



Test Report

Product Name	Touch Note
Model No	T1000, T1000X, T1000E, T1000P, R1001
FCC ID.	JCK-T1000
Transmitter Module	AzuerWave / AW-NE785H

Applicant	GIGA-BYTE TECHNOLOGY CO., LTD
Address	5FL., No. 6, Bau Chiang Road, Hsin-Tien, Taipei-Hsien, Taiwan, R.O.C.

Date of Receipt	Dec. 22, 2009
Issue Date	Feb. 03, 2010
Report No.	09C388R-RFUSP42V01
Report Version	V1.0

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Test Report Certification

Issue Date: Feb. 03, 2010

Report No.: 09C388R-RFUSP42V01



Accredited by NIST (NVLAP)
NVLAP Lab Code: 200533-0

Product Name	Touch Note
Applicant	GIGA-BYTE TECHNOLOGY CO., LTD
Address	5FL., No. 6, Bau Chiang Road, Hsin-Tien, Taipei-Hsien, Taiwan, R.O.C.
Manufacturer	GIGA-BYTE TECHNOLOGY CO., LTD (GBT)
Model No.	T1000, T1000X, T1000E, T1000P, R1001
EUT Rated Voltage	AC 120V/60Hz
EUT testing Voltage	AC 100-240V / 50-60Hz
Trade Name	GIGABYTE
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2008 ANSI C63.4: 2003
Test Result	Complied



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Documented By : Genie Chang
(Senior Adm. Specialist / Genie Chang)



Tested By : Eason Hung
(Engineer / Eason Hung)



Approved By : Vincent Lin
(Manager / Vincent Lin)

Testing Laboratory
0914

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Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Touch Note
Trade Name	GIGABYTE
Model No.	T1000, T1000X, T1000E, T1000P, R1001
FCC ID.	JCK-T1000
Frequency Range	2412-2462MHz for 802.11b/g/n-20BW, 2422-2452MHz for 802.11n-40BW
Number of Channels	802.11b/g/n-20MHz: 11, n-40MHz: 7
Data Speed	802.11b: 1-11Mbps, 802.11g: 6-54Mbps, 802.11n: 7.2-150Mbps
Type of Modulation	802.11b:DSSS (DBPSK, DQPSK, CCK) 802.11g/n:OFDM (BPSK, QPSK, 16QAM, 64QAM)
Antenna Type	PIFA
Antenna Gain	Refer to the table "Antenna List"
Channel Control	Auto
Power Cable	Non-Shielded, 1.8m
Power Adapter	MFR: FSP, M/N: FSP040-RAC Input: AC 100-240V, 50-60Hz, 1.5A Output: DC 19V, 2.1A Cable out: Shielded, 1.8mwith one ferrite core bonded.
Contain Module	AzureWave / AW-NE785H

Antenna List

No.	Manufacturer	Part No.	Peak Gain
1	ARISTOTLE	RFA-02-P24-70-305-L RFA-02-P24-70B-340-R	0.88dBi for 2.4GHz

Note: The antenna of EUT is conform to FCC 15.203

802.11b/g/n-20MHz Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01:	2412 MHz	Channel 02:	2417 MHz	Channel 03:	2422 MHz	Channel 04:	2427 MHz
Channel 05:	2432 MHz	Channel 06:	2437 MHz	Channel 07:	2442 MHz	Channel 08:	2447 MHz
Channel 09:	2452 MHz	Channel 10:	2457 MHz	Channel 11:	2462 MHz		

802.11n-40MHz Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01:	2422 MHz	Channel 02:	2427 MHz	Channel 03:	2432 MHz	Channel 04:	2437 MHz
Channel 05:	2442 MHz	Channel 06:	2447 MHz	Channel 07:	2452 MHz		

Note:

1. The EUT is a Touch Note, Contains functions and so on WiFi and Bluetooth, this report for WiFi.
2. The EUT is including five models for different marketing requirement.
3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
4. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11b is 1Mbps 、802.11g is 6Mbps 、802.11n(20M-BW) is 7.2Mbps and 、802.11n(40M-BW) is 15Mbps)
5. These tests are conducted on a sample for the purpose of demonstrating compliance of 802.11b/g/n transmitter with Part 15 Subpart C Paragraph 15.247 of spread spectrum devices
6. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

1.2. Operational Description

The EUT is a Touch Note with 11 channels. This device provided four kinds of transmitting speed 1, 2, 5.5 and 11Mbps and the device of RF carrier is DBPSK, DQPSK and CCK (IEEE 802.11b). The device provided of eight kinds of transmitting speed 6, 9, 12, 18, 24, 36, 48 and 54Mbps the device of RF carrier is BPSK, QPSK, 16QAM and 64QAM (IEEE 802.11g).

The device provided of eight kinds of transmitting speed 7.2,14.4,21.7,28.9,43.3,57.8,65 and 72.2Mbps in 802.11n(20M-BW) mode and 15,30,45,60,90,120,135 and 150 Mbps(40M-BW) the device of RF carrier is BPSK, QPSK, 16QAM and 64QAM (IEEE 802.11n), The IEEE 802.11n is Multiple In, Single Out” (MISO) technology and two antennas to support 1(Transmit) * 2(Receive) MISO technology.

This Touch Note, compliant with IEEE 802.11b and IEEE 802.11g/n, is a high-efficiency Wireless LAN adapter. It allows your computer to connect to a wireless network and to share resources, such as files or printers without being bound to the network wires. Operation in 2.4GHz Direct Sequence Spread Spectrum (DSSS) and Orthogonal Frequency Division Multiplexing (OFDM) radio transmission, the Touch Note Wired Equivalent Protection (WEP) algorithm is used. In addition, its standard compliance ensures that it can communicate with any IEEE 802.11b and IEEE 802.11g/n network.

Test Mode:	Mode 1: Transmit (802.11b 1Mbps)
	Mode 2: Transmit (802.11g 6Mbps)
	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)
	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

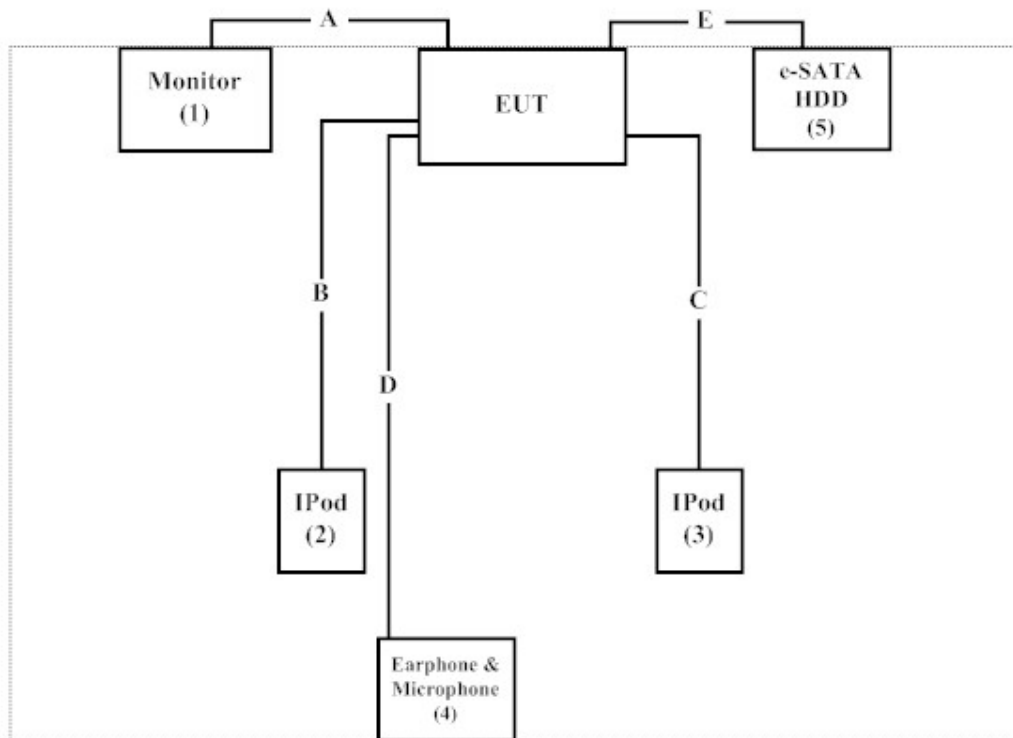
1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1 LCD Monitor	CMV	CT-730D	FNC122F57BA1655	DoC	Non-Shielded, 1.8m
2 iPod nano	Apple	A1199	SU7047UXVQ5	N/A	N/A
3 iPod nano	Apple	A1199	YM709R27VQ5	N/A	N/A
4 Microphone & Earphone	PCHOME	N/A	N/A	N/A	N/A
5 SATA HDD	Onnto	ST-M10	A01926-F03-0006	DoC	Non-Shielded, 1.8m With Core*1

Signal Cable Type	Signal cable Description
A VGA Cable	Non-Shielded, 1.8m
B iPod Cable	Non-Shielded, 0.8m
C iPod Cable	Non-Shielded, 0.8m
D Earphone & Microphone Cable	Non-Shielded, 2.0m
E e-SATA Cable	Non-Shielded, 0.8m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown in Section 1.4.
- (2) Execute “ART tool.exe”(Ver 0_9_b7_ar28x) on the EUT.
- (3) Configure the test mode, the test channel, and the data rate.
- (4) Press “OK” to start the continuous Transmit.
- (5) Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from Quietek Corporation’s Web Site : <http://tw.quietek.com/modules/myalbum/>
 The address and introduction of Quietek Corporation’s laboratories can be founded in our Web site : <http://www.quietek.com/>

Site Description: File on
 Federal Communications Commission
 FCC Engineering Laboratory
 7435 Oakland Mills Road
 Columbia, MD 21046
 Registration Number: 92195



Accreditation on NVLAP
 NVLAP Lab Code: 200533-0



Site Name: Quietek Corporation
 Site Address: No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,
 Lin-Kou Shiang, Taipei,
 Taiwan, R.O.C.
 TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
 E-Mail : service@quietek.com

FCC Accreditation Number: TW1014



2. Conducted Emission

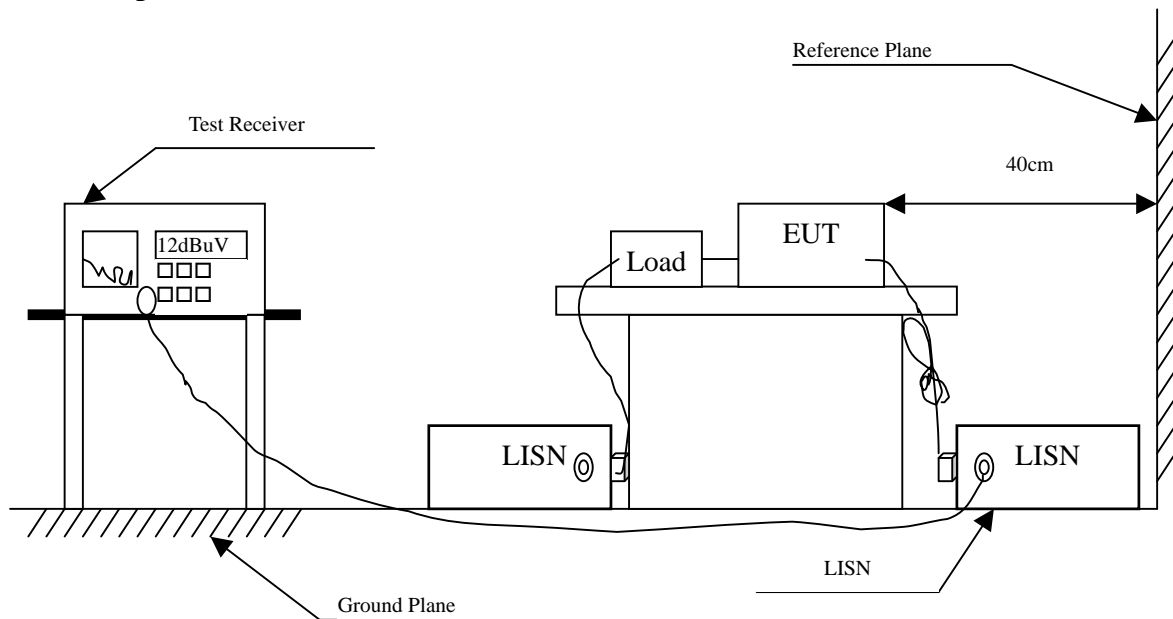
2.1. Test Equipment

The following test equipment are used during the conducted emission test:

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal.	Remark
1	Test Receiver	R & S	ESCS 30/825442/17	May, 2009	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 2009	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 2009	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	May, 2009	
5	No.1 Shielded Room			N/A	

Note: All instruments are calibrated every one year.

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit		
Frequency MHz	Limits	
	QP	AVG
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.5. Uncertainty

± 2.26 dB

2.6. Test Result of Conducted Emission

Product : Touch Note
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
Line 1					
Quasi-Peak					
0.209	9.701	29.660	39.361	-24.953	64.314
0.338	9.650	21.530	31.180	-29.449	60.629
0.986	9.670	24.480	34.150	-21.850	56.000
4.908	9.700	14.740	24.440	-31.560	56.000
8.568	9.800	12.470	22.270	-37.730	60.000
11.795	9.870	14.360	24.230	-35.770	60.000
Average					
0.209	9.701	5.370	15.071	-39.243	54.314
0.338	9.650	5.240	14.890	-35.739	50.629
0.986	9.670	5.140	14.810	-31.190	46.000
4.908	9.700	4.470	14.170	-31.830	46.000
8.568	9.800	3.520	13.320	-36.680	50.000
11.795	9.870	6.910	16.780	-33.220	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. "■" means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Touch Note
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
Line 2					
Quasi-Peak					
0.170	9.743	33.560	43.303	-22.126	65.429
0.377	9.650	20.290	29.940	-29.574	59.514
0.728	9.654	22.220	31.874	-24.126	56.000
0.990	9.670	25.650	35.320	-20.680	56.000
3.849	9.700	16.870	26.570	-29.430	56.000
6.349	9.730	14.090	23.820	-36.180	60.000
Average					
0.170	9.743	17.770	27.513	-27.916	55.429
0.377	9.650	-0.520	9.130	-40.384	49.514
0.728	9.654	4.150	13.804	-32.196	46.000
0.990	9.670	5.090	14.760	-31.240	46.000
3.849	9.700	5.880	15.580	-30.420	46.000
6.349	9.730	5.490	15.220	-34.780	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. "■" means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

3. Peak Power Output

3.1. Test Equipment

The following test equipments are used during the radiated emission tests:

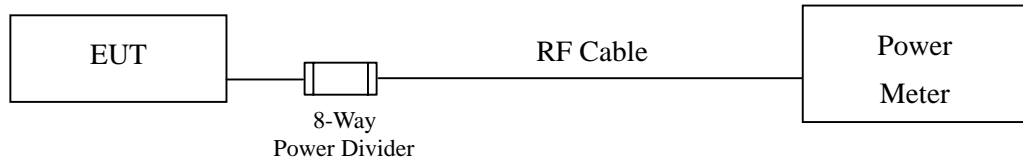
	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Power Meter	Anritsu	ML2495A/6K00003357	May, 2009
X	Power Sensor	Anritsu	MA2411B/0738448	Jun, 2009
X	8-WAY Power Divider	JFW	50PD-647 / 526770 0916	Apr., 2009

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.
3. The power combiner is used for measure 11n mode.

3.2. Test Setup

Conducted Measurement



3.3. Limits

The maximum peak power shall be less 1 Watt.

3.4. Test Procedure

The EUT was tested according to DTS test procedure of Mar. 2005 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

3.5. Uncertainty

± 1.27 dB

3.6. Test Result of Peak Power Output

Product : Touch Note
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel No	Frequency (MHz)	Peak Power Output (dBm)						Required Limit	Result
		Average Power For different Data Rate (Mbps)				Peak Power			
		1	2	5.5	11				
01	2412	16.8	--	--	--	18.06	<30dBm	Pass	
06	2437	16.76	16.33	16.15	15.91	18.12	<30dBm	Pass	
11	2462	16.7	--	--	--	18.34	<30dBm	Pass	

Note: Peak Power Output Value = Reading value on peak power meter + cable loss

Product : Touch Note
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Channel No	Frequency (MHz)	Peak Power Output (dBm)										
		Average Power								Peak Power	Required Limit	Result
		For different Data Rate (Mbps)										
6	9	12	18	24	36	48	54	6				
01	2412	16.2	--	--	--	--	--	--	--	23.34	<30dBm	Pass
06	2437	15.82	15.62	15.41	15.25	15.12	14.89	14.62	14.33	23.41	<30dBm	Pass
11	2462	15.86	--	--	--	--	--	--	--	23.26	<30dBm	Pass

Note: Peak Power Output Value = Reading value on peak power meter + cable loss

Product : Touch Note
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Channel No	Frequency (MHz)	Peak Power Output (dBm)										
		Average Power								Peak Power	Required Limit	Result
		For different Data Rate (Mbps)										
7.2	14.4	21.7	28.9	43.3	57.8	65	72	7.2				
01	2412	14.71	--	--	--	--	--	--	--	22.21	<30dBm	Pass
06	2437	14.84	14.61	14.35	14.17	14.03	13.81	13.6	13.36	22.46	<30dBm	Pass
11	2462	14.68	--	--	--	--	--	--	--	22.33	<30dBm	Pass

Note: Peak Power Output Value = Reading value on peak power meter + cable loss

Product : Touch Note
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

Channel No	Frequency (MHz)	Peak Power Output (dBm)										
		Average Power								Peak Power	Required Limit	Result
		For different Data Rate (Mbps)										
15	30	45	60	90	120	135	150	15				
01	2422	11.85	--	--	--	--	--	--	--	20.17	<30dBm	Pass
04	2437	11.93	11.61	11.38	11.08	10.86	10.6	10.27	10.02	20.65	<30dBm	Pass
07	2452	11.72	--	--	--	--	--	--	--	20.34	<30dBm	Pass

Note: Peak Power Output Value = Reading value on peak power meter + cable loss

4. Radiated Emission

4.1. Test Equipment

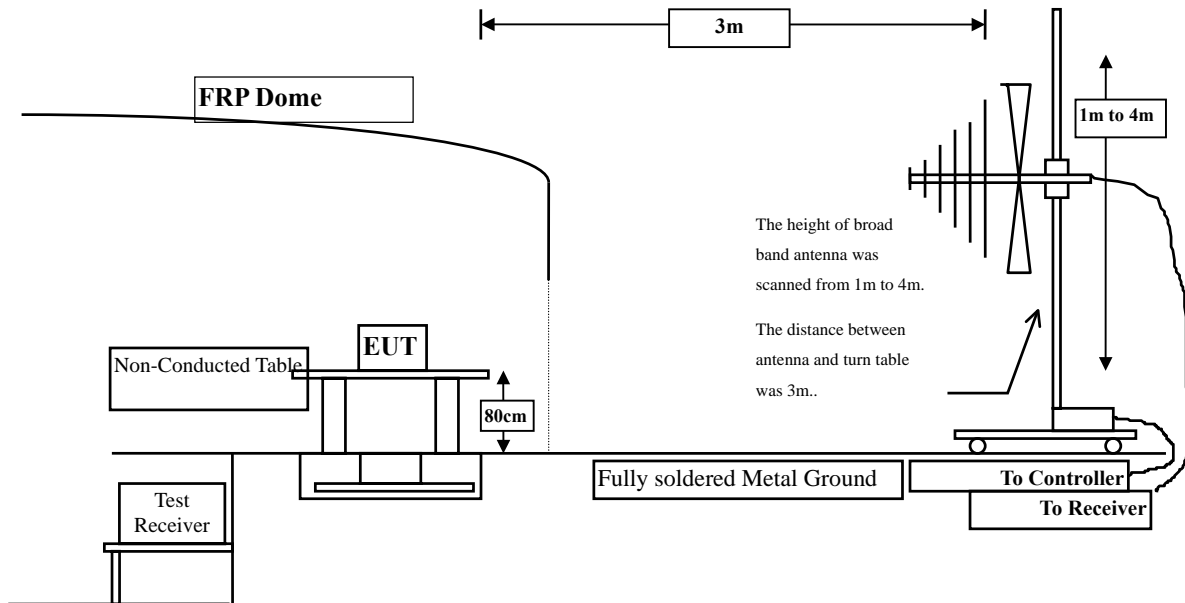
The following test equipment are used during the radiated emission test:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒ Site # 3	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2009
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2009
	X	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2009
	X	Pre-Amplifier	Agilent	8447D/2944A09549	Sep., 2009
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2009
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2009
	X	Coaxial Cable	Quietek	QTK-CABLE/ CAB5	Feb., 2010
	X	Controller	Quietek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

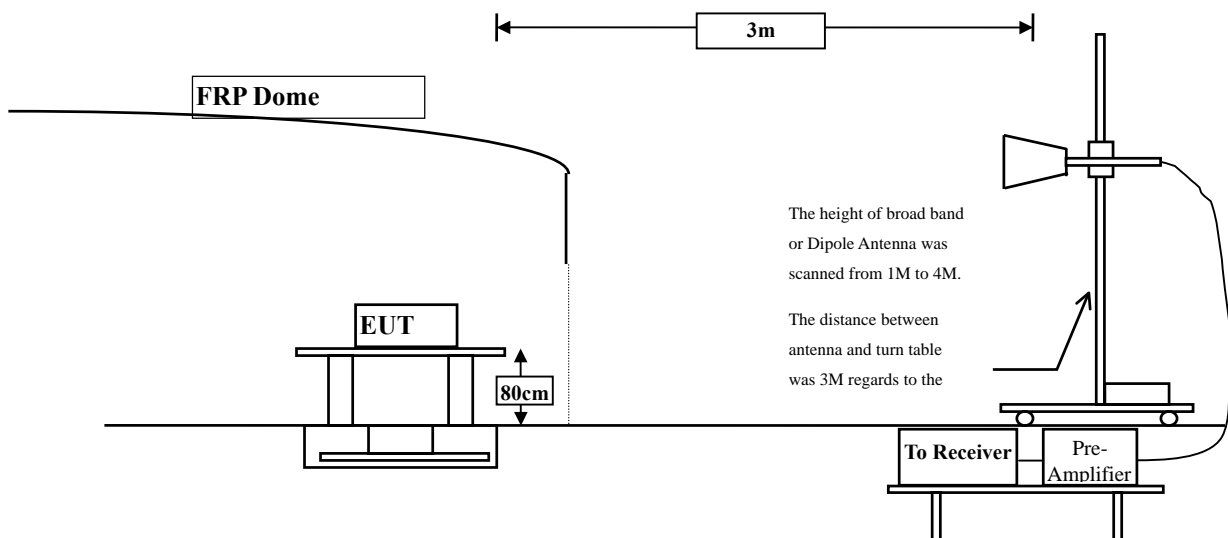
- Note:
1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
 2. The test instruments marked with “X” are used to measure the final test results.

4.2. Test Setup

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



4.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209(a) Limits		
Frequency MHz	uV/m @3m	dBuV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks: E field strength (dBuV/m) = 20 log E field strength (uV/m)

4.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Mar. 2005 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2003 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.

The frequency range from 30MHz to 10th harmonics is checked.

4.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

4.6. Test Result of Radiated Emission

Product : Touch Note
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.478	44.220	47.698	-26.302	74.000
7236.000	7.874	48.350	56.224	-17.776	74.000
9648.000	13.283	39.770	53.053	-20.947	74.000
Average Detector:					
7236.000	7.874	42.590	50.464	-3.536	54.000
Vertical					
Peak Detector:					
4824.000	3.570	43.560	47.130	-26.870	74.000
7236.000	8.819	47.230	56.049	-17.951	74.000
9648.000	13.761	39.680	53.440	-20.560	74.000
Average Detector:					
7236.000	8.819	41.320	50.139	-3.861	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Touch Note
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.100	43.350	46.450	-27.550	74.000
7311.000	7.417	41.560	48.977	-25.023	74.000
9748.000	13.322	39.400	52.722	-21.278	74.000

**Average
Detector:**

--

Vertical

Peak Detector:

4874.000	3.574	41.970	45.544	-28.456	74.000
7311.000	8.230	44.920	53.150	-20.850	74.000
9748.000	13.421	39.020	52.441	-21.559	74.000

**Average
Detector:**

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Touch Note
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4924.000	3.364	41.489	44.853	-29.147	74.000
7386.000	6.624	38.520	45.144	-28.856	74.000
9848.000	13.631	38.850	52.480	-21.520	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	4.221	41.100	45.321	-28.679	74.000
7386.000	7.305	39.850	47.155	-26.845	74.000
9848.000	13.600	39.870	53.470	-20.530	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Touch Note
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.478	41.490	44.968	-29.032	74.000
7236.000	7.874	49.450	57.324	-16.676	74.000
9648.000	13.283	39.480	52.763	-21.237	74.000
Average Detector:					
7236.000	7.874	33.730	41.604	-12.396	54.000
Vertical					
Peak Detector:					
4824.000	3.570	42.150	45.720	-28.280	74.000
7236.000	8.819	48.450	57.269	-16.731	74.000
9648.000	13.761	40.560	54.320	-19.680	74.000
Average Detector:					
7236.000	8.819	34.200	43.019	-10.981	54.000
9648.000	13.761	22.330	36.090	-17.910	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Touch Note
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.100	41.920	45.020	-28.980	74.000
7311.000	7.417	47.650	55.067	-18.933	74.000
9748.000	13.322	40.870	54.192	-19.808	74.000
Average Detector:					
7311.000	7.417	31.920	39.337	-14.663	54.000
9748.000	13.322	25.220	38.542	-15.458	54.000
Peak Detector:					
4874.000	3.574	41.600	45.174	-28.826	74.000
7311.000	8.230	44.130	52.360	-21.640	74.000
9748.000	13.421	39.890	53.311	-20.689	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Touch Note
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4924.000	3.364	40.870	44.234	-29.766	74.000
7386.000	6.624	43.810	50.434	-23.566	74.000
9848.000	13.631	39.680	53.310	-20.690	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	4.221	41.210	45.431	-28.569	74.000
7386.000	7.305	45.700	53.005	-20.995	74.000
9848.000	13.600	39.400	53.000	-21.000	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Touch Note
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW+Bluetooth 1Mbps)(2412MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4804.000	3.621	38.301	41.923	-32.077	74.000
4824.000	3.478	41.350	44.828	-29.172	74.000
7206.000	8.077	40.983	49.059	-24.941	74.000
7236.000	7.874	42.640	50.514	-23.486	74.000
9608.000	13.050	39.102	52.151	-21.849	74.000
9648.000	13.283	39.810	53.093	-20.907	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4804.000	3.584	41.688	45.273	-28.727	74.000
4824.000	3.570	40.990	44.560	-29.440	74.000
7206.000	9.075	38.121	47.196	-26.804	74.000
7236.000	8.819	39.590	48.409	-25.591	74.000
9608.000	13.675	38.737	52.411	-21.589	74.000
9648.000	13.761	39.490	53.250	-20.750	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Touch Note
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW+Bluetooth 1Mbps)(2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBUV	Measurement Level dBUV/m	Margin dB	Limit dBUV/m
Horizontal					
Peak Detector:					
4874.000	3.100	40.150	43.250	-30.750	74.000
4882.000	3.070	40.756	43.826	-30.174	74.000
7311.000	7.417	42.690	50.107	-23.893	74.000
7323.000	7.263	41.195	48.458	-25.542	74.000
9748.000	13.322	38.810	52.132	-21.868	74.000
9764.000	13.377	39.404	52.781	-21.219	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	3.574	40.090	43.664	-30.336	74.000
4882.000	3.606	40.731	44.337	-29.663	74.000
7311.000	8.230	43.330	51.560	-22.440	74.000
7323.000	8.055	40.731	48.786	-25.214	74.000
9748.000	13.421	40.220	53.641	-20.359	74.000
9764.000	13.420	39.393	52.813	-21.187	
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Touch Note
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW+Bluetooth 1Mbps)(2462 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4924.000	3.364	41.110	44.474	-29.526	74.000
4960.000	3.752	41.010	44.762	-29.238	74.000
7386.000	6.624	41.250	47.874	-26.126	74.000
7440.000	7.159	40.398	47.557	-26.443	74.000
9848.000	13.631	40.000	53.630	-20.370	74.000
9920.000	13.637	39.267	52.904	-21.096	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	4.221	43.330	47.551	-26.449	74.000
4960.000	4.884	40.905	45.789	-28.211	74.000
7386.000	7.305	42.650	49.955	-24.045	74.000
7440.000	7.690	40.283	47.973	-26.027	74.000
9848.000	13.600	39.990	53.590	-20.410	74.000
9920.000	13.701	38.216	51.917	-22.083	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Touch Note
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW+Bluetooth 3Mbps)(2422MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4804.000	3.621	40.436	44.058	-29.942	74.000
4844.000	3.329	40.640	43.969	-30.031	74.000
7206.000	8.077	40.270	48.346	-25.654	74.000
7266.000	7.681	39.040	46.721	-27.279	74.000
9608.000	13.050	39.038	52.087	-21.913	74.000
9688.000	13.217	38.850	52.067	-21.933	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4804.000	3.584	40.294	43.879	-30.121	74.000
4844.000	3.575	39.750	43.325	-30.675	74.000
7206.000	9.075	40.765	49.840	-24.160	74.000
7266.000	8.564	39.900	48.464	-25.536	74.000
9608.000	13.675	38.767	52.441	-21.559	74.000
9688.000	13.553	39.820	53.373	-20.627	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Touch Note
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW+Bluetooth 3Mbps)(2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBUV	Measurement Level dBUV/m	Margin dB	Limit dBUV/m
Horizontal					
Peak Detector:					
4874.000	3.100	40.900	44.000	-30.000	74.000
4882.000	3.070	40.747	43.817	-30.183	74.000
7311.000	7.417	38.500	45.917	-28.083	74.000
7323.000	7.263	40.629	47.892	-26.108	74.000
9748.000	13.322	39.080	52.402	-21.598	74.000
9764.000	13.377	39.409	52.786	-21.214	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	3.574	40.380	43.954	-30.046	74.000
4882.000	3.606	40.955	44.561	-29.439	74.000
7311.000	8.230	38.550	46.780	-27.220	74.000
7323.000	8.055	40.613	48.668	-25.332	74.000
9748.000	13.421	39.340	52.761	-21.239	74.000
9764.000	13.420	39.232	52.652	-21.348	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Touch Note
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW+Bluetooth 3Mbps)(2452 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4904.000	3.145	39.600	42.745	-31.255	74.000
4960.000	3.752	40.914	44.666	-29.334	74.000
7356.000	6.664	38.850	45.513	-28.487	74.000
7440.000	7.159	40.118	47.277	-26.723	74.000
9808.000	13.495	39.600	53.095	-20.905	74.000
9920.000	13.637	39.204	52.841	-21.159	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4904.000	3.849	41.110	44.959	-29.041	74.000
4960.000	4.884	40.662	45.546	-28.454	74.000
7356.000	7.389	38.250	45.638	-28.362	74.000
7440.000	7.690	40.271	47.961	-26.039	74.000
9808.000	13.417	39.230	52.647	-21.353	74.000
9920.000	13.701	39.216	52.917	-21.083	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Touch Note
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)(2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
42.125	-6.874	38.339	31.465	-8.535	40.000
345.250	-1.492	36.699	35.207	-10.793	46.000
604.725	4.297	33.305	37.602	-8.398	46.000
767.200	5.099	33.518	38.617	-7.383	46.000
968.475	7.335	38.935	46.270	-7.730	54.000
1000.000	9.565	31.611	41.176	-12.824	54.000
Vertical					
30.000	-3.019	36.134	33.115	-6.885	40.000
102.750	-5.340	41.961	36.621	-6.879	43.500
211.875	-5.729	39.602	33.873	-9.627	43.500
415.575	-6.277	44.101	37.824	-8.176	46.000
553.800	-1.921	38.578	36.657	-9.343	46.000
825.400	3.016	32.824	35.840	-10.160	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Touch Note
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)(2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
39.700	-3.630	36.732	33.102	-6.898	40.000
265.225	-5.502	38.751	33.249	-12.751	46.000
345.250	-1.492	35.896	34.404	-11.596	46.000
468.925	3.597	32.276	35.873	-10.127	46.000
607.150	4.062	33.559	37.621	-8.379	46.000
968.475	7.335	37.297	44.632	-9.368	54.000
Vertical					
30.000	-3.019	36.631	33.612	-6.388	40.000
110.025	-3.446	40.144	36.699	-6.801	43.500
345.250	-0.462	40.807	40.345	-5.655	46.000
553.800	-1.921	41.339	39.418	-6.582	46.000
692.025	2.003	35.674	37.677	-8.323	46.000
968.475	3.920	35.552	39.472	-14.528	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Touch Note
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW+Bluetooth 1Mbps)(2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
31.940	-0.513	33.915	33.402	-6.598	40.000
322.940	-4.535	43.671	39.136	-6.864	46.000
499.480	1.991	29.748	31.739	-14.261	46.000
623.640	1.606	35.808	37.414	-8.586	46.000
831.220	7.121	32.005	39.126	-6.874	46.000
1000.000	9.565	31.798	41.363	-12.637	54.000
Vertical					
38.920	-12.197	46.946	34.750	-5.250	40.000
268.980	-6.326	36.176	29.850	-16.150	46.000
499.230	-0.257	36.407	36.150	-9.850	46.000
702.550	-0.588	38.757	38.170	-7.830	46.000
917.050	0.007	34.803	34.810	-11.190	46.000
997.260	-1.275	43.335	42.060	-11.940	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Touch Note
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW+Bluetooth 3Mbps)(2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
224.000	-10.070	44.694	34.624	-11.376	46.000
452.920	1.293	36.964	38.257	-7.743	46.000
623.640	1.606	37.171	38.777	-7.223	46.000
720.640	3.825	32.626	36.452	-9.548	46.000
761.380	5.144	34.355	39.499	-6.501	46.000
1000.000	9.565	30.364	39.929	-14.071	54.000
Vertical					
379.200	0.880	38.617	39.497	-6.503	46.000
497.540	-0.712	35.987	35.275	-10.725	46.000
666.320	-0.951	38.114	37.163	-8.837	46.000
761.380	1.924	34.084	36.008	-9.992	46.000
864.200	-0.292	33.131	32.839	-13.161	46.000
1000.000	-1.165	33.876	32.711	-21.289	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

5. RF antenna conducted test

5.1. Test Equipment

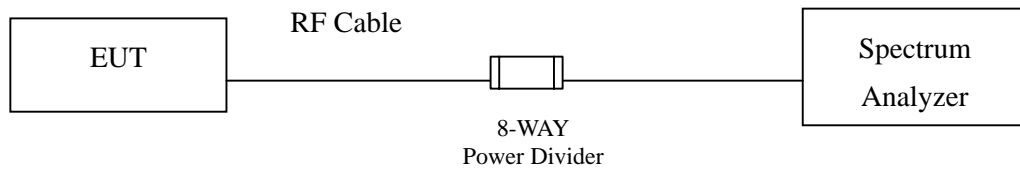
The following test equipments are used during the radiated emission tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2009
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2009
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2009
X	8-WAY Power Divider	JFW	50PD-647 / 526770 0916	Apr., 2009

- Note:
1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
 2. The test instruments marked with “X” are used to measure the final test results.
 3. The power combiner is used for measure 11n mode.

5.2. Test Setup

RF antenna Conducted Measurement:



5.3. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.4. Test Procedure

The EUT was tested according to DTS test procedure of Mar. 2005 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Set VBW > RBW, scan up through 10th harmonic.

5.5. Uncertainty

The measurement uncertainty

Conducted is defined as $\pm 1.27\text{dB}$

5.6. Test Result of RF antenna conducted test

Product : Touch Note
 Test Item : RF antenna conducted test
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel 01 (2412MHz) 30-25GHz



Channel 06 (2437MHz) 30-25GHz



Channel 11 (2462MHz) 30-25GHz



Product : Touch Note
 Test Item : RF Antenna Conducted Spurious
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Channel 01 (2412MHz) 30-25GHz



Channel 06 (2437MHz) 30-25GHz



Channel 11 (2462MHz) 30-25GHz

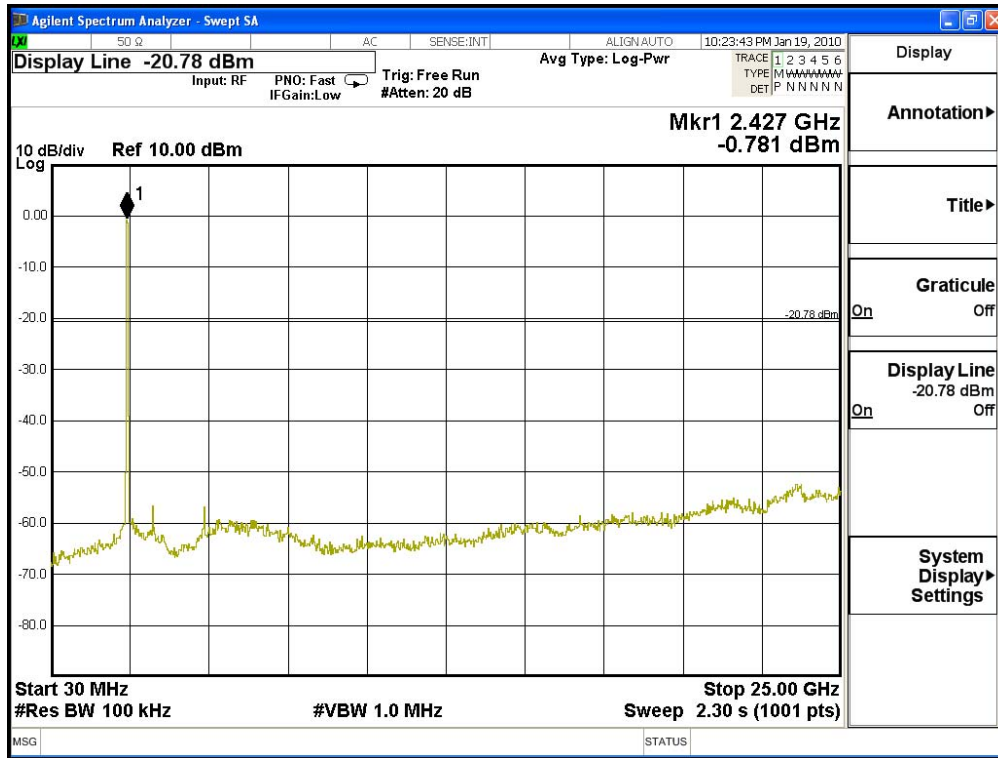


Product : Touch Note
 Test Item : RF Antenna Conducted Spurious
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Channel 01 (2412MHz) 30-25GHz



Channel 06 (2437MHz) 30-25GHz



Channel 11 (2462MHz) 30-25GHz

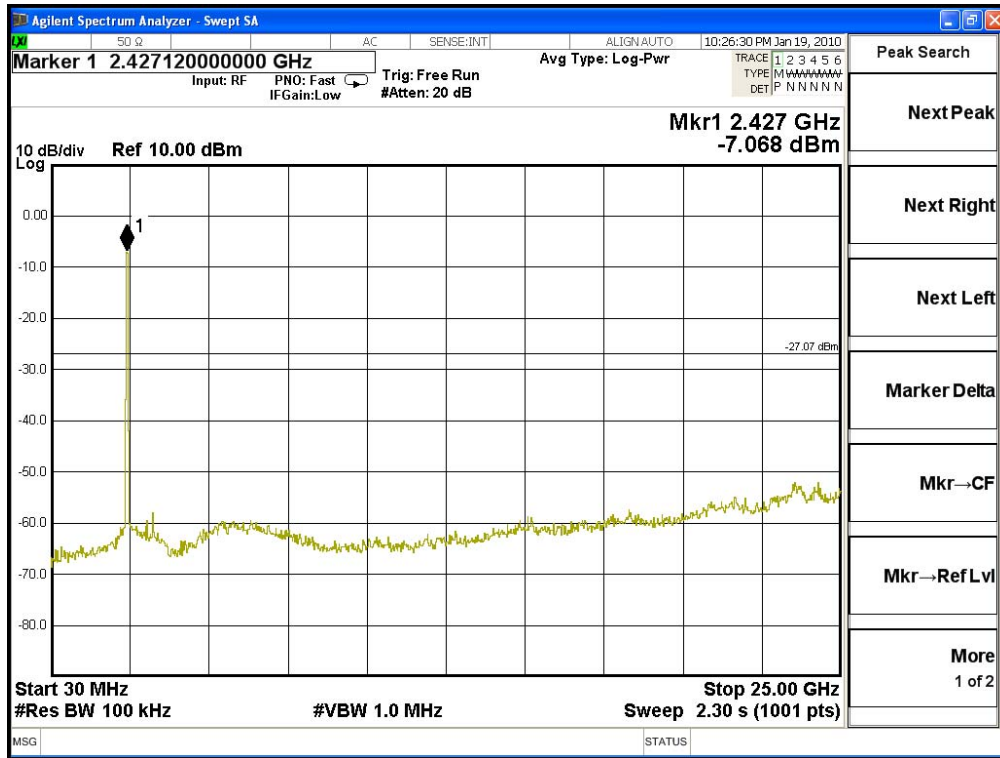


Product : Touch Note
 Test Item : RF Antenna Conducted Spurious
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

Channel 01 (2422MHz) 30-25GHz



Channel 04 (2437MHz) 30-25GHz



Channel 07 (2452MHz) 30-25GHz



6. Band Edge

6.1. Test Equipment

RF Conducted Measurement

The following test equipments are used during the band edge tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2009
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2009
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr.,2009
X	8-WAY Power Divider	JFW	50PD-647 / 526770 0916	Apr., 2009

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.
3. The power combiner is used for measure 11n mode.

RF Radiated Measurement:

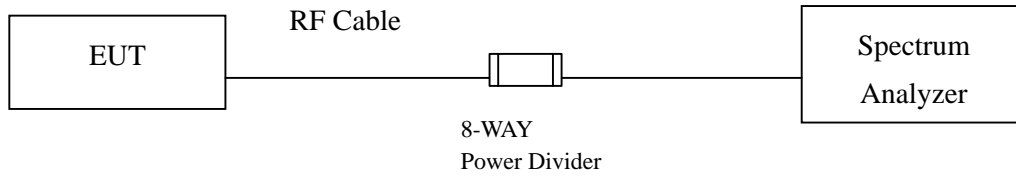
The following test equipments are used during the band edge tests:

Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒ Site # 3	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2009
	X Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2009
	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2009
	X Pre-Amplifier	Agilent	8447D/2944A09549	Sep., 2009
	X Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2009
	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2009
	X Coaxial Cable	Quietek	QTK-CABLE/ CAB5	Feb., 2010
	X Controller	Quietek	QTK-CONTROLLER/ CTRL3	N/A
	X Coaxial Switch	Anritsu	MP59B/6200265729	N/A

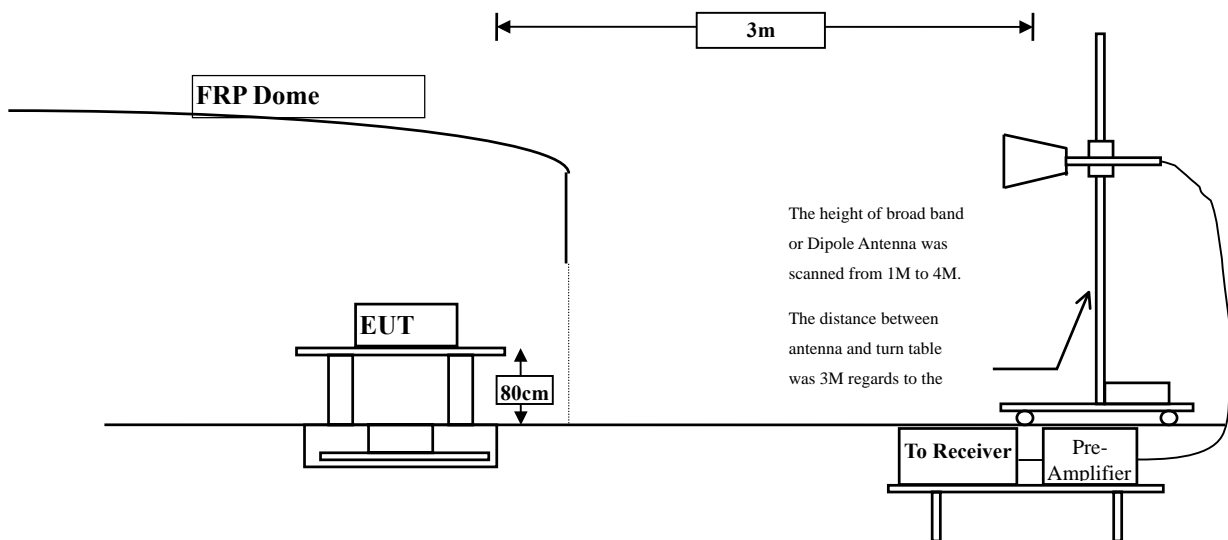
- Note:
1. All instruments are calibrated every one year.
 2. The test instruments marked by “X” are used to measure the final test results.

6.2. Test Setup

RF Conducted Measurement



RF Radiated Measurement:



6.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

6.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Mar. 2005 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2003 on radiated measurement.

6.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

6.6. Test Result of Band Edge

Product : Touch Note
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2412	36.04	66.51	102.551	Peak
Horizontal	2412	36.04	62.65	98.691	Average
Vertical	2412	35.277	61	96.278	Peak
Vertical	2412	35.277	57.04	92.318	Average

Note: 1: Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz

Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Detector
Horizontal	2390	102.551	52.417	50.134	Peak
Horizontal	2389.7	98.691	59.975	38.716	Average
Vertical	2390	96.278	52.417	43.861	Peak
Vertical	2389.7	92.318	59.975	32.343	Average

Note:

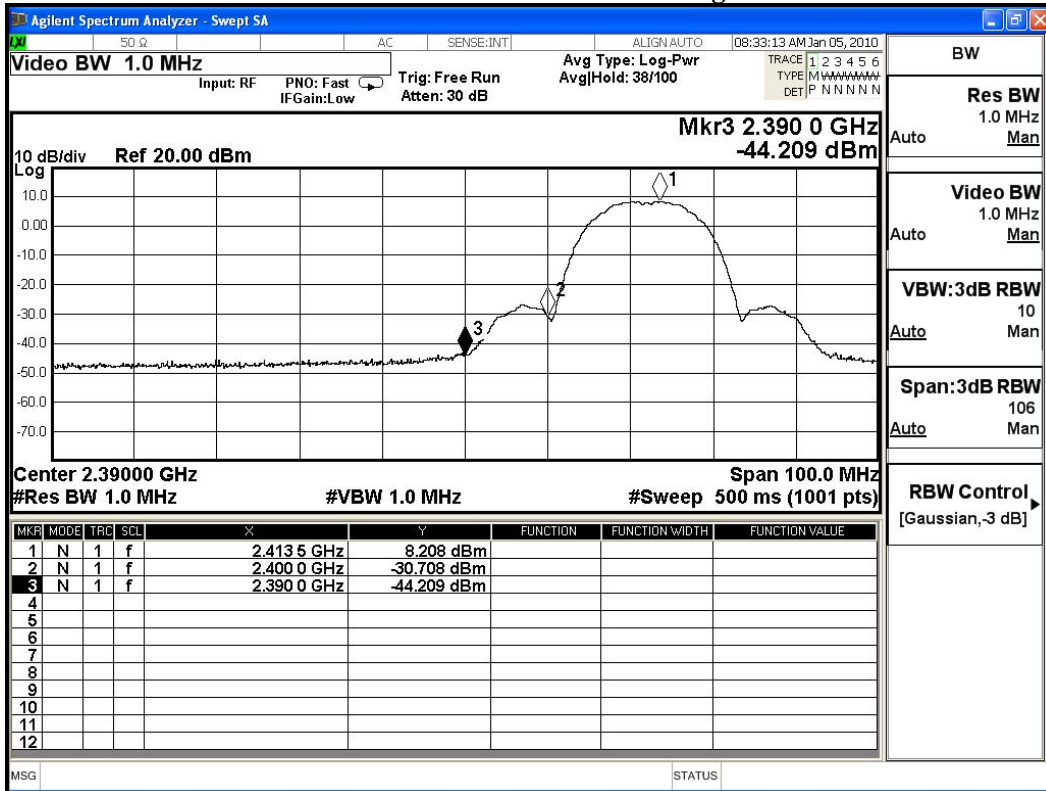
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

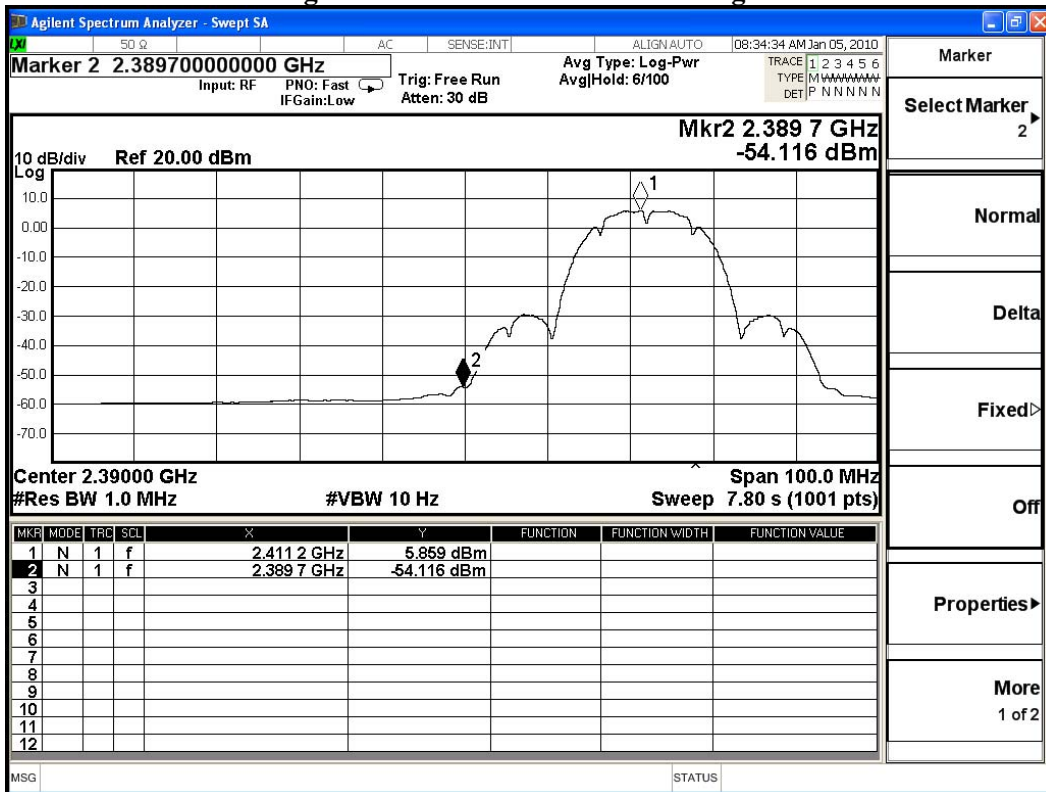
F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

Peak Detector of conducted Band Edge Delta



Average Detector of conducted Band Edge Delta



Product : Touch Note
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2462	36.355	62.28	98.635	Peak
Horizontal	2462	36.355	58.78	95.135	Average
Vertical	2462	35.925	58.28	94.205	Peak
Vertical	2462	35.925	54.64	90.565	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz

Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Detector
Horizontal	2483.6	98.635	52.069	46.566	Peak
Horizontal	2483.5	95.135	60.555	34.58	Average
Vertical	2483.6	94.205	52.069	42.136	Peak
Vertical	2483.5	90.565	60.555	30.01	Average

Note:

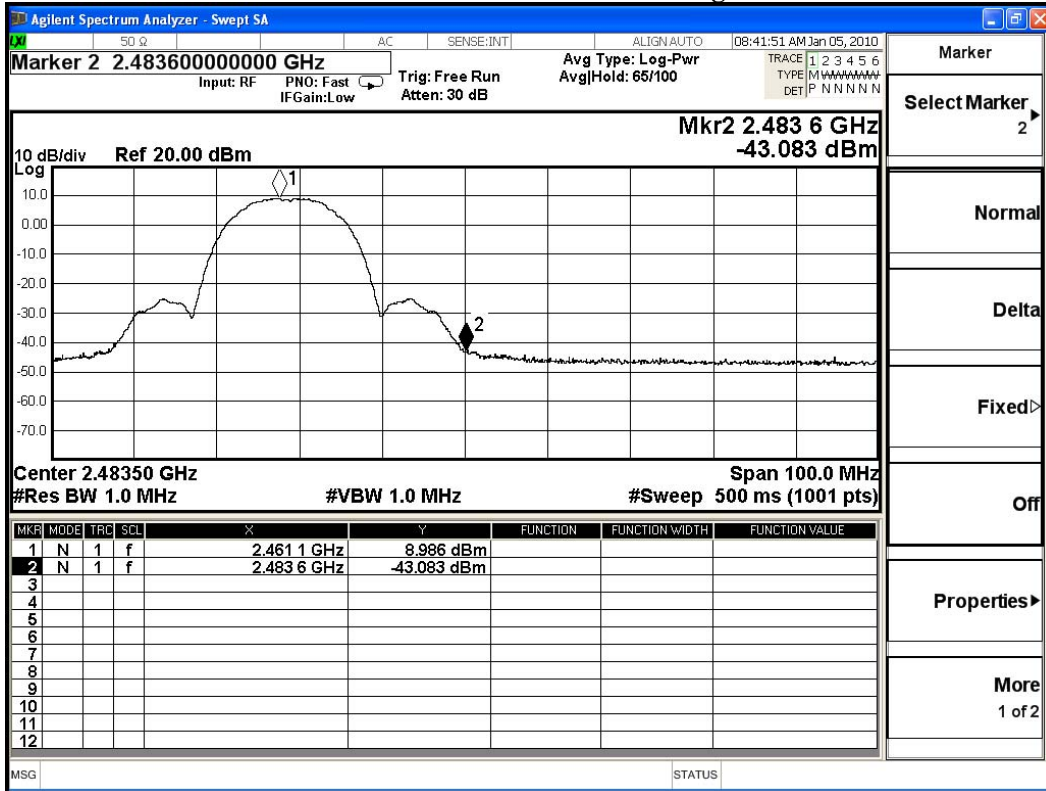
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

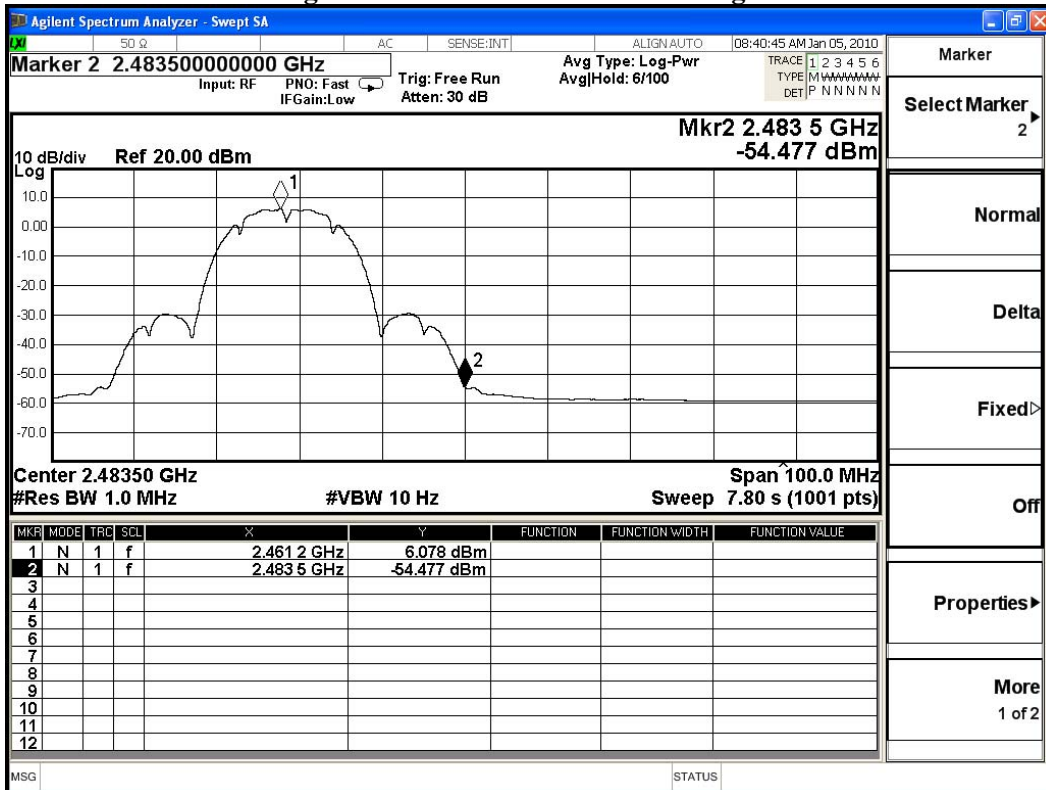
F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

Peak Detector of conducted Band Edge Delta



Average Detector of conducted Band Edge Delta



Product : Touch Note
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2412	36.04	68.22	104.261	Peak
Horizontal	2412	36.04	58.38	94.421	Average
Vertical	2412	35.277	63.3	98.578	Peak
Vertical	2412	35.277	52.69	87.968	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz

Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Detector
Horizontal	2389.7	104.261	39.416	64.845	Peak
Horizontal	2390	94.421	47.454	46.967	Average
Vertical	2389.7	98.578	39.416	59.162	Peak
Vertical	2390	87.968	47.454	40.514	Average

Note:

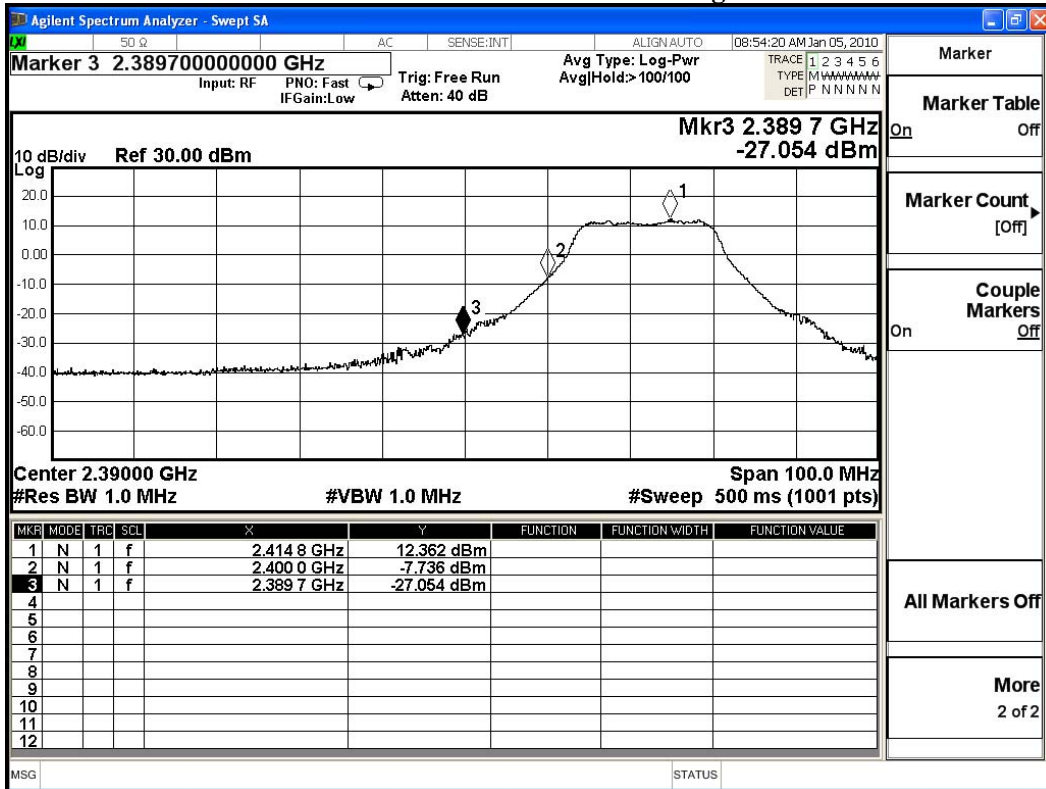
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

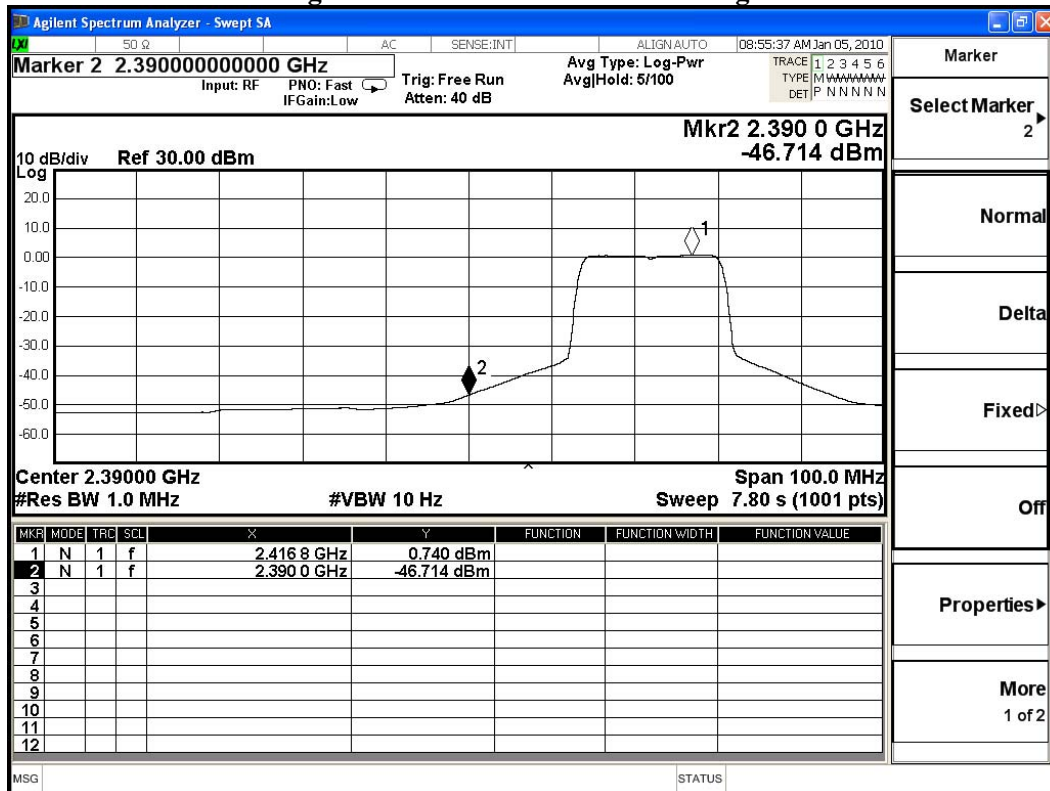
F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

Peak Detector of conducted Band Edge Delta



Average Detector of conducted Band Edge Delta



Product : Touch Note
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2462	36.355	67.17	103.525	Peak
Horizontal	2462	36.355	56.3	92.655	Average
Vertical	2462	35.925	60.58	96.505	Peak
Vertical	2462	35.277	52.69	87.968	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz

Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Detector
Horizontal	2483.6	103.525	38.115	65.41	Peak
Horizontal	2483.5	92.655	45.407	47.248	Average
Vertical	2483.6	96.505	38.115	58.39	Peak
Vertical	2483.5	87.968	45.407	42.561	Average

Note:

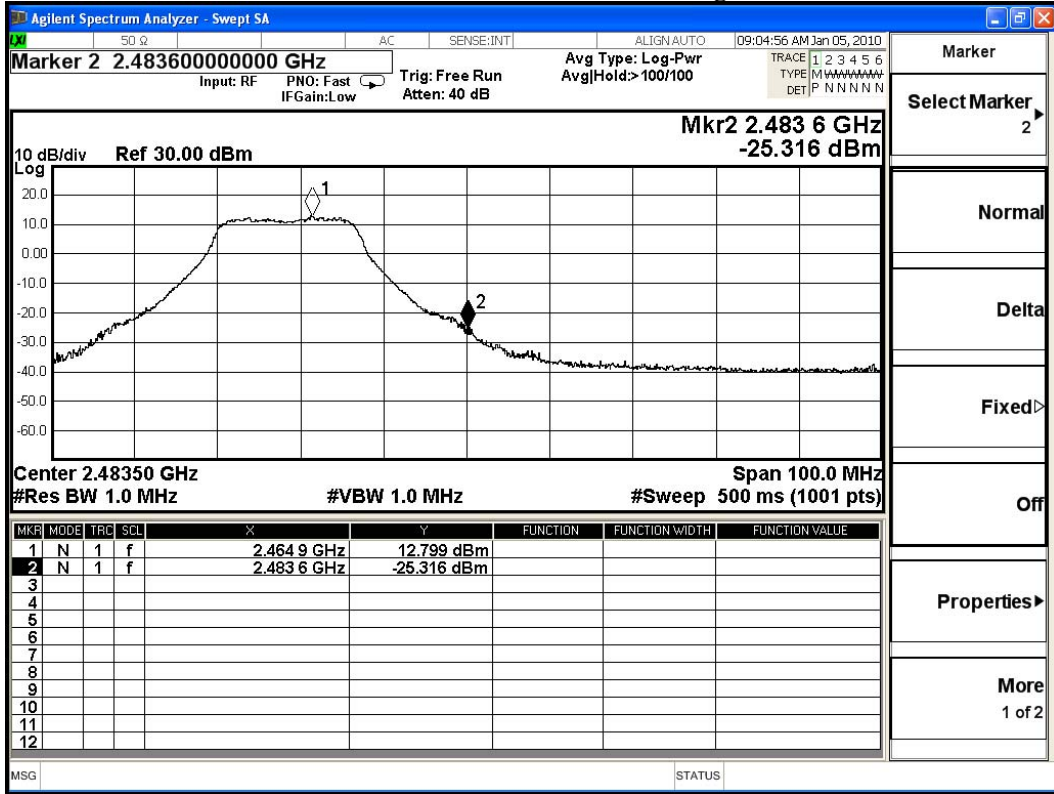
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

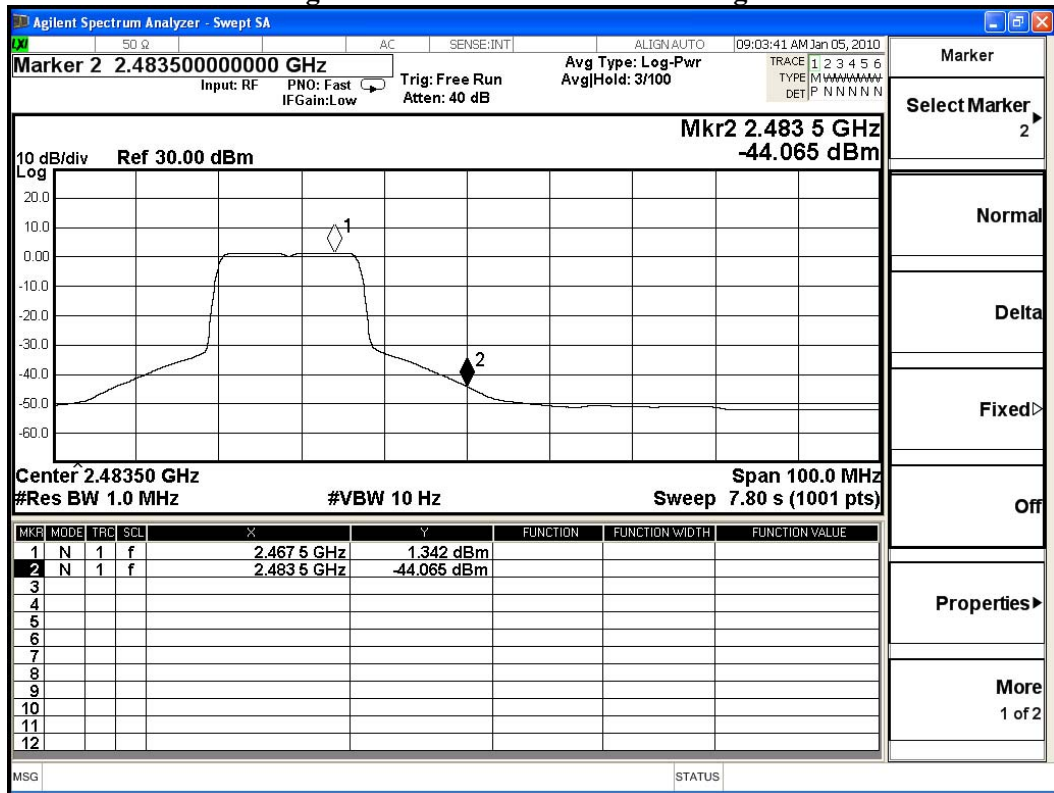
F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

Peak Detector of conducted Band Edge Delta



Average Detector of conducted Band Edge Delta



Product : Touch Note
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2412	36.04	67.09	103.131	Peak
Horizontal	2412	36.04	56.42	92.461	Average
Vertical	2412	35.277	63.53	98.808	Peak
Vertical	2412	35.277	52.1	87.378	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz

Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Detector
Horizontal	2389.5	103.131	37.836	65.295	Peak
Horizontal	2390	92.461	45.864	46.597	Average
Vertical	2389.5	98.808	37.836	60.972	Peak
Vertical	2390	87.378	45.864	41.514	Average

Note:

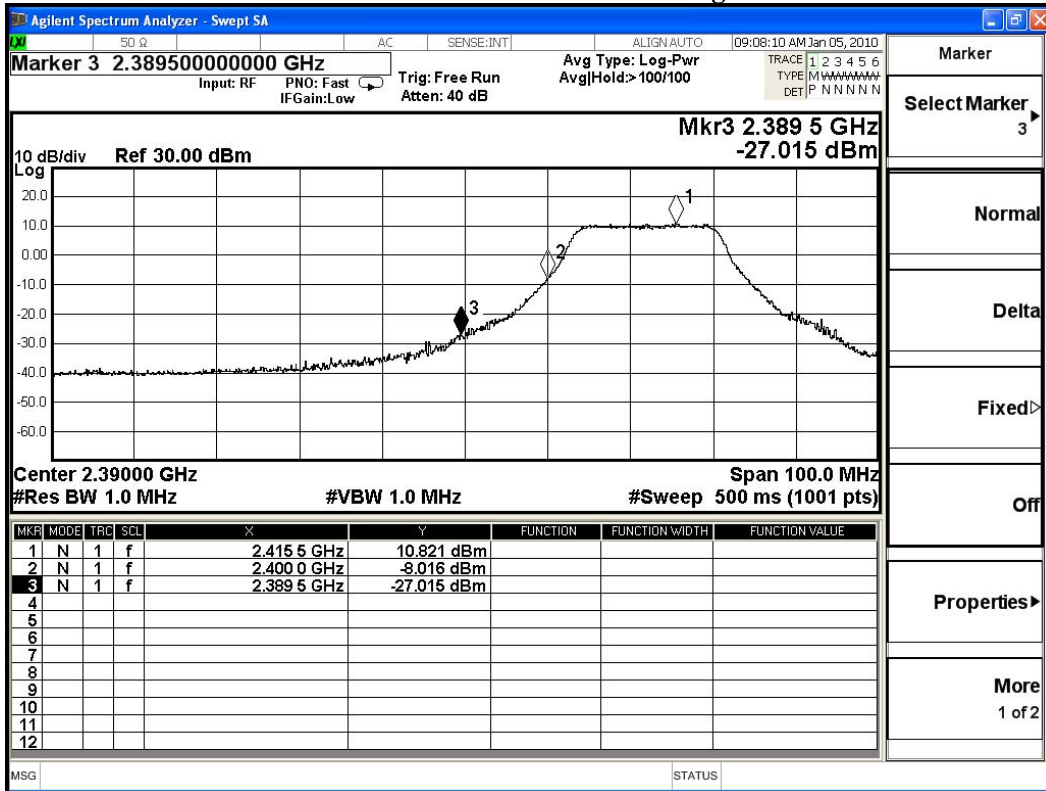
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

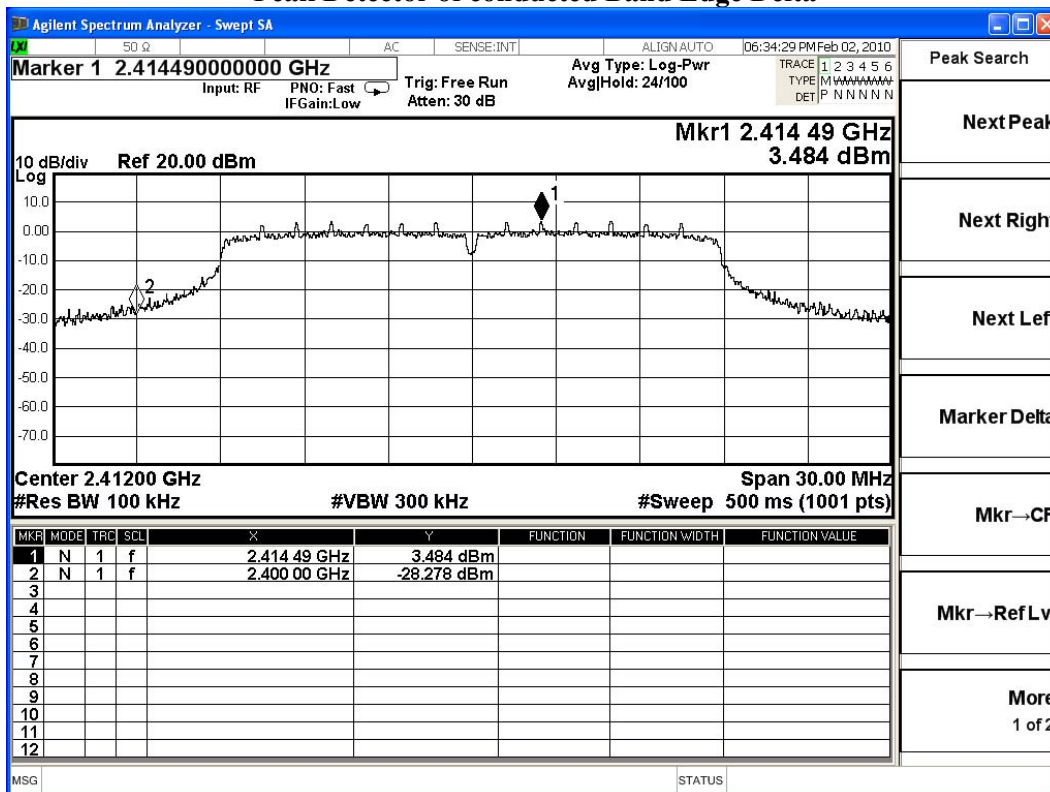
F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

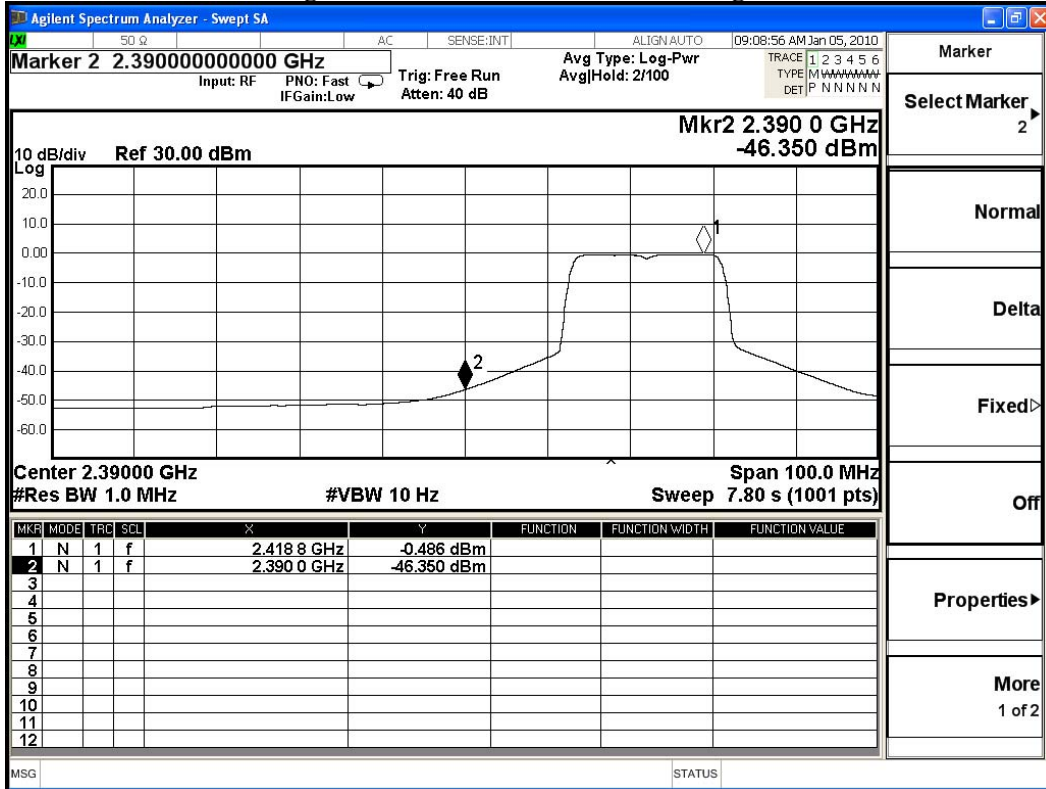
Peak Detector of conducted Band Edge Delta



Peak Detector of conducted Band Edge Delta



Average Detector of conducted Band Edge Delta



Product : Touch Note
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Fundamental Filed Strength

Antenna Pole	Frequency [MHz]	Correction Factor [dB/m]	Reading Level [dBuV]	Emission Level [dBuV/m]	Detector
Horizontal	2462	36.355	65.46	101.815	Peak
Horizontal	2462	36.355	54.61	90.965	Average
Vertical	2462	35.925	60.62	96.545	Peak
Vertical	2462	35.277	52.1	87.378	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz

Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Detector
Horizontal	2484.6	101.815	36.42	65.395	Peak
Horizontal	2483.5	90.965	46.145	44.82	Average
Vertical	2484.6	96.545	36.42	60.125	Peak
Vertical	2483.5	87.378	46.145	41.233	Average

Note:

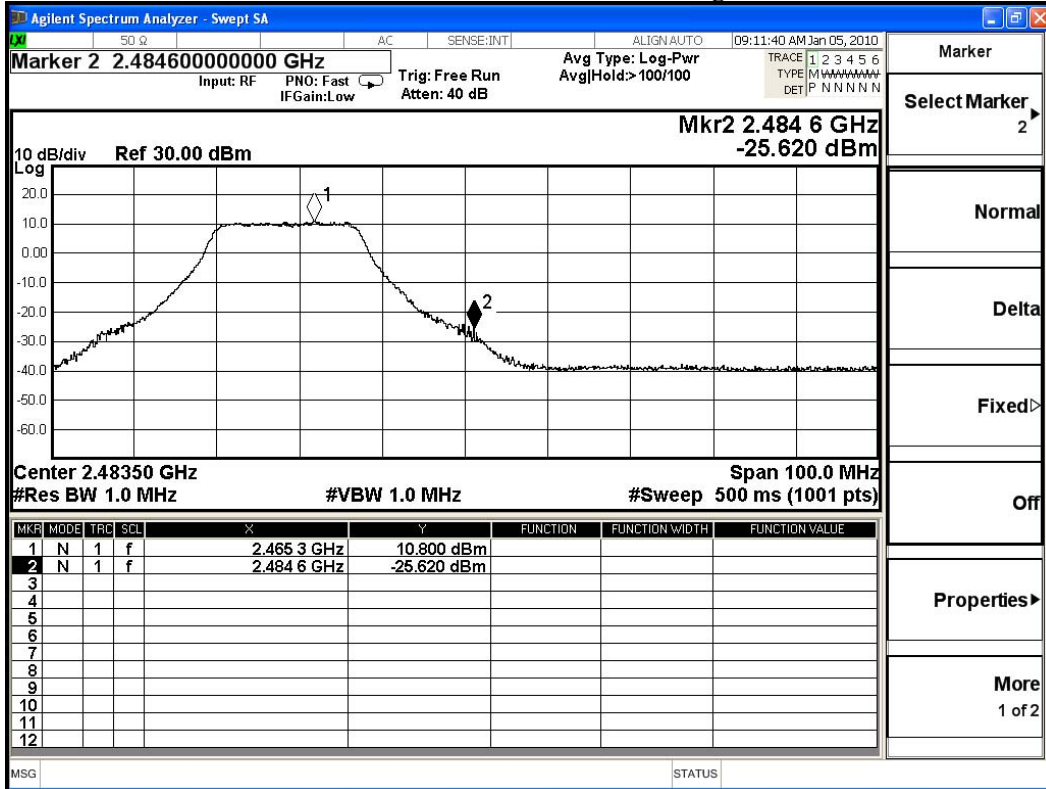
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

F = Fundamental field Strength (Peak or Average)

Δ = Conducted Band Edge Delta (Peak or Average)

Peak Detector of conducted Band Edge Delta



Average Detector of conducted Band Edge Delta

