

Microwave Path Data Sheet

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COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147

(703)726-5824 www.comsearch.com

PCN Date: 09/27/2010

Job Number: 100326COMSSL01

Administrative Information	CA-MOD083B CA	CA-MOD086A CA
City/County	Ripon/San Joaquin	Salida/Stanislaus
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQMD294	
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' 19.2" N	37 ° 42' 30.2" N
Longitude (NAD 83)	121 ° 7' 24.3" W	121 ° 5' 1.6" W
Ground Elevation (m/ft-AMSL)	20.50 / 67.3	22.10 / 72.5
Antenna Structure Registration #		
Path Azimuth (°)	133.868	313.892
Path Length (km / miles)	4.848 / 3.013	
Transmit Antenna		
Manufacturer	79111R RADIO WAVES, INC	79111R RADIO WAVES, INC
Model	HP2-11	HP2-11
Gain(dBi) / Beamwidth(°) / Tilt(°)	34.5 / 3.40 / -0.38	34.5 / 3.40 / 0.35
Centerline (m / ft - AGL)	59.44 / 195.0	27.13 / 89.0
Receive Antenna Same As 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 DRAGONWAVE INC	TEMO28 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)	-42.2	-42.2
EIRP (dBm)	50.5	50.5
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		127.2
Transmit Frequencies (MHz)	11055.0000V(9) 11135.0000V(11)	11545.0000V(9) 11625.0000V(11)

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PCN Date: 09/27/2010

Job Number 100326COMSSL01

Administrative Information	CA-MOD032D CA	CA-MOD085A CA
City/County	Modesto/Stanslaus	Modesto/Stanslaus
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign	WQMD244	
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' 18.9" N	37 ° 39' 49.4" N
Longitude (NAD 83)	121 ° 1' 27.4" W	121 ° 1' 59.3" W
Ground Elevation (m/ft-AMSL)	26.00 / 85.3	24.90 / 81.7
Antenna Structure Registration #		
Path Azimuth (°)	195.820	15.814
Path Length (km / miles)	2.868 / 1.782	
Transmit Antenna	RB1160	RB1160
Manufacturer	RADIO WAVES, INC	RADIO WAVES, INC
Model	HP2-18	HP2-18
Gain(dBi) / Beamwidth(°) / Tilt(°)	38.6 / 2.00 / 0.18	38.6 / 2.00 / -0.20
Centerline (m / ft - AGL)	18.29 / 60.0	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	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)	-42.4	-42.4
EIRP (dBm)	46.1	46.1
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		127.1
Transmit Frequencies (MHz)	18015.0000V(6)	18115.0000V(8)
		19575.0000V(6)
		19675.0000V(8)

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Job Number 100326COMSSL01

Administrative Information	CA-MOD117A CA	CA-MOD100A CA
City/County	Escalon/San Joaquin	/San Joaquin
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		WQMD242
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' 34.5" N	37 ° 45' 35.5" N
Longitude (NAD 83)	120 ° 59' 34.1" W	120 ° 59' 54.8" W
Ground Elevation (m/ft-AMSL)	36.70 / 120.4	35.90 / 117.8
Antenna Structure Registration #		
Path Azimuth (°)	187.863	7.859
Path Length (km / miles)	3.704 / 2.301	
Transmit Antenna	RB1160	RB1160
Manufacturer	RADIO WAVES, INC	RADIO WAVES, INC
Model	HP2-18	HP2-18
Gain(dBi) / Beamwidth(°) / Tilt(°)	38.6 / 2.00 / 0.15	38.6 / 2.00 / -0.17
Centerline (m / ft - AGL)	15.54 / 51.0	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	TEMD04	TEMD04
Manufacturer	DRAGONWAVE INC	DRAGONWAVE INC
Model	18AP40SFC050V02	18AP40SFC050V02
Model Description	AIRPAIR 50	AIRPAIR 50
Emission Designator / Modulation	33M1D7W QPSK	33M1D7W QPSK
Loading	1 CH DIG 50333.300	1 CH DIG 50333.300
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	12.0	12.0
Received Level (dBm)	-40.1	-40.1
EIRP (dBm)	50.6	50.6
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)		129.3
Transmit Frequencies (MHz)	17800.0000V(3)	19360.0000V(3)

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PCN Date: 09/27/2010

Job Number 100326COMSSL01

Administrative Information		CA-MOD095A CA	CA-MOD096B CA
City/County		Turlock/Stanislaus	Turlock/Stanislaus
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 °29' 16.3" N	37 °30' 10.1" N
Longitude (NAD 83)		120 °50' 43.8" W	120 °51' 10.1" W
Ground Elevation (m/ft-AMSL)		30.90 / 101.4	31.50 / 103.3
Antenna Structure Registration #			
Path Azimuth (°)		338.721	158.717
Path Length (km / miles)			1.780 / 1.106
Transmit Antenna			
Manufacturer		91233R	91233R
Model		RADIO WAVES, INC	RADIO WAVES, INC
Gain(dBi) / Beamwidth(°) / Tilt(°)		HPLP1-23	HPLP1-23
Centerline (m / ft - AGL)		35.1 / 2.70 / -1.19	35.1 / 2.70 / 1.18
		52.73 / 173.0	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		TEMK43	TEMK43
Model		DRAGONWAVE INC	DRAGONWAVE INC
Model Description		23AP40SFC100V02	23AP40SFC100V02
Emission Designator / Modulation		AIRPAIR 100	AIRPAIR 100
Loading		37M9D7W 16 QAM	37M9D7W 16 QAM
Stability (%)		1 CH DIG 100000.000	1 CH DIG 100000.000
		0.001	0.001
		Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)		13.0	13.0
Received Level (dBm)		-41.2	-41.2
EIRP (dBm)		48.1	48.1
Fixed Loss: Tx / Common (dB)		0.0 / 0.0	0.0 / 0.0
Free Space Loss (dB)			124.4
Transmit Frequencies (MHz)		21870.0000V(2)	23070.0000V(2)

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PCN Date: 09/27/2010

Job Number 100326COMSSL01

Administrative Information		CA-STK046A CA	CA-STK055A CA
City/County	Stockton/San Joaquin	Stockton/San Joaquin	Stockton/San Joaquin
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign			
Licensee Code	CLESP3	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	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' 52.1" N	37 °57' 0.2" N	
Longitude (NAD 83)	121 °18' 22.3" W	121 °20' 52.6" W	
Ground Elevation (m/ft-AMSL)	3.60 / 11.8	2.10 / 6.9	
Antenna Structure Registration #			
Path Azimuth (°)	273.906	93.881	
Path Length (km / miles)		3.678 / 2.285	
Transmit Antenna			
Manufacturer	87014A	87014A	
Model	ANDREW CORPORATION	ANDREW CORPORATION	
Gain(dBi) / Beamwidth(°) / Tilt(°)	VHLP1-23	VHLP1-23	
Centerline (m / ft - AGL)	35.3 / 3.00 / -0.32	35.3 / 3.00 / 0.30	
	57.91 / 190.0	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	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)	-41.6	-41.6	
EIRP (dBm)	53.8	53.8	
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0	
Free Space Loss (dB)		130.7	
Transmit Frequencies (MHz)	21875.0000V(2)	22025.0000V(5)	23075.0000V(2) 23225.0000V(5)

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PCN Date: 09/27/2010

Job Number 100326COMSSL01

Administrative Information		CA-STK049A CA	CA-STK999A CA
City/County	Stockton/San Joaquin	Stockton/San Joaquin	Stockton/San Joaquin
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign			
Licensee Code	CLESP3	CLESP3	CLESP3
Licensee Name	Clearwire Spectrum Holdings III, LL	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' 45.2" N	37 °59' 30.9" N	
Longitude (NAD 83)	121 °19' 58.1" W	121 °17' 17.6" W	
Ground Elevation (m/ft-AMSL)	2.50 / 8.2	6.40 / 21.0	
Antenna Structure Registration #			
Path Azimuth (°)	96.410	276.437	
Path Length (km / miles)		3.941 / 2.449	
Transmit Antenna			
Manufacturer	87014A	87014A	
Model	ANDREW CORPORATION	ANDREW CORPORATION	
Gain(dBi) / Beamwidth(°) / Tilt(°)	VHLP1-23	VHLP1-23	
Centerline (m / ft - AGL)	35.3 / 3.00 / 0.61	35.3 / 3.00 / -0.64	
	17.37 / 57.0	56.39 / 185.0	
Receive Antenna		Same As 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)	-42.2	-42.2	
EIRP (dBm)	53.8	53.8	
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0	
Free Space Loss (dB)		131.3	
Transmit Frequencies (MHz)	21975.0000V(4)	22075.0000V(6)	23175.0000V(4) 23275.0000V(6)

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Administrative Information		CA-STK056B CA	CA-STK093E CA
City/County	French Camp/San Joaquin	Stockton/San Joaquin	
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 °53' 39.1" N	37 °54' 34.8" N	
Longitude (NAD 83)	121 °17' 44.4" W	121 °18' 36.7" W	
Ground Elevation (m/ft-AMSL)	4.00 / 13.1	2.10 / 6.9	
Antenna Structure Registration #			
Path Azimuth (°)	323.355	143.346	
Path Length (km / miles)		2.141 / 1.330	
Transmit Antenna			
Manufacturer	87014A	87014A	
Model	ANDREW CORPORATION	ANDREW CORPORATION	
Gain(dBi) / Beamwidth(°) / Tilt(°)	VHLP1-23	VHLP1-23	
Centerline (m / ft - AGL)	35.3 / 3.00 / 0.05	35.3 / 3.00 / -0.06	
	24.38 / 80.0	28.35 / 93.0	
Receive Antenna		Same As 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	TEMU08	TEMU08	
Model	DRAGONWAVE INC	DRAGONWAVE INC	
Model Description	23HS50SFC067V01	23HS50SFC067V01	
Emission Designator / Modulation	HORIZON DUO	HORIZON DUO	
Loading	42M6D7W QPSK	42M6D7W QPSK	
Stability (%)	1 CH DIG 67000.000	1 CH DIG 67000.000	
	0.001	0.001	
	Nominal Coordinated Maximum	Nominal Coordinated Maximum	
Power (dBm)	17.0	17.0	
Received Level (dBm)	-38.4	-38.4	
EIRP (dBm)	52.3	52.3	
Fixed Loss: Tx / Common (dB)	0.0 / 0.0	0.0 / 0.0	
Free Space Loss (dB)		126.0	
Transmit Frequencies (MHz)	23175.0000H(4)	23275.0000H(6)	21975.0000H(4) 22075.0000H(6)