FCC Radio Test Report

FCC ID: MCLJ20H049

This report concerns (check one) : ☐ **Original Grant** ■ **Class II Permissive Change**

Issued Date : Aug. 10, 2011
Project No. : R1011008B
Equipment : RF Module
Model Name : J20H049

Applicant : HON HAI Precision IND. CO., LTD.
Address : 5F-1, 5 Hsin-An Road, Hsinchu Science-Based Industri, Hsin Chu, Taiwan

Tested by: Neutron Engineering Inc. EMC Laboratory
Date of Receipt: Jul. 27, 2011
Date of Test: Jul. 28, 2011 ~ Aug. 09, 2011

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NVLAP Lab Code: 200145-0 ilac-MRA TAF Testing Laboratory 0659

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 : RF Module
Brand Name : FOXCONN
Model Name : J20H049
Applicant : HON HAI Precision IND. CO., LTD.
Date of Test : Jul. 28, 2011 ~ Aug. 09, 2011
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-R1011008B) 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
15.247 (c)	Radiated Spurious Emission	PASS	
1.1307 1.1310 2.1091 2.1093	RF Exposure Compliance	PASS	

NOTE:

This Class II permissive change device was originally granted on 12/29/2010. Please refer to Neutron report NEI-FCCP-1-R1011008. The manufacturer did not make any modification on the EUT. Per marketing purpose, the device was tested with the different antenna.

2.1 TEST FACILITY

The test facilities used to collect the test data in this report:

CB08: (VCCI RN: G-91; FCC RN: 614388; FCC DN: TW1054;
IC Assigned Code: 4428C-1)
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** ± **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**%.
The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2.

A. Radiated Measurement :

Test Site	Item	Measurement Frequency Range		Uncertainty	NOTE
CB08	Radiated Emission at 3m	Horizontal Polarization	30 - 200MHz	3.35 dB	
			200 - 1000MHz	3.11 dB	
			1 - 18GHz	3.97 dB	
			18 - 40GHz	4.01 dB	
		Vertical Polarization	30 - 200MHz	3.22 dB	
			200 - 1000MHz	3.24 dB	
			1 - 18GHz	4.05 dB	
			18 - 40GHz	4.04 dB	

Our calculated Measurement Instrumentation Uncertainty is shown in the tables above. These are our U_{lab} values in CISPR 16-4-2 terminology.
Since Table 1 of CISPR 16-4-2 has values of measurement instrumentation uncertainty, called U_{CISPR}, as follows:

Conducted Disturbance (mains port) – 150 kHz – 30 MHz : 3.6 dB
Radiated Disturbance (electric field strength on an open area test site or alternative test site) – 30 MHz – 1000 MHz : 5.2 dB

It can be seen that our U_{lab} values are smaller than U_{CISPR}.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

<table>
<tr><td>Equipment</td><td>RF Module</td></tr>
<tr><td>Brand Name</td><td>FOXCONN</td></tr>
<tr><td>Model Name</td><td>J20H049</td></tr>
<tr><td>OEM Brand/Model Name</td><td>N/A</td></tr>
<tr><td>Model Difference</td><td>N/A</td></tr>
<tr><td>Product Description</td><td>The EUT is a RF Module.
<table>
<tr><td>Operation Frequency:</td><td>2412~2462 MHz</td></tr>
<tr><td>Modulation Type:</td><td>802.11b:CCK, DQPSK, DBPSK
802.11g:64QAM, 16QAM, QPSK, BPSK
802.11n:64QAM, 16QAM, QPSK, BPSK</td></tr>
<tr><td>Bit Rate of Transmitter:</td><td>802.11b:11/5.5/2/1 Mbps
802.11g:54/48/36/24/18/12/9/6 Mbps
802.11n(HT20) MCS0~7:6.5/13/19.5/26
39/52/58.5/65 Mbps</td></tr>
<tr><td>Number Of Channel:</td><td>Please see Note 2.</td></tr>
<tr><td>Antenna Designation:</td><td>Please see Note 3.</td></tr>
<tr><td>Antenna Gain(Peak):</td><td>Please see Note 3.</td></tr>
<tr><td>Peak Output Power(Max):</td><td>802.11b: 19.90 dBm Max.
802.11g: 25.32 dBm Max.
802.11n(20MHz): 25.08 dBm Max.</td></tr>
</table>
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.</td></tr>
<tr><td>Power Source</td><td>DC Voltage supplied from System</td></tr>
<tr><td>Power Rating</td><td>DC 5V +/- 10%</td></tr>
<tr><td>Products Covered</td><td>Please refer to the User's Manual</td></tr>
<tr><td>Connecting I/O Port(s)</td><td>N/A</td></tr>
<tr><td>EUT Modification(s)</td><td>N/A</td></tr>
</table>

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, 802.11n(20MHz)

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

3. Table for Filed Antenna (Additional)

Ant.	Brand	Ant. Part Name	Antenna Type	Connector Type	Cable Length	Gain (dBi) With cable loss
1	FOXCONN	**X-2134031-X**	IFA (metal version)	UFL	175mm	**-4.56**
2	FOXCONN	X-2134031-X	IFA (metal version)	UFL	1000mm	-8.62

All optional antennas were tested, and the EUT with **X-2134031-X (175mm)** was found to be the worst case during the pr-scanning test. This combination of the worst case was used for final testing and collecting test data included in this report.

3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible 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	Description
Mode 1	802.11b/CH01, CH06, CH11 (**X-2134031-X (175mm)**)
Mode 2	802.11g/CH01, CH06, CH11 (**X-2134031-X (175mm)**)
Mode 3	802.11n/20M/CH01, CH06, CH11 (**X-2134031-X (175mm)**)
Mode 4	802.11b/CH01, CH06, CH11 (**X-2134031-X (1000mm)**)
Mode 5	802.11g/CH01, CH06, CH11 (**X-2134031-X (1000mm)**)
Mode 6	802.11n/20M/CH01, CH06, CH11 (**X-2134031-X (1000mm)**)

For Radiated Test	
Final Test Mode	Description
Mode 1	802.11b/CH01, CH11 (**X-2134031-X (175mm)**)
Mode 2	802.11g/CH01, CH11 (**X-2134031-X (175mm)**)
Mode 3	802.11n/20M/CH01, CH11 (**X-2134031-X (175mm)**)

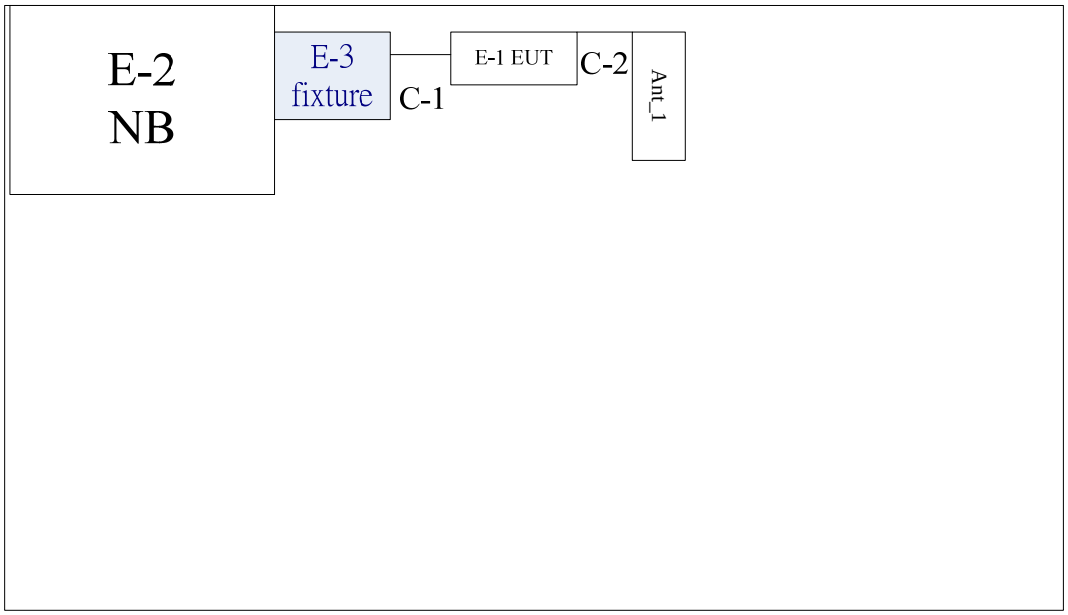
3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product

Test software Version	art_v08_b129.8		
Frequency (MHz)	2412 MHz	2442 MHz	2462 MHz
IEEE 802.11b DSSS	18	18	18
IEEE 802.11g OFDM	16.5	17	17

Test software Version	art_v08_b129.8		
Frequency (MHz)	2412 MHz	2442 MHz	2462 MHz
IEEE 802.11n (20MHz)	16	17	16

3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF RADIATED EMISSION TESTED



3.5 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	RF Module	FOXCONN	J20H049	MCLJ20H049	N/A	EUT
E-2	Notebook PC	DELL	D600	DOC	7T390 A03	
E-3	Fixture	Foxconn	N/A	N/A	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	10cm	
C-2	NO	NO	17.5cm	

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.
(3) " ※ " denotes the support equipment by applicant.

4. EMC EMISSION TEST

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 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 on15.205(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) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain(if use)
Margin Level = Measurement Value – Limit Value

4.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Aug. 31, 2011
2	Microwave Pre_amplifier	Agilent	8449B	3008A01714	Apr. 18, 2012
3	Microflex Cable	N/A	N/A	1m	May. 18, 2012
4	Microflex Cable	AISI	S104-SMAP-1	10m	Aug. 22, 2011
5	Microflex Cable	N/A	N/A	3m	Aug. 22, 2011
6	Test Cable	N/A	LMR-400	966_12m	Jun. 16, 2012
7	Test Cable	N/A	LMR-400	966_3m	Jun. 16, 2012
8	Pre-Amplifier	EMC	EMC-330	980001	Jun. 01, 2012
9	Log-Bicon Antenna	Schwarzbeck	VULB9168-352	9168-352	Jun. 20, 2012
10	Horn Antenna	Schwarzbeck	BBHA 9170	187	Dec. 16, 2010
11	Horn Antenna	Schwarzbeck	BBHA 9120	D-546	Jun. 15, 2012

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

4.1.3 TEST PROCEDURE

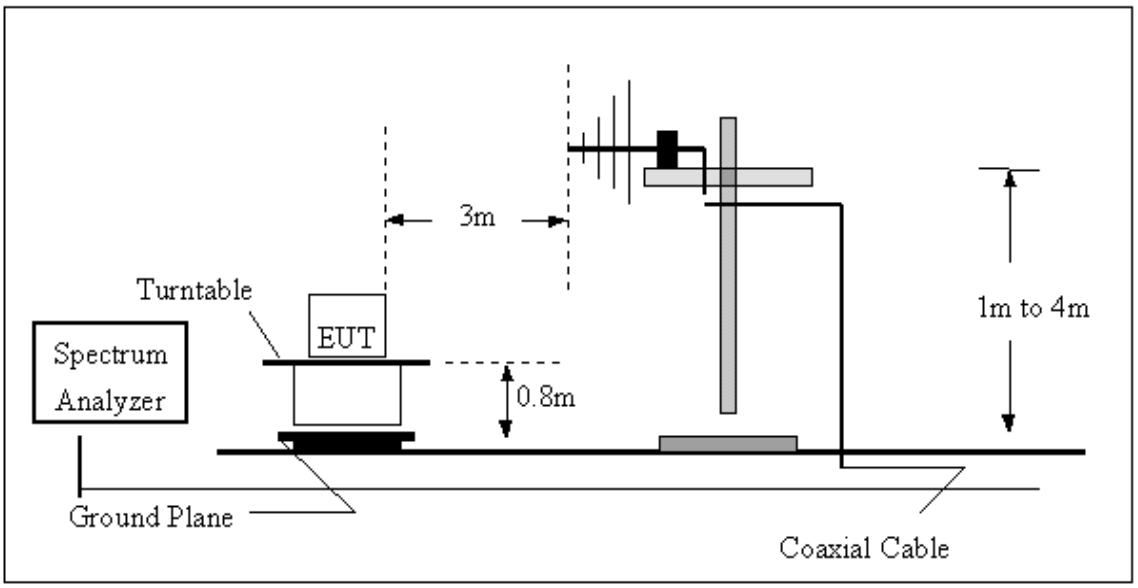
a. The measuring distance of at 10 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m or 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
c. 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.
d. 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.
e. 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.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.
g. The testing follows the guidelines in ANSI C63.4-2003 and FCC Public Notice DA 00-705 Measurement Guidelines. In case the emission is fail due to the used RBW / VBW is too wide, marker-delta method of FCC Public Notice DA 00-705 will be followed.

4.1.4 DEVIATION FROM TEST STANDARD

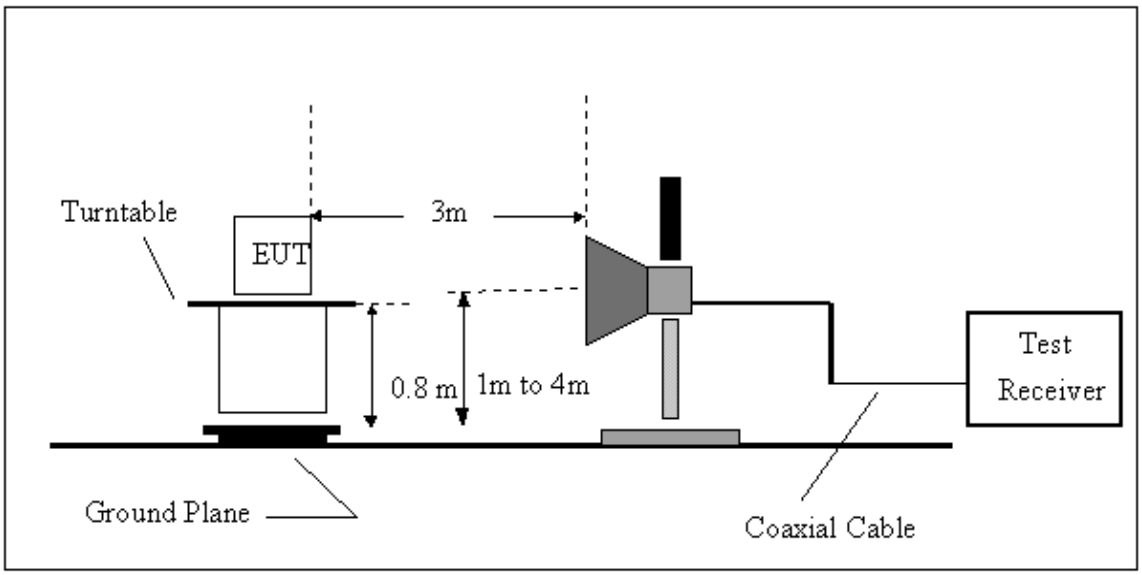
No deviation

4.1.5 TEST SETUP

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



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



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-BETWEEN 30MHZ - 1000MHZ

EUT：	RF Module	Model Name ：	J20H049
Temperature：	25°C	Relative Humidity：	42%
Test Voltage：	AC 120V/60Hz (System)		
Test Mode ：	802.11b/CH06 (**X-2134031-X (175mm)**)		

Freq. (MHz)	Polarization H/V	Reading Level (dBuV)	Correct Factor(dB)	Measurement (dBuV/m)	Limit(Quasi-Peak) (dBuV/m)	Margin (dB)	Note
299.6600	V	40.09	-12.59	27.50	46.00	- 18.50	
373.3800	V	37.55	-10.75	26.80	46.00	- 19.20	
499.4800	V	37.91	-7.98	29.93	46.00	- 16.07	
641.1000	V	36.38	-5.28	31.10	46.00	- 14.90	
666.3200	V	36.40	-4.93	31.47	46.00	- 14.53	
800.1800	V	37.63	-2.83	34.80	46.00	- 11.20	

Remark：

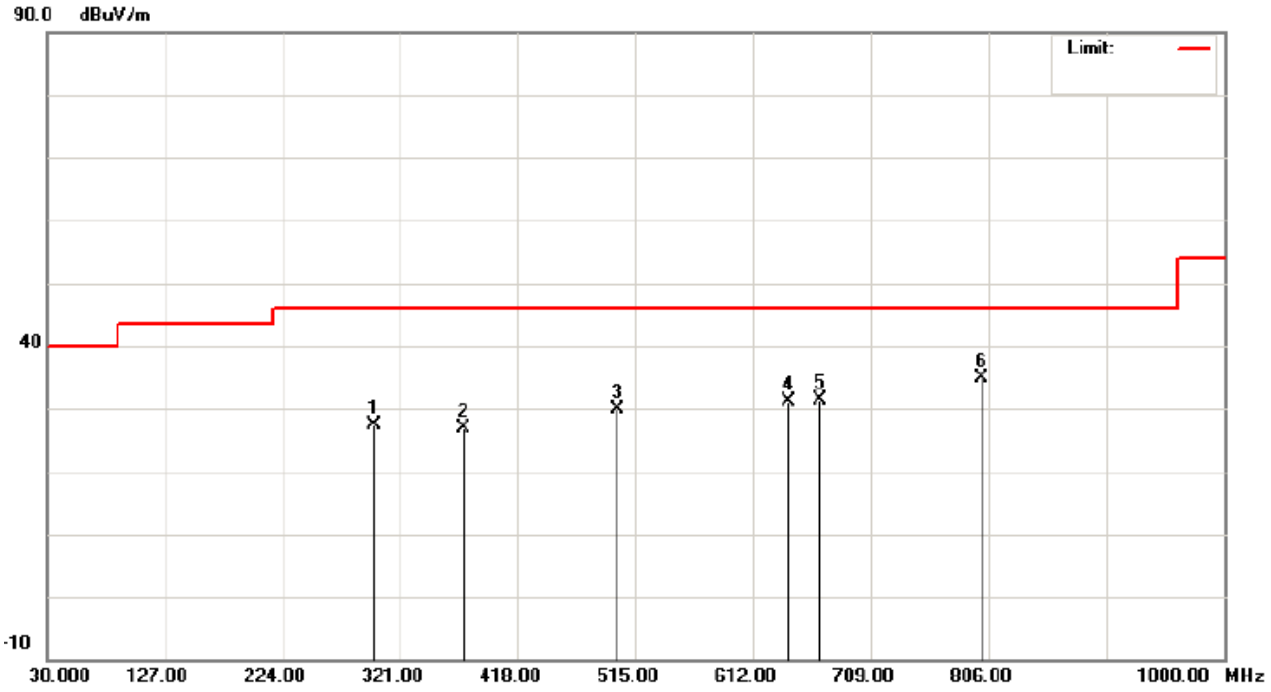
(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(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：	RF Module	Model Name ：	J20H049
Temperature：	25°C	Relative Humidity：	42%
Test Voltage：	AC 120V/60Hz (System)		
Test Mode ：	802.11b/CH06 (**X-2134031-X (175mm)**)		

Freq. (MHz)	Polarization H/V	Reading Level (dBuV)	Correct Factor(dB)	Measurement (dBuV/m)	Limit(Quasi-Peak) (dBuV/m)	Margin (dB)	Note
142.5200	H	32.43	-13.28	19.15	43.50	- 24.35	
239.5200	H	34.07	-14.42	19.65	46.00	- 26.35	
299.6600	H	33.59	-12.59	21.00	46.00	- 25.00	
495.6000	H	29.49	-8.04	21.45	46.00	- 24.55	
617.8200	H	28.19	-5.70	22.49	46.00	- 23.51	
666.3200	H	31.40	-4.93	26.47	46.00	- 19.53	

Remark：

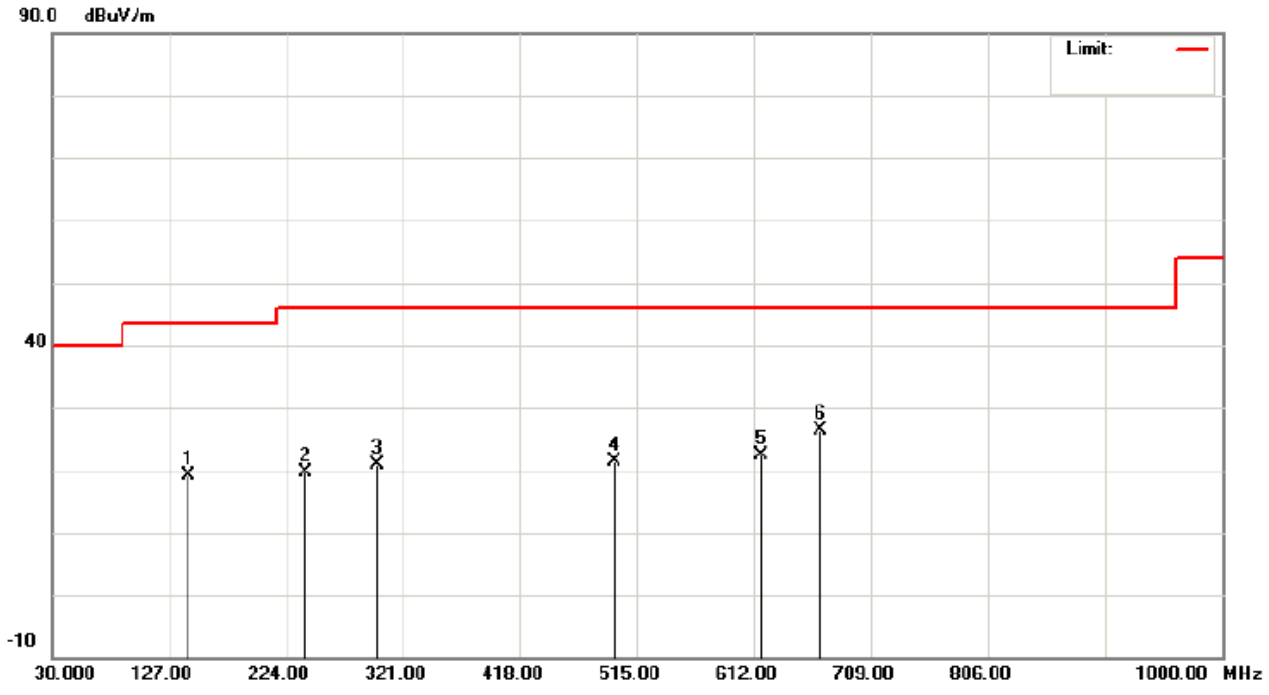
(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(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.



4.1.8 TEST RESULTS - ABOVE 1000MHZ

EUT：	RF Module	Model Name ：	J20H049
Temperature：	25°C	Relative Humidity :	42%
Test Voltage :	AC 120V/60Hz (System)	Orthogonal Axes:	X
Test Mode ：	802.11b/CH01 (**X-2134031-X (175mm)**)		

Type	Freq.	Polarization	Reading Level(dBuV)		Correct	Measurement(dBuV/m)		Limit(dBuV/m)		Margin	Note
F/H/E	(MHz)	H/V	Peak	AV	Factor(dB)	Peak	AV	Peak	AV	(dB)	
H	2390.000	V	22.27	14.19	30.89	53.16	45.08	74.00	54.00	- 8.92	AV
F	2413.200	V	68.39	65.07	30.98	99.37	96.05				
H	4824.000	V	51.38	48.57	2.70	54.08	51.27	74.00	54.00	- 2.73	AV

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 AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV 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 。

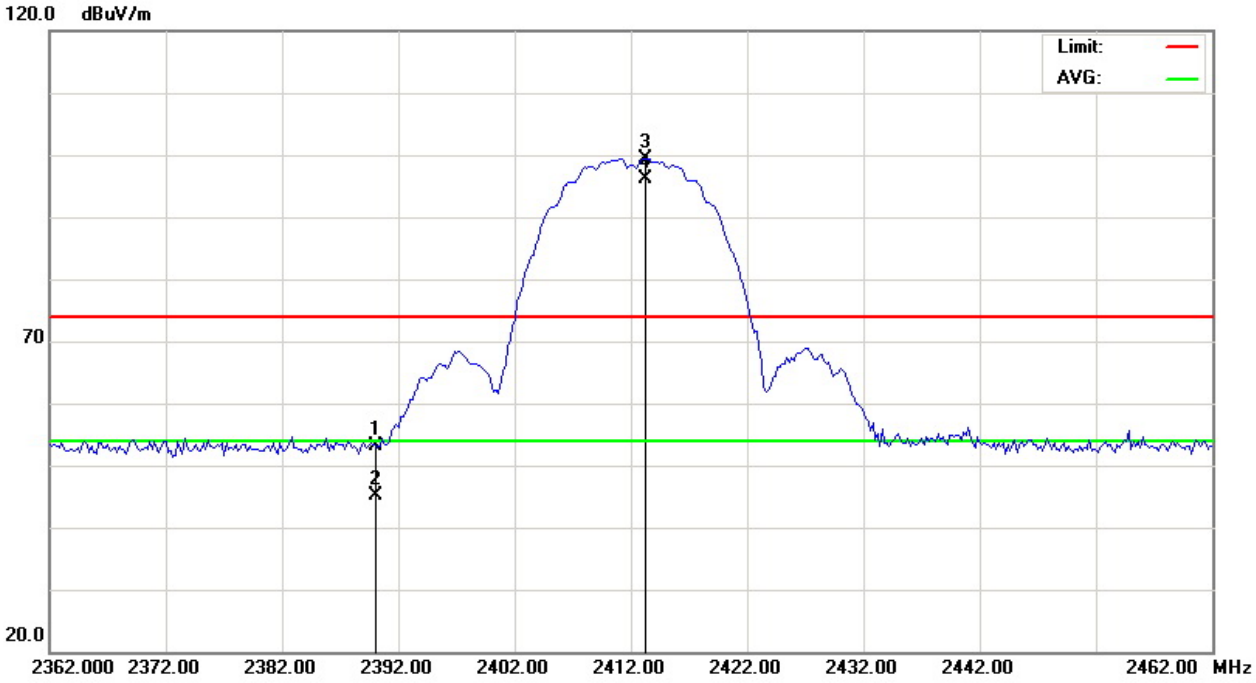
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

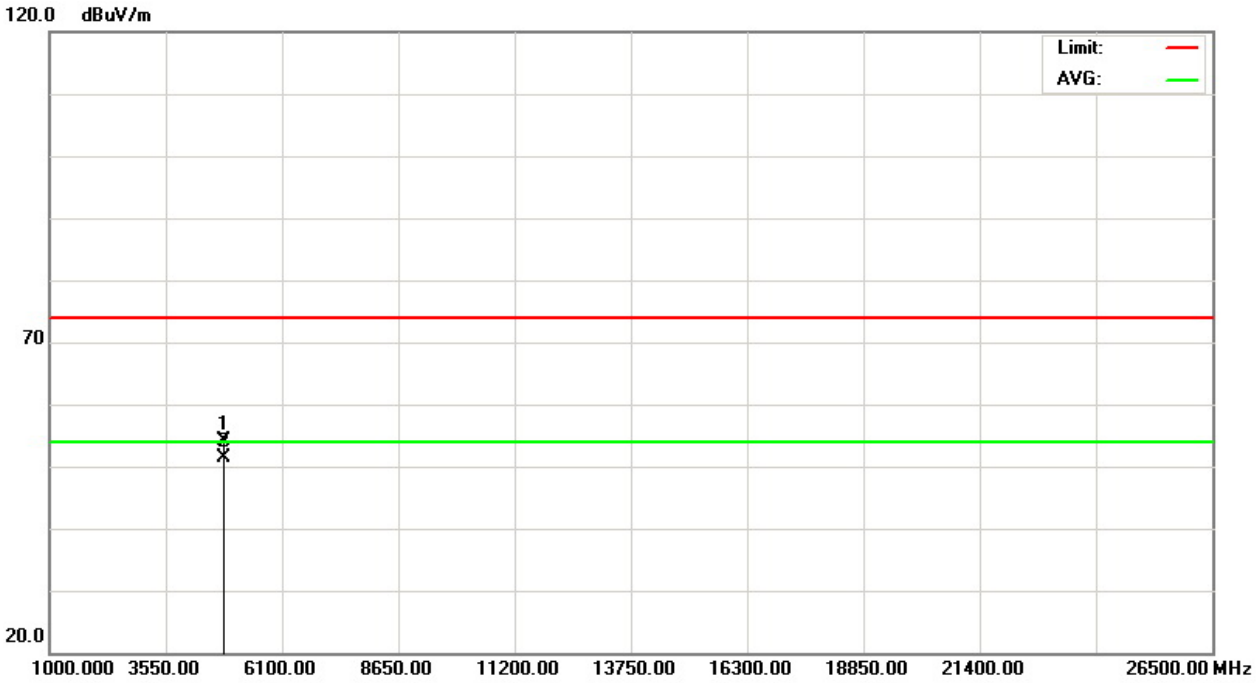
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(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 (Above 1000 MHz, Vertical)





EUT：	RF Module	Model Name ：	J20H049
Temperature：	25°C	Relative Humidity :	42%
Test Voltage :	AC 120V/60Hz (System)	Orthogonal Axes:	X
Test Mode ：	802.11b/CH01 (X-2134031-X (175mm))		

Type F/H/E	Freq. (MHz)	Polarization H/V	Reading Level(dBuV) Peak	Reading Level(dBuV) AV	Correct Factor(dB)	Measurement(dBuV/m) Peak	Measurement(dBuV/m) AV	Limit(dBuV/m) Peak	Limit(dBuV/m) AV	Margin (dB)	Note
H	2390.000	H	23.48	13.30	30.89	54.37	44.19	74.00	54.00	- 9.81	AV
F	2413.200	H	68.96	64.18	30.98	99.94	95.16				
H	4824.060	H	50.32	45.28	2.70	53.02	47.98	74.00	54.00	- 6.02	AV

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 AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV 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 。

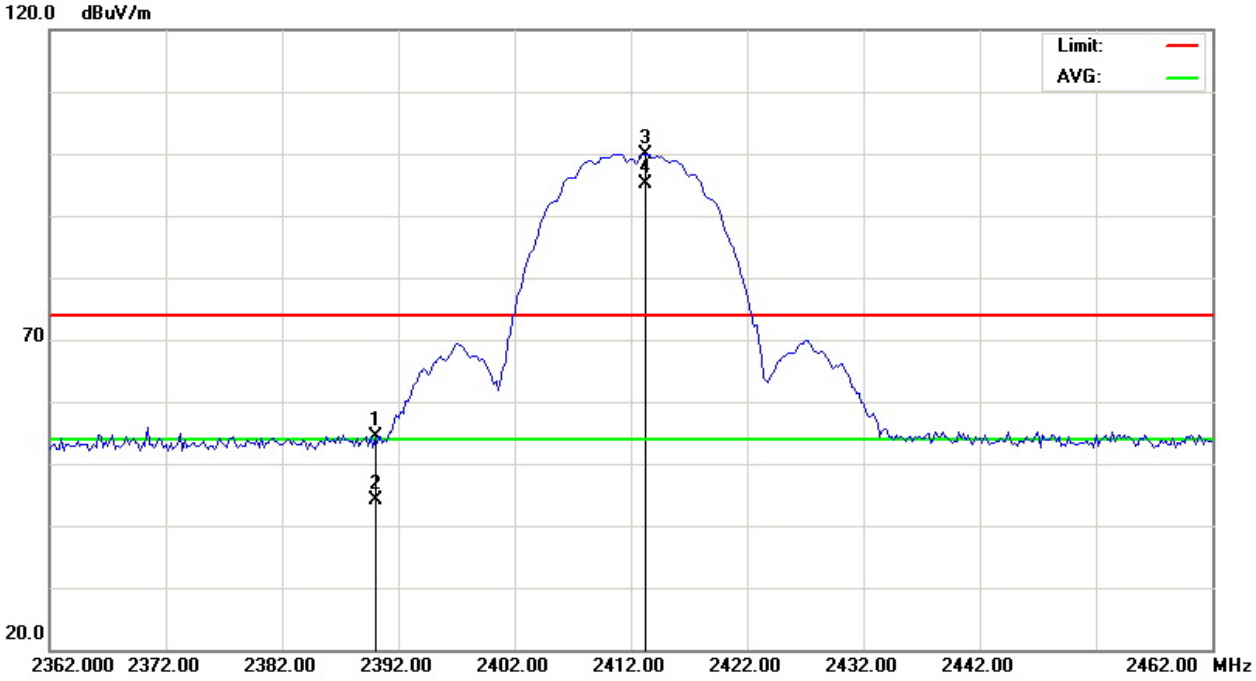
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

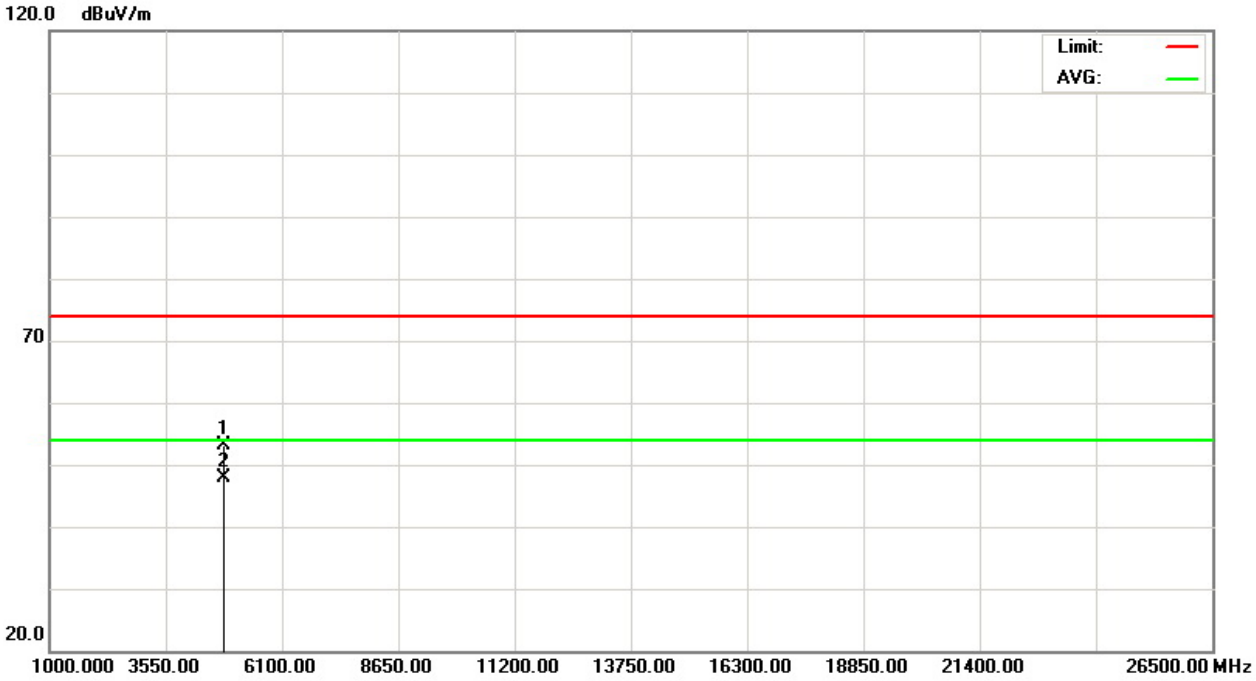
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(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(Above 1000 MHz, Horizontal)





EUT：	RF Module	Model Name ：	J20H049
Temperature：	25°C	Relative Humidity :	42%
Test Voltage :	AC 120V/60Hz (System)	Orthogonal Axes:	X
Test Mode ：	802.11b/CH11 (X-2134031-X (175mm))		

Type	Freq.	Polarization	Reading Level(dBuV)		Correct	Measurement(dBuV/m)		Limit(dBuV/m)		Margin	Note
F/H/E	(MHz)	H/V	Peak	AV	Factor(dB)	Peak	AV	Peak	AV	(dB)	
F	2463.200	V	66.79	62.99	31.19	97.98	94.18				
H	2483.500	V	22.65	12.11	31.28	53.93	43.39	74.00	54.00	- 10.61	AV
H	4923.910	V	55.83	49.13	3.03	58.86	52.16	74.00	54.00	- 1.84	AV

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 AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV 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 。

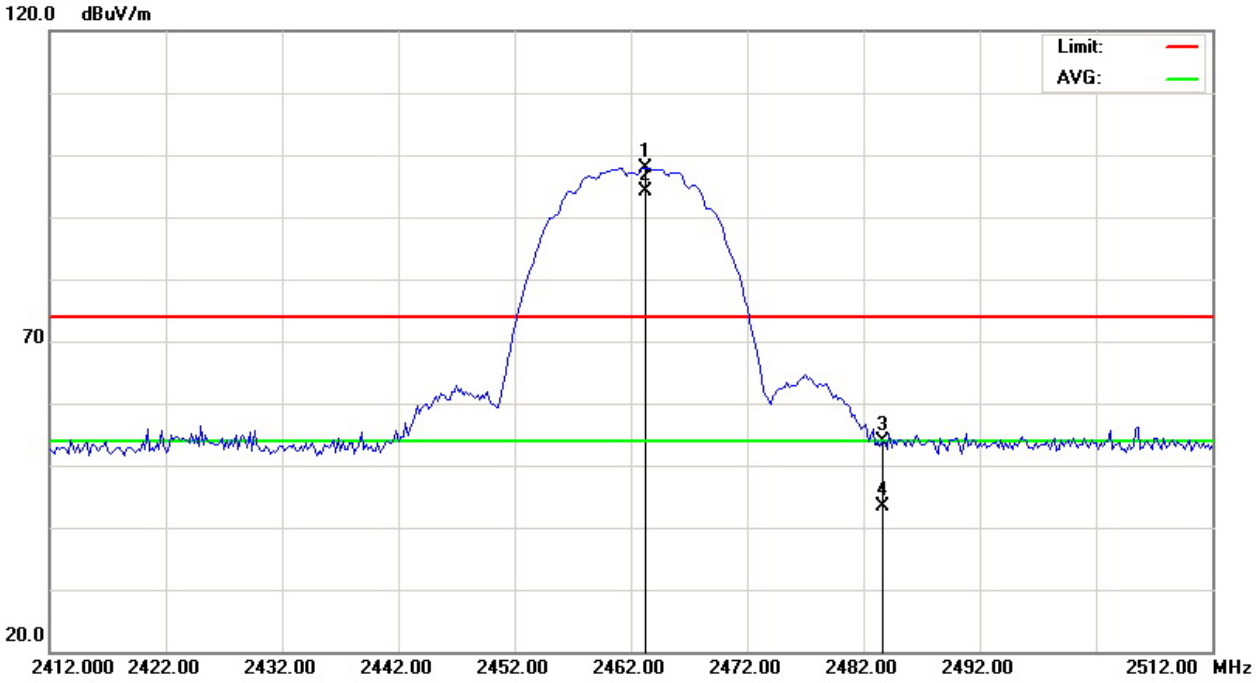
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

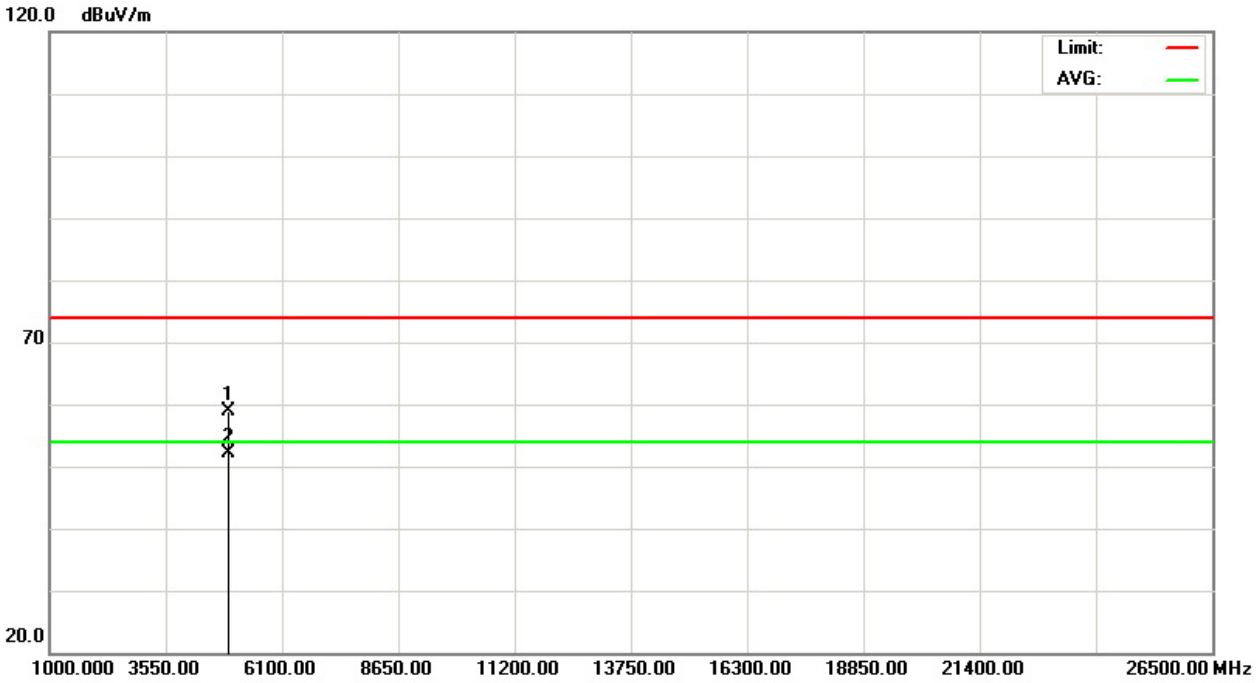
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(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(Above 1000 MHz, Vertical)





EUT：	RF Module	Model Name ：	J20H049
Temperature：	25°C	Relative Humidity :	42%
Test Voltage :	AC 120V/60Hz (System)	Orthogonal Axes:	X
Test Mode ：	802.11b/CH11 (X-2134031-X (175mm))		

Type F/H/E	Freq. (MHz)	Polarization H/V	Reading Level(dBuV) Peak	Reading Level(dBuV) AV	Correct Factor(dB)	Measurement(dBuV/m) Peak	Measurement(dBuV/m) AV	Limit(dBuV/m) Peak	Limit(dBuV/m) AV	Margin (dB)	Note
F	2463.200	H	69.00	64.40	31.19	100.19	95.59				
H	2483.500	H	23.07	13.52	31.28	54.35	44.80	74.00	54.00	- 9.20	AV
H	49.23.91	H	48.32	45.38	3.03	51.35	48.41	74.00	54.00	- 5.59	AV

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 AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV 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 。

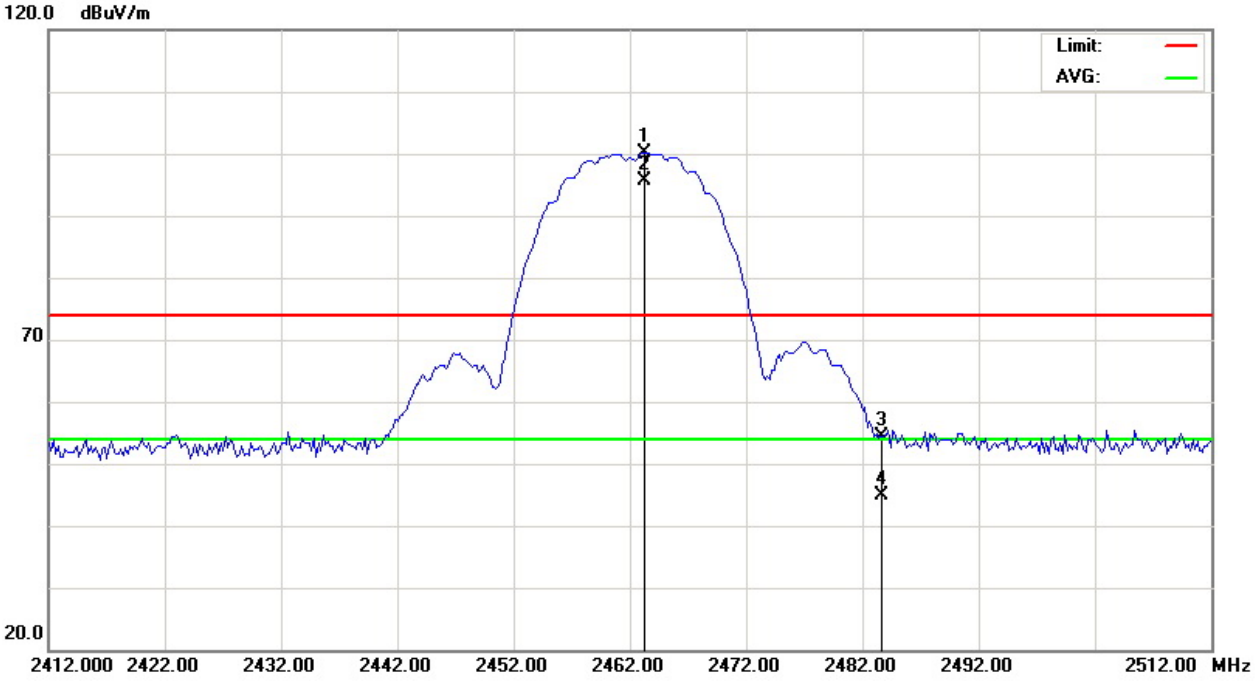
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

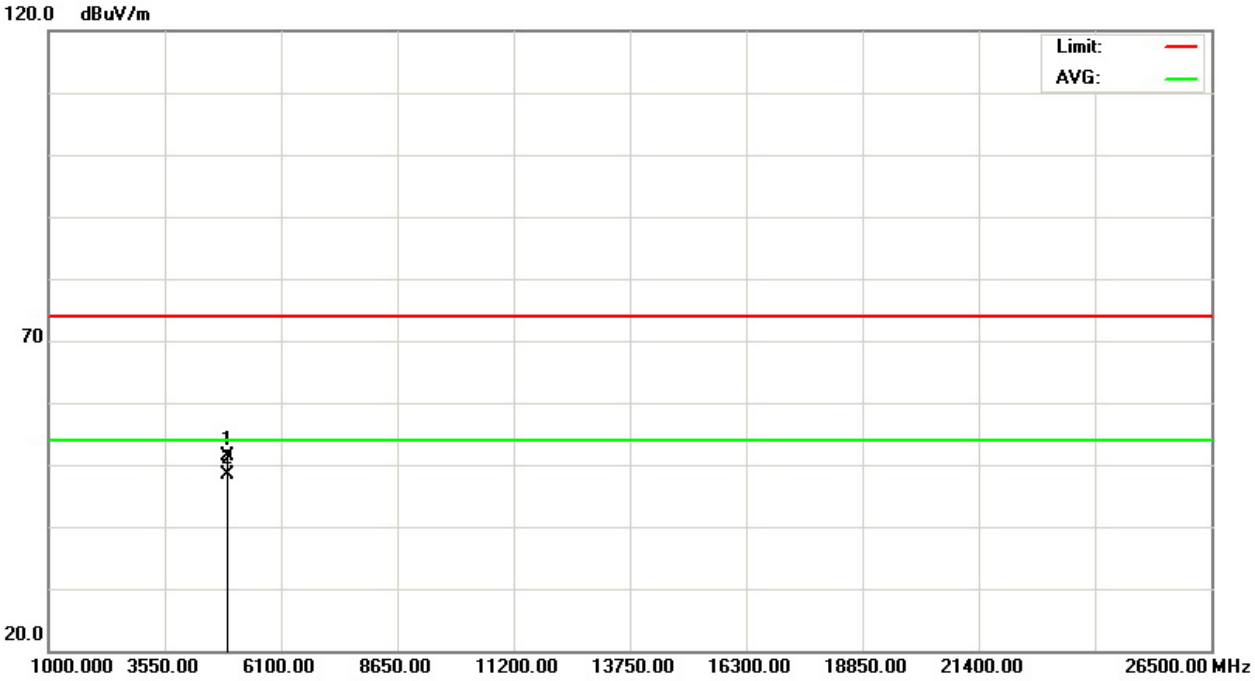
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(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(Above 1000 MHz, Horizontal)





EUT：	RF Module	Model Name ：	J20H049
Temperature：	25°C	Relative Humidity :	42%
Test Voltage :	AC 120V/60Hz (System)	Orthogonal Axes:	X
Test Mode ：	802.11g/CH01 (X-2134031-X (175mm))		

Type F/H/E	Freq. (MHz)	Polarization H/V	Reading Level(dBuV) Peak	Reading Level(dBuV) AV	Correct Factor(dB)	Measurement(dBuV/m) Peak	Measurement(dBuV/m) AV	Limit(dBuV/m) Peak	Limit(dBuV/m) AV	Margin (dB)	Note
H	2390.000	V	35.53	14.50	30.89	66.42	45.39	74.00	54.00	- 7.58	Peak
F	2405.200	V	69.98	59.63	30.95	100.93	90.58				
H	4824.320	V	48.35	33.92	2.70	51.05	36.62	74.00	54.00	- 17.38	AV

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 AV in column of 『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV 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 。

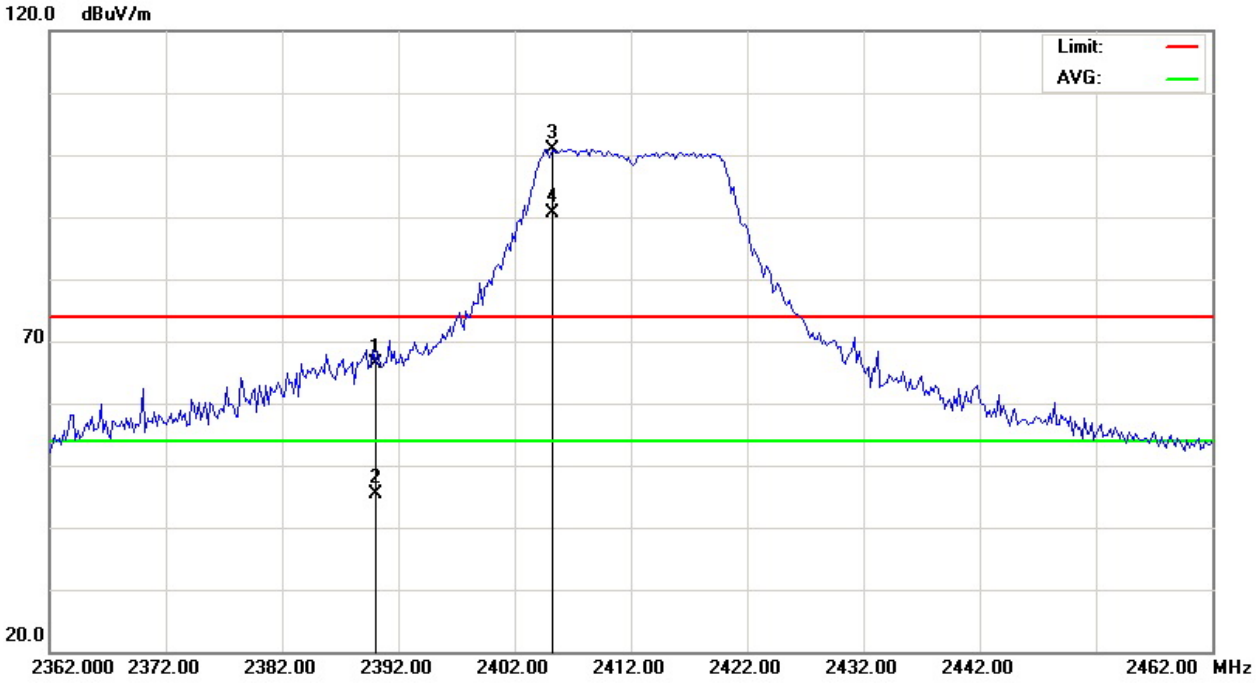
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

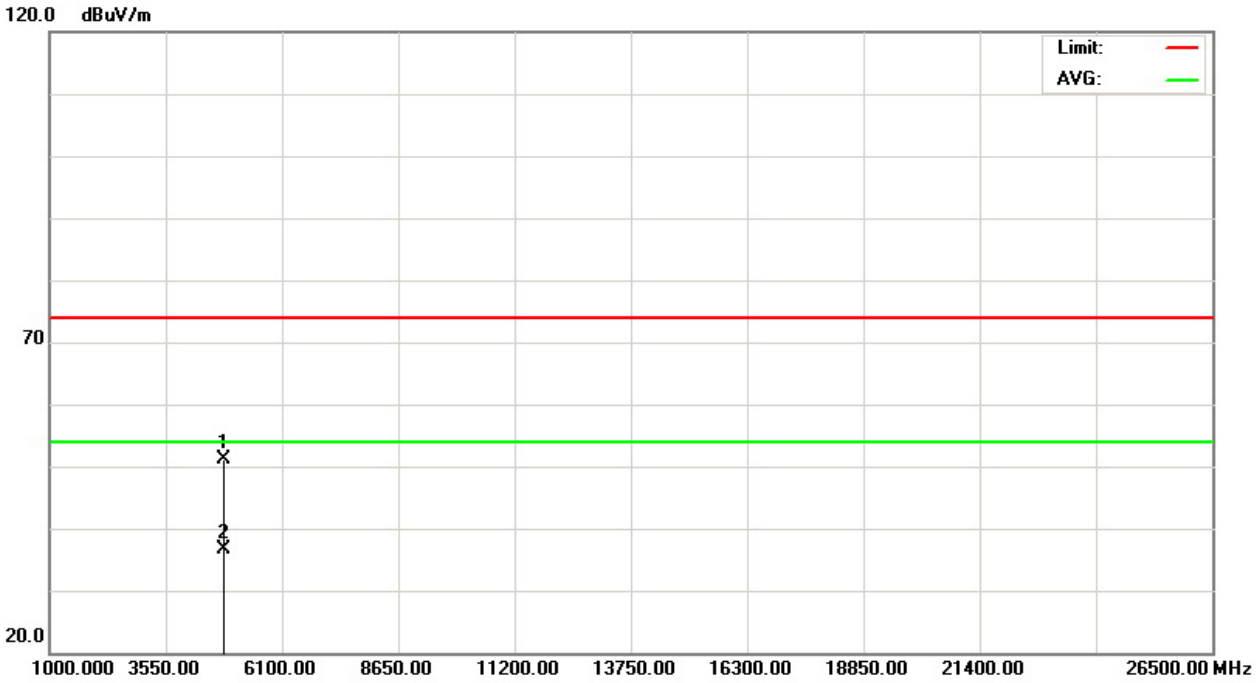
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(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(Above 1000 MHz, Vertical)





EUT：	RF Module	Model Name ：	J20H049
Temperature：	25°C	Relative Humidity :	42%
Test Voltage :	AC 120V/60Hz (System)	Orthogonal Axes:	X
Test Mode ：	802.11g/CH01 (X-2134031-X (175mm))		

Type F/H/E	Freq. (MHz)	Polarization H/V	Reading Level(dBuV) Peak	Reading Level(dBuV) AV	Correct Factor(dB)	Measurement(dBuV/m) Peak	Measurement(dBuV/m) AV	Limit(dBuV/m) Peak	Limit(dBuV/m) AV	Margin (dB)	Note
H	2390.000	H	36.43	14.61	30.89	67.32	45.50	74.00	54.00	- 6.68	Peak
F	2407.600	H	70.38	59.74	30.96	101.34	90.70				
H	4824.000	H	45.38	32.62	2.70	48.08	35.32	74.00	54.00	- 18.68	AV

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 AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV 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 。

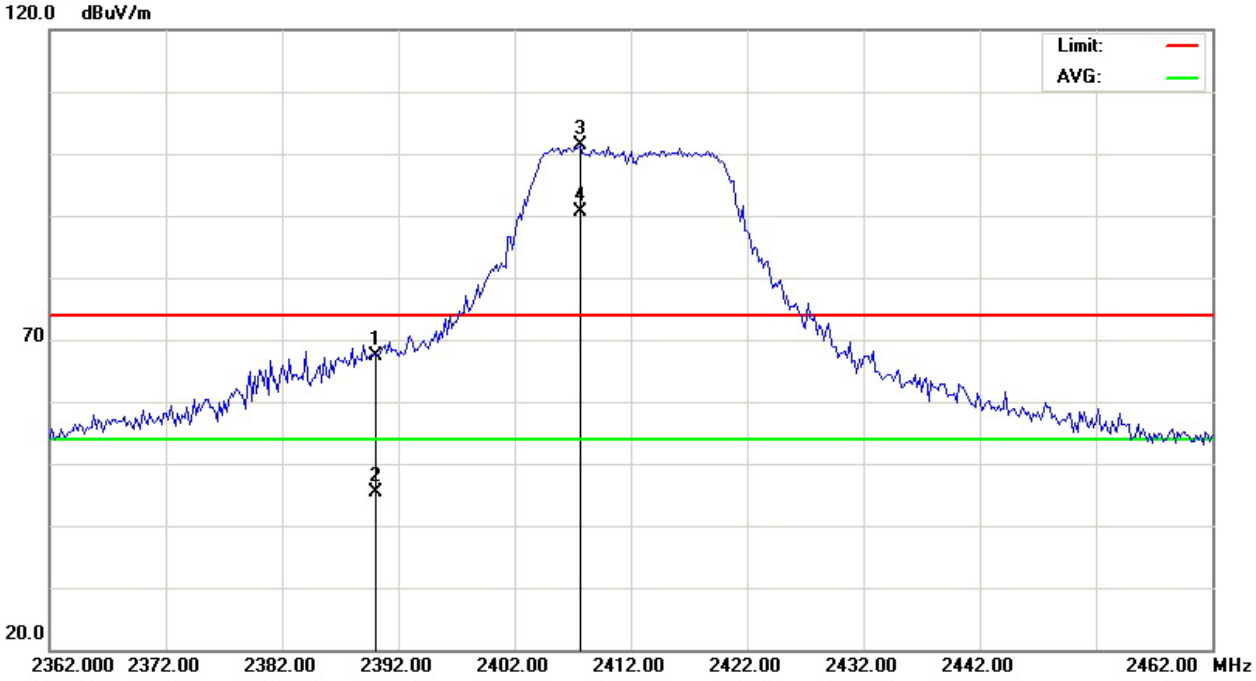
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

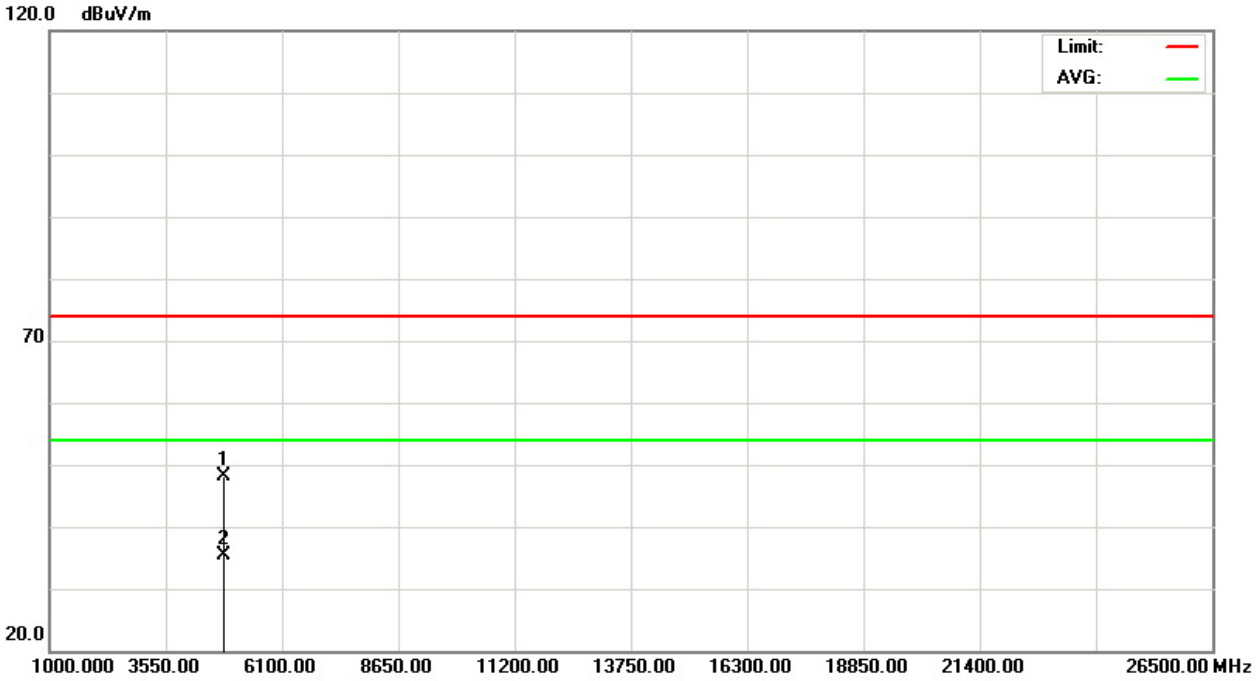
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(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(Above 1000 MHz, Horizontal)





EUT：	RF Module	Model Name ：	J20H049
Temperature：	25°C	Relative Humidity :	42%
Test Voltage :	AC 120V/60Hz (System)	Orthogonal Axes:	X
Test Mode ：	802.11g/CH11 (X-2134031-X (175mm))		

Type F/H/E	Freq. (MHz)	Polarization H/V	Reading Level(dBuV) Peak	Reading Level(dBuV) AV	Correct Factor(dB)	Measurement(dBuV/m) Peak	Measurement(dBuV/m) AV	Limit(dBuV/m) Peak	Limit(dBuV/m) AV	Margin (dB)	Note
F	2464.800	V	70.33	59.81	31.20	101.53	91.01				
H	2483.500	V	31.12	17.81	31.28	62.40	49.09	74.00	54.00	- 4.91	AV
H	4924.320	V	55.57	45.32	3.03	58.60	48.35	74.00	54.00	- 5.65	AV

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 AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV 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 。

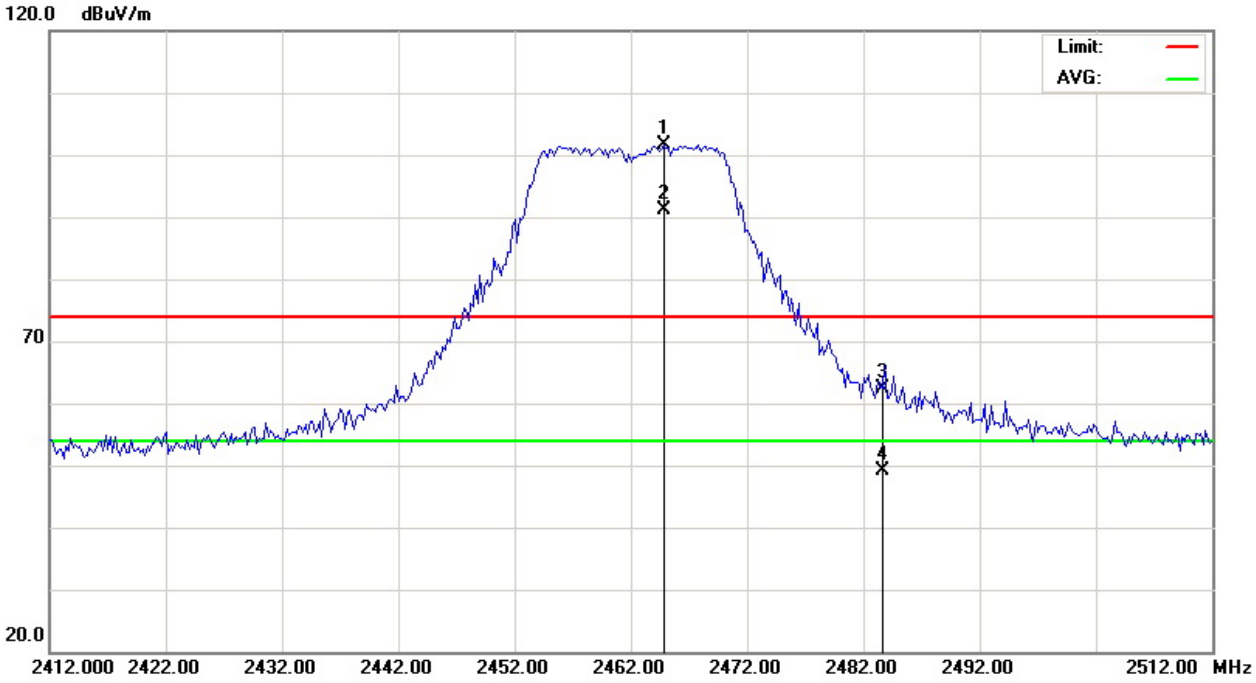
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

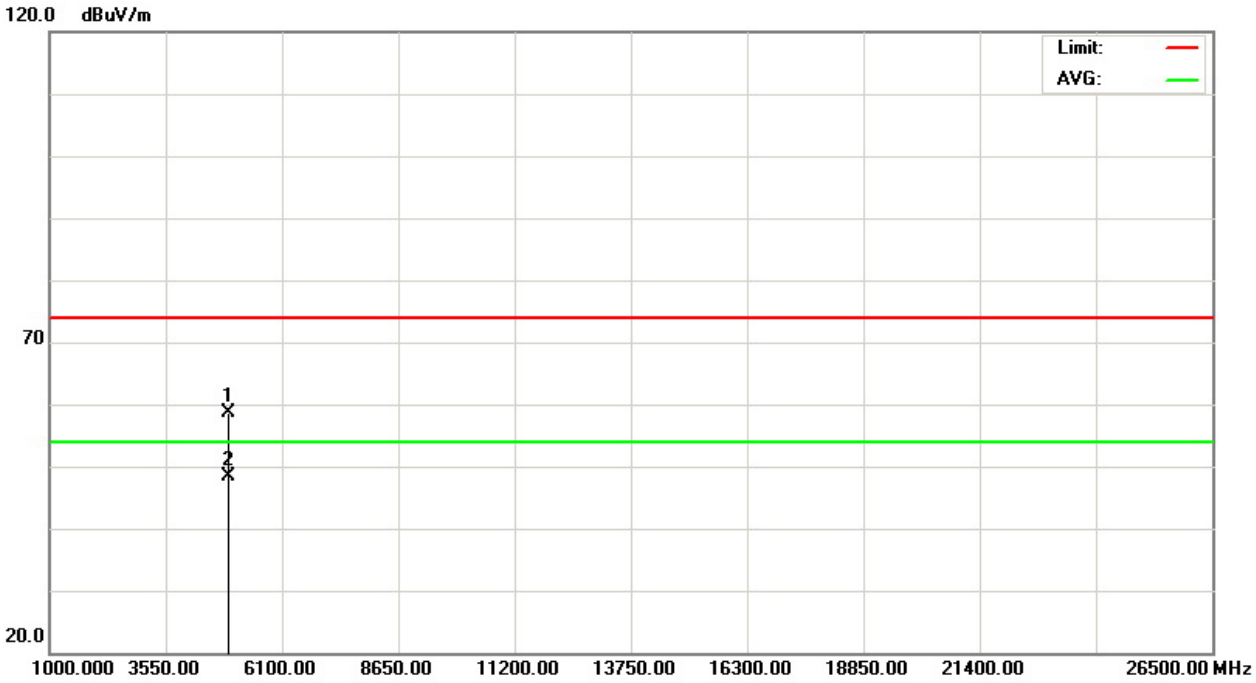
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(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(Above 1000 MHz, Vertical)





EUT：	RF Module	Model Name ：	J20H049
Temperature：	25°C	Relative Humidity :	42%
Test Voltage :	AC 120V/60Hz (System)	Orthogonal Axes:	X
Test Mode ：	802.11g/CH11 (X-2134031-X (175mm))		

Type	Freq.	Polarization	Reading Level(dBuV)		Correct	Measurement(dBuV/m)		Limit(dBuV/m)		Margin	Note
F/H/E	(MHz)	H/V	Peak	AV	Factor(dB)	Peak	AV	Peak	AV	(dB)	
F	2459.200	H	71.45	60.13	31.18	102.63	91.31				
H	2483.500	H	30.56	18.13	31.28	61.84	49.41	74.00	54.00	- 4.59	AV
H	4924.150	H	53.65	42.08	3.03	56.68	45.11	74.00	54.00	- 8.89	AV

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 AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV 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 。

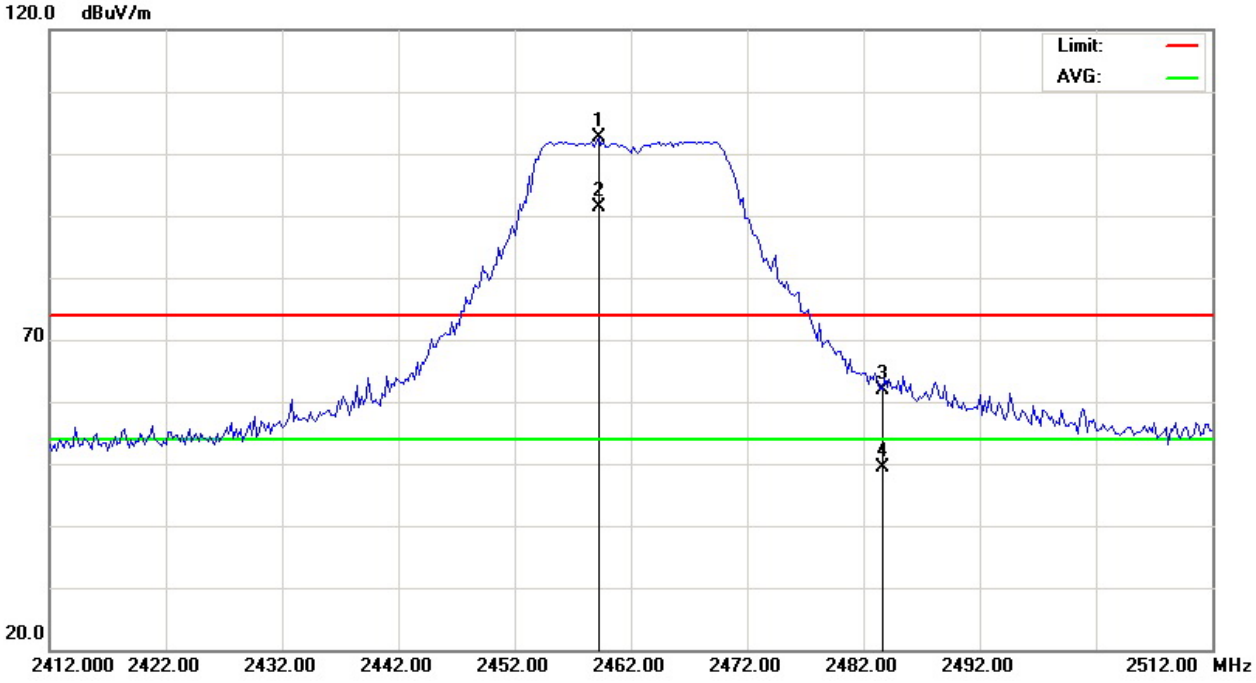
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

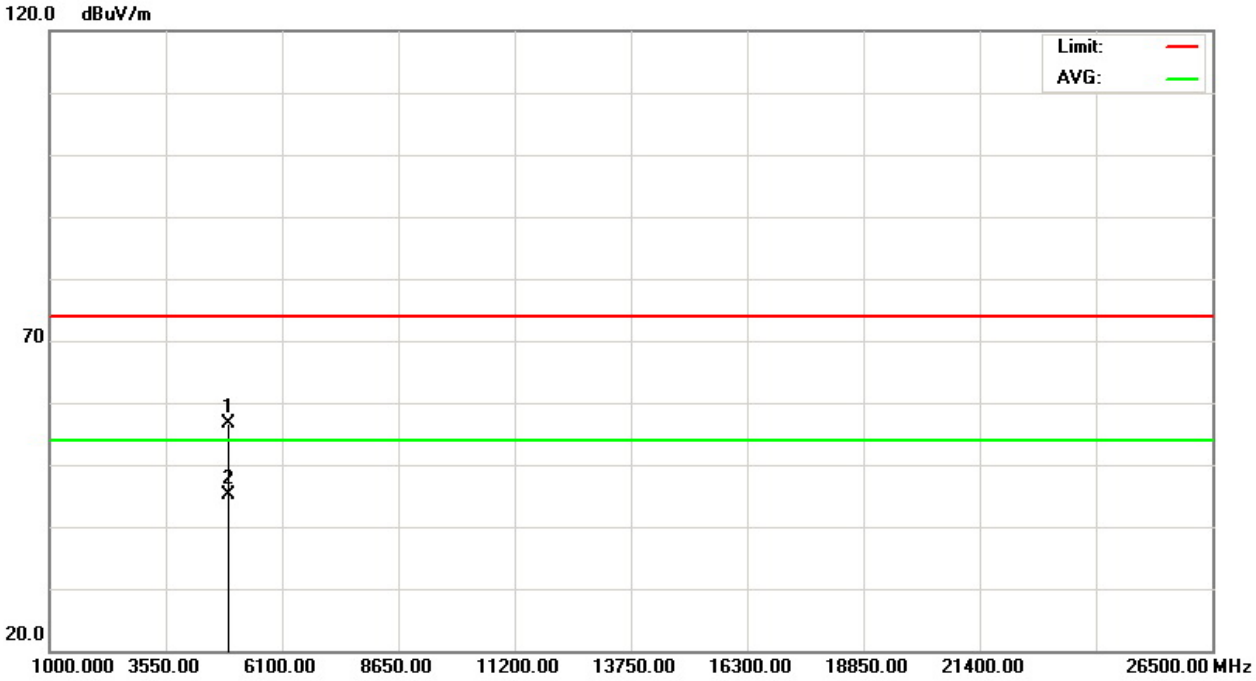
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(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(Above 1000 MHz, Horizontal)





EUT：	RF Module	Model Name ：	J20H049
Temperature：	25°C	Relative Humidity :	42%
Test Voltage :	AC 120V/60Hz (System)	Orthogonal Axes:	X
Test Mode ：	802.11n/20M/CH01 (X-2134031-X (175mm))		

Type F/H/E	Freq. (MHz)	Polarization H/V	Reading Level(dBuV) Peak	Reading Level(dBuV) AV	Correct Factor(dB)	Measurement(dBuV/m) Peak	Measurement(dBuV/m) AV	Limit(dBuV/m) Peak	Limit(dBuV/m) AV	Margin (dB)	Note
H	2390.000	V	36.70	19.08	30.89	67.59	49.97	74.00	54.00	- 4.03	AV
F	2407.000	V	70.46	60.96	30.96	101.42	91.92				
H	4873.064	V	46.29	32.87	2.86	49.15	35.73	74.00	54.00	- 18.27	AV

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 AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV 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 。

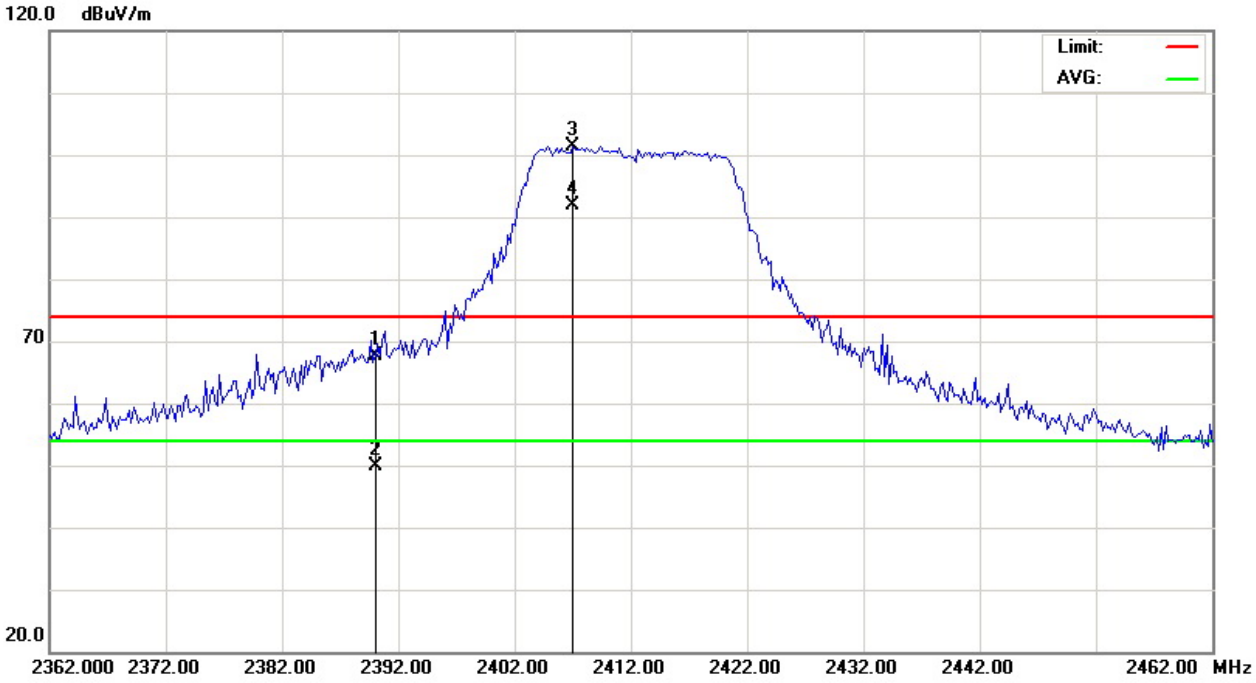
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

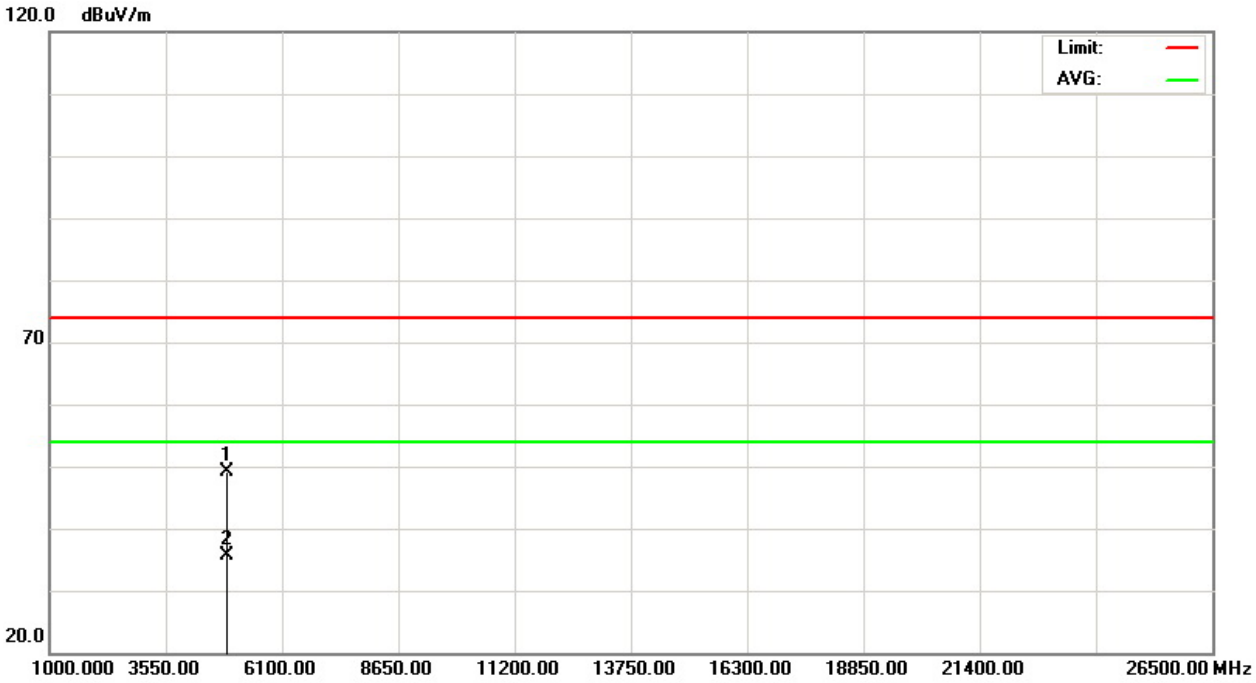
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(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
802.11n/20M/CH01(Above 1000 MHz, Vertical)





EUT：	RF Module	Model Name ：	J20H049
Temperature：	25°C	Relative Humidity :	42%
Test Voltage :	AC 120V/60Hz (System)	Orthogonal Axes:	X
Test Mode ：	802.11n/20M/CH01 (X-2134031-X (175mm))		

Type	Freq.	Polarization	Reading Level(dBuV)		Correct	Measurement(dBuV/m)		Limit(dBuV/m)		Margin	Note
F/H/E	(MHz)	H/V	Peak	AV	Factor(dB)	Peak	AV	Peak	AV	(dB)	
H	2390.000	H	37.06	19.15	30.89	67.95	50.04	74.00	54.00	- 3.96	AV
F	2408.000	H	70.96	61.03	30.96	101.92	91.99				
H	4882.464	H	45.71	34.81	2.89	48.60	37.70	74.00	54.00	- 16.30	AV

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 AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV 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 。

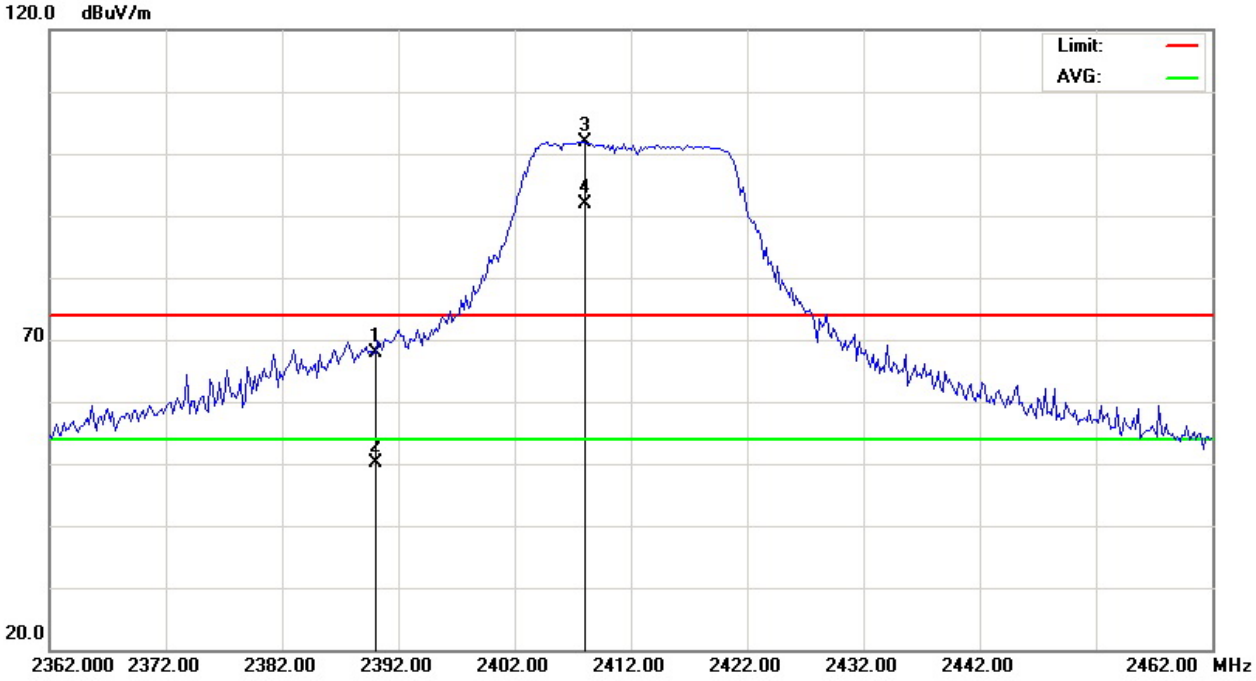
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

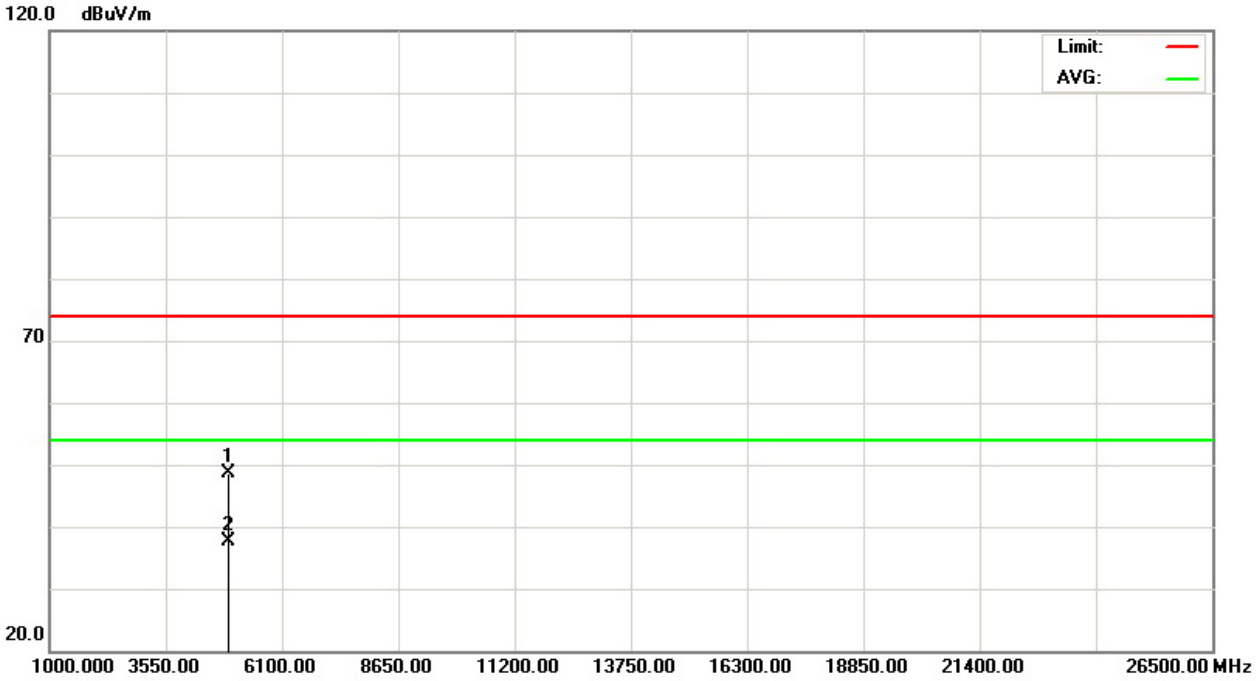
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(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
802.11n/20M/CH01(Above 1000 MHz, Horizontal)





EUT：	RF Module	Model Name ：	J20H049
Temperature：	25°C	Relative Humidity :	42%
Test Voltage :	AC 120V/60Hz (System)	Orthogonal Axes:	X
Test Mode ：	802.11n/20M/CH11 (X-2134031-X (175mm))		

Type F/H/E	Freq. (MHz)	Polarization H/V	Reading Level(dBuV) Peak	Reading Level(dBuV) AV	Correct Factor(dB)	Measurement(dBuV/m) Peak	Measurement(dBuV/m) AV	Limit(dBuV/m) Peak	Limit(dBuV/m) AV	Margin (dB)	Note
F	2463.000	V	69.16	58.53	31.19	100.35	89.72				
H	2483.500	V	27.90	18.21	31.28	59.18	49.49	74.00	54.00	- 4.51	AV
H	4923.940	V	54.62	44.32	3.03	57.65	47.35	74.00	54.00	- 6.65	AV

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 AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV 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 。

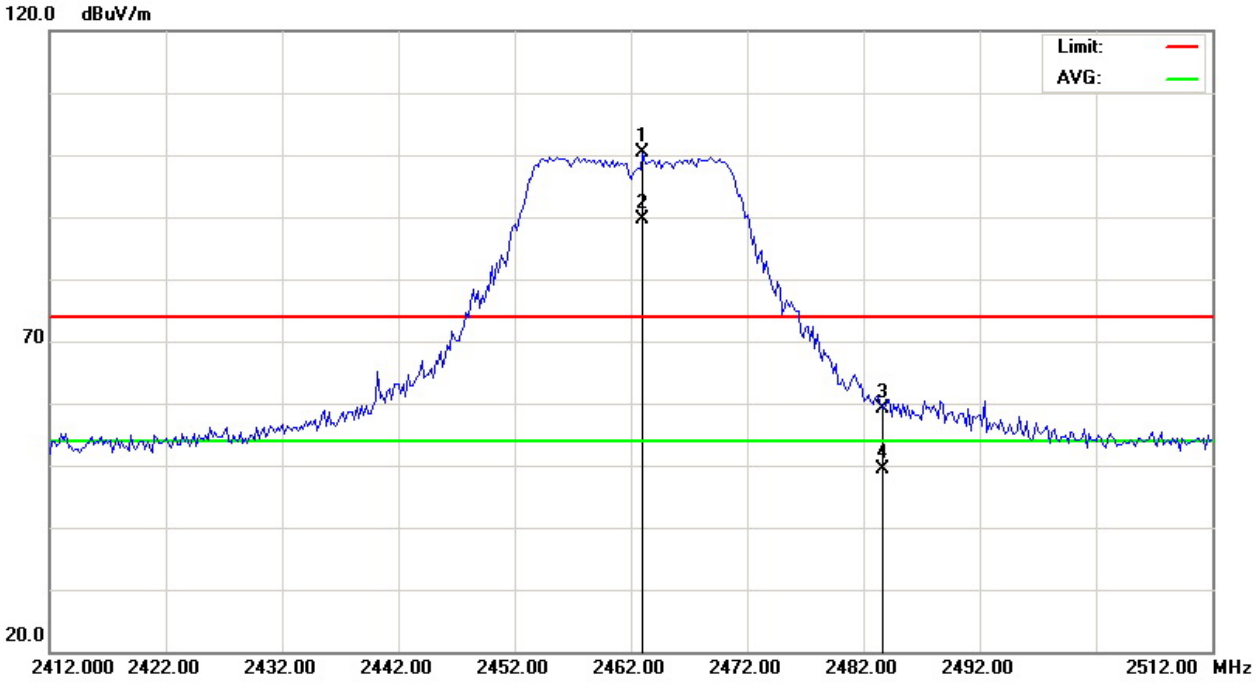
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

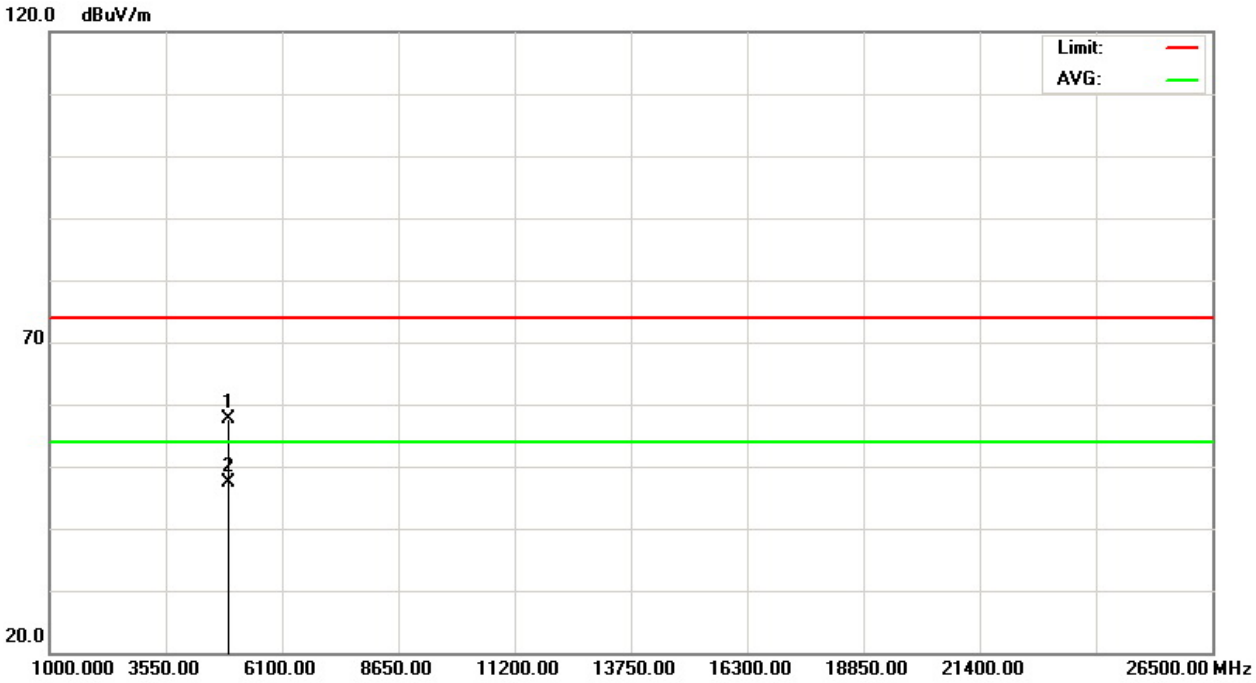
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(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
802.11n/20M/CH11(Above 1000 MHz, Vertical)





EUT：	RF Module	Model Name ：	J20H049
Temperature：	25°C	Relative Humidity :	42%
Test Voltage :	AC 120V/60Hz (System)	Orthogonal Axes:	X
Test Mode ：	802.11n/20M/CH11 (X-2134031-X (175mm))		

Type	Freq.	Polarization	Reading Level(dBuV)		Correct	Measurement(dBuV/m)		Limit(dBuV/m)		Margin	Note
F/H/E	(MHz)	H/V	Peak	AV	Factor(dB)	Peak	AV	Peak	AV	(dB)	
F	2458.000	H	70.51	60.62	31.17	101.68	91.79				
H	2483.500	H	29.93	20.30	31.28	61.21	51.58	74.00	54.00	- 2.42	AV
H	4923.340	H	51.32	41.60	3.03	54.35	44.63	74.00	54.00	- 9.37	AV

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 AV in column of『Note』. Peak denotes that the Peak reading compliance with the AV Limits and then AV 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 。

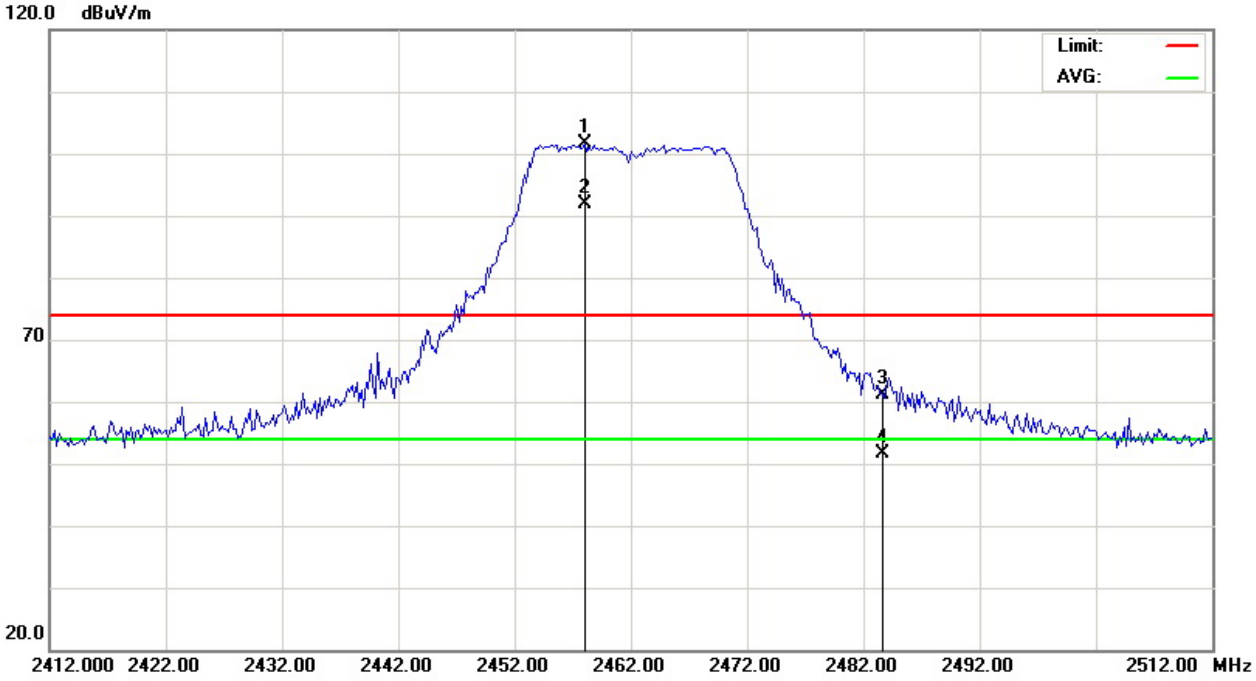
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

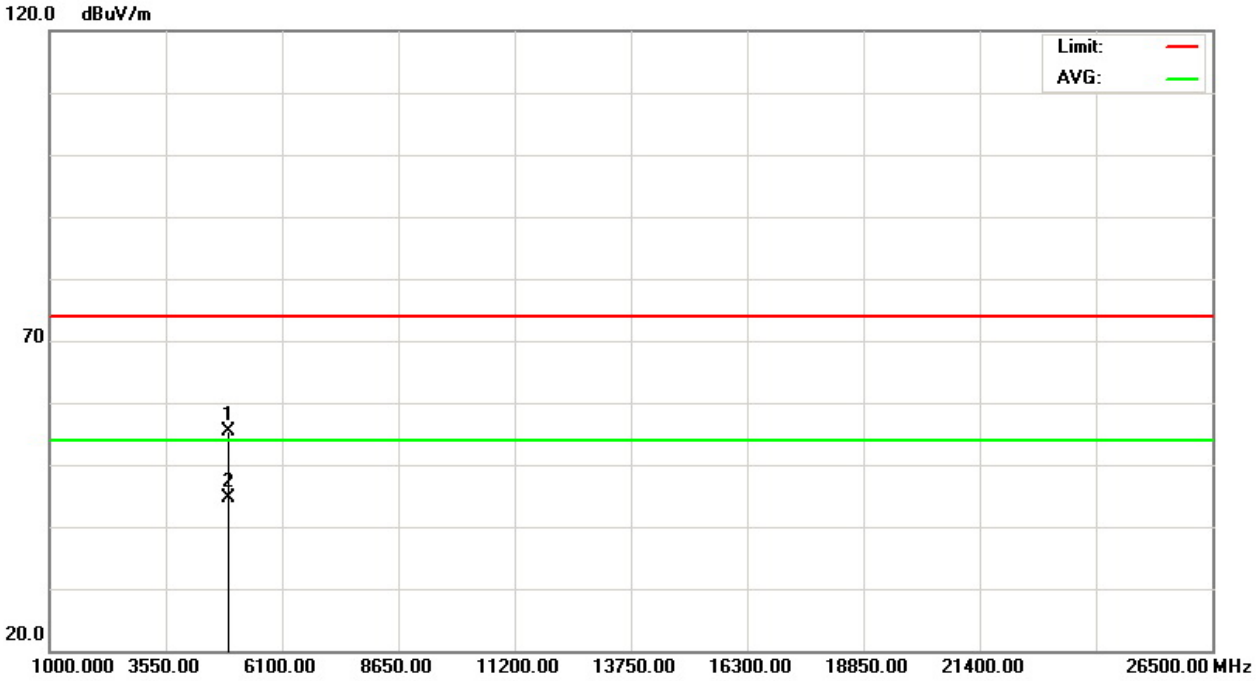
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(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
802.11n/20M/CH11(Above 1000 MHz, Horizontal)





4.1.9 TEST RESULTS-RESTRICTED BANDS REQUIREMENTS

EUT：	RF Module	Model Name ：	J20H049
Temperature：	25°C	Relative Humidity :	42%
Test Voltage :	AC 120V/60Hz (System)	Orthogonal Axes:	X
Test Mode ：	802.11b (X-2134031-X (175mm)) (Vertical)		
Note：	The emission of the carrier radiated field strength is measured for CH01/CH11 (Peak and AV) as following: 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. 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.		

Freq.	Polarization	Reading Level(dBuV)		Correct	Measurement(dBuV/m)		Limit(dBuV/m)		Margin	Note
(MHz)	H/V	Peak	AV	Factor(dB)	Peak	AV	Peak	AV	(dB)	
2390.000	V	22.27	14.19	30.89	53.16	45.08	74.00	54.00	- 8.92	AV
2483.500	V	22.65	12.11	31.28	53.93	43.39	74.00	54.00	- 10.61	AV

Remark：

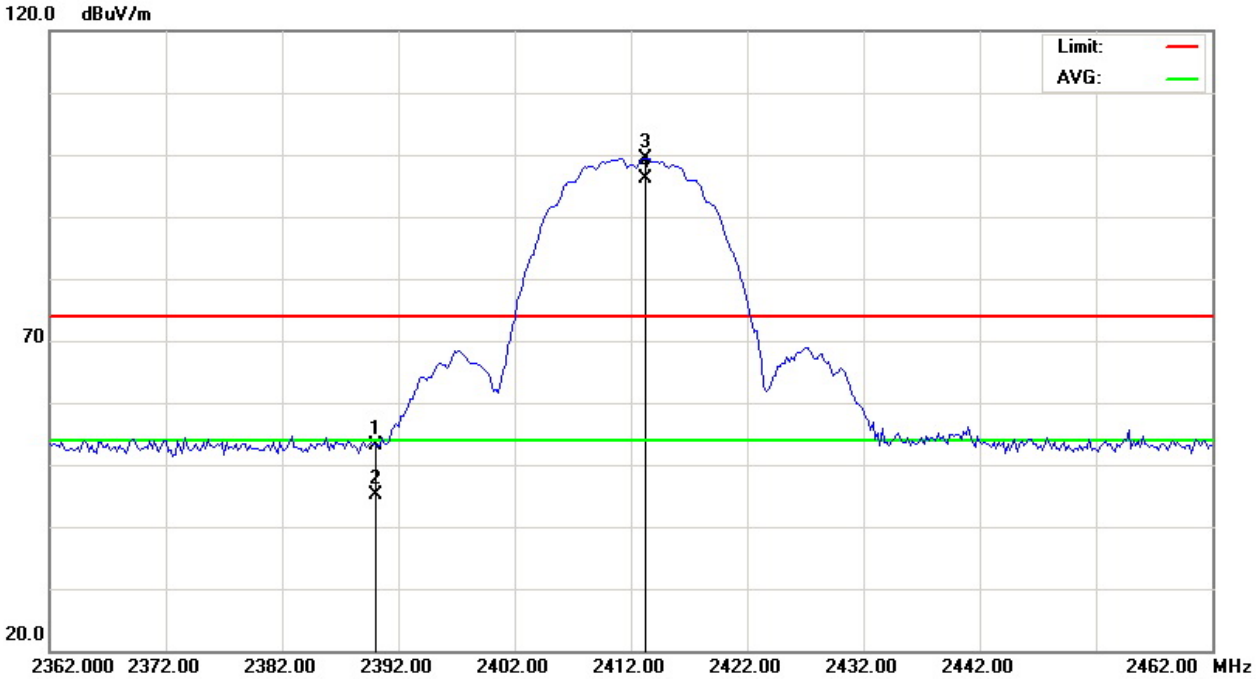
(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

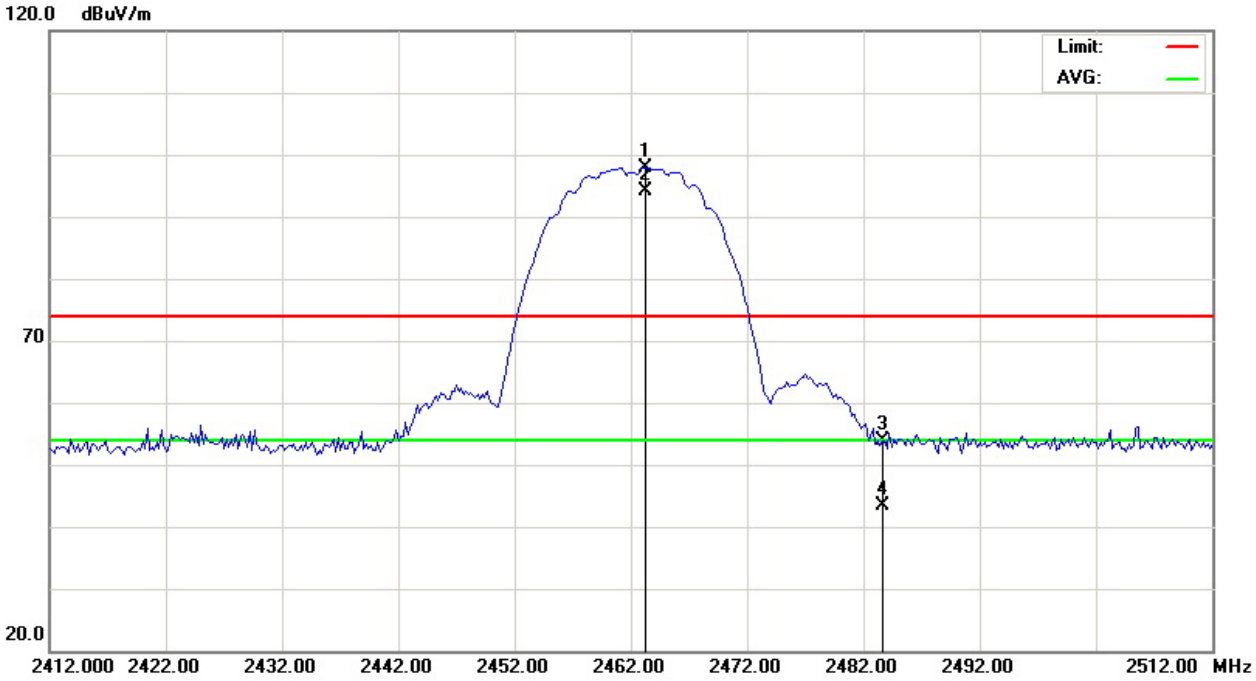
(2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

(3) EUT Orthogonal Axes：

"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

802.11b (Restricted Bands Requirements, Vertical)





EUT：	RF Module	Model Name ：	J20H049
Temperature：	25°C	Relative Humidity：	42%
Test Voltage：	AC 120V/60Hz (System)	Orthogonal Axes:	X
Test Mode ：	802.11b (X-2134031-X (175mm)) (Horizontal)		
Note：	The emission of the carrier radiated field strength is measured for CH01/CH11 (Peak and AV) as following: 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. 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.		

Freq.	Polarization	Reading Level(dBuV)		Correct	Measurement(dBuV/m)		Limit(dBuV/m)		Margin	Note
(MHz)	H/V	Peak	AV	Factor(dB)	Peak	AV	Peak	AV	(dB)	
2390.000	H	23.48	13.30	30.89	54.37	44.19	74.00	54.00	- 9.81	AV
2483.500	H	23.07	13.52	31.28	54.35	44.80	74.00	54.00	- 9.20	AV

Remark：

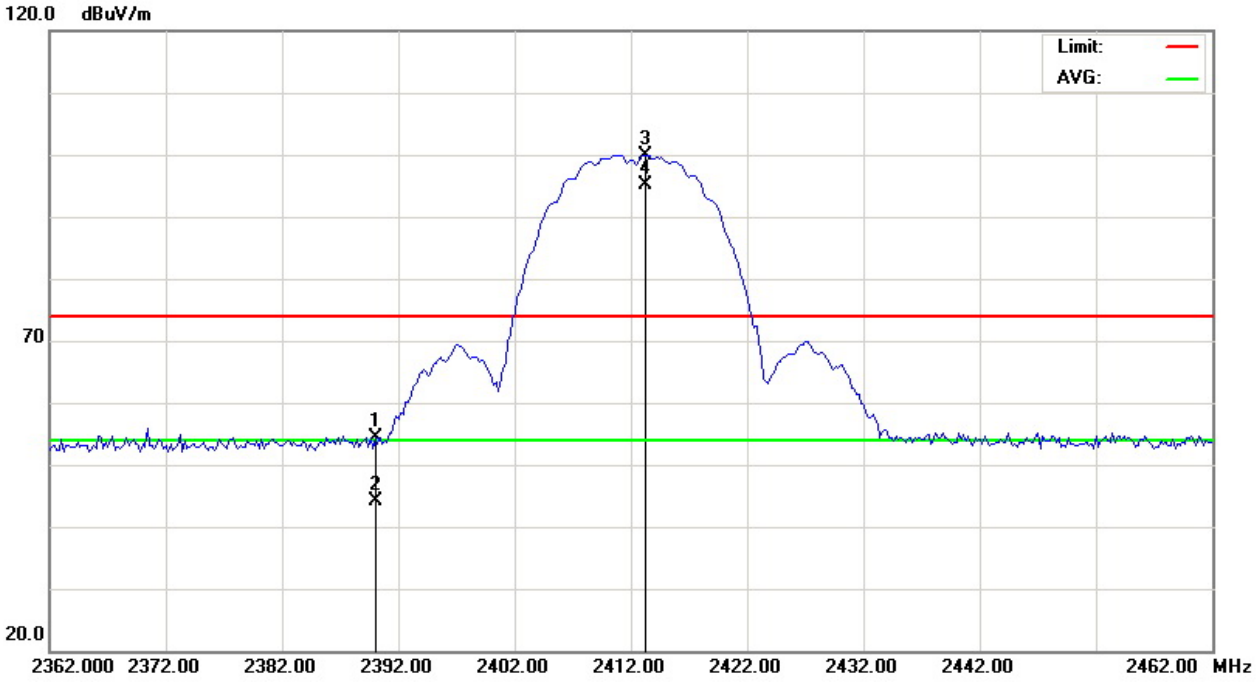
(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

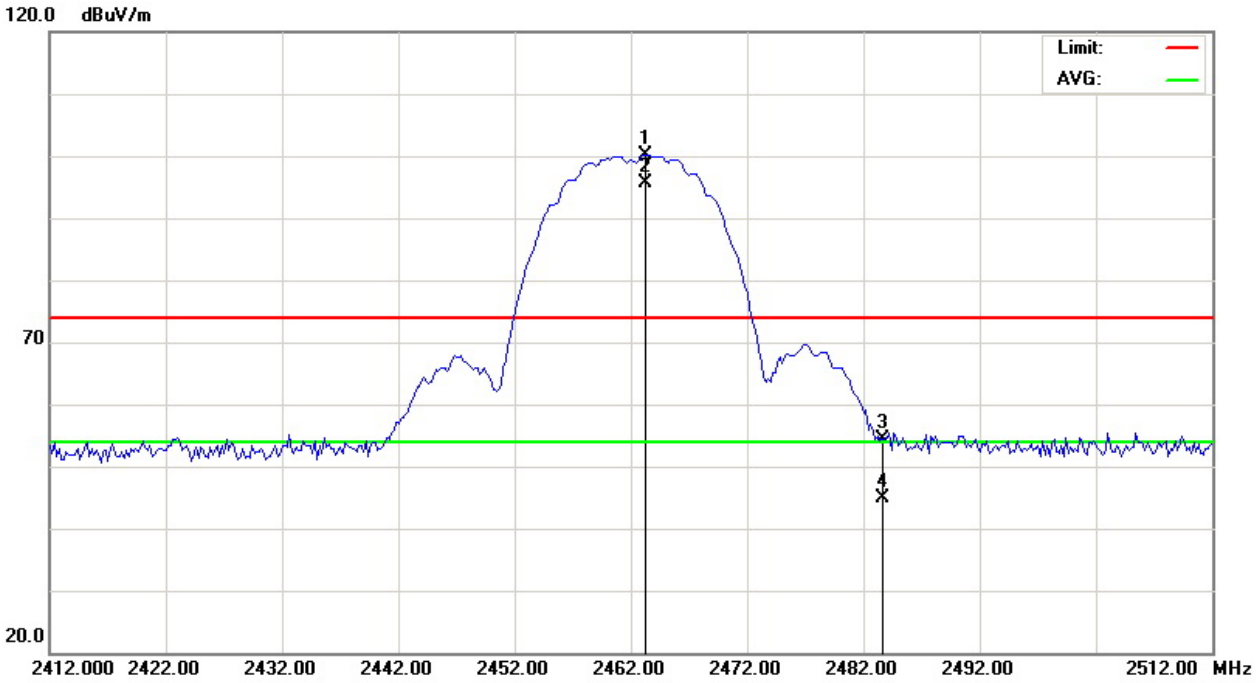
(2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

(3) EUT Orthogonal Axes：

"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

802.11b (Restricted Bands Requirements, Horizontal)





EUT：	RF Module	Model Name ：	J20H049
Temperature：	25°C	Relative Humidity :	42%
Test Voltage :	AC 120V/60Hz (System)	Orthogonal Axes:	X
Test Mode ：	802.11g (X-2134031-X (175mm)) (Vertical)		
Note：	The emission of the carrier radiated field strength is measured for CH01/CH11 (Peak and AV) as following: 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. 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.		

Freq.	Polarization	Reading Level(dBuV)		Correct	Measurement(dBuV/m)		Limit(dBuV/m)		Margin	Note
(MHz)	H/V	Peak	AV	Factor(dB)	Peak	AV	Peak	AV	(dB)	
2390.000	V	35.53	14.50	30.89	66.42	45.39	74.00	54.00	- 7.58	Peak
2483.500	V	31.12	17.81	31.28	62.40	49.09	74.00	54.00	- 4.91	AV

Remark：

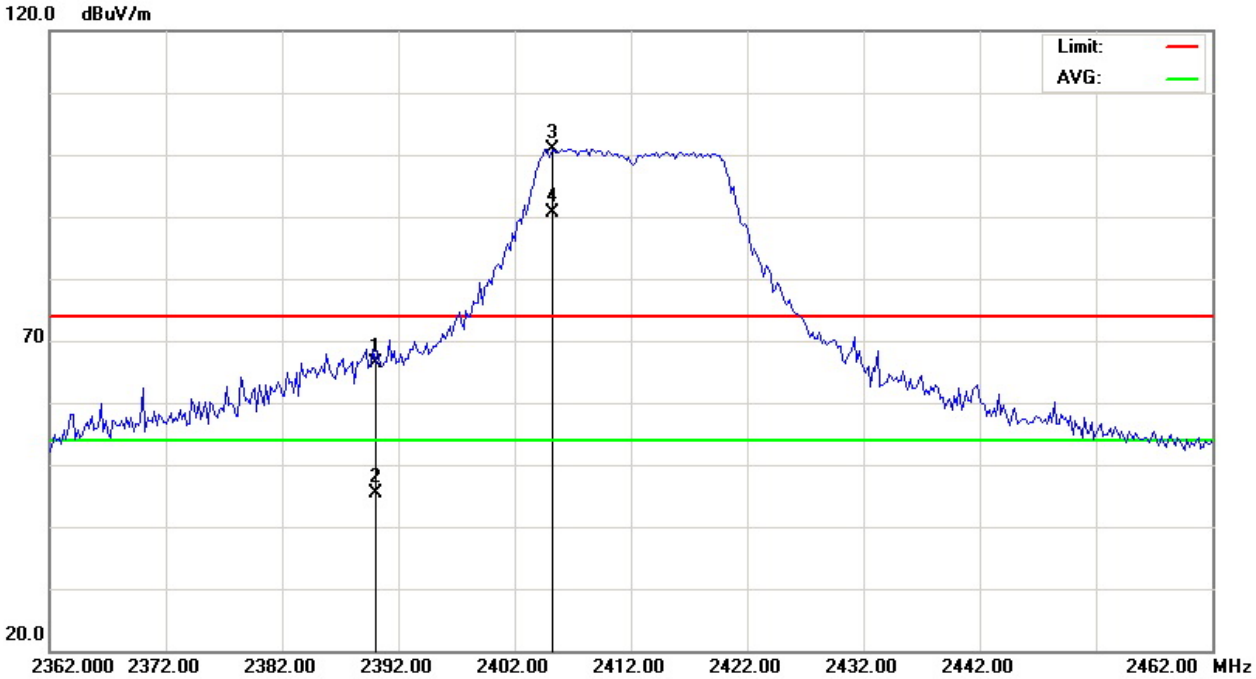
(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

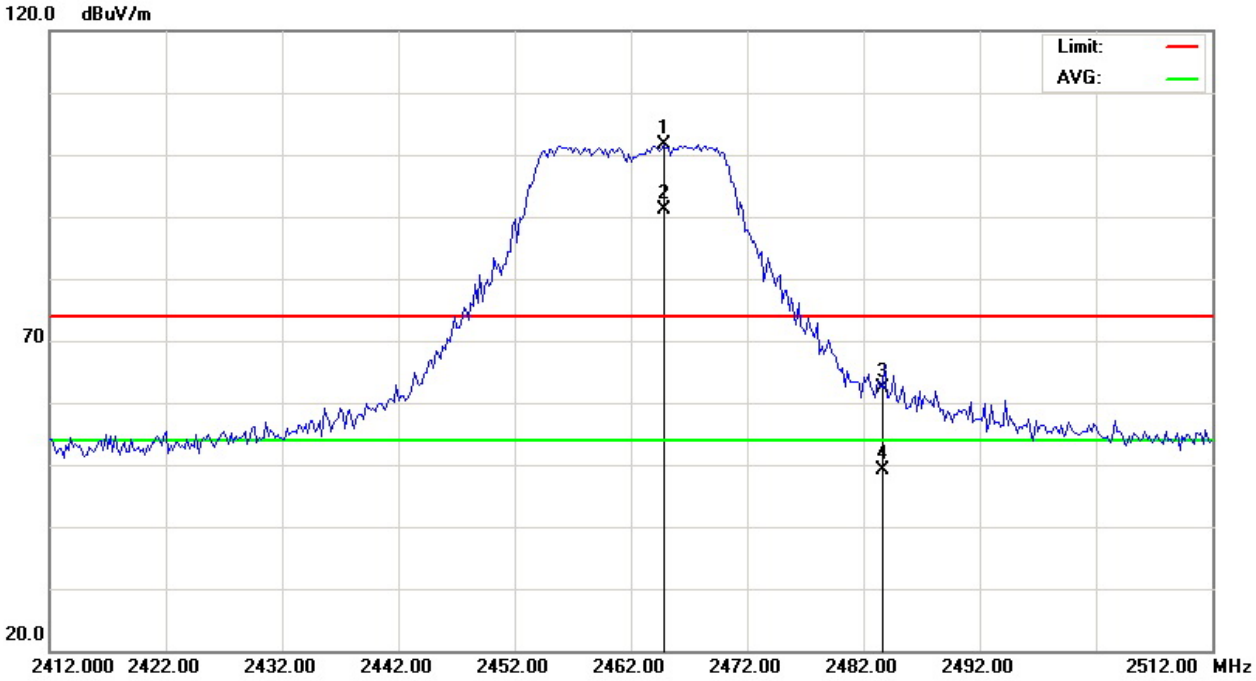
(2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

(3) EUT Orthogonal Axes：

"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

802.11g (Restricted Bands Requirements, Vertical)





EUT：	RF Module	Model Name ：	J20H049
Temperature：	25°C	Relative Humidity：	42%
Test Voltage：	AC 120V/60Hz (System)	Orthogonal Axes:	X
Test Mode ：	802.11g (X-2134031-X (175mm)) (Horizontal)		
Note：	The emission of the carrier radiated field strength is measured for CH01/CH11 (Peak and AV) as following: 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. 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.		

Freq.	Polarization	Reading Level(dBuV)		Correct	Measurement(dBuV/m)		Limit(dBuV/m)		Margin	Note
(MHz)	H/V	Peak	AV	Factor(dB)	Peak	AV	Peak	AV	(dB)	
2390.000	H	36.43	14.61	30.89	67.32	45.50	74.00	54.00	- 6.68	Peak
2483.500	H	30.56	18.13	31.28	61.84	49.41	74.00	54.00	- 4.59	AV

Remark：

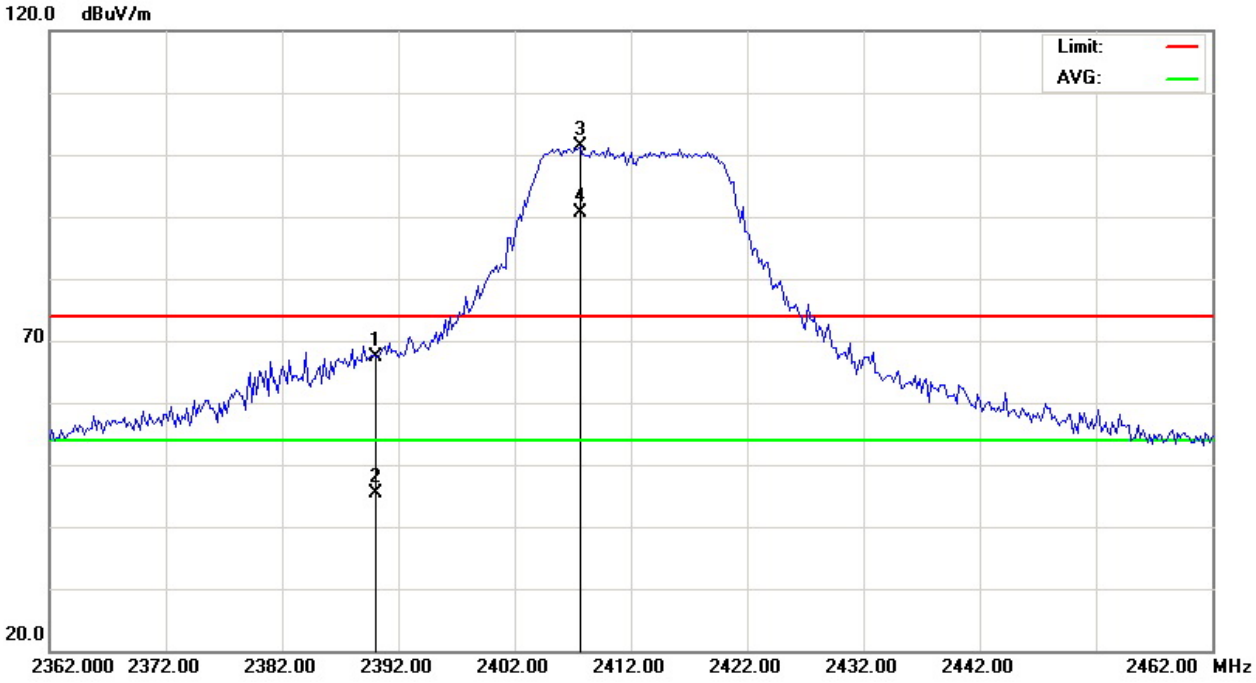
(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

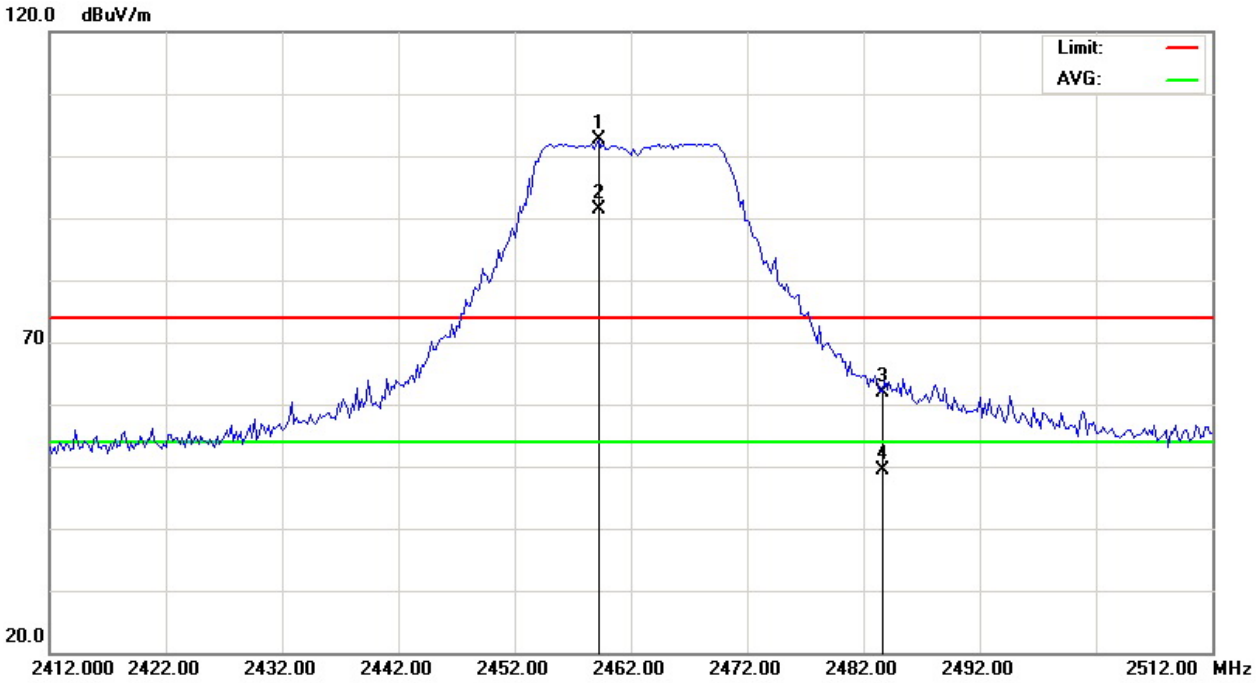
(2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

(3) EUT Orthogonal Axes：

"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

802.11g (Restricted Bands Requirements, Horizontal)





EUT：	RF Module	Model Name ：	J20H049
Temperature：	25°C	Relative Humidity :	42%
Test Voltage :	AC 120V/60Hz (System)	Orthogonal Axes:	X
Test Mode ：	802.11n/20M (X-2134031-X (175mm)) (Vertical)		
Note：	The emission of the carrier radiated field strength is measured for CH01/CH11 (Peak and AV) as following: 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. 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.		

Freq.	Polarization	Reading Level(dBuV)		Correct	Measurement(dBuV/m)		Limit(dBuV/m)		Margin	Note
(MHz)	H/V	Peak	AV	Factor(dB)	Peak	AV	Peak	AV	(dB)	
2390.000	V	36.70	19.08	30.89	67.59	49.97	74.00	54.00	- 4.03	AV
2483.500	V	27.90	18.21	31.28	59.18	49.49	74.00	54.00	- 4.51	AV

Remark：

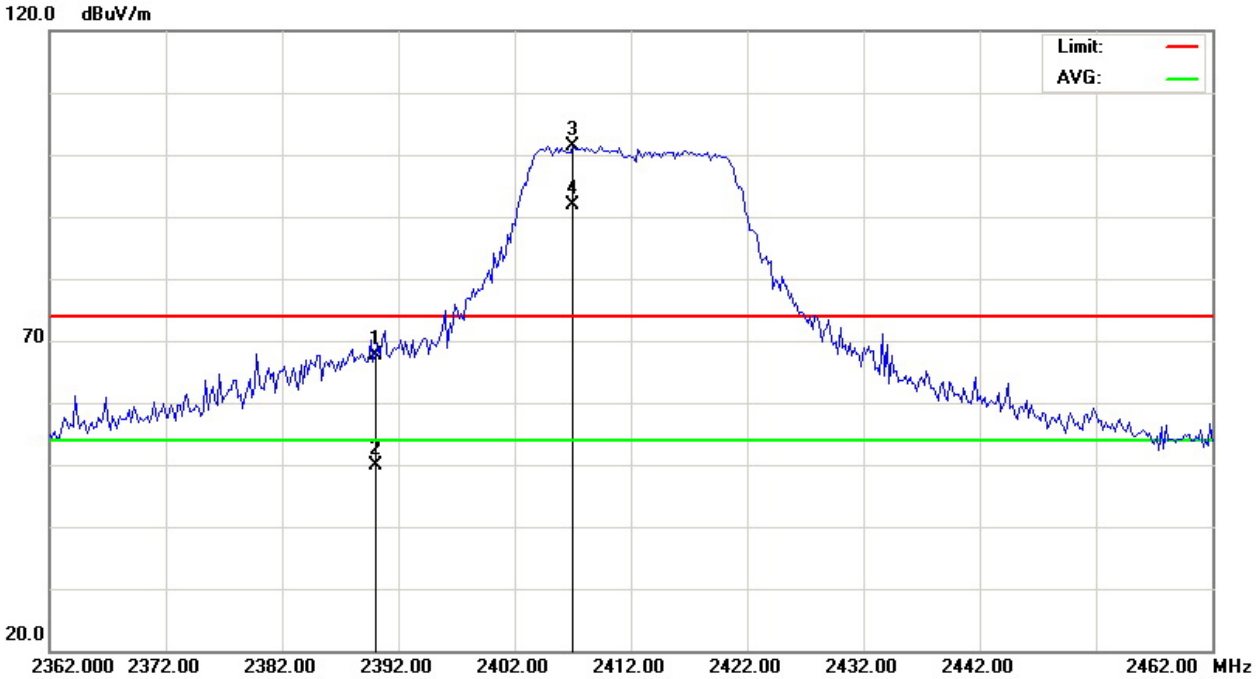
(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

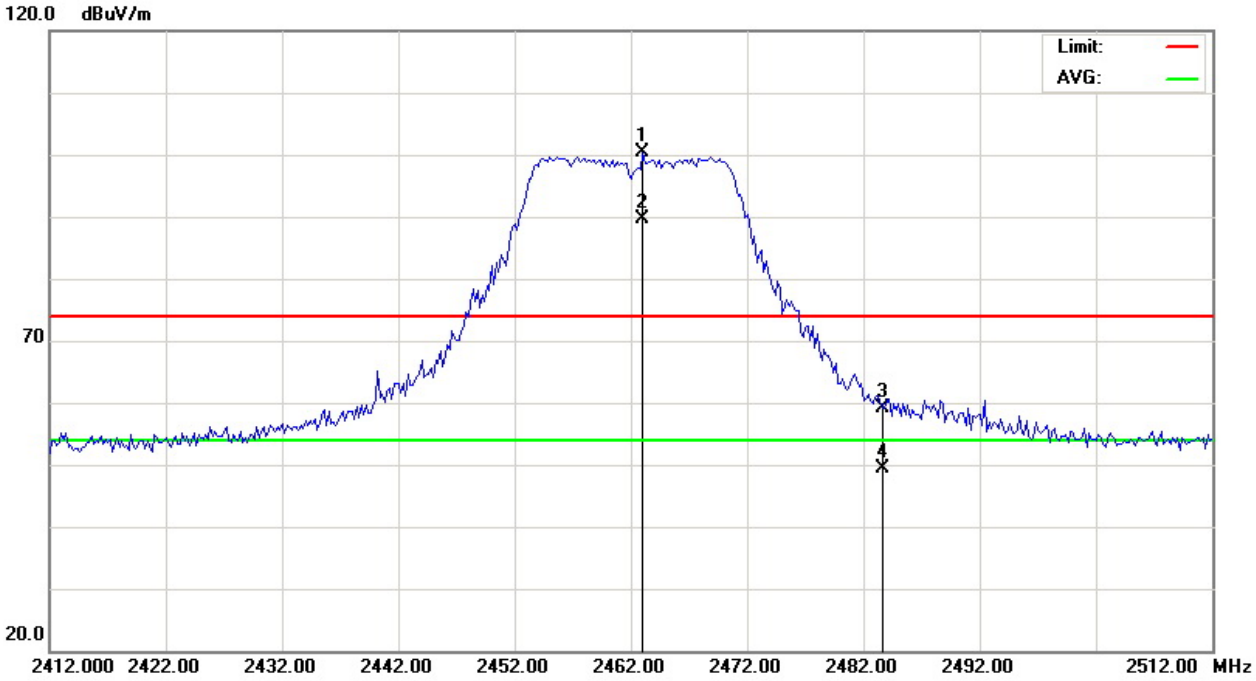
(2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

(3) EUT Orthogonal Axes：

"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

802.11n/20M (Restricted Bands Requirements, Vertical)





EUT：	RF Module	Model Name ：	J20H049
Temperature：	25°C	Relative Humidity：	42%
Test Voltage：	AC 120V/60Hz (System)	Orthogonal Axes:	X
Test Mode ：	802.11n/20M (X-2134031-X (175mm)) (Horizontal)		
Note：	The emission of the carrier radiated field strength is measured for CH01/CH11 (Peak and AV) as following: 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. 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.		

Freq.	Polarization	Reading Level(dBuV)		Correct	Measurement(dBuV/m)		Limit(dBuV/m)		Margin	Note
(MHz)	H/V	Peak	AV	Factor(dB)	Peak	AV	Peak	AV	(dB)	
2390.000	H	37.06	19.15	30.89	67.95	50.04	74.00	54.00	- 3.96	AV
2483.500	H	29.93	20.30	31.28	61.21	51.58	74.00	54.00	- 2.42	AV

Remark：

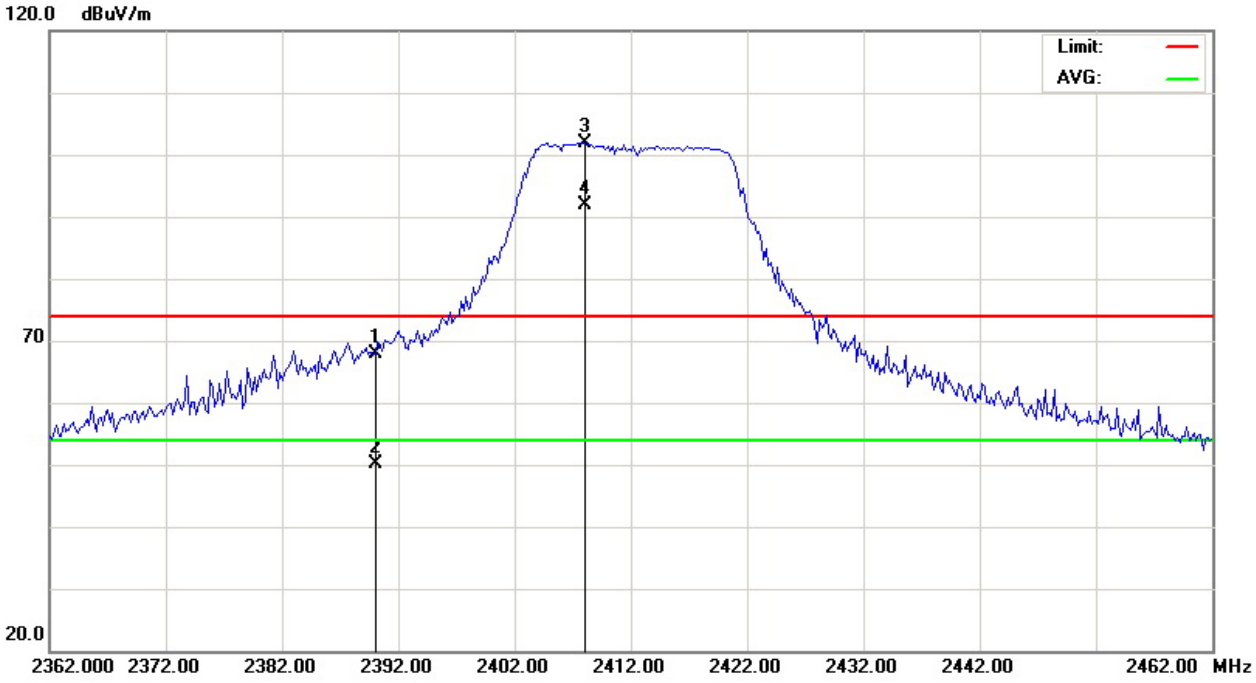
(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

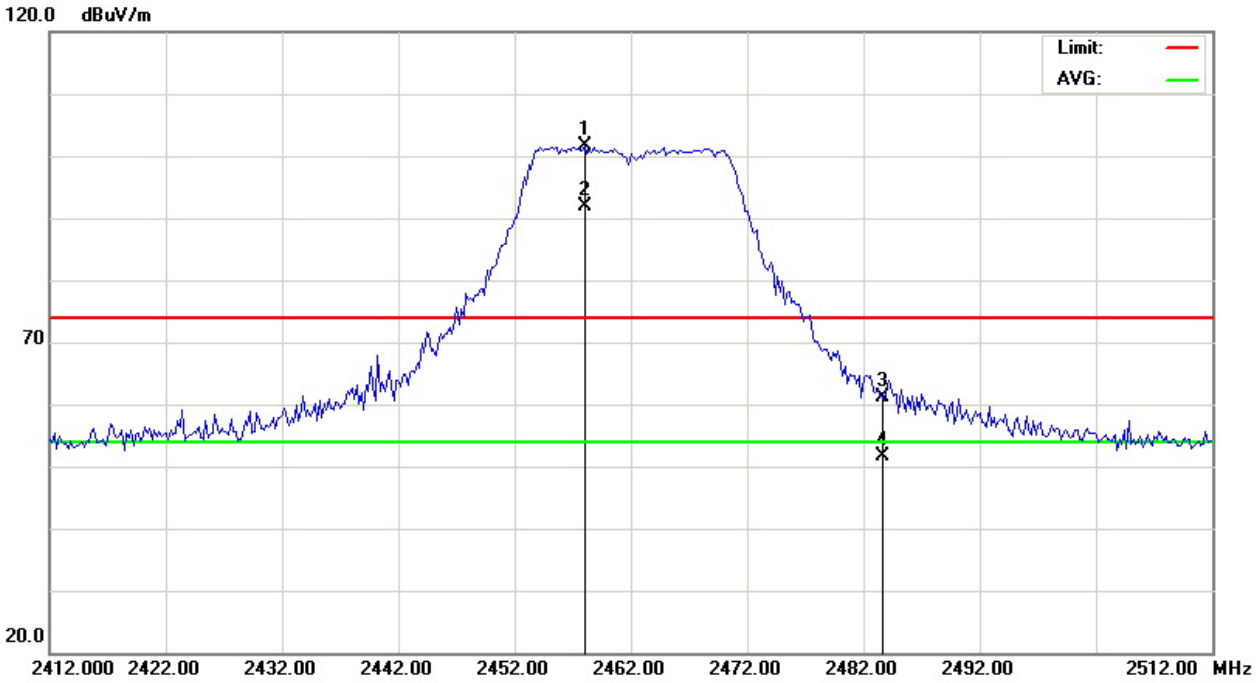
(2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

(3) EUT Orthogonal Axes：

"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand

802.11n/20M (Restricted Bands Requirements, Horizontal)





5. RF EXPOSURE TEST

5.1 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^2)	Averaging Time $\|E\|^2$,$\|H\|^2$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^2)	Averaging Time $\|E\|^2$,$\|H\|^2$ 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

5.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Power Meter	Anritsu	ML2487A	6K00004714	Feb. 17, 2012
2	Power Meter Sensor	Anritsu	MA2491A	34138	Feb. 17, 2012

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

5.1.2 MPE CALCULATION METHOD

E (V/m) $= \frac{\sqrt{30 \times P \times G}}{d}$ Power Density: *Pd* (W/m²) $= \frac{E^2}{377}$

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

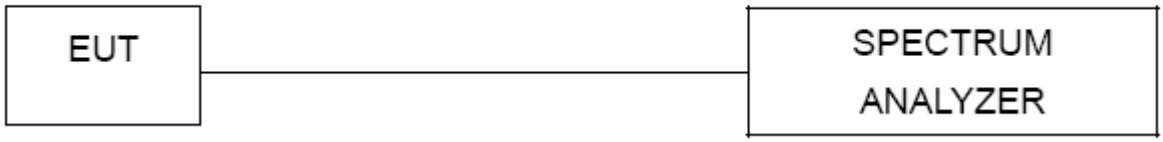
Pd $= \frac{30 \times P \times G}{377 \times d^2}$

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

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.

5.1.6 TEST RESULTS

EUT：	RF Module	Model Name ：	J20H049
Temperature：	13℃	Relative Humidity：	64%
Test Voltage：	AC 120V/60Hz (System)		
Test Mode ：	802.11b (**X-2134031-X (175mm)**)		

Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)
2412	-4.56	0.3499	19.5900	90.9913	0.006338	1
2462	-4.56	0.3499	19.4700	88.5116	0.006165	1

EUT：	RF Module	Model Name ：	J20H049
Temperature：	13℃	Relative Humidity：	64%
Test Voltage：	AC 120V/60Hz (System)		
Test Mode ：	802.11g (**X-2134031-X (175mm)**)		

Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)
2412	-4.56	0.3499	25.4900	353.9973	0.024658	1
2462	-4.56	0.3499	25.5400	358.0964	0.024943	1

EUT：	RF Module	Model Name ：	J20H049
Temperature：	13℃	Relative Humidity：	64%
Test Voltage：	AC 120V/60Hz (System)		
Test Mode ：	802.11n HT20 Single TX (**X-2134031-X (175mm)**)		

Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)
2412	-4.56	0.3499	25.0200	317.6874	0.022128	1
2462	-4.56	0.3499	25.0300	318.4198	0.022179	1

7. HISTORY

Original Issue Date:	
Report No.:	
■ No additional attachment	
☐ Additional attachment were issued as following record:	

Attachment No.	Issue Date	Description