

FCC Compliance Testing

Applicant:	Enterprise Networks, Inc. 757 Shearer St. 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 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