APPLICATION CERTIFICATION
On Behalf of
Sure Wave(Hong Kong) Limited

iBarrel Bluetooth Speaker
Model No.: CQL1413-B

FCC ID: 2AAPLCQL1413-B

Prepared for	:	Sure Wave(Hong Kong) Limited
Address	:	A-703, Building 2, TianAn Cyber Park, HuangGe North Road, LongGang District,Shenzhen,518172, China
Prepared by	:	ACCURATE TECHNOLOGY CO. LTD
Address	:	F1, Bldg. A, Changyuan New Material Port, Keyuan Rd. Science & Industry Park, Nanshan, Shenzhen, Guangdong P.R. China Tel: (0755) 26503290 Fax: (0755) 26503396

Report Number	:	ATE20132717
Date of Test	:	July 01,2014-July 09,2014
Date of Report	:	July 09,2014

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Description Page

Test Report Certification

Applicant	:	Sure Wave(Hong Kong) Limited
Manufacturer	:	Sure Wave(Hong Kong) Limited
EUT Description	:	iBarrel Bluetooth Speaker
		(A) MODEL NO.: CQL1413-B
		(B) SERIAL NO.: N/A
		(C) POWER SUPPLY: DC 3.7V or DC 5V

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247
ANSI C63.4- 2009

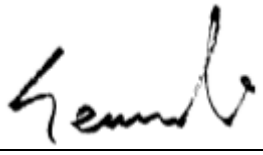
The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.247 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY CO. LTD is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of ACCURATE TECHNOLOGY CO. LTD.

Date of Test : July 01,2014-July 09,2014

Prepared by : 

(Engineer)

Approved & Authorized Signer : 

(Manager)

1. GENERAL INFORMATION

1.1.Description of Device (EUT)

EUT	:	iBarrel Bluetooth Speaker
Model Number	:	CQL1413-B
Frequency Band	:	2402MHz-2480MHz
Number of Channels	:	79
Modulation type	:	GFSK
Antenna Gain	:	0dBi
Antenna type	:	PCB Antenna
Power Supply	:	DC 3.7V(Battery)&DC 5V(USB)
Applicant	:	Sure Wave(Hong Kong) Limited
Address	:	A-703, Building 2, TianAn Cyber Park, HuangGe North Road, LongGang District,Shenzhen,518172, China
Manufacturer	:	Sure Wave(Hong Kong) Limited
Address	:	A-703, Building 2, TianAn Cyber Park, HuangGe North Road, LongGang District,Shenzhen,518172, China
Date of sample received	:	July 01,2014
Date of Test	:	July 01,2014-July 09,2014

1.2.Description of Test Facility

EMC Lab	:	Accredited by TUV Rheinland Shenzhen Listed by FCC The Registration Number is 752051 Listed by Industry Canada The Registration Number is 5077A-2 Accredited by China National Accreditation Committee for Laboratories The Certificate Registration Number is L3193
Name of Firm	:	ACCURATE TECHNOLOGY CO. LTD
Site Location	:	F1, Bldg. A, Changyuan New Material Port, Keyuan Rd. Science & Industry Park, Nanshan, Shenzhen, Guangdong P.R. China

1.3.Measurement Uncertainty

Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty (9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty (30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty (Above 1GHz)	=	4.06dB, k=2

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated dates	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 11, 2014	Jan. 10, 2015
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 11, 2014	Jan. 10, 2015
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 11, 2014	Jan. 10, 2015
Pre-Amplifier	Rohde&Schwarz	CBLU1183540-01	3791	Jan. 11, 2014	Jan. 10, 2015
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 15, 2014	Jan. 14, 2015
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 15, 2014	Jan. 14, 2015
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 15, 2014	Jan. 14, 2015
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1067	Jan. 15, 2014	Jan. 14, 2015
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 11, 2014	Jan. 10, 2015
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 11, 2014	Jan. 10, 2015

3. OPERATION OF EUT DURING TESTING

3.1.Operating Mode

The mode is used: Transmitting mode
Low Channel: 2402MHz
Middle Channel: 2441MHz
High Channel: 2480MHz
Hopping

3.2.Configuration and peripherals

EUT

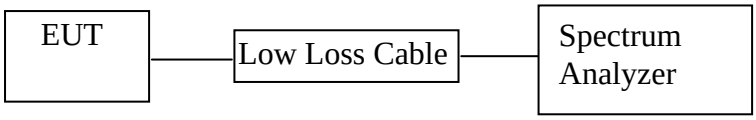
(EUT: iBarrel Bluetooth Speaker)

4. TEST PROCEDURES AND RESULTS

FCC Rules	Description of Test	Result
Section 15.207	Conducted Emission Test	Compliant
Section 15.247(a)(1)	20dB Bandwidth Test	Compliant
Section 15.247(a)(1)	Carrier Frequency Separation Test	Compliant
Section 15.247(a)(1)(iii)	Number Of Hopping Frequency Test	Compliant
Section 15.247(a)(1)(iii)	Dwell Time Test	Compliant
Section 15.247(b)(1)	Maximum Peak Output Power Test	Compliant
Section 15.247(d) Section 15.209	Radiated Emission Test	Compliant
Section 15.247(d)	Band Edge Compliance Test	Compliant
Section 15.203	Antenna Requirement	Compliant

5. 20DB BANDWIDTH TEST

5.1.Block Diagram of Test Setup



(EUT: iBarrel Bluetooth Speaker)

5.2.The Requirement For Section 15.247(a)(1)

Section 15.247(a)(1): Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

5.3.EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

5.4.Operating Condition of EUT

5.4.1.Setup the EUT and simulator as shown as Section 5.1.

5.4.2.Turn on the power of all equipment.

5.4.3.Let the EUT work in TX (Hopping off) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

5.5.Test Procedure

5.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.

5.5.2.Set RBW of spectrum analyzer to 30 kHz and VBW to 100 kHz.

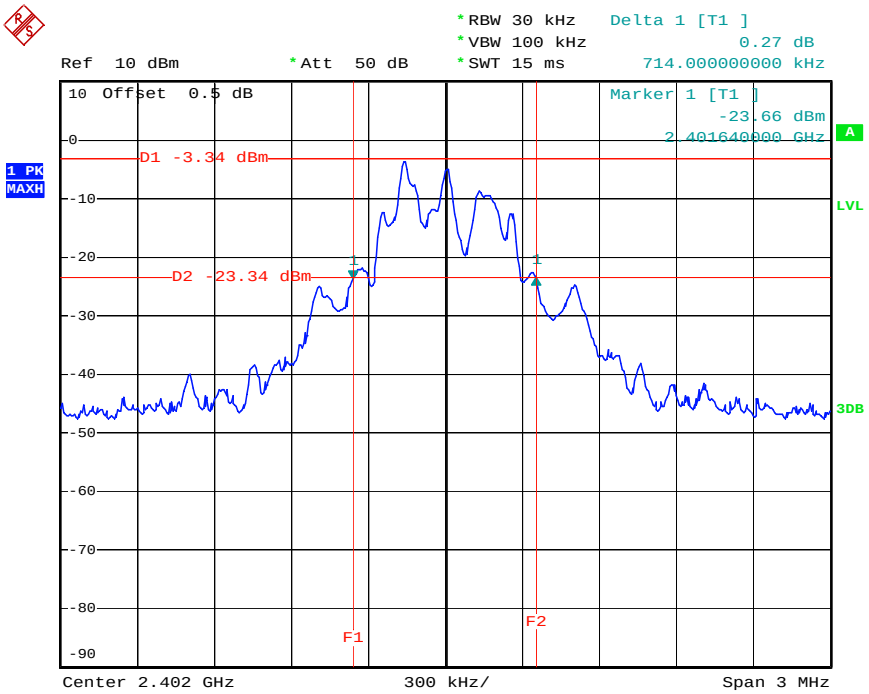
5.5.3.The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

5.6.Test Result

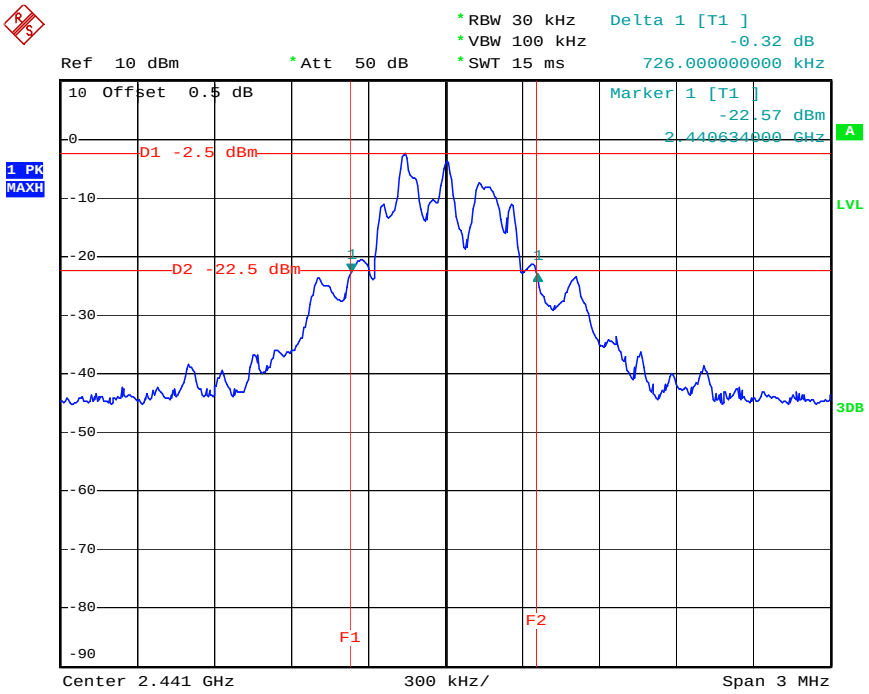
Channel	Frequency (MHz)	20dB Bandwidth (MHz)	Result
Low	2402	0.714	Pass
Middle	2441	0.726	Pass
High	2480	0.726	Pass

The spectrum analyzer plots are attached as below.

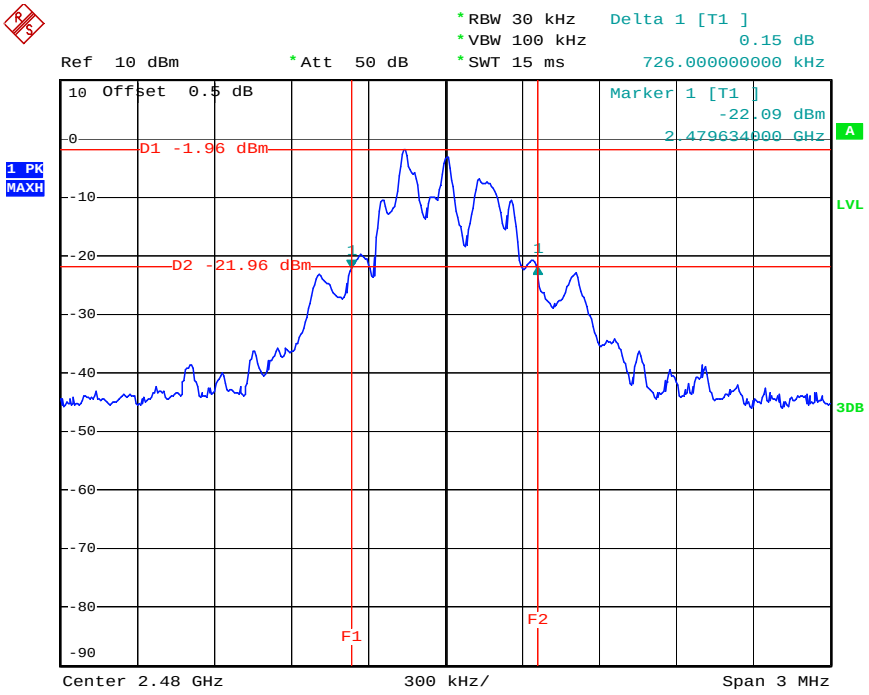
Low channel



Middle channel

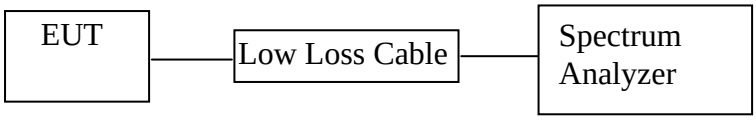


High channel



6. CARRIER FREQUENCY SEPARATION TEST

6.1.Block Diagram of Test Setup



(EUT: iBarrel Bluetooth Speaker)

6.2.The Requirement For Section 15.247(a)(1)

Section 15.247(a)(1): Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudorandomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

6.3.EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

6.4.Operating Condition of EUT

6.4.1.Setup the EUT and simulator as shown as Section 6.1.

6.4.2.Turn on the power of all equipment.

6.4.3.Let the EUT work in TX (Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

6.5.Test Procedure

6.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.

6.5.2.Set RBW of spectrum analyzer to 30 kHz and VBW to 100 kHz. Adjust Span to 2 MHz.

6.5.3.Set the adjacent channel of the EUT maxhold another trace.

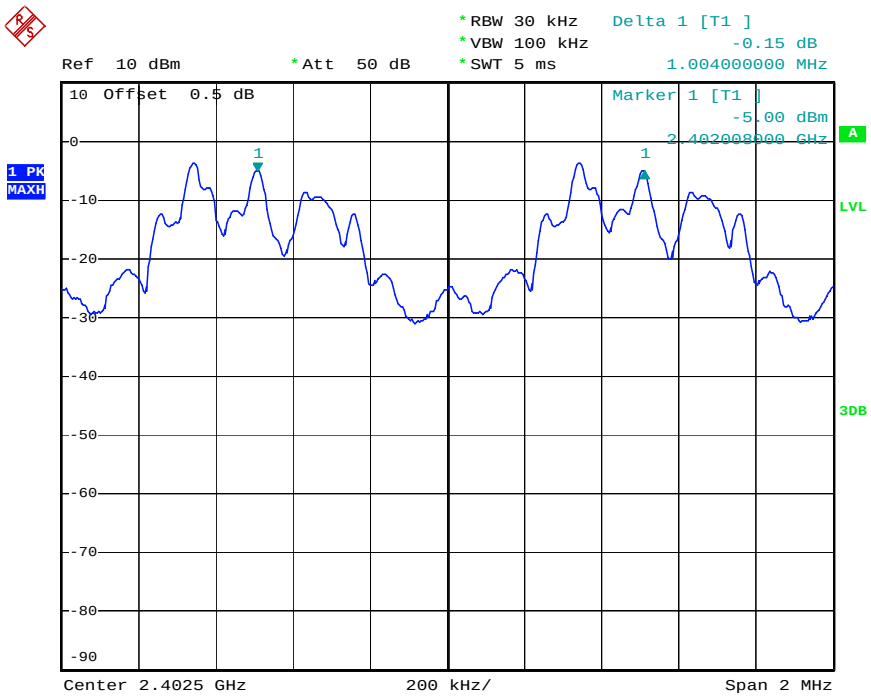
6.5.4.Measurement the channel separation

6.6.Test Result

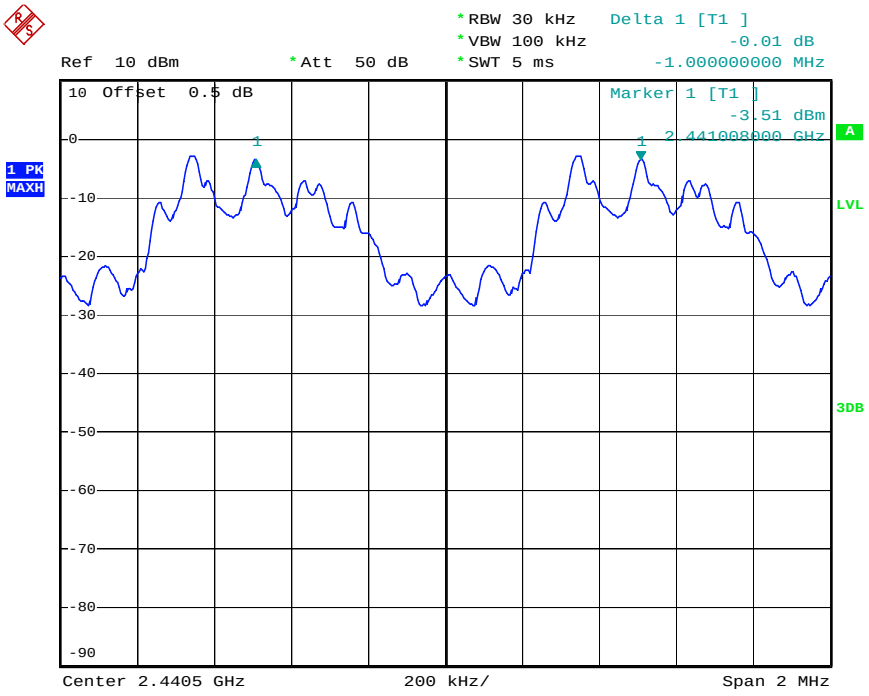
Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.004	25KHz or 20dB bandwidth	PASS
	2403			
Middle	2440	1.000	25KHz or 20dB bandwidth	PASS
	2441			
High	2479	1.004	25KHz or 20dB bandwidth	PASS
	2480			

The spectrum analyzer plots are attached as below.

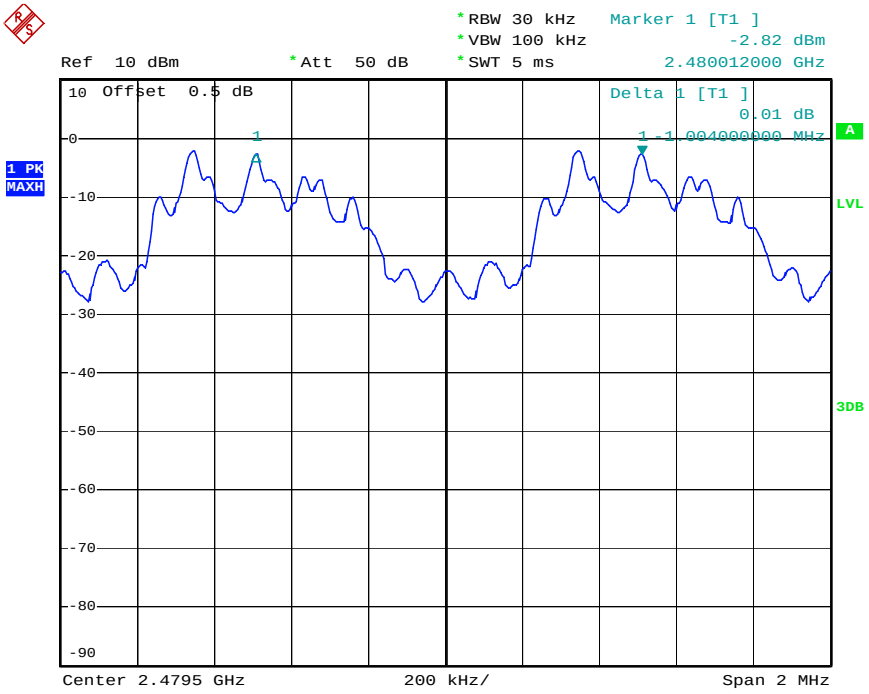
Low channel



Middle channel

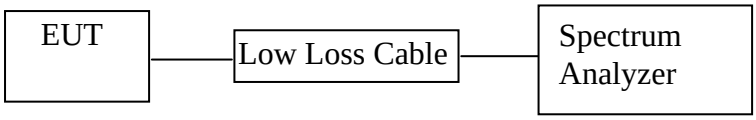


High channel



7. NUMBER OF HOPPING FREQUENCY TEST

7.1.Block Diagram of Test Setup



(EUT: iBarrel Bluetooth Speaker)

7.2.The Requirement For Section 15.247(a)(1)(iii)

Section 15.247(a)(1)(iii): Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

7.3.EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

7.4.Operating Condition of EUT

7.4.1.Setup the EUT and simulator as shown as Section 7.1.

7.4.2.Turn on the power of all equipment.

7.4.3.Let the EUT work in TX (Hopping on) modes measure it.

7.5.Test Procedure

7.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.

7.5.2.Set the spectrum analyzer as Span=83.5MHz, RBW=100 kHz, VBW=300 kHz.

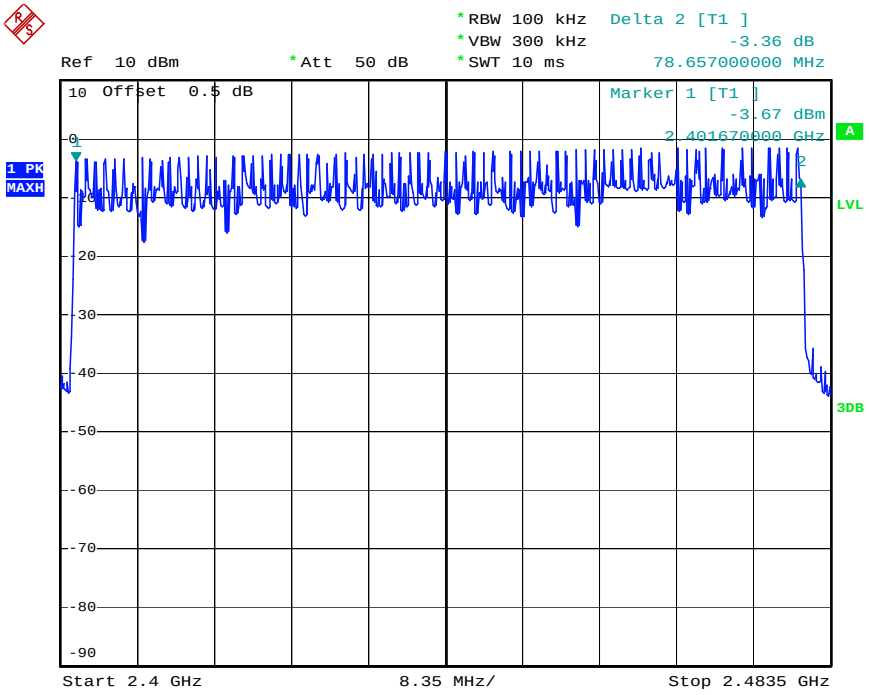
7.5.3.Max hold, view and count how many channel in the band.

7.6.Test Result

Total number of hopping channel	Measurement result(CH)	Limit(CH)
	79	⩾15

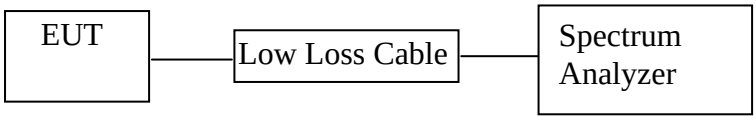
The spectrum analyzer plots are attached as below.

Number of hopping channels



8. DWELL TIME TEST

8.1.Block Diagram of Test Setup



(EUT: iBarrel Bluetooth Speaker)

8.2.The Requirement For Section 15.247(a)(1)(iii)

Section 15.247(a)(1)(iii): Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

8.3.EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

8.4.Operating Condition of EUT

8.4.1.Setup the EUT and simulator as shown as Section 8.1.

8.4.2.Turn on the power of all equipment.

8.4.3.Let the EUT work in TX (Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

8.5.Test Procedure

8.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.

8.5.2.Set center frequency of spectrum analyzer = operating frequency.

8.5.3.Set the spectrum analyzer as RBW=1MHz, VBW=3MHz, Span=0Hz, Get the pulse time.

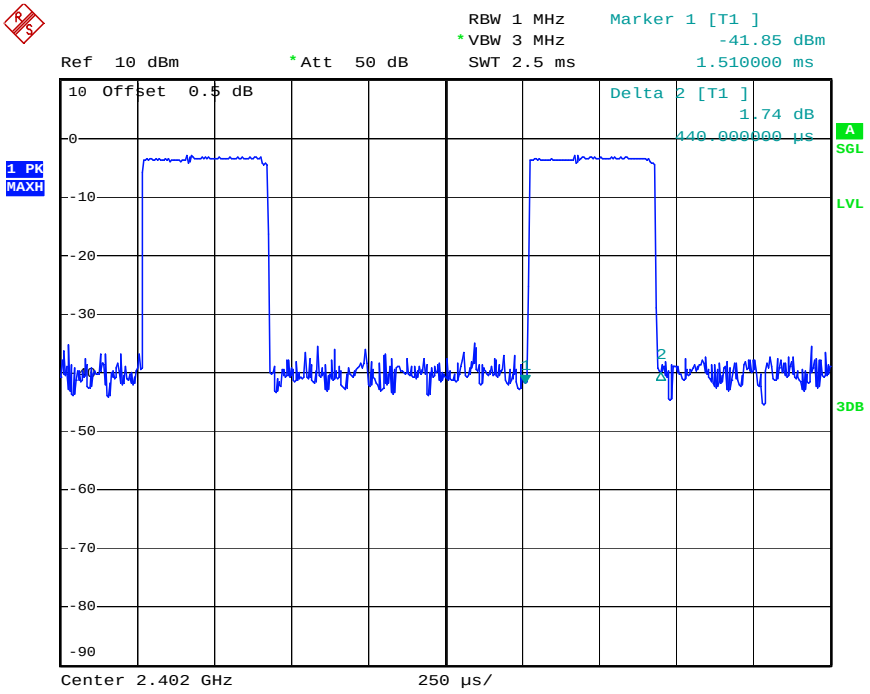
8.5.4.Repeat above procedures until all frequency measured were complete.

8.6.Test Result

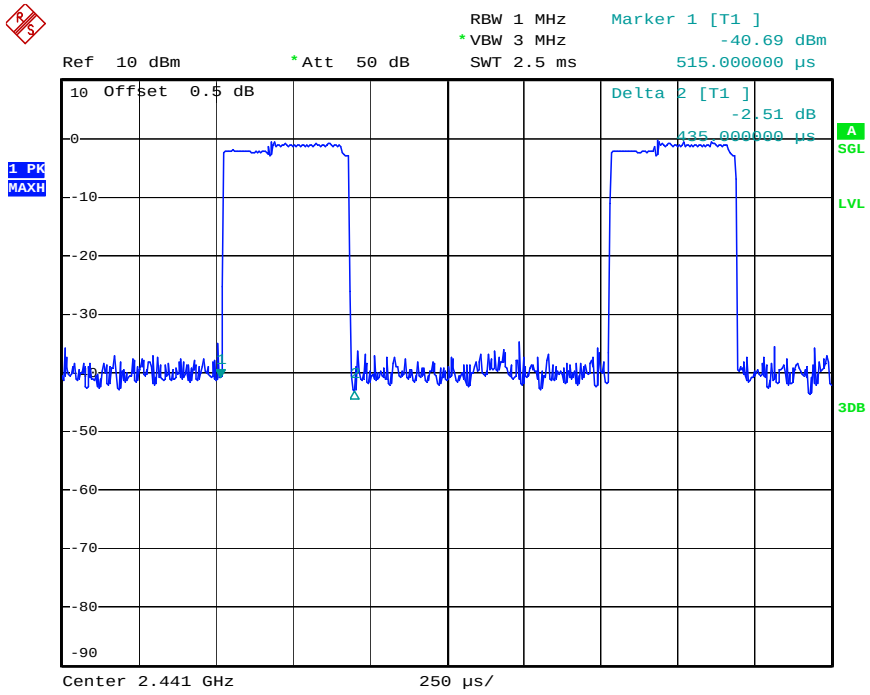
Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.440	140.80	400
	2441	0.435	139.20	400
	2480	0.430	137.60	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(2*79))×31.6				
DH3	2402	1.735	277.60	400
	2441	1.735	277.60	400
	2480	1.800	288.00	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(4*79))×31.6				
DH5	2402	3.050	325.33	400
	2441	3.025	322.67	400
	2480	3.060	326.40	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(6*79))×31.6				

The spectrum analyzer plots are attached as below.

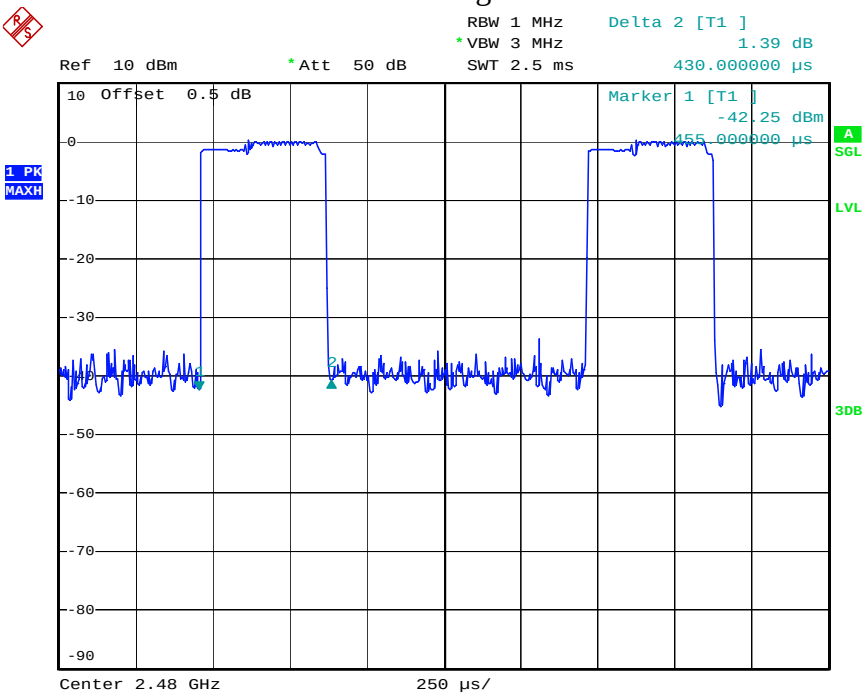
DH1 Low channel



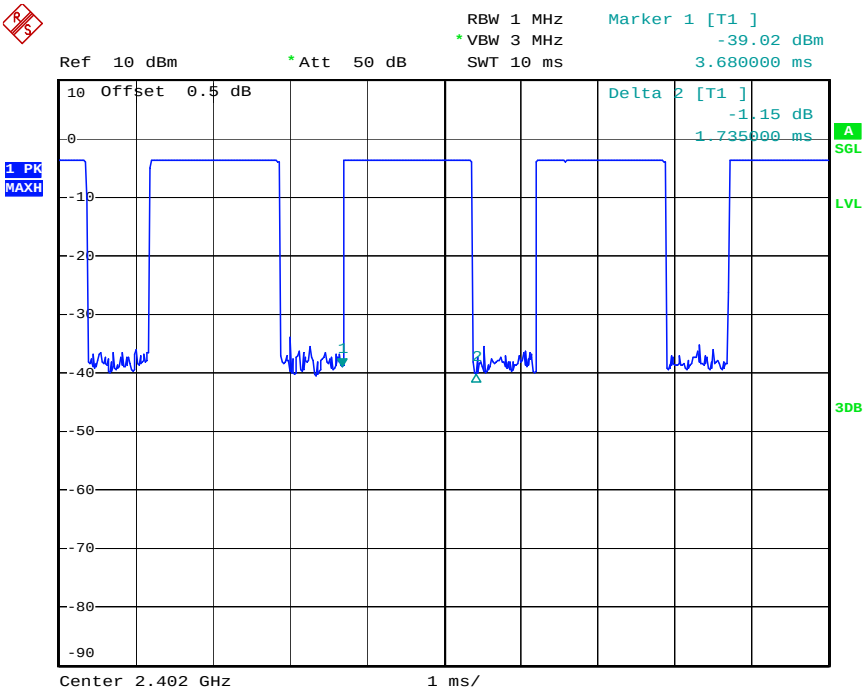
DH1 Middle channel



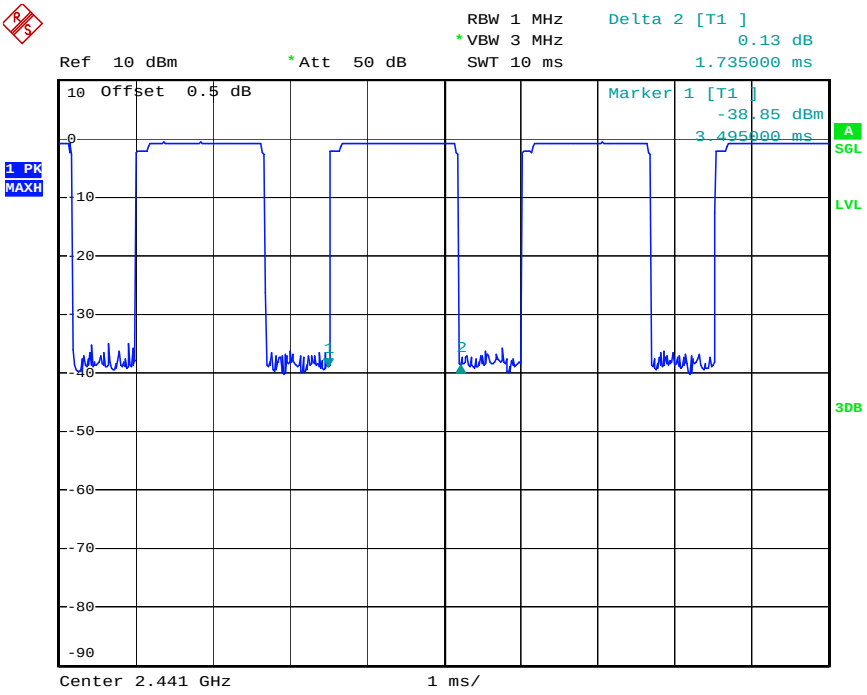
DH1 High channel



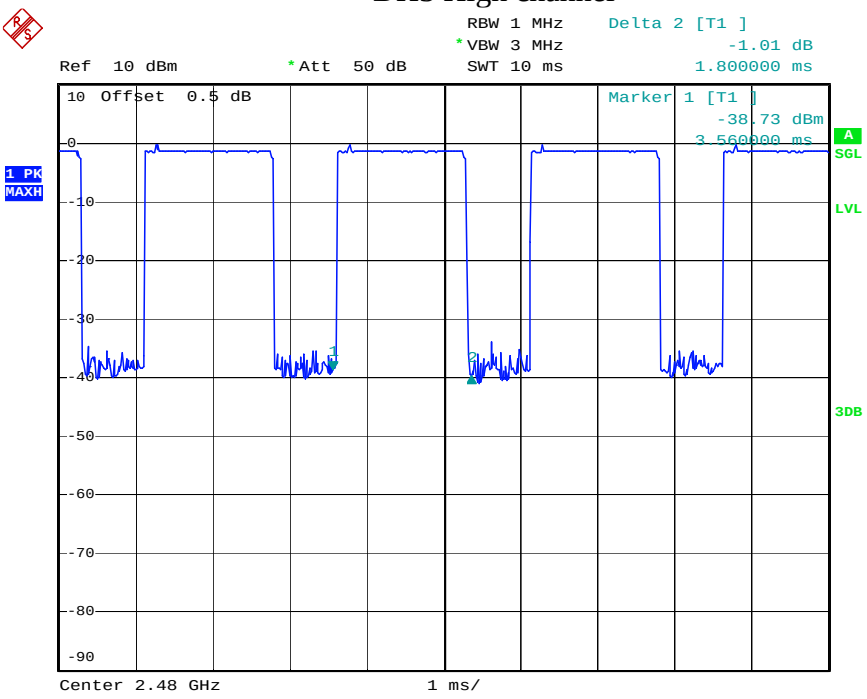
DH3 Low channel



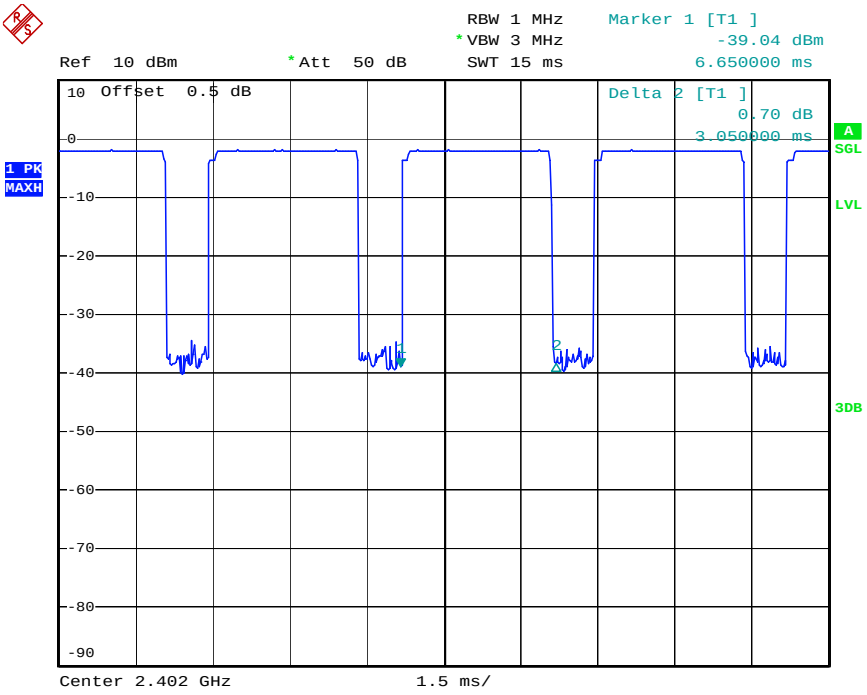
DH3 Middle channel



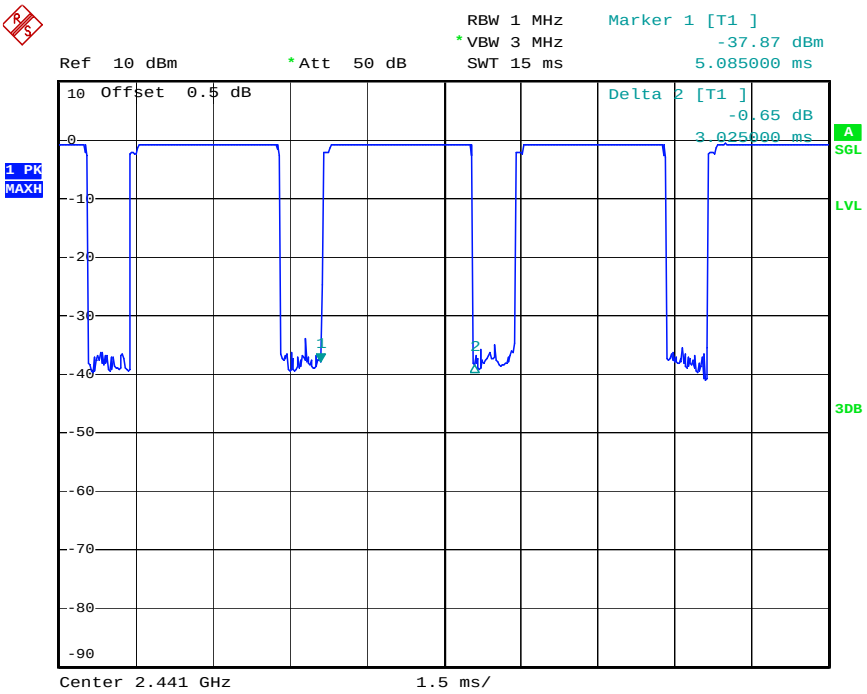
DH3 High channel



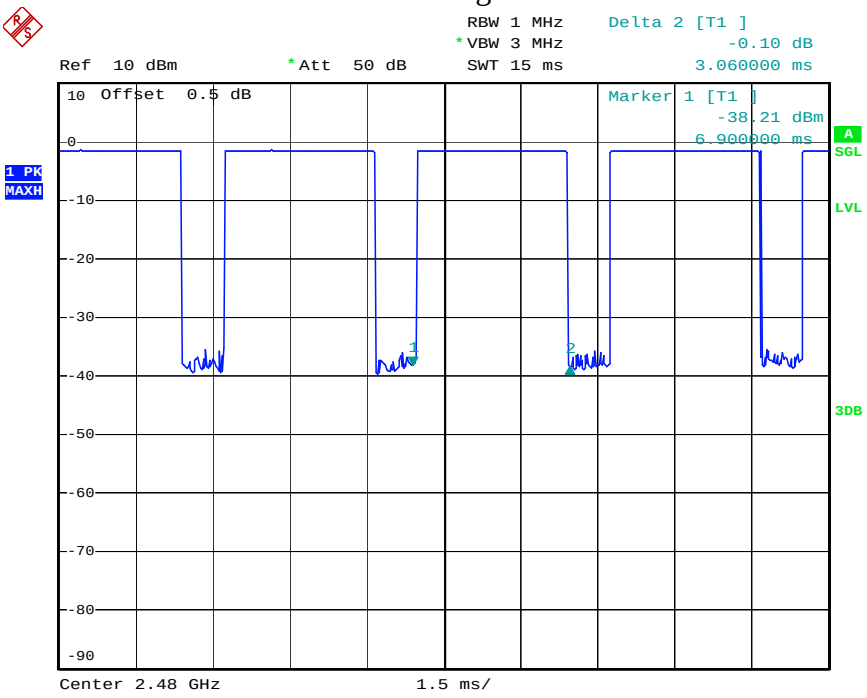
DH5 Low channel



DH5 Middle channel

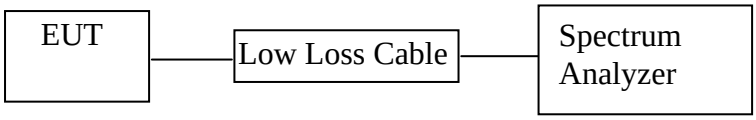


DH5 High channel



9. MAXIMUM PEAK OUTPUT POWER TEST

9.1.Block Diagram of Test Setup



(EUT: iBarrel Bluetooth Speaker)

9.2.The Requirement For Section 15.247(b)(1)

Section 15.247(b)(1): For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

9.3.EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

9.4.Operating Condition of EUT

9.4.1.Setup the EUT and simulator as shown as Section 9.1.

9.4.2.Turn on the power of all equipment.

9.4.3.Let the EUT work in TX (Hopping off) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

9.5.Test Procedure

9.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.

9.5.2.Set RBW of spectrum analyzer to 1MHz and VBW to 3MHz

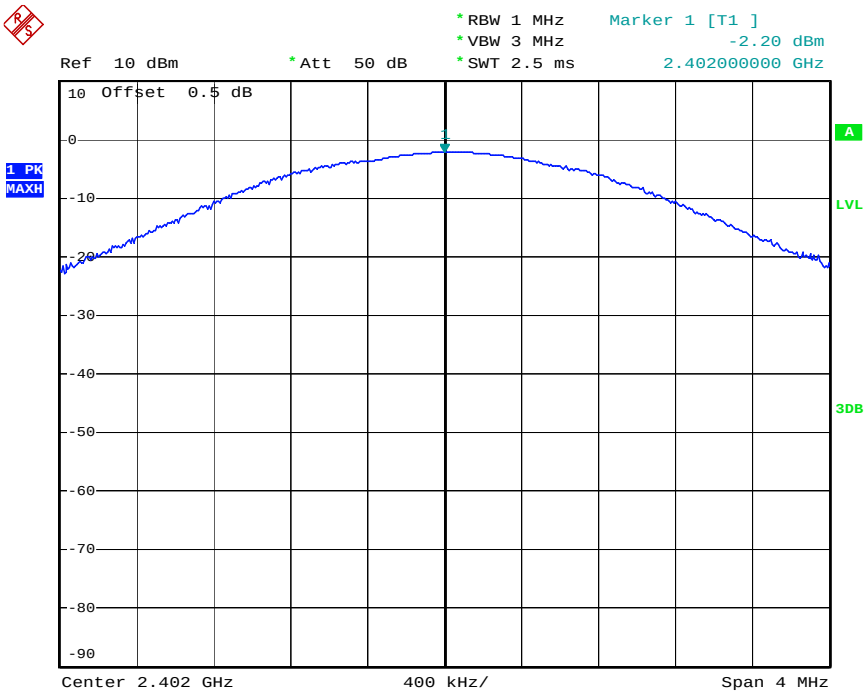
9.5.3.Measurement the maximum peak output power.

9.6.Test Result

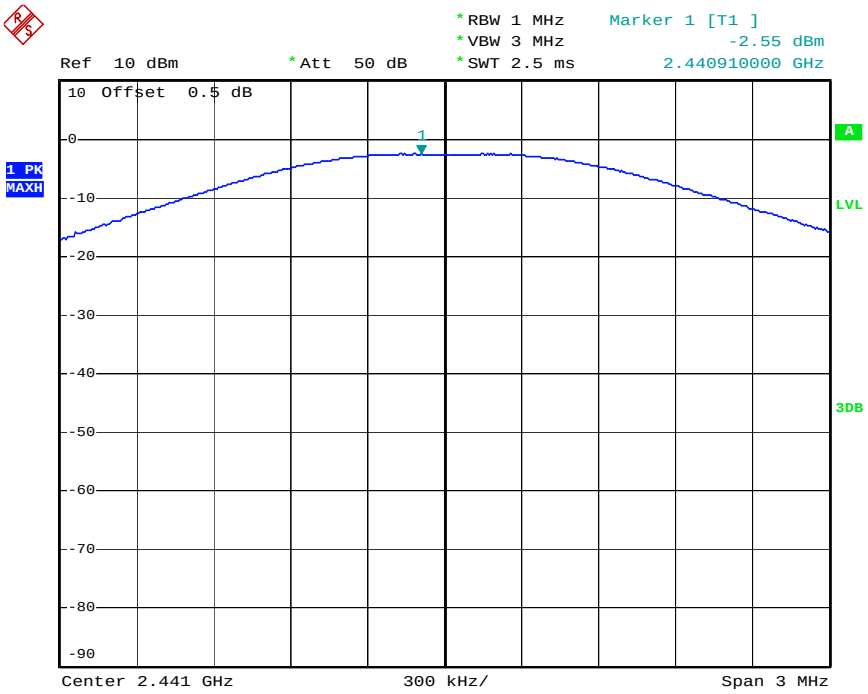
Channel	Frequency (MHz)	Peak Output Power (dBm/mW)	Limits (dBm/W)
Low	2402	-2.20 / 0.60	30/1.0
Middle	2441	-2.55 / 0.56	30/1.0
High	2480	-0.54 / 0.88	30/1.0

The spectrum analyzer plots are attached as below.

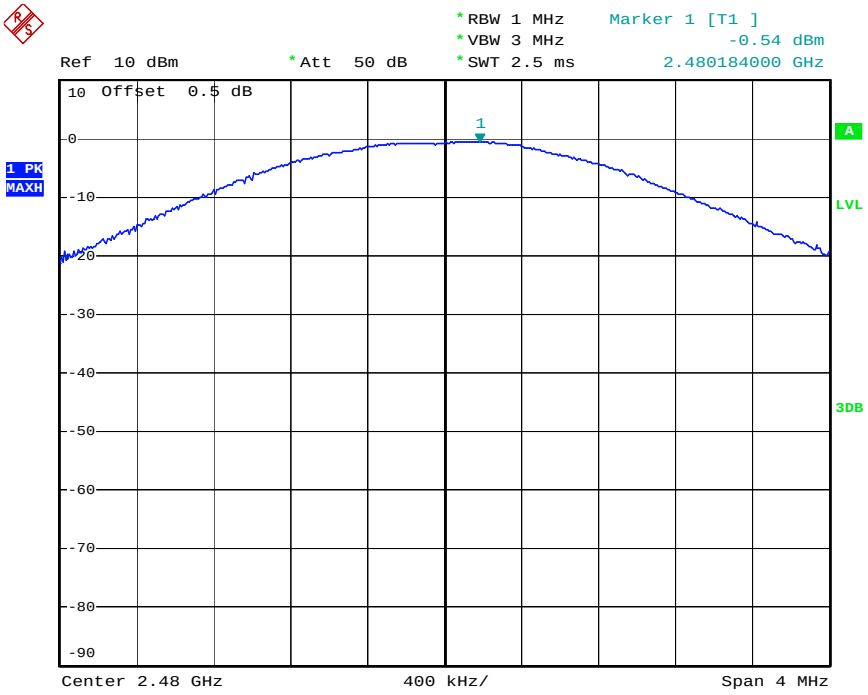
Low channel



Middle channel



High channel



10.RADIATED EMISSION TEST

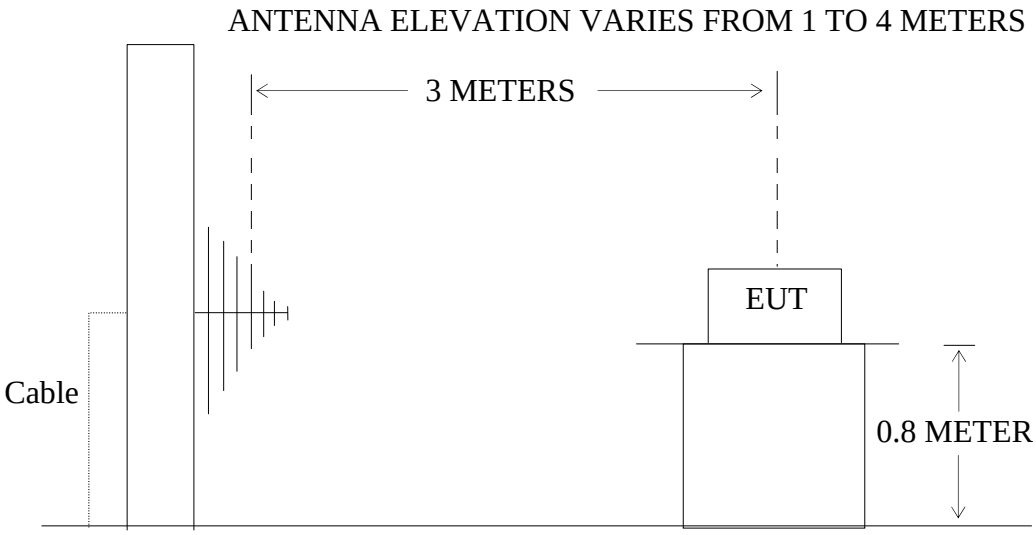
10.1.Block Diagram of Test Setup

10.1.1.Block diagram of connection between the EUT and simulators

EUT

(EUT: iBarrel Bluetooth Speaker)

10.1.2.Anechoic Chamber Test Setup Diagram



(EUT: iBarrel Bluetooth Speaker)

10.2.The Limit For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

10.3.Restricted bands of operation

10.3.1.FCC Part 15.205 Restricted bands of operation

(a) Except as shown in paragraph (d) of this section, Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	([2])
13.36-13.41			

[1]Until February 1, 1999, this restricted band shall be 0.490-0.510
[2]Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in Section15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

10.4.Configuration of EUT on Measurement

The equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

10.5.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4- 2009 on radiated emission measurement.

The final measurement in band 9-90 kHz, 110-490 kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

RBW (120 kHz), VBW (300 kHz) for QP detector below 1GHz
RBW (1 MHz), VBW (3MHz) for Peak detector above 1GHz
RBW (1 MHz), VBW (10Hz) for AV detector above 1GHz (duty cycle $\geqslant$ 98 percent)

If the peak-detected amplitude can be shown to comply with the average limit, then it is not necessary to perform a separate average measurement.

10.6.The Field Strength of Radiation Emission Measurement Results

Note:

1. The fundamental radiated emissions were reduced by 2.4G Band Reject Filter in the attached plots.

2. The 18-25GHz emissions are not reported, because the levels are too low against the limit.

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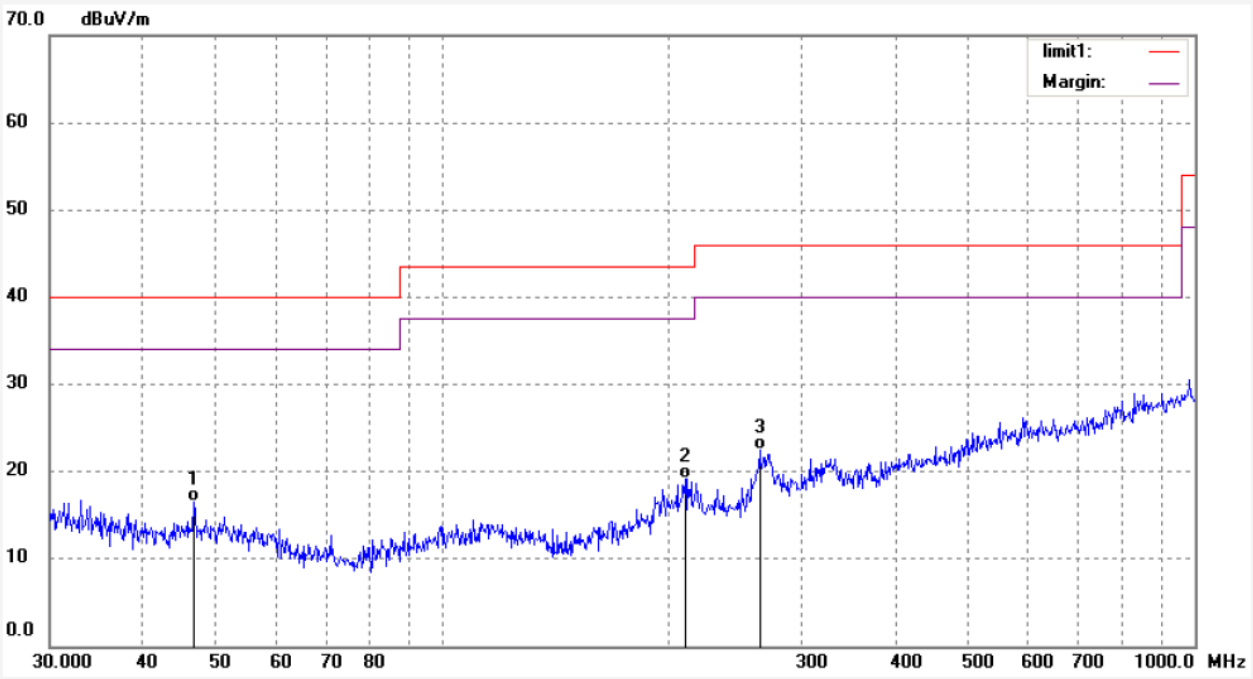
Job No.: Ricky #205	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/07/07/
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 14/43/43
EUT: iBarrel Bluetooth Speaker	Engineer Signature: Ricky
Mode: TX 2402MHz	Distance: 3m
Model: CQL1413-B	
Manufacturer: Sure Wave	

Note: Report No.:ATE20132717



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	46.7077	29.10	-12.62	16.48	40.00	-23.52	QP			
2	210.1294	31.42	-12.17	19.25	43.50	-24.25	QP			
3	264.0416	33.04	-10.48	22.56	46.00	-23.44	QP			

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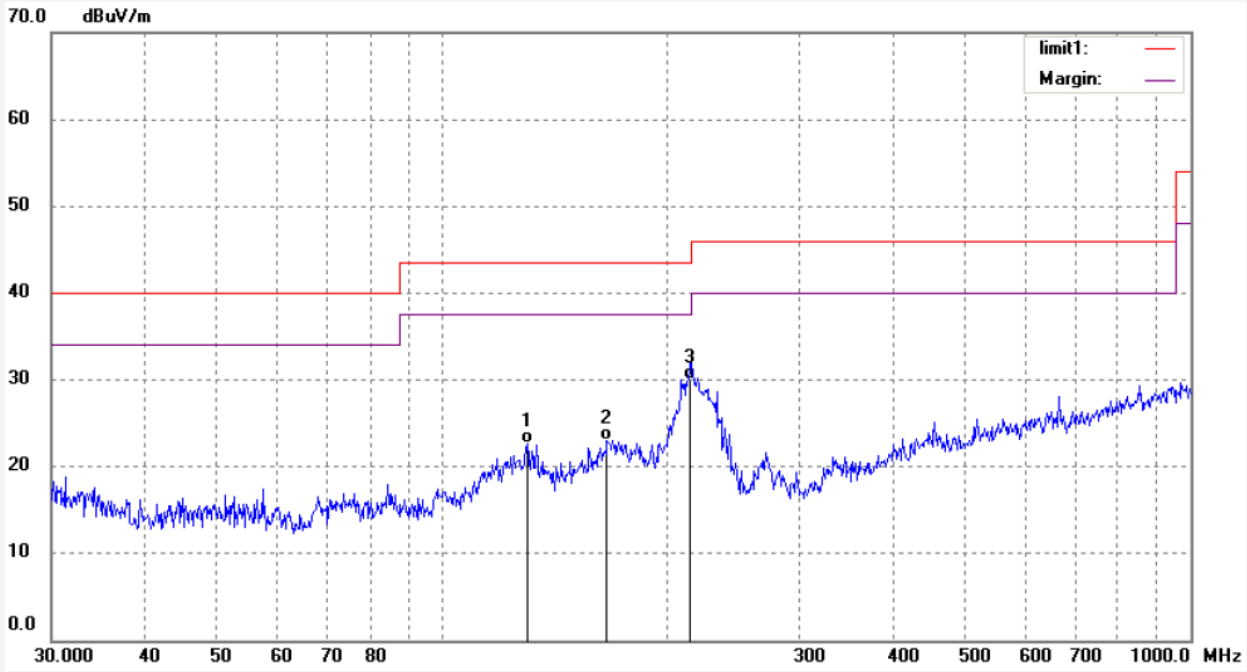
Job No.: Ricky #206	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/07/07/
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 14/44/52
EUT: iBarrel Bluetooth Speaker	Engineer Signature: Ricky
Mode: TX 2402MHz	Distance: 3m
Model: CQL1413-B	
Manufacturer: Sure Wave	

Note: Report No.:ATE20132717



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	129.8477	36.49	-13.85	22.64	43.50	-20.86	QP			
2	166.0540	37.28	-14.30	22.98	43.50	-20.52	QP			
3	214.6063	41.87	-11.90	29.97	43.50	-13.53	QP			

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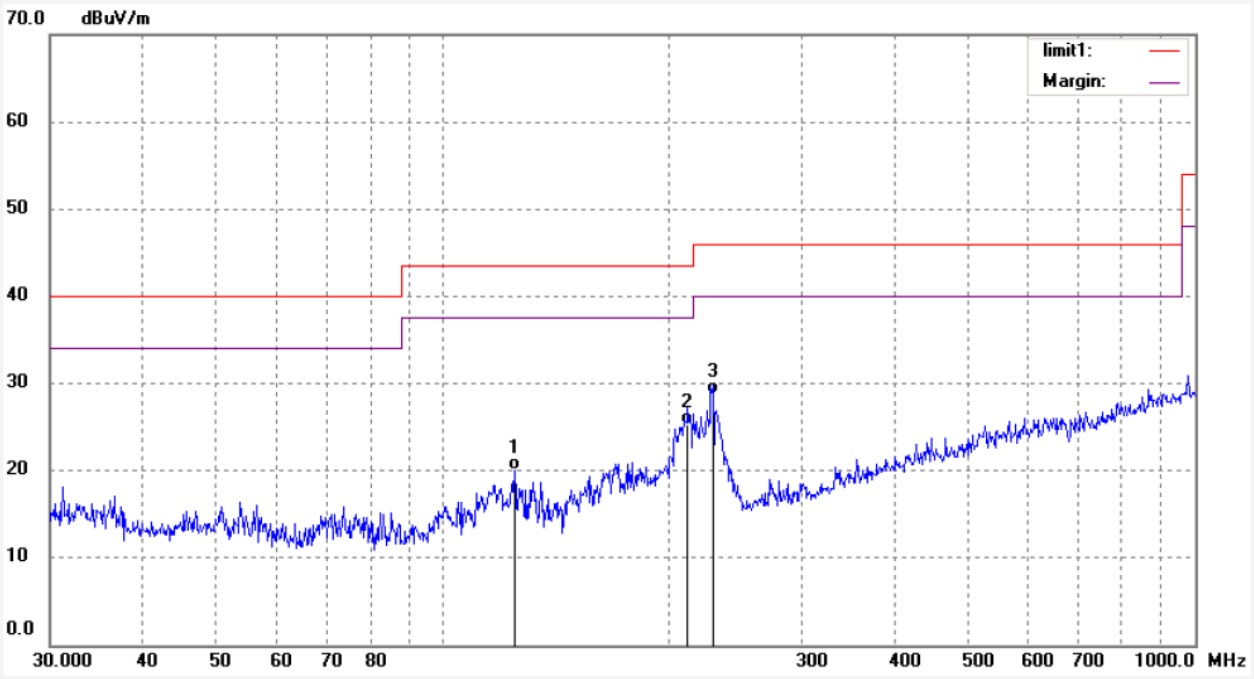
Job No.: Ricky #207	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/07/07/
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 14/45/58
EUT: iBarrel Bluetooth Speaker	Engineer Signature: Ricky
Mode: TX 2441MHz	Distance: 3m
Model: CQL1413-B	
Manufacturer: Sure Wave	

Note: Report No.:ATE20132717



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	124.4868	33.68	-13.68	20.00	43.50	-23.50	QP			
2	211.6112	37.34	-12.09	25.25	43.50	-18.25	QP			
3	228.6173	40.17	-11.35	28.82	46.00	-17.18	QP			

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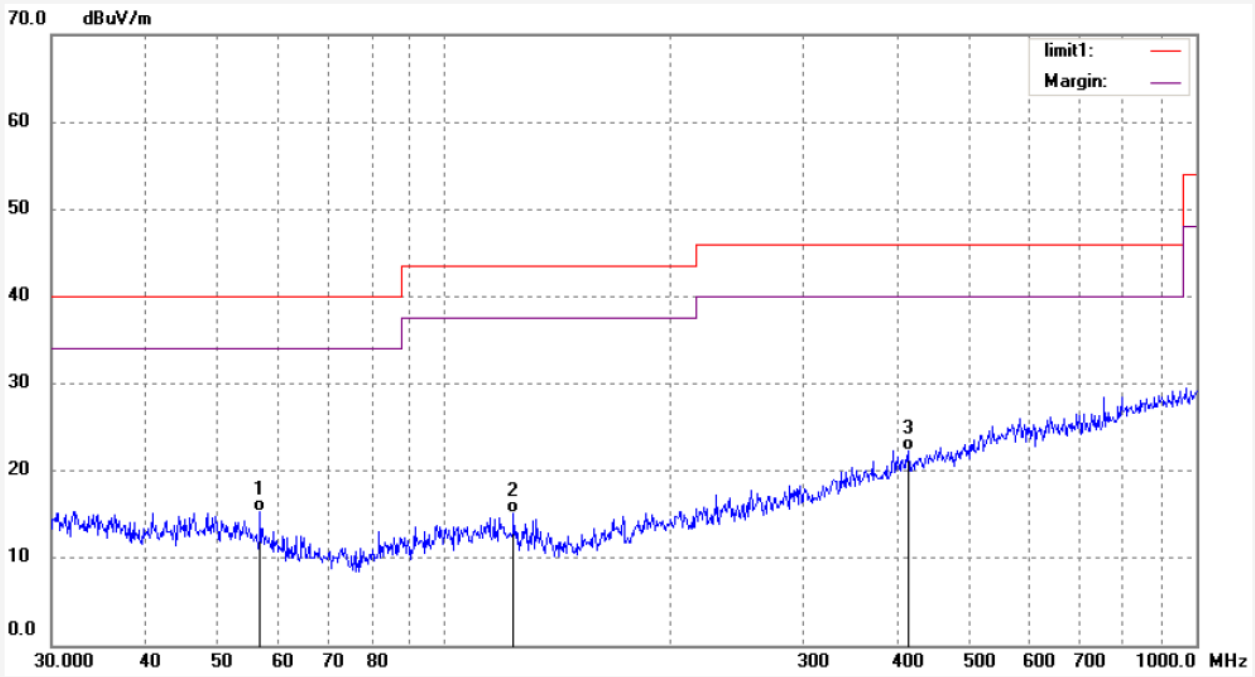
Job No.: Ricky #208	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/07/07/
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 14/47/16
EUT: iBarrel Bluetooth Speaker	Engineer Signature: Ricky
Mode: TX 2441MHz	Distance: 3m
Model: CQL1413-B	
Manufacturer: Sure Wave	

Note: Report No.:ATE20132717



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	56.8644	28.58	-13.34	15.24	40.00	-24.76	QP			
2	123.6150	28.63	-13.57	15.06	43.50	-28.44	QP			
3	413.9915	28.80	-6.44	22.36	46.00	-23.64	QP			

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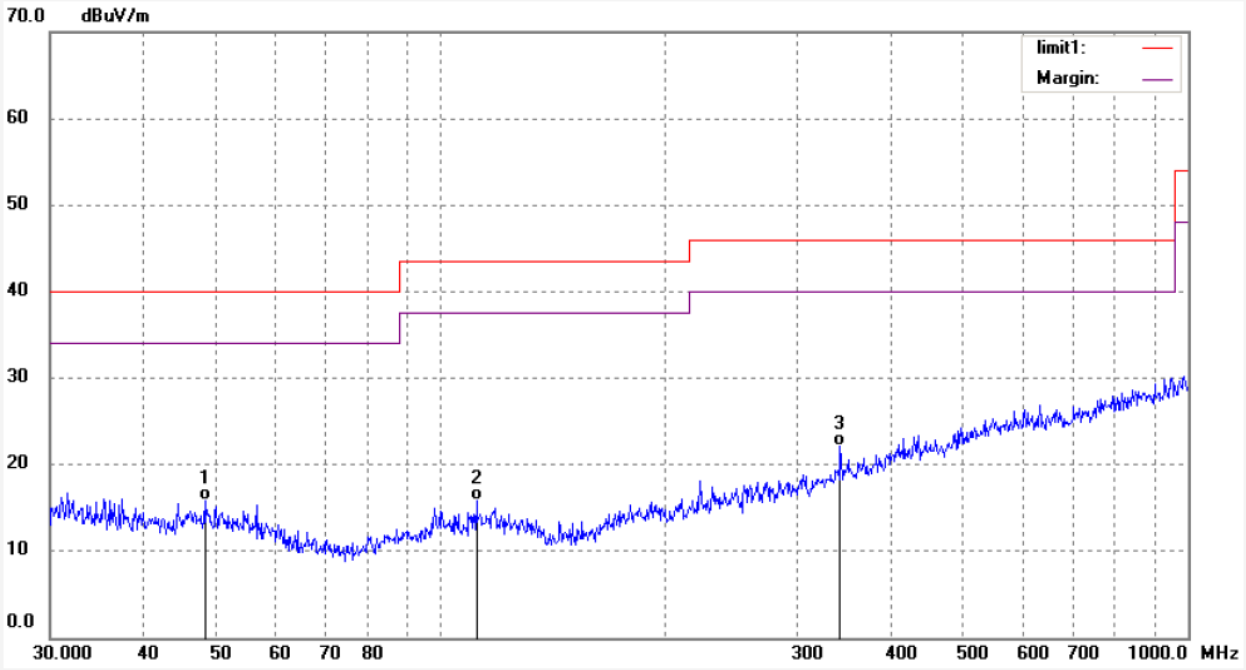
Job No.: Ricky #209
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: iBarrel Bluetooth Speaker
Mode: TX 2480MHz
Model: CQL1413-B
Manufacturer: Sure Wave

Polarization: Horizontal
Power Source: DC 3.7V
Date: 14/07/07/
Time: 14/48/29
Engineer Signature: Ricky
Distance: 3m

Note: Report No.:ATE20132717



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	48.3780	28.38	-12.62	15.76	40.00	-24.24	QP			
2	111.6399	29.56	-13.65	15.91	43.50	-27.59	QP			
3	342.4453	30.07	-7.98	22.09	46.00	-23.91	QP			

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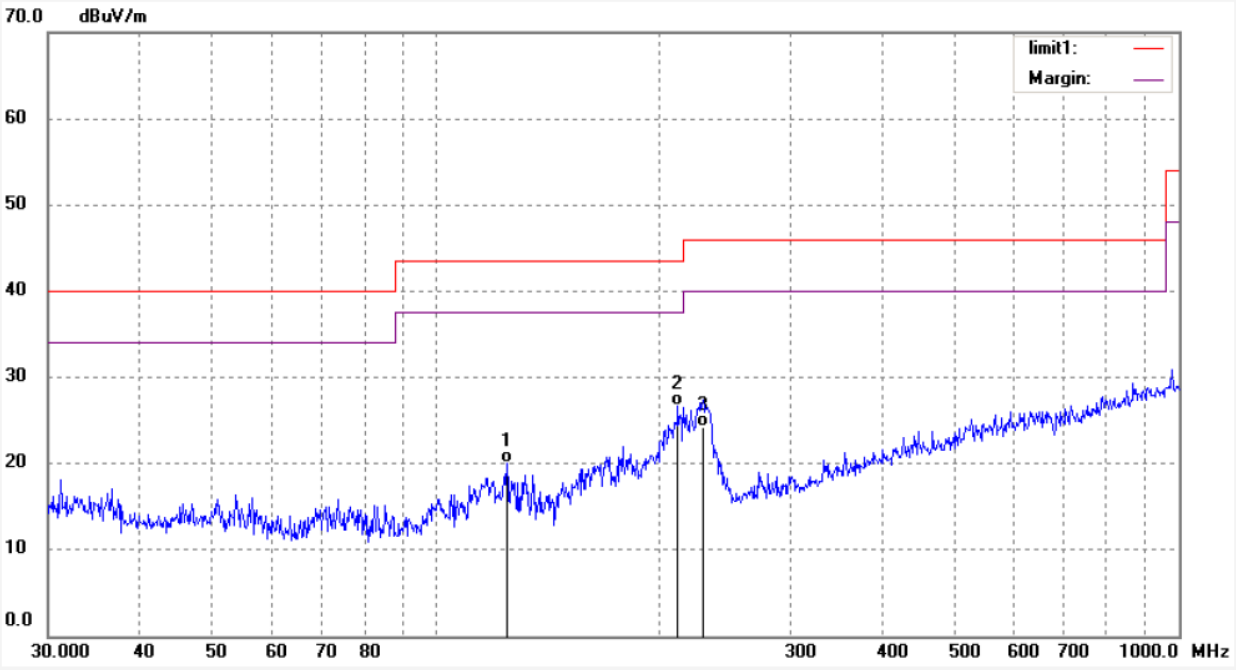
Job No.: Ricky #210	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/07/07/
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 14/51/12
EUT: iBarrel Bluetooth Speaker	Engineer Signature: Ricky
Mode: TX 2480MHz	Distance: 3m
Model: CQL1413-B	
Manufacturer: Sure Wave	

Note: Report No.:ATE20132717



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	124.4868	33.68	-13.68	20.00	43.50	-23.50	QP			
2	211.6109	38.84	-12.09	26.75	43.50	-16.75	QP			
3	228.6173	35.67	-11.35	24.32	46.00	-21.68	QP			

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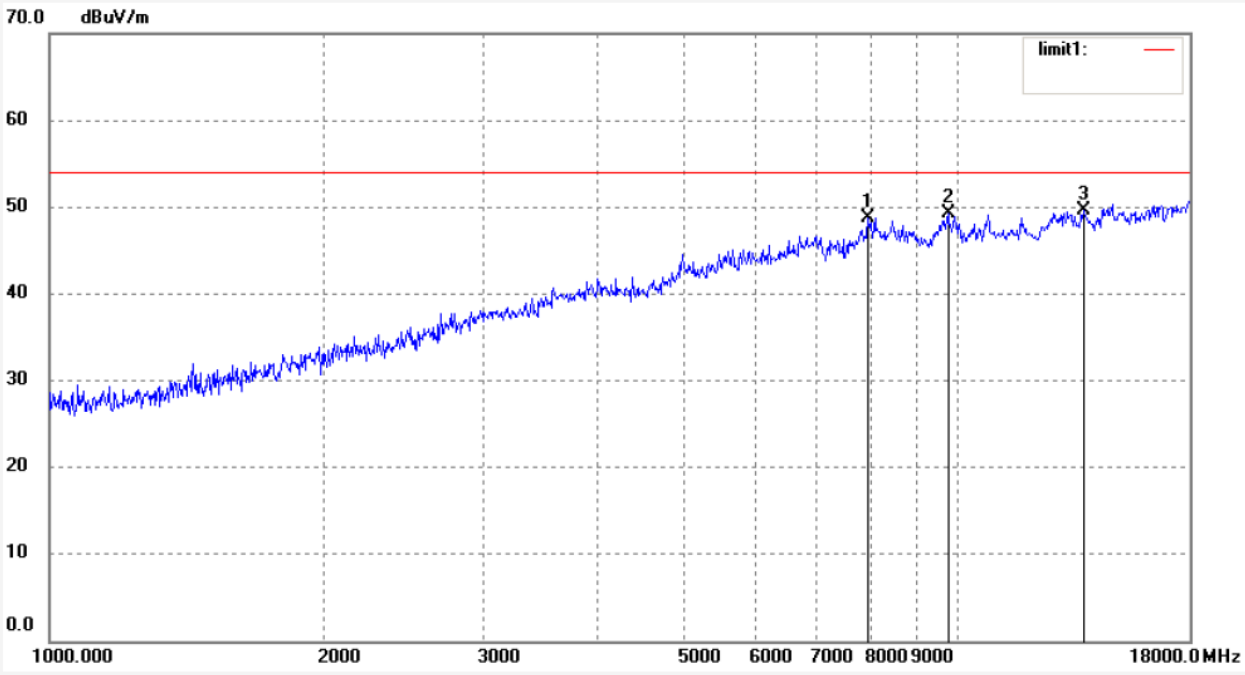
Job No.: Ricky #1971	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/07/07/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 16/47/04
EUT: iBarrel Bluetooth Speaker	Engineer Signature:
Mode: TX 2402MHz	Distance: 3m
Model: CQL1413-B	
Manufacturer: Sure Wave	

Note: Report No:ATE20132717



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	7966.832	40.66	8.03	48.69	54.00	-5.31	peak			
2	9753.371	38.52	10.81	49.33	54.00	-4.67	peak			
3	13757.267	2.26	47.44	49.70	54.00	-4.30	peak			

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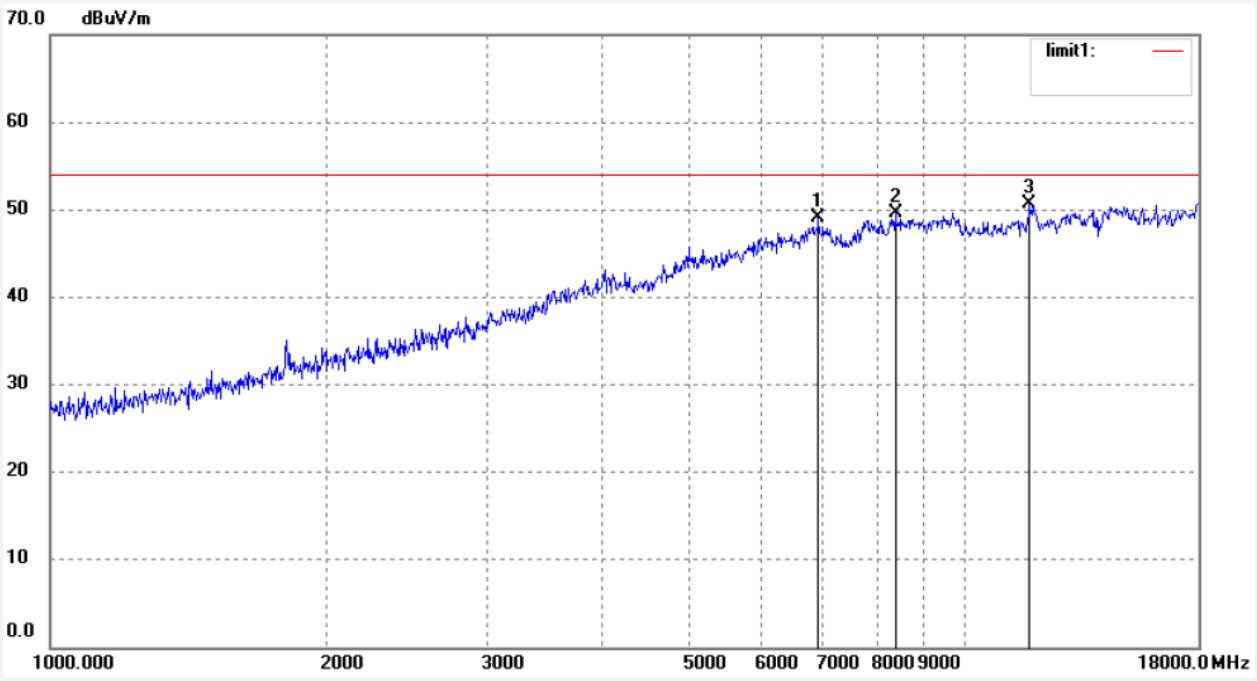
Job No.: Ricky #1972	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/07/07/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 16/49/33
EUT: iBarrel Bluetooth Speaker	Engineer Signature:
Mode: TX 2402MHz	Distance: 3m
Model: CQL1413-B	
Manufacturer: Sure Wave	

Note: Report No:ATE20132717



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	6914.763	43.68	5.44	49.12	54.00	-4.88	peak			
2	8392.292	40.51	9.03	49.54	54.00	-4.46	peak			
3	11769.214	37.44	13.14	50.58	54.00	-3.42	peak			

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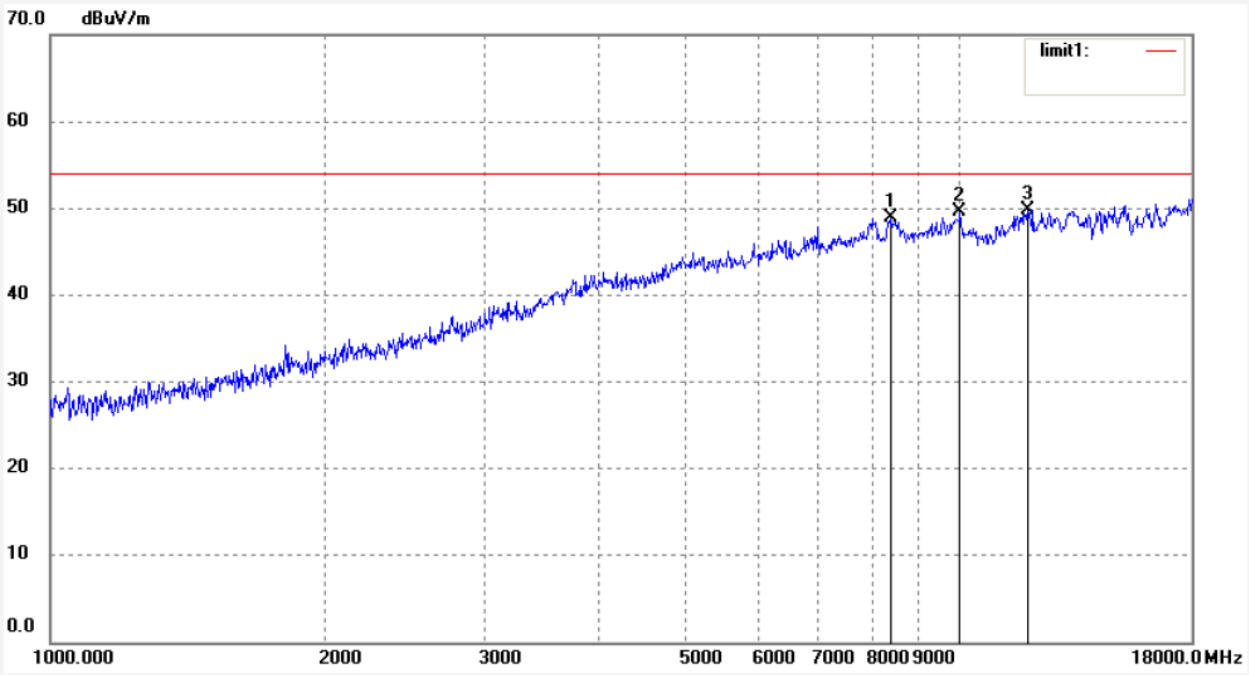
Job No.: Ricky #1973
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBarrel Bluetooth Speaker
Mode: TX 2441MHz
Model: CQL1413-B
Manufacturer: Sure Wave

Polarization: Horizontal
Power Source: DC 3.7V
Date: 14/07/07/
Time: 16/50/38
Engineer Signature:
Distance: 3m

Note: Report No:ATE20132717



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	8416.584	39.97	9.02	48.99	54.00	-5.01	peak			
2	10010.417	38.57	11.06	49.63	54.00	-4.37	peak			
3	11871.710	36.99	12.84	49.83	54.00	-4.17	peak			

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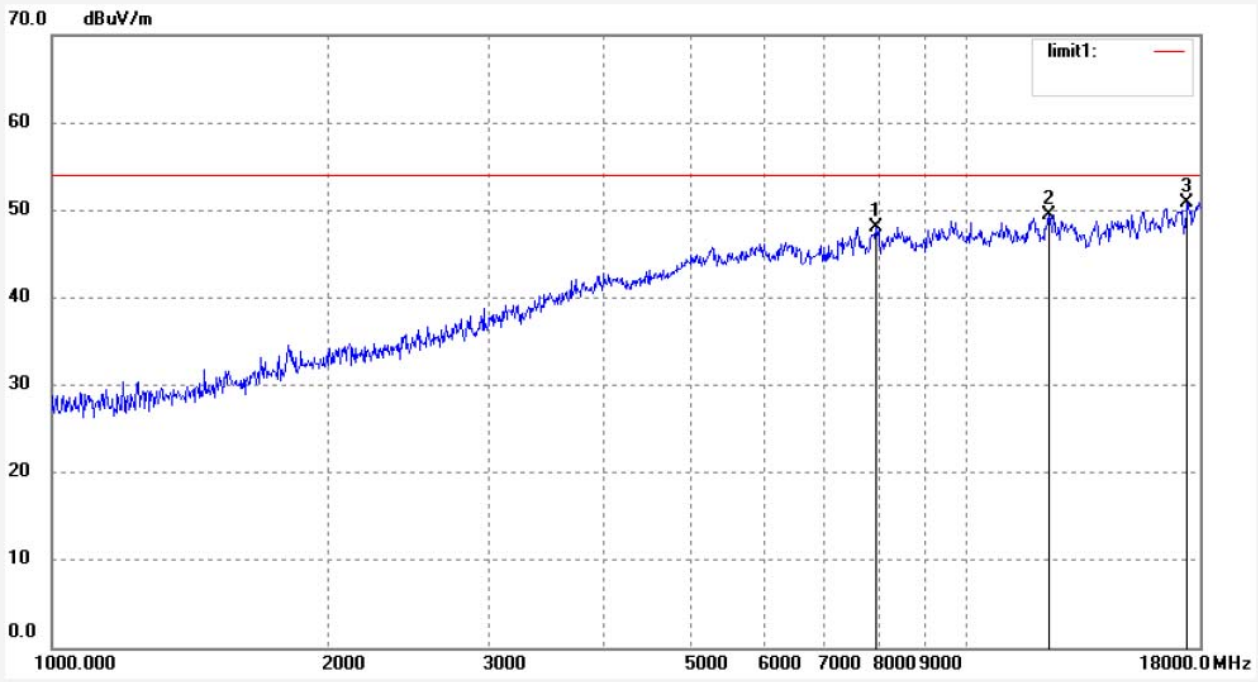
Job No.: Ricky #1974	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/07/07/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 16/52/31
EUT: iBarrel Bluetooth Speaker	Engineer Signature:
Mode: TX 2441MHz	Distance: 3m
Model: CQL1413-B	
Manufacturer: Sure Wave	

Note: Report No:ATE20132717



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	7966.832	40.00	8.03	48.03	54.00	-5.97	peak			
2	12290.698	4.34	45.11	49.45	54.00	-4.55	peak			
3	17436.709	-1.93	52.82	50.89	54.00	-3.11	peak			

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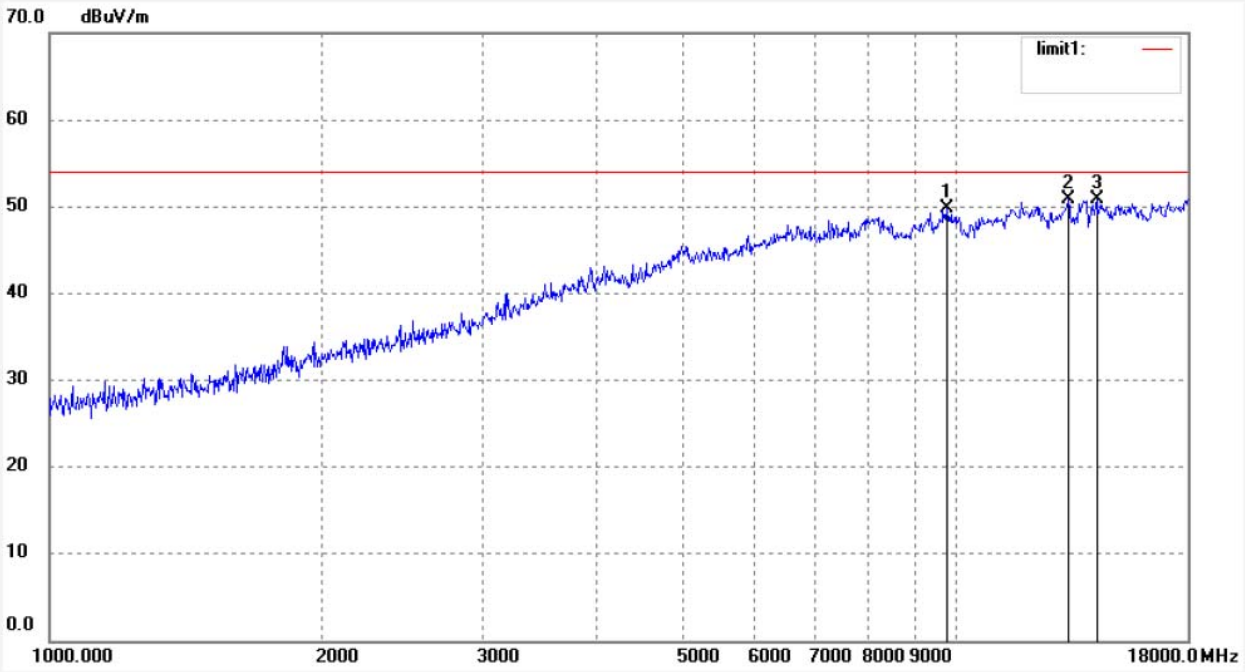
Job No.: Ricky #1975
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBarrel Bluetooth Speaker
Mode: TX 2480MHz
Model: CQL1413-B
Manufacturer: Sure Wave

Polarization: Vertical
Power Source: DC 3.7V
Date: 14/07/07/
Time: 16/54/24
Engineer Signature:
Distance: 3m

Note: Report No:ATE20132717



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	9753.371	39.04	10.81	49.85	54.00	-4.15	peak			
2	13288.284	4.13	46.64	50.77	54.00	-3.23	peak			
3	14284.028	1.45	49.35	50.80	54.00	-3.20	peak			

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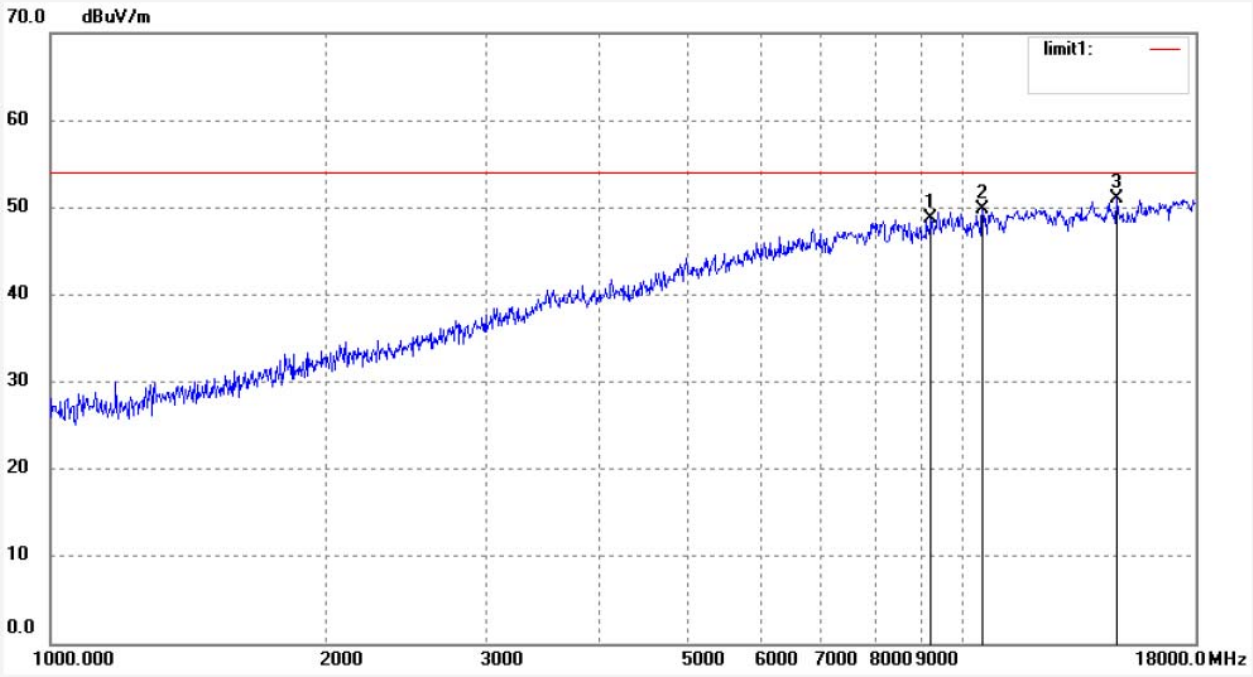
Job No.: Ricky #1976
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBarrel Bluetooth Speaker
Mode: TX 2480MHz
Model: CQL1413-B
Manufacturer: Sure Wave

Polarization: Horizontal
Power Source: DC 3.7V
Date: 14/07/07/
Time: 16/56/26
Engineer Signature:
Distance: 3m

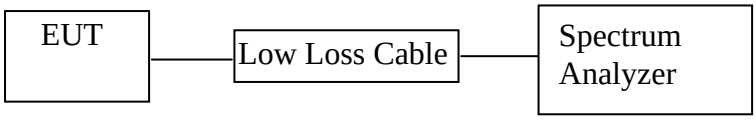
Note: Report No:ATE20132717



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	9232.186	39.26	9.44	48.70	54.00	-5.30	peak			
2	10514.577	39.99	9.87	49.86	54.00	-4.14	peak			
3	14745.473	1.05	49.88	50.93	54.00	-3.07	peak			

11.BAND EDGE COMPLIANCE TEST

11.1.Block Diagram of Test Setup



(EUT: iBarrel Bluetooth Speaker)

11.2.The Requirement For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

11.3.EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

11.4.Operating Condition of EUT

11.4.1.Setup the EUT and simulator as shown as Section 11.1.

11.4.2.Turn on the power of all equipment.

11.4.3.Let the EUT work in TX (Hopping off, Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2480MHz TX frequency to transmit.

11.5.Test Procedure

11.5.1.The transmitter output was connected to the spectrum analyzer via a low loss cable.

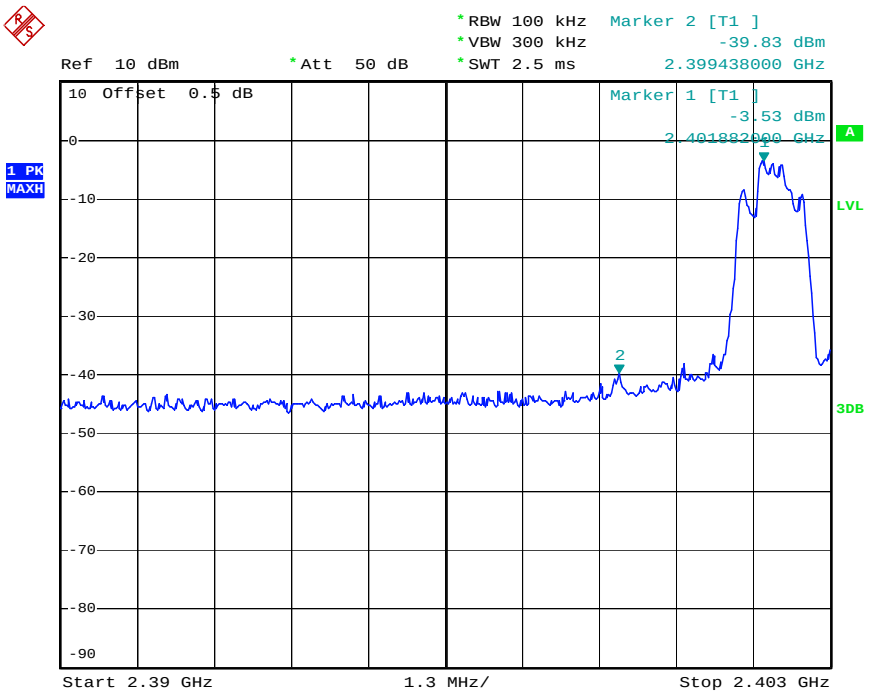
11.5.2.Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz with convenient frequency span including 100 kHz bandwidth from band edge.

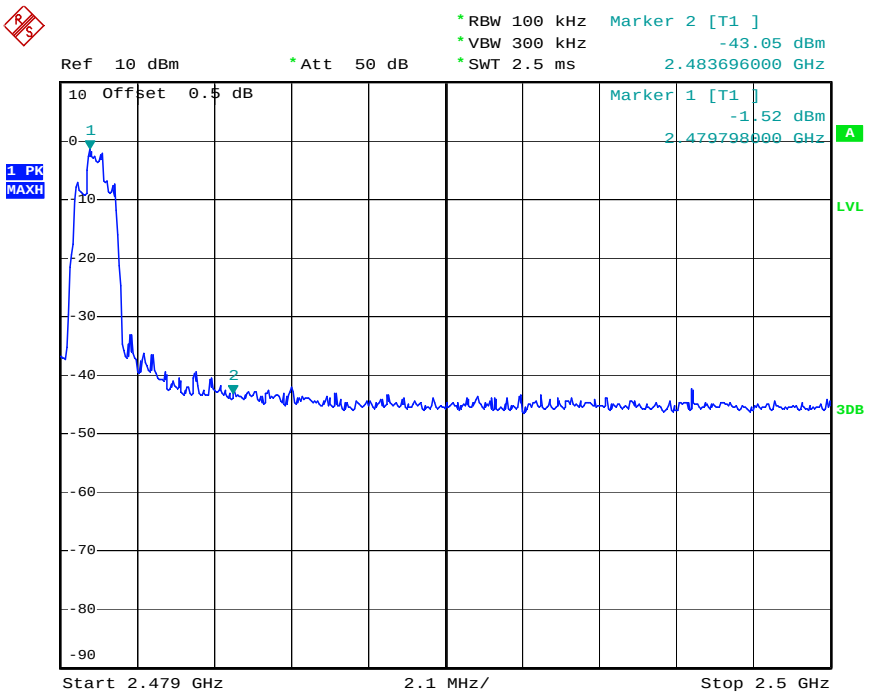
11.5.3.The band edges was measured and recorded.

11.6.Test Result

Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2402	36.30	> 20dBc
2480	41.53	> 20dBc

The spectrum analyzer plots are attached as below.




RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
Marker 2 [T1]
-43.05 dBm
2.483696000 GHz
Ref 10 dBm
Att 50 dB
Offset 0.5 dB
Marker 1 [T1]
-1.52 dBm
2.479798000 GHz
1 PK
MAXH
A
LVL
3DB
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Start 2.479 GHz
2.1 MHz/
Stop 2.5 GHz

Radiated Band Edge Result

Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

   Result = Reading + Corrected Factor
3. Display the measurement of peak values.

Non-hopping

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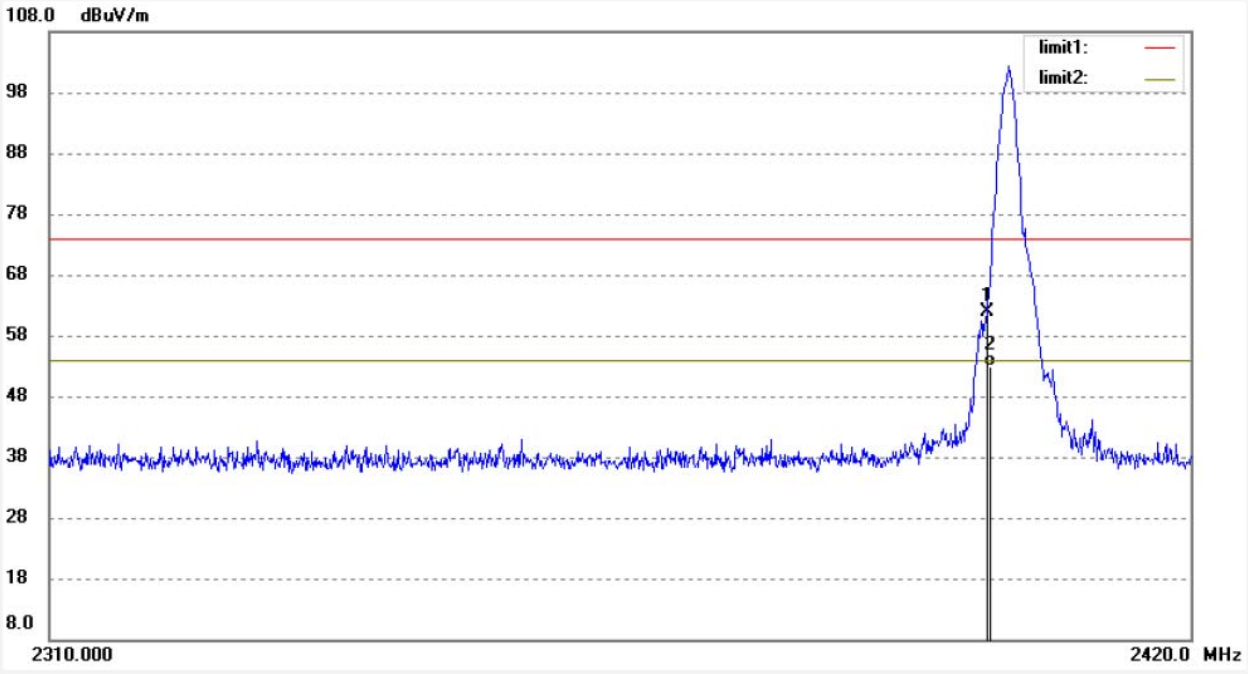
Job No.: Ricky #213	Polarization: Vertical
Standard: FCC 15C PK	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/07/07/
Temp.(C)/Hum.(%) 23 C / 49 %	Time: 15/11/31
EUT: iBarrel Bluetooth Speaker	Engineer Signature:
Mode: TX 2402MHz	Distance: 3m
Model: CQL1413-B	
Manufacturer: Sure Wave	

Note: Report No.:ATE20132717



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2400.000	69.45	-7.46	61.99	74.00	-12.01	peak			
2	2400.000	60.24	-7.46	52.78	54.00	-1.22	AVG			

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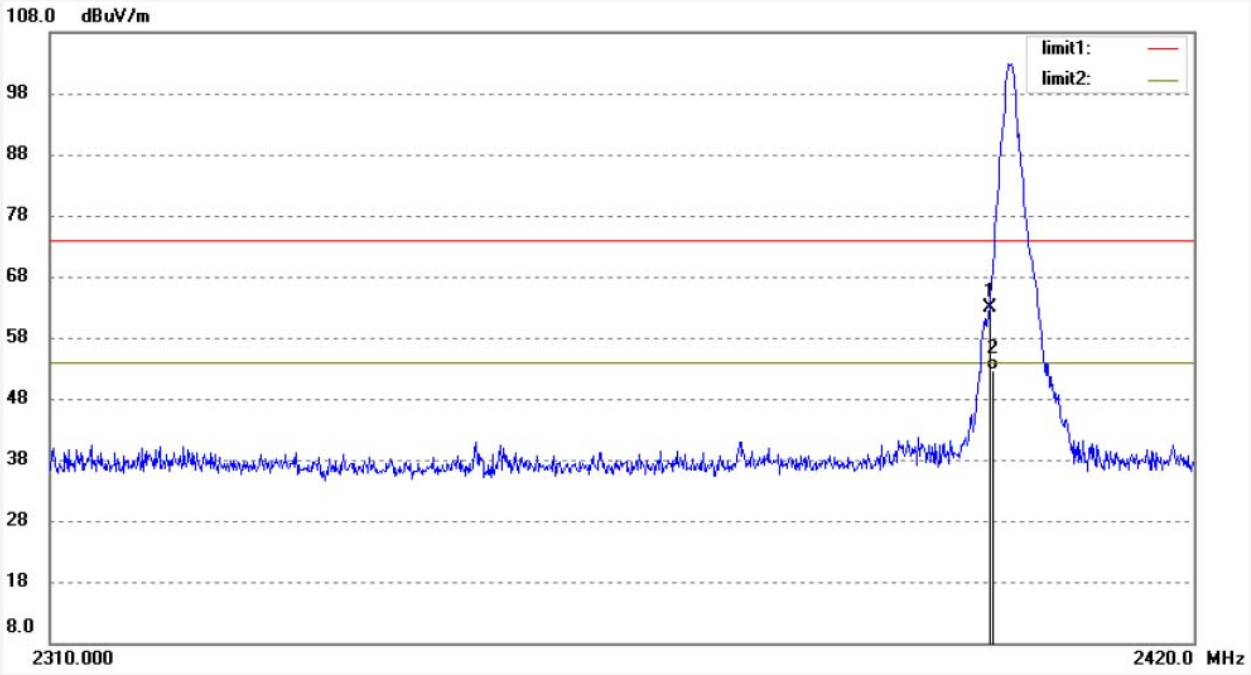
Job No.: Ricky #214
Standard: FCC 15C PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 49 %
EUT: iBarrel Bluetooth Speaker
Mode: TX 2402MHz
Model: CQL1413-B
Manufacturer: Sure Wave

Polarization: Horizontal
Power Source: DC 3.7V
Date: 14/07/07/
Time: 15/12/20
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20132717



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2400.000	70.32	-7.46	62.86	74.00	-11.14	peak			
2	2400.000	60.07	-7.46	52.61	54.00	-1.39	AVG			

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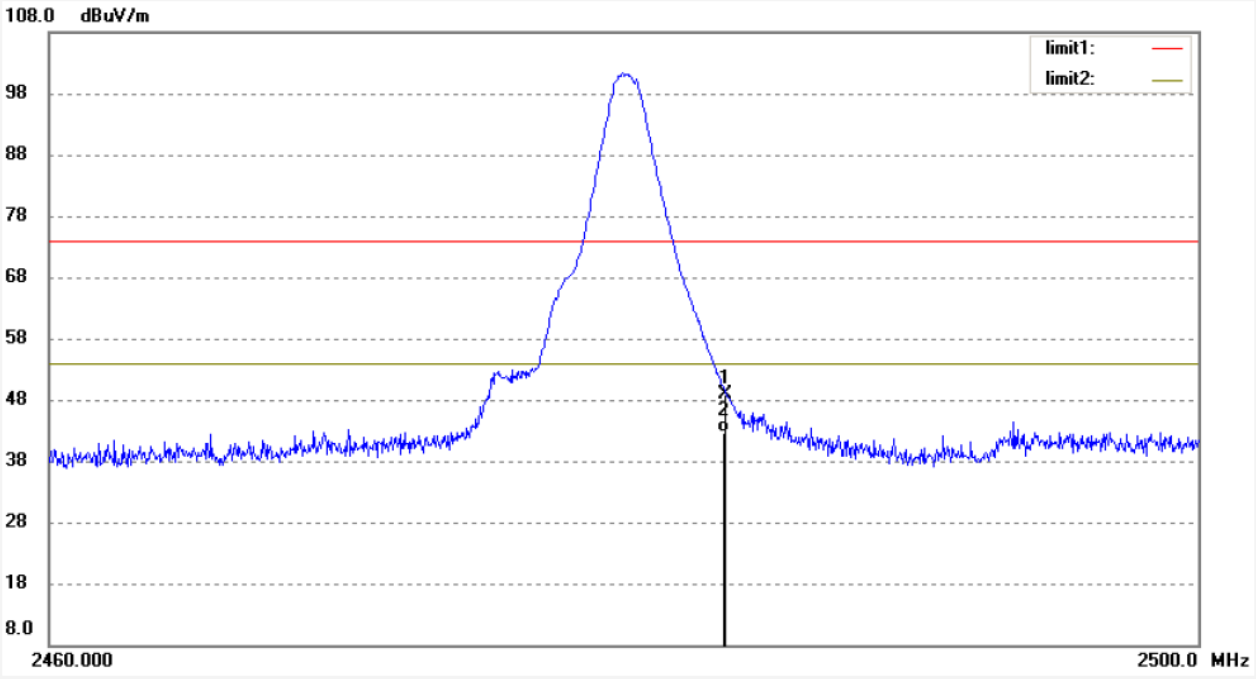
Job No.: Ricky #212
Standard: FCC 15C PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 49 %
EUT: iBarrel Bluetooth Speaker
Mode: TX 2480MHz
Model: CQL1413-B
Manufacturer: Sure Wave

Polarization: Vertical
Power Source: DC 3.7V
Date: 14/07/07/
Time: 15/09/50
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20132717



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.529	56.20	-7.37	48.83	74.00	-25.17	peak			
2	2483.529	50.10	-7.37	42.73	54.00	-11.27	AVG			

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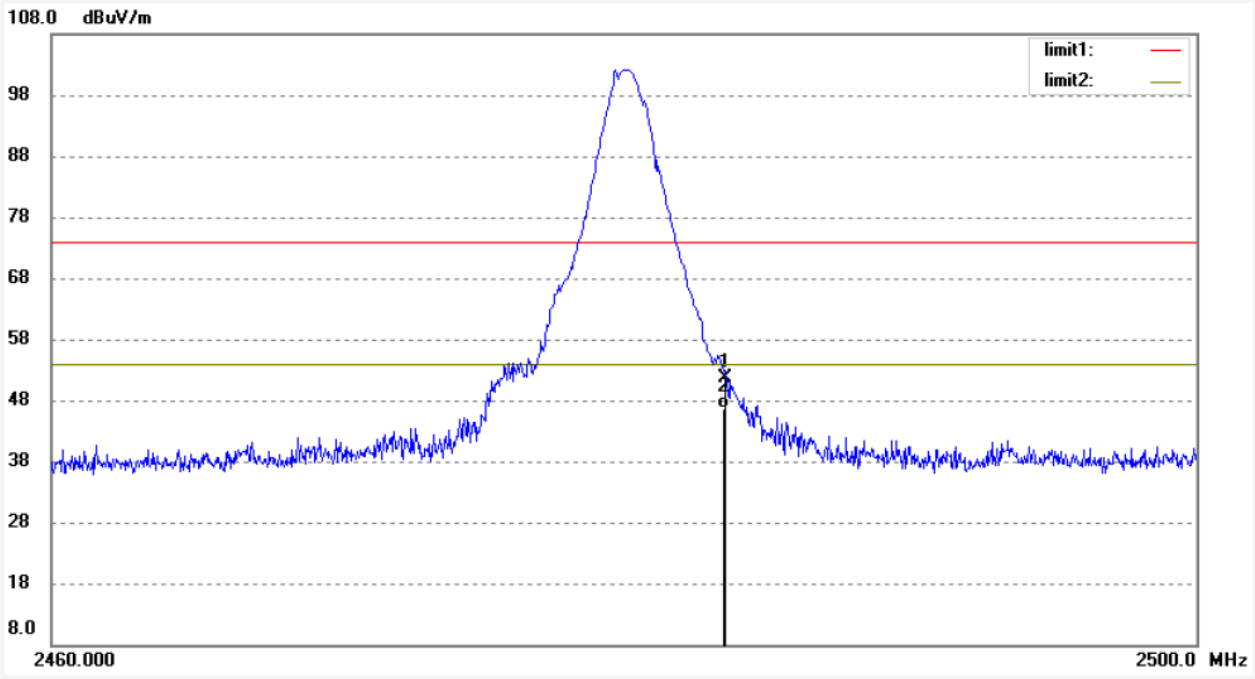
Job No.: Ricky #211
Standard: FCC 15C PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 49 %
EUT: iBarrel Bluetooth Speaker
Mode: TX 2480MHz
Model: CQL1413-B
Manufacturer: Sure Wave

Polarization: Horizontal
Power Source: DC 3.7V
Date: 14/07/07/
Time: 15/09/00
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20132717



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.529	59.03	-7.37	51.66	74.00	-22.34	peak			
2	2483.529	53.89	-7.37	46.52	54.00	-7.48	AVG			

Hopping

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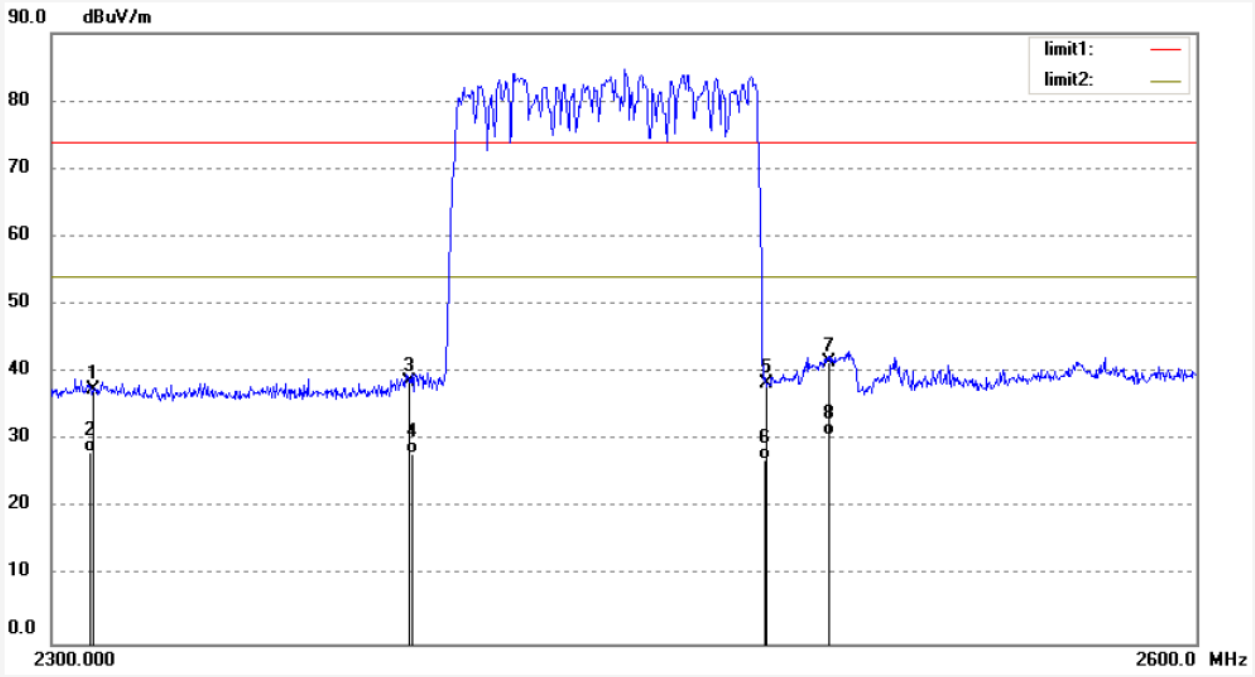
Job No.: STAR #3030
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBarrel Bluetooth Speaker
Mode: HOPPING
Model: CQL1413-B
Manufacturer: Sure Wave

Polarization: Horizontal
Power Source: DC 3.7V
Date: 14/07/07/
Time: 11/31/16
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20132717



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2310.000	44.36	-6.99	37.37	74.00	-36.63	peak			
2	2310.000	35.24	-6.99	28.25	54.00	-25.75	AVG			
3	2390.000	45.45	-6.78	38.67	74.00	-35.33	peak			
4	2390.000	34.80	-6.78	28.02	54.00	-25.98	AVG			
5	2483.500	44.82	-6.54	38.28	74.00	-35.72	peak			
6	2483.500	33.58	-6.54	27.04	54.00	-26.96	AVG			
7	2500.000	48.09	-6.50	41.59	74.00	-32.41	peak			
8	2500.000	37.32	-6.50	30.82	54.00	-23.18	AVG			

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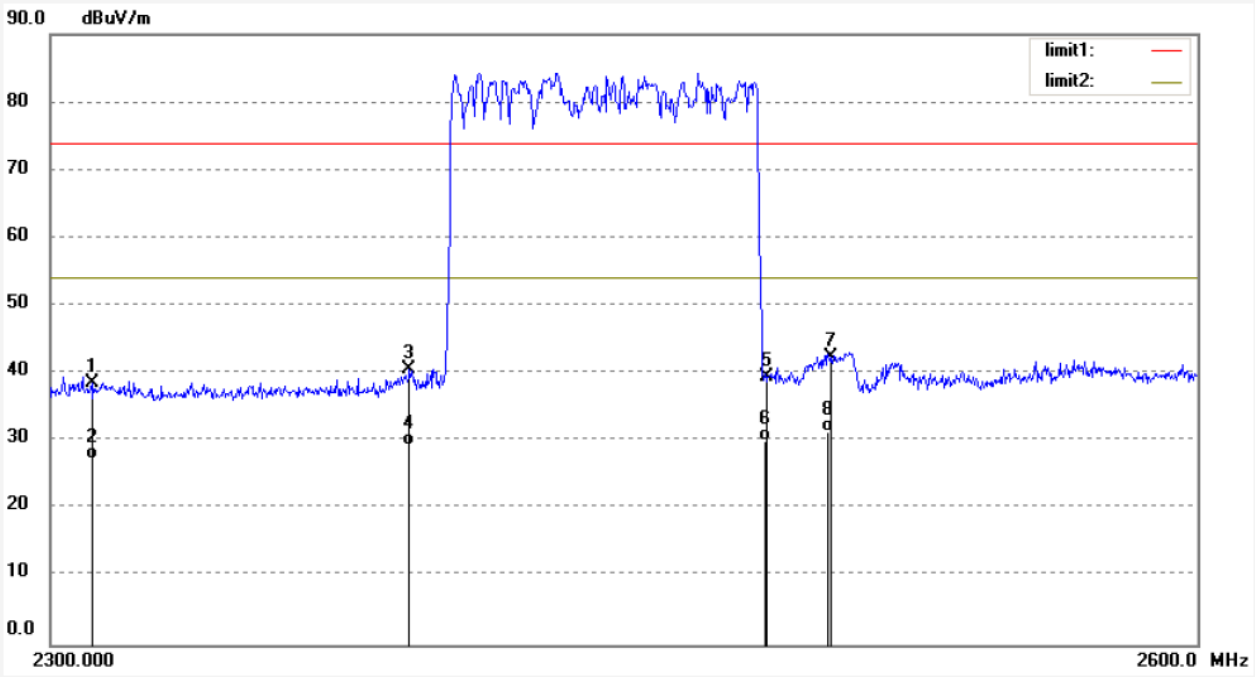
Job No.: STAR #3031
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBarrel Bluetooth Speaker
Mode: HOPPING
Model: CQL1413-B
Manufacturer: Sure Wave

Polarization:Vertical
Power Source: DC 3.7V
Date: 14/07/07/
Time: 11/36/34
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20132717



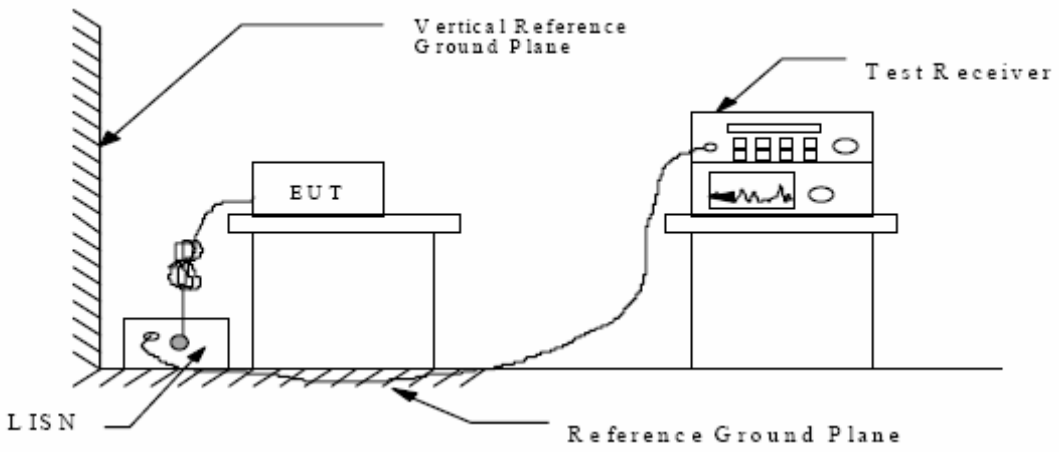
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2310.000	45.68	-6.99	38.69	74.00	-35.31	peak			
2	2310.000	34.29	-6.99	27.30	54.00	-26.70	AVG			
3	2390.000	47.42	-6.78	40.64	74.00	-33.36	peak			
4	2390.000	36.10	-6.78	29.32	54.00	-24.68	AVG			
5	2483.500	45.92	-6.54	39.38	74.00	-34.62	peak			
6	2483.500	36.61	-6.54	30.07	54.00	-23.93	AVG			
7	2500.000	48.96	-6.50	42.46	74.00	-31.54	peak			
8	2500.000	37.88	-6.50	31.38	54.00	-22.62	AVG			

12. AC POWER LINE CONDUCTED EMISSION FOR FCC PART 15 SECTION 15.207(A)

12.1. Block Diagram of Test Setup

12.1.1. Block diagram of connection between the EUT and simulators

12.1.2. Shielding Room Test Setup Diagram



(EUT: iBarrel Bluetooth Speaker)

12.2. The Emission Limit

12.2.1. Conducted Emission Measurement Limits According to Section 15.207(a)

Frequency (MHz)	Limit dB(μV)	
	Quasi-peak Level	Average Level
0.15 - 0.50	66.0 – 56.0 *	56.0 – 46.0 *
0.50 - 5.00	56.0	46.0
5.00 - 30.00	60.0	50.0

* Decreases with the logarithm of the frequency.

12.3.Configuration of EUT on Measurement

The equipment are installed on the Conducted Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

12.4.Operating Condition of EUT

12.4.1.Setup the EUT and simulator as shown as Section 11.1.

12.4.2.Turn on the power of all equipment.

12.4.3.Let the EUT work in TX (Operation) mode measure it.

12.5.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- 2009 on Conducted Emission Measurement.

The bandwidth of test receiver (R & S ESCS30) is set at 9 kHz.

The frequency range from 150 kHz to 30MHz is checked.

12.6.Power Line Conducted Emission Measurement Results

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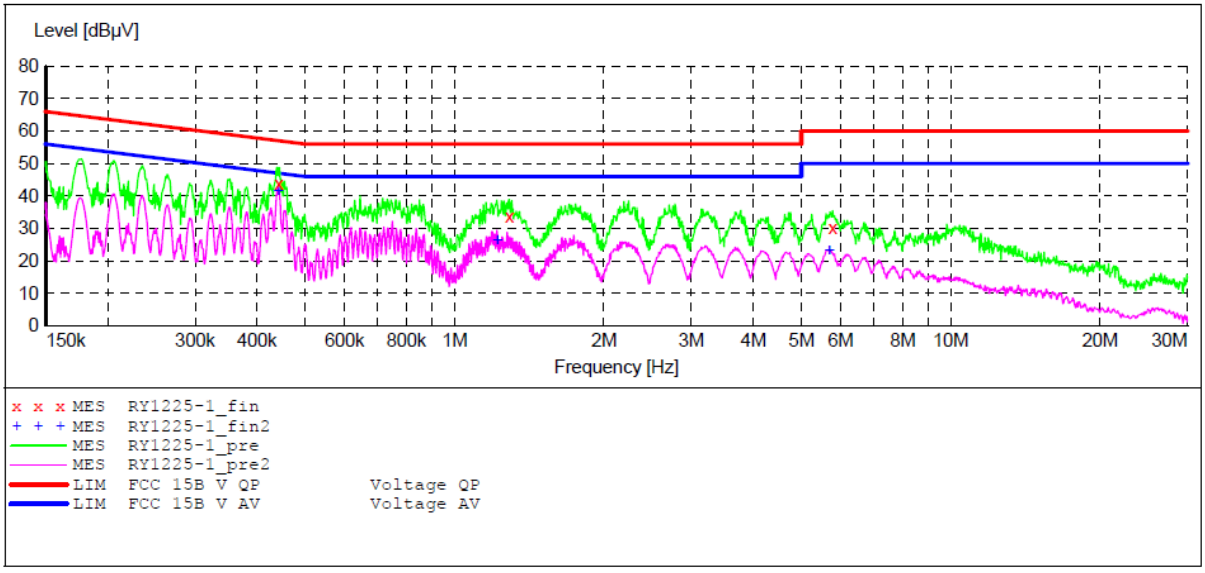
CONDUCTED EMISSION STANDARD FCC PART 15B

```
EUT:                  iBarrel Bluetooth Speaker M/N:CQL1413-B
Manufacturer:         Sure Wave
Operating Condition:  Operation
Test Site:            1#Shielding Room
Operator:             Ricky
Test Specification:   N   120V/60Hz
Comment:              Report No.:ATE20132717
Start of Test:        2014-07-08 / 8:41:33
```

SCAN TABLE: "V 150K-30MHz fin"

```
Short Description:              _SUB_STD_VTERM2 1.70
Start      Stop       Step      Detector  Meas.     IF       Transducer
Frequency  Frequency  Width               Time      Bandw.
150.0 kHz  30.0 MHz   0.4 %     QuasiPeak 1.0 s     9 kHz    LISN(ESH3-Z5)
                                Average
```



MEASUREMENT RESULT: "RY1225-1_fin"

2014-07-08 8:43

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.442311	43.80	12.3	57	13.2	QP	N	GND
1.288728	33.60	12.4	56	22.4	QP	N	GND
5.780010	30.10	12.2	60	29.9	QP	N	GND

MEASUREMENT RESULT: "RY1225-1_fin2"

2014-07-08 8:43

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.440988	41.30	12.3	47	5.7	AV	N	GND
1.217428	26.30	12.4	46	19.7	AV	N	GND
5.694085	23.30	12.2	50	26.7	AV	N	GND

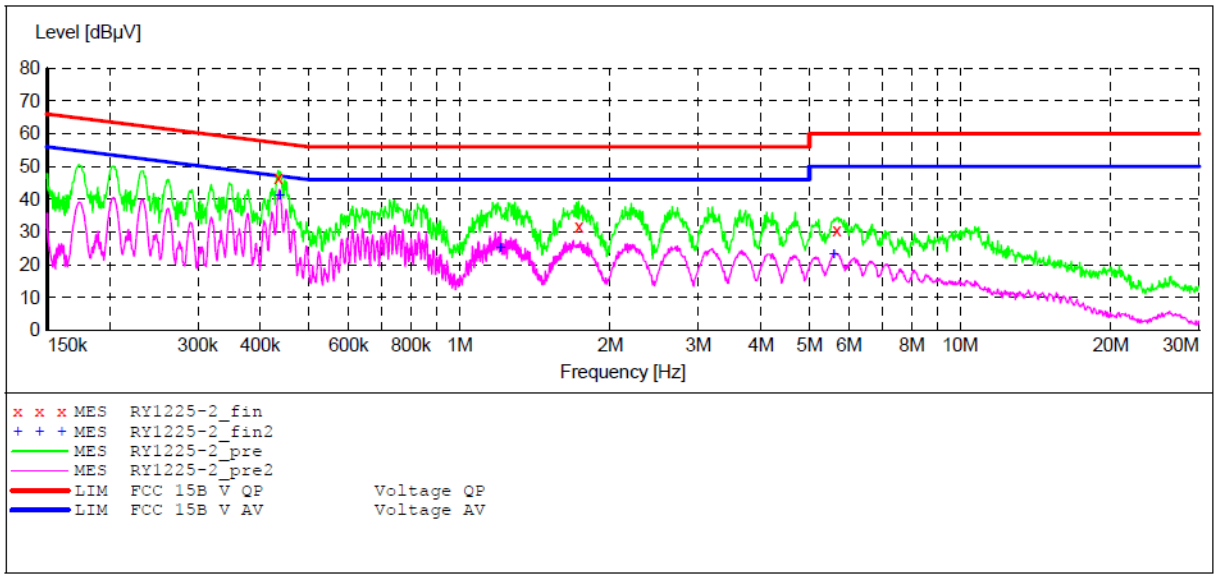
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15B

```
EUT:                  iBarrel Bluetooth Speaker M/N:CQL1413-B
Manufacturer:         Sure Wave
Operating Condition:  Operation
Test Site:            1#Shielding Room
Operator:             Ricky
Test Specification:   L   120V/60Hz
Comment:              Report No.:ATE20132717
Start of Test:        2014-07-08 / 8:44:53
```

SCAN TABLE: "V 150K-30MHz fin"

```
  Short Description:            _SUB_STD_VTERM2 1.70
  Start      Stop       Step      Detector  Meas.     IF       Transducer
  Frequency  Frequency  Width               Time      Bandw.
  150.0 kHz  30.0 MHz   0.4 %     QuasiPeak 1.0 s     9 kHz    LISN(ESH3-Z5)
                                  Average
```



MEASUREMENT RESULT: "RY1225-2_fin"

2014-07-08 8:46

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.434433	46.70	12.2	57	10.5	QP	L1	GND
1.728433	31.70	12.3	56	24.3	QP	L1	GND
5.677054	30.70	12.2	60	29.3	QP	L1	GND

MEASUREMENT RESULT: "RY1225-2_fin2"

2014-07-08 8:46

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.437043	41.20	12.3	47	5.9	AV	L1	GND
1.206537	25.10	12.4	46	20.9	AV	L1	GND
5.592659	23.30	12.2	50	26.7	AV	L1	GND

13. ANTENNA REQUIREMENT

13.1. The Requirement

According to 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.

13.2. Antenna Construction

The antenna is PCB Layout antenna, no consideration of replacement. Therefore, the equipment complies with the antenna requirement of Section 15.203.