TEST REPORT

Reference No.	:	WTS14S0614950E
FCC ID	:	2ACXZBLE301I
Applicant	:	Gold Crown Electronics, Inc.
Address	:	129 E. Savarona Way, Carson, CA 90746, USA
Manufacturer	:	Megatrend Electronics Co., Ltd
Address	:	Tong-Fu-Yu Ind.,Ku-Keng Community,Guan-Lan Jie-Dao, Bao-An District, ShenZhen, China
Product Name	:	MindMobile 3-in-1 Bluetooth Car Charger
Model No.	:	BLE301i ,BTA-065EX
Rules	:	FCC PART15 SUBPART B: 2012
Date of Receipt sample	:	July,12, 2014
Date of Test	:	July,12 ~ July 17, 2014
Date of Issue	:	Sep,10, 2014
Test Result	:	**Pass**

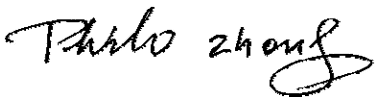
Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:
Waltek Services (Shenzhen) Co., Ltd.
Address: 1/F., Fukangtai Building, West Baima Road, Songgang Street, Baoan District, Shenzhen, Guangdong, China
Testing location: The same as above
Tel :+86-755-83551033
Fax:+86-755-83552400

Compiled by:

Zero Zhou / Project Engineer

Approved by:



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
Antenna Requirement	15.203	PASS
Maximum Permissible Exposure (Exposure of Humans to RF Fields)	1.1307(b)(1)	PASS

3 Contents

4 General Information

4.1 General Description of E.U.T.

Product Name : MindMobile 3-in-1 Bluetooth Car Charger

Model No. : BLE301i ,BTA-065EX

Model Difference : Only the mode name is different.

Operation Frequency : 2402MHz ~ 2480MHz, separated by 2MHz,40 channels in total

The lowest oscillator : 32.768kHz

Type of modulation : GFSK(BLE only)

4.2 Details of E.U.T.

Technical Data : DC 12V power supply by battery

4.3 Channel List

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
0	2402	1	2404	2	2406	3	2408
4	2410	5	2412	6	2414	7	2416
8	2418	9	2420	10	2422	11	2424
12	2426	13	2428	14	2430	15	2432
16	2434	17	2436	18	2438	19	2440
20	2442	21	2444	22	2446	23	2448
24	2450	25	2452	26	2454	27	2456
28	2458	29	2460	30	2462	31	2464
32	2466	33	2468	34	2470	35	2472
36	2474	37	2476	38	2478	39	2480

4.4 Test Mode

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

Table 1 Tests Carried Out Under FCC part 15.247

Test mode	Low channel	Middle channel	High channel
Transmitting	2402MHz	2440MHz	2480MHz

4.5 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, April 29, 2014.

5 Equipment Used during Test

5.1 Equipments List

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	Sep.18,2013	Sep.17,2014
2	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	Sep.18,2013	Sep.17,2014
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	Sep.18,2013	Sep.17,2014
4	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	Sep.18,2013	Sep.17,2014
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	Sep.18,2013	Sep.17,2014
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	Sep.18,2013	Sep.17,2014
7	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	Sep.18,2013	Sep.17,2014
8	Coaxial Cable (above 1GHz)	Top	1GHz-25GHz	EW02014-7	Sep.18,2013	Sep.17,2014
RF Conducted Testing						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1.	EMC Analyzer (9k~26.5GHz)	Agilent	E7405A	MY45114943	Sep.18,2013	Sep.17,2014
2.	Spectrum Analyzer (9k-6GHz)	R&S	FSL6	100959	Sep.18,2013	Sep.17,2014
3.	Humidity Chamber	GF	GTH-225-40-1P	IAA061213	May 16,2014	May 15,2015

5.2 Measurement Uncertainty

Parameter	Uncertainty
Radio Frequency	± 1 x 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 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	$20\log^{(500)}$

6.1 EUT Operation

Operating Environment:

Temperature: 25.5 °C

Humidity: 51 % RH

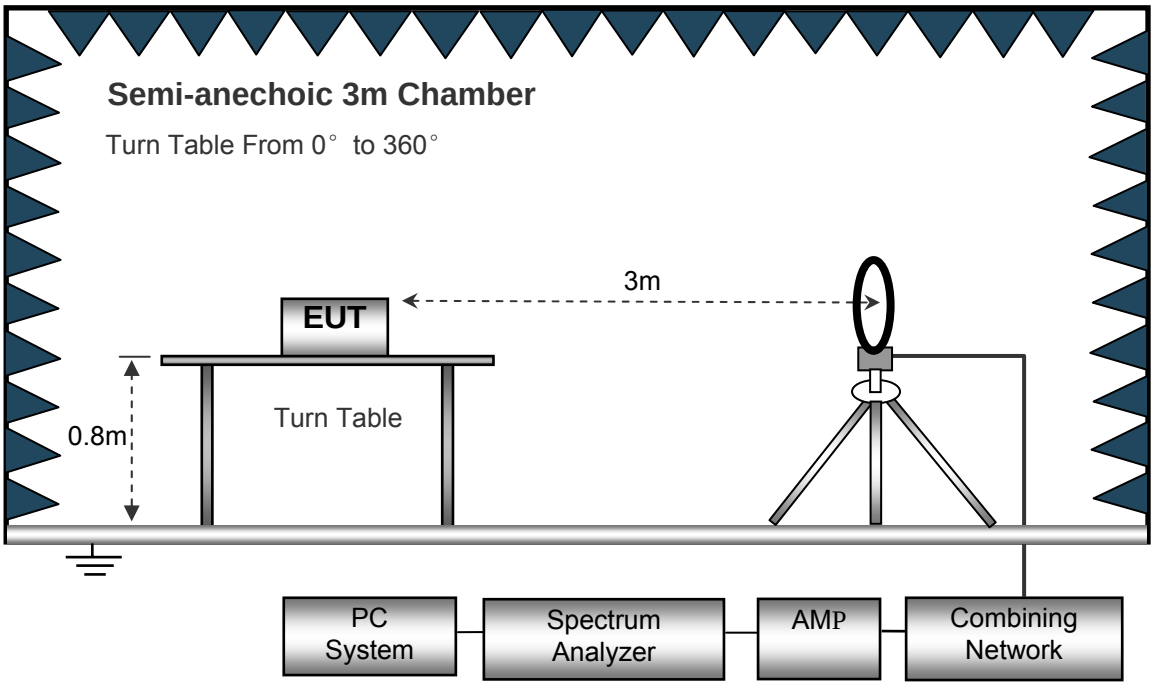
Atmospheric Pressure: 1016 mbar

EUT Operation:

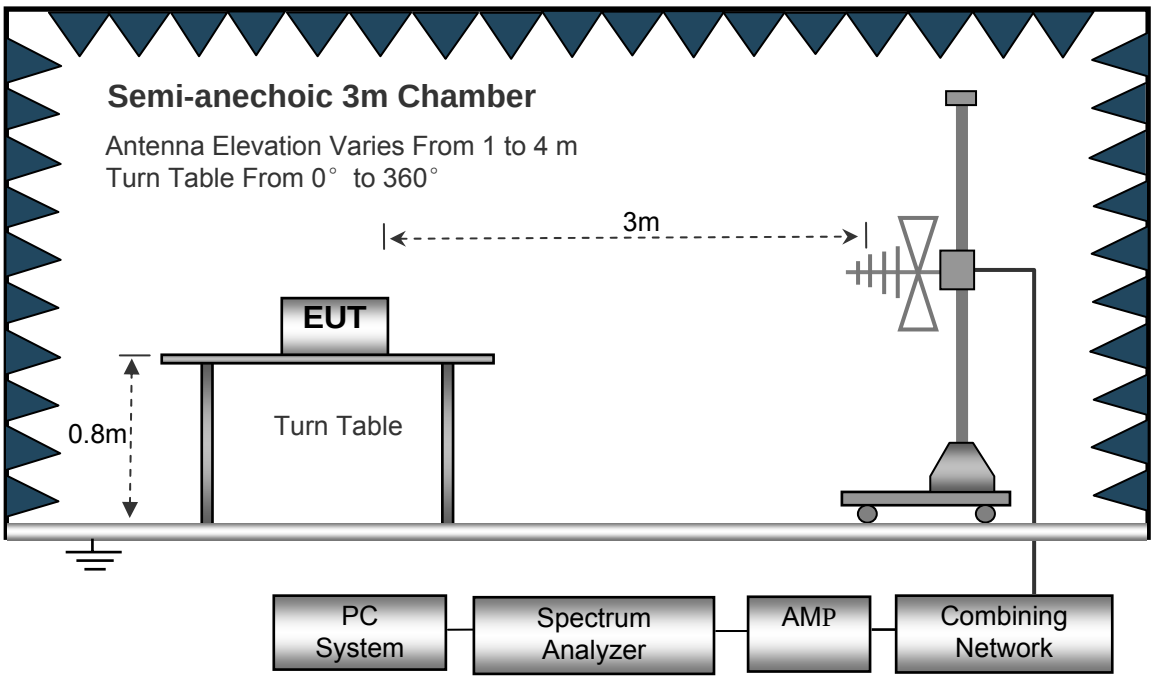
The test was performed in transmitting mode.

6.2 Test Setup

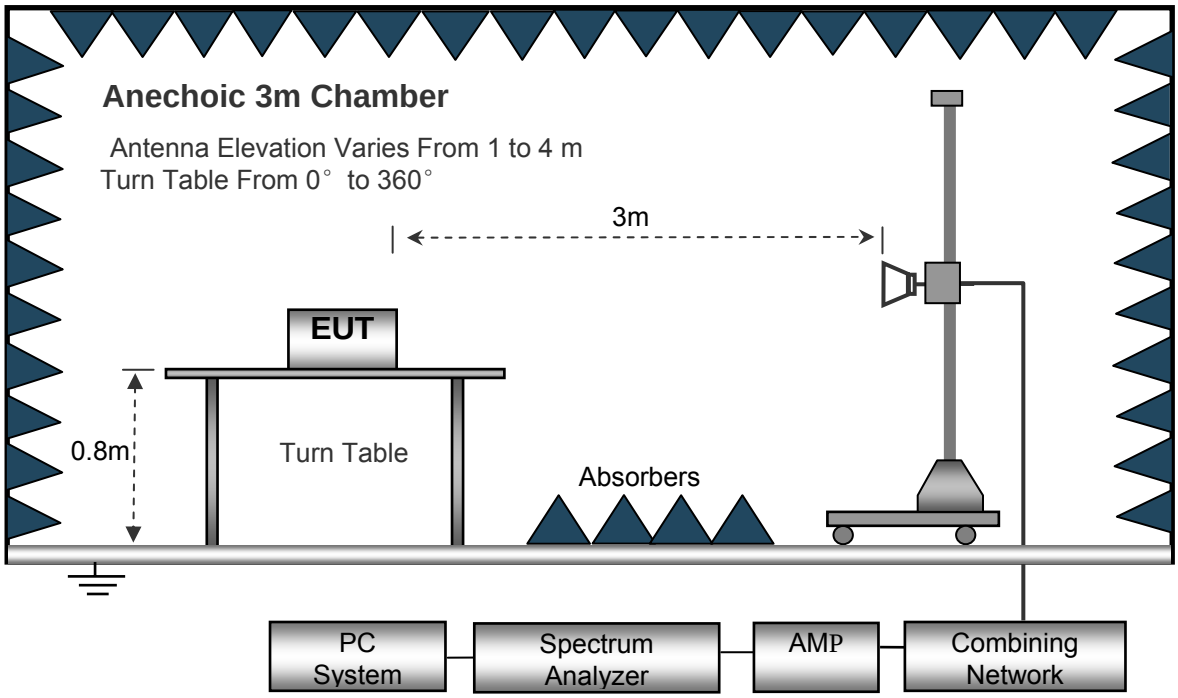
The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4: 2003.
The test setup for emission measurement below 30MHz.



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



The test setup for emission measurement above 1 GHz.



6.3 Spectrum Analyzer Setup

Below 30MHz

Sweep Speed ..... Auto
IF Bandwidth..... 10kHz
Video Bandwidth..... 10kHz

Resolution Bandwidth..... 10kHz

30MHz ~ 1GHz

Sweep Speed ..... Auto
Detector ..... PK
Resolution Bandwidth..... 100kHz
Video Bandwidth..... 300kHz

Above 1GHz

Sweep Speed ..... Auto
Detector ..... PK
Resolution Bandwidth..... 1MHz
Video Bandwidth..... 3MHz
Detector ..... Ave.
Resolution Bandwidth..... 1MHz
Video Bandwidth..... 10Hz

6.4 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.

6.5 Summary of Test Results

Test Frequency: 32.768kHz~30MHz

The measurements were more than 20 dB below the limit and not reported.

Test Frequency: 30MHz ~ 18GHz

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
GFSK Low Channel									
169.67	22.51	QP	136	1.7	H	11.13	33.64	40.00	-6.36
169.67	21.12	QP	47	1.4	V	11.13	32.25	40.00	-7.75
4804.00	52.98	PK	157	1.5	V	-1.06	51.92	74.00	-22.08
4804.00	43.63	Ave	157	1.5	V	-1.06	42.57	54.00	-11.43
7206.00	42.04	PK	152	1.4	H	1.33	43.37	74.00	-30.63
7206.00	37.28	Ave	152	1.4	H	1.33	38.61	54.00	-15.39
2327.73	45.22	PK	347	1.2	V	-13.19	32.03	74.00	-41.97
2327.73	39.55	Ave	347	1.2	V	-13.19	26.36	54.00	-27.64
2355.50	44.02	PK	38	1.4	H	-13.14	30.88	74.00	-43.12
2355.50	37.74	Ave	38	1.4	H	-13.14	24.60	54.00	-29.40
2496.64	44.94	PK	31	1.7	V	-13.08	31.86	74.00	-42.14
2496.64	37.32	Ave	31	1.7	V	-13.08	24.24	54.00	-29.76

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
GFSK Middle Channel									
169.67	22.82	QP	297	1.2	H	11.13	33.95	40.00	-6.05
169.67	21.94	QP	13	1.1	V	11.13	33.07	40.00	-6.93
4880.00	53.80	PK	260	1.8	V	-0.62	53.18	74.00	-20.82
4880.00	44.30	Ave	260	1.8	V	-0.62	43.68	54.00	-10.32
7320.00	42.21	PK	221	1.8	H	2.21	44.42	74.00	-29.58
7320.00	37.23	Ave	221	1.8	H	2.21	39.44	54.00	-14.56
2327.17	46.02	PK	62	2.0	V	-13.19	32.83	74.00	-41.17
2327.17	38.16	Ave	62	2.0	V	-13.19	24.97	54.00	-29.03
2374.78	43.63	PK	96	1.3	H	-13.14	30.49	74.00	-43.51
2374.78	38.55	Ave	96	1.3	H	-13.14	25.41	54.00	-28.59
2487.16	43.86	PK	269	1.3	V	-13.08	30.78	74.00	-43.22
2487.16	36.95	Ave	269	1.3	V	-13.08	23.87	54.00	-30.13

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
GFSK High Channel									
169.67	22.31	QP	155	1.3	H	11.13	33.44	40.00	-6.56
169.67	20.40	QP	315	1.4	V	11.13	31.53	40.00	-8.47
4960.00	53.64	PK	338	1.2	V	-0.24	53.40	74.00	-20.60
4960.00	43.55	Ave	338	1.2	V	-0.24	43.31	54.00	-10.69
7440.00	41.76	PK	149	1.8	H	2.84	44.60	74.00	-29.40
7440.00	36.58	Ave	149	1.8	H	2.84	39.42	54.00	-14.58
2332.00	46.10	PK	281	1.7	V	-13.19	32.91	74.00	-41.09
2332.00	37.16	Ave	281	1.7	V	-13.19	23.97	54.00	-30.03
2378.20	44.23	PK	237	1.2	H	-13.14	31.09	74.00	-42.91
2378.20	36.91	Ave	237	1.2	H	-13.14	23.77	54.00	-30.23
2495.52	44.30	PK	98	1.2	V	-13.08	31.22	74.00	-42.78
2495.52	38.19	Ave	98	1.2	V	-13.08	25.11	54.00	-28.89

Test Frequency: 18GHz~25GHz

The measurements were more than 20 dB below the limit and not reported

7 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:	558074 D01 DTS Meas Guidance v03r02 June 5, 2014
Test Mode:	Transmitting

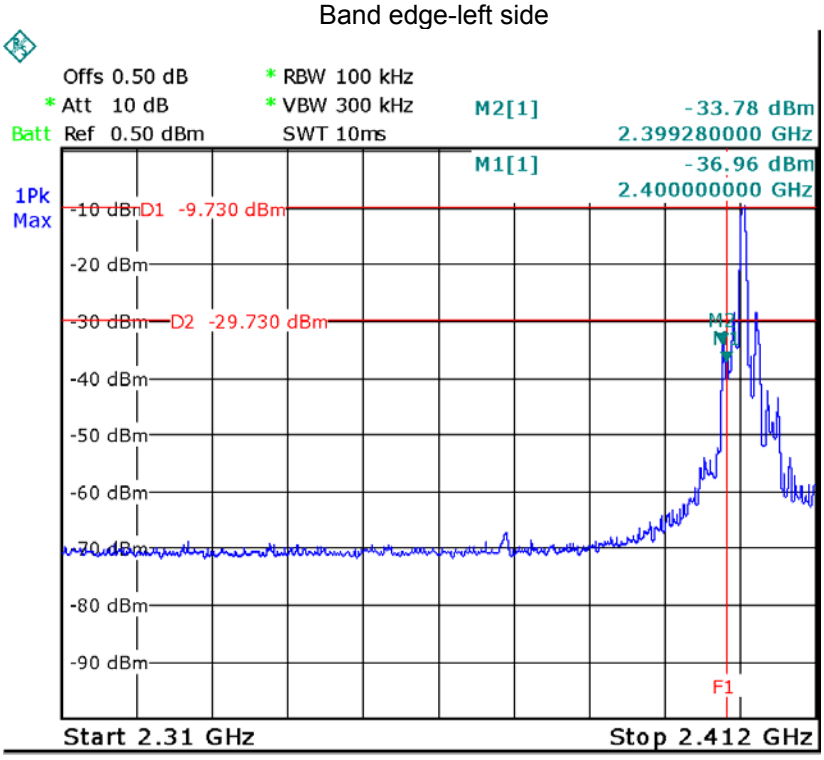
7.1 Test Produce

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz, Sweep = auto

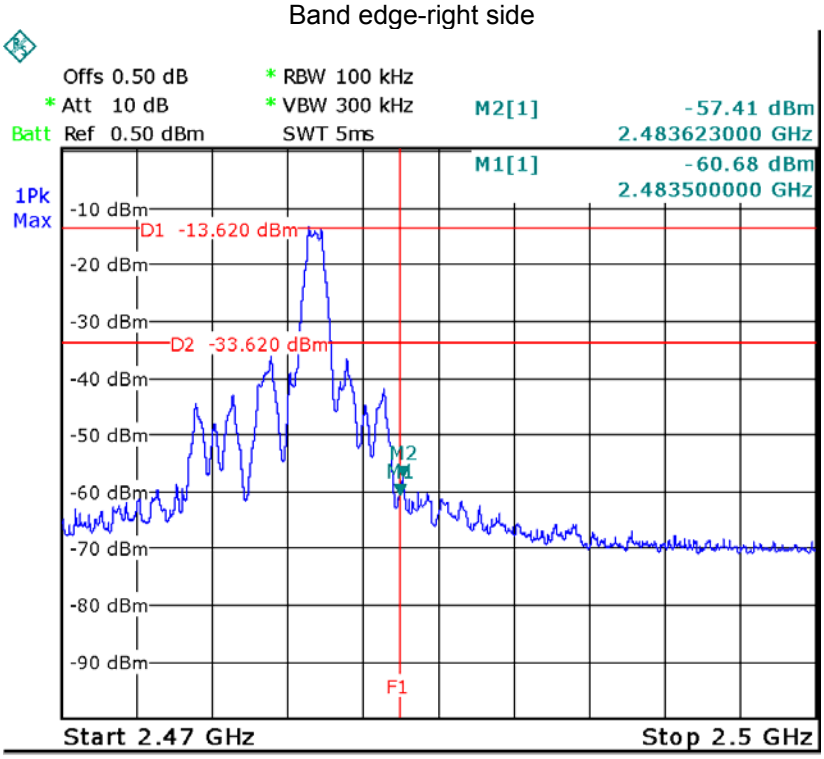
   Detector function = peak, Trace = max hold
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

7.2 Test Result

Band edge-left side



Band edge-right side



8 6 dB Bandwidth Measurement

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: 558074 D01 DTS Meas Guidance v03r02 June 5, 2014

8.1 Test Procedure

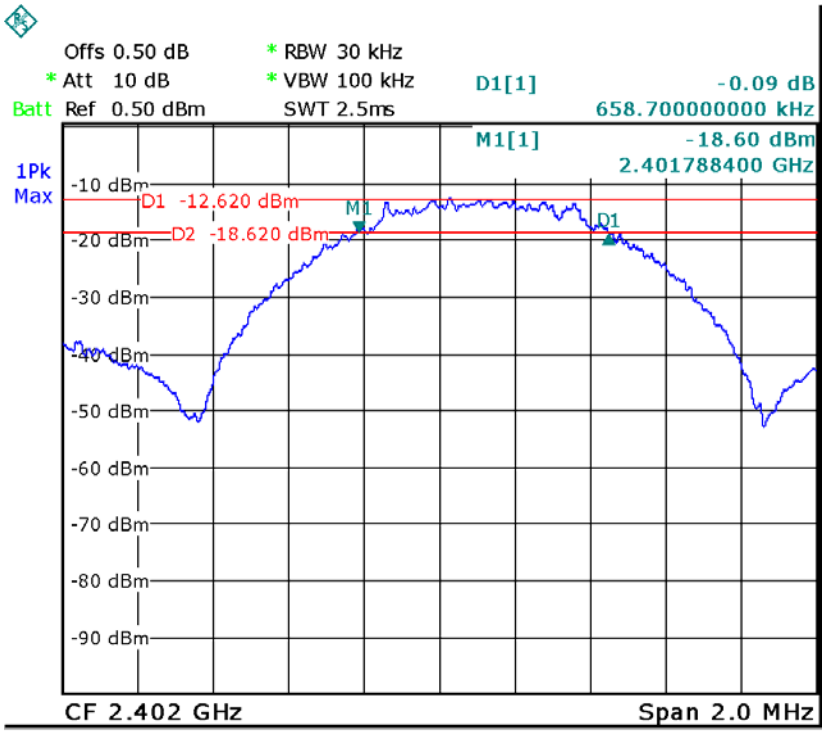
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 30kHz, VBW = 100kHz

8.2 Test Result

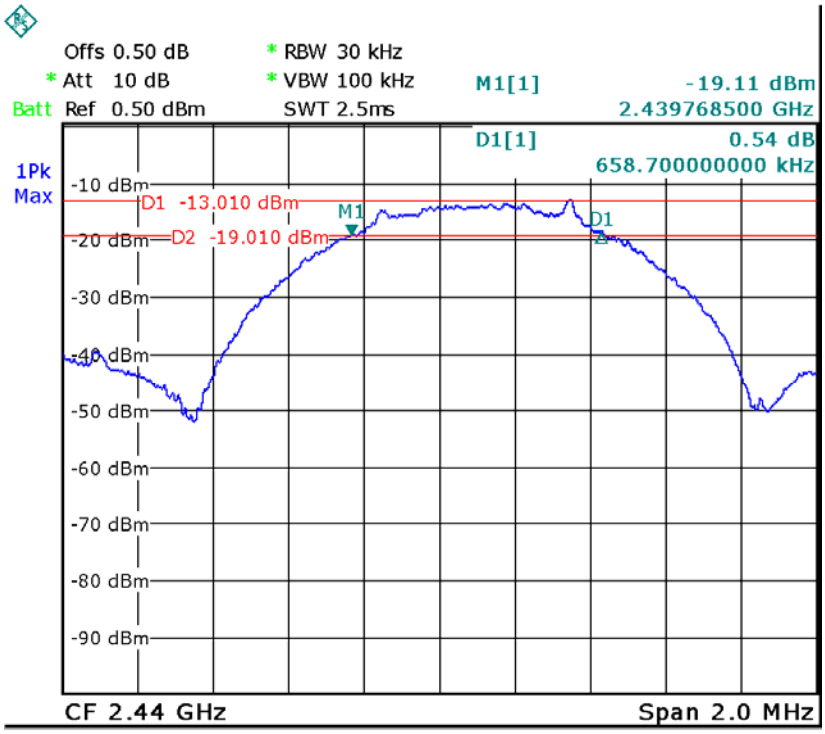
Operation mode	Bandwidth (MHz)
Low channel	0.659
Middle channel	0.659
High channel	0.659

Test result plot as follows:

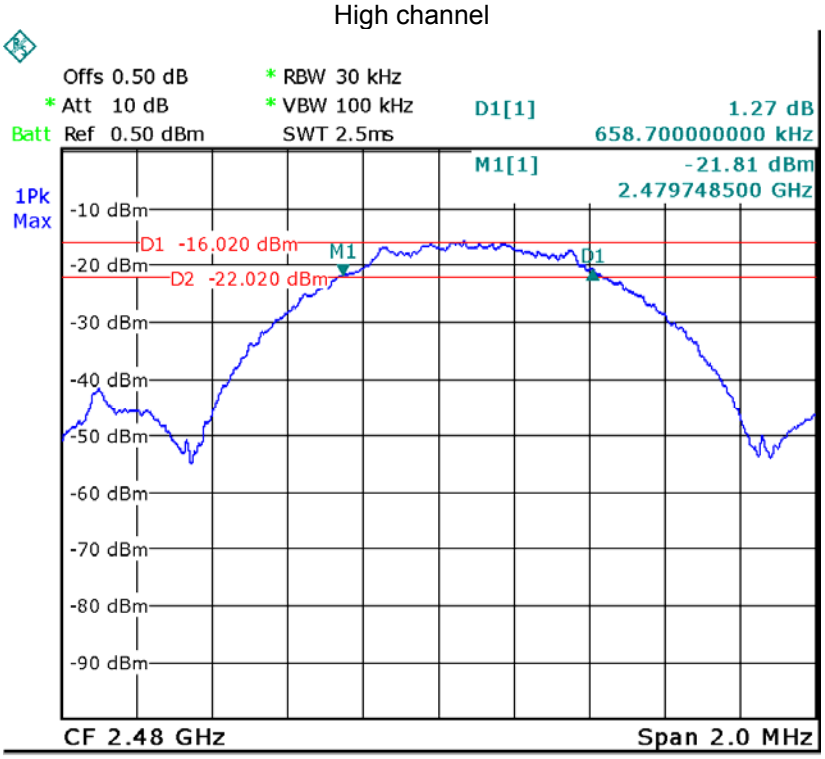
Low channel



Middle channel



High channel



9 Maximum Peak Output Power

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: 558074 D01 DTS Meas Guidance v03r02 June 5, 2014

9.1 Test Procedure

558074 D01 DTS Meas Guidance v03r02 June 5, 2014 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.

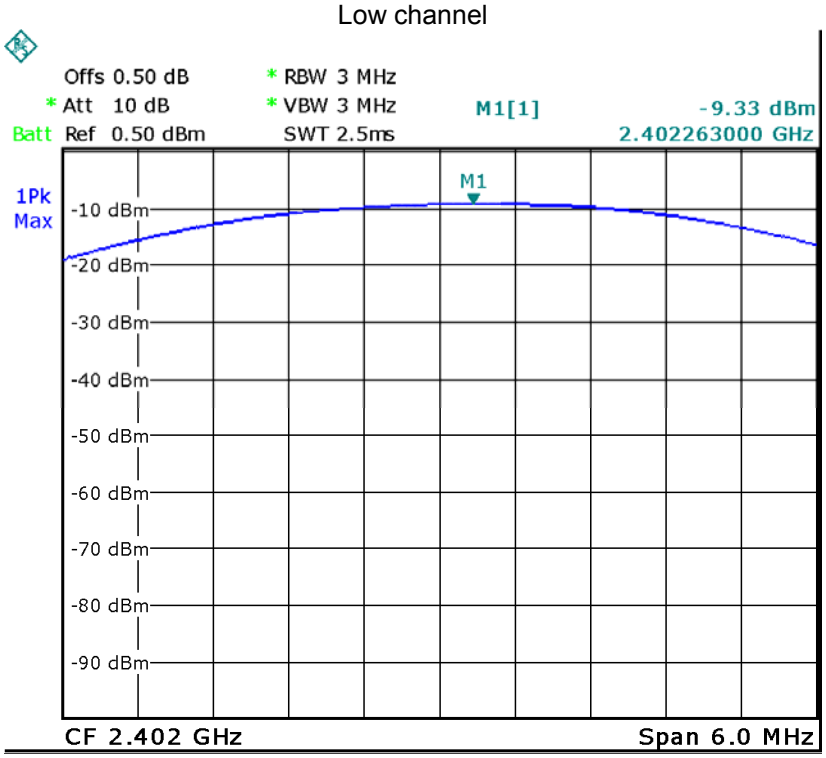
2. Set the spectrum analyzer: RBW = 3MHz. VBW = 3MHz. Sweep = auto; Detector Function = Peak, Set the span to fully encompass the DTS bandwidth.

3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

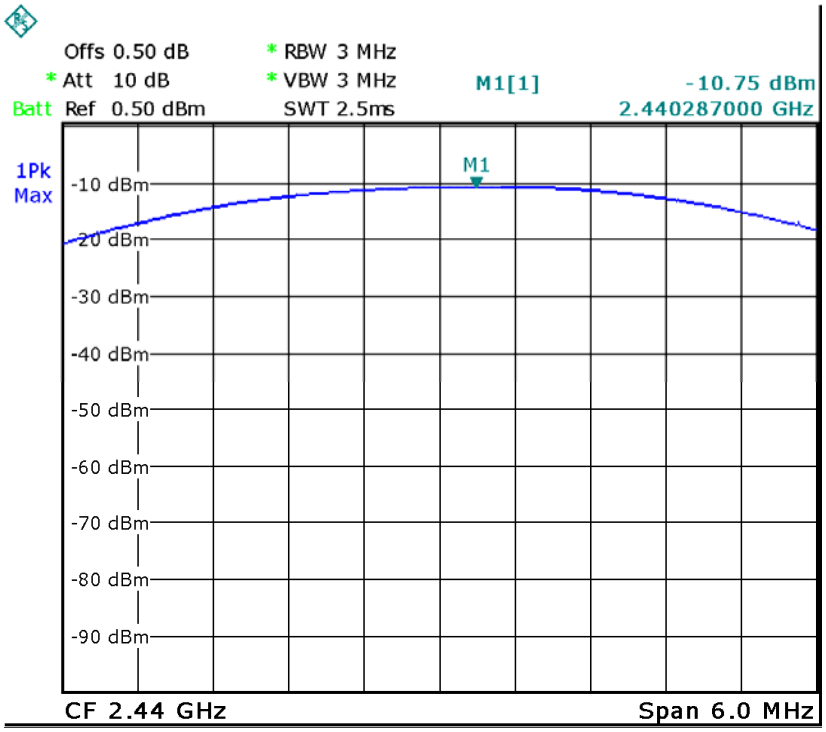
9.2 Test Result

Maximum Peak Output Power (dBm)		
Low channel	Middle channel	High channel
-9.33	-10.75	-13.17
Limit		
1W/30dBm		

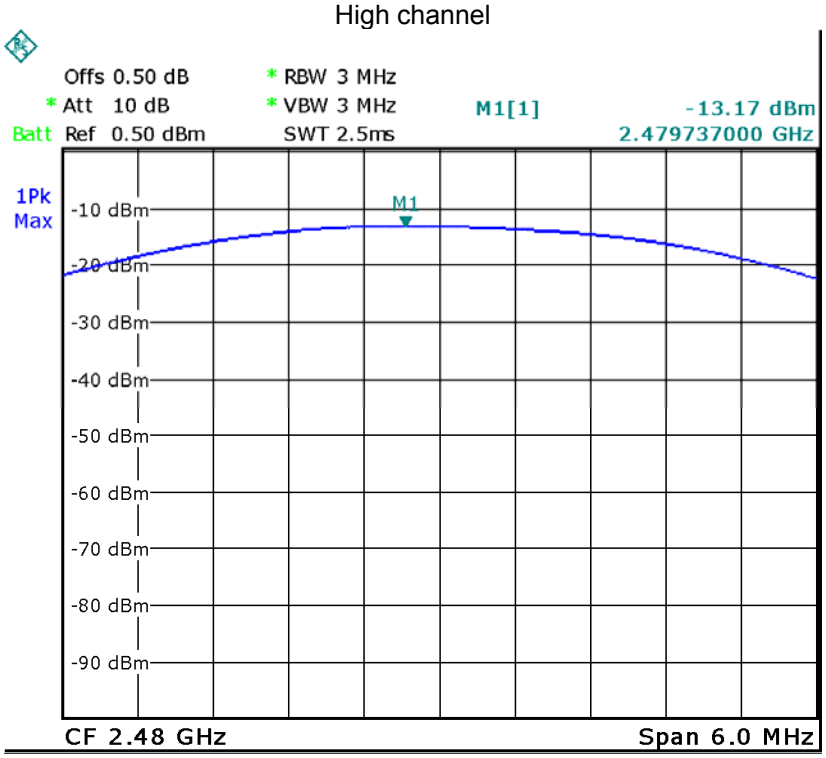
Low channel



Middle channel



High channel



10 Power Spectral density

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: 558074 D01 DTS Meas Guidance v03r02 June 5, 2014

10.1 Test Procedure

558074 D01 DTS Meas Guidance v03r02 June 5, 2014 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.

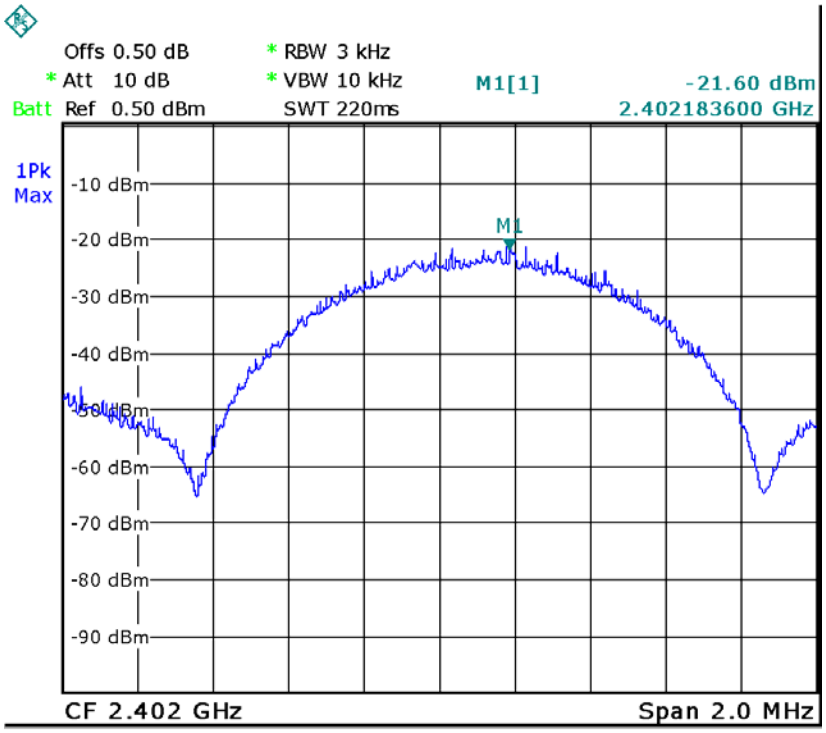
2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz , Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.

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.

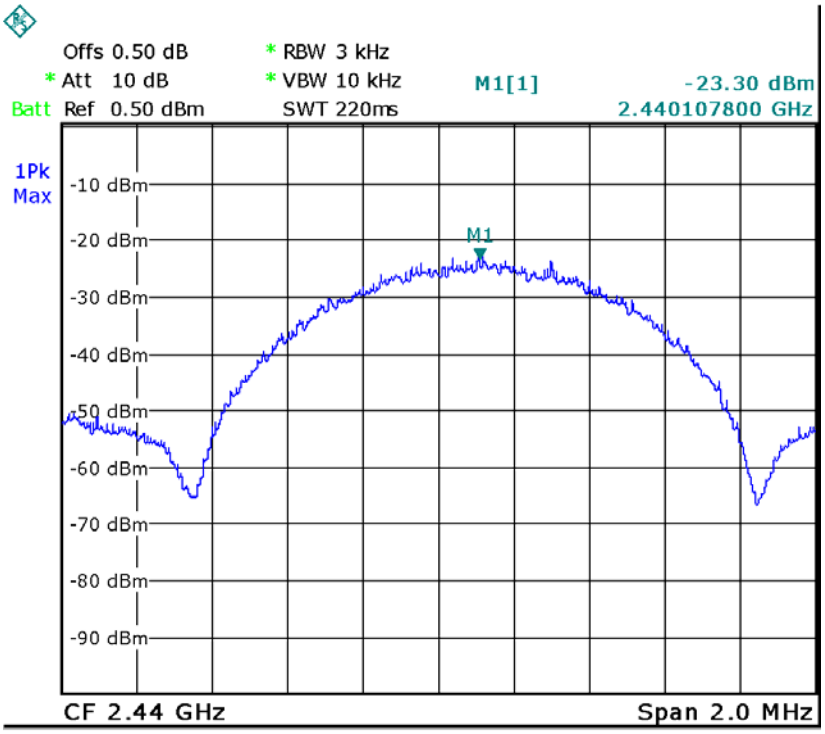
10.2 Test Result

Power Spectral Density		
Low channel	Middle channel	High channel
-21.60	-23.30	-25.88
Limit		
8dBm per 3kHz		

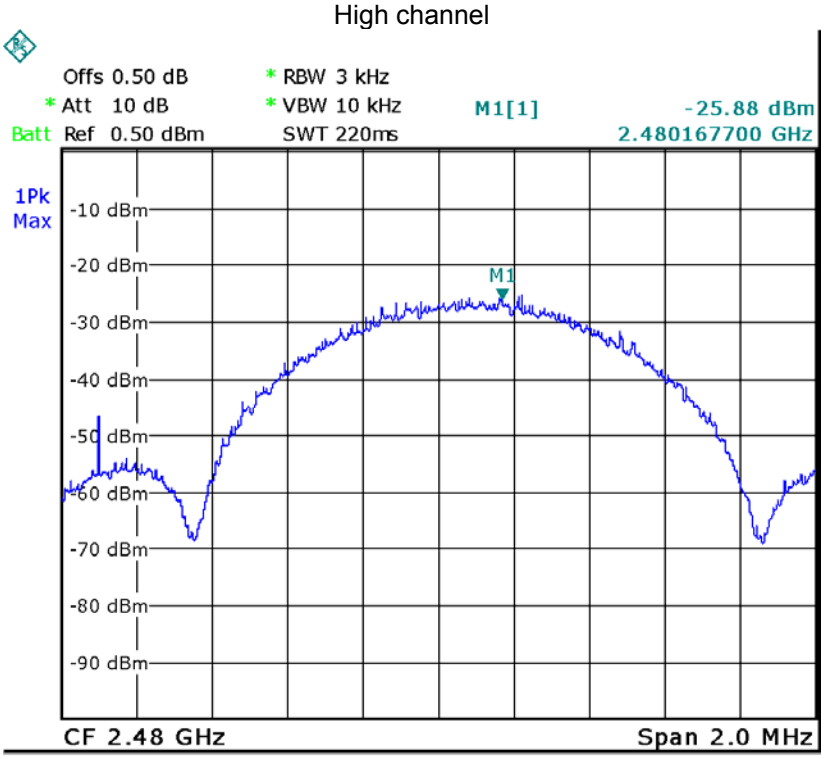
Low channel



Middle channel



High channel



11 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.

12 RF Exposure

Test Requirement: FCC Part 1.1307

Test Mode: The EUT work in Transmitting mode

12.1 Requirements

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.

12.2 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

12.3 MPE Calculation Method

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

E = Electric field (V/m)
P = Peak RF output power (W)
G = EUT Antenna numeric gain (numeric)
d = Separation distance between radiator and human body (m)
The formula can be changed to

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

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

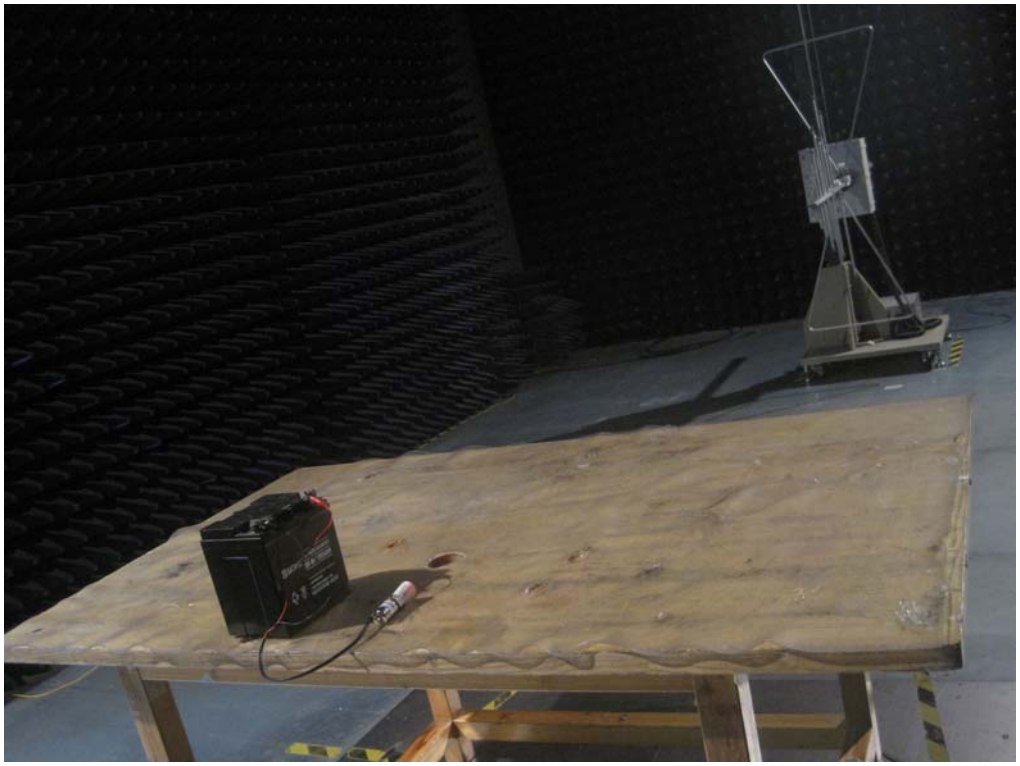
Antenna Gain (numeric)	Max.Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (mW/cm2)	Limit of Power Density (mW/cm2)
1.000	-9.33	0.117	0.000023	1

13 Photographs – Model BLE301i Test Setup

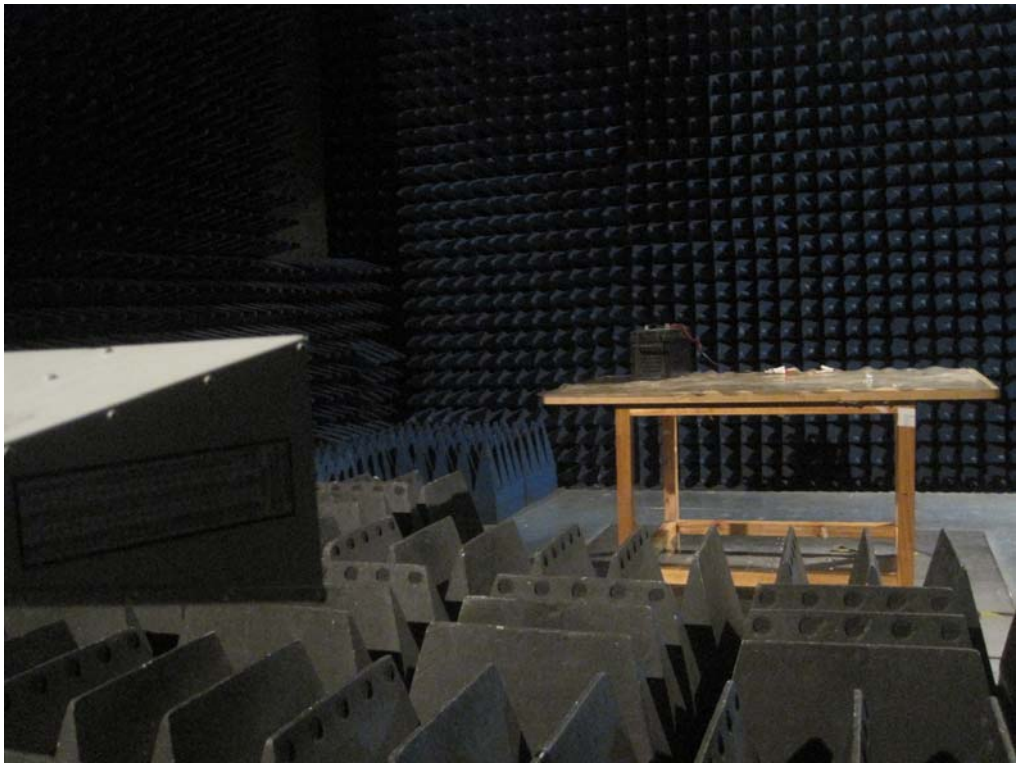
13.1 Radiated Emission

Frequency range 9k-30MHz

Frequency range 30MHz to 1GHz

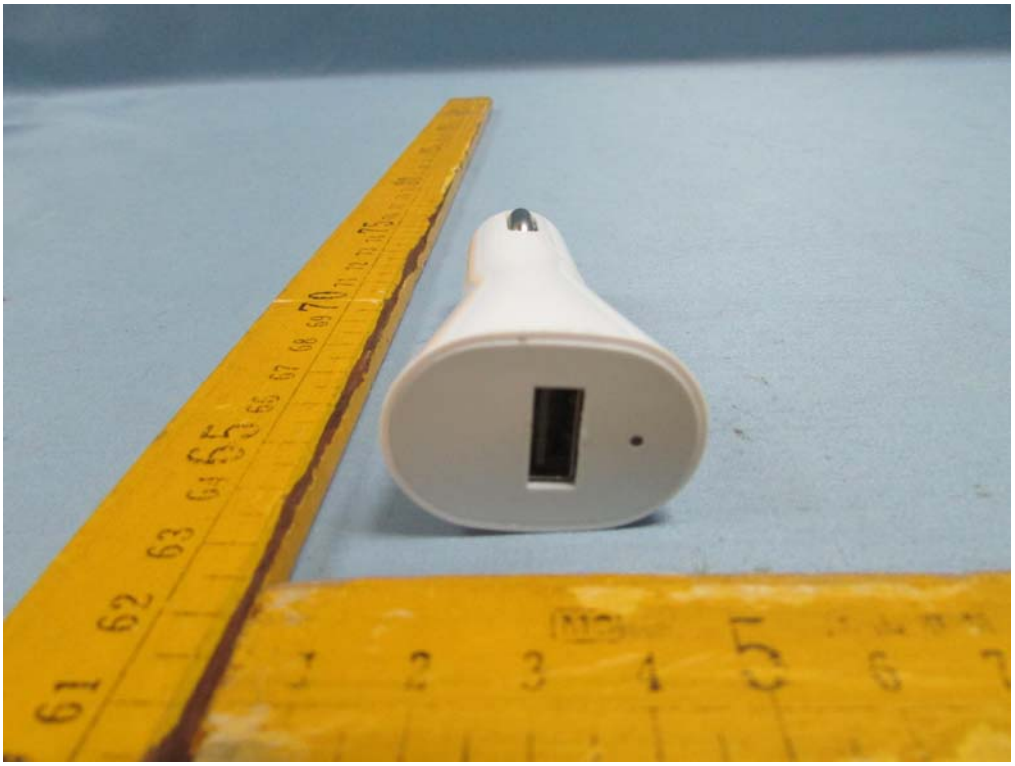


Frequency range 1G-18G

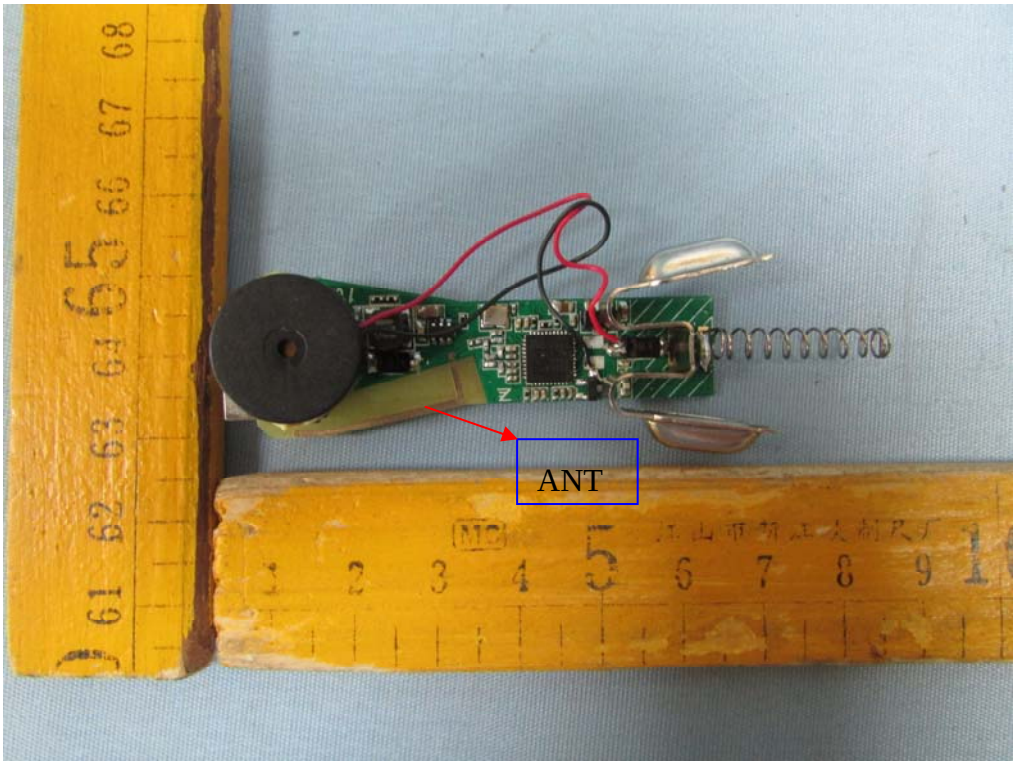


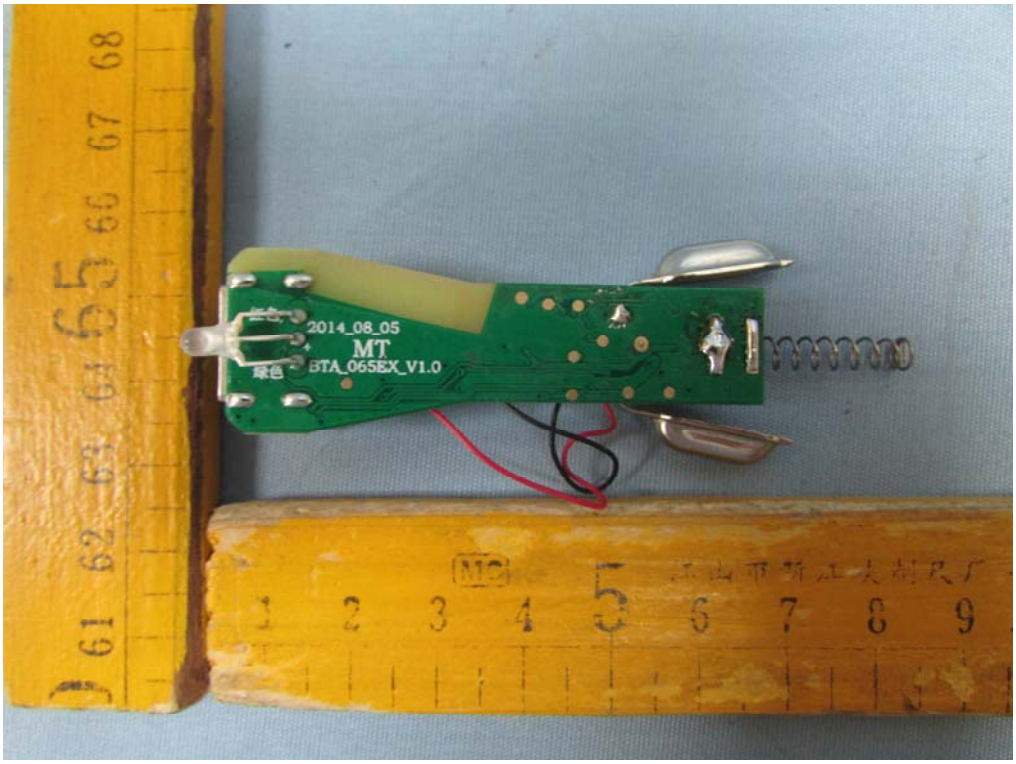
14 Photographs - Model BLE301i Constructional Details

14.1 EUT– External View



14.2 Model BLE301i - Internal View





======End of Report======