

Microwave Path Data Sheet

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COMSEARCH

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

PCN Date: 11/17/2010

Job Number: 101117COMSSL04

New Path

RCN Number: 10111708

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-SFO0498B CA

Dublin/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY500
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' 11.5" N
Longitude (NAD 83)	121 ° 59' 42.5" W	121 ° 53' 49.7" W
Ground Elevation (m/ft-AMSL)	562.40 / 1845.1	102.10 / 335.0
Antenna Structure Registration #	1222544	
Path Azimuth (°)	114.603	294.663
Path Length (km / miles)	9.505 / 5.906	

Transmit Antenna

77041A	77041A
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model VHLP2.5-11	VHLP2.5-11
Gain(dBi) / Beamwidth(°) / Tilt(°) 37.5 / 2.10 / -2.69	37.5 / 2.10 / 2.62
Centerline (m / ft - AGL) 12.19 / 40.0	31.67 / 103.9

Receive Antenna

Same As 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) -42.5	-42.5
EIRP (dBm) 53.0	53.0
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 133.0	

Transmit Frequencies (MHz)	11505.0000H(8)	11625.0000H(11)	11015.0000H(8)	11135.0000H(11)
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PCN Date: 11/17/2010

Job Number 101117COMSSL04

New Path

RCN Number: 10111708

Administrative Information

CA-SFO0582A CA
City/County Hayward/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQML650
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0134A CA

Danville/Contra Costa
Engineering Proposal / PRIMARY OPERATION

CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °39' 34.0" N	37 °48' 56.5" N
Longitude (NAD 83)	121 °55' 59.5" W	121 °55' 21.9" W
Ground Elevation (m/ft-AMSL)	453.50 / 1487.9	253.98 / 833.3
Antenna Structure Registration #	1015996	
Path Azimuth (°)	3.035	183.042
Path Length (km / miles)	17.367 / 10.791	

Transmit Antenna

77083A	77083A
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model VHLP2-11A	VHLP2-11A
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 3.30 / -0.93	34.4 / 3.30 / 0.81
Centerline (m / ft - AGL) 67.06 / 220.0	1.83 / 6.0

Receive Antenna

Same As 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) -50.4	-50.4
EIRP (dBm) 53.4	53.4
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 138.2	

Transmit Frequencies (MHz)	10815.0000V(3)	10935.0000V(6)	11305.0000V(3)	11425.0000V(6)
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PCN Date: 11/17/2010

Job Number 101117COMSSL04

New Path

RCN Number: 10111708

Administrative Information

CA-SFO0003A CA
City/County Pleasanton/Alameda
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLX776
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0482A CA

Pleasanton/Alameda
Engineering Proposal / PRIMARY OPERATION
WQLY508
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 ° 41' 35.2" N	37 ° 39' 39.3" N
Longitude (NAD 83)	121 ° 53' 36.2" W	121 ° 53' 2.2" W
Ground Elevation (m/ft-AMSL)	100.90 / 331.0	102.50 / 336.3
Antenna Structure Registration #		
Path Azimuth (°)	166.872	346.878
Path Length (km / miles)	3.669 / 2.280	

Transmit Antenna

87204A	87204A
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model VHLP2-18B	VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / -0.06	38.9 / 2.10 / 0.04
Centerline (m / ft - AGL) 25.91 / 85.0	21.12 / 69.3

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

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) 13.2	13.2
Received Level (dBm) -38.2	-38.2
EIRP (dBm) 52.1	52.1
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 129.2	

Transmit Frequencies (MHz)	19375.0000H(2)	19475.0000H(4)	17815.0000H(2)	17915.0000H(4)
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PCN Date: 11/17/2010

Job Number 101117COMSSL04

New Path

RCN Number: 10111708

Administrative Information

CA-SFO0097A 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-SFO0564A CA

/Contra Costa
Engineering Proposal / PRIMARY OPERATION
WQLY410
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °52' 38.4" N	37 °48' 57.0" N
Longitude (NAD 83)	122 °2' 31.9" W	122 °3' 44.7" W
Ground Elevation (m/ft-AMSL)	143.74 / 471.6	613.20 / 2011.8
Antenna Structure Registration #		1010559
Path Azimuth (°)	194.620	14.608
Path Length (km / miles)		7.054 / 4.383

Transmit Antenna

87204A	87204A
Manufacturer ANDREW CORPORATION	ANDREW CORPORATION
Model VHLP2-18B	VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / 4.00	38.9 / 2.10 / -4.05
Centerline (m / ft - AGL) 9.14 / 30.0	36.42 / 119.5

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

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) -38.6	-38.6
EIRP (dBm) 57.4	57.4
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 134.9	

Transmit Frequencies (MHz)	19525.0000V(5)	19625.0000V(7)	17965.0000V(5)	18065.0000V(7)
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PCN Date: 11/17/2010

Job Number 101117COMSSL04

New Path

RCN Number: 10111708

Administrative Information

CA-SJC0176A CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQMM680
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
WQMN287
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °20' 8.0" N	37 °17' 49.2" N
Longitude (NAD 83)	121 °55' 3.1" W	121 °54' 47.2" W
Ground Elevation (m/ft-AMSL)	28.80 / 94.5	49.10 / 161.1
Antenna Structure Registration #		
Path Azimuth (°)	174.771	354.774
Path Length (km / miles)	4.297 / 2.670	

Transmit Antenna

RD1150	RD1150
RADIO WAVES, INC	RADIO WAVES, INC
HP2-23	HP2-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 40.2 / 1.70 / -0.04	40.2 / 1.70 / 0.01
Centerline (m / ft - AGL) 35.66 / 117.0	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

TEMQ54	TEMQ54
DRAGONWAVE INC	DRAGONWAVE INC
23HD50HFC215V02	23HD50HFC215V02
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) 14.0	14.0
Received Level (dBm) -37.6	-37.6
EIRP (dBm) 54.2	54.2
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 132.0	

Transmit Frequencies (MHz)	22225.0000V(9)	22325.0000V(11)	23425.0000V(9)	23525.0000V(11)
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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 11/17/2010

Job Number 101117COMSSL04

New Path

RCN Number: 10111708

Administrative Information

CA-SJC0174C CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQMM302
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
WQMM212
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °16' 15.2" N	37 °17' 13.8" N
Longitude (NAD 83)	121 °55' 4.8" W	121 °52' 28.3" W
Ground Elevation (m/ft-AMSL)	56.40 / 185.0	66.00 / 216.5
Antenna Structure Registration #		
Path Azimuth (°)	64.880	244.906
Path Length (km / miles)	4.258 / 2.646	

Transmit Antenna

87205A	87205A
ANDREW CORPORATION	ANDREW CORPORATION
VHLP2-23B	VHLP2-23B
Gain(dBi) / Beamwidth(°) / Tilt(°) 40.5 / 1.70 / -0.05	40.5 / 1.70 / 0.02
Centerline (m / ft - AGL) 28.96 / 95.0	17.07 / 56.0

Receive Antenna

Same As 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
DRAGONWAVE INC	DRAGONWAVE INC
23HD50HFC215V02	23HD50HFC215V02
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) 14.0	14.0
Received Level (dBm) -36.9	-36.9
EIRP (dBm) 54.5	54.5
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 131.9	

Transmit Frequencies (MHz)	21925.0000V(3)	22025.0000V(5)	23125.0000V(3)	23225.0000V(5)
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COMSEARCH

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

PCN Date: 11/17/2010

Job Number 101117COMSSL04

New Path

RCN Number: 10111708

Administrative Information

CA-SFO0432C CA
City/County San Jose/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLY752
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0442A CA

Campbell/Santa Clara
Engineering Proposal / PRIMARY OPERATION
WQMM211
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °19' 2.8" N	37 °17' 6.7" N
Longitude (NAD 83)	121 °56' 51.1" W	121 °58' 51.6" W
Ground Elevation (m/ft-AMSL)	44.10 / 144.7	71.10 / 233.3
Antenna Structure Registration #		
Path Azimuth (°)	219.673	39.653
Path Length (km / miles)	4.649 / 2.889	

Transmit Antenna

RD1150	99141R
MANUFACTURER RADIO WAVES, INC	RADIO WAVES, INC
Model HP2-23	HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 40.2 / 1.70 / -0.12	34.4 / 2.90 / 0.09
Centerline (m / ft - AGL) 49.38 / 162.0	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

TEMQ54	TEMQ54
DRAGONWAVE INC	DRAGONWAVE INC
23HD50HFC215V02	23HD50HFC215V02
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) -39.6	-39.6
EIRP (dBm) 58.7	52.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 132.7	

Transmit Frequencies (MHz)	23425.0000H(9)	23525.0000H(11)	22225.0000H(9)	22325.0000H(11)
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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 11/17/2010

Job Number 101117COMSSL04

New Path

RCN Number: 10111708

Administrative Information

CA-SJC0210C CA
City/County Milpitas/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQML898
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SJC0195C CA

Milpitas/Santa Clara
Engineering Proposal / PRIMARY OPERATION
WQLY502
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °25' 5.0" N	37 °24' 48.6" N
Longitude (NAD 83)	121 °52' 21.1" W	121 °53' 31.4" W
Ground Elevation (m/ft-AMSL)	36.00 / 118.1	14.10 / 46.3
Antenna Structure Registration #		
Path Azimuth (°)	253.703	73.691
Path Length (km / miles)		1.801 / 1.119

Transmit Antenna

RD1150	99141R
RADIO WAVES, INC	RADIO WAVES, INC
HP2-23	HPCPE-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 40.2 / 1.70 / -0.31	34.4 / 2.90 / 0.29
Centerline (m / ft - AGL) 11.89 / 39.0	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

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) -42.4	-42.4
EIRP (dBm) 47.7	41.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB) 124.5	

Transmit Frequencies (MHz)	23125.0000V(3)	23225.0000V(5)	21925.0000V(3)	22025.0000V(5)
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