APPLICATION CERTIFICATION
On Behalf of
TIMSEN INTERNATIONAL LIMITED

Bluetooth Speaker
Model No.: CR8008A-XX

FCC ID: 2ACX8-CR8008A

Prepared for	:	TIMSEN INTERNATIONAL LIMITED
Address	:	5F, No.447, Tianhebei Road, Tianhe District, Guangzhou, Guangdong Province, 510610, 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
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Report Number	:	ATE20141581
Date of Test	:	Aug 12-19,2014
Date of Report	:	Aug 19,2014

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Description Page

Test Report Certification

Applicant	:	TIMSEN INTERNATIONAL LIMITED
Manufacturer	:	TIMSEN INTERNATIONAL LIMITED
EUT Description	:	Bluetooth Speaker

(A) MODEL NO.: CR8008A-XX

Note:(X can be replaced by letter from A to Z or blank)

(B) Trade Name: CROSLEY

(C) POWER SUPPLY: AC 120V/60Hz(powered by adapter) or DC 12V(powered by battery)

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 : Aug 12-19, 2014

Prepared by : Tim Zhang
(Tim.zhang, Engineer)

Approved & Authorized Signer : Sean Liu
(Sean Liu, Manager)

1. GENERAL INFORMATION

1.1.Description of Device (EUT)

EUT	:	Bluetooth Speaker
Model Number	:	CR8008A-XX(X can be replaced by letter from A to Z or blank)
Frequency Band	:	2402MHz-2480MHz
Number of Channels	:	79
Modulation type	:	GFSK, Π/4-DQPSK, 8DPSK
Antenna Gain	:	0dBi
Antenna type	:	PCB Antenna
Power Supply	:	AC 120V/60Hz(powered by adapter) or DC 12V(powered by battery)
Adapter	:	AC/DC ADAPTOR Model:RHD120100 Input: AC 120V 60Hz 30W Output: DC 12.0V 1000A
Applicant	:	TIMSEN INTERNATIONAL LIMITED
Address	:	5F, No.447, Tianhebei Road, Tianhe District, Guangzhou, Guangdong Province, 510610, China
Manufacturer	:	TIMSEN INTERNATIONAL LIMITED
Address	:	5F, No.447, Tianhebei Road, Tianhe District, Guangzhou, Guangdong Province, 510610, China
Date of sample received	:	Aug 12, 2014
Date of Test	:	Aug 12-19, 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

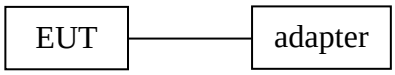
Kind of equipment	Manufacturer	Type	S/N	Calibrated dates	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 11, 2014	Jan. 10, 2015
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 11, 2014	Jan. 10, 2015
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 11, 2014	Jan. 10, 2015
Pre-Amplifier	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
Highpass Filter	Wainwright Instruments	WHKX3.6/18G-10SS	N/A	Jan. 11, 2014	Jan. 10, 2015
Band Reject Filter	Wainwright Instruments	WRCG2400/2485-2375/2510-60/11SS	N/A	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



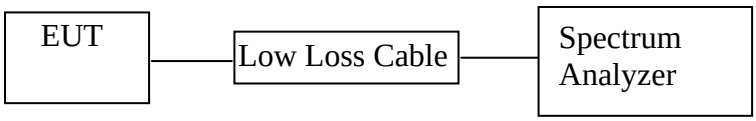
(EUT: Bluetooth speaker)

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: 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.

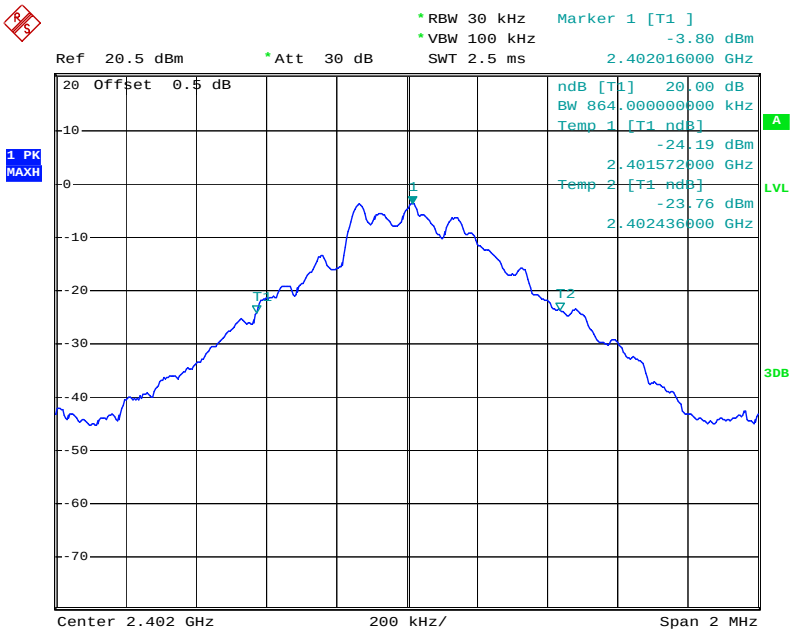
5.6.Test Result

Channel	Frequency (MHz)	GFSK 20dB Bandwidth (MHz)	Π/4-DQPSK 20dB Bandwidth (MHz)	8DPSK 20dB Bandwidth (MHz)	Result
Low	2402	0.864	1.220	1.208	Pass
Middle	2441	0.872	1.220	1.212	Pass
High	2480	0.852	1.224	1.212	Pass

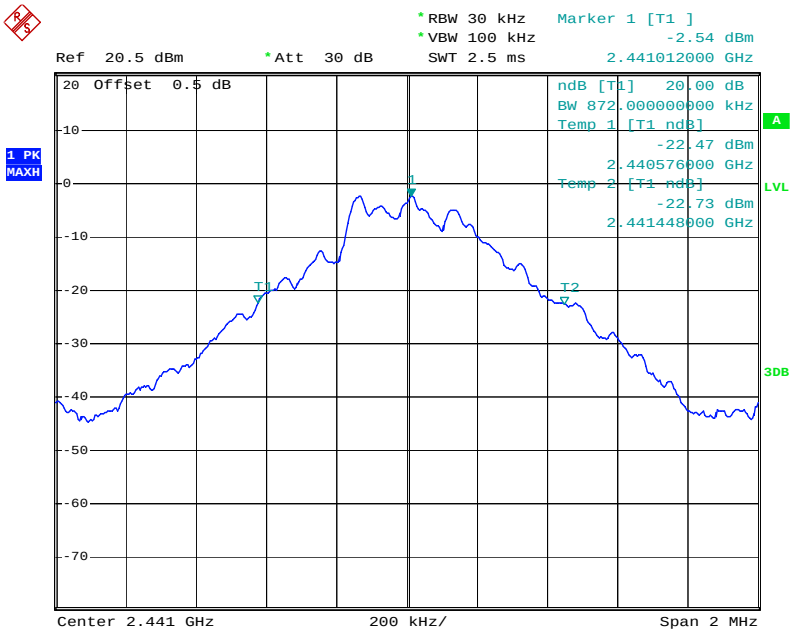
The spectrum analyzer plots are attached as below.

GFSK Mode

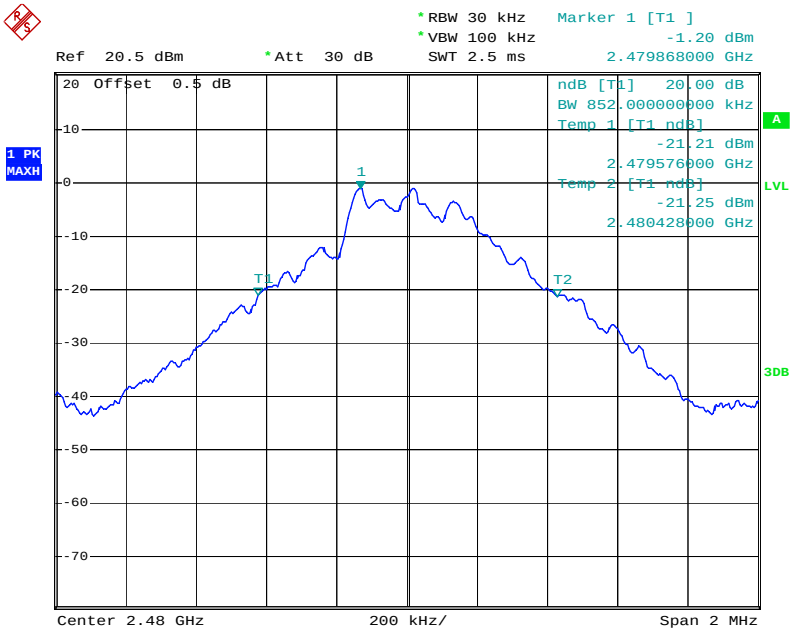
Low channel



Middle channel

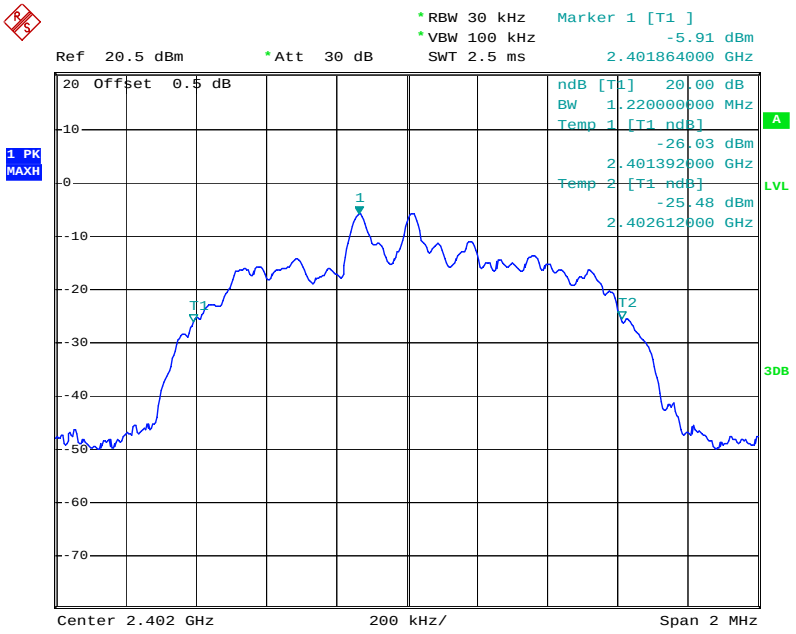


High channel

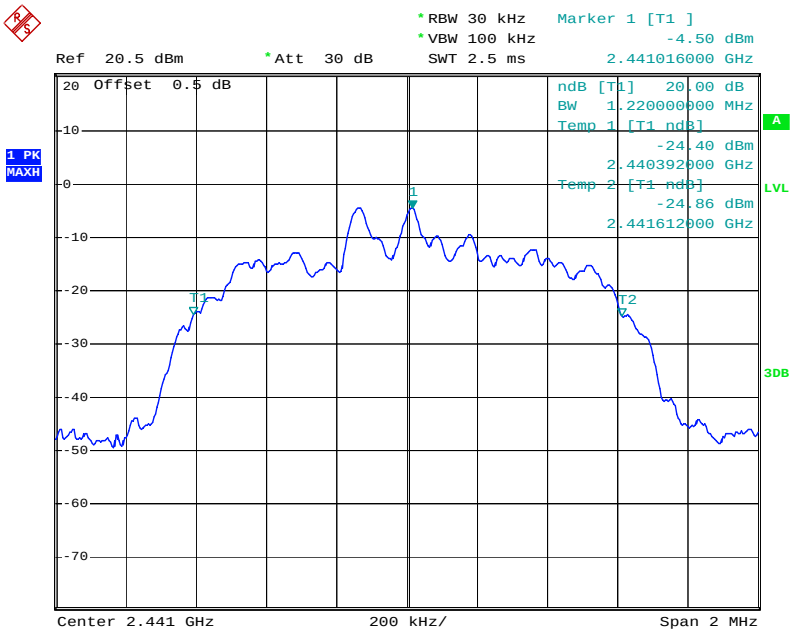


Π/4-DQPSK Mode

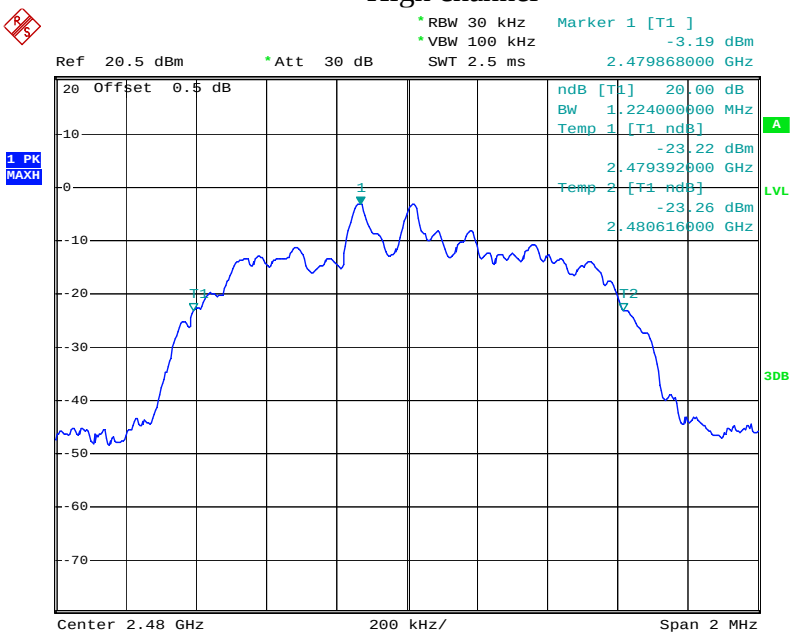
Low channel



Middle channel

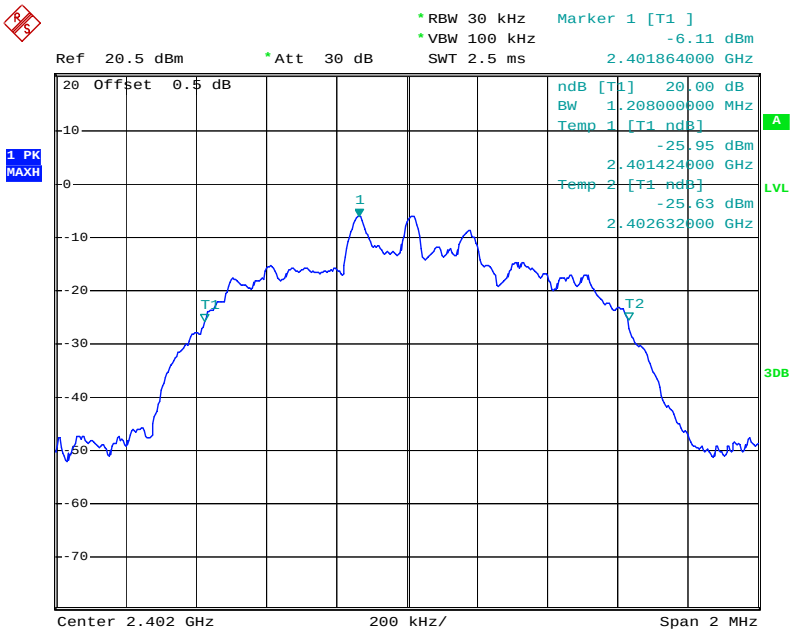


High channel

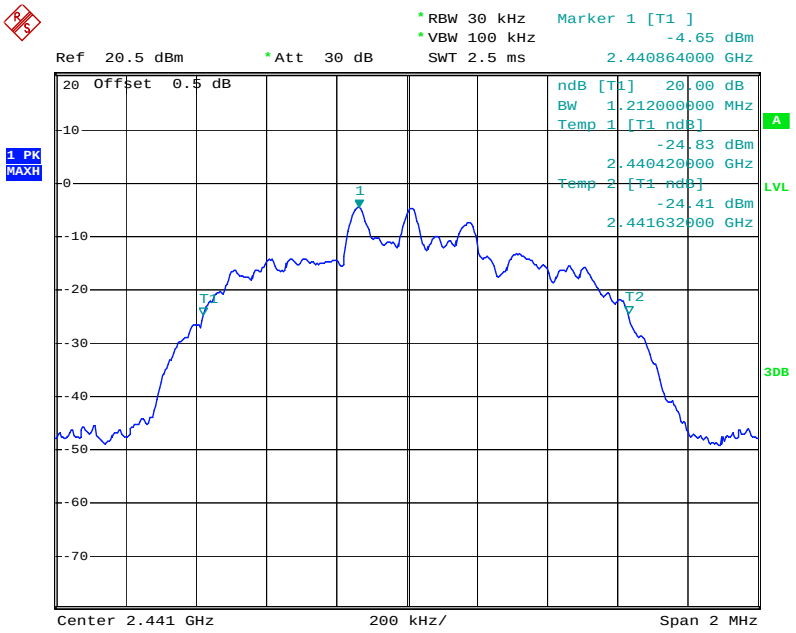


8DPSK Mode

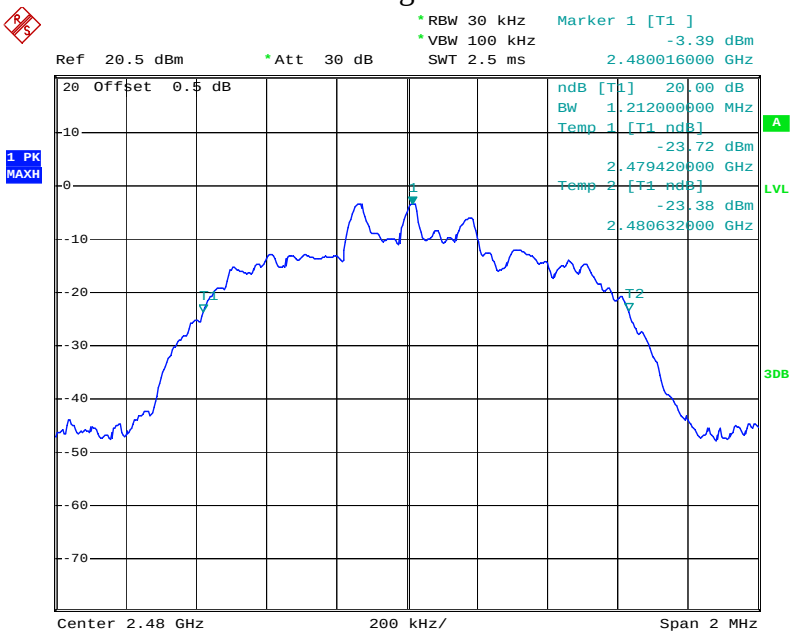
Low channel



Middle channel

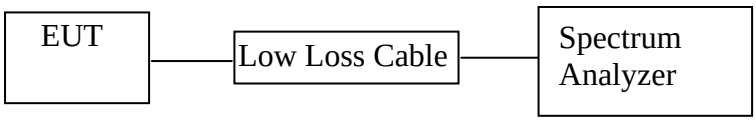


High channel



6. CARRIER FREQUENCY SEPARATION TEST

6.1.Block Diagram of Test Setup



(EUT: 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 100 kHz and VBW to 300 kHz. Adjust Span to 3 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

GFSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.026	25KHz or 20dB bandwidth	PASS
	2403			
Middle	2440	1.008	25KHz or20dB bandwidth	PASS
	2441			
High	2479	1.002	25KHz or 20dB bandwidth	PASS
	2480			

Π/4-DQPSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.002	25KHz or 2/3*20dB bandwidth	PASS
	2403			
Middle	2440	1.020	25KHz or 2/3*20dB bandwidth	PASS
	2441			
High	2479	1.008	25KHz or 2/3*20dB bandwidth	PASS
	2480			

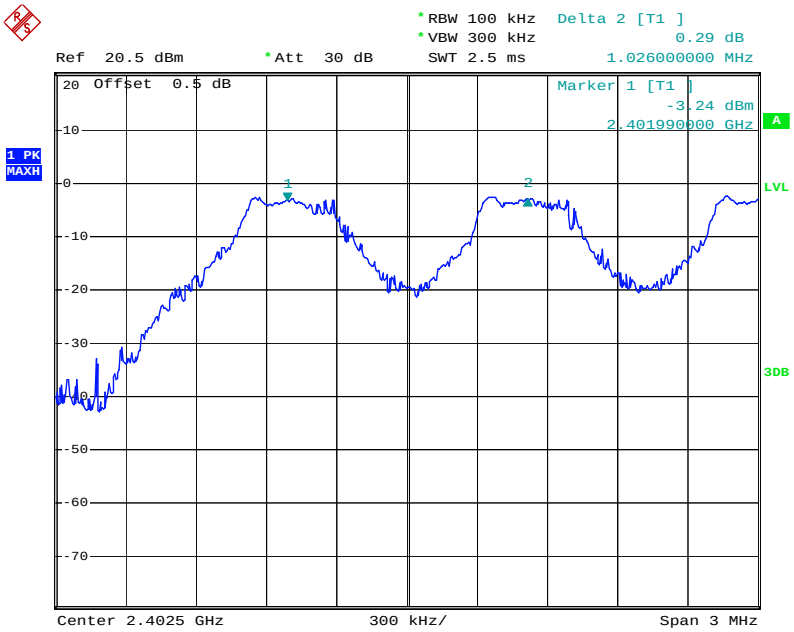
8DPSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.002	25KHz or 2/3*20dB bandwidth	PASS
	2403			
Middle	2440	1.008	25KHz or 2/3*20dB bandwidth	PASS
	2441			
High	2479	1.002	25KHz or 2/3*20dB bandwidth	PASS
	2480			

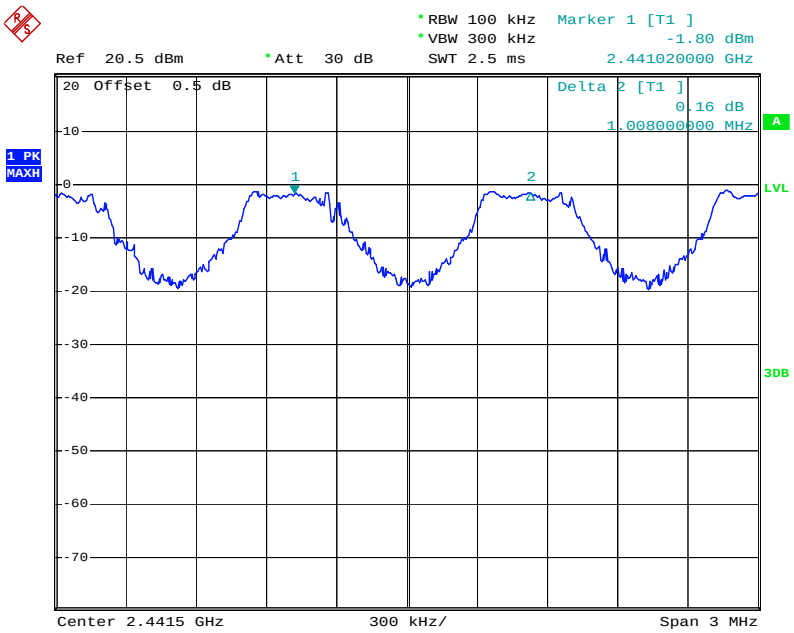
The spectrum analyzer plots are attached as below.

GFSK Mode

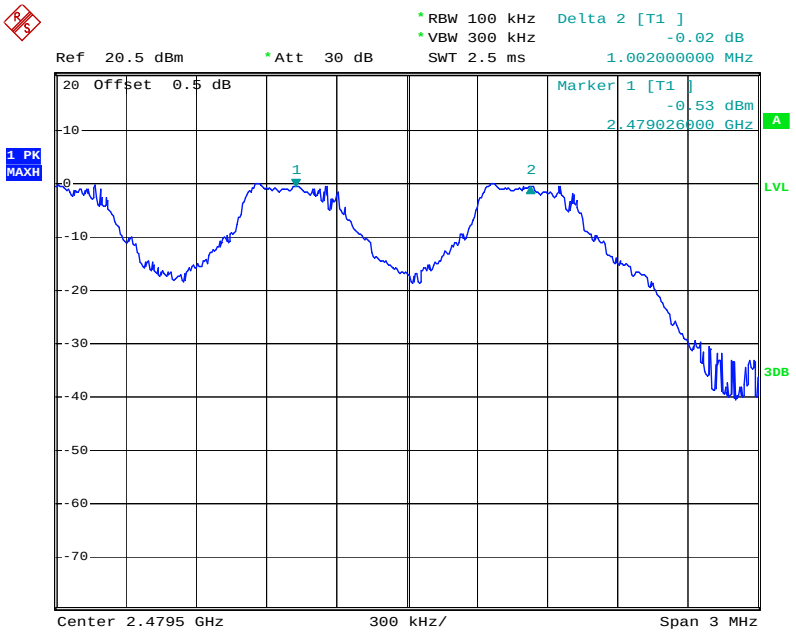
Low channel



Middle channel

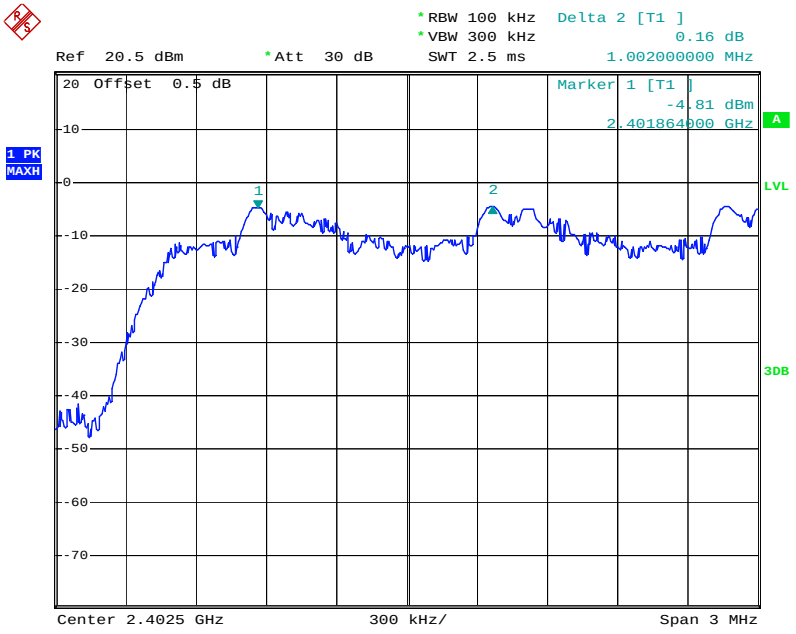


High channel

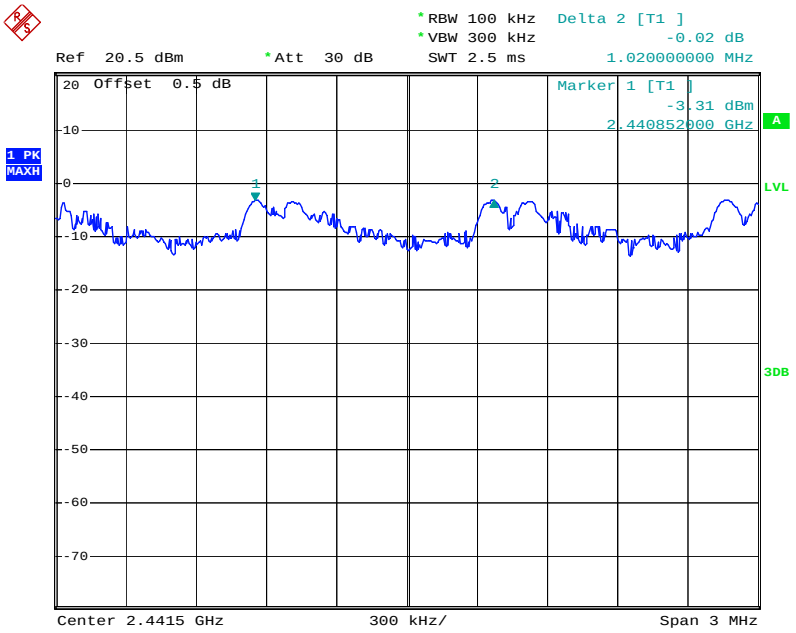


Π/4-DQPSK Mode

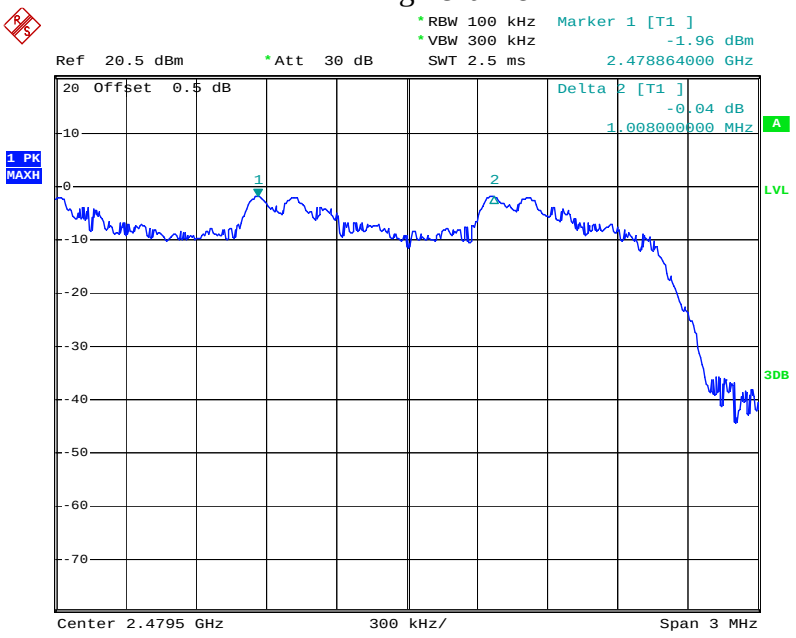
Low channel



Middle channel

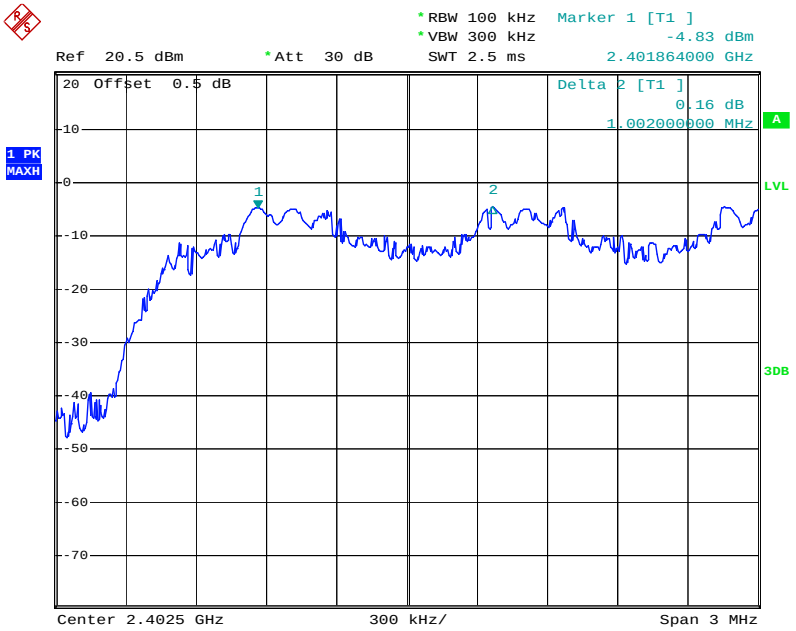


High channel

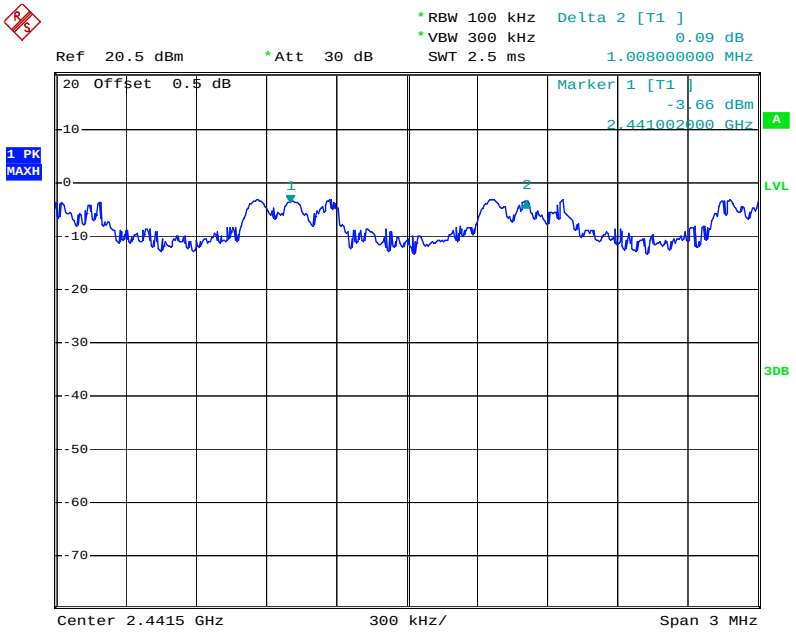


8DPSK Mode

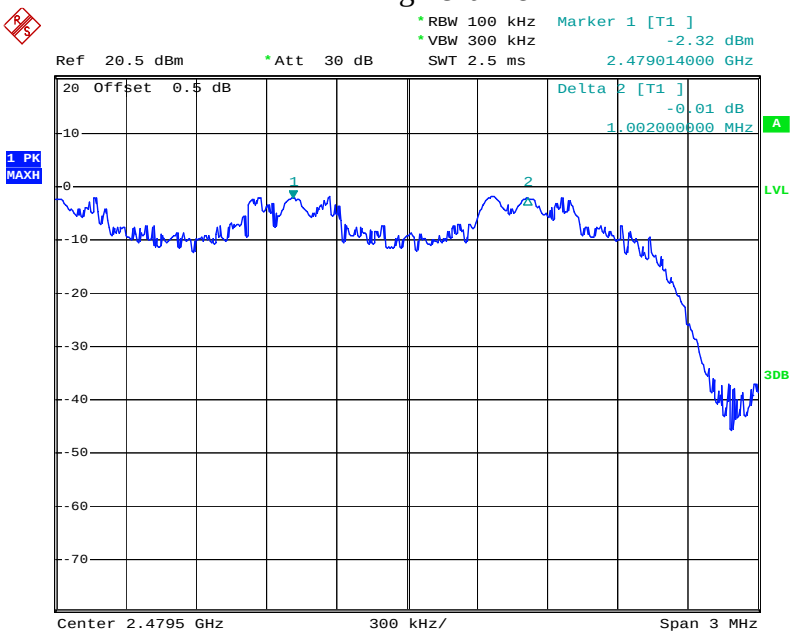
Low channel



Middle channel

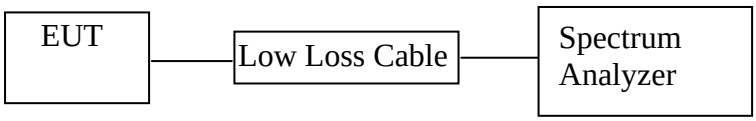


High channel



7. NUMBER OF HOPPING FREQUENCY TEST

7.1.Block Diagram of Test Setup



(EUT: 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.

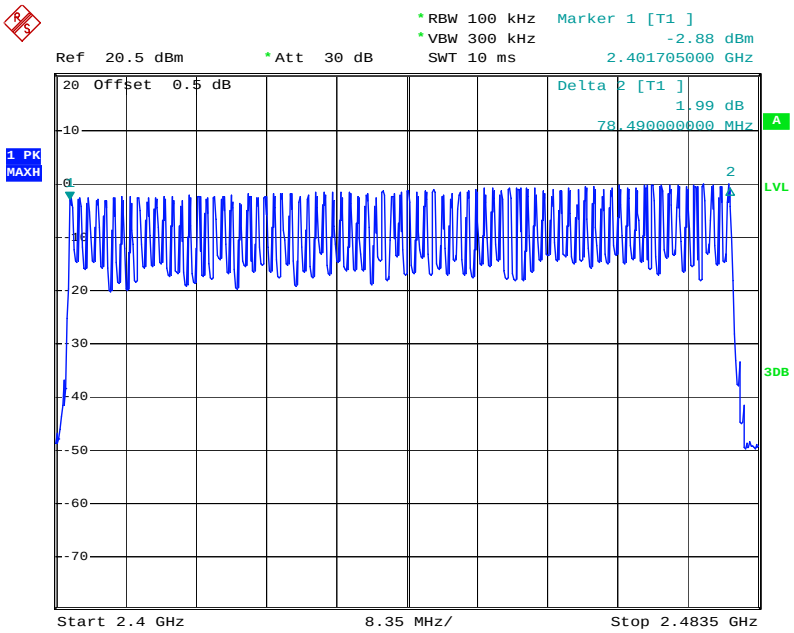
7.5.3.Max hold, view and count how many channel in the band.

7.6.Test Result

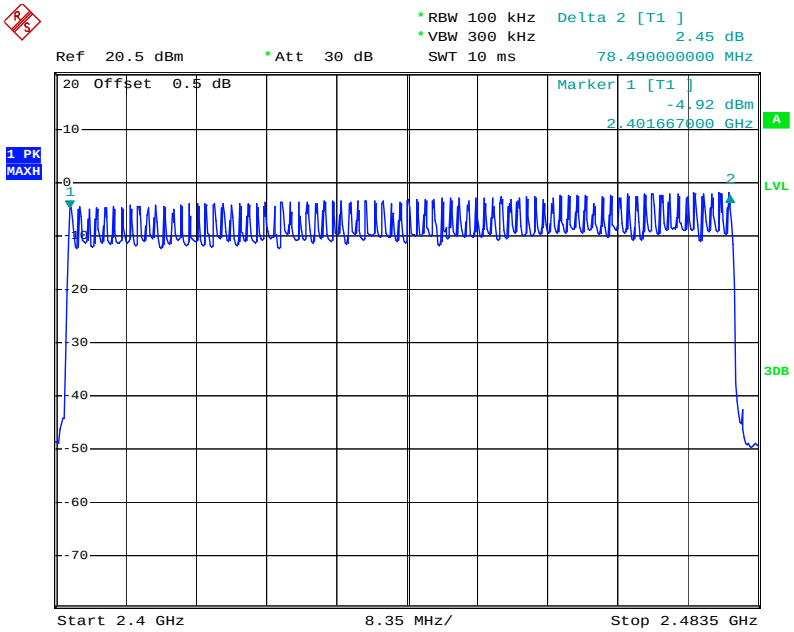
Total number of hopping channel	Measurement result(CH)	Limit(CH)
	79	⩾15

The spectrum analyzer plots are attached as below.

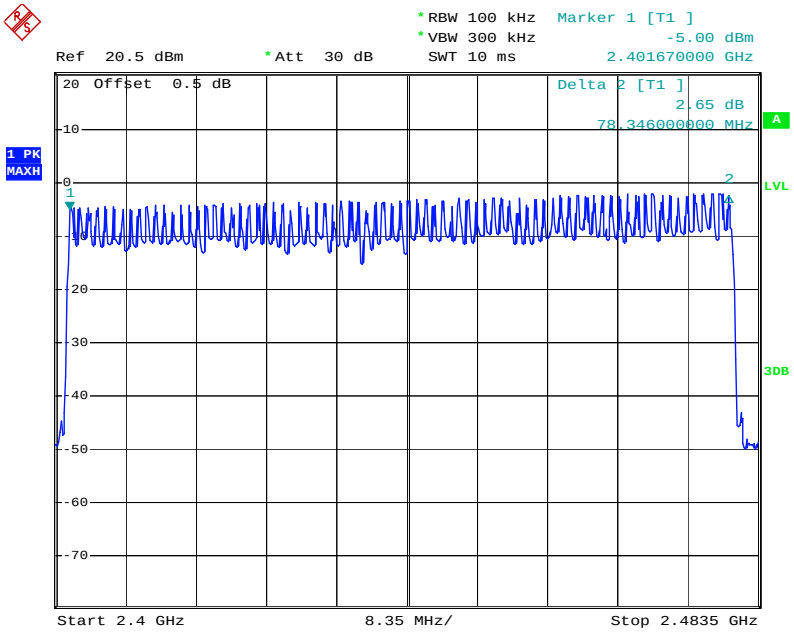
Number of hopping channels(GFSK)



Number of hopping channels(Π/4-DQPSK)

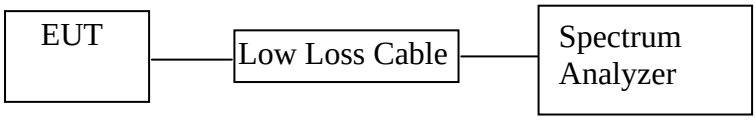


Number of hopping channels(8DPSK)



8. DWELL TIME TEST

8.1.Block Diagram of Test Setup



(EUT: 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, Adjust Sweep=5ms, 10ms, 15ms. Get the pulse time.

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

8.6.Test Result

GFSK Mode

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.440	140.80	400
	2441	0.430	137.60	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	1.700	272.00	400
	2441	1.700	272.00	400
	2480	1.740	278.40	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(4*79))×31.6				
DH5	2402	3.000	320.00	400
	2441	2.970	316.80	400
	2480	2.970	316.80	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(6*79))×31.6				

Π/4-DQPSK

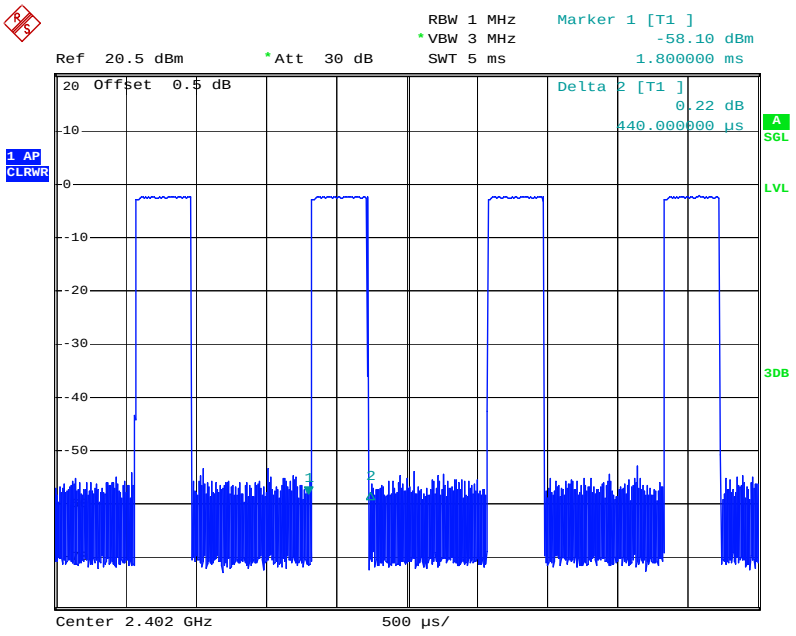
Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.450	144.00	400
	2441	0.450	144.00	400
	2480	0.440	140.80	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(2*79))×31.6				
DH3	2402	1.740	278.40	400
	2441	1.740	278.40	400
	2480	1.720	275.20	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(4*79))×31.6				
DH5	2402	2.970	316.80	400
	2441	2.970	316.80	400
	2480	2.970	316.80	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(6*79))×31.6				

8DPSK Mode

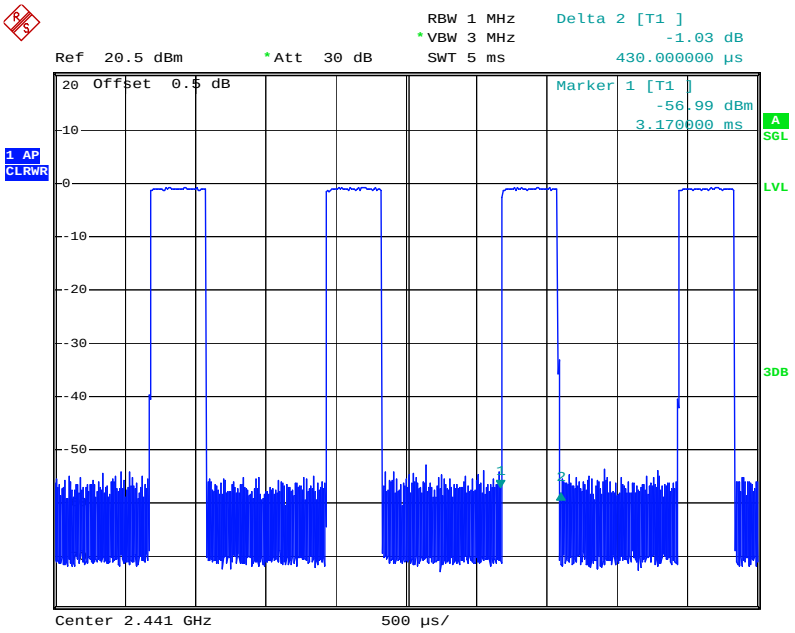
Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.440	140.80	400
	2441	0.440	140.80	400
	2480	0.440	140.80	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(2*79))×31.6				
DH3	2402	1.680	268.80	400
	2441	1.720	275.20	400
	2480	1.700	272.00	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(4*79))×31.6				
DH5	2402	3.000	320.00	400
	2441	3.000	320.00	400
	2480	3.030	323.20	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.

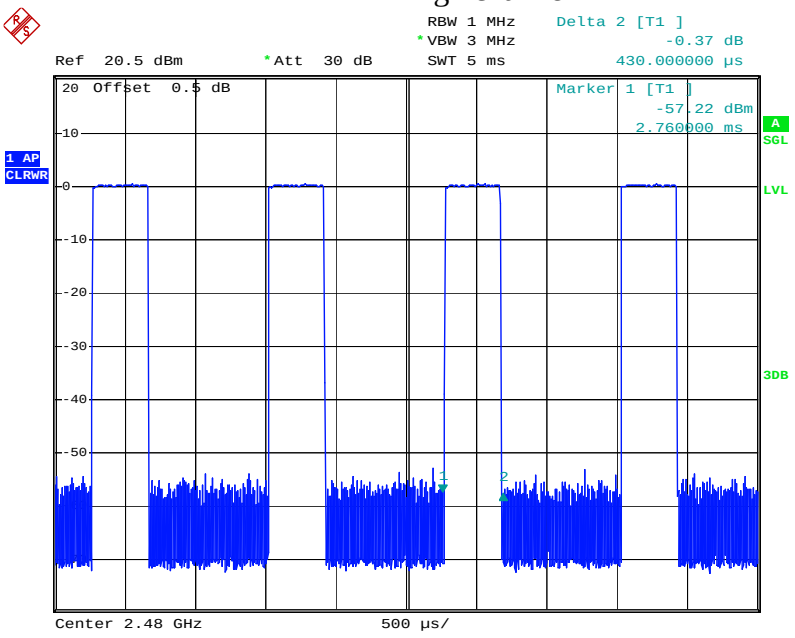
DH1 Low channel



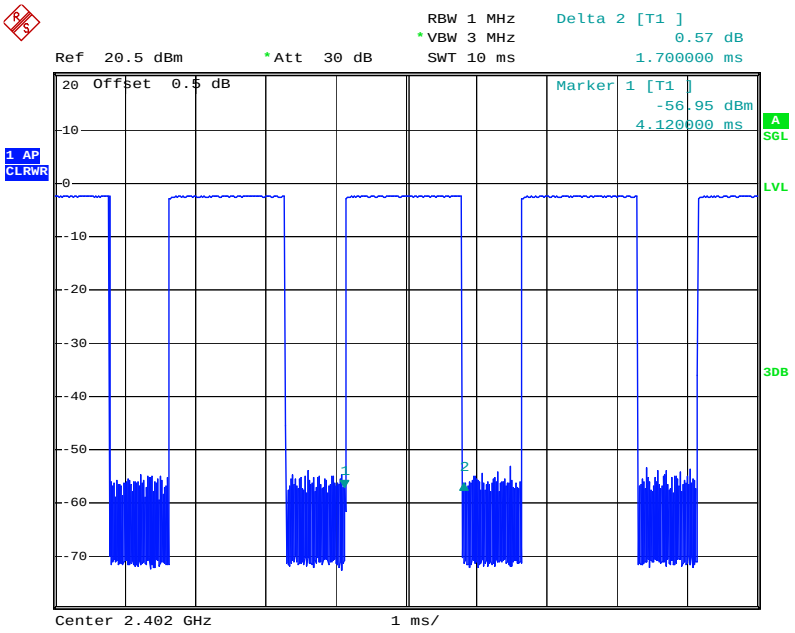
DH1 Middle channel



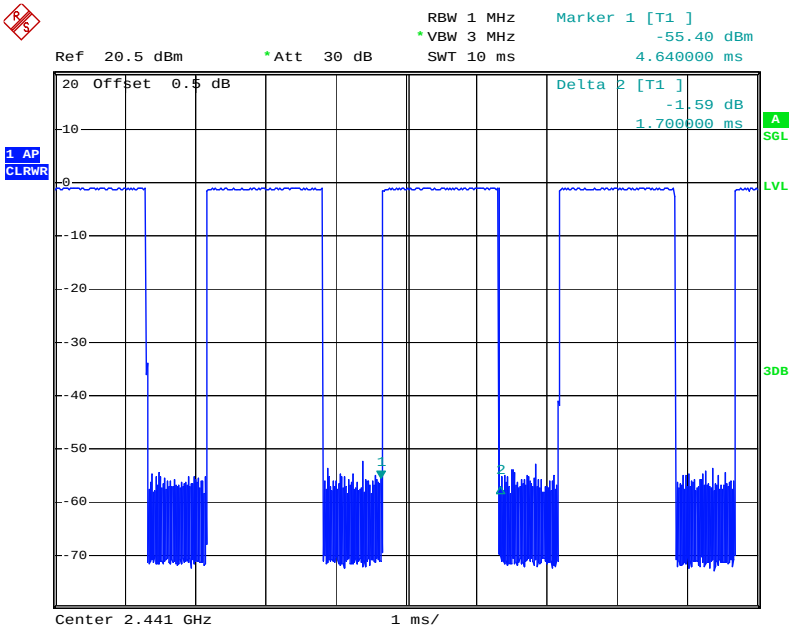
DH1 High channel



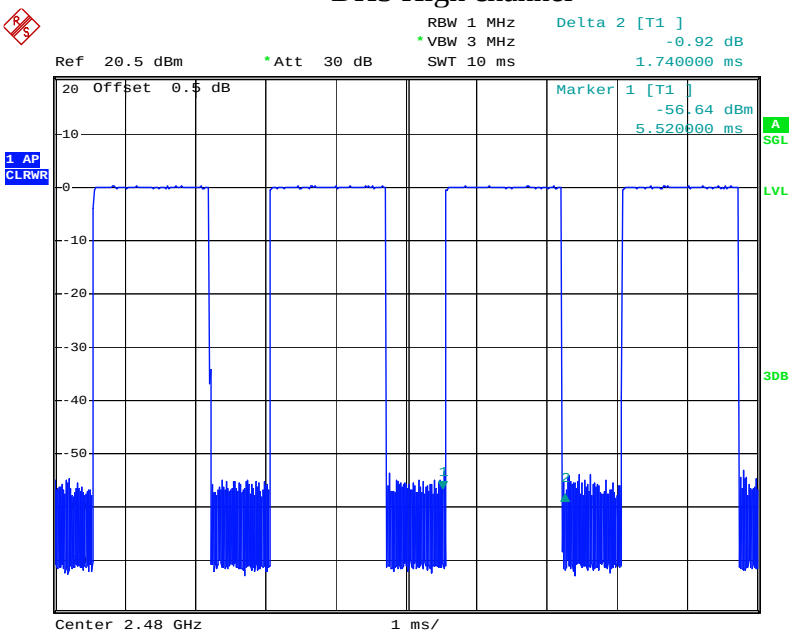
DH3 Low channel



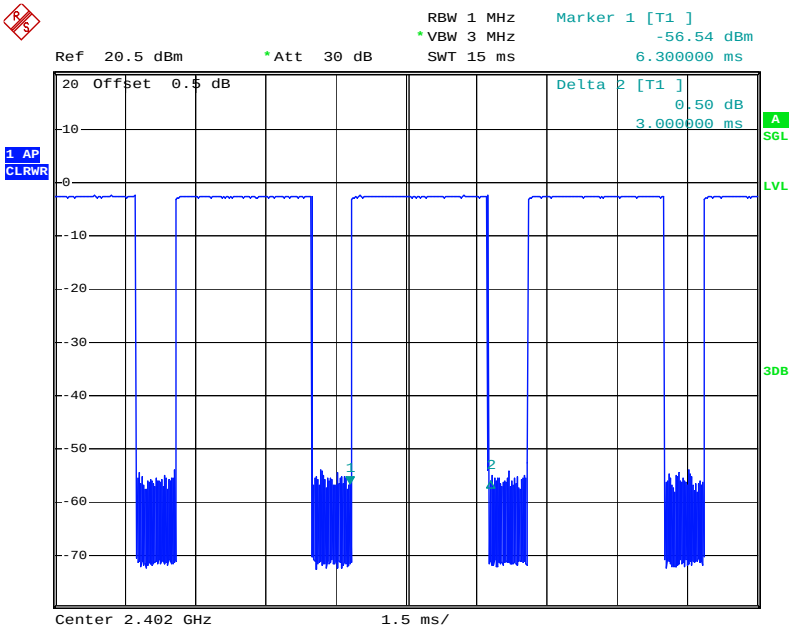
DH3 Middle channel



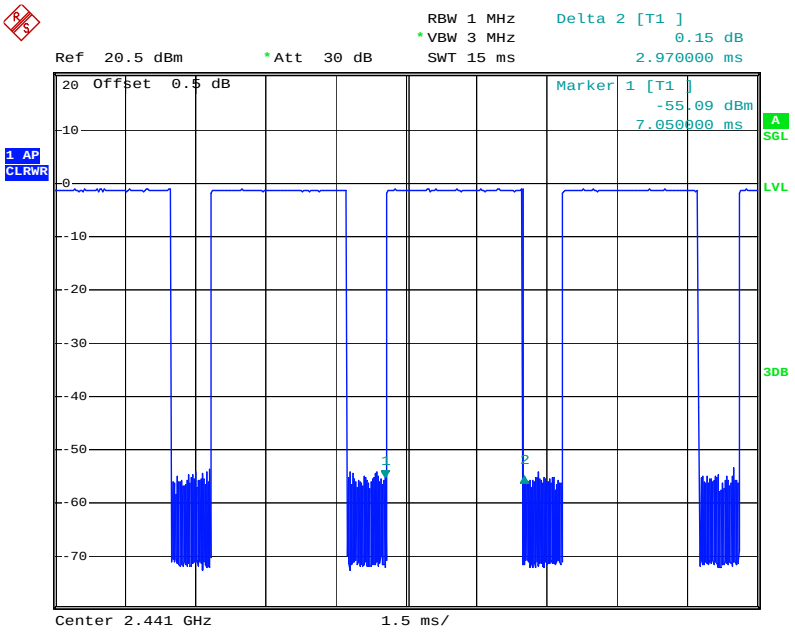
DH3 High channel



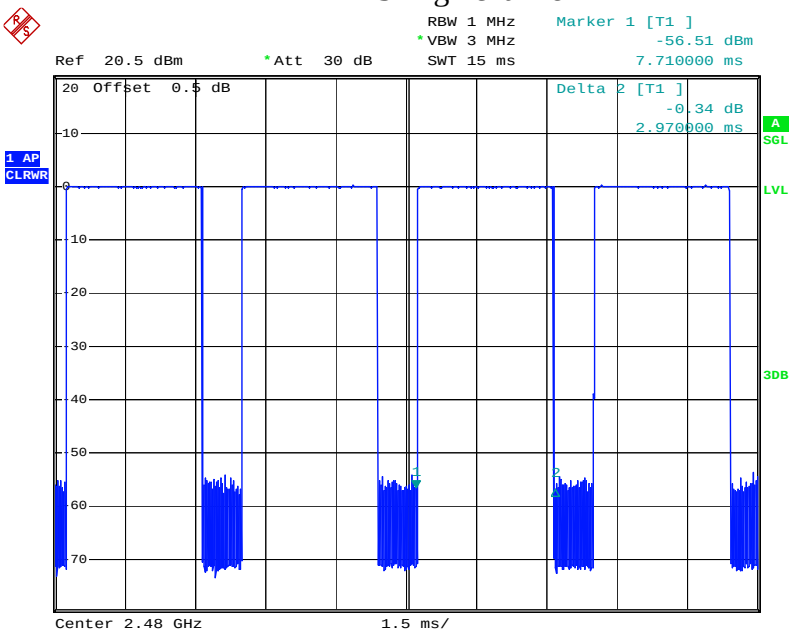
DH5 Low channel



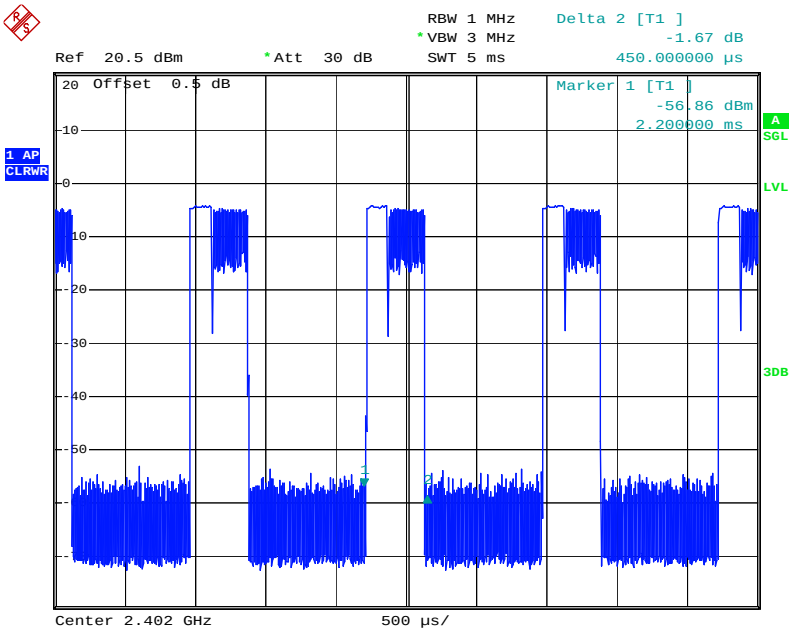
DH5 Middle channel



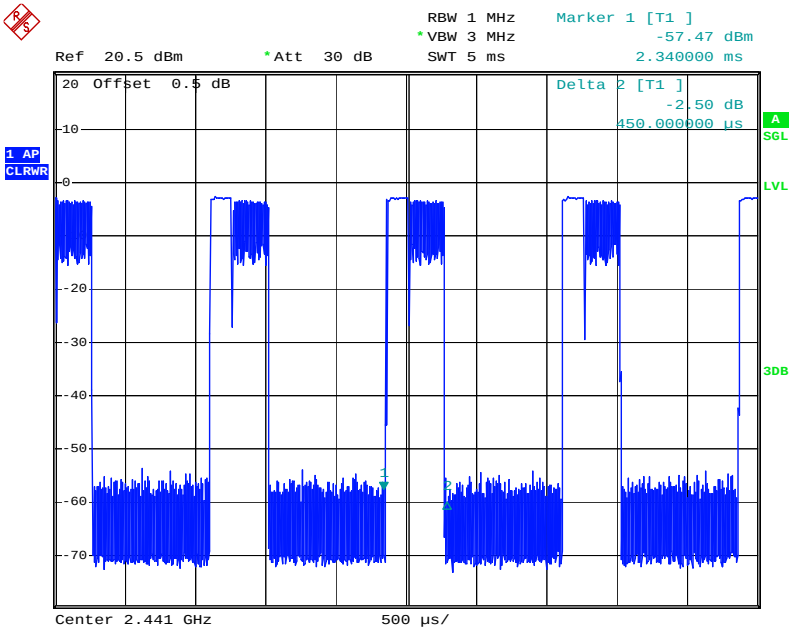
DH5 High channel



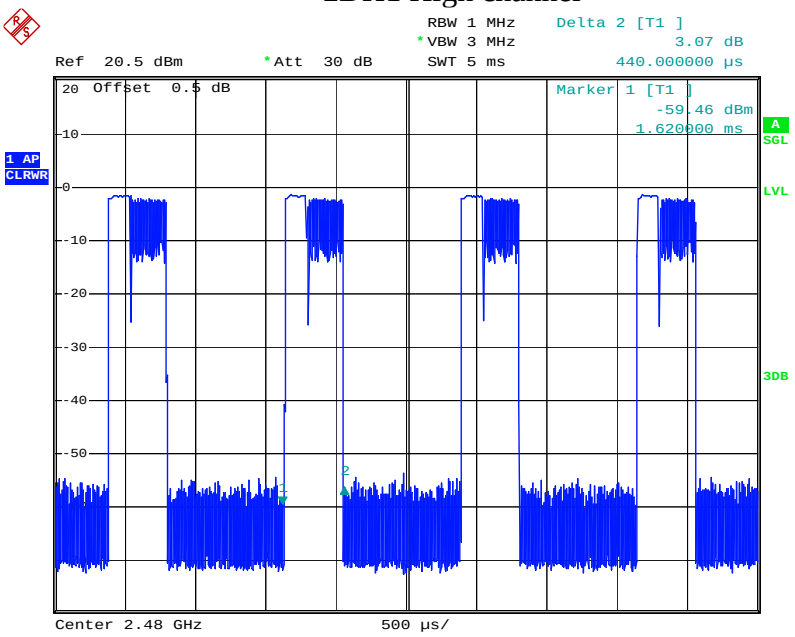
2DH1 Low channel



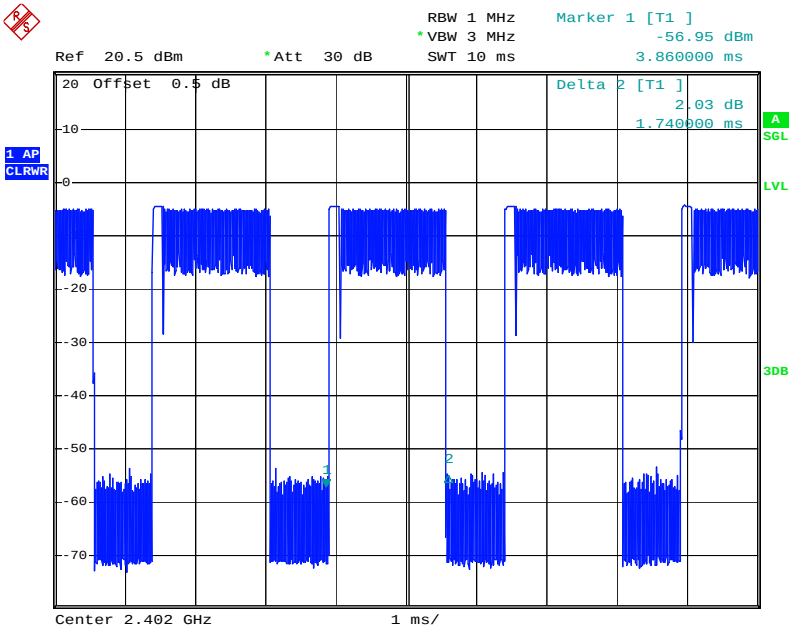
2DH1 Middle channel



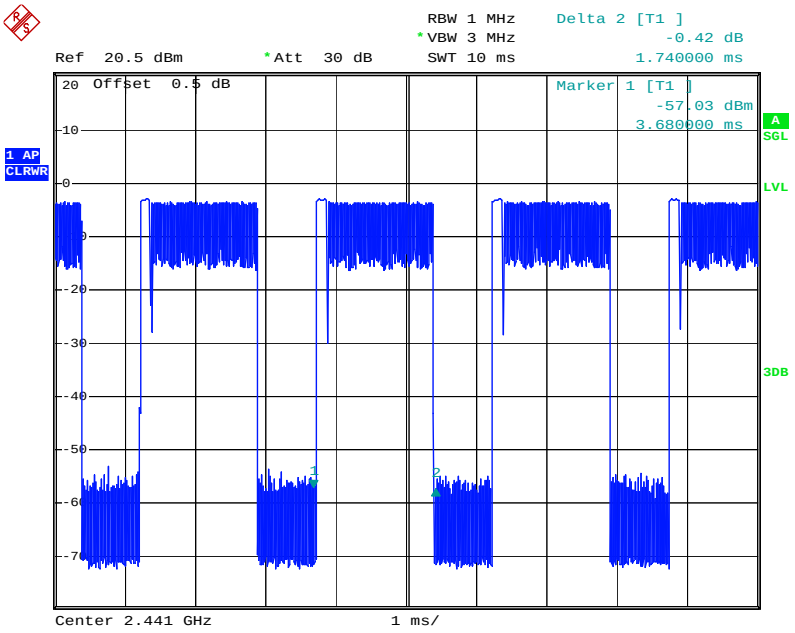
2DH1 High channel



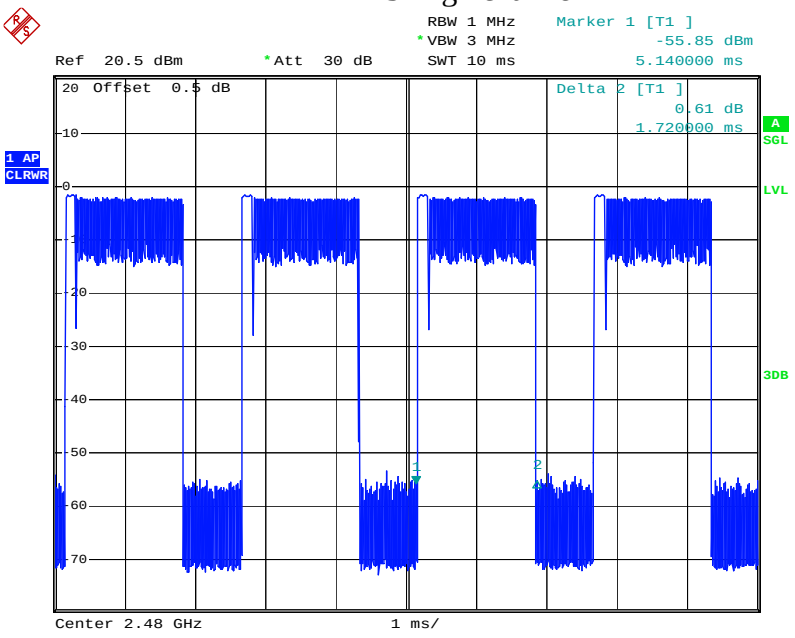
2DH3 Low channel



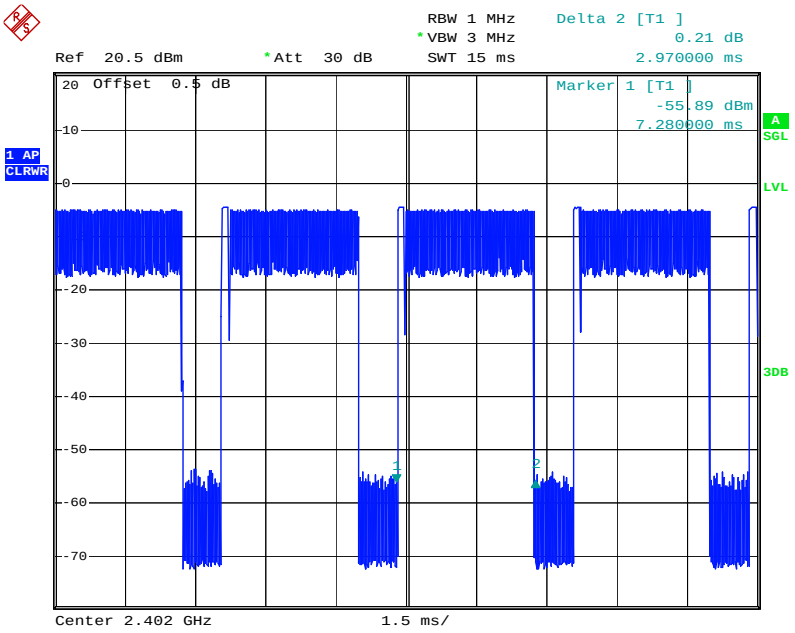
2DH3 Middle channel



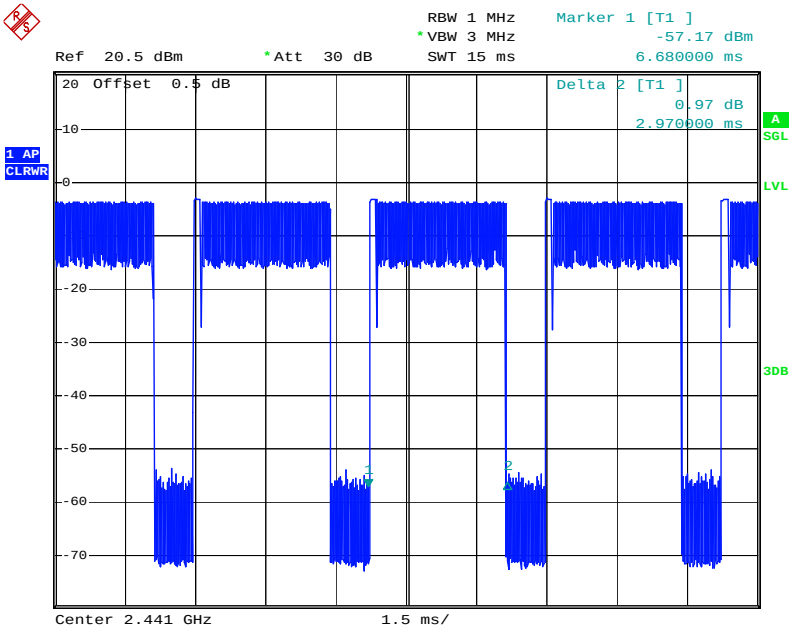
2DH3 High channel



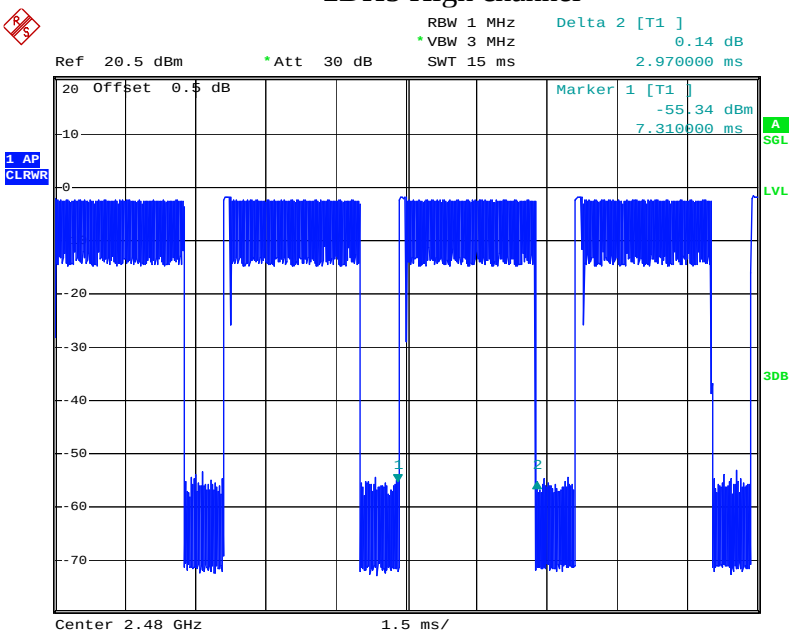
2DH5 Low channel



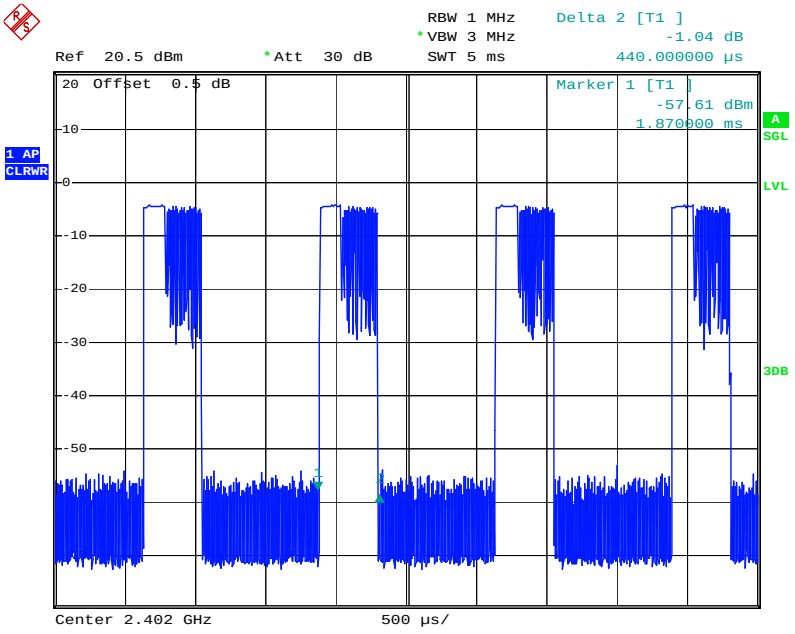
2DH5 Middle channel



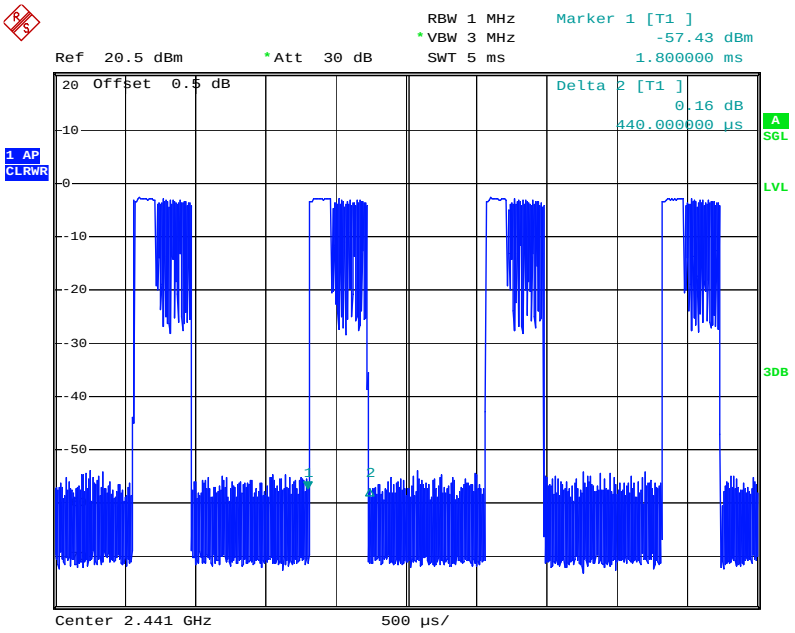
2DH5 High channel



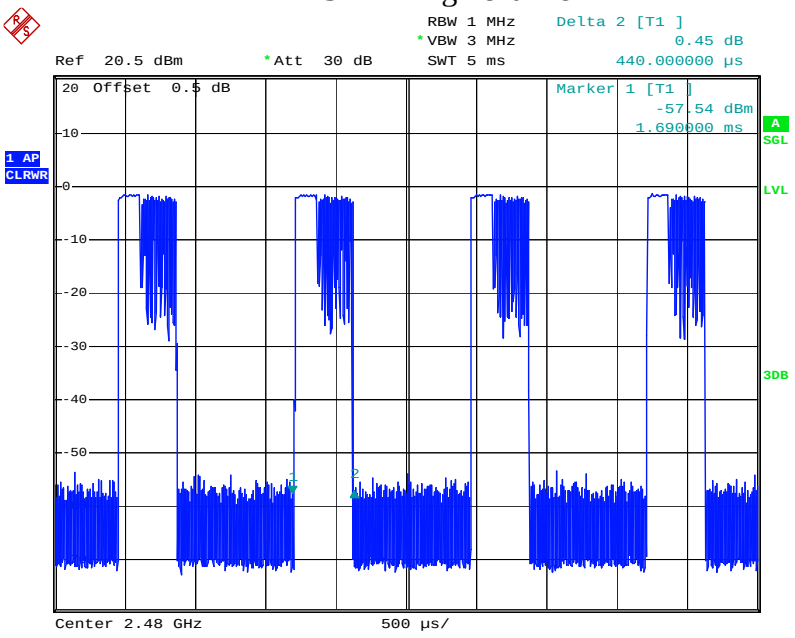
3DH1 Low channel



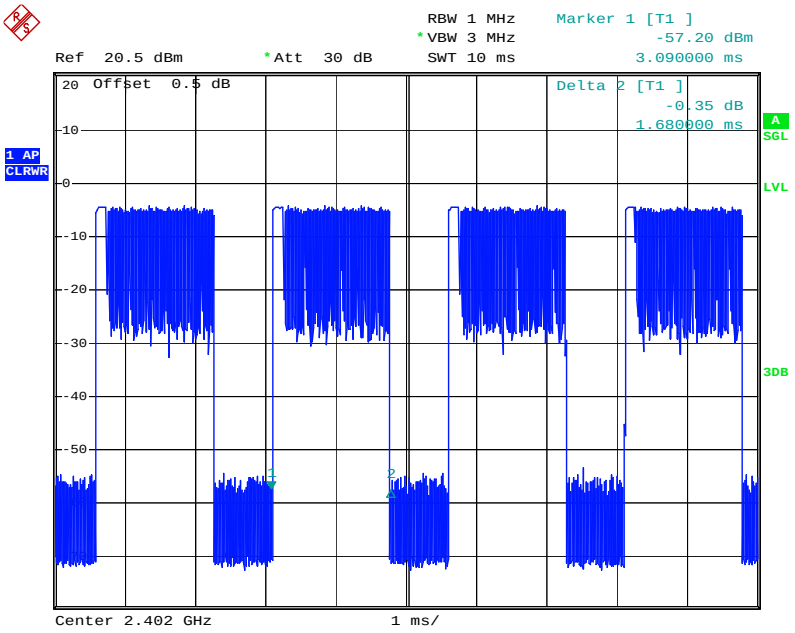
3DH1 Middle channel



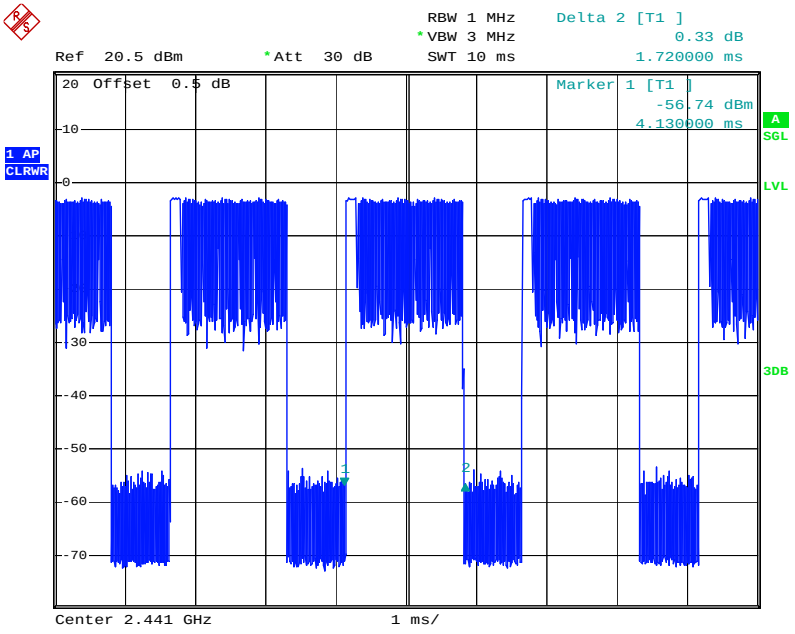
3DH1 High channel



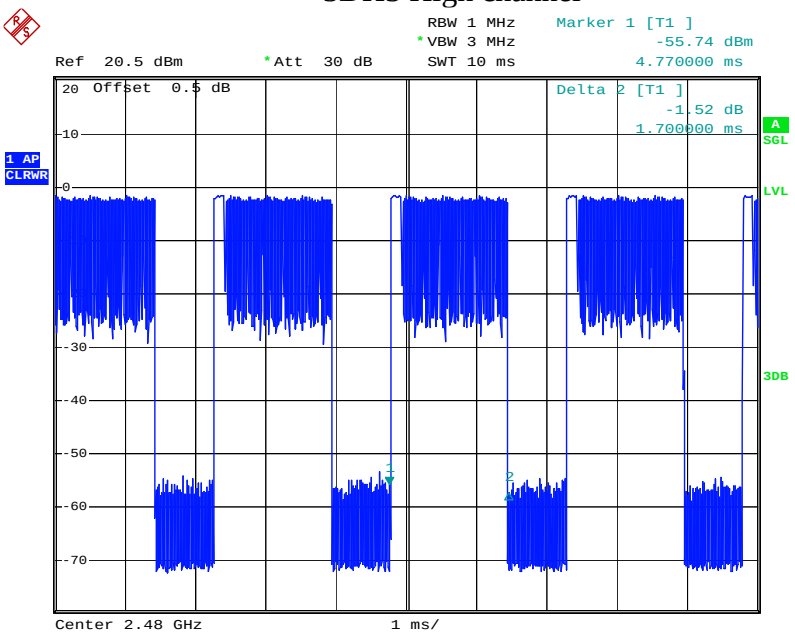
3DH3 Low channel



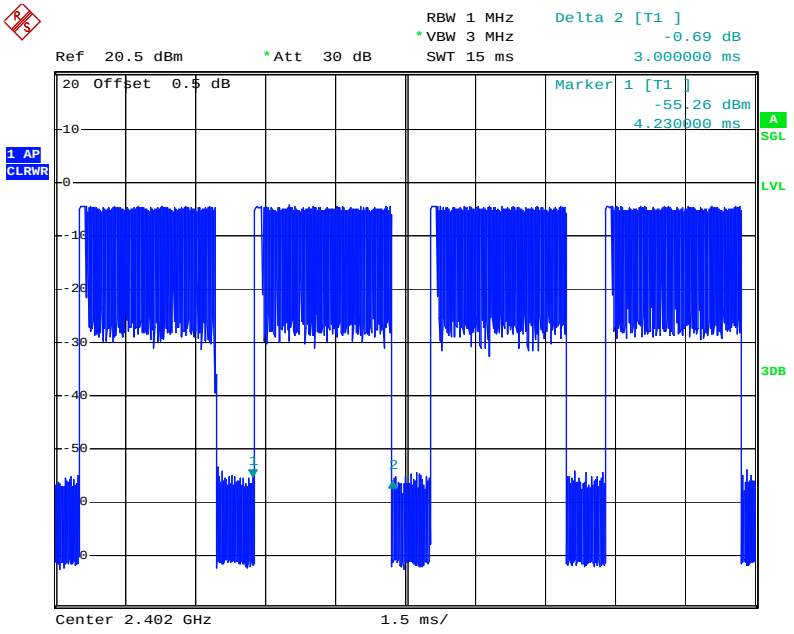
3DH3 Middle channel



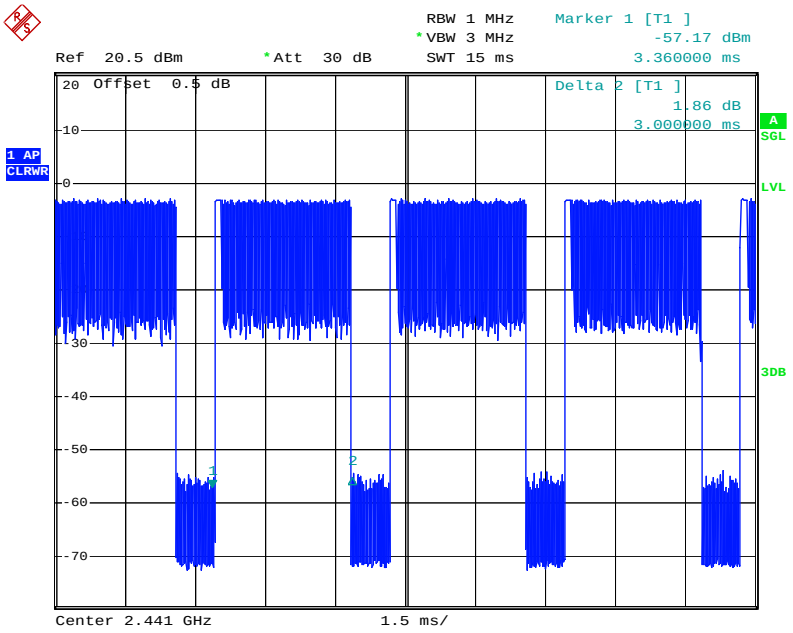
3DH3 High channel



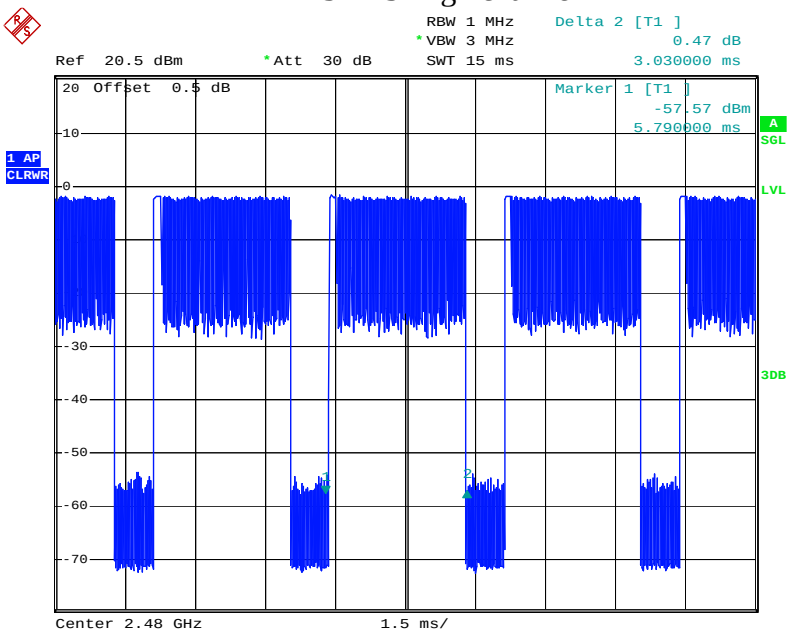
3DH5 Low channel



3DH5 Middle channel

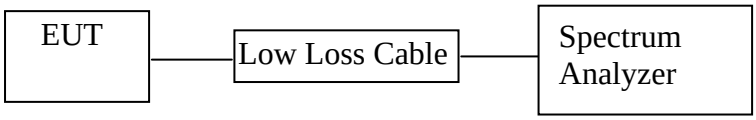


3DH5 High channel



9. MAXIMUM PEAK OUTPUT POWER TEST

9.1.Block Diagram of Test Setup



(EUT: 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 for GFSK mode

9.5.3.Set RBW of spectrum analyzer to 3MHz and VBW to 3MHz for other mode

9.5.4.Measurement the maximum peak output power.

9.6.Test Result

GFSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	-2.09/0.0006	30 / 1.0
Middle	2441	-0.72/0.0008	30 / 1.0
High	2480	0.50/0.0011	30 / 1.0

Π/4-DQPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	-3.95/0.0004	21 / 0.125
Middle	2441	-2.53/0.0006	21 / 0.125
High	2480	-1.27/0.0007	21 / 0.125

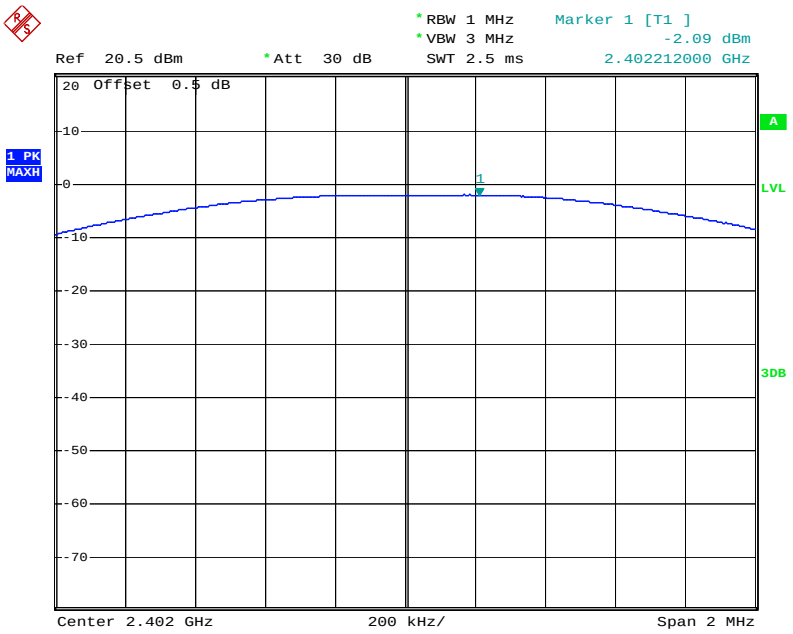
8DPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	-3.83/0.0004	21 / 0.125
Middle	2441	-2.43/0.0006	21 / 0.125
High	2480	-1.17/0.0008	21 / 0.125

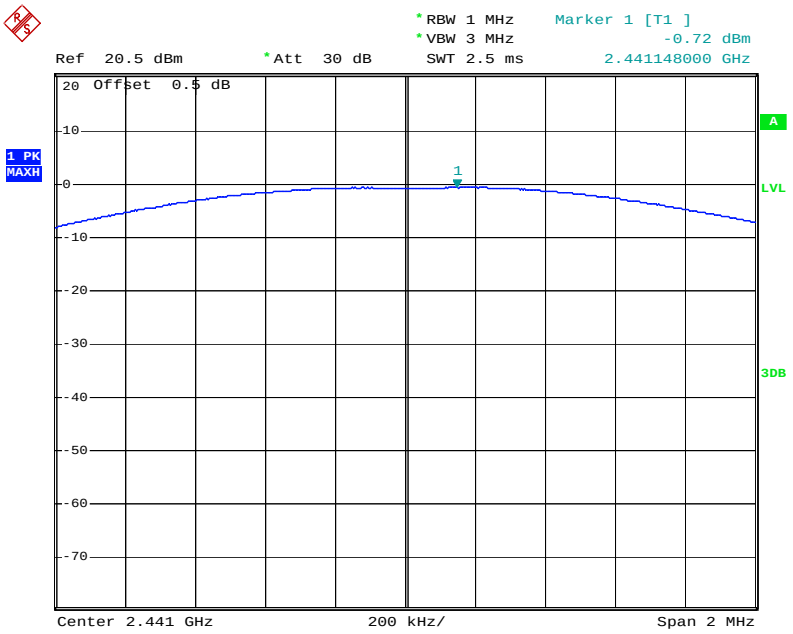
The spectrum analyzer plots are attached as below.

GFSK Mode

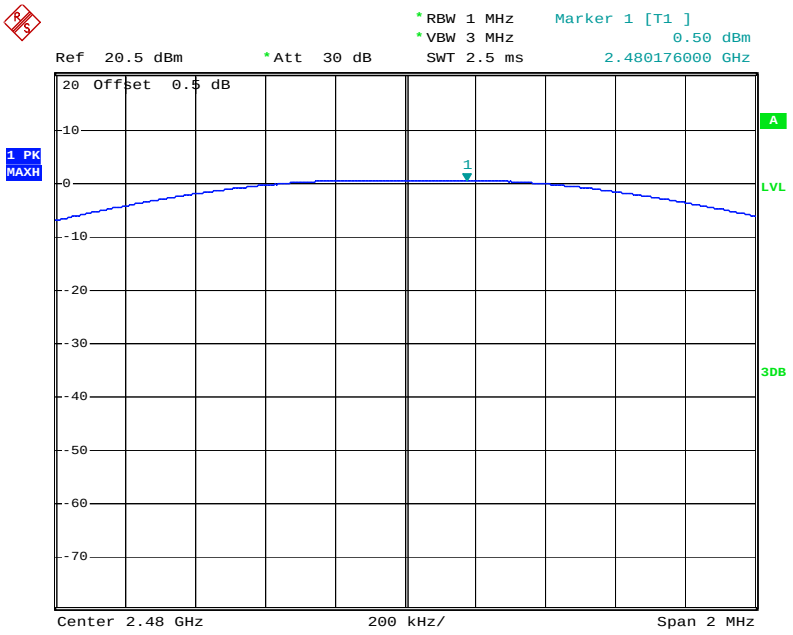
Low channel



Middle channel

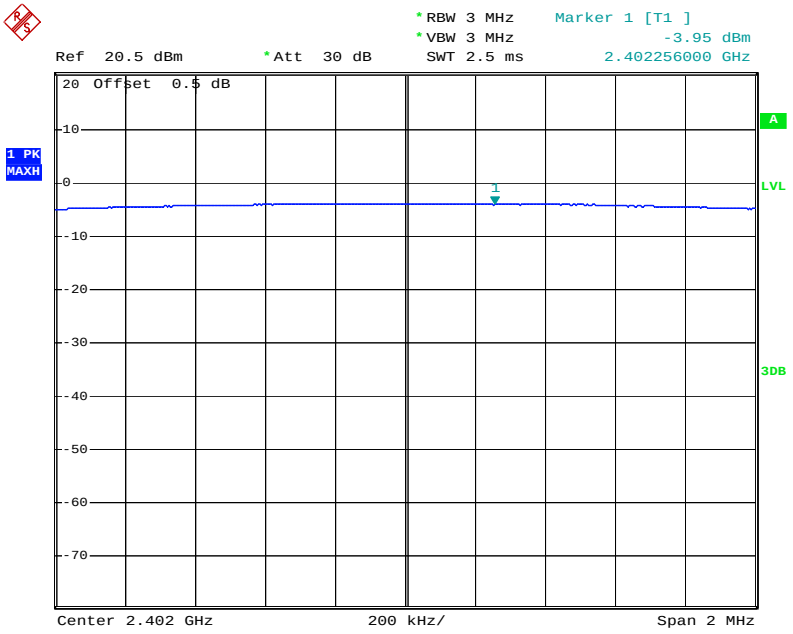


High channel

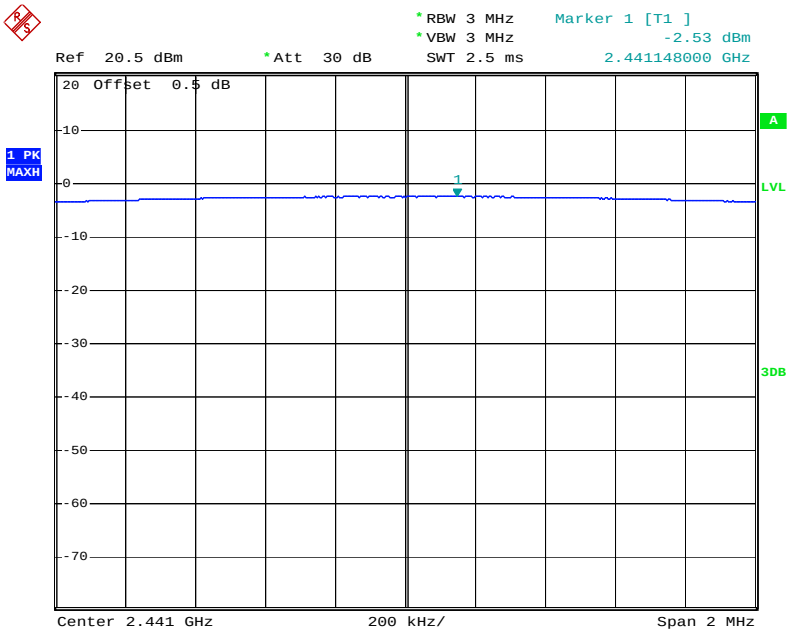


Π/4-DQPSK Mode

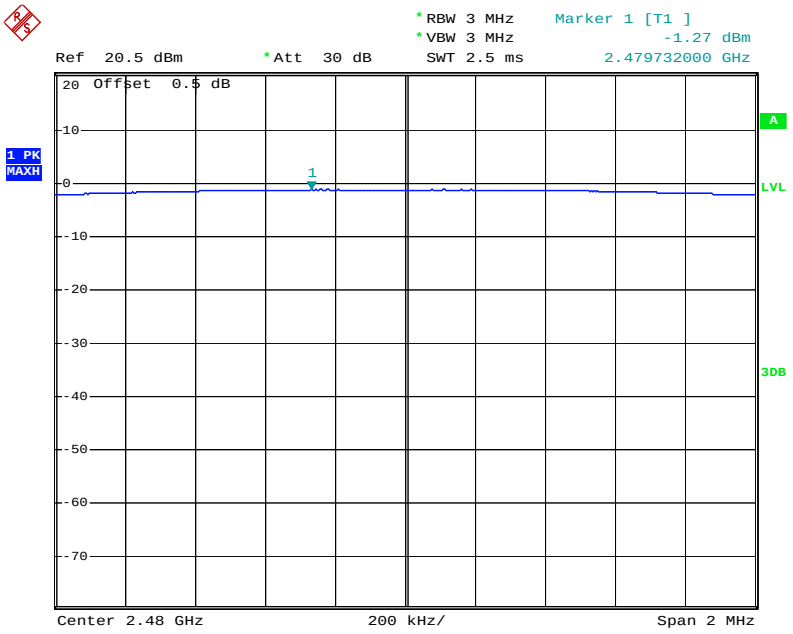
Low channel



Middle channel

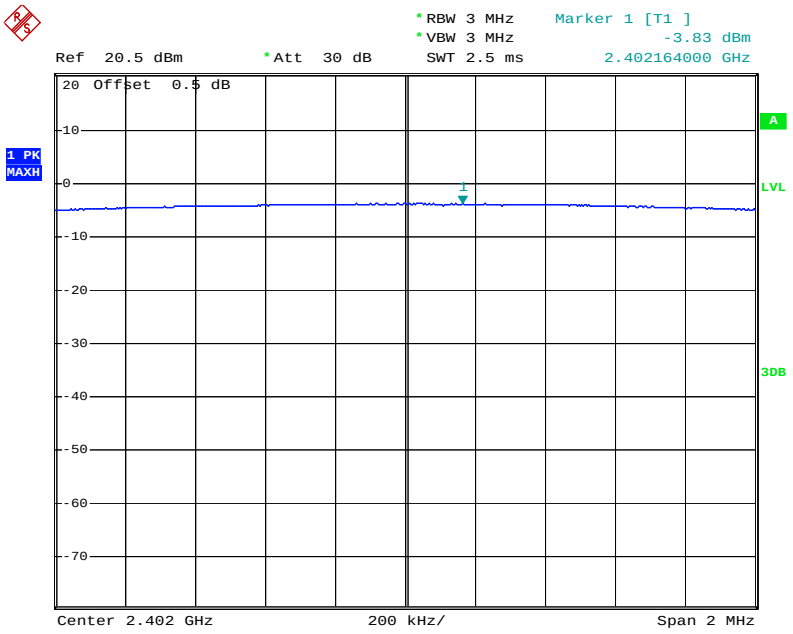


High channel

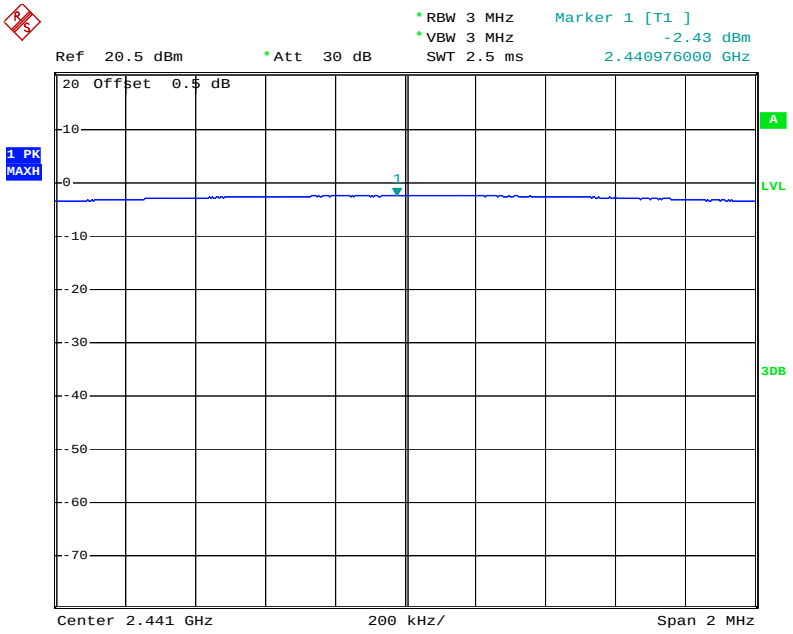


8DPSK Mode

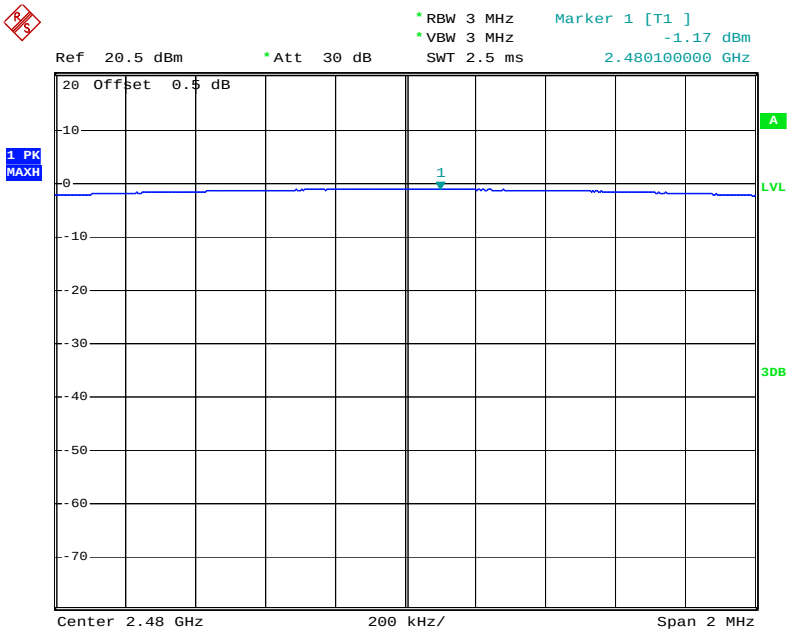
Low channel



Middle channel



High channel



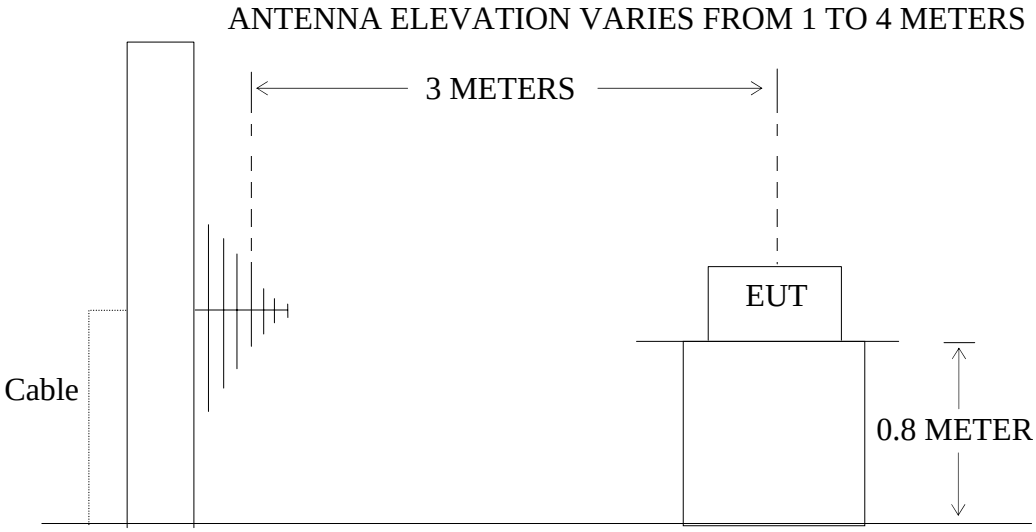
10.RADIATED EMISSION TEST

10.1.Block Diagram of Test Setup

10.1.1.Block diagram of connection between the EUT and simulators

(EUT: Bluetooth Speaker)

10.1.2.Anechoic Chamber Test Setup Diagram



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 is 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.Operating Condition of EUT

10.5.1.Setup the EUT and simulator as shown as Section 10.1.1

10.5.2.Turn on the power of all equipment.

10.5.3.Let the EUT work in TX modes measure it. The transmit frequency are

2402-2480 MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

10.6.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 bandwidth of test receiver (R&S ESI26) is set at 120 KHz in 30-1000MHz. and set at 1MHz in above 1000MHz.
The frequency range from 30MHz to 25000MHz is checked.
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.

The field strength is calculated by adding the antenna factor, and cable loss, and subtracting the amplifier gain from the measured reading. The basic equation calculation is as follows:
Result = Reading + Corrected Factor
Where Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

During the radiated emission test, the spectrum analyzer was set with the following configurations:

Frequency band(MHz)	Detector	RBW(KHz)	VBW(KHz)
30-1000	QP	120	300
Above 1000	Peak	1000	3000
	Average	1000	0.01

10.7.The Field Strength of Radiation Emission Measurement Results

Note: 1.We tested GFSK mode, Π/4-DQPSK Mode & 8QPSK mode and recorded the worst case data(GFSK mode) for all test mode.

2.The fundamental radiated emissions were reduced by Band Reject Filter in the attached plots.

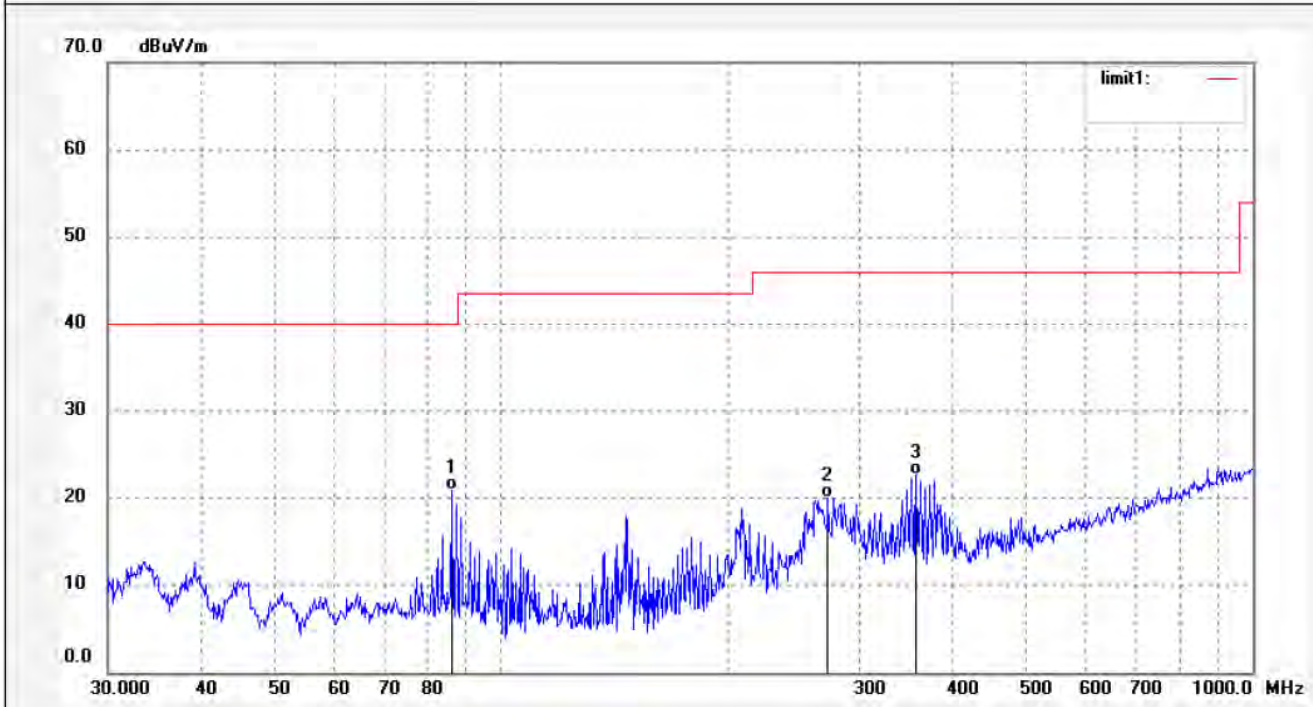
Below 1GHz

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 1# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: STAR2014 #1261
Standard: FCC 15.247 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Speaker
Mode: TX 2402MHz
Model: CR8008A-XX
Manufacturer: TIMSEN

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 14/08/18/
Time: 9/19/57
Engineer Signature: STAR
Distance: 3m

Note: Report No.:ATE20141581

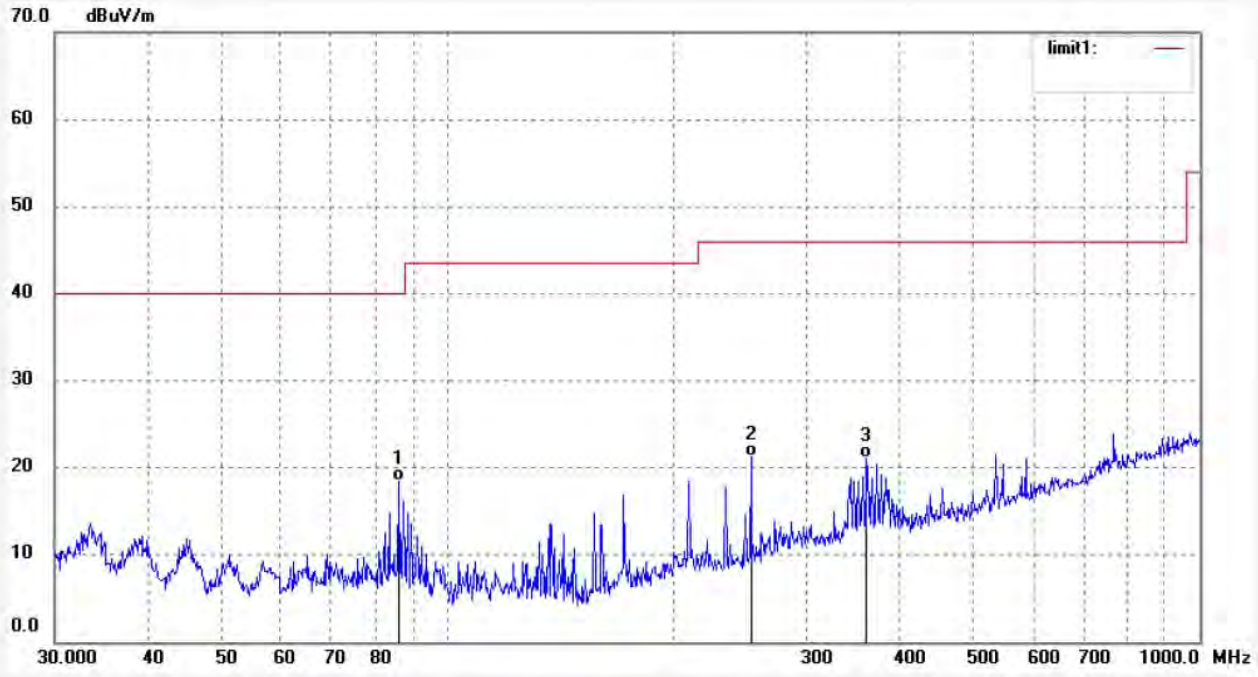


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	85.8984	42.51	-21.57	20.94	40.00	-19.06	QP			
2	272.2776	38.71	-18.63	20.08	46.00	-25.92	QP			
3	356.6758	38.61	-16.03	22.58	46.00	-23.42	QP			

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 1# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: STAR2014 #1260	Polarization: Vertical
Standard: FCC 15.247 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 14/08/18/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 9/15/15
EUT: Bluetooth Speaker	Engineer Signature: STAR
Mode: TX 2402MHz	Distance: 3m
Model: CR8008A-XX	
Manufacturer: TIMSEN	

Note: Report No.:ATE20141581



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	85.8984	39.95	-21.57	18.38	40.00	-21.62	QP			
2	252.9482	40.80	-19.57	21.23	46.00	-24.77	QP			
3	360.4476	36.98	-15.92	21.06	46.00	-24.94	QP			

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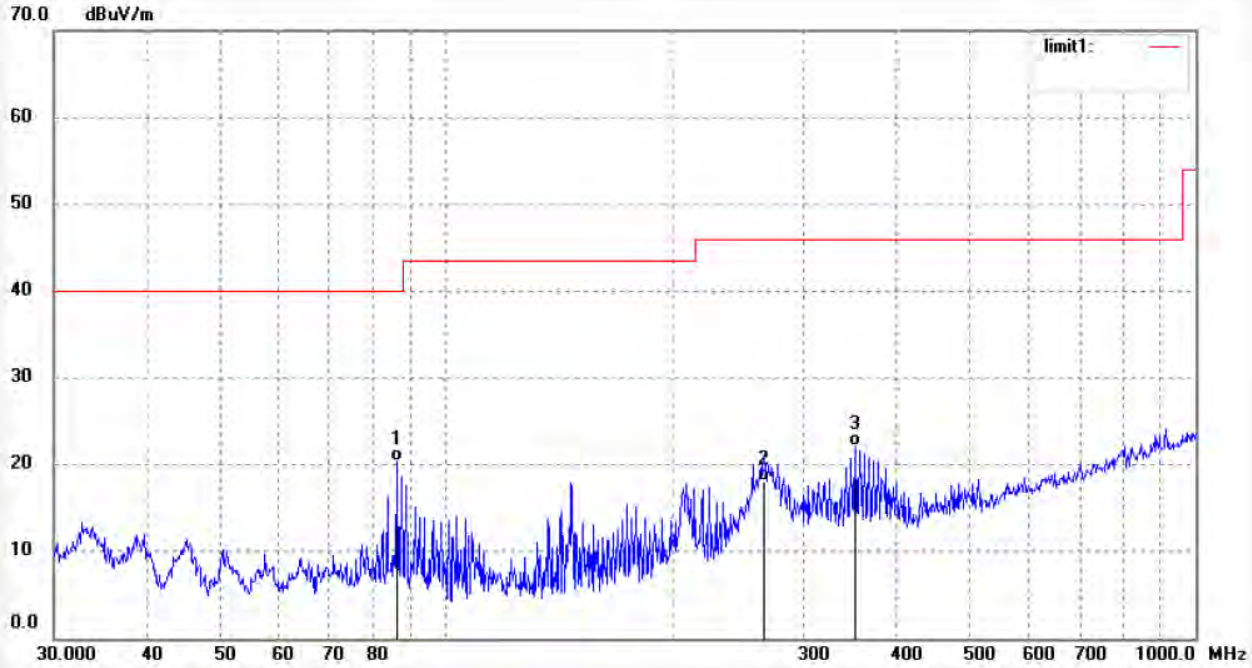
Job No.: STAR2014 #1262	Polarization: Horizontal
Standard: FCC 15.247 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 14/08/18/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 9/23/31
EUT: Bluetooth Speaker	Engineer Signature: STAR
Mode: TX 2441MHz	Distance: 3m
Model: CR8008A-XX	
Manufacturer: TIMSEN	

Note: Report No.:ATE20141581



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	85.8984	41.88	-21.57	20.31	40.00	-19.69	QP			
2	265.6757	36.89	-18.83	18.06	46.00	-27.94	QP			
3	351.7079	38.28	-16.18	22.10	46.00	-23.90	QP			

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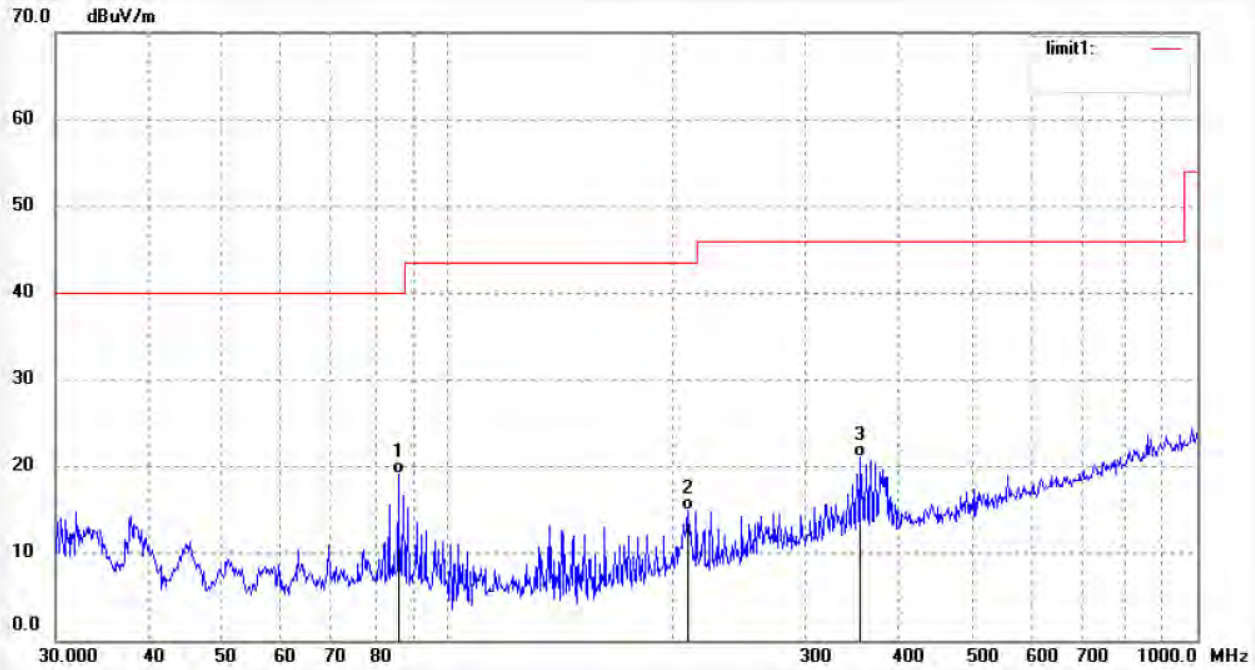
Job No.: STAR2014 #1263
Standard: FCC 15.247 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Speaker
Mode: TX 2441MHz
Model: CR8008A-XX
Manufacturer: TIMSEN

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 14/08/18/
Time: 9/28/12
Engineer Signature: STAR
Distance: 3m

Note: Report No.:ATE20141581



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	85.8984	40.73	-21.57	19.16	40.00	-20.84	QP			
2	209.3129	34.93	-20.02	14.91	43.50	-28.59	QP			
3	354.1831	37.19	-16.10	21.09	46.00	-24.91	QP			

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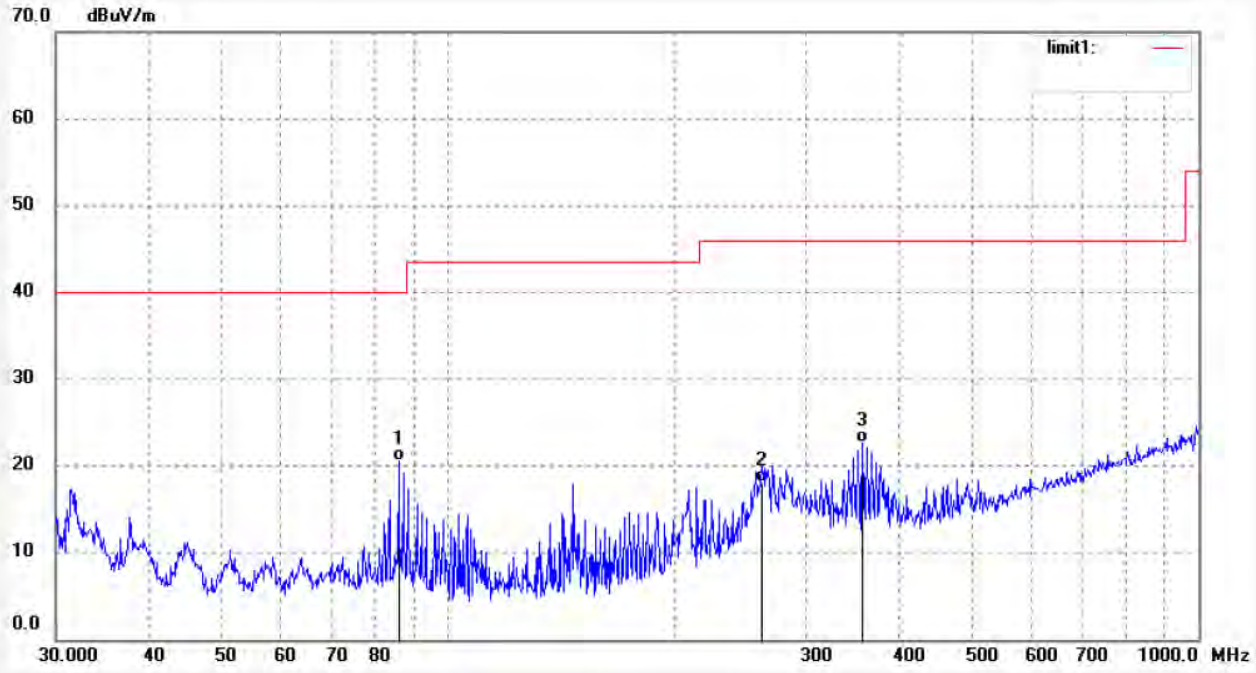
Job No.: STAR2014 #1265	Polarization: Horizontal
Standard: FCC 15.247 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 14/08/18/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 9/37/26
EUT: Bluetooth Speaker	Engineer Signature: STAR
Mode: TX 2480MHz	Distance: 3m
Model: CR8008A-XX	
Manufacturer: TIMSEN	

Note: Report No.:ATE20141581



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	85.8984	42.16	-21.57	20.59	40.00	-19.41	QP			
2	261.9753	37.18	-19.02	18.16	46.00	-27.84	QP			
3	356.6758	38.72	-16.03	22.69	46.00	-23.31	QP			

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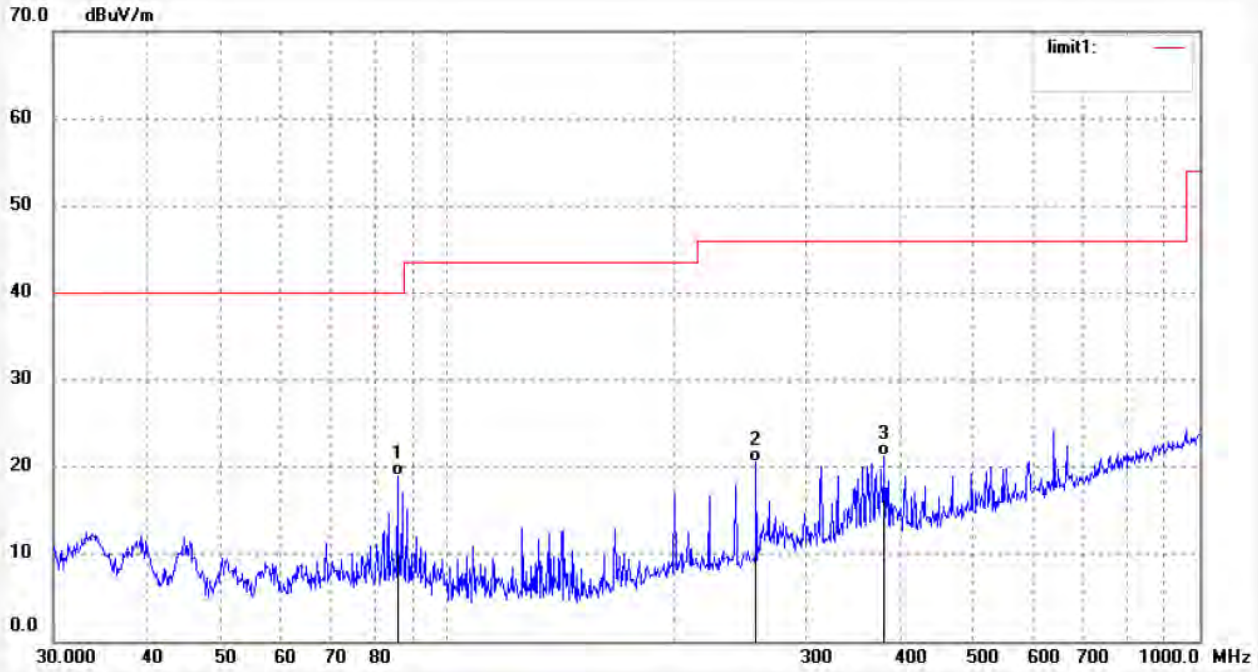
Job No.: STAR2014 #1264
Standard: FCC 15.247 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Speaker
Mode: TX 2480MHz
Model: CR8008A-XX
Manufacturer: TIMSEN

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 14/08/18/
Time: 9/32/47
Engineer Signature: STAR
Distance: 3m

Note: Report No.:ATE20141581



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	85.8983	40.52	-21.57	18.95	40.00	-21.05	QP			
2	257.4221	39.94	-19.30	20.64	46.00	-25.36	QP			
3	381.2485	37.03	-15.78	21.25	46.00	-24.75	QP			

Above 1GHz

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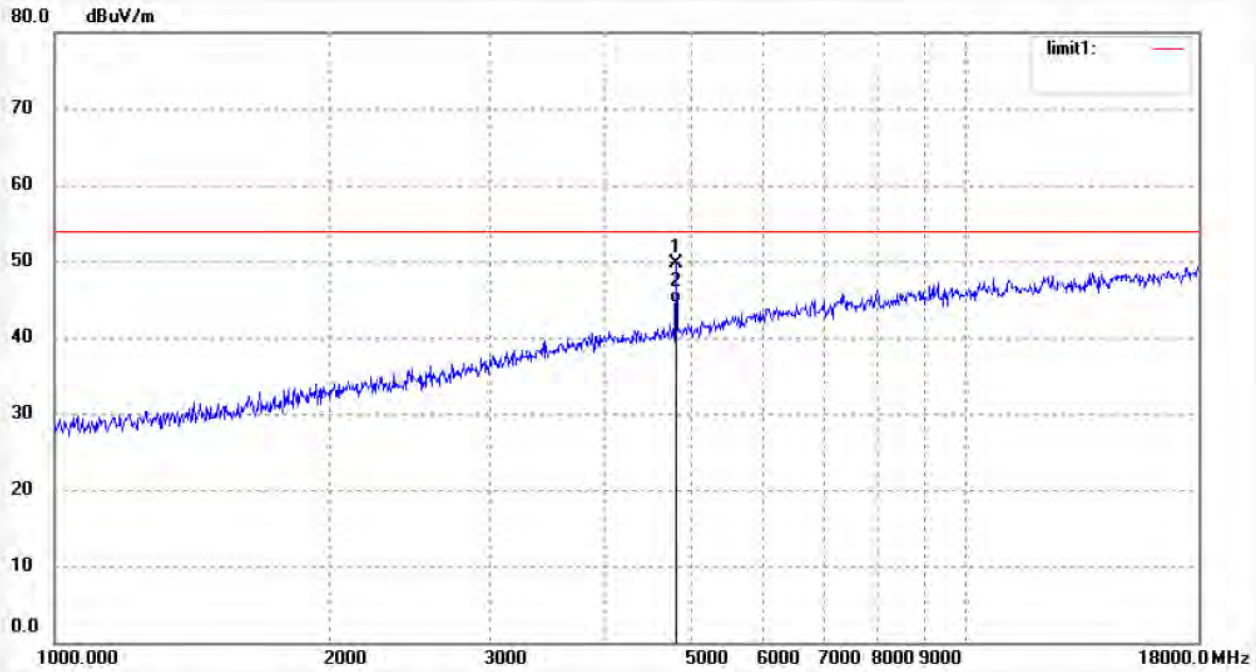
Job No.: STAR2014 #1266
Standard: FCC 15.247 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Speaker
Mode: TX 2402MHz
Model: CR8008A-XX
Manufacturer: TIMSEN

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 14/08/18/
Time: 9/44/28
Engineer Signature: STAR
Distance: 3m

Note: Report No.:ATE20141581



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4804.110	49.94	-0.19	49.75	74.00	-24.25	peak			
2	4804.110	44.69	-0.19	44.50	54.00	-9.50	AVG			

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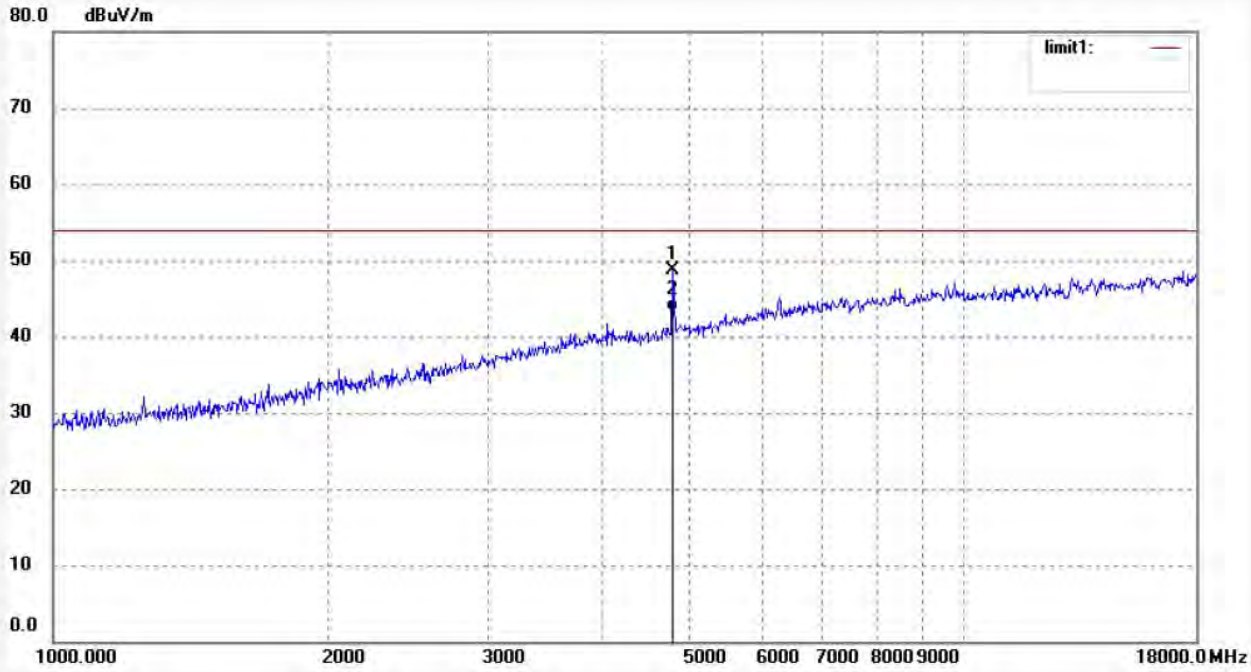
Job No.: STAR2014 #1267	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 14/08/18/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 9/48/08
EUT: Bluetooth Speaker	Engineer Signature: STAR
Mode: TX 2402MHz	Distance: 3m
Model: CR8008A-XX	
Manufacturer: TIMSEN	

Note: Report No.:ATE20141581



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4804.110	48.85	-0.19	48.66	74.00	-25.34	peak			
2	4804.110	43.47	-0.19	43.28	54.00	-10.72	AVG			

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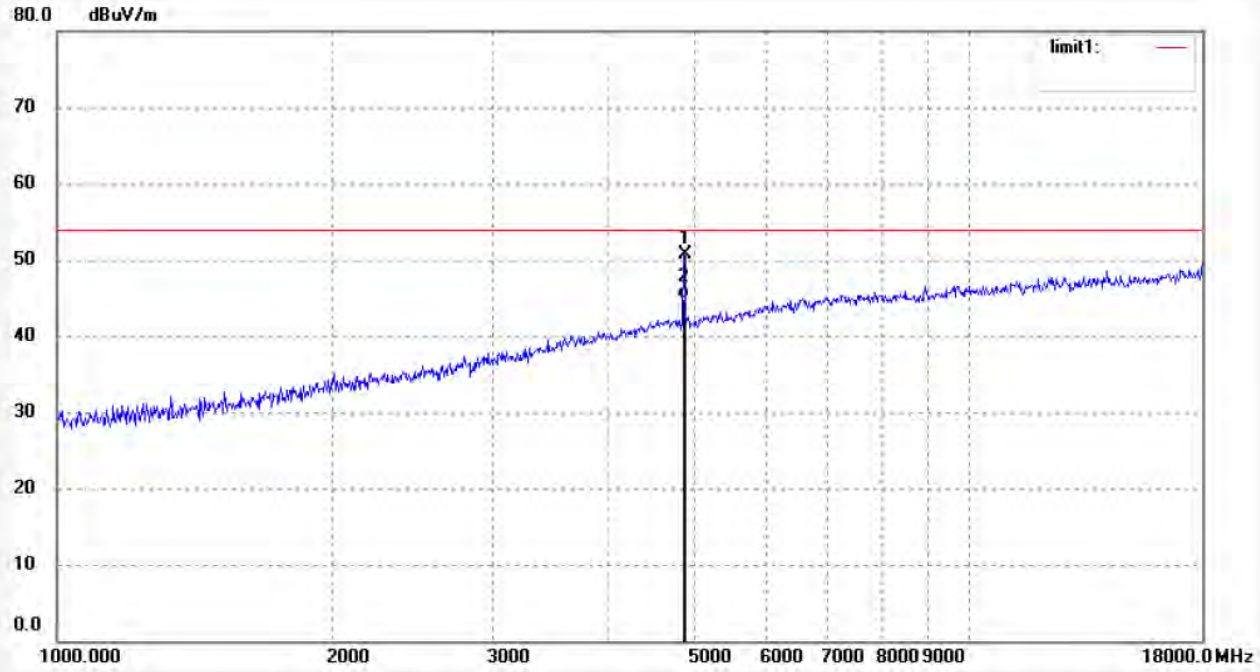
Job No.: STAR2014 #1269	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 14/08/18/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 9/57/33
EUT: Bluetooth Speaker	Engineer Signature: STAR
Mode: TX 2441MHz	Distance: 3m
Model: CR8008A-XX	
Manufacturer: TIMSEN	

Note: Report No.:ATE20141581



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4881.975	50.66	0.09	50.75	74.00	-23.25	peak			
2	4881.975	44.82	0.09	44.91	54.00	-9.09	AVG			

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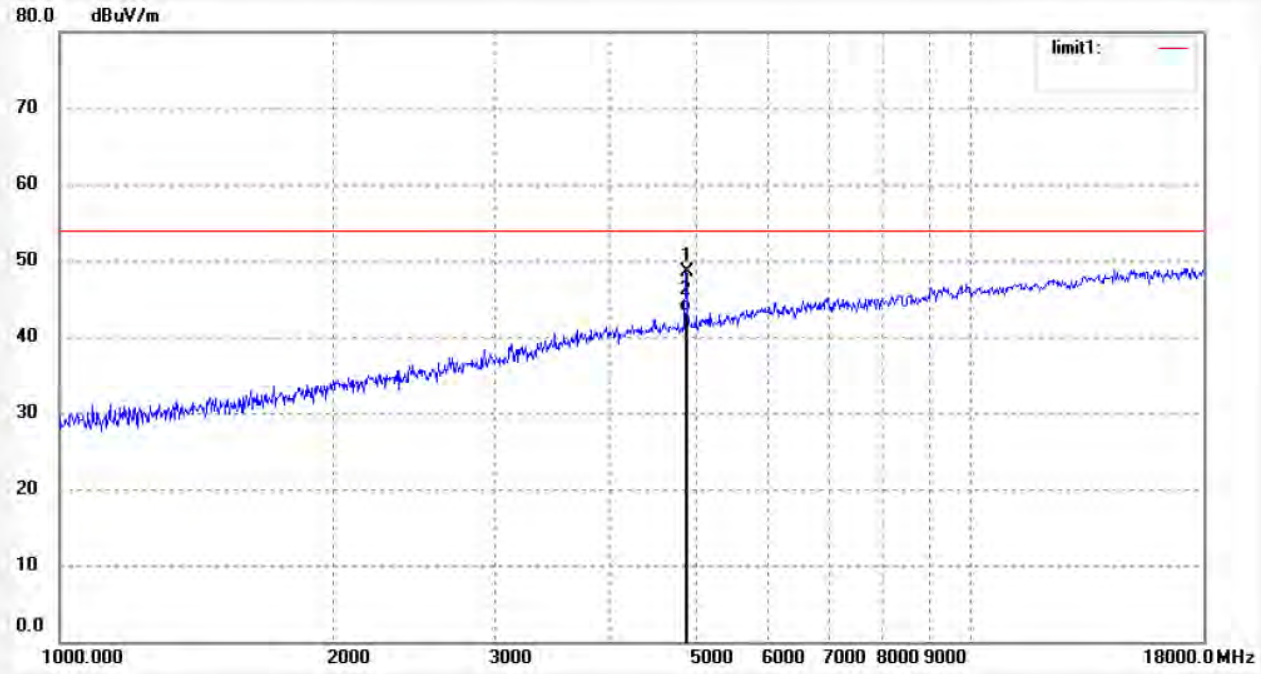
Job No.: STAR2014 #1268	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 14/08/18/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 9/52/21
EUT: Bluetooth Speaker	Engineer Signature: STAR
Mode: TX 2441MHz	Distance: 3m
Model: CR8008A-XX	
Manufacturer: TIMSEN	

Note: Report No.:ATE20141581



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4881.975	48.42	0.09	48.51	74.00	-25.49	peak			
2	4881.975	43.13	0.09	43.22	54.00	-10.78	AVG			

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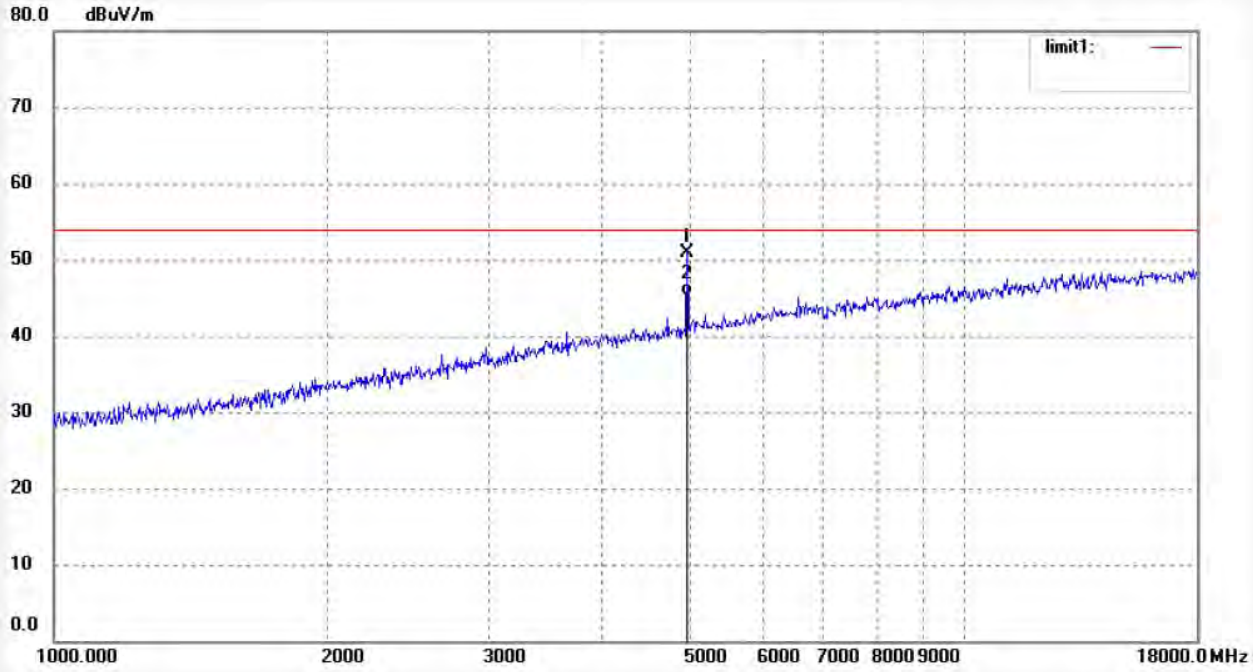
Job No.: STAR2014 #1270
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Speaker
Mode: TX 2480MHz
Model: CR8008A-XX
Manufacturer: TIMSEN

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 14/08/18/
Time: 10/03/48
Engineer Signature: STAR
Distance: 3m

Note: Report No.:ATE20141581



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4959.307	50.65	0.35	51.00	74.00	-23.00	peak			
2	4959.307	44.95	0.35	45.30	54.00	-8.70	AVG			

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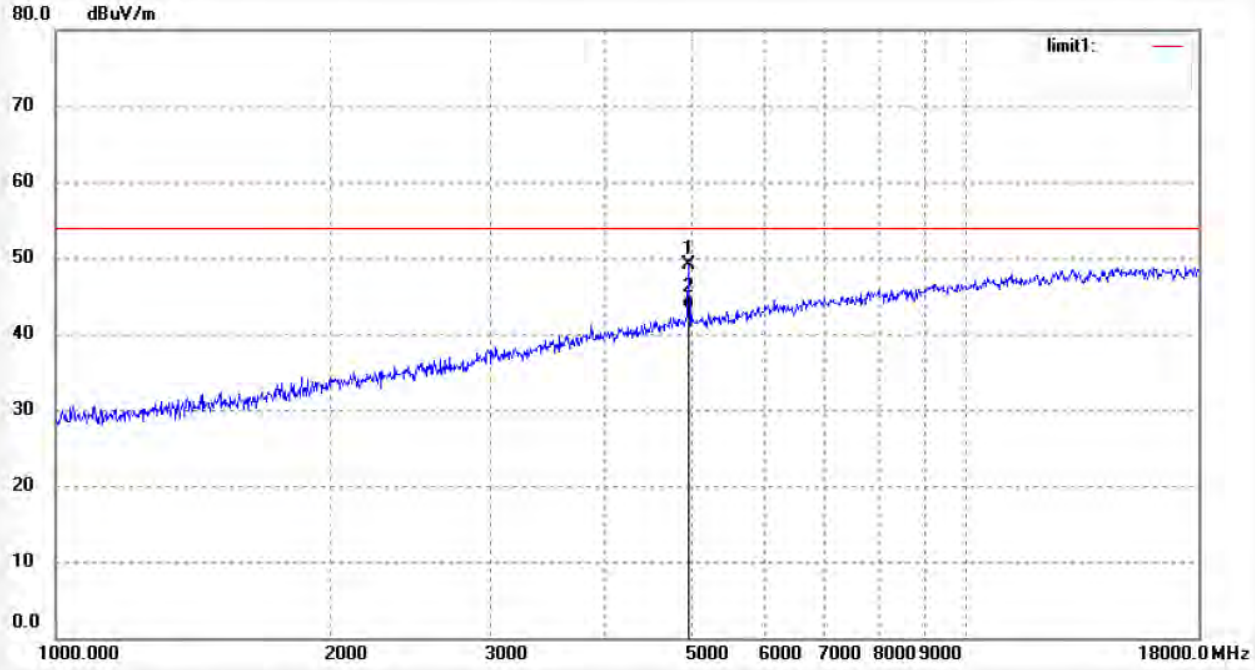
Job No.: STAR2014 #1271
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Speaker
Mode: TX 2480MHz
Model: CR8008A-XX
Manufacturer: TIMSEN

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 14/08/18/
Time: 10/08/56
Engineer Signature: STAR
Distance: 3m

Note: Report No.:ATE20141581



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4959.307	48.77	0.35	49.12	74.00	-24.88	peak			
2	4959.307	42.94	0.35	43.29	54.00	-10.71	AVG			

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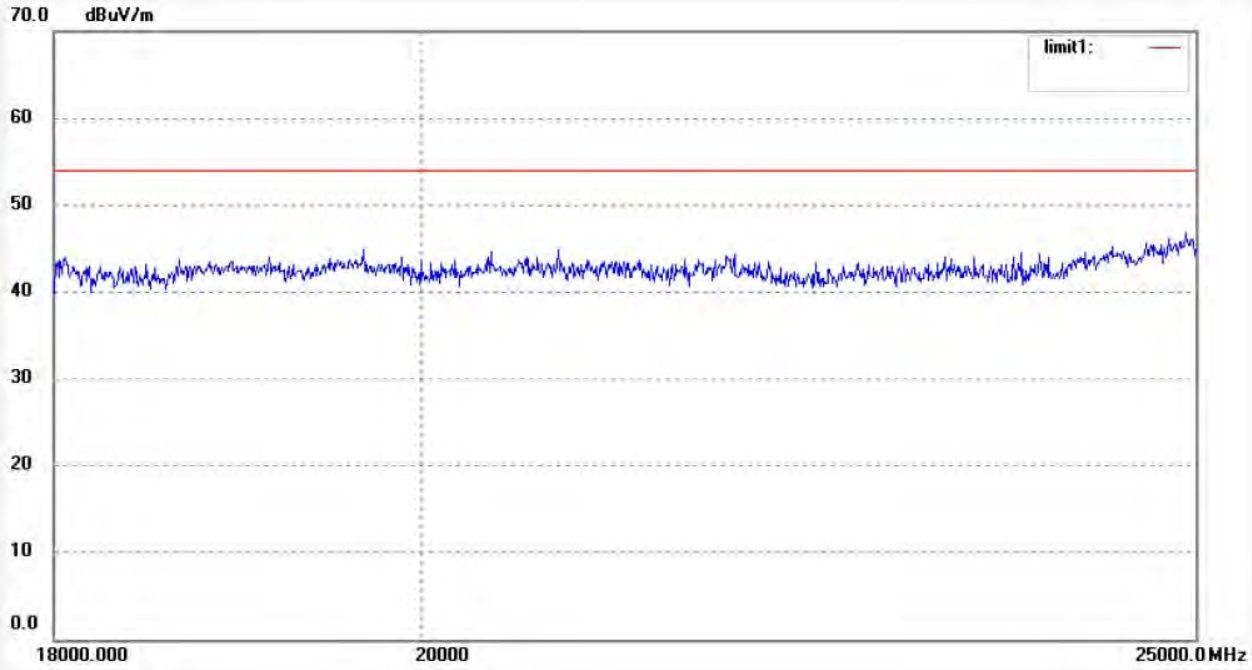
Job No.: star #887	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2014/08/18
Temp.(C)/Hum.(%) 25 C / 51 %	Time: 20:45:16
EUT: Bluetooth Speaker	Engineer Signature: Star
Mode: TX 2402MHz	Distance:
Model: CR8008A-XX	
Manufacturer: TIMSEN	

Note: Report No.:ATE20141581



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark

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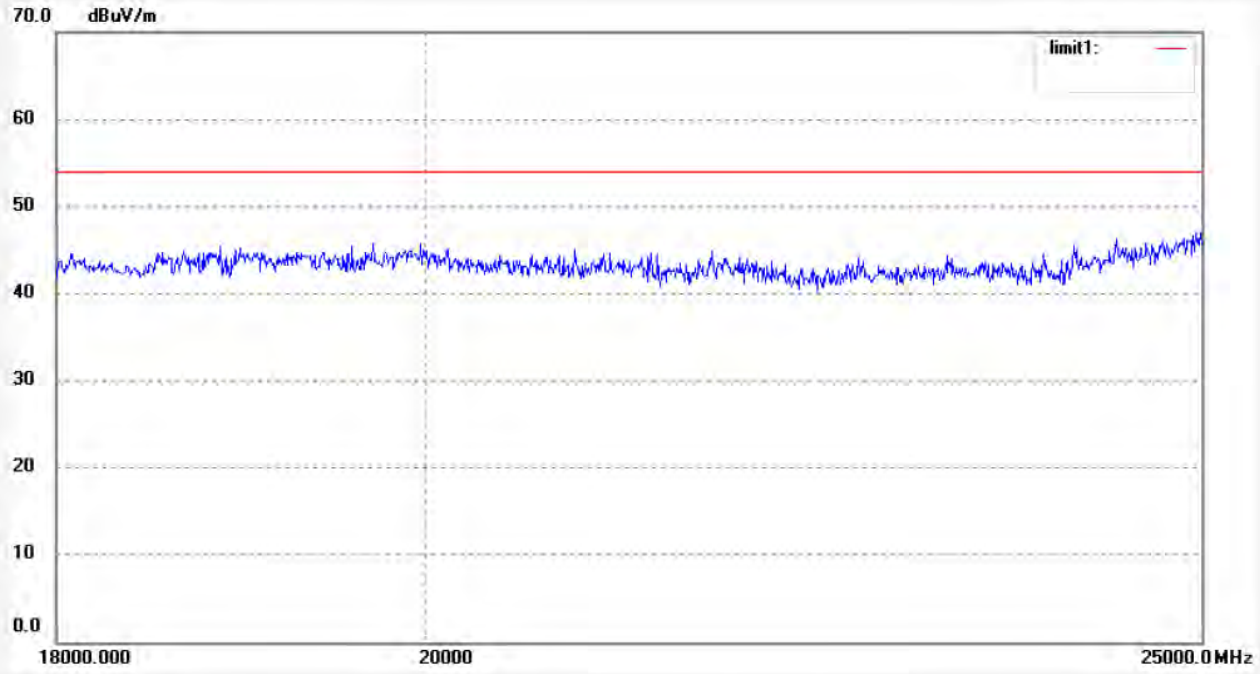
Job No.: star #886	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2014/08/18
Temp.(C)/Hum.(%) 25 C / 51 %	Time: 20:41:55
EUT: Bluetooth Speaker	Engineer Signature: Star
Mode: TX 2402MHz	Distance:
Model: CR8008A-XX	
Manufacturer: TIMSEN	

Note: Report No.:ATE20141581



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark

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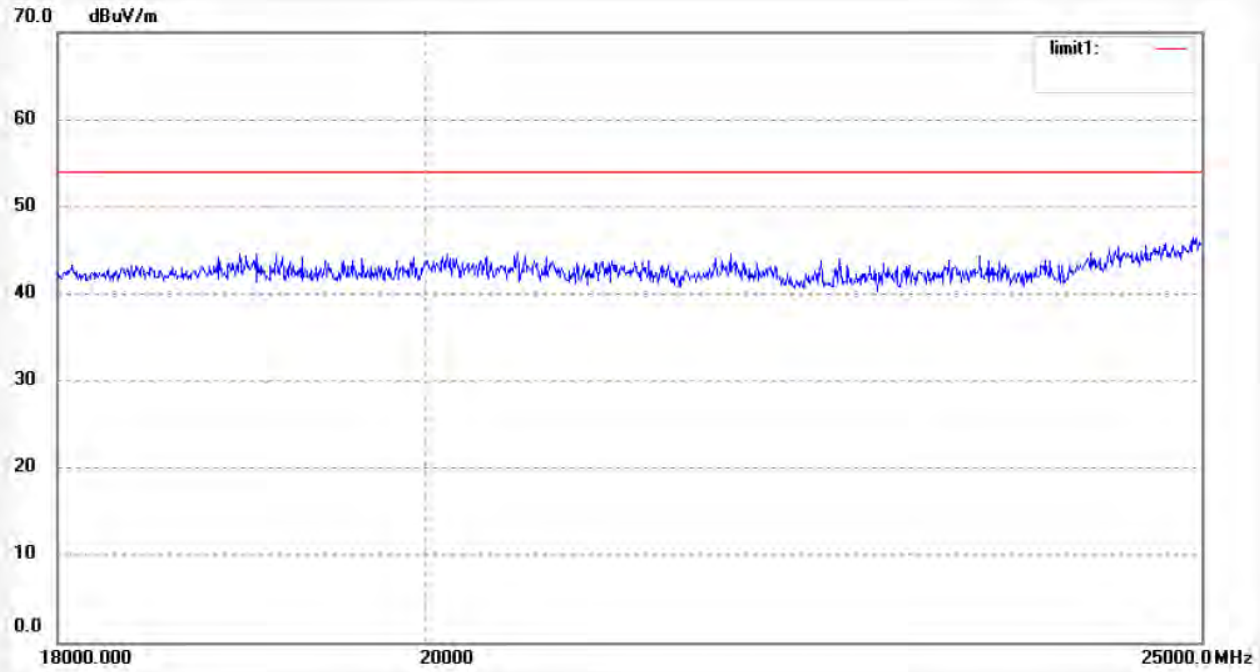
Job No.: star #888	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2014/08/18
Temp.(C)/Hum.(%) 25 C / 51 %	Time: 20:47:35
EUT: Bluetooth Speaker	Engineer Signature: Star
Mode: TX 2441MHz	Distance:
Model: CR8008A-XX	
Manufacturer: TIMSEN	

Note: Report No.:ATE20141581



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark

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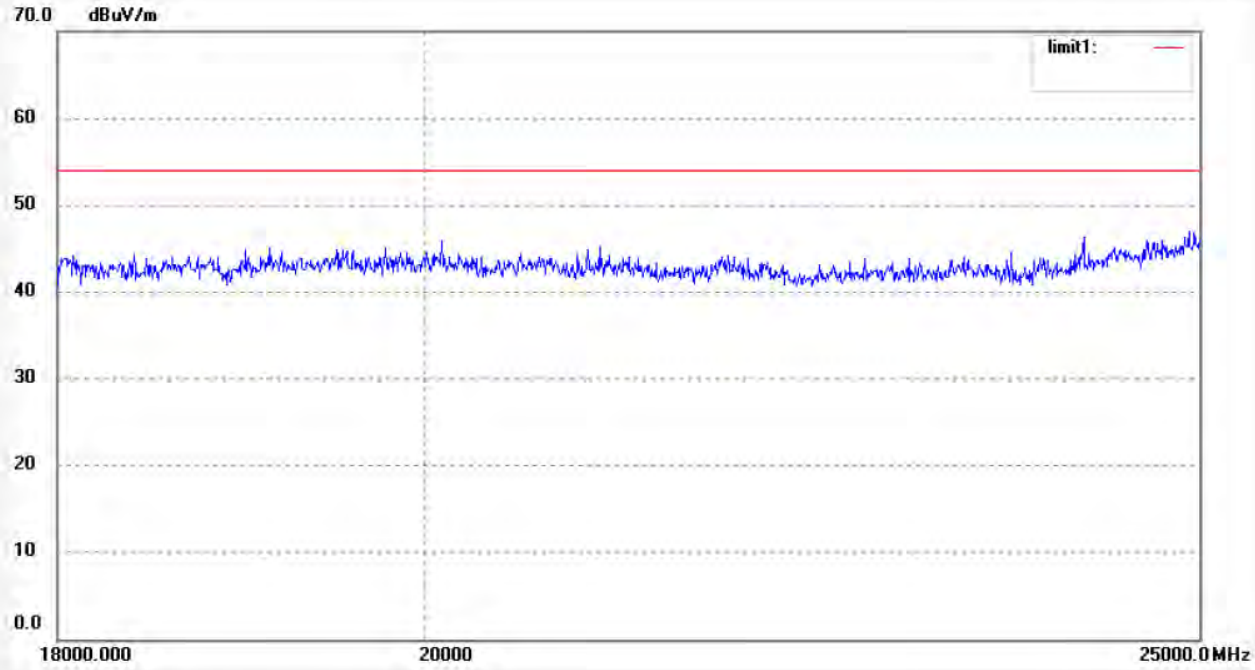
Job No.: star #889	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2014/08/18
Temp.(C)/Hum.(%) 25 C / 51 %	Time: 20:50:54
EUT: Bluetooth Speaker	Engineer Signature: Star
Mode: TX 2441MHz	Distance:
Model: CR8008A-XX	
Manufacturer: TIMSEN	

Note: Report No.:ATE20141581



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark

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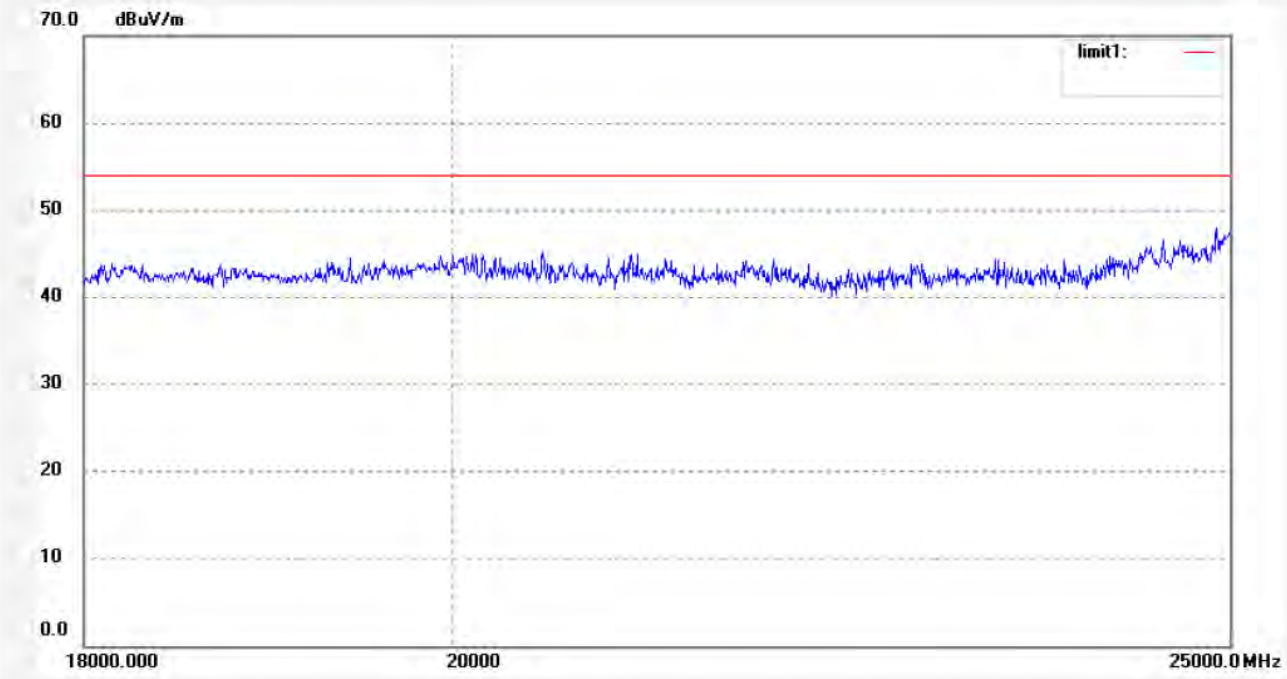
Job No.: star #891	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2014/08/18
Temp.(C)/Hum.(%) 25 C / 51 %	Time: 20:59:21
EUT: Bluetooth Speaker	Engineer Signature: Star
Mode: TX 2480MHz	Distance:
Model: CR8008A-XX	
Manufacturer: TIMSEN	

Note: Report No.:ATE20141581



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark

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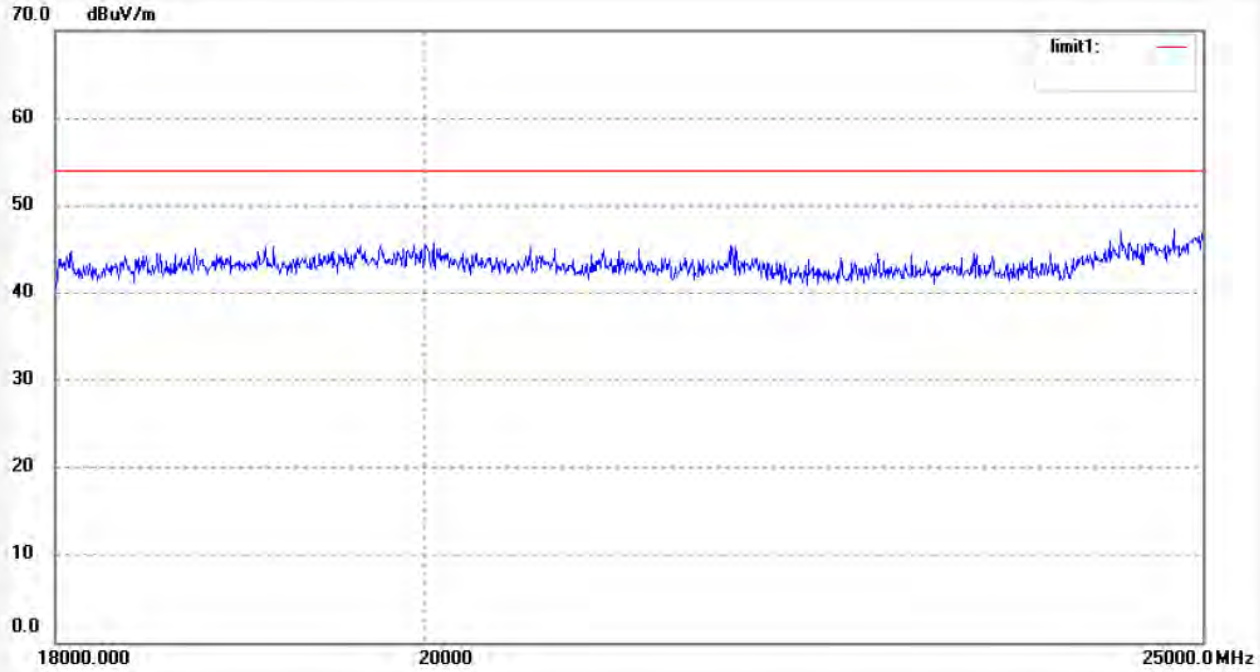
Job No.: star #890	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2014/08/18
Temp.(C)/Hum.(%) 25 C / 51 %	Time: 20:53:10
EUT: Bluetooth Speaker	Engineer Signature: Star
Mode: TX 2480MHz	Distance:
Model: CR8008A-XX	
Manufacturer: TIMSEN	

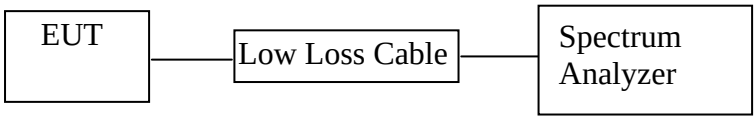
Note: Report No.:ATE20141581



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark

11.BAND EDGE COMPLIANCE TEST

11.1.Block Diagram of Test Setup



(EUT: 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.

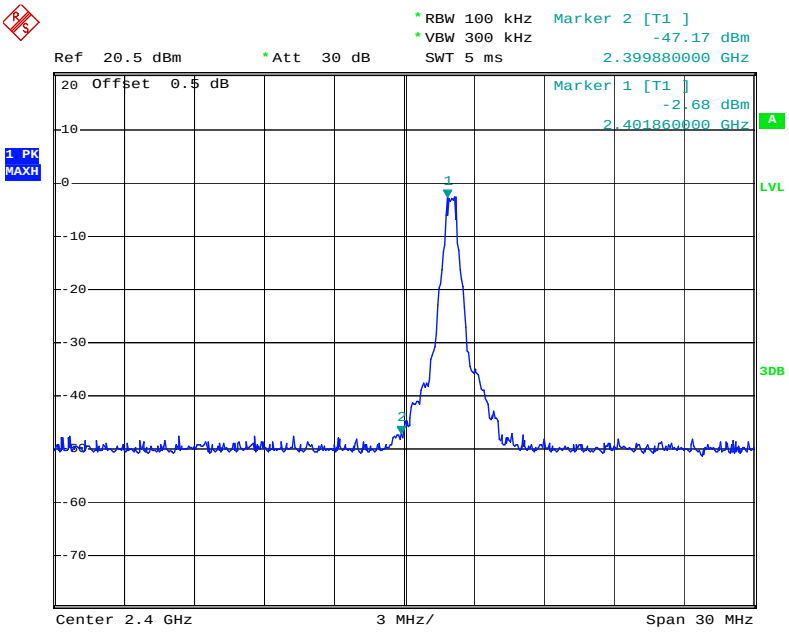
11.5.2.Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz with convenient frequency span including 100 kHz bandwidth from band edge.

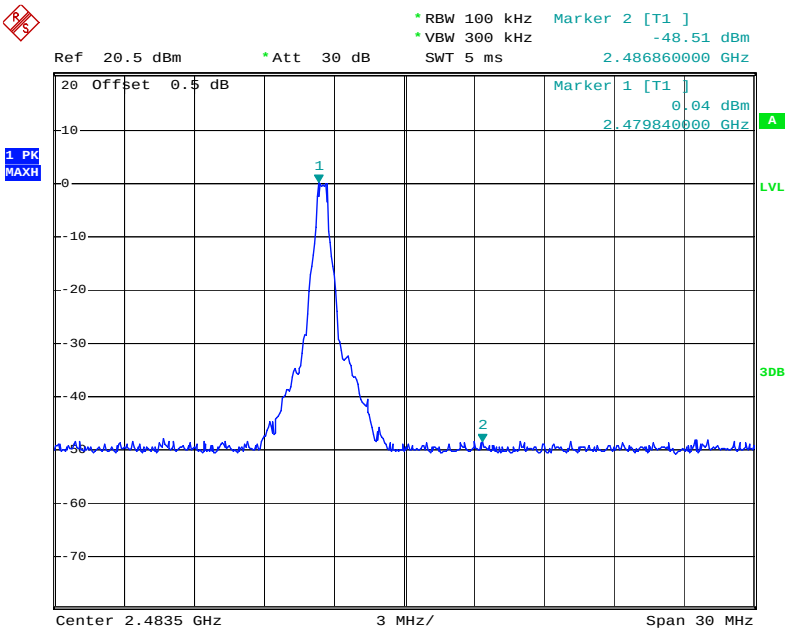
11.5.3.The band edges was measured and recorded.

11.6.Test Result

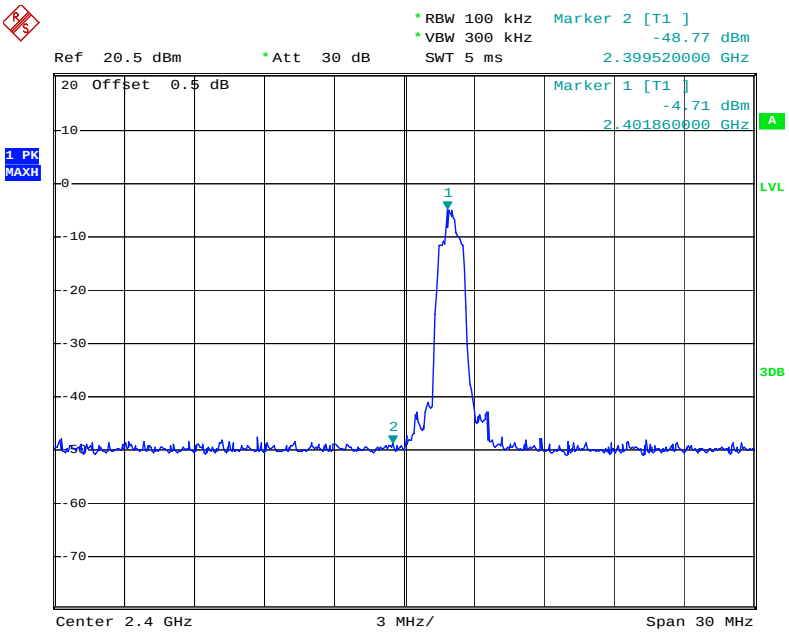
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
GFSK		
2399.880	44.49	> 20dBc
2486.860	48.55	> 20dBc
Π/4-DQPSK Mode		
2399.520	44.06	> 20dBc
2490.400	46.58	> 20dBc
8DPSK		
2398.920	43.27	> 20dBc
2485.300	46.71	> 20dBc

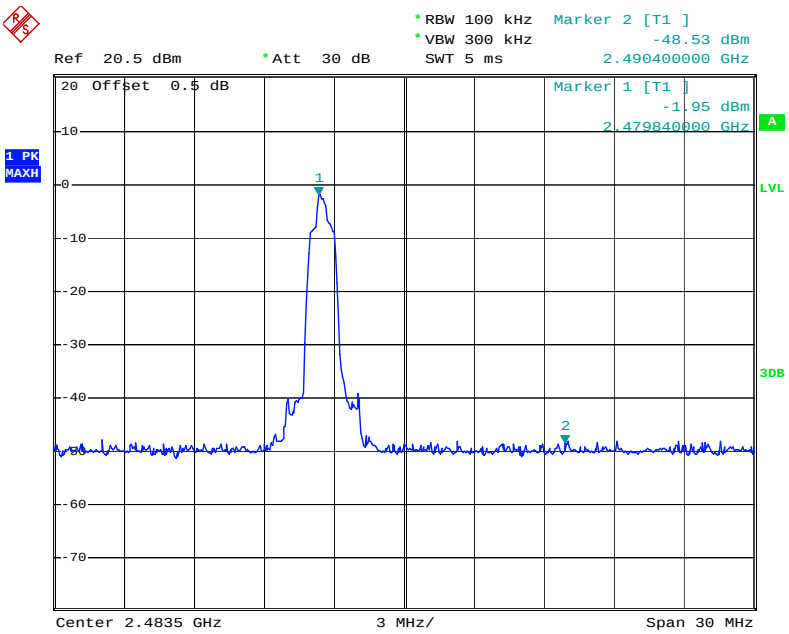
GFSK


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
Marker 2 [T1]
-47.17 dBm
2.399880000 GHz
Ref 20.5 dBm
Att 30 dB
20 Offset 0.5 dB
Marker 1 [T1]
-2.68 dBm
2.401860000 GHz
1 PK MAXH
A
LVL
3DB
Center 2.4 GHz
3 MHz/
Span 30 MHz

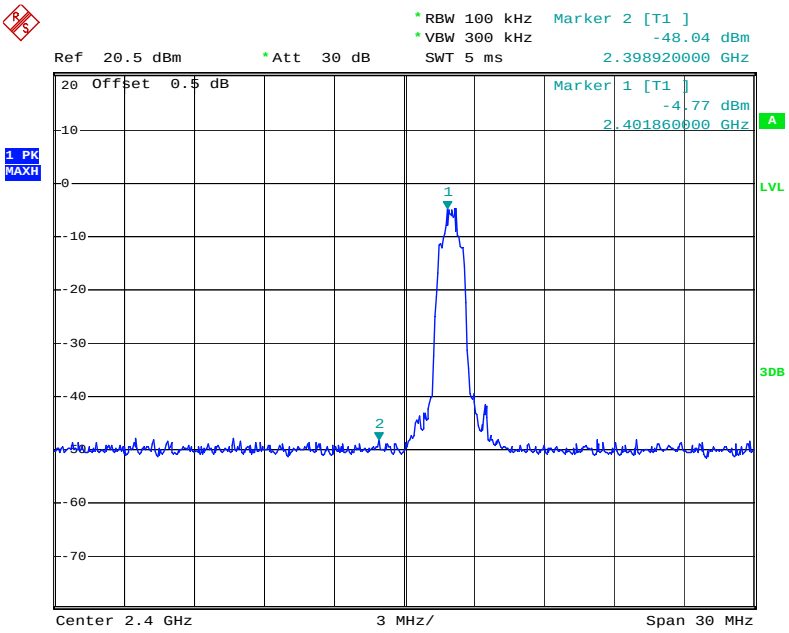

RBW 100 kHz
VBW 300 kHz
SWT 5 ms
Marker 2 [T1]
-48.51 dBm
2.486860000 GHz
Ref 20.5 dBm
Att 30 dB
20 Offset 0.5 dB
Marker 1 [T1]
0.04 dBm
2.479840000 GHz
1 PK MAXH
A
LVL
3DB
Center 2.4835 GHz
3 MHz/
Span 30 MHz

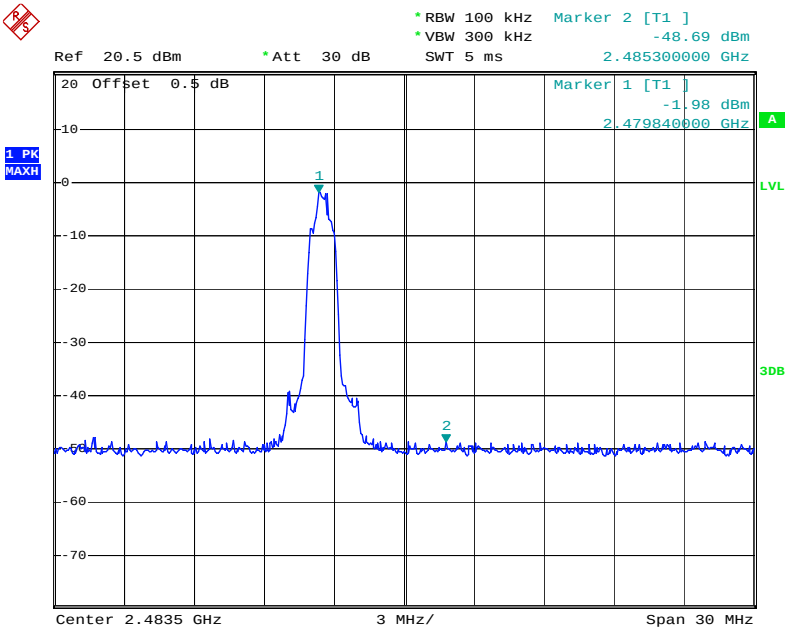
Π/4-DQPSK Mode





8DPSK


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
Marker 2 [T1]
-48.04 dBm
2.398920000 GHz
Ref 20.5 dBm
Att 30 dB
20 Offset 0.5 dB
Marker 1 [T1]
-4.77 dBm
2.401860000 GHz
1 PK
MAXH
A
LVL
3DB
Center 2.4 GHz
3 MHz/
Span 30 MHz


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
Marker 2 [T1]
-48.69 dBm
2.485300000 GHz
Ref 20.5 dBm
Att 30 dB
20 Offset 0.5 dB
Marker 1 [T1]
-1.98 dBm
2.479840000 GHz
1 PK
MAXH
A
LVL
3DB
Center 2.4835 GHz
3 MHz/
Span 30 MHz

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 mode

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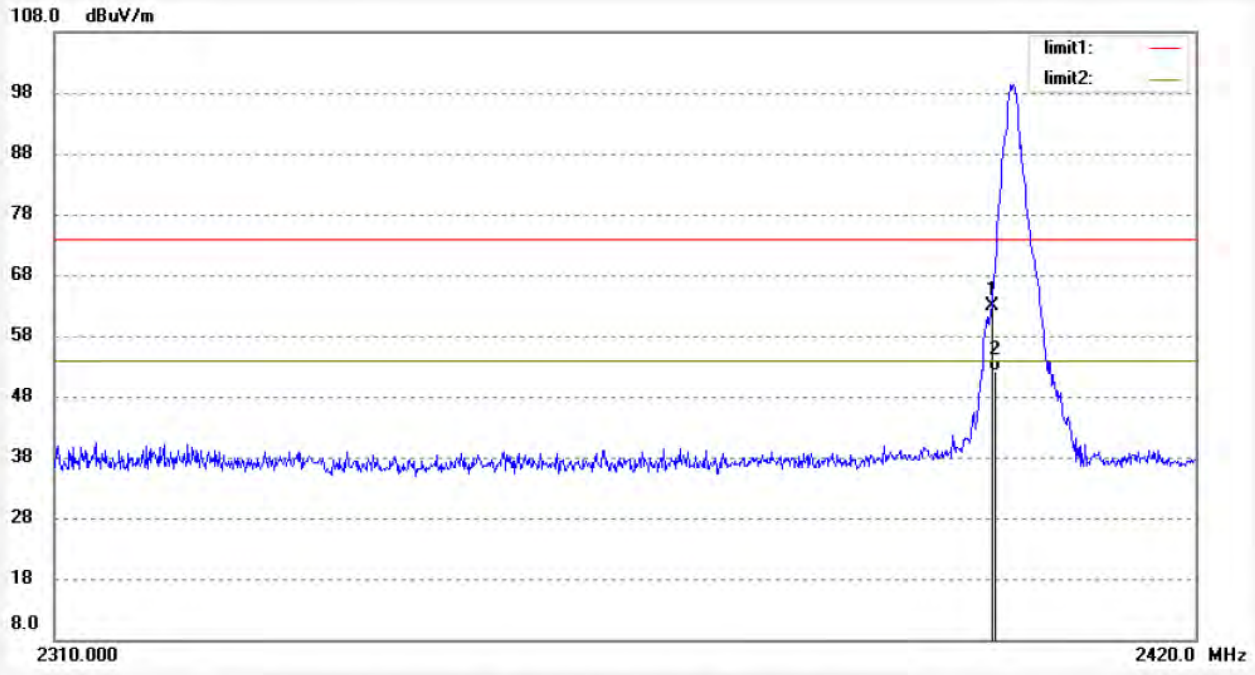
Job No.: Ricky #182	Polarization: Horizontal
Standard: FCC 15C PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 14/08/18/
Temp.(C)/Hum.(%) 23 C / 49 %	Time: 12/48/42
EUT: Bluetooth Speaker	Engineer Signature: Ricky
Mode: TX 2402MHz(GFSK)	Distance: 3m
Model: CR8008A-XX	
Manufacturer: TIMSEN	

Note: Report No.:ATE20141581



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	70.45	-7.46	62.99	74.00	-11.01	peak			
2	2400.000	59.69	-7.46	52.23	54.00	-1.77	AVG			

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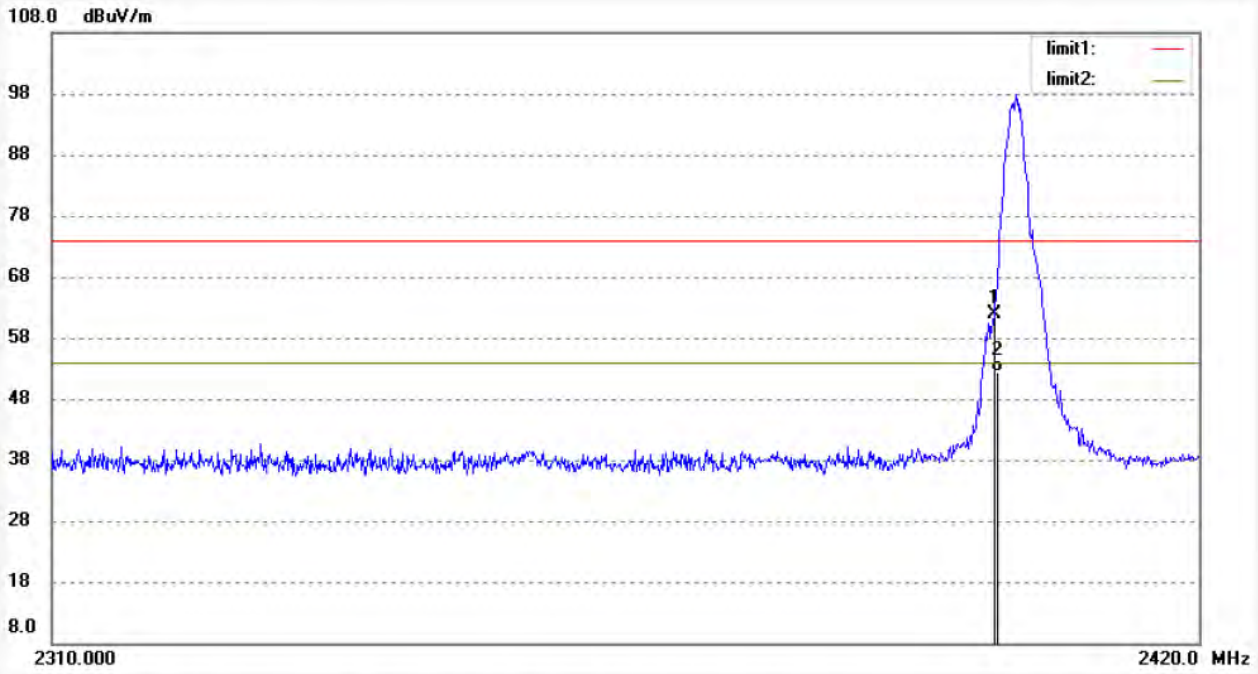
Job No.: Ricky #181	Polarization: Vertical
Standard: FCC 15C PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 14/08/18/
Temp.(C)/Hum.(%) 23 C / 49 %	Time: 12/46/01
EUT: Bluetooth Speaker	Engineer Signature: Ricky
Mode: TX 2402MHz(GFSK)	Distance: 3m
Model: CR8008A-XX	
Manufacturer: TIMSEN	

Note: Report No.:ATE20141581



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	69.22	-7.46	61.76	74.00	-12.24	peak			
2	2400.000	59.91	-7.46	52.45	54.00	-1.55	AVG			

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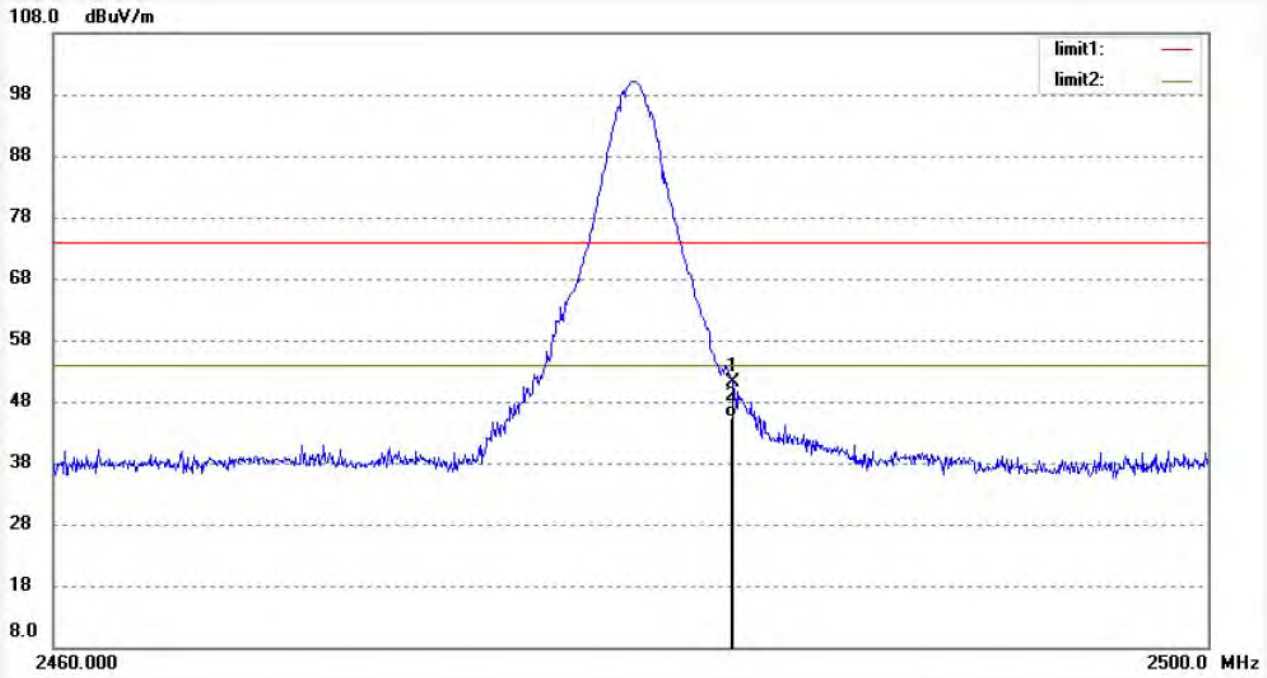
Job No.: Ricky #183
Standard: FCC 15C PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 49 %
EUT: Bluetooth Speaker
Mode: TX 2480MHz(GFSK)
Model: CR8008A-XX
Manufacturer: TIMSEN

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 14/08/18/
Time: 12/50/11
Engineer Signature: Ricky
Distance: 3m

Note: Report No.:ATE20141581



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	58.57	-7.37	51.20	74.00	-22.80	peak			
2	2483.529	52.63	-7.37	45.26	54.00	-8.74	AVG			

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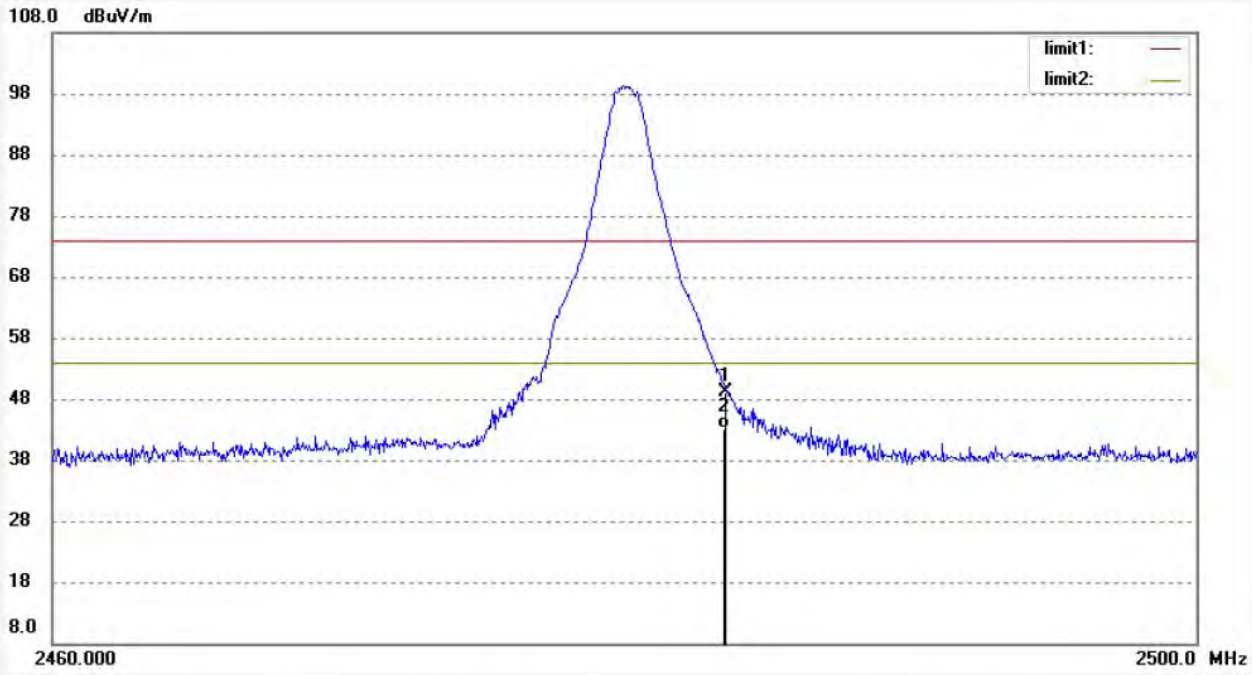
Job No.: Ricky #184
Standard: FCC 15C PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 49 %
EUT: Bluetooth Speaker
Mode: TX 2480MHz(GFSK)
Model: CR8008A-XX
Manufacturer: TIMSEN

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 14/08/18/
Time: 12/54/15
Engineer Signature: Ricky
Distance: 3m

Note: Report No.:ATE20141581



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	56.48	-7.37	49.11	74.00	-24.89	peak			
2	2483.529	50.52	-7.37	43.15	54.00	-10.85	AVG			

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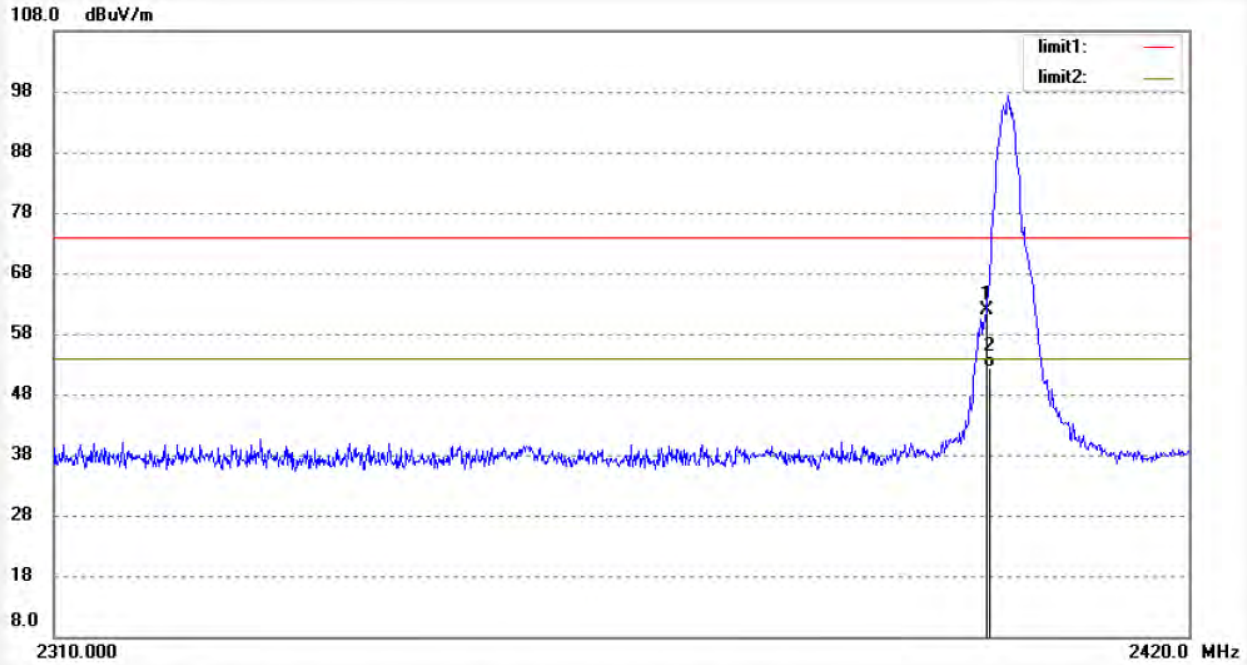
Job No.: Ricky #185
Standard: FCC 15C PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 49 %
EUT: Bluetooth Speaker
Mode: TX 2402MHz(PI/4DQPSK)
Model: CR8008A-XX
Manufacturer: TIMSEN

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 14/08/18/
Time: 12/56/01
Engineer Signature: Ricky
Distance: 3m

Note: Report No.:ATE20141581



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	69.31	-7.46	61.85	74.00	-12.15	peak			
2	2400.000	59.88	-7.46	52.42	54.00	-1.58	AVG			

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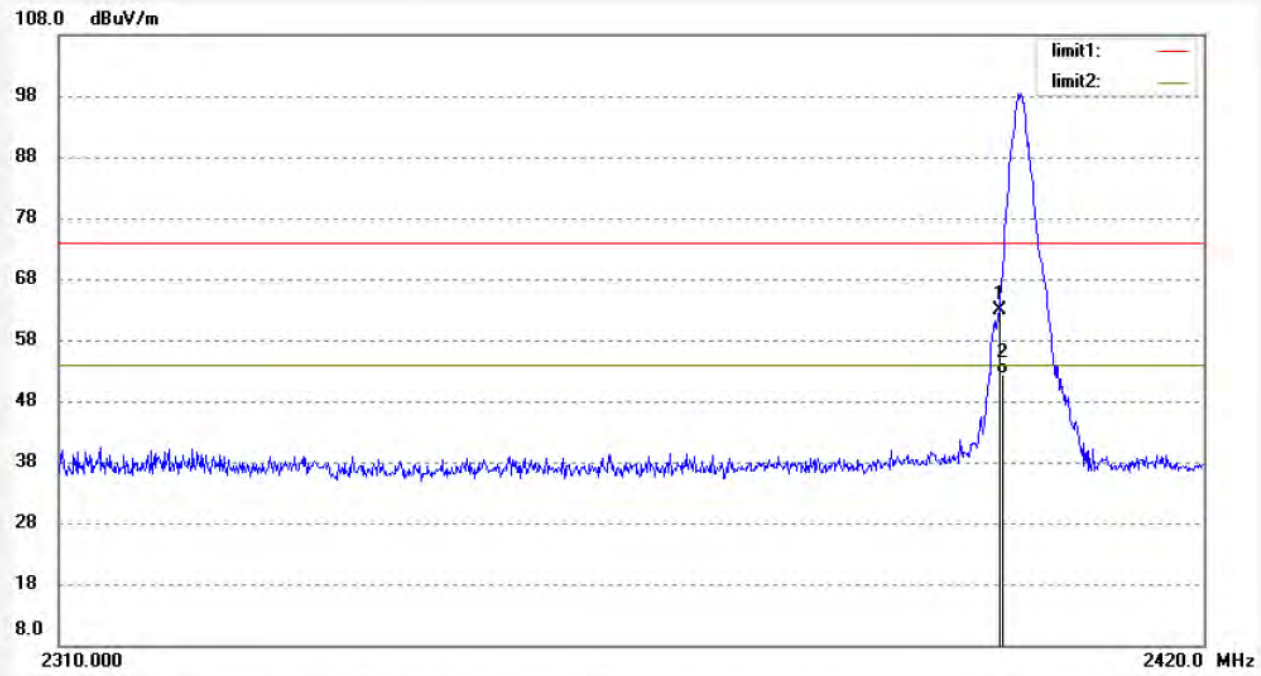
Job No.: Ricky #186
Standard: FCC 15C PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 49 %
EUT: Bluetooth Speaker
Mode: TX 2402MHz(PI/4DQPSK)
Model: CR8008A-XX
Manufacturer: TIMSEN

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 14/08/18/
Time: 12/57/18
Engineer Signature: Ricky
Distance: 3m

Note: Report No.:ATE20141581



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	70.46	-7.46	63.00	74.00	-11.00	peak			
2	2400.000	59.77	-7.46	52.31	54.00	-1.69	AVG			

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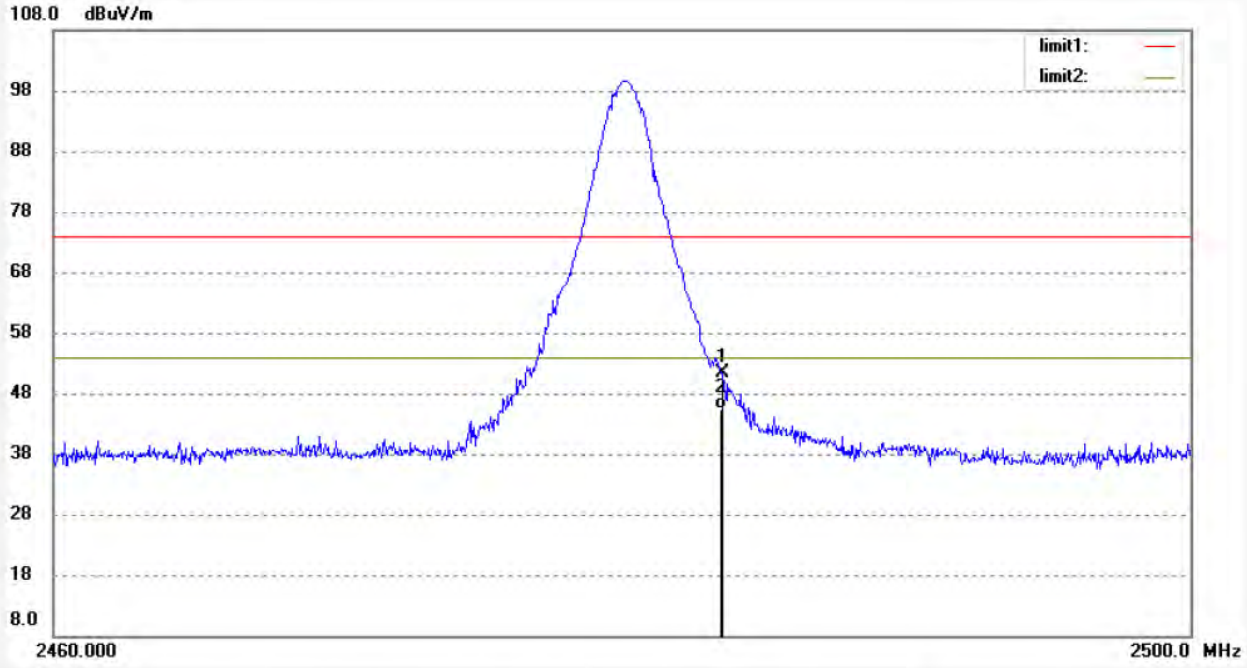
Job No.: Ricky #187	Polarization: Horizontal
Standard: FCC 15C PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 14/08/18/
Temp.(C)/Hum.(%) 23 C / 49 %	Time: 12/59/22
EUT: Bluetooth Speaker	Engineer Signature: Ricky
Mode: TX 2480MHz(PI/4DQPSK)	Distance: 3m
Model: CR8008A-XX	
Manufacturer: TIMSEN	

Note: Report No.:ATE20141581



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	58.66	-7.37	51.29	74.00	-22.71	peak			
2	2483.529	52.79	-7.37	45.42	54.00	-8.58	AVG			

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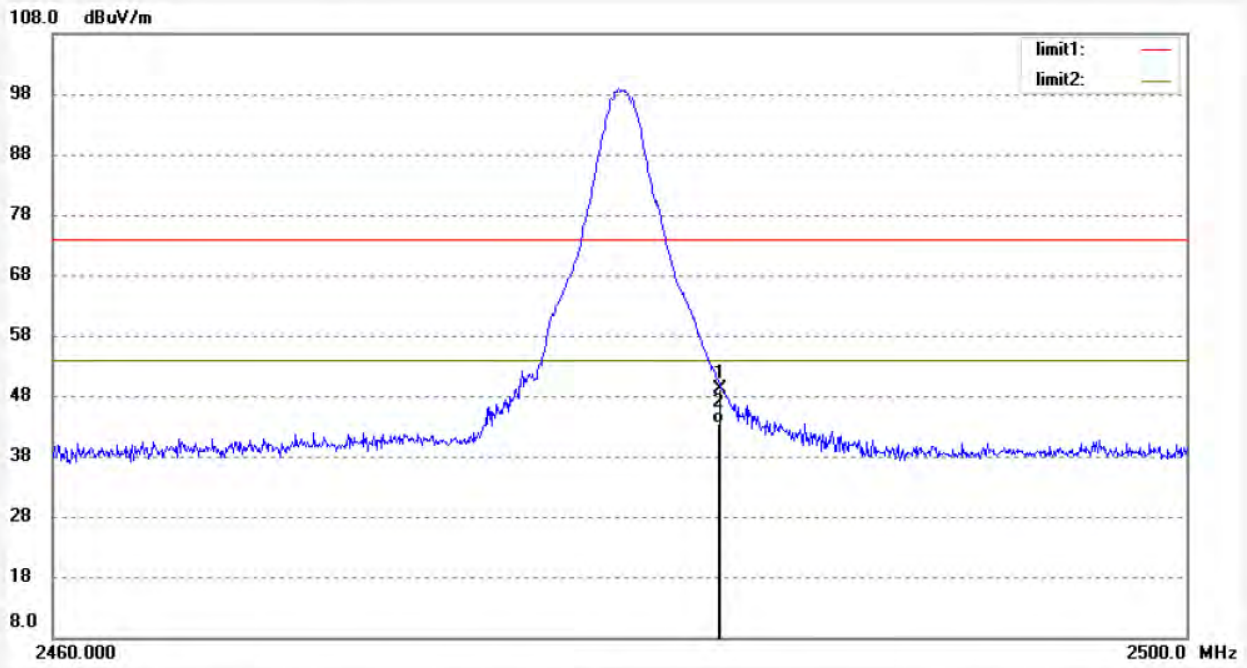
Job No.: Ricky #188
Standard: FCC 15C PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 49 %
EUT: Bluetooth Speaker
Mode: TX 2480MHz(PI/4DQPSK)
Model: CR8008A-XX
Manufacturer: TIMSEN

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 14/08/18/
Time: 13/01/20
Engineer Signature: Ricky
Distance: 3m

Note: Report No.:ATE20141581



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	56.56	-7.37	49.19	74.00	-24.81	peak			
2	2483.529	50.67	-7.37	43.30	54.00	-10.70	AVG			

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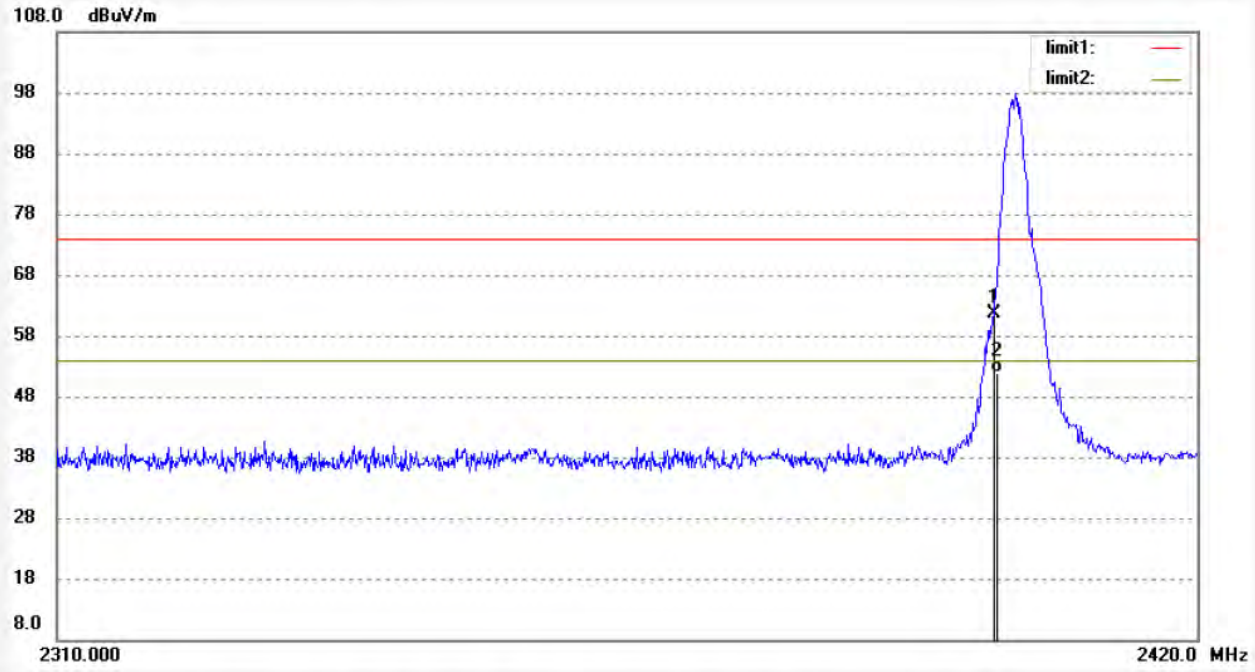
Job No.: Ricky #189	Polarization: Vertical
Standard: FCC 15C PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 14/08/18/
Temp.(C)/Hum.(%) 23 C / 49 %	Time: 13/03/35
EUT: Bluetooth Speaker	Engineer Signature: Ricky
Mode: TX 2402MHz(8QPSK)	Distance: 3m
Model: CR8008A-XX	
Manufacturer: TIMSEN	

Note: Report No.:ATE20141581



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	69.03	-7.46	61.57	74.00	-12.43	peak			
2	2400.000	59.35	-7.46	51.89	54.00	-2.11	AVG			

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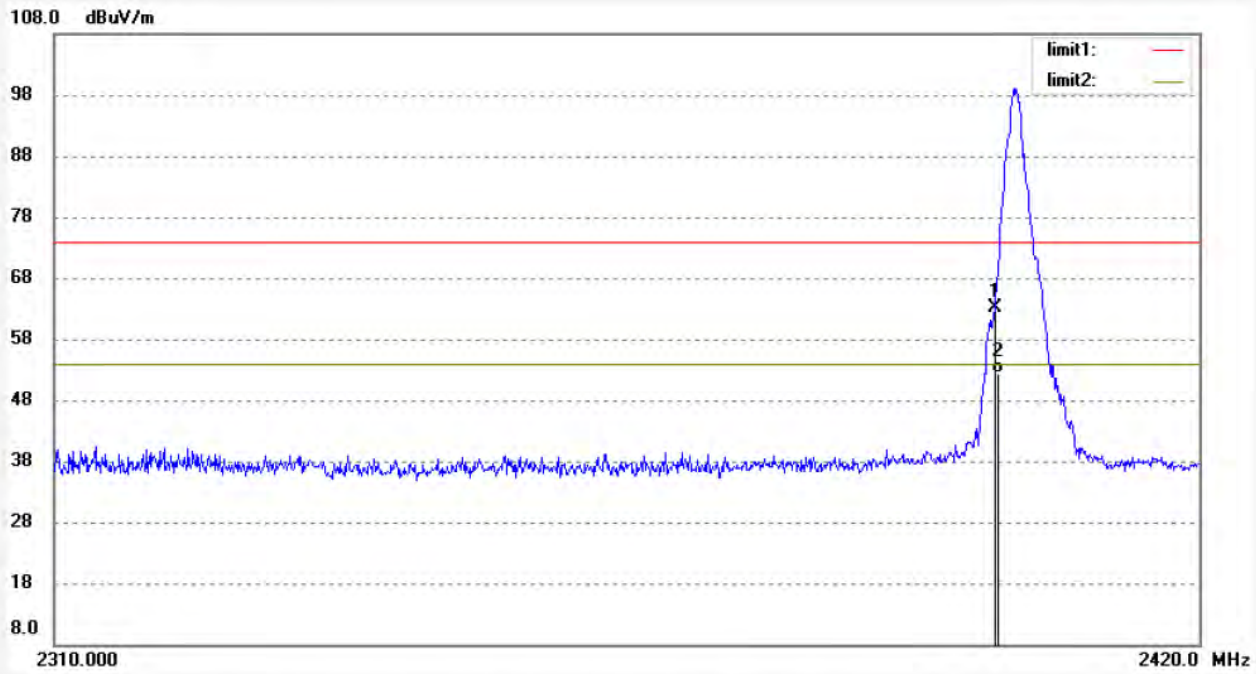
Job No.: Ricky #190
Standard: FCC 15C PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 49 %
EUT: Bluetooth Speaker
Mode: TX 2402MHz(8QPSK)
Model: CR8008A-XX
Manufacturer: TIMSEN

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 14/08/18/
Time: 13/04/57
Engineer Signature: Ricky
Distance: 3m

Note: Report No.:ATE20141581



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	70.56	-7.46	63.10	74.00	-10.90	peak			
2	2400.000	59.72	-7.46	52.26	54.00	-1.74	AVG			

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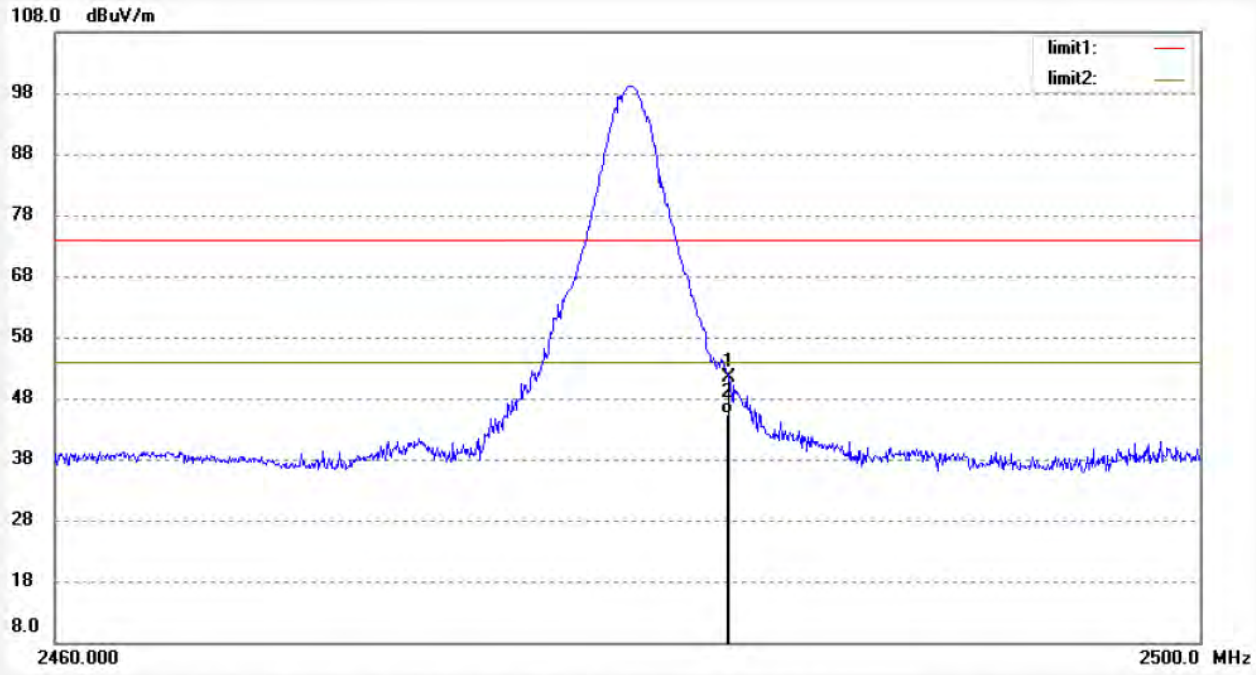
Job No.: Ricky #191
Standard: FCC 15C PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 49 %
EUT: Bluetooth Speaker
Mode: TX 2480MHz(8QPSK)
Model: CR8008A-XX
Manufacturer: TIMSEN

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 14/08/18/
Time: 13/06/19
Engineer Signature: Ricky
Distance: 3m

Note: Report No.:ATE20141581



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	58.67	-7.37	51.30	74.00	-22.70	peak			
2	2483.529	52.81	-7.37	45.44	54.00	-8.56	AVG			

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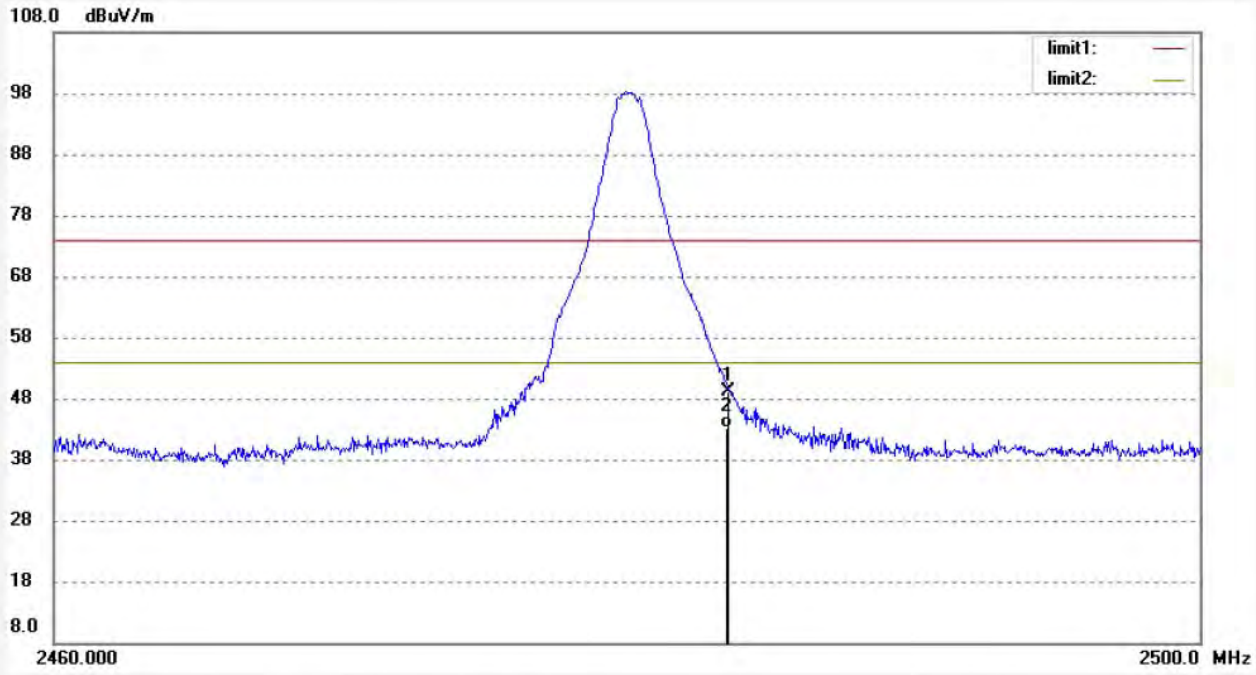
Job No.: Ricky #192	Polarization: Vertical
Standard: FCC 15C PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 14/08/18/
Temp.(C)/Hum.(%) 23 C / 49 %	Time: 13/09/55
EUT: Bluetooth Speaker	Engineer Signature: Ricky
Mode: TX 2480MHz(8QPSK)	Distance: 3m
Model: CR8008A-XX	
Manufacturer: TIMSEN	

Note: Report No.:ATE20141581



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	56.44	-7.37	49.07	74.00	-24.93	peak			
2	2483.529	50.62	-7.37	43.25	54.00	-10.75	AVG			

Hopping mode

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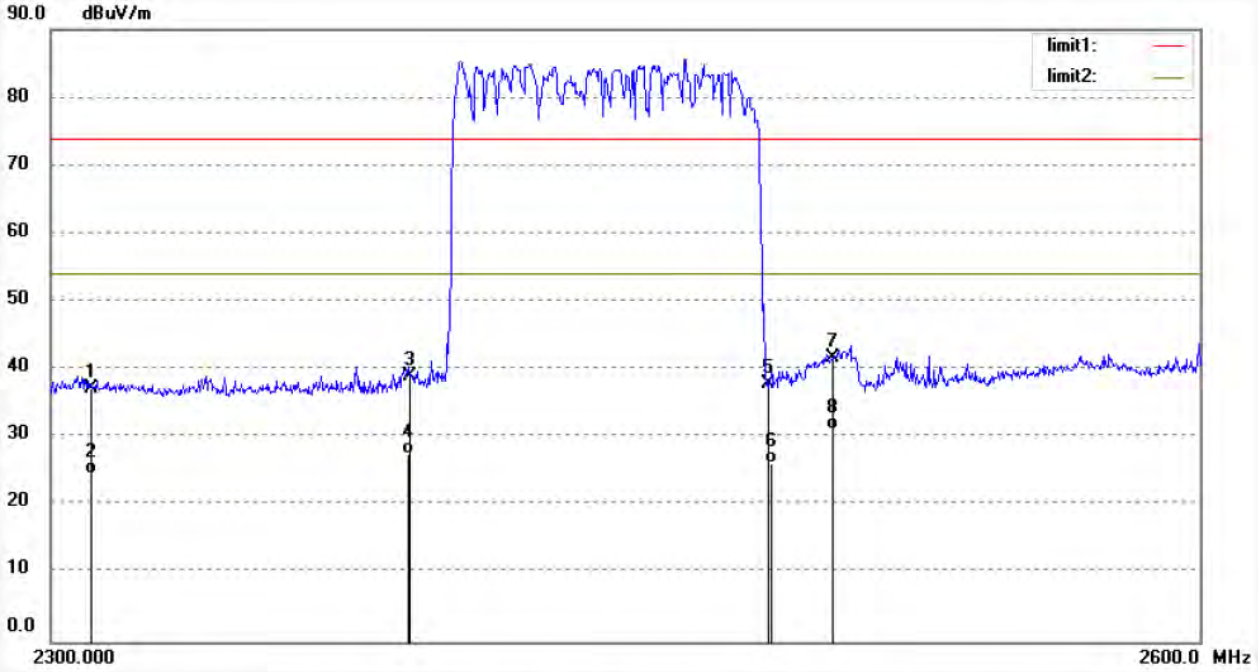
Job No.: STAR #3027
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Speaker
Mode: HOPPING (GFSK)
Model: CR8008A-XX
Manufacturer: TIMSEN

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 14/08/18/
Time: 11/22/51
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141581



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	44.18	-6.99	37.19	74.00	-36.81	peak			
2	2310.000	31.58	-6.99	24.59	54.00	-29.41	AVG			
3	2390.000	45.89	-6.78	39.11	74.00	-34.89	peak			
4	2390.000	34.25	-6.78	27.47	54.00	-26.53	AVG			
5	2483.500	44.36	-6.54	37.82	74.00	-36.18	peak			
6	2483.500	32.69	-6.54	26.15	54.00	-27.85	AVG			
7	2500.000	48.29	-6.50	41.79	74.00	-32.21	peak			
8	2500.000	37.66	-6.50	31.16	54.00	-22.84	AVG			

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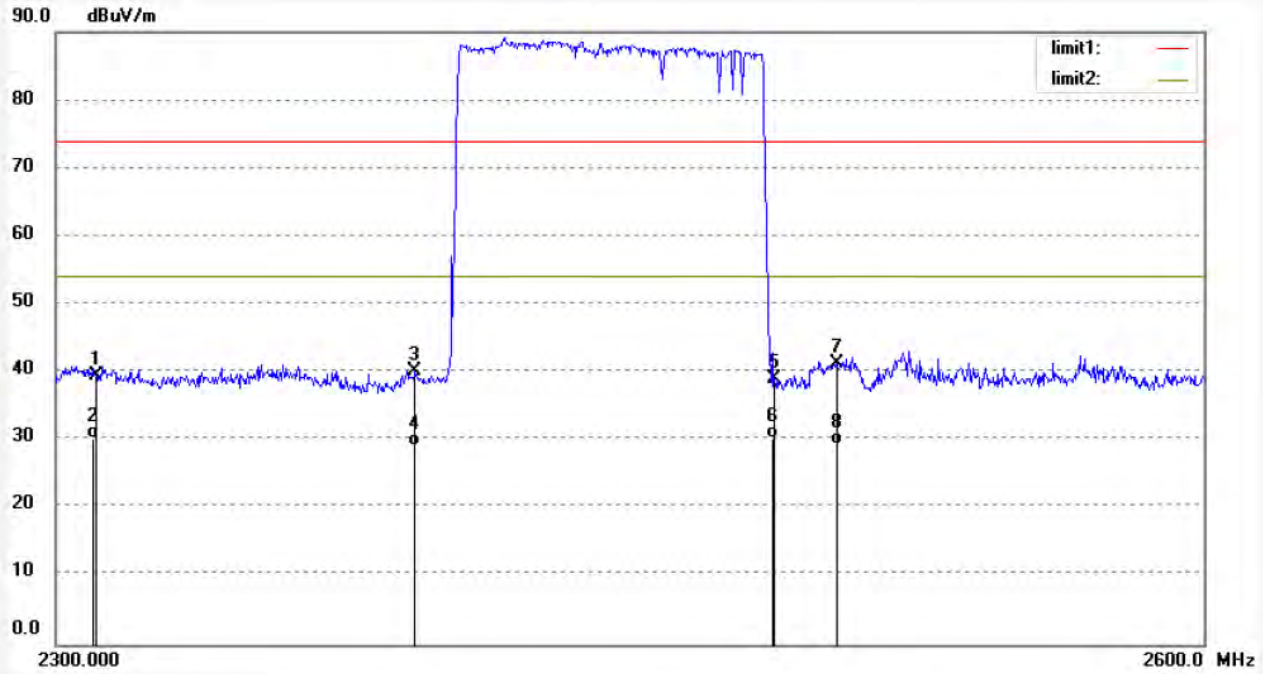
Fax:+86-0755-26503396

Job No.: STAR #3028
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Speaker
Mode: HOPPING (GFSK)
Model: CR8008A-XX
Manufacturer: TIMSEN

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 14/08/18/
Time: 11/25/42
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141581



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	46.43	-6.99	39.44	74.00	-34.56	peak			
2	2310.000	37.25	-6.99	30.26	54.00	-23.74	AVG			
3	2390.000	46.86	-6.78	40.08	74.00	-33.92	peak			
4	2390.000	35.86	-6.78	29.08	54.00	-24.92	AVG			
5	2483.500	45.50	-6.54	38.96	74.00	-35.04	peak			
6	2483.500	36.87	-6.54	30.33	54.00	-23.67	AVG			
7	2500.000	47.78	-6.50	41.28	74.00	-32.72	peak			
8	2500.000	35.88	-6.50	29.38	54.00	-24.62	AVG			

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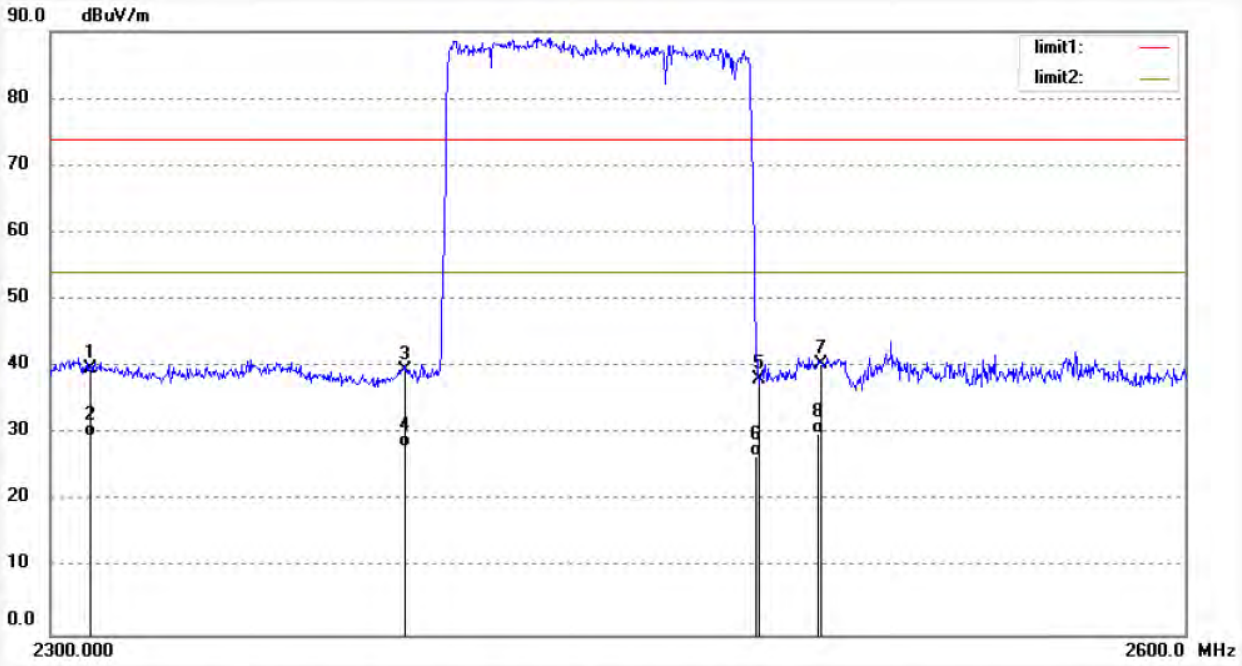
Job No.: STAR #3029
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Speaker
Mode: HOPPING (PI/4DQPSK)
Model: CR8008A-XX
Manufacturer: TIMSEN

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 14/08/18/
Time: 11/28/17
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141581



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	46.75	-6.99	39.76	74.00	-34.24	peak			
2	2310.000	36.55	-6.99	29.56	54.00	-24.44	AVG			
3	2390.000	46.28	-6.78	39.50	74.00	-34.50	peak			
4	2390.000	34.89	-6.78	28.11	54.00	-25.89	AVG			
5	2483.500	44.59	-6.54	38.05	74.00	-35.95	peak			
6	2483.500	33.24	-6.54	26.70	54.00	-27.30	AVG			
7	2500.000	46.93	-6.50	40.43	74.00	-33.57	peak			
8	2500.000	36.43	-6.50	29.93	54.00	-24.07	AVG			

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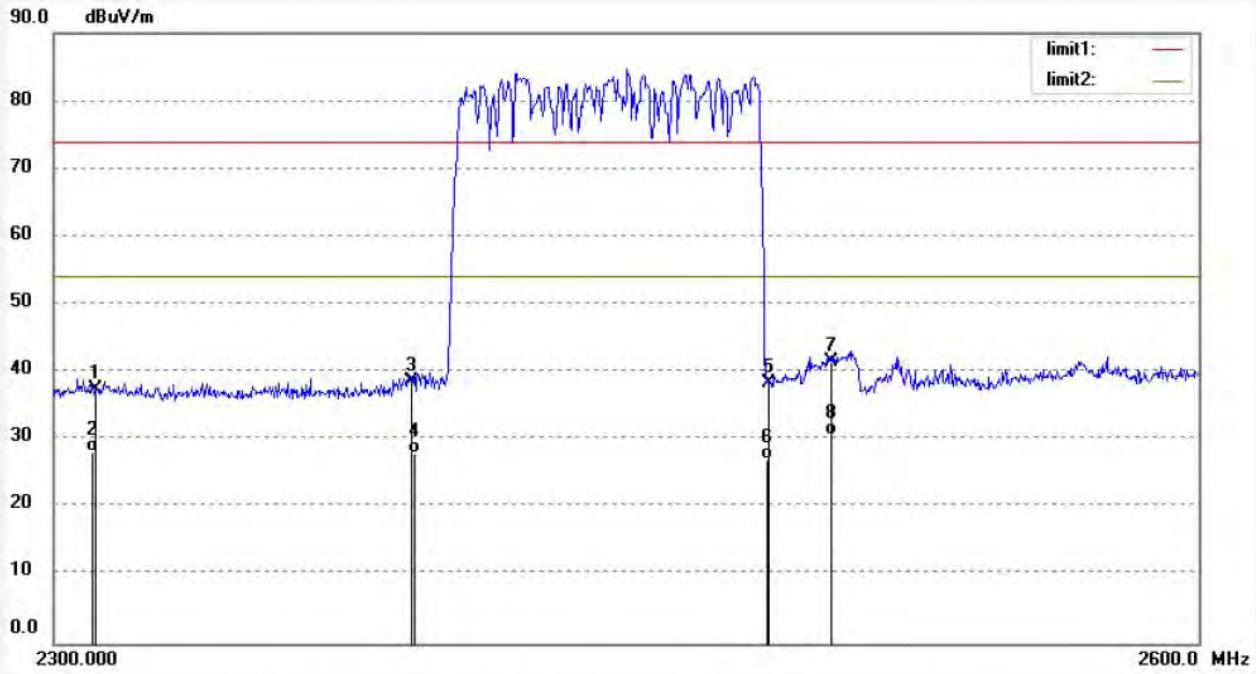
Job No.: STAR #3030
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Speaker
Mode: HOPPING (PI/4DQPSK)
Model: CR8008A-XX
Manufacturer: TIMSEN

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 14/08/18/
Time: 11/31/16
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141581



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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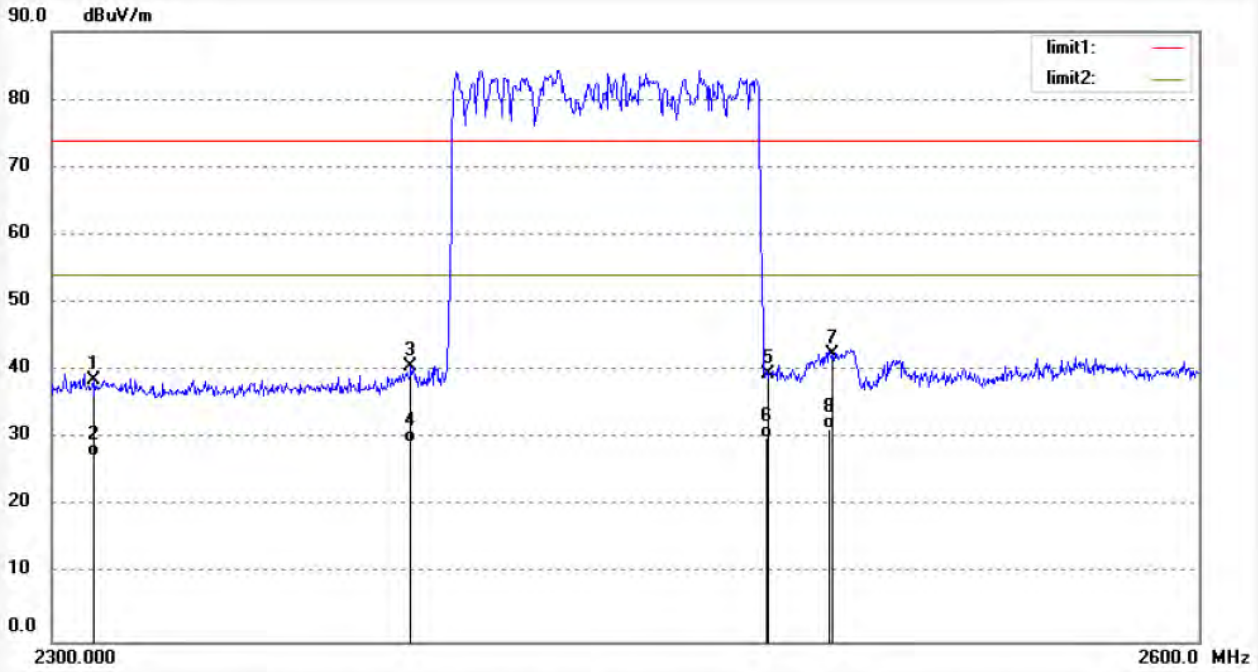
Job No.: STAR #3031
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Speaker
Mode: HOPPING (8QPSK)
Model: CR8008A-XX
Manufacturer: TIMSEN

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 14/08/18/
Time: 11/36/34
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141581



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			

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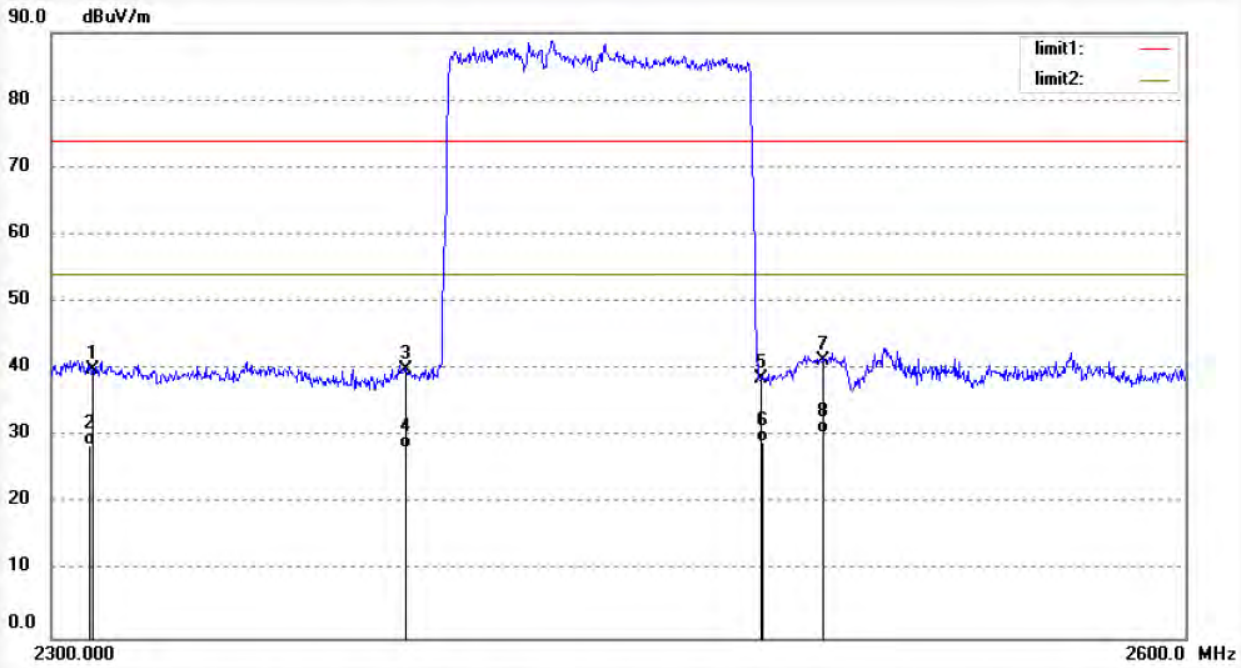
Job No.: STAR #3032
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Speaker
Mode: HOPPING (8QPSK)
Model: CR8008A-XX
Manufacturer: TIMSEN

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 14/08/18/
Time: 11/39/37
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20141581

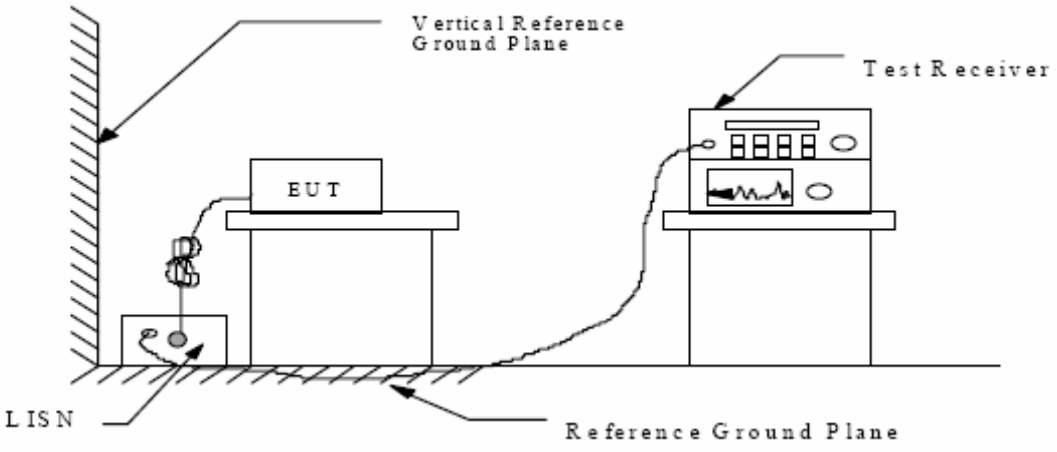


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2310.000	46.88	-6.99	39.89	74.00	-34.11	peak			
2	2310.000	35.60	-6.99	28.61	54.00	-25.39	AVG			
3	2390.000	46.74	-6.78	39.96	74.00	-34.04	peak			
4	2390.000	35.10	-6.78	28.32	54.00	-25.68	AVG			
5	2483.500	45.21	-6.54	38.67	74.00	-35.33	peak			
6	2483.500	35.66	-6.54	29.12	54.00	-24.88	AVG			
7	2500.000	47.76	-6.50	41.26	74.00	-32.74	peak			
8	2500.000	36.91	-6.50	30.41	54.00	-23.59	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. Shielding Room Test Setup Diagram



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 Test 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

PASS.

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

Test mode : BT Operation

MEASUREMENT RESULT: "QWW02_fin"

8/15/2014 1:51PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.159256	49.60	10.5	66	15.9	QP	L1	GND
0.223595	48.20	10.6	63	14.5	QP	L1	GND
0.326712	45.00	10.6	60	14.5	QP	L1	GND

MEASUREMENT RESULT: "QWW02_fin2"

8/15/2014 1:51PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.159256	19.50	10.5	56	36.0	AV	L1	GND
0.222704	17.60	10.6	53	35.1	AV	L1	GND
0.311430	16.00	10.6	50	33.9	AV	L1	GND

MEASUREMENT RESULT: "QWW01_fin"

8/15/2014 1:48PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	49.10	10.5	66	16.9	QP	N	GND
0.271903	44.80	10.6	61	16.3	QP	N	GND
0.374207	41.70	10.7	58	16.7	QP	N	GND

MEASUREMENT RESULT: "QWW01_fin2"

8/15/2014 1:48PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.151202	18.20	10.5	56	37.7	AV	N	GND
0.229932	16.60	10.6	53	35.9	AV	N	GND
0.374207	12.90	10.7	48	35.5	AV	N	GND

Emissions attenuated more than 20 dB below the permissible value are not reported.

The spectral diagrams are attached as below.

ACCURATE TECHNOLOGY CO.,LTD

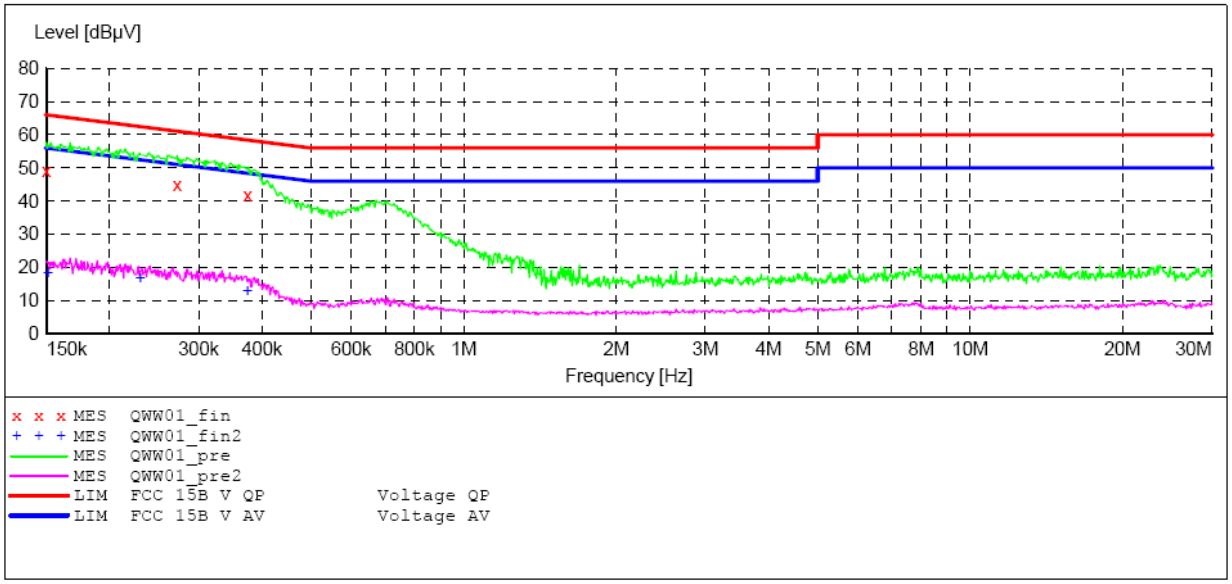
CONDUCTED EMISSION STANDARD FCC PART 15

EUT: Bluetooth Speaker M/N:CR8008A-XX
Manufacturer: TIMSEN
Operating Condition: BT Communicating
Test Site: 1#Shielding Room
Operator: star
Test Specification: N 120V/60Hz
Comment: Report No.:ATE20141581
Start of Test: 8/15/2014 / 1:45:34PM

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

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak Average	1.0 s	9 kHz	NSLK8126 2008



MEASUREMENT RESULT: "QWW01_fin"

8/15/2014 1:48PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	49.10	10.5	66	16.9	QP	N	GND
0.271903	44.80	10.6	61	16.3	QP	N	GND
0.374207	41.70	10.7	58	16.7	QP	N	GND

MEASUREMENT RESULT: "QWW01_fin2"

8/15/2014 1:48PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.151202	18.20	10.5	56	37.7	AV	N	GND
0.229932	16.60	10.6	53	35.9	AV	N	GND
0.374207	12.90	10.7	48	35.5	AV	N	GND

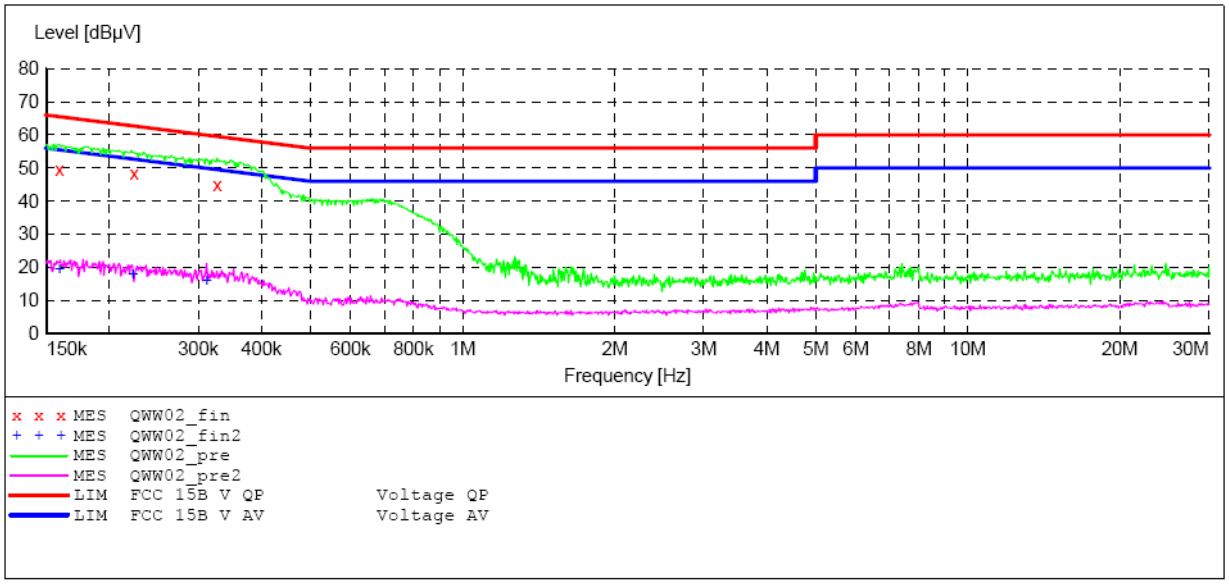
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15

```
EUT:                    Bluetooth Speaker    M/N:CR8008A-XX
Manufacturer:           TIMSEN
Operating Condition:    BT Communicating
Test Site:              1#Shielding Room
Operator:               star
Test Specification:     L 120V/60Hz
Comment:                Report No.:ATE20141581
Start of Test:          8/15/2014 / 1:49:06PM
```

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   4.5 kHz   QuasiPeak 1.0 s     9 kHz    NSLK8126 2008
                                  Average
```



MEASUREMENT RESULT: "QWW02_fin"

```
8/15/2014  1:51PM
   Frequency     Level  Transd  Limit  Margin  Detector  Line   PE
         MHz      dBµV      dB   dBµV      dB

    0.159256     49.60    10.5     66    15.9  QP        L1     GND
    0.223595     48.20    10.6     63    14.5  QP        L1     GND
    0.326712     45.00    10.6     60    14.5  QP        L1     GND
```

MEASUREMENT RESULT: "QWW02_fin2"

```
8/15/2014  1:51PM
   Frequency     Level  Transd  Limit  Margin  Detector  Line   PE
         MHz      dBµV      dB   dBµV      dB

    0.159256     19.50    10.5     56    36.0  AV        L1     GND
    0.222704     17.60    10.6     53    35.1  AV        L1     GND
    0.311430     16.00    10.6     50    33.9  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 antenna, no consideration of replacement. Therefore, the equipment complies with the antenna requirement of Section 15.203.