

FC

Test Report

Product Name	Smart Handheld
Model No	F900
FCC ID.	HLZSHF900

Applicant	Acer Incorporated
Address	8F, 88, Sec. 1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan

Date of Receipt	Feb. 20, 2009
Issue Date	Mar. 05, 2009
Report No.	092276R-RFUSP13V01
Version	V1.0

The test results relate only to the samples tested.

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This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

Test Report Certification

Issue Date: Mar. 05, 2009

Report No.: 092276R-RFUSP13V01


Accredited by NIST (NVLAP)

NVLAP Lab Code: 200533-0

Product Name	Smart Handheld
Applicant	Acer Incorporated
Address	8F, 88, Sec. 1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan
Manufacturer	Arima Communication (JiangSu) Co.,Ltd
Model No.	F900
Rated Voltage	AC 120V/60Hz
Working Voltage	DC 3.7V
Trade Name	acer & glofiish
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2007 ANSI C63.4: 2003
Test Result	Complied



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Documented By :



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Tested By :



(Engineer / Eason Hung)

Approved By :



(Manager / Vincent Lin)



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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Smart Handheld
Trade Name	acer & glofiish
Model No.	F900
FCC ID.	HLZSHF900
Frequency Range	2412-2462MHz
Number of Channels	802.11b/g: 11
Data Speed	802.11b: 1 - 11Mbps, 802.11g: 6 - 54Mbps
Type of Modulation	802.11b:DSSS DBPSK, DQPSK, CCK 802.11g: OFDM BPSK, QPSK, 16QAM, 64QAM
Antenna Type	Chip
Antenna Gain	Refer to the table "Antenna List"
Channel Control	Auto
Power Adapter	MFR: PHIHONG, M/N: PSC05R-050 Input: AC 100-240V~0.2A, 50-60Hz 13-19VA Output: DC 5V, 1.0A Cable Out: Non-Shielded, 1.8m with one ferrite core bonded.

Antenna List

No.	Manufacturer	Part No.	Peak Gain
1	KYOCERA	KYBA100030040AF-L	0.77 dBi for 2.4 GHz

802.11b/g 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		

Note:

1. The EUT is an Smart Handheld with a built-in 2.4GHz WLAN transceiver.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. 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)
4. These tests are conducted on a sample for the purpose of demonstrating compliance of 802.11b/g transmitter with Part 15 Subpart C Paragraph 15.247 of spread spectrum devices
5. 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 Smart Handheld , The EUT Contains functions and so on WiFi 、Bluetooth 、GPS 、GSM/WCDMA, this report for WiFi. This device provided four kinds of transmitting speed 1, 2, 5.5 and 11Mbps. The device of RF carrier is DBPSK, DQPSK and CCK (IEEE 802.11b) or eight kinds of transmitting speed 6, 9, 12, 18, 24, 36, 48 and 54Mbps. The device of RF carrier is OFDM (IEEE 802.11g).

The device adapts direct sequence spread spectrum modulation. The antenna provides diversity function to improve the receiving function.

This Smart Handheld, compliant with IEEE 802.11b and IEEE 802.11g, 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) radio transmission, the Smart Handheld 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 network.

Test Mode:	Mode 1: Transmitter -802.11b 1Mbps
	Mode 2: Transmitter -802.11g 6Mbps
	Mode 3: Transmitter -802.11b 1Mbps+Bluetooth (hopping)
	Mode 4: Transmitter -802.11g 6Mbps+Bluetooth (hopping)

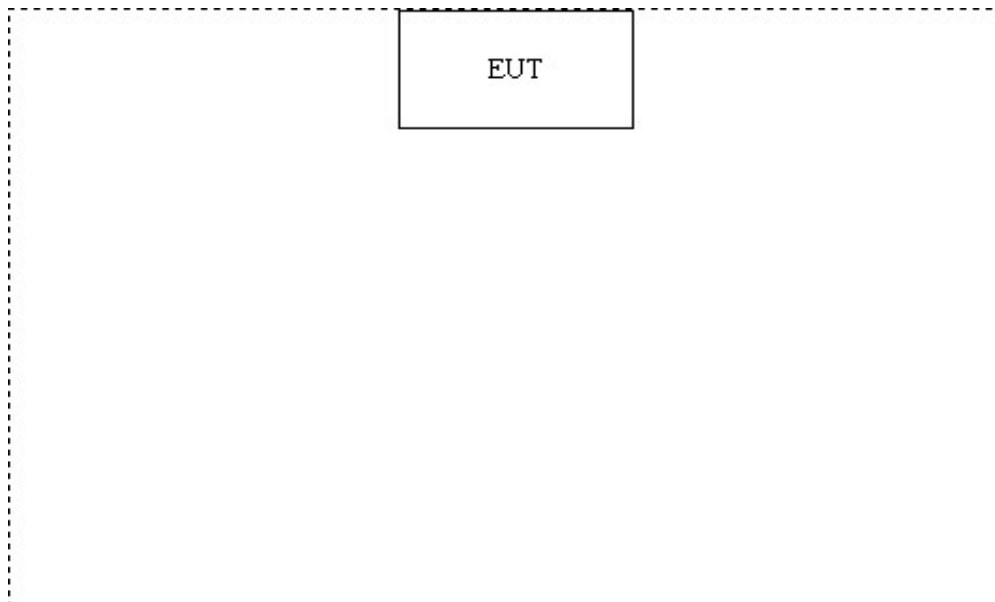
1.3. Tested System Details

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.	Power Cord
(1)	N/A	N/A	N/A	N/A	N/A

	Signal Cable Type	Signal cable Description
A	N/A	N/A

1.4. Configuration of Tested System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown in section 1.4
- (2) Power on the EUT.
- (3) Execute Azurewave GH-600 Program.
- (4) Configure the test channel and the data rate.
- (5) Click on “Start” to transmit continuously.
- (6) 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/>

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Accreditation on NVLAP
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2. Conducted Emission

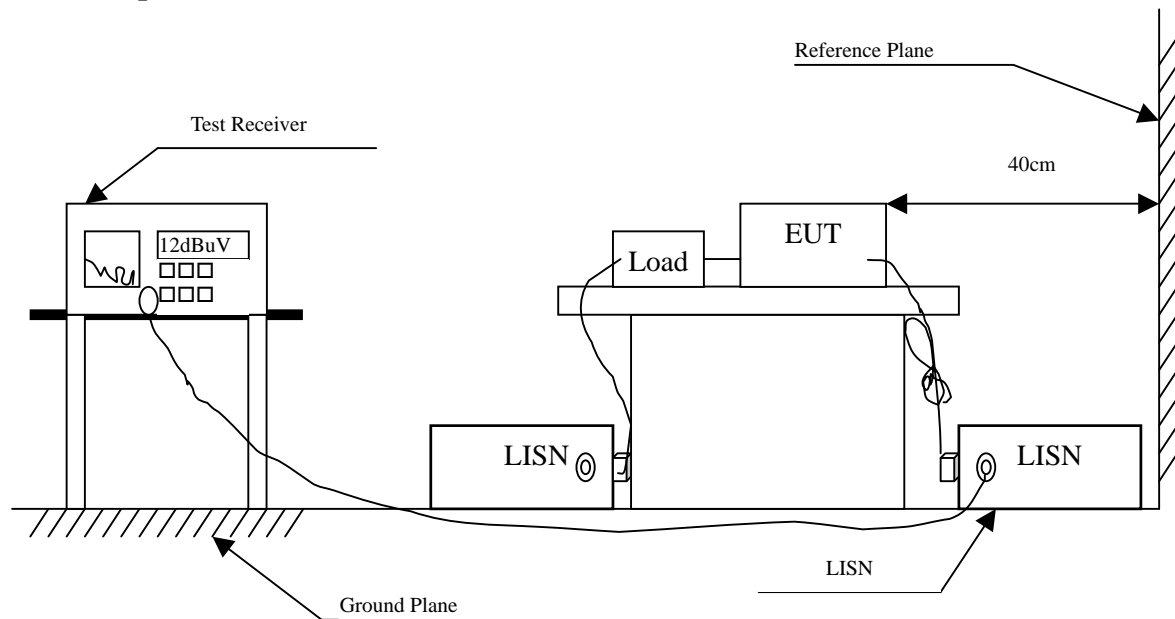
2.1. Test Equipment

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, 2008	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 2008	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 2008	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	May, 2008	
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 : Smart Handheld
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 1: Transmitter -802.11b 1Mbps (2437MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
Line 1					
Quasi-Peak					
0.173	9.734	30.860	40.595	-24.748	65.343
0.275	9.659	22.220	31.879	-30.550	62.429
0.466	9.640	24.070	33.710	-23.261	56.971
0.732	9.635	16.890	26.525	-29.475	56.000
1.947	9.680	12.390	22.070	-33.930	56.000
2.380	9.680	11.460	21.140	-34.860	56.000
Average					
0.173	9.734	22.170	31.905	-23.438	55.343
0.275	9.659	15.540	25.199	-27.230	52.429
0.466	9.640	19.580	29.220	-17.751	46.971
0.732	9.635	11.060	20.695	-25.305	46.000
1.947	9.680	6.780	16.460	-29.540	46.000
2.380	9.680	5.910	15.590	-30.410	46.000

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 : Smart Handheld
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 1: Transmitter -802.11b 1Mbps (2437MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV	dB	dBuV
Line 2					
Quasi-Peak					
0.185	9.727	29.030	38.758	-26.242	65.000
0.279	9.667	23.210	32.877	-29.437	62.314
0.498	9.640	26.000	35.640	-20.417	56.057
0.982	9.670	15.130	24.800	-31.200	56.000
2.935	9.690	14.870	24.560	-31.440	56.000
4.029	9.700	11.370	21.070	-34.930	56.000
Average					
0.185	9.727	20.910	30.638	-24.362	55.000
0.279	9.667	16.000	25.667	-26.647	52.314
0.498	9.640	21.130	30.770	-15.287	46.057
0.982	9.670	9.020	18.690	-27.310	46.000
2.935	9.690	9.630	19.320	-26.680	46.000
4.029	9.700	5.980	15.680	-30.320	46.000

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 : Smart Handheld
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 2: Transmitter -802.11g 6Mbps (2437MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV	dB	dBuV
Line 1					
Quasi-Peak					
0.166	9.746	30.610	40.355	-25.188	65.543
0.197	9.709	25.120	34.829	-29.828	64.657
0.259	9.670	22.210	31.880	-31.006	62.886
0.470	9.640	22.410	32.050	-24.807	56.857
1.263	9.670	14.390	24.060	-31.940	56.000
2.697	9.690	13.600	23.290	-32.710	56.000
Average					
0.166	9.746	15.700	25.445	-30.098	55.543
0.197	9.709	12.890	22.599	-32.058	54.657
0.259	9.670	8.080	17.750	-35.136	52.886
0.470	9.640	15.450	25.090	-21.767	46.857
1.263	9.670	3.120	12.790	-33.210	46.000
2.697	9.690	4.690	14.380	-31.620	46.000

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 : Smart Handheld
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 2: Transmitter -802.11g 6Mbps (2437MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV	dB	dBuV
Line 2					
Quasi-Peak					
0.181	9.732	25.790	35.522	-29.592	65.114
0.259	9.680	22.590	32.270	-30.616	62.886
0.423	9.650	20.540	30.190	-28.010	58.200
0.486	9.640	24.070	33.710	-22.690	56.400
0.697	9.650	19.610	29.260	-26.740	56.000
2.271	9.680	15.280	24.960	-31.040	56.000
Average					
0.181	9.732	13.520	23.252	-31.862	55.114
0.259	9.680	8.220	17.900	-34.986	52.886
0.423	9.650	8.840	18.490	-29.710	48.200
0.486	9.640	17.110	26.750	-19.650	46.400
0.697	9.650	10.170	19.820	-26.180	46.000
2.271	9.680	6.840	16.520	-29.480	46.000

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

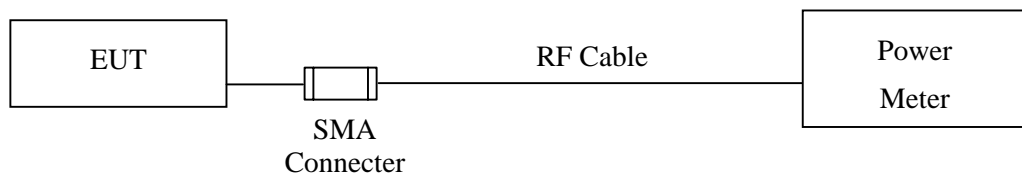
The following test equipments are used during the radiated emission tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Power Meter	Anritsu	ML2495A/6K00003357	May, 2008
X	Power Sensor	Anritsu	MA2491A/034457	May, 2008

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

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 : Smart Handheld
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter -802.11b 1Mbps

Cable Loss=0.5dB		Peak Power Output				
Channel No.	Frequency (MHz)	Data Rate				Required Limit
		1	2	5.5	11	
1	2412.00	16.68	--	--	--	1Watt= 30 dBm
6	2437.00	17.15	17.07	17.05	17.11	1Watt= 30 dBm
11	2462.00	17.38	--	--	--	1Watt= 30 dBm

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

Product : Smart Handheld
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -802.11g 6Mbps

Cable Loss=0.5dB		Peak Power Output								
Channel No.	Frequency (MHz)	Data Rate								Required Limit
		6	9	12	18	24	36	48	54	
1	2412.00	23.61	--	--	--	--	--	--	--	1 Watt= 30 dBm
6	2437.00	24.42	24.36	23.89	23.33	24.12	23.72	23.95	23.52	1 Watt= 30 dBm
11	2462.00	24.35	--	--	--	--	--	--	--	1 Watt= 30 dBm

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

4. Radiated Emission

4.1. Test Equipment

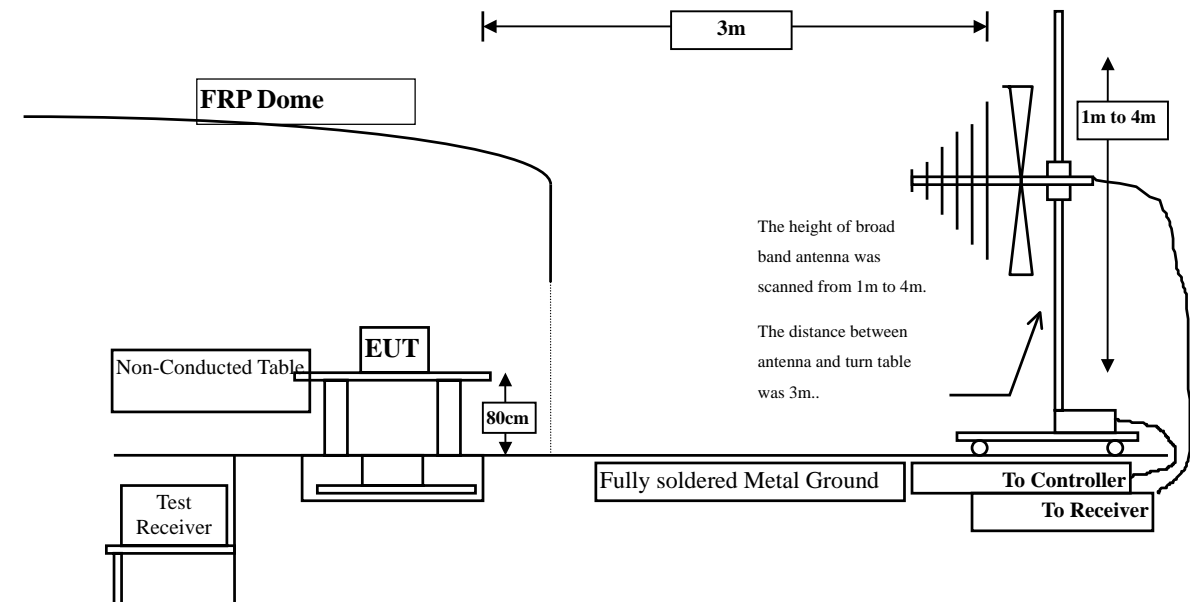
The following test equipment are used during the radiated emission test:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒ Site # 3	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2008
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2008
	X	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2008
	X	Pre-Amplifier	AGILENT	8447D/2944A09549	Sep., 2008
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2008
	X	Spectrum Analyzer	Advantest	R3162/91700283	Oct., 2008
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2009
	X	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

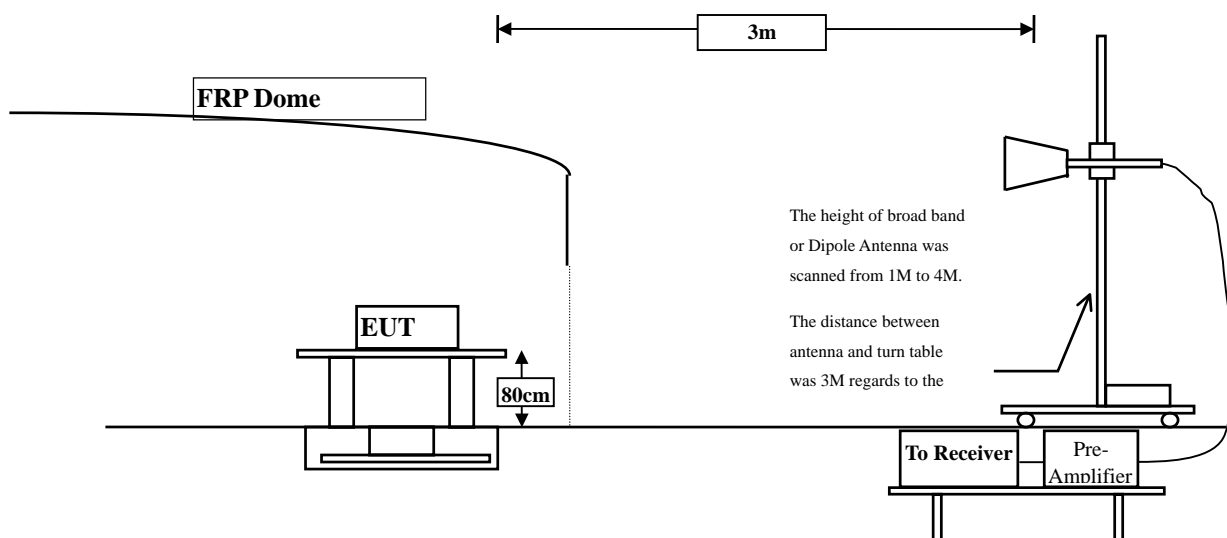
- Note:
1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
 2. The test instruments marked with “X” are used to measure the final test results.

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 beamwidth 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 : Smart Handheld
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter -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	-0.229	44.900	44.671	-29.329	74.000
7236.000	3.182	44.570	47.752	-26.248	74.000
9648.000	5.798	45.030	50.829	-23.171	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	-0.229	44.600	44.371	-29.629	74.000
7236.000	3.182	45.100	48.282	-25.718	74.000
9648.000	5.798	45.710	51.509	-22.491	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 : Smart Handheld
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter -802.11b 1Mbps (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	-0.268	44.580	44.312	-29.688	74.000
7311.000	3.285	44.500	47.786	-26.214	74.000
9748.000	6.190	45.060	51.250	-22.750	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4874.000	-0.268	44.930	44.662	-29.338	74.000
7311.000	3.285	45.060	48.346	-25.654	74.000
9748.000	6.190	44.960	51.150	-22.850	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 : Smart Handheld
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter -802.11b 1Mbps (2462 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4924.000	0.105	44.760	44.865	-29.135	74.000
7386.000	3.644	44.880	48.525	-25.475	74.000
9848.000	6.582	44.620	51.202	-22.798	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4924.000	0.105	44.720	44.825	-29.175	74.000
7386.000	3.644	44.730	48.375	-25.625	74.000
9848.000	6.582	44.730	51.312	-22.688	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 : Smart Handheld
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -802.11g 6Mbps (2412MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	-0.229	45.200	44.971	-29.029	74.000
7236.000	3.182	44.040	47.222	-26.778	74.000
9648.000	5.798	45.230	51.029	-22.971	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4824.000	-0.229	44.770	44.541	-29.459	74.000
7236.000	3.182	44.760	47.942	-26.058	74.000
9648.000	5.798	45.290	51.089	-22.911	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 : Smart Handheld
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -802.11g 6Mbps (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	-0.268	44.670	44.402	-29.598	74.000
7311.000	3.285	44.080	47.366	-26.634	74.000
9748.000	6.190	45.720	51.910	-22.090	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4874.000	-0.268	44.950	44.682	-29.318	74.000
7311.000	3.285	44.340	47.626	-26.374	74.000
9748.000	6.190	45.410	51.600	-22.400	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 : Smart Handheld
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -802.11g 6Mbps (2462 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	33.927	44.950	44.682	-29.318	74.000
7311.000	38.549	44.340	47.626	-26.374	74.000
9748.000	40.506	45.410	51.600	-22.400	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4924.000	0.105	44.790	44.895	-29.105	74.000
7386.000	3.644	44.450	48.095	-25.905	74.000
9848.000	6.582	44.690	51.272	-22.728	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 : Smart Handheld
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmitter -802.11b 1Mbps+Bluetooth (hopping) (2412MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.723	36.200	39.923	-34.077	74.000
7236.000	9.439	33.700	43.139	-30.861	74.000
9648.000	11.829	32.400	44.229	-29.771	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4824.000	3.723	36.220	39.943	-34.057	74.000
7236.000	9.439	34.500	43.939	-30.061	74.000
9648.000	11.829	36.700	48.529	-25.471	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 : Smart Handheld
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmitter -802.11b 1Mbps+Bluetooth (hopping) (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4874.000	3.893	36.170	40.062	-33.938	74.000
7311.000	9.624	34.380	44.004	-29.996	74.000
9748.000	11.805	36.090	47.896	-26.104	74.000

Average

Detector:

--

Vertical

Peak Detector:

4874.000	3.893	36.310	40.202	-33.798	74.000
7311.000	9.624	34.830	44.454	-29.546	74.000
9748.000	11.805	35.720	47.526	-26.474	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 : Smart Handheld
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter -802.11b 1Mbps+Bluetooth (hopping) (2462 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4924.000	4.075	35.650	39.725	-34.275	74.000
7386.000	9.812	35.950	45.762	-28.238	74.000
9848.000	11.819	34.850	46.669	-27.331	74.000

Average

Detector:

--

Vertical

Peak Detector:

4924.000	4.075	36.230	40.305	-33.695	74.000
7386.000	9.812	33.730	43.542	-30.458	74.000
9848.000	11.819	35.420	47.239	-26.761	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 : Smart Handheld
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmitter -802.11 g 6Mbps+Bluetooth (hopping) (2412MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.723	36.760	40.483	-33.517	74.000
7236.000	9.439	35.080	44.519	-29.481	74.000
9648.000	11.829	34.880	46.709	-27.291	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4824.000	3.723	35.660	39.383	-34.617	74.000
7236.000	9.439	34.760	44.199	-29.801	74.000
9648.000	11.829	32.580	44.409	-29.591	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 : Smart Handheld
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmitter -802.11g 6Mbps+Bluetooth (hopping) (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.723	36.450	40.173	-33.827	74.000
7236.000	9.439	34.500	43.939	-30.061	74.000
9648.000	11.829	35.650	47.479	-26.521	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4824.000	3.723	35.660	39.383	-34.617	74.000
7236.000	9.439	34.310	43.749	-30.251	74.000
9648.000	11.829	35.900	47.729	-26.271	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 : Smart Handheld
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmitter -802.11g 6Mbps+Bluetooth (hopping) (2462 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4824.000	3.723	36.280	40.003	-33.997	74.000
7236.000	9.439	35.000	44.439	-29.561	74.000
9648.000	11.829	35.160	46.989	-27.011	74.000

Average

Detector:

--

Vertical

Peak Detector:

4824.000	3.723	36.020	39.743	-34.257	74.000
7236.000	9.439	34.830	44.269	-29.731	74.000
9648.000	11.829	35.200	47.029	-26.971	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 : Smart Handheld
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter -802.11b 1Mbps(2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
584.840	2.850	28.400	31.250	-14.750	46.000
691.540	3.235	26.965	30.200	-15.800	46.000
747.800	2.783	28.817	31.600	-14.400	46.000
829.280	6.015	25.285	31.300	-14.700	46.000
914.640	5.610	27.590	33.200	-12.800	46.000
943.740	5.984	27.516	33.500	-12.500	46.000
Vertical					
544.100	-1.208	29.573	28.365	-17.635	46.000
689.600	2.094	28.106	30.200	-15.800	46.000
771.080	2.656	28.270	30.926	-15.074	46.000
821.520	3.099	29.472	32.571	-13.429	46.000
920.460	5.040	28.794	33.834	-12.166	46.000
967.020	7.541	28.039	35.580	-18.420	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 : Smart Handheld
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -802.11g 6Mbps(2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
547.980	2.736	28.627	31.363	-14.637	46.000
615.880	2.732	28.168	30.900	-15.100	46.000
677.960	2.449	26.151	28.600	-17.400	46.000
757.500	3.857	27.068	30.925	-15.075	46.000
856.440	5.990	26.860	32.850	-13.150	46.000
893.300	4.923	27.577	32.500	-13.500	46.000
Vertical					
509.180	-0.666	27.084	26.418	-19.582	46.000
540.220	-0.403	26.554	26.151	-19.849	46.000
693.480	1.721	28.529	30.250	-15.750	46.000
811.820	2.810	29.571	32.380	-13.620	46.000
842.860	2.683	27.435	30.118	-15.882	46.000
945.680	6.083	29.237	35.320	-10.680	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.

5. RF antenna conducted test

5.1. Test Equipment

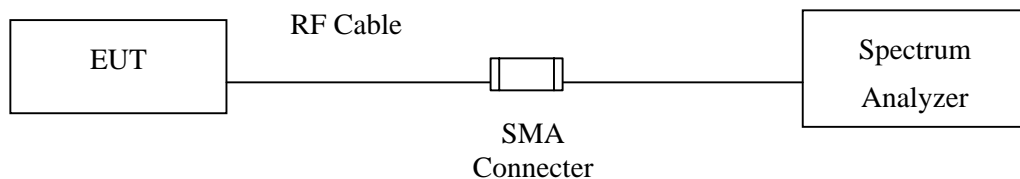
The following test equipments are used during the radiated emission tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Nov, 2008
X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2008

- 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.

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

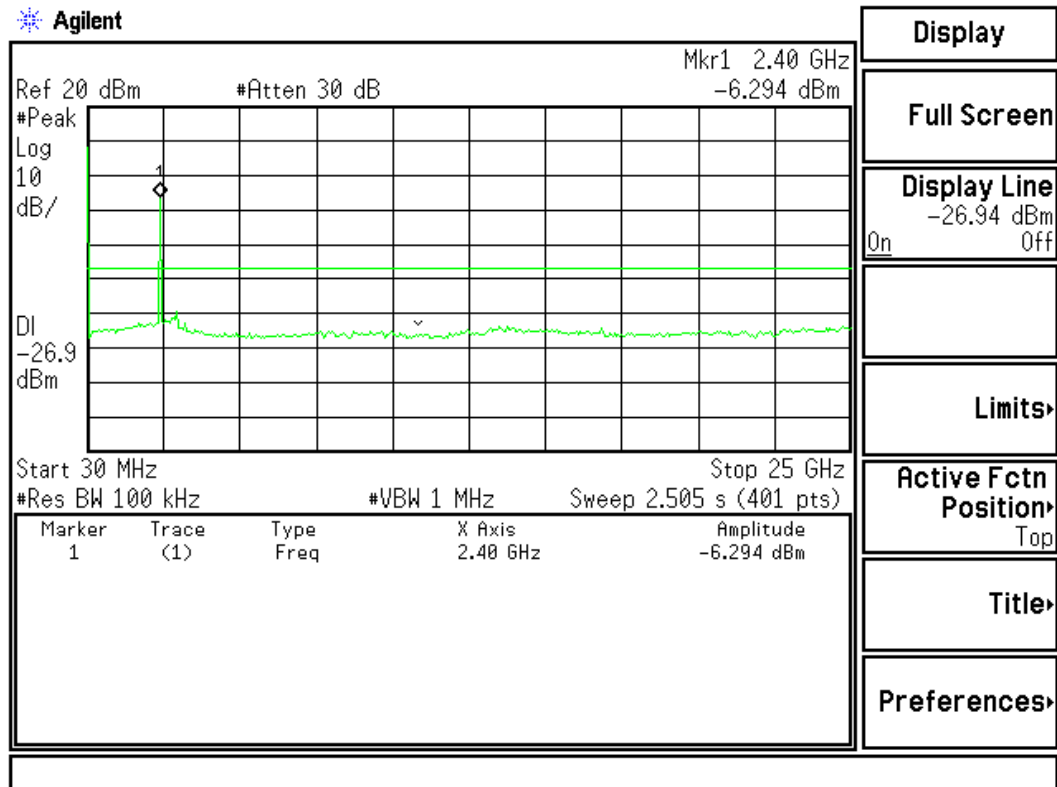
The measurement uncertainty

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

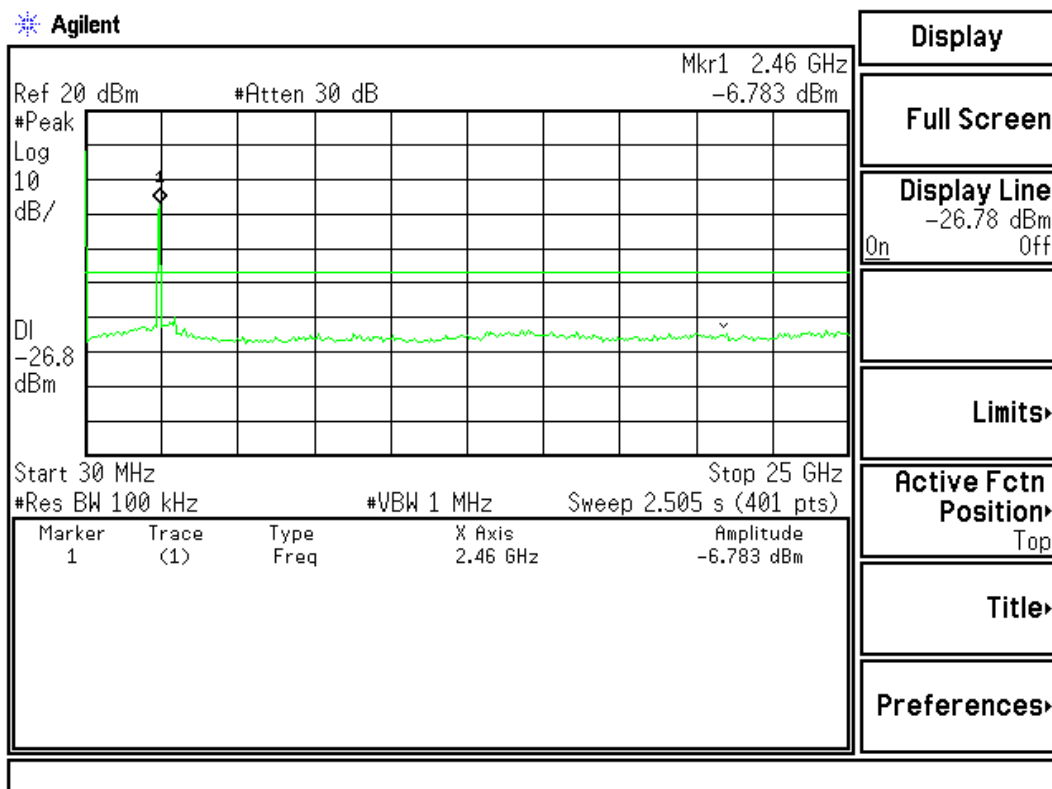
5.6. Test Result of RF antenna conducted test

Product : Smart Handheld
 Test Item : RF antenna conducted test
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter -802.11b 1Mbps

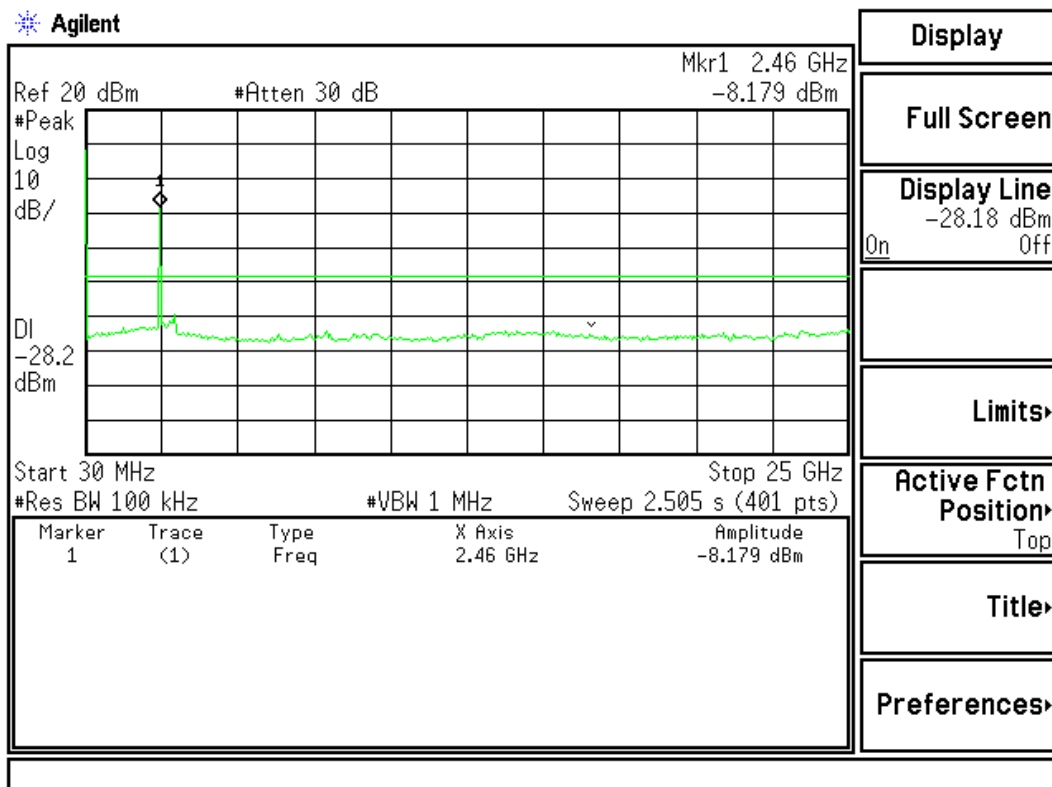
Channel 01 (2412MHz) 30-25GHz



Channel 06 (2437MHz) 30-25GHz

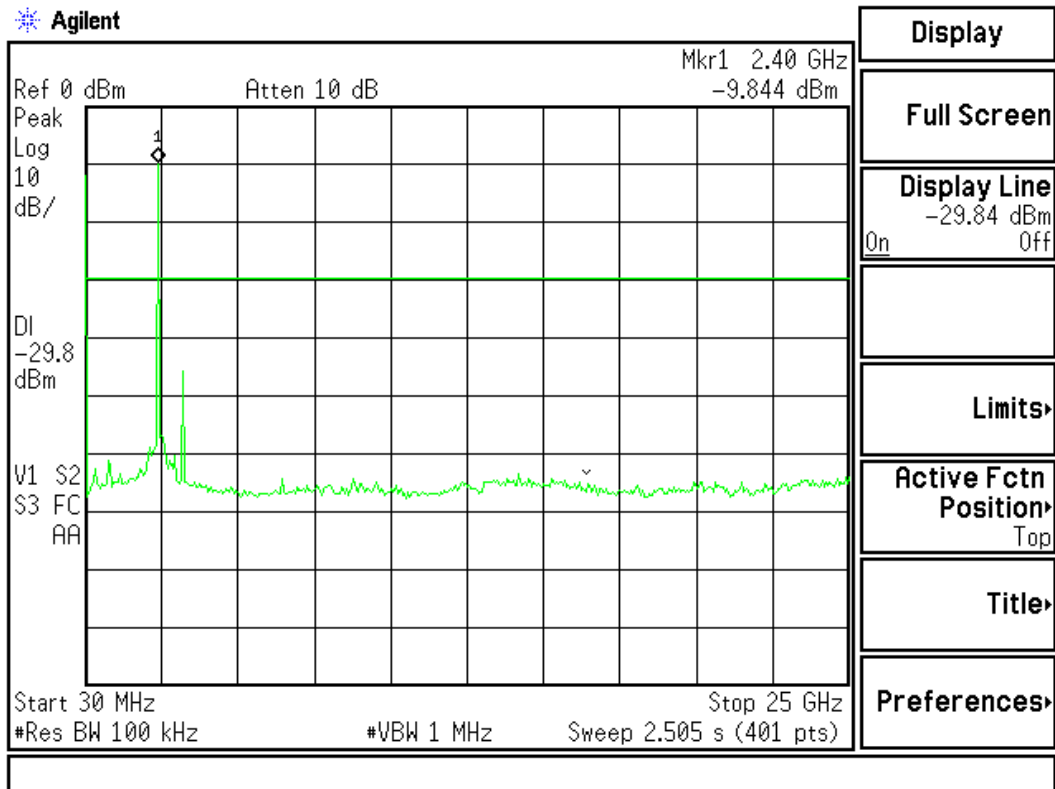


Channel 11 (2462MHz) 30-25GHz

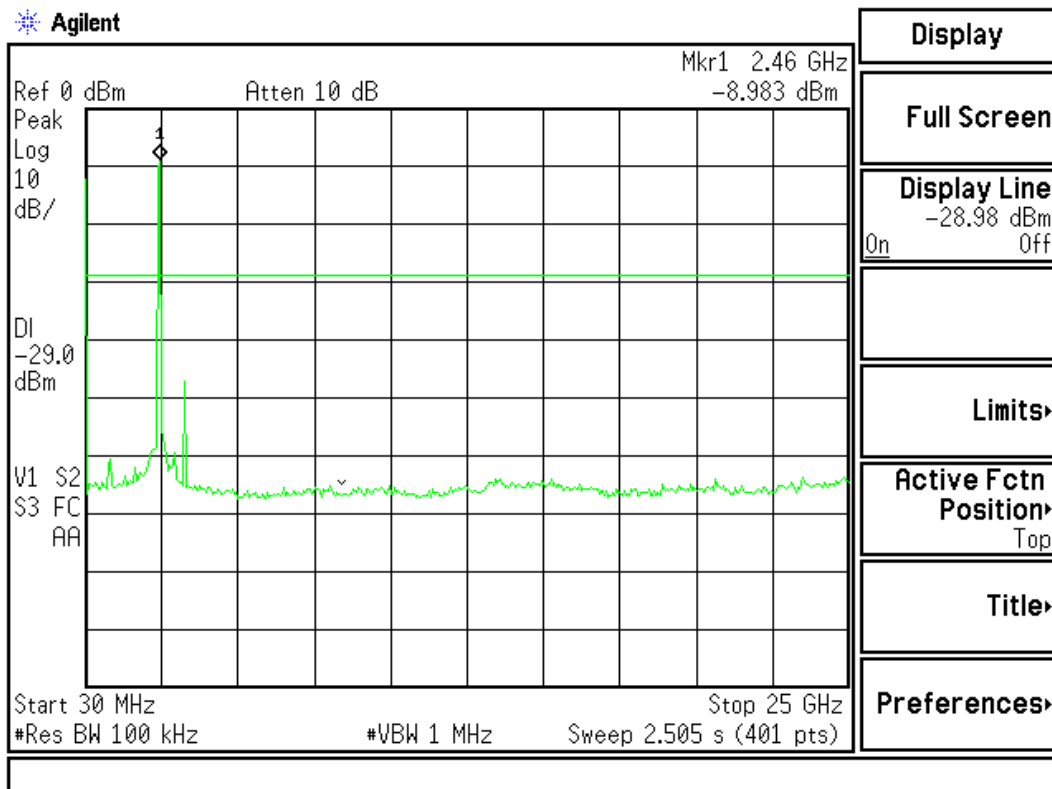


Product : Smart Handheld
 Test Item : RF Antenna Conducted Spurious
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -802.11g 6Mbps

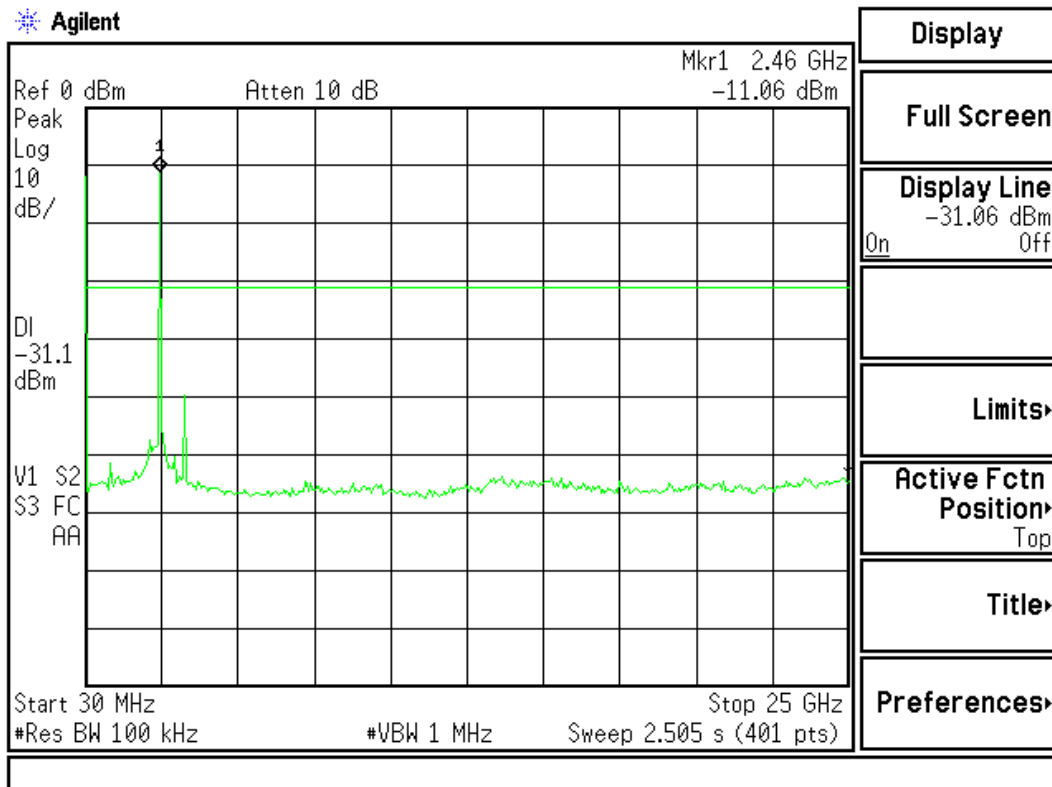
Channel 01 (2412MHz) 30-25GHz



Channel 06 (2437MHz) 30-25GHz



Channel 11 (2462MHz) 30-25GHz



6. Band Edge

6.1. Test Equipment

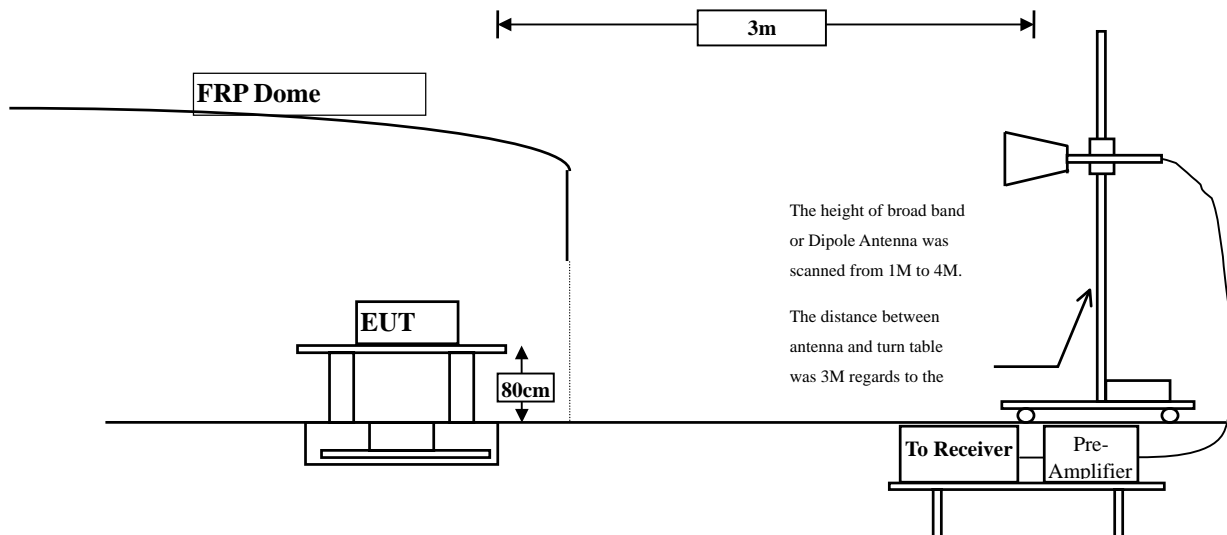
The following test equipments are used during the band edge tests:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒ Site # 3	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2008
	X	Pre-Amplifier	AGILENT	8447D/2944A09549	Sep., 2008
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2008
	X	Spectrum Analyzer	Advantest	R3162/91700283	Oct., 2008
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2009
	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 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

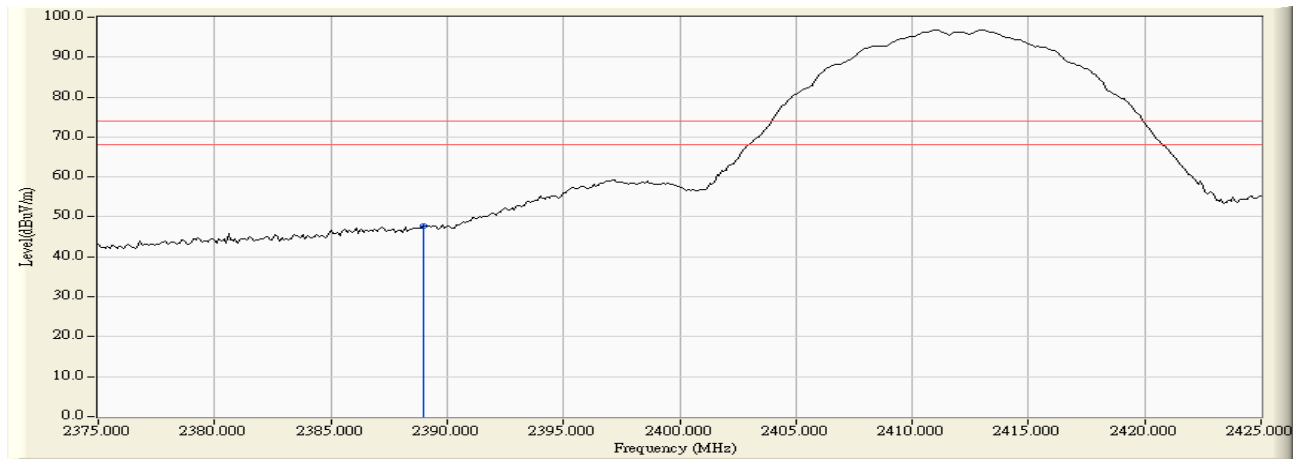
6.6. Test Result of Band Edge

Product : Smart Handheld
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter -802.11b 1Mbps

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
01 (Peak)	2389.000	-6.771	54.585	47.814	74.00	54.00	Pass
01 (Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 01: Horizontal (Peak)



Note:

1. All readings 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 : Smart Handheld
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter -802.11b 1Mbps

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
01 (Peak)	2381.700	-6.794	66.120	59.326	74.00	54.00	Pass
01 (Average)	2381.700	-6.767	39.828	33.061	74.00	54.00	Pass

Figure Channel 01: (Vertical) (Peak)

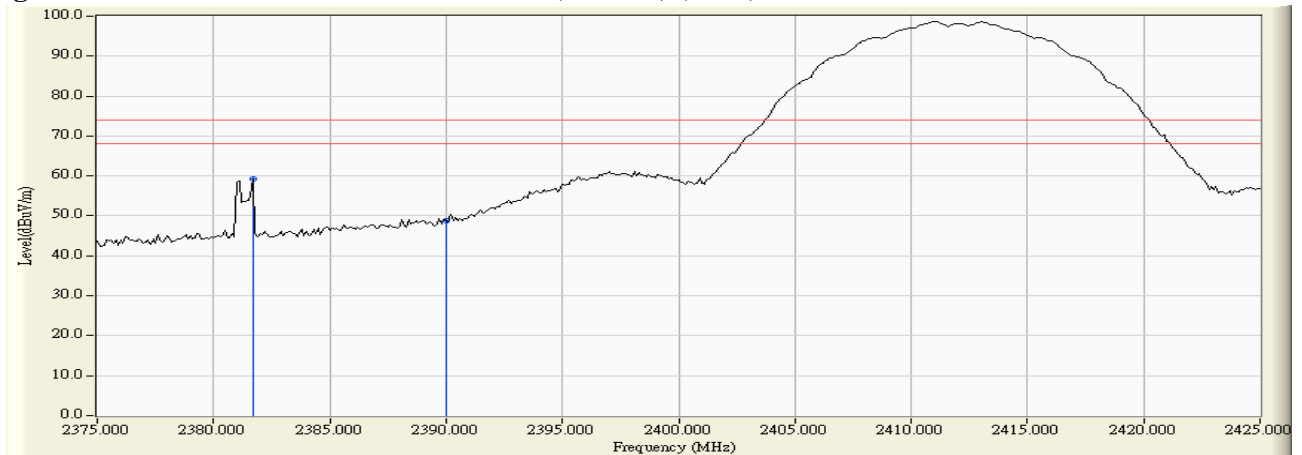
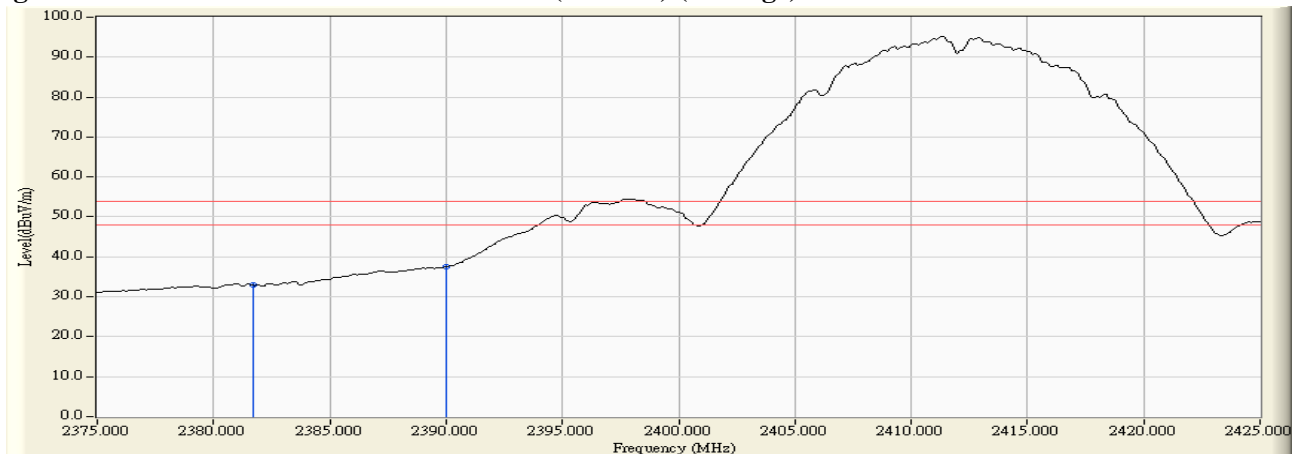


Figure Channel 01: (Vertical) (Average)



Note:

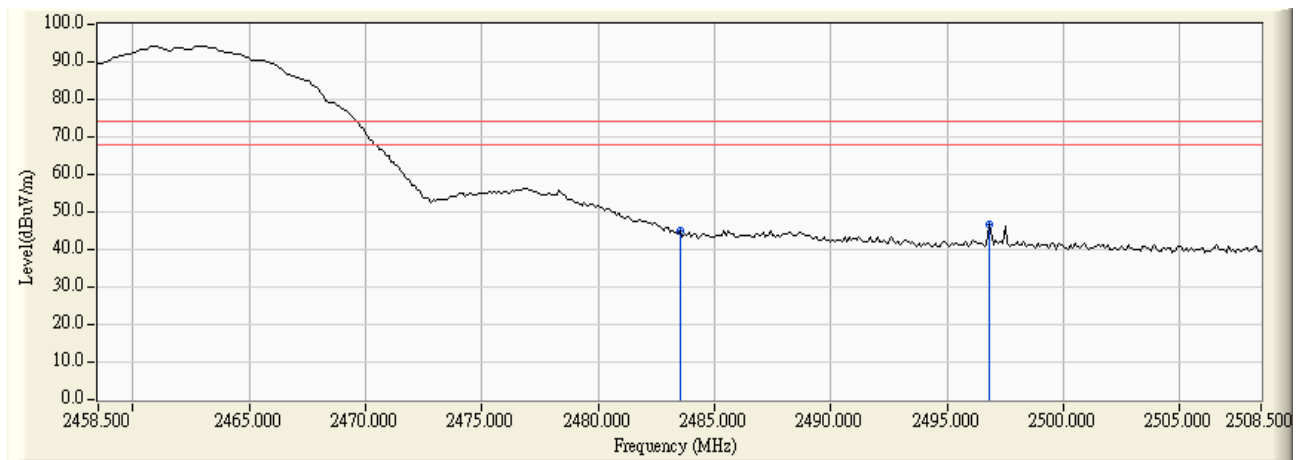
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading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

Product : Smart Handheld
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter -802.11b 1Mbps

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11 (Peak)	2496.8	-6.442	52.928	46.487	74.00	54.00	Pass
11(Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)



Note:

1. All readings 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.

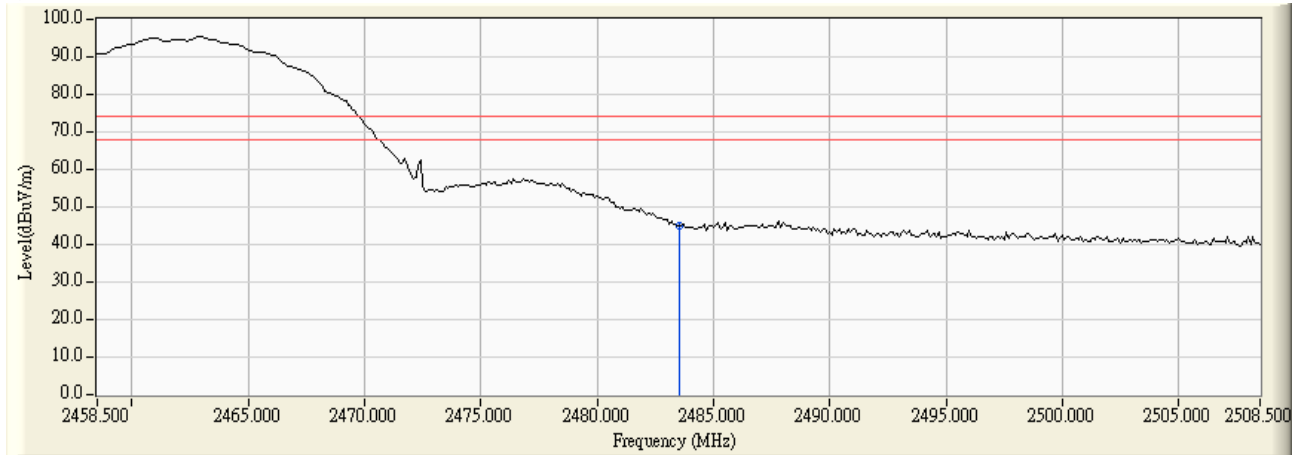
Product : Smart Handheld
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter -802.11b 1Mbps

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11 (Peak)	2483.500	-6.469	51.553	45.085	74.00	54.00	Pass
11(Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 11:

Vertical (Peak)



Note:

1. All readings 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 : Smart Handheld
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -802.11g 6Mbps

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
01 (Peak)	2390.000	-6.769	75.042	68.274	74.00	54.00	Pass
01 (Average)	2390.000	-6.769	55.267	48.499	74.00	54.00	Pass

Figure Channel 01: Horizontal (Peak)

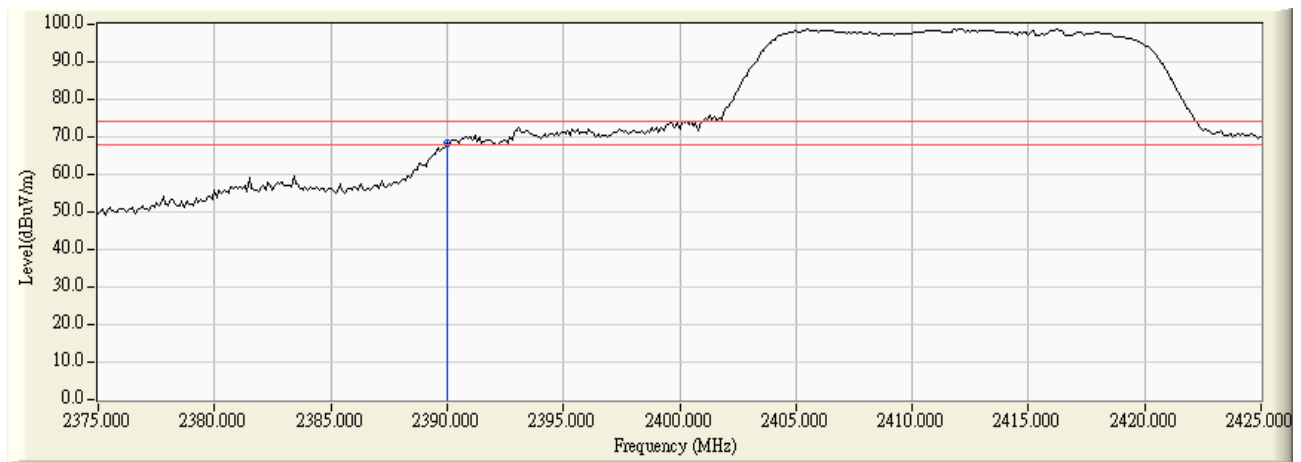
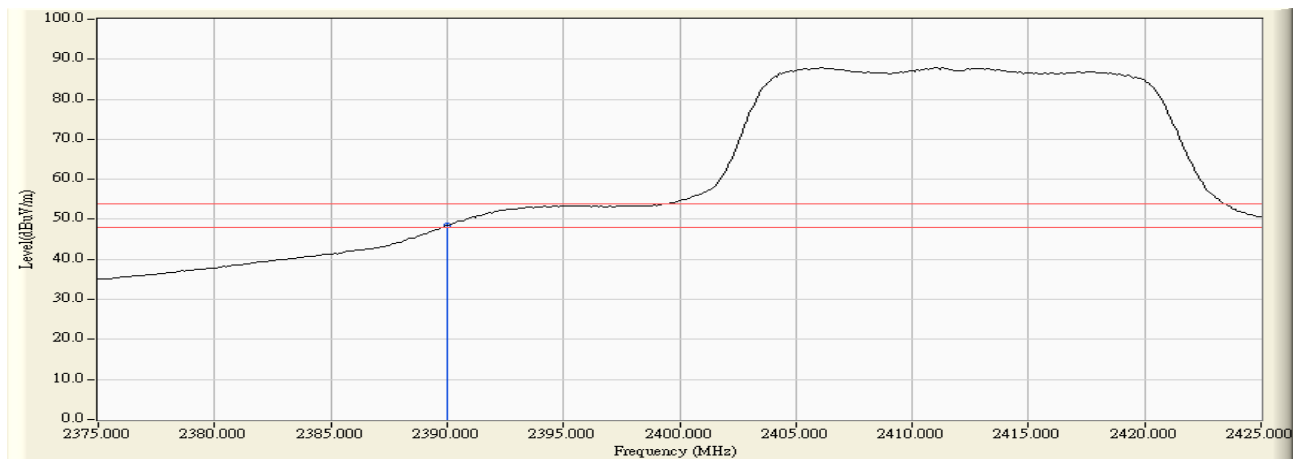


Figure Channel 01: Horizontal (Average)



Note:

1. All readings 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 : Smart Handheld
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -802.11g 6Mbps

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
01 (Peak)	2390.000	-6.769	75.708	68.940	74.00	54.00	Pass
01 (Average)	2390.000	-6.769	54.619	47.851	74.00	54.00	Pass

Figure Channel 01: (Vertical) (Peak)

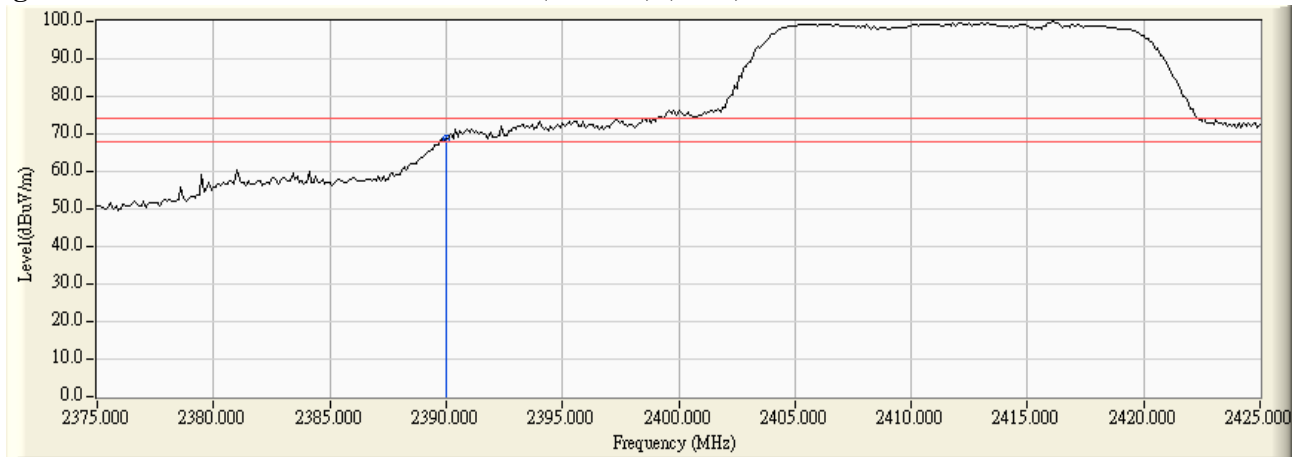
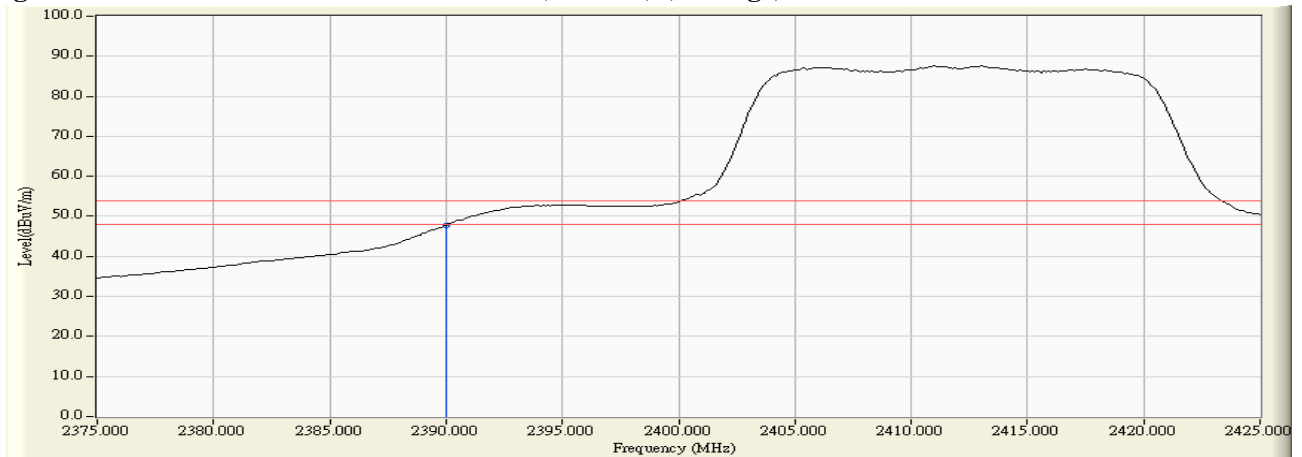


Figure Channel 01: (Vertical) (Average)



Note:

1. All readings 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 : Smart Handheld
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -802.11g 6Mbps

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11 (Peak)	2483.500	-6.469	69.059	62.591	74.00	54.00	Pass
11 (Average)	2483.500	-6.469	53.031	46.563	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

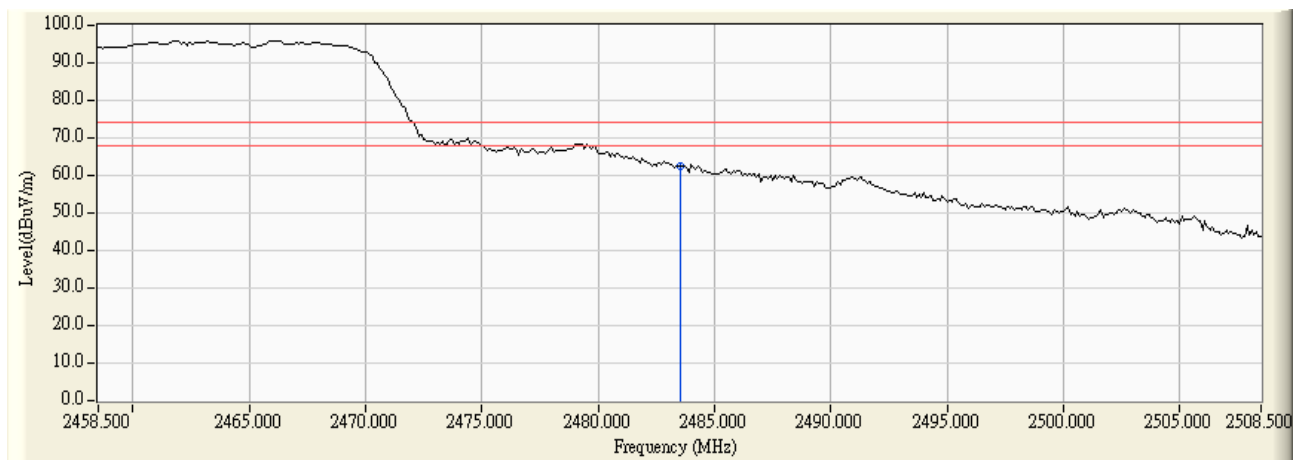
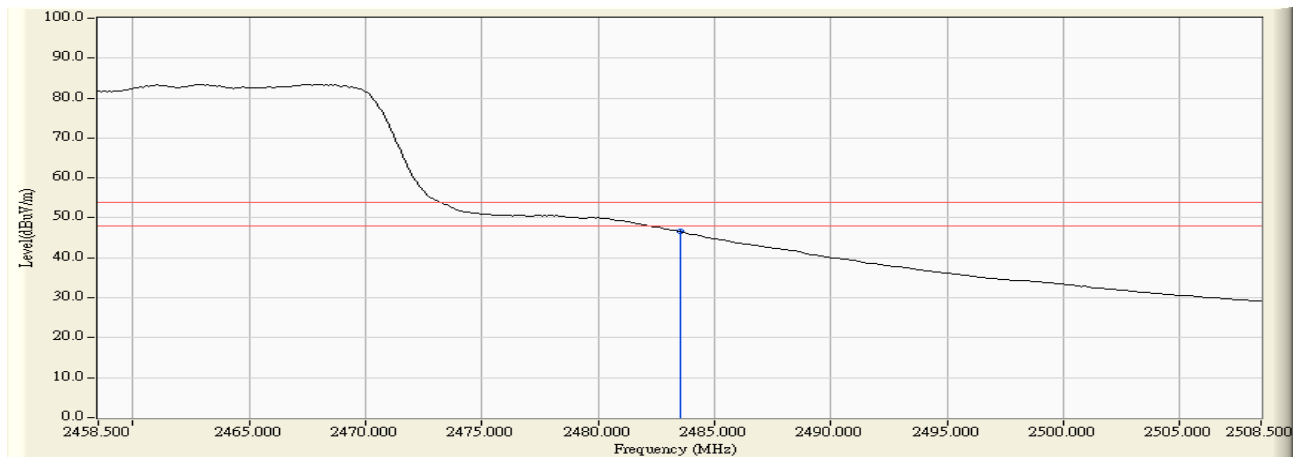


Figure Channel 11: Horizontal (Average)



Note:

1. All readings 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 : Smart Handheld
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -802.11g 6Mbps

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11 (Peak)	2483.500	-6.469	68.647	62.179	74.00	54.00	Pass
11(Average)	2483.500	-6.469	53.400	46.932	74.00	54.00	Pass

Figure Channel 11: Vertical (Peak)

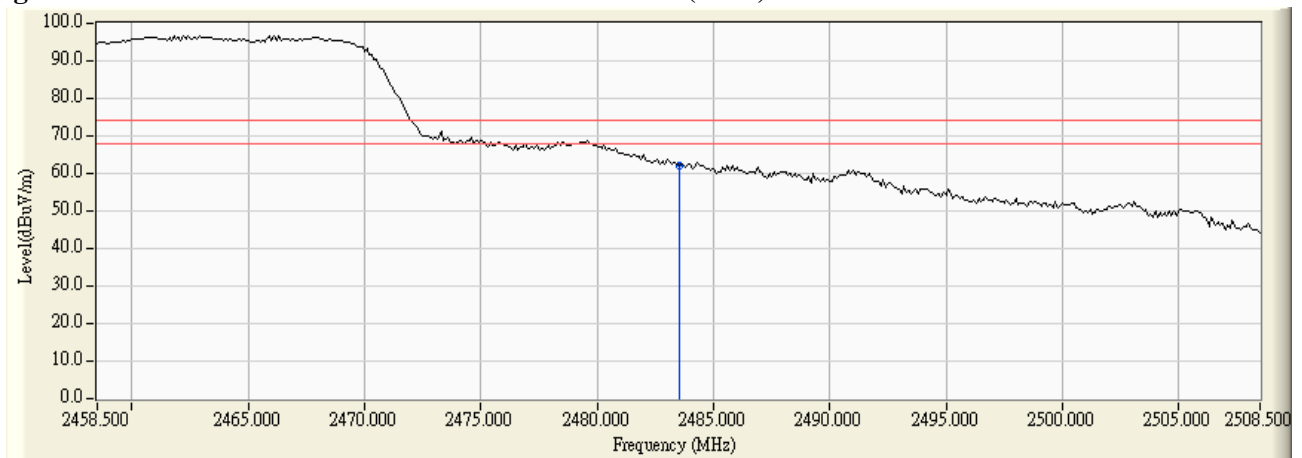
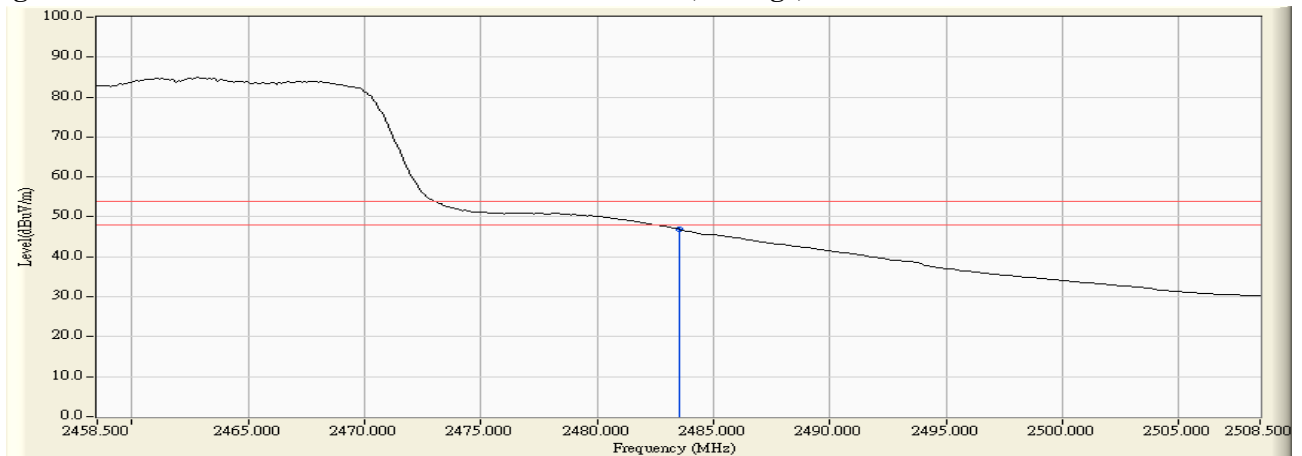


Figure Channel 11: Vertical (Average)



Note:

1. All readings 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.

7. Occupied Bandwidth

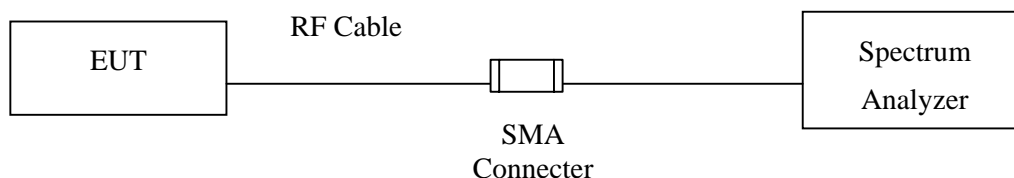
7.1. Test Equipment

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

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100339	Jun, 2008
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2008
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2008

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

7.2. Test Setup



7.3. Limits

The minimum bandwidth shall be at least 500 kHz.

7.4. Test Procedure

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

Set RBW = 100 kHz, Span greater than RBW.

7.5. Uncertainty

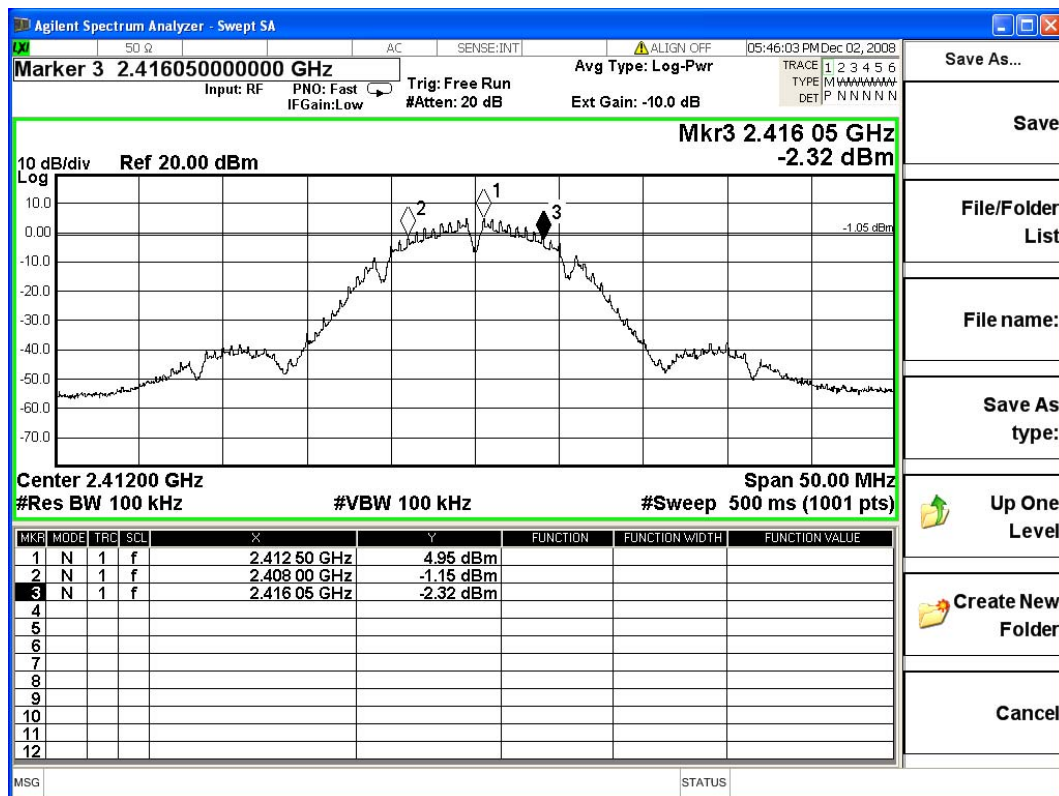
$\pm 150\text{Hz}$

7.6. Test Result of Occupied Bandwidth

Product : Smart Handheld
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter -802.11b 1Mbps (2412MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1	2412.00	8050	>500	Pass

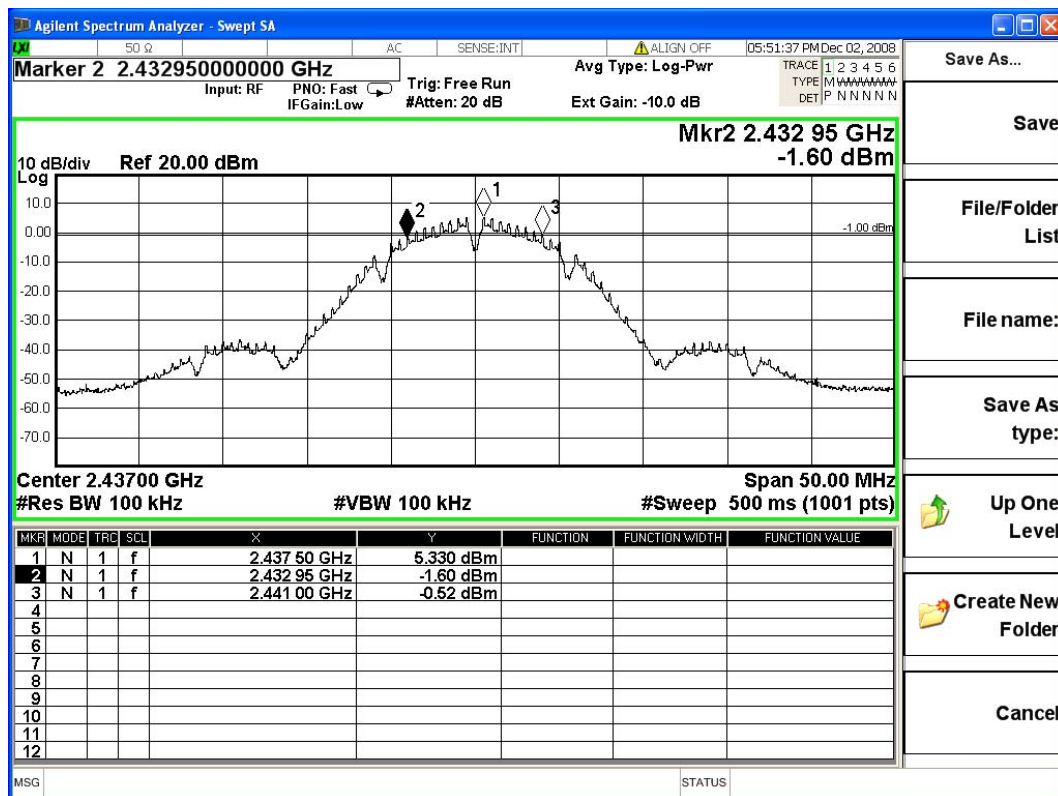
Figure Channel 1:



Product : Smart Handheld
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter -802.11b 1Mbps (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6	2437.00	8050	>500	Pass

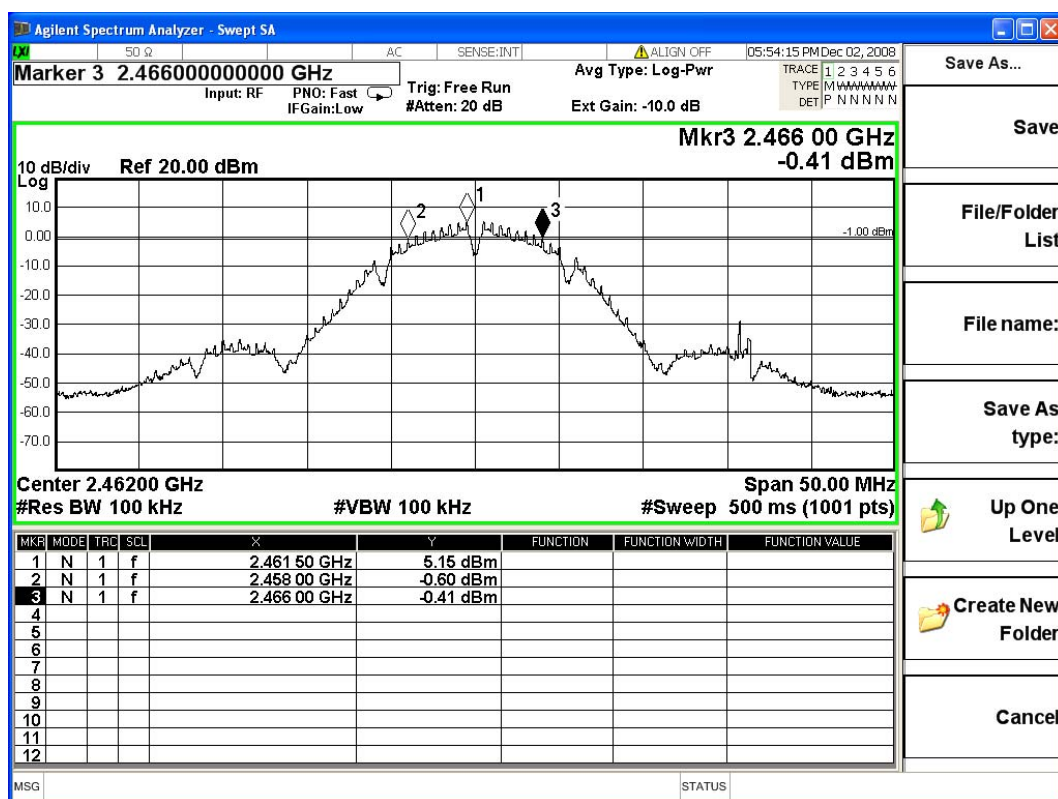
Figure Channel 6:



Product : Smart Handheld
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter -802.11b 1Mbps (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
11	2462.00	8000	>500	Pass

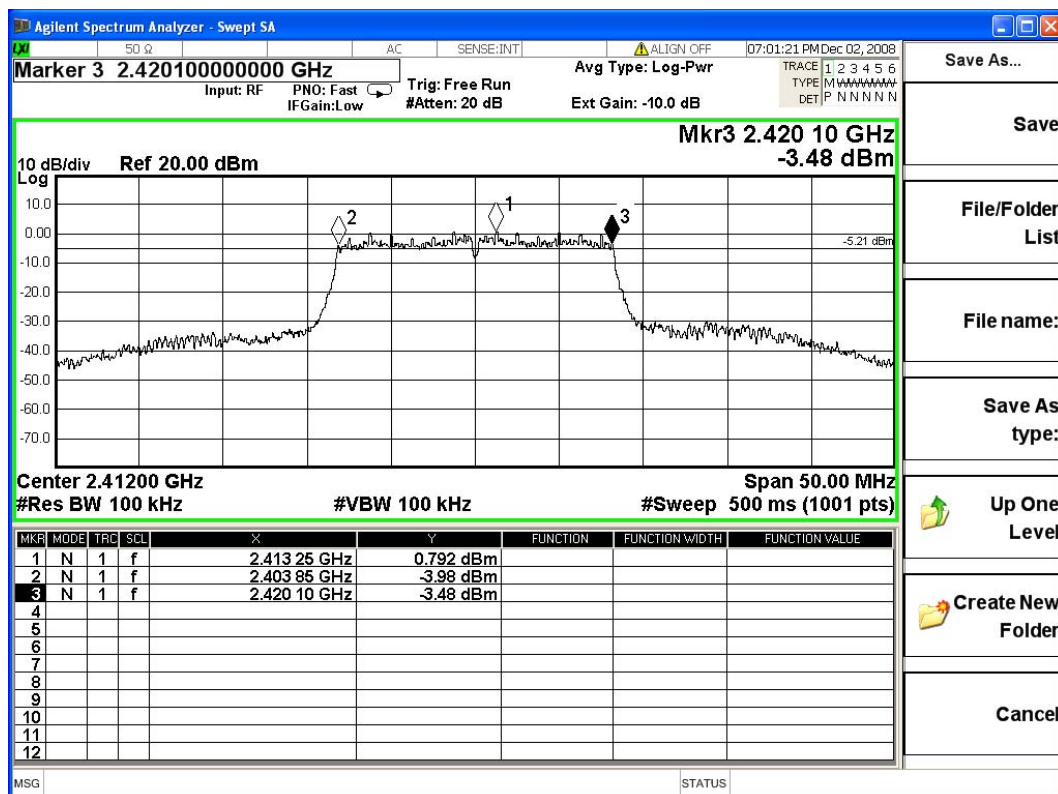
Figure Channel 11:



Product : Smart Handheld
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -802.11g 6Mbps (2412MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1	2412.00	16250	>500	Pass

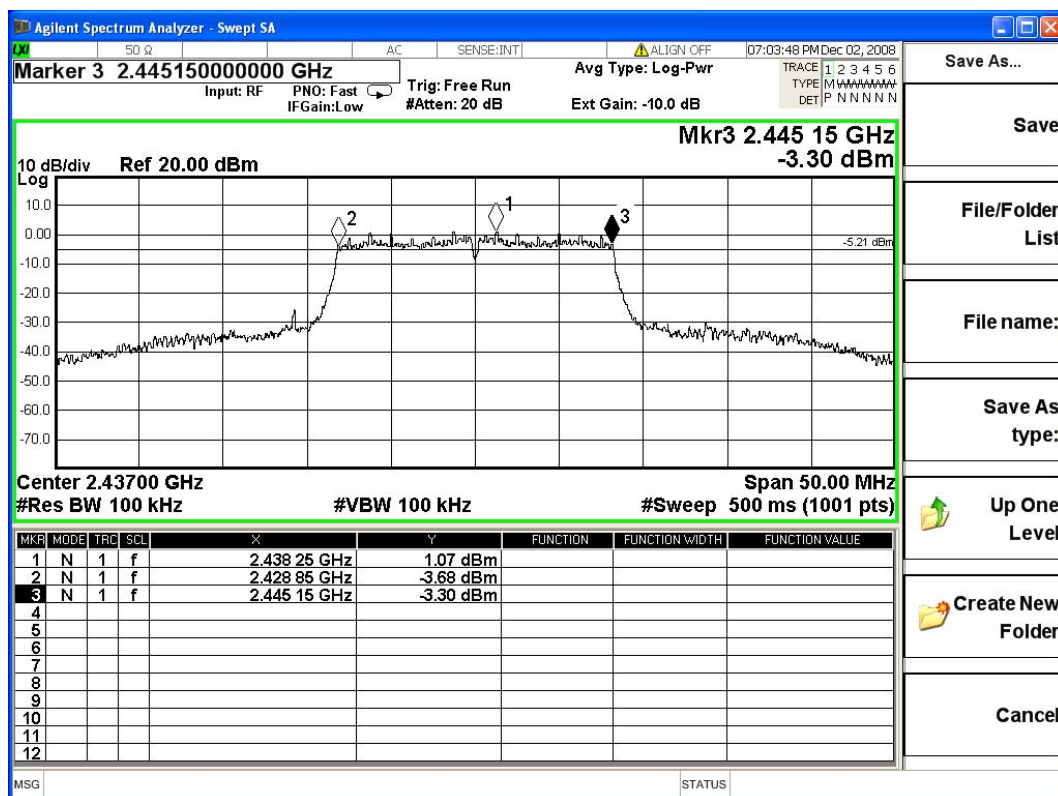
Figure Channel 1:



Product : Smart Handheld
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -802.11g 6Mbps (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6	2437.00	16300	>500	Pass

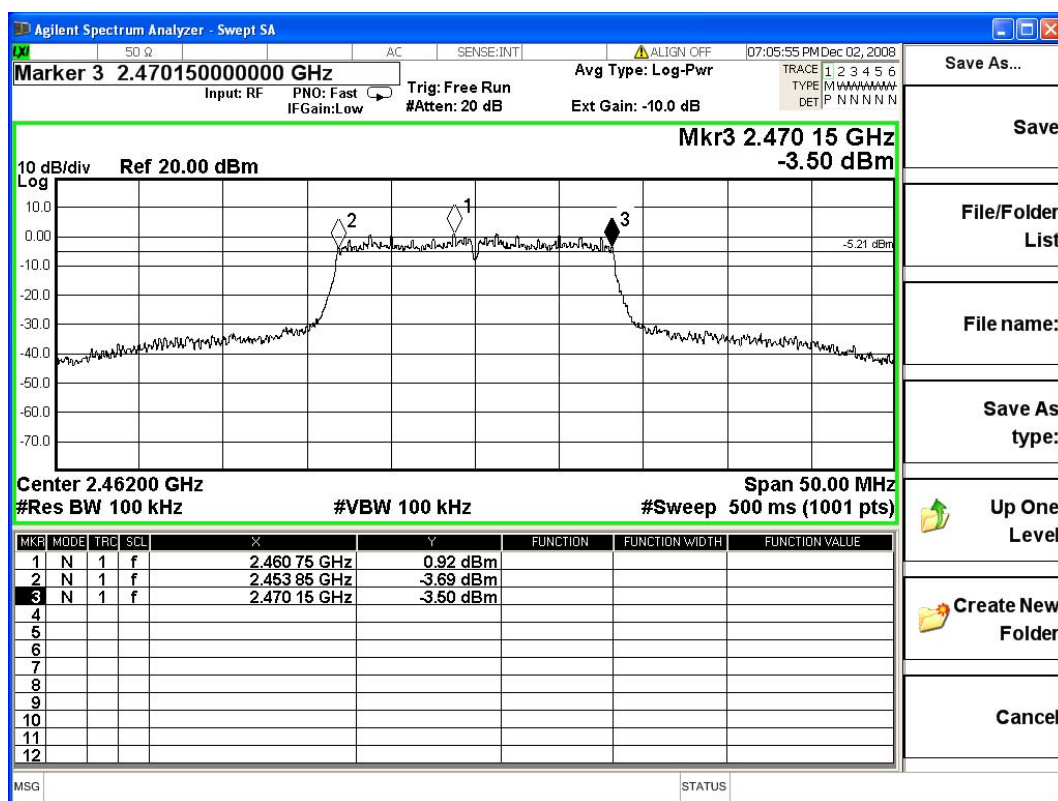
Figure Channel 6:



Product : Smart Handheld
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -802.11g 6Mbps (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
11	2462.00	16300	>500	Pass

Figure Channel 11:



8. Power Density

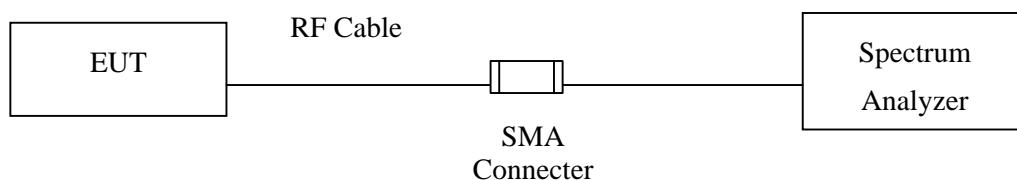
8.1. Test Equipment

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

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100339	Jun, 2008
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2008
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2008

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

8.2. Test Setup



8.3. Limits

The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3kHz bandwidth.

8.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003; tested according to DTS test procedure of Mar. 2005 KDB558074 for compliance to FCC 47CFR 15.247 requirements.
Set RBW= 3 kHz, VBW=10KHz, Sweep time=(SPAN/3KHz), detector=Peak detector

8.5. Uncertainty

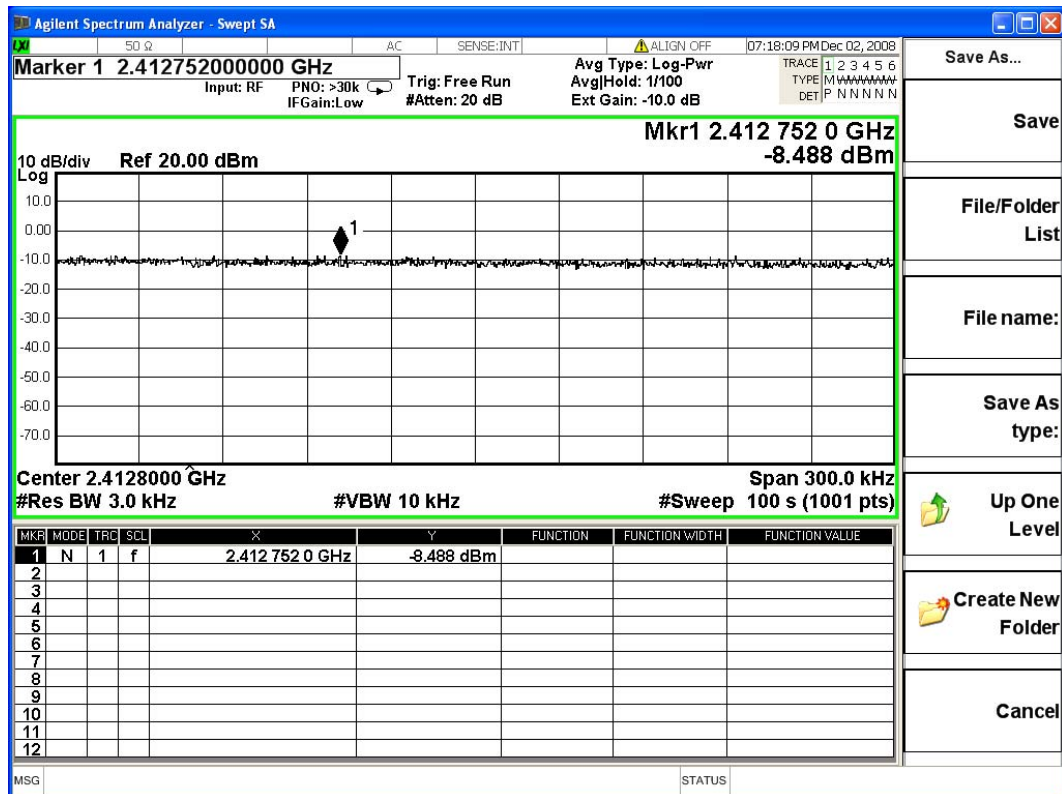
± 1.27 dB

8.6. Test Result of Power Density

Product : Smart Handheld
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter -802.11b 1Mbps (2412MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1	2412.00	-8.488	< 8dBm	Pass

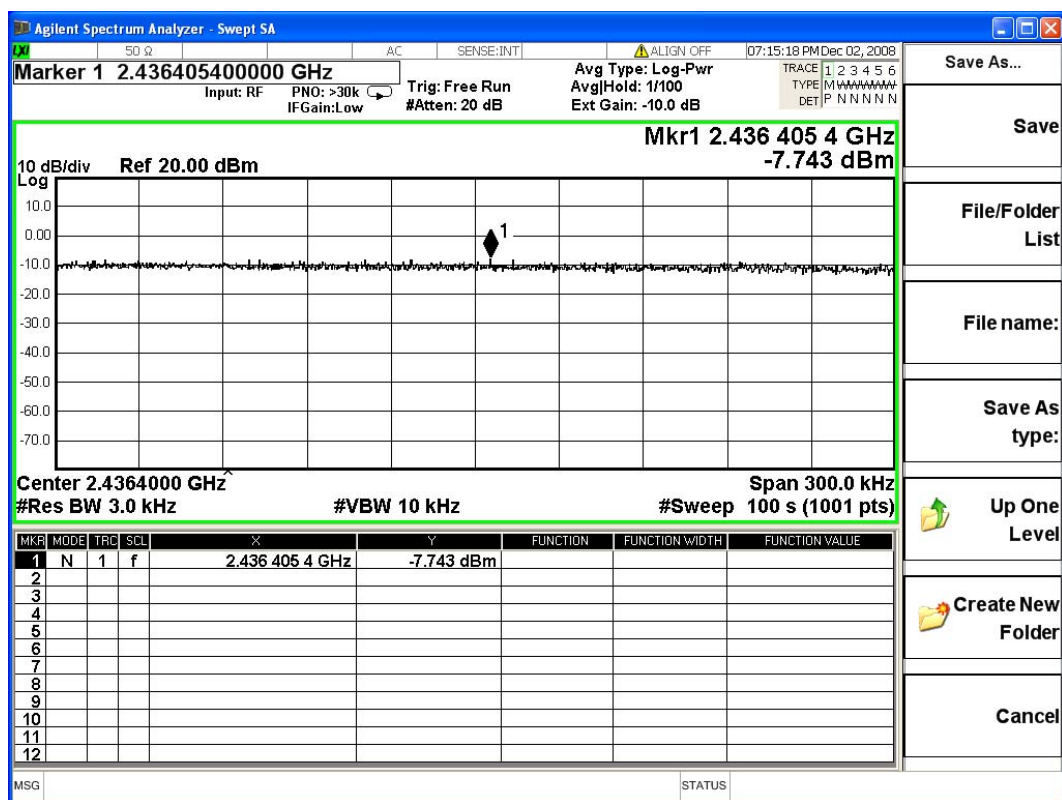
Figure Channel 1:



Product : Smart Handheld
 Test Item : Power Density Data
 Test Site : No.3OATS
 Test Mode : Mode 1: Transmitter -802.11b 1Mbps (2437MHz)

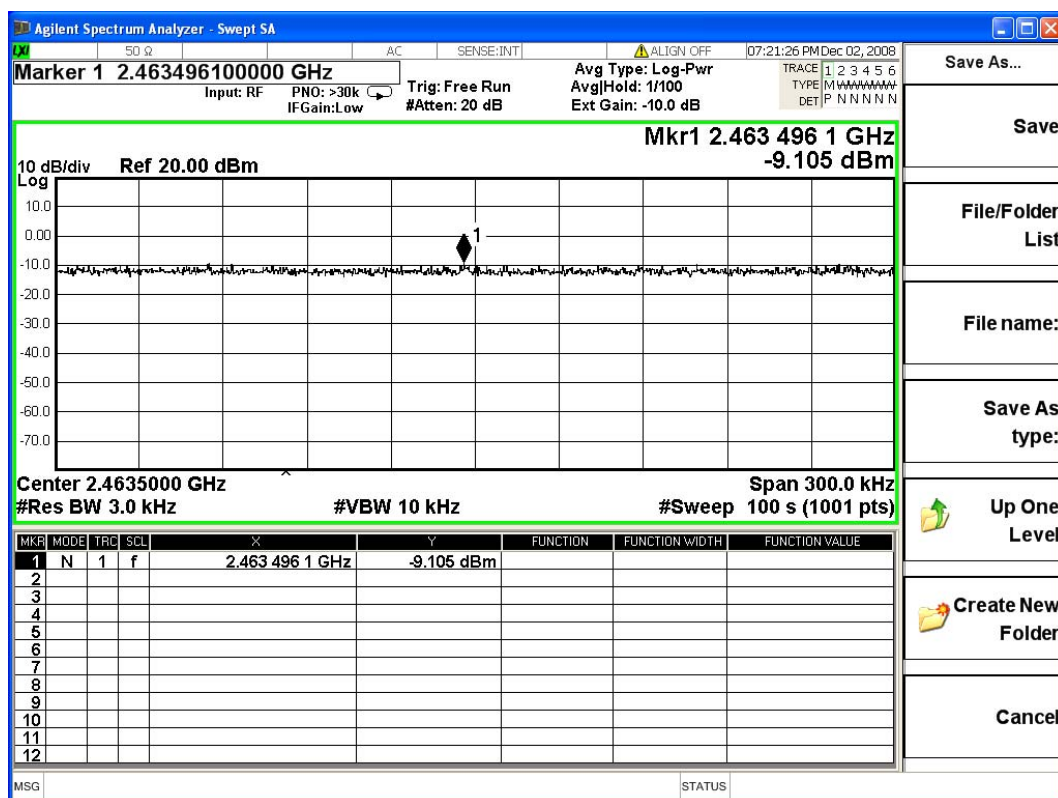
Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
6	2437.000	-7.743	< 8dBm	Pass

Figure Channel 6:



Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
11	2462.00	-9.105	< 8dBm	Pass

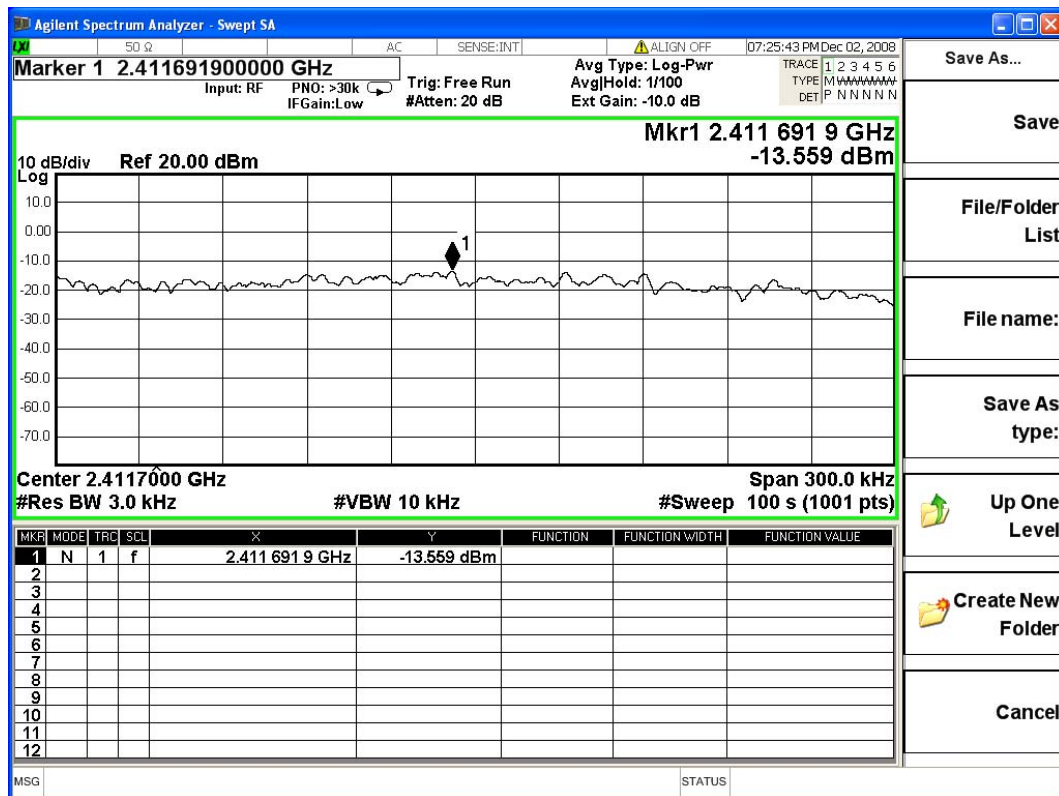
Figure Channel 11:



Product : Smart Handheld
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -802.11g 6Mbps (2412MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1	2412.00	-13.559	< 8dBm	Pass

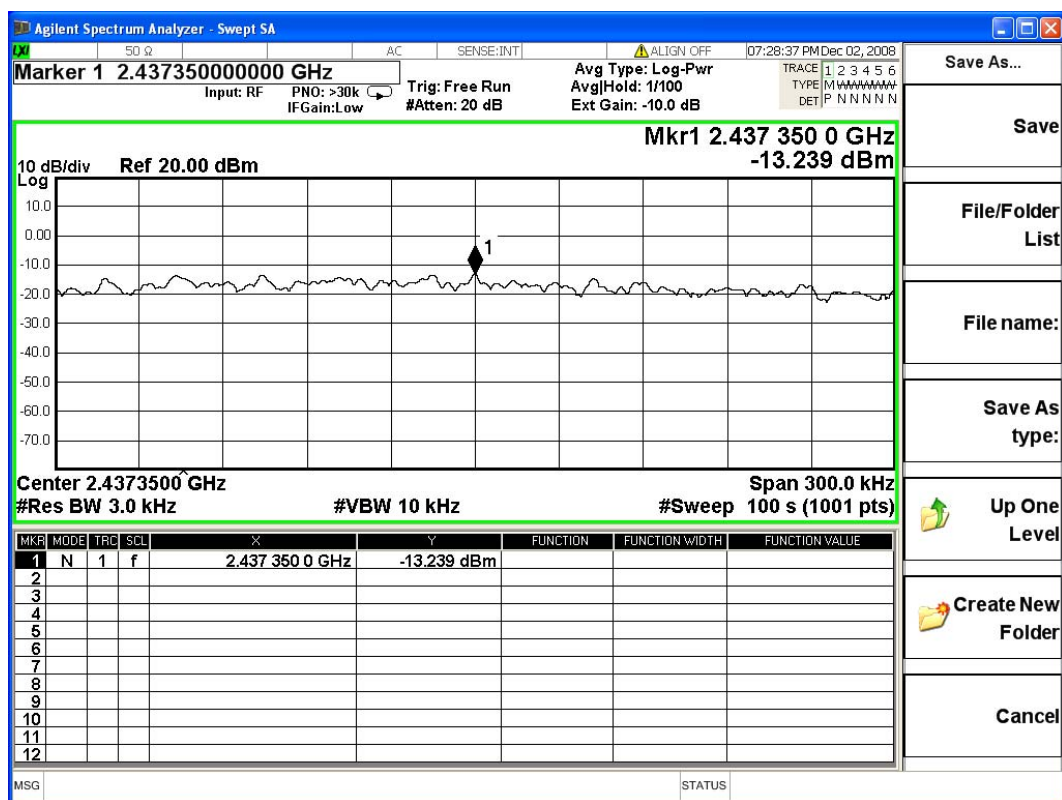
Figure Channel 1:



Product : Smart Handheld
 Test Item : Power Density Data
 Test Site : No.3OATS
 Test Mode : Mode 2: Transmitter -802.11g 6Mbps (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
6	2437.000	-13.239	< 8dBm	Pass

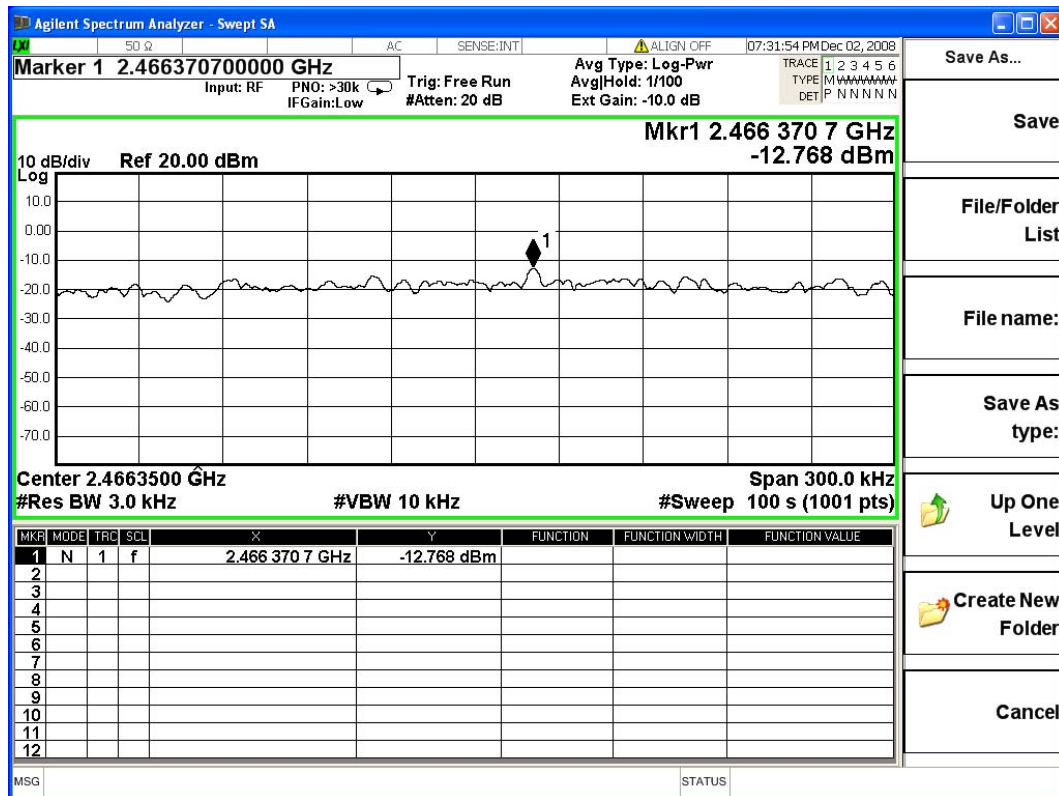
Figure Channel 6:



Product : Smart Handheld
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -802.11g 6Mbps (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
11	2462.00	-12.768	< 8dBm	Pass

Figure Channel 11:



9. EMI Reduction Method During Compliance Testing

No modification was made during testing.