



## Test Report

Product Name	Vzone Player
Model No.	VZ01
FCC ID	WEA-VZ02

Applicant	The Navvo Group, LLC
Address	6553 City West Pkwy Eden Prairie, MN 55344 USA

Date of Receipt	June. 05, 2008
Issued Date	June. 16, 2008
Report No.	086172R-RFUSP05V01
Version	V1.0

The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of Quietek Corporation.

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

# Test Report Certification

Issued Date: June. 16, 2008

Report No.: 086172R-RFUSP05V01



Accredited by NIST (NVLAP)

NVLAP Lab Code: 200533-0

Product Name	Vzone Player
Applicant	The Navvo Group, LLC
Address	6553 City West Pkwy Eden Prairie, MN 55344 USA
Manufacturer	Lite-On TECHNOLOGY CORP.
Model No.	VZ01
Rated Voltage	AC 120V/60Hz
	DC 5V
Trade Name	VOCO
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2007 ANSI C63.4: 2003
Test Result	Complied



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Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

## 1. GENERAL INFORMATION

### 1.1. EUT Description

Product Name	Vzone Player
Trade Name	VOCO
Model No.	VZ01
FCC ID	WEA-VZ02
Frequency Range	802.11b/g: 2412-2462MHz
Channel Number	802.11b/g: 11
Data Speed	IEEE 802.11b – 1, 2, 5.5, 11Mbps IEEE 802.11g – 6, 9, 12, 18, 24, 36 48, 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: Power tron Electronics Corp, M/N: PA1008-1DU Input: AC 100-240V, 50/60Hz, 0.3A Output: DC 5V, 1.5A Cable Out: Non-Shielded, 2.0m with one ferrite core bonded.

#### Antenna List

No.	Manufacturer	Part No.	Peak Gain
1	ACX	AT3216-B2R7HAAT	0.5dBi in 2.4 GHz

#### Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 1:	2412 MHz	Channel 5:	2432 MHz	Channel 9:	2452 MHz
Channel 2:	2417 MHz	Channel 6:	2437 MHz	Channel 10:	2457 MHz
Channel 3:	2422 MHz	Channel 7:	2442 MHz	Channel 11:	2462 MHz
Channel 4:	2427 MHz	Channel 8:	2447 MHz		

#### Note:

1. The EUT is a Vzone Player 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 and 802.11g is 6Mbps)
4. These tests are conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.247 for direct sequence spread spectrum devices.

## 1.2. Operational Description

The EUT is a Vzone Player with 11 channels. This device provides four kinds of transmitting speed 1, 2, 5.5 and 11Mbps. The modulation of device is BPSK, QPSK and CCK (IEEE 802.11b) and eight kinds of transmitting speed 6, 9, 12, 18, 24, 36, 48 and 54Mbps are provided. The technology of this device used is OFDM (IEEE 802.11g).

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

This Vzone Player, 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 Vzone Player 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
	Mode 2: Transmitter 802.11g

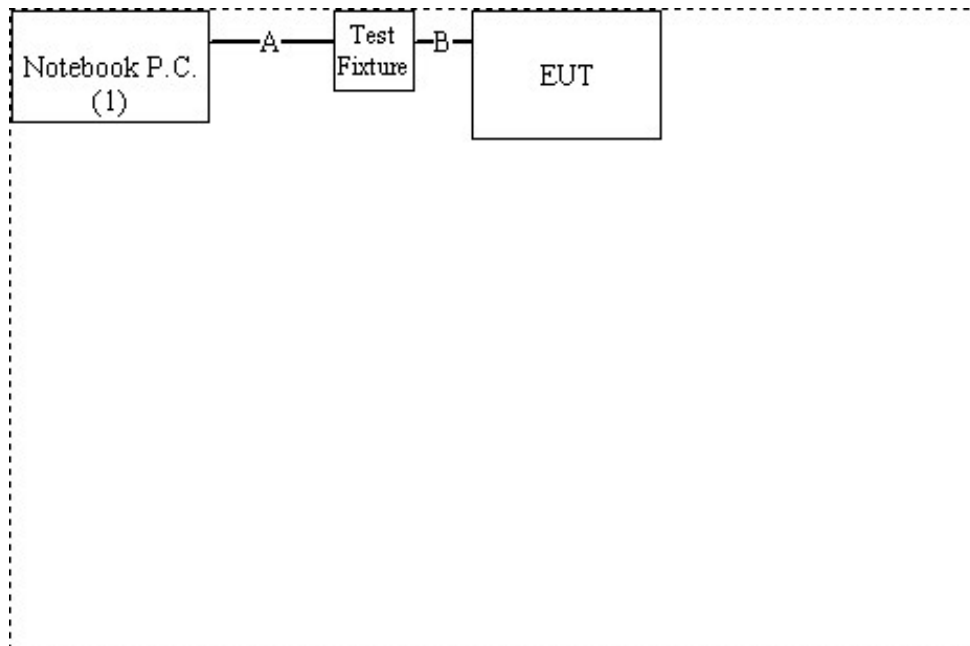
### 1.3. Tested System Details

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.	Notebook P.C.	DELL	PP18L	42649348672	DoC	Non-Shielded, 0.8m

Signal Cable Type	Signal cable Description
A. Modem Cable	Shielded, 1.5m
B. Controller Cable	Non-Shielded, 0.3m

### 1.4. Configuration of Test System



## **1.5. EUT Exercise Software**

- (1) Setup the EUT as shown in Section 1.4
- (2) Execute “Radioscope V5.0” 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

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



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FCC Accreditation Number: TW1014



## 2. Conducted Emission

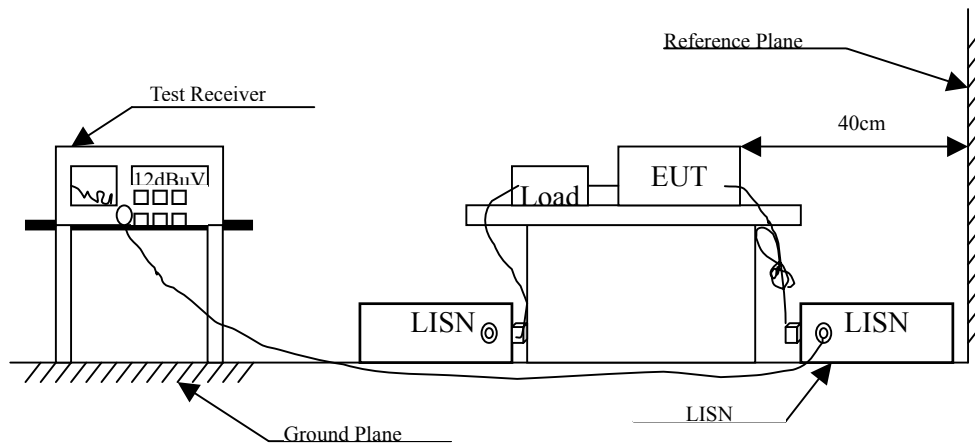
### 2.1. Test Equipment

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, 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: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

### 2.2. Test Setup



### 2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit		
Frequency MHz	Limits	
	uV	dBuV
0.15 - 0.50	66-56 <sub>(註)</sub>	56-46 <sub>(註)</sub>
0.50-5.0	56	46
5.0 - 30	60	50

## 2.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs.)

Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

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

## 2.5. Uncertainty

$\pm 2.26$  dB

## 2.6. Test Result of Conducted Emission

Product : Vzone Player  
 Test Item : Conducted Emission Test  
 Power Line : Line 1  
 Test Mode : Mode 1: Transmitter 802.11b (2437MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV	dB	dBuV
<b>LINE 1</b>					
<b>Quasi-Peak</b>					
0.150	0.300	52.670	52.970	-13.030	66.000
0.318	0.300	53.020	53.320	-7.880	61.200
0.607	0.300	47.240	47.540	-8.460	56.000
0.955	0.310	45.110	45.420	-10.580	56.000
2.541	0.360	43.940	44.300	-11.700	56.000
6.591	0.488	45.990	46.478	-13.522	60.000
<b>Average</b>					
0.150	0.300	37.840	38.140	-17.860	56.000
0.318	0.300	43.060	43.360	-7.840	51.200
0.607	0.300	36.940	37.240	-8.760	46.000
0.955	0.310	34.410	34.720	-11.280	46.000
2.541	0.360	32.720	33.080	-12.920	46.000
6.591	0.488	33.720	34.208	-15.792	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 : Vzone Player  
 Test Item : Conducted Emission Test  
 Power Line : Line 2  
 Test Mode : Mode 1: Transmitter 802.11b (2437MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV	dB	dBuV
<b>LINE 2</b>					
<b>Quasi-Peak</b>					
0.162	0.300	54.000	54.300	-11.357	65.657
0.310	0.300	54.080	54.380	-7.049	61.429
0.599	0.310	51.030	51.340	-4.660	56.000
1.107	0.321	47.450	47.771	-8.229	56.000
2.509	0.360	46.280	46.640	-9.360	56.000
5.845	0.430	50.630	51.060	-8.940	60.000
<b>Average</b>					
0.162	0.300	39.000	39.300	-16.357	55.657
0.310	0.300	40.920	41.220	-10.209	51.429
0.599	0.310	35.710	36.020	-9.980	46.000
1.107	0.321	30.070	30.391	-15.609	46.000
2.509	0.360	30.550	30.910	-15.090	46.000
5.845	0.430	33.900	34.330	-15.670	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 : Vzone Player  
 Test Item : Conducted Emission Test  
 Power Line : Line 1  
 Test Mode : Mode 2: Transmitter 802.11g (2437MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV	dB	dBuV
<b>LINE 1</b>					
<b>Quasi-Peak</b>					
0.170	0.621	53.360	53.981	-11.448	65.429
0.314	0.300	55.760	56.060	-5.254	61.314
0.580	0.300	50.870	51.170	-4.830	56.000
1.412	0.330	48.290	48.620	-7.380	56.000
2.369	0.350	45.930	46.280	-9.720	56.000
5.806	0.460	50.080	50.540	-9.460	60.000
<b>Average</b>					
0.170	0.621	40.150	40.771	-14.658	55.429
0.314	0.300	44.900	45.200	-6.114	51.314
0.580	0.300	39.290	39.590	-6.410	46.000
1.412	0.330	33.770	34.100	-11.900	46.000
2.369	0.350	33.110	33.460	-12.540	46.000
5.806	0.460	36.220	36.680	-13.320	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 : Vzone Player  
 Test Item : Conducted Emission Test  
 Power Line : Line 2  
 Test Mode : Mode 2: Transmitter 802.11g (2437MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV	dB	dBuV
<b>LINE 2</b>					
<b>Quasi-Peak</b>					
0.177	0.300	52.710	53.010	-12.219	65.229
0.322	0.300	55.700	56.000	-5.086	61.086
0.998	0.320	47.670	47.990	-8.010	56.000
1.791	0.340	47.570	47.910	-8.090	56.000
4.271	0.400	51.520	51.920	-4.080	56.000
6.525	0.440	49.300	49.740	-10.260	60.000
<b>Average</b>					
0.177	0.300	34.190	34.490	-20.739	55.229
0.322	0.300	42.100	42.400	-8.686	51.086
0.998	0.320	31.600	31.920	-14.080	46.000
1.791	0.340	30.410	30.750	-15.250	46.000
4.271	0.400	35.050	35.450	-10.550	46.000
6.525	0.440	33.360	33.800	-16.200	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

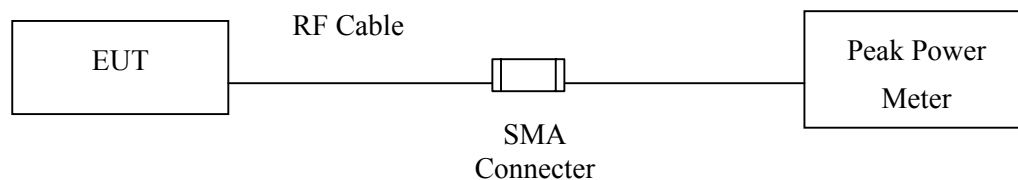
The following test equipments are used during the radiated emission tests:

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

#### 3.2. Test Setup

Conducted Measurement



#### 3.3. Test procedures

The EUT was tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

#### 3.4. Limits

The maximum peak power shall be less 1 Watt.

#### 3.5. Uncertainty

$\pm 1.27$  dB



### 3.6. Test Result of Peak Power Output

Product : Vzone Player  
 Test Item : Peak Power Output Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11b

Cable loss=0.5dB		Peak Power Output Value (dBm)				
Channel No.	Frequency (MHz)	Data Rate				Required Limit
		1 Mbps	2Mbps	5.5Mbps	11Mbps	
1	2412.00	19.12	--	--	--	1Watt= 30 dBm
6	2437.00	19.13	19.03	19.05	18.89	1Watt= 30 dBm
11	2462.00	19.04	--	--	--	1Watt= 30 dBm

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

Product : Vzone Player  
 Test Item : Peak Power Output Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter 802.11g

Cable loss=0.5dB		Peak Power Output Value (dBm)								
Channel No.	Frequency (MHz)	Data Rate (Mbps)								Required Limit
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps	
1	2412.00	21.34	--	--	--	--	--	--	--	1 Watt= 30 dBm
6	2437.00	21.37	21.26	21.21	21.16	21.19	21.06	21.02	21.04	1 Watt= 30 dBm
11	2462.00	21.14	--	--	--	--	--	--	--	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 equipments are used during the radiated emission test:

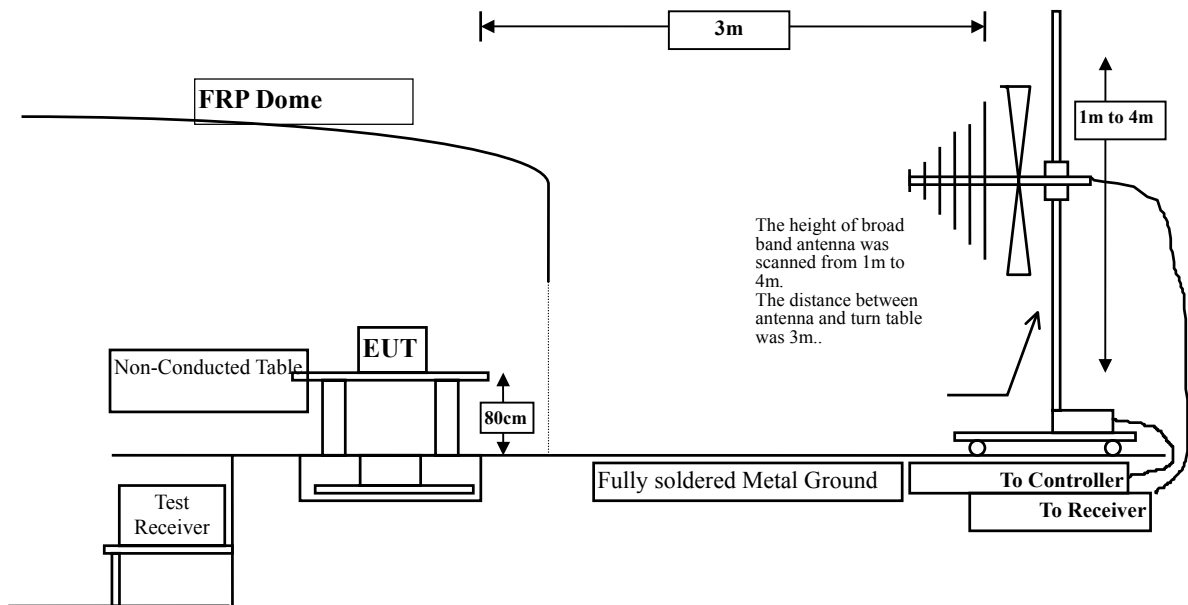
Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Site # 1		Test Receiver	R & S	ESCS 30 / 825442/14	May, 2008
		Spectrum Analyzer	Advantest	R3261C / 71720140	May, 2008
		Pre-Amplifier	HP	8447D/3307A01812	May, 2008
		Bilog Antenna	Chase	CBL6112B / 12452	Sep., 2007
		Horn Antenna	EM	EM6917 / 103325	May, 2008
Site # 2		Test Receiver	R & S	ESCS 30 / 825442/17	May, 2008
		Spectrum Analyzer	Advantest	R3261C / 71720609	May, 2008
		Pre-Amplifier	HP	8447D/3307A01814	May, 2008
		Bilog Antenna	Chase	CBL6112B / 2455	Sep., 2007
		Horn Antenna	EM	EM6917 / 103325	May, 2008
Site # 3	X	Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2008
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
	X	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2008
	X	Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2007
	X	Horn Antenna	Schwarzbeck	BBHA9170 / 208, 209	July, 2007
	X	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2007
	X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2008
	X	Pre-Amplifier	HP	8449B / 3008A01123	July, 2007

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

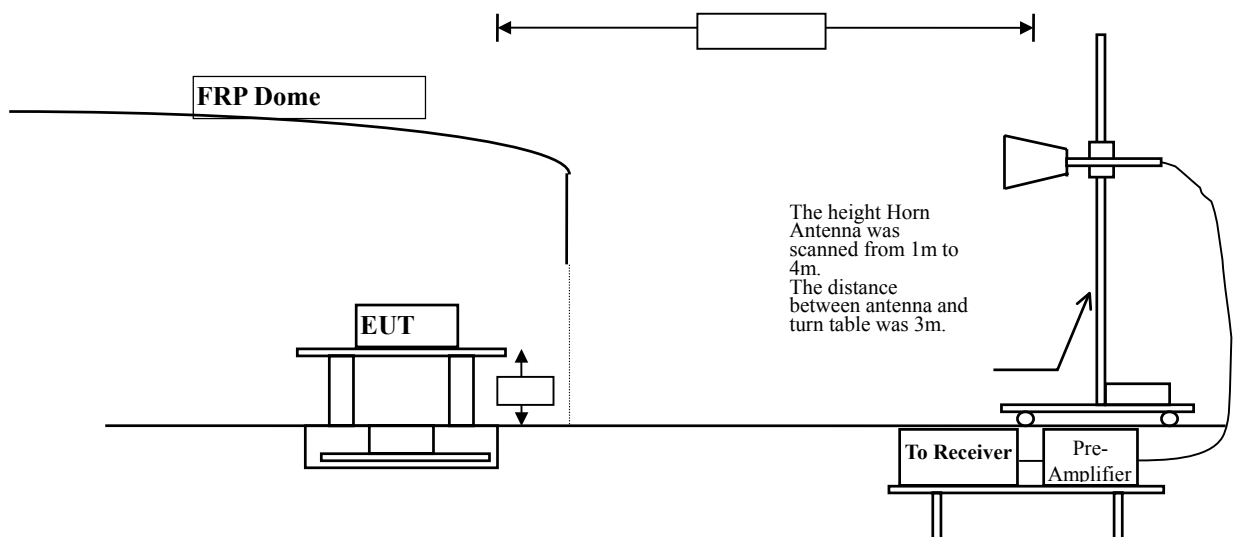
2. The test instruments marked with "X" are used to measure the final test results.

## 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 Oct 2002 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 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 : Vzone Player  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11b (2412MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
4824.000	5.362	44.570	49.931	-24.069	74.000
7236.000	11.867	41.210	53.077	-0.923	74.000
<b>Average</b>					
<b>Detector:</b>					
--					
<b>Vertical</b>					
<b>Peak Detector:</b>					
4824.000	5.362	43.350	48.711	-25.289	74.000
7236.000	11.867	40.260	52.127	-21.873	74.000
<b>Average</b>					
<b>Detector:</b>					
--					

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 : Vzone Player  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11b (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
4874.000	5.465	43.640	49.106	-24.894	74.000
7311.000	12.030	40.630	52.660	-21.340	74.000
<b>Average</b>					
<b>Detector:</b>					
--					
<b>Vertical</b>					
<b>Peak Detector:</b>					
4874.000	5.465	43.940	49.406	-24.594	74.000
7311.000	12.030	40.780	52.810	-21.190	74.000
<b>Average</b>					
<b>Detector:</b>					
--					

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 : Vzone Player  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11b (2462 MHz)

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

#### Horizontal

##### Peak Detector:

4924.000	5.578	43.877	49.454	-24.546	74.000
7386.000	12.211	41.550	53.762	-20.238	74.000

##### Average

##### Detector:

--

#### Vertical

##### Peak Detector:

4924.000	5.578	43.530	49.107	-24.893	74.000
7386.000	12.211	40.880	53.092	-20.908	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 : Vzone Player  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter 802.11g (2412MHz)

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

#### Horizontal

##### Peak Detector:

4824.000	5.362	43.410	48.771	-25.229	74.000
7236.000	11.867	40.480	52.347	-21.653	74.000

##### Average

##### Detector:

--

#### Vertical

##### Peak Detector:

4824.000	5.362	44.040	49.401	-24.599	74.000
7236.000	11.867	41.080	52.947	-21.053	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 : Vzone Player  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter 802.11g (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
4874.000	5.465	43.520	48.986	-25.014	74.000
7311.000	12.030	40.750	52.780	-21.220	74.000
<b>Average</b>					
<b>Detector:</b>					
--					
<b>Vertical</b>					
<b>Peak Detector:</b>					
4874.000	5.465	43.570	49.036	-24.964	74.000
7311.000	12.030	40.810	52.840	-21.160	74.000
<b>Average</b>					
<b>Detector:</b>					
--					

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 : Vzone Player  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter 802.11g (2462 MHz)

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

#### Horizontal

##### Peak Detector:

4924.000	5.578	43.550	49.127	-24.873	74.000
7386.000	12.211	41.280	53.492	-20.508	74.000

##### Average

##### Detector:

--

#### Vertical

##### Peak Detector:

4924.000	5.578	43.480	49.057	-24.943	74.000
7386.000	12.211	40.990	53.202	-20.798	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 : Vzone Player  
 Test Item : General Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11b (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
<b>Horizontal</b>					
201.062	-11.829	42.059	30.230	-13.270	43.500
304.088	-7.546	42.429	34.883	-11.117	46.000
440.160	-0.991	36.758	35.767	-10.233	46.000
599.559	4.191	32.921	37.112	-8.888	46.000
751.182	3.788	27.927	31.715	-14.285	46.000
1000.000	5.630	34.982	40.612	-13.388	54.000
<b>Vertical</b>					
309.920	-8.410	43.907	35.497	-10.503	46.000
432.385	-2.005	32.665	30.660	-15.340	46.000
508.196	-1.590	35.161	33.571	-12.429	46.000
599.559	0.860	31.228	32.087	-13.913	46.000
751.182	1.998	30.444	32.442	-13.558	46.000
1000.000	6.120	35.117	41.237	-12.763	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 : Vzone Player  
 Test Item : General Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter 802.11g (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
<b>Horizontal</b>					
304.088	-7.546	41.979	34.433	-11.567	46.000
432.385	-1.085	36.501	35.416	-10.584	46.000
479.038	-0.690	35.006	34.316	-11.684	46.000
599.559	4.191	31.884	36.075	-9.925	46.000
749.238	3.752	30.622	34.373	-11.627	46.000
1000.000	5.630	32.800	38.430	-15.570	54.000
<b>Vertical</b>					
311.864	-8.275	43.797	35.522	-10.478	46.000
432.385	-2.005	35.243	33.238	-12.762	46.000
576.232	0.241	31.223	31.464	-14.536	46.000
751.182	1.998	33.608	35.606	-10.394	46.000
941.683	5.780	27.951	33.731	-12.269	46.000
1000.000	6.120	36.616	42.736	-11.264	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:

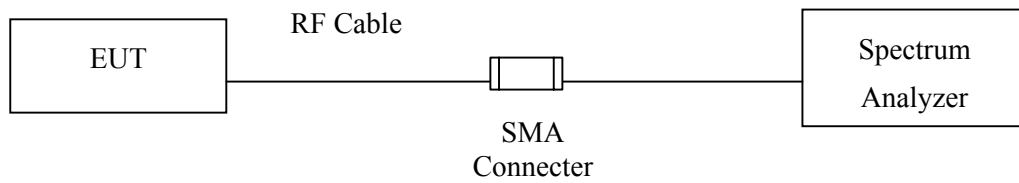
Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
X Spectrum Analyzer	Agilent	N9010A / MY48030495	April, 2008

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 Oct 2002 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 : Vzone Player  
 Test Item : RF antenna conducted test  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11b

### Channel 01 (2412MHz)

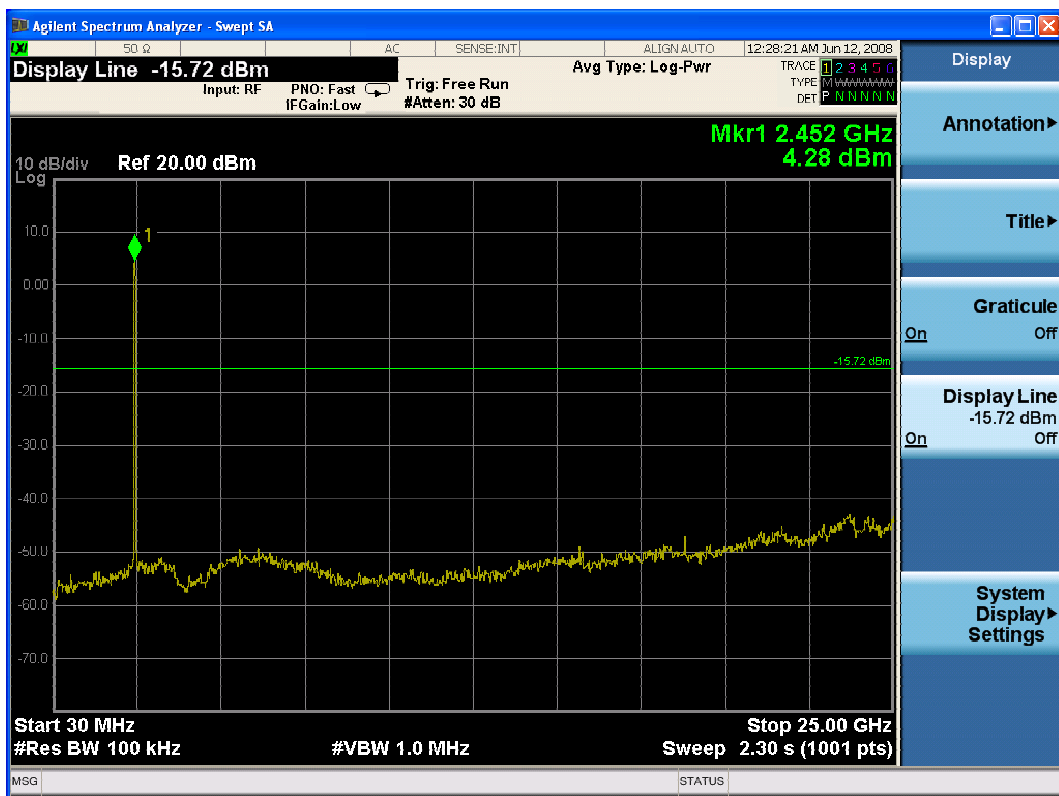




### Channel 06 (2437MHz)



### Channel 11 (2462MHz)

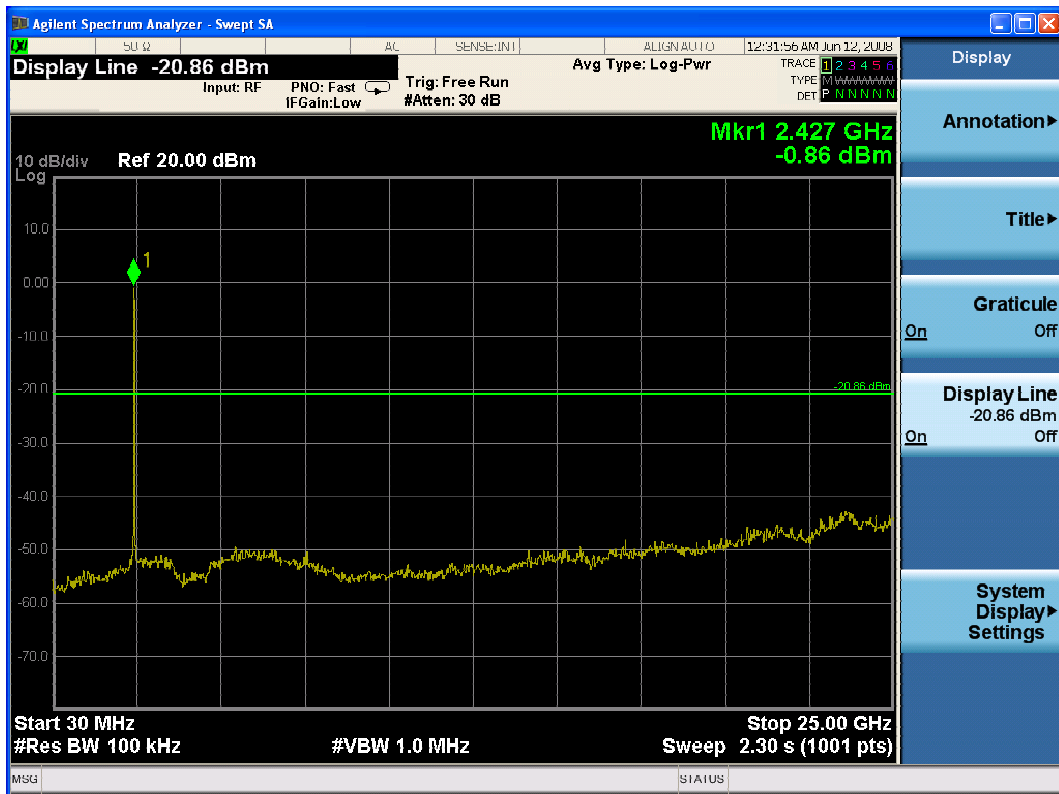


Product : Vzone Player  
 Test Item : RF Antenna Conducted Spurious  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter 802.11g

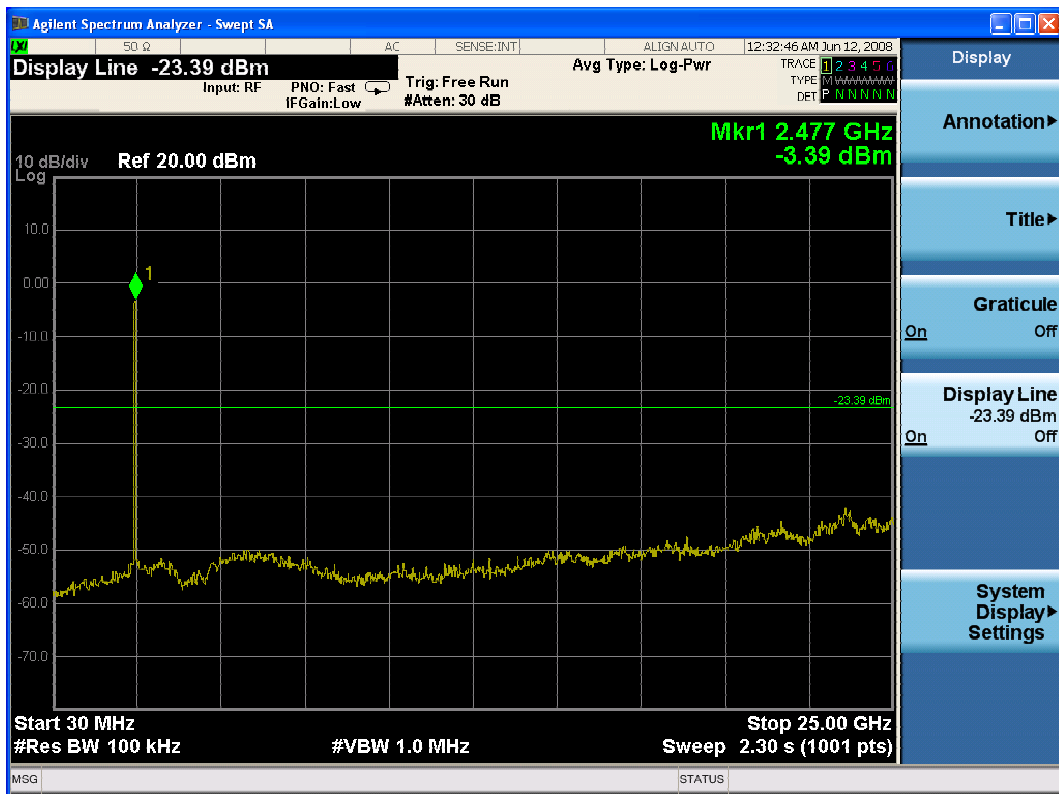
### Channel 01 (2412MHz)



### Channel 06 (2437MHz)



### Channel 11 (2462MHz)



## 6. Radiated Emission Band Edge

### 6.1. Test Equipment

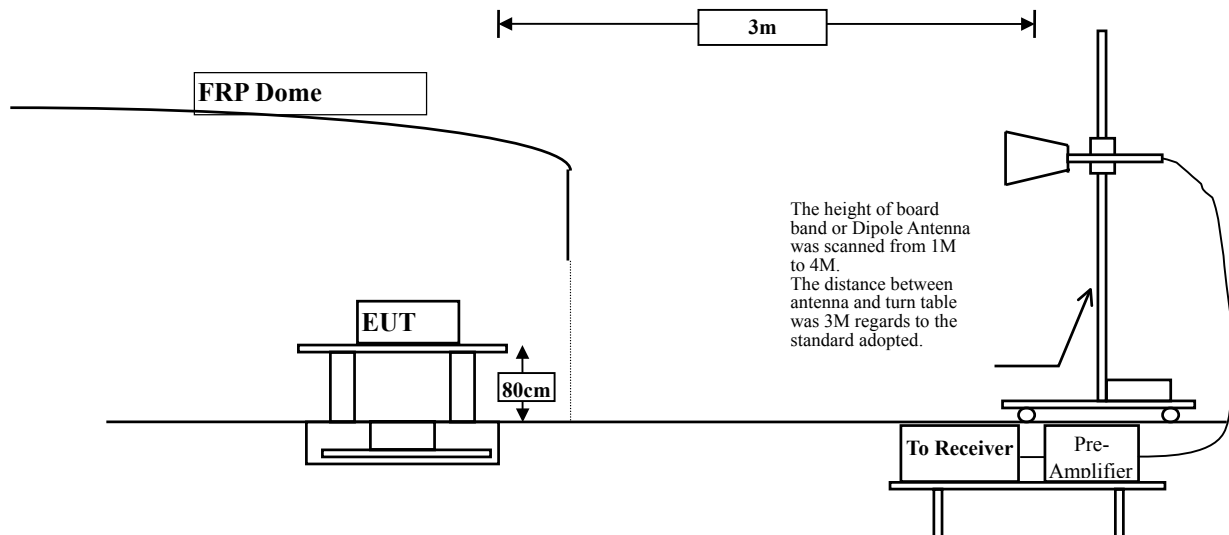
The following test equipments are used during the band edge tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2008
X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
X	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2008
X	Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2007
X	Horn Antenna	Schwarzbeck	BBHA9170 / 208, 209	July, 2007
X	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2007
X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2008
X	Pre-Amplifier	HP	8449B / 3008A01123	July, 2007

- 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.

### 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 Oct 2002 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**

$\pm 3.9$  dB above 1GHz

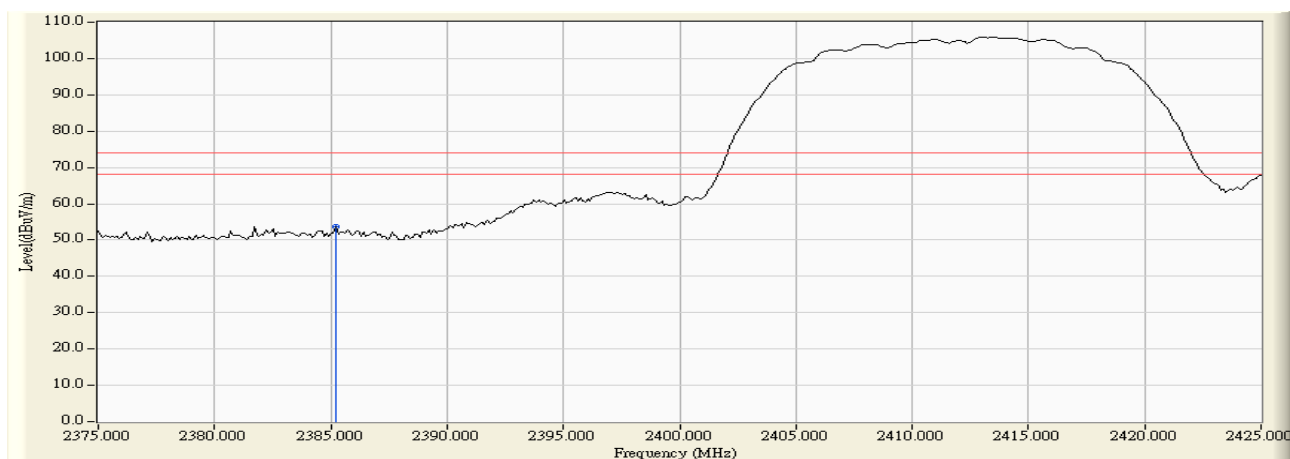
## 6.6. Test Result of Band Edge

Product : Vzone Player  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11b

### RF Radiated Measurement (Horizontal):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
1 (Peak)	2385.220	-2.059	55.656	53.597	74.00	54.00	Pass

Figure Channel 1: Horizontal (Peak)



### Note:

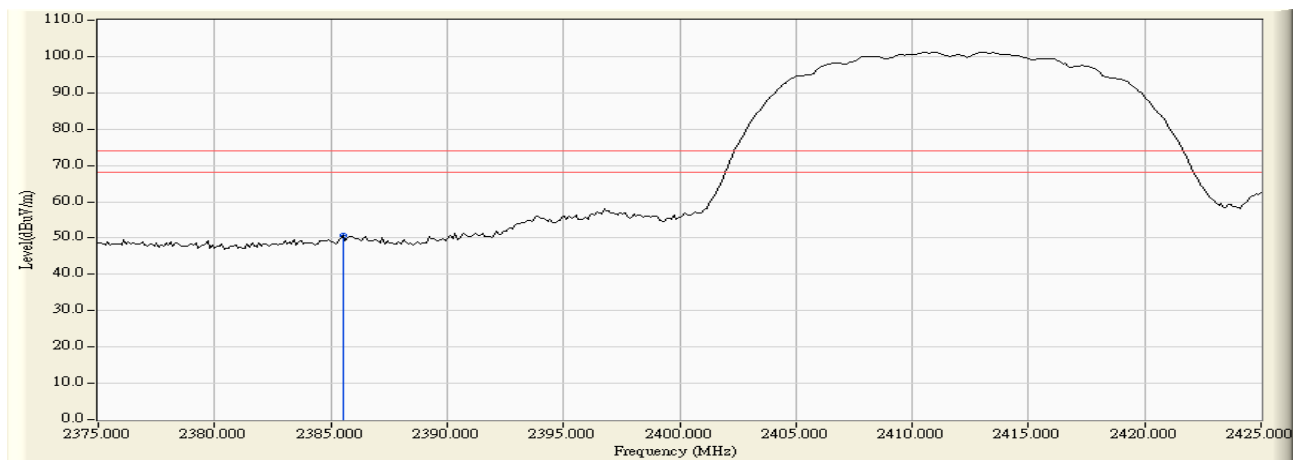
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading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

Product : Vzone Player  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11b

**RF Radiated Measurement (Vertical):**

Channel	Frequency (MHz)	Correct Fcator (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
1 (Peak)	2385.521	-2.057	52.853	50.796	74.00	54.00	Pass

**Figure Channel 1: Vertical (Peak)**



**Note:**

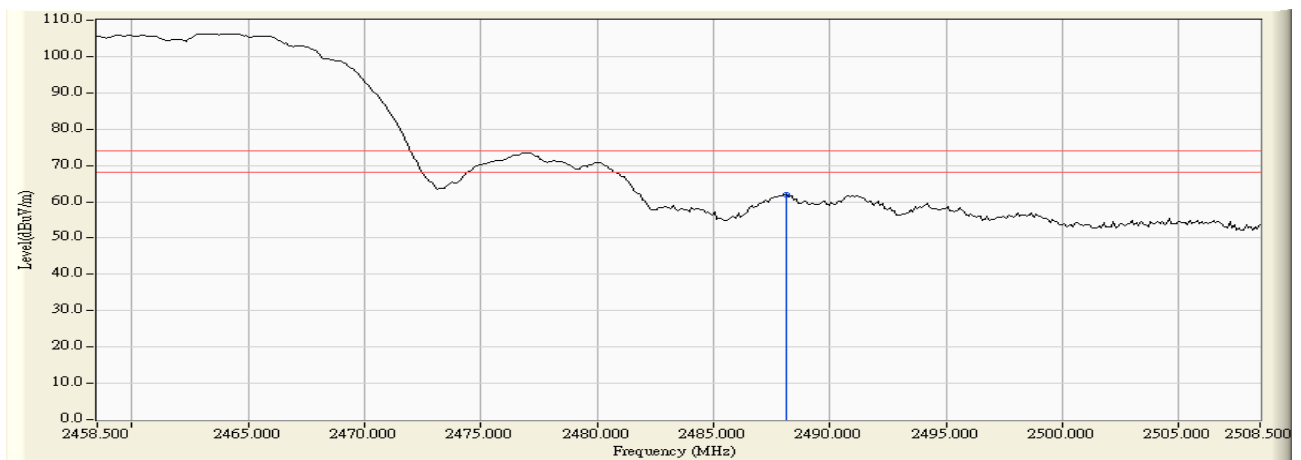
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading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

Product : Vzone Player  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11b

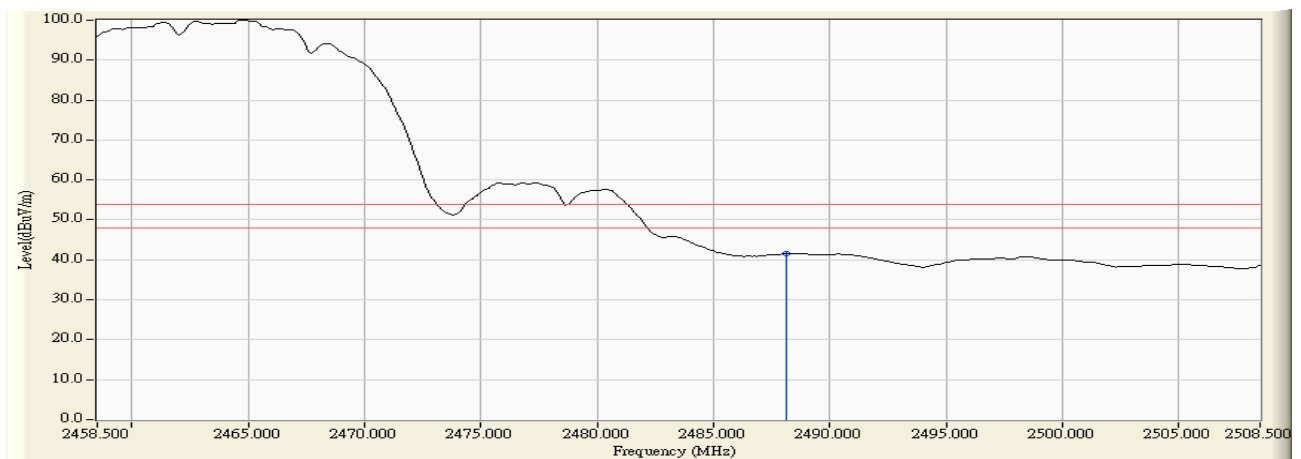
**RF Radiated Measurement (Horizontal):**

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11(Peak)	2488.159	-1.592	63.484	61.893	74.00	54.00	Pass
11(Average)	2488.159	-1.592	43.097	41.506	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.

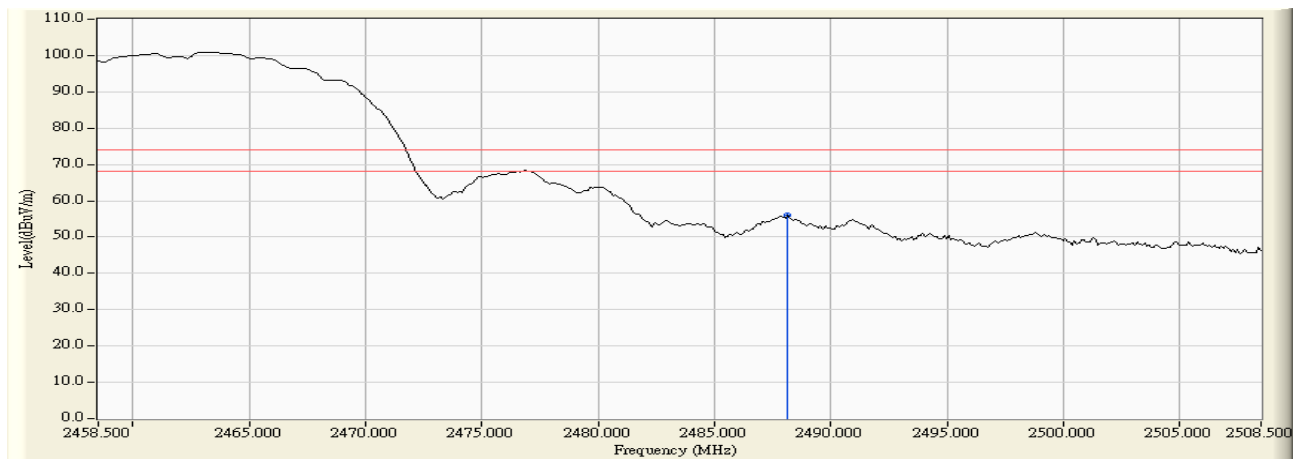


Product : Vzone Player  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11b

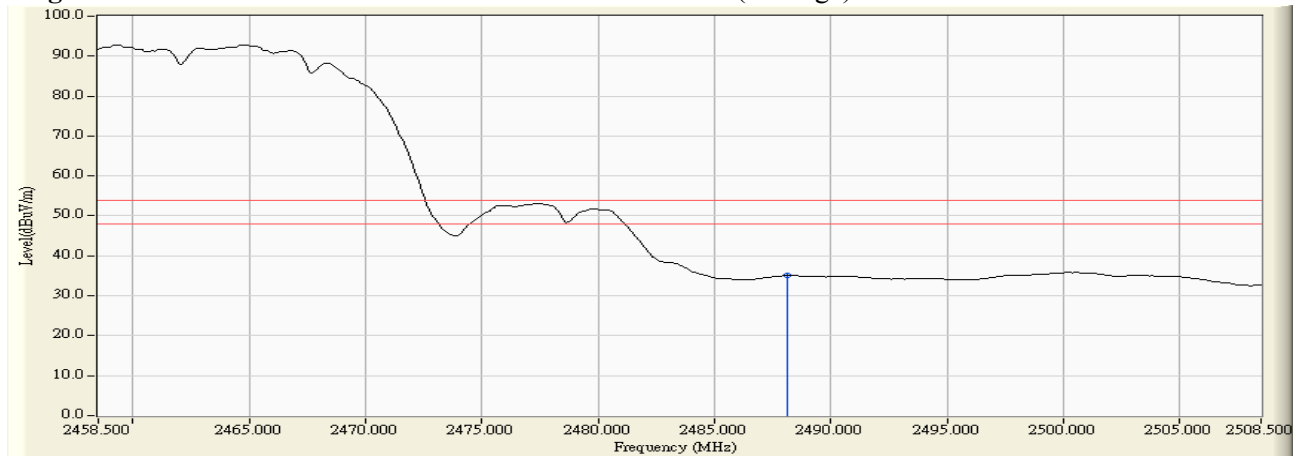
**RF Radiated Measurement (Vertical):**

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11(Peak)	2488.159	-1.592	57.665	56.074	74.00	54.00	Pass
11(Average)	2488.159	-1.592	36.681	35.090	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.

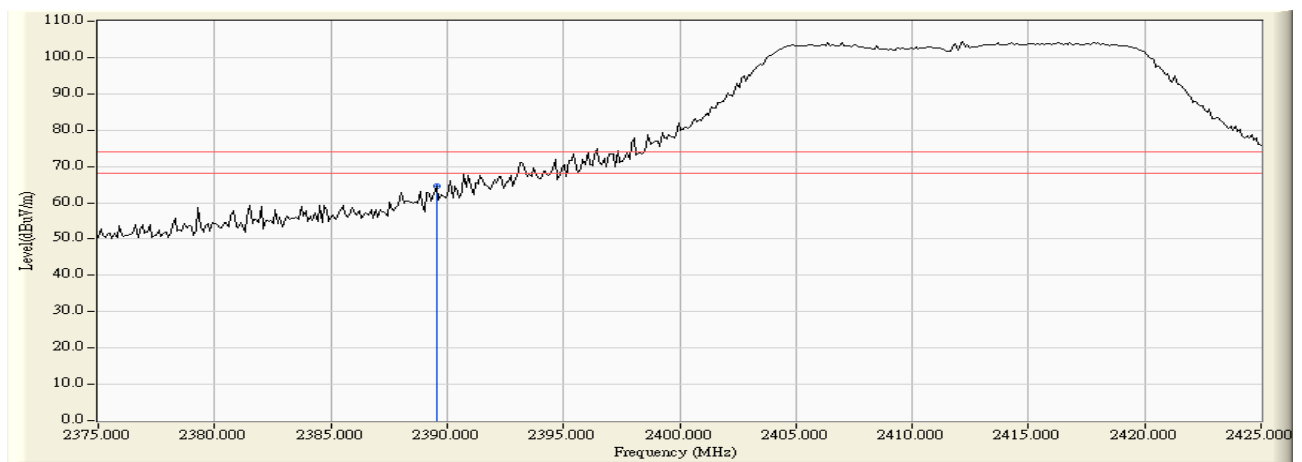
Product : Vzone Player  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter 802.11g

**RF Radiated Measurement (Horizontal):**

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
1 (Peak)	2389.529	-2.040	66.703	64.663	74.00	54.00	Pass
1 (Average)	2389.529	-2.040	42.420	40.380	74.00	54.00	Pass

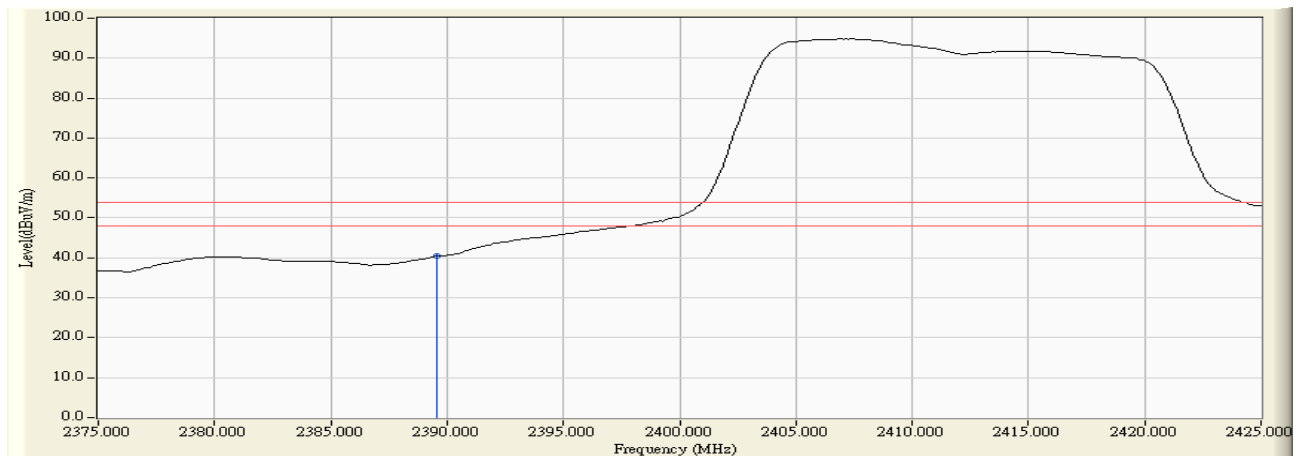
**Figure Channel 1:**

**Horizontal (Peak)**



**Figure Channel 1:**

**Horizontal (Average)**



**Note:**

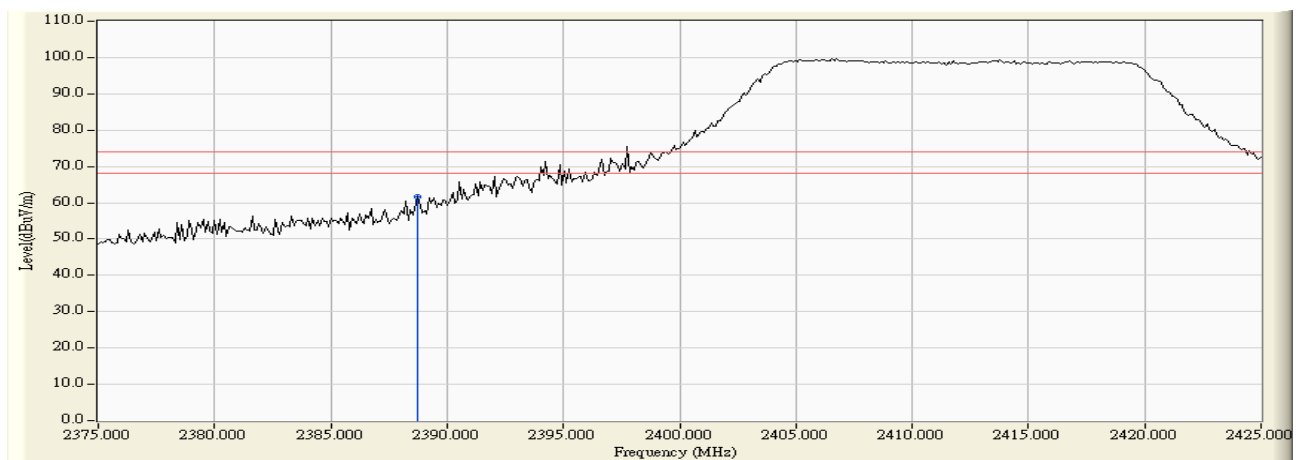
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading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

Product : Vzone Player  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter 802.11g

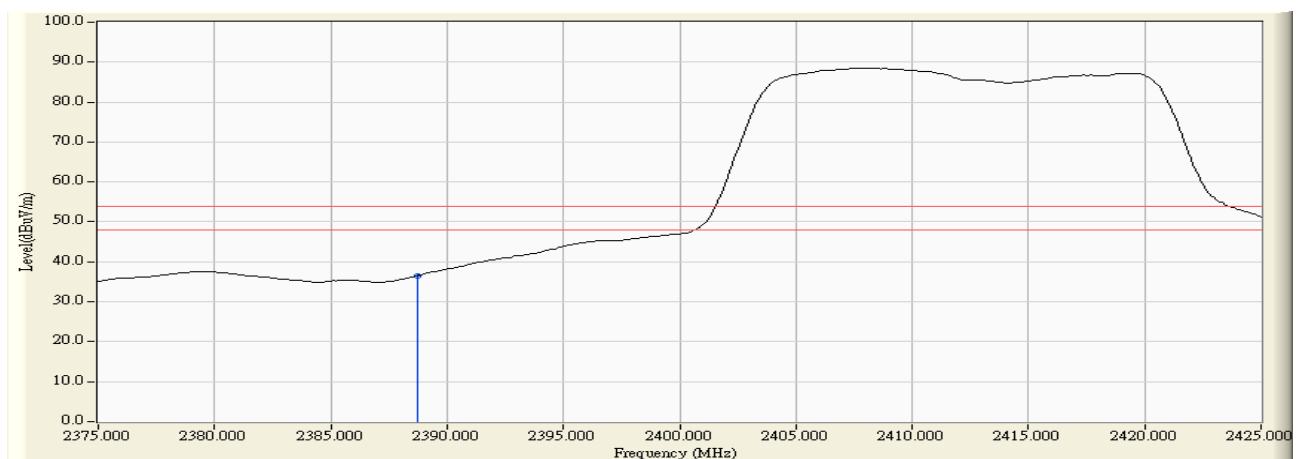
**RF Radiated Measurement (Vertical):**

Channel	Frequency (MHz)	Correct Fcator (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
1 (Peak)	2388.728	-2.044	63.797	61.753	74.00	54.00	Pass
1 (Average)	2388.728	-2.044	38.545	36.501	74.00	54.00	Pass

**Figure Channel 1: Vertical (Peak)**



**Figure Channel 1: Vertical (Average)**



**Note:**

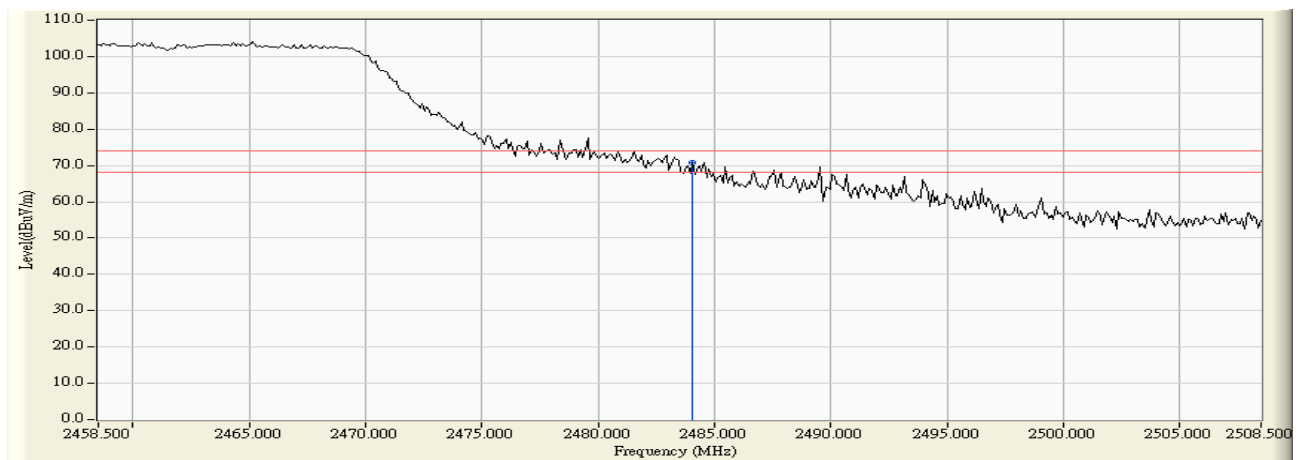
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading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

Product : Vzone Player  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter 802.11g

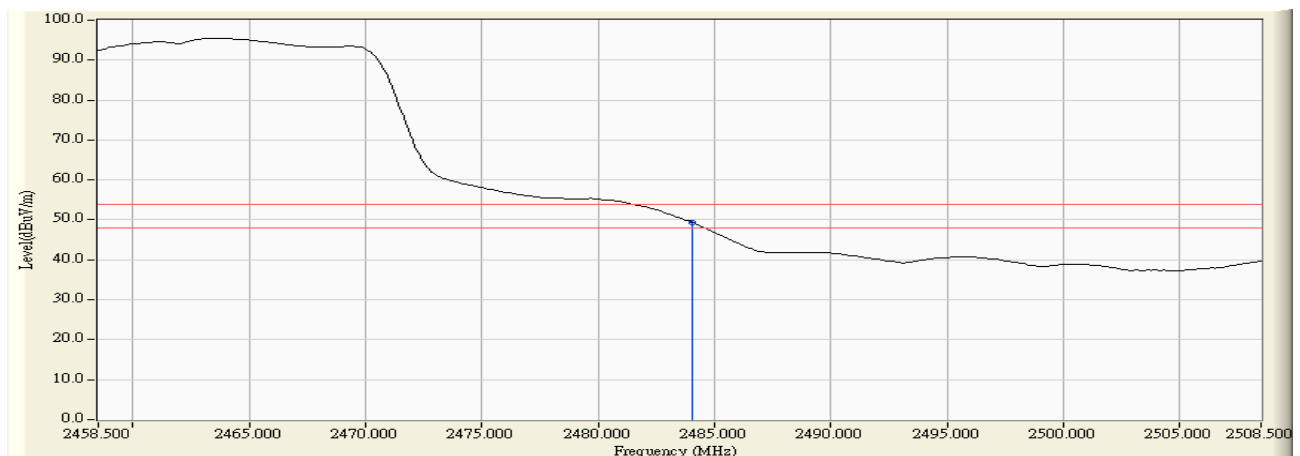
**RF Radiated Measurement (Horizontal):**

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11(Peak)	2484.051	-1.610	72.469	70.859	74.00	54.00	Pass
11(Average)	2484.051	-1.610	50.865	49.255	74.00	54.00	Pass

**Figure Channel 11: Horizontal (Peak)**



**Figure Channel 11: Horizontal (Average)**



Note:

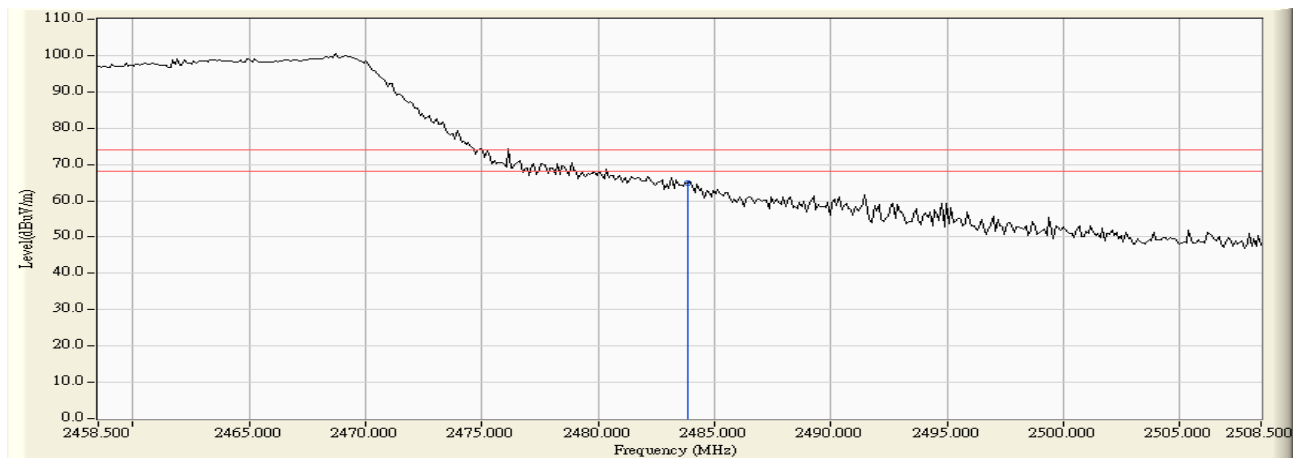
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading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

Product : Vzone Player  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter 802.11g

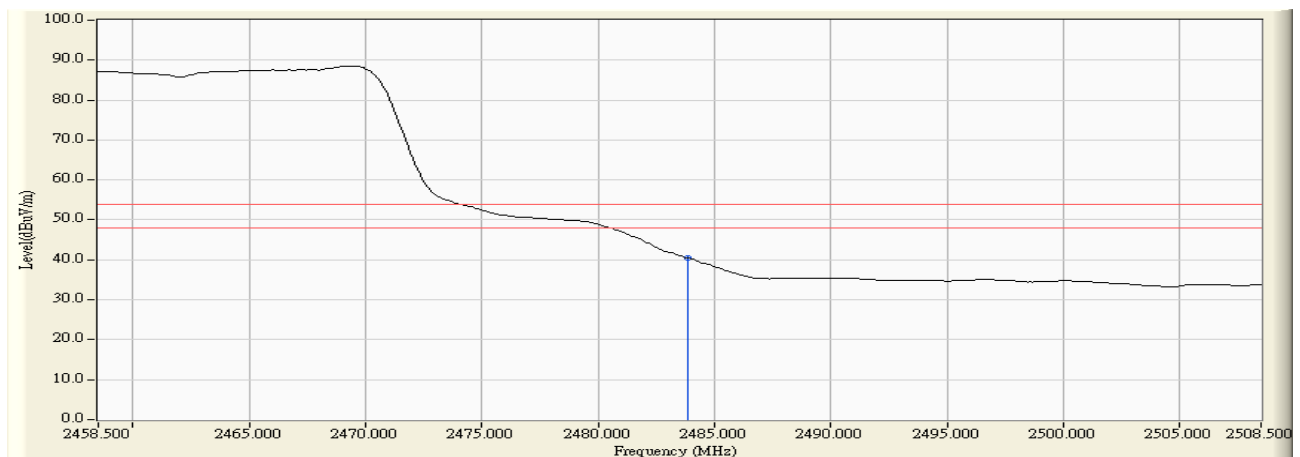
**RF Radiated Measurement (Vertical):**

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11(Peak)	2483.851	-1.611	66.531	64.920	74.00	54.00	Pass
11(Average)	2483.851	-1.611	42.098	40.487	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

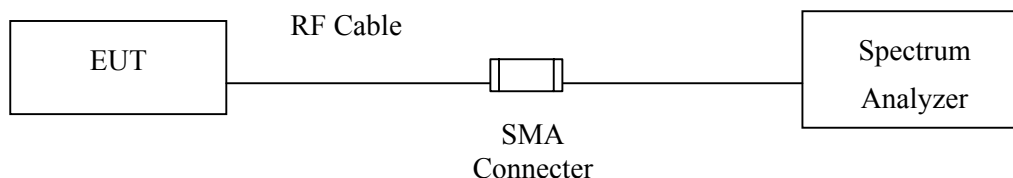
### 7.1. Test Equipment

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

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2008
Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
X Spectrum Analyzer	Agilent	N9010A / MY48030495	April, 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.

### 7.2. Test Setup



### 7.3. Test Procedures

The EUT was setup according to ANSI C63.4, 2003; tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Span greater than RBW.

### 7.4. Limits

The 6 dB bandwidth must be greater than 500 kHz.

### 7.5. Uncertainty

$\pm 150\text{Hz}$

## 7.6. Test Result of Occupied Bandwidth

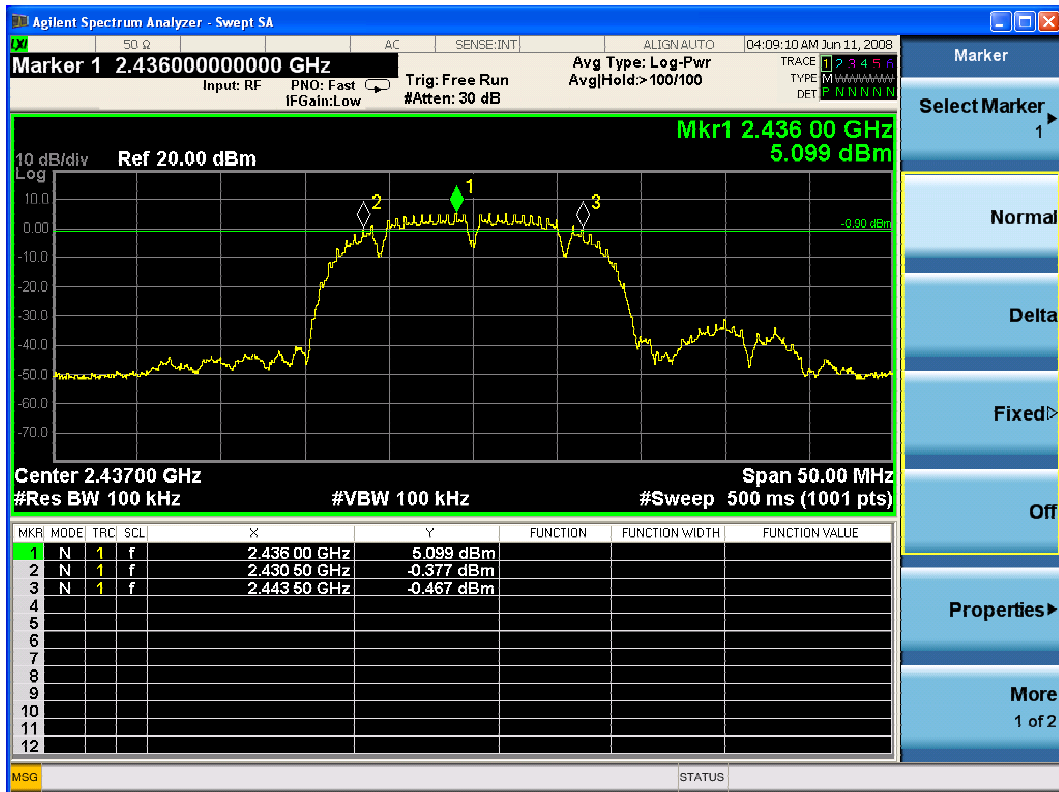
Product : Vzone Player  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11b

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1 (1Mbps)	2412.00	12000	>500	Pass
6 (1Mbps)	2437.00	13000	>500	Pass
11 (1Mbps)	2462.00	13000	>500	Pass

### Channel 1:



### Channel 6:



### Channel 11:

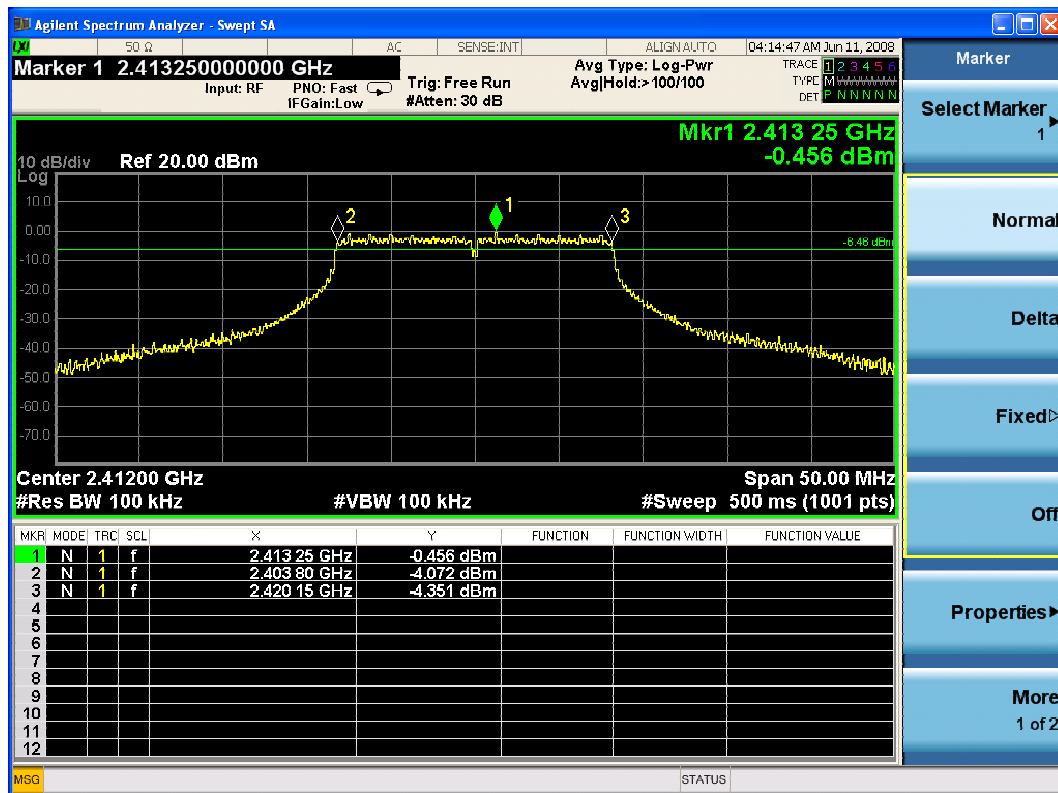




Product : Vzone Player  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter 802.11g

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1 (6Mbps)	2412.00	16350	>500	Pass
6 (6Mbps)	2437.00	16300	>500	Pass
11 (6Mbps)	2462.00	16250	>500	Pass

### Channel 1:



Channel 6:

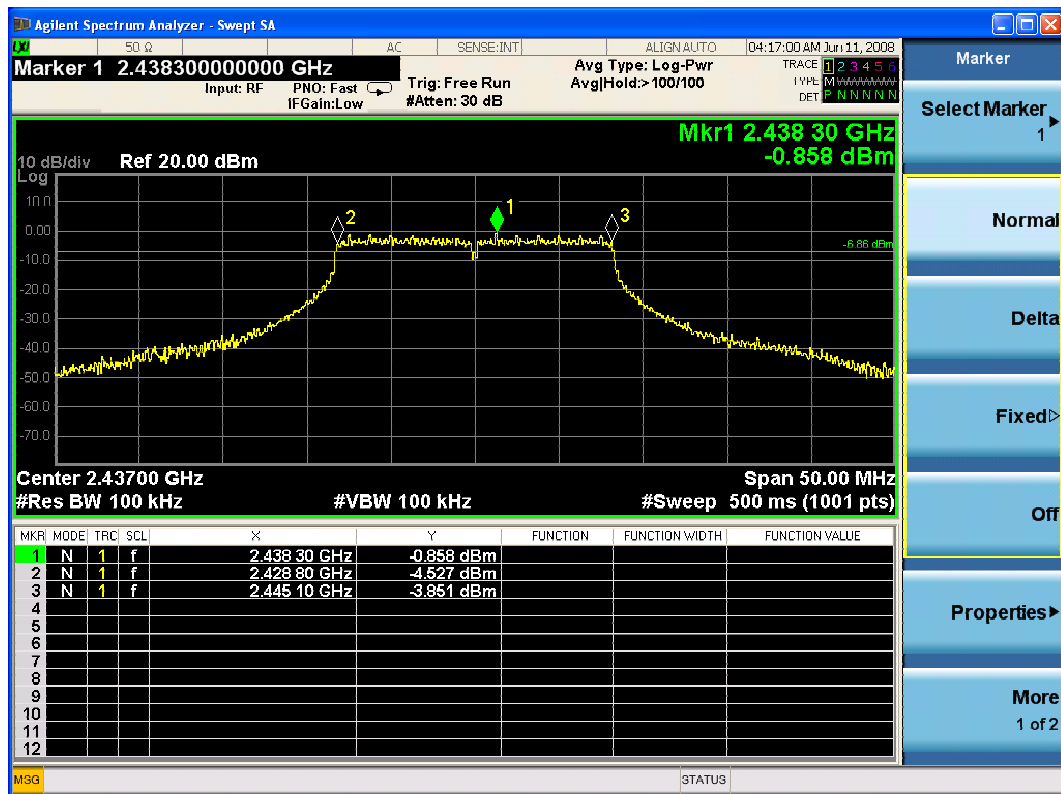
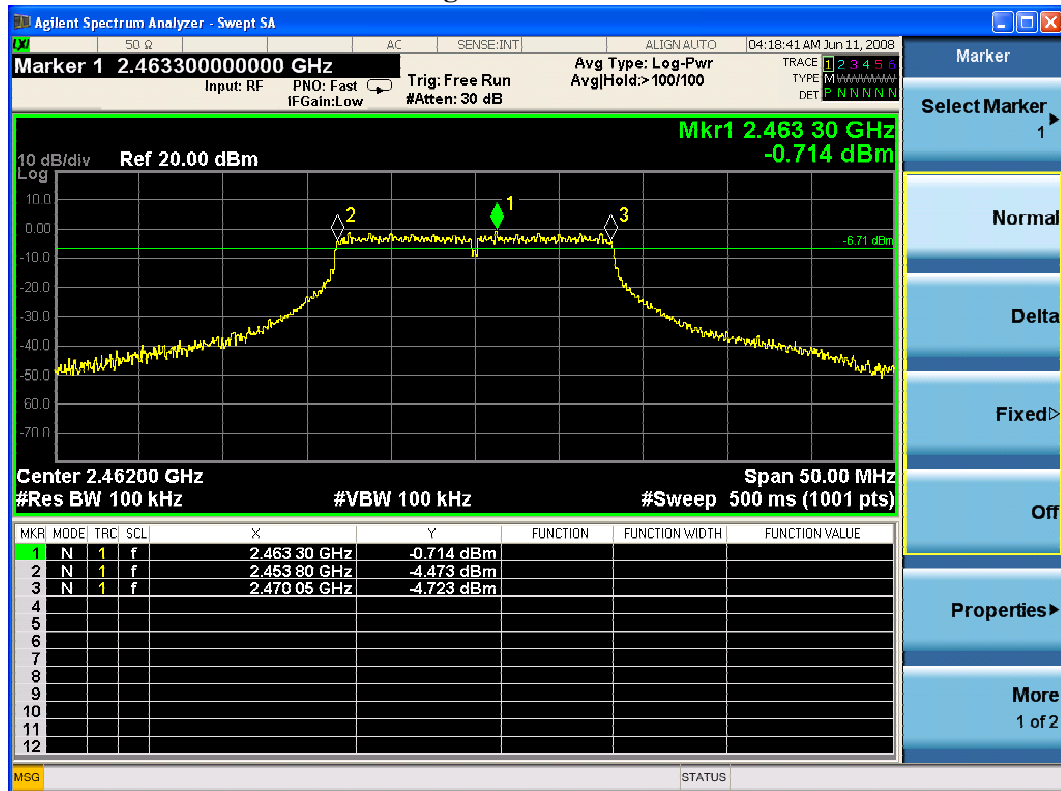


Figure Channel 11:



## 8. Power Density

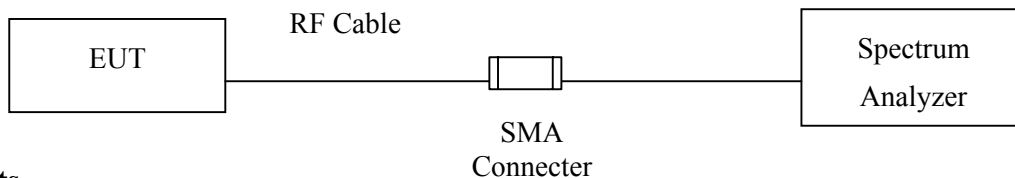
### 8.1. Test Equipment

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

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2008
Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
X Spectrum Analyzer	Agilent	N9010A / MY48030495	April, 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.

### 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 Procedures

The EUT was setup according to ANSI C63.4, 2003; tested according to DTS test procedure of Oct 2002 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

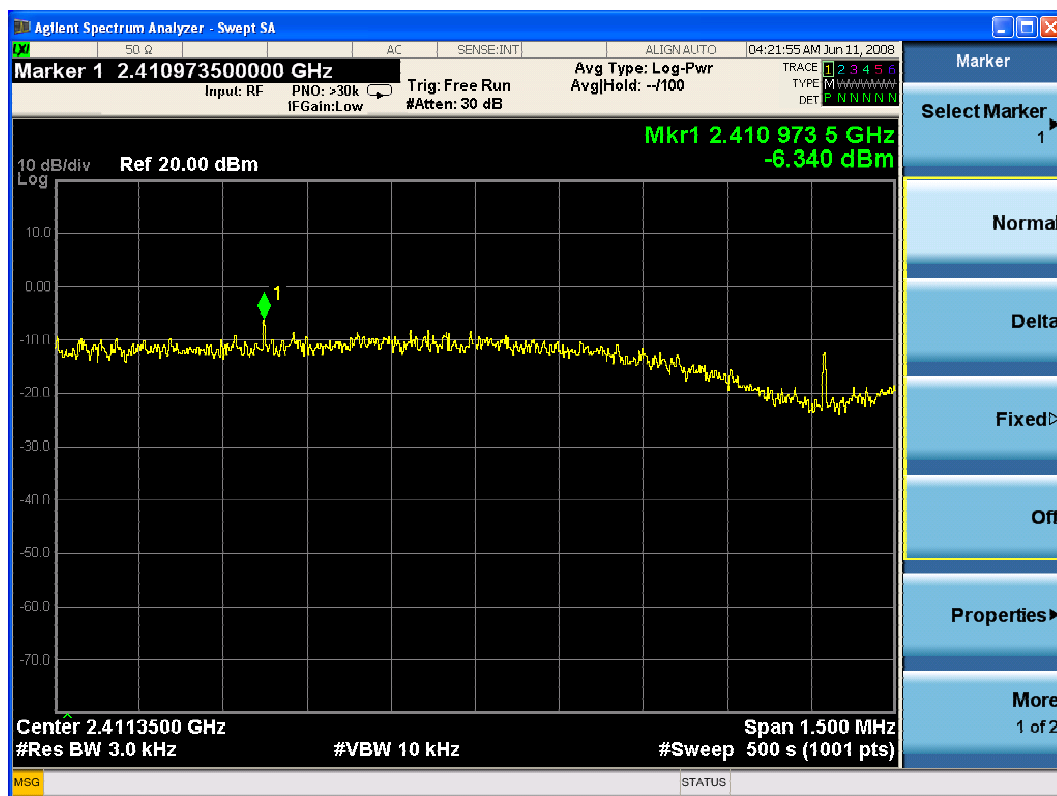
± 1.27 dB

## 8.6. Test Result of Power Density

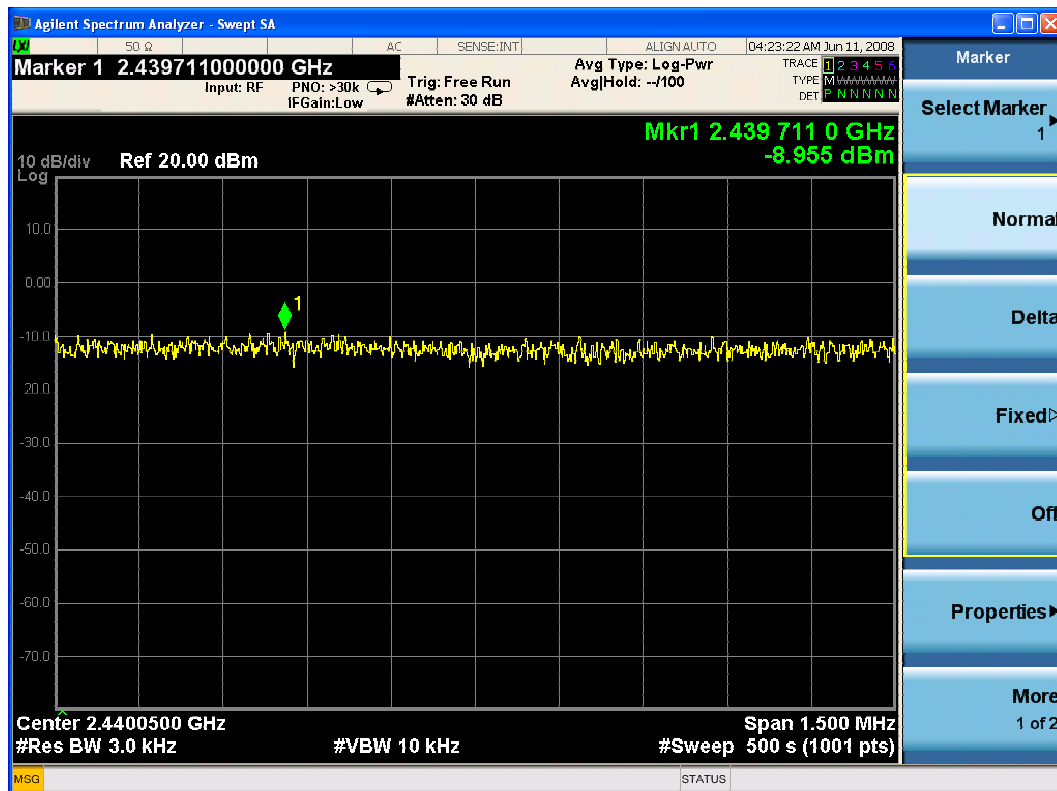
Product : Vzone Player  
 Test Item : Power Density Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11b

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
1 (1Mbps)	2412.00	-6.34	< 10dBm	Pass
6 (1Mbps)	2437.00	-8.96	< 10dBm	Pass
11 (1Mbps)	2462.00	-6.71	< 10dBm	Pass

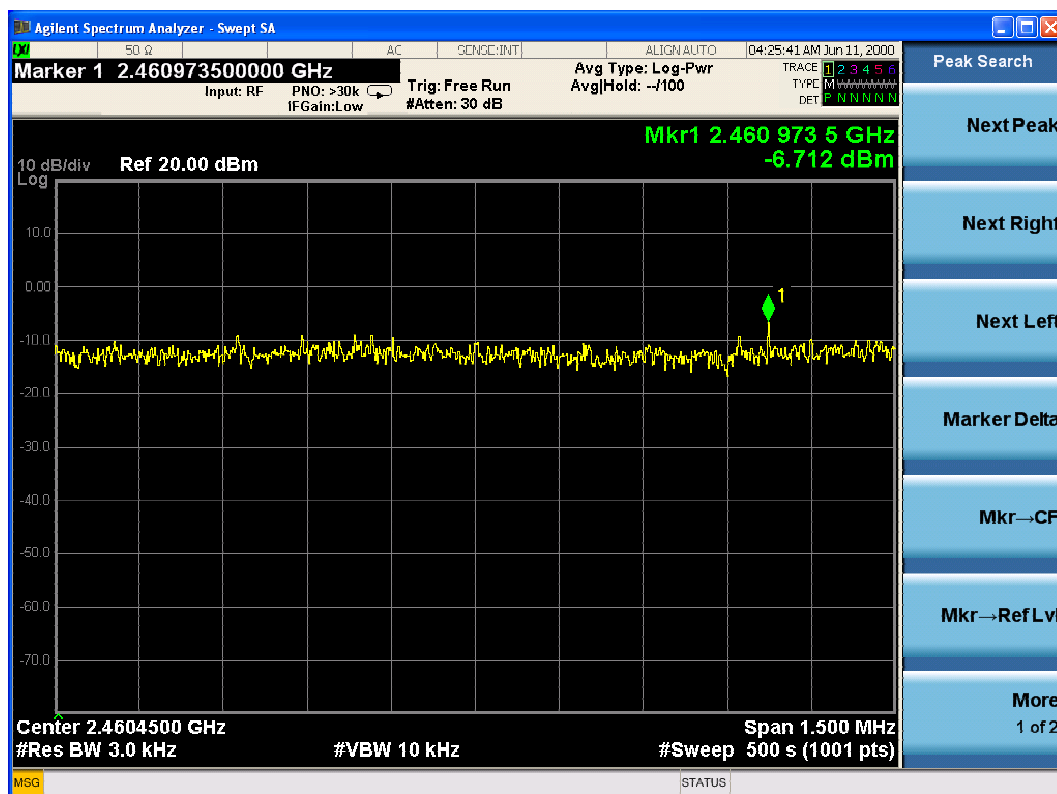
Channel 1:



### Channel 6:



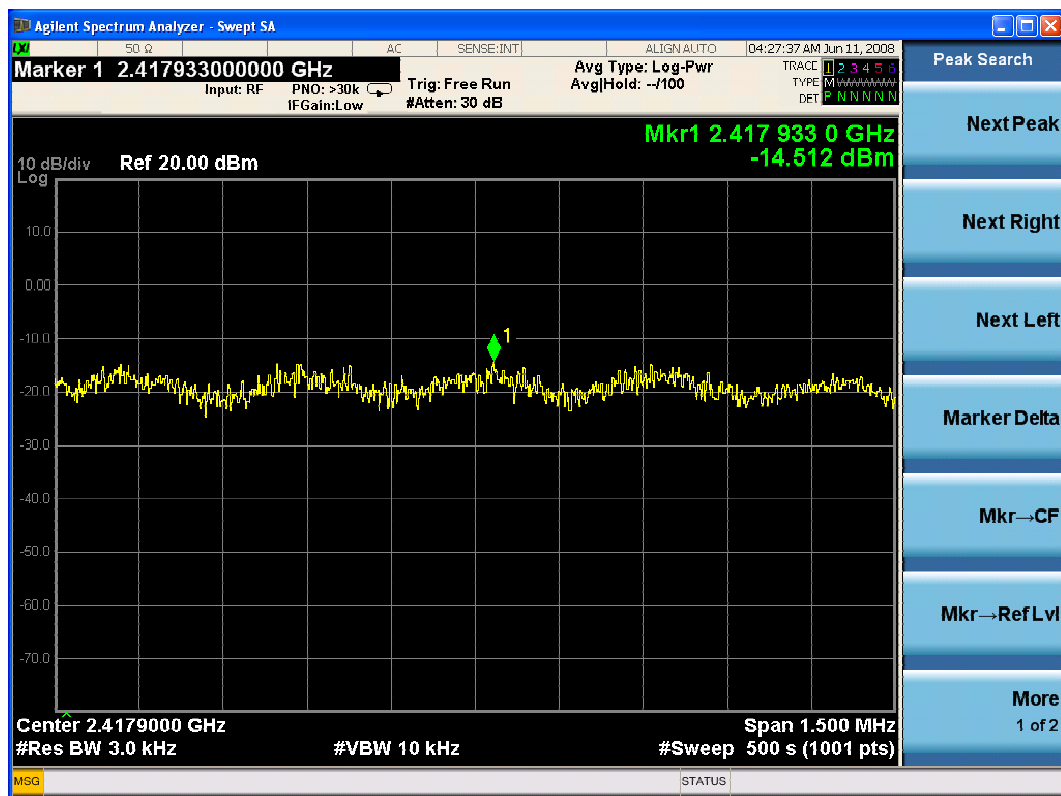
### Channel 11:



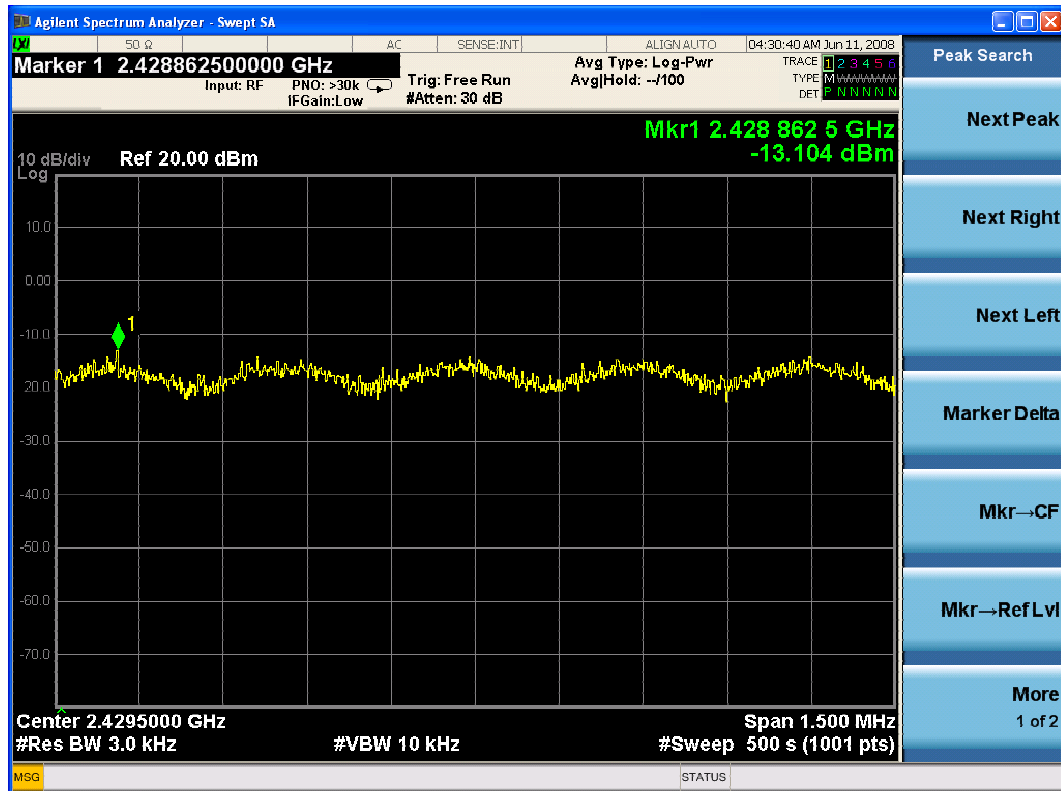
Product : Vzone Player  
 Test Item : Power Density Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter 802.11g

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
1 (6Mbps)	2412.00	-14.51	< 10dBm	Pass
6 (6Mbps)	2437.00	-13.10	< 10dBm	Pass
11 (6Mbps)	2462.00	-14.18	< 10dBm	Pass

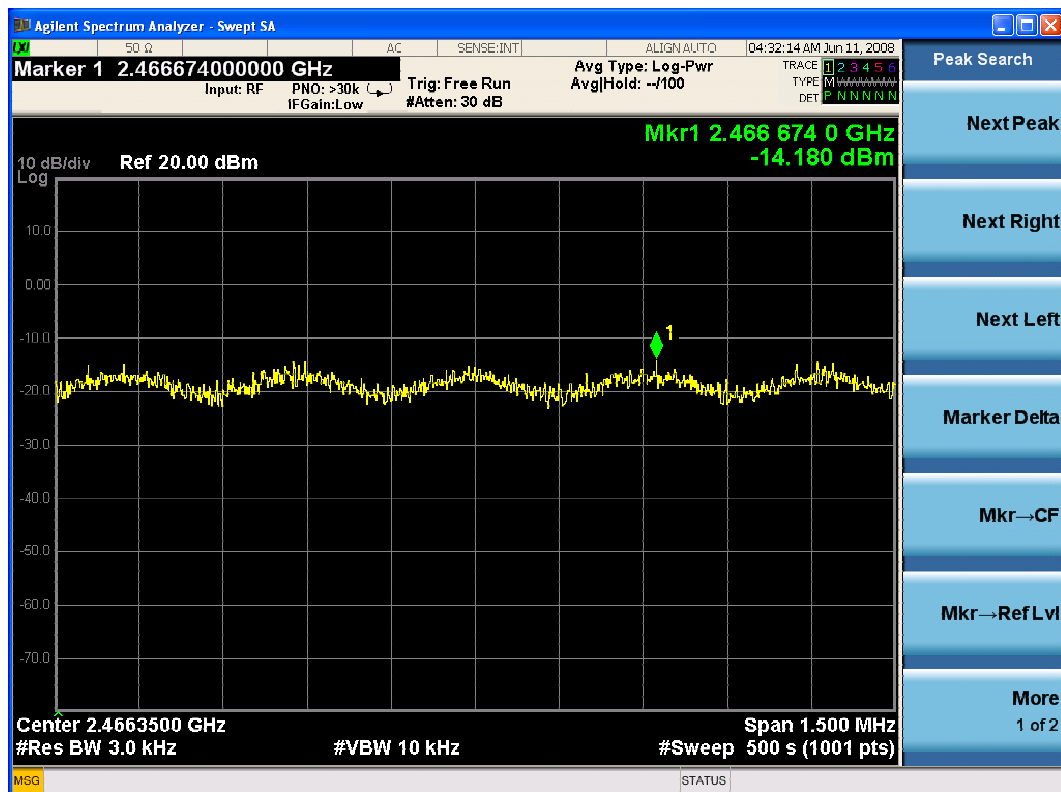
### Channel 1:



### Channel 6:



### Channel 11:



## **9. EMI Reduction Method During Compliance Testing**

No modification was made during testing.