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FCC PART 15 SUBPART C TEST REPORT

Part 15.247

Report Reference No.....:	**CTL1411252830-WF01-1**
Compiled by (position+printed name+signature) .:	File administrators Jacky Chen
Name of the organization performing the tests (position+printed name+signature) .:	Test Engineer Happy Guo
Approved by (position+printed name+signature) .:	Manager Tracy Qi
Date of issue.....:	Jan. 27, 2015
Test Laboratory Name .....:	**Shenzhen CTL Testing Technology Co., Ltd.**
Address .....:	Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, China 518055
Applicant's name.....:	**Cubee Hypermedia Inc.**
Address .....:	1-1 Jihu Road Neihu District TaiPei
Test specification:	
Standard.....:	FCC Part 15.247: Operation within the bands 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz.
TRF Originator.....:	Shenzhen CTL Testing Technology Co., Ltd.
Master TRF.....:	Dated 2011-01

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Test item description .....:	Familybook
FCC ID……..:	2ADJQ14A11G7
Trade Mark .....:	N/A
Model/Type reference .....:	Familybook Genesis 1
Wi-Fi	
Work frequency .....:	802.11b/g/n(20MHz): 2412~2462MHz
Type of modulation.....:	802.11b DSSS, 802.11g/n: OFDM
Data Rate .....:	802.11b: 1/2/5.5/11 Mbps 802.11g: 6/9/12/18/24/36/48/54 Mbps 802.11n: up to 65 Mbps
Antenna Gain .....:	1.5 dBi
Antenna type .....:	Internal
Result .....:	**Positive**

TEST REPORT

Test Report No. :	CTL1411252830-WF01-1	Jan. 27, 2015 Date of issue

Equipment under Test	:	Familybook
Model /Type	:	Familybook Genesis 1
Applicant	:	**Cubee Hypermedia Inc.**
Address	:	1-1 Jihu Road Neihu District TaiPei
Manufacturer	:	**Cubee Hypermedia Inc.**
Address	:	1-1 Jihu Road Neihu District TaiPei

Test Result according to the standards on page 4:	**Positive**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Shenzhen CTL Testing Technology Co.,Ltd.

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1. TEST STANDARDS

The tests were performed according to following standards:

FCC Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.

ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.

ANSI C63.4-2009

KDB Publication No. 558074 D01 v03r02 Guidance on Measurements for Digital Transmission Systems

华检检测 Shenzhen CTL Testing Technology Co.,Ltd.

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	Jan. 22, 2015
Testing commenced on	:	Jan. 22, 2015
Testing concluded on	:	Jan. 26, 2015

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage	:	●	120V / 60 Hz	○	115V / 60Hz
		○	12 V DC	○	24 V DC
		○	Other (specified in blank below)		

Description of the test mode

IEEE 802.11b/g/n(HT20): Thirteen channels are provided to the EUT, but only eleventh channels used for USA.

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

2.3. Short description of the Equipment under Test (EUT)

Familybook, support 802.11b/g/n.

For more details, refer to the user's manual of the EUT.

Serial number: Prototype

2.4. EUT operation mode

Test Mode:

1. Test program used to control the EUT for staying in continuous transmitting.
Channel low (2412MHz), mid (2437MHz) and high (2462MHz) for 802.11b/g/n(HT20) with highest data rate are chosen for full testing , the dutycycle>98%.
2. Test Mode:

Test Mode(TM)	Description	Remark
1	Transmitting	802.11 b 2412MHz, 2437MHz, 2462MHz
2	Transmitting	802.11 g 2412MHz, 2437MHz, 2462MHz
3	Transmitting	802.11 n HT20 2412MHz, 2437MHz, 2462MHz

2.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

○ - supplied by the manufacturer

● - supplied by the lab

○ AC adapter Manufacturer : Cubee Hypermedia Inc.
Model No. : FKS308HSC-1201500U

2.6. NOTE

1. The EUT is a 7.85″ Familybook,The functions of the EUT listed as below:

	Test Standards	Reference Report
WLAN 802.11b/g, 802.11n	FCC Part 15 Subpart C (Section15.247) FCC Per 47 CFR 2.1091(b)	CTL1411252830-WF

2. The frequency bands used in this EUT are listed as follows:

Frequency Band(MHz)	2400-2483.5	5150-5350	5470-5725	5725-5850
802.11b	√	—	—	—
802.11g	√	—	—	—
802.11n(20MHz)	√	—	—	—

3. The EUT incorporates a SISO function, Physically,the EUT provides two completed transmitter and two completed receivers.

Modulation Mode	TX Function
802.11b	1TX
802.11g	1TX
802.11n (20MHz)	1TX

2.7. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCCID: 2ADJQ14A11G7 filing to comply with of the FCC part15.247 Rules.

2.8. Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen CTL Testing Technology Co., Ltd.
Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, China 518055

The sites are constructed in conformance with the requirements of ANSI C6230, ANSI C63.4 (2009) and CISPR Publication 22.

3.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

IC Registration No.: 9618B

The 3m alternate test site of Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration No.: 9618B on November 13, 2013.

FCC-Registration No.: 970318

Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 970318, December 19, 2013.

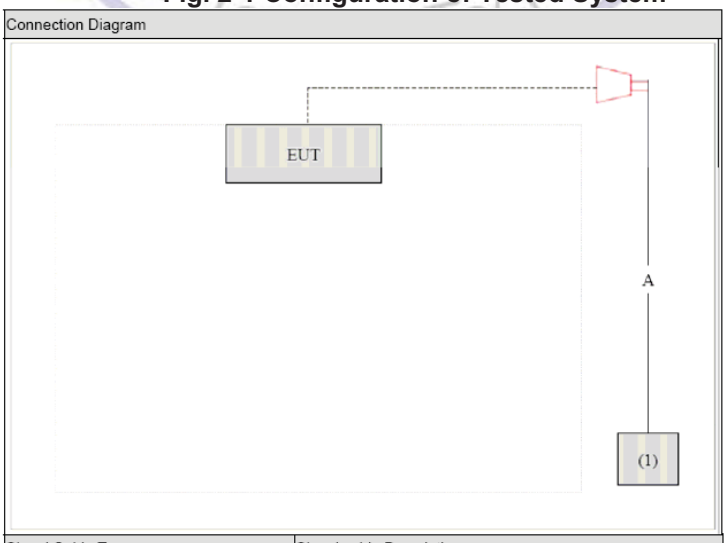
3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

3.4. Configuration of Tested System

Fig. 2-1 Configuration of Tested System



Signal Cable Type		Signal cable Description
A	Coaxial Cable	Shielded, >5m

3.5. Duty Cycle

Operated Mode for Worst Duty Cycle		
☐ Operated normally mode for worst duty cycle		
☒ Operated test mode for worst duty cycle		
Mode	Duty Cycle (%)	Duty Factor (dB)
11b	100	0
11g	100	0
11n HT20	100	0

3.6. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen CTL Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CTL laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10dB	(1)
Radiated Emission	Above 1GHz	4.32dB	(1)
Conducted Disturbance	0.15~30MHz	3.20dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Shenzhen CTL Testing Technology Co.,Ltd.

3.7. Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
Bilog Antenna	Sunol Sciences Corp.	JB1	A061713	2014/07/12	2015/07/11
EMI Test Receiver	R&S	ESCI	103710	2014/07/10	2015/07/09
Spectrum Analyzer	Agilent	E4407B	MY45108355	2014/07/06	2015/07/05
Controller	EM Electronics	Controller EM 1000	N/A	2014/07/06	2015/07/05
Horn Antenna	Sunol Sciences Corp.	DRH-118	A062013	2014/07/12	2015/07/11
Horn Antenna	SCHWARZBECK	BBHA9170	1562	2014/07/12	2015/07/11
Active Loop Antenna	SCHWARZBECK	FMZB1519	1519-037	2014/07/12	2015/07/11
LISN	R&S	ENV216	101316	2014/07/10	2015/07/09
LISN	SCHWARZBECK	NSLK8127	8127687	2014/07/10	2015/07/09
Microwave Preamplifier	HP	8349B	3155A00882	2014/07/10	2015/07/09
Amplifier	HP	8447D	3113A07663	2014/07/10	2015/07/09
Transient Limiter	Com-Power	LIT-153	532226	2014/07/10	2015/07/09
Radio Communication Tester	R&S	CMU200	3655A03522	2014/07/06	2015/07/05
Temperature/Humidity Meter	zhicheng	ZC1-2	22522	2014/07/10	2015/07/09
SIGNAL GENERATOR	HP	8647A	3200A00852	2014/07/10	2015/07/09
Wideband Peak Power Meter	Anritsu	ML2495A	220.23.35	2014/07/06	2015/07/05
Power Sensor	Anritsu	MA2411B	0738552	2014/07/06	2015/07/05
Climate Chamber	ESPEC	EL-10KA	A20120523	2014/07/06	2015/07/05
High-Pass Filter	K&L	9SH10-2700/X12750-O/O	/	2014/07/06	2015/07/05
High-Pass Filter	K&L	41H10-1375/U12750-O/O	/	2014/07/06	2015/07/05
RF Cable	HUBER+SUHNER	RG214	/	2014/07/09	2015/07/08

3.8. Summary of Test Result

FCC PART 15		
FCC Part 15.207	AC Power Conducted Emission	PASS
FCC Part 15.247(a)(2)	6dB Bandwidth	PASS
FCC Part 15.247(d)	Spurious RF Conducted Emission	PASS
FCC Part 15.247(b)	Maximum Peak Output Power	PASS
FCC Part 15.247(e)	Power Spectral Density	PASS
FCC Part 15.109/ 15.205/ 15.209	Radiated Emissions	PASS
FCC Part 15.247(d)	Band Edge Compliance of RF Emission	PASS
FCC Part 15.203/15.247 (b)	Antenna Requirement	PASS

Remark: The measurement uncertainty is not included in the test result.

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

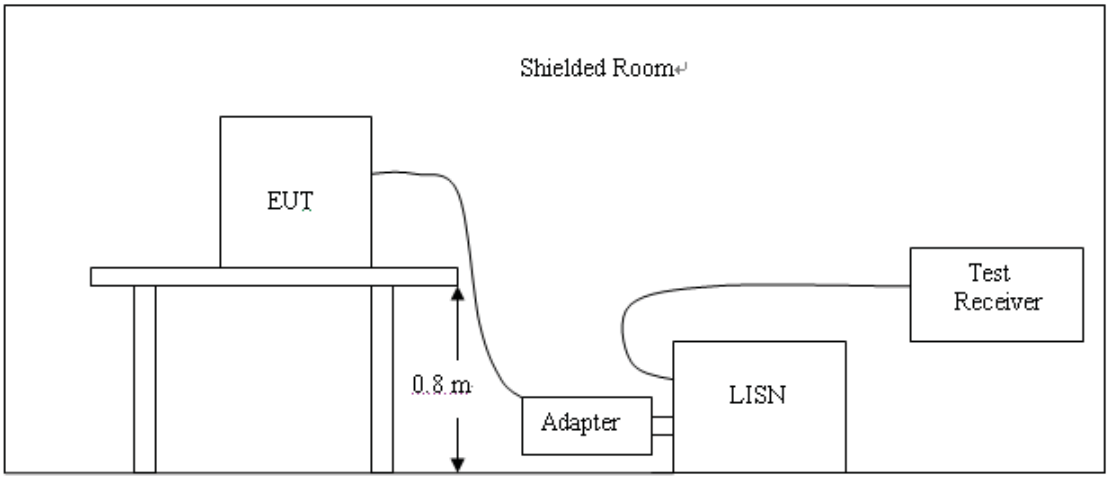
Test Items	Mode	Data Rate	Channel
AC Power Conducted Emission	Keeping TX	11 Mbps	1
Maximum Peak Conducted Output Power Power Spectral Density 6dB Bandwidth Spurious RF conducted emission	11b/DSSS	11 Mbps	1/6/11
	11g/OFDM	54 Mbps	1/6/11
	11n(20MHz)/OFDM	65Mbps	1/6/11
Radiated Emission 30MHz~1GHz	11b/DSSS	11 Mbps	1/6/11
	11g/OFDM	54 Mbps	1/6/11
	11n(20MHz)/OFDM	65Mbps	1/6/11
Radiated Emission 1GHz~10th Harmonic	11b/DSSS	11 Mbps	1/6/11
	11g/OFDM	54 Mbps	1/6/11
	11n(20MHz)/OFDM	65Mbps	1/6/11
Band Edge Compliance of RF Emission	11b/DSSS	11 Mbps	1/11
	11g/OFDM	54 Mbps	1/11
	11n(20MHz)/OFDM	65Mbps	1/11

Note1: According exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test.

4. TEST CONDITIONS AND RESULTS

4.1. Conducted Emissions Test

TEST CONFIGURATION



TEST PROCEDURE

For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following：

Frequency (MHz)	Maximum RF Line Voltage (dBμv)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

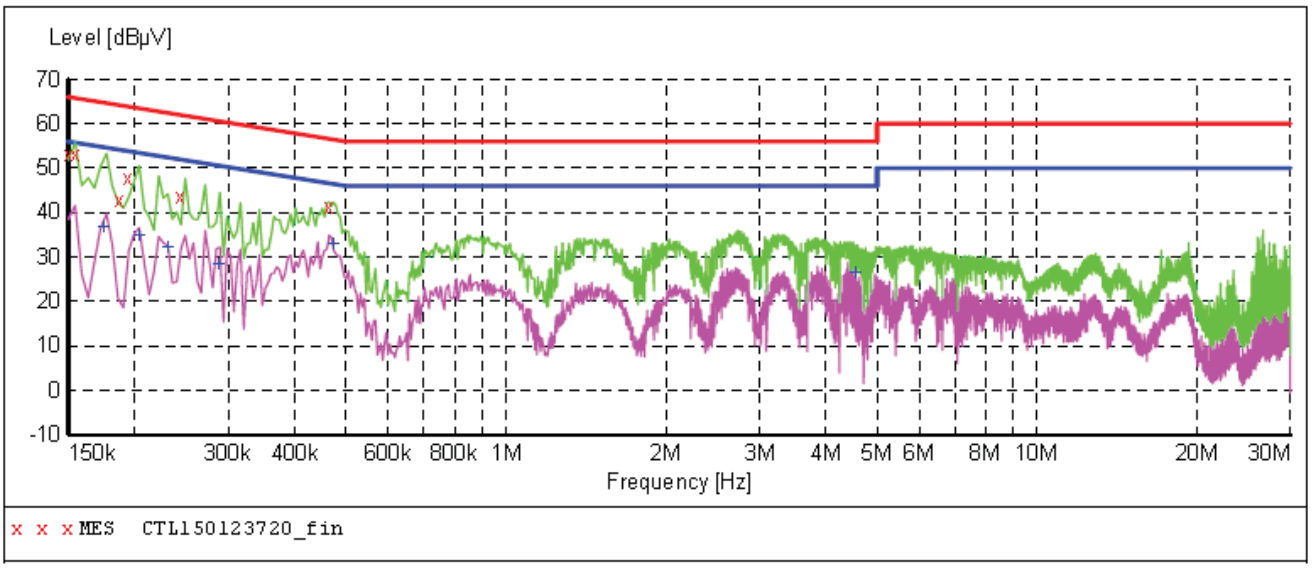
1. Please follow the guidelines in ANSI C63.4-2009.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connecting to the other LISN.
5. The LISN provides 50 ohm coupling impedance for the measuring instrument.
6. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
7. Both sides of AC line were checked for maximum conducted interference.
8. The frequency range from 150 kHz to 30 MHz was searched.
9. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

The RBW/VBW for 150KHz to 30MHz: 9KHz

TEST RESULTS

SCAN TABLE: "Voltage (9K-30M)FIN"

Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL150123720_fin"

1/23/2015 7:19PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	53.20	10.2	66	12.8	QP	L1	GND
0.154000	53.20	10.2	66	12.6	QP	L1	GND
0.186000	42.90	10.2	64	21.3	QP	L1	GND
0.194000	47.70	10.2	64	16.2	QP	L1	GND
0.242000	43.50	10.2	62	18.5	QP	L1	GND
0.462000	41.20	10.2	57	15.5	QP	L1	GND

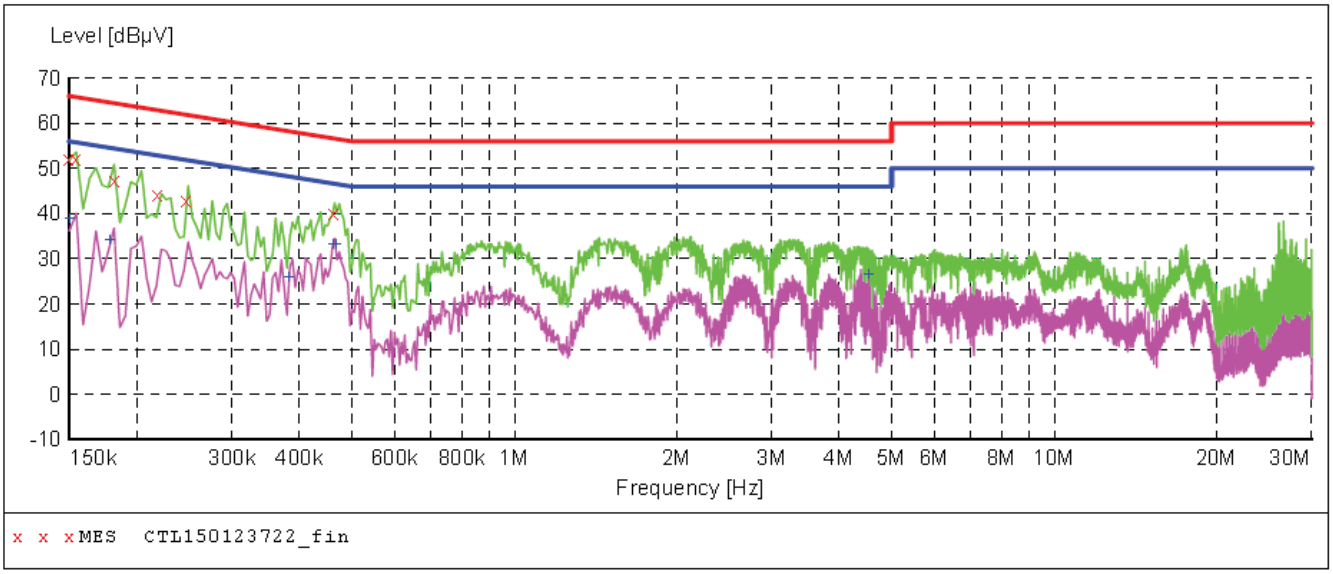
MEASUREMENT RESULT: "CTL150123720_fin2"

1/23/2015 7:19PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.174000	36.80	10.2	55	18.0	AV	L1	GND
0.202000	34.80	10.2	54	18.7	AV	L1	GND
0.230000	32.30	10.2	52	20.1	AV	L1	GND
0.286000	28.30	10.2	51	22.3	AV	L1	GND
0.470000	33.10	10.2	47	13.4	AV	L1	GND
4.538000	26.40	10.4	46	19.6	AV	L1	GND

SCAN TABLE: "Voltage (9K-30M)FIN"

Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL150123722_fin"

1/23/2015 7:27PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	52.30	10.2	66	13.7	QP	N	GND
0.154000	52.20	10.2	66	13.6	QP	N	GND
0.182000	47.40	10.2	64	17.0	QP	N	GND
0.218000	44.40	10.2	63	18.5	QP	N	GND
0.246000	42.90	10.2	62	19.0	QP	N	GND
0.462000	40.20	10.2	57	16.5	QP	N	GND

MEASUREMENT RESULT: "CTL150123722_fin2"

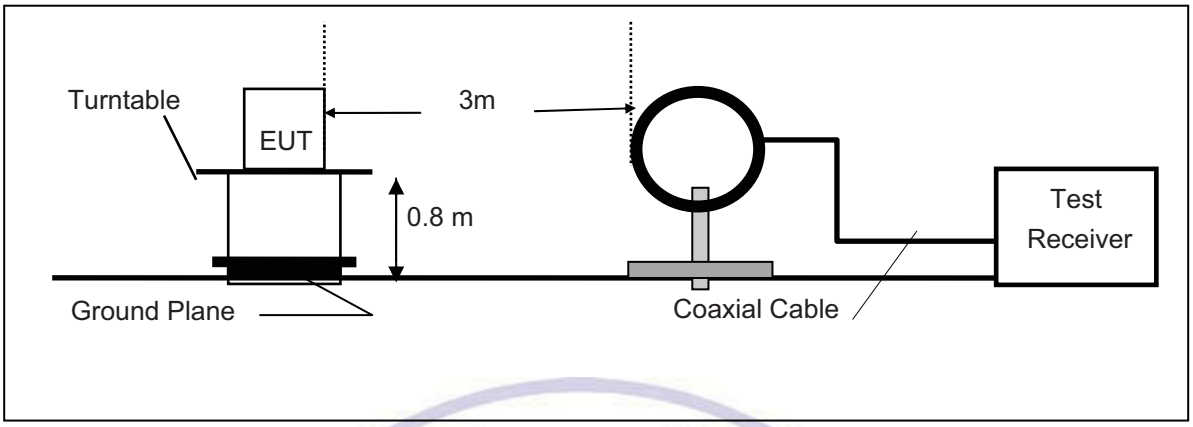
1/23/2015 7:27PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	38.90	10.2	56	17.1	AV	N	GND
0.178000	34.00	10.2	55	20.6	AV	N	GND
0.382000	26.00	10.2	48	22.2	AV	N	GND
0.462000	33.10	10.2	47	13.6	AV	N	GND
0.466000	33.10	10.2	47	13.5	AV	N	GND
4.532000	26.60	10.4	46	19.4	AV	N	GND

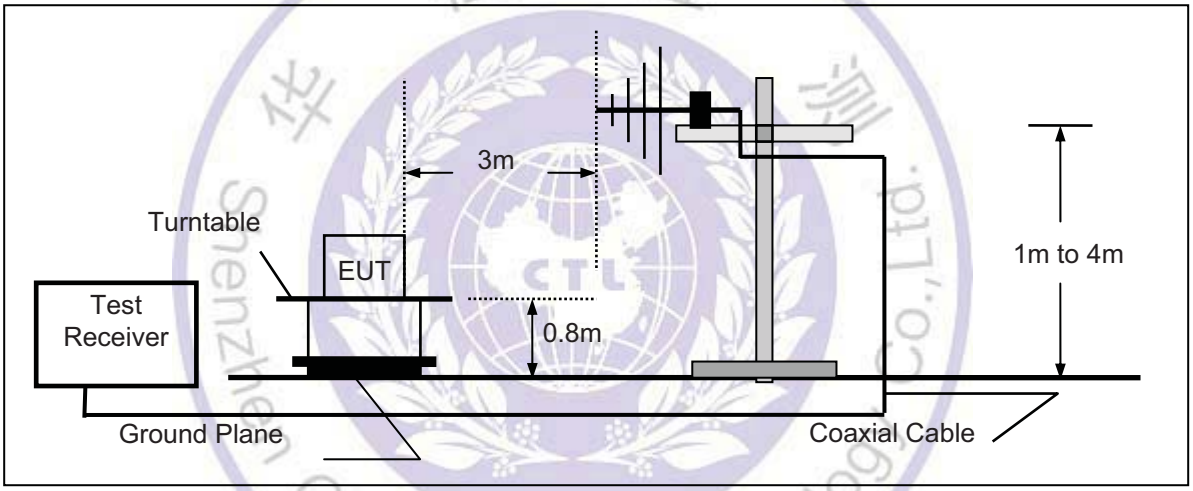
4.2. Radiated Emission Test

TEST CONFIGURATION

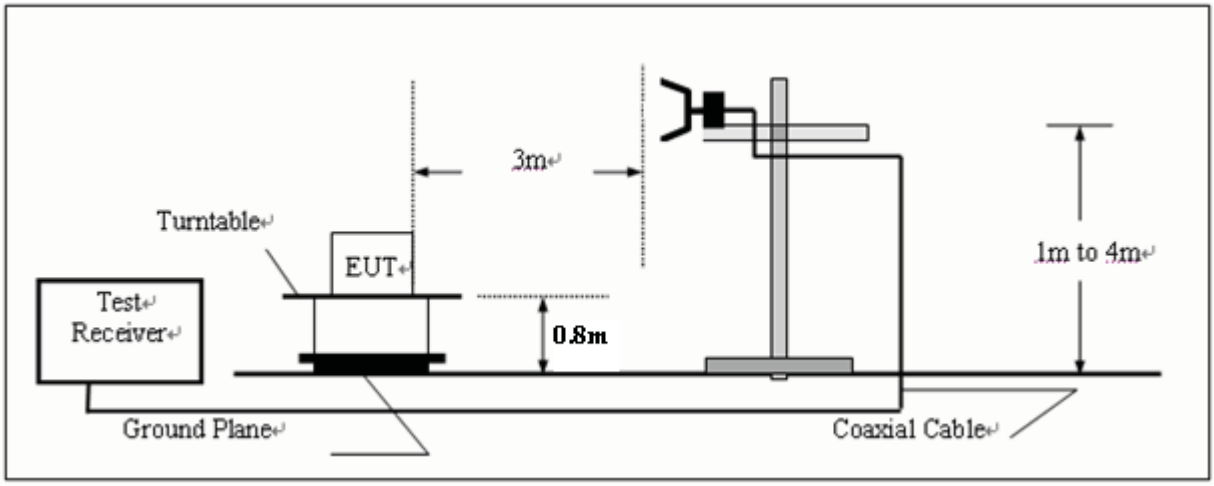
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



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



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

TEST PROCEDURE

1. The testing follows FCC KDB Publication No. 558074 D01 v03r02 (Measurement Guidelines of DTS).
2. The EUT was placed on a turn table which is 0.8m above ground plane.
3. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0℃ to 360℃ to acquire the highest emissions from EUT
4. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
5. Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for f >1 GHz, 100 kHz for f < 1 GHz; VBW ≧RBW; Sweep = auto; Detector function = peak; Trace = max hold.
6. Repeat above procedures until all frequency measurements have been completed.

Note:
When doing emission measurement above 1GHz, the horn antenna will be bended down a little (as horn antenna has the narrow beamwidth) in order to keeping the antenna in the "cone of radiation" of EUT. The 3dB beamwidth is 60 degrees for H-plane and 90 degrees for E-plane.

LIMIT

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values：

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table. According to § 15.247(d), in any 100kHz bandwidth outside the frequency band in which the EUT is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the100kHz bandwidth within the band that contains the highest level of desired power.

TEST RESULTS

9KHz-30MHz:

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

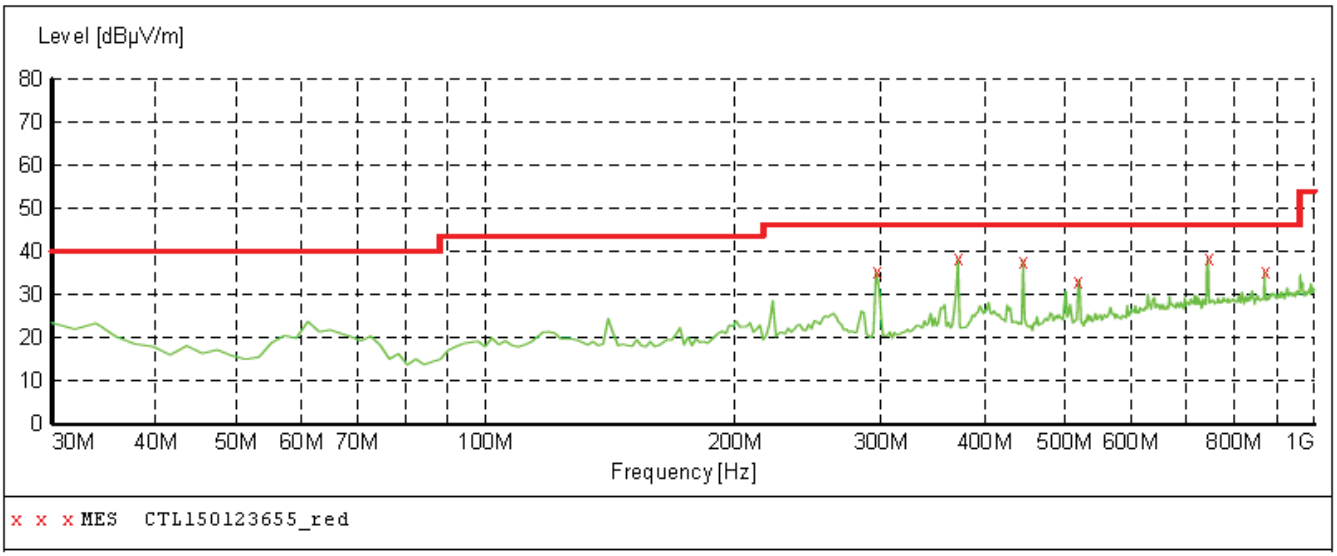
Note: The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Dstance extrapolation factor= 40 log (specific distance/ test distance) (dB);
Limit line= specific limits (dBuV) + distance extrapolation factor.

Below 1GHz:
The radiated measurement are performed the each test mode (b/g/n) and channel (low/mid/high), the datum recorded below (802.11b mode, the middle channel) is the worst case for all the test mode and channel.

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	300.0 ms	120 kHz	JB1



MEASUREMENT RESULT: "CTL150123655_red"

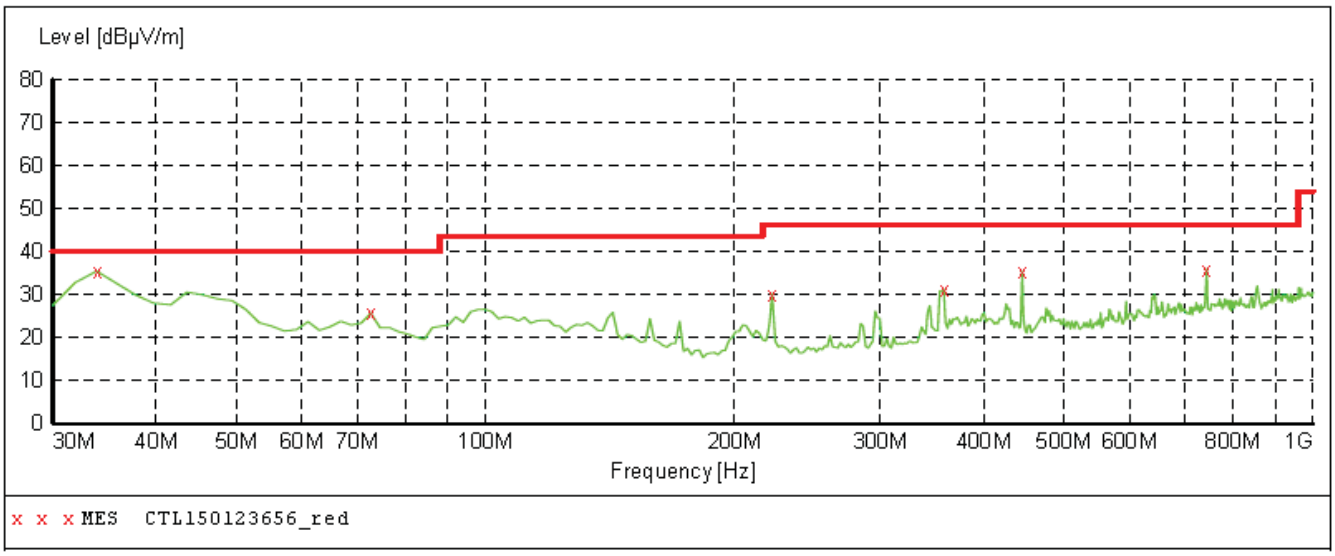
1/23/2015 2:08PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
295.780000	35.20	15.4	46.0	10.8	---	0.0	0.00	HORIZONTAL
371.440000	38.40	17.7	46.0	7.6	---	0.0	0.00	HORIZONTAL
445.160000	37.70	19.2	46.0	8.3	---	0.0	0.00	HORIZONTAL
518.880000	33.20	20.5	46.0	12.8	---	0.0	0.00	HORIZONTAL
743.920000	38.40	24.2	46.0	7.6	---	0.0	0.00	HORIZONTAL
870.020000	35.30	25.5	46.0	10.7	---	0.0	0.00	HORIZONTAL

SWEEP TABLE: "test (30M-1G)"

Short Description: Field Strength

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	300.0 ms	120 kHz	JB1



MEASUREMENT RESULT: "CTL150123656_red"

1/23/2015 2:10PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
33.880000	35.40	18.1	40.0	4.6	---	0.0	0.00	VERTICAL
72.680000	25.60	8.5	40.0	14.4	---	0.0	0.00	VERTICAL
222.060000	30.10	14.2	46.0	15.9	---	0.0	0.00	VERTICAL
357.860000	31.20	17.3	46.0	14.8	---	0.0	0.00	VERTICAL
445.160000	35.30	19.2	46.0	10.7	---	0.0	0.00	VERTICAL
743.920000	35.90	24.2	46.0	10.1	---	0.0	0.00	VERTICAL

CTL Testing Technolo

Above 1GHz:

802.11b

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	V	2411.9	71.6	30.8	102.4	Fundamental	/	PK
	H	245.8	16.4	14.8	31.2	46	14.8	PK
	H	541.4	9.8	19.7	29.5	46	16.5	PK
	V	3200	49.1	-0.6	48.5	54(note3)	5.5	PK
	V	4824	47.8	2.6	50.4	54(note3)	3.6	PK
	V	7236	58.7	8.1	66.8	74	7.2	PK
	V	7236	41.0	8.9	49.9	54	4.1	AV
	H	24000	59.0	-8.9	50.1	54	3.9	PK
6	V	2437	72.6	31.2	103.8	Fundamental	/	PK
	H	359.6	19.9	15.2	35.1	46	10.9	PK
	H	638.9	15.9	21.2	37.1	46	8.9	PK
	V	3200	49.1	-0.6	48.5	54(note3)	5.5	PK
	V	4876	46.1	2.8	48.9	54(note3)	5.1	PK
	V	7298.5	57.0	8.8	65.8	74	8.2	PK
	V	7298.5	42.7	8.1	50.8	54	3.2	AV
	H	24000	59.0	-8.9	50.1	54	3.9	PK
11	V	2462.3	70.8	30.9	101.7	Fundamental	/	PK
	H	698.7	15.9	14.9	30.8	46	15.2	PK
	H	282.6	6.3	21.2	27.5	46	18.5	PK
	V	3200	44.7	-0.6	44.1	54(note3)	9.9	PK
	V	4927	43.8	3	46.8	54(note3)	7.2	PK
	V	7386	53.2	8.9	62.1	74	11.9	PK
	V	7386	41.9	8.9	50.8	54	3.2	AV
	H	24000	59.3	-8.9	50.4	54	3.6	PK

Note: 1. Measure Level = Reading Level + Factor.
2. The test results which are attenuated more than 20 dB below the permissible value limit (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.
3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.
4. RBW = 1MHz VBW =3MHz, Peak detector is for PK value, RMS detector is for AV value.
5. H and V polarity all have been tested , only worst case is reported.

802.11g

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	V	2411.9	71.2	30.8	102.0	Fundamental	/	PK
	H	153.2	25.5	15.7	41.2	46	4.8	PK
	H	453.9	14.4	21.3	35.7	46	10.3	PK
	V	3200	46.2	-0.6	45.6	54(note3)	8.4	PK
	V	4824	47.6	2.6	50.2	54(note3)	3.8	PK
	V	7236	55.9	8.9	64.8	74	9.2	PK
	V	7236	41.8	8.9	50.7	54	3.3	AV
	H	24000	59.1	-8.9	50.2	54	3.8	PK
6	V	2437	71.6	31.2	102.8	Fundamental	/	PK
	H	396.1	18.6	14.8	33.4	46	12.6	PK
	H	443.7	13.5	21.2	34.7	46	11.3	PK
	V	3200	50.8	-0.6	50.2	54(note3)	3.8	PK
	V	4876	46.9	2.8	49.7	54(note3)	4.3	PK
	V	7298.5	57.5	8.8	66.3	74	7.7	PK
	V	7298.5	41.3	8.8	50.1	54	3.9	AV
	H	24000	60.1	-8.9	51.2	54	2.8	PK
11	V	2462.3	71.2	30.9	102.1	Fundamental	/	PK
	H	106.8	11.9	21.2	33.1	46	12.9	PK
	H	396.1	16.0	14.7	30.7	46	15.3	PK
	V	3200	44.7	-0.6	44.1	54(note3)	9.9	PK
	V	4927	42.8	3.0	45.8	54(note3)	8.2	PK
	V	7386	56.9	8.9	65.8	74	8.2	PK
	V	7386	41.5	8.9	50.4	54	3.6	AV
	H	24000	60.2	-8.9	51.3	54	2.7	PK

Note: 1. Measure Level = Reading Level + Factor.
2. The test results which are attenuated more than 20 dB below the permissible value limit (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.
3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.
4. RBW = 1MHz VBW =3MHz, Peak detector is for PK value, RMS detector is for AV value.
5. H and V polarity all have been tested , only worst case is reported.

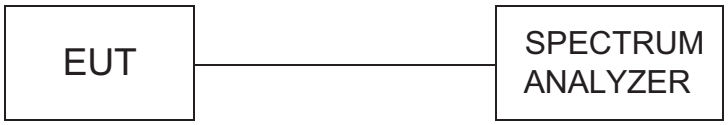
802.11n(20MHz)

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	V	2411.9	71.1	30.8	101.9	Fundamental	/	PK
	H	173.5	9.3	21.2	30.5	46	15.5	PK
	H	517.2	18.0	15.1	33.1	46	12.9	PK
	V	3200	46.4	-0.6	45.8	54(note3)	8.2	PK
	V	4824	47.7	2.6	50.3	54(note3)	3.7	PK
	V	7236	53.9	8.9	62.8	74	11.2	PK
	V	7236	42.2	8.9	51.1	54	2.9	AV
	H	24000	59.7	-8.9	50.8	54	3.2	PK
6	V	2437	70.3	31.2	101.5	Fundamental	/	PK
	H	304.7	11.9	21.2	33.1	46	12.9	PK
	H	682.1	14.8	16.0	30.8	46	15.2	PK
	V	3200	42.4	-0.6	41.8	54(note3)	12.2	PK
	V	4876	41.7	2.8	44.5	54(note3)	9.5	PK
	V	7298.5	56.7	8.8	65.5	74	8.5	PK
	V	7298.5	43.0	8.8	51.8	54	2.2	AV
	H	24000	60.2	-8.9	51.3	54	2.7	PK
11	V	2462.3	70.9	30.9	101.8	Fundamental	/	PK
	H	268.6	17.1	14.7	31.8	46	14.2	PK
	H	304.2	9.5	21.2	30.7	46	15.3	PK
	V	3200	48.7	-0.6	48.1	54(note3)	5.9	PK
	V	4927	42.6	3.0	45.6	54(note3)	8.4	PK
	V	7386	57.7	9.0	66.7	74	7.3	PK
	V	7386	42.7	9.0	51.7	54	2.3	AV
	H	24000	59.7	-8.9	50.8	54	3.2	PK

Note: 1. Measure Level = Reading Level + Factor.
2. The test results which are attenuated more than 20 dB below the permissible value limit (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.
3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.
4. RBW = 1MHz VBW =3MHz, Peak detector is for PK value, RMS detector is for AV value.
5. H and V polarity all have been tested , only worst case is reported.

4.3. 6dB Bandwidth Measurement

TEST CONFIGURATION



TEST PROCEDURE

1. The testing follows FCC KDB Publication No. 558074 D01 v03r02 (Measurement Guidelines of DTS).
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW. The 6 dB bandwidth must be greater than 500 kHz.
4. The marker-delta reading at this point is the 6 dB bandwidth of the emission.

LIMIT

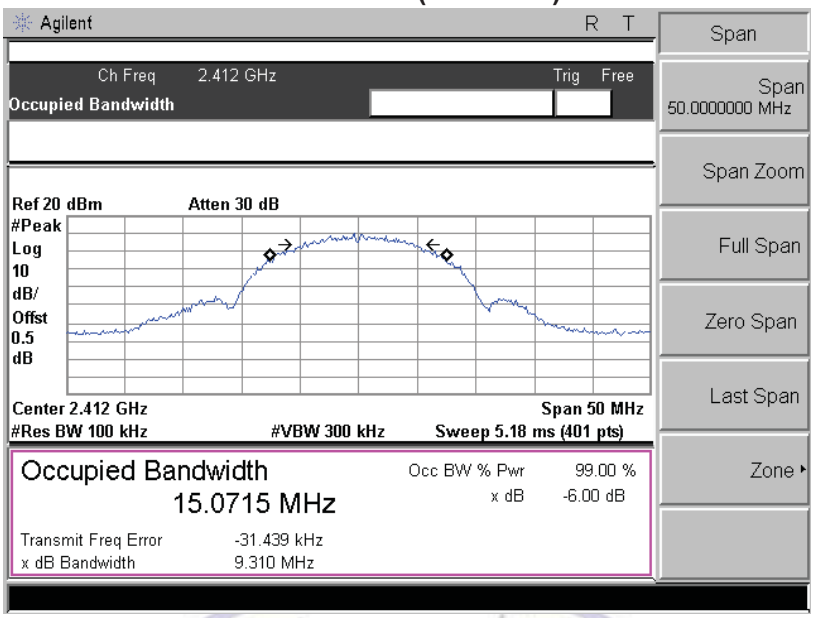
For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

TEST RESULTS

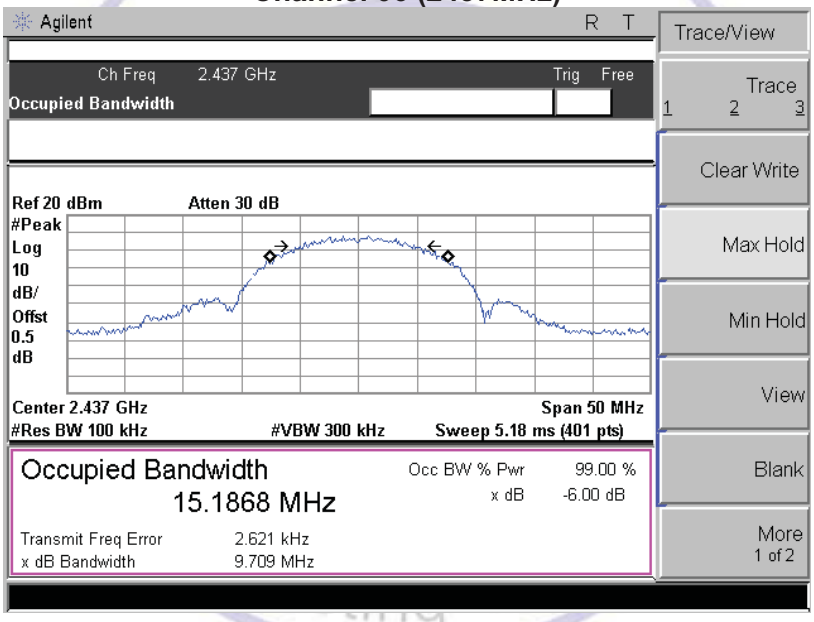
Product	:	Familybook
Test Item	:	6dB Occupied Bandwidth
Test Mode	:	Mode 1: Transmit by 802.11b

Channel No.	Frequency (MHz)	Occupied Bandwidth (kHz)	Limit (kHz)	Result
01	2412	9310	500	Pass
06	2437	9709	500	Pass
11	2462	9423	500	Pass

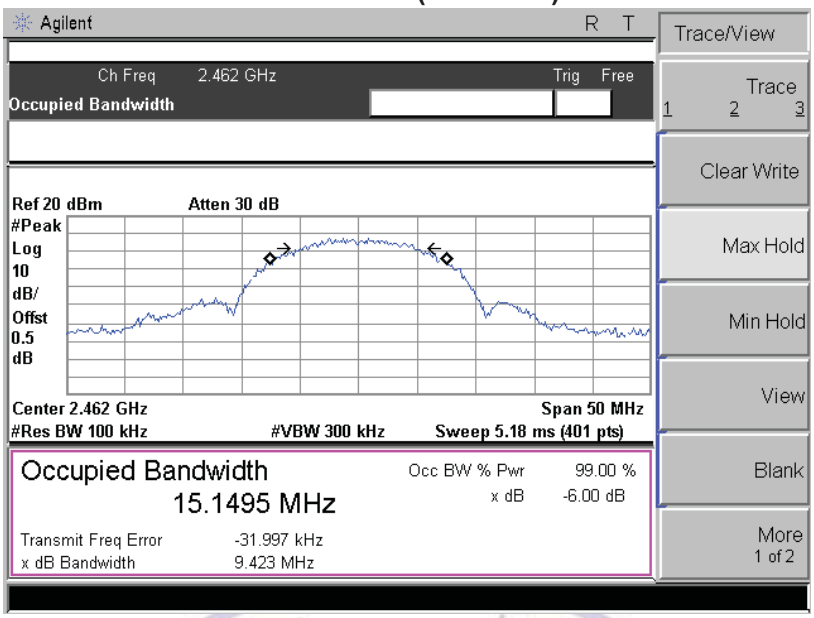
Channel 01 (2412MHz)



Channel 06 (2437MHz)



Channel 11 (2462MHz)



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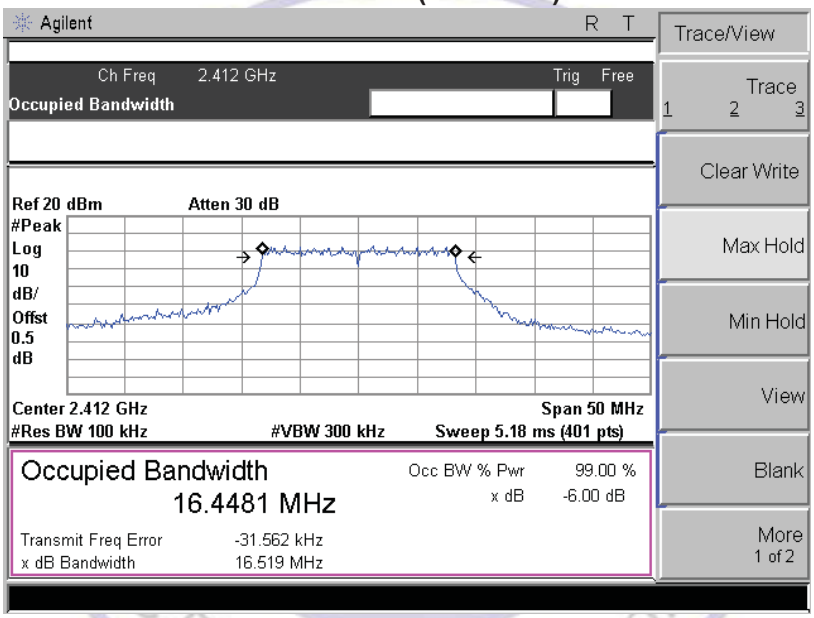
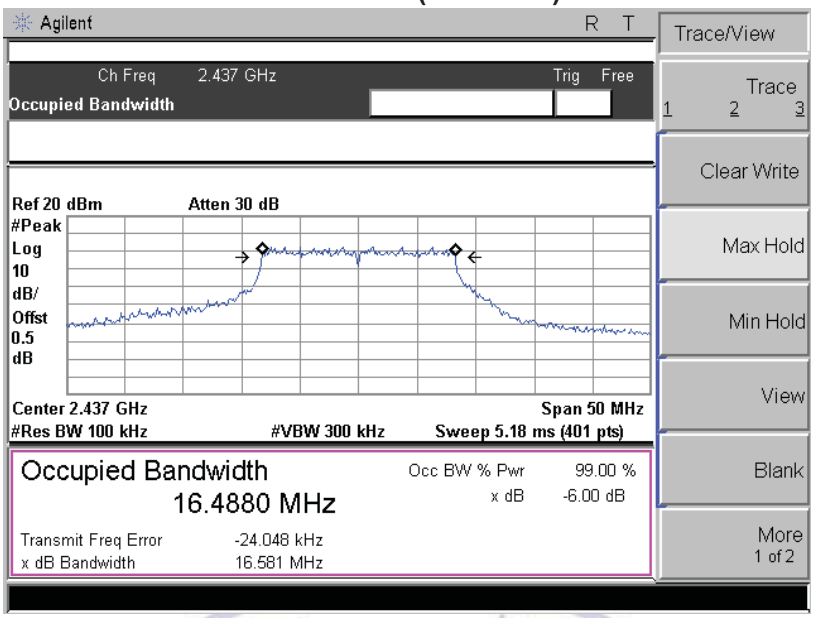
Product	:	Familybook
Test Item	:	6dB Occupied Bandwidth
Test Mode	:	Mode 2: Transmit by 802.11g

Channel No.	Frequency (MHz)	Occupied Bandwidth (kHz)	Limit (kHz)	Result
01	2412	16519	500	Pass
06	2437	16581	500	Pass
11	2462	16558	500	Pass

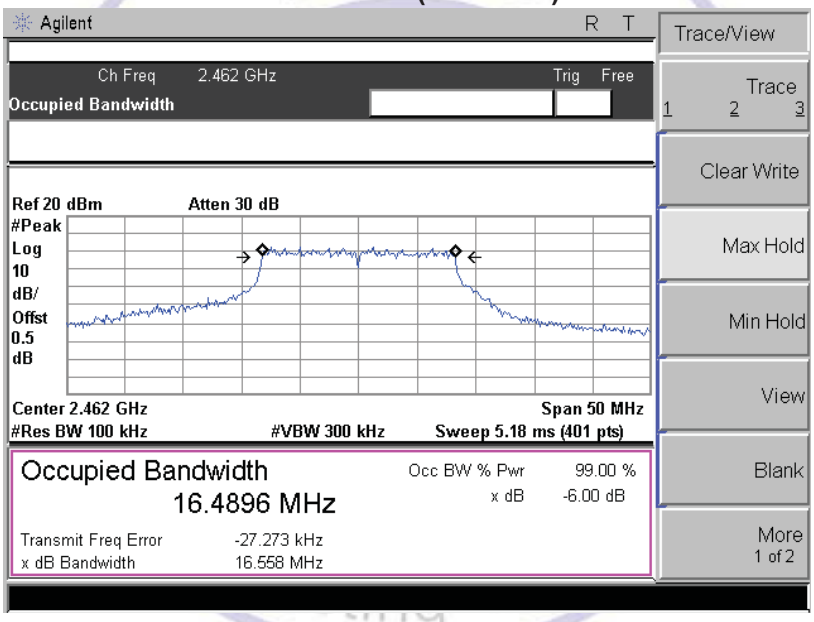
Channel 01 (2412MHz)



Channel 06 (2437MHz)



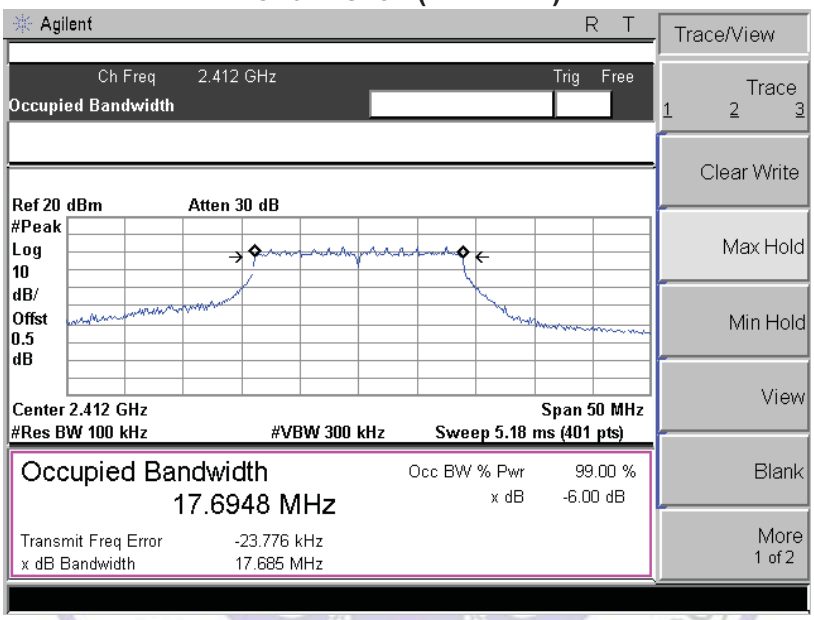
Channel 11 (2462MHz)



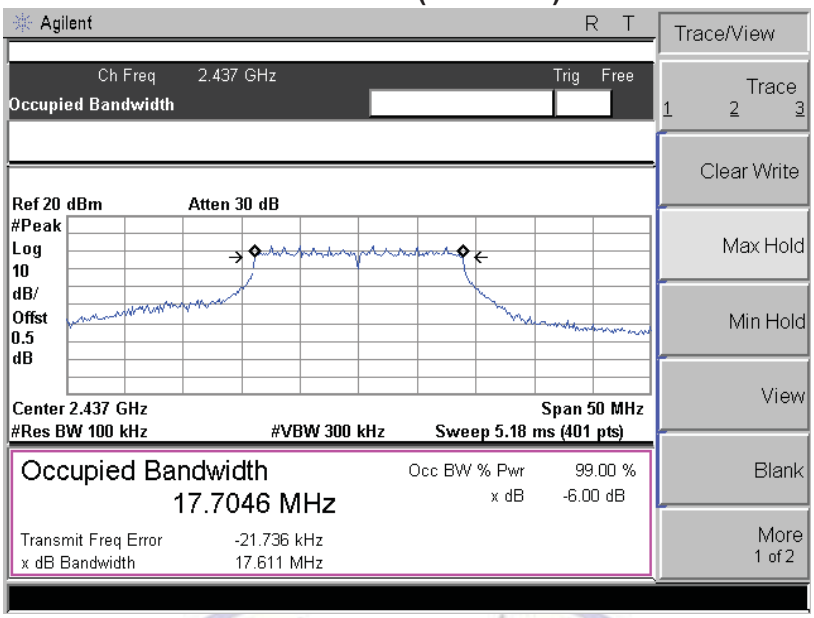
Product	:	Familybook
Test Item	:	6dB Occupied Bandwidth
Test Mode	:	Mode 3: Transmit by 802.11n (20MHz)

Channel No.	Frequency (MHz)	Occupied Bandwidth (kHz)	Limit (kHz)	Result
01	2412	17685	500	Pass
06	2437	17611	500	Pass
11	2462	17718	500	Pass

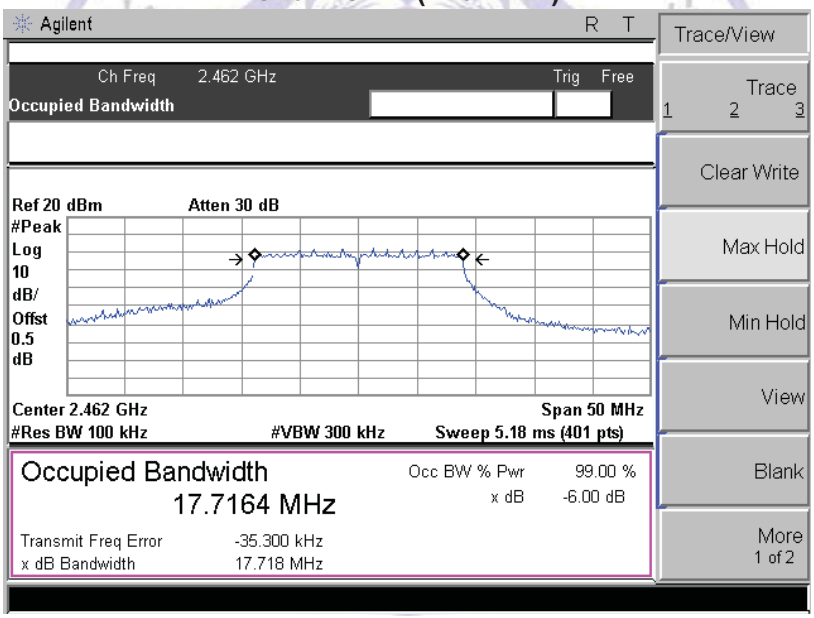
Channel 01 (2412MHz)



Channel 06 (2437MHz)

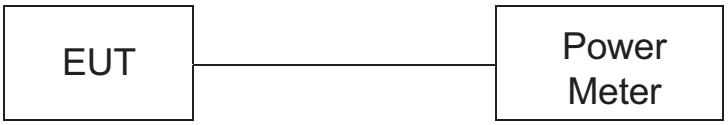


Channel 11 (2462MHz)



4.4. Maximum Peak Output Power

TEST CONFIGURATION



TEST PROCEDURE

According to C63.10 -2013 and KDB558074 D01 v03r02,The EUT was directly connected to the power meter / spectrum analyzer and antenna output port as show in the block diagram as TEST CONFIGURATION shows.

Use the wideband power meter to test peak power and record the result.

LIMIT

The Peak Output Power Measurement limits are 30dBm.

TEST RESULTS

Product	:	Familybook
Test Item	:	Power Output
Test Mode	:	Mode 1: Transmit by 802.11b

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
1	2412	9.60	30.00	Pass
6	2437	9.45	30.00	Pass
11	2462	9.55	30.00	Pass

Product	:	Familybook
Test Item	:	Power Output
Test Mode	:	Mode 2: Transmit by 802.11g

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
1	2412	8.88	30.00	Pass
6	2437	8.79	30.00	Pass
11	2462	8.91	30.00	Pass

Product	:	Familybook
Test Item	:	Power Output
Test Mode	:	Mode 3: Transmit by 802.11n(20MHz)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
1	2412	8.14	30.00	Pass
6	2437	8.02	30.00	Pass
11	2462	8.05	30.00	Pass

Note: The test results including the cable lose.

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4.5. Band Edge Measurement

TEST CONFIGURATION

TEST PROCEDURE

The band edge compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10 and FCC KDB Publication No. 558074 D01 v03r02 (Measurement Guidelines of DTS) with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc.

Set RBW 1MHz VBW 3MHz peak detector for PK value, RMS detector for AV value.

LIMIT

1. Below -20dB of the highest emission level in operating band.

2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209(see Section 15.205(c)).

Frequency (MHz)	Limit Average (dBuv/m)	Limit Peak (dBuv/m)
Below 2390 or Above 2483.5	54	74

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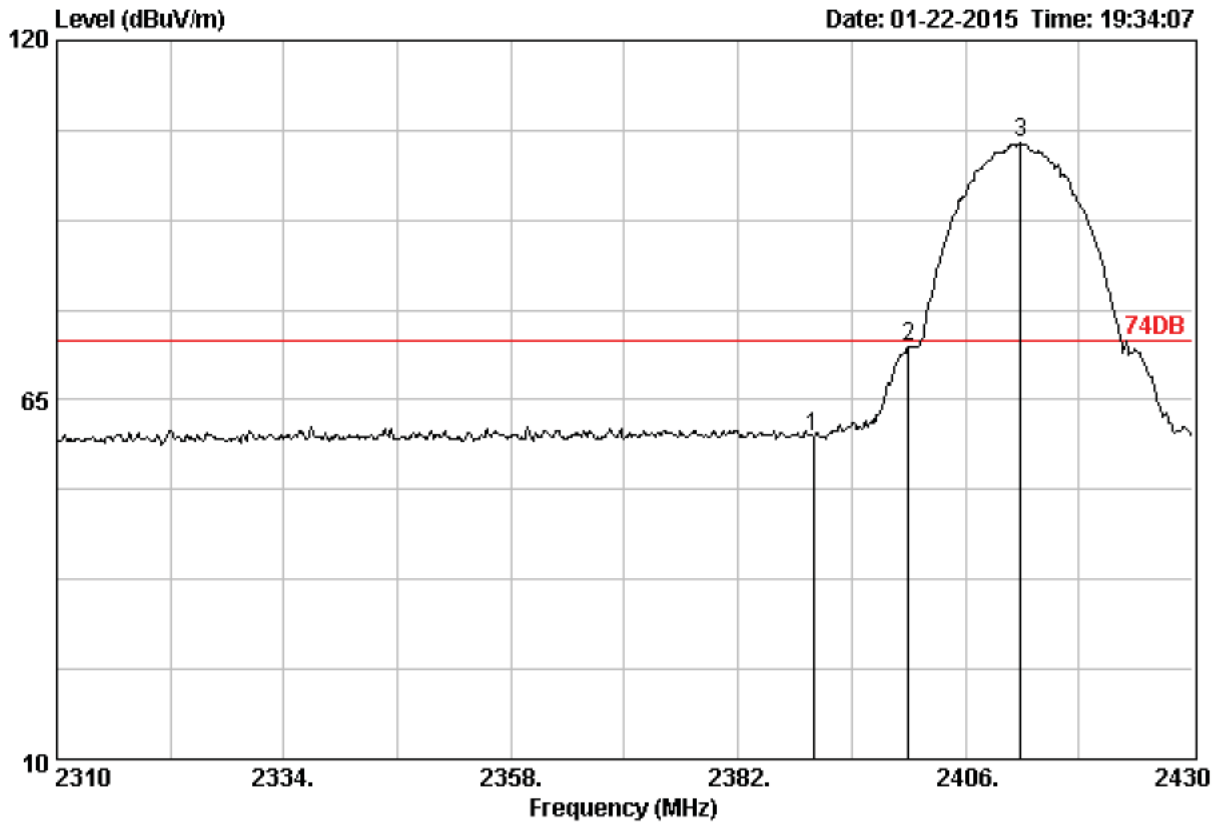
TEST RESULTS

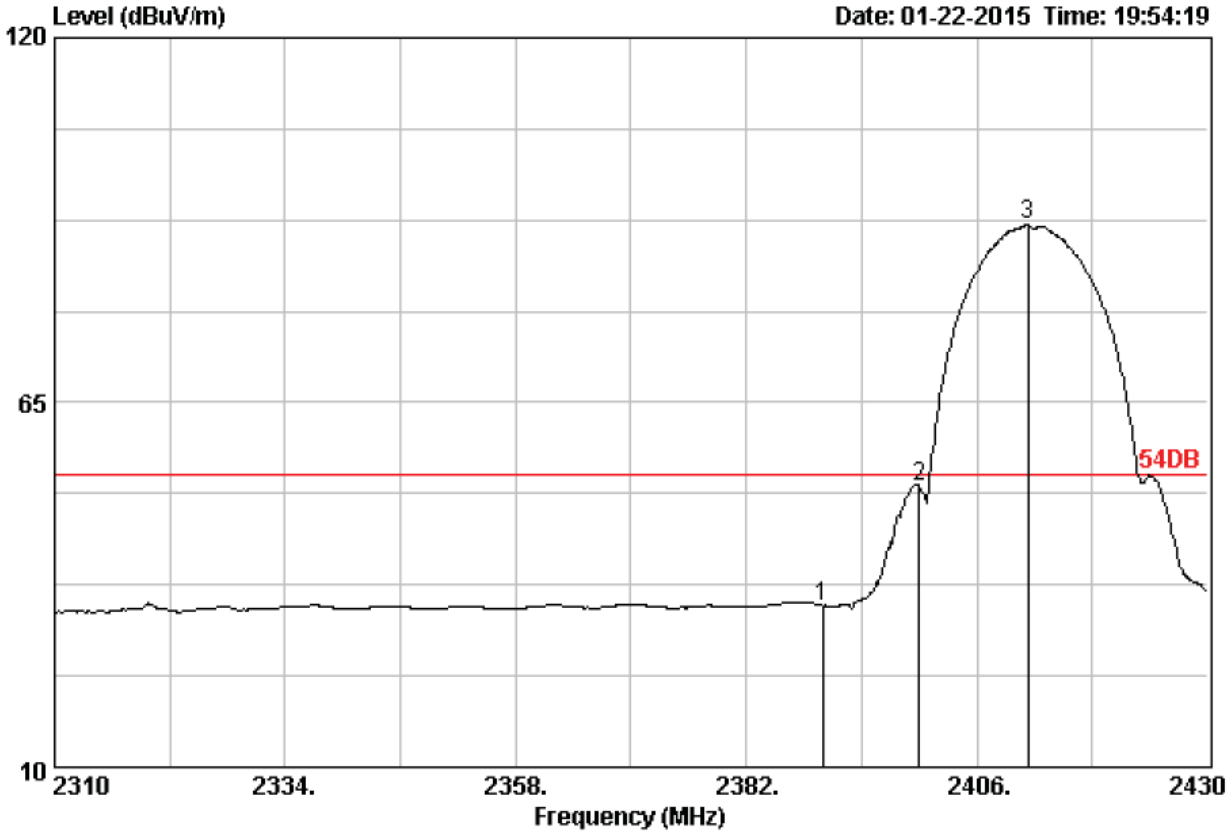
Transmitting mode: 802.11b



Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 74DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 152
Ant. pol. : HORIZONTAL

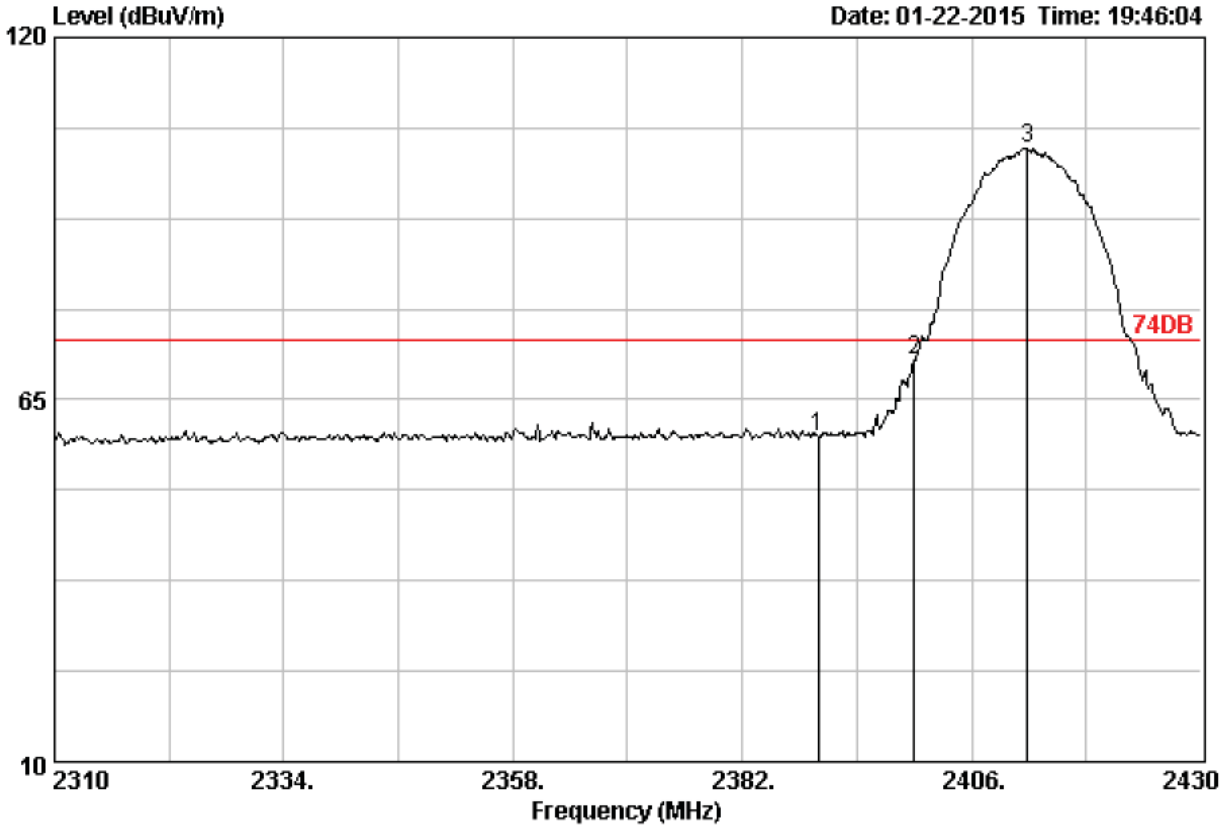
	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.00	28.78	4.61	61.37	59.40	74.00	14.60	Peak
2	2400.00	28.78	4.61	75.06	73.09	74.00	0.91	Peak
3	2411.88	28.81	4.63	106.22	104.30	74.00	-30.30	Peak



Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 54DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 155
Ant. pol. : HORIZONTAL

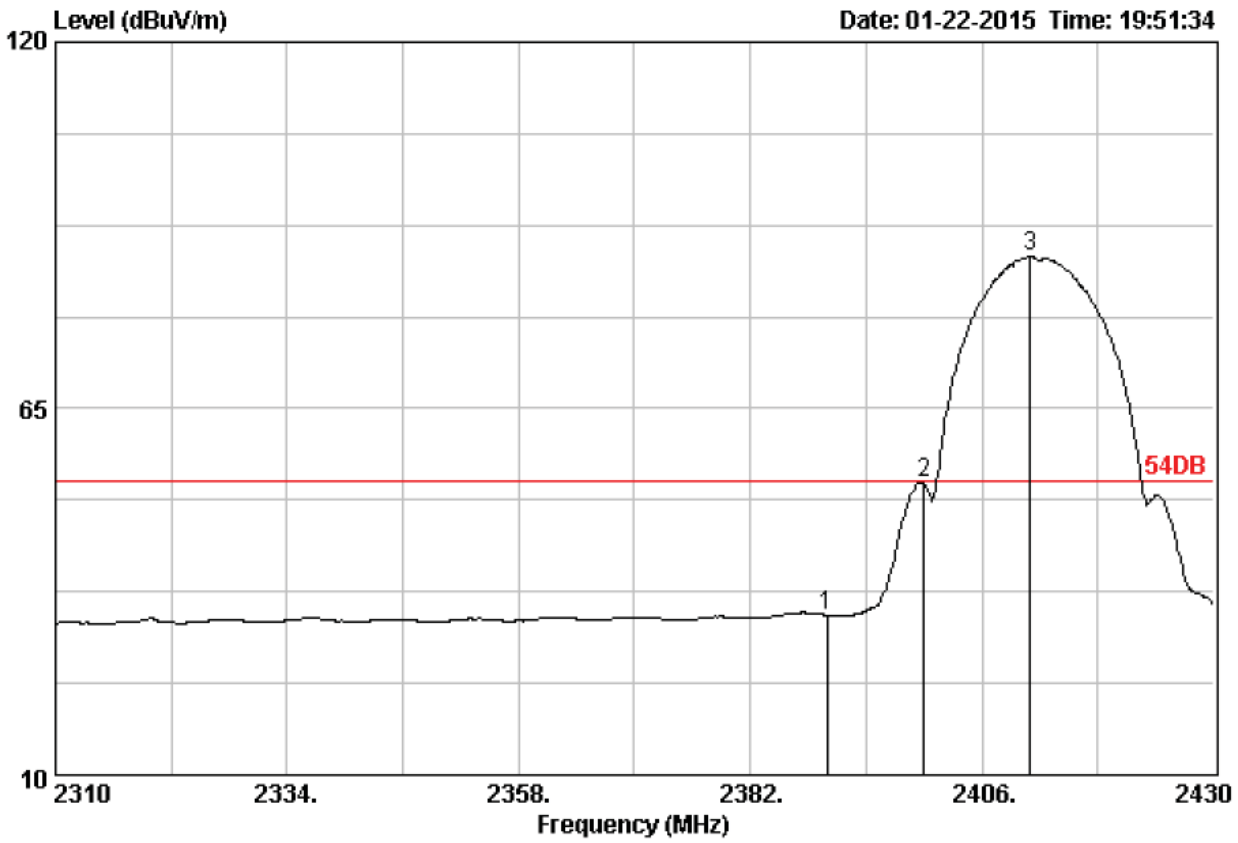
	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.00	28.78	4.61	36.27	34.30	54.00	19.70	Average
2	2400.00	28.78	4.61	54.25	52.28	54.00	1.72	Average
3	2411.28	28.81	4.63	93.73	91.81	54.00	-37.81	Average



Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 74DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 153
Ant. pol. : VERTICAL

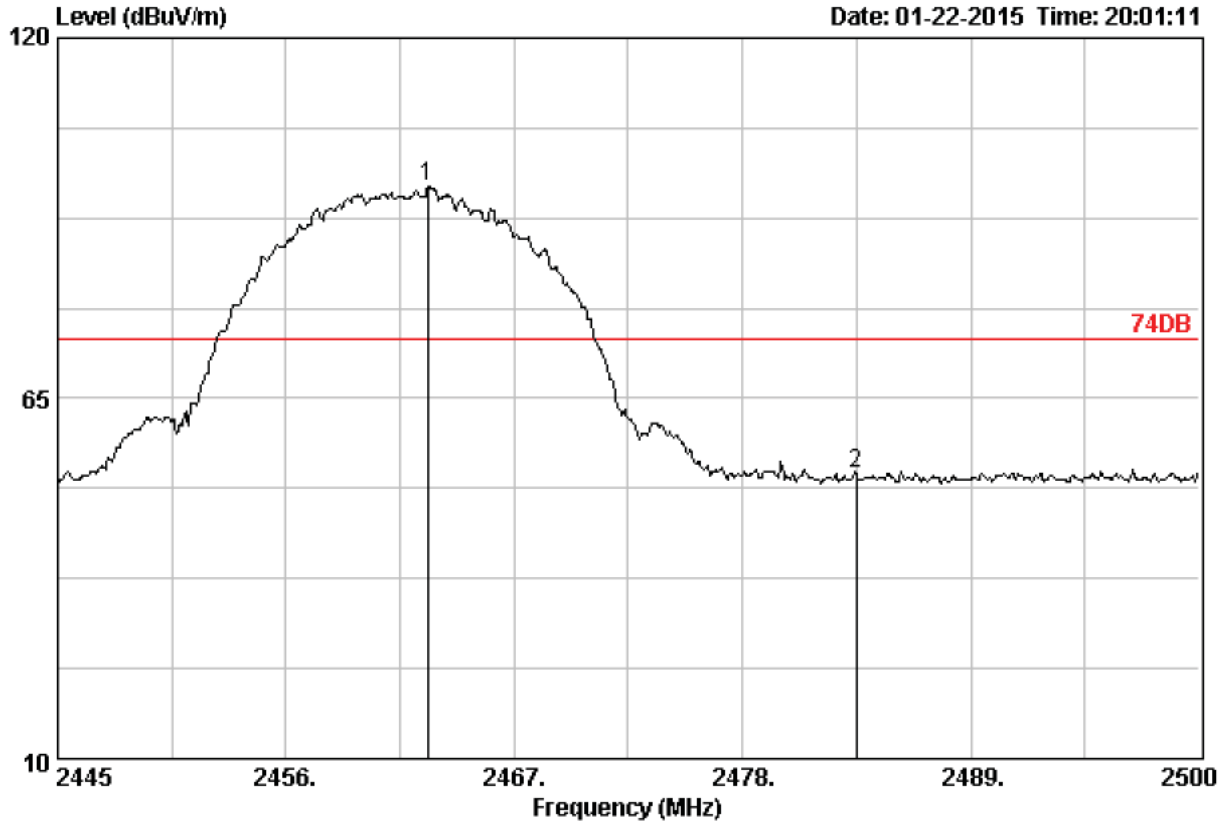
	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.00	28.78	4.61	61.23	59.26	74.00	14.74	Peak
2	2400.00	28.78	4.61	72.87	70.90	74.00	3.10	Peak
3	2411.88	28.81	4.63	105.12	103.20	74.00	-29.20	Peak



Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 54DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 154
Ant. pol. : VERTICAL

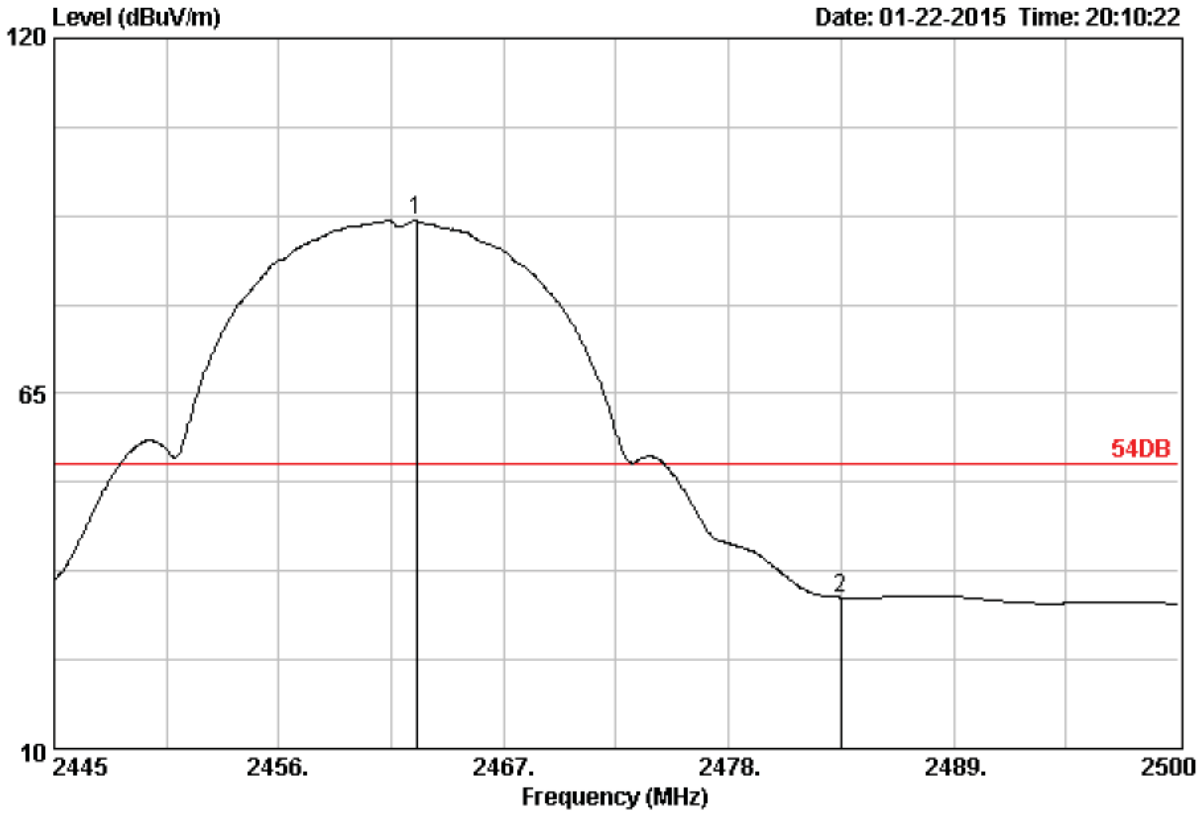
	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.00	28.78	4.61	35.93	33.96	54.00	20.04	Average
2	2400.00	28.78	4.61	55.68	53.71	54.00	0.29	Average
3	2411.04	28.81	4.63	89.70	87.78	54.00	-33.78	Average



Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 74DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 156
Ant. pol. : HORIZONTAL

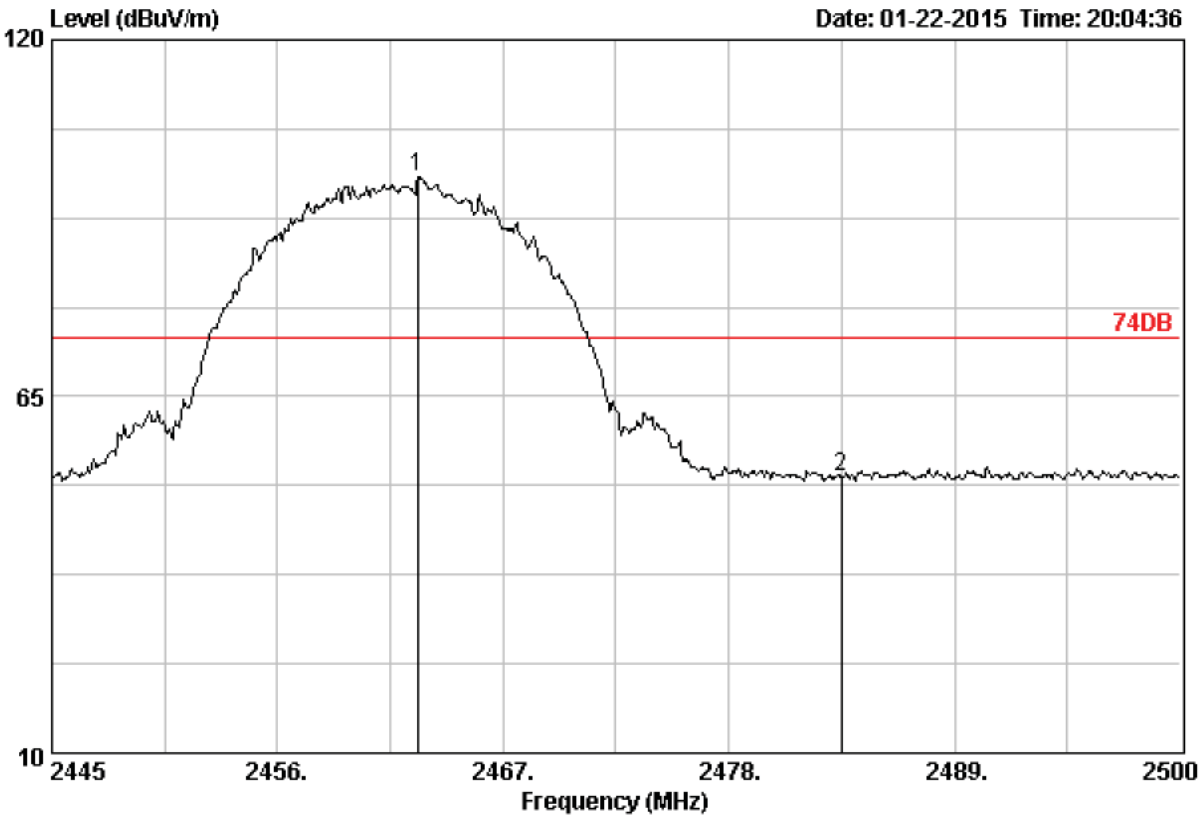
	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2462.82	28.90	4.68	99.27	97.48	74.00	-23.48	Peak
2	2483.50	28.93	4.70	55.12	53.37	74.00	20.63	Peak



Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 54DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 159
Ant. pol. : HORIZONTAL

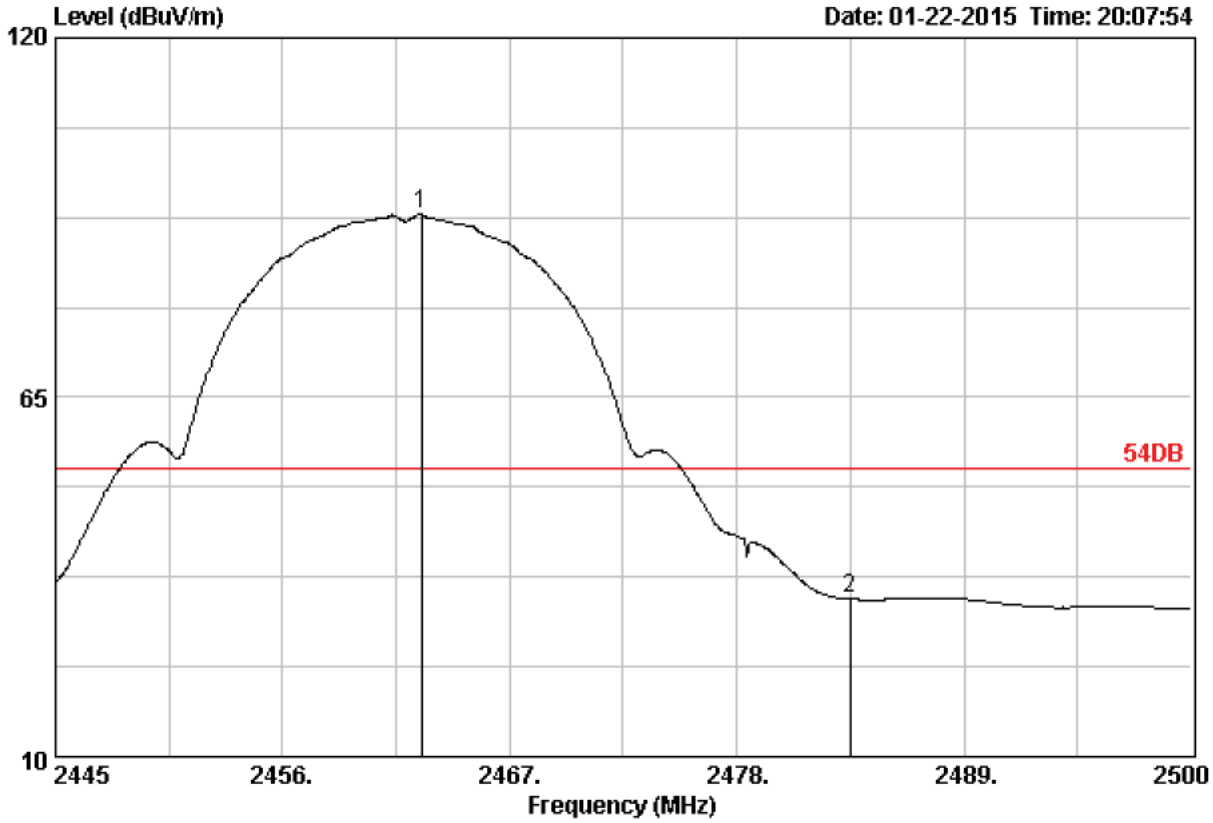
	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2462.71	28.90	4.68	93.61	91.82	54.00	-37.82	Average
2	2483.50	28.93	4.70	35.17	33.42	54.00	20.58	Average



Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 74DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 157
Ant. pol. : VERTICAL

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2462.82	28.90	4.68	100.78	98.99	74.00	-24.99	Peak
2	2483.50	28.93	4.70	54.47	52.72	74.00	21.28	Peak

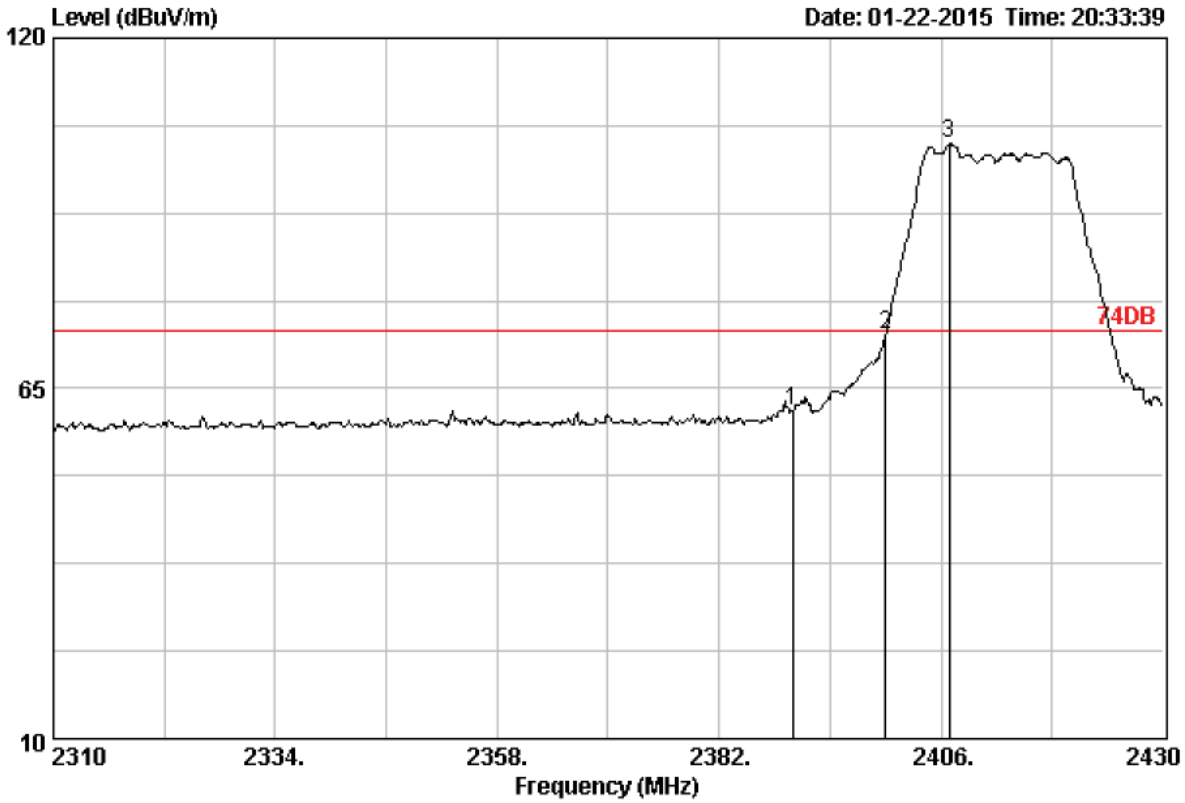


Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 54DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 158
Ant. pol. : VERTICAL

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2462.71	28.90	4.68	94.82	93.03	54.00	-39.03	Average
2	2483.50	28.93	4.70	35.88	34.13	54.00	19.87	Average

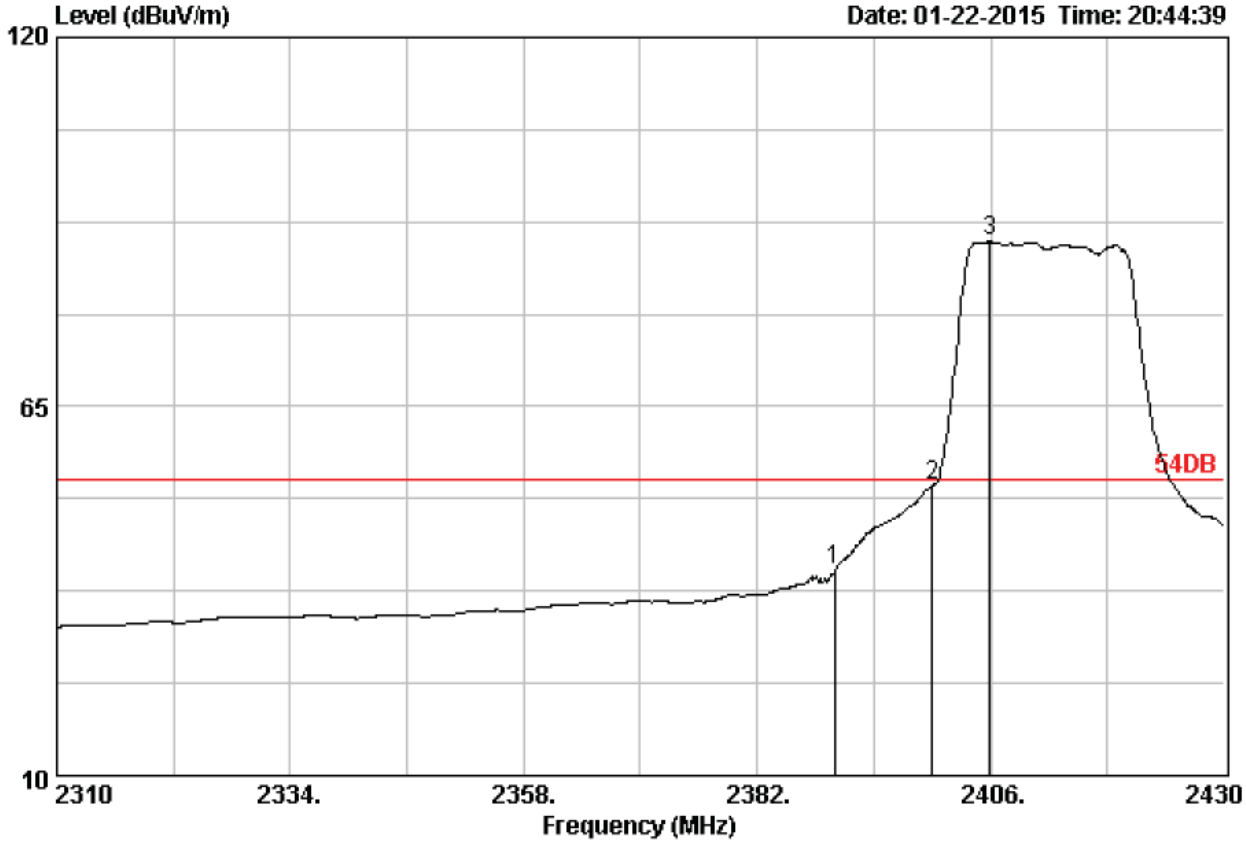
For 802.11g Mode:



Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 74DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 165
Ant. pol. : HORIZONTAL

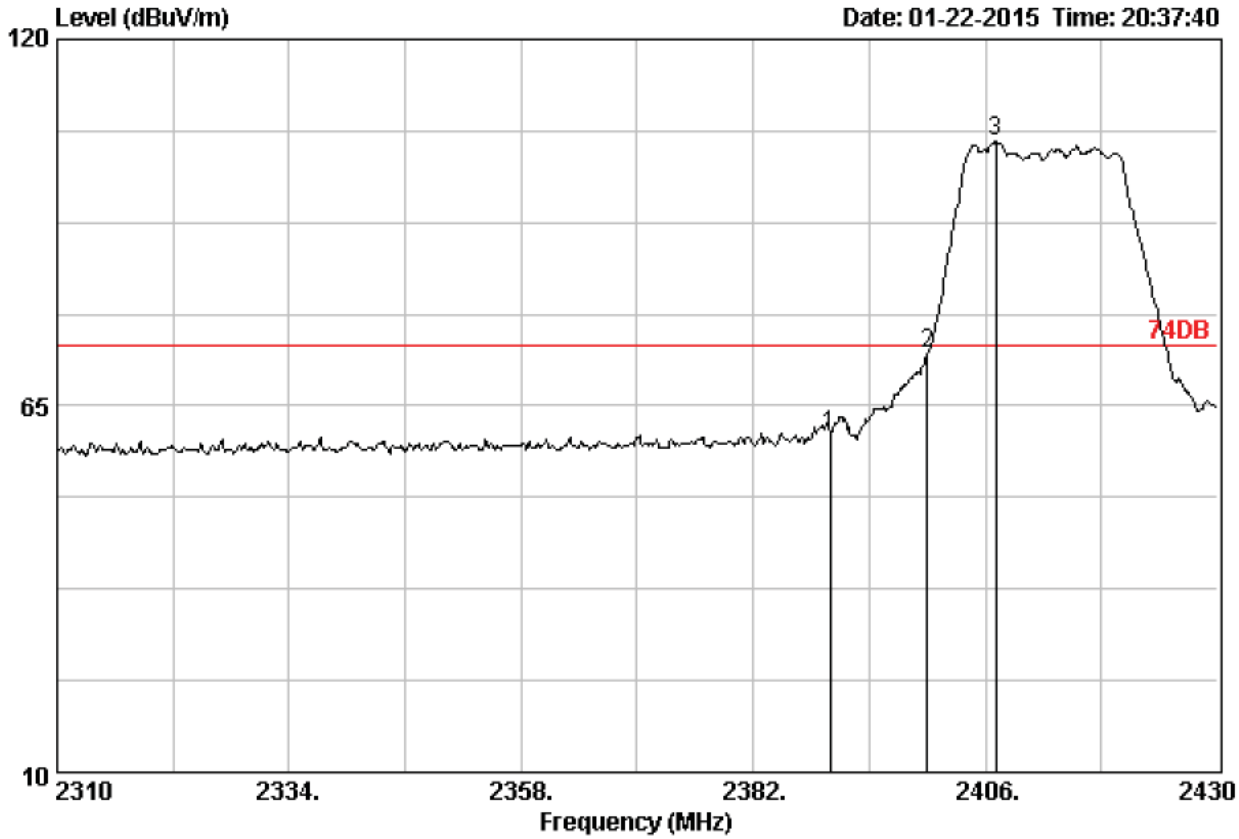
	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.00	28.78	4.61	63.56	61.59	74.00	12.41	Peak
2	2400.00	28.78	4.61	75.25	73.28	74.00	0.72	Peak
3	2406.84	28.81	4.63	105.27	103.35	74.00	-29.35	Peak



Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 54DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 169
Ant. pol. : HORIZONTAL

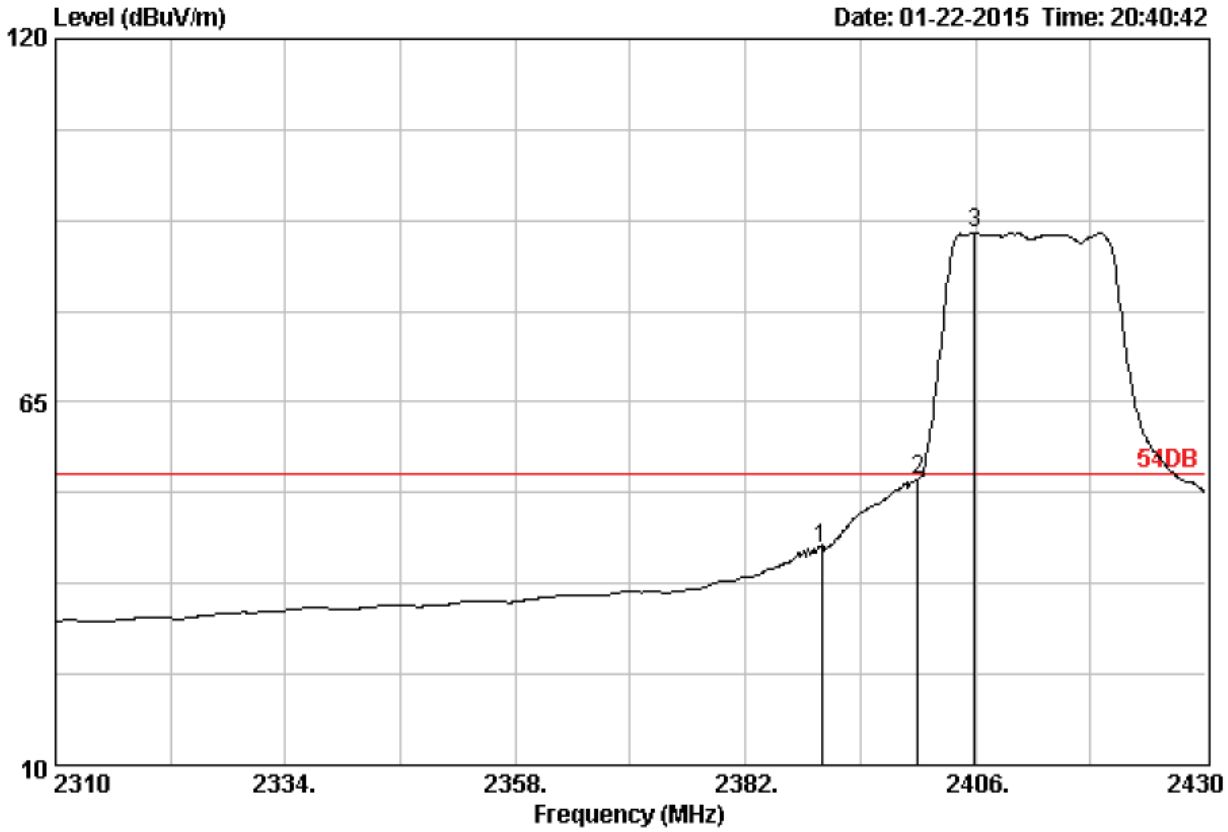
	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.00	28.78	4.61	42.55	40.58	54.00	13.42	Average
2	2400.00	28.78	4.61	55.20	53.23	54.00	0.77	Average
3	2405.88	28.81	4.63	91.51	89.59	54.00	-35.59	Average



Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 74DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 167
Ant. pol. : VERTICAL

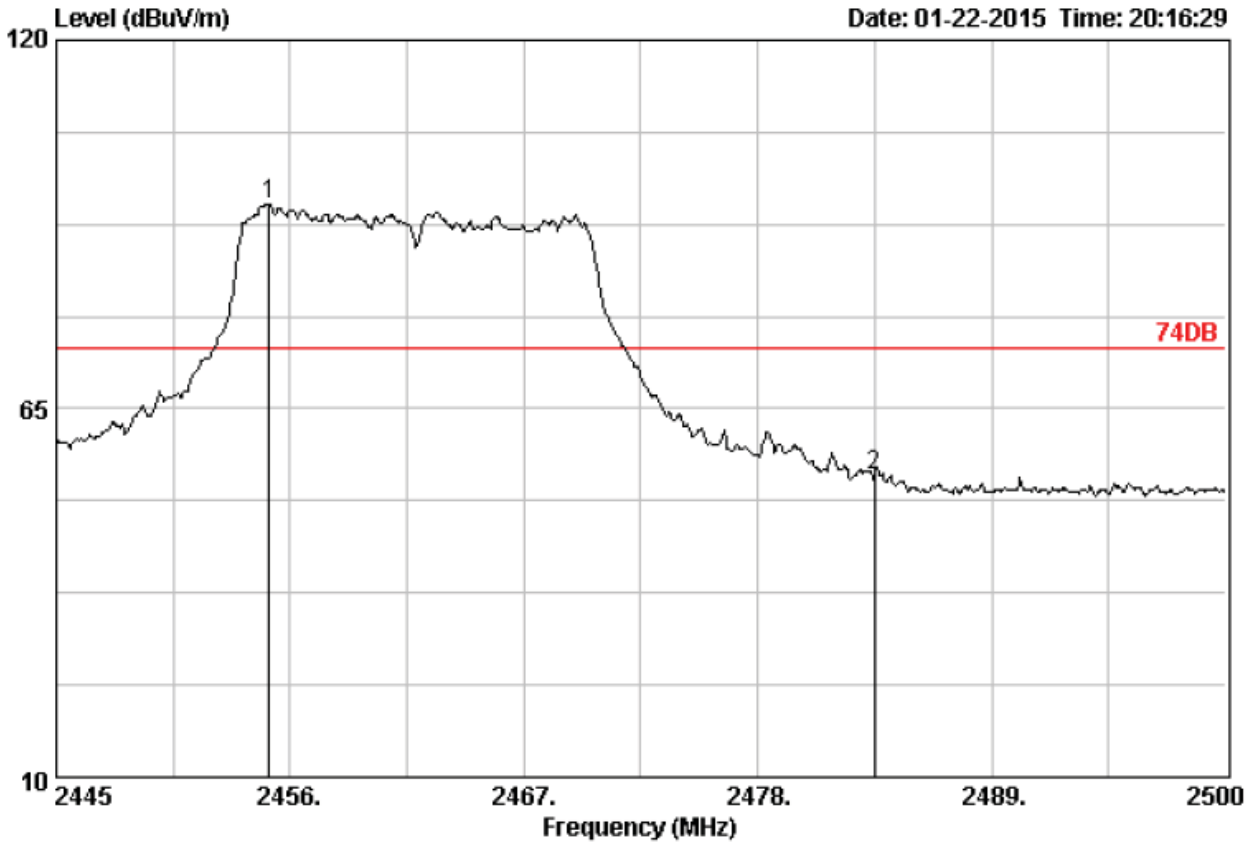
	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.00	28.78	4.61	62.55	60.58	74.00	13.42	Peak
2	2400.00	28.78	4.61	74.78	72.81	74.00	1.19	Peak
3	2407.08	28.81	4.63	106.59	104.67	74.00	-30.67	Peak



Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 54DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 168
Ant. pol. : VERTICAL

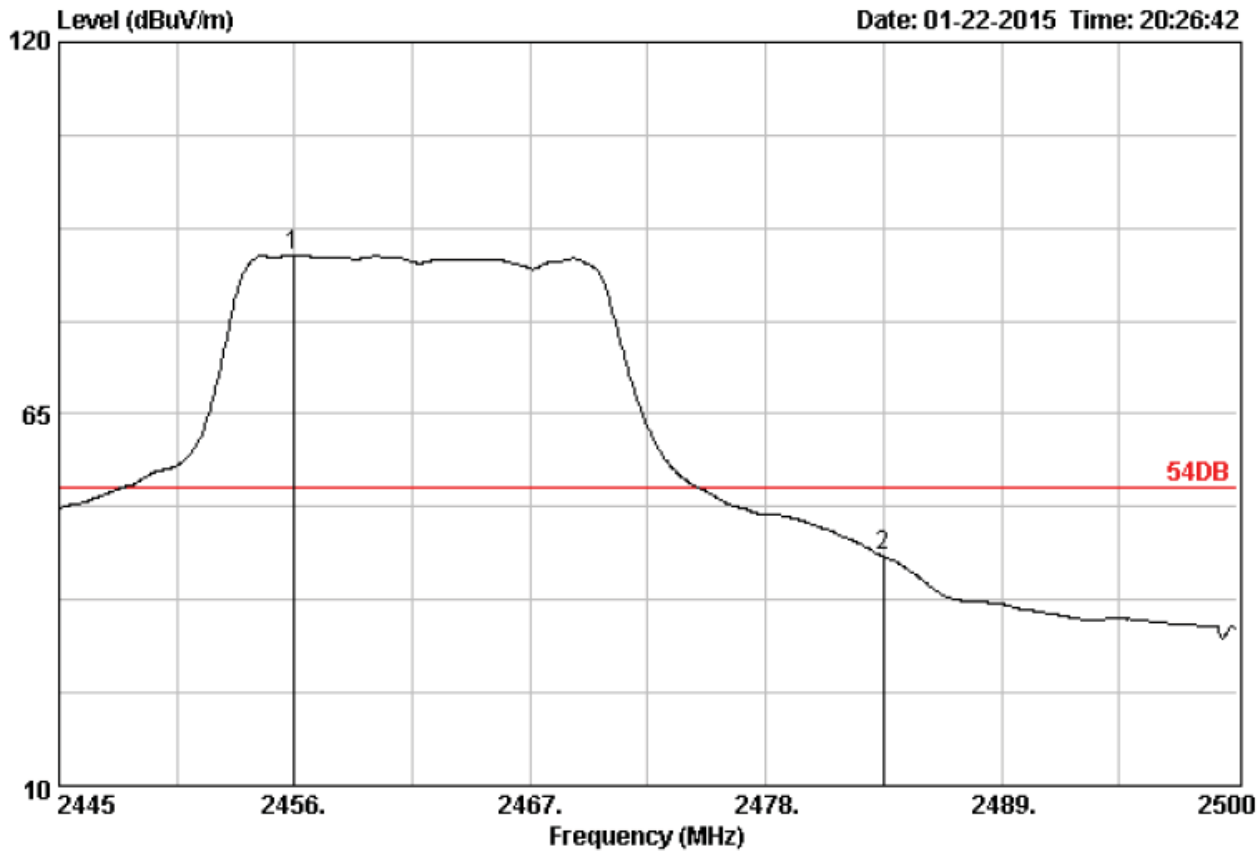
	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.00	28.78	4.61	44.68	42.71	54.00	11.29	Average
2	2400.00	28.78	4.61	55.28	53.31	54.00	0.69	Average
3	2405.88	28.81	4.63	92.54	90.62	54.00	-36.62	Average



Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 74DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 160
Ant. pol. : HORIZONTAL

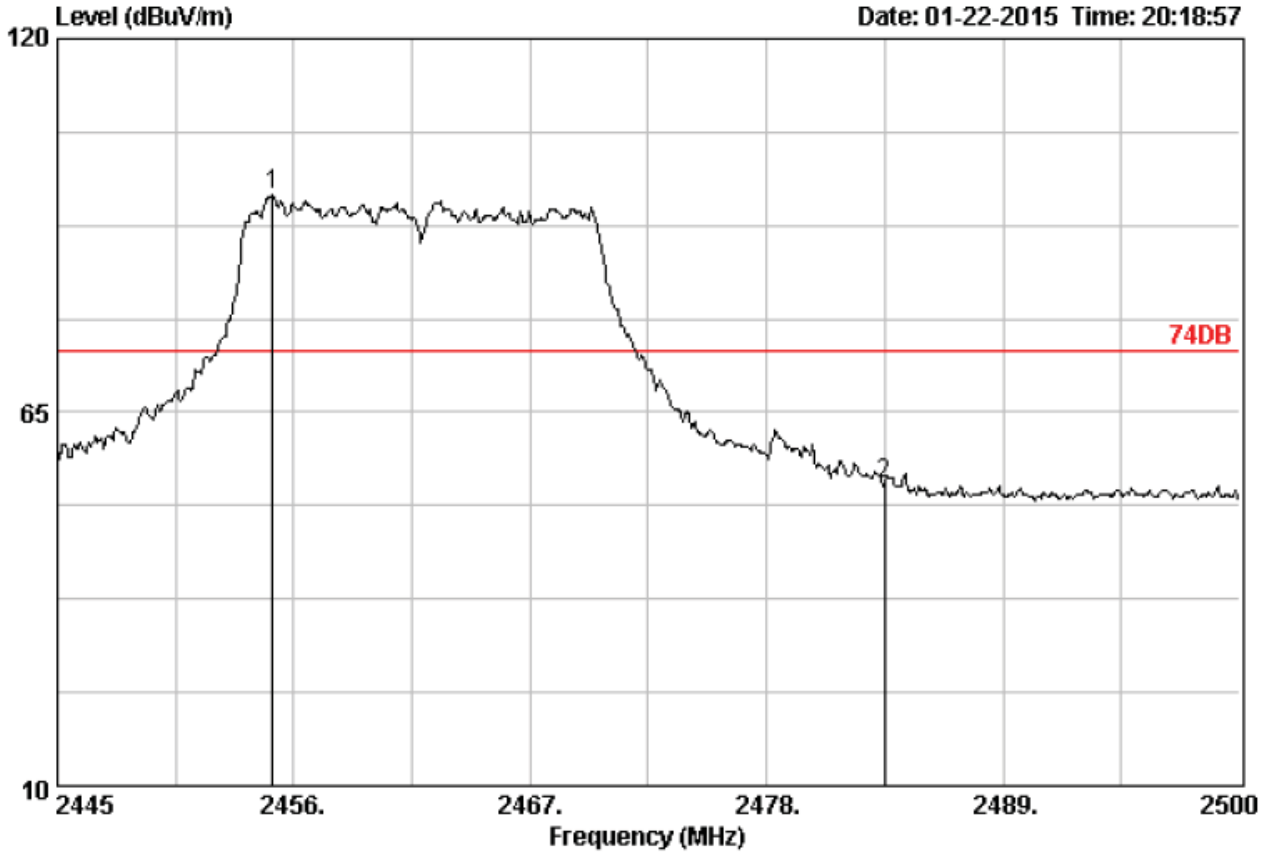
	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2455.01	28.90	4.68	97.33	95.54	74.00	-21.54	Peak
2	2483.50	28.93	4.70	56.79	55.04	74.00	18.96	Peak



Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 54DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 163
Ant. pol. : HORIZONTAL

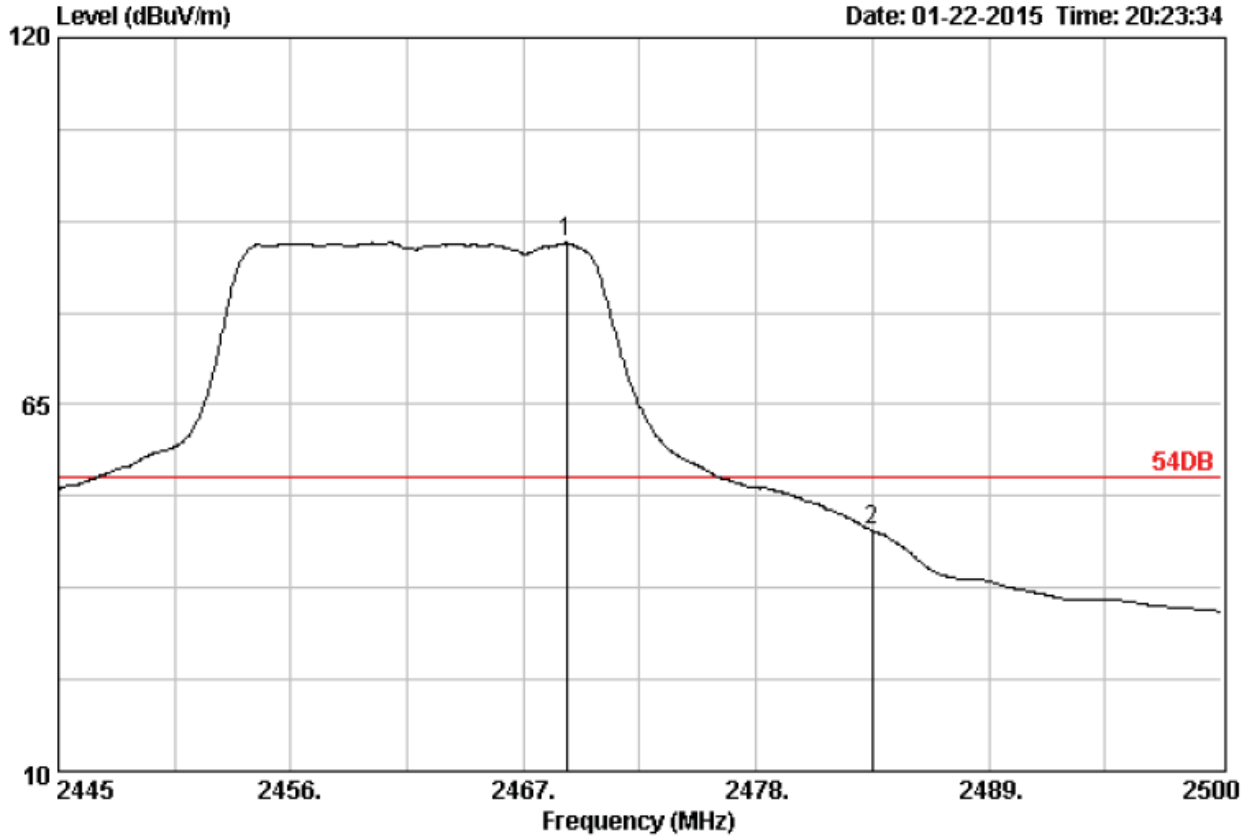
	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2455.95	28.90	4.68	90.32	88.53	54.00	-34.53	Average
2	2483.50	28.93	4.70	45.62	43.87	54.00	10.13	Average



Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 74DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 161
Ant. pol. : VERTICAL

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2455.01	28.90	4.68	98.68	96.89	74.00	-22.89	Peak
2	2483.50	28.93	4.70	56.22	54.47	74.00	19.53	Peak

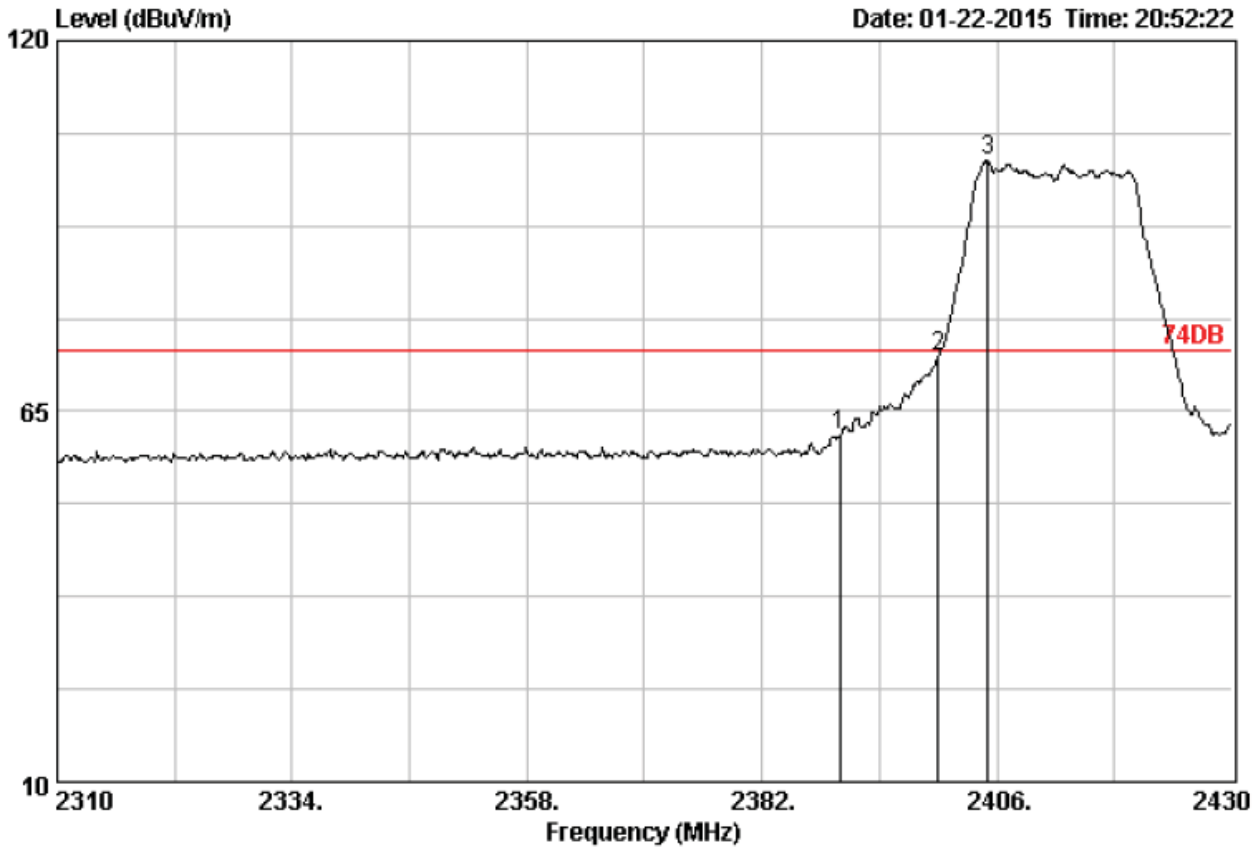


Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 54DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 162
Ant. pol. : VERTICAL

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2469.04	28.90	4.68	91.05	89.26	54.00	-35.26	Average
2	2483.50	28.93	4.70	47.82	46.07	54.00	7.93	Average

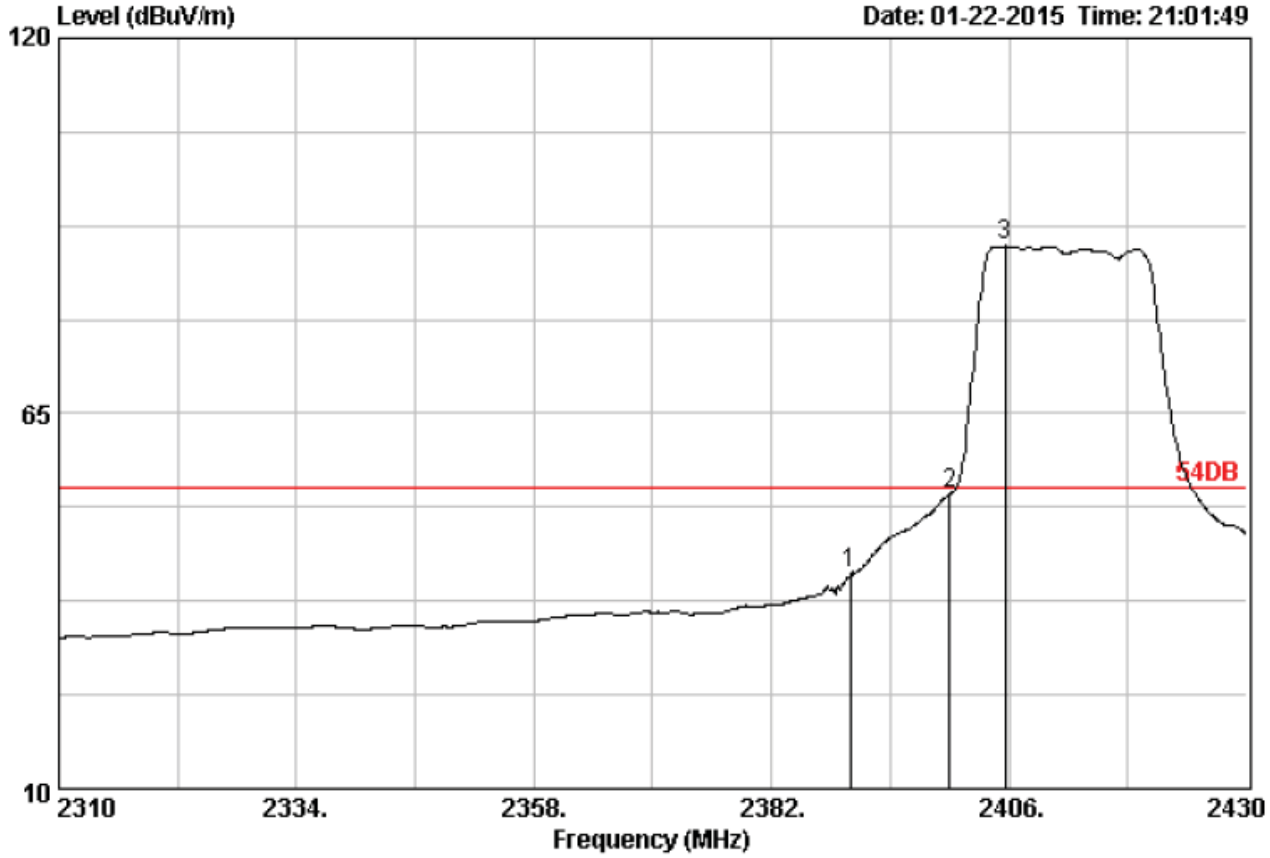
Note : For 802.11n (20MHz) Mode:



Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 74DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 170
Ant. pol. : HORIZONTAL

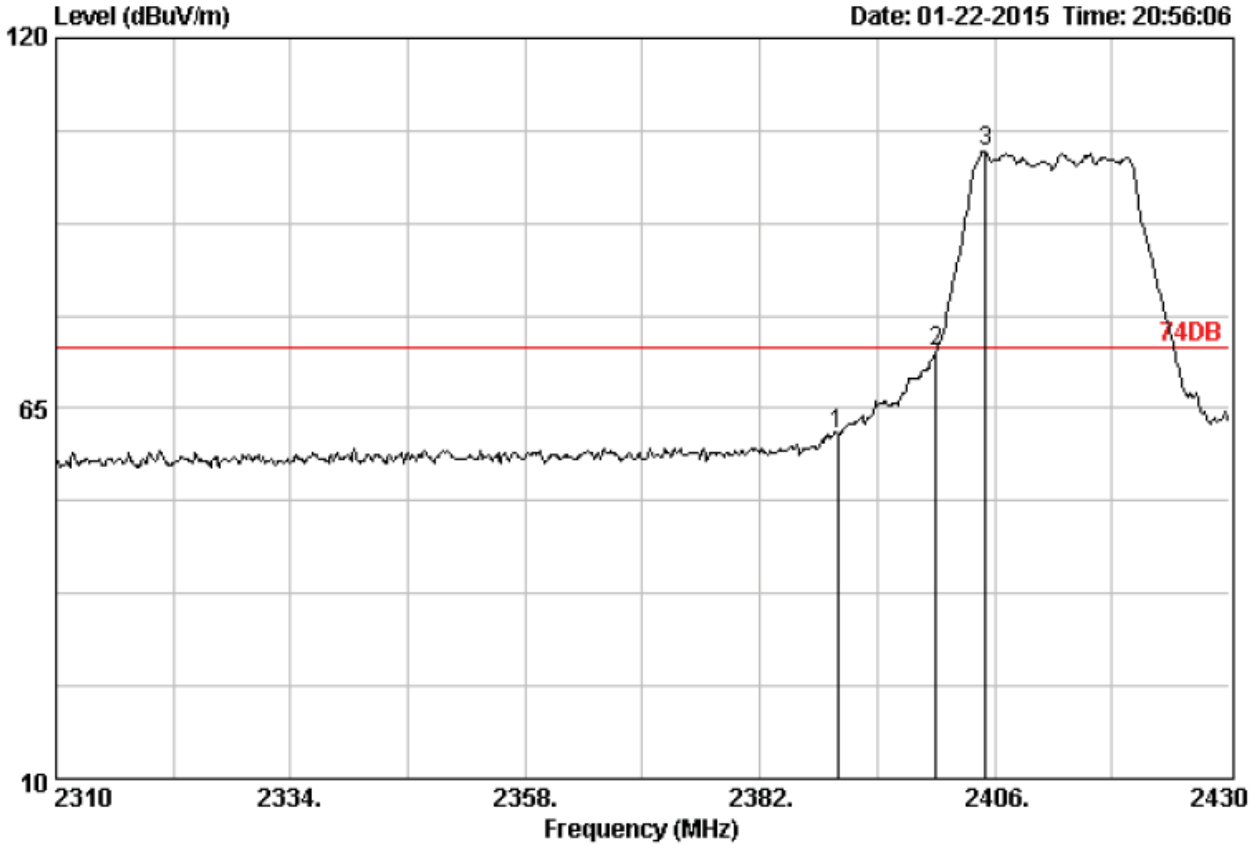
	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.00	28.78	4.61	63.44	61.47	74.00	12.53	Peak
2	2400.00	28.78	4.61	75.16	73.19	74.00	0.81	Peak
3	2405.04	28.81	4.63	104.09	102.17	74.00	-28.17	Peak



Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 54DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 173
Ant. pol. : HORIZONTAL

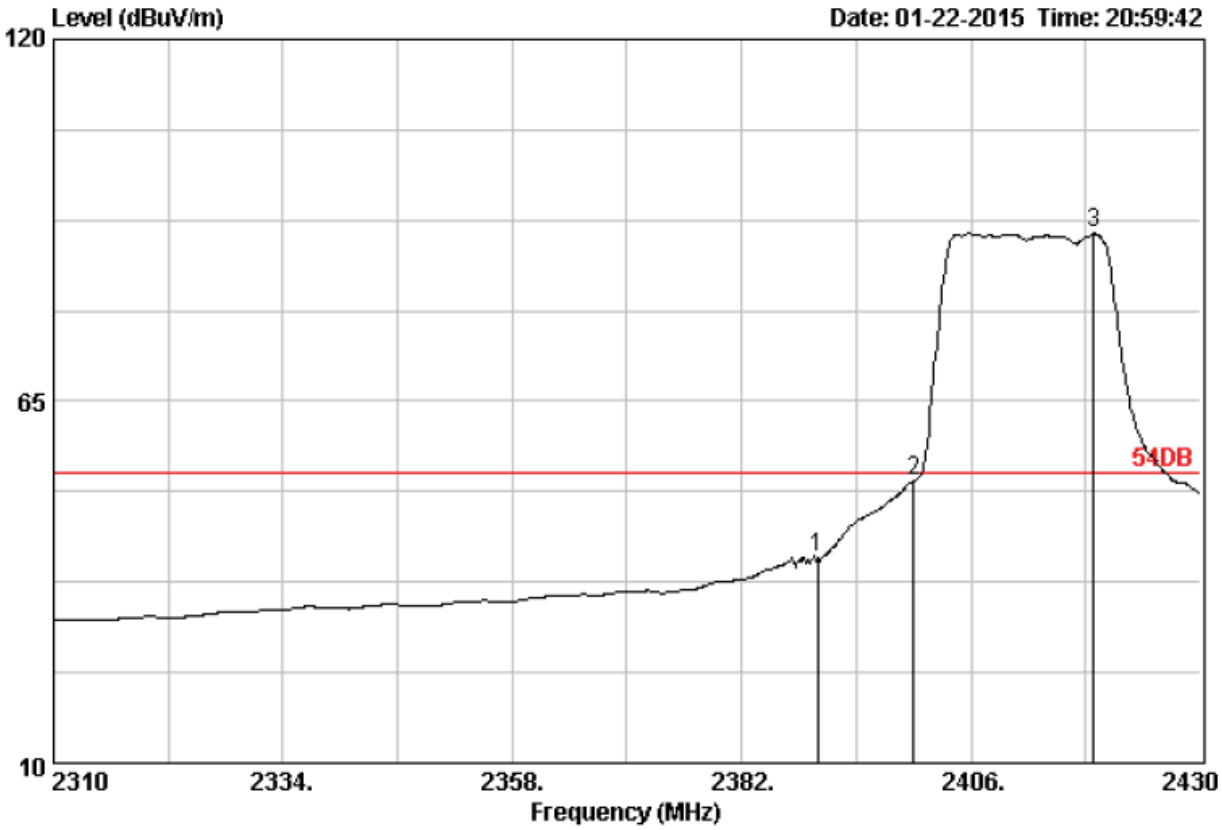
	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.00	28.78	4.61	43.41	41.44	54.00	12.56	Average
2	2400.00	28.78	4.61	55.19	53.22	54.00	0.78	Average
3	2405.64	28.81	4.63	91.45	89.53	54.00	-35.53	Average



Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 74DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 171
Ant. pol. : VERTICAL

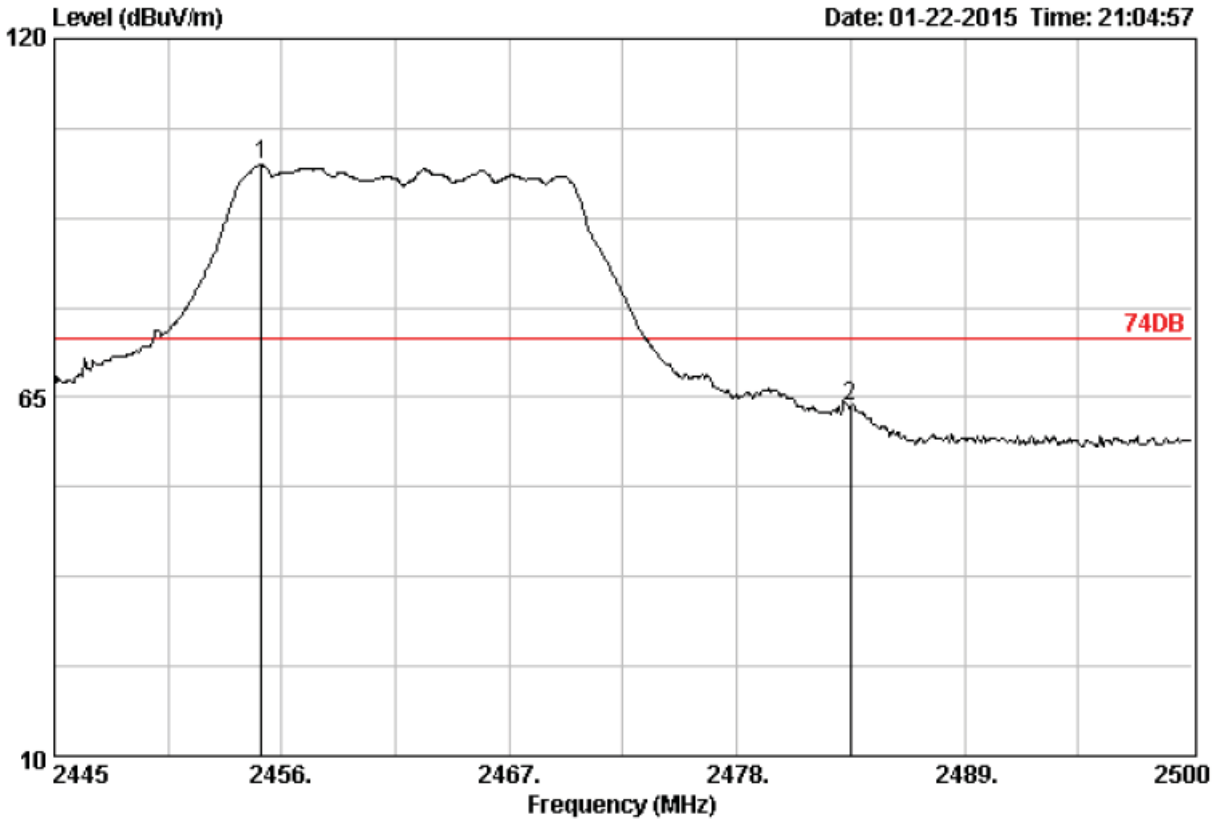
	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.00	28.78	4.61	63.17	61.20	74.00	12.80	Peak
2	2400.00	28.78	4.61	75.34	73.37	74.00	0.63	Peak
3	2405.04	28.81	4.63	105.11	103.19	74.00	-29.19	Peak



Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 54DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 172
Ant. pol. : VERTICAL

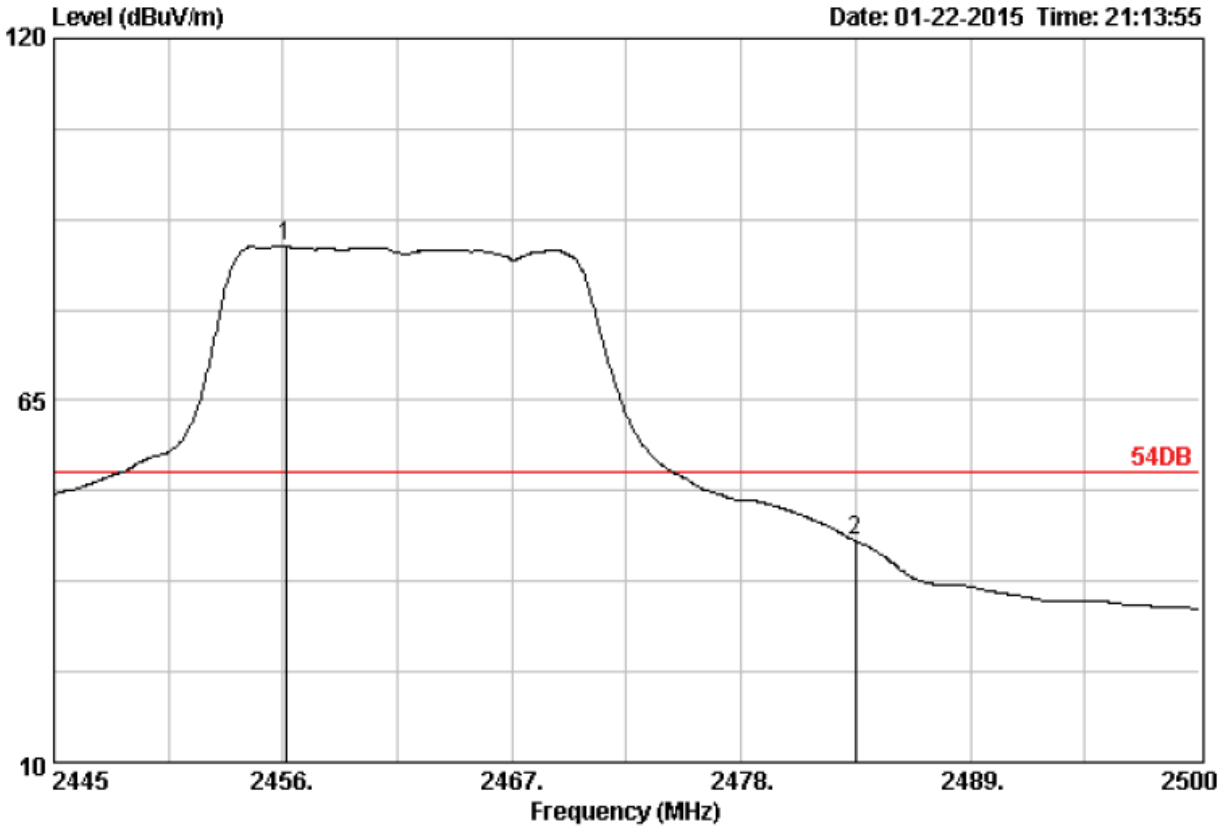
	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.00	28.78	4.61	43.20	41.23	54.00	12.77	Average
2	2400.00	28.78	4.61	54.81	52.84	54.00	1.16	Average
3	2418.84	28.81	4.63	92.44	90.52	54.00	-36.52	Average



Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 74DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 174
Ant. pol. : HORIZONTAL

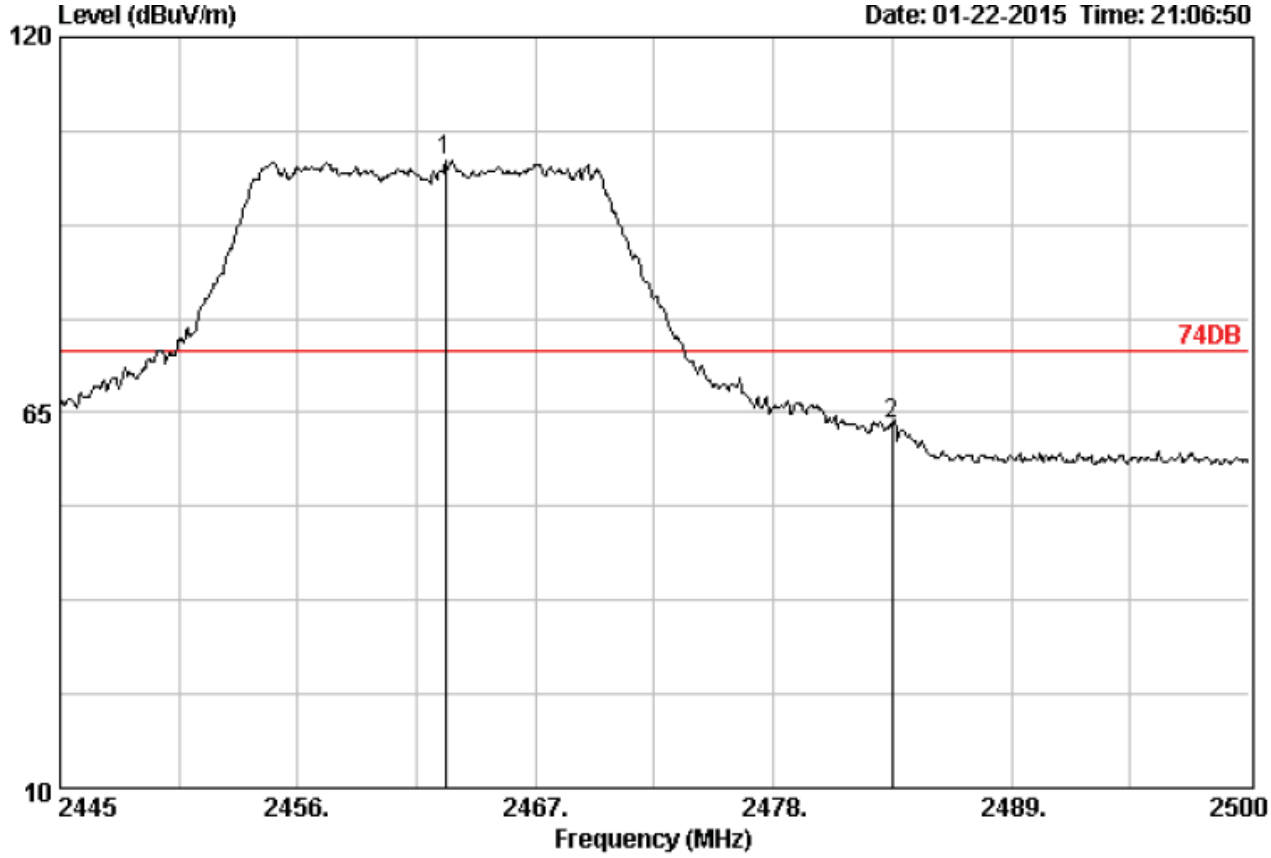
	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2455.01	28.90	4.68	102.41	100.62	74.00	-26.62	Peak
2	2483.50	28.93	4.70	65.33	63.58	74.00	10.42	Peak



Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 54DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 177
Ant. pol. : HORIZONTAL

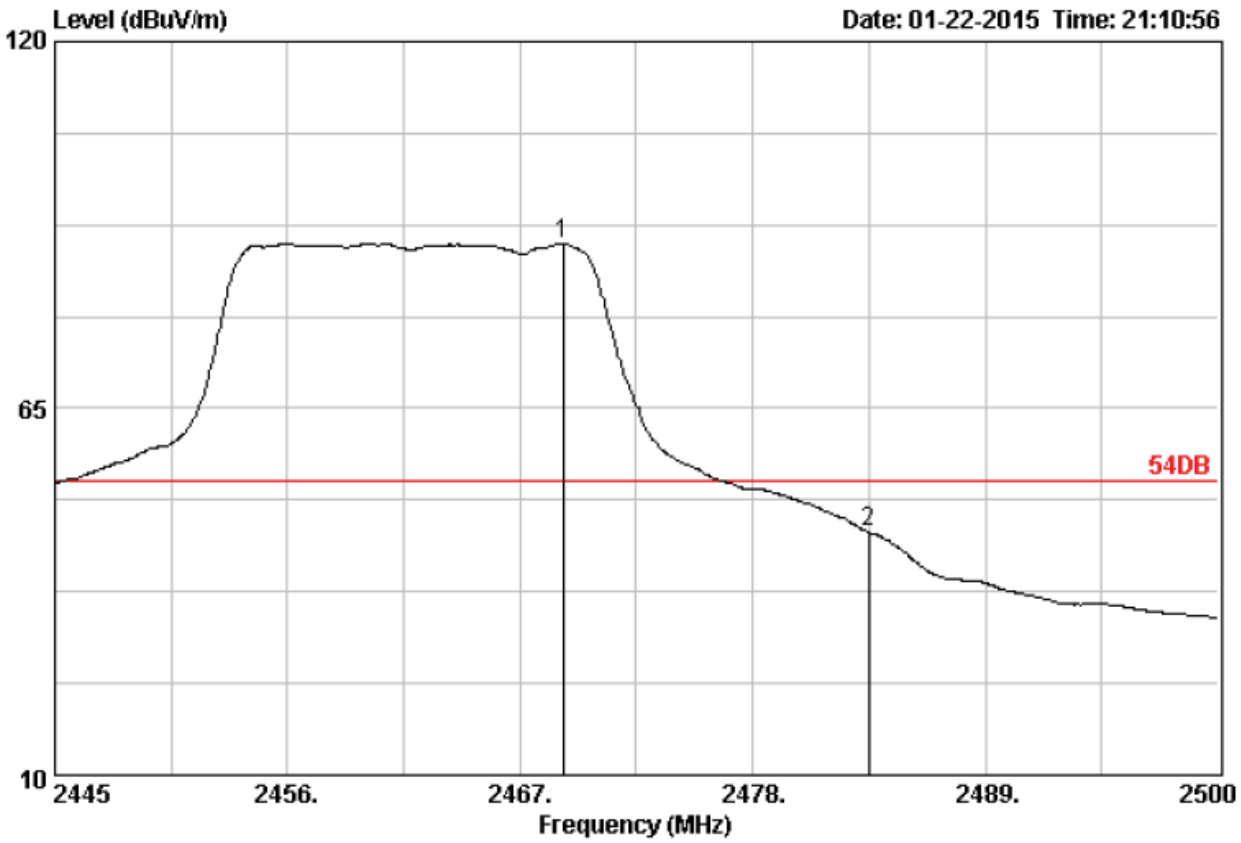
	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2456.11	28.90	4.68	90.28	88.49	54.00	-34.49	Average
2	2483.50	28.93	4.70	45.33	43.58	54.00	10.42	Average



Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 74DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 175
Ant. pol. : VERTICAL

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2462.82	28.90	4.68	103.79	102.00	74.00	-28.00	Peak
2	2483.50	28.93	4.70	65.18	63.43	74.00	10.57	Peak



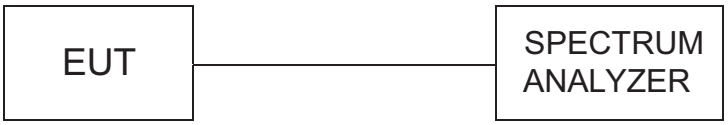
Site no. : 3m Chamber
Dis. / Ant. : 3m DRH-118
Limit : 54DB
Env. / Ins. : 23*C/54%
Engineer :
EUT :
Power :
M/N :
Test Mode :

Data no. : 176
Ant. pol. : VERTICAL

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2469.04	28.90	4.68	91.58	89.79	54.00	-35.79	Average
2	2483.50	28.93	4.70	48.11	46.36	54.00	7.64	Average

4.6. Power Spectral Density Measurement

TEST CONFIGURATION



TEST PROCEDURE

The EUT was tested according to KDB558074 D01 v03r02 for compliance to FCC 47CFR 15.247 requirements.

Set RBW= 3 kHz, VBW≥10KHz, SPAN to 1.5 times greater than the EBW,.

LIMIT

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

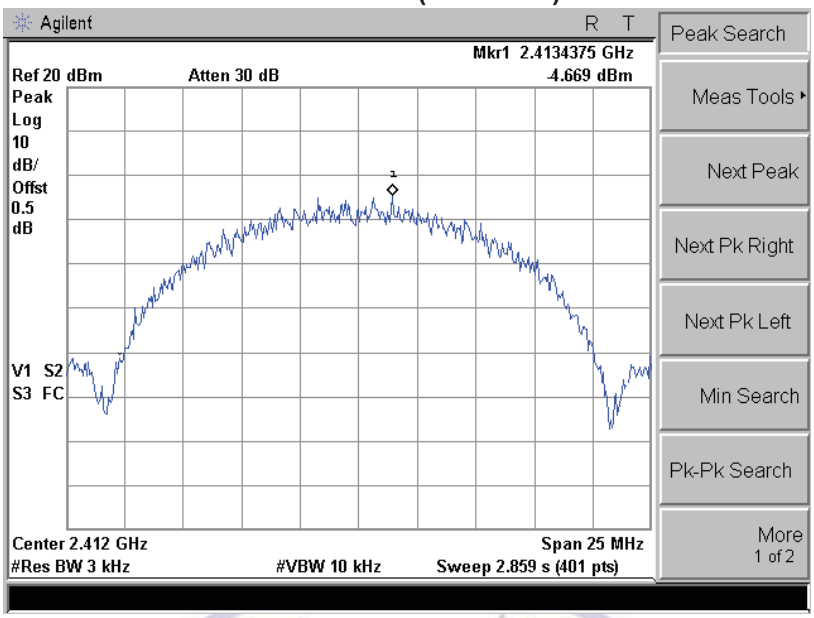
TEST RESULTS

Product	:	Familybook
Test Item	:	Power Spectral Density
Test Mode	:	Mode 1: Transmit by 802.11b

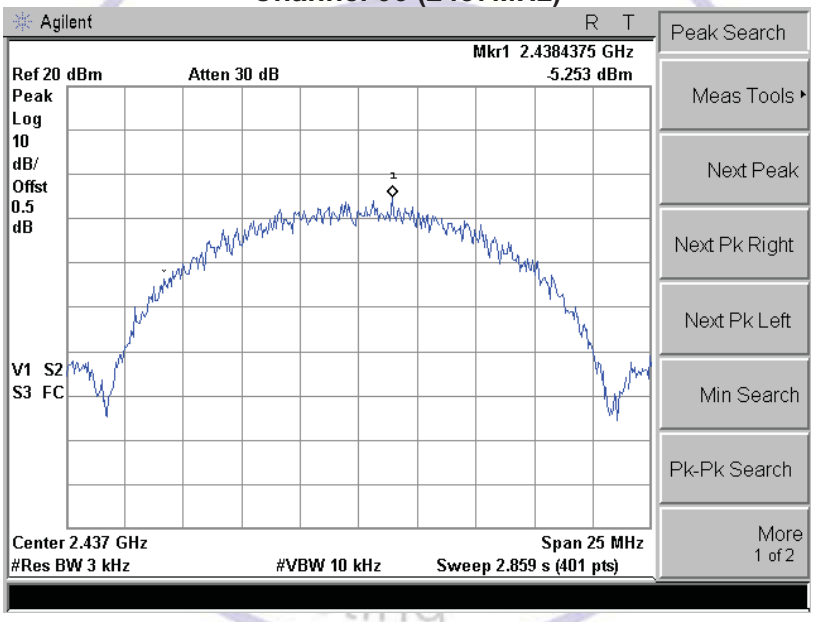
Channel No.	Frequency (MHz)	Measurement PPSD (dBm/3KHz)	Limit (dBm/3KHz)	Result
01	2412	-4.669	8	Pass
06	2437	-5.253	8	Pass
11	2462	-6.616	8	Pass

CTL Testing Technology Co.

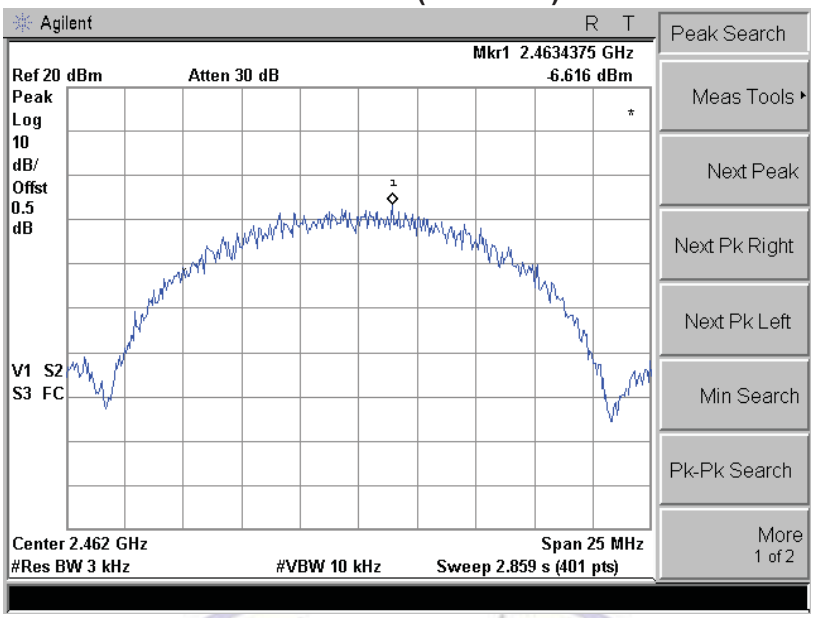
Channel 01 (2412MHz)



Channel 06 (2437MHz)



Channel 11 (2462MHz)

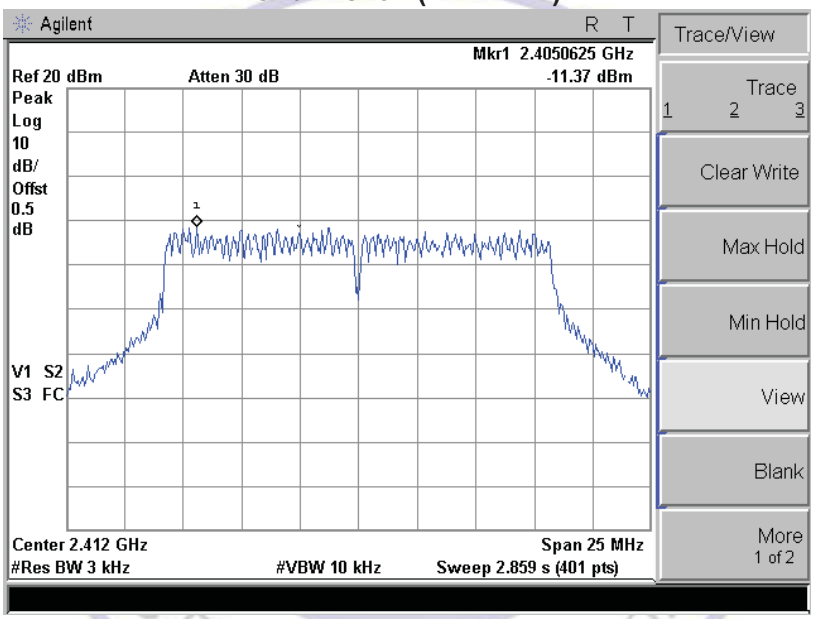


Shenzhen CTL Testing Technology Co.,Ltd.

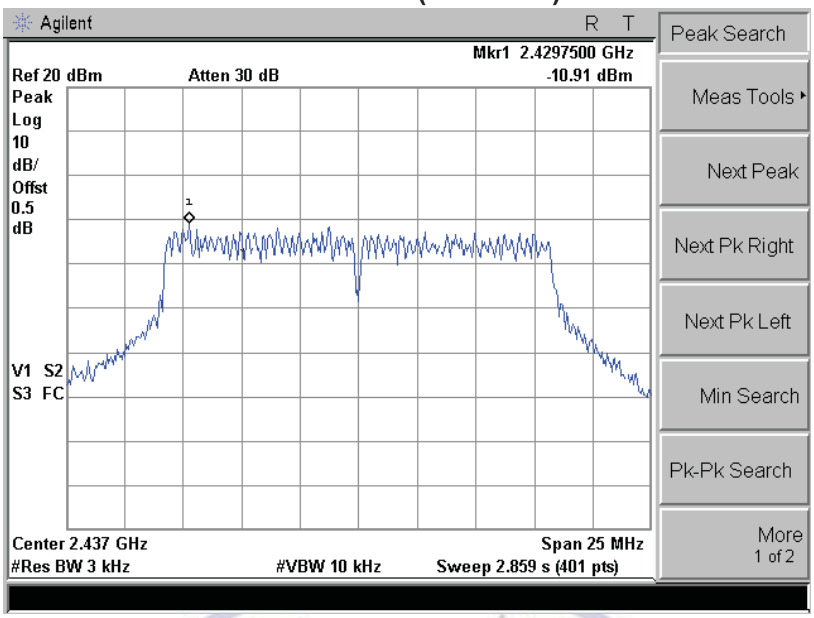
Product	:	Familybook
Test Item	:	Power Spectral Density
Test Mode	:	Mode 2: Transmit by 802.11g

Channel No.	Frequency (MHz)	Measurement PSD (dBm/3KHz)	Limit (dBm/3KHz)	Result
01	2412	-11.37	8	Pass
06	2437	-10.91	8	Pass
11	2462	-12.11	8	Pass

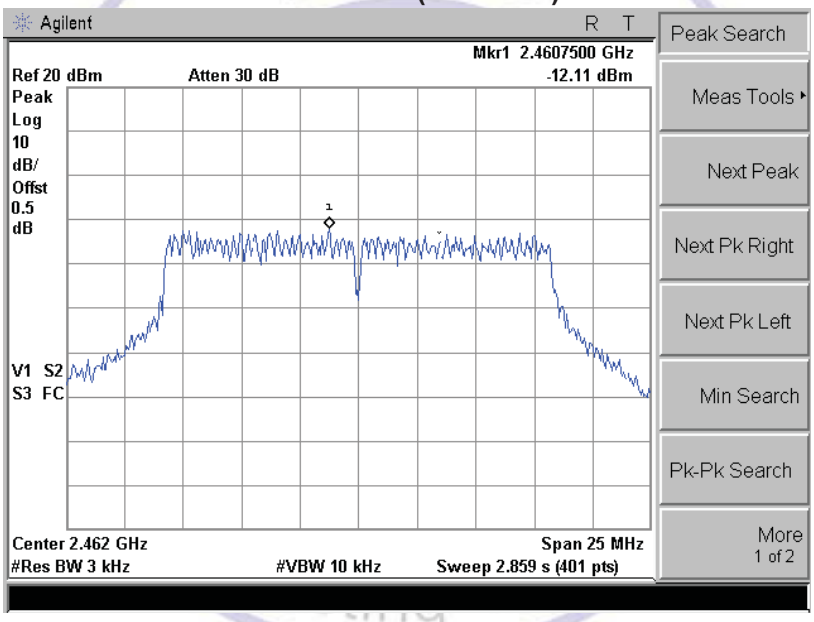
Channel 01 (2412MHz)



Channel 06 (2437MHz)



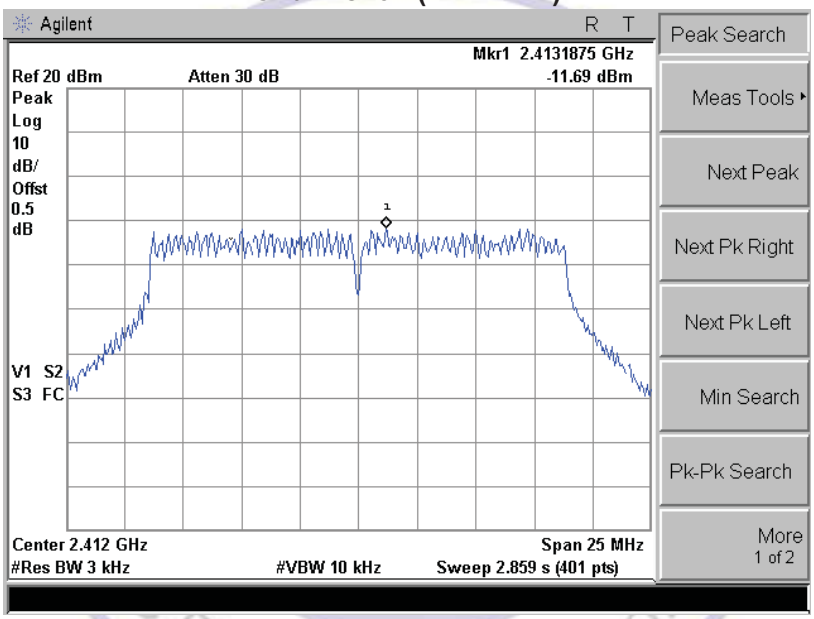
Channel 11 (2462MHz)



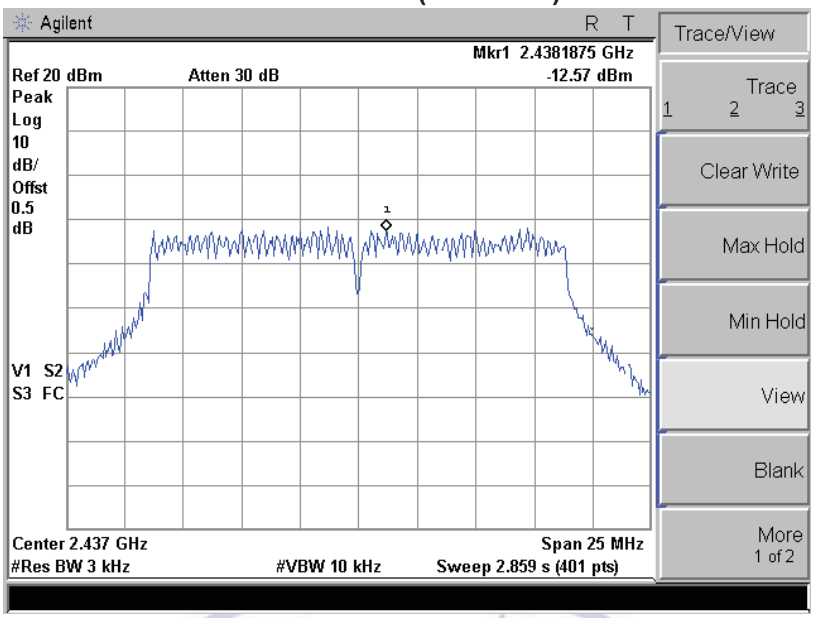
Product	:	Familybook
Test Item	:	Power Spectral Density
Test Mode	:	Mode 3: Transmit by 802.11n (20MHz)

Channel No.	Frequency (MHz)	Measurement PPSD (dBm/3KHz)	Limit (dBm/3KHz)	Result
01	2412	-11.69	8	Pass
06	2437	-12.57	8	Pass
11	2462	-12.30	8	Pass

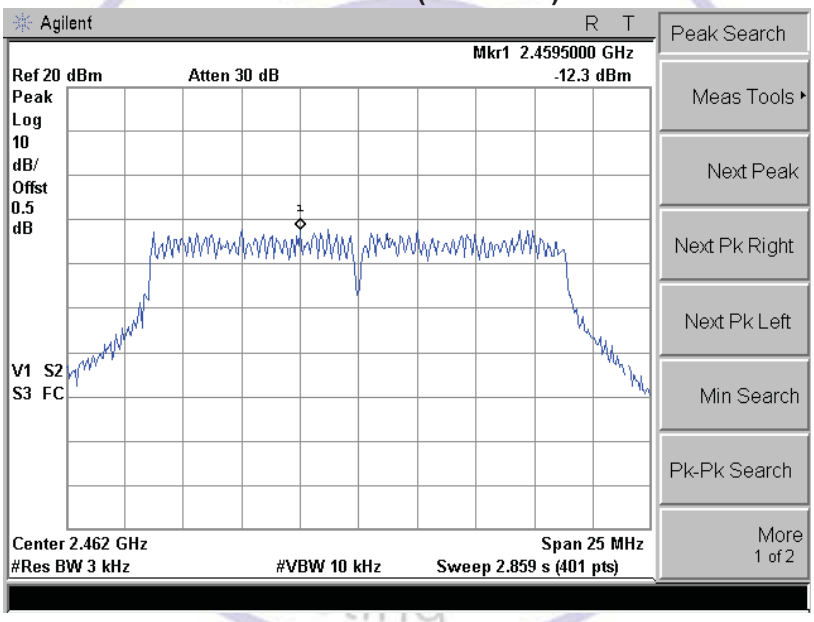
Channel 01 (2412MHz)



Channel 06 (2437MHz)

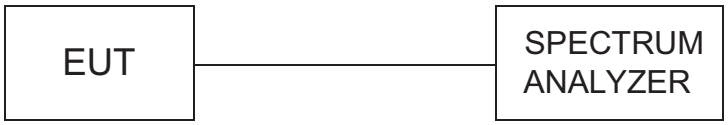


Channel 11 (2462MHz)



4.7. Spurious RF Conducted Emission

TEST CONFIGURATION



TEST PROCEDURE

The EUT was tested according to KDB558074 D01 v03r02 for compliance to FCC 47CFR 15.247 requirements.

conducted measurement RBW=100KHz , VBW =300kHz , PEAK DETECTOR

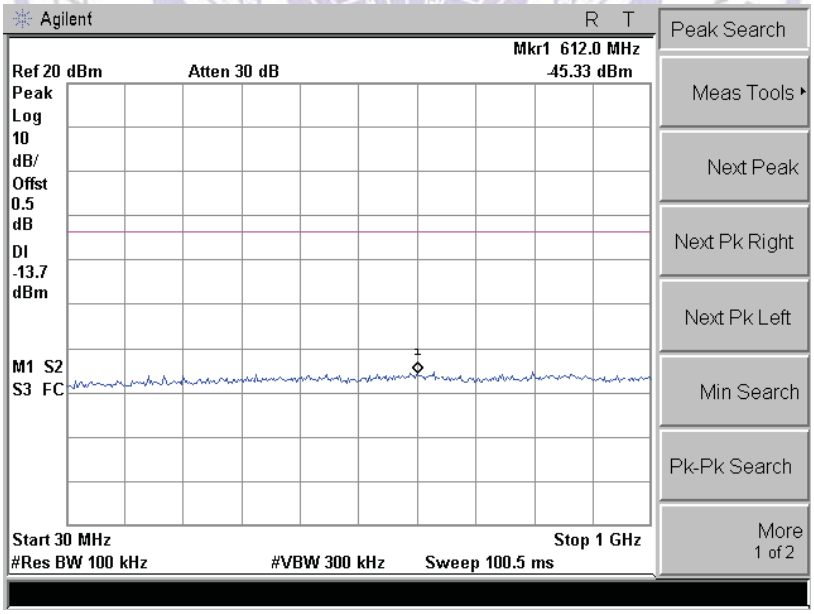
LIMIT

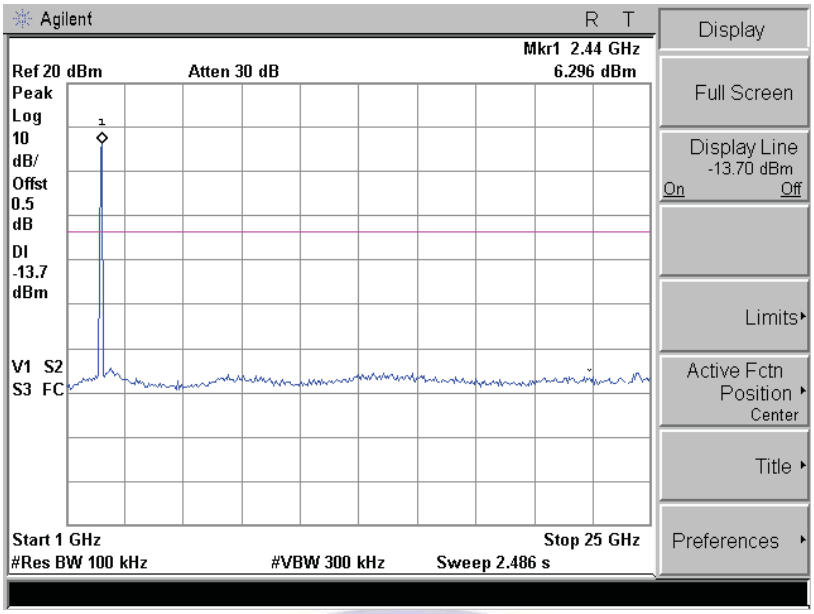
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

TEST RESULTS

Product	:	Familybook
Test Item	:	RF Antenna Conducted Spurious
Test Mode	:	Mode 1: Transmit by 802.11b

Channel 01 (2412MHz)





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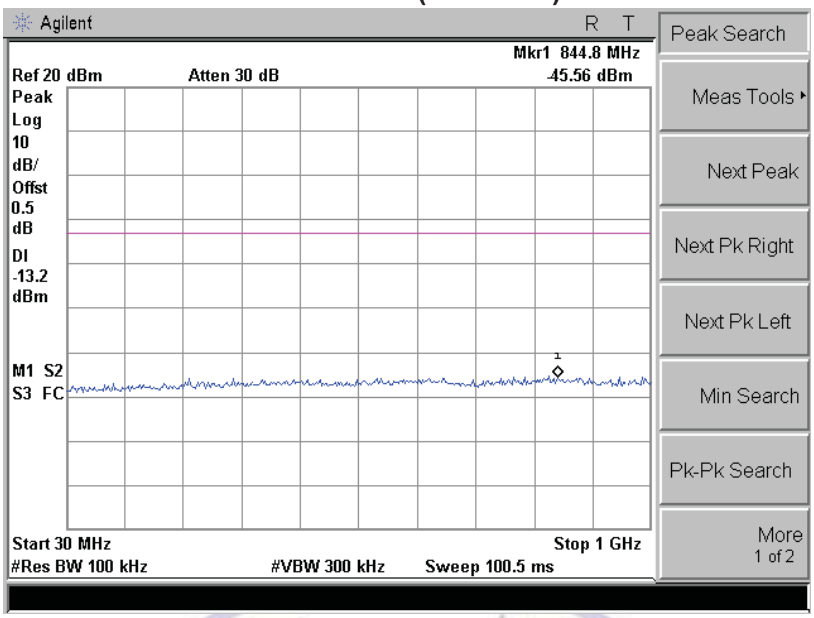
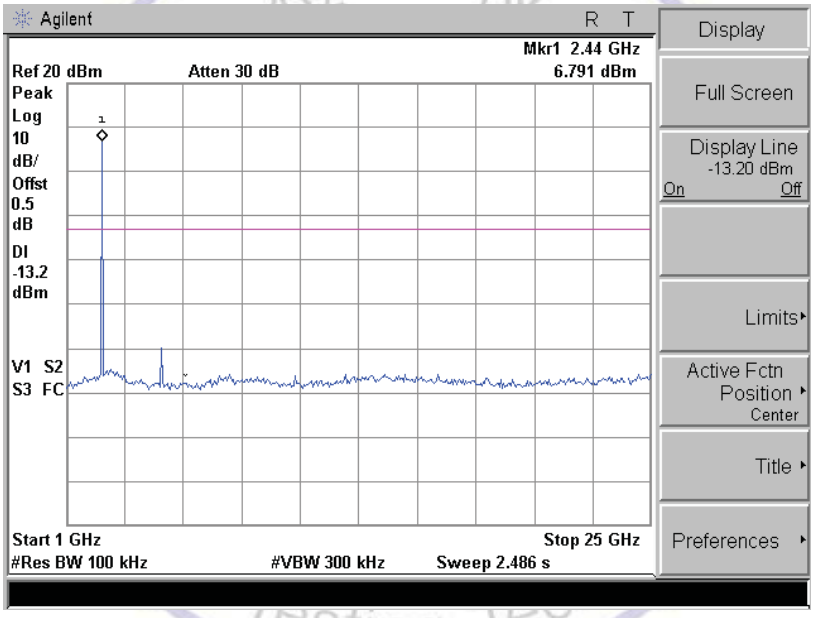
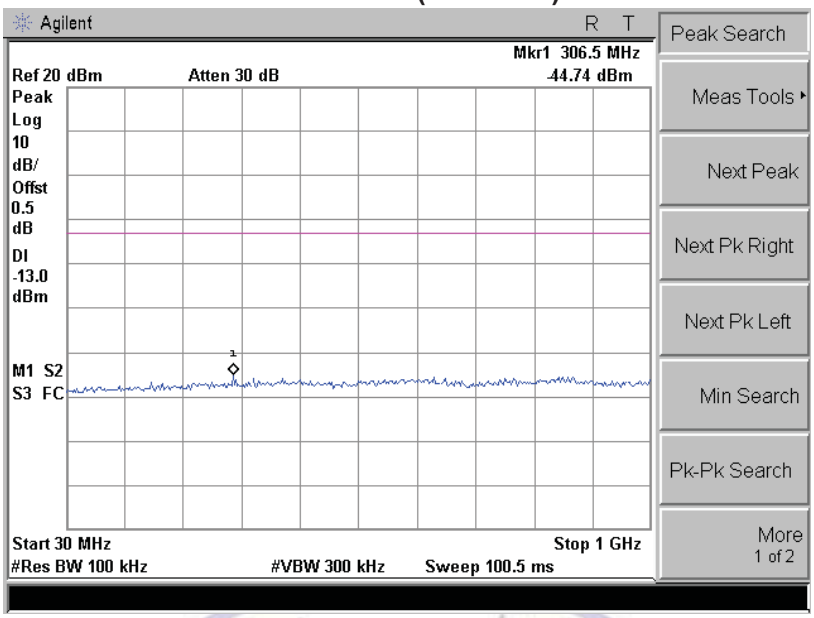
Shenzhen CTL Testing Technology Co.,Ltd.
CTL

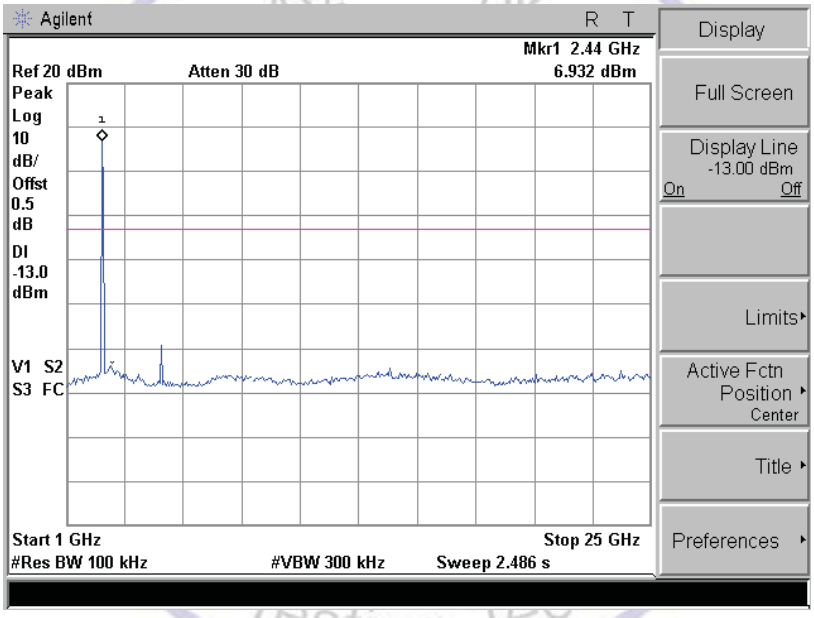
Channel 06 (2437MHz)





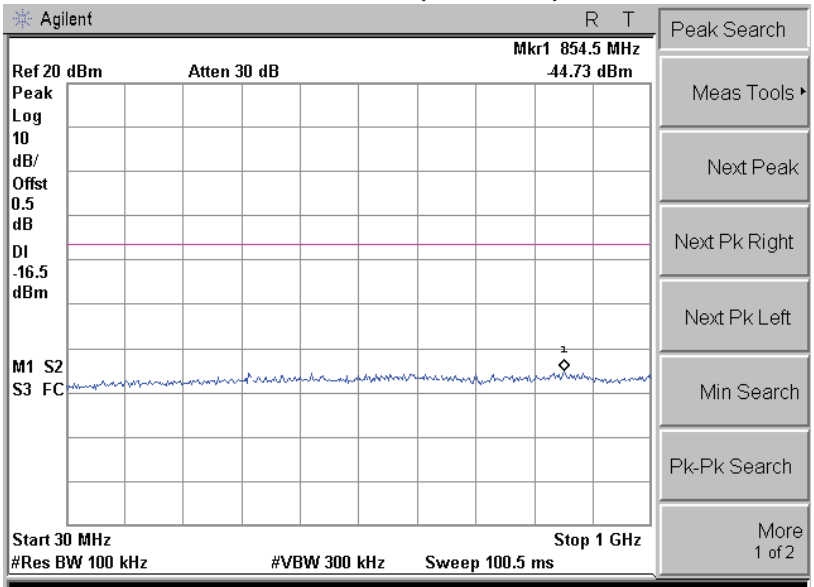
Channel 11 (2462MHz)

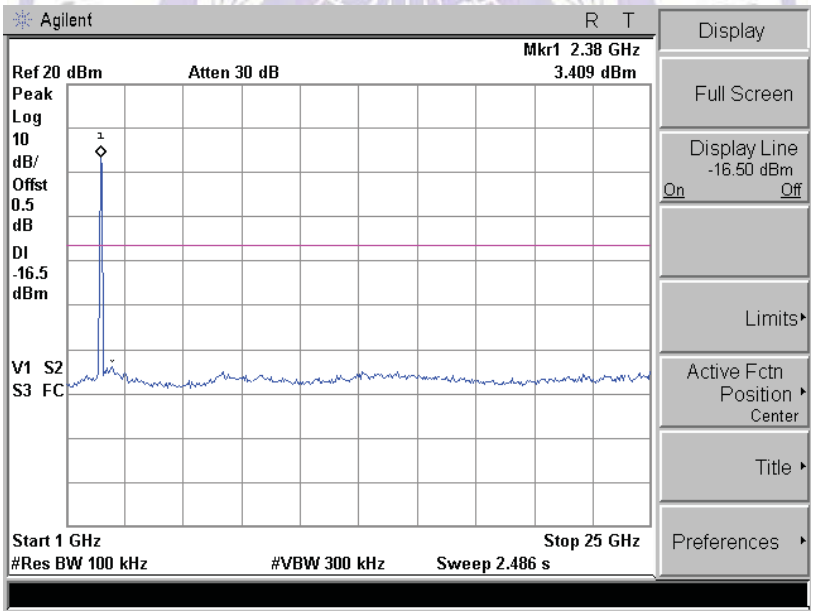




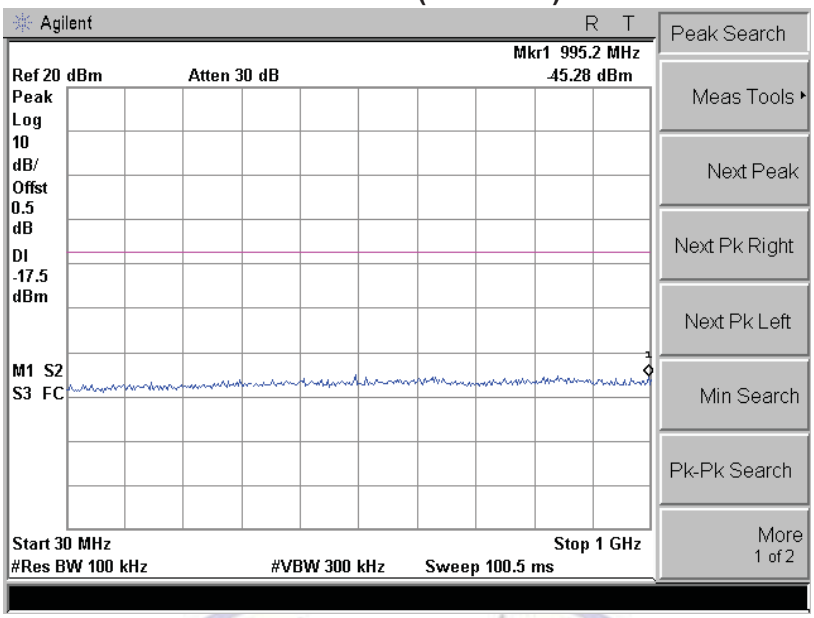
Product	:	Familybook
Test Item	:	RF Antenna Conducted Spurious
Test Mode	:	Mode 2: Transmit by 802.11g

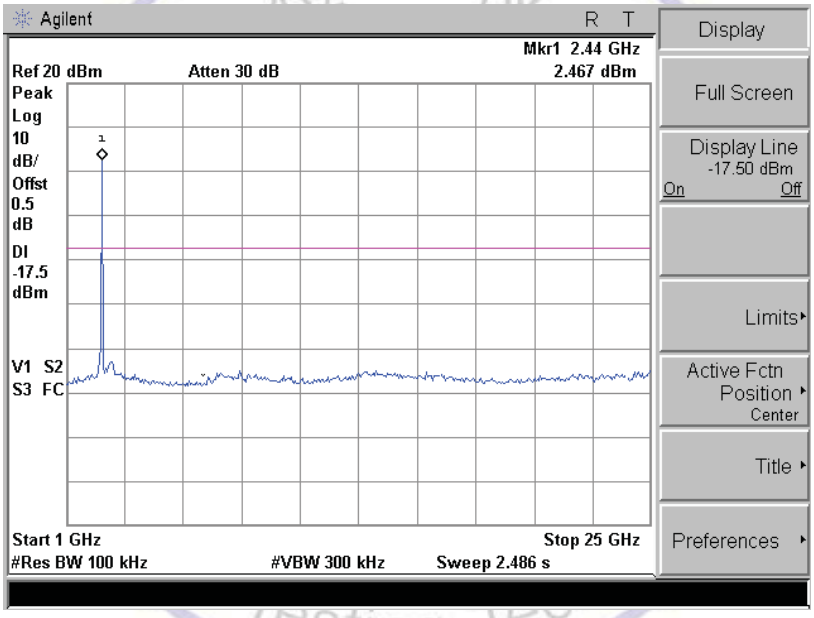
Channel 01 (2412MHz)



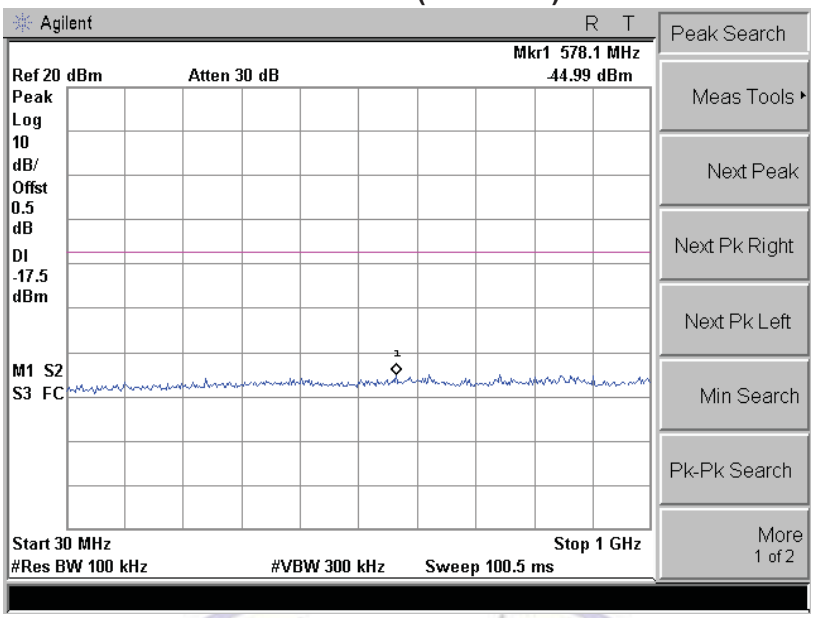


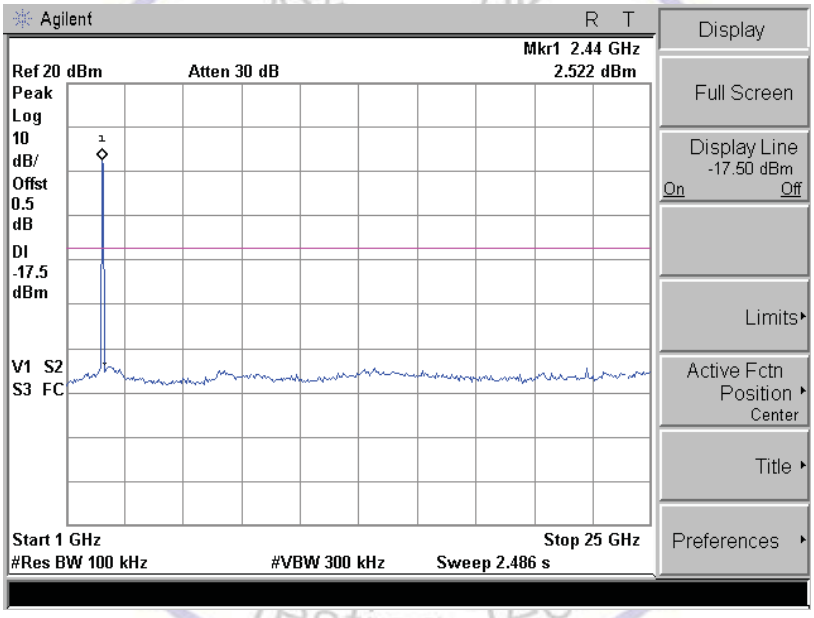
Channel 06 (2437MHz)





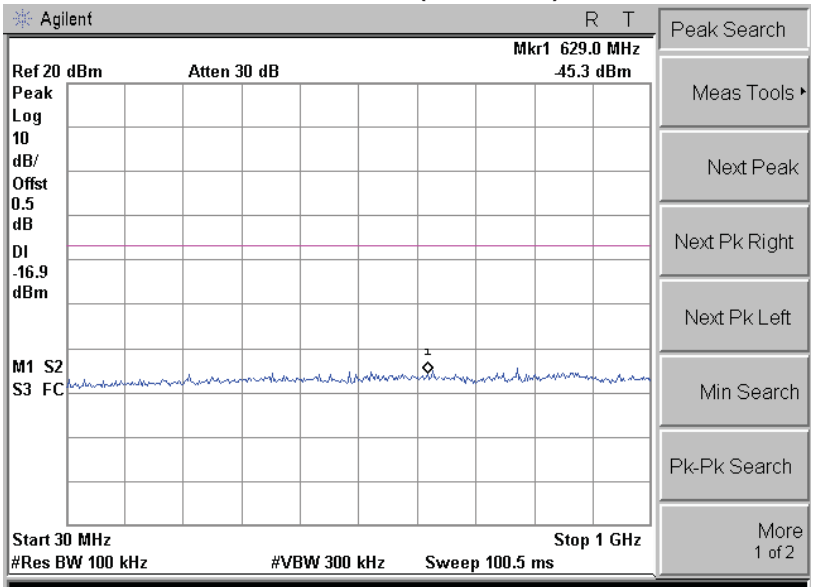
Channel 11 (2462MHz)

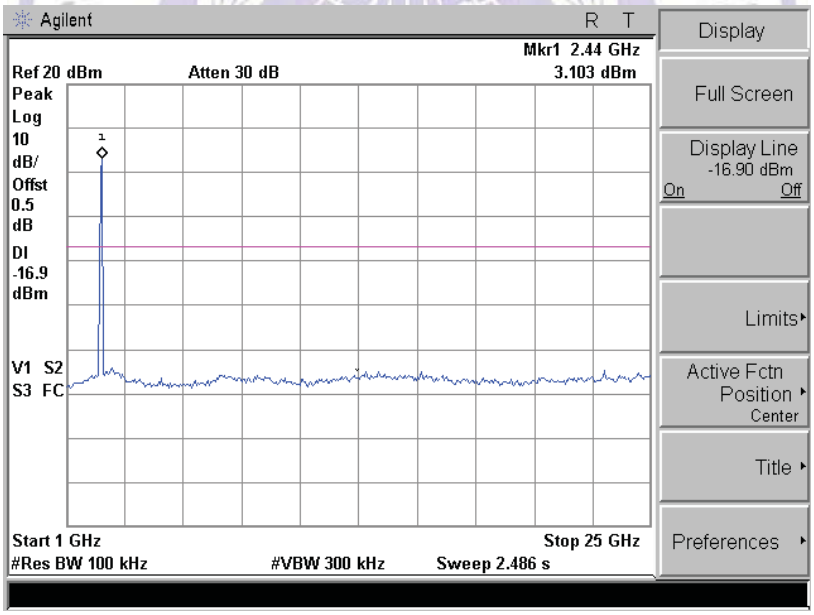




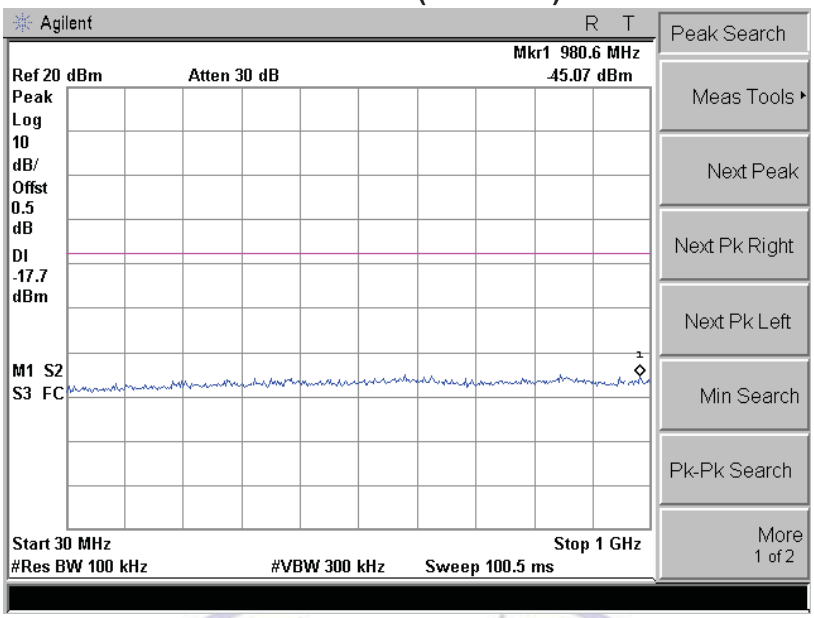
Product	:	Familybook
Test Item	:	RF Antenna Conducted Spurious
Test Mode	:	Mode 3: Transmit by 802.11n (20MHz)

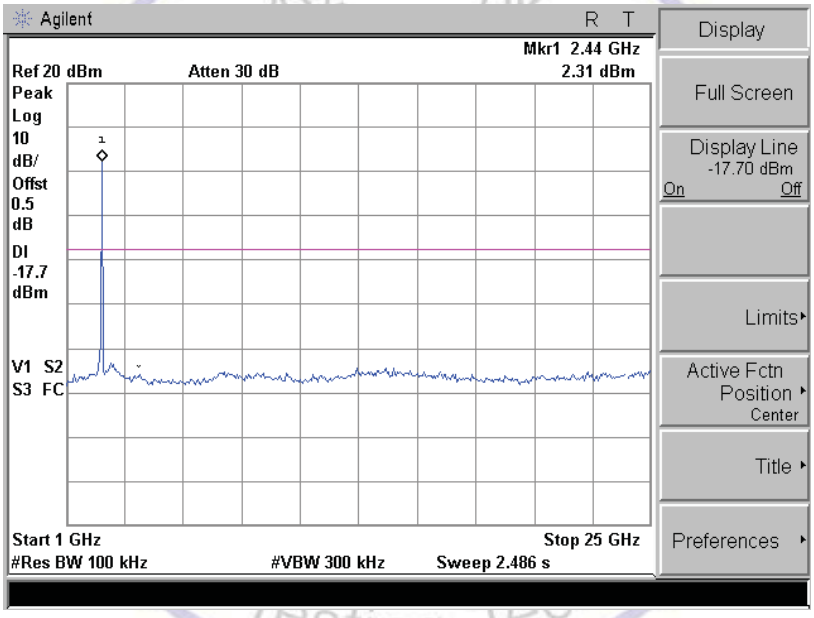
Channel 01 (2412MHz)



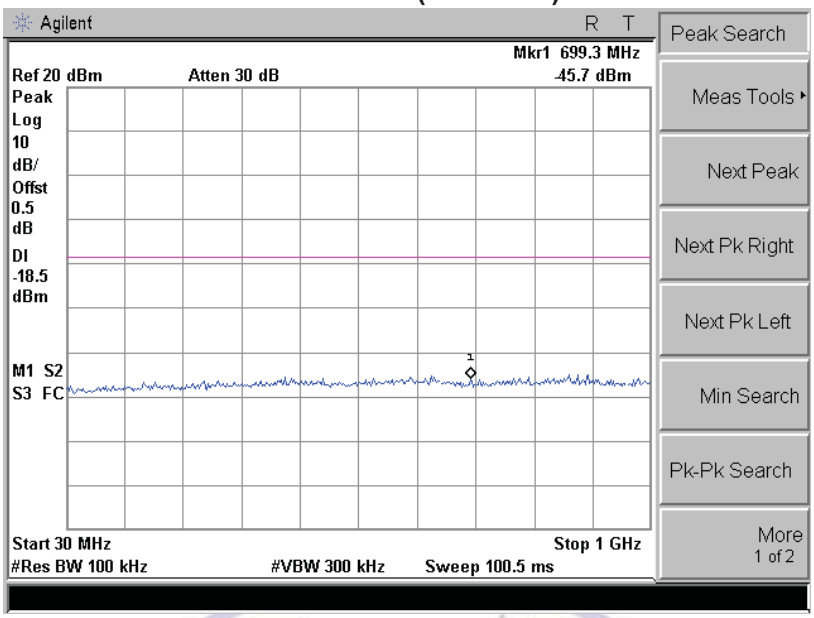


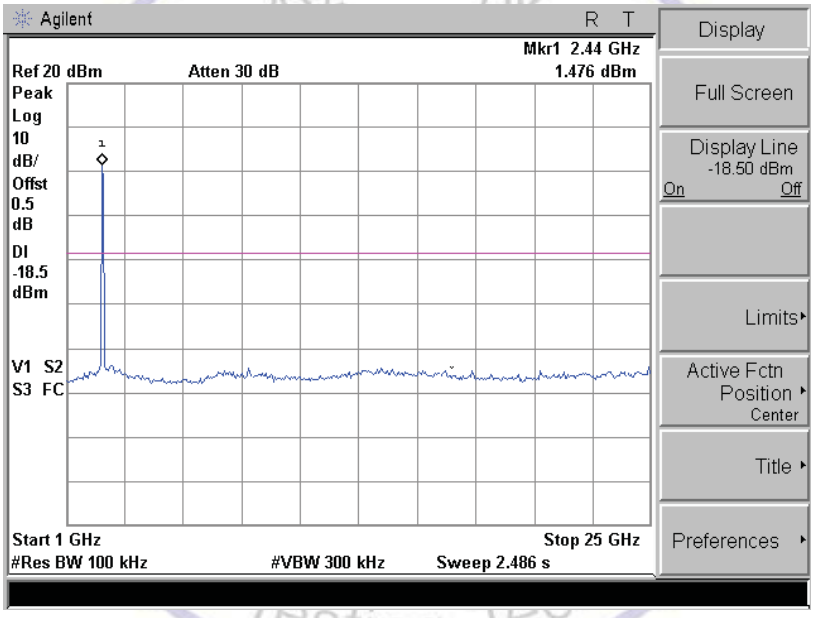
Channel 06 (2437MHz)





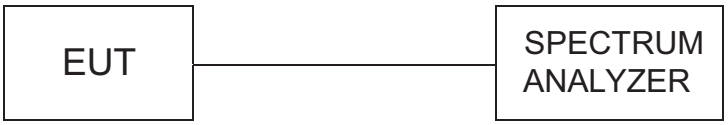
Channel 11 (2462MHz)





4.8. Band Edge compliance of RF Emission

TEST CONFIGURATION



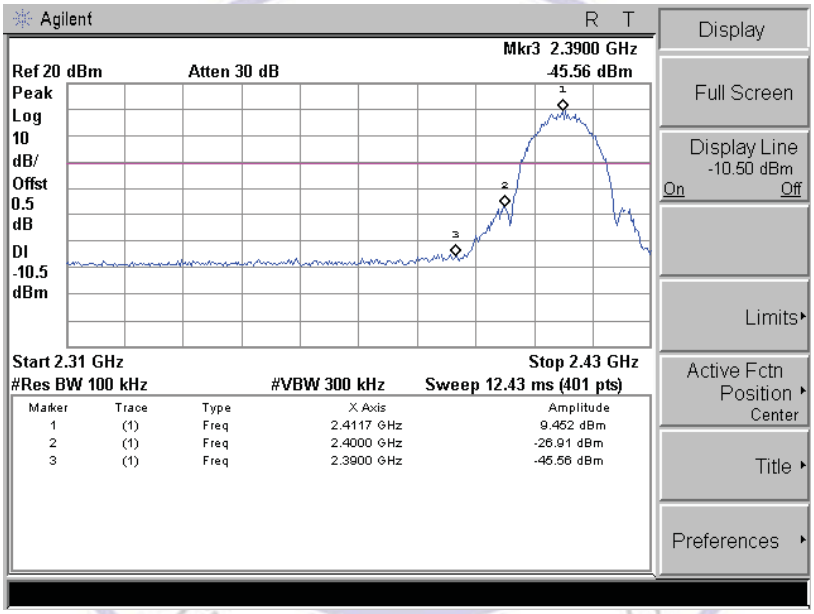
TEST PROCEDURE

The EUT was tested according to KDB 558074 D01 v03r02 for compliance to FCC 47CFR 15.247 requirements.
Set RBW = 100 kHz, Span greater than RBW.

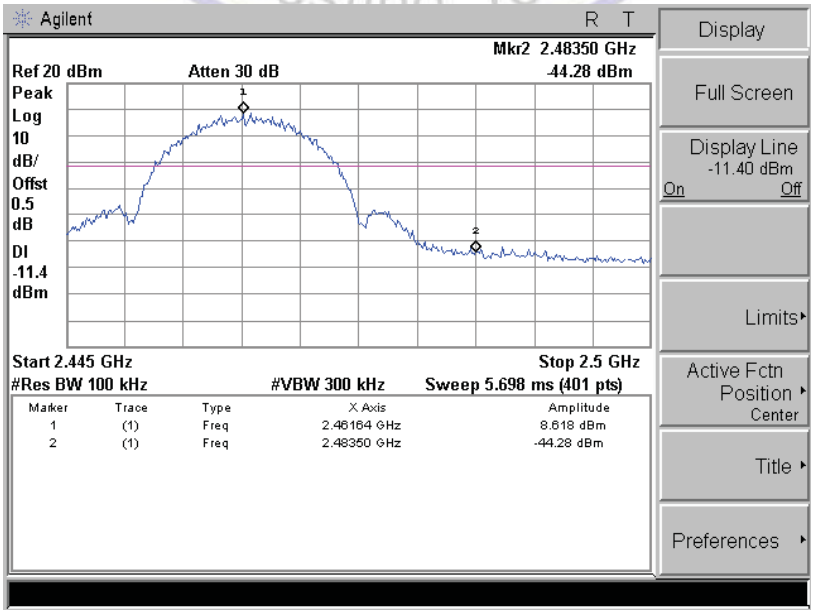
TEST RESUTL

For 802.11b Mode:

CH1

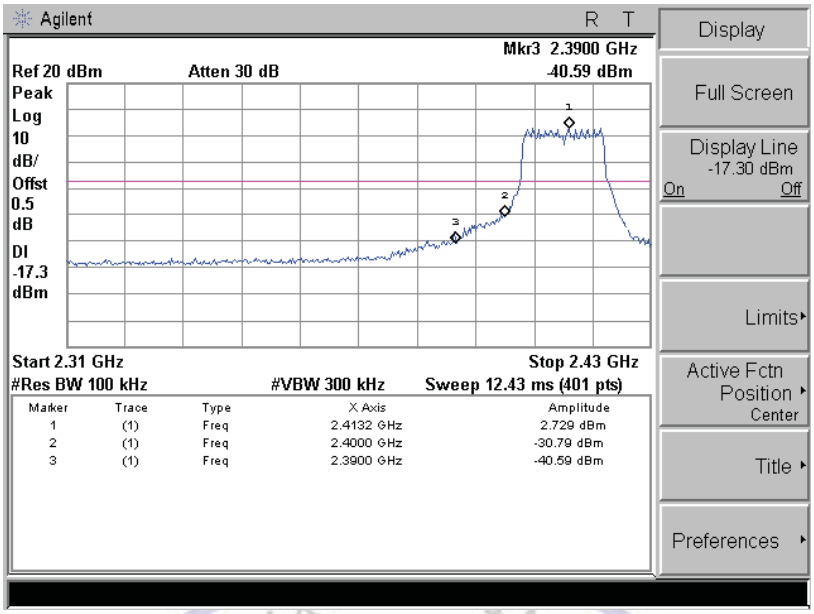


CH11

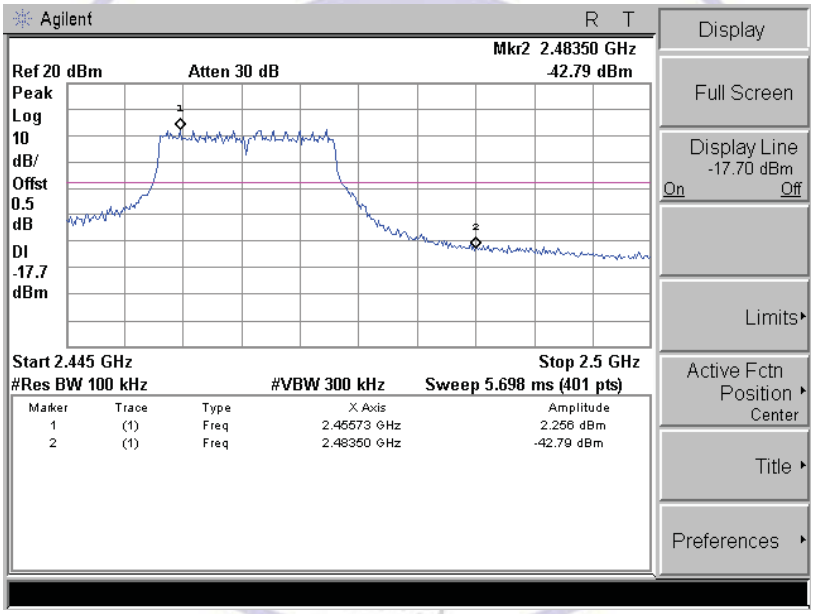


For 802.11g Mode:

CH1

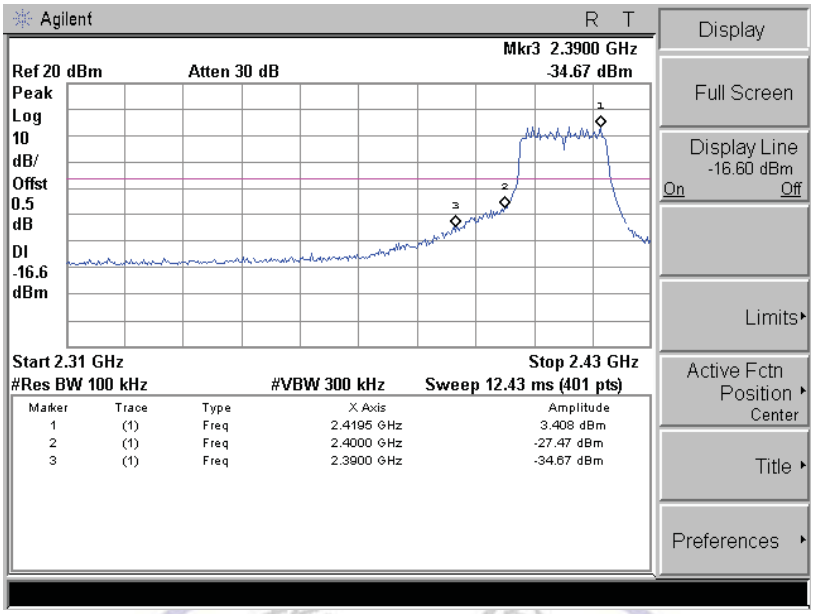


CH11

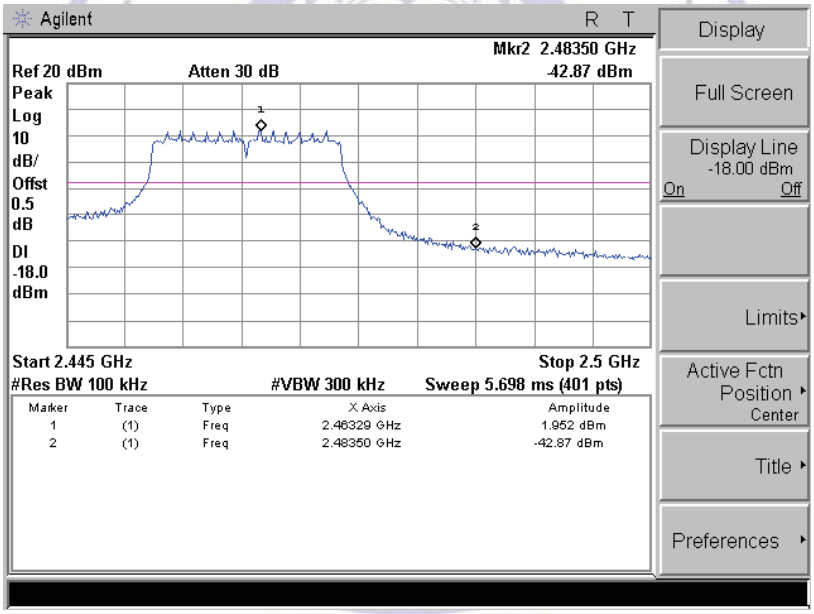


For 802.11n (20MHz) Mode:

CH1



CH11



4.9. Antenna Requirement

STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Refer to statement below for compliance.

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

ANTENNA CONNECTED CONSTRUCTION

The directional gains of antenna used for transmitting is 1.5 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Please see EUT photo for details.

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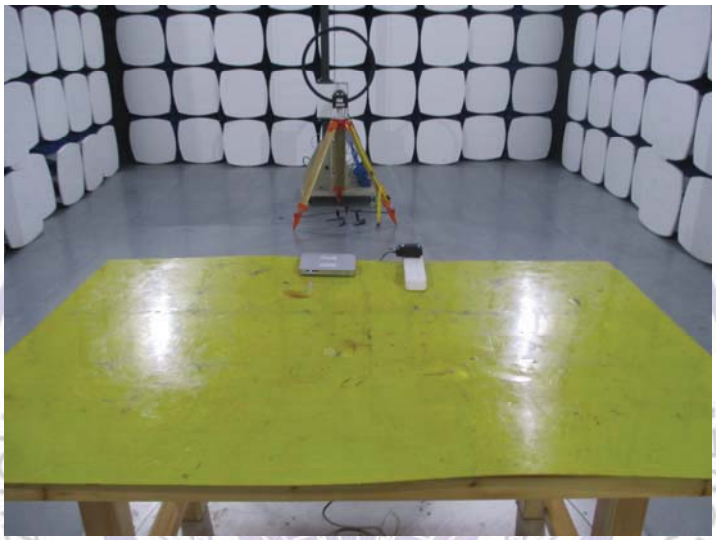
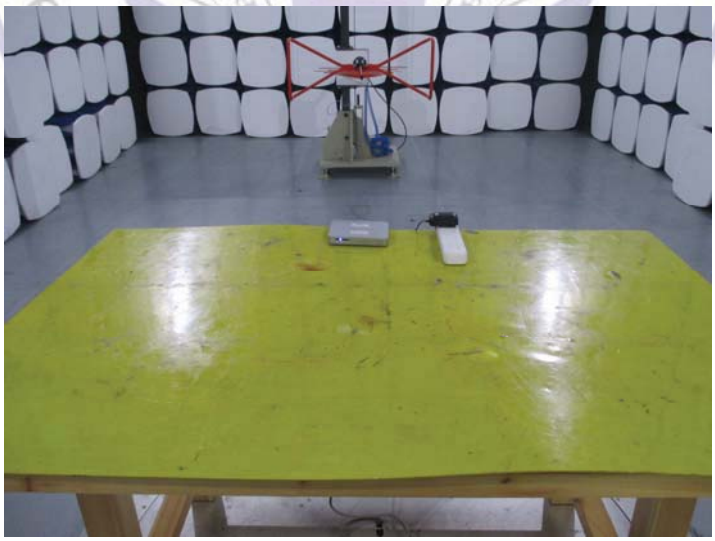
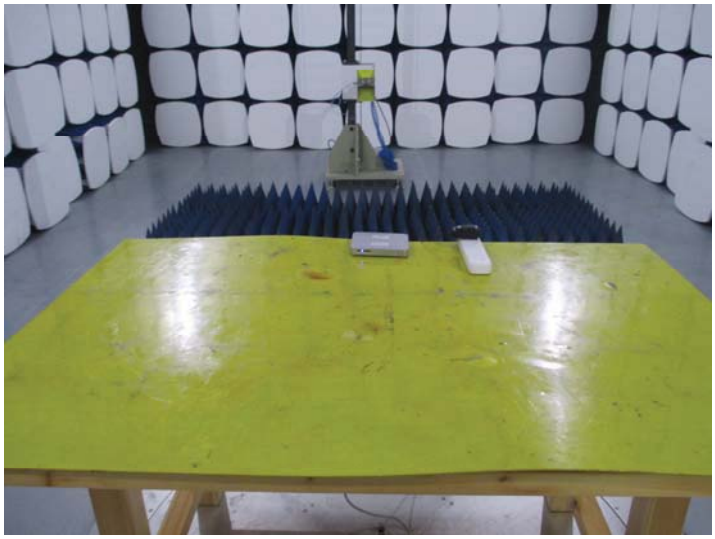
5. Test Setup Photos of the EUT



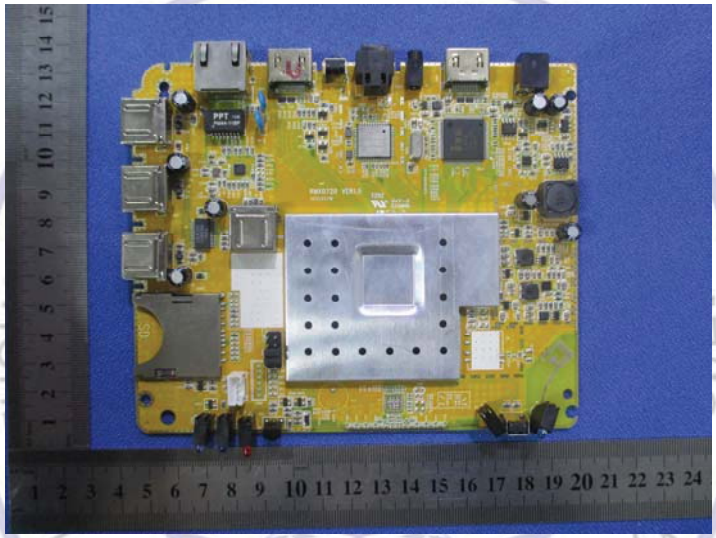


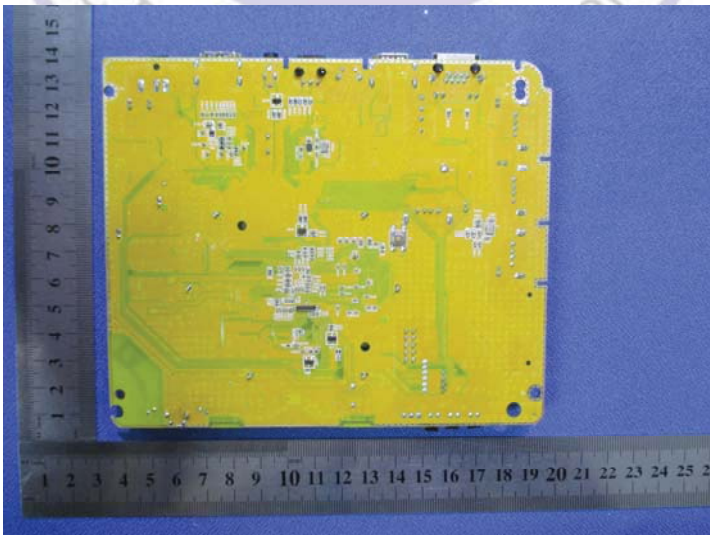


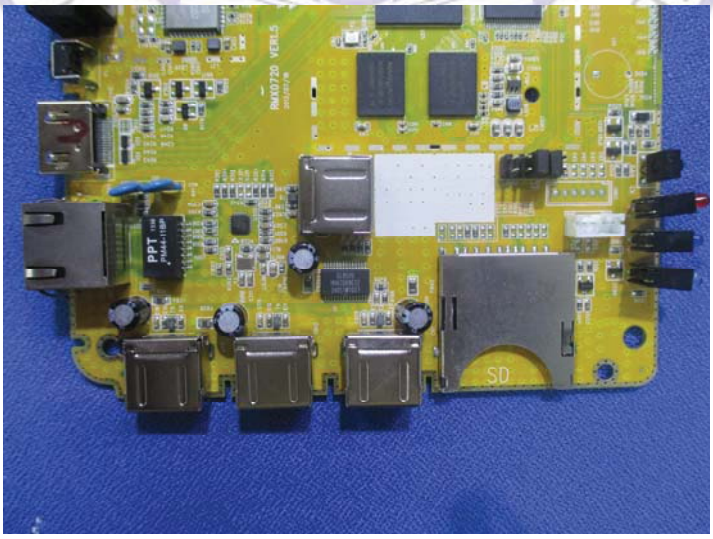
6. External and Internal Photos of the EUT

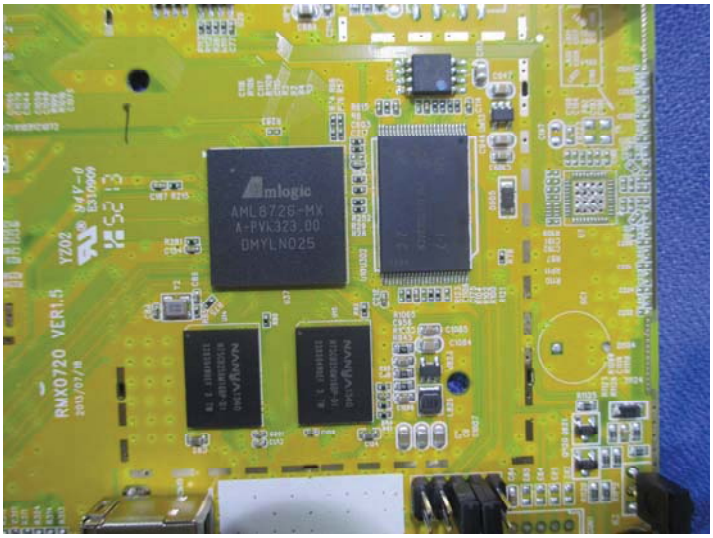
External Photos of EUT

Internal Photos of EUT






SD



.....End of Report.....

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