



**Neutron Engineering Inc.**

# FCC Radio Test Report

**FCC ID: XQBWR24G30**

This report concerns (check one) : ☒ Original Grant ☐ Class I Change

**Issued Date** : Feb. 25, 2010

**Project No.** : R0912003

**Equipment** : IEEE 802.11bg Wireless Module

**Model Name** : WR24G30

**Applicant** : Xagyl Communications

**Address** : 570 Industrial Avenue, Unit 10 Ottawa,  
ON, K1G 0Y9 Canada

**Tested by:**

Neutron Engineering Inc. EMC Laboratory

**Date of Test:**

Jan. 04, 2010 ~ Jan. 14, 2010

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### **Declaration**

**Neutron** represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (NML) of R.O.C., or National Institute of Standards and Technology (NIST) of U.S.A.

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### **Limitation**

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.



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## **1. CERTIFICATION**

Equipment : IEEE 802.11bg Wireless Module  
Brand Name : XAGYL  
Model Name : WR24G30  
Applicant : Xagyl Communications  
Date of Test : Jan. 04, 2010 ~ Jan. 14, 2010  
Standards : FCC Part15, Subpart C / ANCI C63.4 : 2003

The above equipment has been tested and found compliance with the requirement of the relative standards by Neutron Engineering Inc. EMC Laboratory.

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. NEI-FCCP-1-R0912003-RV-1002007) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of NVLAP and TAF according to the ISO-17025 quality assessment standard and technical standard(s).



## 2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15, Subpart C			
Standard Section	Test Item	Judgment	Remark
FCC			
15.207	Conducted Emission	PASS	
15.247 (c)	Antenna conducted Spurious Emission	PASS	
15.247 (a)(2)	6dB Bandwidth	PASS	
15.247 (b)	Peak Output Power	PASS	
15.247 (c)	Radiated Spurious Emission	PASS	
15.247 (d)	Power Spectral Density	PASS	
15.203	Antenna Requirement	PASS	
1.1307 1.1310 2.1091 2.1093	RF Exposure Compliance	PASS	

**NOTE:**

(1) "N/A" denotes test is not applicable in this Test Report



## 2.1 TEST FACILITY

The test facilities used to collect the test data in this report is **CB08(FCC R.N.: 614388)** at the location of 1F., No. 61, Ln. 77, Sing-ai Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)

## 2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expended uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately **95 %** °

### A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U , (dB)	NOTE
C01	ANSI	150 KHz ~ 30MHz	1.94	

### B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U , (dB)	NOTE
OS-01	ANSI	30MHz ~ 200MHz	V	2.86	
		30MHz ~ 200MHz	H	2.56	
		200MHz ~ 1,000MHz	V	2.88	
		200MHz ~ 1,000MHz	H	2.98	
OS-02	ANSI	30MHz ~ 200MHz	V	2.48	
		30MHz ~ 200MHz	H	2.16	
		200MHz ~ 1,000MHz	V	2.50	
		200MHz ~ 1,000MHz	H	2.66	



### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

Equipment	IEEE 802.11bg Wireless Module	
Brand Name	XAGYL	
Model Name	WR24G30	
OEM Brand/Model Name	N/A	
Model Difference	N/A	
Product Description	The EUT is a IEEE 802.11bg Wireless Module.	
	Operation Frequency:	2412~2462 MHz
	Modulation Type:	802.11b:CCK, DQPSK, DBPSK 802.11g:OFDM
	Bit Rate of Transmitter:	802.11b: 11/5.5/2/1 Mbps 802.11g: 54/48/36/24/18/12/9/6 Mbps
	Number Of Channel:	11CH .Please see Note 2.
	Antenna Designation:	Please see Note 3.
	Antenna Gain(Peak):	Please see Note 3.
	Output Power(Max):	802.11b: 23.06dBm (Max.) 802.11g: 29.21dBm (Max.)
	Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.	
Power Source	DC Voltage supplied from AC/DC adapter or Ethernet port (POE).	
Power Rating	DC I/P: 24V, POE: DC 48V	
Connecting I/O Port(s)	Please refer to the User's Manual	
Products Covered	Antenna: Please refer to the Note 3.	

**Note:**

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.





2. CH 01 – CH 11 for 802.11b, 802.11g

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
<b>01</b>	<b>2412</b>	05	2432	09	2452
02	2417	<b>06</b>	<b>2437</b>	10	2457
03	2422	07	2442	<b>11</b>	<b>2462</b>
04	2427	08	2447		

3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	Dipole	MMCX	2.0

4. The EUT provides one completed transmitters and one receivers (1T1R)

Modulated type	TX Function
802.11b	1TX
802.11g	1TX



### 3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Test Mode	TX	RX	Description
Mode 1	v		802.11b/CH01,CH06,CH11(POWER:ADAPTER)
Mode 2	v		802.11g/CH01,CH06,CH11(POWER:ADAPTER)
Mode 3	v		802.11b/CH01,CH06,CH11(POWER:POE)
Mode 4	v		802.11b/CH01,CH06,CH11(POWER:POE)

#### For Final Conducted Test

Final Test Mode	TX	RX	Description
Mode 1	v		802.11b/CH06(POWER:ADAPTER)

#### For Final Radiated Test < 1GHz

Final Test Mode	TX	RX	Description
Mode 1	v		802.11b/CH06(POWER:ADAPTER)

#### For Final Radiated Test > 1GHz

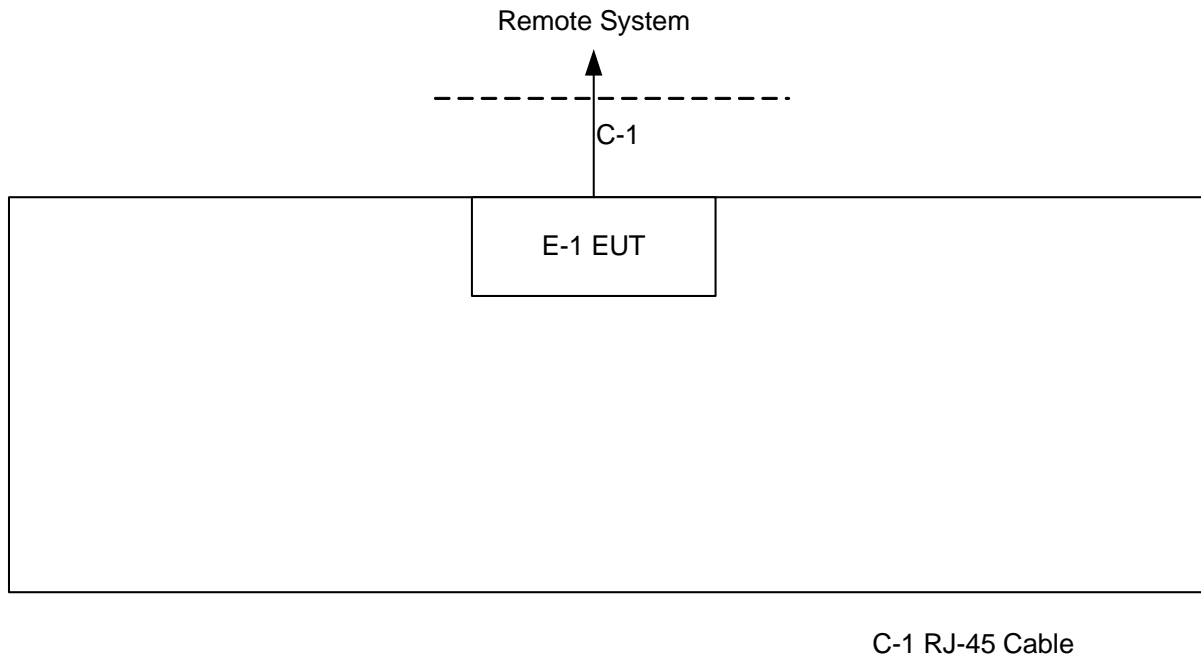
Final Test Mode	TX	RX	Description
Mode 1	v		802.11b/CH01,CH06,CH11(POWER:ADAPTER)
Mode 2	v		802.11g/CH01,CH06,CH11(POWER:ADAPTER)

#### For Final Antenna Port Conducted Measurement

Final Test Mode	TX	RX	Description
Mode 1	v		802.11b/CH01,CH06,CH11(POWER:ADAPTER)
Mode 2	v		802.11g/CH01,CH06,CH11(POWER:ADAPTER)



### 3.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



**3.4 DESCRIPTION OF SUPPORT UNITS**

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
E-1	IEEE 802.11bg Wireless Module	XAGYL	WR24G30	XQBWR24G30	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note
C-1	YES	NO	10M	

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.



#### 4. EMC EMISSION TEST

##### 4.1 CONDUCTED EMISSION MEASUREMENT

##### 4.1.1 POWER LINE CONDUCTED EMISSION (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

##### 4.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Test Cable	N/A	C01	N/A	Dec. 14, 2010
2	Test Cable	N/A	SR03_C_01 &02	N/A	Aug. 19, 2010
3	LISN	EMCO	3816/2	00042991	Jan. 20, 2011
4	Pulse Limiter	Electro-Metrics	EM-7600	112644	Dec. 27, 2010
5	EMI Test Receiver	R&S	ESCI	100080	Mar. 10, 2010

Remark: " N/A" denotes No Model Name , Serial No. or No Calibration specified.



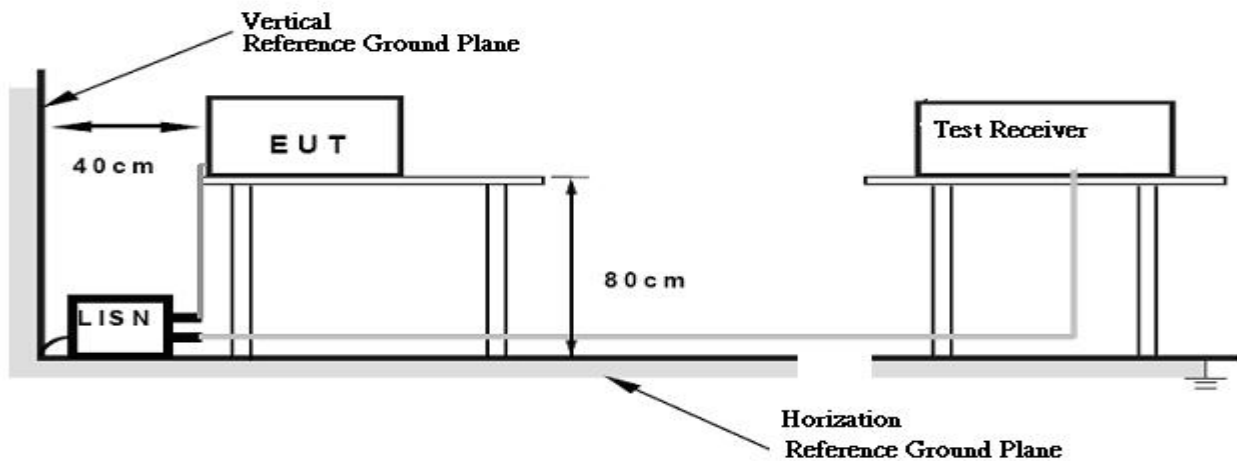
#### **4.1.3 TEST PROCEDURE**

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

#### **4.1.4 DEVIATION FROM TEST STANDARD**

No deviation

#### **4.1.5 TEST SETUP**





#### **4.1.6 EUT OPERATING CONDITIONS**

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.



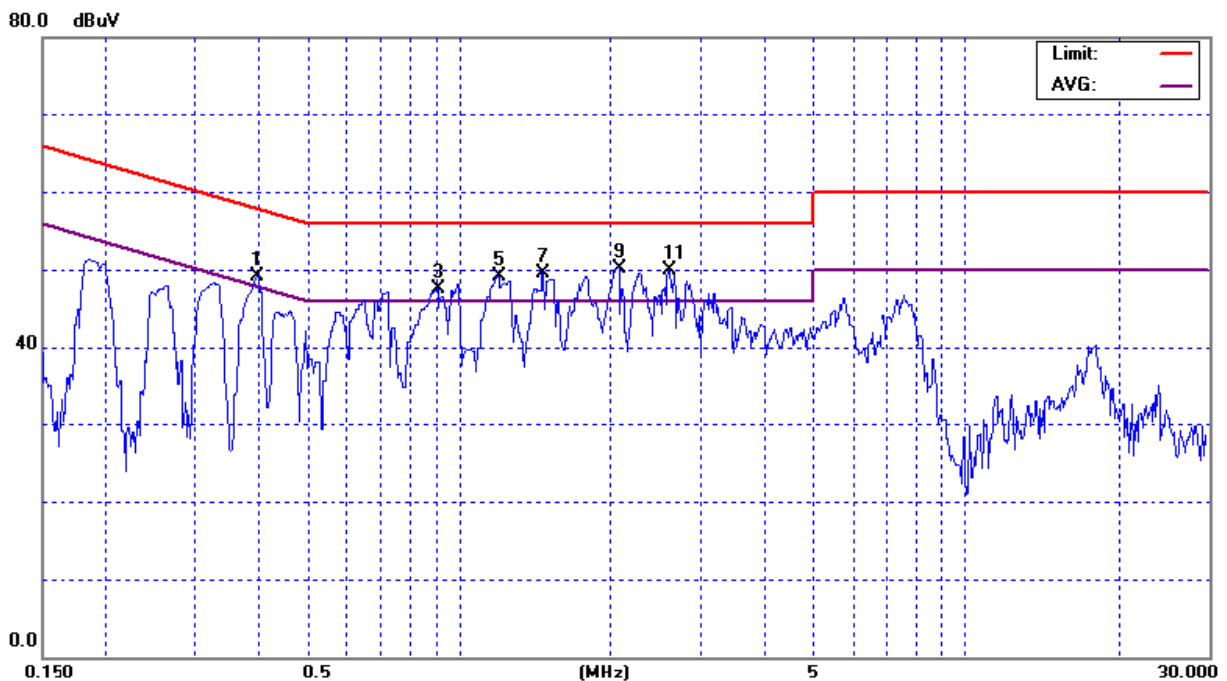
#### 4.1.7 TEST RESULTS

EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	23 °C	Relative Humidity :	53%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11b/CH06(POWER:ADAPTER)		

Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Margin (dB)	Note
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.39	Line	49.19	31.39	58.07	48.07	-8.88	(QP)
0.91	Line	47.41	29.77	56.00	46.00	-8.59	(QP)
1.19	Line	49.13	32.29	56.00	46.00	-6.87	(QP)
1.46	Line	49.55	30.60	56.00	46.00	-6.45	(QP)
2.07	Line	50.20	30.83	56.00	46.00	-5.80	(QP)
2.60	Line	49.83	30.55	56.00	46.00	-6.17	(QP)

#### Remark

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9KHz; SPA setting in RBW=10KHz,VBW =10KHz, Swp. Time = 0.2 sec./MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10KHz,VBW=10KHz, Swp. Time =0.2 sec./MHz.
- (2) All readings are QP Mode value unless otherwise stated AVG in column of 『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a “\*” marked in AVG Mode column of Interference Voltage Measured.
- (3) Measuring frequency range from 150KHz to 30MHz.





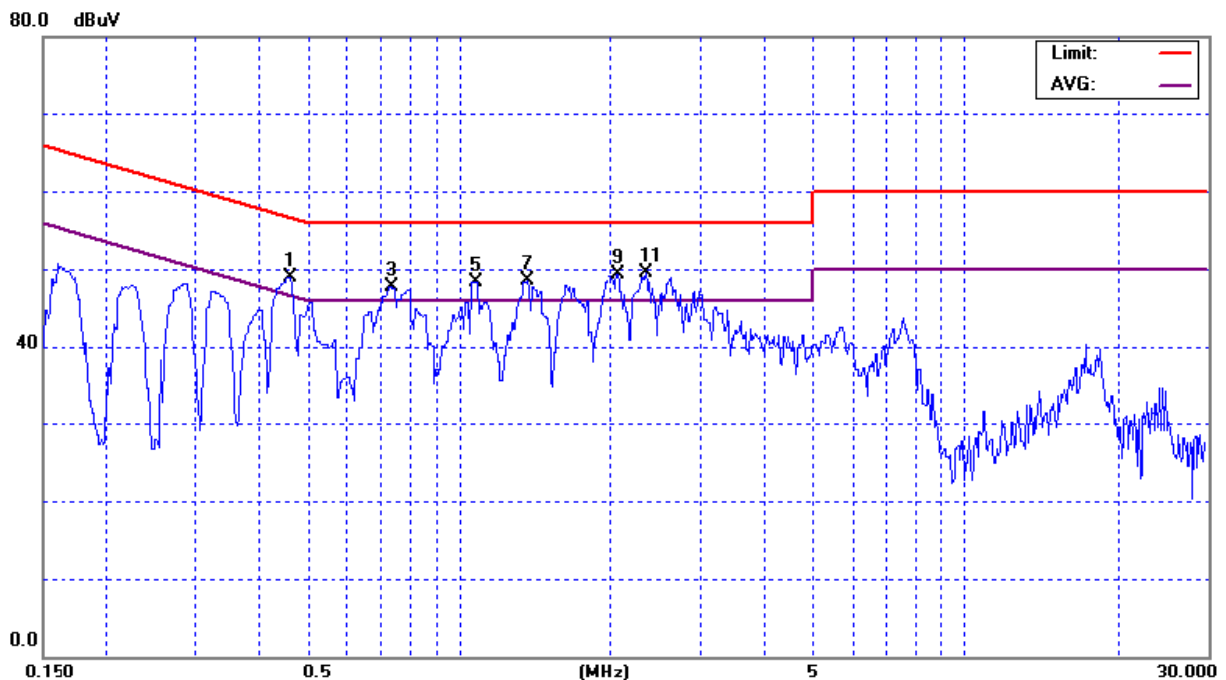


EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	23 °C	Relative Humidity :	53%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11b/CH06(POWER:ADAPTER)		

Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Margin (dB)	Note
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.46	Neutral	48.96	37.93	56.67	46.67	-7.71	(QP)
0.73	Neutral	47.78	34.08	56.00	46.00	-8.22	(QP)
1.08	Neutral	48.35	31.72	56.00	46.00	-7.65	(QP)
1.36	Neutral	48.54	31.34	56.00	46.00	-7.46	(QP)
2.06	Neutral	49.25	32.07	56.00	46.00	-6.75	(QP)
2.35	Neutral	49.44	32.98	56.00	46.00	-6.56	(QP)

**Remark**

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9KHz; SPA setting in RBW=10KHz,VBW =10KHz, Swp. Time = 0.2 sec./MHz °  
Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10KHz,VBW=10KHz, Swp. Time =0.2 sec./MHz °
- (2) All readings are QP Mode value unless otherwise stated AVG in column of 『 Note 』 . If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform ° In this case, a “ \* ” marked in AVG Mode column of Interference Voltage Measured °
- (3) Measuring frequency range from 150KHz to 30MHz °





## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

### LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80	60	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15B.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).



#### 4.2.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Sep. 10, 2010
2	Horn Antenna	Schwarzbeck	BBHA 9120 D	9120D-546	Jun. 04, 2010
3	Microwave Pre_amplifier	Agilent	8449B	3008A01714	Apr. 20, 2010
4	Microflex Cable	N/A	N/A	1m	May. 20, 2010
5	Microflex Cable	AISI	S104-SMAP-1	10m	Aug. 23, 2010
6	Microflex Cable	N/A	N/A	3m	Aug. 23, 2010
7	Test Cable	N/A	LMR-400	966_12m	Jun. 18, 2010
8	Test Cable	N/A	LMR-400	966_3m	Jun. 18, 2010
9	Pre-Amplifier	EMC	EMC-330	980001	Jun. 04, 2010
10	Log-Bicon Antenna	Schwarzbeck	VULB9168-352	9168-352	Jun. 17, 2010

Remark: " N/A" denotes No Model Name / Serial No. and No Calibration specified.

#### 4.2.3 TEST PROCEDURE

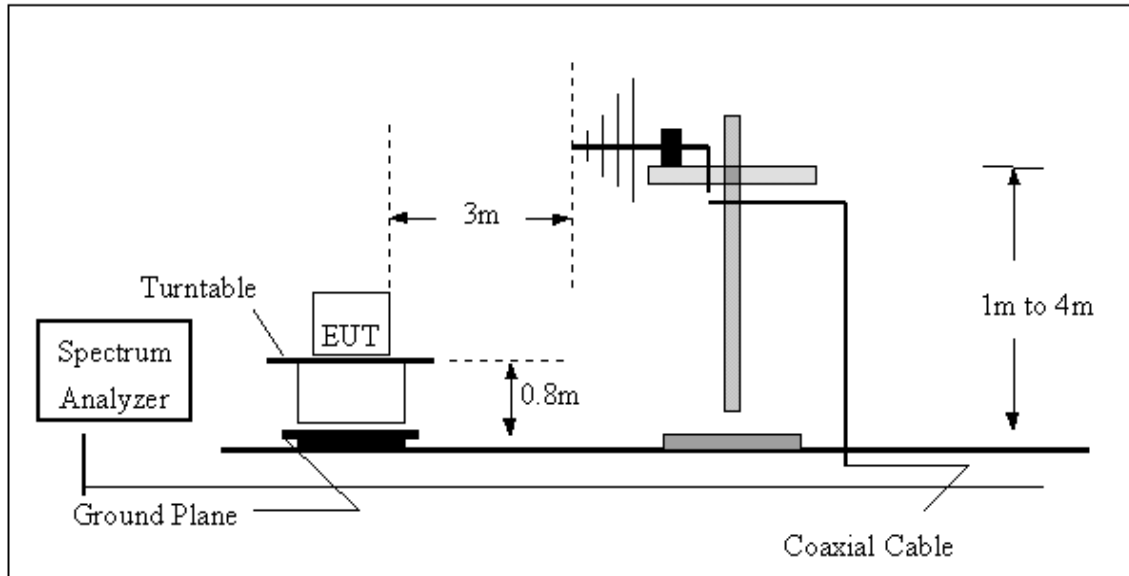
- The measuring distance of at 10 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m or 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

#### 4.2.4 DEVIATION FROM TEST STANDARD

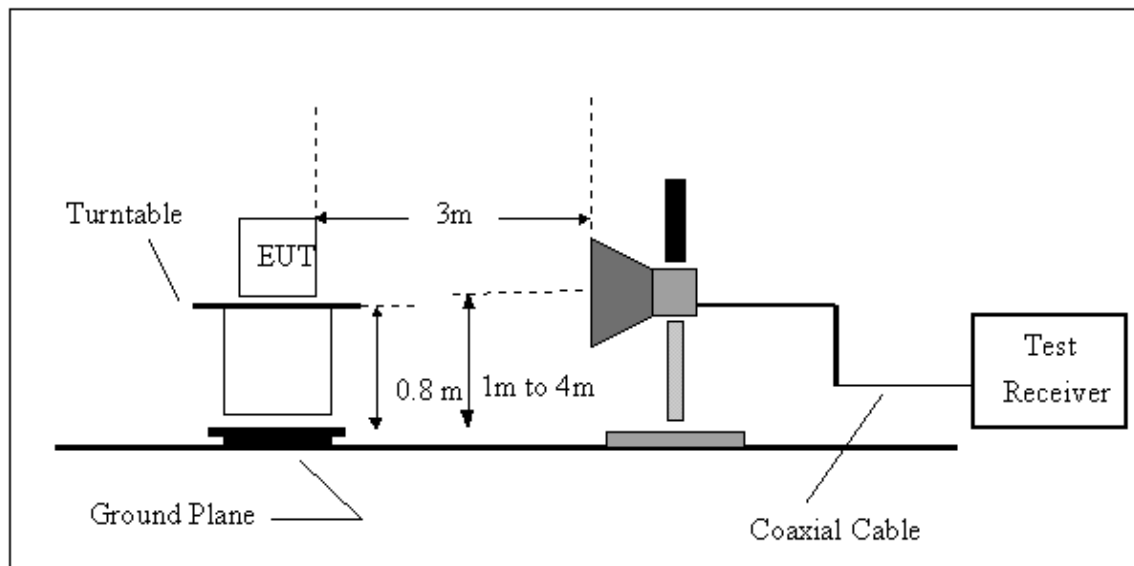
No deviation

#### 4.2.5 TEST SETUP

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(B) Radiated Emission Test Set-UP Frequency Over 1 GHz



#### 4.2.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.



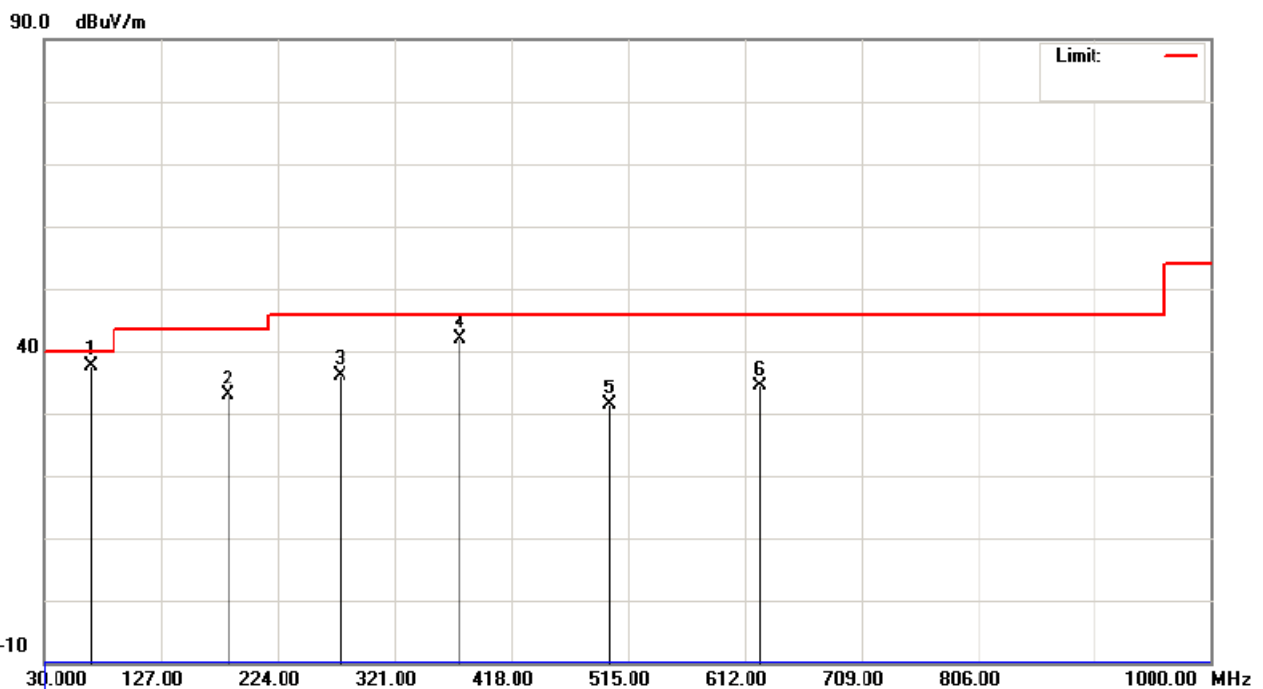
#### 4.2.7 TEST RESULTS-BETWEEN 30MHZ - 1000MHZ

EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	22 °C	Relative Humidity :	43%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11b/CH06(POWER:ADAPTER)		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
68.80	V	60.87	-23.15	37.72	40.00	- 2.28	(QP)
183.26	V	55.37	-22.50	32.87	43.50	- 10.63	
276.38	V	57.33	-21.15	36.18	46.00	- 9.82	
375.32	V	60.80	-18.88	41.92	46.00	- 4.08	
499.48	V	47.80	-16.30	31.50	46.00	- 14.50	
625.58	V	48.08	-13.76	34.32	46.00	- 11.68	

**Remark :**

- (1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ “F” denotes fundamental frequency; “ H” denotes spurious frequency. “E” denotes band edge frequency.
- (4) Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode or QP detector mode of the emission ◦
- (5) Data of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.



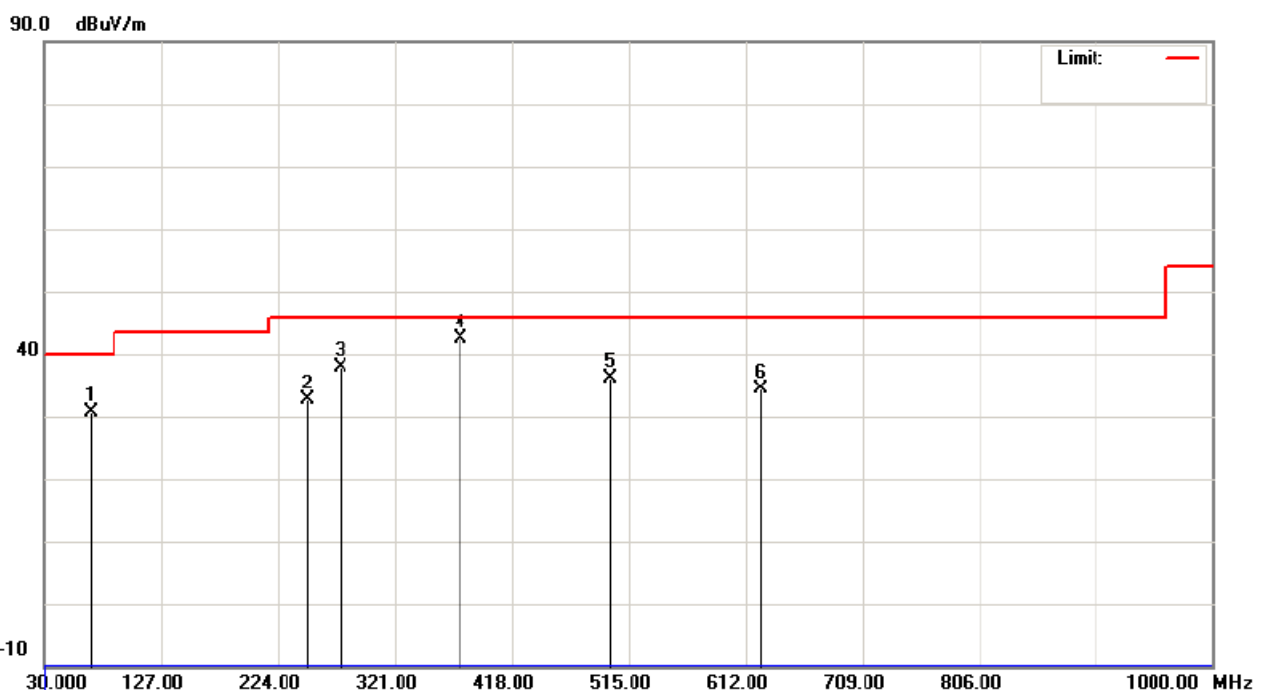


EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	22 °C	Relative Humidity :	43%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11b/CH06(POWER:ADAPTER)		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
68.80	H	53.74	-23.15	30.59	40.00	- 9.41	
249.22	H	54.65	-22.00	32.65	46.00	- 13.35	
276.38	H	59.05	-21.15	37.90	46.00	- 8.10	
375.32	H	61.35	-18.88	42.47	46.00	- 3.53	
499.48	H	52.46	-16.30	36.16	46.00	- 9.84	
625.58	H	48.09	-13.76	34.33	46.00	- 11.67	

**Remark :**

- (1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ “F” denotes fundamental frequency; “ H” denotes spurious frequency. “E” denotes band edge frequency.
- (4) Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode or QP detector mode of the emission ◦
- (5) Data of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.





#### 4.2.8 TEST RESULTS - ABOVE 1000MHZ

EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	22 °C	Relative Humidity :	43%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11b/CH01(POWER:ADAPTER)		

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2385.60	V	28.35	21.62	31.91	60.26	53.53	74.00	54.00	X/E
2412.80	V	81.84	78.55	32.02	113.86	110.57			X/F
4824.04	V	51.71	47.70	3.75	55.46	51.45	74.00	54.00	X/H
7239.00	V	44.94	34.55	9.03	53.97	43.58	74.00	54.00	X/H

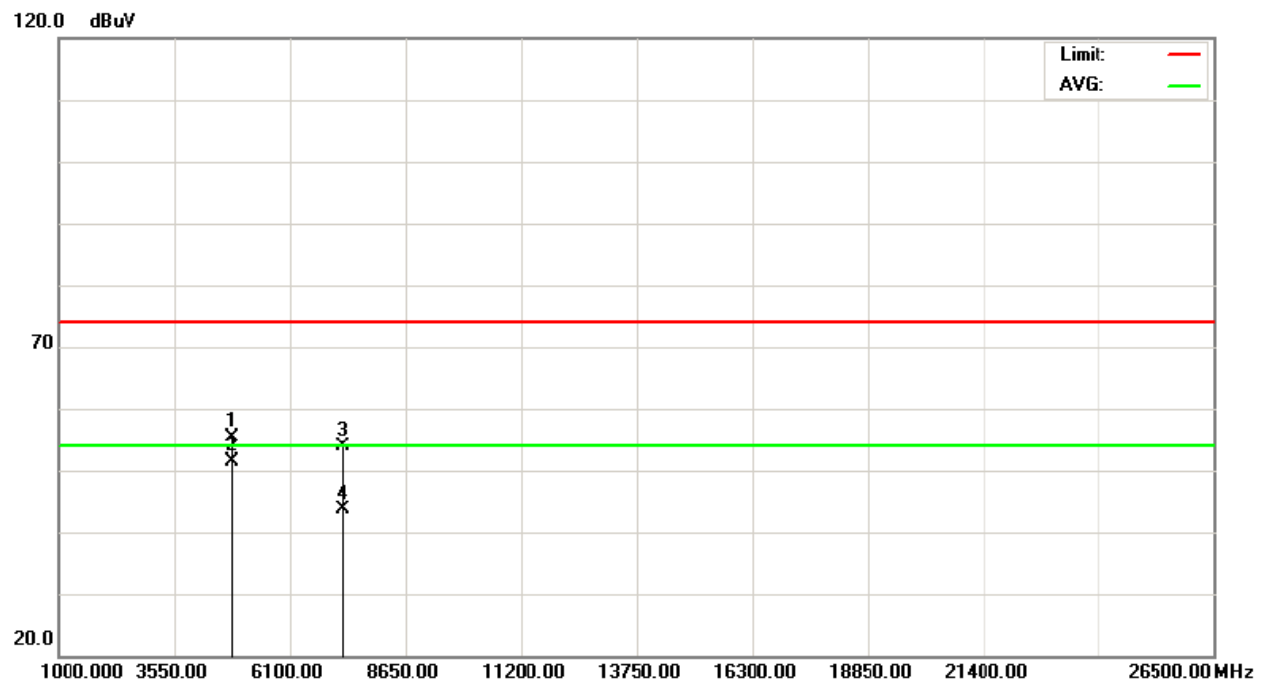
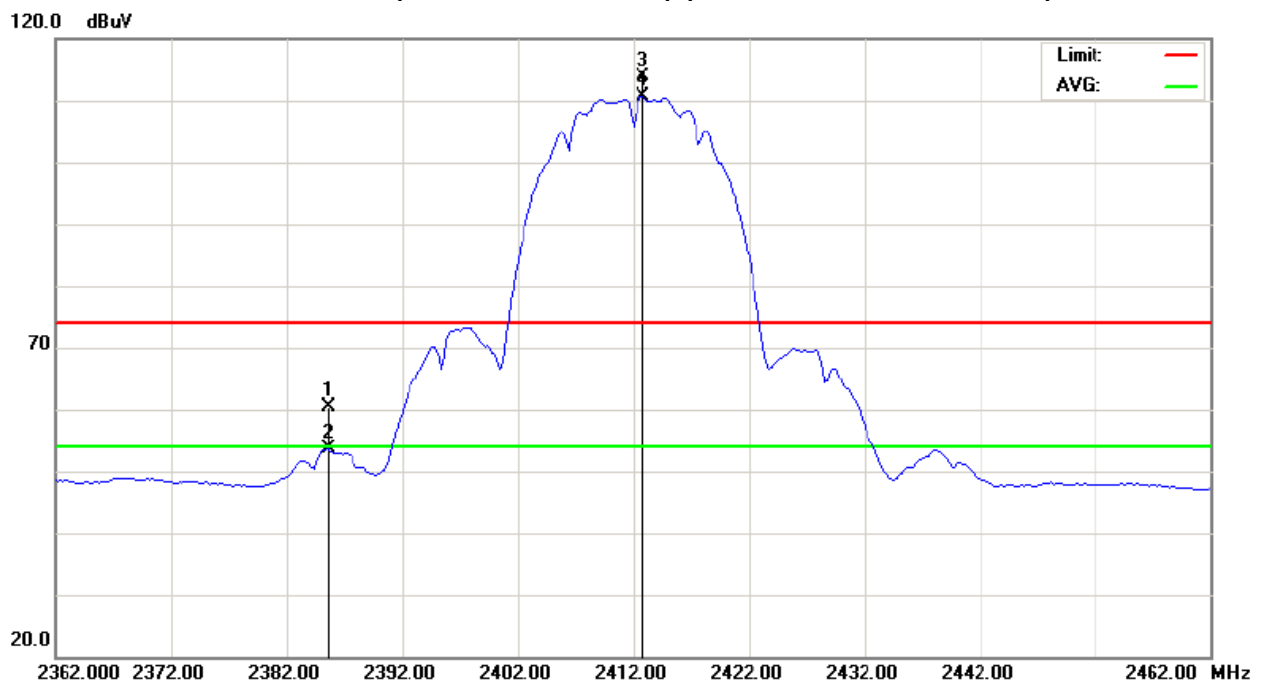
**Remark :**

- (1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (5) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (7) EUT Orthogonal Axes :  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.



Orthogonal Axis : X

802.11b/CH01(POWER:ADAPTER) (Above 1000 MHz, Vertical)







EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	22 °C	Relative Humidity :	43%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11b/CH01(POWER:ADAPTER)		

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2387.20	H	24.16	14.91	31.92	56.08	46.83	74.00	54.00	X/E
2412.80	H	73.29	70.22	32.02	105.31	102.24			X/F
4824.08	H	49.26	47.55	3.75	53.01	51.30	74.00	54.00	X/H
7236.64	H	43.43	31.31	9.02	52.45	40.33	74.00	54.00	X/H

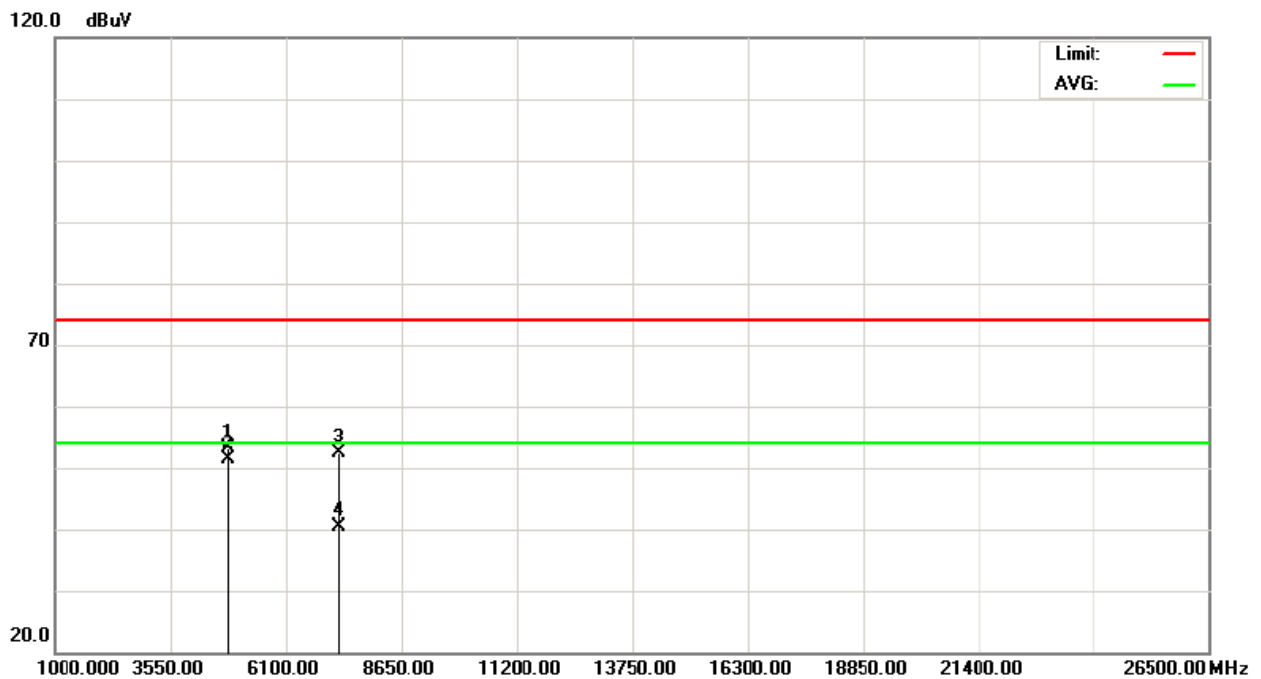
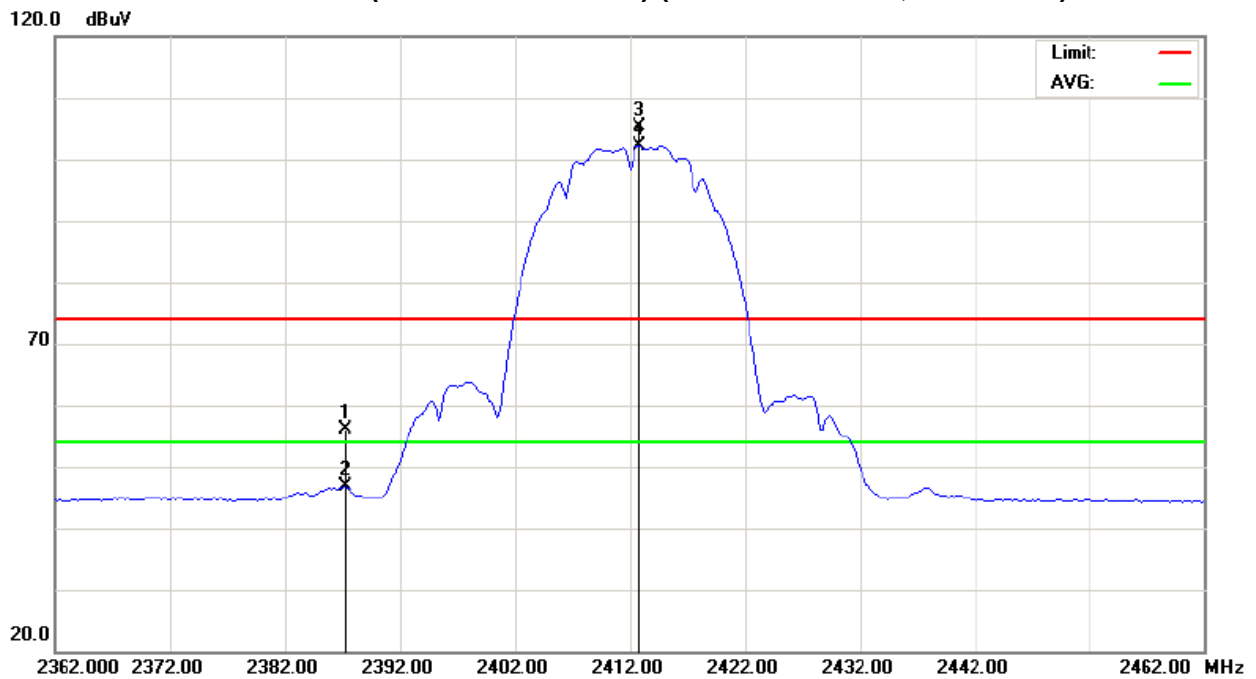
**Remark :**

- (1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (5) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (7) EUT Orthogonal Axes :  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.



Orthogonal Axis : X

802.11b/CH01(POWER:ADAPTER) (Above 1000 MHz, Horizontal)





EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	22 ° C	Relative Humidity :	43%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11b/CH06(POWER:ADAPTER)		

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2436.40	V	82.22	78.52	32.11	114.33	110.63			X/F
4874.03	V	48.79	44.72	3.90	52.69	48.62	74.00	54.00	X/H
7308.36	V	44.59	33.51	9.14	53.73	42.65	74.00	54.00	X/H

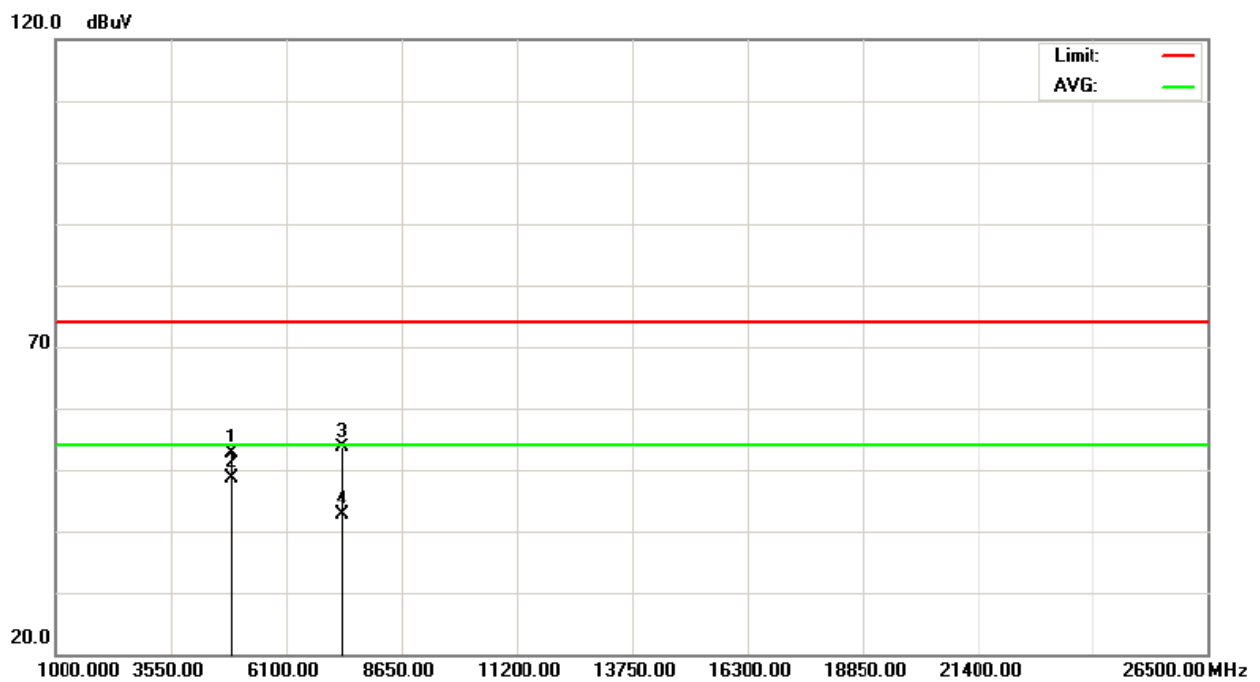
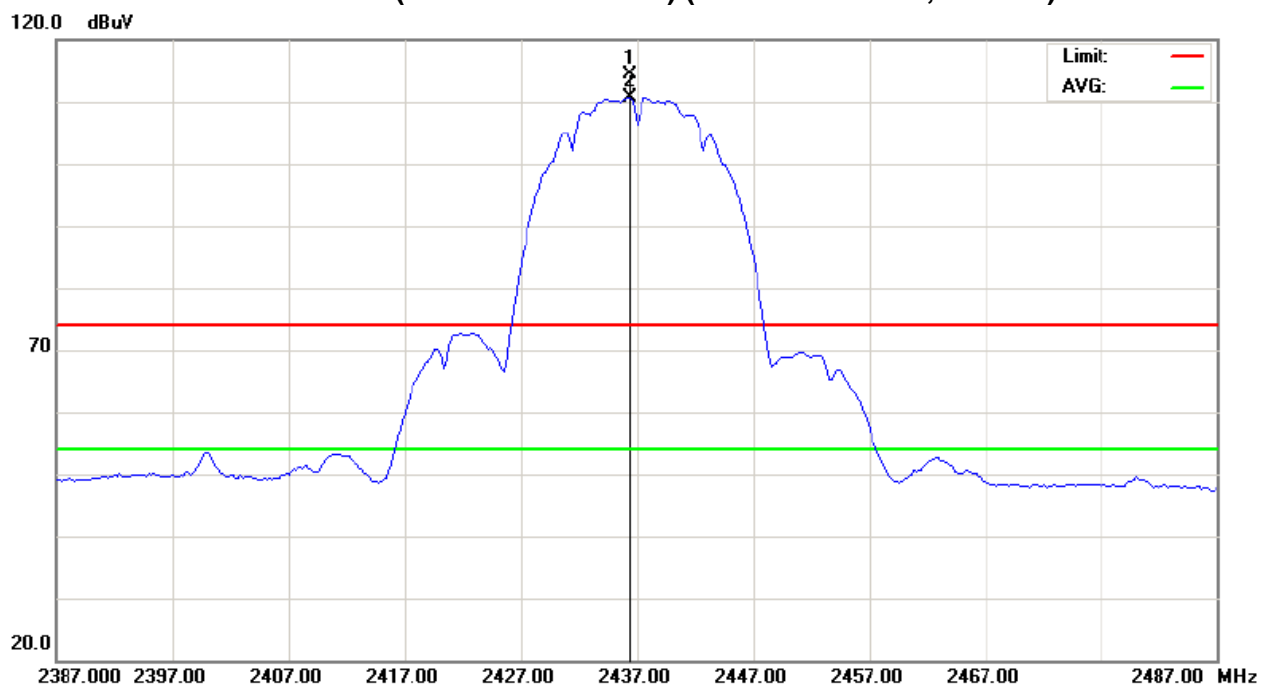
**Remark :**

- (1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (5) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (7) EUT Orthogonal Axes :  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.



Orthogonal Axis : X

802.11b/CH06(POWER:ADAPTER) (Above 1000 MHz, Vertical)





EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	22 °C	Relative Humidity :	43%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11b/CH06(POWER:ADAPTER)		

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2436.40	H	73.08	69.26	32.11	105.19	101.37			X/F
4874.02	H	49.56	45.90	3.90	53.46	49.80	74.00	54.00	X/H
7311.08	H	42.30	29.57	9.14	51.44	38.71	74.00	54.00	X/H

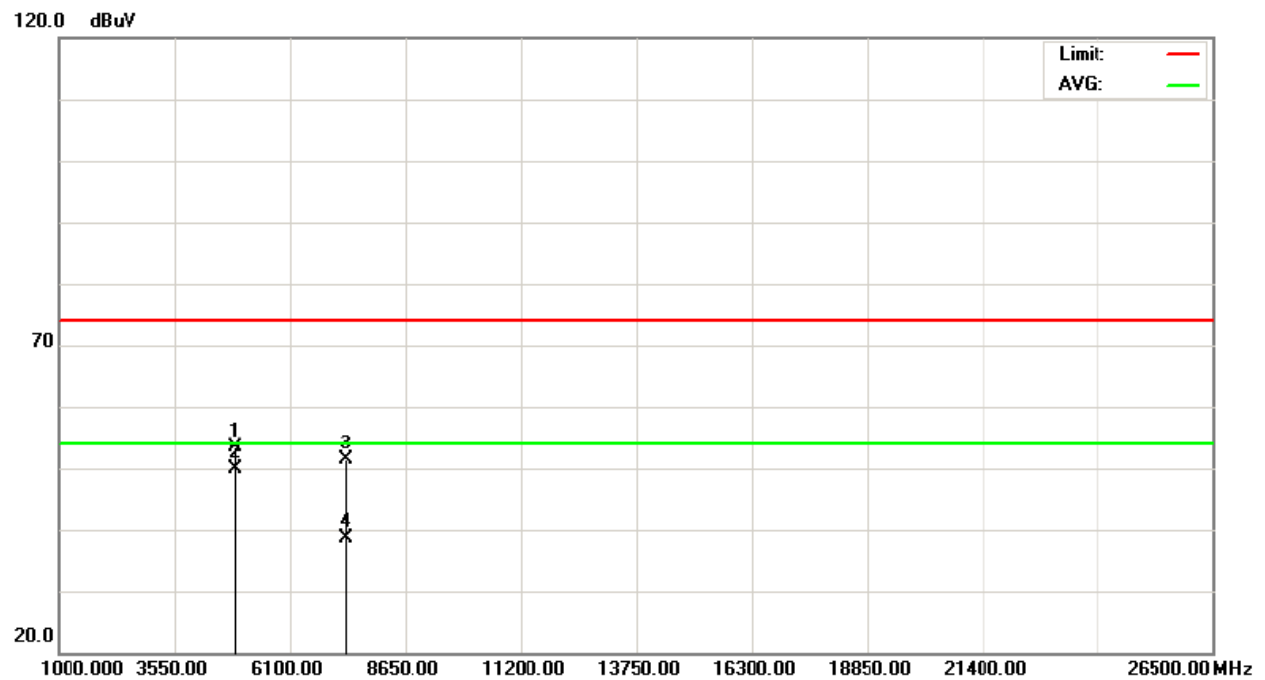
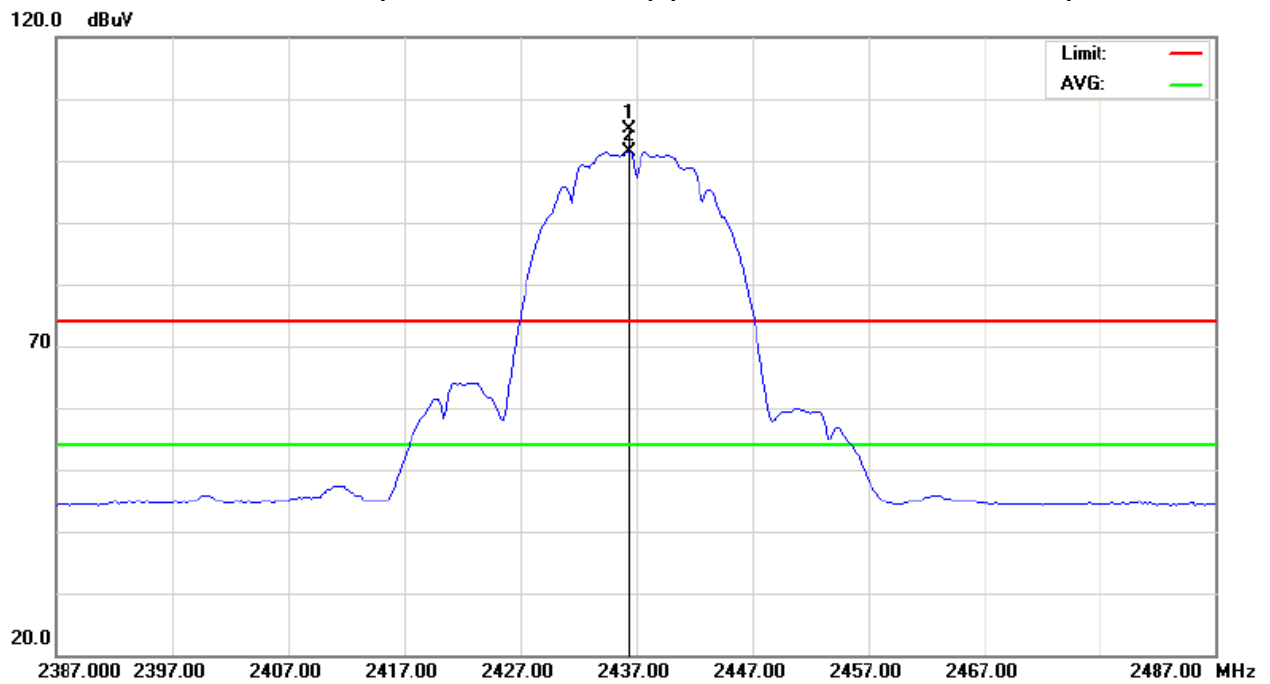
**Remark :**

- (1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (5) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (7) EUT Orthogonal Axes :  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.



Orthogonal Axis : X

802.11b/CH06(POWER:ADAPTER) (Above 1000 MHz, Horizontal)





EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	22 ° C	Relative Humidity :	43%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11b/CH11(POWER:ADAPTER)		

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2459.40	V	81.12	77.51	32.19	113.31	109.70			X/F
2487.70	V	29.02	19.96	32.30	61.32	52.26	74.00	54.00	X/E
4924.04	V	46.93	42.61	4.06	50.99	46.67	74.00	54.00	X/H
7383.32	V	45.43	34.75	9.26	54.69	44.01	74.00	54.00	X/H

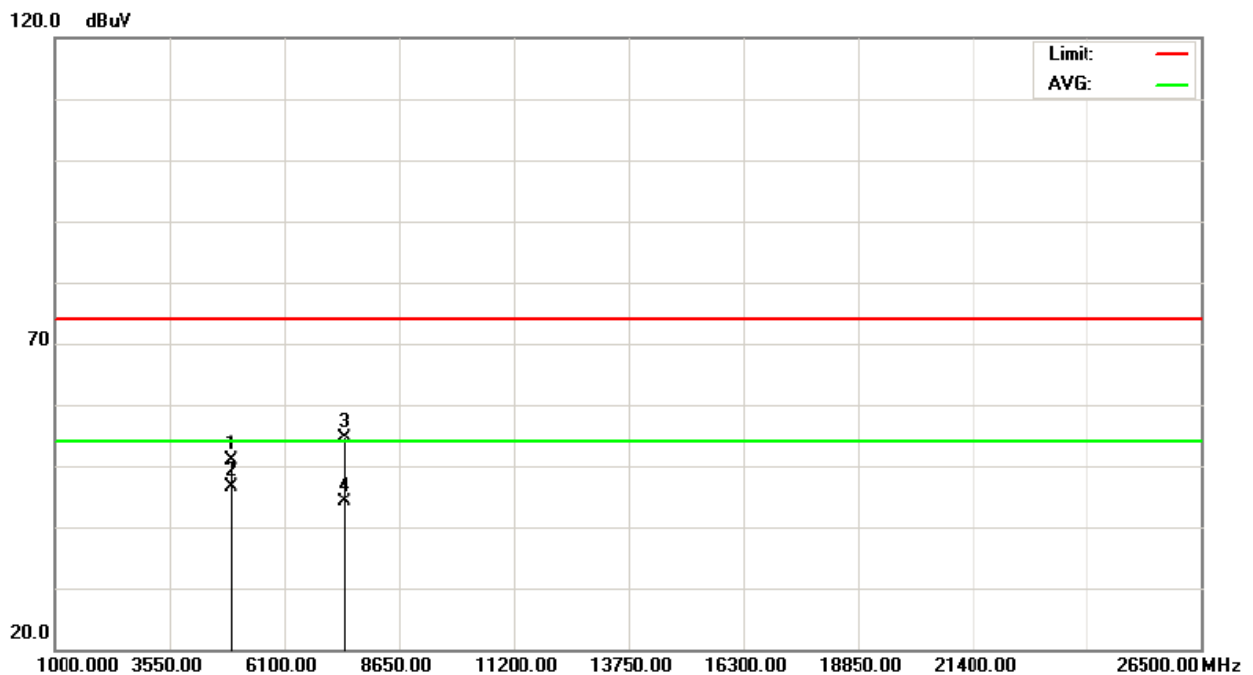
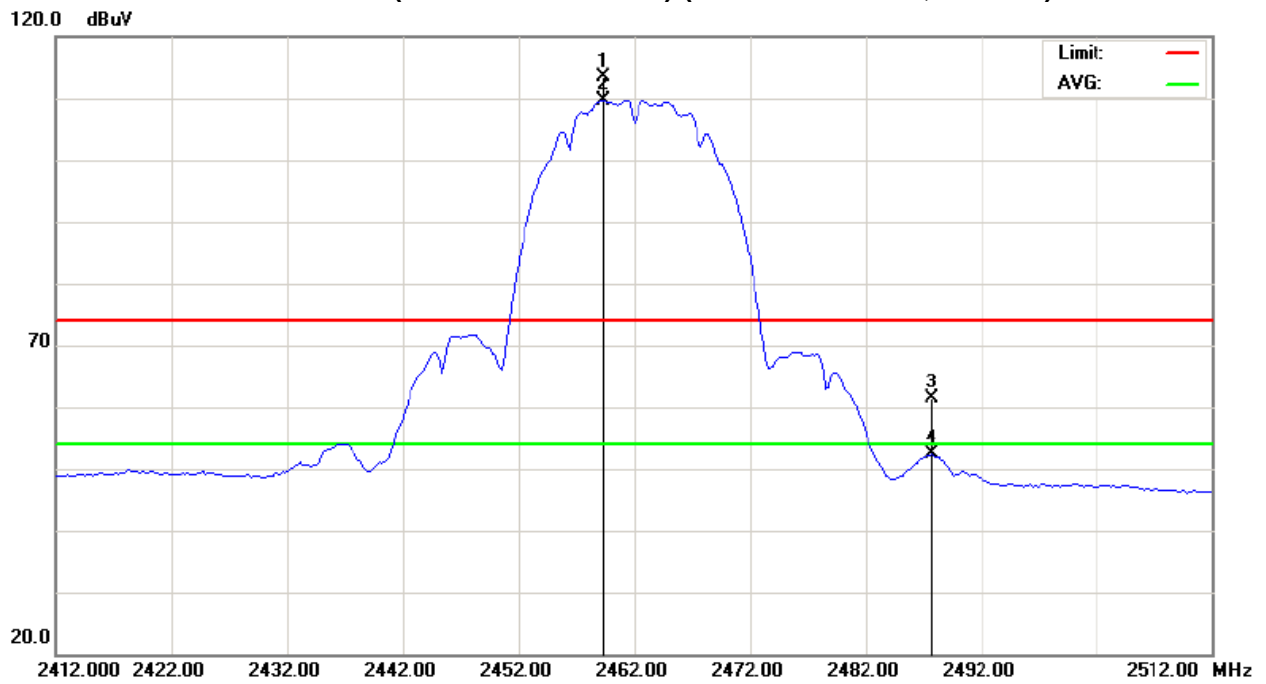
**Remark :**

- (1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (5) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (7) EUT Orthogonal Axes :  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.



Orthogonal Axis : X

802.11b/CH11(POWER:ADAPTER) (Above 1000 MHz, Vertical)







EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	22 °C	Relative Humidity :	43%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11b/CH11(POWER:ADAPTER)		

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2461.40	H	71.16	68.40	32.20	103.36	100.60			X/F
2487.70	H	22.14	13.72	32.30	54.44	46.02	74.00	54.00	X/E
4924.07	H	46.78	42.58	4.06	50.84	46.64	74.00	54.00	X/H
7386.12	H	43.54	31.03	9.27	52.81	40.30	74.00	54.00	X/H

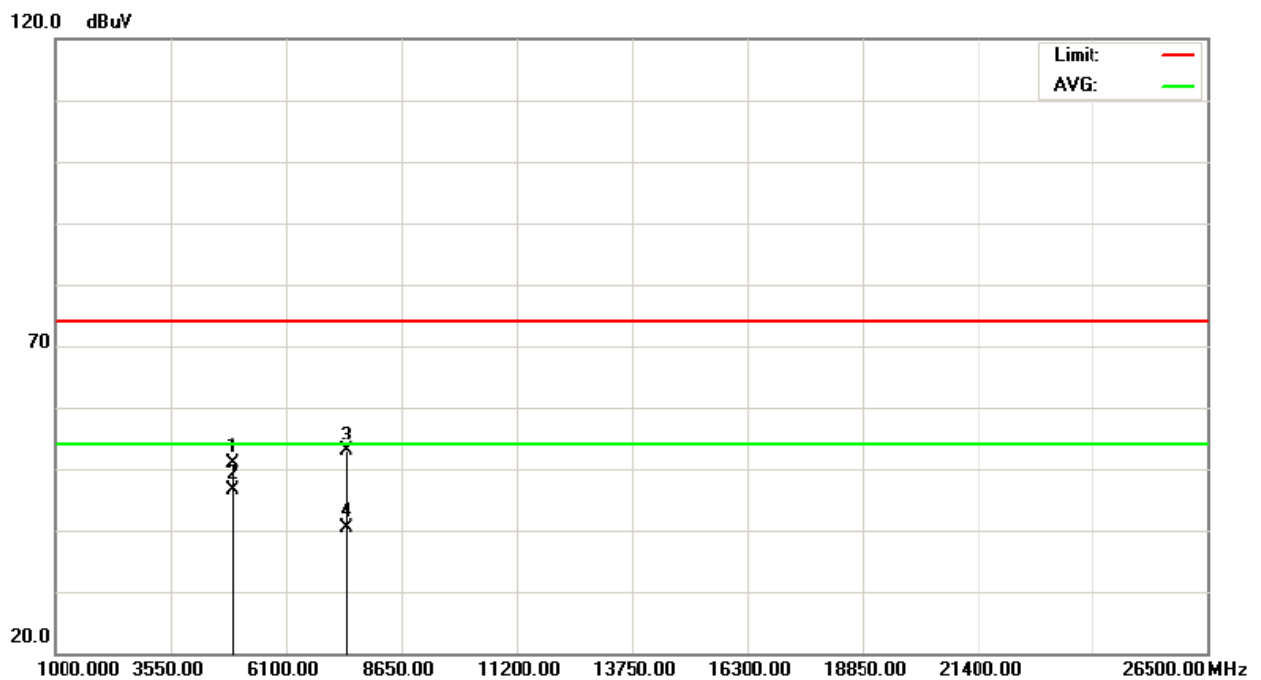
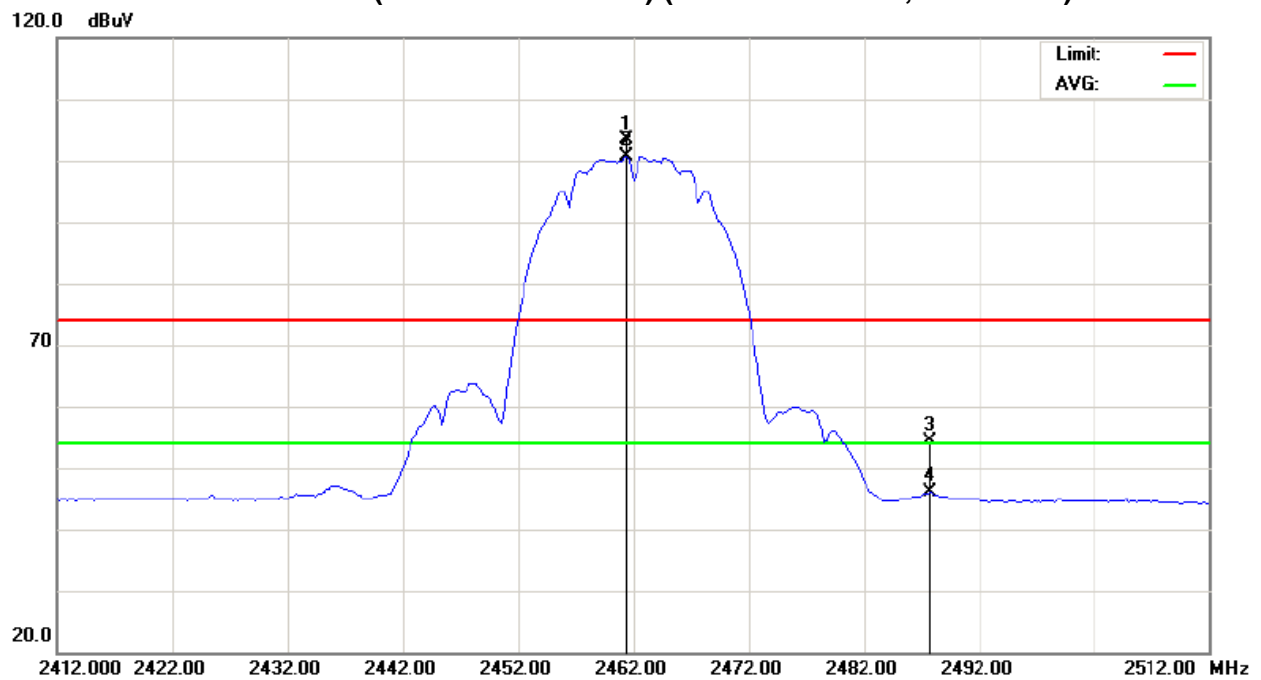
**Remark :**

- (1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (5) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (7) EUT Orthogonal Axes :  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.



Orthogonal Axis : X

802.11b/CH11(POWER:ADAPTER) (Above 1000 MHz, Horizontal)





EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	22 °C	Relative Humidity :	43%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11g/CH01(POWER:ADAPTER)		

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2390.00	V	35.37	20.49	31.93	67.30	52.42	74.00	54.00	X/E
2408.60	V	78.77	69.89	32.00	110.77	101.89			X/F
4823.80	V	42.50	32.32	3.75	46.25	36.07	74.00	54.00	X/H
7235.50	V	44.78	32.58	9.02	53.80	41.60	74.00	54.00	X/H

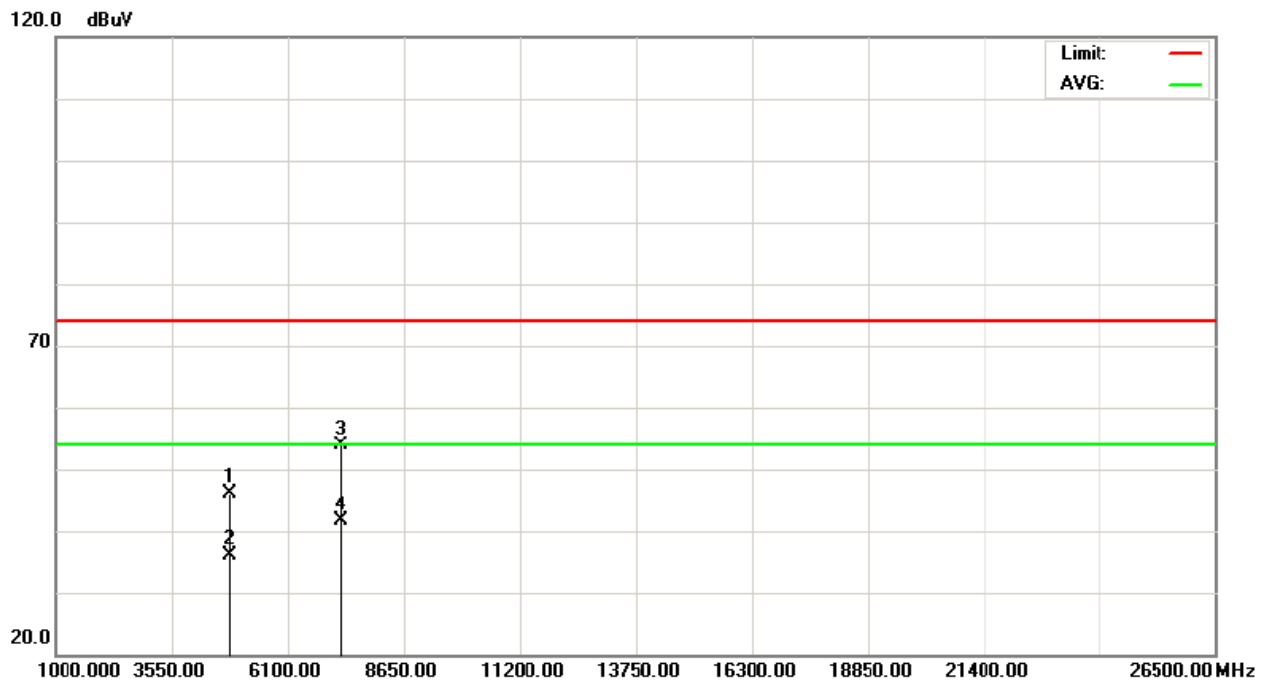
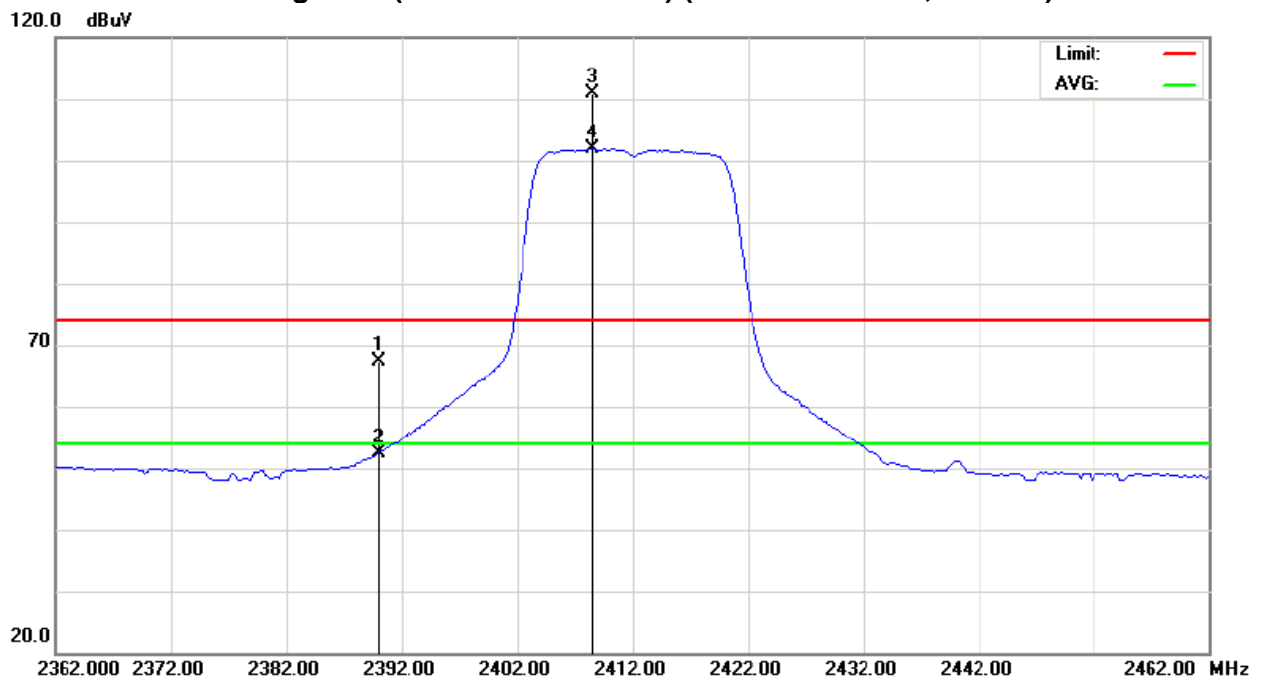
**Remark :**

- (1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (5) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (7) EUT Orthogonal Axes :  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.



Orthogonal Axis : X

802.11g/CH01(POWER:ADAPTER) (Above 1000 MHz, Vertical)





EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	22 °C	Relative Humidity :	43%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11g/CH01(POWER:ADAPTER)		

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2390.00	H	27.57	13.51	31.93	59.50	45.44	74.00	54.00	X/E
2413.20	H	69.47	60.58	32.02	101.49	92.60			X/F
4823.90	H	43.75	32.12	3.75	47.50	35.87	74.00	54.00	X/H
7236.50	H	44.38	31.95	9.02	53.40	40.97	74.00	54.00	X/H

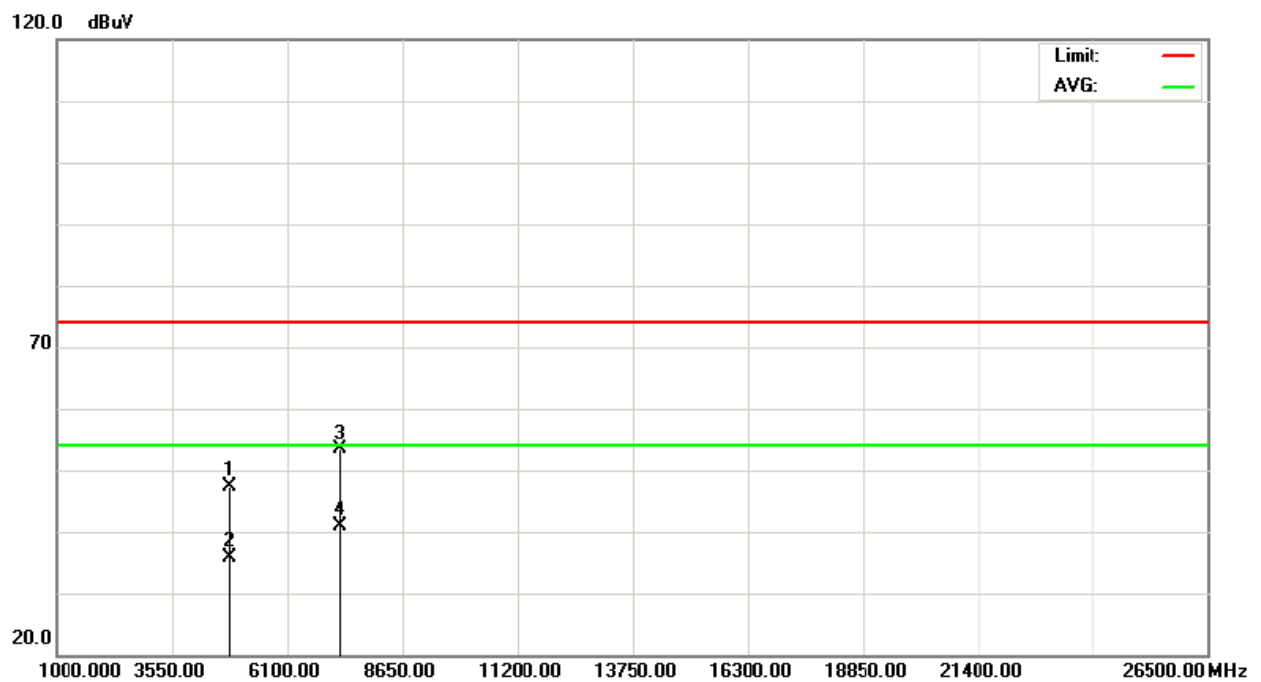
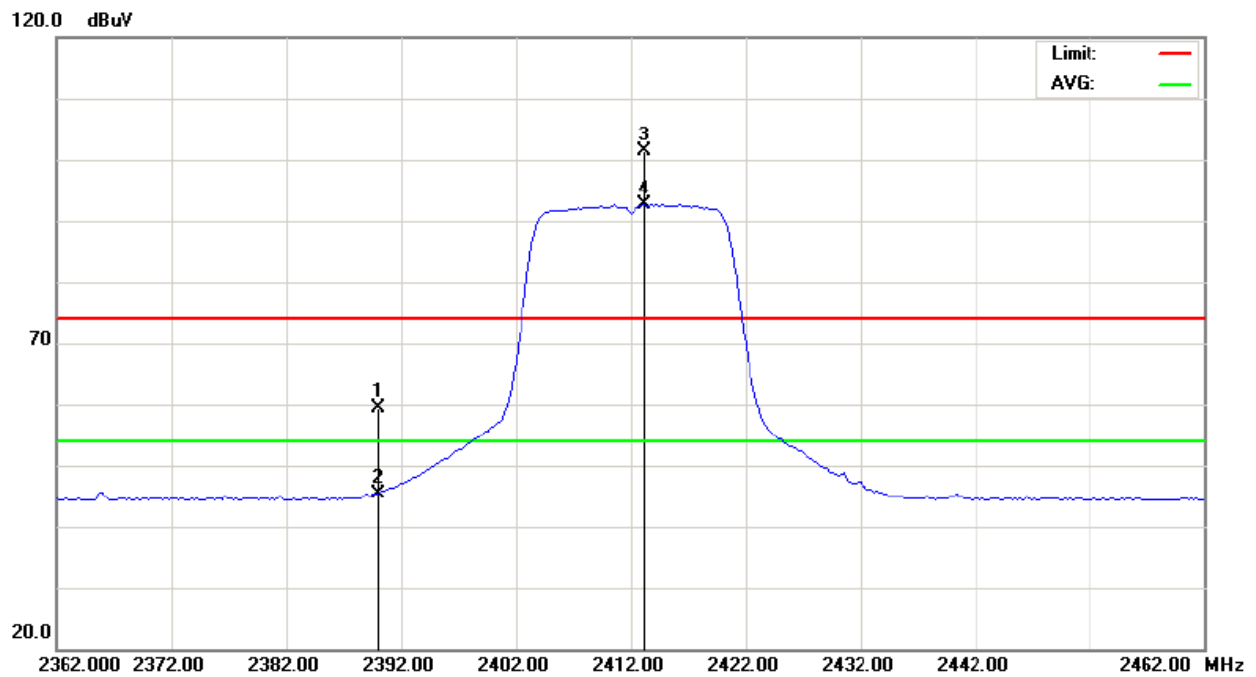
**Remark :**

- (1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (5) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (7) EUT Orthogonal Axes :  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.



Orthogonal Axis : X

802.11g/CH01(POWER:ADAPTER) (Above 1000 MHz, Horizontal)



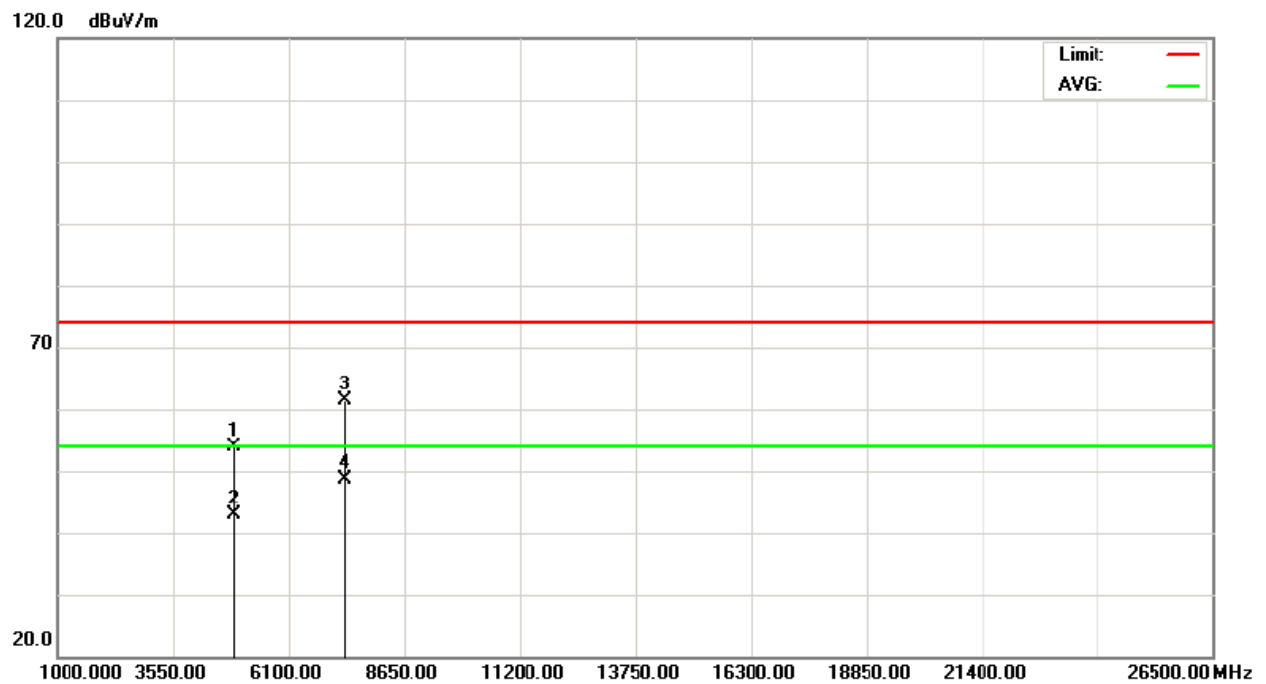
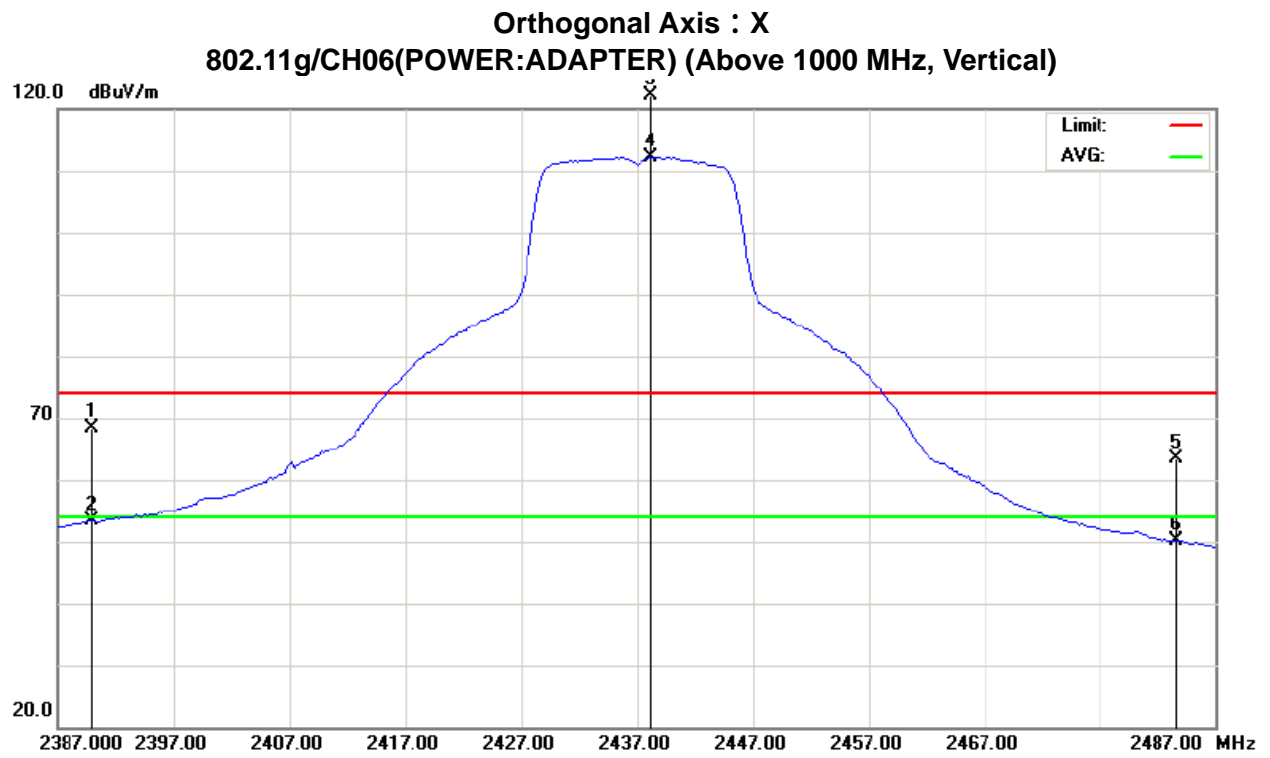


EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	22 °C	Relative Humidity :	43%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11g/CH06(POWER:ADAPTER)		

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2390.00	V	36.49	21.36	31.93	68.42	53.29	74.00	54.00	X/E
2438.20	V	90.14	80.01	32.11	122.25	112.12			X/F
2483.50	V	31.17	17.72	32.29	63.46	50.01	74.00	54.00	X/E
4873.10	V	50.09	38.91	3.90	53.99	42.81	74.00	54.00	X/H
7310.40	V	52.24	39.61	9.14	61.38	48.75	74.00	54.00	X/H

**Remark :**

- (1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (5) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (7) EUT Orthogonal Axes :  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.







EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	22 °C	Relative Humidity :	43%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11g/CH06(POWER:ADAPTER)		

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2390.00	H	29.17	17.27	31.93	61.10	49.20	74.00	54.00	X/E
2433.40	H	84.11	74.75	32.09	116.20	106.84			X/F
2483.50	H	23.50	13.94	32.29	55.79	46.23	74.00	54.00	X/E
4873.30	H	51.56	40.71	3.90	55.46	44.61	74.00	54.00	X/H
7311.40	H	43.07	33.78	9.14	52.21	42.92	74.00	54.00	X/H

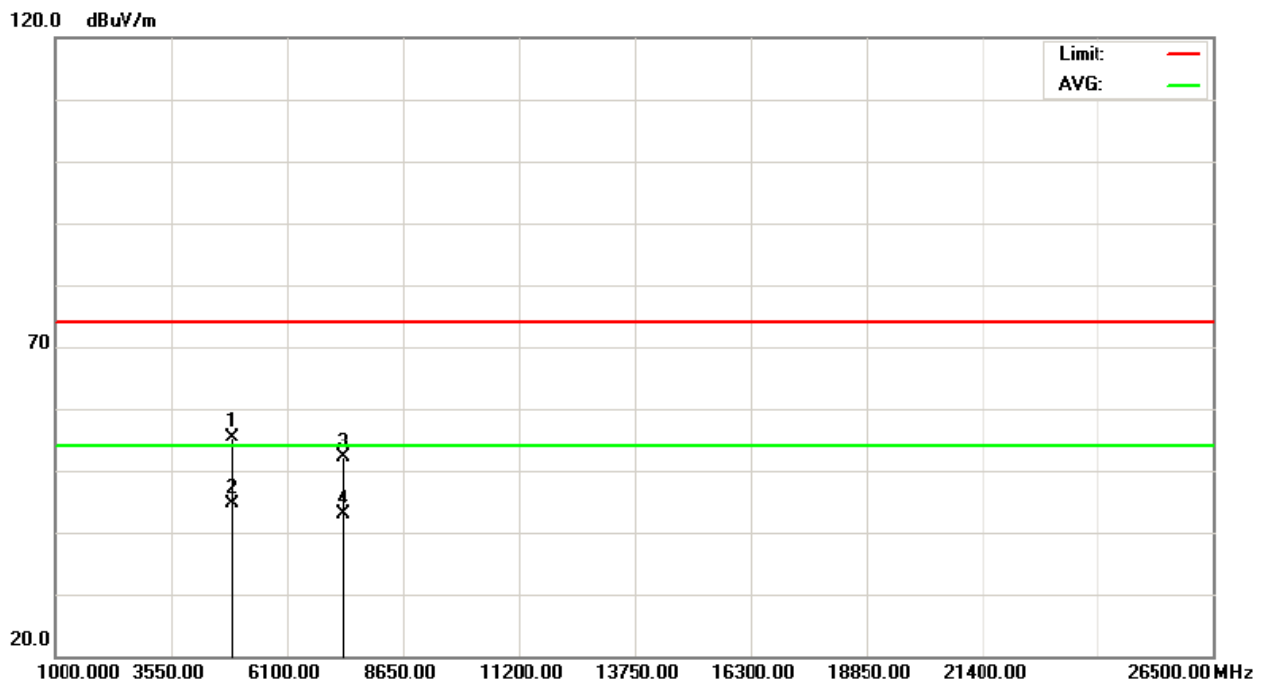
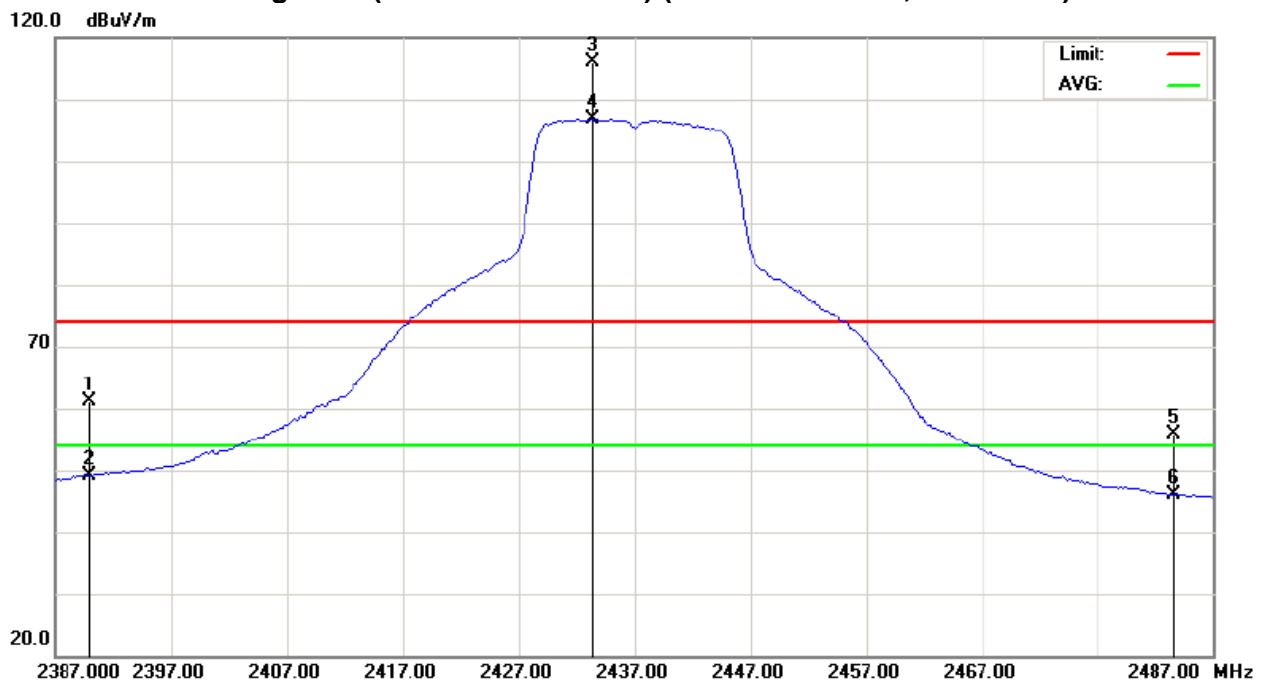
**Remark :**

- (1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (5) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (7) EUT Orthogonal Axes :  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.



Orthogonal Axis : X

802.11g/CH06(POWER:ADAPTER) (Above 1000 MHz, Horizontal)





EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	22 ° C	Relative Humidity :	43%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11g/CH11(POWER:ADAPTER)		

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2459.20	V	80.00	70.67	32.19	112.19	102.86			X/F
2483.50	V	32.40	20.08	32.29	64.69	52.37	74.00	54.00	X/E
4923.98	V	41.46	31.21	4.06	45.52	35.27	74.00	54.00	X/H
7385.98	V	43.57	31.33	9.27	52.84	40.60	74.00	54.00	X/H

**Remark :**

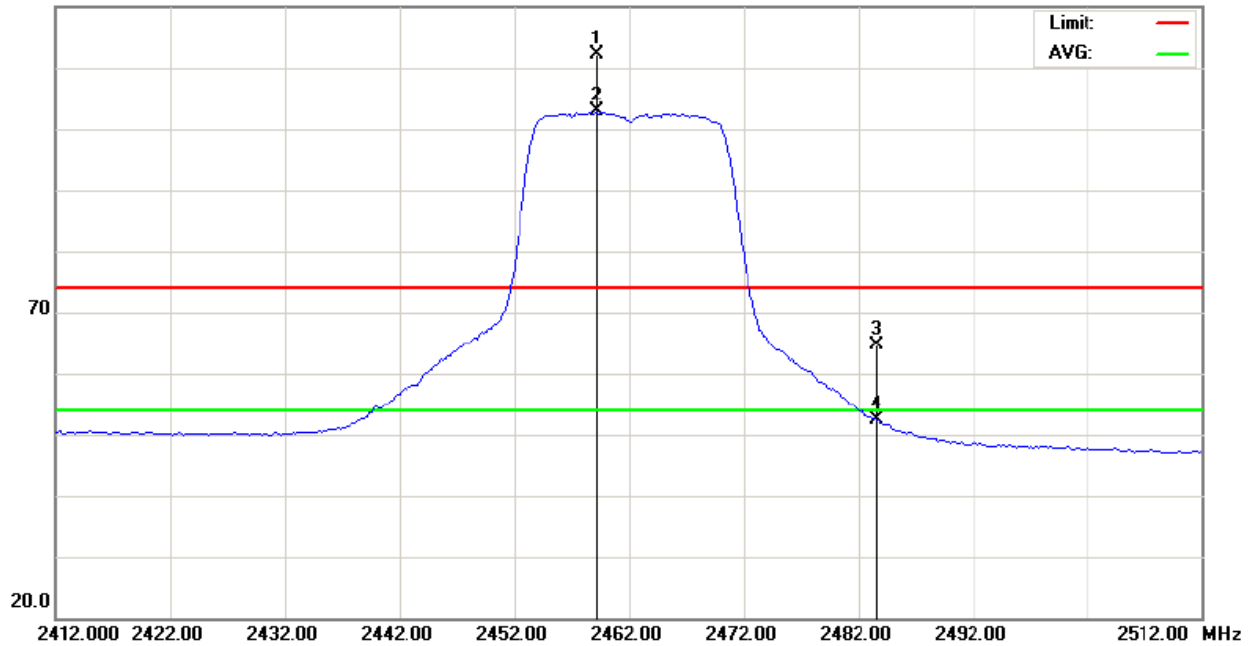
- (1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (5) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (7) EUT Orthogonal Axes :  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.



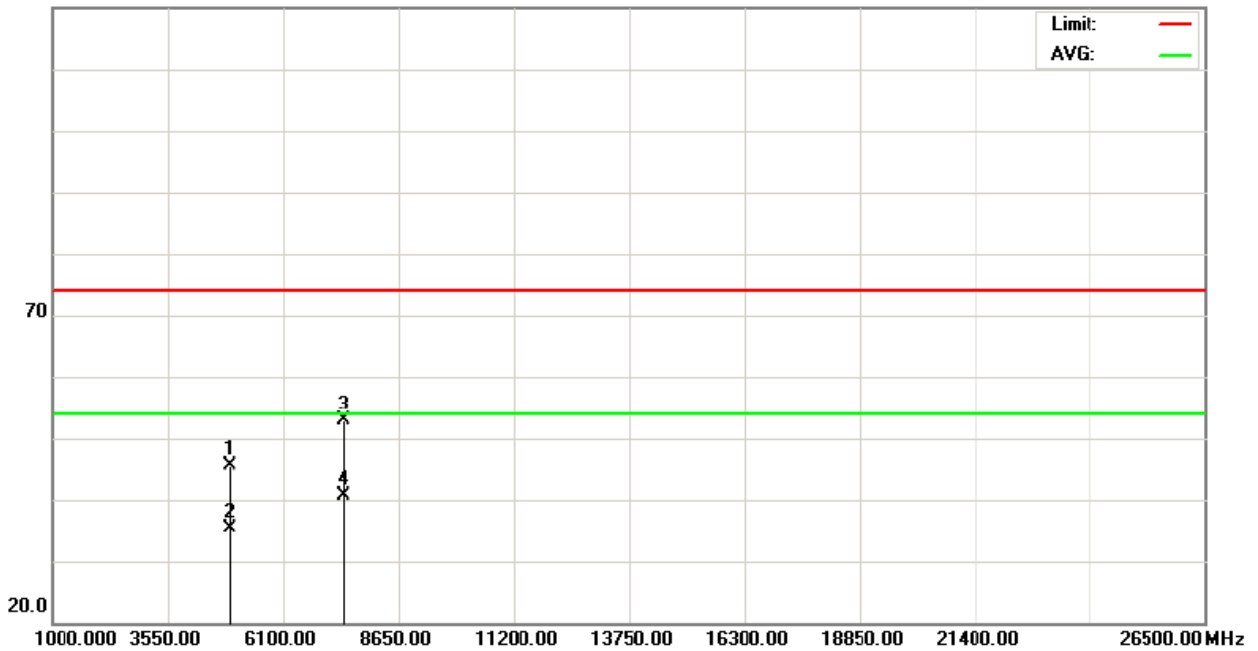
Orthogonal Axis : X

802.11g/CH11(POWER:ADAPTER) (Above 1000 MHz, Vertical)

120.0 dBuV



120.0 dBuV





EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	22 °C	Relative Humidity :	43%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11g/CH11(POWER:ADAPTER)		

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2460.40	H	69.56	60.90	32.20	101.76	93.10			X/F
2483.50	H	22.50	13.76	32.29	54.79	46.05	74.00	54.00	X/E
4924.10	H	41.36	31.29	4.06	45.42	35.35	74.00	54.00	X/H
7385.97	H	43.54	31.48	9.27	52.81	40.75	74.00	54.00	X/H

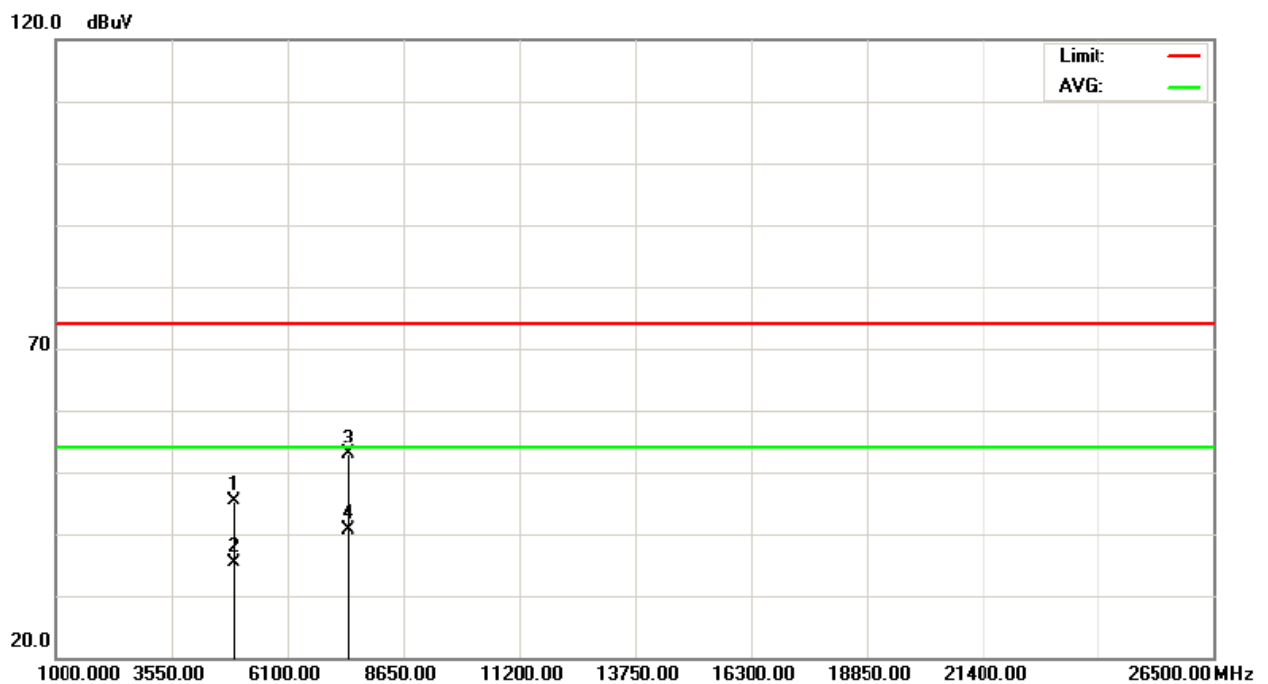
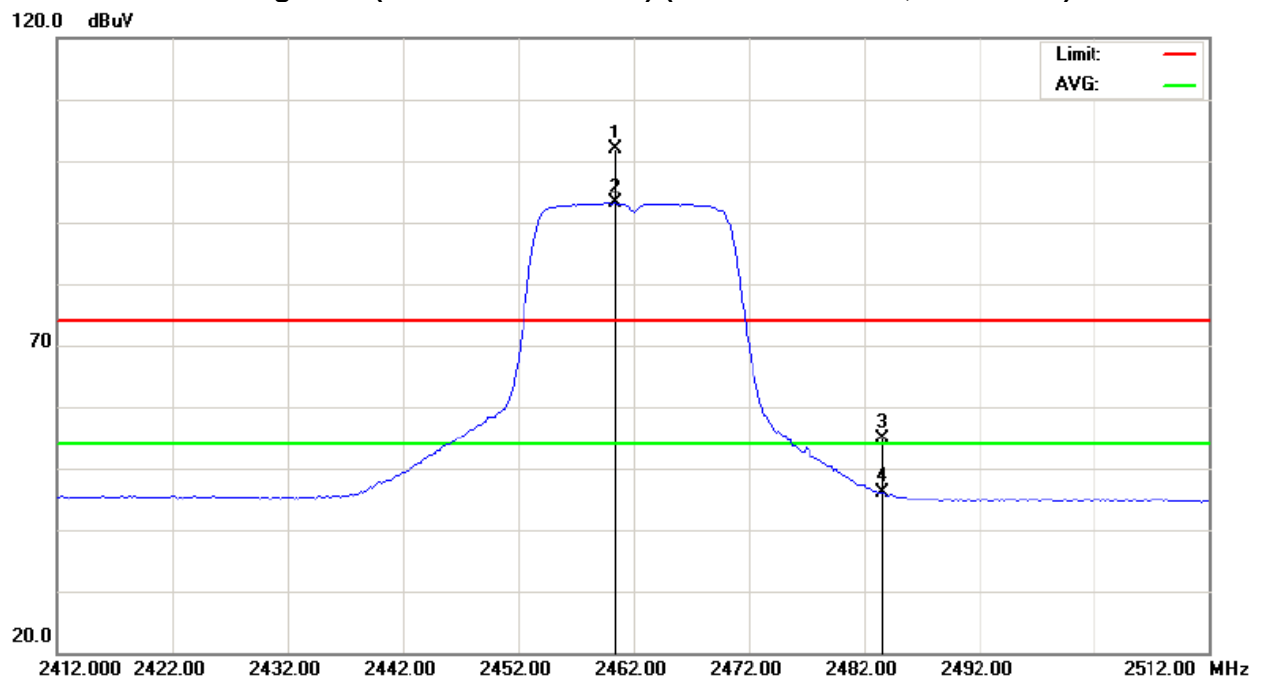
**Remark :**

- (1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ◦
- (3) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency ◦ "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (4) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦
- (5) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (7) EUT Orthogonal Axes :  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (8) During the measurements above 1GHz it is taken care of that the EUT is always within the 3dB cone of radiation BW of the used antenna.



Orthogonal Axis : X

802.11g/CH11(POWER:ADAPTER) (Above 1000 MHz, Horizontal)





#### 4.2.9 TEST RESULTS-RESTRICTED BANDS REQUIREMENTS

EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	22 °C	Relative Humidity :	43%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11b (POWER:ADAPTER) (Vertical)		
Note :	<p>The emission of the carrier radiated field strength is measured for CH01/CH11 (Peak and AV) as following:</p> <ol style="list-style-type: none"> <li>1. The transmitter was then configured with the worst case antenna and setup to transmit at the lowest channel (CH01). Then the field strength was measured at 2310-2390 MHz.</li> <li>2. The transmitter was configured with the worst case antenna and setup to transmit at the highest channel (CH11). Then the field strength was measured at 2483.5-2500 MHz.</li> </ol>		

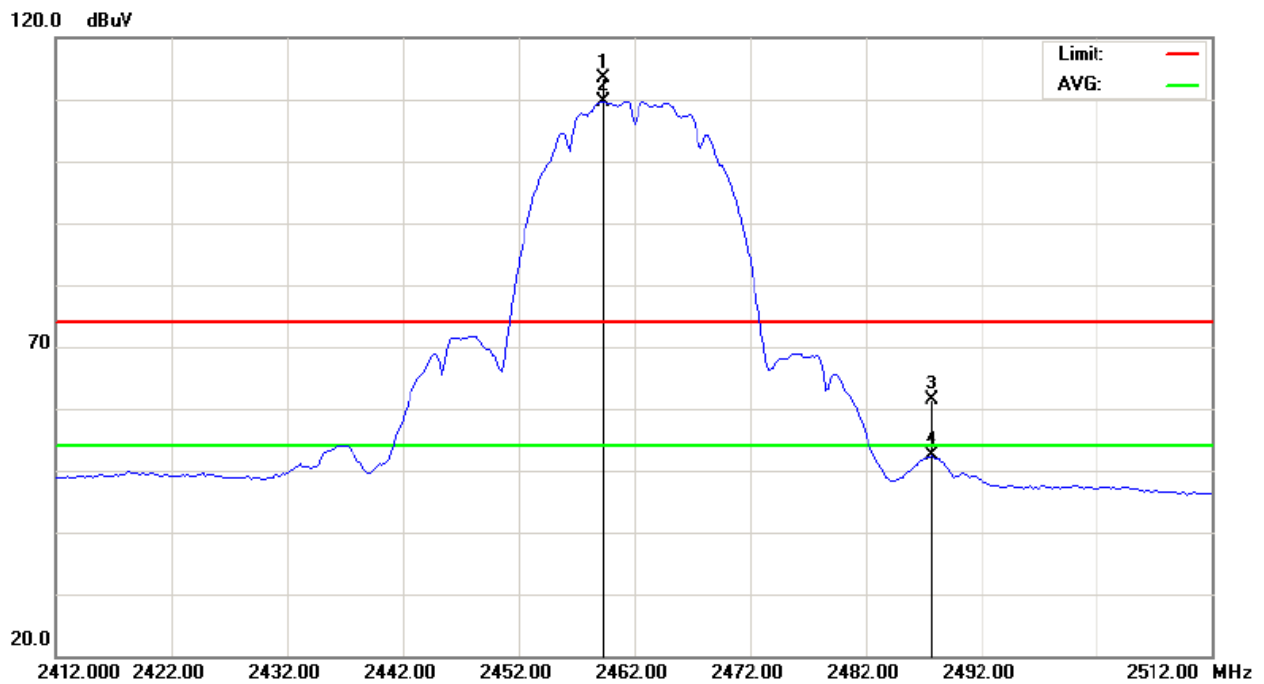
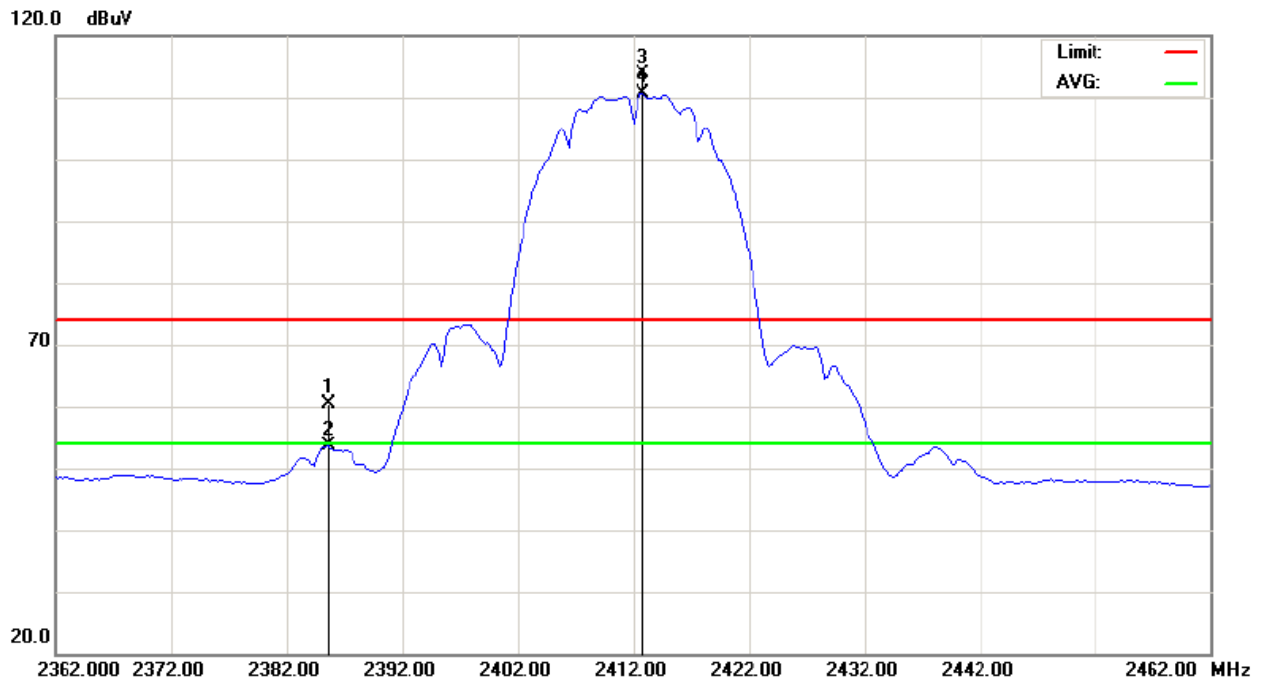
Freq. (MHz)	Ant. Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2385.60	V	28.35	21.62	31.91	60.26	53.53	74.00	54.00	X
2487.70	V	29.02	19.96	32.30	61.32	52.26	74.00	54.00	X

**Remark :**

- (1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto
- (2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .
- (3) EUT Orthogonal Axes :  
 "X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand



802.11b(POWER:ADAPTER) (Restricted Bands Requirements, Vertical)







EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	22 °C	Relative Humidity :	43%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11b(POWER:ADAPTER) (Horizontal)		
Note :	<p>The emission of the carrier radiated field strength is measured for CH01/CH11 (Peak and AV) as following:</p> <ol style="list-style-type: none"> <li>1. The transmitter was then configured with the worst case antenna and setup to transmit at the lowest channel (CH01). Then the field strength was measured at 2310-2390 MHz.</li> <li>2. The transmitter was configured with the worst case antenna and setup to transmit at the highest channel (CH11). Then the field strength was measured at 2483.5-2500 MHz.</li> </ol>		

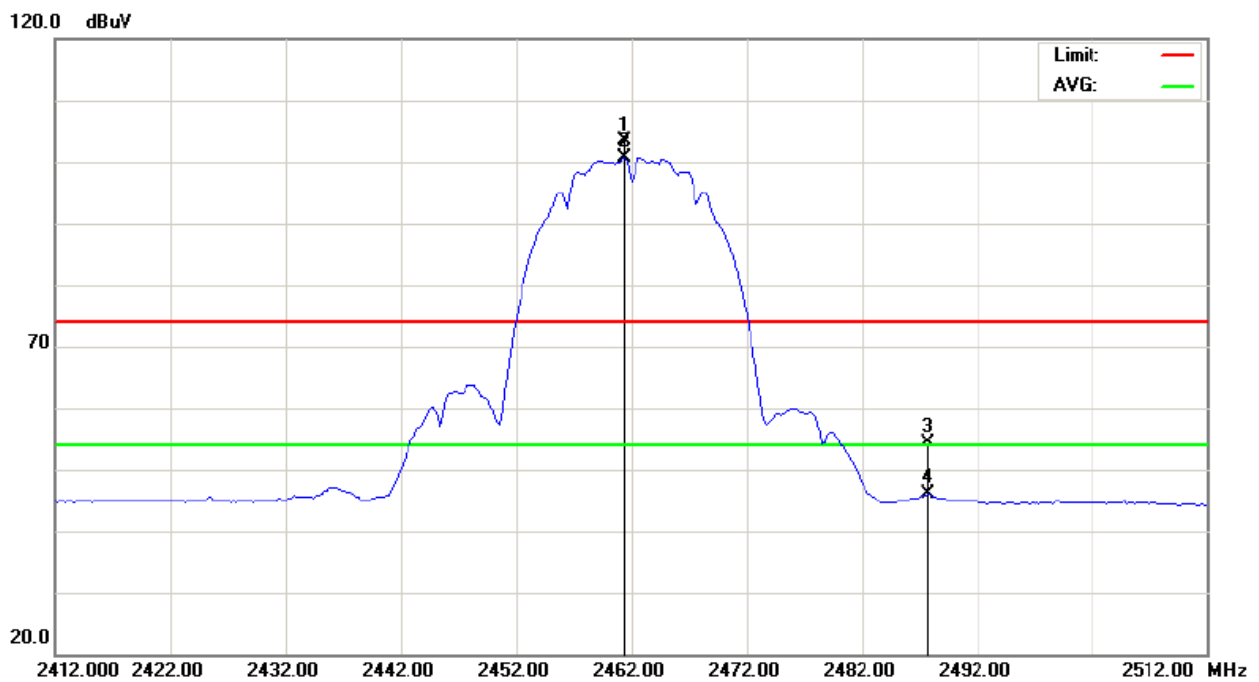
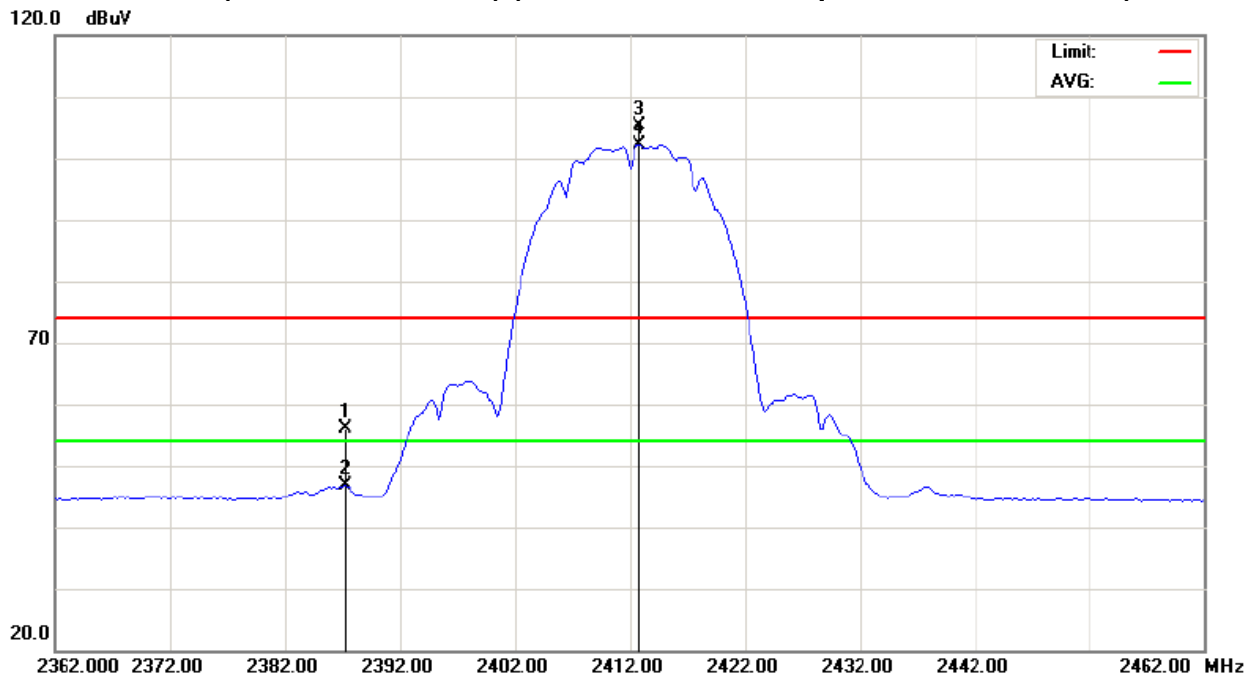
Freq. (MHz)	Ant. Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2387.20	H	24.16	14.91	31.92	56.08	46.83	74.00	54.00	X
2487.70	H	22.14	13.73	32.30	54.44	46.03	74.00	54.00	X

**Remark :**

- (1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto
- (2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .
- (3) EUT Orthogonal Axes :  
“X” - denotes Laid on Table ; “Y” - denotes Vertical Stand ; “Z” - denotes Side Stand



802.11b(POWER:ADAPTER) (Restricted Bands Requirements, Horizontal)





EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	22 °C	Relative Humidity :	43%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11g(POWER:ADAPTER) (Vertical)		
Note :	<p>The emission of the carrier radiated field strength is measured for CH01/CH11 (Peak and AV) as following:</p> <ol style="list-style-type: none"> <li>1. The transmitter was then configured with the worst case antenna and setup to transmit at the lowest channel (CH01). Then the field strength was measured at 2310-2390 MHz.</li> <li>2. The transmitter was configured with the worst case antenna and setup to transmit at the highest channel (CH11). Then the field strength was measured at 2483.5-2500 MHz.</li> </ol>		

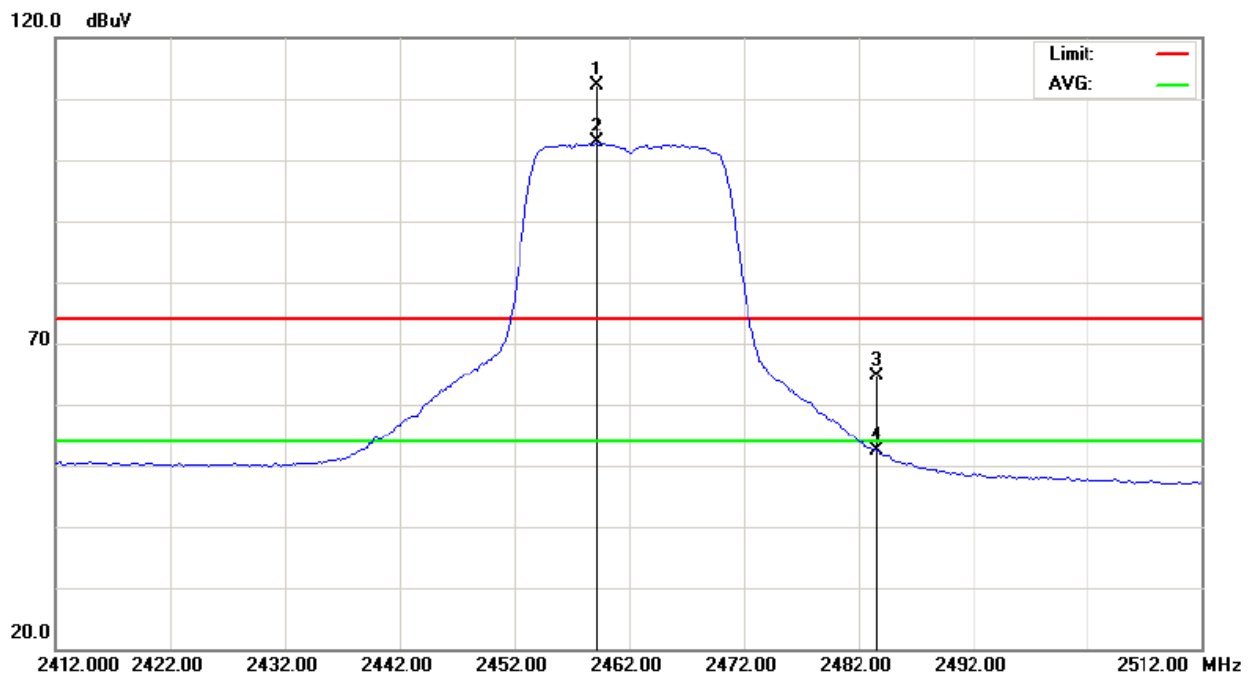
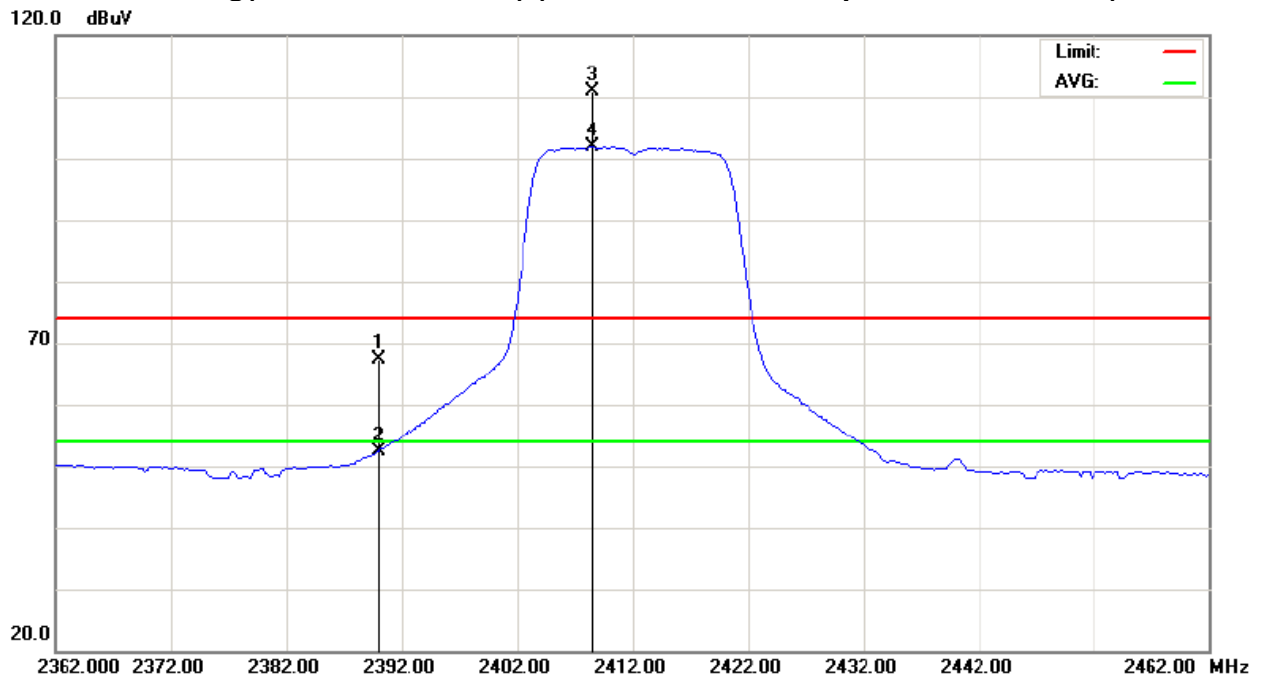
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2390.00	V	35.37	20.49	31.93	67.30	52.42	74.00	54.00	X
2483.50	V	32.40	20.08	32.29	64.69	52.37	74.00	54.00	X

**Remark :**

- (1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto
- (2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .
- (3) EUT Orthogonal Axes :  
 "X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand



802.11g(POWER:ADAPTER) (Restricted Bands Requirements, Vertical)





EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	22 °C	Relative Humidity :	43%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11g(POWER:ADAPTER) (Horizontal)		
Note :	<p>The emission of the carrier radiated field strength is measured for CH01/CH11 (Peak and AV) as following:</p> <ol style="list-style-type: none"> <li>1. The transmitter was then configured with the worst case antenna and setup to transmit at the lowest channel (CH01). Then the field strength was measured at 2310-2390 MHz.</li> <li>2. The transmitter was configured with the worst case antenna and setup to transmit at the highest channel (CH11). Then the field strength was measured at 2483.5-2500 MHz.</li> </ol>		

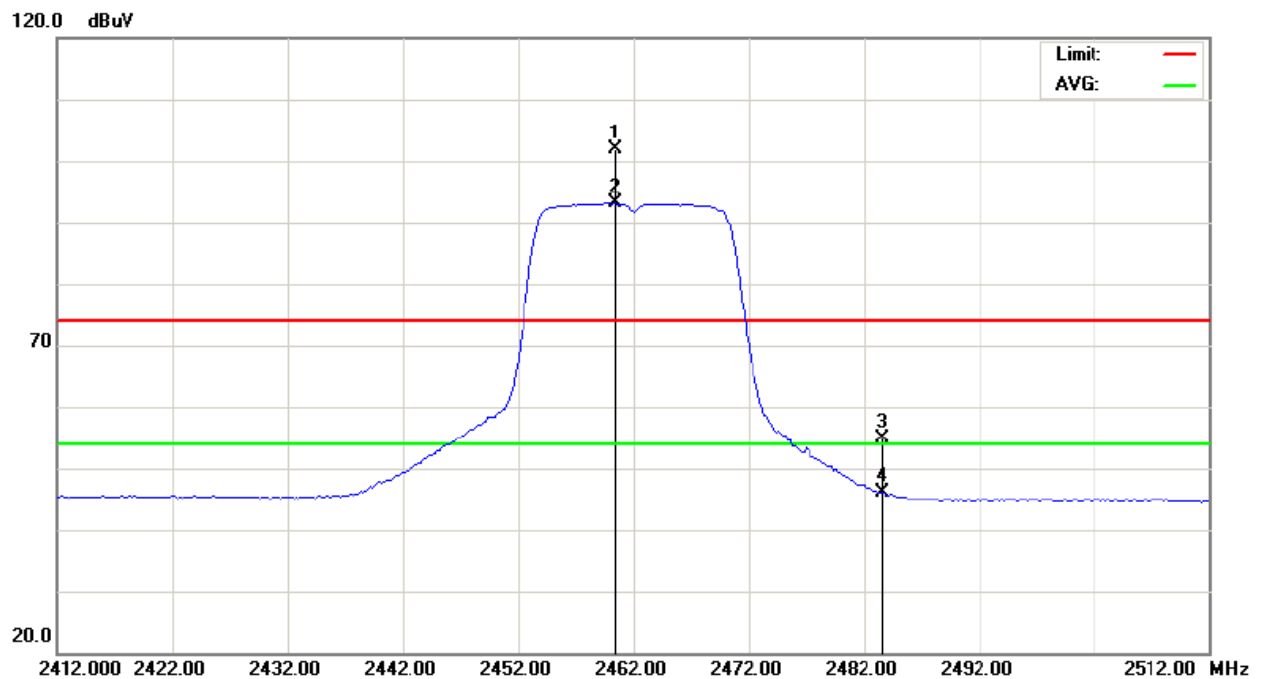
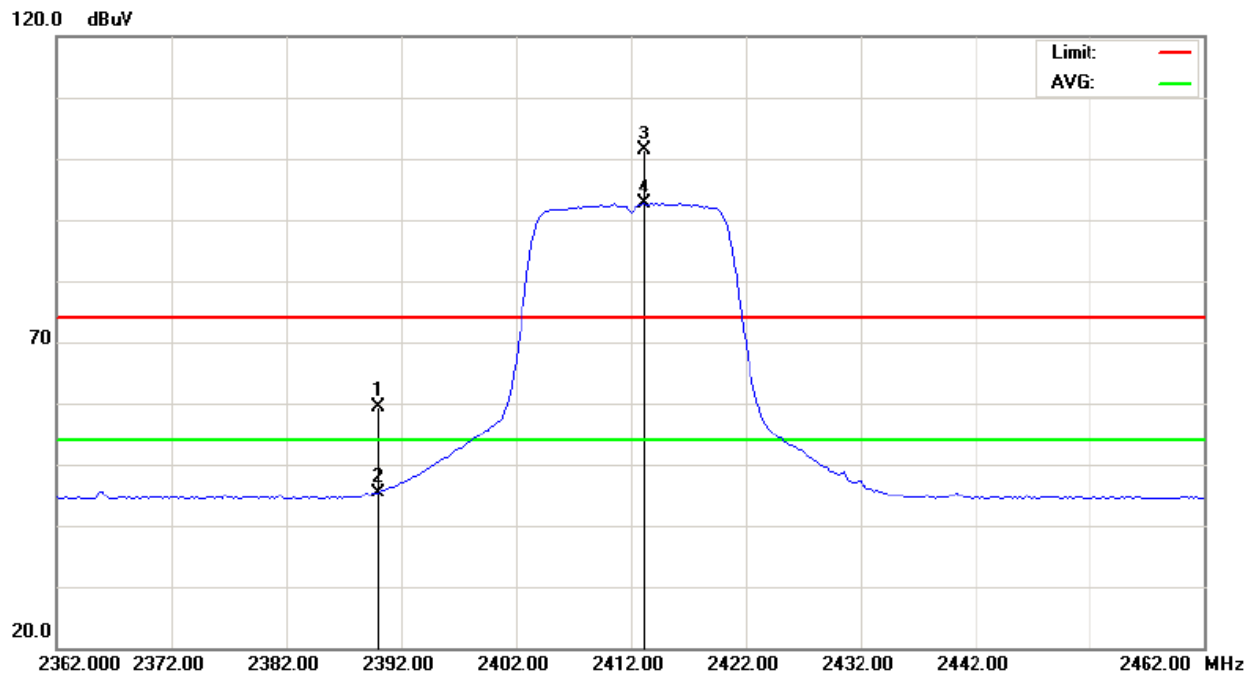
Freq. (MHz)	Ant. Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2390.00	H	27.57	13.51	31.93	59.50	45.44	74.00	54.00	X
2483.50	H	22.50	13.76	32.29	54.79	46.05	74.00	54.00	X

**Remark :**

- (1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto
- (2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission °
- (3) EUT Orthogonal Axes :  
“X” - denotes Laid on Table ; “Y” - denotes Vertical Stand ; “Z” - denotes Side Stand



802.11g(POWER:ADAPTER) (Restricted Bands Requirements, Horizontal)





## 5. BANDWITH TEST

### 5.1 APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart C			
Test Item	Limit	Frequency Range (MHz)	Result
Bandwidth	$\geq 500\text{KHz}$ (6dB bandwidth)	2400-2483.5	PASS

#### 5.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Sep. 10, 2010

Remark: " N/A" denotes No Model Name , Serial No. or No Calibration specified.

#### 5.1.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 100KHz, VBW=100KHz, Sweep time = Auto.

#### 5.1.3 DEVIATION FROM STANDARD

No deviation.

#### 5.1.4 TEST SETUP



#### 5.1.5 EUT OPERATION CONDITIONS

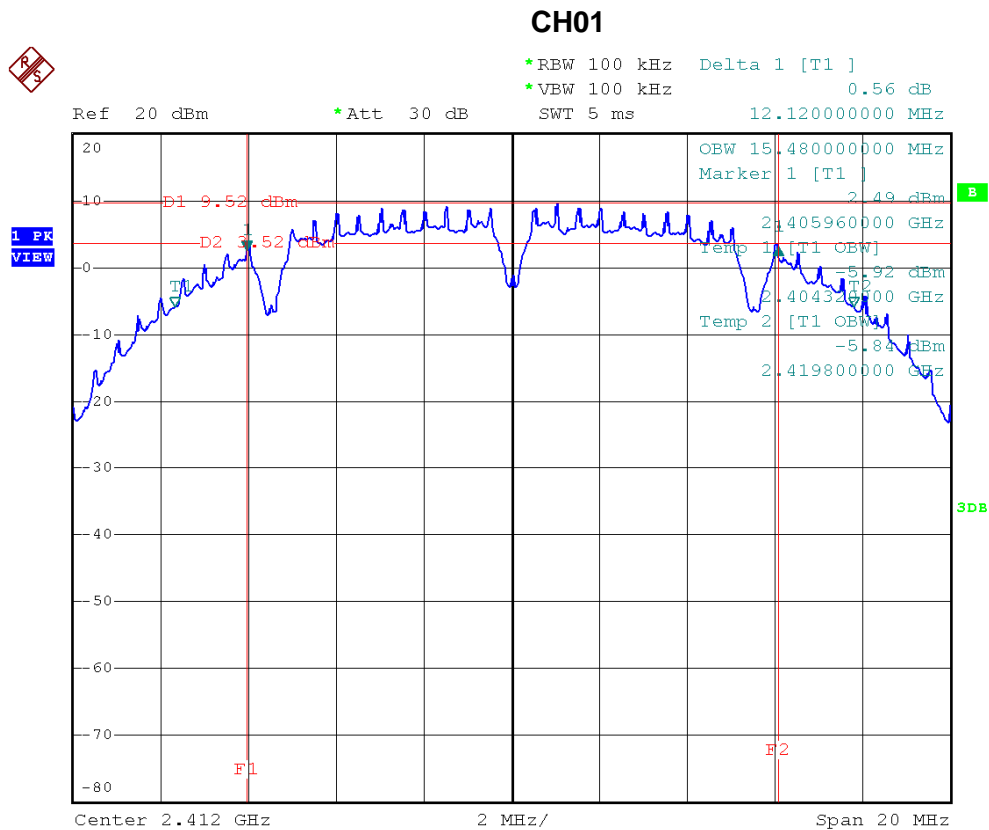
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.  
Chip antenna measurement result.



### 5.1.6 TEST RESULTS

EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	17°C	Relative Humidity :	89%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11b/CH01,CH06,CH11 (POWER:ADAPTER)		

Test Channel	Frequency (MHz)	Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	LIMIT (MHz)
CH01	2412	12.12	15.48	>=500KHz
CH06	2437	12.64	15.48	>=500KHz
CH11	2462	12.12	15.48	>=500KHz







### CH06



\*RBW 100 kHz Delta 1 [T1 ]  
\*VBW 100 kHz -0.69 dB  
SWT 5 ms 12.640000000 MHz

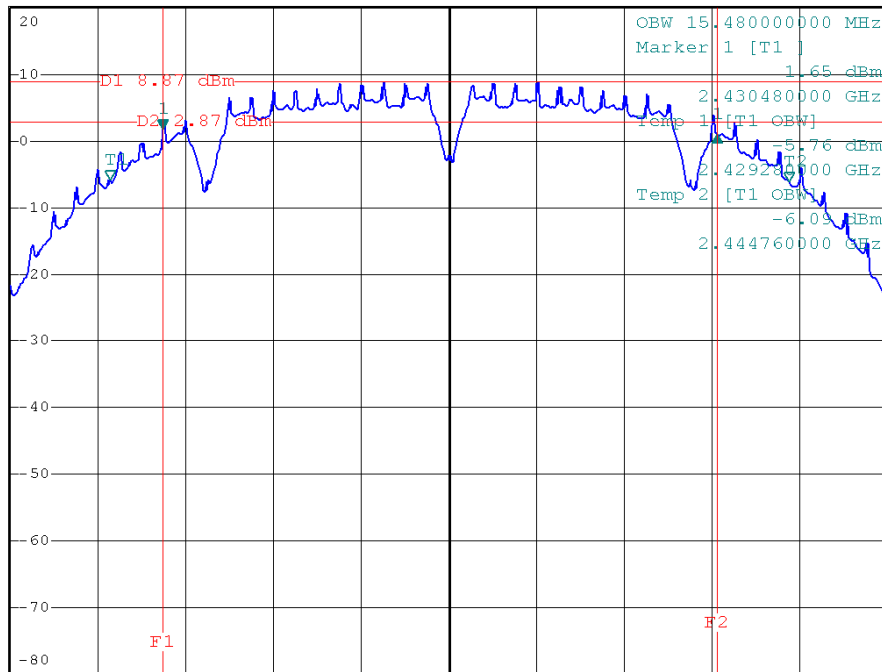
Ref 20 dBm

\*Att 30 dB

SWT 5 ms

12.640000000 MHz

1 PK  
VIEW



Center 2.437 GHz

2 MHz/

Span 20 MHz

### CH11



\*RBW 100 kHz Delta 1 [T1 ]  
\*VBW 100 kHz -0.39 dB  
SWT 5 ms 12.120000000 MHz

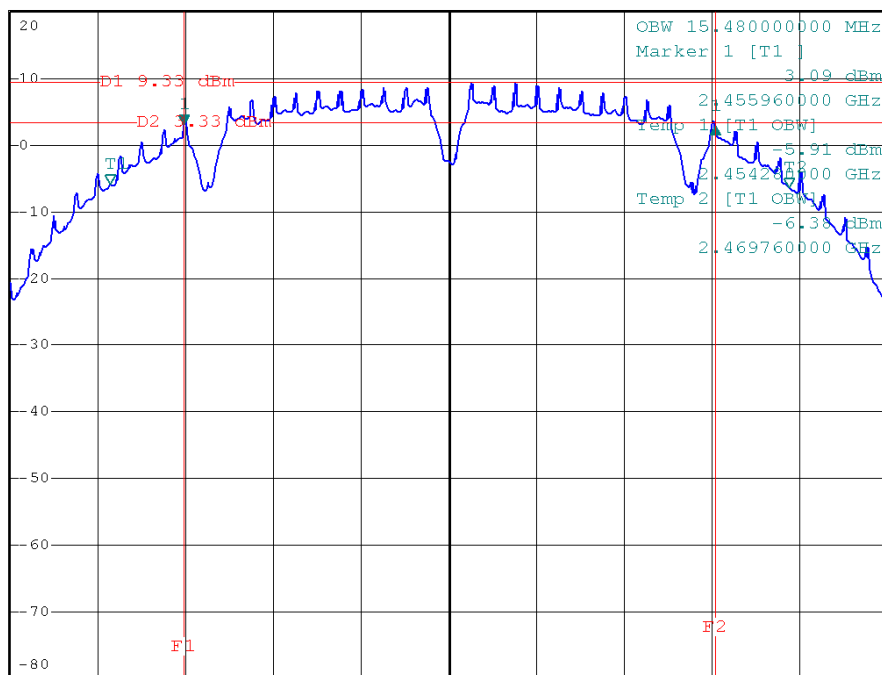
Ref 20 dBm

\*Att 30 dB

SWT 5 ms

12.120000000 MHz

1 PK  
VIEW



Center 2.462 GHz

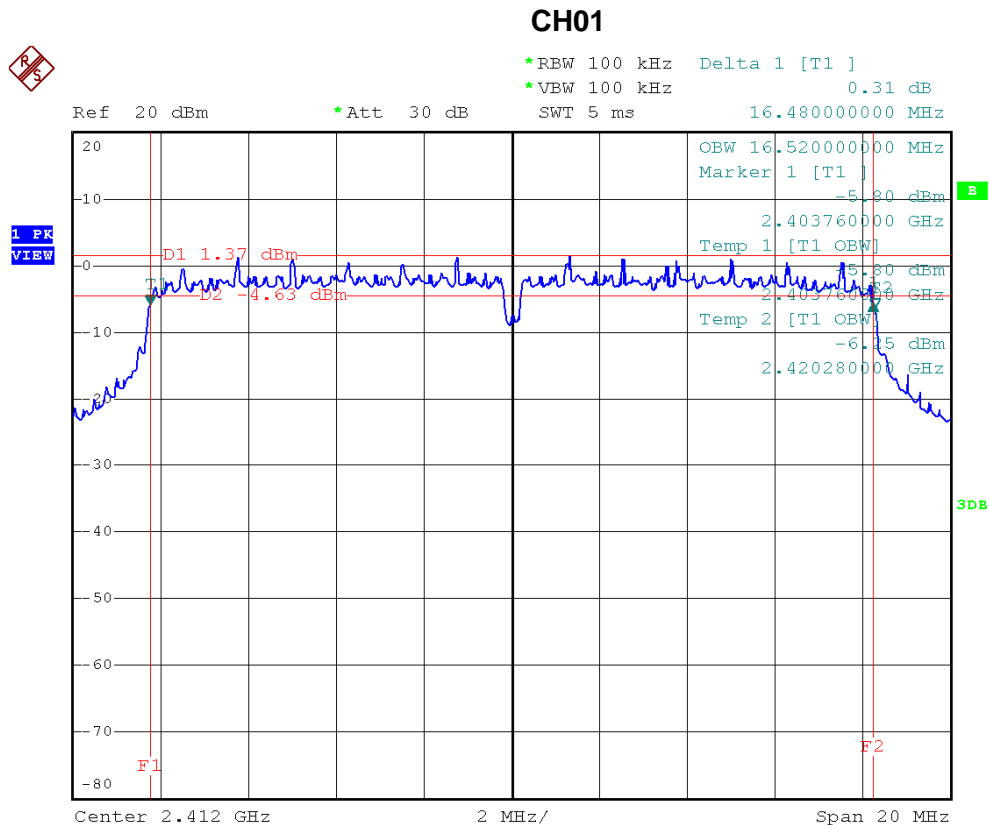
2 MHz/

Span 20 MHz



EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	17°C	Relative Humidity :	89%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11g/CH01,CH06,CH11(POWER:ADAPTER)		

Test Channel	Frequency (MHz)	Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	LIMIT (MHz)
CH01	2412	16.48	16.52	>=500KHz
CH06	2437	16.52	16.52	>=500KHz
CH11	2462	16.48	16.52	>=500KHz





### CH06



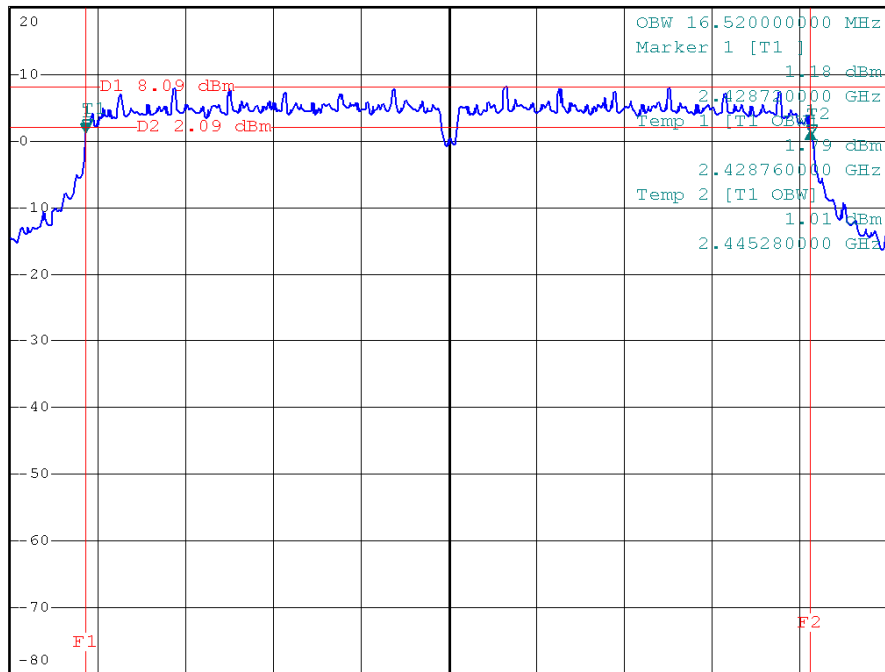
\*RBW 100 kHz Delta 1 [T1 ]  
\*VBW 100 kHz 0.37 dB  
SWT 5 ms 16.520000000 MHz

Ref 20 dBm

\*Att 30 dB

SWT 5 ms

16.520000000 MHz



Center 2.437 GHz

2 MHz/

Span 20 MHz

### CH11



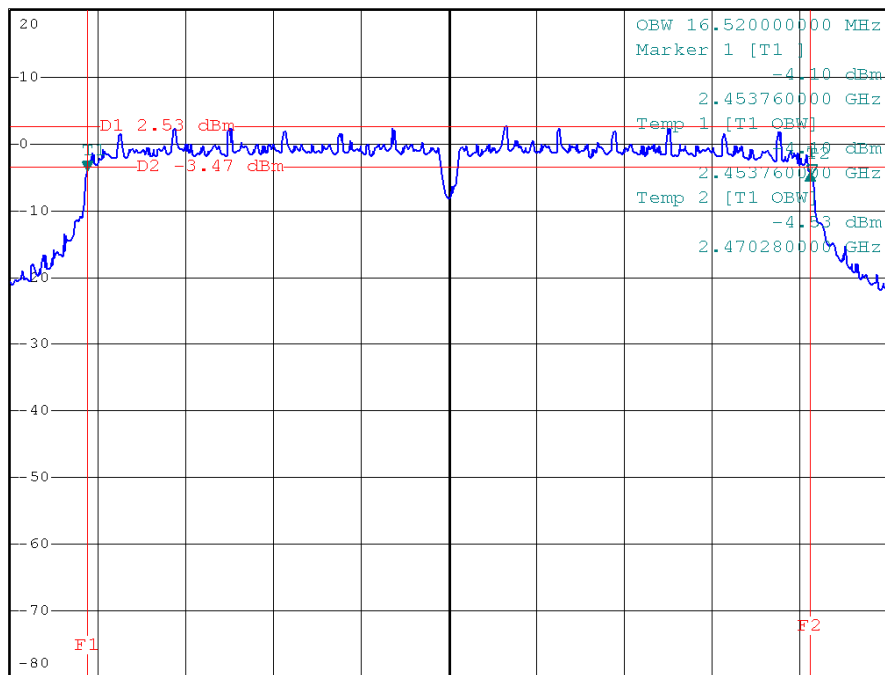
\*RBW 100 kHz Delta 1 [T1 ]  
\*VBW 100 kHz -0.21 dB  
SWT 5 ms 16.480000000 MHz

Ref 20 dBm

\*Att 30 dB

SWT 5 ms

16.480000000 MHz



Center 2.462 GHz

2 MHz/

Span 20 MHz



## 6. PEAK OUTPUT POWER TEST

### 6.1 APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart C			
Test Item	Limit	Frequency Range (MHz)	Result
Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

#### 6.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Power Meter	Anritsu	ML2487A	6K00004714	Feb. 10, 2010
2	Power Meter Sensor	Anritsu	MA2491A	34138	Feb. 10, 2010

Remark: " N/A" denotes No Model Name , Serial No. or No Calibration specified.

#### 6.1.2 TEST PROCEDURE

- a. The EUT was directly connected to the power meter and antenna output port as show in the block diagram below,

#### 6.1.3 DEVIATION FROM STANDARD

No deviation.

#### 6.1.4 TEST SETUP



#### 6.1.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.  
Chip antenna measurement result.



### 6.1.6 TEST RESULTS

EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	17°C	Relative Humidity :	89%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11b /CH01, CH06, CH11(POWER:ADAPTER)		

Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH01	2412	23.06	30	1
CH06	2437	22.96	30	1
CH11	2462	22.65	30	1

EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	17°C	Relative Humidity :	89%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11g /CH01, CH06, CH11(POWER:ADAPTER)		

Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH01	2412	23.91	30	1
CH06	2437	29.21	30	1
CH11	2462	25.15	30	1

Remark :

- (1) The test requirement, RF conducted output power shall measure each transmitter chain by using channel power method.
- (2) Antenna Gain=2.0 dBi.



## **7. ANTENNA CONDUCTED SPURIOUS EMISSION**

### **7.1 APPLIED PROCEDURES / LIMIT**

<b>FCC Part15, Subpart C</b>			
Test Item	Limit	Frequency Range (MHz)	Result
Antenna conducted Spurious Emission	20dB less than the peak value of fundamental frequency	30-25000	PASS

#### **7.1.1 MEASUREMENT INSTRUMENTS LIST**

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Sep. 10, 2010

Remark: " N/A" denotes No Model Name , Serial No. or No Calibration specified.

#### **7.1.2 TEST PROCEDURE**

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 100KHz, VBW=100KHz, Sweep time = Auto.

#### **7.1.3 DEVIATION FROM STANDARD**

No deviation.

#### **7.1.4 TEST SETUP**



#### **7.1.5 EUT OPERATION CONDITIONS**

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.  
Chip antenna measurement result.



### 7.1.6 TEST RESULTS

EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	17°C	Relative Humidity :	89%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11b/CH01, CH11(POWER:ADAPTER)		

Channel of Worst Data: CH01,CH11			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
2386.6	-44.57	2487.5	-44.73
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			



### CH01



\*RBW 100 kHz Marker 3 [T1 ]  
-44.57 dBm  
\*VBW 100 kHz  
SWT 10 ms 2.386600000 GHz

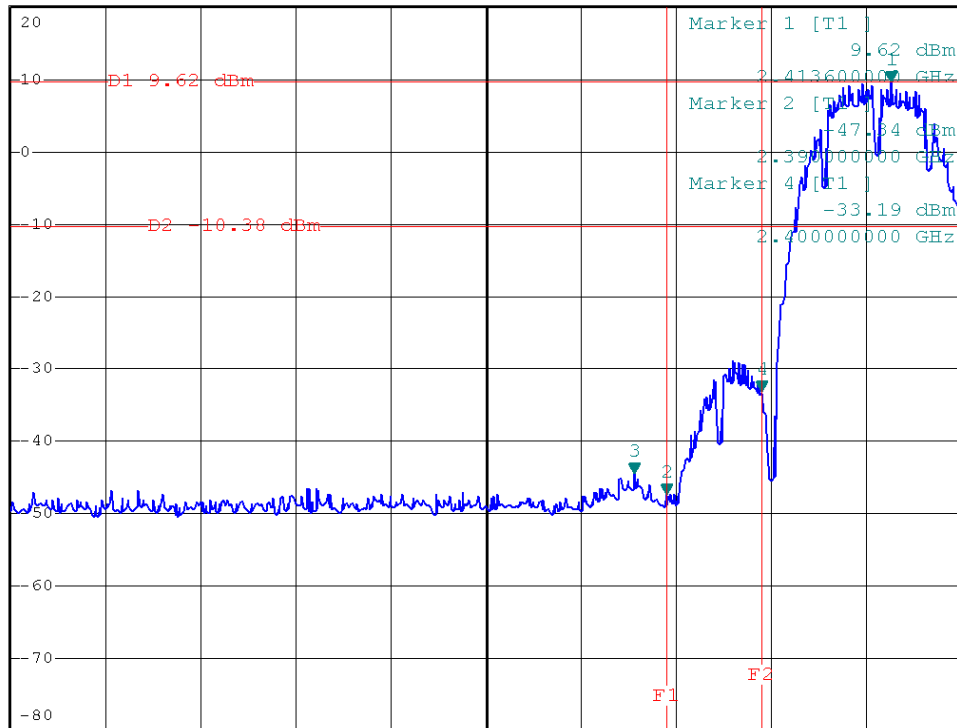
Ref 20 dBm

\*Att 30 dB

SWT 10 ms

2.386600000 GHz

1 PK  
VIEW



Center 2.371 GHz

10 MHz/

Span 100 MHz

### CH11



\*RBW 100 kHz Marker 3 [T1 ]  
-44.73 dBm  
\*VBW 100 kHz  
SWT 10 ms 2.487500000 GHz

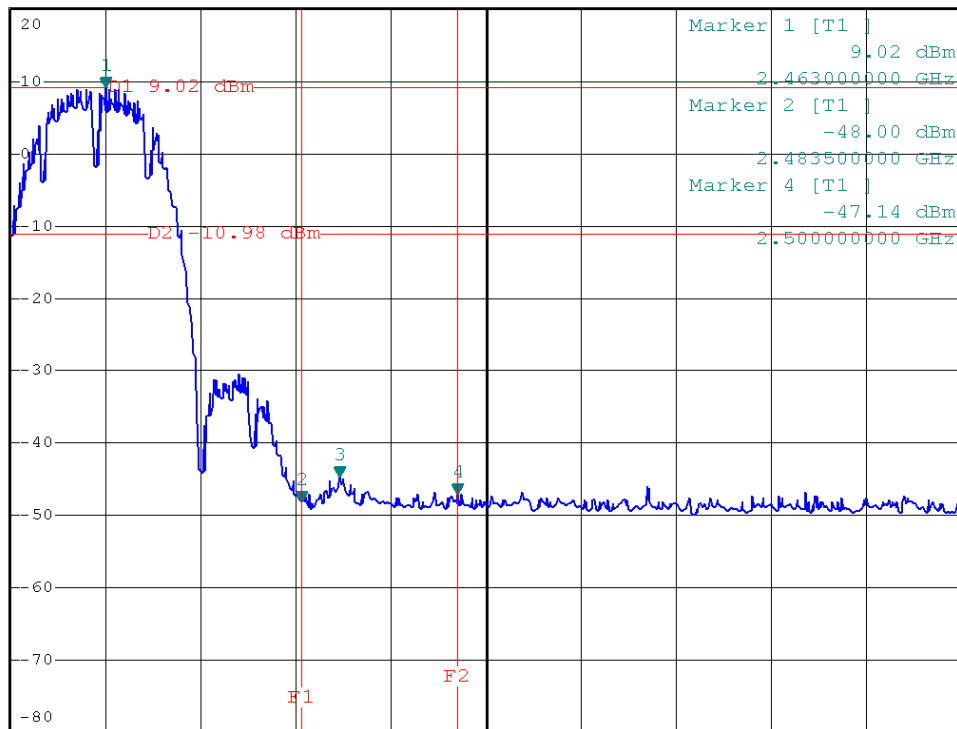
Ref 20 dBm

\*Att 30 dB

SWT 10 ms

2.487500000 GHz

1 PK  
VIEW



Center 2.503 GHz

10 MHz/

Span 100 MHz





EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	17°C	Relative Humidity :	89%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11g/CH01, CH11(POWER:ADAPTER)		

Channel of Worst Data: CH01,CH11			
The max. radio frequency power in any 100kHz bandwidth outside the frequency band		The max. radio frequency power in any 100 kHz bandwidth within the frequency band.	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)
2368.0	-45.79	2483.5	-44.92
Result			
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.			



### CH01



\*RBW 100 kHz Marker 3 [T1 ]  
-45.79 dBm  
\*VBW 100 kHz  
SWT 10 ms 2.368000000 GHz

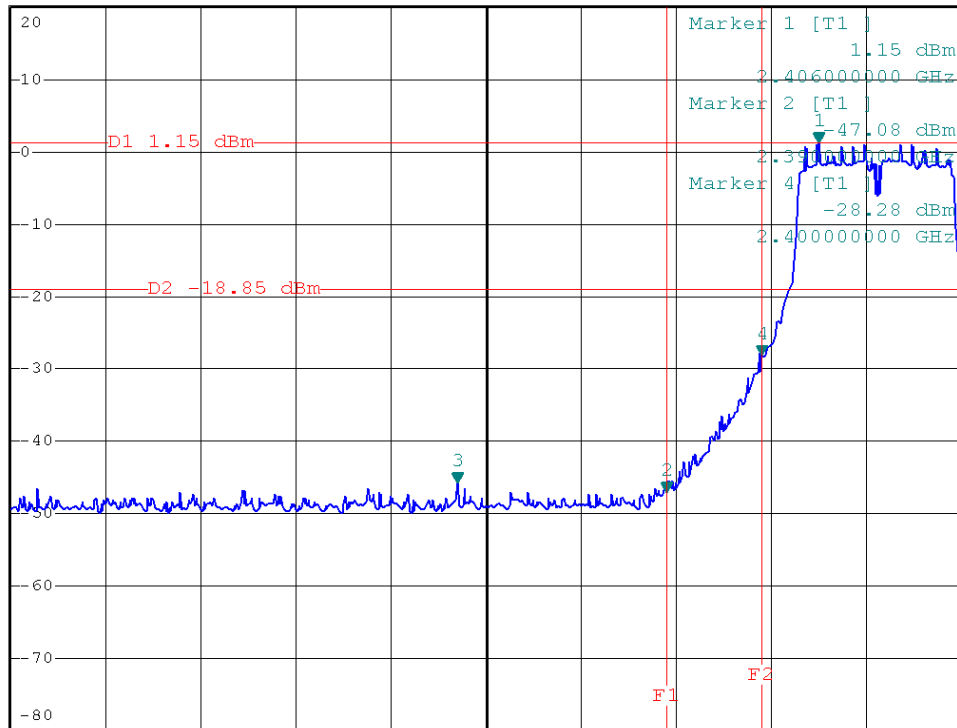
Ref 20 dBm

\*Att 30 dB

SWT 10 ms

2.368000000 GHz

1 PK  
VIEW



Center 2.371 GHz

10 MHz/

Span 100 MHz

### CH11



\*RBW 100 kHz Marker 3 [T1 ]  
-44.92 dBm  
\*VBW 100 kHz  
SWT 10 ms 2.483500000 GHz

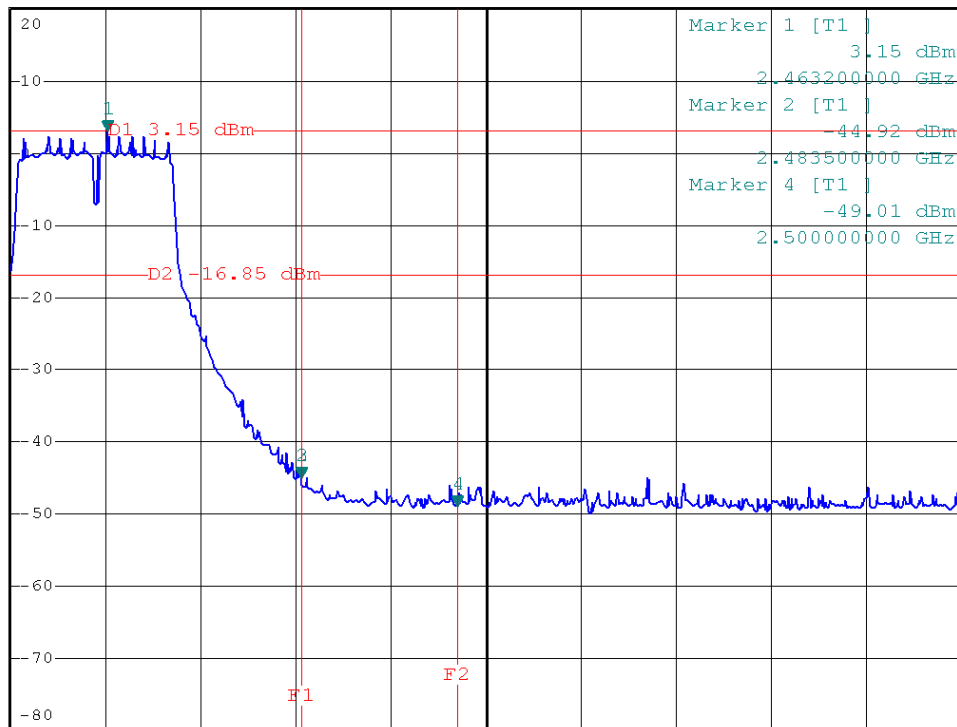
Ref 20 dBm

\*Att 30 dB

SWT 10 ms

2.483500000 GHz

1 PK  
VIEW



Center 2.503 GHz

10 MHz/

Span 100 MHz



## 8. POWER SPECTRAL DENSITY TEST

### 8.1 APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart C			
Test Item	Limit	Frequency Range (MHz)	Result
Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

#### 8.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Sep. 10, 2010

Remark: " N/A" denotes No Model Name, Serial No. or No Calibration specified.

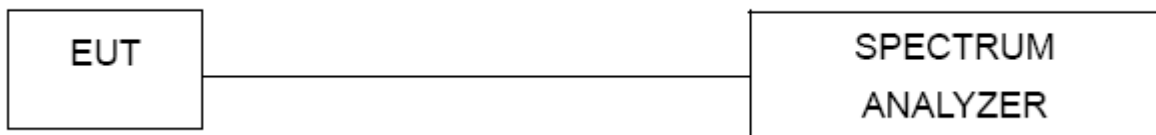
#### 8.1.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW=3KHz, VBW=30KHz, Sweep time = 500s.

#### 8.1.3 DEVIATION FROM STANDARD

No deviation.

#### 8.1.4 TEST SETUP



#### 8.1.5 EUT OPERATION CONDITIONS

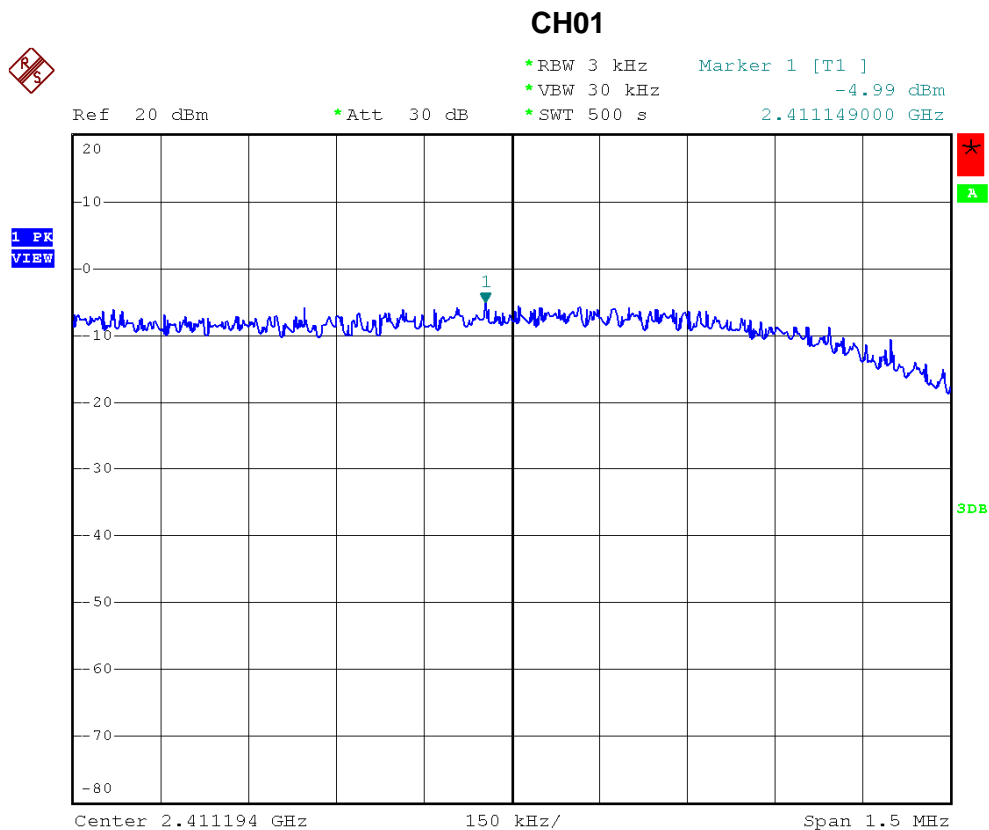
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.  
Chip antenna measurement result.



### 8.1.6 TEST RESULTS

EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	17°C	Relative Humidity :	89%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11b/CH01,CH06,CH11 (POWER:ADAPTER)		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH01	2412	-4.99	8
CH06	2437	-5.11	8
CH11	2462	-6.37	8





### CH06

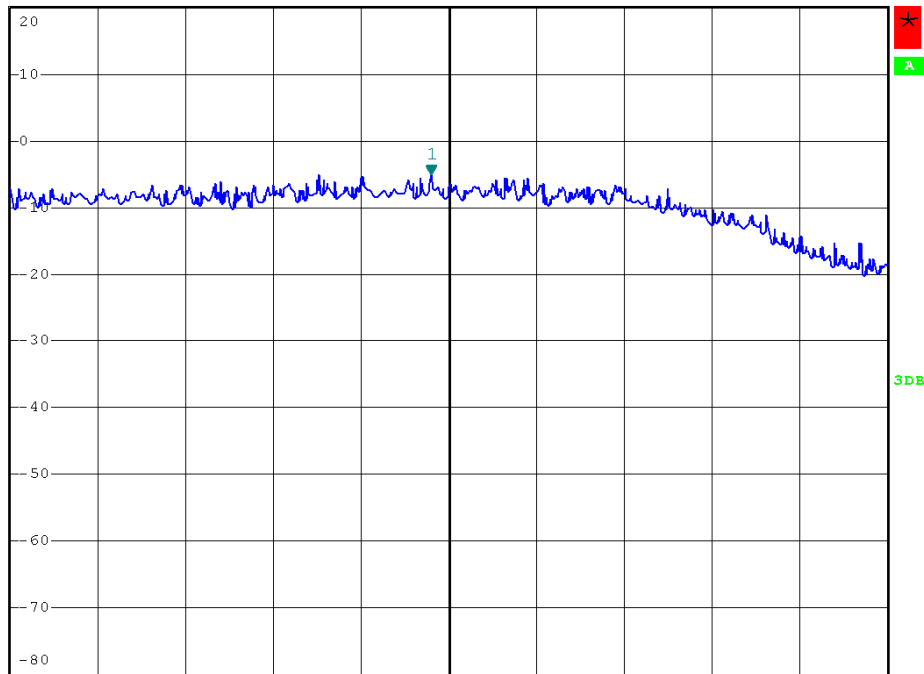


\*RBW 3 kHz Marker 1 [T1 ]  
\*VBW 30 kHz -5.11 dBm  
\*SWT 500 s 2.436268000 GHz

Ref 20 dBm

\*Att 30 dB

1 PK  
VIEW



Center 2.436298 GHz

150 kHz/

Span 1.5 MHz

### CH11

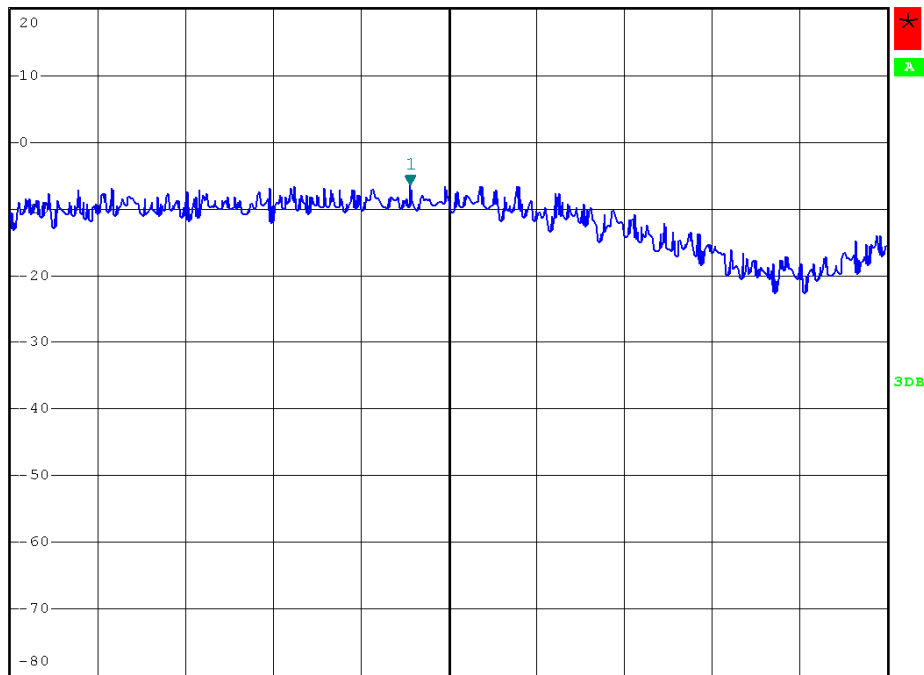


\*RBW 3 kHz Marker 1 [T1 ]  
\*VBW 30 kHz -6.37 dBm  
\*SWT 500 s 2.461376000 GHz

Ref 20 dBm

\*Att 30 dB

1 PK  
VIEW



Center 2.461442 GHz

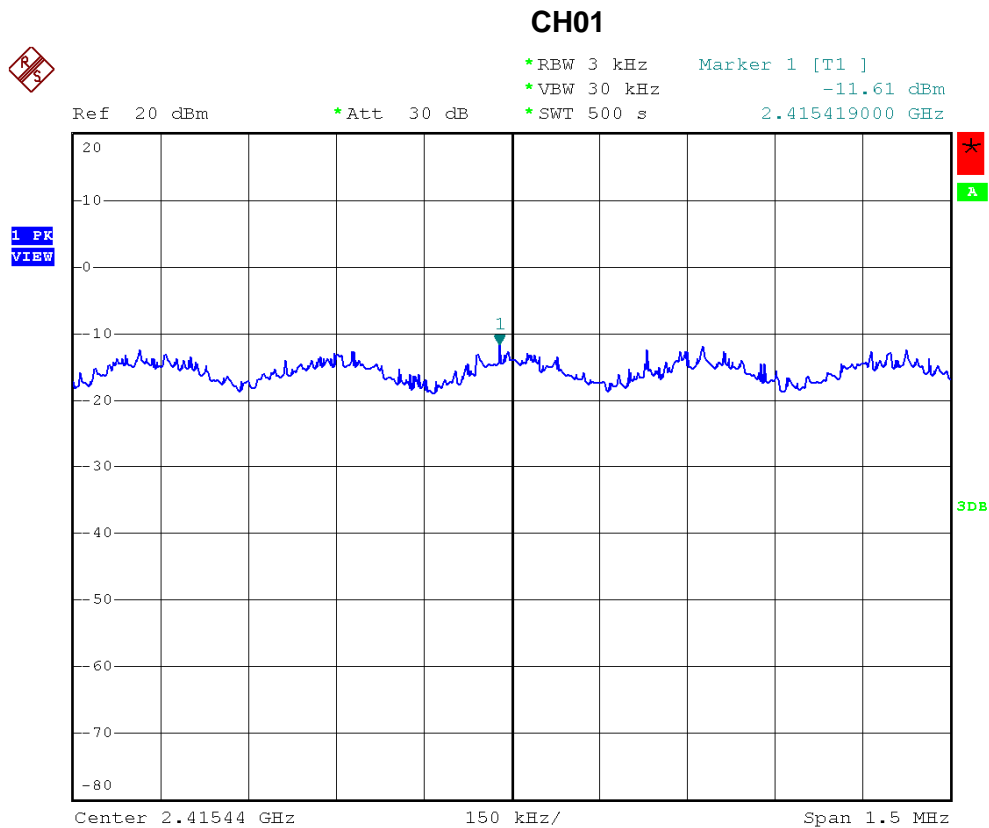
150 kHz/

Span 1.5 MHz



EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	17°C	Relative Humidity :	89%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11g/CH01,CH06,CH11(POWER:ADAPTER)		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH01	2412	-11.61	8
CH06	2437	-5.30	8
CH11	2462	-10.59	8





### CH06

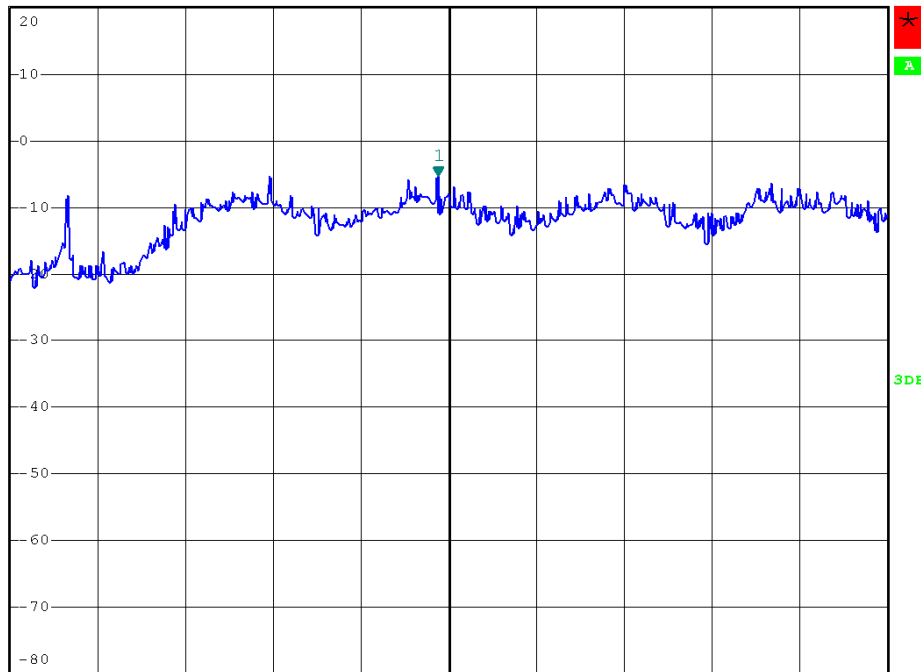


\*RBW 3 kHz Marker 1 [T1 ]  
\*VBW 30 kHz -5.30 dBm  
\*SWT 500 s 2.437650000 GHz

Ref 20 dBm

\*Att 30 dB

1 PK  
VIEW



Center 2.437668 GHz

150 kHz/

Span 1.5 MHz

### CH11

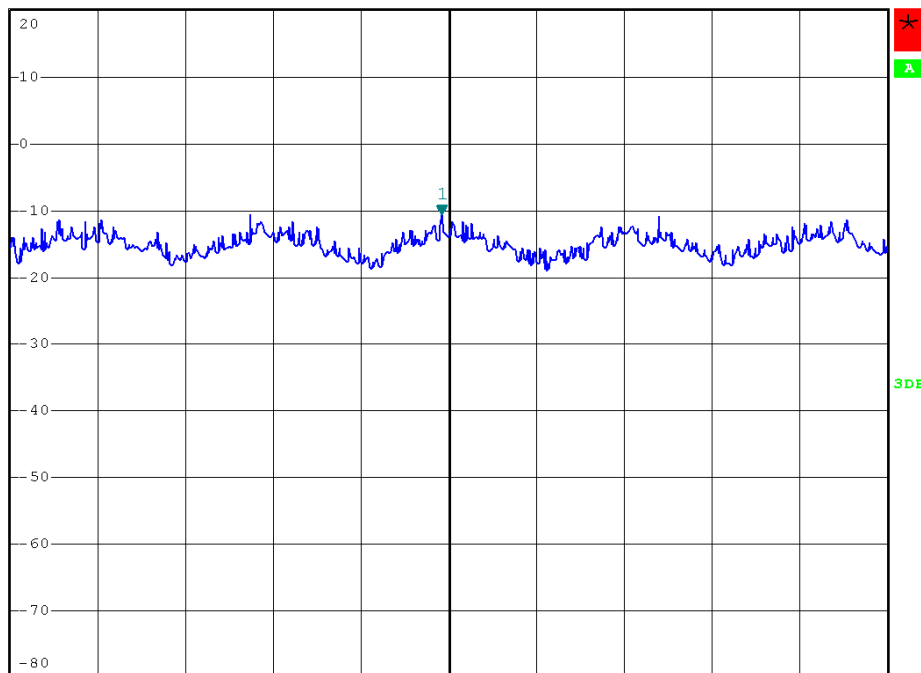


\*RBW 3 kHz Marker 1 [T1 ]  
\*VBW 30 kHz -10.59 dBm  
\*SWT 500 s 2.460748000 GHz

Ref 20 dBm

\*Att 30 dB

1 PK  
VIEW



Center 2.46076 GHz

150 kHz/

Span 1.5 MHz



## 9. RF EXPOSURE TEST

### 9.1 APPLIED PROCEDURES / LIMIT

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device.

#### (A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

#### (B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz ; \*Plane-wave equivalent power density

### 9.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Power Meter	Anritsu	ML2487A	6K00004714	Feb. 10, 2010
2	Power Meter Sensor	Anritsu	MA2491A	34138	Feb. 10, 2010

Remark: " N/A" denotes No Model Name , Serial No. or No Calibration specified.

### 9.1.2 MPE CALCULATION METHOD

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d}$$

$$\text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

**E** = Electric field (V/m)

**P** = Peak RF output power (W)

**G** = EUT Antenna numeric gain (numeric)

**d** = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained





### **9.1.3 DEVIATION FROM STANDARD**

No deviation.

### **9.1.4 TEST SETUP**



### **9.1.5 EUT OPERATION CONDITIONS**

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.



**9.1.6 TEST RESULTS - CHIP**

EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	17°C	Relative Humidity :	89%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11b(POWER:ADAPTER)		

Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )
2412	2.00	1.5849	23.0600	202.3019	0.063819	1
2437	2.00	1.5849	22.9600	197.6970	0.062366	1
2462	2.00	1.5849	22.6500	184.0772	0.058070	1

EUT :	IEEE 802.11bg Wireless Module	Model Name :	WR24G30
Temperature :	17°C	Relative Humidity :	89%
Test Voltage :	AC 120V/60Hz		
Test Mode :	802.11g(POWER:ADAPTER)		

Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )
2412	2.00	1.5849	23.9100	246.0368	0.077614	1
2437	2.00	1.5849	29.2100	833.6812	0.262997	1
2462	2.00	1.5849	25.1500	327.3407	0.103264	1

Remark :