Wireless LAN Radio Test Report

FCC ID: Q3N-8230

This report concerns (check one) : ■ **Original Grant** □ **Class I Change**

Issued Date : May 25, 2011
Project No. : R1011008
Equipment : Terminal
Model Name : 8230

Applicant : CIPHERLAB CO., LTD.
Address : 12F, 333, Dunhua S. Rd., Sec. 2, Taipei, Taiwan

Tested by: Neutron Engineering Inc. EMC Laboratory
Date of Receipt: Apr. 28, 2011
Date of Test: Apr. 28, 2011 ~ May 23, 2011

Testing Engineer : Gary Chou
(Gary Chou)

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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 : Terminal
Brand Name : CIPHERLAB
Model Name : 8230
Applicant : CIPHERLAB CO., LTD.
Date of Test : Apr. 28, 2011 ~ May 23, 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-R1011008) 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
15.207	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) Portable device; SAR report is required.

2.1 TEST FACILITY

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

C01: (VCCI RN: C-2918; T-1666; FCC RN: 95335; FCC DN: TW1010)
No.132-1, Lane 329, Sec. 2, Palian Road, Shijr City, Taipei, Taiwan.

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. Conducted Measurement :

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

B. Radiated Measurement :

Test Site	Item	Measurement Frequency Range		Uncertainty	NOTE
CB08	Radiated mission at 3m	Horizontal Polarization	30 - 00MHz	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

Equipment	Terminal
Brand Name	CIPHERLAB
Model Name	8230
OEM Brand/Model Name	N/A
Model Difference	Model 8230 contains three optional scanner types: 2D, LASER and CCD. All the above types were tested, and the model: 8230 (Scanner Type: 2D) was found to be the worst case during the pre-scanning test. This model of the worst case was used for final testing and collecting test data included in this report.
Product Description	The EUT is a Terminal. 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: Please see Note 2. Antenna Designation: Please see Note 3. Antenna Gain(Peak): Please see Note 3. EIRP Power: 802.11b: 16.58 dBm (Max.) 802.11g: 21.01 dBm (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	Battery supplied or DC Voltage supplied from External Power Supply.
Power Rating	Battery: DC 3.7V 1200Am 4.44Wh AC ADAPTER: I/P: AC 100-240V 47-63Hz 0.48A MAX / O/P: DC 5V 3A 15W MAX
Products Covered	Please refer to the User's Manual
Connecting I/O Port(s)	1 * Li-ion BATTERY PACK: CIPHERLAB BA-80S1A2 1 * AC ADAPTER: ADAPTER TECH. STD-05030V 1 * Connect Cable
EUT Modification(s)	N/A

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2.

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

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	CIPHERLAB	KXAN000000005	PIFA	Soldered	1.79

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
Mode 2	802.11g/CH01, CH06, CH11

For Conducted Test	
Final Test Mode	Description
Mode 1	802.11b/CH06

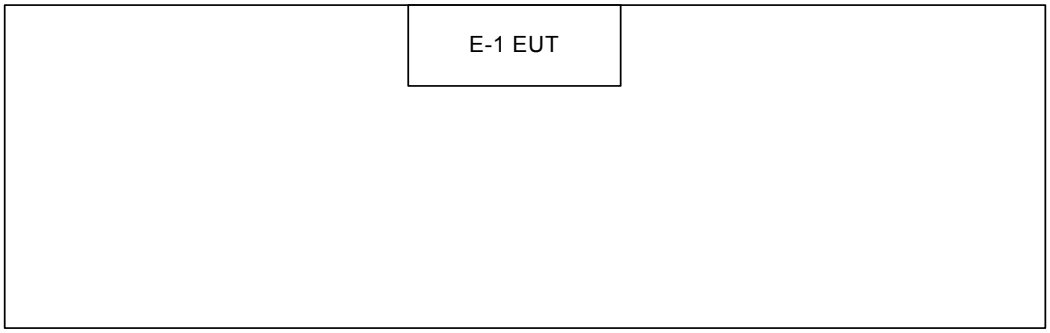
For Radiated Test	
Final Test Mode	Description
Mode 1	802.11b/CH01, CH06, CH11
Mode 2	802.11g/CH01, CH06, CH11

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	1.01a		
Frequency (MHz)	2412 MHz	2442 MHz	2462 MHz
IEEE 802.11b DSSS	20	20	20
IEEE 802.11g OFDM	14	20	20

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	Terminal	CIPHERLAB	8230 (Scanner Type: 2D)	Q3N-8230	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note

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 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.

(3) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(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	LISN	EMCO	3816/2	00042991	Feb. 16, 2012
2	Test Cable	TIMES	LMR-400	SR03_C_01&02	Aug. 20, 2011
3	Pulse Limiter	Electro-Metrics	EM-7600	112647	Dec. 13, 2011
4	EMI Test Receiver	R&S	ESCI	100082	Mar. 15, 2012
5	50Ω BNC TYPE Terminator	N/A	N/A	01	May 25, 2011
6	50Ω BNC TYPE Terminator	N/A	N/A	03	May 25, 2011
7	LISN	EMCO	4825/2	00028234	Jul. 22, 2011

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

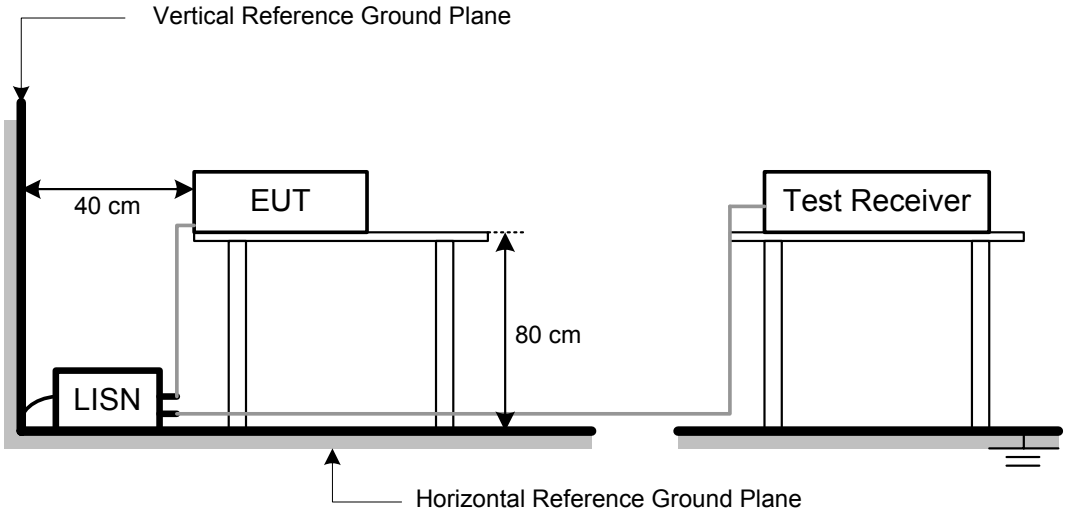
4.1.3 TEST PROCEDURE

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：	Terminal	Model Name :	8230 (Scanner Type: 2D)
Temperature：	24°C	Relative Humidity :	48%
Test Voltage：	AC 120V/60Hz		
Test Mode ：	802.11b/CH06		

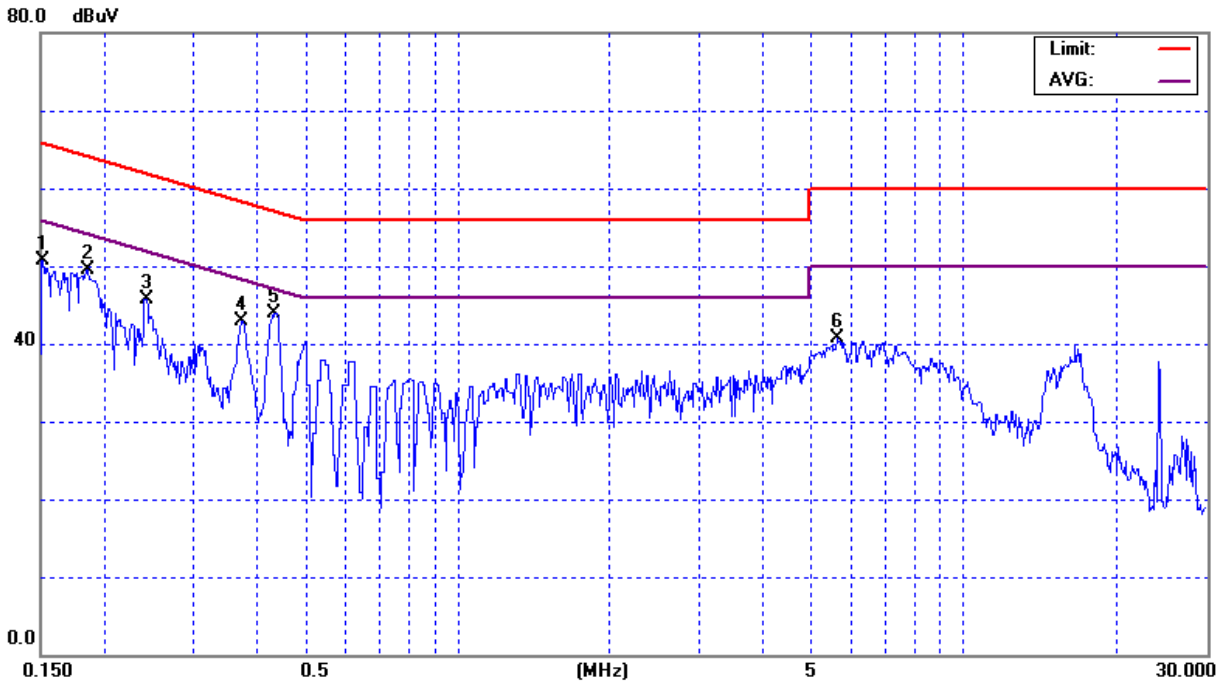
Freq. (MHz)	Terminal L/N	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV)		Limit(dBuV)		Margin (dB)	Note
		QP-Mode	AV-Mode		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.1514	Line	41.10	*	9.62	50.72	*	65.92	55.92	-15.20	(QP)
0.1850	Line	39.93	*	9.62	49.55	*	64.26	54.26	-14.71	(QP)
0.2417	Line	36.16	*	9.62	45.78	*	62.04	52.04	-16.26	(QP)
0.3740	Line	33.29	*	9.61	42.90	*	58.41	48.41	-15.51	(QP)
0.4328	Line	34.33	*	9.61	43.94	*	57.20	47.20	-13.26	(QP)
5.6500	Line	31.04	*	9.75	40.79	*	60.00	50.00	-19.21	(QP)

Remark

(1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9 kHz; SPA setting in RBW=10 kHz, VBW =10 kHz, Swp. Time = 0.2 sec./ MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10 kHz, VBW=10 kHz, 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) In the "Note" column, QP means the margin value of QP is higher than Average and the "Margin" column shows the margin value of QP; AV means the margin value of Average is higher than QP and the "Margin" column shows the margin value of Average.



EUT：	Terminal	Model Name :	8230 (Scanner Type: 2D)
Temperature：	24°C	Relative Humidity :	48%
Test Voltage：	AC 120V/60Hz		
Test Mode ：	802.11b/CH06		

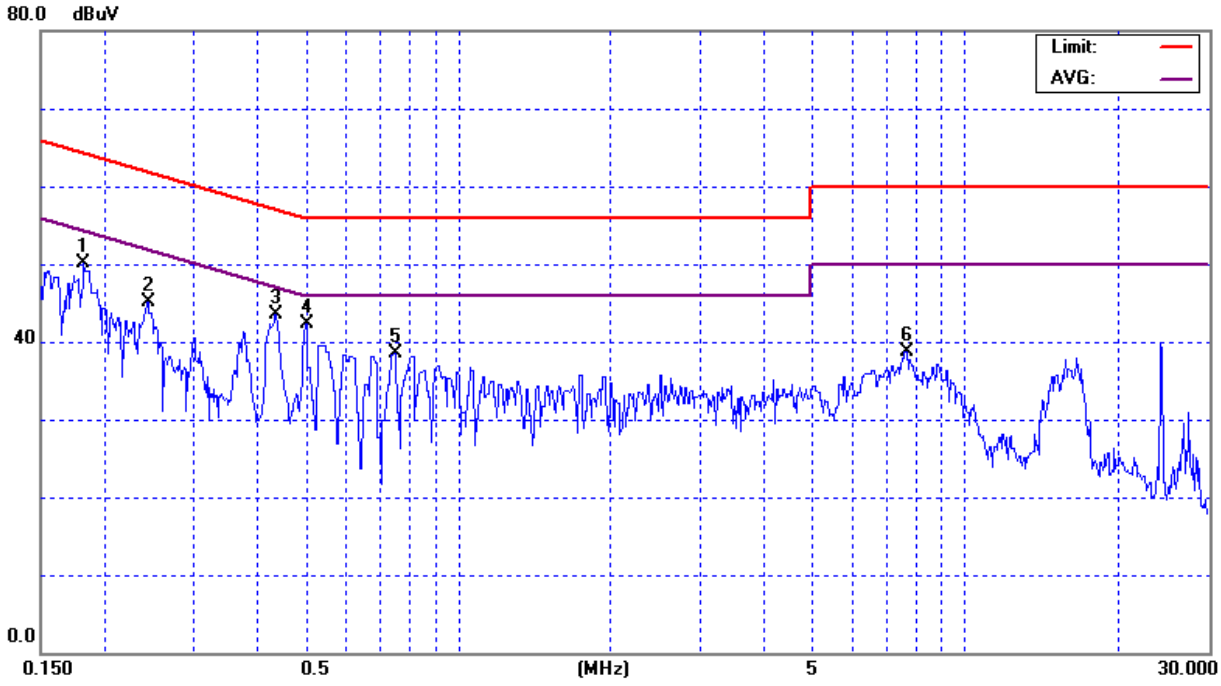
Freq. (MHz)	Terminal L/N	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV)		Limit(dBuV)		Margin (dB)	Note
		QP-Mode	AV-Mode		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.1822	Neutral	40.52	*	9.64	50.16	*	64.38	54.38	-14.22	(QP)
0.2438	Neutral	35.52	*	9.64	45.16	*	61.97	51.97	-16.81	(QP)
0.4356	Neutral	33.80	*	9.63	43.43	*	57.15	47.15	-13.72	(QP)
0.5000	Neutral	32.68	*	9.63	42.31	*	56.00	46.00	-13.69	(QP)
0.7520	Neutral	28.84	*	9.62	38.46	*	56.00	46.00	-17.54	(QP)
7.6500	Neutral	28.90	*	9.81	38.71	*	60.00	50.00	-21.29	(QP)

Remark

(1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9 kHz; SPA setting in RBW=10 kHz, VBW =10 kHz, Swp. Time = 0.2 sec./ MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10 kHz, VBW=10 kHz, 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) In the "Note" column, QP means the margin value of QP is higher than Average and the "Margin" column shows the margin value of QP; AV means the margin value of Average is higher than QP and the "Margin" column shows the margin value of Average.



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 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

4.2.2 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	Horn Antenna	Schwarzbeck	BBHA 9120	D-325	Dec. 08, 2011
3	Microwave Pre_amplifier	Agilent	8449B	3008A01714	Apr. 18, 2012
4	Microflex Cable	N/A	N/A	1m	May. 18, 2012
5	Microflex Cable	AISI	S104-SMAP-1	10m	Aug. 22, 2011
6	Microflex Cable	N/A	N/A	3m	Aug. 22, 2011
7	Test Cable	N/A	LMR-400	966_12m	Jun. 17, 2011
8	Test Cable	N/A	LMR-400	966_3m	Jun. 17, 2011
9	Pre-Amplifier	EMC	EMC-330	980001	Jun. 03, 2011
10	Log-Bicon Antenna	Schwarzbeck	VULB9168-352	9168-352	Jun. 17, 2011

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

4.2.3 TEST PROCEDURE

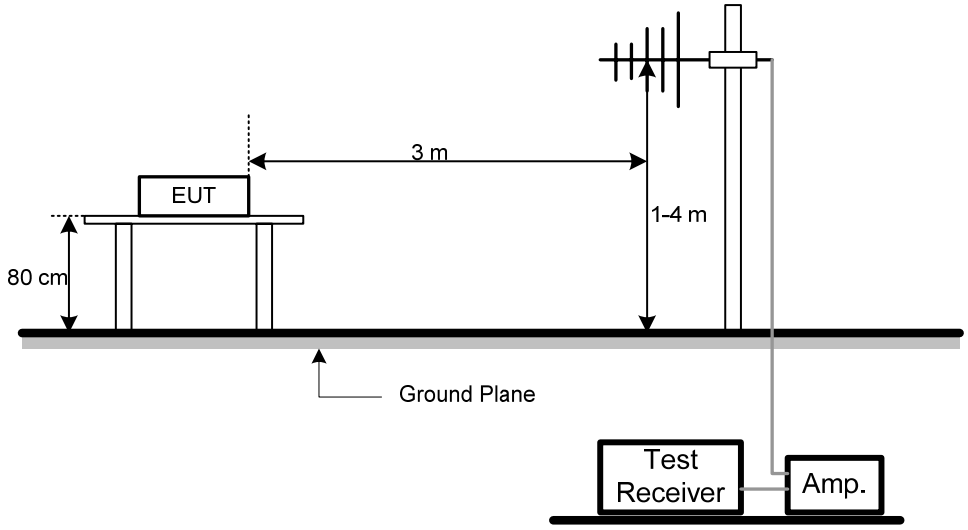
a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m Semi-anechoic chamber. The table was rotated 360 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.

4.2.4 DEVIATION FROM TEST STANDARD

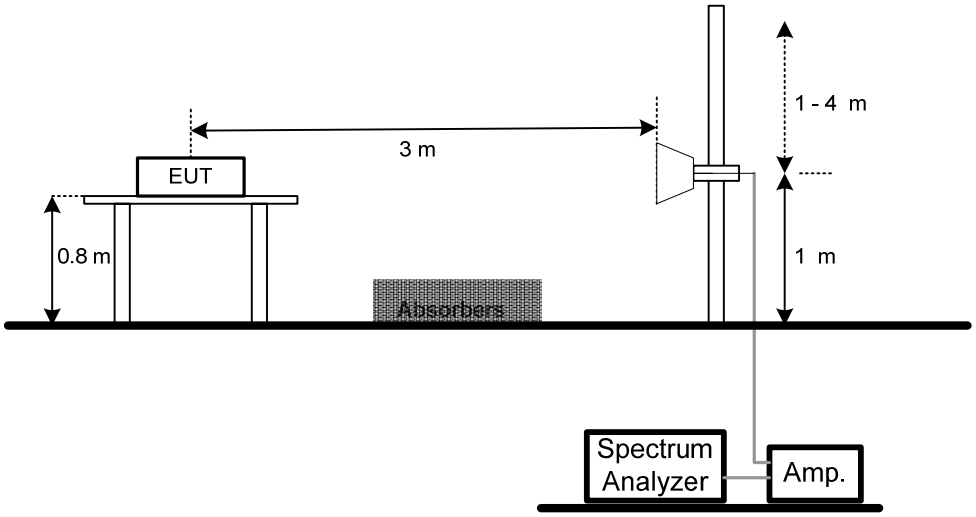
No deviation

4.2.5 TEST SETUP

Radiated Emission Test Set-Up Frequency 30 - 1000MHz



Radiated Emission Test Set-Up Frequency Above 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 - TX

EUT：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	AC 120V/60Hz		
Test Mode ：	802.11b/CH06		

Freq. (MHz)	Polarization H/V	Reading Level (dBuV)	Correct Factor(dB)	Measurement (dBuV/m)	Limit(Quasi-Peak) (dBuV/m)	Margin (dB)	Note
171.6199	V	50.83	-17.18	33.65	43.50	- 9.85	
282.2000	V	43.17	-16.30	26.87	46.00	- 19.13	
307.4200	V	40.19	-15.62	24.57	46.00	- 21.43	
402.4800	V	43.68	-13.20	30.48	46.00	- 15.52	
480.0799	V	36.28	-11.36	24.92	46.00	- 21.08	
699.2999	V	37.57	-7.39	30.18	46.00	- 15.82	

Remark：

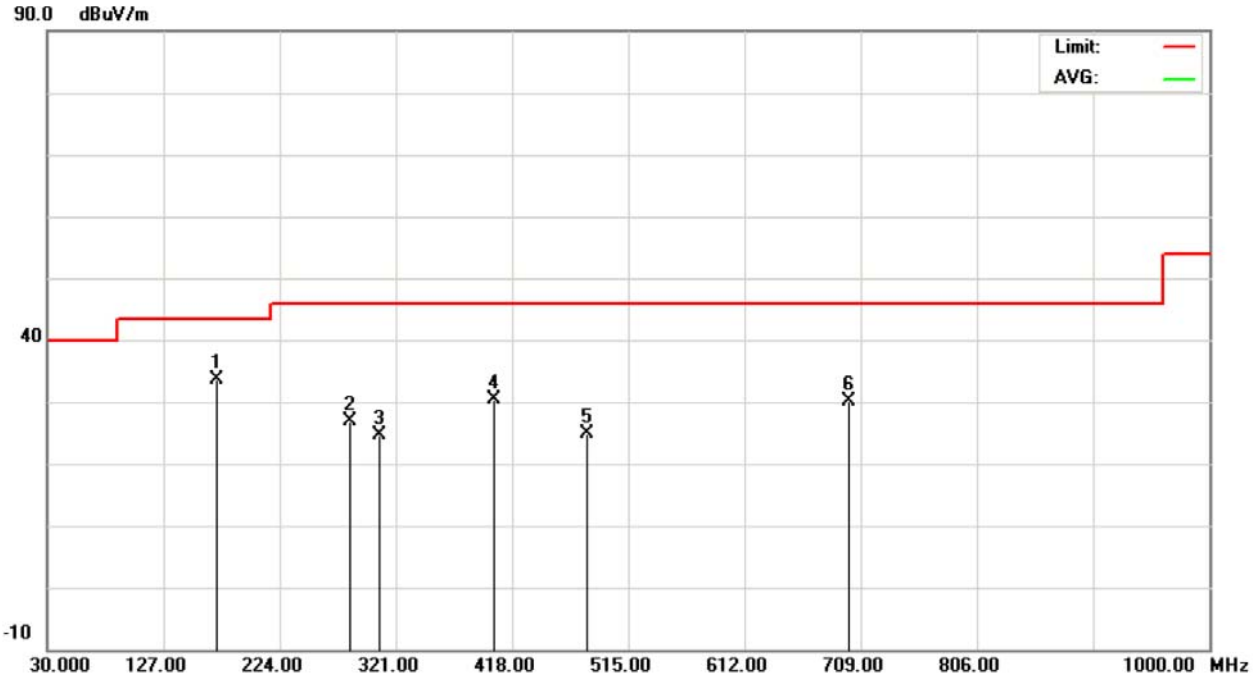
(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(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：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	AC 120V/60Hz		
Test Mode ：	802.11b/CH06		

Freq. (MHz)	Polarization H/V	Reading Level (dBuV)	Correct Factor(dB)	Measurement (dBuV/m)	Limit(Quasi-Peak) (dBuV/m)	Margin (dB)	Note
179.3800	H	41.44	-18.10	23.34	43.50	- 20.16	
256.9800	H	41.77	-17.39	24.38	46.00	- 21.62	
291.8999	H	42.94	-15.99	26.95	46.00	- 19.05	
385.0199	H	32.95	-13.65	19.30	46.00	- 26.70	
410.2399	H	35.76	-12.99	22.77	46.00	- 23.23	
503.3599	H	30.56	-10.94	19.62	46.00	- 26.38	

Remark：

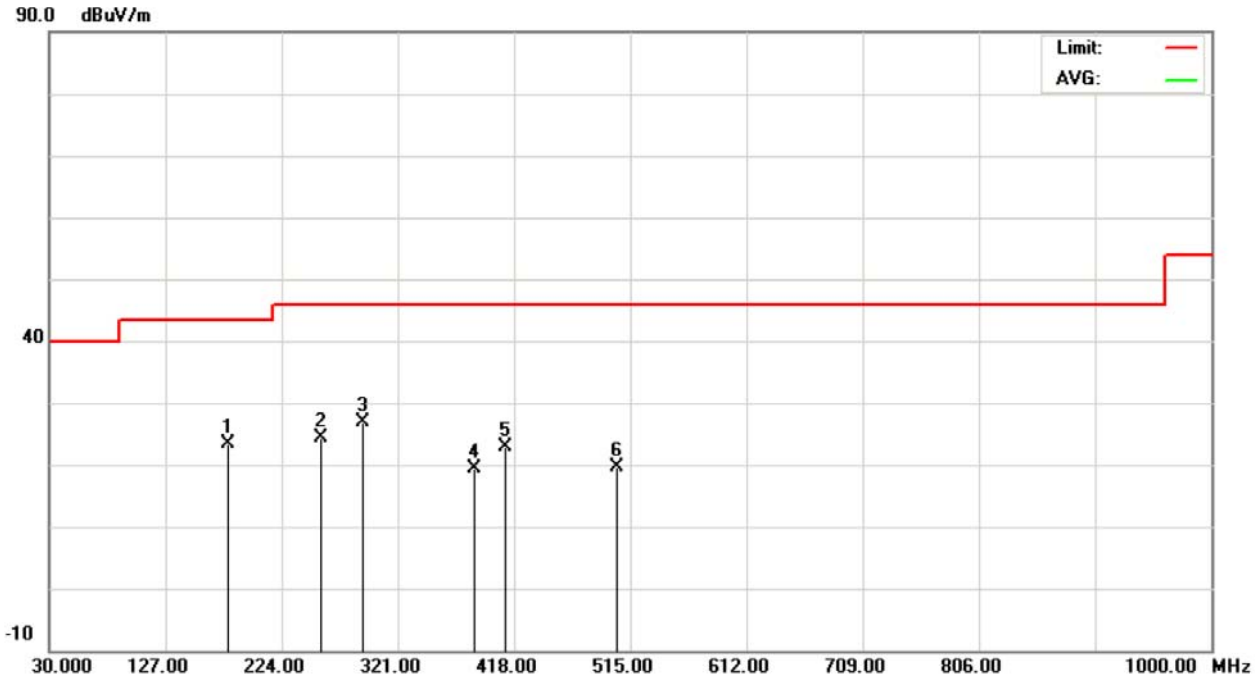
(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(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- TX

EUT：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity :	31%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode ：	802.11b/CH01		

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
E	2390.000	V	21.87	11.90	30.89	52.76	42.79	74.00	54.00	- 11.21	AV
F	2412.800	V	64.64	60.94	30.98	95.62	91.92				
H	4824.010	V	47.29	41.06	2.70	49.99	43.76	74.00	54.00	- 10.24	AV
H	7235.120	V	44.44	33.83	8.30	52.74	42.13	74.00	54.00	- 11.87	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 。

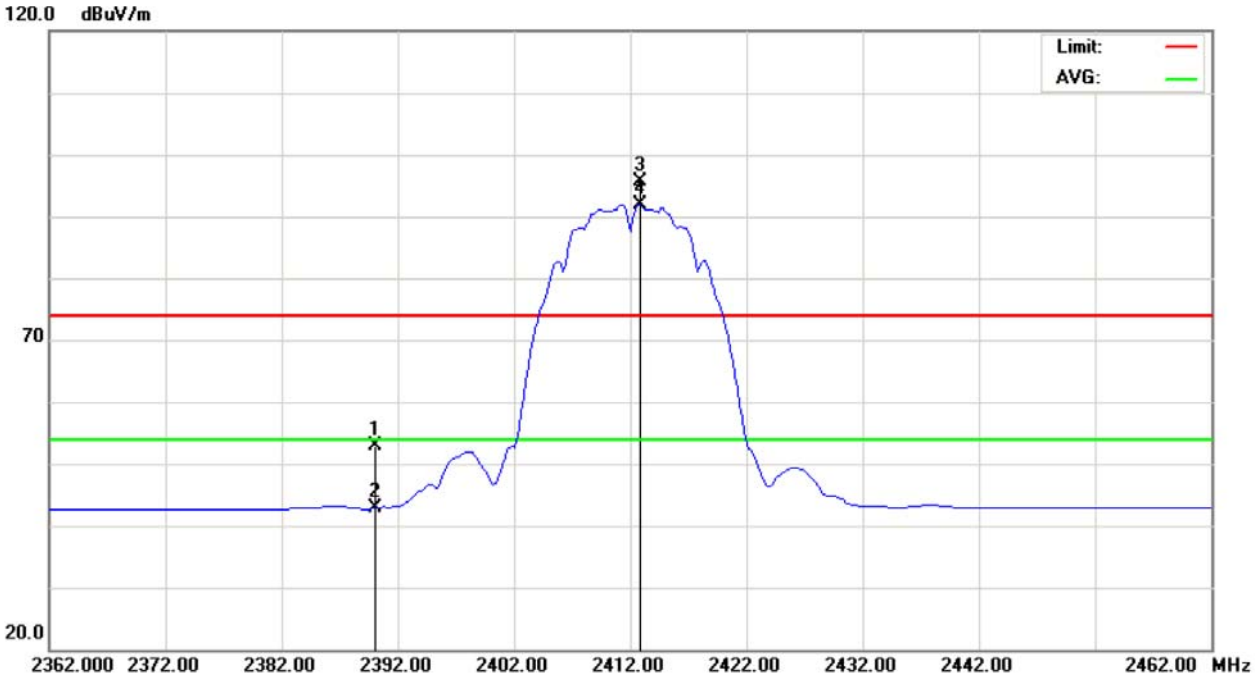
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

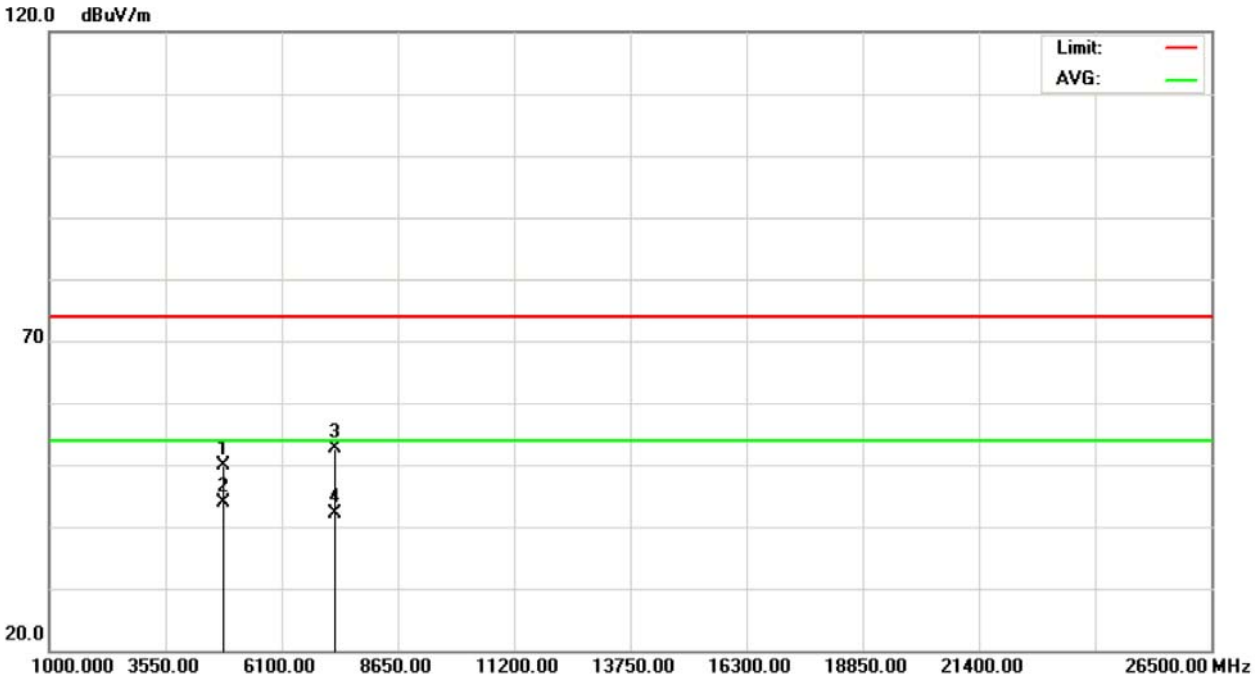
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(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：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity :	31%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode ：	802.11b/CH01		

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
E	2387.200	H	24.66	14.63	30.87	55.53	45.50	74.00	54.00	- 8.50	AV
F	2412.800	H	73.12	69.39	30.98	104.10	100.37				
H	4823.950	H	44.04	34.22	2.70	46.74	36.92	74.00	54.00	- 17.08	AV
H	7235.800	H	42.92	31.52	8.31	51.23	39.83	74.00	54.00	- 14.17	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.

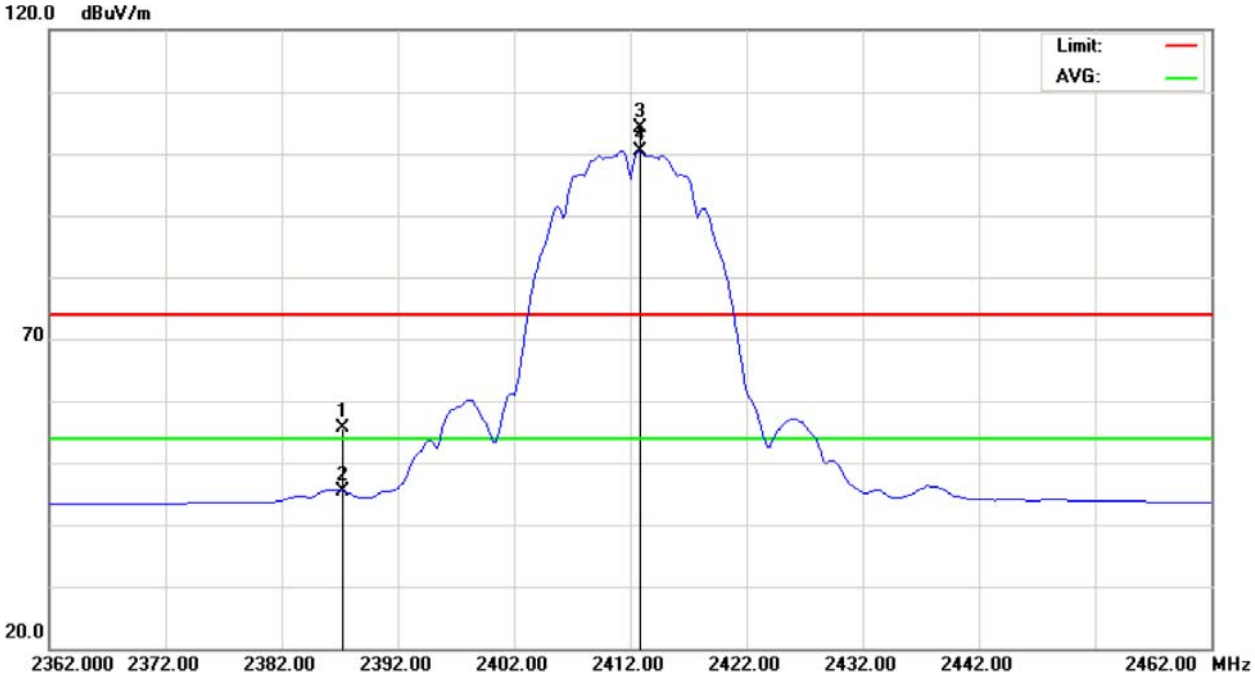
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

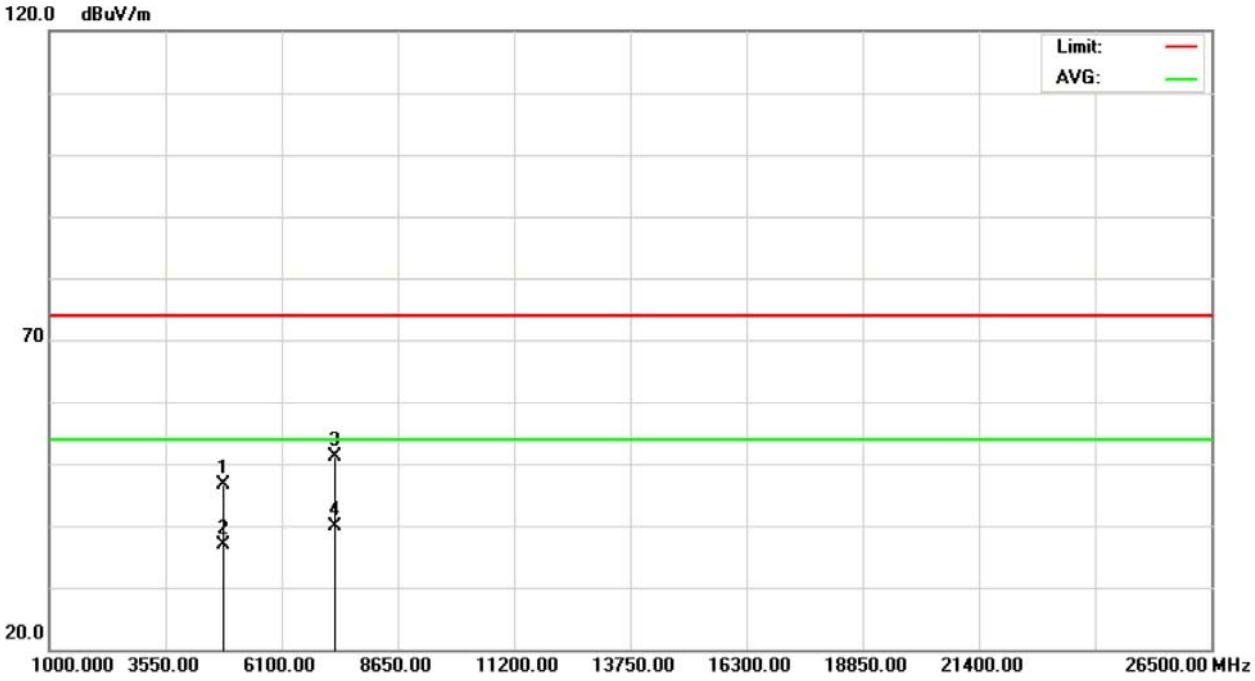
(7) EUT Orthogonal Axes：

"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：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode ：	802.11b/CH06		

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	2436.200	V	64.48	60.73	31.08	95.56	91.81				
H	4873.970	V	44.92	36.63	2.87	47.79	39.50	74.00	54.00	- 14.50	AV
H	7311.790	V	42.81	33.05	8.41	51.22	41.46	74.00	54.00	- 12.54	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 。

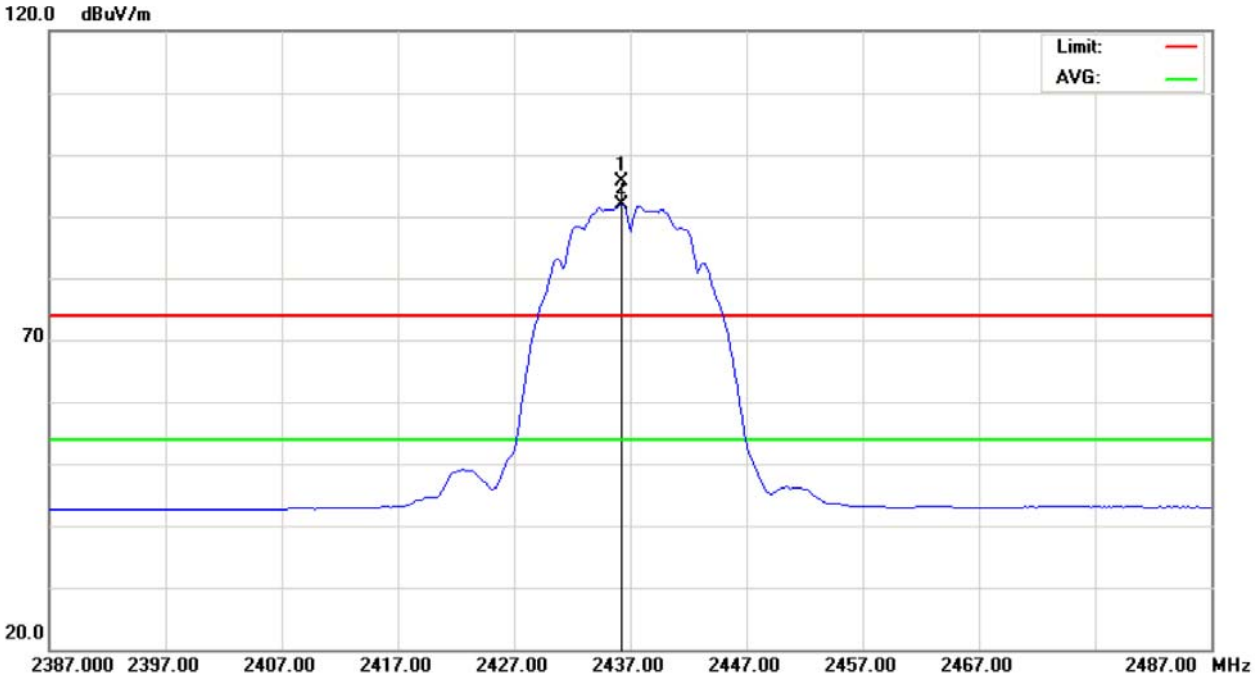
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

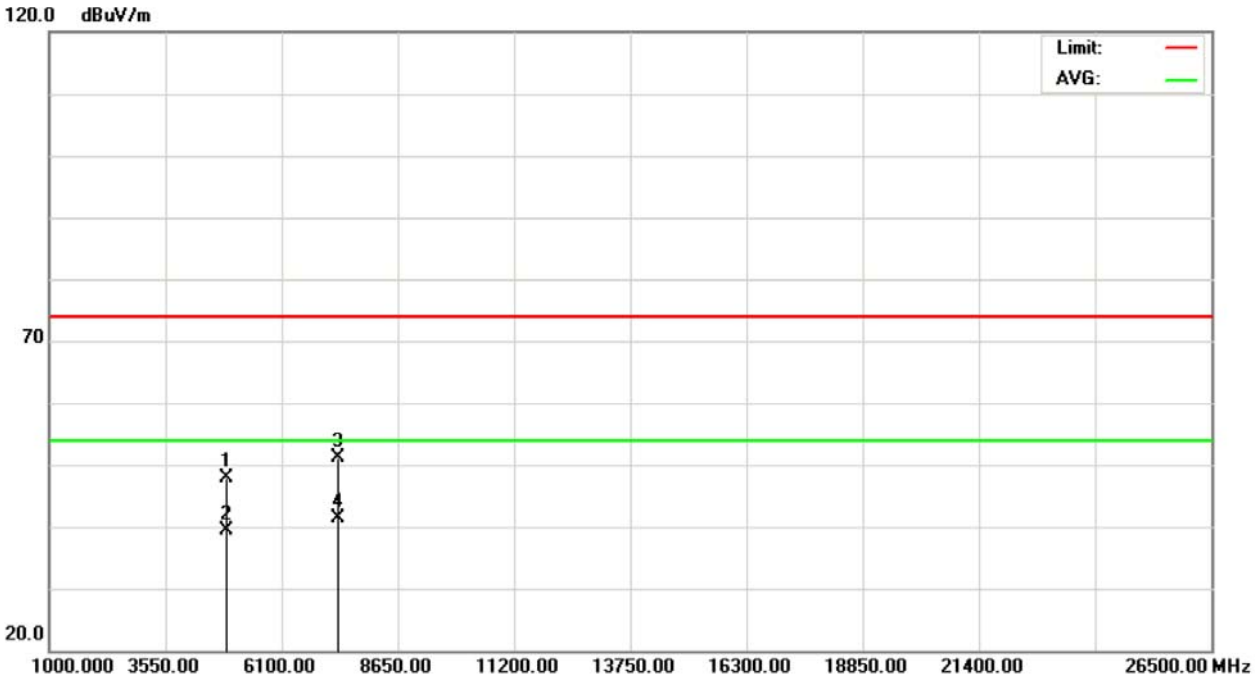
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(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/CH06 (Above 1000 MHz, Vertical)





EUT：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity :	31%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode ：	802.11b/CH06		

Type F/H/E	Freq. (MHz)	Polarization H/V	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV/m)		Limit(dBuV/m)		Margin (dB)	Note
			Peak	AV		Peak	AV	Peak	AV		
F	2436.200	H	69.83	66.11	31.08	100.91	97.19				
H	4873.940	H	41.78	31.35	2.87	44.65	34.22	74.00	54.00	- 19.78	AV
H	7310.780	H	41.65	30.57	8.41	50.06	38.98	74.00	54.00	- 15.02	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 。

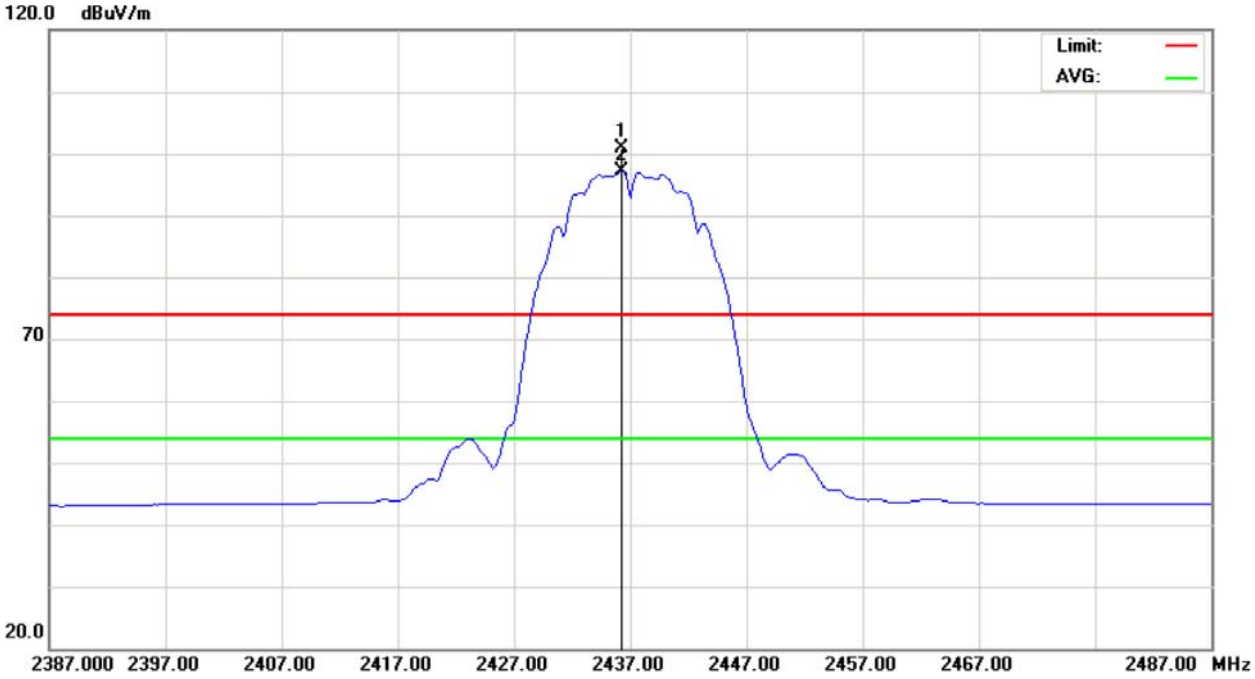
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

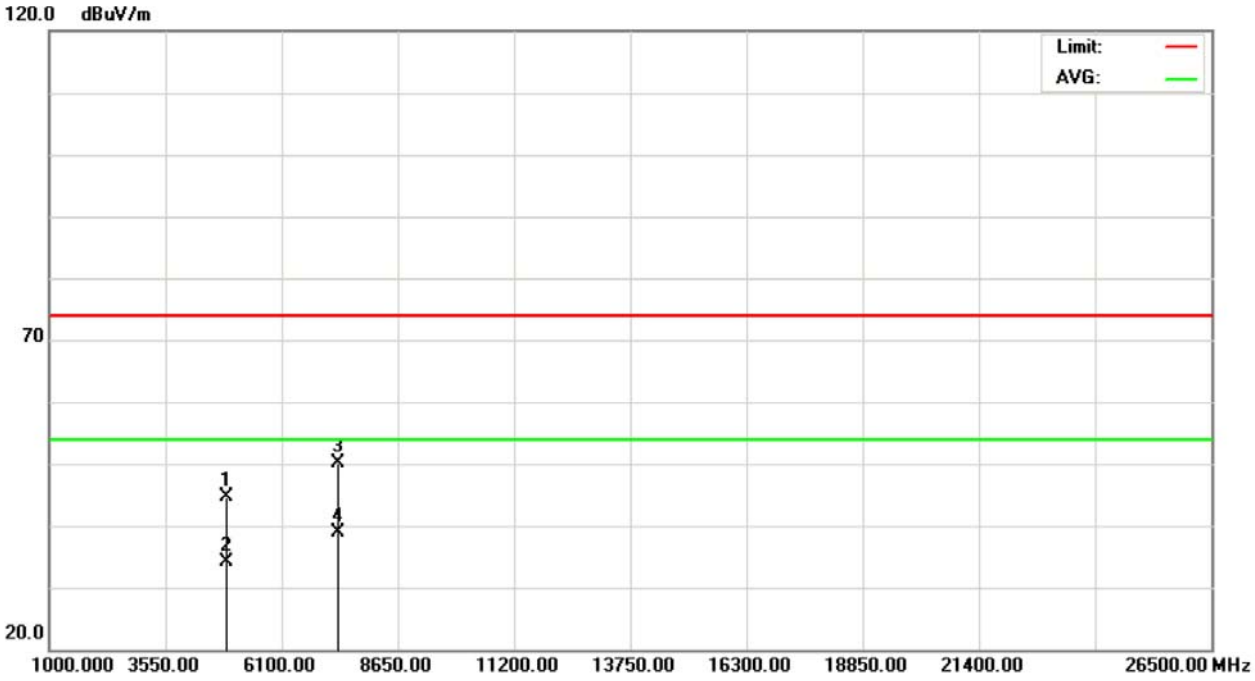
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(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/CH06 (Above 1000 MHz, Horizontal)





EUT：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode ：	802.11b/CH11		

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	2462.800	V	64.05	60.32	31.19	95.24	91.51				
E	2483.500	V	20.70	11.90	31.28	51.98	43.18	74.00	54.00	- 10.82	AV
H	4924.010	V	43.38	36.20	3.03	46.41	39.23	74.00	54.00	- 14.77	AV
H	7386.500	V	41.61	31.69	8.51	50.12	40.20	74.00	54.00	- 13.80	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 。

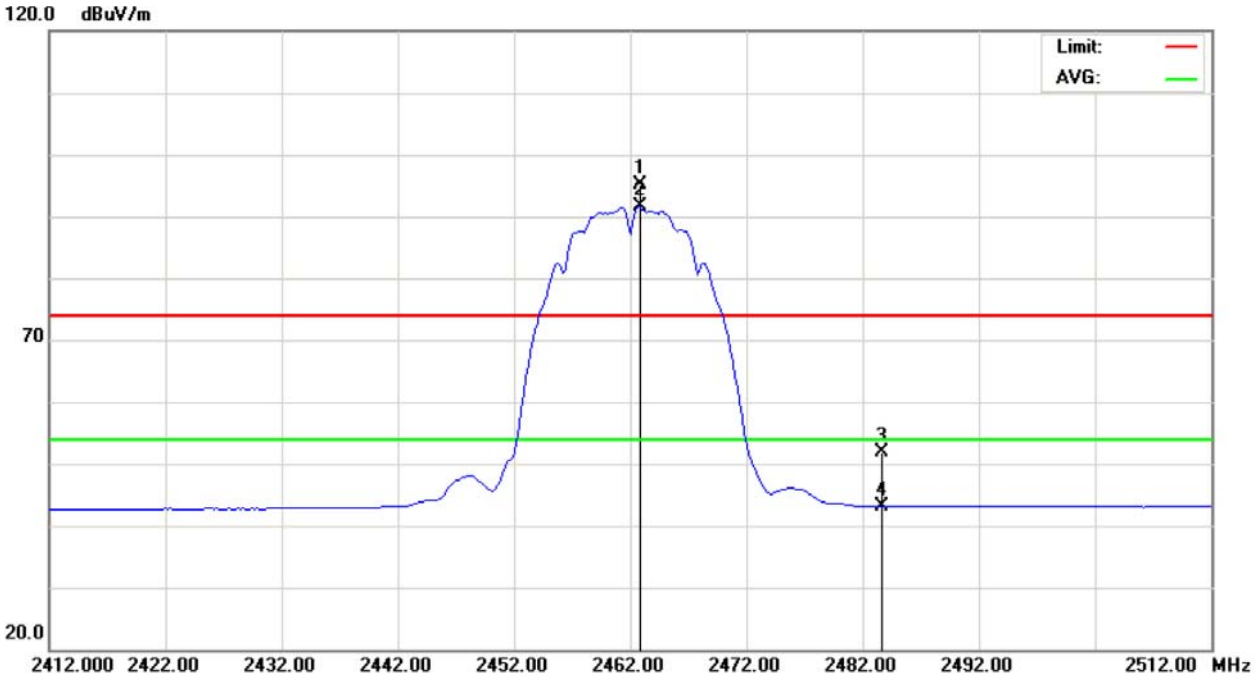
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

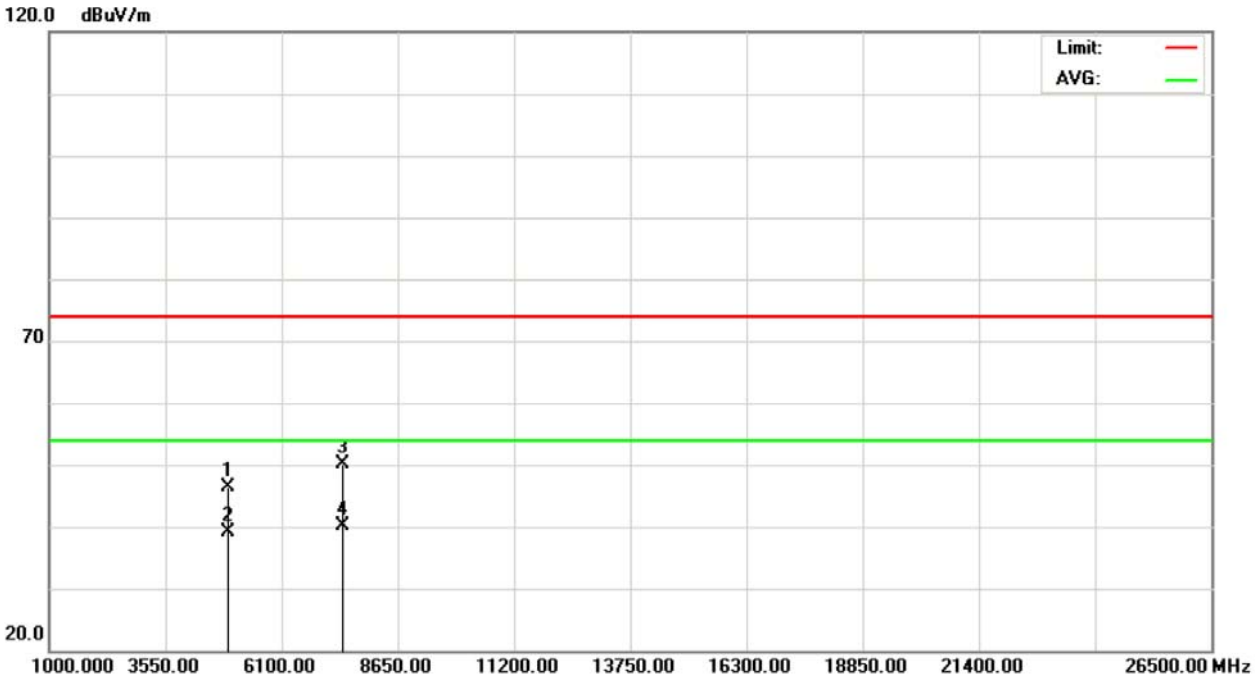
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(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：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity :	31%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode ：	802.11b/CH11		

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	2462.800	H	69.91	66.16	31.19	101.10	97.35				
E	2483.500	H	22.42	12.42	31.28	53.70	43.70	74.00	54.00	- 10.30	AV
H	4924.060	H	42.16	32.38	3.03	45.19	35.41	74.00	54.00	- 18.59	AV
H	7385.740	H	41.38	31.44	8.51	49.89	39.95	74.00	54.00	- 14.05	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.

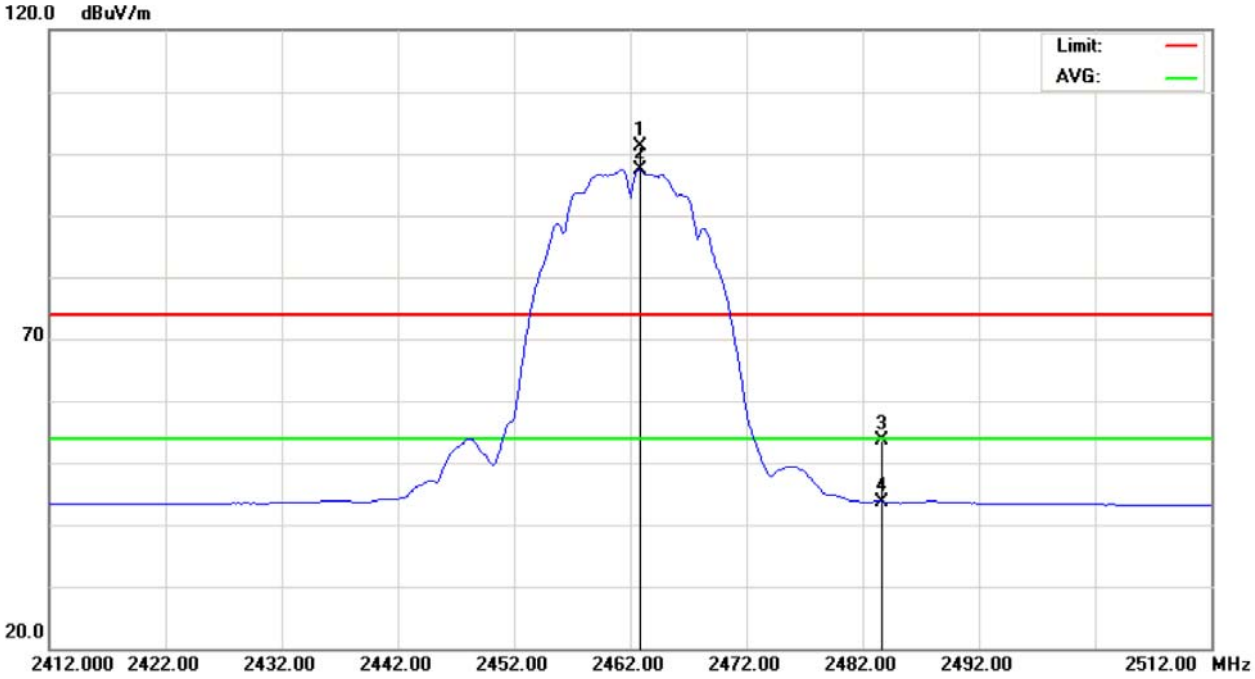
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

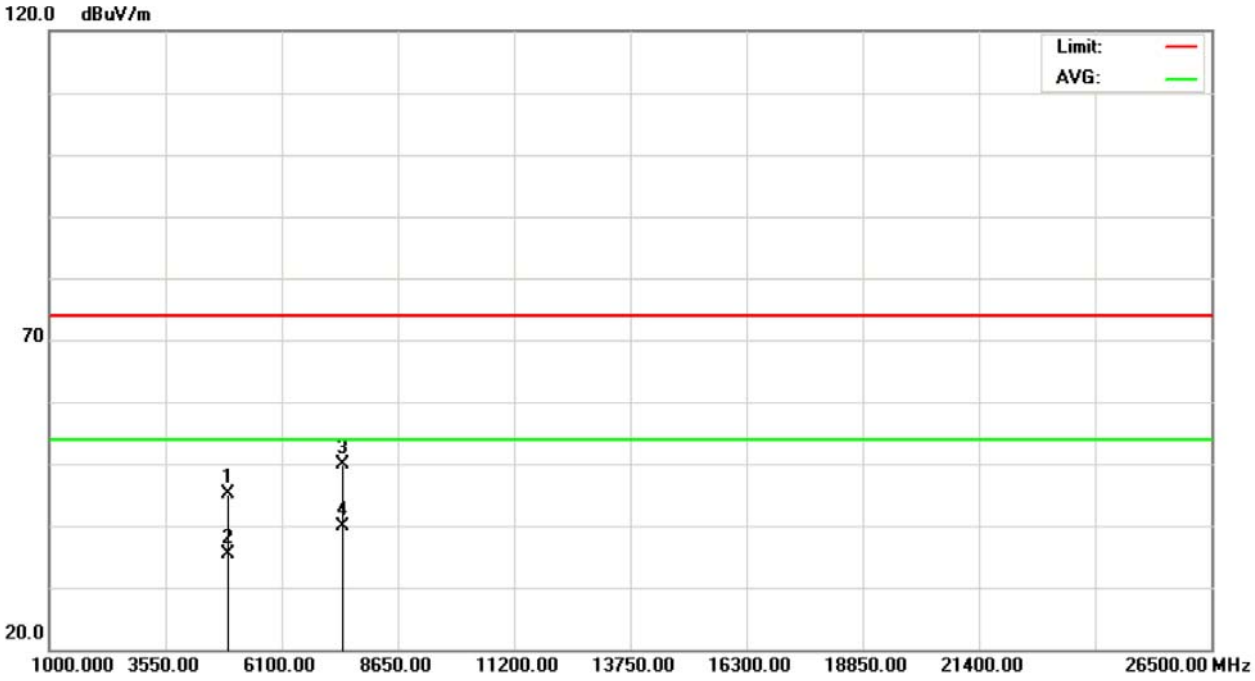
(7) EUT Orthogonal Axes：

"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：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode ：	802.11g/CH01		

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
E	2390.000	V	29.52	14.64	30.89	60.41	45.53	74.00	54.00	- 8.47	AV
F	2405.400	V	46.00	57.04	30.95	76.95	87.99				
H	4823.940	V	41.99	31.42	2.70	44.69	34.12	74.00	54.00	- 19.88	AV
H	7236.100	V	41.65	31.78	8.31	49.96	40.09	74.00	54.00	- 13.91	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) 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 。

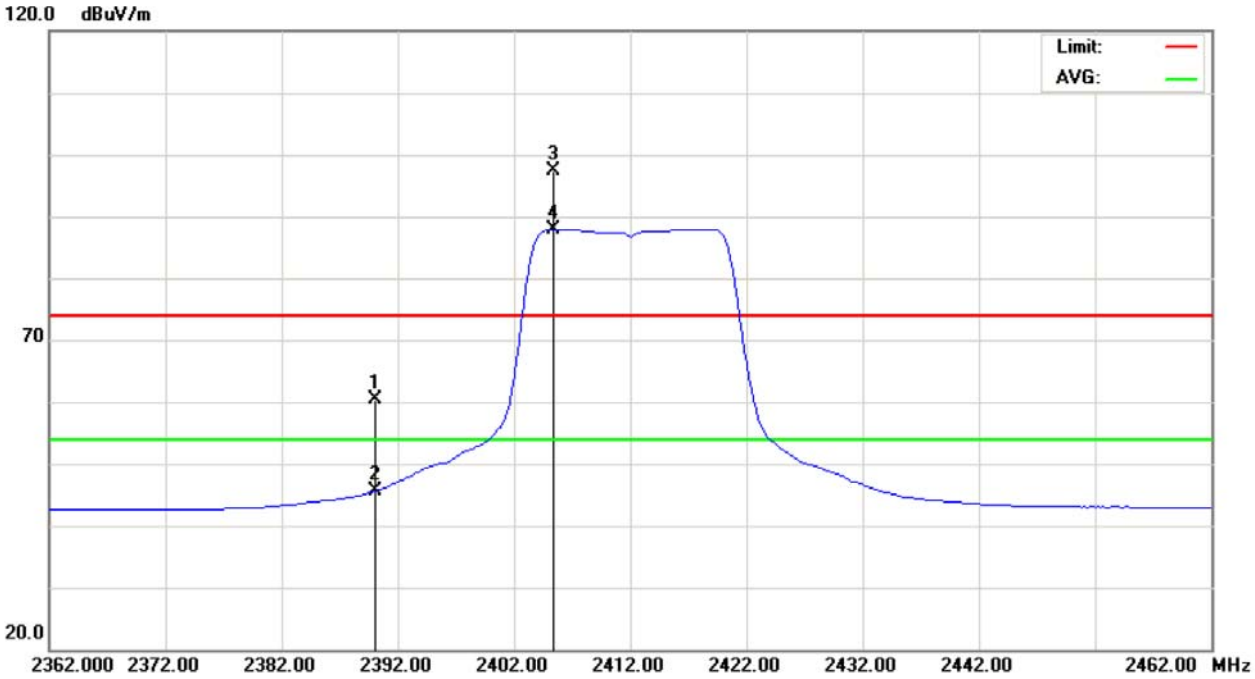
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

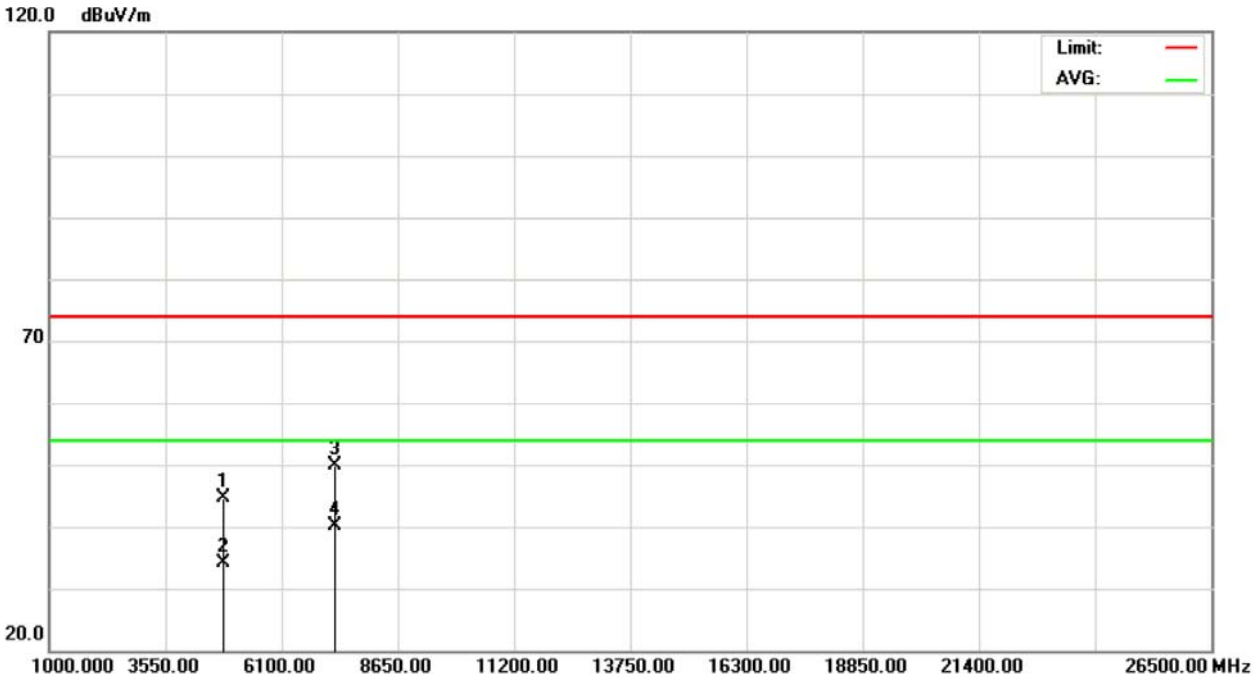
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(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：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity :	31%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode ：	802.11g/CH01		

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
E	2390.000	H	36.48	19.36	30.89	67.37	50.25	74.00	54.00	- 3.75	AV
F	2405.800	H	73.17	63.53	30.95	104.12	94.48				
H	4823.800	H	41.90	30.89	2.70	44.60	33.59	74.00	54.00	- 20.41	AV
H	7235.900	H	43.29	31.53	8.31	51.60	39.84	74.00	54.00	- 14.16	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.

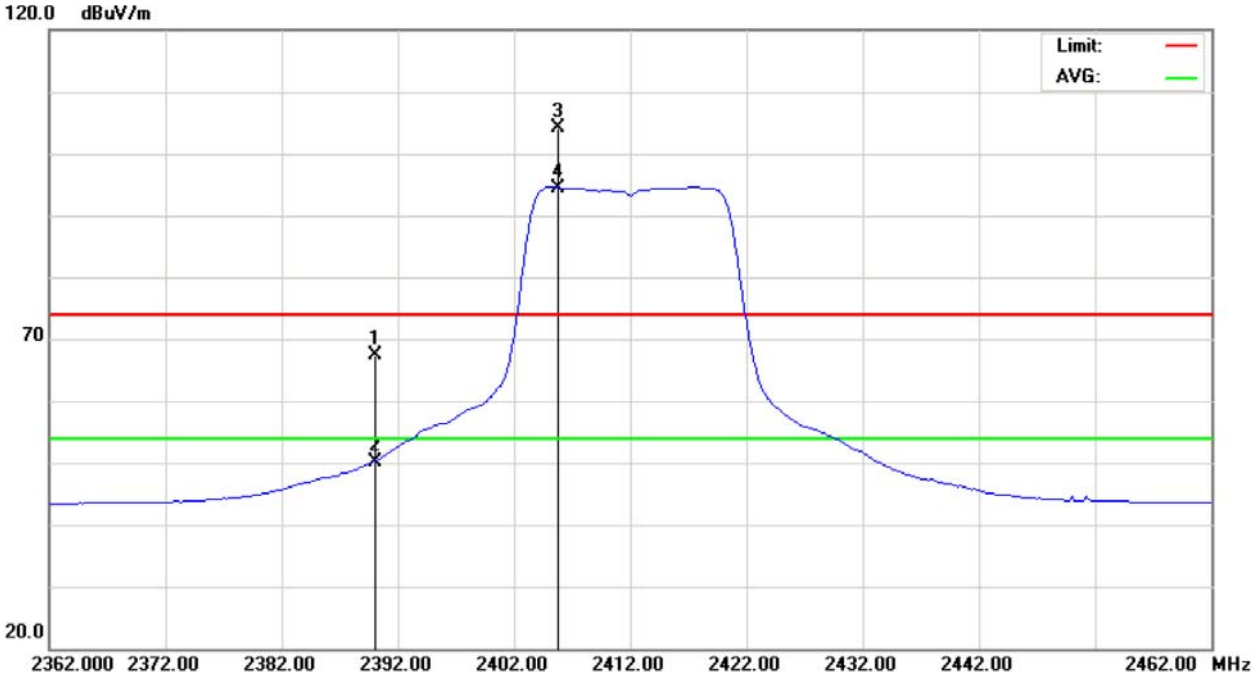
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

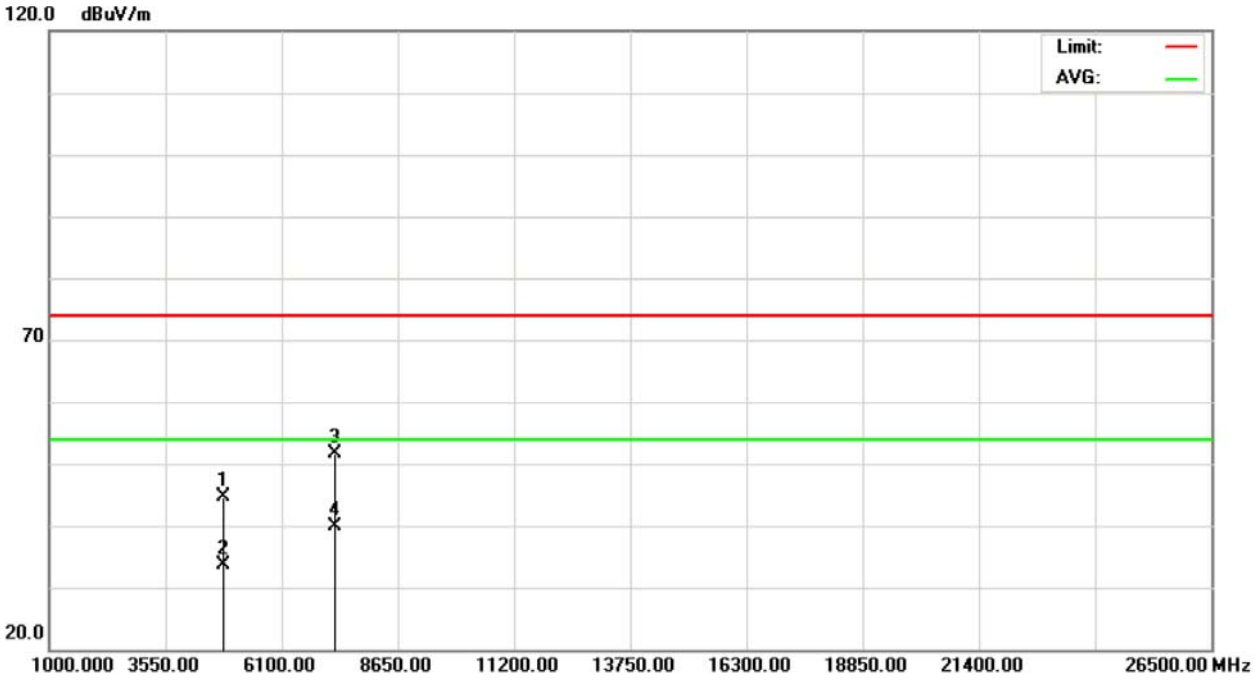
(7) EUT Orthogonal Axes：

"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：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity :	31%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode ：	802.11g/CH06		

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	2430.400	V	66.21	57.21	31.06	97.27	88.27				
H	4873.890	V	41.50	31.06	2.87	44.37	33.93	74.00	54.00	- 20.07	AV
H	7310.920	V	42.30	30.78	8.41	50.71	39.19	74.00	54.00	- 14.81	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 。

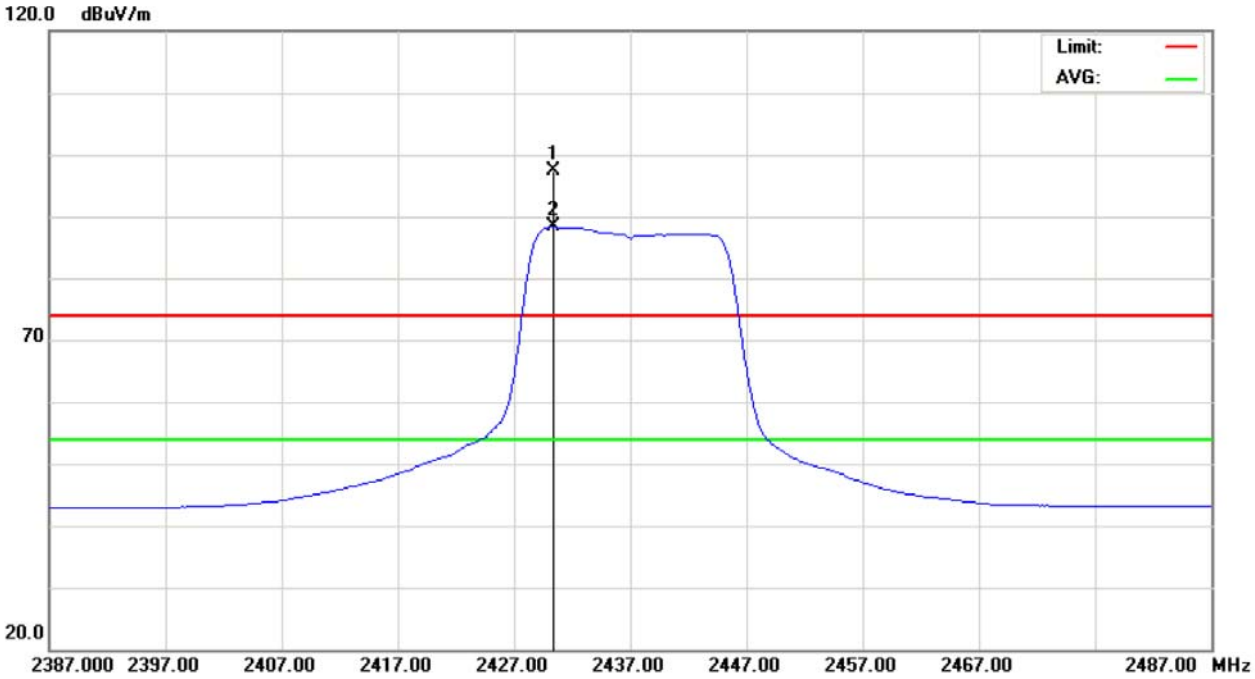
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

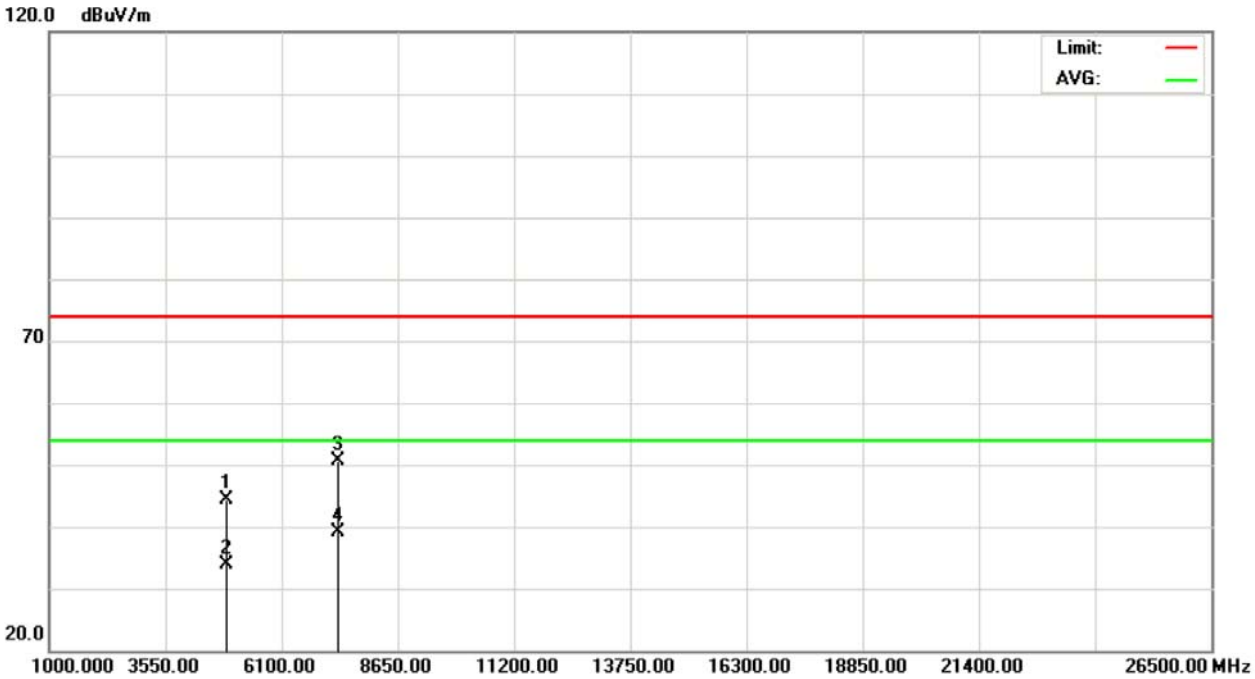
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(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/CH06(Above 1000 MHz, Vertical)





EUT：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity :	31%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode ：	802.11g/CH06		

Type F/H/E	Freq. (MHz)	Polarization H/V	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV/m)		Limit(dBuV/m)		Margin (dB)	Note
			Peak	AV		Peak	AV	Peak	AV		
F	2430.400	H	71.15	62.16	31.06	102.21	93.22				
H	4873.930	H	41.72	30.86	2.87	44.59	33.73	74.00	54.00	- 20.27	AV
H	7310.920	H	42.32	30.73	8.41	50.73	39.14	74.00	54.00	- 14.86	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 。

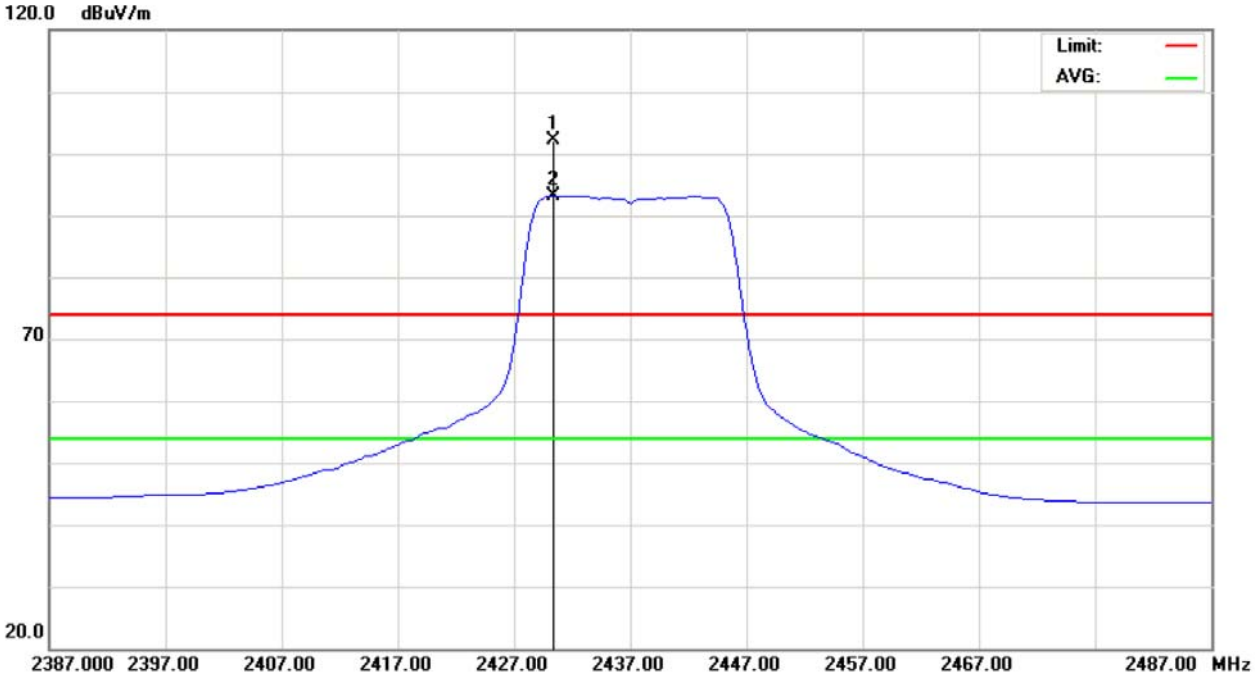
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

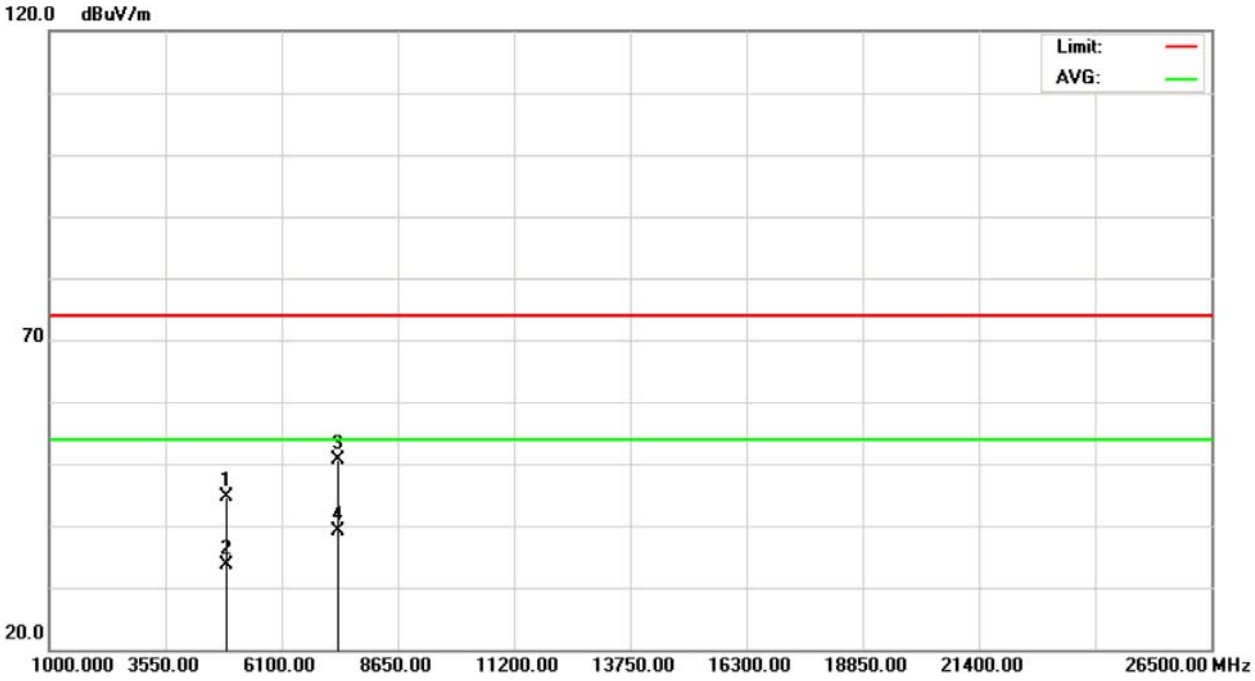
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(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/CH06(Above 1000 MHz, Horizontal)





EUT：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode ：	802.11g/CH11		

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	2455.200	V	66.00	56.59	31.16	97.16	87.75				
E	2483.500	V	30.45	15.52	31.28	61.73	46.80	74.00	54.00	- 7.20	AV
H	4923.970	V	42.92	30.68	3.03	45.95	33.71	74.00	54.00	- 20.29	AV
H	7385.860	V	43.21	32.20	8.51	51.72	40.71	74.00	54.00	- 13.29	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 。

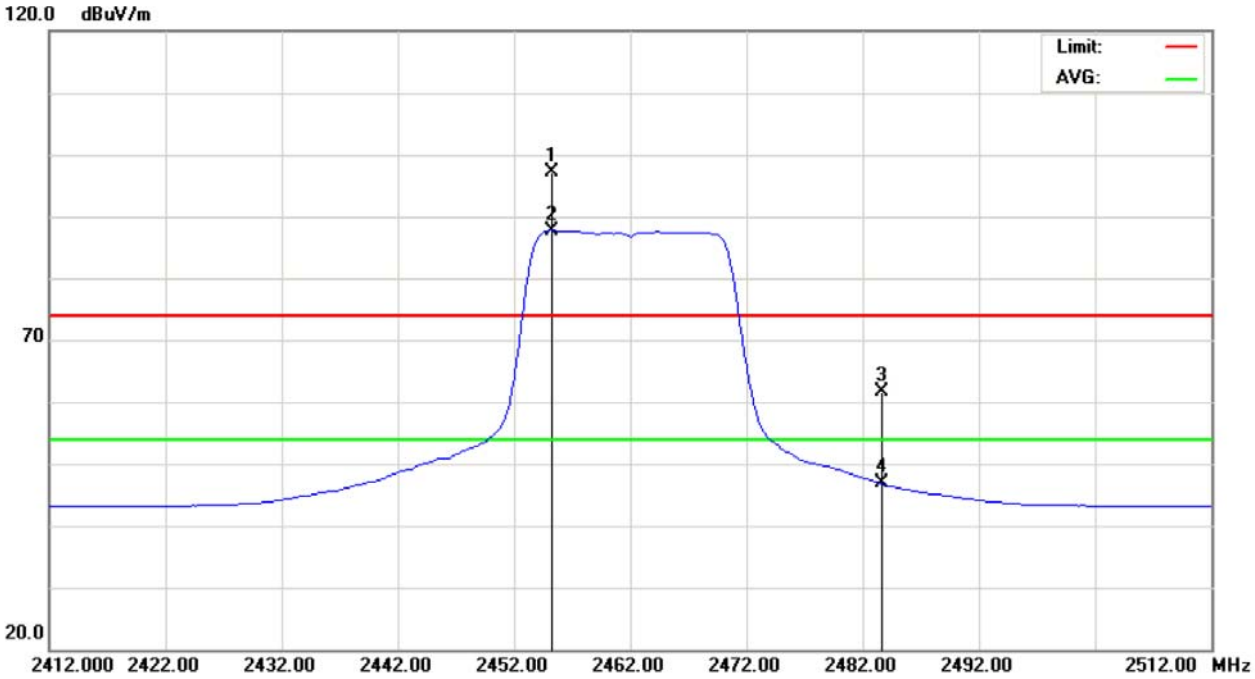
(5) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

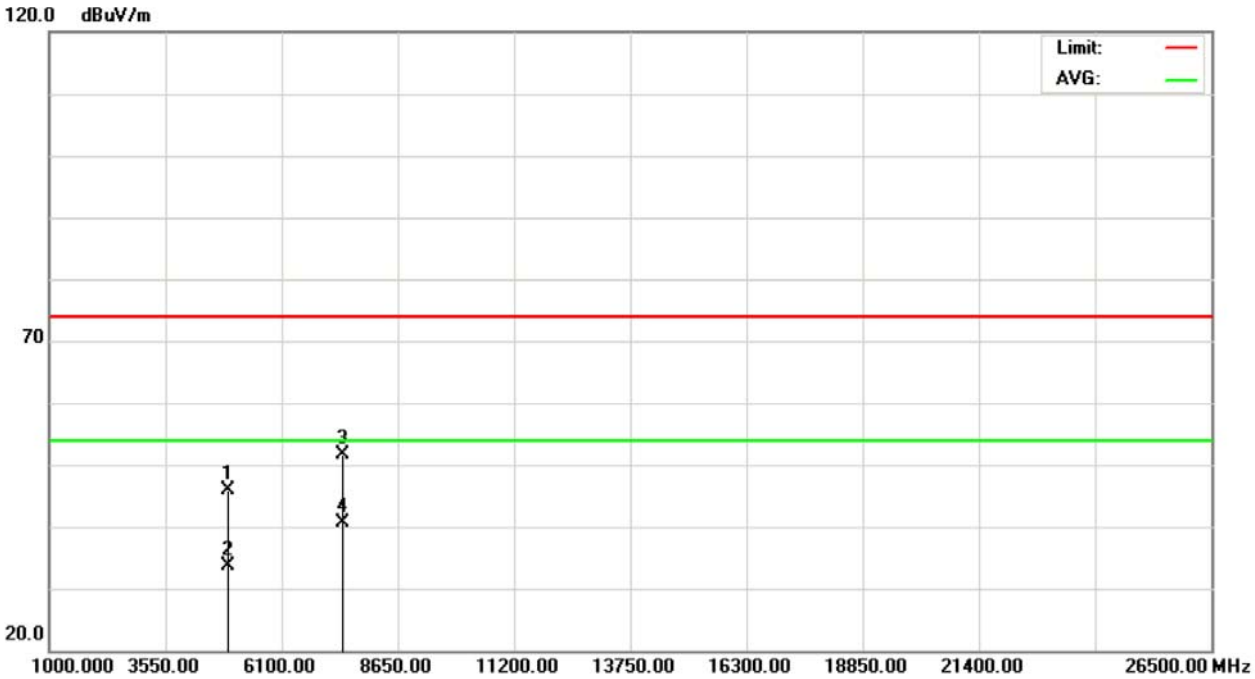
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

(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：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity :	31%
Test Voltage :	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode ：	802.11g/CH11		

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	2455.200	H	72.37	63.15	31.16	103.53	94.31				
E	2483.500	H	31.31	18.65	31.28	62.59	49.93	74.00	54.00	- 4.07	AV
H	4923.940	H	43.03	30.56	3.03	46.06	33.59	74.00	54.00	- 20.41	AV
H	7386.040	H	43.09	31.83	8.51	51.60	40.34	74.00	54.00	- 13.66	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.

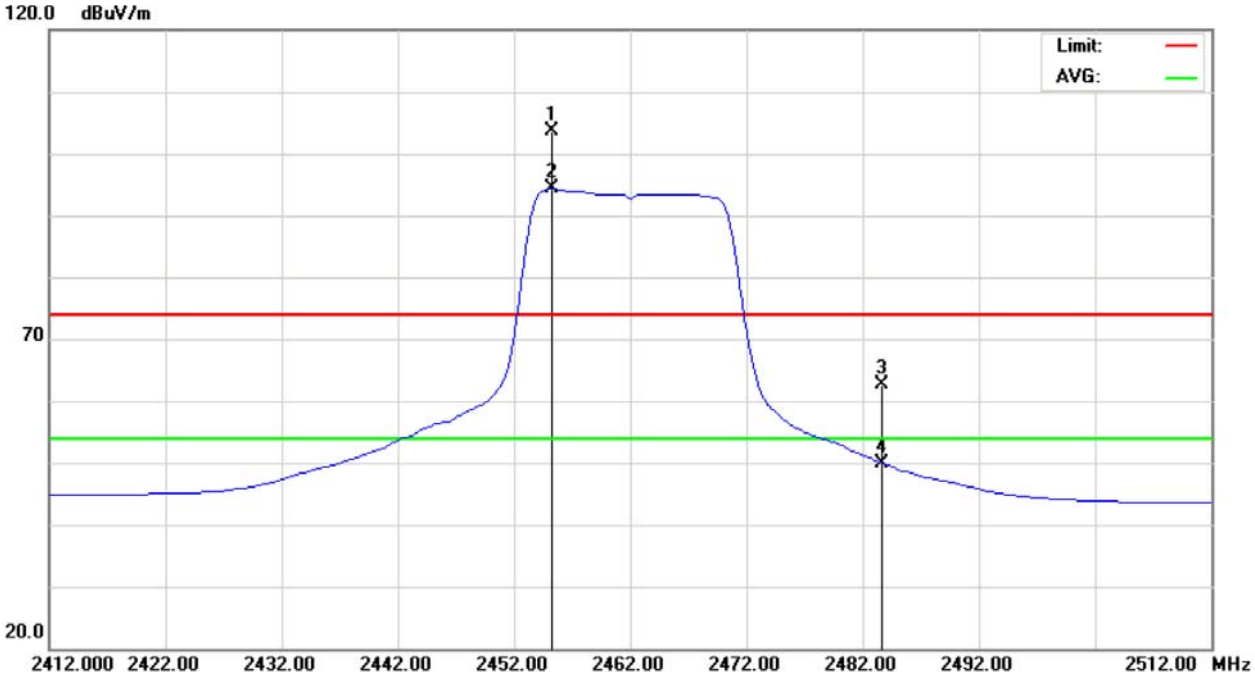
(6) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

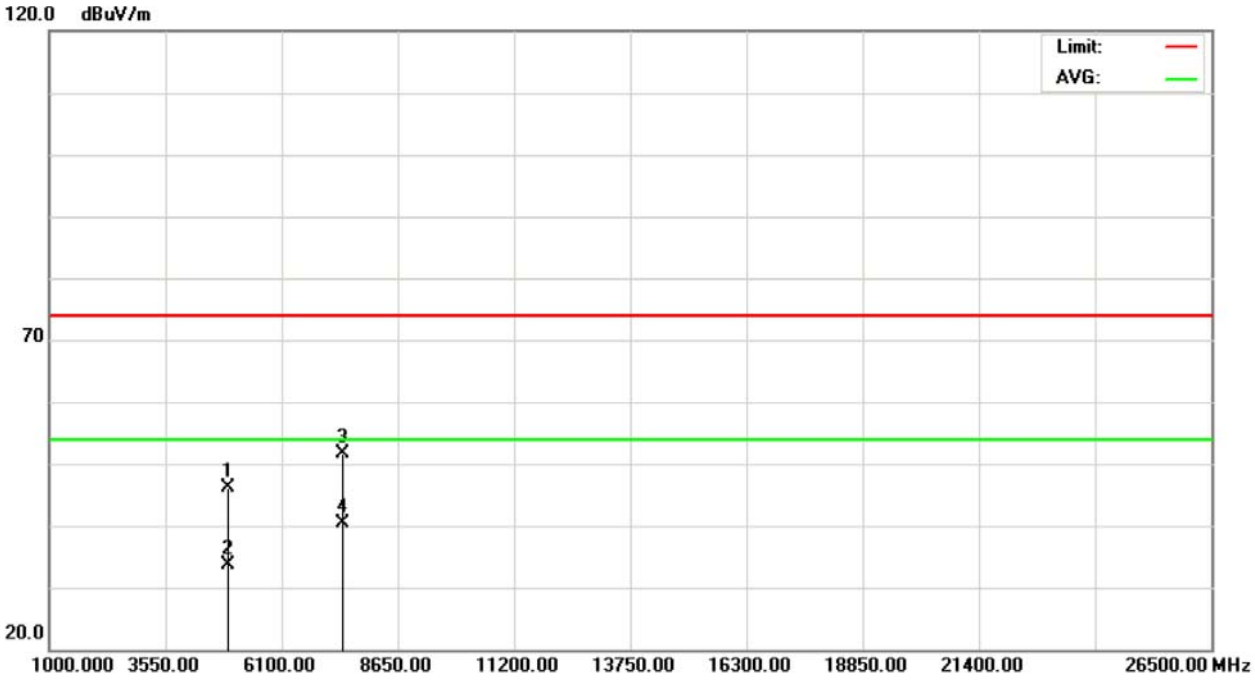
(7) EUT Orthogonal Axes：

"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)





4.2.9 TEST RESULTS-RESTRICTED BANDS REQUIREMENTS

EUT：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode ：	802.11b (Vertical)		
Note：	The emission of the carrier radiated field strength is measured for CH01/CH11 (Peak and AV) as following: 1. The transmitter was setup to transmit at the lowest channel (CH01). Then the field strength was measured at 2310-2390 MHz. 2. The transmitter was setup to transmit at the highest channel (CH11). Then the field strength was measured at 2483.5-2500 MHz.		

Freq. (MHz)	Polarization H/V	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV/m)		Limit(dBuV/m)		Margin (dB)	Note
		Peak	AV		Peak	AV	Peak	AV		
2390.000	V	21.87	11.90	30.89	52.76	42.79	74.00	54.00	- 11.21	AV
2483.500	V	20.70	11.90	31.28	51.98	43.18	74.00	54.00	- 10.82	AV

Remark：

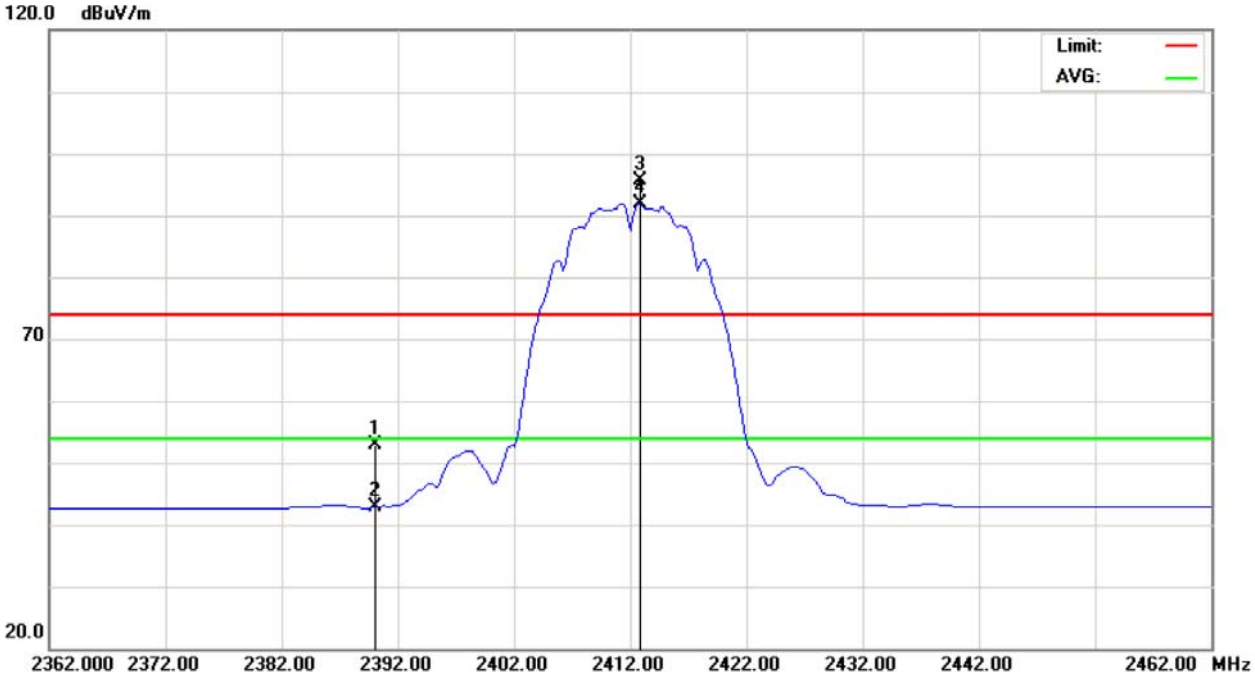
(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

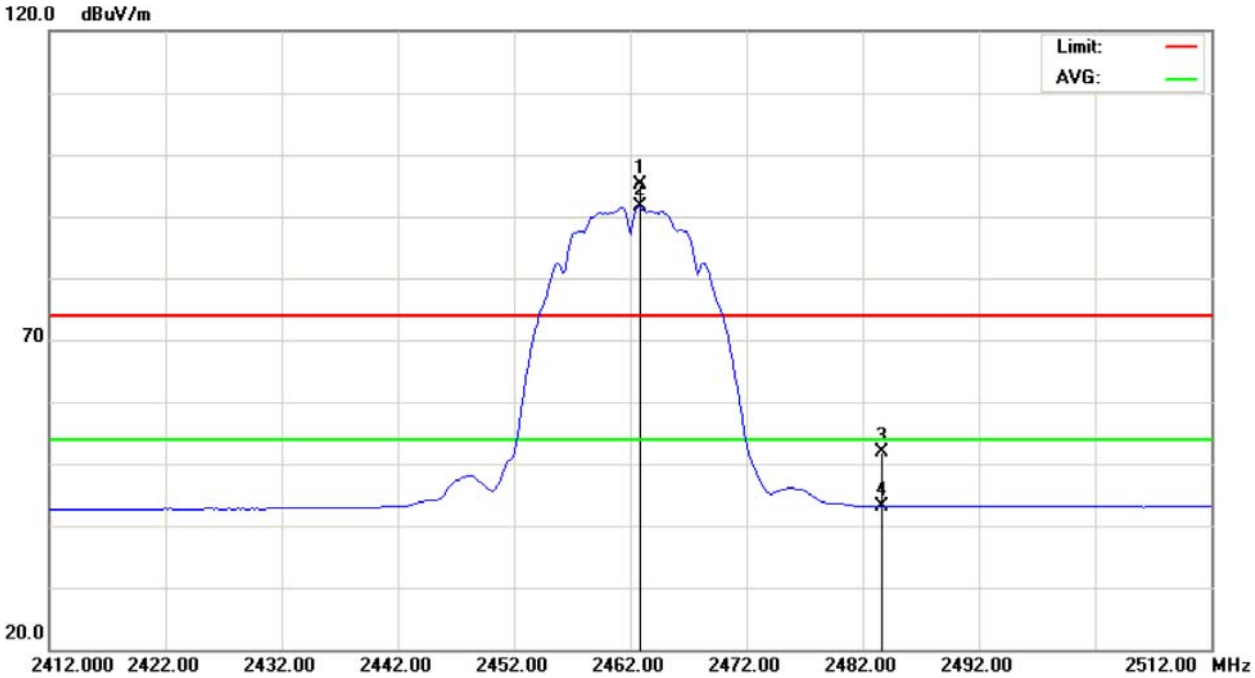
(2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

(3) EUT Orthogonal Axes：

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

802.11b (Restricted Bands Requirements, Vertical)





EUT：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode ：	802.11b (Horizontal)		
Note：	The emission of the carrier radiated field strength is measured for CH01/CH11 (Peak and AV) as following: 1. The transmitter was setup to transmit at the lowest channel (CH01). Then the field strength was measured at 2310-2390 MHz. 2. The transmitter was setup to transmit at the highest channel (CH11). Then the field strength was measured at 2483.5-2500 MHz.		

Freq. (MHz)	Polarization H/V	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV/m)		Limit(dBuV/m)		Margin (dB)	Note
		Peak	AV		Peak	AV	Peak	AV		
2387.200	H	24.66	14.63	30.87	55.53	45.50	74.00	54.00	- 8.50	AV
2483.500	H	22.42	12.42	31.28	53.70	43.70	74.00	54.00	- 10.30	AV

Remark：

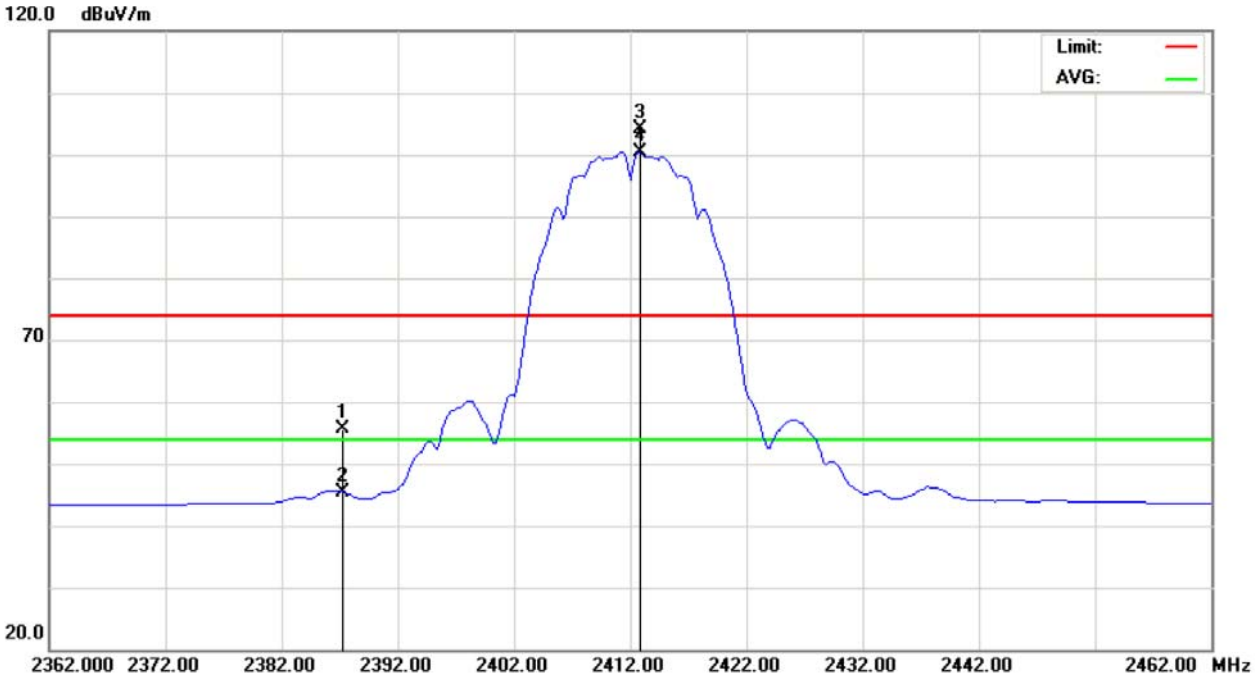
(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

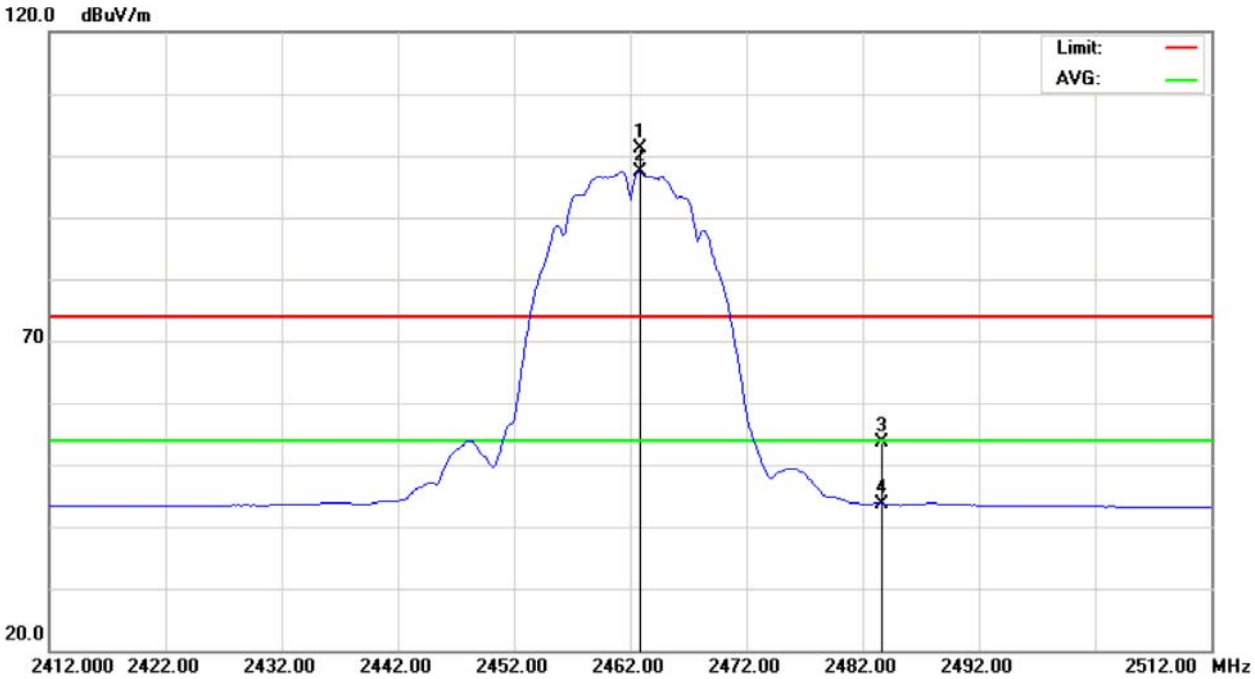
(2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

(3) EUT Orthogonal Axes：

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

802.11b (Restricted Bands Requirements, Horizontal)





EUT：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode ：	802.11g (Vertical)		
Note：	The emission of the carrier radiated field strength is measured for CH01/CH11 (Peak and AV) as following: 1. The transmitter was setup to transmit at the lowest channel (CH01). Then the field strength was measured at 2310-2390 MHz. 2. The transmitter was setup to transmit at the highest channel (CH11). Then the field strength was measured at 2483.5-2500 MHz.		

Freq. (MHz)	Polarization H/V	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV/m)		Limit(dBuV/m)		Margin (dB)	Note
		Peak	AV		Peak	AV	Peak	AV		
2390.000	V	29.52	14.64	30.89	60.41	45.53	74.00	54.00	- 8.47	AV
2483.500	V	30.45	15.52	31.28	61.73	46.80	74.00	54.00	- 7.20	AV

Remark：

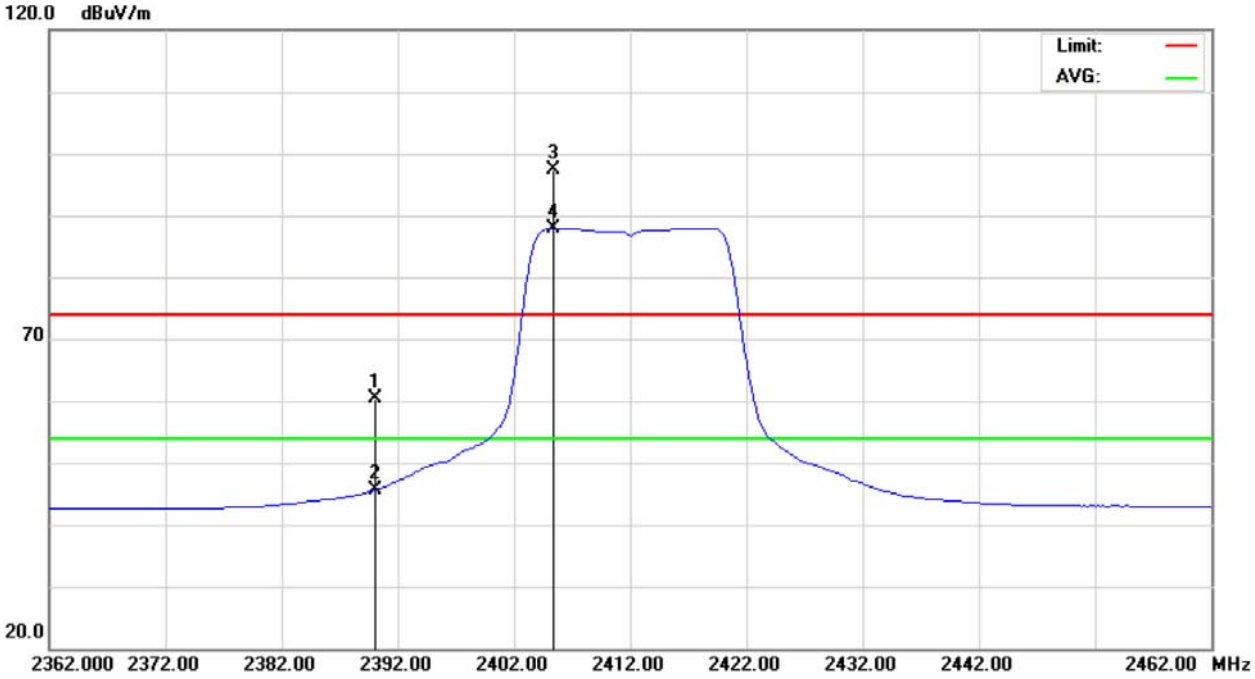
(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

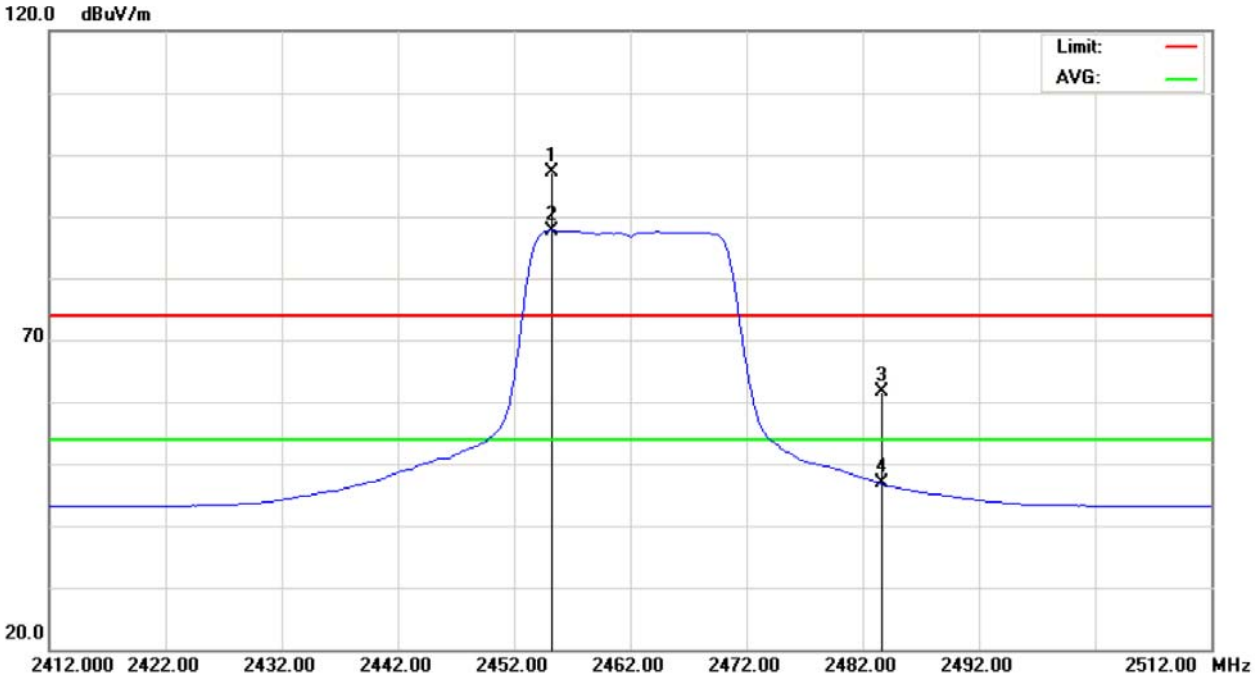
(2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

(3) EUT Orthogonal Axes：

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

802.11g (Restricted Bands Requirements, Vertical)





EUT：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	AC 120V/60Hz	Orthogonal Axes:	X
Test Mode ：	802.11g (Horizontal)		
Note：	The emission of the carrier radiated field strength is measured for CH01/CH11 (Peak and AV) as following: 1. The transmitter was setup to transmit at the lowest channel (CH01). Then the field strength was measured at 2310-2390 MHz. 2. The transmitter was setup to transmit at the highest channel (CH11). Then the field strength was measured at 2483.5-2500 MHz.		

Freq. (MHz)	Polarization H/V	Reading Level(dBuV)		Correct Factor(dB)	Measurement(dBuV/m)		Limit(dBuV/m)		Margin (dB)	Note
		Peak	AV		Peak	AV	Peak	AV		
2390.000	H	36.48	19.36	30.89	67.37	50.25	74.00	54.00	- 3.75	AV
2483.500	H	31.31	18.65	31.28	62.59	49.93	74.00	54.00	- 4.07	AV

Remark：

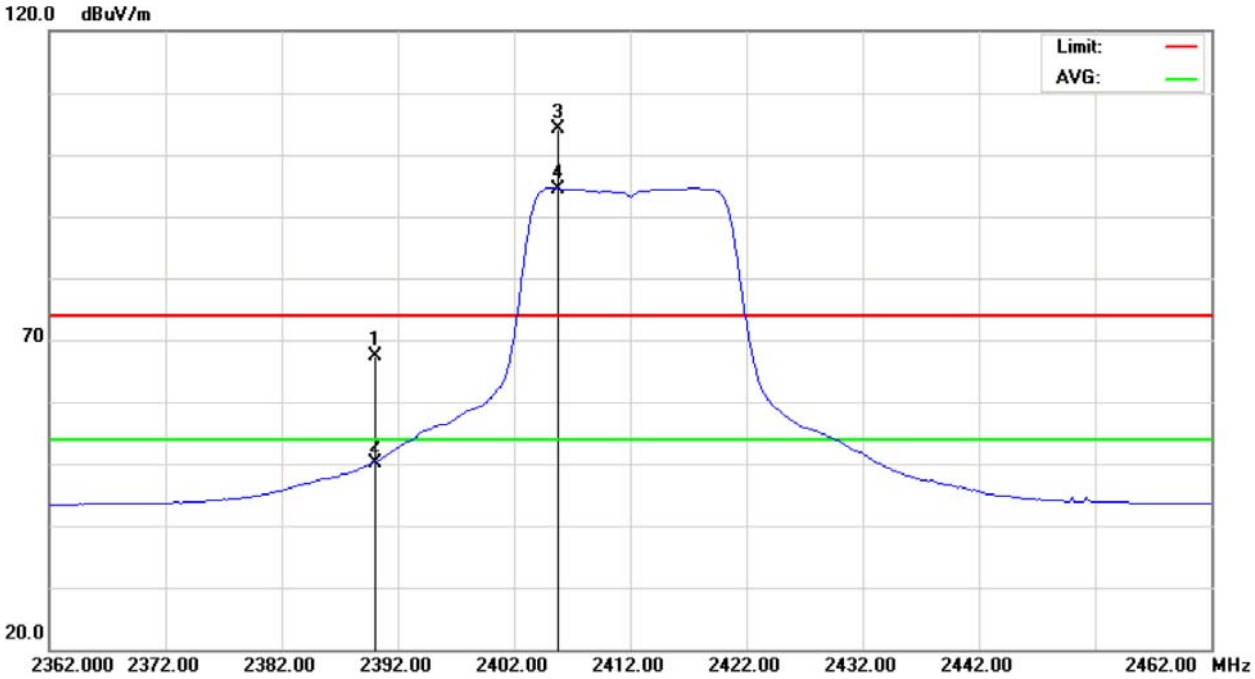
(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

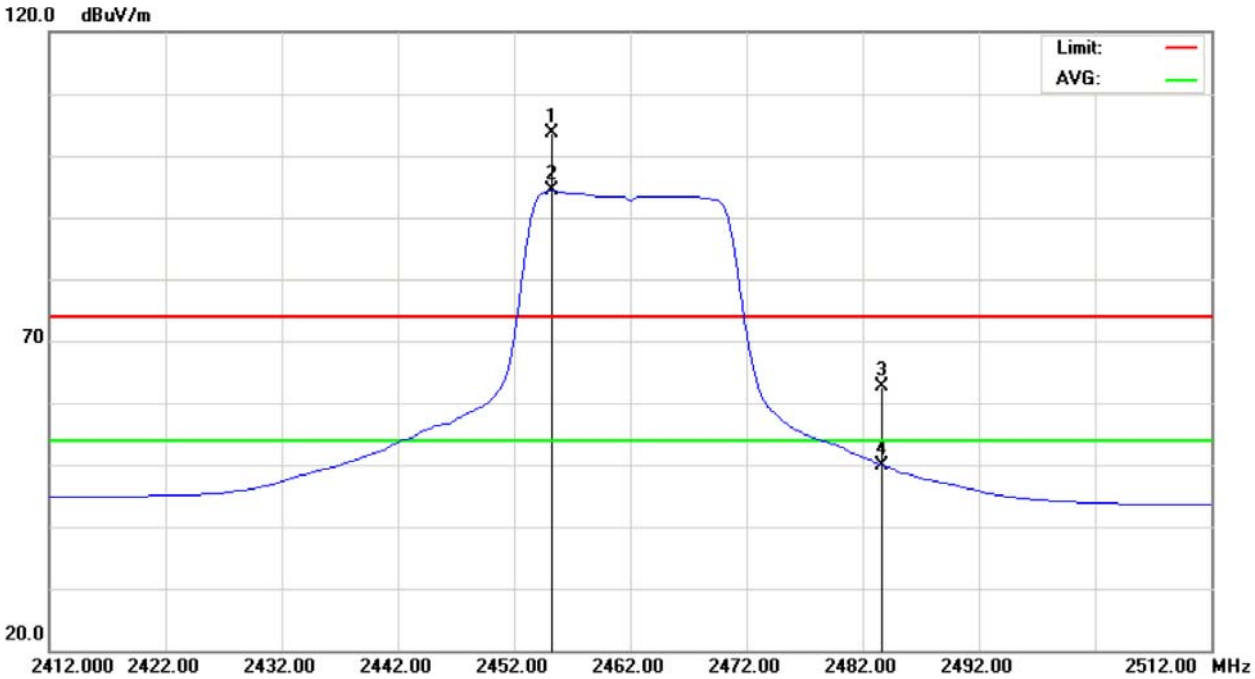
(2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

(3) EUT Orthogonal Axes：

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

802.11g (Restricted Bands Requirements, Horizontal)





5. BANDWITH TEST

5.1 APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart C			
Test Item	Limit	Frequency Range (MHz)	Result
Bandwidth	>= 500KHz (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	Aug. 31, 2011

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

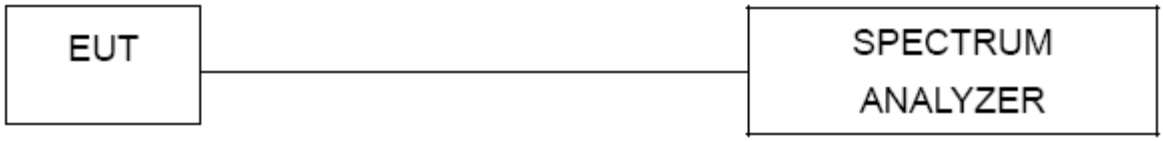
5.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. 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

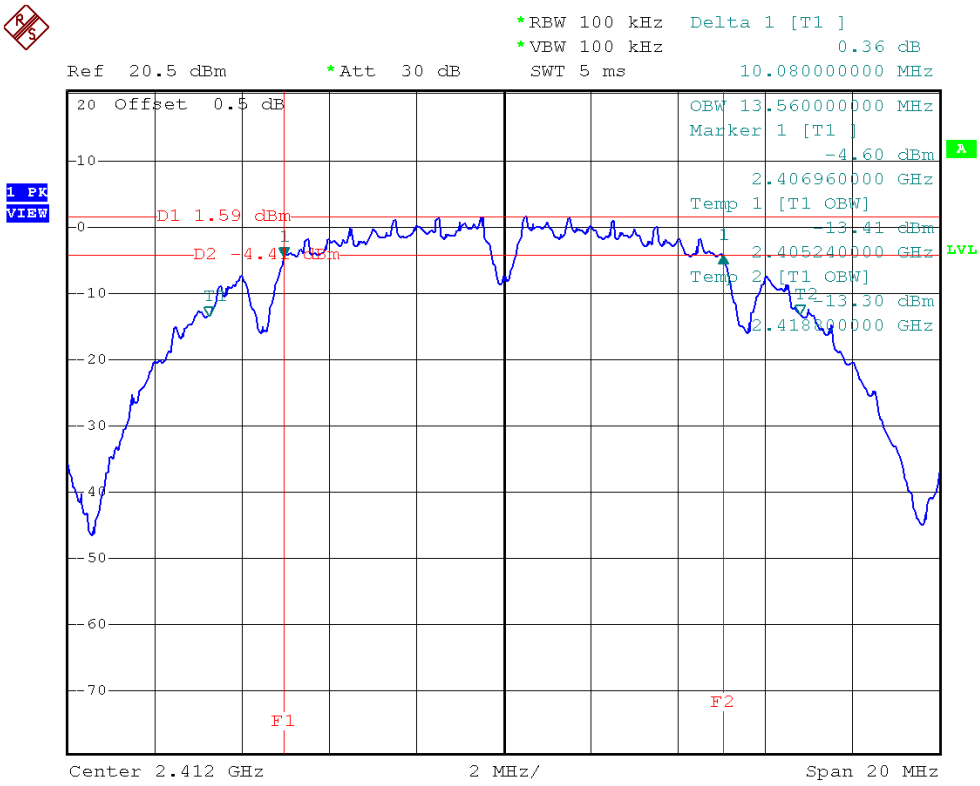
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

5.1.6 TEST RESULTS

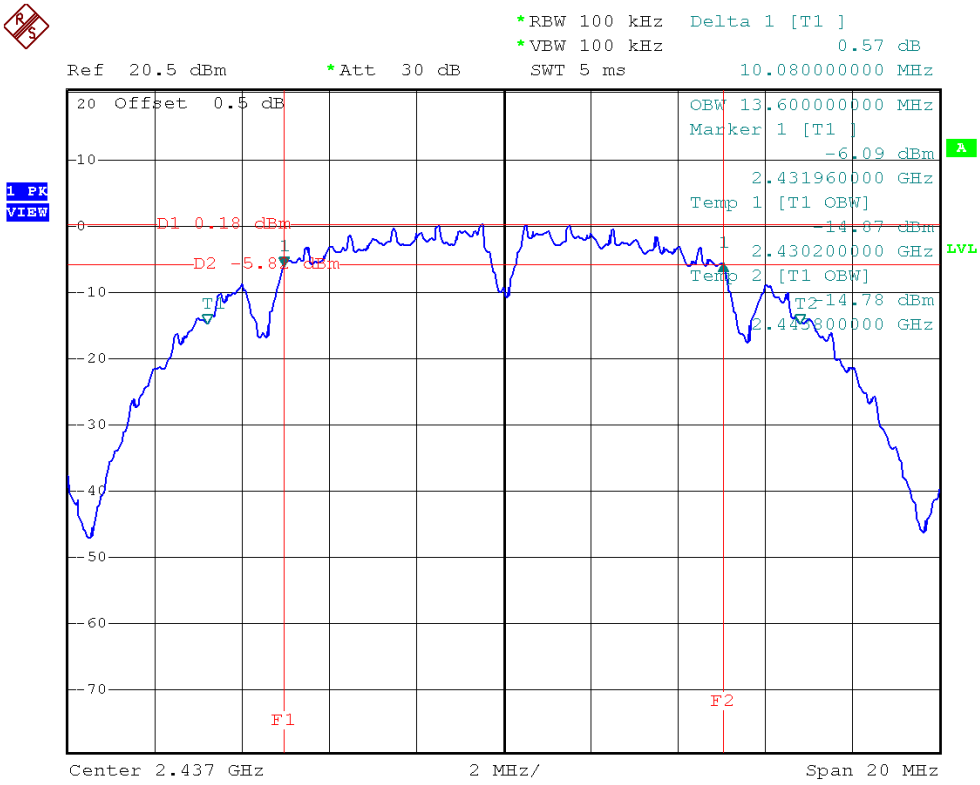
EUT：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	AC 120V/60Hz		
Test Mode ：	802.11b/CH01, CH06, CH11		

Test Channel	Frequency (MHz)	Bandwidth (MHz)	99% Occupied BW (MHz)	LIMIT (MHz)
CH01	2412	10.08	13.56	>=500KHz
CH06	2437	10.08	13.60	>=500KHz
CH11	2462	10.08	13.60	>=500KHz

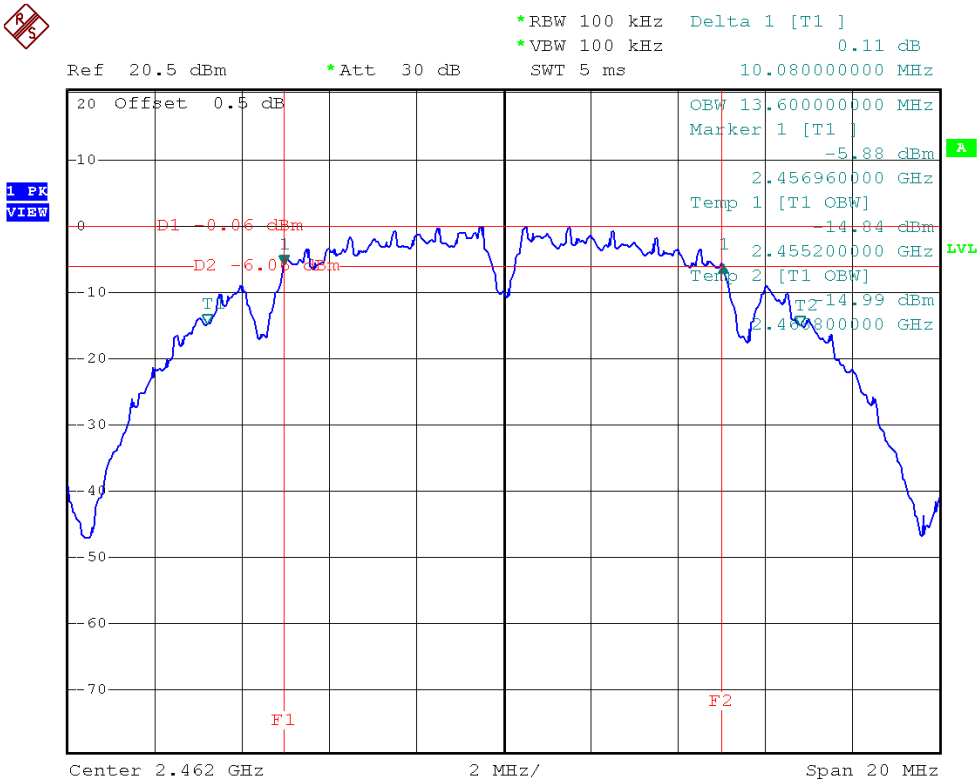
CH01



CH06


*RBW 100 kHz
*VBW 100 kHz
Delta 1 [T1]
0.57 dB
10.080000000 MHz
Ref 20.5 dBm
*Att 30 dB
SWT 5 ms
20 Offset 0.5 dB
OBW 13.600000000 MHz
Marker 1 [T1]
-6.09 dBm
2.431960000 GHz
Temp 1 [T1 OBW]
-14.87 dBm
2.430200000 GHz
Temp 2 [T1 OBW]
-14.78 dBm
2.445800000 GHz
1 PK
VIEW
A
LVL
D1 0.18 dBm
D2 -5.82 dBm
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz

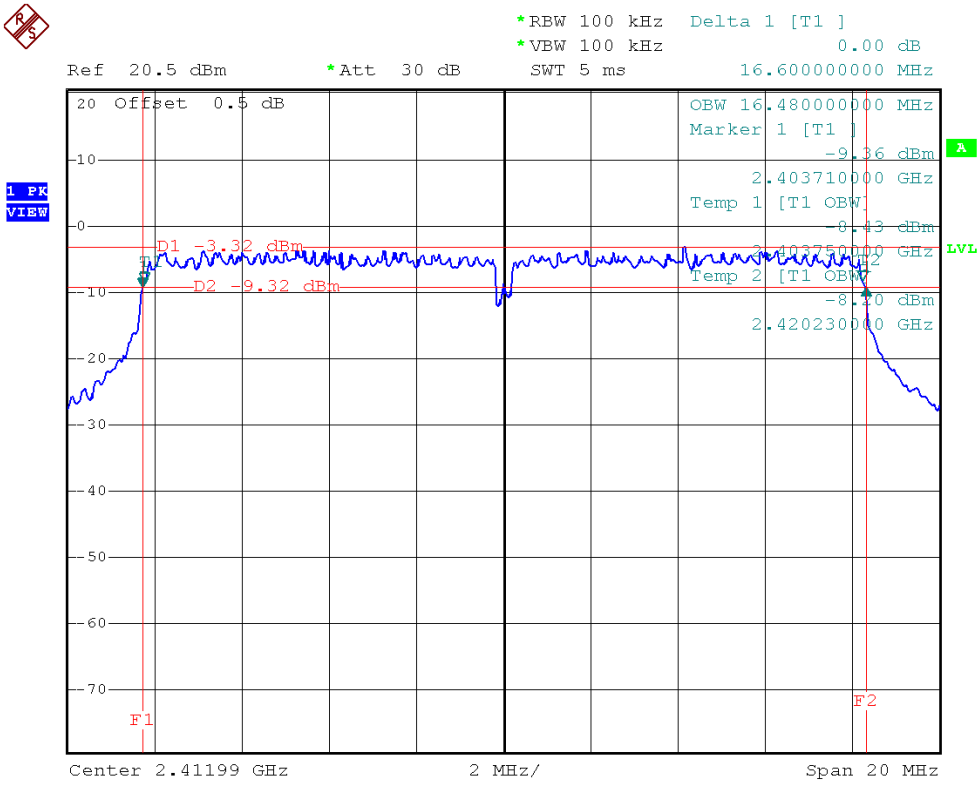
CH11


*RBW 100 kHz
*VBW 100 kHz
Delta 1 [T1]
0.11 dB
10.080000000 MHz
Ref 20.5 dBm
*Att 30 dB
SWT 5 ms
20 Offset 0.5 dB
OBW 13.600000000 MHz
Marker 1 [T1]
-5.88 dBm
2.456960000 GHz
Temp 1 [T1 OBW]
-14.84 dBm
2.455200000 GHz
Temp 2 [T1 OBW]
-14.99 dBm
2.468800000 GHz
1 PK
VIEW
A
LVL
D1 -0.06 dBm
D2 -6.06 dBm
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz

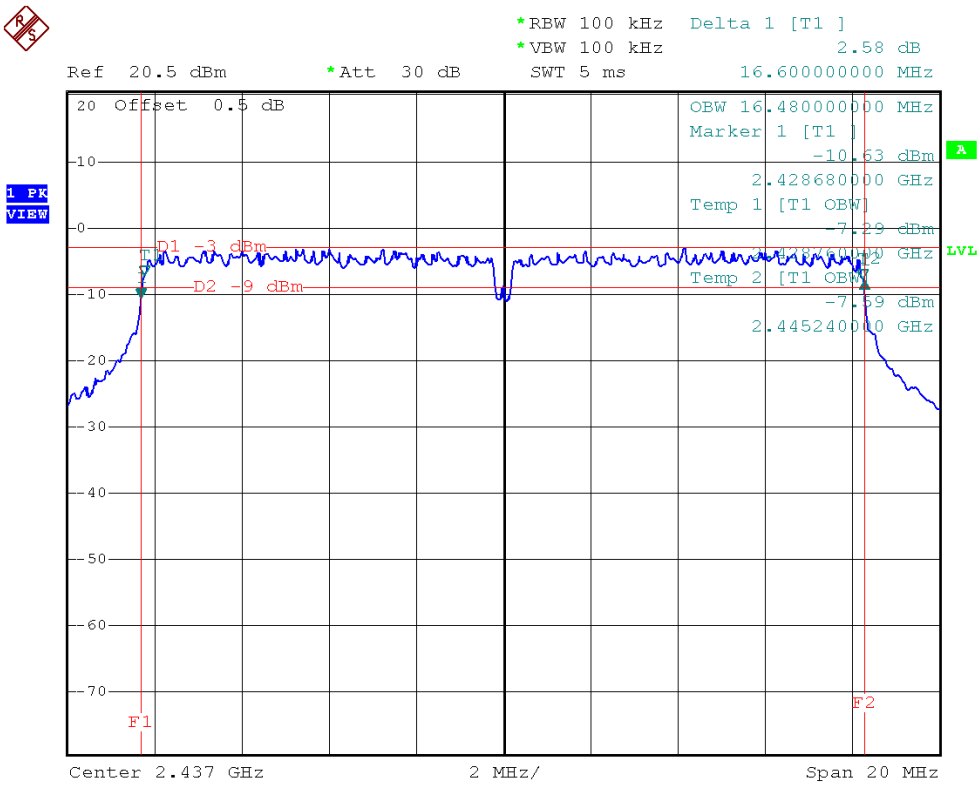
EUT：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	AC 120V/60Hz		
Test Mode ：	802.11g/CH01, CH06, CH11		

Test Channel	Frequency (MHz)	Bandwidth (MHz)	99% Occupied BW (MHz)	LIMIT (MHz)
CH01	2412	16.60	16.48	>=500KHz
CH06	2437	16.60	16.48	>=500KHz
CH11	2462	16.64	16.48	>=500KHz

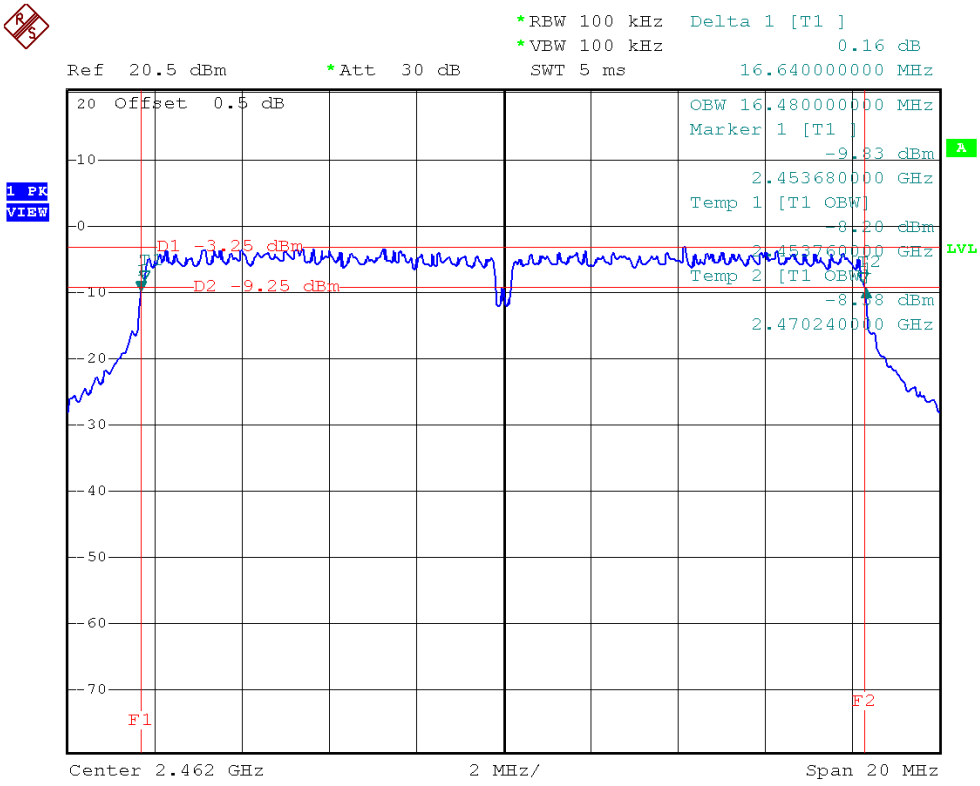
CH01



CH06


*RBW 100 kHz
*VBW 100 kHz
Ref 20.5 dBm
*Att 30 dB
SWT 5 ms
Delta 1 [T1]
2.58 dB
16.600000000 MHz
20 Offset 0.5 dB
OBW 16.480000000 MHz
Marker 1 [T1]
-10.63 dBm
2.428680000 GHz
Temp 1 [T1 OBW]
-7.29 dBm
Temp 2 [T1 OBW]
-7.59 dBm
2.445240000 GHz
1 PK
VIEW
A
LVL
D1 -3 dBm
D2 -9 dBm
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz

CH11


*RBW 100 kHz
*VBW 100 kHz
Ref 20.5 dBm
*Att 30 dB
SWT 5 ms
Delta 1 [T1]
0.16 dB
16.640000000 MHz
20 Offset 0.5 dB
OBW 16.480000000 MHz
Marker 1 [T1]
-9.83 dBm
2.453680000 GHz
Temp 1 [T1 OBW]
-8.20 dBm
Temp 2 [T1 OBW]
-8.48 dBm
2.470240000 GHz
1 PK
VIEW
A
LVL
D1 -3.25 dBm
D2 -9.25 dBm
F1
F2
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. 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.

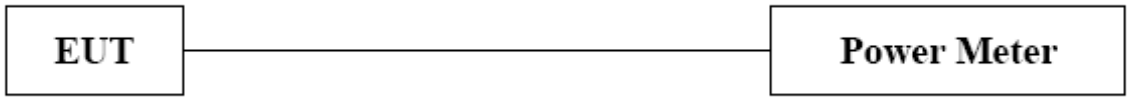
6.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW= 1MHz, VBW= 1MHz, Sweep time = Auto.

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.

6.1.6 TEST RESULTS

EUT：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	AC 120V/60Hz		
Test Mode ：	802.11b/CH01, CH06, CH11		

Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH01	2412	15.97	30	1
CH06	2437	14.83	30	1
CH11	2462	14.08	30	1

EUT：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	AC 120V/60Hz		
Test Mode ：	802.11g/CH01, CH06, CH11		

Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH01	2412	21.01	30	1
CH06	2437	20.97	30	1
CH11	2462	20.16	30	1

7. ANTENNA CONDUCTED SPURIOUS EMISSION

7.1 APPLIED PROCEDURES / LIMIT

FCC Part15, Subpart C			
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	Aug. 31, 2011

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

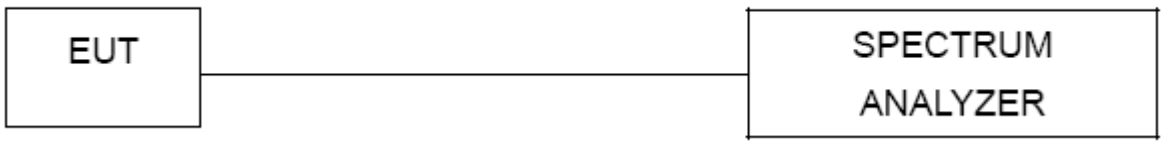
7.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. 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

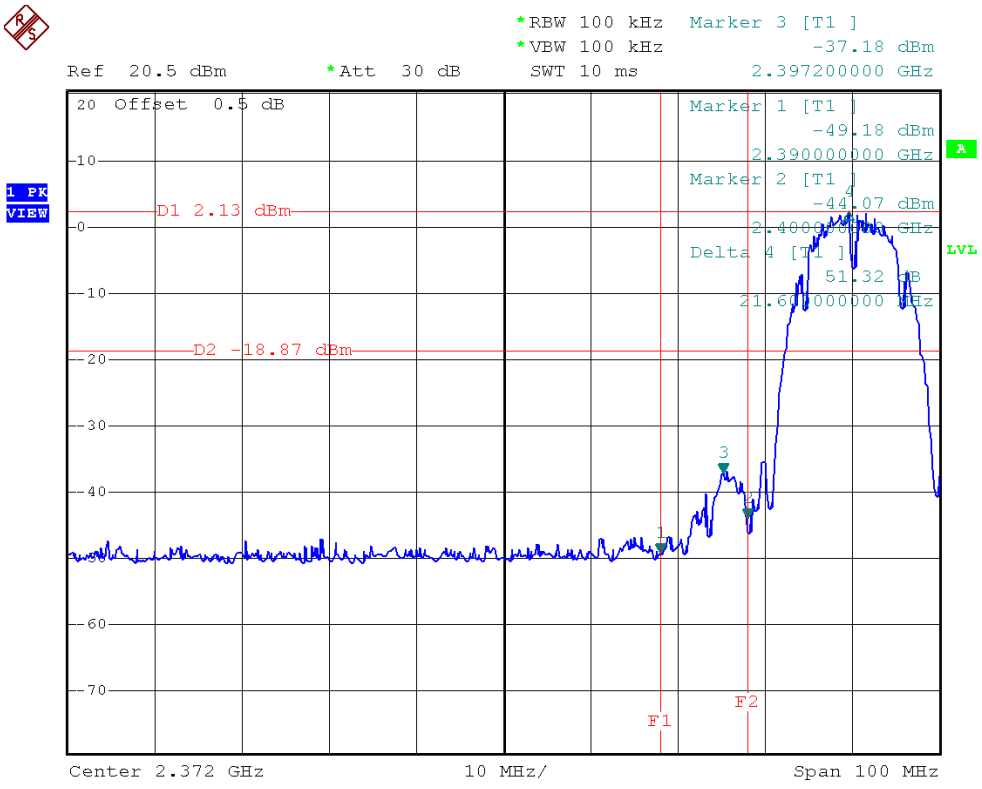
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

7.1.6 TEST RESULTS

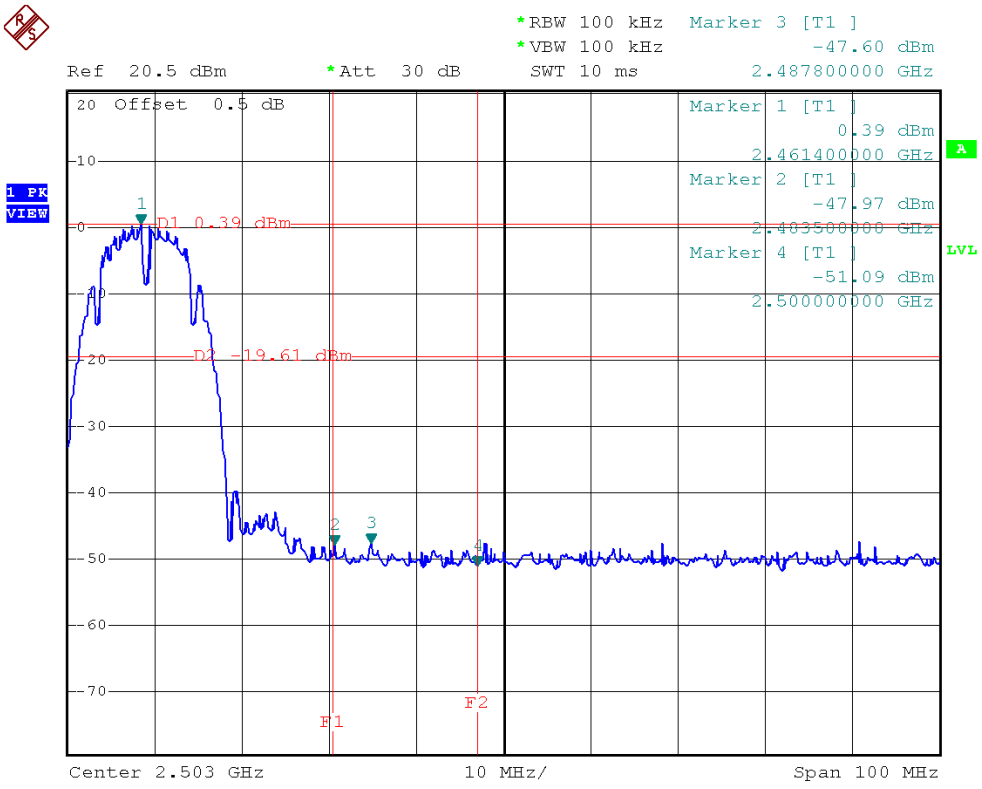
EUT：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	AC 120V/60Hz		
Test Mode ：	802.11b/CH01, CH11		

Channel of Worst Data: CH1,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)
2397.20	-37.18	2487.80	-47.60
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 lever of the desired power.			

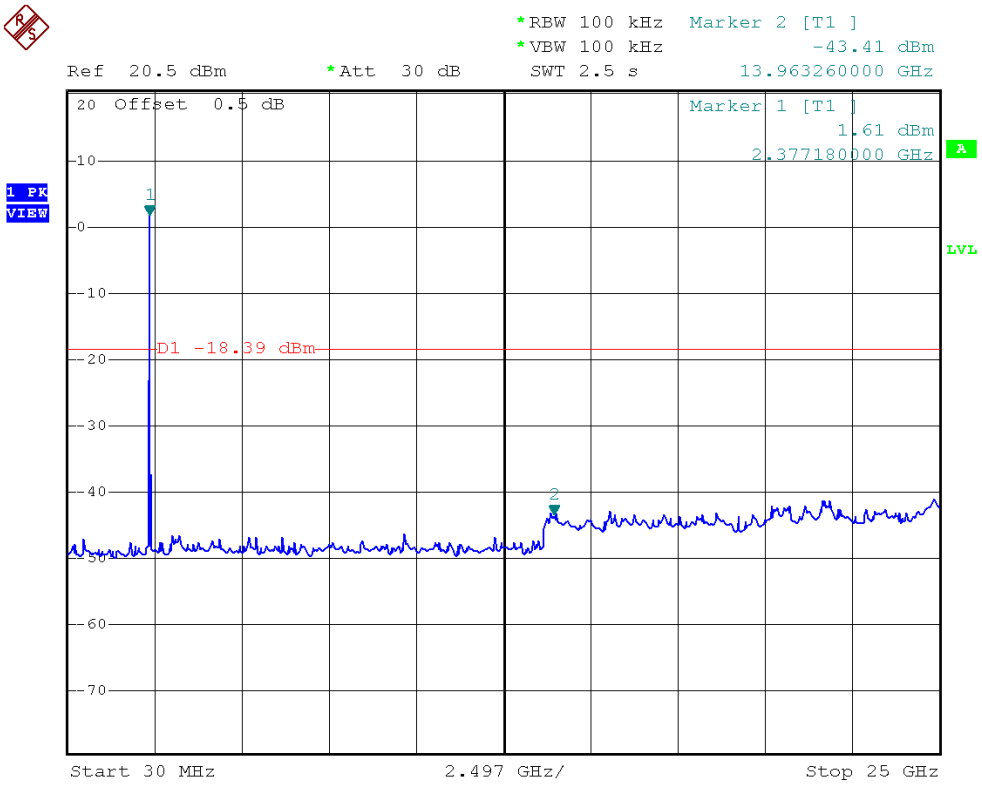
CH01


*RBW 100 kHz
*VBW 100 kHz
Ref 20.5 dBm
*Att 30 dB
SWT 10 ms
Marker 3 [T1]
-37.18 dBm
2.397200000 GHz
20 Offset 0.5 dB
Marker 1 [T1]
-49.18 dBm
2.390000000 GHz
Marker 2 [T1]
-44.07 dBm
2.400000000 GHz
Delta 4 [T1]
51.32 dB
21.600000000 MHz
1 PK
VIEW
D1 2.13 dBm
D2 -18.87 dBm
A
LVL
F1
F2
Center 2.372 GHz
10 MHz/
Span 100 MHz

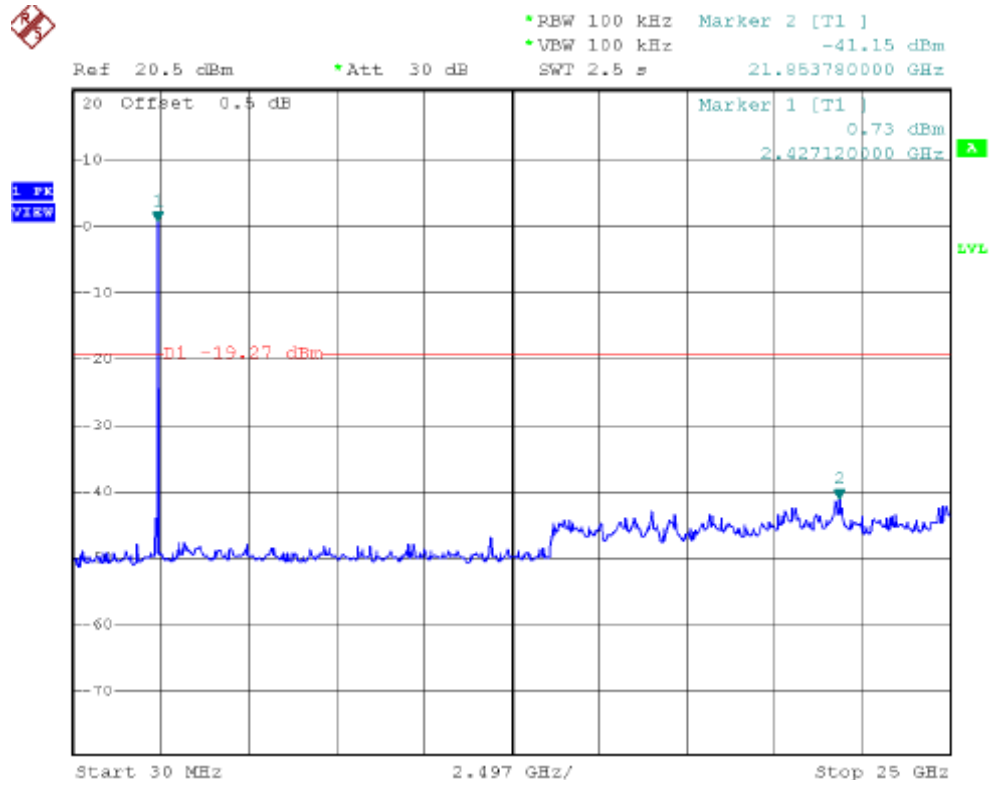
CH11


*RBW 100 kHz
*VBW 100 kHz
Ref 20.5 dBm
*Att 30 dB
SWT 10 ms
Marker 3 [T1]
-47.60 dBm
2.487800000 GHz
20 Offset 0.5 dB
Marker 1 [T1]
0.39 dBm
2.461400000 GHz
Marker 2 [T1]
-47.97 dBm
2.483500000 GHz
Marker 4 [T1]
-51.09 dBm
2.500000000 GHz
1 PK
VIEW
D1 0.39 dBm
D2 -19.61 dBm
A
LVL
F1
F2
Center 2.503 GHz
10 MHz/
Span 100 MHz

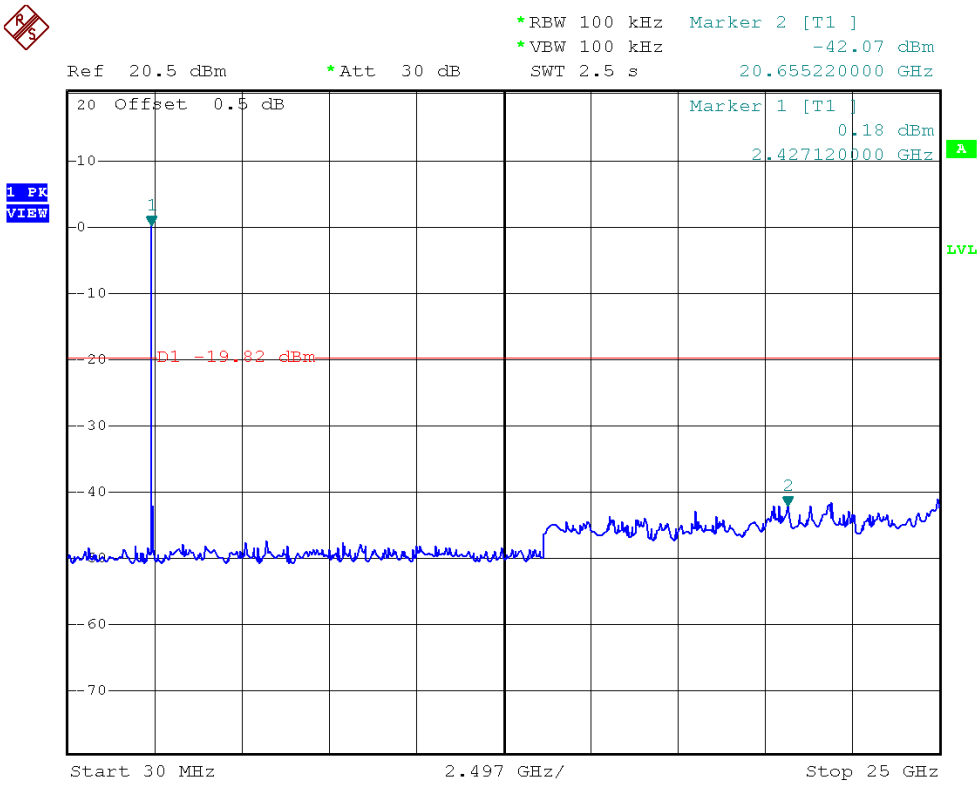
CH01


*RBW 100 kHz
*VBW 100 kHz
Ref 20.5 dBm
*Att 30 dB
SWT 2.5 s
Marker 2 [T1]
-43.41 dBm
13.963260000 GHz
20 Offset 0.5 dB
Marker 1 [T1]
1.61 dBm
2.377180000 GHz
1 PK VIEW
LVL
D1 -18.39 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz

CH06


*RBW 100 kHz
*VBW 100 kHz
Ref 20.5 dBm
*Att 30 dB
SWT 2.5 s
Marker 2 [T1]
-41.15 dBm
21.853780000 GHz
20 Offset 0.5 dB
Marker 1 [T1]
0.73 dBm
2.427120000 GHz
1 PK VIEW
LVL
D1 -19.27 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz

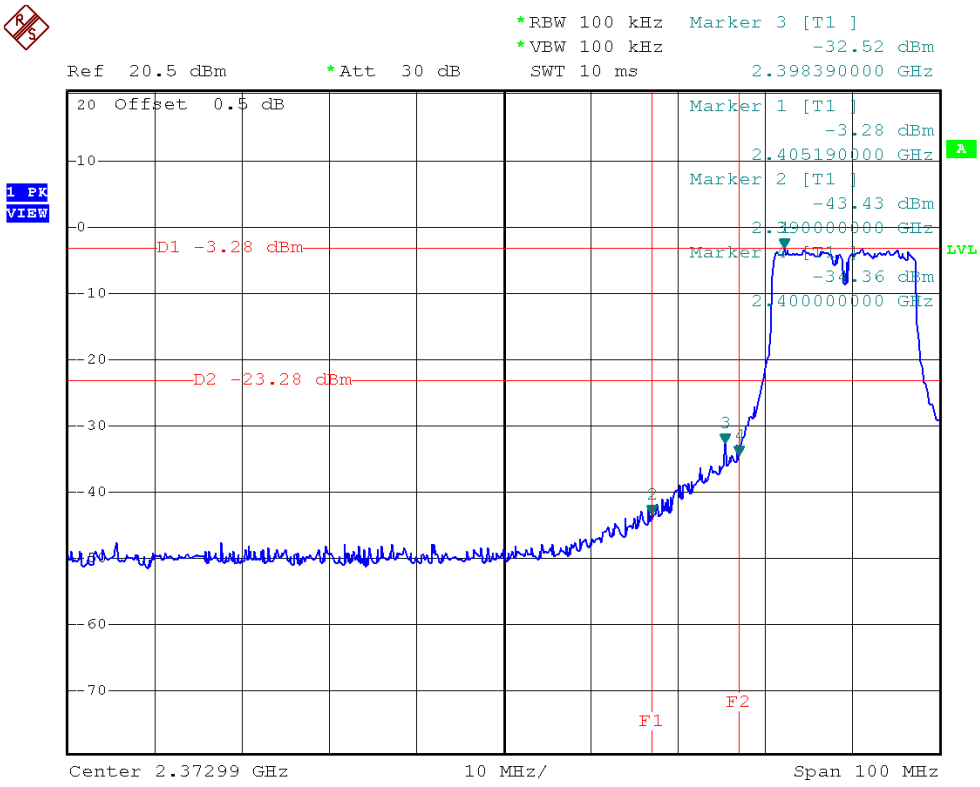
CH11


*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 2 [T1]
-42.07 dBm
20.655220000 GHz
Ref 20.5 dBm
*Att 30 dB
Offset 0.5 dB
Marker 1 [T1]
0.18 dBm
2.427120000 GHz
1 PK
VIEW
A
LVL
D1 -19.82 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz

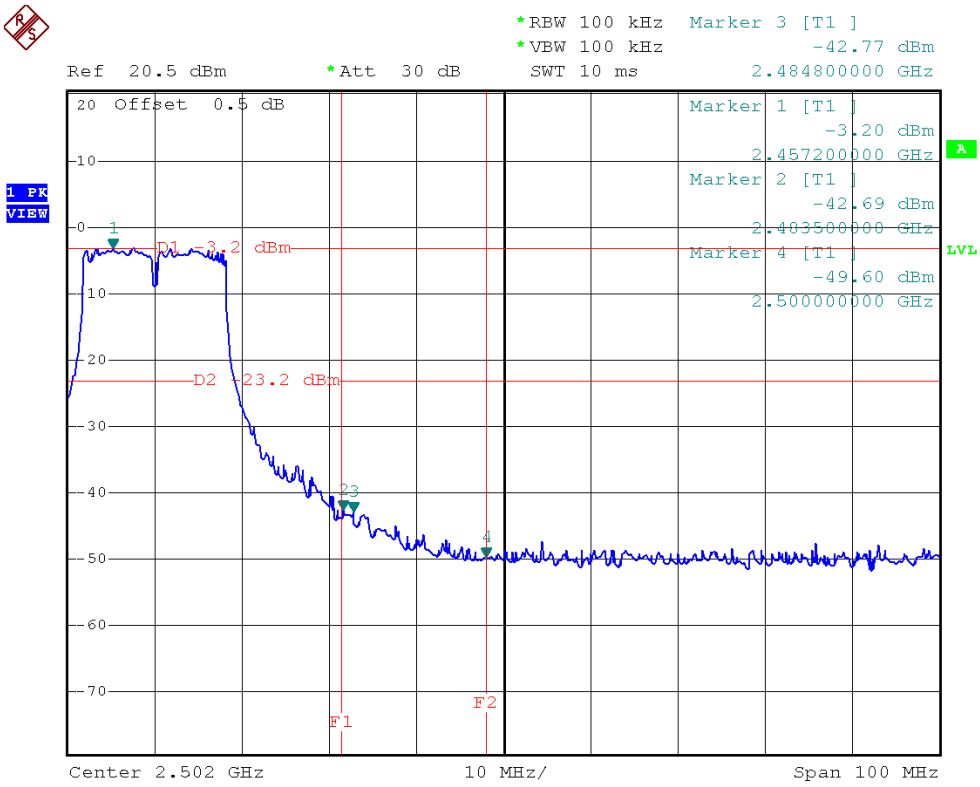
EUT：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	AC 120V/60Hz		
Test Mode ：	802.11g/CH01, CH11		

Channel of Worst Data: CH1,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)
2398.39	-32.52	2484.80	-42.77
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 lever of the desired power.			

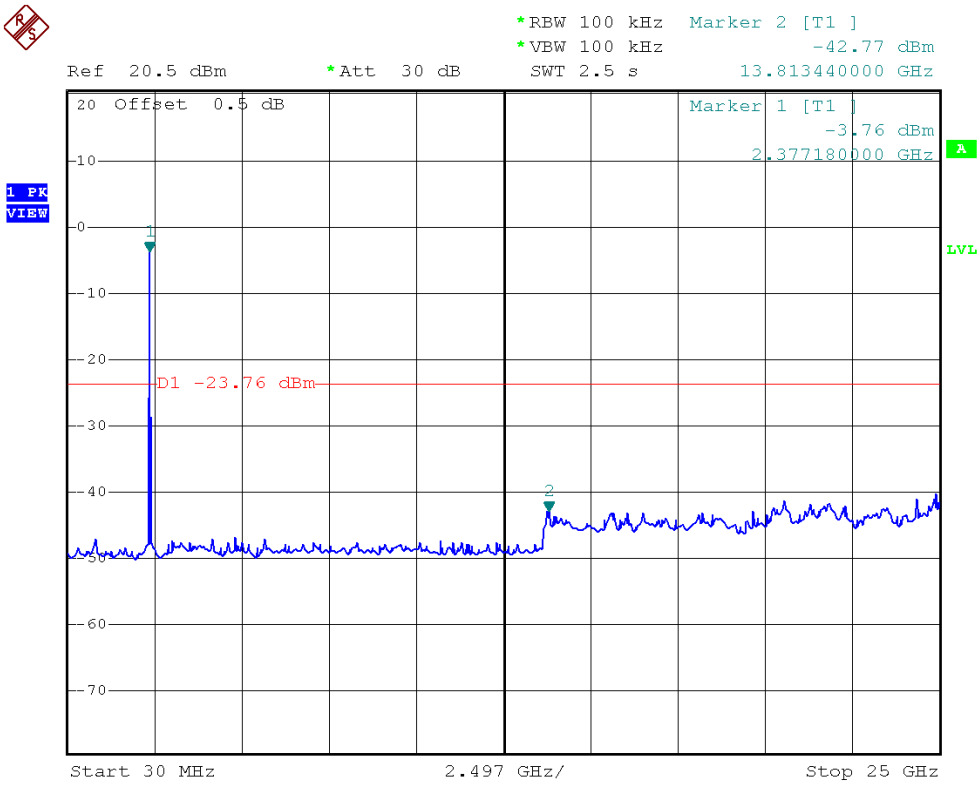
CH01


*RBW 100 kHz
*VBW 100 kHz
Ref 20.5 dBm
*Att 30 dB
SWT 10 ms
Marker 3 [T1]
-32.52 dBm
2.398390000 GHz
20 Offset 0.5 dB
Marker 1 [T1]
-3.28 dBm
2.405190000 GHz
Marker 2 [T1]
-43.43 dBm
2.390000000 GHz
Marker 4 [T1]
-38.36 dBm
2.400000000 GHz
1 PK
VIEW
A
LVL
D1 -3.28 dBm
D2 -23.28 dBm
F1
F2
Center 2.37299 GHz
10 MHz/
Span 100 MHz

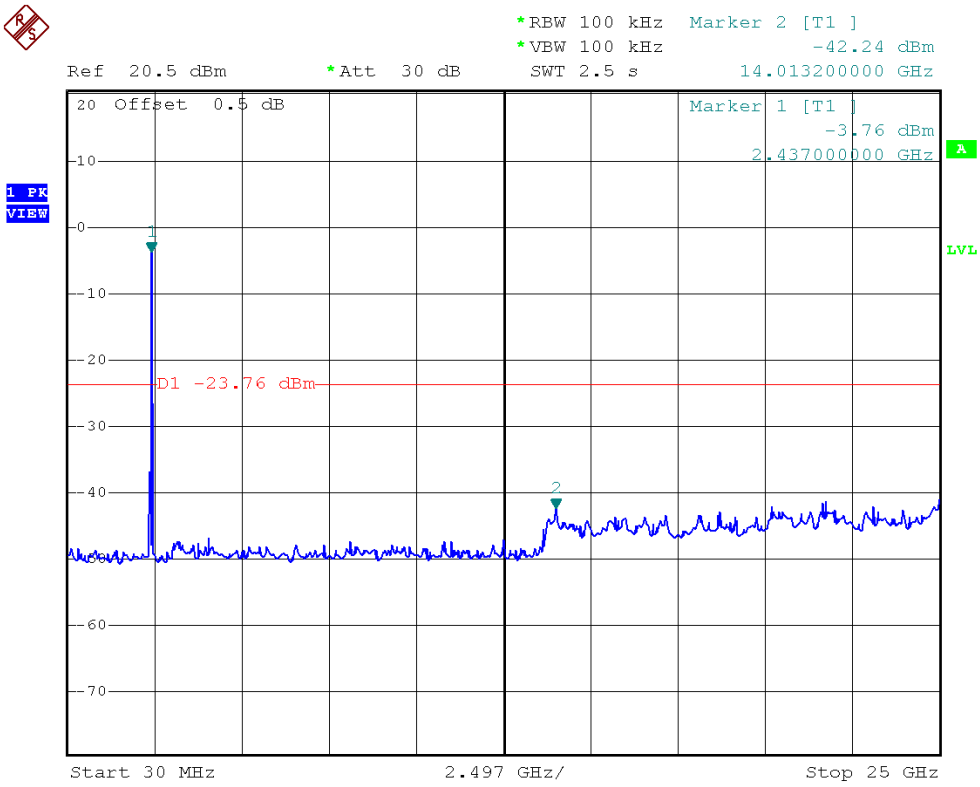
CH11


*RBW 100 kHz
*VBW 100 kHz
Ref 20.5 dBm
*Att 30 dB
SWT 10 ms
Marker 3 [T1]
-42.77 dBm
2.484800000 GHz
20 Offset 0.5 dB
Marker 1 [T1]
-3.20 dBm
2.457200000 GHz
Marker 2 [T1]
-42.69 dBm
2.403500000 GHz
Marker 4 [T1]
-49.60 dBm
2.500000000 GHz
1 PK
VIEW
A
LVL
D1 -3.2 dBm
D2 -23.2 dBm
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz

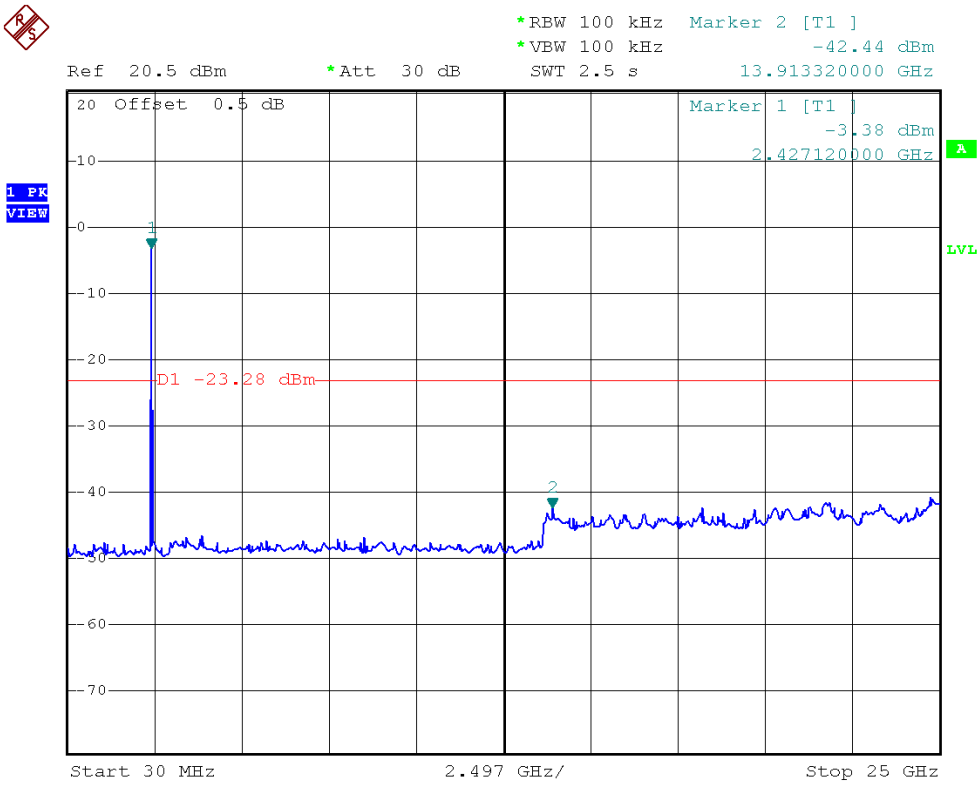
CH01


*RBW 100 kHz
*VBW 100 kHz
Ref 20.5 dBm
*Att 30 dB
SWT 2.5 s
Marker 2 [T1]
-42.77 dBm
13.813440000 GHz
20 Offset 0.5 dB
Marker 1 [T1]
-3.76 dBm
2.377180000 GHz
1 PK
VIEW
A
LVL
D1 -23.76 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz

CH06


*RBW 100 kHz
*VBW 100 kHz
Ref 20.5 dBm
*Att 30 dB
SWT 2.5 s
Marker 2 [T1]
-42.24 dBm
14.013200000 GHz
20 Offset 0.5 dB
Marker 1 [T1]
-3.76 dBm
2.437000000 GHz
1 PK
VIEW
A
LVL
D1 -23.76 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz

CH11


*RBW 100 kHz
*VBW 100 kHz
Ref 20.5 dBm
*Att 30 dB
SWT 2.5 s
Marker 2 [T1]
-42.44 dBm
13.913320000 GHz
20 Offset 0.5 dB
Marker 1 [T1]
-3.38 dBm
2.427120000 GHz
1 PK
VIEW
A
LVL
10
0
-10
-20
-30
-40
-50
-60
-70
D1 -23.28 dBm
1
2
Start 30 MHz
2.497 GHz/
Stop 25 GHz

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	Aug. 31, 2011

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

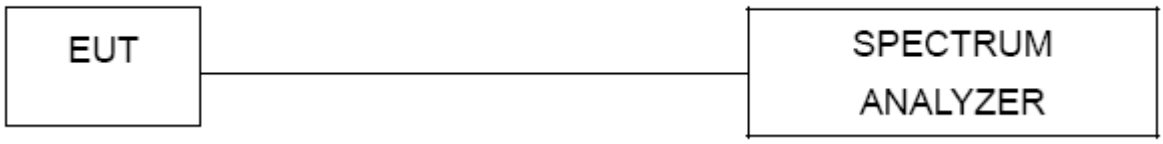
8.1.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. 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

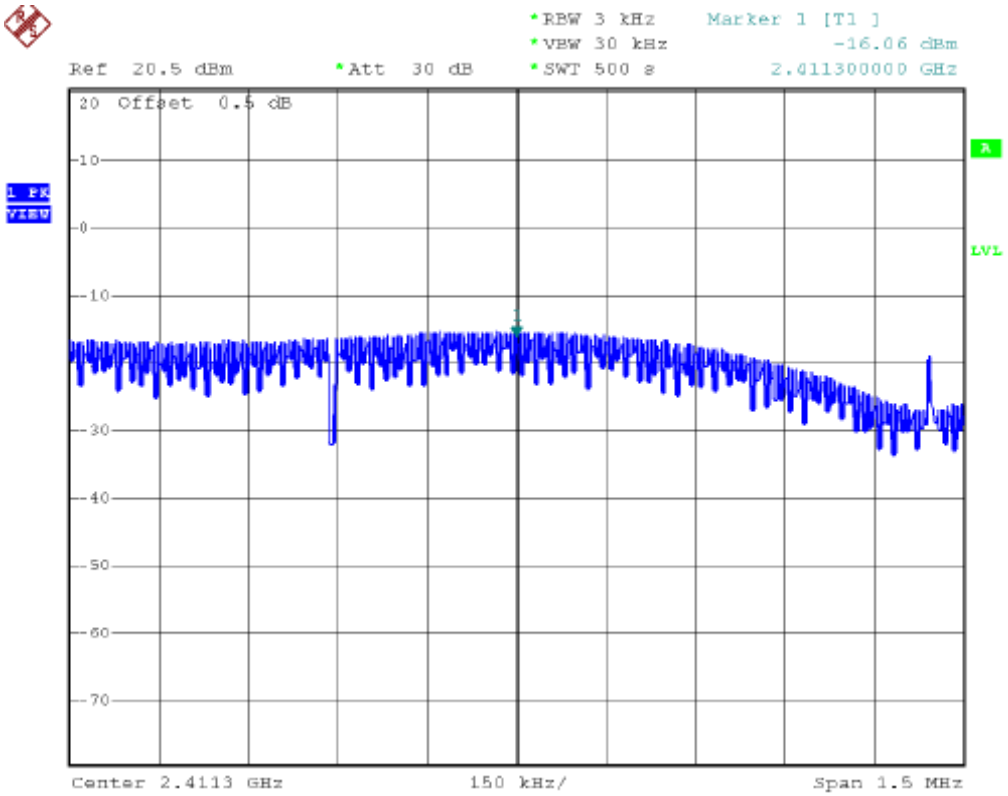
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

8.1.6 TEST RESULTS

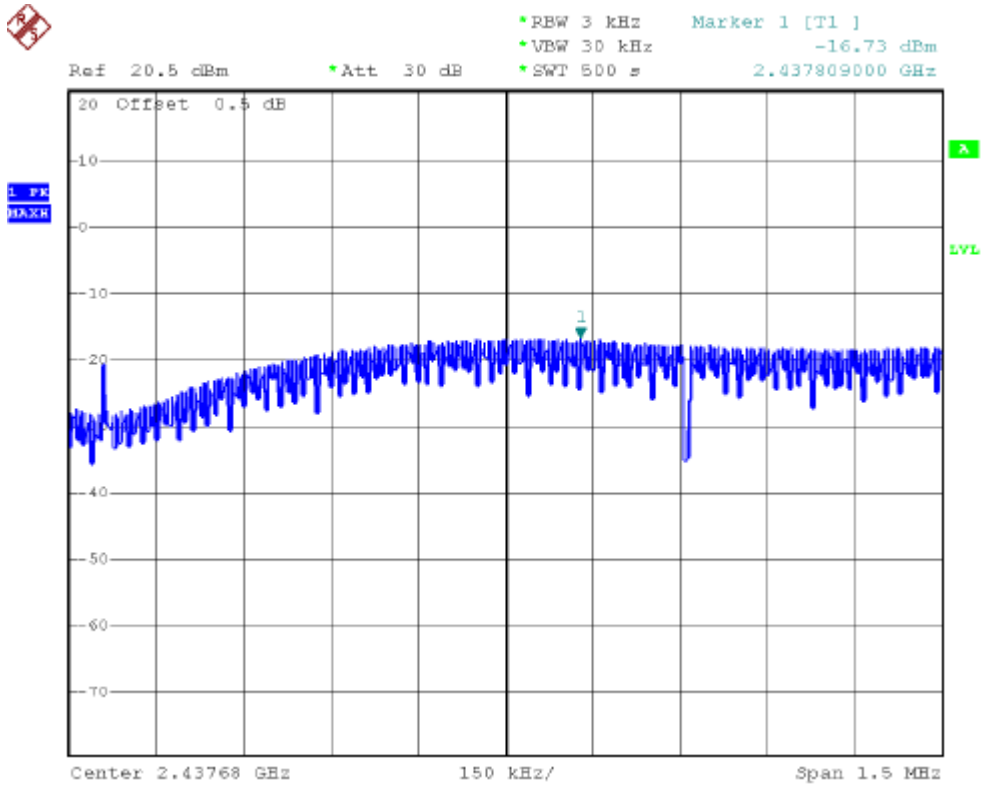
EUT：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	AC 120V/60Hz		
Test Mode ：	802.11b/CH01, CH06, CH11		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH01	2412	-16.06	8
CH06	2437	-16.73	8
CH11	2462	-17.07	8

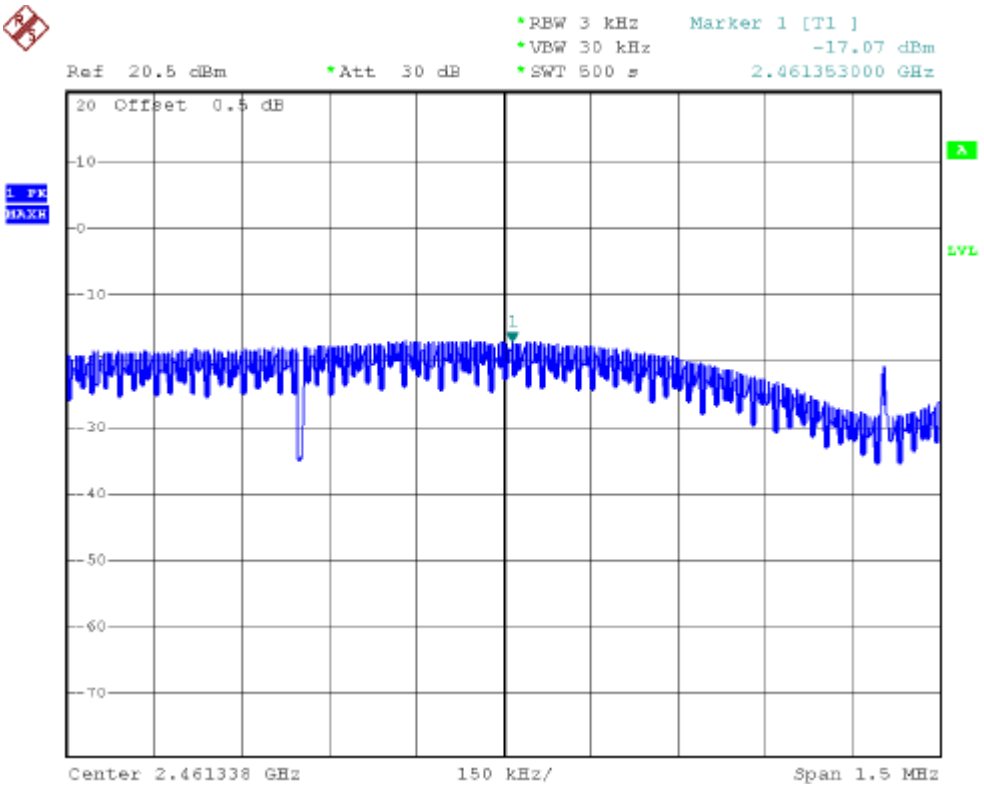
CH01



CH06


*RBW 3 kHz
Marker 1 [T1]
*VBW 30 kHz
-16.73 dBm
Ref 20.5 dBm
*Att 30 dB
*SWT 500 s
2.437809000 GHz
20 Offset 0.5 dB
1 PK MAXH
A
LVL
10
0
-10
-20
-40
-50
-60
-70
Center 2.43768 GHz
150 kHz/
Span 1.5 MHz

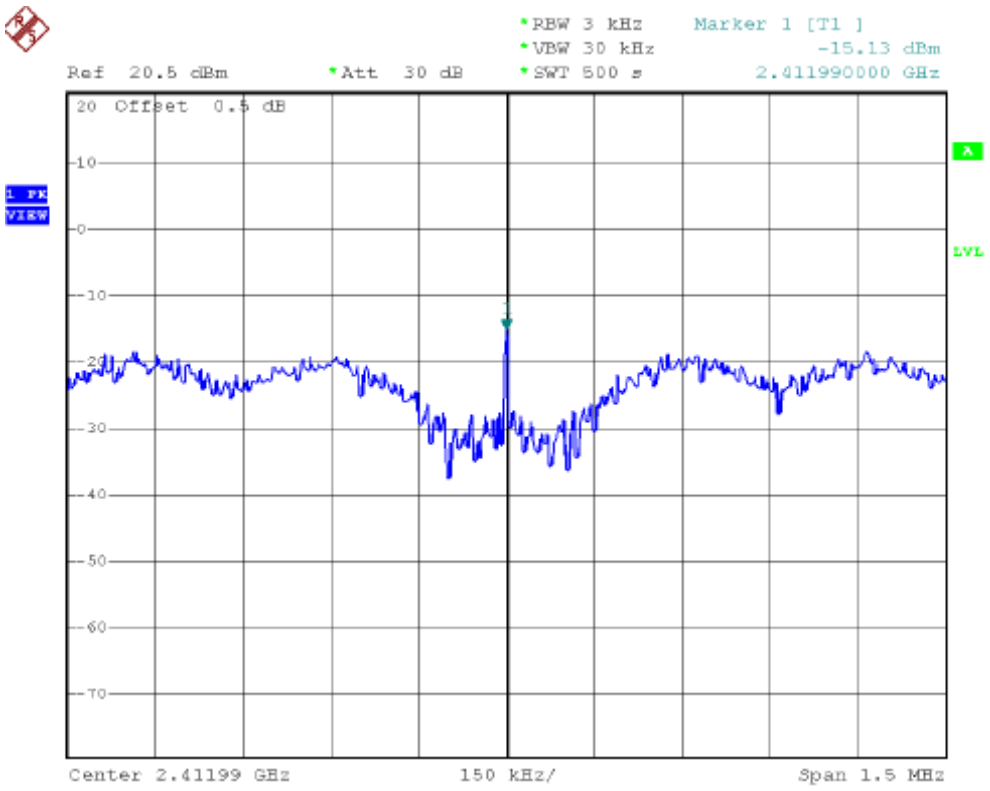
CH11


*RBW 3 kHz
Marker 1 [T1]
*VBW 30 kHz
-17.07 dBm
Ref 20.5 dBm
*Att 30 dB
*SWT 500 s
2.461353000 GHz
20 Offset 0.5 dB
1 PK MAXH
A
LVL
10
0
-10
-30
-40
-50
-60
-70
Center 2.461338 GHz
150 kHz/
Span 1.5 MHz

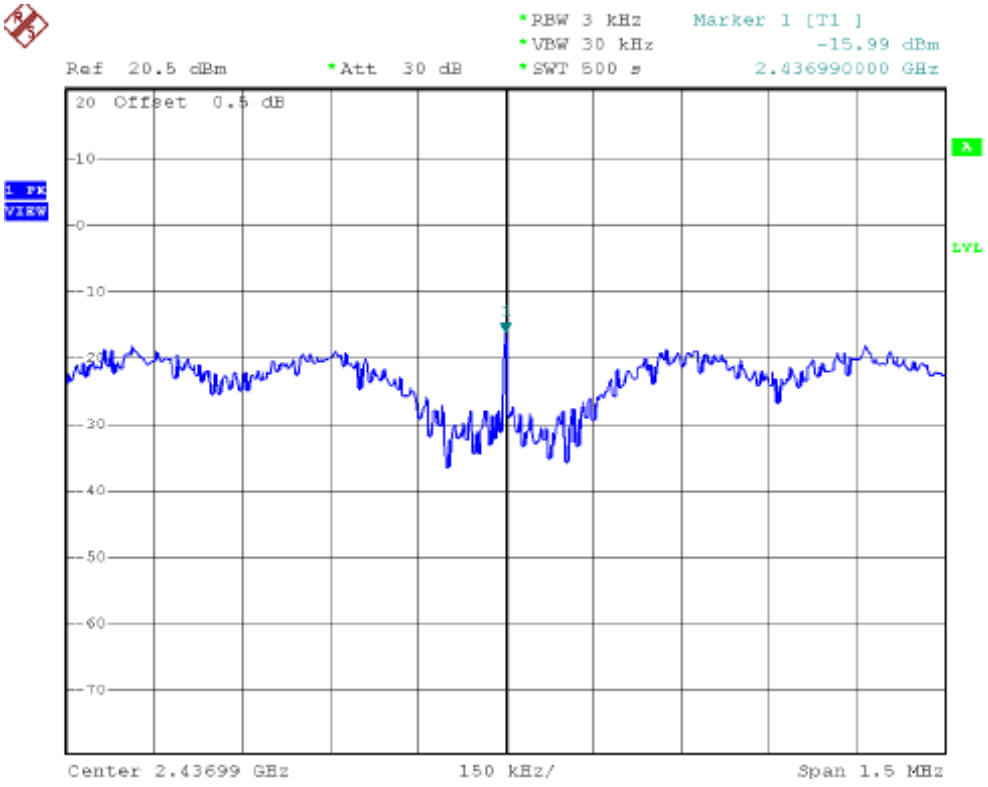
EUT：	Terminal	Model Name ：	8230 (Scanner Type: 2D)
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	AC 120V/60Hz		
Test Mode ：	802.11g/CH01, CH06, CH11		

Test Channel	Frequency (MHz)	Power Density (dBm)	LIMIT (dBm)
CH01	2412	-15.13	8
CH06	2437	-15.99	8
CH11	2462	-16.57	8

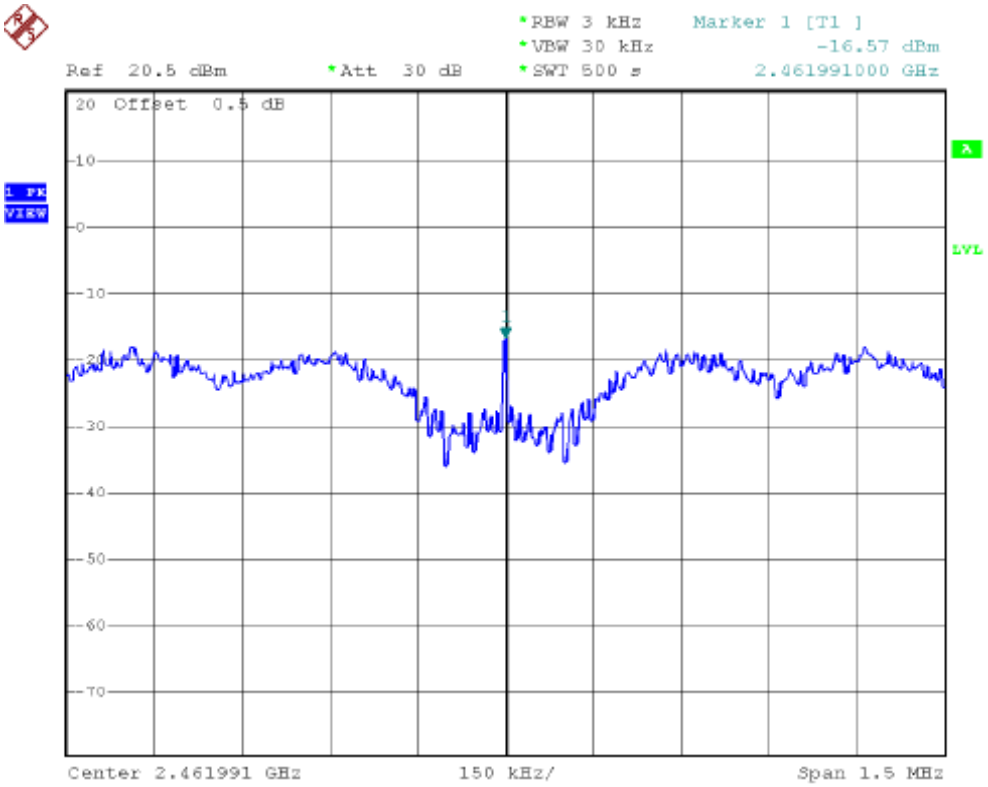
CH01



CH06


*RBW 3 kHz
Marker 1 [T1]
*VBW 30 kHz
-15.99 dBm
Ref 20.5 dBm
*Att 30 dB
*SWT 500 s
2.436990000 GHz
20 Offset 0.5 dB
10
0
-10
-20
-30
-40
-50
-60
-70
1 PK
VIEW
A
LVL
Center 2.43699 GHz
150 kHz/
Span 1.5 MHz

CH11


*RBW 3 kHz
Marker 1 [T1]
*VBW 30 kHz
-16.57 dBm
Ref 20.5 dBm
*Att 30 dB
*SWT 500 s
2.461991000 GHz
20 Offset 0.5 dB
10
0
-10
-20
-30
-40
-50
-60
-70
1 PK
VIEW
A
LVL
Center 2.461991 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^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

9.1.1 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.

9.1.2 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

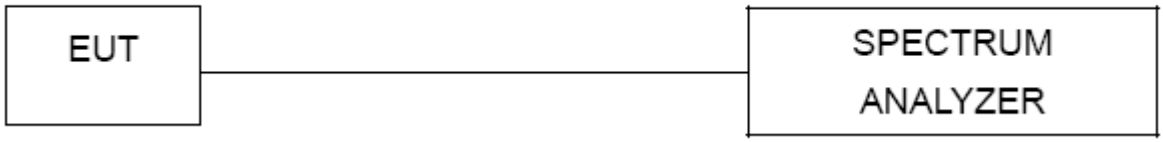
Pd $= \frac{30 \times P \times G}{377 \times d^2}$

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

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

EUT：	Terminal	Model Name ：	8230
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	AC 120V/60Hz		
Test Mode ：	802.11b/CH01, CH06, CH11		

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	1.79	1.5101	15.9700	39.5367	0.011884	1
2437	1.79	1.5101	14.8300	30.4089	0.009140	1
2462	1.79	1.5101	14.0800	25.5859	0.007690	1

EUT：	Terminal	Model Name ：	8230
Temperature：	25°C	Relative Humidity：	31%
Test Voltage：	AC 120V/60Hz		
Test Mode ：	802.11g/CH01, CH06, CH11		

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	1.79	1.5101	21.0100	126.1828	0.037927	1
2437	1.79	1.5101	20.9700	125.0259	0.037579	1
2462	1.79	1.5101	20.1600	103.7528	0.031185	1

11. HISTORY

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

Attachment No.	Issue Date	Description