

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Job Number: 100819COMSSL02

New Path

RCN Number: 10081932

Administrative Information

CA-SFO0008A CA
City/County San Francisco/San Francisco
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0551A CA

San Francisco/San Francisco
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 46' 37.9~ N	37 ° 45' 18.5~ N
Longitude (NAD 83)	122 ° 25' 3.6~ W	122 ° 27' 10.5~ W
Ground Elevation (m/ft-AMSL)	17.90 / 58.7	251.10 / 823.8
Antenna Structure Registration #		
Path Azimuth (°)	231.767	51.745
Path Length (km / miles)	3.955 / 2.457	

Transmit Antenna

77083A	77083A
ANDREW CORPORATION	ANDREW CORPORATION
VHLP2-11A	VHLP2-11A
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 3.30 / 3.49	34.4 / 3.30 / -3.52
Centerline (m / ft - AGL) 104.80 / 343.8	114.00 / 374.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM016	TEM016
DRAGONWAVE INC	DRAGONWAVE INC
11HD40HFC277V02	11HD40HFC277V02
HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 36M7D7W 256 QAM	36M7D7W 256 QAM
Loading 1 CH DIG 277000.000	1 CH DIG 277000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 15.5	15.5
Received Level (dBm) -42.7	-42.7
EIRP (dBm) 49.1	49.1
Fixed Loss: Tx / Common (dB) 0.0 / 0.8	0.0 / 0.8
Free Space Loss (dB) 125.4	

Transmit Frequencies (MHz)

11265.0000V(2)	11385.0000V(5)	10775.0000V(2)	10895.0000V(5)
11545.0000H(9)	11665.0000H(12)	11055.0000H(9)	11175.0000H(12)

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19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Job Number 100819COMSSL02

New Path

RCN Number: 10081932

Administrative Information

CA-SFO0008A CA
City/County San Francisco/San Francisco
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0581A CA

San Francisco/San Francisco
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 46' 37.9~ N	37 ° 44' 34.8~ N
Longitude (NAD 83)	122 ° 25' 3.6~ W	122 ° 24' 53.7~ W
Ground Elevation (m/ft-AMSL)	17.90 / 58.7	138.30 / 453.7
Antenna Structure Registration #		
Path Azimuth (°)	176.346	356.348
Path Length (km / miles)	3.803 / 2.363	

Transmit Antenna

77083A	77083A
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model VHLP2-11A	VHLP2-11A
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 3.30 / 0.51	34.4 / 3.30 / -0.53
Centerline (m / ft - AGL) 103.48 / 339.5	17.68 / 58.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM016	TEM016
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 11HD40HFC277V02	11HD40HFC277V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 36M7D7W 256 QAM	36M7D7W 256 QAM
Loading 1 CH DIG 277000.000	1 CH DIG 277000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 15.5	15.5
Received Level (dBm) -42.4	-42.4
EIRP (dBm) 49.1	49.1
Fixed Loss: Tx / Common (dB) 0.0 / 0.8	0.0 / 0.8
Free Space Loss (dB) 125.1	

Transmit Frequencies (MHz)

11225.0000V(1)	11345.0000V(4)	10735.0000V(1)	10855.0000V(4)
11505.0000H(8)	11585.0000H(10)	11015.0000H(8)	11095.0000H(10)

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Job Number 100819COMSSL02

New Path

RCN Number: 10081932

Administrative Information

CA-SFO0139B CA
City/County Danville/Contra Costa
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0563A CA

/Contra Costa
Engineering Proposal / PRIMARY OPERATION
WQLY428
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83) 37 ° 48' 34.2~ N
Longitude (NAD 83) 121 ° 59' 37.3~ W
Ground Elevation (m/ft-AMSL) 121.00 / 397.0
Antenna Structure Registration #
Path Azimuth (°) 39.292
Path Length (km / miles) 10.361 / 6.438

37 ° 52' 54.2~ N
121 ° 55' 8.8~ W
1097.60 / 3601.0
1014626
219.337

Transmit Antenna

77083A
Manufacturer ANDREW CORPORATION
Model VHLP2-11A
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 3.30 / 5.62
Centerline (m / ft - AGL) 9.60 / 31.5

77083A
ANDREW CORPORATION
VHLP2-11A
34.4 / 3.30 / -5.69
58.47 / 191.8

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMP02
Manufacturer DRAGONWAVE INC
Model 11HD40HFC181V02
Model Description HORIZON DUO
Emission Designator / Modulation 35M8D7W 64 QAM
Loading 1 CH DIG 181000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 16.5
Received Level (dBm) -48.5
EIRP (dBm) 50.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 133.8

TEMP02
DRAGONWAVE INC
11HD40HFC181V02
HORIZON DUO
35M8D7W 64 QAM
1 CH DIG 181000.000
0.001
Nominal Coordinated Maximum
16.5
-48.5
50.9
0.0 / 0.0

Transmit Frequencies (MHz) 10775.0000H(2) 10895.0000H(5) 11265.0000H(2) 11385.0000H(5)

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19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0182A CA
City/County San Francisco/San Francisco
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0551A CA

City/County San Francisco/San Francisco
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 46' 53.8~ N	37 ° 45' 18.5 ~ N
Longitude (NAD 83)	122 ° 30' 18.0~ W	122 ° 27' 10.5 ~ W
Ground Elevation (m/ft-AMSL)	101.80 / 334.0	<u>251.10</u> / <u>823.8</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>122.615</u>	<u>302.646</u>
Path Length (km / miles)		<u>5.449</u> / <u>3.386</u>

Transmit Antenna

77091A
Manufacturer ANDREW CORPORATION
Model VHLP800-11A
Gain(dBi) / Beamwidth(°) / Tilt(°) 37.4 / 2.20 / 2.49
Centerline (m / ft – AGL) 19.20 / 63.0

77091A
Manufacturer ANDREW CORPORATION
Model VHLP800-11A
Gain(dBi) / Beamwidth(°) / Tilt(°) 37.4 / 2.20 / -2.53
Centerline (m / ft – AGL) 108.81 / 357.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEM016
Manufacturer DRAGONWAVE INC
Model 11HD40HFC277V02
Model Description HORIZON DUO
Emission Designator / Modulation 36M7D7W 256 QAM
Loading 1 CH DIG 277000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 15.5
Received Level (dBm) -41.7
EIRP (dBm) 51.0
Fixed Loss: Tx / Common (dB) 0.0 / 1.9
Free Space Loss (dB) 128.2

TEM016
Manufacturer DRAGONWAVE INC
Model 11HD40HFC277V02
Model Description HORIZON DUO
Emission Designator / Modulation 36M7D7W 256 QAM
Loading 1 CH DIG 277000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 15.5
Received Level (dBm) -41.7
EIRP (dBm) 51.0
Fixed Loss: Tx / Common (dB) 0.0 / 1.9

Transmit Frequencies (MHz)	11225.0000V(1)	11345.0000V(4)	10735.0000V(1)	10855.0000V(4)
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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0248A CA
City/County San Francisco/San Francisco
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0551A CA

City/County San Francisco/San Francisco
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 43' 33.0~ N	37 ° 45' <u>18.5</u> ~ N
Longitude (NAD 83)	122 ° 24' 4.3~ W	122 ° 27' <u>10.5</u> ~ W
Ground Elevation (m/ft-AMSL)	15.10 / 49.5	<u>251.10</u> / <u>823.8</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>305.523</u>	<u>125.491</u>
Path Length (km / miles)		<u>5.600</u> / <u>3.480</u>

Transmit Antenna

77083A
Manufacturer ANDREW CORPORATION
Model VHLP2-11A
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 3.30 / 3.33
Centerline (m / ft – AGL) 24.38 / 80.0

77083A
Manufacturer ANDREW CORPORATION
Model VHLP2-11A
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 3.30 / -3.37
Centerline (m / ft – AGL) 116.43 / 382.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEM016
Manufacturer DRAGONWAVE INC
Model 11HD40HFC277V02
Model Description HORIZON DUO
Emission Designator / Modulation 36M7D7W 256 QAM
Loading 1 CH DIG 277000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 15.5
Received Level (dBm) -44.1
EIRP (dBm) 49.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 128.4

TEM016
Manufacturer DRAGONWAVE INC
Model 11HD40HFC277V02
Model Description HORIZON DUO
Emission Designator / Modulation 36M7D7W 256 QAM
Loading 1 CH DIG 277000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 15.5
Received Level (dBm) -44.1
EIRP (dBm) 49.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0

Transmit Frequencies (MHz)	11265.0000H(2)	11385.0000H(5)	10775.0000H(2)	10895.0000H(5)
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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0263A CA
City/County San Leandro/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY403
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0004D CA

Hayward/Alameda
Engineering Proposal / PRIMARY OPERATION
WQLX848
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 42' 12.3~ N	37 ° 39' 19.3~ N
Longitude (NAD 83)	122 ° 8' 26.6~ W	122 ° 3' 25.5~ W
Ground Elevation (m/ft-AMSL)	12.80 / 42.0	153.60 / 503.9
Antenna Structure Registration #		
Path Azimuth (°)	125.838	305.889
Path Length (km / miles)	9.104 / 5.657	

Transmit Antenna

77091A
Manufacturer ANDREW CORPORATION
Model VHLP800-11A
Gain(dBi) / Beamwidth(°) / Tilt(°) 37.4 / 2.20 / 1.08
Centerline (m / ft - AGL) 23.16 / 76.0

77091A
ANDREW CORPORATION
VHLP800-11A
37.4 / 2.20 / -1.14
58.22 / 191.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM016
Manufacturer DRAGONWAVE INC
Model 11HD40HFC277V02
Model Description HORIZON DUO
Emission Designator / Modulation 36M7D7W 256 QAM
Loading 1 CH DIG 277000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 15.5
Received Level (dBm) -42.3
EIRP (dBm) 52.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 132.6

TEM016
DRAGONWAVE INC
11HD40HFC277V02
HORIZON DUO
36M7D7W 256 QAM
1 CH DIG 277000.000
0.001
Nominal Coordinated Maximum
15.5
-42.3
52.9
0.0 / 0.0

Transmit Frequencies (MHz)	11505.0000V(8)	11585.0000V(10)	11015.0000V(8)	11095.0000V(10)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0299A CA	CA-SFO0554E CA
City/County	San Bruno/San Mateo	/San Mateo
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY408	WQLY522
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °38' 15.2~ N	37 °41' 14.5~ N
Longitude (NAD 83)	122 °24' 42.3~ W	122 °26' 5.4~ W
Ground Elevation (m/ft-AMSL)	6.30 / 20.7	380.10 / 1247.0
Antenna Structure Registration #		1205149
Path Azimuth (°)	339.781	159.767
Path Length (km / miles)	5.891 / 3.661	

Transmit Antenna

Manufacturer	<u>77083A</u>	<u>77083A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP2-11A</u>	<u>VHLP2-11A</u>
Centerline (m / ft – AGL)	34.4 / <u>3.30</u> / <u>3.74</u>	34.4 / <u>3.30</u> / <u>-3.78</u>
	27.74 / 91.0	<u>41.15</u> / <u>135.0</u>

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEM016	TEM016
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	11HD40HFC277V02	11HD40HFC277V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	36M7D7W 256 QAM	36M7D7W 256 QAM
Stability (%)	1 CH DIG 277000.000	1 CH DIG 277000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.5	15.5
Received Level (dBm)	-46.2	-46.2
EIRP (dBm)	49.1	49.1
Fixed Loss: Tx / Common (dB)	0.0 / 0.8	0.0 / 0.8
Free Space Loss (dB)		128.9

Transmit Frequencies (MHz)	10735.0000H(1)	10935.0000H(6)	11225.0000H(1)	11425.0000H(6)
	11015.0000V(8)	11095.0000V(10)	11505.0000V(8)	11585.0000V(10)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0394A CA
City/County Redwood City/San Mateo
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0055A CA

Menlo Park/San Mateo
Engineering Proposal / PRIMARY OPERATION
WQLY537
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °28' 46.6~ N	37 °27' 7.9~ N
Longitude (NAD 83)	122 °15' 16.9~ W	122 °11' 23.4~ W
Ground Elevation (m/ft-AMSL)	<u>32.20 / 105.6</u>	23.70 / 77.8
Antenna Structure Registration #		
Path Azimuth (°)	<u>117.917</u>	<u>297.957</u>
Path Length (km / miles)		<u>6.495 / 4.036</u>

Transmit Antenna

77091A
Manufacturer ANDREW CORPORATION
Model VHLP800-11A
Gain(dBi) / Beamwidth(°) / Tilt(°) 37.4 / 2.20 / -0.04
Centerline (m / ft – AGL) 25.91 / 85.0

77091A
ANDREW CORPORATION
VHLP800-11A
37.4 / 2.20 / -0.00
32.31 / 106.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEM028
Manufacturer DRAGONWAVE INC
Model 11HD40HFC212V02
Model Description HORIZON DUO
Emission Designator / Modulation 34M4D7W 128 QAM
Loading 1 CH DIG 212000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 16.0
Received Level (dBm) -40.5
EIRP (dBm) 52.6
Fixed Loss: Tx / Common (dB) 0.0 / 0.8
Free Space Loss (dB) 129.7

TEM028
DRAGONWAVE INC
11HD40HFC212V02
HORIZON DUO
34M4D7W 128 QAM
1 CH DIG 212000.000
0.001
Nominal Coordinated Maximum
16.0
-40.5
52.6
0.0 / 0.8

Transmit Frequencies (MHz)	11305.0000V(3)	11425.0000V(6)	10815.0000V(3)	10935.0000V(6)
	11505.0000H(8)	11585.0000H(10)	11015.0000H(8)	11095.0000H(10)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147

(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Prev Job Num: 100427COMSSL01

Job Number 100819COMSSL02

RCN Number: 10081932

Administrative Information**CA-SFO0469A CA****CA-SJC0215D CA**

City/County

San Jose/Santa Clara

/Santa Clara

Status / License Basis

Engineering Proposal / PRIMARY OPERATION

Engineering Proposal / PRIMARY OPERATION

Call Sign

Licensee Code

CLESP3

CLESP3

Licensee Name

Clearwire Spectrum Holdings III, LL

Clearwire Spectrum Holdings III, LL

Radio Service / Station Class

MG -- Microwave Industrial/Business Pool

FXO -- Fixed

Site Information

Latitude (NAD 83)

37 °13' 11.6~ N

37 °17' 7.2~ N

Longitude (NAD 83)

121 °52' 45.5~ W

121 °51' 27.0~ W

Ground Elevation (m/ft-AMSL)

77.00 / 252.6

130.60 / 428.5

Antenna Structure Registration #

Path Azimuth (°)

14.908194.921

Path Length (km / miles)

7.516 / 4.670**Transmit Antenna**

71692A

77083A

Manufacturer

ANDREW CORPORATION

ANDREW CORPORATION

Model

VHLP4-11A

VHLP2-11A

Gain(dBi) / Beamwidth(°) / Tilt(°)

40.4 / 1.50 / 0.43

34.4 / 3.30 / -0.48

Centerline (m / ft - AGL)

12.19 / 40.0

18.29 / 60.0

Receive Antenna

Same As Transmit

Manufacturer

Model

Gain (dBi) / Beamwidth (°)

Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer

Model

Gain (dBi) / Beamwidth (°)

Centerline (m / ft - AGL)

Radio Information

TEM028

TEM028

Manufacturer

DRAGONWAVE INC

DRAGONWAVE INC

Model

11HD40HFC212V02

11HD40HFC212V02

Model Description

HORIZON DUO

HORIZON DUO

Emission Designator / Modulation

34M4D7W

128 QAM

34M4D7W

128 QAM

Loading

1 CH DIG 212000.000

1 CH DIG 212000.000

Stability (%)

0.001

0.001

Nominal Coordinated Maximum

Nominal Coordinated Maximum

Power (dBm)

15.5

15.5

Received Level (dBm)

-40.7

-40.7

EIRP (dBm)

55.9

49.9

Fixed Loss: Tx / Common (dB)

0.0 / 0.0

0.0 / 0.0

Free Space Loss (dB)

131.0**Transmit Frequencies (MHz)**

10735.0000V(1)

10855.0000V(4)

11225.0000V(1)

11345.0000V(4)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0537B CA
City/County Novato/Marin
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0529A CA

Novato/Marin
Engineering Proposal / PRIMARY OPERATION
WQLY511
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	38 ° 6' <u>45.9</u> ~ N	38 ° 3' 18.9 ~ N
Longitude (NAD 83)	122 ° 32' <u>59.2</u> ~ W	122 ° 31' 11.5 ~ W
Ground Elevation (m/ft-AMSL)	<u>135.90</u> / <u>445.9</u>	28.20 / 92.5
Antenna Structure Registration #		
Path Azimuth (°)	<u>157.637</u>	<u>337.655</u>
Path Length (km / miles)		<u>6.901</u> / <u>4.288</u>

Transmit Antenna

77091A
Manufacturer ANDREW CORPORATION
Model VHLP800-11A
Gain(dBi) / Beamwidth(°) / Tilt(°) 37.4 / 2.20 / -0.81
Centerline (m / ft - AGL) 14.33 / 47.0

77091A
ANDREW CORPORATION
VHLP800-11A
37.4 / 2.20 / 0.76
27.43 / 90.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM016
Manufacturer DRAGONWAVE INC
Model 11HD40HFC277V02
Model Description HORIZON DUO
Emission Designator / Modulation 36M7D7W 256 QAM
Loading 1 CH DIG 277000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 15.5
Received Level (dBm) -39.9
EIRP (dBm) 52.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 130.2

TEM016
DRAGONWAVE INC
11HD40HFC277V02
HORIZON DUO
36M7D7W 256 QAM
1 CH DIG 277000.000
0.001
Nominal Coordinated Maximum
15.5
-39.9
52.9
0.0 / 0.0

Transmit Frequencies (MHz)	10775.0000H(2)	10895.0000H(5)	11265.0000H(2)	11385.0000H(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147

(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01

RCN Number: 10081932

Administrative Information

CA-SFO0554E CA
 City/County /San Mateo
 Status / License Basis Engineering Proposal / PRIMARY OPERATION
 Call Sign WQLY522
 Licensee Code CLESP3
 Licensee Name Clearwire Spectrum Holdings III, LL
 Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0291B CA

Pacifica/San Mateo
 Engineering Proposal / PRIMARY OPERATION
 CLESP3
 Clearwire Spectrum Holdings III, LL
 FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 41' 14.5~ N	37 ° 39' 7.8~ N
Longitude (NAD 83)	122 ° 26' 5.4~ W	122 ° 28' 21.8~ W
Ground Elevation (m/ft-AMSL)	380.10 / 1247.0	222.30 / 729.3
Antenna Structure Registration #	1205149	
Path Azimuth (°)	220.567	40.543
Path Length (km / miles)	5.141 / 3.195	

Transmit Antenna

77041A
 Manufacturer ANDREW CORPORATION
 Model VHLP2.5-11
 Gain(dBi) / Beamwidth(°) / Tilt(°) 37.5 / 2.10 / -2.13
 Centerline (m / ft - AGL) 41.15 / 135.0

77083A
 ANDREW CORPORATION
VHLP2-11A
 34.4 / 3.30 / 2.10
 9.14 / 30.0

Receive Antenna

Same As Transmit

Manufacturer
 Model
 Gain (dBi) / Beamwidth (°)
 Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
 Model
 Gain (dBi) / Beamwidth (°)
 Centerline (m / ft - AGL)

Radio Information

TEM016
 Manufacturer DRAGONWAVE INC
 Model 11HD40HFC277V02
 Model Description HORIZON DUO
 Emission Designator / Modulation 36M7D7W 256 QAM
 Loading 1 CH DIG 277000.000
 Stability (%) 0.001

	Nominal	Coordinated	Maximum
Power (dBm)		15.5	
Received Level (dBm)		-44.1	
EIRP (dBm)		51.1	

 Fixed Loss: Tx / Common (dB) 0.0 / 1.9
 Free Space Loss (dB) 127.7

TEM016
 DRAGONWAVE INC
 11HD40HFC277V02
 HORIZON DUO
 36M7D7W 256 QAM
 1 CH DIG 277000.000
 0.001

	Nominal	Coordinated	Maximum
		15.5	
		-44.1	
		48.0	

 0.0 / 1.9

Transmit Frequencies (MHz)	11465.0000V(7)	11545.0000V(9)	10975.0000V(7)	11055.0000V(9)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0563A CA	CA-SFO0167A CA
City/County	/Contra Costa	Danville/Contra Costa
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY428	WQLY330
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °52' 54.2~ N	37 °47' 23.6~ N
Longitude (NAD 83)	121 °55' 8.8~ W	121 °54' 18.0~ W
Ground Elevation (m/ft-AMSL)	1097.60 / 3601.0	283.90 / 931.4
Antenna Structure Registration #	1014626	
Path Azimuth (°)	173.047	353.056
Path Length (km / miles)	10.268 / 6.380	

Transmit Antenna

Manufacturer	<u>77091A</u> ANDREW CORPORATION	<u>77091A</u> ANDREW CORPORATION
Model	<u>VHLP800-11A</u>	<u>VHLP800-11A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>37.4 / 2.20 / -4.88</u>	<u>37.4 / 2.20 / 4.81</u>
Centerline (m / ft - AGL)	<u>58.47 / 191.8</u>	1.52 / 5.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMO16	TEMO16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	11HD40HFC277V02	11HD40HFC277V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	36M7D7W 256 QAM	36M7D7W 256 QAM
Stability (%)	1 CH DIG 277000.000	1 CH DIG 277000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.5	15.5
Received Level (dBm)	<u>-43.4</u>	<u>-43.4</u>
EIRP (dBm)	<u>52.9</u>	<u>52.9</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		133.7

Transmit Frequencies (MHz) 11265.0000V(2) 11385.0000V(5) 10775.0000V(2) 10895.0000V(5)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0565A CA	CA-SFO0564A CA
City/County	/Contra Costa	/Contra Costa
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY441	WQLY410
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 44' 20.0~ N	37 ° 48' 57.0~ N
Longitude (NAD 83)	121 ° 59' 42.5~ W	122 ° 3' 44.7~ W
Ground Elevation (m/ft-AMSL)	562.40 / 1845.1	613.20 / 2011.8
Antenna Structure Registration #	1222544	1010559
Path Azimuth (°)	325.260	145.218
Path Length (km / miles)	10.395 / 6.459	

Transmit Antenna

Manufacturer	<u>77091A</u>	<u>77091A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP800-11A</u>	<u>VHLP800-11A</u>
Centerline (m / ft - AGL)	37.4 / 2.20 / 0.33	37.4 / 2.20 / -0.40
	15.24 / 50.0	30.48 / 100.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMO28	TEMO28
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	11HD40HFC212V02	11HD40HFC212V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	34M4D7W 128 QAM	34M4D7W 128 QAM
Stability (%)	1 CH DIG 212000.000	1 CH DIG 212000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	16.0	16.0
Received Level (dBm)	<u>-43.0</u>	<u>-43.0</u>
EIRP (dBm)	<u>53.4</u>	<u>53.4</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)	133.8	

Transmit Frequencies (MHz) 11545.0000H(9) 11665.0000H(12) 11055.0000H(9) 11175.0000H(12)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 090707COMSAN01
RCN Number: 10081932

Administrative Information

CA-SJC0030B CA
City/County Cupertino/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0003A CA

Santa Clara/Santa Clara
Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °19' <u>27.8</u> ~ N	37 °23' <u>2.0</u> ~ N
Longitude (NAD 83)	122 °0' <u>53.7</u> ~ W	121 °58' <u>42.5</u> ~ W
Ground Elevation (m/ft-AMSL)	<u>59.00</u> / <u>193.6</u>	<u>10.10</u> / <u>33.1</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>26.046</u>	<u>206.068</u>
Path Length (km / miles)		<u>7.351</u> / <u>4.568</u>

Transmit Antenna

Manufacturer	<u>79011R</u> <u>RADIO WAVES, INC</u>	<u>79011R</u> <u>RADIO WAVES, INC</u>
Model	<u>HP3-11</u>	<u>HP3-11</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	37.6 / 2.20 / <u>-0.27</u>	37.6 / 2.20 / <u>0.22</u>
Centerline (m / ft – AGL)	20.12 / 66.0	38.10 / 125.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEM028			TEM028		
Model	DRAGONWAVE INC			DRAGONWAVE INC		
Model Description	11HD40HFC212V02			11HD40HFC212V02		
Emission Designator / Modulation	HORIZON DUO			HORIZON DUO		
Loading	34M4D7W 128 QAM			34M4D7W 128 QAM		
Stability (%)	1 CH DIG 212000.000			1 CH DIG 212000.000		
	0.001			0.001		
	Nominal	Coordinated	Maximum	Nominal	Coordinated	Maximum
Power (dBm)		16.0			16.0	
Received Level (dBm)		<u>-39.6</u>			<u>-39.6</u>	
EIRP (dBm)		53.6			53.6	
Fixed Loss: Tx / Common (dB)	0.0 / 0.0			0.0 / 0.0		
Free Space Loss (dB)	<u>130.8</u>					

Transmit Frequencies (MHz)	10775.0000V(2)	10855.0000V(4)	11265.0000V(2)	11345.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 090803COMSAN01
RCN Number: 10081932

Administrative Information

CA-SJC0097A CA
City/County Palo Alto/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0036A CA

Mountain View/Santa Clara
Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° <u>26</u> ' <u>55.3</u> ~ N	37 ° <u>25</u> ' <u>21.0</u> ~ N
Longitude (NAD 83)	122 ° <u>9</u> ' <u>32.5</u> ~ W	122 ° <u>5</u> ' <u>7.9</u> ~ W
Ground Elevation (m/ft-AMSL)	<u>15.50</u> / <u>50.9</u>	<u>3.70</u> / <u>12.1</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>114.059</u>	<u>294.104</u>
Path Length (km / miles)		<u>7.125</u> / <u>4.427</u>

Transmit Antenna

77041A
Manufacturer ANDREW CORPORATION
Model VHLP2.5-11
Gain(dBi) / Beamwidth(°) / Tilt(°) 37.5 / 2.10 / -0.48
Centerline (m / ft - AGL) 66.14 / 217.0

77041A
Manufacturer ANDREW CORPORATION
Model VHLP2.5-11
Gain(dBi) / Beamwidth(°) / Tilt(°) 37.5 / 2.10 / 0.44
Centerline (m / ft - AGL) 20.73 / 68.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM028
Manufacturer DRAGONWAVE INC
Model 11HD40HFC212V02
Model Description HORIZON DUO
Emission Designator / Modulation 34M4D7W 128 QAM
Loading 1 CH DIG 212000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 16.0
Received Level (dBm) -39.5
EIRP (dBm) 53.5
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 130.5

TEM028
Manufacturer DRAGONWAVE INC
Model 11HD40HFC212V02
Model Description HORIZON DUO
Emission Designator / Modulation 34M4D7W 128 QAM
Loading 1 CH DIG 212000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 16.0
Received Level (dBm) -39.5
EIRP (dBm) 53.5
Fixed Loss: Tx / Common (dB) 0.0 / 0.0

Transmit Frequencies (MHz) 11465.0000H(7) 11545.0000H(9) 10975.0000H(7) 11055.0000H(9)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0141A CA	CA-SJC0166D CA
City/County	Saratoga/Santa Clara	Campbell/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °15' <u>55.2</u> ~ N	37 °17' <u>19.7</u> ~ N
Longitude (NAD 83)	122 °0' <u>26.7</u> ~ W	121 °56' <u>6.9</u> ~ W
Ground Elevation (m/ft-AMSL)	<u>107.40</u> / <u>352.4</u>	<u>57.50</u> / <u>188.6</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>67.831</u>	<u>247.875</u>
Path Length (km / miles)		<u>6.910</u> / <u>4.294</u>

Transmit Antenna	79011R	79011R
Manufacturer	RADIO WAVES, INC	RADIO WAVES, INC
Model	HP3-11	HP3-11
Gain(dBi) / Beamwidth(°) / Tilt(°)	37.6 / 2.20 / <u>-0.08</u>	37.6 / 2.20 / <u>0.03</u>
Centerline (m / ft - AGL)	24.08 / 79.0	67.06 / 220.0

Receive Antenna

Manufacturer	Same As Transmit
Model	
Gain (dBi) / Beamwidth (°)	
Centerline (m / ft - AGL)	

Diversity Receive Antenna

Manufacturer	
Model	
Gain (dBi) / Beamwidth (°)	
Centerline (m / ft - AGL)	

Radio Information	TEMO28	TEMO28
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	11HD40HFC212V02	11HD40HFC212V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	34M4D7W 128 QAM	34M4D7W 128 QAM
Loading	1 CH DIG 212000.000	1 CH DIG 212000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	16.0	16.0
Received Level (dBm)	-39.0	-39.0
EIRP (dBm)	53.6	53.6
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>130.2</u>

Transmit Frequencies (MHz)	11265.0000V(2)	11385.0000V(5)	10775.0000V(2)	10895.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0163A CA
City/County Campbell/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0002A CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
WQLX857
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °16' <u>26.2</u> ~ N	37 °20' 2.9 ~ N
Longitude (NAD 83)	121 °56' <u>41.9</u> ~ W	121 °53' 30.3 ~ W
Ground Elevation (m/ft-AMSL)	67.90 / 222.8	28.20 / 92.5
Antenna Structure Registration #		
Path Azimuth (°)	<u>35.217</u>	<u>215.250</u>
Path Length (km / miles)		<u>8.179</u> / <u>5.082</u>

Transmit Antenna

71692A	71692A
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model VHLP4-11A	VHLP4-11A
Gain(dBi) / Beamwidth(°) / Tilt(°) 40.4 / 1.50 / -0.08	40.4 / 1.50 / 0.02
Centerline (m / ft - AGL) 17.37 / 57.0	50.29 / 165.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM028	TEM028
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 11HD40HFC212V02	11HD40HFC212V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 34M4D7W 128 QAM	34M4D7W 128 QAM
Loading 1 CH DIG 212000.000	1 CH DIG 212000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 16.0	16.0
Received Level (dBm) -36.5	-36.5
EIRP (dBm) 55.6	55.6
Fixed Loss: Tx / Common (dB) 0.0 / 0.8	0.0 / 0.8
Free Space Loss (dB)	<u>131.7</u>

Transmit Frequencies (MHz)

10735.0000V(1)	10815.0000V(3)	11225.0000V(1)	11305.0000V(3)
11015.0000H(8)	11135.0000H(11)	11505.0000H(8)	11625.0000H(11)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0002A CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLX857
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0224D CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
WQLY547
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °20' 2.9~ N	37 °19' 7.2~ N
Longitude (NAD 83)	121 °53' 30.3~ W	121 °49' 45.9~ W
Ground Elevation (m/ft-AMSL)	28.20 / 92.5	40.00 / 131.2
Antenna Structure Registration #		
Path Azimuth (°)	107.248	287.285
Path Length (km / miles)	5.785 / 3.595	

Transmit Antenna

77091A
Manufacturer ANDREW CORPORATION
Model VHLP800-11A
Gain(dBi) / Beamwidth(°) / Tilt(°) 37.4 / 2.20 / -0.29
Centerline (m / ft - AGL) 50.29 / 165.0

77091A

ANDREW CORPORATION
VHLP800-11A
37.4 / 2.20 / 0.25
10.97 / 36.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM016
Manufacturer DRAGONWAVE INC
Model 11HD40HFC277V02
Model Description HORIZON DUO
Emission Designator / Modulation 36M7D7W 256 QAM
Loading 1 CH DIG 277000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 15.5
Received Level (dBm) -40.0
EIRP (dBm) 52.1
Fixed Loss: Tx / Common (dB) 0.0 / 0.8
Free Space Loss (dB) 128.7

TEM016

DRAGONWAVE INC
11HD40HFC277V02
HORIZON DUO
36M7D7W 256 QAM
1 CH DIG 277000.000
0.001
Nominal Coordinated Maximum
15.5
-40.0
52.1
0.0 / 0.8

Transmit Frequencies (MHz)

<u>11305.0000V(3)</u>	<u>11425.0000V(6)</u>	<u>10815.0000V(3)</u>	<u>10935.0000V(6)</u>
<u>11505.0000H(8)</u>	<u>11625.0000H(11)</u>	<u>11015.0000H(8)</u>	<u>11135.0000H(11)</u>

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0326C CA
City/County Burlingame/San Mateo
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLZ449
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0367D CA

San Mateo/San Mateo
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °35' 37.9~ N	37 °32' <u>11.7</u> ~ N
Longitude (NAD 83)	122 °21' 54.9~ W	122 °19' <u>36.7</u> ~ W
Ground Elevation (m/ft-AMSL)	2.40 / 7.9	<u>114.90</u> / <u>377.0</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>151.908</u>	<u>331.931</u>
Path Length (km / miles)		<u>7.205</u> / <u>4.477</u>

Transmit Antenna

77091A
Manufacturer ANDREW CORPORATION
Model VHLP800-11A
Gain(dBi) / Beamwidth(°) / Tilt(°) 37.4 / 2.20 / 0.64
Centerline (m / ft – AGL) 46.94 / 154.0

77091A
ANDREW CORPORATION
VHLP800-11A
37.4 / 2.20 / -0.69
17.68 / 58.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEM028
Manufacturer DRAGONWAVE INC
Model 11HD40HFC212V02
Model Description HORIZON DUO
Emission Designator / Modulation 34M4D7W 128 QAM
Loading 1 CH DIG 212000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 16.0
Received Level (dBm) -41.4
EIRP (dBm) 52.6
Fixed Loss: Tx / Common (dB) 0.0 / 0.8
Free Space Loss (dB) 130.6

TEM028
DRAGONWAVE INC
11HD40HFC212V02
HORIZON DUO
34M4D7W 128 QAM
1 CH DIG 212000.000
0.001
Nominal Coordinated Maximum
16.0
-41.4
52.6
0.0 / 0.8

Transmit Frequencies (MHz)	11345.0000V(4)	<u>11425.0000V(6)</u>	10855.0000V(4)	<u>10935.0000V(6)</u>
	<u>11505.0000H(8)</u>	<u>11585.0000H(10)</u>	<u>11015.0000H(8)</u>	<u>11095.0000H(10)</u>

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0529A CA
City/County Novato/Marin
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY511
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0523A CA

San Rafael/Marin
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY421
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	38 °3' 18.9~ N	37 °58' 52.3~ N
Longitude (NAD 83)	122 °31' 11.5~ W	122 °31' 45.7~ W
Ground Elevation (m/ft-AMSL)	28.20 / 92.5	185.10 / 607.3
Antenna Structure Registration #		
Path Azimuth (°)	185.798	5.792
Path Length (km / miles)	8.262 / 5.134	

Transmit Antenna

77091A
Manufacturer ANDREW CORPORATION
Model VHLP800-11A
Gain(dBi) / Beamwidth(°) / Tilt(°) 37.4 / 2.20 / 1.00
Centerline (m / ft – AGL) 27.43 / 90.0

77091A
Manufacturer ANDREW CORPORATION
Model VHLP800-11A
Gain(dBi) / Beamwidth(°) / Tilt(°) 37.4 / 2.20 / -1.05
Centerline (m / ft – AGL) 18.29 / 60.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEM016
Manufacturer DRAGONWAVE INC
Model 11HD40HFC277V02
Model Description HORIZON DUO
Emission Designator / Modulation 36M7D7W 256 QAM
Loading 1 CH DIG 277000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 15.5
Received Level (dBm) -41.5
EIRP (dBm) 52.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 131.8

TEM016
Manufacturer DRAGONWAVE INC
Model 11HD40HFC277V02
Model Description HORIZON DUO
Emission Designator / Modulation 36M7D7W 256 QAM
Loading 1 CH DIG 277000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 15.5
Received Level (dBm) -41.5
EIRP (dBm) 52.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0

Transmit Frequencies (MHz) 11265.0000V(2) 11385.0000V(5) 10775.0000V(2) 10895.0000V(5)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0565A CA
City/County /Contra Costa
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY441
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0479A CA

City/County Pleasanton/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY748
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 44' 20.0~ N	37 ° 42' 2.5~ N
Longitude (NAD 83)	121 ° 59' 42.5~ W	121 ° 55' 5.4~ W
Ground Elevation (m/ft-AMSL)	562.40 / 1845.1	101.00 / 331.4
Antenna Structure Registration #	1222544	
Path Azimuth (°)	121.969	302.016
Path Length (km / miles)	8.002 / 4.972	

Transmit Antenna

Manufacturer	<u>77091A</u> ANDREW CORPORATION	<u>77091A</u> ANDREW CORPORATION
Model	<u>VHLP800-11A</u>	<u>VHLP800-11A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	37.4 / 2.20 / -3.40	37.4 / 2.20 / 3.34
Centerline (m / ft - AGL)	30.48 / 100.0	20.73 / 68.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEM016	TEM016
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	11HD40HFC277V02	11HD40HFC277V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	36M7D7W 256 QAM	36M7D7W 256 QAM
Stability (%)	1 CH DIG 277000.000	1 CH DIG 277000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.5	15.5
Received Level (dBm)	-41.2	-41.2
EIRP (dBm)	52.9	52.9
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		131.5

Transmit Frequencies (MHz)	<u>11465.0000V(7)</u>	<u>11545.0000V(9)</u>	<u>10975.0000V(7)</u>	<u>11055.0000V(9)</u>
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Job Number 100819COMSSL02

New Path

RCN Number: 10081932

Administrative Information

CA-SFO0583A CA
City/County /Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0369D CA

Fremont/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY733
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °29' 57.8~ N	37 °32' 31.5~ N
Longitude (NAD 83)	121 °52' 21.3~ W	121 °58' 23.5~ W
Ground Elevation (m/ft-AMSL)	789.90 / 2591.5	17.20 / 56.4
Antenna Structure Registration #		
Path Azimuth (°)	298.078	118.017
Path Length (km / miles)	10.078 / 6.262	

Transmit Antenna

77091A
Manufacturer ANDREW CORPORATION
Model VHLP800-11A
Gain(dBi) / Beamwidth(°) / Tilt(°) 37.4 / 2.20 / -4.38
Centerline (m / ft - AGL) 19.81 / 65.0

77091A
Manufacturer ANDREW CORPORATION
Model VHLP800-11A
Gain(dBi) / Beamwidth(°) / Tilt(°) 37.4 / 2.20 / 4.31
Centerline (m / ft - AGL) 26.82 / 88.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM016
Manufacturer DRAGONWAVE INC
Model 11HD40HFC277V02
Model Description HORIZON DUO
Emission Designator / Modulation 36M7D7W 256 QAM
Loading 1 CH DIG 277000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 15.5
Received Level (dBm) -43.2
EIRP (dBm) 52.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 133.5

TEM016
Manufacturer DRAGONWAVE INC
Model 11HD40HFC277V02
Model Description HORIZON DUO
Emission Designator / Modulation 36M7D7W 256 QAM
Loading 1 CH DIG 277000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 15.5
Received Level (dBm) -43.2
EIRP (dBm) 52.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0

Transmit Frequencies (MHz)	11465.0000H(7)	11585.0000H(10)	10975.0000H(7)	11095.0000H(10)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0276A CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0230B CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °19' 49.6~ N	37 °22' 42.5~ N
Longitude (NAD 83)	121 °53' 18.4~ W	121 °49' 48.1~ W
Ground Elevation (m/ft-AMSL)	29.70 / 97.4	62.40 / 204.7
Antenna Structure Registration #		
Path Azimuth (°)	44.138	224.174
Path Length (km / miles)	7.430 / 4.617	

Transmit Antenna

<u>77083A</u>	<u>77083A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model <u>VHLP2-11A</u>	<u>VHLP2-11A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 3.30 / -0.42	34.4 / 3.30 / 0.37
Centerline (m / ft - AGL) <u>91.44 / 300.0</u>	7.01 / 23.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM098	TEM098
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 11HD40HFC142V02	11HD40HFC142V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 36M2D7W 32 QAM	36M2D7W 32 QAM
Loading 1 CH DIG 142000.000	1 CH DIG 142000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 19.0	19.0
Received Level (dBm) -43.1	-43.1
EIRP (dBm) 53.4	53.4
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 130.9	

Transmit Frequencies (MHz)	11265.0000H(2)	<u>11345.0000H(4)</u>	10775.0000H(2)	<u>10855.0000H(4)</u>
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0004D CA	CA-SFO0269A CA
City/County	Hayward/Alameda	Castro Valley/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLX848	WQLY323
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information		
Latitude (NAD 83)	37 °39' 19.3~ N	37 °41' 36.8~ N
Longitude (NAD 83)	122 °3' 25.5~ W	122 °4' 24.3~ W
Ground Elevation (m/ft-AMSL)	153.60 / 503.9	52.60 / 172.6
Antenna Structure Registration #		
Path Azimuth (°)	341.232	161.222
Path Length (km / miles)	4.477 / 2.782	

Transmit Antenna	87204A	87204A
Manufacturer	ANDREW CORPORATION	ANDREW CORPORATION
Model	VHLP2-18B	VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°)	38.9 / 2.10 / -1.92	38.9 / 2.10 / 1.89
Centerline (m / ft - AGL)	58.22 / 191.0	10.06 / 33.0

Receive Antenna	Same As Transmit
Manufacturer	
Model	
Gain (dBi) / Beamwidth (°)	
Centerline (m / ft - AGL)	

Diversity Receive Antenna
Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information	TEMR29	TEMR29
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	18HD50HFC364V02	18HD50HFC364V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	47M1D7W 256 QAM	47M1D7W 256 QAM
Loading	1 CH DIG 364000.000	1 CH DIG 364000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.5	15.5
Received Level (dBm)	-37.6	-37.6
EIRP (dBm)	54.4	54.4
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		130.9

Transmit Frequencies (MHz)	19375.0000V(2)	19475.0000V(4)	17815.0000V(2)	17915.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0008A CA
City/County San Francisco/San Francisco
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0215A CA

San Francisco/San Francisco
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 46' 37.9~ N	37 ° 45' 36.8~ N
Longitude (NAD 83)	122 ° 25' 3.6~ W	122 ° 23' 16.7~ W
Ground Elevation (m/ft-AMSL)	17.90 / 58.7	9.70 / 31.8
Antenna Structure Registration #		
Path Azimuth (°)	125.745	305.764
Path Length (km / miles)	3.224 / 2.003	

Transmit Antenna

RB1160	RB1160
RADIO WAVES, INC	RADIO WAVES, INC
HP2-18	HP2-18
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.6 / 2.00 / -1.65	38.6 / 2.00 / 1.62
Centerline (m / ft - AGL) 104.24 / 342.0	20.42 / 67.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMR29	TEMR29
DRAGONWAVE INC	DRAGONWAVE INC
18HD50HFC364V02	18HD50HFC364V02
HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 47M1D7W 256 QAM	47M1D7W 256 QAM
Loading 1 CH DIG 364000.000	1 CH DIG 364000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 12.6	12.6
Received Level (dBm) -38.3	-38.3
EIRP (dBm) 51.2	51.2
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 128.1	

Transmit Frequencies (MHz)	18015.0000V(6)	18115.0000V(8)	19575.0000V(6)	19675.0000V(8)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0043A CA
City/County Concord/Contra Costa
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLX780
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0046E CA

Pleasant Hill/Contra Costa
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °58' 17.3~ N	37 °57' 40.0~ N
Longitude (NAD 83)	122 °3' 13.9~ W	122 °4' 26.8~ W
Ground Elevation (m/ft-AMSL)	9.70 / 31.8	26.50 / 86.9
Antenna Structure Registration #		
Path Azimuth (°)	237.132	57.119
Path Length (km / miles)	2.119 / 1.317	

Transmit Antenna

Manufacturer	RB1160	RB1160
Model	RADIO WAVES, INC	RADIO WAVES, INC
Gain(dBi) / Beamwidth(°) / Tilt(°)	HP2-18	HP2-18
Centerline (m / ft - AGL)	38.6 / 2.00 / <u>-0.09</u>	38.6 / 2.00 / <u>0.07</u>
	36.58 / 120.0	<u>16.76</u> / <u>55.0</u>

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMO17	TEMO17
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50SFC371V02	18HD50SFC371V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	49M2D7W 256 QAM	49M2D7W 256 QAM
Stability (%)	1 CH DIG 371000.000	1 CH DIG 371000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	-41.7	-41.7
EIRP (dBm)	44.1	44.1
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		124.4

Transmit Frequencies (MHz)	17965.0000H(5)	18065.0000H(7)	19525.0000H(5)	19625.0000H(7)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0059A CA
City/County Pleasant Hill/Contra Costa
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLX841
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0043A CA

Concord/Contra Costa
Engineering Proposal / PRIMARY OPERATION
WQLX780
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °56' 44.5~ N	37 °58' 17.3~ N
Longitude (NAD 83)	122 °3' 38.5~ W	122 °3' 13.9~ W
Ground Elevation (m/ft-AMSL)	16.50 / 54.1	9.70 / 31.8
Antenna Structure Registration #		
Path Azimuth (°)	11.851	191.856
Path Length (km / miles)	2.924 / 1.817	

Transmit Antenna

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / 0.27
Centerline (m / ft – AGL) 15.65 / 51.3

87204A
ANDREW CORPORATION
VHLP2-18B
38.9 / 2.10 / -0.29
36.58 / 120.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEM085
Manufacturer DRAGONWAVE INC
Model 18HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 7.0
Received Level (dBm) -42.4
EIRP (dBm) 45.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 127.2

TEM085
DRAGONWAVE INC
18HD50HFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
7.0
-42.4
45.9
0.0 / 0.0

Transmit Frequencies (MHz)	19525.0000V(5)	19625.0000V(7)	17965.0000V(5)	18065.0000V(7)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0067D CA
City/County Concord/Contra Costa
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLX851
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0043A CA

City/County Concord/Contra Costa
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLX780
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °56' 6.3~ N	37 °58' 17.3~ N
Longitude (NAD 83)	122 °1' 47.3~ W	122 °3' 13.9~ W
Ground Elevation (m/ft-AMSL)	26.50 / 86.9	9.70 / 31.8
Antenna Structure Registration #		
Path Azimuth (°)	332.378	152.363
Path Length (km / miles)	4.559 / 2.833	

Transmit Antenna

<u>87204A</u>	<u>87204A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model <u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°) <u>38.9</u> / 2.10 / -0.03	<u>38.9</u> / 2.10 / 0.00
Centerline (m / ft - AGL) 21.18 / 69.5	36.58 / 120.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM085	TEM085
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 18HD50HFC322V02	18HD50HFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) <u>17.5</u>	<u>17.5</u>
Received Level (dBm) <u>-35.8</u>	<u>-35.8</u>
EIRP (dBm) <u>56.4</u>	<u>56.4</u>
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 131.1	

Transmit Frequencies (MHz)	19375.0000V(2)	19475.0000V(4)	17815.0000V(2)	17915.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0086A CA
City/County Berkeley/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0093D CA

Berkeley/Alameda
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °53' 28.3~ N	37 °52' 52.4~ N
Longitude (NAD 83)	122 °16' 51.6~ W	122 °18' 25.5~ W
Ground Elevation (m/ft-AMSL)	56.20 / 184.4	3.80 / 12.5
Antenna Structure Registration #		
Path Azimuth (°)	244.255	64.239
Path Length (km / miles)	2.548 / 1.583	

Transmit Antenna

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / -1.10
Centerline (m / ft - AGL) 11.89 / 39.0

87204A
ANDREW CORPORATION
VHLP2-18B
38.9 / 2.10 / 1.08
15.85 / 52.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM085
Manufacturer DRAGONWAVE INC
Model 18HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 15.5
Received Level (dBm) -36.5
EIRP (dBm) 52.5
Fixed Loss: Tx / Common (dB) 0.0 / 1.9
Free Space Loss (dB) 126.0

TEM085
DRAGONWAVE INC
18HD50HFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
15.5
-36.5
52.5
0.0 / 1.9

Transmit Frequencies (MHz)	17815.0000V(2)	17915.0000V(4)	19375.0000V(2)	19475.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0099A CA
City/County Berkeley/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLX758
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0100C CA

City/County Berkeley/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLX763
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °52' 12.2~ N	37 °52' 22.6~ N
Longitude (NAD 83)	122 °16' 7.0~ W	122 °18' 7.9~ W
Ground Elevation (m/ft-AMSL)	56.40 / 185.0	4.10 / 13.5
Antenna Structure Registration #		
Path Azimuth (°)	276.204	96.183
Path Length (km / miles)	2.972 / 1.847	

Transmit Antenna

<u>87204A</u>	<u>87204A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model <u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°) <u>38.9</u> / 2.10 / -1.53	<u>38.9</u> / 2.10 / 1.51
Centerline (m / ft - AGL) 45.72 / 150.0	18.90 / 62.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM085	TEM085
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 18HD50HFC322V02	18HD50HFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 8.0	8.0
Received Level (dBm) <u>-41.6</u>	<u>-41.6</u>
EIRP (dBm) <u>46.9</u>	<u>46.9</u>
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 127.4	

Transmit Frequencies (MHz)	17965.0000V(5)	18065.0000V(7)	19525.0000V(5)	19625.0000V(7)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0100C CA	CA-SFO0110A CA
City/County	Berkeley/Alameda	Berkeley/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLX763	WQLY329
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °52' 22.6~ N	37 °51' 11.2~ N
Longitude (NAD 83)	122 °18' 7.9~ W	122 °17' 20.4~ W
Ground Elevation (m/ft-AMSL)	4.10 / 13.5	12.80 / 42.0
Antenna Structure Registration #		
Path Azimuth (°)	152.188	332.196
Path Length (km / miles)	2.489 / 1.546	

Transmit Antenna

Manufacturer	<u>87204A</u>	<u>87204A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Centerline (m / ft – AGL)	38.9 / 2.10 / 0.55	38.9 / 2.10 / -0.57
	18.90 / 62.0	34.44 / 113.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMO85	TEMO85
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50HFC322V02	18HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-42.5</u>	<u>-42.5</u>
EIRP (dBm)	<u>44.4</u>	<u>44.4</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		125.8

Transmit Frequencies (MHz) 19575.0000V(6) 19675.0000V(8) 18015.0000V(6) 18115.0000V(8)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147

(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Prev Job Num: 100120COMSSL01

Job Number 100819COMSSL02

RCN Number: 10081932

Administrative Information

CA-SFO0109B CA
 City/County Berkeley/Alameda
 Status / License Basis Engineering Proposal / PRIMARY OPERATION
 Call Sign WQLX850
 Licensee Code CLESP3
 Licensee Name Clearwire Spectrum Holdings III, LL
 Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0126A CA

Oakland/Alameda
 Engineering Proposal / PRIMARY OPERATION
 WQLY415
 CLESP3
 Clearwire Spectrum Holdings III, LL
 FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °51' 29.5~ N	37 °50' 2.0~ N
Longitude (NAD 83)	122 °15' 32.1~ W	122 °15' 50.4~ W
Ground Elevation (m/ft-AMSL)	63.80 / 209.3	31.70 / 104.0
Antenna Structure Registration #		
Path Azimuth (°)	189.418	9.415
Path Length (km / miles)	2.735 / 1.699	

Transmit Antenna

<u>87204A</u>	<u>87204A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model <u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°) <u>38.9</u> / 2.10 / -0.64	<u>38.9</u> / 2.10 / 0.62
Centerline (m / ft - AGL) 19.81 / 65.0	21.95 / 72.0

Receive Antenna

Same As Transmit

Manufacturer
 Model
 Gain (dBi) / Beamwidth (°)
 Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
 Model
 Gain (dBi) / Beamwidth (°)
 Centerline (m / ft - AGL)

Radio Information

TEMQ57	TEMQ57
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 18HD50SFC322V02	18HD50SFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 5.5	5.5
Received Level (dBm) <u>-43.3</u>	<u>-43.3</u>
EIRP (dBm) <u>44.4</u>	<u>44.4</u>
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 126.6	

Transmit Frequencies (MHz)	17965.0000V(5)	18065.0000V(7)	19525.0000V(5)	19625.0000V(7)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0110A CA
City/County Berkeley/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY329
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0093D CA

Berkeley/Alameda
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °51' 11.2~ N	37 °52' 52.4~ N
Longitude (NAD 83)	122 °17' 20.4~ W	122 °18' 25.5~ W
Ground Elevation (m/ft-AMSL)	12.80 / 42.0	3.80 / 12.5
Antenna Structure Registration #		
Path Azimuth (°)	332.986	152.975
Path Length (km / miles)	3.502 / 2.176	

Transmit Antenna

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / -0.46
Centerline (m / ft - AGL) 34.44 / 113.0

87059A
ANDREW CORPORATION
VHLP2.5-18
41.0 / 1.50 / 0.44
15.85 / 52.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM032
Manufacturer DRAGONWAVE INC
Model 18HD50HFC271V02
Model Description HORIZON DUO
Emission Designator / Modulation 47M8D7W 128 QAM
Loading 1 CH DIG 271000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 15.5
Received Level (dBm) -37.2
EIRP (dBm) 52.5
Fixed Loss: Tx / Common (dB) 0.0 / 1.9
Free Space Loss (dB) 128.8

TEM032
DRAGONWAVE INC
18HD50HFC271V02
HORIZON DUO
47M8D7W 128 QAM
1 CH DIG 271000.000
0.001
Nominal Coordinated Maximum
15.5
-37.2
54.6
0.0 / 1.9

Transmit Frequencies (MHz)	17965.0000H(5)	18065.0000H(7)	19525.0000H(5)	19625.0000H(7)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0126A CA
City/County Oakland/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY415
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0135A CA

City/County Oakland/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY382
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 50' 2.0~ N	37 ° 48' 57.6~ N
Longitude (NAD 83)	122 ° 15' 50.4~ W	122 ° 17' 0.7~ W
Ground Elevation (m/ft-AMSL)	31.70 / 104.0	3.80 / 12.5
Antenna Structure Registration #		
Path Azimuth (°)	220.895	40.883
Path Length (km / miles)	2.626 / 1.632	

Transmit Antenna

<u>87204A</u>	<u>87204A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model <u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°) <u>38.9</u> / 2.10 / -0.50	<u>38.9</u> / 2.10 / 0.48
Centerline (m / ft - AGL) 21.95 / 72.0	27.43 / 90.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ57	TEMQ57
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 18HD50SFC322V02	18HD50SFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 5.5	5.5
Received Level (dBm) <u>-43.0</u>	<u>-43.0</u>
EIRP (dBm) <u>44.4</u>	<u>44.4</u>
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 126.3	

Transmit Frequencies (MHz)	19575.0000V(6)	19675.0000V(8)	18015.0000V(6)	18115.0000V(8)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0127A CA
City/County Danville/Contra Costa
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY338
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0563A CA

/Contra Costa
Engineering Proposal / PRIMARY OPERATION
WQLY428
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 49' 52.8~ N	37 ° 52' 54.2~ N
Longitude (NAD 83)	121 ° 57' 32.9~ W	121 ° 55' 8.8~ W
Ground Elevation (m/ft-AMSL)	211.70 / 694.6	1097.60 / 3601.0
Antenna Structure Registration #		1014626
Path Azimuth (°)	32.192	212.216
Path Length (km / miles)	6.610 / 4.107	

Transmit Antenna

87059A	87059A
ANDREW CORPORATION	ANDREW CORPORATION
VHLP2.5-18	VHLP2.5-18
Gain(dBi) / Beamwidth(°) / Tilt(°) 41.0 / 1.50 / 8.08	41.0 / 1.50 / -8.12
Centerline (m / ft - AGL) 4.71 / 15.5	59.44 / 195.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM032	TEM032
DRAGONWAVE INC	DRAGONWAVE INC
18HD50HFC271V02	18HD50HFC271V02
HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 47M8D7W 128 QAM	47M8D7W 128 QAM
Loading 1 CH DIG 271000.000	1 CH DIG 271000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 15.7	15.7
Received Level (dBm) -36.6	-36.6
EIRP (dBm) 56.7	56.7
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 134.3	

Transmit Frequencies (MHz)	18015.0000H(6)	18115.0000H(8)	19575.0000H(6)	19675.0000H(8)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0138C CA	CA-SFO0141A CA
City/County	Oakland/Alameda	Oakland/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 48' 41.9~ N	37 ° 48' 24.8~ N
Longitude (NAD 83)	122 ° 15' 54.1~ W	122 ° 18' 22.3~ W
Ground Elevation (m/ft-AMSL)	8.00 / 26.2	3.40 / 11.2
Antenna Structure Registration #		1201091
Path Azimuth (°)	261.738	81.713
Path Length (km / miles)		3.663 / 2.276

Transmit Antenna

Manufacturer	<u>87204A</u>	<u>87204A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Centerline (m / ft – AGL)	38.9 / 2.10 / -0.23	38.9 / 2.10 / 0.20
	39.62 / 130.0	30.48 / 100.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMO85	TEMO85
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50HFC322V02	18HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	17.5	17.5
Received Level (dBm)	<u>-33.9</u>	<u>-33.9</u>
EIRP (dBm)	<u>56.4</u>	<u>56.4</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		129.2

Transmit Frequencies (MHz) 17965.0000H(5) 18065.0000H(7) 19525.0000H(5) 19625.0000H(7)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0146A CA
City/County Danville/Contra Costa
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY208
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0149A CA

Blackhawk-Camino Tas/Contra Costa
Engineering Proposal / PRIMARY OPERATION
WQLY411
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 48' 10.8~ N	37 ° 48' 5.2~ N
Longitude (NAD 83)	121 ° 57' 26.5~ W	121 ° 55' 1.8~ W
Ground Elevation (m/ft-AMSL)	274.00 / 899.0	214.10 / 702.4
Antenna Structure Registration #		
Path Azimuth (°)	92.780	272.805
Path Length (km / miles)	3.544 / 2.202	

Transmit Antenna

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / -0.74
Centerline (m / ft - AGL) 2.74 / 9.0

87204A
ANDREW CORPORATION
VHLP2-18B
38.9 / 2.10 / 0.71
17.68 / 58.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM085
Manufacturer DRAGONWAVE INC
Model 18HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 10.0
Received Level (dBm) -41.1
EIRP (dBm) 48.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 128.9

TEM085
DRAGONWAVE INC
18HD50HFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
10.0
-41.1
48.9
0.0 / 0.0

Transmit Frequencies (MHz)	17815.0000V(2)	17915.0000V(4)	19375.0000V(2)	19475.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0168A CA
City/County Alameda/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY341
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0193C CA

Alameda/Alameda
Engineering Proposal / PRIMARY OPERATION
WQLY413
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 47' 22.4~ N	37 ° 46' 10.6~ N
Longitude (NAD 83)	122 ° 16' 31.5~ W	122 ° 14' 13.8~ W
Ground Elevation (m/ft-AMSL)	2.30 / 7.5	4.20 / 13.8
Antenna Structure Registration #		
Path Azimuth (°)	123.291	303.315
Path Length (km / miles)	4.032 / 2.505	

Transmit Antenna

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / -0.04
Centerline (m / ft - AGL) 20.42 / 67.0

87204A
ANDREW CORPORATION
VHLP2-18B
38.9 / 2.10 / 0.02
16.46 / 54.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM085
Manufacturer DRAGONWAVE INC
Model 18HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 14.0
Received Level (dBm) -38.2
EIRP (dBm) 52.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 130.0

TEM085
DRAGONWAVE INC
18HD50HFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
14.0
-38.2
52.9
0.0 / 0.0

Transmit Frequencies (MHz) 19525.0000V(5) 19625.0000V(7) 17965.0000V(5) 18065.0000V(7)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0182A CA
City/County San Francisco/San Francisco
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0216A CA

City/County San Francisco/San Francisco
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 46' 53.8~ N	37 ° 45' 33.5~ N
Longitude (NAD 83)	122 ° 30' 18.0~ W	122 ° 28' 38.4~ W
Ground Elevation (m/ft-AMSL)	101.80 / 334.0	89.80 / 294.6
Antenna Structure Registration #		
Path Azimuth (°)	135.436	315.453
Path Length (km / miles)	3.474 / 2.159	

Transmit Antenna

Manufacturer	RB1160	RB1160
Model	RADIO WAVES, INC	RADIO WAVES, INC
Gain(dBi) / Beamwidth(°) / Tilt(°)	HP2-18	HP2-18
Centerline (m / ft - AGL)	38.6 / 2.00 / -0.27	38.6 / 2.00 / 0.25
	19.20 / 63.0	15.24 / 50.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMR29	TEMR29
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50HFC364V02	18HD50HFC364V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	47M1D7W 256 QAM	47M1D7W 256 QAM
Stability (%)	1 CH DIG 364000.000	1 CH DIG 364000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	13.2	13.2
Received Level (dBm)	-38.3	-38.3
EIRP (dBm)	51.8	51.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		128.7

Transmit Frequencies (MHz)	19375.0000H(2)	19475.0000H(4)	17815.0000H(2)	17915.0000H(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0182A CA
City/County San Francisco/San Francisco
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0236A CA

City/County San Francisco/San Francisco
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 46' 53.8~ N	37 ° 44' 29.6~ N
Longitude (NAD 83)	122 ° 30' 18.0~ W	122 ° 30' 15.6~ W
Ground Elevation (m/ft-AMSL)	101.80 / 334.0	14.80 / 48.6
Antenna Structure Registration #		
Path Azimuth (°)	179.243	359.243
Path Length (km / miles)	4.446 / 2.763	

Transmit Antenna

Manufacturer	RB1160	RB1160
Model	RADIO WAVES, INC	RADIO WAVES, INC
Gain(dBi) / Beamwidth(°) / Tilt(°)	HP2-18	HP2-18
Centerline (m / ft - AGL)	38.6 / 2.00 / -1.25	38.6 / 2.00 / 1.22
	19.20 / 63.0	10.06 / 33.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMO32	TEMO32
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50HFC271V02	18HD50HFC271V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	47M8D7W 128 QAM	47M8D7W 128 QAM
Stability (%)	1 CH DIG 271000.000	1 CH DIG 271000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	17.0	17.0
Received Level (dBm)	-36.7	-36.7
EIRP (dBm)	55.6	55.6
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		130.9

Transmit Frequencies (MHz)	19575.0000H(6)	19675.0000H(8)	18015.0000H(6)	18115.0000H(8)
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Microwave Path Data Sheet

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COMSEARCH

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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0187A CA
City/County San Ramon/Contra Costa
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY409
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0146A CA

Danville/Contra Costa
Engineering Proposal / PRIMARY OPERATION
WQLY208
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 46' 44.8~ N	37 ° 48' 10.8~ N
Longitude (NAD 83)	121 ° 58' 26.4~ W	121 ° 57' 26.5~ W
Ground Elevation (m/ft-AMSL)	147.10 / 482.6	274.00 / 899.0
Antenna Structure Registration #		
Path Azimuth (°)	28.926	208.936
Path Length (km / miles)	3.030 / 1.882	

Transmit Antenna

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / 2.09
Centerline (m / ft - AGL) 18.29 / 60.0

87204A
ANDREW CORPORATION
VHLP2-18B
38.9 / 2.10 / -2.12
2.74 / 9.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM085
Manufacturer DRAGONWAVE INC
Model 18HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 10.0
Received Level (dBm) -39.7
EIRP (dBm) 48.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 127.5

TEM085
DRAGONWAVE INC
18HD50HFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
10.0
-39.7
48.9
0.0 / 0.0

Transmit Frequencies (MHz)	19525.0000V(5)	19625.0000V(7)	17965.0000V(5)	18065.0000V(7)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0187A CA
City/County San Ramon/Contra Costa
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY409
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0565A CA

/Contra Costa
Engineering Proposal / PRIMARY OPERATION
WQLY441
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 46' 44.8~ N	37 ° 44' 20.0~ N
Longitude (NAD 83)	121 ° 58' 26.4~ W	121 ° 59' 42.5~ W
Ground Elevation (m/ft-AMSL)	147.10 / 482.6	562.40 / 1845.1
Antenna Structure Registration #		1222544
Path Azimuth (°)	202.655	22.642
Path Length (km / miles)	4.837 / 3.006	

Transmit Antenna

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / 5.03
Centerline (m / ft – AGL) 18.29 / 60.0

87204A
ANDREW CORPORATION
VHLP2-18B
38.9 / 2.10 / -5.07
30.48 / 100.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEM085
Manufacturer DRAGONWAVE INC
Model 18HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 16.0
Received Level (dBm) -37.8
EIRP (dBm) 54.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 131.6

TEM085
DRAGONWAVE INC
18HD50HFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
16.0
-37.8
54.9
0.0 / 0.0

Transmit Frequencies (MHz)	19575.0000V(6)	19675.0000V(8)	18015.0000V(6)	18115.0000V(8)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0193C CA
City/County Alameda/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY413
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0220C CA

City/County Oakland/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY334
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 46' 10.6~ N	37 ° 44' 49.2~ N
Longitude (NAD 83)	122 ° 14' 13.8~ W	122 ° 12' 13.9~ W
Ground Elevation (m/ft-AMSL)	4.20 / 13.8	2.30 / 7.5
Antenna Structure Registration #		
Path Azimuth (°)	130.524	310.544
Path Length (km / miles)	3.862 / 2.399	

Transmit Antenna

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / 0.46
Centerline (m / ft - AGL) 16.46 / 54.0

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / -0.49
Centerline (m / ft - AGL) 50.29 / 165.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM085
Manufacturer DRAGONWAVE INC
Model 18HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 12.0
Received Level (dBm) -39.8
EIRP (dBm) 50.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 129.6

TEM085
Manufacturer DRAGONWAVE INC
Model 18HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 12.0
Received Level (dBm) -39.8
EIRP (dBm) 50.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0

Transmit Frequencies (MHz)	18015.0000V(6)	18115.0000V(8)	19575.0000V(6)	19675.0000V(8)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0202A CA
City/County Oakland/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0561A CA

City/County Oakland/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY422
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83) 37 ° 46' 2.5 ~ N
Longitude (NAD 83) 122 ° 12' 44.7 ~ W
Ground Elevation (m/ft-AMSL) 5.50 / 18.0
Antenna Structure Registration #
Path Azimuth (°) 129.397
Path Length (km / miles) 2.632 / 1.636

Latitude (NAD 83) 37 ° 45' 8.3 ~ N
Longitude (NAD 83) 122 ° 11' 21.6 ~ W
Ground Elevation (m/ft-AMSL) 4.10 / 13.5
Antenna Structure Registration #
Path Azimuth (°) 309.411

Transmit Antenna

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / -0.14
Centerline (m / ft - AGL) 25.30 / 83.0

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / 0.12
Centerline (m / ft - AGL) 20.73 / 68.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ57
Manufacturer DRAGONWAVE INC
Model 18HD50SFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.5
Received Level (dBm) -43.0
EIRP (dBm) 44.4
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 126.3

TEMQ57
Manufacturer DRAGONWAVE INC
Model 18HD50SFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.5
Received Level (dBm) -43.0
EIRP (dBm) 44.4
Fixed Loss: Tx / Common (dB) 0.0 / 0.0

Transmit Frequencies (MHz) 17965.0000H(5) 18065.0000H(7) 19525.0000H(5) 19625.0000H(7)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0203B CA
City/County Oakland/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY417
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0202A CA

Oakland/Alameda
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 47' 4.1~ N	37 ° 46' 2.5~ N
Longitude (NAD 83)	122 ° 13' 19.6~ W	122 ° 12' 44.7~ W
Ground Elevation (m/ft-AMSL)	26.20 / 86.0	5.50 / 18.0
Antenna Structure Registration #		
Path Azimuth (°)	<u>155.784</u>	<u>335.789</u>
Path Length (km / miles)		<u>2.082 / 1.294</u>

Transmit Antenna

<u>87204A</u>	<u>87204A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model <u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°) <u>38.9 / 2.10 / -0.37</u>	<u>38.9 / 2.10 / 0.35</u>
Centerline (m / ft - AGL) 17.68 / 58.0	25.30 / 83.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ57	TEMQ57
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 18HD50SFC322V02	18HD50SFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 5.5	5.5
Received Level (dBm) <u>-41.0</u>	<u>-41.0</u>
EIRP (dBm) <u>44.4</u>	<u>44.4</u>
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) <u>124.3</u>	

Transmit Frequencies (MHz)	19375.0000H(2)	19475.0000H(4)	17815.0000H(2)	17915.0000H(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0237A CA	CA-SFO0240A CA
City/County	Oakland/Alameda	Oakland/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY328	WQLY216
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 44' 15.4~ N	37 ° 44' 8.2~ N
Longitude (NAD 83)	122 ° 9' 50.4~ W	122 ° 11' 54.0~ W
Ground Elevation (m/ft-AMSL)	14.40 / 47.2	2.70 / 8.9
Antenna Structure Registration #		
Path Azimuth (°)	265.815	85.794
Path Length (km / miles)	3.034 / 1.886	

Transmit Antenna

Manufacturer	<u>87204A</u> ANDREW CORPORATION	<u>87204A</u> ANDREW CORPORATION
Model	<u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>38.9</u> / 2.10 / -0.01	<u>38.9</u> / 2.10 / -0.01
Centerline (m / ft - AGL)	24.99 / 82.0	36.58 / 120.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMO85	TEMO85
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50HFC322V02	18HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	9.0	9.0
Received Level (dBm)	<u>-40.7</u>	<u>-40.7</u>
EIRP (dBm)	<u>47.9</u>	<u>47.9</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		127.5

Transmit Frequencies (MHz)	18015.0000V(6)	18115.0000V(8)	19575.0000V(6)	19675.0000V(8)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0237A CA
City/County Oakland/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY328
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0257A CA

San Leandro/Alameda
Engineering Proposal / PRIMARY OPERATION
WQMD301
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 44' 15.4~ N	37 ° 42' 48.5~ N
Longitude (NAD 83)	122 ° 9' 50.4~ W	122 ° 9' 20.0~ W
Ground Elevation (m/ft-AMSL)	14.40 / 47.2	14.90 / 48.9
Antenna Structure Registration #		1016585
Path Azimuth (°)	164.469	344.474
Path Length (km / miles)		2.781 / 1.728

Transmit Antenna

<u>87204A</u>	<u>87204A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model <u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°) <u>38.9</u> / 2.10 / -0.09	<u>38.9</u> / 2.10 / 0.07
Centerline (m / ft - AGL) 24.99 / 82.0	20.73 / 68.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ57	TEMQ57
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 18HD50SFC322V02	18HD50SFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 5.5	5.5
Received Level (dBm) <u>-43.5</u>	<u>-43.5</u>
EIRP (dBm) <u>44.4</u>	<u>44.4</u>
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)	126.8

Transmit Frequencies (MHz)	17965.0000V(5)	18065.0000V(7)	19525.0000V(5)	19625.0000V(7)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0240A CA
City/County Oakland/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY216
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0252A CA

San Leandro/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQMD296
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 44' 8.2~ N	37 ° 42' 57.1~ N
Longitude (NAD 83)	122 ° 11' 54.0~ W	122 ° 10' 45.6~ W
Ground Elevation (m/ft-AMSL)	2.70 / 8.9	6.70 / 22.0
Antenna Structure Registration #		
Path Azimuth (°)	142.610	322.622
Path Length (km / miles)	2.759 / 1.714	

Transmit Antenna

87204A	87204A
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model VHLP2-18B	VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / -0.41	38.9 / 2.10 / 0.40
Centerline (m / ft - AGL) 36.58 / 120.0	13.11 / 43.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ57	TEMQ57
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 18HD50SFC322V02	18HD50SFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Power (dBm)	
Received Level (dBm)	
EIRP (dBm)	
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)	126.7

Transmit Frequencies (MHz)	19375.0000V(2)	19475.0000V(4)	17815.0000V(2)	17915.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0243A CA	CA-SFO0263A CA
City/County	San Leandro/Alameda	San Leandro/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		WQLY403
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 43' 55.3~ N	37 ° 42' 12.3~ N
Longitude (NAD 83)	122 ° 8' 23.4~ W	122 ° 8' 26.6~ W
Ground Elevation (m/ft-AMSL)	28.40 / 93.2	12.80 / 42.0
Antenna Structure Registration #		
Path Azimuth (°)	181.414	1.413
Path Length (km / miles)	3.177 / 1.974	

Transmit Antenna

Manufacturer	RB1160	RB1160
Model	RADIO WAVES, INC	RADIO WAVES, INC
Gain(dBi) / Beamwidth(°) / Tilt(°)	HP2-18	HP2-18
Centerline (m / ft - AGL)	38.6 / 2.00 / -0.11	38.6 / 2.00 / 0.09
	13.72 / 45.0	23.77 / 78.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMO85	TEMO85
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50HFC322V02	18HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.5	15.5
Received Level (dBm)	-35.2	-35.2
EIRP (dBm)	54.1	54.1
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		127.9

Transmit Frequencies (MHz) 17815.0000V(2) 17915.0000V(4) 19375.0000V(2) 19475.0000V(4)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0267A CA
City/County San Leandro/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0585A CA

Castro Valley/Alameda
Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 42' <u>2.4</u> ~ N	37 ° 41' <u>34.8</u> ~ N
Longitude (NAD 83)	122 ° 7' <u>49.7</u> ~ W	122 ° 5' <u>38.4</u> ~ W
Ground Elevation (m/ft-AMSL)	<u>10.30</u> / <u>33.8</u>	<u>87.10</u> / <u>285.8</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>104.807</u>	<u>284.829</u>
Path Length (km / miles)		<u>3.327</u> / <u>2.067</u>

Transmit Antenna

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / 1.35
Centerline (m / ft – AGL) 14.33 / 47.0

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / -1.38
Centerline (m / ft – AGL) 16.76 / 55.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEM085
Manufacturer DRAGONWAVE INC
Model 18HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 10.0
Received Level (dBm) -40.5
EIRP (dBm) 48.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 128.3

TEM085
Manufacturer DRAGONWAVE INC
Model 18HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 10.0
Received Level (dBm) -40.5
EIRP (dBm) 48.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0

Transmit Frequencies (MHz)	19375.0000V(2)	19475.0000V(4)	17815.0000V(2)	17915.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147

(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01

RCN Number: 10081932

Administrative Information

CA-SFO0272A CA
 City/County Daly City/San Mateo
 Status / License Basis Engineering Proposal / PRIMARY OPERATION
 Call Sign WQLY405
 Licensee Code CLESP3
 Licensee Name Clearwire Spectrum Holdings III, LL
 Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0265A CA

Daly City/San Mateo
 Engineering Proposal / PRIMARY OPERATION
 WQLY412
 CLESP3
 Clearwire Spectrum Holdings III, LL
 FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 41' 33.7~ N	37 ° 42' 1.4~ N
Longitude (NAD 83)	122 ° 28' 31.7~ W	122 ° 27' 18.1~ W
Ground Elevation (m/ft-AMSL)	46.90 / 153.9	233.10 / 764.8
Antenna Structure Registration #		
Path Azimuth (°)	64.649	244.662
Path Length (km / miles)	1.995 / 1.240	

Transmit Antenna

87204A
 Manufacturer ANDREW CORPORATION
 Model VHLP2-18B
 Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / 5.04
 Centerline (m / ft - AGL) 15.47 / 50.8

87204A
 ANDREW CORPORATION
 VHLP2-18B
 38.9 / 2.10 / -5.05
 5.49 / 18.0

Receive Antenna

Same As Transmit

Manufacturer
 Model
 Gain (dBi) / Beamwidth (°)
 Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
 Model
 Gain (dBi) / Beamwidth (°)
 Centerline (m / ft - AGL)

Radio Information

TEM085
 Manufacturer DRAGONWAVE INC
 Model 18HD50HFC322V02
 Model Description HORIZON DUO
 Emission Designator / Modulation 45M8D7W 256 QAM
 Loading 1 CH DIG 322000.000
 Stability (%) 0.001

	Nominal	Coordinated	Maximum
Power (dBm)		9.8	
Received Level (dBm)		-36.3	
EIRP (dBm)		48.7	

 Fixed Loss: Tx / Common (dB) 0.0 / 0.0
 Free Space Loss (dB) 123.9

TEM085
 DRAGONWAVE INC
 18HD50HFC322V02
 HORIZON DUO
 45M8D7W 256 QAM
 1 CH DIG 322000.000
 0.001

	Nominal	Coordinated	Maximum
		9.8	
		-36.3	
		48.7	

 0.0 / 0.0

Transmit Frequencies (MHz)	17965.0000V(5)	18065.0000V(7)	19525.0000V(5)	19625.0000V(7)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0281A CA
City/County San Lorenzo/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0585A CA

Castro Valley/Alameda
Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 40' <u>9.8</u> ~ N	37 ° 41' <u>34.8</u> ~ N
Longitude (NAD 83)	122 ° 7' <u>37.2</u> ~ W	122 ° 5' <u>38.4</u> ~ W
Ground Elevation (m/ft-AMSL)	<u>9.70</u> / <u>31.8</u>	<u>87.10</u> / <u>285.8</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>47.995</u>	<u>228.015</u>
Path Length (km / miles)		<u>3.917</u> / <u>2.434</u>

Transmit Antenna

Manufacturer	<u>87204A</u>	<u>87204A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Centerline (m / ft – AGL)	<u>38.9</u> / <u>2.10</u> / <u>1.15</u>	<u>38.9</u> / <u>2.10</u> / <u>-1.18</u>
	<u>14.33</u> / <u>47.0</u>	16.76 / 55.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEM085	TEM085
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50HFC322V02	18HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	12.0	12.0
Received Level (dBm)	<u>-40.0</u>	<u>-40.0</u>
EIRP (dBm)	<u>50.9</u>	<u>50.9</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>129.8</u>

Transmit Frequencies (MHz)	19525.0000V(5)	19625.0000V(7)	17965.0000V(5)	18065.0000V(7)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0302C CA	CA-SFO0004D CA
City/County	Hayward/Alameda	Hayward/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		WQLX848
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °37' 18.8~ N	37 °39' 19.3~ N
Longitude (NAD 83)	122 °3' 19.4~ W	122 °3' 25.5~ W
Ground Elevation (m/ft-AMSL)	3.70 / 12.1	153.60 / 503.9
Antenna Structure Registration #		
Path Azimuth (°)	357.695	177.694
Path Length (km / miles)	3.718 / 2.310	

Transmit Antenna

Manufacturer	<u>87204A</u>	<u>87204A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Centerline (m / ft – AGL)	<u>38.9 / 2.10 / 2.30</u>	<u>38.9 / 2.10 / -2.32</u>
	<u>30.48 / 100.0</u>	<u>30.48 / 100.0</u>

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMU74	TEMU74
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HA50HFC322V01	18HA50HFC322V01
Emission Designator / Modulation	Horizon Duo-Adj Channel	Horizon Duo-Adj Channel
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.5	15.5
Received Level (dBm)	<u>-36.0</u>	<u>-36.0</u>
EIRP (dBm)	<u>54.4</u>	<u>54.4</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		129.3

Transmit Frequencies (MHz) 17765.0000V(1) 17815.0000V(2) 19325.0000V(1) 19375.0000V(2)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0320B CA	CA-SFO0004D CA
City/County	Union City/Alameda	Hayward/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY759	WQLX848
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information		
Latitude (NAD 83)	37 °35' 54.1~ N	37 °39' 19.3~ N
Longitude (NAD 83)	122 °4' 3.0~ W	122 °3' 25.5~ W
Ground Elevation (m/ft-AMSL)	5.20 / 17.1	153.60 / 503.9
Antenna Structure Registration #		
Path Azimuth (°)	8.267	188.273
Path Length (km / miles)		6.393 / 3.972

Transmit Antenna	87059A	87059A
Manufacturer	ANDREW CORPORATION	ANDREW CORPORATION
Model	VHLP2.5-18	VHLP2.5-18
Gain(dBi) / Beamwidth(°) / Tilt(°)	41.0 / 1.50 / 1.69	41.0 / 1.50 / -1.74
Centerline (m / ft - AGL)	15.24 / 50.0	58.22 / 191.0

Receive Antenna	Same As Transmit	
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Diversity Receive Antenna		
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Radio Information	TEMO32	TEMO32
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	18HD50HFC271V02	18HD50HFC271V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	47M8D7W 128 QAM	47M8D7W 128 QAM
Loading	1 CH DIG 271000.000	1 CH DIG 271000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.0	15.0
Received Level (dBm)	-37.0	-37.0
EIRP (dBm)	56.0	56.0
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		134.0

Transmit Frequencies (MHz)	17965.0000V(5)	18065.0000V(7)	19525.0000V(5)	19625.0000V(7)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0320B CA	CA-SFO0314A CA
City/County	Union City/Alameda	Union City/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY759	WQLY322
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °35' 54.1~ N	37 °36' 28.6~ N
Longitude (NAD 83)	122 °4' 3.0~ W	122 °2' 24.2~ W
Ground Elevation (m/ft-AMSL)	5.20 / 17.1	15.30 / 50.2
Antenna Structure Registration #		
Path Azimuth (°)	66.295	246.312
Path Length (km / miles)	2.647 / 1.645	

Transmit Antenna

Manufacturer	<u>87204A</u> ANDREW CORPORATION	<u>87204A</u> ANDREW CORPORATION
Model	<u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>38.9</u> / 2.10 / 0.59	<u>38.9</u> / 2.10 / -0.60
Centerline (m / ft - AGL)	15.24 / 50.0	32.61 / 107.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMR29	TEMR29
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50HFC364V02	18HD50HFC364V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	47M1D7W 256 QAM	47M1D7W 256 QAM
Stability (%)	1 CH DIG 364000.000	1 CH DIG 364000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-43.1</u>	<u>-43.1</u>
EIRP (dBm)	<u>44.4</u>	<u>44.4</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		126.4

Transmit Frequencies (MHz) 18015.0000V(6) 18115.0000V(8) 19575.0000V(6) 19675.0000V(8)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0326C CA	CA-SFO0330E CA
City/County	Burlingame/San Mateo	Millbrae/San Mateo
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLZ449	
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °35' 37.9~ N	37 °34' 54.6~ N
Longitude (NAD 83)	122 °21' 54.9~ W	122 °24' 12.3~ W
Ground Elevation (m/ft-AMSL)	2.40 / 7.9	182.90 / 600.1
Antenna Structure Registration #		
Path Azimuth (°)	248.407	68.384
Path Length (km / miles)	3.626 / 2.253	

Transmit Antenna

Manufacturer	87059A	87059A
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	VHLP2.5-18	VHLP2.5-18
Centerline (m / ft - AGL)	41.0 / 1.50 / 2.34	41.0 / 1.50 / -2.36
	46.94 / 154.0	15.24 / 50.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMO85	TEMO85
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50HFC322V02	18HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.5	15.5
Received Level (dBm)	-35.4	-35.4
EIRP (dBm)	54.6	54.6
Fixed Loss: Tx / Common (dB)	0.0 / 1.9	0.0 / 1.9
Free Space Loss (dB)		129.1

Transmit Frequencies (MHz) 17815.0000V(2) 17915.0000V(4) 19375.0000V(2) 19475.0000V(4)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0349B CA
City/County Fremont/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0004D CA

Hayward/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLX848
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °33' 40.0~ N	37 °39' 19.3~ N
Longitude (NAD 83)	122 °0' 50.4~ W	122 °3' 25.5~ W
Ground Elevation (m/ft-AMSL)	16.10 / 52.8	153.60 / 503.9
Antenna Structure Registration #		
Path Azimuth (°)	340.029	160.002
Path Length (km / miles)	11.131 / 6.916	

Transmit Antenna

Manufacturer	87059A	87059A
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	VHLP2.5-18	VHLP2.5-18
Centerline (m / ft - AGL)	41.0 / 1.50 / 0.91	41.0 / 1.50 / -0.99
	11.28 / 37.0	58.22 / 191.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ59	TEMQ59
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50HFC171V02	18HD50HFC171V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 32 QAM	45M8D7W 32 QAM
Stability (%)	1 CH DIG 171000.000	1 CH DIG 171000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	20.0	20.0
Received Level (dBm)	-36.8	-36.8
EIRP (dBm)	61.0	61.0
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		138.8

Transmit Frequencies (MHz)	17965.0000H(5)	18065.0000H(7)	19525.0000H(5)	19625.0000H(7)
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Microwave Path Data Sheet

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19700 Janelia Farm Boulevard, Ashburn, VA, 20147

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PCN Date: 08/19/2010

Prev Job Num: 100427COMSSL01

Job Number 100819COMSSL02

RCN Number: 10081932

Administrative Information

CA-SFO0360C CA
 City/County Newark/Alameda
 Status / License Basis Engineering Proposal / PRIMARY OPERATION
 Call Sign
 Licensee Code CLESP3
 Licensee Name Clearwire Spectrum Holdings III, LL
 Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0365A CA

Newark/Alameda
 Engineering Proposal / PRIMARY OPERATION
 CLESP3
 Clearwire Spectrum Holdings III, LL
 FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °33' 0.9~ N	37 °32' 12.1~ N
Longitude (NAD 83)	122 °3' 8.6~ W	122 °0' 55.1~ W
Ground Elevation (m/ft-AMSL)	5.40 / 17.7	11.50 / 37.7
Antenna Structure Registration #		
Path Azimuth (°)	114.648	294.670
Path Length (km / miles)		3.606 / 2.241

Transmit Antenna

87204A
 Manufacturer ANDREW CORPORATION
 Model VHLP2-18B
 Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / 0.22
 Centerline (m / ft – AGL) 19.39 / 63.6

87204A
 ANDREW CORPORATION
VHLP2-18B
 38.9 / 2.10 / -0.25
 28.04 / 92.0

Receive Antenna

Same As Transmit

Manufacturer
 Model
 Gain (dBi) / Beamwidth (°)
 Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
 Model
 Gain (dBi) / Beamwidth (°)
 Centerline (m / ft – AGL)

Radio Information

TEMR29
 Manufacturer DRAGONWAVE INC
 Model 18HD50HFC364V02
 Model Description HORIZON DUO
 Emission Designator / Modulation 47M1D7W 256 QAM
 Loading 1 CH DIG 364000.000
 Stability (%) 0.001

	Nominal	Coordinated	Maximum
Power (dBm)		13.0	
Received Level (dBm)		<u>-38.2</u>	
EIRP (dBm)		<u>51.9</u>	

 Fixed Loss: Tx / Common (dB) 0.0 / 0.0
 Free Space Loss (dB) 129.0

TEMR29
 DRAGONWAVE INC
 18HD50HFC364V02
 HORIZON DUO
 47M1D7W 256 QAM
 1 CH DIG 364000.000
 0.001

	Nominal	Coordinated	Maximum
		13.0	
		<u>-38.2</u>	
		<u>51.9</u>	

 0.0 / 0.0

Transmit Frequencies (MHz)	17965.0000V(5)	18065.0000V(7)	19525.0000V(5)	19625.0000V(7)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0369D CA	CA-SFO0356A CA
City/County	Fremont/Alameda	Fremont/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY733	WQLY749
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °32' 31.5~ N	37 °33' 2.9~ N
Longitude (NAD 83)	121 °58' 23.5~ W	122 °1' 8.4~ W
Ground Elevation (m/ft-AMSL)	17.20 / 56.4	13.10 / 43.0
Antenna Structure Registration #		
Path Azimuth (°)	283.464	103.436
Path Length (km / miles)	4.162 / 2.586	

Transmit Antenna

Manufacturer	<u>87204A</u>	<u>87204A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Centerline (m / ft - AGL)	38.9 / 2.10 / -0.21	38.9 / 2.10 / 0.18
	26.82 / 88.0	16.76 / 55.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMO85	TEMO85
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50HFC322V02	18HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	14.5	14.5
Received Level (dBm)	-38.0	-38.0
EIRP (dBm)	53.4	53.4
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		130.3

Transmit Frequencies (MHz) 17965.0000V(5) 18065.0000V(7) 19525.0000V(5) 19625.0000V(7)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0380A CA
City/County Redwood City/San Mateo
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0388A CA

Belmont/San Mateo
Engineering Proposal / PRIMARY OPERATION
WQMA279
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °31' <u>24.1</u> ~ N	37 °30' 5.6 ~ N
Longitude (NAD 83)	122 °15' <u>41.3</u> ~ W	122 °18' 35.9 ~ W
Ground Elevation (m/ft-AMSL)	2.40 / 7.9	241.40 / 792.0
Antenna Structure Registration #		
Path Azimuth (°)	<u>240.574</u>	<u>60.544</u>
Path Length (km / miles)		<u>4.924</u> / <u>3.059</u>

Transmit Antenna

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / 2.53
Centerline (m / ft – AGL) 24.38 / 80.0

87204A
ANDREW CORPORATION
VHLP2-18B
38.9 / 2.10 / -2.57
4.57 / 15.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEM085
Manufacturer DRAGONWAVE INC
Model 18HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 15.2
Received Level (dBm) -38.7
EIRP (dBm) 54.1
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 131.7

TEM085
DRAGONWAVE INC
18HD50HFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
15.2
-38.7
54.1
0.0 / 0.0

Transmit Frequencies (MHz)	18015.0000V(6)	18115.0000V(8)	19575.0000V(6)	19675.0000V(8)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0380A CA
City/County Redwood City/San Mateo
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0390A CA

San Carlos/San Mateo
Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °31' <u>24.1</u> ~ N	37 °29' <u>52.2</u> ~ N
Longitude (NAD 83)	122 °15' <u>41.3</u> ~ W	122 °14' <u>46.4</u> ~ W
Ground Elevation (m/ft-AMSL)	2.40 / 7.9	<u>4.50</u> / <u>14.8</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>154.546</u>	<u>334.556</u>
Path Length (km / miles)		<u>3.138</u> / <u>1.950</u>

Transmit Antenna

Manufacturer	<u>87204A</u> ANDREW CORPORATION	<u>87204A</u> ANDREW CORPORATION
Model	<u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>38.9</u> / 2.10 / -0.06	<u>38.9</u> / 2.10 / 0.04
Centerline (m / ft - AGL)	22.86 / 75.0	17.98 / 59.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEM085	TEM085
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50HFC322V02	18HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	12.0	12.0
Received Level (dBm)	<u>-38.0</u>	<u>-38.0</u>
EIRP (dBm)	<u>50.9</u>	<u>50.9</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>127.8</u>

Transmit Frequencies (MHz)	17965.0000H(5)	18065.0000H(7)	19525.0000H(5)	19625.0000H(7)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0381A CA	CA-SFO0369D CA
City/County	Newark/Alameda	Fremont/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY744	WQLY733
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °31' 19.6~ N	37 °32' 31.5~ N
Longitude (NAD 83)	121 °59' 27.6~ W	121 °58' 23.5~ W
Ground Elevation (m/ft-AMSL)	10.00 / 32.8	17.20 / 56.4
Antenna Structure Registration #		
Path Azimuth (°)	35.369	215.379
Path Length (km / miles)	2.719 / 1.689	

Transmit Antenna

Manufacturer	<u>87204A</u> ANDREW CORPORATION	<u>87204A</u> ANDREW CORPORATION
Model	<u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>38.9</u> / 2.10 / 0.10	<u>38.9</u> / 2.10 / -0.12
Centerline (m / ft - AGL)	28.96 / 95.0	26.82 / 88.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ57	TEMQ57
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50SFC322V02	18HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-43.3</u>	<u>-43.3</u>
EIRP (dBm)	<u>44.4</u>	<u>44.4</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		126.6

Transmit Frequencies (MHz) 19575.0000V(6) 19675.0000V(8) 18015.0000V(6) 18115.0000V(8)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0390A CA
City/County San Carlos/San Mateo
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0588A CA

Redwood City/San Mateo
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °29' <u>52.2</u> ~ N	37 °29' <u>13.6</u> ~ N
Longitude (NAD 83)	122 °14' <u>46.4</u> ~ W	122 °12' <u>45.3</u> ~ W
Ground Elevation (m/ft-AMSL)	<u>4.50</u> / <u>14.8</u>	<u>4.80</u> / <u>15.7</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>111.793</u>	<u>291.813</u>
Path Length (km / miles)		<u>3.204</u> / <u>1.991</u>

Transmit Antenna

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / 0.08
Centerline (m / ft – AGL) 17.98 / 59.0

87204A
ANDREW CORPORATION
VHLP2-18B
38.9 / 2.10 / -0.10
22.86 / 75.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEM085
Manufacturer DRAGONWAVE INC
Model 18HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 13.0
Received Level (dBm) -37.2
EIRP (dBm) 51.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 128.0

TEM085
DRAGONWAVE INC
18HD50HFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
13.0
-37.2
51.9
0.0 / 0.0

Transmit Frequencies (MHz)	19375.0000V(2)	19475.0000V(4)	17815.0000V(2)	17915.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0417C CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0419C CA

City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °23' 20.7~ N	37 °22' 39.9~ N
Longitude (NAD 83)	121 °52' 7.0~ W	121 °52' 52.1~ W
Ground Elevation (m/ft-AMSL)	37.20 / 122.0	23.30 / 76.4
Antenna Structure Registration #		
Path Azimuth (°)	221.418	41.411
Path Length (km / miles)	1.677 / 1.042	

Transmit Antenna

Manufacturer	<u>87204A</u> ANDREW CORPORATION	<u>87204A</u> ANDREW CORPORATION
Model	<u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>38.9</u> / 2.10 / -1.09	<u>38.9</u> / 2.10 / 1.08
Centerline (m / ft - AGL)	35.66 / 117.0	17.86 / 58.6

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMR29	TEMR29
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50HFC364V02	18HD50HFC364V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	47M1D7W 256 QAM	47M1D7W 256 QAM
Stability (%)	1 CH DIG 364000.000	1 CH DIG 364000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	13.0	13.0
Received Level (dBm)	<u>-35.4</u>	<u>-35.4</u>
EIRP (dBm)	<u>50.0</u>	<u>50.0</u>
Fixed Loss: Tx / Common (dB)	0.0 / 1.9	0.0 / 1.9
Free Space Loss (dB)		122.4

Transmit Frequencies (MHz)	<u>17815.0000V(2)</u>	<u>17915.0000V(4)</u>	<u>19375.0000V(2)</u>	<u>19475.0000V(4)</u>
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0444A CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0206B CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °17' 12.0~ N	37 °16' 48.1~ N
Longitude (NAD 83)	121 °47' 50.4~ W	121 °50' 18.0~ W
Ground Elevation (m/ft-AMSL)	<u>192.20</u> / <u>630.6</u>	<u>51.20</u> / <u>168.0</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>258.557</u>	<u>78.532</u>
Path Length (km / miles)		<u>3.710</u> / <u>2.305</u>

Transmit Antenna

Manufacturer	<u>87204A</u> ANDREW CORPORATION	<u>87204A</u> ANDREW CORPORATION
Model	<u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>38.9</u> / 2.10 / <u>-2.07</u>	<u>38.9</u> / 2.10 / <u>2.04</u>
Centerline (m / ft – AGL)	11.58 / 38.0	19.51 / 64.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMR29	TEMR29
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50HFC364V02	18HD50HFC364V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	47M1D7W 256 QAM	47M1D7W 256 QAM
Stability (%)	1 CH DIG 364000.000	1 CH DIG 364000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	13.5	13.5
Received Level (dBm)	<u>-38.0</u>	<u>-38.0</u>
EIRP (dBm)	<u>52.4</u>	<u>52.4</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>129.3</u>

Transmit Frequencies (MHz)	<u>17815.0000H(2)</u>	<u>17915.0000H(4)</u>	<u>19375.0000H(2)</u>	<u>19475.0000H(4)</u>
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0453D CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY737
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0233D CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °16' 34.2~ N	37 °18' 38.2~ N
Longitude (NAD 83)	121 °49' 34.5~ W	121 °48' 38.3~ W
Ground Elevation (m/ft-AMSL)	87.90 / 288.4	46.40 / 152.2
Antenna Structure Registration #		
Path Azimuth (°)	19.901	199.910
Path Length (km / miles)	4.066 / 2.526	

Transmit Antenna

Manufacturer	RB1160	RB1160
Model	RADIO WAVES, INC	RADIO WAVES, INC
Gain(dBi) / Beamwidth(°) / Tilt(°)	HP2-18	HP2-18
Centerline (m / ft - AGL)	38.6 / 2.00 / -0.62	38.6 / 2.00 / 0.59
	14.33 / 47.0	12.80 / 42.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ58	TEMQ58
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50SFC215V02	18HD50SFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	-44.4	-44.4
EIRP (dBm)	47.1	47.1
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		130.1

Transmit Frequencies (MHz) 17965.0000V(5) 18065.0000V(7) 19525.0000V(5) 19625.0000V(7)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0485D CA
City/County Dublin/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY445
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0228B CA

/Contra Costa
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 42' 21.2~ N	37 ° 44' 56.3~ N
Longitude (NAD 83)	121 ° 53' 16.2~ W	121 ° 55' 23.3~ W
Ground Elevation (m/ft-AMSL)	106.70 / 350.1	194.90 / 639.4
Antenna Structure Registration #		
Path Azimuth (°)	326.952	146.930
Path Length (km / miles)	5.706 / 3.545	

Transmit Antenna

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / 0.77
Centerline (m / ft - AGL) 19.81 / 65.0

87204A
ANDREW CORPORATION
VHLP2-18B
38.9 / 2.10 / -0.81
10.06 / 33.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ59
Manufacturer DRAGONWAVE INC
Model 18HD50HFC171V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 32 QAM
Loading 1 CH DIG 171000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 20.0
Received Level (dBm) -35.2
EIRP (dBm) 58.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 133.0

TEMQ59
DRAGONWAVE INC
18HD50HFC171V02
HORIZON DUO
45M8D7W 32 QAM
1 CH DIG 171000.000
0.001
Nominal Coordinated Maximum
20.0
-35.2
58.9
0.0 / 0.0

Transmit Frequencies (MHz)	19575.0000V(6)	19675.0000V(8)	18015.0000V(6)	18115.0000V(8)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0490D CA	CA-SFO0475A CA
City/County	Pleasanton/Alameda	/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY437	WQLY847
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information		
Latitude (NAD 83)	37 ° 41' 11.3~ N	37 ° 38' 13.7~ N
Longitude (NAD 83)	121 ° 54' 51.5~ W	121 ° 53' 41.3~ W
Ground Elevation (m/ft-AMSL)	99.20 / 325.5	149.90 / 491.8
Antenna Structure Registration #		
Path Azimuth (°)	162.550	342.562
Path Length (km / miles)	5.739 / 3.566	

Transmit Antenna		
Manufacturer	87059A	87059A
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	VHLP2.5-18	VHLP2.5-18
Centerline (m / ft - AGL)	41.0 / 1.50 / 0.46	41.0 / 1.50 / -0.50
	11.58 / 38.0	9.14 / 30.0

Receive Antenna	Same As Transmit	
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Diversity Receive Antenna		
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Radio Information	TEMO32	TEMO32
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	18HD50HFC271V02	18HD50HFC271V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	47M8D7W 128 QAM	47M8D7W 128 QAM
Loading	1 CH DIG 271000.000	1 CH DIG 271000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	12.0	12.0
Received Level (dBm)	-39.1	-39.1
EIRP (dBm)	53.0	53.0
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		133.1

Transmit Frequencies (MHz)	18015.0000V(6)	18115.0000V(8)	19575.0000V(6)	19675.0000V(8)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0497D CA
City/County Pleasanton/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0565A CA

/Contra Costa
Engineering Proposal / PRIMARY OPERATION
WQLY441
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83) 37 ° 40' 36.3~ N
Longitude (NAD 83) 121 ° 53' 49.0~ W
Ground Elevation (m/ft-AMSL) 98.40 / 322.8
Antenna Structure Registration #
Path Azimuth (°) 308.568
Path Length (km / miles) 11.070 / 6.878

37 ° 44' 20.0~ N
121 ° 59' 42.5~ W
562.40 / 1845.1
1222544
128.508

Transmit Antenna

RB1160
Manufacturer RADIO WAVES, INC
Model HP2-18
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.6 / 2.00 / 2.43
Centerline (m / ft - AGL) 12.19 / 40.0

RB1160
RADIO WAVES, INC
HP2-18
38.6 / 2.00 / -2.50
24.99 / 82.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ64
Manufacturer DRAGONWAVE INC
Model 18HD50HFC110V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M2D7W 16 QAM
Loading 1 CH DIG 110000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 20.5
Received Level (dBm) -41.1
EIRP (dBm) 59.1
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 138.8

TEMQ64
DRAGONWAVE INC
18HD50HFC110V02
HORIZON DUO
45M2D7W 16 QAM
1 CH DIG 110000.000
0.001
Nominal Coordinated Maximum
20.5
-41.1
59.1
0.0 / 0.0

Transmit Frequencies (MHz) 19575.0000V(6) 19675.0000V(8) 18015.0000V(6) 18115.0000V(8)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147

(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Prev Job Num: 100120COMSSL01

Job Number 100819COMSSL02

RCN Number: 10081932

Administrative Information**CA-SFO0498B CA****CA-SFO0480D CA**

City/County

Dublin/Alameda

Dublin/Alameda

Status / License Basis

Engineering Proposal / PRIMARY OPERATION

Engineering Proposal / PRIMARY OPERATION

Call Sign

WQLY500

WQLY851

Licensee Code

CLESP3

CLESP3

Licensee Name

Clearwire Spectrum Holdings III, LL

Clearwire Spectrum Holdings III, LL

Radio Service / Station Class

MG -- Microwave Industrial/Business Pool

FXO -- Fixed

Site Information

Latitude (NAD 83)

37 ° 42' 11.5~ N

37 ° 43' 19.6~ N

Longitude (NAD 83)

121 ° 53' 49.7~ W

121 ° 54' 54.8~ W

Ground Elevation (m/ft-AMSL)

102.10 / 335.0

161.90 / 531.2

Antenna Structure Registration #

Path Azimuth (°)

322.791

142.780

Path Length (km / miles)

2.636 / 1.638

Transmit Antenna87204A87204A

Manufacturer

ANDREW CORPORATION

ANDREW CORPORATION

Model

VHLP2-18BVHLP2-18B

Gain(dBi) / Beamwidth(°) / Tilt(°)

38.9 / 2.10 / 1.23

38.9 / 2.10 / -1.25

Centerline (m / ft - AGL)

13.72 / 45.0

10.97 / 36.0

Receive Antenna

Same As Transmit

Manufacturer

Model

Gain (dBi) / Beamwidth (°)

Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer

Model

Gain (dBi) / Beamwidth (°)

Centerline (m / ft - AGL)

Radio Information

TEMQ57

TEMQ57

Manufacturer

DRAGONWAVE INC

DRAGONWAVE INC

Model

18HD50SFC322V02

18HD50SFC322V02

Model Description

HORIZON DUO

HORIZON DUO

Emission Designator / Modulation

45M8D7W

256 QAM

45M8D7W

256 QAM

Loading

1 CH DIG 322000.000

1 CH DIG 322000.000

Stability (%)

0.001

0.001

Nominal Coordinated Maximum

Nominal Coordinated Maximum

Power (dBm)

5.5

5.5

Received Level (dBm)

-43.0-43.0

EIRP (dBm)

44.444.4

Fixed Loss: Tx / Common (dB)

0.0 / 0.0

0.0 / 0.0

Free Space Loss (dB)

126.3

Transmit Frequencies (MHz)

19575.0000V(6)

19675.0000V(8)

18015.0000V(6)

18115.0000V(8)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0499A CA
City/County Pleasanton/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0582A CA

City/County Hayward/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 41' 18.6~ N	37 ° 39' 34.0~ N
Longitude (NAD 83)	121 ° 53' 49.2~ W	121 ° 55' 59.5~ W
Ground Elevation (m/ft-AMSL)	99.70 / 327.1	453.50 / 1487.9
Antenna Structure Registration #		1015996
Path Azimuth (°)	224.727	44.705
Path Length (km / miles)	4.538 / 2.820	

Transmit Antenna

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / 4.66
Centerline (m / ft – AGL) 12.80 / 42.0

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / -4.69
Centerline (m / ft – AGL) 30.48 / 100.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEM085
Manufacturer DRAGONWAVE INC
Model 18HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 15.5
Received Level (dBm) -37.7
EIRP (dBm) 54.4
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 131.0

TEM085
Manufacturer DRAGONWAVE INC
Model 18HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 15.5
Received Level (dBm) -37.7
EIRP (dBm) 54.4
Fixed Loss: Tx / Common (dB) 0.0 / 0.0

Transmit Frequencies (MHz)	17815.0000H(2)	17915.0000H(4)	19375.0000H(2)	19475.0000H(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0523A CA
City/County San Rafael/Marin
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY421
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0007A CA

San Rafael/Marin
Engineering Proposal / PRIMARY OPERATION
WQLX820
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °58' 52.3~ N	37 °57' 35.1~ N
Longitude (NAD 83)	122 °31' 45.7~ W	122 °30' 4.6~ W
Ground Elevation (m/ft-AMSL)	185.10 / 607.3	5.00 / 16.4
Antenna Structure Registration #		
Path Azimuth (°)	133.959	313.976
Path Length (km / miles)	3.429 / 2.130	

Transmit Antenna

<u>87204A</u>	<u>87204A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model <u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°) <u>38.9</u> / 2.10 / -3.13	<u>38.9</u> / 2.10 / 3.11
Centerline (m / ft - AGL) 18.29 / 60.0	11.58 / 38.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM085	TEM085
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 18HD50HFC322V02	18HD50HFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) <u>13.5</u>	<u>13.5</u>
Received Level (dBm) <u>-37.3</u>	<u>-37.3</u>
EIRP (dBm) <u>52.4</u>	<u>52.4</u>
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 128.6	

Transmit Frequencies (MHz) 19575.0000V(6) 19675.0000V(8) 18015.0000V(6) 18115.0000V(8)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Job Number 100819COMSSL02

New Path

RCN Number: 10081932

Administrative Information

CA-SFO0544A CA
City/County /Marin
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0545A CA

San Rafael/Marin
Engineering Proposal / PRIMARY OPERATION
WQLY444
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	38 °3' 33.2~ N	37 °59' 24.8~ N
Longitude (NAD 83)	122 °36' 15.2~ W	122 °30' 0.5~ W
Ground Elevation (m/ft-AMSL)	576.90 / 1892.7	309.00 / 1013.8
Antenna Structure Registration #		
Path Azimuth (°)	129.933	309.997
Path Length (km / miles)	11.924 / 7.409	

Transmit Antenna

Manufacturer	RB2160	RB2160
Model	RADIO WAVES, INC	RADIO WAVES, INC
Gain(dBi) / Beamwidth(°) / Tilt(°)	HP4-18	HP4-18
Centerline (m / ft - AGL)	44.5 / 1.00 / -1.32	44.5 / 1.00 / 1.24
	7.62 / 25.0	9.75 / 32.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMO90	TEMO90
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50HFC215V02	18HD50HFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.7	15.7
Received Level (dBm)	-34.7	-34.7
EIRP (dBm)	60.2	60.2
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		139.4

Transmit Frequencies (MHz)	19575.0000H(6)	19675.0000H(8)	18015.0000H(6)	18115.0000H(8)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0545A CA	CA-SFO0528A CA
City/County	San Rafael/Marin	San Rafael/Marin
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY444	WQLY402
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °59' 24.8~ N	37 °58' 22.1~ N
Longitude (NAD 83)	122 °30' 0.5~ W	122 °32' 3.5~ W
Ground Elevation (m/ft-AMSL)	309.00 / 1013.8	12.80 / 42.0
Antenna Structure Registration #		
Path Azimuth (°)	237.228	57.207
Path Length (km / miles)	3.570 / 2.219	

Transmit Antenna

Manufacturer	<u>87204A</u> ANDREW CORPORATION	<u>87204A</u> ANDREW CORPORATION
Model	<u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>38.9</u> / 2.10 / -4.73	<u>38.9</u> / 2.10 / 4.71
Centerline (m / ft - AGL)	9.75 / 32.0	11.28 / 37.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEM085	TEM085
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50HFC322V02	18HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	13.5	13.5
Received Level (dBm)	<u>-37.7</u>	<u>-37.7</u>
EIRP (dBm)	<u>52.4</u>	<u>52.4</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		129.0

Transmit Frequencies (MHz) 19525.0000H(5) 19625.0000H(7) 17965.0000H(5) 18065.0000H(7)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0554E CA	CA-SFO0274A CA
City/County	/San Mateo	Daly City/San Mateo
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY522	
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 41' 14.5~ N	37 ° 41' 8.5~ N
Longitude (NAD 83)	122 ° 26' 5.4~ W	122 ° 29' 36.3~ W
Ground Elevation (m/ft-AMSL)	380.10 / 1247.0	171.00 / 561.0
Antenna Structure Registration #	1205149	
Path Azimuth (°)	267.968	87.932
Path Length (km / miles)	5.171 / 3.213	

Transmit Antenna

Manufacturer	RB1160	RB1160
Model	RADIO WAVES, INC	RADIO WAVES, INC
Gain(dBi) / Beamwidth(°) / Tilt(°)	HP2-18	HP2-18
Centerline (m / ft - AGL)	38.6 / 2.00 / -2.65	38.6 / 2.00 / 2.61
	41.15 / 135.0	12.80 / 42.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMU70	TEMU70
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HA50HFC271V01	18HA50HFC271V01
Emission Designator / Modulation	Horizon Duo-Adj Channel	Horizon Duo-Adj Channel
Loading	47M8D7W 128 QAM	47M8D7W 128 QAM
Stability (%)	1 CH DIG 271000.000	1 CH DIG 271000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.5	15.5
Received Level (dBm)	-39.5	-39.5
EIRP (dBm)	54.1	54.1
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		132.2

Transmit Frequencies (MHz) 17765.0000H(1) 17865.0000H(3) 19325.0000H(1) 19425.0000H(3)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0561A CA
City/County Oakland/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY422
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0237A CA

City/County Oakland/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY328
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 45' 8.3~ N	37 ° 44' 15.4~ N
Longitude (NAD 83)	122 ° 11' 21.6~ W	122 ° 9' 50.4~ W
Ground Elevation (m/ft-AMSL)	4.10 / 13.5	14.40 / 47.2
Antenna Structure Registration #		
Path Azimuth (°)	126.139	306.155
Path Length (km / miles)	2.765 / 1.718	

Transmit Antenna

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / 0.29
Centerline (m / ft - AGL) 20.73 / 68.0

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / -0.31
Centerline (m / ft - AGL) 24.99 / 82.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM085
Manufacturer DRAGONWAVE INC
Model 18HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 6.0
Received Level (dBm) -42.9
EIRP (dBm) 44.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 126.7

TEM085
Manufacturer DRAGONWAVE INC
Model 18HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 6.0
Received Level (dBm) -42.9
EIRP (dBm) 44.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0

Transmit Frequencies (MHz) 17815.0000H(2) 17915.0000H(4) 19375.0000H(2) 19475.0000H(4)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0564A CA
City/County /Contra Costa
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY410
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0118A CA

Danville/Contra Costa
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 48' 57.0~ N	37 ° 50' 23.6~ N
Longitude (NAD 83)	122 ° 3' 44.7~ W	122 ° 0' 47.0~ W
Ground Elevation (m/ft-AMSL)	<u>613.20</u> / <u>2011.8</u>	156.00 / 511.8
Antenna Structure Registration #	1010559	
Path Azimuth (°)	58.418	238.448
Path Length (km / miles)	5.100 / 3.169	

Transmit Antenna

<u>87204A</u>	<u>87204A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model <u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°) <u>38.9</u> / 2.10 / -5.40	<u>38.9</u> / 2.10 / 5.37
Centerline (m / ft - AGL) 30.48 / 100.0	7.01 / 23.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM090	TEM090
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 18HD50HFC215V02	18HD50HFC215V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 64 QAM	45M8D7W 64 QAM
Loading 1 CH DIG 215000.000	1 CH DIG 215000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 18.5	18.5
Received Level (dBm) <u>-39.6</u>	<u>-39.6</u>
EIRP (dBm) <u>55.5</u>	<u>55.5</u>
Fixed Loss: Tx / Common (dB) 0.0 / 1.9	0.0 / 1.9
Free Space Loss (dB) 132.1	

Transmit Frequencies (MHz)	<u>18015.0000V(6)</u>	<u>18115.0000V(8)</u>	<u>19575.0000V(6)</u>	<u>19675.0000V(8)</u>
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0565A CA
City/County /Contra Costa
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY441
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0171A CA

San Ramon/Contra Costa
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 44' 20.0~ N	37 ° 47' 15.6~ N
Longitude (NAD 83)	121 ° 59' 42.5~ W	121 ° 56' 8.9~ W
Ground Elevation (m/ft-AMSL)	562.40 / 1845.1	217.10 / 712.3
Antenna Structure Registration #	1222544	
Path Azimuth (°)	43.981	224.018
Path Length (km / miles)	7.526 / 4.677	

Transmit Antenna

<u>87204A</u>	<u>87204A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model <u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°) <u>38.9</u> / 2.10 / -2.71	<u>38.9</u> / 2.10 / 2.65
Centerline (m / ft - AGL) 30.48 / 100.0	23.47 / 77.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ59	TEMQ59
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 18HD50HFC171V02	18HD50HFC171V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 32 QAM	45M8D7W 32 QAM
Loading 1 CH DIG 171000.000	1 CH DIG 171000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 20.0	20.0
Received Level (dBm) <u>-37.6</u>	<u>-37.6</u>
EIRP (dBm) <u>58.9</u>	<u>58.9</u>
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 135.4	

Transmit Frequencies (MHz) 19525.0000V(5) 19625.0000V(7) 17965.0000V(5) 18065.0000V(7)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0031A CA
City/County Milpitas/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0414B CA

/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °25' <u>21.6</u> ~ N	37 °25' 3.1 ~ N
Longitude (NAD 83)	121 °55' <u>8.8</u> ~ W	121 °51' 5.2 ~ W
Ground Elevation (m/ft-AMSL)	<u>6.90</u> / <u>22.6</u>	99.00 / 324.8
Antenna Structure Registration #		1270998
Path Azimuth (°)	<u>95.419</u>	<u>275.460</u>
Path Length (km / miles)		<u>6.017</u> / <u>3.739</u>

Transmit Antenna

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / 0.55
Centerline (m / ft – AGL) 40.23 / 132.0

87204A
ANDREW CORPORATION
VHLP2-18B
38.9 / 2.10 / -0.59
8.23 / 27.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEM090
Manufacturer DRAGONWAVE INC
Model 18HD50HFC215V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 64 QAM
Loading 1 CH DIG 215000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 18.0
Received Level (dBm) -37.7
EIRP (dBm) 56.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 133.5

TEM090
DRAGONWAVE INC
18HD50HFC215V02
HORIZON DUO
45M8D7W 64 QAM
1 CH DIG 215000.000
0.001
Nominal Coordinated Maximum
18.0
-37.7
56.9
0.0 / 0.0

Transmit Frequencies (MHz)	19575.0000V(6)	19675.0000V(8)	18015.0000V(6)	18115.0000V(8)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0166D CA
City/County Campbell/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0191D CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °17' <u>19.7</u> ~ N	37 °17' 18.5~ N
Longitude (NAD 83)	121 °56' <u>6.9</u> ~ W	121 °53' 48.6~ W
Ground Elevation (m/ft-AMSL)	<u>57.50</u> / <u>188.6</u>	45.30 / 148.6
Antenna Structure Registration #		
Path Azimuth (°)	<u>90.611</u>	<u>270.634</u>
Path Length (km / miles)		<u>3.407</u> / <u>2.117</u>

Transmit Antenna

Manufacturer	<u>87204A</u>	<u>87204A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
	<u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>38.9</u> / 2.10 / <u>-1.08</u>	<u>38.9</u> / 2.10 / <u>1.06</u>
Centerline (m / ft – AGL)	67.06 / 220.0	15.54 / 51.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	<u>TEMU71</u>	<u>TEMU71</u>
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	<u>18HA50SFC271V01</u>	<u>18HA50SFC271V01</u>
Emission Designator / Modulation	Horizon Duo-Adj Channel	Horizon Duo-Adj Channel
	<u>47M8D7W</u> <u>128 QAM</u>	<u>47M8D7W</u> <u>128 QAM</u>
Loading	1 CH DIG 271000.000	1 CH DIG 271000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	<u>5.5</u>	<u>5.5</u>
Received Level (dBm)	<u>-45.3</u>	<u>-45.3</u>
EIRP (dBm)	<u>44.4</u>	<u>44.4</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>128.6</u>

Transmit Frequencies (MHz)	17865.0000H(3)	17915.0000H(4)	19425.0000H(3)	19475.0000H(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Prev Job Num: 100120COMSSL01

Job Number 100819COMSSL02

RCN Number: 10081932

Administrative Information

CA-SJC0224D CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY547
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0431A CA

/Santa Clara
Engineering Proposal / PRIMARY OPERATION
WQLY729
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °19' 7.2~ N	37 °19' 21.8~ N
Longitude (NAD 83)	121 °49' 45.9~ W	121 °45' 18.7~ W
Ground Elevation (m/ft-AMSL)	40.00 / 131.2	293.50 / 962.9
Antenna Structure Registration #		1049603
Path Azimuth (°)	86.064	266.109
Path Length (km / miles)		6.594 / 4.097

Transmit Antenna

RH6969	RH6969
RADIO WAVES, INC	RADIO WAVES, INC
HP3-18	HP3-18
Gain(dBi) / Beamwidth(°) / Tilt(°) 42.0 / 1.30 / 2.35	42.0 / 1.30 / -2.39
Centerline (m / ft - AGL) 10.97 / 36.0	30.18 / 99.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM085	TEM085
DRAGONWAVE INC	DRAGONWAVE INC
18HD50HFC322V02	18HD50HFC322V02
HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 17.5	17.5
Received Level (dBm) -32.8	-32.8
EIRP (dBm) 59.5	59.5
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 134.3	

Transmit Frequencies (MHz)

19525.0000V(5)	19625.0000V(7)	17965.0000V(5)	18065.0000V(7)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0228B CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0444A CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °19' <u>49.8</u> ~ N	37 °17' 12.0 ~ N
Longitude (NAD 83)	121 °49' <u>35.4</u> ~ W	121 °47' <u>50.4</u> ~ W
Ground Elevation (m/ft-AMSL)	<u>37.10</u> / <u>121.7</u>	<u>192.20</u> / <u>630.6</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>152.000</u>	<u>332.018</u>
Path Length (km / miles)		<u>5.509</u> / <u>3.423</u>

Transmit Antenna

87059A	87059A
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model VHLP2.5-18	VHLP2.5-18
Gain(dBi) / Beamwidth(°) / Tilt(°) 41.0 / 1.50 / <u>1.58</u>	41.0 / 1.50 / <u>-1.62</u>
Centerline (m / ft - AGL) 12.19 / 40.0	11.28 / 37.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM085	TEM085
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 18HD50HFC322V02	18HD50HFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 17.5	17.5
Received Level (dBm) -33.2	-33.2
EIRP (dBm) 58.5	58.5
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)	<u>132.7</u>

Transmit Frequencies (MHz)	19525.0000V(5)	19625.0000V(7)	17965.0000V(5)	18065.0000V(7)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 091215COMSAN01
RCN Number: 10081932

Administrative Information

CA-SJC0243A CA
City/County Santa Clara/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLN746
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0023B CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °23' 14.8~ N	37 °24' <u>25.4</u> ~ N
Longitude (NAD 83)	121 °57' 49.3~ W	121 °55' <u>34.7</u> ~ W
Ground Elevation (m/ft-AMSL)	7.92 / 26.0	<u>8.30</u> / <u>27.2</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>56.666</u>	<u>236.689</u>
Path Length (km / miles)		<u>3.962</u> / <u>2.462</u>

Transmit Antenna

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / -0.29
Centerline (m / ft – AGL) 35.36 / 116.0

87204A
ANDREW CORPORATION
VHLP2-18B
38.9 / 2.10 / 0.26
16.15 / 53.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMU74
Manufacturer DRAGONWAVE INC
Model 18HA50HFC322V01
Model Description Horizon Duo-Adj Channel
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 14.3
Received Level (dBm) -37.8
EIRP (dBm) 53.2
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 129.9

TEMU74
DRAGONWAVE INC
18HA50HFC322V01
Horizon Duo-Adj Channel
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
14.3
-37.8
53.2
0.0 / 0.0

Transmit Frequencies (MHz)	17815.0000V(2)	17865.0000V(3)	19375.0000V(2)	19425.0000V(3)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0276A CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0427B CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °19' 49.6~ N	37 °20' 19.7~ N
Longitude (NAD 83)	121 °53' 18.4~ W	121 °50' 30.9~ W
Ground Elevation (m/ft-AMSL)	29.70 / 97.4	33.10 / 108.6
Antenna Structure Registration #		
Path Azimuth (°)	77.303	257.331
Path Length (km / miles)	4.226 / 2.626	

Transmit Antenna

<u>87204A</u>	<u>87204A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model <u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°) <u>38.9</u> / 2.10 / <u>-1.03</u>	<u>38.9</u> / 2.10 / <u>1.00</u>
Centerline (m / ft - AGL) <u>91.44</u> / <u>300.0</u>	13.11 / 43.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

<u>TEMU71</u>	<u>TEMU71</u>
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model <u>18HA50SFC271V01</u>	<u>18HA50SFC271V01</u>
Model Description <u>Horizon Duo-Adj Channel</u>	<u>Horizon Duo-Adj Channel</u>
Emission Designator / Modulation <u>47M8D7W</u> <u>128 QAM</u>	<u>47M8D7W</u> <u>128 QAM</u>
Loading 1 CH DIG 271000.000	1 CH DIG 271000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) <u>5.5</u>	<u>5.5</u>
Received Level (dBm) <u>-47.1</u>	<u>-47.1</u>
EIRP (dBm) <u>44.4</u>	<u>44.4</u>
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 130.4	

Transmit Frequencies (MHz)	19325.0000V(1)	19425.0000V(3)	17765.0000V(1)	17865.0000V(3)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0276A CA	CA-SFO0430C CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °19' 49.6~ N	37 °19' 4.1~ N
Longitude (NAD 83)	121 °53' 18.4~ W	121 °51' 0.9~ W
Ground Elevation (m/ft-AMSL)	29.70 / 97.4	38.90 / 127.6
Antenna Structure Registration #		
Path Azimuth (°)	112.495	292.519
Path Length (km / miles)	3.664 / 2.277	

Transmit Antenna

Manufacturer	RB1160	RB1160
Model	RADIO WAVES, INC	RADIO WAVES, INC
Gain(dBi) / Beamwidth(°) / Tilt(°)	HP2-18	HP2-18
Centerline (m / ft - AGL)	38.6 / 2.00 / -0.94	38.6 / 2.00 / 0.92
	91.44 / 300.0	22.86 / 75.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ58	TEMQ58
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50SFC215V02	18HD50SFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	-43.5	-43.5
EIRP (dBm)	47.1	47.1
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		129.2

Transmit Frequencies (MHz) 19375.0000V(2) 19475.0000V(4) 17815.0000V(2) 17915.0000V(4)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0276A CA	CA-SJC0188A CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information		
Latitude (NAD 83)	37 °19' 49.6~ N	37 °18' 26.3~ N
Longitude (NAD 83)	121 °53' 18.4~ W	121 °54' 3.6~ W
Ground Elevation (m/ft-AMSL)	29.70 / 97.4	37.50 / 123.0
Antenna Structure Registration #		
Path Azimuth (°)	203.434	23.427
Path Length (km / miles)	2.799 / 1.739	

Transmit Antenna	RB1160	RB1160
Manufacturer	RADIO WAVES, INC	RADIO WAVES, INC
Model	HP2-18	HP2-18
Gain(dBi) / Beamwidth(°) / Tilt(°)	38.6 / 2.00 / <u>-1.36</u>	38.6 / 2.00 / <u>1.34</u>
Centerline (m / ft - AGL)	<u>91.44</u> / <u>300.0</u>	17.68 / 58.0

Receive Antenna	Same As Transmit	
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Diversity Receive Antenna		
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Radio Information	TEMQ57	TEMQ57
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	18HD50SFC322V02	18HD50SFC322V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	45M8D7W 256 QAM	45M8D7W 256 QAM
Loading	1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	7.5	7.5
Received Level (dBm)	-42.1	-42.1
EIRP (dBm)	46.1	46.1
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		126.8

Transmit Frequencies (MHz)	19525.0000H(5)	19625.0000H(7)	17965.0000H(5)	18065.0000H(7)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010

Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01

RCN Number: 10081932

Administrative Information

CA-SJC0276A CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0202C CA

City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °19' 49.6~ N	37 °21' 53.1~ N
Longitude (NAD 83)	121 °53' 18.4~ W	121 °52' 18.6~ W
Ground Elevation (m/ft-AMSL)	29.70 / 97.4	25.50 / 83.7
Antenna Structure Registration #		
Path Azimuth (°)	21.130	201.140
Path Length (km / miles)	4.082 / 2.536	

Transmit Antenna

Manufacturer	87059A	87059A
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	VHLP2.5-18	VHLP2.5-18
Centerline (m / ft - AGL)	41.0 / 1.50 / <u>-1.10</u>	41.0 / 1.50 / <u>1.07</u>
	<u>91.44</u> / <u>300.0</u>	18.29 / 60.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ57	TEMQ57
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50SFC322V02	18HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	-39.6	-39.6
EIRP (dBm)	49.5	49.5
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		130.1

Transmit Frequencies (MHz)	19375.0000H(2)	19475.0000H(4)	17815.0000H(2)	17915.0000H(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0283A CA
City/County Sunnyvale/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY504
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0084A CA

Sunnyvale/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °22' 13.0~ N	37 °20' 31.6~ N
Longitude (NAD 83)	122 °2' 23.0~ W	122 °1' 32.9~ W
Ground Elevation (m/ft-AMSL)	38.60 / 126.6	54.70 / 179.5
Antenna Structure Registration #		
Path Azimuth (°)	158.471	338.480
Path Length (km / miles)	3.360 / 2.088	

Transmit Antenna

<u>87204A</u>	<u>87204A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model VHLP2-18B	VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / -0.05	38.9 / 2.10 / 0.03
Centerline (m / ft - AGL) 42.67 / 140.0	24.38 / 80.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM085	TEM085
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 18HD50HFC322V02	18HD50HFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 12.0	12.0
Received Level (dBm) -38.6	-38.6
EIRP (dBm) 50.9	50.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 128.4	

Transmit Frequencies (MHz)	19525.0000H(5)	19625.0000H(7)	17965.0000H(5)	18065.0000H(7)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0292A CA	CA-SJC0289A CA
City/County	Palo Alto/Santa Clara	Mountain View/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information		
Latitude (NAD 83)	37 °19' 7.5~ N	37 °24' 14.4~ N
Longitude (NAD 83)	122 °8' 49.9~ W	122 °5' 53.4~ W
Ground Elevation (m/ft-AMSL)	853.60 / 2800.5	15.80 / 51.8
Antenna Structure Registration #		
Path Azimuth (°)	24.643	204.673
Path Length (km / miles)	10.411 / 6.469	

Transmit Antenna	RB1160	RB1160
Manufacturer	RADIO WAVES, INC	RADIO WAVES, INC
Model	HP2-18	HP2-18
Gain(dBi) / Beamwidth(°) / Tilt(°)	38.6 / 2.00 / <u>-4.64</u>	38.6 / 2.00 / <u>4.57</u>
Centerline (m / ft - AGL)	13.72 / 45.0	<u>12.19</u> / <u>40.0</u>

Receive Antenna	Same As Transmit	
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Diversity Receive Antenna		
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Radio Information	TEMQ64	TEMQ64
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	18HD50HFC110V02	18HD50HFC110V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	45M2D7W 16 QAM	45M2D7W 16 QAM
Loading	1 CH DIG 110000.000	1 CH DIG 110000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	20.5	20.5
Received Level (dBm)	-40.6	-40.6
EIRP (dBm)	59.1	59.1
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)	138.3	

Transmit Frequencies (MHz)	19625.0000H(7)	19675.0000H(8)	18065.0000H(7)	18115.0000H(8)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0394A CA
City/County Redwood City/San Mateo
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0603A CA

Redwood City/San Mateo
Engineering Proposal / PRIMARY OPERATION
WQLY419
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °28' 46.6~ N	37 °28' 10.9~ N
Longitude (NAD 83)	122 °15' 16.9~ W	122 °13' 22.7~ W
Ground Elevation (m/ft-AMSL)	<u>32.20 / 105.6</u>	10.90 / 35.8
Antenna Structure Registration #		
Path Azimuth (°)	<u>111.407</u>	<u>291.427</u>
Path Length (km / miles)		<u>3.014 / 1.873</u>

Transmit Antenna

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / -0.59
Centerline (m / ft – AGL) 25.91 / 85.0

87204A
ANDREW CORPORATION
VHLP2-18B
38.9 / 2.10 / 0.57
16.76 / 55.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMQ57
Manufacturer DRAGONWAVE INC
Model 18HD50SFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 7.5
Received Level (dBm) -42.2
EIRP (dBm) 46.4
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 127.5

TEMQ57
DRAGONWAVE INC
18HD50SFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
7.5
-42.2
46.4
0.0 / 0.0

Transmit Frequencies (MHz)	17965.0000V(5)	18065.0000V(7)	19525.0000V(5)	19625.0000V(7)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100617COMSSL02
RCN Number: 10081932

Administrative Information

CA-SFO0551A CA
City/County San Francisco/San Francisco
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0265A CA

Daly City/San Mateo
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY412
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 45' <u>18.5</u> ~ N	37 ° 42' 1.4 ~ N
Longitude (NAD 83)	122 ° 27' <u>10.5</u> ~ W	122 ° 27' 18.1 ~ W
Ground Elevation (m/ft-AMSL)	<u>251.10</u> / <u>823.8</u>	233.10 / 764.8
Antenna Structure Registration #		
Path Azimuth (°)	<u>181.755</u>	<u>1.754</u>
Path Length (km / miles)		<u>6.080</u> / <u>3.778</u>

Transmit Antenna

87059A	87059A
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model VHLP2.5-18	VHLP2.5-18
Gain(dBi) / Beamwidth(°) / Tilt(°) 41.0 / 1.50 / <u>-1.22</u>	41.0 / 1.50 / <u>1.18</u>
Centerline (m / ft - AGL) <u>115.21</u> / <u>378.0</u>	5.49 / 18.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM032	TEM032
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model <u>18HD50HFC271V02</u>	<u>18HD50HFC271V02</u>
Model Description <u>HORIZON DUO</u>	<u>HORIZON DUO</u>
Emission Designator / Modulation 47M8D7W 128 QAM	47M8D7W 128 QAM
Loading 1 CH DIG 271000.000	1 CH DIG 271000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 15.5	15.5
Received Level (dBm) -37.7	-37.7
EIRP (dBm) 55.7	55.7
Fixed Loss: Tx / Common (dB) 0.0 / 0.8	0.0 / 0.8
Free Space Loss (dB) <u>133.6</u>	

Transmit Frequencies (MHz)	17965.0000H(5)	18115.0000H(8)	19525.0000H(5)	19675.0000H(8)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0582A CA
City/County Hayward/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0482A CA

Pleasanton/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY508
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °39' 34.0~ N	37 °39' 39.3~ N
Longitude (NAD 83)	121 °55' 59.5~ W	121 °53' 2.2~ W
Ground Elevation (m/ft-AMSL)	453.50 / 1487.9	102.50 / 336.3
Antenna Structure Registration #	1015996	
Path Azimuth (°)	87.832	267.862
Path Length (km / miles)	4.349 / 2.702	

Transmit Antenna

<u>87204A</u>	<u>87204A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model VHLP2-18B	VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / -4.73	38.9 / 2.10 / 4.70
Centerline (m / ft - AGL) 30.48 / 100.0	22.56 / 74.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM085	TEM085
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 18HD50HFC322V02	18HD50HFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 13.0	13.0
Received Level (dBm) -39.9	-39.9
EIRP (dBm) 51.9	51.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 130.7	

Transmit Frequencies (MHz)	19375.0000V(2)	19475.0000V(4)	17815.0000V(2)	17915.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0149A CA
City/County Los Gatos/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0162A CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
WQLY659
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °15' <u>54.4</u> ~ N	37 °15' 7.5 ~ N
Longitude (NAD 83)	121 °58' <u>56.7</u> ~ W	121 °56' 47.3 ~ W
Ground Elevation (m/ft-AMSL)	<u>80.60</u> / <u>264.4</u>	86.10 / 282.5
Antenna Structure Registration #		
Path Azimuth (°)	<u>114.381</u>	<u>294.403</u>
Path Length (km / miles)		<u>3.501</u> / <u>2.175</u>

Transmit Antenna

87059A	<u>87204A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model VHLP2.5-18	<u>VHLP2-18B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°) 41.0 / 1.50 / <u>-0.23</u>	<u>38.9</u> / 2.10 / 0.20
Centerline (m / ft - AGL) 48.46 / 159.0	29.87 / 98.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM085	TEM085
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 18HD50HFC322V02	18HD50HFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) <u>10.7</u>	<u>10.7</u>
Received Level (dBm) <u>-38.2</u>	<u>-38.2</u>
EIRP (dBm) <u>51.7</u>	<u>49.6</u>
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) <u>128.8</u>	

Transmit Frequencies (MHz)

19375.0000 <u>H</u> (2)	19475.0000 <u>H</u> (4)	17815.0000 <u>H</u> (2)	17915.0000 <u>H</u> (4)
<u>19575.0000V</u> (6)	<u>19675.0000V</u> (8)	<u>18015.0000V</u> (6)	<u>18115.0000V</u> (8)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147

(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01

RCN Number: 10081932

Administrative Information

CA-SJC0162A CA
 City/County San Jose/Santa Clara
 Status / License Basis Engineering Proposal / PRIMARY OPERATION
 Call Sign WQLY659
 Licensee Code CLESP3
 Licensee Name Clearwire Spectrum Holdings III, LL
 Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0186A CA

San Jose/Santa Clara
 Engineering Proposal / PRIMARY OPERATION
 CLESP3
 Clearwire Spectrum Holdings III, LL
 FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °15' 7.5~ N	37 °16' <u>18.8</u> ~ N
Longitude (NAD 83)	121 °56' 47.3~ W	121 °54' <u>13.3</u> ~ W
Ground Elevation (m/ft-AMSL)	86.10 / 282.5	<u>51.80</u> / <u>169.9</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>59.905</u>	<u>239.931</u>
Path Length (km / miles)		<u>4.385</u> / <u>2.725</u>

Transmit Antenna

87059A
 Manufacturer ANDREW CORPORATION
 Model VHLP2.5-18
 Gain(dBi) / Beamwidth(°) / Tilt(°) 41.0 / 1.50 / -0.68
 Centerline (m / ft - AGL) 29.87 / 98.0

87059A
 ANDREW CORPORATION
 VHLP2.5-18
 41.0 / 1.50 / 0.65
 13.41 / 44.0

Receive Antenna

Same As Transmit

Manufacturer
 Model
 Gain (dBi) / Beamwidth (°)
 Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
 Model
 Gain (dBi) / Beamwidth (°)
 Centerline (m / ft - AGL)

Radio Information

TEM085
 Manufacturer DRAGONWAVE INC
 Model 18HD50HFC322V02
 Model Description HORIZON DUO
 Emission Designator / Modulation 45M8D7W 256 QAM
 Loading 1 CH DIG 322000.000
 Stability (%) 0.001

	Nominal	Coordinated	Maximum
Power (dBm)		15.5	
Received Level (dBm)		<u>-33.2</u>	
EIRP (dBm)		56.5	

 Fixed Loss: Tx / Common (dB) 0.0 / 0.0
 Free Space Loss (dB) 130.7

TEM085
 DRAGONWAVE INC
 18HD50HFC322V02
 HORIZON DUO
 45M8D7W 256 QAM
 1 CH DIG 322000.000
 0.001

	Nominal	Coordinated	Maximum
		15.5	
		<u>-33.2</u>	
		56.5	

 0.0 / 0.0

Transmit Frequencies (MHz)	17965.0000V(5)	18065.0000V(7)	19525.0000V(5)	19625.0000V(7)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0165A CA
City/County Santa Clara/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY646
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0003A CA

Santa Clara/Santa Clara
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °20' 49.4~ N	37 °23' 2.0 ~ N
Longitude (NAD 83)	121 °56' 24.8~ W	121 °58' 42.5 ~ W
Ground Elevation (m/ft-AMSL)	22.90 / 75.1	<u>10.10 / 33.1</u>
Antenna Structure Registration #	1055725	
Path Azimuth (°)	<u>320.358</u>	<u>140.334</u>
Path Length (km / miles)		<u>5.310 / 3.299</u>

Transmit Antenna

Manufacturer	87059A	87059A
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	VHLP2.5-18	VHLP2.5-18
Centerline (m / ft - AGL)	41.0 / 1.50 / -0.15	41.0 / 1.50 / 0.11
	31.39 / 103.0	32.00 / 105.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMO85	TEMO85
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50HFC322V02	18HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	17.5	17.5
Received Level (dBm)	-32.9	-32.9
EIRP (dBm)	58.5	58.5
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>132.4</u>

Transmit Frequencies (MHz)	17965.0000V(5)	18065.0000V(7)	19525.0000V(5)	19625.0000V(7)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0166D CA
City/County Campbell/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0186A CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °17' <u>19.7</u> ~ N	37 °16' <u>18.8</u> ~ N
Longitude (NAD 83)	121 °56' <u>6.9</u> ~ W	121 °54' <u>13.3</u> ~ W
Ground Elevation (m/ft-AMSL)	<u>57.50</u> / <u>188.6</u>	<u>51.80</u> / <u>169.9</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>123.848</u>	<u>303.867</u>
Path Length (km / miles)		<u>3.370</u> / <u>2.094</u>

Transmit Antenna

Manufacturer	<u>87204A</u> ANDREW CORPORATION	<u>87204A</u> ANDREW CORPORATION
Model	<u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>38.9</u> / 2.10 / <u>-1.02</u>	<u>38.9</u> / 2.10 / <u>1.00</u>
Centerline (m / ft – AGL)	67.06 / 220.0	13.41 / 44.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMO85	TEMO85
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50HFC322V02	18HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	13.0	13.0
Received Level (dBm)	<u>-37.7</u>	<u>-37.7</u>
EIRP (dBm)	<u>51.9</u>	<u>51.9</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>128.5</u>

Transmit Frequencies (MHz)	18015.0000V(6)	18115.0000V(8)	19575.0000V(6)	19675.0000V(8)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0276A CA	CA-SJC0213C CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °19' 49.6~ N	37 °21' 58.0~ N
Longitude (NAD 83)	121 °53' 18.4~ W	121 °51' 43.2~ W
Ground Elevation (m/ft-AMSL)	29.70 / 97.4	29.90 / 98.1
Antenna Structure Registration #		
Path Azimuth (°)	30.614	210.630
Path Length (km / miles)	4.600 / 2.858	

Transmit Antenna	RB1160	RB1160
Manufacturer	RADIO WAVES, INC	RADIO WAVES, INC
Model	HP2-18	HP2-18
Gain(dBi) / Beamwidth(°) / Tilt(°)	38.6 / 2.00 / <u>-1.01</u>	38.6 / 2.00 / <u>0.98</u>
Centerline (m / ft - AGL)	<u>91.44</u> / <u>300.0</u>	11.58 / 38.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information	TEM032	TEM032
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	18HD50HFC271V02	18HD50HFC271V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	47M8D7W 128 QAM	47M8D7W 128 QAM
Loading	1 CH DIG 271000.000	1 CH DIG 271000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.5	15.5
Received Level (dBm)	-38.5	-38.5
EIRP (dBm)	54.1	54.1
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		131.2

Transmit Frequencies (MHz)	19575.0000V(6)	19675.0000V(8)	18015.0000V(6)	18115.0000V(8)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0283A CA	CA-SJC0061A CA
City/County	Sunnyvale/Santa Clara	Sunnyvale/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY504	
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °22' 13.0~ N	37 °21' 6.4~ N
Longitude (NAD 83)	122 °2' 23.0~ W	122 °0' 39.1~ W
Ground Elevation (m/ft-AMSL)	38.60 / 126.6	38.30 / 125.7
Antenna Structure Registration #		
Path Azimuth (°)	128.757	308.775
Path Length (km / miles)	3.279 / 2.038	

Transmit Antenna

Manufacturer	RB1160	RB1160
Model	RADIO WAVES, INC	RADIO WAVES, INC
Gain(dBi) / Beamwidth(°) / Tilt(°)	HP2-18	HP2-18
Centerline (m / ft - AGL)	38.6 / 2.00 / -0.35	38.6 / 2.00 / 0.32
	30.48 / 100.0	11.58 / 38.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMO32	TEMO32
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50HFC271V02	18HD50HFC271V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	47M8D7W 128 QAM	47M8D7W 128 QAM
Stability (%)	1 CH DIG 271000.000	1 CH DIG 271000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	17.0	17.0
Received Level (dBm)	-37.8	-37.8
EIRP (dBm)	53.7	53.7
Fixed Loss: Tx / Common (dB)	0.0 / 1.9	0.0 / 1.9
Free Space Loss (dB)		128.2

Transmit Frequencies (MHz) 19375.0000H(2) 19475.0000H(4) 17815.0000H(2) 17915.0000H(4)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0551A CA
City/County San Francisco/San Francisco
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0245A CA

San Francisco/San Francisco
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 45' <u>18.5</u> ~ N	37 ° 43' 49.6 ~ N
Longitude (NAD 83)	122 ° 27' <u>10.5</u> ~ W	122 ° 28' 34.3 ~ W
Ground Elevation (m/ft-AMSL)	<u>251.10</u> / <u>823.8</u>	60.00 / 196.9
Antenna Structure Registration #		
Path Azimuth (°)	<u>216.824</u>	<u>36.809</u>
Path Length (km / miles)		<u>3.424</u> / <u>2.127</u>

Transmit Antenna

Manufacturer	RB1160	RB1160
Model	RADIO WAVES, INC	RADIO WAVES, INC
Gain(dBi) / Beamwidth(°) / Tilt(°)	HP2-18	HP2-18
Centerline (m / ft – AGL)	38.6 / 2.00 / <u>-4.65</u>	38.6 / 2.00 / <u>4.63</u>
	<u>108.81</u> / <u>357.0</u>	<u>22.12</u> / <u>72.6</u>

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMR29	TEMR29
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50HFC364V02	18HD50HFC364V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	47M1D7W 256 QAM	47M1D7W 256 QAM
Stability (%)	1 CH DIG 364000.000	1 CH DIG 364000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	<u>15.0</u>	<u>15.0</u>
Received Level (dBm)	<u>-36.4</u>	<u>-36.4</u>
EIRP (dBm)	<u>53.6</u>	<u>53.6</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>128.6</u>

Transmit Frequencies (MHz)	17815.0000 <u>V</u> (2)	17915.0000 <u>V</u> (4)	19375.0000 <u>V</u> (2)	19475.0000 <u>V</u> (4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0582A CA	CA-SFO0474B CA
City/County	Hayward/Alameda	Pleasanton/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °39' 34.0~ N	37 °40' 39.3~ N
Longitude (NAD 83)	121 °55' 59.5~ W	121 °51' 30.1~ W
Ground Elevation (m/ft-AMSL)	453.50 / 1487.9	109.80 / 360.2
Antenna Structure Registration #	1015996	
Path Azimuth (°)	73.019	253.065
Path Length (km / miles)	6.902 / 4.289	

Transmit Antenna

Manufacturer	<u>87204A</u> ANDREW CORPORATION	<u>87204A</u> ANDREW CORPORATION
Model	<u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>38.9</u> / 2.10 / -2.99	<u>38.9</u> / 2.10 / 2.95
Centerline (m / ft - AGL)	30.48 / 100.0	16.15 / 53.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMO90	TEMO90
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50HFC215V02	18HD50HFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	18.5	18.5
Received Level (dBm)	<u>-38.4</u>	<u>-38.4</u>
EIRP (dBm)	<u>57.4</u>	<u>57.4</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		134.7

Transmit Frequencies (MHz) 19525.0000V(5) 19625.0000V(7) 17965.0000V(5) 18065.0000V(7)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0029A CA
City/County Cupertino/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0283A CA

Sunnyvale/Santa Clara
Engineering Proposal / PRIMARY OPERATION
WQLY504
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °19' <u>18.3</u> ~ N	37 °22' 13.0 ~ N
Longitude (NAD 83)	122 °1' <u>52.6</u> ~ W	122 °2' 23.0 ~ W
Ground Elevation (m/ft-AMSL)	<u>71.40</u> / <u>234.3</u>	38.60 / 126.6
Antenna Structure Registration #		
Path Azimuth (°)	<u>352.093</u>	<u>172.088</u>
Path Length (km / miles)		<u>5.438</u> / <u>3.379</u>

Transmit Antenna

	RH6969	<u>RH6969</u>
Manufacturer	RADIO WAVES, INC	RADIO WAVES, INC
Model	HP3-18	<u>HP3-18</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	42.0 / 1.30 / <u>-0.36</u>	<u>42.0</u> / <u>1.30</u> / <u>0.33</u>
Centerline (m / ft – AGL)	<u>30.48</u> / <u>100.0</u>	30.48 / 100.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

	TEMO85	TEMO85
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	18HD50HFC322V02	18HD50HFC322V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	45M8D7W 256 QAM	45M8D7W 256 QAM
Loading	1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	17.5	17.5
Received Level (dBm)	<u>-31.1</u>	<u>-31.1</u>
EIRP (dBm)	59.5	<u>59.5</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>132.6</u>

Transmit Frequencies (MHz)	<u>18015.0000V(6)</u>	<u>18115.0000V(8)</u>	<u>19575.0000V(6)</u>	<u>19675.0000V(8)</u>
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0310D CA
City/County San Bruno/San Mateo
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0322A CA

Burlingame/San Mateo
Engineering Proposal / PRIMARY OPERATION
WQLY850
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °36' <u>50.2</u> ~ N	37 °35' 44.6~ N
Longitude (NAD 83)	122 °25' 32.9~ W	122 °23' 0.8~ W
Ground Elevation (m/ft-AMSL)	<u>109.00</u> / <u>357.6</u>	3.90 / 12.8
Antenna Structure Registration #		
Path Azimuth (°)	<u>118.450</u>	<u>298.475</u>
Path Length (km / miles)		<u>4.244</u> / <u>2.637</u>

Transmit Antenna

Manufacturer	<u>87204A</u> ANDREW CORPORATION	<u>87204A</u> ANDREW CORPORATION
Model	<u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>38.9</u> / <u>2.10</u> / <u>-1.21</u>	<u>38.9</u> / <u>2.10</u> / <u>1.18</u>
Centerline (m / ft - AGL)	<u>13.21</u> / <u>43.3</u>	<u>29.57</u> / <u>97.0</u>

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMR29	TEMR29
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50HFC364V02	18HD50HFC364V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	47M1D7W 256 QAM	47M1D7W 256 QAM
Stability (%)	1 CH DIG 364000.000	1 CH DIG 364000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	<u>14.8</u>	<u>14.8</u>
Received Level (dBm)	<u>-37.8</u>	<u>-37.8</u>
EIRP (dBm)	<u>53.7</u>	<u>53.7</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>130.5</u>

Transmit Frequencies (MHz)	19575.0000 <u>H</u> (6)	19675.0000 <u>H</u> (8)	18015.0000 <u>H</u> (6)	18115.0000 <u>H</u> (8)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0417C CA	CA-SJC0220A CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °23' 20.7~ N	37 °24' 5.0~ N
Longitude (NAD 83)	121 °52' 7.0~ W	121 °50' 59.8~ W
Ground Elevation (m/ft-AMSL)	37.20 / 122.0	56.70 / 186.0
Antenna Structure Registration #		
Path Azimuth (°)	50.429	230.440
Path Length (km / miles)	2.144 / 1.332	

Transmit Antenna

Manufacturer	<u>87204A</u> ANDREW CORPORATION	<u>87204A</u> ANDREW CORPORATION
Model	<u>VHLP2-18B</u>	<u>VHLP2-18B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>38.9</u> / 2.10 / -0.03	<u>38.9</u> / 2.10 / 0.02
Centerline (m / ft - AGL)	35.66 / 117.0	15.24 / 50.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ58	TEMQ58
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50SFC215V02	18HD50SFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	<u>-42.0</u>	<u>-42.0</u>
EIRP (dBm)	<u>45.5</u>	<u>45.5</u>
Fixed Loss: Tx / Common (dB)	0.0 / 1.9	0.0 / 1.9
Free Space Loss (dB)		124.5

Transmit Frequencies (MHz) 17815.0000V(2) 17915.0000V(4) 19375.0000V(2) 19475.0000V(4)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0562A CA
City/County Walnut Creek/Contra Costa
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY494
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0059A CA

Pleasant Hill/Contra Costa
Engineering Proposal / PRIMARY OPERATION
WQLX841
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °54' 31.1~ N	37 °56' 44.5~ N
Longitude (NAD 83)	122 °3' 59.2~ W	122 °3' 38.5~ W
Ground Elevation (m/ft-AMSL)	50.80 / 166.7	16.50 / 54.1
Antenna Structure Registration #		
Path Azimuth (°)	7.005	187.009
Path Length (km / miles)	4.144 / 2.575	

Transmit Antenna

87204A
Manufacturer ANDREW CORPORATION
Model VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / -0.83
Centerline (m / ft - AGL) 40.23 / 132.0

87204A
ANDREW CORPORATION
VHLP2-18B
38.9 / 2.10 / 0.80
15.65 / 51.3

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM085
Manufacturer DRAGONWAVE INC
Model 18HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 14.5
Received Level (dBm) -38.0
EIRP (dBm) 53.4
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 130.3

TEM085
DRAGONWAVE INC
18HD50HFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
14.5
-38.0
53.4
0.0 / 0.0

Transmit Frequencies (MHz) 19375.0000H(2) 19475.0000H(4) 17815.0000H(2) 17915.0000H(4)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01

RCN Number: 10081932

Administrative Information

CA-SJC0044A CA
City/County Sunnyvale/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY443
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0003A CA

Santa Clara/Santa Clara
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °23' 14.6~ N	37 °23' 2.0 ~ N
Longitude (NAD 83)	122 °2' 10.9~ W	121 °58' 42.5 ~ W
Ground Elevation (m/ft-AMSL)	22.90 / 75.1	<u>10.10 / 33.1</u>
Antenna Structure Registration #	1022381	
Path Azimuth (°)	<u>94.315</u>	<u>274.351</u>
Path Length (km / miles)		<u>5.141 / 3.195</u>

Transmit Antenna

87059A	87059A
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model VHLP2.5-18	VHLP2.5-18
Gain(dBi) / Beamwidth(°) / Tilt(°) 41.0 / 1.50 / -0.06	41.0 / 1.50 / 0.02
Centerline (m / ft - AGL) 22.86 / 75.0	32.00 / 105.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM085	TEM085
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 18HD50HFC322V02	18HD50HFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 17.5	17.5
Received Level (dBm) -32.6	-32.6
EIRP (dBm) 58.5	58.5
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)	<u>132.1</u>

Transmit Frequencies (MHz)	17965.0000H(5)	18065.0000H(7)	19525.0000H(5)	19625.0000H(7)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0151D CA	CA-SJC0032C CA
City/County	Santa Clara/Santa Clara	Santa Clara/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		WQKU523
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °20' 42.1~ N	37 °23' 13.1~ N
Longitude (NAD 83)	121 °58' 41.3~ W	121 °58' 0.9~ W
Ground Elevation (m/ft-AMSL)	28.80 / 94.5	7.01 / 23.0
Antenna Structure Registration #		
Path Azimuth (°)	12.051	192.058
Path Length (km / miles)	4.760 / 2.958	

Transmit Antenna

Manufacturer	87059A	87059A
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	VHLP2.5-18	VHLP2.5-18
Centerline (m / ft - AGL)	41.0 / 1.50 / 0.25	41.0 / 1.50 / -0.28
	13.08 / 42.9	56.69 / 186.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ58	TEMQ58
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50SFC215V02	18HD50SFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	-41.0	-41.0
EIRP (dBm)	49.5	49.5
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		131.5

Transmit Frequencies (MHz)	19525.0000V(5)	19675.0000V(8)	17965.0000V(5)	18115.0000V(8)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 090707COMSAN01
RCN Number: 10081932

Administrative Information

CA-SJC0032C CA
City/County Santa Clara/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WOKU523
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0023B CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° <u>23</u> ' <u>13.1</u> ~ N	37 ° <u>24</u> ' <u>25.4</u> ~ N
Longitude (NAD 83)	121 ° <u>58</u> ' <u>0.9</u> ~ W	121 ° <u>55</u> ' <u>34.7</u> ~ W
Ground Elevation (m/ft-AMSL)	<u>7.01</u> / <u>23.0</u>	<u>8.30</u> / <u>27.2</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>58.195</u>	<u>238.220</u>
Path Length (km / miles)		<u>4.231</u> / <u>2.629</u>

Transmit Antenna

Manufacturer	87059A	87059A
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	VHLP2.5-18	VHLP2.5-18
Centerline (m / ft - AGL)	41.0 / 1.50 / <u>-0.50</u>	41.0 / 1.50 / <u>0.47</u>
	<u>56.69</u> / <u>186.0</u>	<u>19.81</u> / <u>65.0</u>

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMR29	TEMR29
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HD50HFC364V02	18HD50HFC364V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	47M1D7W 256 QAM	47M1D7W 256 QAM
Stability (%)	1 CH DIG 364000.000	1 CH DIG 364000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	<u>13.5</u>	<u>13.5</u>
Received Level (dBm)	<u>-34.9</u>	<u>-34.9</u>
EIRP (dBm)	<u>54.5</u>	<u>54.5</u>
Fixed Loss: Tx / Common (dB)	0.0 / <u>0.0</u>	0.0 / <u>0.0</u>
Free Space Loss (dB)		<u>130.4</u>

Transmit Frequencies (MHz)	<u>18015.0000V(6)</u>	<u>18115.0000V(8)</u>	<u>19575.0000V(6)</u>	<u>19675.0000V(8)</u>
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0004D CA
City/County Hayward/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLX848
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0286A CA

City/County Hayward/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY217
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °39' 19.3~ N	37 °39' 25.7~ N
Longitude (NAD 83)	122 °3' 25.5~ W	122 °5' 40.4~ W
Ground Elevation (m/ft-AMSL)	153.60 / 503.9	22.20 / 72.8
Antenna Structure Registration #		
Path Azimuth (°)	273.426	93.404
Path Length (km / miles)	3.312 / 2.058	

Transmit Antenna

<u>87205A</u>	<u>87205A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model <u>VHLP2-23B</u>	<u>VHLP2-23B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°) <u>40.5 / 1.70 / -2.89</u>	<u>40.5 / 1.70 / 2.87</u>
Centerline (m / ft - AGL) 58.22 / 191.0	22.86 / 75.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ48	TEMQ48
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 23HD50HFC322V02	23HD50HFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 11.0	11.0
Received Level (dBm) <u>-37.8</u>	<u>-37.8</u>
EIRP (dBm) <u>51.5</u>	<u>51.5</u>
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 129.8	

Transmit Frequencies (MHz)	23375.0000V(8)	23475.0000V(10)	22175.0000V(8)	22275.0000V(10)
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Microwave Path Data Sheet

Page 109 of 299

COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147

(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01

RCN Number: 10081932

Administrative Information

CA-SFO0004D CA
City/County Hayward/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLX848
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0301C CA

Hayward/Alameda
Engineering Proposal / PRIMARY OPERATION
WQLY340
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °39' 19.3~ N	37 °37' 59.7~ N
Longitude (NAD 83)	122 °3' 25.5~ W	122 °5' 16.6~ W
Ground Elevation (m/ft-AMSL)	153.60 / 503.9	10.60 / 34.8
Antenna Structure Registration #		
Path Azimuth (°)	227.989	47.971
Path Length (km / miles)	3.666 / 2.278	

Transmit Antenna

<u>87205A</u>	<u>87205A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model <u>VHLP2-23B</u>	<u>VHLP2-23B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°) <u>40.5 / 1.70 / -2.80</u>	<u>40.5 / 1.70 / 2.77</u>
Centerline (m / ft - AGL) <u>58.22 / 191.0</u>	<u>22.86 / 75.0</u>

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ48	TEMQ48
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 23HD50HFC322V02	23HD50HFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 13.5	13.5
Received Level (dBm) <u>-36.1</u>	<u>-36.1</u>
EIRP (dBm) <u>54.0</u>	<u>54.0</u>
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 130.6	

Transmit Frequencies (MHz)	23025.0000H(1)	23125.0000H(3)	21825.0000H(1)	21925.0000H(3)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0004D CA
City/County Hayward/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLX848
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0314A CA

City/County Union City/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY322
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °39' 19.3~ N	37 °36' 28.6~ N
Longitude (NAD 83)	122 °3' 25.5~ W	122 °2' 24.2~ W
Ground Elevation (m/ft-AMSL)	153.60 / 503.9	15.30 / 50.2
Antenna Structure Registration #		
Path Azimuth (°)	164.055	344.066
Path Length (km / miles)	5.473 / 3.401	

Transmit Antenna

Manufacturer	87066A	<u>87205A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	VHLP2.5-23A	<u>VHLP2-23B</u>
Centerline (m / ft - AGL)	43.0 / 1.20 / -1.73	40.5 / 1.70 / 1.70
	58.22 / 191.0	32.61 / 107.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ47	TEMQ47
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC271V02	23HD50HFC271V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	47M8D7W 128 QAM	47M8D7W 128 QAM
Stability (%)	1 CH DIG 271000.000	1 CH DIG 271000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	14.0	14.0
Received Level (dBm)	<u>-36.6</u>	<u>-36.6</u>
EIRP (dBm)	57.0	<u>54.5</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		134.1

Transmit Frequencies (MHz)	23175.0000V(4)	23275.0000V(6)	21975.0000V(4)	22075.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0005A CA
City/County Walnut Creek/Contra Costa
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0089B CA

City/County Walnut Creek/Contra Costa
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °53' 52.3~ N	37 °53' 21.3~ N
Longitude (NAD 83)	122 °3' 54.9~ W	122 °3' 21.8~ W
Ground Elevation (m/ft-AMSL)	49.20 / 161.4	48.80 / 160.1
Antenna Structure Registration #		
Path Azimuth (°)	139.761	319.767
Path Length (km / miles)	1.252 / 0.778	

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / -0.47	<u>34.4</u> / <u>2.90</u> / 0.46
Centerline (m / ft - AGL)	24.38 / 80.0	14.71 / 48.3

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMO20	TEMO20
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC371V02	23HD50SFC371V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	49M2D7W 256 QAM	49M2D7W 256 QAM
Stability (%)	1 CH DIG 371000.000	1 CH DIG 371000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-47.0</u>	<u>-47.0</u>
EIRP (dBm)	<u>39.9</u>	<u>39.9</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		121.3

Transmit Frequencies (MHz)	21825.0000V(1)	21975.0000V(4)	23025.0000V(1)	23175.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0043A CA
City/County Concord/Contra Costa
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLX780
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0048A CA

City/County Concord/Contra Costa
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °58' 17.3~ N	37 °57' 45.6 ~ N
Longitude (NAD 83)	122 °3' 13.9~ W	122 °3' 5.2 ~ W
Ground Elevation (m/ft-AMSL)	9.70 / 31.8	<u>12.00</u> / <u>39.4</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>167.741</u>	<u>347.743</u>
Path Length (km / miles)		<u>1.000</u> / <u>0.621</u>

Transmit Antenna

Manufacturer	<u>80014A</u>	<u>80014A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Centerline (m / ft – AGL)	35.3 / 3.00 / <u>-1.02</u>	35.3 / 3.00 / <u>1.02</u>
	36.58 / 120.0	16.46 / 54.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMO20	TEMO20
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC371V02	23HD50SFC371V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	49M2D7W 256 QAM	49M2D7W 256 QAM
Stability (%)	1 CH DIG 371000.000	1 CH DIG 371000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-43.3</u>	<u>-43.3</u>
EIRP (dBm)	40.8	40.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>119.4</u>

Transmit Frequencies (MHz)	23125.0000V(3)	23275.0000V(6)	21925.0000V(3)	22075.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0057A CA
City/County Pleasant Hill/Contra Costa
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0043A CA

Concord/Contra Costa
Engineering Proposal / PRIMARY OPERATION
WQLX780
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °56' 49.1~ N	37 °58' 17.3~ N
Longitude (NAD 83)	122 °4' 40.9~ W	122 °3' 13.9~ W
Ground Elevation (m/ft-AMSL)	28.90 / 94.8	9.70 / 31.8
Antenna Structure Registration #		
Path Azimuth (°)	37.982	217.997
Path Length (km / miles)	3.450 / 2.144	

Transmit Antenna

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / 0.10
Centerline (m / ft – AGL) 10.82 / 35.5

99141R
RADIO WAVES, INC
HPCPE-23
34.4 / 2.90 / -0.12
36.58 / 120.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMQ54
Manufacturer DRAGONWAVE INC
Model 23HD50HFC215V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 64 QAM
Loading 1 CH DIG 215000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 18.5
Received Level (dBm) -42.8
EIRP (dBm) 52.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 130.1

TEMQ54
DRAGONWAVE INC
23HD50HFC215V02
HORIZON DUO
45M8D7W 64 QAM
1 CH DIG 215000.000
0.001
Nominal Coordinated Maximum
18.5
-42.8
52.9
0.0 / 0.0

Transmit Frequencies (MHz)	21825.0000V(1)	21975.0000V(4)	23025.0000V(1)	23175.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0060A CA	CA-SFO0043A CA
City/County	Concord/Contra Costa	Concord/Contra Costa
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		WQLX780
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information		
Latitude (NAD 83)	37 °56' 41.5~ N	37 °58' 17.3~ N
Longitude (NAD 83)	122 °2' 1.9~ W	122 °3' 13.9~ W
Ground Elevation (m/ft-AMSL)	20.40 / 66.9	9.70 / 31.8
Antenna Structure Registration #		
Path Azimuth (°)	329.251	149.239
Path Length (km / miles)	3.437 / 2.136	

Transmit Antenna	99141R	99141R
Manufacturer	RADIO WAVES, INC	RADIO WAVES, INC
Model	HPCPE-23	HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°)	34.4 / 2.90 / 0.21	34.4 / 2.90 / -0.23
Centerline (m / ft - AGL)	12.65 / 41.5	36.58 / 120.0

Receive Antenna	Same As Transmit	
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Diversity Receive Antenna		
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Radio Information	TEMQ54	TEMQ54
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	23HD50HFC215V02	23HD50HFC215V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	45M8D7W 64 QAM	45M8D7W 64 QAM
Loading	1 CH DIG 215000.000	1 CH DIG 215000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	18.5	18.5
Received Level (dBm)	-42.8	-42.8
EIRP (dBm)	52.9	52.9
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		130.1

Transmit Frequencies (MHz)	21875.0000V(2)	22025.0000V(5)	23075.0000V(2)	23225.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147

(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01

RCN Number: 10081932

Administrative Information

CA-SFO0080A CA
 City/County Walnut Creek/Contra Costa
 Status / License Basis Engineering Proposal / PRIMARY OPERATION
 Call Sign
 Licensee Code CLESP3
 Licensee Name Clearwire Spectrum Holdings III, LL
 Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0005A CA

Walnut Creek/Contra Costa
 Engineering Proposal / PRIMARY OPERATION
 CLESP3
 Clearwire Spectrum Holdings III, LL
 FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °54' 2.9~ N	37 °53' 52.3~ N
Longitude (NAD 83)	122 °2' 34.4~ W	122 °3' 54.9~ W
Ground Elevation (m/ft-AMSL)	119.60 / 392.4	49.20 / 161.4
Antenna Structure Registration #		
Path Azimuth (°)	260.572	80.558
Path Length (km / miles)	1.994 / 1.239	

Transmit Antenna

<u>80014A</u>	<u>80014A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model VHLP1-23A	VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / -1.47	35.3 / 3.00 / 1.46
Centerline (m / ft - AGL) 4.93 / 16.2	24.38 / 80.0

Receive Antenna

Same As Transmit

Manufacturer
 Model
 Gain (dBi) / Beamwidth (°)
 Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
 Model
 Gain (dBi) / Beamwidth (°)
 Centerline (m / ft - AGL)

Radio Information

TEMQ48	TEMQ48
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 23HD50HFC322V02	23HD50HFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 11.0	11.0
Received Level (dBm) -43.7	-43.7
EIRP (dBm) 46.3	46.3
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 125.3	

Transmit Frequencies (MHz)	23075.0000V(2)	23225.0000V(5)	21875.0000V(2)	22025.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0114A CA	CA-SFO0006A CA
City/County	Oakland/Alameda	Oakland/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		WQLX773
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °50' 43.4~ N	37 °48' 31.5~ N
Longitude (NAD 83)	122 °15' 8.5~ W	122 °15' 50.2~ W
Ground Elevation (m/ft-AMSL)	55.10 / 180.8	4.20 / 13.8
Antenna Structure Registration #		
Path Azimuth (°)	194.081	14.074
Path Length (km / miles)	4.193 / 2.605	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / 0.34	35.3 / 3.00 / -0.37
Centerline (m / ft - AGL)	14.63 / 48.0	91.44 / 300.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ49	TEMQ49
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC171V02	23HD50HFC171V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 32 QAM	45M8D7W 32 QAM
Stability (%)	1 CH DIG 171000.000	1 CH DIG 171000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	20.0	20.0
Received Level (dBm)	-41.2	-41.2
EIRP (dBm)	55.3	55.3
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		131.8

Transmit Frequencies (MHz)	23025.0000V(1)	23125.0000V(3)	21825.0000V(1)	21925.0000V(3)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0156A CA
City/County San Francisco/San Francisco
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0608A CA

City/County San Francisco/San Francisco
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 47' 38.4~ N	37 ° 47' 29.1~ N
Longitude (NAD 83)	122 ° 23' 45.5~ W	122 ° 24' 18.3~ W
Ground Elevation (m/ft-AMSL)	2.60 / 8.5	23.40 / 76.8
Antenna Structure Registration #		
Path Azimuth (°)	250.341	70.336
Path Length (km / miles)	0.852 / 0.530	

Transmit Antenna

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / 3.78
Centerline (m / ft - AGL) 65.96 / 216.4

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / -3.78
Centerline (m / ft - AGL) 101.45 / 332.8

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM020
Manufacturer DRAGONWAVE INC
Model 23HD50SFC371V02
Model Description HORIZON DUO
Emission Designator / Modulation 49M2D7W 256 QAM
Loading 1 CH DIG 371000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.5
Received Level (dBm) -43.7
EIRP (dBm) 39.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 118.0

TEM020
Manufacturer DRAGONWAVE INC
Model 23HD50SFC371V02
Model Description HORIZON DUO
Emission Designator / Modulation 49M2D7W 256 QAM
Loading 1 CH DIG 371000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.5
Received Level (dBm) -43.7
EIRP (dBm) 39.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0

Transmit Frequencies (MHz)	22125.0000H(7)	22225.0000H(9)	23325.0000H(7)	23425.0000H(9)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0161B CA	CA-SFO0158A CA
City/County	San Francisco/San Francisco	San Francisco/San Francisco
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 47' 32.4~ N	37 ° 47' 38.7~ N
Longitude (NAD 83)	122 ° 24' 2.8~ W	122 ° 24' 6.0~ W
Ground Elevation (m/ft-AMSL)	4.80 / 15.7	4.90 / 16.1
Antenna Structure Registration #		
Path Azimuth (°)	338.047	158.047
Path Length (km / miles)	0.209 / 0.130	

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / <u>-8.93</u>	<u>34.4</u> / <u>2.90</u> / <u>8.93</u>
Centerline (m / ft - AGL)	51.69 / 169.6	<u>18.69</u> / <u>61.3</u>

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEM020			TEM020		
Model	DRAGONWAVE INC			DRAGONWAVE INC		
Model Description	23HD50SFC371V02			23HD50SFC371V02		
Emission Designator / Modulation	HORIZON DUO			HORIZON DUO		
Loading	49M2D7W 256 QAM			49M2D7W 256 QAM		
Stability (%)	1 CH DIG 371000.000			1 CH DIG 371000.000		
	0.001			0.001		
	Nominal	Coordinated	Maximum	Nominal	Coordinated	Maximum
Power (dBm)		-1.6			-1.6	
Received Level (dBm)		<u>-38.6</u>			<u>-38.6</u>	
EIRP (dBm)		<u>32.8</u>			<u>32.8</u>	
Fixed Loss: Tx / Common (dB)	0.0 / 0.0			0.0 / 0.0		
Free Space Loss (dB)	105.8					

Transmit Frequencies (MHz)	22125.0000H(7)	22225.0000H(9)	23325.0000H(7)	23425.0000H(9)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0165A CA
City/County Oakland/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0561A CA

City/County Oakland/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY422
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 47' 25.6~ N	37 ° 45' 8.3~ N
Longitude (NAD 83)	122 ° 10' 15.0~ W	122 ° 11' 21.6~ W
Ground Elevation (m/ft-AMSL)	272.60 / 894.4	4.10 / 13.5
Antenna Structure Registration #		
Path Azimuth (°)	201.065	21.053
Path Length (km / miles)	4.536 / 2.819	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / -3.32	35.3 / 3.00 / 3.29
Centerline (m / ft - AGL)	14.33 / 47.0	20.73 / 68.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ49	TEMQ49
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC171V02	23HD50HFC171V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 32 QAM	45M8D7W 32 QAM
Stability (%)	1 CH DIG 171000.000	1 CH DIG 171000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	20.0	20.0
Received Level (dBm)	-41.9	-41.9
EIRP (dBm)	55.3	55.3
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		132.5

Transmit Frequencies (MHz)	21825.0000V(1)	21975.0000V(4)	23025.0000V(1)	23175.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0167A CA
City/County Danville/Contra Costa
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY330
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0149A CA

Blackhawk-Camino Tas/Contra Costa
Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY411
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 47' 23.6~ N	37 ° 48' 5.2~ N
Longitude (NAD 83)	121 ° 54' 18.0~ W	121 ° 55' 1.8~ W
Ground Elevation (m/ft-AMSL)	283.90 / 931.4	214.10 / 702.4
Antenna Structure Registration #		
Path Azimuth (°)	320.125	140.118
Path Length (km / miles)	1.671 / 1.039	

Transmit Antenna

<u>80014A</u>	<u>80014A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model VHLP1-23A	VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / -1.84	35.3 / 3.00 / 1.83
Centerline (m / ft - AGL) 1.52 / 5.0	17.68 / 58.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ48	TEMQ48
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 23HD50HFC322V02	23HD50HFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 8.0	8.0
Received Level (dBm) -45.2	-45.2
EIRP (dBm) 43.3	43.3
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 123.8	

Transmit Frequencies (MHz)	23075.0000V(2)	23225.0000V(5)	21875.0000V(2)	22025.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0179A CA	CA-SFO0165A CA
City/County	Oakland/Alameda	Oakland/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 46' 59.6~ N	37 ° 47' 25.6~ N
Longitude (NAD 83)	122 ° 12' 11.5~ W	122 ° 10' 15.0~ W
Ground Elevation (m/ft-AMSL)	37.20 / 122.0	272.60 / 894.4
Antenna Structure Registration #		
Path Azimuth (°)	74.283	254.303
Path Length (km / miles)	2.961 / 1.840	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / 4.55	35.3 / 3.00 / -4.57
Centerline (m / ft - AGL)	13.72 / 45.0	14.33 / 47.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ54	TEMQ54
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC215V02	23HD50HFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	18.5	18.5
Received Level (dBm)	-39.7	-39.7
EIRP (dBm)	53.8	53.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		128.8

Transmit Frequencies (MHz)	23125.0000V(3)	23275.0000V(6)	21925.0000V(3)	22075.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147

(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Prev Job Num: 100427COMSSL01

Job Number 100819COMSSL02

RCN Number: 10081932

Administrative Information

CA-SFO0183A CA
City/County San Francisco/San Francisco
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0556A CA

San Francisco/San Francisco
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 46' 53.6~ N	37 ° 47' 7.4~ N
Longitude (NAD 83)	122 ° 24' 27.5~ W	122 ° 24' 39.4~ W
Ground Elevation (m/ft-AMSL)	9.60 / 31.5	20.20 / 66.3
Antenna Structure Registration #		
Path Azimuth (°)	325.614	145.612
Path Length (km / miles)	0.516 / 0.320	

Transmit Antenna

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / 14.01
Centerline (m / ft – AGL) 36.78 / 120.7

99141R
RADIO WAVES, INC
HPCPE-23
34.4 / 2.90 / -14.01
154.84 / 508.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEM020
Manufacturer DRAGONWAVE INC
Model 23HD50SFC371V02
Model Description HORIZON DUO
Emission Designator / Modulation 49M2D7W 256 QAM
Loading 1 CH DIG 371000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.5
Received Level (dBm) -39.3
EIRP (dBm) 39.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 113.6

TEM020
DRAGONWAVE INC
23HD50SFC371V02
HORIZON DUO
49M2D7W 256 QAM
1 CH DIG 371000.000
0.001
Nominal Coordinated Maximum
5.5
-39.3
39.9
0.0 / 0.0

Transmit Frequencies (MHz)	21925.0000V(3)	22075.0000V(6)	23125.0000V(3)	23275.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0184A CA
City/County San Francisco/San Francisco
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0551A CA

City/County San Francisco/San Francisco
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 46' 50.9~ N	37 ° 45' <u>18.5</u> ~ N
Longitude (NAD 83)	122 ° 28' 22.9~ W	122 ° 27' <u>10.5</u> ~ W
Ground Elevation (m/ft-AMSL)	51.50 / 169.0	<u>251.10</u> / <u>823.8</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>148.112</u>	<u>328.124</u>
Path Length (km / miles)		<u>3.355</u> / <u>2.085</u>

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / <u>5.12</u>	<u>34.4</u> / <u>2.90</u> / <u>-5.15</u>
Centerline (m / ft – AGL)	12.19 / 40.0	114.00 / 374.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ54	TEMQ54
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC215V02	23HD50HFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	18.5	18.5
Received Level (dBm)	<u>-42.6</u>	<u>-42.6</u>
EIRP (dBm)	<u>52.9</u>	<u>52.9</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>129.9</u>

Transmit Frequencies (MHz)	21875.0000H(2)	<u>22025.0000H(5)</u>	23075.0000H(2)	<u>23225.0000H(5)</u>
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0205A CA
City/County San Francisco/San Francisco
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0190A CA

San Francisco/San Francisco
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 45' 59.4~ N	37 ° 46' 29.3~ N
Longitude (NAD 83)	122 ° 27' 12.3~ W	122 ° 27' 8.4~ W
Ground Elevation (m/ft-AMSL)	83.00 / 272.3	100.50 / 329.7
Antenna Structure Registration #		
Path Azimuth (°)	5.911	185.912
Path Length (km / miles)	0.927 / 0.576	

Transmit Antenna

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / 1.04
Centerline (m / ft – AGL) 13.72 / 45.0

99141R
RADIO WAVES, INC
HPCPE-23
34.4 / 2.90 / -1.05
13.11 / 43.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEM020
Manufacturer DRAGONWAVE INC
Model 23HD50SFC371V02
Model Description HORIZON DUO
Emission Designator / Modulation 49M2D7W 256 QAM
Loading 1 CH DIG 371000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.5
Received Level (dBm) -44.4
EIRP (dBm) 39.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 118.7

TEM020
DRAGONWAVE INC
23HD50SFC371V02
HORIZON DUO
49M2D7W 256 QAM
1 CH DIG 371000.000
0.001
Nominal Coordinated Maximum
5.5
-44.4
39.9
0.0 / 0.0

Transmit Frequencies (MHz)	21925.0000V(3)	22075.0000V(6)	23125.0000V(3)	23275.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0205A CA	CA-SFO0551A CA
City/County	San Francisco/San Francisco	San Francisco/San Francisco
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 45' 59.4~ N	37 ° 45' 18.5 ~ N
Longitude (NAD 83)	122 ° 27' 12.3~ W	122 ° 27' 10.5 ~ W
Ground Elevation (m/ft-AMSL)	83.00 / 272.3	<u>251.10</u> / <u>823.8</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>177.999</u>	<u>357.999</u>
Path Length (km / miles)		<u>1.262</u> / <u>0.784</u>

Transmit Antenna

Manufacturer	<u>99141R</u>	<u>99141R</u>
Model	RADIO WAVES, INC	RADIO WAVES, INC
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Centerline (m / ft – AGL)	<u>34.4</u> / <u>2.90</u> / <u>11.89</u>	<u>34.4</u> / <u>2.90</u> / <u>-11.90</u>
	16.36 / 53.7	114.00 / 374.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMR36	TEMR36
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC364V02	23HD50HFC364V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	47M1D7W 256 QAM	47M1D7W 256 QAM
Stability (%)	1 CH DIG 364000.000	1 CH DIG 364000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.5	15.5
Received Level (dBm)	<u>-40.9</u>	<u>-40.9</u>
EIRP (dBm)	<u>48.0</u>	<u>48.0</u>
Fixed Loss: Tx / Common (dB)	0.0 / 1.9	0.0 / 1.9
Free Space Loss (dB)		<u>121.4</u>

Transmit Frequencies (MHz) 22125.0000V(7) 22225.0000V(9) 23325.0000V(7) 23425.0000V(9)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0210C CA
City/County Oakland/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0240A CA

City/County Oakland/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY216
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 45' 26.9~ N	37 ° 44' 8.2~ N
Longitude (NAD 83)	122 ° 8' 45.5~ W	122 ° 11' 54.0~ W
Ground Elevation (m/ft-AMSL)	117.80 / 386.5	2.70 / 8.9
Antenna Structure Registration #		
Path Azimuth (°)	242.281	62.249
Path Length (km / miles)	5.214 / 3.240	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / -0.91	35.3 / 3.00 / 0.88
Centerline (m / ft - AGL)	3.05 / 10.0	36.58 / 120.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ53	TEMQ53
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC110V02	23HD50HFC110V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M2D7W 16 QAM	45M2D7W 16 QAM
Stability (%)	1 CH DIG 110000.000	1 CH DIG 110000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	20.5	20.5
Received Level (dBm)	-42.6	-42.6
EIRP (dBm)	55.8	55.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		133.7

Transmit Frequencies (MHz)	21925.0000V(3)	22075.0000V(6)	23125.0000V(3)	23275.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0212A CA
City/County San Francisco/San Francisco
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0191C CA

San Francisco/San Francisco
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 45' 18.6~ N	37 ° 46' 36.2~ N
Longitude (NAD 83)	122 ° 25' 6.0~ W	122 ° 24' 53.3~ W
Ground Elevation (m/ft-AMSL)	21.00 / 68.9	16.70 / 54.8
Antenna Structure Registration #		
Path Azimuth (°)	7.401	187.404
Path Length (km / miles)	2.413 / 1.499	

Transmit Antenna

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / -0.61
Centerline (m / ft - AGL) 40.54 / 133.0

99141R
RADIO WAVES, INC
HPCPE-23
34.4 / 2.90 / 0.60
19.38 / 63.6

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ48
Manufacturer DRAGONWAVE INC
Model 23HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 17.5
Received Level (dBm) -40.7
EIRP (dBm) 51.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 127.0

TEMQ48
DRAGONWAVE INC
23HD50HFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
17.5
-40.7
51.9
0.0 / 0.0

Transmit Frequencies (MHz)	22125.0000V(7)	22225.0000V(9)	23325.0000V(7)	23425.0000V(9)
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Microwave Path Data Sheet

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19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0212A CA
City/County San Francisco/San Francisco
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0222A CA

San Francisco/San Francisco
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 45' 18.6~ N	37 ° 45' 15.2~ N
Longitude (NAD 83)	122 ° 25' 6.0~ W	122 ° 24' 18.9~ W
Ground Elevation (m/ft-AMSL)	21.00 / 68.9	21.40 / 70.2
Antenna Structure Registration #		
Path Azimuth (°)	95.191	275.199
Path Length (km / miles)	1.158 / 0.719	

Transmit Antenna

<u>99141R</u>	<u>99141R</u>
Manufacturer RADIO WAVES, INC	RADIO WAVES, INC
Model <u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°) <u>34.4</u> / <u>2.90</u> / -1.09	<u>34.4</u> / <u>2.90</u> / 1.08
Centerline (m / ft - AGL) 40.54 / 133.0	18.29 / 60.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMR36	TEMR36
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 23HD50HFC364V02	23HD50HFC364V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 47M1D7W 256 QAM	47M1D7W 256 QAM
Loading 1 CH DIG 364000.000	1 CH DIG 364000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 14.1	14.1
Received Level (dBm) <u>-37.7</u>	<u>-37.7</u>
EIRP (dBm) <u>48.5</u>	<u>48.5</u>
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 120.6	

Transmit Frequencies (MHz)	21825.0000H(1)	21925.0000H(3)	23025.0000H(1)	23125.0000H(3)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0246A CA
City/County San Leandro/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0220C CA

City/County Oakland/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY334
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 43' <u>36.5</u> ~ N	37 ° 44' 49.2 ~ N
Longitude (NAD 83)	122 ° 11' <u>11.1</u> ~ W	122 ° 12' 13.9 ~ W
Ground Elevation (m/ft-AMSL)	<u>4.30</u> / <u>14.1</u>	2.30 / 7.5
Antenna Structure Registration #		
Path Azimuth (°)	<u>325.555</u>	<u>145.544</u>
Path Length (km / miles)		<u>2.718</u> / <u>1.689</u>

Transmit Antenna

Manufacturer	<u>80014A</u>	<u>80014A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Centerline (m / ft – AGL)	35.3 / 3.00 / <u>0.70</u>	35.3 / 3.00 / <u>-0.72</u>
	14.63 / 48.0	50.29 / 165.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ48	TEMQ48
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC322V02	23HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	17.5	17.5
Received Level (dBm)	<u>-39.9</u>	<u>-39.9</u>
EIRP (dBm)	52.8	52.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>128.0</u>

Transmit Frequencies (MHz)	21825.0000H(1)	21975.0000H(4)	23025.0000H(1)	23175.0000H(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0250D CA	CA-SFO0269A CA
City/County	Castro Valley/Alameda	Castro Valley/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		WQLY323
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information		
Latitude (NAD 83)	37 ° 43' 12.7~ N	37 ° 41' 36.8~ N
Longitude (NAD 83)	122 ° 5' 52.8~ W	122 ° 4' 24.3~ W
Ground Elevation (m/ft-AMSL)	167.60 / 549.9	52.60 / 172.6
Antenna Structure Registration #		
Path Azimuth (°)	143.744	323.759
Path Length (km / miles)		3.666 / 2.278

Transmit Antenna	80014A	80014A
Manufacturer	ANDREW CORPORATION	ANDREW CORPORATION
Model	VHLP1-23A	VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / -1.72	35.3 / 3.00 / 1.70
Centerline (m / ft - AGL)	4.57 / 15.0	10.06 / 33.0

Receive Antenna	Same As Transmit	
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Diversity Receive Antenna		
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Radio Information	TEMQ54	TEMQ54
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	23HD50HFC215V02	23HD50HFC215V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	45M8D7W 64 QAM	45M8D7W 64 QAM
Loading	1 CH DIG 215000.000	1 CH DIG 215000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	18.5	18.5
Received Level (dBm)	-41.5	-41.5
EIRP (dBm)	53.8	53.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		130.6

Transmit Frequencies (MHz)	23125.0000V(3)	23275.0000V(6)	21925.0000V(3)	22075.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100715COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0252A CA
City/County San Leandro/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQMD296
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0262A CA

City/County San Leandro/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 42' 57.1~ N	37 ° 42' <u>22.6</u> ~ N
Longitude (NAD 83)	122 ° 10' 45.6~ W	122 ° 11' <u>27.2</u> ~ W
Ground Elevation (m/ft-AMSL)	6.70 / 22.0	<u>2.30</u> / <u>7.5</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>223.773</u>	<u>43.766</u>
Path Length (km / miles)		<u>1.473</u> / <u>0.915</u>

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / <u>0.01</u>	<u>34.4</u> / <u>2.90</u> / <u>-0.02</u>
Centerline (m / ft – AGL)	13.11 / 43.0	17.98 / 59.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEM020			TEM020		
Model	DRAGONWAVE INC			DRAGONWAVE INC		
Model Description	23HD50SFC371V02			23HD50SFC371V02		
Emission Designator / Modulation	HORIZON DUO			HORIZON DUO		
Loading	49M2D7W 256 QAM			49M2D7W 256 QAM		
Stability (%)	1 CH DIG 371000.000			1 CH DIG 371000.000		
	0.001			0.001		
	Nominal	Coordinated	Maximum	Nominal	Coordinated	Maximum
Power (dBm)		5.5			5.5	
Received Level (dBm)		<u>-48.4</u>			<u>-48.4</u>	
EIRP (dBm)		<u>39.9</u>			<u>39.9</u>	
Fixed Loss: Tx / Common (dB)	0.0 / 0.0			0.0 / 0.0		
Free Space Loss (dB)	<u>122.7</u>					

Transmit Frequencies (MHz)	21925.0000V(3)	22075.0000V(6)	23125.0000V(3)	23275.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100715COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0252A CA	CA-SFO0264A CA
City/County	San Leandro/Alameda	San Leandro/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQMD296	
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 42' 57.1~ N	37 ° 42' 15.1~ N
Longitude (NAD 83)	122 ° 10' 45.6~ W	122 ° 9' 39.6~ W
Ground Elevation (m/ft-AMSL)	6.70 / 22.0	6.80 / 22.3
Antenna Structure Registration #		
Path Azimuth (°)	128.689	308.701
Path Length (km / miles)	2.071 / 1.287	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / 0.14	35.3 / 3.00 / -0.15
Centerline (m / ft - AGL)	13.11 / 43.0	18.29 / 60.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMR36	TEMR36
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC364V02	23HD50HFC364V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	47M1D7W 256 QAM	47M1D7W 256 QAM
Stability (%)	1 CH DIG 364000.000	1 CH DIG 364000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.5	15.5
Received Level (dBm)	-39.6	-39.6
EIRP (dBm)	50.8	50.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		125.7

Transmit Frequencies (MHz) 21875.0000H(2) 21975.0000H(4) 23075.0000H(2) 23175.0000H(4)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0259A CA	CA-SFO0252A CA
City/County	San Leandro/Alameda	San Leandro/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQMD463	WQMD296
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 42' 35.9~ N	37 ° 42' 57.1~ N
Longitude (NAD 83)	122 ° 10' 10.4~ W	122 ° 10' 45.6~ W
Ground Elevation (m/ft-AMSL)	9.00 / 29.5	6.70 / 22.0
Antenna Structure Registration #		
Path Azimuth (°)	307.170	127.164
Path Length (km / miles)	1.082 / 0.672	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / -0.13	35.3 / 3.00 / 0.12
Centerline (m / ft - AGL)	13.11 / 43.0	13.11 / 43.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMO20	TEMO20
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC371V02	23HD50SFC371V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	49M2D7W 256 QAM	49M2D7W 256 QAM
Stability (%)	1 CH DIG 371000.000	1 CH DIG 371000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	-43.9	-43.9
EIRP (dBm)	40.8	40.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		120.0

Transmit Frequencies (MHz)	23025.0000V(1)	23225.0000V(5)	21825.0000V(1)	22025.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0259A CA
City/County San Leandro/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQMD463
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0257A CA

City/County San Leandro/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQMD301
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 42' 35.9~ N	37 ° 42' 48.5~ N
Longitude (NAD 83)	122 ° 10' 10.4~ W	122 ° 9' 20.0~ W
Ground Elevation (m/ft-AMSL)	9.00 / 29.5	14.90 / 48.9
Antenna Structure Registration #		1016585
Path Azimuth (°)	72.528	252.536
Path Length (km / miles)		1.294 / 0.804

Transmit Antenna

<u>80014A</u>	<u>80014A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model VHLP1-23A	VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / 0.59	35.3 / 3.00 / -0.60
Centerline (m / ft - AGL) 13.11 / 43.0	20.73 / 68.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ16	TEMQ16
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 23HD50SFC322V02	23HD50SFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
	Nominal Coordinated Maximum
Power (dBm) 5.5	5.5
Received Level (dBm) -45.5	-45.5
EIRP (dBm) 40.8	40.8
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 121.6	

Transmit Frequencies (MHz)	23175.0000H(4)	23275.0000H(6)	21975.0000H(4)	22075.0000H(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0263A CA
City/County San Leandro/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY403
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0270A CA

City/County San Leandro/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 42' 12.3~ N	37 ° 41' 33.4 ~ N
Longitude (NAD 83)	122 ° 8' 26.6~ W	122 ° 10' 7.6 ~ W
Ground Elevation (m/ft-AMSL)	12.80 / 42.0	<u>2.30 / 7.5</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>244.148</u>	<u>64.131</u>
Path Length (km / miles)	2.750 / 1.709	

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4 / 2.90 / -0.15</u>	<u>34.4 / 2.90 / 0.13</u>
Centerline (m / ft - AGL)	23.16 / 76.0	26.82 / 88.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ54	TEMQ54
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC215V02	23HD50HFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	18.5	18.5
Received Level (dBm)	<u>-42.7</u>	<u>-42.7</u>
EIRP (dBm)	<u>52.9</u>	<u>51.0</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 1.9
Free Space Loss (dB)		<u>128.1</u>

Transmit Frequencies (MHz)	21825.0000H(1)	21975.0000H(4)	23025.0000H(1)	23175.0000H(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147

(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Prev Job Num: 100427COMSSL01

Job Number 100819COMSSL02

RCN Number: 10081932

Administrative Information

CA-SFO0263A CA
 City/County San Leandro/Alameda
 Status / License Basis Engineering Proposal / PRIMARY OPERATION
 Call Sign WQLY403
 Licensee Code CLESP3
 Licensee Name Clearwire Spectrum Holdings III, LL
 Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0271B CA

San Leandro/Alameda
 Engineering Proposal / PRIMARY OPERATION
 CLESP3
 Clearwire Spectrum Holdings III, LL
 FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 42' 12.3~ N	37 ° 41' 26.2~ N
Longitude (NAD 83)	122 ° 8' 26.6~ W	122 ° 9' 5.4~ W
Ground Elevation (m/ft-AMSL)	12.80 / 42.0	5.50 / 18.0
Antenna Structure Registration #		
Path Azimuth (°)	213.777	33.770
Path Length (km / miles)	1.710 / 1.062	

Transmit Antenna

99141R
 Manufacturer RADIO WAVES, INC
 Model HPCPE-23
 Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / -0.67
 Centerline (m / ft - AGL) 23.16 / 76.0

99141R
 RADIO WAVES, INC
 HPCPE-23
 34.4 / 2.90 / 0.66
 10.67 / 35.0

Receive Antenna

Same As Transmit

Manufacturer
 Model
 Gain (dBi) / Beamwidth (°)
 Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
 Model
 Gain (dBi) / Beamwidth (°)
 Centerline (m / ft - AGL)

Radio Information

TEMQ48
 Manufacturer DRAGONWAVE INC
 Model 23HD50HFC322V02
 Model Description HORIZON DUO
 Emission Designator / Modulation 45M8D7W 256 QAM
 Loading 1 CH DIG 322000.000
 Stability (%) 0.001

	Nominal	Coordinated	Maximum
Power (dBm)		15.5	
Received Level (dBm)		-39.7	
EIRP (dBm)		49.9	

 Fixed Loss: Tx / Common (dB) 0.0 / 0.0
 Free Space Loss (dB) 124.0

TEMQ48
 DRAGONWAVE INC
 23HD50HFC322V02
 HORIZON DUO
 45M8D7W 256 QAM
 1 CH DIG 322000.000
 0.001

	Nominal	Coordinated	Maximum
		15.5	
		-39.7	
		49.9	

 0.0 / 0.0

Transmit Frequencies (MHz)	21875.0000V(2)	22025.0000V(5)	23075.0000V(2)	23225.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100617COMSSL02
RCN Number: 10081932

Administrative Information

CA-SFO0265A CA
City/County Daly City/San Mateo
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY412
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0581A CA

San Francisco/San Francisco
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° <u>42</u> ' <u>1.4</u> ~ N	37 ° <u>44</u> ' <u>34.8</u> ~ N
Longitude (NAD 83)	122 ° <u>27</u> ' <u>18.1</u> ~ W	122 ° <u>24</u> ' <u>53.7</u> ~ W
Ground Elevation (m/ft-AMSL)	<u>233.10</u> / <u>764.8</u>	<u>138.30</u> / <u>453.7</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>36.774</u>	<u>216.799</u>
Path Length (km / miles)		<u>5.905</u> / <u>3.669</u>

Transmit Antenna

87066A
Manufacturer ANDREW CORPORATION
Model VHLP2.5-23A
Gain(dBi) / Beamwidth(°) / Tilt(°) 43.0 / 1.20 / -0.83
Centerline (m / ft – AGL) 5.49 / 18.0

87066A
ANDREW CORPORATION
VHLP2.5-23A
43.0 / 1.20 / 0.79
16.46 / 54.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMQ54
Manufacturer DRAGONWAVE INC
Model 23HD50HFC215V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 64 QAM
Loading 1 CH DIG 215000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 16.0
Received Level (dBm) -34.3
EIRP (dBm) 58.2
Fixed Loss: Tx / Common (dB) 0.0 / 0.8
Free Space Loss (dB) 134.8

TEMQ54
DRAGONWAVE INC
23HD50HFC215V02
HORIZON DUO
45M8D7W 64 QAM
1 CH DIG 215000.000
0.001
Nominal Coordinated Maximum
16.0
-34.3
58.2
0.0 / 0.8

Transmit Frequencies (MHz)

<u>23025.0000H(1)</u>	<u>23225.0000H(5)</u>	<u>21825.0000H(1)</u>	<u>22025.0000H(5)</u>
<u>23425.0000V(9)</u>	<u>23525.0000V(11)</u>	<u>22225.0000V(9)</u>	<u>22325.0000V(11)</u>

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0267A CA
City/County San Leandro/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0275A CA

Ashland/Alameda
Engineering Proposal / PRIMARY OPERATION
WQLY206
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83) 37 ° 42' 2.4 ~ N
Longitude (NAD 83) 122 ° 7' 49.7 ~ W
Ground Elevation (m/ft-AMSL) 10.30 / 33.8
Antenna Structure Registration # 1015126
Path Azimuth (°) 144.911
Path Length (km / miles) 1.624 / 1.009

37 ° 41' 19.3 ~ N
122 ° 7' 11.6 ~ W
11.90 / 39.0
1015126
324.918

Transmit Antenna

80014A
Manufacturer ANDREW CORPORATION
Model VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / 0.46
Centerline (m / ft - AGL) 14.33 / 47.0

80014A
ANDREW CORPORATION
VHLP1-23A
35.3 / 3.00 / -0.47
25.91 / 85.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ48
Manufacturer DRAGONWAVE INC
Model 23HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 8.0
Received Level (dBm) -45.0
EIRP (dBm) 43.3
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 123.6

TEMQ48
DRAGONWAVE INC
23HD50HFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
8.0
-45.0
43.3
0.0 / 0.0

Transmit Frequencies (MHz) 23325.0000H(7) 23425.0000H(9) 22125.0000H(7) 22225.0000H(9)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0268A CA
City/County Daly City/San Mateo
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0554E CA

/San Mateo
Engineering Proposal / PRIMARY OPERATION
WQLY522
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 42' <u>3.2</u> ~ N	37 ° 41' 14.5~ N
Longitude (NAD 83)	122 ° 29' <u>47.3</u> ~ W	122 ° 26' 5.4~ W
Ground Elevation (m/ft-AMSL)	<u>68.40</u> / <u>224.4</u>	380.10 / 1247.0
Antenna Structure Registration #		1205149
Path Azimuth (°)	<u>105.421</u>	<u>285.459</u>
Path Length (km / miles)		<u>5.640</u> / <u>3.504</u>

Transmit Antenna

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / 3.44
Centerline (m / ft – AGL) 11.58 / 38.0

RD1150
RADIO WAVES, INC
HP2-23
40.2 / 1.70 / -3.48
41.15 / 135.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMQ53
Manufacturer DRAGONWAVE INC
Model 23HD50HFC110V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M2D7W 16 QAM
Loading 1 CH DIG 110000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 20.5
Received Level (dBm) -39.3
EIRP (dBm) 54.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 134.4

TEMQ53
DRAGONWAVE INC
23HD50HFC110V02
HORIZON DUO
45M2D7W 16 QAM
1 CH DIG 110000.000
0.001
Nominal Coordinated Maximum
20.5
-39.3
60.7
0.0 / 0.0

Transmit Frequencies (MHz) 23025.0000H(1) 23125.0000H(3) 21825.0000H(1) 21925.0000H(3)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0269A CA
City/County Castro Valley/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY323
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0585A CA

City/County Castro Valley/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 41' 36.8~ N	37 ° 41' <u>34.8</u> ~ N
Longitude (NAD 83)	122 ° 4' 24.3~ W	122 ° 5' <u>38.4</u> ~ W
Ground Elevation (m/ft-AMSL)	52.60 / 172.6	<u>87.10</u> / <u>285.8</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>268.061</u>	<u>88.048</u>
Path Length (km / miles)		<u>1.816</u> / <u>1.129</u>

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / <u>1.29</u>	35.3 / 3.00 / <u>-1.31</u>
Centerline (m / ft – AGL)	10.06 / 33.0	16.76 / 55.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ48	TEMQ48
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC322V02	23HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.5	15.5
Received Level (dBm)	-38.4	-38.4
EIRP (dBm)	50.8	50.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>124.5</u>

Transmit Frequencies (MHz)	21825.0000V(1)	21975.0000V(4)	23025.0000V(1)	23175.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0276B CA
City/County San Leandro/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0275A CA

Ashland/Alameda
Engineering Proposal / PRIMARY OPERATION
WQLY206
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 41' <u>5.0</u> ~ N	37 ° 41' 19.3~ N
Longitude (NAD 83)	122 ° 8' <u>5.3</u> ~ W	122 ° 7' 11.6~ W
Ground Elevation (m/ft-AMSL)	<u>9.40</u> / <u>30.8</u>	11.90 / 39.0
Antenna Structure Registration #		1015126
Path Azimuth (°)	<u>71.470</u>	<u>251.479</u>
Path Length (km / miles)		<u>1.388</u> / <u>0.862</u>

Transmit Antenna

80014A
Manufacturer ANDREW CORPORATION
Model VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / 0.46
Centerline (m / ft – AGL) 17.07 / 56.0

80014A
ANDREW CORPORATION
VHLP1-23A
35.3 / 3.00 / -0.47
25.91 / 85.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMQ16
Manufacturer DRAGONWAVE INC
Model 23HD50SFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.5
Received Level (dBm) -46.1
EIRP (dBm) 40.8
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 122.2

TEMQ16
DRAGONWAVE INC
23HD50SFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
5.5
-46.1
40.8
0.0 / 0.0

Transmit Frequencies (MHz)	23025.0000V(1)	23175.0000V(4)	21825.0000V(1)	21975.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0280A CA
City/County Daly City/San Mateo
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0291B CA

City/County Pacifica/San Mateo
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 40' 15.9~ N	37 ° 39' 7.8~ N
Longitude (NAD 83)	122 ° 29' 21.6~ W	122 ° 28' 21.8~ W
Ground Elevation (m/ft-AMSL)	199.70 / 655.2	222.30 / 729.3
Antenna Structure Registration #		
Path Azimuth (°)	145.077	325.087
Path Length (km / miles)	2.561 / 1.591	

Transmit Antenna

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / 0.33
Centerline (m / ft – AGL) 16.76 / 55.0

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / -0.34
Centerline (m / ft – AGL) 9.14 / 30.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMR36
Manufacturer DRAGONWAVE INC
Model 23HD50HFC364V02
Model Description HORIZON DUO
Emission Designator / Modulation 47M1D7W 256 QAM
Loading 1 CH DIG 364000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 15.5
Received Level (dBm) -43.2
EIRP (dBm) 49.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 127.5

TEMR36
Manufacturer DRAGONWAVE INC
Model 23HD50HFC364V02
Model Description HORIZON DUO
Emission Designator / Modulation 47M1D7W 256 QAM
Loading 1 CH DIG 364000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 15.5
Received Level (dBm) -43.2
EIRP (dBm) 49.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0

Transmit Frequencies (MHz)	21875.0000V(2)	22025.0000V(5)	23075.0000V(2)	23225.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0294B CA
City/County Hayward/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0308A CA

City/County Hayward/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °38' 23.3~ N	37 °37' 11.6 ~ N
Longitude (NAD 83)	122 °6' 19.4~ W	122 °5' 56.4 ~ W
Ground Elevation (m/ft-AMSL)	12.80 / 42.0	3.40 / 11.2
Antenna Structure Registration #		
Path Azimuth (°)	165.686	345.690
Path Length (km / miles)	2.281 / 1.418	

Transmit Antenna

Manufacturer	99141R RADIO WAVES, INC	99141R RADIO WAVES, INC
Model	HPCPE-23	HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°)	34.4 / 2.90 / -0.13	34.4 / 2.90 / 0.11
Centerline (m / ft - AGL)	16.76 / 55.0	21.34 / 70.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMR36 DRAGONWAVE INC	TEMR36 DRAGONWAVE INC
Model	23HD50HFC364V02	23HD50HFC364V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	47M1D7W 256 QAM	47M1D7W 256 QAM
Loading	1 CH DIG 364000.000	1 CH DIG 364000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.5	15.5
Received Level (dBm)	-42.2	-42.2
EIRP (dBm)	49.9	49.9
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		126.5

Transmit Frequencies (MHz)	21925.0000V(3)	22075.0000V(6)	23125.0000V(3)	23275.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0332B CA
City/County Burlingame/San Mateo
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0326C CA

Burlingame/San Mateo
Engineering Proposal / PRIMARY OPERATION
WQLZ449
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °34' 37.1~ N	37 °35' 37.9~ N
Longitude (NAD 83)	122 °20' 59.6~ W	122 °21' 54.9~ W
Ground Elevation (m/ft-AMSL)	12.00 / 39.4	2.40 / 7.9
Antenna Structure Registration #		
Path Azimuth (°)	324.107	144.098
Path Length (km / miles)	2.314 / 1.438	

Transmit Antenna

87205A
Manufacturer ANDREW CORPORATION
Model VHLP2-23B
Gain(dBi) / Beamwidth(°) / Tilt(°) 40.5 / 1.70 / 0.43
Centerline (m / ft - AGL) 19.81 / 65.0

87205A

ANDREW CORPORATION
VHLP2-23B
40.5 / 1.70 / -0.44
46.94 / 154.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ16
Manufacturer DRAGONWAVE INC
Model 23HD50SFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.5
Received Level (dBm) -40.1
EIRP (dBm) 46.0
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 126.6

TEMQ16

DRAGONWAVE INC
23HD50SFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
5.5
-40.1
46.0
0.0 / 0.0

Transmit Frequencies (MHz)	23025.0000V(1)	23175.0000V(4)	21825.0000V(1)	21975.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0348A CA	CA-SFO0355A CA
City/County	San Mateo/San Mateo	San Mateo/San Mateo
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		WQLY857
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °33' 40.6~ N	37 °33' 12.2~ N
Longitude (NAD 83)	122 °18' 52.8~ W	122 °18' 0.0~ W
Ground Elevation (m/ft-AMSL)	4.50 / 14.8	2.40 / 7.9
Antenna Structure Registration #		
Path Azimuth (°)	124.040	304.049
Path Length (km / miles)	1.564 / 0.972	

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / 0.92	<u>34.4</u> / <u>2.90</u> / -0.93
Centerline (m / ft - AGL)	12.19 / 40.0	39.62 / 130.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	7.5	7.5
Received Level (dBm)	<u>-46.9</u>	<u>-46.9</u>
EIRP (dBm)	<u>41.9</u>	<u>41.9</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		123.2

Transmit Frequencies (MHz) 23375.0000V(8) 23475.0000V(10) 22175.0000V(8) 22275.0000V(10)

Microwave Path Data Sheet

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(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0352A CA	CA-SFO0340D CA
City/County	Fremont/Alameda	Fremont/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °33' 30.2~ N	37 °34' 13.1~ N
Longitude (NAD 83)	121 °58' 44.4~ W	121 °58' 18.2~ W
Ground Elevation (m/ft-AMSL)	17.20 / 56.4	22.30 / 73.2
Antenna Structure Registration #		
Path Azimuth (°)	25.925	205.929
Path Length (km / miles)	1.471 / 0.914	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / 0.06	35.3 / 3.00 / -0.07
Centerline (m / ft - AGL)	19.81 / 65.0	16.46 / 54.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMO20	TEMO20
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC371V02	23HD50SFC371V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	49M2D7W 256 QAM	49M2D7W 256 QAM
Stability (%)	1 CH DIG 371000.000	1 CH DIG 371000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	-46.6	-46.6
EIRP (dBm)	40.8	40.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)	122.7	

Transmit Frequencies (MHz)	23125.0000V(3)	23275.0000V(6)	21925.0000V(3)	22075.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0355A CA	CA-SFO0339A CA
City/County	San Mateo/San Mateo	San Mateo/San Mateo
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY857	
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information		
Latitude (NAD 83)	37 °33' 12.2~ N	37 °34' 10.4~ N
Longitude (NAD 83)	122 °18' 0.0~ W	122 °18' 42.6~ W
Ground Elevation (m/ft-AMSL)	2.40 / 7.9	2.70 / 8.9
Antenna Structure Registration #		
Path Azimuth (°)	329.775	149.768
Path Length (km / miles)	2.077 / 1.290	

Transmit Antenna	99141R	99141R
Manufacturer	RADIO WAVES, INC	RADIO WAVES, INC
Model	HPCPE-23	HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°)	34.4 / 2.90 / -0.71	34.4 / 2.90 / 0.70
Centerline (m / ft - AGL)	39.62 / 130.0	13.72 / 45.0

Receive Antenna	Same As Transmit
Manufacturer	
Model	
Gain (dBi) / Beamwidth (°)	
Centerline (m / ft - AGL)	

Diversity Receive Antenna
Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information	TEMQ55	TEMQ55
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	23HD50SFC215V02	23HD50SFC215V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	45M8D7W 64 QAM	45M8D7W 64 QAM
Loading	1 CH DIG 215000.000	1 CH DIG 215000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	-48.4	-48.4
EIRP (dBm)	42.9	42.9
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		125.7

Transmit Frequencies (MHz)	21875.0000V(2)	22025.0000V(5)	23075.0000V(2)	23225.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0355A CA	CA-SFO0359A CA
City/County	San Mateo/San Mateo	Foster City/San Mateo
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY857	
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °33' 12.2~ N	37 °32' 55.8~ N
Longitude (NAD 83)	122 °18' 0.0~ W	122 °16' 29.7~ W
Ground Elevation (m/ft-AMSL)	2.40 / 7.9	2.00 / 6.6
Antenna Structure Registration #		
Path Azimuth (°)	102.842	282.858
Path Length (km / miles)	2.273 / 1.413	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / -0.56	35.3 / 3.00 / 0.54
Centerline (m / ft - AGL)	39.62 / 130.0	18.29 / 60.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ54	TEMQ54
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC215V02	23HD50HFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	-47.4	-47.4
EIRP (dBm)	43.8	43.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		126.5

Transmit Frequencies (MHz)	21925.0000V(3)	22075.0000V(6)	23125.0000V(3)	23275.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0355A CA
City/County San Mateo/San Mateo
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY857
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0372A CA

San Mateo/San Mateo
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °33' 12.2~ N	37 °31' 51.3~ N
Longitude (NAD 83)	122 °18' 0.0~ W	122 °17' 17.4~ W
Ground Elevation (m/ft-AMSL)	2.40 / 7.9	2.40 / 7.9
Antenna Structure Registration #		
Path Azimuth (°)	157.248	337.256
Path Length (km / miles)	2.705 / 1.681	

Transmit Antenna

RD1150	RD1150
RADIO WAVES, INC	RADIO WAVES, INC
HP2-23	HP2-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 40.2 / 1.70 / -0.54	40.2 / 1.70 / 0.52
Centerline (m / ft - AGL) 39.62 / 130.0	14.63 / 48.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ16	TEMQ16
DRAGONWAVE INC	DRAGONWAVE INC
23HD50SFC322V02	23HD50SFC322V02
HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 7.5	7.5
Received Level (dBm) -40.1	-40.1
EIRP (dBm) 47.7	47.7
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 128.0	

Transmit Frequencies (MHz)	21825.0000V(1)	21975.0000V(4)	23025.0000V(1)	23175.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0356A CA	CA-SFO0365A CA
City/County	Fremont/Alameda	Newark/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY749	
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °33' 2.9~ N	37 °32' 12.1~ N
Longitude (NAD 83)	122 °1' 8.4~ W	122 °0' 55.1~ W
Ground Elevation (m/ft-AMSL)	13.10 / 43.0	11.50 / 37.7
Antenna Structure Registration #		
Path Azimuth (°)	168.223	348.226
Path Length (km / miles)	1.600 / 0.994	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / 0.34	35.3 / 3.00 / -0.35
Centerline (m / ft - AGL)	16.76 / 55.0	28.04 / 92.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ48	TEMQ48
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC322V02	23HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	7.0	7.0
Received Level (dBm)	-45.8	-45.8
EIRP (dBm)	42.3	42.3
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		123.4

Transmit Frequencies (MHz) 21875.0000V(2) 22025.0000V(5) 23075.0000V(2) 23225.0000V(5)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0360C CA	CA-SFO0361A CA
City/County	Newark/Alameda	Newark/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °33' 0.9~ N	37 °32' 36.9~ N
Longitude (NAD 83)	122 °3' 8.6~ W	122 °2' 14.0~ W
Ground Elevation (m/ft-AMSL)	5.40 / 17.7	8.00 / 26.2
Antenna Structure Registration #		
Path Azimuth (°)	118.897	298.906
Path Length (km / miles)	1.531 / 0.951	

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / -0.08	<u>34.4</u> / <u>2.90</u> / 0.07
Centerline (m / ft - AGL)	19.20 / 63.0	14.63 / 48.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMR36	TEMR36
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC364V02	23HD50HFC364V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	47M1D7W 256 QAM	47M1D7W 256 QAM
Stability (%)	1 CH DIG 364000.000	1 CH DIG 364000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	7.0	7.0
Received Level (dBm)	<u>-47.3</u>	<u>-47.3</u>
EIRP (dBm)	<u>41.4</u>	<u>41.4</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		123.1

Transmit Frequencies (MHz) 23025.0000V(1) 23175.0000V(4) 21825.0000V(1) 21975.0000V(4)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0360C CA	CA-SFO0370B CA
City/County	Newark/Alameda	Newark/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °33' 0.9~ N	37 °31' 49.1~ N
Longitude (NAD 83)	122 °3' 8.6~ W	122 °2' 16.4~ W
Ground Elevation (m/ft-AMSL)	5.40 / 17.7	6.10 / 20.0
Antenna Structure Registration #		
Path Azimuth (°)	149.928	329.937
Path Length (km / miles)	2.558 / 1.589	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / -0.22	35.3 / 3.00 / 0.20
Centerline (m / ft - AGL)	19.20 / 63.0	9.14 / 30.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ48	TEMQ48
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC322V02	23HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	17.5	17.5
Received Level (dBm)	-39.4	-39.4
EIRP (dBm)	52.8	52.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		127.5

Transmit Frequencies (MHz) 23125.0000H(3) 23275.0000H(6) 21925.0000H(3) 22075.0000H(6)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0367D CA
City/County San Mateo/San Mateo
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0358E CA

City/County San Mateo/San Mateo
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °32' <u>11.7</u> ~ N	37 °32' <u>54.2</u> ~ N
Longitude (NAD 83)	122 °19' <u>36.7</u> ~ W	122 °19' 13.1 ~ W
Ground Elevation (m/ft-AMSL)	<u>114.90</u> / <u>377.0</u>	<u>17.80</u> / <u>58.4</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>23.851</u>	<u>203.855</u>
Path Length (km / miles)		<u>1.433</u> / <u>0.890</u>

Transmit Antenna

Manufacturer	RD1150	RD1150
Model	RADIO WAVES, INC	RADIO WAVES, INC
Gain(dBi) / Beamwidth(°) / Tilt(°)	HP2-23	HP2-23
Centerline (m / ft - AGL)	40.2 / 1.70 / <u>-3.55</u>	40.2 / 1.70 / <u>3.54</u>
	17.68 / 58.0	25.91 / 85.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-40.4</u>	<u>-40.4</u>
EIRP (dBm)	43.8	43.8
Fixed Loss: Tx / Common (dB)	0.0 / 1.9	0.0 / 1.9
Free Space Loss (dB)		<u>122.5</u>

Transmit Frequencies (MHz)	21875.0000V(2)	22025.0000V(5)	23075.0000V(2)	23225.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0369D CA	CA-SFO0363A CA
City/County	Fremont/Alameda	Fremont/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY733	
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °32' 31.5~ N	37 °32' 22.9~ N
Longitude (NAD 83)	121 °58' 23.5~ W	121 °57' 46.8~ W
Ground Elevation (m/ft-AMSL)	17.20 / 56.4	16.00 / 52.5
Antenna Structure Registration #		
Path Azimuth (°)	106.395	286.401
Path Length (km / miles)	0.939 / 0.584	

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / 0.31	<u>34.4</u> / <u>2.90</u> / -0.32
Centerline (m / ft - AGL)	26.82 / 88.0	33.22 / 109.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMO20	TEMO20
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC371V02	23HD50SFC371V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	49M2D7W 256 QAM	49M2D7W 256 QAM
Stability (%)	1 CH DIG 371000.000	1 CH DIG 371000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-46.4</u>	<u>-46.4</u>
EIRP (dBm)	<u>39.9</u>	<u>38.0</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 1.9
Free Space Loss (dB)		118.8

Transmit Frequencies (MHz) 23075.0000V(2) 23225.0000V(5) 21875.0000V(2) 22025.0000V(5)

Microwave Path Data Sheet

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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0369D CA
City/County Fremont/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY733
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0376A CA

City/County Fremont/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °32' 31.5~ N	37 °31' 27.5~ N
Longitude (NAD 83)	121 °58' 23.5~ W	121 °56' 49.6~ W
Ground Elevation (m/ft-AMSL)	17.20 / 56.4	18.50 / 60.7
Antenna Structure Registration #		
Path Azimuth (°)	130.551	310.567
Path Length (km / miles)	3.034 / 1.886	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / -0.18	35.3 / 3.00 / 0.16
Centerline (m / ft - AGL)	26.82 / 88.0	16.46 / 54.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ54	TEMQ54
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC215V02	23HD50HFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	18.5	18.5
Received Level (dBm)	-39.9	-39.9
EIRP (dBm)	53.8	53.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		129.0

Transmit Frequencies (MHz)	<u>23325.0000H(7)</u>	<u>23425.0000H(9)</u>	<u>22125.0000H(7)</u>	<u>22225.0000H(9)</u>
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147

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PCN Date: 08/19/2010

Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01

RCN Number: 10081932

Administrative Information

CA-SFO0369D CA
 City/County Fremont/Alameda
 Status / License Basis Engineering Proposal / PRIMARY OPERATION
 Call Sign WQLY733
 Licensee Code CLESP3
 Licensee Name Clearwire Spectrum Holdings III, LL
 Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0595A CA

Fremont/Alameda
 Engineering Proposal / PRIMARY OPERATION
 CLESP3
 Clearwire Spectrum Holdings III, LL
 FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °32' 31.5~ N	37 °33' 14.5 ~ N
Longitude (NAD 83)	121 °58' 23.5~ W	121 °59' 29.9 ~ W
Ground Elevation (m/ft-AMSL)	17.20 / 56.4	<u>16.90</u> / <u>55.4</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>309.129</u>	<u>129.118</u>
Path Length (km / miles)		<u>2.101</u> / <u>1.305</u>

Transmit Antenna

87205A
 Manufacturer ANDREW CORPORATION
 Model VHLP2-23B
 Gain(dBi) / Beamwidth(°) / Tilt(°) 40.5 / 1.70 / -0.37
 Centerline (m / ft - AGL) 26.82 / 88.0

80014A
 ANDREW CORPORATION
 VHLP1-23A
 35.3 / 3.00 / 0.36
 13.72 / 45.0

Receive Antenna

Same As Transmit

Manufacturer
 Model
 Gain (dBi) / Beamwidth (°)
 Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
 Model
 Gain (dBi) / Beamwidth (°)
 Centerline (m / ft - AGL)

Radio Information

TEMQ16
 Manufacturer DRAGONWAVE INC
 Model 23HD50SFC322V02
 Model Description HORIZON DUO
 Emission Designator / Modulation 45M8D7W 256 QAM
 Loading 1 CH DIG 322000.000
 Stability (%) 0.001

	Nominal	Coordinated	Maximum
Power (dBm)		7.5	
Received Level (dBm)		<u>-42.5</u>	
EIRP (dBm)		<u>48.0</u>	

 Fixed Loss: Tx / Common (dB) 0.0 / 0.0
 Free Space Loss (dB) 125.8

TEMQ16
 DRAGONWAVE INC
 23HD50SFC322V02
 HORIZON DUO
 45M8D7W 256 QAM
 1 CH DIG 322000.000
 0.001

	Nominal	Coordinated	Maximum
		7.5	
		<u>-42.5</u>	
		42.8	

 0.0 / 0.0

Transmit Frequencies (MHz)	23025.0000V(1)	23175.0000V(4)	21825.0000V(1)	21975.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0375A CA	CA-SFO0378B CA
City/County	Newark/Alameda	Newark/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °31' 34.0~ N	37 °31' 37.4~ N
Longitude (NAD 83)	122 °0' 28.8~ W	122 °1' 28.1~ W
Ground Elevation (m/ft-AMSL)	9.10 / 29.9	6.70 / 22.0
Antenna Structure Registration #		
Path Azimuth (°)	274.123	94.113
Path Length (km / miles)	1.460 / 0.907	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / -0.11	35.3 / 3.00 / 0.10
Centerline (m / ft - AGL)	14.02 / 46.0	13.72 / 45.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMO20	TEMO20
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC371V02	23HD50SFC371V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	49M2D7W 256 QAM	49M2D7W 256 QAM
Stability (%)	1 CH DIG 371000.000	1 CH DIG 371000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	-46.5	-46.5
EIRP (dBm)	40.8	40.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		122.6

Transmit Frequencies (MHz) 21825.0000V(1) 21975.0000V(4) 23025.0000V(1) 23175.0000V(4)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0377D CA	CA-SFO0381A CA
City/County	Fremont/Alameda	Newark/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		WQLY744
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °31' 24.2~ N	37 °31' 19.6~ N
Longitude (NAD 83)	121 °58' 37.7~ W	121 °59' 27.6~ W
Ground Elevation (m/ft-AMSL)	11.60 / 38.1	10.00 / 32.8
Antenna Structure Registration #		
Path Azimuth (°)	263.402	83.394
Path Length (km / miles)	1.233 / 0.766	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / 0.63	35.3 / 3.00 / -0.64
Centerline (m / ft - AGL)	13.72 / 45.0	28.96 / 95.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMR36	TEMR36
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC364V02	23HD50HFC364V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	47M1D7W 256 QAM	47M1D7W 256 QAM
Stability (%)	1 CH DIG 364000.000	1 CH DIG 364000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	10.0	10.0
Received Level (dBm)	-42.5	-42.5
EIRP (dBm)	43.4	45.3
Fixed Loss: Tx / Common (dB)	0.0 / 1.9	0.0 / 0.0
Free Space Loss (dB)		121.2

Transmit Frequencies (MHz)	23325.0000V(7)	23425.0000V(9)	22125.0000V(7)	22225.0000V(9)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0381A CA	CA-SFO0364B CA
City/County	Newark/Alameda	Fremont/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY744	
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °31' 19.6~ N	37 °32' 16.3~ N
Longitude (NAD 83)	121 °59' 27.6~ W	121 °59' 28.0~ W
Ground Elevation (m/ft-AMSL)	10.00 / 32.8	13.50 / 44.3
Antenna Structure Registration #		
Path Azimuth (°)	359.678	179.678
Path Length (km / miles)	1.748 / 1.086	

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / -0.34	<u>34.4</u> / <u>2.90</u> / 0.33
Centerline (m / ft - AGL)	28.96 / 95.0	15.24 / 50.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMR36	TEMR36
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC364V02	23HD50HFC364V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	47M1D7W 256 QAM	47M1D7W 256 QAM
Stability (%)	1 CH DIG 364000.000	1 CH DIG 364000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	10.0	10.0
Received Level (dBm)	<u>-45.4</u>	<u>-45.4</u>
EIRP (dBm)	<u>44.4</u>	<u>44.4</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		124.2

Transmit Frequencies (MHz) 22175.0000V(8) 22275.0000V(10) 23375.0000V(8) 23475.0000V(10)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0381A CA
City/County Newark/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY744
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0374B CA

City/County Fremont/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °31' 19.6~ N	37 °31' 52.0~ N
Longitude (NAD 83)	121 °59' 27.6~ W	121 °57' 46.4~ W
Ground Elevation (m/ft-AMSL)	10.00 / 32.8	15.60 / 51.2
Antenna Structure Registration #		
Path Azimuth (°)	68.092	248.109
Path Length (km / miles)	2.678 / 1.664	

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / -0.16	<u>34.4</u> / <u>2.90</u> / 0.14
Centerline (m / ft - AGL)	28.96 / 95.0	16.46 / 54.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ47	TEMQ47
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC271V02	23HD50HFC271V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	47M8D7W 128 QAM	47M8D7W 128 QAM
Stability (%)	1 CH DIG 271000.000	1 CH DIG 271000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	17.0	17.0
Received Level (dBm)	<u>-42.1</u>	<u>-42.1</u>
EIRP (dBm)	<u>51.4</u>	<u>51.4</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		127.9

Transmit Frequencies (MHz)	21875.0000V(2)	22025.0000V(5)	23075.0000V(2)	23225.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0381A CA	CA-SFO0383A CA
City/County	Newark/Alameda	Fremont/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY744	
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °31' 19.6~ N	37 °30' 38.5~ N
Longitude (NAD 83)	121 °59' 27.6~ W	121 °57' 55.1~ W
Ground Elevation (m/ft-AMSL)	10.00 / 32.8	8.00 / 26.2
Antenna Structure Registration #		
Path Azimuth (°)	119.146	299.161
Path Length (km / miles)	2.601 / 1.616	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / 0.03	35.3 / 3.00 / -0.05
Centerline (m / ft - AGL)	28.96 / 95.0	32.92 / 108.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ54	TEMQ54
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC215V02	23HD50HFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	18.5	18.5
Received Level (dBm)	-40.5	-40.5
EIRP (dBm)	53.8	51.9
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 1.9
Free Space Loss (dB)		127.7

Transmit Frequencies (MHz)	21925.0000V(3)	22075.0000V(6)	23125.0000V(3)	23275.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0384A CA	CA-SFO0583A CA
City/County	Fremont/Alameda	/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °30' 46.8~ N	37 °29' 57.8~ N
Longitude (NAD 83)	121 °56' 45.6~ W	121 °52' 21.3~ W
Ground Elevation (m/ft-AMSL)	9.80 / 32.2	<u>789.90</u> / <u>2591.5</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>103.078</u>	<u>283.123</u>
Path Length (km / miles)		<u>6.665</u> / <u>4.141</u>

Transmit Antenna

Manufacturer	<u>87205A</u>	<u>87205A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP2-23B</u>	<u>VHLP2-23B</u>
Centerline (m / ft – AGL)	<u>40.5</u> / <u>1.70</u> / <u>6.68</u>	<u>40.5</u> / <u>1.70</u> / <u>-6.72</u>
	<u>27.74</u> / <u>91.0</u>	<u>30.48</u> / <u>100.0</u>

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ53	TEMQ53
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC110V02	23HD50HFC110V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M2D7W 16 QAM	45M2D7W 16 QAM
Stability (%)	1 CH DIG 110000.000	1 CH DIG 110000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	20.5	20.5
Received Level (dBm)	<u>-38.1</u>	<u>-38.1</u>
EIRP (dBm)	<u>59.1</u>	<u>59.1</u>
Fixed Loss: Tx / Common (dB)	0.0 / <u>1.9</u>	0.0 / <u>1.9</u>
Free Space Loss (dB)		<u>135.8</u>

Transmit Frequencies (MHz) 21825.0000V(1) 21975.0000V(4) 23025.0000V(1) 23175.0000V(4)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0397A CA
City/County North Fair Oaks/San Mateo
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY747
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0395E CA

Redwood City/San Mateo
Engineering Proposal / PRIMARY OPERATION
WQLY745
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °28' 34.7~ N	37 °28' 52.4~ N
Longitude (NAD 83)	122 °12' 33.1~ W	122 °13' 40.4~ W
Ground Elevation (m/ft-AMSL)	8.20 / 26.9	5.40 / 17.7
Antenna Structure Registration #		
Path Azimuth (°)	288.269	108.258
Path Length (km / miles)	1.741 / 1.082	

Transmit Antenna

80014A
Manufacturer ANDREW CORPORATION
Model VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / -0.35
Centerline (m / ft - AGL) 19.81 / 65.0

80014A
ANDREW CORPORATION
VHLP1-23A
35.3 / 3.00 / 0.34
12.19 / 40.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ48
Manufacturer DRAGONWAVE INC
Model 23HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 15.5
Received Level (dBm) -38.1
EIRP (dBm) 50.8
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 124.2

TEMQ48
DRAGONWAVE INC
23HD50HFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
15.5
-38.1
50.8
0.0 / 0.0

Transmit Frequencies (MHz)	21825.0000V(1)	21975.0000V(4)	23025.0000V(1)	23175.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0400A CA	CA-SJC0107A CA
City/County	East Palo Alto/San Mateo	East Palo Alto/San Mateo
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		WQLN743
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °28' 26.2~ N	37 °27' 33.7~ N
Longitude (NAD 83)	122 °8' 2.4~ W	122 °8' 29.8~ W
Ground Elevation (m/ft-AMSL)	4.50 / 14.8	8.84 / 29.0
Antenna Structure Registration #		
Path Azimuth (°)	202.590	22.585
Path Length (km / miles)	1.753 / 1.089	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / 0.47	35.3 / 3.00 / -0.49
Centerline (m / ft - AGL)	14.94 / 49.0	25.30 / 83.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ55	TEMQ55
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC215V02	23HD50SFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	-45.1	-45.1
EIRP (dBm)	43.8	43.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		124.2

Transmit Frequencies (MHz)	21825.0000V(1)	21975.0000V(4)	23025.0000V(1)	23175.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0404A CA
City/County East Palo Alto/San Mateo
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0097A CA

City/County Palo Alto/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °28' 5.3~ N	37 °26' 55.3~ N
Longitude (NAD 83)	122 °9' 10.7~ W	122 °9' 32.5~ W
Ground Elevation (m/ft-AMSL)	6.90 / 22.6	<u>15.50</u> / <u>50.9</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>193.944</u>	<u>13.941</u>
Path Length (km / miles)		<u>2.224</u> / <u>1.382</u>

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / <u>2.06</u>	<u>34.4</u> / <u>2.90</u> / <u>-2.07</u>
Centerline (m / ft – AGL)	10.67 / 35.0	82.30 / 270.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMU07	TEMU07
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HS50HFC364V01	23HS50HFC364V01
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	47M1D7W 256 QAM	47M1D7W 256 QAM
Stability (%)	1 CH DIG 364000.000	1 CH DIG 364000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	18.0	18.0
Received Level (dBm)	<u>-39.5</u>	<u>-39.5</u>
EIRP (dBm)	<u>52.4</u>	<u>52.4</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>126.3</u>

Transmit Frequencies (MHz)	21875.0000V(2)	22025.0000V(5)	23075.0000V(2)	23225.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0408A CA
City/County Fremont/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0031A CA

Milpitas/Santa Clara
Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °27' 29.0~ N	37 °25' 21.6 ~ N
Longitude (NAD 83)	121 °55' 15.7~ W	121 °55' 8.8 ~ W
Ground Elevation (m/ft-AMSL)	2.60 / 8.5	<u>6.90</u> / <u>22.6</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>177.527</u>	<u>357.528</u>
Path Length (km / miles)		<u>3.931</u> / <u>2.443</u>

Transmit Antenna

Manufacturer	<u>80014A</u>	<u>80014A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Centerline (m / ft – AGL)	35.3 / 3.00 / <u>0.40</u>	35.3 / 3.00 / <u>-0.43</u>
	15.85 / 52.0	40.23 / 132.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ52	TEMQ52
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC110V02	23HD50SFC110V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M2D7W 16 QAM	45M2D7W 16 QAM
Stability (%)	1 CH DIG 110000.000	1 CH DIG 110000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	10.5	10.5
Received Level (dBm)	-50.1	-50.1
EIRP (dBm)	45.8	45.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>131.2</u>

Transmit Frequencies (MHz) 22175.0000H(8) 22275.0000H(10) 23375.0000H(8) 23475.0000H(10)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0418A CA	CA-SJC0190C CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °22' 38.2~ N	37 °22' 59.2~ N
Longitude (NAD 83)	121 °55' 12.8~ W	121 °54' 0.8~ W
Ground Elevation (m/ft-AMSL)	11.80 / 38.7	17.30 / 56.8
Antenna Structure Registration #		
Path Azimuth (°)	69.917	249.929
Path Length (km / miles)	1.886 / 1.172	

Transmit Antenna	RD1150	RD1150
Manufacturer	RADIO WAVES, INC	RADIO WAVES, INC
Model	HP2-23	HP2-23
Gain(dBi) / Beamwidth(°) / Tilt(°)	40.2 / 1.70 / -0.26	40.2 / 1.70 / 0.24
Centerline (m / ft - AGL)	27.43 / 90.0	13.72 / 45.0

Receive Antenna Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information	TEMQ48	TEMQ48
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	23HD50HFC322V02	23HD50HFC322V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	45M8D7W 256 QAM	45M8D7W 256 QAM
Loading	1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	14.0	14.0
Received Level (dBm)	-30.5	-30.5
EIRP (dBm)	54.2	54.2
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		124.9

Transmit Frequencies (MHz)	22125.0000V(7)	22275.0000V(10)	23325.0000V(7)	23475.0000V(10)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0419C CA	CA-SJC0190C CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °22' 39.9~ N	37 °22' 59.2~ N
Longitude (NAD 83)	121 °52' 52.1~ W	121 °54' 0.8~ W
Ground Elevation (m/ft-AMSL)	23.30 / 76.4	17.30 / 56.8
Antenna Structure Registration #		
Path Azimuth (°)	289.400	109.388
Path Length (km / miles)	1.792 / 1.113	

Transmit Antenna	RD1150	RD1150
Manufacturer	RADIO WAVES, INC	RADIO WAVES, INC
Model	HP2-23	HP2-23
Gain(dBi) / Beamwidth(°) / Tilt(°)	40.2 / 1.70 / -0.25	40.2 / 1.70 / 0.23
Centerline (m / ft - AGL)	15.24 / 50.0	13.72 / 45.0

Receive Antenna Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information	TEMO20	TEMO20
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	23HD50SFC371V02	23HD50SFC371V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	49M2D7W 256 QAM	49M2D7W 256 QAM
Loading	1 CH DIG 371000.000	1 CH DIG 371000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	-42.3	-42.3
EIRP (dBm)	43.8	43.8
Fixed Loss: Tx / Common (dB)	0.0 / 1.9	0.0 / 1.9
Free Space Loss (dB)		124.4

Transmit Frequencies (MHz)	22225.0000V(9)	22375.0000V(12)	23425.0000V(9)	23575.0000V(12)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0426C CA	CA-SFO0432C CA
City/County	Santa Clara/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		WQLY752
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information		
Latitude (NAD 83)	37 °19' 51.3~ N	37 °19' 2.8~ N
Longitude (NAD 83)	121 °57' 58.0~ W	121 °56' 51.1~ W
Ground Elevation (m/ft-AMSL)	34.10 / 111.9	44.10 / 144.7
Antenna Structure Registration #		
Path Azimuth (°)	132.227	312.238
Path Length (km / miles)	2.225 / 1.382	

Transmit Antenna	80014A	80014A
Manufacturer	ANDREW CORPORATION	ANDREW CORPORATION
Model	VHLP1-23A	VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / 0.93	35.3 / 3.00 / -0.95
Centerline (m / ft - AGL)	22.86 / 75.0	49.38 / 162.0

Receive Antenna	Same As Transmit	
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Diversity Receive Antenna		
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Radio Information	TEMQ55	TEMQ55
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	23HD50SFC215V02	23HD50SFC215V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	45M8D7W 64 QAM	45M8D7W 64 QAM
Loading	1 CH DIG 215000.000	1 CH DIG 215000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	-47.2	-47.2
EIRP (dBm)	43.8	43.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		126.3

Transmit Frequencies (MHz)	21925.0000V(3)	22075.0000V(6)	23125.0000V(3)	23275.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0429A CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0431A CA

/Santa Clara
Engineering Proposal / PRIMARY OPERATION
WQLY729
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83) 37 ° 19' 18.0 ~ N
Longitude (NAD 83) 121 ° 46' 43.8 ~ W
Ground Elevation (m/ft-AMSL) 88.00 / 288.7
Antenna Structure Registration # 1049603
Path Azimuth (°) 86.793
Path Length (km / miles) 2.098 / 1.304

37 ° 19' 21.8 ~ N
121 ° 45' 18.7 ~ W
293.50 / 962.9
1049603
266.807

Transmit Antenna

87205A
Manufacturer ANDREW CORPORATION
Model VHLP2-23B
Gain(dBi) / Beamwidth(°) / Tilt(°) 40.5 / 1.70 / 5.82
Centerline (m / ft – AGL) 21.34 / 70.0

80014A
ANDREW CORPORATION
VHLP1-23A
35.3 / 3.00 / -5.84
30.18 / 99.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMQ48
Manufacturer DRAGONWAVE INC
Model 23HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 7.5
Received Level (dBm) -42.5
EIRP (dBm) 48.0
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 125.8

TEMQ48
DRAGONWAVE INC
23HD50HFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
7.5
-42.5
42.8
0.0 / 0.0

Transmit Frequencies (MHz) 23075.0000H(2) 23225.0000H(5) 21875.0000H(2) 22025.0000H(5)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0432C CA	CA-SJC0157B CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY752	
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °19' 2.8~ N	37 °18' 17.5~ N
Longitude (NAD 83)	121 °56' 51.1~ W	121 °57' 5.5~ W
Ground Elevation (m/ft-AMSL)	44.10 / 144.7	50.30 / 165.0
Antenna Structure Registration #		
Path Azimuth (°)	194.248	14.245
Path Length (km / miles)	1.441 / 0.895	

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / -1.30	<u>34.4</u> / <u>2.90</u> / 1.29
Centerline (m / ft - AGL)	49.38 / 162.0	10.67 / 35.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-48.2</u>	<u>-48.2</u>
EIRP (dBm)	<u>39.9</u>	<u>39.9</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		122.5

Transmit Frequencies (MHz) 23075.0000V(2) 23225.0000V(5) 21875.0000V(2) 22025.0000V(5)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0432C CA	CA-SJC0171C CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY752	WQLY568
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °19' 2.8~ N	37 °18' 57.4~ N
Longitude (NAD 83)	121 °56' 51.1~ W	121 °55' 52.3~ W
Ground Elevation (m/ft-AMSL)	44.10 / 144.7	43.30 / 142.1
Antenna Structure Registration #		
Path Azimuth (°)	96.554	276.564
Path Length (km / miles)	1.457 / 0.906	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / -1.16	35.3 / 3.00 / 1.15
Centerline (m / ft - AGL)	49.38 / 162.0	20.73 / 68.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ48	TEMQ48
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC322V02	23HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	7.5	7.5
Received Level (dBm)	-44.5	-44.5
EIRP (dBm)	42.8	42.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		122.6

Transmit Frequencies (MHz)	23075.0000V(2)	23225.0000V(5)	21875.0000V(2)	22025.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010

Prev Job Num: 100427COMSSL01

Job Number 100819COMSSL02

RCN Number: 10081932

Administrative Information**CA-SFO0434B CA****CA-SJC0029A CA**

City/County

Cupertino/Santa Clara

Cupertino/Santa Clara

Status / License Basis

Engineering Proposal / PRIMARY OPERATION

Engineering Proposal / PRIMARY OPERATION

Call Sign

Licensee Code

CLESP3

CLESP3

Licensee Name

Clearwire Spectrum Holdings III, LL

Clearwire Spectrum Holdings III, LL

Radio Service / Station Class

MG -- Microwave Industrial/Business Pool

FXO -- Fixed

Site Information

Latitude (NAD 83)

37 °18' 53.9~ N

37 °19' 18.3~ N

Longitude (NAD 83)

122 °2' 23.2~ W

122 °1' 52.6~ W

Ground Elevation (m/ft-AMSL)

87.00 / 285.4

71.40 / 234.3

Antenna Structure Registration #

Path Azimuth (°)

45.043225.049

Path Length (km / miles)

1.065 / 0.662**Transmit Antenna**80014A80014A

Manufacturer

ANDREW CORPORATION

ANDREW CORPORATION

Model

VHLP1-23AVHLP1-23A

Gain(dBi) / Beamwidth(°) / Tilt(°)

35.3 / 3.00 / 0.0935.3 / 3.00 / -0.10

Centerline (m / ft - AGL)

11.89 / 39.0

29.26 / 96.0

Receive Antenna

Same As Transmit

Manufacturer

Model

Gain (dBi) / Beamwidth (°)

Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer

Model

Gain (dBi) / Beamwidth (°)

Centerline (m / ft - AGL)

Radio Information

TEMQ16

TEMQ16

Manufacturer

DRAGONWAVE INC

DRAGONWAVE INC

Model

23HD50SFC322V02

23HD50SFC322V02

Model Description

HORIZON DUO

HORIZON DUO

Emission Designator / Modulation

45M8D7W 256 QAM

45M8D7W 256 QAM

Loading

1 CH DIG 322000.000

1 CH DIG 322000.000

Stability (%)

0.001

0.001

Nominal Coordinated Maximum

Nominal Coordinated Maximum

Power (dBm)

5.5

5.5

Received Level (dBm)

-43.8-43.8

EIRP (dBm)

40.8

40.8

Fixed Loss: Tx / Common (dB)

0.0 / 0.0

0.0 / 0.0

Free Space Loss (dB)

119.9**Transmit Frequencies (MHz)**23325.0000V(7)23425.0000V(9)22125.0000V(7)22225.0000V(9)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0436C CA	CA-SJC0218C CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °18' 56.3~ N	37 °18' 23.4~ N
Longitude (NAD 83)	121 °51' 57.8~ W	121 °50' 56.4~ W
Ground Elevation (m/ft-AMSL)	33.50 / 109.9	39.20 / 128.6
Antenna Structure Registration #		
Path Azimuth (°)	123.850	303.860
Path Length (km / miles)	1.821 / 1.131	

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / 0.10	<u>34.4</u> / <u>2.90</u> / -0.11
Centerline (m / ft - AGL)	17.68 / 58.0	15.24 / 50.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-50.3</u>	<u>-50.3</u>
EIRP (dBm)	<u>39.9</u>	<u>39.9</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		124.6

Transmit Frequencies (MHz) 21875.0000V(2) 22025.0000V(5) 23075.0000V(2) 23225.0000V(5)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0441A CA
City/County Campbell/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0166D CA

City/County Campbell/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °17' 37.8~ N	37 °17' <u>19.7</u> ~ N
Longitude (NAD 83)	121 °57' 40.6~ W	121 °56' <u>6.9</u> ~ W
Ground Elevation (m/ft-AMSL)	55.00 / 180.4	<u>57.50</u> / <u>188.6</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>103.584</u>	<u>283.600</u>
Path Length (km / miles)	<u>2.374</u> / <u>1.475</u>	

Transmit Antenna

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / 1.29
Centerline (m / ft – AGL) 15.85 / 52.0

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / -1.30
Centerline (m / ft – AGL) 67.06 / 220.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMQ55
Manufacturer DRAGONWAVE INC
Model 23HD50SFC215V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 64 QAM
Loading 1 CH DIG 215000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 8.5
Received Level (dBm) -49.6
EIRP (dBm) 42.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 126.9

TEMQ55
Manufacturer DRAGONWAVE INC
Model 23HD50SFC215V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 64 QAM
Loading 1 CH DIG 215000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 8.5
Received Level (dBm) -49.6
EIRP (dBm) 42.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0

Transmit Frequencies (MHz)	22175.0000V(8)	22325.0000V(11)	23375.0000V(8)	23525.0000V(11)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0442A CA
City/County Campbell/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0166D CA

City/County Campbell/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °17' <u>6.8</u> ~ N	37 °17' <u>19.7</u> ~ N
Longitude (NAD 83)	121 °58' <u>52.0</u> ~ W	121 °56' <u>6.9</u> ~ W
Ground Elevation (m/ft-AMSL)	71.10 / 233.3	<u>57.50</u> / <u>188.6</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>84.401</u>	<u>264.429</u>
Path Length (km / miles)		<u>4.086</u> / <u>2.539</u>

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / <u>0.54</u>	<u>34.4</u> / <u>2.90</u> / <u>-0.57</u>
Centerline (m / ft – AGL)	14.02 / 46.0	67.06 / 220.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMZ82	TEMZ82
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD40HFC142V02	23HD40HFC142V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	36M2D7W 32 QAM	36M2D7W 32 QAM
Stability (%)	1 CH DIG 142000.000	1 CH DIG 142000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	19.0	19.0
Received Level (dBm)	<u>-43.8</u>	<u>-43.8</u>
EIRP (dBm)	<u>53.4</u>	<u>53.4</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>131.6</u>

Transmit Frequencies (MHz)	22220.0000V(9)	22370.0000V(12)	23420.0000V(9)	23570.0000V(12)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0446A CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY854
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0444A CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °17' 8.0~ N	37 °17' 12.0~ N
Longitude (NAD 83)	121 °49' 5.1~ W	121 °47' 50.4~ W
Ground Elevation (m/ft-AMSL)	51.60 / 169.3	<u>192.20</u> / <u>630.6</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>86.160</u>	<u>266.172</u>
Path Length (km / miles)		<u>1.844</u> / <u>1.146</u>

Transmit Antenna

Manufacturer	<u>80014A</u>	<u>80014A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / <u>4.54</u>	35.3 / 3.00 / <u>-4.55</u>
Centerline (m / ft – AGL)	9.14 / 30.0	15.24 / 50.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ54	TEMQ54
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC215V02	23HD50HFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	<u>-45.6</u>	<u>-45.6</u>
EIRP (dBm)	43.8	43.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>124.7</u>

Transmit Frequencies (MHz) 22125.0000H(7) 22225.0000H(9) 23325.0000H(7) 23425.0000H(9)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0446A CA	CA-SJC0234B CA
City/County	San Jose/Santa Clara	/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY854	
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °17' 8.0~ N	37 °17' 28.4~ N
Longitude (NAD 83)	121 °49' 5.1~ W	121 °48' 30.3~ W
Ground Elevation (m/ft-AMSL)	51.60 / 169.3	83.20 / 273.0
Antenna Structure Registration #		
Path Azimuth (°)	53.730	233.736
Path Length (km / miles)	1.063 / 0.661	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / 1.41	35.3 / 3.00 / -1.41
Centerline (m / ft - AGL)	10.91 / 35.8	5.49 / 18.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	-43.8	-43.8
EIRP (dBm)	40.8	40.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		119.9

Transmit Frequencies (MHz) 23075.0000V(2) 23225.0000V(5) 21875.0000V(2) 22025.0000V(5)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0448C CA
City/County Campbell/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0163A CA

City/County Campbell/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °16' 46.7~ N	37 °16' <u>26.2</u> ~ N
Longitude (NAD 83)	121 °56' 13.9~ W	121 °56' <u>41.9</u> ~ W
Ground Elevation (m/ft-AMSL)	63.30 / 207.7	67.90 / 222.8
Antenna Structure Registration #		
Path Azimuth (°)	<u>227.507</u>	<u>47.502</u>
Path Length (km / miles)		<u>0.936</u> / <u>0.581</u>

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / -0.52	35.3 / 3.00 / 0.52
Centerline (m / ft - AGL)	30.48 / 100.0	17.37 / 57.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	-44.6	-44.6
EIRP (dBm)	38.9	40.8
Fixed Loss: Tx / Common (dB)	0.0 / 1.9	0.0 / 0.0
Free Space Loss (dB)		<u>118.8</u>

Transmit Frequencies (MHz)	<u>21925.0000V(3)</u>	<u>22075.0000V(6)</u>	<u>23125.0000V(3)</u>	<u>23275.0000V(6)</u>
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0449A CA
City/County Campbell/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0166D CA

City/County Campbell/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °16' 51.0~ N	37 °17' 19.7 ~ N
Longitude (NAD 83)	121 °57' 28.0~ W	121 °56' 6.9 ~ W
Ground Elevation (m/ft-AMSL)	63.10 / 207.0	57.50 / 188.6
Antenna Structure Registration #		
Path Azimuth (°)	66.105	246.119
Path Length (km / miles)	2.185 / 1.358	

Transmit Antenna

Manufacturer	80014A	80014A
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	VHLP1-23A	VHLP1-23A
Centerline (m / ft – AGL)	35.3 / 3.00 / 1.20	35.3 / 3.00 / -1.22
	15.24 / 50.0	67.06 / 220.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ55	TEMQ55
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC215V02	23HD50SFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	-47.0	-47.0
EIRP (dBm)	43.8	43.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)	126.1	

Transmit Frequencies (MHz)	21825.0000V(1)	21975.0000V(4)	23025.0000V(1)	23175.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0453D CA	CA-SJC0229B CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY737	
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °16' 34.2~ N	37 °14' 59.0~ N
Longitude (NAD 83)	121 °49' 34.5~ W	121 °49' 58.5~ W
Ground Elevation (m/ft-AMSL)	87.90 / 288.4	51.10 / 167.7
Antenna Structure Registration #		
Path Azimuth (°)	191.394	11.390
Path Length (km / miles)	2.994 / 1.860	

Transmit Antenna

Manufacturer	RD1150	99141R
Model	RADIO WAVES, INC	RADIO WAVES, INC
Gain(dBi) / Beamwidth(°) / Tilt(°)	HP2-23	HPCPE-23
Centerline (m / ft - AGL)	40.2 / 1.70 / -0.81	34.4 / 2.90 / 0.79
	14.33 / 47.0	9.14 / 30.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ55	TEMQ55
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC215V02	23HD50SFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	-45.8	-45.8
EIRP (dBm)	48.7	42.9
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		128.9

Transmit Frequencies (MHz) 22175.0000V(8) 22275.0000V(10) 23375.0000V(8) 23475.0000V(10)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0458A CA
City/County /Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0457C CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °15' 32.7~ N	37 °15' 32.2~ N
Longitude (NAD 83)	121 °50' 32.1~ W	121 °49' 54.8~ W
Ground Elevation (m/ft-AMSL)	48.60 / 159.4	51.50 / 169.0
Antenna Structure Registration #		
Path Azimuth (°)	90.958	270.964
Path Length (km / miles)	0.919 / 0.571	

Transmit Antenna

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / 0.08
Centerline (m / ft – AGL) 12.19 / 40.0

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / -0.09
Centerline (m / ft – AGL) 10.67 / 35.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMQ16
Manufacturer DRAGONWAVE INC
Model 23HD50SFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.5
Received Level (dBm) -44.3
EIRP (dBm) 39.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 118.6

TEMQ16
Manufacturer DRAGONWAVE INC
Model 23HD50SFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.5
Received Level (dBm) -44.3
EIRP (dBm) 39.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0

Transmit Frequencies (MHz)	23075.0000V(2)	23225.0000V(5)	21875.0000V(2)	22025.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Prev Job Num: 100427COMSSL01

Job Number 100819COMSSL02

RCN Number: 10081932

Administrative Information

CA-SFO0460C CA

CA-SJC0185B CA

City/County

San Jose/Santa Clara

San Jose/Santa Clara

Status / License Basis

Engineering Proposal / PRIMARY OPERATION

Engineering Proposal / PRIMARY OPERATION

Call Sign

Licensee Code

CLESP3

CLESP3

Licensee Name

Clearwire Spectrum Holdings III, LL

Clearwire Spectrum Holdings III, LL

Radio Service / Station Class

MG -- Microwave Industrial/Business Pool

FXO -- Fixed

Site Information

Latitude (NAD 83)

37 °15' 11.0~ N

37 °14' 47.9~ N

Longitude (NAD 83)

121 °54' 30.2~ W

121 °54' 10.5~ W

Ground Elevation (m/ft-AMSL)

62.30 / 204.4

70.60 / 231.6

Antenna Structure Registration #

Path Azimuth (°)

145.714

325.718

Path Length (km / miles)

0.862 / 0.536

Transmit Antenna

80014A

80014A

Manufacturer

ANDREW CORPORATION

ANDREW CORPORATION

Model

VHLP1-23A

VHLP1-23A

Gain(dBi) / Beamwidth(°) / Tilt(°)

35.3 / 3.00 / 1.92

35.3 / 3.00 / -1.92

Centerline (m / ft - AGL)

11.58 / 38.0

32.19 / 105.6

Receive Antenna

Same As Transmit

Manufacturer

Model

Gain (dBi) / Beamwidth (°)

Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer

Model

Gain (dBi) / Beamwidth (°)

Centerline (m / ft - AGL)

Radio Information

TEMQ16

TEMQ16

Manufacturer

DRAGONWAVE INC

DRAGONWAVE INC

Model

23HD50SFC322V02

23HD50SFC322V02

Model Description

HORIZON DUO

HORIZON DUO

Emission Designator / Modulation

45M8D7W

256 QAM

45M8D7W

256 QAM

Loading

1 CH DIG 322000.000

1 CH DIG 322000.000

Stability (%)

0.001

0.001

Nominal Coordinated Maximum

Nominal Coordinated Maximum

Power (dBm)

5.5

5.5

Received Level (dBm)

-42.0

-42.0

EIRP (dBm)

40.8

40.8

Fixed Loss: Tx / Common (dB)

0.0 / 0.0

0.0 / 0.0

Free Space Loss (dB)

118.1

Transmit Frequencies (MHz)

23075.0000V(2)

23225.0000V(5)

21875.0000V(2)

22025.0000V(5)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0461B CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0235A CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 15' 20.7 ~ N	37 ° 15' 31.0 ~ N
Longitude (NAD 83)	121 ° 49' 13.7 ~ W	121 ° 48' 34.5 ~ W
Ground Elevation (m/ft-AMSL)	54.10 / 177.5	57.10 / 187.3
Antenna Structure Registration #		
Path Azimuth (°)	<u>71.800</u>	<u>251.806</u>
Path Length (km / miles)		<u>1.017 / 0.632</u>

Transmit Antenna

80014A
Manufacturer ANDREW CORPORATION
Model VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / -0.38
Centerline (m / ft - AGL) 21.64 / 71.0

80014A
ANDREW CORPORATION
VHLP1-23A
35.3 / 3.00 / 0.38
11.89 / 39.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ16
Manufacturer DRAGONWAVE INC
Model 23HD50SFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.5
Received Level (dBm) -43.4
EIRP (dBm) 40.8
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 119.5

TEMQ16
DRAGONWAVE INC
23HD50SFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
5.5
-43.4
40.8
0.0 / 0.0

Transmit Frequencies (MHz)

21825.0000V(1)	21975.0000V(4)	23025.0000V(1)	23175.0000V(4)
<u>22175.0000V(8)</u>	<u>22275.0000V(10)</u>	<u>23375.0000V(8)</u>	<u>23475.0000V(10)</u>

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0462B CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0453D CA

City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY737
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °14' 57.4~ N	37 °16' 34.2~ N
Longitude (NAD 83)	121 °50' 40.7~ W	121 °49' 34.5~ W
Ground Elevation (m/ft-AMSL)	49.70 / 163.1	87.90 / 288.4
Antenna Structure Registration #		
Path Azimuth (°)	28.656	208.667
Path Length (km / miles)	3.401 / 2.113	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / 0.65	35.3 / 3.00 / -0.67
Centerline (m / ft - AGL)	13.41 / 44.0	14.33 / 47.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ52	TEMQ52
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC110V02	23HD50SFC110V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M2D7W 16 QAM	45M2D7W 16 QAM
Stability (%)	1 CH DIG 110000.000	1 CH DIG 110000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	10.5	10.5
Received Level (dBm)	-48.9	-48.9
EIRP (dBm)	45.8	45.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		130.0

Transmit Frequencies (MHz)	21875.0000H(2)	22025.0000H(5)	23075.0000H(2)	23225.0000H(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0463A CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0185B CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °14' 44.0~ N	37 °14' 47.9~ N
Longitude (NAD 83)	121 °53' 20.7~ W	121 °54' 10.5~ W
Ground Elevation (m/ft-AMSL)	66.10 / 216.9	70.60 / 231.6
Antenna Structure Registration #		
Path Azimuth (°)	275.599	95.591
Path Length (km / miles)	1.233 / 0.766	

Transmit Antenna

<u>80014A</u>	<u>80014A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model VHLP1-23A	VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / 1.28	35.3 / 3.00 / -1.28
Centerline (m / ft - AGL) 9.14 / 30.0	32.19 / 105.6

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ48	TEMQ48
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 23HD50HFC322V02	23HD50HFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 15.5	15.5
Received Level (dBm) -38.9	-38.9
EIRP (dBm) 48.9	48.9
Fixed Loss: Tx / Common (dB) 0.0 / 1.9	0.0 / 1.9
Free Space Loss (dB) 121.2	

Transmit Frequencies (MHz)

<u>23025.0000H(1)</u>	23075.0000H(2)	<u>21825.0000H(1)</u>	21875.0000H(2)
<u>23175.0000H(4)</u>	23225.0000H(5)	<u>21975.0000H(4)</u>	22025.0000H(5)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0469A CA	CA-SJC0211A CA
City/County	San Jose/Santa Clara	/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information		
Latitude (NAD 83)	37 ° 13' 11.6~ N	37 ° 13' 54.4~ N
Longitude (NAD 83)	121 ° 52' 45.5~ W	121 ° 52' 0.3~ W
Ground Elevation (m/ft-AMSL)	77.00 / 252.6	86.80 / 284.8
Antenna Structure Registration #		
Path Azimuth (°)	40.177	220.185
Path Length (km / miles)	1.727 / 1.073	

Transmit Antenna	87066A	87205A
Manufacturer	ANDREW CORPORATION	ANDREW CORPORATION
Model	VHLP2.5-23A	VHLP2-23B
Gain(dBi) / Beamwidth(°) / Tilt(°)	43.0 / 1.20 / 0.47	40.5 / 1.70 / -0.48
Centerline (m / ft - AGL)	10.67 / 35.0	15.24 / 50.0

Receive Antenna	Same As Transmit	
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Diversity Receive Antenna		
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Radio Information	TEMQ16	TEMQ16
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	23HD50SFC322V02	23HD50SFC322V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	45M8D7W 256 QAM	45M8D7W 256 QAM
Loading	1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	-38.9	-38.9
EIRP (dBm)	46.6	44.1
Fixed Loss: Tx / Common (dB)	0.0 / 1.9	0.0 / 1.9
Free Space Loss (dB)	124.1	

Transmit Frequencies (MHz)	23125.0000V(3)	23275.0000V(6)	21925.0000V(3)	22075.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0471A CA
City/County Castro Valley/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0585A CA

City/County Castro Valley/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 42' 24.4~ N	37 ° 41' 34.8~ N
Longitude (NAD 83)	122 ° 4' 28.5~ W	122 ° 5' 38.4~ W
Ground Elevation (m/ft-AMSL)	71.20 / 233.6	<u>87.10</u> / <u>285.8</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>228.239</u>	<u>48.228</u>
Path Length (km / miles)		<u>2.296</u> / <u>1.427</u>

Transmit Antenna

80014A
Manufacturer ANDREW CORPORATION
Model VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / 0.54
Centerline (m / ft – AGL) 10.67 / 35.0

80014A
Manufacturer ANDREW CORPORATION
Model VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / -0.56
Centerline (m / ft – AGL) 16.76 / 55.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMQ48
Manufacturer DRAGONWAVE INC
Model 23HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 15.5
Received Level (dBm) -40.5
EIRP (dBm) 50.8
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 126.6

TEMQ48
Manufacturer DRAGONWAVE INC
Model 23HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 15.5
Received Level (dBm) -40.5
EIRP (dBm) 50.8
Fixed Loss: Tx / Common (dB) 0.0 / 0.0

Transmit Frequencies (MHz) 23375.0000V(8) 23475.0000V(10) 22175.0000V(8) 22275.0000V(10)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0475A CA	CA-SFO0482A CA
City/County	/Alameda	Pleasanton/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY847	WQLY508
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °38' 13.7~ N	37 °39' 39.3~ N
Longitude (NAD 83)	121 °53' 41.3~ W	121 °53' 2.2~ W
Ground Elevation (m/ft-AMSL)	149.90 / 491.8	102.50 / 336.3
Antenna Structure Registration #		
Path Azimuth (°)	19.957	199.964
Path Length (km / miles)	2.808 / 1.745	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>87205A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP2-23B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / -0.70	40.5 / 1.70 / 0.68
Centerline (m / ft - AGL)	9.14 / 30.0	22.56 / 74.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ48	TEMQ48
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC322V02	23HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.5	15.5
Received Level (dBm)	<u>-37.0</u>	<u>-37.0</u>
EIRP (dBm)	50.8	<u>56.0</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		128.3

Transmit Frequencies (MHz) 23125.0000V(3) 23275.0000V(6) 21925.0000V(3) 22075.0000V(6)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0481A CA	CA-SFO0494D CA
City/County	Pleasanton/Alameda	Pleasanton/Alameda
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 41' 49.9~ N	37 ° 41' 2.6~ N
Longitude (NAD 83)	121 ° 52' 58.8~ W	121 ° 52' 25.7~ W
Ground Elevation (m/ft-AMSL)	104.30 / 342.2	105.80 / 347.1
Antenna Structure Registration #		
Path Azimuth (°)	150.919	330.925
Path Length (km / miles)	1.669 / 1.037	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / -0.34	35.3 / 3.00 / 0.33
Centerline (m / ft - AGL)	23.77 / 78.0	12.50 / 41.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMO25	TEMO25
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC271V02	23HD50SFC271V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	47M8D7W 128 QAM	47M8D7W 128 QAM
Stability (%)	1 CH DIG 271000.000	1 CH DIG 271000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	7.0	7.0
Received Level (dBm)	-46.2	-46.2
EIRP (dBm)	42.3	42.3
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		123.8

Transmit Frequencies (MHz) 23025.0000V(1) 23175.0000V(4) 21825.0000V(1) 21975.0000V(4)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147

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PCN Date: 08/19/2010

Prev Job Num: 100427COMSSL01

Job Number 100819COMSSL02

RCN Number: 10081932

Administrative Information

CA-SFO0482A CA
 City/County Pleasanton/Alameda
 Status / License Basis Engineering Proposal / PRIMARY OPERATION
 Call Sign WQLY508
 Licensee Code CLESP3
 Licensee Name Clearwire Spectrum Holdings III, LL
 Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0478C CA

/Alameda
 Engineering Proposal / PRIMARY OPERATION
 CLESP3
 Clearwire Spectrum Holdings III, LL
 FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °39' 39.3~ N	37 °39' 54.2~ N
Longitude (NAD 83)	121 °53' 2.2~ W	121 °55' 5.6~ W
Ground Elevation (m/ft-AMSL)	102.50 / 336.3	146.60 / 481.0
Antenna Structure Registration #		
Path Azimuth (°)	278.647	98.626
Path Length (km / miles)	3.059 / 1.901	

Transmit Antenna

99141R
 Manufacturer RADIO WAVES, INC
 Model HPCPE-23
 Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / 0.54
 Centerline (m / ft – AGL) 22.56 / 74.0

99141R
 RADIO WAVES, INC
 HPCPE-23
 34.4 / 2.90 / -0.56
 7.92 / 26.0

Receive Antenna

Same As Transmit

Manufacturer
 Model
 Gain (dBi) / Beamwidth (°)
 Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
 Model
 Gain (dBi) / Beamwidth (°)
 Centerline (m / ft – AGL)

Radio Information

TEMQ47
 Manufacturer DRAGONWAVE INC
 Model 23HD50HFC271V02
 Model Description HORIZON DUO
 Emission Designator / Modulation 47M8D7W 128 QAM
 Loading 1 CH DIG 271000.000
 Stability (%) 0.001

	Nominal	Coordinated	Maximum
Power (dBm)		17.0	
Received Level (dBm)		<u>-43.3</u>	
EIRP (dBm)		<u>51.4</u>	

 Fixed Loss: Tx / Common (dB) 0.0 / 0.0
 Free Space Loss (dB) 129.1

TEMQ47
 DRAGONWAVE INC
 23HD50HFC271V02
 HORIZON DUO
 47M8D7W 128 QAM
 1 CH DIG 271000.000
 0.001

	Nominal	Coordinated	Maximum
		17.0	
		<u>-43.3</u>	
		<u>51.4</u>	

 0.0 / 0.0

Transmit Frequencies (MHz)	21875.0000V(2)	22025.0000V(5)	23075.0000V(2)	23225.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0486A CA
City/County San Ramon/Contra Costa
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0480D CA

Dublin/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY851
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 43' 49.5~ N	37 ° 43' 19.6~ N
Longitude (NAD 83)	121 ° 55' 45.3~ W	121 ° 54' 54.8~ W
Ground Elevation (m/ft-AMSL)	110.50 / 362.5	161.90 / 531.2
Antenna Structure Registration #		
Path Azimuth (°)	126.698	306.706
Path Length (km / miles)	1.542 / 0.958	

Transmit Antenna

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / 1.86
Centerline (m / ft – AGL) 12.19 / 40.0

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / -1.87
Centerline (m / ft – AGL) 10.97 / 36.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEM020
Manufacturer DRAGONWAVE INC
Model 23HD50SFC371V02
Model Description HORIZON DUO
Emission Designator / Modulation 49M2D7W 256 QAM
Loading 1 CH DIG 371000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.5
Received Level (dBm) -48.8
EIRP (dBm) 39.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 123.1

TEM020
Manufacturer DRAGONWAVE INC
Model 23HD50SFC371V02
Model Description HORIZON DUO
Emission Designator / Modulation 49M2D7W 256 QAM
Loading 1 CH DIG 371000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.5
Received Level (dBm) -48.8
EIRP (dBm) 39.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0

Transmit Frequencies (MHz)	23075.0000V(2)	23225.0000V(5)	21875.0000V(2)	22025.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0496D CA
City/County Pleasanton/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0485D CA

Dublin/Alameda
Engineering Proposal / PRIMARY OPERATION
WQLY445
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 42' 1.2~ N	37 ° 42' 21.2~ N
Longitude (NAD 83)	121 ° 52' 19.2~ W	121 ° 53' 16.2~ W
Ground Elevation (m/ft-AMSL)	106.00 / 347.8	106.70 / 350.1
Antenna Structure Registration #		
Path Azimuth (°)	293.832	113.822
Path Length (km / miles)	1.526 / 0.948	

Transmit Antenna

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / 0.36
Centerline (m / ft - AGL) 10.67 / 35.0

99141R
RADIO WAVES, INC
HPCPE-23
34.4 / 2.90 / -0.37
19.81 / 65.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEM020
Manufacturer DRAGONWAVE INC
Model 23HD50SFC371V02
Model Description HORIZON DUO
Emission Designator / Modulation 49M2D7W 256 QAM
Loading 1 CH DIG 371000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.5
Received Level (dBm) -48.7
EIRP (dBm) 39.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 123.0

TEM020
DRAGONWAVE INC
23HD50SFC371V02
HORIZON DUO
49M2D7W 256 QAM
1 CH DIG 371000.000
0.001
Nominal Coordinated Maximum
5.5
-48.7
39.9
0.0 / 0.0

Transmit Frequencies (MHz)	21925.0000V(3)	22075.0000V(6)	23125.0000V(3)	23275.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0501A CA	CA-SFO0007A CA
City/County	/Marin	San Rafael/Marin
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY404	WQLX820
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °56' 47.6~ N	37 °57' 35.1~ N
Longitude (NAD 83)	122 °29' 59.7~ W	122 °30' 4.6~ W
Ground Elevation (m/ft-AMSL)	93.10 / 305.4	5.00 / 16.4
Antenna Structure Registration #		
Path Azimuth (°)	355.331	175.330
Path Length (km / miles)	1.469 / 0.913	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / -4.05	35.3 / 3.00 / 4.04
Centerline (m / ft - AGL)	27.43 / 90.0	11.58 / 38.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	<u>TEMR36</u> DRAGONWAVE INC	<u>TEMR36</u> DRAGONWAVE INC
Model	<u>23HD50HFC364V02</u>	<u>23HD50HFC364V02</u>
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	<u>47M1D7W</u> 256 QAM	<u>47M1D7W</u> 256 QAM
Loading	1 CH DIG 364000.000	1 CH DIG 364000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.5	15.5
Received Level (dBm)	-36.6	-36.6
EIRP (dBm)	50.8	50.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		122.7

Transmit Frequencies (MHz) 21875.0000V(2) 22025.0000V(5) 23075.0000V(2) 23225.0000V(5)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0526A CA
City/County Novato/Marin
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY440
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0537B CA

Novato/Marin
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	38 °6' 21.9~ N	38 °6' <u>45.9</u> ~ N
Longitude (NAD 83)	122 °34' 46.4~ W	122 °32' <u>59.2</u> ~ W
Ground Elevation (m/ft-AMSL)	8.10 / 26.6	<u>135.90</u> / <u>445.9</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>74.171</u>	<u>254.189</u>
Path Length (km / miles)		<u>2.714</u> / <u>1.687</u>

Transmit Antenna

87205A
Manufacturer ANDREW CORPORATION
Model VHLP2-23B
Gain(dBi) / Beamwidth(°) / Tilt(°) 40.5 / 1.70 / 2.76
Centerline (m / ft – AGL) 10.97 / 36.0

87205A
ANDREW CORPORATION
VHLP2-23B
40.5 / 1.70 / -2.78
14.33 / 47.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMQ48
Manufacturer DRAGONWAVE INC
Model 23HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 9.8
Received Level (dBm) -37.3
EIRP (dBm) 50.3
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 128.0

TEMQ48
DRAGONWAVE INC
23HD50HFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
9.8
-37.3
50.3
0.0 / 0.0

Transmit Frequencies (MHz) 21875.0000H(2) 22025.0000H(5) 23075.0000H(2) 23225.0000H(5)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0551A CA
City/County San Francisco/San Francisco
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0232A CA

San Francisco/San Francisco
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 45' <u>18.5</u> ~ N	37 ° 44' 41.8 ~ N
Longitude (NAD 83)	122 ° 27' <u>10.5</u> ~ W	122 ° 27' 11.4 ~ W
Ground Elevation (m/ft-AMSL)	<u>251.10</u> / <u>823.8</u>	177.80 / 583.3
Antenna Structure Registration #		
Path Azimuth (°)	<u>181.116</u>	<u>1.115</u>
Path Length (km / miles)		<u>1.132</u> / <u>0.703</u>

Transmit Antenna

99141R	99141R
Manufacturer RADIO WAVES, INC	RADIO WAVES, INC
Model <u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°) <u>34.4</u> / <u>2.90</u> / <u>-8.63</u>	<u>34.4</u> / <u>2.90</u> / <u>8.63</u>
Centerline (m / ft – AGL) 115.21 / 378.0	16.76 / 55.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMR36	TEMR36
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 23HD50HFC364V02	23HD50HFC364V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 47M1D7W 256 QAM	47M1D7W 256 QAM
Loading 1 CH DIG 364000.000	1 CH DIG 364000.000
Stability (%) 0.001	0.001
	Nominal Coordinated Maximum
Power (dBm) 13.7	13.7
Received Level (dBm) <u>-37.9</u>	<u>-37.9</u>
EIRP (dBm) <u>48.1</u>	<u>48.1</u>
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) <u>120.4</u>	

Transmit Frequencies (MHz)	22175.0000H(8)	22275.0000H(10)	23375.0000H(8)	23475.0000H(10)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147

(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01

RCN Number: 10081932

Administrative Information

CA-SFO0554E CA
 City/County /San Mateo
 Status / License Basis Engineering Proposal / PRIMARY OPERATION
 Call Sign WQLY522
 Licensee Code CLESP3
 Licensee Name Clearwire Spectrum Holdings III, LL
 Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0249A CA

San Francisco/San Francisco
 Engineering Proposal / PRIMARY OPERATION
 CLESP3
 Clearwire Spectrum Holdings III, LL
 FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 41' 14.5~ N	37 ° 43' 23.5~ N
Longitude (NAD 83)	122 ° 26' 5.4~ W	122 ° 27' 12.5~ W
Ground Elevation (m/ft-AMSL)	380.10 / 1247.0	91.50 / 300.2
Antenna Structure Registration #	1205149	
Path Azimuth (°)	337.552	157.541
Path Length (km / miles)	4.303 / 2.674	

Transmit Antenna

99141R	99141R
Manufacturer RADIO WAVES, INC	RADIO WAVES, INC
Model HPCPE-23	HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / -4.27	34.4 / 2.90 / 4.24
Centerline (m / ft - AGL) 41.15 / 135.0	9.45 / 31.0

Receive Antenna

Same As Transmit

Manufacturer
 Model
 Gain (dBi) / Beamwidth (°)
 Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
 Model
 Gain (dBi) / Beamwidth (°)
 Centerline (m / ft - AGL)

Radio Information

TEMQ49	TEMQ49
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 23HD50HFC171V02	23HD50HFC171V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 32 QAM	45M8D7W 32 QAM
Loading 1 CH DIG 171000.000	1 CH DIG 171000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 19.9	19.9
Received Level (dBm) -43.3	-43.3
EIRP (dBm) 54.3	54.3
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 132.0	

Transmit Frequencies (MHz)	22125.0000H(7)	22225.0000H(9)	23325.0000H(7)	23425.0000H(9)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100617COMSSL02
RCN Number: 10081932

Administrative Information	CA-SFO0554E CA	CA-SFO0265A CA
City/County	/San Mateo	Daly City/San Mateo
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	<u>WOLY522</u>	<u>WOLY412</u>
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° <u>41</u> ' <u>14.5</u> ~ N	37 ° <u>42</u> ' <u>1.4</u> ~ N
Longitude (NAD 83)	122 ° <u>26</u> ' <u>5.4</u> ~ W	122 ° <u>27</u> ' <u>18.1</u> ~ W
Ground Elevation (m/ft-AMSL)	<u>380.10</u> / <u>1247.0</u>	<u>233.10</u> / <u>764.8</u>
Antenna Structure Registration #	<u>1205149</u>	
Path Azimuth (°)	<u>309.078</u>	<u>129.065</u>
Path Length (km / miles)	2.294 / 1.426	

Transmit Antenna

Manufacturer	<u>87205A</u>	<u>87205A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP2-23B</u>	<u>VHLP2-23B</u>
Centerline (m / ft – AGL)	<u>40.5</u> / <u>1.70</u> / <u>-4.56</u>	<u>40.5</u> / <u>1.70</u> / <u>4.54</u>
	<u>41.15</u> / <u>135.0</u>	<u>5.49</u> / <u>18.0</u>

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	<u>TEMQ48</u>	<u>TEMQ48</u>
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	<u>23HD50HFC322V02</u>	<u>23HD50HFC322V02</u>
Emission Designator / Modulation	<u>HORIZON DUO</u>	<u>HORIZON DUO</u>
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	7.8	7.8
Received Level (dBm)	<u>-37.7</u>	<u>-37.7</u>
EIRP (dBm)	<u>48.3</u>	<u>48.3</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)	<u>126.6</u>	

Transmit Frequencies (MHz) 22175.0000V(8) 22275.0000V(10) 23375.0000V(8) 23475.0000V(10)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0558A CA	CA-SFO0571A CA
City/County	San Francisco/San Francisco	San Francisco/San Francisco
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 47' <u>34.3</u> ~ N	37 ° 46' 32.5 ~ N
Longitude (NAD 83)	122 ° 23' <u>52.6</u> ~ W	122 ° 23' 14.4 ~ W
Ground Elevation (m/ft-AMSL)	<u>3.50</u> / <u>11.5</u>	1.40 / 4.6
Antenna Structure Registration #		
Path Azimuth (°)	<u>153.865</u>	<u>333.872</u>
Path Length (km / miles)	<u>2.122</u> / <u>1.319</u>	

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / <u>-4.85</u>	<u>34.4</u> / <u>2.90</u> / <u>4.83</u>
Centerline (m / ft - AGL)	186.54 / 612.0	8.92 / 29.3

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMR36	TEMR36
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC364V02	23HD50HFC364V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	47M1D7W 256 QAM	47M1D7W 256 QAM
Stability (%)	1 CH DIG 364000.000	1 CH DIG 364000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.5	15.5
Received Level (dBm)	<u>-41.6</u>	<u>-41.6</u>
EIRP (dBm)	<u>49.9</u>	<u>49.9</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>125.9</u>

Transmit Frequencies (MHz) 22125.0000H(7) 22225.0000H(9) 23325.0000H(7) 23425.0000H(9)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SFO0565A CA	CA-SFO0196A CA
City/County	/Contra Costa	San Ramon/Contra Costa
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY441	
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 44' 20.0~ N	37 ° 46' 19.2~ N
Longitude (NAD 83)	121 ° 59' 42.5~ W	121 ° 59' 38.7~ W
Ground Elevation (m/ft-AMSL)	562.40 / 1845.1	173.90 / 570.5
Antenna Structure Registration #	1222544	
Path Azimuth (°)	1.450	181.450
Path Length (km / miles)	3.676 / 2.284	

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / -6.32	<u>34.4</u> / <u>2.90</u> / 6.30
Centerline (m / ft - AGL)	30.48 / 100.0	12.50 / 41.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ47	TEMQ47
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC271V02	23HD50HFC271V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	47M8D7W 128 QAM	47M8D7W 128 QAM
Stability (%)	1 CH DIG 271000.000	1 CH DIG 271000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	17.0	17.0
Received Level (dBm)	<u>-44.9</u>	<u>-44.9</u>
EIRP (dBm)	<u>51.4</u>	<u>51.4</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		130.7

Transmit Frequencies (MHz) 23025.0000V(1) 23175.0000V(4) 21825.0000V(1) 21975.0000V(4)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0588A CA
City/County Redwood City/San Mateo
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0397A CA

North Fair Oaks/San Mateo
Engineering Proposal / PRIMARY OPERATION
WQLY747
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °29' <u>13.6</u> ~ N	37 °28' 34.7 ~ N
Longitude (NAD 83)	122 °12' <u>45.3</u> ~ W	122 °12' 33.1 ~ W
Ground Elevation (m/ft-AMSL)	<u>4.80</u> / <u>15.7</u>	8.20 / 26.9
Antenna Structure Registration #		
Path Azimuth (°)	<u>165.966</u>	<u>345.968</u>
Path Length (km / miles)		<u>1.236</u> / <u>0.768</u>

Transmit Antenna

80014A
Manufacturer ANDREW CORPORATION
Model VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / 0.01
Centerline (m / ft – AGL) 22.86 / 75.0

80014A
ANDREW CORPORATION
VHLP1-23A
35.3 / 3.00 / -0.02
19.81 / 65.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMQ16
Manufacturer DRAGONWAVE INC
Model 23HD50SFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.5
Received Level (dBm) -45.1
EIRP (dBm) 40.8
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 121.2

TEMQ16
DRAGONWAVE INC
23HD50SFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
5.5
-45.1
40.8
0.0 / 0.0

Transmit Frequencies (MHz)	23125.0000V(3)	23275.0000V(6)	21925.0000V(3)	22075.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0597A CA
City/County Concord/Contra Costa
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0059A CA

Pleasant Hill/Contra Costa
Engineering Proposal / PRIMARY OPERATION
WQLX841
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °57' 3.1~ N	37 °56' 44.5~ N
Longitude (NAD 83)	122 °2' 47.2~ W	122 °3' 38.5~ W
Ground Elevation (m/ft-AMSL)	16.50 / 54.1	16.50 / 54.1
Antenna Structure Registration #		
Path Azimuth (°)	245.403	65.394
Path Length (km / miles)	1.378 / 0.856	

Transmit Antenna

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / 0.18
Centerline (m / ft – AGL) 11.28 / 37.0

99141R
RADIO WAVES, INC
HPCPE-23
34.4 / 2.90 / -0.19
15.65 / 51.3

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEM020
Manufacturer DRAGONWAVE INC
Model 23HD50SFC371V02
Model Description HORIZON DUO
Emission Designator / Modulation 49M2D7W 256 QAM
Loading 1 CH DIG 371000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.5
Received Level (dBm) -47.8
EIRP (dBm) 39.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 122.1

TEM020
DRAGONWAVE INC
23HD50SFC371V02
HORIZON DUO
49M2D7W 256 QAM
1 CH DIG 371000.000
0.001
Nominal Coordinated Maximum
5.5
-47.8
39.9
0.0 / 0.0

Transmit Frequencies (MHz)	23075.0000V(2)	23225.0000V(5)	21875.0000V(2)	22025.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SFO0608A CA
City/County San Francisco/San Francisco
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0144B CA

San Francisco/San Francisco
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 47' 29.1~ N	37 ° 48' 28.2~ N
Longitude (NAD 83)	122 ° 24' 18.3~ W	122 ° 24' 43.8~ W
Ground Elevation (m/ft-AMSL)	23.40 / 76.8	3.90 / 12.8
Antenna Structure Registration #		
Path Azimuth (°)	341.103	161.098
Path Length (km / miles)	1.926 / 1.197	

Transmit Antenna

<u>99141R</u>	<u>99141R</u>
Manufacturer RADIO WAVES, INC	RADIO WAVES, INC
Model HPCPE-23	HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / -3.19	34.4 / 2.90 / 3.18
Centerline (m / ft - AGL) 101.98 / 334.6	14.23 / 46.7

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMR36	TEMR36
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 23HD50HFC364V02	23HD50HFC364V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 47M1D7W 256 QAM	47M1D7W 256 QAM
Loading 1 CH DIG 364000.000	1 CH DIG 364000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 15.5	15.5
Received Level (dBm) -40.7	-40.7
EIRP (dBm) 49.9	49.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 125.0	

Transmit Frequencies (MHz)	23375.0000H(8)	23475.0000H(10)	22175.0000H(8)	22275.0000H(10)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0003A CA
City/County Santa Clara/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0102B CA

City/County Santa Clara/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY525
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °23' <u>2.0</u> ~ N	37 °22' 5.8~ N
Longitude (NAD 83)	121 °58' <u>42.5</u> ~ W	121 °57' 29.6~ W
Ground Elevation (m/ft-AMSL)	<u>10.10</u> / <u>33.1</u>	14.00 / 45.9
Antenna Structure Registration #		1255516
Path Azimuth (°)	<u>134.003</u>	<u>314.015</u>
Path Length (km / miles)		<u>2.494</u> / <u>1.550</u>

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / -0.13	35.3 / 3.00 / 0.11
Centerline (m / ft - AGL)	32.00 / 105.0	22.86 / 75.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ48	TEMQ48
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC322V02	23HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.5	15.5
Received Level (dBm)	-41.2	-41.2
EIRP (dBm)	50.8	50.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>127.3</u>

Transmit Frequencies (MHz)	23125.0000H(3)	23275.0000H(6)	21925.0000H(3)	22075.0000H(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0003A CA
City/County Santa Clara/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0104B CA

City/County Santa Clara/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °23' <u>2.0</u> ~ N	37 °21' 23.4~ N
Longitude (NAD 83)	121 °58' <u>42.5</u> ~ W	121 °58' 39.1~ W
Ground Elevation (m/ft-AMSL)	<u>10.10</u> / <u>33.1</u>	22.00 / 72.2
Antenna Structure Registration #		
Path Azimuth (°)	<u>178.423</u>	<u>358.424</u>
Path Length (km / miles)		<u>3.041</u> / <u>1.890</u>

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / -0.13	35.3 / 3.00 / 0.11
Centerline (m / ft - AGL)	32.00 / 105.0	13.72 / 45.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ20	TEMQ20
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC171V02	23HD50SFC171V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 32 QAM	45M8D7W 32 QAM
Stability (%)	1 CH DIG 171000.000	1 CH DIG 171000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	10.0	10.0
Received Level (dBm)	-48.4	-48.4
EIRP (dBm)	45.3	45.3
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>129.0</u>

Transmit Frequencies (MHz)	23075.0000H(2)	23225.0000H(5)	21875.0000H(2)	22025.0000H(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0029A CA	CA-SJC0137A CA
City/County	Cupertino/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °19' <u>18.3</u> ~ N	37 °18' 30.9 ~ N
Longitude (NAD 83)	122 °1' <u>52.6</u> ~ W	122 °1' 53.3 ~ W
Ground Elevation (m/ft-AMSL)	<u>71.40</u> / <u>234.3</u>	79.60 / 261.2
Antenna Structure Registration #		
Path Azimuth (°)	<u>180.676</u>	<u>0.676</u>
Path Length (km / miles)		<u>1.461</u> / <u>0.908</u>

Transmit Antenna

Manufacturer	<u>99141R</u>	<u>99141R</u>
Model	RADIO WAVES, INC	RADIO WAVES, INC
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Centerline (m / ft – AGL)	<u>34.4</u> / <u>2.90</u> / <u>-0.30</u>	<u>34.4</u> / <u>2.90</u> / <u>0.29</u>
	29.26 / 96.0	13.59 / 44.6

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-48.4</u>	<u>-48.4</u>
EIRP (dBm)	<u>39.9</u>	<u>39.9</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>122.7</u>

Transmit Frequencies (MHz) 23075.0000V(2) 23225.0000V(5) 21875.0000V(2) 22025.0000V(5)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0030B CA
City/County Cupertino/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0111A CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
WQLY509
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °19' <u>27.8</u> ~ N	37 °19' 20.5 ~ N
Longitude (NAD 83)	122 °0' <u>53.7</u> ~ W	121 °59' 48.9 ~ W
Ground Elevation (m/ft-AMSL)	<u>59.00</u> / <u>193.6</u>	50.60 / 166.0
Antenna Structure Registration #		
Path Azimuth (°)	<u>98.024</u>	<u>278.035</u>
Path Length (km / miles)		<u>1.611</u> / <u>1.001</u>

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / <u>-0.00</u>	35.3 / 3.00 / <u>-0.01</u>
Centerline (m / ft – AGL)	20.12 / 66.0	28.65 / 94.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ48	TEMQ48
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC322V02	23HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.5	15.5
Received Level (dBm)	<u>-37.4</u>	<u>-37.4</u>
EIRP (dBm)	50.8	50.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>123.5</u>

Transmit Frequencies (MHz)	23025.0000H(1)	23175.0000H(4)	21825.0000H(1)	21975.0000H(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0030B CA
City/County Cupertino/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0126A CA

Cupertino/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °19' <u>27.8</u> ~ N	37 °20' 4.0 ~ N
Longitude (NAD 83)	122 °0' <u>53.7</u> ~ W	122 °1' 16.6 ~ W
Ground Elevation (m/ft-AMSL)	<u>59.00</u> / <u>193.6</u>	58.90 / 193.2
Antenna Structure Registration #		
Path Azimuth (°)	<u>333.201</u>	<u>153.197</u>
Path Length (km / miles)		<u>1.250</u> / <u>0.777</u>

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / <u>-0.49</u>	35.3 / 3.00 / <u>0.48</u>
Centerline (m / ft – AGL)	28.12 / 92.3	17.68 / 58.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-45.2</u>	<u>-45.2</u>
EIRP (dBm)	40.8	40.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>121.3</u>

Transmit Frequencies (MHz)	23025.0000V(1)	23175.0000V(4)	21825.0000V(1)	21975.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0031A CA	CA-SJC0182A CA
City/County	Milpitas/Santa Clara	Milpitas/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		WQMA290
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °25' <u>21.6</u> ~ N	37 °26' 17.9 ~ N
Longitude (NAD 83)	121 °55' <u>8.8</u> ~ W	121 °54' 25.2 ~ W
Ground Elevation (m/ft-AMSL)	<u>6.90</u> / <u>22.6</u>	3.80 / 12.5
Antenna Structure Registration #		
Path Azimuth (°)	<u>31.695</u>	<u>211.702</u>
Path Length (km / miles)		<u>2.040</u> / <u>1.268</u>

Transmit Antenna

Manufacturer	<u>80014A</u>	<u>80014A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Centerline (m / ft – AGL)	35.3 / 3.00 / <u>-0.86</u>	35.3 / 3.00 / <u>0.85</u>
	40.23 / 132.0	12.80 / 42.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ48	TEMQ48
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC322V02	23HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.5	15.5
Received Level (dBm)	-39.4	-39.4
EIRP (dBm)	50.8	50.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>125.5</u>

Transmit Frequencies (MHz) 21925.0000H(3) 22075.0000H(6) 23125.0000H(3) 23275.0000H(6)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0032C CA	CA-SJC0090C CA
City/County	Santa Clara/Santa Clara	Santa Clara/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQKU523	WQLY660
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °23' 13.1~ N	37 °23' 40.0~ N
Longitude (NAD 83)	121 °58' 0.9~ W	121 °56' 41.2~ W
Ground Elevation (m/ft-AMSL)	7.01 / 23.0	6.40 / 21.0
Antenna Structure Registration #		
Path Azimuth (°)	67.064	247.078
Path Length (km / miles)	2.129 / 1.323	

Transmit Antenna

Manufacturer	<u>87205A</u> ANDREW CORPORATION	<u>87205A</u> ANDREW CORPORATION
Model	<u>VHLP2-23B</u>	<u>VHLP2-23B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	40.5 / 1.70 / -0.94	40.5 / 1.70 / 0.93
Centerline (m / ft - AGL)	56.69 / 186.0	22.56 / 74.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-39.4</u>	<u>-39.4</u>
EIRP (dBm)	<u>46.0</u>	<u>46.0</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		125.9

Transmit Frequencies (MHz) 21825.0000V(1) 21975.0000V(4) 23025.0000V(1) 23175.0000V(4)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0033D CA
City/County Mountain View/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQKU517
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0040B CA

City/County Mountain View/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °25' 47.7~ N	37 °25' 2.0~ N
Longitude (NAD 83)	122 °5' 53.7~ W	122 °5' 55.5~ W
Ground Elevation (m/ft-AMSL)	1.98 / 6.5	5.10 / 16.7
Antenna Structure Registration #		
Path Azimuth (°)	181.799	1.799
Path Length (km / miles)	1.410 / 0.876	

Transmit Antenna

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / -0.83
Centerline (m / ft - AGL) 36.58 / 120.0

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / 0.82
Centerline (m / ft - AGL) 13.11 / 43.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ55
Manufacturer DRAGONWAVE INC
Model 23HD50SFC215V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 64 QAM
Loading 1 CH DIG 215000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 8.5
Received Level (dBm) -46.9
EIRP (dBm) 41.0
Fixed Loss: Tx / Common (dB) 0.0 / 1.9
Free Space Loss (dB) 122.3

TEMQ55
Manufacturer DRAGONWAVE INC
Model 23HD50SFC215V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 64 QAM
Loading 1 CH DIG 215000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 8.5
Received Level (dBm) -46.9
EIRP (dBm) 42.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0

Transmit Frequencies (MHz)	22125.0000V(7)	22225.0000V(9)	23325.0000V(7)	23425.0000V(9)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0033D CA
City/County Mountain View/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQKU517
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0094B CA

Palo Alto/Santa Clara
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °25' 47.7~ N	37 °26' 16.3~ N
Longitude (NAD 83)	122 °5' 53.7~ W	122 °6' 52.0~ W
Ground Elevation (m/ft-AMSL)	1.98 / 6.5	2.60 / 8.5
Antenna Structure Registration #		
Path Azimuth (°)	301.604	121.594
Path Length (km / miles)	1.683 / 1.046	

Transmit Antenna

<u>80014A</u>	<u>80014A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model <u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / -0.42	35.3 / 3.00 / 0.41
Centerline (m / ft - AGL) 41.76 / 137.0	28.96 / 95.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ55	TEMQ55
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 23HD50SFC215V02	23HD50SFC215V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 64 QAM	45M8D7W 64 QAM
Loading 1 CH DIG 215000.000	1 CH DIG 215000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 8.5	8.5
Received Level (dBm) -48.6	-48.6
EIRP (dBm) 41.9	41.9
Fixed Loss: Tx / Common (dB) 0.0 / 1.9	0.0 / 1.9
Free Space Loss (dB) 123.9	

Transmit Frequencies (MHz)	22175.0000V(8)	22275.0000V(10)	23375.0000V(8)	23475.0000V(10)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 090707COMSAN01
RCN Number: 10081932

Administrative Information

CA-SJC0035A CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0031A CA

Milpitas/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °24' <u>43.0</u> ~ N	37 °25' <u>21.6</u> ~ N
Longitude (NAD 83)	121 °57' <u>20.0</u> ~ W	121 °55' <u>8.8</u> ~ W
Ground Elevation (m/ft-AMSL)	<u>2.90</u> / <u>9.5</u>	<u>6.90</u> / <u>22.6</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>69.742</u>	<u>249.764</u>
Path Length (km / miles)		<u>3.439</u> / <u>2.137</u>

Transmit Antenna

87205A
Manufacturer ANDREW CORPORATION
Model VHLP2-23B
Gain(dBi) / Beamwidth(°) / Tilt(°) 40.5 / 1.70 / 0.48
Centerline (m / ft – AGL) 14.63 / 48.0

87205A
ANDREW CORPORATION
VHLP2-23B
40.5 / 1.70 / -0.50
40.23 / 132.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMR36
Manufacturer DRAGONWAVE INC
Model 23HD50HFC364V02
Model Description HORIZON DUO
Emission Designator / Modulation 47M1D7W 256 QAM
Loading 1 CH DIG 364000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 15.5
Received Level (dBm) -33.6
EIRP (dBm) 56.0
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 130.1

TEMR36
DRAGONWAVE INC
23HD50HFC364V02
HORIZON DUO
47M1D7W 256 QAM
1 CH DIG 364000.000
0.001
Nominal Coordinated Maximum
15.5
-33.6
56.0
0.0 / 0.0

Transmit Frequencies (MHz)	23075.0000H(2)	23175.0000H(4)	21875.0000H(2)	21975.0000H(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 090707COMSAN01
RCN Number: 10081932

Administrative Information

CA-SJC0036A CA
City/County Mountain View/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0076C CA

City/County Mountain View/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQKU514
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °25' <u>21.0</u> ~ N	37 °25' 36.4 ~ N
Longitude (NAD 83)	122 °5' <u>7.9</u> ~ W	122 °4' 19.7 ~ W
Ground Elevation (m/ft-AMSL)	<u>3.70</u> / <u>12.1</u>	1.98 / 6.5
Antenna Structure Registration #		
Path Azimuth (°)	<u>68.164</u>	<u>248.172</u>
Path Length (km / miles)		<u>1.277</u> / <u>0.793</u>

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / <u>0.00</u>	35.3 / 3.00 / <u>-0.01</u>
Centerline (m / ft – AGL)	20.73 / 68.0	22.56 / 74.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEM020			TEM020		
Model	DRAGONWAVE INC			DRAGONWAVE INC		
Model Description	23HD50SFC371V02			23HD50SFC371V02		
Emission Designator / Modulation	HORIZON DUO			HORIZON DUO		
Loading	49M2D7W	256 QAM		49M2D7W	256 QAM	
Stability (%)	1 CH	DIG 371000.000		1 CH	DIG 371000.000	
	0.001			0.001		
	Nominal	Coordinated	Maximum	Nominal	Coordinated	Maximum
Power (dBm)		5.5			5.5	
Received Level (dBm)		<u>-45.4</u>			<u>-45.4</u>	
EIRP (dBm)		<u>40.8</u>			<u>40.8</u>	
Fixed Loss: Tx / Common (dB)	0.0 / <u>0.0</u>			0.0 / <u>0.0</u>		
Free Space Loss (dB)			<u>121.5</u>			

Transmit Frequencies (MHz)	23025.0000V(1)	23125.0000V(3)	21825.0000V(1)	21925.0000V(3)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0041D CA	CA-SJC0027A CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information		
Latitude (NAD 83)	37 °25' 15.5~ N	37 °25' 11.5~ N
Longitude (NAD 83)	121 °57' 6.8~ W	121 °56' 0.2~ W
Ground Elevation (m/ft-AMSL)	2.40 / 7.9	6.30 / 20.7
Antenna Structure Registration #		
Path Azimuth (°)	94.301	274.312
Path Length (km / miles)	1.642 / 1.020	

Transmit Antenna	87205A	87205A
Manufacturer	ANDREW CORPORATION	ANDREW CORPORATION
Model	VHLP2-23B	VHLP2-23B
Gain(dBi) / Beamwidth(°) / Tilt(°)	40.5 / 1.70 / 0.43	40.5 / 1.70 / -0.44
Centerline (m / ft - AGL)	13.72 / 45.0	22.25 / 73.0

Receive Antenna	Same As Transmit	
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Diversity Receive Antenna		
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Radio Information	TEMQ16	TEMQ16
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	23HD50SFC322V02	23HD50SFC322V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	45M8D7W 256 QAM	45M8D7W 256 QAM
Loading	1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.0	5.0
Received Level (dBm)	-37.7	-37.7
EIRP (dBm)	45.5	45.5
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		123.7

Transmit Frequencies (MHz)	23075.0000V(2)	23225.0000V(5)	21875.0000V(2)	22025.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0041D CA	CA-SJC0066B CA
City/County	San Jose/Santa Clara	Santa Clara/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		WQLY524
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information		
Latitude (NAD 83)	37 °25' 15.5~ N	37 °24' 18.4~ N
Longitude (NAD 83)	121 °57' 6.8~ W	121 °58' 35.0~ W
Ground Elevation (m/ft-AMSL)	2.40 / 7.9	3.90 / 12.8
Antenna Structure Registration #		
Path Azimuth (°)	230.944	50.929
Path Length (km / miles)	2.793 / 1.736	

Transmit Antenna	RD1150	RD1150
Manufacturer	RADIO WAVES, INC	RADIO WAVES, INC
Model	HP2-23	HP2-23
Gain(dBi) / Beamwidth(°) / Tilt(°)	40.2 / 1.70 / 1.03	40.2 / 1.70 / -1.05
Centerline (m / ft - AGL)	13.72 / 45.0	63.03 / 206.8

Receive Antenna	Same As Transmit	
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Diversity Receive Antenna		
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Radio Information	TEMQ16	TEMQ16
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	23HD50SFC322V02	23HD50SFC322V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	45M8D7W 256 QAM	45M8D7W 256 QAM
Loading	1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	7.5	7.5
Received Level (dBm)	-40.4	-40.4
EIRP (dBm)	47.7	47.7
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		128.3

Transmit Frequencies (MHz)	23325.0000H(7)	23425.0000H(9)	22125.0000H(7)	22225.0000H(9)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0043D CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0066B CA

Santa Clara/Santa Clara
Engineering Proposal / PRIMARY OPERATION
WQLY524
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °25' 13.9~ N	37 °24' 18.4~ N
Longitude (NAD 83)	121 °58' 29.4~ W	121 °58' 35.0~ W
Ground Elevation (m/ft-AMSL)	2.30 / 7.5	3.90 / 12.8
Antenna Structure Registration #		
Path Azimuth (°)	184.602	4.601
Path Length (km / miles)	1.717 / 1.067	

Transmit Antenna

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / 1.69
Centerline (m / ft – AGL) 13.72 / 45.0

99141R
RADIO WAVES, INC
HPCPE-23
34.4 / 2.90 / -1.70
63.03 / 206.8

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMQ55
Manufacturer DRAGONWAVE INC
Model 23HD50SFC215V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 64 QAM
Loading 1 CH DIG 215000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 8.5
Received Level (dBm) -46.7
EIRP (dBm) 42.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 124.0

TEMQ55
DRAGONWAVE INC
23HD50SFC215V02
HORIZON DUO
45M8D7W 64 QAM
1 CH DIG 215000.000
0.001
Nominal Coordinated Maximum
8.5
-46.7
42.9
0.0 / 0.0

Transmit Frequencies (MHz) 23375.0000H(8) 23475.0000H(10) 22175.0000H(8) 22275.0000H(10)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0045B CA
City/County Milpitas/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0096A CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °24' <u>11.0</u> ~ N	37 °23' <u>26.1</u> ~ N
Longitude (NAD 83)	121 °54' <u>41.0</u> ~ W	121 °55' <u>3.7</u> ~ W
Ground Elevation (m/ft-AMSL)	<u>11.00</u> / <u>36.1</u>	<u>10.60</u> / <u>34.8</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>201.969</u>	<u>21.965</u>
Path Length (km / miles)		<u>1.493</u> / <u>0.927</u>

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / <u>-0.35</u>	35.3 / 3.00 / <u>0.34</u>
Centerline (m / ft – AGL)	29.26 / 96.0	20.73 / 68.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ16			TEMQ16		
Model	DRAGONWAVE INC			DRAGONWAVE INC		
Model Description	23HD50SFC322V02			23HD50SFC322V02		
Emission Designator / Modulation	HORIZON DUO			HORIZON DUO		
Loading	45M8D7W	256 QAM		45M8D7W	256 QAM	
Stability (%)	1 CH	DIG 322000.000		1 CH	DIG 322000.000	
	0.001			0.001		
	Nominal	Coordinated	Maximum	Nominal	Coordinated	Maximum
Power (dBm)		5.5			5.5	
Received Level (dBm)		<u>-46.7</u>			<u>-46.7</u>	
EIRP (dBm)		40.8			40.8	
Fixed Loss: Tx / Common (dB)	0.0 / 0.0			0.0 / 0.0		
Free Space Loss (dB)	<u>122.8</u>					

Transmit Frequencies (MHz)	23125.0000V(3)	23275.0000V(6)	21925.0000V(3)	22075.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0045B CA	CA-SJC0199B CA
City/County	Milpitas/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °24' <u>11.0</u> ~ N	37 °23' 12.7 ~ N
Longitude (NAD 83)	121 °54' <u>41.0</u> ~ W	121 °53' 15.5 ~ W
Ground Elevation (m/ft-AMSL)	<u>11.00</u> / <u>36.1</u>	21.30 / 69.9
Antenna Structure Registration #		
Path Azimuth (°)	<u>130.511</u>	<u>310.526</u>
Path Length (km / miles)		<u>2.766</u> / <u>1.719</u>

Transmit Antenna	RD1150	RD1150
Manufacturer	RADIO WAVES, INC	RADIO WAVES, INC
Model	HP2-23	HP2-23
Gain(dBi) / Beamwidth(°) / Tilt(°)	40.2 / 1.70 / <u>-0.15</u>	40.2 / 1.70 / <u>0.13</u>
Centerline (m / ft - AGL)	29.26 / 96.0	12.19 / 40.0

Receive Antenna Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information	TEMQ48	TEMQ48
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	23HD50HFC322V02	23HD50HFC322V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	45M8D7W 256 QAM	45M8D7W 256 QAM
Loading	1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	9.9	9.9
Received Level (dBm)	<u>-37.9</u>	<u>-37.9</u>
EIRP (dBm)	50.1	50.1
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>128.2</u>

Transmit Frequencies (MHz)	23025.0000V(1)	23175.0000V(4)	21825.0000V(1)	21975.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0046A CA
City/County Sunnyvale/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQMA227
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0083A CA

Sunnyvale/Santa Clara
Engineering Proposal / PRIMARY OPERATION
WQMD295
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °24' 20.4~ N	37 °23' 50.8~ N
Longitude (NAD 83)	121 °59' 35.4~ W	121 °59' 49.7~ W
Ground Elevation (m/ft-AMSL)	3.40 / 11.2	6.20 / 20.3
Antenna Structure Registration #		
Path Azimuth (°)	201.078	21.076
Path Length (km / miles)	0.978 / 0.608	

Transmit Antenna

80014A
Manufacturer ANDREW CORPORATION
Model VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / -0.65
Centerline (m / ft - AGL) 22.86 / 75.0

80014A
ANDREW CORPORATION
VHLP1-23A
35.3 / 3.00 / 0.64
9.04 / 29.7

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ16
Manufacturer DRAGONWAVE INC
Model 23HD50SFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.5
Received Level (dBm) -43.1
EIRP (dBm) 40.8
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 119.2

TEMQ16
DRAGONWAVE INC
23HD50SFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
5.5
-43.1
40.8
0.0 / 0.0

Transmit Frequencies (MHz)	21875.0000V(2)	22025.0000V(5)	23075.0000V(2)	23225.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0046A CA	CA-SJC0105B CA
City/County	Sunnyvale/Santa Clara	Sunnyvale/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQMA227	WQLY538
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °24' 20.4~ N	37 °24' 33.2~ N
Longitude (NAD 83)	121 °59' 35.4~ W	122 °0' 8.3~ W
Ground Elevation (m/ft-AMSL)	3.40 / 11.2	2.60 / 8.5
Antenna Structure Registration #		
Path Azimuth (°)	296.002	115.996
Path Length (km / miles)	0.900 / 0.559	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / 0.18	35.3 / 3.00 / -0.18
Centerline (m / ft - AGL)	13.11 / 43.0	16.76 / 55.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	-42.3	-42.3
EIRP (dBm)	40.8	40.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		118.4

Transmit Frequencies (MHz)	21825.0000V(1)	21975.0000V(4)	23025.0000V(1)	23175.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147

(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Prev Job Num: 100120COMSSL01

Job Number 100819COMSSL02

RCN Number: 10081932

Administrative Information

CA-SJC0053B CA
City/County Sunnyvale/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY425
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0003A CA

Santa Clara/Santa Clara
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °23' 1.5~ N	37 °23' 2.0 ~ N
Longitude (NAD 83)	121 °59' 54.2~ W	121 °58' 42.5 ~ W
Ground Elevation (m/ft-AMSL)	12.60 / 41.3	<u>10.10 / 33.1</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>89.493</u>	<u>269.505</u>
Path Length (km / miles)		<u>1.764 / 1.096</u>

Transmit Antenna

RD1150
Manufacturer RADIO WAVES, INC
Model HP2-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 40.2 / 1.70 / 0.65
Centerline (m / ft – AGL) 9.45 / 31.0

RD1150
RADIO WAVES, INC
HP2-23
40.2 / 1.70 / -0.66
32.00 / 105.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMQ16
Manufacturer DRAGONWAVE INC
Model 23HD50SFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.5
Received Level (dBm) -38.4
EIRP (dBm) 45.7
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 124.3

TEMQ16
DRAGONWAVE INC
23HD50SFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
5.5
-38.4
45.7
0.0 / 0.0

Transmit Frequencies (MHz)	21875.0000V(2)	22025.0000V(5)	23075.0000V(2)	23225.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0058A CA
City/County Mountain View/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY565
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0064A CA

Palo Alto/Santa Clara
Engineering Proposal / PRIMARY OPERATION
WQLY555
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °24' 4.6~ N	37 °24' 20.6~ N
Longitude (NAD 83)	122 °6' 40.5~ W	122 °8' 22.8~ W
Ground Elevation (m/ft-AMSL)	21.20 / 69.6	31.80 / 104.3
Antenna Structure Registration #		
Path Azimuth (°)	281.101	101.084
Path Length (km / miles)	2.564 / 1.593	

Transmit Antenna

87205A
Manufacturer ANDREW CORPORATION
Model VHLP2-23B
Gain(dBi) / Beamwidth(°) / Tilt(°) 40.5 / 1.70 / 0.21
Centerline (m / ft – AGL) 26.82 / 88.0

87205A
ANDREW CORPORATION
VHLP2-23B
40.5 / 1.70 / -0.23
25.91 / 85.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMQ48
Manufacturer DRAGONWAVE INC
Model 23HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 7.5
Received Level (dBm) -39.0
EIRP (dBm) 48.0
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 127.5

TEMQ48
DRAGONWAVE INC
23HD50HFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
7.5
-39.0
48.0
0.0 / 0.0

Transmit Frequencies (MHz)	21825.0000V(1)	21975.0000V(4)	23025.0000V(1)	23175.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0064A CA
City/County Palo Alto/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY555
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0131A CA

Los Altos Hills/Santa Clara
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °24' 20.6~ N	37 °22' 58.4 ~ N
Longitude (NAD 83)	122 °8' 22.8~ W	122 °8' 47.0 ~ W
Ground Elevation (m/ft-AMSL)	31.80 / 104.3	<u>153.00</u> / <u>502.0</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>193.221</u>	<u>13.217</u>
Path Length (km / miles)		<u>2.603</u> / <u>1.618</u>

Transmit Antenna

87205A
Manufacturer ANDREW CORPORATION
Model VHLP2-23B
Gain(dBi) / Beamwidth(°) / Tilt(°) 40.5 / 1.70 / 2.17
Centerline (m / ft – AGL) 25.91 / 85.0

87205A
ANDREW CORPORATION
VHLP2-23B
40.5 / 1.70 / -2.19
3.96 / 13.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMQ48
Manufacturer DRAGONWAVE INC
Model 23HD50HFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 15.5
Received Level (dBm) -31.2
EIRP (dBm) 56.0
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 127.7

TEMQ48
DRAGONWAVE INC
23HD50HFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
15.5
-31.2
56.0
0.0 / 0.0

Transmit Frequencies (MHz) 22175.0000H(8) 22275.0000H(10) 23375.0000H(8) 23475.0000H(10)

Microwave Path Data Sheet

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COMSEARCH

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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0066B CA
City/County Santa Clara/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY524
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0035A CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °24' 18.4~ N	37 °24' <u>43.0</u> ~ N
Longitude (NAD 83)	121 °58' 35.0~ W	121 °57' <u>20.0</u> ~ W
Ground Elevation (m/ft-AMSL)	3.90 / 12.8	<u>2.90</u> / <u>9.5</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>67.642</u>	<u>247.655</u>
Path Length (km / miles)		<u>1.994</u> / <u>1.239</u>

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / <u>-1.42</u>	35.3 / 3.00 / <u>1.41</u>
Centerline (m / ft – AGL)	62.79 / 206.0	14.63 / 48.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ16			TEMQ16		
Model	DRAGONWAVE INC			DRAGONWAVE INC		
Model Description	23HD50SFC322V02			23HD50SFC322V02		
Emission Designator / Modulation	HORIZON DUO			HORIZON DUO		
Loading	45M8D7W	256 QAM		45M8D7W	256 QAM	
Stability (%)	1 CH	DIG 322000.000		1 CH	DIG 322000.000	
	0.001			0.001		
	Nominal	Coordinated	Maximum	Nominal	Coordinated	Maximum
Power (dBm)		5.5			5.5	
Received Level (dBm)		<u>-49.3</u>			<u>-49.3</u>	
EIRP (dBm)		40.8			40.8	
Fixed Loss: Tx / Common (dB)	0.0 / 0.0			0.0 / 0.0		
Free Space Loss (dB)	<u>125.4</u>					

Transmit Frequencies (MHz)	21825.0000H(1)	21975.0000H(4)	23025.0000H(1)	23175.0000H(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0069B CA
City/County Mountain View/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY501
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0134B CA

Loyola/Santa Clara
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °22' 10.4~ N	37 °21' 51.5~ N
Longitude (NAD 83)	122 °4' 48.2~ W	122 °6' 15.5~ W
Ground Elevation (m/ft-AMSL)	47.20 / 154.9	61.70 / 202.4
Antenna Structure Registration #		
Path Azimuth (°)	<u>254.831</u>	<u>74.817</u>
Path Length (km / miles)		<u>2.226 / 1.383</u>

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / 0.13	35.3 / 3.00 / -0.15
Centerline (m / ft - AGL)	22.86 / 75.0	13.72 / 45.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ48	TEMQ48
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC322V02	23HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.5	15.5
Received Level (dBm)	-40.2	-40.2
EIRP (dBm)	50.8	50.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>126.3</u>

Transmit Frequencies (MHz)	<u>22125.0000H(7)</u>	<u>22225.0000H(9)</u>	<u>23325.0000H(7)</u>	<u>23425.0000H(9)</u>
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0073C CA
City/County Sunnyvale/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0105B CA

Sunnyvale/Santa Clara
Engineering Proposal / PRIMARY OPERATION
WQLY538
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °24' <u>54.7</u> ~ N	37 °24' 33.2 ~ N
Longitude (NAD 83)	122 °0' <u>48.7</u> ~ W	122 °0' 8.3 ~ W
Ground Elevation (m/ft-AMSL)	<u>1.40</u> / <u>4.6</u>	2.60 / 8.5
Antenna Structure Registration #		
Path Azimuth (°)	<u>123.707</u>	<u>303.714</u>
Path Length (km / miles)		<u>1.194</u> / <u>0.742</u>

Transmit Antenna

80014A
Manufacturer ANDREW CORPORATION
Model VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / 0.05
Centerline (m / ft – AGL) 16.76 / 55.0

80014A
ANDREW CORPORATION
VHLP1-23A
35.3 / 3.00 / -0.06
16.76 / 55.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMQ16
Manufacturer DRAGONWAVE INC
Model 23HD50SFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.5
Received Level (dBm) -44.8
EIRP (dBm) 40.8
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 120.9

TEMQ16
DRAGONWAVE INC
23HD50SFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
5.5
-44.8
40.8
0.0 / 0.0

Transmit Frequencies (MHz)	21875.0000V(2)	22025.0000V(5)	23075.0000V(2)	23225.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0082B CA
City/County Santa Clara/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0125A CA

City/County Santa Clara/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °20' 58.3~ N	37 °21' 53.2~ N
Longitude (NAD 83)	121 °59' 40.0~ W	121 °58' 58.0~ W
Ground Elevation (m/ft-AMSL)	32.00 / 105.0	17.90 / 58.7
Antenna Structure Registration #		
Path Azimuth (°)	31.408	211.415
Path Length (km / miles)	1.983 / 1.232	

Transmit Antenna

<u>87205A</u>	<u>80014A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model <u>VHLP2-23B</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°) <u>40.5</u> / <u>1.70</u> / -0.41	35.3 / 3.00 / 0.40
Centerline (m / ft - AGL) 22.86 / 75.0	22.86 / 75.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ16	TEMQ16
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 23HD50SFC322V02	23HD50SFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 7.5	7.5
Received Level (dBm) <u>-42.0</u>	<u>-42.0</u>
EIRP (dBm) <u>48.0</u>	42.8
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 125.3	

Transmit Frequencies (MHz)	23125.0000V(3)	23275.0000V(6)	21925.0000V(3)	22075.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0086A CA	CA-SJC0057A CA
City/County	Sunnyvale/Santa Clara	Sunnyvale/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °20' 27.4~ N	37 °19' 53.2~ N
Longitude (NAD 83)	122 °2' 31.8~ W	122 °3' 8.1~ W
Ground Elevation (m/ft-AMSL)	67.30 / 220.8	85.60 / 280.8
Antenna Structure Registration #		
Path Azimuth (°)	220.285	40.278
Path Length (km / miles)	1.382 / 0.859	

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / 1.64	<u>34.4</u> / <u>2.90</u> / -1.65
Centerline (m / ft - AGL)	12.19 / 40.0	33.53 / 110.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ55	TEMQ55
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC215V02	23HD50SFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	<u>-46.8</u>	<u>-46.8</u>
EIRP (dBm)	<u>42.9</u>	<u>41.0</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 1.9
Free Space Loss (dB)		122.2

Transmit Frequencies (MHz) 23025.0000V(1) 23225.0000V(5) 21825.0000V(1) 22025.0000V(5)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0090C CA
City/County Santa Clara/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY660
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0023B CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °23' 40.0~ N	37 °24' <u>25.4</u> ~ N
Longitude (NAD 83)	121 °56' 41.2~ W	121 °55' <u>34.7</u> ~ W
Ground Elevation (m/ft-AMSL)	6.40 / 21.0	<u>8.30</u> / <u>27.2</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>49.439</u>	<u>229.450</u>
Path Length (km / miles)		<u>2.153</u> / <u>1.338</u>

Transmit Antenna

Manufacturer	<u>87205A</u>	<u>87205A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
	<u>VHLP2-23B</u>	<u>VHLP2-23B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>40.5</u> / <u>1.70</u> / <u>-0.13</u>	<u>40.5</u> / <u>1.70</u> / <u>0.11</u>
Centerline (m / ft – AGL)	22.56 / 74.0	16.15 / 53.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-39.5</u>	<u>-39.5</u>
EIRP (dBm)	<u>46.0</u>	<u>46.0</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>126.0</u>

Transmit Frequencies (MHz)	23125.0000V(3)	23275.0000V(6)	21925.0000V(3)	22075.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0090C CA	CA-SJC0062B CA
City/County	Santa Clara/Santa Clara	Santa Clara/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY660	
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °23' 40.0~ N	37 °23' 57.8~ N
Longitude (NAD 83)	121 °56' 41.2~ W	121 °58' 3.3~ W
Ground Elevation (m/ft-AMSL)	6.40 / 21.0	5.20 / 17.1
Antenna Structure Registration #		
Path Azimuth (°)	285.210	105.196
Path Length (km / miles)	2.093 / 1.300	

Transmit Antenna

Manufacturer	<u>87205A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP2-23B</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	40.5 / 1.70 / 0.18	35.3 / 3.00 / -0.19
Centerline (m / ft - AGL)	22.56 / 74.0	30.48 / 100.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ55	TEMQ55
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC215V02	23HD50SFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	<u>-43.4</u>	<u>-43.4</u>
EIRP (dBm)	<u>49.0</u>	<u>41.9</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 1.9
Free Space Loss (dB)		125.8

Transmit Frequencies (MHz) 23075.0000V(2) 23225.0000V(5) 21875.0000V(2) 22025.0000V(5)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0090C CA	CA-SJC0072A CA
City/County	Santa Clara/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY660	
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °23' 40.0~ N	37 °24' 2.4~ N
Longitude (NAD 83)	121 °56' 41.2~ W	121 °56' 26.3~ W
Ground Elevation (m/ft-AMSL)	6.40 / 21.0	4.60 / 15.1
Antenna Structure Registration #		
Path Azimuth (°)	27.953	207.956
Path Length (km / miles)	0.782 / 0.486	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / -0.58	35.3 / 3.00 / 0.58
Centerline (m / ft - AGL)	22.56 / 74.0	16.46 / 54.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	-41.1	-41.1
EIRP (dBm)	40.8	40.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		117.2

Transmit Frequencies (MHz)	23025.0000V(1)	23175.0000V(4)	21825.0000V(1)	21975.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0090C CA
City/County Santa Clara/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY660
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0096A CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °23' 40.0~ N	37 °23' <u>26.1</u> ~ N
Longitude (NAD 83)	121 °56' 41.2~ W	121 °55' <u>3.7</u> ~ W
Ground Elevation (m/ft-AMSL)	6.40 / 21.0	<u>10.60</u> / <u>34.8</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>100.122</u>	<u>280.139</u>
Path Length (km / miles)		<u>2.436</u> / <u>1.514</u>

Transmit Antenna

Manufacturer	<u>87205A</u>	<u>87205A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
	<u>VHLP2-23B</u>	<u>VHLP2-23B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>40.5</u> / <u>1.70</u> / <u>-0.02</u>	<u>40.5</u> / <u>1.70</u> / <u>0.01</u>
Centerline (m / ft – AGL)	22.56 / 74.0	17.68 / 58.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-40.6</u>	<u>-40.6</u>
EIRP (dBm)	<u>46.0</u>	<u>46.0</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>127.1</u>

Transmit Frequencies (MHz)	23075.0000V(2)	23225.0000V(5)	21875.0000V(2)	22025.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0097A CA
City/County Palo Alto/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0398A CA

Menlo Park/San Mateo
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °26' <u>55.3</u> ~ N	37 °28' 35.1~ N
Longitude (NAD 83)	122 °9' <u>32.5</u> ~ W	122 °9' 7.2~ W
Ground Elevation (m/ft-AMSL)	<u>15.50</u> / <u>50.9</u>	3.30 / 10.8
Antenna Structure Registration #		
Path Azimuth (°)	<u>11.422</u>	<u>191.426</u>
Path Length (km / miles)		<u>3.139</u> / <u>1.950</u>

Transmit Antenna

Manufacturer	<u>87205A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP2-23B</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>40.5</u> / <u>1.70</u> / <u>-1.55</u>	<u>35.3</u> / <u>3.00</u> / <u>1.52</u>
Centerline (m / ft – AGL)	<u>82.30</u> / <u>270.0</u>	<u>10.36</u> / <u>34.0</u>

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ54	TEMQ54
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC215V02	23HD50HFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	-45.0	-45.0
EIRP (dBm)	<u>49.0</u>	43.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>129.3</u>

Transmit Frequencies (MHz)	23025.0000H(1)	23175.0000H(4)	21825.0000H(1)	21975.0000H(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0097A CA
City/County Palo Alto/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0048C CA

Palo Alto/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °26' <u>55.3</u> ~ N	37 °26' 4.2 ~ N
Longitude (NAD 83)	122 °9' <u>32.5</u> ~ W	122 °7' 47.7 ~ W
Ground Elevation (m/ft-AMSL)	<u>15.50</u> / <u>50.9</u>	5.10 / 16.7
Antenna Structure Registration #		
Path Azimuth (°)	<u>121.438</u>	<u>301.456</u>
Path Length (km / miles)		<u>3.020</u> / <u>1.876</u>

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / <u>-1.66</u>	<u>34.4</u> / <u>2.90</u> / <u>1.64</u>
Centerline (m / ft – AGL)	82.30 / 270.0	<u>5.79</u> / <u>19.0</u>

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ20	TEMQ20
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC171V02	23HD50SFC171V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 32 QAM	45M8D7W 32 QAM
Stability (%)	1 CH DIG 171000.000	1 CH DIG 171000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	10.0	10.0
Received Level (dBm)	<u>-50.2</u>	<u>-50.2</u>
EIRP (dBm)	<u>44.4</u>	<u>44.4</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>129.0</u>

Transmit Frequencies (MHz)	23125.0000V(3)	23275.0000V(6)	21925.0000V(3)	22075.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0097A CA
City/County Palo Alto/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0055A CA

Menlo Park/San Mateo
Engineering Proposal / PRIMARY OPERATION
WQLY537
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °26' <u>55.3</u> ~ N	37 °27' 7.9~ N
Longitude (NAD 83)	122 °9' <u>32.5</u> ~ W	122 °11' 23.4~ W
Ground Elevation (m/ft-AMSL)	<u>15.50</u> / <u>50.9</u>	23.70 / 77.8
Antenna Structure Registration #		
Path Azimuth (°)	<u>278.120</u>	<u>98.101</u>
Path Length (km / miles)		<u>2.753</u> / <u>1.711</u>

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>87205A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP2-23B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / <u>-0.88</u>	<u>40.5</u> / <u>1.70</u> / <u>0.86</u>
Centerline (m / ft – AGL)	82.30 / 270.0	32.31 / 106.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ48	TEMQ48
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC322V02	23HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.5	15.5
Received Level (dBm)	-36.9	-36.9
EIRP (dBm)	50.8	<u>56.0</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>128.2</u>

Transmit Frequencies (MHz)	23025.0000V(1)	23175.0000V(4)	21825.0000V(1)	21975.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0102B CA	CA-SJC0070A CA
City/County	Santa Clara/Santa Clara	Santa Clara/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY525	WQLY519
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °22' 5.8~ N	37 °22' 32.6~ N
Longitude (NAD 83)	121 °57' 29.6~ W	121 °57' 25.2~ W
Ground Elevation (m/ft-AMSL)	14.00 / 45.9	11.80 / 38.7
Antenna Structure Registration #	1255516	
Path Azimuth (°)	7.465	187.465
Path Length (km / miles)	0.833 / 0.518	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / -1.01	35.3 / 3.00 / 1.01
Centerline (m / ft - AGL)	30.48 / 100.0	17.98 / 59.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ48	TEMQ48
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC322V02	23HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	10.0	10.0
Received Level (dBm)	-37.2	-37.2
EIRP (dBm)	45.3	45.3
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		117.8

Transmit Frequencies (MHz)	21875.0000V(2)	22025.0000V(5)	23075.0000V(2)	23225.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0103A CA	CA-SJC0083A CA
City/County	Sunnyvale/Santa Clara	Sunnyvale/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		WQMD295
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °23' 49.5~ N	37 °23' 50.8~ N
Longitude (NAD 83)	122 °0' 34.5~ W	121 °59' 49.7~ W
Ground Elevation (m/ft-AMSL)	6.90 / 22.6	6.20 / 20.3
Antenna Structure Registration #		
Path Azimuth (°)	87.913	267.921
Path Length (km / miles)	1.103 / 0.685	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / -1.17	35.3 / 3.00 / 1.16
Centerline (m / ft - AGL)	30.78 / 101.0	9.02 / 29.6

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	7.5	7.5
Received Level (dBm)	-44.0	-44.0
EIRP (dBm)	40.9	42.8
Fixed Loss: Tx / Common (dB)	0.0 / 1.9	0.0 / 0.0
Free Space Loss (dB)		120.2

Transmit Frequencies (MHz)	21875.0000V(2)	22025.0000V(5)	23075.0000V(2)	23225.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0107A CA
City/County East Palo Alto/San Mateo
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLN743
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0065C CA

Palo Alto/Santa Clara
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °27' 33.7~ N	37 °27' <u>9.4</u> ~ N
Longitude (NAD 83)	122 °8' 29.8~ W	122 °7' <u>34.4</u> ~ W
Ground Elevation (m/ft-AMSL)	8.84 / 29.0	<u>4.10</u> / <u>13.5</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>118.816</u>	<u>298.825</u>
Path Length (km / miles)		<u>1.554</u> / <u>0.966</u>

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / <u>-0.70</u>	<u>34.4</u> / <u>2.90</u> / <u>0.69</u>
Centerline (m / ft – AGL)	28.65 / 94.0	14.63 / 48.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ55	TEMQ55
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC215V02	23HD50SFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	<u>-45.9</u>	<u>-45.9</u>
EIRP (dBm)	<u>42.9</u>	<u>42.9</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>123.2</u>

Transmit Frequencies (MHz)	23075.0000V(2)	23225.0000V(5)	21875.0000V(2)	22025.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0109A CA	CA-SJC0274A CA
City/County	Sunnyvale/Santa Clara	Santa Clara/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		WQMD455
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °22' 13.6~ N	37 °23' 16.4~ N
Longitude (NAD 83)	121 °59' 56.1~ W	121 °58' 25.9~ W
Ground Elevation (m/ft-AMSL)	20.40 / 66.9	9.90 / 32.5
Antenna Structure Registration #		
Path Azimuth (°)	48.889	228.905
Path Length (km / miles)	2.945 / 1.830	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / 0.56	35.3 / 3.00 / -0.58
Centerline (m / ft - AGL)	18.59 / 61.0	58.52 / 192.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ20	TEMQ20
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC171V02	23HD50SFC171V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 32 QAM	45M8D7W 32 QAM
Stability (%)	1 CH DIG 171000.000	1 CH DIG 171000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	10.0	10.0
Received Level (dBm)	-48.1	-48.1
EIRP (dBm)	45.3	45.3
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		128.7

Transmit Frequencies (MHz)	21825.0000H(1)	21975.0000H(4)	23025.0000H(1)	23175.0000H(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0111A CA	CA-SJC0051B CA
City/County	San Jose/Santa Clara	Cupertino/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY509	
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information		
Latitude (NAD 83)	37 °19' 20.5~ N	37 °19' 3.1~ N
Longitude (NAD 83)	121 °59' 48.9~ W	122 °0' 32.2~ W
Ground Elevation (m/ft-AMSL)	50.60 / 166.0	61.30 / 201.1
Antenna Structure Registration #		1269478
Path Azimuth (°)	243.294	63.287
Path Length (km / miles)		1.193 / 0.742

Transmit Antenna	80014A	80014A
Manufacturer	ANDREW CORPORATION	ANDREW CORPORATION
Model	VHLP1-23A	VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / -0.08	35.3 / 3.00 / 0.07
Centerline (m / ft - AGL)	28.65 / 94.0	16.31 / 53.5

Receive Antenna	Same As Transmit	
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Diversity Receive Antenna		
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Radio Information	TEMQ16	TEMQ16
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	23HD50SFC322V02	23HD50SFC322V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	45M8D7W 256 QAM	45M8D7W 256 QAM
Loading	1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	-44.8	-44.8
EIRP (dBm)	40.8	40.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		120.9

Transmit Frequencies (MHz)	21925.0000V(3)	22075.0000V(6)	23125.0000V(3)	23275.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147

(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Prev Job Num: 100427COMSSL01

Job Number 100819COMSSL02

RCN Number: 10081932

Administrative Information

CA-SJC0117C CA
City/County Palo Alto/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0064A CA

Palo Alto/Santa Clara
Engineering Proposal / PRIMARY OPERATION
WQLY555
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °24' 37.3~ N	37 °24' 20.6~ N
Longitude (NAD 83)	122 °8' 50.2~ W	122 °8' 22.8~ W
Ground Elevation (m/ft-AMSL)	40.30 / 132.2	31.80 / 104.3
Antenna Structure Registration #		
Path Azimuth (°)	127.379	307.384
Path Length (km / miles)	0.848 / 0.527	

Transmit Antenna

80014A
Manufacturer ANDREW CORPORATION
Model VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / 0.39
Centerline (m / ft – AGL) 11.58 / 38.0

80014A
ANDREW CORPORATION
VHLP1-23A
35.3 / 3.00 / -0.40
25.91 / 85.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMQ16
Manufacturer DRAGONWAVE INC
Model 23HD50SFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.5
Received Level (dBm) -41.8
EIRP (dBm) 40.8
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 117.9

TEMQ16
DRAGONWAVE INC
23HD50SFC322V02
HORIZON DUO
45M8D7W 256 QAM
1 CH DIG 322000.000
0.001
Nominal Coordinated Maximum
5.5
-41.8
40.8
0.0 / 0.0

Transmit Frequencies (MHz)	21875.0000H(2)	22025.0000H(5)	23075.0000H(2)	23225.0000H(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0119C CA
City/County Palo Alto/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0097A CA

Palo Alto/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °26' 39.8~ N	37 °26' 55.3~ N
Longitude (NAD 83)	122 °8' 0.8~ W	122 °9' 32.5~ W
Ground Elevation (m/ft-AMSL)	5.40 / 17.7	<u>15.50</u> / <u>50.9</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>281.977</u>	<u>101.962</u>
Path Length (km / miles)		<u>2.304</u> / <u>1.432</u>

Transmit Antenna

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / 2.06
Centerline (m / ft – AGL) 9.14 / 30.0

99141R
RADIO WAVES, INC
HPCPE-23
34.4 / 2.90 / -2.08
82.30 / 270.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMQ55
Manufacturer DRAGONWAVE INC
Model 23HD50SFC215V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 64 QAM
Loading 1 CH DIG 215000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 8.5
Received Level (dBm) -49.3
EIRP (dBm) 42.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 126.6

TEMQ55
DRAGONWAVE INC
23HD50SFC215V02
HORIZON DUO
45M8D7W 64 QAM
1 CH DIG 215000.000
0.001
Nominal Coordinated Maximum
8.5
-49.3
42.9
0.0 / 0.0

Transmit Frequencies (MHz)	22225.0000V(9)	22375.0000V(12)	23425.0000V(9)	23575.0000V(12)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0120A CA
City/County Palo Alto/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0033D CA

Mountain View/Santa Clara
Engineering Proposal / PRIMARY OPERATION
WQKU517
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °25' 23.4~ N	37 °25' 47.7~ N
Longitude (NAD 83)	122 °6' 50.4~ W	122 °5' 53.7~ W
Ground Elevation (m/ft-AMSL)	5.10 / 16.7	1.98 / 6.5
Antenna Structure Registration #		
Path Azimuth (°)	61.742	241.752
Path Length (km / miles)		1.583 / 0.983

Transmit Antenna

<u>80014A</u>	<u>80014A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model VHLP1-23A	VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / 0.81	35.3 / 3.00 / -0.82
Centerline (m / ft - AGL) 16.15 / 53.0	41.76 / 137.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ55	TEMQ55
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 23HD50SFC215V02	23HD50SFC215V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 64 QAM	45M8D7W 64 QAM
Loading 1 CH DIG 215000.000	1 CH DIG 215000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 8.5	8.5
Received Level (dBm) -46.1	-46.1
EIRP (dBm) 43.8	41.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 1.9
Free Space Loss (dB)	123.3

Transmit Frequencies (MHz)	23025.0000V(1)	23175.0000V(4)	21825.0000V(1)	21975.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0125A CA	CA-SJC0022A CA
City/County	Santa Clara/Santa Clara	Santa Clara/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information		
Latitude (NAD 83)	37 °21' 53.2~ N	37 °22' 30.0~ N
Longitude (NAD 83)	121 °58' 58.0~ W	121 °58' 38.3~ W
Ground Elevation (m/ft-AMSL)	17.90 / 58.7	13.40 / 44.0
Antenna Structure Registration #		
Path Azimuth (°)	23.133	203.136
Path Length (km / miles)	1.234 / 0.767	

Transmit Antenna	80014A	80014A
Manufacturer	ANDREW CORPORATION	ANDREW CORPORATION
Model	VHLP1-23A	VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / -0.51	35.3 / 3.00 / 0.50
Centerline (m / ft - AGL)	22.86 / 75.0	16.46 / 54.0

Receive Antenna	Same As Transmit
Manufacturer	
Model	
Gain (dBi) / Beamwidth (°)	
Centerline (m / ft - AGL)	

Diversity Receive Antenna
Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information	TEMQ16	TEMQ16
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	23HD50SFC322V02	23HD50SFC322V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	45M8D7W 256 QAM	45M8D7W 256 QAM
Loading	1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	-45.1	-45.1
EIRP (dBm)	40.8	40.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		121.2

Transmit Frequencies (MHz)	21875.0000V(2)	22025.0000V(5)	23075.0000V(2)	23225.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0125A CA	CA-SJC0288B CA
City/County	Santa Clara/Santa Clara	Santa Clara/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °21' 53.2~ N	37 °21' 25.0~ N
Longitude (NAD 83)	121 °58' 58.0~ W	121 °59' 40.9~ W
Ground Elevation (m/ft-AMSL)	17.90 / 58.7	26.00 / 85.3
Antenna Structure Registration #		
Path Azimuth (°)	230.532	50.524
Path Length (km / miles)	1.368 / 0.850	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / 0.02	35.3 / 3.00 / -0.02
Centerline (m / ft - AGL)	22.86 / 75.0	15.24 / 50.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	-46.0	-46.0
EIRP (dBm)	40.8	40.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		122.1

Transmit Frequencies (MHz)	21825.0000V(1)	21975.0000V(4)	23025.0000V(1)	23175.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0126A CA
City/County Cupertino/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0084A CA

Sunnyvale/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °20' 4.0~ N	37 °20' 31.6~ N
Longitude (NAD 83)	122 °1' 16.6~ W	122 °1' 32.9~ W
Ground Elevation (m/ft-AMSL)	58.90 / 193.2	54.70 / 179.5
Antenna Structure Registration #		
Path Azimuth (°)	334.755	154.752
Path Length (km / miles)	0.941 / 0.585	

Transmit Antenna

<u>80014A</u>	<u>80014A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model VHLP1-23A	VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / -0.44	35.3 / 3.00 / 0.44
Centerline (m / ft - AGL) 13.72 / 45.0	10.67 / 35.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ16	TEMQ16
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 23HD50SFC322V02	23HD50SFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 5.5	5.5
Received Level (dBm) -42.7	-42.7
EIRP (dBm) 40.8	40.8
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 118.8	

Transmit Frequencies (MHz) 23375.0000V(8) 23475.0000V(10) 22175.0000V(8) 22275.0000V(10)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0127B CA	CA-SJC0121A CA
City/County	Sunnyvale/Santa Clara	Sunnyvale/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °22' <u>42.4</u> ~ N	37 °22' 55.3~ N
Longitude (NAD 83)	122 °1' <u>57.2</u> ~ W	122 °0' 53.8~ W
Ground Elevation (m/ft-AMSL)	<u>29.10</u> / <u>95.5</u>	17.00 / 55.8
Antenna Structure Registration #		
Path Azimuth (°)	<u>75.691</u>	<u>255.701</u>
Path Length (km / miles)		<u>1.610</u> / <u>1.000</u>

Transmit Antenna

Manufacturer	<u>80014A</u>	<u>80014A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Centerline (m / ft – AGL)	35.3 / 3.00 / <u>-1.05</u>	35.3 / 3.00 / <u>1.04</u>
	33.53 / 110.0	16.15 / 53.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ55	TEMQ55
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC215V02	23HD50SFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	<u>-44.4</u>	<u>-44.4</u>
EIRP (dBm)	43.8	43.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>123.5</u>

Transmit Frequencies (MHz) 23025.0000H(1) 23175.0000H(4) 21825.0000H(1) 21975.0000H(4)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0127B CA
City/County Sunnyvale/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0283A CA

Sunnyvale/Santa Clara
Engineering Proposal / PRIMARY OPERATION
WQLY504
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °22' <u>42.4</u> ~ N	37 °22' 13.0~ N
Longitude (NAD 83)	122 °1' <u>57.2</u> ~ W	122 °2' 23.0~ W
Ground Elevation (m/ft-AMSL)	<u>29.10</u> / <u>95.5</u>	38.60 / 126.6
Antenna Structure Registration #		
Path Azimuth (°)	<u>215.007</u>	<u>35.003</u>
Path Length (km / miles)		<u>1.107</u> / <u>0.688</u>

Transmit Antenna

Manufacturer	<u>80014A</u>	<u>80014A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Centerline (m / ft – AGL)	35.3 / 3.00 / <u>0.19</u>	35.3 / 3.00 / <u>-0.20</u>
	36.27 / 119.0	30.48 / 100.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-44.1</u>	<u>-44.1</u>
EIRP (dBm)	40.8	40.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>120.2</u>

Transmit Frequencies (MHz)	23025.0000V(1)	23175.0000V(4)	21825.0000V(1)	21975.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147

(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Prev Job Num: 100120COMSSL01

Job Number 100819COMSSL02

RCN Number: 10081932

Administrative Information

CA-SJC0130A CA
 City/County Belmont/San Mateo
 Status / License Basis Engineering Proposal / PRIMARY OPERATION
 Call Sign
 Licensee Code CLESP3
 Licensee Name Clearwire Spectrum Holdings III, LL
 Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0367D CA

San Mateo/San Mateo
 Engineering Proposal / PRIMARY OPERATION
 Licensee Code CLESP3
 Licensee Name Clearwire Spectrum Holdings III, LL
 Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °31' <u>12.3</u> ~ N	37 °32' <u>11.7</u> ~ N
Longitude (NAD 83)	122 °18' <u>26.0</u> ~ W	122 °19' <u>36.7</u> ~ W
Ground Elevation (m/ft-AMSL)	<u>179.50</u> / <u>588.9</u>	<u>114.90</u> / <u>377.0</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>316.537</u>	<u>136.526</u>
Path Length (km / miles)	<u>2.523</u> / <u>1.568</u>	

Transmit Antenna

87205A
 Manufacturer ANDREW CORPORATION
 Model VHLP2-23B
 Gain(dBi) / Beamwidth(°) / Tilt(°) 40.5 / 1.70 / -1.49
 Centerline (m / ft - AGL) 18.29 / 60.0

87205A
 ANDREW CORPORATION
 VHLP2-23B
40.5 / 1.70 / 1.47
 17.68 / 58.0

Receive Antenna

Same As Transmit

Manufacturer
 Model
 Gain (dBi) / Beamwidth (°)
 Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
 Model
 Gain (dBi) / Beamwidth (°)
 Centerline (m / ft - AGL)

Radio Information

TEMQ16
 Manufacturer DRAGONWAVE INC
 Model 23HD50SFC322V02
 Model Description HORIZON DUO
 Emission Designator / Modulation 45M8D7W 256 QAM
 Loading 1 CH DIG 322000.000
 Stability (%) 0.001

	Nominal	Coordinated	Maximum
Power (dBm)		5.5	
Received Level (dBm)		<u>-40.9</u>	
EIRP (dBm)		<u>46.0</u>	

 Fixed Loss: Tx / Common (dB) 0.0 / 0.0
 Free Space Loss (dB) 127.4

TEMQ16
 DRAGONWAVE INC
 23HD50SFC322V02
 HORIZON DUO
 45M8D7W 256 QAM
 1 CH DIG 322000.000
 0.001

	Nominal	Coordinated	Maximum
		5.5	
		<u>-40.9</u>	
		<u>46.0</u>	

 0.0 / 0.0

Transmit Frequencies (MHz)	23025.0000V(1)	23175.0000V(4)	21825.0000V(1)	21975.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0130A CA
City/County Belmont/San Mateo
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0388A CA

Belmont/San Mateo
Engineering Proposal / PRIMARY OPERATION
WQMA279
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °31' <u>12.3</u> ~ N	37 °30' 5.6 ~ N
Longitude (NAD 83)	122 °18' <u>26.0</u> ~ W	122 °18' 35.9 ~ W
Ground Elevation (m/ft-AMSL)	<u>179.50</u> / <u>588.9</u>	241.40 / 792.0
Antenna Structure Registration #		
Path Azimuth (°)	<u>186.744</u>	<u>6.742</u>
Path Length (km / miles)	<u>2.071</u> / <u>1.287</u>	

Transmit Antenna

<u>80014A</u>	<u>80014A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model <u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / <u>1.33</u>	35.3 / 3.00 / <u>-1.34</u>
Centerline (m / ft – AGL) 18.29 / 60.0	4.57 / 15.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMQ48	TEMQ48
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 23HD50HFC322V02	23HD50HFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 15.5	15.5
Received Level (dBm) <u>-39.6</u>	<u>-39.6</u>
EIRP (dBm) 50.8	50.8
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) <u>125.7</u>	

Transmit Frequencies (MHz)	23075.0000 <u>H</u> (2)	23225.0000 <u>H</u> (5)	21875.0000 <u>H</u> (2)	22025.0000 <u>H</u> (5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0131A CA
City/County Los Altos Hills/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0133D CA

Los Altos/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °22' <u>58.4</u> ~ N	37 °22' <u>44.1</u> ~ N
Longitude (NAD 83)	122 °8' <u>47.0</u> ~ W	122 °7' <u>6.0</u> ~ W
Ground Elevation (m/ft-AMSL)	<u>153.00</u> / <u>502.0</u>	58.30 / 191.3
Antenna Structure Registration #		
Path Azimuth (°)	<u>100.052</u>	<u>280.069</u>
Path Length (km / miles)	<u>2.524</u> / <u>1.568</u>	

Transmit Antenna

Manufacturer	<u>87205A</u> ANDREW CORPORATION	<u>87205A</u> ANDREW CORPORATION
Model	<u>VHLP2-23B</u>	<u>VHLP2-23B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>40.5</u> / <u>1.70</u> / <u>-1.96</u>	<u>40.5</u> / <u>1.70</u> / <u>1.94</u>
Centerline (m / ft – AGL)	3.96 / 13.0	12.80 / 42.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	-40.9	-40.9
EIRP (dBm)	<u>46.0</u>	<u>46.0</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>127.4</u>

Transmit Frequencies (MHz)	<u>23325.0000H(7)</u>	<u>23425.0000H(9)</u>	<u>22125.0000H(7)</u>	<u>22225.0000H(9)</u>
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0140B CA	CA-SJC0137A CA
City/County	Cupertino/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information		
Latitude (NAD 83)	37 °18' 38.4~ N	37 °18' 30.9~ N
Longitude (NAD 83)	122 °0' 46.5~ W	122 °1' 53.3~ W
Ground Elevation (m/ft-AMSL)	69.00 / 226.4	79.60 / 261.2
Antenna Structure Registration #		
Path Azimuth (°)	262.004	81.993
Path Length (km / miles)	1.661 / 1.032	

Transmit Antenna	80014A	80014A
Manufacturer	ANDREW CORPORATION	ANDREW CORPORATION
Model	VHLP1-23A	VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / 0.22	35.3 / 3.00 / -0.23
Centerline (m / ft - AGL)	17.68 / 58.0	13.59 / 44.6

Receive Antenna	Same As Transmit	
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Diversity Receive Antenna		
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Radio Information	TEMQ55	TEMQ55
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	23HD50SFC215V02	23HD50SFC215V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	45M8D7W 64 QAM	45M8D7W 64 QAM
Loading	1 CH DIG 215000.000	1 CH DIG 215000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	-44.7	-44.7
EIRP (dBm)	43.8	43.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		123.8

Transmit Frequencies (MHz)	<u>22125.0000V(7)</u>	<u>22225.0000V(9)</u>	<u>23325.0000V(7)</u>	<u>23425.0000V(9)</u>
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0145C CA	CA-SJC0142A CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °18' <u>26.1</u> ~ N	37 °18' 1.8 ~ N
Longitude (NAD 83)	121 °59' <u>38.7</u> ~ W	122 °0' 18.2 ~ W
Ground Elevation (m/ft-AMSL)	<u>62.80</u> / <u>206.0</u>	71.60 / 234.9
Antenna Structure Registration #		
Path Azimuth (°)	<u>232.403</u>	<u>52.396</u>
Path Length (km / miles)		<u>1.228</u> / <u>0.763</u>

Transmit Antenna

Manufacturer	<u>80014A</u>	<u>80014A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Centerline (m / ft – AGL)	35.3 / 3.00 / <u>-0.79</u>	35.3 / 3.00 / <u>0.78</u>
	36.58 / 120.0	10.97 / 36.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-45.0</u>	<u>-45.0</u>
EIRP (dBm)	40.8	40.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>121.1</u>

Transmit Frequencies (MHz) 23375.0000V(8) 23475.0000V(10) 22175.0000V(8) 22275.0000V(10)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Job Number 100819COMSSL02

New Path

RCN Number: 10081932

Administrative Information

CA-SJC0146A CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0145C CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °17' 25.5~ N	37 °18' 26.1~ N
Longitude (NAD 83)	121 °59' 42.8~ W	121 °59' 38.7~ W
Ground Elevation (m/ft-AMSL)	78.00 / 255.9	62.80 / 206.0
Antenna Structure Registration #		
Path Azimuth (°)	3.093	183.094
Path Length (km / miles)	1.871 / 1.163	

Transmit Antenna

87205A	87205A
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model VHLP2-23B	VHLP2-23B
Gain(dBi) / Beamwidth(°) / Tilt(°) 40.5 / 1.70 / 0.03	40.5 / 1.70 / -0.04
Centerline (m / ft - AGL) 20.12 / 66.0	36.58 / 120.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ16	TEMQ16
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 23HD50SFC322V02	23HD50SFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 5.5	5.5
Received Level (dBm) -38.3	-38.3
EIRP (dBm) 46.0	46.0
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 124.8	

Transmit Frequencies (MHz)	23075.0000V(2)	23225.0000V(5)	21875.0000V(2)	22025.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0147D CA
City/County Los Gatos/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0141A CA

Saratoga/Santa Clara
Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °15' <u>20.2</u> ~ N	37 °15' <u>55.2</u> ~ N
Longitude (NAD 83)	121 °59' <u>7.1</u> ~ W	122 °0' <u>26.7</u> ~ W
Ground Elevation (m/ft-AMSL)	138.30 / 453.7	<u>107.40</u> / <u>352.4</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>298.822</u>	<u>118.809</u>
Path Length (km / miles)		<u>2.239</u> / <u>1.391</u>

Transmit Antenna

Manufacturer	<u>87205A</u> ANDREW CORPORATION	<u>87205A</u> ANDREW CORPORATION
Model	<u>VHLP2-23B</u>	<u>VHLP2-23B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>40.5</u> / <u>1.70</u> / <u>-0.65</u>	<u>40.5</u> / <u>1.70</u> / <u>0.64</u>
Centerline (m / ft – AGL)	18.29 / 60.0	24.08 / 79.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-39.9</u>	<u>-39.9</u>
EIRP (dBm)	<u>46.0</u>	<u>46.0</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>126.4</u>

Transmit Frequencies (MHz)	23025.0000V(1)	23175.0000V(4)	21825.0000V(1)	21975.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0147D CA	CA-SJC0149A CA
City/County	Los Gatos/Santa Clara	Los Gatos/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 15' <u>20.2</u> ~ N	37 ° 15' <u>54.4</u> ~ N
Longitude (NAD 83)	121 ° 59' <u>7.1</u> ~ W	121 ° 58' <u>56.7</u> ~ W
Ground Elevation (m/ft-AMSL)	138.30 / 453.7	<u>80.60</u> / <u>264.4</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>13.660</u>	<u>193.662</u>
Path Length (km / miles)		<u>1.085</u> / <u>0.674</u>

Transmit Antenna

Manufacturer	<u>80014A</u>	<u>80014A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Centerline (m / ft – AGL)	35.3 / 3.00 / <u>-1.45</u>	35.3 / 3.00 / <u>1.44</u>
	<u>18.29</u> / <u>60.0</u>	<u>48.65</u> / <u>159.6</u>

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-44.0</u>	<u>-44.0</u>
EIRP (dBm)	40.8	40.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>120.1</u>

Transmit Frequencies (MHz) 23075.0000V(2) 23225.0000V(5) 21875.0000V(2) 22025.0000V(5)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0156A CA	CA-SJC0165A CA
City/County	Santa Clara/Santa Clara	Santa Clara/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		WQLY646
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °21' 9.9~ N	37 °20' 49.4~ N
Longitude (NAD 83)	121 °57' 32.7~ W	121 °56' 24.8~ W
Ground Elevation (m/ft-AMSL)	24.30 / 79.7	22.90 / 75.1
Antenna Structure Registration #		1055725
Path Azimuth (°)	110.710	290.721
Path Length (km / miles)	1.787 / 1.110	

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4 / 2.90 / 0.80</u>	<u>34.4 / 2.90 / -0.81</u>
Centerline (m / ft - AGL)	<u>17.37 / 57.0</u>	<u>43.89 / 144.0</u>

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ55	TEMQ55
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC215V02	23HD50SFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	<u>-47.1</u>	<u>-47.1</u>
EIRP (dBm)	<u>42.9</u>	<u>42.9</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		124.4

Transmit Frequencies (MHz)	23325.0000V(7)	23425.0000V(9)	22125.0000V(7)	22225.0000V(9)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Prev Job Num: 100427COMSSL01

Job Number 100819COMSSL02

RCN Number: 10081932

Administrative Information

CA-SJC0159A CA
City/County Santa Clara/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0165A CA

Santa Clara/Santa Clara
Engineering Proposal / PRIMARY OPERATION
WQLY646
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °20' 33.8~ N	37 °20' 49.4~ N
Longitude (NAD 83)	121 °57' 3.4~ W	121 °56' 24.8~ W
Ground Elevation (m/ft-AMSL)	30.20 / 99.1	22.90 / 75.1
Antenna Structure Registration #		1055725
Path Azimuth (°)	63.148	243.155
Path Length (km / miles)		1.065 / 0.662

Transmit Antenna

<u>80014A</u>	<u>80014A</u>
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model VHLP1-23A	VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / 0.59	35.3 / 3.00 / -0.59
Centerline (m / ft - AGL) 13.11 / 43.0	31.39 / 103.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ16	TEMQ16
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 23HD50SFC322V02	23HD50SFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 5.5	5.5
Received Level (dBm) -43.8	-43.8
EIRP (dBm) 40.8	40.8
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 119.9	

Transmit Frequencies (MHz)	23075.0000V(2)	23225.0000V(5)	21875.0000V(2)	22025.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0161D CA	CA-SJC0165A CA
City/County	Santa Clara/Santa Clara	Santa Clara/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		WQLY646
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °21' 35.4~ N	37 °20' 49.4~ N
Longitude (NAD 83)	121 °56' 48.7~ W	121 °56' 24.8~ W
Ground Elevation (m/ft-AMSL)	18.00 / 59.1	22.90 / 75.1
Antenna Structure Registration #		1055725
Path Azimuth (°)	157.471	337.475
Path Length (km / miles)		1.535 / 0.954

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / 0.81	<u>34.4</u> / <u>2.90</u> / -0.82
Centerline (m / ft - AGL)	14.33 / 47.0	31.39 / 103.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	7.5	7.5
Received Level (dBm)	<u>-46.8</u>	<u>-46.8</u>
EIRP (dBm)	<u>41.9</u>	<u>41.9</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		123.1

Transmit Frequencies (MHz) 23025.0000H(1) 23175.0000H(4) 21825.0000H(1) 21975.0000H(4)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0162A CA	CA-SJC0154A CA
City/County	San Jose/Santa Clara	Los Gatos/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY659	
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °15' 7.5~ N	37 °15' 2.2~ N
Longitude (NAD 83)	121 °56' 47.3~ W	121 °57' 53.4~ W
Ground Elevation (m/ft-AMSL)	86.10 / 282.5	82.20 / 269.7
Antenna Structure Registration #		
Path Azimuth (°)	264.278	84.267
Path Length (km / miles)	1.637 / 1.017	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / <u>0.40</u>	35.3 / 3.00 / <u>-0.41</u>
Centerline (m / ft – AGL)	29.87 / 98.0	<u>45.42</u> / <u>149.0</u>

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ55	TEMQ55
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC215V02	23HD50SFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	-46.4	-46.4
EIRP (dBm)	43.8	41.9
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 1.9
Free Space Loss (dB)		123.6

Transmit Frequencies (MHz)	21825.0000V(1)	21975.0000V(4)	23025.0000V(1)	23175.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0163A CA
City/County Campbell/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0162A CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
WQLY659
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °16' <u>26.2</u> ~ N	37 °15' 7.5 ~ N
Longitude (NAD 83)	121 °56' <u>41.9</u> ~ W	121 °56' 47.3 ~ W
Ground Elevation (m/ft-AMSL)	67.90 / 222.8	86.10 / 282.5
Antenna Structure Registration #		
Path Azimuth (°)	<u>183.139</u>	<u>3.139</u>
Path Length (km / miles)		<u>2.430</u> / <u>1.510</u>

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>87205A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP2-23B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / <u>0.72</u>	<u>40.5</u> / <u>1.70</u> / -0.73
Centerline (m / ft - AGL)	17.37 / 57.0	29.87 / 98.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ48	TEMQ48
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC322V02	23HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	14.0	14.0
Received Level (dBm)	<u>-37.3</u>	<u>-37.3</u>
EIRP (dBm)	49.3	<u>54.5</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>127.1</u>

Transmit Frequencies (MHz)	23025.0000V(1)	23175.0000V(4)	21825.0000V(1)	21975.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0164A CA	CA-SJC0102B CA
City/County	Santa Clara/Santa Clara	Santa Clara/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		WQLY525
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °22' 47.1~ N	37 °22' 5.8~ N
Longitude (NAD 83)	121 °56' 24.7~ W	121 °57' 29.6~ W
Ground Elevation (m/ft-AMSL)	9.60 / 31.5	14.00 / 45.9
Antenna Structure Registration #		1255516
Path Azimuth (°)	231.437	51.427
Path Length (km / miles)	2.042 / 1.269	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>87205A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP2-23B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / 0.26	40.5 / 1.70 / -0.28
Centerline (m / ft - AGL)	17.68 / 58.0	22.86 / 75.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	7.5	7.5
Received Level (dBm)	<u>-42.3</u>	<u>-42.3</u>
EIRP (dBm)	42.8	<u>48.0</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		125.6

Transmit Frequencies (MHz) 23025.0000H(1) 23175.0000H(4) 21825.0000H(1) 21975.0000H(4)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0165A CA	CA-SJC0285A CA
City/County	Santa Clara/Santa Clara	Santa Clara/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY646	
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °20' 49.4~ N	37 °21' 10.6~ N
Longitude (NAD 83)	121 °56' 24.8~ W	121 °58' 9.3~ W
Ground Elevation (m/ft-AMSL)	22.90 / 75.1	22.40 / 73.5
Antenna Structure Registration #	1055725	
Path Azimuth (°)	284.267	104.249
Path Length (km / miles)	2.654 / 1.649	

Transmit Antenna

Manufacturer	RD1150	RD1150
Model	RADIO WAVES, INC	RADIO WAVES, INC
Gain(dBi) / Beamwidth(°) / Tilt(°)	HP2-23	HP2-23
Centerline (m / ft – AGL)	40.2 / 1.70 / 0.49	40.2 / 1.70 / -0.51
	12.19 / 40.0	35.84 / 117.6

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ55	TEMQ55
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC215V02	23HD50SFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	-38.9	-38.9
EIRP (dBm)	48.7	48.7
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)	127.8	

Transmit Frequencies (MHz)	22175.0000V(8)	22275.0000V(10)	23375.0000V(8)	23475.0000V(10)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0166D CA
City/County Campbell/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0445D CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °17' <u>19.7</u> ~ N	37 °16' 45.5~ N
Longitude (NAD 83)	121 °56' <u>6.9</u> ~ W	121 °55' 18.3~ W
Ground Elevation (m/ft-AMSL)	<u>57.50</u> / <u>188.6</u>	58.70 / 192.6
Antenna Structure Registration #		
Path Azimuth (°)	<u>131.366</u>	<u>311.374</u>
Path Length (km / miles)		<u>1.595</u> / <u>0.991</u>

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / <u>-1.49</u>	35.3 / 3.00 / <u>1.48</u>
Centerline (m / ft – AGL)	67.06 / 220.0	24.38 / 80.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ55	TEMQ55
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC215V02	23HD50SFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	<u>-46.2</u>	<u>-46.2</u>
EIRP (dBm)	43.8	41.9
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 1.9
Free Space Loss (dB)		<u>123.4</u>

Transmit Frequencies (MHz)	23125.0000V(3)	23275.0000V(6)	21925.0000V(3)	22075.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0166D CA
City/County Campbell/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0179A CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °17' <u>19.7</u> ~ N	37 °17' 49.2 ~ N
Longitude (NAD 83)	121 °56' <u>6.9</u> ~ W	121 °54' 47.2 ~ W
Ground Elevation (m/ft-AMSL)	<u>57.50</u> / <u>188.6</u>	49.10 / 161.1
Antenna Structure Registration #		
Path Azimuth (°)	<u>65.136</u>	<u>245.149</u>
Path Length (km / miles)		<u>2.163</u> / <u>1.344</u>

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / <u>-1.56</u>	<u>34.4</u> / <u>2.90</u> / <u>1.55</u>
Centerline (m / ft – AGL)	67.06 / 220.0	16.76 / 55.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ55	TEMQ55
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC215V02	23HD50SFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	<u>-48.8</u>	<u>-48.8</u>
EIRP (dBm)	<u>42.9</u>	<u>42.9</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>126.1</u>

Transmit Frequencies (MHz)	23025.0000 <u>H</u> (1)	23175.0000 <u>H</u> (4)	21825.0000 <u>H</u> (1)	21975.0000 <u>H</u> (4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0174C CA	CA-SJC0186A CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °16' 15.2~ N	37 °16' <u>18.8</u> ~ N
Longitude (NAD 83)	121 °55' 4.8~ W	121 °54' <u>13.3</u> ~ W
Ground Elevation (m/ft-AMSL)	56.40 / 185.0	<u>51.80</u> / <u>169.9</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>84.997</u>	<u>265.005</u>
Path Length (km / miles)		<u>1.274</u> / <u>0.791</u>

Transmit Antenna

Manufacturer	<u>80014A</u>	<u>80014A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Centerline (m / ft – AGL)	35.3 / 3.00 / <u>-0.92</u>	35.3 / 3.00 / 0.92
	29.26 / 96.0	13.41 / 44.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMO25	TEMO25
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC271V02	23HD50SFC271V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	47M8D7W 128 QAM	47M8D7W 128 QAM
Stability (%)	1 CH DIG 271000.000	1 CH DIG 271000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	7.0	7.0
Received Level (dBm)	<u>-45.8</u>	<u>-45.8</u>
EIRP (dBm)	40.4	42.3
Fixed Loss: Tx / Common (dB)	0.0 / 1.9	0.0 / 0.0
Free Space Loss (dB)		<u>121.5</u>

Transmit Frequencies (MHz)	21825.0000V(1)	21975.0000V(4)	23025.0000V(1)	23175.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0176A CA	CA-SJC0167C CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information		
Latitude (NAD 83)	37 °20' 8.0~ N	37 °19' 31.8~ N
Longitude (NAD 83)	121 °55' 3.1~ W	121 °55' 33.5~ W
Ground Elevation (m/ft-AMSL)	28.80 / 94.5	36.00 / 118.1
Antenna Structure Registration #		
Path Azimuth (°)	213.848	33.843
Path Length (km / miles)	1.344 / 0.835	

Transmit Antenna	80014A	80014A
Manufacturer	ANDREW CORPORATION	ANDREW CORPORATION
Model	VHLP1-23A	VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / 0.68	35.3 / 3.00 / -0.69
Centerline (m / ft - AGL)	13.11 / 43.0	21.95 / 72.0

Receive Antenna	Same As Transmit	
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Diversity Receive Antenna		
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Radio Information	TEMQ16	TEMQ16
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	23HD50SFC322V02	23HD50SFC322V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	45M8D7W 256 QAM	45M8D7W 256 QAM
Loading	1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	-45.8	-45.8
EIRP (dBm)	40.8	40.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		121.9

Transmit Frequencies (MHz)	21875.0000V(2)	22025.0000V(5)	23075.0000V(2)	23225.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0183C CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0208C CA

City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °20' <u>54.1</u> ~ N	37 °22' 10.8 ~ N
Longitude (NAD 83)	121 °54' <u>0.7</u> ~ W	121 °52' 28.4 ~ W
Ground Elevation (m/ft-AMSL)	<u>21.10</u> / <u>69.2</u>	25.80 / 84.6
Antenna Structure Registration #		
Path Azimuth (°)	<u>43.841</u>	<u>223.856</u>
Path Length (km / miles)		<u>3.279</u> / <u>2.037</u>

Transmit Antenna

Manufacturer	RD1150	RD1150
Model	RADIO WAVES, INC	RADIO WAVES, INC
Gain(dBi) / Beamwidth(°) / Tilt(°)	HP2-23	HP2-23
Centerline (m / ft – AGL)	40.2 / 1.70 / <u>-0.66</u>	40.2 / 1.70 / <u>0.64</u>
	51.82 / 170.0	10.06 / 33.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ55	TEMQ55
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC215V02	23HD50SFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	<u>-40.8</u>	<u>-40.8</u>
EIRP (dBm)	48.7	48.7
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>129.7</u>

Transmit Frequencies (MHz)	21875.0000H(2)	22075.0000H(6)	23075.0000H(2)	23275.0000H(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0190C CA	CA-SJC0187A CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °22' 59.2~ N	37 °22' 27.4~ N
Longitude (NAD 83)	121 °54' 0.8~ W	121 °54' 10.7~ W
Ground Elevation (m/ft-AMSL)	17.30 / 56.8	16.20 / 53.1
Antenna Structure Registration #		
Path Azimuth (°)	193.953	13.951
Path Length (km / miles)	1.010 / 0.628	

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / 0.02	<u>34.4</u> / <u>2.90</u> / -0.03
Centerline (m / ft - AGL)	13.72 / 45.0	15.24 / 50.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMO20	TEMO20
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC371V02	23HD50SFC371V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	49M2D7W 256 QAM	49M2D7W 256 QAM
Stability (%)	1 CH DIG 371000.000	1 CH DIG 371000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-45.1</u>	<u>-45.1</u>
EIRP (dBm)	<u>39.9</u>	<u>39.9</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		119.4

Transmit Frequencies (MHz) 23375.0000H(8) 23525.0000H(11) 22175.0000H(8) 22325.0000H(11)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0195C CA
City/County Milpitas/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0045B CA

Milpitas/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °24' <u>48.6</u> ~ N	37 °24' <u>11.0</u> ~ N
Longitude (NAD 83)	121 °53' <u>31.4</u> ~ W	121 °54' <u>41.0</u> ~ W
Ground Elevation (m/ft-AMSL)	<u>14.10</u> / <u>46.3</u>	<u>11.00</u> / <u>36.1</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>235.899</u>	<u>55.887</u>
Path Length (km / miles)	<u>2.067</u> / <u>1.285</u>	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>87205A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP2-23B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / <u>0.04</u>	40.5 / <u>1.70</u> / <u>-0.06</u>
Centerline (m / ft – AGL)	24.38 / 80.0	29.26 / 96.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	<u>TEMQ16</u> DRAGONWAVE INC	<u>TEMQ16</u> DRAGONWAVE INC
Model	<u>23HD50SFC322V02</u>	<u>23HD50SFC322V02</u>
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	45M8D7W 256 QAM	45M8D7W 256 QAM
Loading	1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	7.5	7.5
Received Level (dBm)	<u>-42.4</u>	<u>-42.4</u>
EIRP (dBm)	42.8	<u>48.0</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>125.7</u>

Transmit Frequencies (MHz) 21925.0000V(3) 22025.0000V(5) 23125.0000V(3) 23225.0000V(5)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0197C CA	CA-SJC0195C CA
City/County	Milpitas/Santa Clara	Milpitas/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQMA288	
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °25' 10.9~ N	37 °24' 48.6 ~ N
Longitude (NAD 83)	121 °53' 8.2~ W	121 °53' 31.4 ~ W
Ground Elevation (m/ft-AMSL)	18.00 / 59.1	<u>14.10</u> / <u>46.3</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>219.688</u>	<u>39.684</u>
Path Length (km / miles)		<u>0.893</u> / <u>0.555</u>

Transmit Antenna

Manufacturer	<u>80014A</u>	<u>80014A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Centerline (m / ft – AGL)	35.3 / 3.00 / -0.25	35.3 / 3.00 / <u>0.25</u>
	24.38 / 80.0	24.38 / 80.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMO20	TEMO20
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC371V02	23HD50SFC371V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	49M2D7W 256 QAM	49M2D7W 256 QAM
Stability (%)	1 CH DIG 371000.000	1 CH DIG 371000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-42.3</u>	<u>-42.3</u>
EIRP (dBm)	40.8	40.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>118.4</u>

Transmit Frequencies (MHz) 23025.0000V(1) 23175.0000V(4) 21825.0000V(1) 21975.0000V(4)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0197C CA	CA-SJC0210C CA
City/County	Milpitas/Santa Clara	Milpitas/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQMA288	
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °25' 10.9~ N	37 °25' 5.0~ N
Longitude (NAD 83)	121 °53' 8.2~ W	121 °52' 21.1~ W
Ground Elevation (m/ft-AMSL)	18.00 / 59.1	36.00 / 118.1
Antenna Structure Registration #		
Path Azimuth (°)	98.922	278.930
Path Length (km / miles)	1.172 / 0.728	

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / 0.27	<u>34.4</u> / <u>2.90</u> / -0.27
Centerline (m / ft - AGL)	24.38 / 80.0	11.89 / 39.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-46.4</u>	<u>-46.4</u>
EIRP (dBm)	<u>39.9</u>	<u>39.9</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		120.7

Transmit Frequencies (MHz) 23375.0000V(8) 23475.0000V(10) 22175.0000V(8) 22275.0000V(10)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0198A CA	CA-SJC0197C CA
City/County	Milpitas/Santa Clara	Milpitas/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQMA289	WQMA288
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °26' 5.4~ N	37 °25' 10.9~ N
Longitude (NAD 83)	121 °53' 31.1~ W	121 °53' 8.2~ W
Ground Elevation (m/ft-AMSL)	9.40 / 30.8	18.00 / 59.1
Antenna Structure Registration #		
Path Azimuth (°)	161.472	341.476
Path Length (km / miles)	1.772 / 1.101	

Transmit Antenna

Manufacturer	87205A ANDREW CORPORATION	87205A ANDREW CORPORATION
Model	VHLP2-23B	VHLP2-23B
Gain(dBi) / Beamwidth(°) / Tilt(°)	40.5 / 1.70 / 0.15	40.5 / 1.70 / -0.17
Centerline (m / ft - AGL)	26.52 / 87.0	22.86 / 75.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	-37.8	-37.8
EIRP (dBm)	46.0	46.0
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		124.3

Transmit Frequencies (MHz)	21925.0000V(3)	22075.0000V(6)	23125.0000V(3)	23275.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0199B CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0203A CA

City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °23' 12.7~ N	37 °23' 45.0~ N
Longitude (NAD 83)	121 °53' 15.5~ W	121 °53' 10.0~ W
Ground Elevation (m/ft-AMSL)	21.30 / 69.9	21.60 / 70.9
Antenna Structure Registration #		
Path Azimuth (°)	7.737	187.737
Path Length (km / miles)	1.005 / 0.624	

Transmit Antenna

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / 0.76
Centerline (m / ft – AGL) 12.19 / 40.0

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / -0.77
Centerline (m / ft – AGL) 25.30 / 83.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMQ16
Manufacturer DRAGONWAVE INC
Model 23HD50SFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.5
Received Level (dBm) -45.1
EIRP (dBm) 39.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 119.4

TEMQ16
Manufacturer DRAGONWAVE INC
Model 23HD50SFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.5
Received Level (dBm) -45.1
EIRP (dBm) 39.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0

Transmit Frequencies (MHz)	21925.0000V(3)	22075.0000V(6)	23125.0000V(3)	23275.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Job Number 100819COMSSL02

New Path

RCN Number: 10081932

Administrative Information

CA-SJC0200A CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0211A CA

/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °13' 56.6~ N	37 °13' 54.4~ N
Longitude (NAD 83)	121 °53' 0.0~ W	121 °52' 0.3~ W
Ground Elevation (m/ft-AMSL)	73.50 / 241.1	86.80 / 284.8
Antenna Structure Registration #		
Path Azimuth (°)	92.634	272.644
Path Length (km / miles)	1.473 / 0.915	

Transmit Antenna

80014A	80014A
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model VHLP1-23A	VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / -0.64	35.3 / 3.00 / 0.63
Centerline (m / ft - AGL) 44.81 / 147.0	15.24 / 50.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ48	TEMQ48
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 23HD50HFC322V02	23HD50HFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 15.5	15.5
Received Level (dBm) -36.6	-36.6
EIRP (dBm) 50.8	50.8
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 122.7	

Transmit Frequencies (MHz)	23325.0000H(7)	23425.0000H(9)	22125.0000H(7)	22225.0000H(9)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0201A CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0436C CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °19' 5.7~ N	37 °18' 56.3~ N
Longitude (NAD 83)	121 °53' 5.1~ W	121 °51' 57.8~ W
Ground Elevation (m/ft-AMSL)	33.20 / 108.9	33.50 / 109.9
Antenna Structure Registration #		
Path Azimuth (°)	99.914	279.925
Path Length (km / miles)	1.682 / 1.045	

Transmit Antenna

99141R
Manufacturer RADIO WAVES, INC
Model HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / 0.18
Centerline (m / ft – AGL) 12.50 / 41.0

99141R
RADIO WAVES, INC
HPCPE-23
34.4 / 2.90 / -0.19
17.68 / 58.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEM025
Manufacturer DRAGONWAVE INC
Model 23HD50SFC271V02
Model Description HORIZON DUO
Emission Designator / Modulation 47M8D7W 128 QAM
Loading 1 CH DIG 271000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 7.0
Received Level (dBm) -48.1
EIRP (dBm) 41.4
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 123.9

TEM025
DRAGONWAVE INC
23HD50SFC271V02
HORIZON DUO
47M8D7W 128 QAM
1 CH DIG 271000.000
0.001
Nominal Coordinated Maximum
7.0
-48.1
41.4
0.0 / 0.0

Transmit Frequencies (MHz)	23125.0000V(3)	23275.0000V(6)	21925.0000V(3)	22075.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147

(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Prev Job Num: 100427COMSSL01

Job Number 100819COMSSL02

RCN Number: 10081932

Administrative Information**CA-SJC0205A CA****CA-SFO0443D CA**

City/County

San Jose/Santa Clara

San Jose/Santa Clara

Status / License Basis

Engineering Proposal / PRIMARY OPERATION

Engineering Proposal / PRIMARY OPERATION

Call Sign

Licensee Code

CLESP3

CLESP3

Licensee Name

Clearwire Spectrum Holdings III, LL

Clearwire Spectrum Holdings III, LL

Radio Service / Station Class

MG -- Microwave Industrial/Business Pool

FXO -- Fixed

Site Information

Latitude (NAD 83)

37 °18' 21.0~ N

37 °17' 13.8~ N

Longitude (NAD 83)

121 °52' 40.9~ W

121 °52' 28.3~ W

Ground Elevation (m/ft-AMSL)

39.00 / 128.0

66.00 / 216.5

Antenna Structure Registration #

Path Azimuth (°)

171.480

351.482

Path Length (km / miles)

2.095 / 1.302

Transmit Antenna80014A80014A

Manufacturer

ANDREW CORPORATION

ANDREW CORPORATION

Model

VHLP1-23AVHLP1-23A

Gain(dBi) / Beamwidth(°) / Tilt(°)

35.3 / 3.00 / 0.69

35.3 / 3.00 / -0.70

Centerline (m / ft - AGL)

18.90 / 62.0

17.22 / 56.5

Receive Antenna

Same As Transmit

Manufacturer

Model

Gain (dBi) / Beamwidth (°)

Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer

Model

Gain (dBi) / Beamwidth (°)

Centerline (m / ft - AGL)

Radio Information

TEMQ55

TEMQ55

Manufacturer

DRAGONWAVE INC

DRAGONWAVE INC

Model

23HD50SFC215V02

23HD50SFC215V02

Model Description

HORIZON DUO

HORIZON DUO

Emission Designator / Modulation

45M8D7W 64 QAM

45M8D7W 64 QAM

Loading

1 CH DIG 215000.000

1 CH DIG 215000.000

Stability (%)

0.001

0.001

Nominal Coordinated Maximum

Nominal Coordinated Maximum

Power (dBm)

8.5

8.5

Received Level (dBm)

-46.7

-46.7

EIRP (dBm)

43.8

43.8

Fixed Loss: Tx / Common (dB)

0.0 / 0.0

0.0 / 0.0

Free Space Loss (dB)

125.8

Transmit Frequencies (MHz)23325.0000V(7)23425.0000V(9)22125.0000V(7)22225.0000V(9)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0206B CA	CA-SFO0453D CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		WQLY737
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 16' <u>48.1</u> ~ N	37 ° 16' 34.2 ~ N
Longitude (NAD 83)	121 ° 50' <u>18.0</u> ~ W	121 ° 49' 34.5 ~ W
Ground Elevation (m/ft-AMSL)	<u>51.20</u> / <u>168.0</u>	87.90 / 288.4
Antenna Structure Registration #		
Path Azimuth (°)	<u>111.792</u>	<u>291.799</u>
Path Length (km / miles)		<u>1.154</u> / <u>0.717</u>

Transmit Antenna

Manufacturer	<u>80014A</u>	<u>80014A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Centerline (m / ft – AGL)	35.3 / 3.00 / <u>1.71</u>	35.3 / 3.00 / <u>-1.72</u>
	16.46 / 54.0	14.33 / 47.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMO20	TEMO20
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC371V02	23HD50SFC371V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	49M2D7W 256 QAM	49M2D7W 256 QAM
Stability (%)	1 CH DIG 371000.000	1 CH DIG 371000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-44.5</u>	<u>-44.5</u>
EIRP (dBm)	40.8	40.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>120.6</u>

Transmit Frequencies (MHz) 21875.0000V(2) 22025.0000V(5) 23075.0000V(2) 23225.0000V(5)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0209C CA	CA-SJC0214C CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		WQLY503
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °14' 30.2~ N	37 °15' 5.9~ N
Longitude (NAD 83)	121 °51' 39.0~ W	121 °51' 44.5~ W
Ground Elevation (m/ft-AMSL)	55.80 / 183.1	56.60 / 185.7
Antenna Structure Registration #		
Path Azimuth (°)	352.979	172.978
Path Length (km / miles)	1.109 / 0.689	

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / 0.34	<u>34.4</u> / <u>2.90</u> / -0.34
Centerline (m / ft - AGL)	14.02 / 46.0	19.81 / 65.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-46.0</u>	<u>-46.0</u>
EIRP (dBm)	<u>39.9</u>	<u>39.9</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		120.3

Transmit Frequencies (MHz) 21875.0000V(2) 22025.0000V(5) 23075.0000V(2) 23225.0000V(5)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0214C CA	CA-SJC0225B CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY503	WQLY575
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °15' 5.9~ N	37 °16' 2.0~ N
Longitude (NAD 83)	121 °51' 44.5~ W	121 °50' 0.2~ W
Ground Elevation (m/ft-AMSL)	56.60 / 185.7	50.60 / 166.0
Antenna Structure Registration #		
Path Azimuth (°)	56.054	236.071
Path Length (km / miles)	3.098 / 1.925	

Transmit Antenna

Manufacturer	<u>87205A</u> ANDREW CORPORATION	<u>87205A</u> ANDREW CORPORATION
Model	<u>VHLP2-23B</u>	<u>VHLP2-23B</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	40.5 / 1.70 / -0.26	40.5 / 1.70 / 0.24
Centerline (m / ft - AGL)	19.81 / 65.0	12.19 / 40.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ48	TEMQ48
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC322V02	23HD50HFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	15.5	15.5
Received Level (dBm)	<u>-32.7</u>	<u>-32.7</u>
EIRP (dBm)	<u>56.0</u>	<u>56.0</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		129.2

Transmit Frequencies (MHz) 23075.0000V(2) 23225.0000V(5) 21875.0000V(2) 22025.0000V(5)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0215D CA
City/County /Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0454C CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
WQLY852
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °17' <u>7.2</u> ~ N	37 °16' 21.9~ N
Longitude (NAD 83)	121 °51' <u>27.0</u> ~ W	121 °52' 15.0~ W
Ground Elevation (m/ft-AMSL)	<u>130.60</u> / <u>428.5</u>	48.10 / 157.8
Antenna Structure Registration #		
Path Azimuth (°)	<u>220.259</u>	<u>40.251</u>
Path Length (km / miles)		<u>1.830</u> / <u>1.137</u>

Transmit Antenna

Manufacturer	<u>87205A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP2-23B</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>40.5</u> / <u>1.70</u> / <u>-3.26</u>	<u>35.3</u> / <u>3.00</u> / <u>3.25</u>
Centerline (m / ft – AGL)	38.10 / 125.0	16.46 / 54.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	-43.3	-43.3
EIRP (dBm)	<u>46.0</u>	40.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>124.6</u>

Transmit Frequencies (MHz)	23075.0000V(2)	23225.0000V(5)	21875.0000V(2)	22025.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0215D CA	CA-SJC0196C CA
City/County	/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °17' <u>7.2</u> ~ N	37 °15' 58.1~ N
Longitude (NAD 83)	121 °51' <u>27.0</u> ~ W	121 °53' 24.3~ W
Ground Elevation (m/ft-AMSL)	<u>130.60</u> / <u>428.5</u>	51.20 / 168.0
Antenna Structure Registration #		
Path Azimuth (°)	<u>233.614</u>	<u>53.594</u>
Path Length (km / miles)		<u>3.590</u> / <u>2.231</u>

Transmit Antenna

Manufacturer	RD1150	RD1150
Model	RADIO WAVES, INC	RADIO WAVES, INC
Gain(dBi) / Beamwidth(°) / Tilt(°)	HP2-23	HP2-23
Centerline (m / ft – AGL)	40.2 / 1.70 / <u>-1.72</u>	40.2 / 1.70 / <u>1.69</u>
	38.10 / 125.0	10.67 / 35.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ55	TEMQ55
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC215V02	23HD50SFC215V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 64 QAM	45M8D7W 64 QAM
Stability (%)	1 CH DIG 215000.000	1 CH DIG 215000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	8.5	8.5
Received Level (dBm)	<u>-41.6</u>	<u>-41.6</u>
EIRP (dBm)	48.7	48.7
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>130.5</u>

Transmit Frequencies (MHz) 23125.0000H(3) 23275.0000H(6) 21925.0000H(3) 22075.0000H(6)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0216B CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0222A CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83) 37 °22' 55.6 ~ N
Longitude (NAD 83) 121 °51' 40.2 ~ W
Ground Elevation (m/ft-AMSL) 42.30 / 138.8
Antenna Structure Registration # 1269897
Path Azimuth (°) 53.650
Path Length (km / miles) 1.753 / 1.089

37 °23' 29.3 ~ N
121 °50' 42.8 ~ W
61.80 / 202.8
1269897
233.660

Transmit Antenna

80014A
Manufacturer ANDREW CORPORATION
Model VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / 0.03
Centerline (m / ft - AGL) 33.53 / 110.0

80014A
ANDREW CORPORATION
VHLP1-23A
35.3 / 3.00 / -0.05
15.24 / 50.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ20
Manufacturer DRAGONWAVE INC
Model 23HD50SFC171V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 32 QAM
Loading 1 CH DIG 171000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 10.0
Received Level (dBm) -45.5
EIRP (dBm) 43.4
Fixed Loss: Tx / Common (dB) 0.0 / 1.9
Free Space Loss (dB) 124.2

TEMQ20
DRAGONWAVE INC
23HD50SFC171V02
HORIZON DUO
45M8D7W 32 QAM
1 CH DIG 171000.000
0.001
Nominal Coordinated Maximum
10.0
-45.5
45.3
0.0 / 0.0

Transmit Frequencies (MHz) 21825.0000V(1) 21975.0000V(4) 23025.0000V(1) 23175.0000V(4)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0217B CA	CA-SJC0227C CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		WQLY592
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °20' <u>42.0</u> ~ N	37 °21' 35.4 ~ N
Longitude (NAD 83)	121 °51' <u>22.7</u> ~ W	121 °50' 21.4 ~ W
Ground Elevation (m/ft-AMSL)	<u>29.80</u> / <u>97.8</u>	33.00 / 108.3
Antenna Structure Registration #		
Path Azimuth (°)	<u>42.497</u>	<u>222.507</u>
Path Length (km / miles)	<u>2.233</u> / <u>1.388</u>	

Transmit Antenna

Manufacturer	<u>87205A</u>	<u>87205A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP2-23B</u>	<u>VHLP2-23B</u>
Centerline (m / ft – AGL)	<u>40.5</u> / <u>1.70</u> / 0.11	<u>40.5</u> / <u>1.70</u> / <u>-0.12</u>
	15.24 / 50.0	16.46 / 54.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-41.7</u>	<u>-41.7</u>
EIRP (dBm)	<u>46.0</u>	<u>44.1</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / <u>1.9</u>
Free Space Loss (dB)		<u>126.3</u>

Transmit Frequencies (MHz) 23075.0000V(2) 23225.0000V(5) 21875.0000V(2) 22025.0000V(5)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0219A CA	CA-SJC0214C CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		WQLY503
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 13' <u>52.0</u> ~ N	37 ° 15' 5.9 ~ N
Longitude (NAD 83)	121 ° 50' <u>52.8</u> ~ W	121 ° 51' 44.5 ~ W
Ground Elevation (m/ft-AMSL)	<u>124.60</u> / <u>408.8</u>	56.60 / 185.7
Antenna Structure Registration #		
Path Azimuth (°)	<u>330.785</u>	<u>150.776</u>
Path Length (km / miles)	<u>2.610</u> / <u>1.622</u>	

Transmit Antenna

Manufacturer	<u>87205A</u>	<u>87205A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP2-23B</u>	<u>VHLP2-23B</u>
Centerline (m / ft – AGL)	<u>40.5</u> / <u>1.70</u> / <u>-1.19</u>	<u>40.5</u> / <u>1.70</u> / <u>1.18</u>
	5.79 / 19.0	19.81 / 65.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	7.5	7.5
Received Level (dBm)	<u>-39.2</u>	<u>-39.2</u>
EIRP (dBm)	<u>48.0</u>	<u>48.0</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>127.7</u>

Transmit Frequencies (MHz) 21925.0000V(3) 22075.0000V(6) 23125.0000V(3) 23275.0000V(6)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0220A CA	CA-SJC0222A CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information		
Latitude (NAD 83)	37 °24' 5.0~ N	37 °23' 29.3~ N
Longitude (NAD 83)	121 °50' 59.8~ W	121 °50' 42.8~ W
Ground Elevation (m/ft-AMSL)	56.70 / 186.0	61.80 / 202.8
Antenna Structure Registration #		1269897
Path Azimuth (°)	159.196	339.199
Path Length (km / miles)		1.177 / 0.732

Transmit Antenna	80014A	80014A
Manufacturer	ANDREW CORPORATION	ANDREW CORPORATION
Model	VHLP1-23A	VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / 0.35	35.3 / 3.00 / -0.36
Centerline (m / ft - AGL)	15.24 / 50.0	17.37 / 57.0

Receive Antenna	Same As Transmit	
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Diversity Receive Antenna		
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft - AGL)		

Radio Information	TEMQ16	TEMQ16
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	23HD50SFC322V02	23HD50SFC322V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	45M8D7W 256 QAM	45M8D7W 256 QAM
Loading	1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	7.5	7.5
Received Level (dBm)	-42.7	-42.7
EIRP (dBm)	42.8	42.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		120.8

Transmit Frequencies (MHz)	21875.0000V(2)	22025.0000V(5)	23075.0000V(2)	23225.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0225B CA	CA-SFO0458A CA
City/County	San Jose/Santa Clara	/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLY575	
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °16' 2.0~ N	37 °15' 32.7~ N
Longitude (NAD 83)	121 °50' 0.2~ W	121 °50' 32.1~ W
Ground Elevation (m/ft-AMSL)	50.60 / 166.0	48.60 / 159.4
Antenna Structure Registration #		
Path Azimuth (°)	221.032	41.027
Path Length (km / miles)	1.197 / 0.744	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / -0.10	35.3 / 3.00 / 0.09
Centerline (m / ft - AGL)	12.19 / 40.0	12.19 / 40.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	-44.8	-44.8
EIRP (dBm)	40.8	40.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		120.9

Transmit Frequencies (MHz)	21825.0000V(1)	21975.0000V(4)	23025.0000V(1)	23175.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0226C CA	CA-SFO0444A CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °17' 39.5~ N	37 °17' 12.0~ N
Longitude (NAD 83)	121 °49' 46.4~ W	121 °47' 50.4~ W
Ground Elevation (m/ft-AMSL)	47.80 / 156.8	<u>192.20</u> / <u>630.6</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>106.517</u>	<u>286.536</u>
Path Length (km / miles)	<u>2.980</u> / <u>1.852</u>	

Transmit Antenna

Manufacturer	<u>80014A</u>	<u>80014A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Centerline (m / ft – AGL)	35.3 / 3.00 / <u>2.51</u>	35.3 / 3.00 / <u>-2.53</u>
	24.38 / 80.0	11.28 / 37.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ52	TEMQ52
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC110V02	23HD50SFC110V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M2D7W 16 QAM	45M2D7W 16 QAM
Stability (%)	1 CH DIG 110000.000	1 CH DIG 110000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	10.5	10.5
Received Level (dBm)	<u>-47.7</u>	<u>-47.7</u>
EIRP (dBm)	45.8	45.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>128.8</u>

Transmit Frequencies (MHz) 23075.0000H(2) 23225.0000H(5) 21875.0000H(2) 22025.0000H(5)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0232A CA	CA-SFO0425C CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °21' <u>32.9</u> ~ N	37 °20' 55.3 ~ N
Longitude (NAD 83)	121 °48' <u>59.1</u> ~ W	121 °48' 16.4 ~ W
Ground Elevation (m/ft-AMSL)	<u>46.10</u> / <u>151.2</u>	53.60 / 175.9
Antenna Structure Registration #		
Path Azimuth (°)	<u>137.802</u>	<u>317.809</u>
Path Length (km / miles)		<u>1.565</u> / <u>0.972</u>

Transmit Antenna

Manufacturer	<u>99141R</u>	RD1150
Model	RADIO WAVES, INC	RADIO WAVES, INC
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>HPCPE-23</u>	HP2-23
Centerline (m / ft – AGL)	<u>34.4</u> / <u>2.90</u> / <u>0.38</u>	<u>40.2</u> / <u>1.70</u> / <u>-0.39</u>
	<u>17.37</u> / <u>57.0</u>	<u>20.42</u> / <u>67.0</u>

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	7.5	7.5
Received Level (dBm)	<u>-41.1</u>	<u>-41.1</u>
EIRP (dBm)	<u>41.9</u>	<u>47.7</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>123.2</u>

Transmit Frequencies (MHz) 23075.0000V(2) 23225.0000V(5) 21875.0000V(2) 22025.0000V(5)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0232A CA	CA-SJC0227C CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		WQLY592
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information		
Latitude (NAD 83)	37 °21' <u>32.9</u> ~ N	37 °21' 35.4 ~ N
Longitude (NAD 83)	121 °48' <u>59.1</u> ~ W	121 °50' 21.4 ~ W
Ground Elevation (m/ft-AMSL)	<u>46.10</u> / <u>151.2</u>	33.00 / 108.3
Antenna Structure Registration #		
Path Azimuth (°)	<u>272.186</u>	<u>92.172</u>
Path Length (km / miles)		<u>2.027</u> / <u>1.259</u>

Transmit Antenna		
Manufacturer	<u>87205A</u>	<u>87205A</u>
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>VHLP2-23B</u>	<u>VHLP2-23B</u>
Centerline (m / ft – AGL)	<u>40.5</u> / <u>1.70</u> / <u>-0.35</u>	<u>40.5</u> / <u>1.70</u> / <u>0.34</u>
	16.46 / 54.0	17.37 / 57.0

Receive Antenna	Same As Transmit	
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft – AGL)		

Diversity Receive Antenna		
Manufacturer		
Model		
Gain (dBi) / Beamwidth (°)		
Centerline (m / ft – AGL)		

Radio Information	TEMQ16	TEMQ16
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	23HD50SFC322V02	23HD50SFC322V02
Model Description	HORIZON DUO	HORIZON DUO
Emission Designator / Modulation	45M8D7W 256 QAM	45M8D7W 256 QAM
Loading	1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	5.5	5.5
Received Level (dBm)	<u>-39.0</u>	<u>-39.0</u>
EIRP (dBm)	<u>46.0</u>	<u>46.0</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>125.5</u>

Transmit Frequencies (MHz)	23025.0000V(1)	23175.0000V(4)	21825.0000V(1)	21975.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0232A CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0231A CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83) 37 °21' 32.9 ~ N
Longitude (NAD 83) 121 °48' 59.1 ~ W
Ground Elevation (m/ft-AMSL) 46.10 / 151.2
Antenna Structure Registration # 1246272
Path Azimuth (°) 198.366
Path Length (km / miles) 1.930 / 1.199

37 °20' 33.5 ~ N
121 °49' 23.8 ~ W
35.70 / 117.1
1246272
18.362

Transmit Antenna

80014A
Manufacturer ANDREW CORPORATION
Model VHLP1-23A
Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / 0.16
Centerline (m / ft – AGL) 17.37 / 57.0

80014A
ANDREW CORPORATION
VHLP1-23A
35.3 / 3.00 / -0.18
33.53 / 110.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

TEMQ20
Manufacturer DRAGONWAVE INC
Model 23HD50SFC171V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 32 QAM
Loading 1 CH DIG 171000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 10.0
Received Level (dBm) -46.4
EIRP (dBm) 45.3
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 125.1

TEMQ20
DRAGONWAVE INC
23HD50SFC171V02
HORIZON DUO
45M8D7W 32 QAM
1 CH DIG 171000.000
0.001
Nominal Coordinated Maximum
10.0
-46.4
43.4
0.0 / 1.9

Transmit Frequencies (MHz) 23125.0000V(3) 23275.0000V(6) 21925.0000V(3) 22075.0000V(6)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0234B CA	CA-SFO0435C CA
City/County	/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °17' 28.4~ N	37 °18' 35.9~ N
Longitude (NAD 83)	121 °48' 30.3~ W	121 °49' 22.0~ W
Ground Elevation (m/ft-AMSL)	83.20 / 273.0	46.20 / 151.6
Antenna Structure Registration #		
Path Azimuth (°)	328.543	148.535
Path Length (km / miles)	2.440 / 1.516	

Transmit Antenna

Manufacturer	<u>80014A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP1-23A</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	35.3 / 3.00 / -0.68	35.3 / 3.00 / 0.66
Centerline (m / ft - AGL)	7.32 / 24.0	15.85 / 52.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ20	TEMQ20
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC171V02	23HD50SFC171V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 32 QAM	45M8D7W 32 QAM
Stability (%)	1 CH DIG 171000.000	1 CH DIG 171000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	10.0	10.0
Received Level (dBm)	-48.4	-48.4
EIRP (dBm)	45.3	43.4
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 1.9
Free Space Loss (dB)		127.1

Transmit Frequencies (MHz)	21825.0000V(1)	21975.0000V(4)	23025.0000V(1)	23175.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100120COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0235A CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0452C CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °15' <u>31.0</u> ~ N	37 °16' <u>31.2</u> ~ N
Longitude (NAD 83)	121 °48' <u>34.5</u> ~ W	121 °48' 31.7 ~ W
Ground Elevation (m/ft-AMSL)	57.10 / 187.3	<u>97.00</u> / <u>318.2</u>
Antenna Structure Registration #		
Path Azimuth (°)	<u>2.129</u>	<u>182.129</u>
Path Length (km / miles)		<u>1.857</u> / <u>1.154</u>

Transmit Antenna

Manufacturer	<u>87205A</u> ANDREW CORPORATION	<u>80014A</u> ANDREW CORPORATION
Model	<u>VHLP2-23B</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>40.5</u> / <u>1.70</u> / <u>1.24</u>	35.3 / 3.00 / <u>-1.26</u>
Centerline (m / ft – AGL)	12.19 / 40.0	12.80 / 42.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft – AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	7.5	7.5
Received Level (dBm)	<u>-41.4</u>	<u>-41.4</u>
EIRP (dBm)	<u>48.0</u>	42.8
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		<u>124.7</u>

Transmit Frequencies (MHz)	23125.0000V(3)	23275.0000V(6)	21925.0000V(3)	22075.0000V(6)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0238A CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0291A CA

City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °18' 47.3~ N	37 °18' 4.2~ N
Longitude (NAD 83)	121 °47' 37.6~ W	121 °47' 5.1~ W
Ground Elevation (m/ft-AMSL)	62.40 / 204.7	110.10 / 361.2
Antenna Structure Registration #		
Path Azimuth (°)	148.935	328.941
Path Length (km / miles)	1.551 / 0.964	

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>99141R</u> RADIO WAVES, INC
Model	<u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	<u>34.4</u> / <u>2.90</u> / 1.97	<u>34.4</u> / <u>2.90</u> / -1.98
Centerline (m / ft - AGL)	12.50 / 41.0	18.29 / 60.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	7.5	7.5
Received Level (dBm)	<u>-46.9</u>	<u>-46.9</u>
EIRP (dBm)	<u>41.9</u>	<u>41.9</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		123.2

Transmit Frequencies (MHz)	21875.0000V(2)	22025.0000V(5)	23075.0000V(2)	23225.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information	CA-SJC0239B CA	CA-SJC0236C CA
City/County	San Jose/Santa Clara	San Jose/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	Clearwire Spectrum Holdings III, LL
Radio Service / Station Class	MG -- Microwave Industrial/Business Pool	FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °19' 44.6~ N	37 °19' 19.7~ N
Longitude (NAD 83)	121 °47' 51.7~ W	121 °48' 20.1~ W
Ground Elevation (m/ft-AMSL)	45.50 / 149.3	45.80 / 150.3
Antenna Structure Registration #		
Path Azimuth (°)	222.331	42.326
Path Length (km / miles)	1.038 / 0.645	

Transmit Antenna

Manufacturer	<u>99141R</u> RADIO WAVES, INC	<u>80014A</u> ANDREW CORPORATION
Model	<u>HPCPE-23</u>	<u>VHLP1-23A</u>
Gain(dBi) / Beamwidth(°) / Tilt(°)	34.4 / 2.90 / 0.95	35.3 / 3.00 / -0.96
Centerline (m / ft - AGL)	12.19 / 40.0	29.26 / 96.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

Manufacturer	TEMQ16	TEMQ16
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50SFC322V02	23HD50SFC322V02
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO
Loading	45M8D7W 256 QAM	45M8D7W 256 QAM
Stability (%)	1 CH DIG 322000.000	1 CH DIG 322000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	7.5	7.5
Received Level (dBm)	-44.4	-44.4
EIRP (dBm)	41.9	40.9
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 1.9
Free Space Loss (dB)		119.7

Transmit Frequencies (MHz)	21825.0000V(1)	21975.0000V(4)	23025.0000V(1)	23175.0000V(4)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/19/2010

Job Number 100819COMSSL02

New Path

RCN Number: 10081932

Administrative Information

CA-SJC0276A CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0443D CA

San Jose/Santa Clara
Engineering Proposal / PRIMARY OPERATION
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °19' 49.6~ N	37 °17' 13.8~ N
Longitude (NAD 83)	121 °53' 18.4~ W	121 °52' 28.3~ W
Ground Elevation (m/ft-AMSL)	29.70 / 97.4	66.00 / 216.5
Antenna Structure Registration #		
Path Azimuth (°)	165.590	345.599
Path Length (km / miles)	4.959 / 3.081	

Transmit Antenna

87205A	87205A
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model VHLP2-23B	VHLP2-23B
Gain(dBi) / Beamwidth(°) / Tilt(°) 40.5 / 1.70 / -0.45	40.5 / 1.70 / 0.42
Centerline (m / ft - AGL) 91.44 / 300.0	17.22 / 56.5

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ54	TEMQ54
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 23HD50HFC215V02	23HD50HFC215V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 64 QAM	45M8D7W 64 QAM
Loading 1 CH DIG 215000.000	1 CH DIG 215000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 18.5	18.5
Received Level (dBm) -35.4	-35.4
EIRP (dBm) 58.2	58.2
Fixed Loss: Tx / Common (dB) 0.0 / 0.8	0.0 / 0.8
Free Space Loss (dB) 133.3	

Transmit Frequencies (MHz)

23025.0000H(1)	23275.0000H(6)	21825.0000H(1)	22075.0000H(6)
23375.0000V(8)	23475.0000V(10)	22175.0000V(8)	22275.0000V(10)

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010
Job Number 100819COMSSL02

Prev Job Num: 100427COMSSL01
RCN Number: 10081932

Administrative Information

CA-SJC0276A CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0201A CA

City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °19' 49.6~ N	37 °19' 5.7~ N
Longitude (NAD 83)	121 °53' 18.4~ W	121 °53' 5.1~ W
Ground Elevation (m/ft-AMSL)	29.70 / 97.4	33.20 / 108.9
Antenna Structure Registration #		
Path Azimuth (°)	166.398	346.400
Path Length (km / miles)	1.392 / 0.865	

Transmit Antenna

87205A
Manufacturer ANDREW CORPORATION
Model VHLP2-23B
Gain(dBi) / Beamwidth(°) / Tilt(°) 40.5 / 1.70 / -3.84
Centerline (m / ft - AGL) 107.59 / 353.0

87066A
Manufacturer ANDREW CORPORATION
Model VHLP2.5-23A
Gain(dBi) / Beamwidth(°) / Tilt(°) 43.0 / 1.20 / 3.83
Centerline (m / ft - AGL) 10.67 / 35.0

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ16
Manufacturer DRAGONWAVE INC
Model 23HD50SFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.0
Received Level (dBm) -37.5
EIRP (dBm) 43.6
Fixed Loss: Tx / Common (dB) 0.0 / 1.9
Free Space Loss (dB) 122.2

TEMQ16
Manufacturer DRAGONWAVE INC
Model 23HD50SFC322V02
Model Description HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM
Loading 1 CH DIG 322000.000
Stability (%) 0.001
Nominal Coordinated Maximum
Power (dBm) 5.0
Received Level (dBm) -37.5
EIRP (dBm) 46.1
Fixed Loss: Tx / Common (dB) 0.0 / 1.9

Transmit Frequencies (MHz)	21875.0000V(2)	22025.0000V(5)	23075.0000V(2)	23225.0000V(5)
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Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147

(858)232-4372 www.comsearch.com

PCN Date: 08/19/2010

Prev Job Num: 100427COMSSL01

Job Number 100819COMSSL02

RCN Number: 10081932

Administrative Information

CA-SJC0283A CA
City/County Sunnyvale/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY504
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0060A CA

Sunnyvale/Santa Clara
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °22' 13.0~ N	37 °22' 9.9~ N
Longitude (NAD 83)	122 °2' 23.0~ W	122 °2' 8.9~ W
Ground Elevation (m/ft-AMSL)	38.60 / 126.6	37.80 / 124.0
Antenna Structure Registration #		
Path Azimuth (°)	105.400	285.403
Path Length (km / miles)	0.360 / 0.224	

Transmit Antenna

<u>99141R</u>	<u>99141R</u>
Manufacturer RADIO WAVES, INC	RADIO WAVES, INC
Model <u>HPCPE-23</u>	<u>HPCPE-23</u>
Gain(dBi) / Beamwidth(°) / Tilt(°) <u>34.4</u> / <u>2.90</u> / -4.06	<u>34.4</u> / <u>2.90</u> / 4.06
Centerline (m / ft - AGL) 42.67 / 140.0	17.92 / 58.8

Receive Antenna

Same As Transmit

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Diversity Receive Antenna

Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information

TEMQ16	TEMQ16
Manufacturer DRAGONWAVE INC	DRAGONWAVE INC
Model 23HD50SFC322V02	23HD50SFC322V02
Model Description HORIZON DUO	HORIZON DUO
Emission Designator / Modulation 45M8D7W 256 QAM	45M8D7W 256 QAM
Loading 1 CH DIG 322000.000	1 CH DIG 322000.000
Stability (%) 0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm) 4.0	4.0
Received Level (dBm) <u>-37.7</u>	<u>-37.7</u>
EIRP (dBm) <u>38.4</u>	<u>38.4</u>
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 110.5	

Transmit Frequencies (MHz)	21925.0000H(3)	22075.0000H(6)	23125.0000H(3)	23275.0000H(6)
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