

## FCC Compliance Testing

|                       |                                                                       |
|-----------------------|-----------------------------------------------------------------------|
| Applicant:            | Enterprise Networks, Inc.<br>757 Shearer St.<br>North Wales, PA 19454 |
| Equipment Under Test: | Digital Microwave Radio – 18GHz                                       |
| FCC ID:               | PYC18-3800                                                            |
| In Accordance with:   | FCC Part 101, Subpart C                                               |
| Authorized By:        | Paul Caskey, President<br>Enterprise Networks                         |

#### Equipment General Specifications:

|                               |                            |
|-------------------------------|----------------------------|
| Manufacturer:                 | Enterprise Networks, Inc.  |
| Model Number:                 | 18-3800-MPU                |
| Supply Voltage:               | 60 VAC                     |
| Frequency Range of Operation: | 18,800 MHz – 19,700 MHz    |
| Channel Bandwidth:            | 20 MHz (FCC Part 101.147)  |
| Operator Frequency Selection: | none                       |
| Modulation Type:              | 16-256 QAM (user variable) |
| Emission Designator:          | D2D                        |
| Symbol Rate:                  | 16.05 Msps (max)           |
| Data Rate:                    | 155 Mbps (max)             |
| Microwave Output Power:       | 0-20 dBm (variable)        |
| Data Source:                  | External                   |

## Summary of Test Data:

All tests were performed using a 100mW (+20dBm) transmitter.  
Transmitter is QAM modulated at 16 Msps

| Test                                   | Test Part/Section | Tech. Standard Part/Section | Result   |
|----------------------------------------|-------------------|-----------------------------|----------|
| RF Power Output                        | Part 2.1046       | Part 101.113                | Complies |
| Occupied Bandwidth                     | Part 2.1049       | Part 101.111                | Complies |
| Spurious Emissions at Antenna Terminal | Part 2.1051       | Part 101.111                | Complies |
| Field Strength of Spurious Radiation   | Part 2.1053       | Part 101.111                | Complies |
| Frequency Stability                    | Part 2.1055       | Part 101.107                | Complies |

## Part 2.1046 RF Output Power

Technical Standard: Part 101.113(a)

Test Result: Complies

Test Data:

Specified output +20 dBm (100mW)

Measured output power (HP435B power meter):

Room temp : +19.4 dBm

+50 Deg C: +19.1 dBm

-30 Deg C: +19.8 dBm

## Part 2.1049 Occupied Bandwidth

Technical Standard: 101.111(a)(2)(ii)

Test Result: Complies

Test Data:

Test made at center frequency 18,950 MHz  
Spectrum Analyzer HP8570A

Minimum attenuation of modulated carrier:  $A = 11 + 0.4(P-50) + 10 \log B$   
For  $B = 20$  MHz,  $A = 23 + 0.4(P-50)$  where  $P = \%BW$  from center frequency

| P (%) | attenuation A (dBc) | measured attenuation (dBc) |
|-------|---------------------|----------------------------|
| 50    | 23                  | 43                         |
| 60    | 27                  | 43                         |
| 70    | 31                  | 45                         |
| 80    | 35                  | 48                         |
| 90    | 39                  | 52                         |
| 100   | 43                  | 58                         |
| 110   | 47                  | >60                        |
| 120   | 51                  | >60                        |
| 130   | 55                  | >60                        |
| 140   | 56                  | >60                        |
| 150   | 56                  | >60                        |
| 160   | 56                  | >60                        |
| 170   | 56                  | >60                        |
| 180   | 56                  | >60                        |
| 190   | 56                  | >60                        |
| 200   | 56                  | >60                        |
| 210   | 56                  | >60                        |
| 220   | 56                  | >60                        |
| 230   | 56                  | >60                        |
| 240   | 56                  | >60                        |
| 250   | 56                  | >60                        |

## **Part 2.1051 Spurious Emissions at Antenna Terminal**

Technical Standard: 101.111(a)(2)(iii)

Test Result: Complies

Test Data: Worst case spurs were the lower sideband and LO each of which were <-65 dBc.

## **Part 2.1053 Field Strength of Spurious Emissions**

Technical Standard: 101.111(a)(2)(iii)  
84.4 dBuV/m @ 3m < 1 GHz  
82.2 dBuV/m @ 3m < 1 GHz

Test Result: Complies

Test Data: No emissions could be detected between 30MHz and 40GHz. An external mixer was used to measure between 22 and 40 GHz.

## **Part 2.1055 Frequency Stability**

Technical Standard: 101.507, 0.001% (189 kHz)

Test Result: Complies

Test Data: The system has a specified temperature stability of 0.1 ppm due to the low phase-noise ovenized reference oscillator. A Thermotron Model S-4 was used to cycle the unit between -30 and +50 degrees C. Worst case frequency deviations of 16 kHz are recorded below.

-30 deg. C: 18,950,011 kHz  
+25 deg. C: 18,950,002 kHz  
+50 deg. C: 18,949,995 kHz