

Microwave Path Data Sheet

COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147

(703)726-5500 www.comsearch.com

Job Number: 110822COMSKS07

Date: 08/22/2011

Adaptive Modulation Prior Coordination Notice

One or more paths in this Prior Coordination Notice (PCN) use microwave radios with Adaptive Modulation. These paths can be identified by a numerical superscript notation immediately following the Radio Code on the path data sheet.

The superscript notation can be cross referenced to the corresponding table(s) below to identify the various modulation modes in which the microwave path will operate.

(1) Master Radio Code: X11142 - DRAGONWAVE INC

Pages: 1-3

Radio Code	Model	Model Description	Emission Designator	Modulation	Loading (Mbps)	Stability (%)	Coordinated Power (dBm)
TEMO16	11HD40HFC277 V02	HORIZON DUO	36M7D7W	256 QAM	1 CH DIG 277.0	0.001	15.5
TEMO98	11HD40HFC142 V02	HORIZON DUO	36M2D7W	32 QAM	1 CH DIG 142.0	0.001	15.5

(2) Master Radio Code: X18143 - DRAGONWAVE INC

Pages: 6

Radio Code	Model	Model Description	Emission Designator	Modulation	Loading (Mbps)	Stability (%)	Coordinated Power (dBm)
TEMQ59	18HD50HFC171 V02	HORIZON DUO	45M8D7W	32 QAM	1 CH DIG 171.0	0.001	15.5
TEMQ62	18HD50HFC067 V02	HORIZON DUO	42M6D7W	QPSK	1 CH DIG 67.0	0.001	15.5
TEMR29	18HD50HFC364 V02	HORIZON DUO	47M1D7W	256 QAM	1 CH DIG 364.0	0.001	15.5

(3) Master Radio Code: X18168 - DRAGONWAVE INC

Pages: 5

Radio Code	Model	Model Description	Emission Designator	Modulation	Loading (Mbps)	Stability (%)	Coordinated Power (dBm)
TEMQ59	18HD50HFC171 V02	HORIZON DUO	45M8D7W	32 QAM	1 CH DIG 171.0	0.001	14.5
TEMQ62	18HD50HFC067 V02	HORIZON DUO	42M6D7W	QPSK	1 CH DIG 67.0	0.001	14.5
TEMR29	18HD50HFC364 V02	HORIZON DUO	47M1D7W	256 QAM	1 CH DIG 364.0	0.001	14.5

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Job Number: 110822COMSKS07

Date: 08/22/2011

(4) Master Radio Code: X18169 - DRAGONWAVE INC

Pages: 4

Radio Code	Model	Model Description	Emission Designator	Modulation	Loading (Mbps)	Stability (%)	Coordinated Power (dBm)
TEMT87	18HS50HFC067 V02	HORIZON DUO	42M6D7W	QPSK	1 CH DIG 67.0	0.001	19.5
TEMT89	18HS50HFC171 V02	HORIZON DUO	45M8D7W	32 QAM	1 CH DIG 171.0	0.001	19.5
TEMT93	18HS50HFC364 V02	HORIZON DUO	47M1D7W	256 QAM	1 CH DIG 364.0	0.001	19.5

(5) Master Radio Code: X23026 - DRAGONWAVE INC

Pages: 7

Radio Code	Model	Model Description	Emission Designator	Modulation	Loading (Mbps)	Stability (%)	Coordinated Power (dBm)
TEMU01	23HS50HFC067 V01	HORIZON DUO	42M6D7W	QPSK	1 CH DIG 67.0	0.001	19.5
TEMU03	23HS50HFC171 V01	HORIZON DUO	45M8D7W	32 QAM	1 CH DIG 171.0	0.001	19.5
TEMU07	23HS50HFC364 V01	HORIZON DUO	47M1D7W	256 QAM	1 CH DIG 364.0	0.001	19.5

(6) Master Radio Code: X23046 - DRAGONWAVE INC

Pages: 9

Radio Code	Model	Model Description	Emission Designator	Modulation	Loading (Mbps)	Stability (%)	Coordinated Power (dBm)
TEMQ49	23HD50HFC171 V02	HORIZON DUO	45M8D7W	32 QAM	1 CH DIG 171.0	0.001	15.5
TEMQ50	23HD50HFC067 V02	HORIZON DUO	42M6D7W	QPSK	1 CH DIG 67.0	0.001	15.5
TEMR36	23HD50HFC364 V02	HORIZON DUO	47M1D7W	256 QAM	1 CH DIG 364.0	0.001	15.5

(7) Master Radio Code: X23094 - DRAGONWAVE INC

Pages: 8

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Job Number: 110822COMSKS07

Date: 08/22/2011

Radio Code	Model	Model Description	Emission Designator	Modulation	Loading (Mbps)	Stability (%)	Coordinated Power (dBm)
TEMO20	23HD50SFC371 V02	HORIZON DUO	49M2D7W	256 QAM	1 CH DIG 371.0	0.001	5.5
TEMQ20	23HD50SFC171 V02	HORIZON DUO	45M8D7W	32 QAM	1 CH DIG 171.0	0.001	5.5
TEMQ51	23HD50SFC067 V02	HORIZON DUO	42M6D7W	QPSK	1 CH DIG 67.0	0.001	5.5

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19700 Janelia Farm Boulevard, Ashburn, VA, 20147

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PCN Date: 08/22/2011

Prev Job Num: 110412COMSTI06

Job Number: 110822COMSKS07

RCN Number: 11082230

Administrative Information

CA-SAC022A CA
City/County Vineyard/Sacramento
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQMF733
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SAC0562A CA

Elk Grove/Sacramento
Engineering Proposal / PRIMARY OPERATION
WQMF688
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	38 °27' 11.9" N	38 °24' 35.1" N
Longitude (NAD 83)	121 °20' 58.8" W	121 °21' 48.2" W
Ground Elevation (m/ft-AMSL)	23.50 / 77.1	15.60 / 51.2
Antenna Structure Registration #	1221711	
Path Azimuth (°)	193.923	13.914
Path Length (km / miles)	4.981 / 3.095	

Transmit Antenna

77083A
Manufacturer ANDREW CORPORATION
Model VHLP2-11A
Gain(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 3.30 / -0.43
Centerline (m / ft - AGL) 50.29 / 165.0

77083A
ANDREW CORPORATION
VHLP2-11A
34.4 / 3.30 / 0.40
22.19 / 72.8

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

X11142¹
Manufacturer DRAGONWAVE INC
Model 11HD40HFC277V02
Model Description ACM DUO 256QAM/32QAM (15.5 dBm)
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)		-43.1	
EIRP (dBm)		49.9	

Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 127.4

X11142¹
DRAGONWAVE INC
11HD40HFC277V02
ACM DUO 256QAM/32QAM (15.5 dBm)
36M7D7W 256 QAM
1 CH DIG 277000.000
0.001

	Nominal	Coordinated	Maximum
		15.5	
		-43.1	
		49.9	

0.0 / 0.0

Transmit Frequencies (MHz)	11305.0000V(3)	11425.0000V(6)	10815.0000V(3)	10935.0000V(6)
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19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/22/2011
Job Number 110822COMSKS07

Prev Job Num: 110126COMSSL05
RCN Number: 11082230

Administrative Information	CA-SFO0326C CA	CA-SFO0367D CA
City/County	Burlingame/San Mateo	San Mateo/San Mateo
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQLZ449	WQLZ445
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 °32' 14.9" N
Longitude (NAD 83)	122 °21' 54.9" W	122 °19' 41.6" W
Ground Elevation (m/ft-AMSL)	2.40 / 7.9	125.90 / 413.1
Antenna Structure Registration #		
Path Azimuth (°)	152.393	332.415
Path Length (km / miles)	7.062 / 4.388	

Transmit Antenna	77041A	77043A
Manufacturer	ANDREW CORPORATION	ANDREW CORPORATION
Model	VHLP2.5-11	VHLP4-11B
Gain(dBi) / Beamwidth(°) / Tilt(°)	37.5 / 2.10 / 0.74	40.4 / 1.50 / -0.79
Centerline (m / ft - AGL)	46.94 / 154.0	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	X11142 ¹	X11142 ¹
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	11HD40HFC277V02	11HD40HFC277V02
Model Description	ACM DUO 256QAM/32QAM (15.5 dBm)	ACM DUO 256QAM/32QAM (15.5 dBm)
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)	-38.6	-38.6
EIRP (dBm)	52.2	55.1
Fixed Loss: Tx / Common (dB)	0.0 / 0.8	0.0 / 0.8
Free Space Loss (dB)		130.4

Transmit Frequencies (MHz)	11345.0000V(4)	11425.0000V(6)	10855.0000V(4)	10935.0000V(6)
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19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/22/2011
Job Number 110822COMSKS07

Prev Job Num: 101007COMSSL01
RCN Number: 11082230

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-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 FXO -- Fixed

Site Information

Latitude (NAD 83) 37 ° 44' 20.0" N
Longitude (NAD 83) 121 ° 59' 42.5" W
Ground Elevation (m/ft-AMSL) 562.40 / 1845.1
Antenna Structure Registration # 1222544
Path Azimuth (°) 325.260
Path Length (km / miles) 10.395 / 6.459

37 ° 48' 57.0" N
122 ° 3' 44.7" W
613.20 / 2011.8
1010559
145.218

Transmit Antenna

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

77091A
ANDREW CORPORATION
VHLP800-11A
37.4 / 2.20 / -0.40
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

X11142¹
Manufacturer DRAGONWAVE INC
Model 11HD40HFC277V02
Model Description ACM DUO 256QAM/32QAM (15.5 dBm)
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) -43.5
EIRP (dBm) 52.9
Fixed Loss: Tx / Common (dB) 0.0 / 0.0
Free Space Loss (dB) 133.8

X11142¹
DRAGONWAVE INC
11HD40HFC277V02
ACM DUO 256QAM/32QAM (15.5 dBm)
36M7D7W 256 QAM
1 CH DIG 277000.000
0.001
Nominal Coordinated Maximum
15.5
-43.5
52.9
0.0 / 0.0

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

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PCN Date: 08/22/2011
Job Number 110822COMSKS07

Prev Job Num: 100416COMSSL01
RCN Number: 11082230

Administrative Information	CA-SAC0666C CA	CA-SAC001A CA
City/County	Folsom/Sacramento	/Sacramento
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQMF922	WQMF579
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)	38 °38' 36.9" N	38 °38' 6.8" N
Longitude (NAD 83)	121 °10' 1.3" W	121 °11' 59.3" W
Ground Elevation (m/ft-AMSL)	80.00 / 262.5	47.40 / 155.5
Antenna Structure Registration #		
Path Azimuth (°)	251.994	71.973
Path Length (km / miles)	3.001 / 1.865	

Transmit Antenna

Manufacturer	87012A	87012A
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	VHLP2-18	VHLP2-18
Centerline (m / ft - AGL)	38.7 / 2.10 / -0.63	38.7 / 2.10 / 0.61
	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	X18169 ⁴	X18169 ⁴
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	18HS50HFC364V02	18HS50HFC364V02
Emission Designator / Modulation	ACM DUO 256QAM/32QAM/QPSK (19.5 dBm)	ACM DUO 256QAM/32QAM/QPSK (19.5 dBm)
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)	19.5	19.5
Received Level (dBm)	-30.5	-30.5
EIRP (dBm)	58.2	58.2
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		127.4

Transmit Frequencies (MHz)	19575.0000V(6)	19675.0000V(8)	18015.0000V(6)	18115.0000V(8)
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PCN Date: 08/22/2011
Job Number 110822COMSKS07

Prev Job Num: 100916COMSSL07
RCN Number: 11082230

Administrative Information

CA-SFO0380A CA
City/County Redwood City/San Mateo
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQMA226
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0355A CA

San Mateo/San Mateo
Engineering Proposal / PRIMARY OPERATION
WQLY857
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °31' 24.1" N	37 °33' 12.2" N
Longitude (NAD 83)	122 °15' 41.3" W	122 °18' 0.0" W
Ground Elevation (m/ft-AMSL)	2.40 / 7.9	2.40 / 7.9
Antenna Structure Registration #		
Path Azimuth (°)	314.396	134.373
Path Length (km / miles)	4.765 / 2.961	

Transmit Antenna

87059A	87059A
ANDREW CORPORATION	ANDREW CORPORATION
VHLP2.5-18	VHLP2.5-18
Gain(dBi) / Beamwidth(°) / Tilt(°) 41.0 / 1.50 / 0.13	41.0 / 1.50 / -0.16
Centerline (m / ft - AGL) 28.04 / 92.0	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

<u>X18168³</u>	<u>X18168³</u>
DRAGONWAVE INC	DRAGONWAVE INC
<u>18HD50HFC364V02</u>	<u>18HD50HFC364V02</u>
<u>ACM DUO 256QAM/32QAM/QPSK (14.5 dBm)</u>	<u>ACM DUO 256QAM/32QAM/QPSK (14.5 dBm)</u>
<u>47M1D7W</u> <u>256 QAM</u>	<u>47M1D7W</u> <u>256 QAM</u>
1 CH DIG 364000.000	1 CH DIG 364000.000
0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
<u>14.5</u>	<u>14.5</u>
<u>-36.6</u>	<u>-36.6</u>
<u>54.7</u>	<u>54.7</u>
Fixed Loss: Tx / Common (dB) 0.0 / 0.8	0.0 / 0.8
Free Space Loss (dB)	131.5

Transmit Frequencies (MHz)	17965.0000H(5)	18065.0000H(7)	19525.0000H(5)	19625.0000H(7)
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PCN Date: 08/22/2011
Job Number 110822COMSKS07

Prev Job Num: 100819COMSSL02
RCN Number: 11082230

Administrative Information	CA-SJC0031A CA	CA-SFO0414B CA
City/County	Milpitas/Santa Clara	/Santa Clara
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQKU521	WQMM284
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' 21.6" N	37 °25' 3.1" N
Longitude (NAD 83)	121 °55' 8.8" W	121 °51' 5.2" W
Ground Elevation (m/ft-AMSL)	6.90 / 22.6	99.00 / 324.8
Antenna Structure Registration #		1270998
Path Azimuth (°)	95.419	275.460
Path Length (km / miles)		6.017 / 3.739

Transmit Antenna	87204A	87204A
Manufacturer	ANDREW CORPORATION	ANDREW CORPORATION
Model	VHLP2-18B	VHLP2-18B
Gain(dBi) / Beamwidth(°) / Tilt(°)	38.9 / 2.10 / 0.55	38.9 / 2.10 / -0.59
Centerline (m / ft - AGL)	40.23 / 132.0	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	X18143 ²	X18143 ²
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	18HD50HFC364V02	18HD50HFC364V02
Model Description	ACM DUO 256QAM/32QAM/QPSK (15.5 dBm)	ACM DUO 256QAM/32QAM/QPSK (15.5 dBm)
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)	-40.2	-40.2
EIRP (dBm)	54.4	54.4
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		133.5

Transmit Frequencies (MHz)	19575.0000V(6)	19675.0000V(8)	18015.0000V(6)	18115.0000V(8)
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19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/22/2011
Job Number 110822COMSKS07

Prev Job Num: 100107COMSTI01
RCN Number: 11082230

Administrative Information

CA-SAC0585A CA
City/County Arden-Arcade/Sacramento
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQMF919
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SAC0688A CA

Sacramento/Sacramento
Engineering Proposal / PRIMARY OPERATION
WQMJ377
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	38 °35' 57.9" N	38 °36' 23.7" N
Longitude (NAD 83)	121 °24' 52.5" W	121 °26' 0.6" W
Ground Elevation (m/ft-AMSL)	14.70 / 48.2	12.90 / 42.3
Antenna Structure Registration #		
Path Azimuth (°)	295.777	115.765
Path Length (km / miles)	1.830 / 1.137	

Transmit Antenna

87014A	87014A
ANDREW CORPORATION	ANDREW CORPORATION
VHLP1-23	VHLP1-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / 0.51	35.3 / 3.00 / -0.52
Centerline (m / ft - AGL) 18.29 / 60.0	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

<u>X23026⁵</u>	<u>X23026⁵</u>
DRAGONWAVE INC	DRAGONWAVE INC
23HS50HFC171V01	23HS50HFC171V01
DUO ACM Master 256QAM-32QAM-QPSK (19.5)	DUO ACM Master 256QAM-32QAM-QPSK (19.5)
45M8D7W 32 QAM	45M8D7W 32 QAM
1 CH DIG 171000.000	1 CH DIG 171000.000
0.001	0.001
Nominal Coordinated Maximum	Nominal Coordinated Maximum
19.5	19.5
-34.5	-34.5
54.8	54.8
0.0 / 0.0	0.0 / 0.0
	124.6

Transmit Frequencies (MHz) 21875.0000H(2)

23075.0000H(2)

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
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PCN Date: 08/22/2011

Job Number 110822COMSKS07

Prev Job Num: 101014COMSSL01

RCN Number: 11082230

Administrative Information

CA-SFO0367D CA
City/County San Mateo/San Mateo
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQLZ445
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class MG -- Microwave Industrial/Business Pool

CA-SFO0358E CA

San Mateo/San Mateo
Engineering Proposal / PRIMARY OPERATION
WQML750
CLESP3
Clearwire Spectrum Holdings III, LL
FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °32' 14.9" N	37 °32' 54.2" N
Longitude (NAD 83)	122 °19' 41.6" W	122 °19' 13.1" W
Ground Elevation (m/ft-AMSL)	125.90 / 413.1	17.80 / 58.4
Antenna Structure Registration #		
Path Azimuth (°)	30.001	210.006
Path Length (km / miles)		1.399 / 0.869

Transmit Antenna

RD1150	RD1150
RADIO WAVES, INC	RADIO WAVES, INC
HP2-23	HP2-23
Gain(dBi) / Beamwidth(°) / Tilt(°) 40.2 / 1.70 / -4.09	40.2 / 1.70 / 4.08
Centerline (m / ft - AGL) 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

<u>X23094</u> ⁷	<u>X23094</u> ⁷
DRAGONWAVE INC	DRAGONWAVE INC
23HD50SFC371V02	23HD50SFC371V02
DUO ACM 256QAM/32QAM/QPSK (5.5 dBm)	DUO ACM 256QAM/32QAM/QPSK (5.5 dBm)
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) -40.2	-40.2
EIRP (dBm) 43.8	43.8
Fixed Loss: Tx / Common (dB) 0.0 / 1.9	0.0 / 1.9
Free Space Loss (dB) 122.3	

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
(703)726-5500 www.comsearch.com

PCN Date: 08/22/2011

Job Number 110822COMSKS07

Prev Job Num: 101117COMSSL07

RCN Number: 11082230

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-SJC0063B CA

Sunnyvale/Santa Clara
Status / License Basis Engineering Proposal / PRIMARY OPERATION
Call Sign WQNE379
Licensee Code CLESP3
Licensee Name Clearwire Spectrum Holdings III, LL
Radio Service / Station Class FXO -- Fixed

Site Information

Latitude (NAD 83)	37 °24' 4.6" N	37 °21' 34.8" N
Longitude (NAD 83)	122 °6' 40.5" W	122 °3' 42.3" W
Ground Elevation (m/ft-AMSL)	21.20 / 69.6	50.30 / 165.0
Antenna Structure Registration #		
Path Azimuth (°)	136.475	316.505
Path Length (km / miles)	6.368 / 3.957	

Transmit Antenna

Manufacturer	87066A	87205A
Model	ANDREW CORPORATION	ANDREW CORPORATION
Gain(dBi) / Beamwidth(°) / Tilt(°)	VHLP2.5-23A	VHLP2-23B
Centerline (m / ft - AGL)	43.0 / 1.20 / 0.36	40.5 / 1.70 / -0.40
	26.52 / 87.0	39.32 / 129.0

Receive Antenna

Same As 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>X23046⁶</u>	<u>X23046⁶</u>
Model	DRAGONWAVE INC	DRAGONWAVE INC
Model Description	23HD50HFC364V02	23HD50HFC364V02
Emission Designator / Modulation	DUO ACM 256QAM/32QAM/QPSK (15.5 dBm)	DUO ACM 256QAM/32QAM/QPSK (15.5 dBm)
Loading	<u>47M1D7W</u> <u>256 QAM</u>	<u>47M1D7W</u> <u>256 QAM</u>
Stability (%)	1 CH DIG 364000.000	1 CH DIG 364000.000
	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	<u>15.5</u>	<u>15.5</u>
Received Level (dBm)	<u>-36.4</u>	<u>-36.4</u>
EIRP (dBm)	<u>58.5</u>	<u>56.0</u>
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		135.4

Transmit Frequencies (MHz)	23475.0000H(10)	23575.0000H(12)	22275.0000H(10)	22375.0000H(12)
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