

APPLICATION CERTIFICATION  
On Behalf of  
Shenzhen Jonter Digital Co.,LTD

Bluetooth Speaker  
Model No.: D-01, MI-SPBS1, BT 5, D-01A,  
D-01B, D-01C,D-01D, D-01E, D-01F

FCC ID: 2AB9SD-01

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### Test Report Certification


Applicant : Shenzhen Jonter Digital Co.,LTD  
 Manufacturer : Shenzhen Jonter Digital Co.,LTD  
 EUT Description : Bluetooth Speaker  
 (A) MODEL NO.: D-01, MI-SPBS1, BT 5, D-01A, D-01B, D-01C,D-01D, D-01E, D-01F  
 (B) Trade Name.: JONTER, MERKURY, BLAUPUNKT  
 (C) POWER SUPPLY: DC 3.7V (Battery) & DC 5V(USB Port)  
 (D) 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 : May 30-June 06, 2014

Prepared by :   
 (Engineer)

Approved & Authorized Signer :   
 (Manager)

# 1. GENERAL INFORMATION

## 1.1. Description of Device (EUT)

EUT	:	Bluetooth Speaker
Model Number	:	D-01, MI-SPBS1, BT 5, D-01A, D-01B, D-01C, D-01D, D-01E, D-01F (Note: These samples are same except for the model number are different. So we prepare the D-01 for test.)
Frequency Band	:	2402MHz-2480MHz
Number of Channels	:	79
Modulation type	:	GFSK, $\Pi/4$ -DQPSK, 8DPSK
Antenna Gain	:	1.5dBi
Antenna type	:	PCB Antenna
Power Supply	:	DC 3.7V(Battery)&DC 5V(USB Port)
Applicant	:	Shenzhen Jonter Digital Co.,LTD
Address	:	3F/4B, Hezhou Jinfo Industrial Park, Hezhou, Xixiang Street, Baoan District, Shenzhen, Guangdong
Manufacturer	:	Shenzhen Jonter Digital Co.,LTD
Address	:	3F/4B, Hezhou Jinfo Industrial Park, Hezhou, Xixiang Street, Baoan District, Shenzhen, Guangdong
Date of sample received	:	May 30, 2014
Date of Test	:	May 30-June 06, 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 = 3.08dB, k=2  
(9kHz-30MHz)

Radiated emission expanded uncertainty = 4.42dB, k=2  
(30MHz-1000MHz)

Radiated emission expanded uncertainty = 4.06dB, k=2  
(Above 1GHz)

## 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	CBLU118354 0-01	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: Bluetooth Speaker)

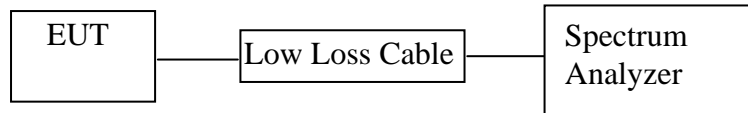


#### 4. TEST PROCEDURES AND RESULTS

<b>FCC Rules</b>	<b>Description of Test</b>	<b>Result</b>
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.

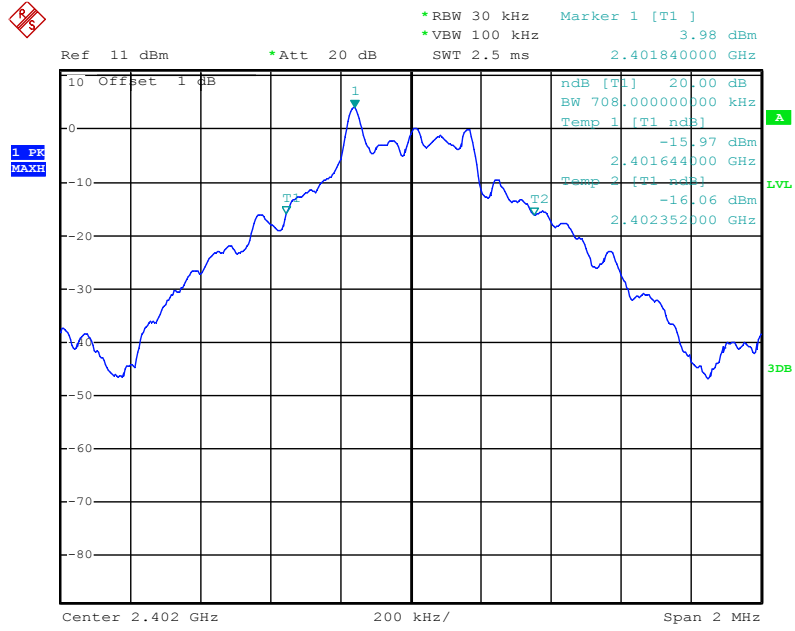
## 5.6. Test Result

Channel	Frequency (MHz)	GFSK 20dB Bandwidth (MHz)	$\Pi/4$ -DQPSK 20dB Bandwidth (MHz)	8DPSK 20dB Bandwidth (MHz)	Result
Low	2402	0.708	1.116	1.160	Pass
Middle	2441	0.704	1.116	1.164	Pass
High	2480	0.704	1.112	1.164	Pass

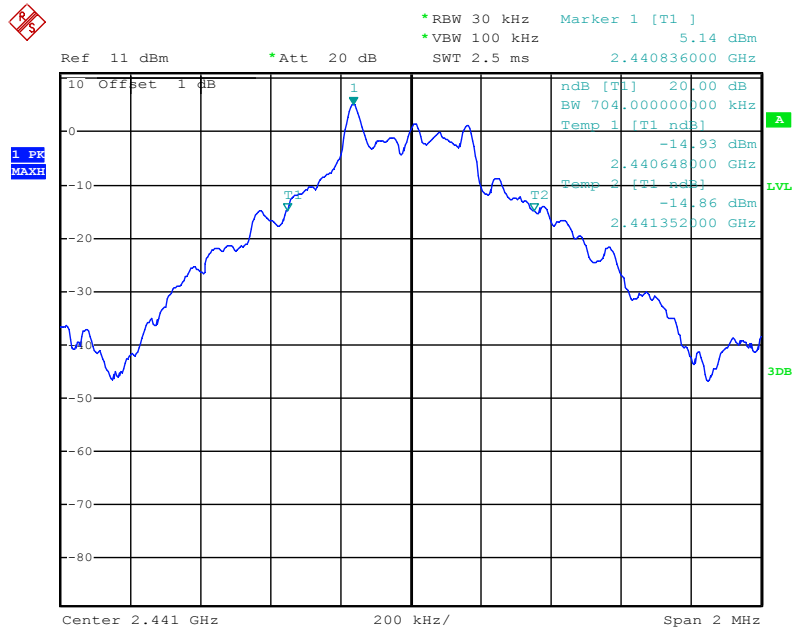
The spectrum analyzer plots are attached as below.

# GFSK Mode

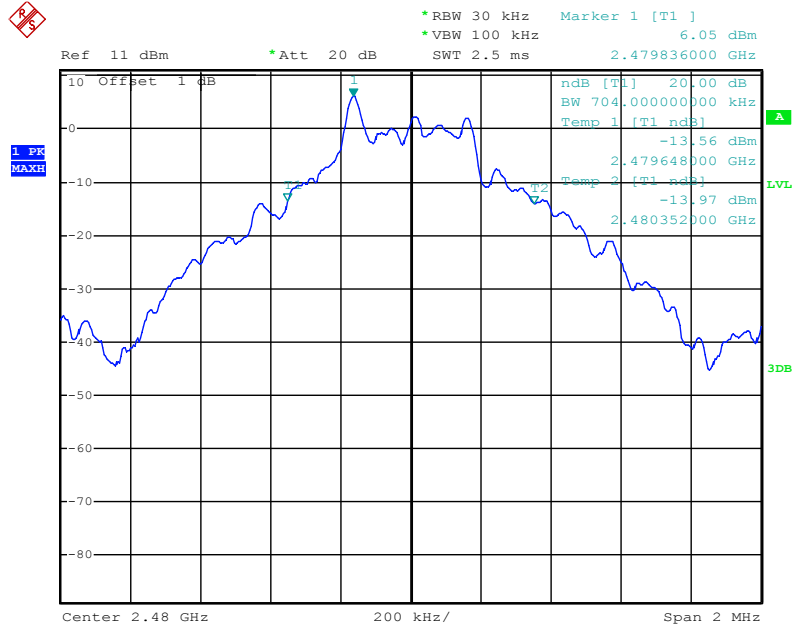
## Low channel



## Middle channel

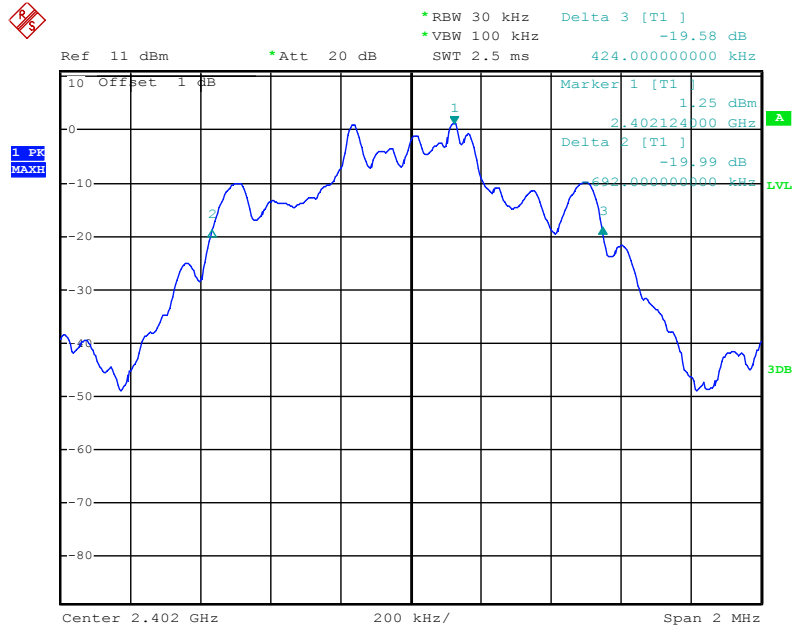


### High channel

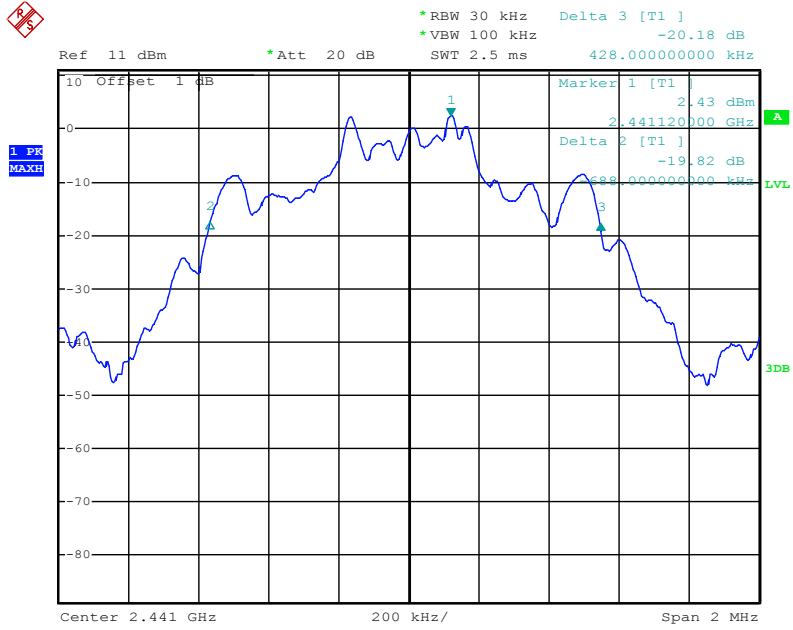


### $\Pi/4$ -DQPSK Mode

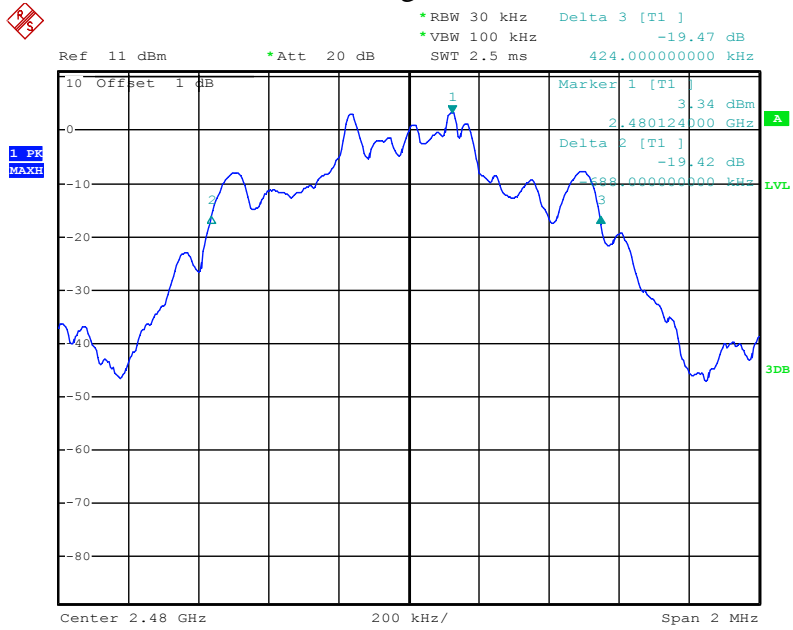
### Low channel



### Middle channel

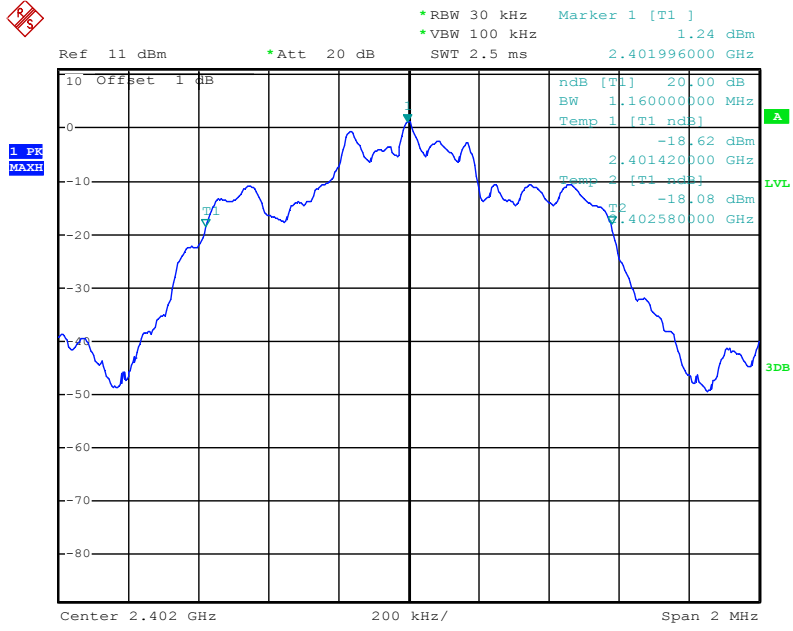


### High channel

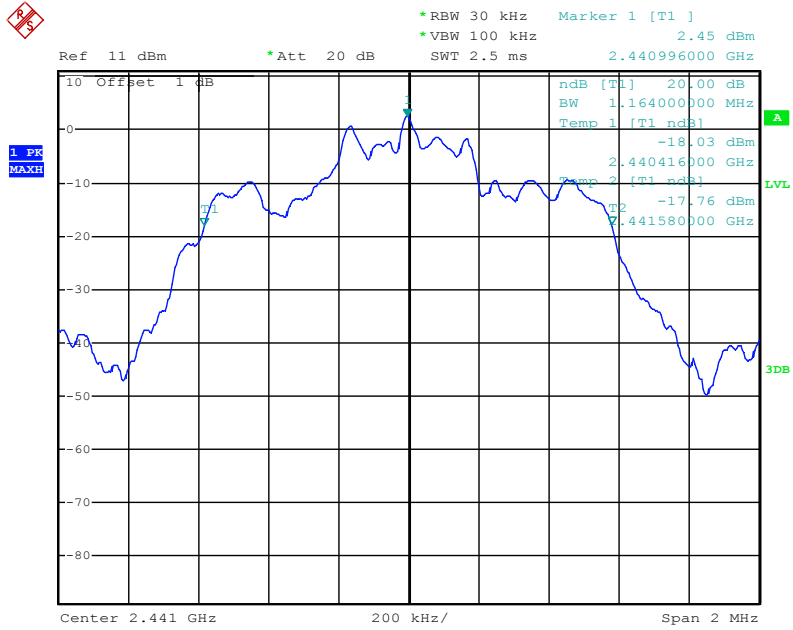


8DPSK Mode

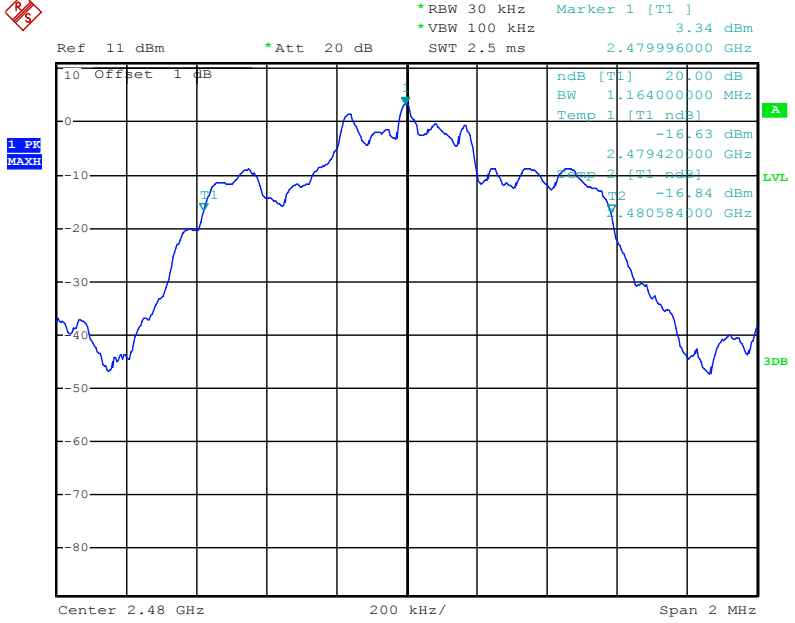
Low channel



Middle channel



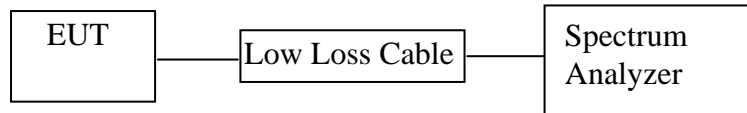
### High channel





## 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	1.002	25KHz or 20dB bandwidth	PASS
	2403			
Middle	2441	1.002	25KHz or 20dB bandwidth	PASS
	2442			
High	2479	1.158	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	2441	1.002	25KHz or 2/3*20dB bandwidth	PASS
	2442			
High	2479	1.002	25KHz or 2/3*20dB bandwidth	PASS
	2480			

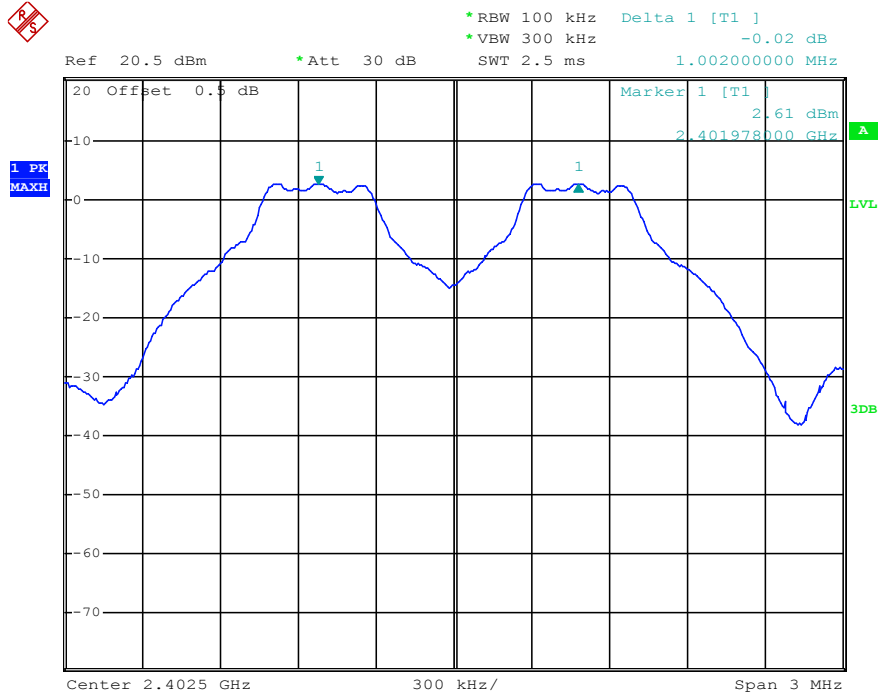
### 8QPSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.000	25KHz or 2/3*20dB bandwidth	PASS
	2403			
Middle	2441	1.004	25KHz or 2/3*20dB bandwidth	PASS
	2442			
High	2479	1.004	25KHz or 2/3*20dB bandwidth	PASS
	2480			

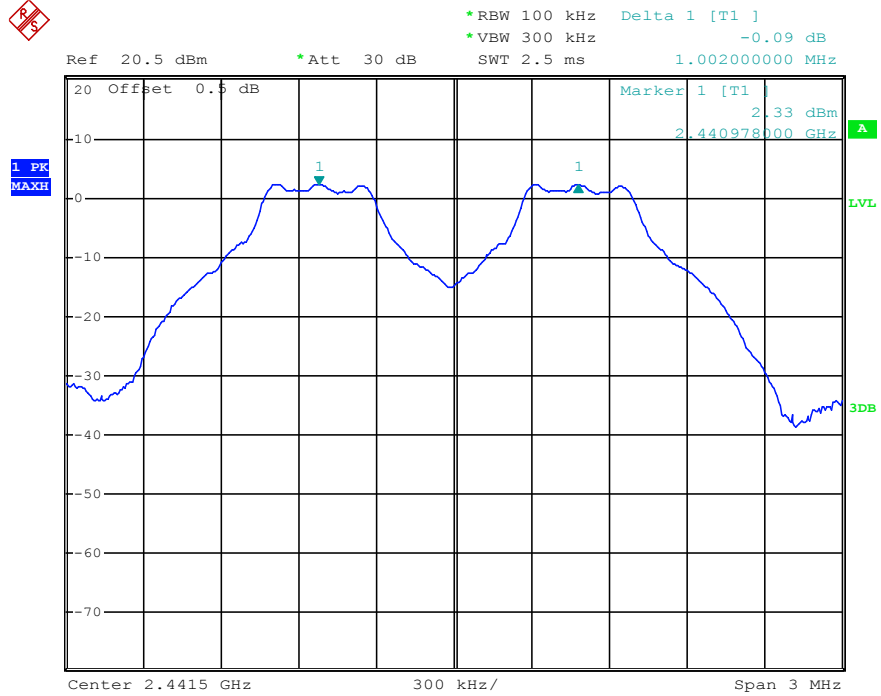
The spectrum analyzer plots are attached as below.

# GFSK Mode

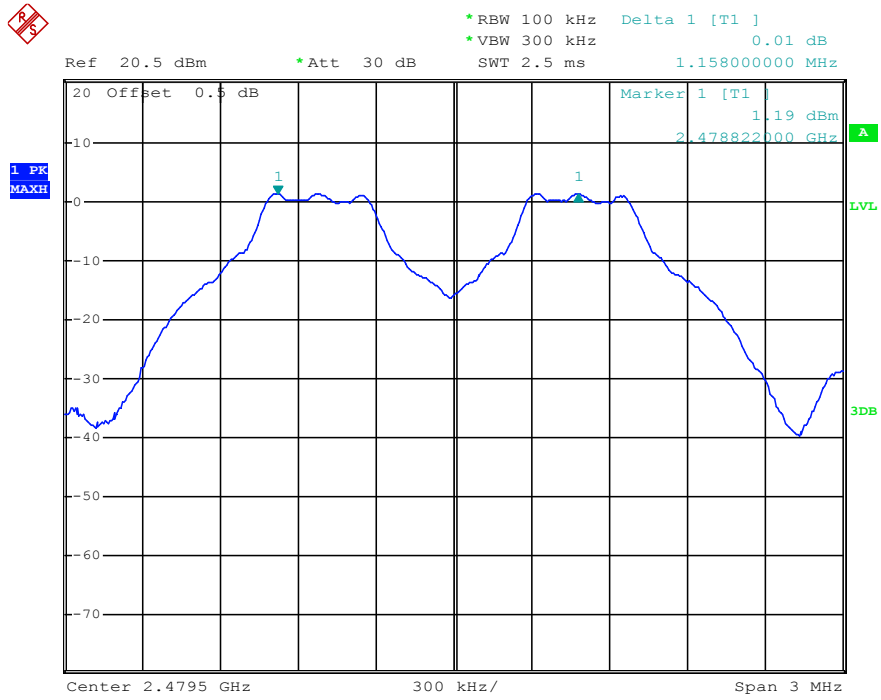
## Low channel



## Middle channel

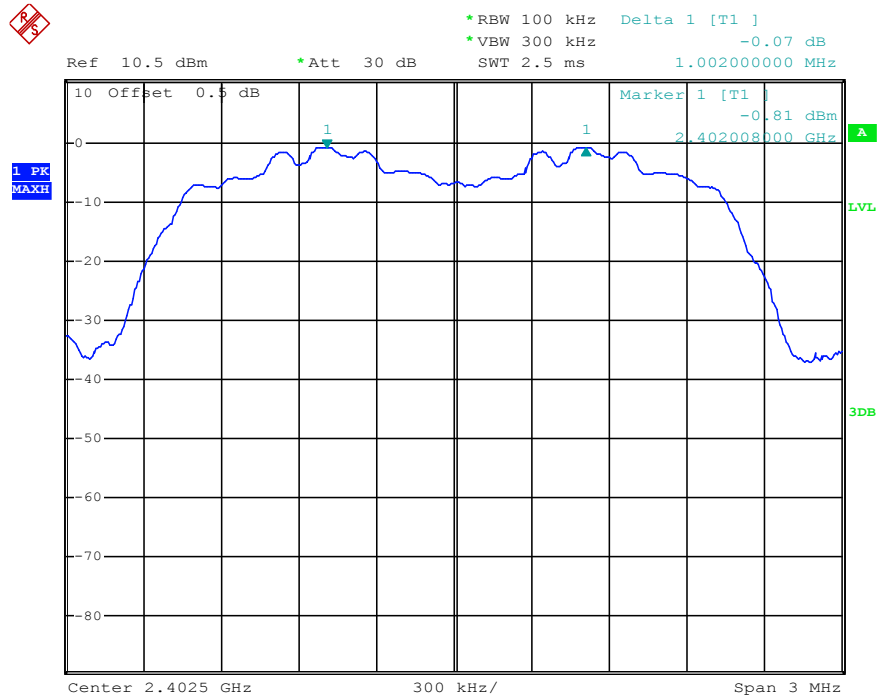


### High channel

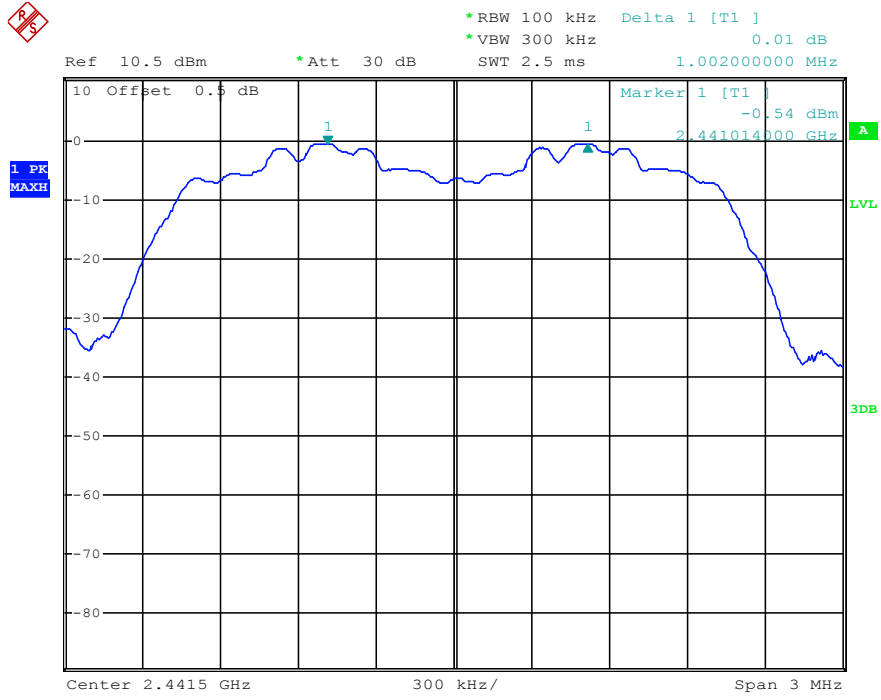


### Π/4-DQPSK Mode

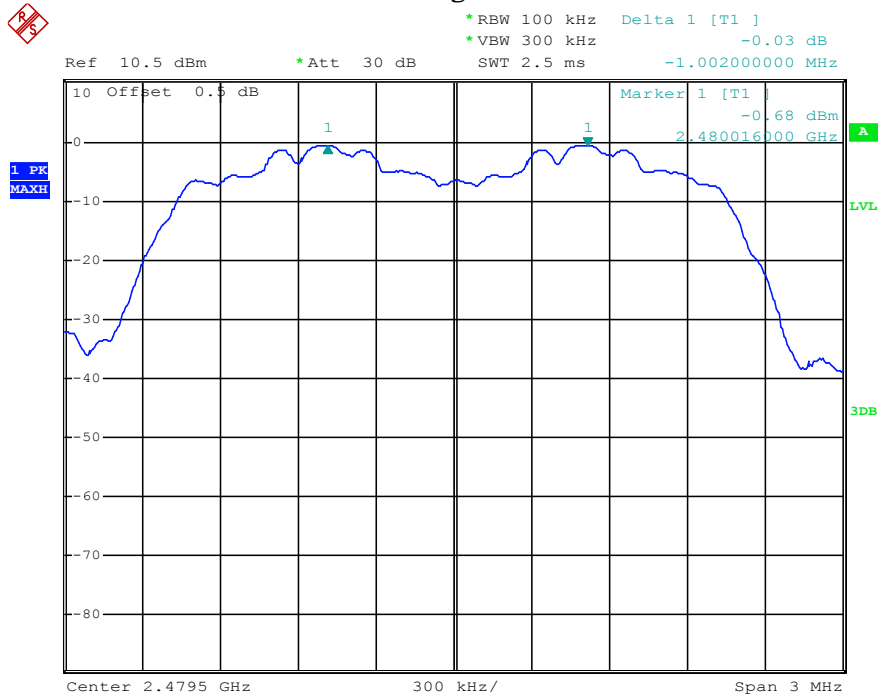
### Low channel



### Middle channel



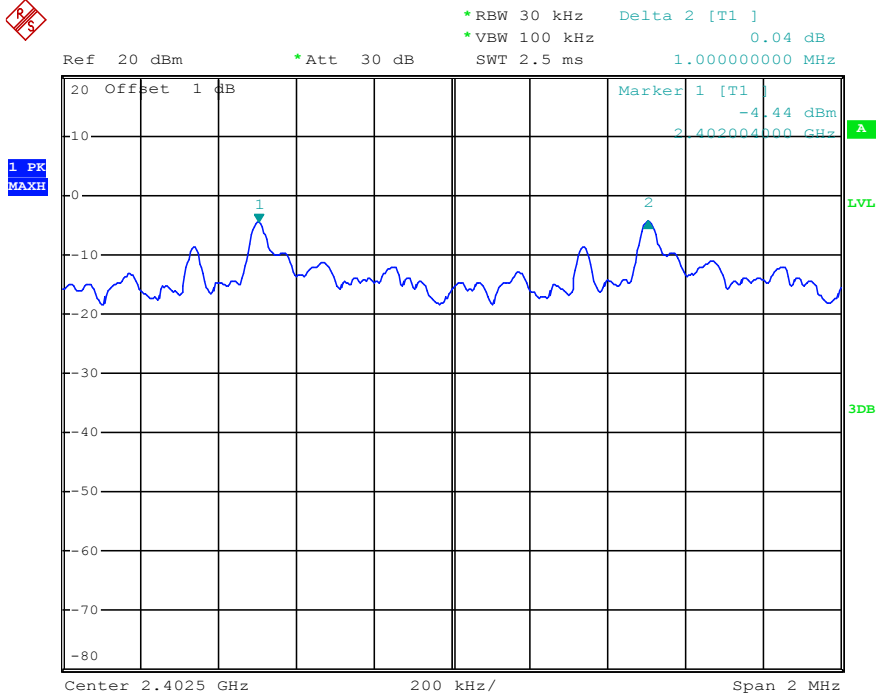
### High channel



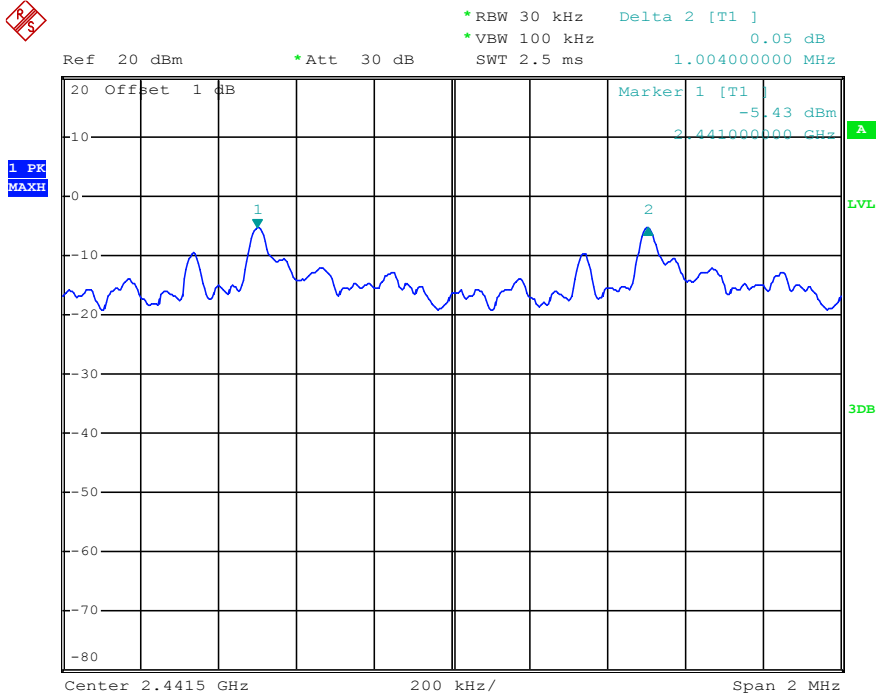
8DPSK Mode



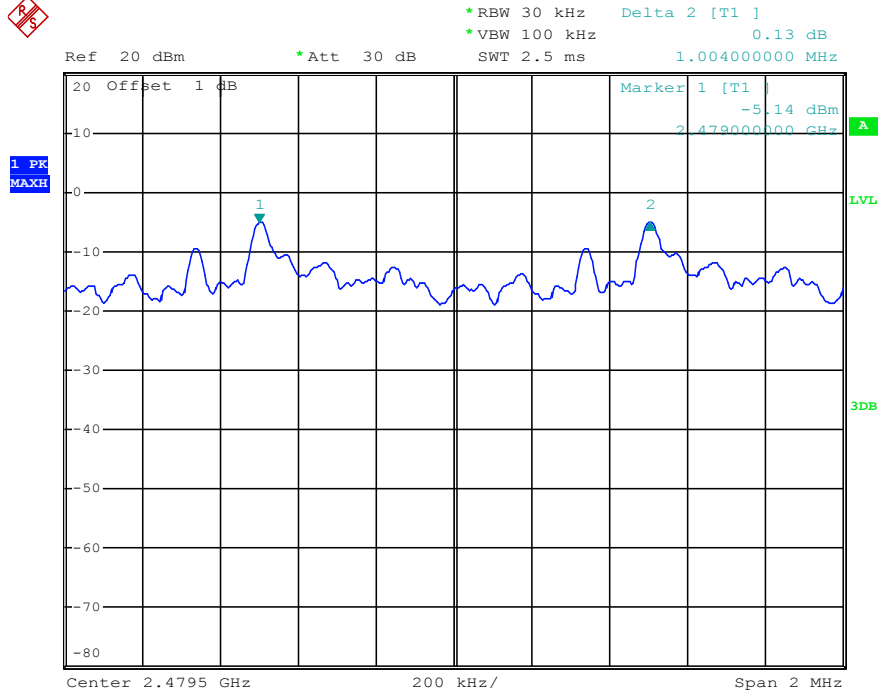
Low channel



Middle channel

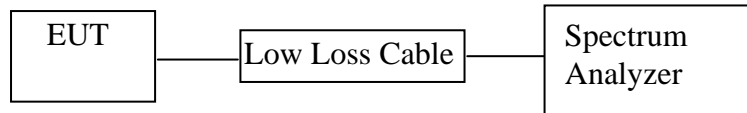


### High channel



## 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.

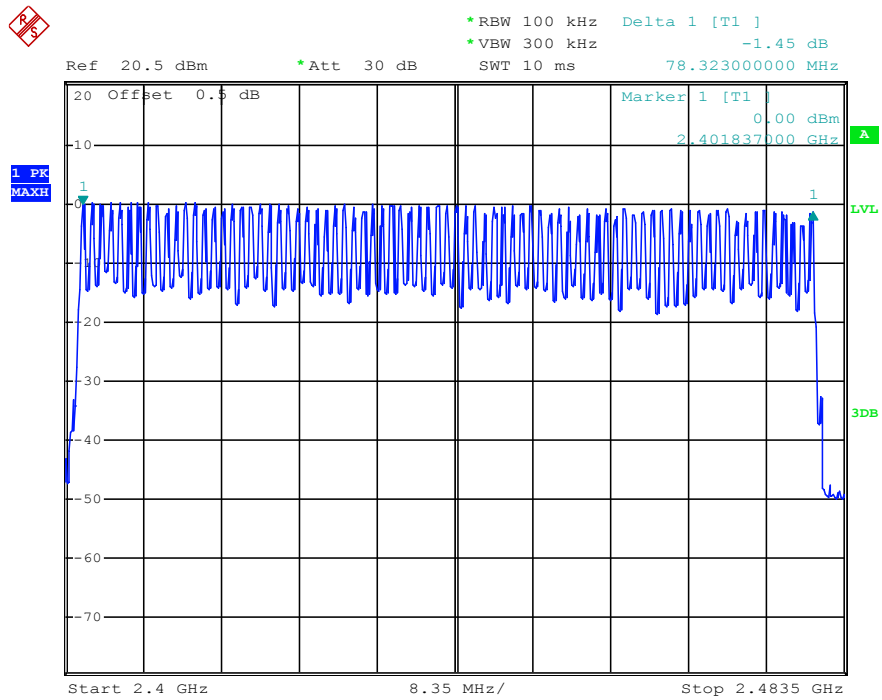
7.5.3. Max hold, view and count how many channel in the band.

### 7.6. Test Result

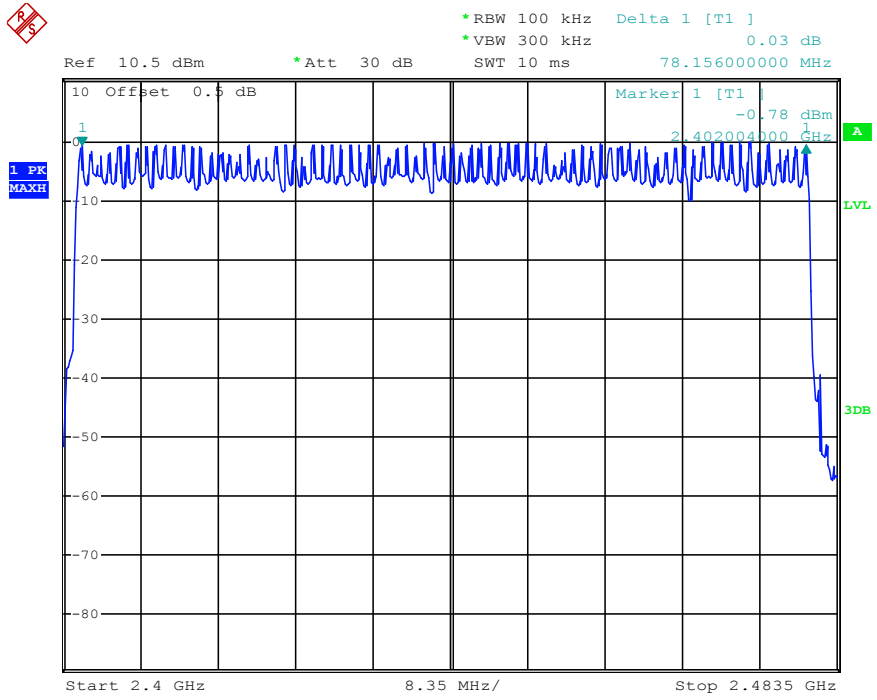
Total number of hopping channel	Measurement result(CH)	Limit(CH)
	79	≥15

The spectrum analyzer plots are attached as below.

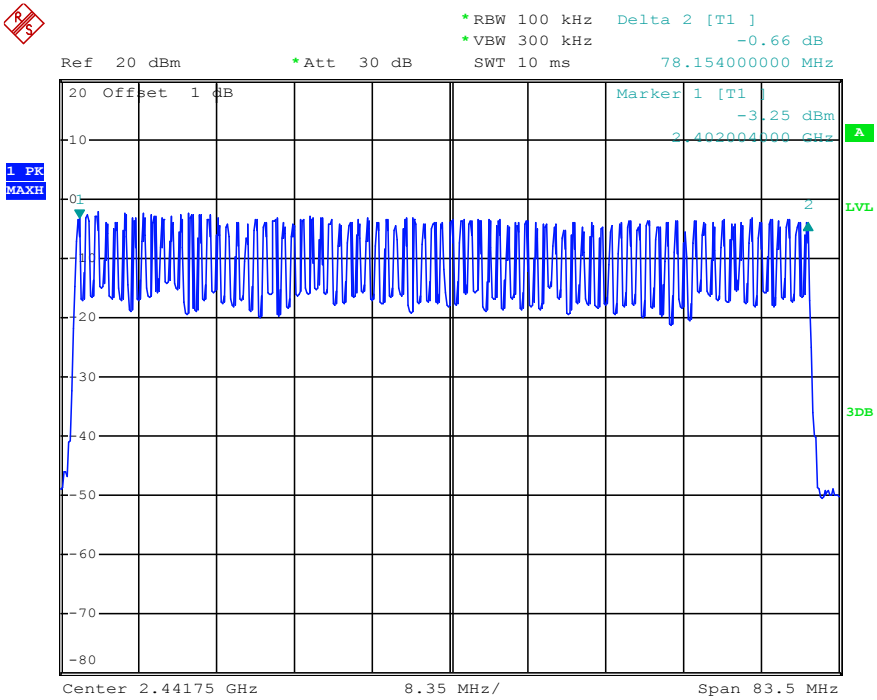
Number of hopping channels(GFSK)



### Number of hopping channels( $\Pi/4$ -DQPSK)

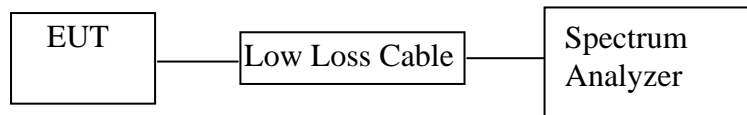


### Number of hopping channels(8QPSK)



## 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=100 kHz, VBW=300 kHz, Span=0Hz, Adjust Sweep=1s. Get the burst (in 1 sec.).

8.5.4. Set the spectrum analyzer as RBW=1MHz, VBW=3MHz, Span=0Hz, Adjust Sweep=2ms. Get the pulse time.

8.5.5. 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	0.425	136.00	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(2*79)) \times 31.6$				
DH3	2402	1.705	272.80	400
	2441	1.705	272.80	400
	2480	1.745	279.20	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(4*79)) \times 31.6$				
DH5	2402	3.085	329.07	400
	2441	3.085	329.07	400
	2480	3.025	322.67	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6*79)) \times 31.6$				

### Π/4-DQPSK

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.415	132.80	400
	2441	0.420	134.40	400
	2480	0.420	134.40	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(2*79)) \times 31.6$				
DH3	2402	1.695	271.20	400
	2441	1.695	271.20	400
	2480	1.695	271.20	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(4*79)) \times 31.6$				
DH5	2402	2.960	315.73	400
	2441	2.960	315.73	400
	2480	2.960	315.73	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6*79)) \times 31.6$				

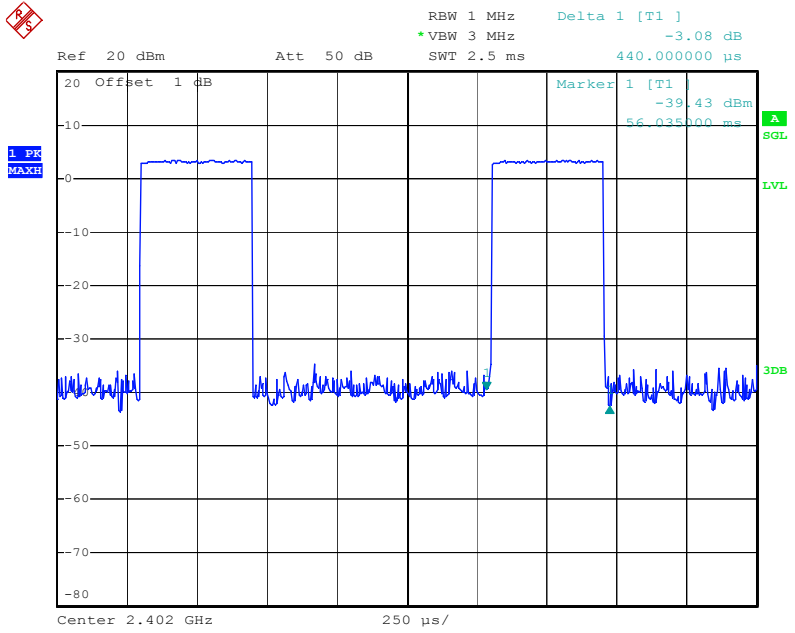
### 8QPSK Mode

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.420	134.40	400
	2441	0.420	134.40	400
	2480	0.420	134.40	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(2*79)) \times 31.6$				
DH3	2402	1.680	268.80	400
	2441	1.680	268.80	400
	2480	1.695	271.20	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(4*79)) \times 31.6$				
DH5	2402	3.010	321.07	400
	2441	3.010	321.07	400
	2480	3.040	324.27	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6*79)) \times 31.6$				

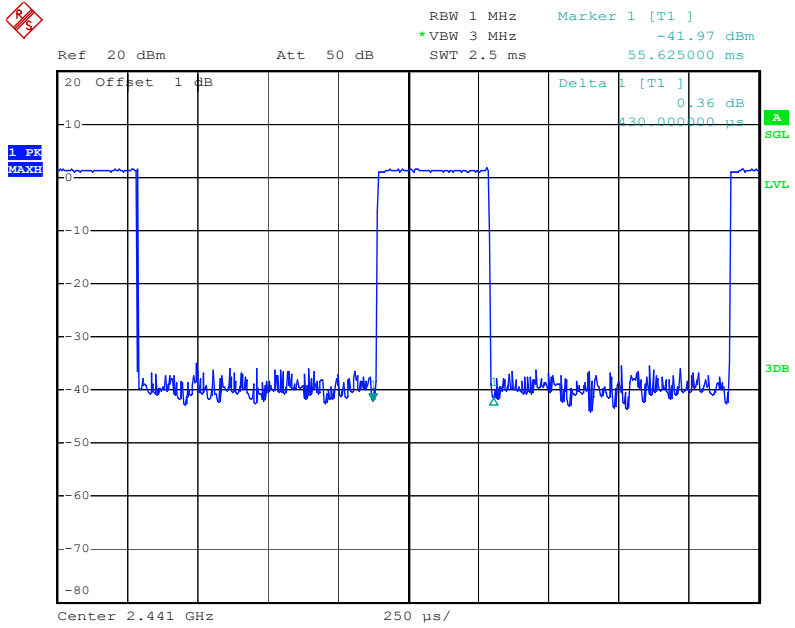
The spectrum analyzer plots are attached as below.

Mode 1: GFSK Link Mode

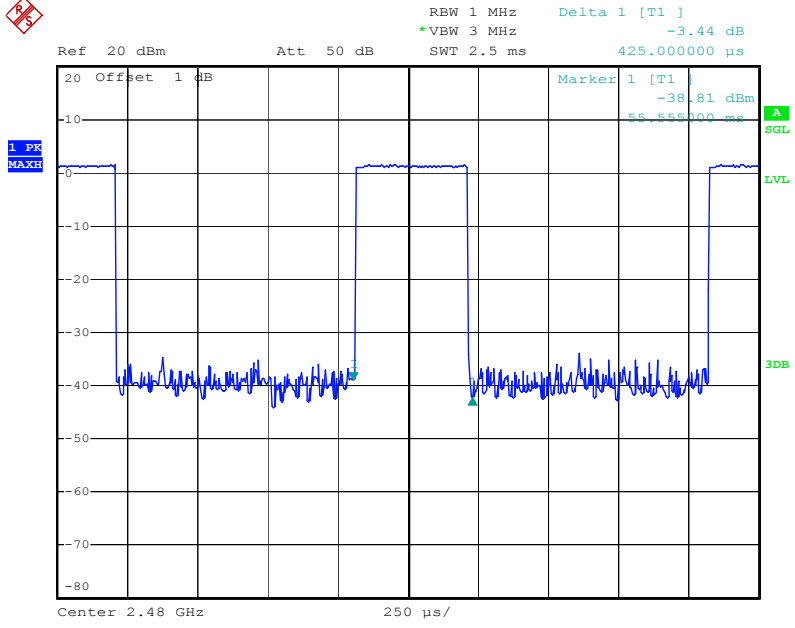
### DH1 Low channel



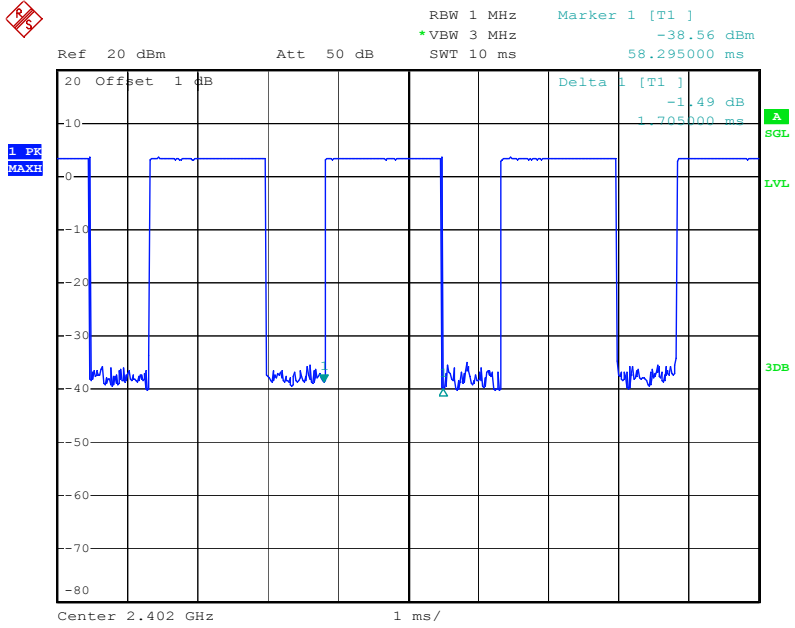
### DH1 Middle channel



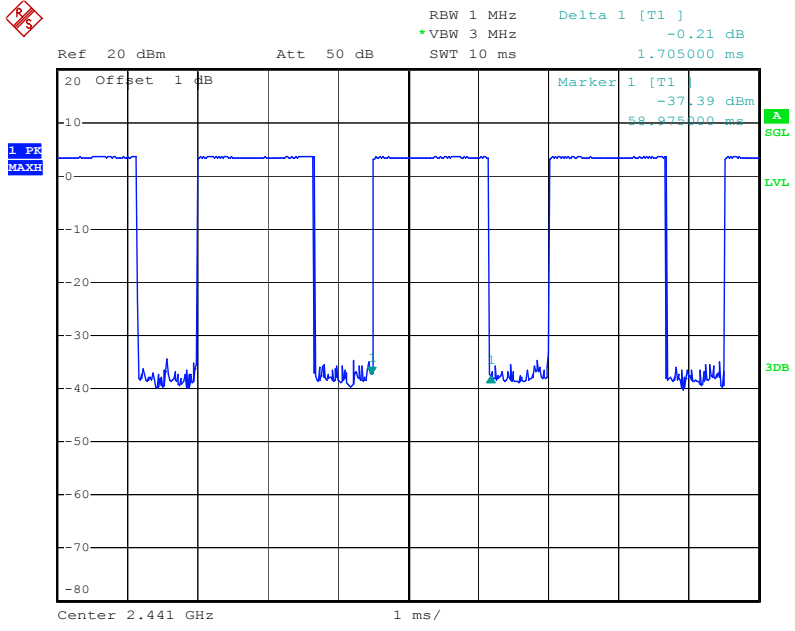
### DH1 High channel



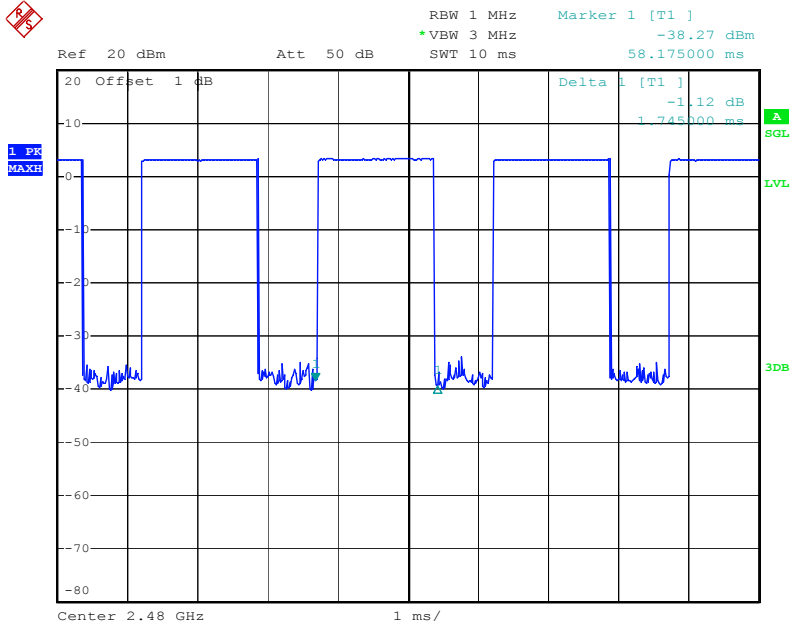
### DH3 Low channel



### DH3 Middle channel

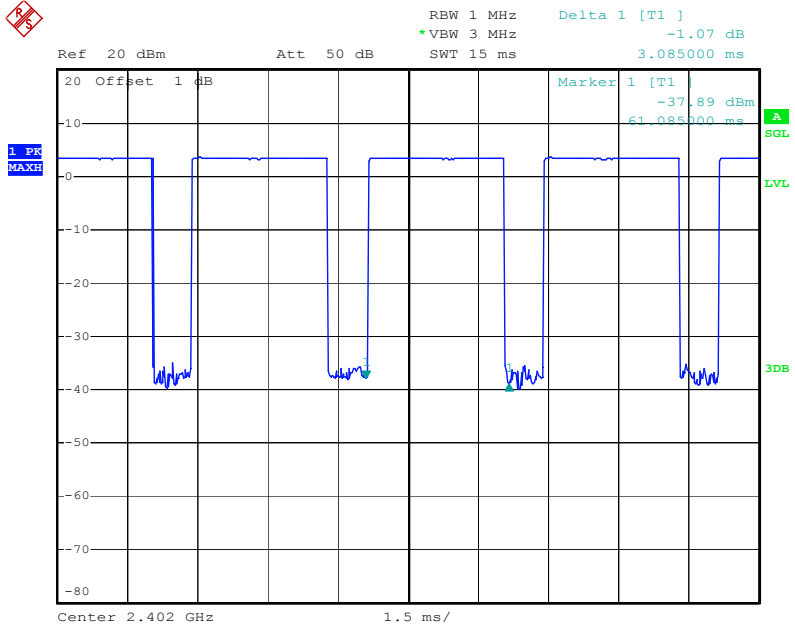


### DH3 High channel

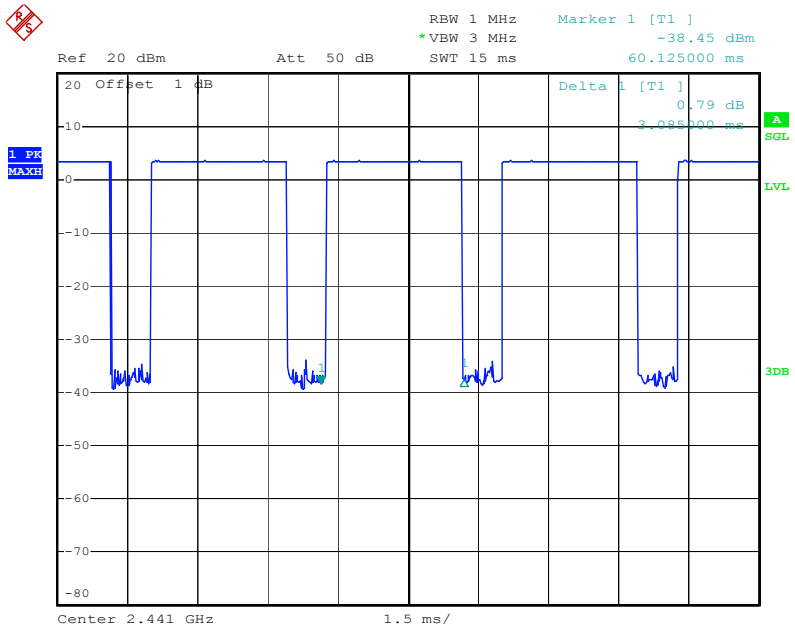




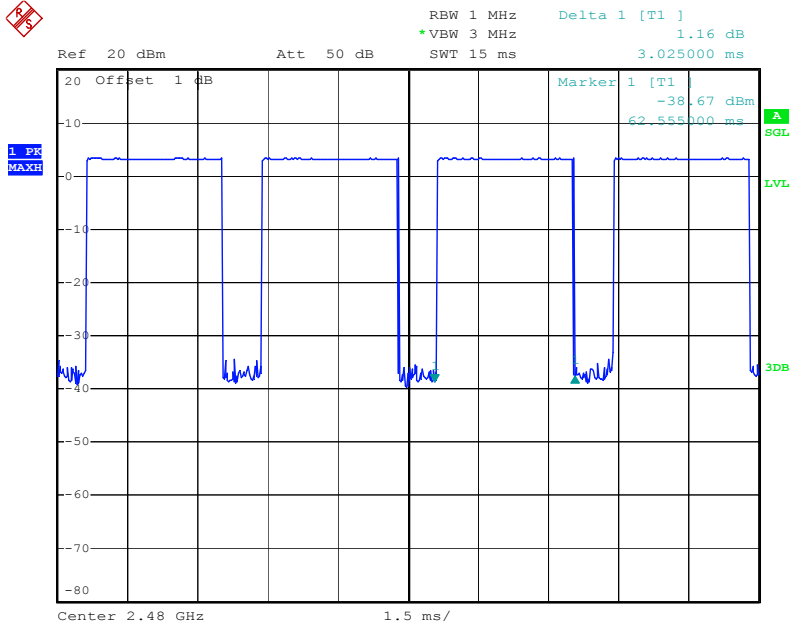
### DH5 Low channel



### DH5 Middle channel

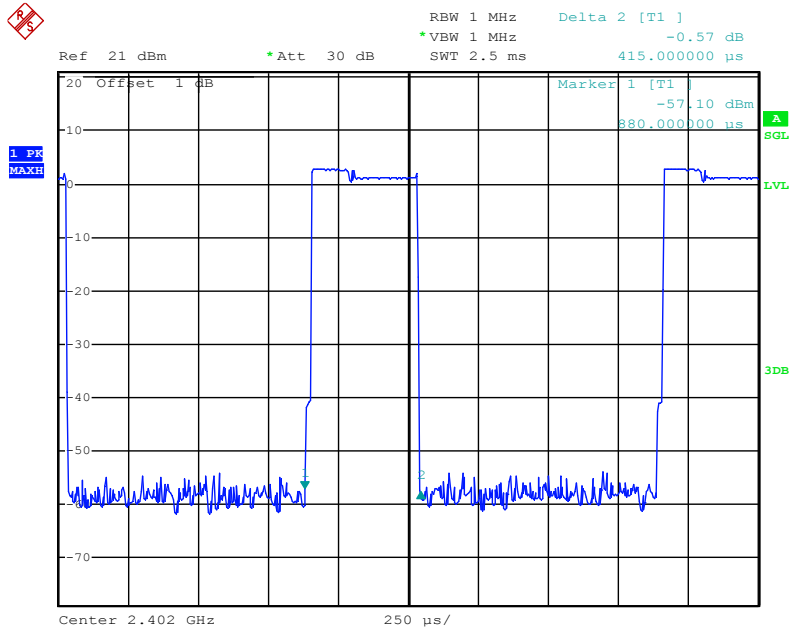


### DH5 High channel

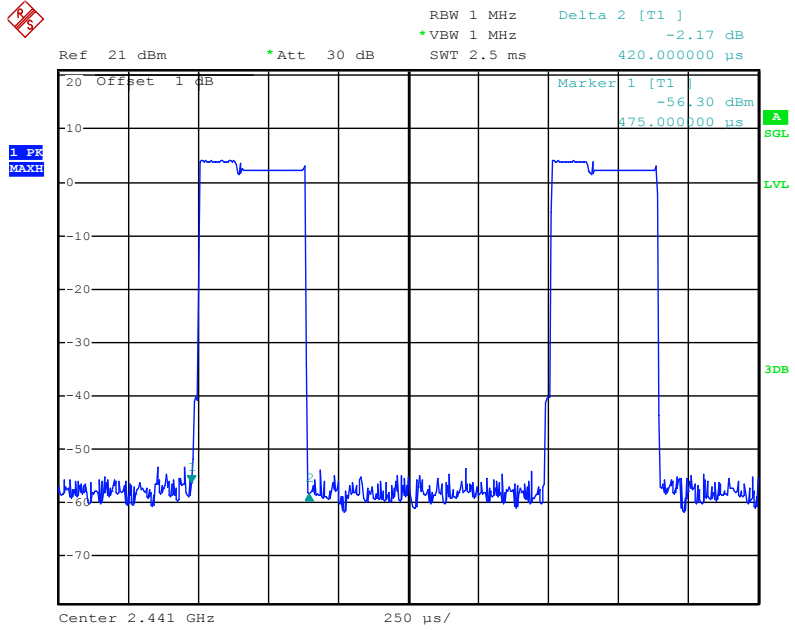


Mode 2:  $\pi/4$  DQPSK Link Mode

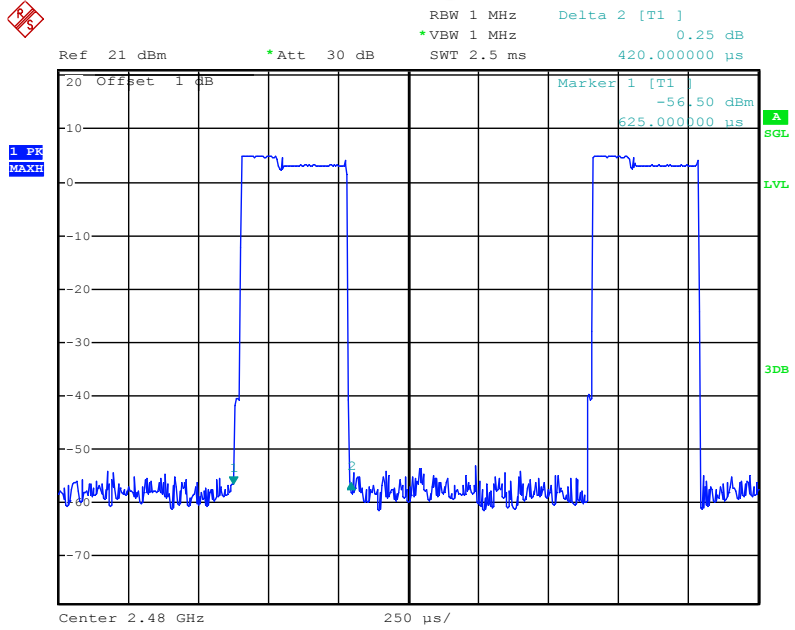
### 2DH1 Low channel



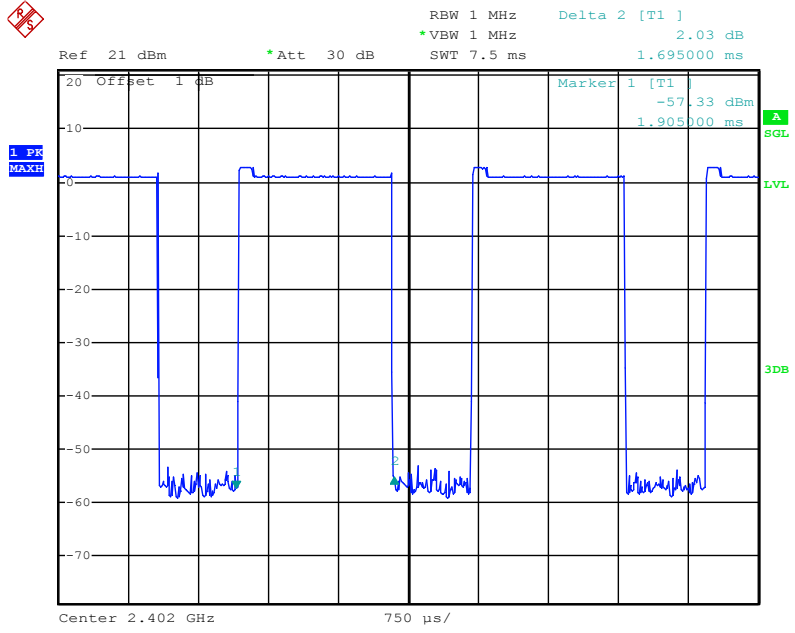
### 2DH1 Middle channel



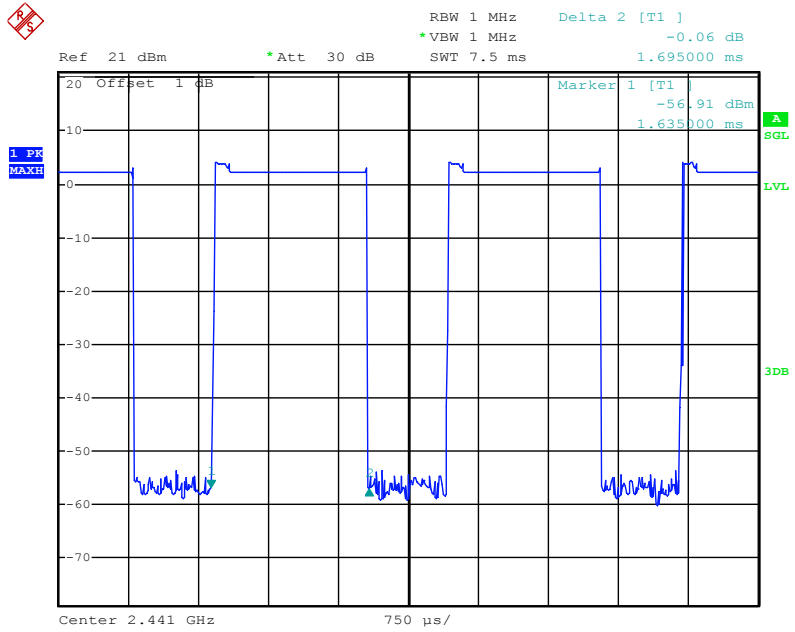
### 2DH1 High channel



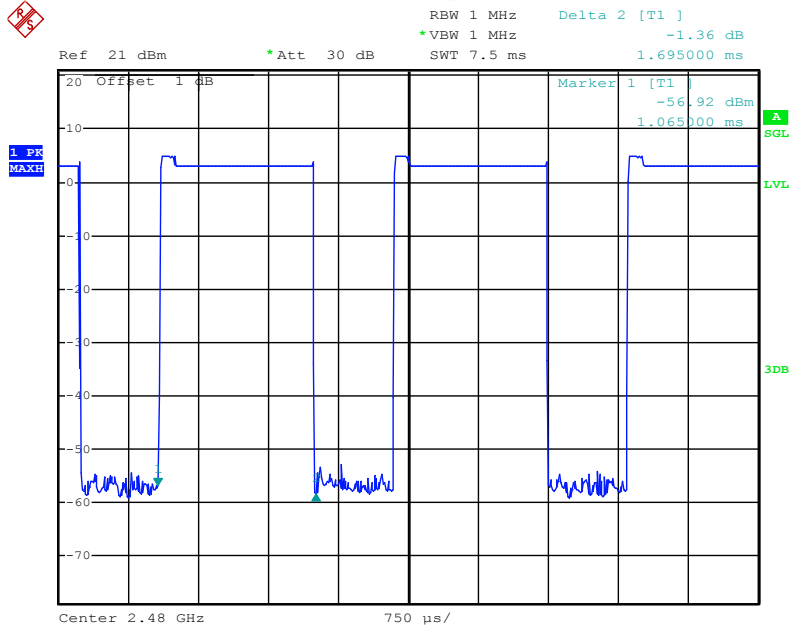
### 2DH3 Low channel



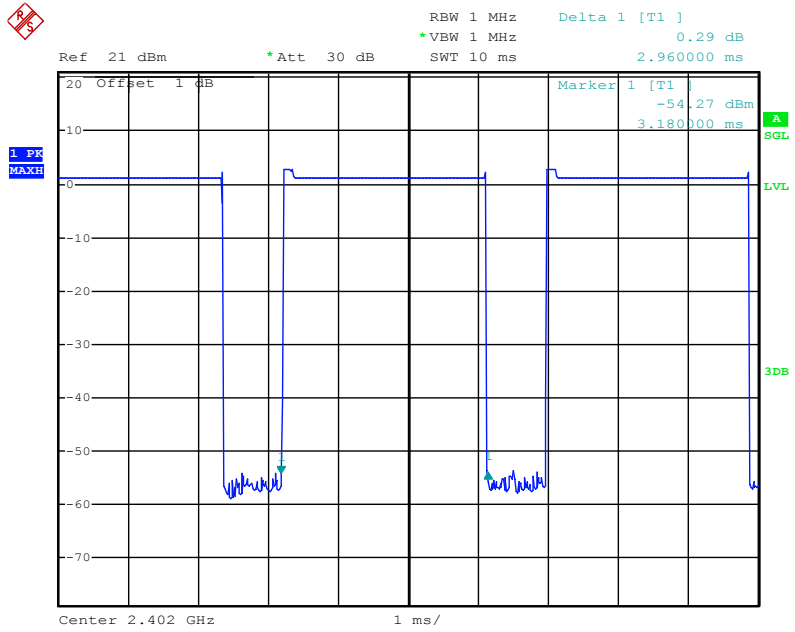
### 2DH3 Middle channel



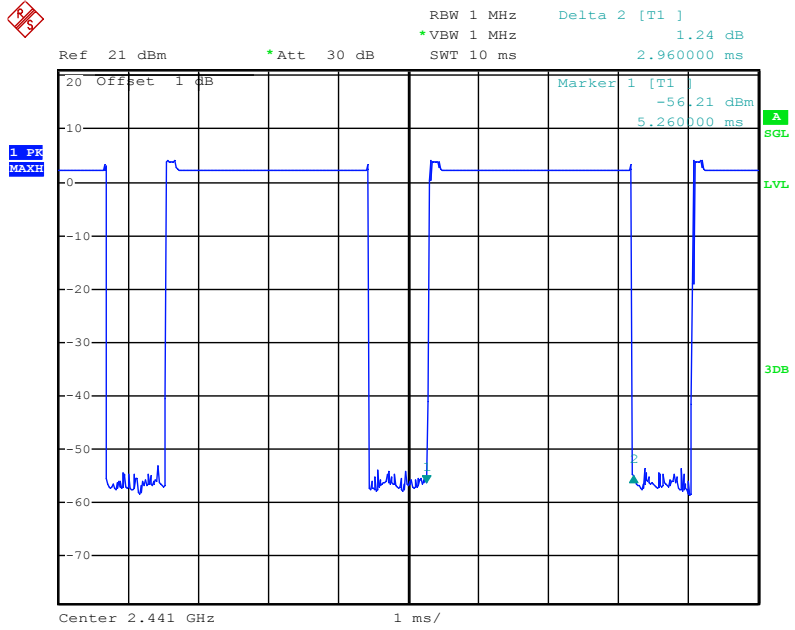
### 2DH3 High channel



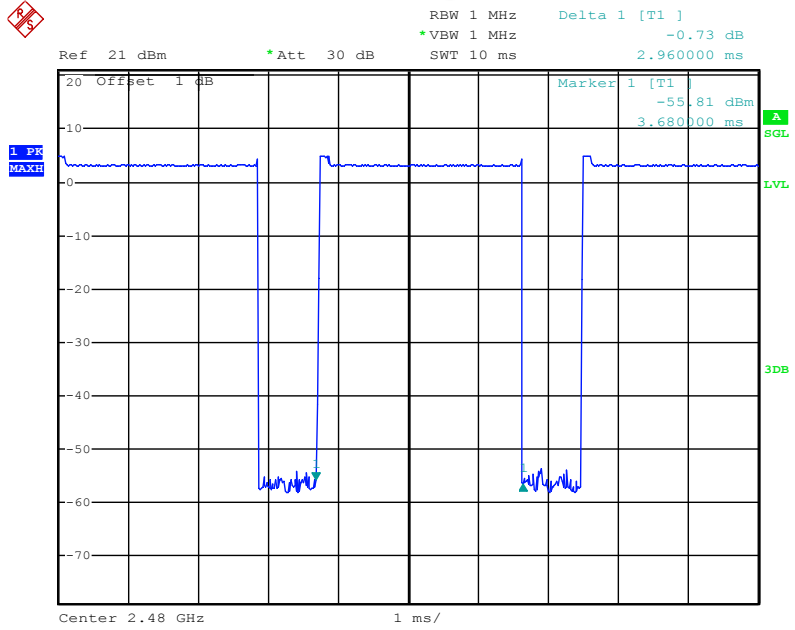
### 2DH5 Low channel



### 2DH5 Middle channel

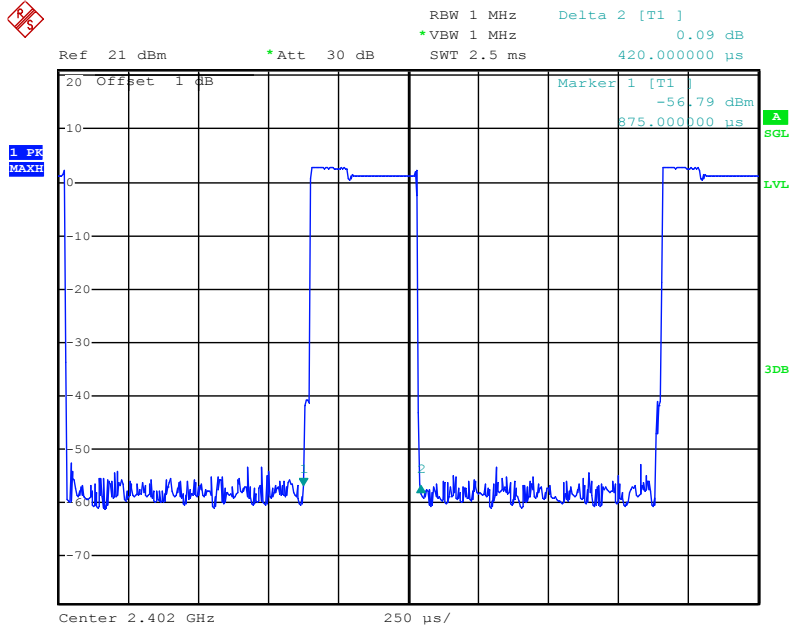


### 2DH5 High channel

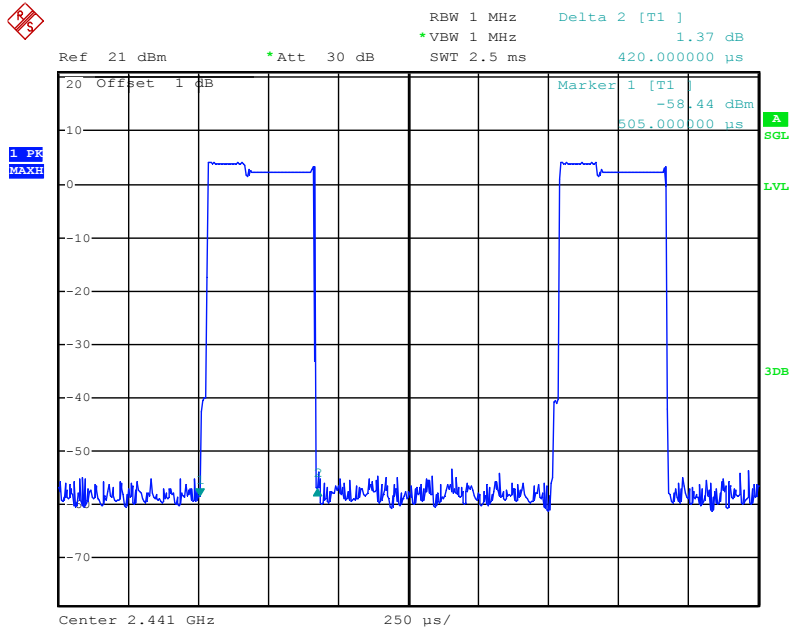


Mode 3: 8DPSK Link Mode

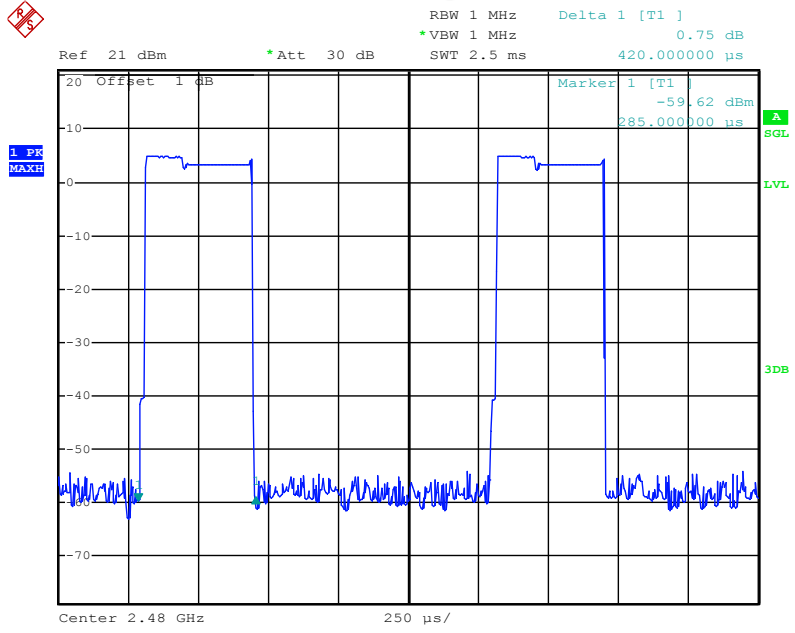
### 3DH1 Low channel



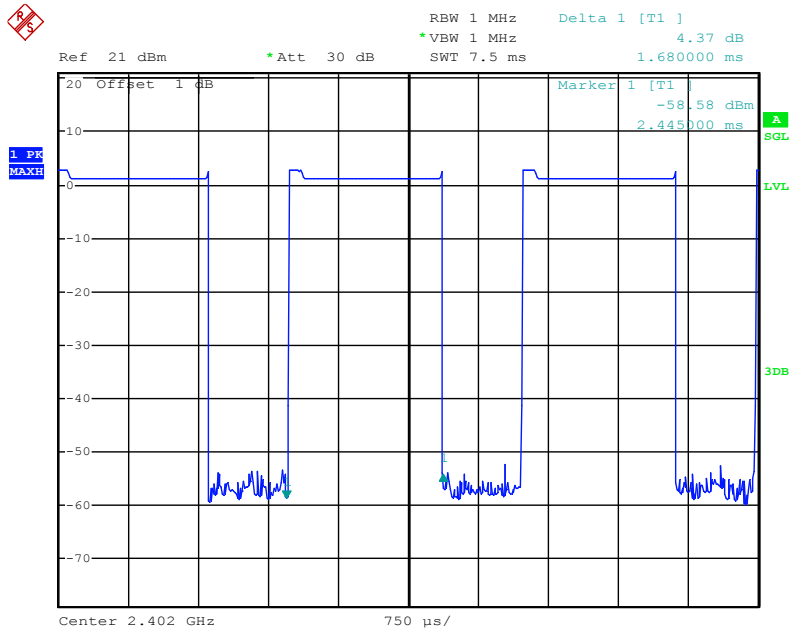
### 3DH1 Middle channel



### 3DH1 High channel

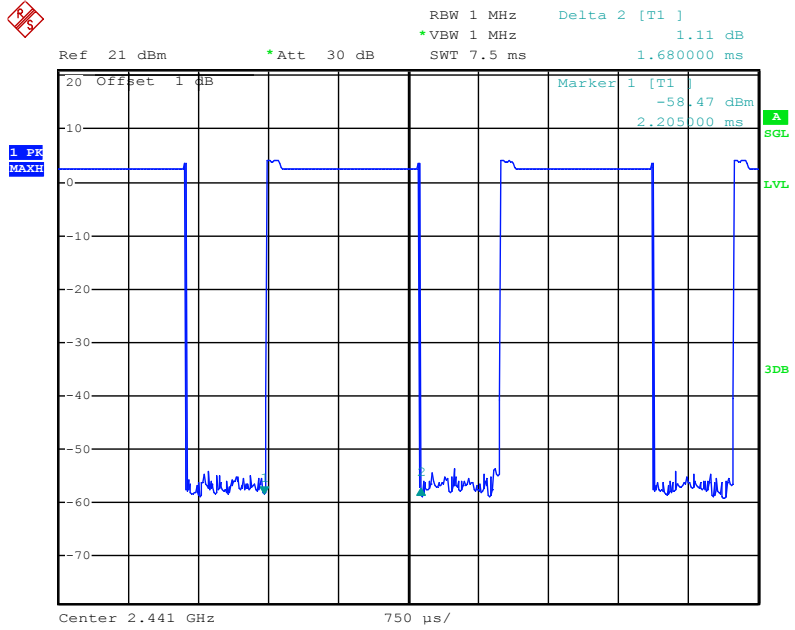


### 3DH3 Low channel

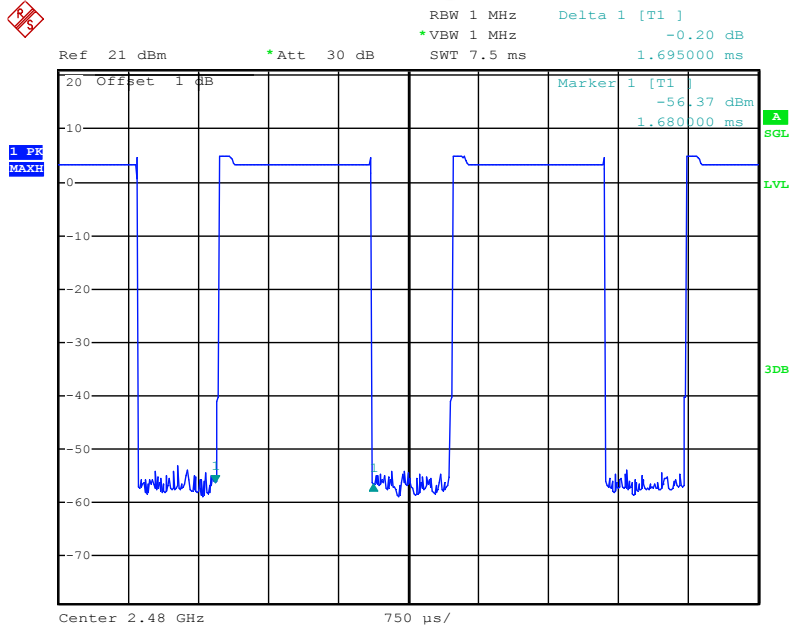




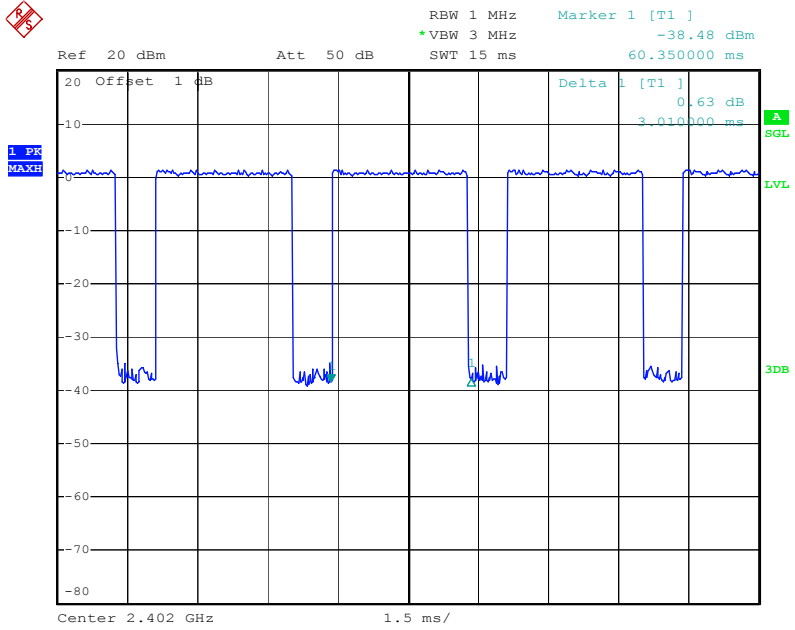
### 3DH3 Middle channel



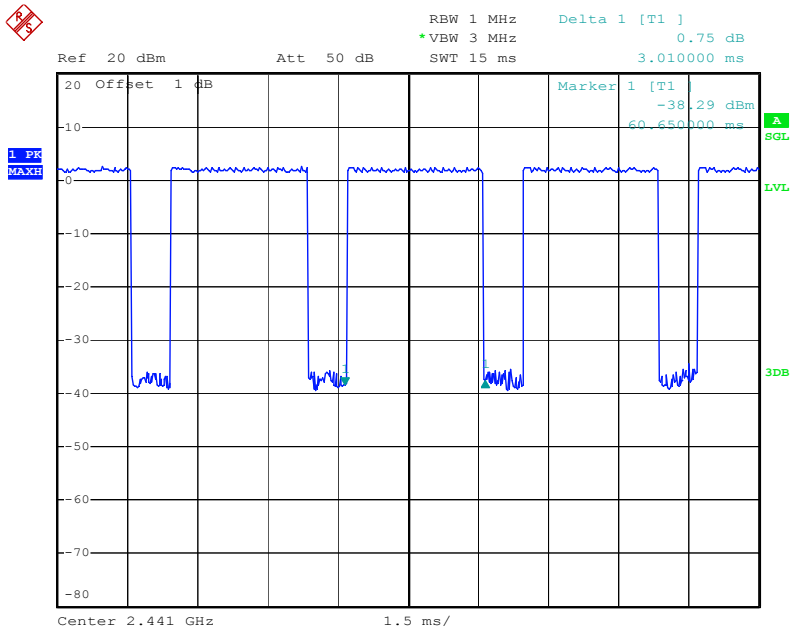
### 3DH3 High channel



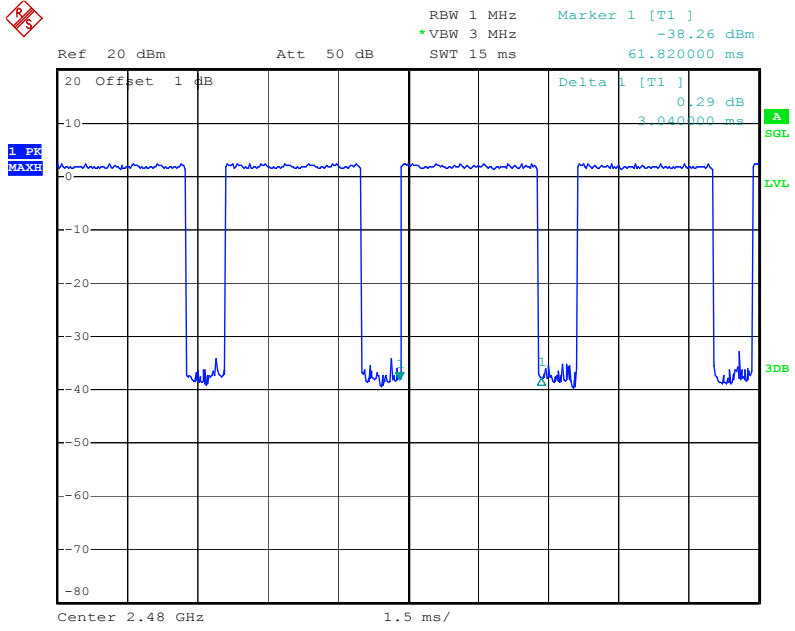
### 3DH5 Low channel



### 3DH5 Middle channel

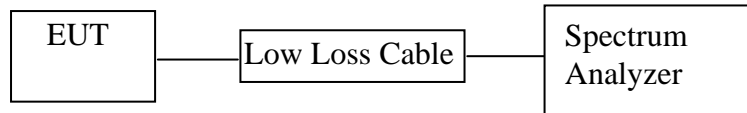


### 3DH5 High channel



## 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)	Limits dBm / W
Low	2402	3.61	30/1.0
Middle	2441	2.48	30/1.0
High	2480	2.43	30/1.0

### Π/4-DQPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm)	Limits dBm / W
Low	2402	2.31	21 / 0.125
Middle	2441	1.62	21 / 0.125
High	2480	2.43	21 / 0.125

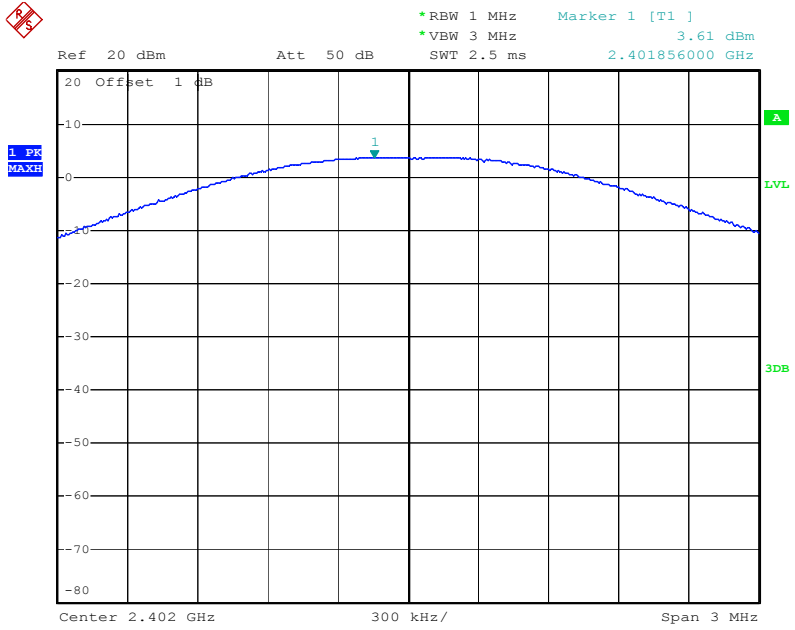
### 8QPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm)	Limits dBm / W
Low	2402	2.43	21 / 0.125
Middle	2441	1.72	21 / 0.125
High	2480	2.53	21 / 0.125

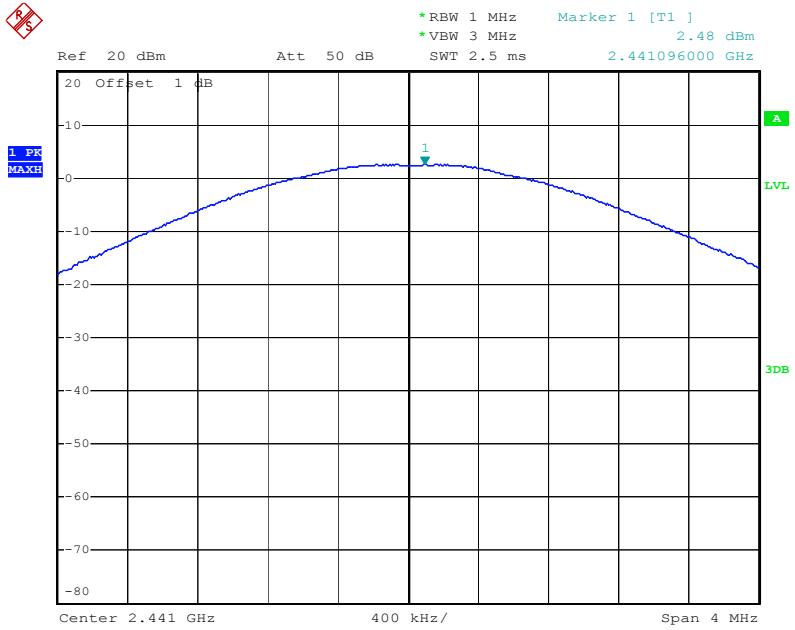
The spectrum analyzer plots are attached as below.

# GFSK Mode

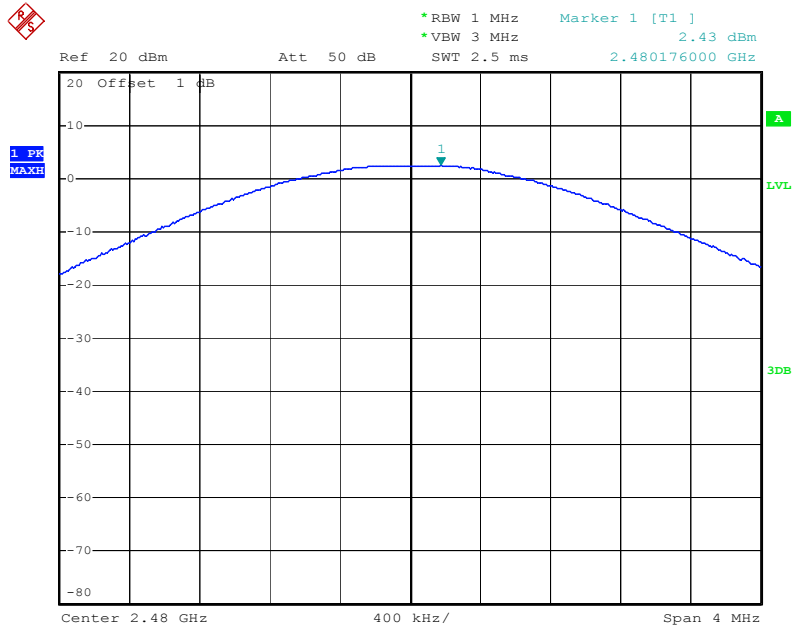
## Low channel



## Middle channel

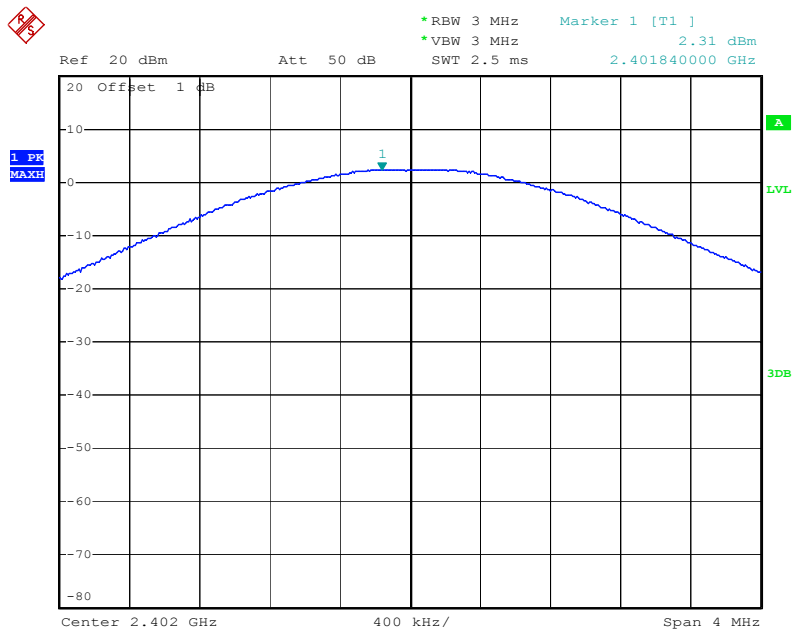


### High channel

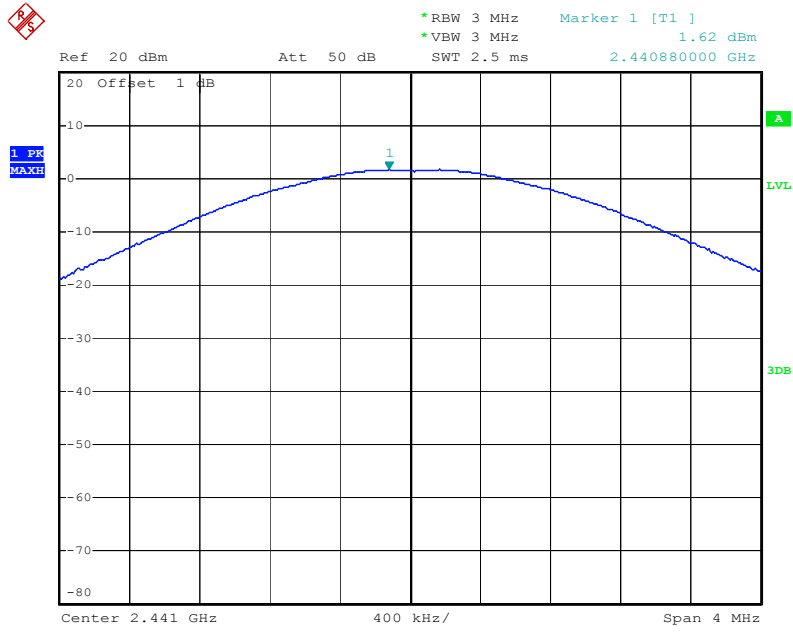


### $\Pi/4$ -DQPSK Mode

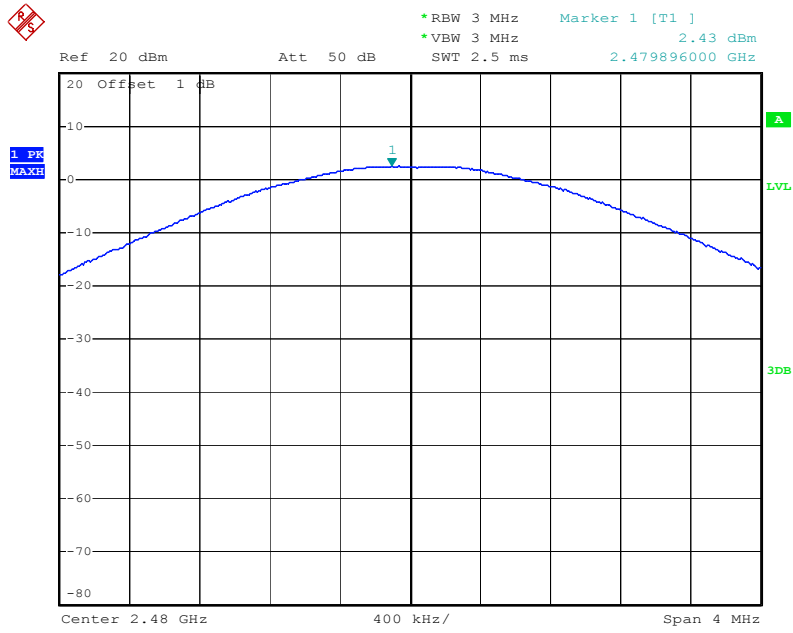
### Low channel



### Middle channel



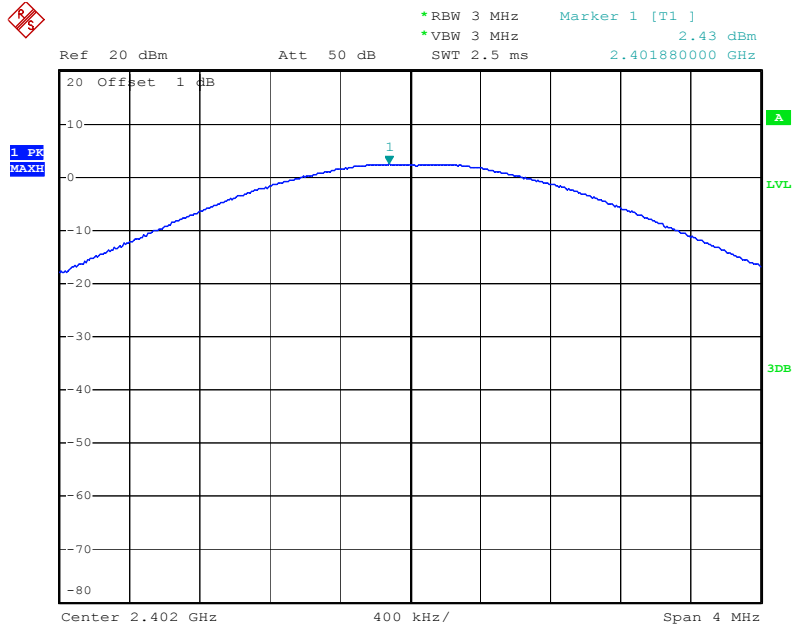
### High channel



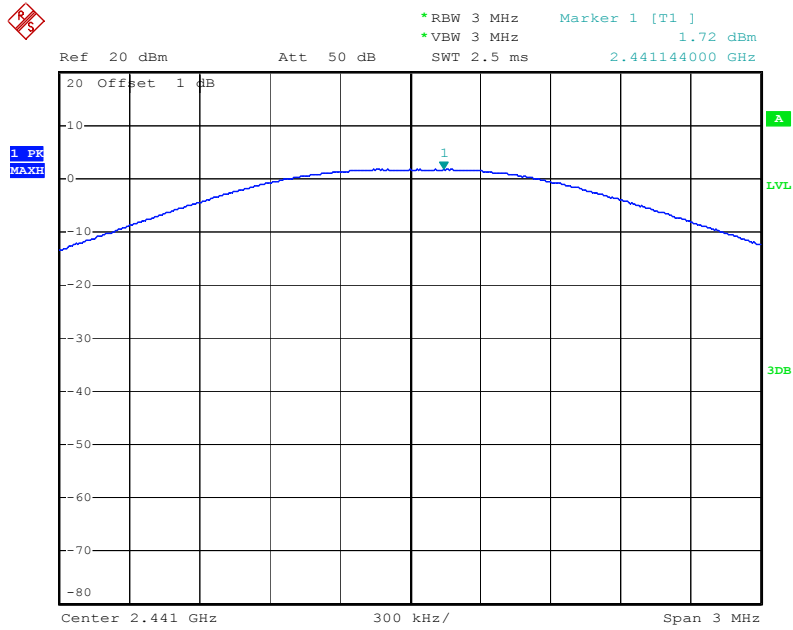


# 8QPSK Mode

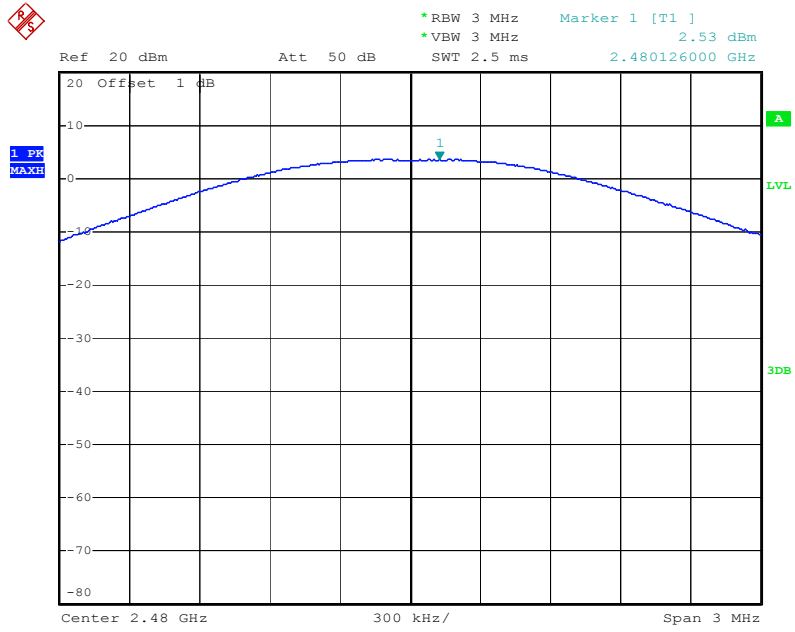
## Low channel



## Middle channel



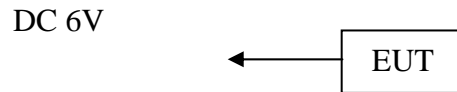
### High channel



## 10. RADIATED EMISSION TEST

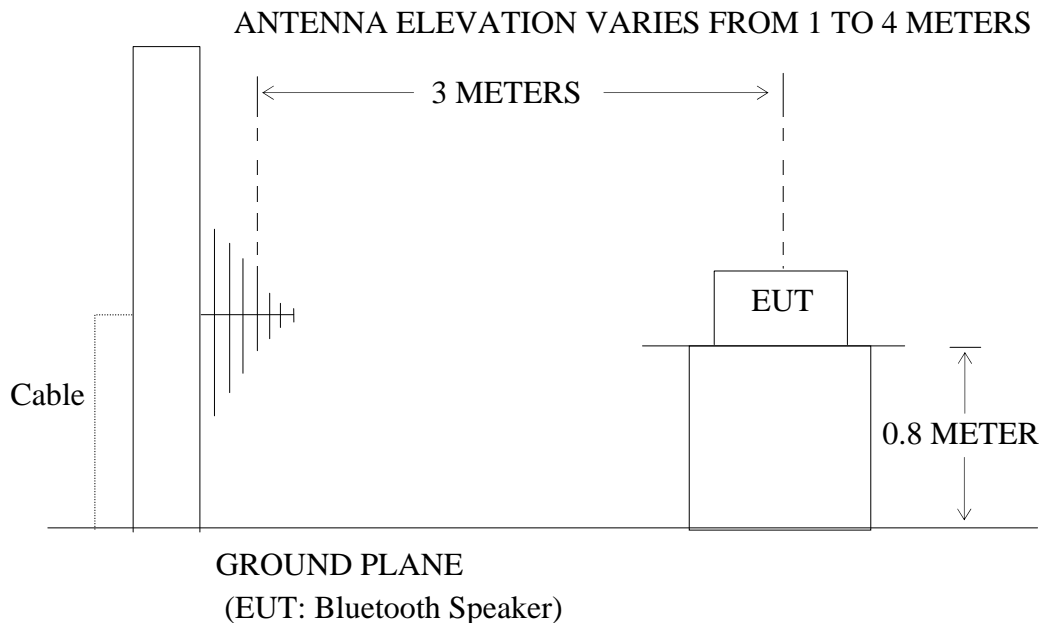
### 10.1. Block Diagram of Test Setup

#### 10.1.1. Block diagram of connection between the EUT and simulators



(EUT: Bluetooth Speaker)

#### 10.1.2. Anechoic Chamber Test Setup Diagram



(EUT: 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
<sup>1</sup> 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	( <sup>2</sup> )
13.36-13.41			

<sup>1</sup>Until February 1, 1999, this restricted band shall be 0.490-0.510

<sup>2</sup>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 Section 15.209 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 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

### 10.6.The Field Strength of Radiation Emission Measurement Results

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

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

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



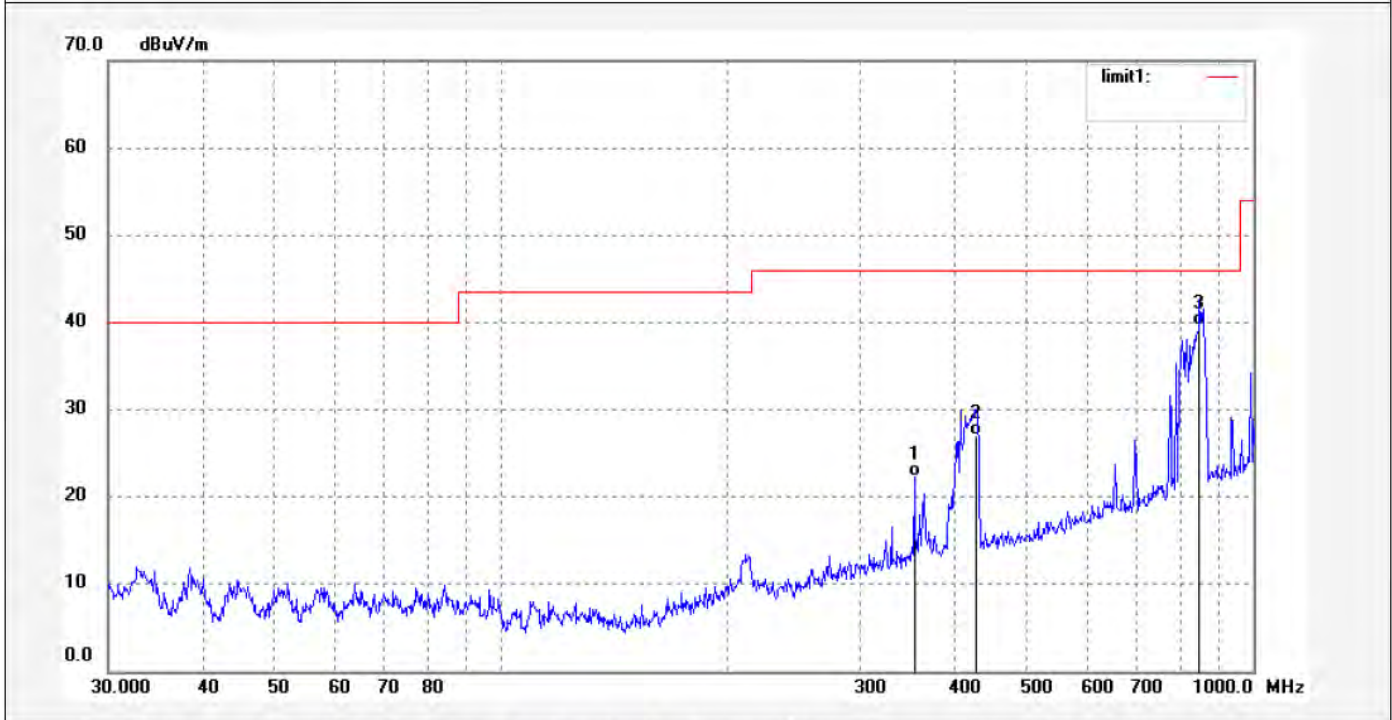
#### ACCURATE TECHNOLOGY CO., LTD.

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.: RICKY #1426	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 25 C / 55 %	Time: 9/46/53
EUT: Buletooth Speaker	Engineer Signature: Carry
Mode: TX 2402MHz	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	354.1831	38.36	-16.10	22.26	46.00	-23.74	QP			
2	428.0193	42.28	-15.22	27.06	46.00	-18.94	QP			
3	848.0563	46.58	-6.99	39.59	46.00	-6.41	QP			



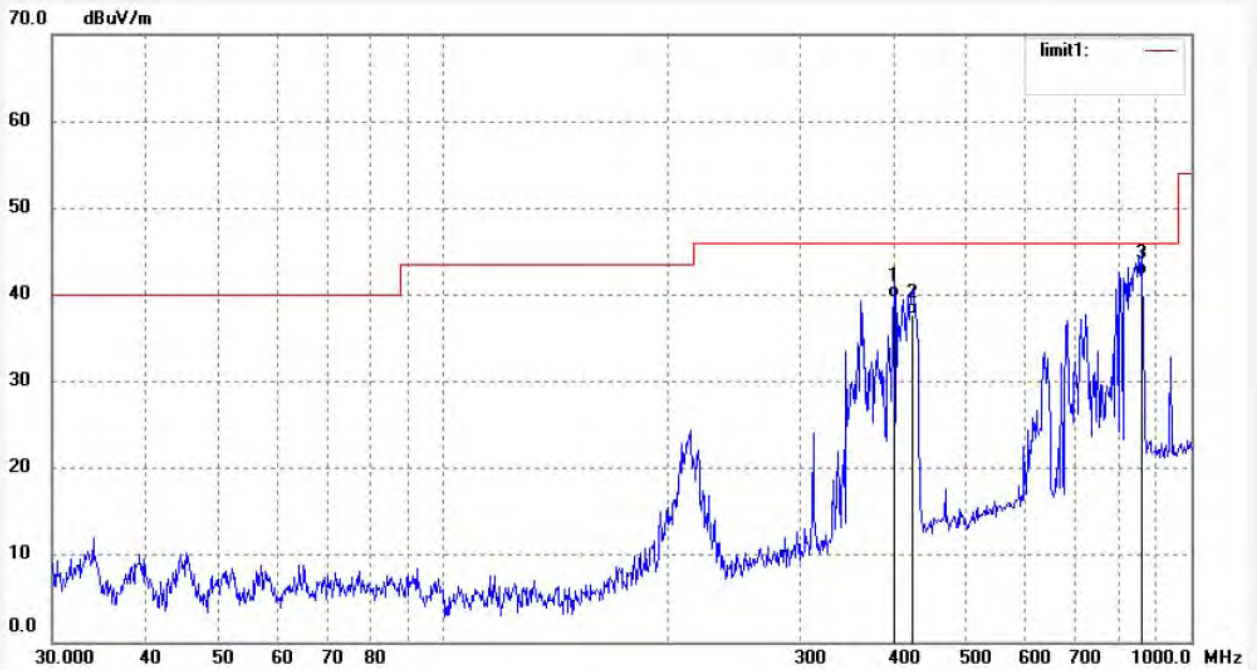
**ACCURATE TECHNOLOGY CO., LTD.**

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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: RICKY #1427	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 25 C / 55 %	Time: 9/47/34
EUT: Buletooth Speaker	Engineer Signature: Carry
Mode: TX 2402MHz	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	400.4319	55.26	-15.63	39.63	46.00	-6.37	QP			
2	423.5403	53.03	-15.33	37.70	46.00	-8.30	QP			
3	857.0247	49.12	-6.86	42.26	46.00	-3.74	QP			



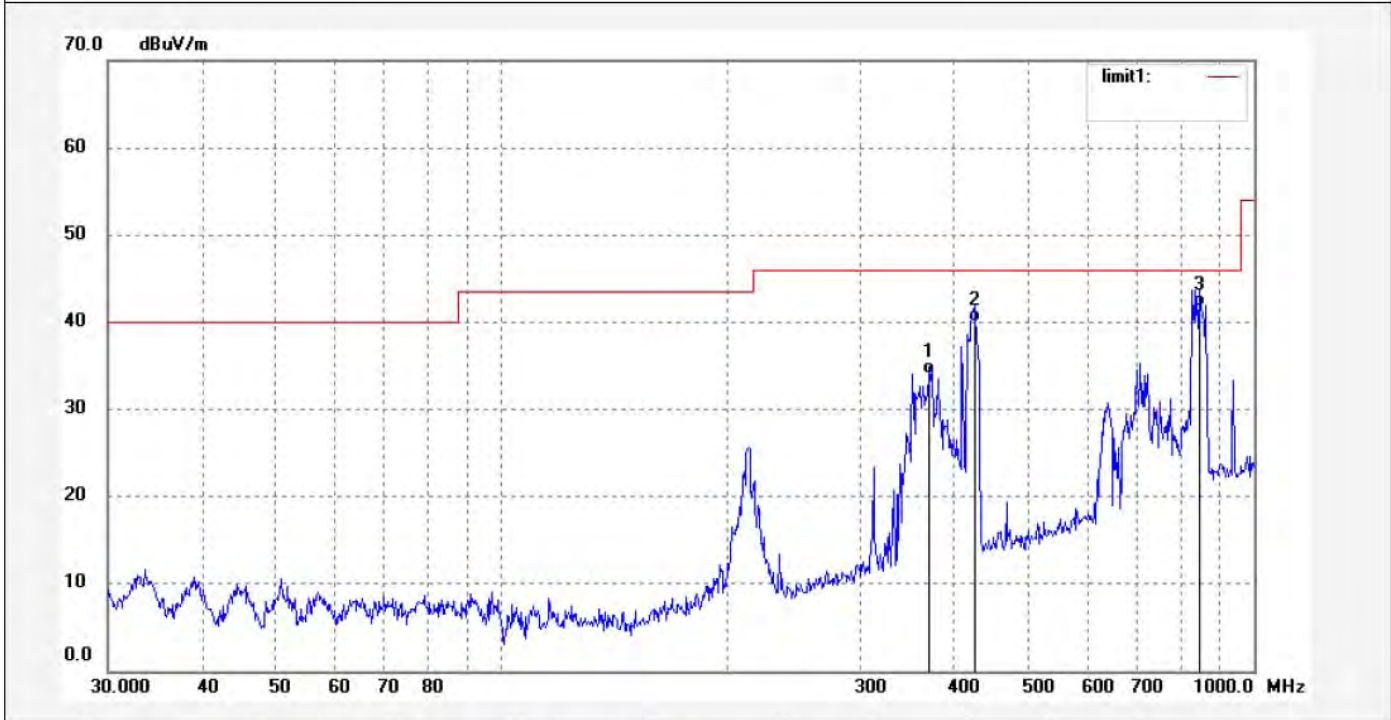
**ACCURATE TECHNOLOGY CO., LTD.**

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.: RICKY #1428	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 25 C / 55 %	Time: 9/48/45
EUT: Buletooth Speaker	Engineer Signature: Carry
Mode: TX 2441MHz	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	370.7023	49.84	-15.85	33.99	46.00	-12.01	QP			
2	425.0280	55.37	-15.31	40.06	46.00	-5.94	QP			
3	845.0878	48.78	-7.06	41.72	46.00	-4.28	QP			





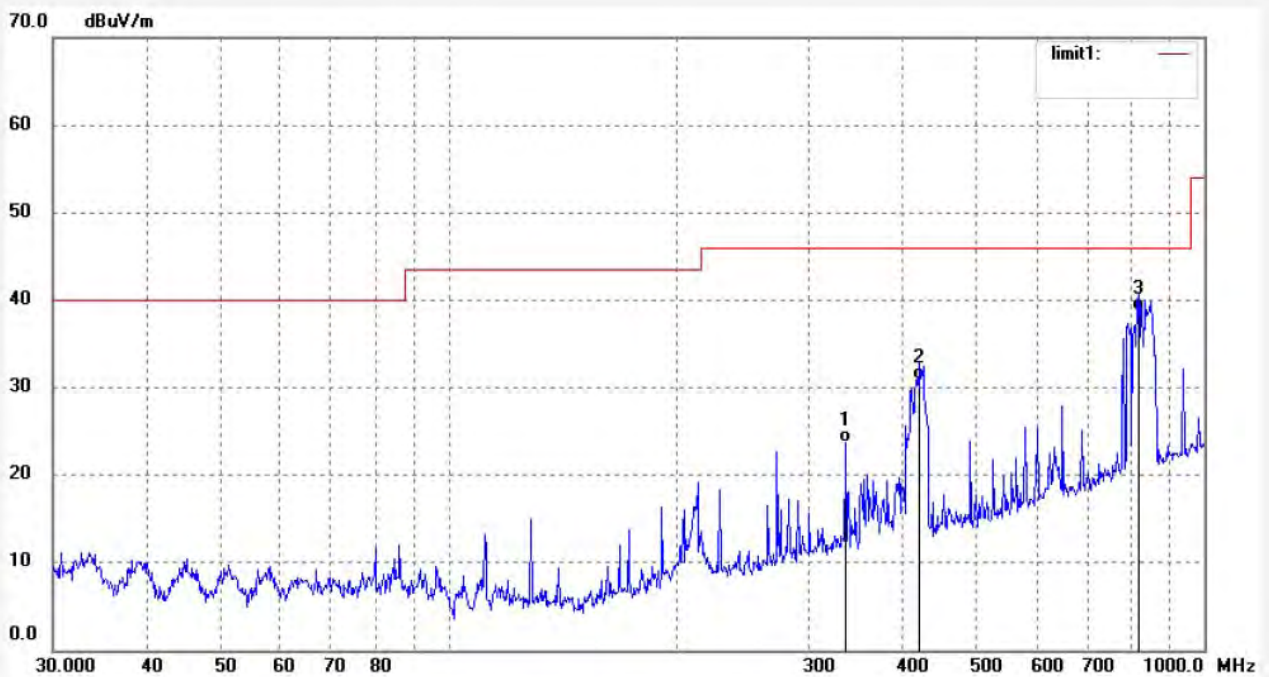
**ACCURATE TECHNOLOGY CO., LTD.**

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.: RICKY #1429	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 25 C / 55 %	Time: 9/50/16
EUT: Buletooth Speaker	Engineer Signature: Carry
Mode: TX 2441MHz	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	336.0352	40.45	-16.71	23.74	46.00	-22.26	QP			
2	420.5803	46.26	-15.36	30.90	46.00	-15.10	QP			
3	818.8341	46.24	-7.47	38.77	46.00	-7.23	QP			



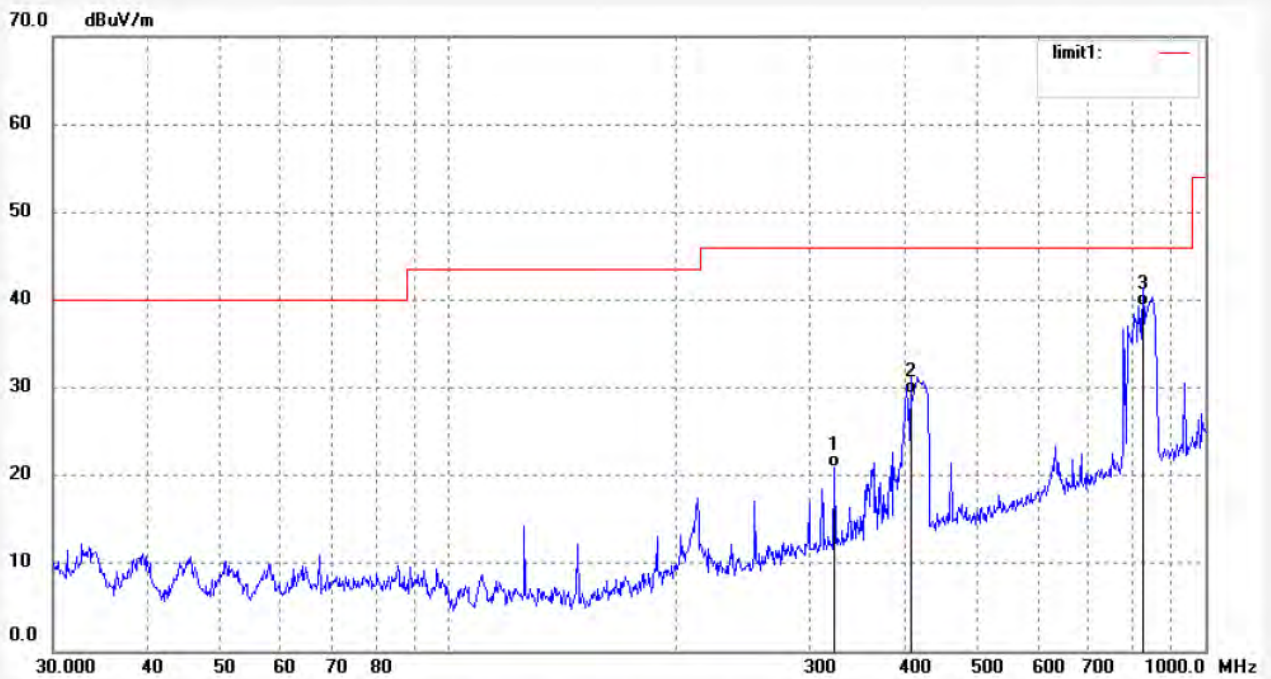
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F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: RICKY #1430	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 25 C / 55 %	Time: 9/52/03
EUT: Buletooth Speaker	Engineer Signature: Carry
Mode: TX 2480MHz	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	323.3204	38.14	-17.26	20.88	46.00	-25.12	QP			
2	407.5145	44.79	-15.51	29.28	46.00	-16.72	QP			
3	827.4934	46.62	-7.32	39.30	46.00	-6.70	QP			



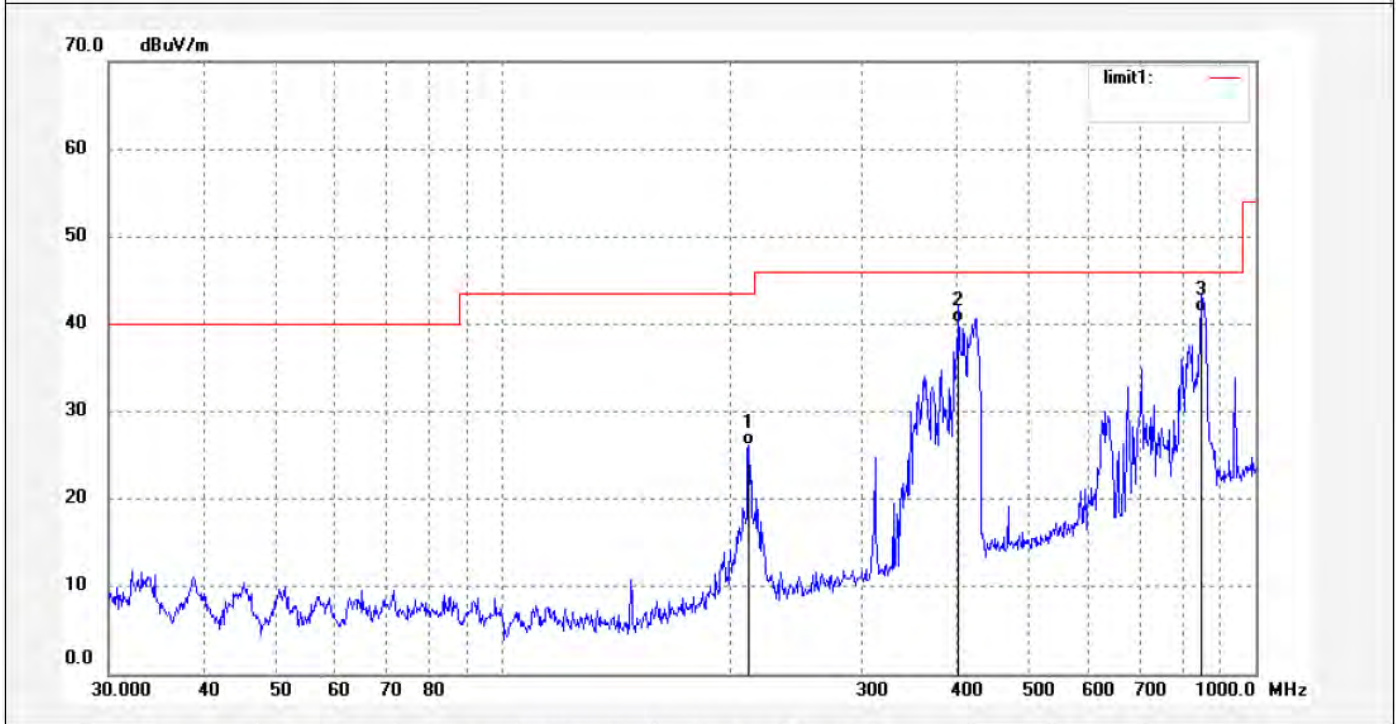
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Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: RICKY #1431	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 25 C / 55 %	Time: 9/53/23
EUT: Buletooth Speaker	Engineer Signature: Carry
Mode: TX 2480MHz	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	212.2695	46.19	-20.00	26.19	43.50	-17.31	QP			
2	403.2500	55.74	-15.58	40.16	46.00	-5.84	QP			
3	848.0563	48.39	-6.99	41.40	46.00	-4.60	QP			



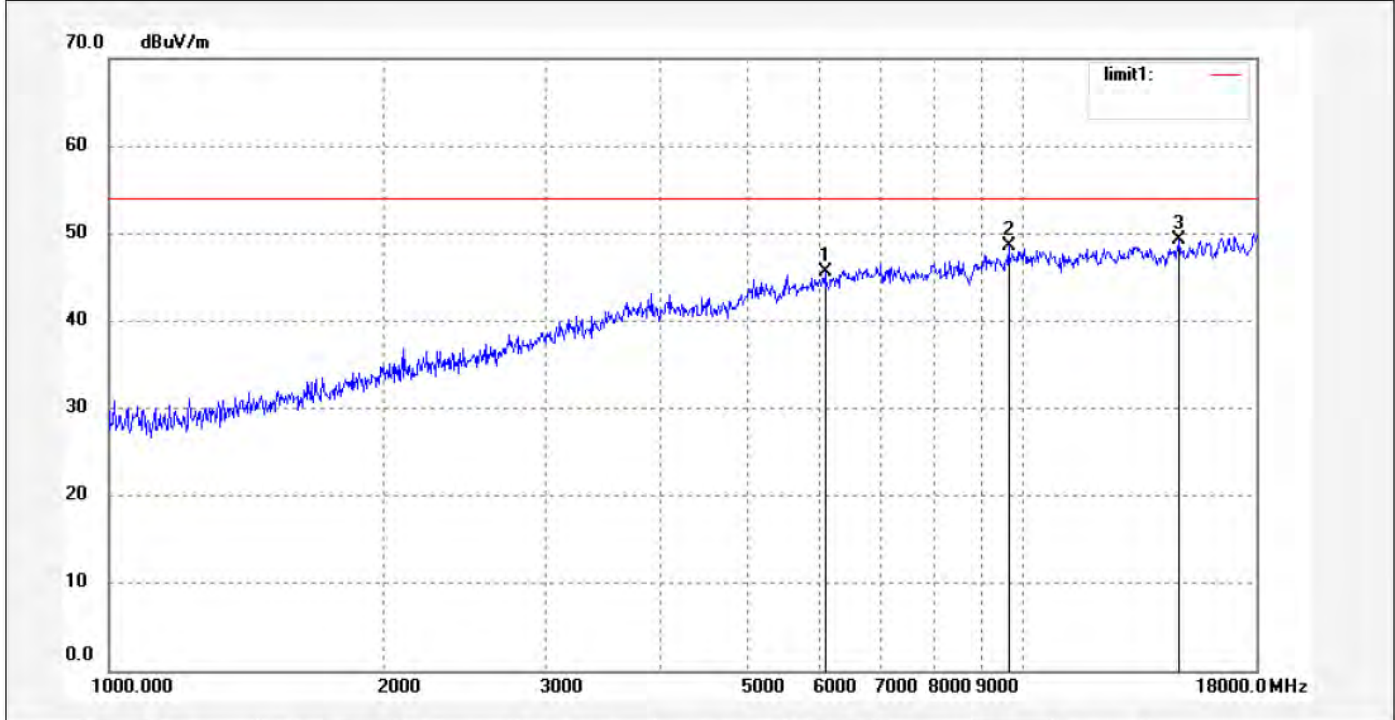
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Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: RICKY #1437	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 25 C / 55 %	Time: 10/09/10
EUT: Buletooth Speaker	Engineer Signature: Carry
Mode: TX 2402MHz	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	6071.417	41.99	3.53	45.52	54.00	-8.48	peak			
2	9641.257	37.87	10.63	48.50	54.00	-5.50	peak			
3	14830.959	-0.38	49.69	49.31	54.00	-4.69	peak			



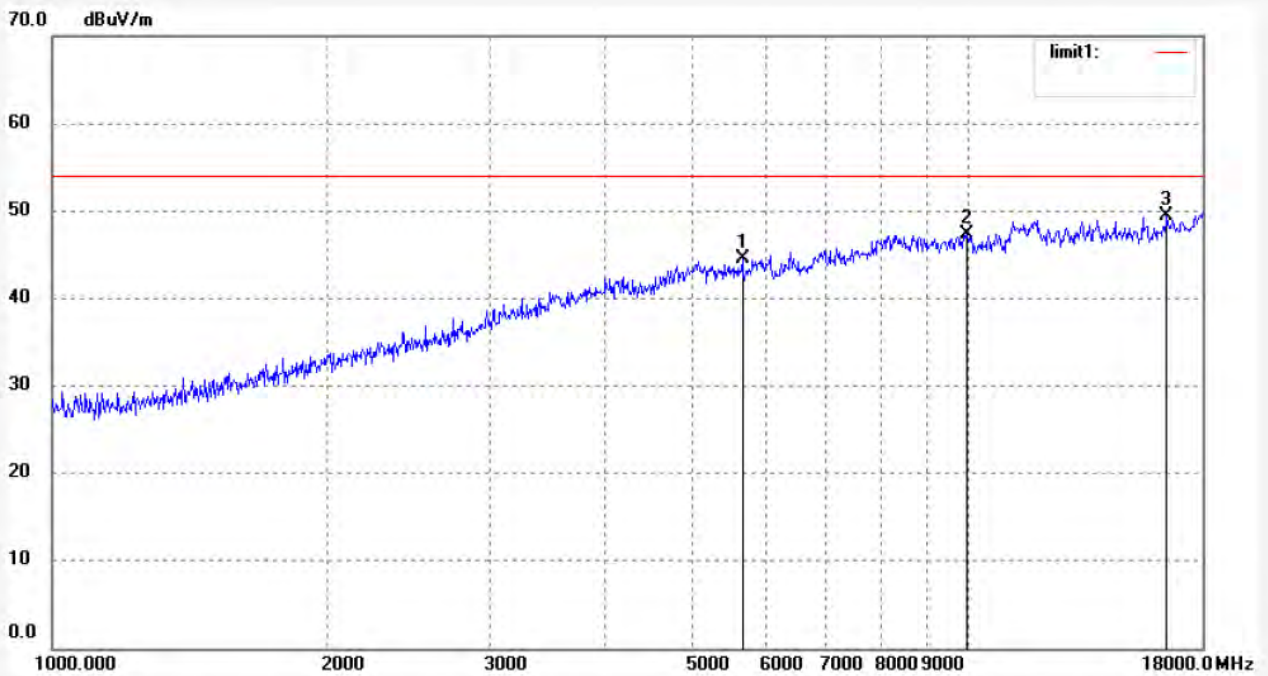
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Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: RICKY #1436	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 25 C / 55 %	Time: 10/07/37
EUT: Buletooth Speaker	Engineer Signature: Carry
Mode: TX 2402MHz	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	5664.525	42.27	2.30	44.57	54.00	-9.43	peak			
2	9952.717	36.33	11.05	47.38	54.00	-6.62	peak			
3	16457.318	0.36	49.14	49.50	54.00	-4.50	peak			



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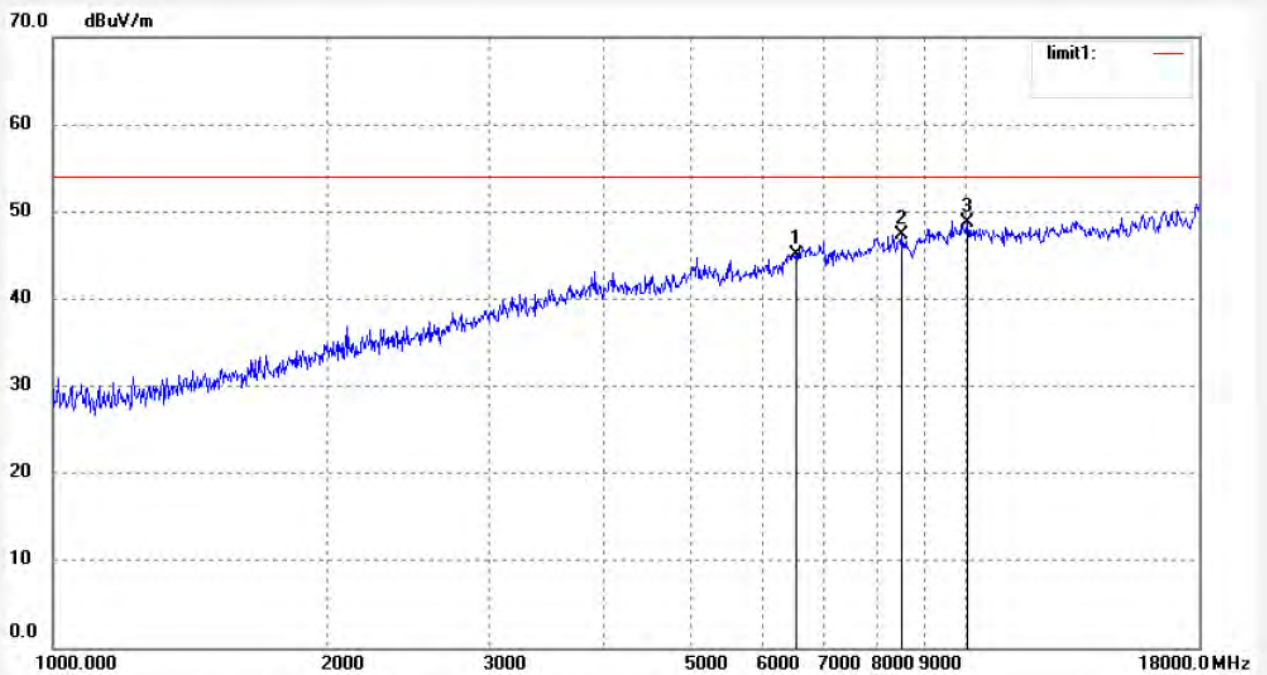
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: RICKY #1435  
Standard: FCC Class B 3M Radiated  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: Buletooth Speaker  
Mode: TX 2441MHz  
Model: D-01  
Manufacturer: Jonter

Polarization: Vertical  
Power Source: DC 3.7V  
Date: 14/06/04/  
Time: 10/05/13  
Engineer Signature: Carry  
Distance: 3m

Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	6507.536	40.65	4.45	45.10	54.00	-8.90	peak			
2	8514.456	38.51	8.87	47.38	54.00	-6.62	peak			
3	10039.393	37.80	10.96	48.76	54.00	-5.24	peak			



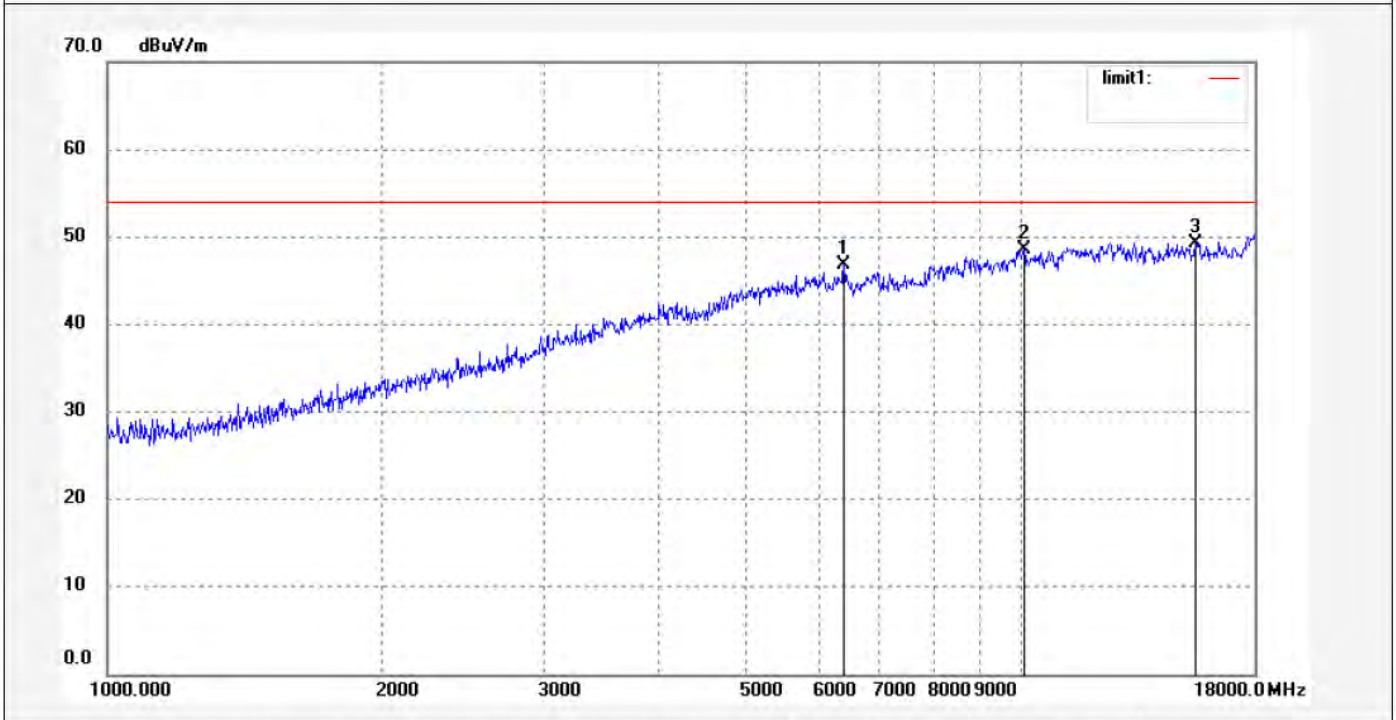
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Site: 1# Chamber  
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Fax:+86-0755-26503396

Job No.: RICKY #1434	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 25 C / 55 %	Time: 10/03/28
EUT: Buletooth Speaker	Engineer Signature: Carry
Mode: TX 2441MHz	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	6395.654	42.35	4.44	46.79	54.00	-7.21	peak			
2	10068.453	37.71	10.85	48.56	54.00	-5.44	peak			
3	15488.107	0.79	48.51	49.30	54.00	-4.70	peak			



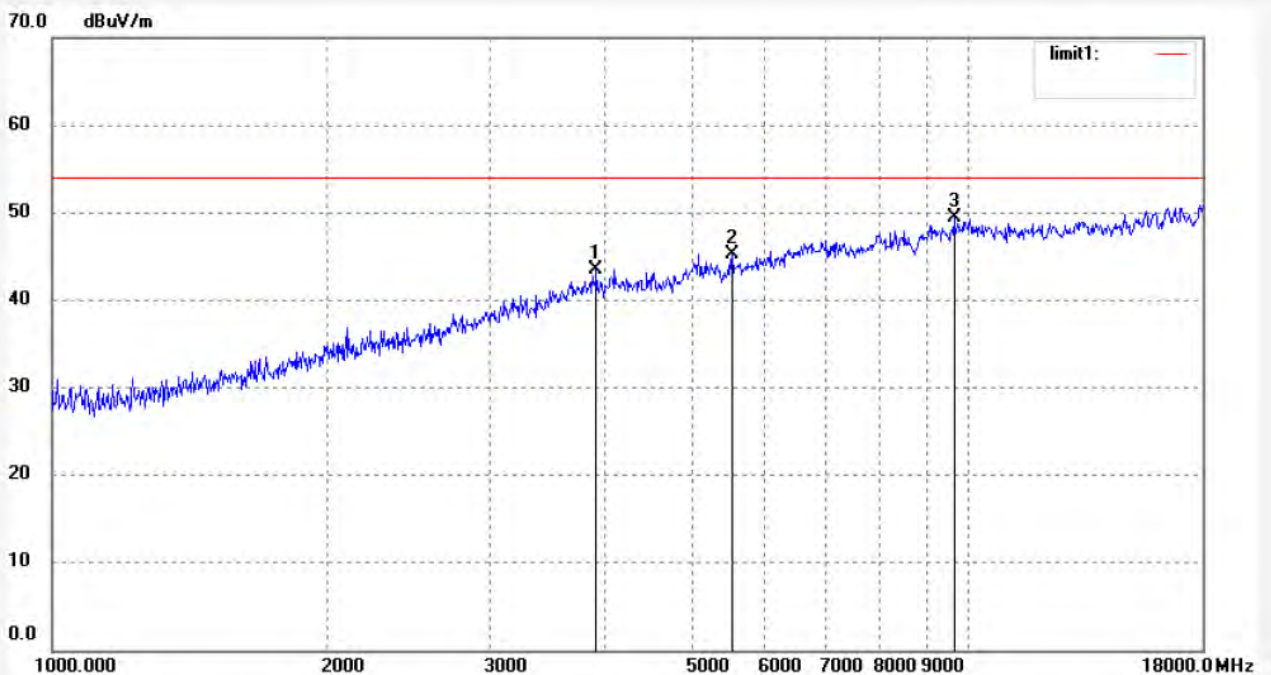
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Site: 1# Chamber  
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Fax:+86-0755-26503396

Job No.: RICKY #1433	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 25 C / 55 %	Time: 10/01/27
EUT: Buletooth Speaker	Engineer Signature: Carry
Mode: TX 2480MHz	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	3924.135	45.22	-1.66	43.56	54.00	-10.44	peak			
2	5519.072	43.08	2.21	45.29	54.00	-8.71	peak			
3	9641.257	38.87	10.63	49.50	54.00	-4.50	peak			





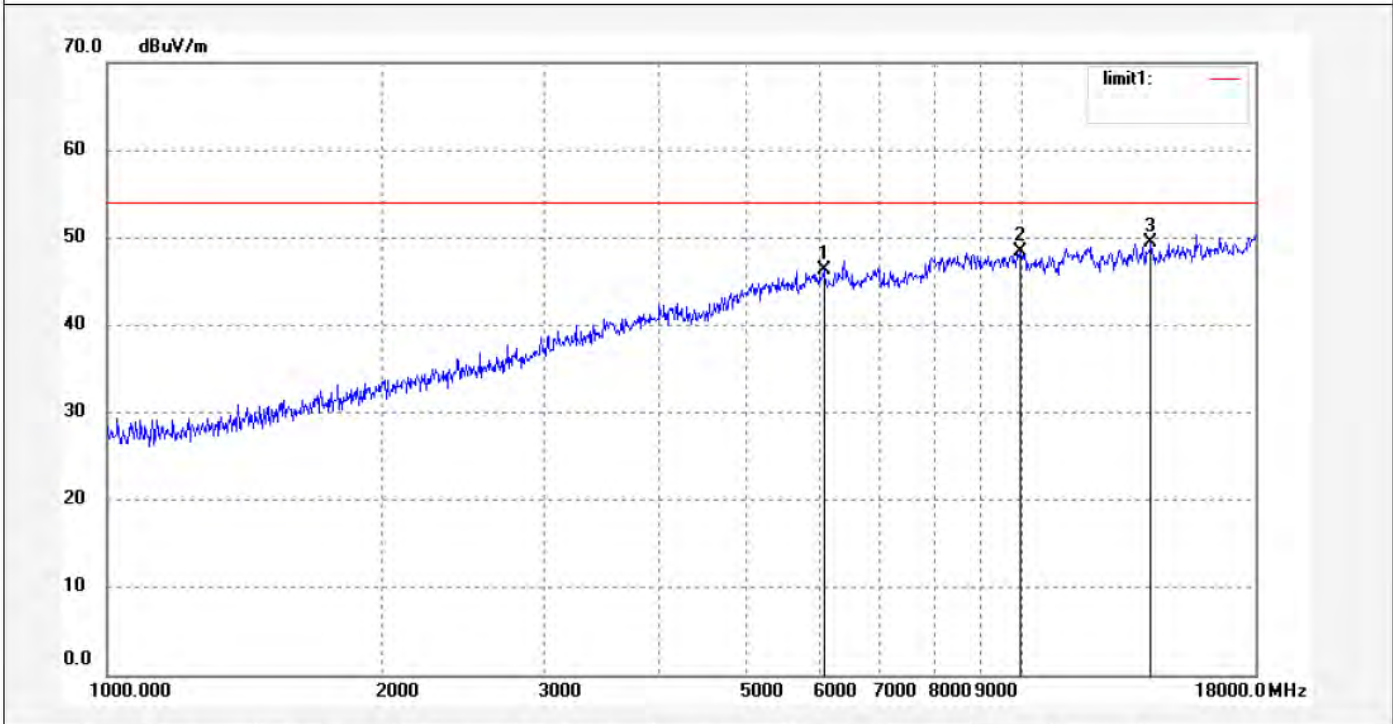
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Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: RICKY #1432	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 25 C / 55 %	Time: 9/55/28
EUT: Buletooth Speaker	Engineer Signature: Carry
Mode: TX 2480MHz	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

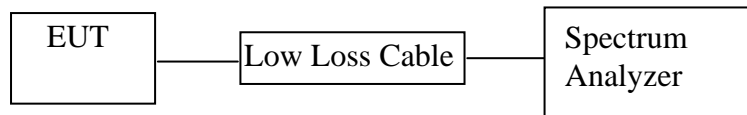
Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	6071.417	42.83	3.53	46.36	54.00	-7.64	peak			
2	9952.717	37.33	11.05	48.38	54.00	-5.62	peak			
3	13837.024	1.80	47.59	49.39	54.00	-4.61	peak			

## 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.

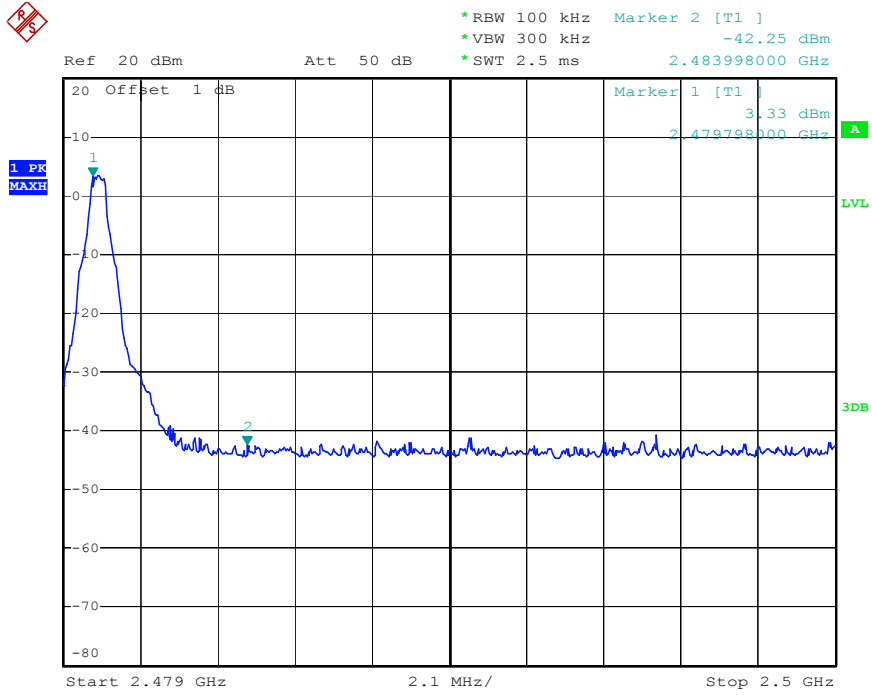
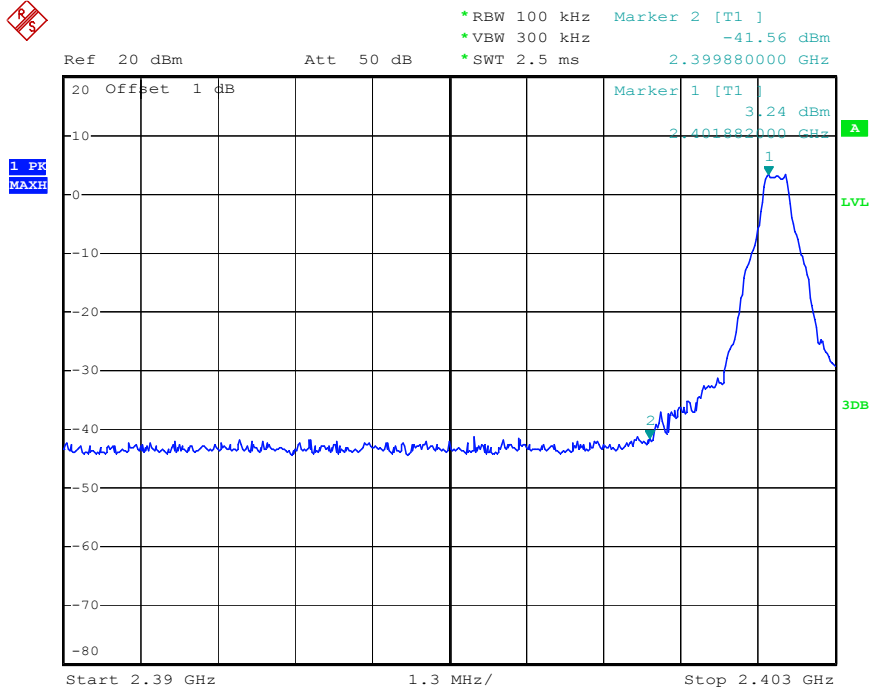
11.5.2. Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz with convenient frequency span including 100 kHz bandwidth from band edge.

11.5.3. The band edges was measured and recorded.

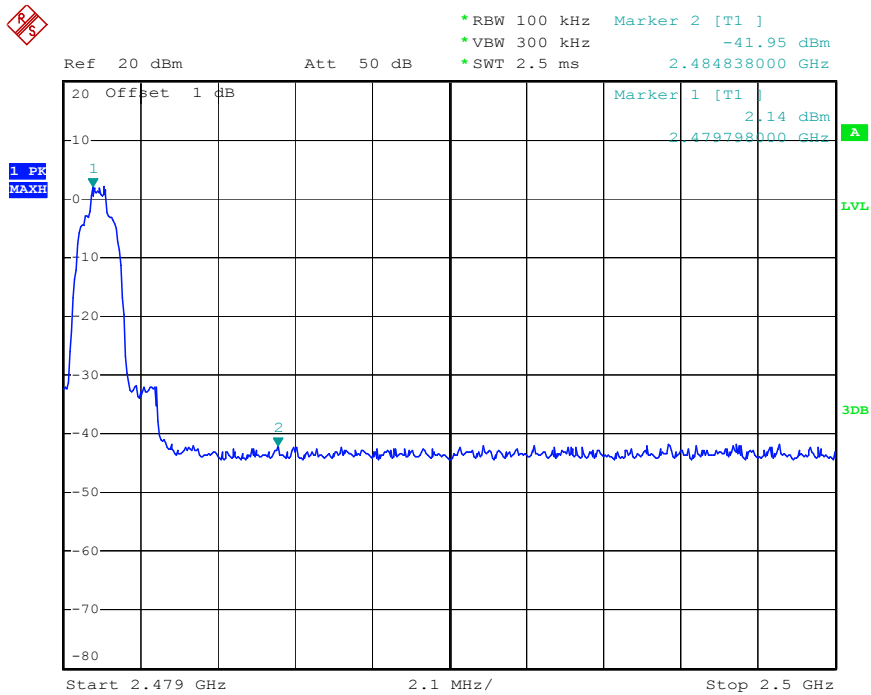
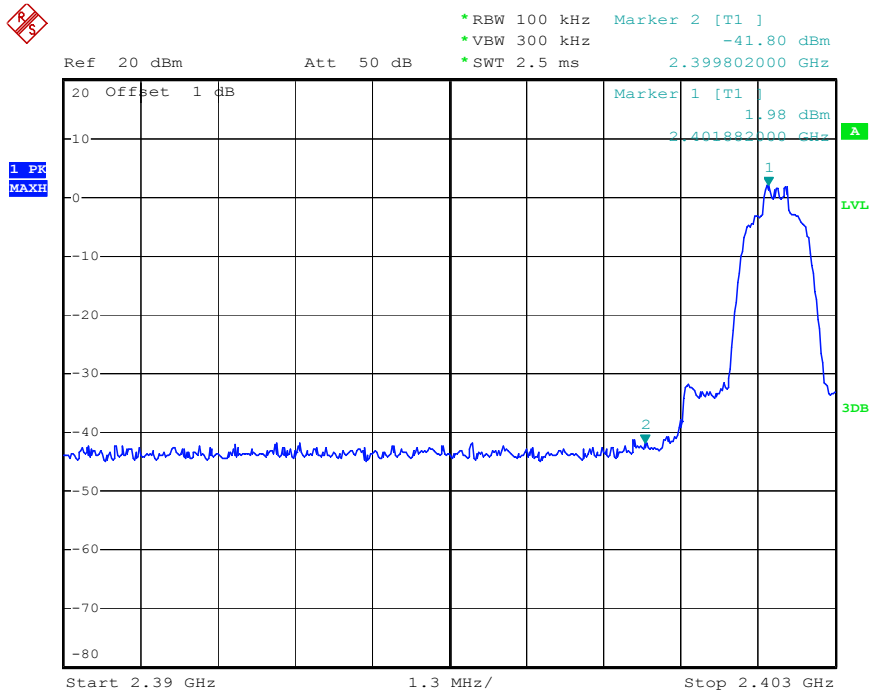
## 11.6. Test Result

Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
GFSK		
2399.880	44.80	> 20dBc
2483.998	45.58	> 20dBc
Π/4-DQPSK Mode		
2399.802	43.79	> 20dBc
2484.838	44.09	> 20dBc
8QPSK		
2399.750	43.26	> 20dBc
2483.788	44.32	> 20dBc

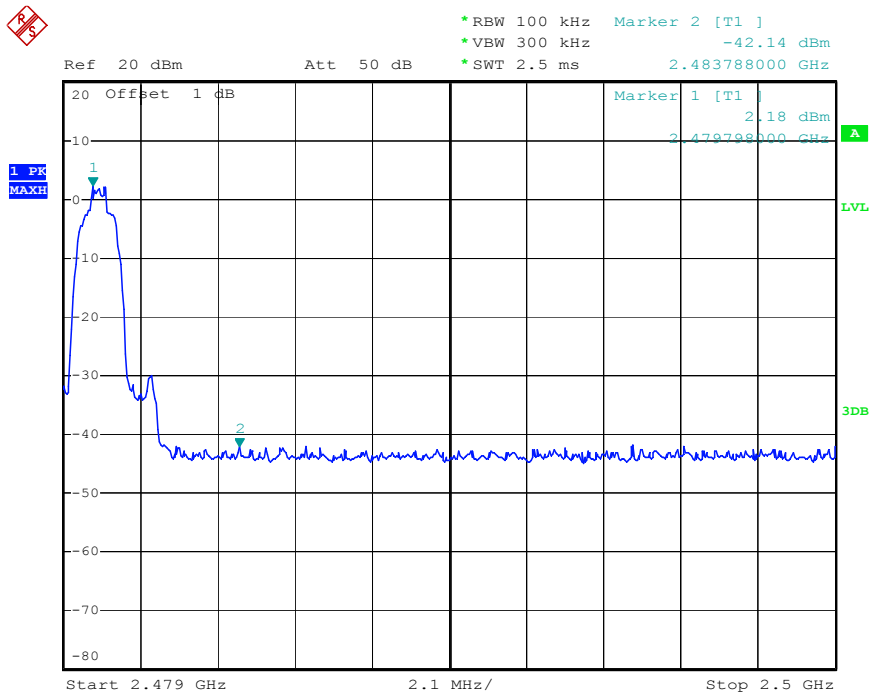
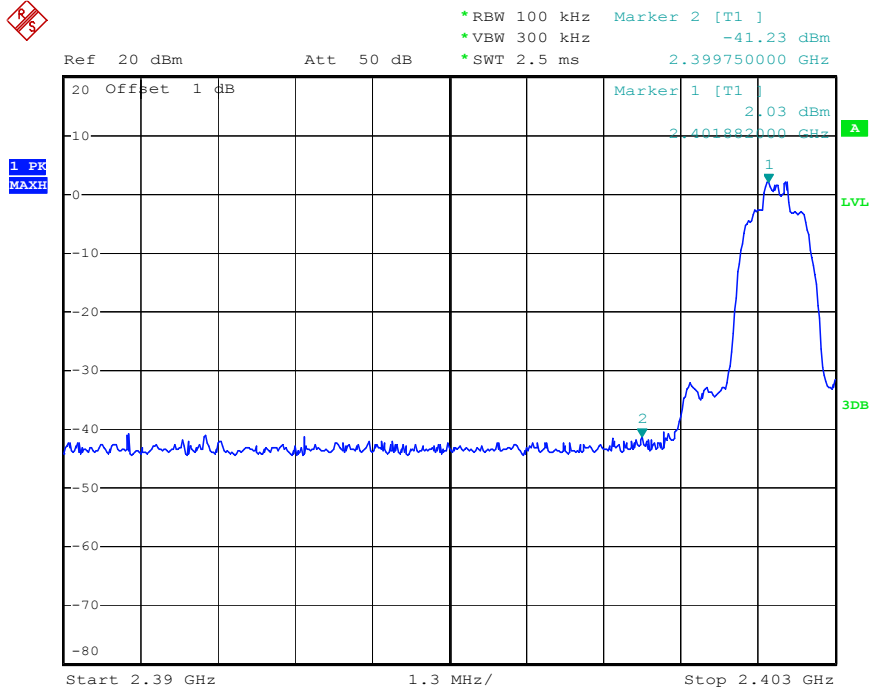
### GFSK



### $\Pi/4$ -DQPSK Mode



### 8QPSK



### 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:

$$\text{Result} = \text{Reading} + \text{Corrected Factor}$$

3. Display the measurement of peak values.

#### Non-hopping mode



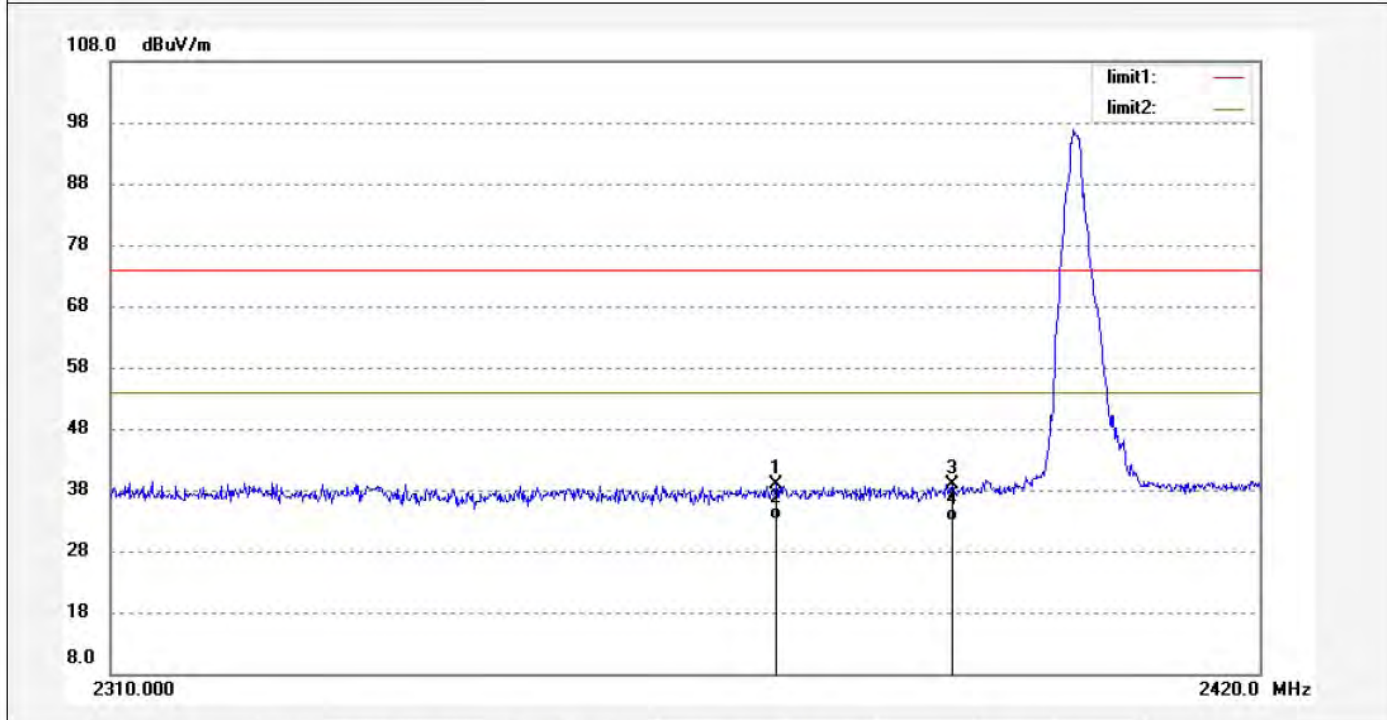
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Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: RICKY #1447	Polarization: Horizontal
Standard: FCC PK	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 23 C / 49 %	Time: 10/19/25
EUT: Buletooth Speaker	Engineer Signature: Ricky
Mode: TX 2402MHz(GFSK)	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2373.083	46.43	-7.64	38.79	74.00	-35.21	peak			
2	2373.083	40.67	-7.64	33.03	54.00	-20.97	AVG			
3	2390.000	46.38	-7.53	38.85	74.00	-35.15	peak			
4	2390.000	40.37	-7.53	32.84	54.00	-21.16	AVG			



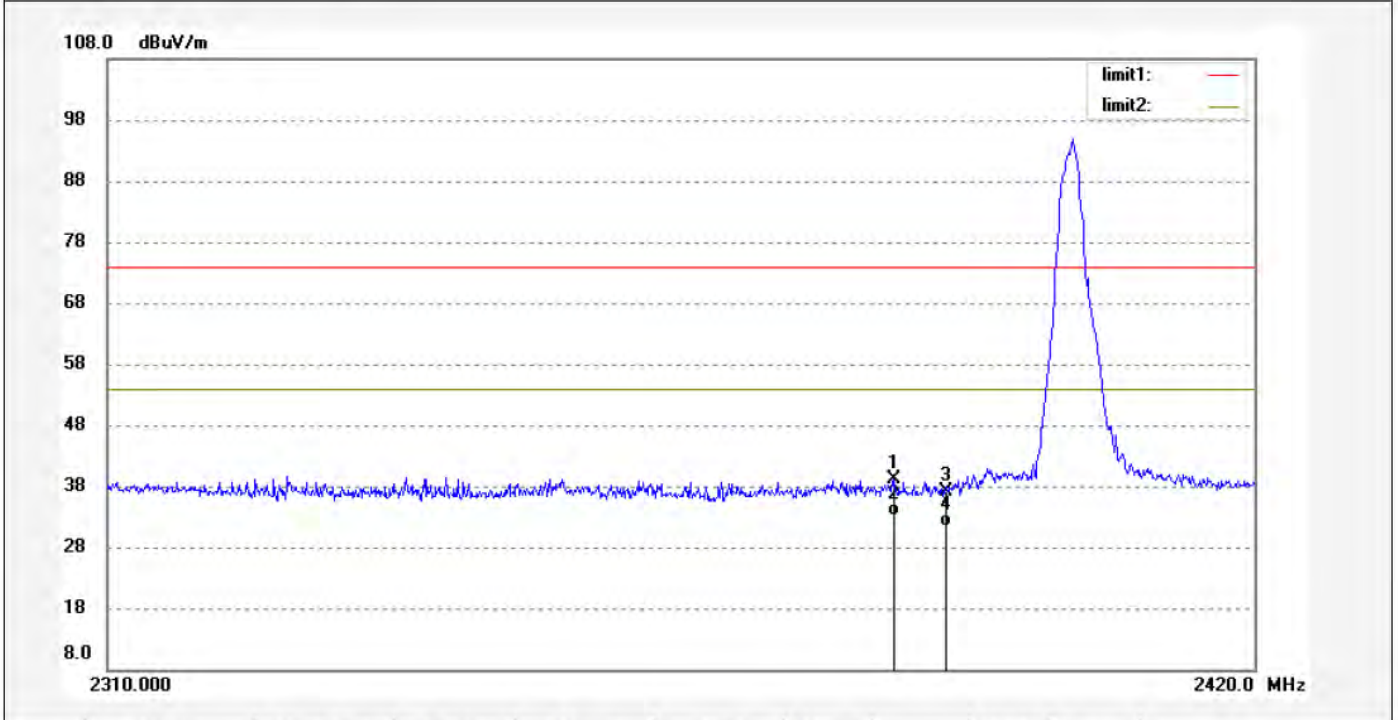
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Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: RICKY #1446	Polarization: Vertical
Standard: FCC PK	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 23 C / 49 %	Time: 10/18/19
EUT: Buletooth Speaker	Engineer Signature: Ricky
Mode: TX 2402MHz(GFSK)	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2384.838	46.61	-7.56	39.05	74.00	-34.95	peak			
2	2384.838	40.78	-7.56	33.22	54.00	-20.78	AVG			
3	2390.000	44.56	-7.53	37.03	74.00	-36.97	peak			
4	2390.000	38.97	-7.53	31.44	54.00	-22.56	AVG			





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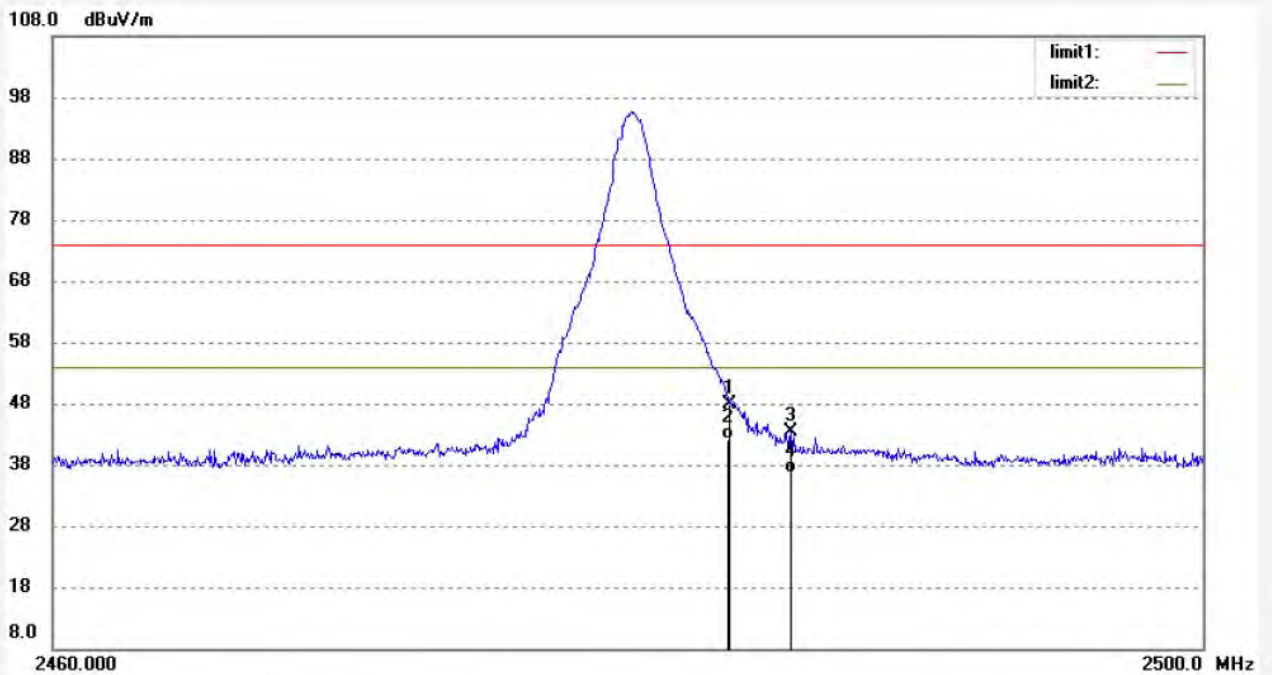
Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: RICKY #1445	Polarization: Vertical
Standard: FCC PK	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 23 C / 49 %	Time: 10/17/24
EUT: Buletooth Speaker	Engineer Signature: Ricky
Mode: TX 2480MHz(GFSK)	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	55.33	-7.37	47.96	74.00	-26.04	peak			
2	2483.500	49.48	-7.37	42.11	54.00	-11.89	AVG			
3	2485.617	50.75	-7.38	43.37	74.00	-30.63	peak			
4	2485.617	44.11	-7.38	36.73	54.00	-17.27	AVG			



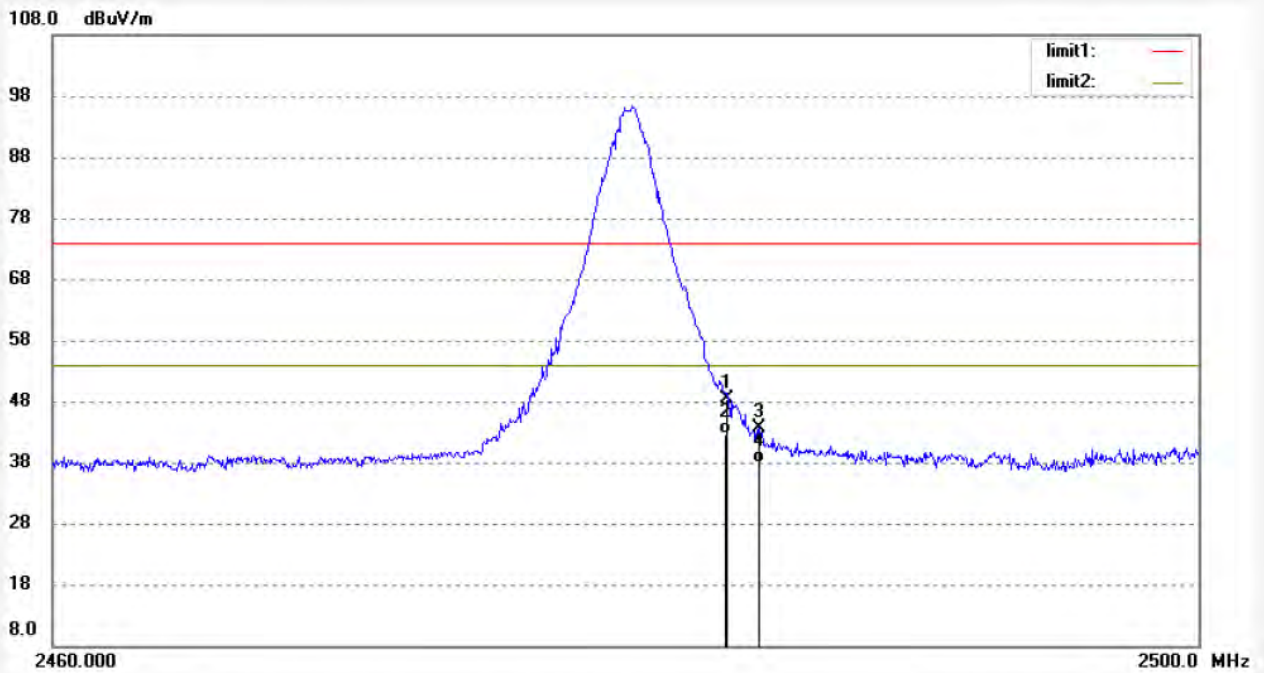
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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: RICKY #1444	Polarization: Horizontal
Standard: FCC PK	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 23 C / 49 %	Time: 10/16/41
EUT: Buletooth Speaker	Engineer Signature: Ricky
Mode: TX 2480MHz(GFSK)	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	55.75	-7.37	48.38	74.00	-25.62	peak			
2	2483.500	50.03	-7.37	42.66	54.00	-11.34	AVG			
3	2484.573	51.06	-7.38	43.68	74.00	-30.32	peak			
4	2484.573	45.27	-7.38	37.89	54.00	-16.11	AVG			



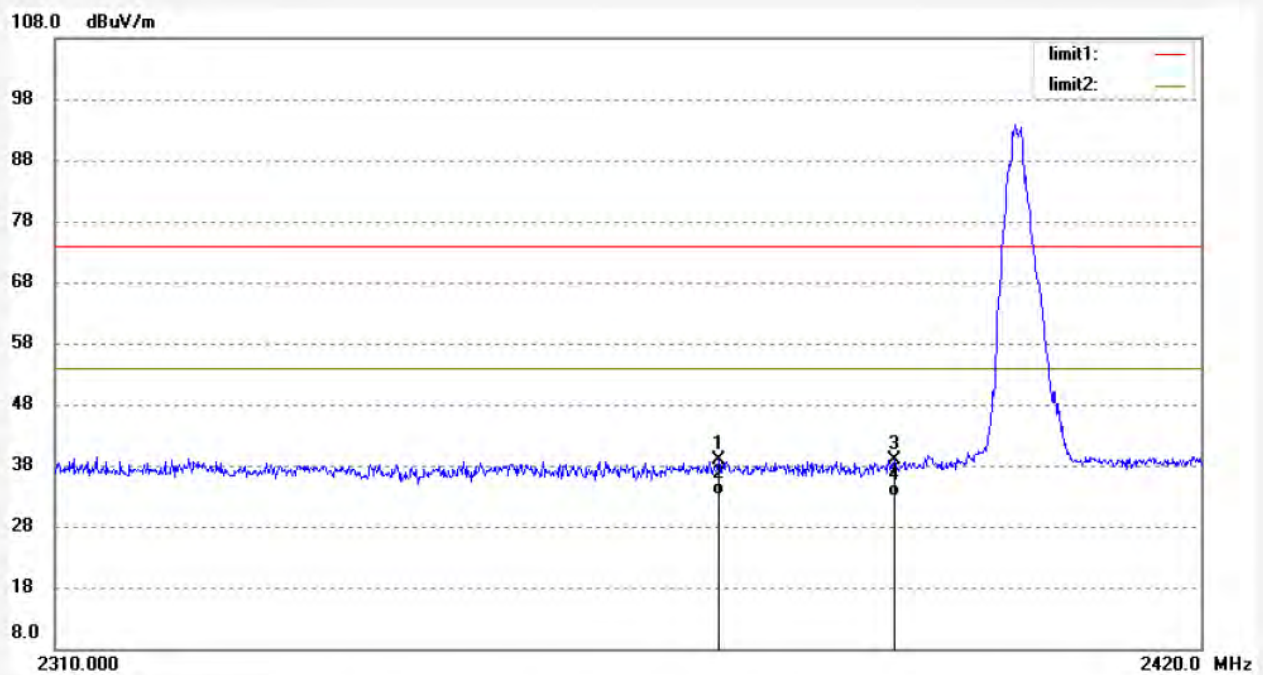
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Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: RICKY #1451	Polarization: Horizontal
Standard: FCC PK	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 23 C / 49 %	Time: 10/23/25
EUT: Buletooth Speaker	Engineer Signature: Ricky
Mode: TX 2402MHz(PI/4DQPSK)	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2373.083	46.55	-7.64	38.91	74.00	-35.09	peak			
2	2373.083	40.73	-7.64	33.09	54.00	-20.91	AVG			
3	2390.000	46.40	-7.53	38.87	74.00	-35.13	peak			
4	2390.000	40.41	-7.53	32.88	54.00	-21.12	AVG			



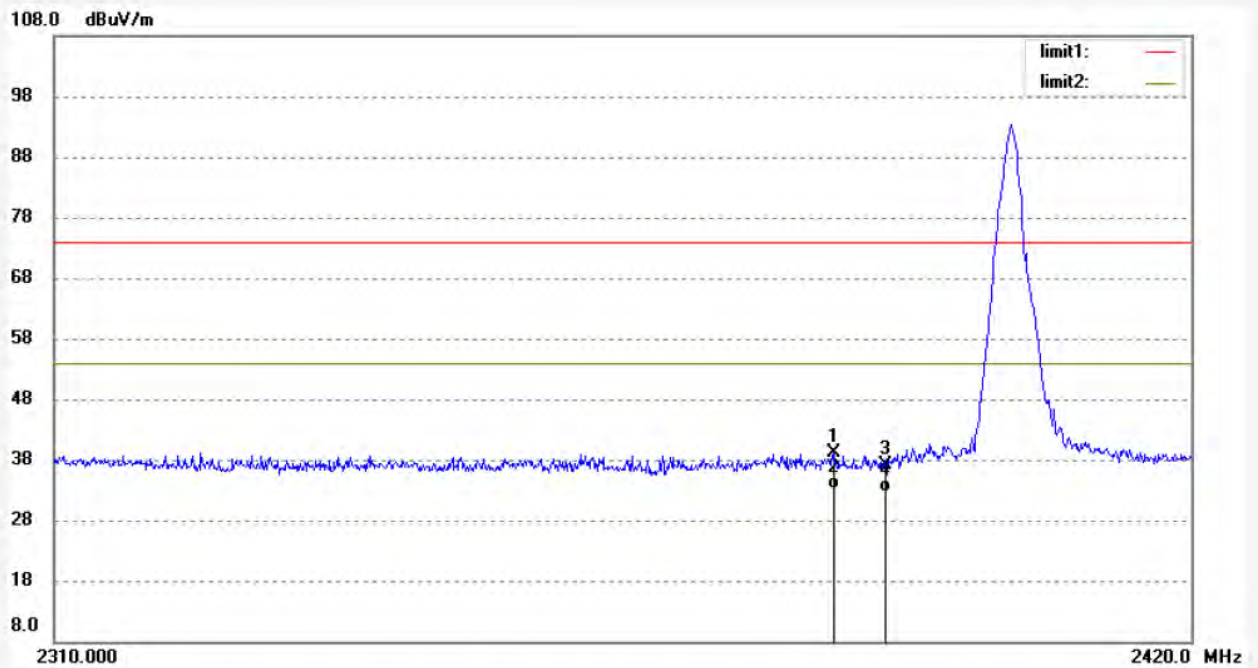
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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: RICKY #1450	Polarization: Vertical
Standard: FCC PK	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 23 C / 49 %	Time: 10/22/24
EUT: Buletooth Speaker	Engineer Signature: Ricky
Mode: TX 2402MHz(PI/4DQPSK)	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2384.838	46.78	-7.56	39.22	74.00	-34.78	peak			
2	2384.838	40.65	-7.56	33.09	54.00	-20.91	AVG			
3	2390.000	44.63	-7.53	37.10	74.00	-36.90	peak			
4	2390.000	40.12	-7.53	32.59	54.00	-21.41	AVG			



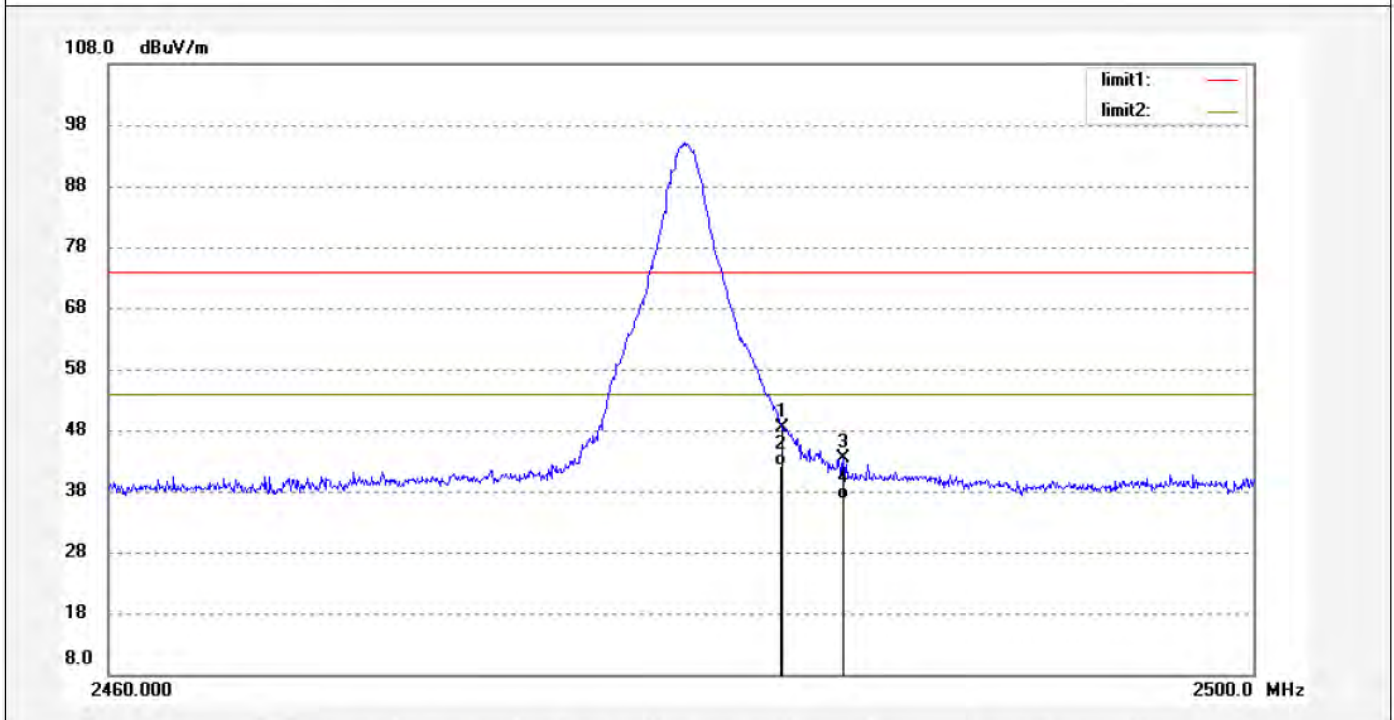
**ACCURATE TECHNOLOGY CO., LTD.**

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.: RICKY #1449	Polarization: Vertical
Standard: FCC PK	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 23 C / 49 %	Time: 10/21/21
EUT: Buletooth Speaker	Engineer Signature: Ricky
Mode: TX 2480MHz(PI/4DQPSK)	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	55.65	-7.37	48.28	74.00	-25.72	peak			
2	2483.500	49.51	-7.37	42.14	54.00	-11.86	AVG			
3	2485.617	50.81	-7.38	43.43	74.00	-30.57	peak			
4	2485.617	44.13	-7.38	36.75	54.00	-17.25	AVG			



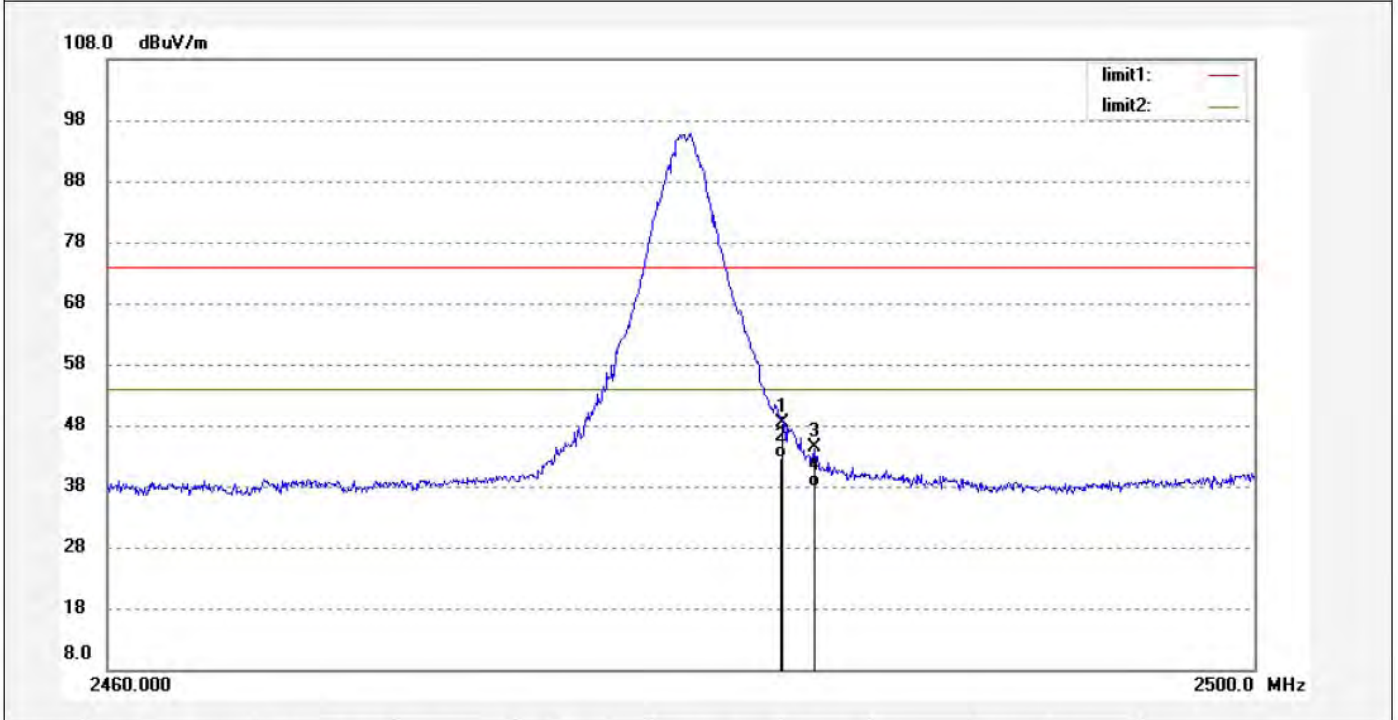
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Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: RICKY #1448	Polarization: Horizontal
Standard: FCC PK	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 23 C / 49 %	Time: 10/20/54
EUT: Buletooth Speaker	Engineer Signature: Ricky
Mode: TX 2480MHz(PI/4DQPSK)	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	55.65	-7.37	48.28	74.00	-25.72	peak			
2	2483.500	50.12	-7.37	42.75	54.00	-11.25	AVG			
3	2484.573	51.74	-7.38	44.36	74.00	-29.64	peak			
4	2484.573	45.30	-7.38	37.92	54.00	-16.08	AVG			



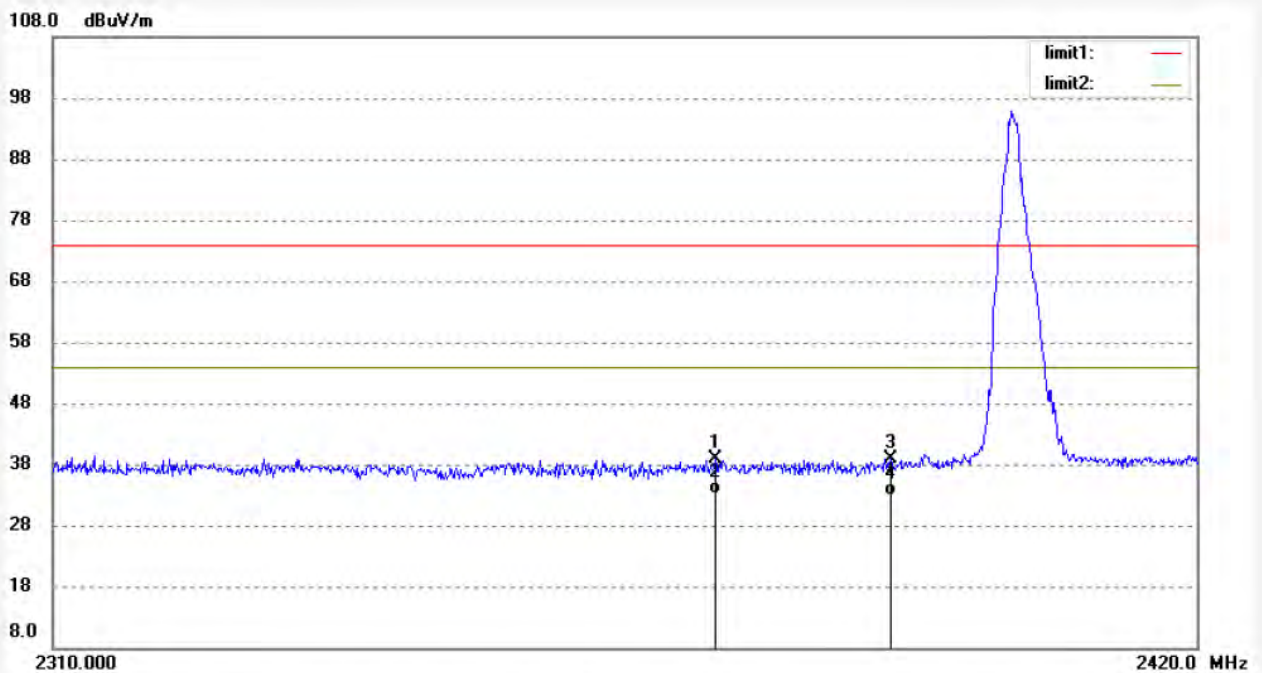
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Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: RICKY #1455	Polarization: Horizontal
Standard: FCC PK	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 23 C / 49 %	Time: 10/27/37
EUT: Buletooth Speaker	Engineer Signature: Ricky
Mode: TX 2402MHz(8QPSK)	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2373.083	46.57	-7.64	38.93	74.00	-35.07	peak			
2	2373.083	40.72	-7.64	33.08	54.00	-20.92	AVG			
3	2390.000	46.43	-7.53	38.90	74.00	-35.10	peak			
4	2390.000	40.45	-7.53	32.92	54.00	-21.08	AVG			



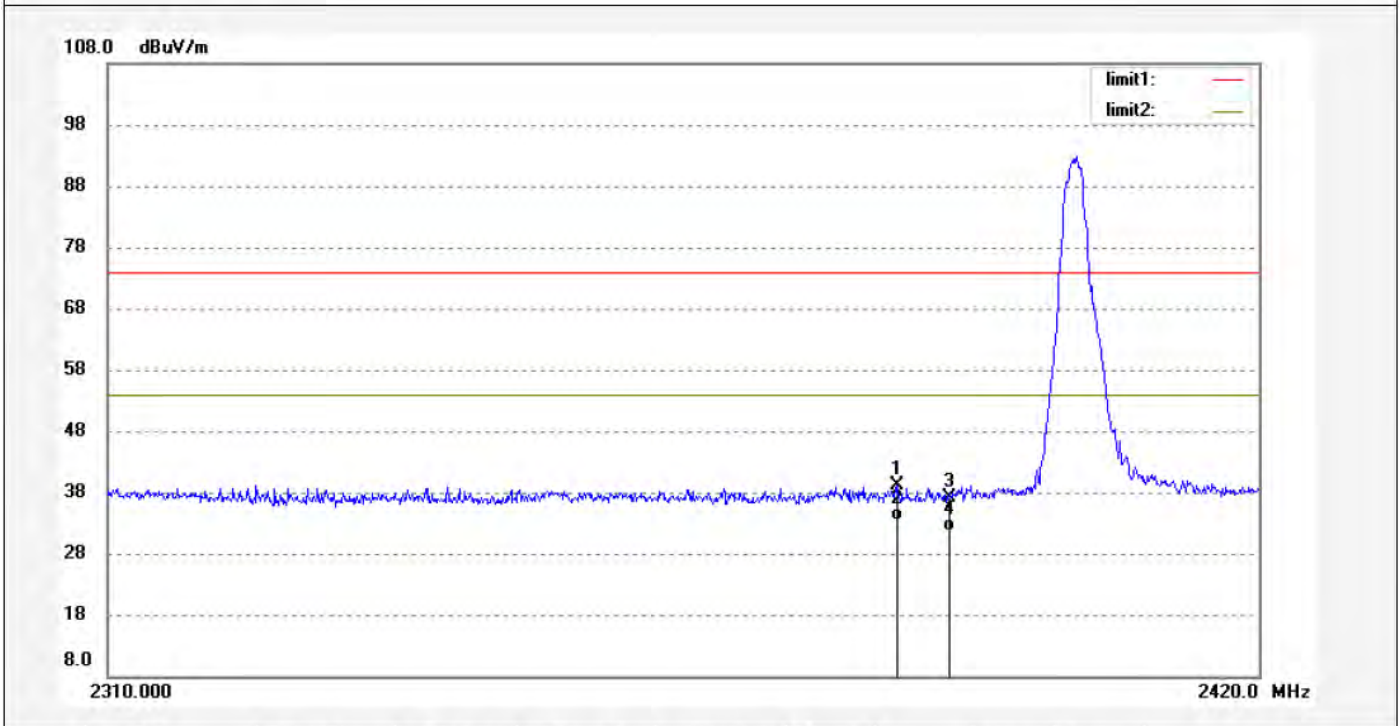
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Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: RICKY #1454	Polarization: Vertical
Standard: FCC PK	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 23 C / 49 %	Time: 10/26/11
EUT: Buletooth Speaker	Engineer Signature: Ricky
Mode: TX 2402MHz(8QPSK)	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2384.838	46.73	-7.56	39.17	74.00	-34.83	peak			
2	2384.838	40.83	-7.56	33.27	54.00	-20.73	AVG			
3	2390.000	44.64	-7.53	37.11	74.00	-36.89	peak			
4	2390.000	39.24	-7.53	31.71	54.00	-22.29	AVG			





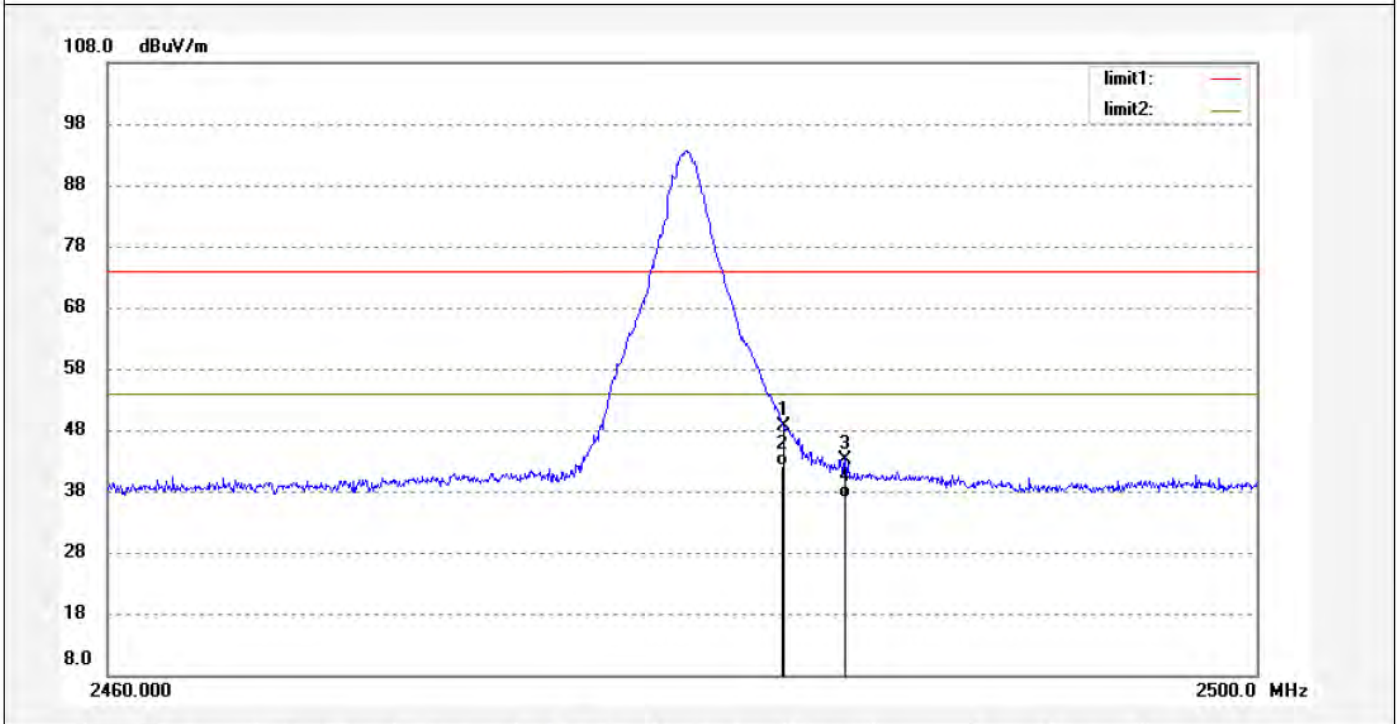
**ACCURATE TECHNOLOGY CO., LTD.**

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.: RICKY #1453	Polarization: Vertical
Standard: FCC PK	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 23 C / 49 %	Time: 10/25/20
EUT: Buletooth Speaker	Engineer Signature: Ricky
Mode: TX 2480MHz(8QPSK)	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	55.91	-7.37	48.54	74.00	-25.46	peak			
2	2483.500	49.52	-7.37	42.15	54.00	-11.85	AVG			
3	2485.617	50.59	-7.38	43.21	74.00	-30.79	peak			
4	2485.617	44.30	-7.38	36.92	54.00	-17.08	AVG			



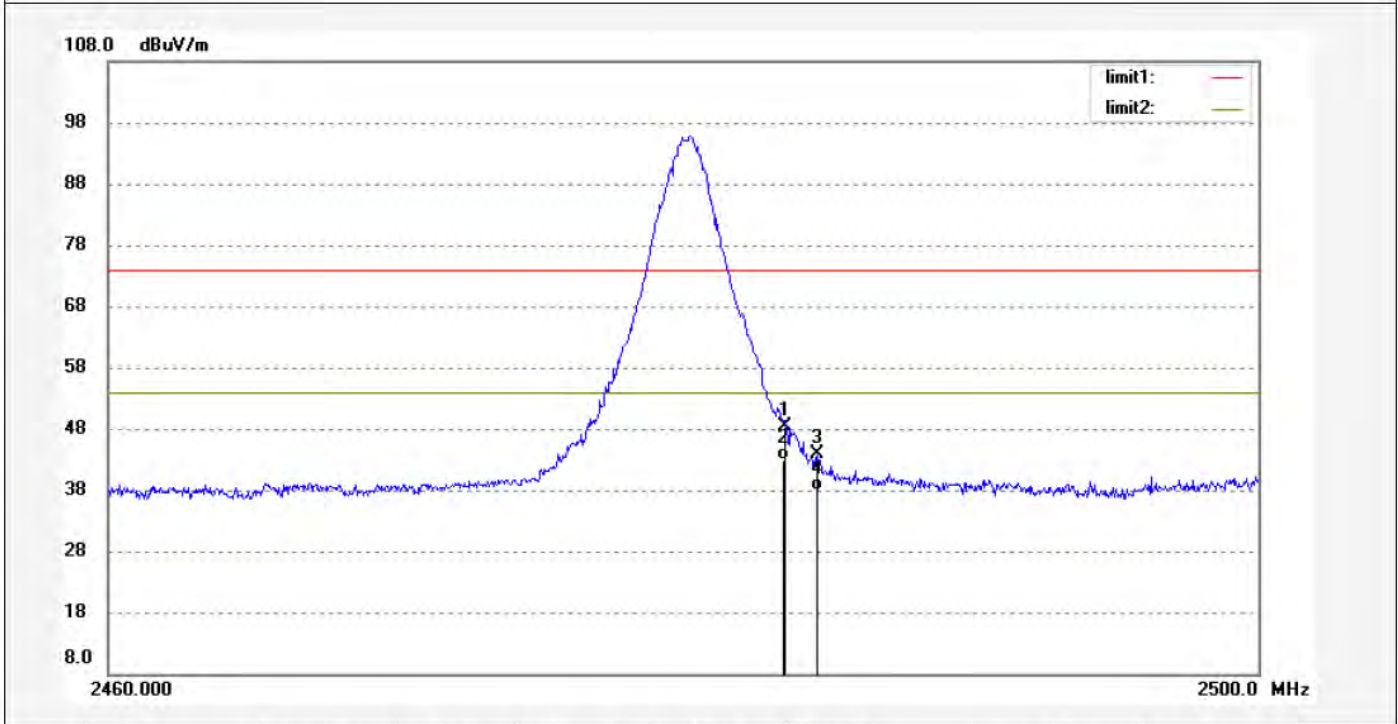
**ACCURATE TECHNOLOGY CO., LTD.**

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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: RICKY #1452	Polarization: Horizontal
Standard: FCC PK	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 23 C / 49 %	Time: 10/24/19
EUT: Buletooth Speaker	Engineer Signature: Ricky
Mode: TX 2480MHz(8QPSK)	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE20140911



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	55.83	-7.37	48.46	74.00	-25.54	peak			
2	2483.500	50.24	-7.37	42.87	54.00	-11.13	AVG			
3	2484.573	51.31	-7.38	43.93	74.00	-30.07	peak			
4	2484.573	45.34	-7.38	37.96	54.00	-16.04	AVG			

Hopping mode



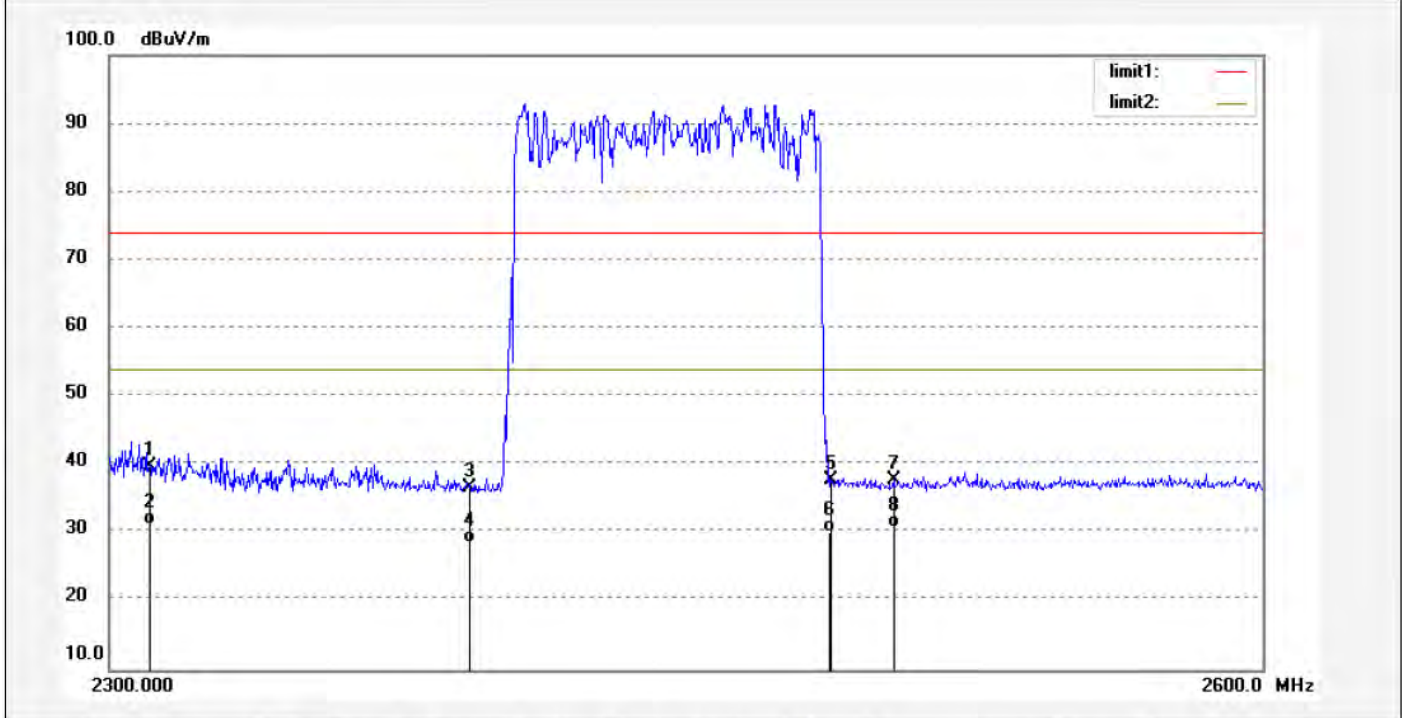
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Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: RICKY #1438	Polarization: Horizontal
Standard: FCC PK	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 25 C / 55 %	Time: 10/10/25
EUT: Buletooth Speaker	Engineer Signature:
Mode: HOPPING(GFSK)	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE2014010911



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	38.19	-6.99	31.20	54.00	-22.80	AVG			
3	2390.000	43.54	-6.78	36.76	74.00	-37.24	peak			
4	2390.000	35.33	-6.78	28.55	54.00	-25.45	AVG			
5	2483.500	44.27	-6.54	37.73	74.00	-36.27	peak			
6	2483.500	36.64	-6.54	30.10	54.00	-23.90	AVG			
7	2500.000	44.29	-6.50	37.79	74.00	-36.21	peak			
8	2500.000	37.21	-6.50	30.71	54.00	-23.29	AVG			



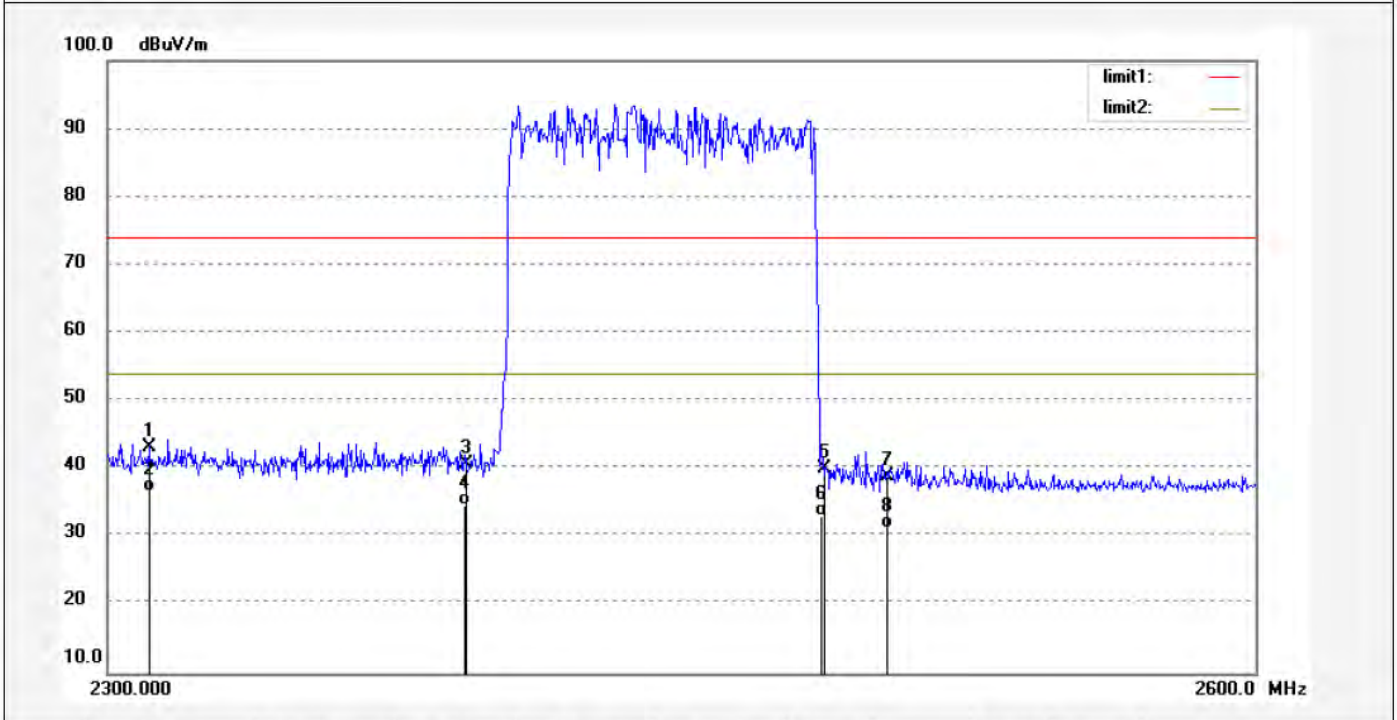
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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: RICKY #1439	Polarization: Vertical
Standard: FCC PK	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 25 C / 55 %	Time: 10/11/42
EUT: Buletooth Speaker	Engineer Signature:
Mode: HOPPING(GFSK)	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE2014010911



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	50.18	-6.99	43.19	74.00	-30.81	peak			
2	2310.000	43.66	-6.99	36.67	54.00	-17.33	AVG			
3	2390.000	47.54	-6.78	40.76	74.00	-33.24	peak			
4	2390.000	41.31	-6.78	34.53	54.00	-19.47	AVG			
5	2483.500	46.67	-6.54	40.13	74.00	-33.87	peak			
6	2483.500	39.59	-6.54	33.05	54.00	-20.95	AVG			
7	2500.000	45.47	-6.50	38.97	74.00	-35.03	peak			
8	2500.000	37.72	-6.50	31.22	54.00	-22.78	AVG			



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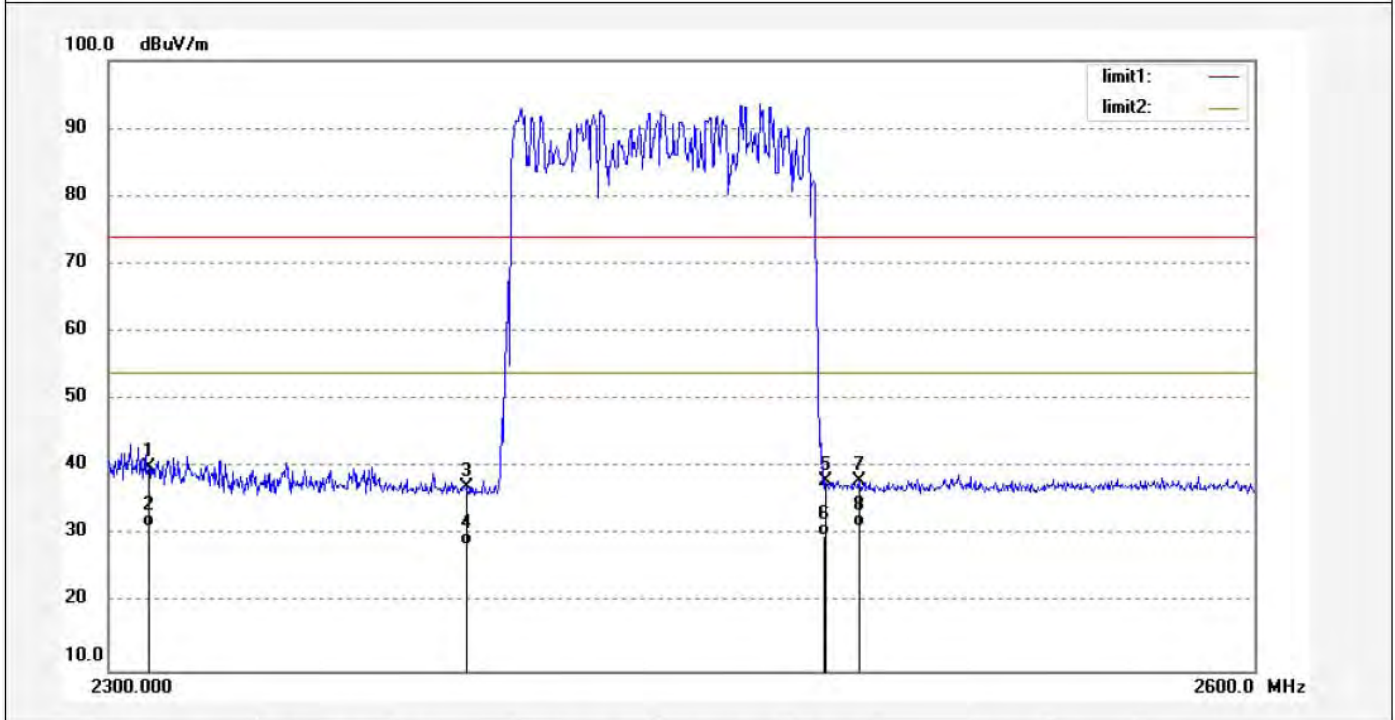
Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: RICKY #1440	Polarization: Horizontal
Standard: FCC PK	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 25 C / 55 %	Time: 10/12/33
EUT: Buletooth Speaker	Engineer Signature:
Mode: HOPPING(PI/4DQPSK)	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE2014010911



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	47.03	-6.99	40.04	74.00	-33.96	peak			
2	2310.000	38.31	-6.99	31.32	54.00	-22.68	AVG			
3	2390.000	43.94	-6.78	37.16	74.00	-36.84	peak			
4	2390.000	35.28	-6.78	28.50	54.00	-25.50	AVG			
5	2483.500	44.55	-6.54	38.01	74.00	-35.99	peak			
6	2483.500	36.42	-6.54	29.88	54.00	-24.12	AVG			
7	2492.600	44.58	-6.51	38.07	74.00	-35.93	peak			
8	2492.600	37.88	-6.51	31.37	54.00	-22.63	AVG			



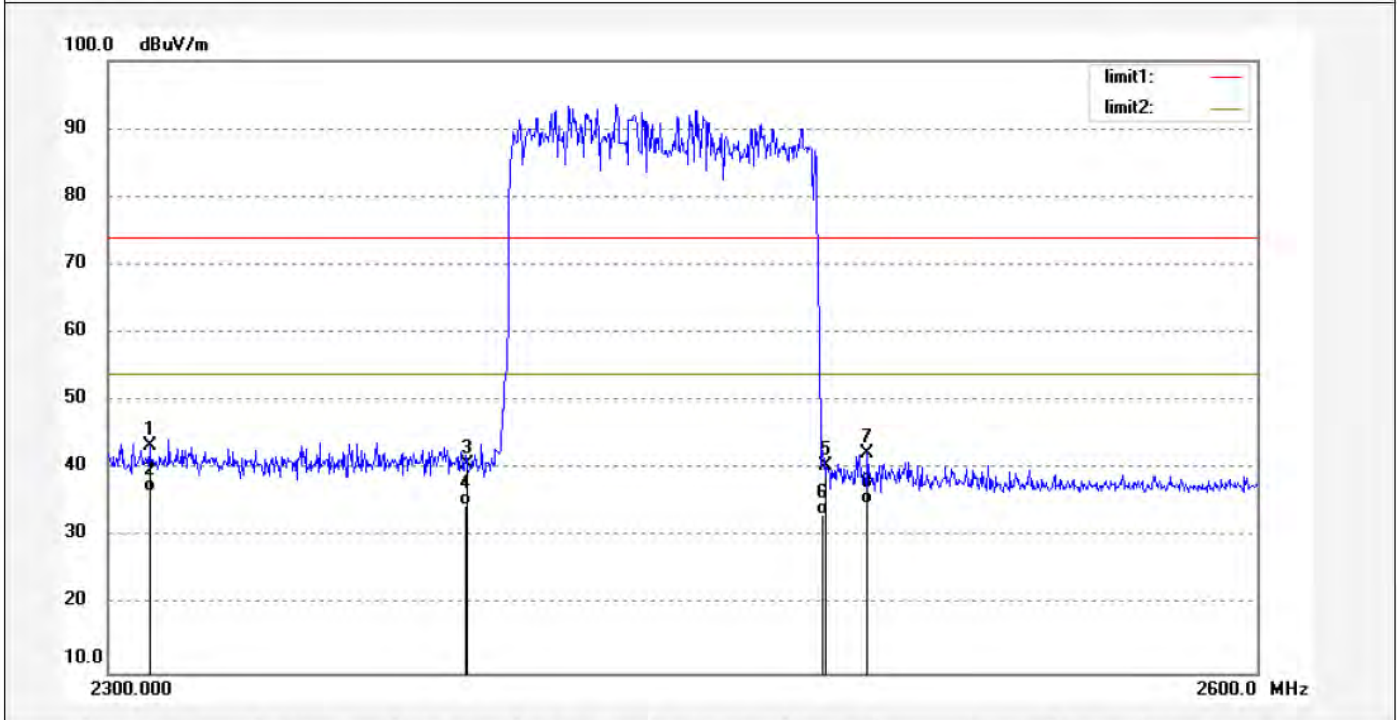
**ACCURATE TECHNOLOGY CO., LTD.**

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Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: RICKY #1441	Polarization: Vertical
Standard: FCC PK	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 25 C / 55 %	Time: 10/13/22
EUT: Buletooth Speaker	Engineer Signature:
Mode: HOPPING(PI/4DQPSK)	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE2014010911



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	50.37	-6.99	43.38	74.00	-30.62	peak			
2	2310.000	43.55	-6.99	36.56	54.00	-17.44	AVG			
3	2390.000	47.59	-6.78	40.81	74.00	-33.19	peak			
4	2390.000	41.41	-6.78	34.63	54.00	-19.37	AVG			
5	2483.500	46.94	-6.54	40.40	74.00	-33.60	peak			
6	2483.500	39.88	-6.54	33.34	54.00	-20.66	AVG			
7	2494.400	48.75	-6.50	42.25	74.00	-31.75	peak			
8	2494.400	41.35	-6.50	34.85	54.00	-19.15	AVG			



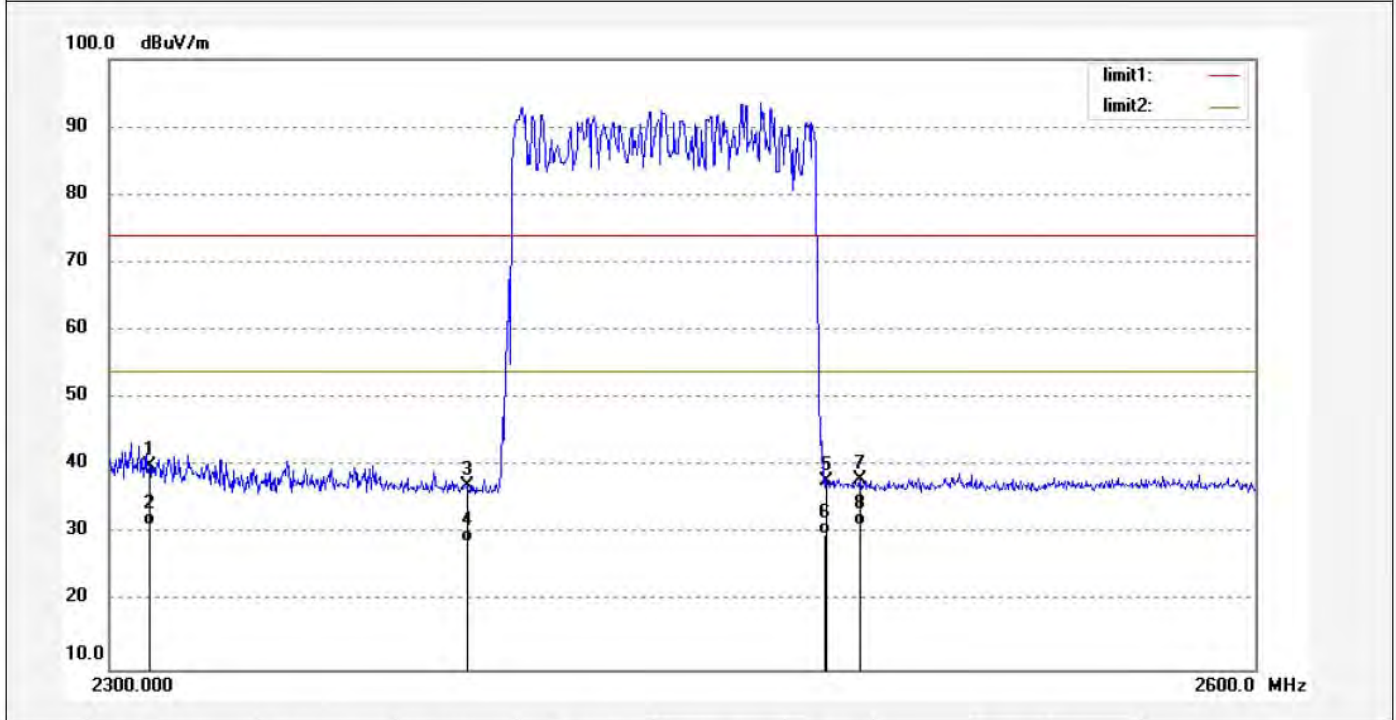
**ACCURATE TECHNOLOGY CO., LTD.**

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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: RICKY #1442	Polarization: Horizontal
Standard: FCC PK	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 25 C / 55 %	Time: 10/14/21
EUT: Buletooth Speaker	Engineer Signature:
Mode: HOPPING(8QPSK)	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE2014010911



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	46.93	-6.99	39.94	74.00	-34.06	peak			
2	2310.000	38.31	-6.99	31.32	54.00	-22.68	AVG			
3	2390.000	43.82	-6.78	37.04	74.00	-36.96	peak			
4	2390.000	35.54	-6.78	28.76	54.00	-25.24	AVG			
5	2483.500	44.41	-6.54	37.87	74.00	-36.13	peak			
6	2483.500	36.38	-6.54	29.84	54.00	-24.16	AVG			
7	2492.600	44.58	-6.51	38.07	74.00	-35.93	peak			
8	2492.600	37.69	-6.51	31.18	54.00	-22.82	AVG			



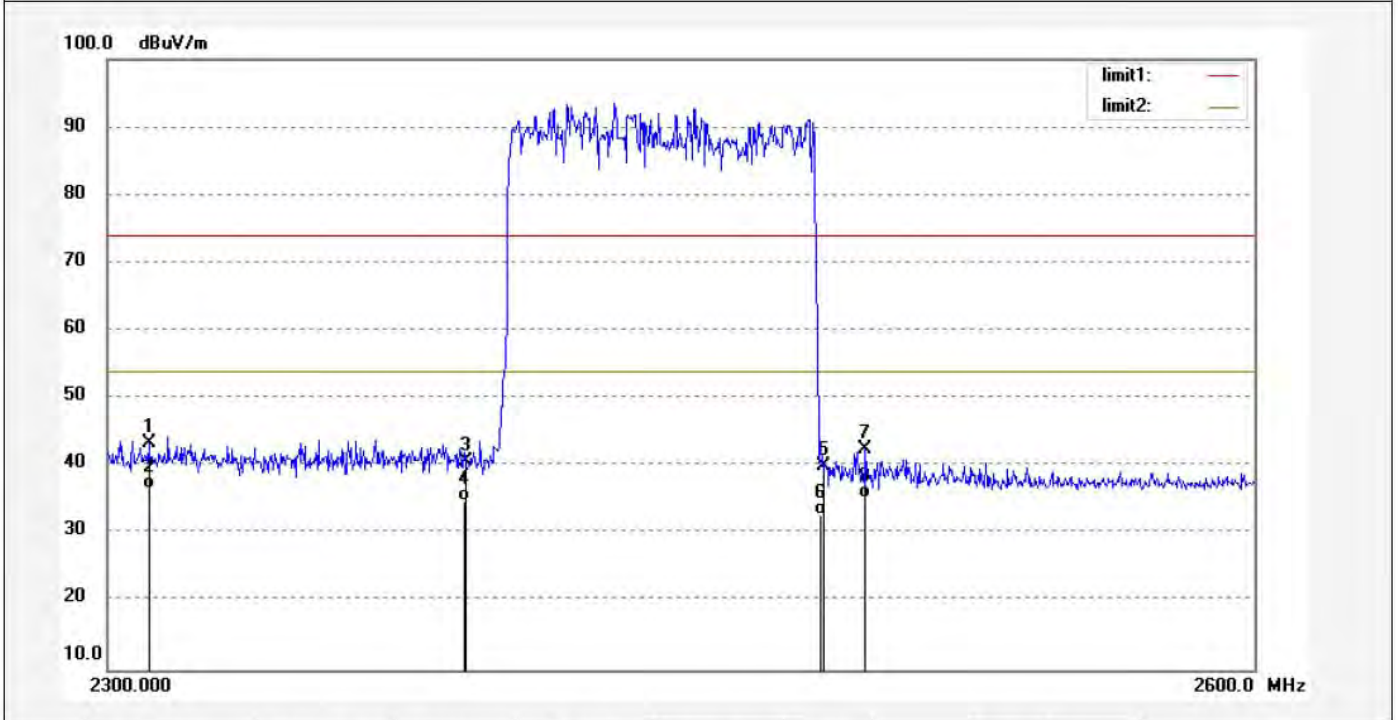
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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: RICKY #1443	Polarization: Vertical
Standard: FCC PK	Power Source: DC 3.7V
Test item: Radiation Test	Date: 14/06/04/
Temp.( C)/Hum.(%) 25 C / 55 %	Time: 10/15/38
EUT: Buletooth Speaker	Engineer Signature:
Mode: HOPPING(8QPSK)	Distance: 3m
Model: D-01	
Manufacturer: Jonter	

Note: Report No.:ATE2014010911



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	50.49	-6.99	43.50	74.00	-30.50	peak			
2	2310.000	43.74	-6.99	36.75	54.00	-17.25	AVG			
3	2390.000	47.51	-6.78	40.73	74.00	-33.27	peak			
4	2390.000	41.75	-6.78	34.97	54.00	-19.03	AVG			
5	2483.500	46.66	-6.54	40.12	74.00	-33.88	peak			
6	2483.500	39.41	-6.54	32.87	54.00	-21.13	AVG			
7	2494.400	48.96	-6.50	42.46	74.00	-31.54	peak			
8	2494.400	41.88	-6.50	35.38	54.00	-18.62	AVG			



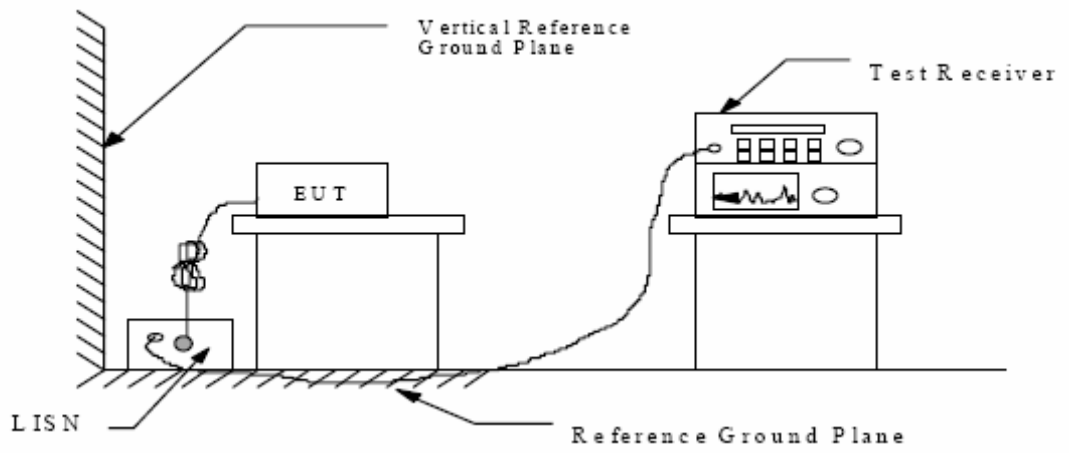
## 12.AC POWER LINE CONDUCTED EMISSION FOR FCC PART

### 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: 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

**ACCURATE TECHNOLOGY CO., LTD**

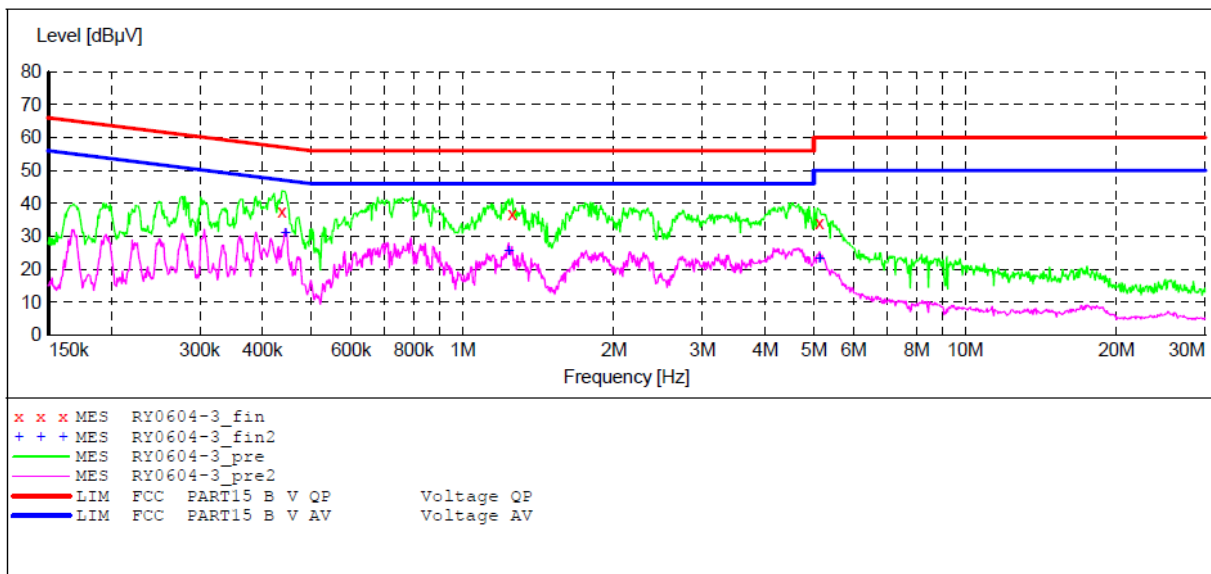
**CONDUCTED EMISSION STANDARD FCC PART15 B**

EUT: Bluetooth speaker M/N:D-01  
 Manufacturer: Jonter  
 Operating Condition: Operation  
 Test Site: 1#Shielding Room  
 Operator: Ricky  
 Test Specification: N 120V/60Hz  
 Comment:

Report No.: ATE20140911

**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: "RY0604-3\_fin"**

6/4/2014 9:08AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.437246	37.70	10.7	57	19.4	QP	N	GND
1.254372	36.70	10.9	56	19.3	QP	N	GND
5.133660	33.90	11.2	60	26.1	QP	N	GND

**MEASUREMENT RESULT: "RY0604-3\_fin2"**

6/4/2014 9:08AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.444284	30.90	10.7	47	16.1	AV	N	GND
1.234502	25.50	10.9	46	20.5	AV	N	GND
5.133660	23.20	11.2	50	26.8	AV	N	GND

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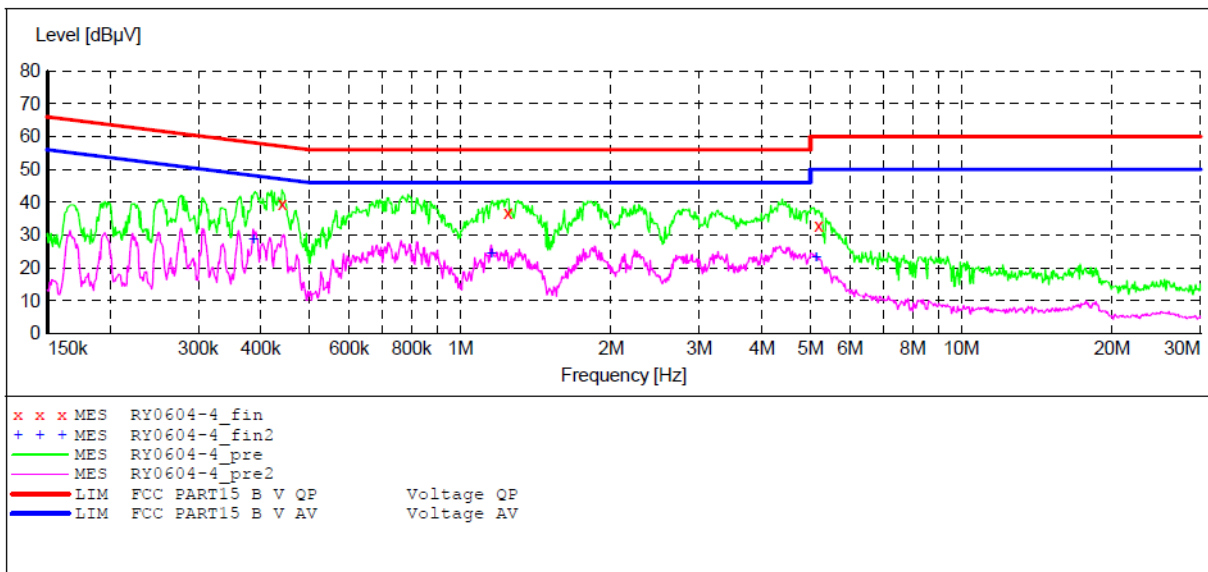
CONDUCTED EMISSION STANDARD FCC PART15 B

EUT: Bluetooth speaker M/N:D-01  
 Manufacturer: Jonter  
 Operating Condition: Operation  
 Test Site: 1#Shielding Room  
 Operator: Ricky  
 Test Specification: L 120V/60Hz  
 Comment:

Report No.:ATE20140911

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: "RY0604-4\_fin"

6/4/2014 9:11AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.440751	39.60	10.7	57	17.4	QP	L1	GND
1.244397	36.80	10.9	56	19.2	QP	L1	GND
5.195511	33.00	11.2	60	27.0	QP	L1	GND

MEASUREMENT RESULT: "RY0604-4\_fin2"

6/4/2014 9:11AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.386350	28.50	10.7	48	19.6	AV	L1	GND
1.153502	24.40	10.9	46	21.6	AV	L1	GND
5.133660	23.10	11.2	50	26.9	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 Layout antenna, no consideration of replacement. Therefore, the equipment complies with the antenna requirement of Section 15.203.

Antenna

