

FCC TEST REPORT

FCC ID : IKQBTBTL
Applicant : Scosche Industries Inc
Address : 1550 Pacific Ave., Oxnard, CA 93033
Manufacturer : CCA ELECTRONIC FACTORY
Address : 1-3F Building 120-121TH, PingHuan Industrial City, PingShan Town, LongGang District, ShenZhen City, China.

Equipment Under Test (EUT) :

Product Name : Scosche Boom BOTTLE
Model No. : BTBTL
Rules : FCC CFR47 Part 15 C Section 15.247:2010

Date of Test : Feb. 20 ~ Mar. 02, 2013

Date of Issue : Mar. 07, 2013

Test Result : PASS*

Remark:

* The sample detailed above has been tested to the requirements of FCC rules mentioned above.

The test results have been reviewed against the directives above and found to meet their essential requirements.

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company.

The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:**Waltek Services (Shenzhen) Co., Ltd.**

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Testing location: 1/F., Fukangtai Building, West Baima Road, Songgang Street, Baoan District, Shenzhen, Guangdong, China

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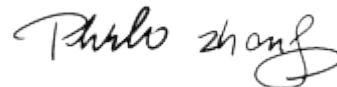
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Compiled by:

Approved by:



Zero Zhou / Project Engineer



Philo Zhong / Manager

2 Test Summary

Test Items	Test Requirement	Result
Radiated Emissions	15.205(a) 15.209(a)	PASS
Conducted Emissions	15.207(a)	PASS
6dB Bandwidth	15.247(a)(2)	PASS
Maximum Peak Output Power	15.247(b)(3),(4)	PASS
Power Spectral Density	15.247(e)	PASS
Band Edge	15.247(d)	PASS
Emissions from out of band	15.247(d)	PASS
Emissions from the restricted bands	15.247(d)	PASS
Antenna Requirement	15.203	PASS
Maximum Permissible Exposure (Exposure of Humans to RF Fields)	1.1307(b)(1)	PASS

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4 General Information

4.1 General Description of E.U.T.

Product Name	: Scosche Boom BOTTLE
Model No.	: BTBTL
Model Difference	: N/A
Operation Frequency	: 2402MHz ~ 2480MHz, separated by 2MHz, 40 channels in total
Oscillator	: Crystal 16MHz
Type of modulation	: Bluetooth 4.0

4.2 Details of E.U.T.

Technical Data	: (1)DC 5V powered for USB (2)DC 3.7V, 2300mAh powered for lithium battery
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4.3 Test Facility

The test facility has a test site registered with the following organizations:

- **IC – Registration No.: 7760A**

Waltek Services(Shenzhen) Co., Ltd. Has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files.

Registration number 7760A, July 12, 2012.

- **FCC – Registration No.: 880581**

Waltek Services(Shenzhen) 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 880581, May 26, 2011.

4.4 Test Location

Waltek Services(Shenzhen) Co., Ltd. at 1/F, Fukangtai Building, West Baima Rd., Songgang Street, Baoan District, Shenzhen, China

4.5 General condition

Ambient Condition: 25.5 °C 58 %RH

For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

The follow condition is not applicable for adapter:

Test Voltage	Input voltage
Rated voltage-15%	AC V
normal	AC V
Rated voltage+15%	AC V

The follow condition is applicable.

Test voltage	Test Voltage
Rated voltage	New Battery 3.7V

5 Equipment Used during Test

5.1 Equipments List

Conducted Emissions						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMI Test Receiver	R&S	ESCI	101178	Aug. 13,2012	Aug. 13,2013
2.	LISN	R&S	ENV216	101215	Aug. 13,2012	Aug. 13,2013
3.	Cable	Top	TYPE16(3.5M)	-	Aug.14,2012	Aug. 14,2013
3m Semi-anechoic Chamber for Radiation Emissions						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMC Analyzer	Agilent	E7405A	MY45114943	Aug. 13,2012	Aug. 13,2013
2.	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	Aug. 13,2012	Aug. 13,2013
3.	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	Aug. 13,2012	Aug. 13,2013
4.	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	Aug. 13,2012	Aug. 13,2013
5.	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	399	Aug. 13,2012	Aug. 13,2013
6.	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	Feb .23,2012	Feb .23,2013
7.	Broadband Preamplifier	SCHWARZBECK	BBV 9718	9718-148	Aug. 13,2012	Aug. 13,2013
8.	10m Coaxial Cable with N- plug	SCHWARZBECK	AK 9515 H	-	Aug. 13,2012	Aug. 13,2013
9.	10m 50 Ohm Coaxial Cable with N-plug	Top	TYPE16(13M)	-	Aug. 13,2012	Aug. 13,2013
Associated Equipment						
1.	Computer	Lenovo	T4900V	0100640332	-	-
2.	LCD	View Sonic	VA521	922050101 551	-	-
3.	Keyboard	Shuangfeiyan	KB-3	-	-	-
4.	Mouse	JEEJA	M-01	-	-	-
5.	IPOD	Apple	A1367	-	-	-

5.2 Measurement Uncertainty

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-6}$
RF Power	± 1.0 dB
RF Power Density	± 2.2 dB
Radiated Spurious Emissions test	± 5.03 dB (Bilog antenna 30M~1000MHz)
	± 4.74 dB (Horn antenna 1000M~25000MHz)
Conducted Spurious Emissions test	± 3.64 dB (AC mains 150KHz~30MHz)

5.3 Test Equipment Calibration

All the test equipments used are valid and calibrated by CEPREI Certification Body that address is No.110 Dongguan Zhuang RD. Guangzhou, P.R.China.

6 Conducted Emission

Test Requirement:	FCC CFR 47 Part 15 Section 15.207
Test Method:	ANSI C63.4:2003
Test Result:	PASS
Frequency Range:	150kHz to 30MHz
Class:	Class B
Limit:	66-56 dB μ V between 0.15MHz & 0.5MHz 56 dB μ V between 0.5MHz & 5MHz 60 dB μ V between 5MHz & 30MHz
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

6.1 E.U.T. Operation

Operating Environment:

Temperature:	25.5 °C
Humidity:	51 % RH
Atmospheric Pressure:	1013 mbar

EUT Operation:

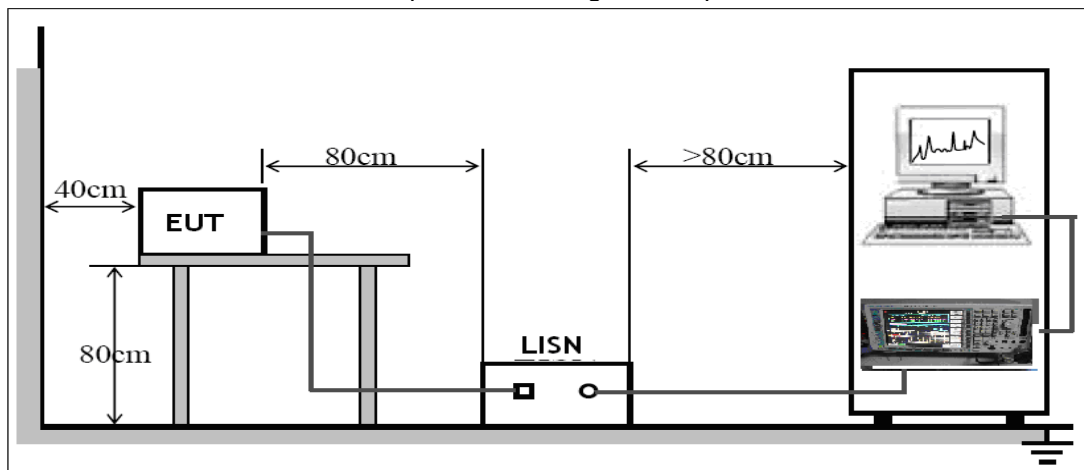
The EUT was tested in USB charging mode.

The EUT was tested according to ANSI C63.4:2003. The frequency spectrum from 150kHz to 30MHz was investigated.

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

6.2 EUT Setup

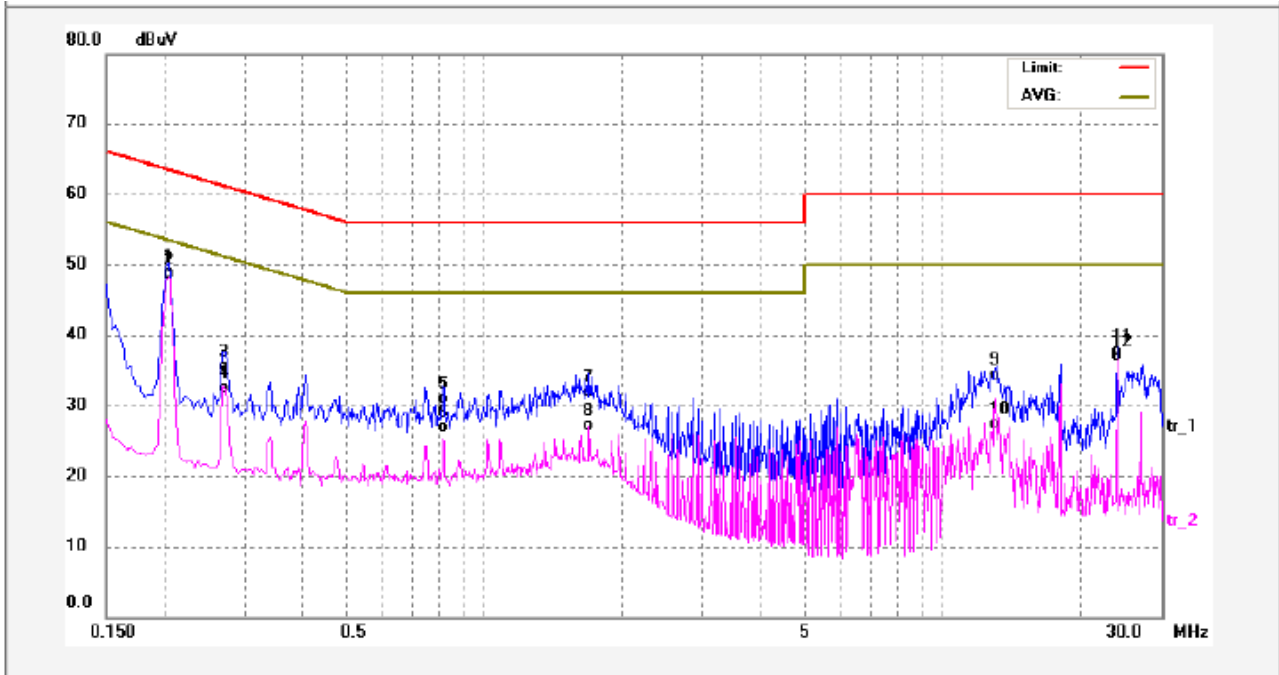
The conducted emission tests were performed using the setup accordance with the ANSI C63.4:2003.



6.3 Conducted Emission Test Result

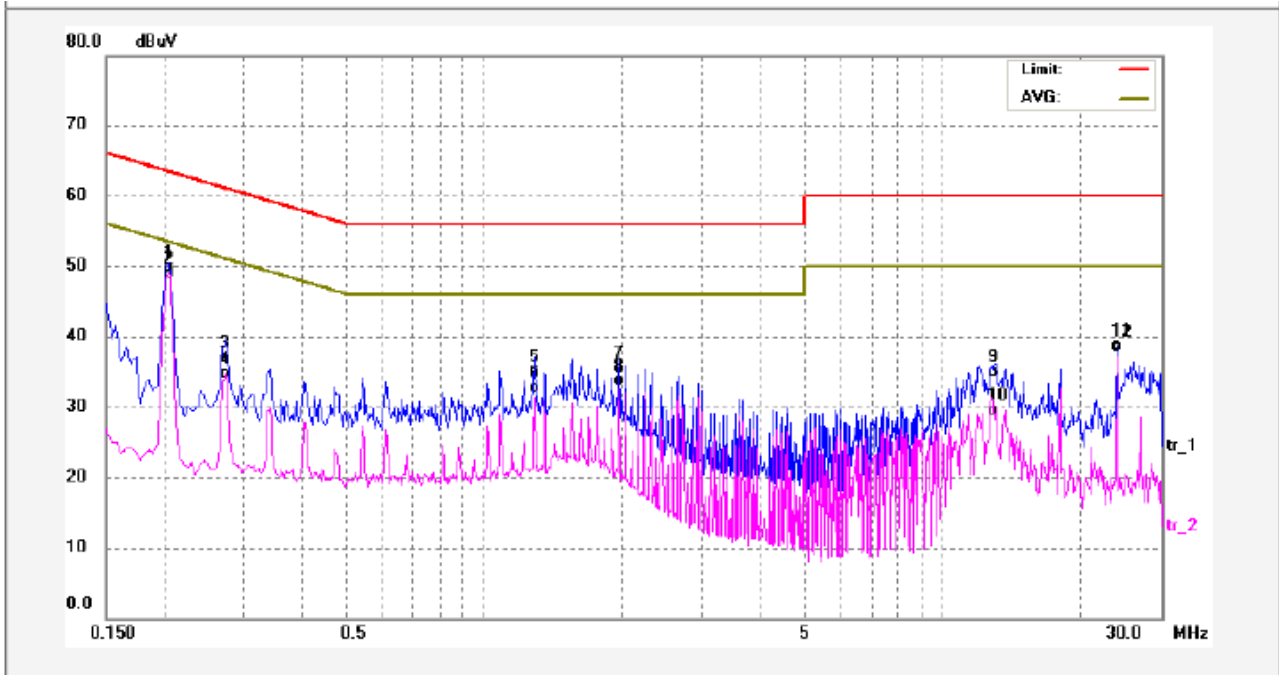
An initial pre-scan was performed on the live and neutral lines.

Live line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.2060	36.90	11.30	48.20	63.36	-15.16	QP	
2	0.2060	36.40	11.30	47.70	53.36	-5.66	AVG	
3	0.2740	23.37	11.30	34.67	60.99	-26.32	QP	
4	0.2740	20.37	11.30	31.67	50.99	-19.32	AVG	
5	0.8139	18.78	11.28	30.06	56.00	-25.94	QP	
6	0.8139	14.86	11.28	26.14	46.00	-19.86	AVG	
7	1.6980	19.83	11.19	31.02	56.00	-24.98	QP	
8	1.6980	15.20	11.19	26.39	46.00	-19.61	AVG	
9	13.1100	22.05	11.40	33.45	60.00	-26.55	QP	
10	13.1100	15.10	11.40	26.50	50.00	-23.50	AVG	
11	24.0540	25.31	11.55	36.86	60.00	-23.14	QP	
12	24.0540	24.47	11.55	36.02	50.00	-13.98	AVG	

Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.2060	37.62	11.30	48.92	63.36	-14.44	QP	
2	0.2060	36.72	11.30	48.02	53.36	-5.34	AVG	
3	0.2740	24.85	11.30	36.15	60.99	-24.84	QP	
4	0.2740	22.58	11.30	33.88	50.99	-17.11	AVG	
5	1.2900	23.00	11.19	34.19	56.00	-21.81	QP	
6	1.2900	20.62	11.19	31.81	46.00	-14.19	AVG	
7	1.9700	23.43	11.20	34.63	56.00	-21.37	QP	
8	1.9700	21.70	11.20	32.90	46.00	-13.10	AVG	
9	13.1100	22.70	11.40	34.10	60.00	-25.90	QP	
10	13.1100	17.33	11.40	28.73	50.00	-21.27	AVG	
11	24.0580	26.39	11.55	37.94	60.00	-22.06	QP	
12	24.0580	26.10	11.55	37.65	50.00	-12.35	AVG	

7 Radiated Emissions

Test Requirement: FCC CFR47 Part 15 Section 15.209
& 15.247

Test Method: ANSI C63.4:2003

Test Result: PASS

Measurement Distance: 3m

Limit:

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	$20\log^{(2400/F(kHz))} + 80$
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	$20\log^{(24000/F(kHz))} + 40$
1.705 ~ 30	30	30	100 * 30	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

7.1 EUT Operation :

Operating Environment:

Temperature: 25.5 °C

Humidity: 51 % RH

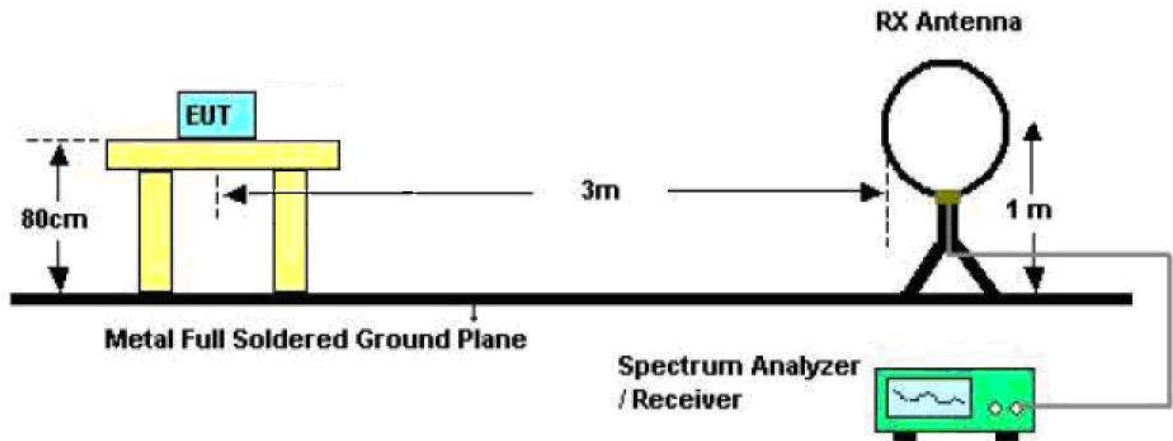
Atmospheric Pressure: 1016 mbar

EUT Operation:

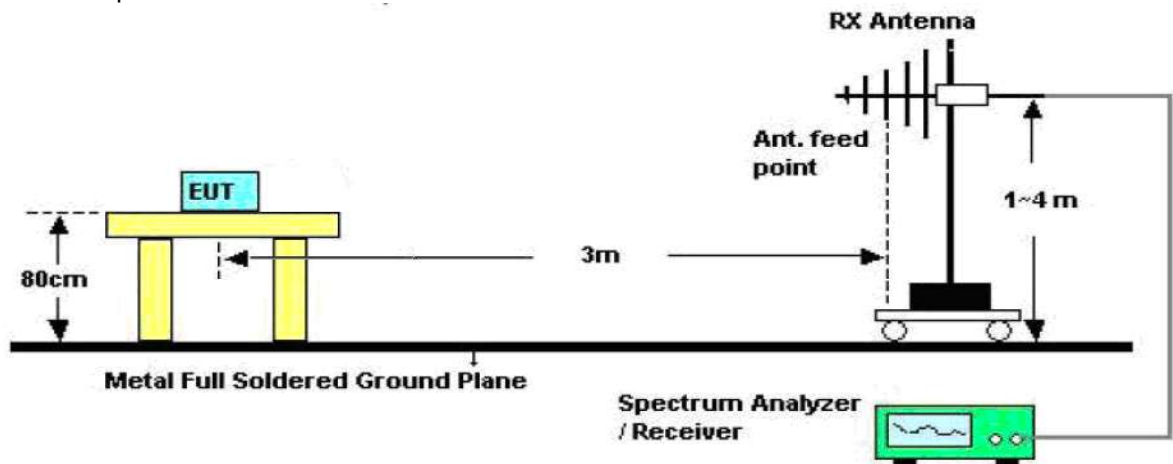
The EUT was tested in bluetooth, USB charging, AUX in mode, The most mode were shown as follow.

7.2 Test Setup

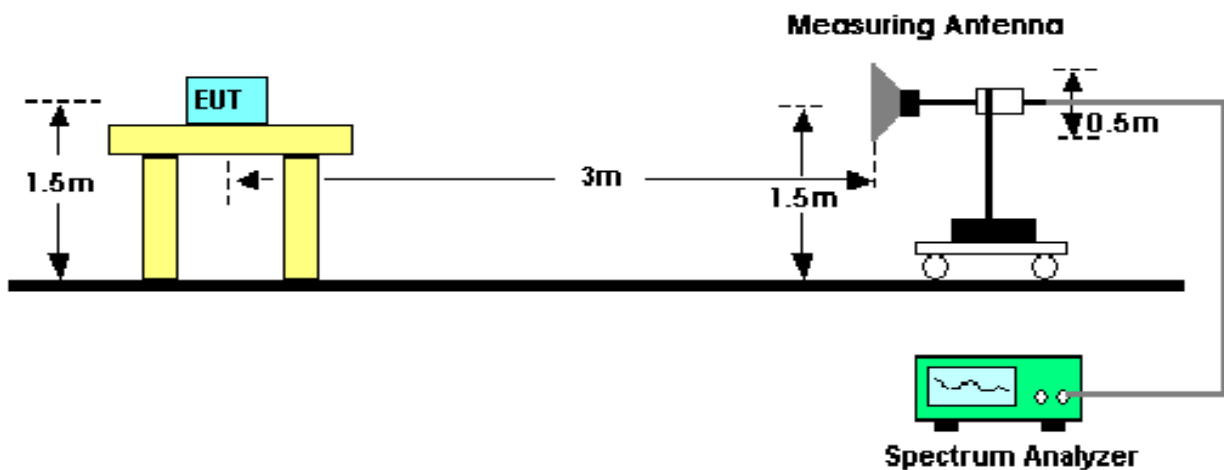
The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4: 2003.
 The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



7.3 Spectrum Analyzer Setup

According to FCC Part15 Rules, the system was tested from 16MHz to 25000MHz.

Below 30MHz

Sweep SpeedAuto
IF Bandwidth10KHz
Video Bandwidth10KHz
Resolution Bandwidth10KHz

30MHz ~ 1GHz

Sweep SpeedAuto
IF Bandwidth120 KHz
Video Bandwidth100KHz
Quasi-Peak Adapter Bandwidth120 KHz
Quasi-Peak Adapter ModeNormal
Resolution Bandwidth100KHz

Above 1GHz

Sweep SpeedAuto
IF Bandwidth120 KHz
Video Bandwidth3MHz
Quasi-Peak Adapter Bandwidth120 KHz
Quasi-Peak Adapter ModeNormal
Resolution Bandwidth1MHz

7.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are performed in X,Y and Z axis positioning(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand),the worst condition was tested putting the eut in X axis,so the worst data were shown as follow.

7.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Limit}$$

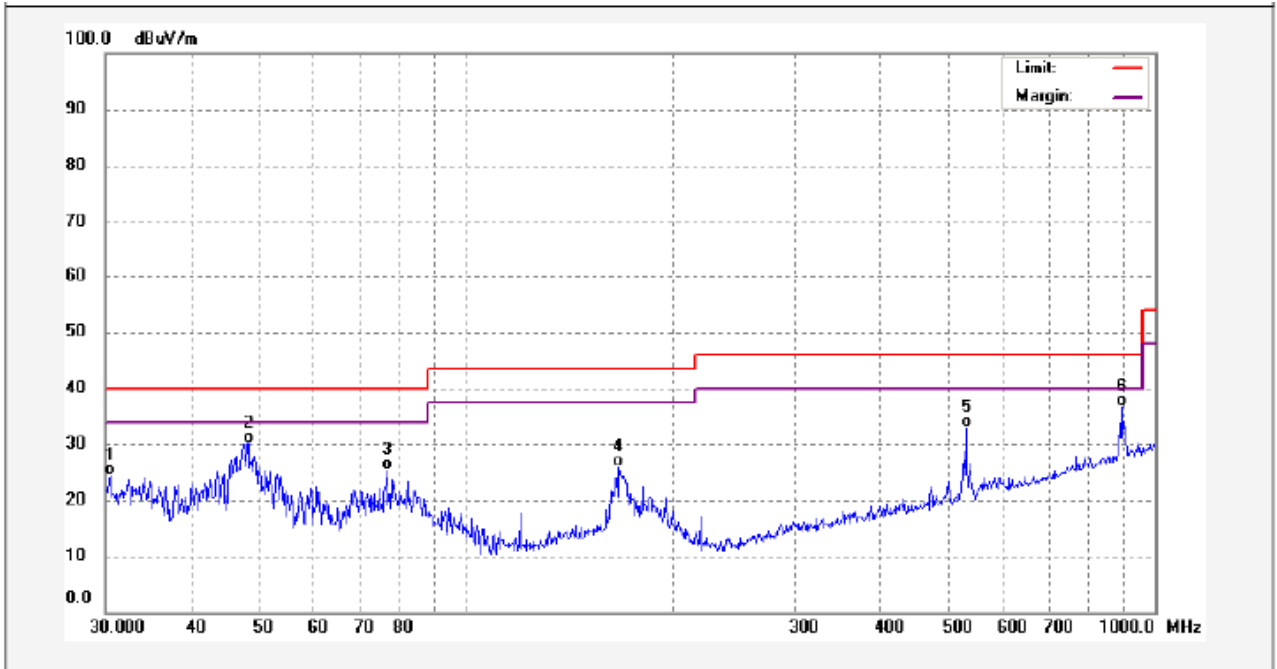
7.6 Summary of Test Results

Test Frequency : Below 30MHz

All emissions were more than 20 dB below the limit and therefore not reported.

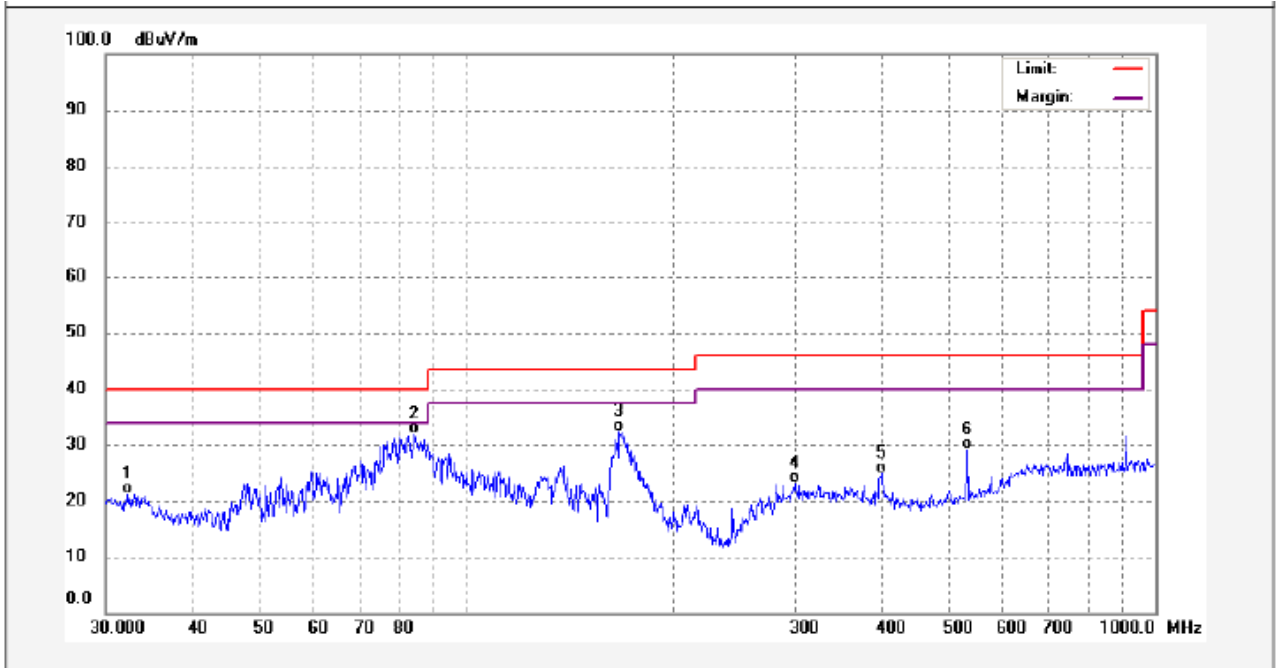
Test Frequency : 30MHz ~ 1000MHz

Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	30.4238	42.73	-18.29	24.44	40.00	-15.56	QP	
2	48.3318	50.94	-20.83	30.11	40.00	-9.89	QP	
3	76.7808	48.84	-23.54	25.30	40.00	-14.70	QP	
4	166.6514	47.66	-21.76	25.90	43.50	-17.60	QP	
5	531.9635	46.34	-13.42	32.92	46.00	-13.08	QP	
6	893.8567	42.31	-5.63	36.68	46.00	-9.32	QP	

Antenna polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	32.2925	39.45	-18.31	21.14	40.00	-18.86	QP	
2	84.1100	57.67	-25.84	31.83	40.00	-8.17	QP	
3	166.6514	53.38	-21.05	32.33	43.50	-11.17	QP	
4	299.3158	42.84	-19.68	23.16	46.00	-22.84	QP	
5	400.4319	41.72	-16.72	25.00	46.00	-21.00	QP	
6	533.8321	42.62	-13.56	29.06	46.00	-16.94	QP	

Test Frequency: 1GHz-25GHz

All emissions were more than 20 dB below the limit and therefore not reported.

Frequency (MHz)	Detector	Antenna Polarization	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Turntable Angle (°)
Lower frequency							
2402.00	AV	Vertical		N/A	(Fund.)	1.1	110
4804.00	AV	Vertical	45.32	54.00	-8.68	1.4	140
7206.00	AV	Vertical	47.24	54.00	-6.76	1.6	170
9608.00	AV	Vertical	45.21	54.00	-8.79	1.4	130
2402.00	AV	Horizontal		N/A	(Fund.)	1.7	70
4804.00	AV	Horizontal	44.21	54.00	-9.79	1.2	180
7206.00	AV	Horizontal	40.35	54.00	-13.65	1.4	100
9608.00	AV	Horizontal	39.54	54.00	-14.46	1.4	195
2402.00	PK	Vertical		N/A	(Fund.)	1.3	30
4804.00	PK	Vertical	57.23	74.00	-16.77	1.7	145
7206.00	PK	Vertical	59.64	74.00	-14.36	2.1	160
9608.00	PK	Vertical	56.21	74.00	-17.79	1.2	240
2402.00	PK	Horizontal		N/A	(Fund.)	2.0	120
4804.00	PK	Horizontal	43.21	74.00	-30.79	1.7	170
7206.00	PK	Horizontal	10.25	74.00	-63.75	1.6	90
9608.00	PK	Horizontal	43.25	74.00	-30.75	1.1	85
Middle frequency							
2440.00	AV	Vertical			(Fund.)	1.7	70
4880.00	AV	Vertical	47.52	54	-6.48	1.4	185
7320.00	AV	Vertical	45.21	54	-8.79	1.1	140
9760.00	AV	Vertical	42.02	54	-11.98	1.5	70
2440.00	AV	Horizontal			(Fund.)	1.5	190
4880.00	AV	Horizontal	43.24	54	-10.76	1.7	150
7320.00	AV	Horizontal	44.15	54	-9.85	1.7	310
9760.00	AV	Horizontal	37.15	54	-16.85	1.0	215
2440.00	PK	Vertical			(Fund.)	1.3	30
4880.00	PK	Vertical	60.25	74	-13.75	1.7	175
7320.00	PK	Vertical	57.15	74	-16.85	1.8	170
9760.00	PK	Vertical	57.21	74	-16.79	1.4	180
2440.00	PK	Horizontal			(Fund.)	1.7	60
4880.00	PK	Horizontal	57.21	74	-16.79	1.7	125
7320.00	PK	Horizontal	56.54	74	-17.46	1.7	120
9760.00	PK	Horizontal	52.11	74	-21.89	1.7	145
Upper frequency							
2480.00	AV	Vertical		N/A	(Fund.)	1.2	220
4960.00	AV	Vertical	46.32	54.00	-7.68	1.4	95
7440.00	AV	Vertical	43.15	54.00	-10.85	1.3	170
9920.00	AV	Vertical	45.58	54.00	-8.42	1.1	130

Frequency (MHz)	Detector	Antenna Polarization	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Turntable Angle (°)
2480.00	AV	Horizontal		N/A	(Fund.)	1.5	190
4960.00	AV	Horizontal	40.98	54.00	-13.02	2.3	210
7440.00	AV	Horizontal	41.56	54.00	-12.44	1.4	160
9920.00	AV	Horizontal	42.81	54.00	-11.19	1.3	275
2480.00	PK	Vertical		N/A	(Fund.)	1.3	210
4960.00	PK	Vertical	61.23	74.00	-12.77	1.0	115
7440.00	PK	Vertical	56.48	74.00	-17.52	2.5	180
9920.00	PK	Vertical	57.25	74.00	-16.75	1.1	160
2480.00	PK	Horizontal		N/A	(Fund.)	1.8	240
4960.00	PK	Horizontal	55.66	74.00	-18.34	1.4	140
7440.00	PK	Horizontal	54.25	74.00	-19.75	1.6	150
9920.00	PK	Horizontal	54.16	74.00	-19.84	1.5	265

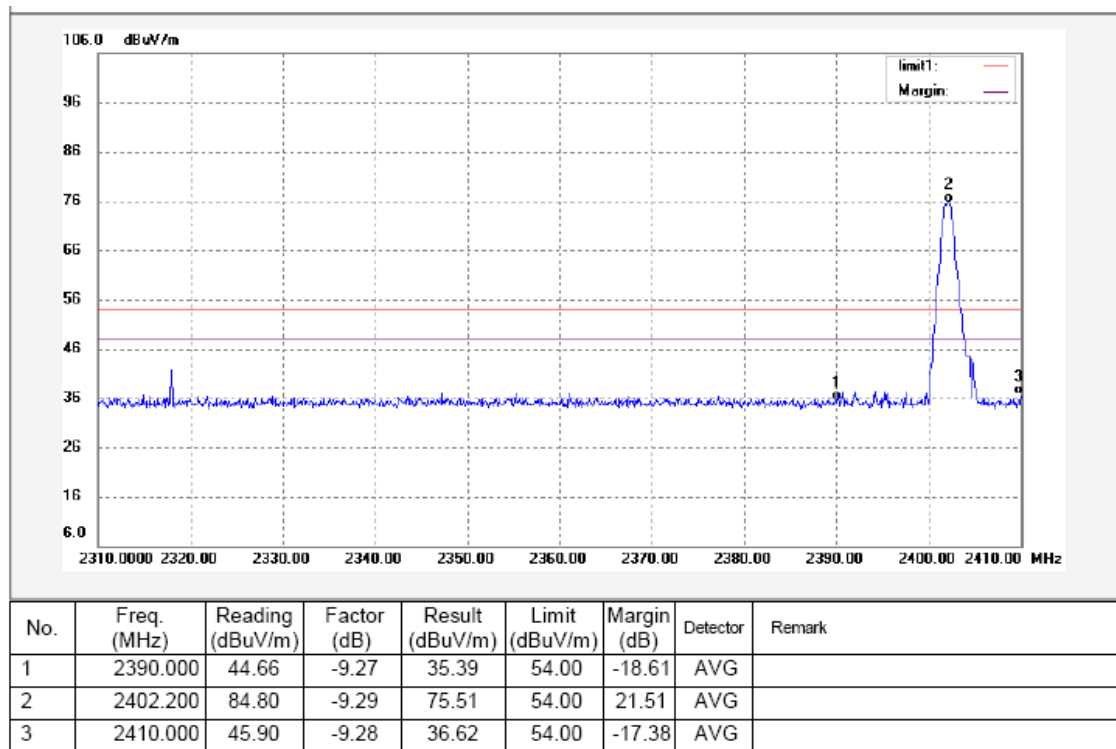
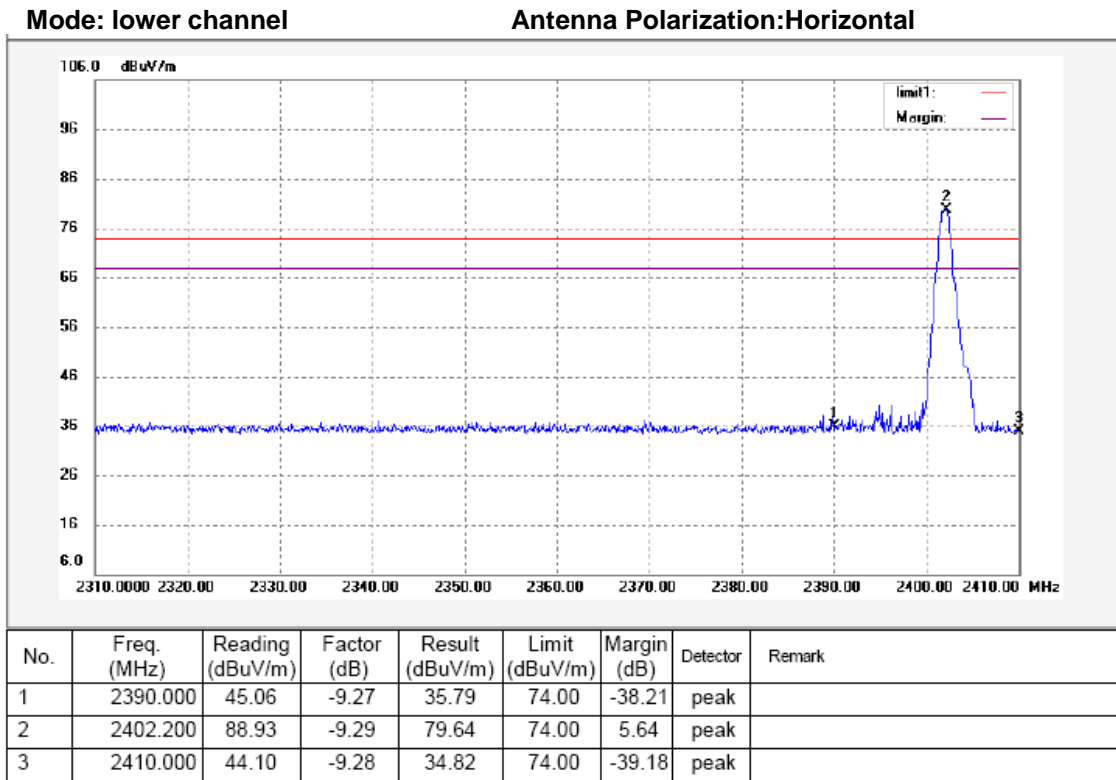
8 Band Edge Measurement

Test Requirement:	Section 15.247(d) In addition, radiated emissions which fall in the restricted bands. as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) and 15.205(c).
Test Method:	KDB558074 D01 V02 10/04/2012
Measurement Distance:	3m
Detector:	For Peak value: RBW = 1MHz VBW =3MHz; Sweep = auto Detector function = peak Trace = max hold For Average value: RBW = 1MHz VBW=10Hz; Sweep = auto Detector function = Average Trace = max hold

8.1 Test Produce

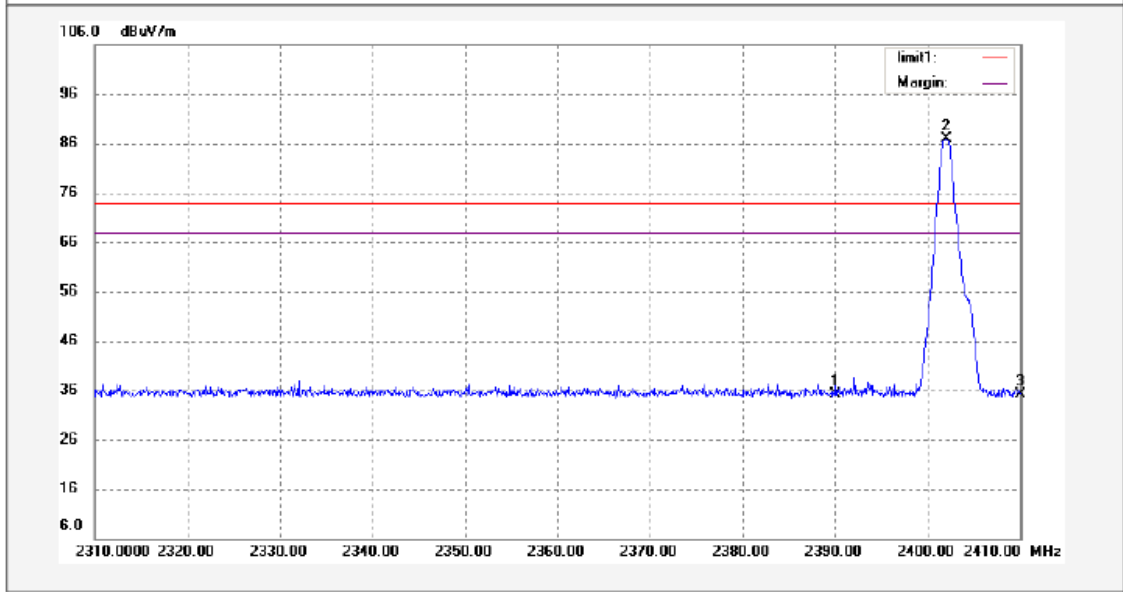
1. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.
2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.

8.2 Test Result

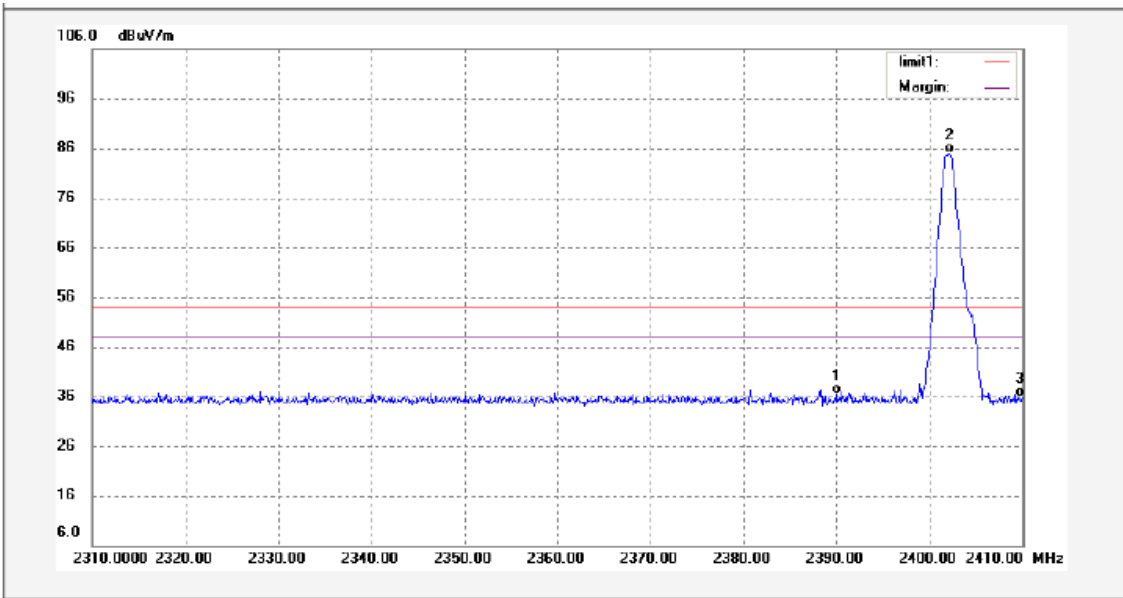


Mode: lower channel

Antenna Polarization:Vertical



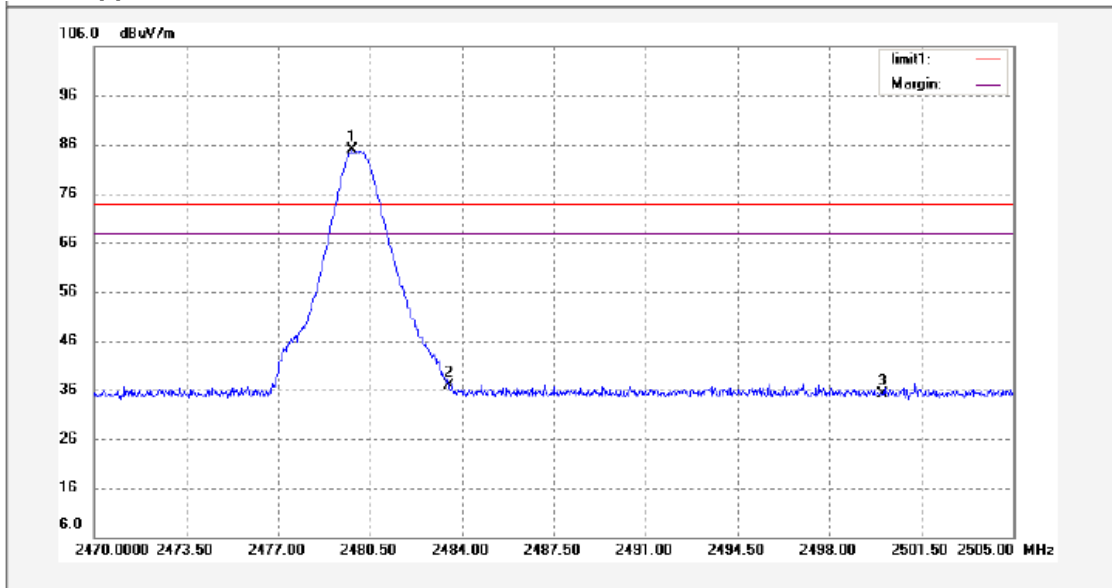
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2390.000	44.50	-9.27	35.23	74.00	-38.77	peak	
2	2402.100	96.06	-9.29	86.77	74.00	12.77	peak	
3	2410.000	44.30	-9.28	35.02	74.00	-38.98	peak	



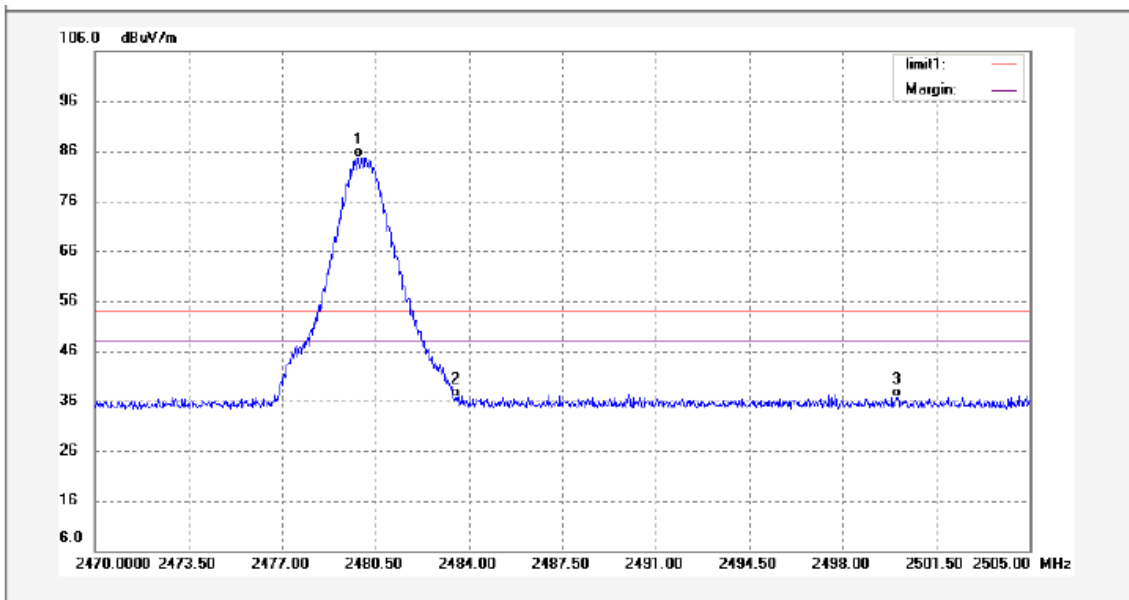
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2390.000	45.53	-9.27	36.26	54.00	-17.74	AVG	
2	2402.200	94.15	-9.29	84.86	54.00	30.86	AVG	
3	2410.000	45.11	-9.28	35.83	54.00	-18.17	AVG	

Mode: upper channel

Antenna Polarization:Horizontal



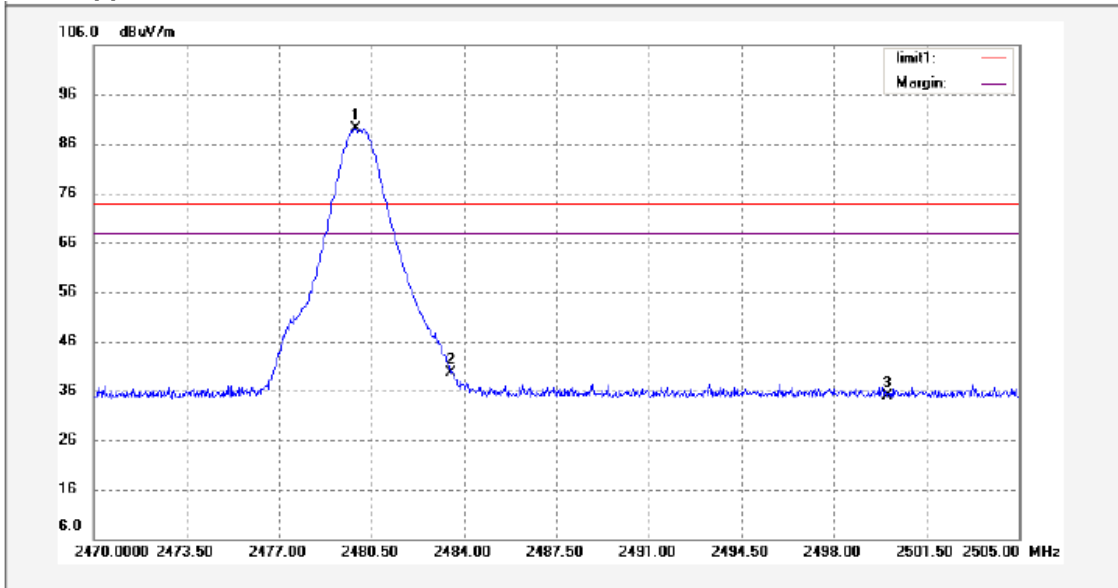
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2479.835	93.98	-9.22	84.76	74.00	10.76	peak	
2	2483.500	46.08	-9.20	36.88	74.00	-37.12	peak	
3	2500.000	44.29	-9.15	35.14	74.00	-38.86	peak	



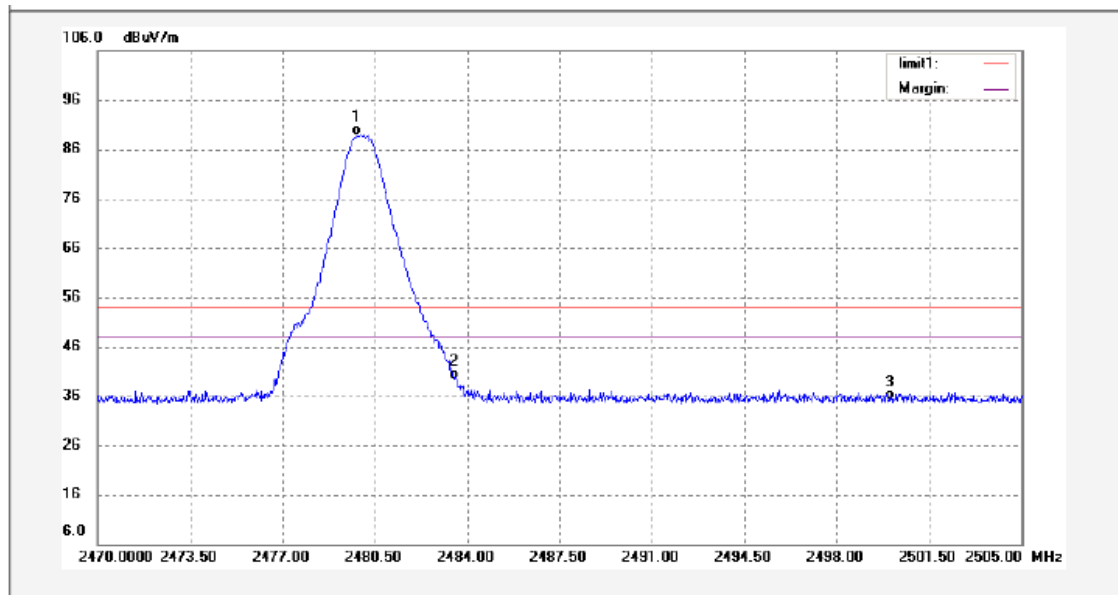
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2479.870	93.85	-9.22	84.63	54.00	30.63	AVG	
2	2483.500	45.74	-9.20	36.54	54.00	-17.46	AVG	
3	2500.000	45.71	-9.15	36.56	54.00	-17.44	AVG	

Mode: upper channel

Antenna Polarization:Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2479.905	98.31	-9.22	89.09	74.00	15.09	peak	
2	2483.500	48.77	-9.20	39.57	74.00	-34.43	peak	
3	2500.000	44.14	-9.15	34.99	74.00	-39.01	peak	



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2479.835	98.21	-9.22	88.99	54.00	34.99	AVG	
2	2483.500	48.67	-9.20	39.47	54.00	-14.53	AVG	
3	2500.000	44.33	-9.15	35.18	54.00	-18.82	AVG	

9 6 dB Bandwidth Measurement

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: KDB558074 D01 V02 10/04/2012

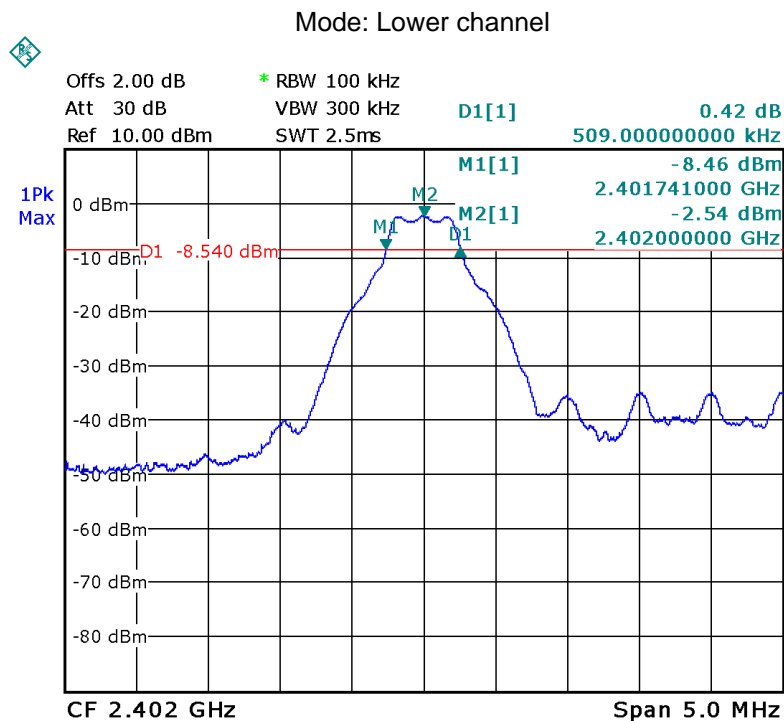
9.1 Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz

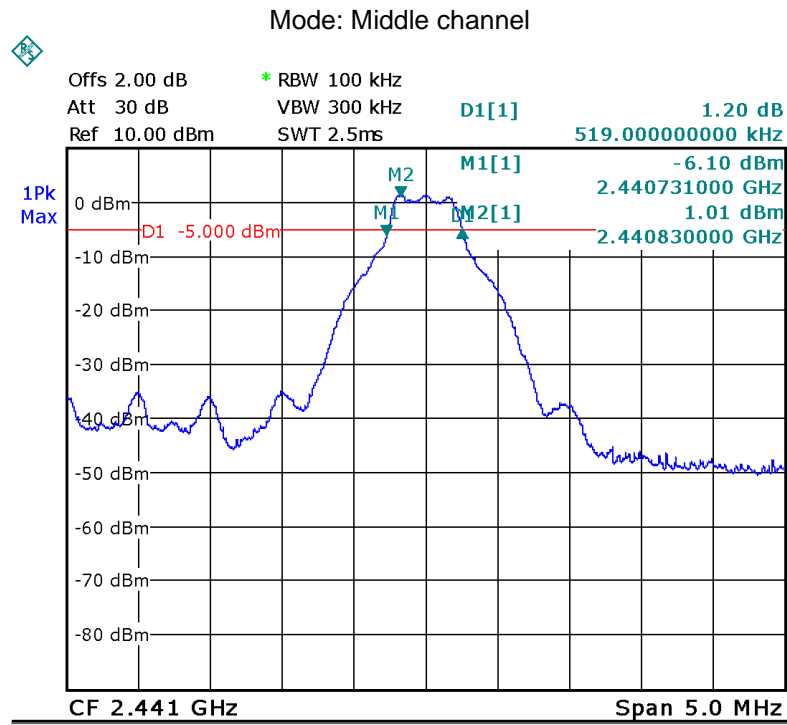
9.2 Test Result:

Operation mode	Bandwidth (MHz)
Lower channel	0.509
Middle channel	0.519
Upper channel	0.529

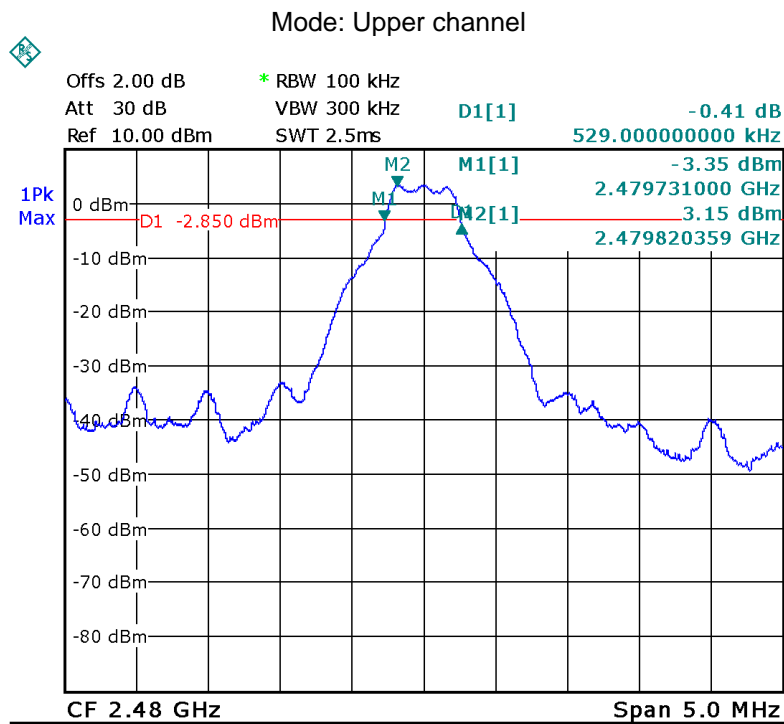
Test result plot as follows:



Date: 26.FEB.2013 14:04:04



Date: 26.FEB.2013 14:07:59



Date: 26.FEB.2013 14:09:23

10 Maximum Peak Output Power

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: KDB558074 D01 V02 10/04/2012

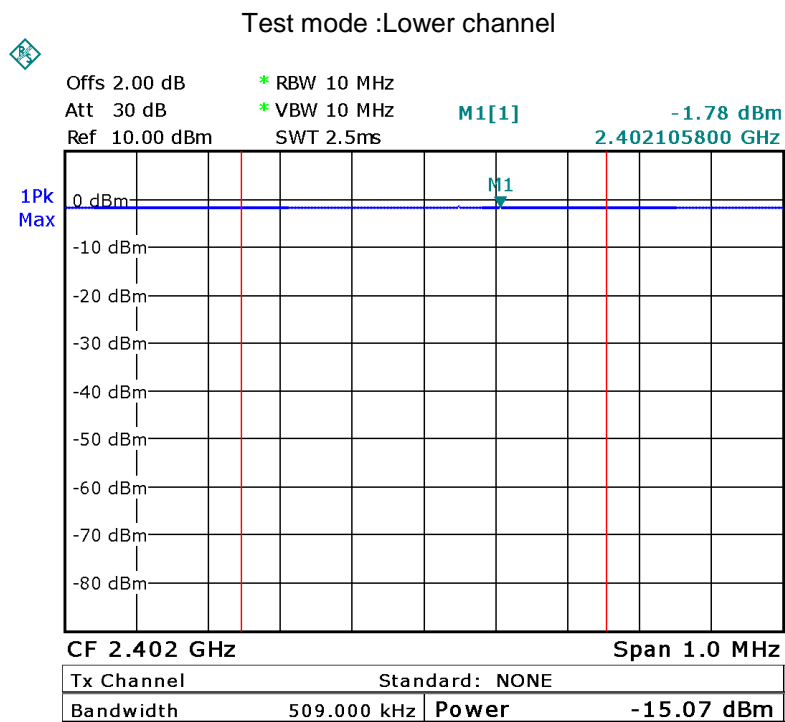
10.1 Test Procedure:

KDB558074 D01 V02 10/04/2012 section 8.1.2 Option 2

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 1MHz. VBW = 1MHz. Sweep = auto; Detector Function = Peak, Set the span to fully encompass the DTS bandwidth.
3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

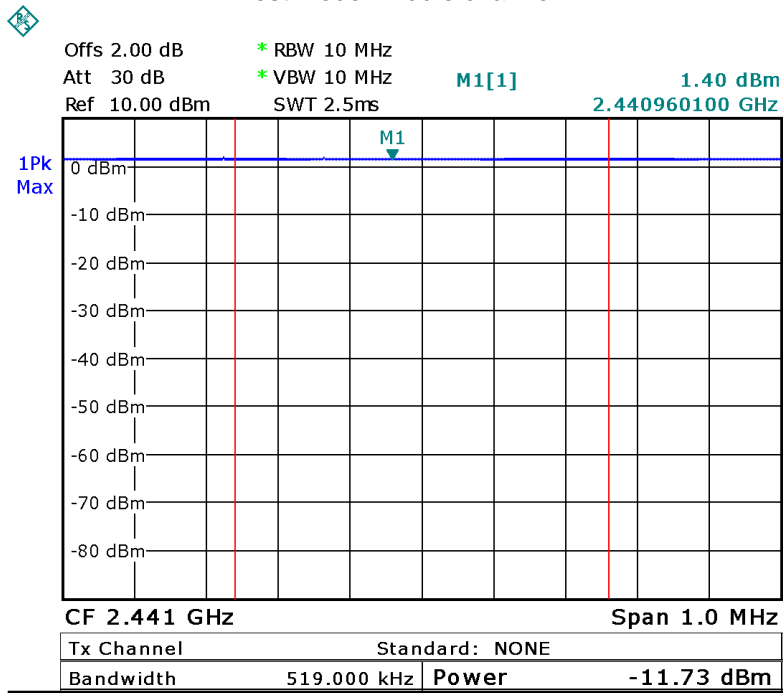
10.2 Test Result:

Maximum Peak Output Power (dBm)		
Lower channel	Middle channel	Upper channel
-15.07	-11.73	-9.70
Limit		
1W/30dBm		



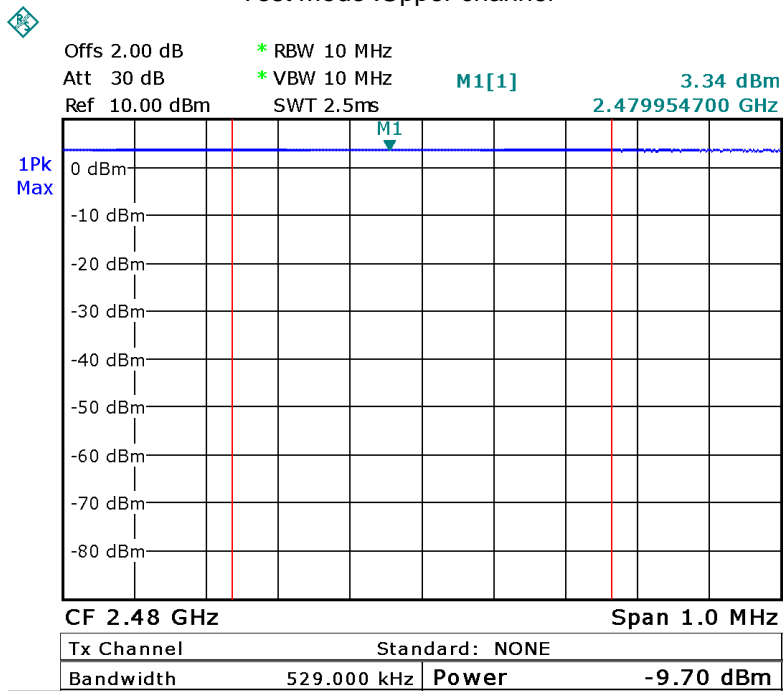
Date: 26.FEB.2013 14:19:10

Test mode :Middle channel



Date: 26.FEB.2013 14:26:25

Test mode :Upper channel



Date: 26.FEB.2013 14:24:47

11 Power Spectral density

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: KDB558074 D01 V02 10/04/2012

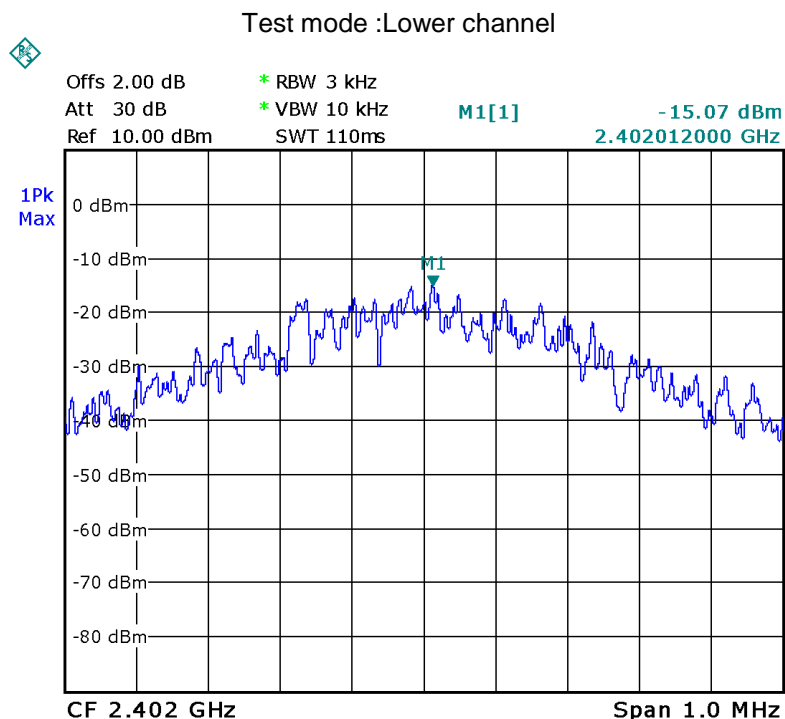
11.1 Test Procedure:

KDB558074 D01 V02 10/04/2012 section 9.1 Option 1

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz , Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section
Submit this plot.

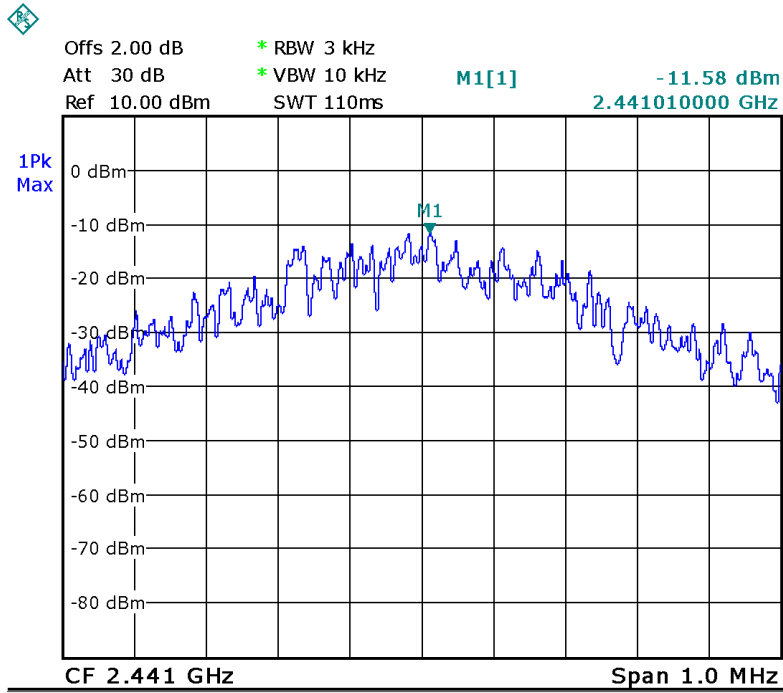
11.2 Test Result:

Test mode :TX 11b		
10 Maximum Peak Output Power (dBm per 3kHz)		
Lower channel	Middle channel	Upper channel
-15.07	-11.58	-9.27
Limit		
8dBm per 3kHz		



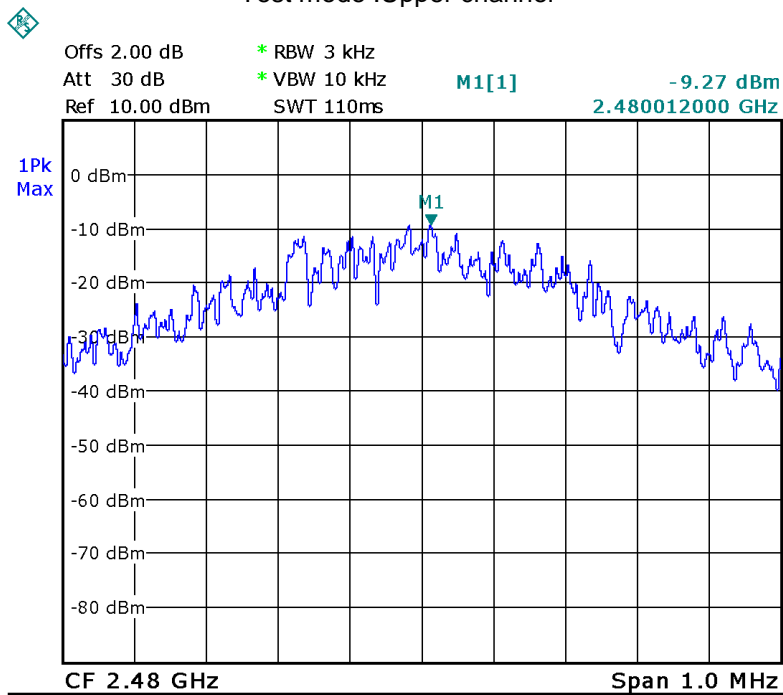
Date: 26.FEB.2013 14:16:11

Test mode : Middle channel



Date: 26.FEB.2013 14:14:29

Test mode :Upper channel



Date: 26.FEB.2013 14:13:48

12 Emissions from out of band

Test Requirement:	FCC CFR47 Part 15 Section 15.247(d)
Test Method:	DA 00-705
Test Limit:	Emissions produced by the device outside the authorized frequency band shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the fundamental.
Test Mode:	Test in fixing operating frequency at lower, middle, upper channel.

12.1 Test Procedure:

KDB558074 D01 V02 10/04/2012 section 10.1 clause1

The maximum peak conducted output power procedure was used to demonstrate compliance to 15.247(b)(3) requirements, then the peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz. This measurement was performed over a frequency range that spans from the lowest frequency generated in the device up to and including the tenth harmonic of the highest fundamental frequency.

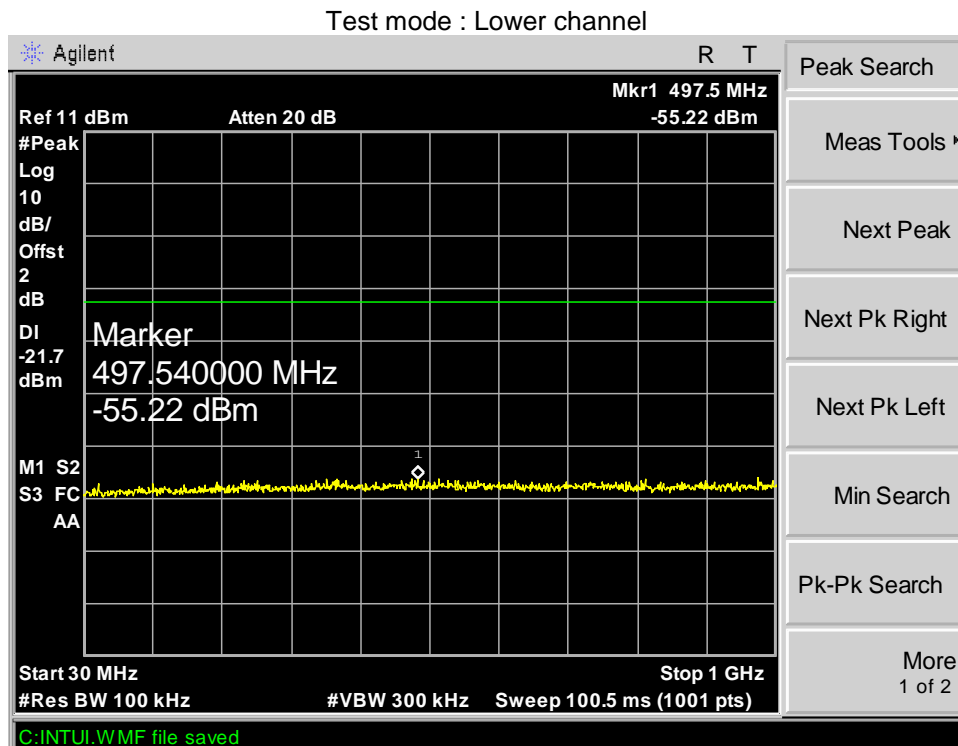
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set to span from the lowest frequency generated in the device up to and including the tenth harmonic of the highest fundamental frequency
3. For below 1GHz, Set RBW = 100kHz and VBW = 300kHz. Sweep = auto. For above 1GHz, Set RBW = 100kHz and VBW = 300kHz. Sweep = auto.
4. mark the worst point and record.

12.2 Test Result:

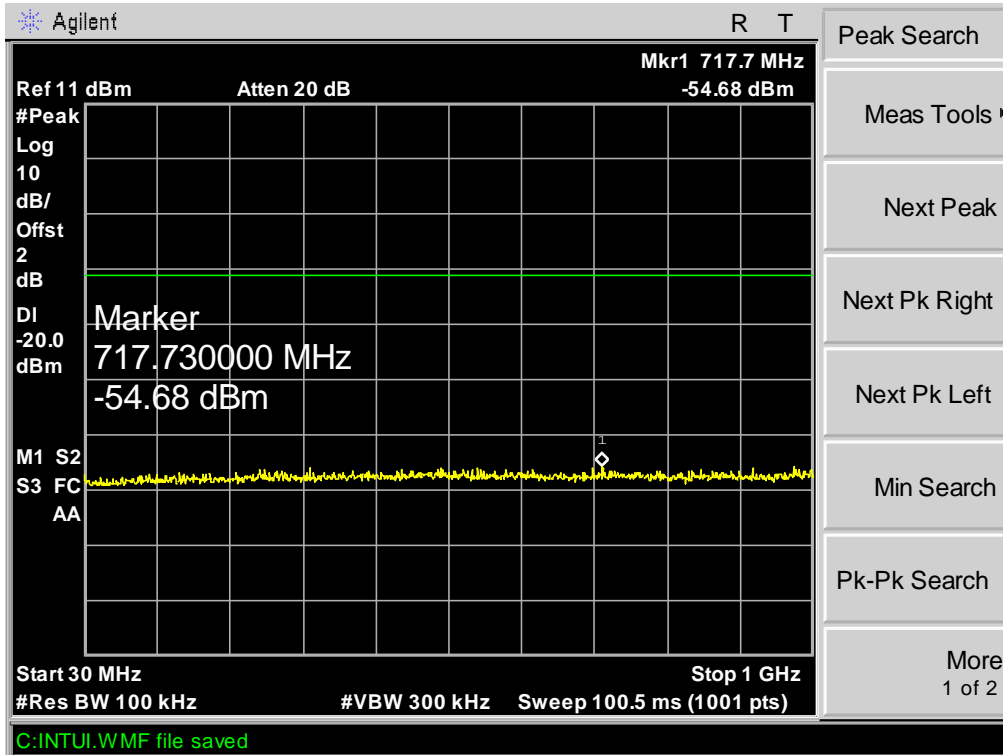
Test Frequency : Below 30MHz

Remark: For emissions below 30MHz, no emission higher than background level, so the data does not show in the report.

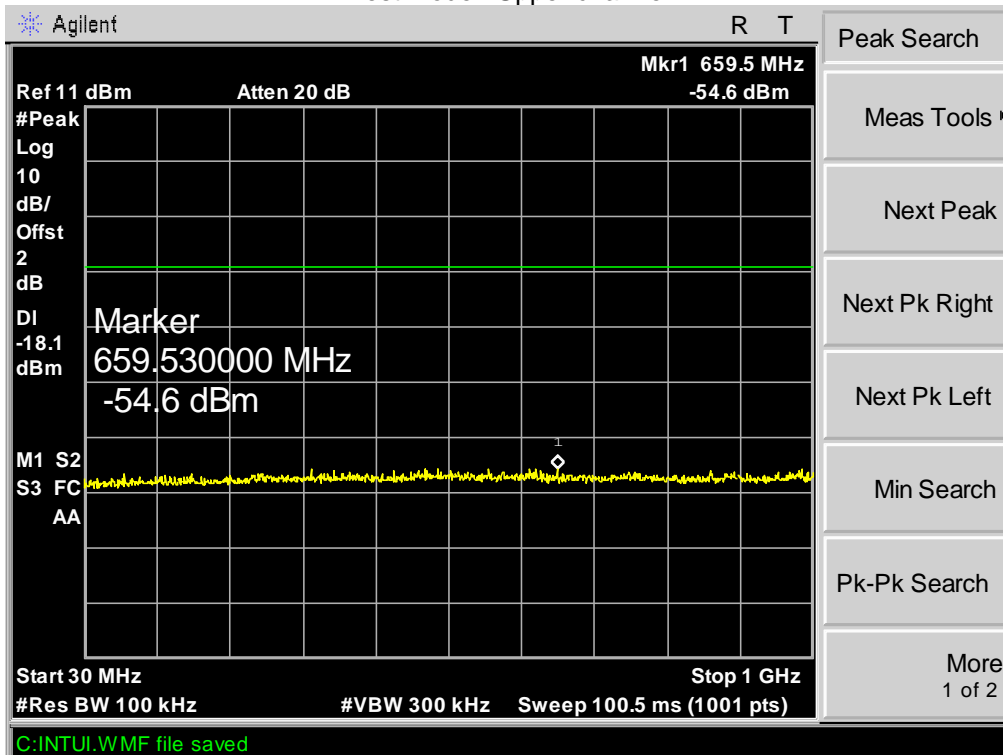
Test Frequency : 30MHz ~ 1GHz



Test mode : Middle channel

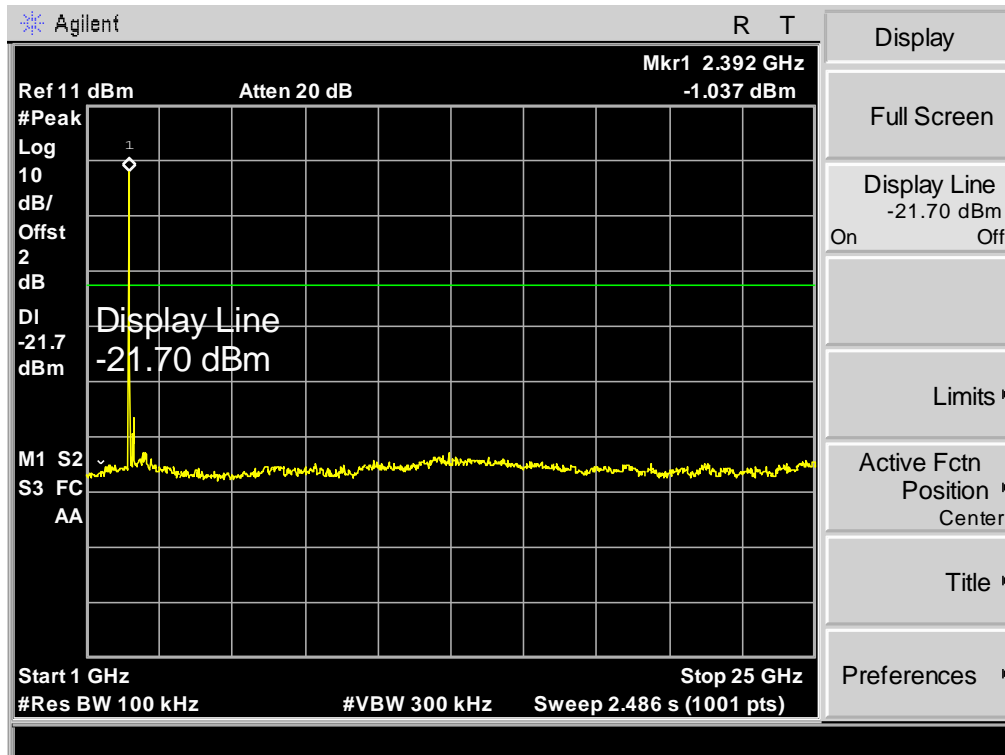


Test mode : Upper channel

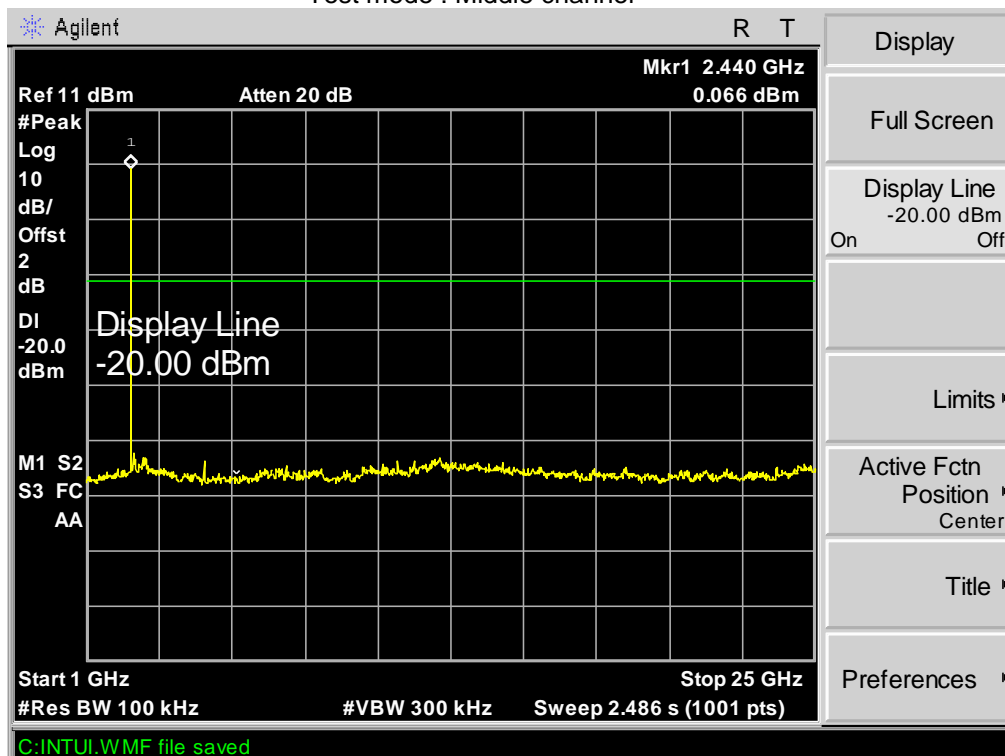


Test Frequency : 1GHz ~ 25GHz

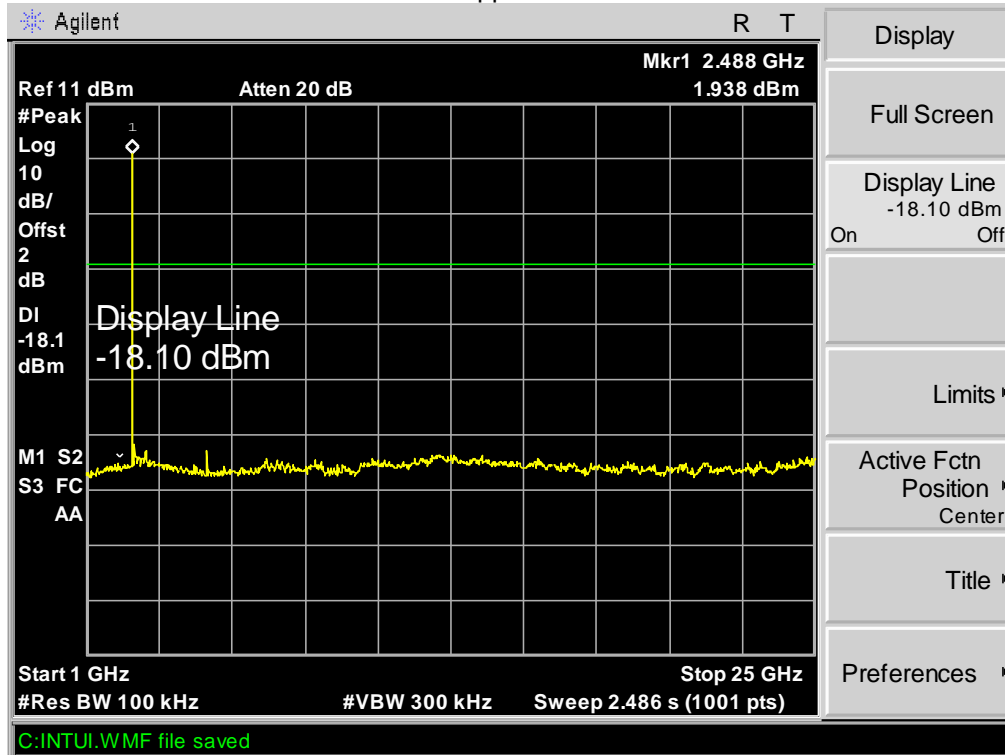
Test mode : Lower channel



Test mode : Middle channel



Test mode : Upper channel



13 Emissions from the restricted bands

Test Requirement: FCC CFR47 Part 15 Section 15.247(d)
 Test Method: DA 00-705
 Test Limit: 15.205&15.209

Converting the above equation to the logarithmic equivalent yields:
 $EIRP = E + 20\log(d) - 104.8$, for example: $E=74\text{dBuV/m(PK)}$, then the
 caculated EIRP is -21.26dBm(PK) . If $E=54\text{dBuV/m(AV)}$, then the
 caculated EIRP is -41.26dBm(AV) . This relationship can be used to
 determine correspondent field strength levels from EIRP levels
 measured at the distances specified in §15.209(a).

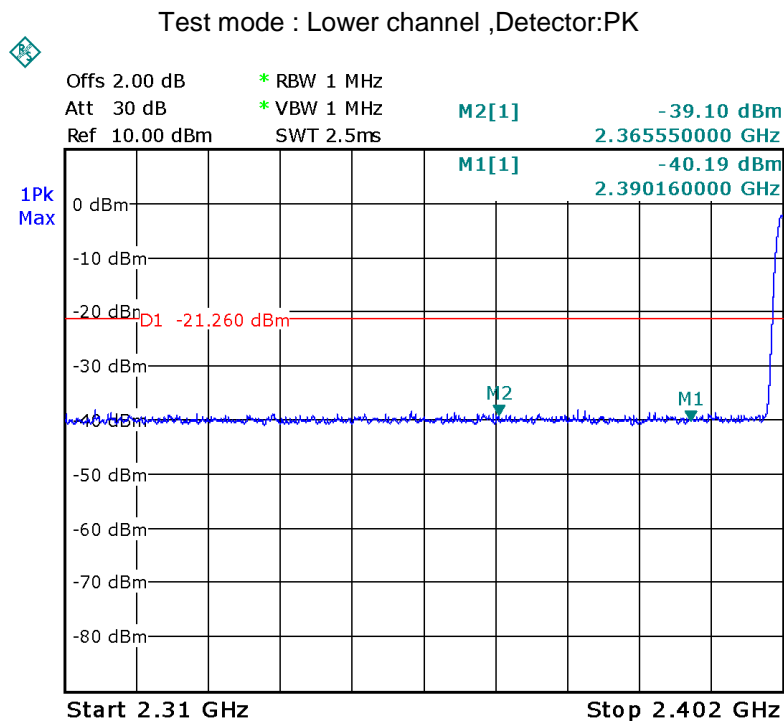
Test Mode: Test in fixing operating frequency at lower, middle, upper channel.

13.1 Test Procedure:

KDB558074 D01 V02 10/04/2012 section 10.2.2

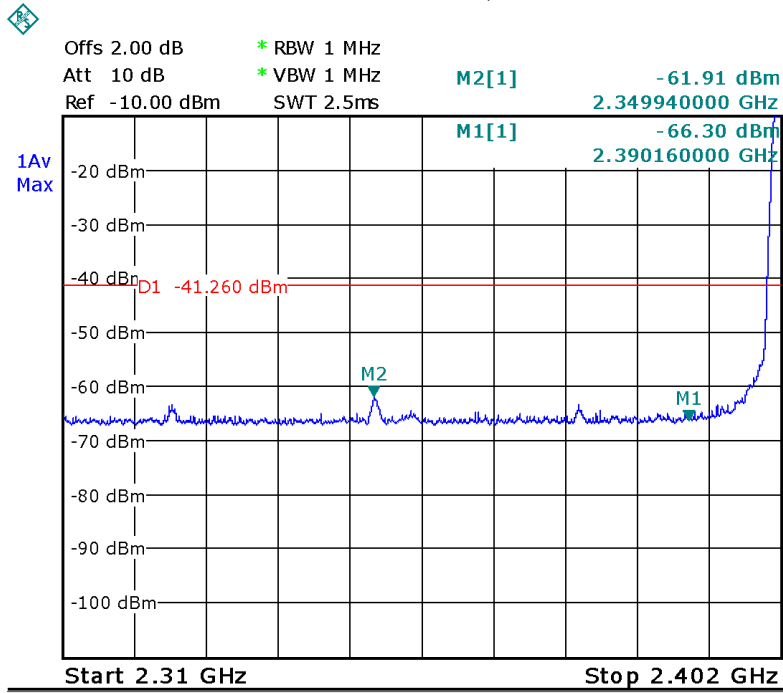
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set to span from the lowest frequency generated in the device up to and including the tenth harmonic of the highest fundamental frequency
3. Set RBW = 1MHz and VBW = 1MHz. Sweep = auto.
4. mark the worst point and record.

13.2 Test Result:



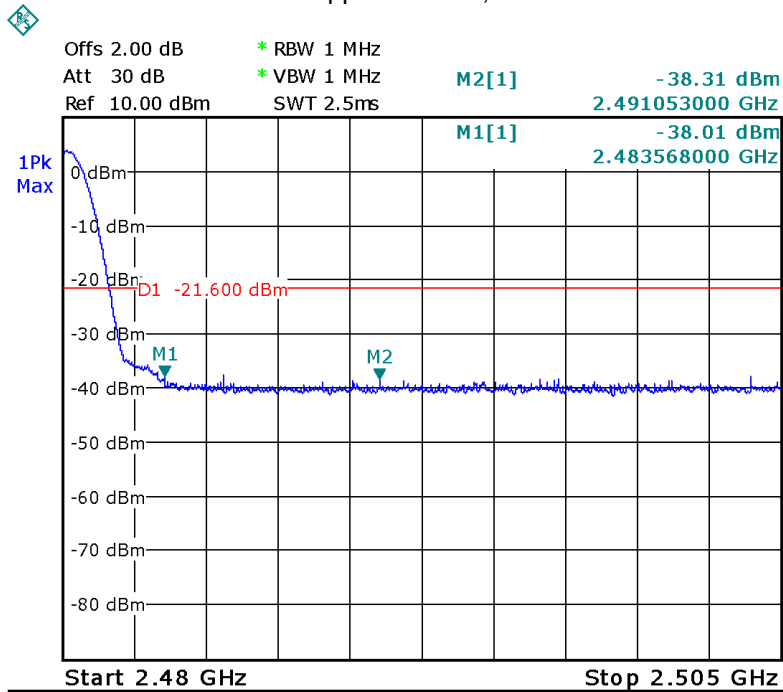
Date: 26.FEB.2013 14:32:19

Test mode : Lower channel ,Detector:AV



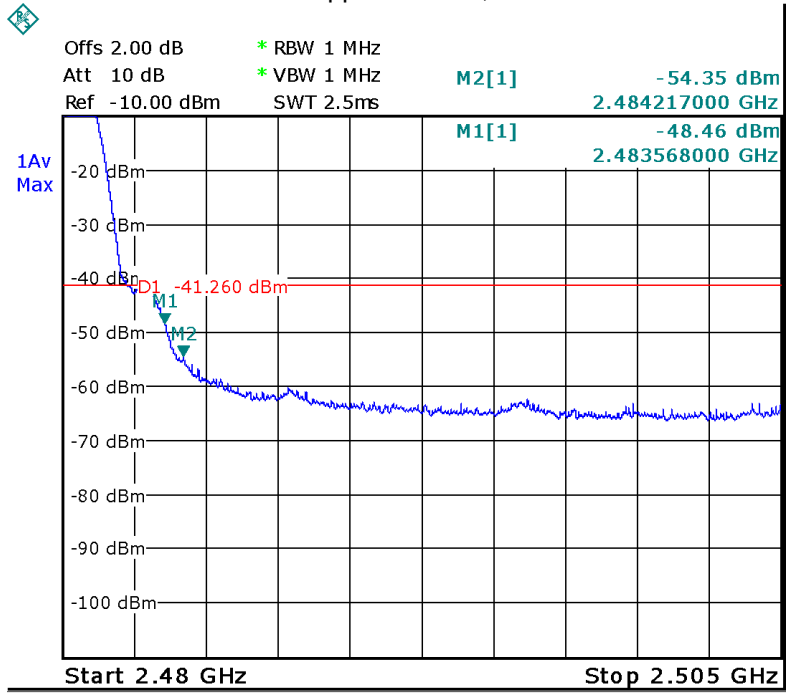
Date: 26.FEB.2013 14:33:15

Test mode : Upper channel,Detector:PK



Date: 26.FEB.2013 14:38:13

Test mode : Upper channel,Detector:AV



Date: 26.FEB.2013 14:34:47

14 Antenna Requirement

According to the FCC Part 15 Paragraph 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. This product has a PCB printed antenna, fulfill the requirement of this section.

15 RF Exposure

Test Requirement: FCC Part 1.1307

Test Mode: The EUT work in test mode(Tx).

15.1 Requirments:

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

15.2 The procedures / limit

(A) Limits for Occupational / Controlled Exposure

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

(B) Limits for General Population / Uncontrolled Exposure

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

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

15.3 MPE Calculation Method

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

E = Electric field (V/m)

P = Peak RF output power (W)

G = EUT Antenna numeric gain (numeric)

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

The formula can be changed to

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

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

Antenna Gain (numeric)	Max.Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (mW/cm ²)	Limit of Power Density (mW/cm ²)
1	-9.7	0.107	0.000002	1

16 Photographs – Test Setup

16.1 Conducted Emission



16.2 Radiated Emission

Test frequency below 30MHz



Test frequency from 30MHz to 1GHz
Setup of the worst mode: USB Charging Mode



Test frequency above 1GHz
Remark:the PC is used for setting lower/middle/upper channel transmitting only.



17 Photographs - Constructional Details

17.1 EUT – External View

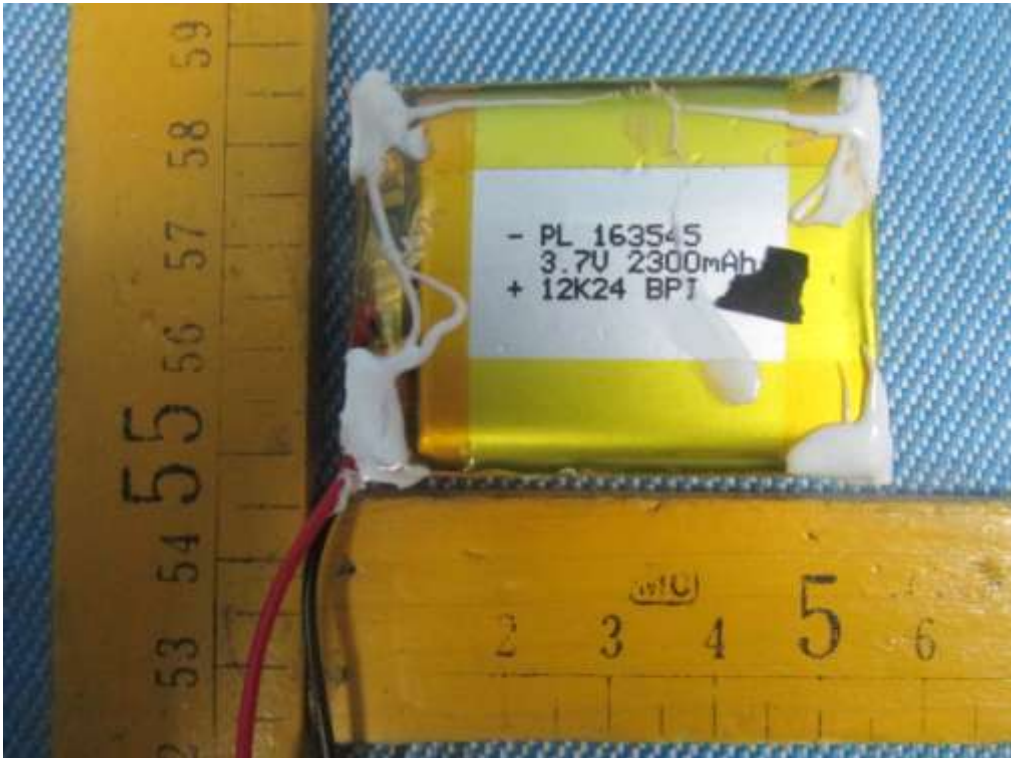


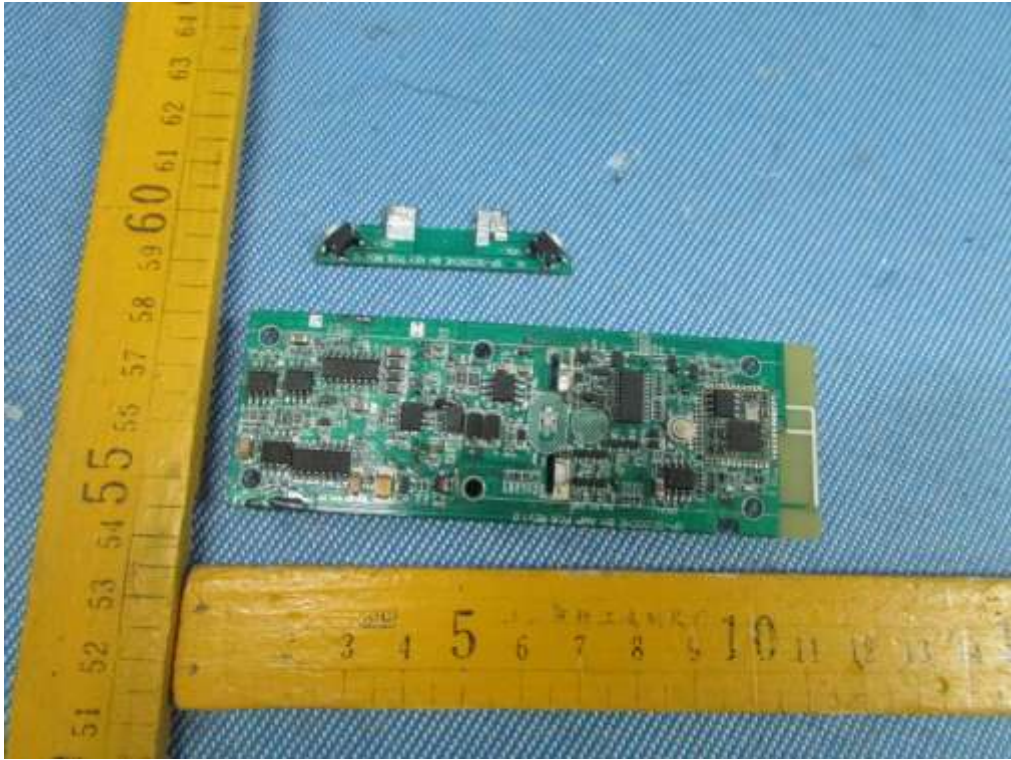
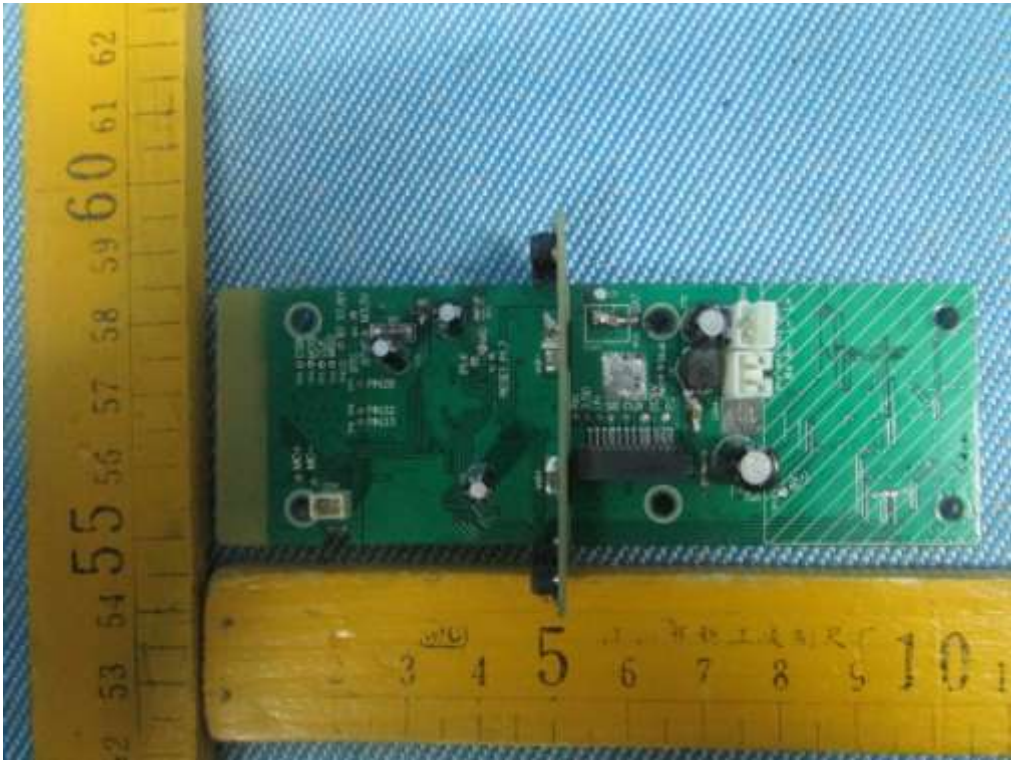


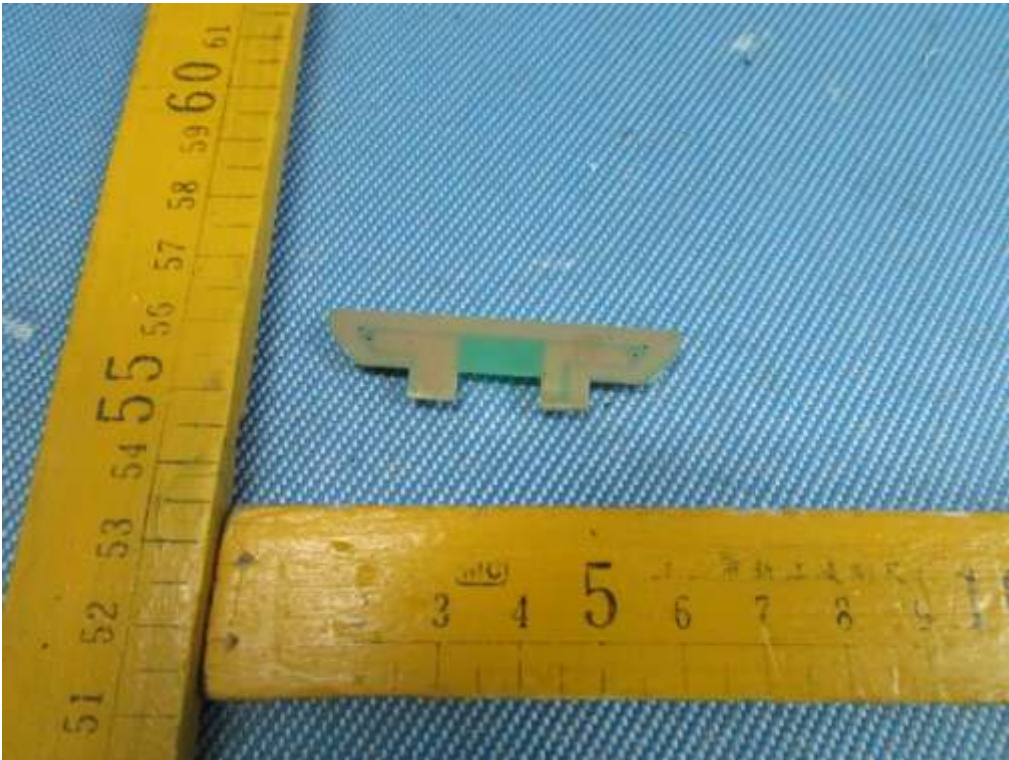
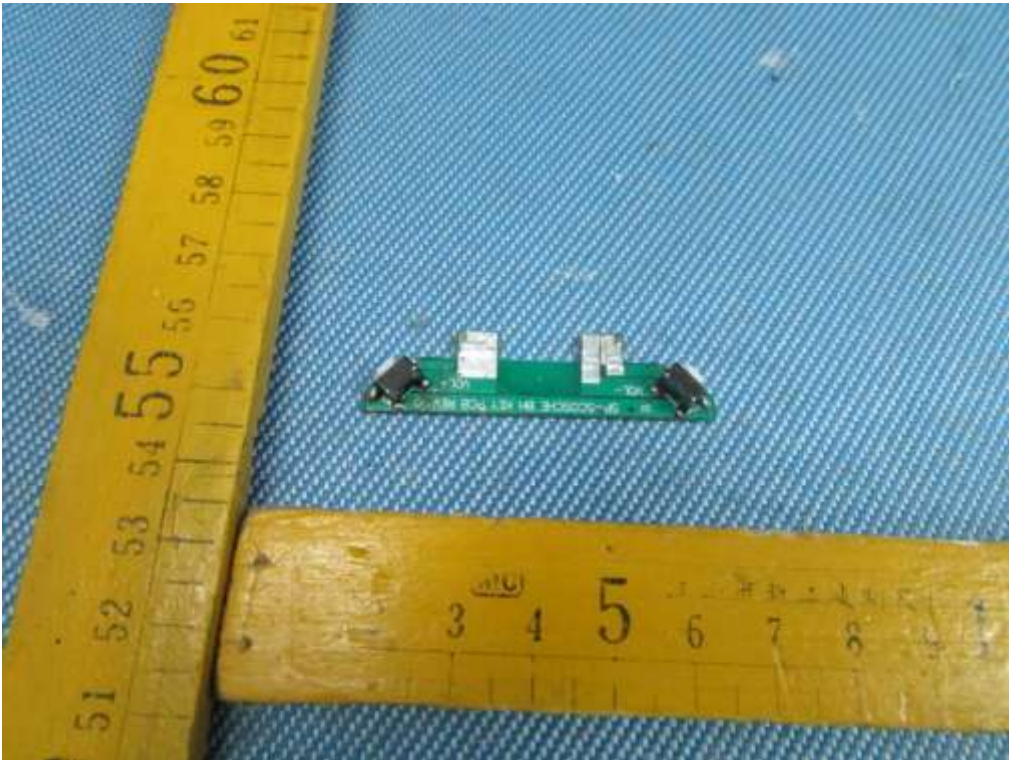


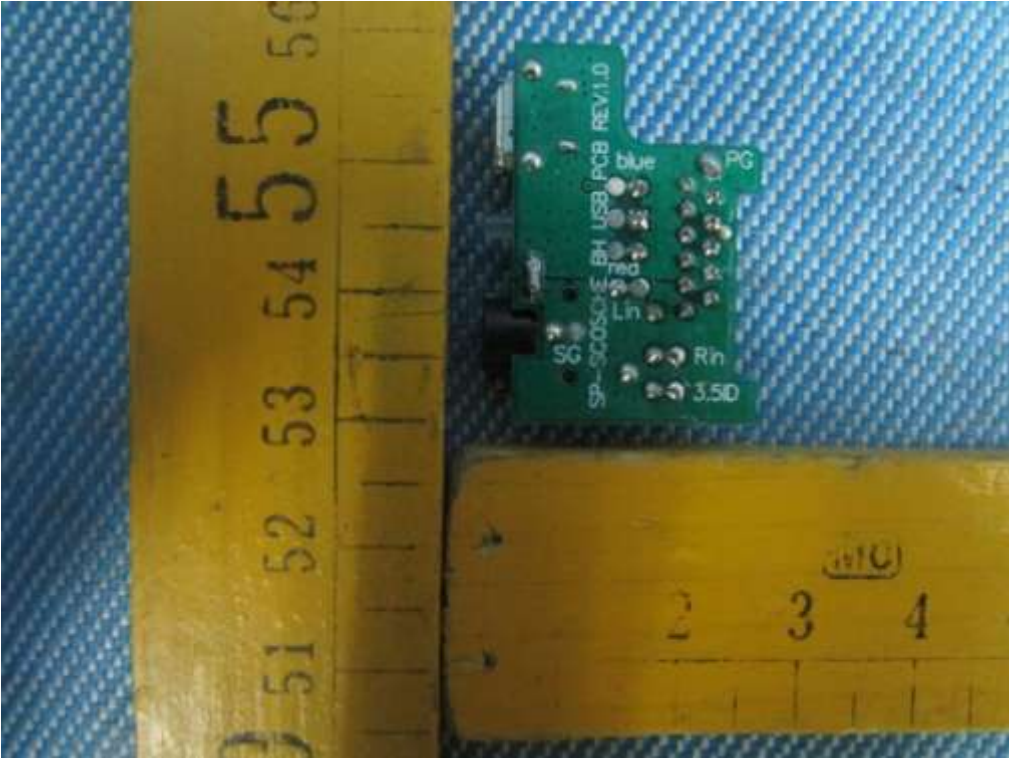
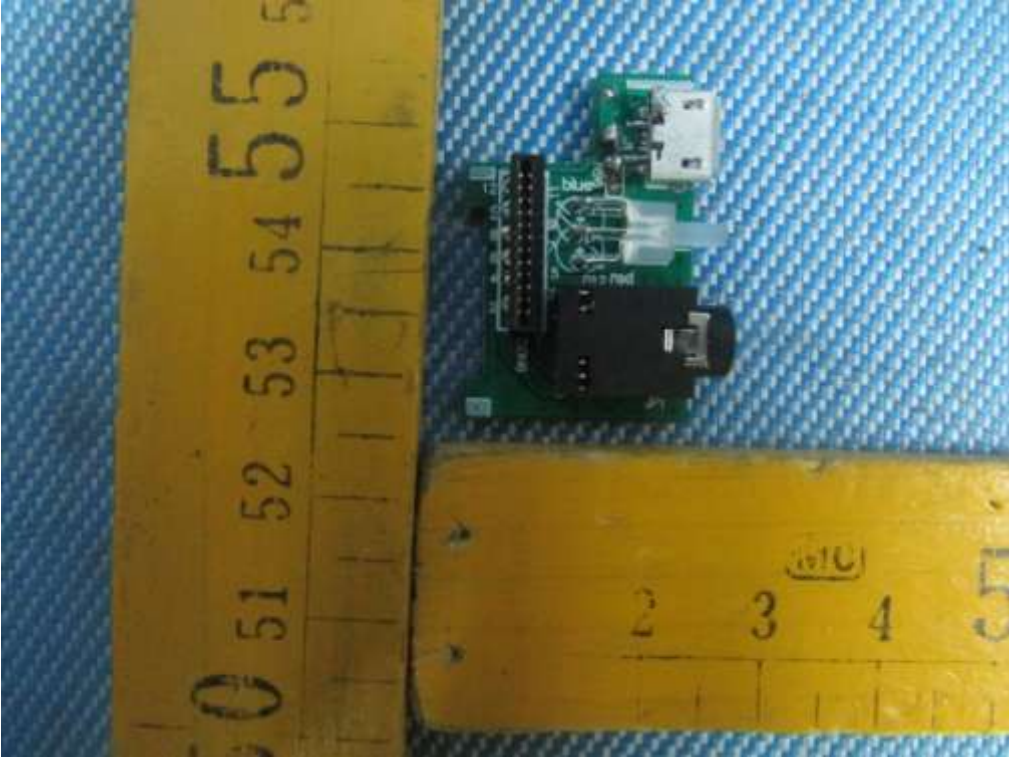
17.2 EUT- Internal View

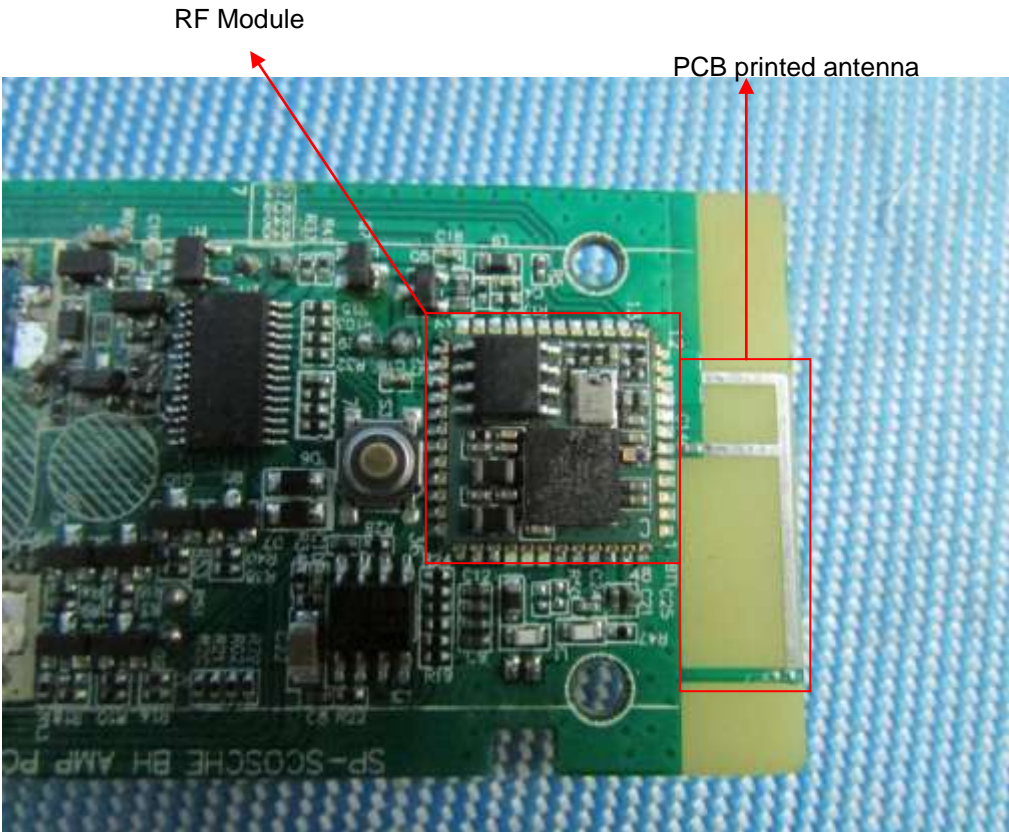












==End of test report==