

# FCC TEST REPORT

according to

## FCC Rules and Regulations

### Part 15 Subpart C & E

Applicant	Firetide Inc.
Address	16795 Lark Ave., Ste. 200, Los Gatos, CA 95032
Equipment	HotPort Wireless Mesh Node
Model No.	HotPort3203
FCC ID	REP-3200-1
Trade Name	Firetide

Laboratory accreditation



1332

ILAC MRA

- The test result refers exclusively to the test presented test model / sample.,
- Without written approval of **Exclusive Certification Corp.** the test report shall not be reproduced except in full.
- The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

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# CERTIFICATE OF COMPLIANCE

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FCC ID	REP-3200-1

#### I HEREBY CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4**. The equipment was **passed** the test performed according to **FCC Rules and Regulations Part 15 Subpart C & E (2003)**. The test was carried out on Apr. 18, 2005 at *Exclusive Certification Corp.*

Signature

  
Anson Chou / Manager

## 1. Report of Measurements and Examinations

### 1.1. List of Measurements and Examinations

For Frequency 5.15GHz ~ 5.35GHZ

Applied Standard : FCC Part 15, Subpart E (Section 15.407)		
FCC Rule	Description of Test	Result
15.407(b)(5)	. Conducted Emission	Pass
15.407(b)(1/2/3)(b)(5)	. Radiated Emission	Pass
15.407(a)(1/2/3)	. Peak Transmit Power	Pass
15.407(a)(6)	. Peak Power Excursion	Pass
15.407(a)(1/2/3)	. Peak Power Spectral Density	Pass
15.407(g)	. Frequency Stability	Pass

For Frequency 5.725GHz ~ 5.85GHZ

Applied Standard : FCC Part 15, Subpart C (Section 15.247)		
FCC Rule	Description of Test	Result
15.203	. Antenna Requirement	Pass
15.207	. Conducted Emission	Pass
15.209	. Radiated Emission	Pass
15.247(a)(2)	. 6dB Bandwidth	Pass
15.247(b)	. Maximum Peak Output Power	Pass
15.247(c)	. 100kHz Bandwidth of Frequency Band Edges	Pass
15.247(d)	. Power Spectral Density	Pass
1.1307 1.1310 2.1091 2.1093	. RF Exposure Compliance	Pass

Test engineer: \_\_\_\_\_

*Jerry*

## 2. Test Configuration of Equipment under Test

### 2.1. Feature of Equipment under Test

<p><b>Model</b> HotPort 3203</p> <p><b>Protocol</b> Firetide Mesh Routing Protocol (FMRP)</p> <p><b>Encryption</b></p> <ul style="list-style-type: none"> <li>40/64 bit, 104/128 bit WEP keys</li> <li>128 bit, 256 bit AES keys</li> </ul> <p><b>Wireless interface</b></p> <p>2.4 GHz spectrum</p> <ul style="list-style-type: none"> <li>2.400–2.497 GHz (actual channels available for use are subject to country-specific regulatory approvals)</li> <li>TX Power: Up to 4 W EIRP depending on country of operation and antenna configuration</li> </ul> <p>5 GHz spectrum</p> <ul style="list-style-type: none"> <li>5.250 – 5.350 GHz</li> <li>5.750 – 5.825 GHz (actual channels available for use are subject to country-specific regulatory approvals)</li> <li>TX Power: Up to 1 W EIRP depending on country of operation and antenna configuration</li> </ul> <p>Dynamic Frequency Selection (DFS) Transmit Power Control (TPC)</p> <p><b>Network ports</b></p> <ul style="list-style-type: none"> <li>Dual 10/100 Mbps Ethernet ports with circular, watertight IP67-rated connectors</li> <li>IEEE 802.3, 802.3u compliant CSMA/CD 10/100 autosense</li> </ul> <p><b>Antennas</b></p> <ul style="list-style-type: none"> <li>Two detachable, 6 dBi omni-directional, vertical polarization, dual spectrum antennas (included for network staging only)</li> <li>Single detachable 8 dBi omni-directional, vertical polarization antenna (order separately) Note: antennas are spectrum specific</li> <li>Spectrum: 2.4 GHz and 5 GHz</li> <li>Connectors: TNC reverse polarity</li> <li>Length: 16.5 in. (42 cm)</li> <li>Range: up to 2600 ft (800 m) depending on spectrum and environmental attenuation</li> <li>Gain: up to 8 dBi</li> </ul>	<p><b>Enclosure</b></p> <ul style="list-style-type: none"> <li>Cast aluminum NEMA-4X/IP67 enclosure</li> <li>Two antenna connectors (TNC reverse polarity)</li> <li>One power connector</li> <li>Two circular, watertight IP67-rated Ethernet data connectors</li> <li>System indicator LEDs (power, status, fault)</li> <li>Physical security via lockable mounting bracket</li> <li>Weight: 4.85 lbs (2.2 Kg) with sun shield ⌚Dimensions: 9.812" x 7.812" x 2.687" (25 cm x 19.8 cm x 6.82 cm)</li> </ul> <p><b>Power</b></p> <ul style="list-style-type: none"> <li>Input voltage: 24 VDC</li> <li>Indoor-rated power supply (transformer): 90-240 VAC, 50/60 Hz</li> <li>Power consumption: 25 W nominal</li> <li>802.3af compliant PoE (PD and PSE)</li> <li>Power transition cable: 32.8 ft (10 m)</li> </ul> <p><b>Regulatory Agency Certifications</b> Contact your Firetide dealer for product availability and certifications for your country</p> <p><b>Environmental specifications</b></p> <ul style="list-style-type: none"> <li>Operating temperature: -40°C to +55 °C (-40° F to 131° F)</li> <li>Storage temperature: -40°C to +80°C (-40° F to 176° F)</li> <li>Humidity (non-condensing) 5% to 95%</li> <li>Storage humidity (non-condensing): 10% to 90%</li> </ul> <p><b>Mesh Management Software</b> Includes HotView mesh management software</p> <p><b>Warranty</b> One year limited warranty (see warranty card for details)</p> <p><b>Included Accessories</b></p> <ul style="list-style-type: none"> <li>Lockable bracket for pole and wall mounting</li> <li>Indoor-rated power supply</li> <li>Sun shield</li> <li>Weatherized Ethernet transition cable (circular, watertight IP67-rated connector to RJ-45 connector)</li> <li>Weatherized RJ-45 connector kit</li> </ul>
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## 2.2. RF Module Specifications

Frequency Range	USA: 2.400 – 2.483GHz, 5.25 ~ 5.35Ghz, 5.725 ~ 5.825Ghz Europe: 2.400 – 2.483GHz, 5.15~ 5.35Ghz, 5.47 ~ 5.725Ghz Japan: 2.400 – 2.483GHz, 4.90 – 5.091GHz China: 2.400 – 2.483GHz, 5.725 ~5.85Ghz			
Modulation Technique	802.11b/g: DSSS (DBPSK, DQPSK, CCK); OFDM (BPSK,QPSK, 16-QAM, 64-QAM)802.11a: OFDM(BPSK,QPSK, 16-QAM, 64-QAM)			
Host Interface	Mini-PCI form factor; Mini-PCI Version 1.0 type 3B			
Channels Support	802.11b/g US/Canada: 11 (1 ~ 11) Major European country: 13 (1 ~ 13) France: 4 (10 ~ 13) Japan: 11b: 14 (1~13 or 14th), 11g: 13 (1 ~ 13) China: 13 (1 ~ 13) 802.11a 1). US/Canada:12 non-overlapping channels (5.25 ~ 5.35GHz, 5.725 ~ 5.825GHz) 2). Europe: 19 non-overlapping channel (5.15 ~ 5.35GHz, 5.47 ~ 5.725GHz) 3). Japan: 4 non-overlapping channels (5.15 ~ 5.25GHz) 4). China : 5 non-overlapping channels (5.725 ~ 5.85GHz)			
Operation Voltage	3.3V +/- 5%			
Power Consumption		802.11a	802.11b	802.11g
	FTP Tx :	420mA	430mA	410mA
	FTP Rx :	300mA	310mA	310mA
	Standby mode:	260mA	250mA	270mA
	Power saving mode:	50mA	50mA	50mA
	RF Kill :	40mA	40mA	40mA
Output Power	802.11b: 18 dBm 802.11g: 18dBm @6Mbps; 15dBm @54Mbps 802.11a: 17dBm @6Mbps; 13dBm @54Mbps			
Operation Distance (depend on antenna performance)	802.11a: Outdoor: 85m@54Mbps, 300m@6Mbps Indoor: 20m@54Mbps, 40m@6Mbps 802.11b: Outdoor:300m@11Mbps, 400m@1Mbps Indoor: 30m@11Mbps, 50m@1Mbps 802.11g: Outdoor: 80m@54Mbps, 300m@6Mbps Indoor: 15m@54Mbps, 35m@6Mbps			
Operation System Supported	Windows®98SE, ME, 2K, XP			
Dimension	59.75mm(L) * 44.60mm (W) * 5mm (H)			
Security	- 64-bit,128-bit, 152-bit WEP Encryption - 802.1x Authentication - AES-CCM & TKIP Encryption			
Operation Mode	Infrastructure & Ad-hoc mode			
Transfer Data Rate	802.11b/g: 11, 5.5, 2, 1 Mbps, auto-fallback, up to 54 Mbps 802.11a (Normal mode): 54, 48, 36, 24, 18, 12, 9, 6Mbps, auto-fallback			
Operation Temperature	0°C ~ 70°C			
Storage Temperature	-20°C ~ 80°C			
Wi-Fi Alliance	WECA Compliant			
WHQL	Microsoft®XP Compliant			
FAA	S/W audio On/Off support			
EMC Certificate	FCC part 15 (USA), with multiple e-Antenna Telec (Japan), with multiple e-Antenna			
Media Access Protocol	CSMA/CA with ACK architecture 32-bit MAC			
Antenna Connector	2 x SMT Ultra-miniature coaxial connectors			

### 2.3. Test Mode and Test Software

The following test mode and test software was performed for conduction and radiation test:

- 802.11 a (CH5: 5260MHz)
- 802.11 a (CH8: 5320MHz)
- 802.11 a (CH9: 5745MHz)
- 802.11 a (CH11: 5785MHz)
- 802.11 a (CH13: 5825MHz)
- An executive programs, "Hyper Terminal" Application under WIN XP.
- The Radiated test include two kind of antenna:

Antenna type 1 : external dipole antenna.

Antenna gain : 4 dBi

Antenna type 2 : external GP-antenna

Antenna gain : 8 dBi

### 2.4. Description of Test System

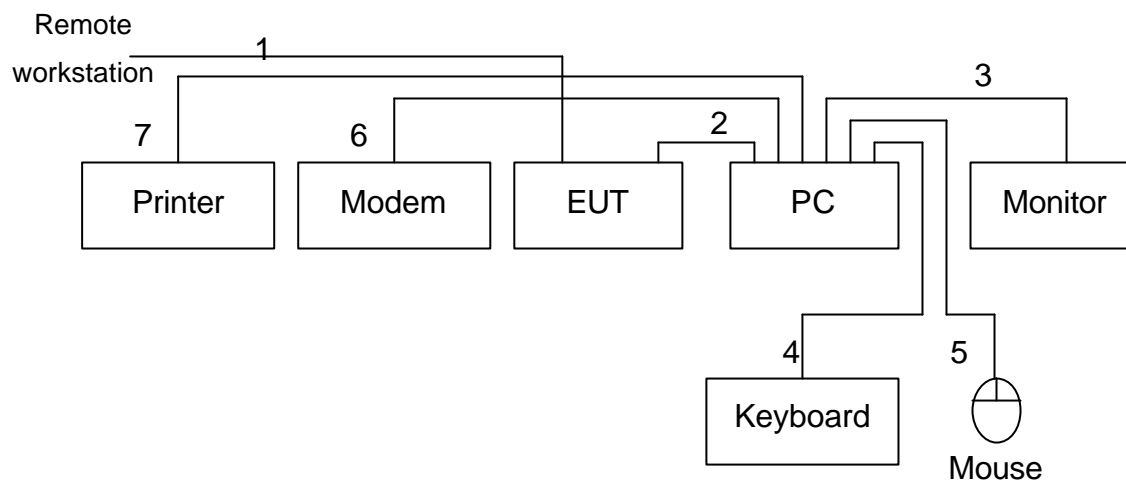
Device	Manufacturer	Model No.	Description
PC	IBM	IGV	Power Cable, Unshielding 1.8 m
Monitor	SlimAGE	510A	Power Cable, Adapter Unshielding 1.8 m Data Cable, VGA shielding 1.35 m
Keyboard	IBM	KB-0225	Data Cable, PS2 shielding 1.85 m
Mouse	IBM	MO28VO	Data Cable, USB shielding 1.85 m
Modem	ACEXX	DM-1414	Power Cable, Adapter Unshielding 1.8 m Data Cable, RS232 Unshielding 1.35 m
Printer	HP	Desk Jet400	Power Cable, Adapter Unshielding 1.8 m Data Cable, PRINT shielding 1.6 m
Notebook (Remote site)	Dell	510m	Power Cable, Adapter Unshielding 1.8 m

Use Cable:

Cable	Description
LAN	Unshielding, 1.9m
LAN	Unshielding, 10m



## 2.5. Connection Diagram of Test System



1. The LAN cable is connected form remote workstation to the EUT.
2. The LAN cable is connected form PC to the EUT.
3. The I/O cable is connected from PC to the Monitor.
4. The I/O cable is connected from PC to the Keyboard.
5. The I/O cable is connected from PC to the Mouse.
6. The I/O cable is connected from PC to the MODEM
7. The I/O cable is connected from PC to the Printer.

### 3. General Information of Test

Test Site:	Exclusive Certification Corp. 4F-2, No. 28, Lane 78, Xing-Ai Rd. Nei-hu, Taipei City 114 Taiwan R.O.C.
Test Site Location (OATS1-SD):	No.68-1, Shihbachongsi, shihding Township, Taipei County 223, Taiwan, R.O.C.
Test Voltage:	AC 110V/ 60Hz
Test in Compliance with:	ANSI C63.4-2003 FCC Part 15 Subpart C & E
Frequency Range Investigated:	AC Power Conducted Emission : from 150kHz to 30 MHz Radiated and conducted Emission: from 30 MHz to 40 GHz
Test Distance:	The test distance of radiated emission from antenna to EUT is 3 M.

#### 3.1. History of this test report

ORIGINAL.

## 4. Antenna Requirements

### 4.1. Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

### 4.2. Antenna Construction and Directional Gain

Antenna type 1: external Dipole Antenna.

Antenna Gain: 4 dBi @ 5 GHz.

Antenna type 2: external GP-Antenna.

Antenna Gain: 8 dBi @ 5GHz

## 5. Test of Conducted Emission

### 5.1. Test Limit

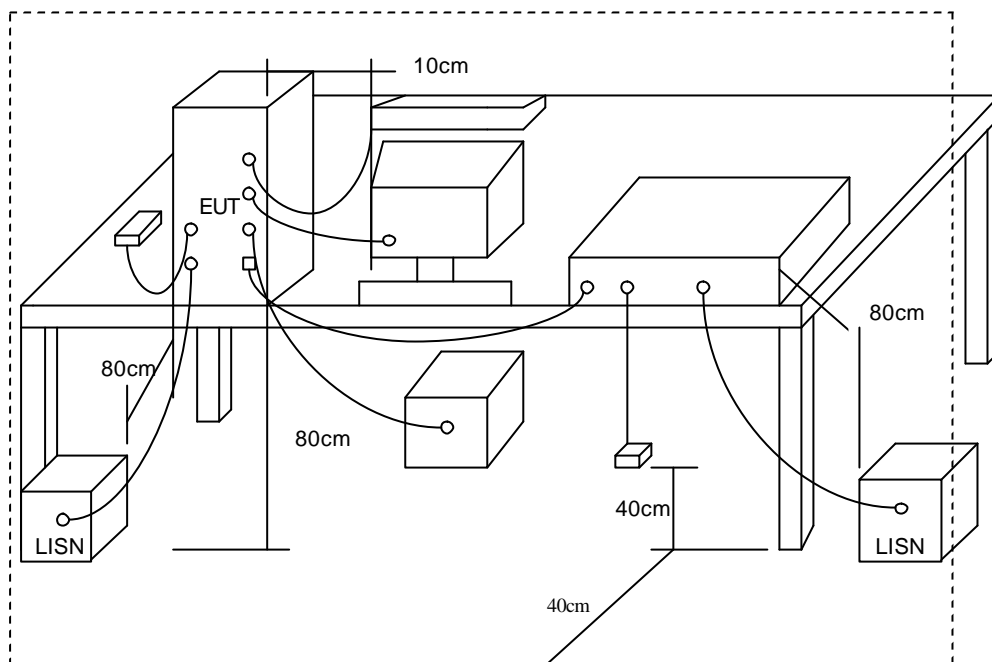
Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 115 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-1992 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 2.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

Frequency (MHz)	Quasi Peak (dB $\mu$ V)	Average (dB $\mu$ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

### 5.2. Test Procedures

- a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- c. All the support units are connecting to the other LISN.
- d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- e. The FCC states that a 50 ohm, 50 micro-henry LISN should be used.
- f. Both sides of AC line were checked for maximum conducted interference.
- g. The frequency range from 150 kHz to 30 MHz was searched.
- h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

### 5.3. Typical Test Setup



### 5.4. Measurement equipment

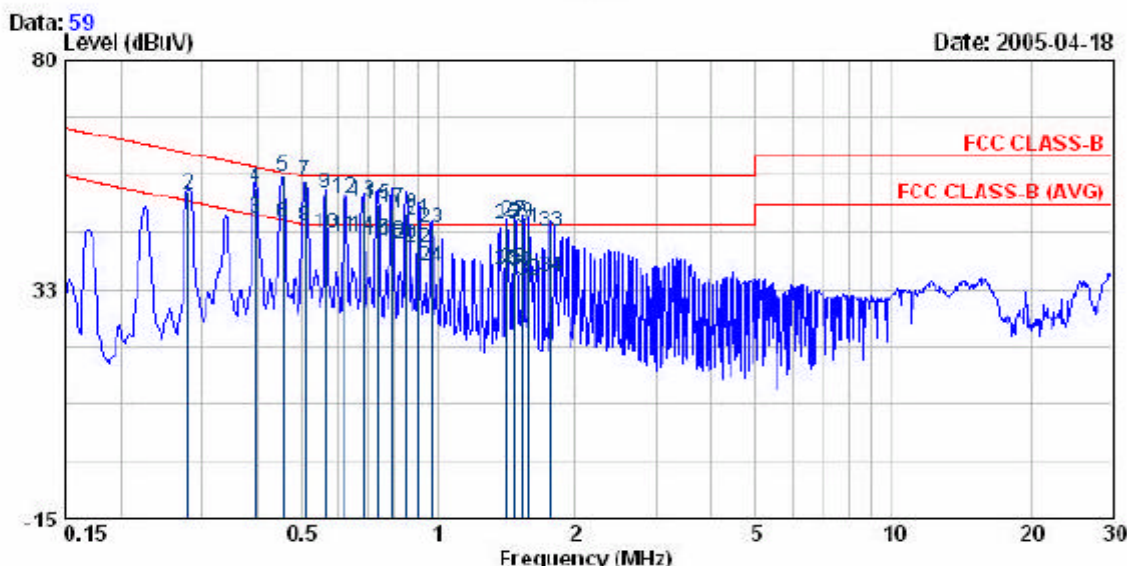
Instrument/Ancillary	Type	Manufacturer	Valid Date.
Receiver	SCR3501	Schaffner	2005/11/03
LISN	NNB-2/16Z	MESS TEC	2006/03/30
LISN	NNB-2/16Z	ROLF HEINE	2005/04/25
ISN	FCC	FCC-TLISN-T4-02	2005/06/10

### 5.5. Test Result and Data

Antenna type 1: external Dipole Antenna.

EUT : Razor  
 Power : AC 110V  
 Test Mode : 602.11a CH 5  
 Memo :

Pol/Phase : NEUTRAL  
 Temperature : 26 °C  
 Humidity : 58 %

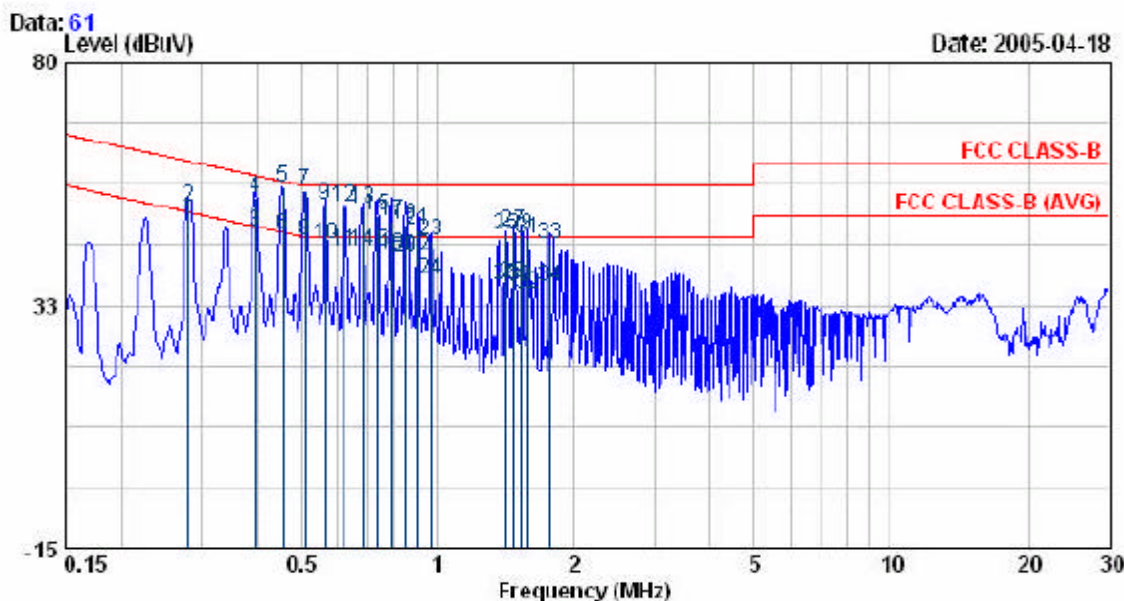


Freq MHz	Read Level dBuV	Factor dB	Level dBuV	Limit dBuV	Over Limit dBuV	Remark
0.282	48.15	0.35	48.50	50.76	-2.26	AVERAGE
0.282	51.69	0.35	52.04	50.76	-8.72	QP
0.396	46.79	0.50	47.29	47.95	-0.66	AVERAGE
0.396	52.89	0.50	53.39	57.95	-4.56	QP
0.454	55.34	0.49	55.83	56.80	-0.97	QP
0.454	45.89	0.49	46.38	46.80	-0.42	AVERAGE
0.510	54.35	0.47	54.82	56.00	-1.18	QP
0.510	44.98	0.47	45.45	46.00	-0.55	AVERAGE
0.564	51.91	0.46	52.37	56.00	-3.63	QP
0.564	43.81	0.46	44.27	46.00	-1.73	AVERAGE
0.621	42.86	0.45	43.30	46.00	-2.70	AVERAGE
0.621	50.93	0.45	51.38	56.00	-4.62	QP
0.679	50.34	0.44	50.78	56.00	-5.22	QP
0.679	42.89	0.44	43.33	46.00	-2.67	AVERAGE
0.731	49.52	0.43	49.95	56.00	-6.05	QP
0.731	42.41	0.43	42.84	46.00	-3.16	AVERAGE
0.792	48.91	0.43	49.34	56.00	-6.66	QP
0.792	41.86	0.43	42.28	46.00	-3.72	AVERAGE
0.848	47.92	0.42	48.34	56.00	-7.66	QP
0.848	41.36	0.42	41.78	46.00	-4.22	AVERAGE
0.904	46.62	0.41	47.03	56.00	-8.97	QP
0.904	40.52	0.41	40.93	46.00	-5.07	AVERAGE
0.963	44.63	0.40	45.03	56.00	-10.97	QP
0.963	36.82	0.40	37.22	46.00	-8.78	AVERAGE
1.418	45.51	0.45	45.96	56.00	-10.04	QP
1.418	35.89	0.45	36.34	46.00	-9.66	AVERAGE
1.472	46.25	0.46	46.71	56.00	-9.29	QP
1.472	36.45	0.46	36.91	46.00	-9.09	AVERAGE
1.527	45.86	0.46	46.31	56.00	-9.69	QP
1.527	35.82	0.46	36.28	46.00	-9.72	AVERAGE
1.585	44.87	0.47	45.34	56.00	-10.66	QP
1.585	34.12	0.47	34.59	46.00	-11.41	AVERAGE
1.762	43.92	0.48	44.40	56.00	-11.60	QP
1.762	34.71	0.48	35.19	46.00	-10.81	AVERAGE

Remarks: 1. Level = Read Level + Factor  
 2. Factor = LISN(ISN) Factor + Cable Loss

EUT : Razor  
 Power : AC 110V  
 Test Mode : 802.11a CH 5  
 Memo :

Pol/Phase : LINE  
 Temperature : 26 °C  
 Humidity : 58 %



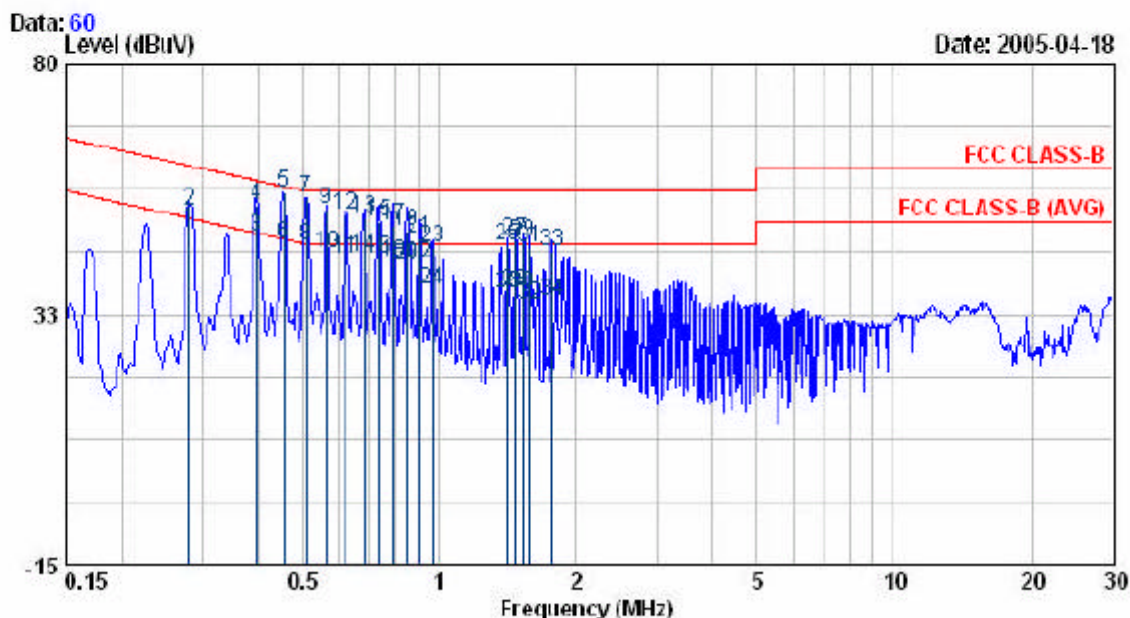
Freq	Read Level	Factor	Level	Limit	Over Limit	Remark
MHz	dBuV	dB	dBuV	dBuV	dBuV	
0.282	48.36	0.35	48.71	50.76	-2.05	AVERAGE
0.282	51.49	0.35	51.84	60.76	-8.92	QP
0.396	46.52	0.50	47.02	47.95	-0.93	AVERAGE
0.396	52.93	0.50	53.43	57.95	-4.52	QP
0.454	55.22	0.49	55.71	56.80	-1.09	QP
0.454	45.61	0.49	46.10	46.80	-0.70	AVERAGE
0.510	54.31	0.47	54.78	56.00	-1.22	QP
0.510	44.89	0.47	45.36	46.00	-0.64	AVERAGE
0.564	51.72	0.46	52.18	56.00	-3.82	QP
0.564	44.15	0.46	44.61	46.00	-1.39	AVERAGE
0.621	42.73	0.45	43.18	46.00	-2.82	AVERAGE
0.621	51.31	0.45	51.76	56.00	-4.24	QP
0.679	51.03	0.44	51.47	56.00	-4.53	QP
0.679	42.81	0.44	43.25	46.00	-2.75	AVERAGE
0.731	49.63	0.43	50.06	56.00	-5.94	QP
0.731	42.56	0.43	42.99	46.00	-3.01	AVERAGE
0.792	48.61	0.43	49.04	56.00	-6.96	QP
0.792	41.85	0.43	42.28	46.00	-3.72	AVERAGE
0.848	47.89	0.42	48.31	56.00	-7.69	QP
0.848	41.42	0.42	41.84	46.00	-4.16	AVERAGE
0.904	46.75	0.41	47.16	56.00	-8.84	QP
0.904	41.53	0.41	42.00	46.00	-4.00	AVERAGE
0.963	44.75	0.40	45.15	56.00	-10.85	QP
0.963	36.98	0.40	37.38	46.00	-8.62	AVERAGE
1.418	45.69	0.45	46.14	56.00	-9.86	QP
1.418	36.21	0.45	36.66	46.00	-9.34	AVERAGE
1.472	46.45	0.46	46.91	56.00	-9.09	QP
1.472	36.51	0.46	36.97	46.00	-9.03	AVERAGE
1.527	45.79	0.46	46.25	56.00	-9.75	QP
1.527	35.75	0.46	36.21	46.00	-9.79	AVERAGE
1.585	44.91	0.47	45.38	56.00	-10.62	QP
1.585	34.36	0.47	34.83	46.00	-11.17	AVERAGE
1.762	43.86	0.48	44.34	56.00	-11.66	QP
1.762	35.71	0.48	36.19	46.00	-9.81	AVERAGE

Remarks: 1. Level = Read Level + Factor  
 2. Factor = LISN(ISN) Factor + Cable Loss



EUT : Razor  
 Power : AC 110V  
 Test Mode : 602.11a CH 0  
 Memo :

Pol/Phase : NEUTRAL  
 Temperature : 26 °C  
 Humidity : 58 %



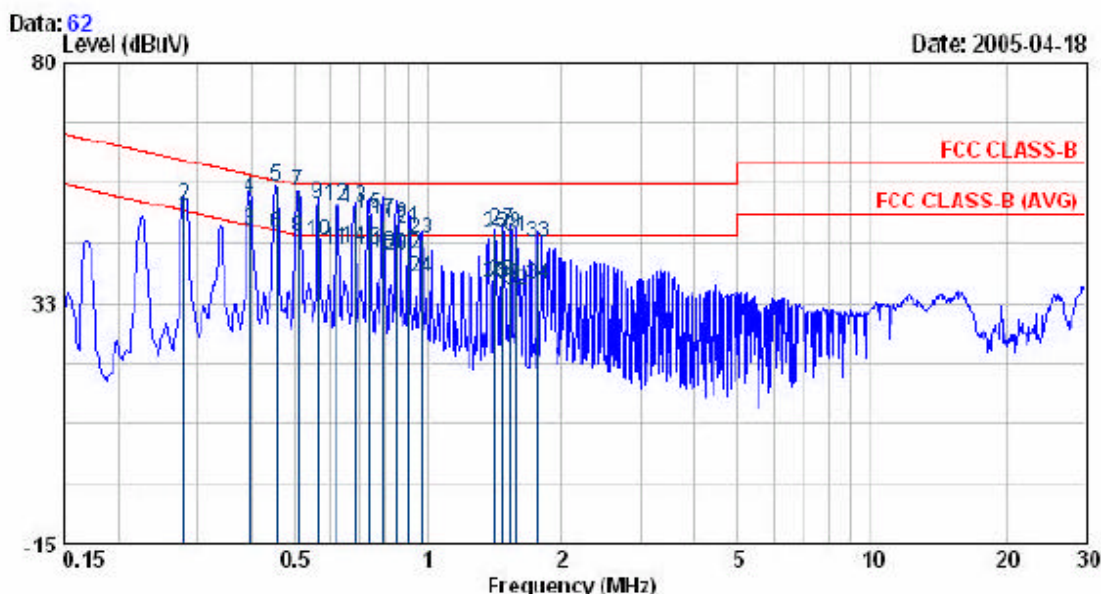
Freq MHz	Read Level dBuV	Factor dB	Level dBuV	Limit dBuV	Over Limit dBuV	Remark
0.282	48.24	0.35	48.59	50.76	-2.17	AVERAGE
0.282	51.78	0.35	52.13	60.76	-8.63	QP
0.396	46.66	0.50	47.15	47.95	-0.80	AVERAGE
0.396	52.76	0.50	53.26	57.95	-4.69	QP
0.454	55.23	0.49	55.72	56.00	-1.08	QP
0.454	45.56	0.49	46.05	46.00	-0.75	AVERAGE
0.510	54.11	0.47	54.58	56.00	-1.42	QP
0.510	45.02	0.47	45.49	46.00	-0.51	AVERAGE
0.564	51.93	0.46	52.39	56.00	-3.61	QP
0.564	43.75	0.46	44.21	46.00	-1.79	AVERAGE
0.621	42.71	0.45	43.16	46.00	-2.84	AVERAGE
0.621	50.93	0.45	51.38	56.00	-4.62	QP
0.679	50.45	0.44	50.89	56.00	-5.11	QP
0.679	42.89	0.44	43.33	46.00	-2.67	AVERAGE
0.731	49.52	0.43	49.95	56.00	-6.05	QP
0.731	42.53	0.43	42.96	46.00	-3.04	AVERAGE
0.792	48.91	0.43	49.34	56.00	-6.66	QP
0.792	41.86	0.43	42.28	46.00	-3.72	AVERAGE
0.848	47.98	0.42	48.40	56.00	-7.60	QP
0.848	41.36	0.42	41.78	46.00	-4.22	AVERAGE
0.904	46.62	0.41	47.03	56.00	-8.97	QP
0.904	41.63	0.41	42.04	46.00	-3.96	AVERAGE
0.963	44.63	0.40	45.03	56.00	-10.97	QP
0.963	36.82	0.40	37.22	46.00	-8.78	AVERAGE
1.418	45.21	0.45	45.66	56.00	-10.34	QP
1.418	35.89	0.45	36.34	46.00	-9.66	AVERAGE
1.472	46.25	0.46	46.71	56.00	-9.29	QP
1.472	36.56	0.46	37.02	46.00	-8.98	AVERAGE
1.527	45.86	0.46	46.31	56.00	-9.69	QP
1.527	35.89	0.46	36.35	46.00	-9.65	AVERAGE
1.585	44.87	0.47	45.34	56.00	-10.66	QP
1.585	34.12	0.47	34.59	46.00	-11.41	AVERAGE
1.762	43.92	0.48	44.40	56.00	-11.60	QP
1.762	34.71	0.48	35.19	46.00	-10.81	AVERAGE

Remarks: 1. Level = Read Level + Factor  
 2. Factor = LISN(ISM) Factor + Cable Loss



EUT : Razor  
 Power : AC 110V  
 Test Mode : 602.11a CH 8  
 Memo :

Pol/Phase : LINE  
 Temperature : 26 °C  
 Humidity : 58 %

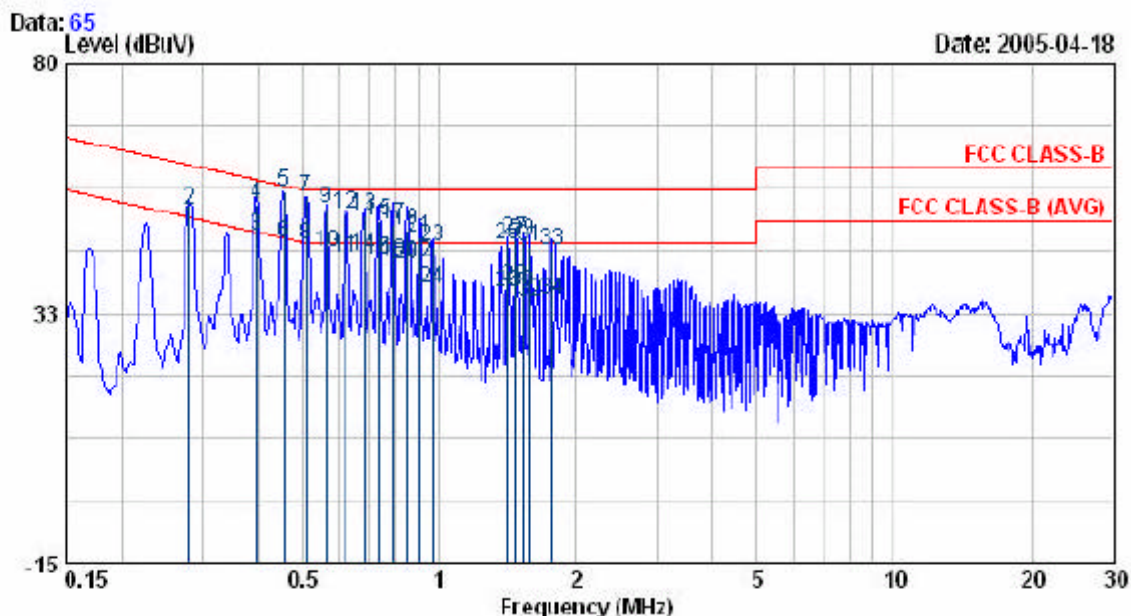


Freq MHz	Read Level dBuV	Factor dB	Level dBuV	Limit dBuV	Over Limit dBuV	Remark
0.282	48.32	0.35	48.67	50.76	-2.09	AVERAGE
0.282	51.63	0.35	51.98	50.76	-8.78	QP
0.396	46.49	0.50	46.99	47.95	-0.96	AVERAGE
0.396	52.87	0.50	53.37	57.95	-4.58	QP
0.454	55.03	0.49	55.52	56.80	-1.28	QP
0.454	45.68	0.49	46.17	46.80	-0.63	AVERAGE
0.510	54.23	0.47	54.70	56.00	-1.30	QP
0.510	44.91	0.47	45.38	46.00	-0.62	AVERAGE
0.564	51.79	0.46	52.25	56.00	-3.75	QP
0.564	44.23	0.46	44.69	46.00	-1.31	AVERAGE
0.621	42.69	0.45	43.14	46.00	-2.86	AVERAGE
0.621	51.36	0.45	51.81	56.00	-4.19	QP
0.679	51.16	0.44	51.60	56.00	-4.40	QP
0.679	42.89	0.44	43.33	46.00	-2.67	AVERAGE
0.731	49.68	0.43	50.11	56.00	-5.89	QP
0.731	42.61	0.43	43.04	46.00	-2.96	AVERAGE
0.792	48.61	0.43	49.04	56.00	-6.96	QP
0.792	41.85	0.43	42.28	46.00	-3.72	AVERAGE
0.848	47.91	0.42	48.33	56.00	-7.67	QP
0.848	41.42	0.42	41.84	46.00	-4.16	AVERAGE
0.904	46.75	0.41	47.16	56.00	-8.84	QP
0.904	41.61	0.41	42.02	46.00	-3.98	AVERAGE
0.963	44.75	0.40	45.15	56.00	-10.85	QP
0.963	36.98	0.40	37.38	46.00	-8.62	AVERAGE
1.418	45.72	0.45	46.17	56.00	-9.83	QP
1.418	36.21	0.45	36.66	46.00	-9.34	AVERAGE
1.472	46.32	0.46	46.78	56.00	-9.22	QP
1.472	36.51	0.46	36.97	46.00	-9.03	AVERAGE
1.527	45.79	0.46	46.25	56.00	-9.75	QP
1.527	35.75	0.46	36.21	46.00	-9.79	AVERAGE
1.585	44.91	0.47	45.38	56.00	-10.62	QP
1.585	34.51	0.47	34.98	46.00	-11.02	AVERAGE
1.762	43.86	0.48	44.34	56.00	-11.66	QP
1.762	35.83	0.48	36.31	46.00	-9.69	AVERAGE

Remarks: 1. Level = Read Level + Factor  
 2. Factor = LISN(ISN) Factor + Cable Loss

EUT : Razor  
 Power : AC 110V  
 Test Mode : 802.11a CH 9  
 Memo :

Pol/Phase : NEUTRAL  
 Temperature : 26 °C  
 Humidity : 58 %

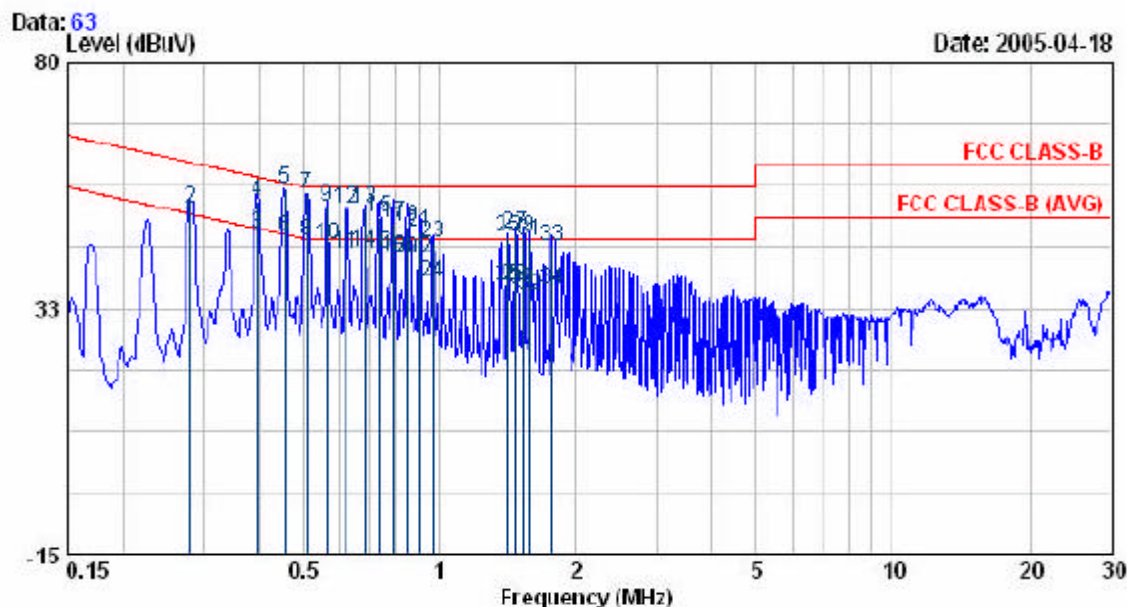


Freq MHz	Read Level dBuV	Factor dB	Level dBuV	Limit dBuV	Over Limit dBuV	Remark
0.282	48.32	0.35	48.67	50.76	-2.09	AVERAGE
0.282	51.78	0.35	52.13	50.76	-8.63	QP
0.396	46.65	0.50	47.15	47.95	-0.80	AVERAGE
0.396	52.76	0.50	53.26	47.95	-4.69	QP
0.454	55.23	0.49	55.72	56.80	-1.08	QP
0.454	45.56	0.49	46.05	46.80	-0.75	AVERAGE
0.510	54.11	0.47	54.58	56.00	-1.42	QP
0.510	45.02	0.47	45.49	46.00	-0.51	AVERAGE
0.564	51.93	0.46	52.39	56.00	-3.61	QP
0.564	43.75	0.46	44.21	46.00	-1.79	AVERAGE
0.621	42.71	0.45	43.16	46.00	-2.84	AVERAGE
0.621	50.93	0.45	51.38	56.00	-4.62	QP
0.679	50.58	0.44	51.02	56.00	-4.98	QP
0.679	42.89	0.44	43.33	46.00	-2.67	AVERAGE
0.731	49.52	0.43	49.95	56.00	-6.05	QP
0.731	42.48	0.43	42.91	46.00	-3.09	AVERAGE
0.792	48.91	0.43	49.34	56.00	-6.66	QP
0.792	41.85	0.43	42.28	46.00	-3.72	AVERAGE
0.848	47.98	0.42	48.40	56.00	-7.60	QP
0.848	41.36	0.42	41.78	46.00	-4.22	AVERAGE
0.904	46.62	0.41	47.03	56.00	-8.97	QP
0.904	41.63	0.41	42.04	46.00	-3.96	AVERAGE
0.963	44.63	0.40	45.03	56.00	-10.97	QP
0.963	36.82	0.40	37.22	46.00	-8.78	AVERAGE
1.418	45.21	0.45	45.66	56.00	-10.34	QP
1.418	35.89	0.45	36.34	46.00	-9.66	AVERAGE
1.472	46.25	0.46	46.71	56.00	-9.29	QP
1.472	36.93	0.46	37.44	46.00	-8.56	AVERAGE
1.527	45.85	0.46	46.31	56.00	-9.69	QP
1.527	35.89	0.46	36.35	46.00	-9.65	AVERAGE
1.585	44.87	0.47	45.34	56.00	-10.66	QP
1.585	34.25	0.47	34.72	46.00	-11.28	AVERAGE
1.762	43.92	0.48	44.40	56.00	-11.60	QP
1.762	34.71	0.48	35.19	46.00	-10.81	AVERAGE

Remarks: 1. Level = Read Level + Factor  
 2. Factor = LISN(ISN) Factor + Cable Loss

EUT : Razor  
 Power : AC 110V  
 Test Mode : 802.11a CH 9  
 Memo :

Pol/Phase : LINE  
 Temperature : 26 °C  
 Humidity : 58 %



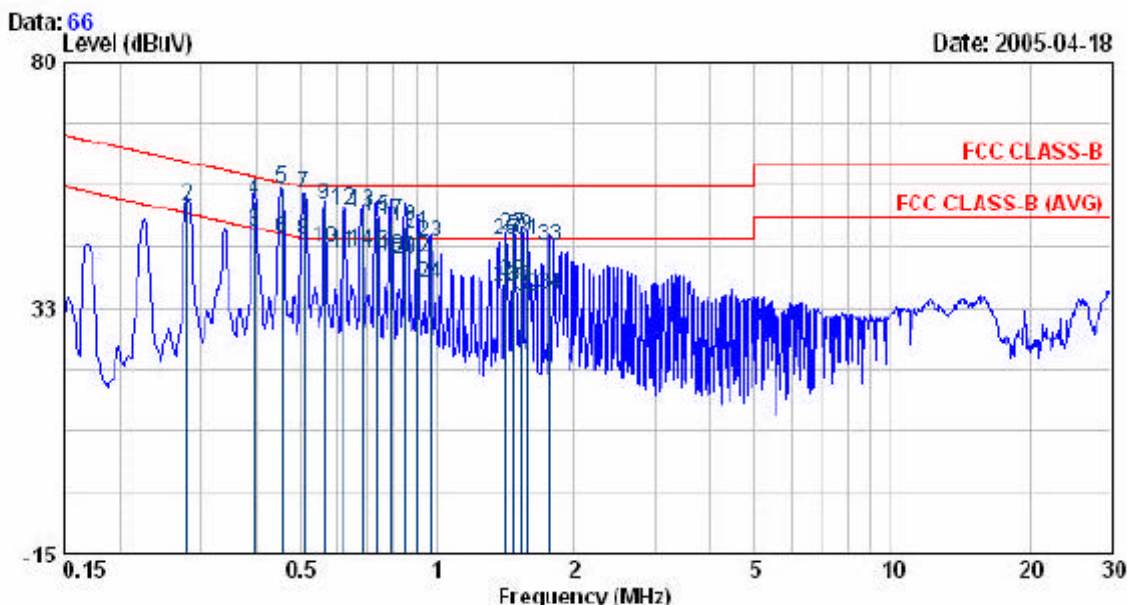
Freq	Read	Factor	Level	Limit	Over	Remark
NHz	dBuV	dB	dBuV	dBuV	dBuV	
0.282	48.32	0.35	48.67	50.76	-2.09	AVERAGE
0.282	51.63	0.35	51.98	50.76	-8.78	QP
0.396	46.51	0.50	47.01	47.95	-0.94	AVERAGE
0.396	52.87	0.50	53.37	57.95	-4.58	QP
0.454	55.03	0.49	55.52	56.80	-1.28	QP
0.454	45.71	0.49	46.20	46.80	-0.60	AVERAGE
0.510	54.23	0.47	54.70	56.00	-1.30	QP
0.510	44.91	0.47	45.38	46.00	-0.62	AVERAGE
0.564	51.82	0.46	52.28	56.00	-3.72	QP
0.564	44.23	0.46	44.69	46.00	-1.31	AVERAGE
0.621	42.63	0.45	43.14	46.00	-2.86	AVERAGE
0.621	51.36	0.45	51.81	56.00	-4.19	QP
0.679	51.25	0.44	51.69	56.00	-4.31	QP
0.679	42.89	0.44	43.33	46.00	-2.67	AVERAGE
0.731	49.68	0.43	50.11	56.00	-5.89	QP
0.731	42.63	0.43	43.11	46.00	-2.89	AVERAGE
0.792	48.61	0.43	49.04	56.00	-6.96	QP
0.792	41.85	0.43	42.28	46.00	-3.72	AVERAGE
0.848	47.91	0.42	48.33	56.00	-7.67	QP
0.848	41.54	0.42	41.96	46.00	-4.04	AVERAGE
0.904	46.75	0.41	47.16	56.00	-8.84	QP
0.904	41.61	0.41	42.02	46.00	-3.98	AVERAGE
0.963	44.82	0.40	45.22	56.00	-10.78	QP
0.963	36.98	0.40	37.38	46.00	-8.62	AVERAGE
1.418	45.72	0.45	46.17	56.00	-9.83	QP
1.418	36.35	0.45	36.80	46.00	-9.20	AVERAGE
1.472	46.32	0.46	46.78	56.00	-9.22	QP
1.472	36.51	0.46	36.97	46.00	-9.03	AVERAGE
1.527	45.79	0.46	46.25	56.00	-9.75	QP
1.527	35.75	0.46	36.21	46.00	-9.79	AVERAGE
1.585	44.91	0.47	45.38	56.00	-10.62	QP
1.585	34.51	0.47	34.98	46.00	-11.02	AVERAGE
1.762	43.85	0.48	44.34	56.00	-11.66	QP
1.762	35.83	0.48	36.31	46.00	-9.69	AVERAGE

Remarks: 1. Level = Read Level + Factor  
 2. Factor = LISN (ISN) Factor + Cable Loss



EUT : Razor  
 Power : AC 110V  
 Test Mode : 802.11a CH 11  
 Memo :

Pol/Phase : NEUTRAL  
 Temperature : 26 °C  
 Humidity : 58 %

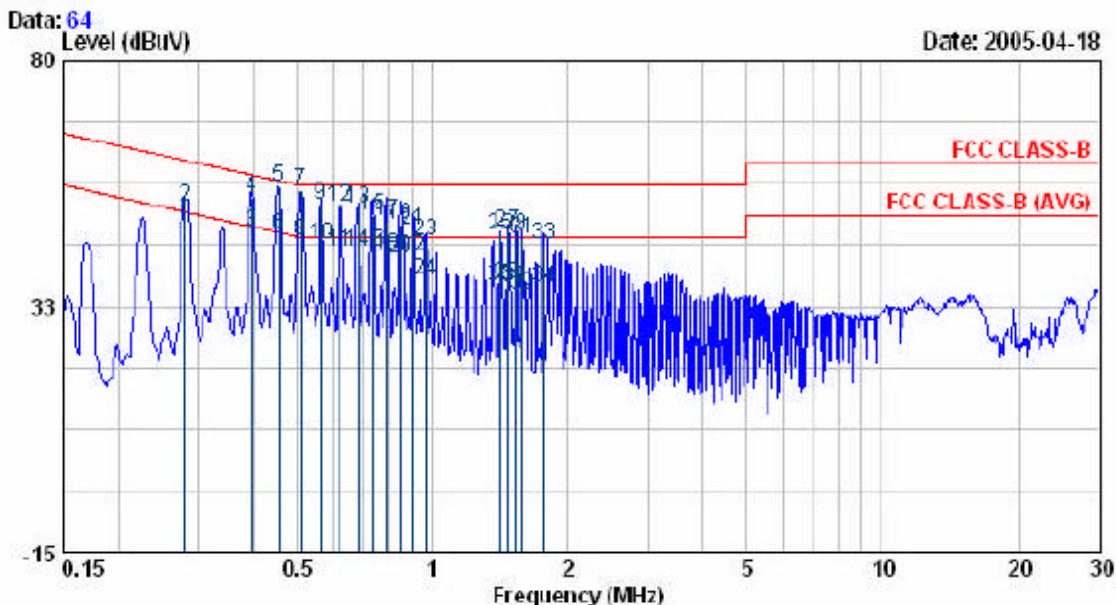


Freq MHz	Read Level dBuV	Factor dB	Level dBuV	Limit dBuV	Over Limit dBuV	Remark
0.282	48.32	0.35	48.67	50.76	-2.09	AVERAGE
0.282	51.78	0.35	52.13	60.76	-8.63	QP
0.396	46.71	0.50	47.21	47.95	-0.74	AVERAGE
0.396	52.76	0.50	53.26	57.95	-4.69	QP
0.454	55.23	0.49	55.72	56.80	-1.08	QP
0.454	45.52	0.49	46.01	46.80	-0.79	AVERAGE
0.510	54.11	0.47	54.58	56.00	-1.42	QP
0.510	45.02	0.47	45.49	46.00	-0.51	AVERAGE
0.564	51.93	0.46	52.39	56.00	-3.61	QP
0.564	43.75	0.46	44.21	46.00	-1.79	AVERAGE
0.621	42.75	0.45	43.20	46.00	-2.80	AVERAGE
0.621	50.93	0.45	51.38	56.00	-4.62	QP
0.679	50.58	0.44	51.02	56.00	-4.98	QP
0.679	42.89	0.44	43.33	46.00	-2.67	AVERAGE
0.731	49.52	0.43	49.95	56.00	-6.05	QP
0.731	42.51	0.43	42.94	46.00	-3.06	AVERAGE
0.792	48.91	0.43	49.34	56.00	-6.66	QP
0.792	41.85	0.43	42.28	46.00	-3.72	AVERAGE
0.848	47.95	0.42	48.37	56.00	-7.63	QP
0.848	41.36	0.42	41.78	46.00	-4.22	AVERAGE
0.904	46.62	0.41	47.03	56.00	-8.97	QP
0.904	41.69	0.41	42.10	46.00	-3.90	AVERAGE
0.963	44.63	0.40	45.03	56.00	-10.97	QP
0.963	36.82	0.40	37.22	46.00	-8.78	AVERAGE
1.418	45.21	0.45	45.66	56.00	-10.34	QP
1.418	35.94	0.45	36.39	46.00	-9.61	AVERAGE
1.472	46.25	0.46	46.71	56.00	-9.29	QP
1.472	36.98	0.46	37.44	46.00	-8.56	AVERAGE
1.527	45.85	0.46	46.31	56.00	-9.69	QP
1.527	35.89	0.46	36.35	46.00	-9.65	AVERAGE
1.585	44.95	0.47	45.42	56.00	-10.58	QP
1.585	34.25	0.47	34.72	46.00	-11.28	AVERAGE
1.762	43.92	0.48	44.40	56.00	-11.60	QP
1.762	34.71	0.48	35.19	46.00	-10.81	AVERAGE

Remarks: 1. Level = Read Level + Factor  
 2. Factor = LISN(ISN) Factor + Cable Loss

EUT : Razor  
 Power : AC 110V  
 Test Mode : 802.11a CH 11  
 Memo :

Pol/Phase : LINE  
 Temperature : 26 °C  
 Humidity : 58 %

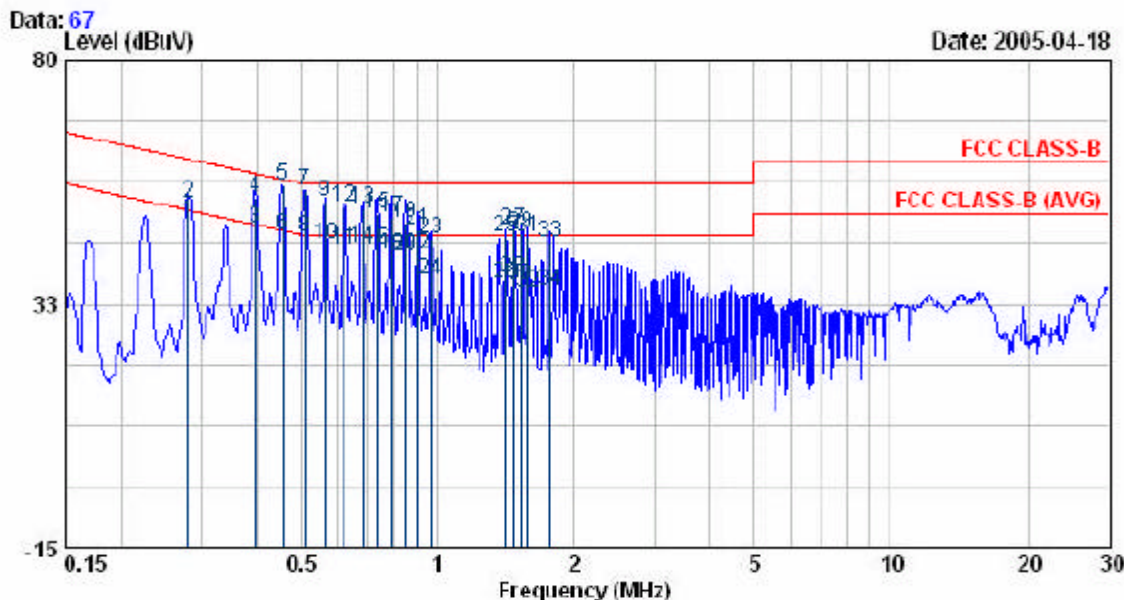


Freq MHz	Read Level dBuV	Factor dB	Level dBuV	Limit dBuV	Over Limit dBuV	Remark
0.282	48.36	0.35	48.71	50.76	-2.05	AVERAGE
0.282	51.49	0.35	51.84	60.76	-8.92	QP
0.396	46.52	0.50	47.02	47.95	-0.93	AVERAGE
0.396	52.93	0.50	53.43	57.95	-4.52	QP
0.454	55.22	0.49	55.71	56.80	-1.09	QP
0.454	45.61	0.49	46.10	46.80	-0.70	AVERAGE
0.510	54.31	0.47	54.78	56.00	-1.22	QP
0.510	44.89	0.47	45.36	46.00	-0.64	AVERAGE
0.564	51.72	0.46	52.18	56.00	-3.82	QP
0.564	44.15	0.46	44.61	46.00	-1.39	AVERAGE
0.621	42.73	0.45	43.18	46.00	-2.82	AVERAGE
0.621	51.31	0.45	51.76	56.00	-4.24	QP
0.679	51.03	0.44	51.47	56.00	-4.53	QP
0.679	42.81	0.44	43.25	46.00	-2.75	AVERAGE
0.731	49.63	0.43	50.06	56.00	-5.94	QP
0.731	42.56	0.43	42.99	46.00	-3.01	AVERAGE
0.792	48.61	0.43	49.04	56.00	-6.96	QP
0.792	41.85	0.43	42.28	46.00	-3.72	AVERAGE
0.848	47.89	0.42	48.31	56.00	-7.69	QP
0.848	41.42	0.42	41.84	46.00	-4.16	AVERAGE
0.904	46.75	0.41	47.16	56.00	-8.84	QP
0.904	41.59	0.41	42.00	46.00	-4.00	AVERAGE
0.963	44.75	0.40	45.15	56.00	-10.85	QP
0.963	36.98	0.40	37.38	46.00	-8.62	AVERAGE
1.418	45.69	0.45	46.14	56.00	-9.86	QP
1.418	36.21	0.45	36.66	46.00	-9.34	AVERAGE
1.472	46.45	0.46	46.91	56.00	-9.09	QP
1.472	36.51	0.46	36.97	46.00	-9.03	AVERAGE
1.527	45.79	0.46	46.25	56.00	-9.75	QP
1.527	35.75	0.46	36.21	46.00	-9.79	AVERAGE
1.585	44.91	0.47	45.38	56.00	-10.62	QP
1.585	34.36	0.47	34.83	46.00	-11.17	AVERAGE
1.762	43.86	0.48	44.34	56.00	-11.66	QP
1.762	35.71	0.48	36.19	46.00	-9.81	AVERAGE

Remarks: 1. Level = Read Level + Factor  
 2. Factor = LISN(ISN) Factor + Cable Loss

EUT : Razor  
 Power : AC 110V  
 Test Mode : 802.11a CH 13  
 Memo :

Pol/Phase : NEUTRAL  
 Temperature : 26 °C  
 Humidity : 58 %



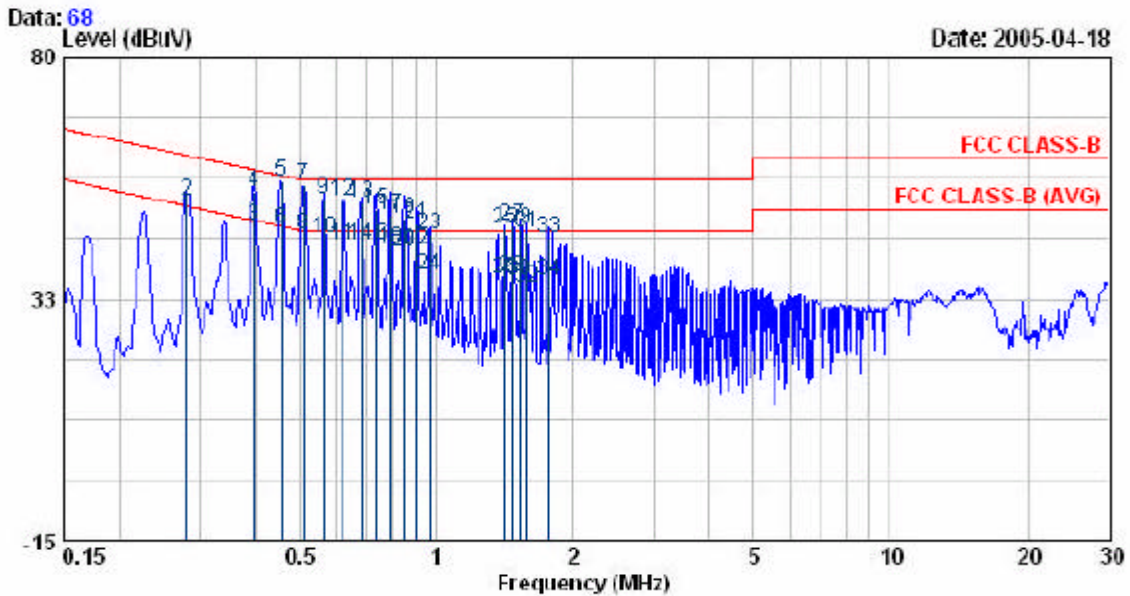
Freq	Read Level	Factor	Level	Limit	Over Limit	Remark
MHz	dBuV	dB	dBuV	dBuV	dBuV	
0.282	48.32	0.35	48.67	50.76	-2.09	AVERAGE
0.282	51.82	0.35	52.17	60.76	-8.59	QP
0.396	46.71	0.50	47.21	47.95	-0.74	AVERAGE
0.396	52.81	0.50	53.31	57.95	-4.64	QP
0.454	55.23	0.49	55.72	56.80	-1.08	QP
0.454	45.52	0.49	46.01	46.80	-0.79	AVERAGE
0.510	54.09	0.47	54.56	56.00	-1.44	QP
0.510	45.02	0.47	45.49	46.00	-0.51	AVERAGE
0.564	51.93	0.46	52.39	56.00	-3.61	QP
0.564	43.71	0.46	44.17	46.00	-1.83	AVERAGE
0.621	42.75	0.45	43.20	46.00	-2.80	AVERAGE
0.621	50.89	0.45	51.34	56.00	-4.66	QP
0.679	50.58	0.44	51.02	56.00	-4.98	QP
0.679	42.89	0.44	43.33	46.00	-2.67	AVERAGE
0.731	49.59	0.43	50.02	56.00	-5.98	QP
0.731	42.51	0.43	42.94	46.00	-3.06	AVERAGE
0.792	48.91	0.43	49.34	56.00	-6.66	QP
0.792	41.79	0.43	42.22	46.00	-3.78	AVERAGE
0.848	47.95	0.42	48.37	56.00	-7.63	QP
0.848	41.36	0.42	41.78	46.00	-4.22	AVERAGE
0.904	46.59	0.41	47.00	56.00	-9.00	QP
0.904	41.69	0.41	42.10	46.00	-3.90	AVERAGE
0.963	44.63	0.40	45.03	56.00	-10.97	QP
0.963	36.85	0.40	37.25	46.00	-8.75	AVERAGE
1.418	45.21	0.45	45.66	56.00	-10.34	QP
1.418	35.94	0.45	36.39	46.00	-9.61	AVERAGE
1.472	46.36	0.46	46.82	56.00	-9.18	QP
1.472	36.98	0.46	37.44	46.00	-8.56	AVERAGE
1.527	45.86	0.46	46.31	56.00	-9.69	QP
1.527	35.81	0.46	36.27	46.00	-9.73	AVERAGE
1.585	44.95	0.47	45.42	56.00	-10.58	QP
1.585	34.25	0.47	34.72	46.00	-11.28	AVERAGE
1.762	43.92	0.48	44.40	56.00	-11.60	QP
1.762	34.71	0.48	35.19	46.00	-10.81	AVERAGE

Remarks: 1. Level = Read Level + Factor  
 2. Factor = LISN (ISN) Factor + Cable Loss



EUT : Razor  
 Power : AC 110V  
 Test Mode : 802.11a CH 13  
 Memo :

Pol/Phase : LINE  
 Temperature : 26 °C  
 Humidity : 58 %



Freq MHz	Read Level dBuV	Factor dB	Level dBuV	Limit dBuV	Over Limit dBuV	Remark
0.282	48.36	0.35	48.71	50.76	-2.05	AVERAGE
0.282	51.49	0.35	51.84	50.76	-8.92	QP
0.396	46.53	0.50	47.08	47.95	-0.87	AVERAGE
0.396	52.93	0.50	53.43	57.95	-4.52	QP
0.454	55.22	0.49	55.71	56.80	-1.09	QP
0.454	45.63	0.49	46.12	46.80	-0.68	AVERAGE
0.510	54.31	0.47	54.78	56.00	-1.22	QP
0.510	44.79	0.47	45.26	46.00	-0.74	AVERAGE
0.564	51.72	0.46	52.18	56.00	-3.82	QP
0.564	44.15	0.46	44.61	46.00	-1.39	AVERAGE
0.621	42.73	0.45	43.18	46.00	-2.82	AVERAGE
0.621	51.36	0.45	51.81	56.00	-4.19	QP
0.679	51.03	0.44	51.47	56.00	-4.53	QP
0.679	42.81	0.44	43.25	46.00	-2.75	AVERAGE
0.731	49.71	0.43	50.14	56.00	-5.86	QP
0.731	42.55	0.43	42.99	46.00	-3.01	AVERAGE
0.792	48.61	0.43	49.04	56.00	-6.96	QP
0.792	41.85	0.43	42.28	46.00	-3.72	AVERAGE
0.848	47.91	0.42	48.33	56.00	-7.67	QP
0.848	41.42	0.42	41.84	46.00	-4.16	AVERAGE
0.904	46.79	0.41	47.20	56.00	-8.80	QP
0.904	41.59	0.41	42.00	46.00	-4.00	AVERAGE
0.963	44.75	0.40	45.15	56.00	-10.85	QP
0.963	36.91	0.40	37.31	46.00	-8.69	AVERAGE
1.418	45.63	0.45	46.14	56.00	-9.86	QP
1.418	36.21	0.45	36.66	46.00	-9.34	AVERAGE
1.472	46.45	0.46	46.91	56.00	-9.09	QP
1.472	36.55	0.46	37.01	46.00	-8.99	AVERAGE
1.527	45.79	0.46	46.25	56.00	-9.75	QP
1.527	35.75	0.46	36.21	46.00	-9.79	AVERAGE
1.585	44.91	0.47	45.38	56.00	-10.62	QP
1.585	34.41	0.47	34.88	46.00	-11.12	AVERAGE
1.762	43.86	0.48	44.34	56.00	-11.66	QP
1.762	35.71	0.48	36.19	46.00	-9.81	AVERAGE

Remarks: 1. Level = Read Level + Factor  
 2. Factor = LISN(ISN) Factor + Cable Loss