



**Spectrum Research &  
Testing Lab., Inc.**  
No. 101-10, Ling 8,  
Shan-Tong Li, Chung-Li  
City, Taoyuan, Taiwan

## TEST REPORT

Reference No.: A07103104  
Report No.: FCCA07103104  
FCC ID: UXNIV2120  
Page: 1 of 46  
Date: Dec. 04, 2007

Product Name: InternetVue  
Model No.: IV-2120  
Applicant: Addlogix, Inc.  
459 Wald, Irvine, CA 92618, USA  
Date of Receipt: Oct. 31, 2007  
Finished date of Test: Nov. 27, 2006  
Applicable Standards: 47 CFR Part 15, Subpart C  
ANSI C63.4: 2003

We, **Spectrum Research & Testing Laboratory Inc.**, hereby certify that one sample of the above was tested in our laboratory with positive results according to the above-mentioned standards. The records in the report are an accurate account of the results. Details of the results are given in the subsequent pages of this report.

Tested By : Jeff Yu auth. , Date: Dec/04/2007  
(Tim Mie)

Approved By : Johnson Ho , Date: 12/14/2007  
( Johnson Ho, Director )

**NVLAP**  
Lab Code: 200099-0  
FMNG-059.10 REPORT

 <p><b>Spectrum Research &amp; Testing Lab., Inc.</b> No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan</p>	<p><b>TEST REPORT</b></p>	<p>Reference No.: A07103104 Report No.: FCCA07103104 FCC ID: UXNIV2120 Page: 2 of 46 Date: Dec. 04, 2007</p>
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## 1. DOCUMENT POLICY AND TEST STATEMENT

### 1.1 DOCUMENT POLICY

- The report shall not be reproduced except in full, without the written approval of SRT Lab, Inc.
- Each test or calibration report bearing the term and/or symbol shall include a statement that the report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
- The NVLAP logo applies only to the applicable standards specified in this report.

### 1.2 TEST STATEMENT

- The test results in the report apply only to the unit tested by SRT Lab.
- There was no deviation from the requirements of test standards during the test.
- AC power source, 120 Vac/60 Hz, was used during the test.

### 1.3 EUT MODIFICATION

- No modification in SRT Lab.

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## 2. DESCRIPTION OF EUT AND TEST MODE

### 2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	InternetVue
MODEL NO.	IV-2120
POWER SUPPLY	DC 5V, 2A
FREQUENCY BAND	2.4 ~ 2.4835 GHz
NUMBER OF CHANNEL	11
CHANNEL SPACING	5MHz
RATED RF OUTPUT POWER	EIRP $\leq$ 20 dBm
MODULATION TYPE	OFDM
BIT RATE OF TRANSMISSION	1Mbps
MODE OF OPERATION	duplex
BIT RATE/SPEED OF TRANSMISSION	11G: 6, 9, 12, 18, 24, 36, 48, 54Mbps
ANTENNA TYPE	SMA Monopole type
ANTENNA GAIN	0dBi

#### NOTE :

For more detailed information, please refer to the EUT's specification or user's manual provided by manufacturer.

### 2.2 DESCRIPTION OF EUT INTERNAL DEVICE

DEVICE	BRAND / MAKER	MODEL	FCC ID/DOC	REMARK
N/A				

### 2.3 DESCRIPTION OF TEST MODE

11 channels are provided by EUT. The 3 channels of lower, medium and higher were chosen for test.

There are test modes for each test configuration as below:

Mode	Modulation Type	Channel	Frequency (MHz)
1	IEEE 802.11g	CH1	2412
2		CH6	2437
3		CH11	2462

#### NOTE :

1. Below 1 GHz, the channel 1, 6 and 11 were pre-tested in chamber. The channel 11, worst case one, was chosen for conducted and radiated emission test.
2. Above 1 GHz, the channel 1, 6 and 11 were tested individually

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## 2.4 DESCRIPTION OF SUPPORT UNIT

The EUT was configured by the requirement of ANSI C63.4:2003. All interface ports were connected to the appropriate support units via specific cables. The support units and cables are listed below.

NO	DEVICE	BRAND	MODEL	FCC ID/ DOC	CABLE
1	NOTEBOOK	DELL	2652B-RD02D110	N/A	1.8m shielded power cord
2	TV	TECO	TL2009FM	N/A	1.5m shielded power cord
3	Mouse	Acer(USB)	M-U69	JNZ211444	1.5m unshielded power cord
4	Keyboard	ACER(USB)	KUS9903	N/A	2.5m unshielded power cord

**NOTE :** For the actual test configuration, please refer to the photos of testing.

## 3. DESCRIPTION OF APPLIED STANDARDS

The EUT is a kind of wireless product. According to the specifications provided by the applicant, it must comply with the requirements of the following standards:

47 CFR Part 15, Subpart C

ANSI C63.4: 2003

All tests have been performed and recorded as the above standards.

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## 4 . TECHNICAL CHARACTERISTICS TEST

### 4.1 CONDUCTED EMISSION TEST

#### 4.1.1 LIMIT

Frequency (MHz)	Class A (dB $\mu$ V)		Class B (dB $\mu$ V)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

#### NOTE :

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

#### 4.1.2 TEST EQUIPMENT

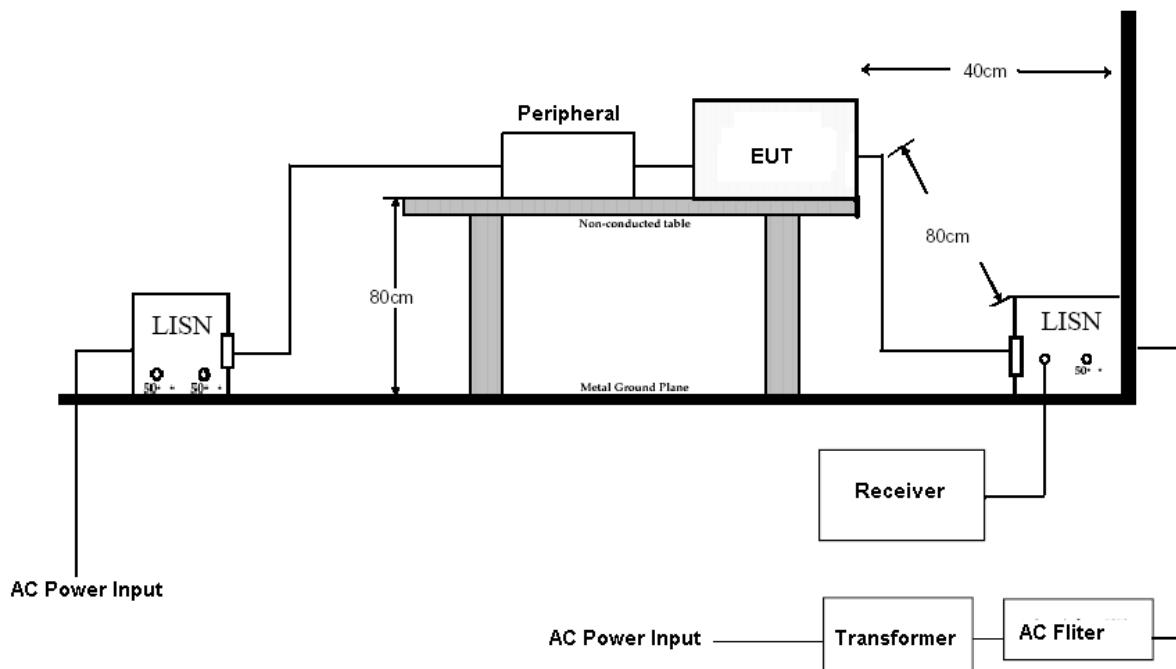
The following test equipment was used for the test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER	9 kHz TO 30 MHz	ROHDE & SCHWARZ	ESHS30 / 826003/008	SEP. 2008 ETC
LISN	50 $\mu$ H, 50 ohm	FCC	FCC-LISN-50-25-2 / 01017	OCT. 2008 ETC
LISN (for Peripheral)	50 $\mu$ H, 50 ohm	FCC	9252-50-R24-BNC / 951315	JUN. 2008 ETC
50 OHM TERMINATOR	50 ohm	HP	11593A / #2	OCT. 2008 ETC
COAXIAL CABLE	5M	TIMES	EQM-0159 / #5-5m	AUG. 2008 SRT
FILTER	2 LINE, 30A	FIL.COIL	FC-943 / 771	NCR
GROUND PLANE	2.3M (H) x 2.4M (W)	SRT	N/A	NCR
GROUND PLANE	2.4M (H) x 2.4M (W)	SRT	N/A	NCR

**NOTE:** The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.



### 4.1.3 TEST SETUP



#### NOTE :

1. The EUT was put on a wooden table with 0.8m heights above ground plane, and 0.4m away from reference ground plane (> 2mx2m).
2. For the actual test configuration, please refer to the photos of testing.
3. The serial no. of the LISN connected to EUT is 01017.
4. The serial no. of the LISN connected to support units is 01018.

### 4.1.4 TEST PROCEDURE

The EUT was tested according to the requirement of ANSI C63.4:2003 and CISPR22:2003. The frequency spectrum from 0.15 MHz to 30 MHz was investigated. The LISN used was 50 ohm/50μH as specified. All readings were quasi-peak and average values with 10 kHz resolution bandwidth of the test receiver. The EUT system was operated in all typical methods by users. Both lines of the power mains of EUT were measured and the cables connected to EUT and support units were moved to find the maximum emission levels for each frequency.

First, find the margin or higher points at least 6 points by software, then use manual to find the maximum data. The procedure is referred on the test procedure of SRT LAB.

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#### **4.1.5 EUT OPERATING CONDITION**

1. Under Windows XP ran "EMI TEST" program and PC sent "H" pattern or accessed the following peripherals directly or via EUT:

- NB
- TV
- Mouse
- Keyboard

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#### 4.1.6 TEST RESULT

Temperature:	23 °C	Humidity:	64 %RH
Frequency Range:	0.15 – 30 MHz	Tested Mode:	IEEE 802.11g
Receiver Detector:	Q.P. and AV.	Tested Channel:	CH1: 2412MHz
Tested By:	Tim Mie	Tested Date:	Nov. 27, 2007

Power Line Measured : Line

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dB $\mu$ V)		Emission Level (dB $\mu$ V)		Limit (dB $\mu$ V)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.183	0.30	53.56	46.83	53.86	47.13	65.06	55.06	-11.20	-7.93
0.186	0.30	53.30	46.58	53.60	46.88	64.97	54.97	-11.37	-8.09
0.552	0.24	43.84	40.06	44.08	40.30	56.00	46.00	-11.92	-5.70
1.962	0.16	38.14	33.34	38.30	33.50	56.00	46.00	-17.70	-12.50
14.115	0.25	41.18	37.77	41.43	38.02	60.00	50.00	-18.57	-11.98
16.937	0.30	38.30	34.18	38.60	34.48	60.00	50.00	-21.40	-15.52

Power Line Measured : Neutral

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dB $\mu$ V)		Emission Level (dB $\mu$ V)		Limit (dB $\mu$ V)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.183	0.30	53.50	46.70	53.80	47.00	65.06	55.06	-11.26	-8.06
0.186	0.30	53.22	46.47	53.52	46.77	64.97	54.97	-11.45	-8.20
0.552	0.24	43.86	40.01	44.10	40.25	56.00	46.00	-11.90	-5.75
3.437	0.19	39.04	34.60	39.23	34.79	56.00	46.00	-16.77	-11.21
13.567	0.24	37.94	33.35	38.18	33.59	60.00	50.00	-21.82	-16.41
16.937	0.28	38.52	34.17	38.80	34.45	60.00	50.00	-21.20	-15.55

#### NOTE :

1. Measurement uncertainty is +/-1.32dB
2. Emission level = Reading value + Correction factor
3. Correction Factor = Cable loss + Insertion loss of LISN
4. Margin value = Emission level - Limit
5. The emission of other frequencies was very low against the limit.
6. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

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Temperature:	23 °C	Humidity:	64 %RH
Frequency Range:	0.15 – 30 MHz	Tested Mode:	IEEE 802.11g
Receiver Detector:	Q.P. and AV.	Tested Channel:	CH6: 2437MHz
Tested By:	Tim Mie	Tested Date:	Nov. 27, 2007

Power Line Measured : Line

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dB $\mu$ V)		Emission Level (dB $\mu$ V)		Limit (dB $\mu$ V)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.183	0.30	53.26	46.79	53.56	47.09	65.06	55.06	-11.50	-7.97
0.186	0.30	53.12	46.33	53.42	46.63	64.97	54.97	-11.55	-8.34
0.586	0.24	28.08	3.93	28.32	4.17	56.00	46.00	-27.68	-41.83
2.269	0.16	38.46	34.76	38.62	34.92	56.00	46.00	-17.38	-11.08
13.993	0.25	41.34	38.35	41.59	38.60	60.00	50.00	-18.41	-11.40
20.453	0.39	13.74	7.26	14.13	7.65	60.00	50.00	-45.87	-42.35

Power Line Measured : Neutral

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dB $\mu$ V)		Emission Level (dB $\mu$ V)		Limit (dB $\mu$ V)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.183	0.30	52.68	45.15	52.98	45.45	65.06	55.06	-12.08	-9.61
0.186	0.30	52.12	44.77	52.42	45.07	64.97	54.97	-12.55	-9.90
0.615	0.22	40.94	35.83	41.16	36.05	56.00	46.00	-14.84	-9.95
1.289	0.14	39.74	37.18	39.88	37.32	56.00	46.00	-16.12	-8.68
13.069	0.24	37.58	35.18	37.82	35.42	60.00	50.00	-22.18	-14.58
16.937	0.28	36.66	34.03	36.94	34.31	60.00	50.00	-23.06	-15.69

**NOTE :**

1. Measurement uncertainty is +/-1.32dB
2. Emission level = Reading value + Correction factor
3. Correction Factor = Cable loss + Insertion loss of LISN
4. Margin value = Emission level - Limit
5. The emission of other frequencies was very low against the limit.
6. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

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Temperature:	23 °C	Humidity:	64 %RH
Frequency Range:	0.15 – 30 MHz	Tested Mode:	IEEE 802.11g
Receiver Detector:	Q.P. and AV.	Tested Channel:	CH11: 2462MHz
Tested By:	Tim Mie	Tested Date:	Nov. 27, 2007

Power Line Measured : Line

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dB $\mu$ V)		Emission Level (dB $\mu$ V)		Limit (dB $\mu$ V)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.183	0.30	52.60	44.99	52.90	45.29	65.06	55.06	-12.16	-9.77
0.186	0.30	52.28	44.81	52.58	45.11	64.97	54.97	-12.39	-9.86
0.615	0.22	40.76	35.63	40.98	35.85	56.00	46.00	-15.02	-10.15
1.655	0.15	38.58	32.26	38.73	32.41	56.00	46.00	-17.27	-13.59
12.947	0.24	37.94	34.97	38.18	35.21	60.00	50.00	-21.82	-14.79
19.49	0.37	32.18	20.78	32.55	21.15	60.00	50.00	-27.45	-28.85

Power Line Measured : Neutral

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dB $\mu$ V)		Emission Level (dB $\mu$ V)		Limit (dB $\mu$ V)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.183	0.30	52.46	44.97	52.76	45.27	65.06	55.06	-12.30	-9.79
0.186	0.30	52.28	44.81	52.58	45.11	64.97	54.97	-12.39	-9.86
0.552	0.24	41.02	37.96	41.26	38.20	56.00	46.00	-14.74	-7.80
1.230	0.14	38.22	36.05	38.36	36.19	56.00	46.00	-17.64	-9.81
13.252	0.24	38.00	34.85	38.24	35.09	60.00	50.00	-21.76	-14.91
15.912	0.28	19.26	10.79	19.54	11.07	60.00	50.00	-40.46	-38.93

**NOTE :**

1. Measurement uncertainty is +/-1.32dB
2. Emission level = Reading value + Correction factor
3. Correction Factor = Cable loss + Insertion loss of LISN
4. Margin value = Emission level - Limit
5. The emission of other frequencies was very low against the limit.
6. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

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## 4.2 RADIATED EMISSION TEST

### 4.2.1 LIMIT

FCC Part15, Subpart C Section 15.209 limit of radiated emission for frequency below1000MHz. The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

FREQUENCY (MHz)	DISTANCE (m)	FIELD STRENGTH (dB $\mu$ V/m)
30 - 88	3	40.0
88 - 216	3	43.5
216 - 960	3	46.0
Above 960	3	54.0

**NOTE :**

1. In the emission tables above , the tighter limit applies at the band edges.
2. Distance refers to the distance between measuring instrument, antemma, and the closest point of any part of the device or system.

FCC Part 15, Section15.35(b) limit of radiated emission for frequency above 1000 MHz

FREQUENCY (MHz)	Class A (dB $\mu$ V/m) (at 3m)		Class B (dB $\mu$ V/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80.0	60.0	74.0	54.0

 <p><b>Spectrum Research &amp; Testing Lab., Inc.</b> No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan</p>	<p><b>TEST REPORT</b></p>	<p>Reference No.: A07103104 Report No.: FCCA07103104 FCC ID: UXNIV2120 Page:14 of 46 Date: Dec. 04, 2007</p>
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#### 4.2.2 TEST EQUIPMENT

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

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER	9 kHz TO 2750 MHz	ROHDE & SCHWARZ	ESCS30/ 830245/012	OCT. 2008 ETC
BI-LOG ANTENNA	26 MHz TO 2 GHz	EMCO	3142B / 0005-1534	NOV. 2008 ETC
OATS	3 – 10 M MEASUREMENT	SRT	SRT-1	NOV. 2008 SRT
COAXIAL CABLE	25M	TIMES	J400 / #25M	AUG. 2008 ETC
FILTER	2 LINE, 30A	FIL.COIL	FC-943 / 869	NCR

**NOTE:**

1. The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.
2. The Open Area Test Site (SRT-1) is registered by FCC with No. 90957 and VCCI with No. R-1081.
3. The Open Area Test Site (SRT-2) is registered by FCC with No. 98458 and VCCI with No. R-1168.



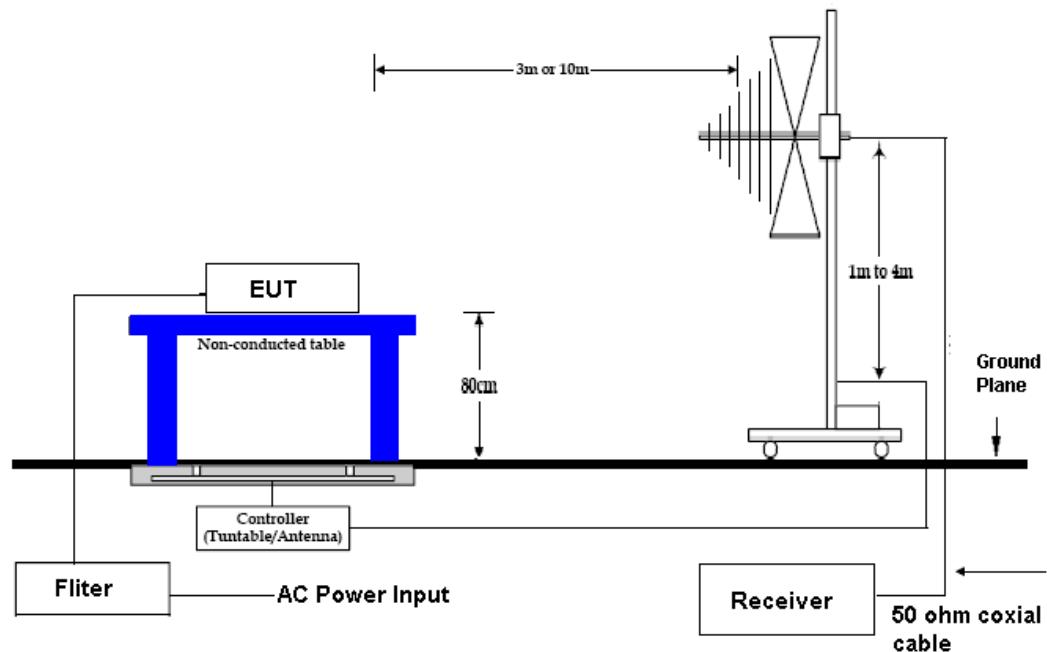
**Spectrum Research &  
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## 4.2.3 TEST SET-UP

(30MHz - 1GHz)



### NOTE :

1. The EUT system was put on a wooden table with 0.8m heights above a ground plane.
2. For the actual test configuration, please refer to the photos of testing.

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#### 4.2.4 TEST PROCEDURE

The EUT was tested according to the requirement of ANSI C63.4:2003 and CISPR 22:2003. The measurements were made at an open area test site with 10 meter measurement distance under 1 GHz and with 3m distance above 1GHz. The frequency spectrum measured started from 30 MHz. Under 1 GHz, all readings were quasi-peak values with 120 kHz resolution bandwidth of the test receiver. Above 1 GHz, the measurements were made at an open area test site with 3 meter measurement distance and all readings were peak or average values with 1 MHz resolution bandwidth of the test receiver. The EUT system was operated in all typical methods by users. The cables connected to EUT and support units were moved to find the maximum emission levels for each frequency.

First, find the margin or higher points at least 6 points by software, then use manual to find the maximum data. The procedure is referred on the test procedure of SRT LAB.

#### 4.2.5 EUT OPERATING CONDITION

Same as section 4.1.5 of this report.

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## 4.2.6 TEST RESULT

Temperature:	23°C	Humidity:	60 %RH
Frequency Range:	30 – 1000 MHz	Measured Distance:	10m
Receiver Detector:	Q.P.	Tested Mode:	IEEE 802.11g
Tested By:	Tim Mie	Tested Channel:	CH 1 : 2412MHz
Tested Date:	Nov. 26, 2007		

Antenna Polarization:Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	AZ(°)	EL(m)
32.0053	1.02	16.38	8.8	26.2	30.0	-3.8	310	3.2
63.0589	1.43	6.90	13.5	21.8	30.0	-8.2	270	3.2
108.2069	1.88	7.94	11.5	21.3	30.0	-8.7	270	3
224.0189	2.89	11.22	10.0	24.1	30.0	-5.9	45	2.6
240.0789	3.02	12.00	18.0	33.0	37.0	-4.0	90	1.8
597.0539	5.38	19.95	8.4	33.7	37.0	-3.3	90	1.5

Antenna Polarization:Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	AZ(°)	EL(m)
32.0187	1.02	16.38	8.2	25.6	30.0	-4.4	70	1
63.0255	1.43	6.90	11.6	19.9	30.0	-10.1	60	1
108.2089	1.88	7.94	10.8	20.6	30.0	-9.4	45	2.1
224.0556	2.89	11.22	10.2	24.3	30.0	-5.7	270	2.5
240.0154	3.02	12.00	16.5	31.5	37.0	-5.5	180	3
597.2289	5.38	19.95	8.2	33.5	37.0	-3.5	270	3.2

### NOTE :

1. Measurement uncertainty is +/-2dB.
2. \*\*: Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

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Temperature:	23°C	Humidity:	60 %RH
Frequency Range:	30 – 1000 MHz	Measured Distance:	10m
Receiver Detector:	Q.P.	Tested Mode:	IEEE 802.11g
Tested By:	Tim Mie	Tested Channel:	CH 6 : 2437MHz
Tested Date:	Nov. 26, 2007		

### Antenna Polarization:Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	AZ(°)	EL(m)
32.0054	1.02	16.38	7.8	25.2	30.0	-4.8	320	3.5
63.0723	1.43	6.90	12.6	20.9	30.0	-9.1	270	3.5
108.5239	1.88	7.94	10.0	19.8	30.0	-10.2	270	2.8
224.0078	2.89	11.22	10.5	24.6	30.0	-5.4	55	2.8
240.0569	3.02	12.00	14.5	29.5	37.0	-7.5	45	1.9
500.0133	4.90	18.20	9.0	32.1	37.0	-4.9	45	1.5

### Antenna Polarization:Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	AZ(°)	EL(m)
32.0058	1.02	16.38	8.1	25.5	30.0	-4.5	75	1.2
63.0692	1.43	6.90	13.1	21.4	30.0	-8.6	75	1.2
108.5223	1.88	7.94	9.8	19.6	30.0	-10.4	55	1.8
224.0048	2.89	11.22	11.2	25.3	30.0	-4.7	270	2.5
240.0054	3.02	12.00	18.3	33.3	37.0	-3.7	95	2.8
500.0133	4.90	18.20	7.3	30.4	37.0	-6.6	270	3.5

### NOTE :

1. Measurement uncertainty is +/-2dB.
2. \*\*: Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

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Temperature:	23°C	Humidity:	60 %RH
Frequency Range:	30 – 1000 MHz	Measured Distance:	10m
Receiver Detector:	Q.P.	Tested Mode:	IEEE 802.11g
Tested By:	Tim Mie	Tested Channel:	CH 11 : 2462MHz
Tested Date:	Nov. 26, 2007		

### Antenna Polarization:Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	AZ(°)	EL(m)
32.0058	1.02	16.38	8.6	26.0	30.0	-4.0	330	3.2
63.0785	1.43	6.90	14.8	23.1	30.0	-6.9	260	3.2
108.5699	1.88	7.94	13.5	23.3	30.0	-6.7	230	3
224.0569	2.89	11.22	10.0	24.1	30.0	-5.9	60	2.6
240.0582	3.02	12.00	18.0	33.0	37.0	-4.0	45	2
597.0259	5.38	19.95	8.7	34.0	37.0	-3.0	45	1.8

### Antenna Polarization:Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	AZ(°)	EL(m)
32.0659	1.02	16.38	8.6	26.0	30.0	-4.0	45	1
63.0755	1.43	6.90	12.6	20.9	30.0	-9.1	45	1
108.2256	1.88	7.94	11.2	21.0	30.0	-9.0	45	1.5
224.3205	2.89	11.22	10.2	24.3	30.0	-5.7	270	2.5
239.9976	3.01	11.97	18.5	33.5	37.0	-3.5	180	3
597.0478	5.38	19.95	8.4	33.7	37.0	-3.3	270	3.2

### NOTE :

1. Measurement uncertainty is +/-2dB.
2. \*\*: Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

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Temperature:	23°C	Humidity:	60 %RH
Frequency Range:	1 – 25GHz	Measured Distance:	3m
Receiver Detector:	PK. or AV.	Tested Mode:	IEEE 802.11g
Tested By:	Tim Mie	Tested Channel:	CH 1 : 2412MHz
Tested Date:	Nov. 26, 2007		

Antenna Polarization: Horizontal

Frequency (MHz)	Corret Factor (dB)	Antenna Factor (dB/m)	Reading (dB $\mu$ V)		Emission (dB $\mu$ V/m)		Limit (dB $\mu$ V/m)		Margin (dB)	
			PK	AV	PK	AV	PK	AV	PK	AV
2400.00	-32.16	28.54	88.0	71.5	84.4	67.9	N/A	N/A	N/A	N/A
1205.50	-33.86	24.65	40.9	*	31.7	*	74.0	54.0	-42.3	*
1603.00	-32.92	25.69	38.4	*	31.2	*	74.0	54.0	-42.8	*
1823.50	-33.05	26.53	50.7	37.6	44.2	31.1	74.0	54.0	-29.8	-22.9
4563.50	-30.38	33.45	42.2	*	45.3	*	74.0	54.0	-28.7	*
5823.00	-29.57	34.06	45.3	*	49.7	*	74.0	54.0	-24.3	*

Antenna Polarization: Vertical

Frequency (MHz)	Corret Factor (dB)	Antenna Factor (dB/m)	Reading (dB $\mu$ V)		Emission (dB $\mu$ V/m)		Limit (dB $\mu$ V/m)		Margin (dB)	
			PK	AV	PK	AV	PK	AV	PK	AV
2400.00	-32.16	28.00	75.8	68.2	71.7	64.0	N/A	N/A	N/A	N/A
1205.50	-33.86	24.65	43.6	*	34.4	*	74.0	54.0	-39.6	*
1708.00	-32.95	26.09	39.1	*	32.2	*	74.0	54.0	-41.8	*
1910.00	-32.61	26.86	53.4	35.2	47.7	29.4	74.0	54.0	-26.3	-24.6
3724.00	-30.73	32.41	48.0	*	49.7	*	74.0	54.0	-24.3	*
5722.00	-29.44	34.04	40.7	*	45.3	*	74.0	54.0	-28.7	*

**NOTE :**

1. Measurement uncertainty is +/-2dB.
2. \*\*: Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies was very low against the limit.

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Temperature:	23°C	Humidity:	60 %RH
Frequency Range:	1 – 25GHz	Measured Distance:	3m
Receiver Detector:	PK. or AV.	Tested Mode:	IEEE 802.11g
Tested By:	Tim Mie	Tested Channel:	CH 6 : 2437MHz
Tested Date:	Nov. 26, 2007		

Antenna Polarization: Horizontal

Frequency (MHz)	Corret Factor (dB)	Antenna Factor (dB/m)	Reading (dB $\mu$ V)		Emission (dB $\mu$ V/m)		Limit (dB $\mu$ V/m)		Margin (dB)	
			PK	AV	PK	AV	PK	AV	PK	AV
2436.00	-32.22	28.61	76.9	68.2	73.3	64.6	N/A	N/A	N/A	N/A
1205.50	-33.86	24.65	41.7	*	32.5	*	74.0	54.0	-41.5	*
1603.00	-32.92	25.69	39.0	*	31.7	*	74.0	54.0	-42.3	*
1823.50	-33.05	26.53	51.7	39.2	45.1	32.7	74.0	54.0	-28.9	-21.3
4563.50	-30.38	33.45	44.1	*	47.2	*	74.0	54.0	-26.8	*
5823.00	-29.57	34.06	46.2	*	50.7	*	74.0	54.0	-23.3	*

Antenna Polarization: Vertical

Frequency (MHz)	Corret Factor (dB)	Antenna Factor (dB/m)	Reading (dB $\mu$ V)		Emission (dB $\mu$ V/m)		Limit (dB $\mu$ V/m)		Margin (dB)	
			PK	AV	PK	AV	PK	AV	PK	AV
2436.00	-32.22	28.07	77.7	62.3	73.5	58.2	N/A	N/A	N/A	N/A
1205.50	-33.86	24.65	42.7	*	33.4	*	74.0	54.0	-40.6	*
1708.00	-32.95	26.09	53.4	32.5	46.6	25.6	74.0	54.0	-27.4	-28.4
1910.00	-32.61	26.86	56.7	38.2	51.0	32.4	74.0	54.0	-23.0	-21.6
3724.00	-30.73	32.41	47.2	*	48.9	*	74.0	54.0	-25.1	*
5722.00	-29.44	34.04	42.5	*	47.1	*	74.0	54.0	-26.9	*

**NOTE :**

1. Measurement uncertainty is +/-2dB.
2. \*\*: Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies was very low against the limit.

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Temperature:	23°C	Humidity:	60 %RH
Frequency Range:	1 – 25GHz	Measured Distance:	3m
Receiver Detector:	PK. or AV.	Tested Mode:	IEEE 802.11g
Tested By:	Tim Mie	Tested Channel:	CH 11 : 2462MHz
Tested Date:	Nov. 26, 2007		

Antenna Polarization: Horizontal

Frequency (MHz)	Corret Factor (dB)	Antenna Factor (dB/m)	Reading (dB $\mu$ V)		Emission (dB $\mu$ V/m)		Limit (dB $\mu$ V/m)		Margin (dB)	
			PK	AV	PK	AV	PK	AV	PK	AV
2472.00	-32.20	28.71	97.2	82.3	93.7	78.8	N/A	N/A	N/A	N/A
1205.50	-33.86	24.65	41.9	*	32.7	*	74.0	54.0	-41.3	*
1603.00	-32.92	25.69	41.3	*	34.0	*	74.0	54.0	-40.0	*
1823.50	-33.05	26.53	50.6	39.2	44.1	32.7	74.0	54.0	-29.9	-21.3
4563.50	-30.38	33.45	46.2	*	49.3	*	74.0	54.0	-24.7	*
5823.00	-29.57	34.06	47.0	*	51.5	*	74.0	54.0	-22.5	*

Antenna Polarization: Vertical

Frequency (MHz)	Corret Factor (dB)	Antenna Factor (dB/m)	Reading (dB $\mu$ V)		Emission (dB $\mu$ V/m)		Limit (dB $\mu$ V/m)		Margin (dB)	
			PK	AV	PK	AV	PK	AV	PK	AV
2472.00	-32.20	28.14	103.8	75.2	99.7	71.1	N/A	N/A	N/A	N/A
1205.50	-33.86	24.65	42.8	*	33.6	*	74.0	54.0	-40.4	*
1708.00	-32.95	26.09	39.0	*	32.1	*	74.0	54.0	-41.9	*
1910.00	-32.61	26.86	38.9	*	33.2	*	74.0	54.0	-40.8	*
3724.00	-30.73	32.41	48.3	*	50.0	*	74.0	54.0	-24.0	*
5722.00	-29.44	34.04	45.1	*	49.7	*	74.0	54.0	-24.3	*

**NOTE :**

1. Measurement uncertainty is +/-2dB.
2. \*\*: Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies was very low against the limit.

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### 4.3 6dBm BANDWIDTH TEST

#### 4.3.1 LIMIT

FCC Part15, Subpart C Section 15.247(2). The minimum 6dBm bandwidth shall be at least 500 kHz.

#### 4.3.2 TEST EQUIPMENT

The following test equipment was used during the test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
SPECTRUM	9kHz-7GHz	ROHDE & SCHWARZ	FSP7/ 839511/010	APR. 2008 R&S

**NOTE:** The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

#### 4.3.3 TEST SET-UP



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

#### 4.3.4 TEST PROCEDURE

The EUT was operating in the transmitter mode and could control its channels. The test result was printed by the hard copy function of the spectrum.

#### 4.3.5 EUT OPERATING CONDITION

Same as section 4.1.5 of this report.

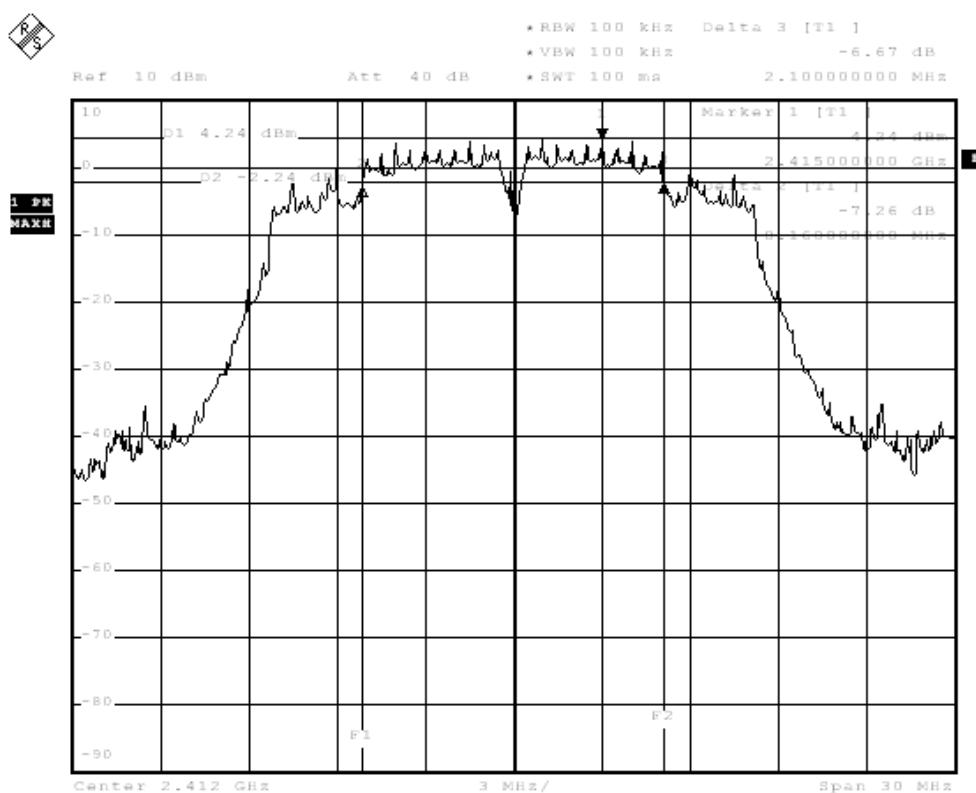
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## 4.3.6 TEST RESULT

Temperature:	23°C	Humidity:	60%RH
Spectrum Detector:	PK.	Tested Mode:	IEEE 802.11g
Tested By:	Tim Mie	Tested Date:	Nov. 15, 2007

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	6dB DOWN BW (MHz)
1	2412	10.26
6	2437	10.26
11	2462	10.2

CH1:

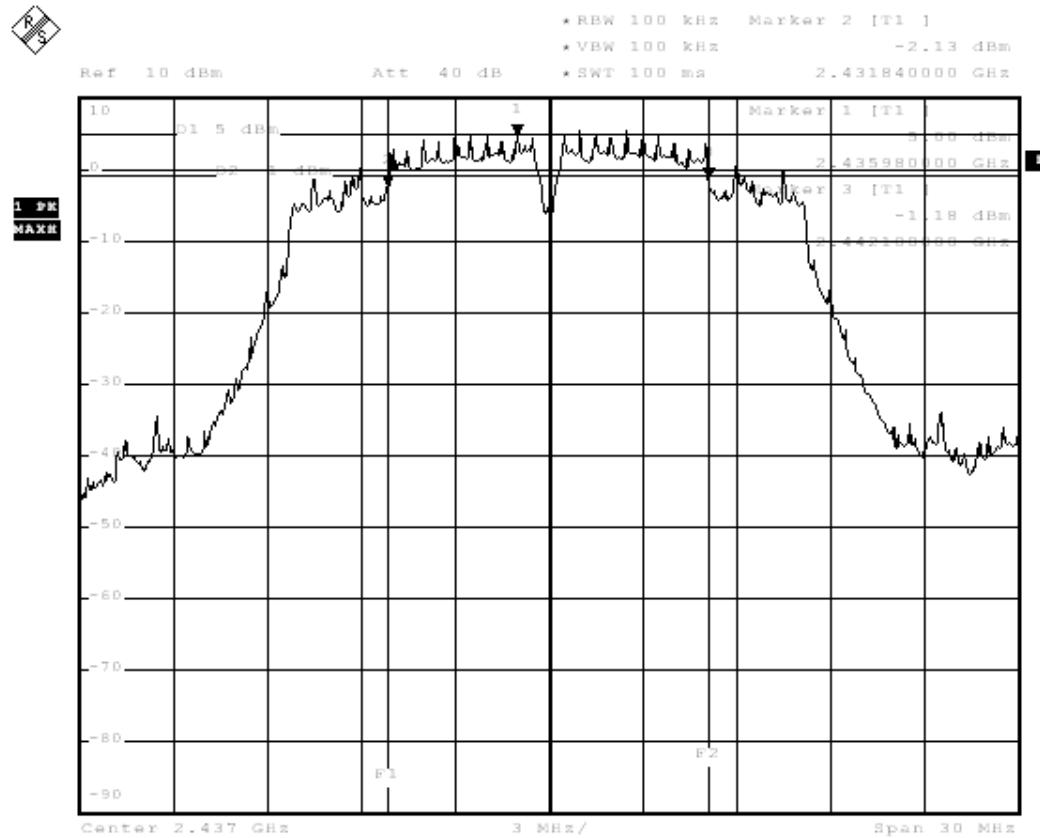




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CH 6:

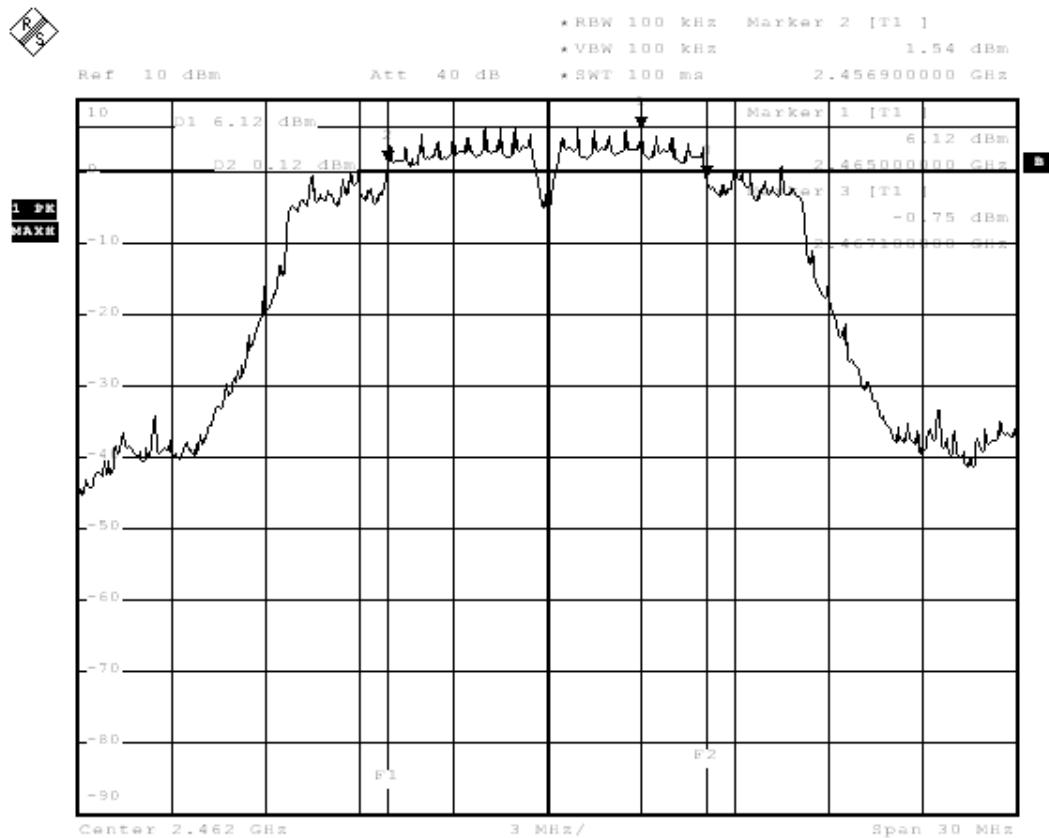




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CH 11:



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## 4.4 PEAK POWER TEST

### 4.4.1 LIMIT

FCC Part15, Subpart C Section 15.247

FREQUENCY RANGE(MHz)	LIMIT(W)
902 - 928	1(30dBm)
2400 - 2483.5	1(30dBm)
5725 - 5850	1(30dBm)

### 4.4.2 TEST EQUIPMENT

The following test equipment was used during the test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
SPECTRUM	9kHz-7GHz	ROHDE & SCHWARZ	FSP7/ 839511/010	APR. 2008 R&S
POWER METER	N/A	BOONTON	4232A/ 29001	MAY 2008 ETC
POWER SENSOR	DC-8GHz 50 Ω	BOONTON	51011EMC/ 31181	NOV. 2008 ETC

**NOTE:** The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

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#### 4.4.3 TEST SET-UP



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

#### 4.4.4 TEST PROCEDURE

The EUT was operating in transmitter mode and could control its channel.  
Printed out the test result from the spectrum by hard copy function.  
Recorded the read value of the power meter.

#### 4.4.5 EUT OPERATING CONDITION

Same as section 4.1.5 of this report.

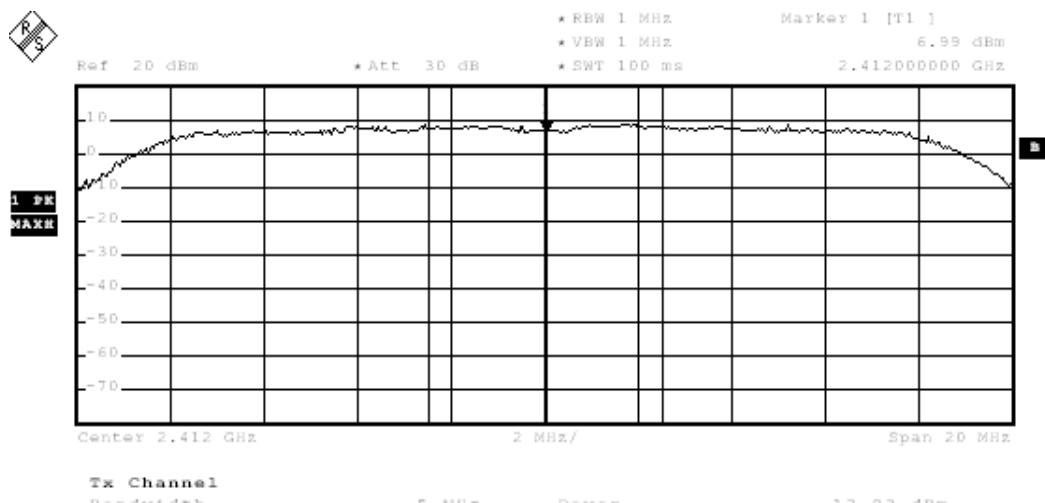
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#### 4.4.6 TEST RESULT

Temperature:	23°C	Humidity:	60%RH
Spectrum Detector:	PK.	Tested Mode:	IEEE 802.11g
Tested By:	Tim Mie	Tested Date:	Nov. 23, 2007

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)
1	2412	13.93
6	2437	15.03
11	2462	15.58

CH1:

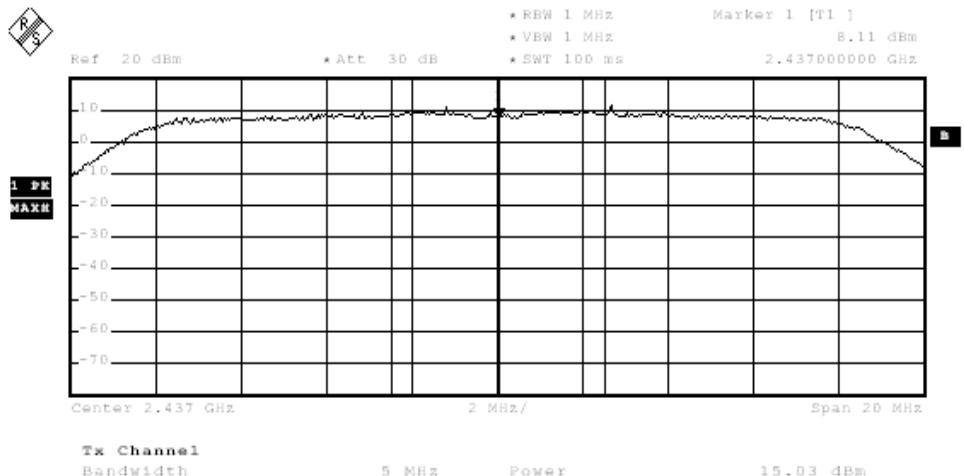




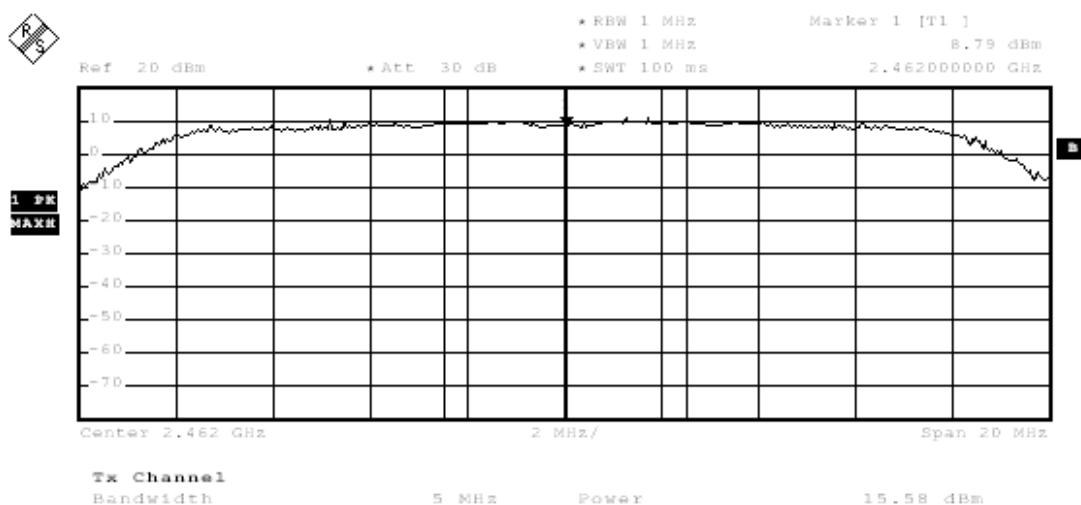
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## 4.5 BAND EDGE TEST

### 4.5.1 LIMIT

FCC Part15, Subpart C Section 15.247. 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)).

OPERATING FREQUENCY RANGE (MHz)	SPURIOUS EMISSION FREQUENCY (MHz)	LIMIT	
		Peak power ration to emission(dBc)	Emission level(dBuV/m)
902 - 928	<902	>20	NA
	>928	>20	NA
	960-1240	NA	54
2400 - 2483.5	<2400	>20	NA
	>2483.5-2500	NA	54
5725 - 5850	<5350-5460	NA	54
	<5725	>20	NA
	>5850	>20	NA

### 4.5.2 TEST EQUIPMENT

The following test equipment was used during the test:

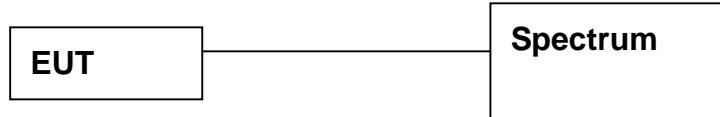
EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
SPECTRUM	9kHz-7GHz	ROHDE & SCHWARZ	FSP7/ 839511/010	APR. 2008 R&S
SPECTRUM	9KHz-26.5GHz	HP	8953E/ 3710A03220	MAY 2008 ETC
PRE-AMPLIFIER	1GHz-26.5GHz Gain:30dB(typ.)	HP	8449B/ 3008A01019	NOV. 2008 ETC
HORN ANTENNA	1GHz to 18GHz	EMCO	3115/ 9602-4681	DEC. 2008 ETC
OATS	3 - 10 M measurement	SRT	SRT-1	APR. 2008 SRT

**NOTE:** The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

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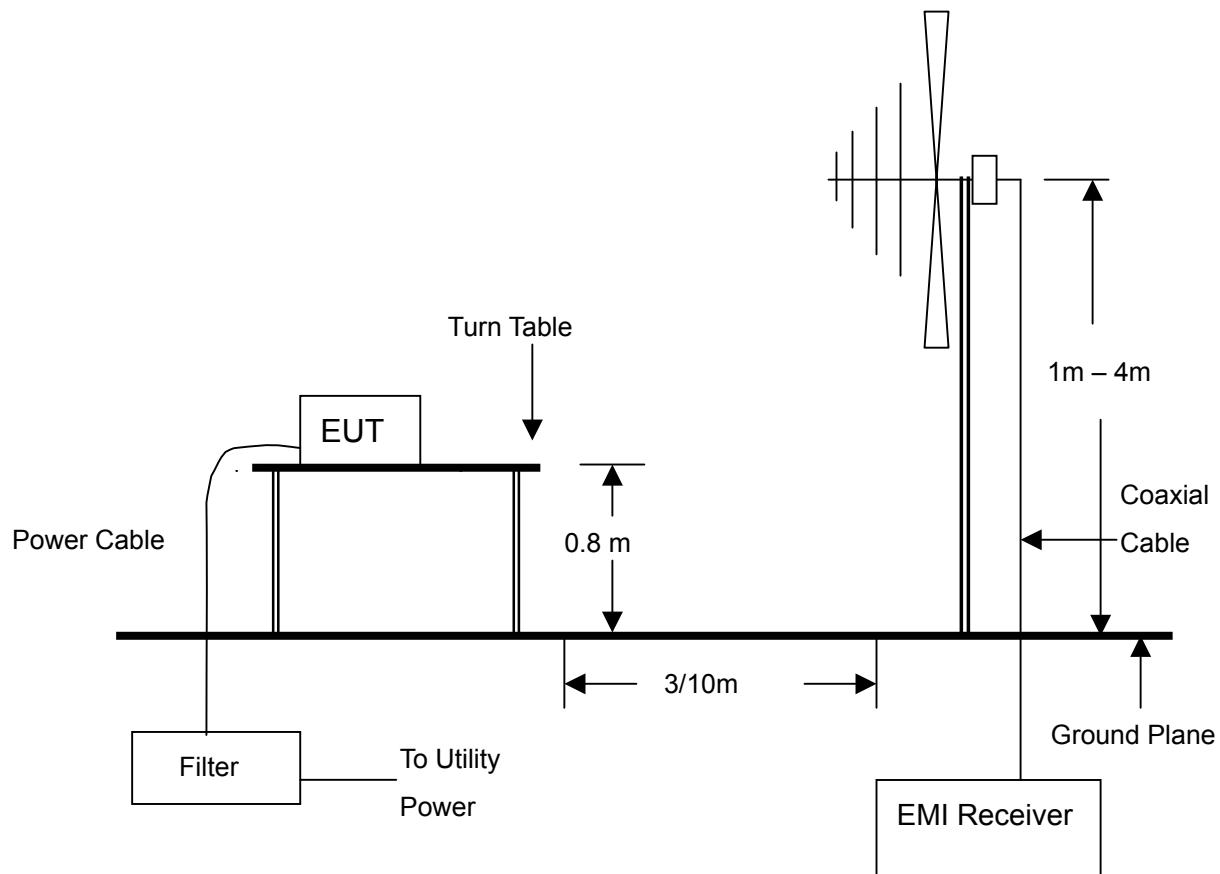
### 4.5.3 TEST SET-UP

FOR RF CONDUCTED TEST (dBc)



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

FOR RADIATED EMISSION TEST



**NOTE :**

1. The EUT system was put on a wooden table with 0.8m heights above a ground plane.
2. For the actual test configuration, please refer to the photos of testing.

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#### 4.5.4 TEST PROCEDURE

1. The EUT was operating in transmitter mode and could be controlled its channel.  
Printed out the test result from the spectrum by hard copy function.
2. The EUT was tested according to the requirement of ANSI C63.4 and CISPR 22.  
The measurements were made at an open area test site with 10 meter measurement distance under 1 GHz and with 3m distance above 1GHz. The frequency spectrum measured started from 30 MHz. Under 1 GHz. All readings were quasi-peak values with 120 kHz resolution bandwidth of the test receiver. Above 1 GHz, the measurements were made at an open area test site with 3 meter measurement distance and all readings were peak and average values with 1 MHz resolution bandwidth of the test receiver. The EUT system was operated in all typical methods by users. The cables connected to EUT and support units were moved to find the maximum emission levels for each frequency.

#### 4.5.5 EUT OPERATING CONDITION

Same as section 4.1.5 of this report.

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## 4.5.6 TEST RESULT

Temperature:	24°C	Humidity:	58%RH
Spectrum Detector:	PK. & AV	Tested Mode:	IEEE 802.11g
Tested By:	Tim Mie	Tested Date:	Nov. 23, 2007

### 1. Conducted test

Frequency (MHz)	PEAK POWER OUTPUT (dBm)	Emission read Value(dBm)	Result of Band edge (dBc)	Band edge LIMIT (dBc)
<2400	-5.07	-45.02	-43.02	>20dBc
>2483.5	0.36	-50.22	-30.22	>20dBc

### 2. Radiated emission test

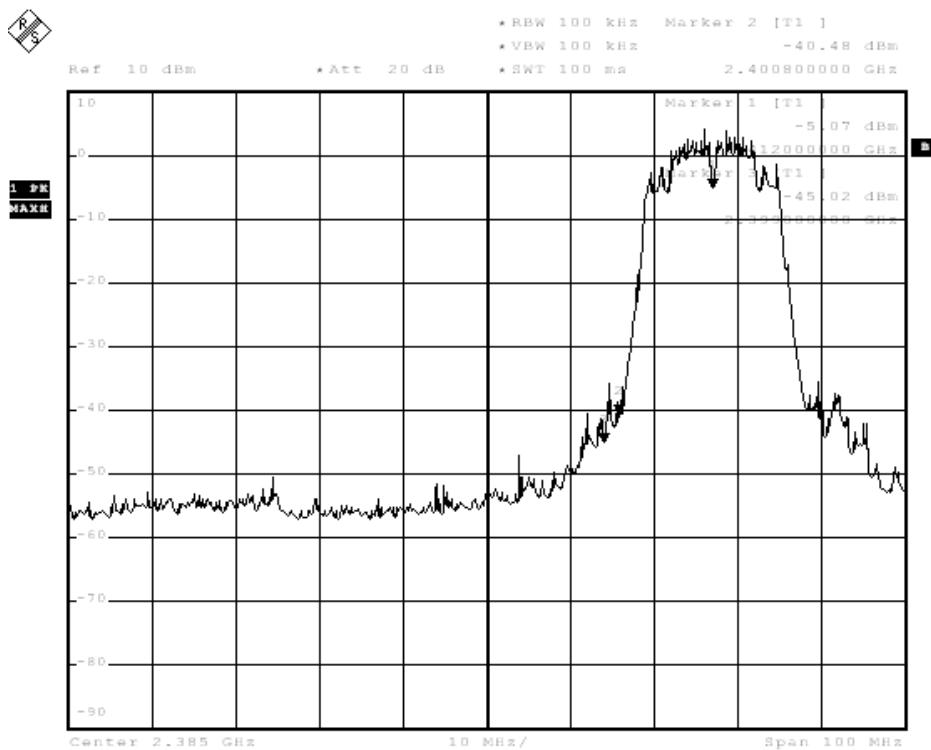
Frequency (MHz)	Antenna polarization (H/V)	Reading (dBuV)		Emission (dBuV/m)		Band edge Limit (dBuV/m)	
		PK	AV	PK	AV	PK	AV
<2400	V	62.7	44.3	58.4	40.0	74.0	54.0
>2483.5	V	60.8	45.4	56.8	41.4	74.0	54.0



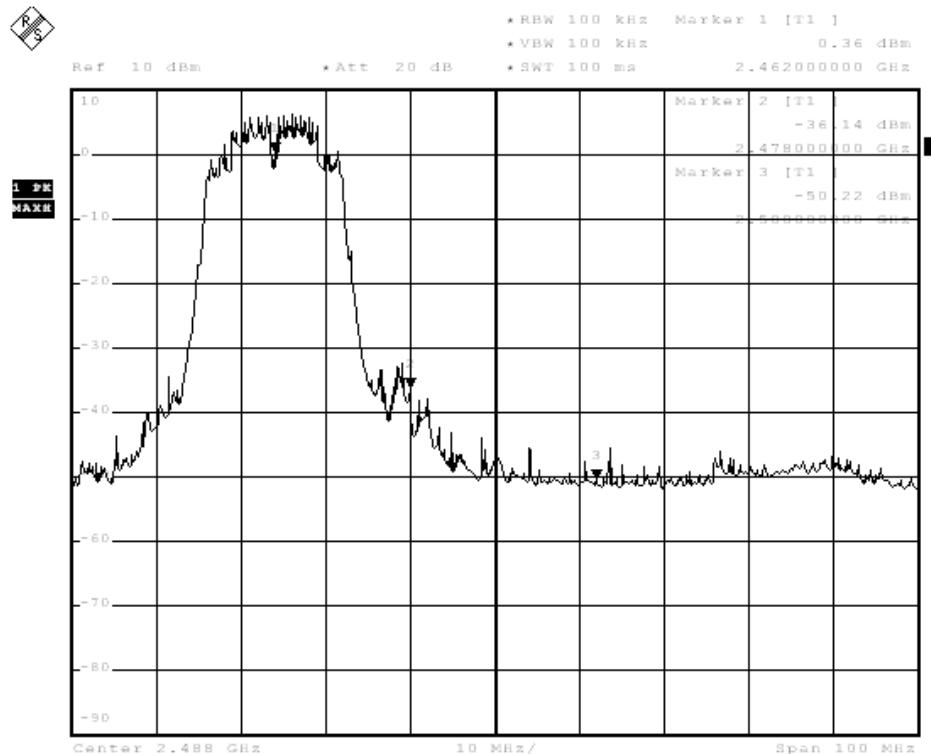
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## 4.6 POWER DENSITY TEST

### 4.6.1 LIMIT

FCC Part15, Subpart C Section 15.247

FREQUENCY RANGE (MHz)	Limit(dBm/kHz)
902-928	
2400-2483.5	8dBm/3kHz
5725-5850	

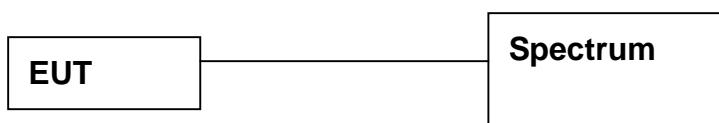
### 4.6.2 TEST EQUIPMENT

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

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
SPECTRUM	9kHz-7GHz	ROHDE & SCHWARZ	FSP7/ 839511/010	APR. 2008 R&S

**NOTE:** The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

### 4.6.3 TEST SET-UP



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

### 4.6.4 TEST PROCEDURE

The EUT was operating in transmitter mode and could be controlled its channel. Printed out the test result from the spectrum by hard copy function.

### 4.6.5 EUT OPERATING CONDITION

Same as section 4.1.5 of this report.

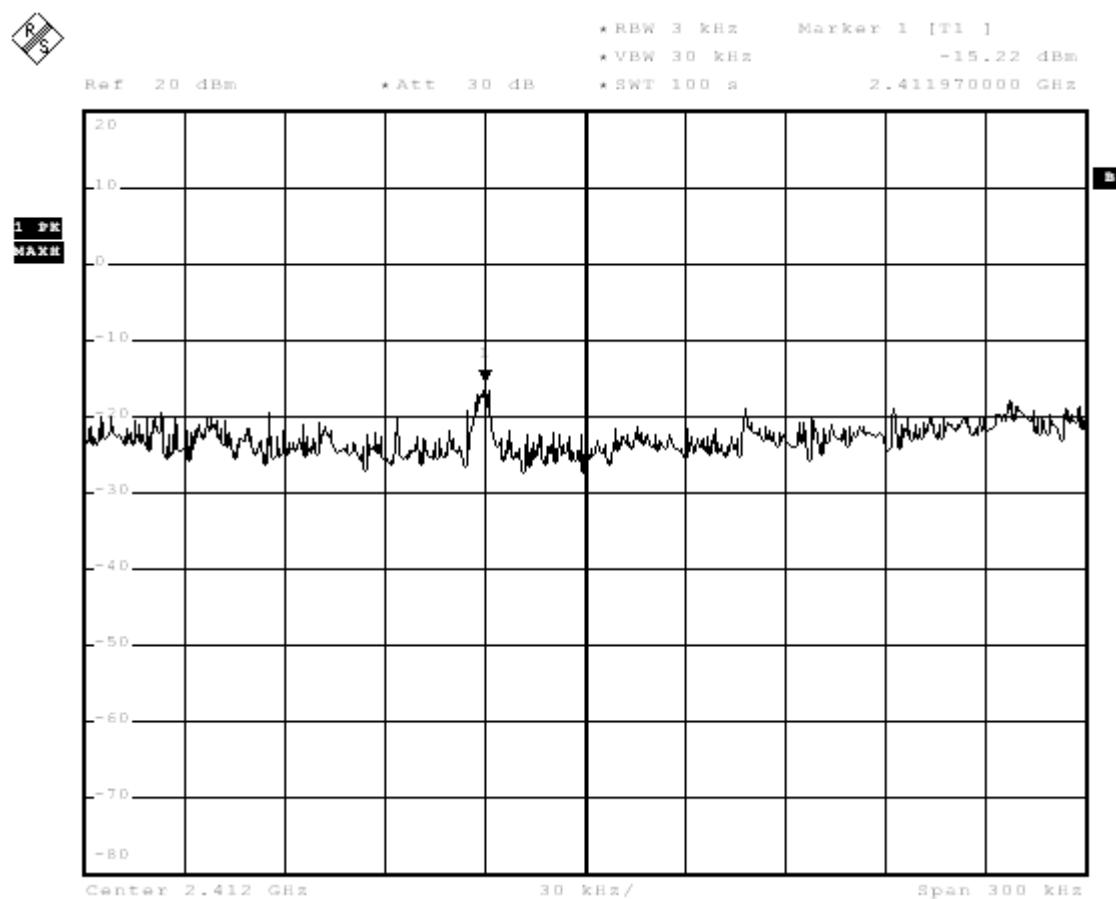
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## 4.6.6 TEST RESULT

Temperature:	23°C	Humidity:	62%RH
Spectrum Detector:	PK.	Tested Mode:	IEEE 802.11g
Tested By:	Tim Mie	Tested Date:	Nov. 23, 2007

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3KHz BW (dBm/3kHz)	MAXIMUM LIMIT (dBm/3kHz)
1	2412	-15.22	8
6	2437	-14.58	8
11	2462	-13.34	8

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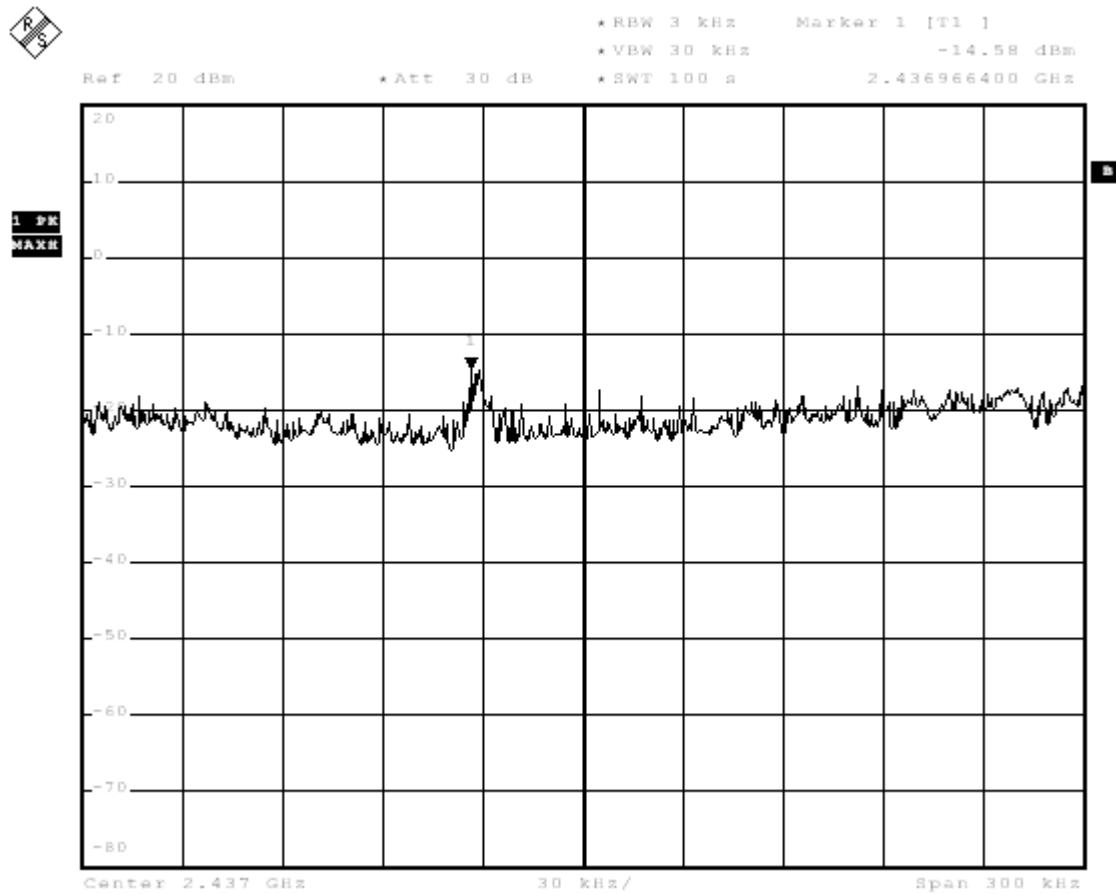
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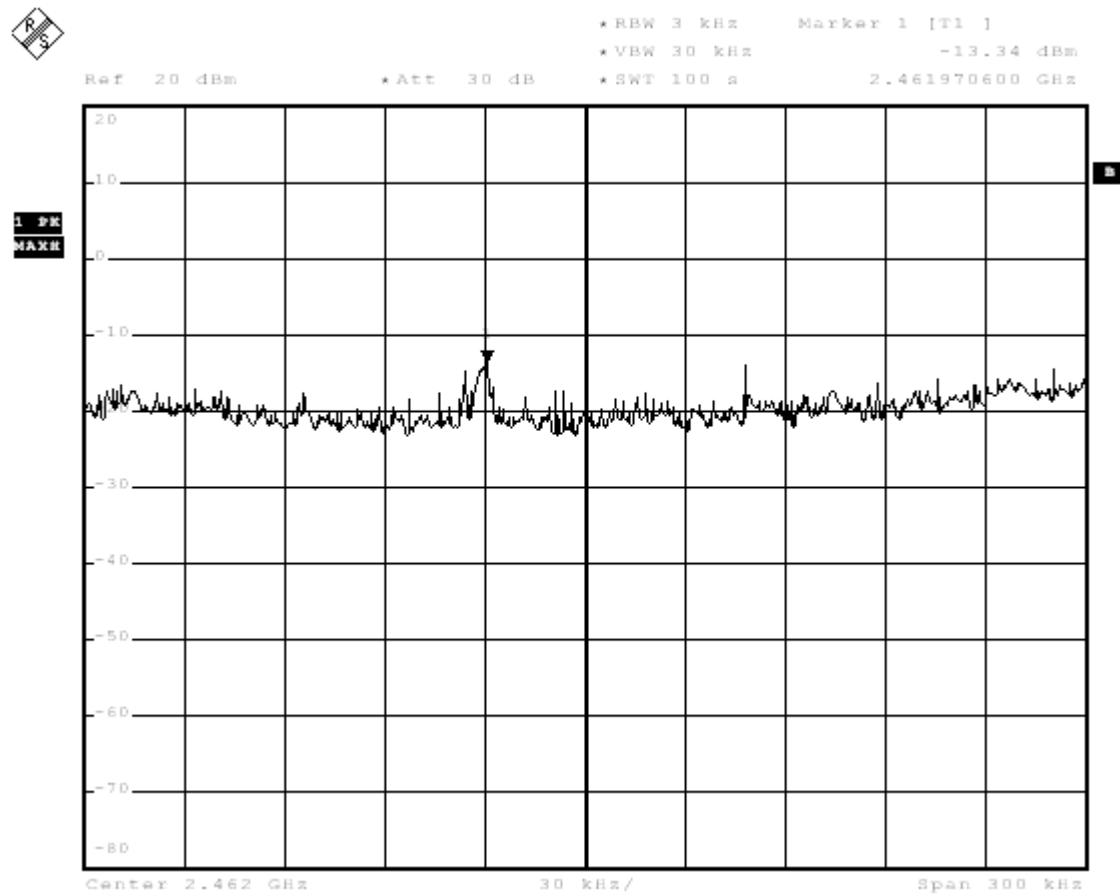
**Spectrum Research &  
Testing Lab., Inc.**  
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## 5. Antenna application

### 5.1 Antenna requirement

The EUT's antenna is met the requirement of FCC part15C section15.203 and 15.204.

FCC part15C section15.247 requirement:

Systems operating in the 2400-2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

### 5.2 Result

The EUT's antenna used an external SMA Monopole type antenna. Gain of antenna types is 0dBi that meet the requirement.

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## 7. TERMS OF ABBREVIATION

AV.	Average detection
AZ(°)	Turn table azimuth
Correct.	Correction
EL(m)	Antenna height (meter)
EUT	Equipment Under Test
Horiz.	Horizontal direction
LISN	Line Impedance Stabilization Network
NSA	Normalized Site Attenuation
Q.P.	Quasi-peak detection
SRT Lab	Spectrum Research & Testing Laboratory, Inc.
Vert.	Vertical direction



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