



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: RH8-MINIBASS

Applicant : All Best Technology Limited
Address : No.9, Yincheng 1st Rd., Xiabian Village, Chang'an Town,
Dongguan City, Guangdong Province, China

Equipment Under Test (EUT):

Name : Portable Mini Bluetooth Speaker
Model : Mini Bass

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

Report No : CST-TCB140325011
Date of Test : March 25, 2014 to April 1, 2014
Date of Issue : April 3, 2014

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Test Result :	PASS *
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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

Description	Page
1 General Information -----	4
1.1 Description of Device (EUT)-----	4
1.2 Description of Test Facility-----	4
2 EMC Equipment List -----	5
3 Test Procedure -----	6
4 Summary of Measurement -----	7
4.1 Summary of test result-----	7
4.2 Test connection-----	7
4.3 Assistant equipment used for test-----	7
4.4 Test mode-----	8
4.5 Test Conditions-----	8
4.6 Measurement Uncertainty (95% confidence levels, k=2)-----	9
5 Spurious Emission -----	10
5.1 Radiation Emission-----	10
5.1.1 Radiation Emission Limits(15.209)-----	10
5.1.2 Test Setup-----	10
5.1.3 Test Procedure-----	12
5.1.4 Test Equipment Setting For emission test Result-----	12
5.1.5 Test Condition-----	12
5.1.6 Test Result-----	12
6 POWER LINE CONDUCTED EMISSION -----	18
6.1 Conducted Emission Limits(15.207)-----	18
6.2 Test Setup-----	18
6.3 Test Procedure-----	19
6.4 Test Results-----	19
7 Conducted Maximum Output Power -----	22
7.1 Test limit-----	22
Please refer section 15.247.-----	22
7.2 Test Procedure-----	22
7.3 Test Setup-----	22
7.4 Test Results-----	22
8 PEAK POWER SPECTRAL DENSITY -----	23
8.1 Test limit-----	23
8.2 Method of measurement-----	23
8.3 Test Setup-----	23
8.4 Test Results-----	23
9 Bandwidth -----	26
9.1 Test limit-----	26
9.2 Method of measurement-----	26
9.3 Test Setup-----	26
9.4 Test Results-----	26
10 Band Edge Check -----	29
10.1 Test limit-----	29
10.2 Test Procedure-----	29
10.3 Test Setup-----	29
10.4 Test Result-----	29

11 Antenna Requirement	34
12 Test setup photo	35
12.1 Photos of Radiated emission	35
12.2 Photos of Conducted Emission test	36
13 Photographs of EUT	37

1 General Information

1.1 Description of Device (EUT)

EUT	: Portable Mini Bluetooth Speaker
Model No.	: Mini Bass
Trade mark	: N/A
Power supply	: DC 3.7V 400mAh internal Lithium battery And DC5V from PC for charge
Radio Technology	: Bluetooth 4.0
Operation frequency	: 2402-2480MHz
Channel numbers	40
Channel seperation	2MHz
Modulation	: GFSK
Antenna Type	: PCB Antenna, max gain 0 dBi
Applicant	: All Best Technology Limited
Address	: No.9, Yincheng 1st Rd., Xiabian Village, Chang'an Town, Dongguan City, Guangdong Province, China
Manufacturer	: All Best Technology Limited
Address	: No.9, Yincheng 1st Rd., Xiabian Village, Chang'an Town, Dongguan City, Guangdong Province, China

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
IC Registered No.: 8528B

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.12, 14	1Year
Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D(1201)	Mar.12, 14	1Year
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170 D(1432)	Mar.12, 14	1Year
Active Loop Antenna	Beijing Daze	ZN30900A	SEL0097	Mar.12, 14	1Year
L.I.S.N.	SCHWARZBECK	NSLK8126	8126466	Oct. 30, 13	1Year
Cable	Resenberger	N/A	No.1	Oct. 30, 13	1Year
Cable	SCHWARZBECK	N/A	No.2	Oct. 30, 13	1Year
Cable	SCHWARZBECK	N/A	No.3	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°C 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 120kHz 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°C 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(d)&15.209	Compliance
Conduction Emission	FCC PART 15:2013	Section 15.207	Compliance
Bandwidth Test	FCC PART 15:2013	Section 15.247(a)(2)	Compliance
Conducted Peak ouput Power	FCC PART 15:2013	Section 15.247(b)(3)	Compliance
Power Density	FCC PART 15:2013	Section 15.247(e)	Compliance
Band Edge	FCC PART 15:2013	Section 15.247(d)	Compliance
Antenna Requirement	FCC PART 15:2013	Section15.203/15.247(c)	Compliance

Note: The EUT has been tested as an independent unit. And Continual transmitting in maximum power.

4.2 Test connection



4.3 Assistant equipment used for test

Description	:	Notebook
Manufacturer	:	Great Wall
Model No.	:	T80

4.4 Test mode

The test software “csr (bluetool3)” was used to control EUT work in Continuous TX mode, and select test channel, wireless mode

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	10	2422MHz	20	2442MHz	30	2462MHz
1	2404MHz	11	2424MHz	21	2444MHz	31	2464MHz
2	2406MHz	12	2426MHz	22	2446MHz	32	2466MHz
3	2408MHz	13	2428MHz	23	2448MHz	33	2468MHz
4	2410MHz	14	2430MHz	24	2450MHz	34	2470MHz
5	2412MHz	15	2432MHz	25	2452MHz	35	2472MHz
6	2414MHz	16	2434MHz	26	2454MHz	36	2474MHz
7	2416MHz	17	2436MHz	27	2456MHz	37	2476MHz
8	2418MHz	18	2438MHz	28	2458MHz	38	2478MHz
9	2420MHz	19	2440MHz	29	2460MHz	39	2480MHz

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below

Tested mode, channel, and data rate information		
Mode	Channel	Frequency (MHz)
GFSK	Lowest :CH0	2402
	Middle: CH20	2442
	Highest: CH39	2480

4.5 Test Conditions

Temperature range	21-25°C
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 conducted RF Power	0.65dB	
Uncertainty for temperature	0.2°C	
Uncertainty for humidity	1%	
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

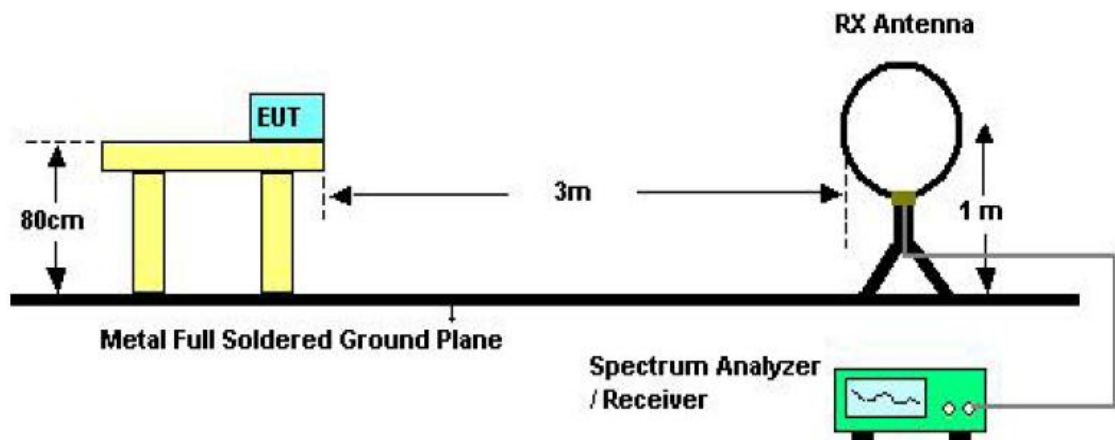
Harmonic emissions limits comply with below 54 dBuV/m at 3m. Other emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or comply with the radiated emissions limits specified in section 15.209(a) limit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

NOTE:

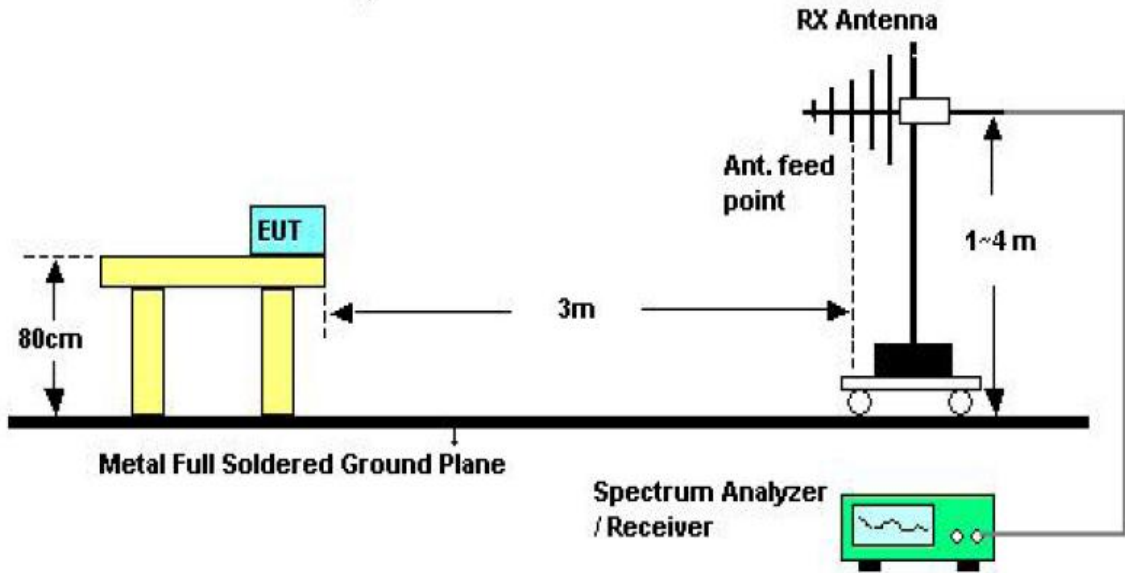
- a) The tighter limit applies at the band edges.
- b) Emission Level(dB uV/m)=20log Emission Level(Uv/m)

5.1.2 Test Setup

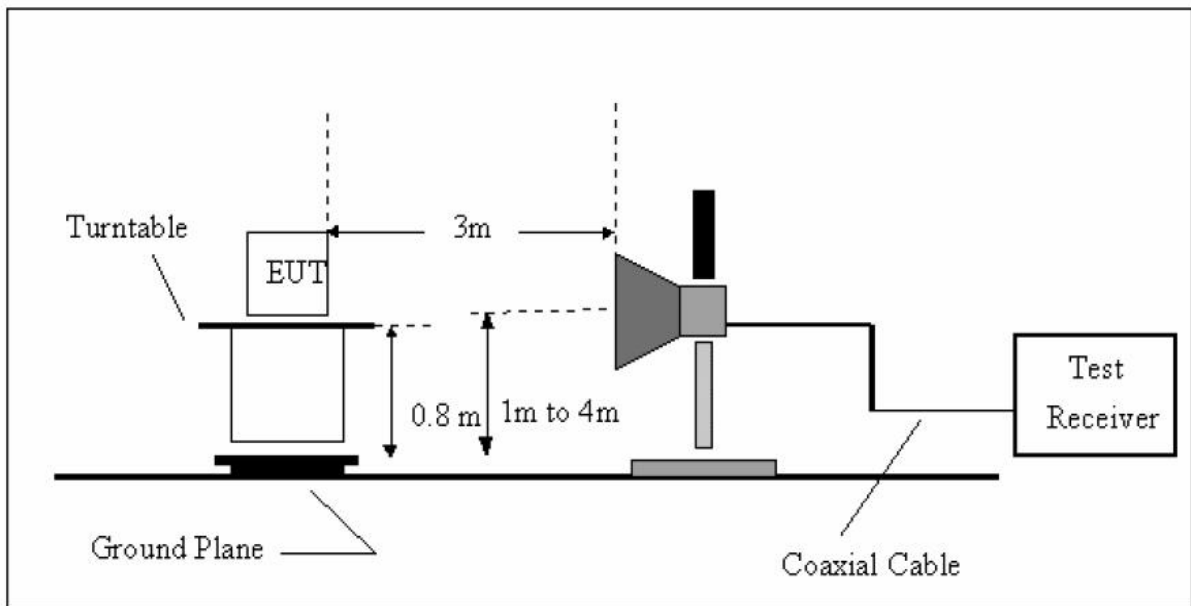
See the next page



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

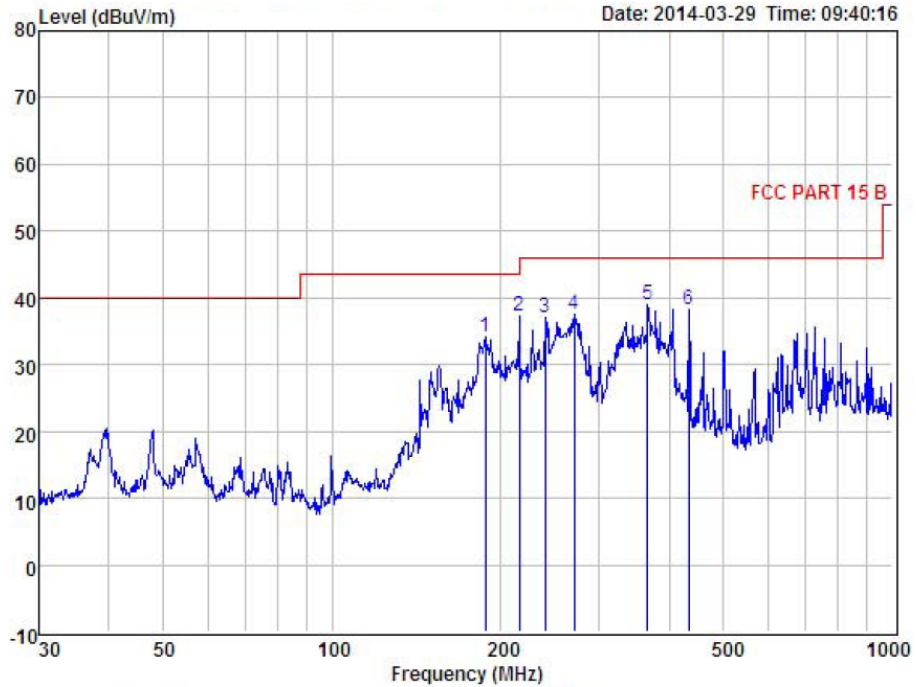
We have scanned the 10th harmonic from 9KHz to the EUT.

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.

Horizontal:

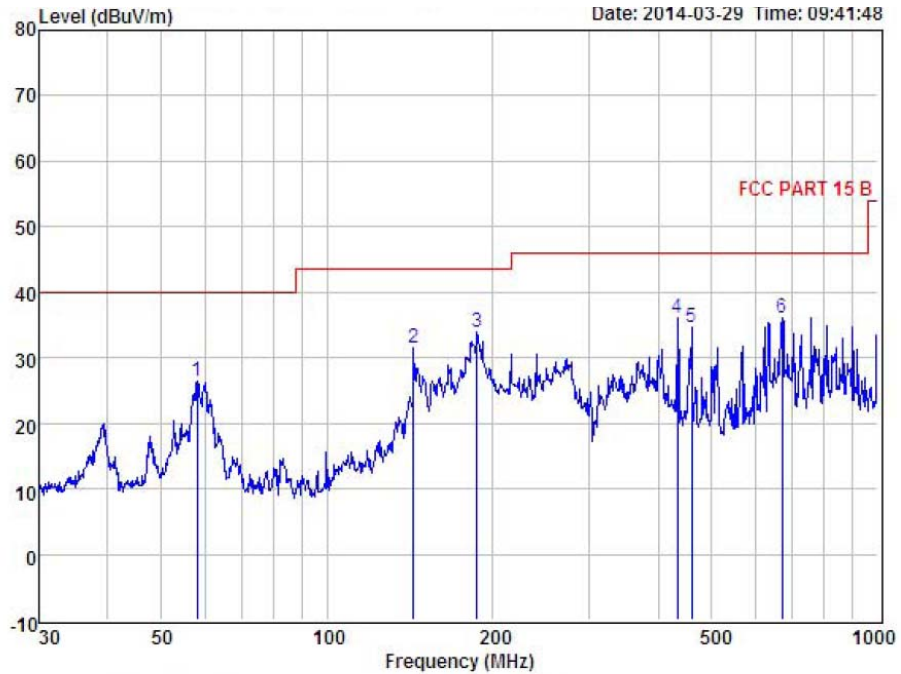


Condition : FCC PART 15 B 3m POL: HORIZONTAL
 EUT : Portable Mini Bluetooth Speaker
 Model No : Mini Bass
 Test Mode : Charging+Transmitting
 Power : DC5V from PC
 Test Engineer : Joe
 Remark :
 Temp : 24.2°C
 Hum : 54%

Item	Freq MHz	Read Level dBuV	Antenna Factor dB	Preamp Factor dB	Cable Loss dB	Level dBuV	Limit dBuV	Margin dBuV	Remark
1	187.75	49.83	10.71	26.95	0.55	34.14	43.50	-9.36	QP
2	216.02	53.42	10.41	27.05	0.55	37.33	46.00	-8.67	QP
3	239.99	52.13	11.45	27.09	0.53	37.02	46.00	-8.98	QP
4	270.37	51.97	12.09	27.14	0.69	37.61	46.00	-8.39	QP
5	365.54	51.25	14.16	27.32	0.78	38.87	46.00	-7.13	QP
6	432.55	49.55	15.53	27.46	0.74	38.36	46.00	-7.64	QP

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

Vertical:



Condition : FCC PART 15 B 3m POL: VERTICAL
 EUT : Portable Mini Bluetooth Speaker
 Model No : Mini Base
 Test Mode : Charging+Transmitting
 Power : DCSV from PC
 Test Engineer : Joe
 Remark :
 Temp : 24.2°C
 Hum : 54%

Item	Freq MHz	Read Level dBuV	Antenna Factor dB	Preamp Factor dB	Cable Loss dB	Level dBuV	Limit dBuV	Margin dBuV	Remark
1	58.20	41.09	12.91	27.86	0.23	26.37	40.00	-13.63	QP
2	143.83	44.28	13.77	26.90	0.38	31.53	43.50	-11.97	QP
3	167.10	49.38	10.95	26.94	0.60	33.99	43.50	-9.51	QP
4	432.55	47.24	15.53	27.46	0.74	36.05	46.00	-9.95	QP
5	459.11	45.10	16.06	27.51	1.10	34.75	46.00	-11.25	QP
6	670.49	43.36	19.35	27.78	1.14	36.07	46.00	-9.93	QP

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

1GHz—25GHz Radiated emission Test result									
EUT: Portable Mini Bluetooth Speaker					M/N: Mini Bass				
Power: DC 5V from PC									
Test date: 2014-3-29 Test site: 3m Chamber Tested by: Joe									
Test mode: Tx CH0 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	47.35	33.95	10.18	34.26	57.22	74.00	16.78	PK
2	4804	36.28	33.95	10.18	34.26	46.15	54.00	7.85	AV
3	7206	/							
4	9608	/							
5	12010	/							
Antenna Polarity: Horizontal									
1	4804	45.39	33.95	10.18	34.26	55.26	74.00	18.74	PK
2	4804	34.52	33.95	10.18	34.26	44.39	54.00	9.61	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 emission Test result									
EUT: Portable Mini Bluetooth Speaker					M/N: Mini Bass				
Power: DC 5V from PC									
Test date: 2013-03-29 Test site: 3m Chamber Tested by: Joe									
Test mode: Tx CH20 2442MHz									
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	4884	47.35	33.93	10.20	34.29	57.19	74.00	16.81	PK
2	4884	36.57	33.93	10.20	34.29	46.41	54.00	7.59	AV
3	7326	/							
4	9768	/							
5	12210	/							
Antenna Polarity: Horizontal									
1	4884	48.35	33.93	10.20	34.29	58.19	74.00	15.81	PK
2	4884	37.54	33.93	10.20	34.29	47.38	54.00	6.62	AV
3	7326	/							
4	9768	/							
5	12210	/							
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 emission Test result									
EUT: Portable Mini Bluetooth Speaker M/N:Mini Bass									
Power: DC 5V from PC									
Test date: 2013-03-29 Test site: 3m Chamber Tested by: Joe									
Test mode: Tx CH39 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	46.38	33.98	10.22	34.25	56.33	74.00	17.67	PK
2	4960	35.28	33.98	10.22	34.25	45.23	54.00	8.77	AV
3	7440	/							
4	9920	/							
5	12400	/							
Antenna Polarity: Horizontal									
1	4960	46.29	33.98	10.22	34.25	56.24	74.00	17.76	PK
2	4960	36.38	33.98	10.22	34.25	46.33	54.00	7.67	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)

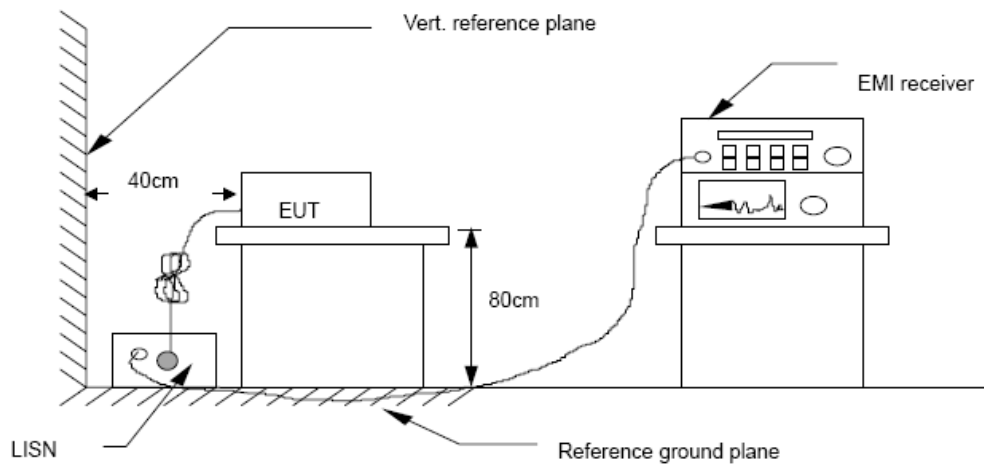
Frequency MHz	Limits dB(μ V)	
	Quasi-peak Level	Average Level
0.15 -0.50	66 -56*	56 - 46*
0.50 -5.00	56	46
5.00 -30.00	60	50

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

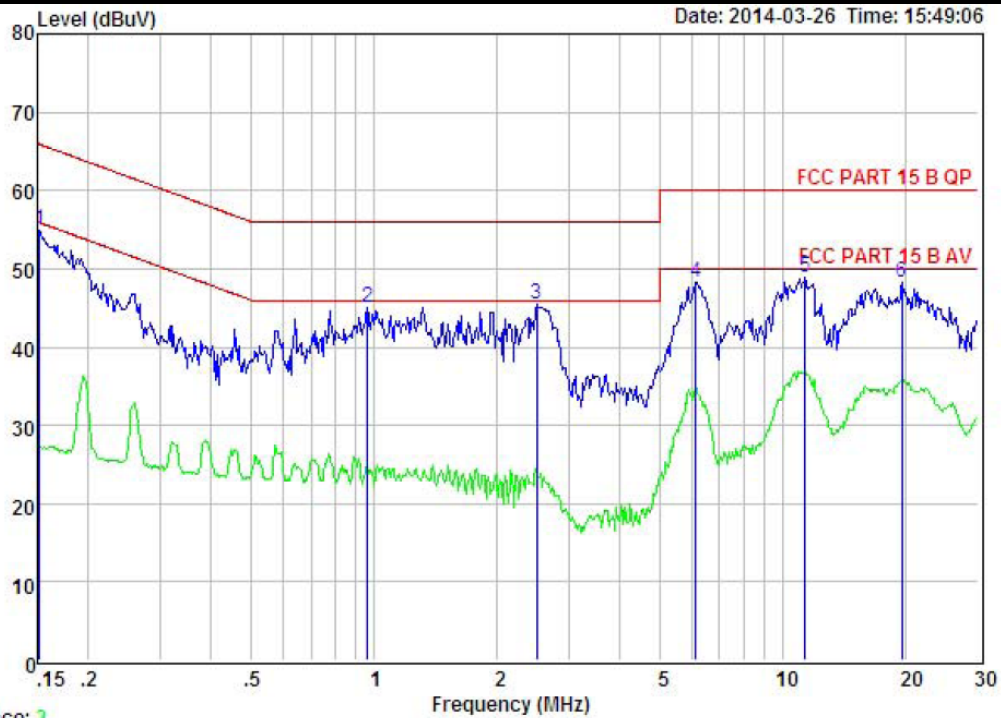


6.3 Test Procedure

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

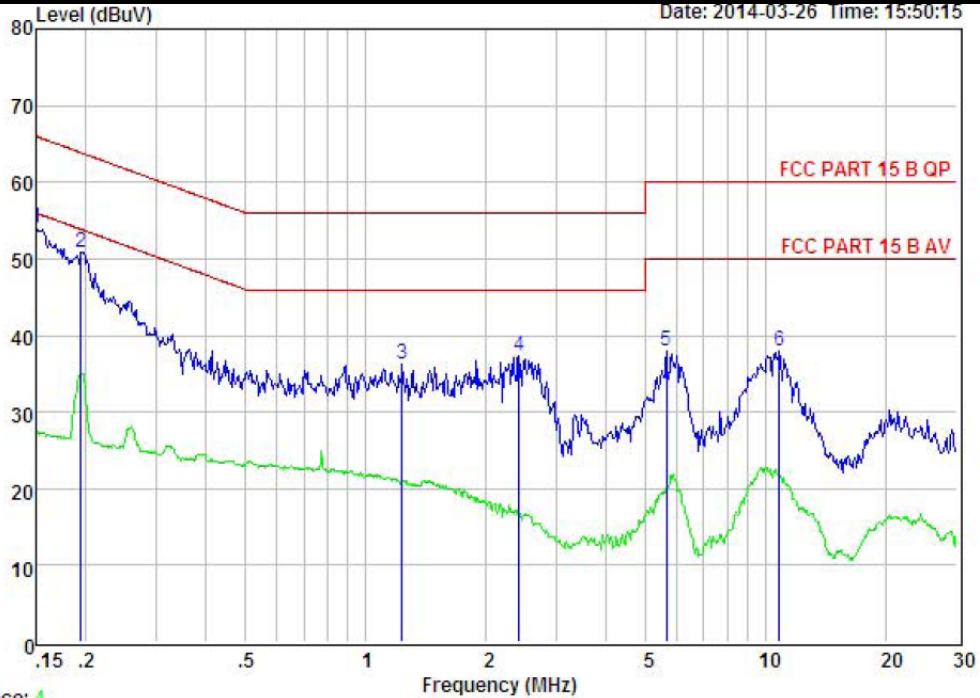
PASS. Detailed information please see the following page.



Trace: 2
 Condition : FCC PART 15 B QP POL: NEUTRAL Temp:24 °C Hum:56 %
 EUT : Portable Mini Bluetooth Speaker
 Model No : Mini Bass
 Test Mode : Charging+Transmitting
 Power : DC 5V from PC
 Test Engineer: Joe
 Remark :

Item	Freq MHz	Read dBuV	LISN Factor dB	Preamp Factor dB	Cable Loss dB	Level dBuV	Limit dBuV	Margin dBuV	Remark
1	0.152	45.15	0.03	-9.72	0.10	55.00	65.91	-10.91	QP
2	0.963	35.13	0.04	-9.71	0.10	44.98	56.00	-11.02	QP
3	2.500	35.68	0.06	-9.70	0.11	45.55	56.00	-10.45	QP
4	6.121	38.49	0.11	-9.60	0.14	48.34	60.00	-11.66	QP
5	11.317	38.87	0.24	-9.48	0.22	48.81	60.00	-11.19	QP
6	19.532	38.14	0.31	-9.48	0.34	48.27	60.00	-11.73	QP

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



Trace: 4
 Condition : FCC PART 15 B QP POL: LINE Temp:24 °C Hum:56 %
 EUT : Portable Mini Bluetooth Speaker
 Model No : Mini Bass
 Test Mode : Charging+Transmitting
 Power : DC 5V from PC
 Test Engineer: Joe
 Remark :

Item	Freq MHz	Read dBuV	LISN Factor dB	Preamp Factor dB	Cable Loss dB	Level dBuV	Limit dBuV	Margin dBuV	Remark
1	0.150	44.21	0.03	-9.72	0.10	54.06	66.00	-11.94	QP
2	0.194	41.05	0.03	-9.72	0.10	50.90	63.84	-12.94	QP
3	1.236	26.42	0.04	-9.71	0.10	36.27	56.00	-19.73	QP
4	2.422	27.43	0.06	-9.70	0.11	37.30	56.00	-18.70	QP
5	5.653	28.16	0.10	-9.64	0.13	38.03	60.00	-21.97	QP
6	10.790	28.04	0.22	-9.50	0.22	37.98	60.00	-22.02	QP

Remarks: Level = Read + LISN Factor - Preamp Factor + Cable loss
 Note: If QP Result is complied with AV limit, AV Result is deemed to comply with AV limit

7 Conducted Maximum Output Power

7.1 Test limit

Please refer section 15.247.

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

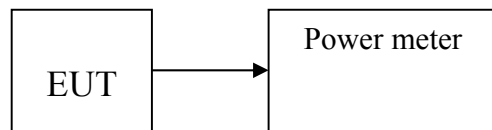
7.2 Test Procedure

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 DTS Meas Guidance v03r01

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	4.670	2.93	30
CH20	2442	5.815	3.82	30
CH39	2480	6.061	4.04	30

8 PEAK POWER SPECTRAL DENSITY

8.1 Test limit

8.1.1 Please refer section 15.247.

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 D01Meas Guidance v03r01

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

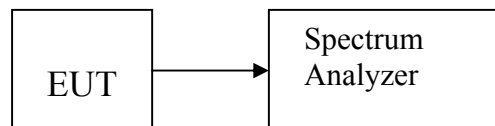
8.2.2 Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

8.2.3 Set the spectrum analyzer as :3kHz \leq RBW \leq 100kHz, VBW \geq 3xRBW, span=1.5 the DTS bandwidth, 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



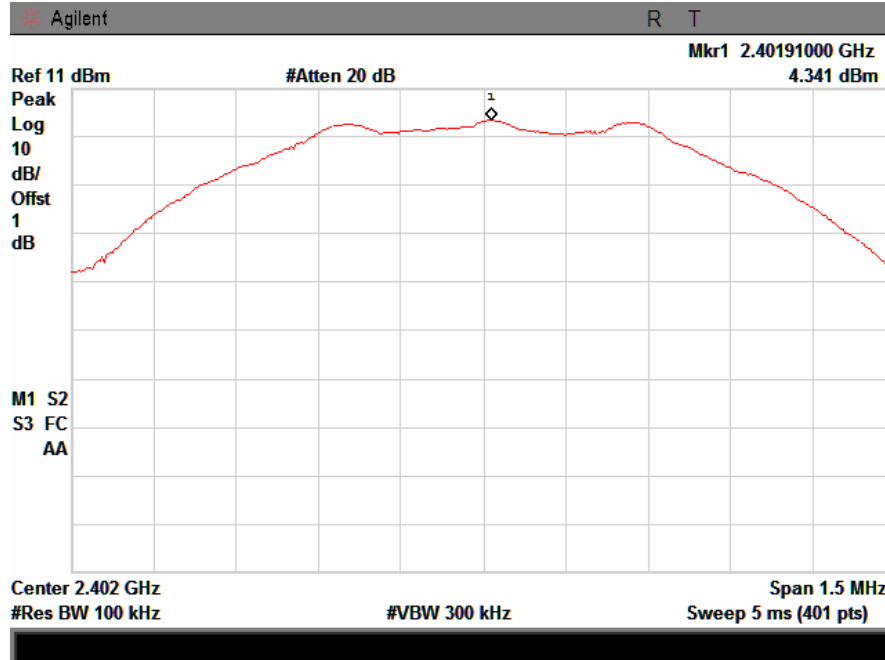
8.4 Test Results

PASS.

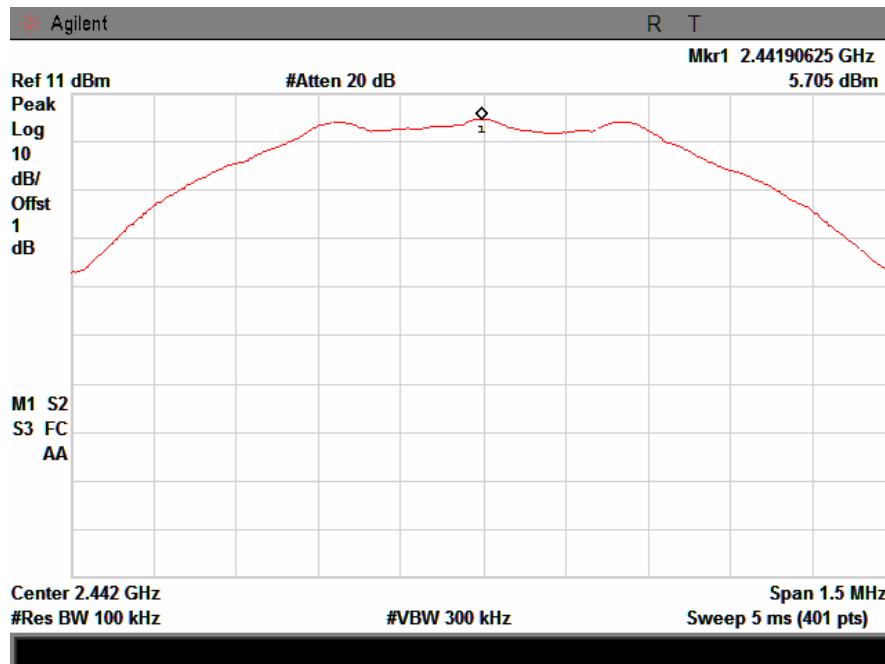
Detailed information please see the following page.

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limit (dBm)	Result
CH0	2402	4.341	8	PASS
CH20	2442	5.705	8	PASS
CH39	2480	5.975	8	PASS

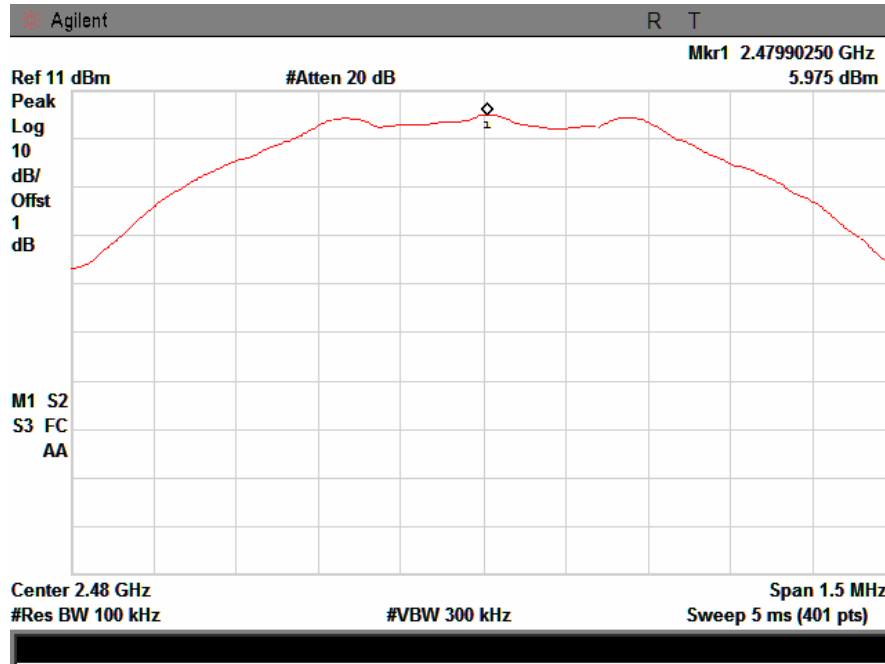
CH Low :



CH Mid :



CH High :



9 Bandwidth

9.1 Test limit

Please refer section 15.247

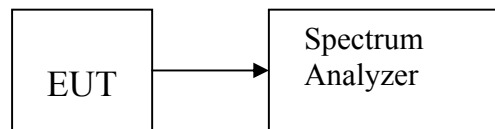
For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz.

9.2 Method of measurement

Details see the KDB558074 D01Meas Guidance v03r01

- a) The bandwidth is measured at an amplitude level reduced 6dB 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 \geq 3RBW, Sweep time set auto, detail see the test plot.

9.3 Test Setup



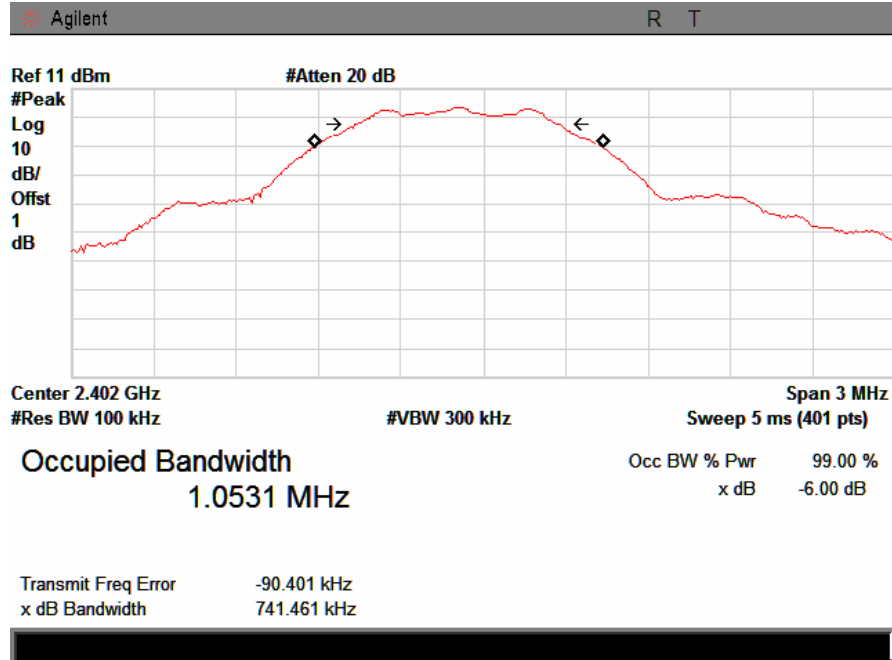
9.4 Test Results

PASS.

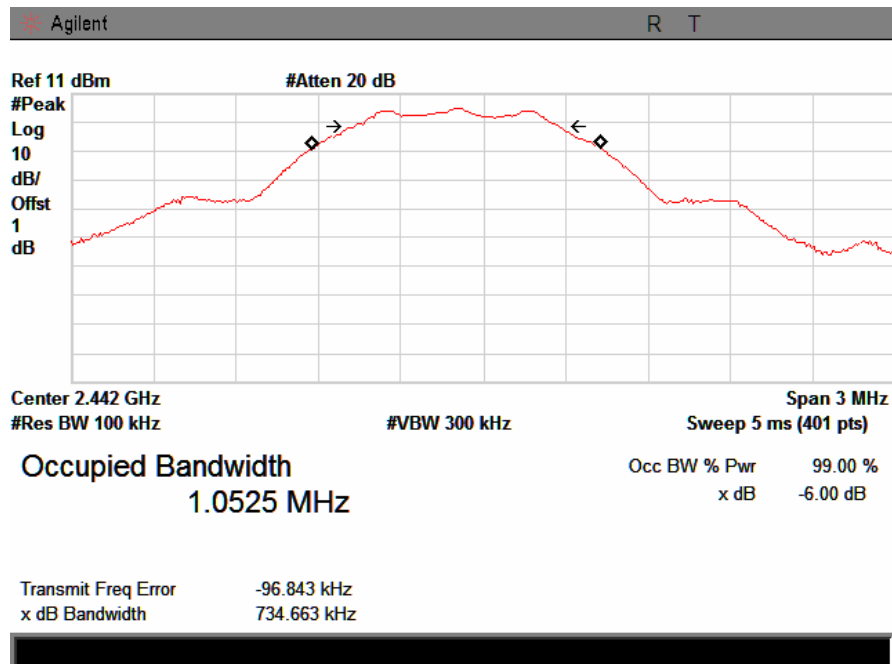
Detailed information please see the following page.

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit (MHz)	Result
CH0	2402	0.741	1.053	0.5	PASS
CH20	2442	0.735	1.052	0.5	PASS
CH39	2480	0.746	1.063	0.5	PASS

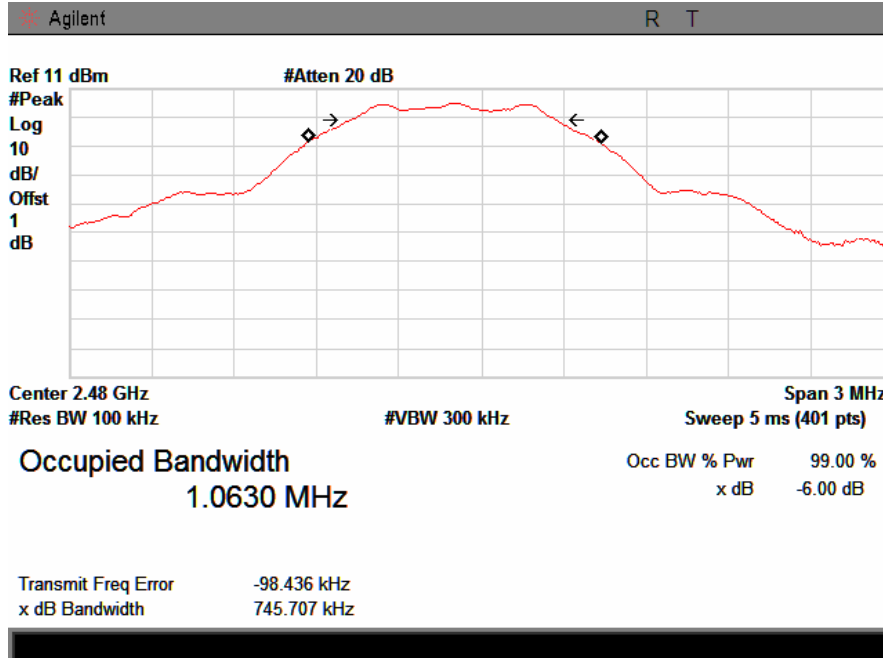
CH Low :



CH Mid :



CH High :



10 Band Edge Check

10.1 Test limit

Please refer section 15.247

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 was Set according to KDB558074 D01Meas Guidance v03r01

10.3 Test Setup

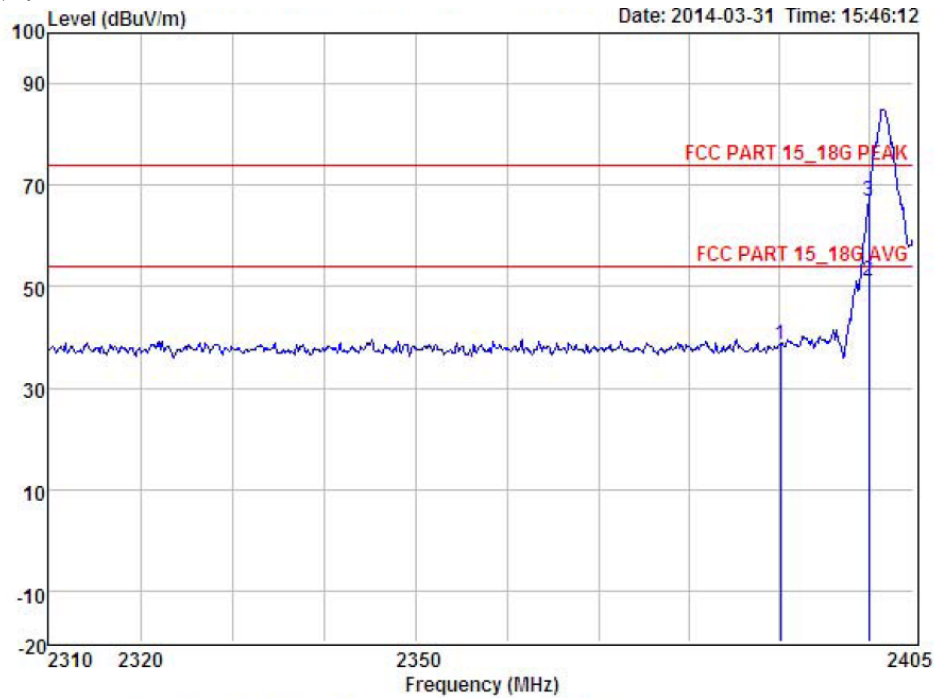
Same as 5.2.2.

10.4 Test Result

PASS.

Detailed information please see the following page.

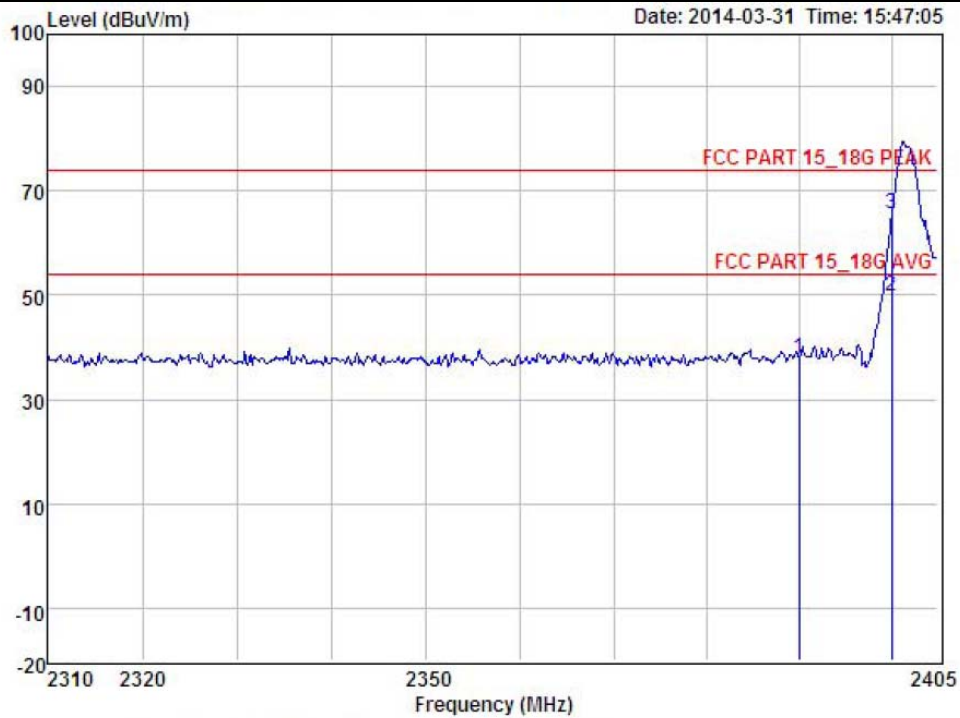
CH LOW :



Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL
 EUT : Portable Mini Bluetooth Speaker
 Model No : Mini Bass
 Test Mode : BLE TX L CH
 Power : DC 5V from PC
 Test Engineer : Joe
 Remark :
 Temp : 24.2°C
 Hum : 54%

Item	Freq MHz	Read Level dBuV	Antenna Factor dB	Preamp Factor dB	Cable Loss dB	Level dBuV	Limit dBuV	Margin dBuV	Remark
1	2390.12	42.12	27.62	34.97	3.92	38.69	74.00	-35.31	Peak
2	2400.00	54.35	27.62	34.97	3.94	50.94	54.00	-3.06	Average
3	2400.00	70.12	27.62	34.97	3.94	66.71	74.00	-7.29	Peak

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

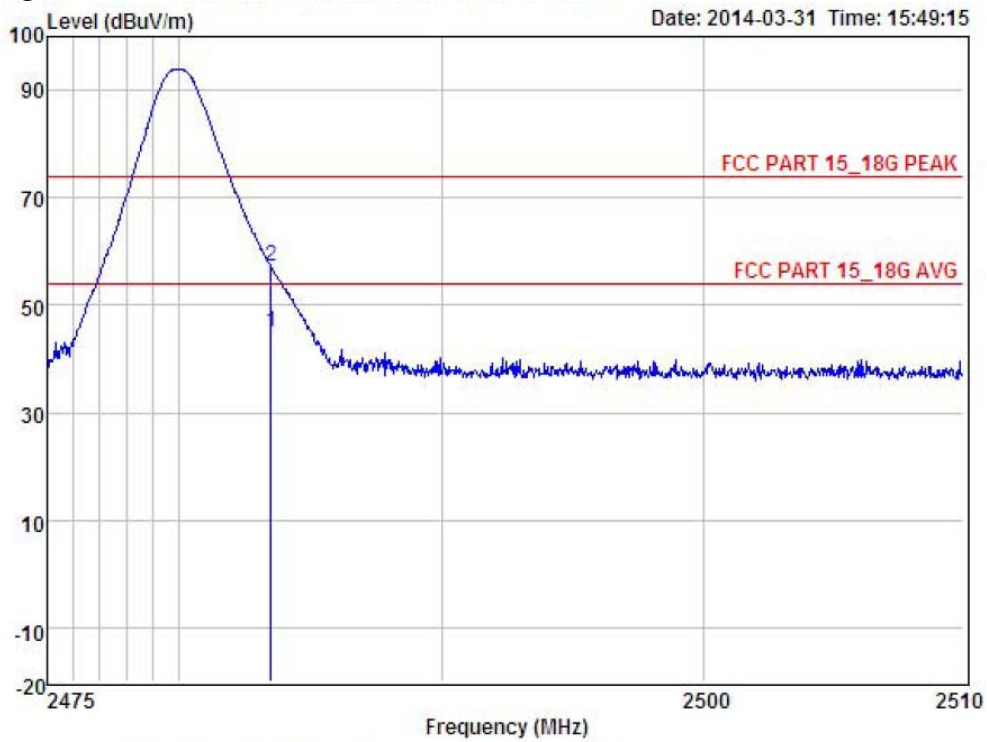


Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL
 EUT : Portable Mini Bluetooth Speaker
 Model No : Mini Bass
 Test Mode : BLE TX L CH
 Power : DC 5V from PC
 Test Engineer : Joe
 Remark :
 Temp : 24.2°C
 Hum : 54%

Item	Freq MHz	Read Level dBuV	Antenna Factor dB	Preamp Factor dB	Cable Loss dB	Level dBuV	Limit dBuV	Margin dBuV	Remark
1	2390.00	41.32	27.62	34.97	3.92	37.89	74.00	-36.11	Peak
2	2400.00	53.26	27.62	34.97	3.94	49.85	54.00	-4.15	Average
3	2400.00	68.99	27.62	34.97	3.94	65.58	74.00	-8.42	Peak

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

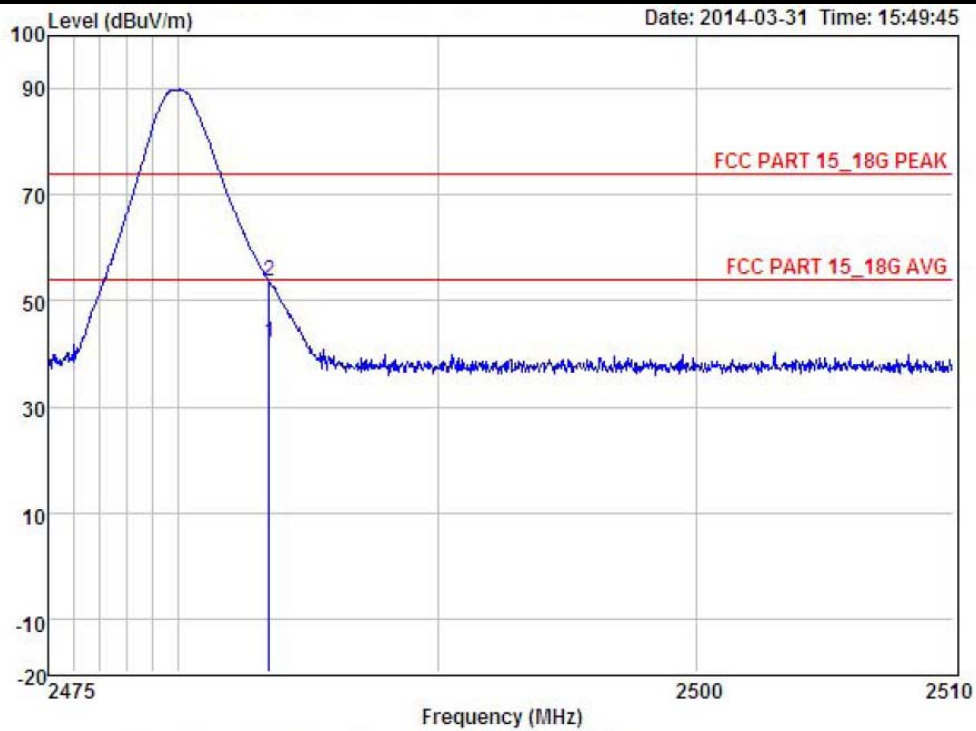
CH High :



Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL
 EUT : Portable Mini Bluetooth Speaker
 Model No : Mini Bass
 Test Mode : BLE TX H CH
 Power : DC 5V from PC
 Test Engineer : Joe
 Remark :
 Temp : 24.2°C
 Hum : 54%

Item	Freq MHz	Read Level dBuV	Antenna Factor dB	Preamp Factor dB	Cable Loss dB	Level dBuV	Limit dBuV	Margin dBuV	Remark
1	2483.50	48.31	27.59	34.97	4.00	44.93	54.00	-9.07	Average
2	2483.50	60.56	27.59	34.97	4.00	57.18	74.00	-16.82	Peak

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



Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL
 EUT : Portable Mini Bluetooth Speaker
 Model No : Mini Bass
 Test Mode : BLE H CH
 Power : DC 5V from PC
 Test Engineer : Joe
 Remark :
 Temp : 24.2°C
 Hum : 54%

Item	Freq MHz	Read Level dBuV	Antenna Factor dB	Preamp Factor dB	Cable Loss dB	Level dBuV	Limit dBuV	Margin dBuV	Remark
1	2483.50	45.31	27.59	34.97	4.00	41.93	54.00	-12.07	Average
2	2483.50	57.21	27.59	34.97	4.00	53.83	74.00	-20.17	Peak

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

11 Antenna Requirement

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
<p>15.203 requirement: <i>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, 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.</i></p> <p>15.247(c) (1)(i) requirement: <i>(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.</i></p>	
E.U.T Antenna:	
<p><i>The antenna port is PCB antenna, which cannot replace by end-user, the best case gain of the antenna is 0 dBi.</i></p>	
