

## Microwave Path Data Sheet

Page 1 of 14

## COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147  
(858)232-4372 [www.comsearch.com](http://www.comsearch.com)

PCN Date: 11/12/2010  
Job Number: 101112COMSSL04

Prev Job Num: 100819COMSSL02  
RCN Number: 10111203

**Administrative Information**

**CA-SJC0141A CA**  
City/County Saratoga/Santa Clara  
Status / License Basis Engineering Proposal / PRIMARY OPERATION  
Call Sign WQMA300  
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 WQMA224  
Licensee Code CLESP3  
Licensee Name Clearwire Spectrum Holdings III, LL  
Radio Service / Station Class FXO -- Fixed

**Site Information**

|                                  |                 |                             |
|----------------------------------|-----------------|-----------------------------|
| Latitude (NAD 83)                | 37 °15' 55.2" N | 37 °17' <u>18.7</u> " N     |
| Longitude (NAD 83)               | 122 °0' 26.7" W | 121 °56' <u>5.8</u> " W     |
| Ground Elevation (m/ft-AMSL)     | 107.40 / 352.4  | <u>59.40</u> / <u>194.9</u> |
| Antenna Structure Registration # |                 | 1204443                     |
| Path Azimuth (°)                 | <u>68.152</u>   | <u>248.196</u>              |
| Path Length (km / miles)         |                 | <u>6.924</u> / <u>4.302</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>-0.06</u> | 37.6 / 2.20 / <u>0.02</u> |
| Centerline (m / ft - AGL) 24.08 / 79.0                        | 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**

|                                                  |                             |
|--------------------------------------------------|-----------------------------|
| 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) <u>-39.1</u>                | <u>-39.1</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>130.3</u>                |                             |

|                                   |                |                |                |                |
|-----------------------------------|----------------|----------------|----------------|----------------|
| <b>Transmit Frequencies (MHz)</b> | 11265.0000V(2) | 11385.0000V(5) | 10775.0000V(2) | 10895.0000V(5) |
|-----------------------------------|----------------|----------------|----------------|----------------|

## Microwave Path Data Sheet

Page 2 of 14

## COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147  
(858)232-4372 [www.comsearch.com](http://www.comsearch.com)

PCN Date: 11/12/2010  
Job Number 101112COMSSL04

Prev Job Num: 100819COMSSL02  
RCN Number: 10111203

**Administrative Information**

**CA-SJC0166D CA**  
City/County Campbell/Santa Clara  
Status / License Basis Engineering Proposal / PRIMARY OPERATION  
Call Sign WQMA224  
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  
WQLY645  
CLESP3  
Clearwire Spectrum Holdings III, LL  
FXO -- Fixed

**Site Information**

|                                  |                             |                             |
|----------------------------------|-----------------------------|-----------------------------|
| Latitude (NAD 83)                | 37 °17' <u>18.7</u> " N     | 37 °16' 18.8" N             |
| Longitude (NAD 83)               | 121 °56' <u>5.8</u> " W     | 121 °54' 13.3" W            |
| Ground Elevation (m/ft-AMSL)     | <u>59.40</u> / <u>194.9</u> | 51.80 / 169.9               |
| Antenna Structure Registration # | <u>1204443</u>              |                             |
| Path Azimuth (°)                 | <u>123.667</u>              | <u>303.686</u>              |
| Path Length (km / miles)         |                             | <u>3.330</u> / <u>2.069</u> |

**Transmit Antenna**

|                                                               |                           |
|---------------------------------------------------------------|---------------------------|
| 87204A                                                        | 87204A                    |
| Manufacturer ANDREW CORPORATION                               | ANDREW CORPORATION        |
| Model VHLP2-18B                                               | VHLP2-18B                 |
| Gain(dBi) / Beamwidth(°) / Tilt(°) 38.9 / 2.10 / <u>-1.06</u> | 38.9 / 2.10 / <u>1.04</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**

|                                                  |                             |
|--------------------------------------------------|-----------------------------|
| 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) <u>-37.6</u>                | <u>-37.6</u>                |
| EIRP (dBm) 51.9                                  | 51.9                        |
| Fixed Loss: Tx / Common (dB) 0.0 / 0.0           | 0.0 / 0.0                   |
| Free Space Loss (dB) <u>128.4</u>                |                             |

|                                   |                |                |                |                |
|-----------------------------------|----------------|----------------|----------------|----------------|
| <b>Transmit Frequencies (MHz)</b> | 18015.0000V(6) | 18115.0000V(8) | 19575.0000V(6) | 19675.0000V(8) |
|-----------------------------------|----------------|----------------|----------------|----------------|

## Microwave Path Data Sheet

Page 3 of 14

## COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147  
(858)232-4372 [www.comsearch.com](http://www.comsearch.com)

PCN Date: 11/12/2010  
Job Number 101112COMSSL04

Prev Job Num: 100617COMSSL02  
RCN Number: 10111203

**Administrative Information**

**CA-SJC0166D CA**  
City/County Campbell/Santa Clara  
Status / License Basis Engineering Proposal / PRIMARY OPERATION  
Call Sign WQMA224  
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 °17' <u>18.7</u> " N     | 37 °20' 2.9" N              |
| Longitude (NAD 83)               | 121 °56' <u>5.8</u> " W     | 121 °53' 30.3" W            |
| Ground Elevation (m/ft-AMSL)     | <u>59.40</u> / <u>194.9</u> | 28.20 / 92.5                |
| Antenna Structure Registration # | <u>1204443</u>              |                             |
| Path Azimuth (°)                 | <u>37.092</u>               | <u>217.118</u>              |
| Path Length (km / miles)         |                             | <u>6.347</u> / <u>3.944</u> |

**Transmit Antenna**

|                                                               |                           |
|---------------------------------------------------------------|---------------------------|
| 87066A                                                        | 87066A                    |
| Manufacturer ANDREW CORPORATION                               | ANDREW CORPORATION        |
| Model VHLP2.5-23A                                             | VHLP2.5-23A               |
| Gain(dBi) / Beamwidth(°) / Tilt(°) 43.0 / 1.20 / <u>-0.45</u> | 43.0 / 1.20 / <u>0.41</u> |
| Centerline (m / ft - AGL) 66.45 / 218.0                       | 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**

|                                                 |                             |
|-------------------------------------------------|-----------------------------|
| 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) -30.9                      | -30.9                       |
| EIRP (dBm) 61.5                                 | 61.5                        |
| Fixed Loss: Tx / Common (dB) 0.0 / 0.0          | 0.0 / 0.0                   |
| Free Space Loss (dB)                            | <u>135.4</u>                |

|                                   |                |                 |                |                 |
|-----------------------------------|----------------|-----------------|----------------|-----------------|
| <b>Transmit Frequencies (MHz)</b> | 23425.0000H(9) | 23525.0000H(11) | 22225.0000H(9) | 22325.0000H(11) |
|-----------------------------------|----------------|-----------------|----------------|-----------------|

# Microwave Path Data Sheet

Page 4 of 14

## COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147  
(858)232-4372 [www.comsearch.com](http://www.comsearch.com)

PCN Date: 11/12/2010  
Job Number 101112COMSSL04

Prev Job Num: 100713COMSSL01  
RCN Number: 10111203

### Administrative Information

**CA-SFO0451F 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 WQMA224  
Licensee Code CLESP3  
Licensee Name Clearwire Spectrum Holdings III, LL  
Radio Service / Station Class FXO -- Fixed

### Site Information

|                                  |                  |                             |
|----------------------------------|------------------|-----------------------------|
| Latitude (NAD 83)                | 37 °16' 13.4" N  | 37 °17' <u>18.7</u> " N     |
| Longitude (NAD 83)               | 121 °57' 20.6" W | 121 °56' <u>5.8</u> " W     |
| Ground Elevation (m/ft-AMSL)     | 70.30 / 230.6    | <u>59.40</u> / <u>194.9</u> |
| Antenna Structure Registration # |                  | 1204443                     |
| Path Azimuth (°)                 | <u>42.463</u>    | <u>222.475</u>              |
| Path Length (km / miles)         |                  | <u>2.729</u> / <u>1.696</u> |

### Transmit Antenna

|                                    |                           |                            |
|------------------------------------|---------------------------|----------------------------|
| Manufacturer                       | 87205A                    | 87205A                     |
| Model                              | ANDREW CORPORATION        | ANDREW CORPORATION         |
| Gain(dBi) / Beamwidth(°) / Tilt(°) | VHLP2-23B                 | VHLP2-23B                  |
| Centerline (m / ft - AGL)          | 40.5 / 1.70 / <u>0.97</u> | 40.5 / 1.70 / <u>-0.98</u> |
|                                    | 9.14 / 30.0               | 66.45 / 218.0              |

### Receive Antenna

Same As 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)             | -38.6                       | -38.6                       |
| EIRP (dBm)                       | 49.0                        | 49.0                        |
| Fixed Loss: Tx / Common (dB)     | 0.0 / 0.0                   | 0.0 / 0.0                   |
| Free Space Loss (dB)             |                             | <u>128.1</u>                |

|                                   |                |                |                |                |
|-----------------------------------|----------------|----------------|----------------|----------------|
| <b>Transmit Frequencies (MHz)</b> | 21875.0000V(2) | 22025.0000V(5) | 23075.0000V(2) | 23225.0000V(5) |
|-----------------------------------|----------------|----------------|----------------|----------------|

# Microwave Path Data Sheet

Page 5 of 14

## COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147  
(858)232-4372 [www.comsearch.com](http://www.comsearch.com)

PCN Date: 11/12/2010  
Job Number 101112COMSSL04

Prev Job Num: 100819COMSSL02  
RCN Number: 10111203

### Administrative Information

**CA-SFO0441A CA**  
City/County Campbell/Santa Clara  
Status / License Basis Engineering Proposal / PRIMARY OPERATION  
Call Sign WQMM294  
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 WQMA224  
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>18.7</u> " N     |
| Longitude (NAD 83)               | 121 °57' 40.6" W | 121 °56' <u>5.8</u> " W     |
| Ground Elevation (m/ft-AMSL)     | 55.00 / 180.4    | <u>59.40</u> / <u>194.9</u> |
| Antenna Structure Registration # |                  | 1204443                     |
| Path Azimuth (°)                 | <u>104.145</u>   | <u>284.161</u>              |
| Path Length (km / miles)         |                  | <u>2.408</u> / <u>1.496</u> |

### Transmit Antenna

|                                    |                           |                            |
|------------------------------------|---------------------------|----------------------------|
| Manufacturer                       | 99141R                    | 99141R                     |
| Model                              | RADIO WAVES, INC          | RADIO WAVES, INC           |
| Gain(dBi) / Beamwidth(°) / Tilt(°) | HPCPE-23                  | HPCPE-23                   |
| Centerline (m / ft - AGL)          | 34.4 / 2.90 / <u>1.31</u> | 34.4 / 2.90 / <u>-1.33</u> |
|                                    | 15.85 / 52.0              | 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)             | <u>-49.7</u>                | <u>-49.7</u>                |
| EIRP (dBm)                       | 42.9                        | 42.9                        |
| Fixed Loss: Tx / Common (dB)     | 0.0 / 0.0                   | 0.0 / 0.0                   |
| Free Space Loss (dB)             |                             | <u>127.0</u>                |

|                                   |                |                 |                |                 |
|-----------------------------------|----------------|-----------------|----------------|-----------------|
| <b>Transmit Frequencies (MHz)</b> | 22175.0000V(8) | 22325.0000V(11) | 23375.0000V(8) | 23525.0000V(11) |
|-----------------------------------|----------------|-----------------|----------------|-----------------|

# Microwave Path Data Sheet

Page 6 of 14

## COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147  
(858)232-4372 [www.comsearch.com](http://www.comsearch.com)

PCN Date: 11/12/2010  
Job Number 101112COMSSL04

Prev Job Num: 100819COMSSL02  
RCN Number: 10111203

### Administrative Information

**CA-SFO0442A CA**  
City/County Campbell/Santa Clara  
Status / License Basis Engineering Proposal / PRIMARY OPERATION  
Call Sign WQMM211  
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 WQMA224  
Licensee Code CLESP3  
Licensee Name Clearwire Spectrum Holdings III, LL  
Radio Service / Station Class FXO -- Fixed

### Site Information

|                                  |                  |                             |
|----------------------------------|------------------|-----------------------------|
| Latitude (NAD 83)                | 37 °17' 6.8" N   | 37 °17' <u>18.7</u> " N     |
| Longitude (NAD 83)               | 121 °58' 52.0" W | 121 °56' <u>5.8</u> " W     |
| Ground Elevation (m/ft-AMSL)     | 71.10 / 233.3    | <u>59.40</u> / <u>194.9</u> |
| Antenna Structure Registration # |                  | 1204443                     |
| Path Azimuth (°)                 | <u>84.865</u>    | <u>264.893</u>              |
| Path Length (km / miles)         |                  | <u>4.110</u> / <u>2.554</u> |

### Transmit Antenna

|                                    |                           |                            |
|------------------------------------|---------------------------|----------------------------|
| Manufacturer                       | 99141R                    | 99141R                     |
| Model                              | RADIO WAVES, INC          | RADIO WAVES, INC           |
| Gain(dBi) / Beamwidth(°) / Tilt(°) | HPCPE-23                  | HPCPE-23                   |
| Centerline (m / ft – AGL)          | 34.4 / 2.90 / <u>0.56</u> | 34.4 / 2.90 / <u>-0.59</u> |
|                                    | 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)             | -43.8                       | -43.8                       |
| EIRP (dBm)                       | 53.4                        | 53.4                        |
| Fixed Loss: Tx / Common (dB)     | 0.0 / 0.0                   | 0.0 / 0.0                   |
| Free Space Loss (dB)             |                             | <u>131.6</u>                |

|                                   |                |                 |                |                 |
|-----------------------------------|----------------|-----------------|----------------|-----------------|
| <b>Transmit Frequencies (MHz)</b> | 22220.0000V(9) | 22370.0000V(12) | 23420.0000V(9) | 23570.0000V(12) |
|-----------------------------------|----------------|-----------------|----------------|-----------------|

## Microwave Path Data Sheet

Page 7 of 14

## COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147

(858)232-4372 [www.comsearch.com](http://www.comsearch.com)

PCN Date: 11/12/2010

Prev Job Num: 100819COMSSL02

Job Number 101112COMSSL04

RCN Number: 10111203

**Administrative Information**

**CA-SFO0449A CA**  
 City/County Campbell/Santa Clara  
 Status / License Basis Engineering Proposal / PRIMARY OPERATION  
 Call Sign WQMM288  
 Licensee Code CLESP3  
 Licensee Name Clearwire Spectrum Holdings III, LL  
 Radio Service / Station Class MG -- Microwave Industrial/Business Pool

**CA-SJC0166D CA**

Campbell/Santa Clara  
 Engineering Proposal / PRIMARY OPERATION  
 WQMA224  
 CLESP3  
 Clearwire Spectrum Holdings III, LL  
 FXO -- Fixed

**Site Information**

|                                  |                  |                             |
|----------------------------------|------------------|-----------------------------|
| Latitude (NAD 83)                | 37 °16' 51.0" N  | 37 °17' <u>18.7</u> " N     |
| Longitude (NAD 83)               | 121 °57' 28.0" W | 121 °56' <u>5.8</u> " W     |
| Ground Elevation (m/ft-AMSL)     | 63.10 / 207.0    | <u>59.40</u> / <u>194.9</u> |
| Antenna Structure Registration # |                  | 1204443                     |
| Path Azimuth (°)                 | <u>67.126</u>    | <u>247.140</u>              |
| Path Length (km / miles)         |                  | <u>2.198</u> / <u>1.365</u> |

**Transmit Antenna**

80014A  
 Manufacturer ANDREW CORPORATION  
 Model VHLP1-23A  
 Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / 1.25  
 Centerline (m / ft – AGL) 15.24 / 50.0

80014A  
 ANDREW CORPORATION  
 VHLP1-23A  
 35.3 / 3.00 / -1.26  
 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) |         | -47.1       |         |
| EIRP (dBm)           |         | 43.8        |         |

 Fixed Loss: Tx / Common (dB) 0.0 / 0.0  
 Free Space Loss (dB) 126.2

TEMQ55  
 DRAGONWAVE INC  
 23HD50SFC215V02  
 HORIZON DUO  
 45M8D7W 64 QAM  
 1 CH DIG 215000.000  
 0.001  

|  |         |             |         |
|--|---------|-------------|---------|
|  | Nominal | Coordinated | Maximum |
|  |         | 8.5         |         |
|  |         | -47.1       |         |
|  |         | 43.8        |         |

 0.0 / 0.0

|                                   |                |                |                |                |
|-----------------------------------|----------------|----------------|----------------|----------------|
| <b>Transmit Frequencies (MHz)</b> | 21825.0000V(1) | 21975.0000V(4) | 23025.0000V(1) | 23175.0000V(4) |
|-----------------------------------|----------------|----------------|----------------|----------------|

## Microwave Path Data Sheet

Page 8 of 14

## COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147  
(858)232-4372 [www.comsearch.com](http://www.comsearch.com)

PCN Date: 11/12/2010  
Job Number 101112COMSSL04

Prev Job Num: 100819COMSSL02  
RCN Number: 10111203

**Administrative Information**

**CA-SJC0166D CA**  
City/County Campbell/Santa Clara  
Status / License Basis Engineering Proposal / PRIMARY OPERATION  
Call Sign WQMA224  
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  
WQMN261  
CLESP3  
Clearwire Spectrum Holdings III, LL  
FXO -- Fixed

**Site Information**

|                                  |                             |                             |
|----------------------------------|-----------------------------|-----------------------------|
| Latitude (NAD 83)                | 37 ° 17' <u>18.7</u> " N    | 37 ° 16' 45.5" N            |
| Longitude (NAD 83)               | 121 ° 56' <u>5.8</u> " W    | 121 ° 55' 18.3" W           |
| Ground Elevation (m/ft-AMSL)     | <u>59.40</u> / <u>194.9</u> | 58.70 / 192.6               |
| Antenna Structure Registration # | <u>1204443</u>              |                             |
| Path Azimuth (°)                 | <u>131.173</u>              | <u>311.181</u>              |
| Path Length (km / miles)         |                             | <u>1.555</u> / <u>0.966</u> |

**Transmit Antenna**

|                                                               |                           |
|---------------------------------------------------------------|---------------------------|
| 80014A                                                        | 80014A                    |
| Manufacturer ANDREW CORPORATION                               | ANDREW CORPORATION        |
| Model VHLP1-23A                                               | VHLP1-23A                 |
| Gain(dBi) / Beamwidth(°) / Tilt(°) 35.3 / 3.00 / <u>-1.60</u> | 35.3 / 3.00 / <u>1.59</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**

|                                                 |                             |
|-------------------------------------------------|-----------------------------|
| 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) <u>-46.0</u>               | <u>-46.0</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>123.2</u>               |                             |

|                                   |                |                |                |                |
|-----------------------------------|----------------|----------------|----------------|----------------|
| <b>Transmit Frequencies (MHz)</b> | 23125.0000V(3) | 23275.0000V(6) | 21925.0000V(3) | 22075.0000V(6) |
|-----------------------------------|----------------|----------------|----------------|----------------|

# Microwave Path Data Sheet

Page 9 of 14

## COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147  
(858)232-4372 [www.comsearch.com](http://www.comsearch.com)

PCN Date: 11/12/2010  
Job Number 101112COMSSL04

Prev Job Num: 100819COMSSL02  
RCN Number: 10111203

### Administrative Information

**CA-SJC0166D CA**  
City/County Campbell/Santa Clara  
Status / License Basis Engineering Proposal / PRIMARY OPERATION  
Call Sign WQMA224  
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 °17' <u>18.7</u> " N     | 37 °17' 49.2" N             |
| Longitude (NAD 83)               | 121 °56' <u>5.8</u> " W     | 121 °54' 47.2" W            |
| Ground Elevation (m/ft-AMSL)     | <u>59.40</u> / <u>194.9</u> | 49.10 / 161.1               |
| Antenna Structure Registration # | <u>1204443</u>              |                             |
| Path Azimuth (°)                 | <u>64.088</u>               | <u>244.101</u>              |
| Path Length (km / miles)         |                             | <u>2.152</u> / <u>1.337</u> |

### Transmit Antenna

|                                    |                            |                           |
|------------------------------------|----------------------------|---------------------------|
| Manufacturer                       | 99141R                     | 99141R                    |
| Model                              | RADIO WAVES, INC           | RADIO WAVES, INC          |
| Gain(dBi) / Beamwidth(°) / Tilt(°) | HPCPE-23                   | HPCPE-23                  |
| Centerline (m / ft – AGL)          | 34.4 / 2.90 / <u>-1.62</u> | 34.4 / 2.90 / <u>1.61</u> |
|                                    | 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)             | -48.7                       | -48.7                       |
| EIRP (dBm)                       | 42.9                        | 42.9                        |
| Fixed Loss: Tx / Common (dB)     | 0.0 / 0.0                   | 0.0 / 0.0                   |
| Free Space Loss (dB)             |                             | <u>126.0</u>                |

|                                   |                |                |                |                |
|-----------------------------------|----------------|----------------|----------------|----------------|
| <b>Transmit Frequencies (MHz)</b> | 23025.0000H(1) | 23175.0000H(4) | 21825.0000H(1) | 21975.0000H(4) |
|-----------------------------------|----------------|----------------|----------------|----------------|

## Microwave Path Data Sheet

Page 10 of 14

## COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147  
(858)232-4372 [www.comsearch.com](http://www.comsearch.com)

PCN Date: 11/12/2010  
Job Number 101112COMSSL04

Prev Job Num: 100916COMSSL07  
RCN Number: 10111203

**Administrative Information**

**CA-SJC0430A 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-SJC0166D CA**

Campbell/Santa Clara  
Engineering Proposal / PRIMARY OPERATION  
WQMA224  
CLESP3  
Clearwire Spectrum Holdings III, LL  
FXO -- Fixed

**Site Information**

|                                  |                 |                             |
|----------------------------------|-----------------|-----------------------------|
| Latitude (NAD 83)                | 37 °16' 58.8" N | 37 °17' <u>18.7</u> " N     |
| Longitude (NAD 83)               | 121 °54' 3.0" W | 121 °56' <u>5.8</u> " W     |
| Ground Elevation (m/ft-AMSL)     | 49.60 / 162.7   | <u>59.40</u> / <u>194.9</u> |
| Antenna Structure Registration # |                 | 1204443                     |
| Path Azimuth (°)                 | <u>281.475</u>  | <u>101.455</u>              |
| Path Length (km / miles)         |                 | <u>3.086</u> / <u>1.918</u> |

**Transmit Antenna**

RD1150  
Manufacturer RADIO WAVES, INC  
Model HP2-23  
Gain(dBi) / Beamwidth(°) / Tilt(°) 40.2 / 1.70 / 1.24  
Centerline (m / ft – AGL) 9.14 / 30.0

RD1150  
RADIO WAVES, INC  
HP2-23  
40.2 / 1.70 / -1.26  
66.45 / 218.0

**Receive Antenna**

Same As 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) 15.0  
Received Level (dBm) -33.7  
EIRP (dBm) 55.2  
Fixed Loss: Tx / Common (dB) 0.0 / 0.0  
Free Space Loss (dB) 129.1

TEMQ48  
DRAGONWAVE INC  
23HD50HFC322V02  
HORIZON DUO  
45M8D7W 256 QAM  
1 CH DIG 322000.000  
0.001  
Nominal Coordinated Maximum  
15.0  
-33.7  
55.2  
0.0 / 0.0

**Transmit Frequencies (MHz)** 21875.0000H(2) 22025.0000H(5) 23075.0000H(2) 23225.0000H(5)

# Microwave Path Data Sheet

Page 11 of 14

## COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147  
(858)232-4372 [www.comsearch.com](http://www.comsearch.com)

PCN Date: 11/12/2010  
Job Number 101112COMSSL04

Prev Job Num: 100916COMSSL07  
RCN Number: 10111203

### Administrative Information

**CA-SJC0473D 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 WQMA224  
Licensee Code CLESP3  
Licensee Name Clearwire Spectrum Holdings III, LL  
Radio Service / Station Class FXO -- Fixed

### Site Information

|                                  |                 |                             |
|----------------------------------|-----------------|-----------------------------|
| Latitude (NAD 83)                | 37 °17' 14.0" N | 37 °17' <u>18.7</u> " N     |
| Longitude (NAD 83)               | 121 °58' 3.8" W | 121 °56' <u>5.8</u> " W     |
| Ground Elevation (m/ft-AMSL)     | 61.90 / 203.1   | <u>59.40</u> / <u>194.9</u> |
| Antenna Structure Registration # |                 | 1204443                     |
| Path Azimuth (°)                 | <u>87.136</u>   | <u>267.156</u>              |
| Path Length (km / miles)         |                 | <u>2.910</u> / <u>1.808</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>1.13</u> | 40.2 / 1.70 / <u>-1.15</u> |
|                                    | 6.10 / 20.0               | 66.45 / 218.0              |

### Receive Antenna

Same As 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)             | -39.7                       | -39.7                       |
| EIRP (dBm)                       | 48.7                        | 48.7                        |
| Fixed Loss: Tx / Common (dB)     | 0.0 / 0.0                   | 0.0 / 0.0                   |
| Free Space Loss (dB)             |                             | <u>128.6</u>                |

|                                   |                |                 |                |                 |
|-----------------------------------|----------------|-----------------|----------------|-----------------|
| <b>Transmit Frequencies (MHz)</b> | 22175.0000H(8) | 22275.0000H(10) | 23375.0000H(8) | 23475.0000H(10) |
|-----------------------------------|----------------|-----------------|----------------|-----------------|

# Microwave Path Data Sheet

Page 12 of 14

## COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147  
(858)232-4372 [www.comsearch.com](http://www.comsearch.com)

PCN Date: 11/12/2010  
Job Number 101112COMSSL04

Prev Job Num: 101007COMSSL01  
RCN Number: 10111203

### Administrative Information

**CA-SJC0416A 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-SJC0166D CA

City/County Campbell/Santa Clara  
Status / License Basis Engineering Proposal / PRIMARY OPERATION  
Call Sign WQMA224  
Licensee Code CLESP3  
Licensee Name Clearwire Spectrum Holdings III, LL  
Radio Service / Station Class FXO -- Fixed

### Site Information

|                                  |                  |                             |
|----------------------------------|------------------|-----------------------------|
| Latitude (NAD 83)                | 37 °15' 52.3" N  | 37 °17' <u>18.7</u> " N     |
| Longitude (NAD 83)               | 121 °56' 28.7" W | 121 °56' <u>5.8</u> " W     |
| Ground Elevation (m/ft-AMSL)     | 73.20 / 240.2    | <u>59.40</u> / <u>194.9</u> |
| Antenna Structure Registration # |                  | 1204443                     |
| Path Azimuth (°)                 | <u>11.957</u>    | <u>191.961</u>              |
| Path Length (km / miles)         |                  | <u>2.723</u> / <u>1.692</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>0.87</u> | 40.2 / 1.70 / <u>-0.89</u> |
| Centerline (m / ft - AGL) 10.67 / 35.0                       | 66.45 / 218.0              |

### Receive Antenna

Same As 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) 12.5                                 | 12.5                        |
| Received Level (dBm) <u>-37.2</u>                | <u>-37.2</u>                |
| EIRP (dBm) <u>51.7</u>                           | <u>51.7</u>                 |
|                                                  |                             |
| Fixed Loss: Tx / Common (dB) 0.0 / <u>1.0</u>    | 0.0 / <u>1.0</u>            |
| Free Space Loss (dB)                             | <u>128.1</u>                |

|                                   |                 |                 |                 |                 |
|-----------------------------------|-----------------|-----------------|-----------------|-----------------|
| <b>Transmit Frequencies (MHz)</b> | 22275.0000H(10) | 22375.0000H(12) | 23475.0000H(10) | 23575.0000H(12) |
|-----------------------------------|-----------------|-----------------|-----------------|-----------------|

## Microwave Path Data Sheet

Page 13 of 14

## COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147  
(858)232-4372 [www.comsearch.com](http://www.comsearch.com)

PCN Date: 11/12/2010  
Job Number 101112COMSSL04

Prev Job Num: 100713COMSSL01  
RCN Number: 10111203

**Administrative Information**

**CA-SFO0933A 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-SFO0299A CA**

San Bruno/San Mateo  
Engineering Proposal / PRIMARY OPERATION  
WQLY408  
CLESP3  
Clearwire Spectrum Holdings III, LL  
FXO -- Fixed

**Site Information**

|                                  |                      |                  |
|----------------------------------|----------------------|------------------|
| Latitude (NAD 83)                | 37 °37' 42.8" N      | 37 °38' 15.2" N  |
| Longitude (NAD 83)               | 122 °26' 8.4" W      | 122 °24' 42.3" W |
| Ground Elevation (m/ft-AMSL)     | <u>58.60 / 192.3</u> | 6.30 / 20.7      |
| Antenna Structure Registration # | <u>1274665</u>       |                  |
| Path Azimuth (°)                 | 64.670               | 244.685          |
| Path Length (km / miles)         | 2.335 / 1.451        |                  |

**Transmit Antenna**

|                                                               |                           |
|---------------------------------------------------------------|---------------------------|
| 99141R                                                        | RD1150                    |
| MANUFACTURER RADIO WAVES, INC                                 | RADIO WAVES, INC          |
| MODEL HPCPE-23                                                | HP2-23                    |
| GAIN(dBi) / Beamwidth(°) / Tilt(°) 34.4 / 2.90 / <u>-1.31</u> | 40.2 / 1.70 / <u>1.30</u> |
| CENTERLINE (m / ft - AGL) 28.65 / 94.0                        | 27.74 / 91.0              |

**Receive Antenna**

Same As 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                      |
| DRAGONWAVE INC                                   | DRAGONWAVE INC              |
| 23HD50HFC364V02                                  | 23HD50HFC364V02             |
| 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) 14.2                                 | 14.2                        |
| Received Level (dBm) -37.9                       | -37.9                       |
| EIRP (dBm) 48.6                                  | 54.4                        |
| Fixed Loss: Tx / Common (dB) 0.0 / 0.0           | 0.0 / 0.0                   |
| Free Space Loss (dB) 126.7                       |                             |

|                                   |                |                |                |                |
|-----------------------------------|----------------|----------------|----------------|----------------|
| <b>Transmit Frequencies (MHz)</b> | 23075.0000V(2) | 23225.0000V(5) | 21875.0000V(2) | 22025.0000V(5) |
|-----------------------------------|----------------|----------------|----------------|----------------|

# Microwave Path Data Sheet

Page 14 of 14

## COMSEARCH

19700 Janelia Farm Boulevard, Ashburn, VA, 20147  
(858)232-4372 [www.comsearch.com](http://www.comsearch.com)

PCN Date: 11/12/2010  
Job Number 101112COMSSL04

Prev Job Num: 100713COMSSL01  
RCN Number: 10111203

### Administrative Information

**CA-SJC0223D 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-SJC0232A CA

City/County San Jose/Santa Clara  
Status / License Basis Engineering Proposal / PRIMARY OPERATION  
Call Sign WQMA312  
Licensee Code CLESP3  
Licensee Name Clearwire Spectrum Holdings III, LL  
Radio Service / Station Class FXO -- Fixed

### Site Information

|                                  |                 |                             |
|----------------------------------|-----------------|-----------------------------|
| Latitude (NAD 83)                | 37 °22' 25.8" N | 37 °21' <u>32.9</u> " N     |
| Longitude (NAD 83)               | 121 °50' 6.4" W | 121 °48' <u>59.1</u> " W    |
| Ground Elevation (m/ft-AMSL)     | 53.80 / 176.5   | <u>46.10</u> / <u>151.2</u> |
| Antenna Structure Registration # |                 |                             |
| Path Azimuth (°)                 | <u>134.556</u>  | <u>314.567</u>              |
| Path Length (km / miles)         |                 | <u>2.324</u> / <u>1.444</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) 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

|                                                  |                             |
|--------------------------------------------------|-----------------------------|
| TEM020                                           | TEM020                      |
| 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) <u>-40.8</u>                | <u>-40.8</u>                |
| EIRP (dBm) 45.7                                  | 45.7                        |
|                                                  |                             |
| Fixed Loss: Tx / Common (dB) 0.0 / 0.0           | 0.0 / 0.0                   |
| Free Space Loss (dB) <u>126.7</u>                |                             |

|                                   |                |                |                |                |
|-----------------------------------|----------------|----------------|----------------|----------------|
| <b>Transmit Frequencies (MHz)</b> | 21875.0000V(2) | 22025.0000V(5) | 23075.0000V(2) | 23225.0000V(5) |
|-----------------------------------|----------------|----------------|----------------|----------------|