



Report No.:

FCC 1911095-02

File Reference No.:

2019-11-19

Applicant:

Richen Industrial Co., Ltd.

Product:

Bluetooth Speaker

Model No.:

S156S

Trademark:

ILE

Test Standards:

FCC Part 15.247

Test Result:

It is herewith confirmed and found to comply with the requirements set up by ANSI C63.10, FCC Part 15.247 for the evaluation of electromagnetic compatibility

Approved By

*Jack Chung*

Jack Chung

Manager

Dated:

November 19, 2019

**Results appearing herein relate only to the sample tested**

**The technical reports is issued errors and omissions exempt and is subject to withdrawal at**

**SHENZHEN TIMEWAY TESTING LABORATORIES**

Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China

Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com



### **Special Statement:**

The testing quality ability of our laboratory meet with “Quality Law of People’s Republic of China” Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAL. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

#### **CNAS-LAB Code: L2292**

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

#### **FCC-Registration No.: 744189**

The 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 No.: 744189.

#### **Industry Canada (IC) —Registration No.:5205A**

The EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5205A.

#### **A2LA (Certification Number:5013.01)**

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01

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## Test Report Conclusion

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## 1.0 General Details

### 1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TESTING LABORATORIES.  
Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China  
Telephone: (755) 83448688  
Fax: (755) 83442996

### 1.2 Applicant Details

Applicant: Richen Industrial Co., Ltd.  
Address: Rm.1688, Building A, Bantian International Center, No.5 Huancheng South Street, Longgang, Shenzhen, China  
Telephone: 0755-82797557  
Fax: --

### 1.3 Description of EUT

Product: Bluetooth Speaker  
Manufacturer: Richen Industrial Co., Ltd.  
Address: Rm.1688, Building A, Bantian International Center, No.5 Huancheng South Street, Longgang, Shenzhen, China  
Brand Name: ILE  
Additional Brand Name: N/A  
Model Number: S156S  
Additional Model Number: N/A  
Type of Modulation: GFSK ( Bluetooth BLE)  
Frequency range: 2402-2480MHz  
Frequency Selection: By software  
Channel Number: 40  
Rating: Input : DC 5V or Built-in 3.7V Li-ion battery

### 1.4 Submitted Sample: 1 Samples

### 1.5 Test Duration

2019-11-13 to 2019-11-19

### 1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB  
Radiated Emissions below 1GHz Uncertainty =4.7dB  
Radiated Emissions above 1GHz Uncertainty =6.0dB

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Conducted Power Uncertainty =6.0dB  
Occupied Channel Bandwidth Uncertainty =5%

1.7 Test Engineer

*Terry Tang*

The sample tested by \_\_\_\_\_

Print Name: Terry Tang

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<b>2.0 Test Equipment</b>					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2019-06-21	2020-06-20
TWO Line-V-NETW	R&S	EZH3-Z5	100294	2019-06-21	2020-06-20
TWO Line-V-NETW	R&S	EZH3-Z5	100253	2019-06-21	2020-06-20
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2019-06-21	2020-06-20
Loop Antenna	EMCO	6507	00078608	2019-06-20	2020-06-20
Spectrum	R&S	FSIQ26	100292	2019-06-21	2020-06-20
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2019-06-21	2020-06-20
Horn Antenna	R&S	BBHA 9120D	9120D-631	2018-07-09	2021-07-08
Power meter	Anritsu	ML2487A	6K00003613	2019-08-22	2020-08-21
Power sensor	Anritsu	MA2491A	32263	2019-08-22	2020-08-21
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2018-07-04	2021-07-03
9*6*6 Anechoic	--	--	N/A	2018-02-07	2021-02-06
EMI Test Receiver	RS	ESVB	826156/011	2019-06-21	2020-06-20
EMI Test Receiver	RS	ESH3	860904/006	2019-06-21	2020-06-20
Spectrum	HP/Agilent	ESA-L1500A	US37451154	2019-06-21	2020-06-20
Spectrum	HP/Agilent	E4407B	MY50441392	2019-06-21	2020-06-20
Spectrum	RS	FSP	1164.4391.38	2019-01-20	2020-01-19
RF Cable	Zhengdi	ZT26-NJ-NJ-8 M/FA	--	2019-06-21	2020-06-20
RF Cable	Zhengdi	7m	--	2019-06-21	2020-06-20
RF Switch	EM	EMSW18	060391	2019-06-21	2020-06-20
Pre-Amplifier	Schwarebeck	BBV9743	#218	2019-06-21	2020-06-20
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2019-06-21	2020-06-20
LISN	SCHAFFNER	NNB42	00012	2019-01-08	2020-01-07

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### 3.0 Technical Details

#### 3.1 Summary of test results

The EUT has been tested according to the following specifications:			
Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.207	Conducted Emission Test	PASS	Complies
FCC Part 15 Subpart C Paragraph 15.247(a)(2) Limit	Spectrum bandwidth of a Orthogonal Frequency Division Multiplex System Limit: 6dB bandwidth>500kHz	PASS	Complies
FCC Part 15, Paragraph 15.247(b)	Maximum peak output power Limit: max. 30dBm	PASS	Complies
FCC Part 15, Paragraph 15.205 & 15.209	Transmitter Radiated Emission Limit: Table 15.209	PASS	Complies
FCC Part 15, Paragraph 15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Complies
FCC Part 15, Paragraph 15.247(d)	Out of Band Emission and Restricted Band Radiation Limit: 20dB less than peak value of fundamental frequency Restricted band limit: Table 15.209	PASS	Complies

#### 3.2 Test Standards

FCC Part 15 Subpart & Subpart C, Paragraph 15.247

#### 4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES.

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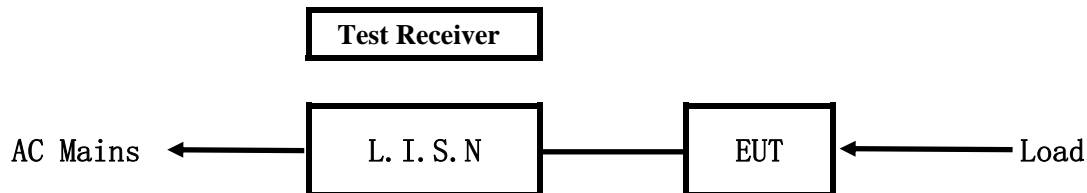
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## 5. Power Line Conducted Emission Test

### 5.1 Schematics of the test



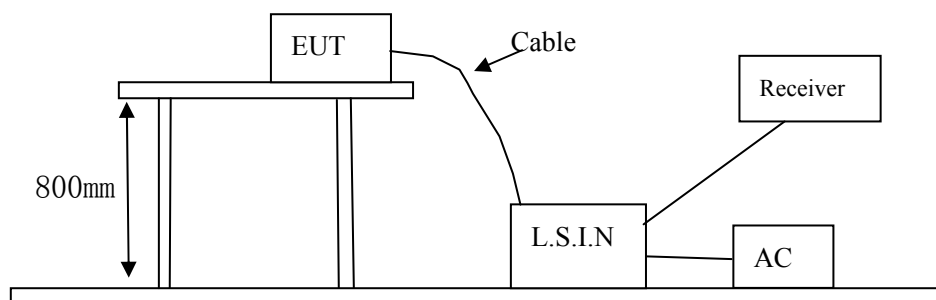
EUT: Equipment Under Test

### 5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.10 –2013.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup



### 5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.10-2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

#### A. EUT

Device	Manufacturer	Model	FCC ID
Bluetooth Speaker	Richen Industrial Co., Ltd.	S156S	RMZ-S156S

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B. Internal Device

Device	Manufacturer	Model	Rating

C. Peripherals

Device	Manufacturer	Model	Rating
Power Supply	h.TV	S012BE80500200	Input: 100-240V~, 50/60Hz, 0.5A; Output: DC5V, 2A

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10-2013.

A Setup the EUT and simulators as shown on follow

B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207 and 15.107

Frequency (MHz)	Class A Limits (dB $\mu$ V)		Class B Limits (dB $\mu$ V)	
	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level
0.15 ~ 0.50	79.0	66.0	66.0~56.0*	56.0~46.0*
0.50 ~ 5.00	73.0	60.0	56.0	46.0
5.00 ~ 30.00	73.0	60.0	60.0	50.0

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

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

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**A: Conducted Emission on Live Terminal (150kHz to 30MHz)**

**EUT Operating Environment**

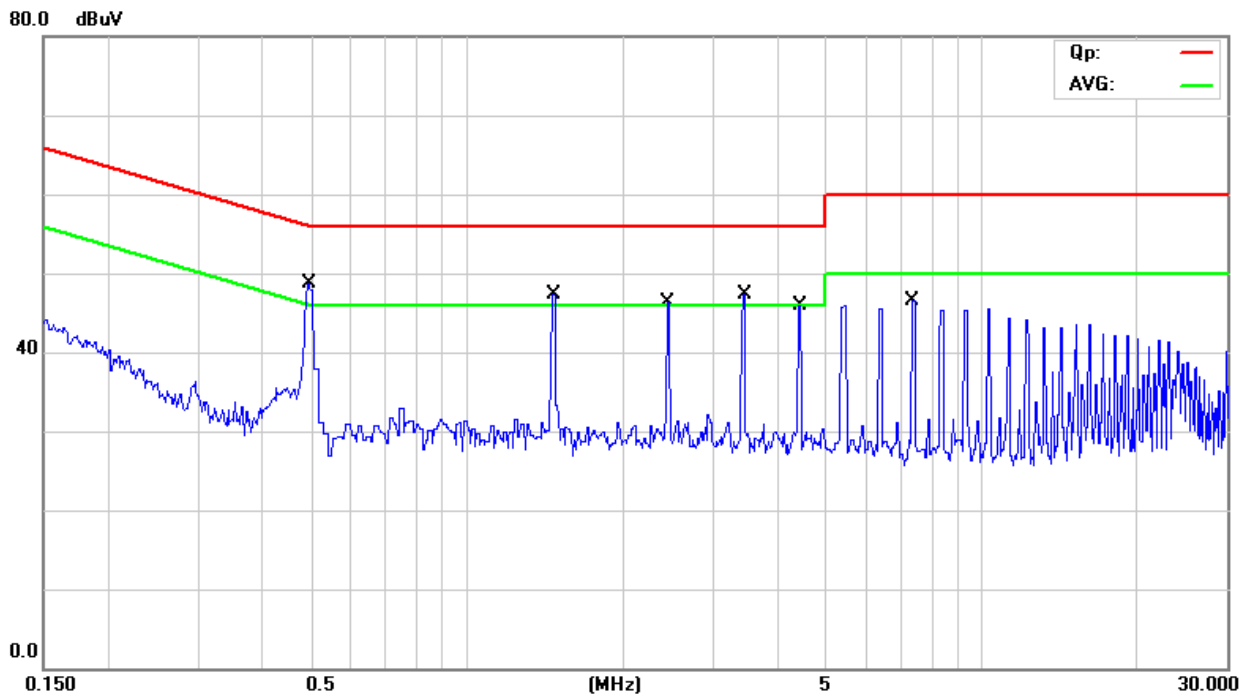
Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

**EUT set Condition: Keep Bluetooth Transmitting**

**Equipment Level: Class B**

**Results: PASS**

Please refer to following diagram for individual



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	dBuV	Factor	ment	dBuV	dB	Detector	Comment
1		0.4912	36.40	9.77	46.17	56.15	-9.98	QP	
2		0.4912	31.80	9.77	41.57	46.15	-4.58	AVG	
3		1.4734	36.50	9.79	46.29	56.00	-9.71	QP	
4	*	1.4734	32.50	9.79	42.29	46.00	-3.71	AVG	
5		2.4553	36.00	9.82	45.82	56.00	-10.18	QP	
6		2.4553	31.00	9.82	40.82	46.00	-5.18	AVG	
7		3.4370	35.40	9.86	45.26	56.00	-10.74	QP	
8		3.4370	29.70	9.86	39.56	46.00	-6.44	AVG	
9		4.4171	35.50	9.90	45.40	56.00	-10.60	QP	
10		4.4171	31.40	9.90	41.30	46.00	-4.70	AVG	
11		7.3534	34.20	10.03	44.23	60.00	-15.77	QP	
12		7.3534	29.10	10.03	39.13	50.00	-10.87	AVG	

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**B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)**

**EUT Operating Environment**

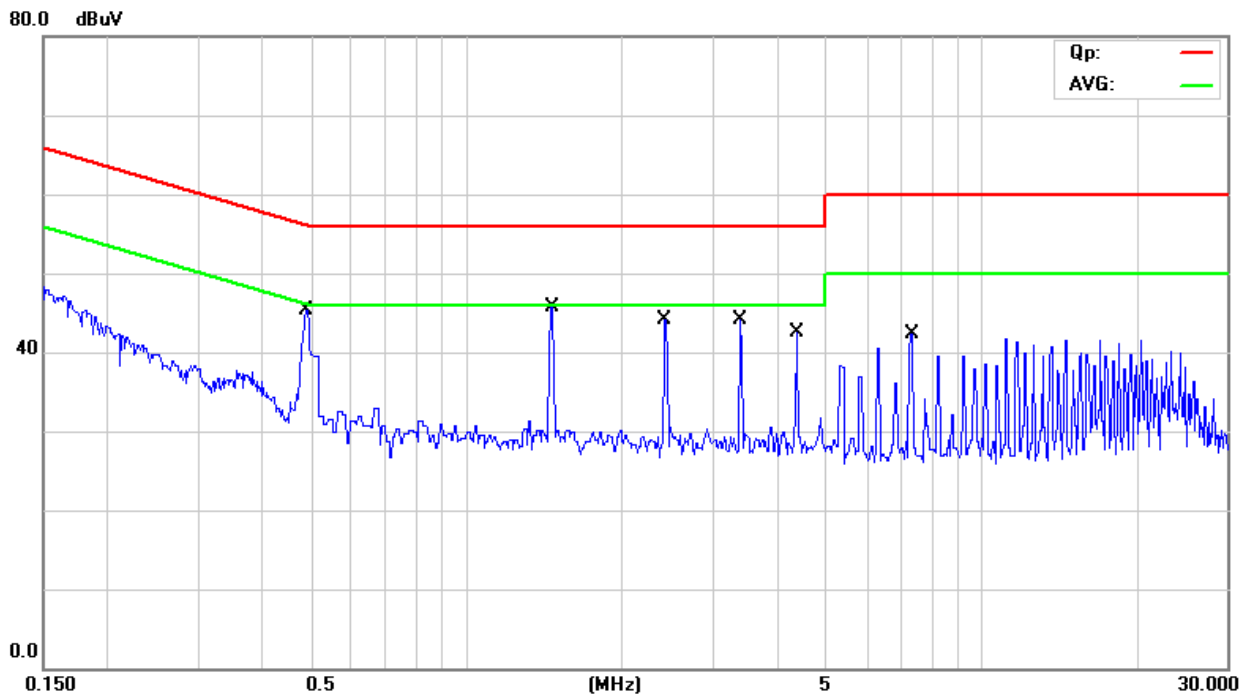
Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

**EUT set Condition: Keep Bluetooth Transmitting**

**Equipment Level: Class B**

**Results: Pass**

Please refer to following diagram for individual



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.4895	31.30	9.77	41.07	56.18	-15.11	QP	
2		0.4895	28.10	9.77	37.87	46.18	-8.31	AVG	
3		1.4652	32.30	9.79	42.09	56.00	-13.91	QP	
4	*	1.4652	29.30	9.79	39.09	46.00	-6.91	AVG	
5		2.4055	7.70	9.82	17.52	56.00	-38.48	QP	
6		2.4055	-1.80	9.82	8.02	46.00	-37.98	AVG	
7		3.4226	30.40	9.86	40.26	56.00	-15.74	QP	
8		3.4226	19.90	9.86	29.76	46.00	-16.24	AVG	
9		4.4095	31.10	9.90	41.00	56.00	-15.00	QP	
10		4.4095	25.60	9.90	35.50	46.00	-10.50	AVG	
11		7.3580	28.70	10.03	38.73	60.00	-21.27	QP	
12		7.3580	24.50	10.03	34.53	50.00	-15.47	AVG	

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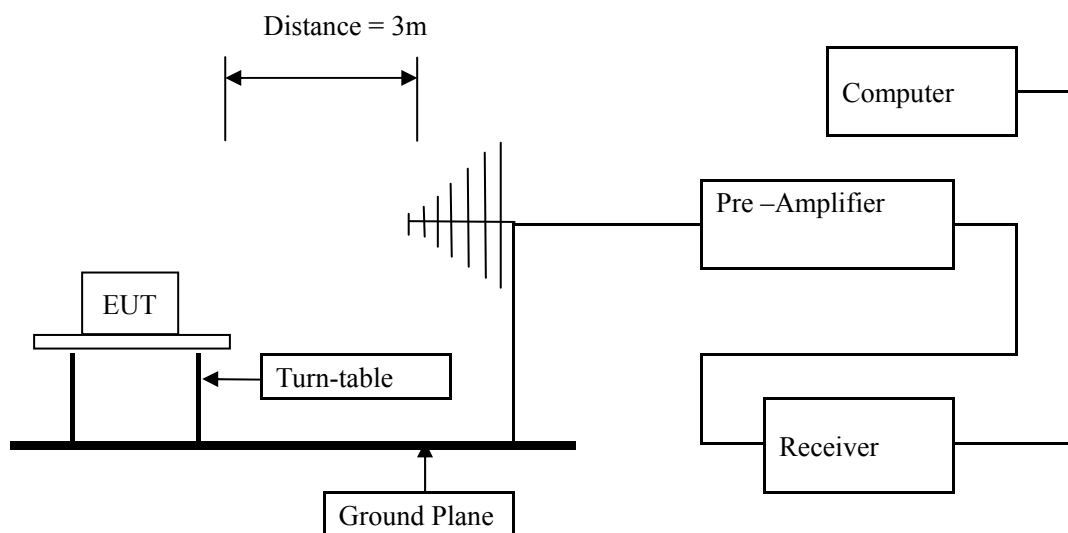


## 6 Radiated Emission Test

### 6.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No.744189
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.
- (3) The frequency spectrum from 30 MHz to 25 GHz was investigated. All readings from 30 MHz to 1 GHz are Quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=1MHz VBW=3MHz and PK detector. AV value with RBW=1MHz, VBW=3MHz and RMS detector. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a “QP” in the data table.
- (6) The antenna polarization : Vertical polarization and Horizontal polarization.

### Block diagram of Test setup



- 6.2 Configuration of The EUT  
Same as section 5.3 of this report

- 6.3 EUT Operating Condition  
Same as section 5.4 of this report.

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#### 6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

**Frequencies in restricted band are complied to limit on Paragraph 15.209 and 15.109**

Frequency Range (MHz)	Distance (m)	Field strength (dB $\mu$ V/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

- Note:
1. RF Voltage (dBuV) = 20 log RF Voltage ( $\mu$ V)
  2. In the Above Table, the higher limit applies at the band edges.
  3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
  4. GFSK was the worse case because it has highest output power
  5. This is a handheld device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.
  6. Battery fully charged

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## Test result

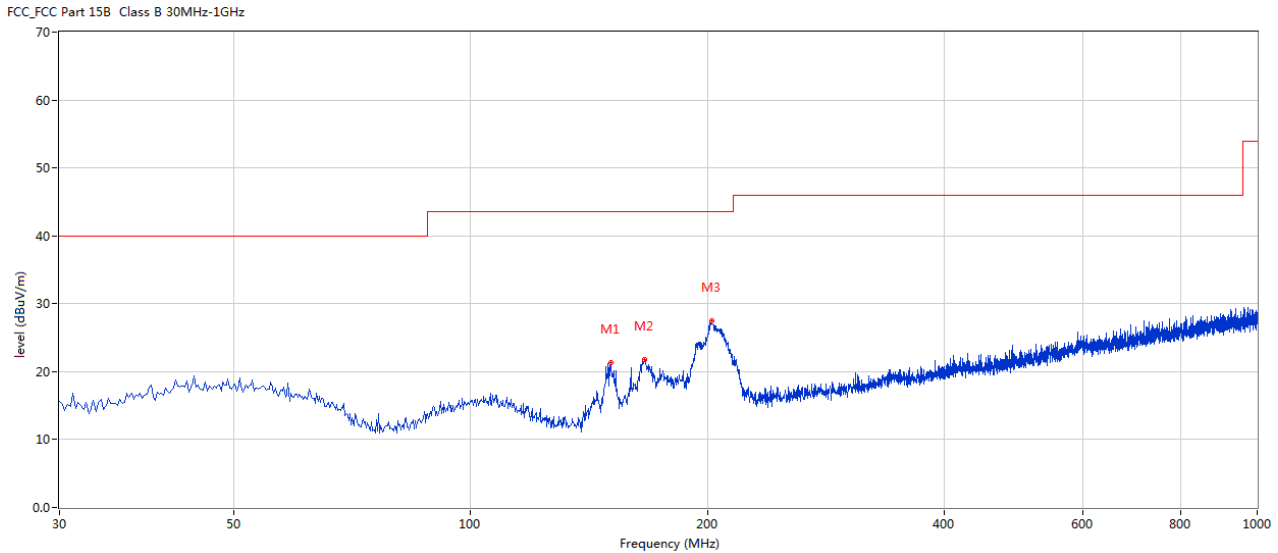
### General Radiated Emission Data and Harmonics Radiated Emission Data

#### Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Keep Bluetooth Transmitting

Results: Pass

#### Test Figure:



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	150.735	21.26	-16.99	43.5	-22.24	Peak	323.00	200	H	Pass
2	166.493	21.77	-16.05	43.5	-21.73	Peak	110.00	200	H	Pass
3	202.617	27.43	-13.40	43.5	-16.07	Peak	43.00	200	H	Pass

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## Test result

### General Radiated Emission Data and Harmonics Radiated Emission Data

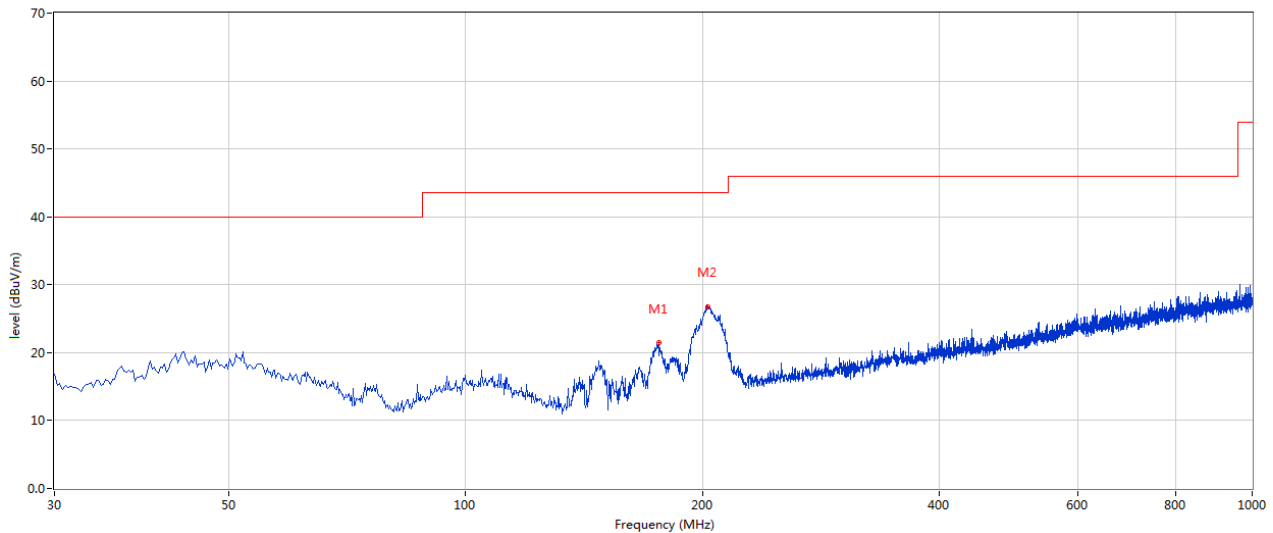
#### Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: **Keep Transmitting**

**Results: Pass**

Test Figure:

FCC\_FCC Part 15B Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	175.949	21.50	-15.62	43.5	-22.00	Peak	0.00	100	V	Pass
2	203.102	26.80	-13.44	43.5	-16.70	Peak	360.00	200	V	Pass

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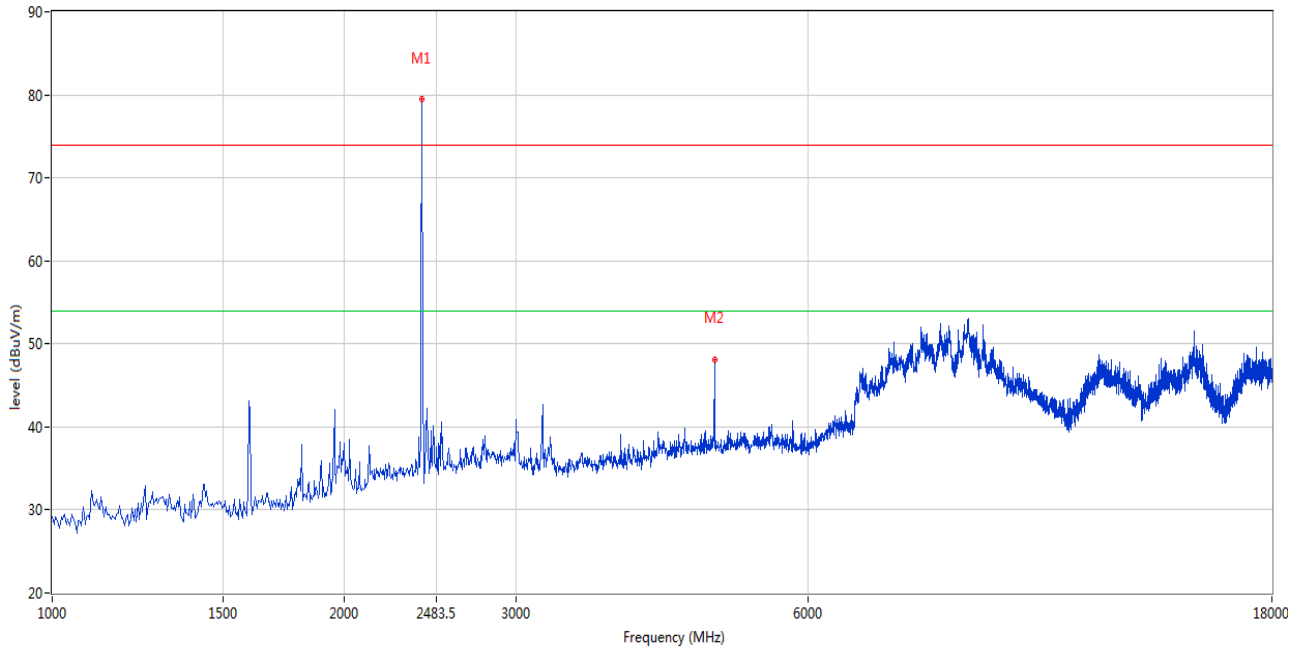


### Test Figures above 1GHz:

Please refer to the following test plots for details:

#### Low Channel: Vertical

FCC\_FCC Part 15B Class B 1GHz-18GHz - 2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	4802.799	48.14	3.12	54.0	-5.86	Peak	147.00	100	V	Pass

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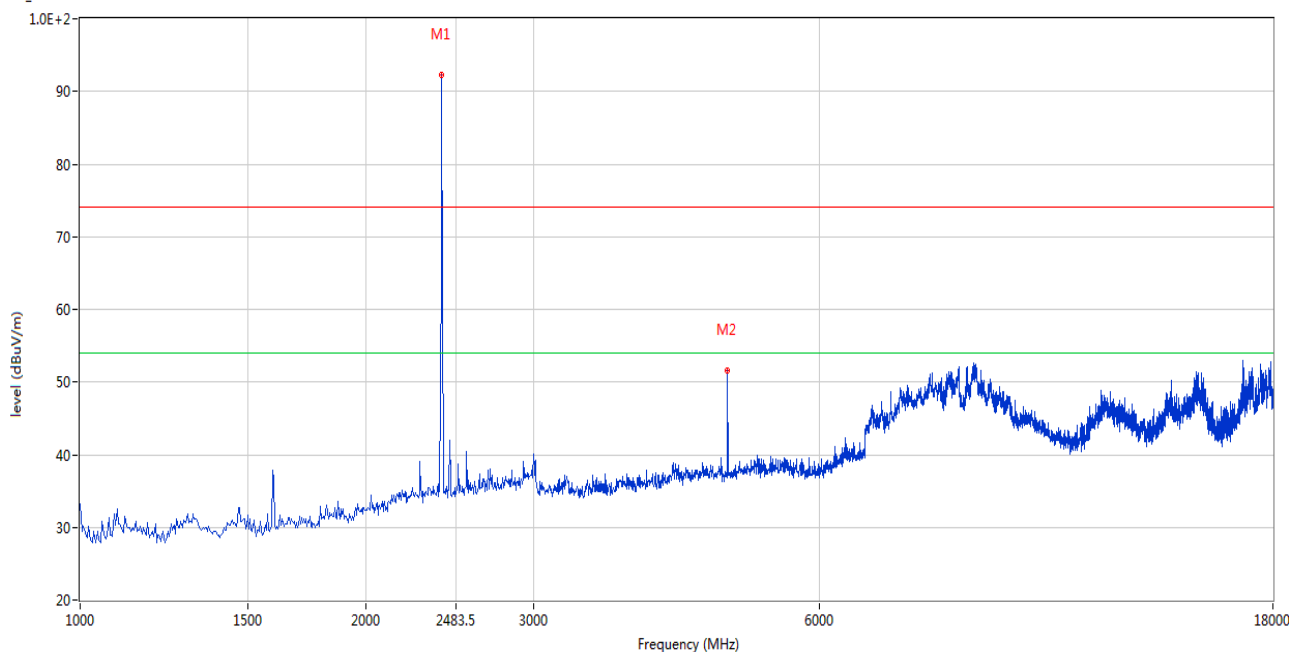
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# Low Channel : Horizontal

FCC\_FCC Part 15B Class B 1GHz-18GHz - 2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	4802.799	51.61	3.12	54.0	-2.39	Peak	287.00	100	H	Pass

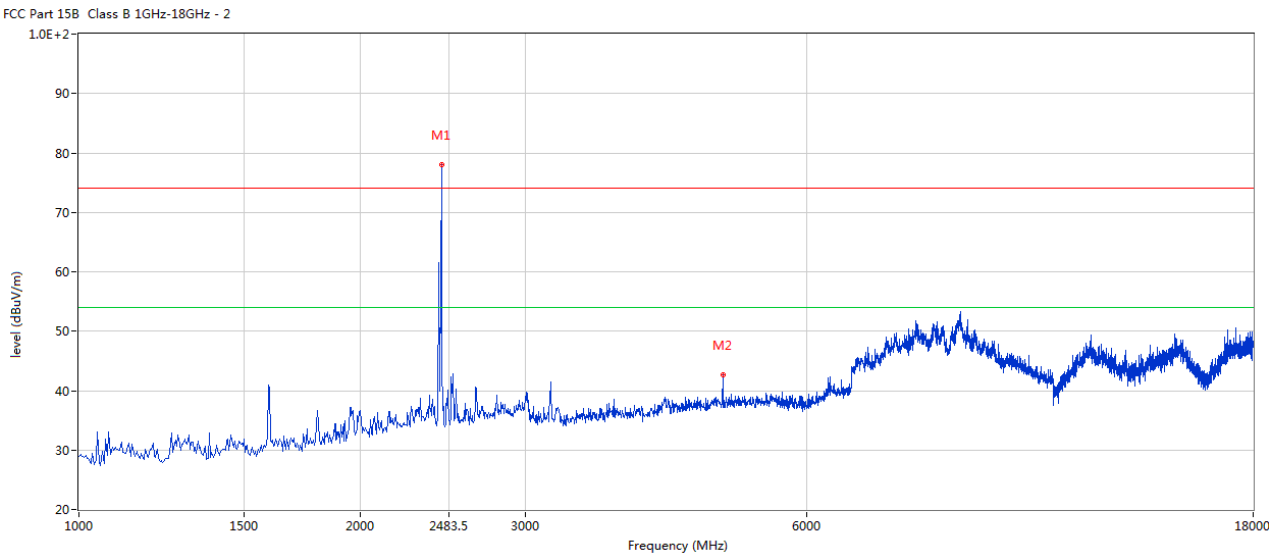
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Middle Channel : Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	4879.280	42.71	3.20	54.0	-11.29	Peak	337.00	100	V	Pass

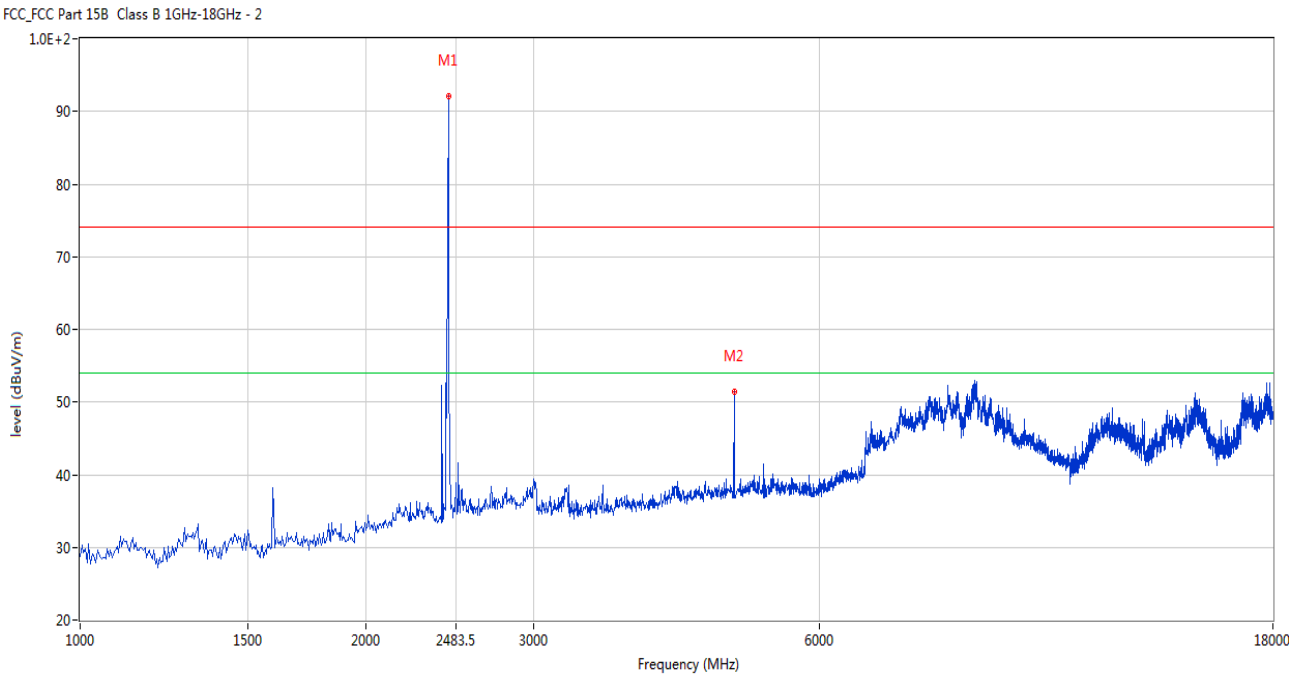
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Middle Channel : Horizontal

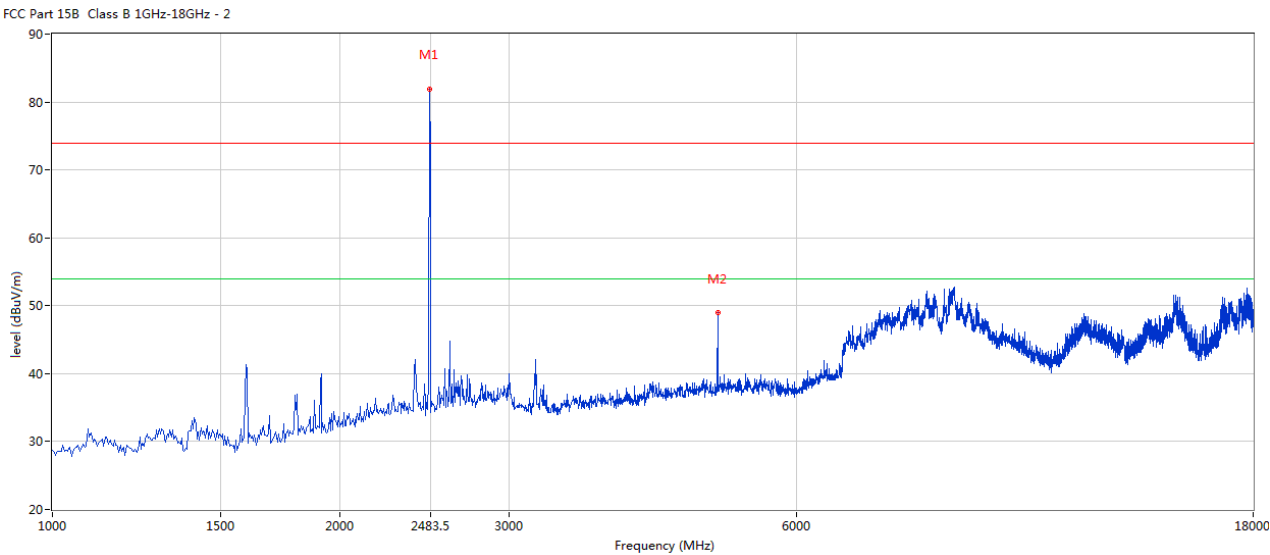


No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	4879.280	51.47	3.20	54.0	-2.53	Peak	109.00	100	H	Pass

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High Channel : Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	4960.010	48.92	3.36	54.0	-5.08	Peak	77.00	100	V	Pass

The report refers only to the sample tested and does not apply to the bulk.

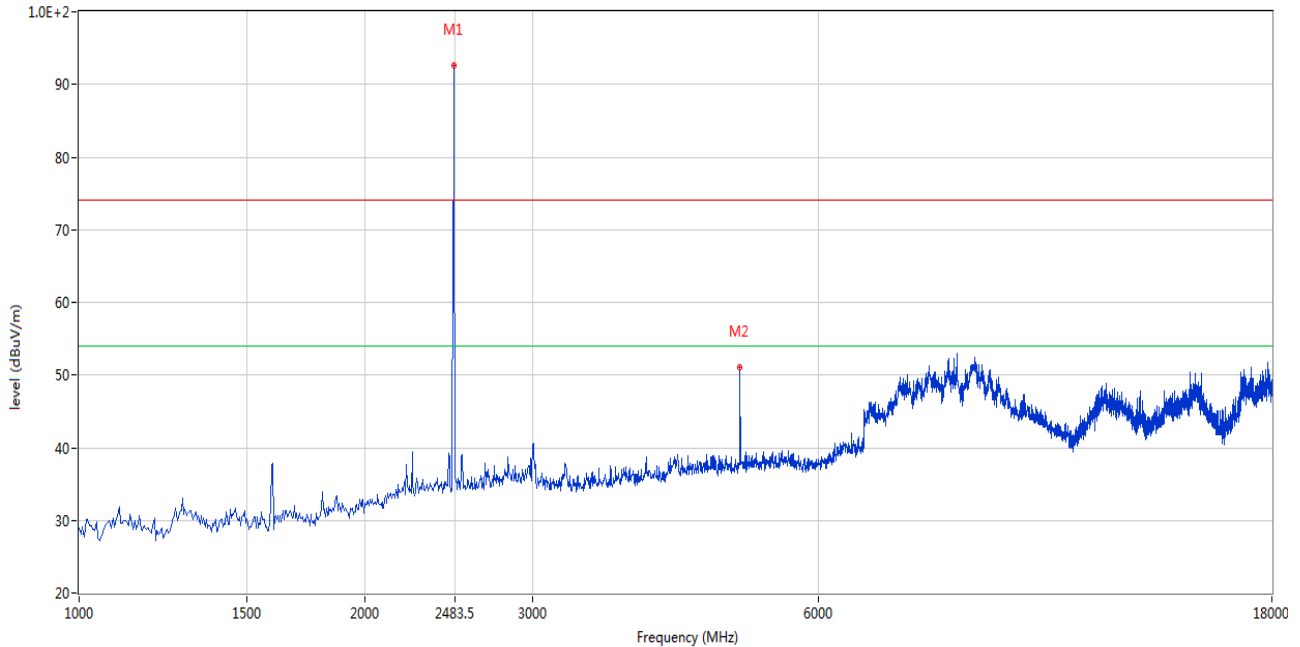
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## High Channel : Horizontal

FCC\_FCC Part 15B Class B 1GHz-18GHz - 2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	4960.010	50.99	3.36	54.0	-3.01	Peak	265.00	100	H	Pass

**Note: 1. Level = Reading + AF + Cable - Preamp**

**2. For the radiated emissions above 18G, it is the floor noise.**

**3. The measured PK value less than the AV limit, no necessary to take down the AV measurement result.**

The report refers only to the sample tested and does not apply to the bulk.

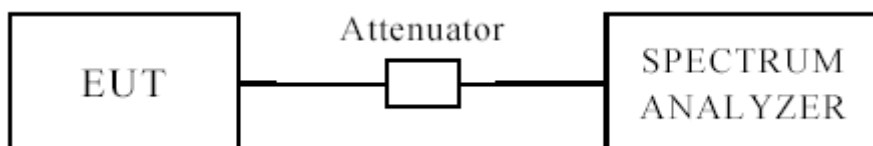
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## 7.0 6dB Bandwidth Measurement

### 7.1 Test Setup



### 7.2 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is >500 kHz

### 7.3 Test Procedure

1. Set resolution bandwidth (RBW) = 100 kHz
2. Set the video bandwidth (VBW)  $\geq 3 \times$  RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

### 7.4 Test Result

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# 6dB BW

EUT		Bluetooth Speaker		Model		S156S	
Mode		Keep Transmitting		Input Voltage		DC3.7V	
Temperature		24 deg. C,		Humidity		56% RH	
Channel	Channel Frequency (MHz)		6 dB Bandwidth (kHz)		Minimum Limit (kHz)		Pass/ Fail
Low	2402		510		0.5		Pass
Middle	2440		510		0.5		Pass
High	2480		510		0.5		Pass

The report refers only to the sample tested and does not apply to the bulk.

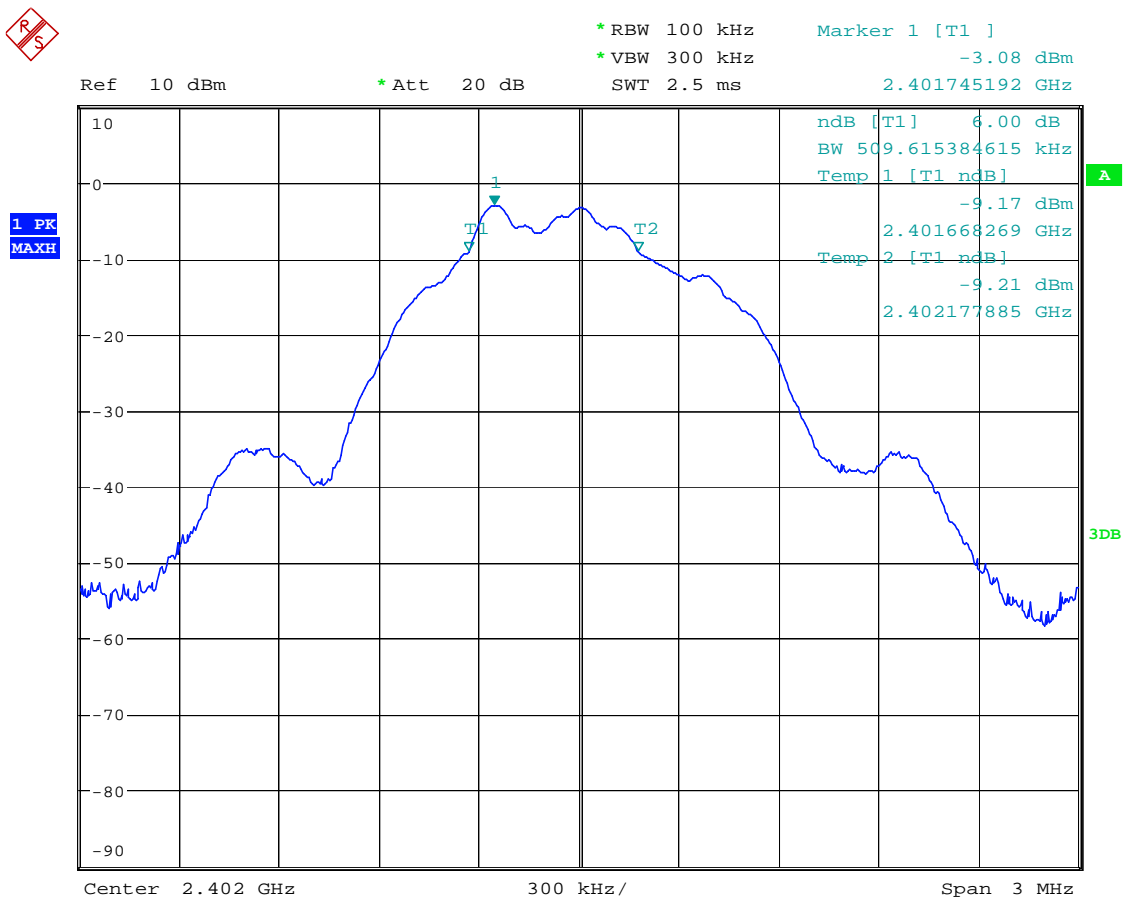
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Test Figure:

1. Condition: Low Channel



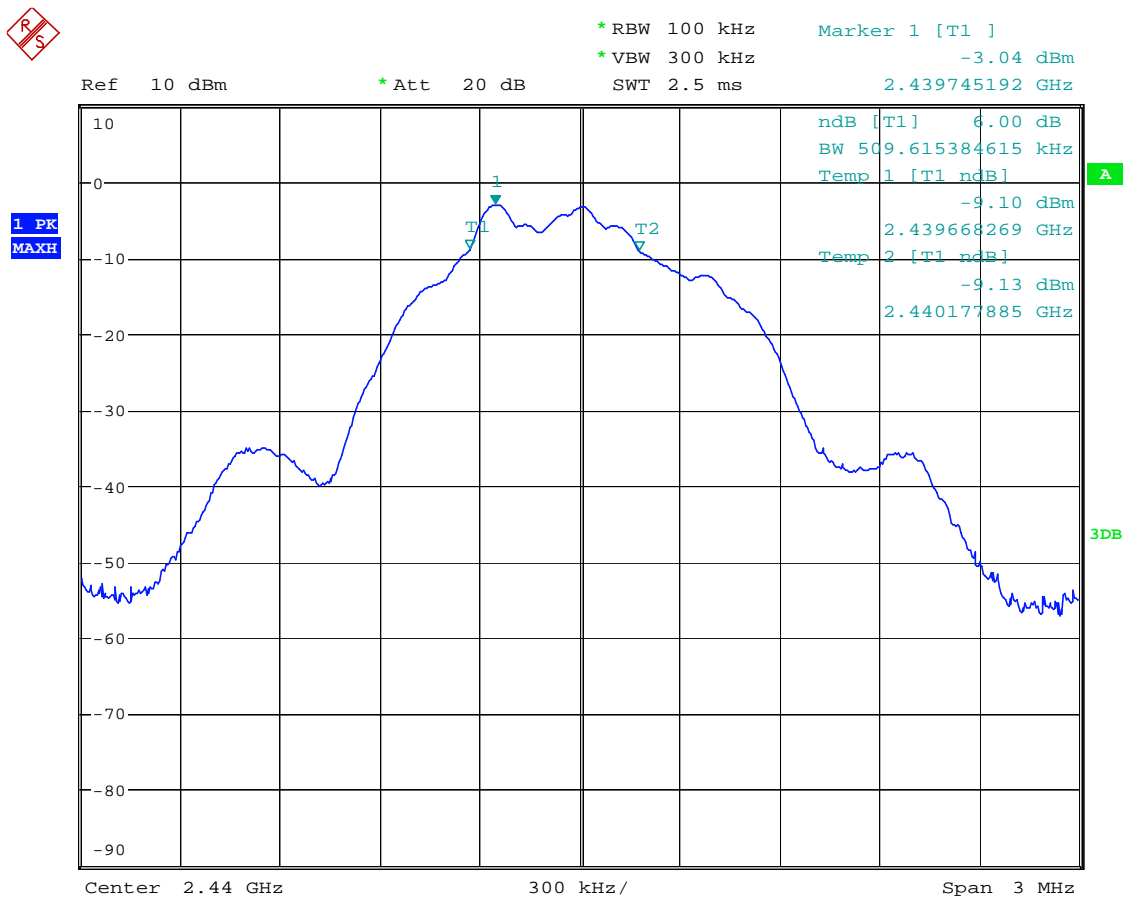
Date: 15.NOV.2019 14:46:46

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2. Condition: Middle Channel

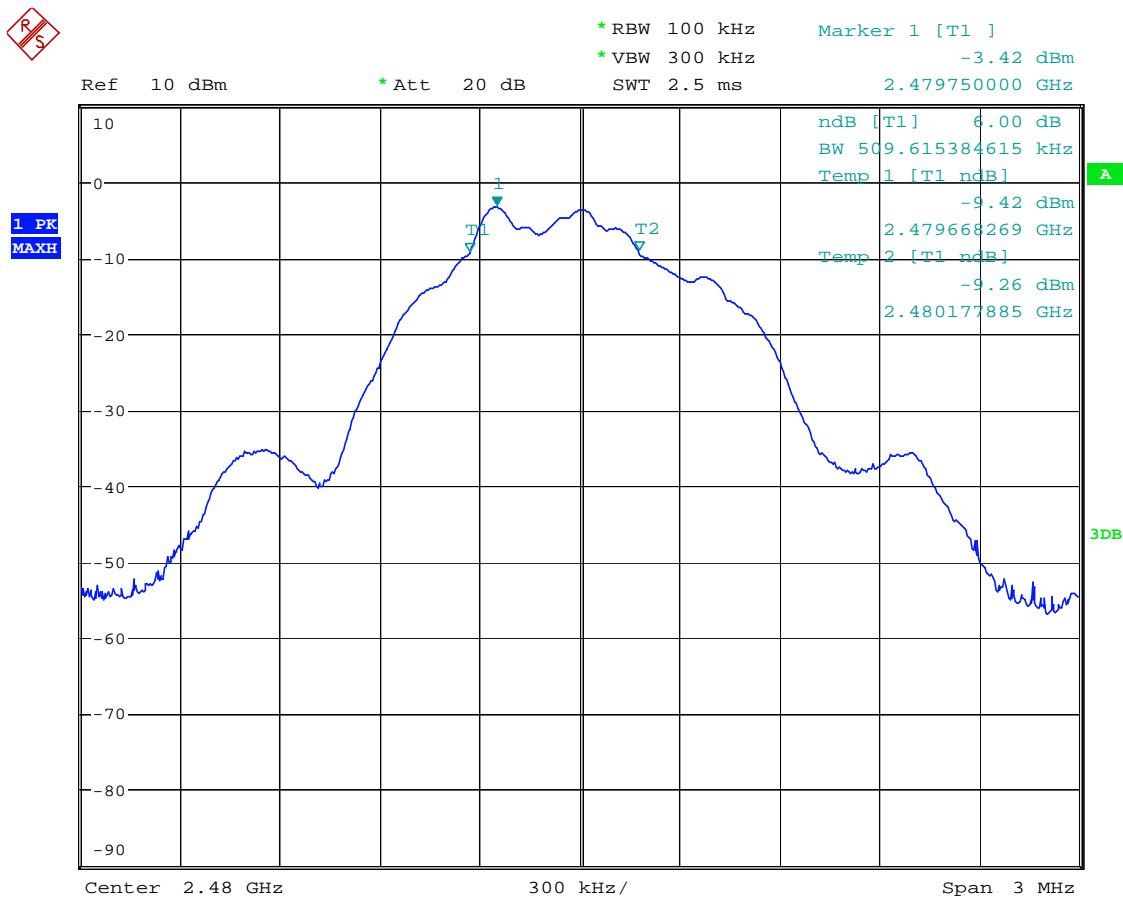


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3. High Channel



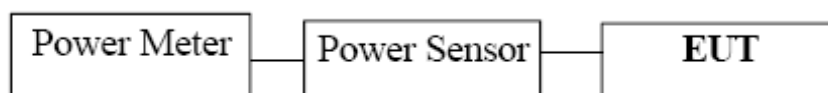
Date: 15.NOV.2019 14:45:57

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## 8. Maximum Output Power

### 8.1 Test Setup



### 8.2 Limits of Maximum Output Power

The Maximum Output Power Measurement is 30dBm.

### 8.3 Test Procedure

The RF power output was measured with a Power meter connected to the RF Antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate centre frequency.

**Note: the Peak power were measured.**

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#### 8.4 Test Results

EUT	Bluetooth Speaker	Model	S156S	
Mode	Keep Transmitting	Input Voltage	DC3.7V	
Temperature	24 deg. C,	Humidity	56% RH	
Channel	Channel Frequency (MHz)	Max. Power Output (dBm)	Peak Power Limit (dBm)	Pass/ Fail
		Peak		
Low	2402	-2.77	30	Pass
Middle	2440	-2.75	30	Pass
High	2480	-3.06	30	Pass

Note: 1. the result basic equation calculation as follow:

$$\text{Max. Power Output} = \text{Power Reading} + \text{Cable loss} + \text{Attenuator}$$

The report refers only to the sample tested and does not apply to the bulk.

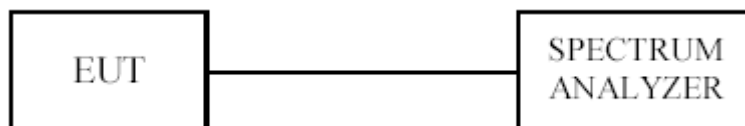
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## 9. Power Spectral Density Measurement

### 9.1 Test Setup



### 9.2 Limits of Power Spectral Density Measurement

The Maximum Power Spectral Density Measurement is 8dBm.

### 9.3 Test Procedure

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW = 10 kHz.
3. Set the VBW  $\geq$  30 kHz.
4. Set the span to 1.5 times the DTS channel bandwidth.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
11. The resulting peak PSD level must be  $\leq$  8 dBm.

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#### 9.4 Test Result

EUT		Bluetooth Speaker		Model	S156S
Mode		Keep Transmitting		Input Voltage	DC3.7V
Temperature		24 deg. C,		Humidity	56% RH
Channel	Peak Power Reading (dBm)	Cable Loss (dB)	Final Power Spectral Density (dBm)	Maximum Limit (dBm)	Pass/ Fail
Low	-13.66	0.2	-13.46	8	Pass
Middle	-13.71	0.2	-13.51	8	Pass
High	-13.97	0.2	-13.77	8	Pass

Note: The result basic equation calculation as follow:

$$\text{Peak Power Output} = \text{Peak Power Reading} + \text{Cable loss}$$

The report refers only to the sample tested and does not apply to the bulk.

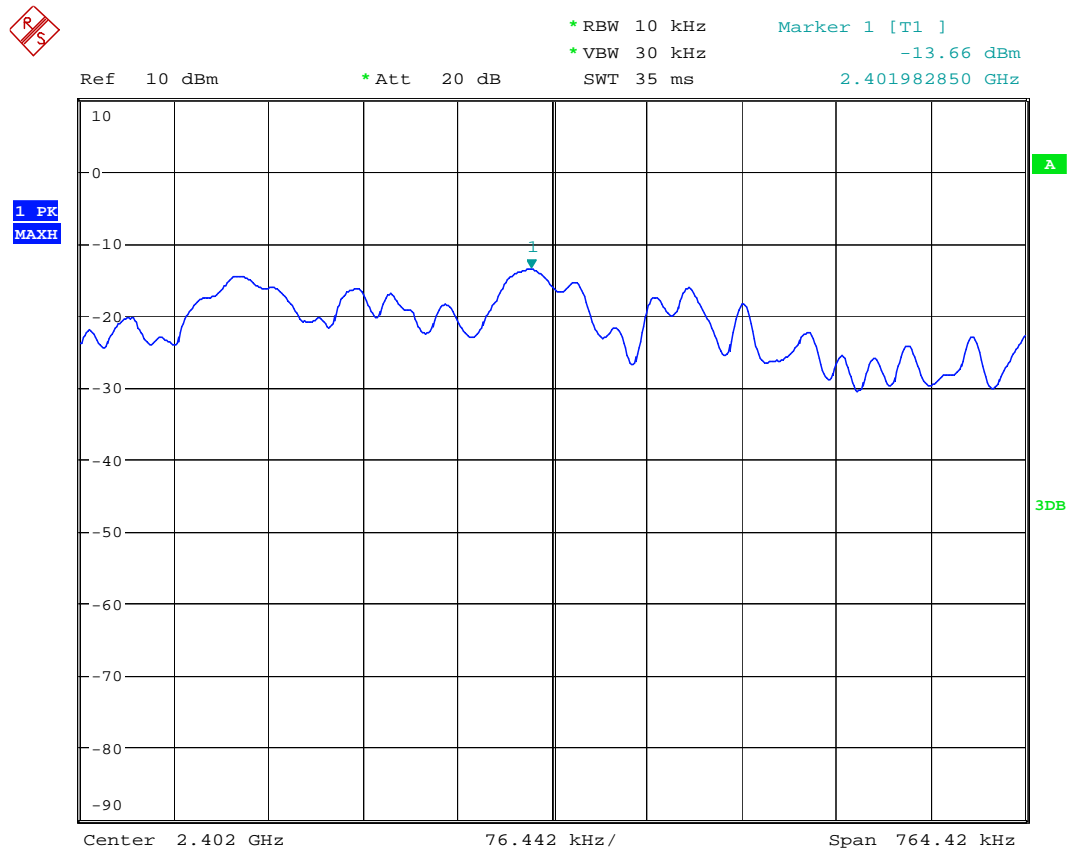
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Test Figure:

1. Condition: Low Channel

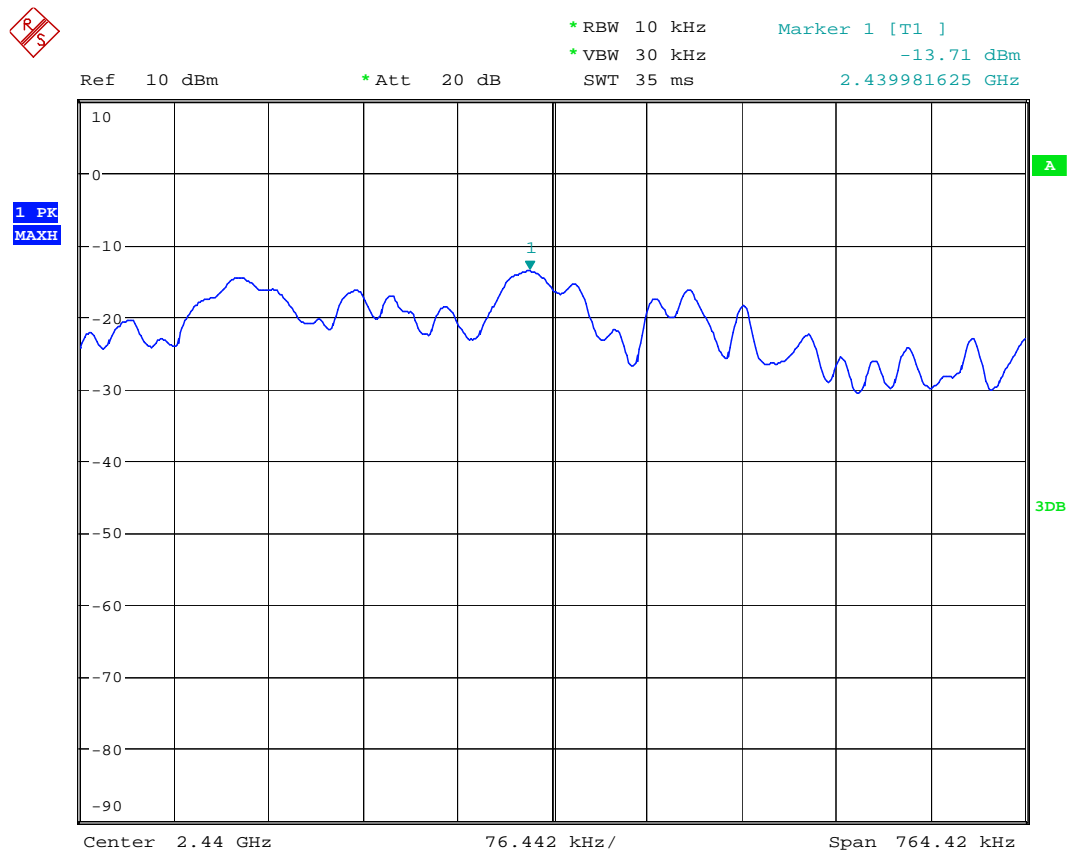


Date: 15.NOV.2019 14:55:28

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2. Condition: Middle Channel



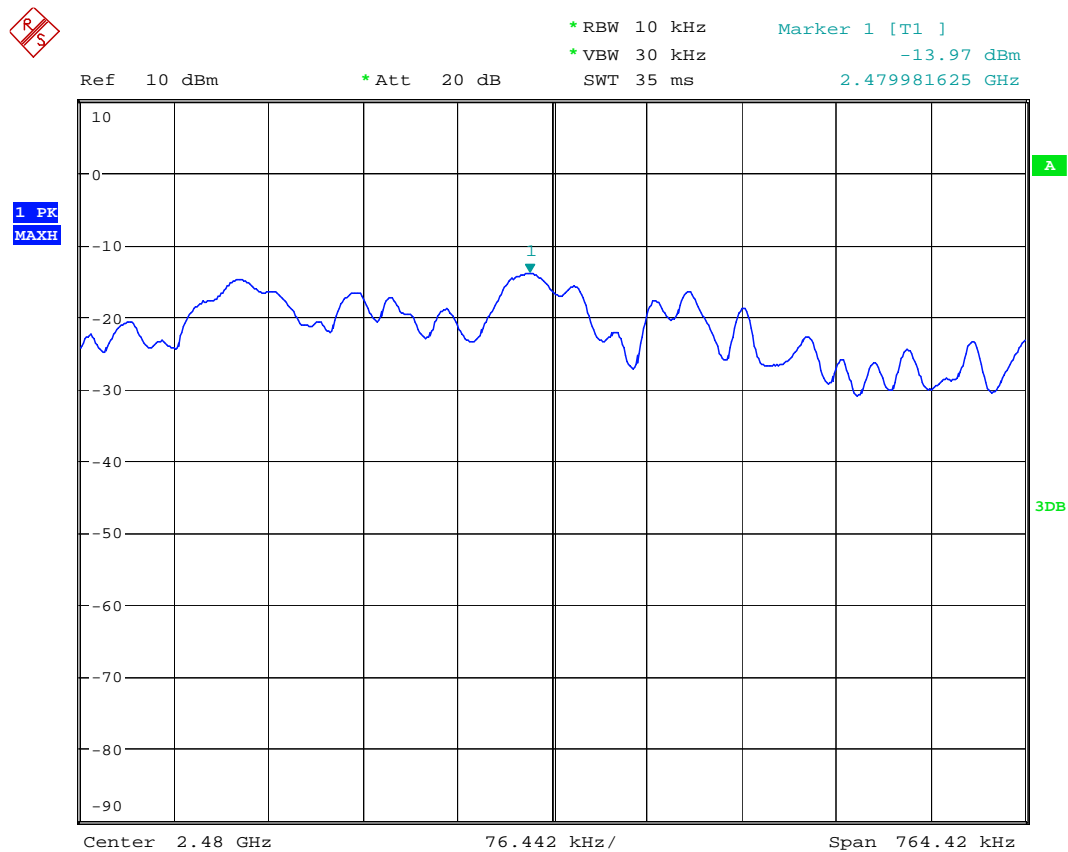
Date: 15.NOV.2019 14:56:07

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3. High Channel



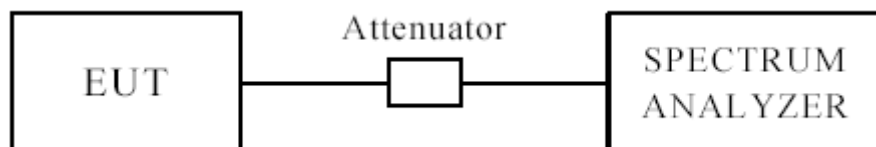
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## 10 Out of Band Measurement

### 10.1 Test Setup for band edge



The restricted band requirement based on radiated emission test; please see the clause 6 for the test setup

### 10.2 Limits of Out of Band Emissions Measurement

1. Below  $-20\text{dB}$  of the highest emission level of operating band (in 100kHz Resolution Bandwidth).
2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

### 10.3 Test Procedure

For signals in the restricted bands above and below the 2.4-2.483GHz allocated band a measurement was made of Radiated emission test. (Peak values with RBW=1MHz, VBW=3MHz and PK detector. AV value with RBW=1MHz, VBW=3MHz and RMS detector)

For bandage test, the spectrum set as follows: RBW=100 kHz, VBW=300 kHz. A conducted measurement used

### 10.4 Test Result

Please see next pages

- Note: 1. For band-edge measurement, the frequency from 30MHz-25GHz was tested. And It met the FCC rule.
2. This is a handheld device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.

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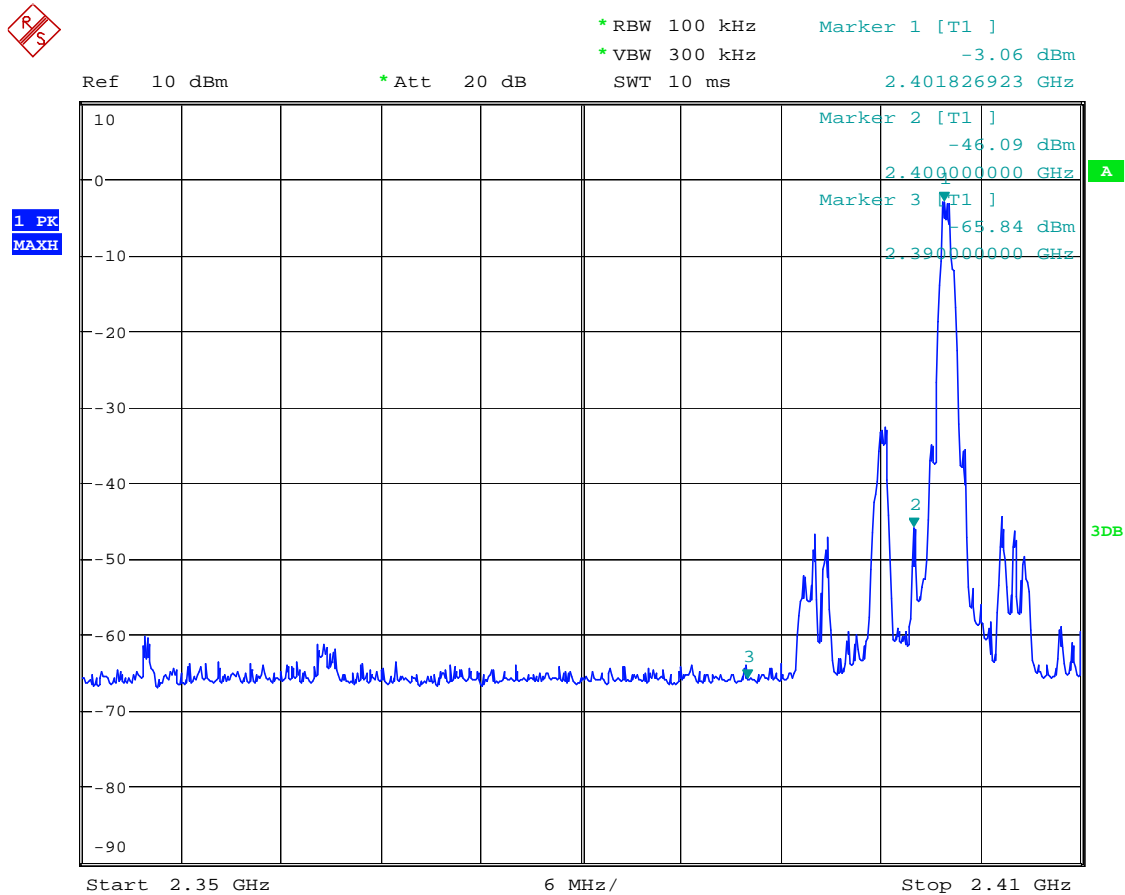
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#### 10.4 Band-edge Measurement

EUT	Bluetooth Speaker	Model	S156S
Mode	Keep Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

#### Test Figure:



Date: 15.NOV.2019 14:48:33

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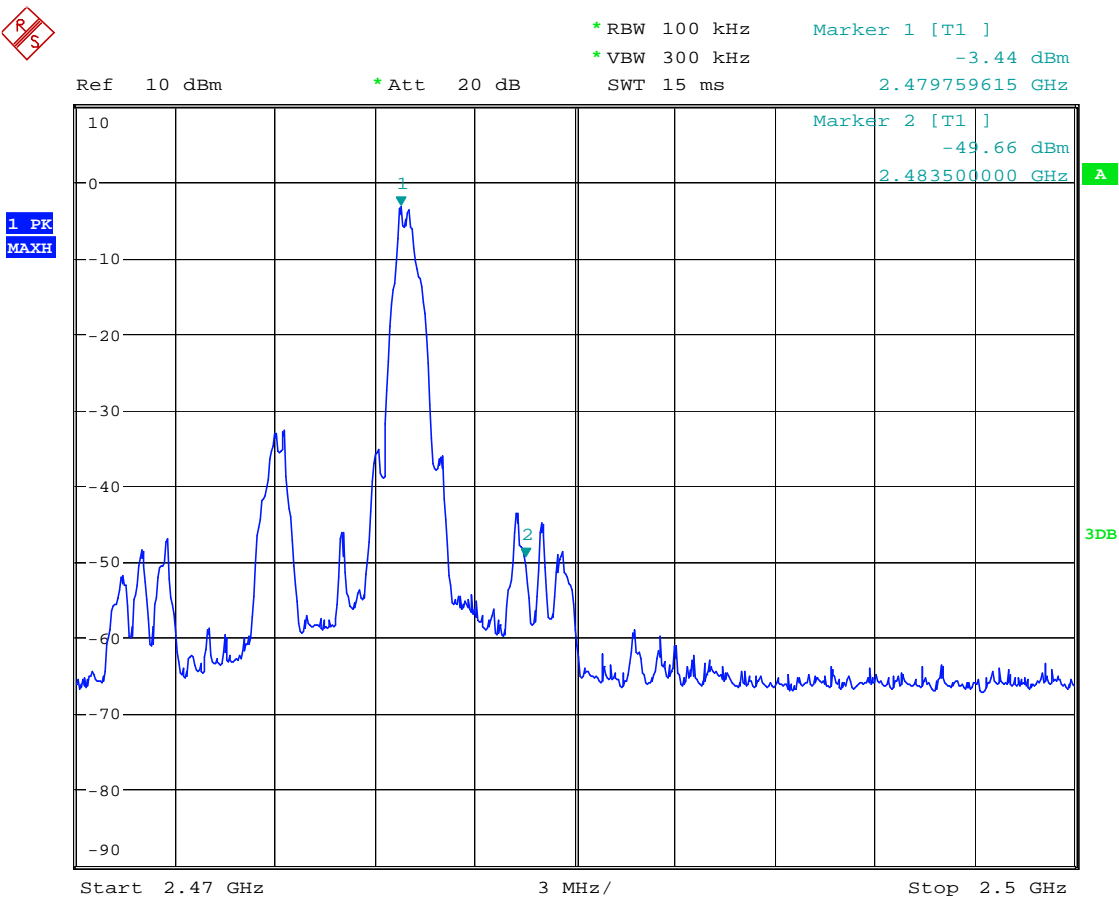
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10.4 Band-edge Measurement

EUT	Bluetooth Speaker	Model	S156S
Mode	Keeping Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



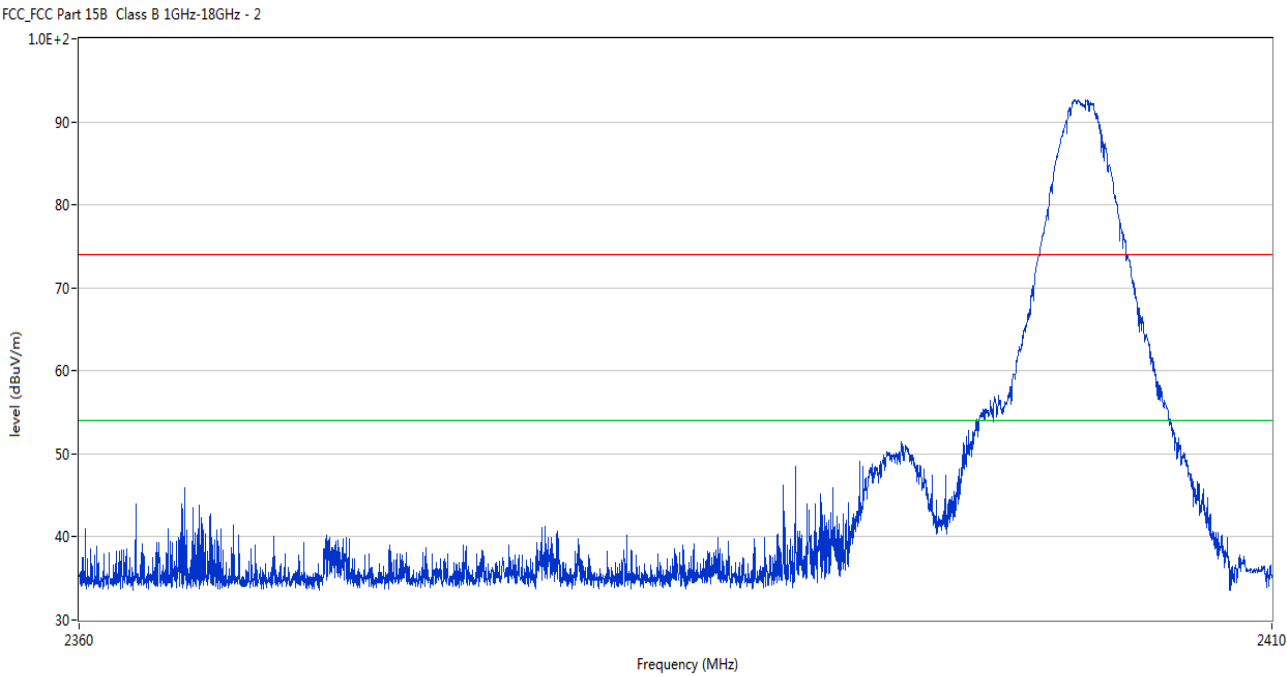
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10.4 Restrict Band Measurement

EUT	Bluetooth Speaker	Model	S156S
Mode	Keep Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass		



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2390	48.44	-3.53	54.0	-5.56	Peak	150.00	100	H	Pass

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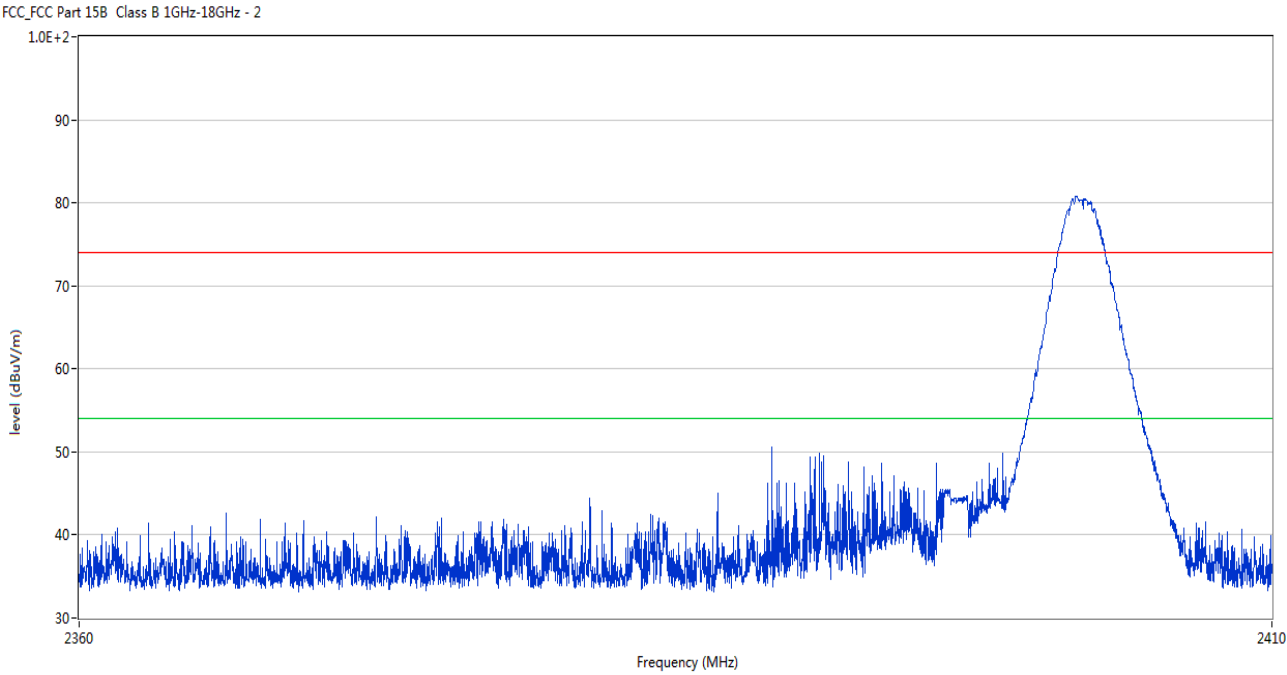
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10.4 Restrict Band Measurement

EUT	Bluetooth Speaker	Model	S156S
Mode	Keep Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass		



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2390	45.86	-3.53	54.0	-8.14	Peak	120.00	100	V	Pass

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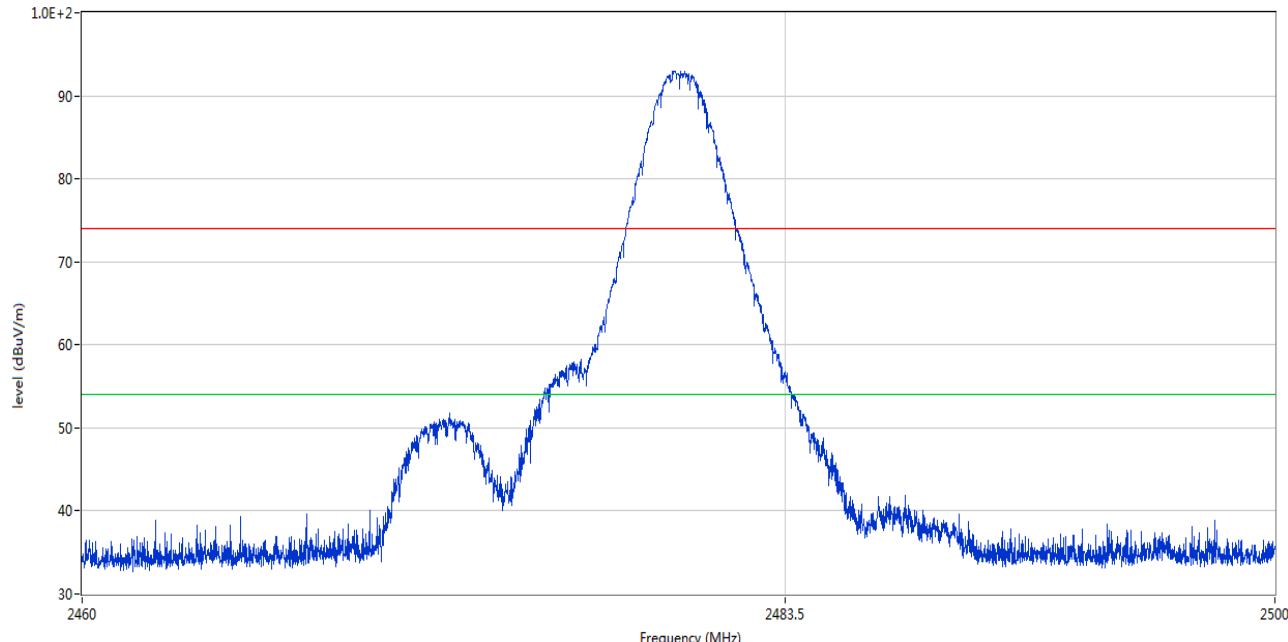
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10.4 Restrict Band Measurement

EUT	Bluetooth Speaker	Model	S156S
Mode	Keep Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass		

FCC Part 15B Class B 1GHz-18GHz - 2



The spectrum plot displays the radio frequency emissions of the Bluetooth Speaker. The x-axis represents Frequency in MHz, ranging from 2460 to 2500. The y-axis represents the signal level in dBuV/m, ranging from 30 to 100. A prominent peak is observed at 2483.5 MHz, reaching a level of approximately 93 dBuV/m. Two horizontal reference lines are present: a red line at 74 dBuV/m and a green line at 54 dBuV/m. The signal level at the peak exceeds both reference lines.

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1**	2483.5	33.74	-3.57	54.0	-20.26	AV	277.00	100	H	Pass
1	2483.5	56.60	-3.57	74.0	-17.40	Peak	277.00	100	H	Pass

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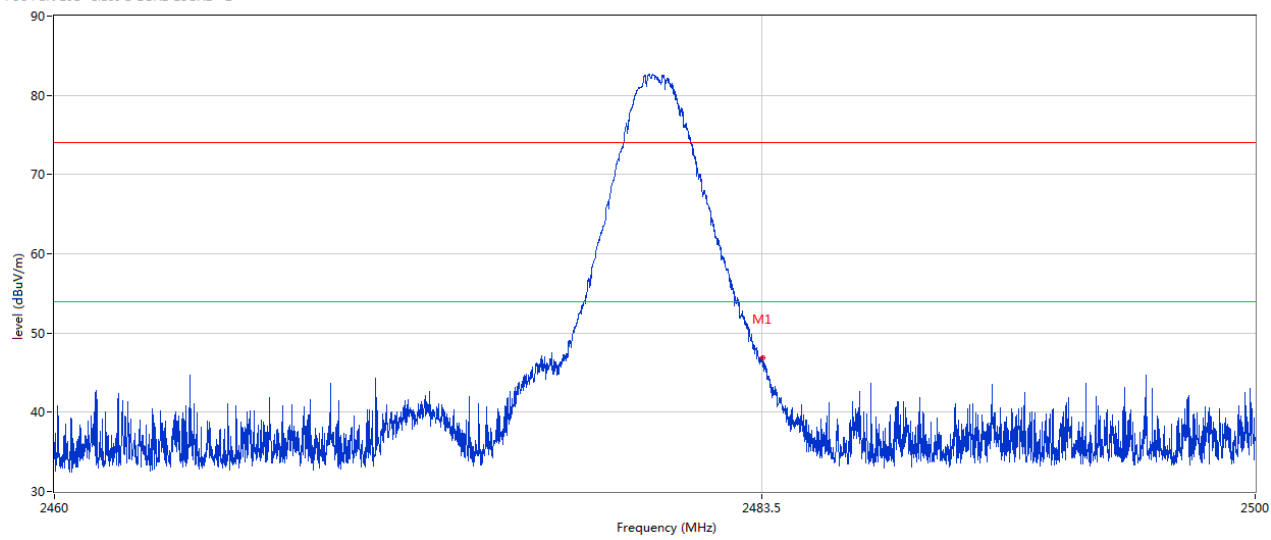
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10.4 Restrict Band Measurement

EUT	Bluetooth Speaker	Model	S156S
Mode	Keep Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass		

FCC Part 15B Class B 1GHz-18GHz - 2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2483.5	46.83	-3.57	54.0	-7.17	Peak	57.00	100	V	Pass

**Note:** The measured PK value less than the AV limit, no necessary to take down the AV measurement result.

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## **11.0 Antenna Requirement**

### **11.1 Standard Applicable**

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

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

### **11.2 Antenna Connected construction**

PCB antenna used. The gain of the antennas is 0.58dBi.

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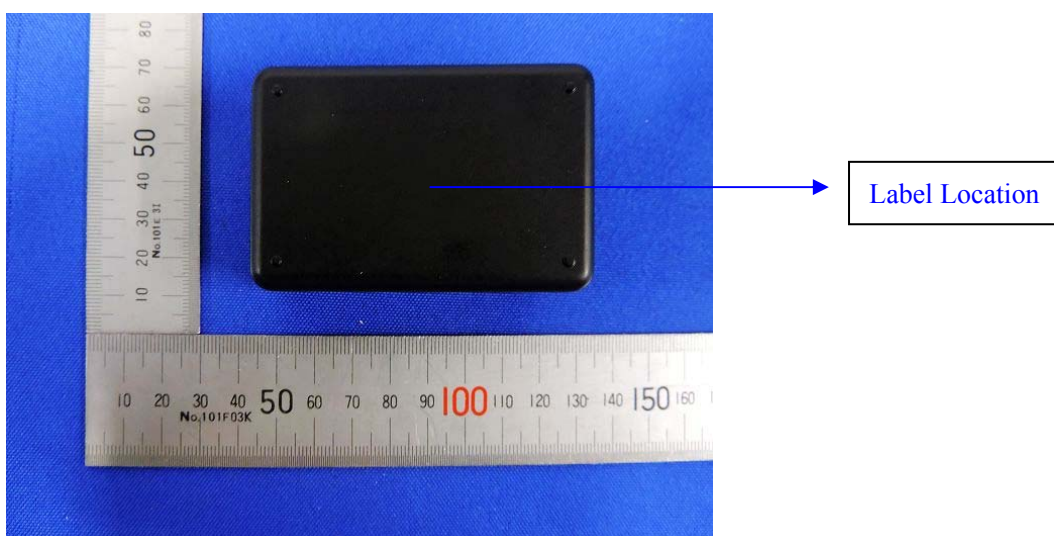
## 12.0 FCC ID Label

### FCC ID: RMZ-S156S

**This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.**

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

#### Mark Location:



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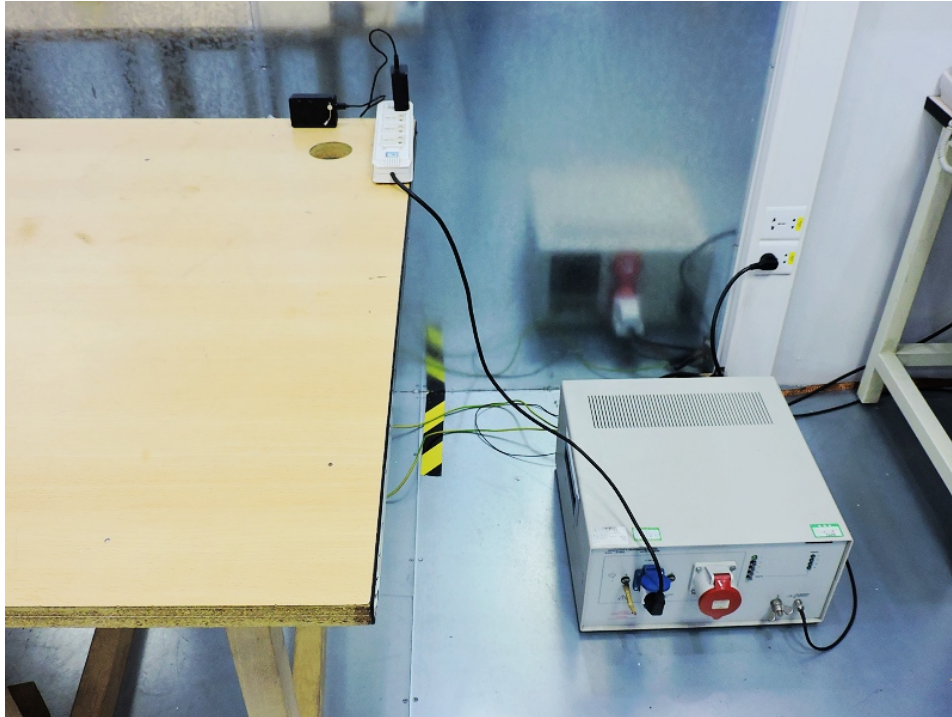
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### 13.0 Photo of testing

Conducted Emission Test Setup:



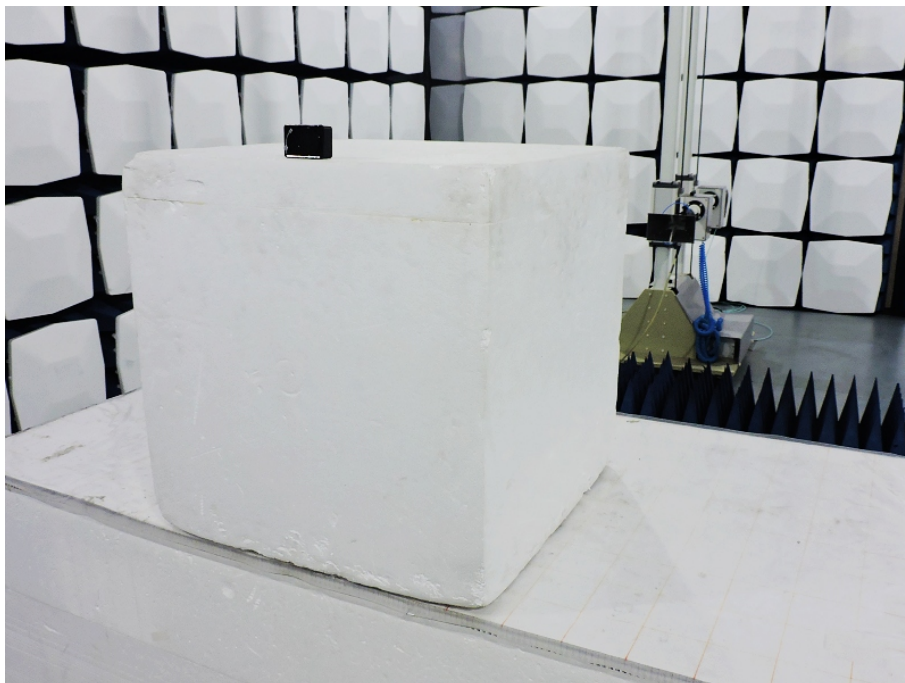
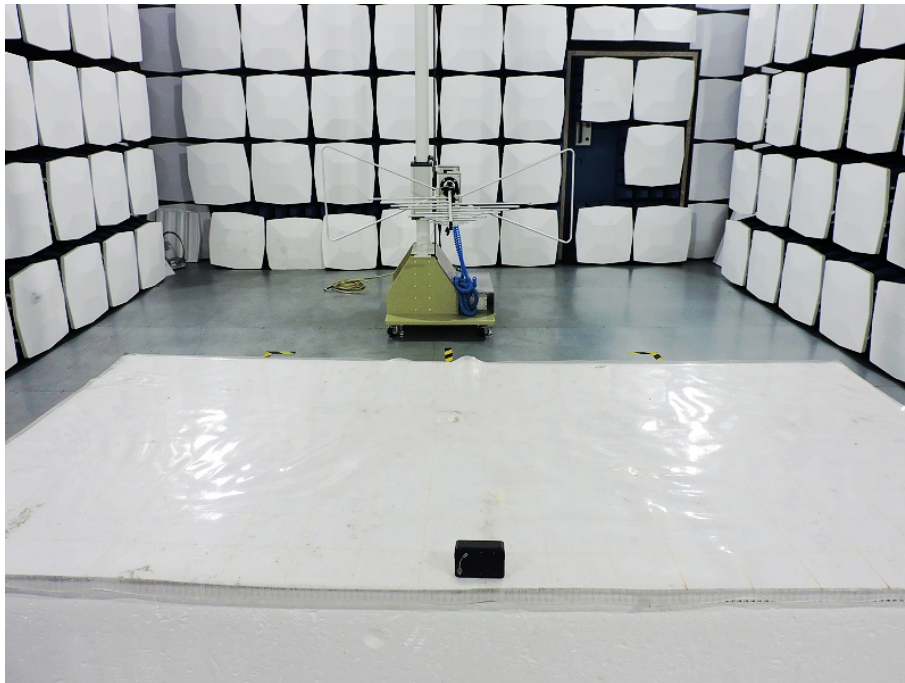
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**Radiated Emission Test Setup:**



**Photographs – EUT**

Please refer test report EMC1911095-01

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**End of the report**

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