

APPLICATION CERTIFICATION  
On Behalf of  
CLEVER BRIGHT INTERNATIONAL (H.K.) LTD

Bluetooth Stereo Headphone with built-mic  
Model No.: BTSH-12/6335,CB-BH027,SL BT HDSET

FCC ID: 2AD42BTSH-12

Prepared for : CLEVER BRIGHT INTERNATIONAL (H.K.) LTD  
Address : Rm 1701, Zhuoyue Building, Fuhua Yi Rd., Futian  
Central Zone, Shenzhen, P.R. China.  
Prepared by : ACCURATE TECHNOLOGY CO. LTD  
Address : F1, Bldg. A, Changyuan New Material Port, Keyuan Rd.  
Science & Industry Park, Nanshan, Shenzhen, Guangdong  
P.R. China

Tel: (0755) 26503290  
Fax: (0755) 26503396

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Date of Report : Mar 13,2015

## TABLE OF CONTENTS

Description	Page
Test Report Certification	
<b>1. GENERAL INFORMATION .....</b>	<b>5</b>
1.1. Description of Device (EUT).....	5
1.2. Description of Test Facility .....	6
1.3. Measurement Uncertainty .....	6
<b>2. MEASURING DEVICE AND TEST EQUIPMENT .....</b>	<b>7</b>
<b>3. OPERATION OF EUT DURING TESTING .....</b>	<b>8</b>
3.1. Operating Mode .....	8
3.2. Configuration and peripherals .....	8
<b>4. TEST PROCEDURES AND RESULTS .....</b>	<b>9</b>
<b>5. 20DB BANDWIDTH TEST.....</b>	<b>10</b>
5.1. Block Diagram of Test Setup.....	10
5.2. The Requirement For Section 15.247(a)(1).....	10
5.3. EUT Configuration on Measurement .....	10
5.4. Operating Condition of EUT .....	10
5.5. Test Procedure .....	11
5.6. Test Result .....	11
<b>6. CARRIER FREQUENCY SEPARATION TEST.....</b>	<b>11</b>
6.1. Block Diagram of Test Setup.....	13
6.2. The Requirement For Section 15.247(a)(1).....	13
6.3. EUT Configuration on Measurement .....	13
6.4. Operating Condition of EUT .....	13
6.5. Test Procedure .....	14
6.6. Test Result .....	14
<b>7. NUMBER OF HOPPING FREQUENCY TEST .....</b>	<b>15</b>
7.1. Block Diagram of Test Setup.....	17
7.2. The Requirement For Section 15.247(a)(1)(iii).....	17
7.3. EUT Configuration on Measurement .....	17
7.4. Operating Condition of EUT .....	17
7.5. Test Procedure .....	18
7.6. Test Result .....	18
<b>8. DWELL TIME TEST .....</b>	<b>19</b>
8.1. Block Diagram of Test Setup.....	19
8.2. The Requirement For Section 15.247(a)(1)(iii).....	19
8.3. EUT Configuration on Measurement .....	19
8.4. Operating Condition of EUT .....	19
8.5. Test Procedure .....	20
8.6. Test Result .....	20
<b>9. MAXIMUM PEAK OUTPUT POWER TEST .....</b>	<b>26</b>
9.1. Block Diagram of Test Setup.....	26
9.2. The Requirement For Section 15.247(b)(1).....	26
9.3. EUT Configuration on Measurement .....	26

9.4.	Operating Condition of EUT .....	26
9.5.	Test Procedure .....	27
9.6.	Test Result .....	27
<b>10.</b>	<b>RADIATED EMISSION TEST .....</b>	<b>27</b>
10.1.	Block Diagram of Test Setup.....	29
10.2.	The Limit For Section 15.247(d) .....	30
10.3.	Restricted bands of operation .....	30
10.4.	Configuration of EUT on Measurement .....	31
10.5.	Test Procedure .....	31
10.6.	The Field Strength of Radiation Emission Measurement Results .....	32
<b>11.</b>	<b>BAND EDGE COMPLIANCE TEST .....</b>	<b>44</b>
11.1.	Block Diagram of Test Setup.....	44
11.2.	The Requirement For Section 15.247(d) .....	44
11.3.	EUT Configuration on Measurement .....	44
11.4.	Operating Condition of EUT .....	44
11.5.	Test Procedure .....	45
11.6.	Test Result .....	45
<b>12.</b>	<b>AC POWER LINE CONDUCTED EMISSION FOR FCC PART 15 SECTION 15.207(A) ..</b>	<b>53</b>
12.1.	Block Diagram of Test Setup.....	53
12.2.	The Emission Limit .....	53
12.3.	Configuration of EUT on Measurement .....	54
12.4.	Operating Condition of EUT .....	54
12.5.	Test Procedure .....	54
12.6.	Power Line Conducted Emission Measurement Results .....	54
<b>13.</b>	<b>ANTENNA REQUIREMENT.....</b>	<b>57</b>
13.1.	The Requirement .....	57
13.2.	Antenna Construction .....	57

## Test Report Certification

Applicant : CLEVER BRIGHT INTERNATIONAL (H.K.) LTD  
Manufacturer : CLEVER BRIGHT INTERNATIONAL (H.K.) LTD  
EUT Description : Bluetooth Stereo Headphone with built-mic  
(A) MODEL NO.: BTSH-12/6335,CB-BH027,SL BT HDSET  
(B) POWER SUPPLY: DC 3.7V (Battery)or DC5V(USB)

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247  
ANSI C63.10- 2013

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 : Feb 05-Mar 13,2015

Date of Report : Mar 13,2015

Prepared by :



(Eric Zhang, Engineer)

Approved & Authorized Signer :



(Sean Liu, Manager)

## 1. GENERAL INFORMATION

### 1.1. Description of Device (EUT)

EUT	:	Bluetooth Stereo Headphone with built-mic
Model Number	:	BTSH-12/6335,CB-BH027,SL BT HDSET
		Note: These samples are same except for the model number is difference. So we prepare the BTSH-12/6335 for test
Frequency Band	:	2402MHz-2480MHz
Number of Channels	:	79
Modulation type	:	GFSK
Antenna Gain	:	2.3dBi
Antenna type	:	PCB Antenna
Power Supply	:	DC 3.7V (Battery) or DC 5V(USB)
Applicant	:	CLEVER BRIGHT INTERNATIONAL (H.K.) LTD
Address	:	Rm 1701, Zhuoyue Building, Fuhua Yi Rd., Futian Central Zone, Shenzhen, P.R. China.
Manufacturer	:	CLEVER BRIGHT INTERNATIONAL (H.K.) LTD
Address	:	Rm 1701, Zhuoyue Building, Fuhua Yi Rd., Futian Central Zone, Shenzhen, P.R. China.
Date of sample received	:	Feb 05, 2015
Date of Test	:	Feb 05-Mar 13,2015

## 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	Last Cal.	Cal. Interval
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan.10, 2015	1 Year
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan.10, 2015	1 Year
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan.10, 2015	1 Year
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	Jan.10, 2015	1 Year
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan.15, 2015	1 Year
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan.15, 2015	1 Year
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan.15, 2015	1 Year
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1067	Jan.15, 2015	1 Year
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan.10, 2015	1 Year
LISN	Schwarzbeck	NSLK8126	8126431	Jan.10, 2015	1 Year

### **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 Stereo Headphone with built-mic)

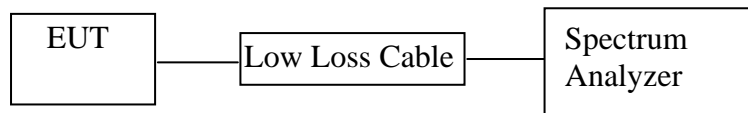


#### 4. TEST PROCEDURES AND RESULTS

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 Stereo Headphone with built-mic)

### 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.

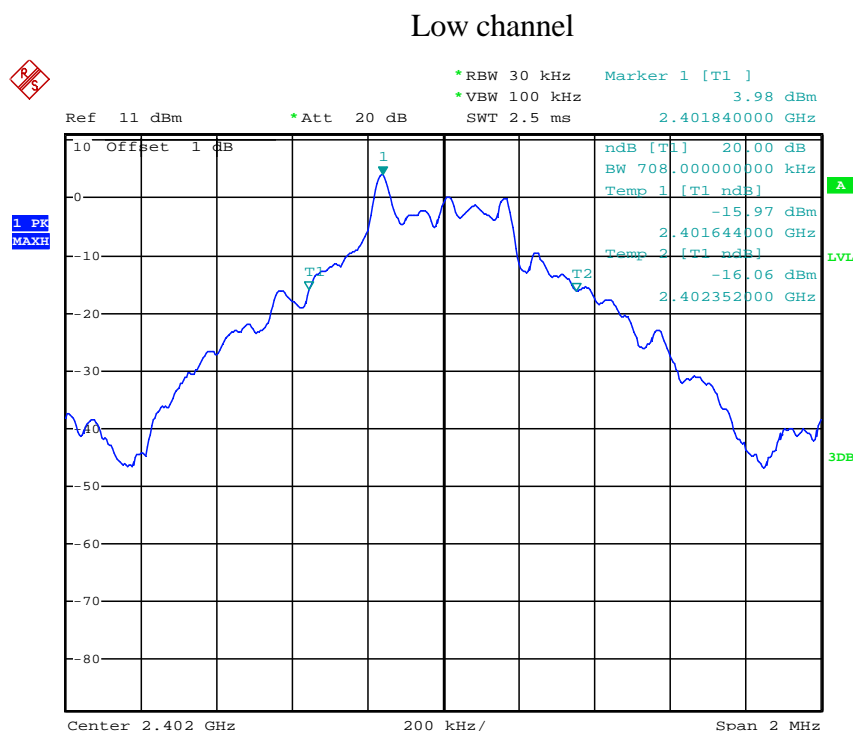
5.5.2. Set RBW of spectrum analyzer to 30 kHz and VBW to 100 kHz.

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

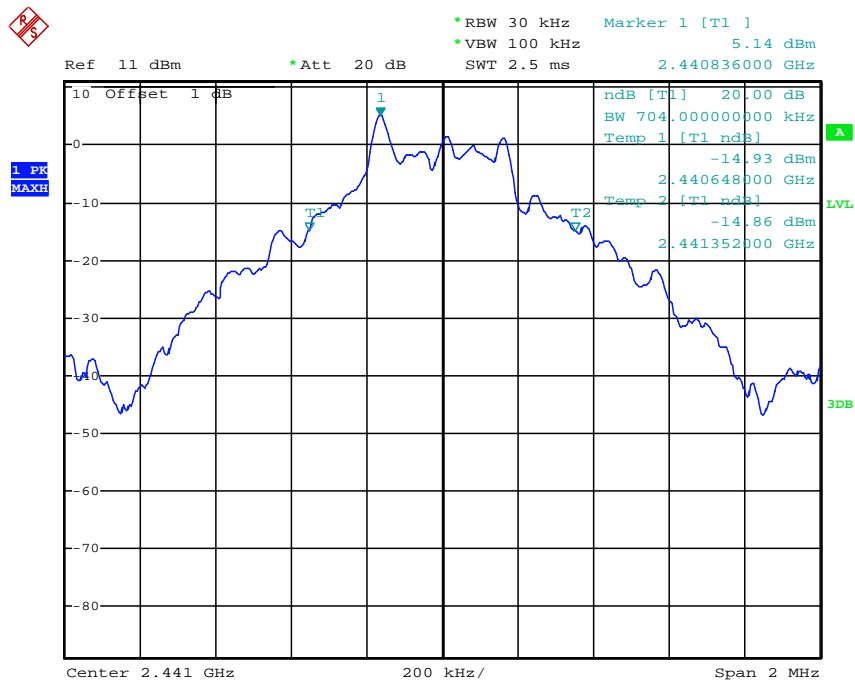
## 5.6. Test Result

Channel	Frequency (MHz)	GFSK 20dB Bandwidth (MHz)	Result
Low	2402	0.708	Pass
Middle	2441	0.704	Pass
High	2480	0.704	Pass

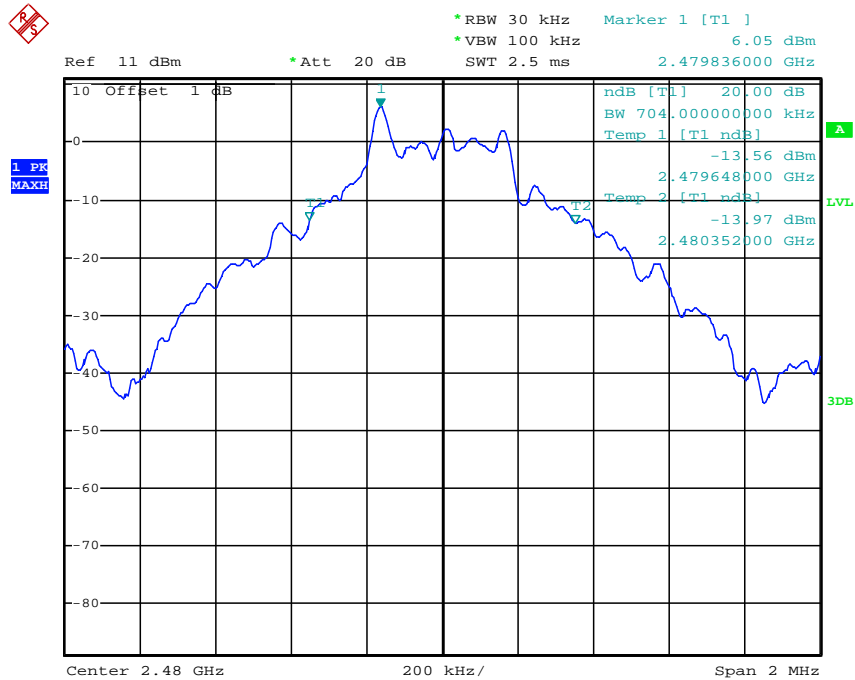
The spectrum analyzer plots are attached as below.



## Middle channel

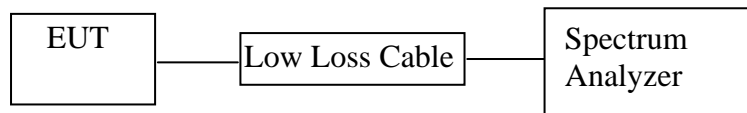


## High channel



## 6. CARRIER FREQUENCY SEPARATION TEST

### 6.1. Block Diagram of Test Setup



(EUT: Bluetooth Stereo Headphone with built-mic)

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

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

### 6.3. EUT Configuration on Measurement

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

### 6.4. Operating Condition of EUT

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

6.4.2. Turn on the power of all equipment.

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

## 6.5. Test Procedure

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

6.5.2. Set RBW of spectrum analyzer to 30 kHz and VBW to 100 kHz. Adjust Span to 3 MHz.

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

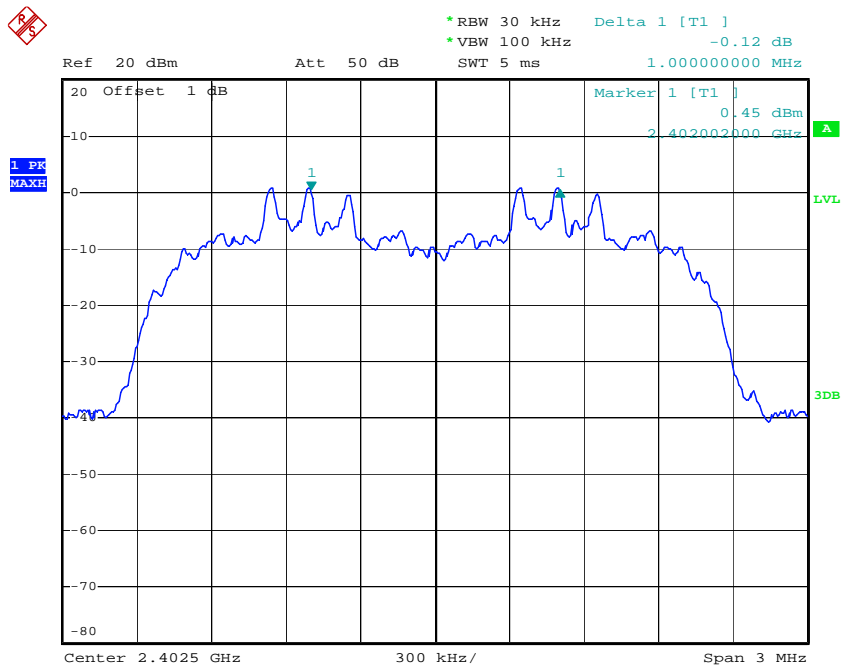
6.5.4. Measurement the channel separation

## 6.6. Test Result

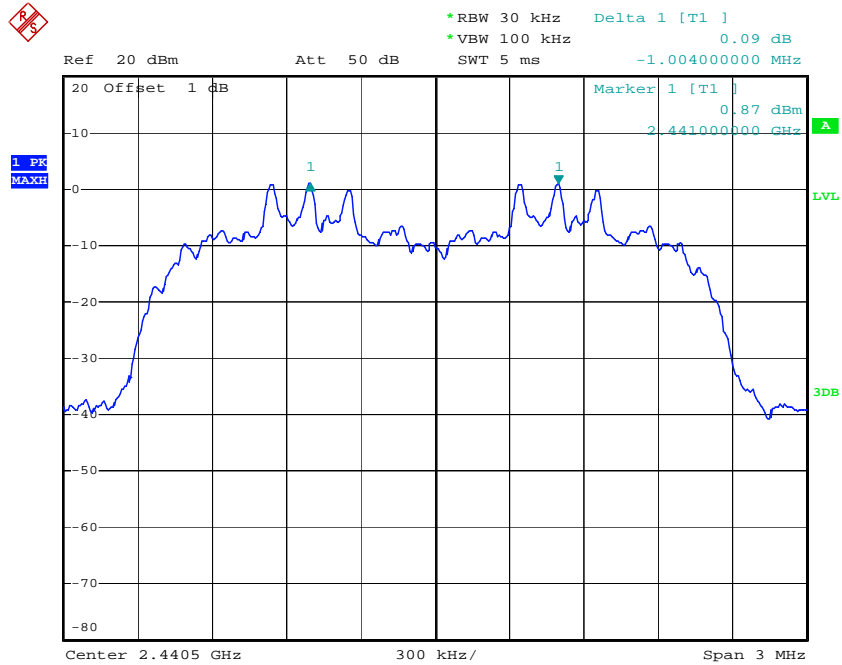
Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.000	25KHz or 20dB bandwidth	PASS
	2403			
Middle	2440	1.004	25KHz or 20dB bandwidth	PASS
	2441			
High	2479	1.002	25KHz or 20dB bandwidth	PASS
	2480			

The spectrum analyzer plots are attached as below.

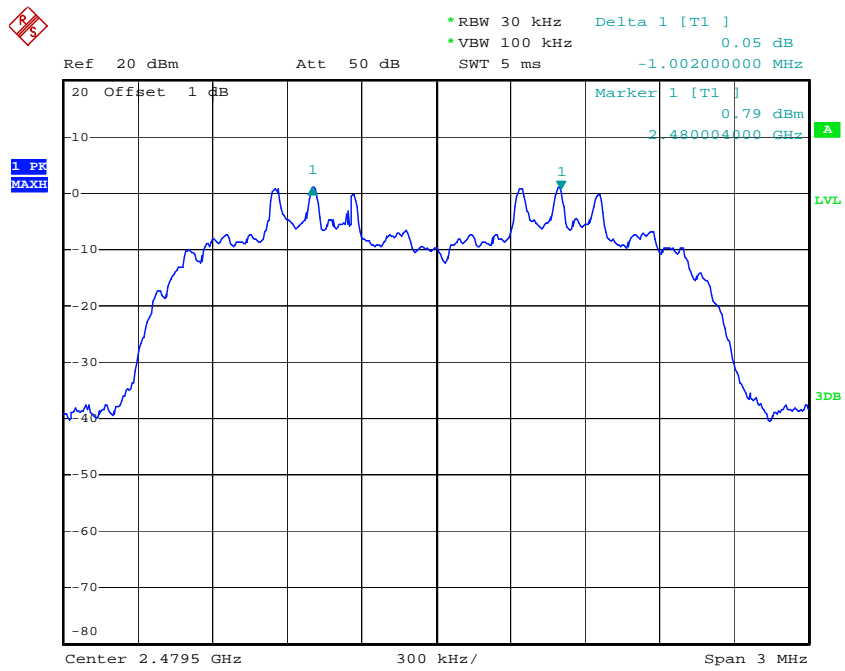
## Low channel



## Middle channel



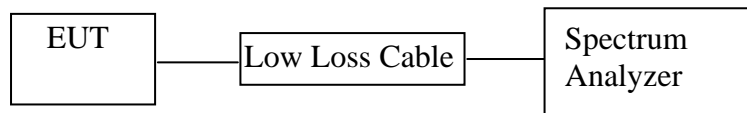
High channel





## 7. NUMBER OF HOPPING FREQUENCY TEST

### 7.1. Block Diagram of Test Setup



(EUT: Bluetooth Stereo Headphone with built-mic)

### 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

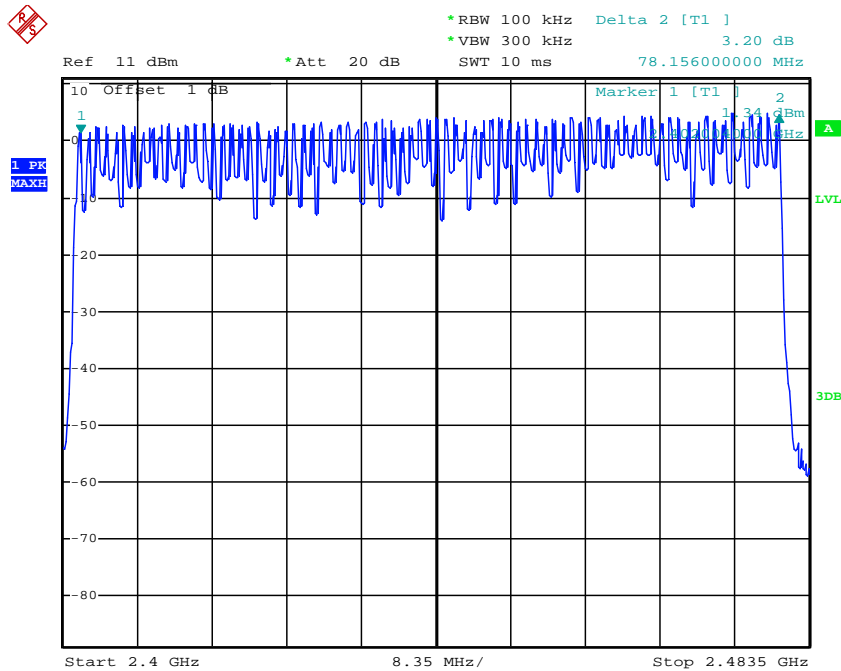
- 7.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.
- 7.5.2. Set the spectrum analyzer as Span=83.5MHz, RBW=100 kHz, VBW=300 kHz.
- 7.5.3. Max hold, view and count how many channel in the band.

## 7.6. Test Result

Total number of hopping channel	Measurement result(CH)	Limit(CH)
	79	$\geq 15$

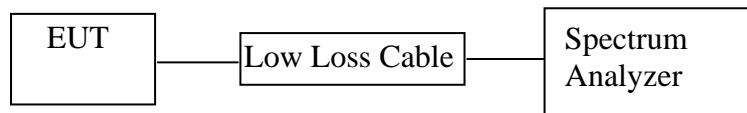
The spectrum analyzer plots are attached as below.

Number of hopping channels



## 8. DWELL TIME TEST

### 8.1. Block Diagram of Test Setup



(EUT: Bluetooth Stereo Headphone with built-mic)

### 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.

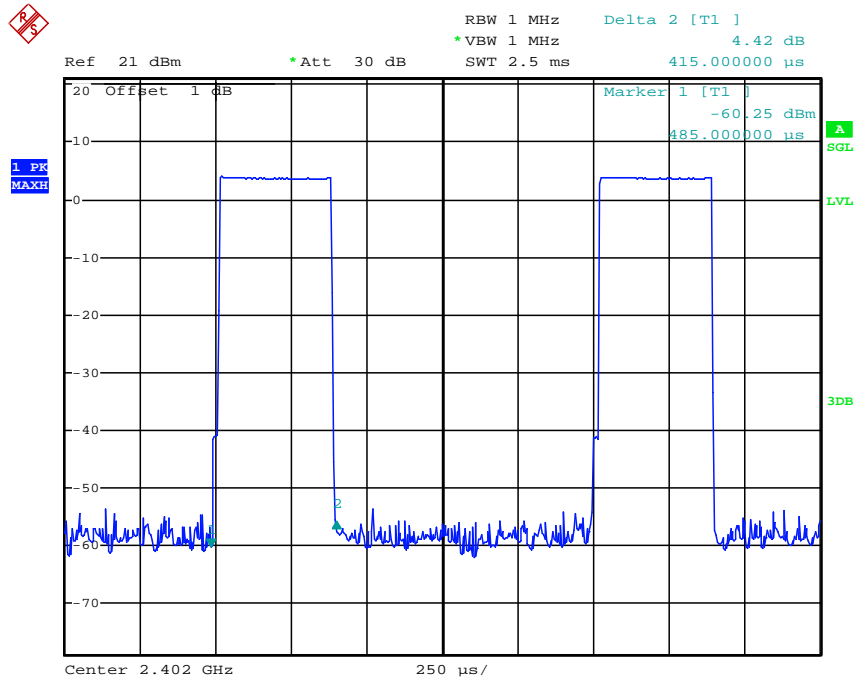
8.5.4. Repeat above procedures until all frequency measured were complete.

## 8.6. Test Result

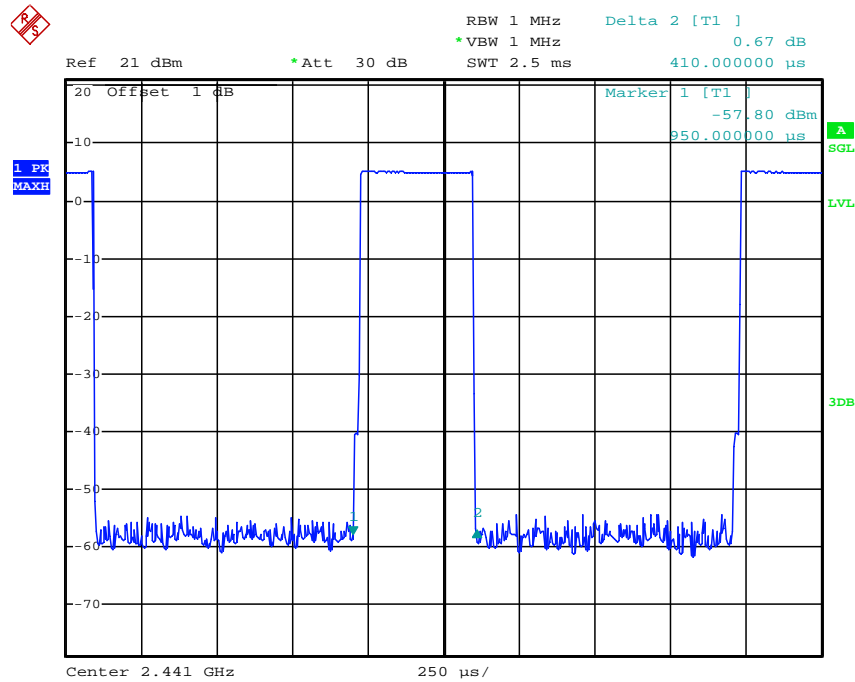
Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.415	132.80	400
	2441	0.410	131.20	400
	2480	0.415	132.80	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(2 \times 79)) \times 31.6$				
DH3	2402	1.680	268.80	400
	2441	1.695	271.20	400
	2480	1.680	268.80	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(4 \times 79)) \times 31.6$				
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 $\times (1600/(6 \times 79)) \times 31.6$				

The spectrum analyzer plots are attached as below.

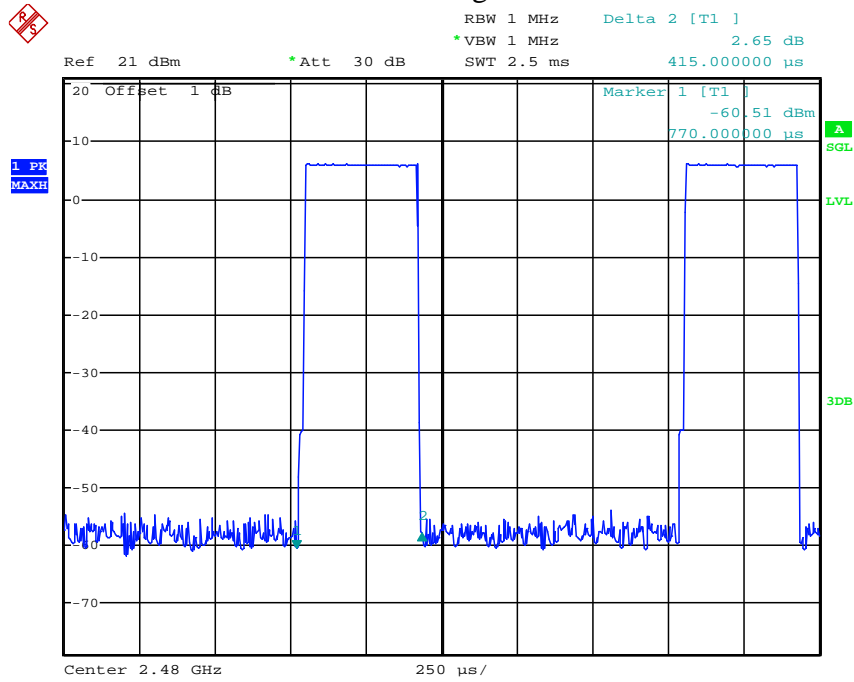
## DH1 Low channel



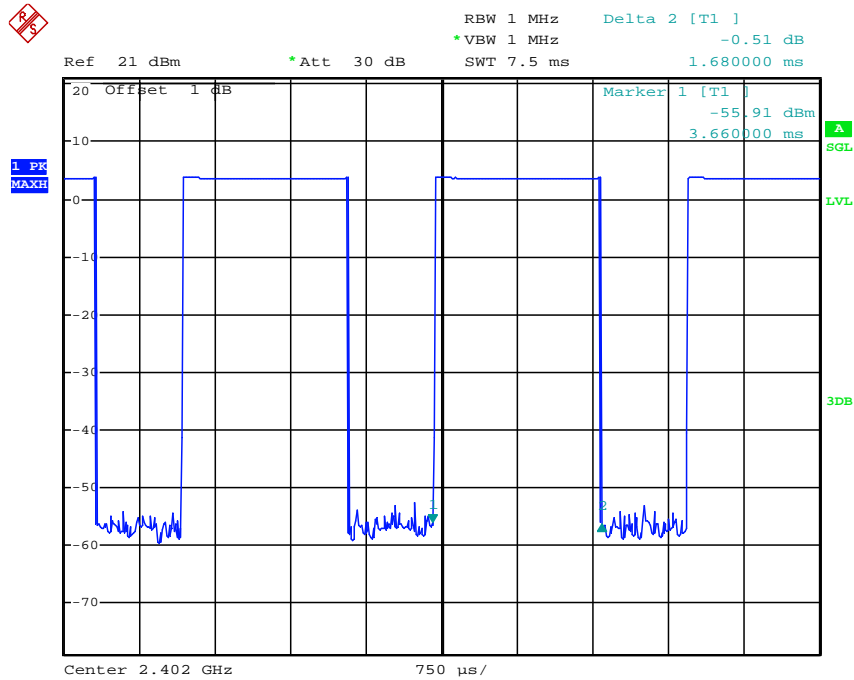
## DH1 Middle channel



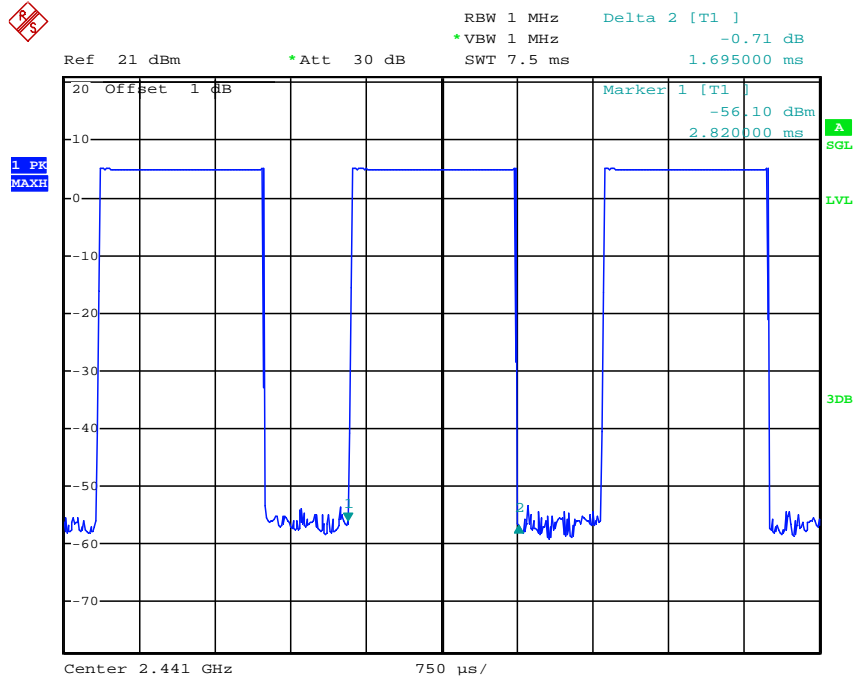
## DH1 High channel



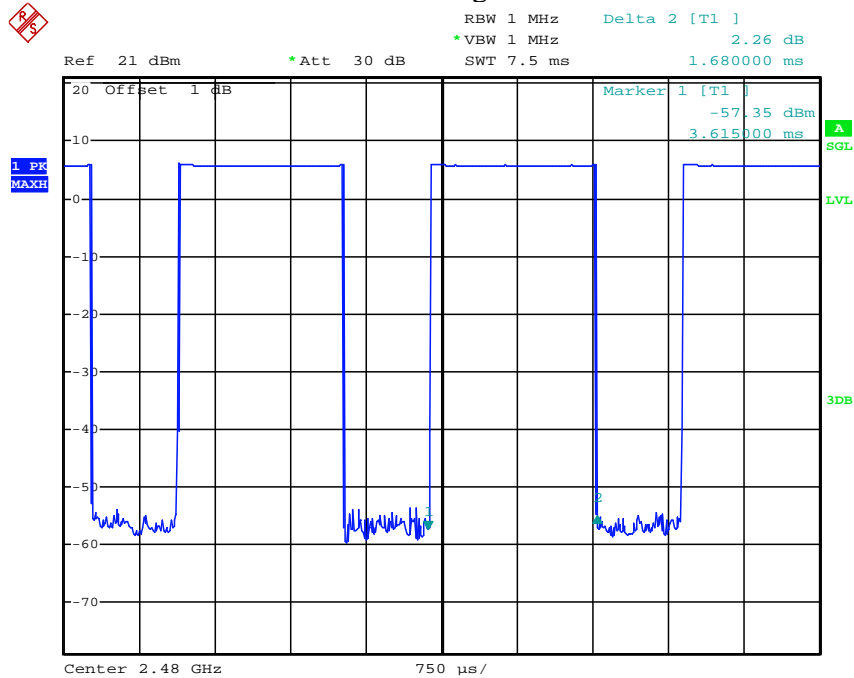
## DH3 Low channel



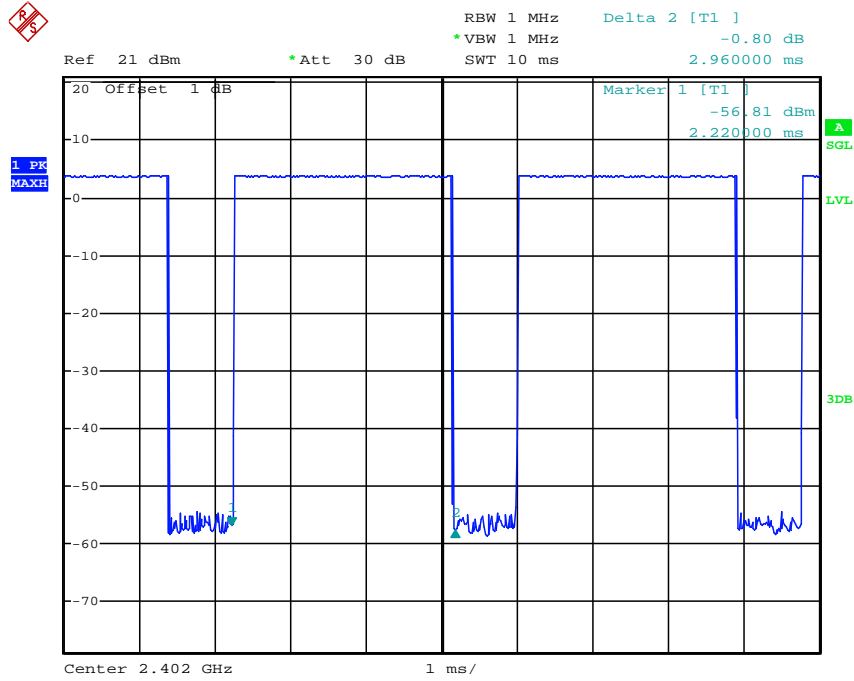
## DH3 Middle channel



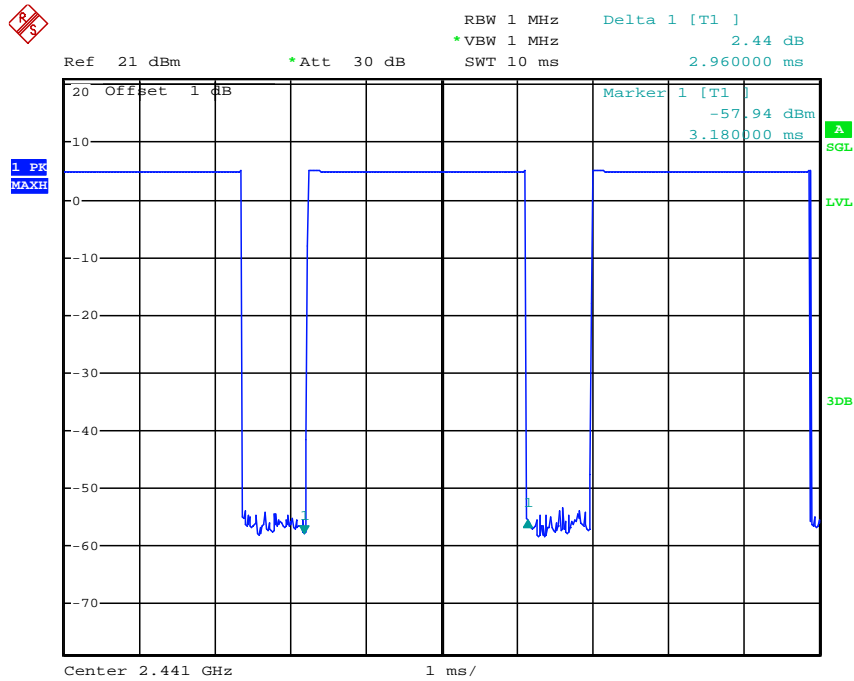
## DH3 High channel



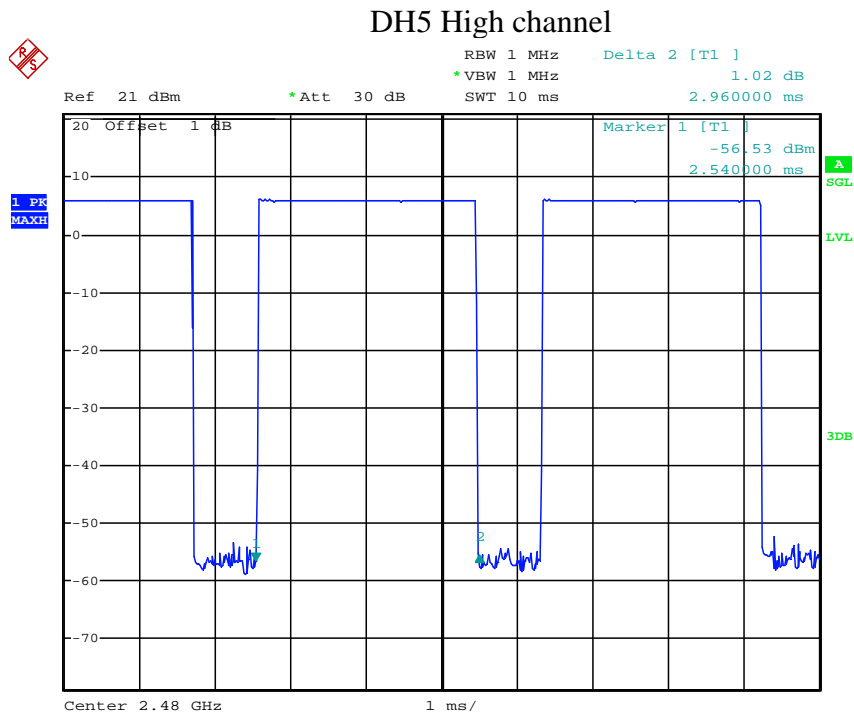
## DH5 Low channel



## DH5 Middle channel

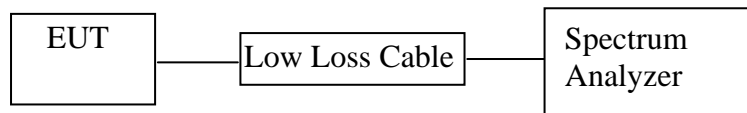






## 9. MAXIMUM PEAK OUTPUT POWER TEST

### 9.1. Block Diagram of Test Setup



(EUT: Bluetooth Stereo Headphone with built-mic)

### 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

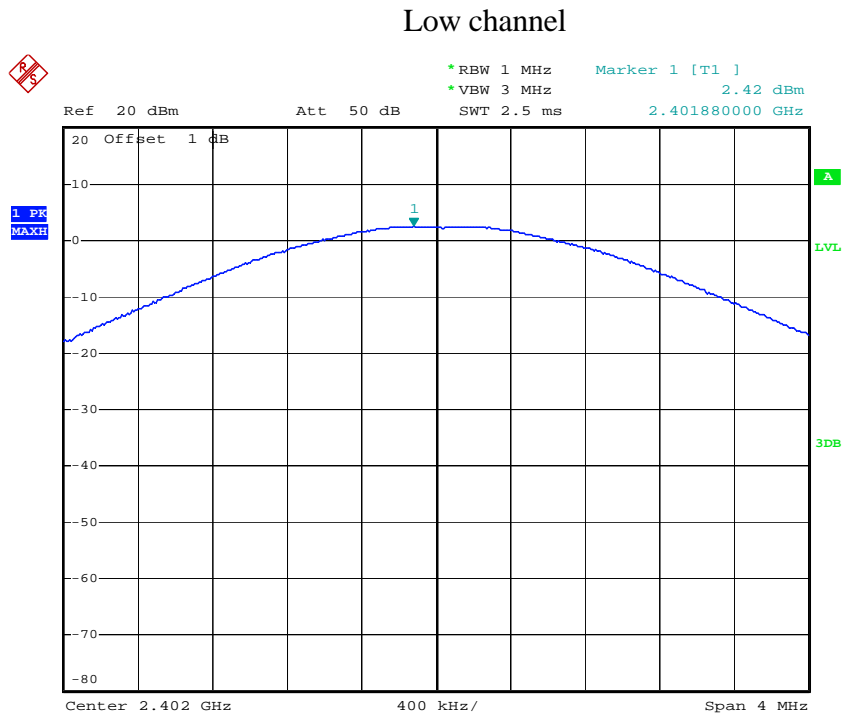
9.5.3. Set RBW of spectrum analyzer to 3MHz and VBW to 3MHz for other mode

9.5.4. Measurement the maximum peak output power.

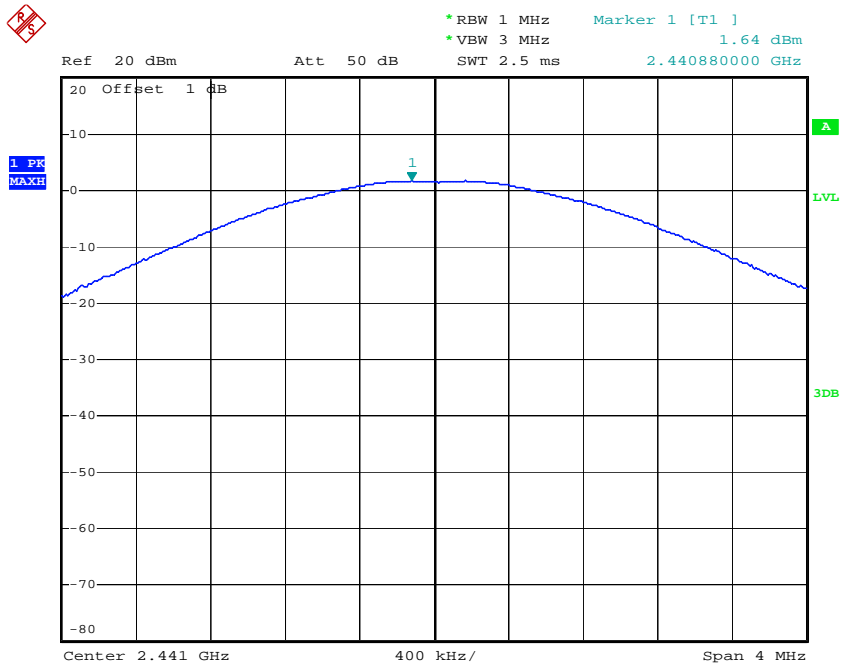
## 9.6. Test Result

Channel	Frequency (MHz)	Peak Output Power(dBm)	Peak Output Power(mW)	Limits dBm / W
Low	2402	2.42	1.75	30/1.0
Middle	2441	1.64	1.46	30/1.0
High	2480	2.43	1.75	30/1.0

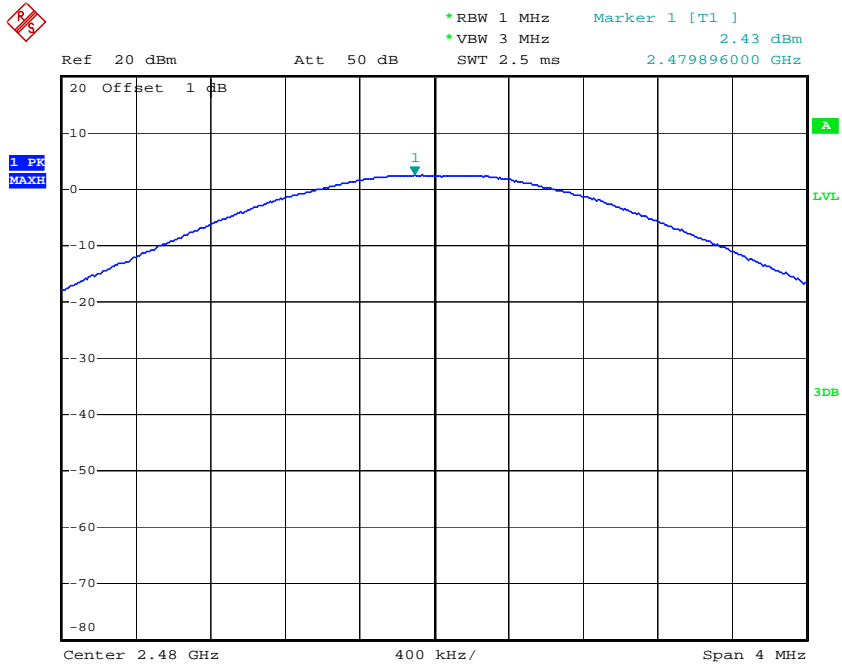
The spectrum analyzer plots are attached as below.



### Middle channel



### High channel



## 10. RADIATED EMISSION TEST

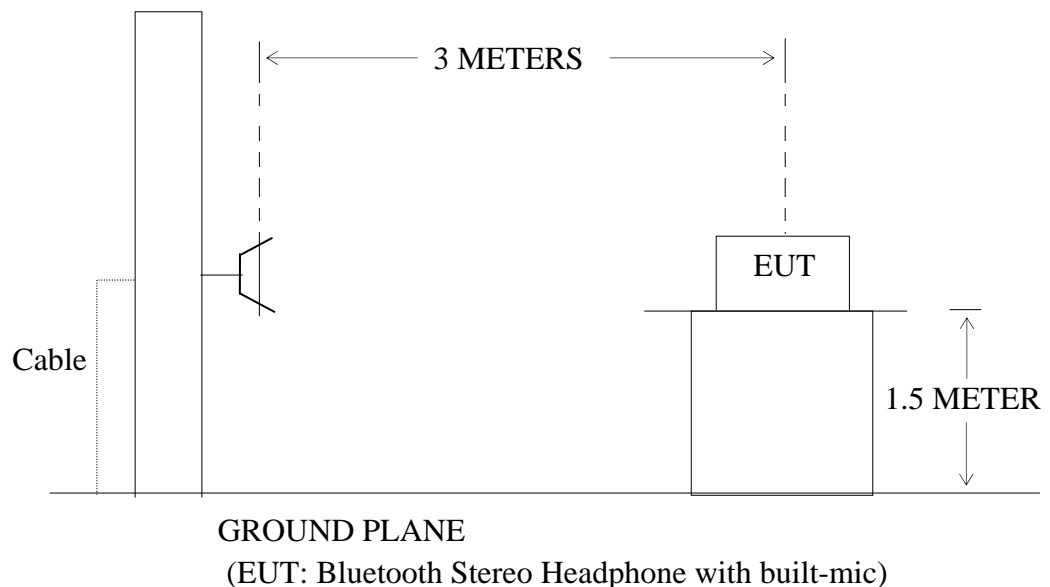
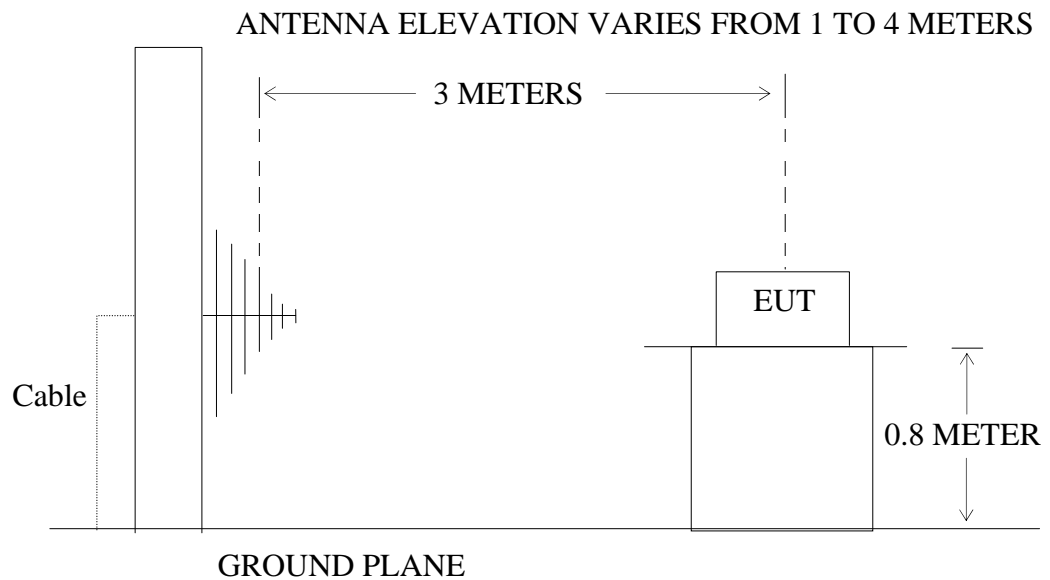
### 10.1. Block Diagram of Test Setup

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



(EUT: Bluetooth Stereo Headphone with built-mic)

#### 10.1.2. Anechoic Chamber Test Setup Diagram



(EUT: Bluetooth Stereo Headphone with built-mic)

## 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 C63.10-2013 on radiated emission measurement.

For emission measurements above 1 GHz, the EUT shall be placed at a height of 1.5 m above the floor on a support that is RF transparent for the frequencies of interest. 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

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

RBW (120 kHz), VBW (300 kHz) for QP detector below 1GHz

Peak detector above 1GHz

RBW (1 MHz), VBW (3MHz) for Peak measurement

RBW (1 MHz), VBW (10Hz) for AV measurement

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

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

- Note: 1.** The fundamental radiated emissions were reduced by 2.4G Band Reject Filter in the attached plots.  
**2.** The 18-25GHz emissions are not reported, because the levels are too low against the limit.



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

Site: 1# Chamber

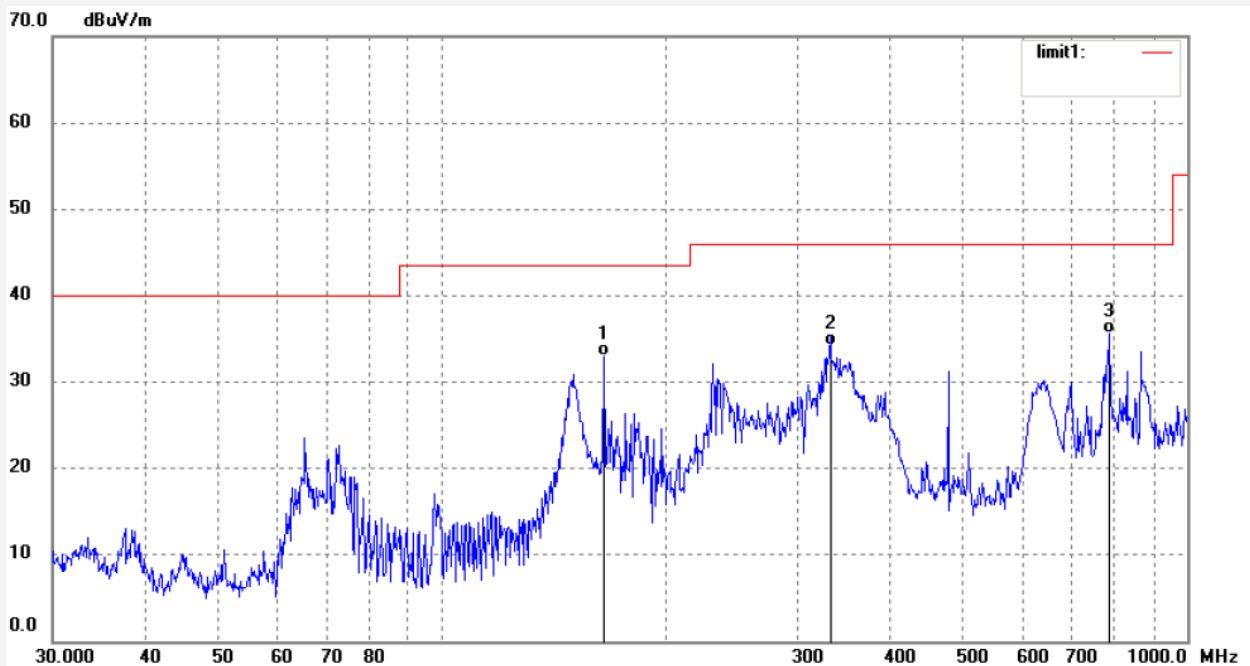
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: star2015 #318  
Standard: FCC Class B 3M Radiated  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: Bluetooth Stereo Headphone with built-in mic  
Mode: TX 2402MHz  
Model: BTSH-12/6335  
Manufacturer: CLEVER BRIGHT

Polarization: Horizontal  
Power Source: DC 5V  
Date: 15/03/11/  
Time: 8/34/54  
Engineer Signature:  
Distance: 3m

Note: Report No.:ATE20150291



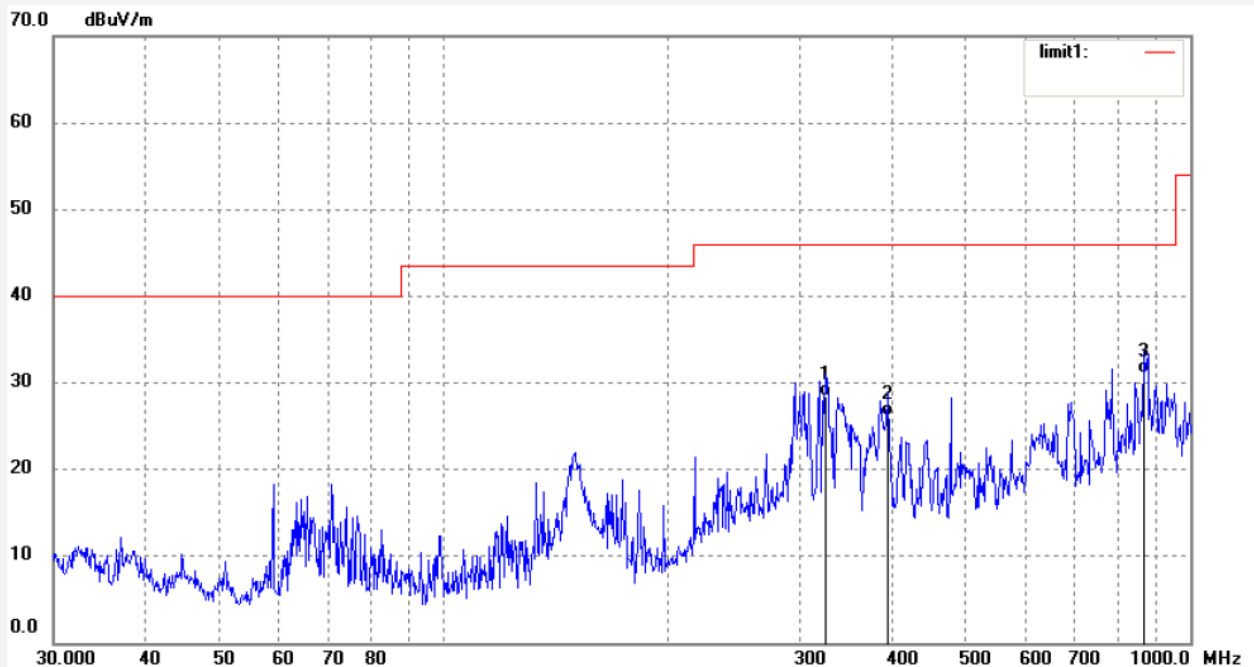
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	164.8912	57.29	-24.34	32.95	43.50	-10.55	QP			
2	331.7858	53.20	-18.90	34.30	46.00	-11.70	QP			
3	787.4749	45.50	-9.97	35.53	46.00	-10.47	QP			



Job No.: star2015 #319  
Standard: FCC Class B 3M Radiated  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: Bluetooth Stereo Headphone with built-in mic  
Mode: TX 2402MHz  
Model: BTSH-12/6335  
Manufacturer: CLEVER BRIGHT

Polarization: Vertical  
Power Source: DC 5V  
Date: 15/03/11/  
Time: 8/37/31  
Engineer Signature:  
Distance: 3m

Note: Report No.:ATE20150291



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	324.8645	47.56	-19.20	28.36	46.00	-17.64	QP			
2	394.1198	43.82	-17.69	26.13	46.00	-19.87	QP			
3	865.8383	39.67	-8.69	30.98	46.00	-15.02	QP			

Job No.: star2015 #320

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Bluetooth Stereo Headphone with built-in mic

Mode: TX 2441MHz

Model: BTSH-12/6335

Manufacturer: CLEVER BRIGHT

Polarization: Vertical

Power Source: DC 5V

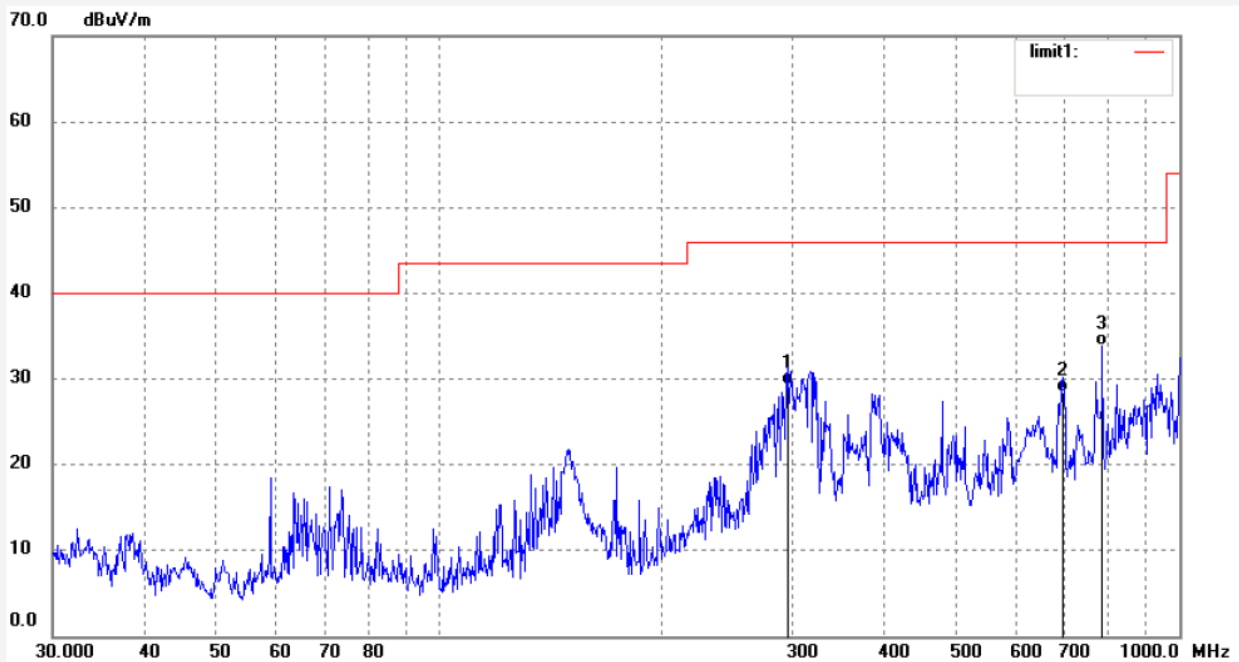
Date: 15/03/11/

Time: 8/41/11

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20150291



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	295.4623	49.25	-19.94	29.31	46.00	-16.69	QP			
2	696.3524	40.30	-11.86	28.44	46.00	-17.56	QP			
3	787.4749	43.82	-9.97	33.85	46.00	-12.15	QP			

Job No.: star2015 #321

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Bluetooth Stereo Headphone with built-in mic

Mode: TX 2441MHz

Model: BTSH-12/6335

Manufacturer: CLEVER BRIGHT

Polarization: Horizontal

Power Source: DC 5V

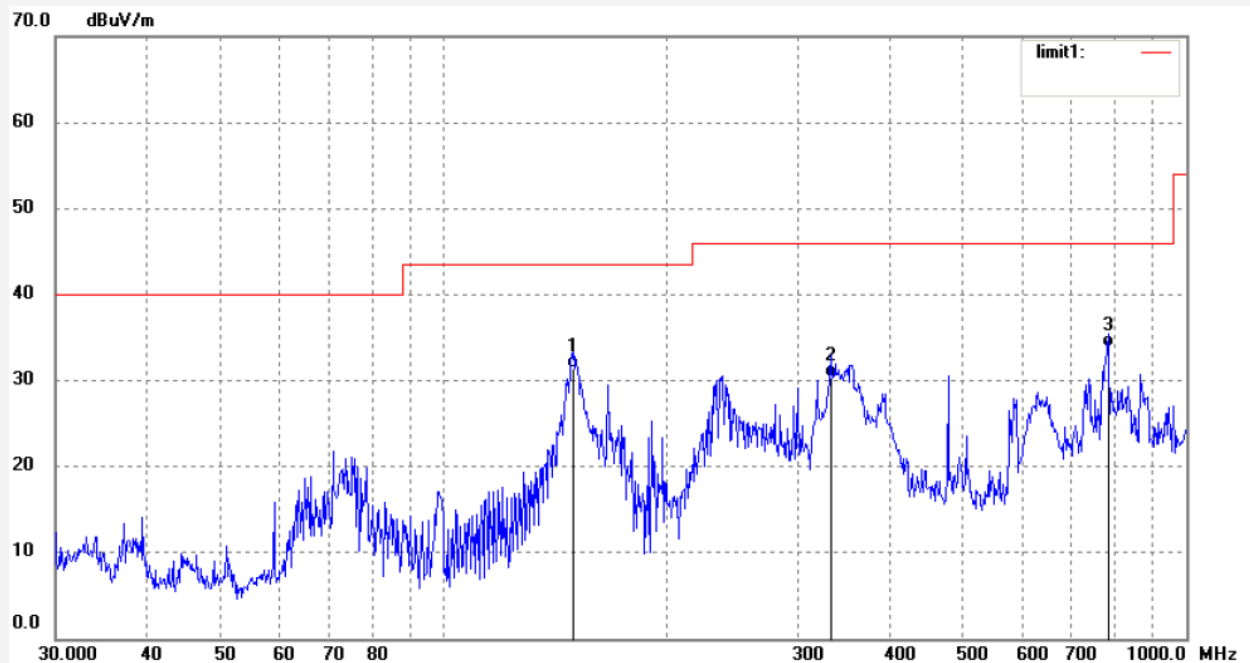
Date: 15/03/11/

Time: 8/45/23

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20150291

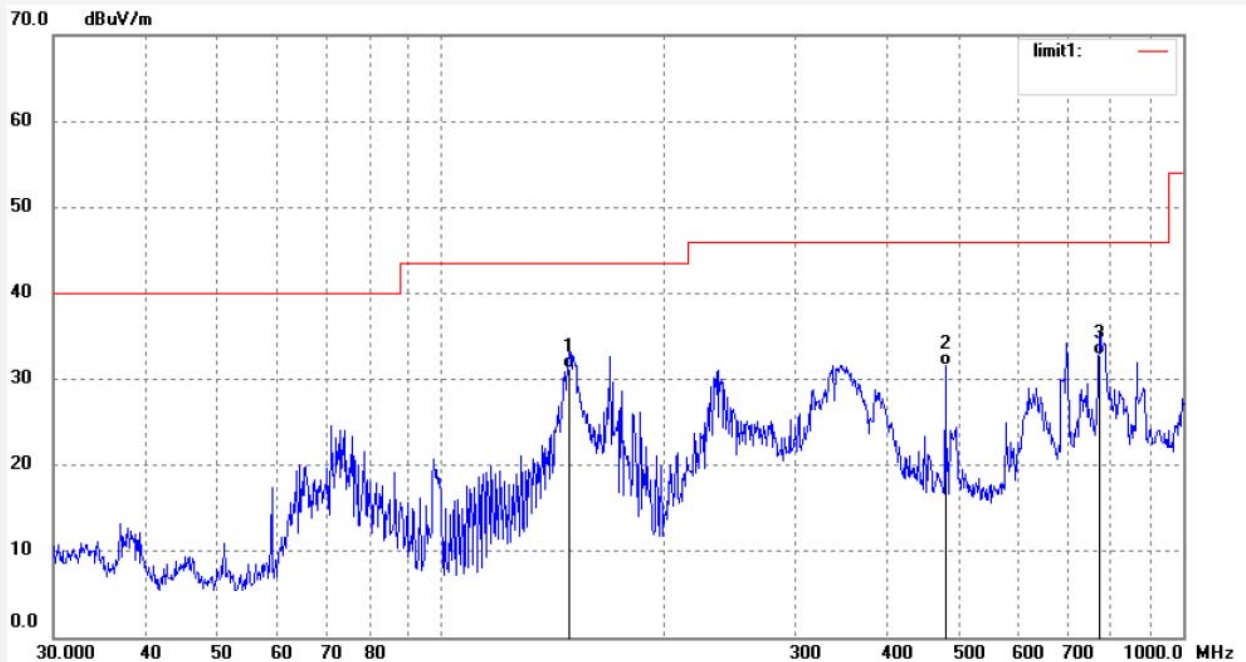


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	149.4415	57.15	-25.79	31.36	43.50	-12.14	QP			
2	331.7857	49.22	-18.90	30.32	46.00	-15.68	QP			
3	784.7128	43.93	-10.02	33.91	46.00	-12.09	QP			

Job No.: star2015 #322  
Standard: FCC Class B 3M Radiated  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: Bluetooth Stereo Headphone with built-in mic  
Mode: TX 2480MHz  
Model: BTSH-12/6335  
Manufacturer: CLEVER BRIGHT

Polarization: Horizontal  
Power Source: DC 5V  
Date: 15/03/11/  
Time: 8/49/46  
Engineer Signature:  
Distance: 3m

Note: Report No.:ATE20150291

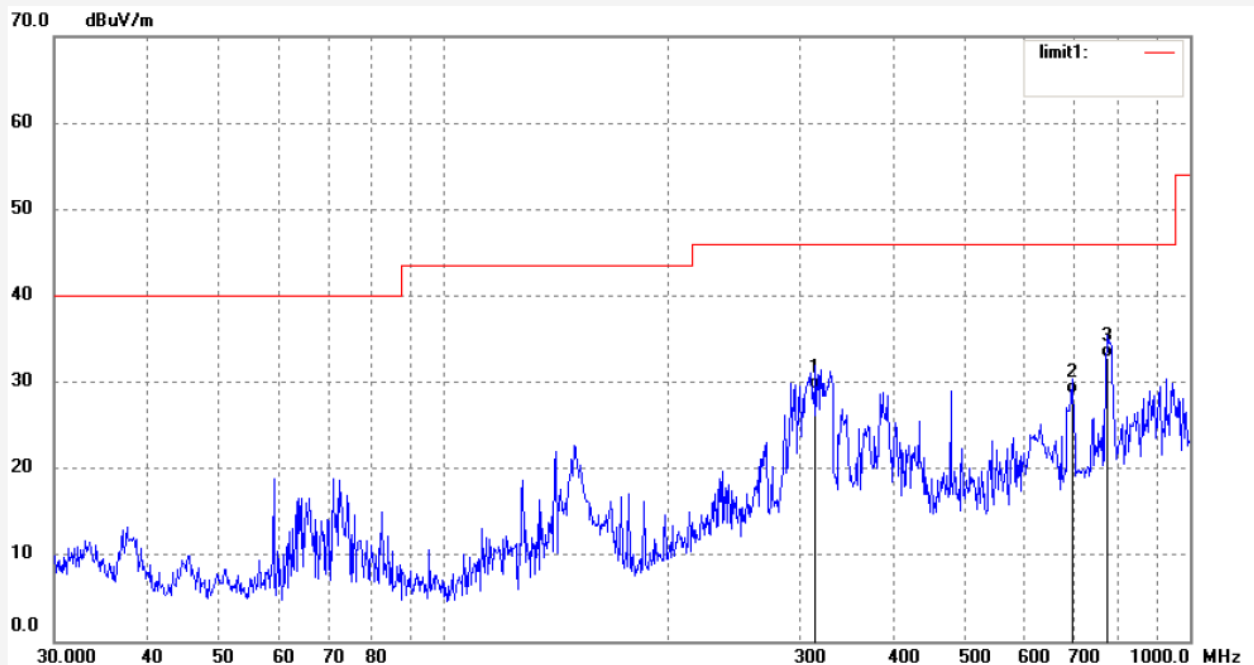


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	148.9173	57.00	-25.79	31.21	43.50	-12.29	QP			
2	478.1394	47.85	-16.18	31.67	46.00	-14.33	QP			
3	771.0475	43.02	-10.26	32.76	46.00	-13.24	QP			

Job No.: star2015 #323  
Standard: FCC Class B 3M Radiated  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: Bluetooth Stereo Headphone with built-in mic  
Mode: TX 2480MHz  
Model: BTSH-12/6335  
Manufacturer: CLEVER BRIGHT

Polarization: Vertical  
Power Source: DC 5V  
Date: 15/03/11/  
Time: 8/53/35  
Engineer Signature:  
Distance: 3m

Note: Report No.:ATE20150291



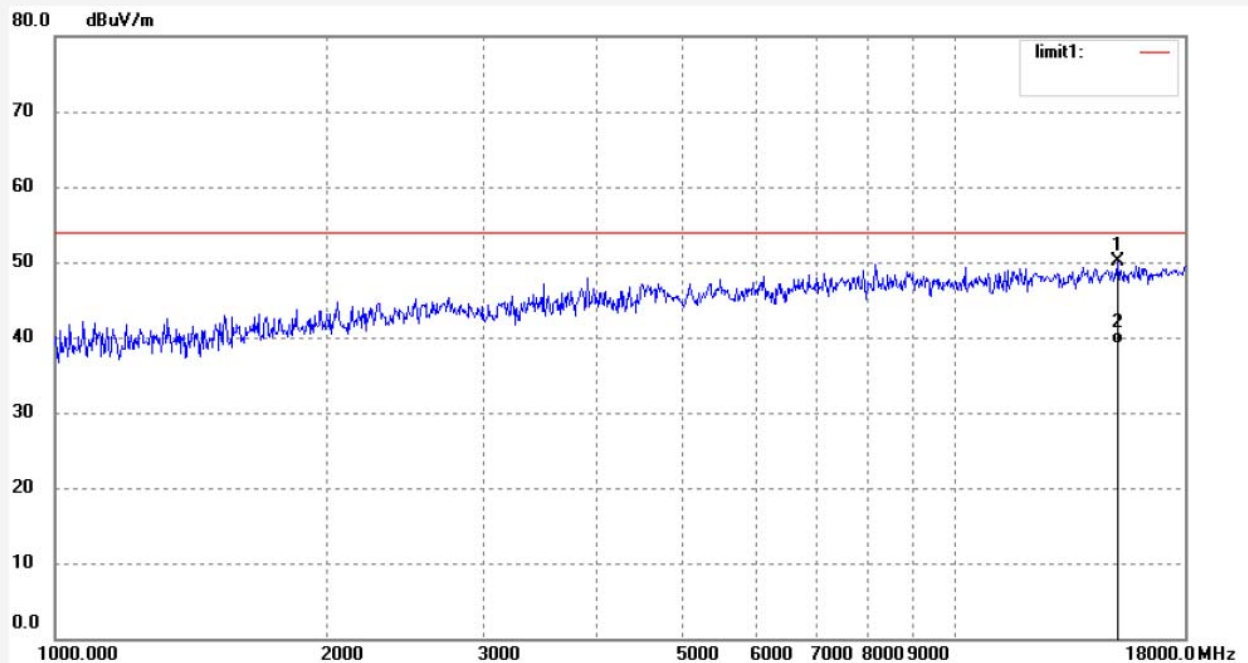
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	314.7522	48.67	-19.55	29.12	46.00	-16.88	QP			
2	696.3525	40.56	-11.86	28.70	46.00	-17.30	QP			
3	776.4849	43.01	-10.17	32.84	46.00	-13.16	QP			



Job No.: star2015 #312  
Standard: FCC Class B 3M Radiated  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: Bluetooth Stereo Headphone with built-in mic  
Mode: TX 2402MHz  
Model: BTSH-12/6335  
Manufacturer: CLEVER BRIGHT

Polarization: Horizontal  
Power Source: DC 5V  
Date: 2015/03/10  
Time: 17:14:58  
Engineer Signature:  
Distance: 3m

Note: Report No.:ATE20150291



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	15159.656	30.98	19.04	50.02	54.00	-3.98	peak			
2	15159.656	20.00	19.04	39.04	54.00	-14.96	AVG			



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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.: star2015 #313

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Bluetooth Stereo Headphone with built-in mic

Mode: TX 2402MHz

Model: BTSH-12/6335

Manufacturer: CLEVER BRIGHT

Polarization: Vertical

Power Source: DC 5V

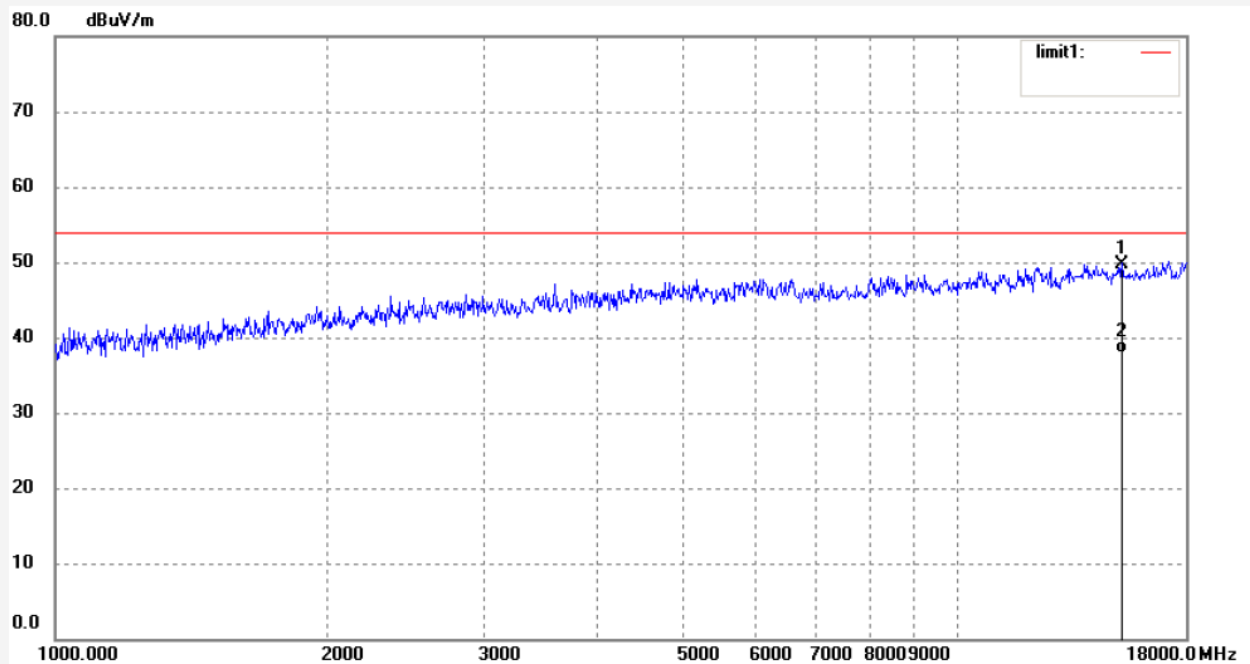
Date: 2015/03/10

Time: 17:17:45

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20150291



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	15292.613	30.97	18.83	49.80	54.00	-4.20	peak			
2	15292.613	19.13	18.83	37.96	54.00	-16.04	AVG			

Job No.: star2015 #314

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Bluetooth Stereo Headphone with built-in mic

Mode: TX 2441MHz

Model: BTSH-12/6335

Manufacturer: CLEVER BRIGHT

Polarization: Vertical

Power Source: DC 5V

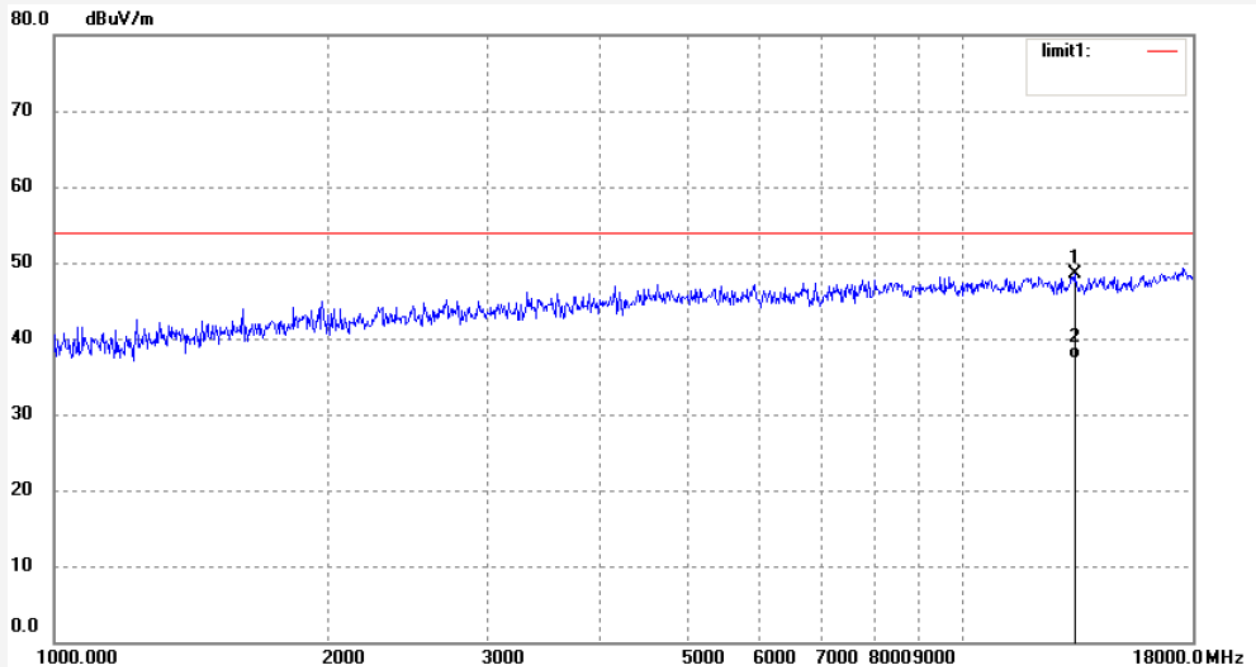
Date: 2015/03/10

Time: 17:20:45

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20150291



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	13337.303	31.71	16.70	48.41	54.00	-5.59	peak			
2	13337.303	20.70	16.70	37.40	54.00	-16.60	AVG			





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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.: star2015 #315

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Bluetooth Stereo Headphone with built-in mic

Mode: TX 2441MHz

Model: BTSH-12/6335

Manufacturer: CLEVER BRIGHT

Polarization: Horizontal

Power Source: DC 5V

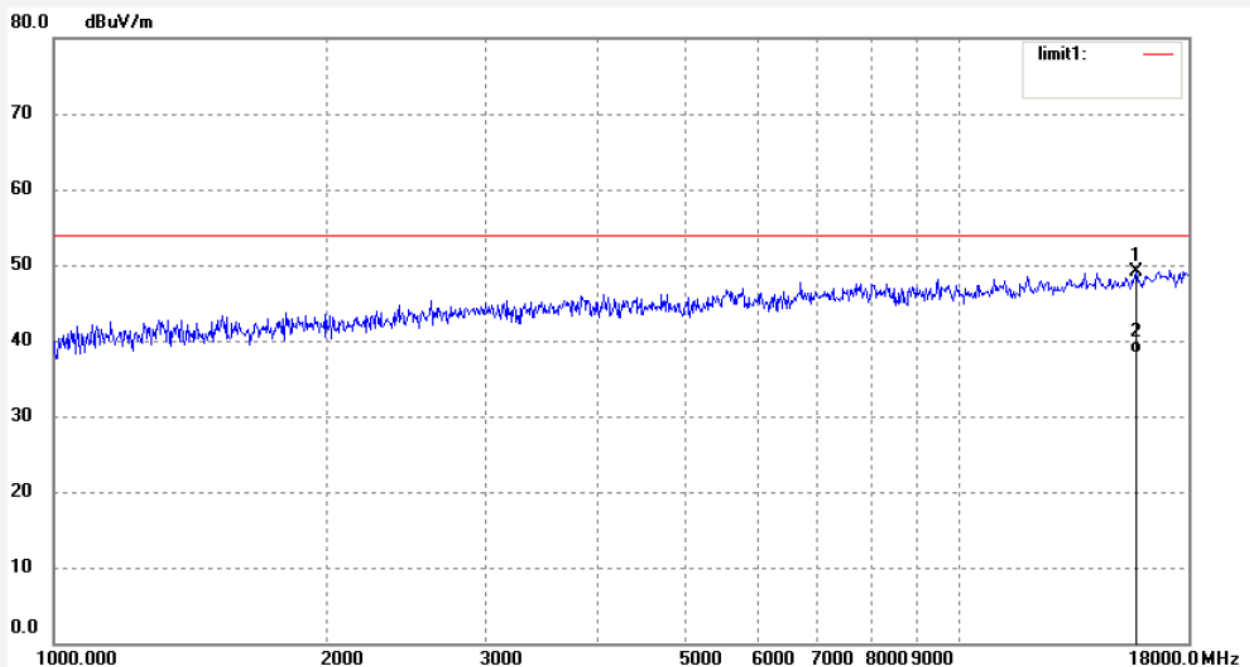
Date: 2015/03/10

Time: 17:24:41

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20150291



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	15744.284	30.50	18.55	49.05	54.00	-4.95	peak			
2	15744.284	19.76	18.55	38.31	54.00	-15.69	AVG			

Job No.: star2015 #316

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Bluetooth Stereo Headphone with built-in mic

Mode: TX 2480MHz

Model: BTSH-12/6335

Manufacturer: CLEVER BRIGHT

Polarization: Horizontal

Power Source: DC 5V

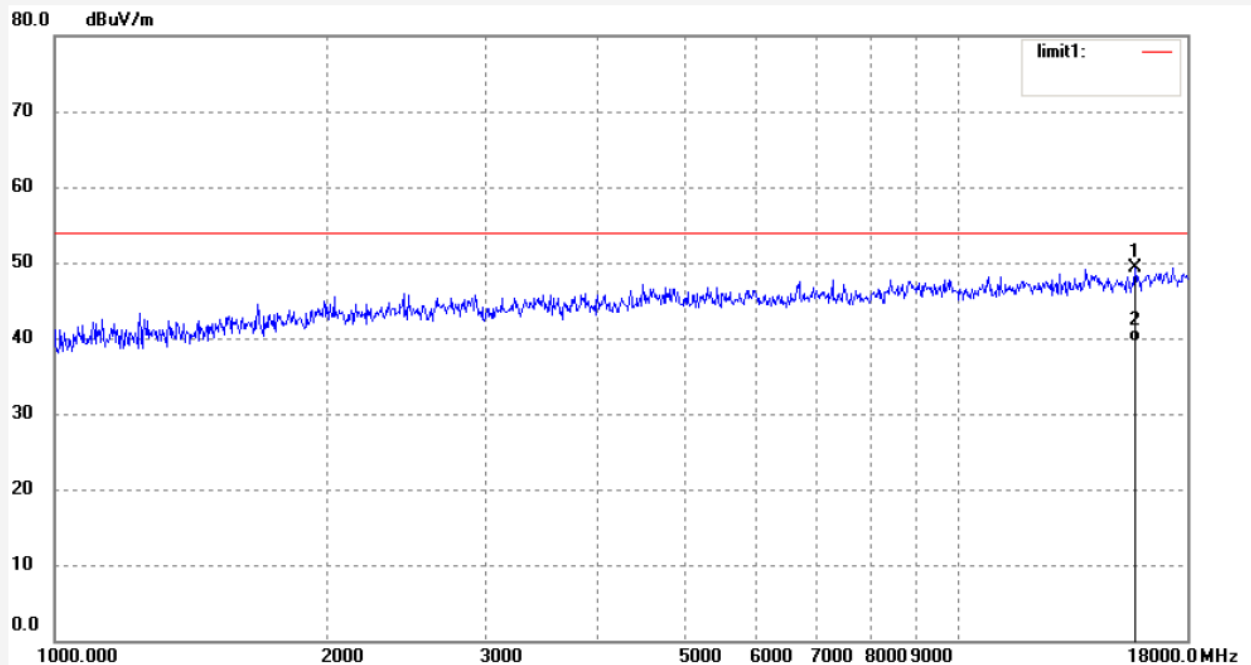
Date: 2015/03/10

Time: 17:28:59

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20150291



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	15744.284	30.81	18.55	49.36	54.00	-4.64	peak			
2	15744.284	21.00	18.55	39.55	54.00	-14.45	AVG			

Job No.: star2015 #317

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Bluetooth Stereo Headphone with built-in mic

Mode: TX 2480MHz

Model: BTSH-12/6335

Manufacturer: CLEVER BRIGHT

Polarization: Vertical

Power Source: DC 5V

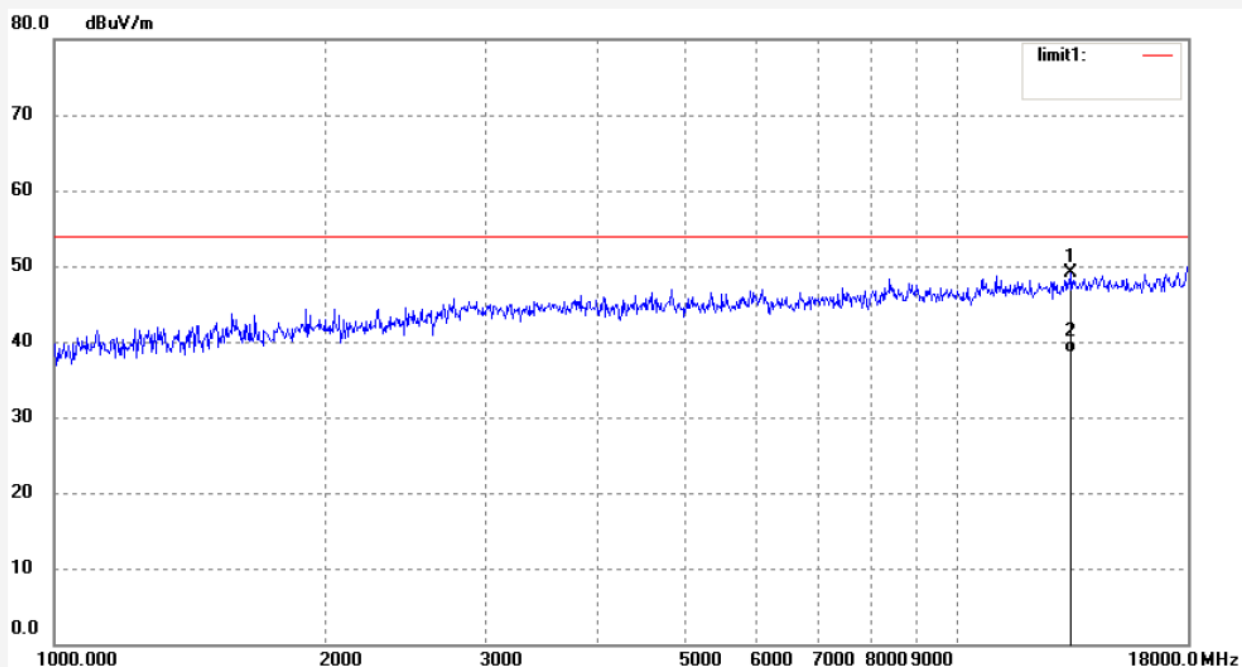
Date: 2015/03/10

Time: 17:32:00

Engineer Signature:

Distance: 3m

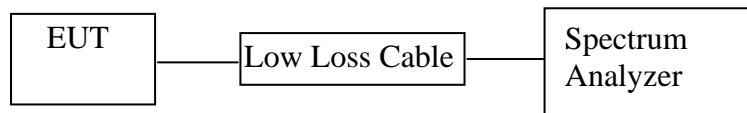
Note: Report No.:ATE20150291



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	13376.181	32.31	16.76	49.07	54.00	-4.93	peak			
2	13376.181	21.70	16.76	38.46	54.00	-15.54	AVG			

## 11.BAND EDGE COMPLIANCE TEST

### 11.1.Block Diagram of Test Setup



(EUT: Bluetooth Stereo Headphone with built-mic)

### 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.

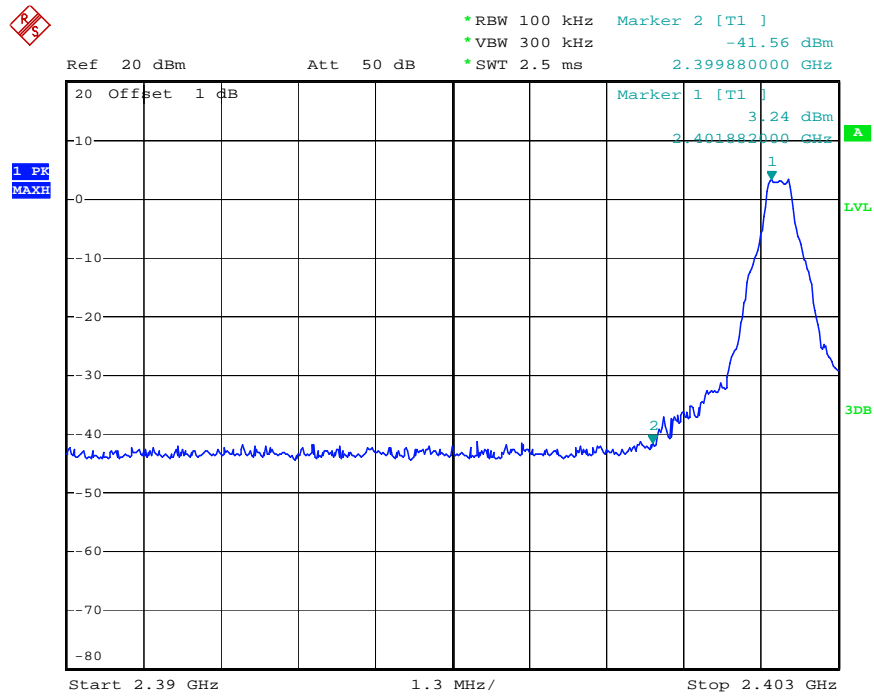
11.5.2.Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz with convenient frequency span including 100 kHz bandwidth from band edge.

11.5.3.The band edges was measured and recorded.

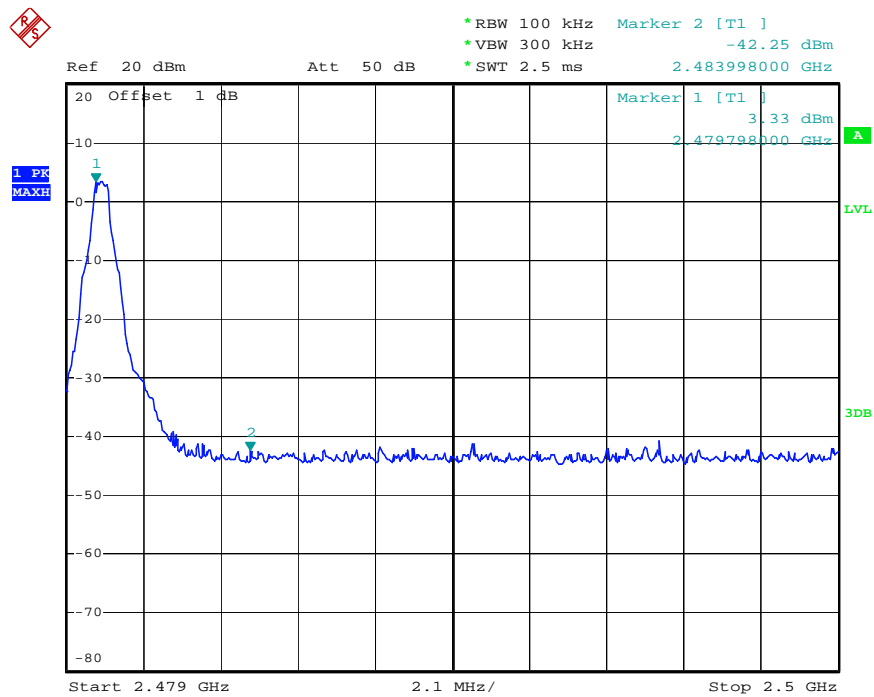
### 11.6.Test Result

Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
GFSK		
2400	44.80	> 20dBc
2483.5	45.58	> 20dBc

## Low channel



## High channel



## 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



## 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.: STAR #428

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Bluetooth Stereo Headphone

Mode: TX 2402MHz(GFSK)

Model: BTSH-12/6335

Manufacturer: CLEVER BRIGHT

Polarization: Vertical

Power Source: DC 5V

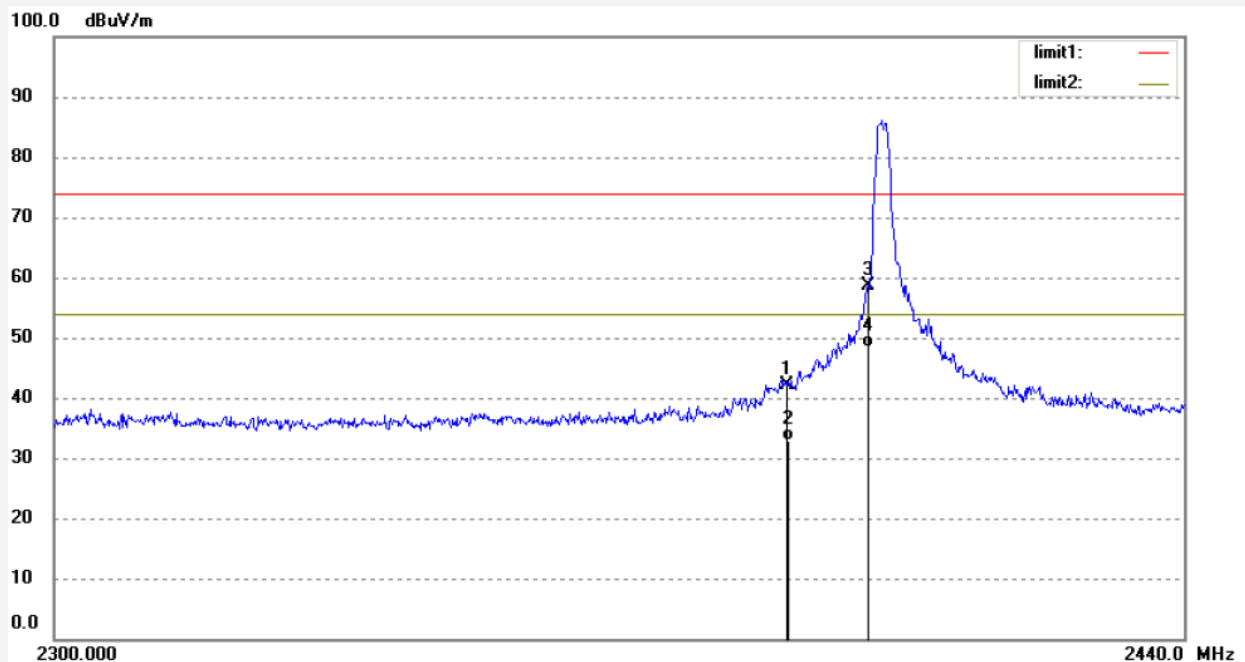
Date: 2015/03/12

Time: 9/22/16

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20150291



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	48.87	-6.78	42.09	74.00	-31.91	peak			
2	2390.000	39.67	-6.78	32.89	54.00	-21.11	AVG			
3	2400.000	65.28	-6.76	58.52	74.00	-15.48	peak			
4	2400.000	55.14	-6.76	48.38	54.00	-5.62	AVG			

Job No.: STAR #429

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Bluetooth Stereo Headphone

Mode: TX 2402MHz(GFSK)

Model: BTSH-12/6335

Manufacturer: CLEVER BRIGHT

Polarization: Horizontal

Power Source: DC 5V

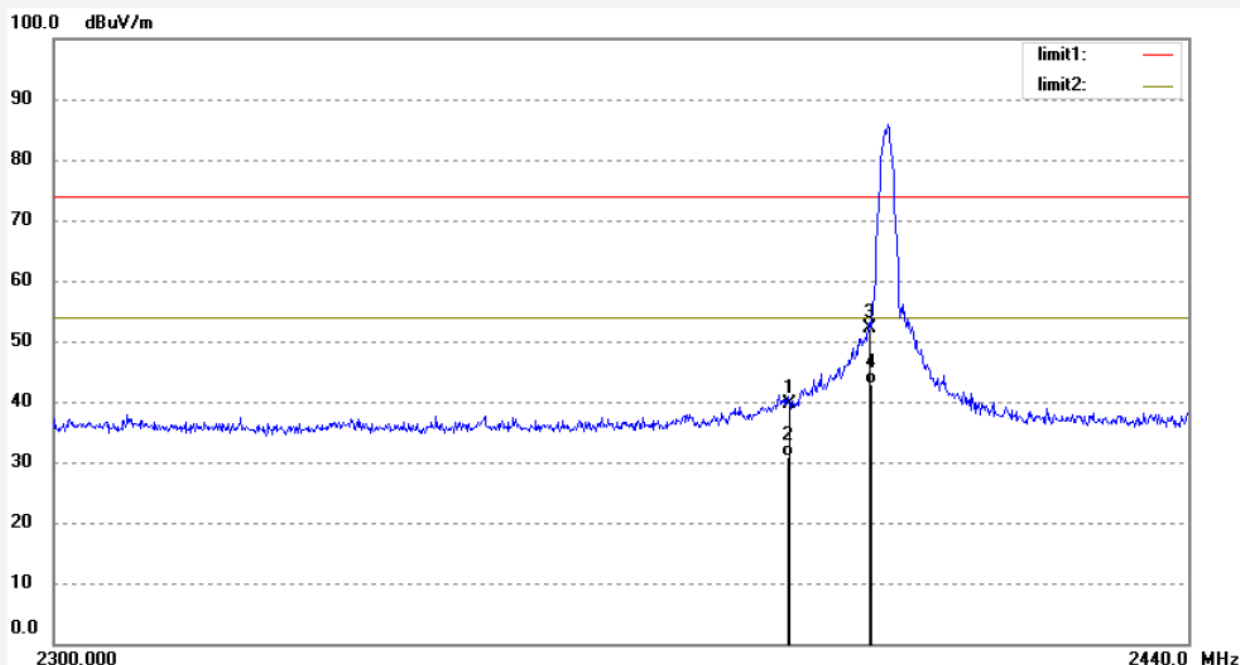
Date: 2015/03/12

Time: 9/26/49

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20150291



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	46.49	-6.78	39.71	74.00	-34.29	peak			
2	2390.000	37.67	-6.78	30.89	54.00	-23.11	AVG			
3	2400.000	58.80	-6.76	52.04	74.00	-21.96	peak			
4	2400.000	49.61	-6.76	42.85	54.00	-11.15	AVG			



Job No.: STAR #422

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Bluetooth Stereo Headphone

Mode: TX 2480MHz(GFSK)

Model: BTSH-12/6335

Manufacturer: CLEVER BRIGHT

Polarization: Vertical

Power Source: DC 5V

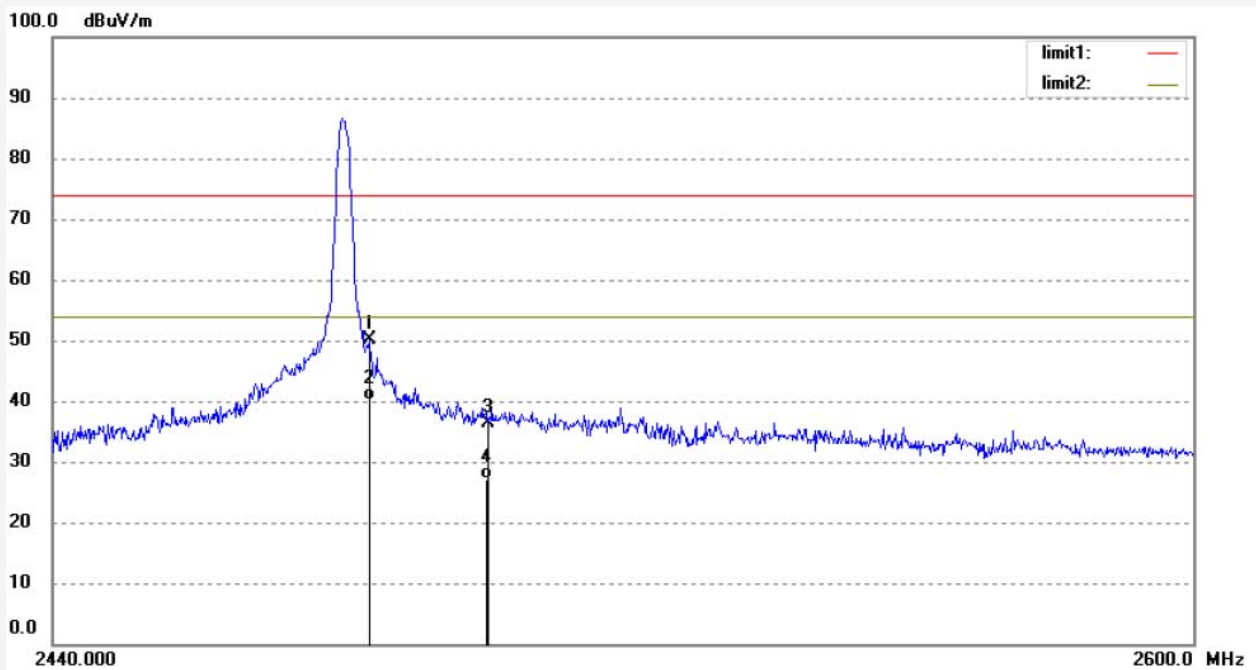
Date: 2015/03/12

Time: 8/55/04

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20150291

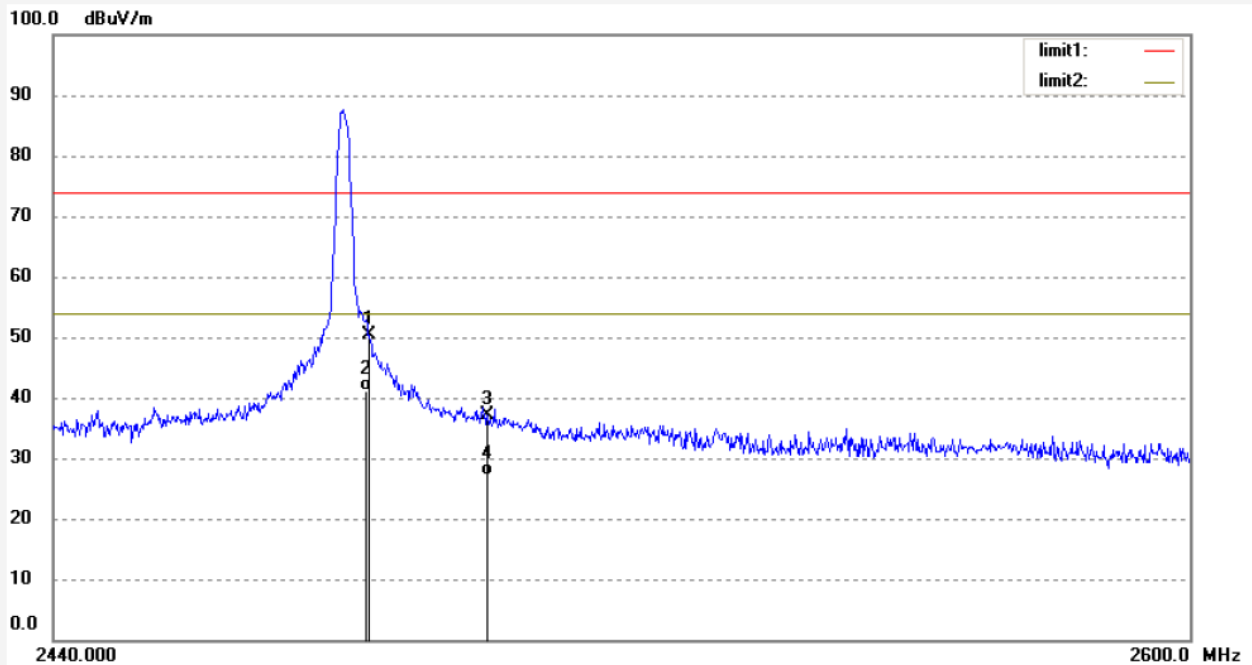


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	56.79	-6.54	50.25	74.00	-23.75	peak			
2	2483.500	46.79	-6.54	40.25	54.00	-13.75	AVG			
3	2500.000	42.79	-6.50	36.29	74.00	-37.71	peak			
4	2500.000	33.62	-6.50	27.12	54.00	-26.88	AVG			

Job No.: STAR #423  
Standard: FCC PK  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: Bluetooth Stereo Headphone  
Mode: TX 2480MHz(GFSK)  
Model: BTSH-12/6335  
Manufacturer: CLEVER BRIGHT

Polarization: Horizontal  
Power Source: DC 5V  
Date: 2015/03/12  
Time: 8/58/34  
Engineer Signature:  
Distance: 3m

Note: Report No.:ATE20150291



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	57.02	-6.54	50.48	74.00	-23.52	peak			
2	2483.500	47.58	-6.54	41.04	54.00	-12.96	AVG			
3	2500.000	43.62	-6.50	37.12	74.00	-36.88	peak			
4	2500.000	33.67	-6.50	27.17	54.00	-26.83	AVG			

## Hopping mode



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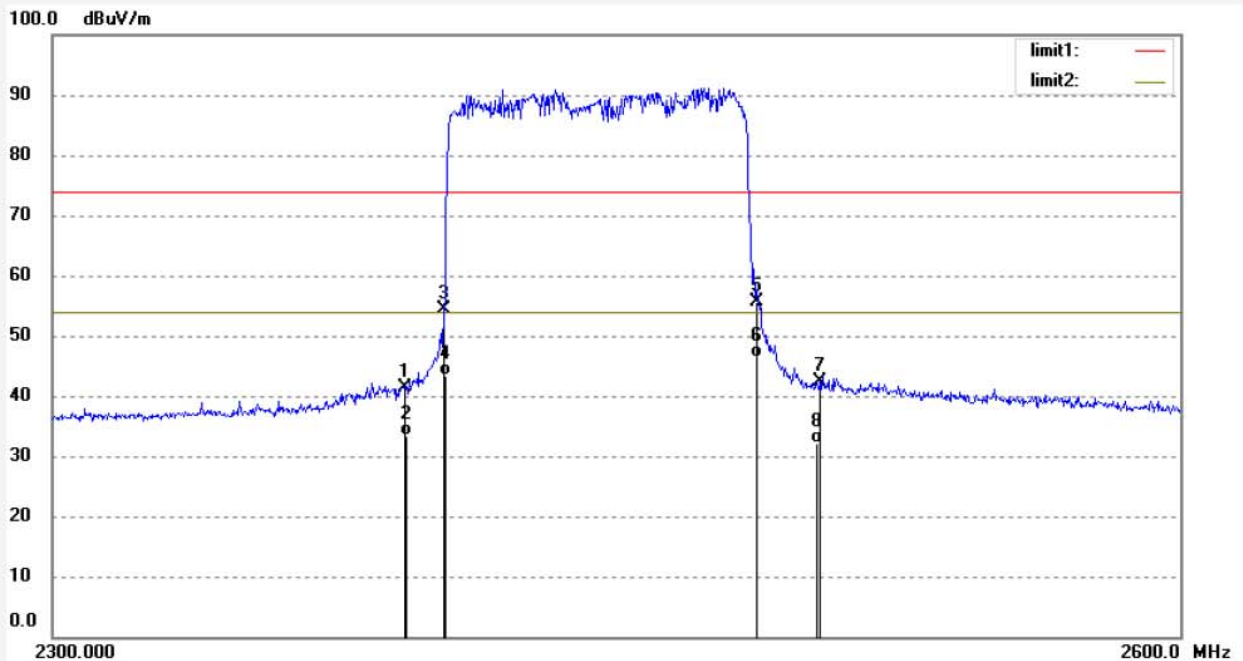
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

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

Job No.: STAR #434  
Standard: FCC PK  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: Bluetooth Stereo Headphone  
Mode: HOPPING (GFSK)  
Model: BTSH-12/6335  
Manufacturer: CLEVER BRIGHT

Polarization: Horizontal  
Power Source: DC 5V  
Date: 2015/03/12  
Time: 9/48/04  
Engineer Signature:  
Distance: 3m

Note: Report No.:ATE20150291

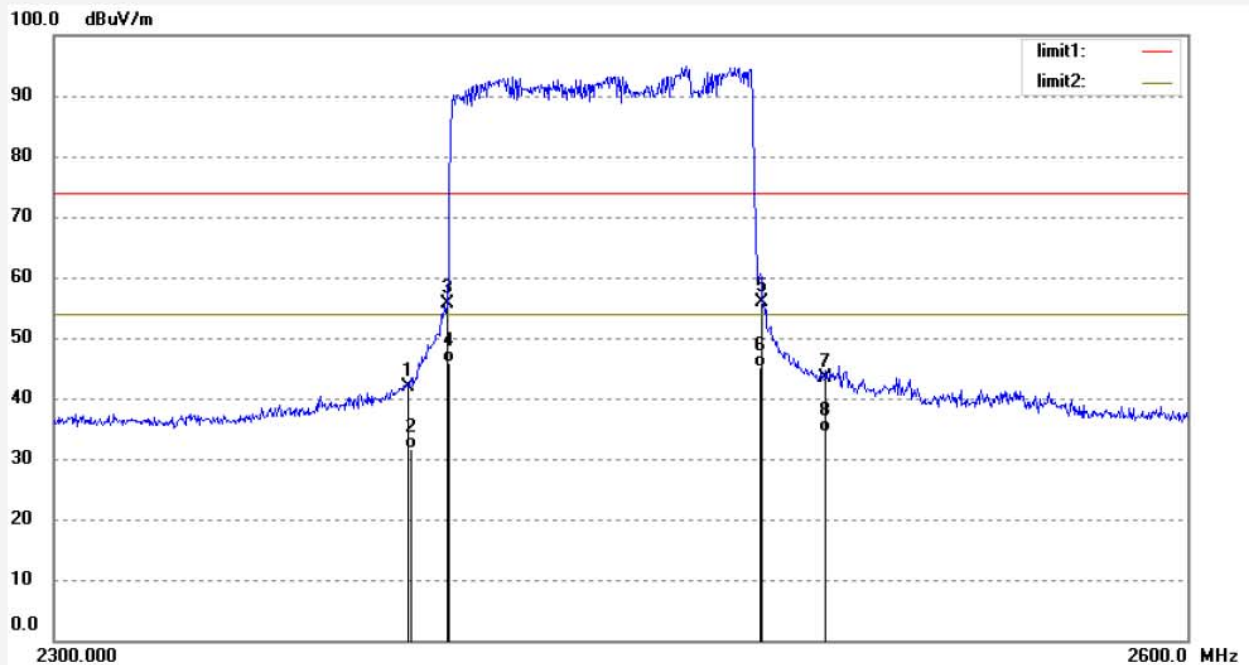


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	48.16	-6.78	41.38	74.00	-32.62	peak			
2	2390.000	40.25	-6.78	33.47	54.00	-20.53	AVG			
3	2400.000	61.16	-6.76	54.40	74.00	-19.60	peak			
4	2400.000	50.19	-6.76	43.43	54.00	-10.57	AVG			
5	2483.500	62.21	-6.54	55.67	74.00	-18.33	peak			
6	2483.500	52.80	-6.54	46.26	54.00	-7.74	AVG			
7	2500.000	48.78	-6.50	42.28	74.00	-31.72	peak			
8	2500.000	38.67	-6.50	32.17	54.00	-21.83	AVG			

Job No.: STAR #435  
Standard: FCC PK  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: Bluetooth Stereo Headphone  
Mode: HOPPING (GFSK)  
Model: BTSH-12/6335  
Manufacturer: CLEVER BRIGHT

Polarization: Vertical  
Power Source: DC 5V  
Date: 2015/03/12  
Time: 9/52/41  
Engineer Signature:  
Distance: 3m

Note: Report No.:ATE20150291



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	48.75	-6.78	41.97	74.00	-32.03	peak			
2	2390.000	38.46	-6.78	31.68	54.00	-22.32	AVG			
3	2400.000	62.43	-6.76	55.67	74.00	-18.33	peak			
4	2400.000	52.61	-6.76	45.85	54.00	-8.15	AVG			
5	2483.500	62.38	-6.54	55.84	74.00	-18.16	peak			
6	2483.500	51.67	-6.54	45.13	54.00	-8.87	AVG			
7	2500.000	49.85	-6.50	43.35	74.00	-30.65	peak			
8	2500.000	40.77	-6.50	34.27	54.00	-19.73	AVG			



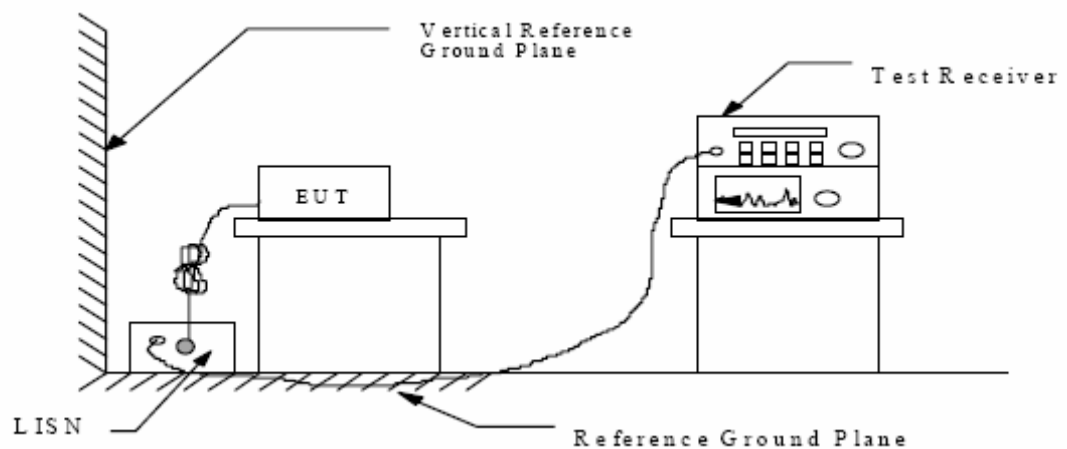
## 12.AC POWER LINE CONDUCTED EMISSION FOR FCC PART

### 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 Stereo Headphone with built-mic)

#### 12.2.The Emission Limit

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

Frequency (MHz)	Limit dB( $\mu$ V)	
	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 C63.10- 2013 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

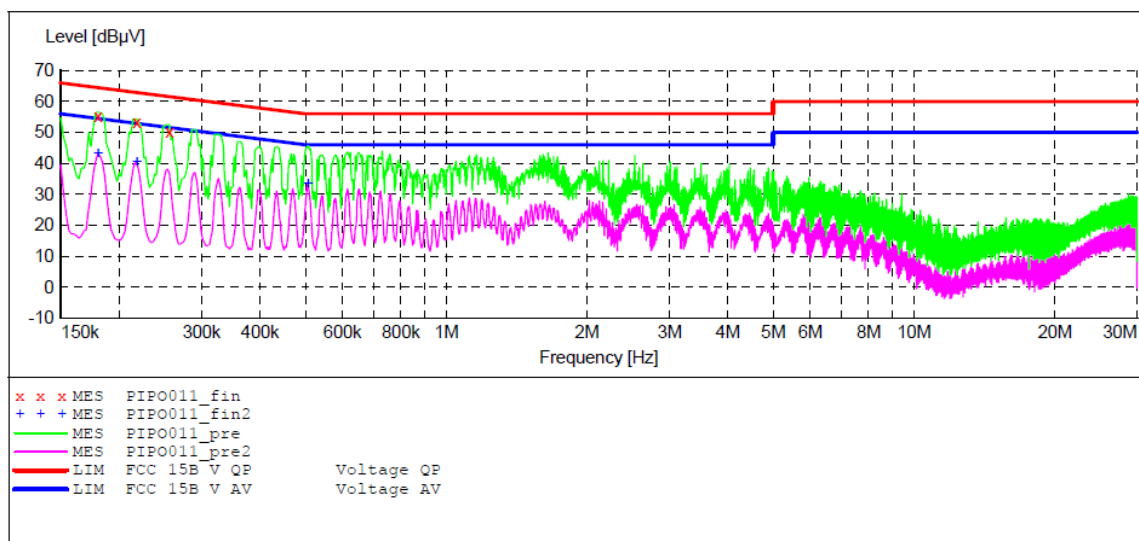
## ACCURATE TECHNOLOGY CO., LTD

### CONDUCTED EMISSION STANDARD FCC PART 15 B

EUT: Bluetooth Stereo Headphone with built-in mic M/N:BTSH-12/6335  
 Manufacturer: CLEVER BRIGHT  
 Operating Condition: ON  
 Test Site: 2#Shielding Room  
 Operator: star  
 Test Specification: L 120V/60Hz  
 Comment: Report NO.:ATE20150291  
 Start of Test: 2015-3-10 / 9:22:35

#### 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 LISN(ESH3-Z5)  
 Average



#### MEASUREMENT RESULT: "PIPO011\_fin"

2015-3-10 9:24

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.180000	55.40	10.5	65	9.1	QP	L1	GND
0.218000	53.10	10.7	63	9.8	QP	L1	GND
0.256000	50.00	10.9	62	11.6	QP	L1	GND

#### MEASUREMENT RESULT: "PIPO011\_fin2"

2015-3-10 9:24

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.180000	43.00	10.5	55	11.5	AV	L1	GND
0.218000	40.40	10.7	53	12.5	AV	L1	GND
0.506000	33.50	11.5	46	12.5	AV	L1	GND

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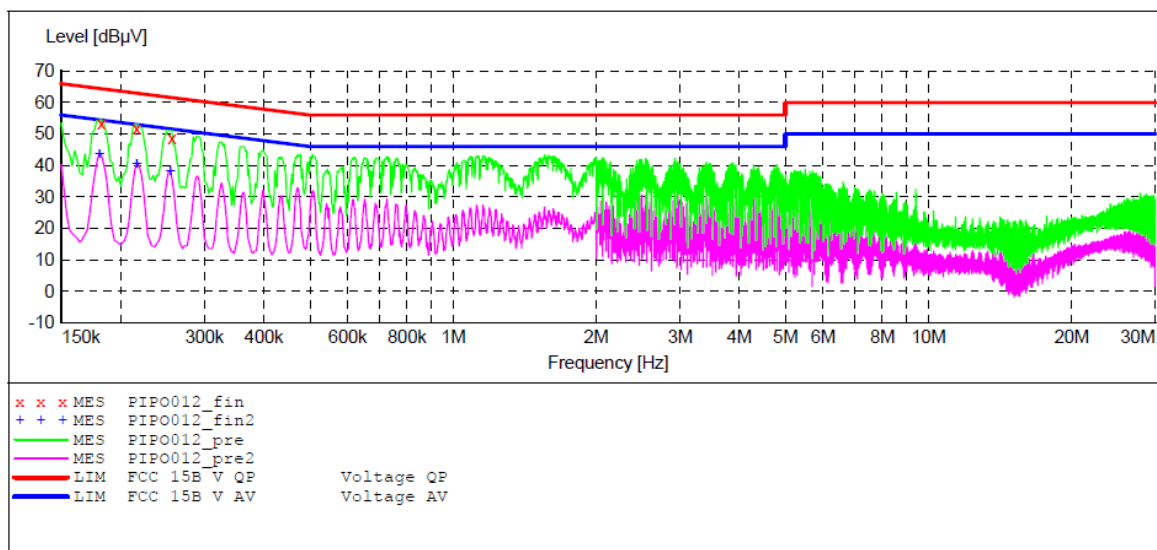
## CONDUCTED EMISSION STANDARD FCC PART 15 B

EUT: Bluetooth Stereo Headphone with built-in mic M/N:BTSH-12/6335  
 Manufacturer: CLEVER BRIGHT  
 Operating Condition: ON  
 Test Site: 2#Shielding Room  
 Operator: star  
 Test Specification: N 120V/60Hz  
 Comment: Report NO.:ATE20150291  
 Start of Test: 2015-3-10 / 9:24:38

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

Short Description: \_SUB\_STD\_VTERM2 1.70

Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width				
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak	1.0 s	9 kHz	LISN (ESH3-Z5)
			Average			



### MEASUREMENT RESULT: "PIPO012\_fin"

2015-3-10 9:27

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.182000	53.30	10.5	64	11.1	QP	N	GND
0.216000	51.60	10.7	63	11.4	QP	N	GND
0.256000	48.60	10.9	62	13.0	QP	N	GND

### MEASUREMENT RESULT: "PIPO012\_fin2"

2015-3-10 9:27

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.180000	43.40	10.5	55	11.1	AV	N	GND
0.216000	40.40	10.7	53	12.6	AV	N	GND
0.254000	38.00	10.8	52	13.6	AV	N	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 a permanent attached antenna, no consideration of replacement. The gain is 2.3dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.

