

APPLICATION CERTIFICATION

On Behalf of
DAZA Electronics Company

Bluetooth speaker
Model No.: Sp-25BT,Kfdz51,Kfdz52,Kfdz53

FCC ID: Z8VSP-25BT

Prepared for : DAZA Electronics Company
Address : Bldg G,Xinmusheng Low Carbon Industrial
Park,NO.6,Xinmu Road Pinghu,Shenzhen,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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Test Report Certification

Applicant : DAZA Electronics Company
 Manufacturer : DAZA Electronics Company
 EUT Description : Bluetooth speaker
 (A) MODEL NO.: Sp-25BT,Kfdz51,Kfdz52,Kfdz53
 (B) POWER SUPPLY: DC 3.7V (Battery) & DC 5V(USB Port)
 (C) Measurement Procedure Used:

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

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

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

Date of Test : July 09-16,2014

Prepared by : 
 (Engineer)

Approved & Authorized Signer : 
 (Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	:	Bluetooth speaker
Model Number	:	Sp-25BT,Kfdz51,Kfdz52,Kfdz53 (Note: These samples are same except for the model number are different. So we prepare the Sp-25BT for test.)
Frequency Band	:	2402MHz-2480MHz
Number of Channels	:	79
Bluetooth Version	:	3.0+EDR
Modulation type	:	GFSK, $\Pi/4$ -DQPSK, 8DPSK
Antenna Gain	:	0dBi
Antenna type	:	PCB Antenna
Power Supply	:	DC 3.7V(Battery)&DC 5V(USB Port)
Applicant	:	DAZA Electronics Company
Address	:	Bldg G,Xinmusheng Low Carbon Industrial Park,NO.6,Xinmu Road Pinghu,Shenzhen,China
Manufacturer	:	DAZA Electronics Company
Address	:	Bldg G,Xinmusheng Low Carbon Industrial Park,NO.6,Xinmu Road Pinghu,Shenzhen,China
Date of sample received	:	July 09, 2014
Date of Test	:	July 09-16,2014

1.2. Description of Test Facility

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

1.3. Measurement Uncertainty

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

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated dates	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 11, 2014	Jan. 10, 2015
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 11, 2014	Jan. 10, 2015
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 11, 2014	Jan. 10, 2015
Pre-Amplifier	Rohde&Schwarz	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

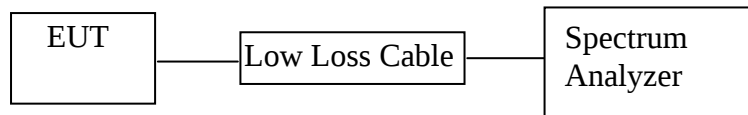
(EUT: Bluetooth speaker)

4. TEST PROCEDURES AND RESULTS

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

5. 20DB BANDWIDTH TEST

5.1. Block Diagram of Test Setup



(EUT: Bluetooth speaker)

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

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

5.3. EUT Configuration on Measurement

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

5.4. Operating Condition of EUT

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

5.4.2. Turn on the power of all equipment.

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

5.5. Test Procedure

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

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

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

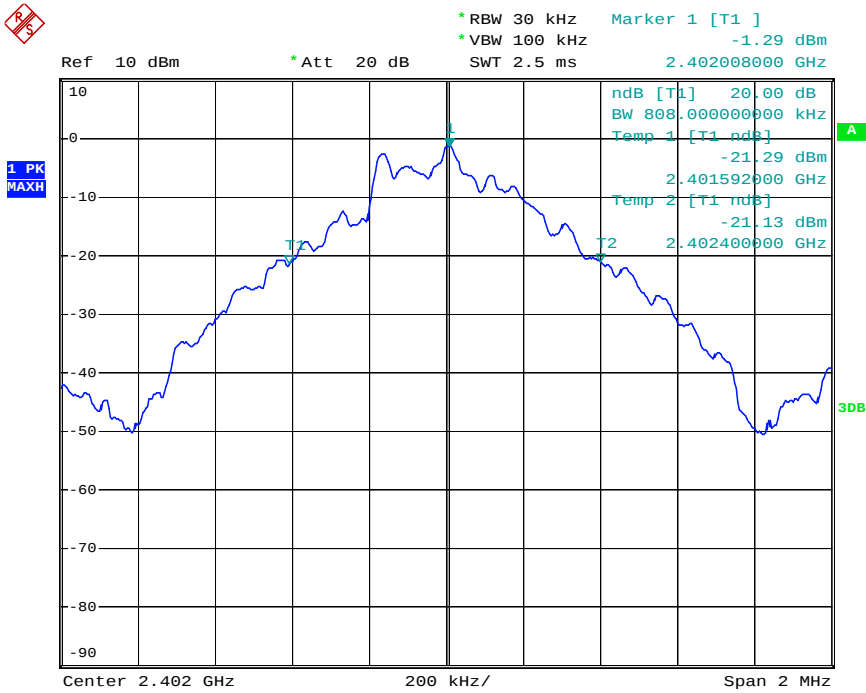
5.6. Test Result

Channel	Frequency (MHz)	GFSK 20dB Bandwidth (MHz)	$\Pi/4$ -DQPSK 20dB Bandwidth (MHz)	8DPSK 20dB Bandwidth (MHz)	Result
Low	2402	0.808	1.228	1.152	Pass
Middle	2441	0.808	1.224	1.152	Pass
High	2480	0.844	1.224	1.148	Pass

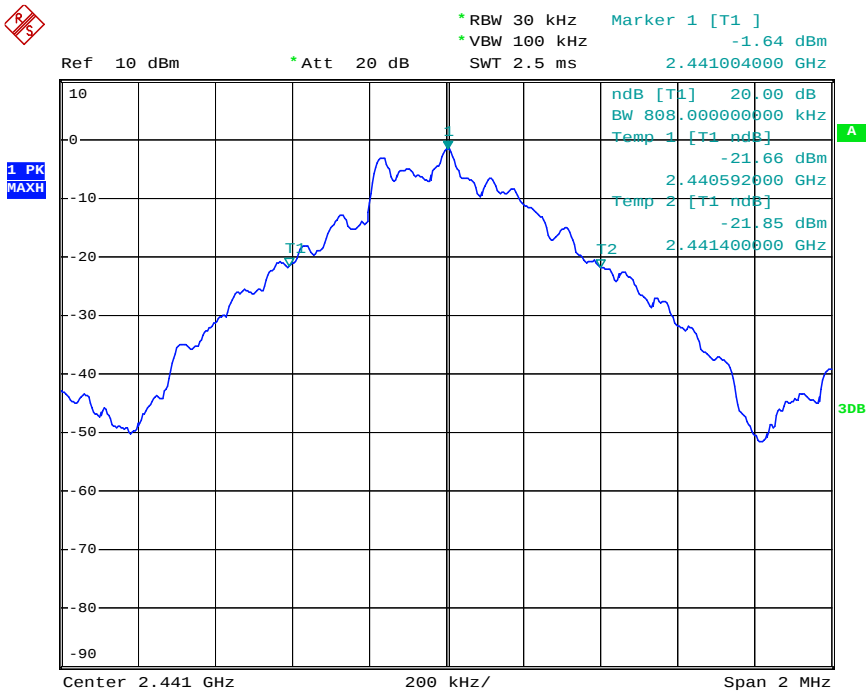
The spectrum analyzer plots are attached as below.

GFSK Mode

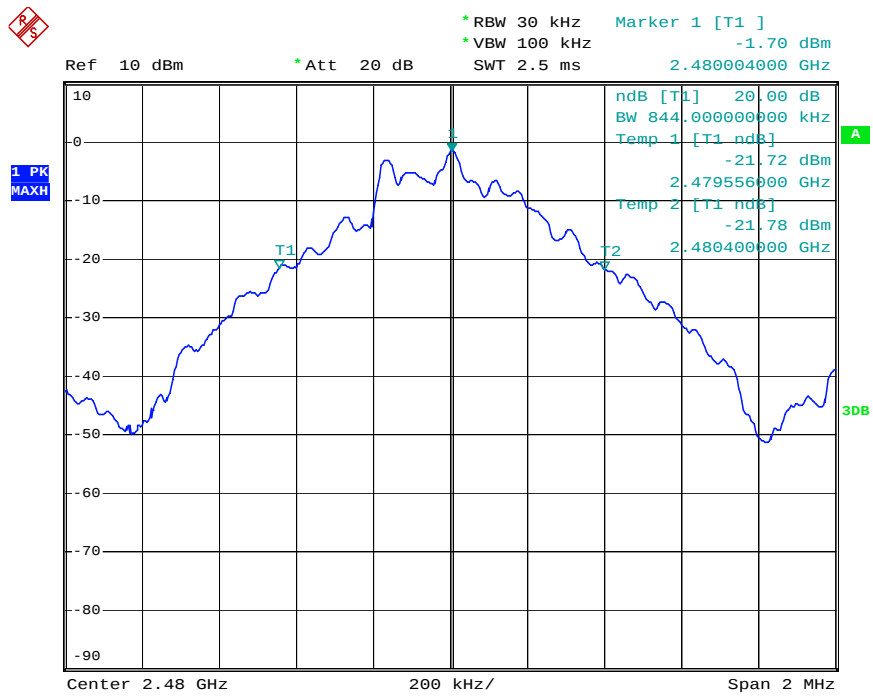
Low channel



Middle channel

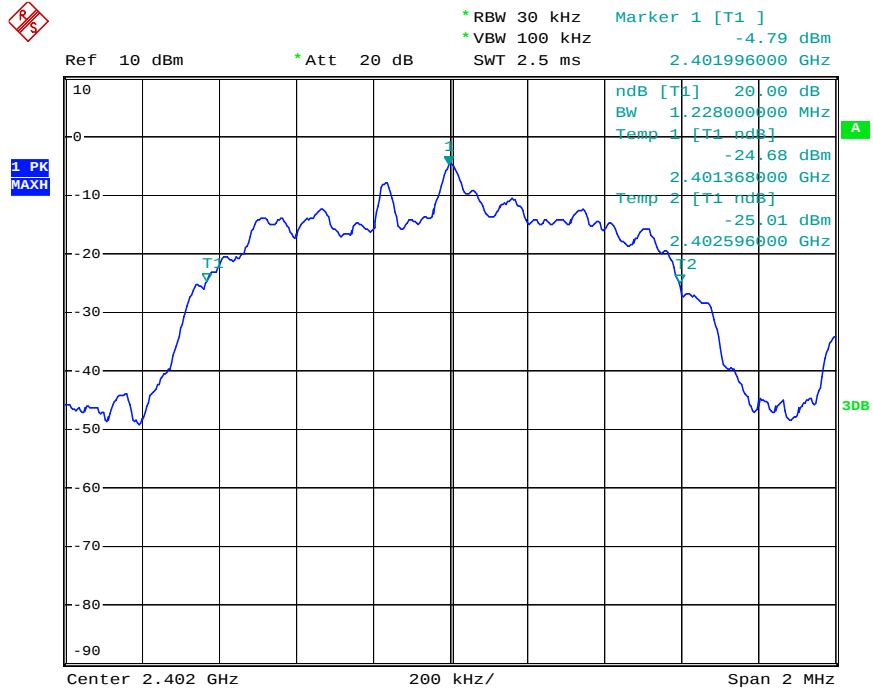


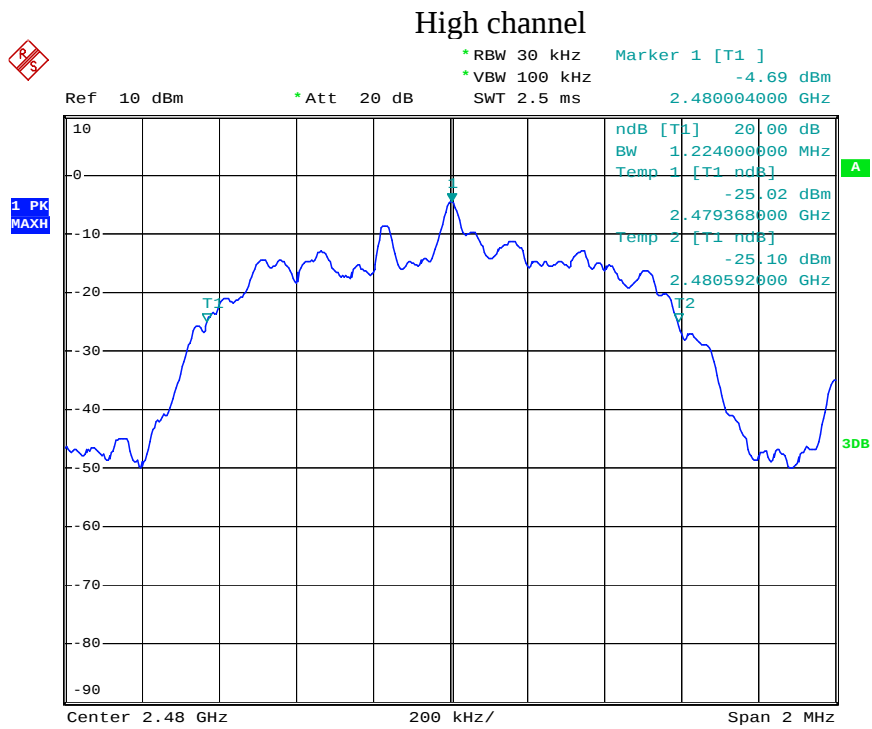
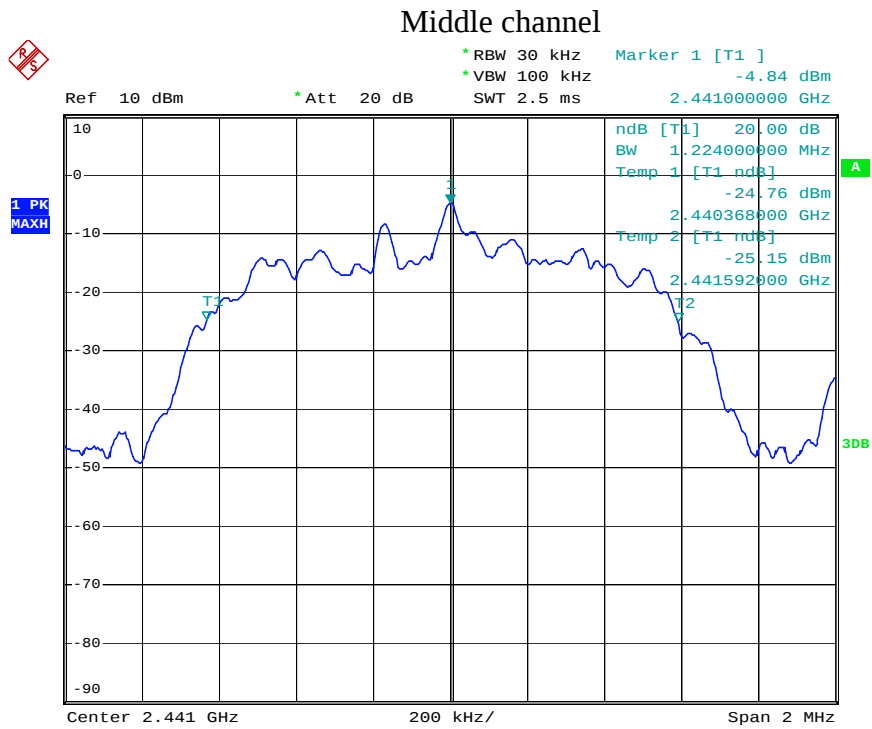
High channel



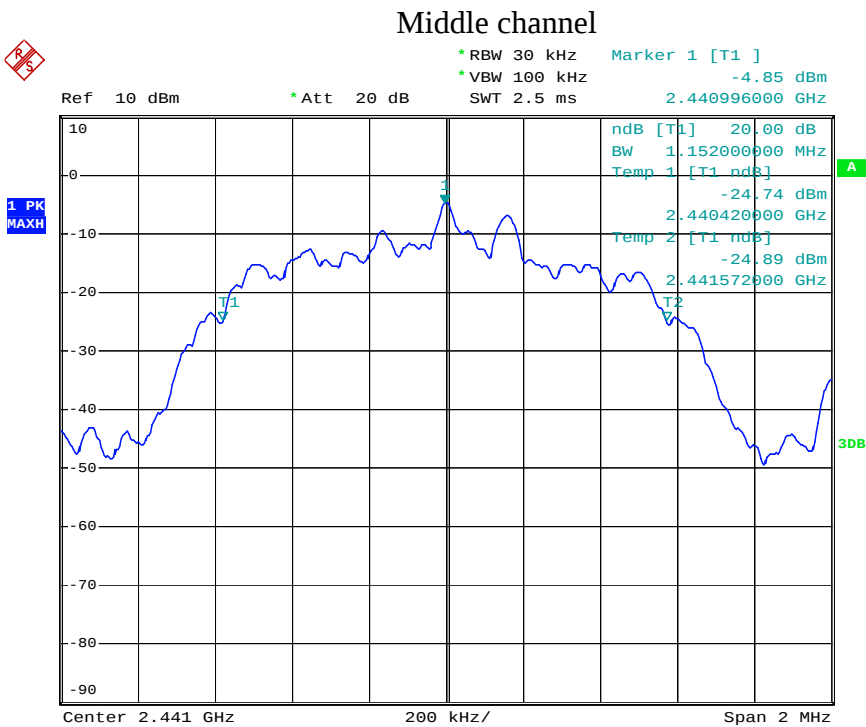
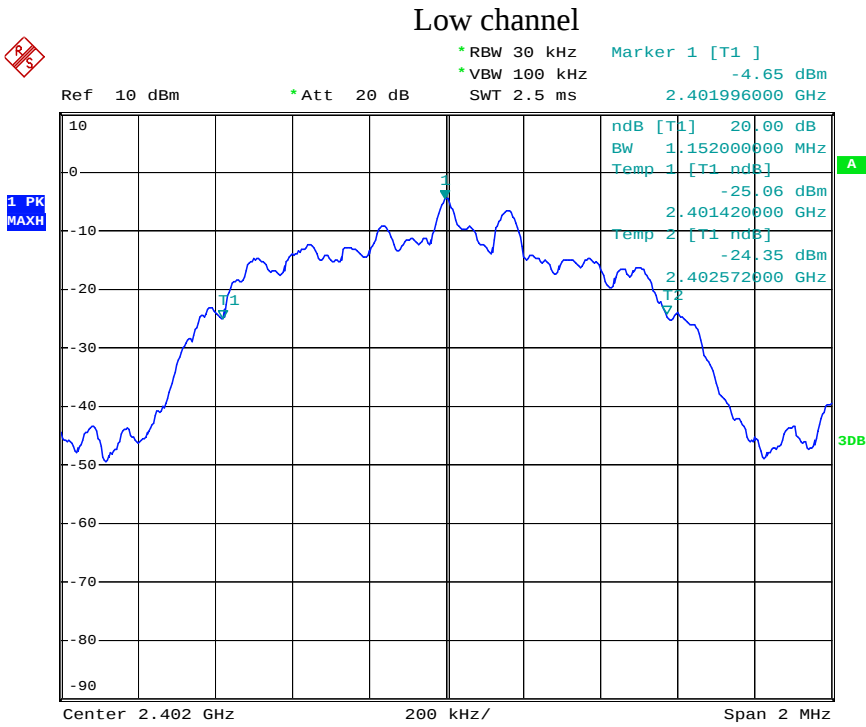
$\Pi/4$ -DQPSK Mode

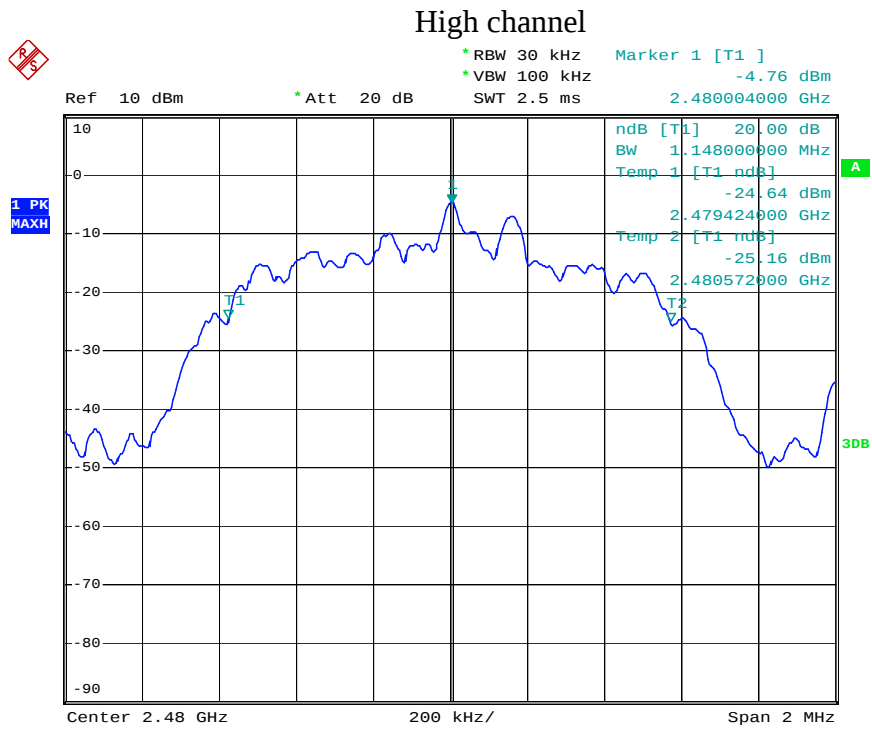
Low channel





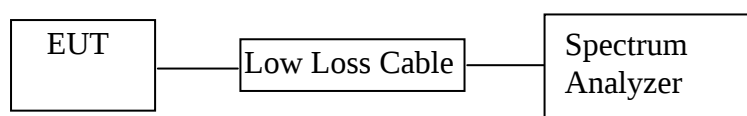
8DPSK Mode





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	1.000	25KHz or 20dB bandwidth	PASS
	2403			
Middle	2440	1.000	25KHz or 20dB bandwidth	PASS
	2441			
High	2479	1.000	25KHz or 20dB bandwidth	PASS
	2480			

Π/4-DQPSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.010	25KHz or 2/3*20dB bandwidth	PASS
	2403			
Middle	2440	1.002	25KHz or 2/3*20dB bandwidth	PASS
	2441			
High	2479	1.002	25KHz or 2/3*20dB bandwidth	PASS
	2480			

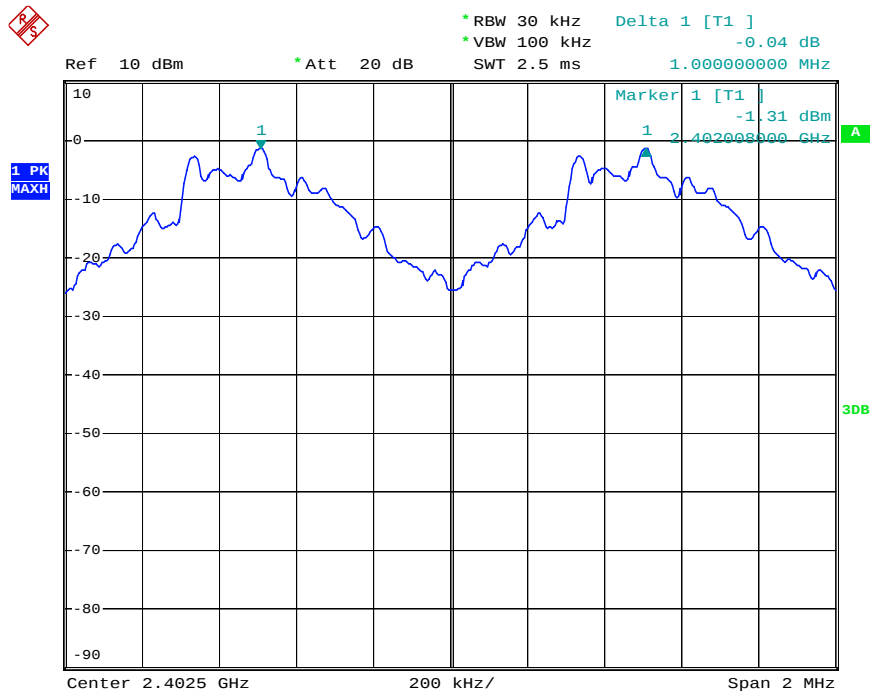
8DPSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.000	25KHz or 2/3*20dB bandwidth	PASS
	2403			
Middle	2440	1.002	25KHz or 2/3*20dB bandwidth	PASS
	2441			
High	2479	1.002	25KHz or 2/3*20dB bandwidth	PASS
	2480			

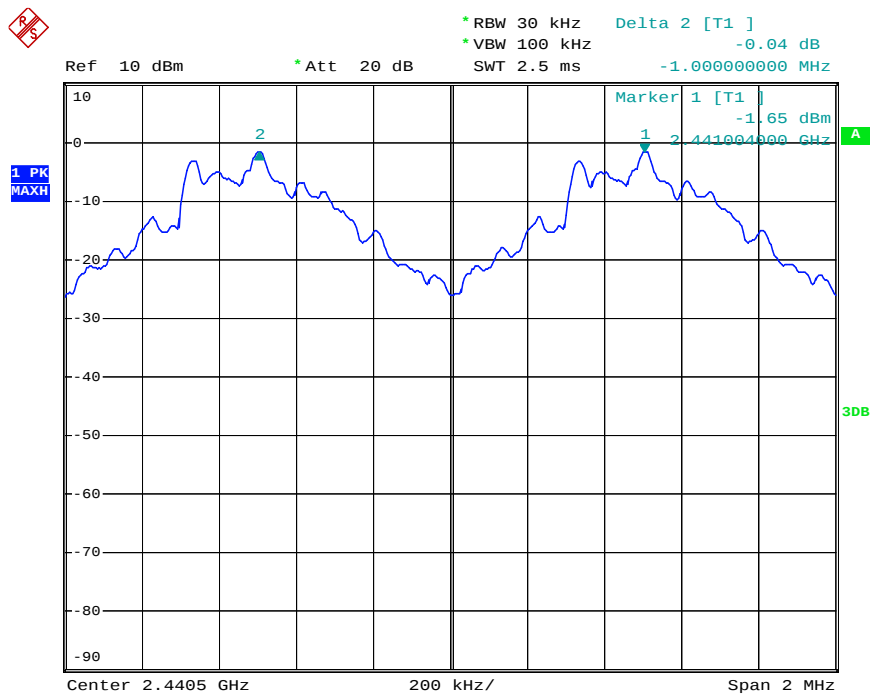
The spectrum analyzer plots are attached as below.

GFSK Mode

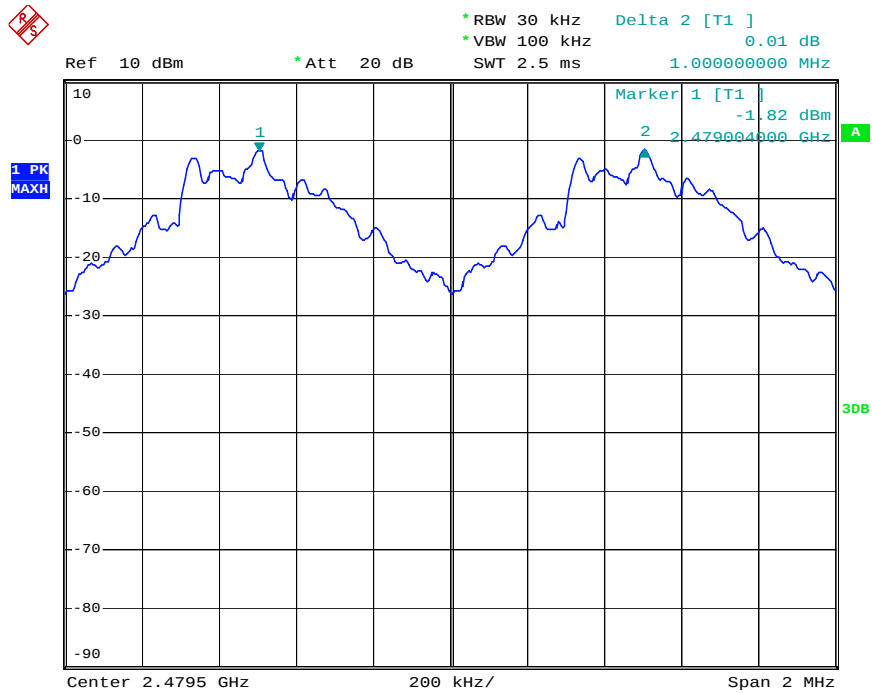
Low channel



Middle channel

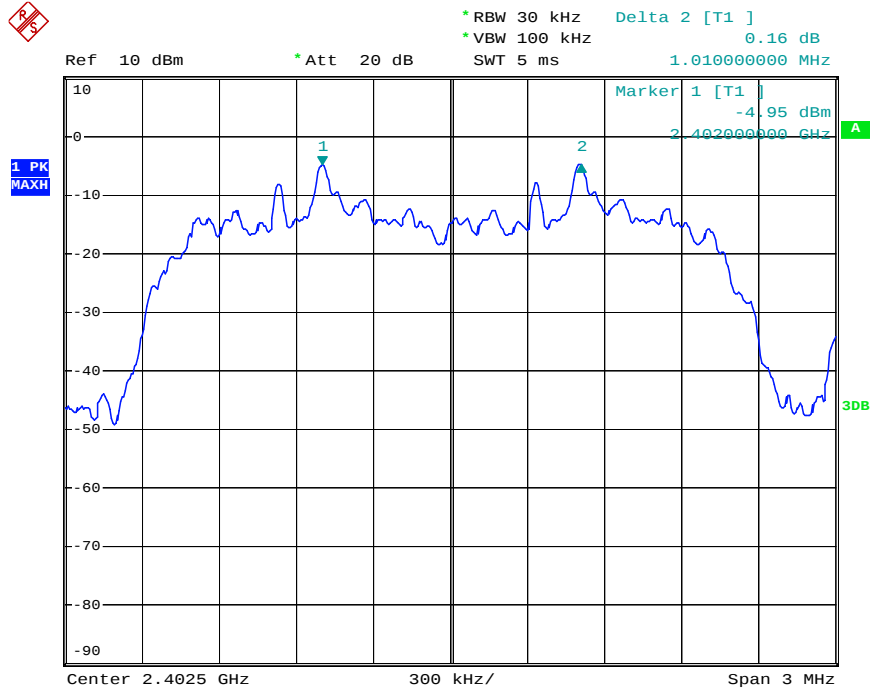


High channel

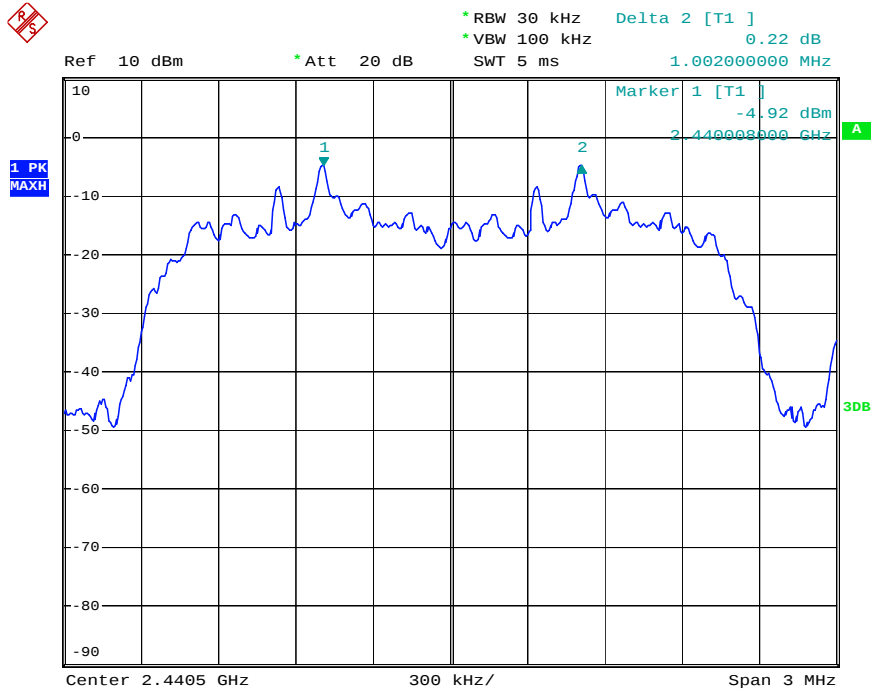


$\Pi/4$ -DQPSK Mode

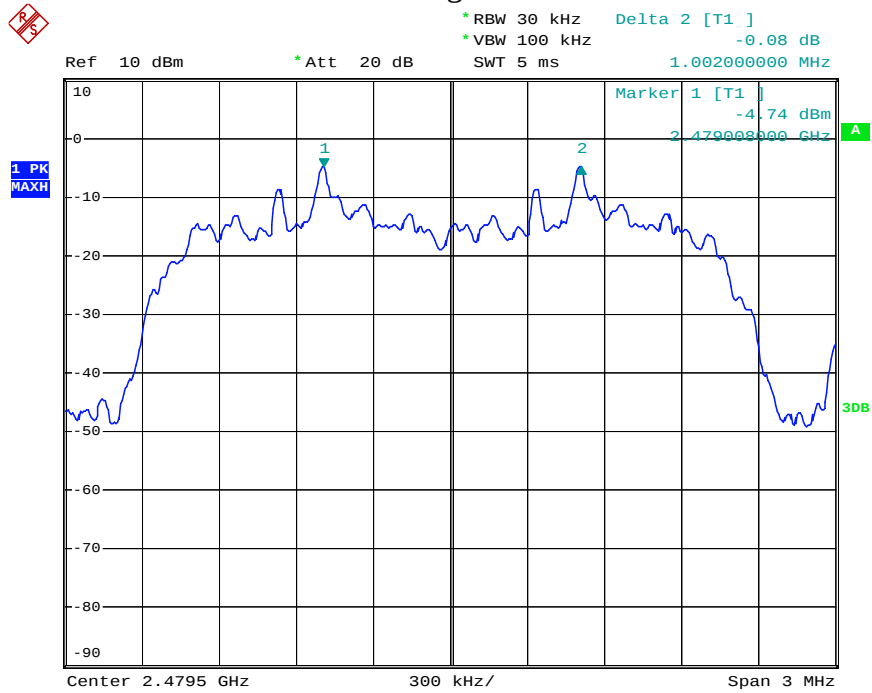
Low channel



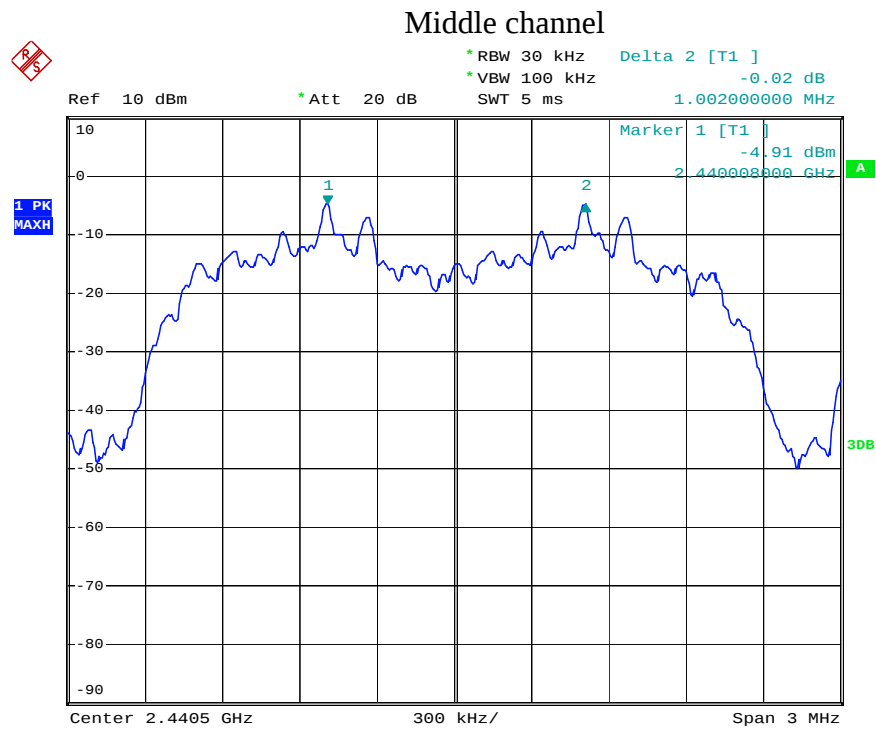
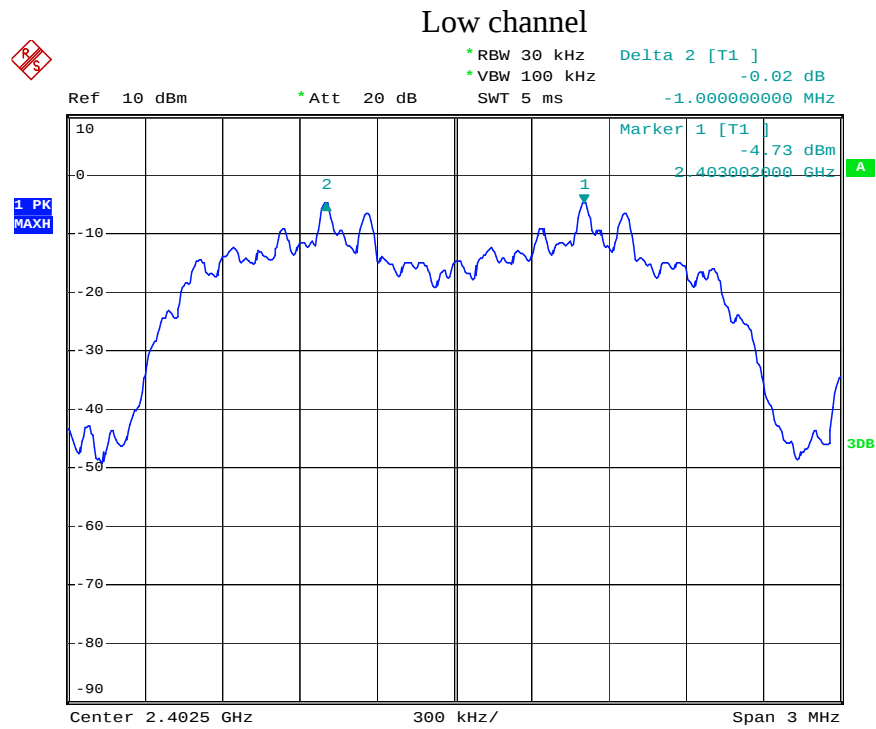
Middle channel

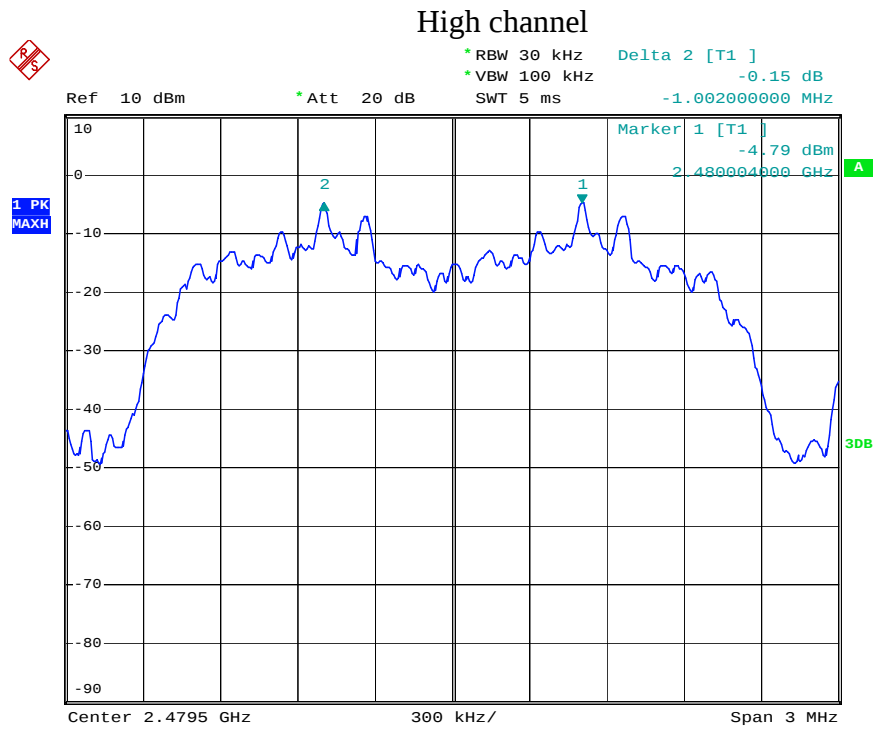


High channel



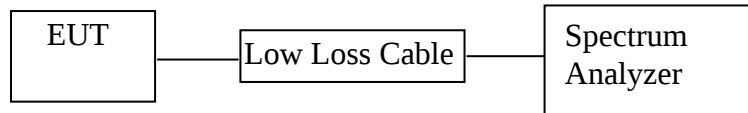
8DPSK Mode





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.

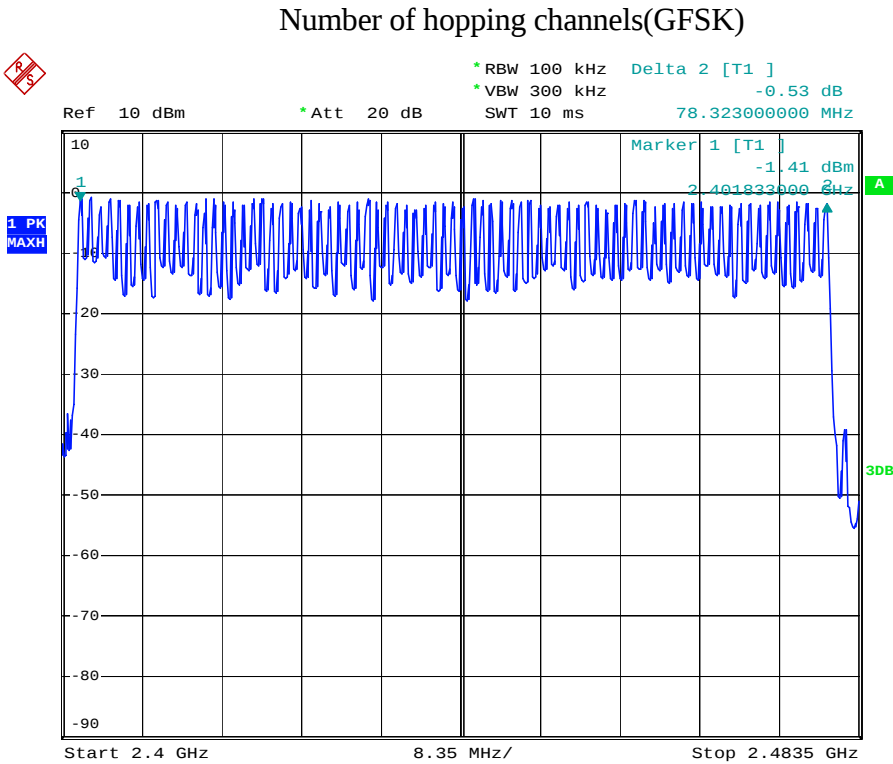
7.5. Test Procedure

- 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.

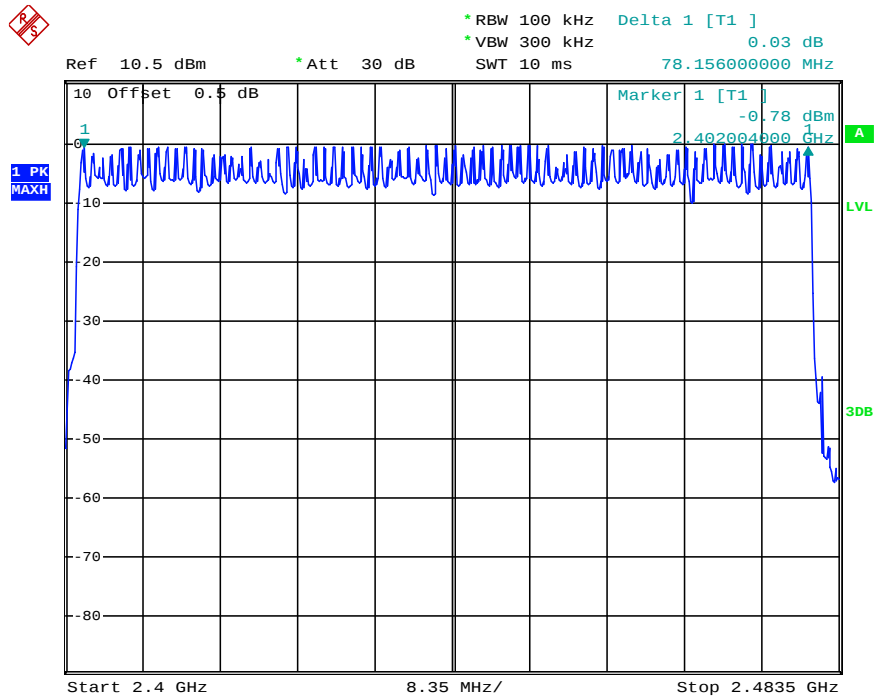
7.6. Test Result

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

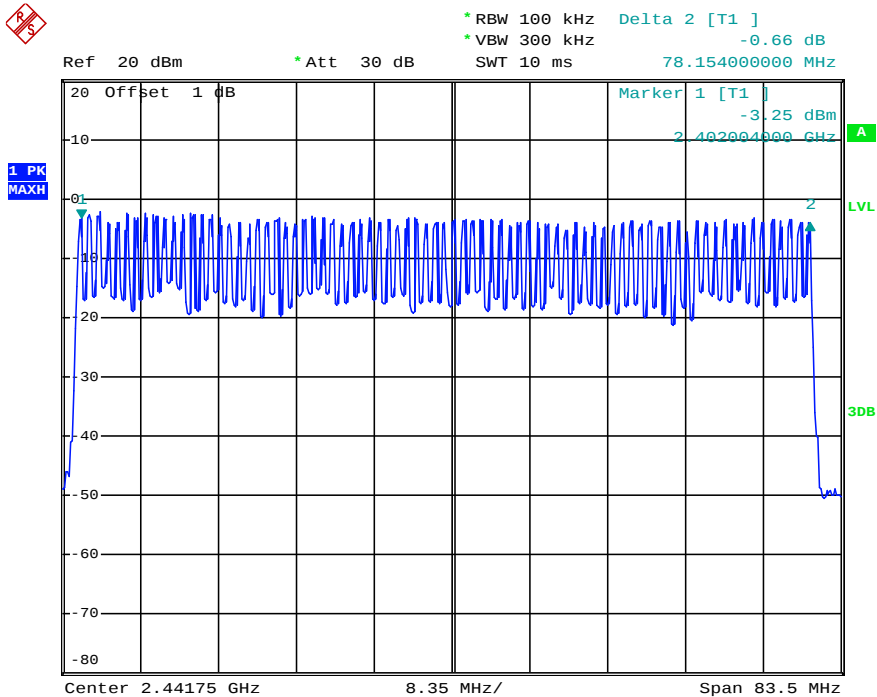
The spectrum analyzer plots are attached as below.



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

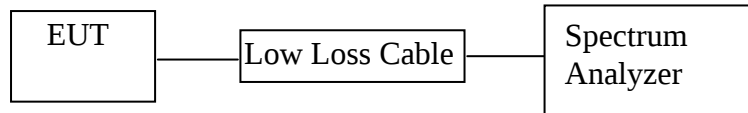


Number of hopping channels(8DPSK)



8. DWELL TIME TEST

8.1. Block Diagram of Test Setup



(EUT: Bluetooth speaker)

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

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

8.3. EUT Configuration on Measurement

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

8.4. Operating Condition of EUT

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

8.4.2. Turn on the power of all equipment.

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

8.5. Test Procedure

- 8.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.
- 8.5.2. Set center frequency of spectrum analyzer = operating frequency.
- 8.5.3. Set the spectrum analyzer as RBW=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	0.530	169.60	400
	2441	0.530	169.60	400
	2480	0.530	169.60	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	1.650	264.00	400
	2441	1.800	288.00	400
	2480	1.790	286.40	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	3.070	327.47	400
	2441	3.070	327.47	400
	2480	3.070	327.47	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6 \times 79)) \times 31.6$				

Π/4-DQPSK

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.545	174.40	400
	2441	0.545	174.40	400
	2480	0.545	174.40	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	1.315	210.40	400
	2441	1.325	212.00	400
	2480	1.325	212.00	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	3.495	372.80	400
	2441	3.075	328.00	400
	2480	3.075	328.00	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6 \times 79)) \times 31.6$				

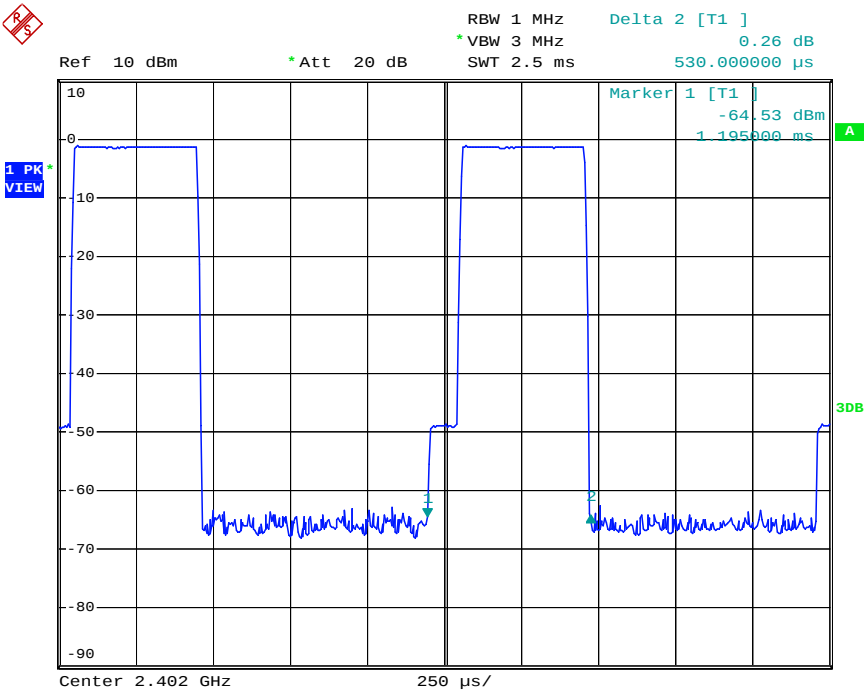
8DPSK Mode

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.540	172.80	400
	2441	0.540	172.80	400
	2480	0.545	174.40	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	1.890	302.40	400
	2441	1.815	290.40	400
	2480	1.805	288.80	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	3.075	328.00	400
	2441	3.095	330.13	400
	2480	3.080	328.53	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6 \times 79)) \times 31.6$				

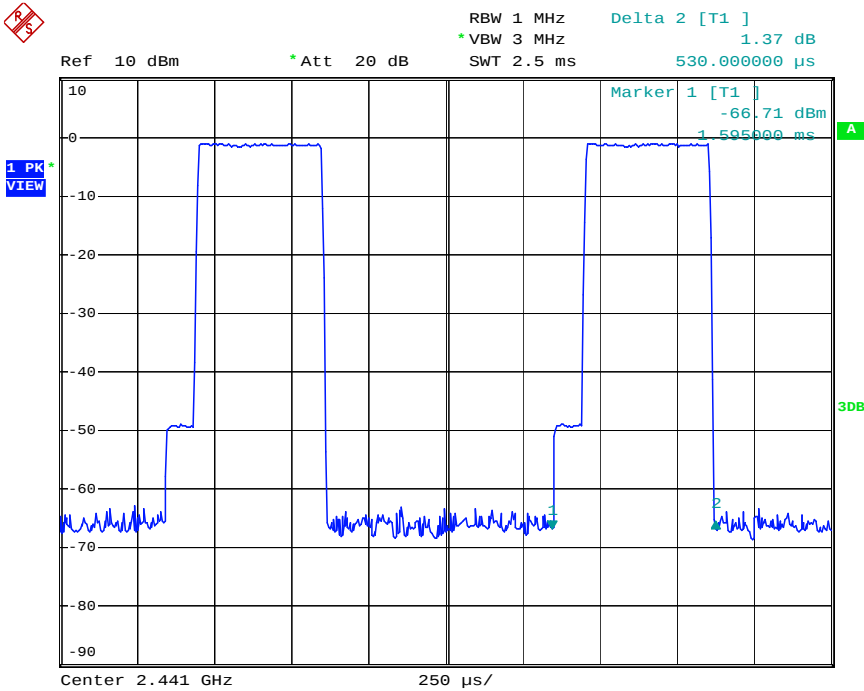
The spectrum analyzer plots are attached as below.

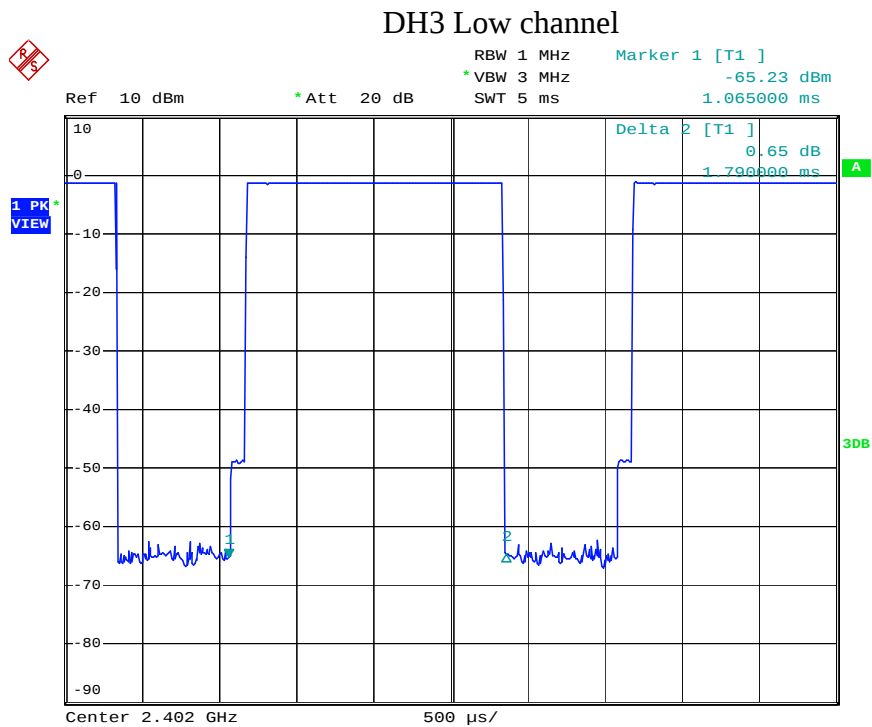
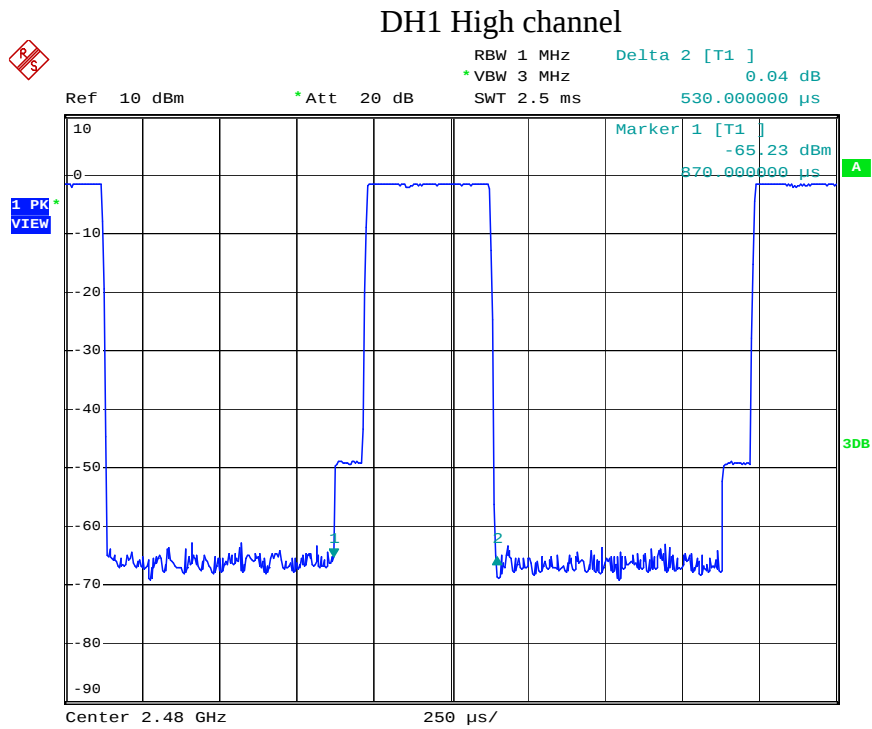
Mode 1: GFSK Link Mode

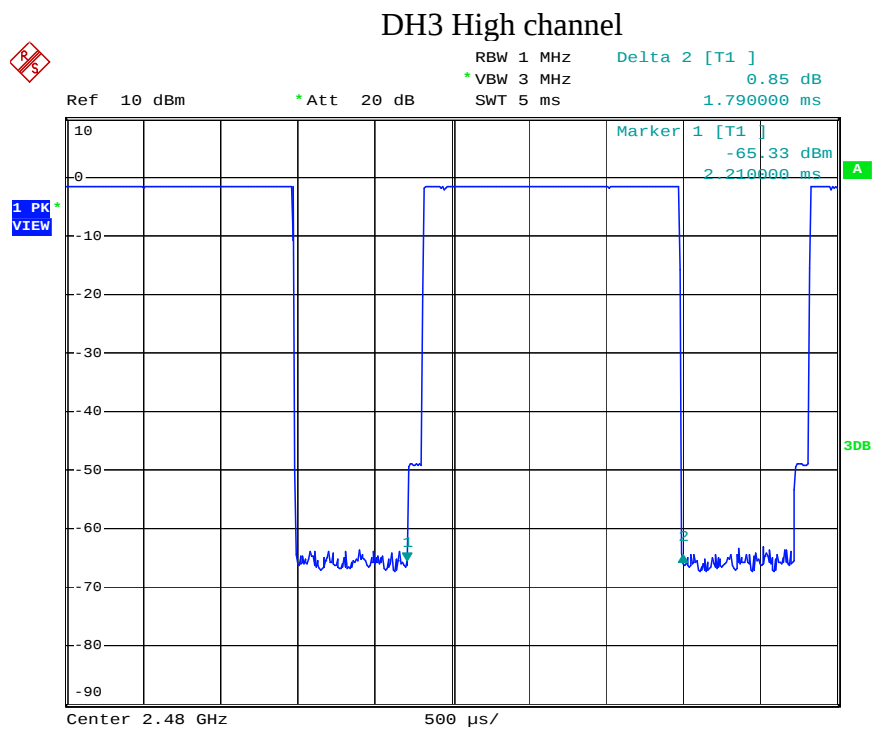
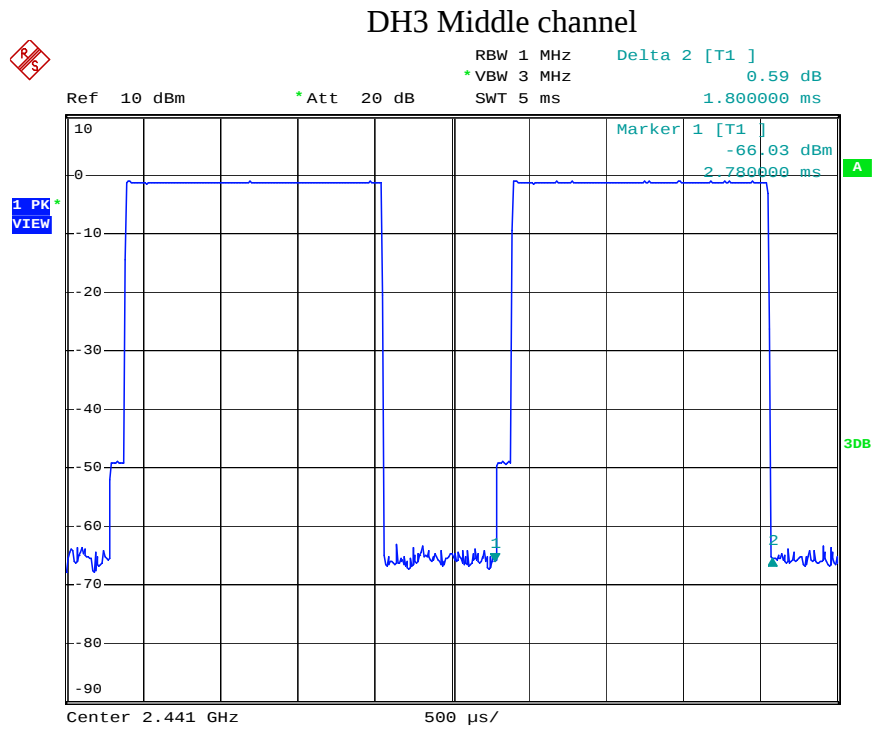
DH1 Low channel

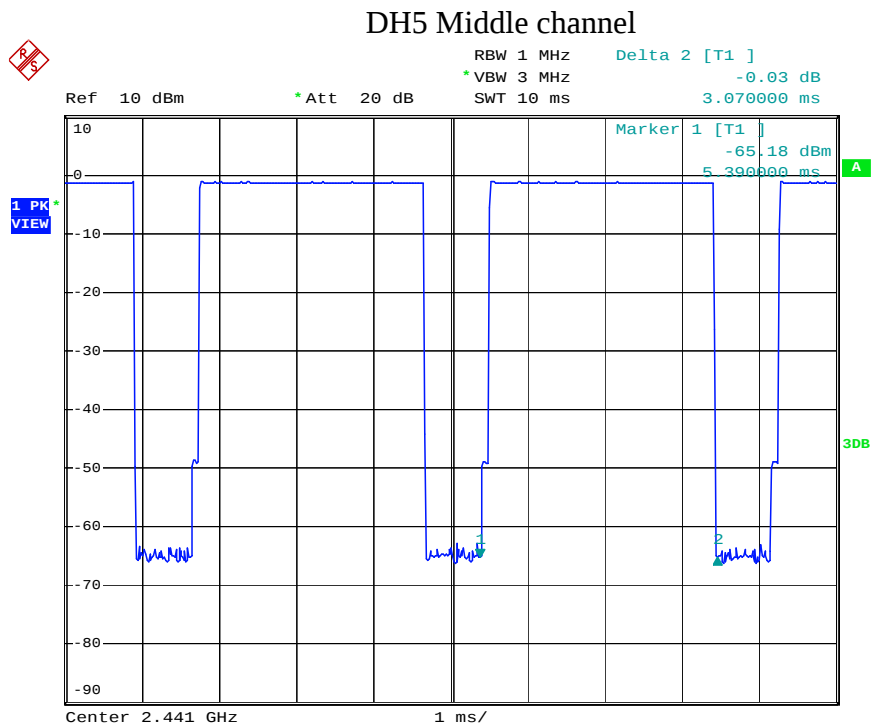
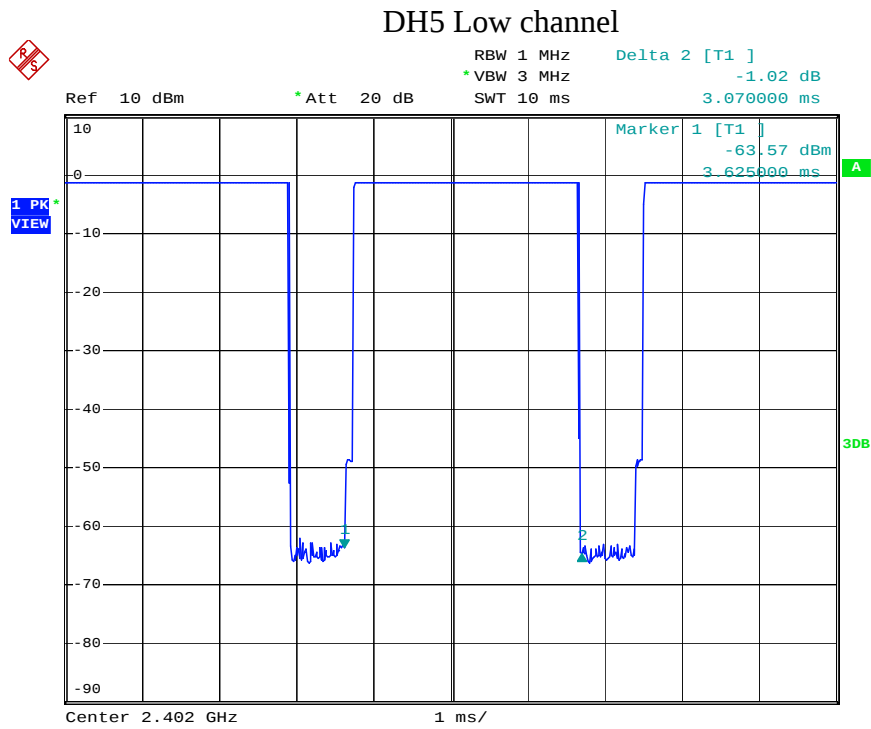


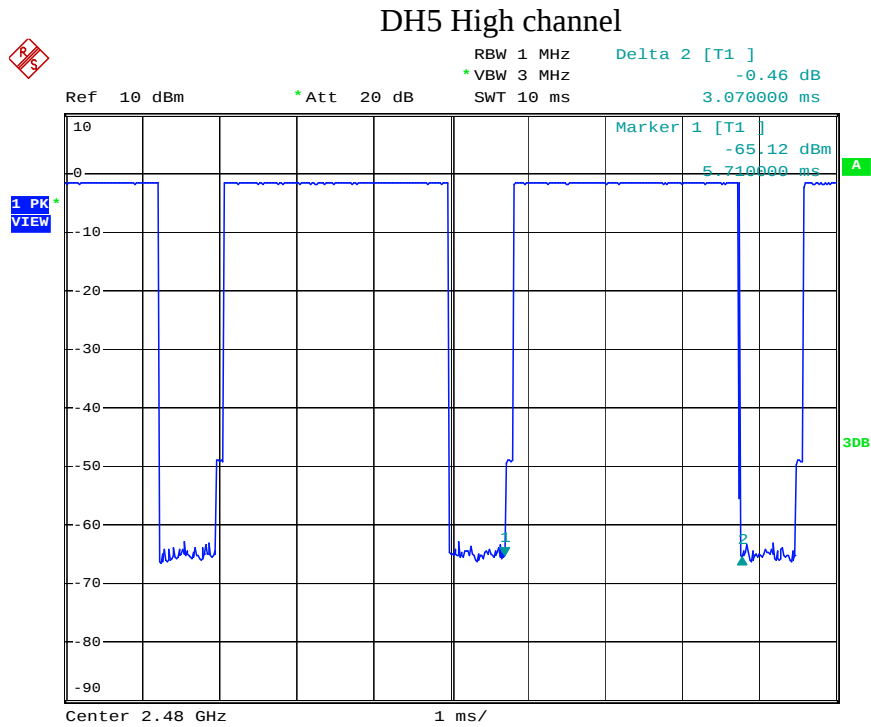
DH1 Middle channel



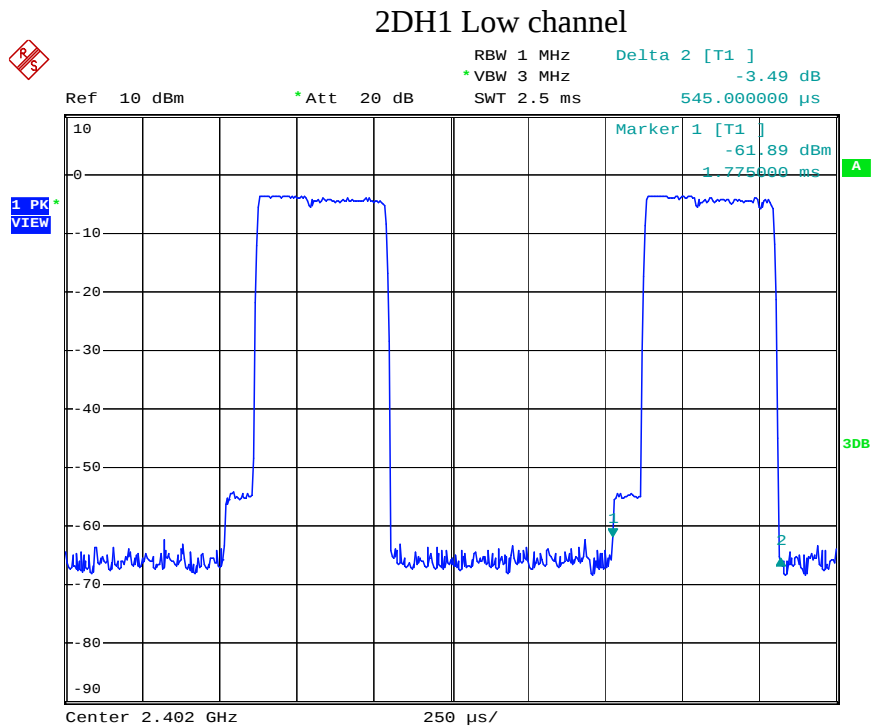




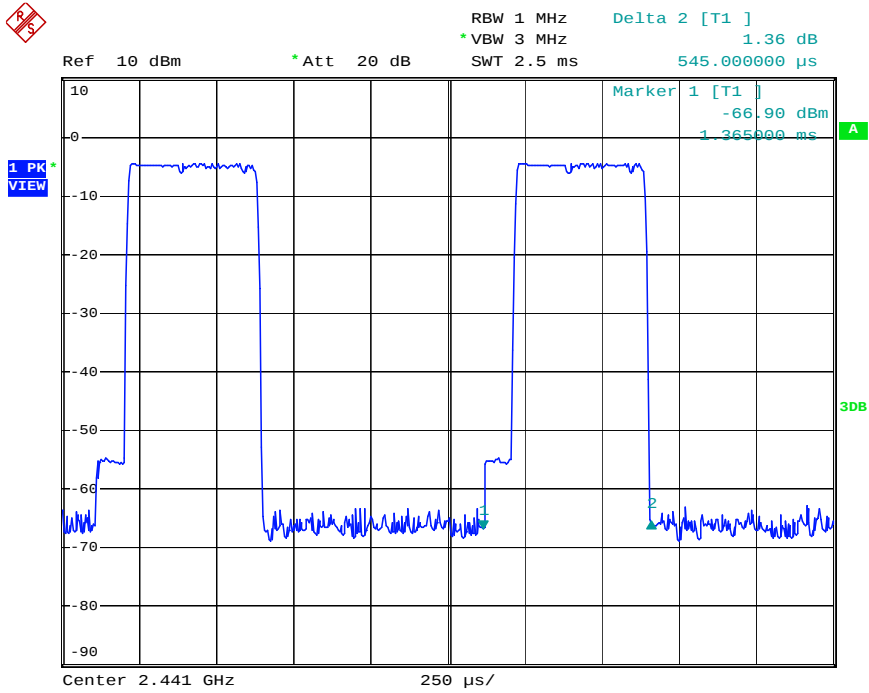




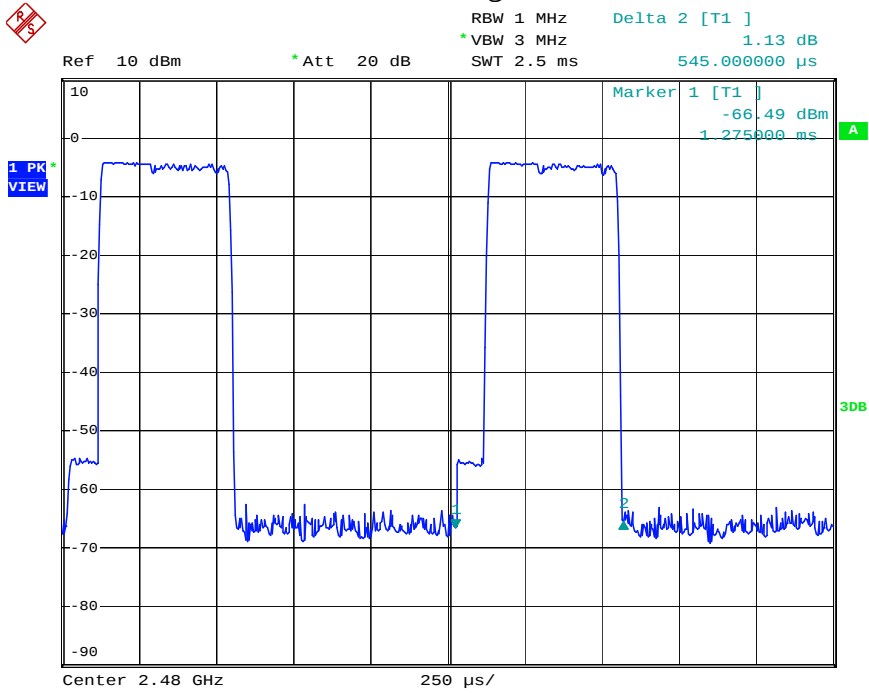
Mode 2: $\pi/4$ DQPSK Link Mode

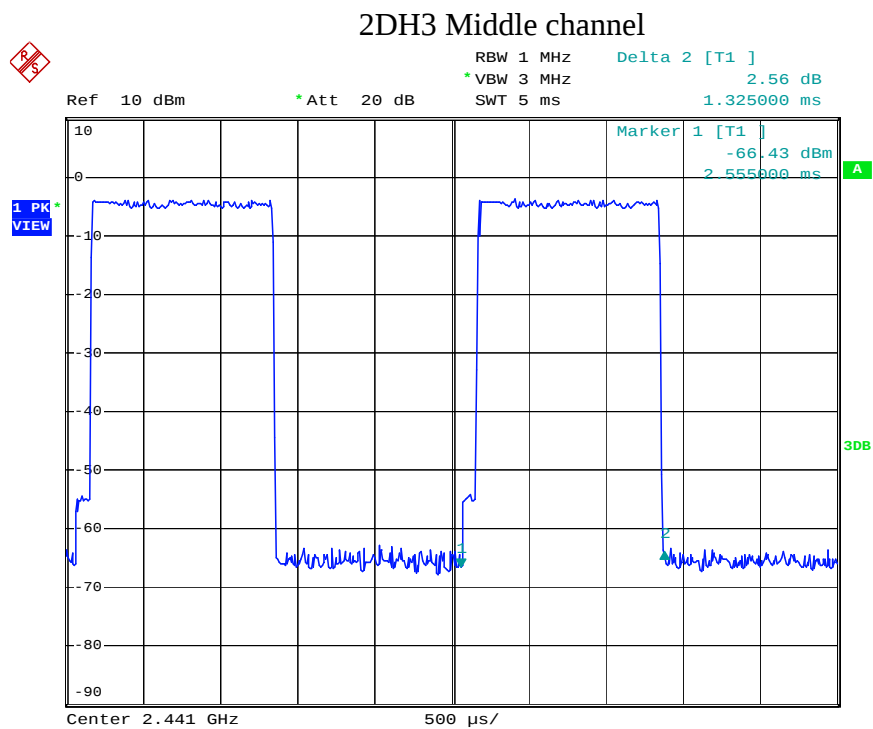
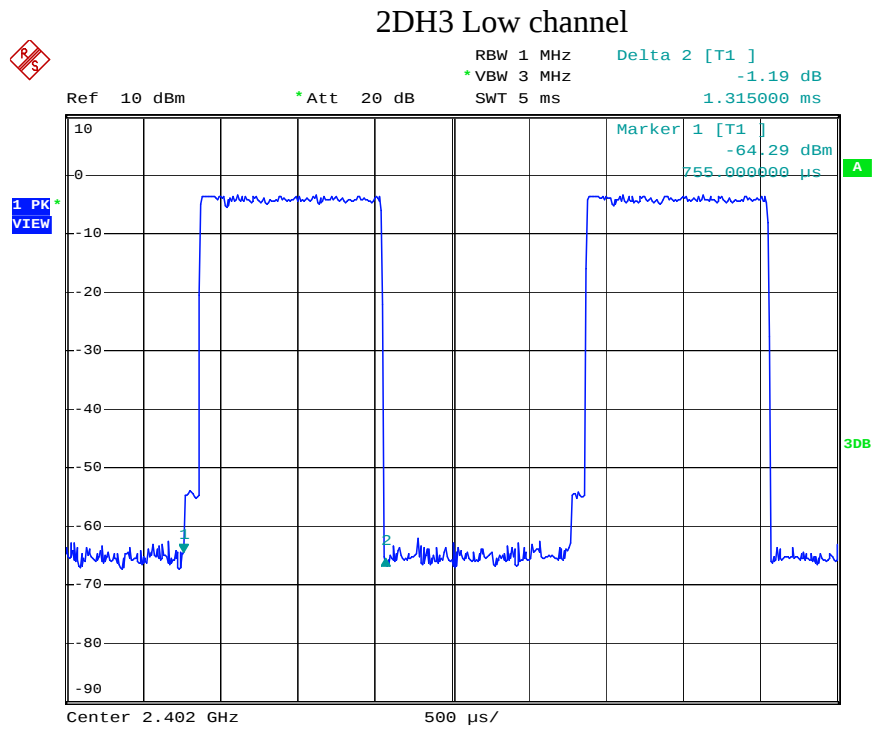


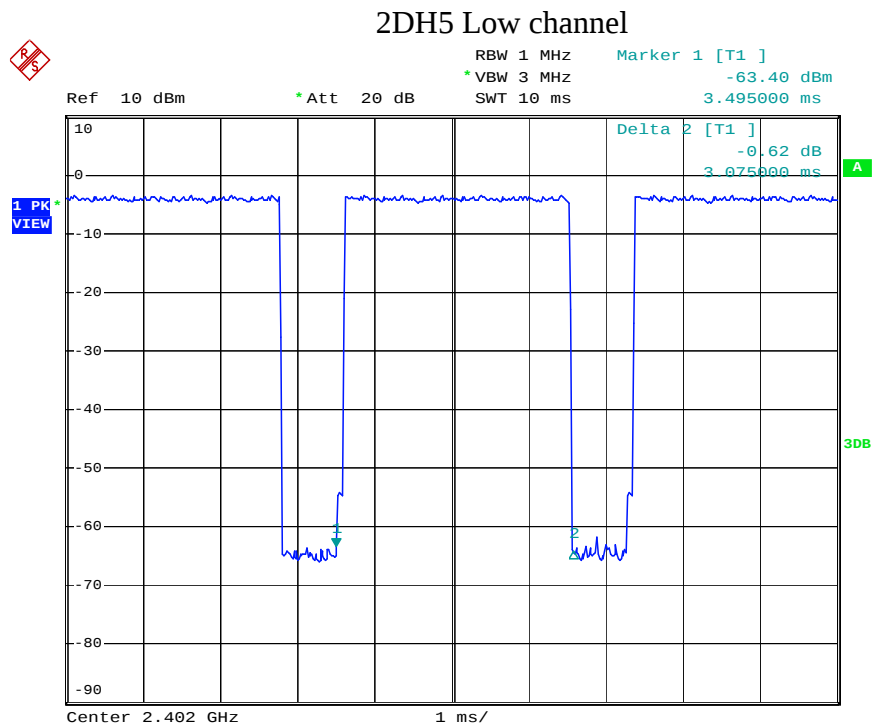
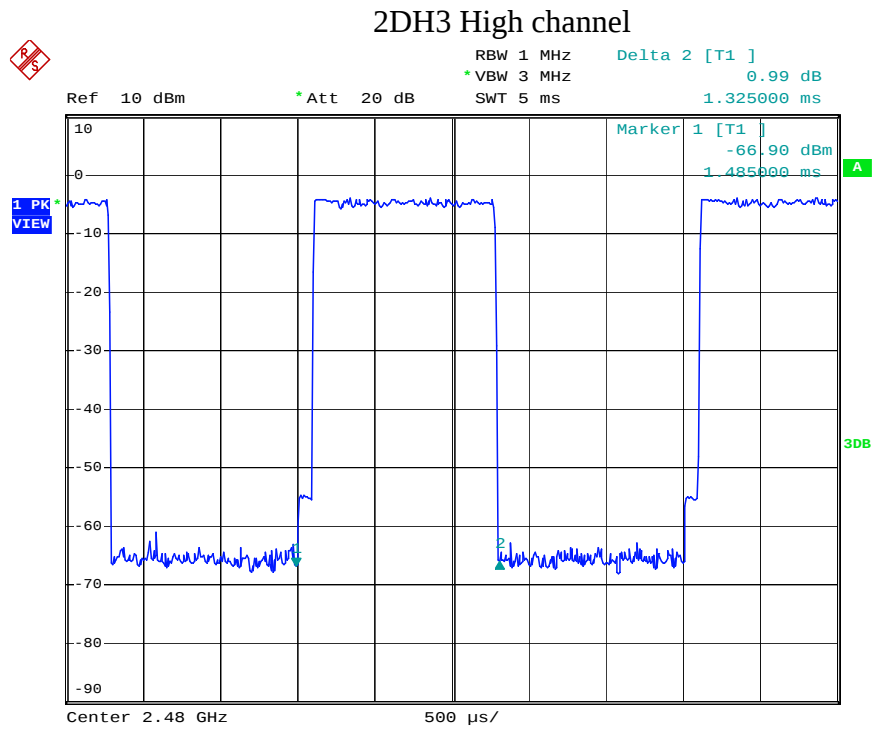
2DH1 Middle channel

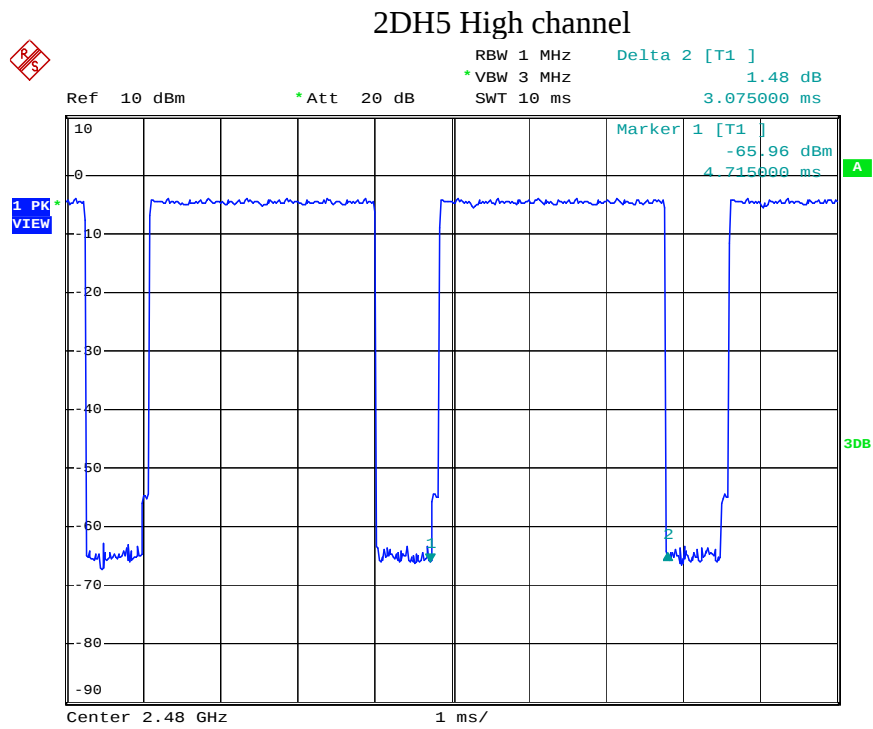
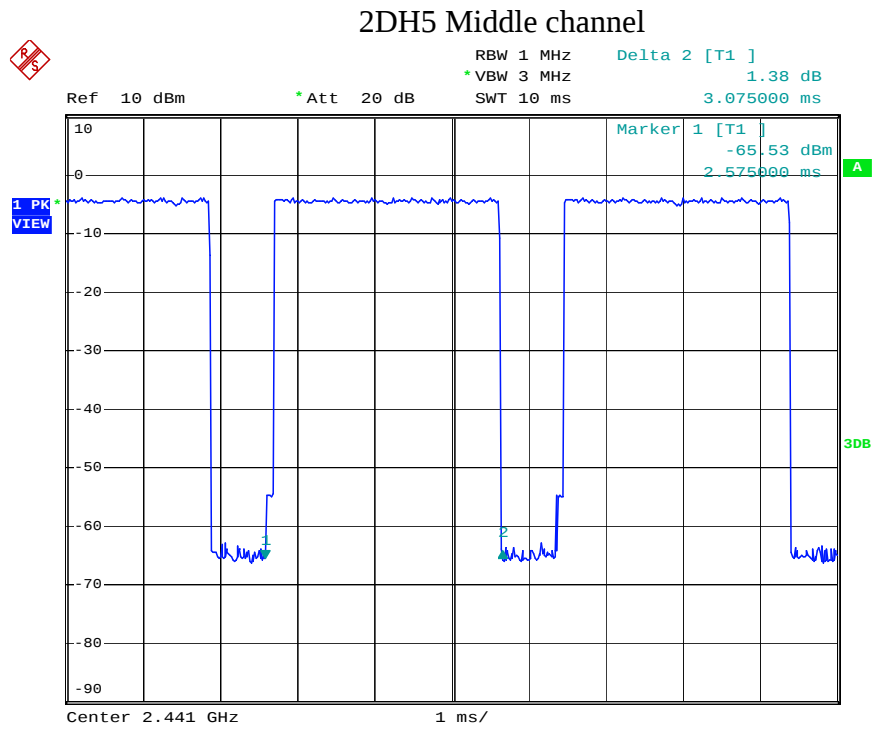


2DH1 High channel



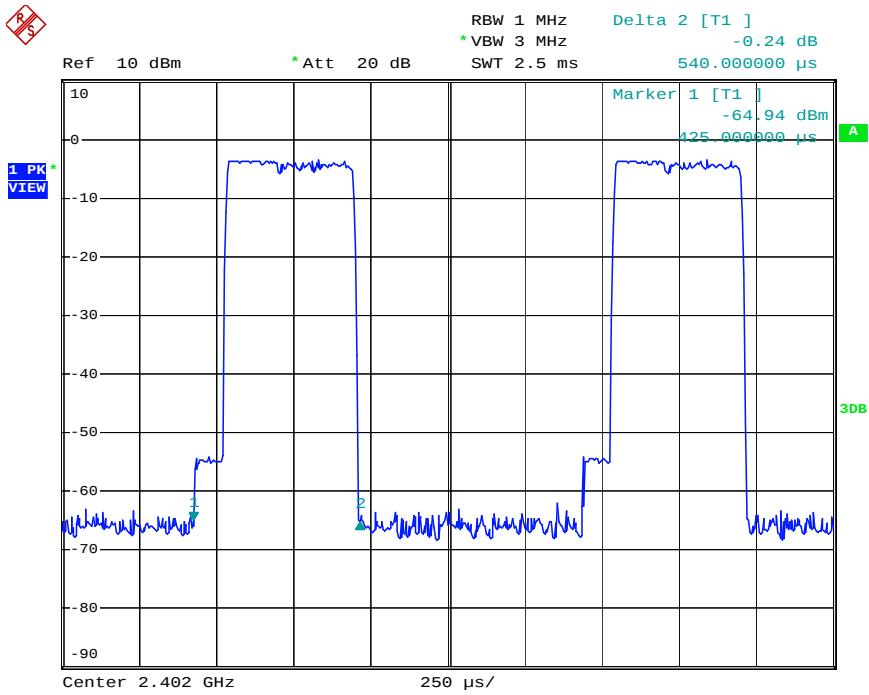




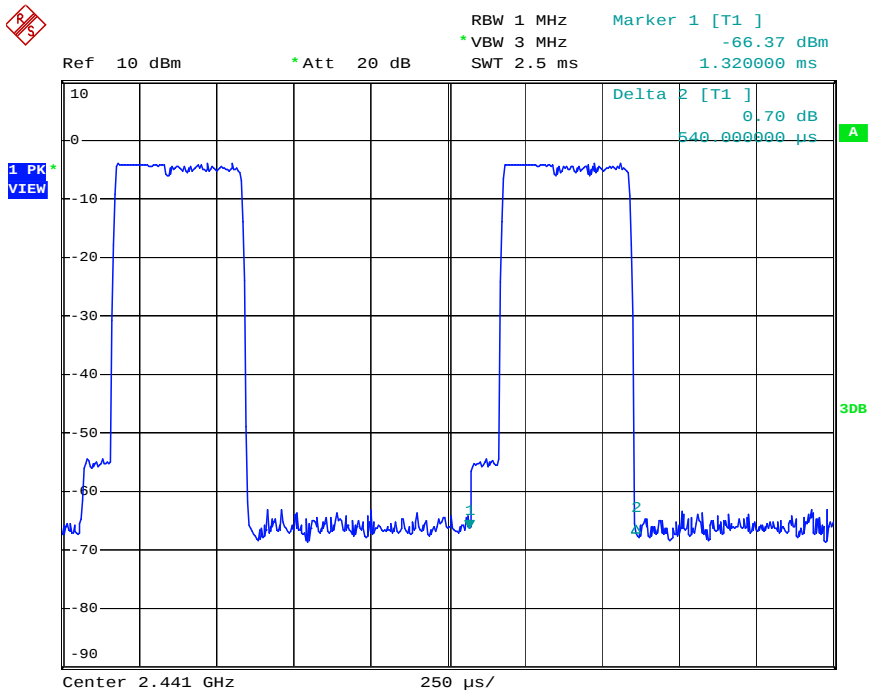


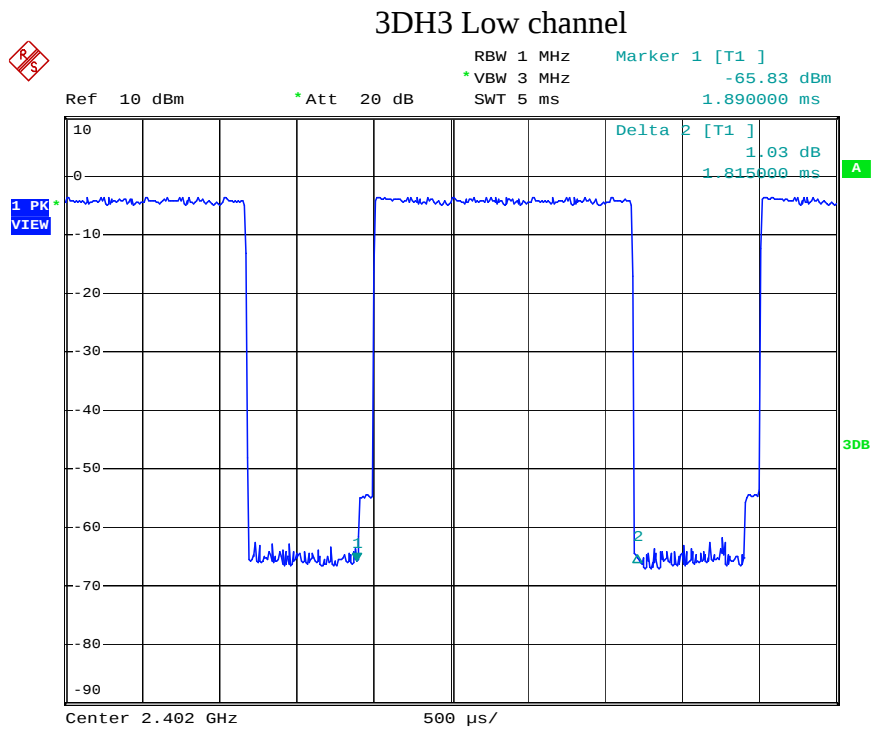
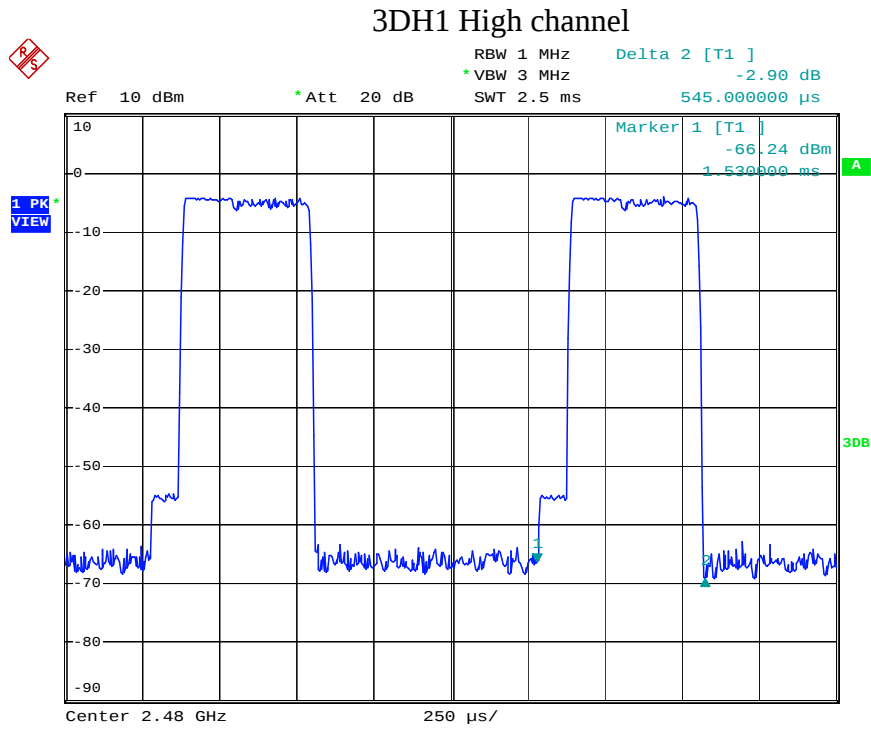
Mode 3: 8DPSK Link Mode

3DH1 Low channel

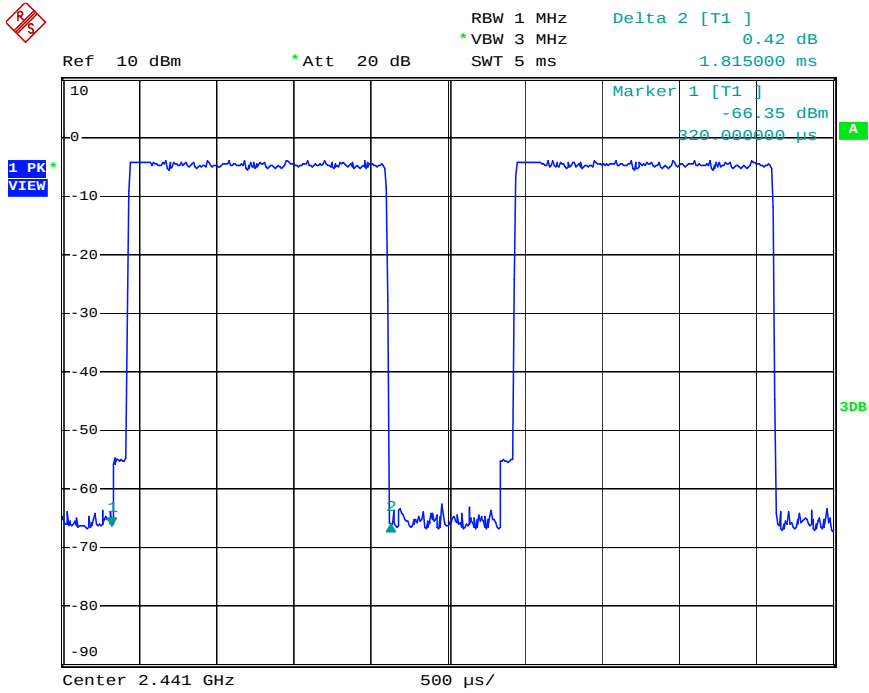


3DH1 Middle channel

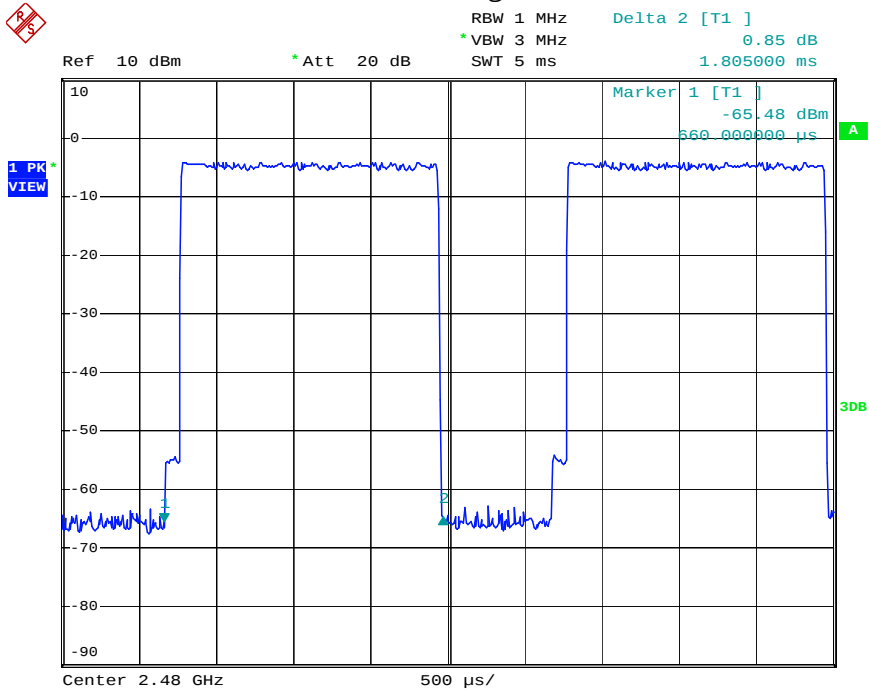


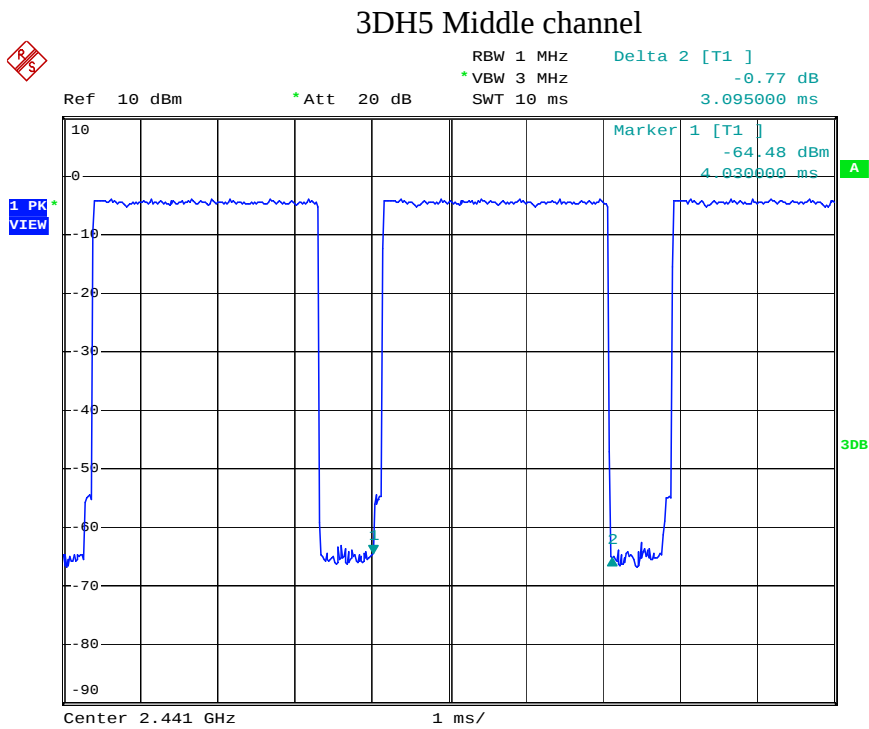
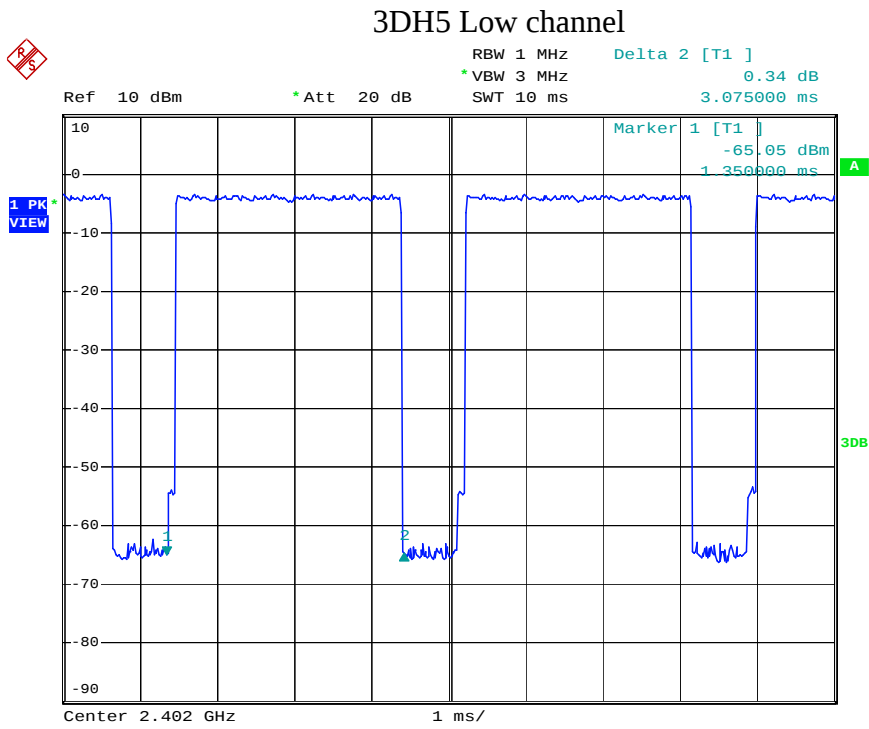


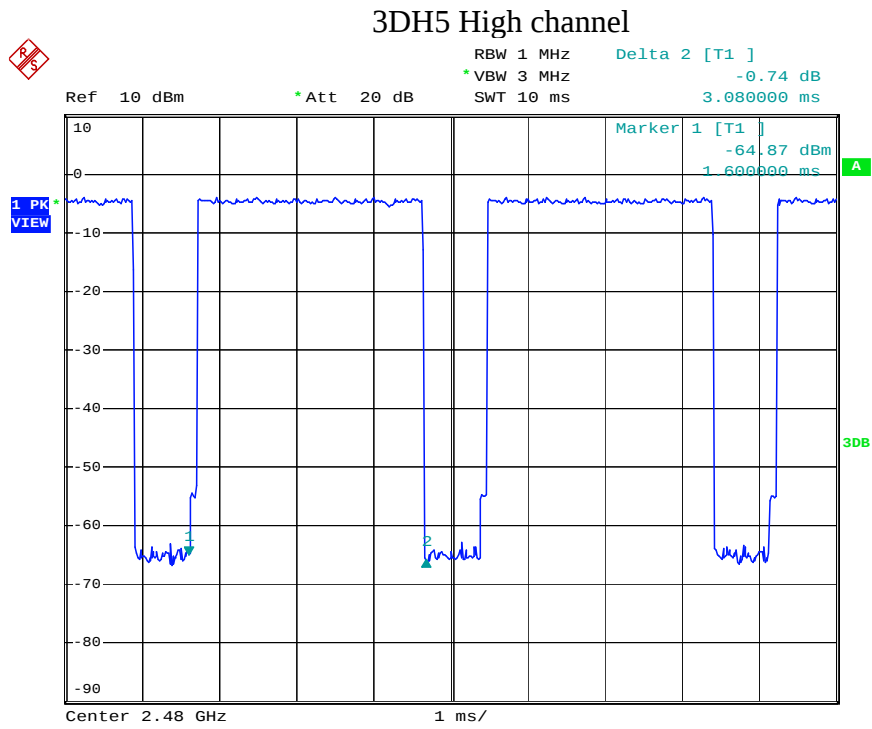
3DH3 Middle channel



3DH3 High channel

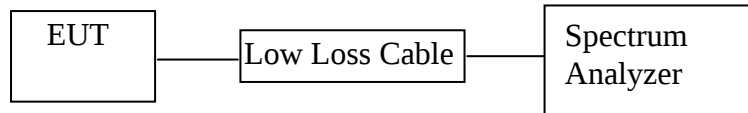






9. MAXIMUM PEAK OUTPUT POWER TEST

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	-0.82	30/1.0
Middle	2441	-1.15	30/1.0
High	2480	-1.28	30/1.0

Π/4-DQPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm)	Limits dBm / W
Low	2402	-3.43	21 / 0.125
Middle	2441	-3.89	21 / 0.125
High	2480	-3.94	21 / 0.125

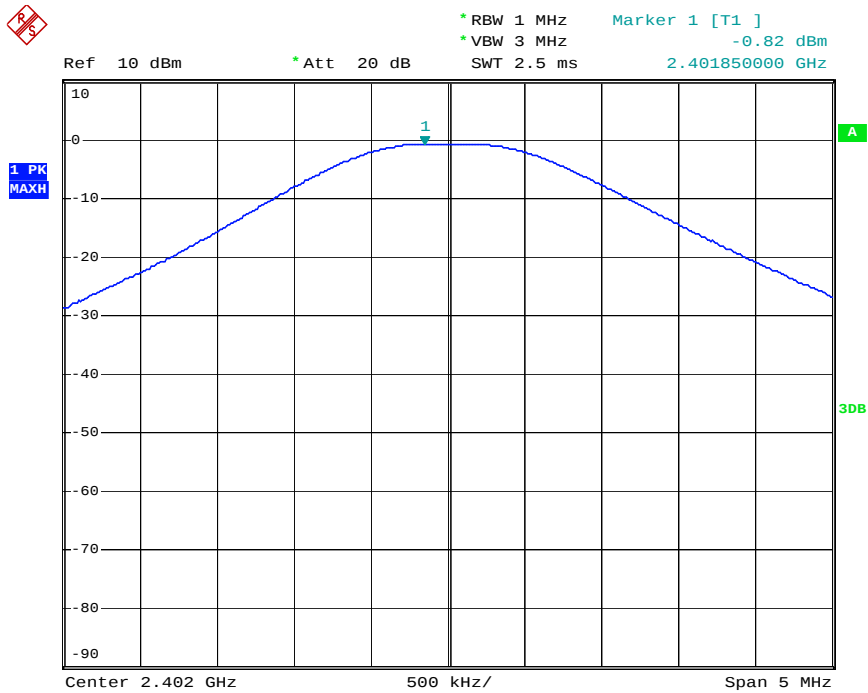
8DPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm)	Limits dBm / W
Low	2402	-3.18	21 / 0.125
Middle	2441	-3.59	21 / 0.125
High	2480	-3.72	21 / 0.125

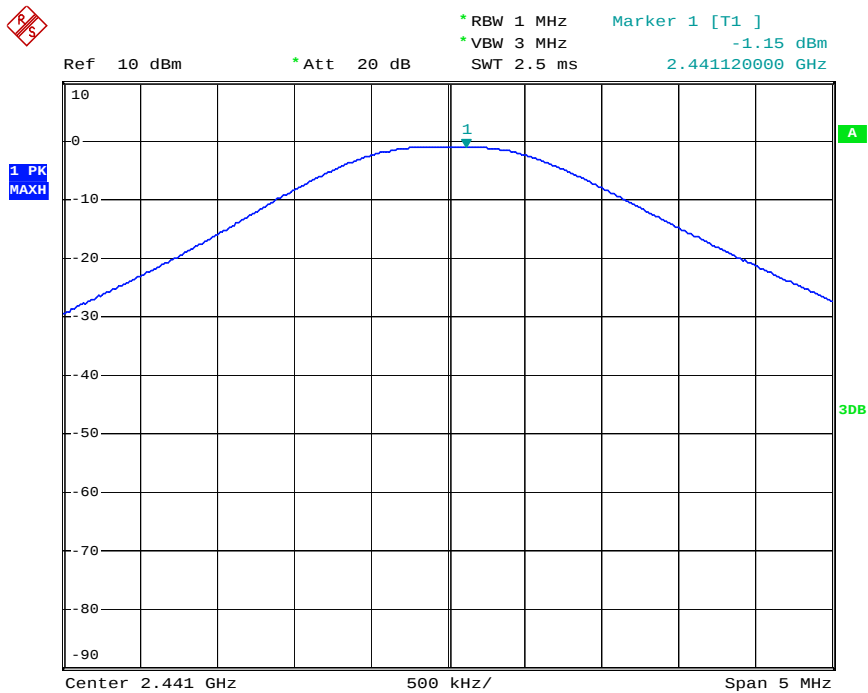
The spectrum analyzer plots are attached as below.

GFSK Mode

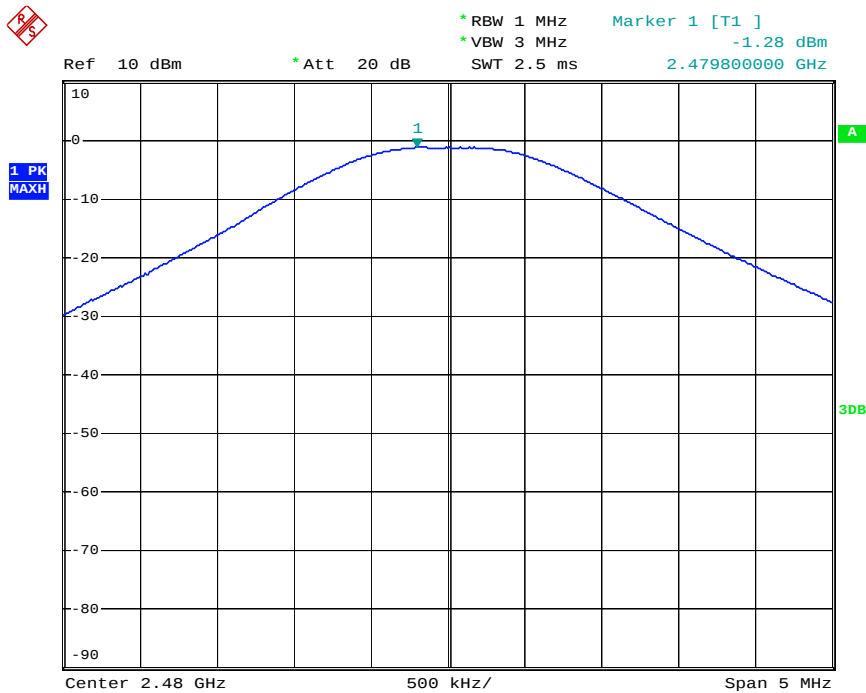
Low channel



Middle channel

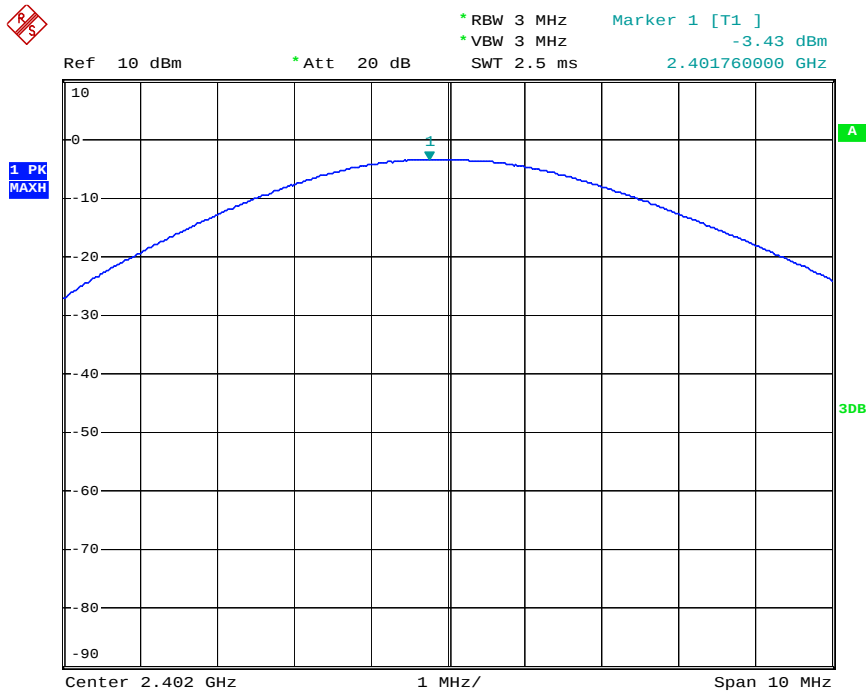


High channel

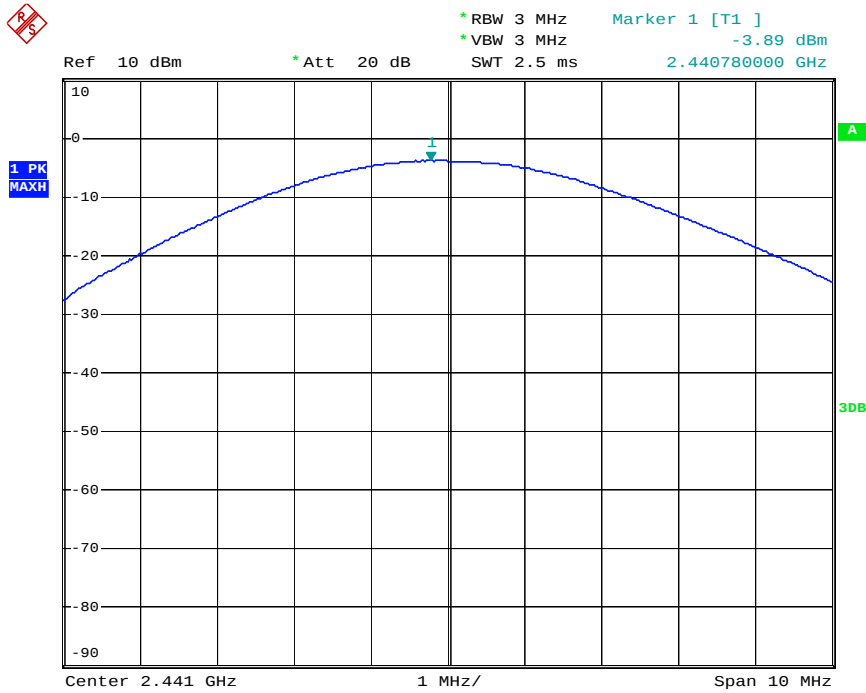


Π/4-DQPSK Mode

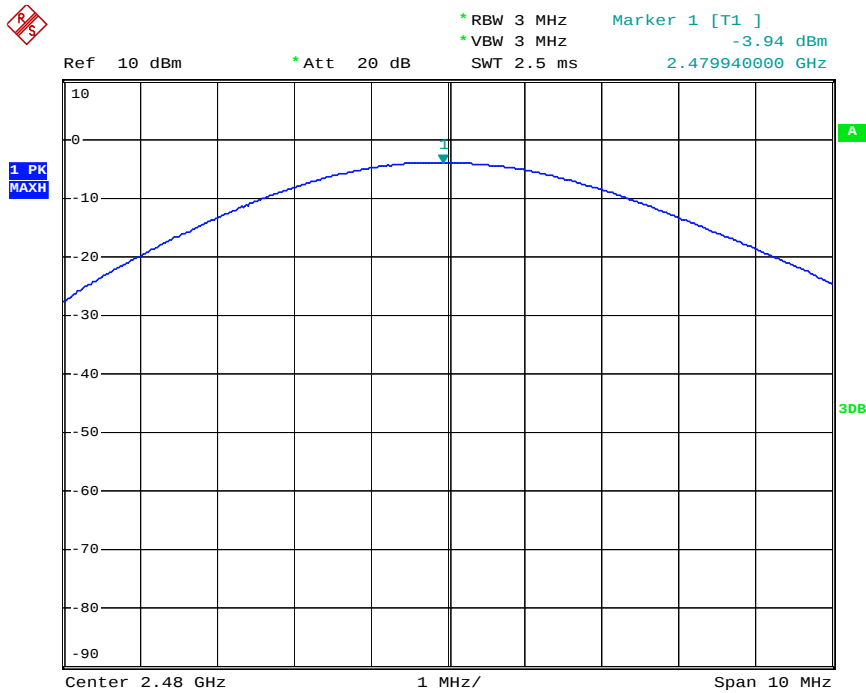
Low channel



Middle channel

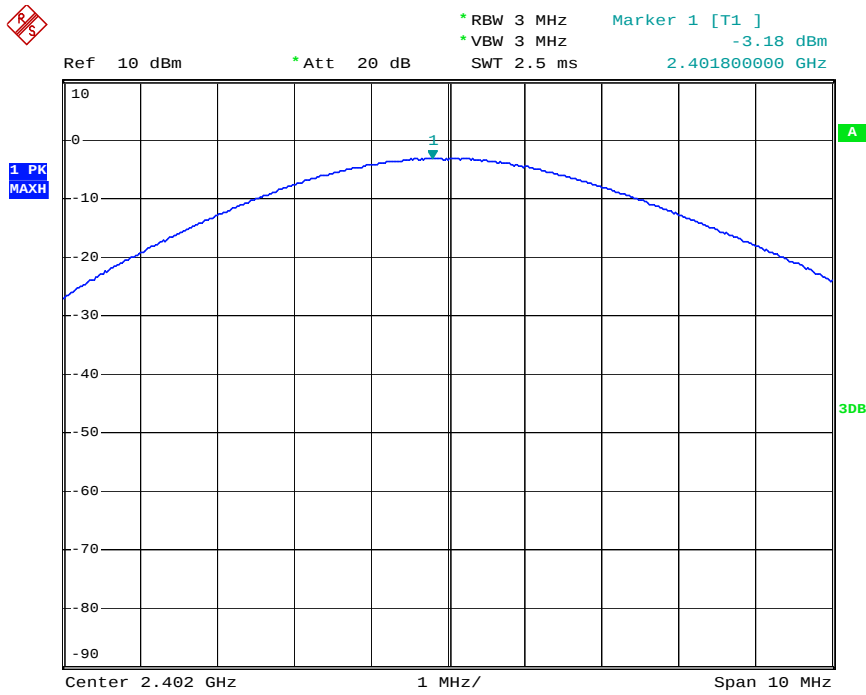


High channel

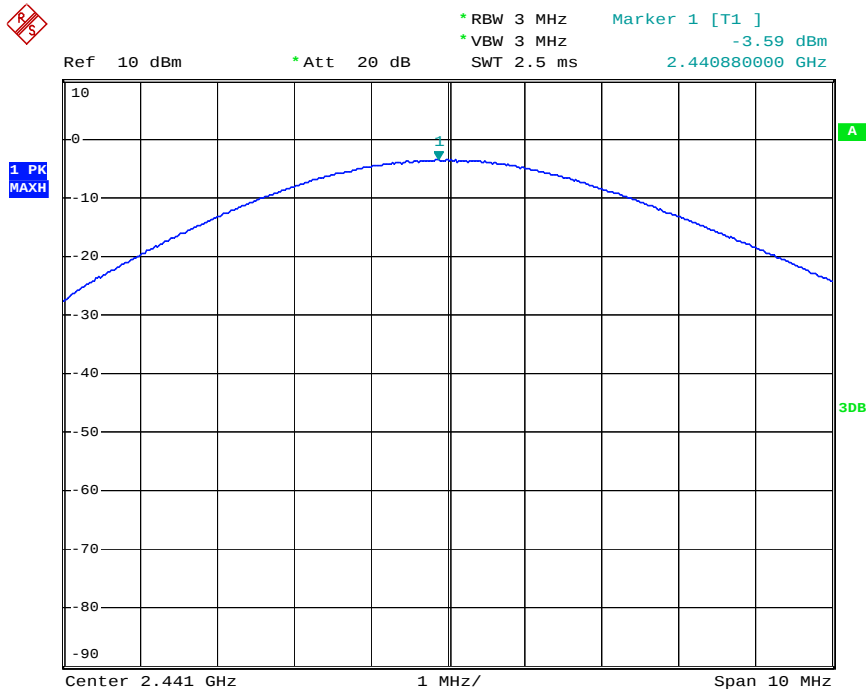


8DPSK Mode

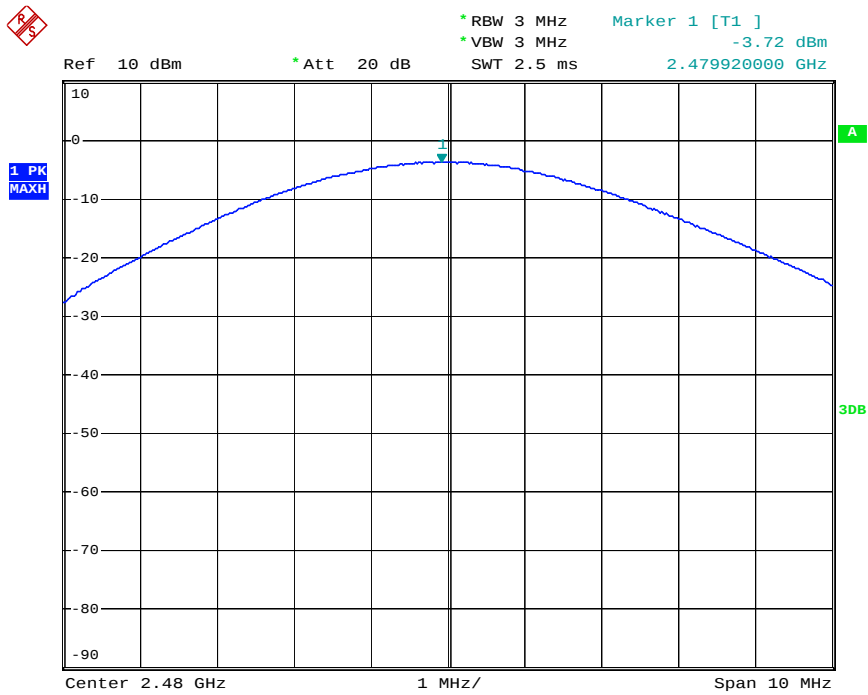
Low channel



Middle channel



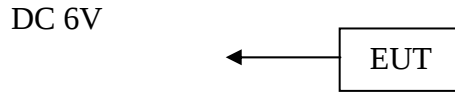
High channel



10. RADIATED EMISSION TEST

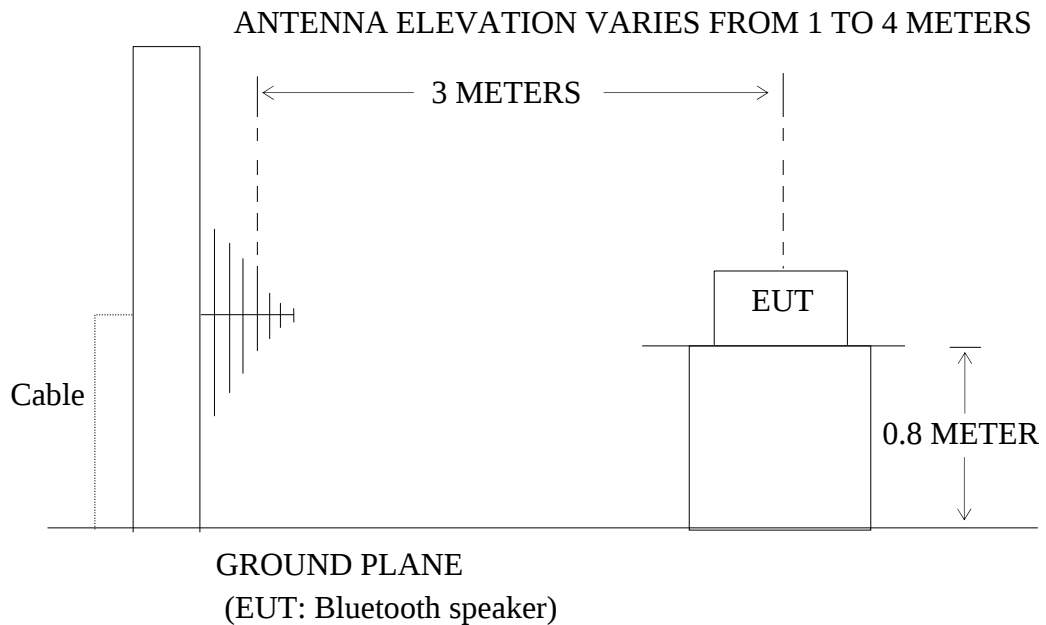
10.1. Block Diagram of Test Setup

10.1.1. Block diagram of connection between the EUT and simulators



(EUT: Bluetooth speaker)

10.1.2. Anechoic Chamber Test Setup Diagram



10.2. The Limit For Section 15.247(d)

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

10.3.Restricted bands of operation

10.3.1.FCC Part 15.205 Restricted bands of operation

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

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

¹Until February 1, 1999, this restricted band shall be 0.490-0.510

²Above 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 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. When average radiated emissions measurements are specified there is also a limit on the peak emissions level which is 20 dB above the applicable maximum permitted average emission limit

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

RBW (1 MHz), VBW (3MHz) for Peak detector above 1GHz

RBW (1 MHz), VBW (10Hz) for AV detector above 1GHz

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.We tested GFSK mode, $\Pi/4$ -DQPSK Mode & 8DPSK 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.



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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 #1984

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2402MHz

Model: SP-25BT

Manufacturer: DAZA

Polarization: Vertical

Power Source: DC 3.7V

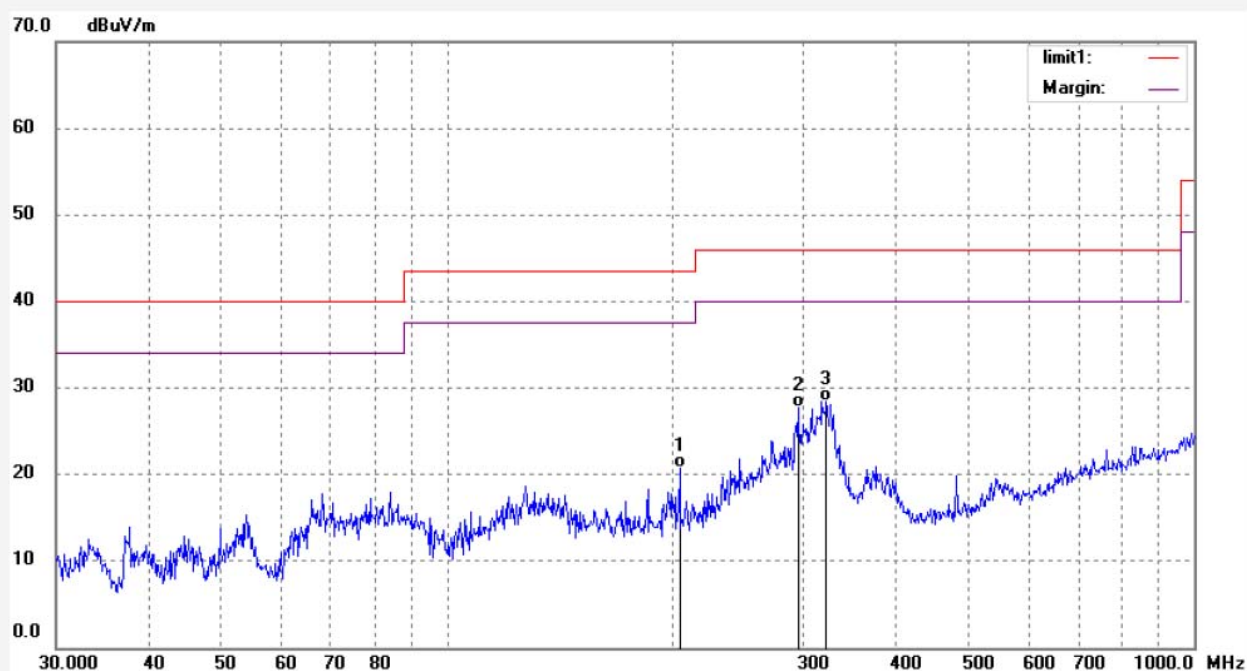
Date: 2014/07/10

Time: 14:22:00

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	204.9551	40.87	-20.05	20.82	43.50	-22.68	QP			
2	295.1469	45.67	-17.95	27.72	46.00	-18.28	QP			
3	322.1886	45.79	-17.31	28.48	46.00	-17.52	QP			



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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 #1983

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2402MHz

Model: SP-25BT

Manufacturer: DAZA

Polarization: Horizontal

Power Source: DC 3.7V

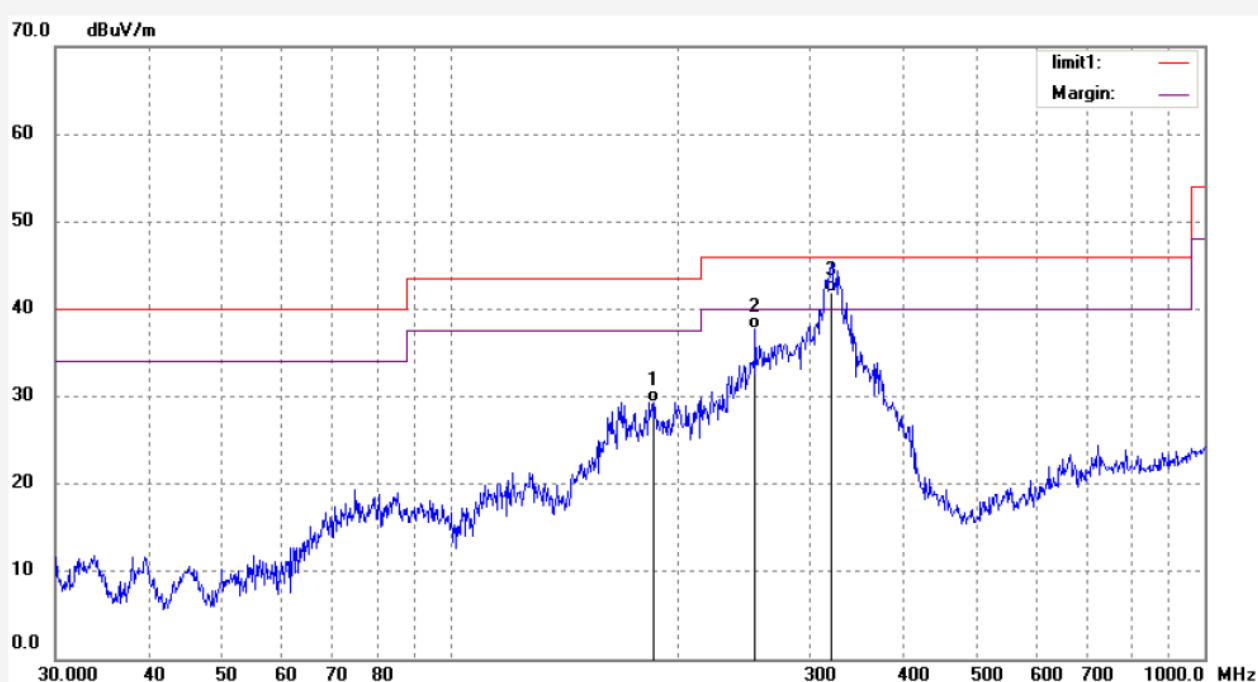
Date: 2014/07/10

Time: 14:20:41

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	186.4409	50.54	-21.26	29.28	43.50	-14.22	QP			
2	253.8367	57.32	-19.52	37.80	46.00	-8.20	QP			
3	319.9370	59.39	-17.40	41.99	46.00	-4.01	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 #1982

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2441MHz

Model: SP-25BT

Manufacturer: DAZA

Polarization: Horizontal

Power Source: DC 3.7V

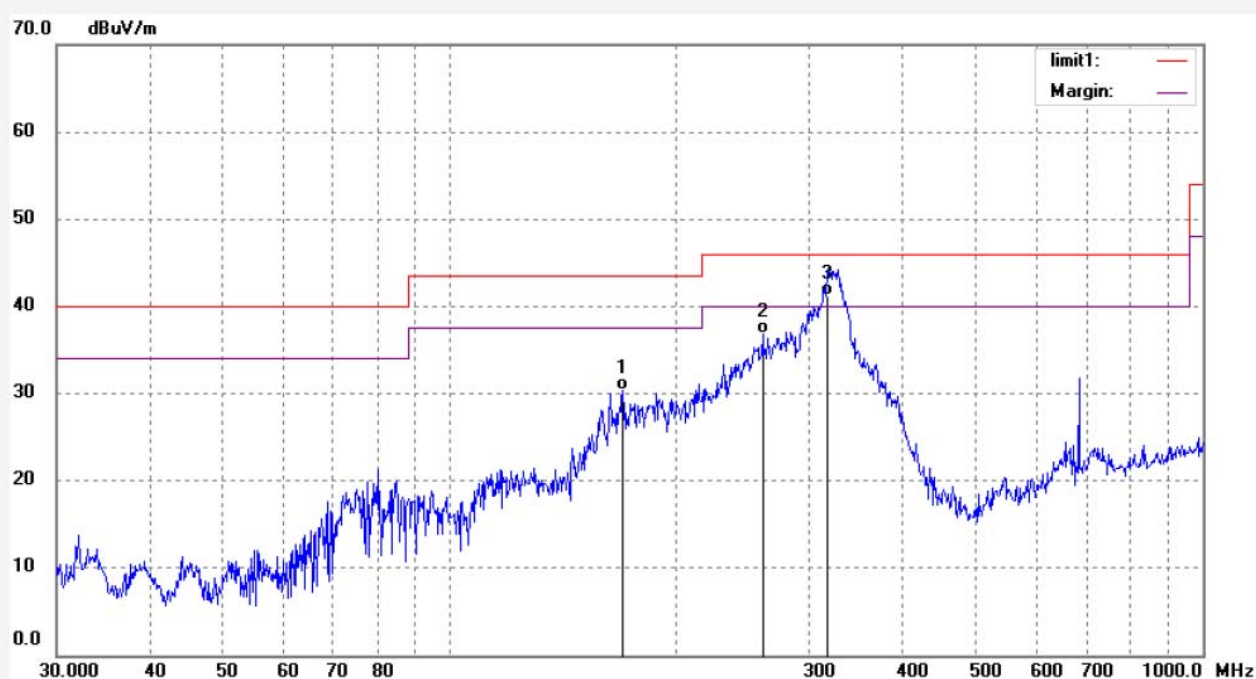
Date: 2014/07/10

Time: 14:19:24

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	169.5990	52.28	-21.84	30.44	43.50	-13.06	QP			
2	260.1444	55.90	-19.12	36.78	46.00	-9.22	QP			
3	316.5890	58.68	-17.49	41.19	46.00	-4.81	QP			



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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 #1981

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2441MHz

Model: SP-25BT

Manufacturer: DAZA

Polarization: Vertical

Power Source: DC 3.7V

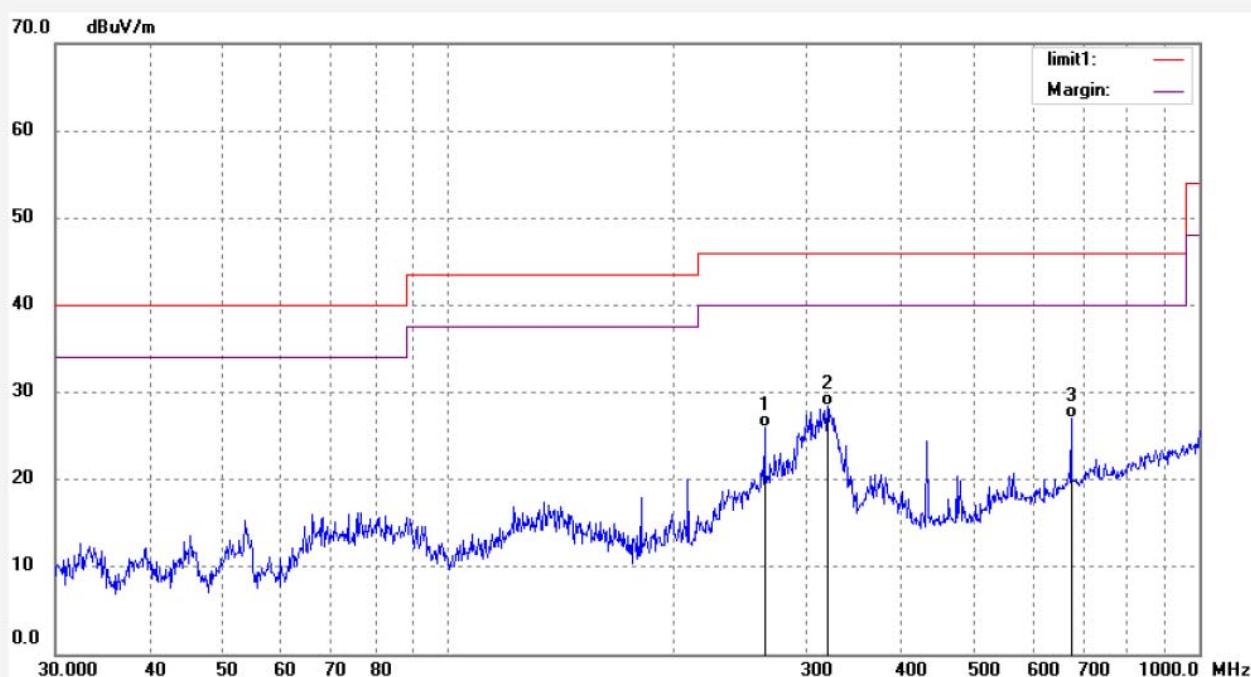
Date: 2014/07/10

Time: 14:18:26

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	263.8190	44.88	-18.92	25.96	46.00	-20.04	QP			
2	319.9370	45.82	-17.40	28.42	46.00	-17.58	QP			
3	675.2080	37.27	-10.20	27.07	46.00	-18.93	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 #1980

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2480MHz

Model: SP-25BT

Manufacturer: DAZA

Polarization: Vertical

Power Source: DC 3.7V

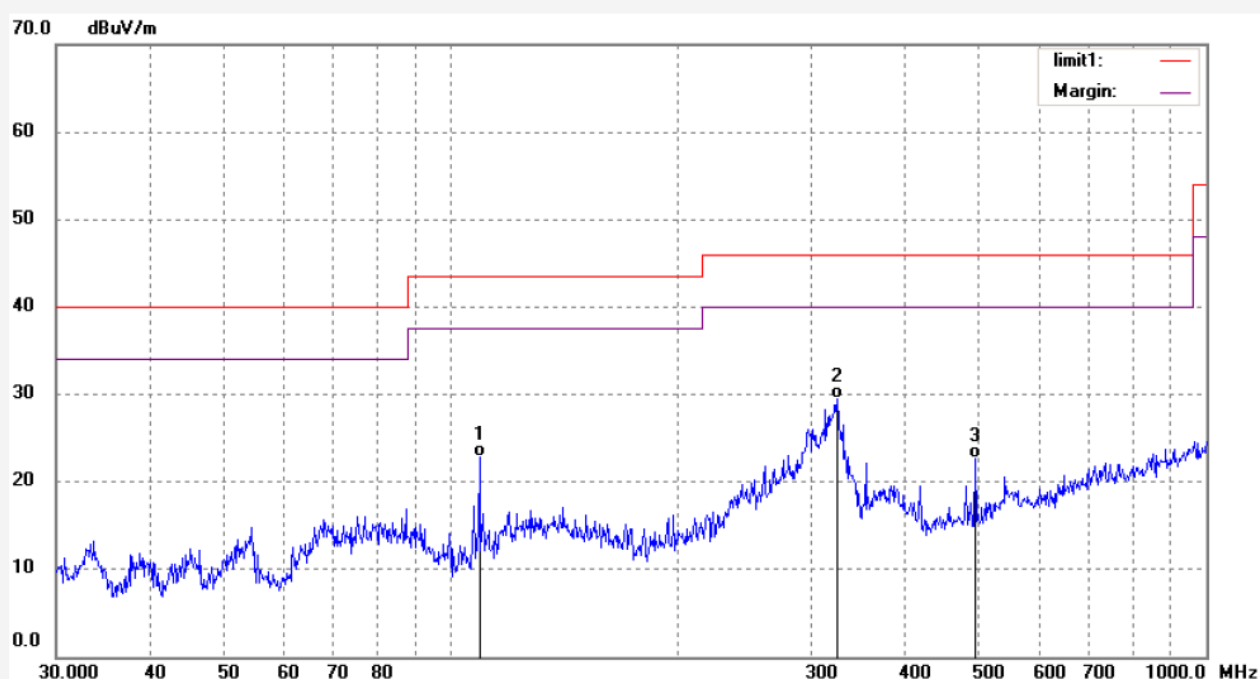
Date: 2014/07/10

Time: 14:16:59

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	109.0285	45.18	-22.31	22.87	43.50	-20.63	QP			
2	324.4560	46.77	-17.22	29.55	46.00	-16.45	QP			
3	494.1983	36.65	-14.00	22.65	46.00	-23.35	QP			



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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 #1979

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2480MHz

Model: SP-25BT

Manufacturer: DAZA

Polarization: Horizontal

Power Source: DC 3.7V

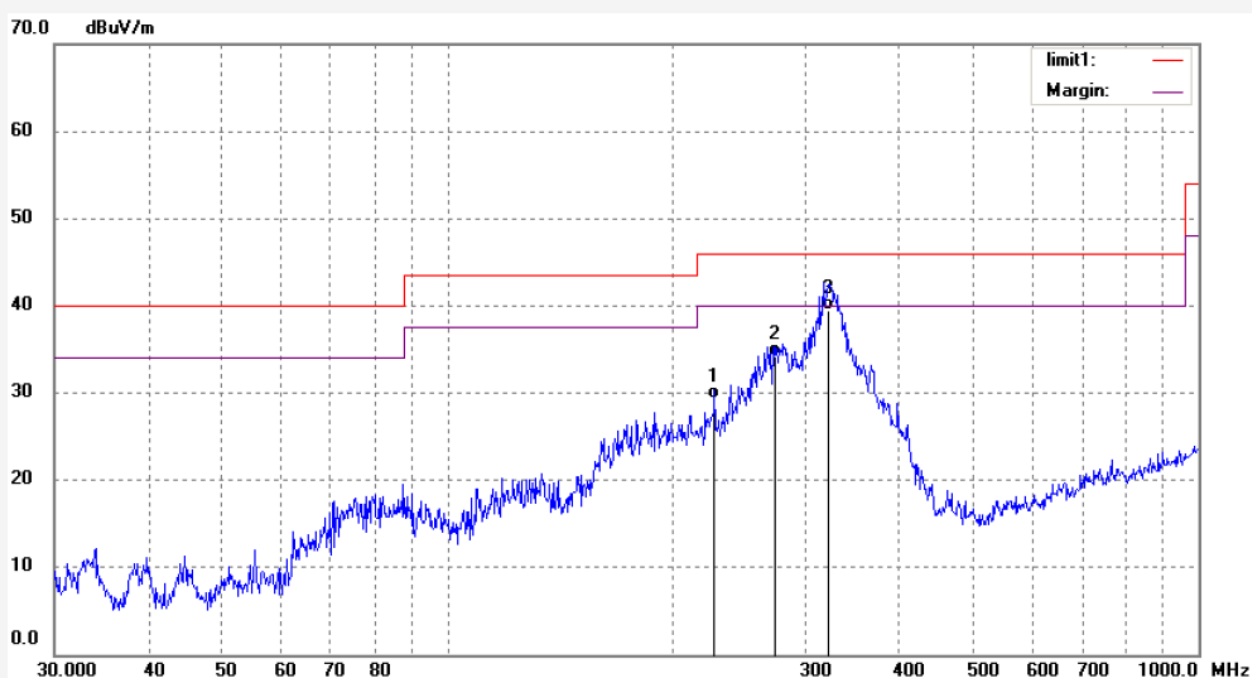
Date: 2014/07/10

Time: 13:56:06

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	226.8936	49.22	-19.88	29.34	46.00	-16.66	QP			
2	273.2341	52.89	-18.61	34.28	46.00	-11.72	QP			
3	322.1886	56.74	-17.31	39.43	46.00	-6.57	QP			



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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 #2003

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2402MHz

Model: SP-25BT

Manufacturer: DAZA

Polarization: Vertical

Power Source: DC 3.7V

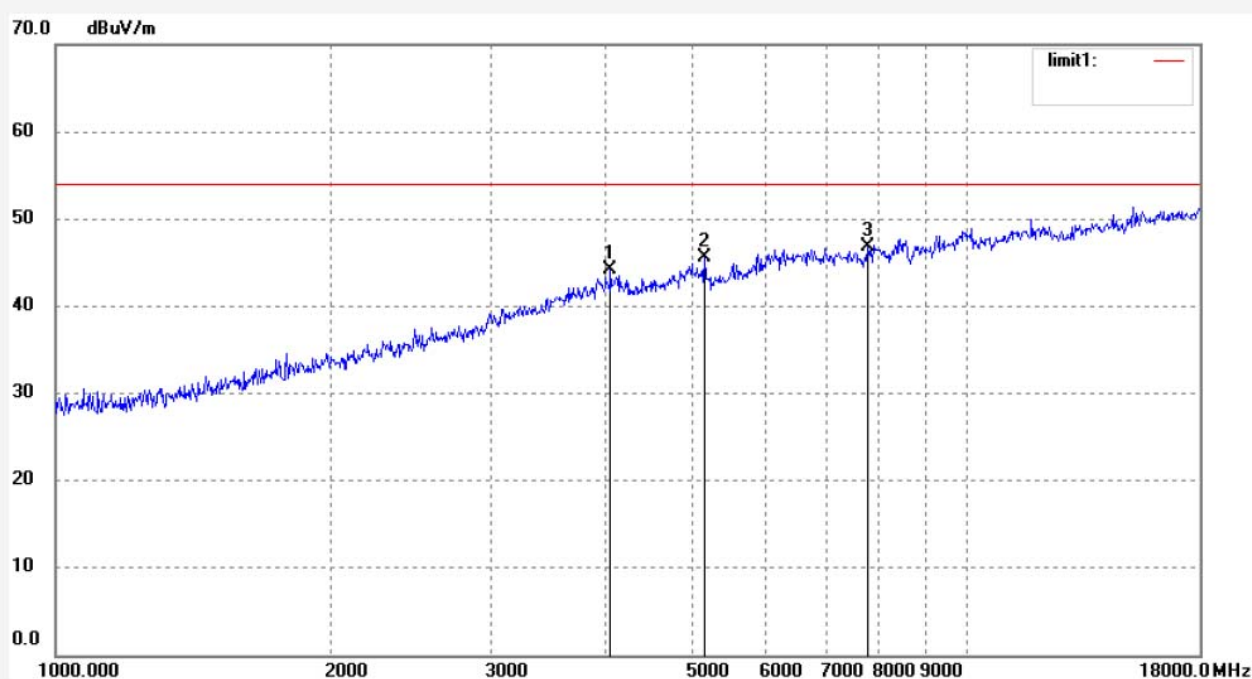
Date: 2014/07/10

Time: 20/07/37

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4062.629	45.44	-1.17	44.27	54.00	-9.73	peak			
2	5149.197	44.06	1.45	45.51	54.00	-8.49	peak			
3	7784.729	40.25	6.54	46.79	54.00	-7.21	peak			



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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: ricky #2004

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2402MHz

Model: SP-25BT

Manufacturer: DAZA

Polarization: Horizontal

Power Source: DC 3.7V

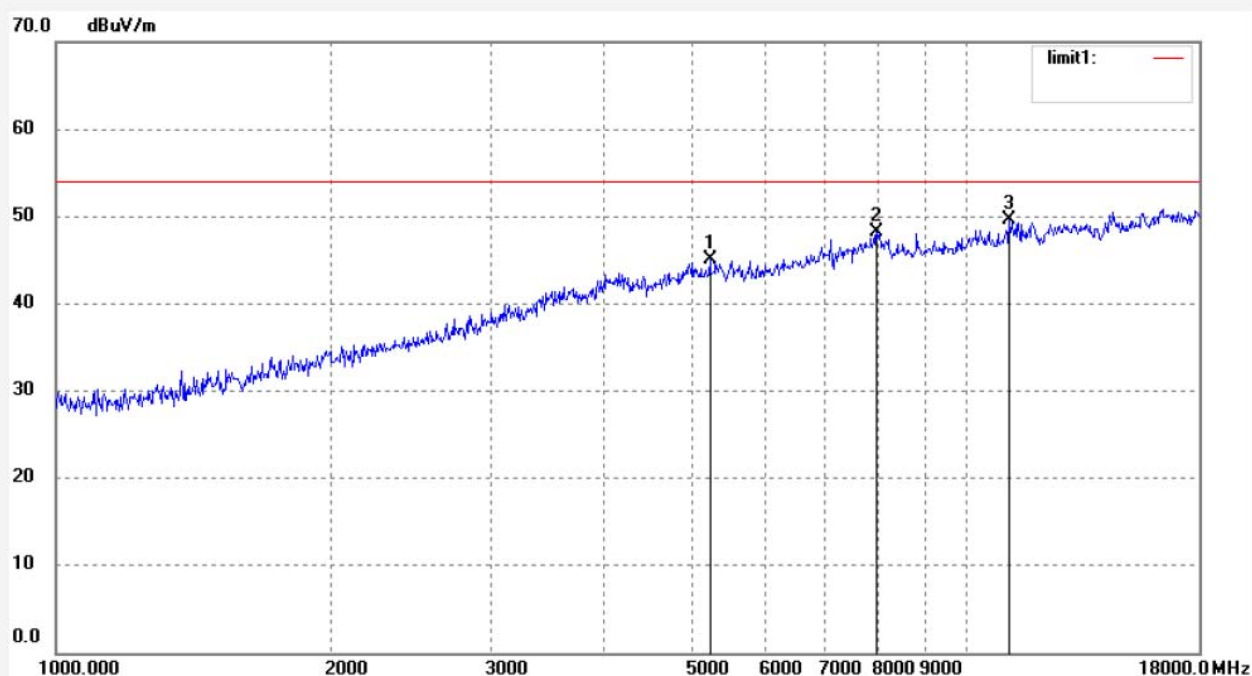
Date: 2014/07/10

Time: 20/08/14

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	5224.153	43.39	1.68	45.07	54.00	-8.93	peak			
2	7966.832	40.14	8.03	48.17	54.00	-5.83	peak			
3	11140.310	38.80	10.86	49.66	54.00	-4.34	peak			



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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: ricky #2005

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2441MHz

Model: SP-25BT

Manufacturer: DAZA

Polarization: Vertical

Power Source: DC 3.7V

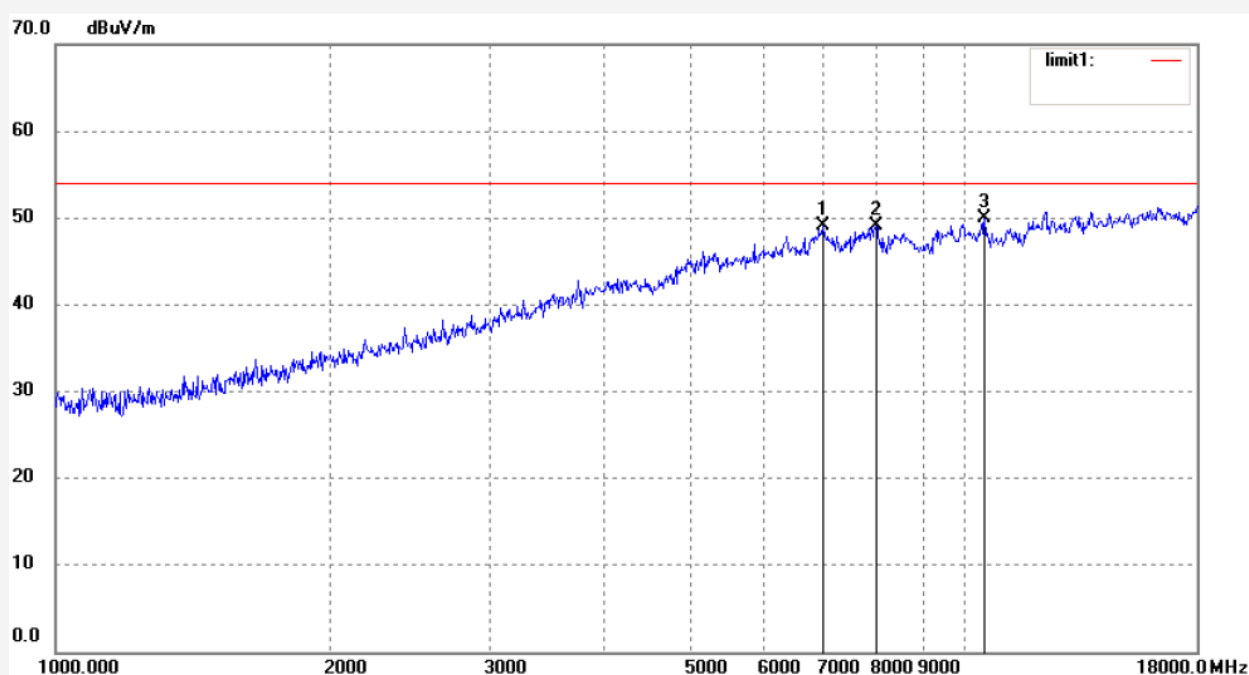
Date: 2014/07/10

Time: 20/09/41

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	6974.983	43.62	5.55	49.17	54.00	-4.83	peak			
2	7989.892	40.84	8.22	49.06	54.00	-4.94	peak			
3	10514.577	40.13	9.87	50.00	54.00	-4.00	peak			



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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 #2006

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2441MHz

Model: SP-25BT

Manufacturer: DAZA

Polarization: Horizontal

Power Source: DC 3.7V

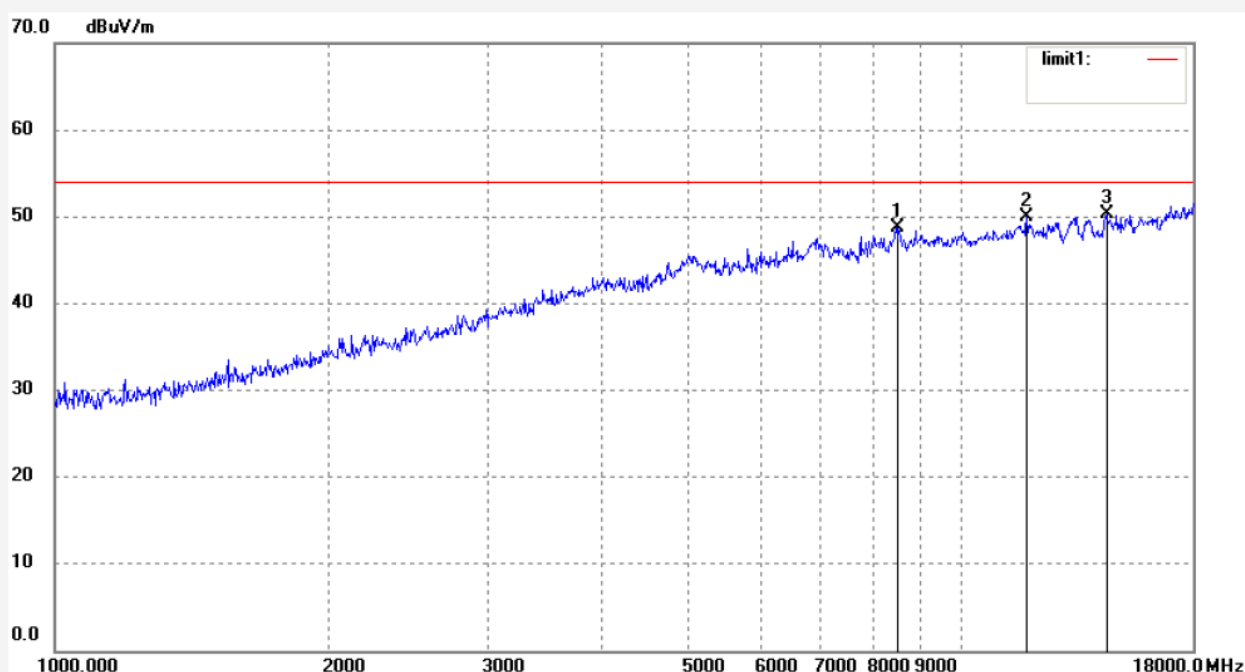
Date: 2014/07/10

Time: 20/10/32

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	8514.456	39.95	8.87	48.82	54.00	-5.18	peak			
2	11803.280	36.57	13.33	49.90	54.00	-4.10	peak			
3	14450.131	0.15	50.19	50.34	54.00	-3.66	peak			



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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 #2007

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2480MHz

Model: SP-25BT

Manufacturer: DAZA

Polarization: Horizontal

Power Source: DC 3.7V

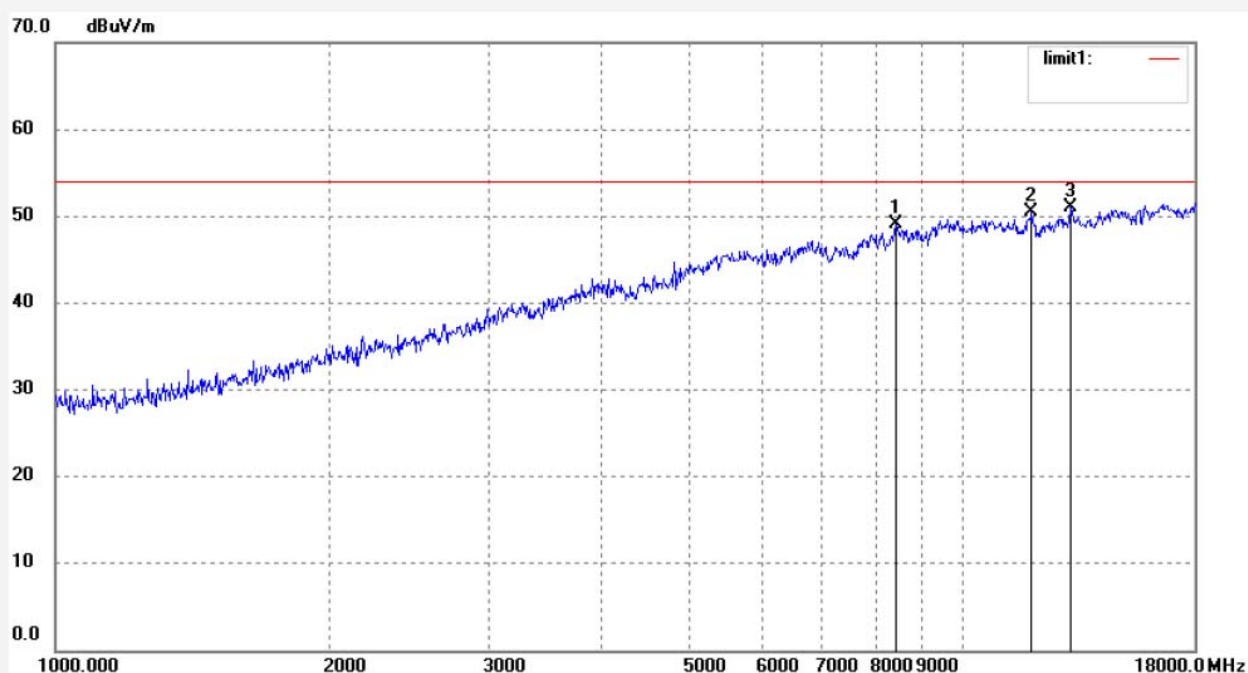
Date: 2014/07/10

Time: 20/11/55

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	8440.946	40.04	8.98	49.02	54.00	-4.98	peak			
2	11906.073	37.93	12.58	50.51	54.00	-3.49	peak			
3	13135.536	4.64	46.40	51.04	54.00	-2.96	peak			



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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 #2008

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2480MHz

Model: SP-25BT

Manufacturer: DAZA

Polarization: Vertical

Power Source: DC 3.7V

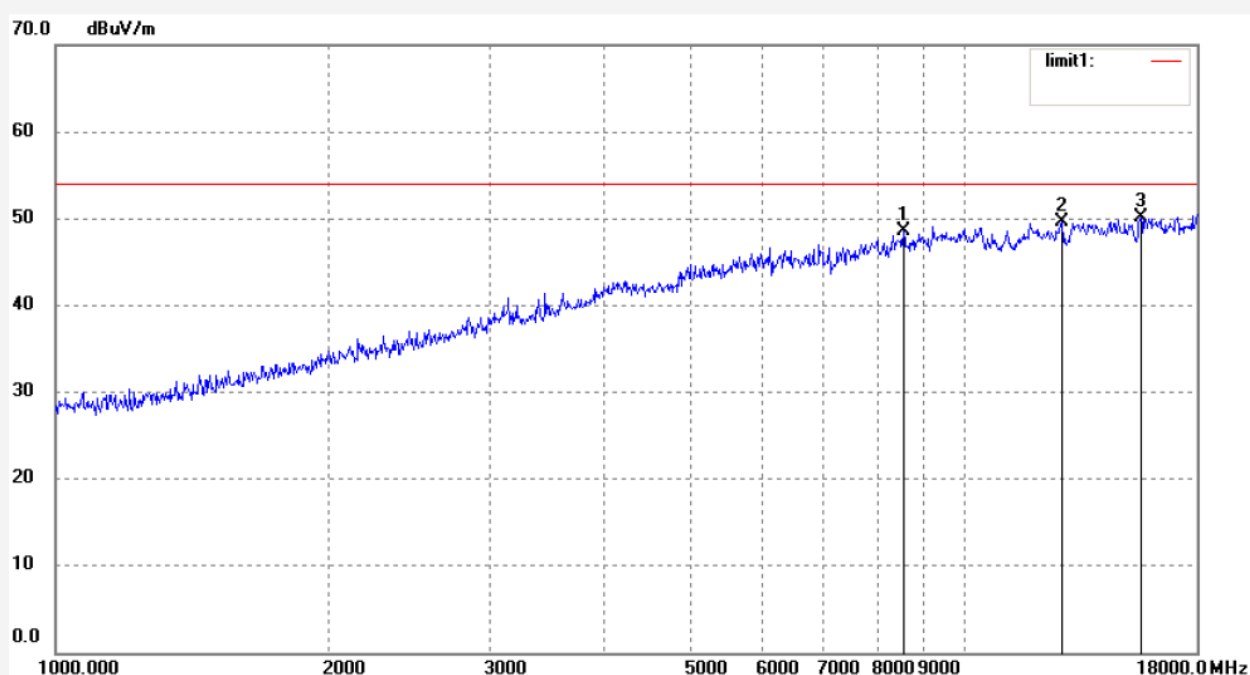
Date: 2014/07/10

Time: 20/12/33

Engineer Signature:

Distance: 3m

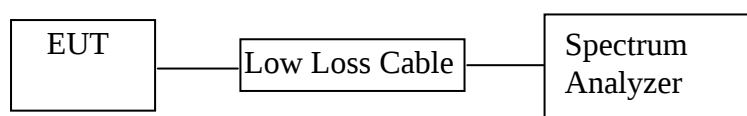
Note: Report No:ATE20141292



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	8563.819	39.76	8.76	48.52	54.00	-5.48	peak			
2	12798.243	3.77	45.88	49.65	54.00	-4.35	peak			
3	15622.990	1.65	48.53	50.18	54.00	-3.82	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

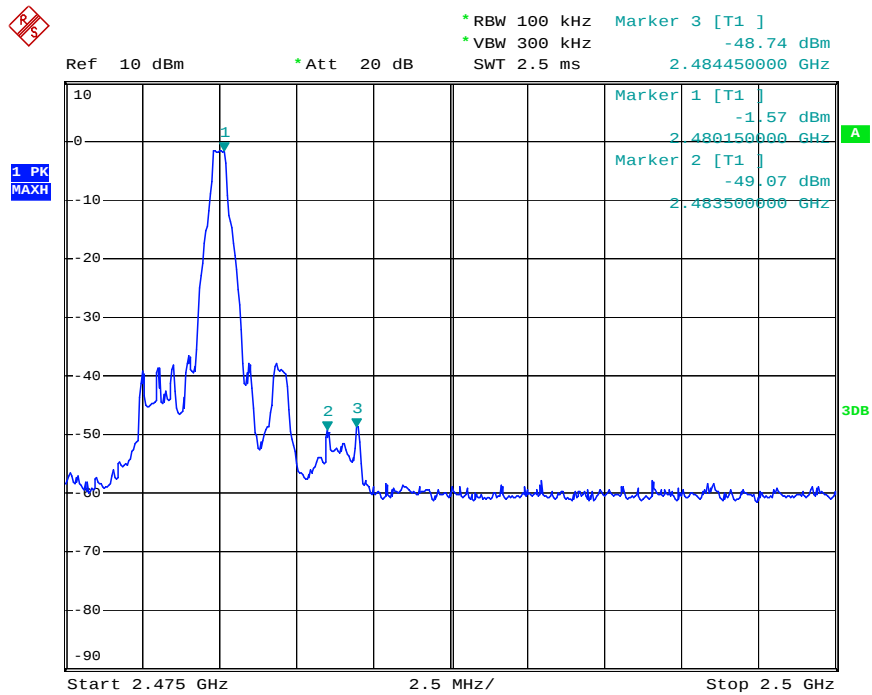
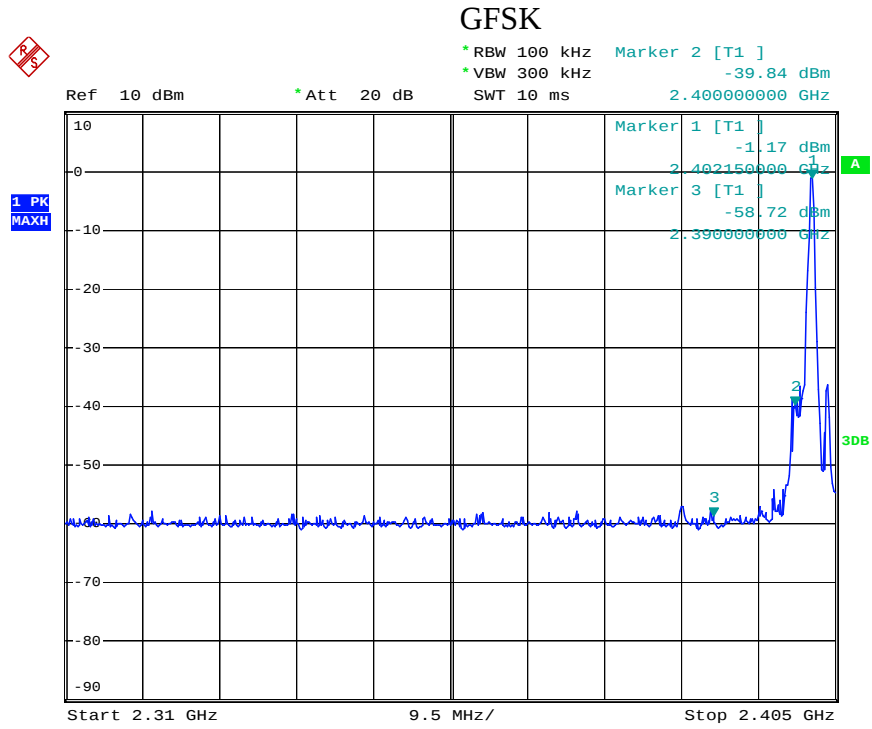
11.5.1. The transmitter output was connected to the spectrum analyzer via a low loss cable.

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.

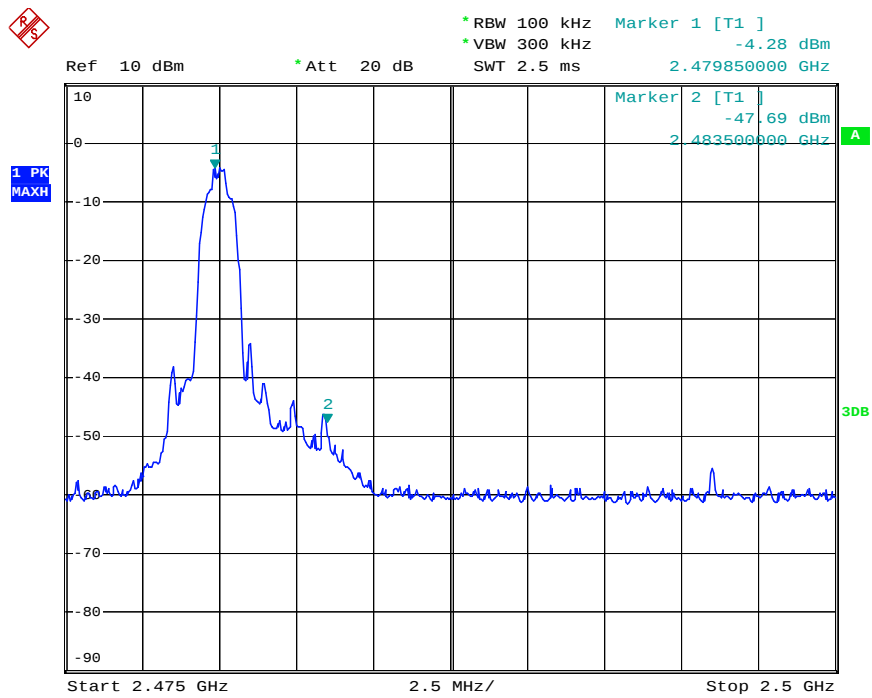
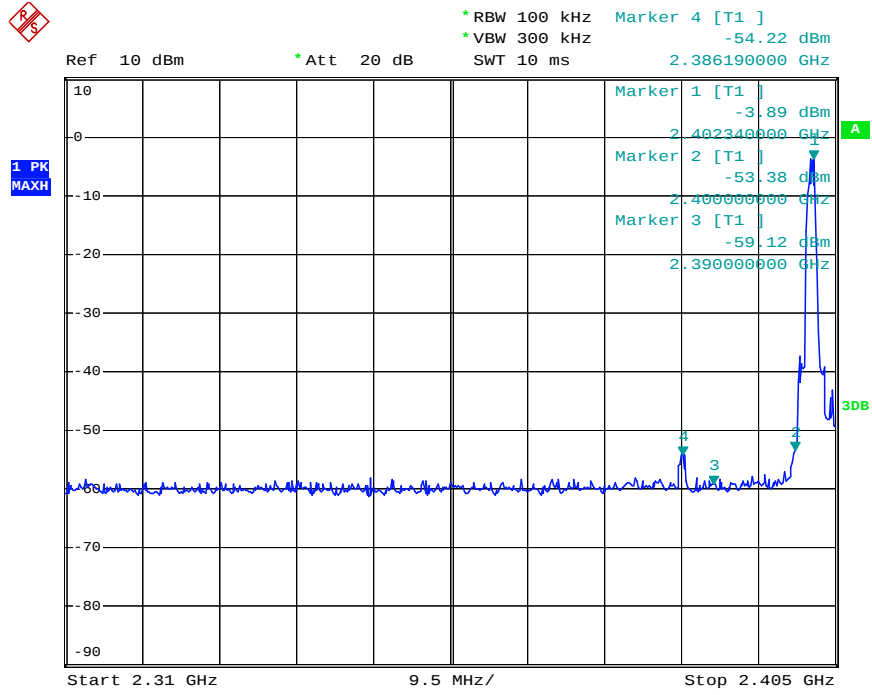
11.5.3. The band edges was measured and recorded.

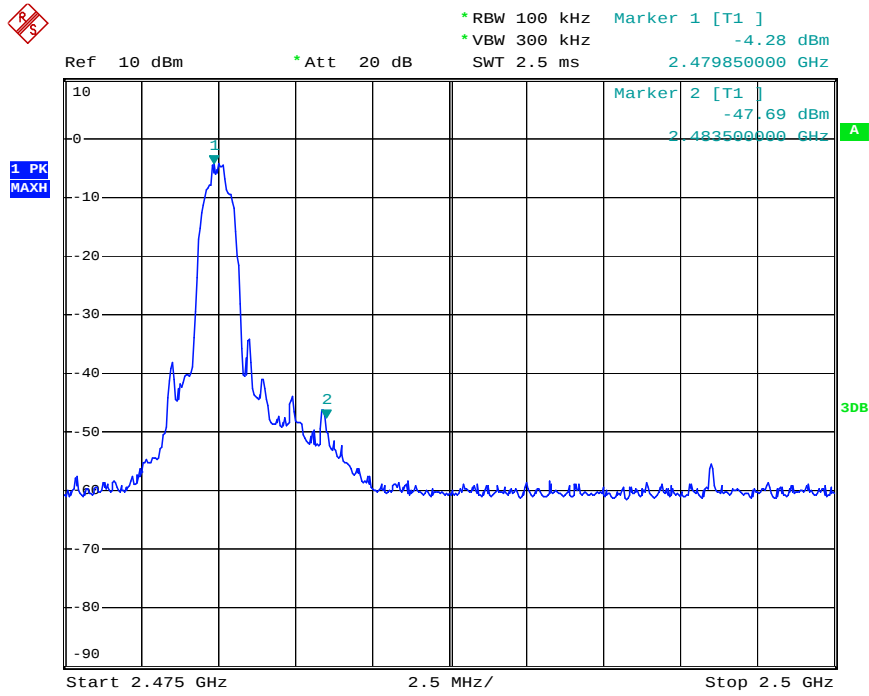
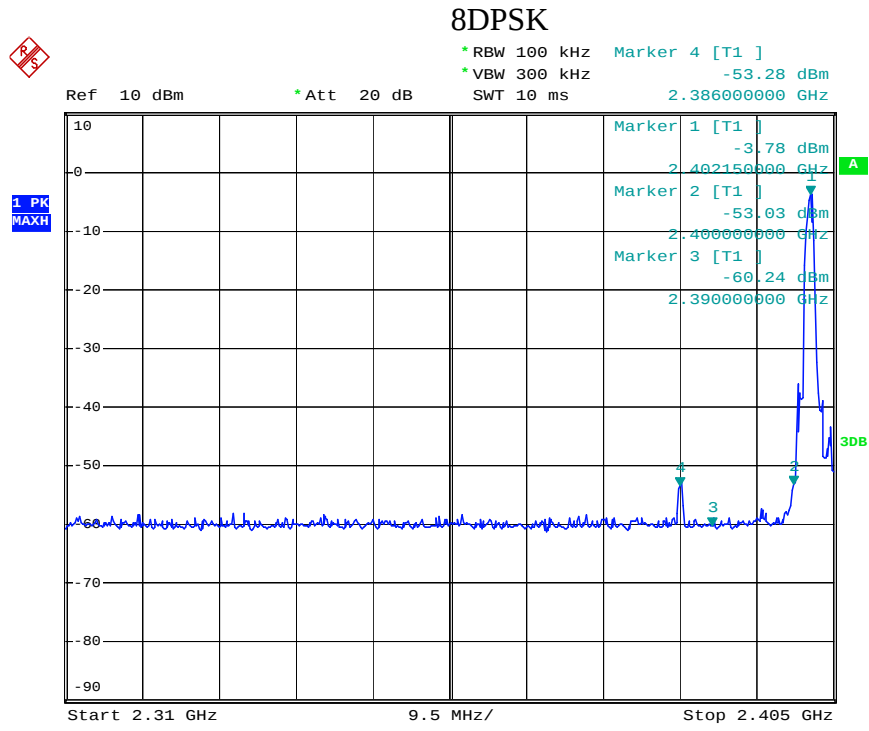
11.6. Test Result

Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
GFSK		
2399.880	57.55	> 20dBc
2483.998	47.17	> 20dBc
Π/4-DQPSK Mode		
2399.802	50.33	> 20dBc
2484.838	43.41	> 20dBc
8DPSK		
2399.750	49.50	> 20dBc
2483.788	43.41	> 20dBc



$\Pi/4$ -DQPSK Mode





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

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: ricky #1987

Standard: FCC PK

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2402MHz(GFSK)

Model: SP-25BT

Manufacturer: DAZA

Polarization: Vertical

Power Source: DC 3.7V

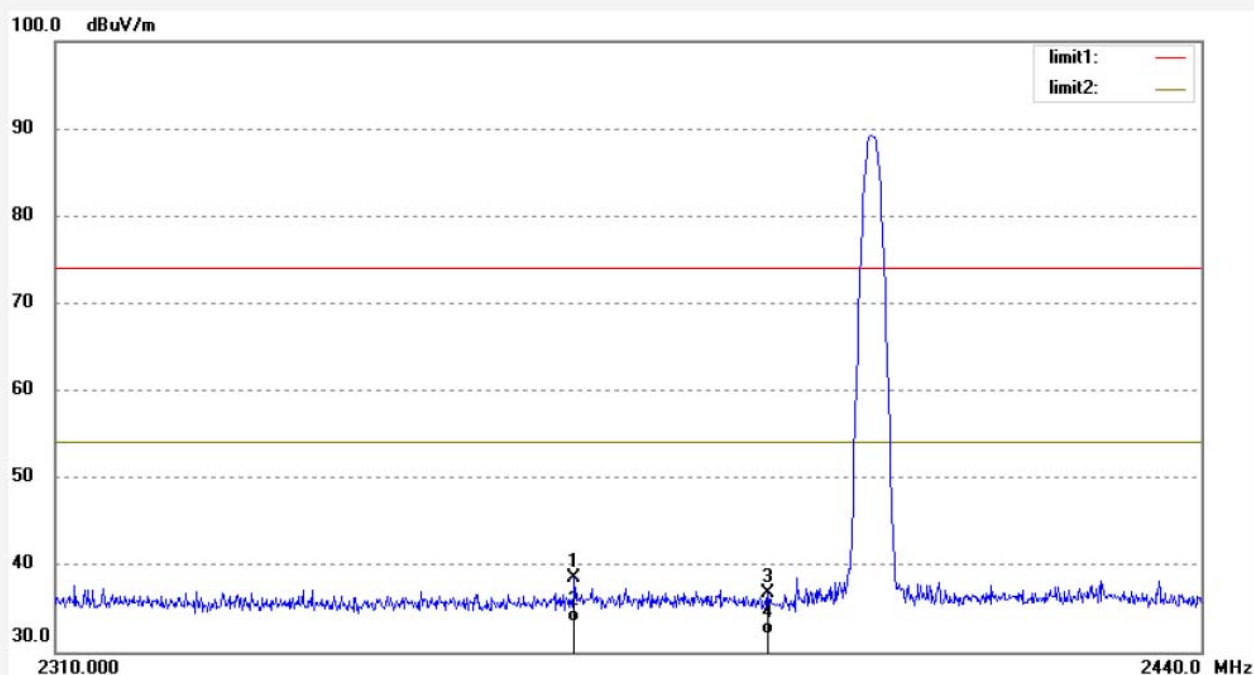
Date: 2014/07/10

Time: 18/26/30

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2368.110	46.24	-7.72	38.52	74.00	-35.48	peak			
2	2368.110	41.22	-7.72	33.50	54.00	-20.50	AVG			
3	2390.000	44.24	-7.57	36.67	74.00	-37.33	peak			
4	2390.000	39.53	-7.57	31.96	54.00	-22.04	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.: ricky #1988

Standard: FCC PK

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2402MHz(GFSK)

Model: SP-25BT

Manufacturer: DAZA

Polarization: Horizontal

Power Source: DC 3.7V

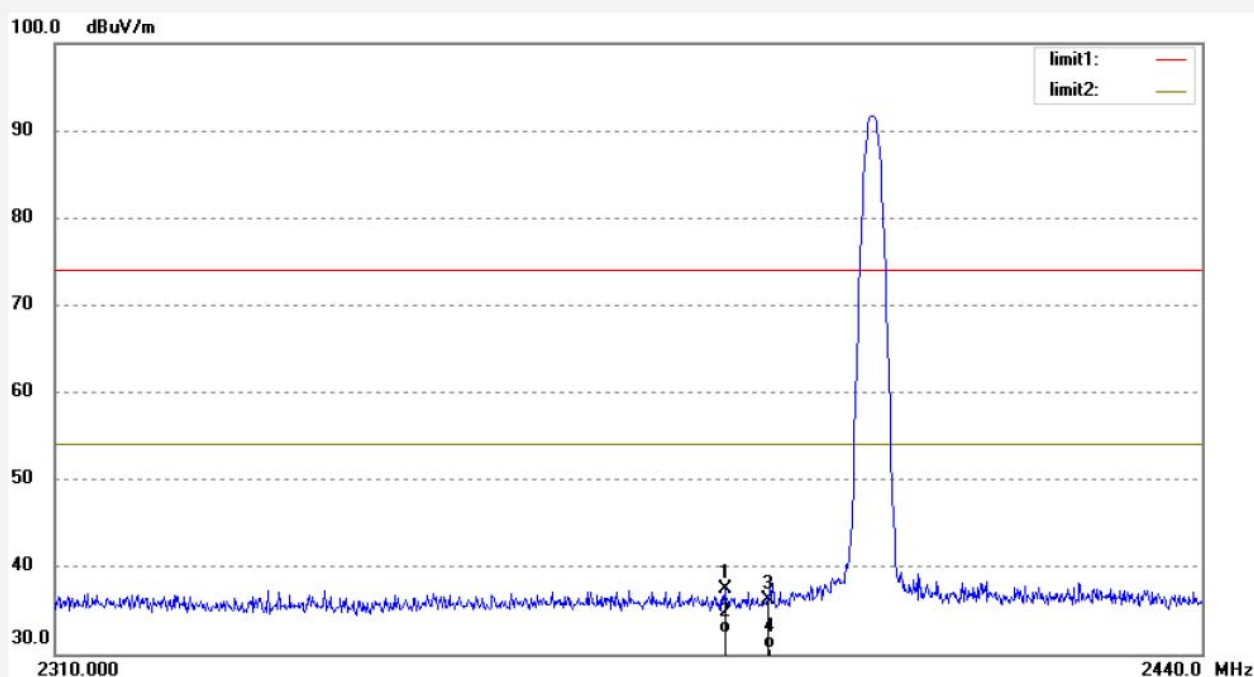
Date: 2014/07/10

Time: 18/27/57

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2385.140	45.01	-7.61	37.40	74.00	-36.60	peak			
2	2385.140	40.00	-7.61	32.39	54.00	-21.61	AVG			
3	2390.000	43.70	-7.57	36.13	74.00	-37.87	peak			
4	2390.000	38.27	-7.57	30.70	54.00	-23.30	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 #1986

Standard: FCC PK

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2480MHz(GFSK)

Model: SP-25BT

Manufacturer: DAZA

Polarization: Vertical

Power Source: DC 3.7V

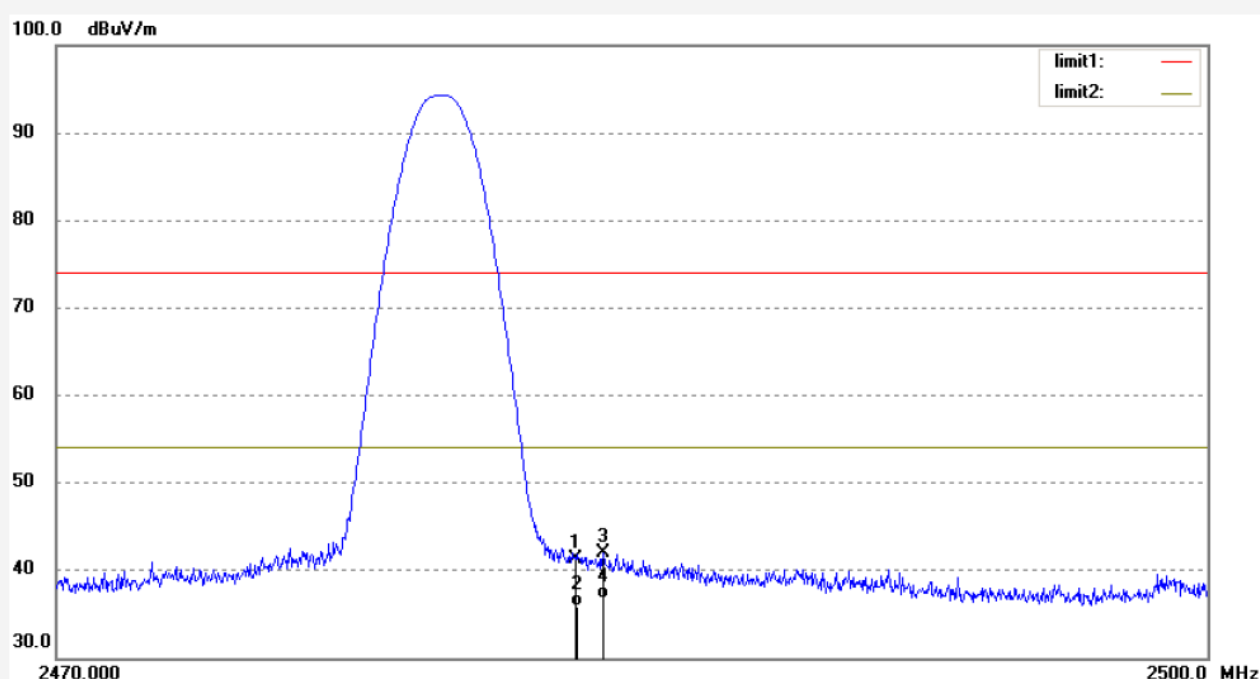
Date: 2014/07/10

Time: 18/23/29

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



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	48.71	-7.38	41.33	74.00	-32.67	peak			
2	2483.500	43.27	-7.38	35.89	54.00	-18.11	AVG			
3	2484.220	49.32	-7.39	41.93	74.00	-32.07	peak			
4	2484.220	44.18	-7.39	36.79	54.00	-17.21	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 #1985

Standard: FCC PK

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2480MHz(GFSK)

Model: SP-25BT

Manufacturer: DAZA

Polarization: Horizontal

Power Source: DC 3.7V

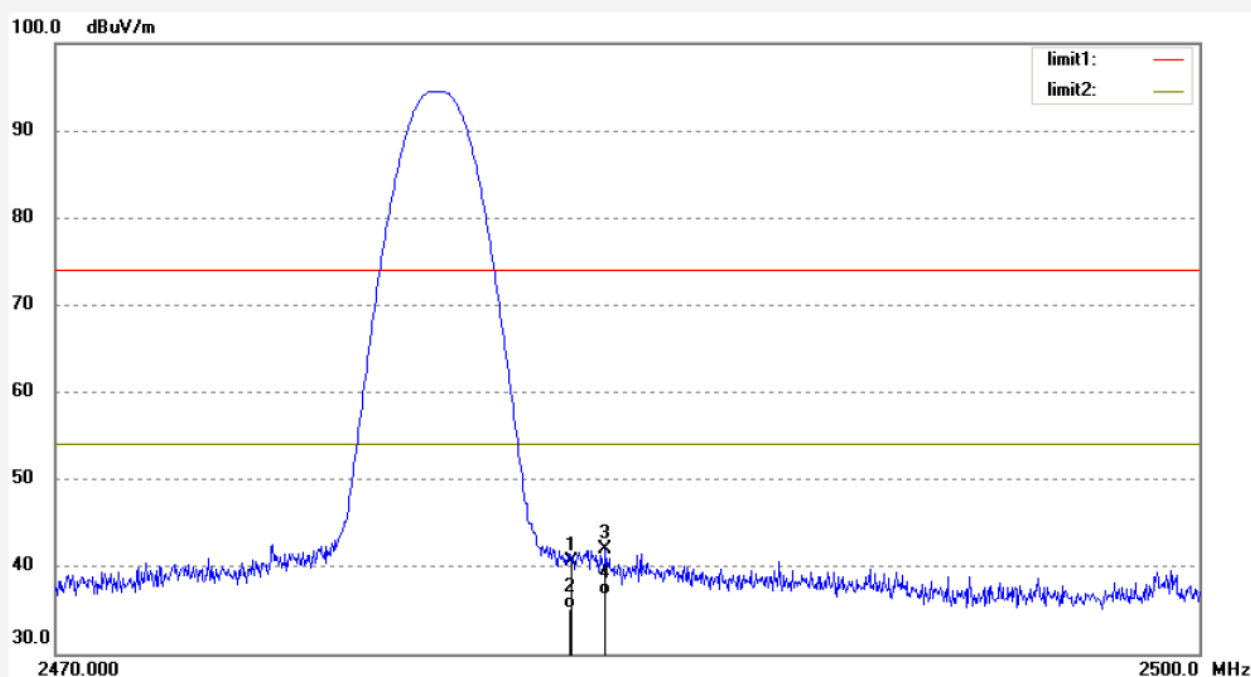
Date: 2014/07/10

Time: 18/22/00

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



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	47.90	-7.38	40.52	74.00	-33.48	peak			
2	2483.500	42.61	-7.38	35.23	54.00	-18.77	AVG			
3	2484.400	49.45	-7.39	42.06	74.00	-31.94	peak			
4	2484.400	44.13	-7.39	36.74	54.00	-17.26	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 #1991

Standard: FCC PK

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2402MHz(PI/4DQPSK)

Model: SP-25BT

Manufacturer: DAZA

Polarization: Vertical

Power Source: DC 3.7V

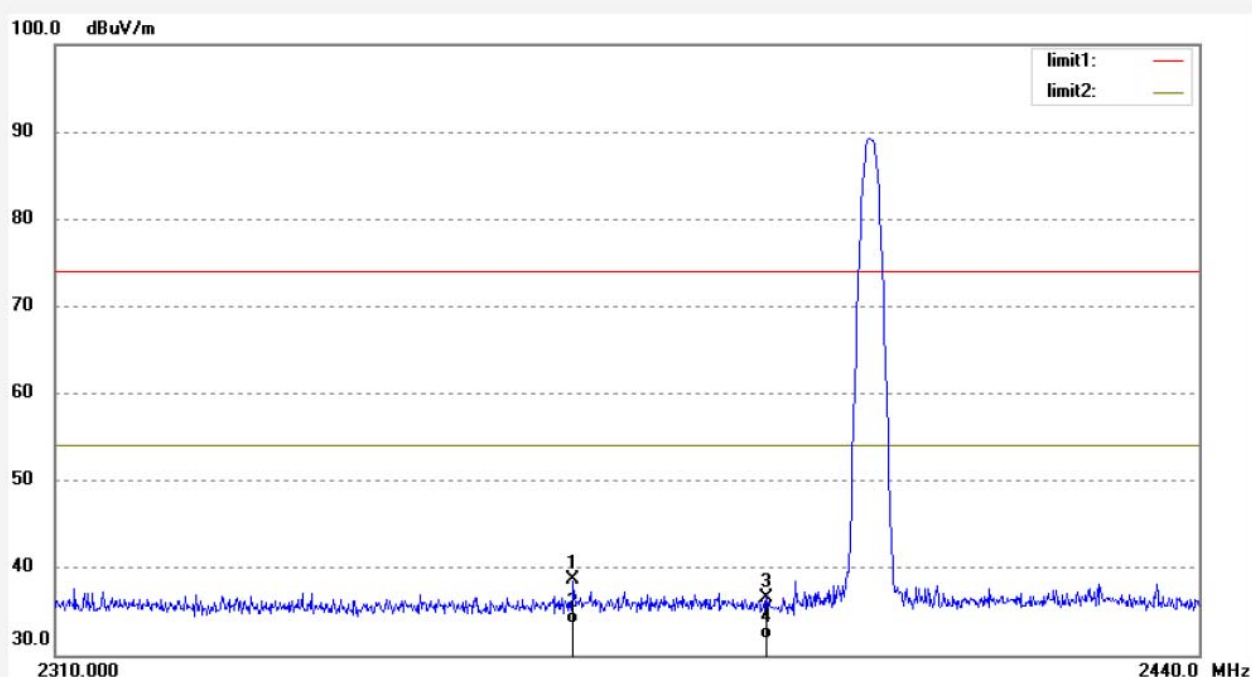
Date: 2014/07/10

Time: 19/12/37

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2368.110	46.37	-7.72	38.65	74.00	-35.35	peak			
2	2368.110	41.38	-7.72	33.66	54.00	-20.34	AVG			
3	2390.000	44.19	-7.57	36.62	74.00	-37.38	peak			
4	2390.000	39.49	-7.57	31.92	54.00	-22.08	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 #1992

Standard: FCC PK

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2402MHz(PI/4DQPSK)

Model: SP-25BT

Manufacturer: DAZA

Polarization: Horizontal

Power Source: DC 3.7V

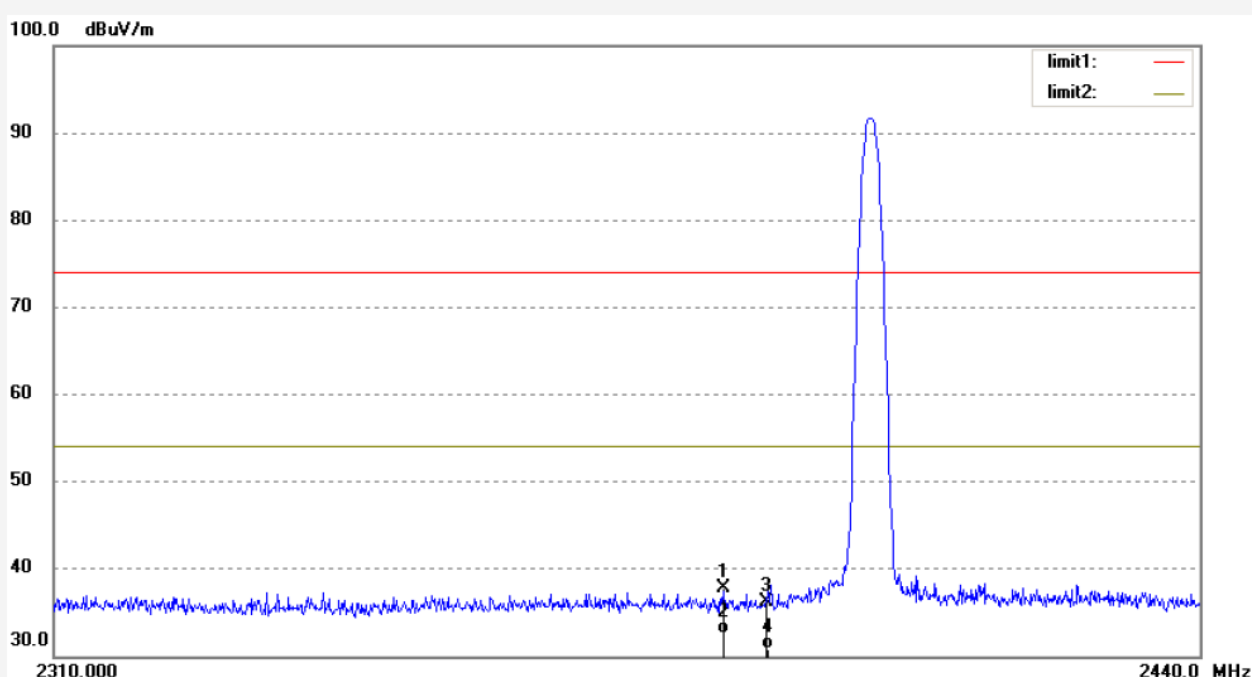
Date: 2014/07/10

Time: 19/13/24

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2385.140	45.34	-7.61	37.73	74.00	-36.27	peak			
2	2385.140	40.18	-7.61	32.57	54.00	-21.43	AVG			
3	2390.000	43.73	-7.57	36.16	74.00	-37.84	peak			
4	2390.000	38.36	-7.57	30.79	54.00	-23.21	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.: ricky #1990

Standard: FCC PK

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2480MHz(PI/4DQPSK)

Model: SP-25BT

Manufacturer: DAZA

Polarization: Vertical

Power Source: DC 3.7V

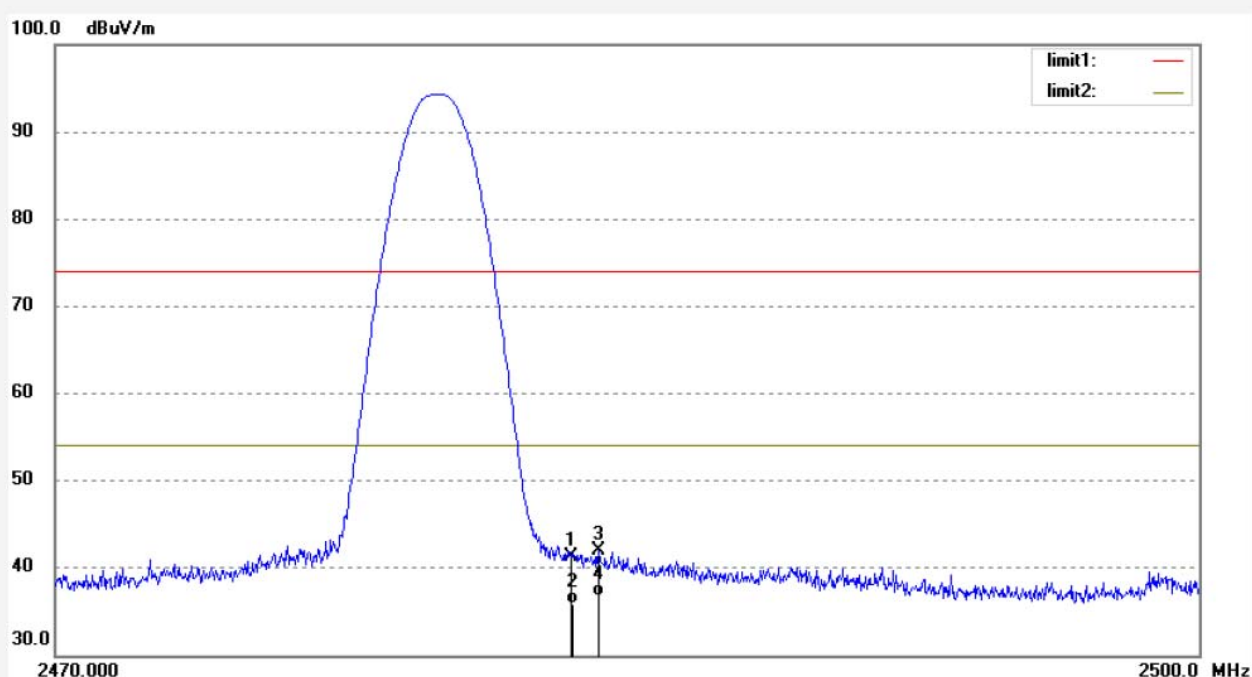
Date: 2014/07/10

Time: 19/11/15

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



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	48.69	-7.38	41.31	74.00	-32.69	peak			
2	2483.500	43.30	-7.38	35.92	54.00	-18.08	AVG			
3	2484.220	49.31	-7.39	41.92	74.00	-32.08	peak			
4	2484.220	44.16	-7.39	36.77	54.00	-17.23	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 #1989

Standard: FCC PK

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2480MHz(PI/4DQPSK)

Model: SP-25BT

Manufacturer: DAZA

Polarization: Horizontal

Power Source: DC 3.7V

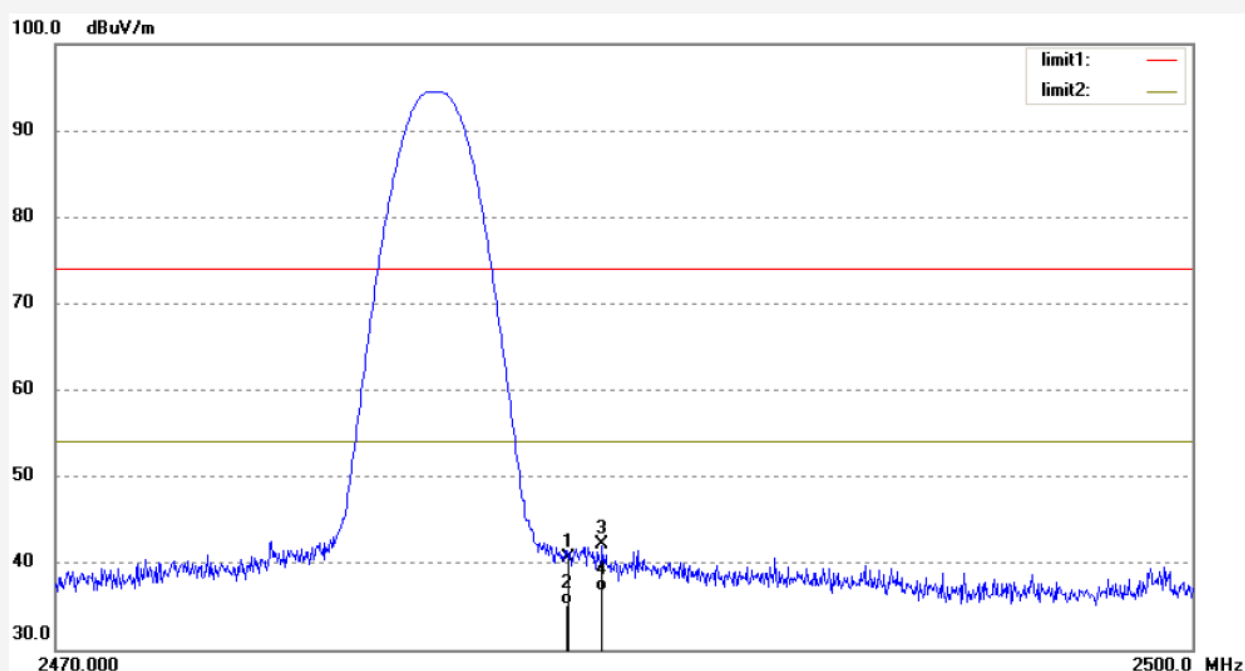
Date: 2014/07/10

Time: 19/10/21

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



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	48.01	-7.38	40.63	74.00	-33.37	peak			
2	2483.500	42.53	-7.38	35.15	54.00	-18.85	AVG			
3	2484.400	49.55	-7.39	42.16	74.00	-31.84	peak			
4	2484.400	44.19	-7.39	36.80	54.00	-17.20	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.: ricky #1996

Standard: FCC PK

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2402MHz(8DPSK)

Model: SP-25BT

Manufacturer: DAZA

Polarization: Vertical

Power Source: DC 3.7V

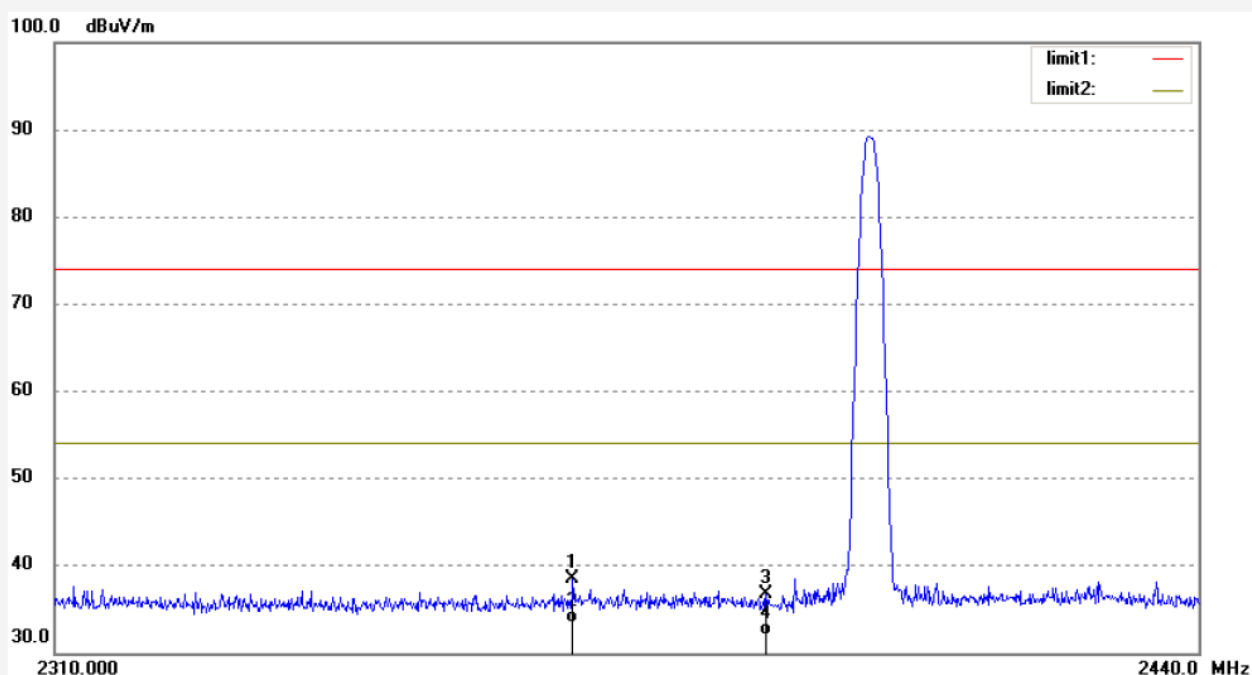
Date: 2014/07/10

Time: 19/17/27

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2368.110	46.24	-7.72	38.52	74.00	-35.48	peak			
2	2368.110	41.22	-7.72	33.50	54.00	-20.50	AVG			
3	2390.000	44.24	-7.57	36.67	74.00	-37.33	peak			
4	2390.000	39.53	-7.57	31.96	54.00	-22.04	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.: ricky #1995

Standard: FCC PK

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2402MHz(8DPSK)

Model: SP-25BT

Manufacturer: DAZA

Polarization: Vertical

Power Source: DC 3.7V

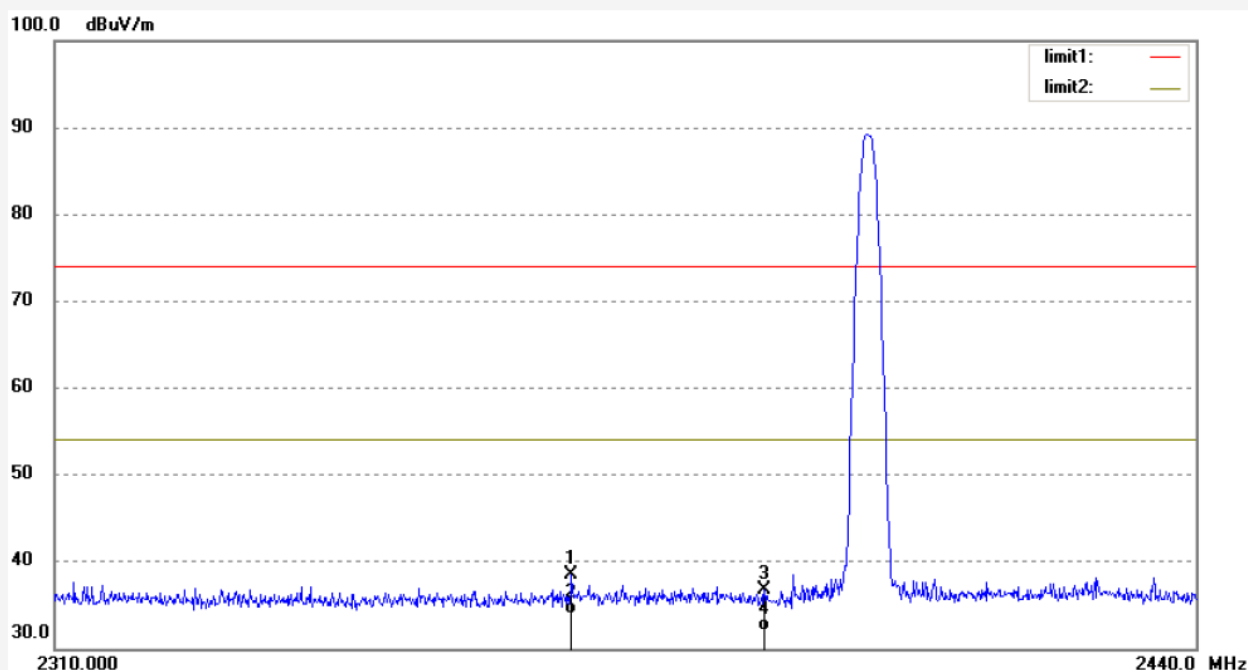
Date: 2014/07/10

Time: 19/16/41

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2368.110	46.21	-7.72	38.49	74.00	-35.51	peak			
2	2368.110	41.58	-7.72	33.86	54.00	-20.14	AVG			
3	2390.000	44.26	-7.57	36.69	74.00	-37.31	peak			
4	2390.000	39.61	-7.57	32.04	54.00	-21.96	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.: ricky #1994

Standard: FCC PK

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2480MHz(8DPSK)

Model: SP-25BT

Manufacturer: DAZA

Polarization: Vertical

Power Source: DC 3.7V

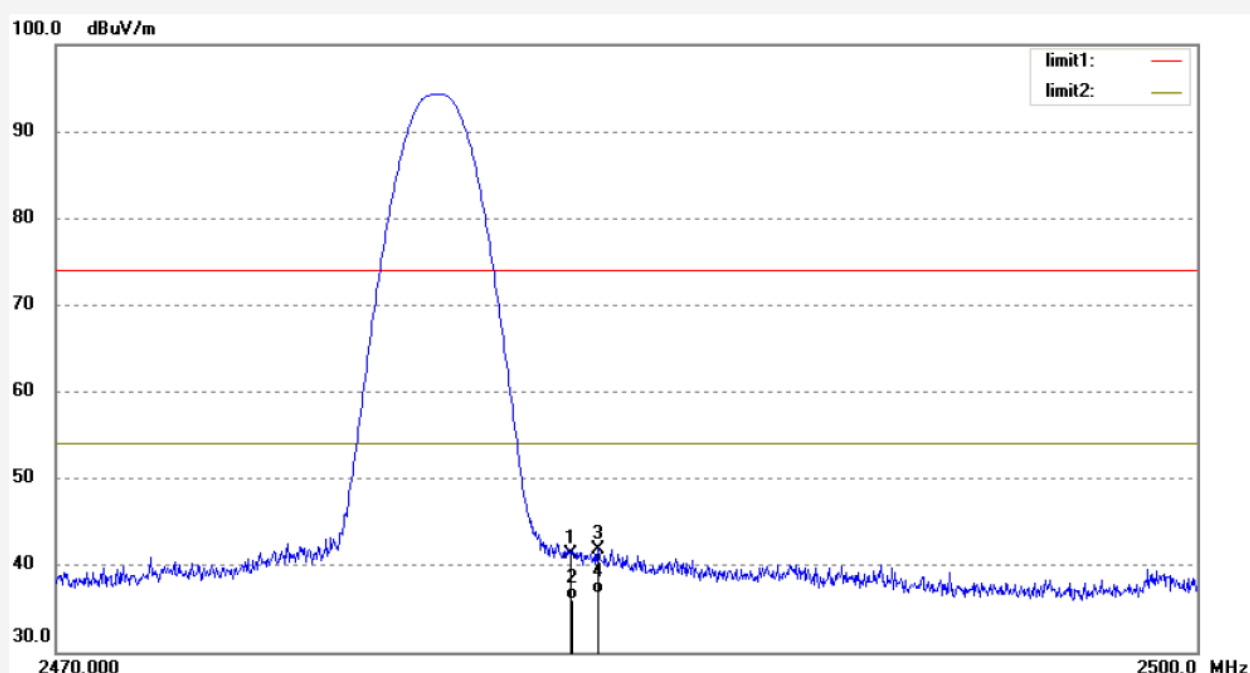
Date: 2014/07/10

Time: 19/15/28

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



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	48.67	-7.38	41.29	74.00	-32.71	peak			
2	2483.500	43.35	-7.38	35.97	54.00	-18.03	AVG			
3	2484.220	49.29	-7.39	41.90	74.00	-32.10	peak			
4	2484.220	44.08	-7.39	36.69	54.00	-17.31	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 #1993

Standard: FCC PK

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: TX 2480MHz(8DPSK)

Model: SP-25BT

Manufacturer: DAZA

Polarization: Horizontal

Power Source: DC 3.7V

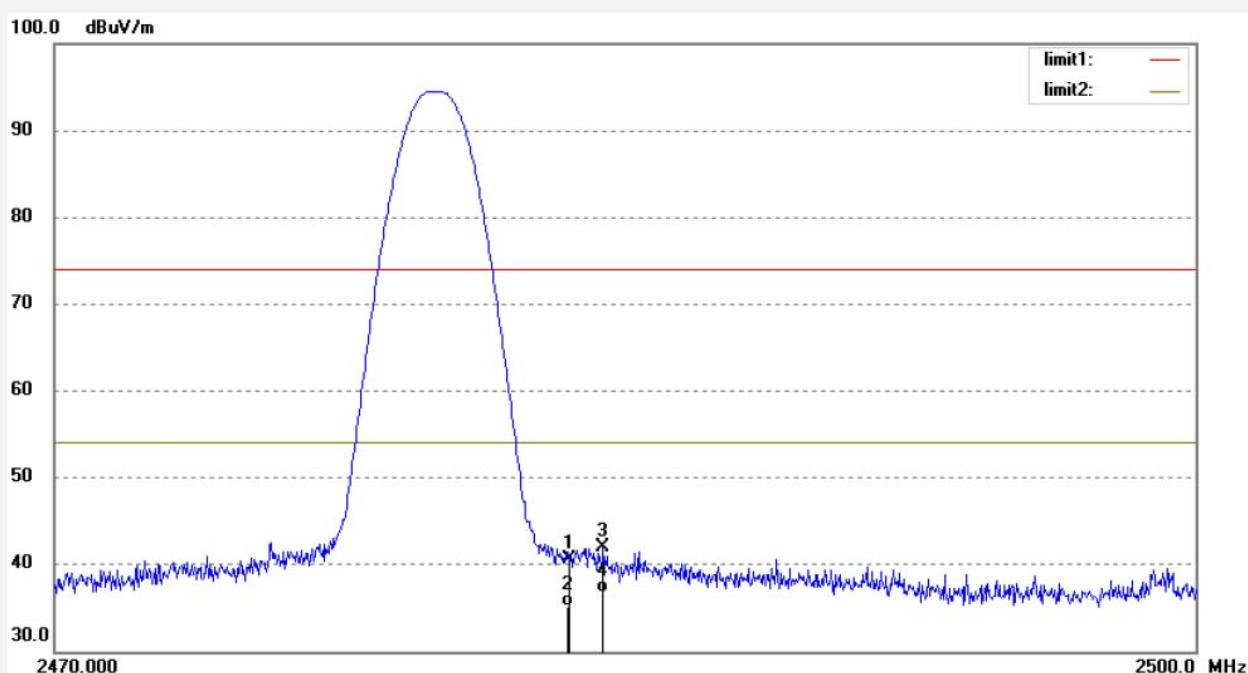
Date: 2014/07/10

Time: 19/14/38

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



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	48.05	-7.38	40.67	74.00	-33.33	peak			
2	2483.500	42.58	-7.38	35.20	54.00	-18.80	AVG			
3	2484.400	49.45	-7.39	42.06	74.00	-31.94	peak			
4	2484.400	44.09	-7.39	36.70	54.00	-17.30	AVG			

Hopping mode



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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: ricky #2002

Standard: FCC PK

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: HOPPING(GFSK)

Model: SP-25BT

Manufacturer: DAZA

Polarization: Vertical

Power Source: DC 3.7V

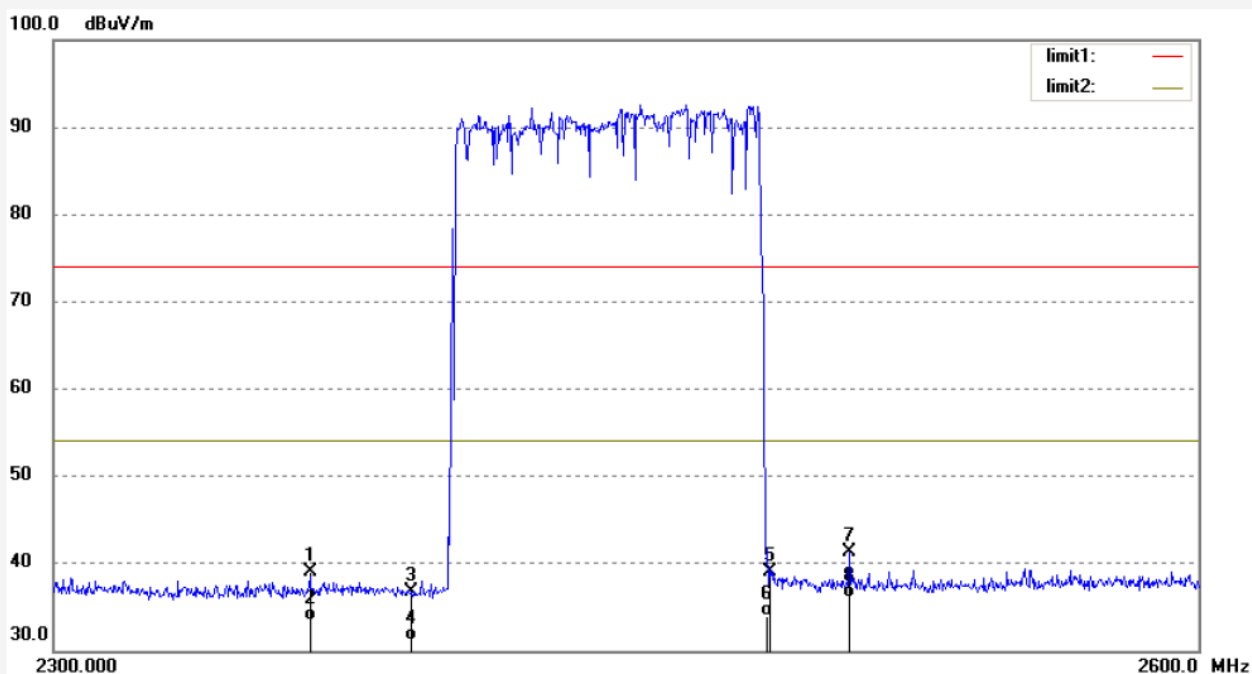
Date: 2014/07/10

Time: 19/45/52

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2364.200	46.68	-7.74	38.94	74.00	-35.06	peak			
2	2364.200	41.11	-7.74	33.37	54.00	-20.63	AVG			
3	2390.000	44.33	-7.57	36.76	74.00	-37.24	peak			
4	2390.000	38.72	-7.57	31.15	54.00	-22.85	AVG			
5	2483.500	46.38	-7.38	39.00	74.00	-35.00	peak			
6	2483.500	41.23	-7.38	33.85	54.00	-20.15	AVG			
7	2504.600	48.61	-7.37	41.24	74.00	-32.76	peak			
8	2504.600	43.35	-7.37	35.98	54.00	-18.02	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 #2001

Standard: FCC PK

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: HOPPING(GFSK)

Model: SP-25BT

Manufacturer: DAZA

Polarization: Horizontal

Power Source: DC 3.7V

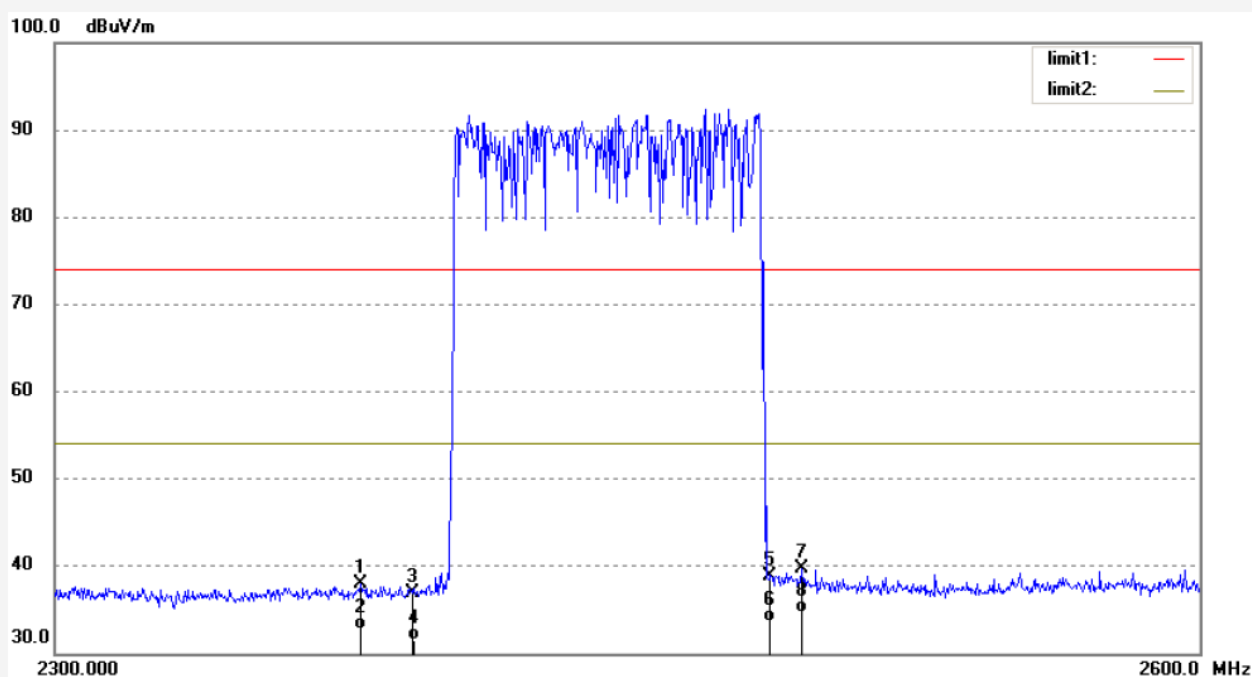
Date: 2014/07/10

Time: 19/44/25

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2376.800	45.62	-7.66	37.96	74.00	-36.04	peak			
2	2376.800	40.30	-7.66	32.64	54.00	-21.36	AVG			
3	2390.000	44.51	-7.57	36.94	74.00	-37.06	peak			
4	2390.000	39.14	-7.57	31.57	54.00	-22.43	AVG			
5	2483.500	46.19	-7.38	38.81	74.00	-35.19	peak			
6	2483.500	41.00	-7.38	33.62	54.00	-20.38	AVG			
7	2491.700	47.12	-7.39	39.73	74.00	-34.27	peak			
8	2491.700	42.01	-7.39	34.62	54.00	-19.38	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 #2000

Standard: FCC PK

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: HOPPING(PI/4DQPSK)

Model: SP-25BT

Manufacturer: DAZA

Polarization: Vertical

Power Source: DC 3.7V

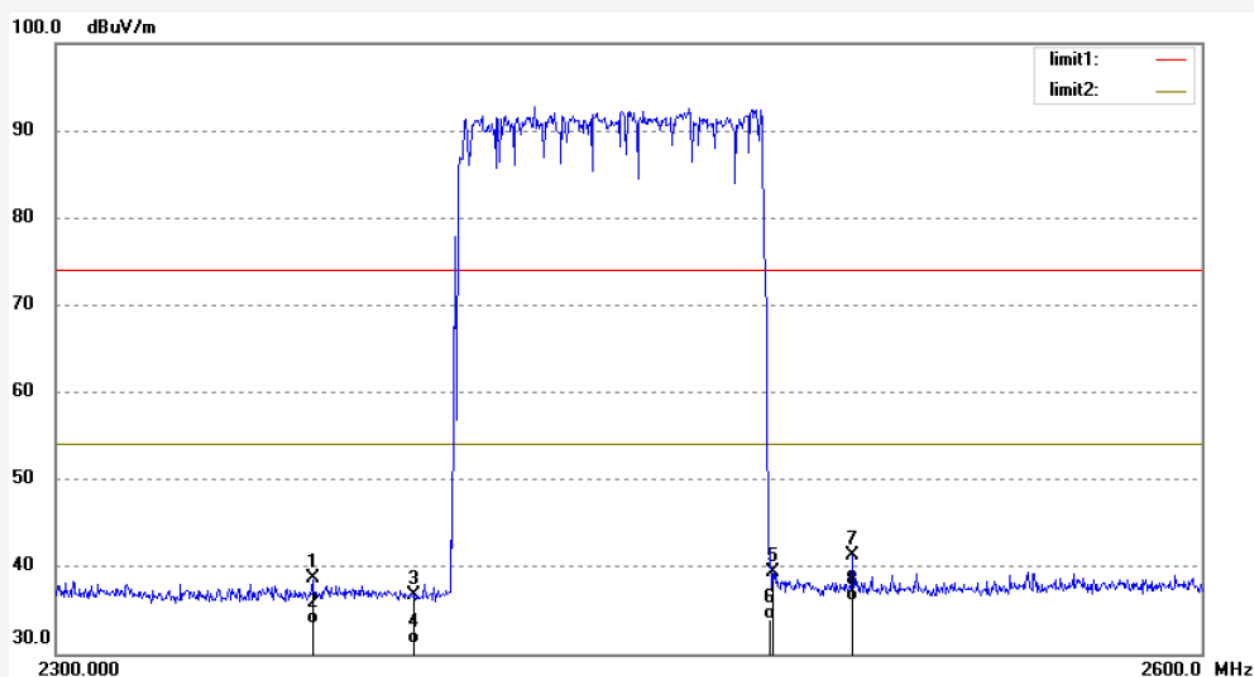
Date: 2014/07/10

Time: 19/43/28

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2364.200	46.37	-7.74	38.63	74.00	-35.37	peak			
2	2364.200	41.10	-7.74	33.36	54.00	-20.64	AVG			
3	2390.000	44.31	-7.57	36.74	74.00	-37.26	peak			
4	2390.000	38.72	-7.57	31.15	54.00	-22.85	AVG			
5	2483.500	46.67	-7.38	39.29	74.00	-34.71	peak			
6	2483.500	41.30	-7.38	33.92	54.00	-20.08	AVG			
7	2504.600	48.62	-7.37	41.25	74.00	-32.75	peak			
8	2504.600	43.35	-7.37	35.98	54.00	-18.02	AVG			



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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: ricky #1999

Standard: FCC PK

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: HOPPING(PI/4DQPSK)

Model: SP-25BT

Manufacturer: DAZA

Polarization: Horizontal

Power Source: DC 3.7V

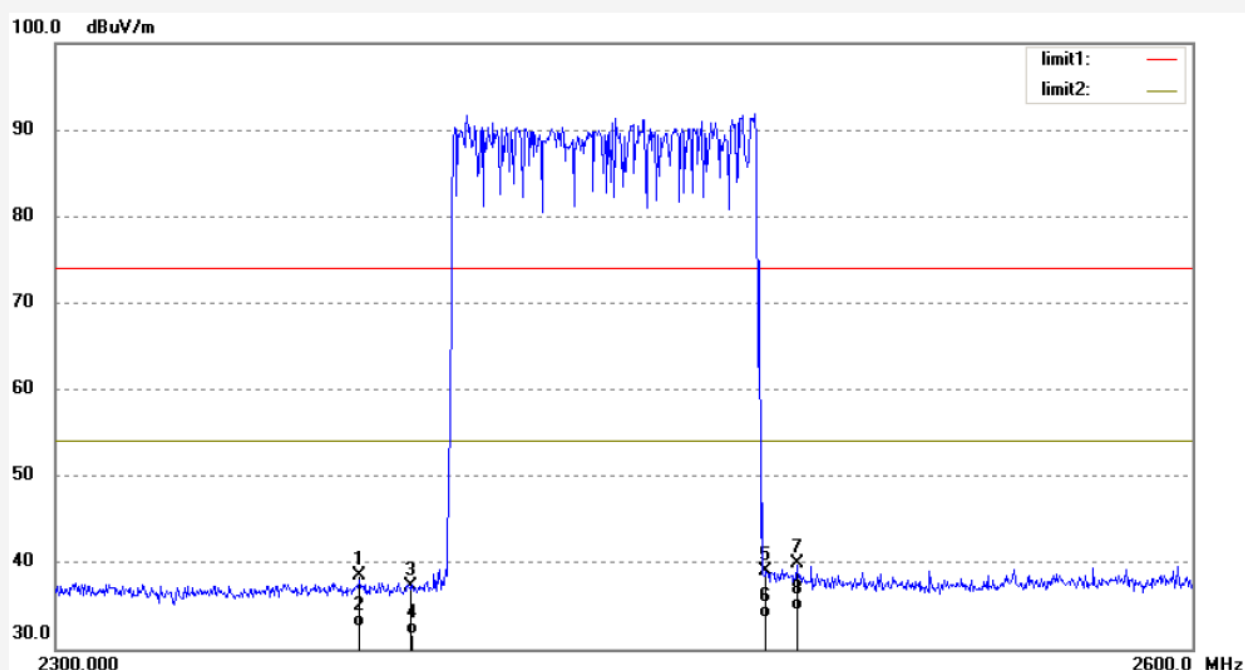
Date: 2014/07/10

Time: 19/42/32

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2376.800	46.10	-7.66	38.44	74.00	-35.56	peak			
2	2376.800	40.19	-7.66	32.53	54.00	-21.47	AVG			
3	2390.000	44.85	-7.57	37.28	74.00	-36.72	peak			
4	2390.000	39.17	-7.57	31.60	54.00	-22.40	AVG			
5	2483.500	46.37	-7.38	38.99	74.00	-35.01	peak			
6	2483.500	40.97	-7.38	33.59	54.00	-20.41	AVG			
7	2491.700	47.23	-7.39	39.84	74.00	-34.16	peak			
8	2491.700	41.86	-7.39	34.47	54.00	-19.53	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.: ricky #1998

Standard: FCC PK

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: HOPPING(8DPSK)

Model: SP-25BT

Manufacturer: DAZA

Polarization: Vertical

Power Source: DC 3.7V

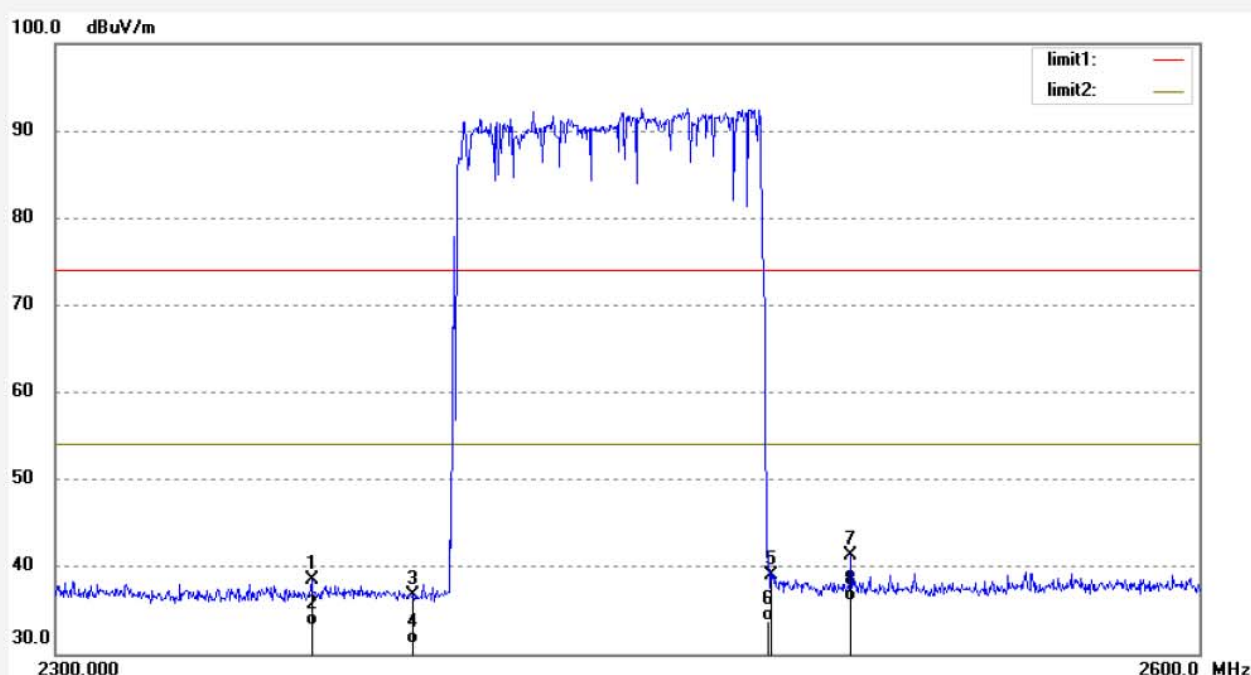
Date: 2014/07/10

Time: 19/40/50

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2364.200	46.29	-7.74	38.55	74.00	-35.45	peak			
2	2364.200	41.03	-7.74	33.29	54.00	-20.71	AVG			
3	2390.000	44.26	-7.57	36.69	74.00	-37.31	peak			
4	2390.000	38.67	-7.57	31.10	54.00	-22.90	AVG			
5	2483.500	46.34	-7.38	38.96	74.00	-35.04	peak			
6	2483.500	41.21	-7.38	33.83	54.00	-20.17	AVG			
7	2504.600	48.72	-7.37	41.35	74.00	-32.65	peak			
8	2504.600	43.38	-7.37	36.01	54.00	-17.99	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.: ricky #1997

Standard: FCC PK

Test item: Radiation Test

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

EUT: Bluetooth Speaker

Mode: HOPPING(8DPSK)

Model: SP-25BT

Manufacturer: DAZA

Polarization: Horizontal

Power Source: DC 3.7V

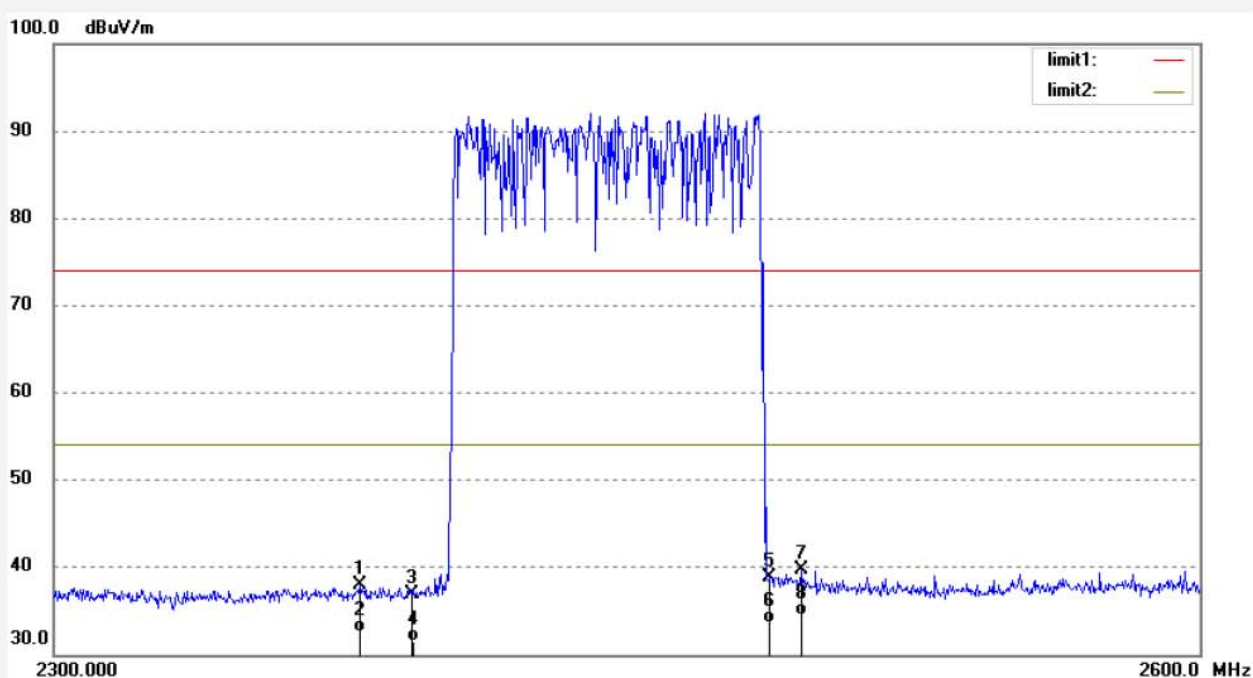
Date: 2014/07/10

Time: 19/33/37

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141292



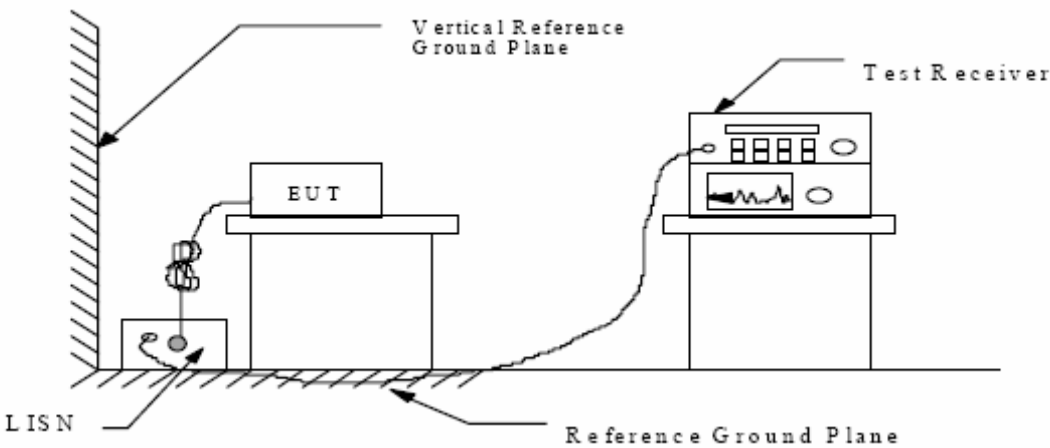
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2376.800	45.59	-7.66	37.93	74.00	-36.07	peak			
2	2376.800	40.21	-7.66	32.55	54.00	-21.45	AVG			
3	2390.000	44.48	-7.57	36.91	74.00	-37.09	peak			
4	2390.000	39.11	-7.57	31.54	54.00	-22.46	AVG			
5	2483.500	46.20	-7.38	38.82	74.00	-35.18	peak			
6	2483.500	41.02	-7.38	33.64	54.00	-20.36	AVG			
7	2491.700	47.05	-7.39	39.66	74.00	-34.34	peak			
8	2491.700	41.93	-7.39	34.54	54.00	-19.46	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(μ 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 C63.4- 2009 on Conducted Emission Measurement.

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

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

12.6.Power Line Conducted Emission Measurement Results

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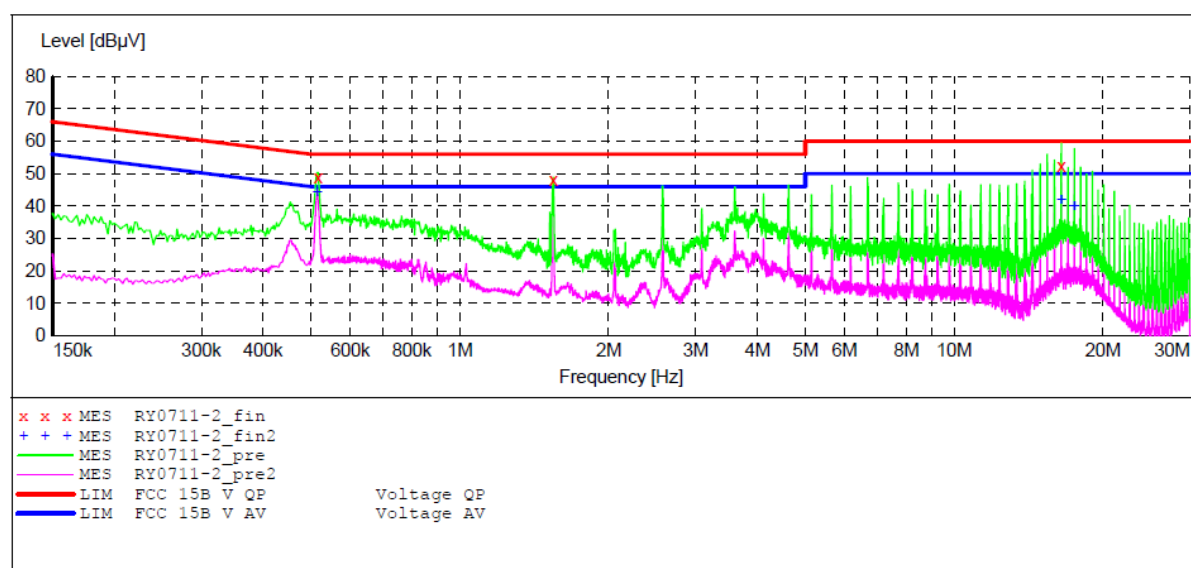
CONDUCTED EMISSION STANDARD FCC PART15B

EUT: Bluetooth Speaker M/N:SP-25BT
 Manufacturer: DAZA
 Operating Condition: Operation
 Test Site: 1#Shielding Room
 Operator: Ricky
 Test Specification: L 120V/60Hz
 Comment:

Report No:ATE20141292

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: "RY0711-2_fin"

2014-7-11 9:53

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.516000	48.90	11.5	56	7.1	QP	L1	GND
1.544000	47.90	11.6	56	8.1	QP	L1	GND
16.481000	52.50	11.9	60	7.5	QP	L1	GND

MEASUREMENT RESULT: "RY0711-2_fin2"

2014-7-11 9:53

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.514000	44.00	11.5	46	2.0	AV	L1	GND
16.481000	41.70	11.9	50	8.3	AV	L1	GND
17.511500	40.00	11.9	50	10.0	AV	L1	GND

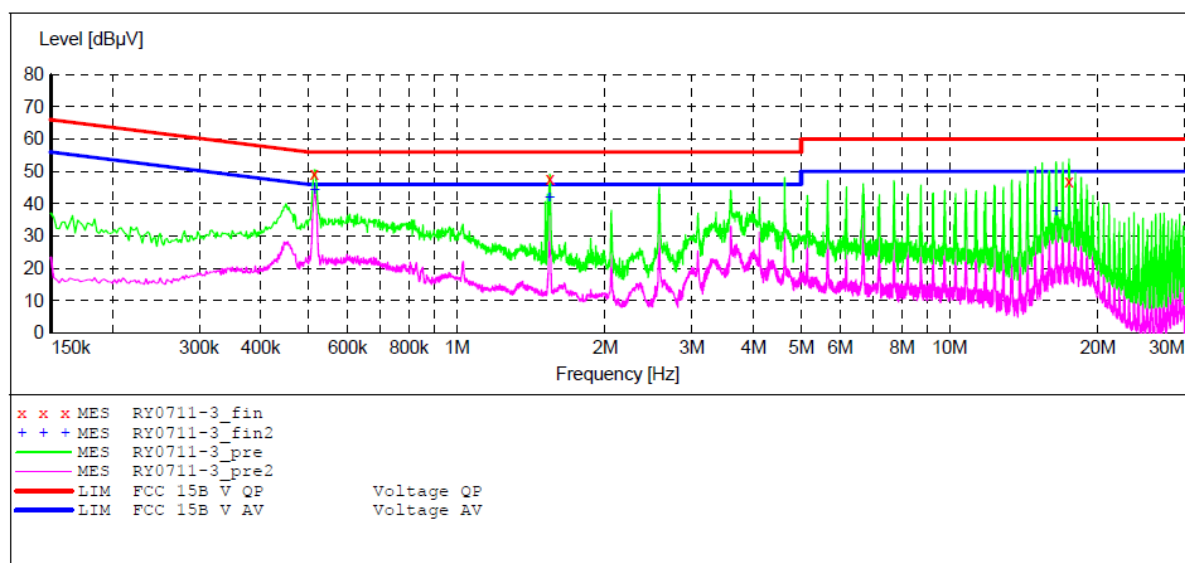
ACCURATE TECHNOLOGY CO.,LTD**CONDUCTED EMISSION STANDARD FCC PART15B**

EUT: Bluetooth Speaker M/N:SP-25BT
 Manufacturer: DAZA
 Operating Condition: Operation
 Test Site: 1#Shielding Room
 Operator: Ricky
 Test Specification: N 120V/60Hz
 Comment:

Report No:ATE20141292

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: "RY0711-3_fin"**

2014-7-11 9:56

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.514000	49.10	11.5	56	6.9	QP	N	GND
1.544000	47.60	11.6	56	8.4	QP	N	GND
17.489000	47.00	11.9	60	13.0	QP	N	GND

MEASUREMENT RESULT: "RY0711-3_fin2"

2014-7-11 9:56

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.514000	44.00	11.5	46	2.0	AV	N	GND
1.544000	41.70	11.6	46	4.3	AV	N	GND
16.467500	37.70	11.9	50	12.3	AV	N	GND

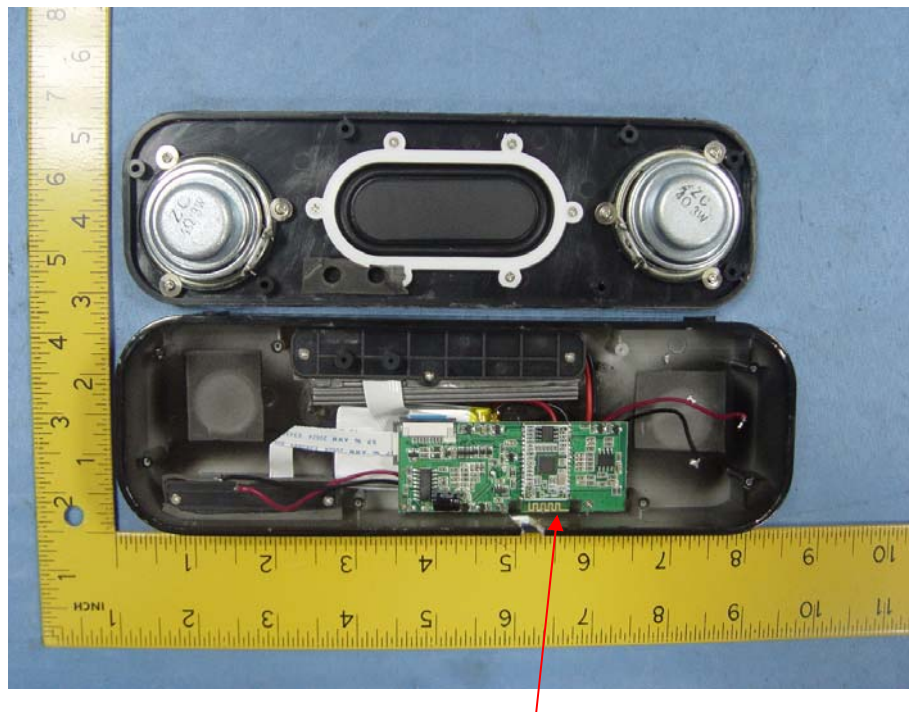
13.ANTENNA REQUIREMENT

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



Antenna