A Test Lab Techno Corp.

No.140-1, Chang-an St., Bade City, Tao-Yuan County 334, Taiwan (R.O.C.)
Tel：+886-3-2710188 / Fax：+886-3-2710190

Part 15 E Test Report

Report No.	：	**0910FR14**
Applicant	：	**Acer Incorporated**
Product Name	：	**WLAN Module**
Trade Name	：	**acer**
Model Number	：	**512AN_HMW**
FCC ID	：	**HLZ512ANH**
Dates of Test	：	**Oct. 10 ~ Oct. 30, 2009**
Test Specification	：	**FCC 47 CFR Part 15 Subpart E (15.407) (2008-10)**
		Canada RSS-210 Issue 7(June 2007)
		Canada RSS-Gen Issue 2(June 2007)
		ANSI C63.4: 2003
Location of Test Lab.	：	**Chang-an Lab.**

1. The test operations have to be performed with cautious behavior, the test results are as attached.
2. The test results are under chamber environment of A Test Lab Techno Corp. A Test Lab Techno Corp. does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples.
3. The measurement report has to be written approval of A Test Lab Techno Corp. It may only be reproduced or published in full. This report shall not be reproduced except in full, without the written approval of A Test Lab Techno Corp.
4. This document may be altered or revised by A Test Lab Techno. Corp. personnel only, and shall be noted in the revision section of the document.

Miller Lee **20091031**
Approve Signer

John Cheng **20091031**
Testing Engineer

CERTIFICATION

We hereby verify that:

A test Lab Techno Corp. tested the above equipment. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2003 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.407.

The test results of this report relate only to the tested sample identified in this report.

Product Name	:	**WLAN Module**
Applicant	:	**Acer Incorporated**
Applicant Address	:	**8F, 88, Sec.1, Hsin Tai Wu Rd. Hsichih, Taipei Hsien 221 Taiwan, R.O.C.**
Manufacturer	:	**Quanta Computer Inc.**
Manufacturer Address	:	**No.211, Wen Hwa 2nd Rd., Kuei Shan Hsiang, Tao Yuan Shien, Taiwan, R.O.C.**
Trade Name	:	**acer**
Model Number	:	**512AN_HMW**
FCC ID	:	**HLZ512ANH**
Rated Voltage	:	**120Vac, 60Hz**
EUT Voltage	:	**11.1Vdc, 5600mA**
Applicable Standard	:	**FCC 47 CFR Part 15 Subpart E (15.407) (2008-10)** **Canada RSS-210 Issue 7(June 2007)** **Canada RSS-Gen Issue 2(June 2007)**
Test Result	:	**Complied**

Approved by : **Miller Lee 2009/10/31**

Prepared by : **John Cheng 2009/10/31**

A Test Lab Techno Corp.

No.140-1, Chang-an St., Bade City, Tao-Yuan County 334, Taiwan (R.O.C.)
Tel：03-2710188 / Fax：03-2710190

Contents

1. EUT Description

Applicant	:	Acer Incorporated
Applicant Address	:	8F, 88, Sec.1, Hsin Tai Wu Rd. Hsichih, Taipei Hsien 221 Taiwan, R.O.C.
Manufacturer	:	Quanta Computer Inc.
Manufacturer Address	:	No.211, Wen Hwa 2nd Rd., Kuei Shan Hsiang, Tao Yuan Shien, Taiwan, R.O.C.
Product Name	:	WLAN Module
Trade Name	:	acer
Model Number	:	512AN_HMW

Frequency Range :

	Mode	Frequency Range (MHz)	Number of Channels
UNII Band I	IEEE 802.11a	5180 – 5240	4 Channels
	draft 802.11n Standard-20 MHz	5180 – 5240	4 Channels
	draft 802.11n Wide-40 MHz	5190 ~ 5230	2 Channels
UNII Band II	IEEE 802.11a	5260 - 5320	4 Channels
	draft 802.11n Standard-20 MHz	5260 - 5320	4 Channels
	draft 802.11n Wide-40 MHz	5270 - 5310	2 Channels
UNII Band III	IEEE 802.11a	5500 - 5700	11 Channels
	draft 802.11n Standard-20 MHz	5500 – 5700	11 Channels
	draft 802.11n Wide-40 MHz	5510 - 5670	7 Channels

Type of Modulation	:	OFDM (QPSK, BPSK, 16-QAM, 64-QAM)
Transmit Data Rate	:	IEEE 802.11a mode: 54, 48, 36, 24, 18, 12, 9, 6 Mbps draft 802.11n Standard-20 MHz Channel mode: OFDM (6.5, 7.2, 13, 14.4, 14.44, 19.5, 21.7, 26, 28.89, 28.9, 39, 43.3, 43.33 52, 57.78, 57.8, 58.5, 65.0, 72.2, 78, 86.67, 104, 115.56, 117, 130, 144.44 Mbps) draft 802.11n Wide-40 MHz Channel mode: OFDM (13.5, 15, 27, 30, 40.5, 45, 54, 60, 81, 90, 108, 120, 121.5, 135, 150, 162, 180, 216, 240, 243, 270, 300 Mbps
Antenna Type	:	PIFA Type
Antenna Gain	:	5150-5350 MHz: 3.36dBi, 5470-5725 MHz: 2.0dBi, 5725-5850 MHz: 3.56dBi
Hardware Version	:	V0.2103
Software Version	:	D2A
Host Laptop PC	:	Trade Name: acer ,Gateway, Packard Bell Model Name: ZE8
Component		
Power Adapter	:	HIPRO, HP-A0301R3 Input:100-240Vac, 50/60Hz, 1A Output: 19Vdc, 1.58A Cable in: Non-Shielded, 1.78A Cable out: Non-Shielded, 1.46 m

Operation Frequency

Unlicensed National Information Infrastructure (U-NII)	
Channel	**MHz**
36	5180
38	5190
40	5200
46	5230
48	5240
52	5260
54	5270
62	5310
64	5350
100	5500
102	5510
118	5590
134	5670
120	5600
140	5700

Remark:

1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.
2. This submittal(s) (test report) is intended for FCC ID: HLZ512ANH filing to comply with Section 15.407 of the FCC Part 15, Subpart E Rules.

1.1 FCC Part 15.205 Restricted Bands of Operations

(a)Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2] Above 38.6

(a)Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

1.2 Description of Test Modes

The Acer Incorporated model 512AN_HMW is a 2x1 MISO 802.11abgn radio module that is designed to be installed in laptops. The module supports 802.11b, 802.11g and 802.11n protocols in the 2400 – 2483.5 MHz band and 802.11a and 802.11n in the 5150 – 5250 MHz, 5250 – 5350 MHz, 5470 – 5725 MHz and 5725 – 5850 MHz bands. In 802.11n mode it supports both 20-MHz and 40-MHz channels. It can operate in SISO (1x1) and MISO (2x1) configurations.

2. Instrument calibration

2.1 Measuring Instrument Calibration

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

2.2 Measurement Equipment Used

Equipment Used for Emissions Measurement

Remark: Each piece of equipment is scheduled for calibration once a year.

Describe	Manufacturer	Model	Serial Number	Calibration	
				Cal. Date	Due Date
Spectrum Analyzer	Advantest	R3132	160300103	Mar. 10, 2009	Mar. 10, 2010
Test Receiver	R&S	ESCI	100367	Jun. 05, 2009	Jun. 05, 2010
LISN	EMCO	3816/2 SH	00060110	Jun. 05, 2009	Jun. 05, 2010
LISN	EMCO	3816/2 SH	00060111	Jun. 29, 2009	Jun. 29, 2010
Transient Limiter	ELECTRO-METRICS	EM-7600	777	Sep. 22, 2009	Sep. 22, 2010
Spectrum Analyzer	Agilent	E4445A	MY46181986	May 14,2009	May 14,2010
Amplifier	Agilent	8447D	2944A11119	Jan. 19, 2009	Jan. 19, 2010
Amplifier	Agilent	8447D	2944A11120	Jan. 20, 2009	Jan. 20, 2010
Spectrum Analyzer	Agilent	E4446A	MY46180578	Jan. 20, 2009	Jan. 20, 2010
RF Pre-selector	Agilent	N9039A	MY46520255	Jan. 26, 2009	Jan. 26, 2010
RF Pre-selector	Agilent	N9039A	MY46520256	Jan. 17, 2009	Jan. 17, 2010
Pre Amplifier	Agilent	8449B	3008A02457	Mar. 04, 2009	Mar. 04, 2010
Test Receiver	R&S	ESCI	100367	Jun. 05, 2009	Jun. 05, 2010
Biconilog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	9163-270	Jun. 23, 2009	Jun. 23, 2010
Horn Antenna	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	Jul. 01, 2009	Jul. 01, 2010
Horn Antenna	SCHWARZBECK MESS-ELEKTRONIK	BBHA9170	9170-320	Jun. 30, 2009	Jun. 30, 2010
Wide Band Sensor	R & S	NRP-Z81	100017	May 17, 2009	May 17, 2010

3. Facilities and accreditations

3.1 Facilities

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	ANSI C63.4 CE	15-35	25
Humidity (%RH)		30-60	50
Barometric pressure (mbar)		860-1060	950-1000
Temperature (°C)	ANSI C63.4 RE	15-35	25
Humidity (%RH)		30-60	50
Barometric pressure (mbar)		860-1060	950-1000

Registration Number：854525

Designation Number：TW1330

Test Site Name: A Test Lab Techno Corp.

Test Site Location: No. 140 -1, Changan Street, Bade City, Taoyuan County, Taiwan R.O.C.

TEL: 886-3-271-0188 FAX: 886-3-271-0190

The chamber meets the characteristics of ANSI C63.4-2003. This site is on file with the FCC.

3.2 Equipment

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

3.3 Maximum Conducted Output Power

3.3.1 Limit

According to §15.407(a),

1. For the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10log B, where B is the 26 dB emission bandwidth in MHz.
2. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10log B, where B is the 26 dB emission bandwidth in MHz.

If transmitting antennas of directional gain greater than 6dBi are used, both the peak transmits power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

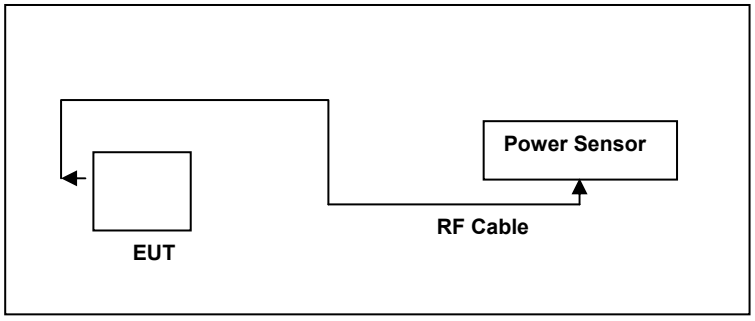
Operating Frequency (MHz)	Output Power	Power Spectral Density
5150 - 5250	50mW (17 dBm)	10 dBm/MHz
5250 - 5350	250 mW (24 dBm)	11 dBm/MHz
5470 - 5725	250 mW (24 dBm)	11 dBm/MHz
5725 – 5825	1 Watts (30 dBm)	17 dBm/MHz

The peak excursion envelope is limited to 13dB.

For system using antennas with gains exceeding 6dBi, the output power and power spectral density limits are reduced by 1dB for every dB the antenna gain exceeds 6dBi. Fixed point-to-point applications using the 5725 – 5825 MHz band may use antennas with gains of up to 23dBi without this limitation. If the gain exceeds 23dBi then the output power limit of 1 Watt is reduced by 1dB for every dB the gain exceeds 23dBi.

3.3.2 Test Configuration

The EUT was connected to a power sensor through a 50Ω RF cable.



3.3.3 Test Procedure

The tests below are run with the EUT's transmitter set at high power in TX mode. The EUT is needed to force selection of output power level and channel number. While testing, EUT was set to transmit continuously. Remove the Subjective device's antenna and connect the RF output port to spectrum analyzer. The maximum peak output power shall not exceed 1 watt.
For antennas with gains of 6 dBi or less, maximum allowed transmitter output is 1 watt (+30 dBm). For antennas with gains greater than 6 dBi, transmitter output level must be decreased by an amount equal to (GAIN - 6)/3 dBm.
The antenna port of the EUT was connected to the input of a power sensor. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.

3.3.4 Test Results

No non-compliance noted

3.3.5 Test Data

Test mode: IEEE 802.11a mode

Frequency (MHz)	Software Setting	Maximum Conducted Output Power
		Pavg (dBm)
5180	26.5	14.86
5200	29.0	17.60
5240	29.0	17.44
5260	28.5	17.17
5280	28.5	17.32
5320	25.5	14.68
5500	26.5	17.53
5600	29.0	17.83
5700	26.5	17.21

Test mode: draft 802.11n Standard-20 MHz

Frequency (MHz)	Software Setting	Maximum Conducted Output Power
		Pavg (dBm)
5180	26.5	14.55
5200	29.0	17.55
5240	29.0	17.47
5260	27.5	16.51
5280	57.0	17.51
5320	25.5	14.57
5500	22.0	17.53
5600	27.0	16.54
5700	25.0	16.52

Test mode: draft 802.11n Wide-40 MHz

Frequency (MHz)	Software Setting	Maximum Conducted Output Power
		Pavg (dBm)
5190	20.0	10.33
5230	30.5	16.42
5270	30.5	16.57
5310	20.0	10.35
5510	21.5	13.72
5590	25.5	16.64
5670	26.5	16.53

Note: Note: Average powers measured in above table are derived with a power meter and are ONLY for comparing the average powers measured in original application(Original ID: PD9512ANH) with a power meter.

3.4 Band Edges Measurement

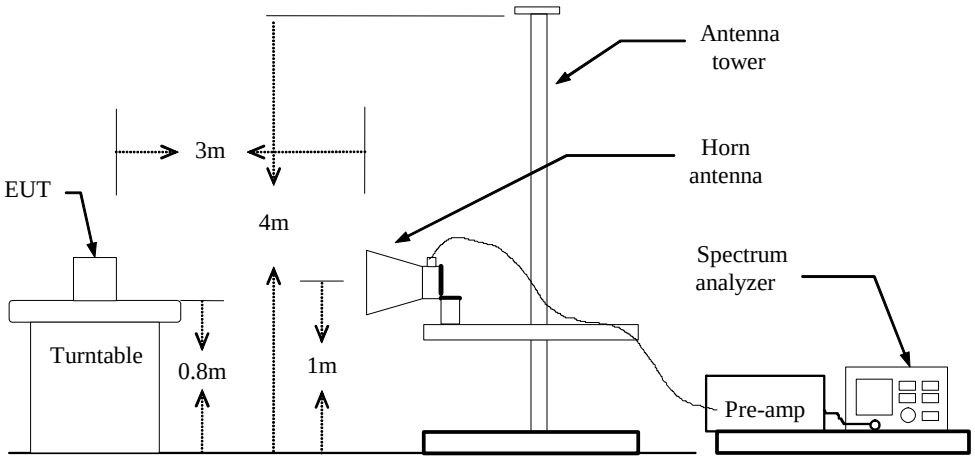
3.4.1 Limit

According to §15.407(b),

(1) The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.

(2) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency block edges as the design of the equipment permits.

3.4.2 Test Configuration



3.4.3 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
   (a)PEAK: RBW=VBW=1MHz / Sweep=AUTO
   (b)AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

3.4.4 Test Results

No non-compliance noted

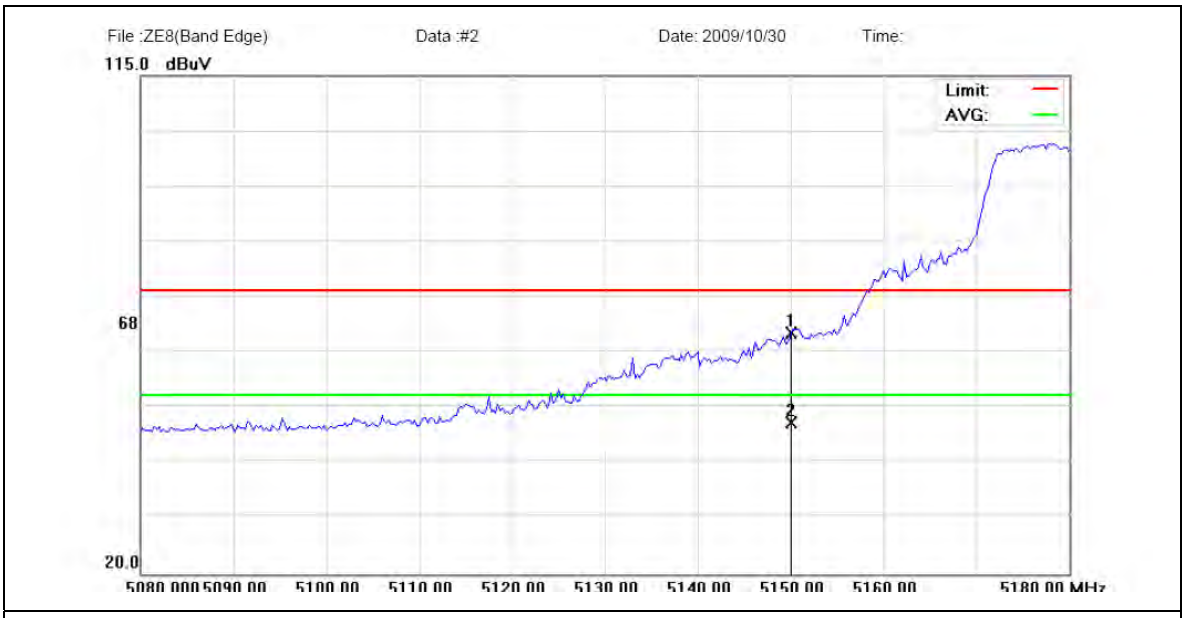
3.4.5 Test Data

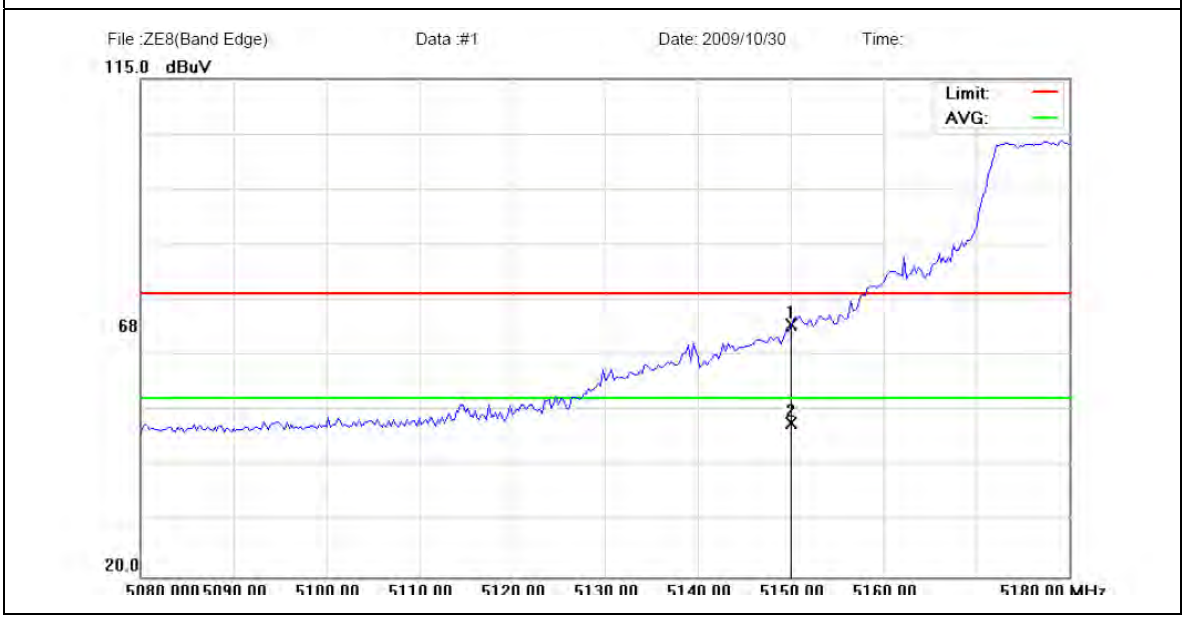
Test mode: IEEE 802.11a mode

Run #1: Padiated Spurious Emissions, Band Edges. Operating Mode: 802.11a - Chain A

Run #1a: Low Channel @ 5180 MHz (band edge at 5150 MHz)

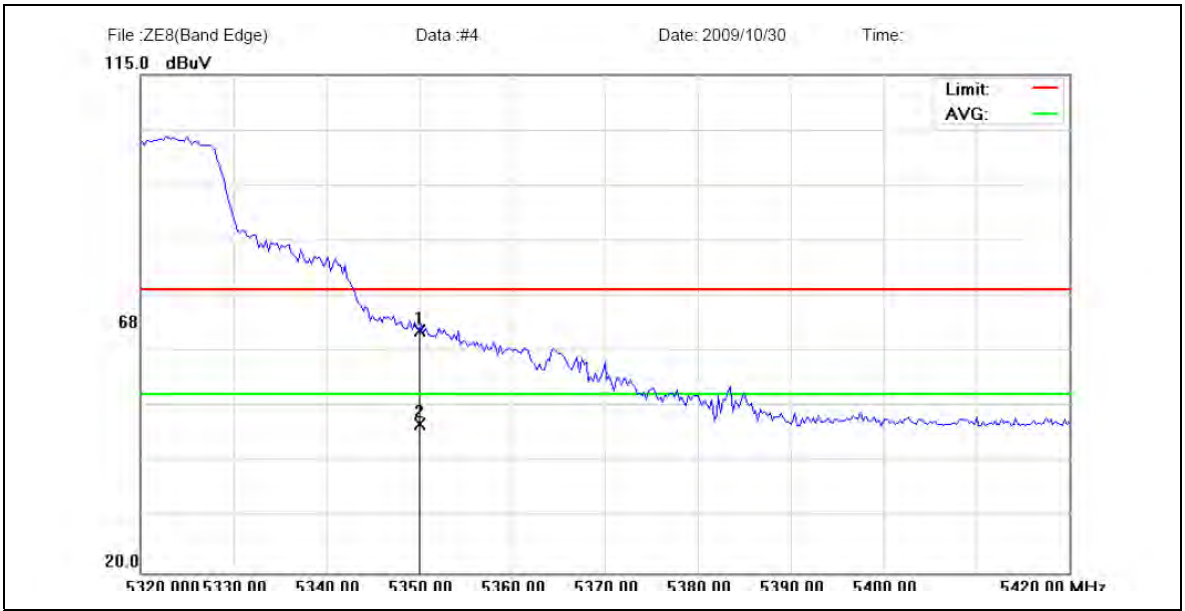
Band Edge Signal Field Strength						
Frequency	Level	Pol	15.209 / 15.247		Detector	Comments
MHz	dBµV/m	v/h	Limit	Margin	PK/QP/Avg	
5150.000	48.84	H	54.0	-5.16	Avg	RBW= 1MHz, VBW=10Hz
5150.000	65.85	H	74.0	-8.15	PK	RBW=VBW=1MHz
5150.000	49.35	V	54.0	-4.65	Avg	RBW= 1MHz, VBW=10Hz
5150.000	68.07	V	74.0	-5.93	PK	RBW=VBW=1MHz

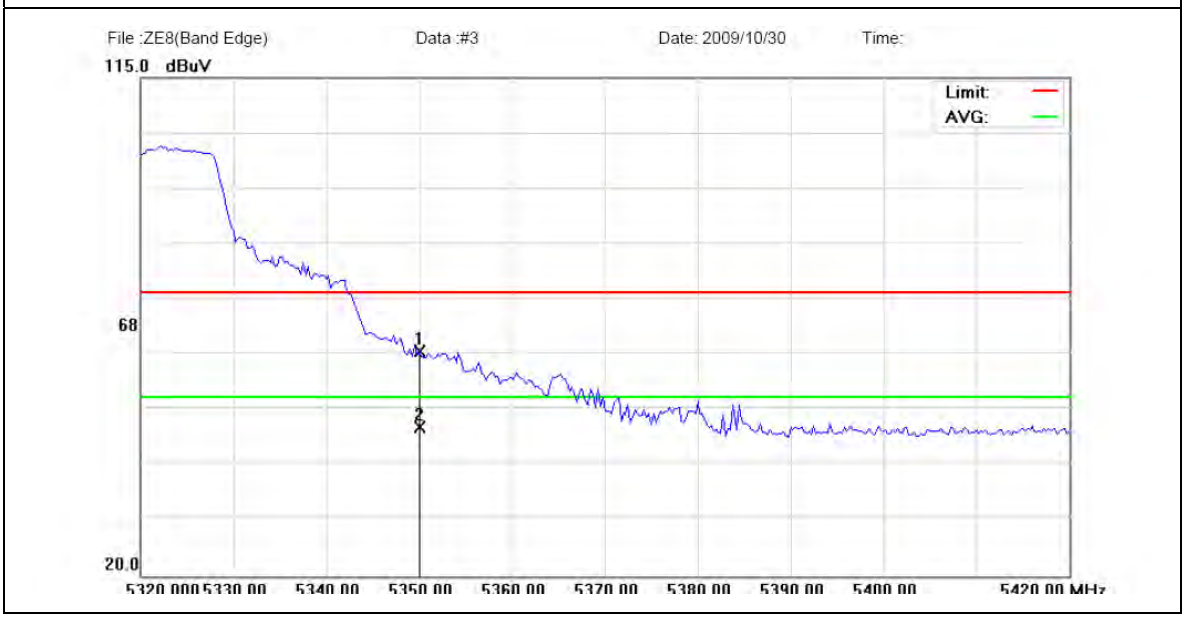




Run #1b: High Channel @ 5320 MHz (band edge at 5350 MHz)

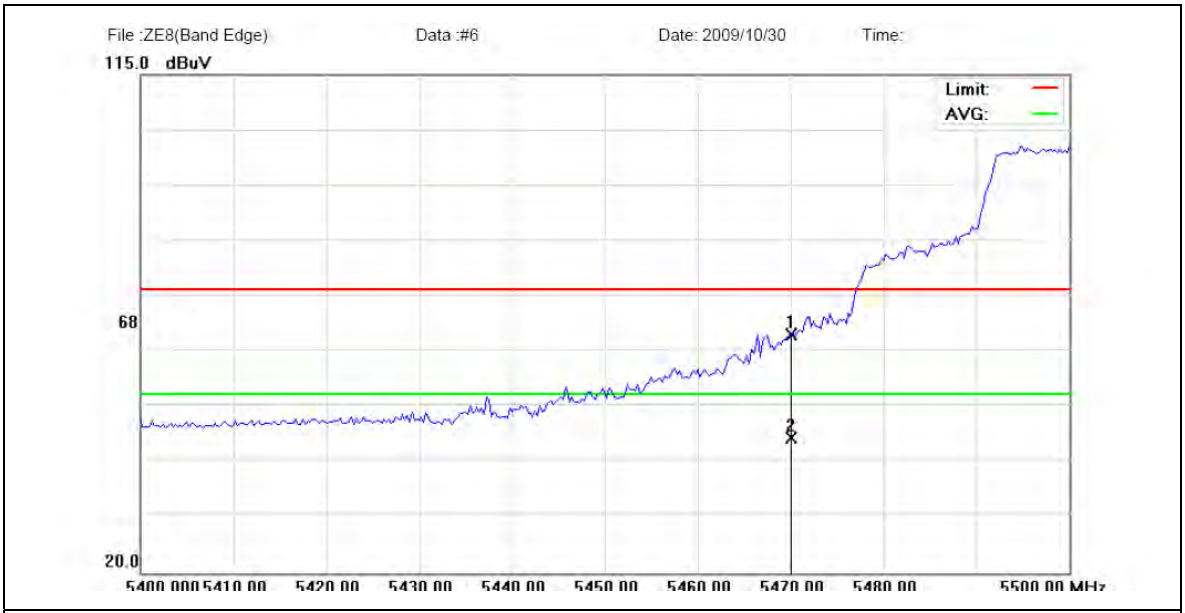
Band Edge Signal Field Strength						
Frequency	Level	Pol	15.209 / 15.247		Detector	Comments
MHz	dBµV/m	v/h	Limit	Margin	PK/QP/Avg	
5320.000	48.39	H	54.0	-5.61	Avg	RBW= 1MHz, VBW=10Hz
5320.000	66.29	H	74.0	-7.71	PK	RBW=VBW=1MHz
5320.000	48.34	V	54.0	-5.66	Avg	RBW= 1MHz, VBW=10Hz
5320.000	62.88	V	74.0	-11.12	PK	RBW=VBW=1MHz

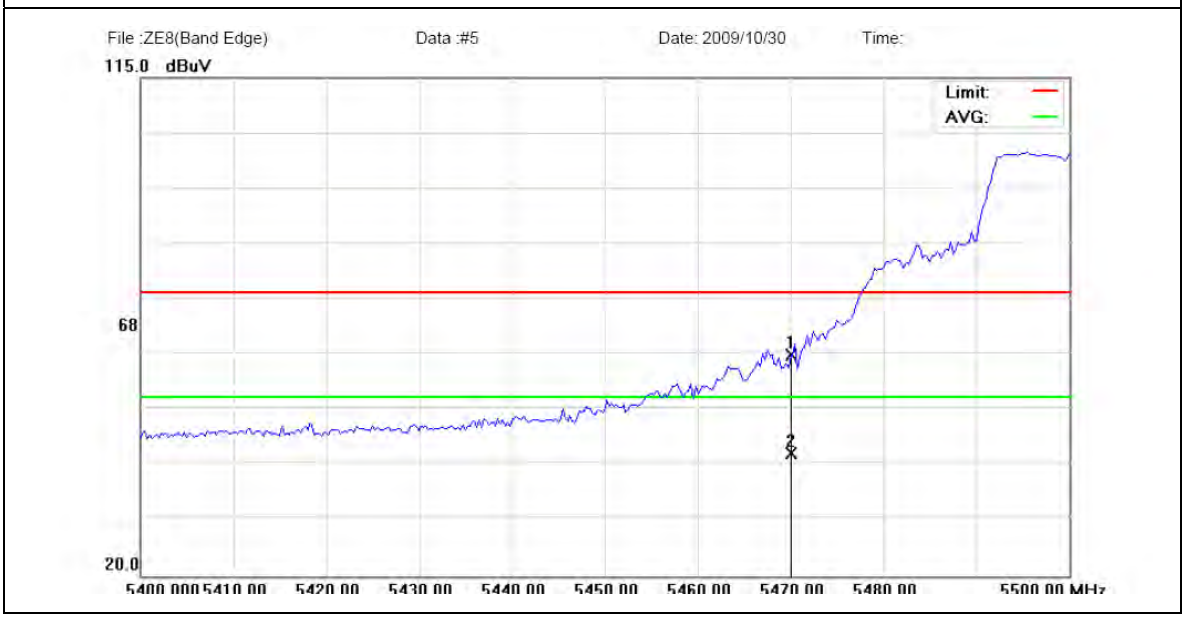




Run #1c: Low Channel @ 5500 MHz (restricted band edge at 5460 MHz, allocated band edge at 5470MHz)

Band Edge Signal Field Strength						
Frequency	Level	Pol	15.209 / 15.247		Detector	Comments
MHz	dBµV/m	v/h	Limit	Margin	PK/QP/Avg	
5470.000	45.73	H	54.0	-8.27	Avg	RBW= 1MHz, VBW=10Hz
5470.000	65.56	H	74.0	-8.44	PK	RBW=VBW=1MHz
5470.000	43.33	V	54.0	-10.67	Avg	RBW= 1MHz, VBW=10Hz
5470.000	62.12	V	74.0	-11.88	PK	RBW=VBW=1MHz



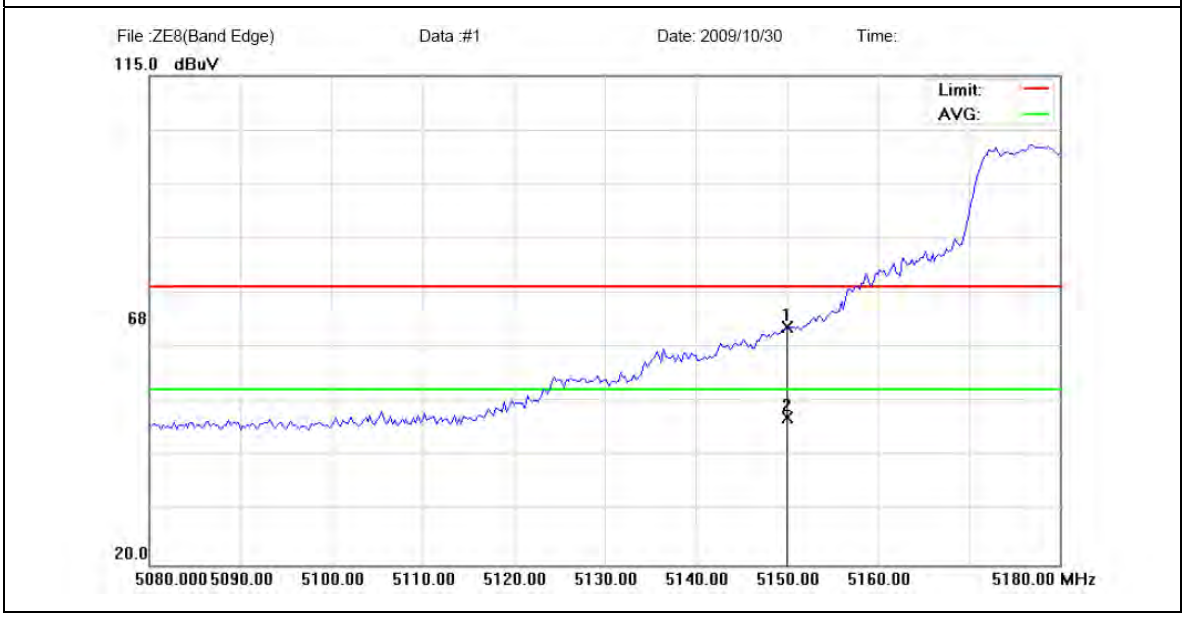


Test mode: draft 802.11n Standard-20 MHz

Run #1: Radiated Spurious Emissions, Band Edges. Operating Mode: 802.11n20 - Chain A

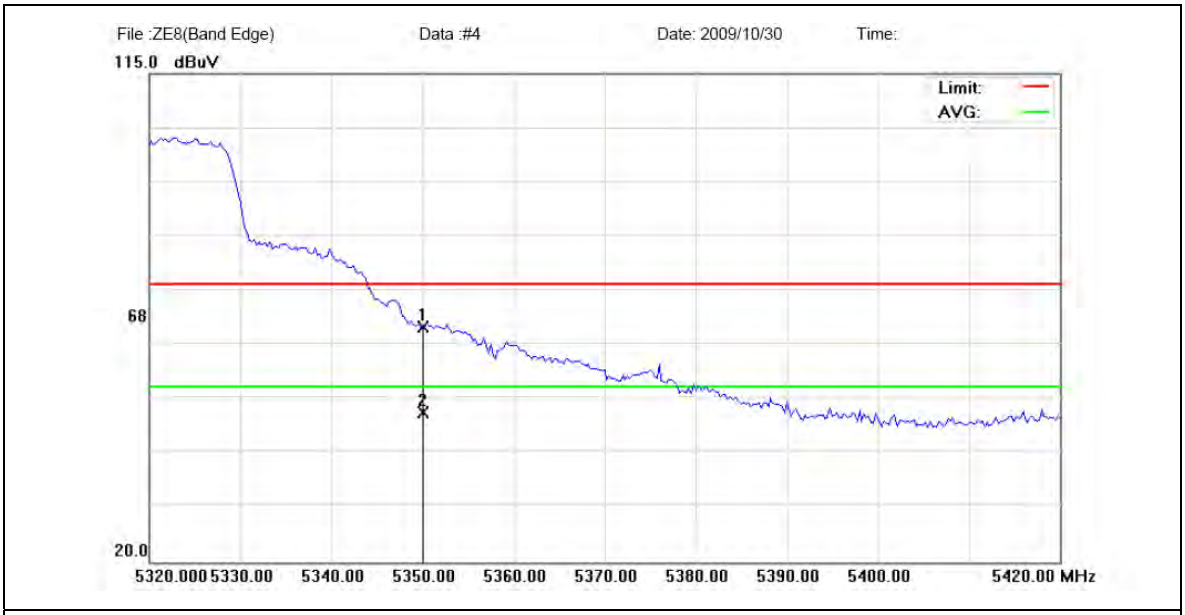
Run #1a: Low Channel @ 5180 MHz (band edge at 5150 MHz)

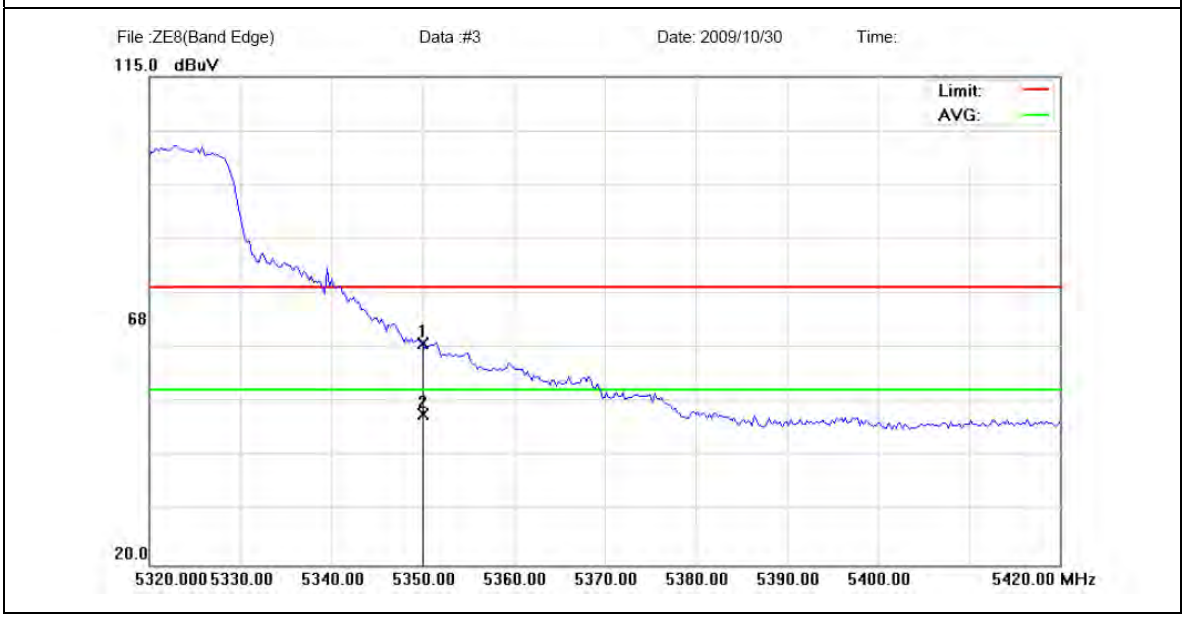
Band Edge Signal Field Strength						
Frequency	Level	Pol	15.209 / 15.247		Detector	Comments
MHz	dBµV/m	v/h	Limit	Margin	PK/QP/Avg	
5150.000	49.27	H	54.0	-4.76	Avg	RBW= 1MHz, VBW=10Hz
5150.000	66.21	H	74.0	-7.79	PK	RBW=VBW=1MHz
5148.000	48.64	V	54.0	-5.36	Avg	RBW= 1MHz, VBW=10Hz
5148.000	66.20	V	74.0	7.80	PK	RBW=VBW=1MHz



Run #1b: High Channel @ 5320 MHz (band edge at 5350 MHz)

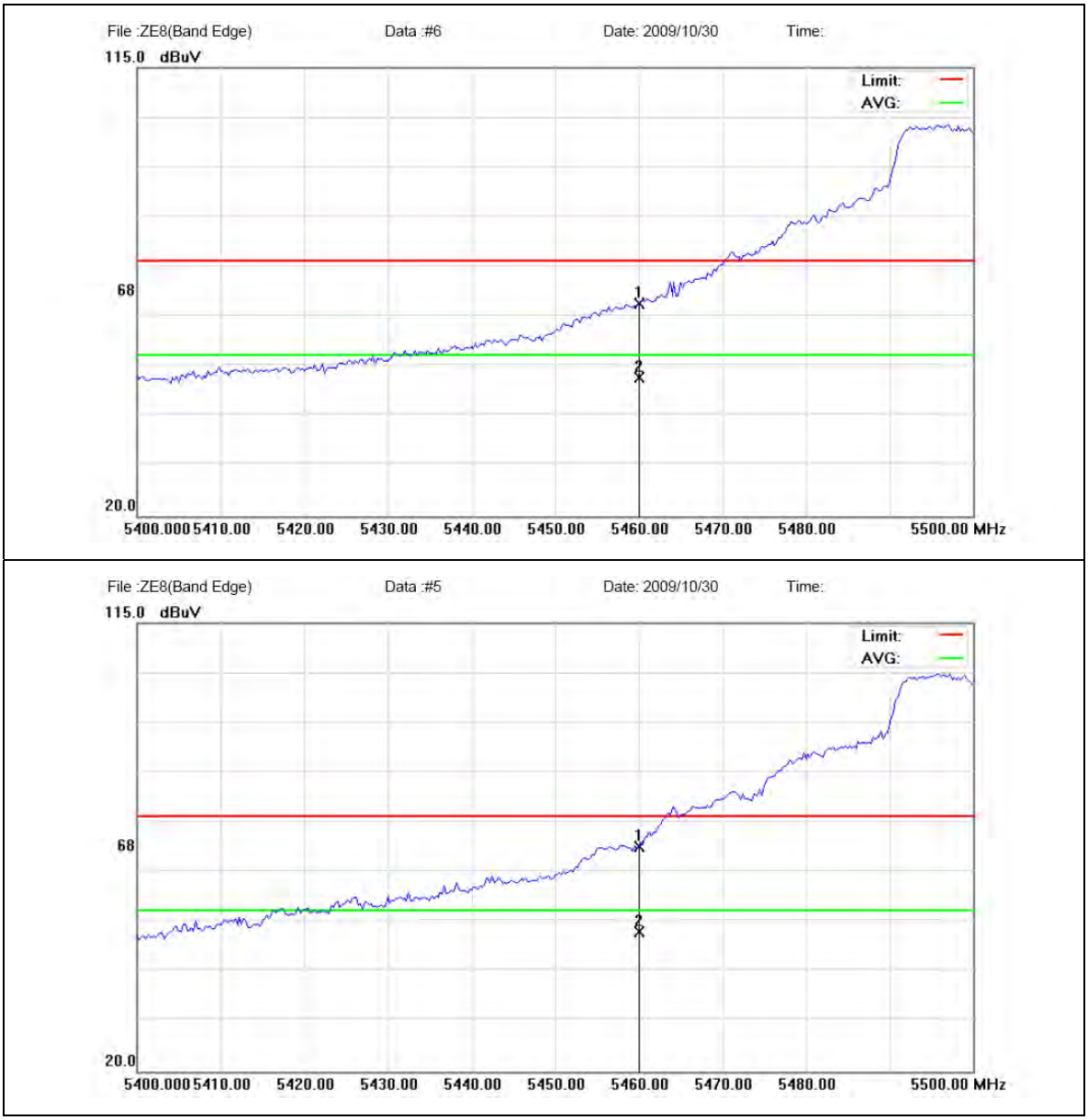
Band Edge Signal Field Strength						
Frequency	Level	Pol	15.209 / 15.247		Detector	Comments
MHz	dBµV/m	v/h	Limit	Margin	PK/QP/Avg	
5350.000	49.00	H	54.0	-5.00	Avg	RBW= 1MHz, VBW=10Hz
5350.000	65.72	H	74.0	-8.28	PK	RBW=VBW=1MHz
5350.000	49.40	V	54.0	-4.60	Avg	RBW= 1MHz, VBW=10Hz
5350.000	63.13	V	74.0	-10.87	PK	RBW=VBW=1MHz





Run #1c: Low Channel @ 5500 MHz (restricted band edge at 5460 MHz, allocated band edge at 5470MHz)

Band Edge Signal Field Strength						
Frequency	Level	Pol	15.209 / 15.247		Detector	Comments
MHz	dBµV/m	v/h	Limit	Margin	PK/QP/Avg	
5460.000	49.33	H	54.0	-4.67	Avg	RBW= 1MHz, VBW=10Hz
5460.000	65.01	H	74.0	-8.99	PK	RBW=VBW=1MHz
5460.000	49.60	V	54.0	-4.40	Avg	RBW= 1MHz, VBW=10Hz
5460.000	67.73	V	74.0	-6.27	PK	RBW=VBW=1MHz

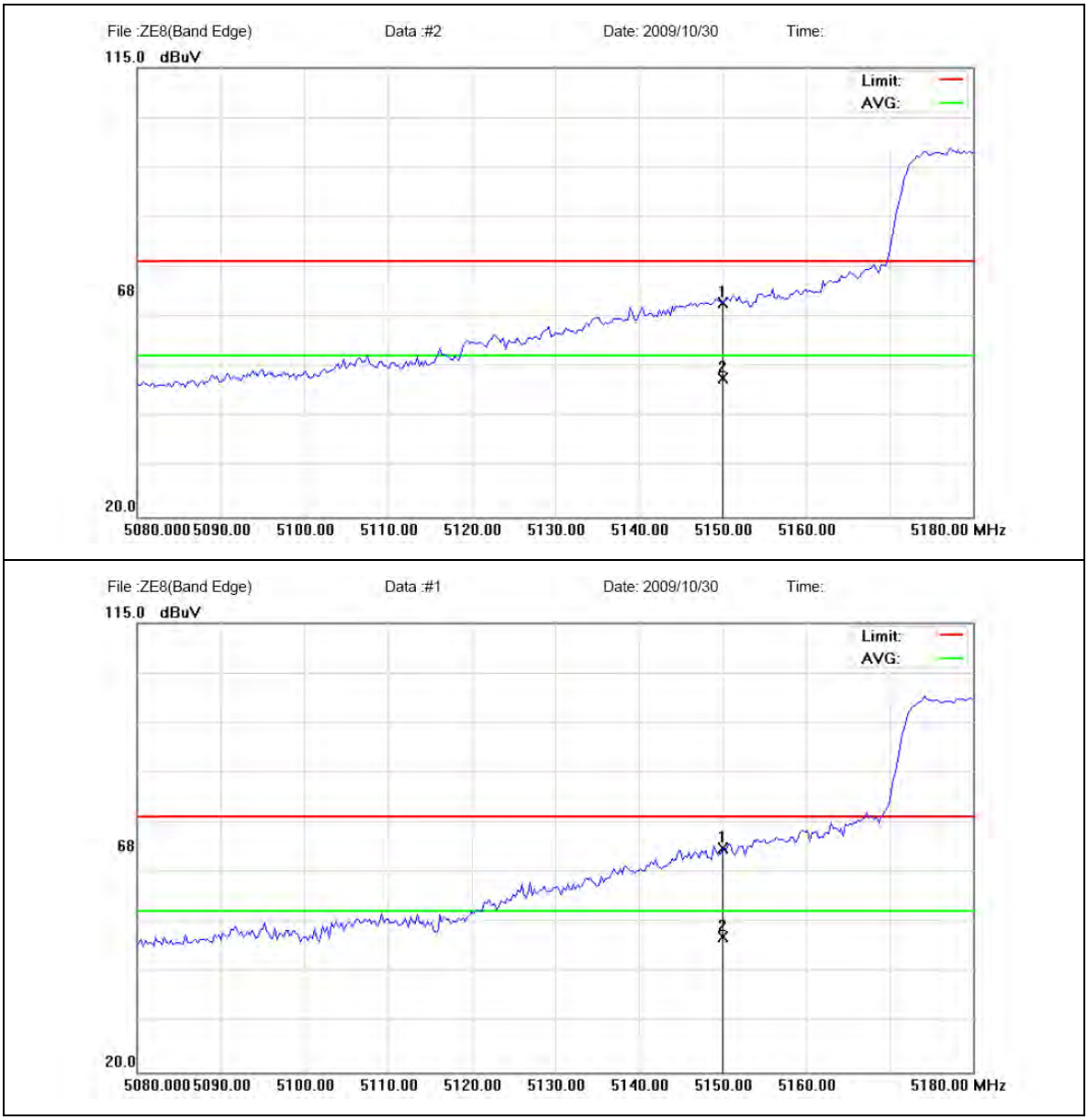


Test mode: draft 802.11n Wide-40 MHz

Run #1: Radiated Spurious Emissions, Band Edges. Operating Mode: 802.11n 40MHz - Chain A

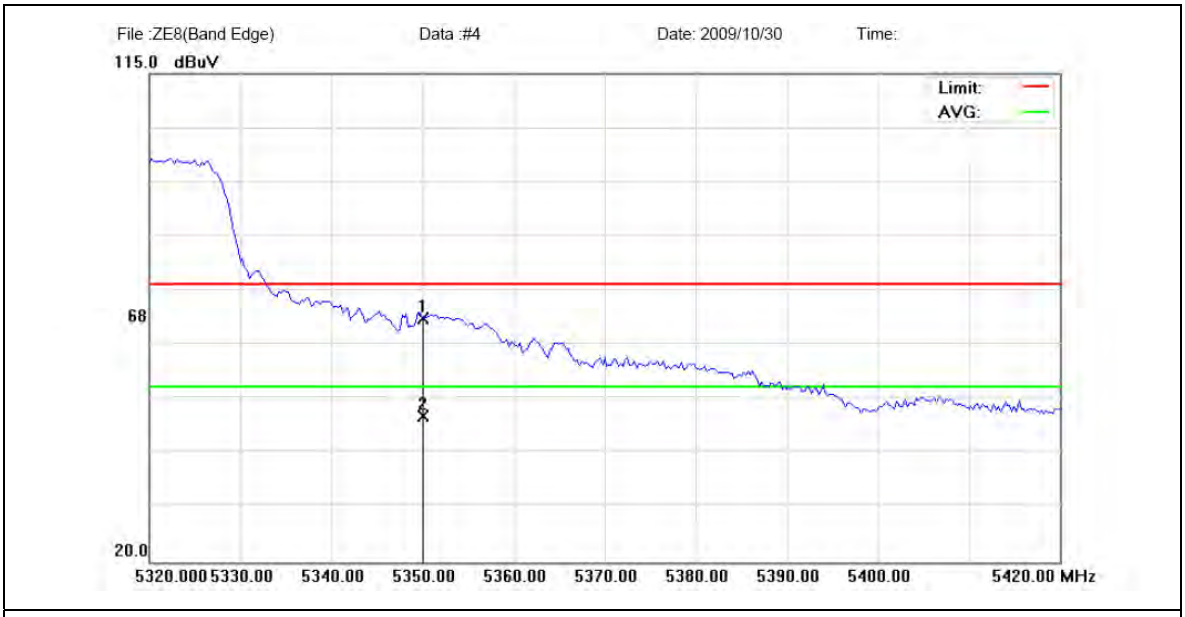
Run #1a: Low Channel @ 5190 MHz (band edge at 5150 MHz)

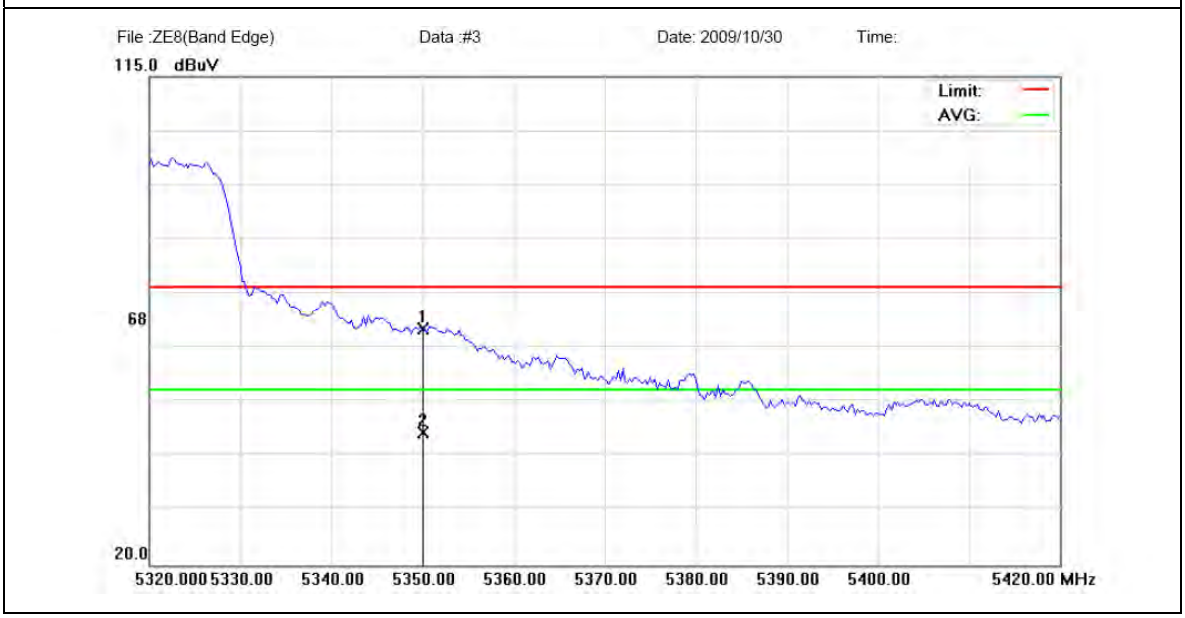
Band Edge Signal Field Strength						
Frequency	Level	Pol	15.209 / 15.247		Detector	Comments
MHz	dBµV/m	v/h	Limit	Margin	PK/QP/Avg	
5150.000	49.35	H	54.0	-4.65	Avg	RBW= 1MHz, VBW=10Hz
5150.000	65.33	H	74.0	-8.67	PK	RBW=VBW=1MHz
5150.000	48.64	V	54.0	-5.36	Avg	RBW= 1MHz, VBW=10Hz
5150.000	67.28	V	74.0	-6.72	PK	RBW=VBW=1MHz



Run #1b: High Channel @ 5310 MHz (band edge at 5350 MHz)

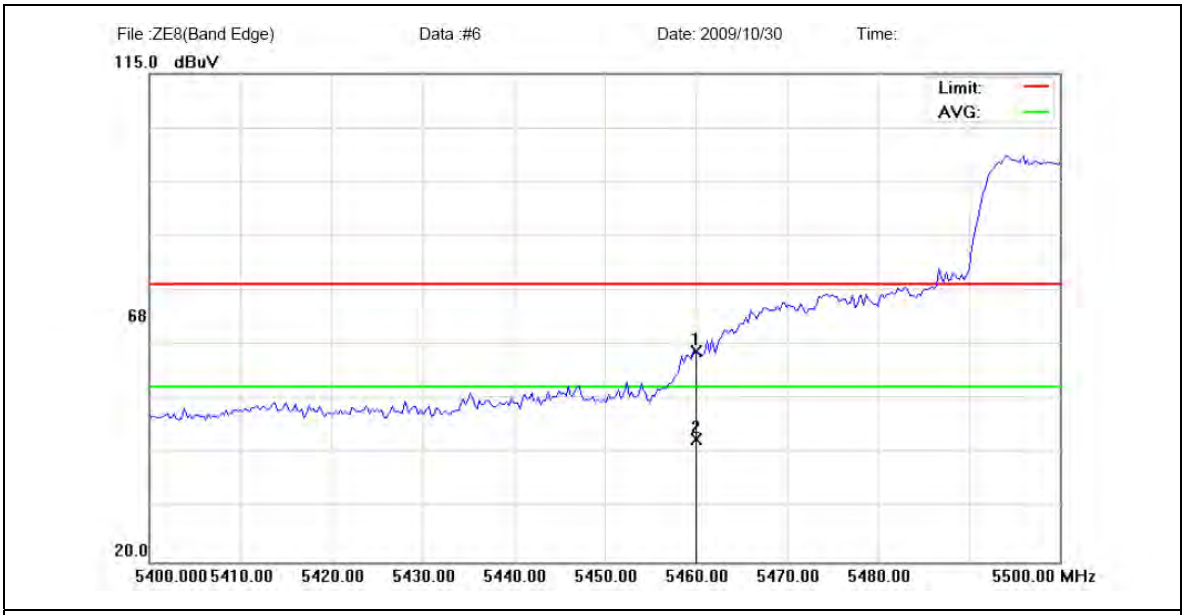
Band Edge Signal Field Strength						
Frequency	Level	Pol	15.209 / 15.247		Detector	Comments
MHz	dBµV/m	v/h	Limit	Margin	PK/QP/Avg	
5350.000	48.40	H	54.0	-5.60	Avg	RBW= 1MHz, VBW=10Hz
5350.000	67.28	H	74.0	-6.72	PK	RBW=VBW=1MHz
5350.000	45.84	V	54.0	-8.16	Avg	RBW= 1MHz, VBW=10Hz
5350.000	65.86	V	74.0	-8.14	PK	RBW=VBW=1MHz

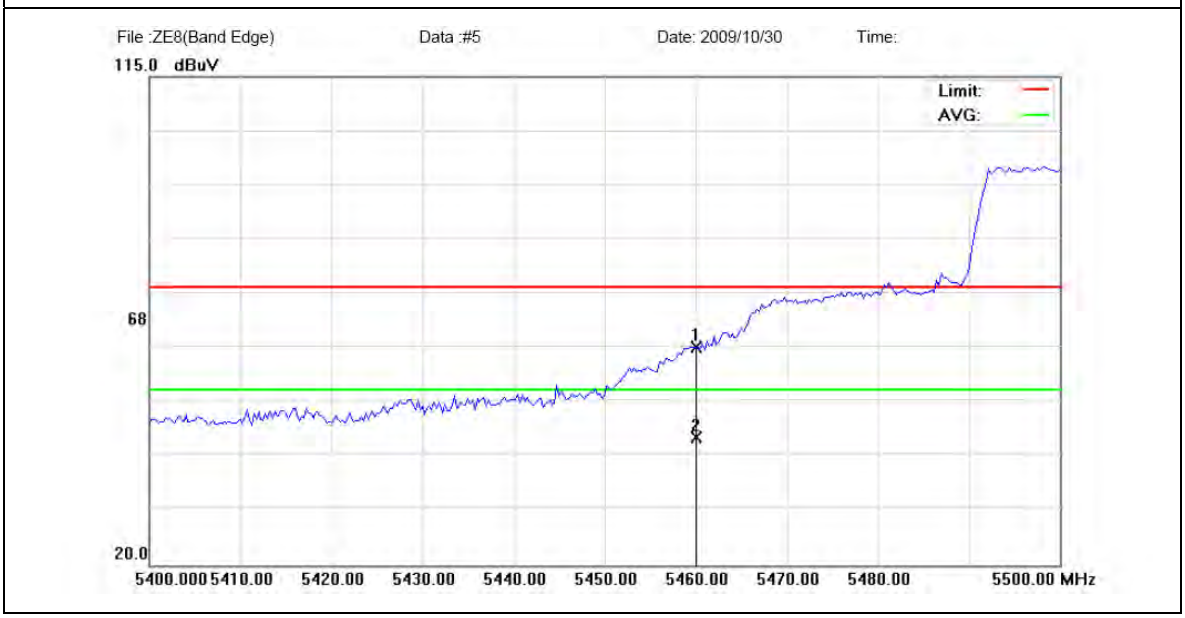




Run #1c: Low Channel @ 5510 MHz (restricted band edge at 5460 MHz, allocated band edge at 5470MHz)

Band Edge Signal Field Strength						
Frequency	Level	Pol	15.209 / 15.247		Detector	Comments
MHz	dBµV/m	v/h	Limit	Margin	PK/QP/Avg	
5460.000	43.85	H	54.0	-10.15	Avg	RBW= 1MHz, VBW=10Hz
5460.000	60.95	H	74.0	-13.05	PK	RBW=VBW=1MHz
5460.000	44.79	V	54.0	-9.21	Avg	RBW= 1MHz, VBW=10Hz
5460.000	62.42	V	74.0	-11.58	PK	RBW=VBW=1MHz





3.5 Radiated Undesirable Emission

3.5.1 Limit

According to §15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

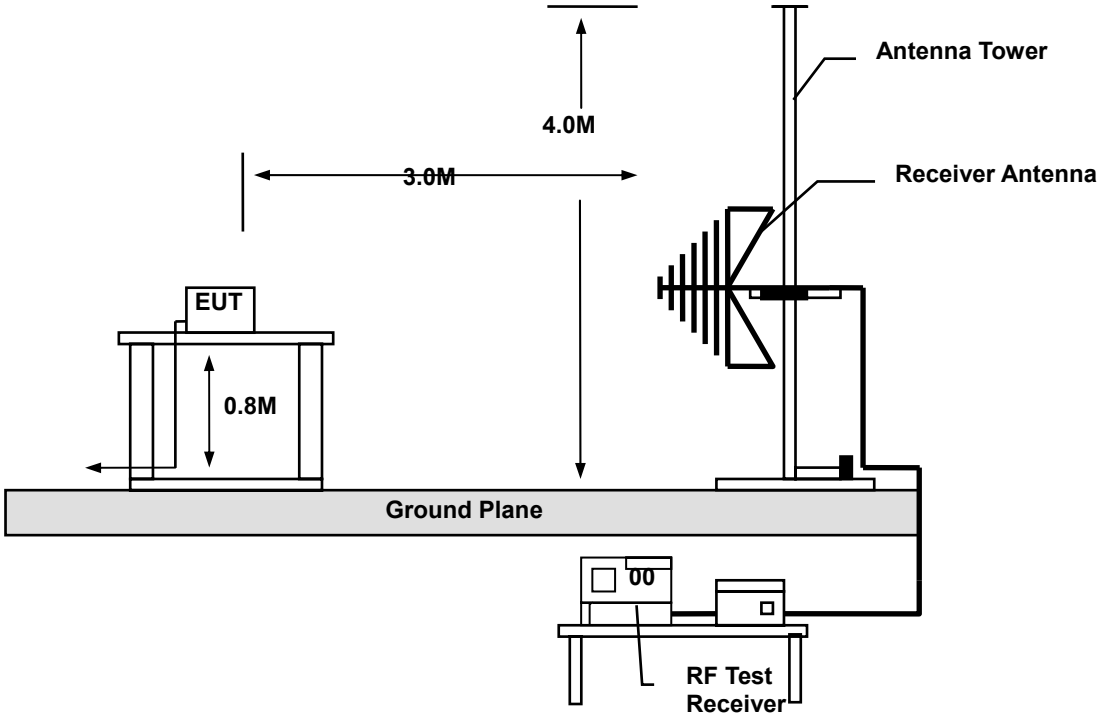
Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

In the emission table above, the tighter limit applies at the band edges.

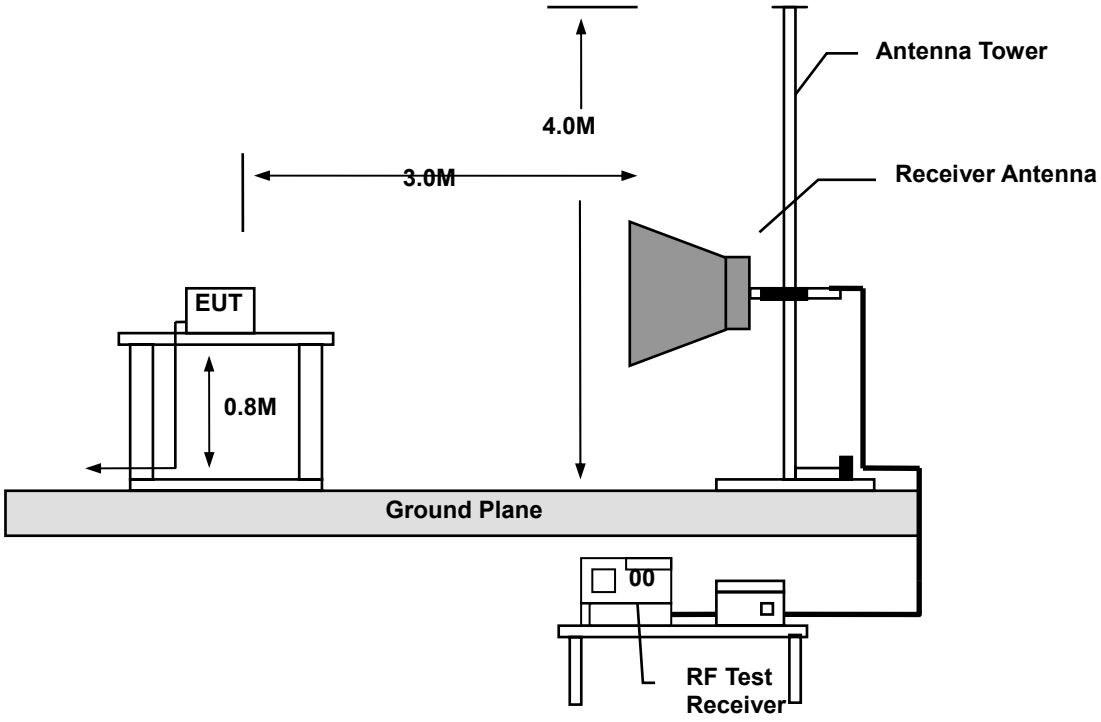
Frequency (MHz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

3.5.2 Test Configuration

Below 1 GHz



Above 1GHz



3.5.3 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

Below 1GHz: RBW=100kHz / VBW=300kHz / Sweep=AUTO

Above 1GHz: (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

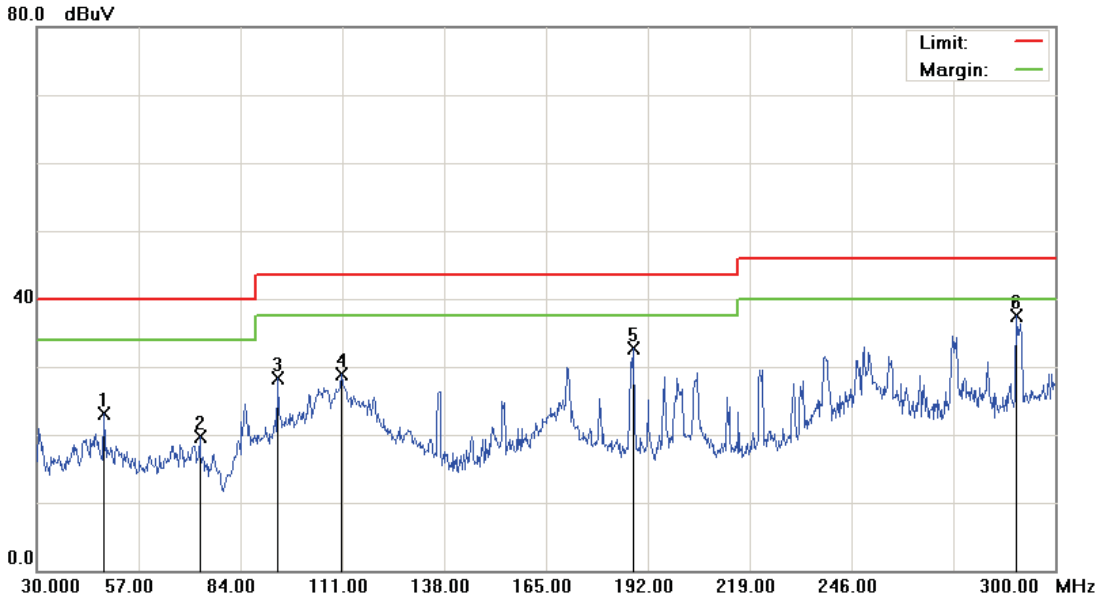
7. Repeat above procedures until the measurements for all frequencies are complete.

3.5.4 Test Results

TX Below 1 GHz

Operation Mode:	Wi-FI Normal Link	**Test Date:**	Oct. 15, 2009
Temperature:	22°C	**Tested by:**	John Cheng
Humidity:	60% RH	**Polarity:**	Ver. / Hor.
Please refer to next page of detail testing data.			

File :ZE8(WIFI) Data :#1 Date: 2009/10/15 Time: 上午 09:49:48



Site: site #1
Limit: FCC Class B 3M Radiation
EUT:
M/N: 09-0255-SEO
Mode: WIFI
Note:

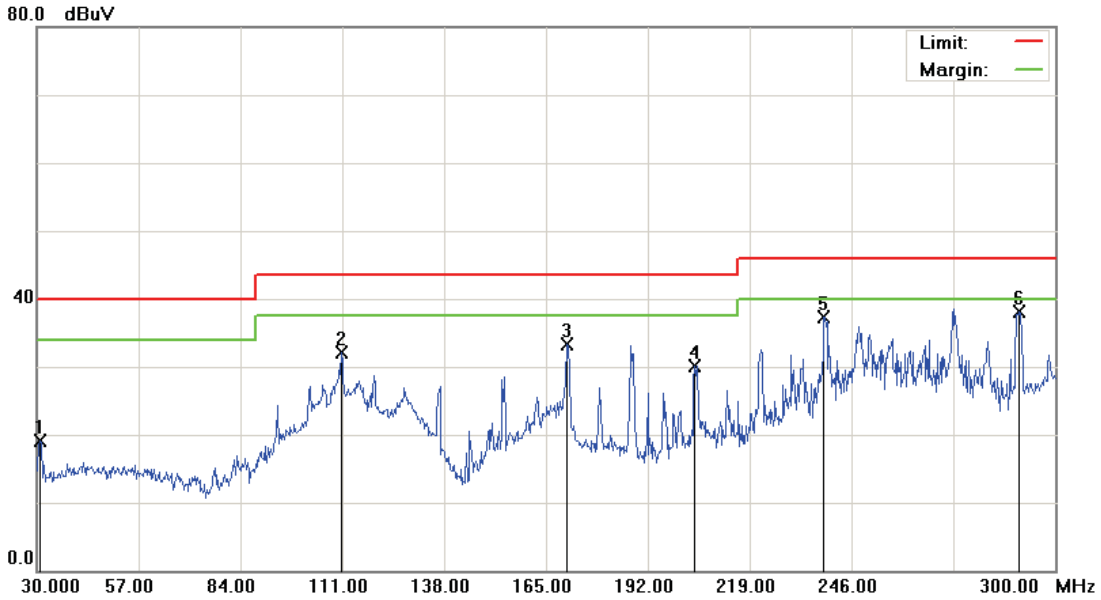
Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %
RBW: 120 KHz VBW: 100

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	cm	degree	Comment
1		47.8200	35.19	-12.02	23.17	40.00	-16.83	peak			
2		73.2000	36.63	-16.95	19.68	40.00	-20.32	peak			
3		93.9900	40.49	-12.27	28.22	43.50	-15.28	peak			
4		110.7300	41.48	-12.63	28.85	43.50	-14.65	peak			
5		188.2200	46.19	-13.53	32.66	43.50	-10.84	peak			
6	*	289.7400	47.62	-10.03	37.59	46.00	-8.41	peak			

*:Maximum data x:Over limit !:over margin

File :ZE8(WIFI) Data :#3 Date: 2009/10/15 Time: 上午 09:57:14



Site: site #1
Limit: FCC Class B 3M Radiation
EUT:
M/N: 09-0255-SEO
Mode: WIFI
Note:

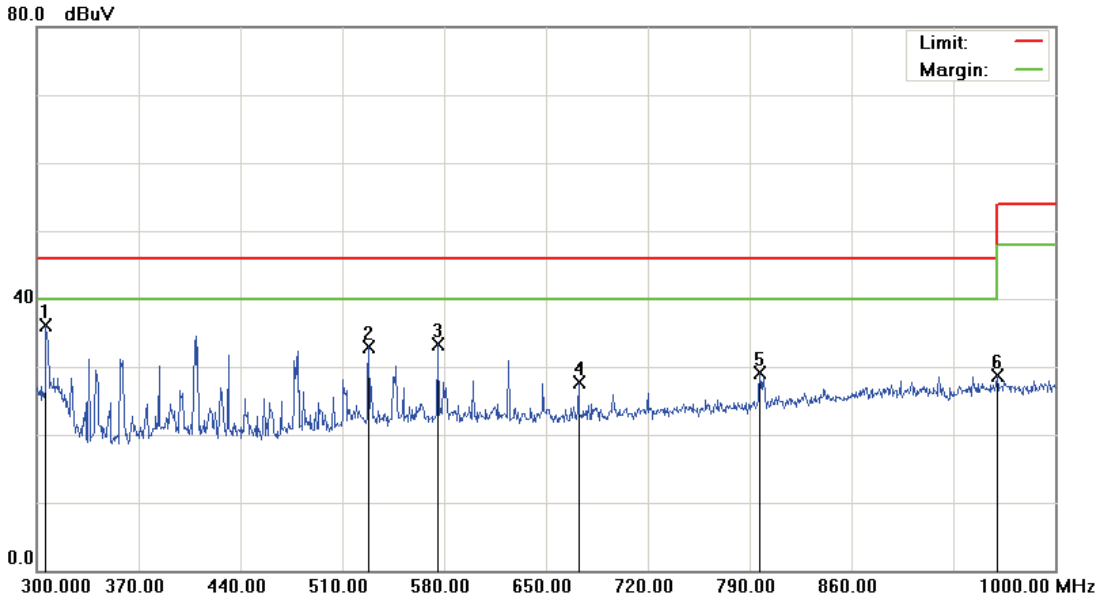
Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %
RBW: 120 KHz VBW: 300

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	cm	degree	Comment
1		30.8100	32.37	-13.30	19.07	40.00	-20.93	peak			
2		110.7300	44.78	-12.63	32.15	43.50	-11.35	peak			
3		170.4000	48.74	-15.36	33.38	43.50	-10.12	peak			
4		204.4200	43.16	-13.07	30.09	43.50	-13.41	peak			
5		238.7100	48.84	-11.51	37.33	46.00	-8.67	peak			
6	*	290.5500	48.11	-10.03	38.08	46.00	-7.92	peak			

*:Maximum data x:Over limit !:over margin

File :ZE8(WIFI) Data :#2 Date: 2009/10/15 Time: 上午 09:54:01



Site: site #1
Limit: FCC Class B 3M Radiation
EUT:
M/N: 09-0255-SEO
Mode: WIFI
Note:

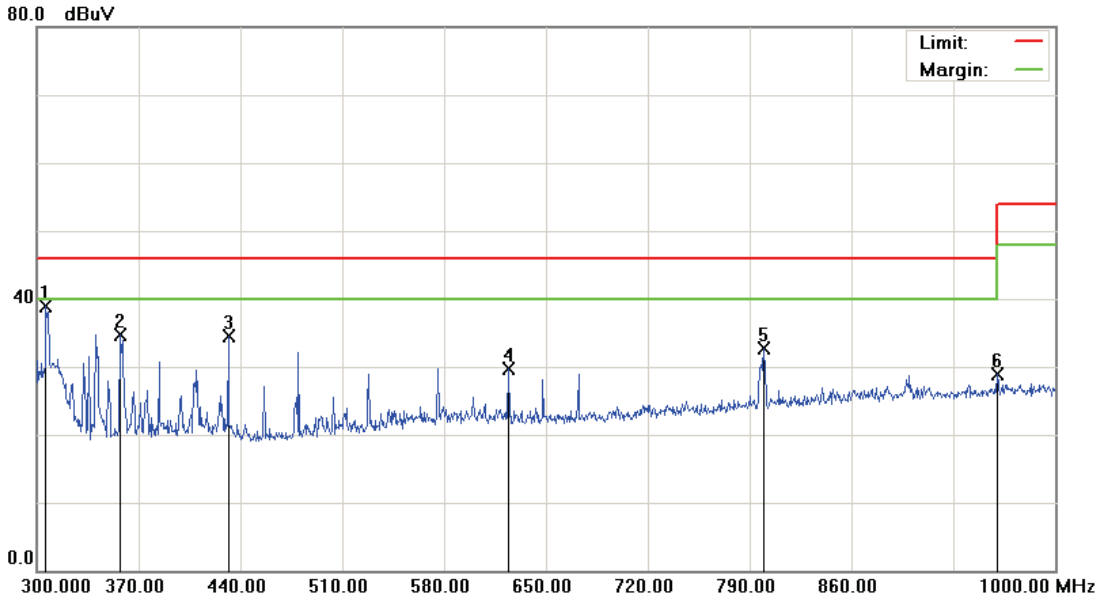
Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %
RBW: 120 KHz VBW: 100

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	cm	degree	Comment
1	*	306.3000	46.08	-10.05	36.03	46.00	-9.97	peak			
2		528.2000	39.27	-6.34	32.93	46.00	-13.07	peak			
3		575.8000	38.63	-5.34	33.29	46.00	-12.71	peak			
4		672.4000	31.90	-4.28	27.62	46.00	-18.38	peak			
5		797.0000	31.50	-2.34	29.16	46.00	-16.84	peak			
6		960.1000	28.29	0.43	28.72	54.00	-25.28	peak			

*:Maximum data x:Over limit !:over margin

File :ZE8(WIFI) Data :#4 Date: 2009/10/15 Time: 上午 10:00:00



Site: site #1
Limit: FCC Class B 3M Radiation
EUT:
M/N: 09-0255-SEO
Mode: WIFI
Note:

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %
RBW: 120 KHz VBW: 300

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	cm	degree	Comment
1	*	306.3000	48.87	-10.05	38.82	46.00	-7.18	peak			
2		357.4000	43.59	-8.90	34.69	46.00	-11.31	peak			
3		431.6000	42.53	-8.03	34.50	46.00	-11.50	peak			
4		624.1000	34.38	-4.60	29.78	46.00	-16.22	peak			
5		799.8000	35.12	-2.32	32.80	46.00	-13.20	peak			
6		960.1000	28.54	0.43	28.97	54.00	-25.03	peak			

*:Maximum data x:Over limit !:over margin

TX Above 1 GHz

Operation Mode:	TX / IEEE 802.11a mode / 5180 MHz				**Test Date:** Oct. 30, 2009		
Temperature:	22°C				**Tested by:** John Cheng		
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1991.10	V	50.50	-1.66	48.84	68.30	-19.46	peak
3189.25	V	46.84	2.68	49.52	68.30	-18.78	peak
9867.45	V	37.94	17.84	55.78	68.30	-12.52	peak
14285.00	V	37.52	18.61	56.13	68.30	-12.17	peak
21966.50	V	37.36	21.13	58.49	68.30	-9.81	peak
23541.75	V	38.53	20.53	59.06	68.30	-9.24	peak
2290.30	H	43.20	0.48	44.78	74.00	-29.22	peak
9960.00	H	37.31	17.82	56.43	68.30	-11.87	peak
14215.20	H	37.28	18.78	56.86	68.30	-11.44	peak
17985.00	H	36.07	25.57	62.54	68.30	-5.76	peak
21860.25	H	36.71	21.19	59.10	68.30	-9.20	peak
24030.50	H	39.04	19.99	59.93	68.30	-8.37	peak

Operation Mode:	TX / IEEE 802.11a mode / 5200 MHz				**Test Date:** Oct. 30, 2009		
Temperature:	22°C				**Tested by:** John Cheng		
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1986.00	V	51.47	-1.84	49.63	68.30	-18.67	peak
2696.50	V	40.79	22.58	63.37	74.00	-10.63	peak
2696.50	V	20.74	22.58	43.32	54.00	-10.68	AVG
10395.20	V	41.28	10.73	52.01	68.30	-16.29	peak
18176.25	V	37.66	23.22	60.88	68.30	-7.42	peak
21669.00	V	36.64	21.25	57.89	68.30	-10.41	peak
24413.00	V	38.87	19.71	58.58	68.30	-9.72	peak
2632.00	H	43.11	0.95	44.06	68.30	-24.24	peak
9996.50	H	37.42	17.94	55.36	68.30	-12.94	peak
14095.20	H	37.10	18.90	56.00	68.30	-12.30	peak
17965.00	H	36.63	25.21	61.84	68.30	-6.46	peak
20011.50	H	37.79	22.11	59.90	68.30	-8.40	peak
25326.75	H	39.14	19.09	58.23	68.30	-10.07	peak

TX Above 1 GHz

Operation Mode:	TX / IEEE 802.11a mode / 5240 MHz				**Test Date:** Oct. 30, 2009		
Temperature:	22°C				**Tested by:** John Cheng		
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1243.10	V	56.29	-4.22	52.07	68.30	-36.23	peak
9321.25	V	38.52	16.91	55.43	68.30	-32.87	peak
14175.20	V	37.07	18.85	55.92	68.30	-32.38	peak
17985.00	V	36.49	25.57	62.06	68.30	-26.24	peak
21881.50	V	36.94	21.18	58.12	68.30	-30.18	peak
25751.75	V	39.97	18.77	58.74	68.30	-29.56	peak
2387.20	H	44.55	0.15	44.70	74.00	-29.30	peak
2696.50	H	39.79	22.58	62.37	74.00	-11.63	peak
2696.50	H	20.68	22.58	43.26	54.00	-10.74	AVG
10475.20	H	40.40	10.82	51.22	68.30	-37.08	peak
18282.50	H	37.31	23.20	60.51	68.30	-27.79	peak
21860.25	H	36.84	21.19	58.03	68.30	-30.27	peak
25964.25	H	39.64	18.58	58.22	68.30	-30.08	peak

Operation Mode:	TX / IEEE 802.11a mode / 5260 MHz				**Test Date:** Oct. 30, 2009		
Temperature:	22°C				**Tested by:** John Cheng		
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1992.80	V	50.46	-1.60	48.86	68.30	-19.44	peak
2696.50	V	40.15	22.58	62.73	74.00	-11.27	peak
9849.20	V	38.69	17.89	56.58	68.30	-11.72	peak
14005.00	V	37.58	18.67	56.25	68.30	-12.05	peak
17992.75	V	36.16	25.57	61.73	68.30	-6.57	peak
25369.25	V	39.05	19.05	58.10	68.30	-10.20	peak
2494.30	H	46.71	0.25	46.96	74.00	-27.04	peak
9686.25	H	38.16	17.35	55.51	68.30	-12.79	peak
14135.20	H	37.11	18.84	55.95	68.30	-12.35	peak
18495.00	H	37.47	23.10	60.57	68.30	-7.73	peak
21881.50	H	37.28	21.18	58.46	68.30	-9.84	peak
23626.75	H	37.91	20.42	58.33	68.30	-9.97	peak

TX Above 1 GHz

Operation Mode:	TX / IEEE 802.11a mode / 5280 MHz				**Test Date:** Oct. 30, 2009		
Temperature:	22°C				**Tested by:** John Cheng		
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1992.80	V	50.70	-1.60	49.10	68.30	-19.20	peak
2696.50	V	39.97	22.58	62.55	74.00	-11.45	peak
2696.50	V	20.92	22.58	43.50	54.00	-10.50	AVG
9593.70	V	38.31	17.41	55.72	68.30	-12.58	peak
14105.00	V	37.03	18.87	55.90	68.30	-12.40	peak
18757.75	V	37.05	23.13	60.18	68.30	-8.12	peak
23244.25	V	37.71	20.78	58.49	68.30	-9.81	peak
1487.90	H	51.16	-3.86	47.30	74.00	-26.70	peak
2700.00	H	40.31	22.58	62.89	74.00	-11.11	peak
2700.00	H	20.72	22.58	43.30	54.00	-10.70	AVG
9830.95	H	37.51	17.83	55.34	68.30	-12.96	peak
18580.00	H	37.74	23.07	60.81	68.30	-7.49	peak
22051.50	H	36.94	21.09	58.03	68.30	-10.27	peak
23605.50	H	37.96	20.44	58.40	68.30	-9.90	peak

Operation Mode:	TX / IEEE 802.11a mode / 5320 MHz				**Test Date:** Oct. 30, 2009		
Temperature:	22°C				**Tested by:** John Cheng		
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1989.40	V	51.01	-1.71	50.40	68.30	-17.90	peak
3192.75	V	48.56	2.68	52.54	68.30	-15.76	peak
13915.20	V	37.59	18.54	56.93	68.30	-11.37	peak
18813.75	V	37.32	23.15	61.37	68.30	-6.93	peak
21839.00	V	37.16	21.20	59.56	68.30	-8.74	peak
25390.50	V	39.48	19.04	59.42	68.30	-8.88	peak
2489.20	H	45.81	0.26	46.07	74.00	-27.93	peak
2700.00	H	40.23	22.58	62.81	74.00	-11.19	peak
2700.00	H	20.72	22.58	43.30	54.00	-10.70	AVG
10635.20	H	39.07	11.27	50.34	68.30	-17.96	peak
14285.00	H	37.48	18.61	56.09	68.30	-12.21	peak
18694.00	H	36.94	23.11	60.05	68.30	-8.25	peak
24115.50	H	38.49	19.90	58.39	68.30	-9.91	peak

TX Above 1 GHz

Operation Mode:	TX / IEEE 802.11a mode / 5500 MHz				**Test Date:** Oct. 30, 2009		
Temperature:	22°C				**Tested by:** John Cheng		
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1986.00	V	51.37	-1.84	49.53	68.30	-18.77	peak
3192.75	V	47.64	2.68	50.32	68.30	-17.98	peak
9776.20	V	37.71	17.69	55.40	68.30	-12.90	peak
14285.00	V	38.15	18.61	56.76	68.30	-11.54	peak
18056.50	V	36.79	23.26	60.05	68.30	-8.25	peak
23541.75	V	37.79	20.53	58.32	68.30	-9.98	peak
1243.10	H	49.26	-4.22	45.04	68.30	-23.26	peak
2700.00	H	39.61	22.58	62.19	74.00	-11.81	peak
2700.00	H	20.79	22.58	43.37	54.00	-10.63	AVG
9830.95	H	37.43	17.83	55.26	68.30	-13.04	peak
14125.00	H	37.53	18.84	56.37	68.30	-11.93	peak
18162.75	H	36.84	23.23	60.07	68.30	-8.23	peak
25241.75	H	39.00	19.14	58.14	68.30	-10.16	peak

Operation Mode:	TX / IEEE 802.11a mode / 5600 MHz				**Test Date:** Oct. 30, 2009		
Temperature:	22°C				**Tested by:** John Cheng		
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1987.70	V	51.67	-1.77	49.90	68.30	-18.40	peak
2700.00	V	41.13	22.58	63.71	74.00	-10.29	peak
2700.00	V	20.79	22.58	43.37	54.00	-10.63	AVG
9885.70	V	37.85	17.80	55.65	68.30	-12.65	peak
18388.75	V	37.29	23.15	60.44	68.30	-7.86	peak
21860.25	V	37.07	21.19	58.26	68.30	-10.04	peak
23520.50	V	38.22	20.56	58.78	68.30	-9.52	peak
2490.90	H	43.55	0.25	43.80	74.00	-30.20	peak
2700.00	H	40.07	22.58	62.65	74.00	-11.35	peak
2700.00	H	20.60	22.58	43.18	54.00	-10.82	AVG
9338.20	H	38.88	16.93	55.81	68.30	-12.49	peak
17985.00	H	36.97	25.57	62.54	68.30	-5.76	peak
18736.50	H	37.19	23.13	60.32	68.30	-7.98	peak
25836.75	H	40.24	18.69	58.93	68.30	-9.37	peak

TX Above 1 GHz

Operation Mode:	TX / IEEE 802.11a mode / 5700 MHz				**Test Date:**	Oct. 30, 2009
Temperature:	22°C				**Tested by:**	John Cheng
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1992.80	V	51.10	-1.60	49.50	68.30	-18.80	peak
3192.75	V	45.80	2.68	48.48	68.30	-19.82	peak
11395.20	V	40.81	12.34	53.15	68.30	-15.15	peak
14185.00	V	38.52	18.86	57.38	68.30	-10.92	peak
19501.50	V	37.53	22.69	60.22	68.30	-8.08	peak
25305.50	V	39.38	19.10	58.48	68.30	-9.82	peak
2484.10	H	49.96	0.25	50.21	74.00	-23.79	peak
2484.10	H	31.14	0.25	31.39	54.00	-22.61	AVG
9981.75	H	37.10	17.88	54.98	68.30	-13.32	peak
11395.20	H	39.01	12.34	51.35	68.30	-16.95	peak
17885.00	H	37.47	24.96	62.43	68.30	-5.87	peak
22136.50	H	37.45	21.04	58.49	68.30	-9.81	peak
25305.50	H	39.15	19.10	58.25	68.30	-10.05	peak

TX Above 1 GHz

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode/ 5180 MHz			**Test Date:** Oct. 30, 2009			
Temperature:	22°C			**Tested by:** John Cheng			
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1243.10	V	54.84	-4.22	50.62	68.30	-17.68	peak
2494.50	V	48.33	0.25	48.58	74.00	-25.42	peak
2494.50	V	30.25	0.25	30.50	54.00	-23.50	AVG
9356.45	V	38.94	16.98	55.92	68.30	-12.38	peak
10345.00	V	40.95	10.47	51.42	68.30	-16.88	peak
18226.50	V	36.66	23.21	59.87	68.30	-8.43	peak
25411.75	V	39.65	19.03	58.68	68.30	-9.62	peak
2388.90	H	43.84	0.15	43.99	74.00	-30.01	peak
2699.00	H	40.05	22.58	62.63	74.00	-11.37	peak
2699.00	H	20.92	22.58	43.50	54.00	-10.50	AVG
9301.70	H	38.84	16.89	55.73	68.30	-12.57	peak
17965.00	H	37.71	25.21	62.92	68.30	-5.38	peak
18694.00	H	36.74	23.11	59.85	68.30	-8.45	peak
23201.75	H	37.94	20.81	58.75	68.30	-9.55	peak

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode/ 5200 MHz			**Test Date:** Oct. 30, 2009			
Temperature:	22°C			**Tested by:** John Cheng			
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1991.10	V	50.83	-1.66	49.17	68.30	-19.13	peak
3191.25	V	48.76	2.68	51.44	68.30	-16.86	peak
9885.70	V	38.45	17.80	56.25	68.30	-12.05	peak
17885.00	V	37.40	24.96	62.36	68.30	-5.94	peak
21839.00	V	36.56	21.20	57.76	68.30	-10.54	peak
23053.00	V	37.93	20.86	58.79	68.30	-9.51	peak
2637.10	H	42.98	0.97	43.95	68.30	-24.35	peak
9980.75	H	37.32	17.88	55.20	68.30	-13.10	peak
10395.20	H	41.42	10.73	52.15	68.30	-16.15	peak
17965.00	H	36.81	25.21	62.02	68.30	-6.28	peak
21902.75	H	36.72	21.16	57.88	68.30	-10.42	peak
23711.75	H	38.41	20.31	58.72	68.30	-9.58	peak

TX Above 1 GHz

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode/ 5240 MHz			**Test Date:** Oct. 30, 2009		
Temperature:	22°C			**Tested by:** John Cheng		
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1989.40	V	49.80	-1.71	48.09	68.30	-20.21	peak
2698.50	V	39.68	22.58	62.26	74.00	-11.74	peak
2698.50	V	20.82	22.58	43.40	54.00	-10.60	AVG
9976.95	V	37.89	17.88	55.77	68.30	-12.53	peak
19323.75	V	37.66	22.87	60.53	68.30	-7.77	peak
21839.00	V	36.75	21.20	57.95	68.30	-10.35	peak
23265.50	V	38.02	20.77	58.79	68.30	-9.51	peak
2387.20	H	43.73	0.15	43.88	74.00	-30.12	peak
9871.25	H	37.62	17.84	55.46	68.30	-12.84	peak
17995.20	H	36.47	25.57	62.04	68.30	-6.26	peak
19472.50	H	37.41	22.71	60.12	68.30	-8.18	peak
21839.00	H	37.16	21.20	58.36	68.30	-9.94	peak
23478.00	H	38.10	20.61	58.71	68.30	-9.59	peak

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode/ 5260 MHz			**Test Date:** Oct. 30, 2009		
Temperature:	22°C			**Tested by:** John Cheng		
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1994.50	V	50.18	-1.53	48.65	68.30	-19.65	peak
2698.50	V	41.14	22.58	63.72	74.00	-10.28	peak
2698.50	V	20.75	22.58	43.33	54.00	-10.67	AVG
9830.95	V	37.77	17.83	55.60	68.30	-12.70	peak
18367.50	V	37.02	23.16	60.18	68.30	-8.12	peak
22476.50	V	37.29	20.90	58.19	68.30	-10.11	peak
25178.00	V	39.31	19.20	58.51	68.30	-9.79	peak
2485.80	H	47.98	0.26	48.24	74.00	-25.76	peak
2485.80	H	31.12	0.26	31.38	54.00	-22.62	AVG
9597.00	H	37.68	17.41	55.09	68.30	-13.21	peak
17935.20	H	37.97	24.71	62.68	68.30	-5.62	peak
18006.25	H	36.88	23.28	60.16	68.30	-8.14	peak
21605.25	H	36.72	21.28	58.00	68.30	-10.30	peak
25220.50	H	39.18	19.16	58.34	68.30	-9.96	peak

TX Above 1 GHz

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode/ 5280 MHz			**Test Date:** Oct. 30, 2009		
Temperature:	22°C			**Tested by:** John Cheng		
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1991.10	V	50.17	-1.66	48.51	68.30	-19.79	peak
9834.25	V	37.40	17.83	55.23	68.30	-13.07	peak
17995.20	V	36.68	25.57	62.25	68.30	-6.05	peak
18537.50	V	37.16	23.08	60.24	68.30	-8.06	peak
21541.50	V	36.81	21.33	58.14	68.30	-10.16	peak
24476.75	V	38.75	19.67	58.42	68.30	-9.88	peak
1989.40	H	45.59	-1.71	43.88	68.30	-24.42	peak
2699.00	H	39.38	22.58	61.96	74.00	-12.04	peak
2699.00	H	20.70	22.58	43.28	54.00	-10.72	AVG
14215.20	H	37.28	18.78	56.06	68.30	-12.24	peak
17865.00	H	37.50	24.36	61.86	68.30	-6.44	peak
21499.00	H	37.38	21.35	58.73	68.30	-9.57	peak
23286.75	H	37.60	20.76	58.36	68.30	-9.94	peak

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode/ 5320 MHz			**Test Date:** Oct. 30, 2009		
Temperature:	22°C			**Tested by:** John Cheng		
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1987.70	V	50.77	-1.77	49.00	68.30	-19.30	peak
3191.25	V	46.71	2.68	49.39	68.30	-18.91	peak
9338.20	V	39.18	16.93	56.11	68.30	-12.19	peak
14305.00	V	37.88	18.57	56.45	68.30	-11.85	peak
18375.25	V	36.94	23.16	60.10	68.30	-8.20	peak
25964.25	V	40.45	18.58	59.03	68.30	-9.27	peak
2388.90	H	43.44	0.15	43.59	74.00	-30.41	peak
9889.50	H	37.37	17.80	55.17	68.30	-13.13	peak
14175.20	H	37.36	18.85	56.21	68.30	-12.09	peak
18792.50	H	37.40	23.16	60.56	68.30	-7.74	peak
21817.75	H	37.49	21.20	58.69	68.30	-9.61	peak
24349.25	H	38.92	19.76	58.68	68.30	-9.62	peak

TX Above 1 GHz

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode/ 5500 MHz			**Test Date:** Oct. 30, 2009		
Temperature:	22°C			**Tested by:** John Cheng		
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1994.50	V	50.13	-1.53	48.60	68.80	-20.20	peak
3191.25	V	46.75	2.68	49.43	68.80	-19.37	peak
14015.20	V	37.49	18.67	56.16	68.80	-12.64	peak
18580.00	V	36.95	23.07	60.02	68.80	-8.78	peak
21881.50	V	37.43	21.18	58.61	68.80	-10.19	peak
23754.25	V	39.09	20.29	59.38	68.80	-9.42	peak
1243.10	H	55.73	-4.22	51.51	68.80	-17.29	peak
9889.00	H	37.79	17.80	55.59	68.80	-13.21	peak
17895.20	H	37.79	24.96	62.75	68.80	-6.05	peak
18346.25	H	37.44	23.16	60.60	68.80	-8.20	peak
21711.50	H	37.29	21.23	58.52	68.80	-10.28	peak
25263.00	H	39.42	19.13	58.55	68.80	-10.25	peak

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode/ 5600 MHz			**Test Date:** Oct. 30, 2009		
Temperature:	22°C			**Tested by:** John Cheng		
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1986.00	V	51.26	-1.84	49.42	68.30	-18.88	peak
3191.25	V	45.69	2.68	48.37	68.30	-19.93	peak
9356.45	V	38.98	16.98	55.96	68.30	-12.34	peak
14125.00	V	37.50	18.84	56.34	68.30	-11.96	peak
19522.75	V	37.42	22.67	60.09	68.30	-8.21	peak
23520.50	V	38.26	20.56	58.82	68.30	-9.48	peak
2484.10	H	47.37	0.25	47.62	74.00	-26.38	peak
2700.00	H	39.56	22.58	62.14	74.00	-11.86	peak
2700.00	H	20.65	22.58	43.23	54.00	-10.77	AVG
9739.70	H	38.69	17.69	56.38	68.30	-11.92	peak
18771.25	H	37.35	23.14	60.49	68.30	-7.81	peak
22412.75	H	37.88	20.92	58.80	68.30	-9.50	peak
25964.25	H	40.41	18.58	58.99	68.30	-9.31	peak

TX Above 1 GHz

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode/ 5700 MHz				**Test Date:** Oct. 30, 2009	
Temperature:	22°C				**Tested by:** John Cheng	
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1991.10	V	50.58	-1.66	48.92	68.30	-19.38	peak
3191.25	V	48.25	2.68	50.93	68.30	-17.37	peak
14135.20	V	37.42	18.84	56.26	68.30	-12.04	peak
18707.50	V	37.45	23.12	60.57	68.30	-7.73	peak
21839.00	V	37.34	21.20	58.54	68.30	-9.76	peak
25305.50	V	39.75	19.10	58.85	68.30	-9.45	peak
2490.90	H	44.39	0.25	44.64	74.00	-29.36	peak
9361.25	H	38.22	16.98	55.20	68.30	-13.10	peak
11395.20	H	41.89	12.34	54.23	68.30	-14.07	peak
18728.75	H	37.30	23.13	60.43	68.30	-7.87	peak
21881.50	H	37.52	21.18	58.70	68.30	-9.60	peak
23435.50	H	38.37	20.66	59.03	68.30	-9.27	peak

Operation Mode:	TX / draft 802.11n Wide-40 MHz Channel mode / 5190MHz				**Test Date:** Oct. 30, 2009	
Temperature:	22°C				**Tested by:** John Cheng	
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1991.10	V	50.04	-1.66	48.38	68.30	-19.92	peak
3191.25	V	45.33	2.68	48.01	68.30	-20.29	peak
9830.95	V	38.17	17.83	56.00	68.30	-12.30	peak
17985.00	V	37.20	25.57	62.77	68.30	-5.53	peak
19140.25	V	37.61	22.97	60.58	68.30	-7.72	peak
23563.00	V	38.33	20.50	58.83	68.30	-9.47	peak
2494.30	H	47.31	0.25	47.56	74.00	-26.44	peak
9889.30	H	37.52	17.80	55.32	68.30	-12.98	peak
17975.20	H	36.99	25.21	62.20	68.30	-6.10	peak
18112.50	H	37.58	23.23	60.81	68.30	-7.49	peak
21902.75	H	37.22	21.16	58.38	68.30	-9.92	peak
23456.75	H	38.39	20.63	59.02	68.30	-9.28	peak

TX Above 1 GHz

Operation Mode:	TX / draft 802.11n Wide-40 MHz Channel mode / 5230MHz				**Test Date:** Oct. 30, 2009	
Temperature:	22°C				**Tested by:** John Cheng	
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1241.40	V	53.95	-4.24	49.71	68.30	-18.59	peak
3191.25	V	47.39	2.68	50.07	68.30	-18.23	peak
9319.95	V	38.93	16.91	55.84	68.30	-12.46	peak
17885.00	V	37.60	24.96	62.56	68.30	-5.74	peak
21499.00	V	36.84	21.35	58.19	68.30	-10.11	peak
25305.50	V	39.74	19.10	58.84	68.30	-9.46	peak
2399.10	H	45.61	0.12	45.73	68.30	-22.57	peak
9361.25	H	40.46	16.98	57.44	68.30	-10.86	peak
14120.00	H	38.38	18.87	57.25	68.30	-11.05	peak
18680.00	H	38.02	23.09	61.11	68.30	-7.19	peak
21846.25	H	38.13	21.20	59.33	68.30	-8.97	peak
23100.00	H	39.22	20.84	60.06	68.30	-8.24	peak

Operation Mode:	TX / draft 802.11n Wide-40 MHz Channel mode / 5270MHz				**Test Date:** Oct. 30, 2009	
Temperature:	22°C				**Tested by:** John Cheng	
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1239.70	V	55.69	-4.26	51.43	68.30	-16.87	peak
2489.40	V	49.33	0.26	49.59	74.00	-24.41	peak
2489.40	V	30.65	0.26	30.91	54.00	-23.09	AVG
9703.20	V	38.46	17.49	55.95	68.30	-12.35	peak
18218.75	V	37.01	23.21	60.22	68.30	-8.08	peak
21562.75	V	37.39	21.31	58.70	68.30	-9.60	peak
23584.25	V	38.35	20.47	58.82	68.30	-9.48	peak
1589.90	H	46.94	-3.77	43.17	74.00	-30.83	peak
2698.80	H	40.08	22.58	62.66	74.00	-11.34	peak
2698.80	H	20.68	22.58	43.26	54.00	-10.74	AVG
9319.95	H	39.04	16.91	55.95	68.30	-12.35	peak
17905.00	H	37.27	24.84	62.11	68.30	-6.19	peak
21839.00	H	37.54	21.20	58.74	68.30	-9.56	Peak
24285.50	H	38.69	19.80	58.49	68.30	-9.81	peak

TX Above 1 GHz

Operation Mode:	TX / draft **802.11n Wide-40 MHz** Channel mode / 5310MHz				**Test Date:** Oct. 30, 2009	
Temperature:	22°C				**Tested by:** John Cheng	
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1239.70	V	52.64	-4.26	48.38	74.00	-25.62	peak
1239.70	V	30.78	-4.26	26.52	54.00	-27.48	AVG
3191.25	V	48.32	2.68	51.00	68.30	-17.30	peak
9684.95	V	38.68	17.35	56.03	68.30	-12.27	peak
14045.00	V	37.48	18.72	56.20	68.30	-12.10	peak
18757.75	V	37.25	23.13	60.38	68.30	-7.92	peak
23648.00	V	38.77	20.39	59.16	68.30	-9.14	peak
1489.60	H	47.22	-3.86	43.36	74.00	-30.64	peak
9414.80	H	38.29	17.07	55.36	68.30	-12.94	peak
14255.20	H	37.94	18.66	56.60	68.30	-11.70	peak
18835.00	H	38.35	23.15	61.50	68.30	-6.80	peak
21860.25	H	37.48	21.19	58.67	68.30	-9.63	peak
23350.50	H	38.10	20.73	58.83	68.30	-9.47	peak

Operation Mode:	TX / draft **802.11n Wide-40 MHz** Channel mode / 5510MHz				**Test Date:** Oct. 30, 2009	
Temperature:	22°C				**Tested by:** John Cheng	
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1987.70	V	51.08	-1.77	49.31	68.30	-18.99	peak
3191.25	V	47.55	2.68	50.23	68.30	-18.07	peak
9356.45	V	38.74	16.98	55.72	68.30	-12.58	peak
18176.25	V	37.50	23.22	60.72	68.30	-7.58	peak
21520.25	V	36.96	21.35	58.31	68.30	-9.99	peak
23244.25	V	37.69	20.78	58.47	68.30	-9.83	peak
1493.00	H	48.16	-3.85	44.31	74.00	-29.69	peak
9360.05	H	38.39	16.98	55.37	68.30	-12.93	peak
13975.20	H	37.80	18.62	56.42	68.30	-11.88	peak
18665.00	H	37.27	23.09	60.36	68.30	-7.94	peak
21945.25	H	37.93	21.15	59.08	68.30	-9.22	peak
25348.00	H	39.69	19.07	58.76	68.30	-9.54	peak

TX Above 1 GHz

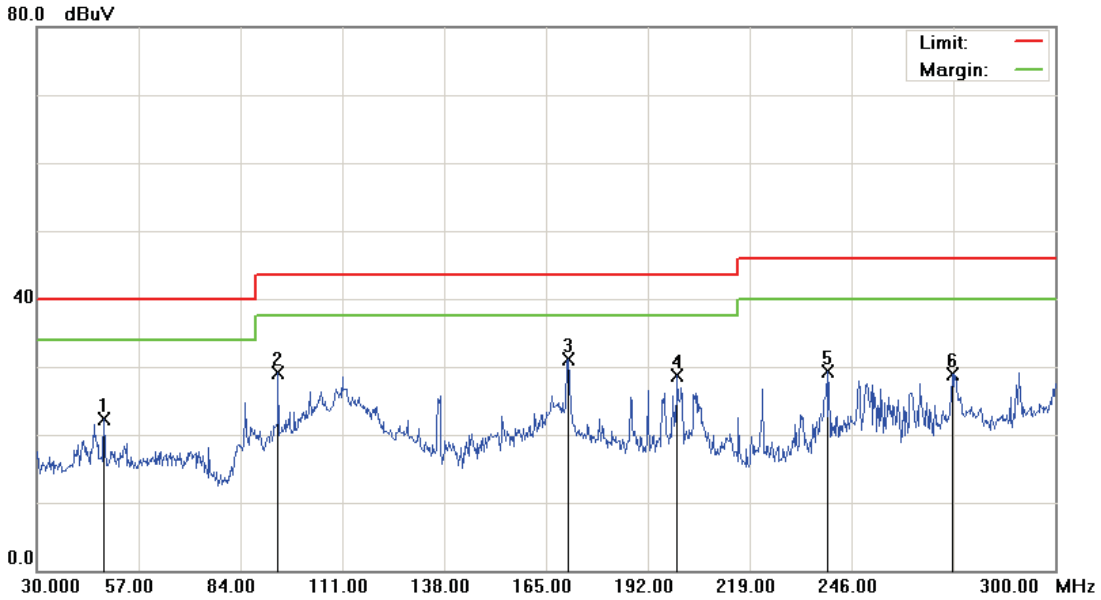
Operation Mode:	TX / draft **802.11n Wide-40 MHz** Channel mode / 5590MHz				**Test Date:** Oct. 30, 2009	
Temperature:	22°C				**Tested by:** John Cheng	
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1987.70	V	50.14	-1.77	48.37	68.30	-19.93	peak
9341.50	V	38.36	16.93	55.29	68.30	-13.01	peak
14335.20	V	37.69	18.54	56.23	68.30	-12.07	peak
18728.75	V	37.26	23.13	60.39	68.30	-7.91	peak
21945.25	V	37.48	21.15	58.63	68.30	-9.67	peak
23648.00	V	38.39	20.39	58.78	68.30	-9.52	peak
1591.60	H	46.75	-3.76	42.99	74.00	-31.01	peak
2700.00	H	39.83	22.58	62.41	74.00	-11.59	peak
2700.00	H	20.68	22.58	43.26	54.00	-10.74	AVG
13615.20	H	38.45	17.81	56.26	68.30	-12.04	peak
17965.00	H	36.93	25.21	62.14	68.30	-6.16	peak
21647.75	H	37.16	21.27	58.43	68.30	-9.87	peak
25496.75	H	39.76	18.98	58.74	68.30	-9.56	peak

Operation Mode:	TX / draft **802.11n Wide-40 MHz** Channel mode / 5670MHz				**Test Date:** Oct. 30, 2009	
Temperature:	22°C				**Tested by:** John Cheng	
Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1986.00	V	50.65	-1.84	48.81	68.30	-19.49	peak
9797.75	V	37.73	17.67	55.40	68.30	-12.90	peak
13995.20	V	37.49	18.67	56.16	68.30	-12.14	peak
18601.25	V	37.21	23.07	60.28	68.30	-8.02	peak
21499.00	V	36.71	21.35	58.06	68.30	-10.24	peak
25581.75	V	39.80	18.92	58.72	68.30	-9.58	peak
2387.20	H	42.99	0.15	43.14	74.00	-30.86	peak
2700.00	H	40.12	22.58	62.70	74.00	-11.30	peak
2700.00	H	20.92	22.58	43.50	54.00	-10.50	AVG
14115.20	H	37.51	18.87	56.38	68.30	-11.92	peak
18750.00	H	37.33	23.13	60.46	68.30	-7.84	peak
21796.50	H	37.03	21.21	58.24	68.30	-10.06	peak
25326.75	H	39.87	19.09	58.96	68.30	-9.34	peak

RX Below 1 GHz

Operation Mode:	Wi-FI Normal Link	**Test Date:**	Oct. 15, 2009
Temperature:	22°C	**Tested by:**	John Cheng
Humidity:	60% RH	**Polarity:**	Ver. / Hor.
Please refer to next page of detail testing data.			

File :ZE8(IDLE) Data :#1 Date: 2009/10/15 Time: 上午 10:04:35



Site: site #1
Limit: FCC Class B 3M Radiation
EUT:
M/N: 09-0255-SEO
Mode: Receiver Mode
Note:

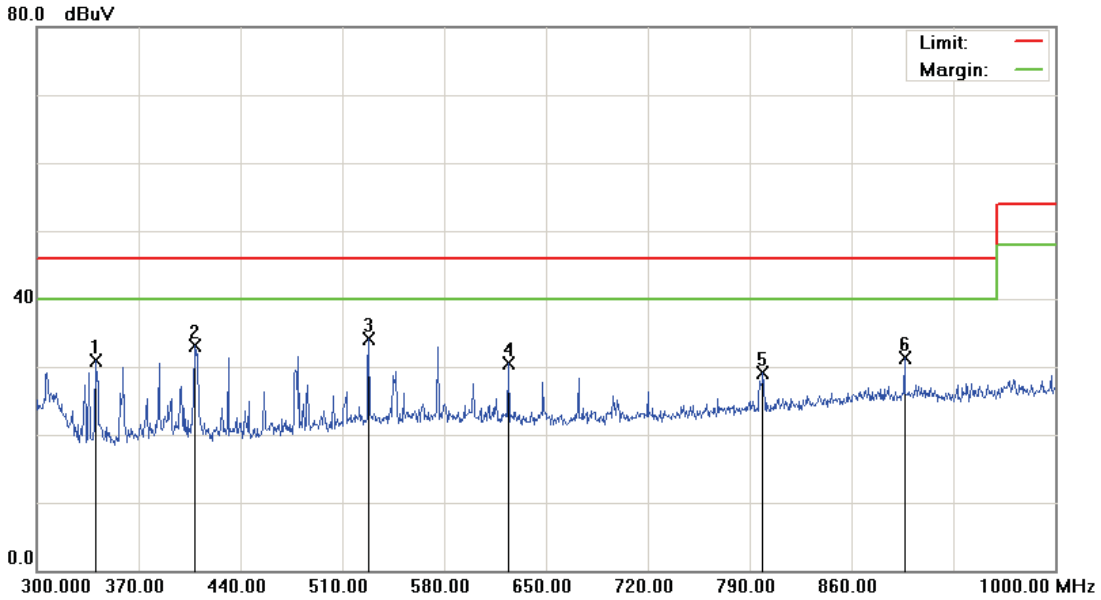
Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	cm	degree	Comment
1		47.8200	34.38	-12.02	22.36	40.00	-17.64	peak			
2		93.9900	41.41	-12.27	29.14	43.50	-14.36	peak			
3	*	170.9400	46.34	-15.27	31.07	43.50	-12.43	peak			
4		199.8300	41.90	-13.18	28.72	43.50	-14.78	peak			
5		239.5200	40.84	-11.46	29.38	46.00	-16.62	peak			
6		272.7300	39.73	-10.86	28.87	46.00	-17.13	peak			

*:Maximum data x:Over limit !:over margin

File :ZE8(IDLE) Data :#2 Date: 2009/10/15 Time: 上午 10:06:11



Site: site #1
Limit: FCC Class B 3M Radiation
EUT:
M/N: 09-0255-SEO
Mode: Receiver Mode
Note:

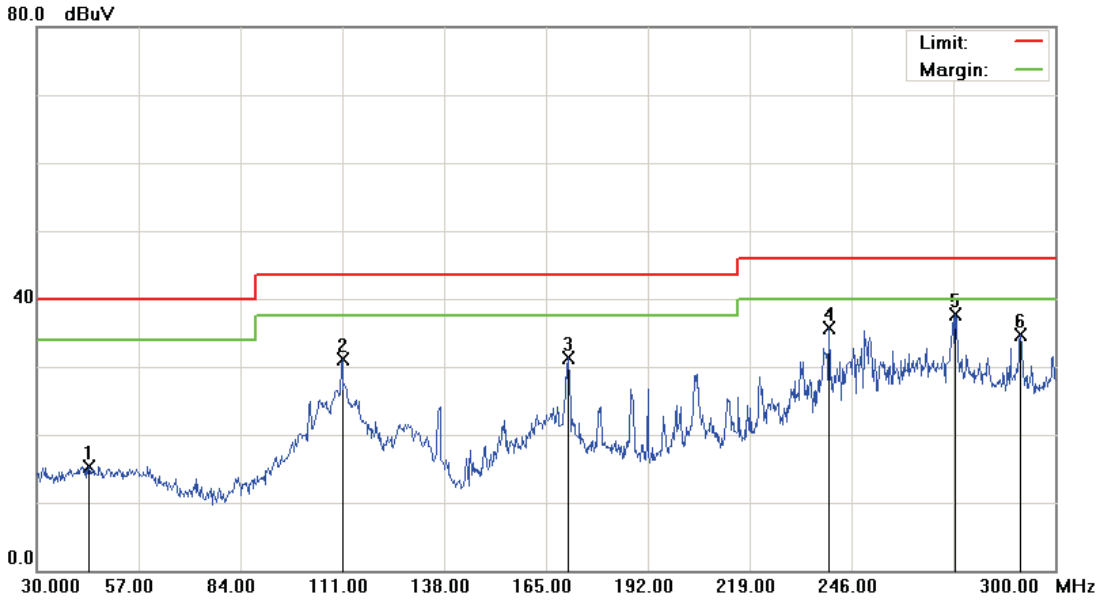
Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	cm	degree	Comment
1		340.6000	39.96	-8.97	30.99	46.00	-15.01	peak			
2		408.5000	41.43	-8.26	33.17	46.00	-12.83	peak			
3	*	528.2000	40.46	-6.34	34.12	46.00	-11.88	peak			
4		624.1000	35.19	-4.60	30.59	46.00	-15.41	peak			
5		799.1000	31.36	-2.32	29.04	46.00	-16.96	peak			
6		896.4000	31.79	-0.47	31.32	46.00	-14.68	peak			

*:Maximum data x:Over limit !:over margin

File :ZE8(IDLE) Data :#3 Date: 2009/10/15 Time: 上午 10:08:41



Site: site #1
Limit: FCC Class B 3M Radiation
EUT:
M/N: 09-0255-SEO
Mode: Receiver Mode
Note:

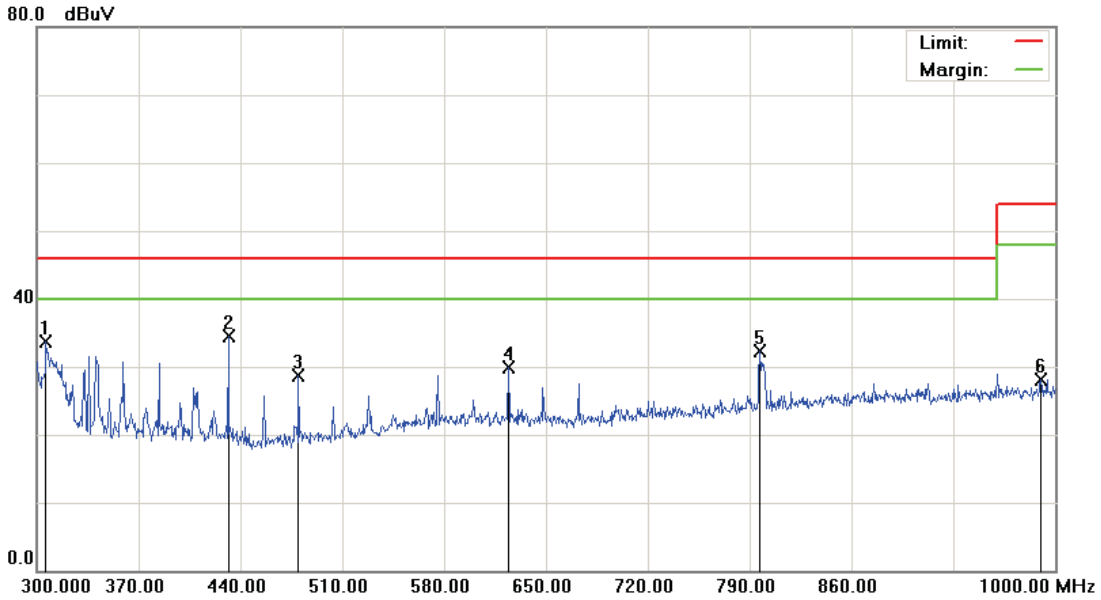
Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	cm	degree	Comment
1		43.7700	27.24	-11.84	15.40	40.00	-24.60	peak			
2		111.0000	43.80	-12.68	31.12	43.50	-12.38	peak			
3		170.9400	46.57	-15.27	31.30	43.50	-12.20	peak			
4		240.0600	47.14	-11.43	35.71	46.00	-10.29	peak			
5	*	273.5400	48.56	-10.83	37.73	46.00	-8.27	peak			
6		290.8200	44.82	-10.05	34.77	46.00	-11.23	peak			

*:Maximum data x:Over limit !:over margin

File :ZE8(IDLE) Data :#4 Date: 2009/10/15 Time: 上午 10:10:31



Site: site #1
Limit: FCC Class B 3M Radiation
EUT:
M/N: 09-0255-SEO
Mode: Receiver Mode
Note:

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	cm	degree	Comment
1		306.3000	43.80	-10.05	33.75	46.00	-12.25	peak			
2	*	431.6000	42.44	-8.03	34.41	46.00	-11.59	peak			
3		479.9000	36.28	-7.53	28.75	46.00	-17.25	peak			
4		624.1000	34.52	-4.60	29.92	46.00	-16.08	peak			
5		797.0000	34.73	-2.34	32.39	46.00	-13.61	peak			
6		990.2000	27.14	0.93	28.07	54.00	-25.93	peak			

*:Maximum data x:Over limit !:over margin

RX Above 1 GHz

Operation Mode:	Receiver Mode	**Test Date:**	Oct. 30, 2009
Temperature:	22°C	**Tested by:**	John Cheng
Humidity:	60% RH	**Polarity:**	Ver. / Hor.

Freq	Pol V/H	Read Level (dBuV)	Factor	Level (dBuV)	Limit (dBuV)	Over	detector
1996.65	V	51.01	-1.60	49.41	74.00	-24.59	peak
2700.00	V	40.28	22.58	62.86	74.00	-11.14	peak
2700.00	V	21.34	22.58	43.92	54.00	-10.08	AVG
3190.25	V	51.90	2.68	54.58	74.00	-19.42	peak
3190.25	V	30.40	2.68	33.08	54.00	-20.92	AVG
9919.00	V	38.05	17.78	55.83	74.00	-18.17	peak
9919.00	V	27.72	17.78	45.50	54.00	-8.50	AVG
14195.00	V	28.65	28.40	57.05	74.00	-16.95	peak
14195.00	V	18.28	28.40	46.68	54.00	-7.32	AVG
18000.00	V	28.25	35.11	63.36	74.00	-10.64	peak
18000.00	V	7.48	35.11	42.59	54.00	-11.41	AVG
18859.25	V	37.21	23.15	60.36	74.00	-13.64	peak
18859.25	V	17.92	23.15	41.07	54.00	-12.93	AVG
21905.00	V	36.90	21.16	58.06	74.00	-15.94	peak
21905.00	V	18.87	21.16	40.03	54.00	-13.97	AVG
25730.00	V	39.84	18.79	58.63	74.00	-15.37	peak
25730.00	V	20.33	18.79	39.12	54.00	-14.88	AVG
2005.30	H	46.77	-1.77	45.00	74.00	-29.00	peak
2700.00	H	39.98	22.58	62.56	74.00	-11.44	peak
2700.00	H	21.40	22.58	43.98	54.00	-10.02	AVG
9310.00	H	39.69	16.89	56.58	74.00	-17.42	peak
9310.00	H	27.66	16.89	44.55	54.00	-9.45	AVG
14252.00	H	29.41	28.25	57.66	74.00	-16.34	peak
14252.00	H	17.94	28.25	46.19	54.00	-7.81	AVG
18000.00	H	28.23	35.11	63.34	74.00	-10.66	peak
18000.00	H	7.47	35.11	42.58	54.00	-11.42	AVG
18322.25	H	38.12	23.19	61.31	74.00	-12.69	peak
18322.25	H	20.64	23.19	43.83	54.00	-10.17	AVG
21904.00	H	38.01	21.18	59.19	74.00	-14.81	peak
21904.00	H	20.45	21.18	41.63	54.00	-12.37	AVG
25617.75	H	39.90	18.90	58.80	74.00	-15.20	peak
25617.75	H	21.33	18.90	40.23	54.00	-13.77	AVG

3.6 Antenna Requirements

3.6.1 Standard Applicable

For intentional device, according to 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 15.407 (a), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

3.6.2 Antenna Connector Construction

The antenna used in this product is **PIFA Antenna**. And the maximum Gain of this antenna lest below.

Band	Frequency (MHz)	Gain (dBi)
IEEE 802.11a	5150-5350	3.36
	5470-5725	2.00
	5725-5850	3.56
draft 802.11n Standard-20 MHz	5150-5350	3.36
	5470-5725	2.00
	5725-5850	3.56
draft 802.11n Wide-40 MHz	5150-5350	3.36
	5470-5725	2.00
	5725-5850	3.56