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FCC PART 15 SUBPART C TEST REPORT

FCC Part 15.247

Report Reference No.....: **CTL1403250553-WW**

Compiled by
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(position+printed name+signature) .: Test Engineer Tracy Qi *Tracy Qi*

Approved by
(position+printed name+signature) .: Manager Tracy Qi *Tracy Qi*

Date of issue.....: Apr. 15, 2014

Test Firm: **Shenzhen CTL Testing Technology Co., Ltd.**
Address: Floor 1-A, Baisha Technology Park, No.3011, Shahehexi Road, Nanshan District, Shenzhen, China 518055

Applicant's name.....: **Bulltech Electronic Products S.L.**
Address: Gran Via, 64, 2-I, 28013 Madrid, Spain.

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: SMART PHONE
FCC ID.....: 2AAM3SYRENI50DCII
Trade Mark: SZENIO
Model/Type reference: Syreni 50DC II
GSM/WCDMA
Transmit: 2G:GSM 850: 824~849MHz, PCS 1900: 1850~1910MHz
3G:WCDMA Band V: 824~849MHz
Receive: 2G:GSM 850: 869~894MHz, PCS 1900: 1930~1990MHz
3G:WCDMA Band V: 869~894MHz
Release Version: 2G:R99
3G:Rel-6
Type of modulation.....: 2G: GMSK for GSM/GPRS/EDGE
3G: QPSK
GPRS Type: Class B

GPRS Class	Class 12
GPS	
work frequency	1575.42MHz
Type of modulation	BPSK
Bluetooth	
Work frequency	2402~2480MHz
Version	V4.0
Type of modulation	FHSS
Data Rate	1Mbps(GFSK), 2Mbps(Pi/4 DQPSK), 3Mbps(8DPSK)
Wi-Fi	
Work frequency	802.11b/g/n(40MHz): 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 135 Mbps
Antenna Gain	-2.0 dBi for GSM850 and WCDMA Band V -1.0 dBi for PCS1900 0 dBi for Bluetooth and Wi-Fi
Antenna type	Internal
IMEI 1	358392044937091
IMEI 2	358392044937109
Hardware version	8068-MB-V0.3
Software version	8068-01C_K77W_OTD_A999W_BULLTECH_QHD_V008_ 20140117_1240
Result	Positive

TEST REPORT

Test Report No. :	CTL1403250553-WW	Apr.15, 2014
		Date of issue

Equipment under Test : SMART PHONE

Model /Type : Syreni 50DC II

Applicant : **Bulltech Electronic Products S.L.**

Address : Gran Via, 64, 2-I, 28013 Madrid, Spain.

Manufacturer : **Shenzhen ODX Telecom Equipment Co., Ltd.**

Address : 2nd Floor of Building B, HongLianYing Technology Park,
No.286 of SiLi Road, DaBuXiang Community, Longhua
New District, Shenzhen, China

Test Result according to the
standards on page 5:

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.

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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 C63.10-2009](#): American National Standard for Testing Unlicensed Wireless Devices.

[ANSI C63.4-2003](#)

[KDB Publication No. KDB 558074 D01 v03r01 Guidance on Measurements for Digital Transmission Systems](#)



2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	Mar. 25, 2014
Testing commenced on	:	Mar. 25, 2014
Testing concluded on	:	Apr. 15, 2014

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage	:	<input checked="" type="radio"/> 120V / 60 Hz	<input type="radio"/> 115V / 60Hz
		<input type="radio"/> 12 V DC	<input type="radio"/> 24 V DC
		<input checked="" type="radio"/> Other (specified in blank below)	

DC 3.7V from battery

Description of the test mode

IEEE 802.11b/g/n: 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)

A SMART PHONE with WCDMA/GSM, Bluetooth, GPS and wifi function.

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

Serial number: Prototype

2.4. EUT operation mode

Test Mode:

1. The EUT has been tested under normal operating condition.
2. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed. Channel low (2412MHz), mid (2442MHz) and high (2462MHz) with highest data rate are chosen for full testing.
3. Test Mode:

Test Mode(TM)	Description	Remark
TM1	Transmitting	802.11 b
TM2	Transmitting	802.11 g
TM3	Transmitting	802.11 n HT20
TM4	Transmitting	802.11 n HT40

2.5. EUT configuration

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

○ - supplied by the manufacturer

● - supplied by the lab

● Notebook PC

Manufacturer : DELL

Model No. : PP18L

2.6. NOTE

1. The EUT is an 802.11b/g/n SMART PHONE, The functions of the EUT listed as below:

	Test Standards	Reference Report
Radio	FCC Part 15 Subpart C (Section 15.247)	CTL1403250553-WW
RF Exposure	FCC Per 47 CFR 2.1091(b)	CTL1403250553-WW

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)	√	—	—	—
802.11n(40MHz)	√	—	—	—

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
802.11n (40MHz)	1TX

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

This submittal(s) (test report) is intended for FCC ID: **2AAM3SYRENI50DCII** filing to comply with of the FCC Part 15.247 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 (2003) 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.

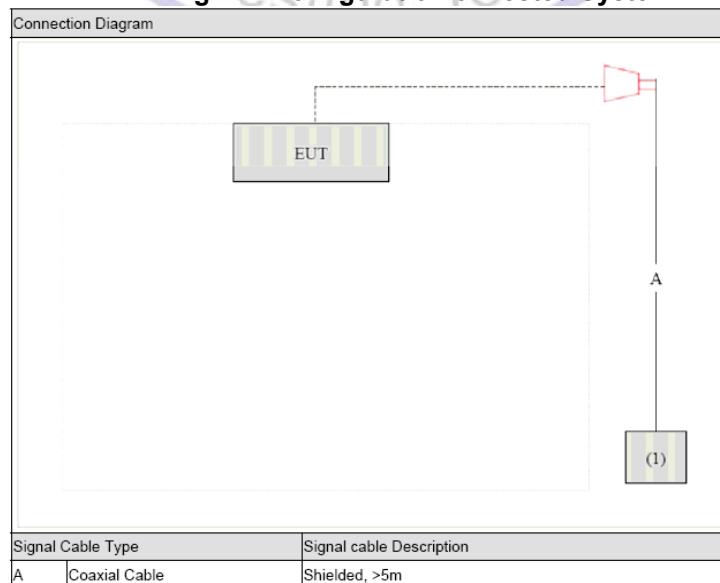
3.3. Environmental conditions

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

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

3.4. Configuration of Tested System

Fig. 2-1 Configuration of Tested System



3.5. 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.



3.6. Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
Bilog Antenna	Sunol Sciences Corp.	JB1	A061713	2013/07/12	2014/07/11
EMI Test Receiver	R&S	ESCI	103710	2013/07/10	2014/07/09
Spectrum Analyzer	Agilent	E4407B	MY45108355	2013/07/06	2014/07/05
Controller	EM Electronics	Controller EM 1000	N/A	2013/07/06	2014/07/05
Horn Antenna	Sunol Sciences Corp.	DRH-118	A062013	2013/07/12	2014/07/11
Horn Antenna	SCHWARZBECK	BBHA9170	1562	2013/07/12	2014/07/11
Active Loop Antenna	SCHWARZBECK	FMZB1519	1519-037	2013/07/12	2014/07/11
LISN	R&S	ENV216	101316	2013/07/10	2014/07/09
LISN	SCHWARZBECK	NSLK8127	8127687	2013/07/10	2014/07/09
Microwave Preamplifier	HP	8349B	3155A00882	2013/07/10	2014/07/09
Amplifier	HP	8447D	3113A07663	2013/07/10	2014/07/09
Transient Limiter	Com-Power	LIT-153	532226	2013/07/10	2014/07/09
Radio Communication Tester	R&S	CMU200	3655A03522	2013/07/06	2014/07/05
Temperature/Humidity Meter	zhicheng	ZC1-2	22522	2013/07/10	2014/07/09
SIGNAL GENERATOR	HP	8647A	3200A00852	2013/07/10	2014/07/09
Wideband Peak Power Meter	Anritsu	ML2495A	220.23.35	2013/07/06	2014/07/05
Climate Chamber	ESPEC	EL-10KA	A20120523	2013/07/06	2014/07/05
High-Pass Filter	K&L	9SH10-2700/X12750-O/O	/	2013/07/06	2014/07/05
High-Pass Filter	K&L	41H10-1375/U12750-O/O	/	2013/07/06	2014/07/05

3.7. 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
FCC Per 47 CFR 2.1091(b)	MPE Evaluation	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.

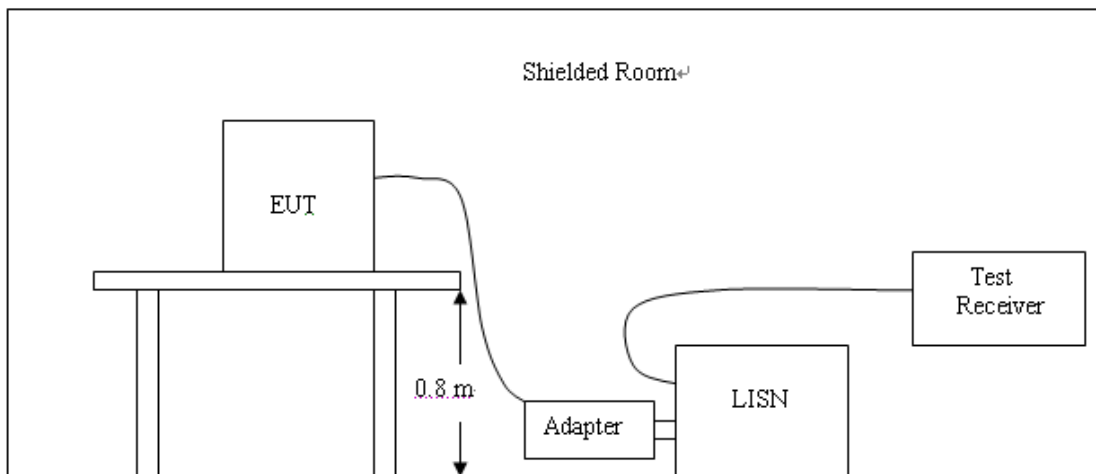
Test Items	Mode	Data Rate	Channel
AC Power Conducted Emission	Normal Link	11 Mbps	1
Maximum Peak Conducted Output Power Power Spectral Density 6dB Bandwidth Spurious RF conducted emission	11b/DSSS	11 Mbps	1/6/11
	11g/OFDM	54 Mbps	1/6/11
	11n(20MHz)/OFDM	65Mbps	1/6/11
	11n(40MHz)/OFDM	135Mbps	3/6/9
Radiated Emission 30MHz~1GHz	11b/DSSS	11 Mbps	1/6/11
	11g/OFDM	54 Mbps	1/6/11
	11n(20MHz)/OFDM	65Mbps	1/6/11
	11n(40MHz)/OFDM	135Mbps	3/6/9
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
	11n(40MHz)/OFDM	135Mbps	3/6/9
Band Edge Compliance of RF Emission	11b/DSSS	11 Mbps	1/11
	11g/OFDM	54 Mbps	1/11
	11n(20MHz)/OFDM	65Mbps	1/11
	11n(40MHz)/OFDM	135Mbps	3/9

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 (dB μ v)			
	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

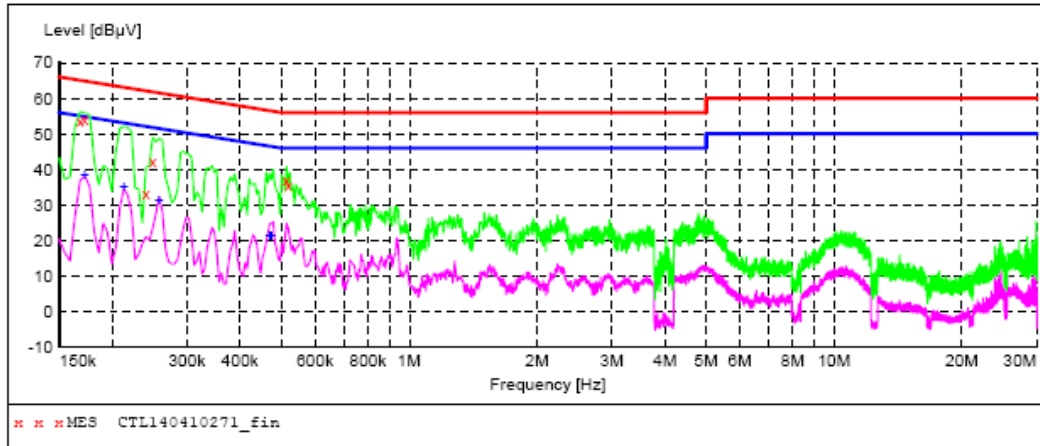
For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

1. Please follow the guidelines in ANSI C63.4-2003.
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: "CTL140410271_fin"

4/10/2014 8:56AM

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.168000	53.70	10.2	65	11.4	QP	N	GND
0.172500	53.90	10.2	65	10.9	QP	N	GND
0.240000	33.30	10.2	62	28.8	QP	N	GND
0.249000	42.40	10.2	62	19.4	QP	N	GND
0.514500	36.90	10.2	56	19.1	QP	N	GND
0.519000	35.60	10.2	56	20.4	QP	N	GND

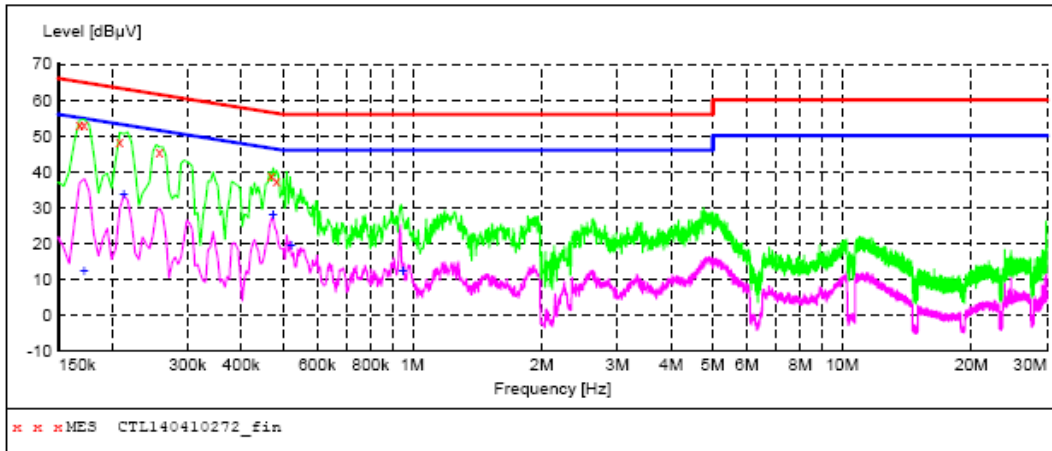
MEASUREMENT RESULT: "CTL140410271_fin2"

4/10/2014 8:56AM

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.172500	38.30	10.2	55	16.5	AV	N	GND
0.213000	35.20	10.2	53	17.9	AV	N	GND
0.258000	31.10	10.2	52	20.4	AV	N	GND
0.469500	21.20	10.2	47	25.3	AV	N	GND
0.474000	21.30	10.2	46	25.1	AV	N	GND



SCAN TABLE: "Voltage (9K-30M) FIN"
 Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL140410272_fin"

4/10/2014 9:02AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.168000	53.00	10.2	65	12.1	QP	L1	GND
0.172500	53.00	10.2	65	11.8	QP	L1	GND
0.208500	48.40	10.2	63	14.9	QP	L1	GND
0.258000	45.70	10.2	62	15.8	QP	L1	GND
0.469500	38.70	10.2	57	17.8	QP	L1	GND
0.483000	37.30	10.2	56	19.0	QP	L1	GND

MEASUREMENT RESULT: "CTL140410272_fin2"

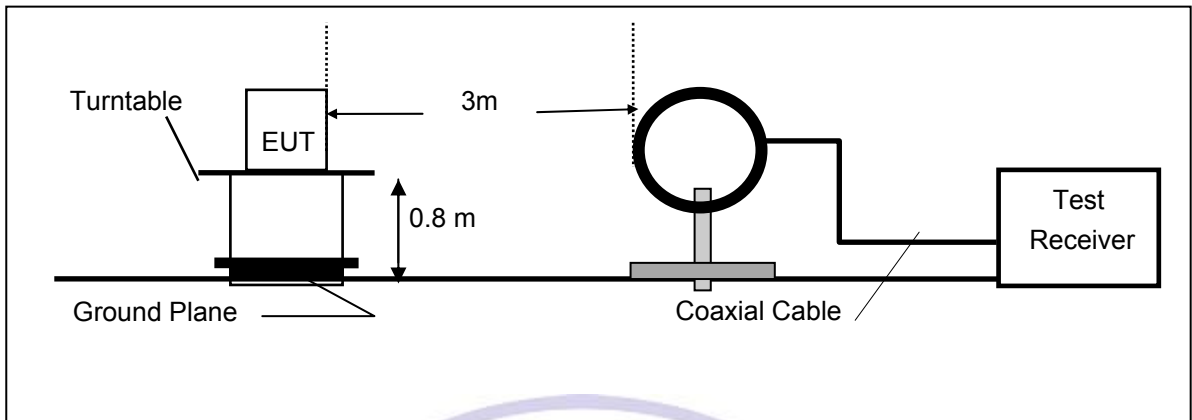
4/10/2014 9:02AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.172500	12.40	10.2	55	42.4	AV	L1	GND
0.213000	33.70	10.2	53	19.4	AV	L1	GND
0.474000	27.90	10.2	46	18.5	AV	L1	GND
0.523500	19.50	10.2	46	26.5	AV	L1	GND
0.951000	12.30	10.3	46	33.7	AV	L1	GND

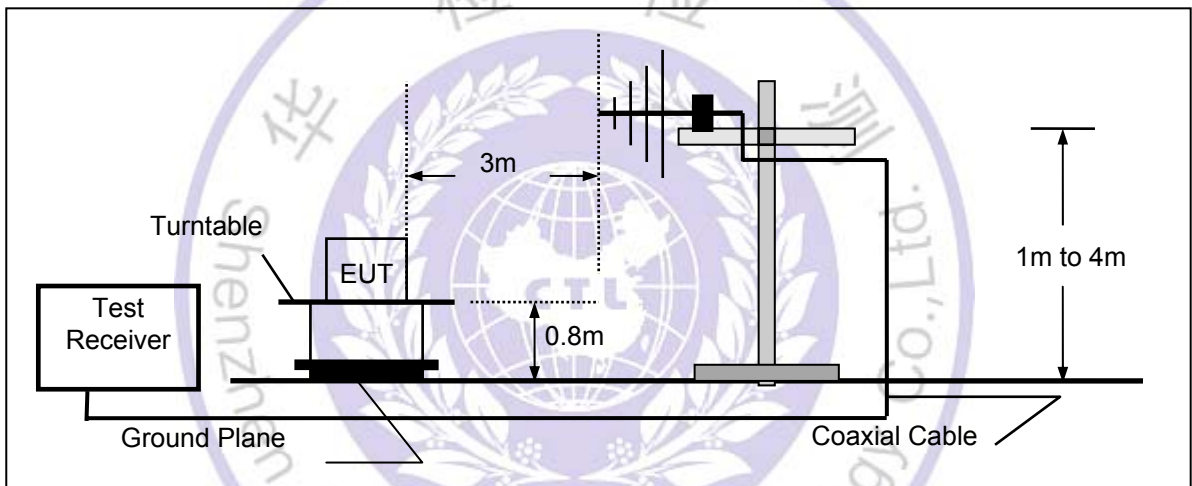
4.2. Radiated Emission Test

TEST CONFIGURATION

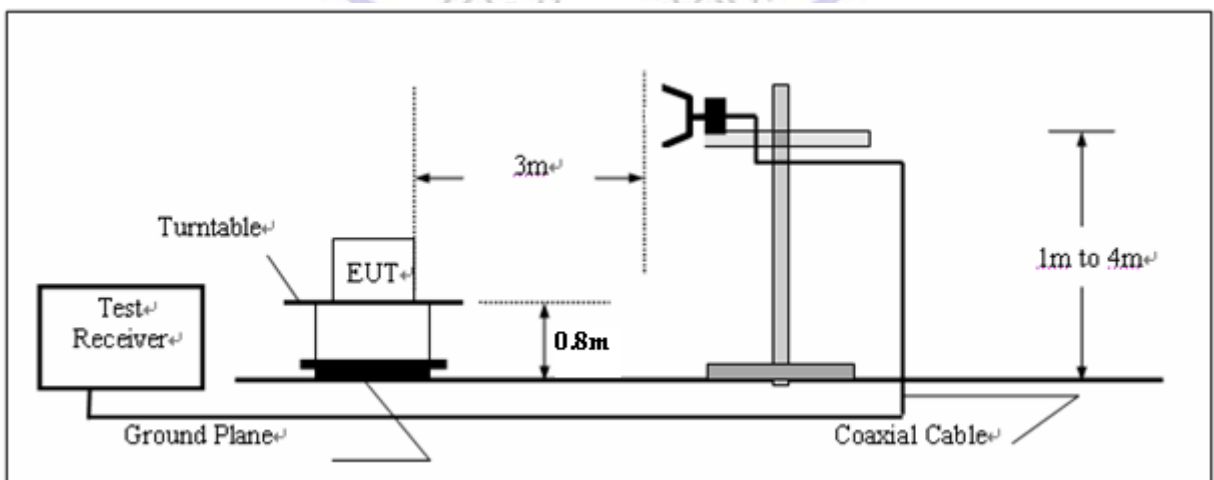
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(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 v03r01 (Measurement Guidelines of DTS), the EUT was setup according to ANSI C63.4: and tested according to ANSI C63.10 for compliance to FCC 47CFR 15.247 requirements.
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, 120 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 the 100kHz bandwidth within the band that contains the highest level of desired power.

TEST RESULTS

Mode 1: Transmit by 802.11b

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	V	2413.4	80.0	31.2	111.2	Fundamental	/	PK
	V	340.0	-0.9	14.5	13.6	46	-32.4	QP
	H	550.0	-0.8	19.4	18.6	46	-27.4	QP
	H	3200.0	42.6	-5.7	36.9	54(Note 2)	-17.1	PK
	H	4824.0	40.9	-2.5	38.4	54(Note 2)	-15.6	PK
	V	7236.0	42.0	2.6	44.6	54(Note 2)	-9.4	PK
	H	24000.0	59.4	-8.9	50.5	54(Note 2)	-3.5	PK
6	V	2438.5	80.5	31.3	111.8	Fundamental	/	PK
	V	287.5	1.4	13.5	14.9	46	-31.1	QP
	V	543.8	-0.7	19.3	18.6	46	-27.4	QP
	H	3200.0	42.1	-5.7	36.4	54(Note 2)	-17.6	PK
	V	4874.0	41.6	-2.4	39.2	54(Note 2)	-14.8	PK
	V	7311.0	43.6	2.7	46.3	54(Note 2)	-7.7	PK
	H	24000.0	59.7	-8.9	50.8	54(Note 2)	-3.2	PK
11	V	2463.3	80.9	31.6	112.5	Fundamental	/	PK
	V	350.0	-1.7	14.8	13.1	46	-32.9	QP
	V	540.0	-0.6	19.1	18.5	46	-27.5	QP
	H	3200.0	42.3	-5.6	36.7	54(Note 2)	-17.3	PK
	H	4924.0	41.3	-2.2	39.1	54(Note 2)	-14.9	PK
	V	7386.0	47.4	2.7	50.1	54(Note 2)	-3.9	PK
	V	24000.0	59.1	-8.9	50.2	54(Note 2)	-3.8	PK

Note:

1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise and 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.

Mode 2: Transmit by 802.11g

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	H	2415.3	75.9	31.3	107.2	Fundamental	/	PK
	H	543.8	-1.5	19.3	17.8	46	-28.2	QP
	V	543.8	-1.1	19.3	18.2	46	-27.8	QP
	V	3200.0	42.8	-5.6	37.2	54(Note 2)	-16.8	PK
	V	4824.0	40.9	-2.4	38.5	54(Note 2)	-15.5	PK
	V	7236.0	41.4	2.7	44.1	54(Note 2)	-9.9	PK
	H	24000.0	59.3	-8.9	50.4	54(Note 2)	-3.6	PK
6	H	2438.5	76.1	31.7	107.8	Fundamental	/	PK
	H	540.0	-1.7	19.2	17.5	46	-28.5	QP
	V	540.0	-0.9	19.2	18.3	46	-27.7	QP
	H	3200.0	42.8	-5.6	37.2	54(Note 2)	-16.8	PK
	H	4874.0	40.9	-2.3	38.6	54(Note 2)	-15.4	PK
	V	7311.0	41.7	2.7	44.4	54(Note 2)	-9.6	PK
	H	24000.0	59.0	-8.9	50.1	54(Note 2)	-3.9	PK
11	H	2463.5	76.5	31.6	108.1	Fundamental	/	PK
	H	539.3	-2.5	19.1	16.6	46	-29.4	QP
	V	539.3	3.3	19.2	22.5	46	-23.5	QP
	V	3200.0	42.5	-5.6	36.9	54(Note 2)	-17.1	PK
	V	4924.0	41.4	-2.2	39.2	54(Note 2)	-14.8	PK
	V	7386.0	47.1	2.8	49.9	54(Note 2)	-4.1	PK
	H	24000.0	59.6	-8.9	50.7	54(Note 2)	-3.3	PK

Note:

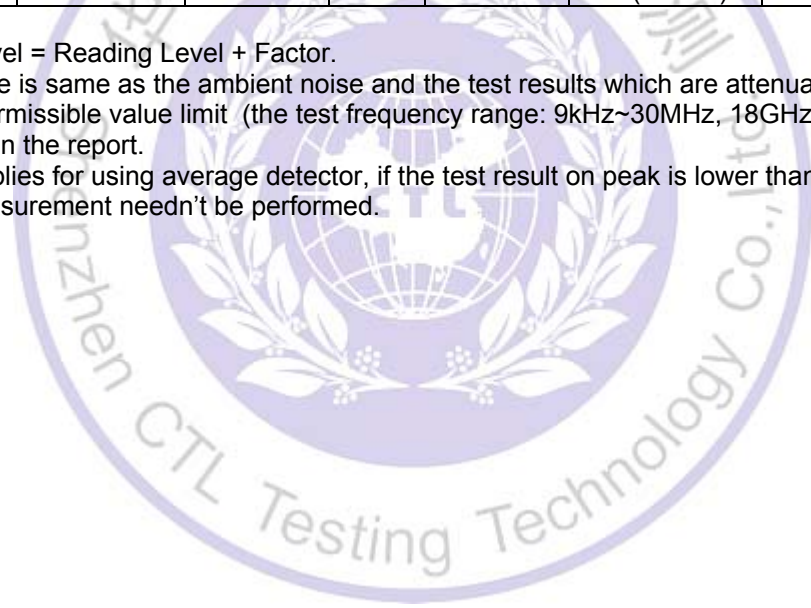
1. Measure Level = Reading Level + Factor.
2. The test trace is same as the ambient noise and the test results which are attenuated more than 20 dB below the permissible value limit (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.
3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode 3: Transmit by 802.11n(20MHz)

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	H	2416.3	76.0	31.2	107.2	Fundamental	/	PK
	H	350.0	-0.4	14.8	14.4	46	-31.6	QP
	H	550.0	0.1	19.5	19.6	46	-26.4	QP
	V	3200.0	42.8	-5.6	37.2	54(Note 2)	-16.8	PK
	V	4824.0	41.3	-2.5	38.8	54(Note 2)	-15.2	PK
	V	7236.0	40.9	2.6	43.5	54(Note 2)	-10.5	PK
	H	24000.0	59.4	-8.9	50.5	54(Note 2)	-3.5	PK
6	H	2438.5	75.5	31.3	106.8	Fundamental	/	PK
	H	350.0	-0.2	14.8	14.6	46	-31.4	QP
	V	540.9	-0.5	19.2	18.7	46	-27.3	QP
	H	3200.0	42.5	-5.6	36.9	54(Note 2)	-17.1	PK
	H	4874.0	40.9	-2.3	38.6	54(Note 2)	-15.4	PK
	V	7311.0	42.1	2.7	44.8	54(Note 2)	-9.2	PK
	H	24000.0	59.1	-8.9	50.2	54(Note 2)	-3.8	PK
11	H	2466.3	74.5	31.6	106.1	Fundamental	/	PK
	H	555.0	-2.7	19.5	16.8	46	-29.2	QP
	V	555.0	-1.3	19.4	18.1	46	-27.9	QP
	H	3200.0	42.5	-5.6	36.9	54(Note 2)	-17.1	PK
	V	4924.0	41.0	-2.1	38.9	54(Note 2)	-15.1	PK
	V	7386.0	44.4	2.8	47.2	54(Note 2)	-6.8	PK
	H	24000.0	59.9	-8.9	51.0	54(Note 2)	-3.0	PK

Note:

1. Measure Level = Reading Level + Factor.
2. The test trace is same as the ambient noise and 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.



Mode 4: Transmit by 802.11n(40MHz)

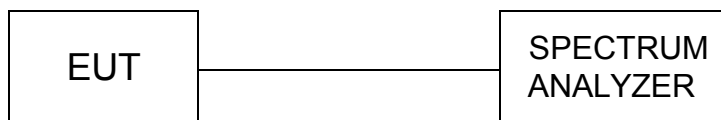
CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
3	V	2423.6	65.2	30.8	96.0	Fundamental	/	PK
	H	341.9	14.2	16.0	30.2	46	-15.8	QP
	H	564.0	14.5	21.2	35.7	46	-10.3	QP
	V	3200.0	42.5	-0.6	41.9	54(note3)	-12.1	PK
	V	4844.0	41.5	2.6	44.2	54(note3)	-9.8	PK
	V	7290.0	44.5	8.8	53.3	54(note3)	-0.7	PK
	H	24000.0	59.3	-8.9	50.4	54(note3)	-3.6	PK
6	V	2437.0	64.6	31.2	95.8	Fundamental	/	PK
	H	291.9	12.9	14.8	27.7	46	-18.3	QP
	H	553.3	13.6	21.2	34.8	46	-11.2	QP
	V	3200.0	42.1	-0.6	41.5	54(note3)	-12.5	PK
	V	4874.0	41.6	2.8	44.4	54(note3)	-9.6	PK
	V	7349.2	32.0	9.0	40.9	54	-13.1	AV
	V	7358.0	46.6	9.0	55.6	74	-18.4	PK
H	24000.0	59.1	-8.9	50.2	54(note3)	-3.8	PK	
9	V	2453.6	64.7	30.9	95.6	Fundamental	/	PK
	H	586.3	14.1	21.2	35.3	46	-10.7	QP
	H	294.3	13.4	14.8	28.2	46	-17.8	QP
	V	3200.0	42.6	-0.6	42.0	54(note3)	-12.0	PK
	V	4904.0	41.9	2.9	44.8	54(note3)	-9.2	PK
	V	7349.4	32.2	9.0	41.2	54	-12.8	AV
	V	7349.5	45.6	9.0	54.5	74	-19.5	PK
H	24000.0	59.5	-8.9	50.6	54(note3)	-3.4	PK	

Note:

1. Measure Level = Reading Level + Factor.
2. The test trace is same as the ambient noise and 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.

4.3. 6dB Bandwidth Measurement

TEST CONFIGURATION



TEST PROCEDURE

1. The testing follows FCC KDB Publication No. 558074 D01 v03r01 (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

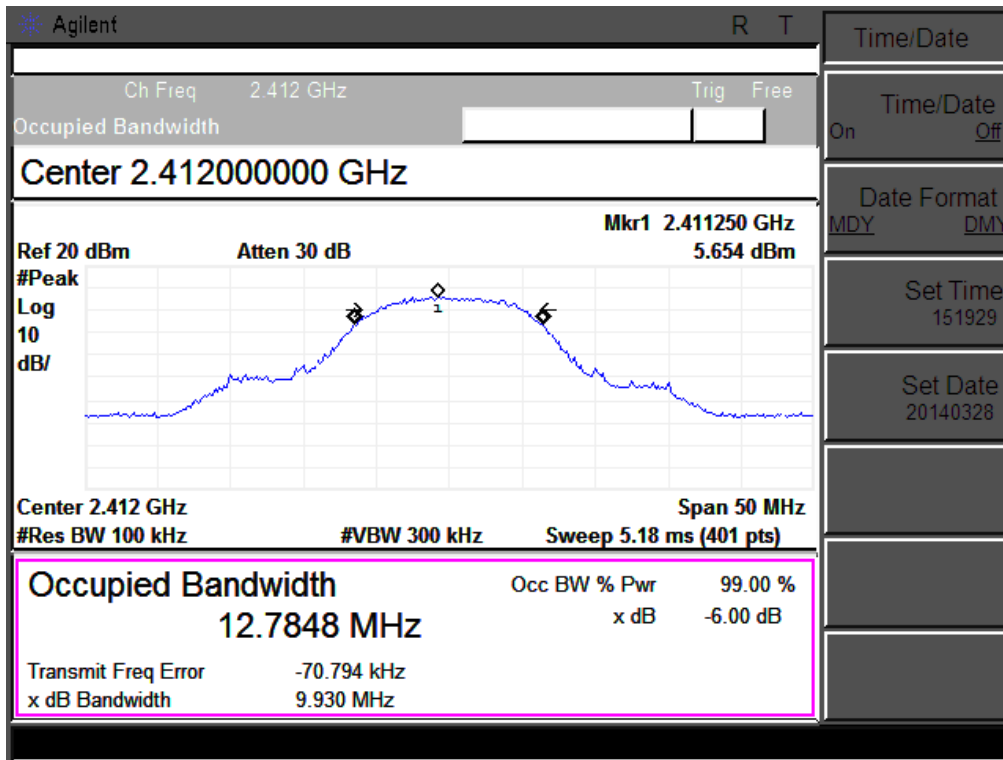
For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

TEST RESULTS

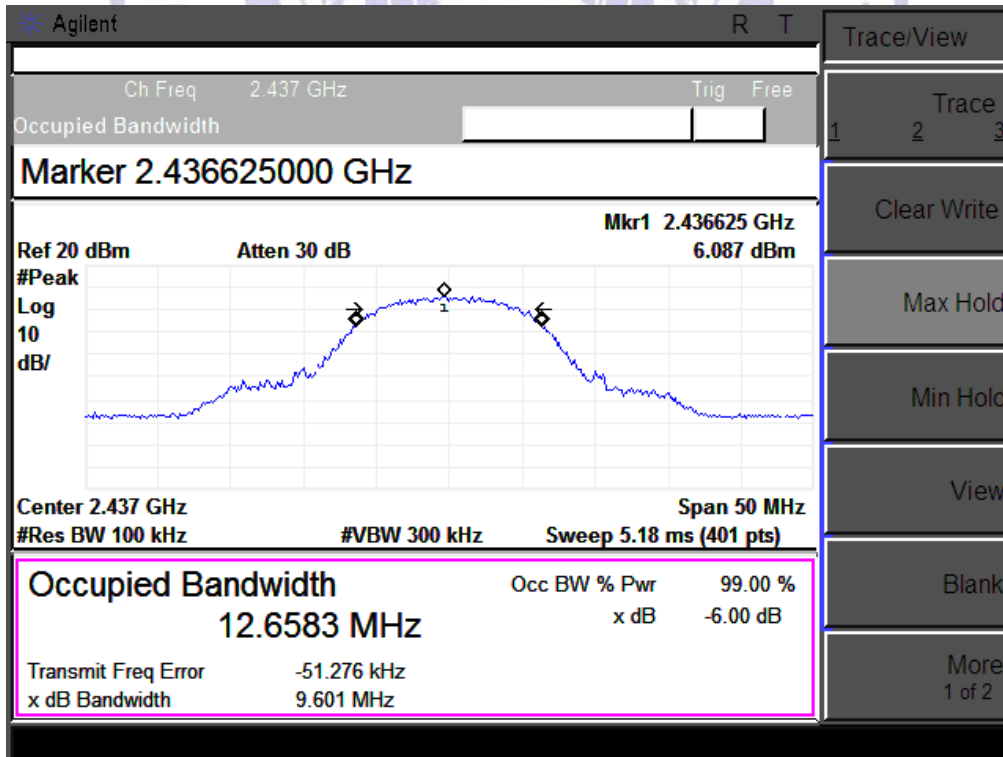
Mode	CHANNEL	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
802.11b	1	9.930	0.5	PASS
	6	9.601	0.5	PASS
	11	9.333	0.5	PASS
802.11g	1	16.077	0.5	PASS
	6	15.758	0.5	PASS
	11	15.306	0.5	PASS
802.11n HT20	1	16.730	0.5	PASS
	6	16.989	0.5	PASS
	11	16.200	0.5	PASS
802.11n HT40	3	35.457	0.5	PASS
	6	35.538	0.5	PASS
	9	35.636	0.5	PASS

For 802.11b:

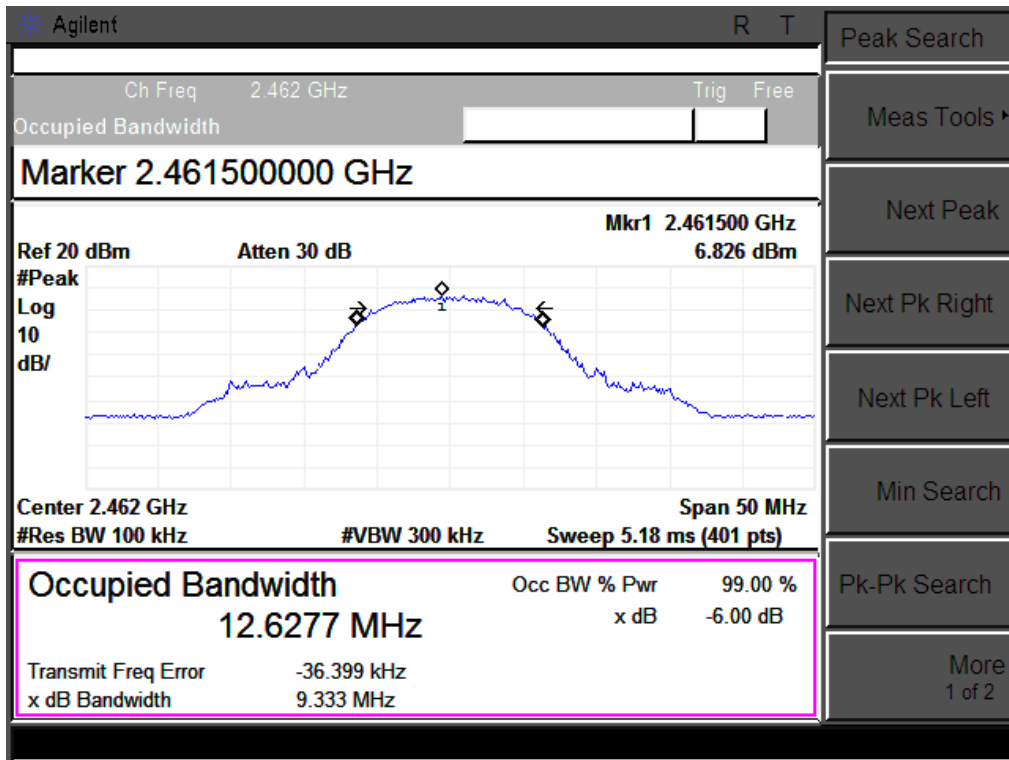
CH1



CH6



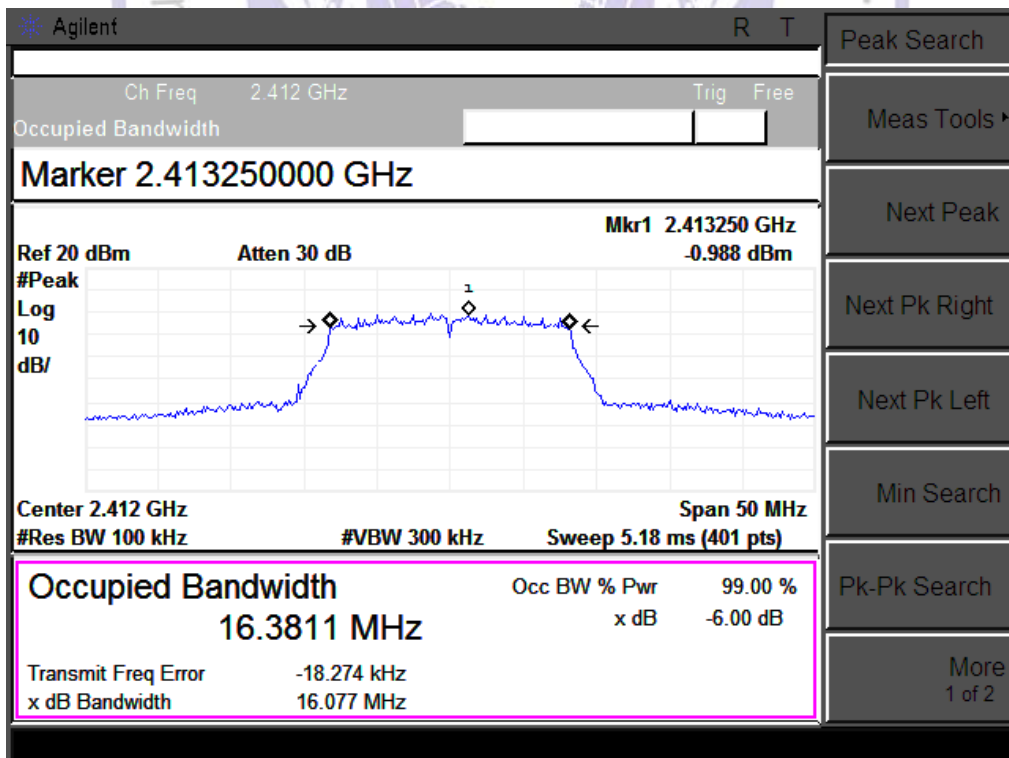
CH11



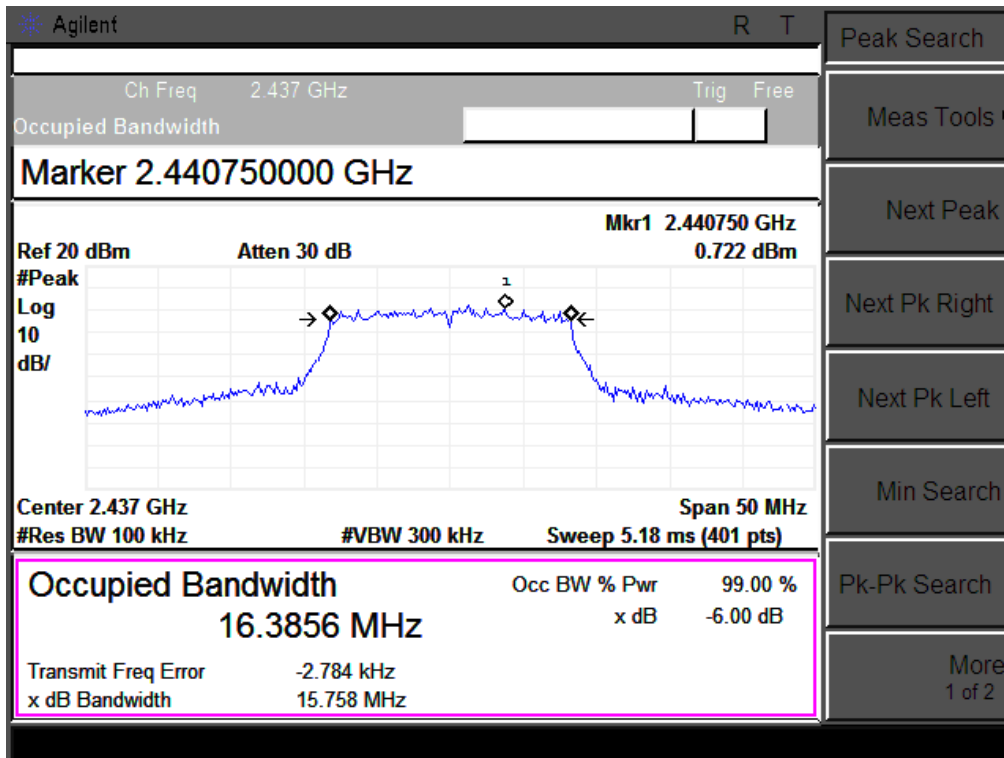
For 802.11g:



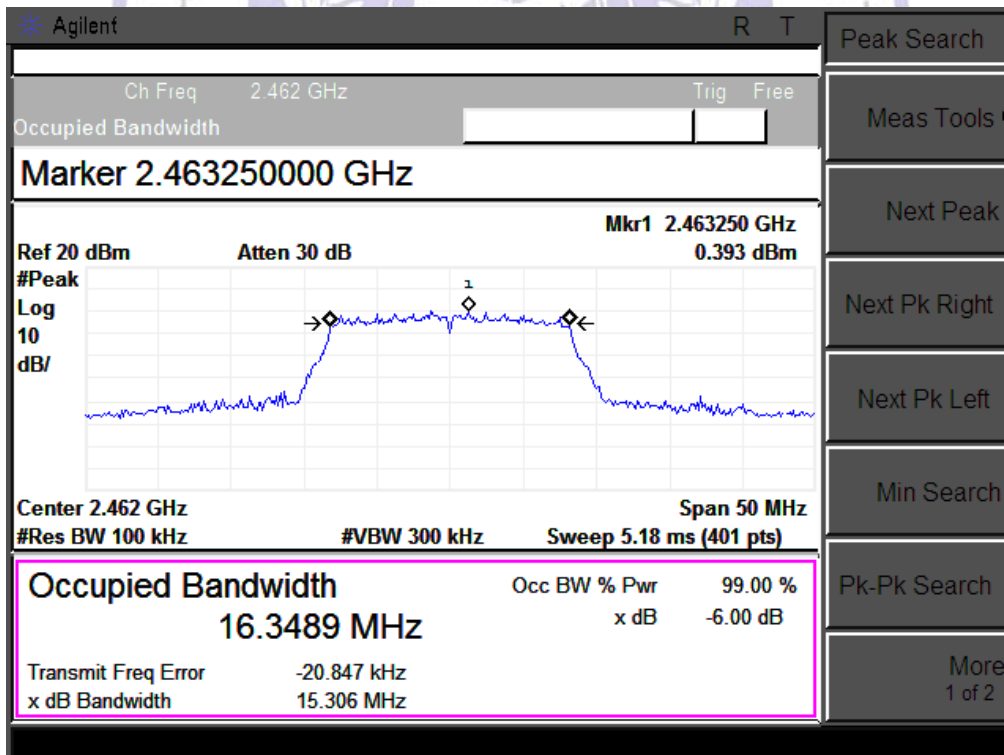
CH1



CH6

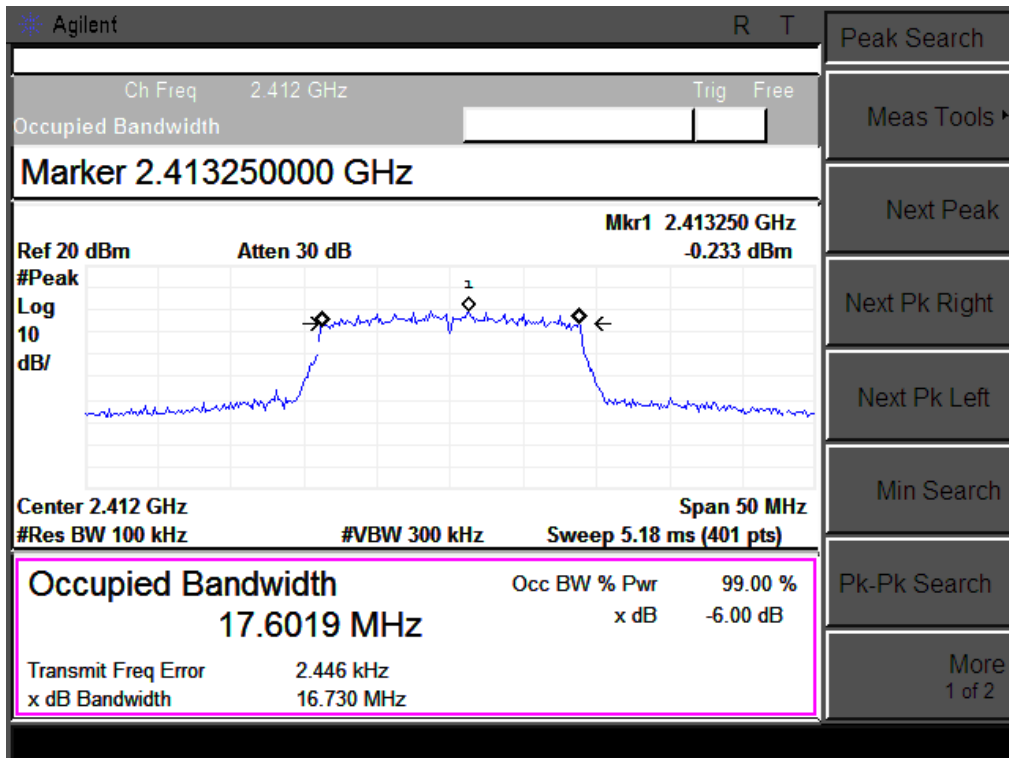


CH11

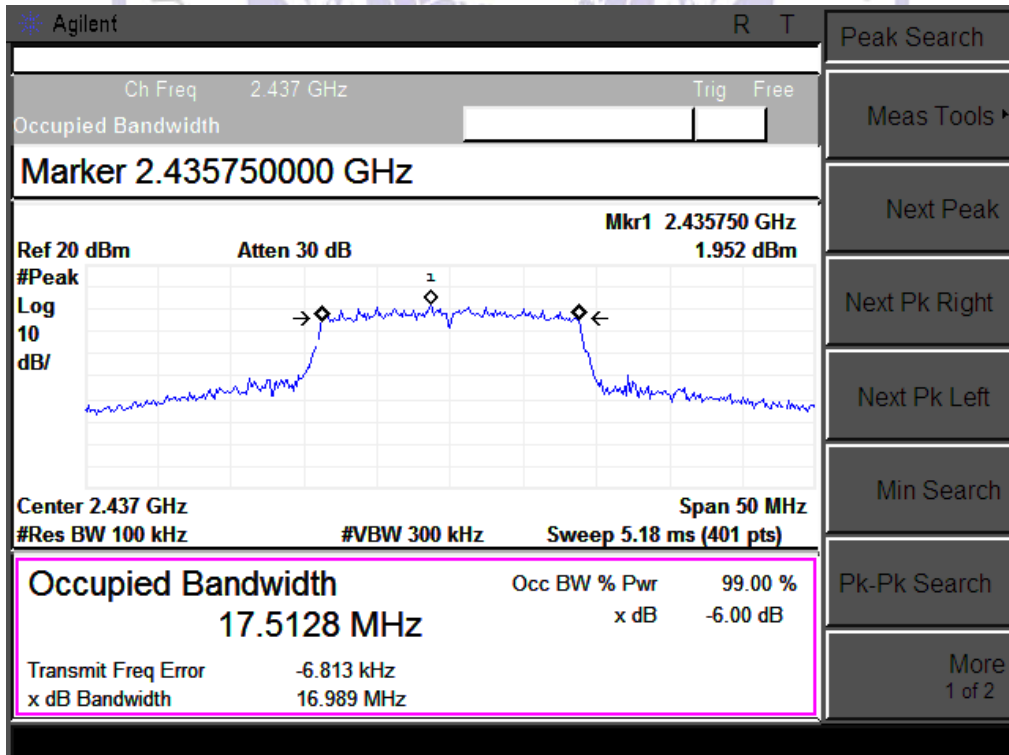


For 802.11n (20MHz) Mode:

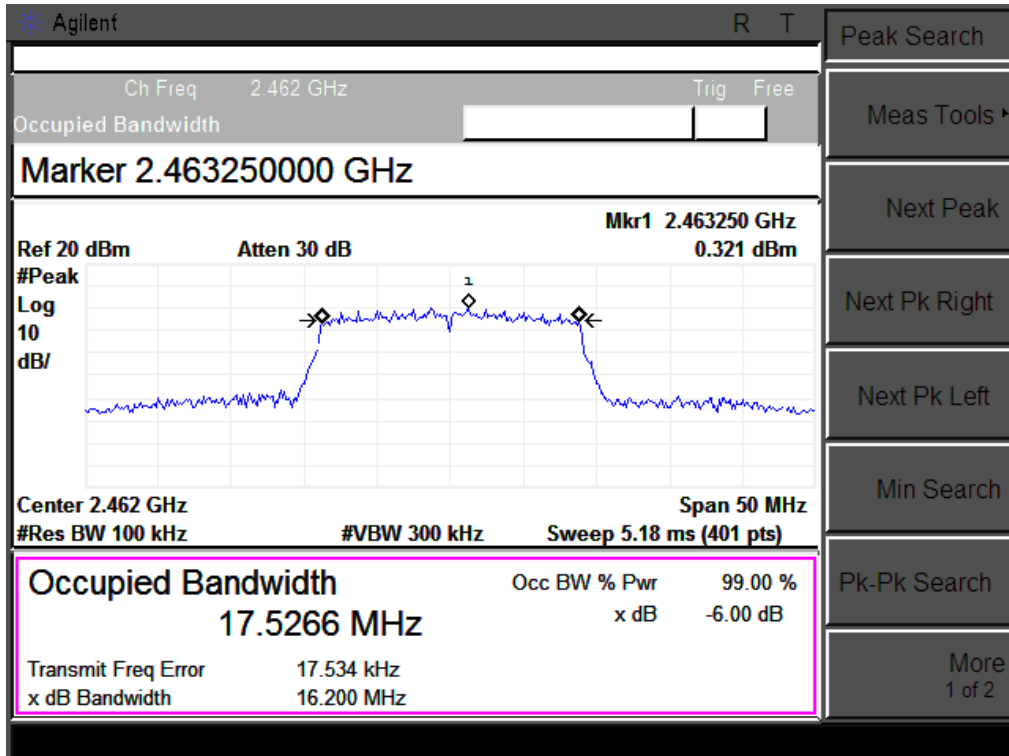
CH1



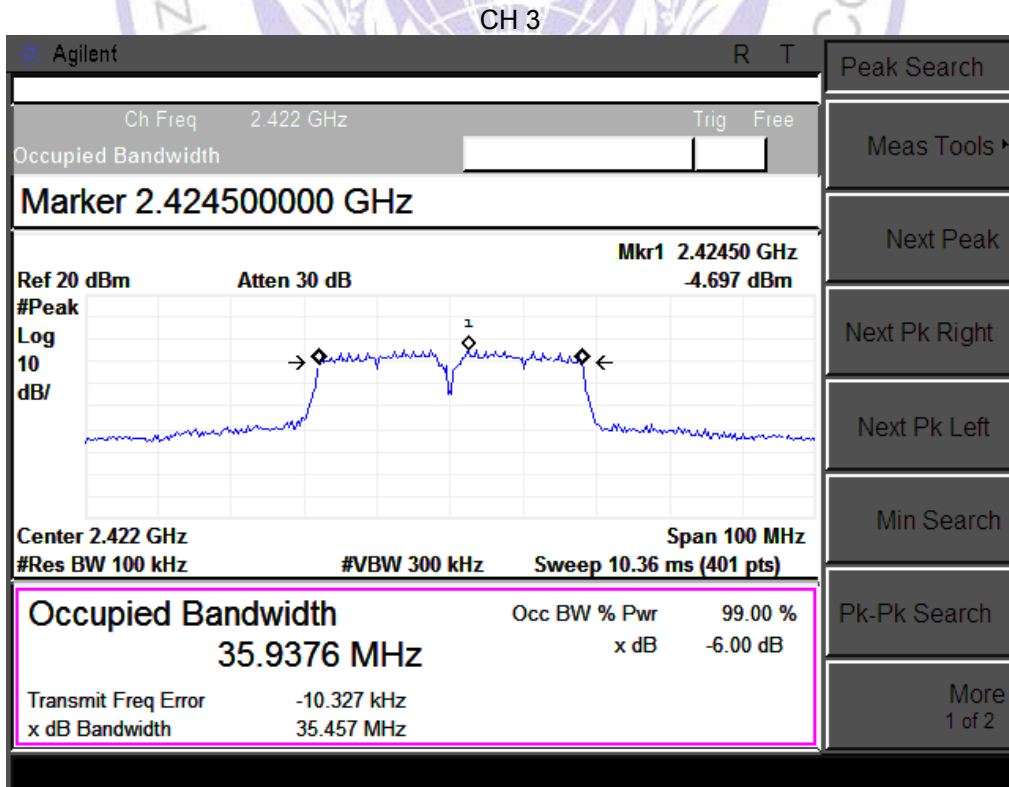
CH6



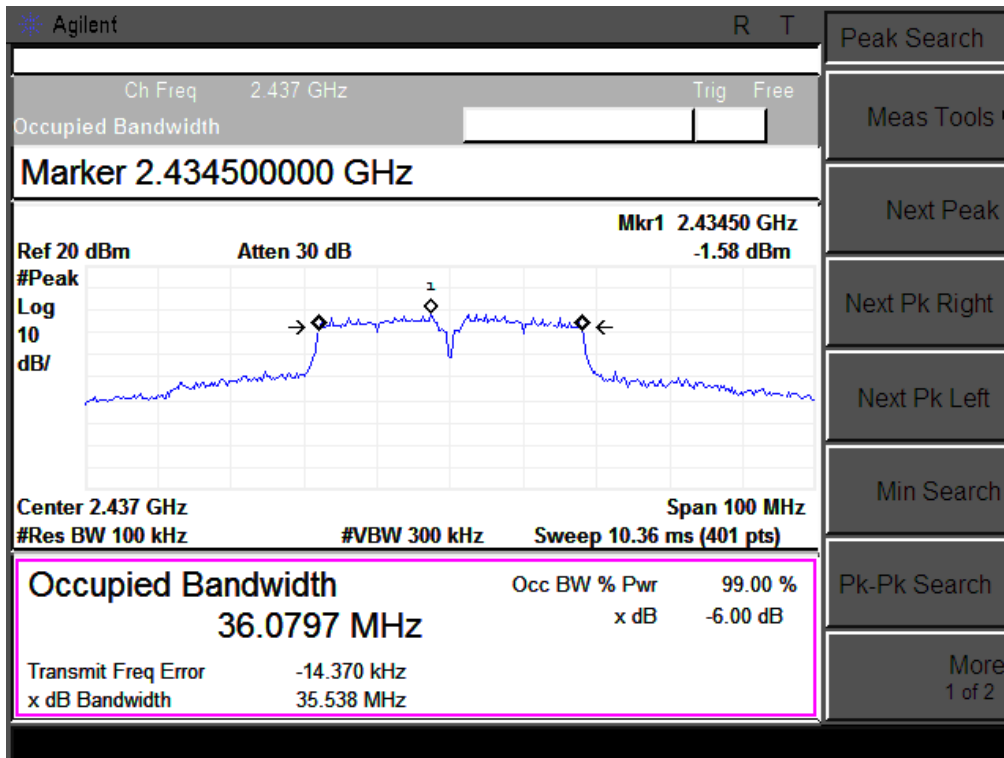
CH11



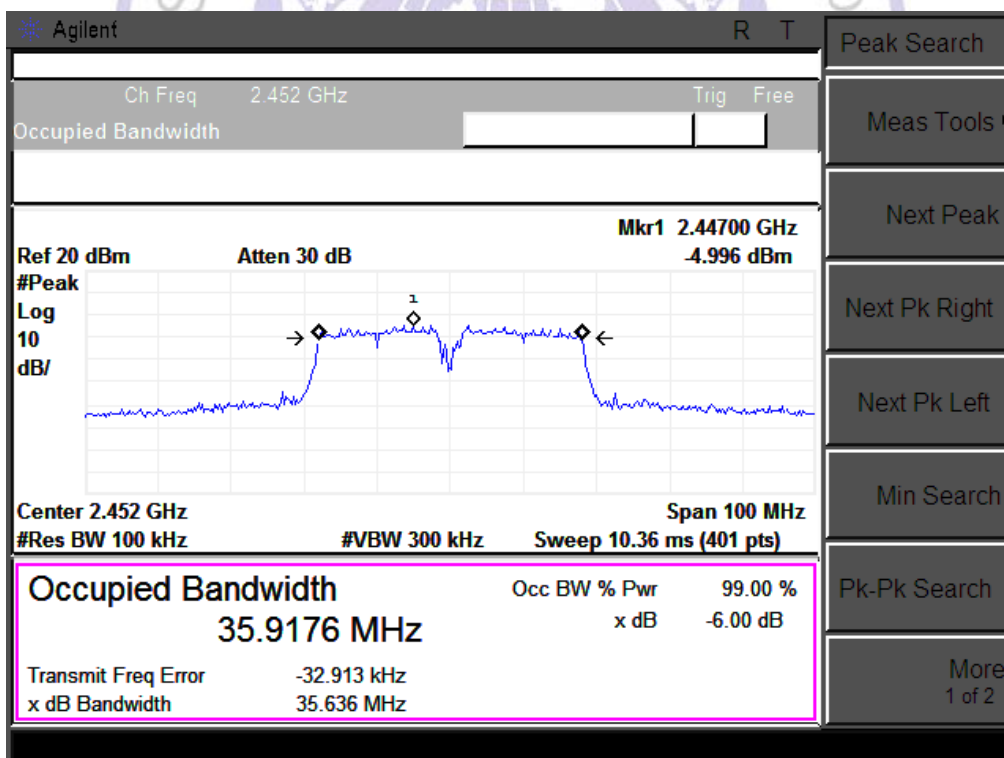
For 802.11n (40MHz) Mode:



CH 6

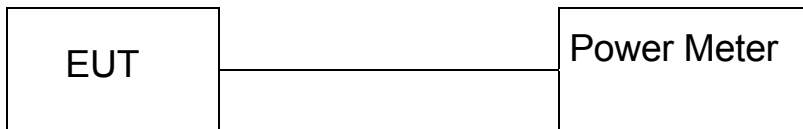


CH 9



4.4. Maximum Peak Output Power

TEST CONFIGURATION



TEST PROCEDURE

According to C63.10 -2009 and KDB 558074 D01 v03r01, 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	:	SMART PHONE
Test Item	:	Power Output
Test Site	:	TR8
Test Mode	:	Mode 1: Transmit by 802.11b

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
01	2412	9.55	30.00	Pass
06	2437	9.37	30.00	Pass
11	2462	9.42	30.00	Pass

Product	:	SMART PHONE
Test Item	:	Power Output
Test Site	:	TR8
Test Mode	:	Mode 2: Transmit by 802.11g

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
01	2412	9.28	30.00	Pass
06	2437	9.20	30.00	Pass
11	2462	9.14	30.00	Pass

Product	:	SMART PHONE
Test Item	:	Power Output
Test Site	:	TR8
Test Mode	:	Mode 3: Transmit by 802.11n(20MHz)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
01	2412	8.86	30.00	Pass
06	2437	8.79	30.00	Pass
11	2462	8.83	30.00	Pass

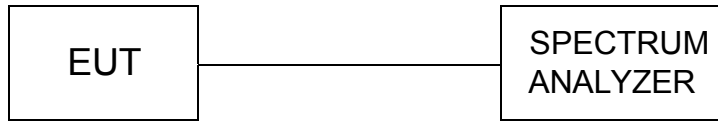
Product	:	SMART PHONE
Test Item	:	Power Output
Test Site	:	TR8
Test Mode	:	Mode 3: Transmit by 802.11n(40MHz)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
03	2422	8.79	30.00	Pass
06	2437	8.74	30.00	Pass
09	2452	8.70	30.00	Pass

Note: The test results including the cable lose.

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 v03r01 (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=100kHz and VBM= 300KHz to measure the peak field strength and set RBW to 1MHz and VBW to 10Hz to measure the average radiated field strength.

The conducted RF band edge was measured by using a spectrum analyzer. Set span wide enough to capture the highest in-band emission and the emission at the band edge. Set RBW and VBW to 100 kHz, to measure the conducted peak band edge.

Connect the spectrum analyzer to the EUT using an appropriate RF cable connected to the EUT output. Configure the spectrum analyzer settings as described below (be sure to enter all losses between the unlicensed wireless device output and the spectrum analyzer).

- Span: Set Span for minimum 50 MHz - Reference Level: 110 dB μ V (corrected for gains and losses of test antenna factor, preamp gain and cable loss) - Attenuation: 10 dB
- Sweep Time: Coupled - Resolution Bandwidth: Up to and including 1 GHz = \geq 100 kHz
- Resolution Bandwidth: Above 1 GHz = 1 MHz - Video Bandwidth: Below 1 GHz = 300 kHz
- Video Bandwidth: Up to and including 1 GHz = \geq 3 MHz for peak and 10 Hz for average
- Detector: Peak

Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel.

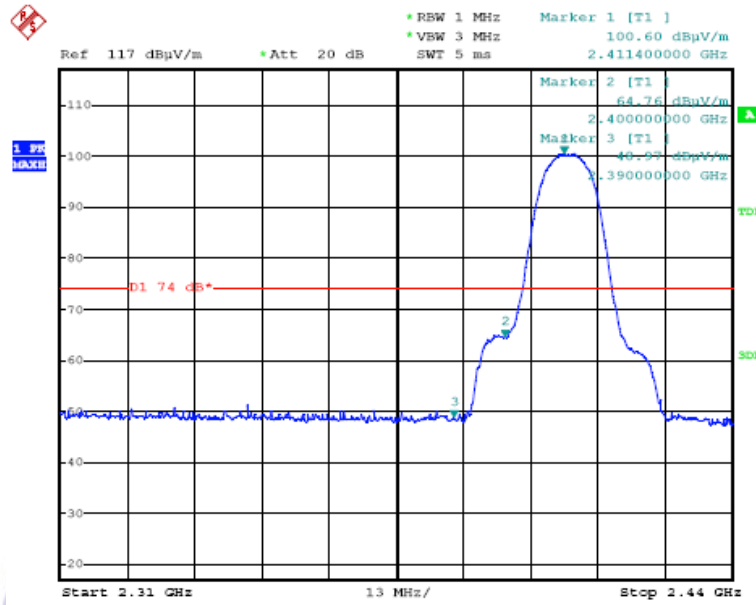
LIMIT

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)).

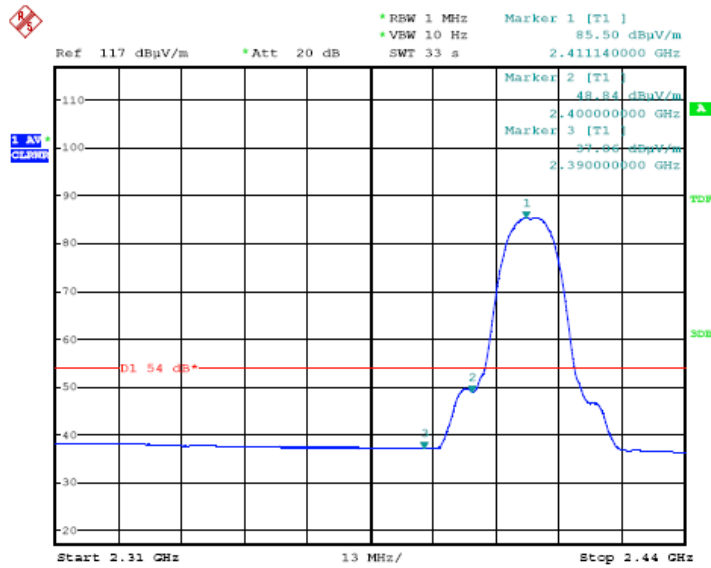
Frequency (MHz)	Limit Average (dB μ v/m)	Limit Peak (dB μ v/m)
Below 2390 or Above 2483.5	54	74

TEST RESULTS

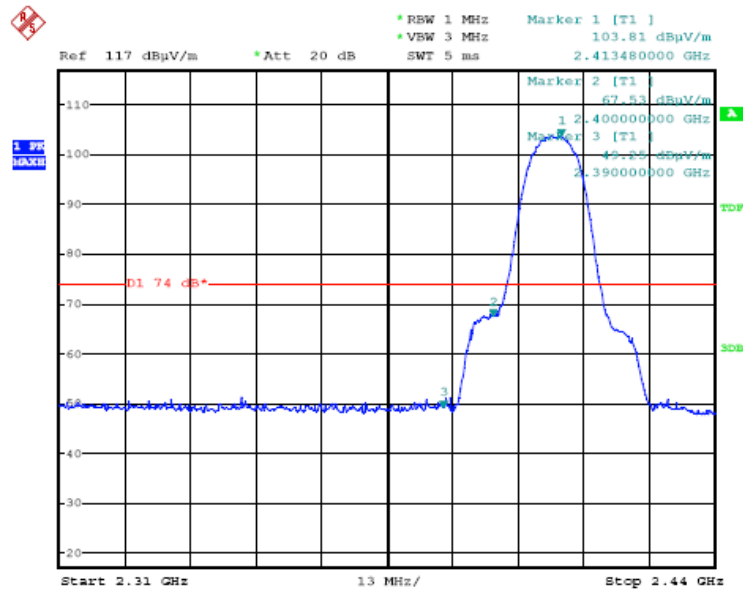
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Horizontal
EUT: SMART PHONE	Power: By Battery
Note: Mode1: Transmit at channel 2412MHz by 802.11b	



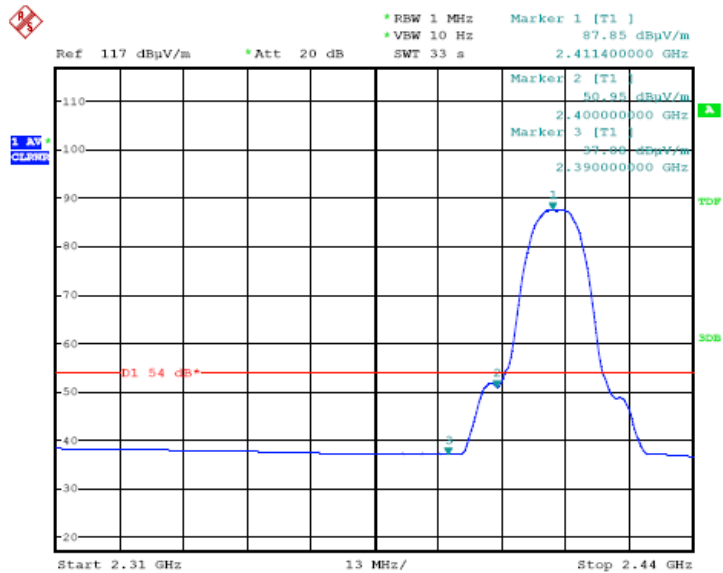
Engineer: Happy	
Site: AC5	Time: 2014/04/14
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Probe: Horn_DRH-118 (1-18GHz)	Polarity: Horizontal
EUT: SMART PHONE	Power: By Battery
Note: Mode1: Transmit at channel 2412MHz by 802.11b	



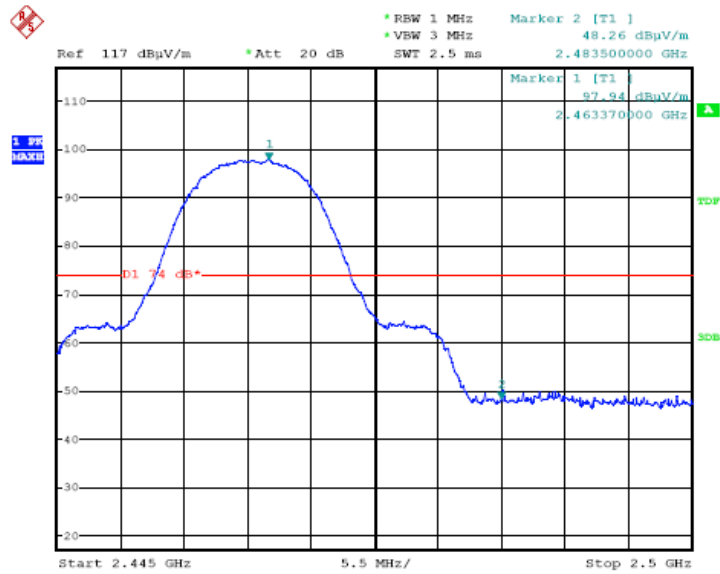
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Vertical
EUT: SMART PHONE	Power: By Battery
Note: Mode1: Transmit at channel 2412MHz by 802.11b	



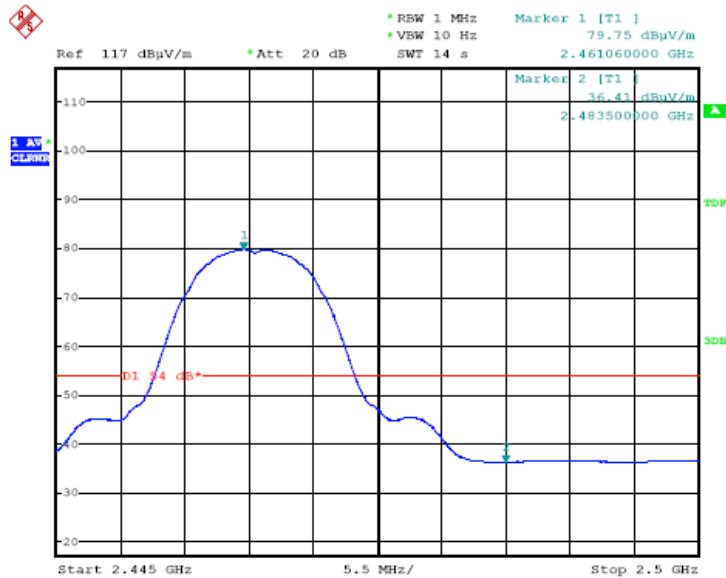
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Vertical
EUT: SMART PHONE	Power: By Battery
Note: Mode1: Transmit at channel 2412MHz by 802.11b	



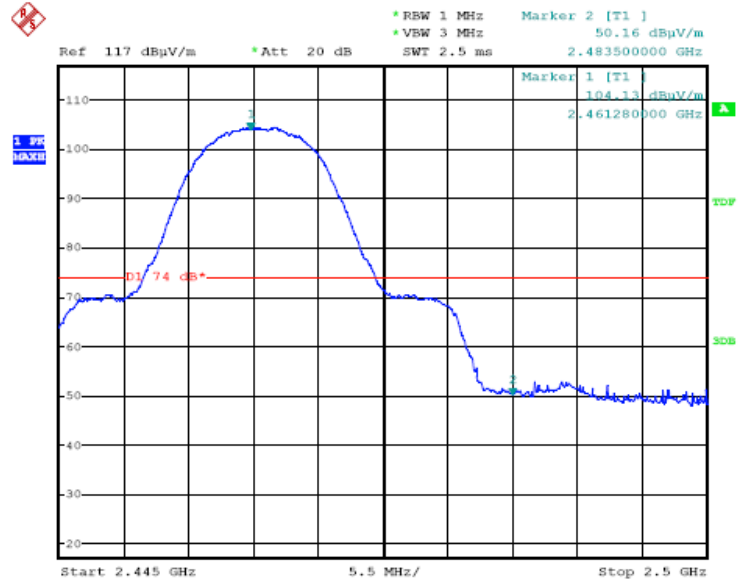
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC Part15.209 RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Horizontal
EUT: SMART PHONE	Power: By Battery
Note: Mode1: Transmit at channel 2462MHz by 802.11b	



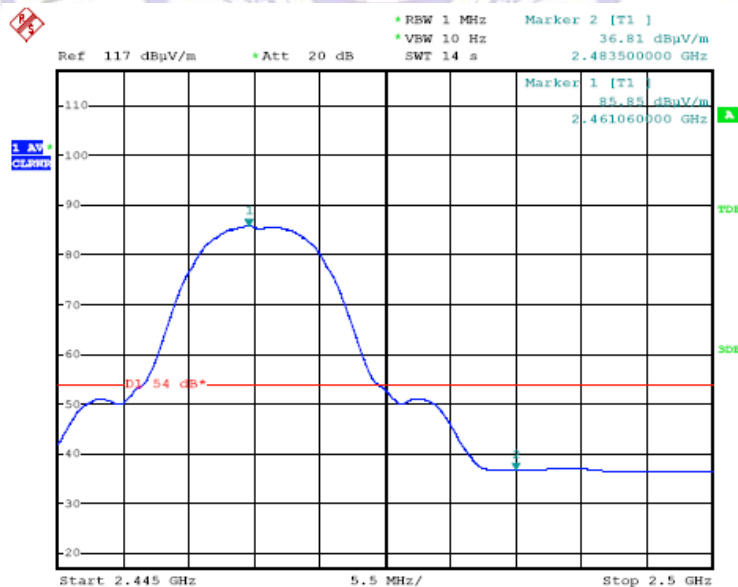
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Site: AC5	Time: 2014/04/14
Limit: FCC Part15.209 RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Horizontal
EUT: SMART PHONE	Power: By Battery
Note: Mode1: Transmit at channel 2462MHz by 802.11b	



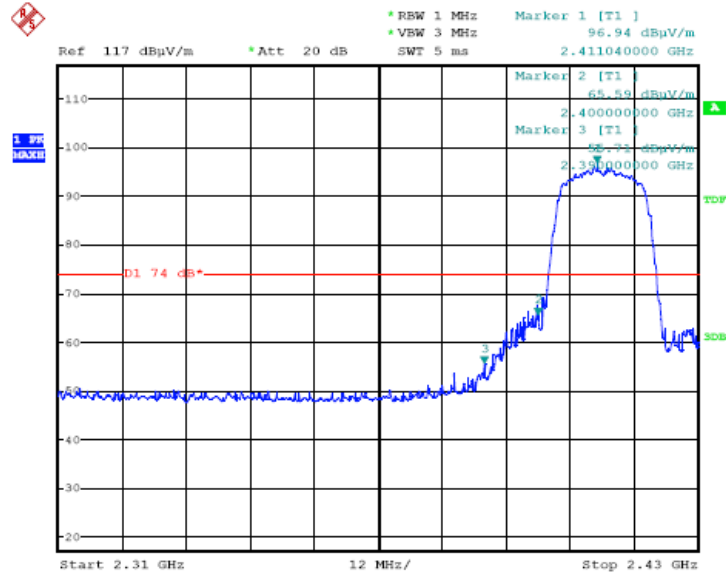
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC Part15.209 RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Vertical
EUT: SMART PHONE	Power: By Battery
Note: Mode1: Transmit at channel 2462MHz by 802.11b	



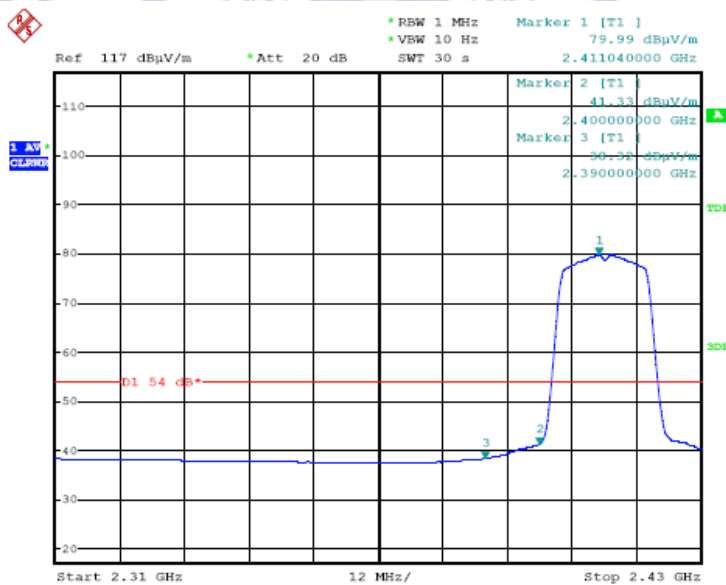
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Site: AC5	Time: 2014/04/14
Limit: FCC Part15.209 RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Vertical
EUT: SMART PHONE	Power: By Battery
Note: Mode1: Transmit at channel 2462MHz by 802.11b	



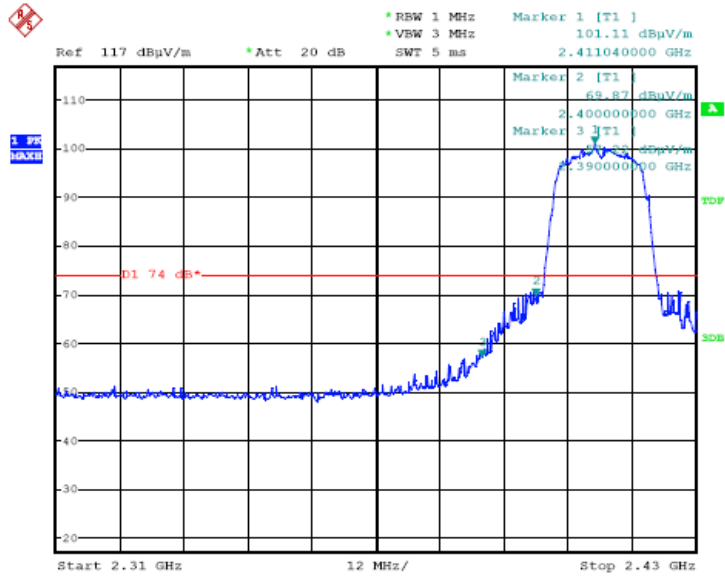
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC Part15.209 RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Horizontal
EUT: SMART PHONE	Power: By Battery
Note: Mode2: Transmit at channel 2412MHz by 802.11g	



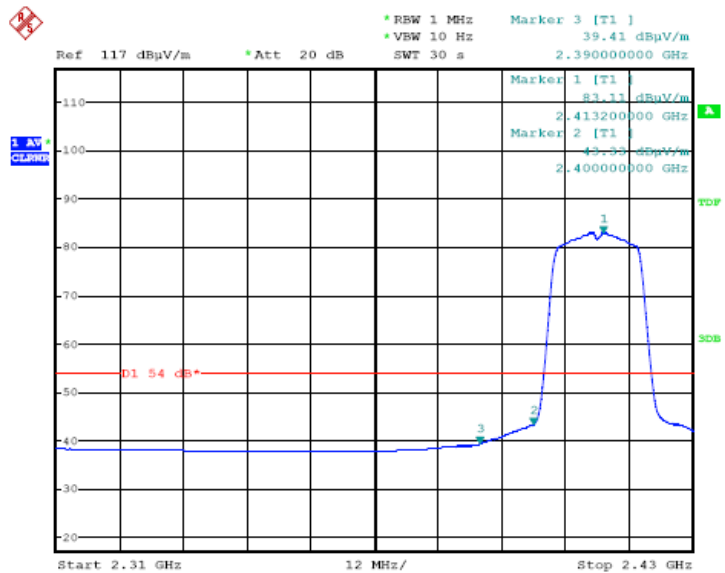
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC Part15.209 RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Horizontal
EUT: SMART PHONE	Power: By Battery
Note: Mode2: Transmit at channel 2412MHz by 802.11g	



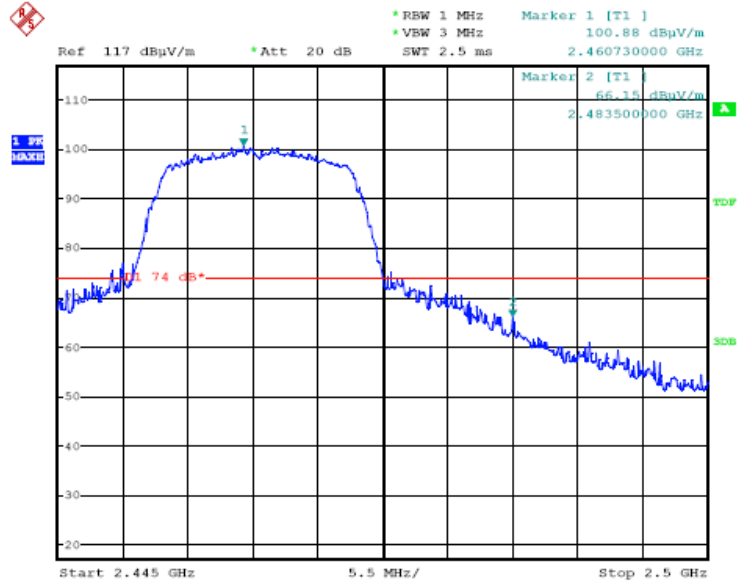
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC Part15.209 RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Vertical
EUT: SMART PHONE	Power: By Battery
Note: Mode2: Transmit at channel 2412MHz by 802.11g	



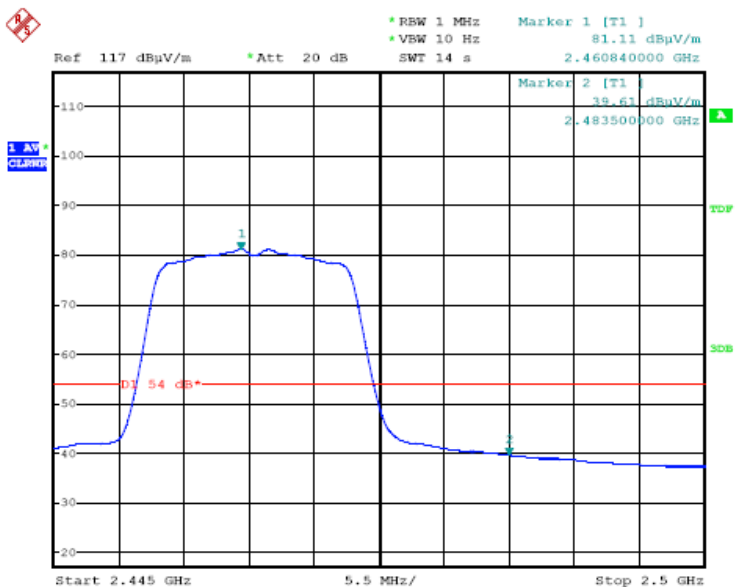
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC Part15.209 RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Vertical
EUT: SMART PHONE	Power: By Battery
Note: Mode2: Transmit at channel 2412MHz by 802.11g	



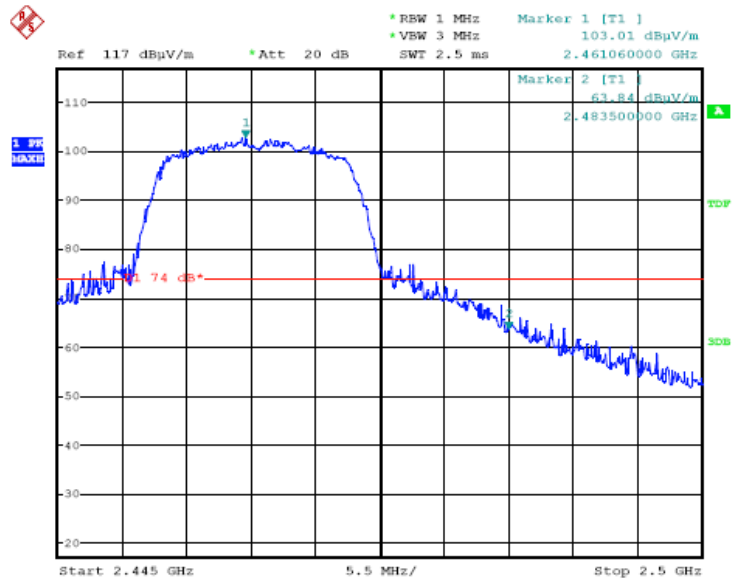
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC Part15.209 RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Horizontal
EUT: SMART PHONE	Power: By Battery
Note: Mode2: Transmit at channel 2462MHz by 802.11g	



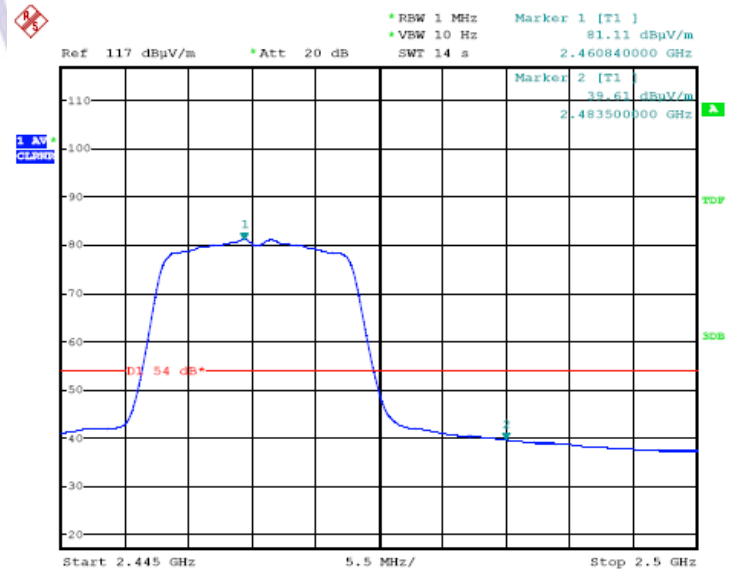
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC Part15.209 RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Horizontal
EUT: SMART PHONE	Power: By Battery
Note: Mode2: Transmit at channel 2462MHz by 802.11g	



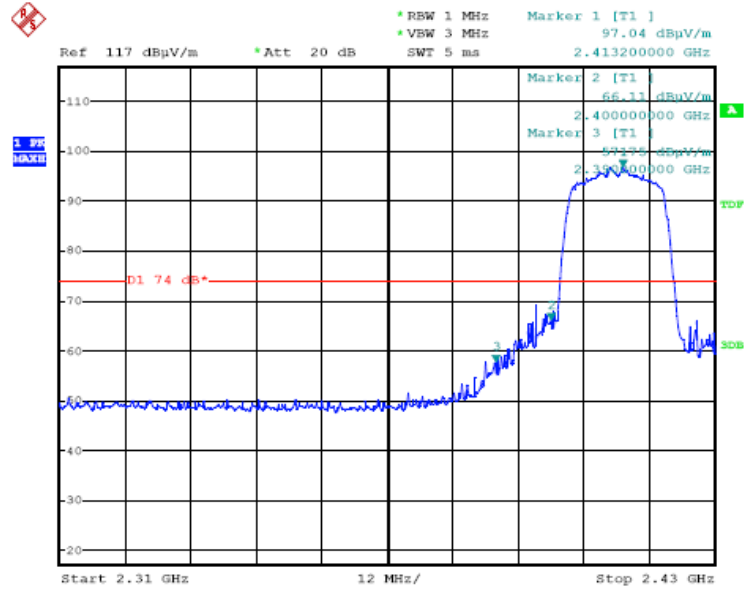
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Vertical
EUT: SMART PHONE	Power: By Battery
Note: Mode2: Transmit at channel 2462MHz by 802.11g	



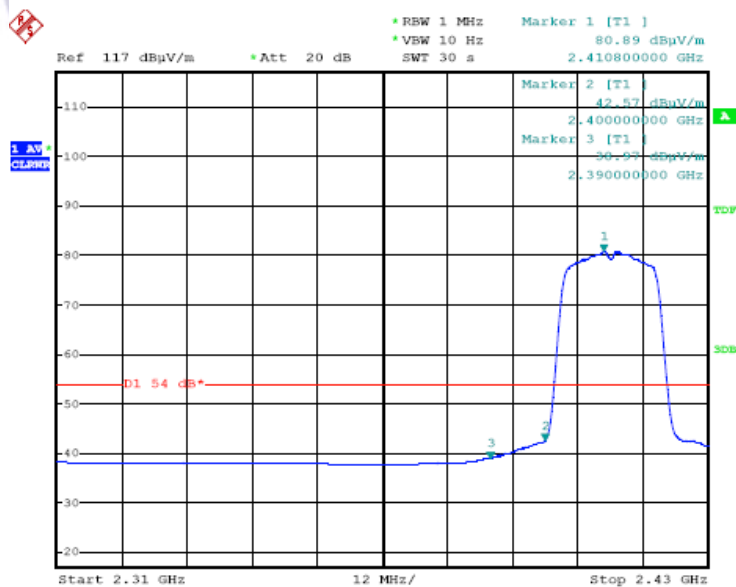
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Vertical
EUT: SMART PHONE	Power: By Battery
Note: Mode2: Transmit at channel 2462MHz by 802.11g	



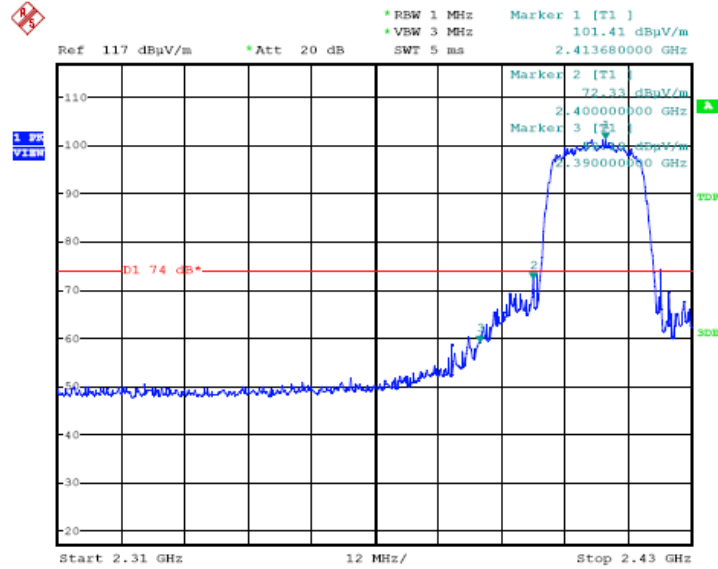
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC Part15.209 RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Horizontal
EUT: SMART PHONE	Power: By Battery
Note: Mode3: Transmit at channel 2412MHz by 802.11n(20MHz)	



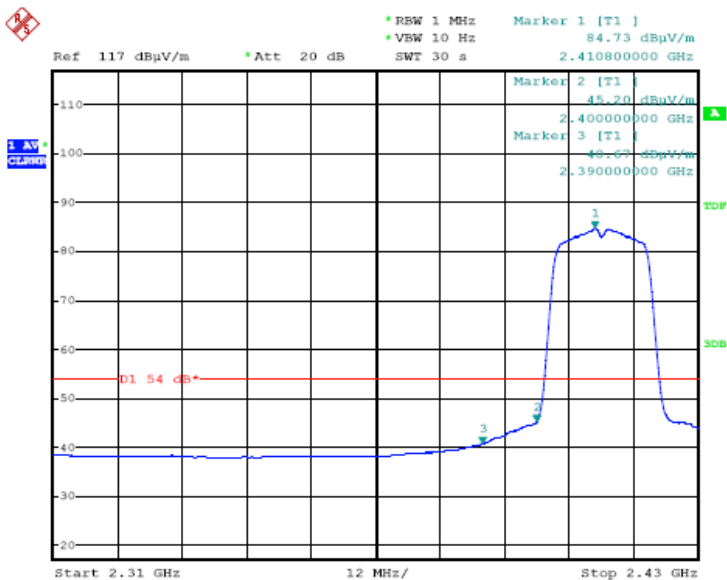
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC Part15.209 RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Horizontal
EUT: SMART PHONE	Power: By Battery
Note: Mode3: Transmit at channel 2412MHz by 802.11n(20MHz)	



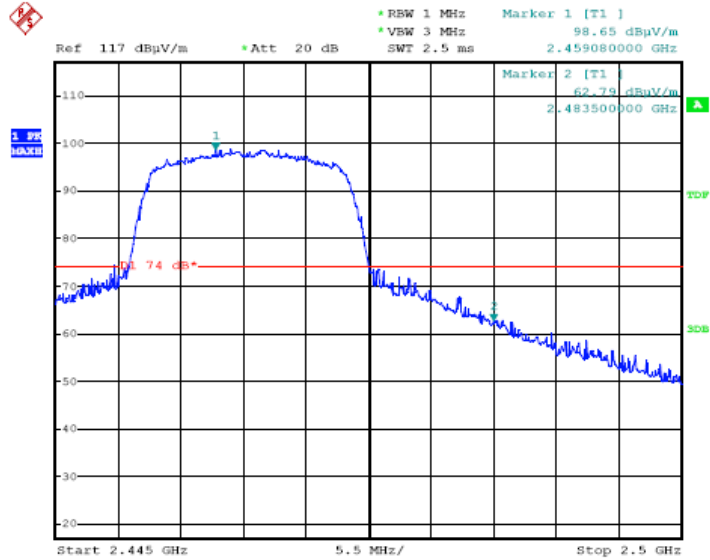
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC Part15.209 RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Vertical
EUT: SMART PHONE	Power: By Battery
Note: Mode3: Transmit at channel 2412MHz by 802.11n(20MHz)	



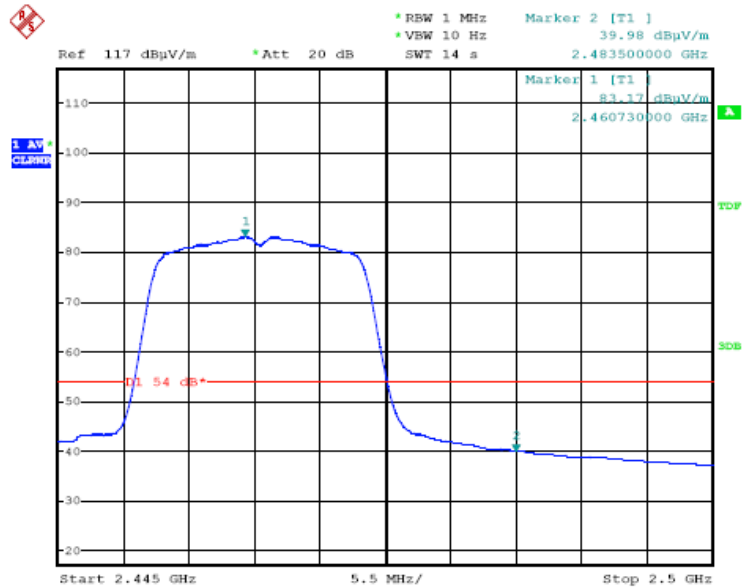
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC Part15.209 RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Vertical
EUT: SMART PHONE	Power: By Battery
Note: Mode3: Transmit at channel 2412MHz by 802.11n(20MHz)	



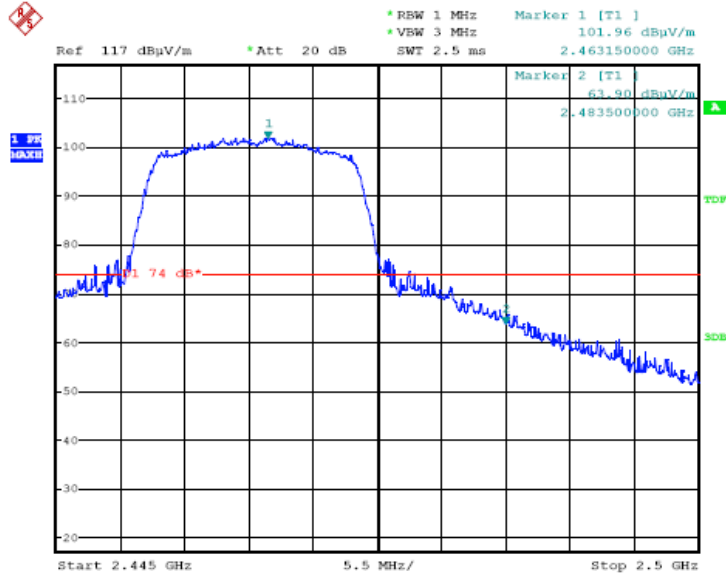
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Horizontal
EUT: SMART PHONE	Power: By Battery
Note: Mode3: Transmit at channel 2462MHz by 802.11n(20MHz)	



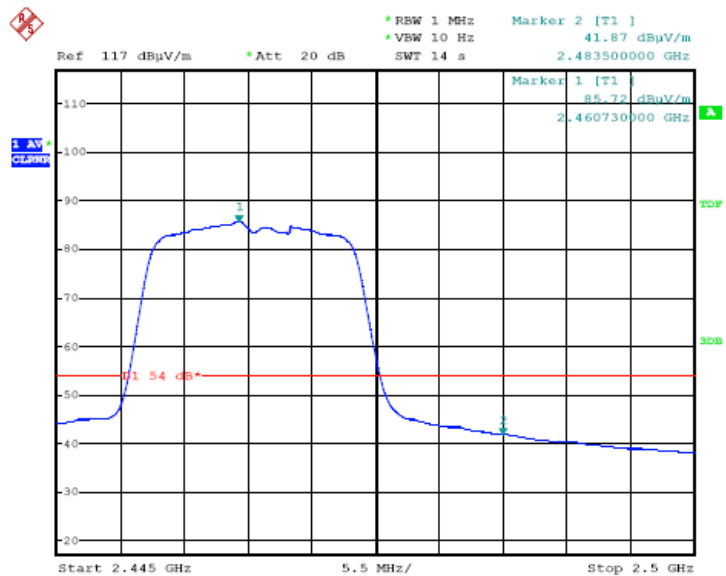
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Horizontal
EUT: SMART PHONE	Power: By Battery
Note: Mode3: Transmit at channel 2462MHz by 802.11n(20MHz)	



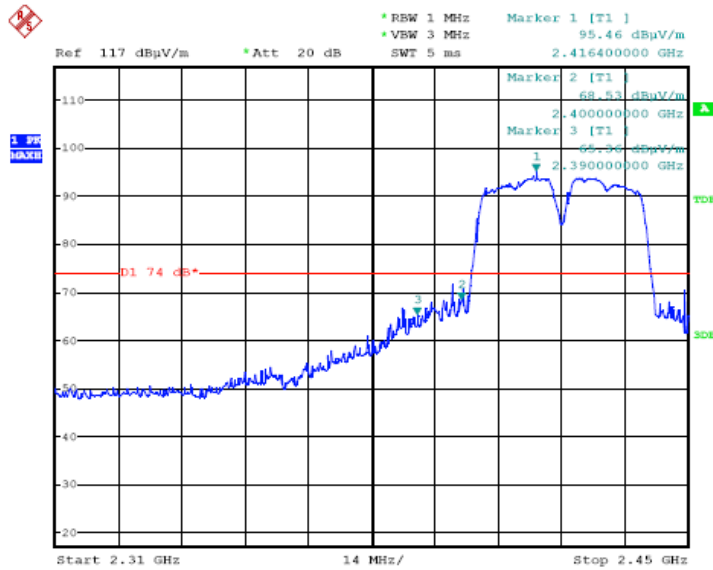
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC Part15.209 RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Vertical
EUT: SMART PHONE	Power: By Battery
Note: Mode3: Transmit at channel 2462MHz by 802.11n(20MHz)	



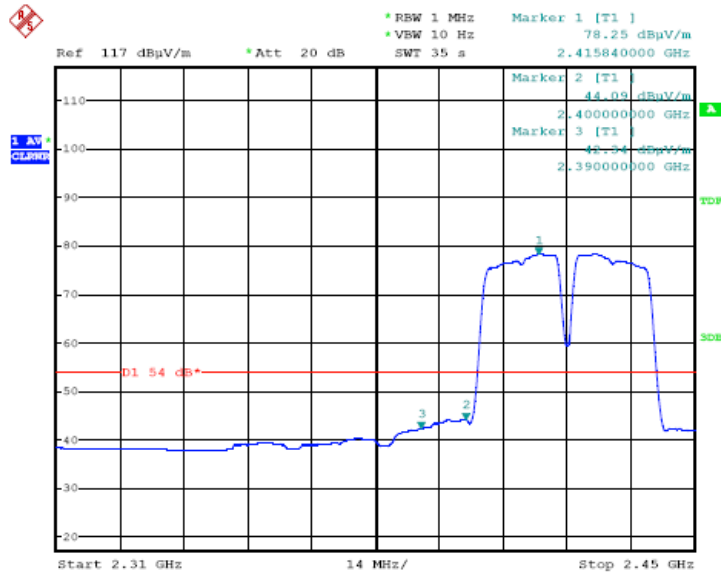
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC Part15.209 RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Vertical
EUT: SMART PHONE	Power: By Battery
Note: Mode3: Transmit at channel 2462MHz by 802.11n(20MHz)	



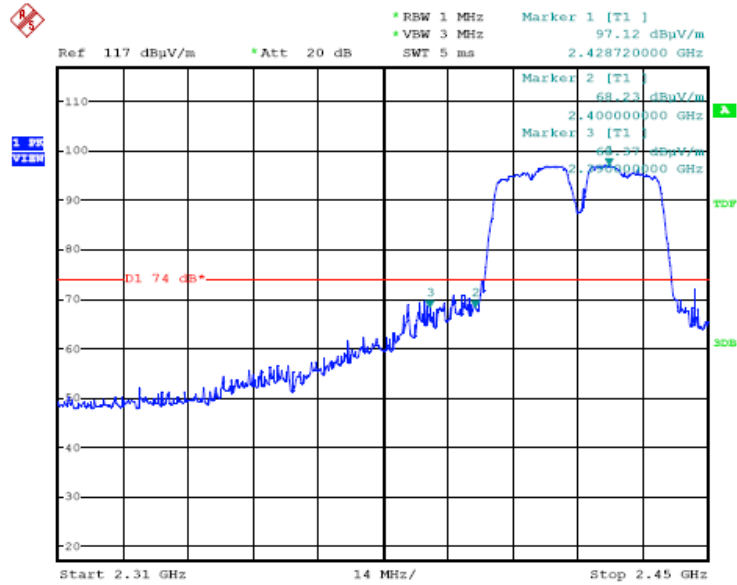
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Horizontal
EUT: SMART PHONE	Power: By Battery
Note: Mode 4: Transmit at channel 2422MHz by 802.11n(40MHz)	



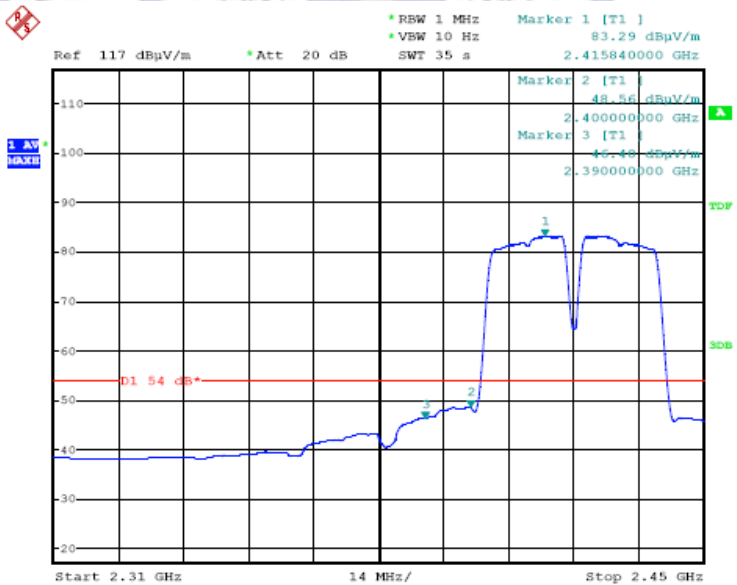
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Horizontal
EUT: SMART PHONE	Power: By Battery
Note: Mode 4: Transmit at channel 2422MHz by 802.11n(40MHz)	



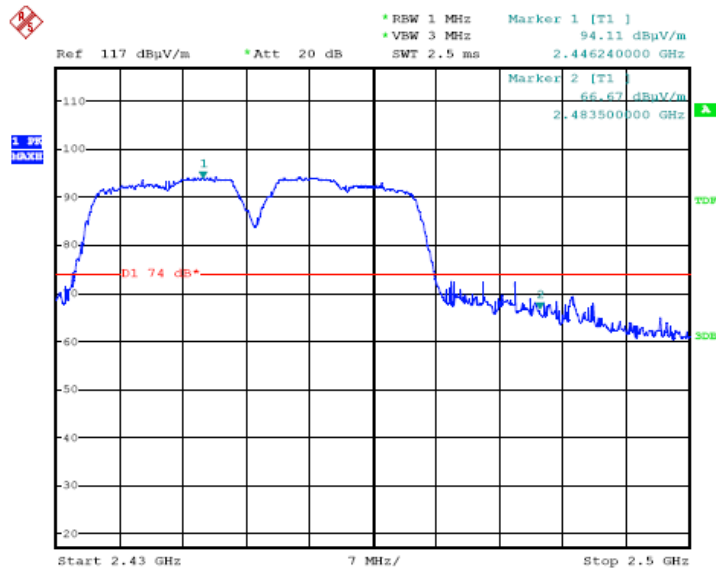
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC Part15.209 RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Vertical
EUT: SMART PHONE	Power: By Battery
Note: Mode 4: Transmit at channel 2422MHz by 802.11n(40MHz)	



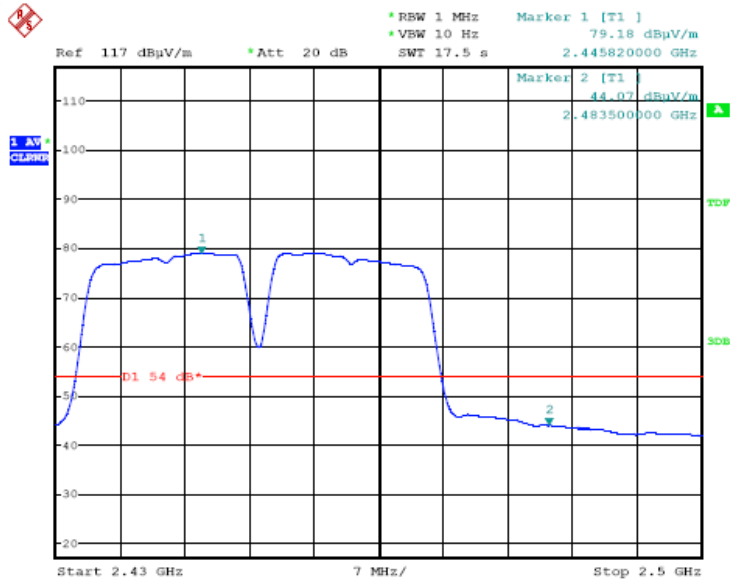
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC Part15.209 RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Vertical
EUT: SMART PHONE	Power: By Battery
Note: Mode 4: Transmit at channel 2422MHz by 802.11n(40MHz)	



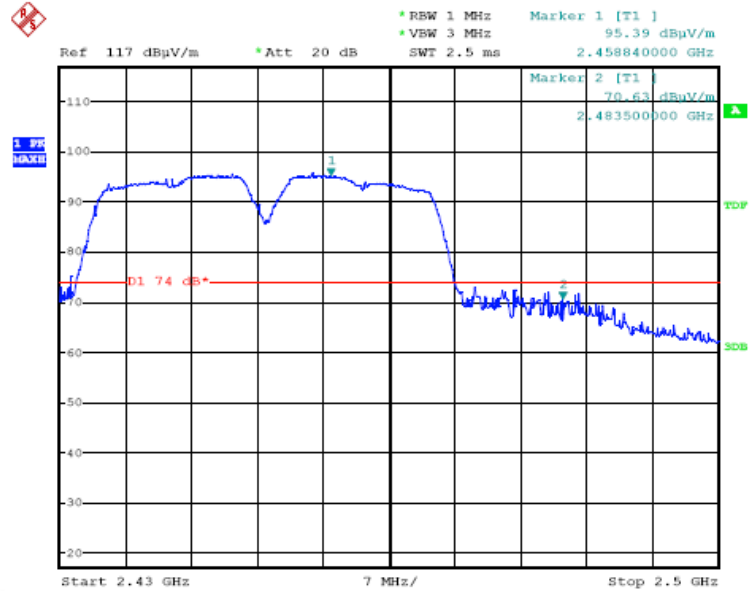
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Horizontal
EUT: SMART PHONE	Power: By Battery
Note: Mode 4: Transmit at channel 2452MHz by 802.11n(40MHz)	



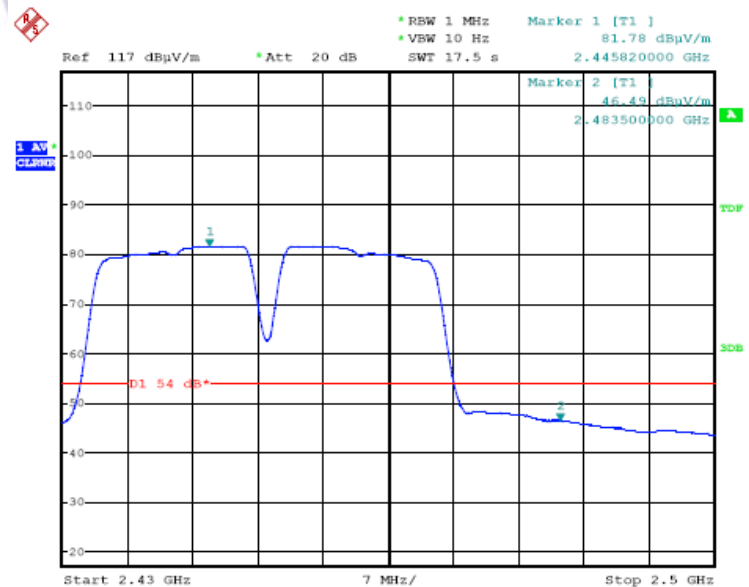
Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Horizontal
EUT: SMART PHONE	Power: By Battery
Note: Mode 4: Transmit at channel 2452MHz by 802.11n(40MHz)	



Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC Part15.209 RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Vertical
EUT: SMART PHONE	Power: By Battery
Note: Mode 4: Transmit at channel 2452MHz by 802.11n(40MHz)	

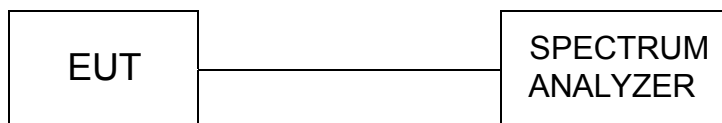


Engineer: Happy	
Site: AC5	Time: 2014/04/14
Limit: FCC Part15.209 RE(3m)	Margin: 0
Probe: Horn_DRH-118 (1-18GHz)	Polarity: Vertical
EUT: SMART PHONE	Power: By Battery
Note: Mode 4: Transmit at channel 2452MHz by 802.11n(40MHz)	



4.6. Power Spectral Density Measurement

TEST CONFIGURATION



TEST PROCEDURE

The EUT was tested according to KDB 558074 D01 v03r01 for compliance to FCC 47CFR 15.247 requirements.

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

LIMIT

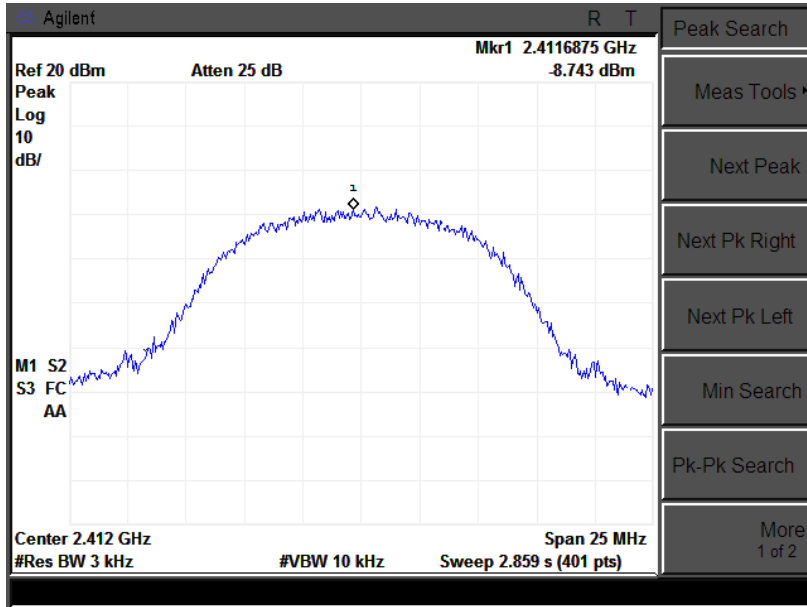
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST RESULTS

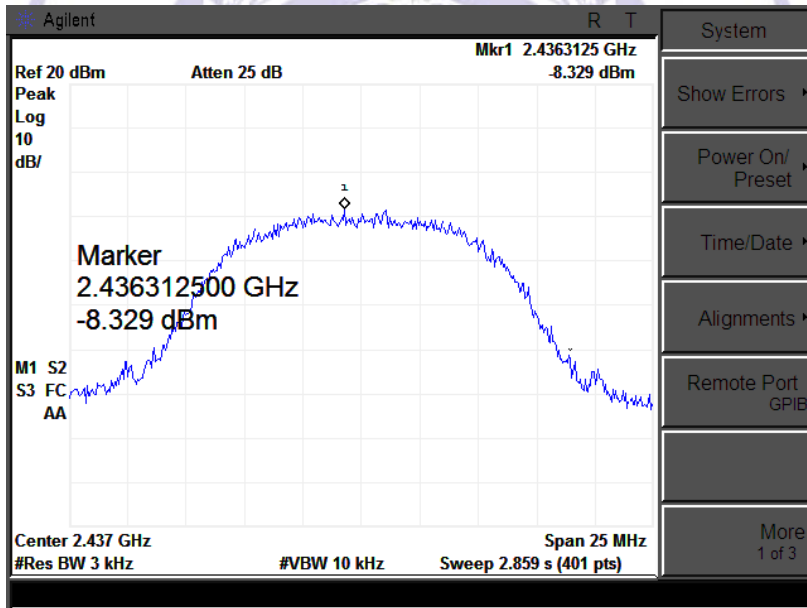
Modulation Mode	Channel	Channel Frequency (MHz)	PSD (dBm/3KHz)	Maximum limit (dBm/3KHz)	PASS / FAIL
802.11b	1	2412	-8.746	8	PASS
	6	2437	-8.329	8	PASS
	11	2462	-9.060	8	PASS
802.11g	1	2412	-15.84	8	PASS
	6	2437	-13.80	8	PASS
	11	2462	-14.50	8	PASS
802.11n HT20	1	2412	-15.79	8	PASS
	6	2437	-13.77	8	PASS
	11	2462	-16.12	8	PASS
802.11n HT40	3	2422	-19.18	8	PASS
	6	2437	-16.53	8	PASS
	9	2452	-19.14	8	PASS

For 802.11b Mode:

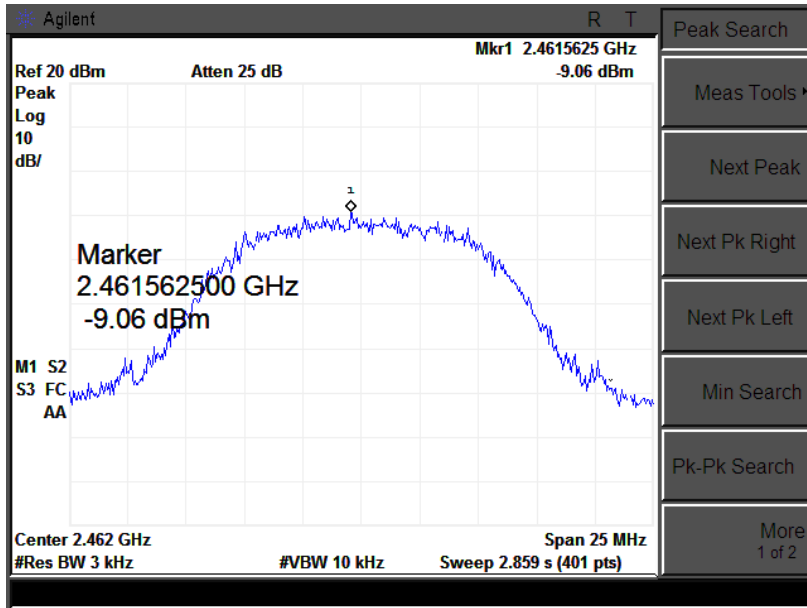
CH1



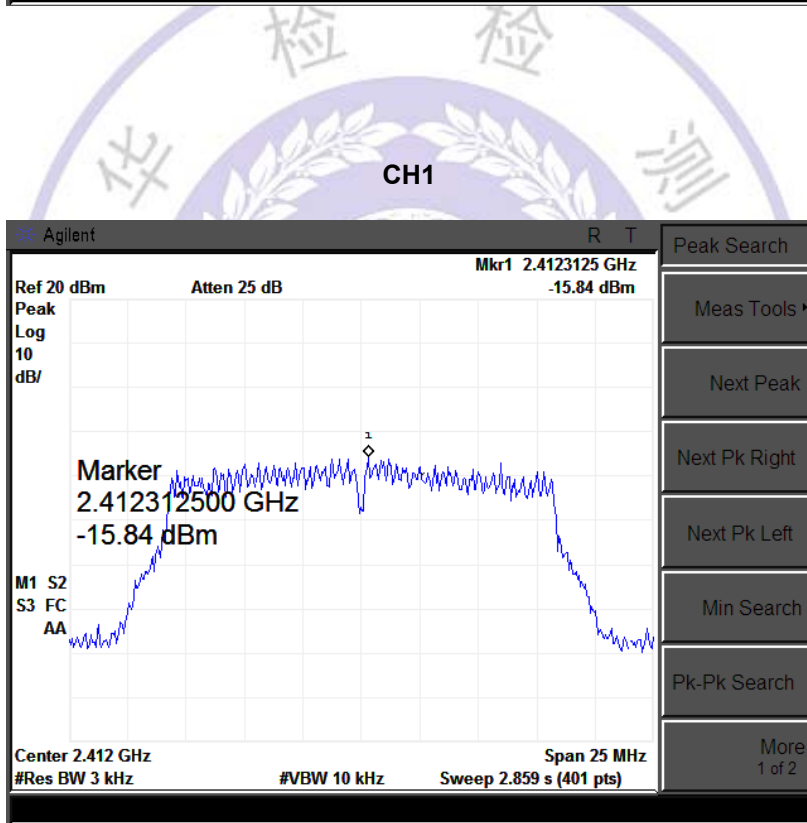
CH6



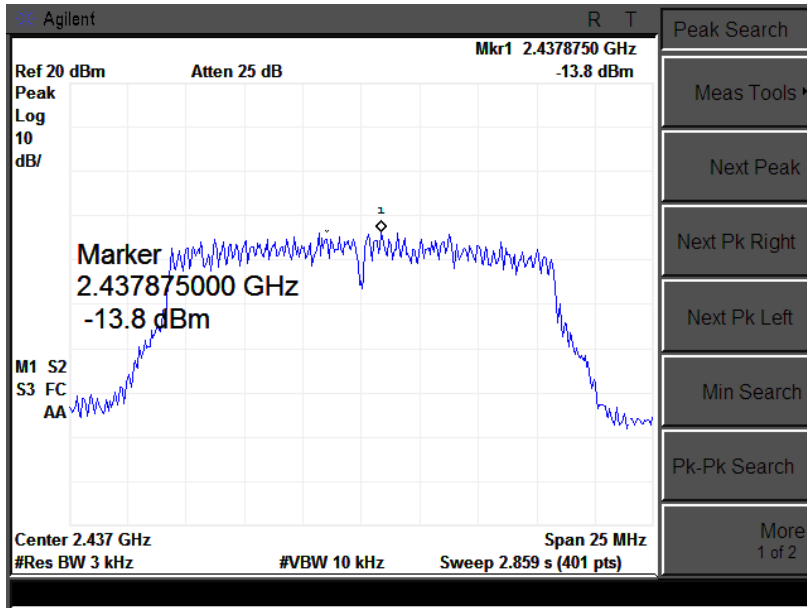
CH11



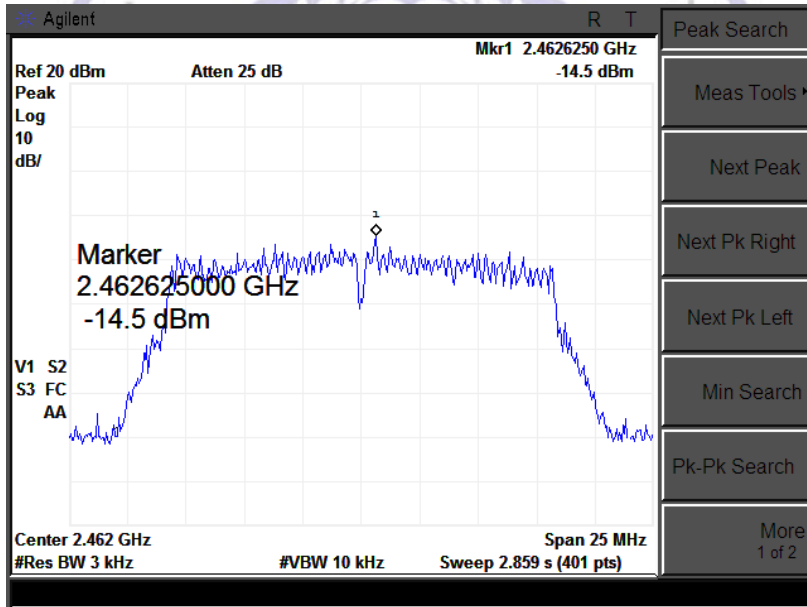
For 802.11g Mode:



CH6

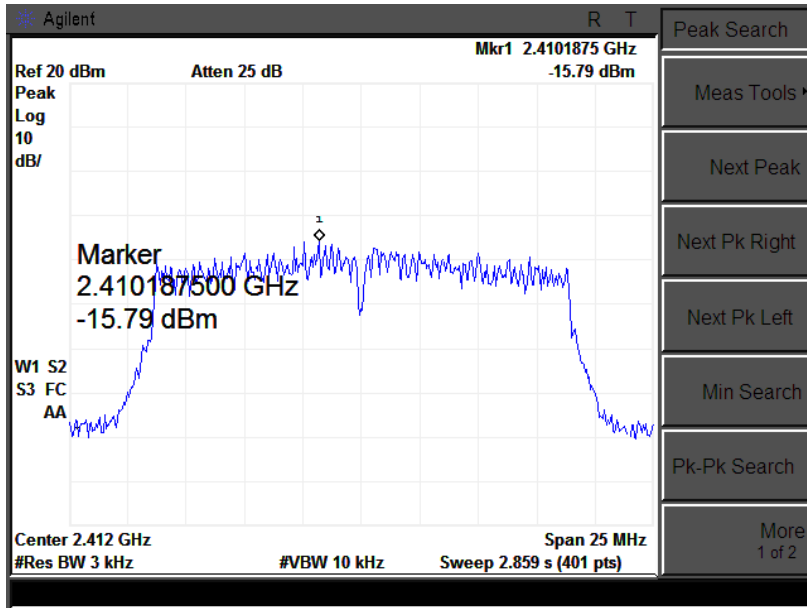


CH11

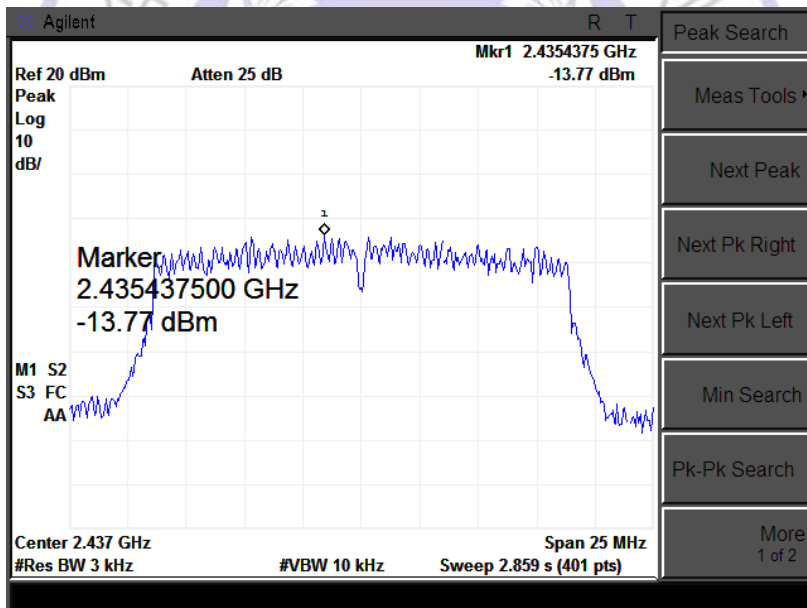


For 802.11n (20MHz) Mode:

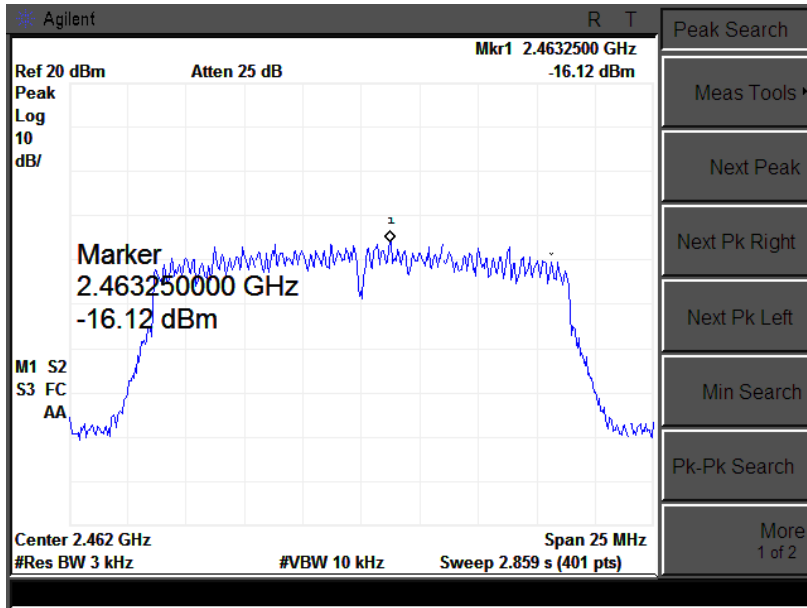
CH1



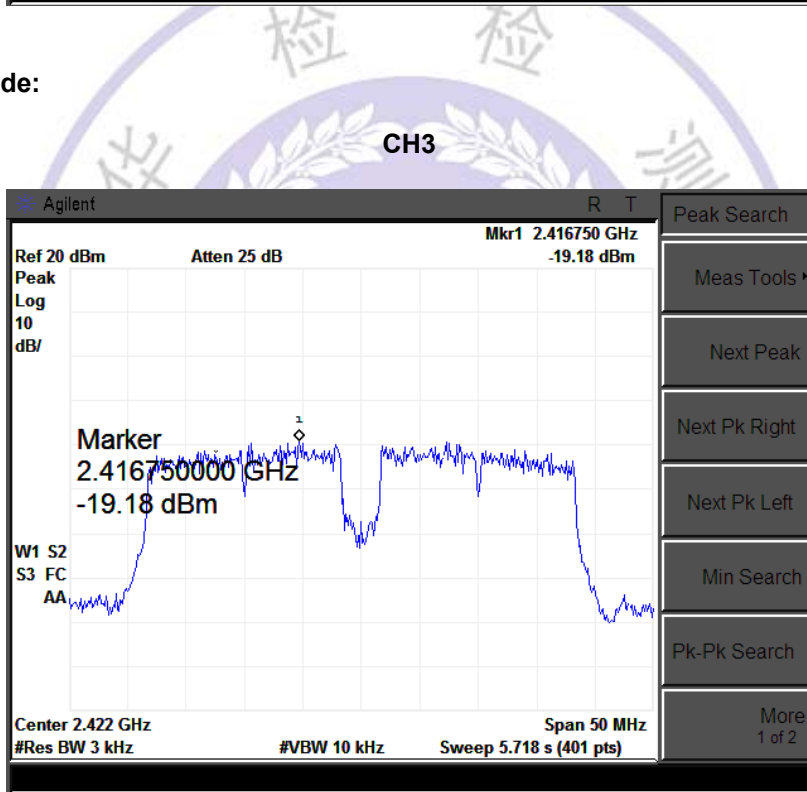
CH6



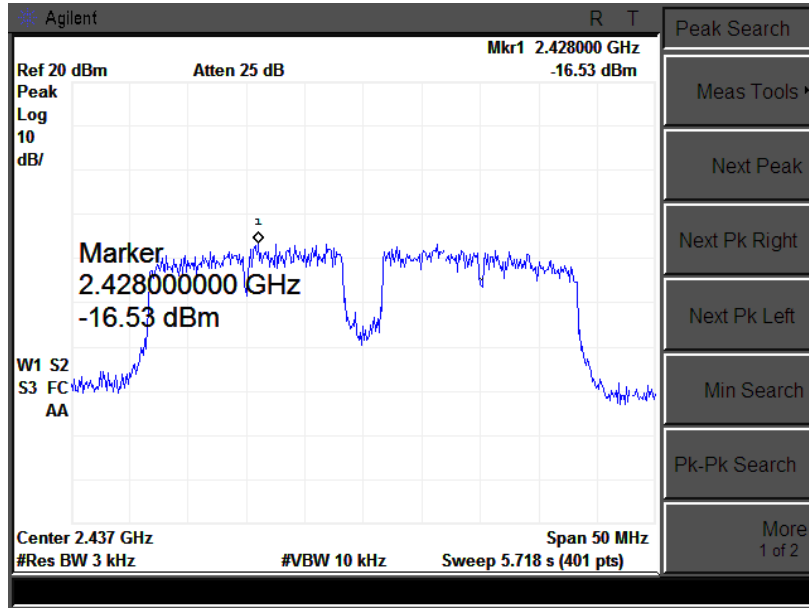
CH11



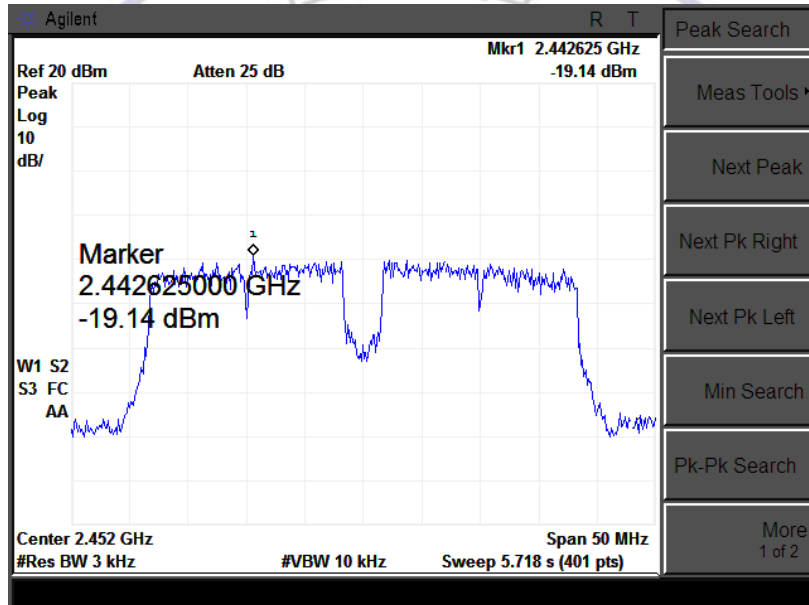
For 802.11n (40MHz) Mode:



CH 6

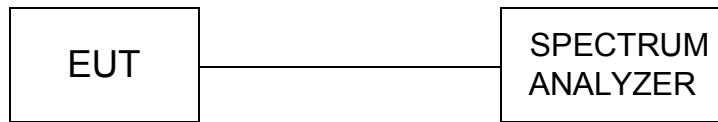


CH 9



4.7. Spurious RF Conducted Emission

TEST CONFIGURATION



TEST PROCEDURE

The EUT was tested according to KDB 558074 D01 v03r01 for compliance to FCC 47CFR 15.247 requirements.

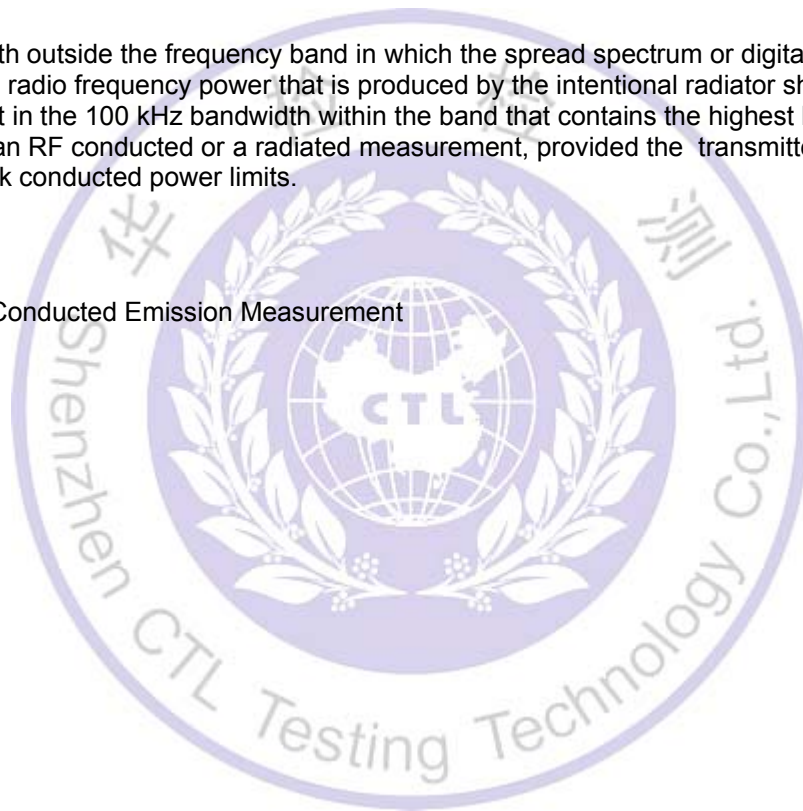
The Spurious RF conducted emissions compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10-2009 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW=100kHz and VBM= 300KHz to measure the peak field strength, and measure frequency range from 30MHz to 26.5GHz.

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.

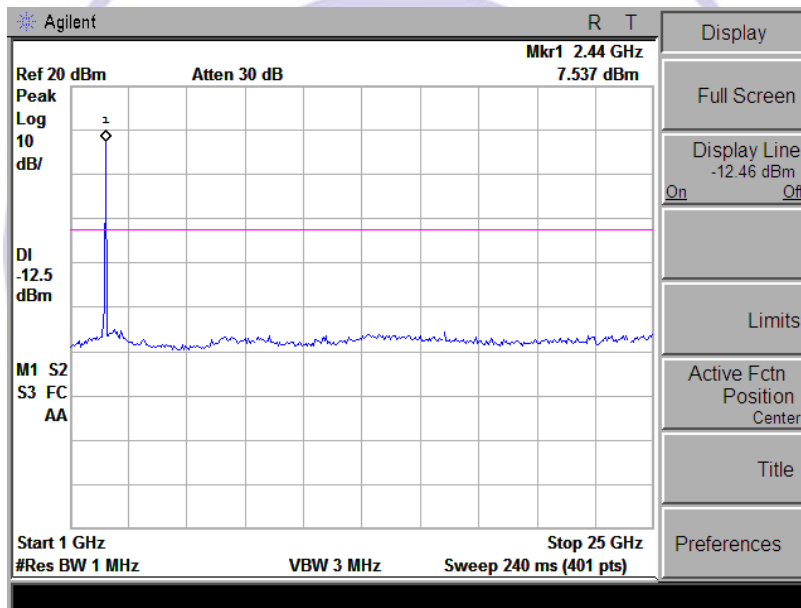
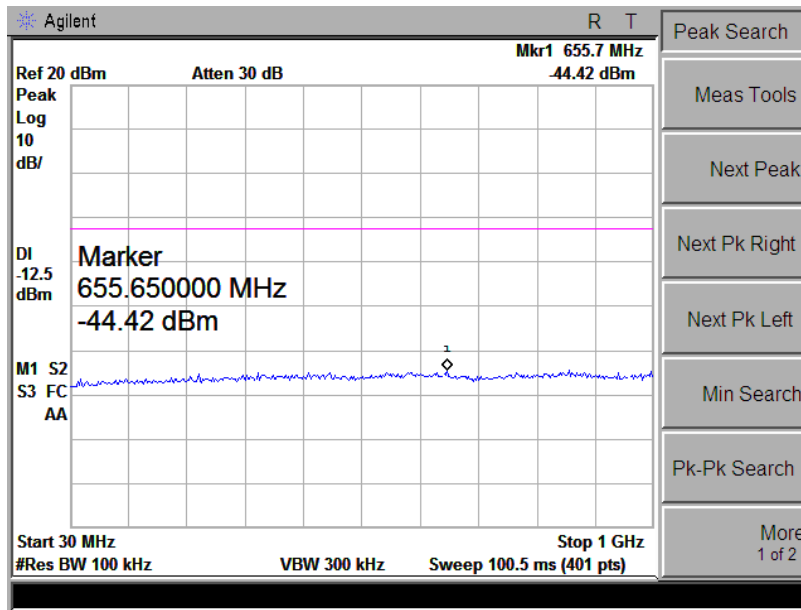
TEST RESULTS

Photos of Spurious RF Conducted Emission Measurement

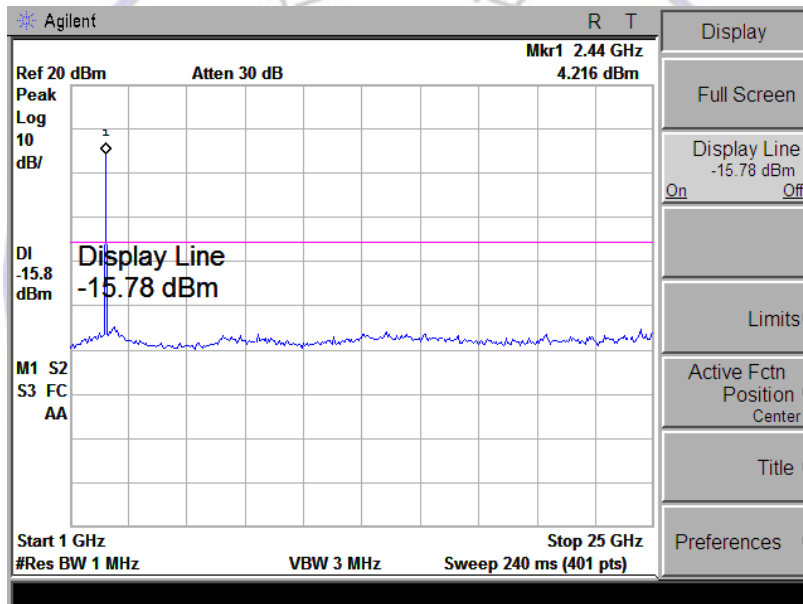
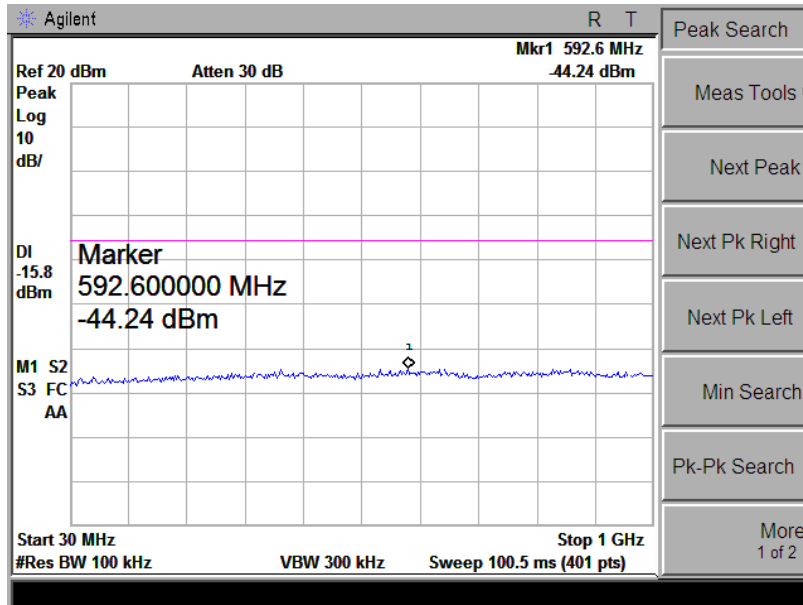


For 802.11b Mode:

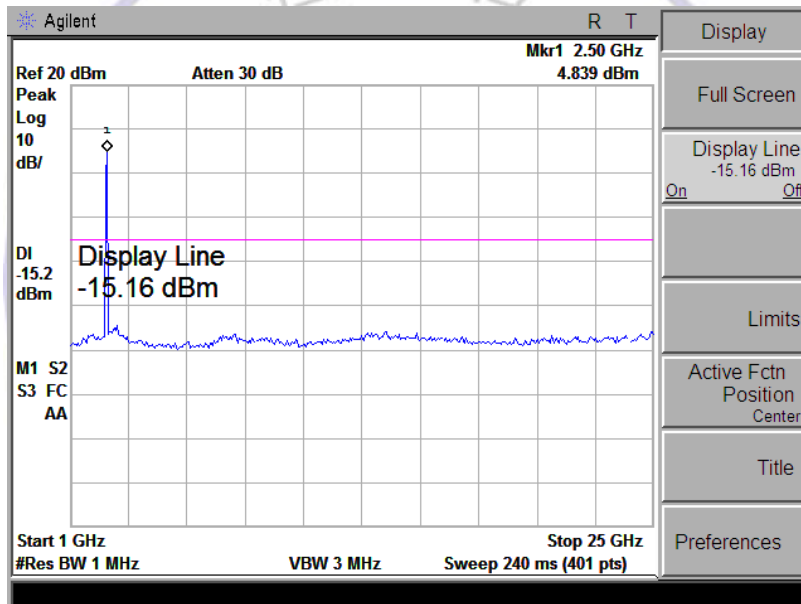
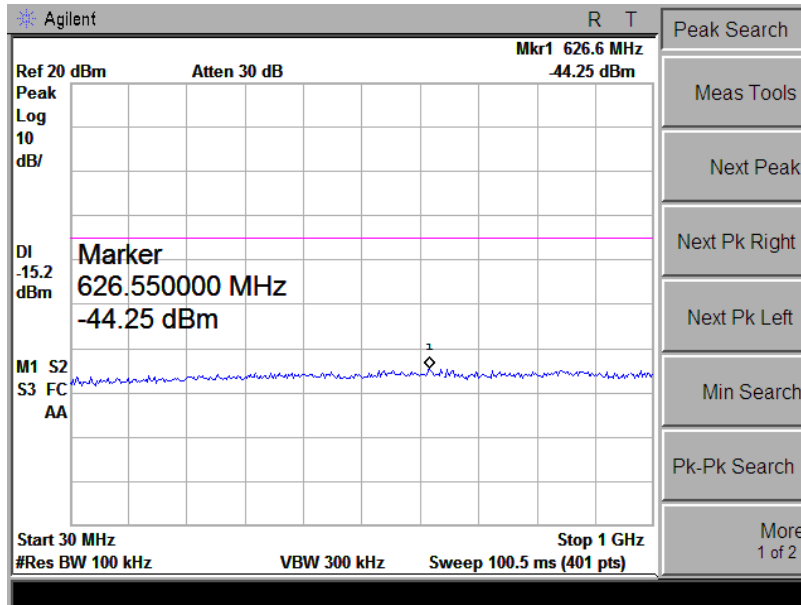
CH1



CH6

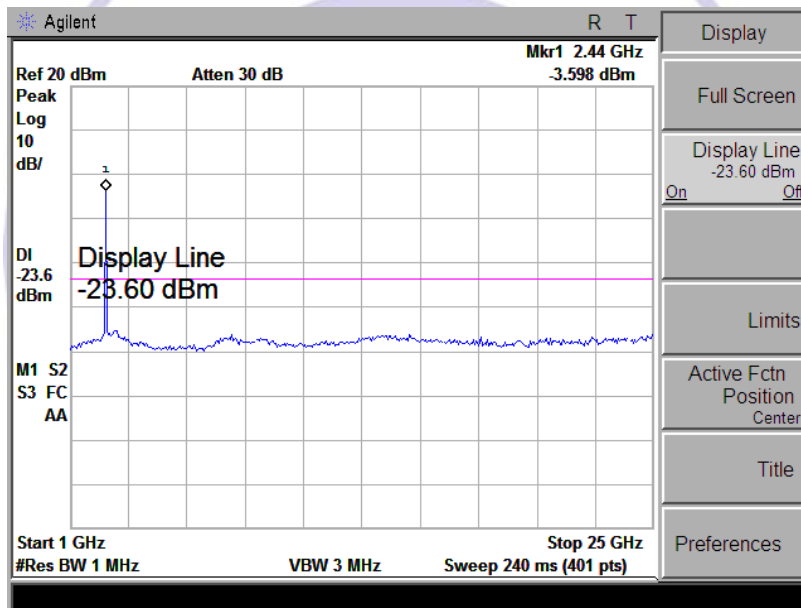
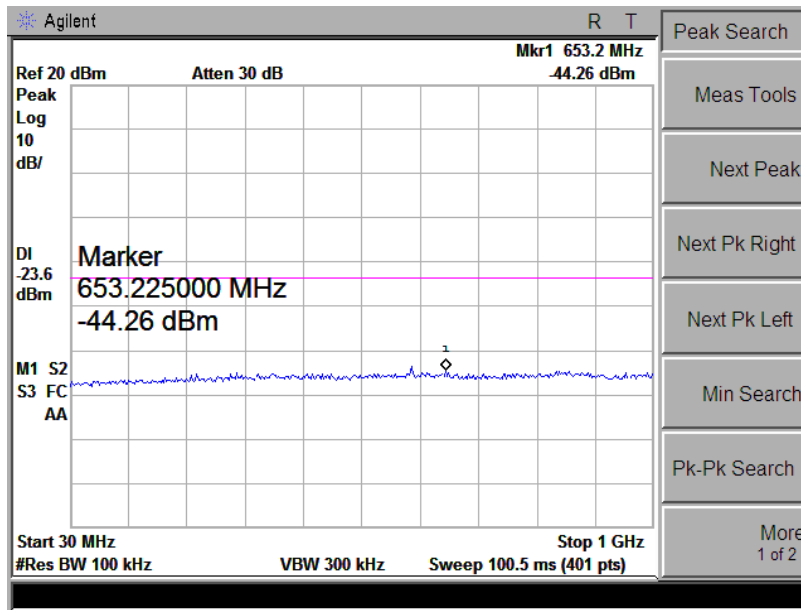


CH11

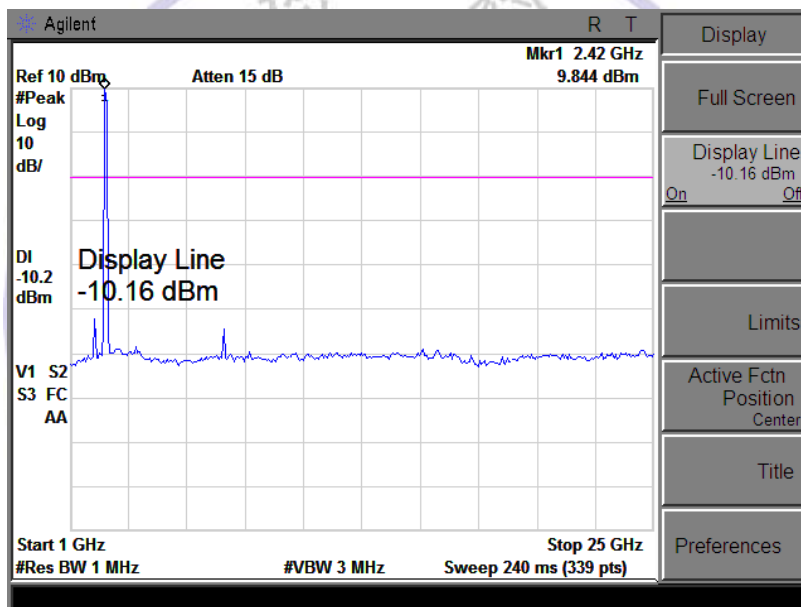
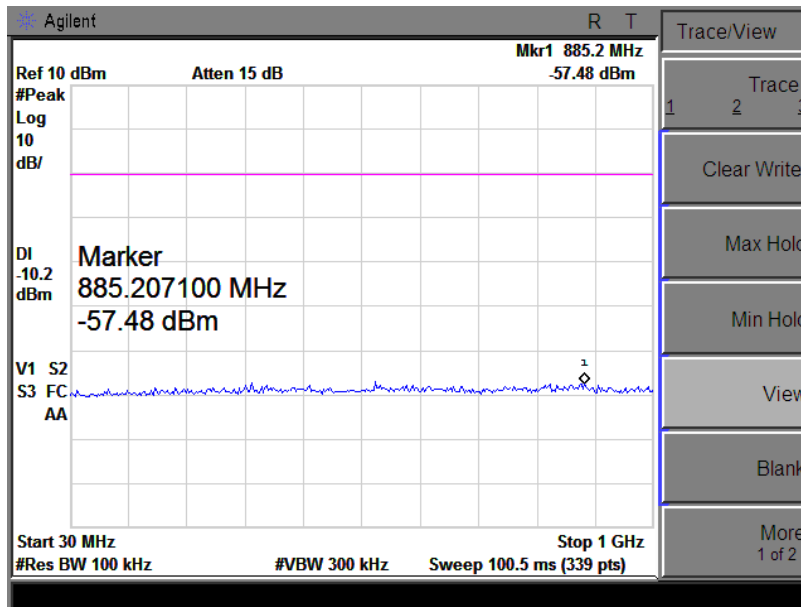


For 802.11g Mode:

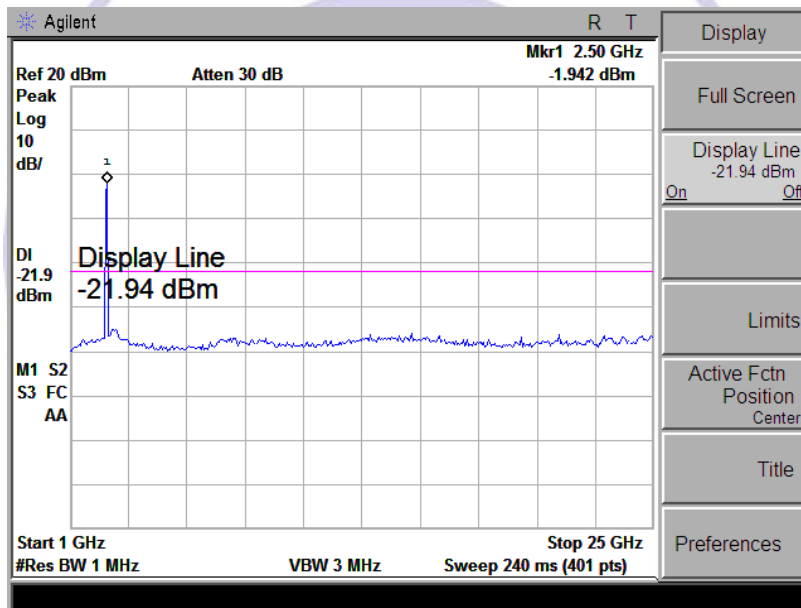
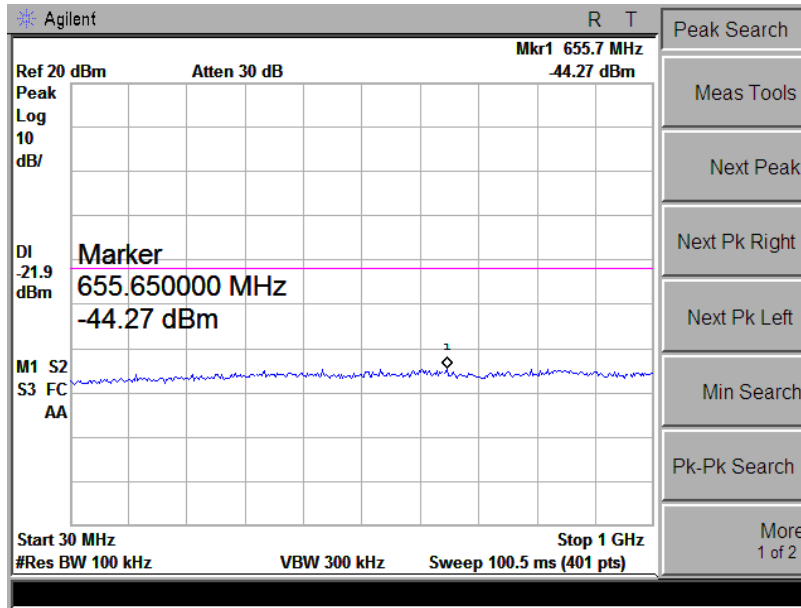
CH1



CH6

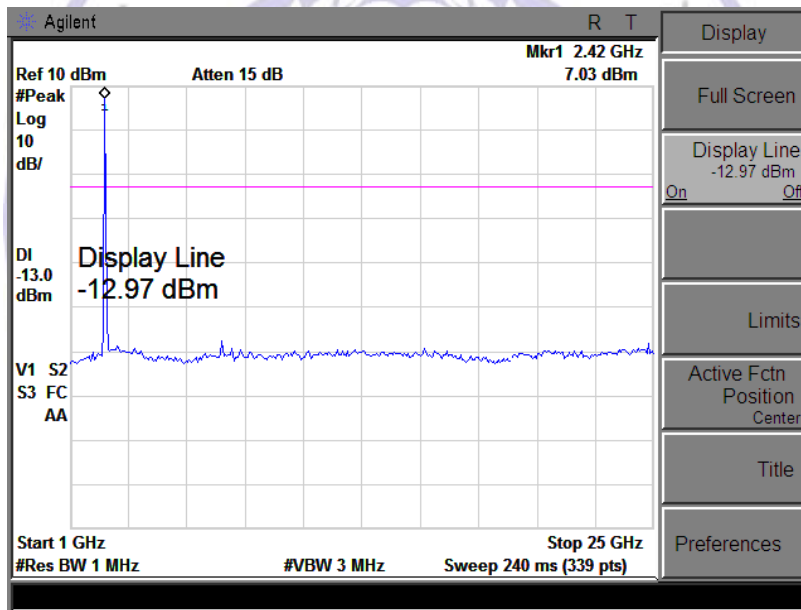
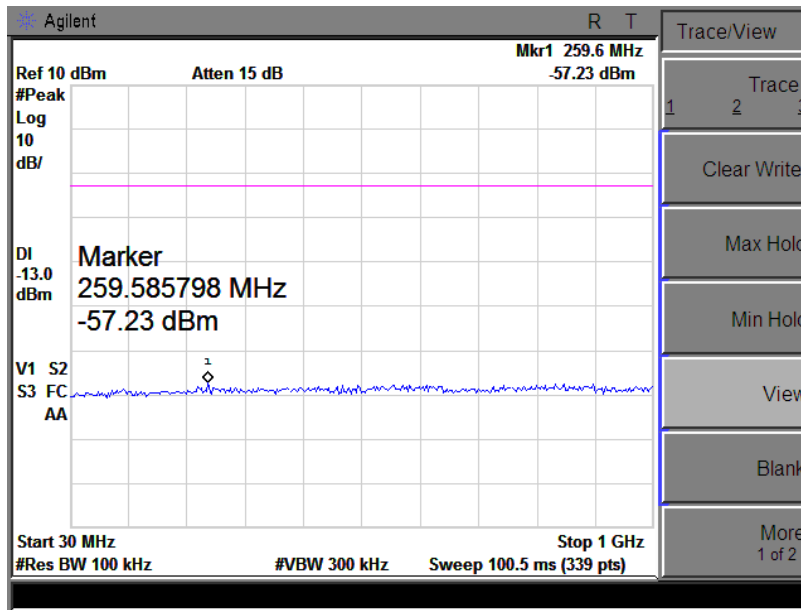


CH11

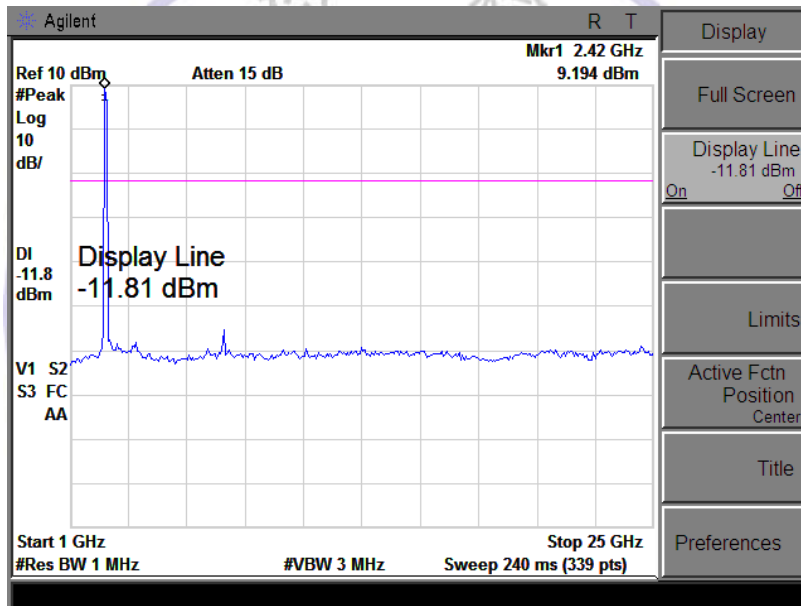
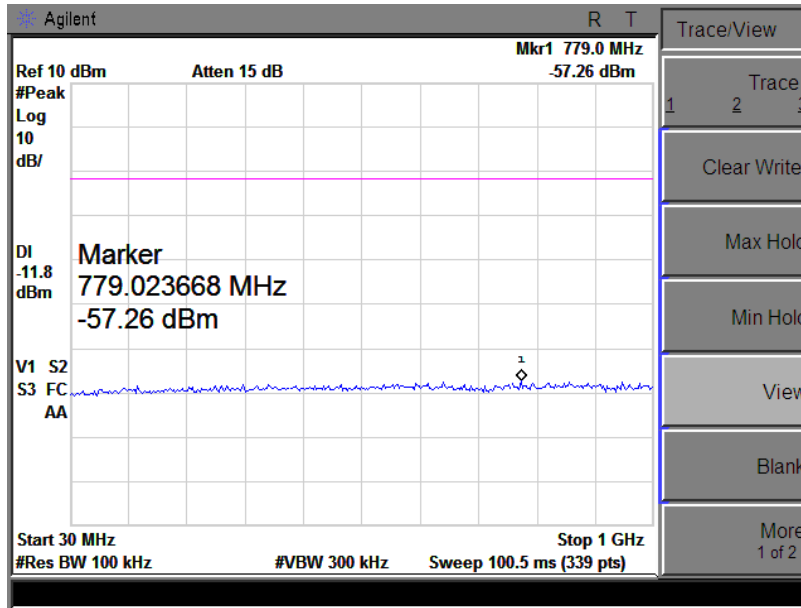


For 802.11n (20MHz) Mode:

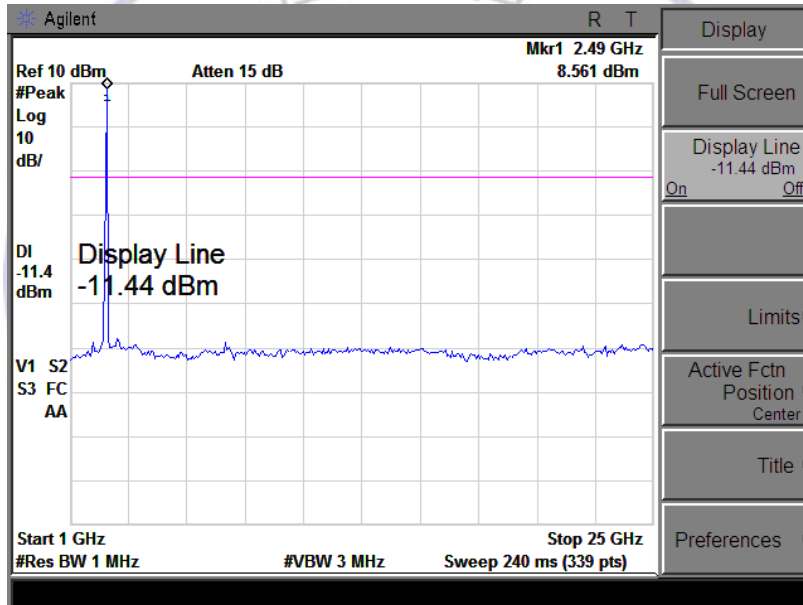
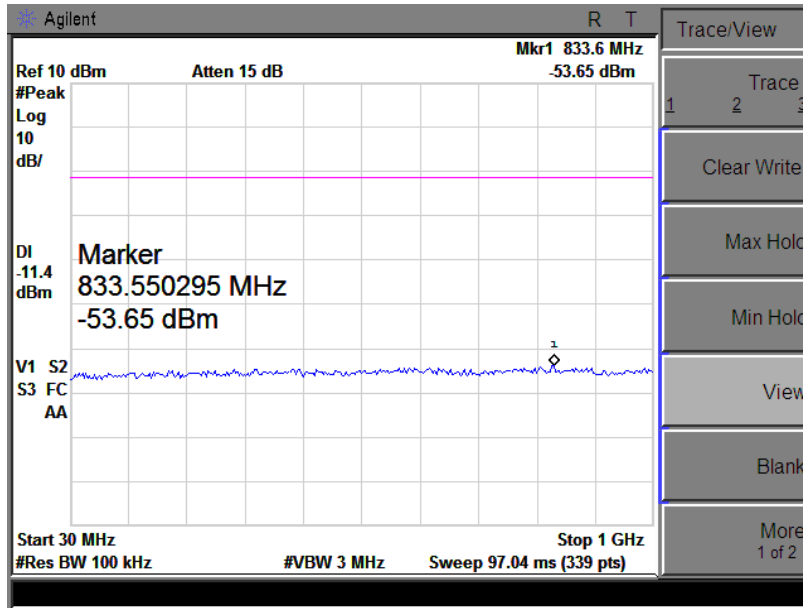
CH1



CH6

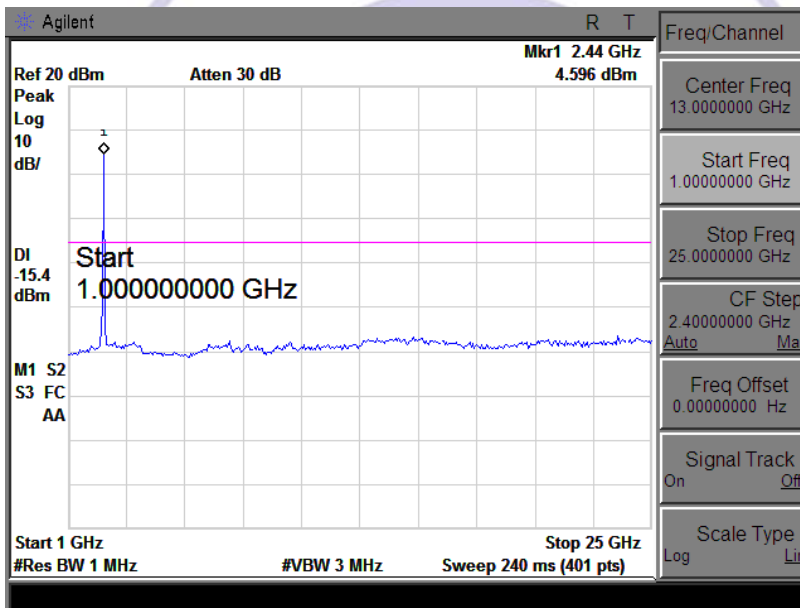
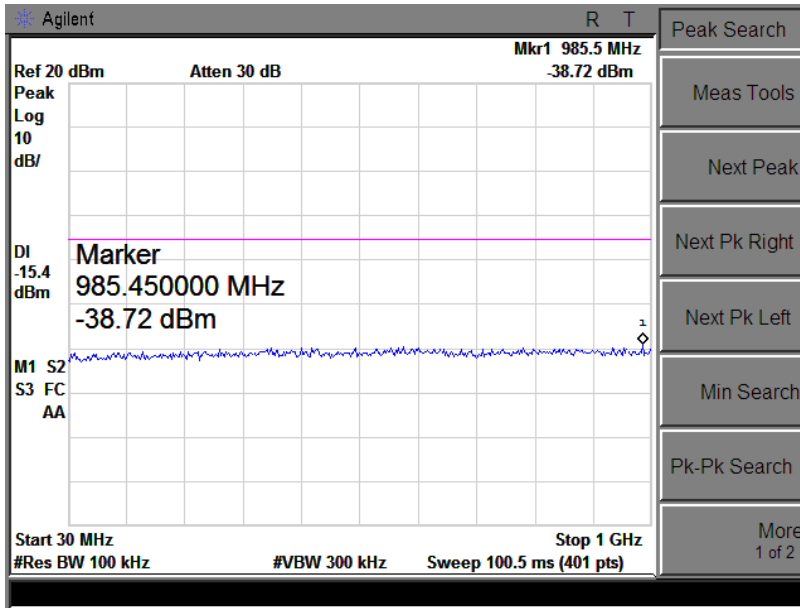


CH11

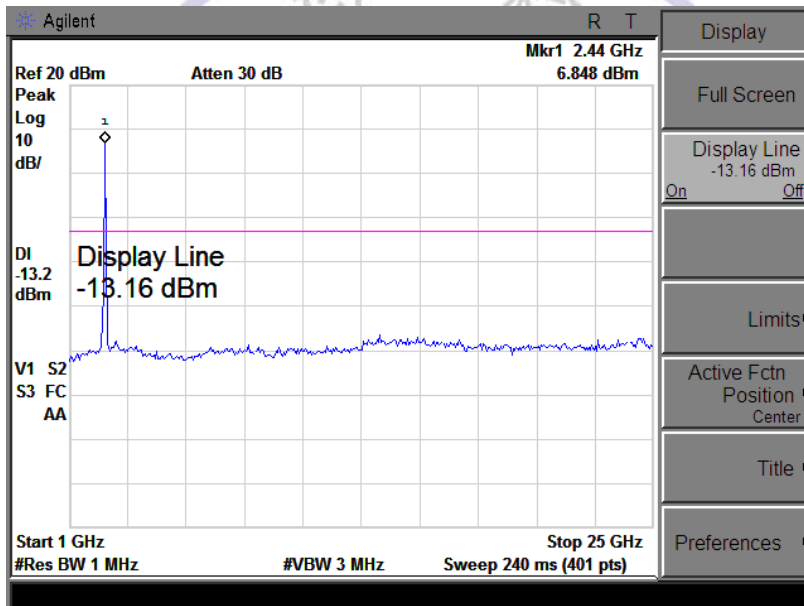
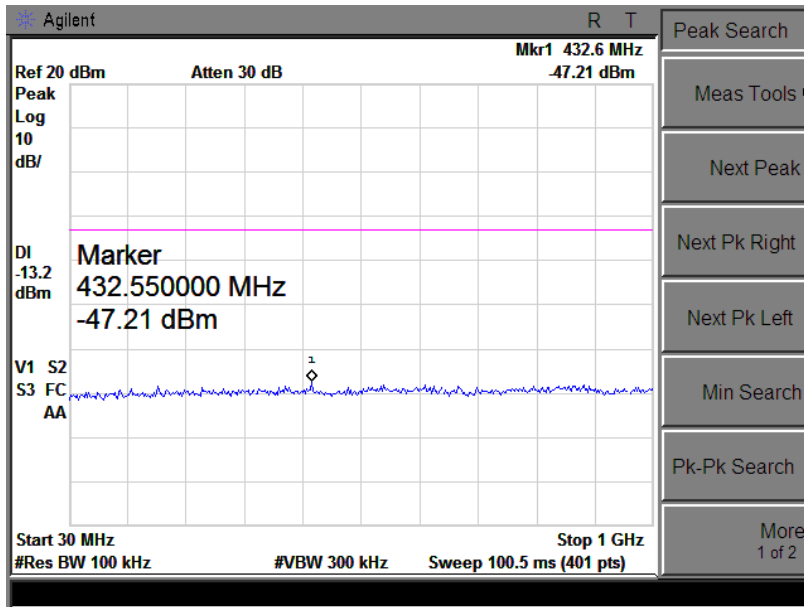


For 802.11n (40MHz) Mode:

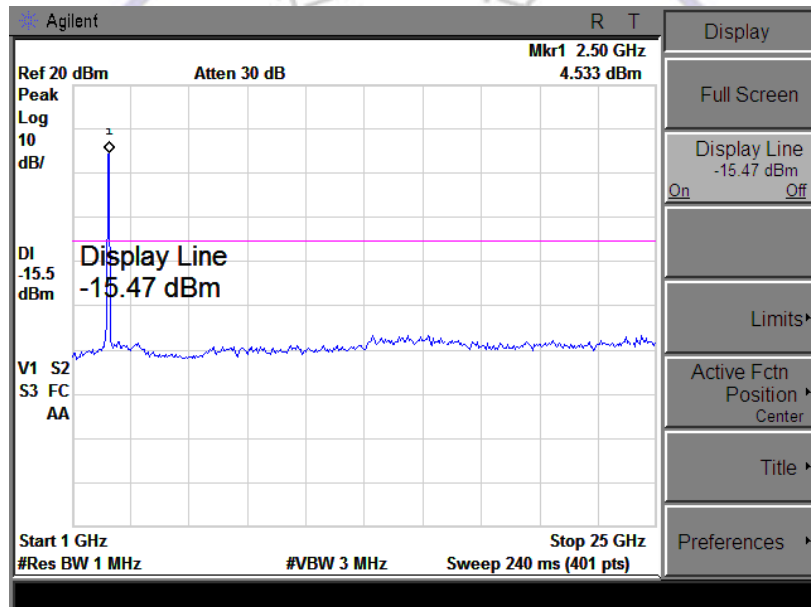
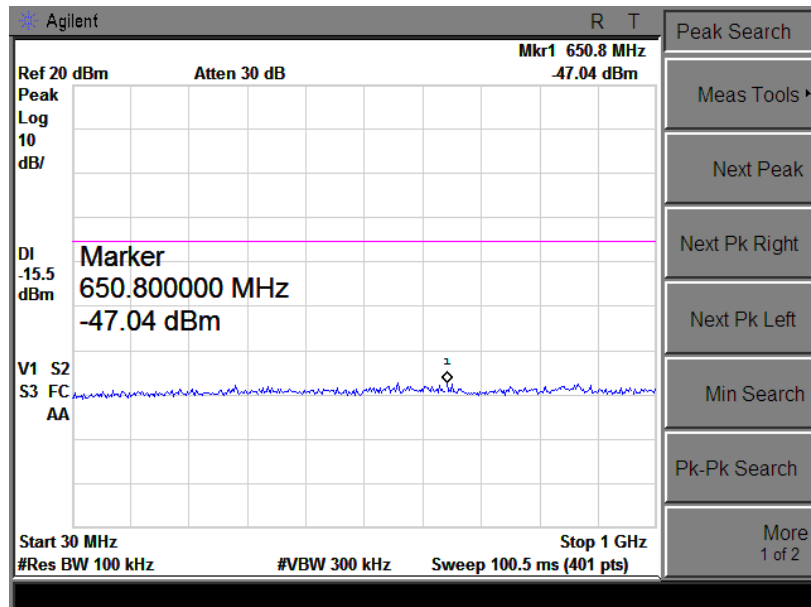
CH3



CH6

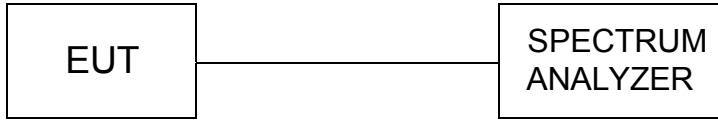


CH9



4.8. Operation Frequency Range of 20dB Bandwidth

TEST CONFIGURATION



TEST PROCEDURE

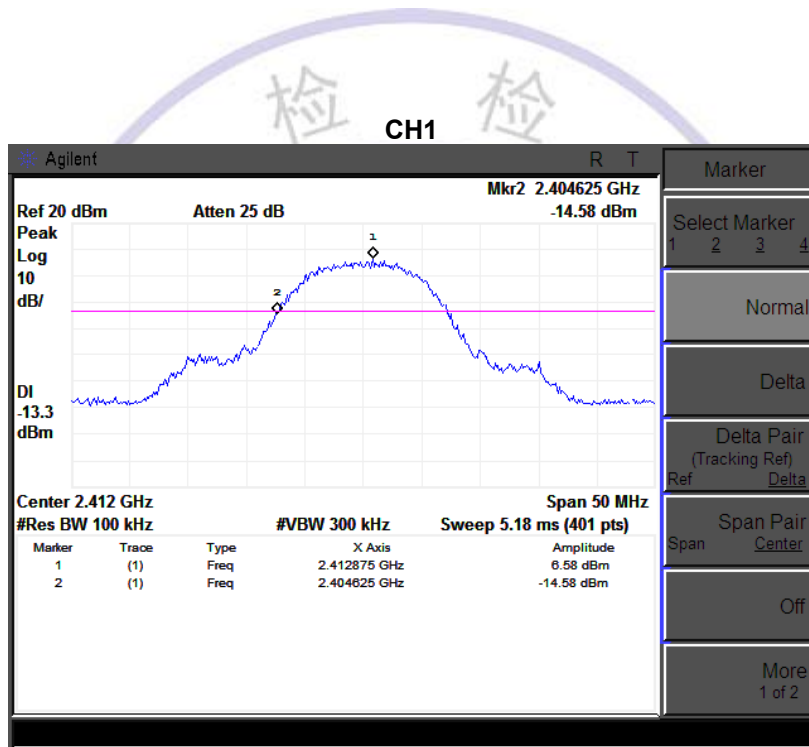
The EUT was tested according to KDB 558074 D01 v03r01 for compliance to FCC 47CFR 15.247 requirements. Set RBW = 100 kHz, Span greater than RBW.

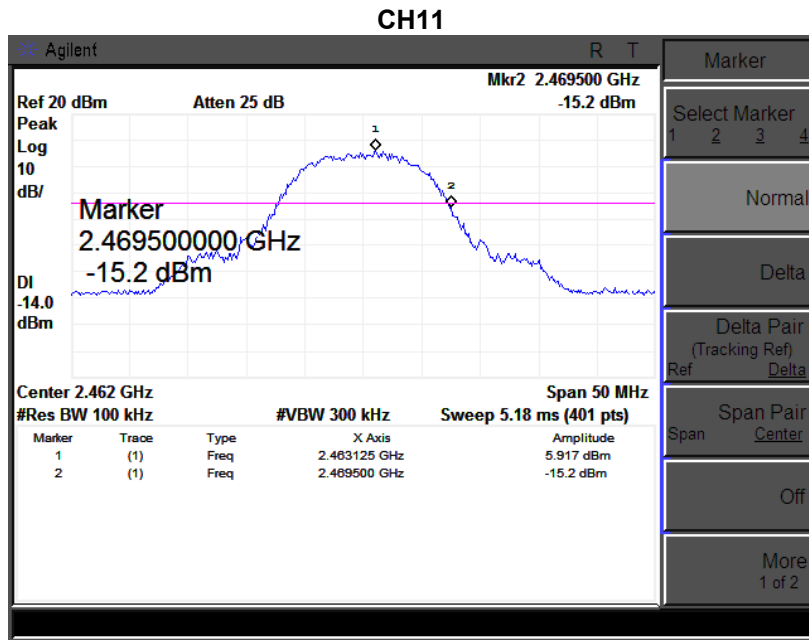
LIMIT

20 dB bandwidth of the emission is contained within the operation frequency band.

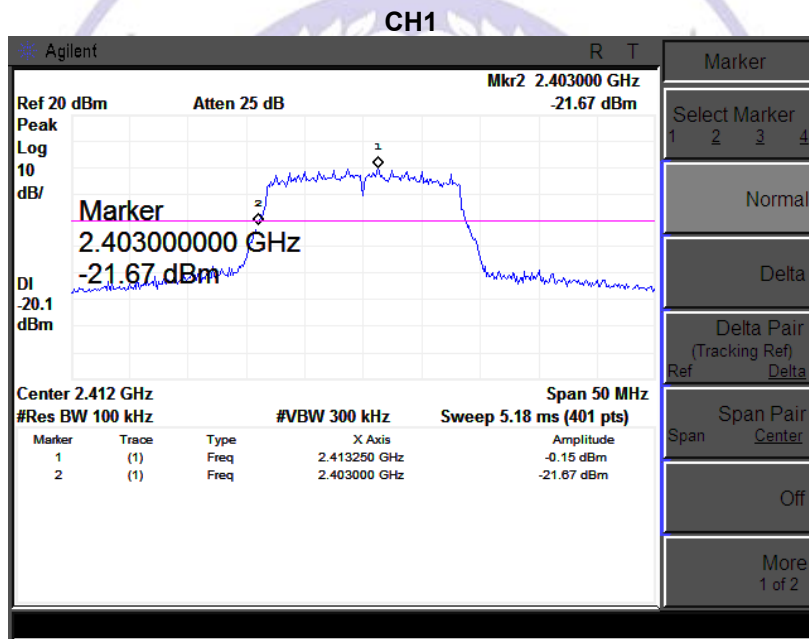
TEST RESULT

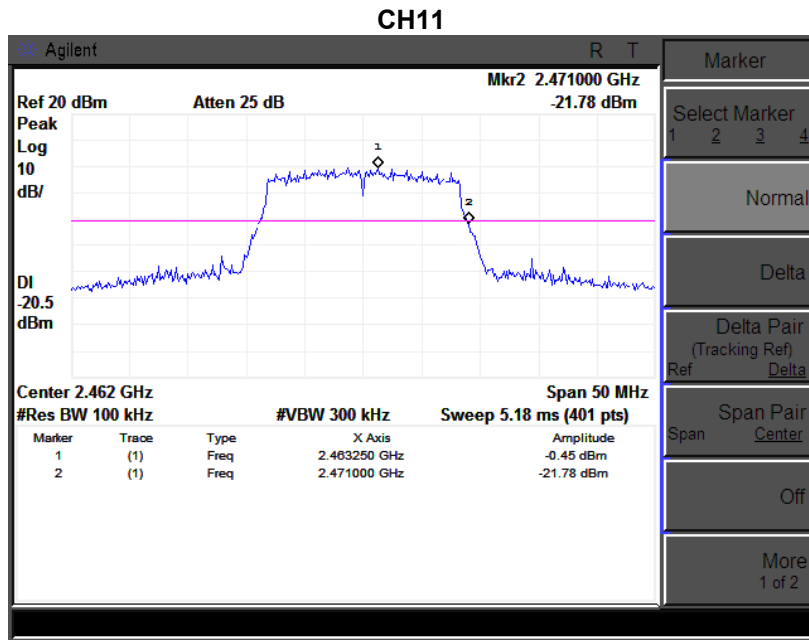
For 802.11b Mode:



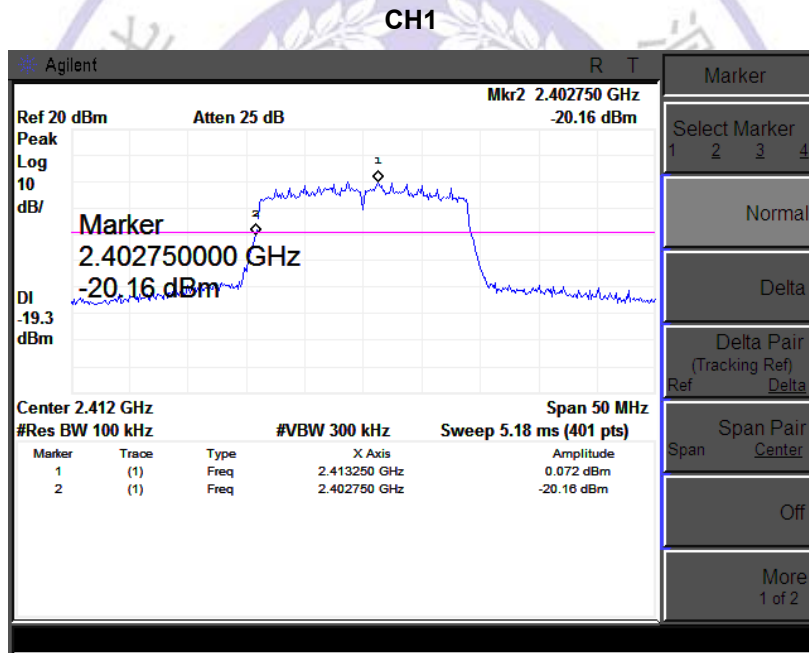


For 802.11g Mode:

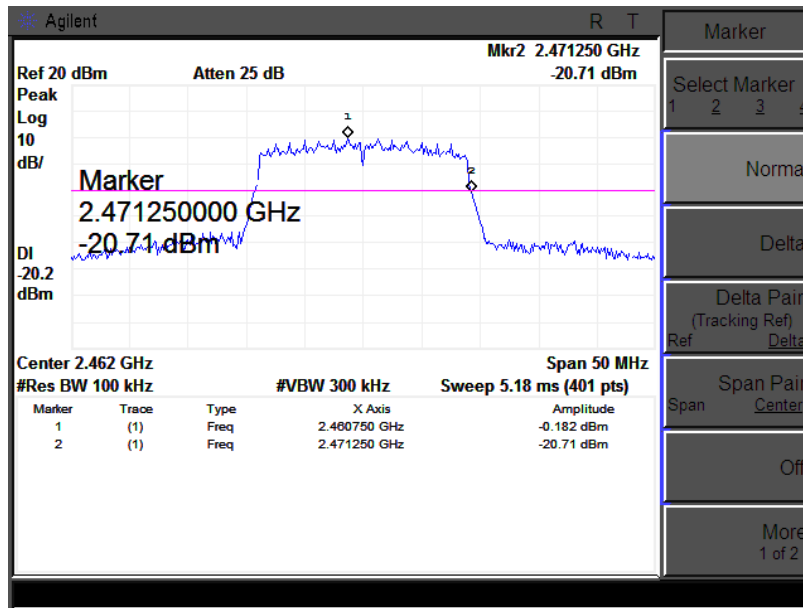




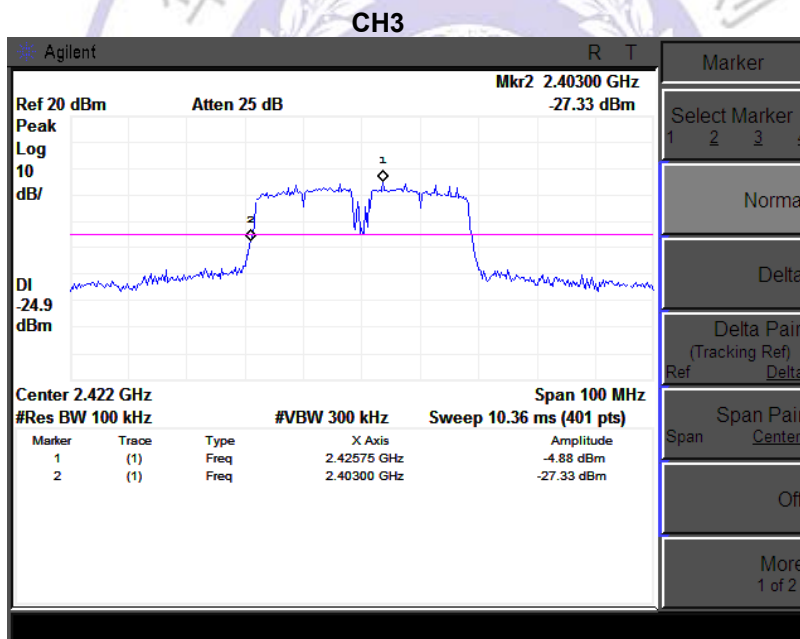
For 802.11n (20MHz) Mode:



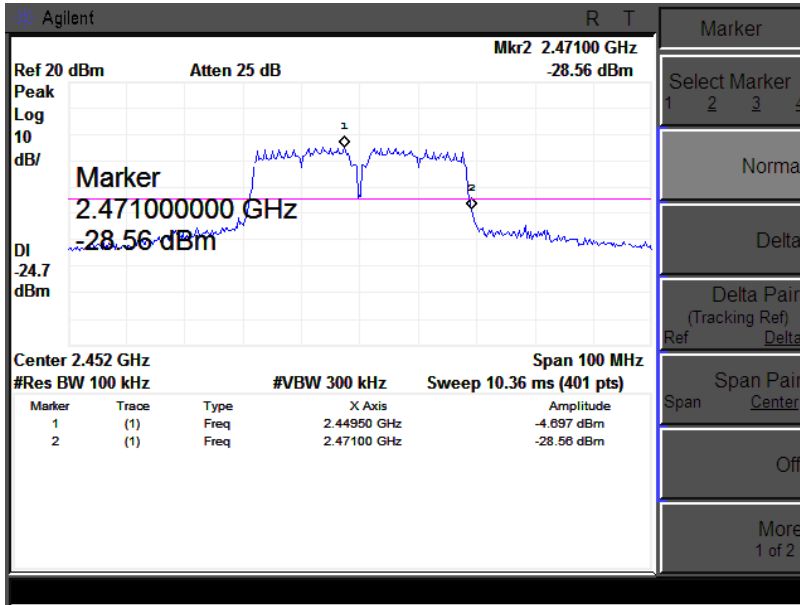
CH11



For 802.11n (40MHz) Mode:



CH9



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.

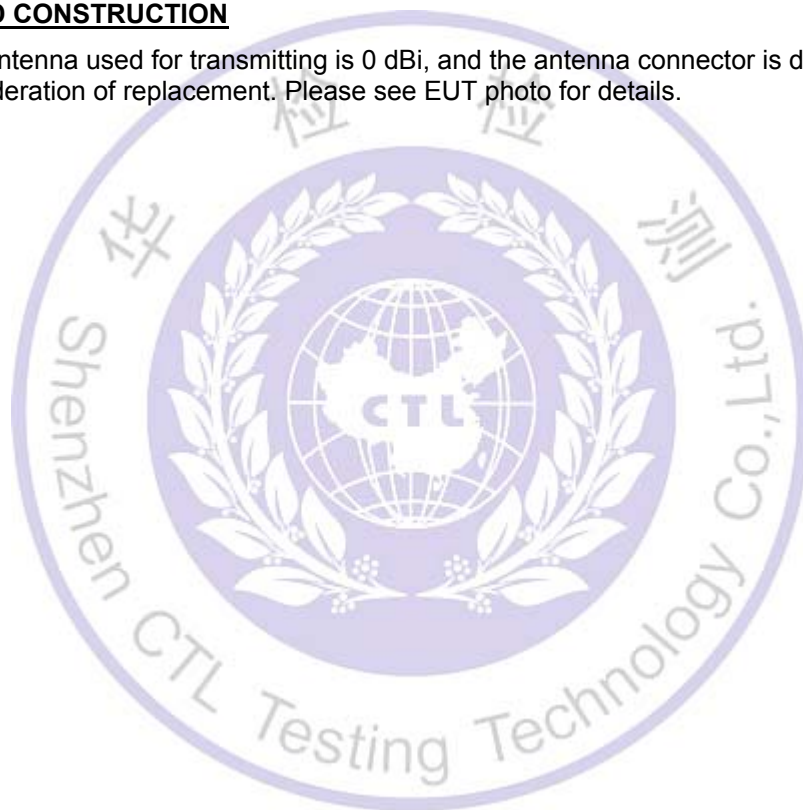
And according to FCC 47 CFR Section 15.247 (c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

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 0 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Please see EUT photo for details.



4.10. RF Exposure

STANDARD APPLICABLE

According to § 1.1307 (b)(1), system operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a portable device. Per KDB 447498 D01 v05, the device used distance is 5mm from body.

LIMIT

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

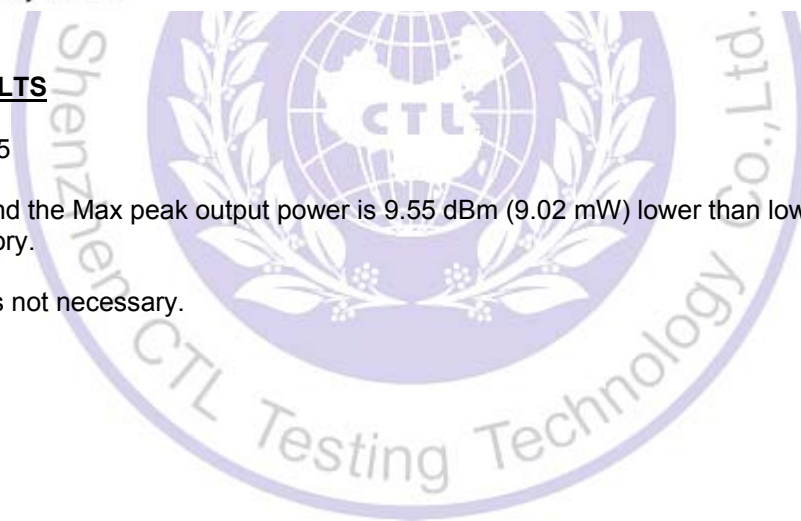
F= Frequency in MHz

MEASUREMENT RESULTS

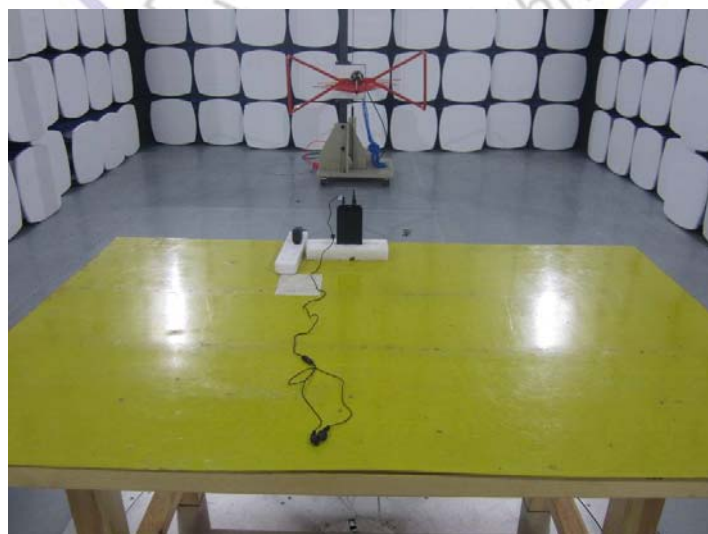
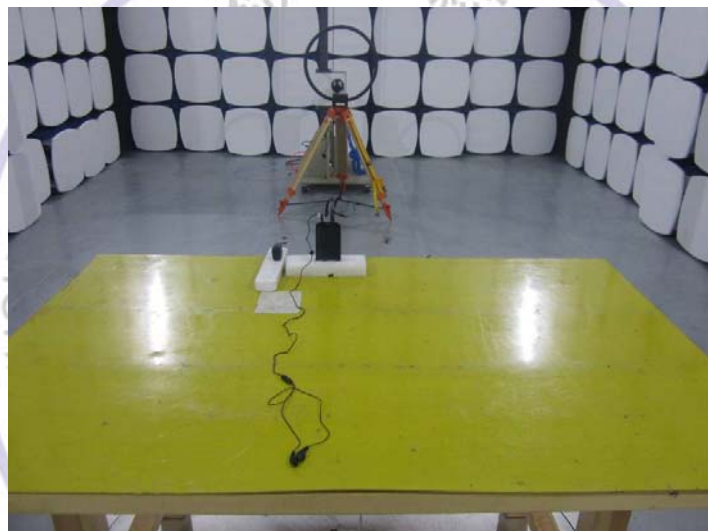
Per KDB 447498 D01 V05

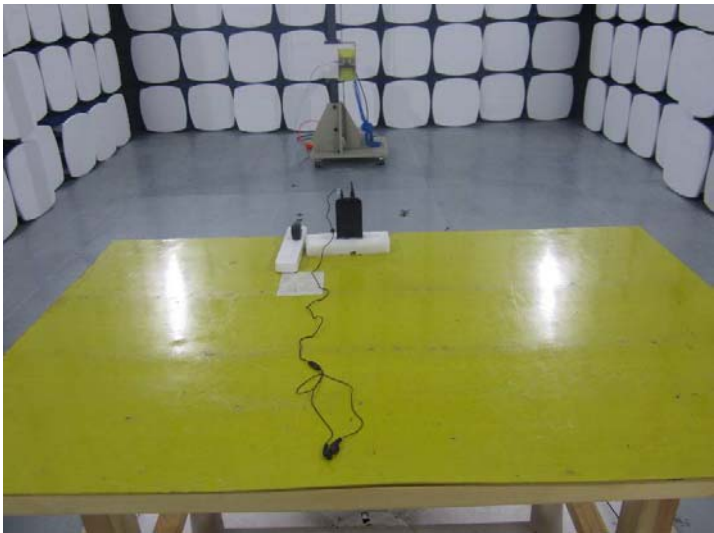
This is a Wi-Fi function and the Max peak output power is 9.55 dBm (9.02 mW) lower than low threshold 10 mW in general population category.

The SAR measurement is not necessary.



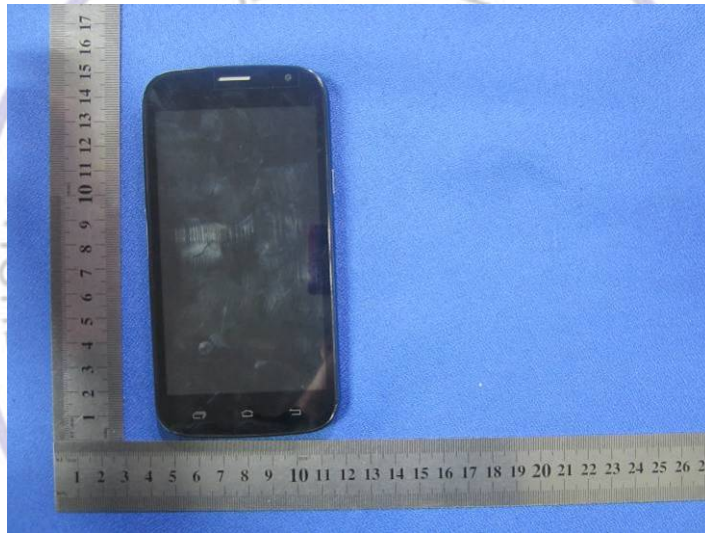
5. Test Setup Photos of the EUT





6. External and Internal Photos of the EUT

External Photos of EUT

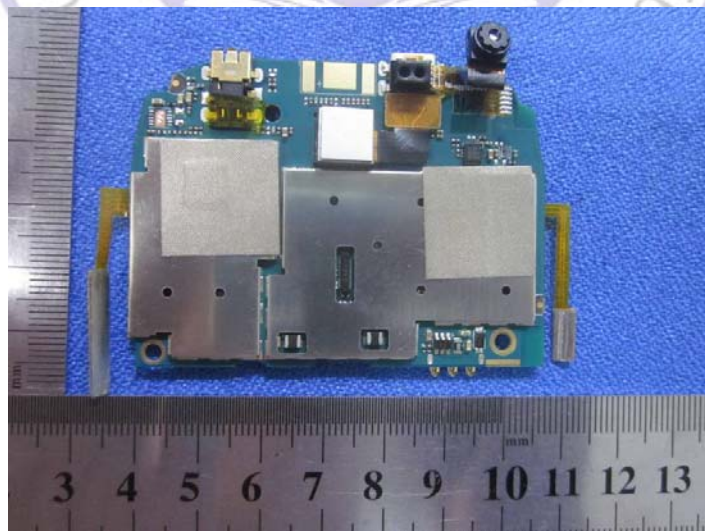
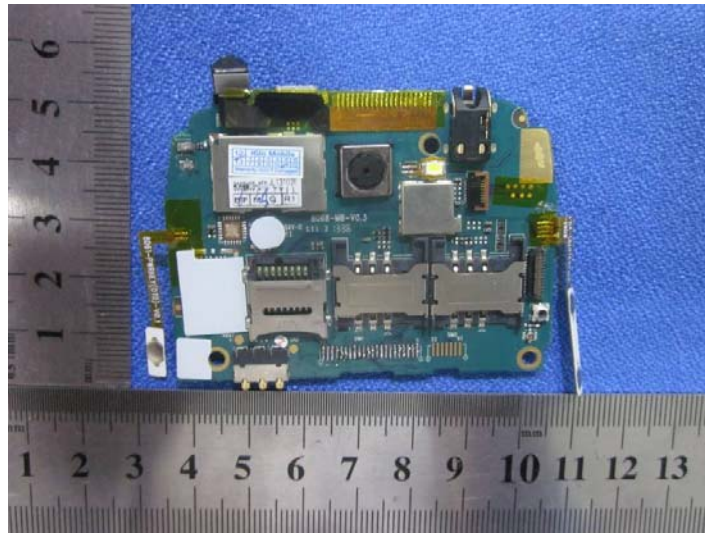


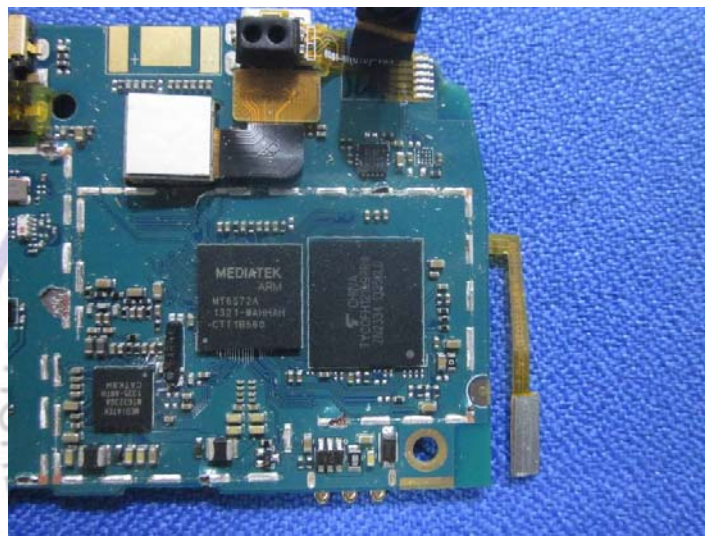
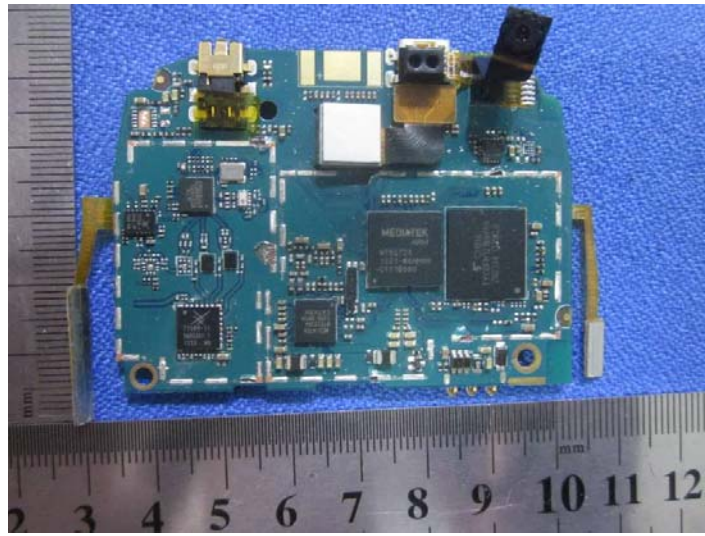


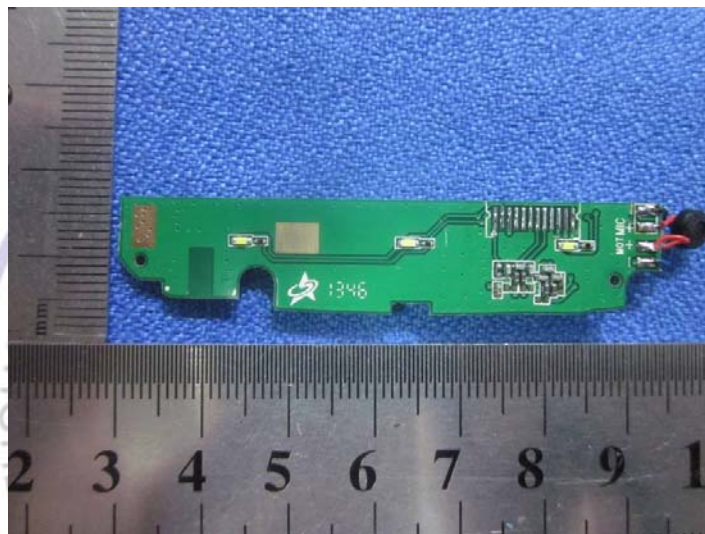
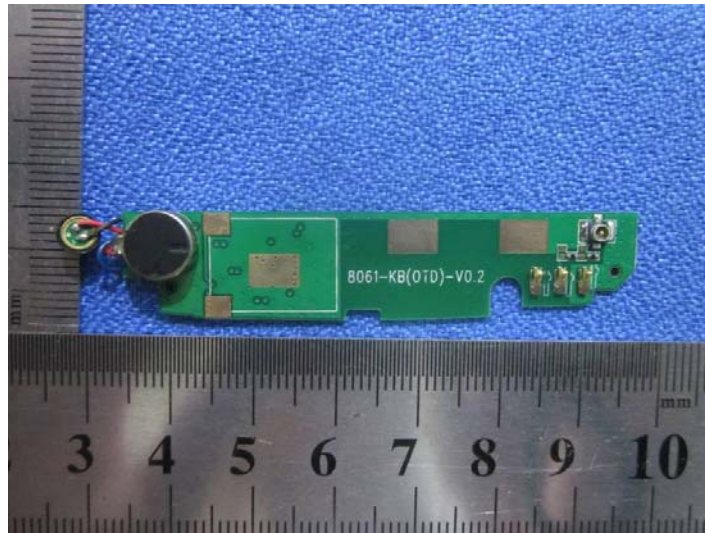


Internal Photos of EUT









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

