Shenzhen Certification Technology Service Co., Ltd
2F, Building B, East Area of Nanchang Second Industrial Zone, Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China.

TEST REPORT

FCC ID:2ACVT-B102

Applicant : **Harmony Electronics Factory Shenzhen Baoan District Xixiang Town**

Address : **No.171,Gu-shu lst,Xi-xiang Town,Bao-an Dist.,Shen-zhen City,Guang-dong Province,P.R.CHINA 518126**

Equipment Under Test (EUT):

Name : Bluetooth Car Visor Speaker

Model : UM-B102-BS

Standards : FCC PART 15, SUBPART C : 2013 (Section 15.247)

Report No : CST-TCB140718039

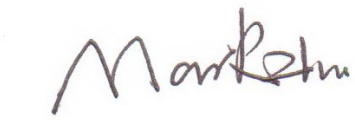
Date of Test : July 21- 30, 2014

Date of Issue : July 31, 2014

Test Result :	**PASS ***

* In the configuration tested, the EUT complied with the standards specified above

Authorized Signature



(Mark Zhu)
General Manager

The manufacture should ensure that all the products in series production are in conformity with the product sample detailed in this report.

If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of Shenzhen Certification Technology Service Co., Ltd. Or test done by Shenzhen Certification Technology Service Co., Ltd. Approvals in connection with, distribution or use of the product described in this report must be approved by Shenzhen Certification Technology Service Co., Ltd. Approvals in writing.

TABLE OF CONTENT

1 General Information

1.1 Description of Device (EUT)

EUT	:	Bluetooth Car Visor Speaker
Model No.	:	UM-B102-BS
Trade mark	:	**UMOVE**
Power supply	:	DC 3.7V From battery or DC 5V From USB For Charge
Radio Technology	:	Bluetooth 4.0 and Bluetooth 2.1+EDR
Operation frequency	:	Bluetooth 4.0: 2402-2480MHz Bluetooth 2.1+EDR: 2402-2480MHz
Note		This report only test Bluetooth 4.0
Channel No.		40 Channels
Modulation	:	GFSK
Antenna Type	:	PCB Antenna, max gain 0 dBi
Applicant	:	Harmony Electronics Factory Shenzhen Baoan District Xixiang Town
Address	:	No.171,Gu-shu lst,Xi-xiang Town,Bao-an Dist.,Shen-zhen City,Guang-dong Province,P.R.CHINA 518126
Manufacturer	:	Harmony Electronics Factory Shenzhen Baoan District Xixiang Town
Address	:	No.171,Gu-shu lst,Xi-xiang Town,Bao-an Dist.,Shen-zhen City,Guang-dong Province,P.R.CHINA 518126

1.2 Description of Test Facility

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
FCC Registered No.:197647

2 EMC Equipment List

Equipment	Manufacture	Model No.	Serial No.	Last cal.	Cal Interval
3m Semi-Anechoic	ETS-LINDGREN	N/A	SEL0017	Nov. 16, 13	1Year
Spectrum analyzer	Agilent	E4407B	MY49510055	Oct. 30, 13	1Year
Receiver	R&S	ESCI	101165	Oct. 30, 13	1Year
Receiver	R&S	ESCI	101202	Oct. 30, 13	1Year
Bilog Antenna	SCHWARZBECK	VULB 9168	9168-438	Mar.11, 14	1Year
Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D(1201)	Mar.11, 14	1Year
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170 D(1432)	Mar.11, 14	1Year
Active Loop Antenna	Beijing Daze	ZN30900A	SEL0097	Mar.11, 14	1Year
L.I.S.N.	SCHWARZBECK	NSLK8126	8126466	Oct. 30, 13	1Year
Cable	Resenberger	SUCOFLEX 104	MY6562/4	Oct. 30, 13	1Year
Cable	Resenberger	SUCOFLEX 104	309972/4	Oct. 30, 13	1Year
Cable	Resenberger	SUCOFLEX 104	329112/4	Oct. 30, 13	1Year
Power Meter	Anritsu	ML2487A	6K00001491	Oct. 30, 13	1Year
Power sensor	Anritsu	ML2491A	32516	Oct. 30, 13	1Year
Pre-amplifier	SCHWARZBECK	BBV9743	9743-019	Oct. 30, 13	1Year
Pre-amplifier	Quietek	AP-180C	CHM-0602012	Oct. 30, 13	1Year

3 Test Procedure

POWER LINE CONDUCTED INTERFERENCE: The test procedure used was ANSI Standard C63.4-2003 using a 50 u H LISN. Both Lines were observed. The bandwidth of the receiver was 10kHz with an appropriate sweep speed. The ambient temperature of the EUT was 25℃ with a humidity of 58%.

RADIATION INTERFERENCE: The test procedure used was ANSI Standard C63.4-2003 using a ANRITSU spectrum analyzer with a pre-selector. The analyzer was calibrated in dB above a micro volt at the output of the antenna. The resolution bandwidth was 100kHz and the video bandwidth was 300 kHz up to 1 GHz and 1 MHz with a video BW of 3MHz above 1 GHz. The ambient temperature of the EUT was 25℃ with a humidity of 58%.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer and cable loss. The antenna correction factors and cable loss are stated in terms of dB. The gain of the Pre-selector was accounted for in the Spectrum Analyzer Meter Reading.
Example:
Freq (MHz) METER READING + ACF + CABLE = FS
33.20 dBuV + 10.36 dB + 0.9 dB= 44.46 dBuV/m @ 3m
ANSI STANDARD C63.4-2003 10.1.7 MEASUREMENT PROCEDURES: The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The EUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation. When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes. The situation was similar for the conducted measurement except that the table did not rotate. The EUT was setup as described in ANSI Standard C63.4-2003 10.1.7 with the EUT 40 cm from the vertical ground wall.

4 Summary of Measurement

4.1 Summary of test result

Test Item	Test Requirement	Standards Paragraph	Result
Spurious Emission	FCC PART 15:2013	Section 15.247&15.209	Compliance
Conduction Emission	FCC PART 15:2013	Section 15.207	Compliance
Bandwidth Test	FCC PART 15:2013	Section 15.247	Compliance
Peak Power	FCC PART 15:2013	Section 15.247	Compliance
Power Density	FCC PART 15:2013	Section 15.247	Compliance
Band Edge	FCC PART 15:2013	Section 15.247	Compliance
Antenna Requirement	FCC PART 15:2013	Section 15.203	Compliance
Note: 3 axes be tested in the radiated emission test , only the X axes worst case was recorded in the test report			

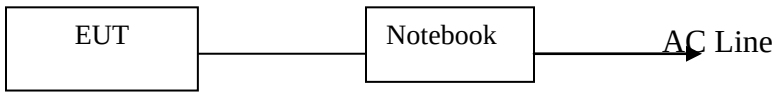
Note: The EUT has been tested as an independent unit. And Continual Transmitting in maximum power (Fully charged battery is used during the test)

EUT is configured to transmit continuously (Duty cycle) is 100%， average correction factor = 20 log 1=0

4.2 Test connection

1, For radiated emissions test: EUT was placed on a turn table, which is 0.8 meter high above ground. EUT was be set into BT TX mode by Bluesuite software before test

Charge And TX Mode:



4.3 Assistant equipment used for test

Description	:	Notebook
Manufacturer	:	Acer
Model No.	:	ZQT

4.4 Test mode

The test software “BlueSuite 2.4.8” was used to control EUT work in Continuous TX mode, and select test channel, wireless mode

Tested mode, channel, and data rate information		
Mode	Channel	Frequency (MHz)
GFSK	Low :CH1	2402
	Middle: CH20	2440
	High: CH40	2480

4.5 Test Conditions

Temperature range	21-25℃
Humidity range	40-75%
Pressure range	86-106kPa

4.6 Measurement Uncertainty (95% confidence levels, k=2)

Item	MU	Remark
Uncertainty for Power point Conducted Emissions Test	2.42dB	
Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)	2.13 dB	Polarize: V
	2.57dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	3.54dB	Polarize: V
	4.1dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	2.08dB	Polarize: H
	2.56dB	Polarize: V
Uncertainty for radio frequency	1×10-9	
Uncertainty for DC and low frequency voltages	0.06%	

5 Spurious Emission

5.1 Radiation Emission

5.1.1 Radiation Emission Limits(15.209)

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

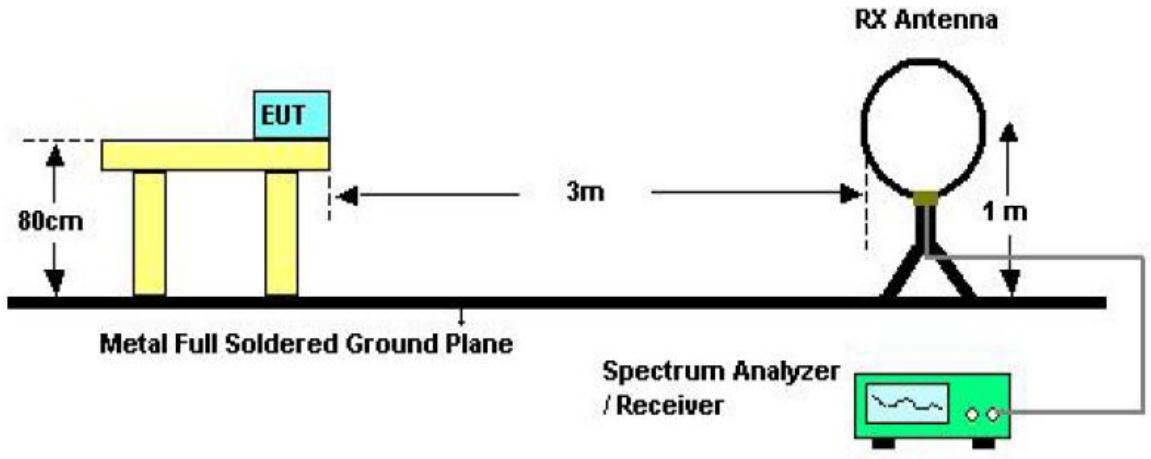
Harmonic emissions limits comply with below 54 dBuV/m at 3m. Other emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or comply with the radiated emissions limits specified in section 15.209(a) limit in the table below has to be followed.

NOTE:

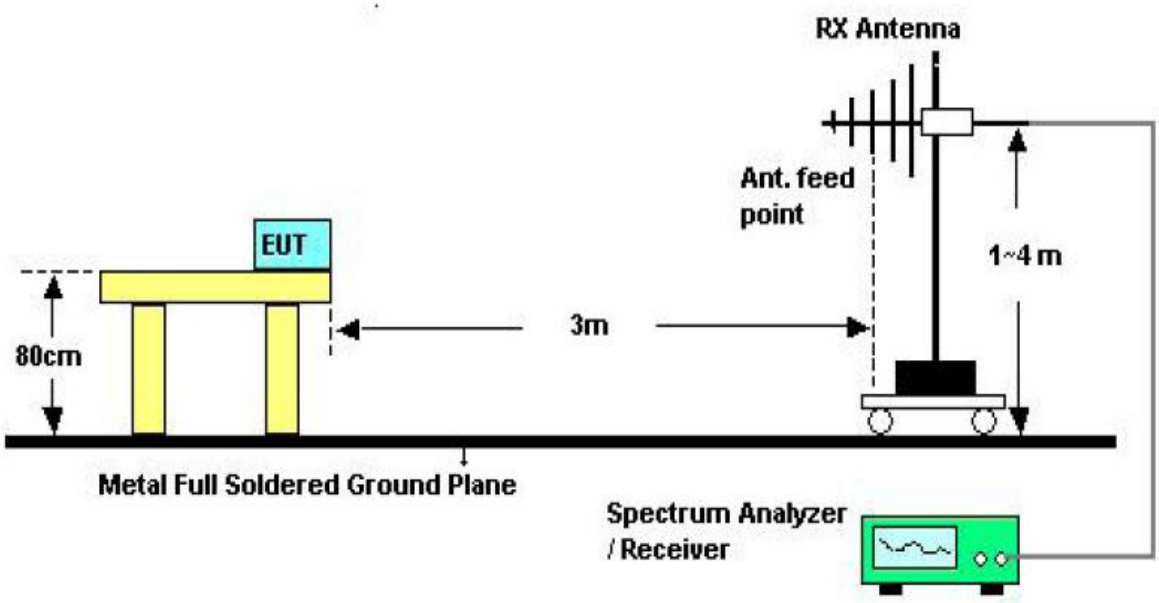
a) The tighter limit applies at the band edges.
b) Emission Level(dB uV/m)=20log Emission Level(Uv/m)

5.1.2 Test Setup

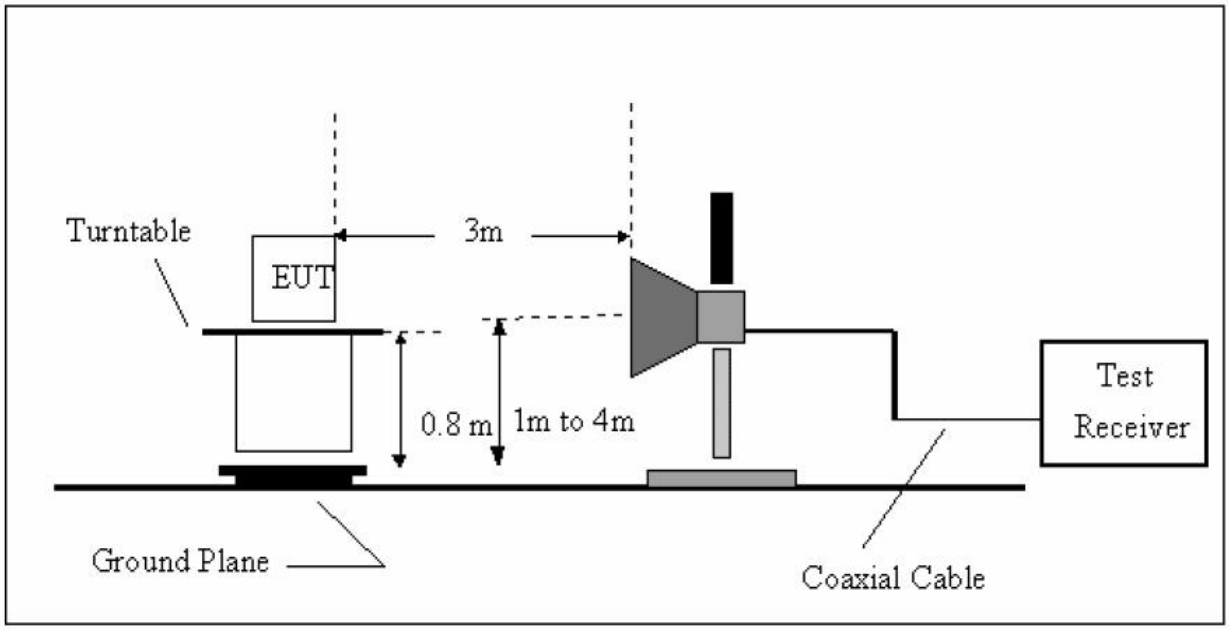
See the next page



Below 30MHz Test Setup



Above 30MHz Test Setup



Above 1GHz Test Setup

5.1.3 Test Procedure

a) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1GHz, The EUT was placed on a rotating 0.8 m high above ground, The table was rotated 360 degrees to determine the position of the highest radiation
b) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set of make measurement.
c) The initial step in collecting conducted emission data is a spectrum analyzer Peak detector mode pre-scanning the measurement frequency range. Significant Peaks are then marked. and then Qusia Peak Detector mode premeasured
d) If Peak value comply with QP limit Below 1GHz.The EUT deemed to comply with QP limit. But the Peak value and average value both need to comply with applicable limit above 1GHz.
e) For the actual test configuration, please see the test setup photo.

5.1.4 Test Equipment Setting For emission test Result

9KHz~150KHz	RBW 200Hz	VBW1KHz
150KHz~30MHz	RBW 9KHz	VBW 30KHz
30MHZ~1GHz	RBW 120KHz	VBW 300KHz
Above 1GHz	RBW 1MHz	VBW 3MHz

5.1.5 Test Condition

Continual Transmitting in maximum power.

5.1.6 Test Result

We have scanned the 10th harmonic from 9KHz to the EUT.

Detailed information please see the following page.

From 9KHz to 30MHz: Conclusion: PASS

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

Remark: All three modulations of EUT have been tested, only show the test data of the worst modulation in this report, and we found the worst modulation is GFSK（Low Channel CH0）

From 30MHz to 1000MHz: Conclusion: PASS
Horizontal:

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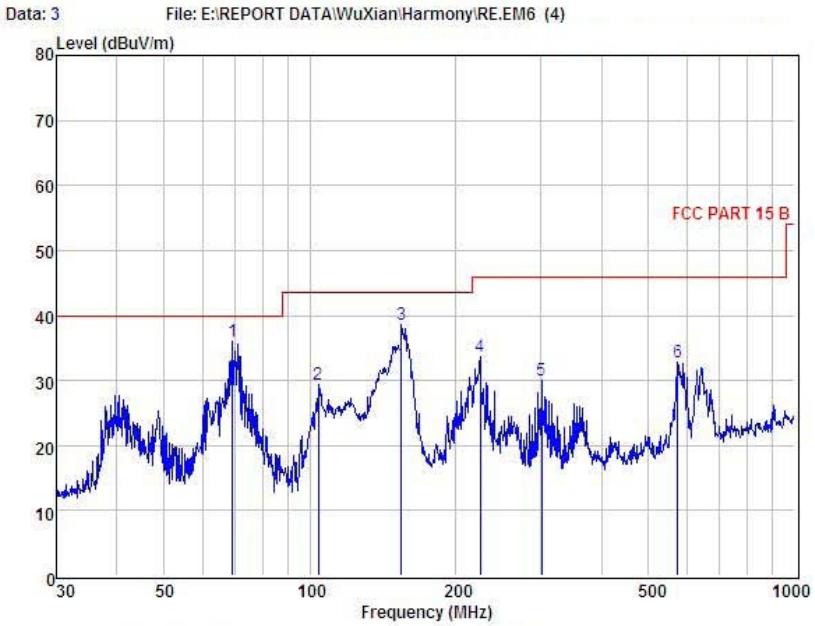


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Condition      : FCC PART 15 B        3m       POL: HORIZONTAL
EUT            : Bluetooth Car Visor Speaker
Model No       : UM-B102-BS
Test Mode      : Charge And TX  Mode (GFSK) CH0
Power          : DC 5V From PC AC 120V/60Hz
Test Engineer  : Store
Remark         :
Temp           : 24℃
Hum            : 56%
```

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	69.36	51.75	10.82	26.76	0.24	36.05	40.00	-3.95	QP
2	104.17	45.25	10.74	26.85	0.32	29.46	43.50	-14.04	QP
3	154.28	50.97	14.15	26.91	0.40	38.61	43.50	-4.89	QP
4	224.52	49.02	10.87	26.87	0.55	33.57	46.00	-12.43	QP
5	300.37	40.71	12.85	24.19	0.64	30.01	46.00	-15.99	QP
6	574.63	41.00	17.81	27.18	1.27	32.90	46.00	-13.10	QP

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

Vertical:

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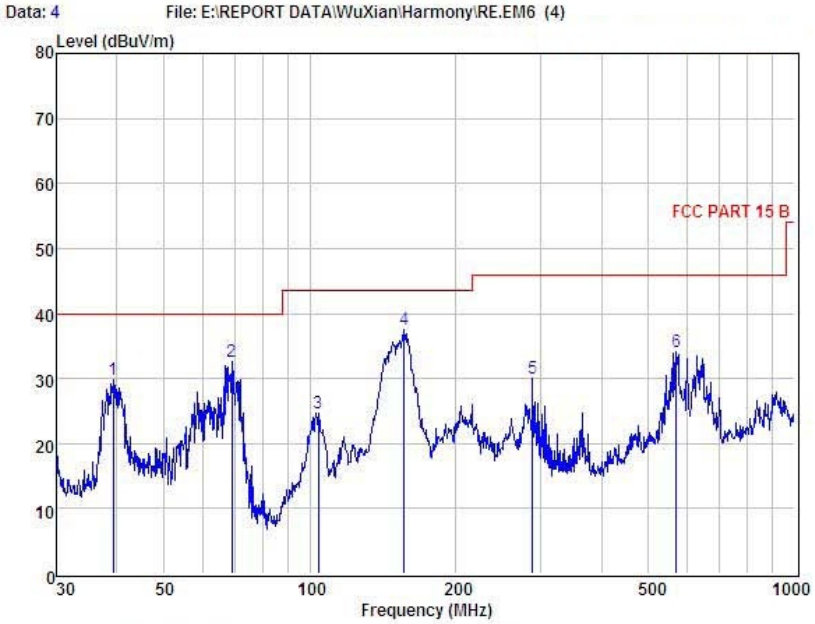



```
Condition      : FCC PART 15 B        3m       POL: VERTICAL
EUT            : Bluetooth Car Visor Speaker
Model No       : UM-B102-BS
Test Mode      : Charge And TX  Mode (GFSK) CH0
Power          : DC 5V From PC AC 120V/60Hz
Test Engineer  : Store
Remark         :
Temp           : 24℃
Hum            : 56%
```

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	39.30	41.29	14.07	25.81	0.17	29.72	40.00	-10.28	QP
2	69.11	48.34	10.82	26.76	0.30	32.70	40.00	-7.30	QP
3	104.17	40.50	10.74	26.85	0.32	24.71	43.50	-18.79	QP
4	156.46	49.97	14.15	26.91	0.38	37.59	43.50	-5.91	QP
5	287.99	40.97	12.54	24.17	0.66	30.00	46.00	-16.00	QP
6	570.61	42.23	17.74	27.33	1.41	34.05	46.00	-11.95	QP

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

Above 1GHz

1GHz—25GHz Radiated emissison Test result									
EUT: Bluetooth Car Visor Speaker M/N: UM-B102-BS									
Power: DC 5V From PC AC 120V/60Hz									
Test date: 2014-07-27 Test site: 3m Chamber Tested by: Store Chu									
Test mode: GFSK Tx CH1 2402MHz									
Antenna polarity: Vertical									
No	Freq (MHz)	Read Level (dBuV/m)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4804	48.48	33.95	10.18	34.26	58.35	74.00	15.65	PK
2	4804	35.27	33.95	10.18	34.26	45.14	54.00	8.86	AV
3	7206	/							
4	9608	/							
5	12010	/							
Antenna Polarity: Horizontal									
1	4804	49.31	33.95	10.18	34.26	59.18	74.00	14.82	PK
2	4804	37.20	33.95	10.18	34.26	47.07	54.00	6.93	AV
3	7206	/							
4	9608	/							
5	12010	/							
Note: 1,Measuring frequency from 1GHz to 25GHz 2,Spectrum Set for PK measure: RBW=1MHz, VBW=1MHz, Sweep time=Auto, Detector: PK 2,Spectrum Set for AV measure: RBW=1MHz, VBW=10Hz, Sweep time=Auto, Detector: PK 3, Result = Read level + Antenna factor + cable loss-Amp factor 4, All the other emissions not reported were too low to read and deemed to comply with FCC limit.									

1GHz—25GHz Radiated emissison Test result									
EUT: Bluetooth Car Visor Speaker M/N: UM-B102-BS									
Power: DC 5V From PC AC 120V/60Hz									
Test date: 2014-07-27 Test site: 3m Chamber Tested by: Store Chu									
Test mode: GFSK Tx CH20 2440MHz									
Antenna polarity: Vertical									
No	Freq (MHz)	Read Level (dBuV/m)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4880	46.34	33.93	10.20	34.29	56.18	74.00	17.82	PK
2	4880	36.81	33.93	10.20	34.29	46.65	54.00	7.35	AV
3	7320	/							
4	9760	/							
5	12200	/							
Antenna Polarity: Horizontal									
1	4880	47.26	33.93	10.20	34.29	57.1	74.00	16.90	PK
2	4880	37.12	33.93	10.20	34.29	46.96	54.00	7.04	AV
3	7320	/							
4	9760	/							
5	12200	/							
Note: 1, Measuring frequency from 1GHz to 25GHz 2,Spectrum Set for PK measure: RBW=1MHz, VBW=1MHz, Sweep time=Auto, Detector: PK 2,Spectrum Set for AV measure: RBW=1MHz, VBW=10Hz, Sweep time=Auto, Detector: PK 3, Result = Read level + Antenna factor + cable loss-Amp factor 4, All the other emissions not reported were too low to read and deemed to comply with FCC limit.									

1GHz—25GHz Radiated emissison Test result									
EUT: Bluetooth Car Visor Speaker M/N: UM-B102-BS									
Power: DC 5V From PC AC 120V/60Hz									
Test date: 2014-07-27 Test site: 3m Chamber Tested by: Store Chu									
Test mode: GFSK Tx CH40 2480MHz									
Antenna polarity: Vertical									
No	Freq (MHz)	Read Level (dBuV/m)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4960	46.82	33.98	10.22	34.25	56.77	74.00	17.23	PK
2	4960	38.01	33.98	10.22	34.25	47.96	54.00	6.04	AV
3	7440	/							
4	9920	/							
5	12400	/							
Antenna Polarity: Horizontal									
1	4960	48.16	33.98	10.22	34.25	58.11	74.00	15.89	PK
2	4960	37.56	33.98	10.22	34.25	47.51	54.00	6.49	AV
3	7440	/							
4	9920	/							
5	12400	/							
Note: 1, Measuring frequency from 1GHz to 25GHz 2, Spectrum Set for PK measure: RBW=1MHz, VBW=1MHz, Sweep time=Auto, Detector: PK 2, Spectrum Set for AV measure: RBW=1MHz, VBW=10Hz, Sweep time=Auto, Detector: PK 3, Result = Read level + Antenna factor + cable loss-Amp factor 4, All the other emissions not reported were too low to read and deemed to comply with FCC limit.									

6 POWER LINE CONDUCTED EMISSION

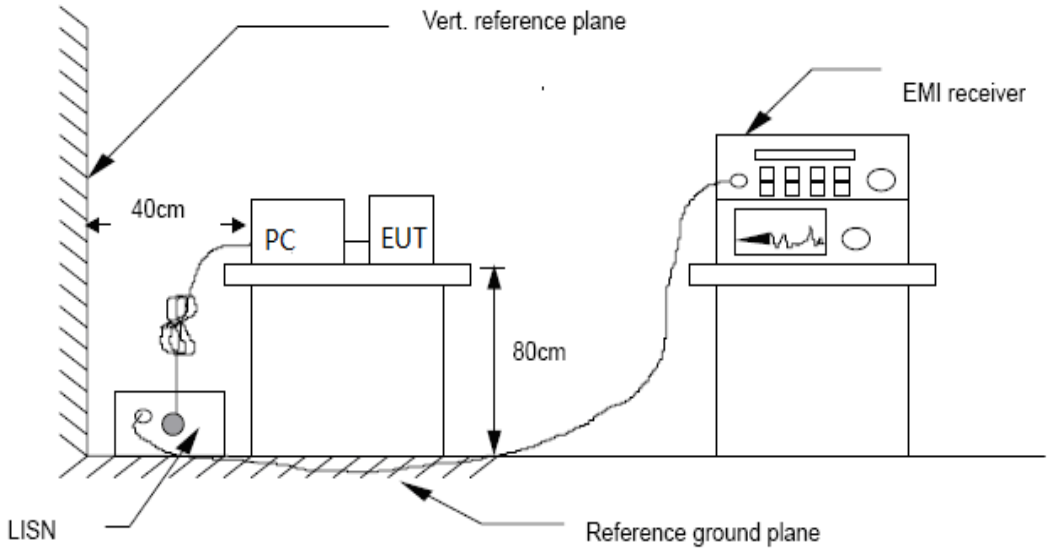
6.1 Conducted Emission Limits(15.207)

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 -0.50	66 -56*	56 - 46*
0.50 -5.00	56	46
5.00 -30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

3.The limit decreases in line with the logarithm of the frequency in the rang of 0.15 to 0.50 MHz.

6.2 Test Setup



6.3 Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4-2003 on Conducted Emission Measurement.
The bandwidth of test receiver (R & S ESCS30) is set at 9 kHz.

6.4 Test Results

PASS

Detailed information please see the following page.

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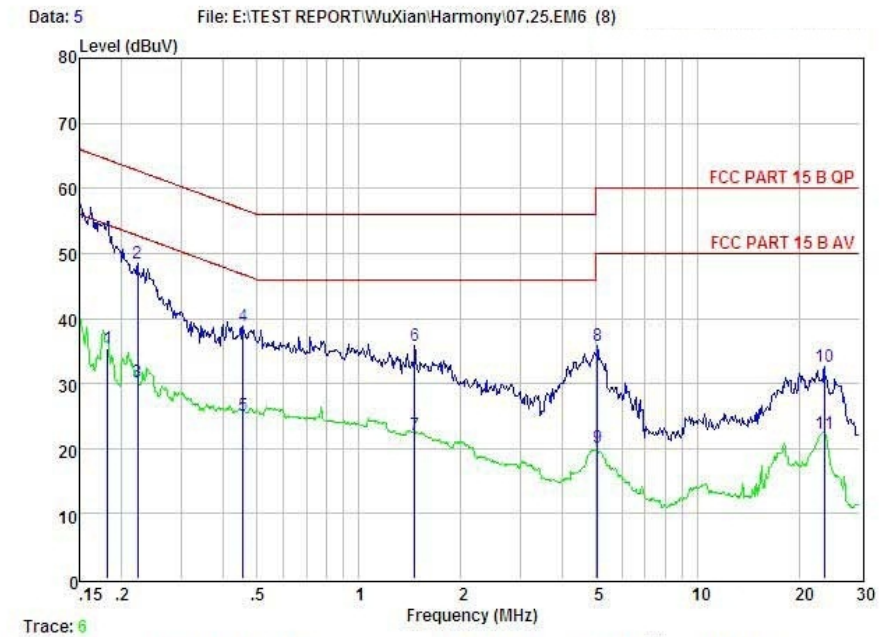


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Condition     : FCC PART 15 B QP              POL: NEUTRAL  Temp:24 ℃   Hum:56 %
EUT           : Bluethooth Car Visor Speaker
Model No      : UM-B102-BS
Test Mode     : Charge And TX  Mode (GFSK) CH0
Power         : DC 5V from PC AC 120V/60Hz
Test Engineer: Store
Remark        :
```

Item	Freq	Read	LISN Factor	Preamp Factor	Cable Lose	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	0.182	25.61	0.03	-9.72	0.10	35.46	54.42	-18.96	Average
2	0.223	38.63	0.03	-9.72	0.10	48.48	62.70	-14.22	QP
3	0.223	20.33	0.03	-9.72	0.10	30.18	52.70	-22.52	Average
4	0.456	28.93	0.03	-9.72	0.10	38.78	56.76	-17.98	QP
5	0.456	15.26	0.03	-9.72	0.10	25.11	46.76	-21.65	Average
6	1.464	25.86	0.05	-9.71	0.10	35.72	56.00	-20.28	QP
7	1.464	12.22	0.05	-9.71	0.10	22.08	46.00	-23.92	Average
8	5.058	25.85	0.10	-9.68	0.12	35.75	60.00	-24.25	QP
9	5.058	10.21	0.10	-9.68	0.12	20.11	50.00	-29.89	Average
10	23.636	22.15	0.43	-9.56	0.44	32.58	60.00	-27.42	QP
11	23.636	11.78	0.43	-9.56	0.44	22.21	50.00	-27.79	Average

Remarks: Level = Read + LISN Factor - Preamp Factor + Cable loss

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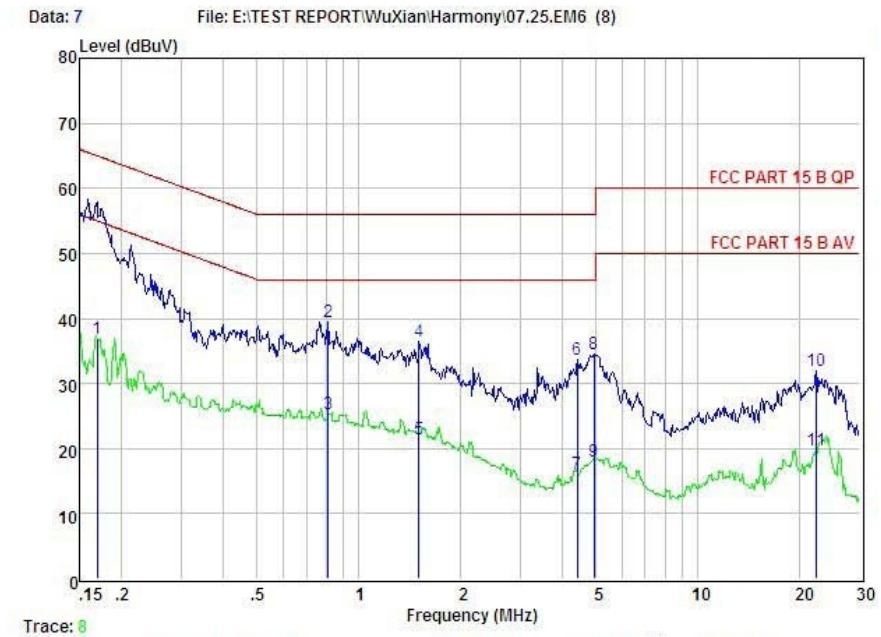
Website: http://www.cessz.com Email:Service@cessz.com



Condition : FCC PART 15 B QP POL: LINE Temp:24 ℃ Hum:56 %
EUT : Bluethooth Car Visor Speaker
Model No : UM-B102-BS
Test Mode : Charge And TX Mode (GFSK) CH0
Power : DC 5V from PC AC 120V/60Hz
Test Engineer: Store
Remark :

Item	Freq	Read	LISN Factor	Preamp Factor	Cable Lose	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	0.169	26.97	0.03	-9.72	0.10	36.82	54.99	-18.17	Average
2	0.813	29.73	0.02	-9.71	0.10	39.56	56.00	-16.44	QP
3	0.813	15.54	0.02	-9.71	0.10	25.37	46.00	-20.63	Average
4	1.503	26.65	0.05	-9.71	0.10	36.51	56.00	-19.49	QP
5	1.503	11.58	0.05	-9.71	0.10	21.44	46.00	-24.56	Average
6	4.407	23.75	0.09	-9.68	0.12	33.64	56.00	-22.36	QP
7	4.407	6.28	0.09	-9.68	0.12	16.17	46.00	-29.83	Average
8	4.952	24.72	0.10	-9.68	0.12	34.62	56.00	-21.38	QP
9	4.952	8.14	0.10	-9.68	0.12	18.04	46.00	-27.96	Average
10	22.298	21.53	0.40	-9.54	0.40	31.87	60.00	-28.13	QP
11	22.298	9.33	0.40	-9.54	0.40	19.67	50.00	-30.33	Average

Remarks: Level = Read + LISN Factor - Preamp Factor + Cable loss

7 Conducted Maximum Output Power

7.1 Test limit

Please refer section15.247.

Regulation 15.247(b) The limit of Maximum Peak Output Power Measurement is 1W(30dBm)

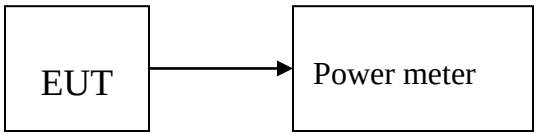
7.2 Test Procedure

7.2.1 Connected the EUT's antenna port to peak power meter by 20dB attenuator.

7.2.2 Measure out each mode and each bands peak output power of EUT.

Note: The cable loss and attenuator loss were offset into measure device as amplitude offset. Details see the KDB558074 D01 DTS Meas Guidance v03r02.

7.3 Test Setup



7.4 Test Results

PASS

Detailed information please see the Below.

Channel	Frequency (MHz)	PK Output Power (dBm)	PK Output Power (mW)	Limit (dBm)
CH0	2402	2.41	1.74	30
CH19	2440	2.57	1.81	30
CH39	2480	2.19	1.66	30

8 PEAK POWER SPECTRAL DENSITY

8.1 Test limit

8.1.1 Please refer section15.247.

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

8.1.3 The direct sequence operating of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

8.2 Method of measurement

Details see the KDB558074 D01 DTS Meas Guidance v03r02.

8.2.1 Place the EUT on the table and set it in transmitting mode.

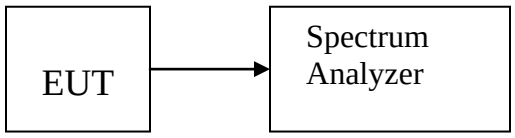
8.2.2 Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

8.2.3 Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, span=1.5OBW, detail see the test plot.

8.2.4 Record the max reading.

8.2.5 Repeat the above procedure until the measurements for all frequencies are completed.

8.3 Test Setup



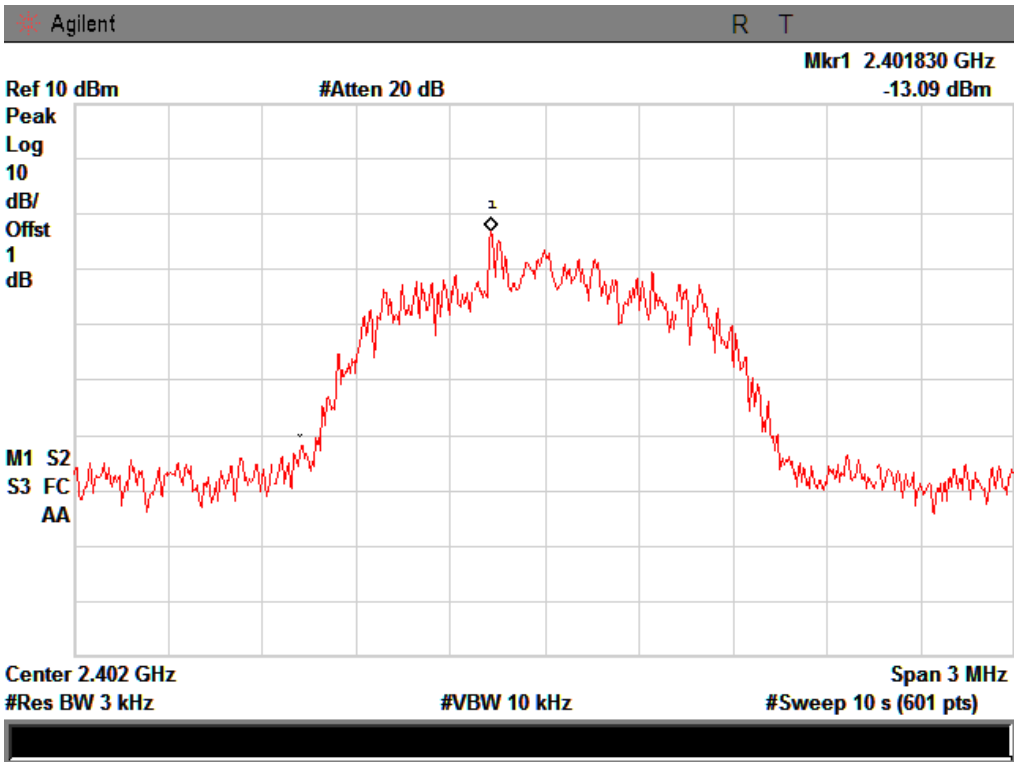
8.4 Test Results

PASS.

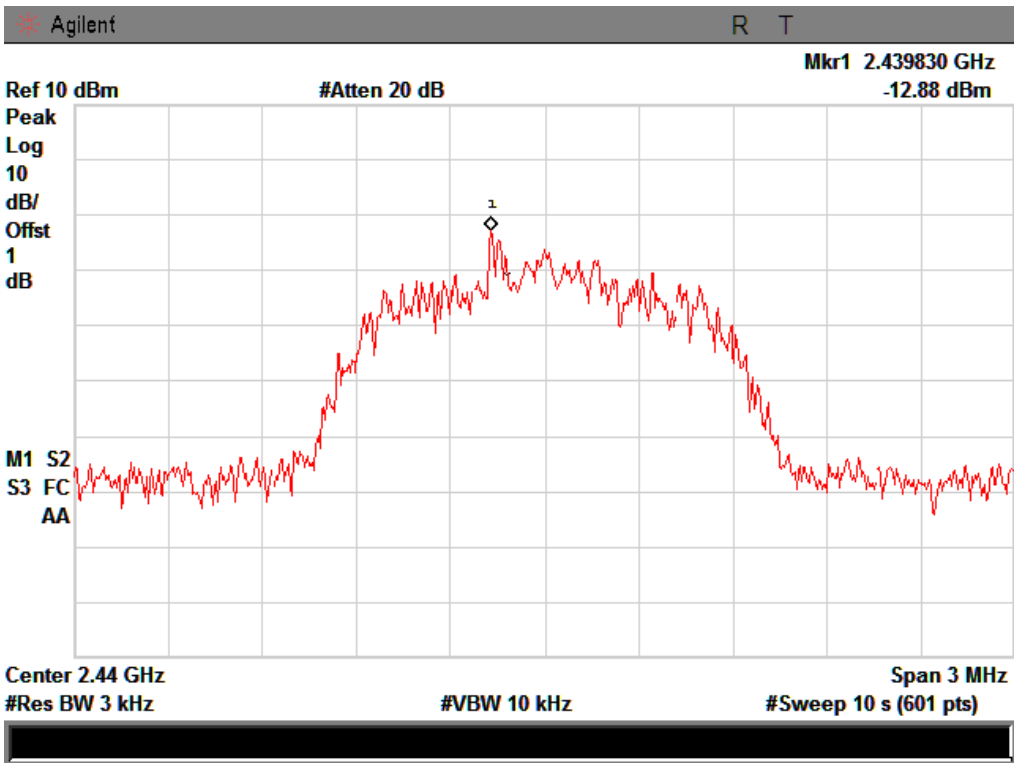
Detailed information please see the following page.

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limit (dBm)	Result
CH0	2402	-13.09	8	PASS
CH19	2440	-12.88	8	PASS
CH39	2480	-13.24	8	PASS

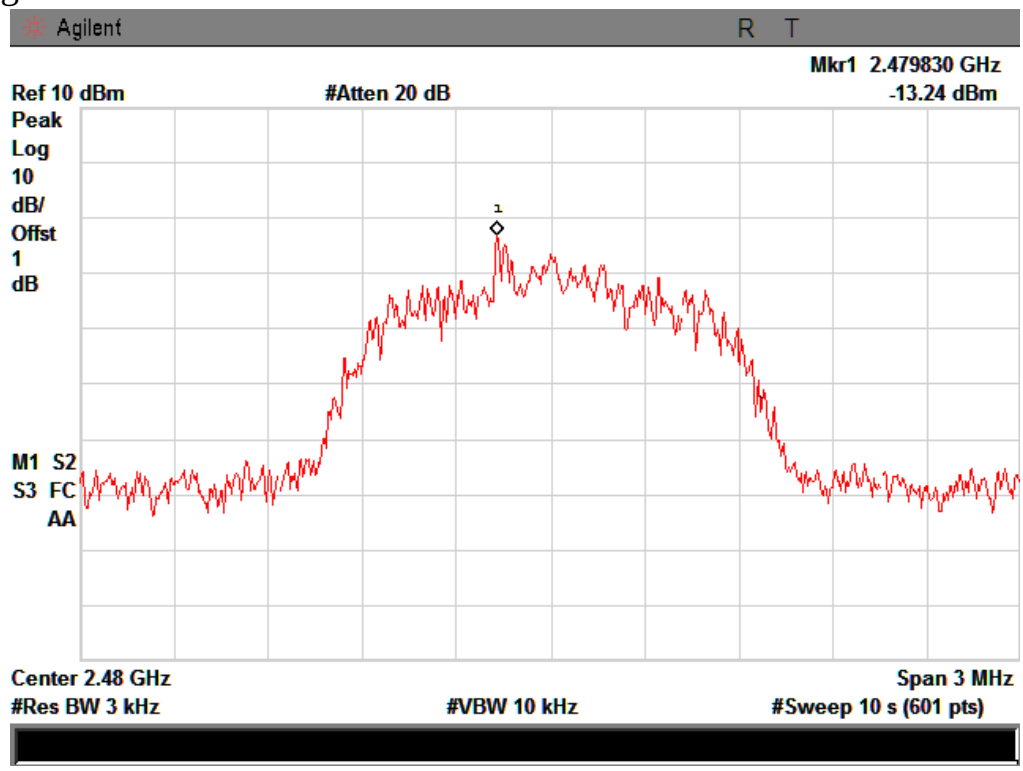
CH Low :


Agilent
R T
Mkr1 2.401830 GHz
Ref 10 dBm
#Atten 20 dB
-13.09 dBm
Peak
Log
10
dB/
Offst
1
dB
M1 S2
S3 FC
AA
Center 2.402 GHz
Span 3 MHz
#Res BW 3 kHz
#VBW 10 kHz
#Sweep 10 s (601 pts)

CH Mid :


Agilent
R T
Mkr1 2.439830 GHz
Ref 10 dBm
#Atten 20 dB
-12.88 dBm
Peak
Log
10
dB/
Offst
1
dB
M1 S2
S3 FC
AA
Center 2.44 GHz
Span 3 MHz
#Res BW 3 kHz
#VBW 10 kHz
#Sweep 10 s (601 pts)

CH High :


Agilent
R T
Mkr1 2.479830 GHz
-13.24 dBm
Ref 10 dBm
#Atten 20 dB
Peak
Log
10
dB/
Offst
1
dB
M1 S2
S3 FC
AA
Center 2.48 GHz
Span 3 MHz
#Res BW 3 kHz
#VBW 10 kHz
#Sweep 10 s (601 pts)

9 Bandwidth

9.1 Test limit

Please refer section15.247

For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz.

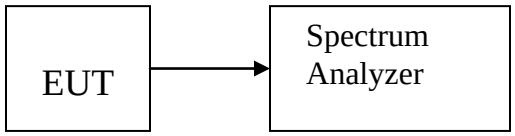
9.2 Method of measurement

Details see the KDB558074 D01 DTS Meas Guidance v03r02.

a)The bandwidth is measured at an amplitude level reduced 20dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

b) The test receiver set RBW =100KHz, VBW≥3RBW, Sweep time set auto, detail see the test plot.

9.3 Test Setup



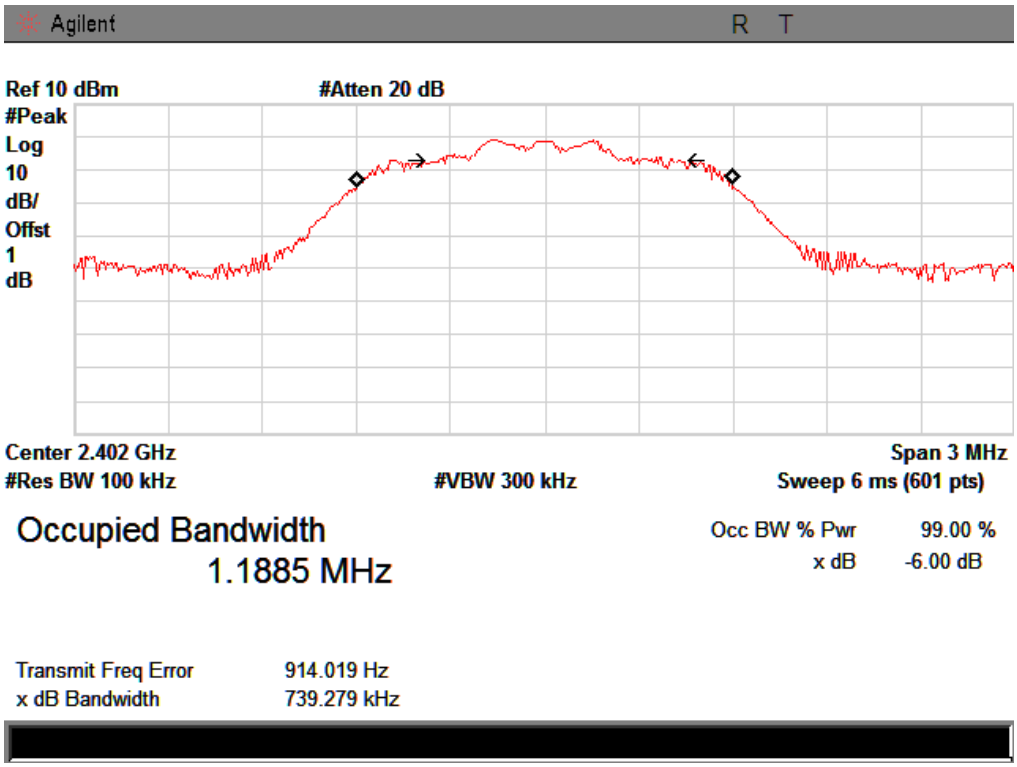
9.4 Test Results

PASS.

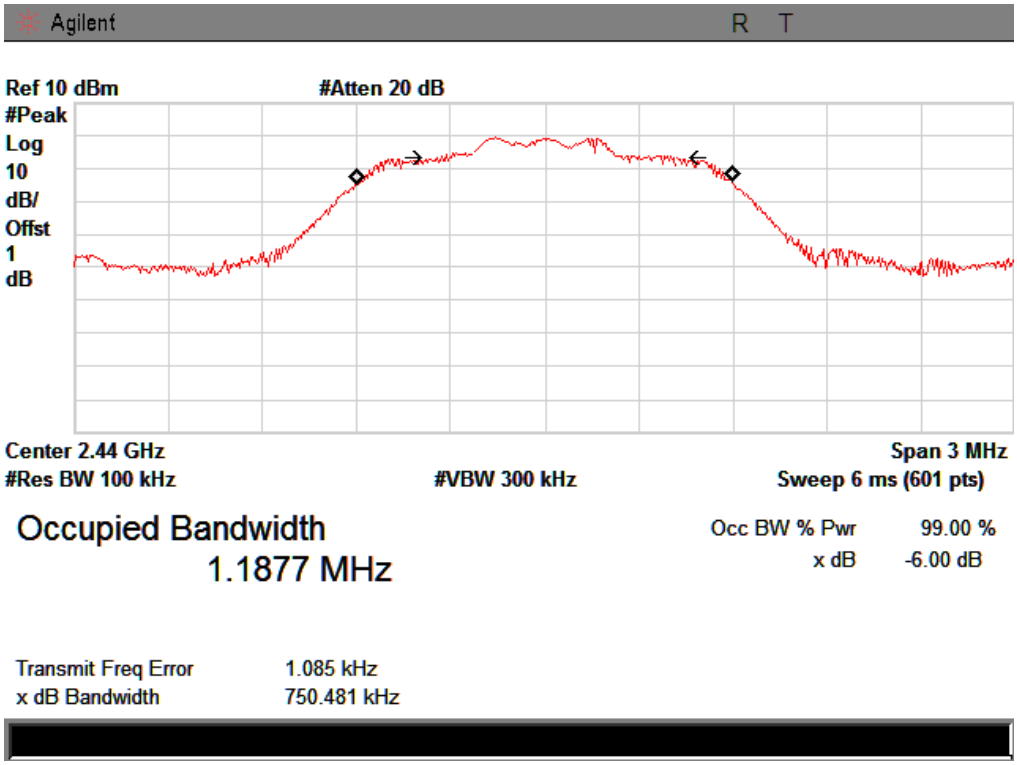
Detailed information please see the following page.

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit (MHz)	Result
CH0	2402	0.739	1.189	0.5	PASS
CH19	2440	0.750	1.188	0.5	PASS
CH39	2480	0.774	1.194	0.5	PASS

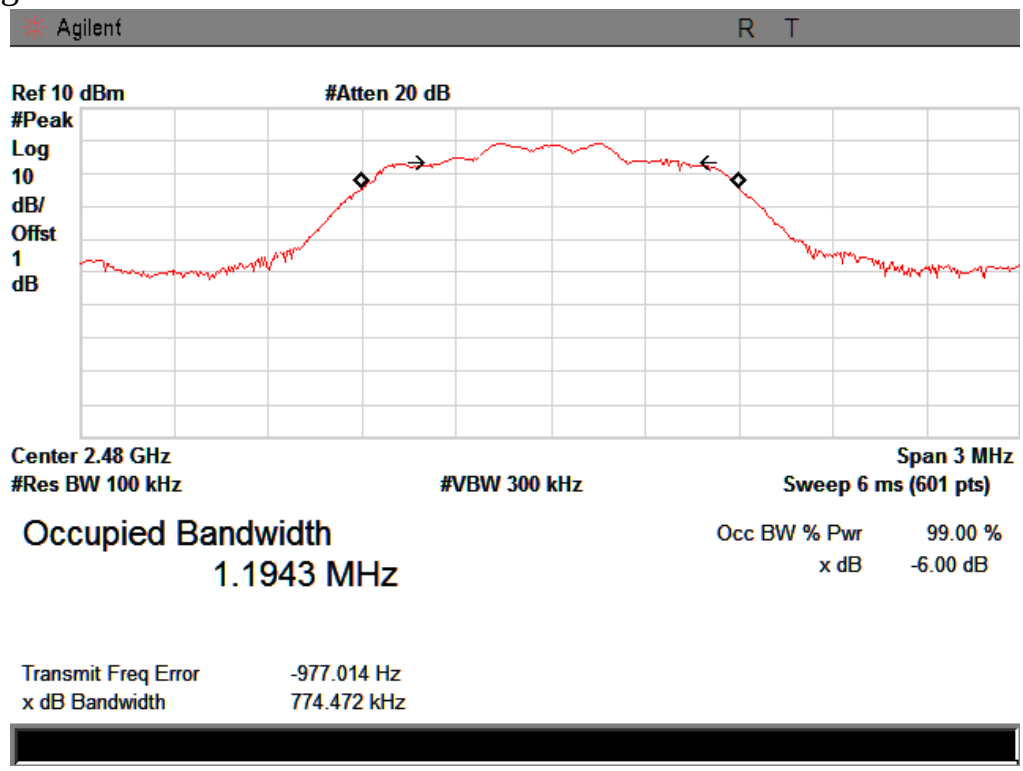
CH Low :


Agilent
R T
Ref 10 dBm
#Atten 20 dB
#Peak
Log
10
dB/
Offst
1
dB
Center 2.402 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 3 MHz
Sweep 6 ms (601 pts)
Occupied Bandwidth
1.1885 MHz
Occ BW % Pwr 99.00 %
x dB -6.00 dB
Transmit Freq Error 914.019 Hz
x dB Bandwidth 739.279 kHz

CH Mid :


Agilent
R T
Ref 10 dBm
#Atten 20 dB
#Peak
Log
10
dB/
Offst
1
dB
Center 2.44 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 3 MHz
Sweep 6 ms (601 pts)
Occupied Bandwidth
1.1877 MHz
Occ BW % Pwr 99.00 %
x dB -6.00 dB
Transmit Freq Error 1.085 kHz
x dB Bandwidth 750.481 kHz

CH High :


Agilent
R T
Ref 10 dBm
#Atten 20 dB
#Peak
Log
10
dB/
Offst
1
dB
Center 2.48 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 3 MHz
Sweep 6 ms (601 pts)
Occupied Bandwidth
1.1943 MHz
Occ BW % Pwr 99.00 %
x dB -6.00 dB
Transmit Freq Error -977.014 Hz
x dB Bandwidth 774.472 kHz

10 Band Edge Check

10.1 Test limit

Please refer section15.247

All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

10.2 Test Procedure

12.2.1 Put the EUT on a 0.8m high table, power on the EUT. Emissions were scanned and measured rotating the EUT to 360 degrees, Find the maximum Emission

12.2.2 Check the spurious emissions out of band.

12.2.3 RBW, VBW Setting, please see the following test plot.

10.3 Test Setup

Same as 5.2.2.

10.4 Test Result

PASS.

Detailed information please see the following page.

CH LOW :

Shenzhen Certification Technology Service Co., Ltd.
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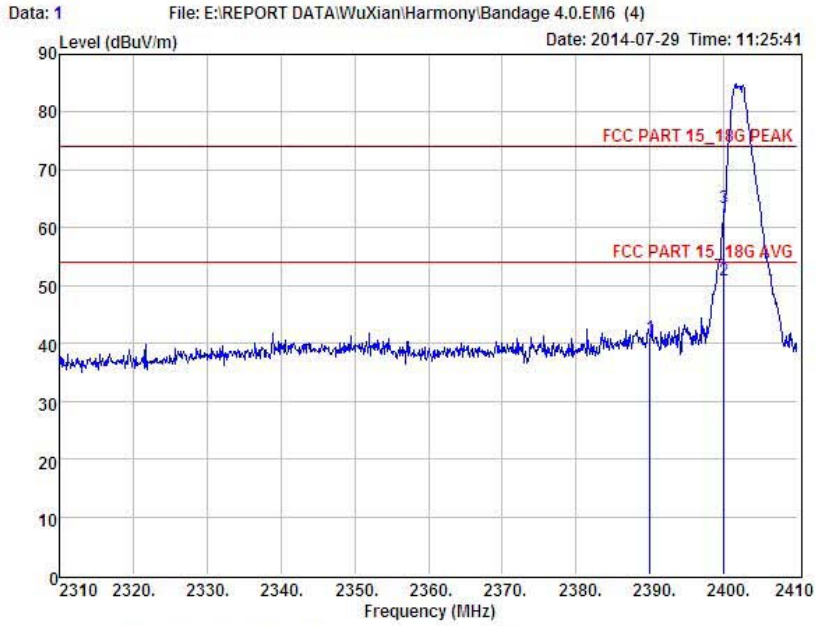
Website: http://www.cessz.com Email: Service@cessz.com




```
Condition      : FCC PART 15_18G PEAK 3m       POL: VERTICAL
EUT            : Bluetooth Car Visor Speaker
Model No       : UM-B102-BS
Test Mode      : GFSK 2402MHz
Power          : DC 5V From PC AC 120V/60Hz
Test Engineer  : Stroe
Remark         :
Temp           :
Hum            :
```

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	44.36	27.62	34.97	3.92	40.93	74.00	-33.07	Peak
2	2400.00	54.26	27.62	34.97	3.94	50.85	54.00	-3.15	Average
3	2400.00	66.93	27.62	34.97	3.94	63.52	74.00	-10.48	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
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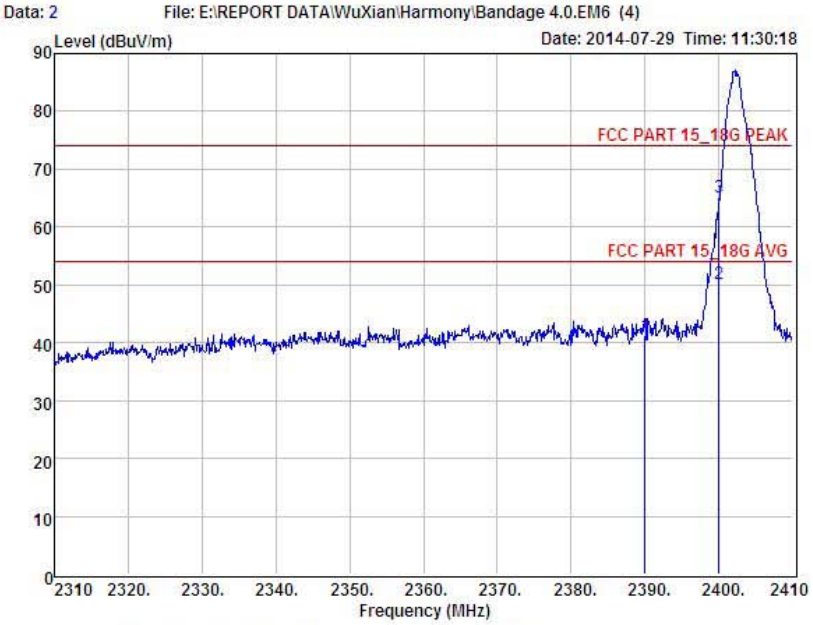
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com



Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL
EUT : Bluetooth Car Visor Speaker
Model No : UM-B102-BS
Test Mode : GFSK 2402MHz
Power : DC 5V From PC AC 120V/60Hz
Test Engineer : Store
Remark :
Temp :
Hum :

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	44.67	27.62	34.97	3.92	41.24	74.00	-32.76	Peak
2	2400.00	53.49	27.62	34.97	3.94	50.08	54.00	-3.92	Average
3	2400.00	68.49	27.62	34.97	3.94	65.08	74.00	-8.92	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

CH High :

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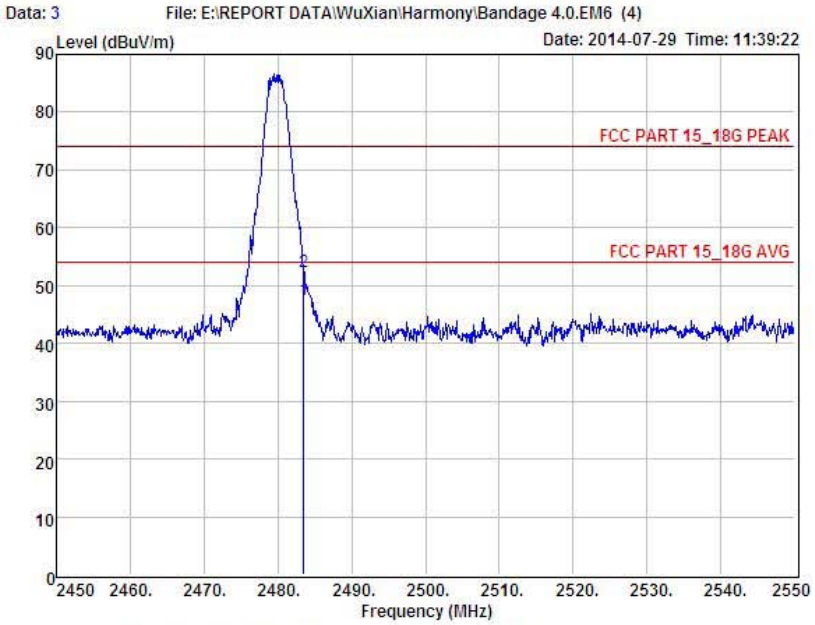
Website: http://www.cessz.com Email: Service@cessz.com




```
Condition      : FCC PART 15_18G PEAK 3m       POL: HORIZONTAL
EUT            : Bluetooth Car Visor Speaker
Model No       : UM-B102-BS
Test Mode      : GFSK 2480MHz
Power          : DC 5V From PC AC 120V/60Hz
Test Engineer  : Store
Remark         :
Temp           :
Hum            :
```

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2483.50	51.03	27.59	34.97	4.00	47.65	54.00	-6.35	Average
2	2483.50	55.67	27.59	34.97	4.00	52.29	74.00	-21.71	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

Shenzhen Certification Technology Service Co., Ltd.
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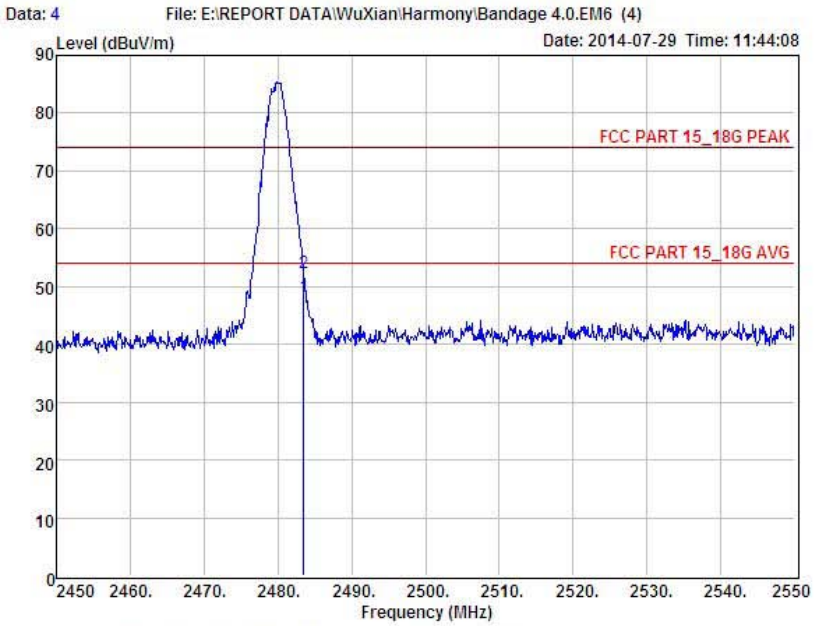


Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL
EUT : Bluetooth Car Visor Speaker
Model No : UM-B102-BS
Test Mode : GFSK 2480MHz
Power : DC 5V From PC AC 120V/60Hz
Test Engineer : Store
Remark :
Temp :
Hum :

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2483.50	51.66	27.59	34.97	4.00	48.28	54.00	-5.72	Average
2	2483.50	55.66	27.59	34.97	4.00	52.28	74.00	-21.72	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

11 Antenna Requirement

11.1 Standard Requirement

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

11.2 Antenna Connected Construction

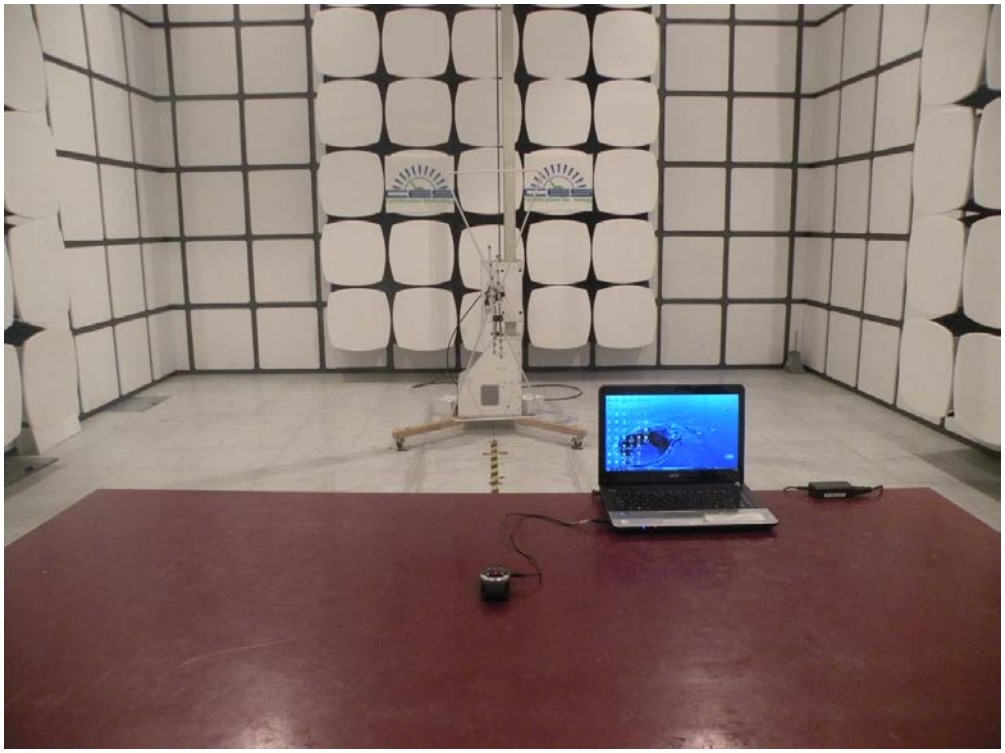
The directional gains of antenna used for transmitting is 0 dBi, and de-signed with permanent attachment and no consideration of replacement. Please see EUT photo for details.

11.3 Result

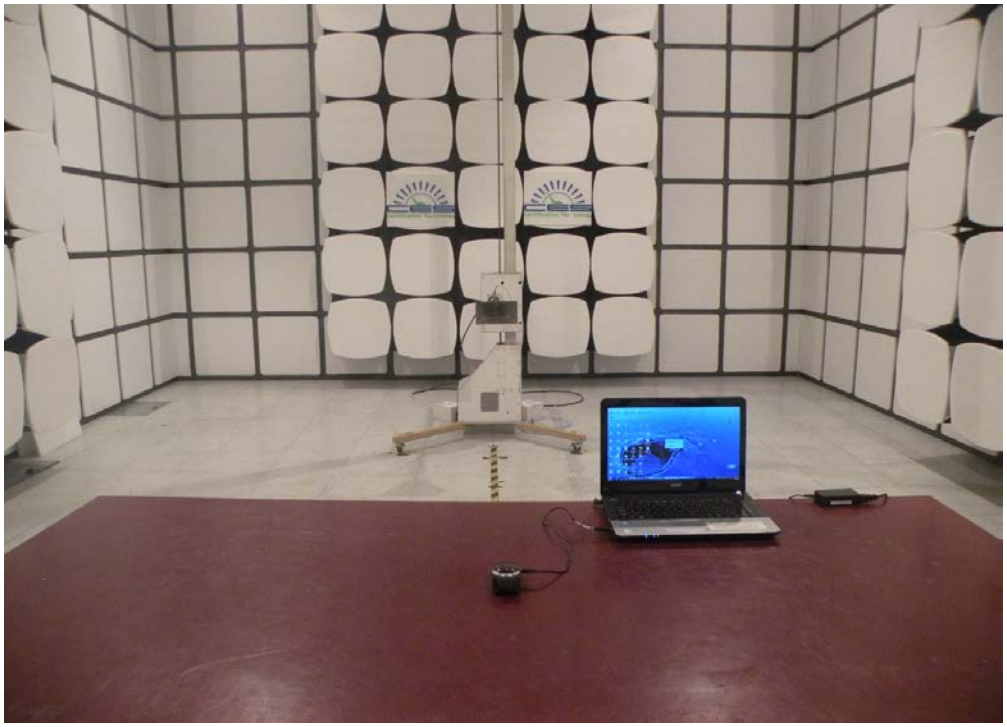
The EUT antenna is PCB Antenna. It comply with the standard requirement.

12 Photographs of Test Setup

Photographs-Radiated Emission Test Setup in Chamber Below 1G



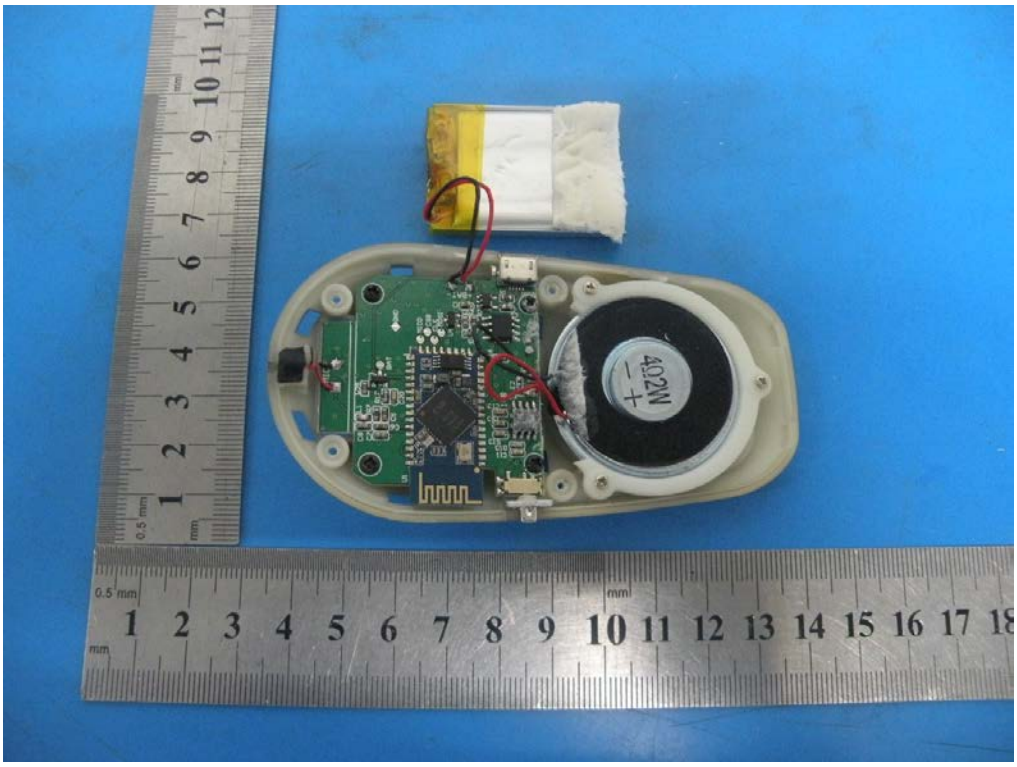
Above 1G

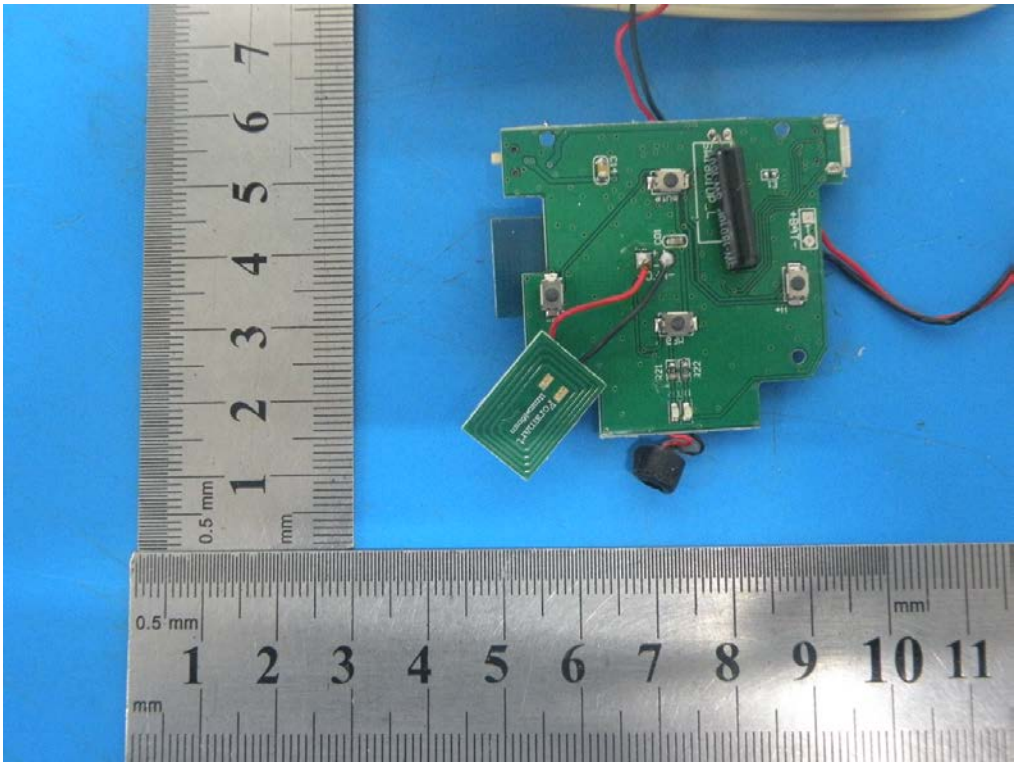


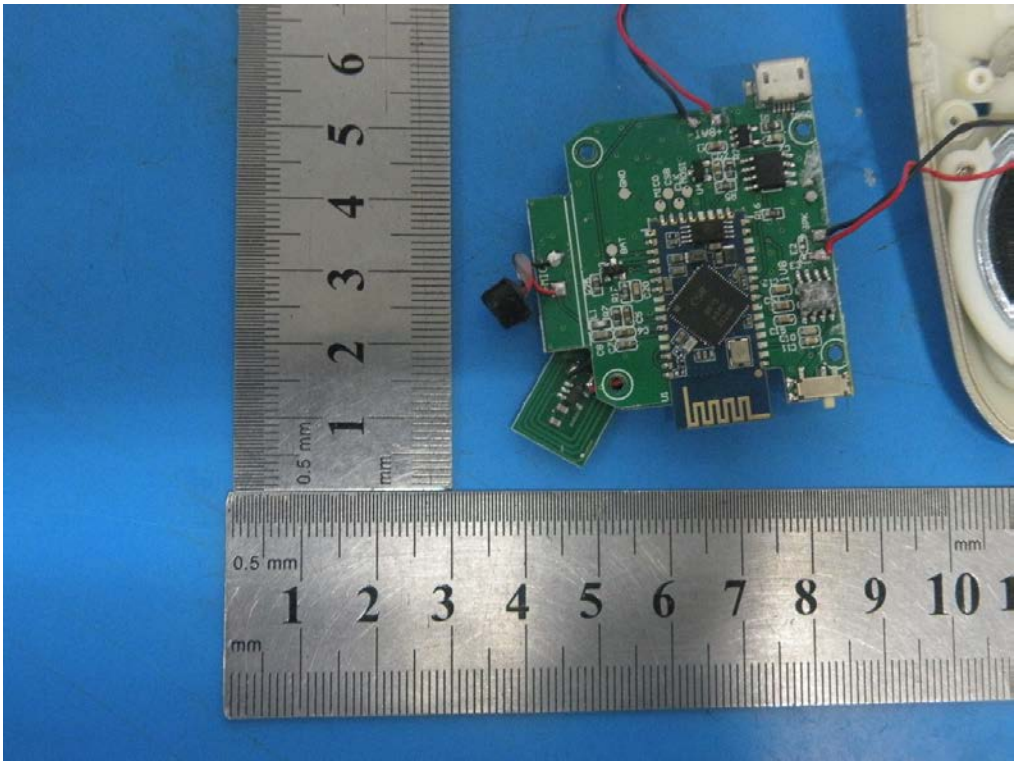
13 Photographs of EUT

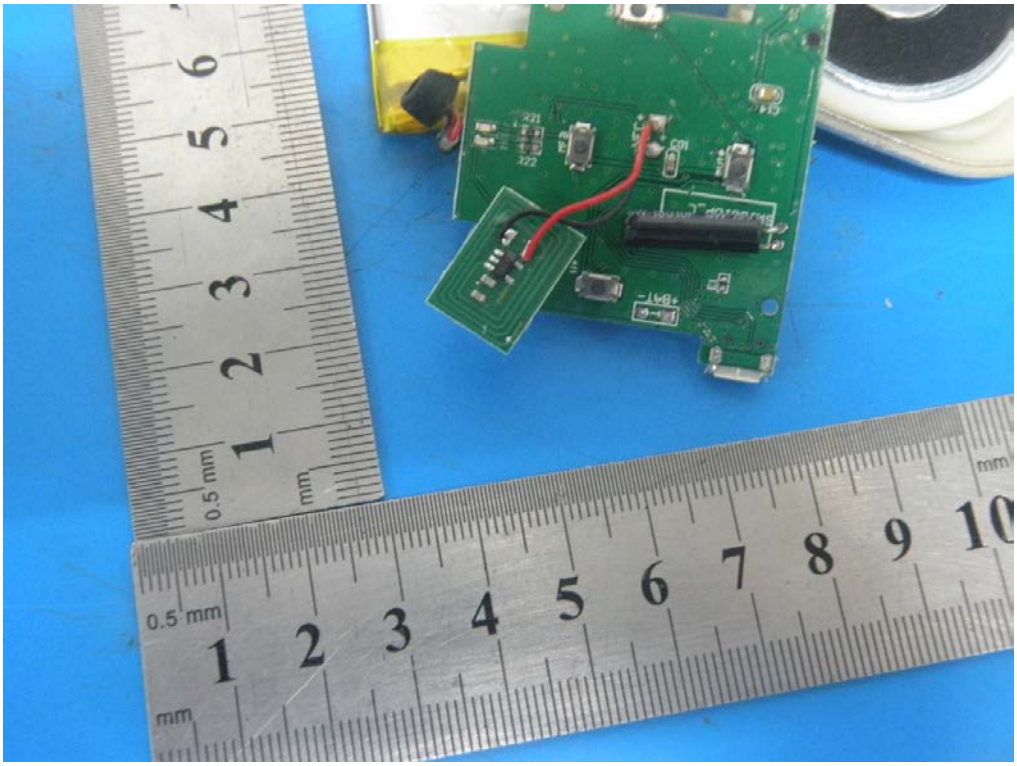

4Ω2W


4Ω2W




0.5 mm
mm
1 2 3 4 5 6 7 8 9 10 11


0.5 mm
mm
1 2 3 4 5 6 7 8 9 10



-------END OF THE REPORT-------