

APPLICATION CERTIFICATION FCC Part 15C
On Behalf of

OLALA TECHNOLOGY LIMITED

Wireless bluetooth earphones
Model No.: SG1

FCC ID: 2AN38-SG1

Prepared for : OLALA TECHNOLOGY LIMITED
Address : 12/F, San Toi Building, 137-139, Connaught Road Central, Central
and Western District, Hong Kong 999077

Prepared by : Shenzhen Accurate Technology Co., Ltd.
Address : 1/F., Building A, Changyuan New Material Port, Science & Industry
Park, Nanshan District, Shenzhen, Guangdong, P.R. China

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

Report No. : ATE20171962
Date of Test : October 24-October 25, 2017
Date of Report : October 26, 2017

TABLE OF CONTENTS

Description Page

Test Report Certification

1. GENERAL INFORMATION	5
1.1. Description of Device (EUT).....	5
1.2. Accessory and Auxiliary Equipment	5
1.3. Description of Test Facility	6
1.4. Measurement Uncertainty	6
2. MEASURING DEVICE AND TEST EQUIPMENT	7
3. OPERATION OF EUT DURING TESTING	8
3.1. Operating Mode	8
3.2. Configuration and peripherals	8
4. TEST PROCEDURES AND RESULTS	9
5. 20DB BANDWIDTH TEST.....	10
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	10
5.6. Test Result	11
6. CARRIER FREQUENCY SEPARATION TEST.....	16
6.1. Block Diagram of Test Setup.....	16
6.2. The Requirement For Section 15.247(a)(1).....	16
6.3. EUT Configuration on Measurement	16
6.4. Operating Condition of EUT	16
6.5. Test Procedure	17
6.6. Test Result	17
7. NUMBER OF HOPPING FREQUENCY TEST	23
7.1. Block Diagram of Test Setup.....	23
7.2. The Requirement For Section 15.247(a)(1)(iii).....	23
7.3. EUT Configuration on Measurement	23
7.4. Operating Condition of EUT	23
7.5. Test Procedure	23
7.6. Test Result	24
8. DWELL TIME TEST	26
8.1. Block Diagram of Test Setup.....	26
8.2. The Requirement For Section 15.247(a)(1)(iii).....	26
8.3. EUT Configuration on Measurement	26
8.4. Operating Condition of EUT	26
8.5. Test Procedure	26
8.6. Test Result	27
9. MAXIMUM PEAK OUTPUT POWER TEST	42
9.1. Block Diagram of Test Setup.....	42
9.2. The Requirement For Section 15.247(b)(1).....	42

9.3.	EUT Configuration on Measurement	42
9.4.	Operating Condition of EUT	42
9.5.	Test Procedure	42
9.6.	Test Result	43
10.	RADIATED EMISSION TEST	49
10.1.	Block Diagram of Test Setup.....	49
10.2.	The Limit For Section 15.247(d)	50
10.3.	Restricted bands of operation	51
10.4.	Configuration of EUT on Measurement	51
10.5.	Operating Condition of EUT	52
10.6.	Test Procedure	52
10.7.	Data Sample.....	53
10.8.	The Field Strength of Radiation Emission Measurement Results	53
11.	BAND EDGE COMPLIANCE TEST	66
11.1.	Block Diagram of Test Setup.....	66
11.2.	The Requirement For Section 15.247(d)	66
11.3.	EUT Configuration on Measurement	66
11.4.	Operating Condition of EUT	66
11.5.	Test Procedure	67
11.6.	Test Result	67
12.	AC POWER LINE CONDUCTED EMISSION FOR FCC PART 15 SECTION 15.207(A) ..	90
12.1.	Block Diagram of Test Setup.....	90
12.2.	Power Line Conducted Emission Measurement Limits.....	91
12.3.	Configuration of EUT on Measurement	91
12.4.	Operating Condition of EUT	91
12.5.	Test Procedure	91
12.6.	Data Sample.....	92
12.7.	Power Line Conducted Emission Measurement Results	92
13.	ANTENNA REQUIREMENT.....	97
13.1.	The Requirement	97
13.2.	Antenna Construction	97

Test Report Certification

Applicant : OLALA TECHNOLOGY LIMITED
Manufacturer : OLALA TECHNOLOGY LIMITED
EUT Description : Wireless bluetooth earphones
Model No. : SG1
Trade Name : OLALA

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247: 2016
ANSI C63.10: 2013

The device described above is tested by Shenzhen 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 Shenzhen 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 Shenzhen Accurate Technology Co., Ltd.

Date of Test : October 24-October 25, 2017

Date of Report : October 26, 2017

Prepared by :

Star Yang
(Star Yang, Engineer)

Approved & Authorized Signer :

Sean Liu
(Sean Liu, Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Model Number	:	SG1
Bluetooth version	:	V 4.1 Single mode This report is for BT classic mode
Frequency Range	:	2402MHz-2480MHz
Number of Channels	:	79
Antenna Gain(Max)	:	0dBi
Antenna type	:	Integral antenna
Adapter Input Voltage	:	DC 3.7V (Powered by Lithium battery) or DC 5V (Powered by USB port)
Modulation mode	:	GFSK, $\pi/4$ DQPSK, 8DPSK
Applicant	:	OLALA TECHNOLOGY LIMITED
Address	:	12/F, San Toi Building, 137-139, Connaught Road Central, Central and Western District, Hong Kong 999077
Manufacturer	:	OLALA TECHNOLOGY LIMITED
Address	:	12/F, San Toi Building, 137-139, Connaught Road Central, Central and Western District, Hong Kong 999077

1.2. Accessory and Auxiliary Equipment

AC/DC Power Adapter (provided by laboratory)	:	Model: TEKA006-0501500UKU
		Input: 100-240V~50/60Hz 0.3A
		Output: DC 5V/1A
PC (provided by laboratory)	:	Manufacturer: LENOVO
		M/N: 4290-RT8
		S/N: R9-FW93G 11/08

1.3. Description of Test Facility

EMC Lab	:	Recognition of accreditation by Federal Communications Commission (FCC) The Designation Number is CN1189 The Registration Number is 708358 Listed by Innovation, Science and Economic Development Canada (ISED) The Registration Number is 5077A-2 Accredited by China National Accreditation Service for Conformity Assessment (CNAS) The Registration Number is CNAS L3193 Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 4297.01
Name of Firm	:	Shenzhen Accurate Technology Co., Ltd.
Site Location	:	1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

1.4. 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. 07, 2017	1 Year
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 07, 2017	1 Year
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 07, 2017	1 Year
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	Jan. 07, 2017	1 Year
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 13, 2017	1 Year
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 13, 2017	1 Year
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 13, 2017	1 Year
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 13, 2017	1 Year
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 07, 2017	1 Year
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 07, 2017	1 Year
Highpass Filter	Wainwright Instruments	WHKX3.6/18 G-10SS	N/A	Jan. 07, 2017	1 Year
Band Reject Filter	Wainwright Instruments	WRCG2400/2 485-2375/2510 -60/11SS	N/A	Jan. 07, 2017	1 Year

3. OPERATION OF EUT DURING TESTING

3.1.Operating Mode

The mode is used: Transmitting mode

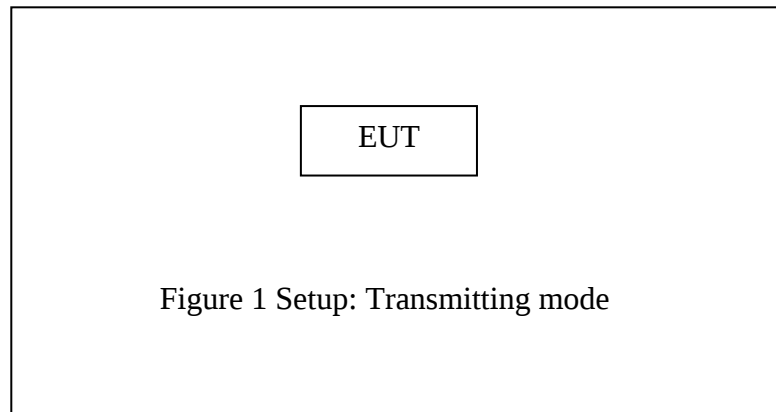
Low Channel: 2402MHz

Middle Channel: 2441MHz

High Channel: 2480MHz

Hopping

3.2.Configuration and peripherals

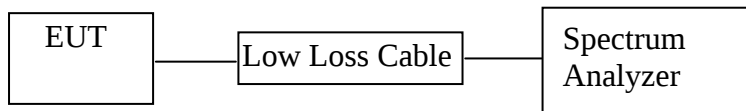


4. TEST PROCEDURES AND RESULTS

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: Wireless bluetooth earphones)

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 100 kHz and VBW to 300 kHz.

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

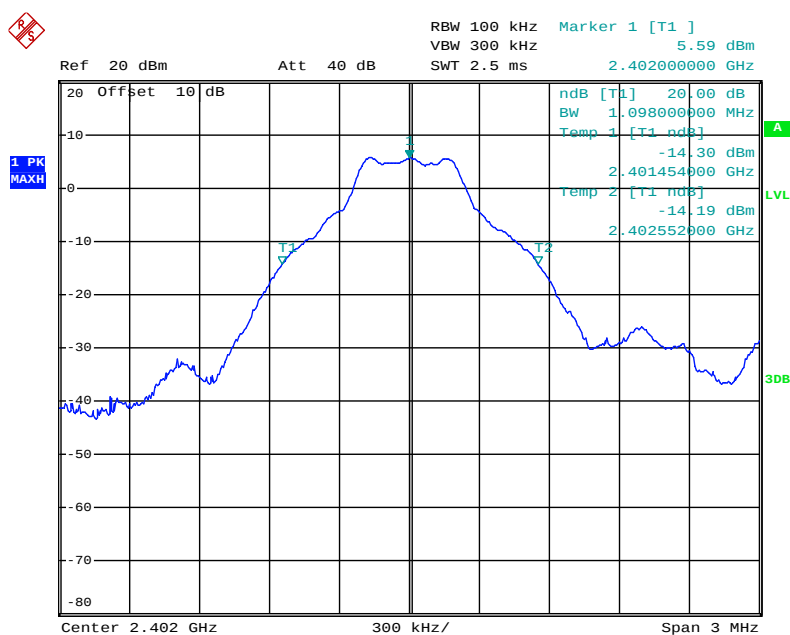
5.6. Test Result

Channel	Frequency (MHz)	GFSK 20dB Bandwidth (MHz)	Π/4-DQPSK 20dB Bandwidth (MHz)	8DPSK 20dB Bandwidth (MHz)	Result
Low	2402	1.098	1.356	1.350	Pass
Middle	2441	1.104	1.356	1.350	Pass
High	2480	1.098	1.362	1.350	Pass

The spectrum analyzer plots are attached as below.

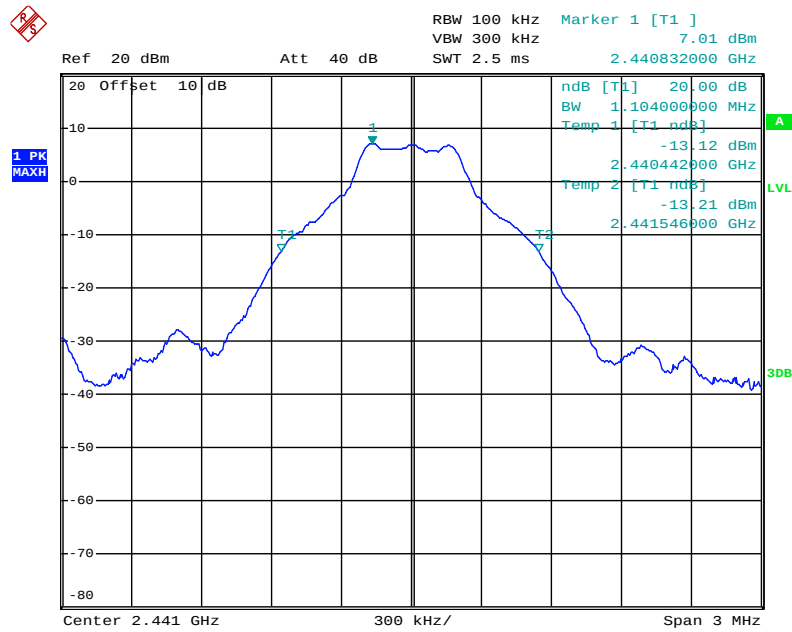
GFSK Mode

Low channel



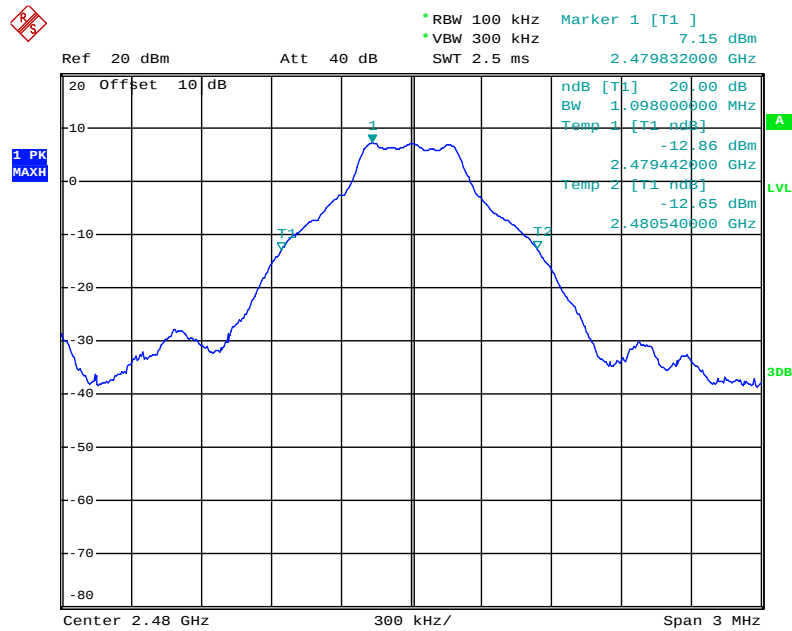
Date: 24.OCT.2017 13:43:17

Middle channel



Date: 24.OCT.2017 13:44:59

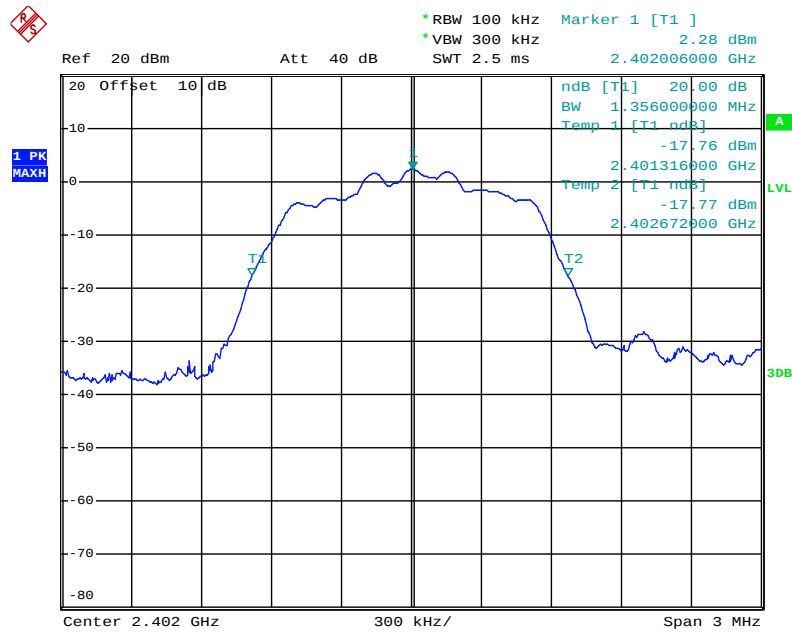
High channel



Date: 24.OCT.2017 13:46:33

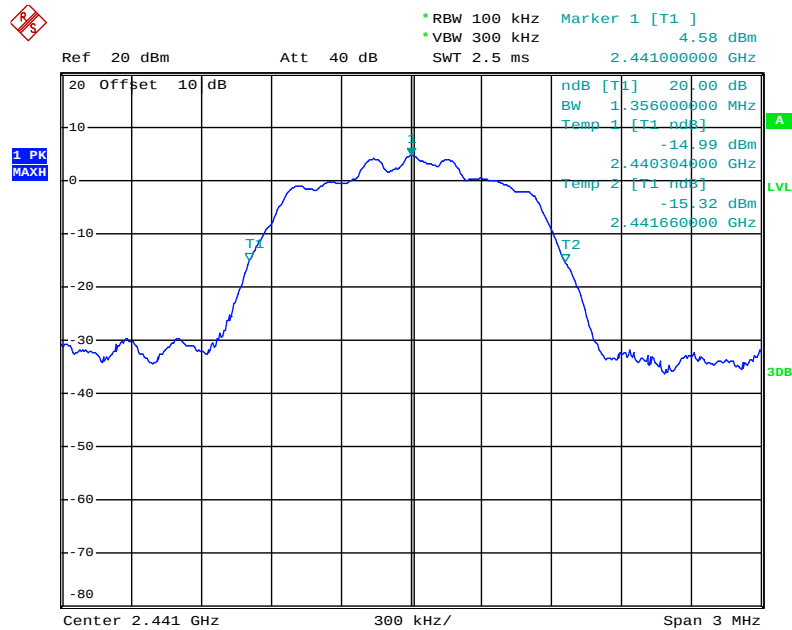
Π/4-DQPSK Mode

Low channel



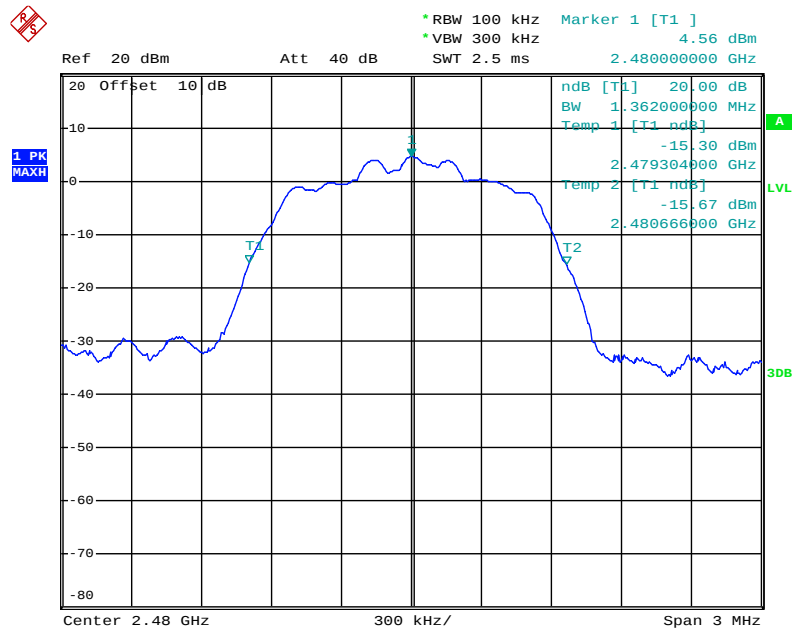
Date: 24.OCT.2017 13:49:44

Middle channel



Date: 24.OCT.2017 13:48:43

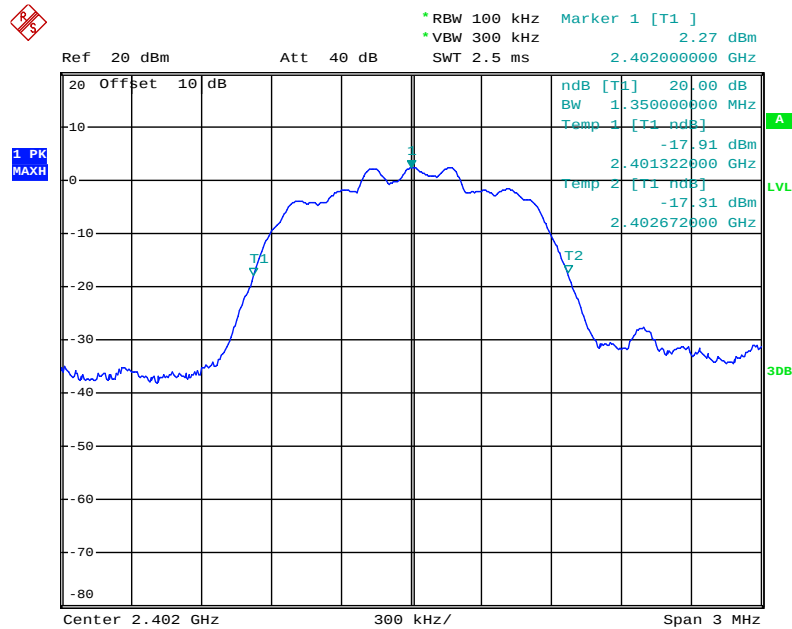
High channel



Date: 24.OCT.2017 13:47:55

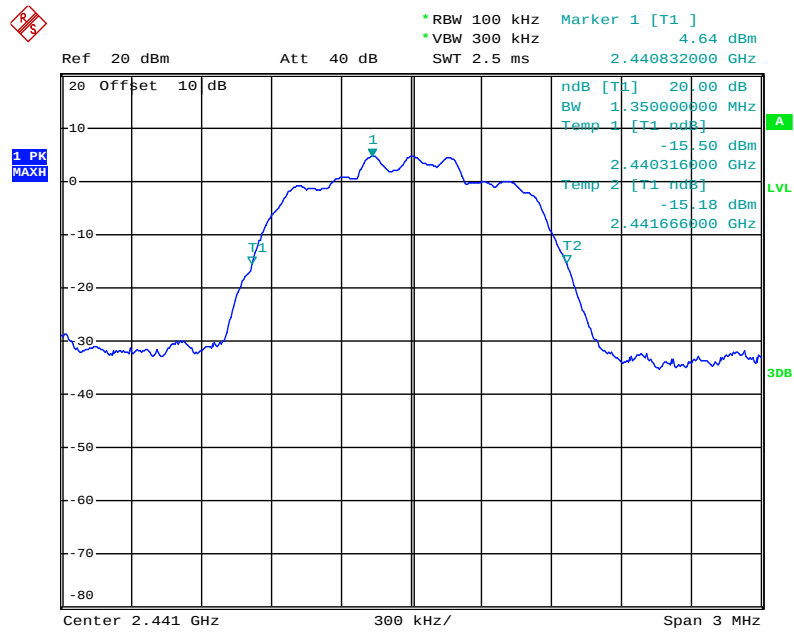
8DPSK Mode

Low channel



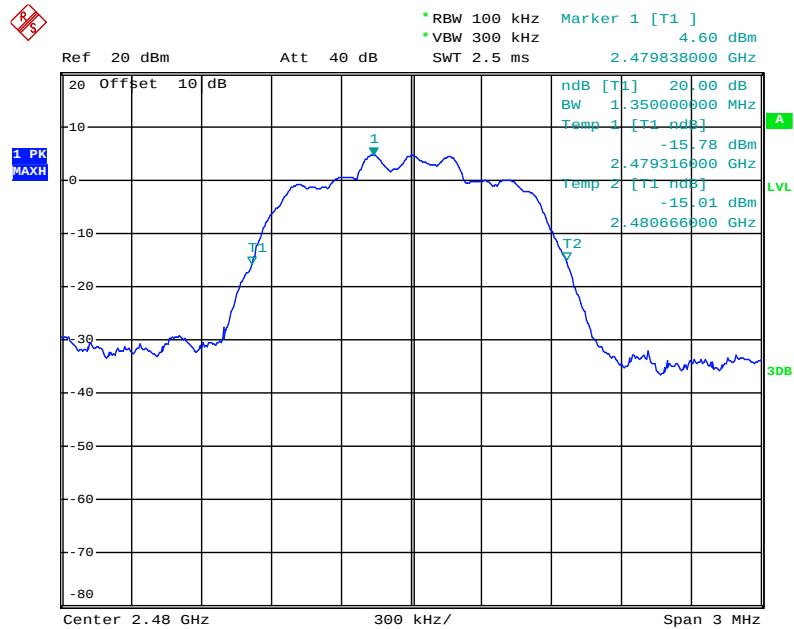
Date: 24.OCT.2017 13:51:12

Middle channel



Date: 24.OCT.2017 13:52:09

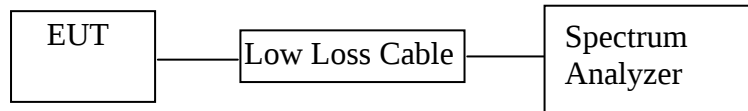
High channel



Date: 24.OCT.2017 13:52:50

6. CARRIER FREQUENCY SEPARATION TEST

6.1. Block Diagram of Test Setup



(EUT: Wireless bluetooth earphones)

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 2MHz.

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

6.5.4.Measurement the channel separation

6.6.Test Result

GFSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.002	25KHz or 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			

Π/4-DQPSK

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

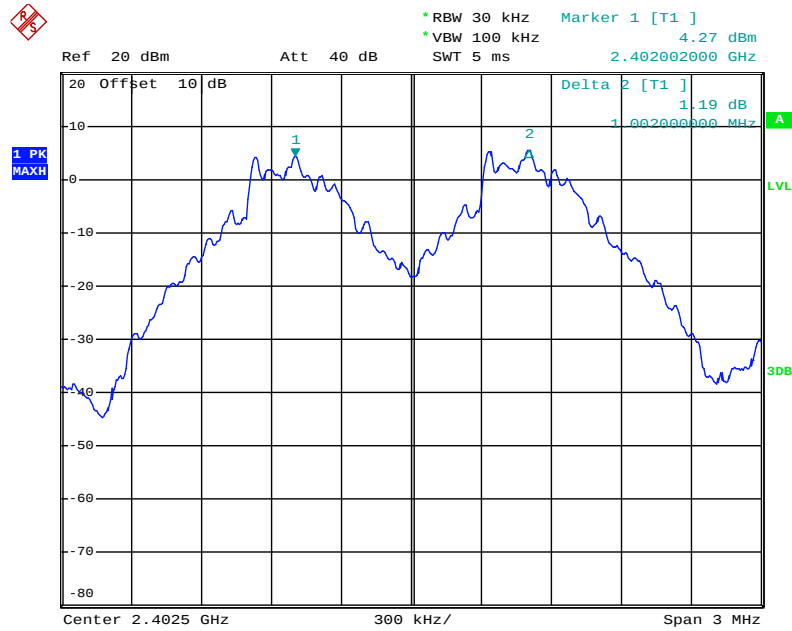
8DPSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.002	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.

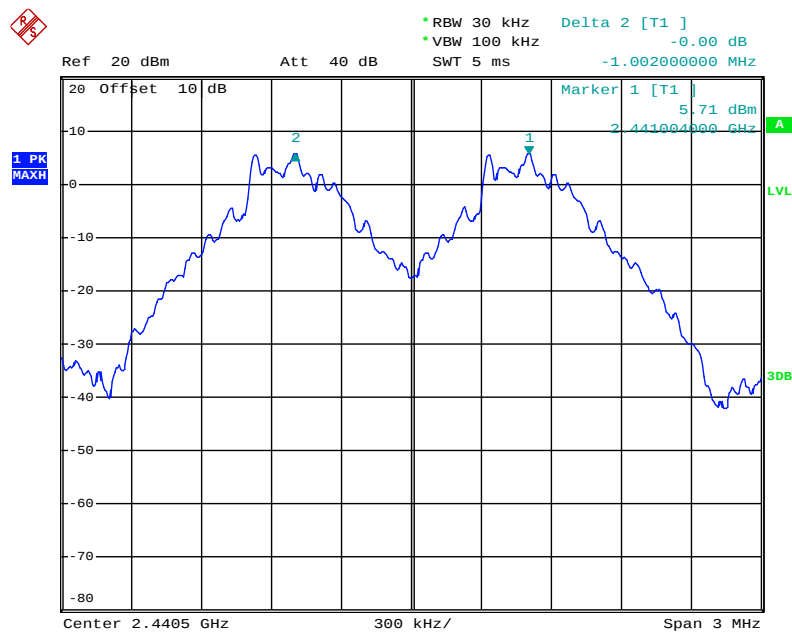
GFSK Mode

Low channel



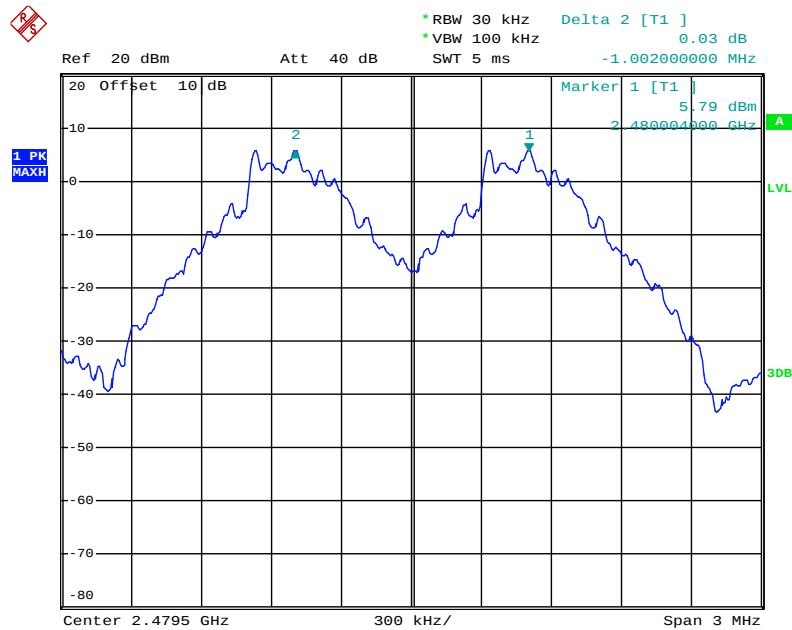
Date: 24.OCT.2017 13:59:40

Middle channel



Date: 24.OCT.2017 14:00:38

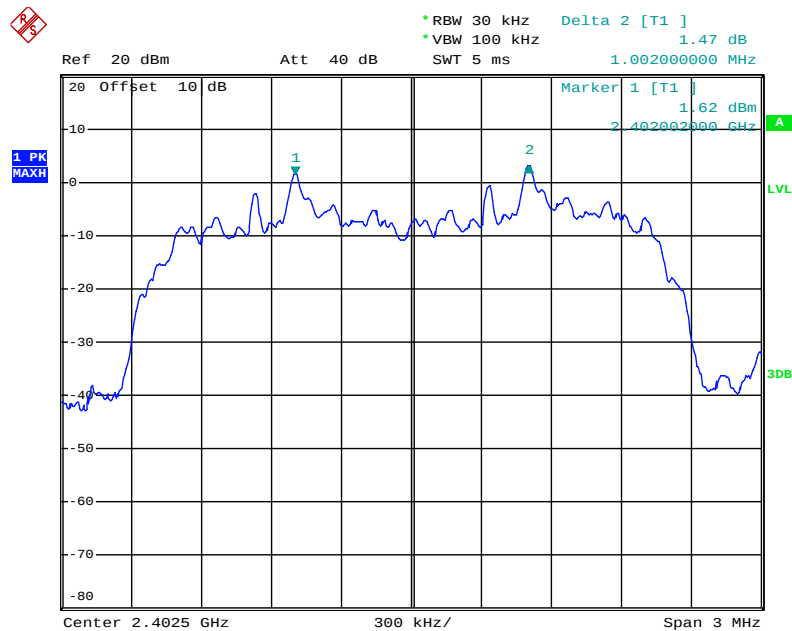
High channel



Date: 24.OCT.2017 14:01:43

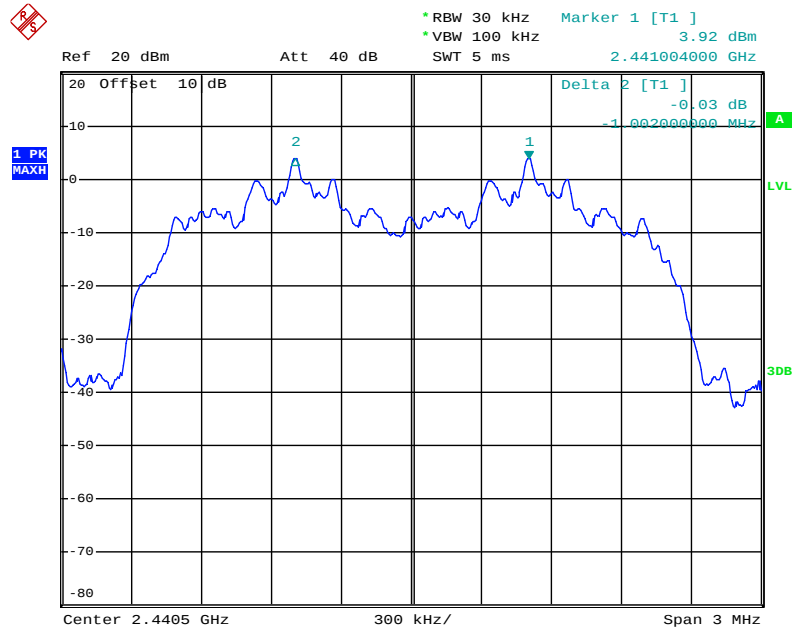
Π/4-DQPSK Mode

Low channel



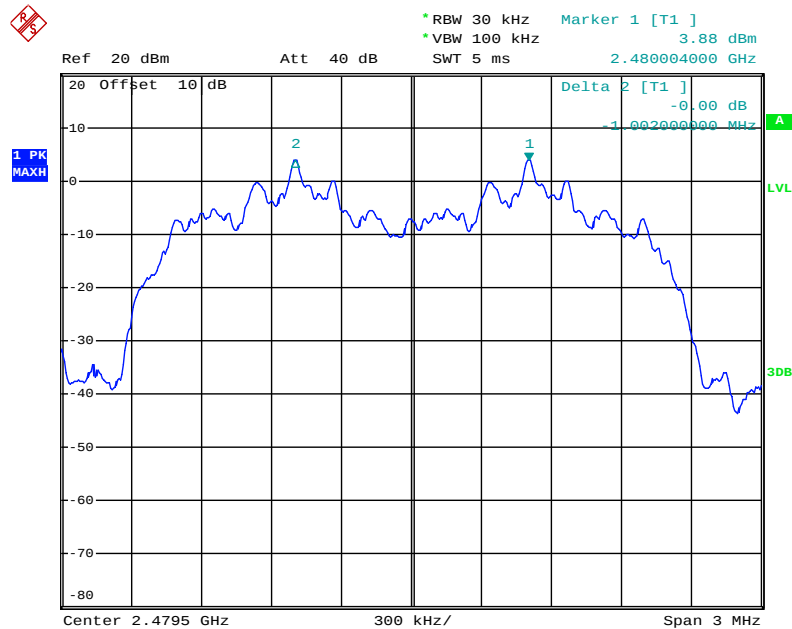
Date: 24.OCT.2017 14:43:43

Middle channel



Date: 24.OCT.2017 14:05:22

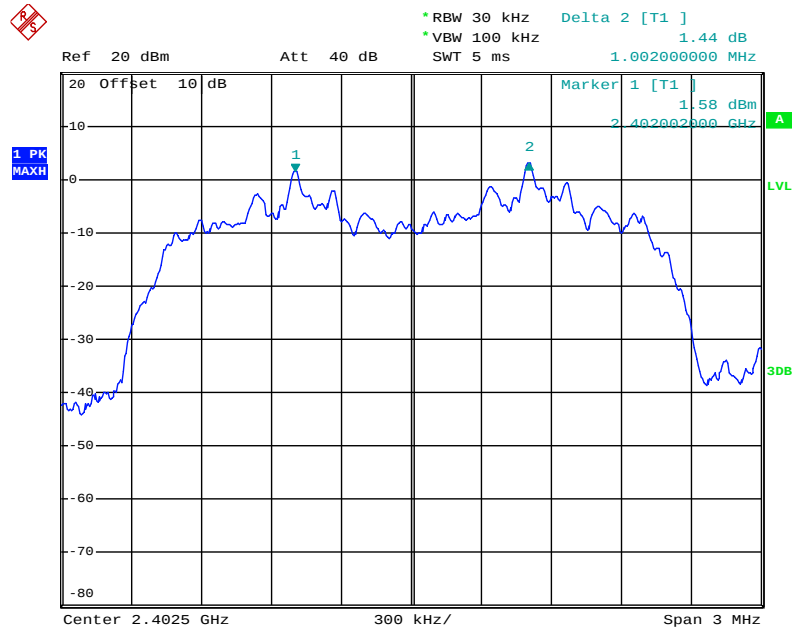
High channel



Date: 24.OCT.2017 14:04:15

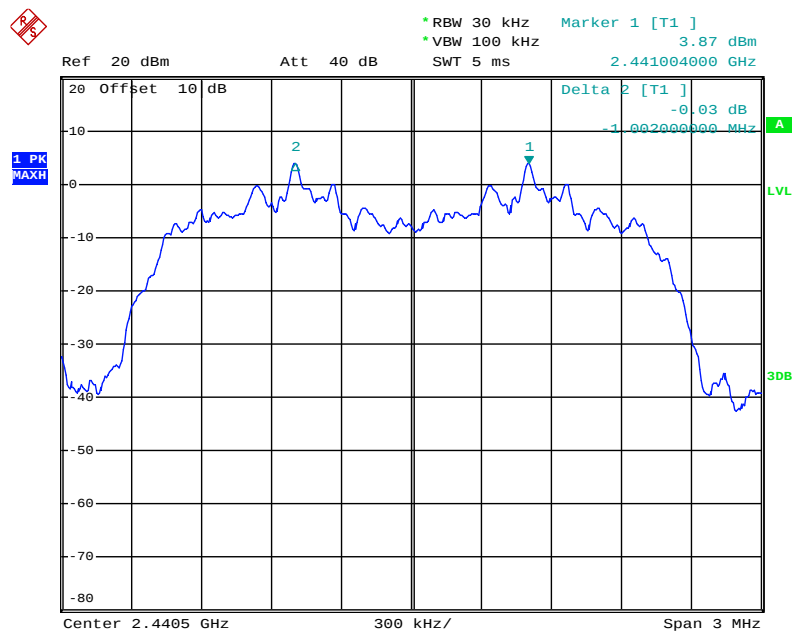
8DPSK Mode

Low channel



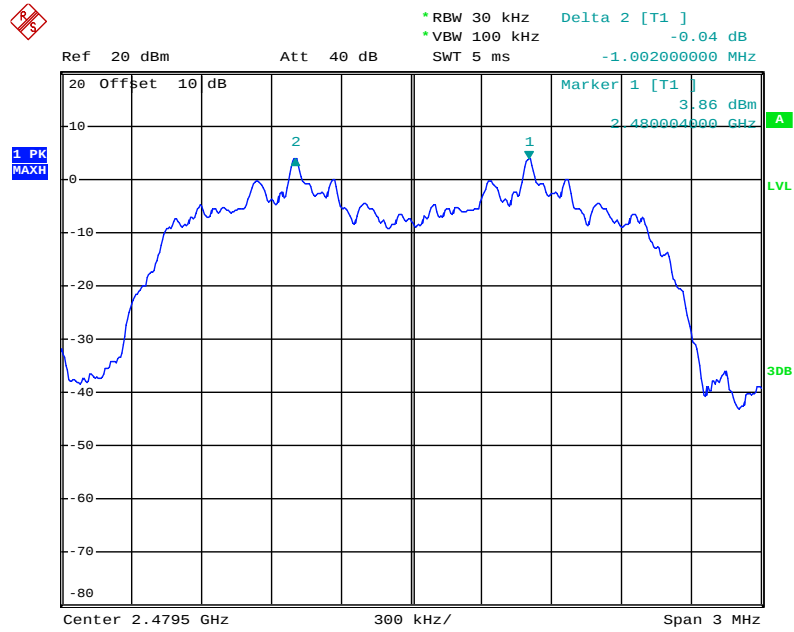
Date: 24.OCT.2017 13:57:18

Middle channel



Date: 24.OCT.2017 13:56:11

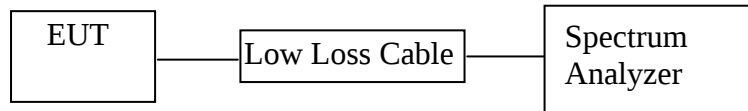
High channel



Date: 24.OCT.2017 13:54:57

7. NUMBER OF HOPPING FREQUENCY TEST

7.1. Block Diagram of Test Setup



(EUT: Wireless bluetooth earphones)

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 RBW=100 kHz, VBW=300 kHz.

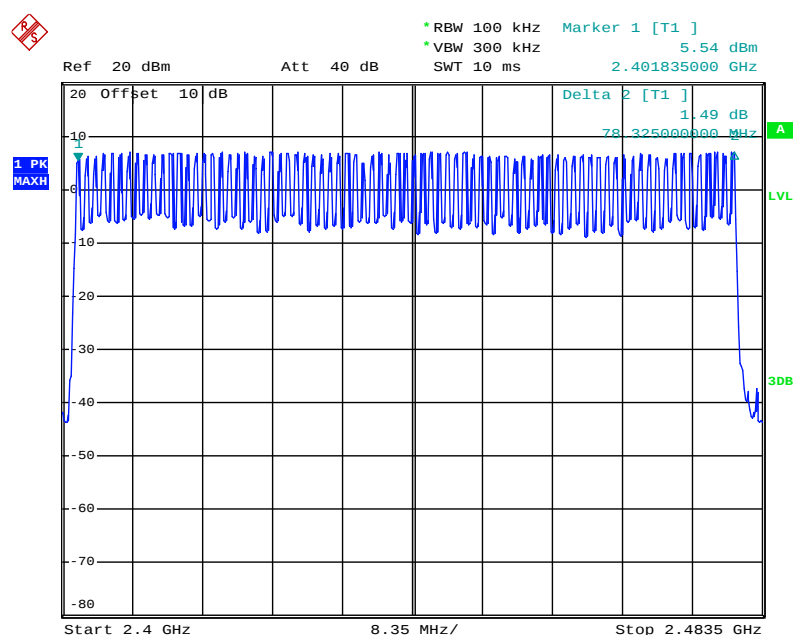
7.5.3. Max hold, view and count how many channel in the band.

7.6.Test Result

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

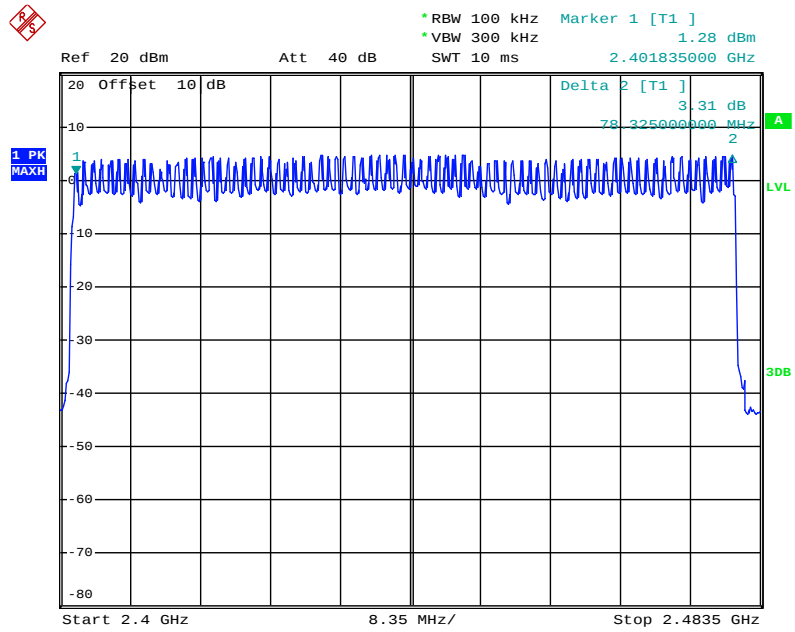
The spectrum analyzer plots are attached as below.

Number of hopping channels(GFSK)



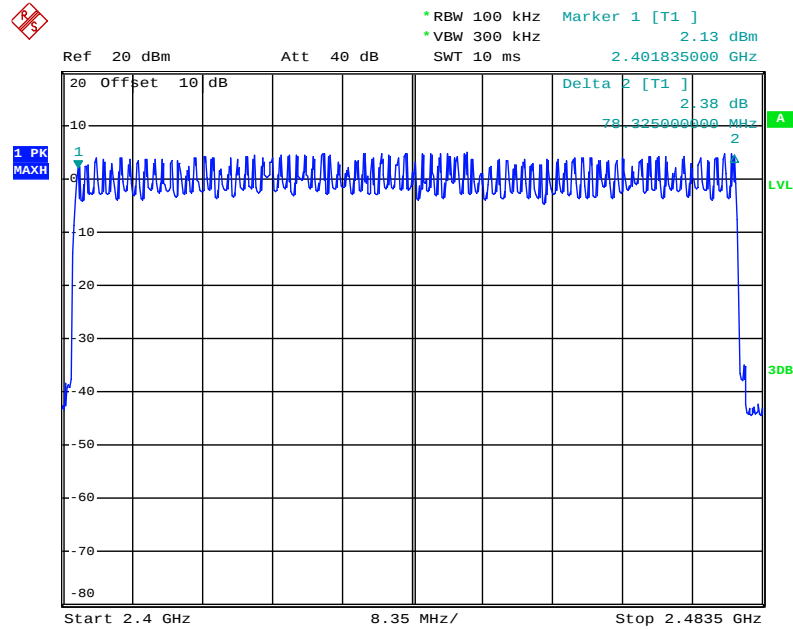
Date: 24.OCT.2017 14:15:06

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



Date: 24.OCT.2017 14:10:42

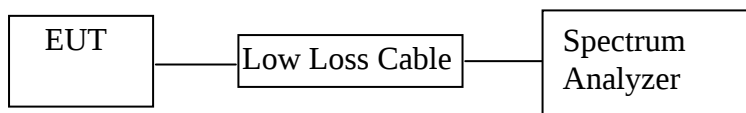
Number of hopping channels(8DPSK)



Date: 24.OCT.2017 14:17:33

8. DWELL TIME TEST

8.1. Block Diagram of Test Setup



(EUT: Wireless bluetooth earphones)

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

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

8.3. EUT Configuration on Measurement

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

8.4. Operating Condition of EUT

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

8.4.2. Turn on the power of all equipment.

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

8.5. Test Procedure

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

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

8.5.3. Set the spectrum analyzer as RBW=1MHz, VBW=3MHz, Span=0Hz, Adjust Sweep=5ms, 10ms, 15ms. Get the pulse time.

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

8.6.Test Result

GFSK Mode

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.450	144.00	400
	2441	0.450	144.00	400
	2480	0.450	144.00	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	1.730	276.80	400
	2441	1.730	276.80	400
	2480	1.730	276.80	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	2.990	318.93	400
	2441	2.990	318.93	400
	2480	2.990	318.93	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6 \times 79)) \times 31.6$				

II/4-DQPSK

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.450	144.00	400
	2441	0.450	144.00	400
	2480	0.450	144.00	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	1.730	276.80	400
	2441	1.730	276.80	400
	2480	1.730	276.80	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	2.990	318.93	400
	2441	2.990	318.93	400
	2480	2.990	318.93	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6 \times 79)) \times 31.6$				

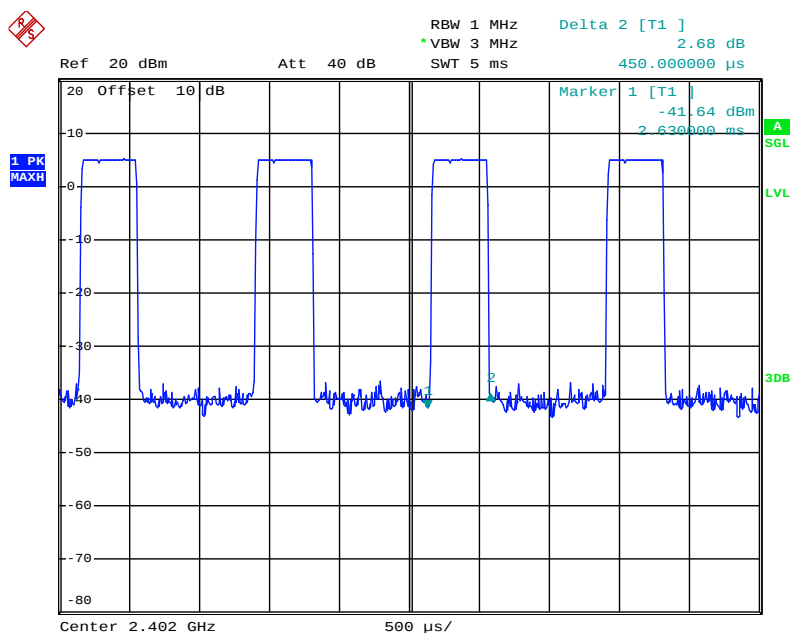
8DPSK Mode

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.450	144.00	400
	2441	0.460	147.20	400
	2480	0.460	147.20	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	1.720	275.20	400
	2441	1.720	275.20	400
	2480	1.720	275.20	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	3.010	321.07	400
	2441	3.010	321.07	400
	2480	3.010	321.07	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.

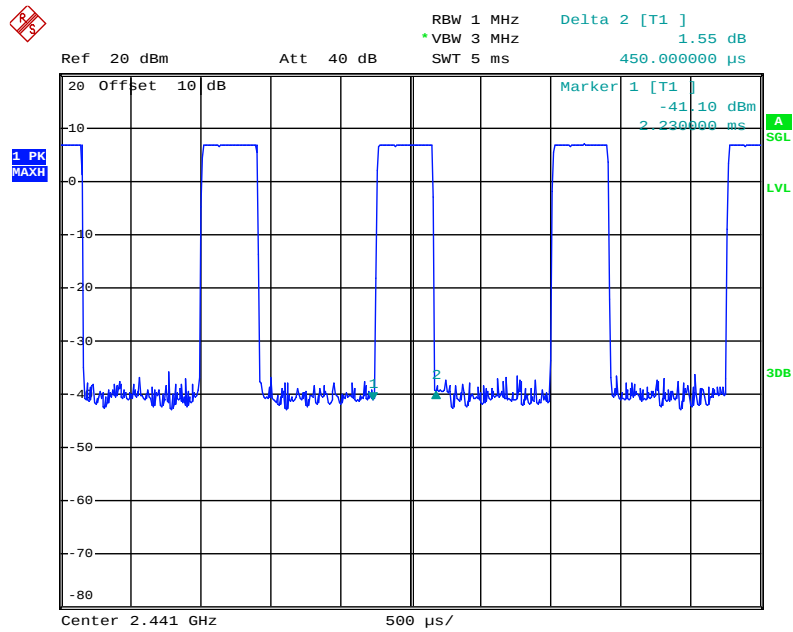
GFSK Mode

DH1 Low channel



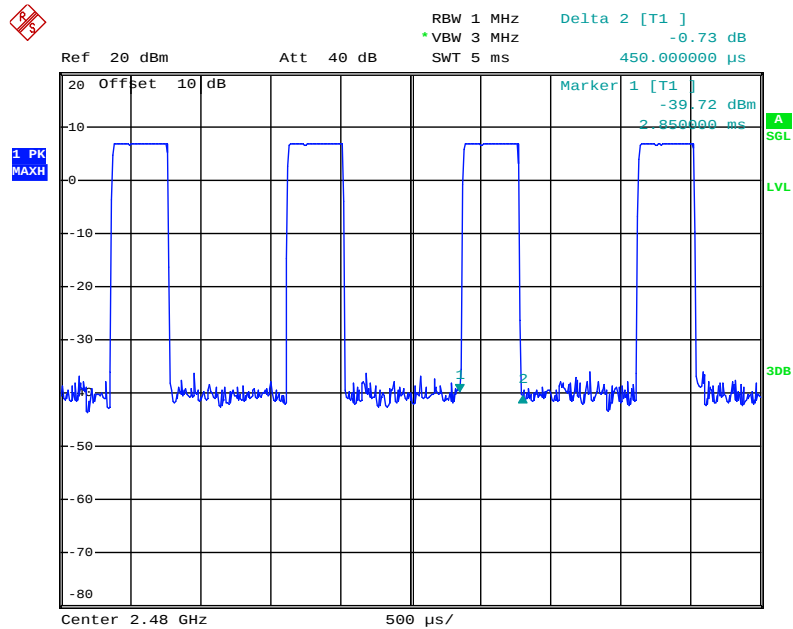
Date: 24.OCT.2017 15:00:25

DH1 Middle channel



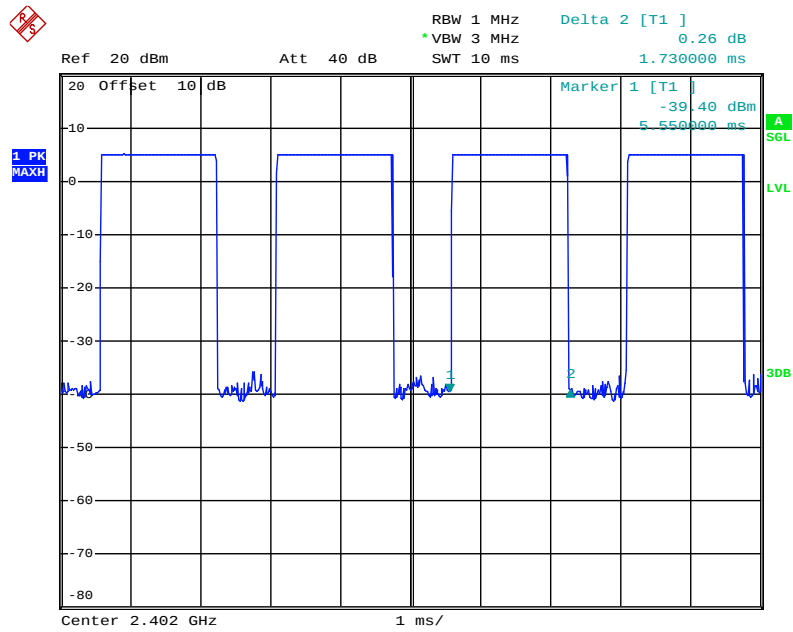
Date: 24.OCT.2017 15:01:22

DH1 High channel



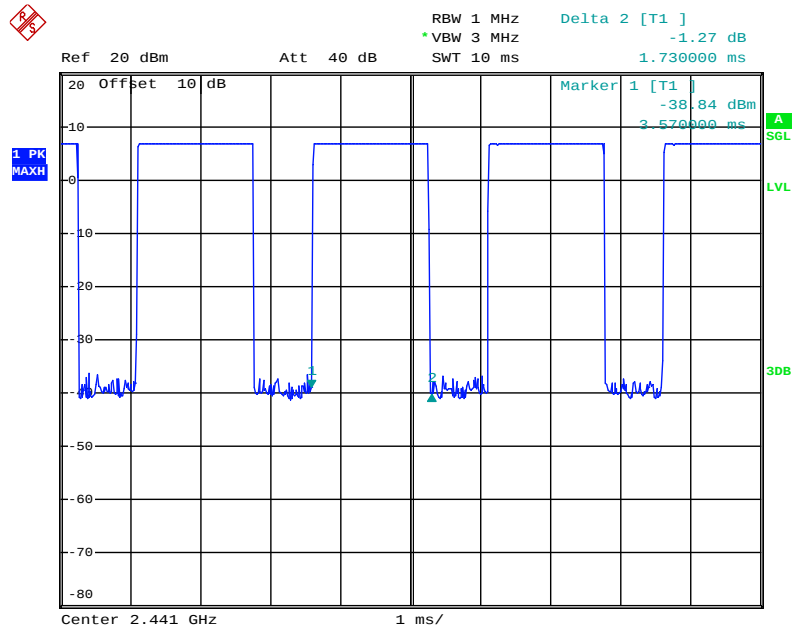
Date: 24.OCT.2017 15:02:18

DH3 Low channel



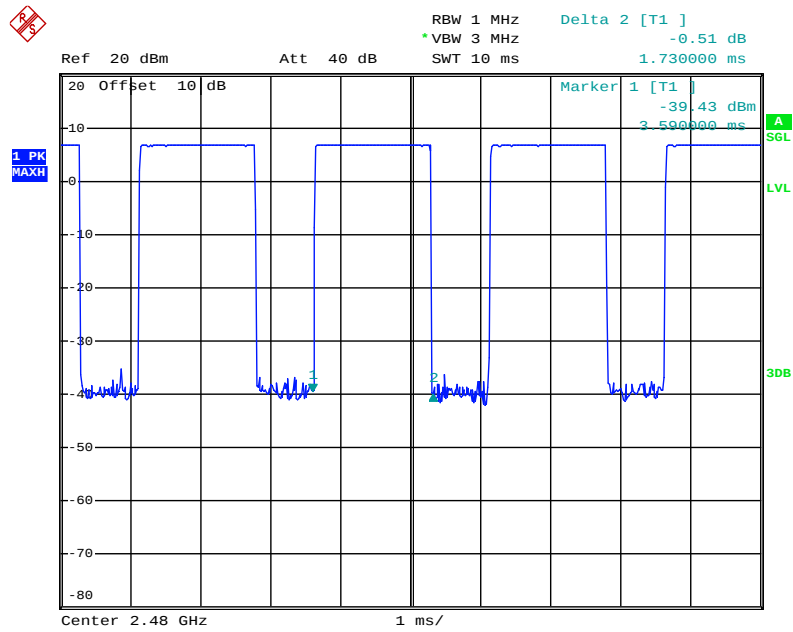
Date: 24.OCT.2017 15:03:26

DH3 Middle channel



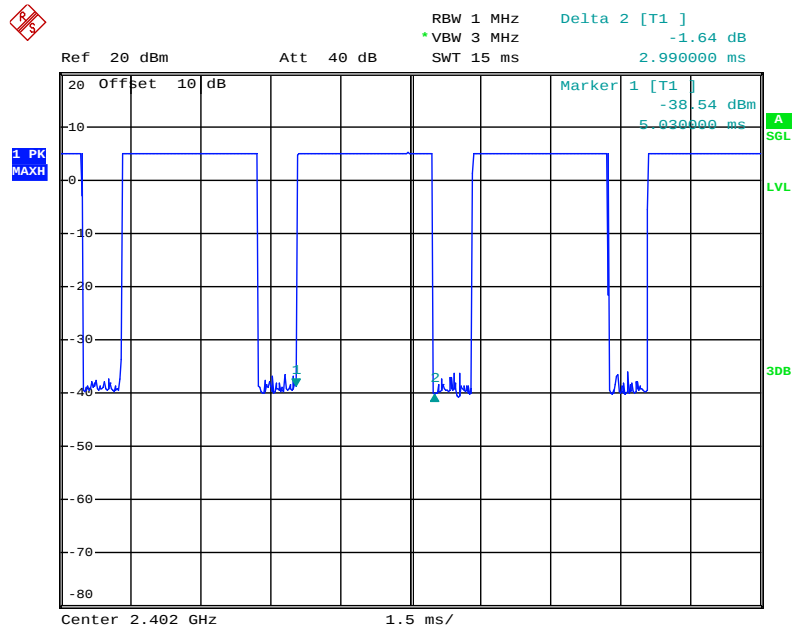
Date: 24.OCT.2017 15:04:29

DH3 High channel



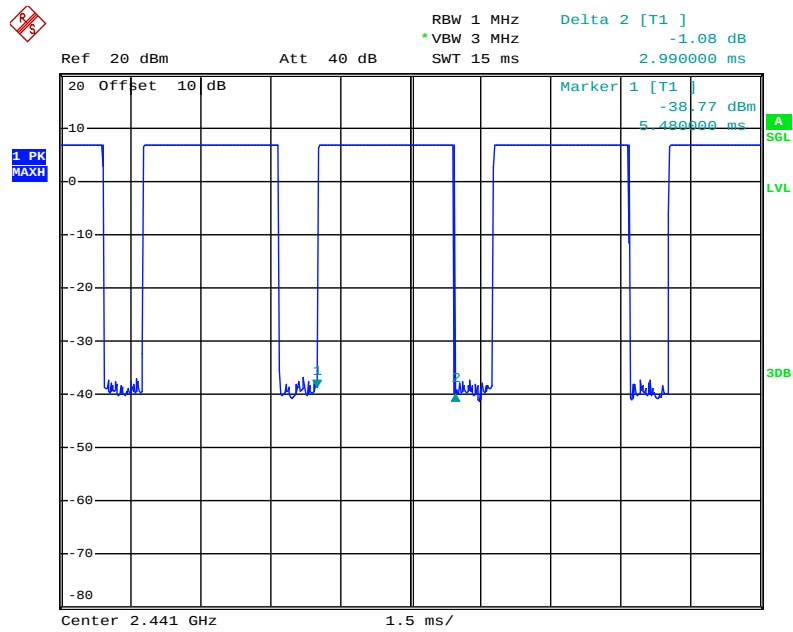
Date: 24.OCT.2017 15:05:15

DH5 Low channel



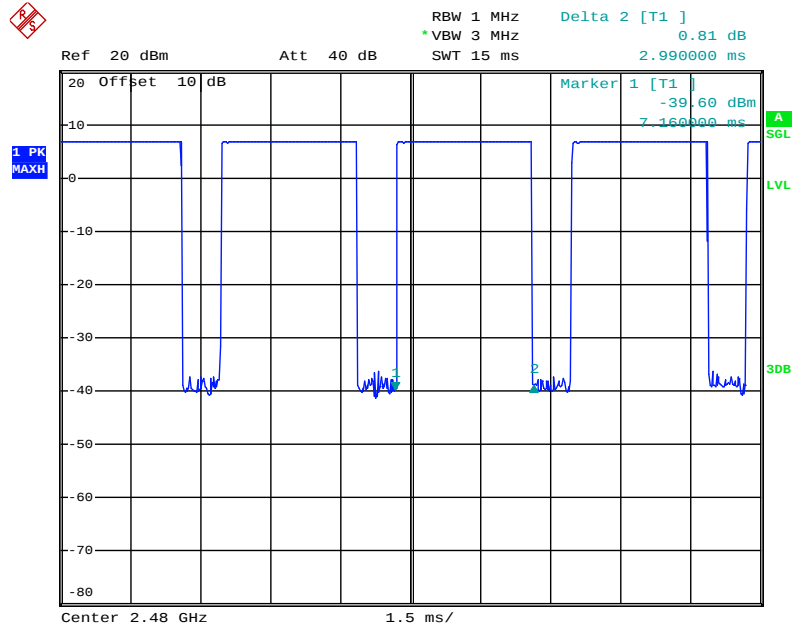
Date: 24.OCT.2017 15:06:31

DH5 Middle channel



Date: 24.OCT.2017 15:07:30

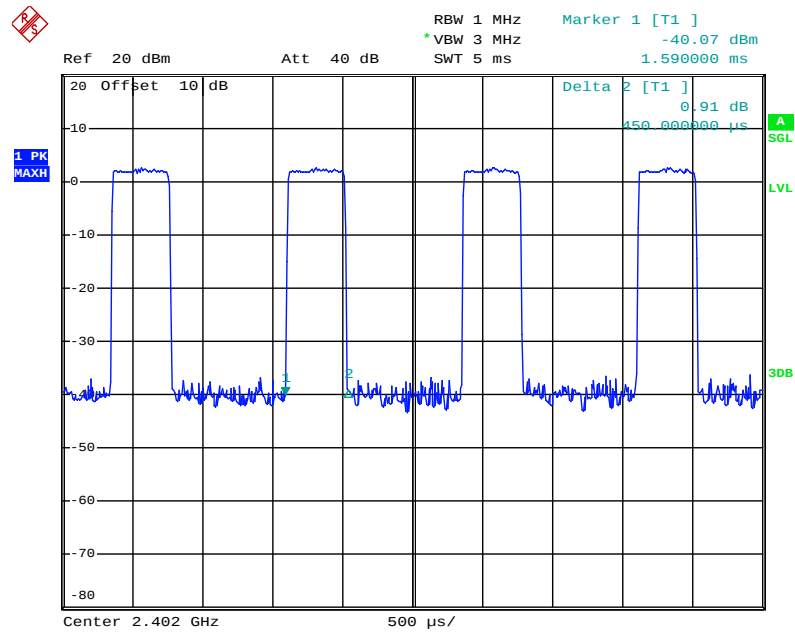
DH5 High channel



Date: 24.OCT.2017 15:08:07

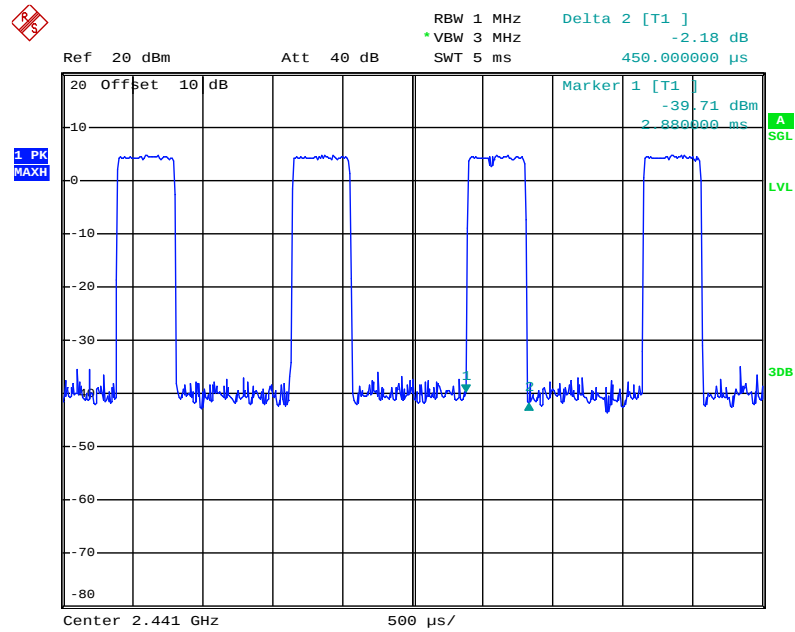
Π/4-DQPSK

2DH1 Low channel



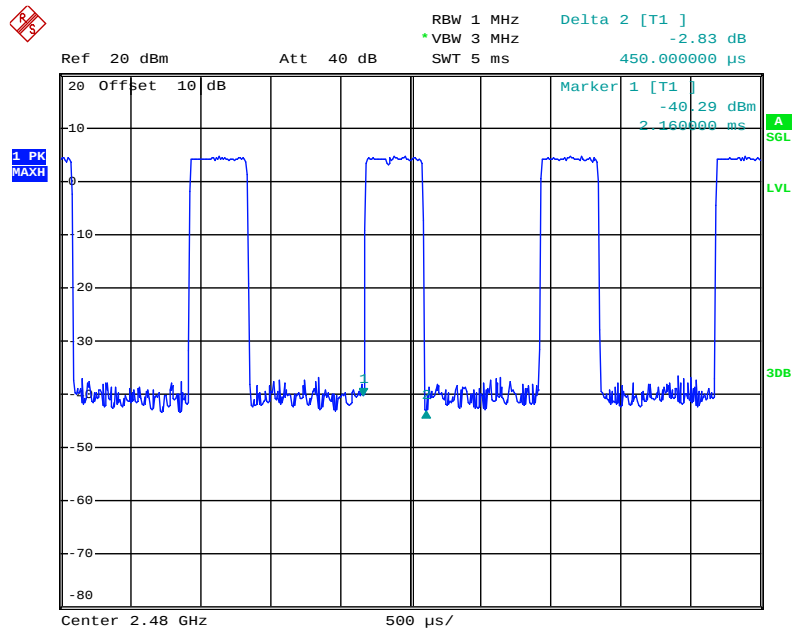
Date: 24.OCT.2017 14:45:48

2DH1 Middle channel



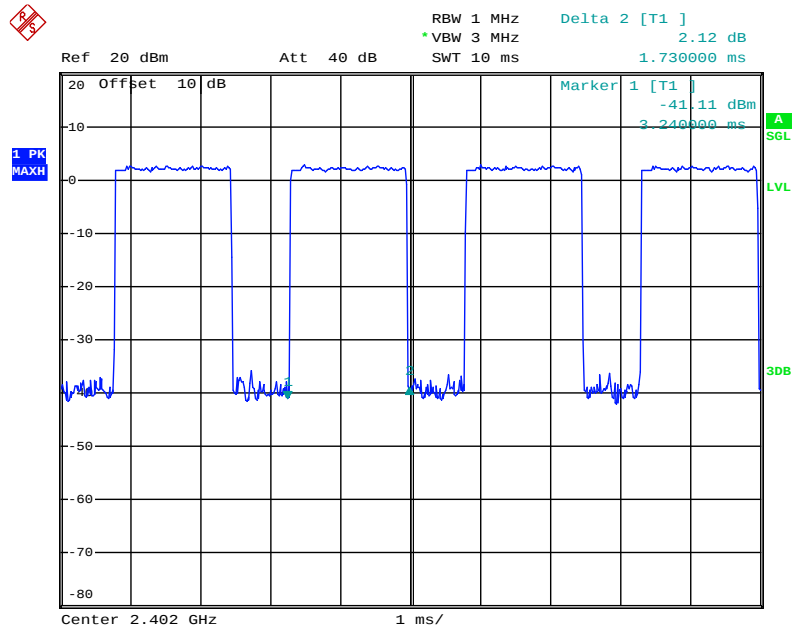
Date: 24.OCT.2017 14:47:26

2DH1 High channel



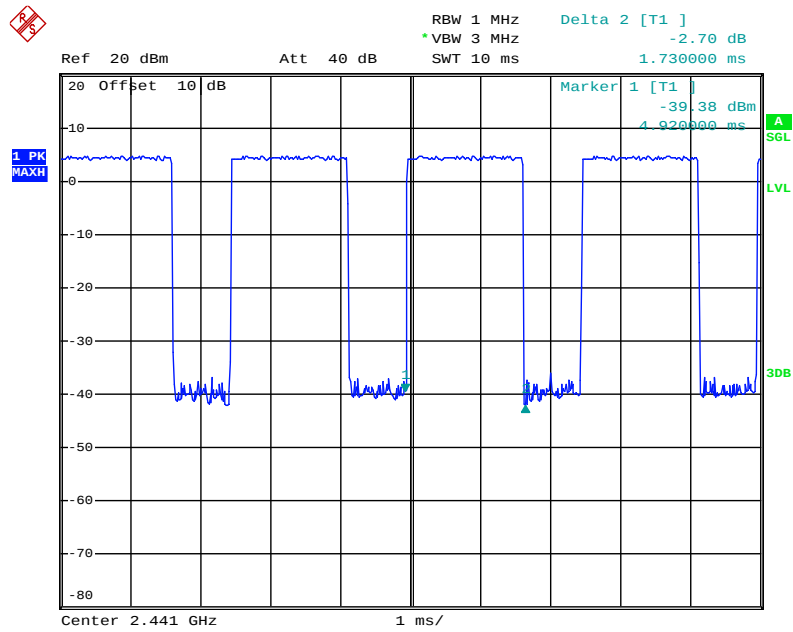
Date: 24.OCT.2017 14:49:19

2DH3 Low channel



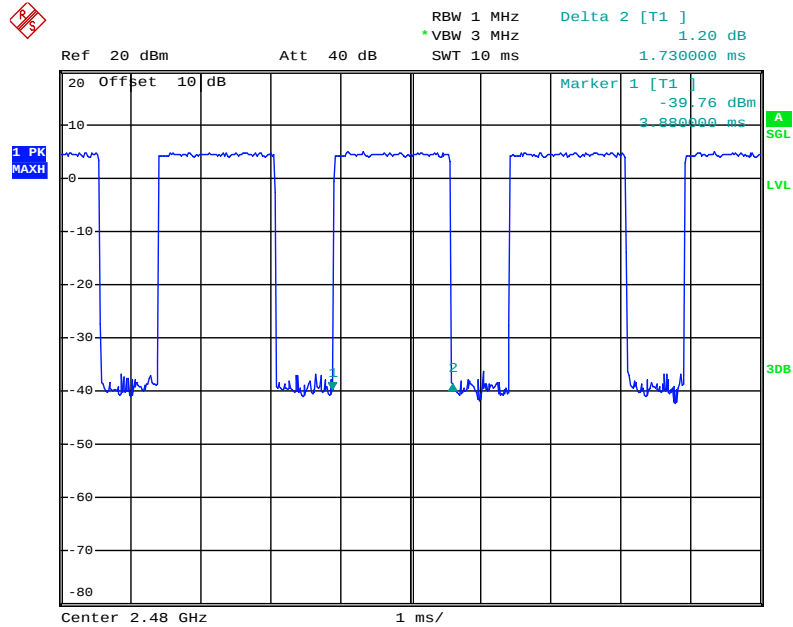
Date: 24.OCT.2017 14:52:41

2DH3 Middle channel



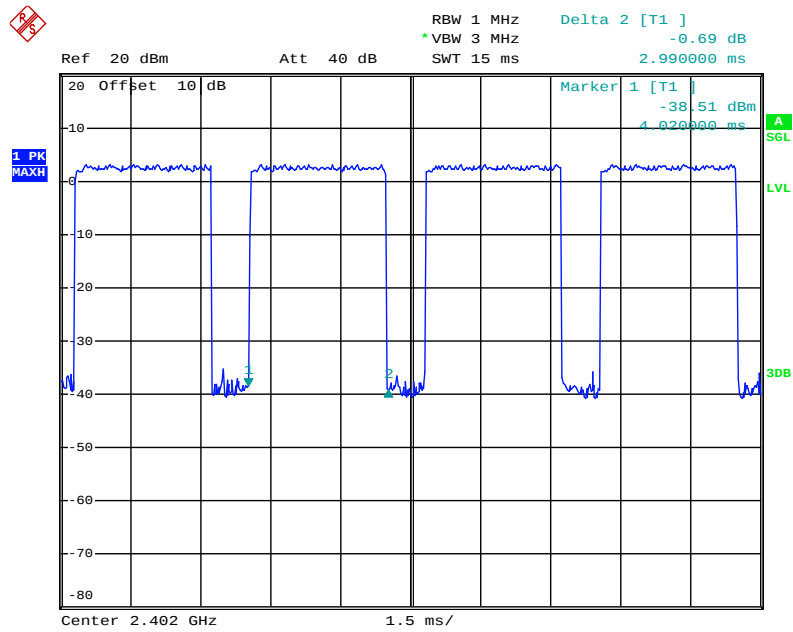
Date: 24.OCT.2017 14:51:19

2DH3 High channel



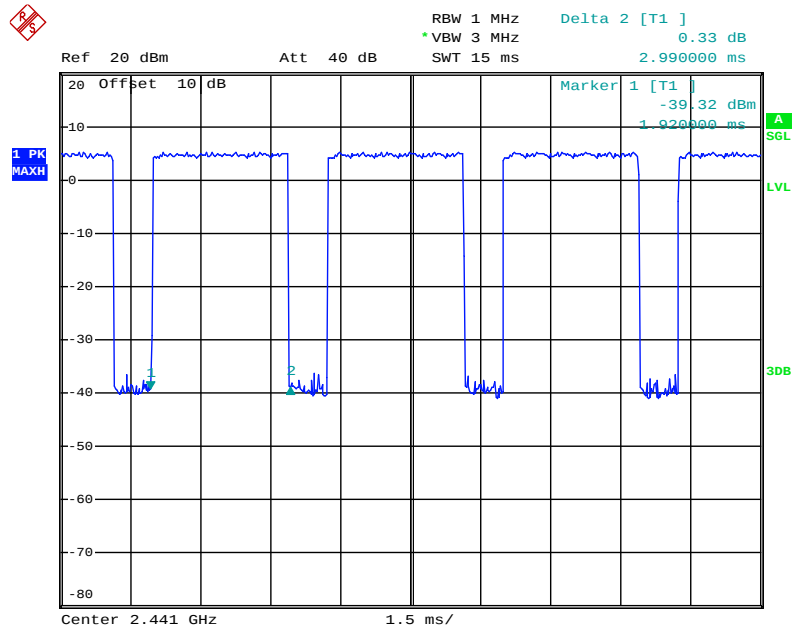
Date: 24.OCT.2017 14:50:16

2DH5 Low channel



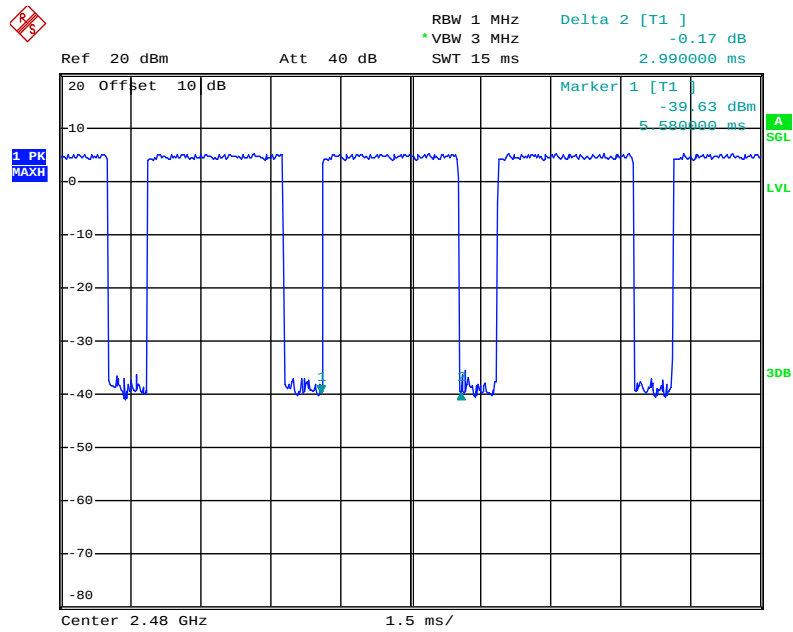
Date: 24.OCT.2017 14:54:43

2DH5 Middle channel



Date: 24.OCT.2017 14:55:24

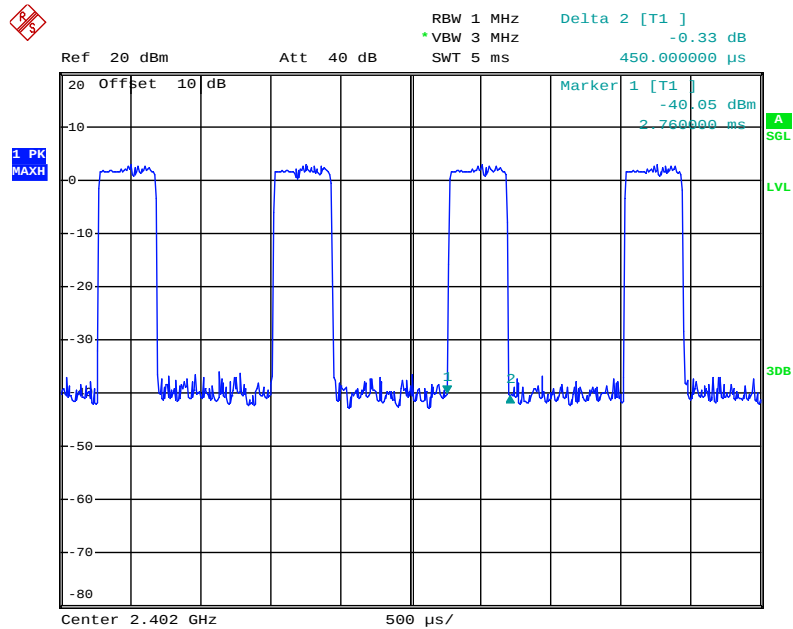
2DH5 High channel



Date: 24.OCT.2017 14:56:02

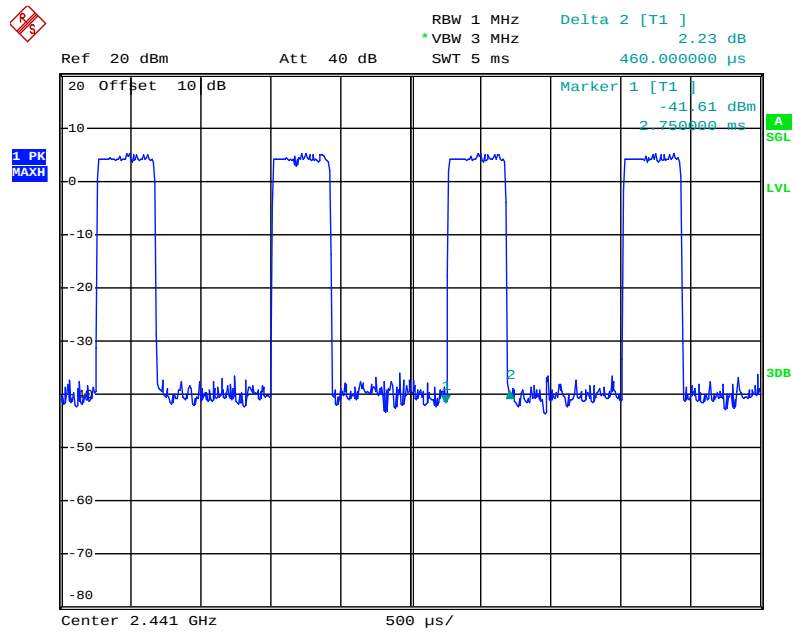
8DPSK Mode

3DH1 Low channel



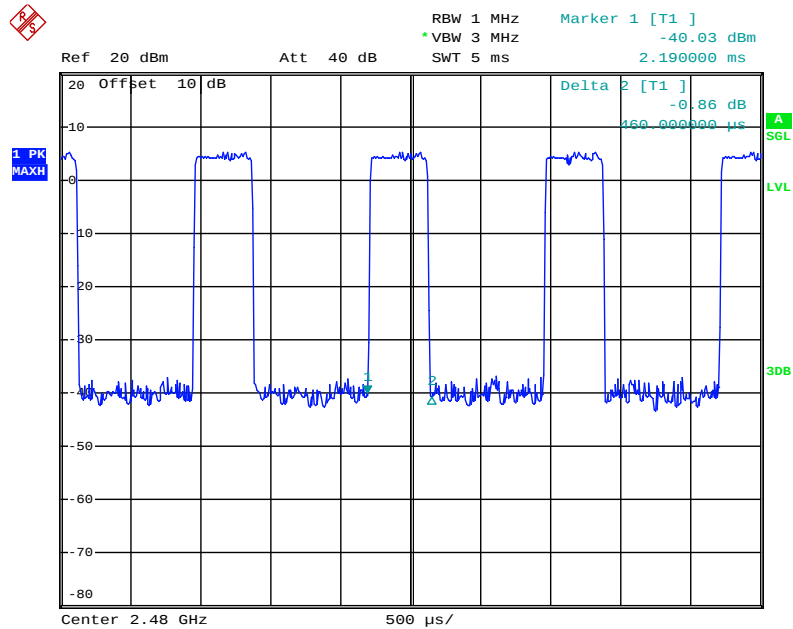
Date: 24.OCT.2017 15:09:38

3DH1 Middle channel



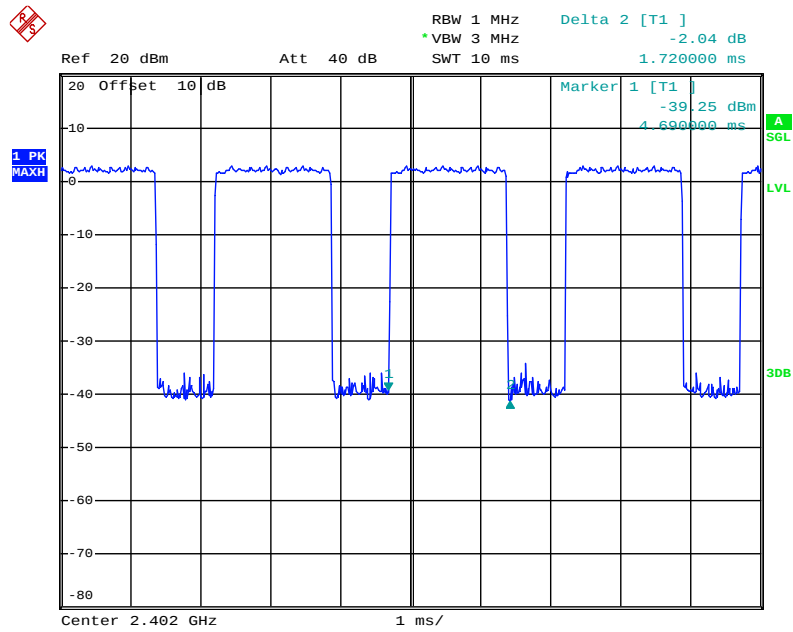
Date: 24.OCT.2017 15:10:29

3DH1 High channel



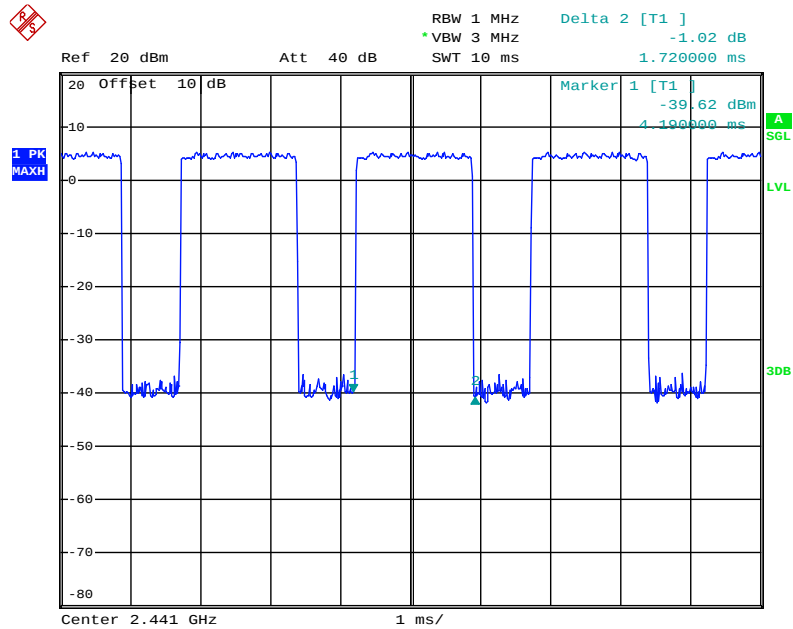
Date: 24.OCT.2017 15:11:22

3DH3 Low channel



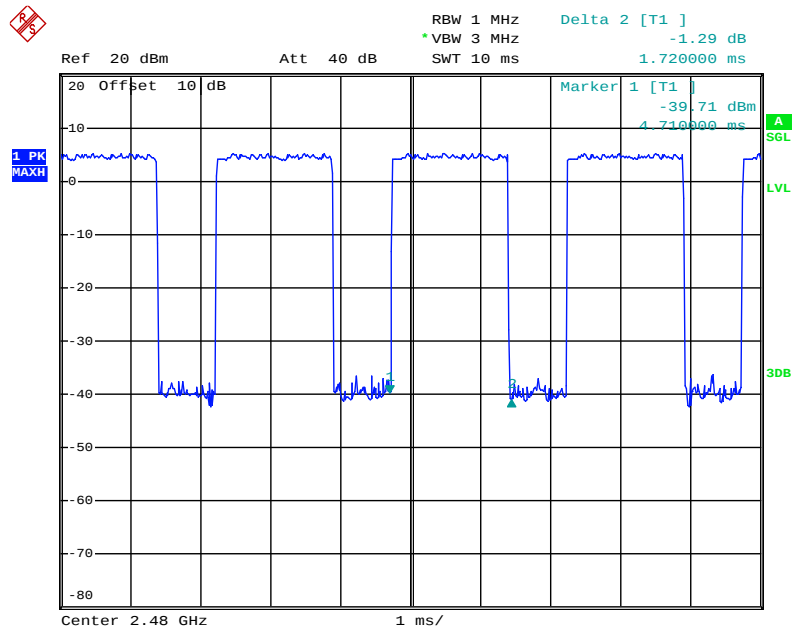
Date: 24.OCT.2017 15:13:05

3DH3 Middle channel



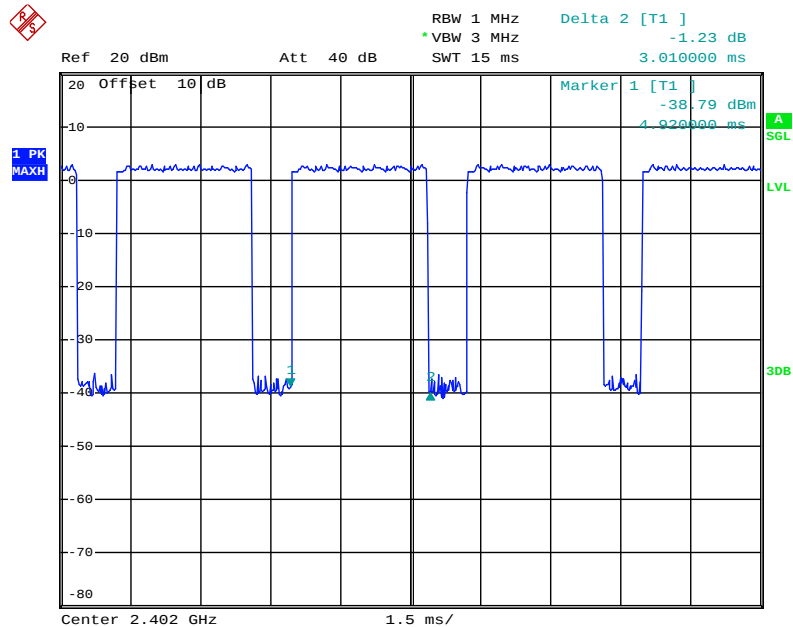
Date: 24.OCT.2017 15:14:51

3DH3 High channel



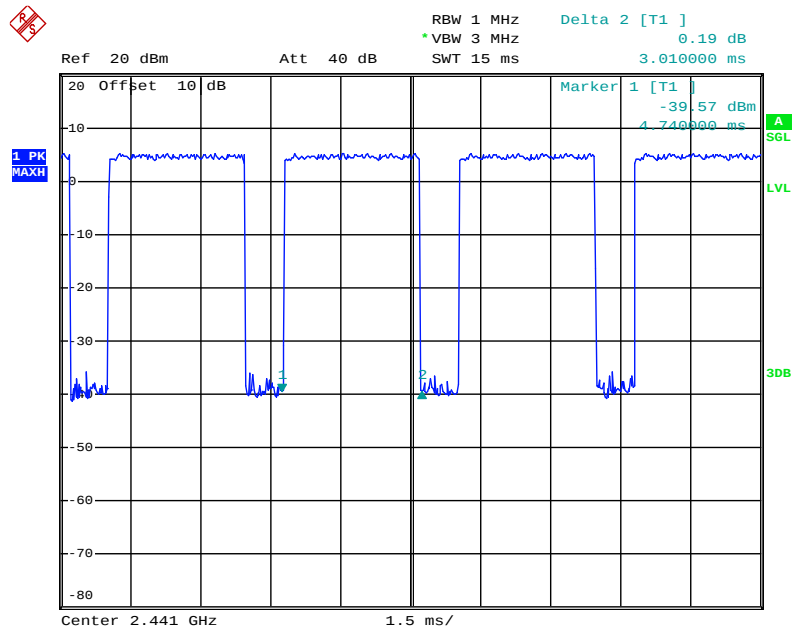
Date: 24.OCT.2017 15:15:55

3DH5 Low channel



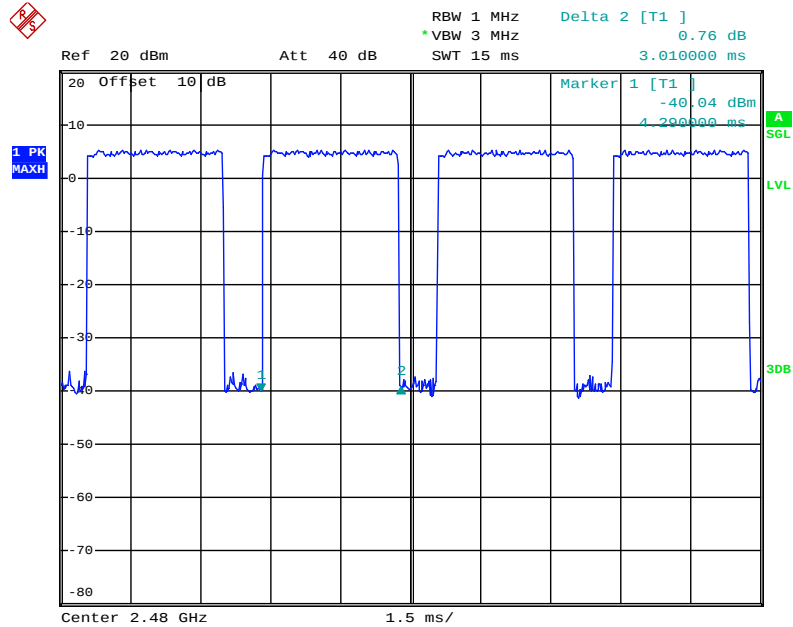
Date: 24.OCT.2017 15:17:53

3DH5 Middle channel



Date: 24.OCT.2017 15:18:31

3DH5 High channel



Date: 24.OCT.2017 15:19:10

9. MAXIMUM PEAK OUTPUT POWER TEST

9.1. Block Diagram of Test Setup



(EUT: Wireless bluetooth earphones)

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 3MHz and VBW to 3MHz.

9.5.3. Measurement the maximum peak output power.

9.6. Test Result

GFSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	5.48/0.0035	21 / 0.125
Middle	2441	6.54/0.0045	21 / 0.125
High	2480	6.81/0.0048	21 / 0.125

II/4-DQPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	3.24/0.0021	21 / 0.125
Middle	2441	5.35/0.0034	21 / 0.125
High	2480	5.40/0.0035	21 / 0.125

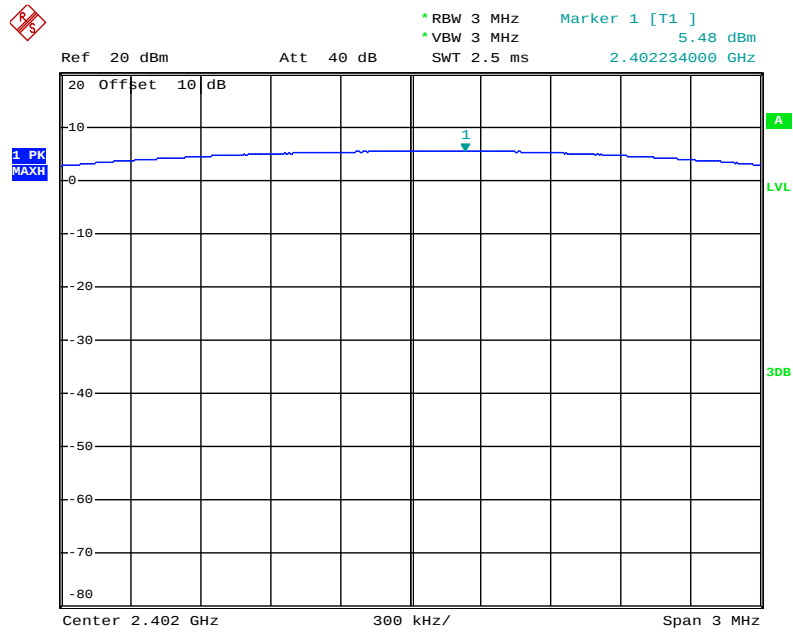
8DPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	3.77/0.0024	21 / 0.125
Middle	2441	5.59/0.0036	21 / 0.125
High	2480	5.72/0.0037	21 / 0.125

The spectrum analyzer plots are attached as below.

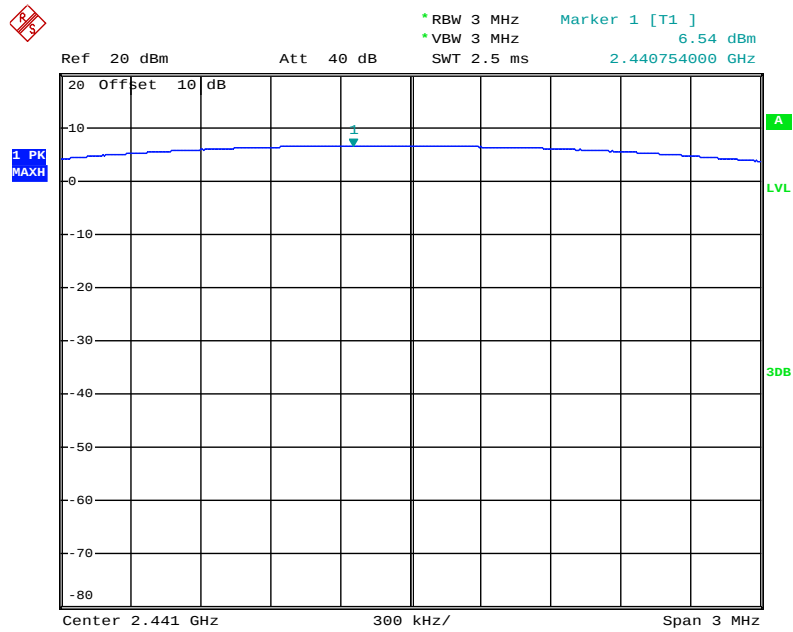
GFSK Mode

Low channel



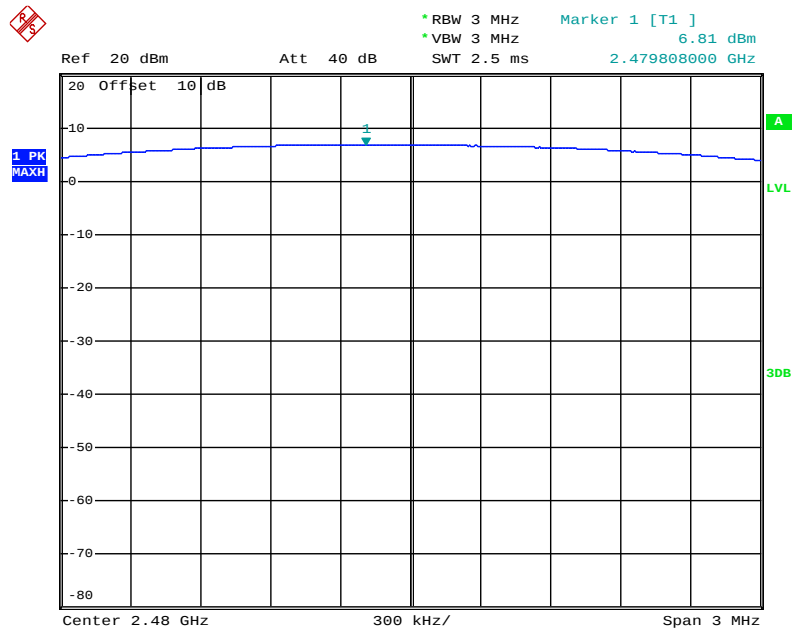
Date: 24.OCT.2017 14:20:54

Middle channel



Date: 24.OCT.2017 14:21:22

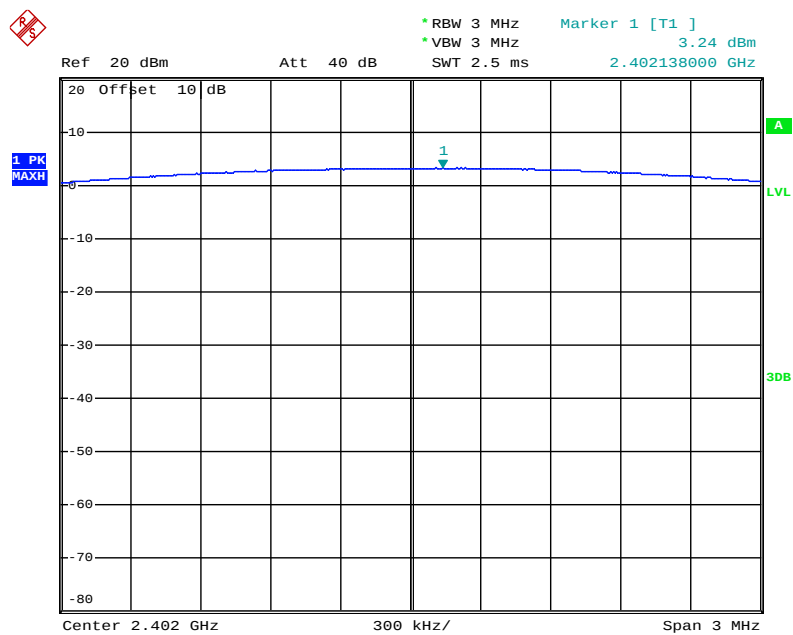
High channel



Date: 24.OCT.2017 14:21:47

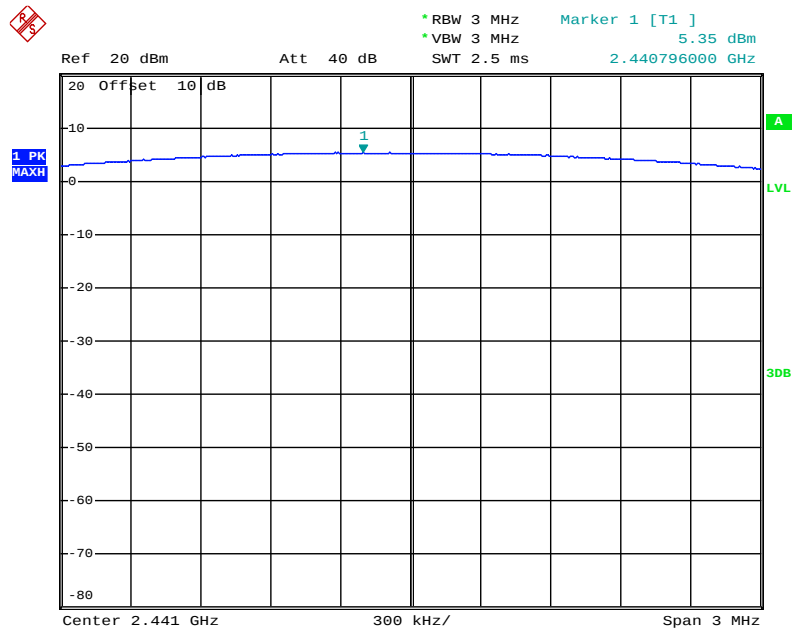
II/4-DQPSK Mode

Low channel



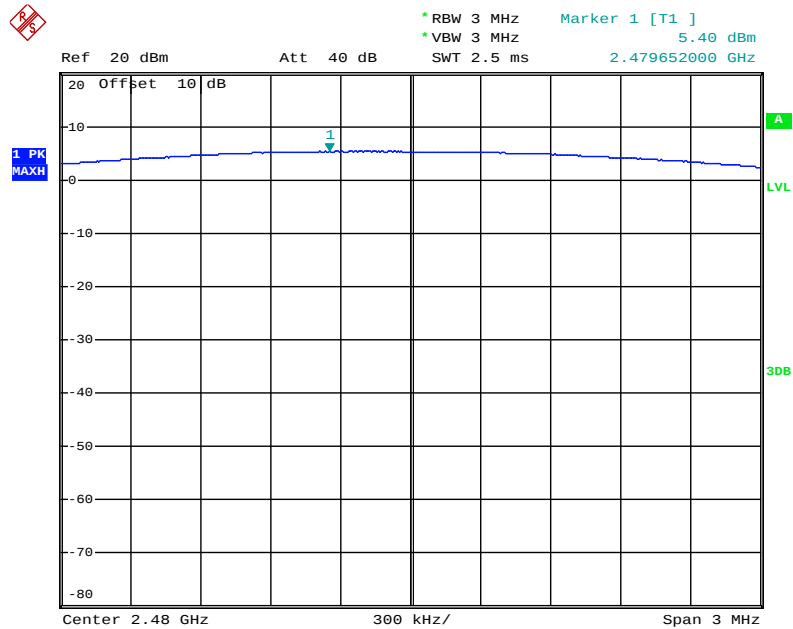
Date: 24.OCT.2017 14:24:43

Middle channel



Date: 24.OCT.2017 14:23:57

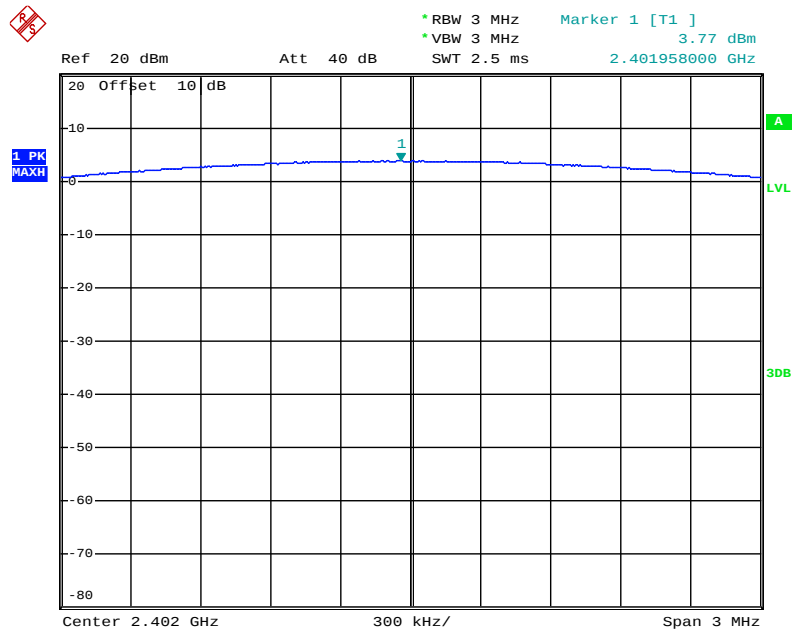
High channel



Date: 24.OCT.2017 14:23:12

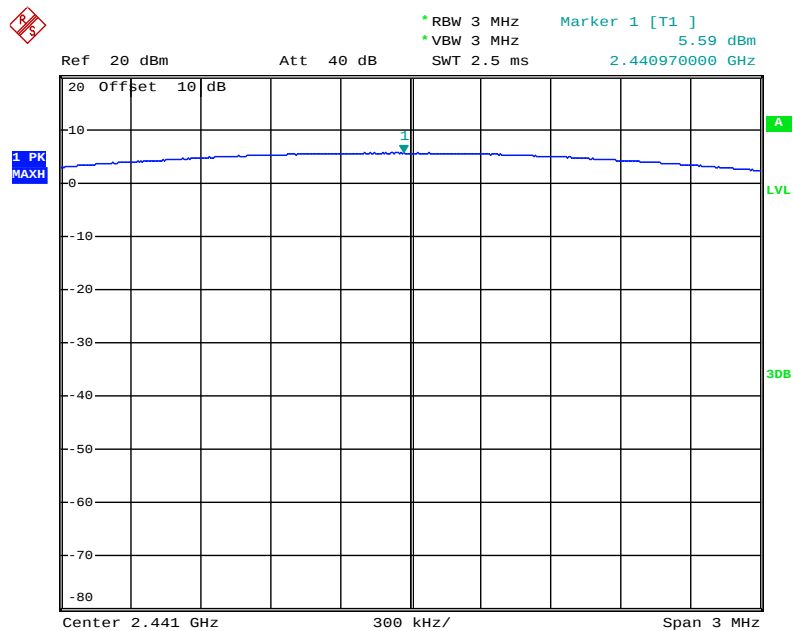
8DPSK Mode

Low channel



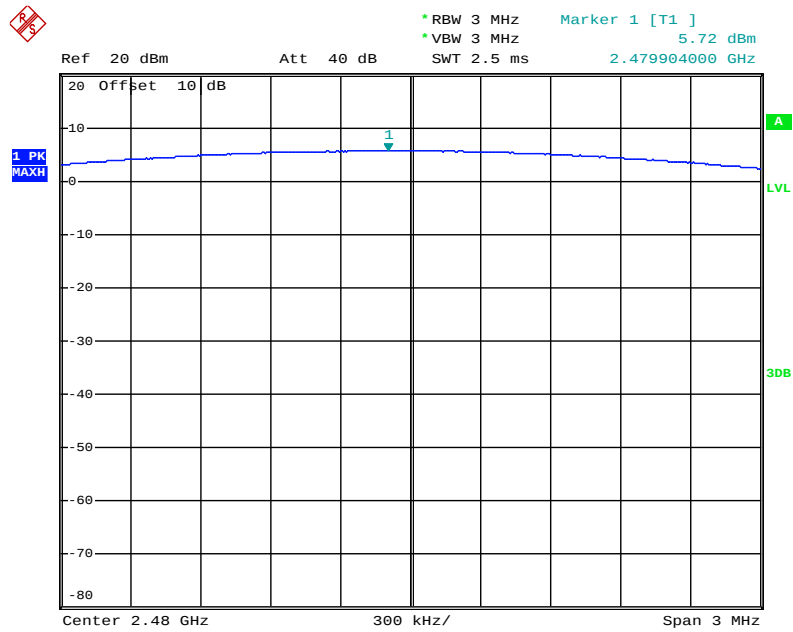
Date: 24.OCT.2017 14:25:49

Middle channel



Date: 24.OCT.2017 14:26:45

High channel

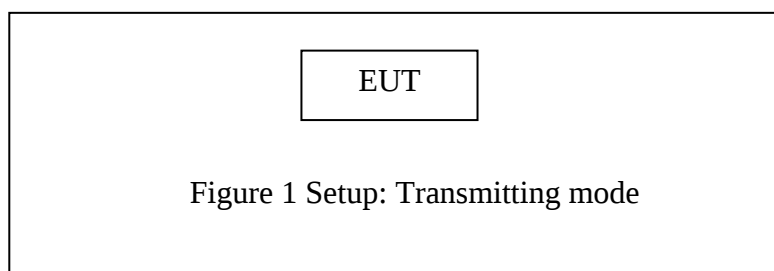


Date: 24.OCT.2017 14:27:35

10.RADIATED EMISSION TEST

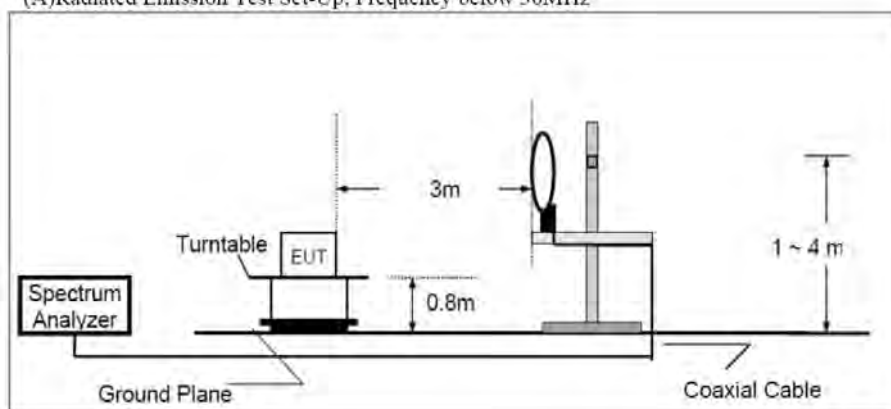
10.1.Block Diagram of Test Setup

10.1.1.Block diagram of connection between the EUT and peripherals

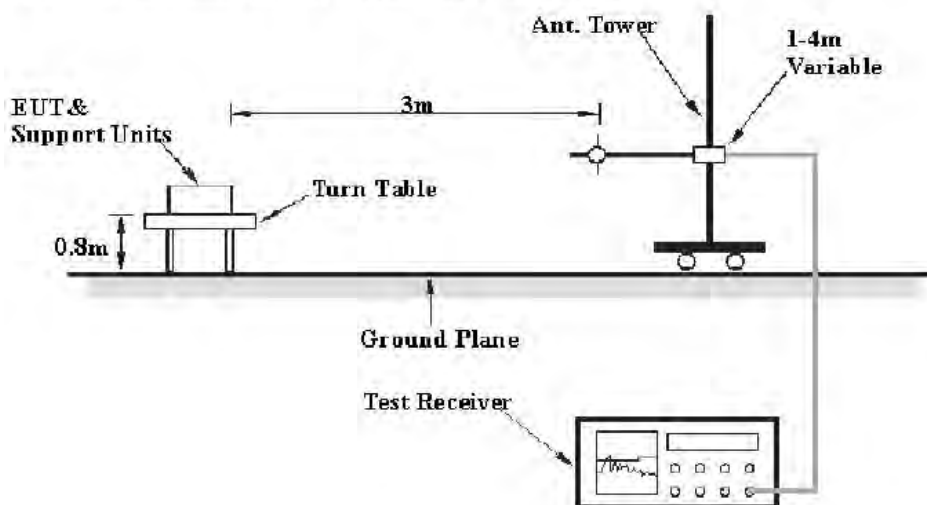


10.1.2.Semi-Anechoic Chamber Test Setup Diagram

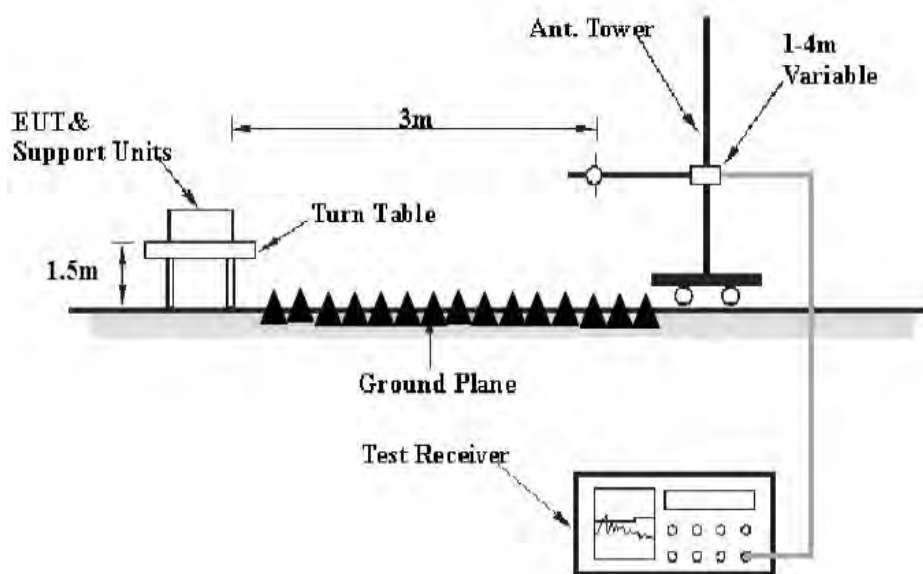
(A)Radiated Emission Test Set-Up, Frequency below 30MHz



(B)Radiated Emission Test Set-Up, Frequency 30MHz-1GHz



(C) Radiated Emission Test Set-Up, Frequency above 1GHz



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 Section15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

10.4.Configuration of EUT on Measurement

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

10.5. Operating Condition of EUT

10.5.1. Setup the EUT and simulator as shown as Section 10.1.

10.5.2. Turn on the power of all equipment.

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

10.6. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground(Below 1GHz). The EUT and its simulators are placed on a turntable, which is 1.5 meter high above ground(Above 1GHz). 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 bi-log 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 EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

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

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

10.7.Data Sample

Frequency (MHz)	Reading (dB μ v)	Factor (dB/m)	Result (dB μ v/m)	Limit (dB μ v/m)	Margin (dB)	Remark
X.XX	48.69	-13.35	35.34	46	-10.66	QP

Frequency(MHz) = Emission frequency in MHz

Reading(dB μ v) = Uncorrected Analyzer/Receiver reading

Factor (dB/m) = Antenna factor + Cable Loss – Amplifier gain

Result(dB μ v/m) = Reading(dB μ v) + Factor(dB/m)

Limit (dB μ v/m) = Limit stated in standard

Margin (dB) = Result(dB μ v/m) - Limit (dB μ v/m)

QP = Quasi-peak Reading

Calculation Formula:

Margin(dB) = Result (dB μ V/m)–Limit(dB μ V/m)

Result(dB μ V/m)= Reading(dB μ V)+ Factor(dB/m)

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the limit.

10.8.The Field Strength of Radiation Emission Measurement Results

PASS.

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

2. The test frequency is from 30MHz to 25GHz, The 18-25GHz emissions are not reported, because the levels are too low against the limit.

Below 1GHz



ACCURATE TECHNOLOGY CO., LTD.

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

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

Job No.: STAR2017 #1030

Polarization: Horizontal

Standard: FCC Class B 3M Radiated

Power Source: DC 3.7V

Test item: Radiation Test

Date: 17/10/24/

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

Time: 15/32/00

EUT: Wireless bluetooth earphones

Engineer Signature: star

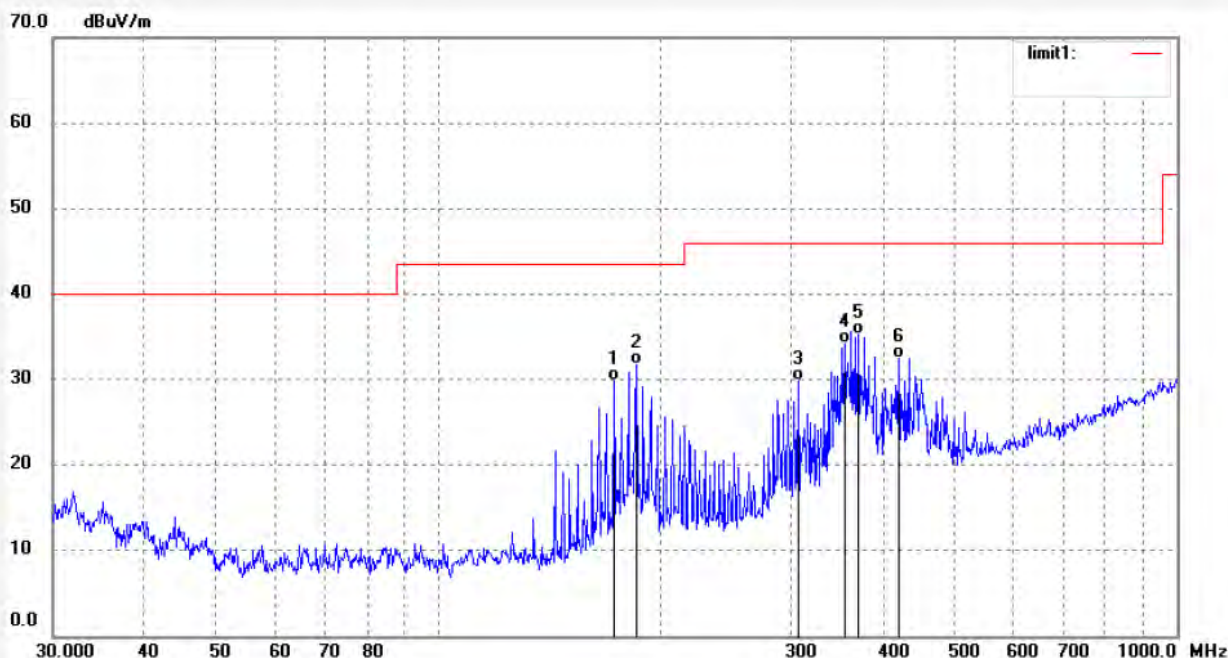
Mode: TX 2402MHz (GFSK)

Distance: 3m

Model: SG1

Manufacturer: OLALA

Note: Report No.:ATE20171962



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	172.5976	50.39	-20.57	29.82	43.50	-13.68	QP			
2	185.1626	51.55	-19.83	31.72	43.50	-11.78	QP			
3	307.1053	45.28	-15.52	29.76	46.00	-16.24	QP			
4	354.6912	47.94	-13.64	34.30	46.00	-11.70	QP			
5	369.9659	48.69	-13.35	35.34	46.00	-10.66	QP			
6	419.8509	45.15	-12.67	32.48	46.00	-13.52	QP			



ACCURATE TECHNOLOGY CO., LTD.

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

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2017 #1031

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: TX 2402MHz (GFSK)

Model: SG1

Manufacturer: OLALA

Polarization: Vertical

Power Source: DC 3.7V

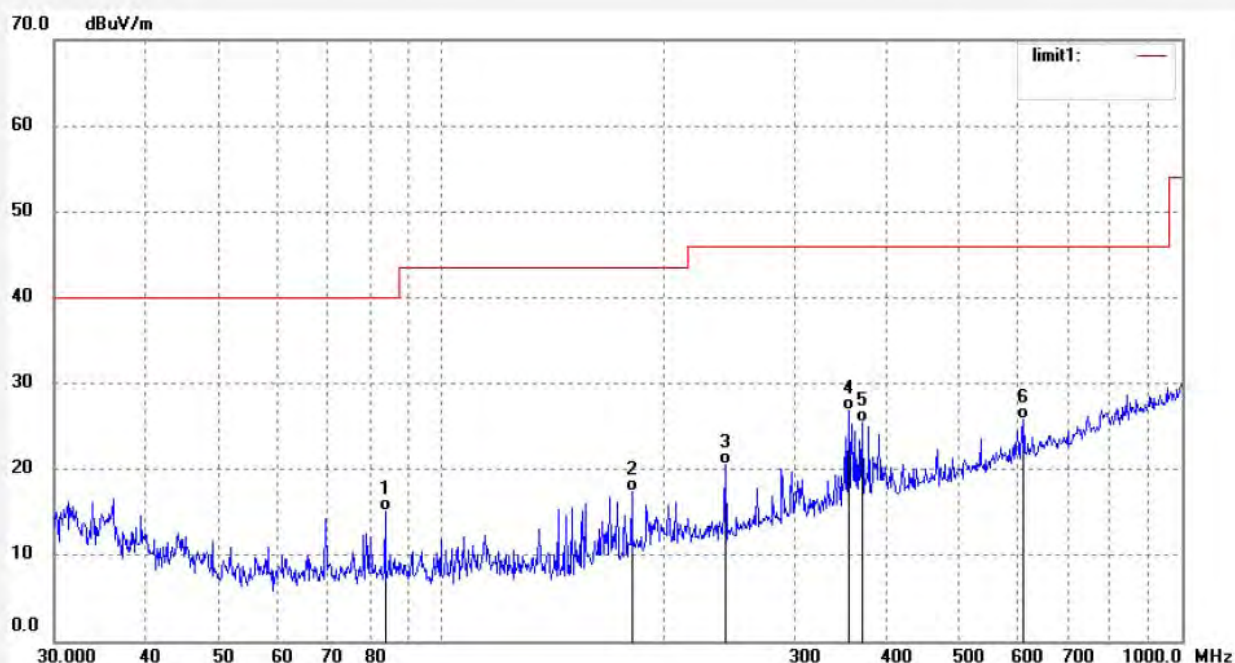
Date: 17/10/24/

Time: 15/32/46

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	83.9882	37.11	-21.98	15.13	40.00	-24.87	QP			
2	180.6640	37.71	-20.27	17.44	43.50	-26.06	QP			
3	241.8377	38.65	-18.17	20.48	46.00	-25.52	QP			
4	354.6911	40.54	-13.64	26.90	46.00	-19.10	QP			
5	369.9658	38.82	-13.35	25.47	46.00	-20.53	QP			
6	611.4623	33.98	-8.15	25.83	46.00	-20.17	QP			



ACCURATE TECHNOLOGY CO., LTD.

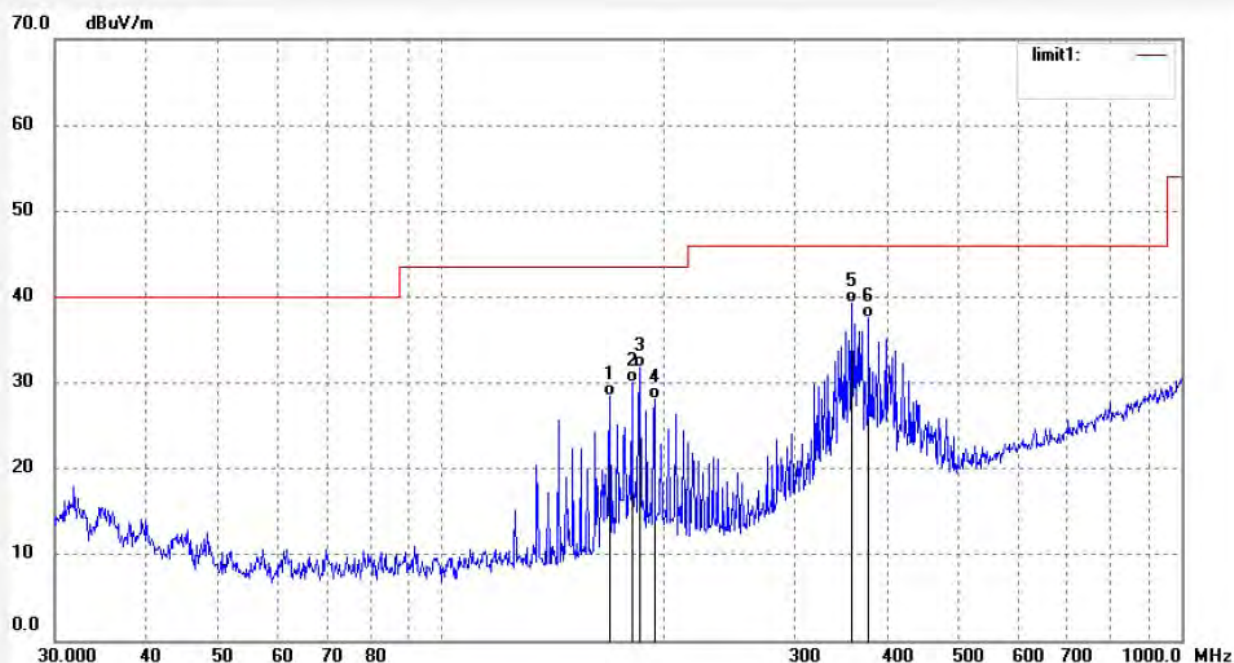
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

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

Job No.: STAR2017 #1034
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Wireless bluetooth earphones
Mode: TX 2441MHz (GFSK)
Model: SG1
Manufacturer: OLALA

Polarization: Horizontal
Power Source: DC 3.7V
Date: 17/10/24/
Time: 15/38/11
Engineer Signature: star
Distance: 3m

Note: Report No.:ATE20171962



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	168.9970	48.80	-20.41	28.39	43.50	-15.11	QP			
2	180.6639	50.26	-20.27	29.99	43.50	-13.51	QP			
3	185.1624	51.58	-19.83	31.75	43.50	-11.75	QP			
4	193.8163	47.06	-19.05	28.01	43.50	-15.49	QP			
5	358.4497	52.71	-13.50	39.21	46.00	-6.79	QP			
6	377.8480	50.80	-13.26	37.54	46.00	-8.46	QP			



ACCURATE TECHNOLOGY CO., LTD.

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

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2017 #1032

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: TX 2441MHz (GFSK)

Model: SG1

Manufacturer: OLALA

Polarization: Vertical

Power Source: DC 3.7V

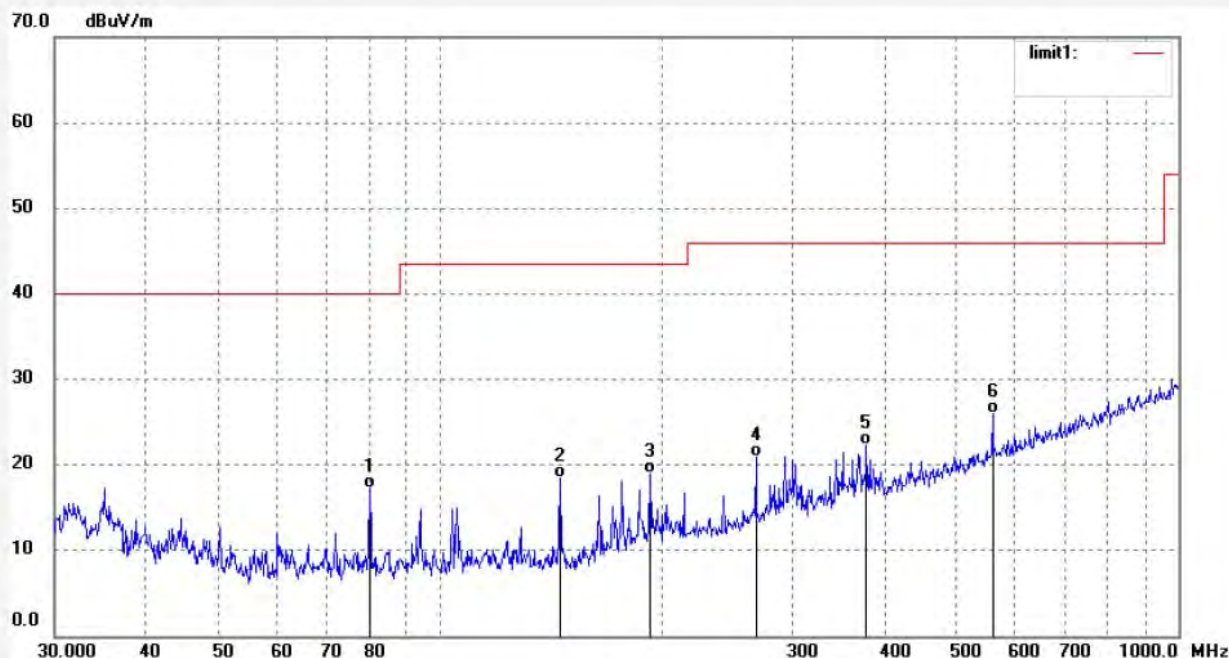
Date: 17/10/24/

Time: 15/33/31

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	80.2383	39.29	-22.00	17.29	40.00	-22.71	QP			
2	145.2995	40.87	-22.37	18.50	43.50	-25.00	QP			
3	192.4590	38.26	-19.19	19.07	43.50	-24.43	QP			
4	267.7787	37.98	-17.14	20.84	46.00	-25.16	QP			
5	377.8481	35.52	-13.26	22.26	46.00	-23.74	QP			
6	560.0431	35.39	-9.44	25.95	46.00	-20.05	QP			



ACCURATE TECHNOLOGY CO., LTD.

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

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2017 #1035

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: TX 2480MHz (GFSK)

Model: SG1

Manufacturer: OLALA

Polarization: Horizontal

Power Source: DC 3.7V

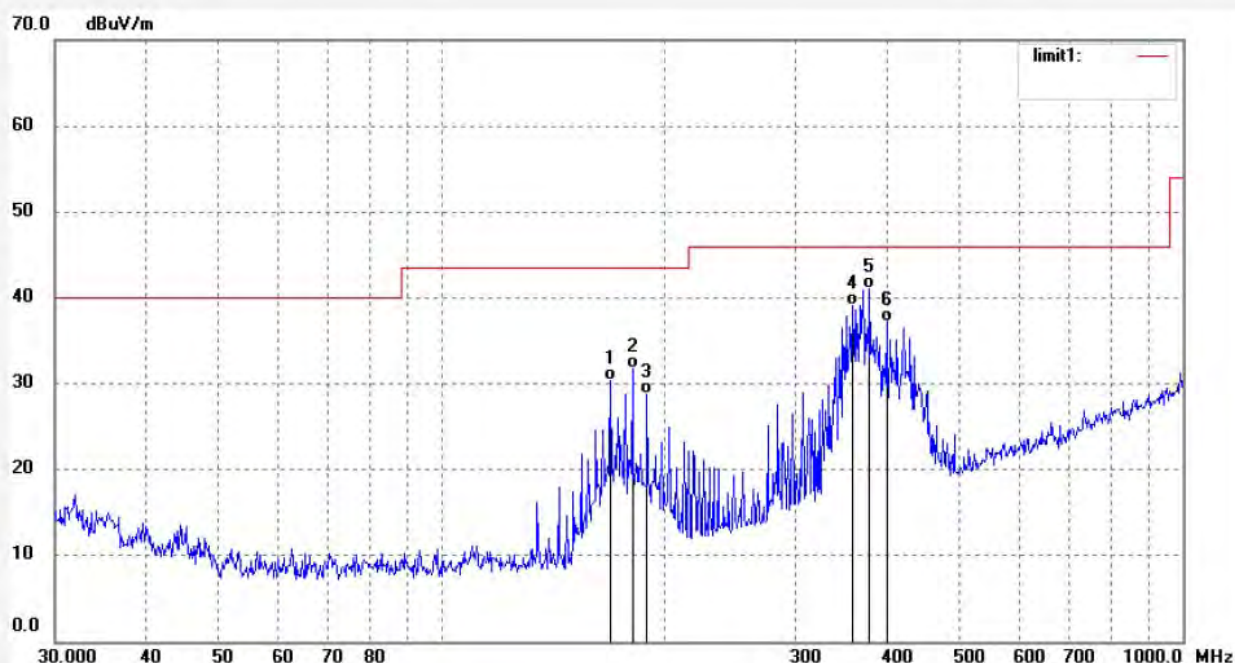
Date: 17/10/24/

Time: 15/40/10

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	168.9970	50.81	-20.41	30.40	43.50	-13.10	QP			
2	180.6640	52.00	-20.27	31.73	43.50	-11.77	QP			
3	189.1075	48.21	-19.49	28.72	43.50	-14.78	QP			
4	358.4497	52.69	-13.50	39.19	46.00	-6.81	QP			
5	377.8480	54.34	-13.26	41.08	46.00	-4.92	QP			
6	398.2961	50.15	-13.03	37.12	46.00	-8.88	QP			



ACCURATE TECHNOLOGY CO., LTD.

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

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2017 #1036

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: TX 2480MHz (GFSK)

Model: SG1

Manufacturer: OLALA

Polarization: Vertical

Power Source: DC 3.7V

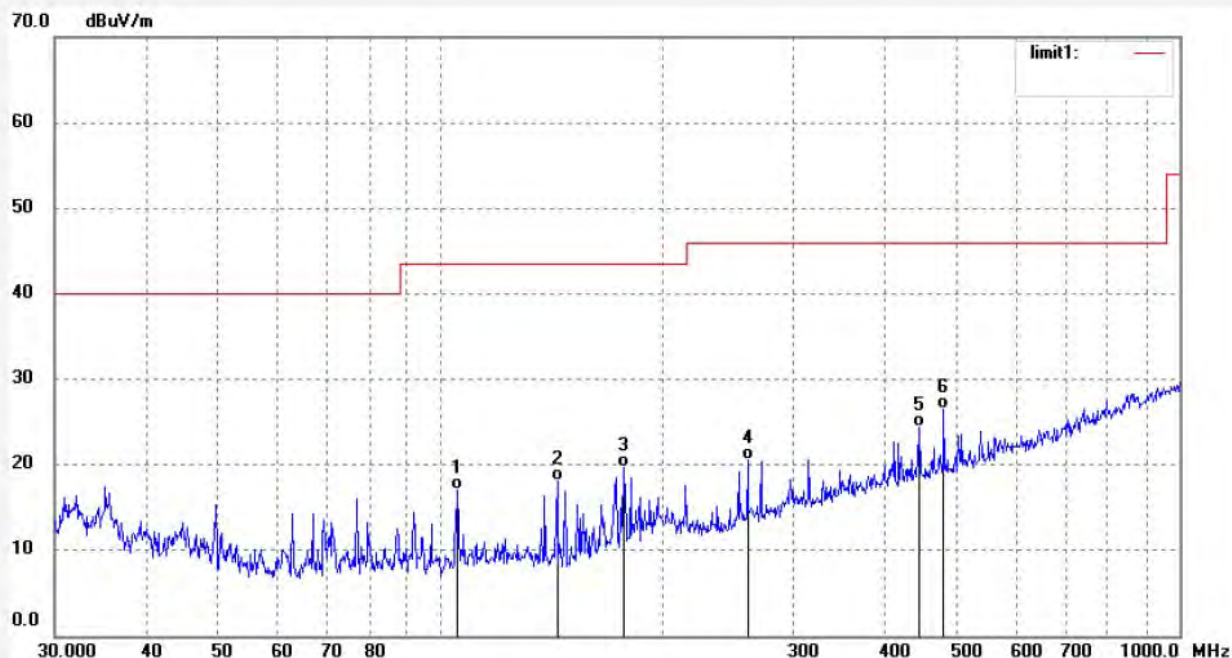
Date: 17/10/24/

Time: 15/41/38

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	105.1667	39.67	-22.69	16.98	43.50	-26.52	QP			
2	143.7760	40.49	-22.36	18.13	43.50	-25.37	QP			
3	176.8952	40.40	-20.63	19.77	43.50	-23.73	QP			
4	260.3566	38.03	-17.52	20.51	46.00	-25.49	QP			
5	444.1299	36.38	-12.00	24.38	46.00	-21.62	QP			
6	479.8224	37.69	-11.23	26.46	46.00	-19.54	QP			

Above 1GHz



ACCURATE TECHNOLOGY CO., LTD.

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

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2017 #1038

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: TX 2402MHz (GFSK)

Model: SG1

Manufacturer: OLALA

Polarization: Horizontal

Power Source: DC 3.7V

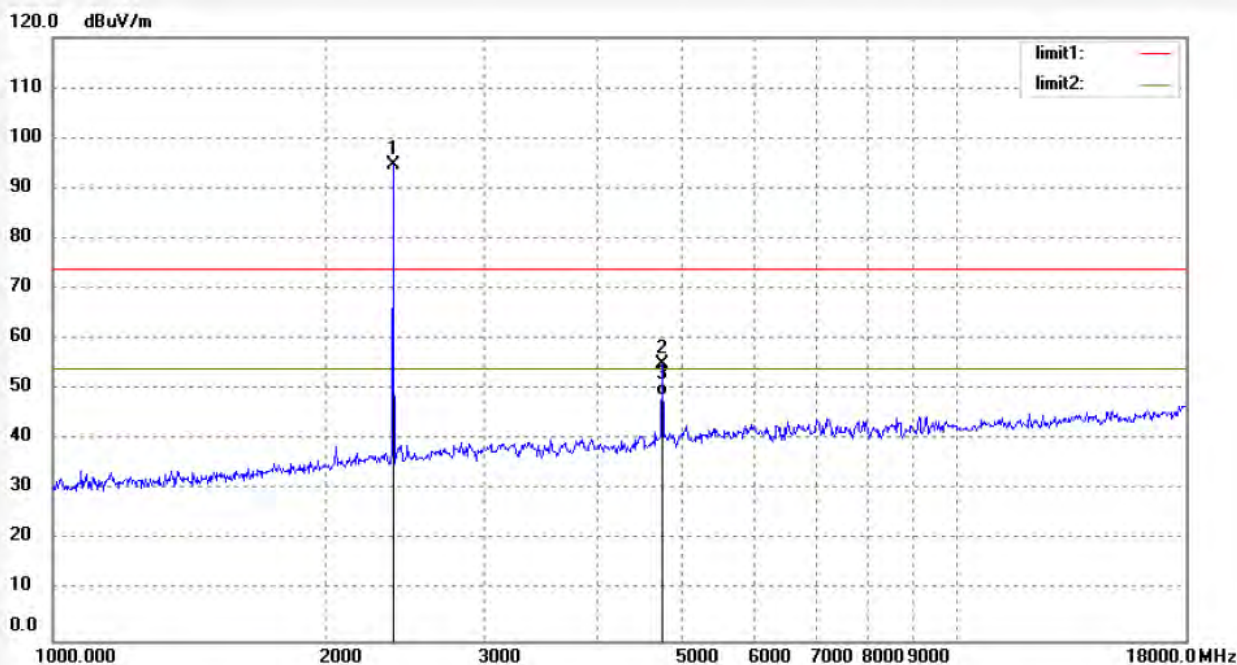
Date: 17/10/24/

Time: 15/53/48

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.019	101.14	-6.37	94.77			peak			
2	4804.157	54.26	0.70	54.96	74.00	-19.04	peak			
3	4804.157	48.00	0.70	48.70	54.00	-5.30	AVG			

Note: Average measurement with peak detection at No.3



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.: STAR2017 #1037

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: TX 2402MHz (GFSK)

Model: SG1

Manufacturer: OLALA

Polarization: Vertical

Power Source: DC 3.7V

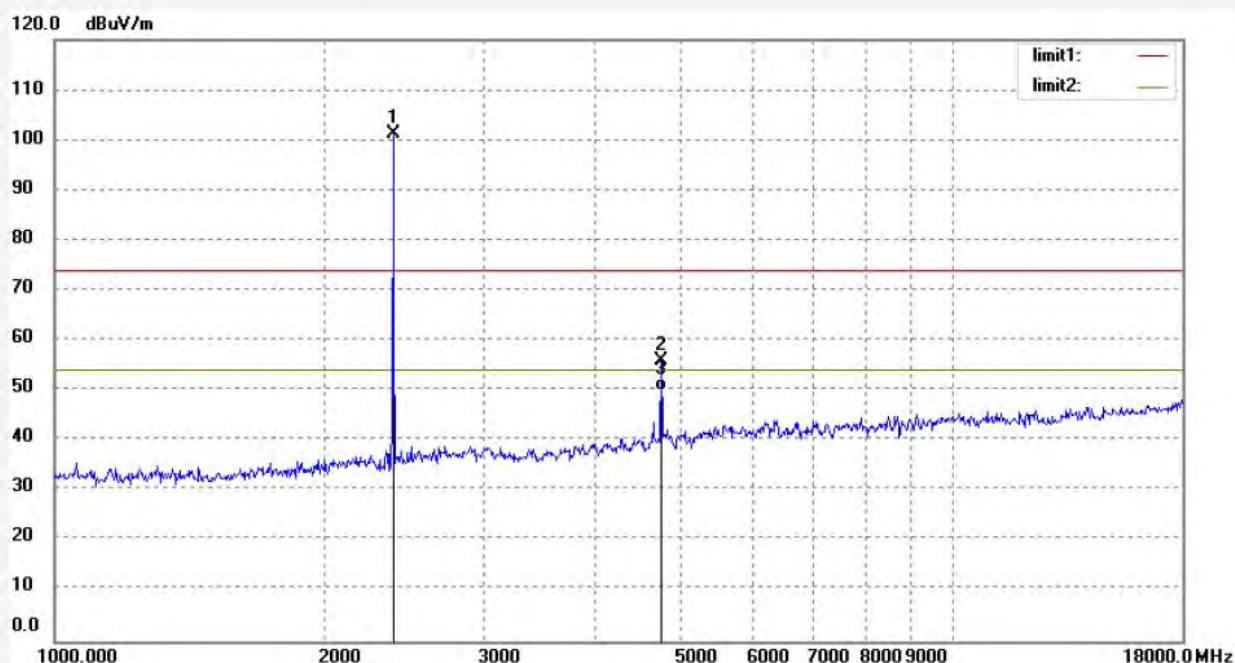
Date: 17/10/24/

Time: 15/52/35

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.019	107.51	-6.37	101.14			peak			
2	4804.057	55.38	0.70	56.08	74.00	-17.92	peak			
3	4804.057	49.24	0.70	49.94	54.00	-4.06	AVG			

Note: Average measurement with peak detection at No.3



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.: STAR2017 #1039

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: TX 2441MHz (GFSK)

Model: SG1

Manufacturer: OLALA

Polarization: Horizontal

Power Source: DC 3.7V

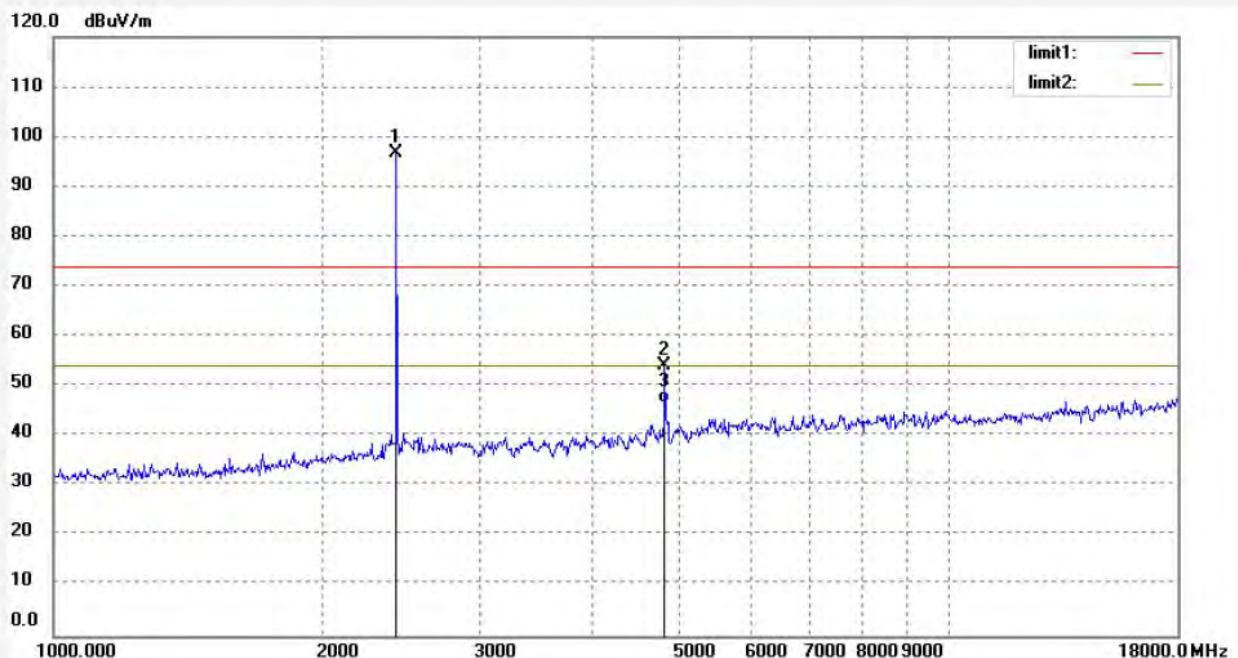
Date: 17/10/24/

Time: 15/56/36

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2441.121	103.01	-6.20	96.81			peak			
2	4882.024	53.17	1.07	54.24	74.00	-19.76	peak			
3	4882.024	45.68	1.07	46.75	54.00	-7.25	AVG			

Note: Average measurement with peak detection at No.3



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.: STAR2017 #1040

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: TX 2441MHz (GFSK)

Model: SG1

Manufacturer: OLALA

Polarization: Vertical

Power Source: DC 3.7V

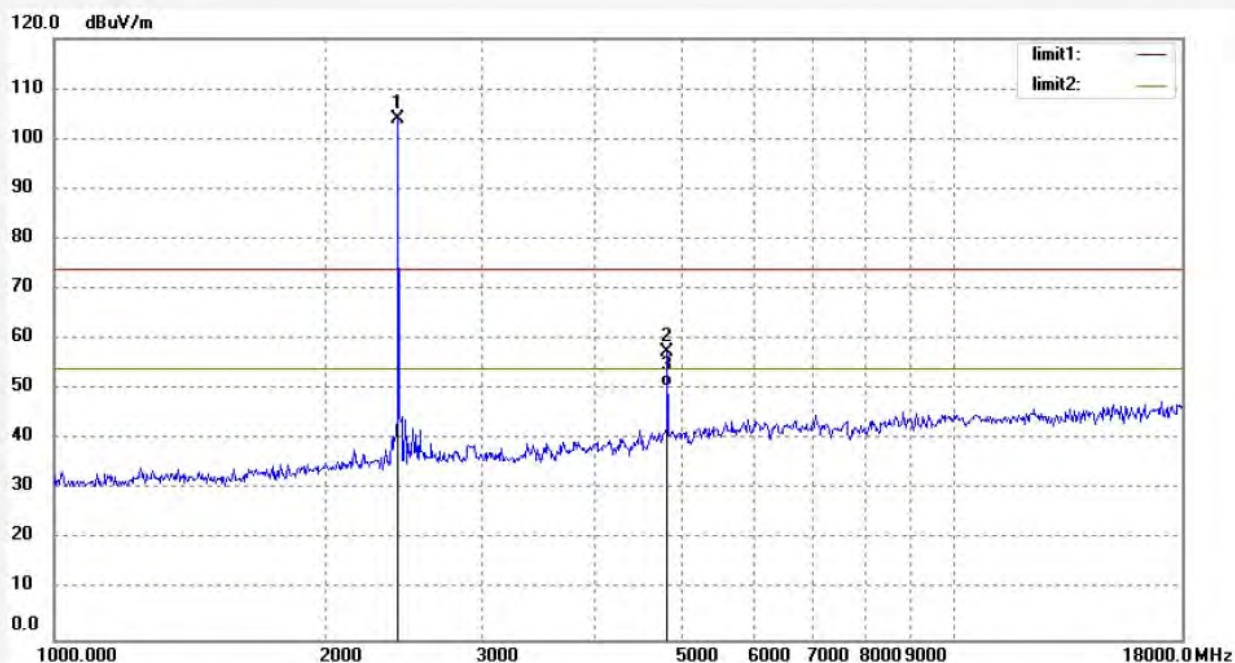
Date: 17/10/24/

Time: 15/58/05

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2441.021	110.22	-6.20	104.02			peak			
2	4882.124	56.37	1.07	57.44	74.00	-16.56	peak			
3	4882.124	49.41	1.07	50.48	54.00	-3.52	AVG			

Note: Average measurement with peak detection at No.3



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.: STAR2017 #1042

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: TX 2480MHz (GFSK)

Model: SG1

Manufacturer: OLALA

Polarization: Horizontal

Power Source: DC 3.7V

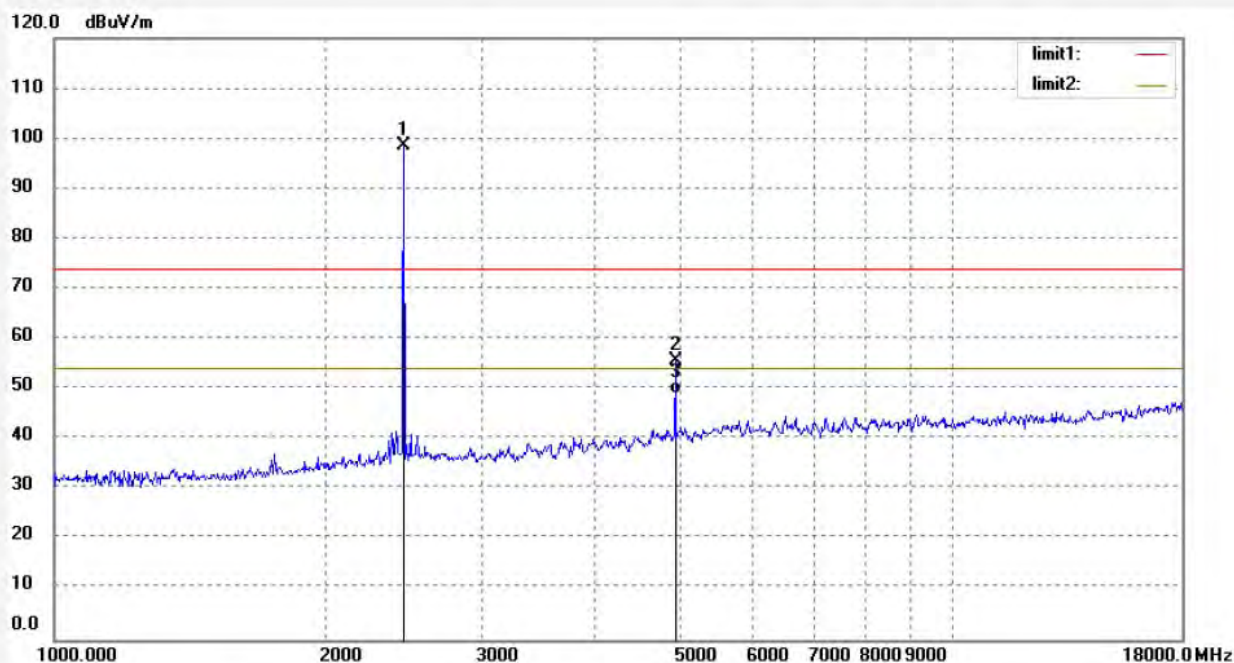
Date: 17/10/24/

Time: 16/03/24

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.034	104.60	-6.04	98.56			peak			
2	4960.015	54.09	1.50	55.59	74.00	-18.41	peak			
3	4960.015	47.45	1.50	48.95	54.00	-5.05	AVG			

Note: Average measurement with peak detection at No.3



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.: STAR2017 #1041

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: TX 2480MHz (GFSK)

Model: SG1

Manufacturer: OLALA

Polarization: Vertical

Power Source: DC 3.7V

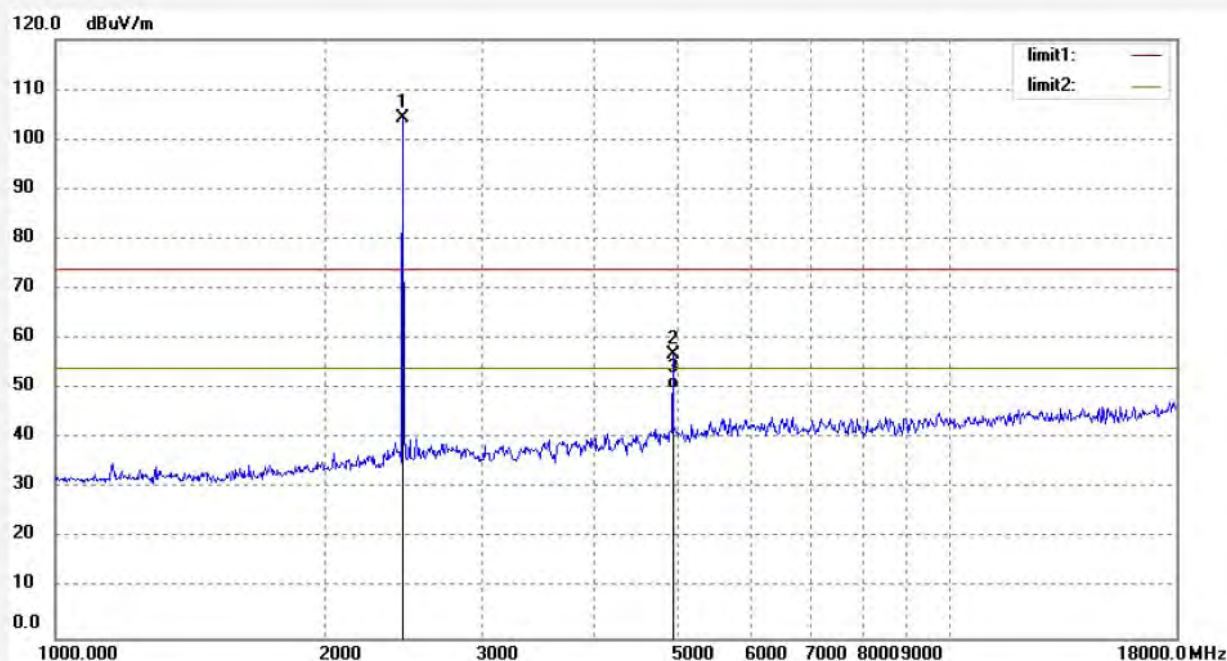
Date: 17/10/24/

Time: 16/00/06

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.034	110.25	-6.04	104.21			peak			
2	4960.132	55.27	1.50	56.77	74.00	-17.23	peak			
3	4960.132	48.40	1.50	49.90	54.00	-4.10	AVG			

Note: Average measurement with peak detection at No.3

11.BAND EDGE COMPLIANCE TEST

11.1.Block Diagram of Test Setup



(EUT: Wireless bluetooth earphones)

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.

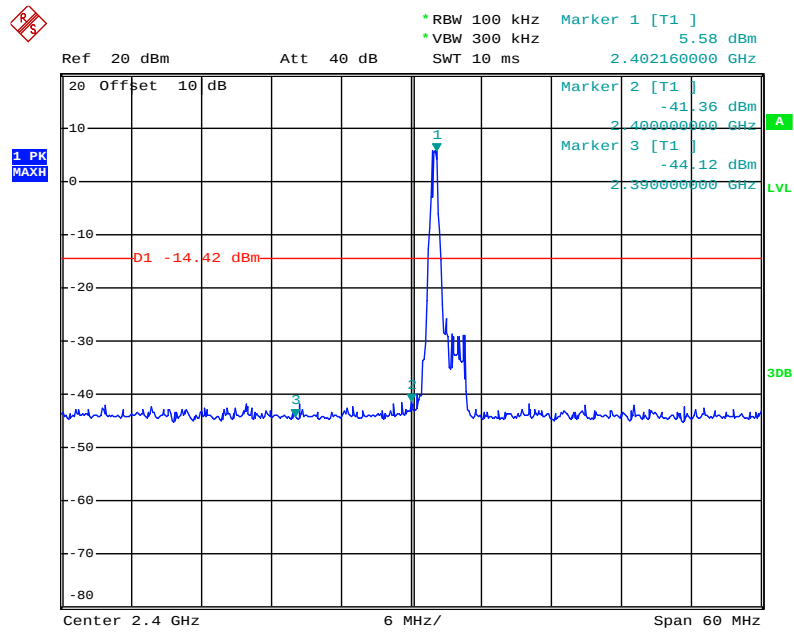
11.5.2. Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz with convenient frequency span including 100 kHz bandwidth from band edge.

11.5.3. The band edges was measured and recorded.

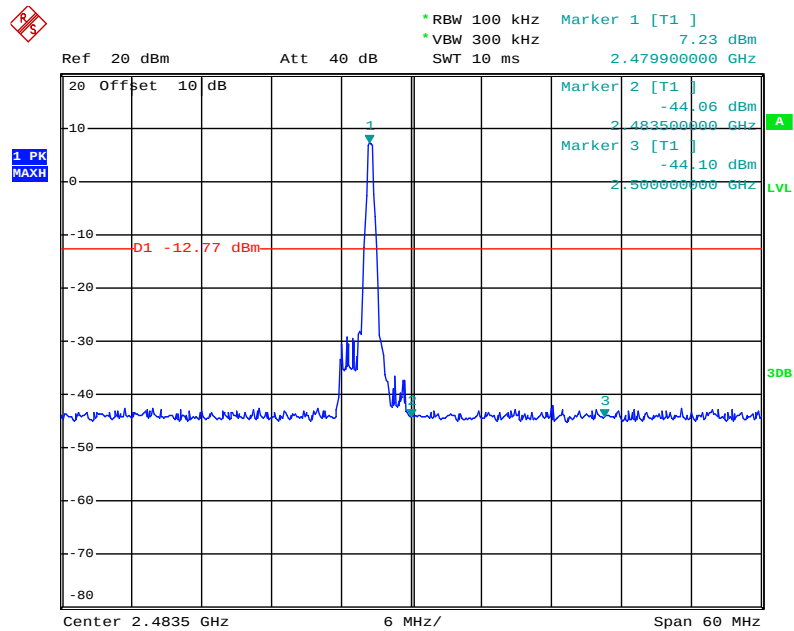
11.6. Test Result

Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
GFSK Mode		
2400.00	35.78	> 20dBc
2483.50	36.83	> 20dBc
Π/4-DQPSK Mode		
2400.00	41.44	> 20dBc
2483.50	38.79	> 20dBc
8DPSK Mode		
2400.00	41.25	> 20dBc
2483.50	39.61	> 20dBc

GFSK Mode

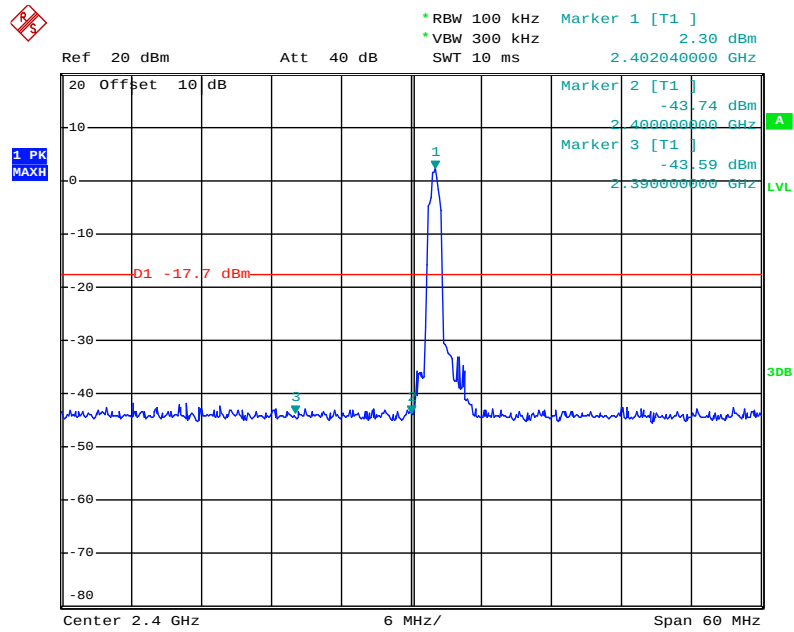


Date: 24.OCT.2017 14:39:32

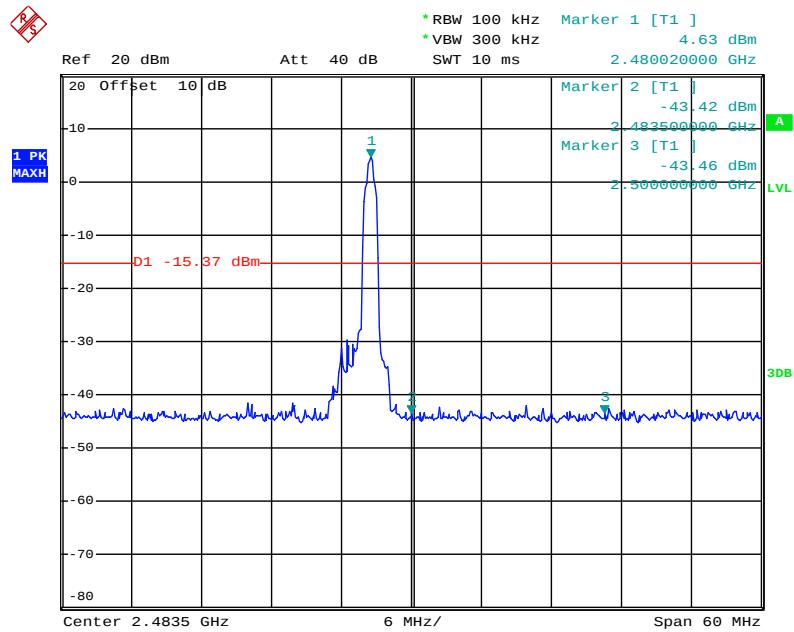


Date: 24.OCT.2017 14:37:41

Π/4-DQPSK Mode

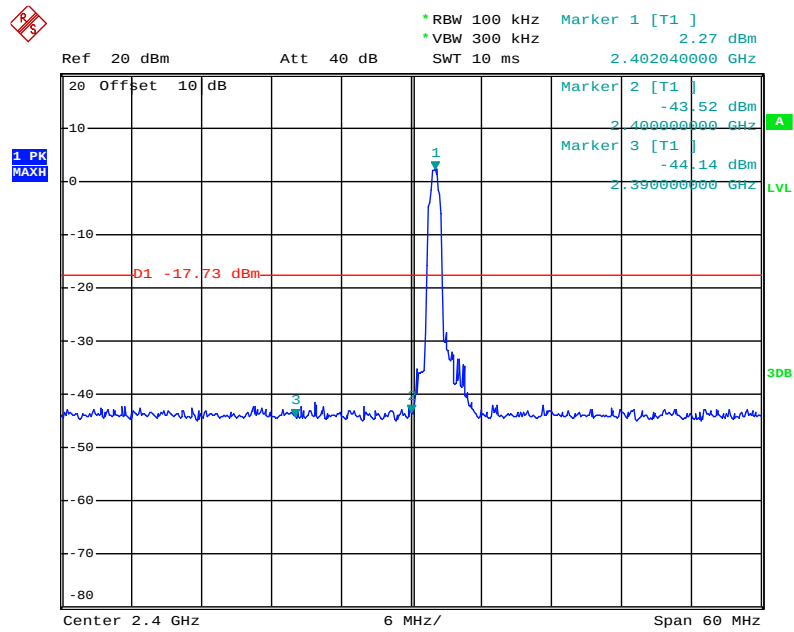


Date: 24.OCT.2017 14:34:06

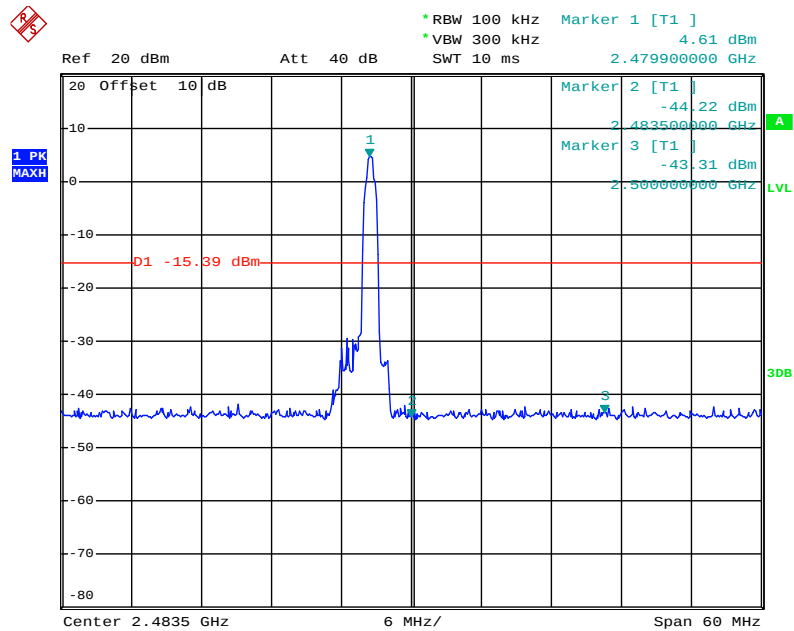


Date: 24.OCT.2017 14:36:01

8DPSK Mode



Date: 24.OCT.2017 14:32:43



Date: 24.OCT.2017 14:30:18

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.

Test Procedure:

The EUT and its simulators are placed on a turntable, which is 1.5 meter high above ground(Above 1GHz). 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 bi-log 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 EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

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

We select 2402MHz, 2480MHz TX frequency to transmit(Hopping off mode).

We select 2402-2480MHz TX frequency to transmit(Hopping on mode).

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

- 1.The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.
- 2.The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
- 3.All modes of operation were investigated and the worst-case emissions are reported.



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.: STAR2017 #1044

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: TX 2402MHz (GFSK)

Model: SG1

Manufacturer: OLALA

Polarization: Horizontal

Power Source: DC 3.7V

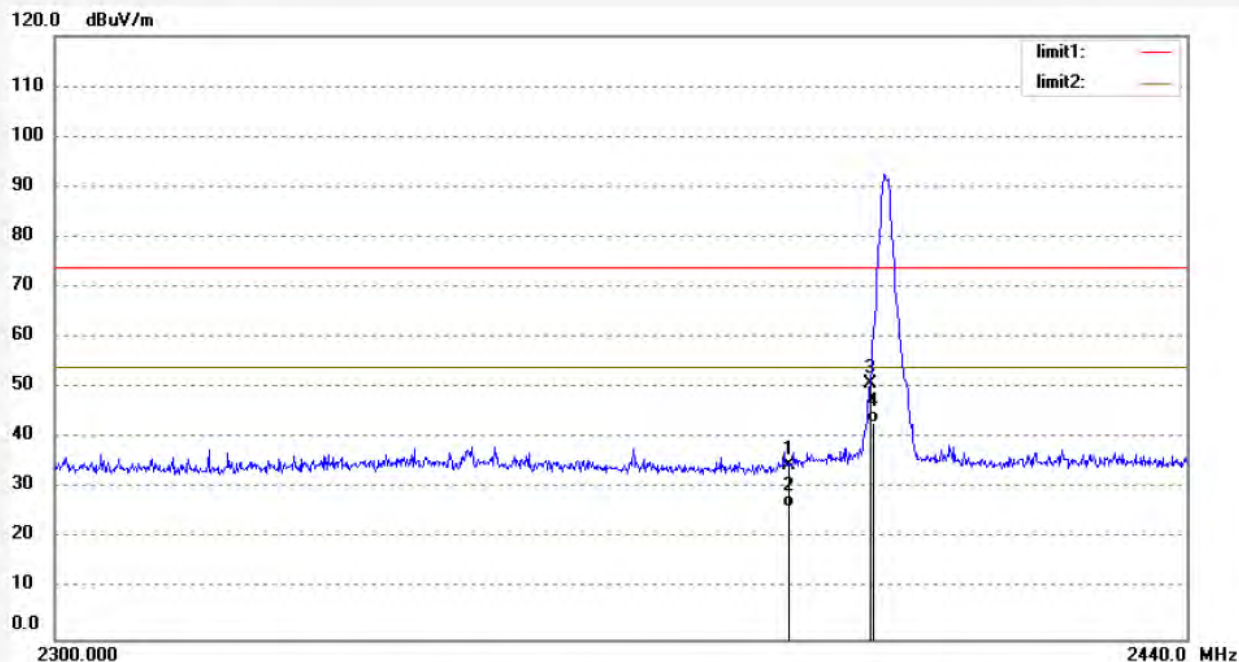
Date: 17/10/24/

Time: 16/10/31

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



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	40.97	-6.32	34.65	74.00	-39.35	peak			
2	2390.000	32.69	-6.32	26.37	54.00	-27.63	AVG			
3	2400.000	57.15	-6.27	50.88	74.00	-23.12	peak			
4	2400.000	49.22	-6.27	42.95	54.00	-11.05	AVG			

Note: Average measurement with peak detection at No.2&4



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.: STAR2017 #1043

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: TX 2402MHz (GFSK)

Model: SG1

Manufacturer: OLALA

Polarization: Vertical

Power Source: DC 3.7V

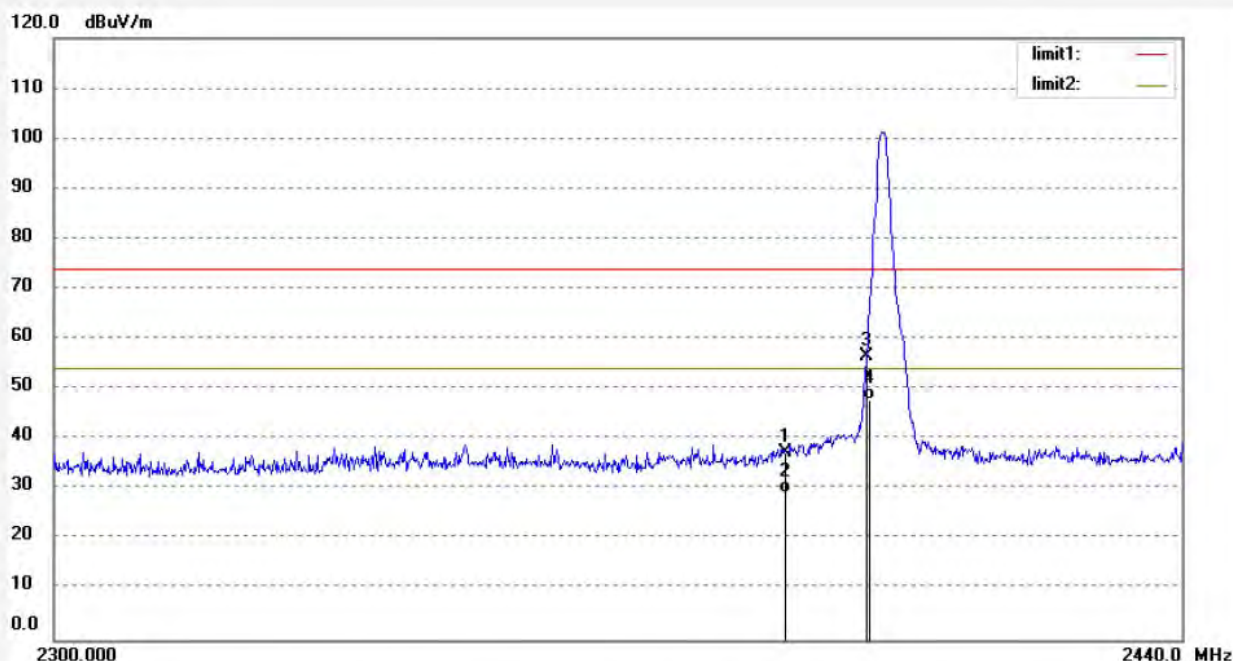
Date: 17/10/24/

Time: 16/09/00

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



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	43.75	-6.32	37.43	74.00	-36.57	peak			
2	2390.000	35.69	-6.32	29.37	54.00	-24.63	AVG			
3	2400.000	62.86	-6.27	56.59	74.00	-17.41	peak			
4	2400.000	54.25	-6.27	47.98	54.00	-6.02	AVG			

Note: Average measurement with peak detection at No.2&4



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.: STAR2017 #1045

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: TX 2480MHz (GFSK)

Model: SG1

Manufacturer: OLALA

Polarization: Horizontal

Power Source: DC 3.7V

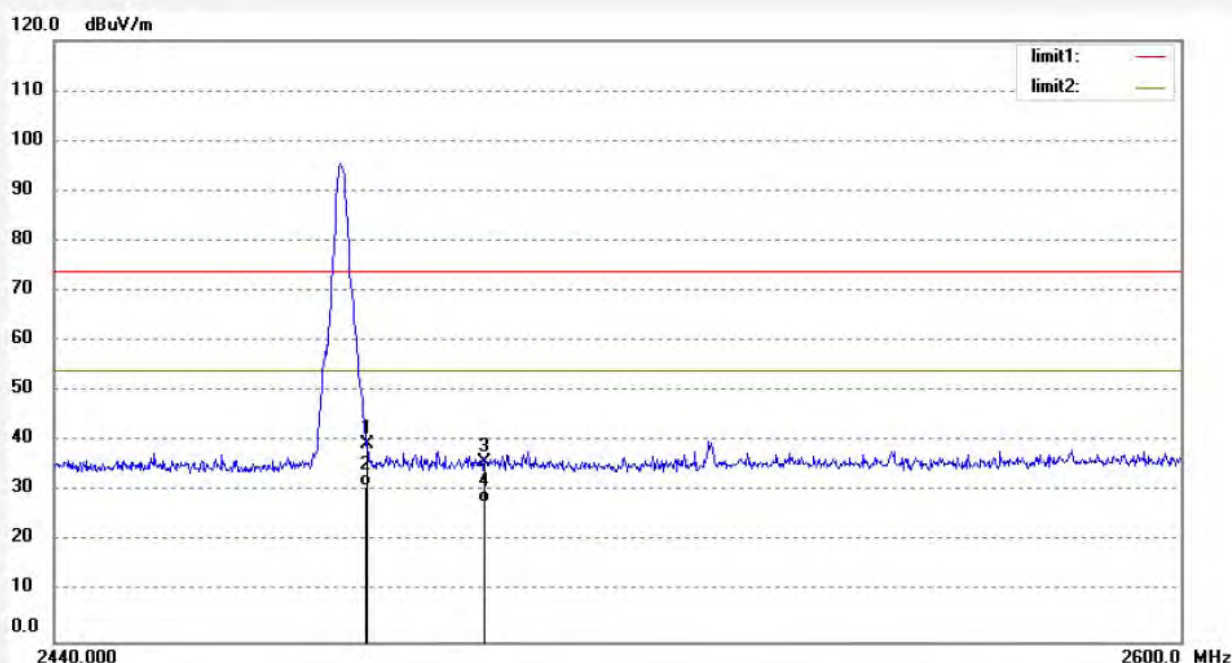
Date: 17/10/24/

Time: 16/13/14

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



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	45.22	-5.89	39.33	74.00	-34.67	peak			
2	2483.500	37.08	-5.89	31.19	54.00	-22.81	AVG			
3	2500.000	41.65	-5.81	35.84	74.00	-38.16	peak			
4	2500.000	33.62	-5.81	27.81	54.00	-26.19	AVG			

Note: Average measurement with peak detection at No.2&4



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.: STAR2017 #1046

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: TX 2480MHz (GFSK)

Model: SG1

Manufacturer: OLALA

Polarization: Vertical

Power Source: DC 3.7V

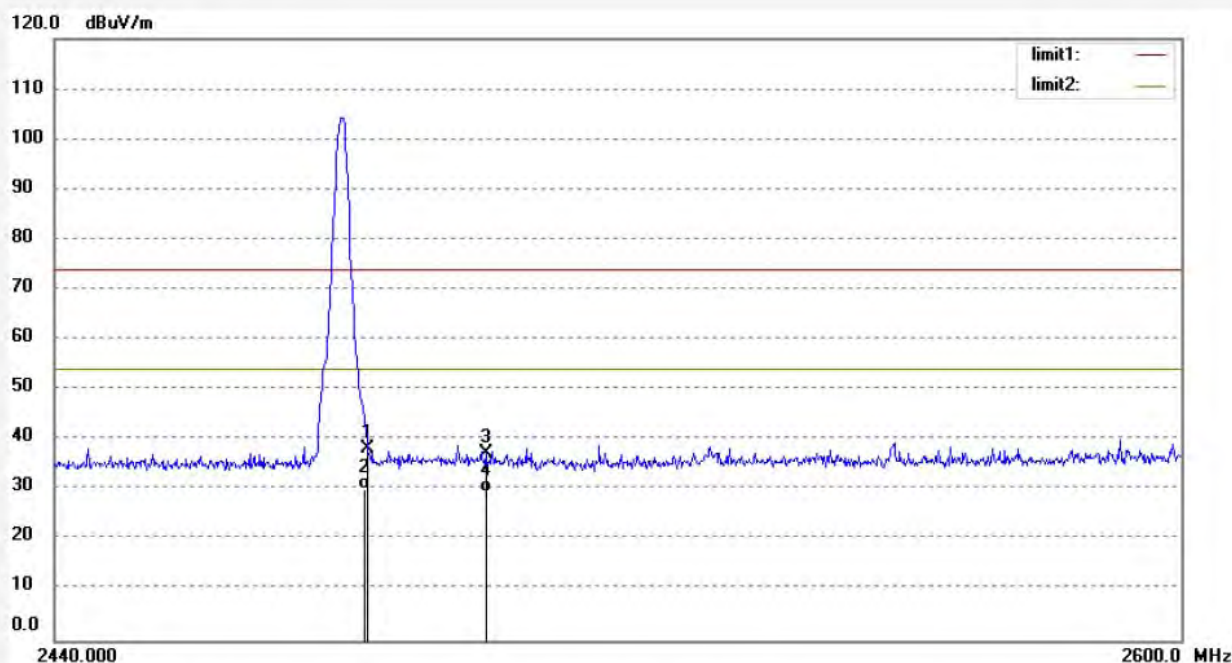
Date: 17/10/24/

Time: 16/14/28

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



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	44.01	-5.89	38.12	74.00	-35.88	peak			
2	2483.500	36.07	-5.89	30.18	54.00	-23.82	AVG			
3	2500.000	43.16	-5.81	37.35	74.00	-36.65	peak			
4	2500.000	35.25	-5.81	29.44	54.00	-24.56	AVG			

Note: Average measurement with peak detection at No.2&4



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.: STAR2017 #1048

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: TX 2402MHz (π/4-DQPSK)

Model: SG1

Manufacturer: OLALA

Polarization: Horizontal

Power Source: DC 3.7V

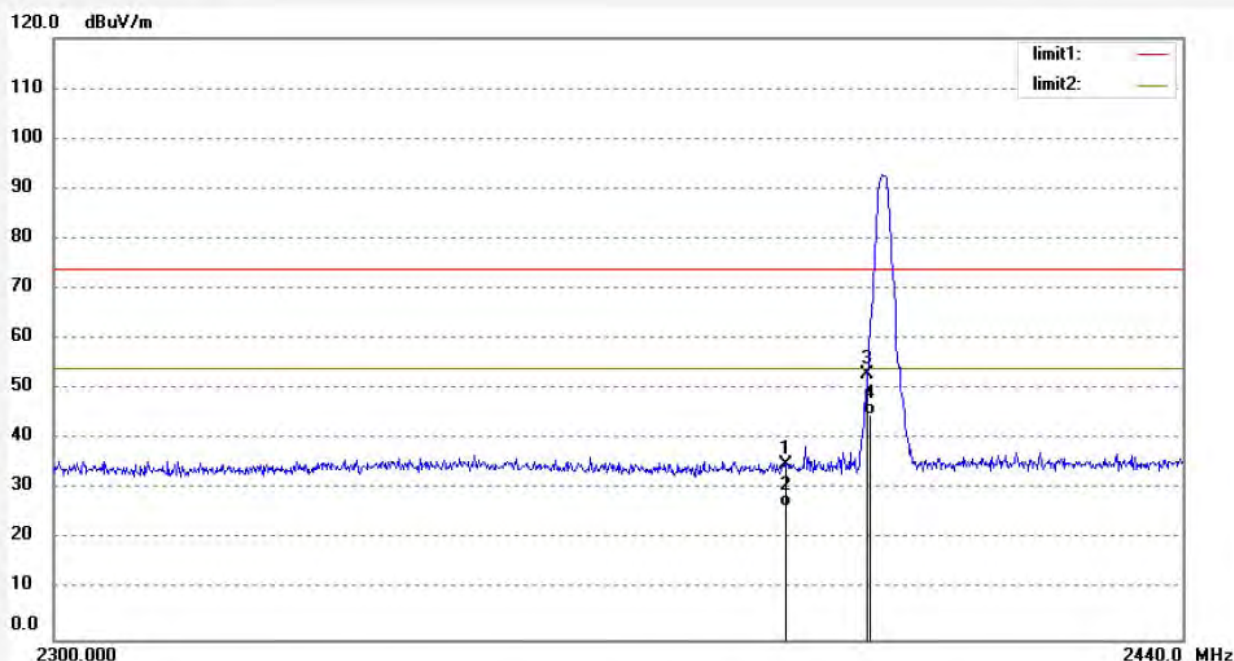
Date: 17/10/24/

Time: 16/19/10

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



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	41.38	-6.32	35.06	74.00	-38.94	peak			
2	2390.000	32.87	-6.32	26.55	54.00	-27.45	AVG			
3	2400.000	59.36	-6.27	53.09	74.00	-20.91	peak			
4	2400.000	51.00	-6.27	44.73	54.00	-9.27	AVG			

Note: Average measurement with peak detection at No.2&4



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.: STAR2017 #1047

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: TX 2402MHz (π/4-DQPSK)

Model: SG1

Manufacturer: OLALA

Polarization: Vertical

Power Source: DC 3.7V

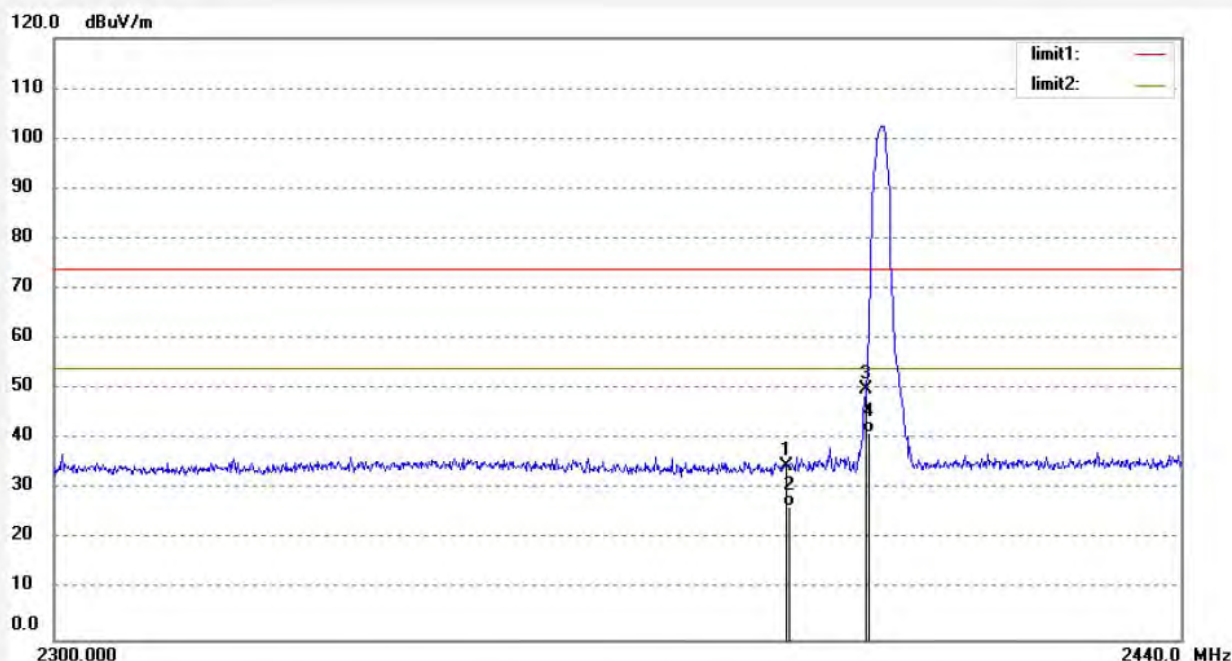
Date: 17/10/24/

Time: 16/18/14

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



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	40.90	-6.32	34.58	74.00	-39.42	peak			
2	2390.000	32.99	-6.32	26.67	54.00	-27.33	AVG			
3	2400.000	56.34	-6.27	50.07	74.00	-23.93	peak			
4	2400.000	47.62	-6.27	41.35	54.00	-12.65	AVG			

Note: Average measurement with peak detection at No.2&4



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.: STAR2017 #1049

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: TX 2480MHz (π/4-DQPSK)

Model: SG1

Manufacturer: OLALA

Polarization: Horizontal

Power Source: DC 3.7V

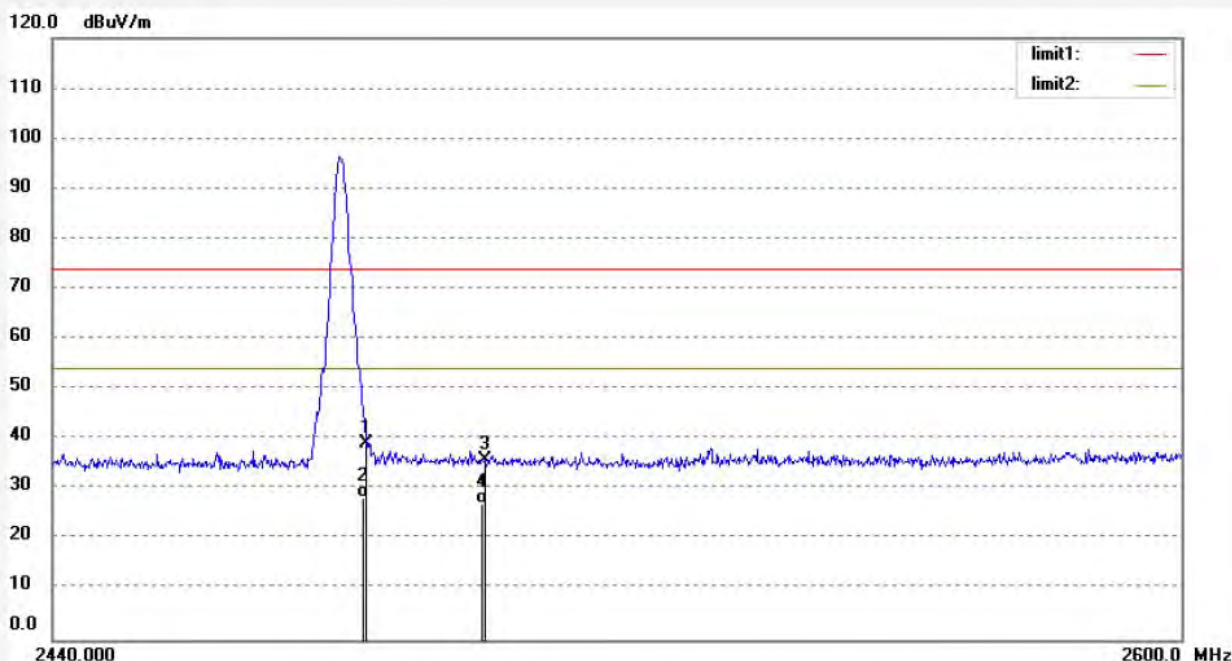
Date: 17/10/24/

Time: 16/21/30

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



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	45.06	-5.89	39.17	74.00	-34.83	peak			
2	2483.500	34.26	-5.89	28.37	54.00	-25.63	AVG			
3	2500.000	41.53	-5.81	35.72	74.00	-38.28	peak			
4	2500.000	33.04	-5.81	27.23	54.00	-26.77	AVG			

Note: Average measurement with peak detection at No.2&4



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.: STAR2017 #1050

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: TX 2480MHz (π/4-DQPSK)

Model: SG1

Manufacturer: OLALA

Polarization: Vertical

Power Source: DC 3.7V

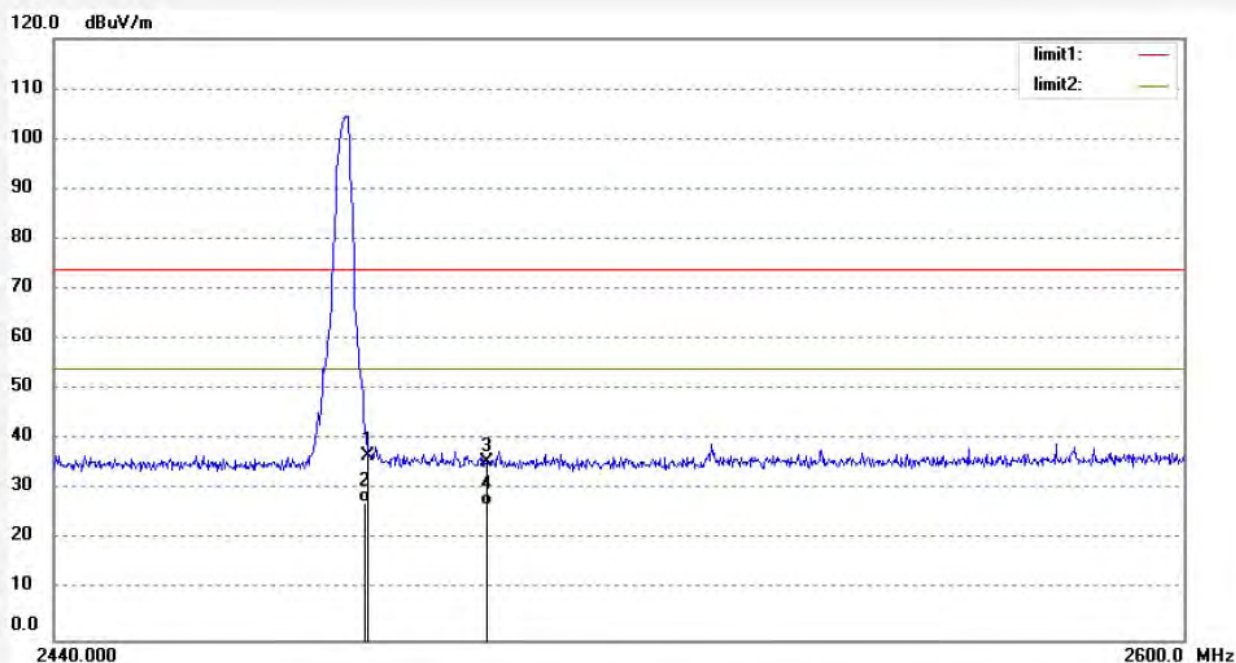
Date: 17/10/24/

Time: 16/22/44

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



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	42.74	-5.89	36.85	74.00	-37.15	peak			
2	2483.500	33.41	-5.89	27.52	54.00	-26.48	AVG			
3	2500.000	41.35	-5.81	35.54	74.00	-38.46	peak			
4	2500.000	32.65	-5.81	26.84	54.00	-27.16	AVG			

Note: Average measurement with peak detection at No.2&4



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.: STAR2017 #1052

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: TX 2402MHz (8DPSK)

Model: SG1

Manufacturer: OLALA

Polarization: Horizontal

Power Source: DC 3.7V

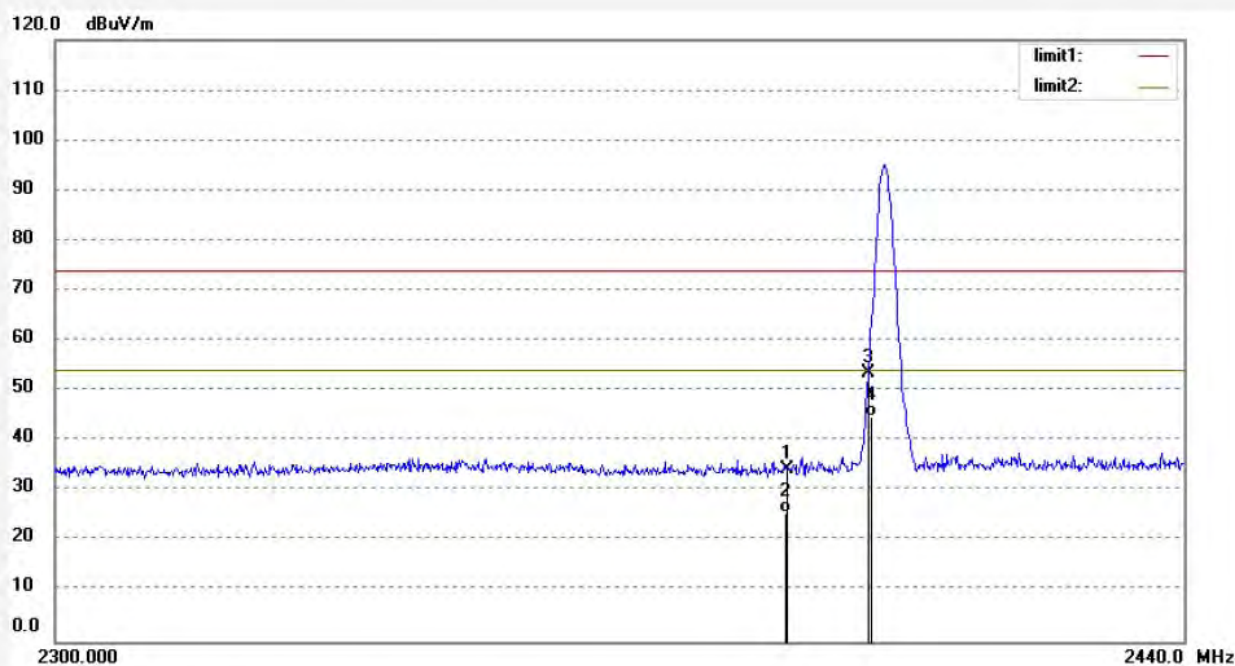
Date: 17/10/24/

Time: 16/26/22

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



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	40.67	-6.32	34.35	74.00	-39.65	peak			
2	2390.000	32.07	-6.32	25.75	54.00	-28.25	AVG			
3	2400.000	59.93	-6.27	53.66	74.00	-20.34	peak			
4	2400.000	51.00	-6.27	44.73	54.00	-9.27	AVG			

Note: Average measurement with peak detection at No.2&4



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.: STAR2017 #1051

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: TX 2402MHz (8DPSK)

Model: SG1

Manufacturer: OLALA

Polarization: Vertical

Power Source: DC 3.7V

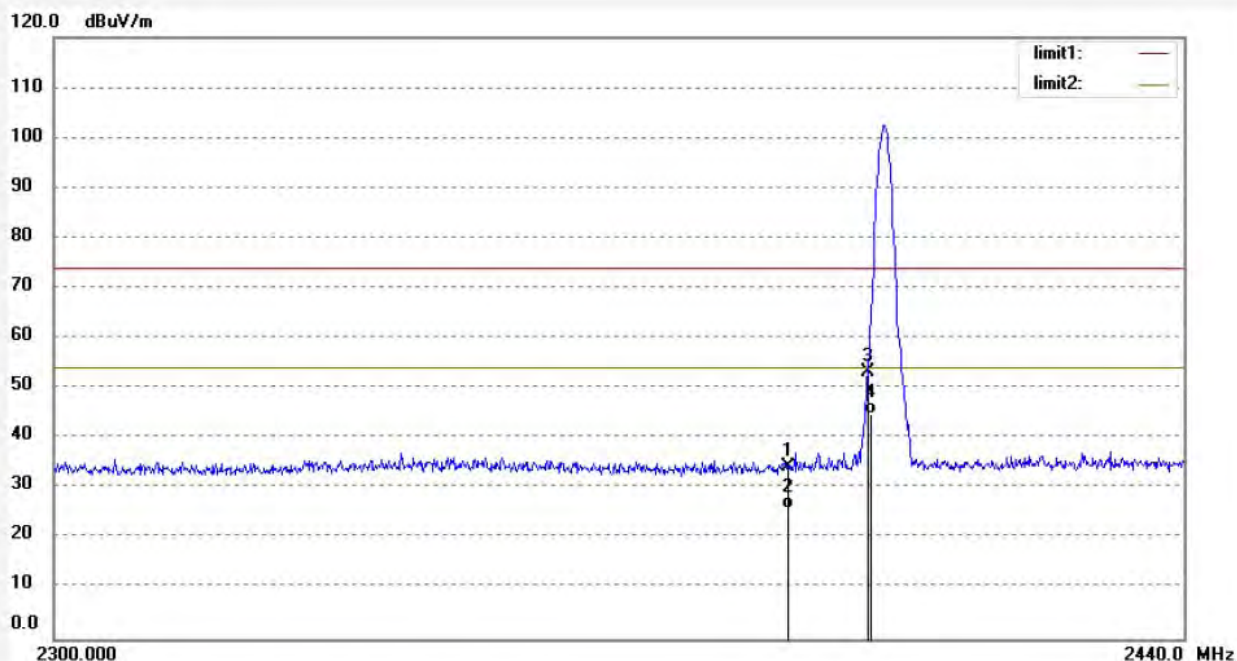
Date: 17/10/24/

Time: 16/25/14

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



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	40.81	-6.32	34.49	74.00	-39.51	peak			
2	2390.000	32.32	-6.32	26.00	54.00	-28.00	AVG			
3	2400.000	59.62	-6.27	53.35	74.00	-20.65	peak			
4	2400.000	51.15	-6.27	44.88	54.00	-9.12	AVG			

Note: Average measurement with peak detection at No.2&4



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.: STAR2017 #1053

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: TX 2480MHz (8DPSK)

Model: SG1

Manufacturer: OLALA

Polarization: Horizontal

Power Source: DC 3.7V

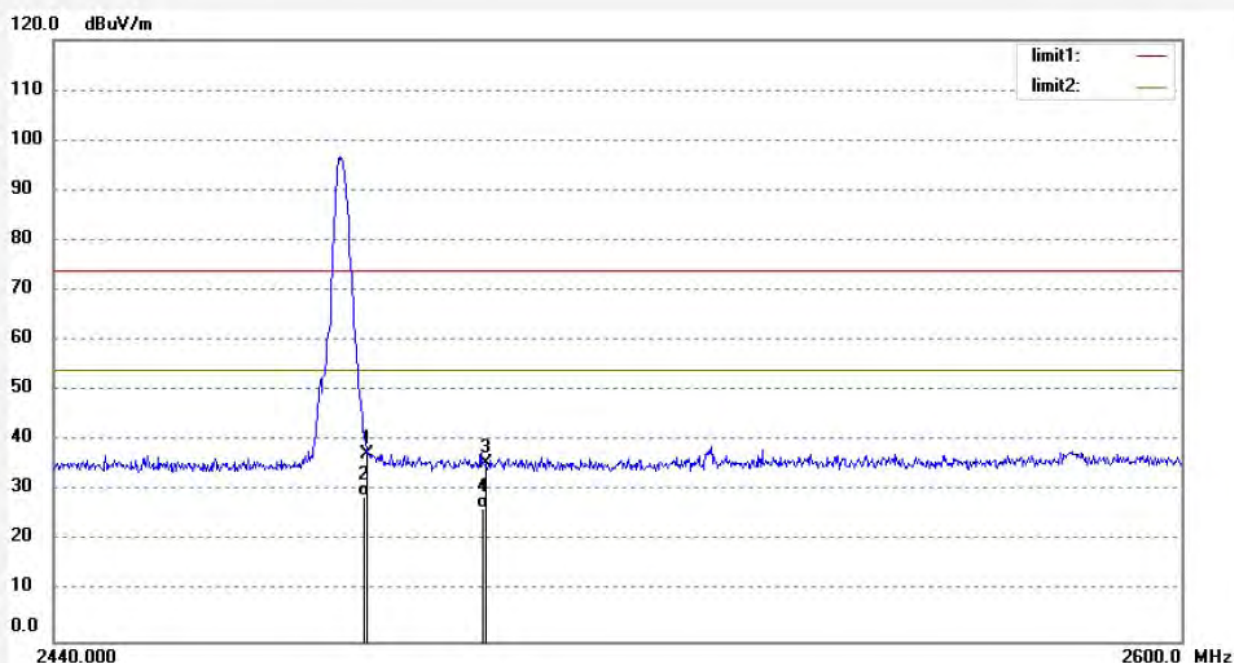
Date: 17/10/24/

Time: 16/28/20

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



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	43.29	-5.89	37.40	74.00	-36.60	peak			
2	2483.500	34.80	-5.89	28.91	54.00	-25.09	AVG			
3	2500.000	41.29	-5.81	35.48	74.00	-38.52	peak			
4	2500.000	32.41	-5.81	26.60	54.00	-27.40	AVG			

Note: Average measurement with peak detection at No.2&4



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.: STAR2017 #1054

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: TX 2480MHz (8DPSK)

Model: SG1

Manufacturer: OLALA

Polarization: Vertical

Power Source: DC 3.7V

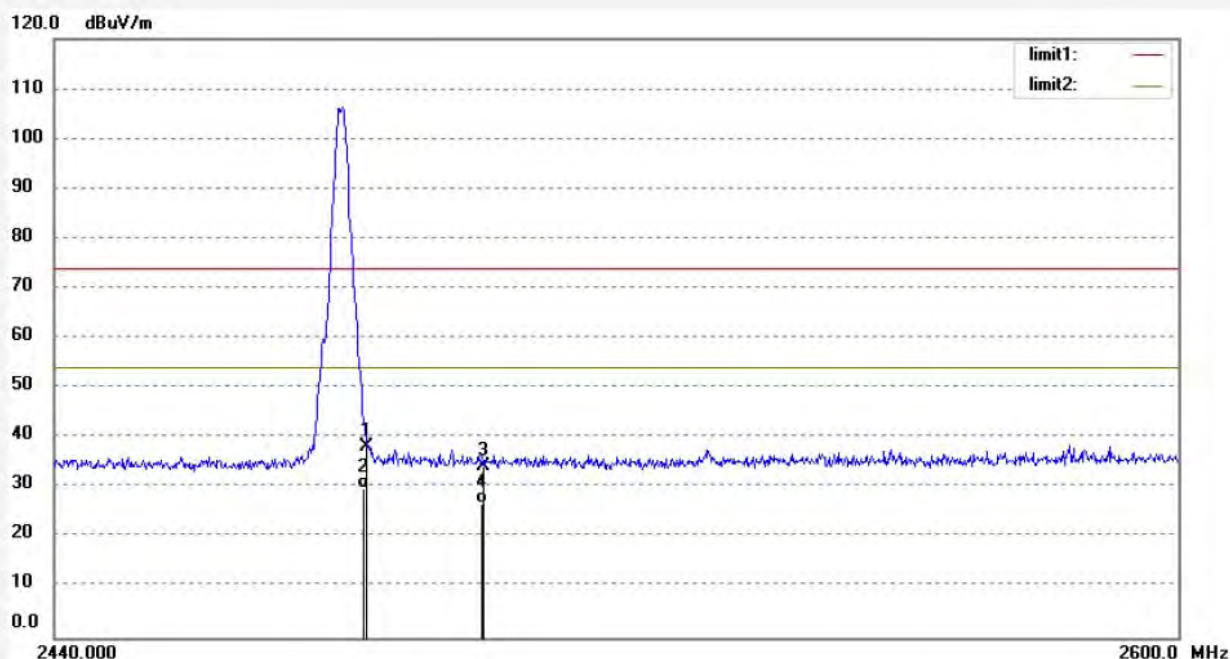
Date: 17/10/24/

Time: 16/29/10

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



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	44.09	-5.89	38.20	74.00	-35.80	peak			
2	2483.500	35.78	-5.89	29.89	54.00	-24.11	AVG			
3	2500.000	40.17	-5.81	34.36	74.00	-39.64	peak			
4	2500.000	32.54	-5.81	26.73	54.00	-27.27	AVG			

Note: Average measurement with peak detection at No.2&4

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.: STAR2017 #1060

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: Hopping (GFSK)

Model: SG1

Manufacturer: OLALA

Polarization: Horizontal

Power Source: DC 3.7V

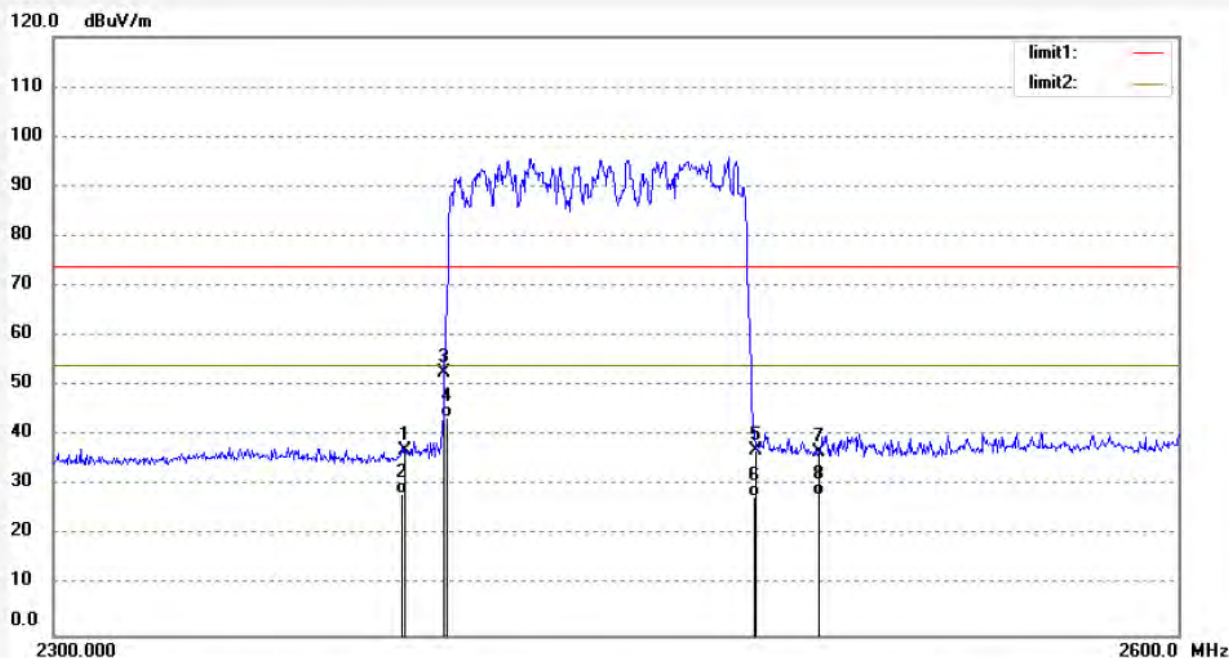
Date: 17/10/24/

Time: 17/22/29

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



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	43.37	-6.32	37.05	74.00	-36.95	peak			
2	2390.000	34.58	-6.32	28.26	54.00	-25.74	AVG			
3	2400.000	58.93	-6.27	52.66	74.00	-21.34	peak			
4	2400.000	50.05	-6.27	43.78	54.00	-10.22	AVG			
5	2483.500	42.98	-5.89	37.09	74.00	-36.91	peak			
6	2483.500	33.70	-5.89	27.81	54.00	-26.19	AVG			
7	2500.000	42.48	-5.81	36.67	74.00	-37.33	peak			
8	2500.000	34.00	-5.81	28.19	54.00	-25.81	AVG			

Note: Average measurement with peak detection at No.2&4&6&8



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.: STAR2017 #1059

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: Hopping (GFSK)

Model: SG1

Manufacturer: OLALA

Polarization: Vertical

Power Source: DC 3.7V

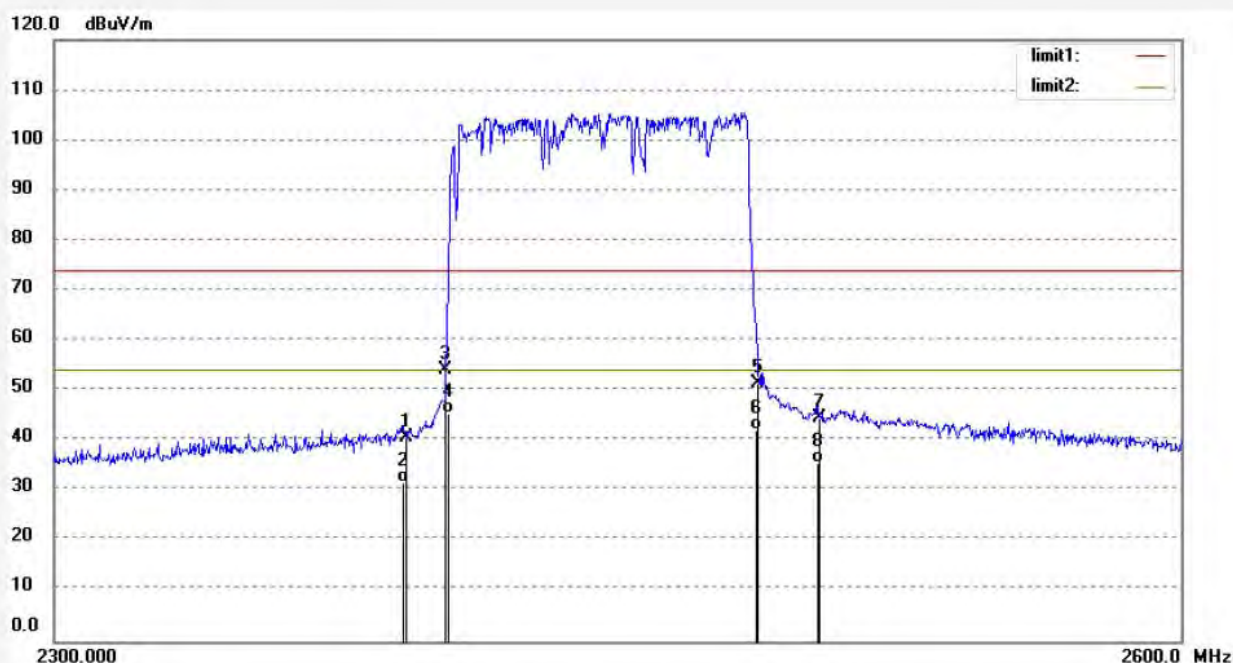
Date: 17/10/24/

Time: 17/02/13

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



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	46.87	-6.32	40.55	74.00	-33.45	peak			
2	2390.000	38.06	-6.32	31.74	54.00	-22.26	AVG			
3	2400.000	60.37	-6.27	54.10	74.00	-19.90	peak			
4	2400.000	51.58	-6.27	45.31	54.00	-8.69	AVG			
5	2483.500	57.37	-5.89	51.48	74.00	-22.52	peak			
6	2483.500	48.00	-5.89	42.11	54.00	-11.89	AVG			
7	2500.000	50.50	-5.81	44.69	74.00	-29.31	peak			
8	2500.000	41.28	-5.81	35.47	54.00	-18.53	AVG			

Note: Average measurement with peak detection at No.2&4&6&8



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.: STAR2017 #1057

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: Hopping (π/4-DQPSK)

Model: SG1

Manufacturer: OLALA

Polarization: Horizontal

Power Source: DC 3.7V

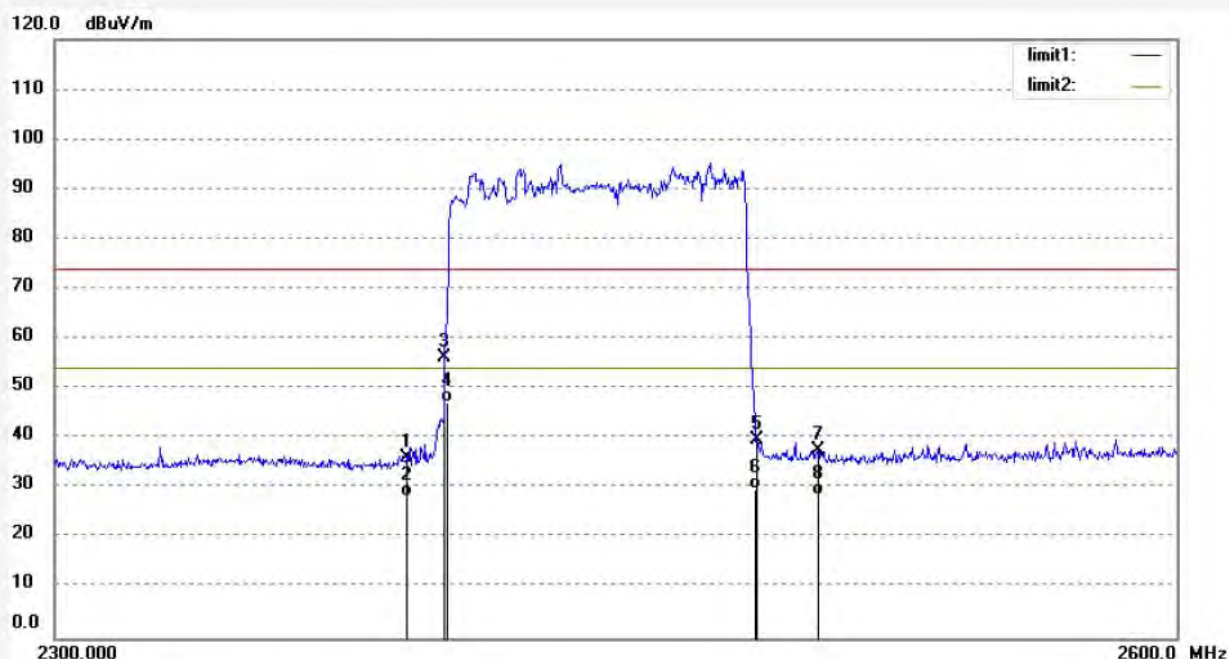
Date: 17/10/24/

Time: 16/48/22

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



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	42.45	-6.32	36.13	74.00	-37.87	peak			
2	2390.000	34.69	-6.32	28.37	54.00	-25.63	AVG			
3	2400.000	62.54	-6.27	56.27	74.00	-17.73	peak			
4	2400.000	53.53	-6.27	47.26	54.00	-6.74	AVG			
5	2483.500	45.75	-5.89	39.86	74.00	-34.14	peak			
6	2483.500	35.71	-5.89	29.82	54.00	-24.18	AVG			
7	2500.000	43.57	-5.81	37.76	74.00	-36.24	peak			
8	2500.000	34.54	-5.81	28.73	54.00	-25.27	AVG			

Note: Average measurement with peak detection at No.2&4&6&8



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.: STAR2017 #1058

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: Hopping (π/4-DQPSK)

Model: SG1

Manufacturer: OLALA

Polarization: Vertical

Power Source: DC 3.7V

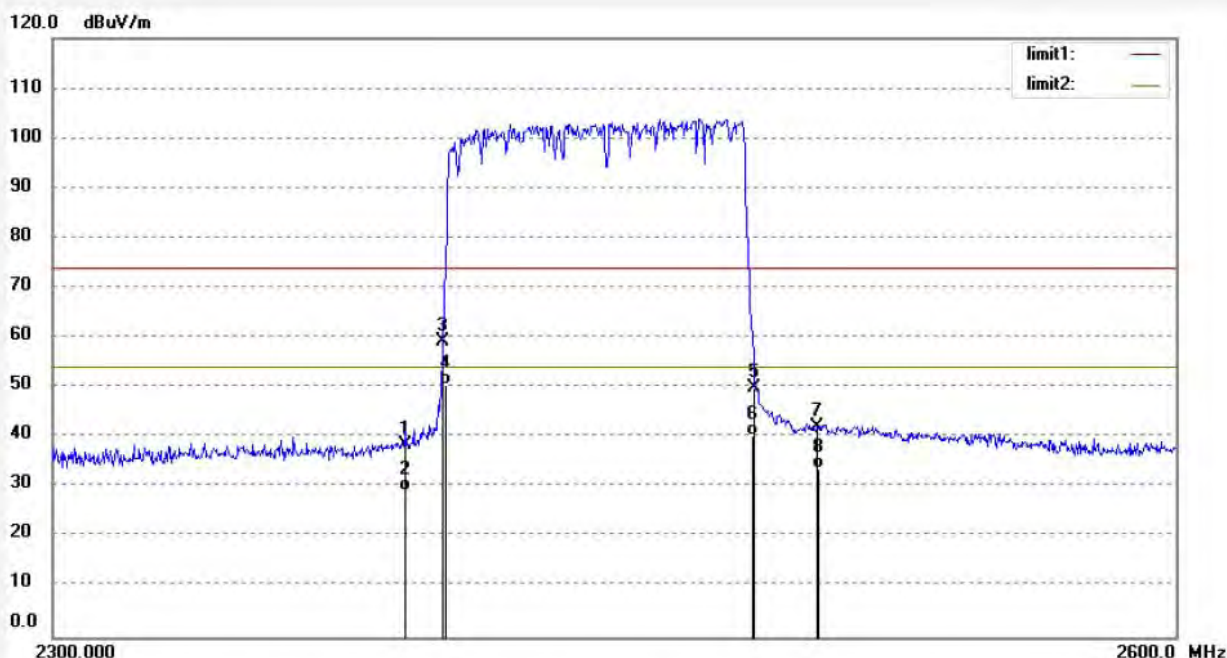
Date: 17/10/24/

Time: 16/53/03

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



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	44.75	-6.32	38.43	74.00	-35.57	peak			
2	2390.000	35.62	-6.32	29.30	54.00	-24.70	AVG			
3	2400.000	65.54	-6.27	59.27	74.00	-14.73	peak			
4	2400.000	56.70	-6.27	50.43	54.00	-3.57	AVG			
5	2483.500	55.91	-5.89	50.02	74.00	-23.98	peak			
6	2483.500	46.22	-5.89	40.33	54.00	-13.67	AVG			
7	2500.000	47.87	-5.81	42.06	74.00	-31.94	peak			
8	2500.000	39.41	-5.81	33.60	54.00	-20.40	AVG			

Note: Average measurement with peak detection at No.2&4&6&8



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.: STAR2017 #1056

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: Hopping (8DPSK)

Model: SG1

Manufacturer: OLALA

Polarization: Horizontal

Power Source: DC 3.7V

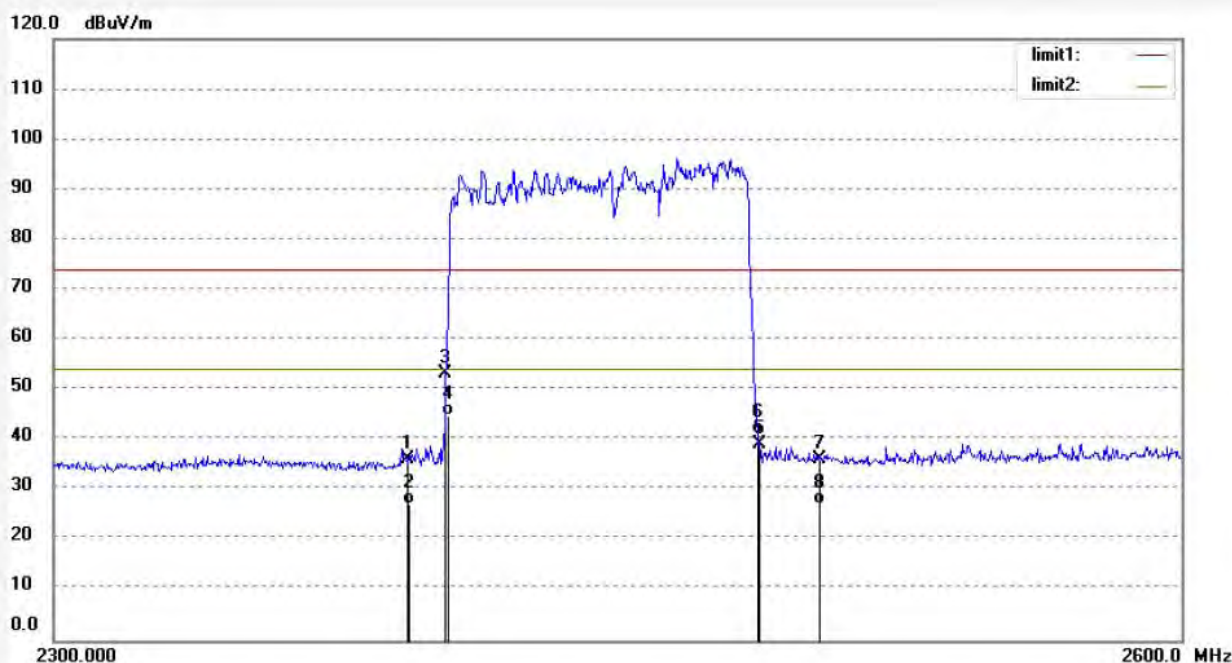
Date: 17/10/24/

Time: 16/42/03

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



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	42.41	-6.32	36.09	74.00	-37.91	peak			
2	2390.000	33.47	-6.32	27.15	54.00	-26.85	AVG			
3	2400.000	59.46	-6.27	53.19	74.00	-20.81	peak			
4	2400.000	51.00	-6.27	44.73	54.00	-9.27	AVG			
5	2483.500	45.05	-5.89	39.16	74.00	-34.84	peak			
6	2483.500	47.04	-5.89	41.15	54.00	-12.85	AVG			
7	2500.000	41.96	-5.81	36.15	74.00	-37.85	peak			
8	2500.000	32.85	-5.81	27.04	54.00	-26.96	AVG			

Note: Average measurement with peak detection at No.2&4&6&8



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.: STAR2017 #1055

Standard: FCC PK

Test item: Radiation Test

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

EUT: Wireless bluetooth earphones

Mode: Hopping (8DPSK)

Model: SG1

Manufacturer: OLALA

Polarization: Vertical

Power Source: DC 3.7V

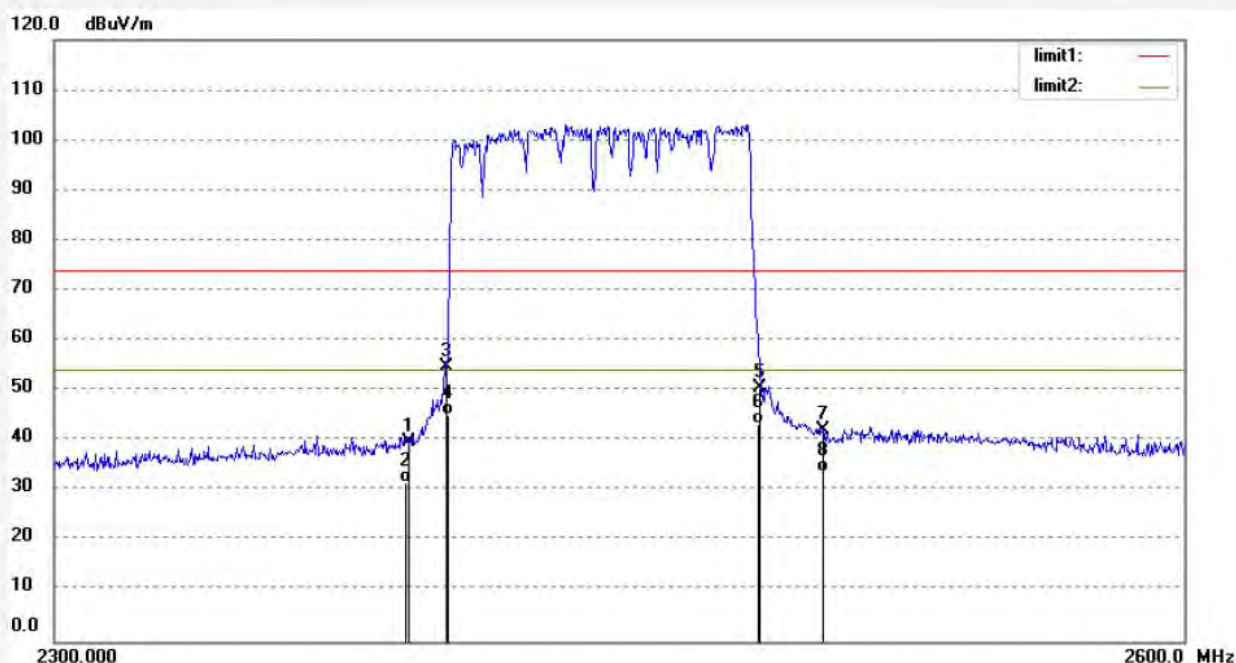
Date: 17/10/24/

Time: 16/36/27

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20171962



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	46.18	-6.32	39.86	74.00	-34.14	peak			
2	2390.000	37.88	-6.32	31.56	54.00	-22.44	AVG			
3	2400.000	60.94	-6.27	54.67	74.00	-19.33	peak			
4	2400.000	51.29	-6.27	45.02	54.00	-8.98	AVG			
5	2483.500	56.34	-5.89	50.45	74.00	-23.55	peak			
6	2483.500	49.20	-5.89	43.31	54.00	-10.69	AVG			
7	2500.000	47.82	-5.81	42.01	74.00	-31.99	peak			
8	2500.000	39.47	-5.81	33.66	54.00	-20.34	AVG			

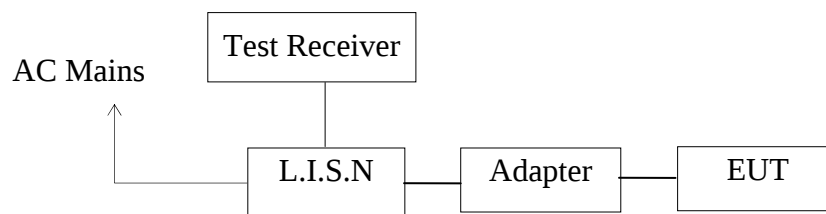
Note: Average measurement with peak detection at No.2&4&6&8

12.AC POWER LINE CONDUCTED EMISSION FOR FCC PART

15 SECTION 15.207(A)

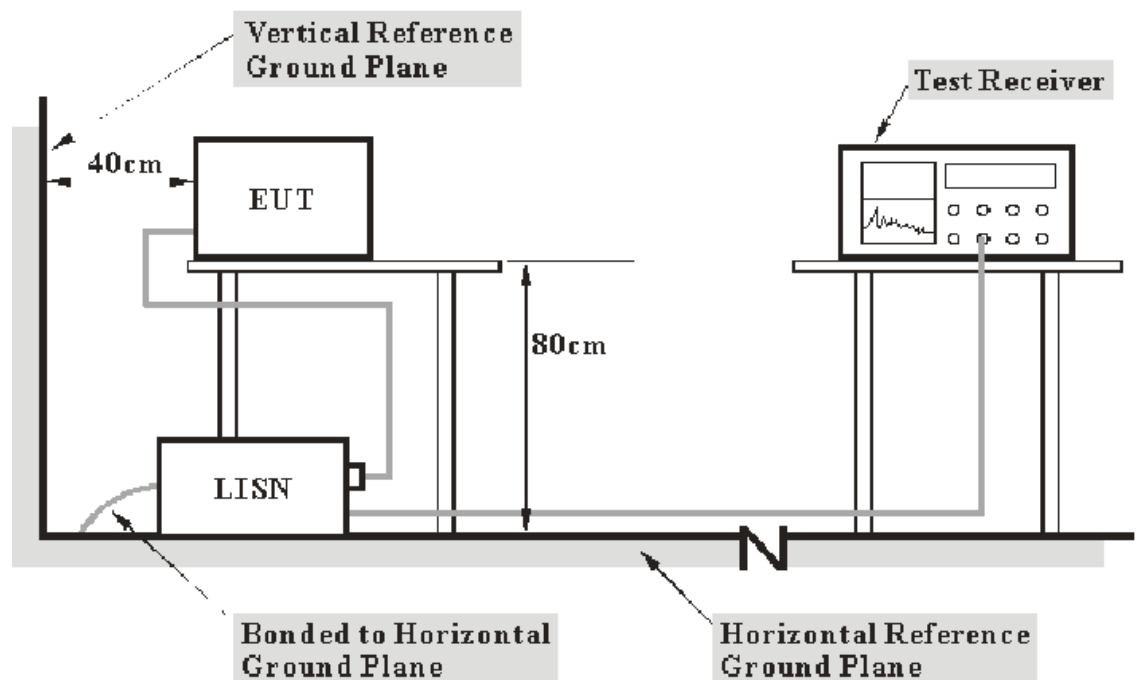
12.1.Block Diagram of Test Setup

12.1.1.Block diagram of connection between the EUT and simulators



(EUT: Wireless bluetooth earphones)

12.1.2.Test System Setup



- Note:**
1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

12.2.Power Line Conducted Emission Measurement Limits

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
NOTE1: The lower limit shall apply at the transition frequencies.		
NOTE2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.		

12.3.Configuration of EUT on Measurement

The equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

12.4.Operating Condition of EUT

12.4.1.Setup the EUT and simulator as shown as Section 12.1.

12.4.2.Turn on the power of all equipment.

12.4.3.Let the EUT work in test mode and 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 9kHz.

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

12.6.Data Sample

Frequency (MHz)	Transducer value (dB)	QuasiPeak Level (dBμV)	Average Level (dBμV)	QuasiPeak Limit (dBμV)	Average Limit (dBμV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
X.XX	10.5	51.1	34.2	56.0	46.0	4.9	11.8	Pass

Frequency(MHz) = Emission frequency in MHz

Transducer value(dB) = Insertion loss of LISN + Cable Loss

Level(dBμV) = Quasi-peak Reading/Average Reading + Transducer value

Limit (dBμV) = Limit stated in standard

Margin = Limit (dBμV) - Level (dBμV)

Calculation Formula:

Margin = Limit (dBμV) - Level (dBμV)

12.7.Power Line Conducted Emission Measurement Results

PASS.

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

Maximizing procedure was performed on the six (6) highest emissions of the EUT. Emissions attenuated more than 20 dB below the permissible value are not reported.

All data was recorded in the Quasi-peak and average detection mode.

The spectral diagrams are attached as below.

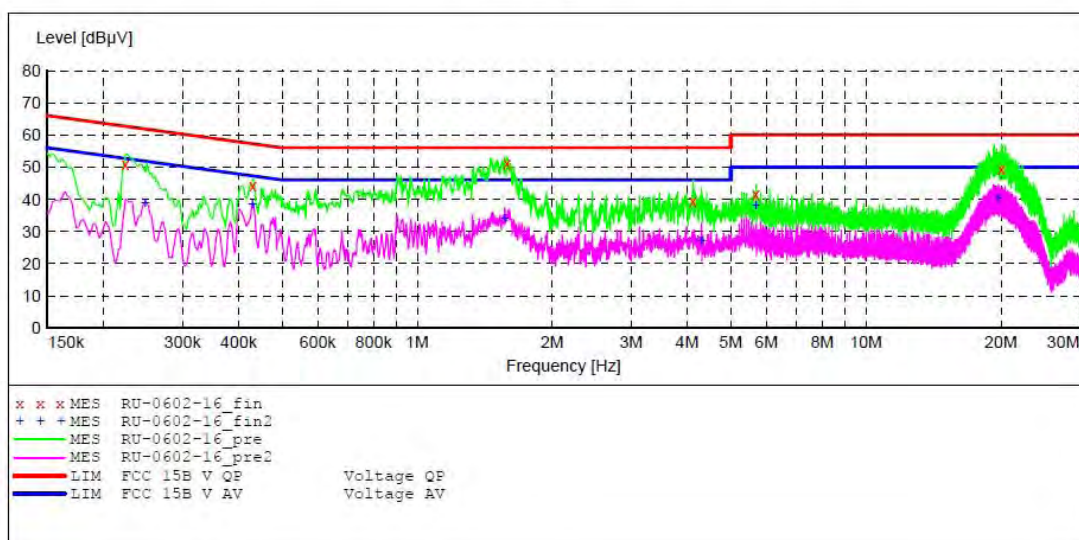
ACCURATE TECHNOLOGY CO., LTD

CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: Wireless bluetooth earphones M/N:SG1
 Manufacturer: OLALA
 Operating Condition: Charging
 Test Site: 2#Shielding Room
 Operator: DING
 Test Specification: L 120V/60Hz
 Comment: Report NO.:ATE20171962
 Start of Test: 2017-10-25 / 19:11:24

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

Short Description: _SUB_STD VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average



MEASUREMENT RESULT: "RU-0602-16_fin"

2017-10-25 19:13

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.224000	51.00	10.5	63	11.7	QP	L1	GND
0.430000	44.10	10.6	57	13.2	QP	L1	GND
1.586000	51.10	10.9	56	4.9	QP	L1	GND
4.120000	39.40	11.0	56	16.6	QP	L1	GND
5.690000	41.80	11.1	60	18.2	QP	L1	GND
20.055000	49.50	11.3	60	10.5	QP	L1	GND

MEASUREMENT RESULT: "RU-0602-16_fin2"

2017-10-25 19:13

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.248000	39.00	10.5	52	12.8	AV	L1	GND
0.430000	38.80	10.6	47	8.5	AV	L1	GND
1.568000	34.20	10.8	46	11.8	AV	L1	GND
4.300000	27.50	11.0	46	18.5	AV	L1	GND
5.690000	38.50	11.1	50	11.5	AV	L1	GND
19.735000	40.40	11.3	50	9.6	AV	L1	GND

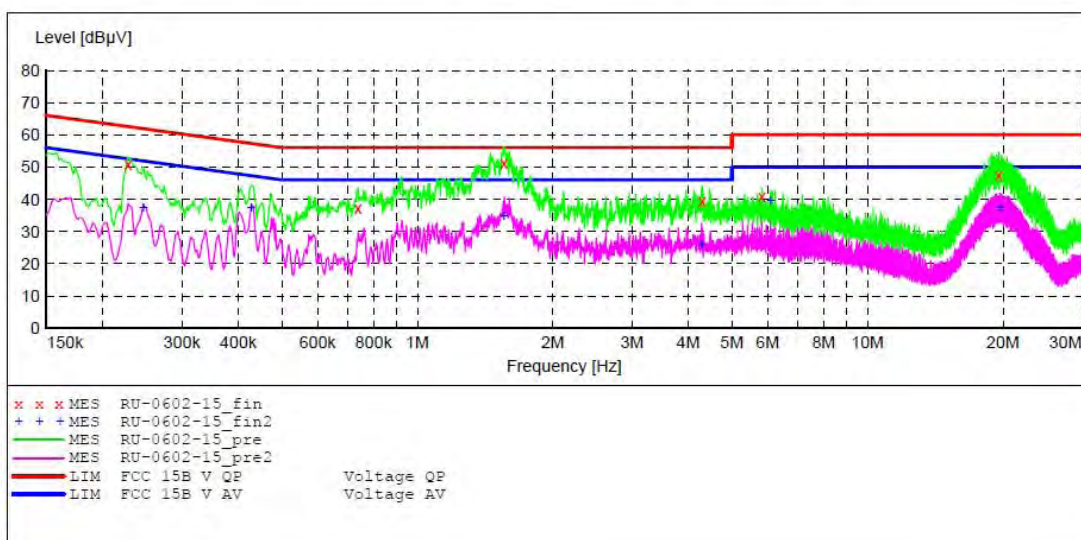
ACCURATE TECHNOLOGY CO., LTD

CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: Wireless bluetooth earphones M/N:SG1
 Manufacturer: OLALA
 Operating Condition: Charging
 Test Site: 2#Shielding Room
 Operator: DING
 Test Specification: N 120V/60Hz
 Comment: Report NO.:ATE20171962
 Start of Test: 2017-10-25 / 19:09:08

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

Short Description: _SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average



MEASUREMENT RESULT: "RU-0602-15_fin"

2017-10-25 19:10

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.228000	51.00	10.5	63	11.5	QP	N	GND
0.738000	37.30	10.7	56	18.7	QP	N	GND
1.560000	51.20	10.8	56	4.8	QP	N	GND
4.300000	39.60	11.0	56	16.4	QP	N	GND
5.825000	40.80	11.1	60	19.2	QP	N	GND
19.560000	47.60	11.3	60	12.4	QP	N	GND

MEASUREMENT RESULT: "RU-0602-15_fin2"

2017-10-25 19:10

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.246000	37.80	10.5	52	14.1	AV	N	GND
0.428000	37.70	10.6	47	9.6	AV	N	GND
1.560000	34.90	10.8	46	11.1	AV	N	GND
4.280000	26.10	11.0	46	19.9	AV	N	GND
6.095000	39.70	11.1	50	10.3	AV	N	GND
19.675000	37.70	11.3	50	12.3	AV	N	GND

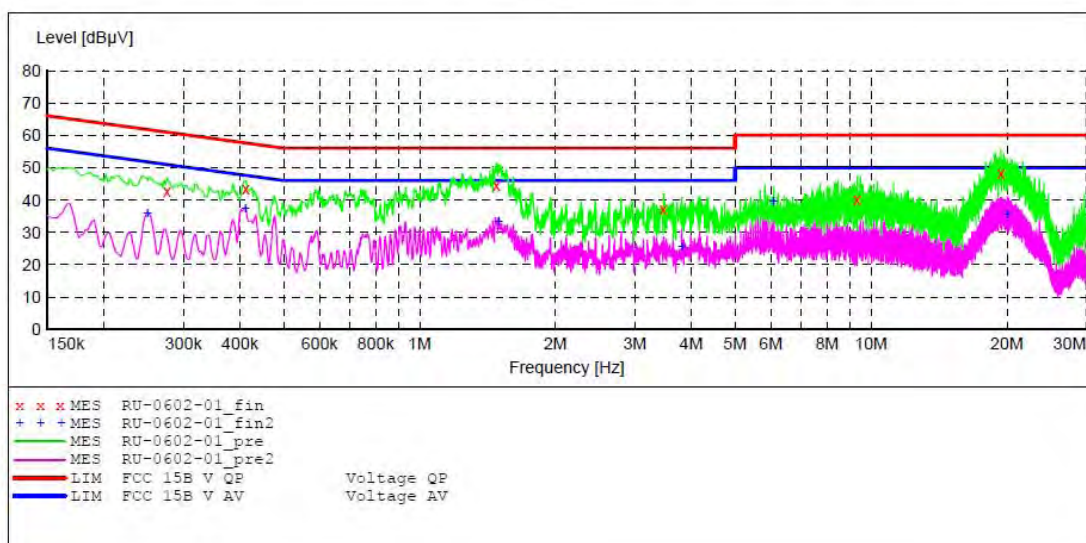
ACCURATE TECHNOLOGY CO., LTD

CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: Wireless bluetooth earphones M/N:SG1
 Manufacturer: OLALA
 Operating Condition: Charging
 Test Site: 2#Shielding Room
 Operator: DING
 Test Specification: L 240V/60Hz
 Comment: Report NO.:ATE20171962
 Start of Test: 2017-10-25 / 17:47:15

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

Short Description: _SUB STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average



MEASUREMENT RESULT: "RU-0602-01_fin"

2017-10-25 17:48

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.276000	42.90	10.5	61	18.0	QP	L1	GND
0.412000	43.60	10.6	58	14.0	QP	L1	GND
1.482000	44.60	10.8	56	11.4	QP	L1	GND
3.470000	37.20	11.0	56	18.8	QP	L1	GND
9.315000	40.20	11.2	60	19.8	QP	L1	GND
19.390000	48.20	11.3	60	11.8	QP	L1	GND

MEASUREMENT RESULT: "RU-0602-01_fin2"

2017-10-25 17:48

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.250000	36.20	10.5	52	15.6	AV	L1	GND
0.412000	37.60	10.6	48	10.0	AV	L1	GND
1.498000	33.60	10.8	46	12.4	AV	L1	GND
3.810000	25.80	11.0	46	20.2	AV	L1	GND
6.085000	39.80	11.1	50	10.2	AV	L1	GND
20.015000	35.90	11.3	50	14.1	AV	L1	GND

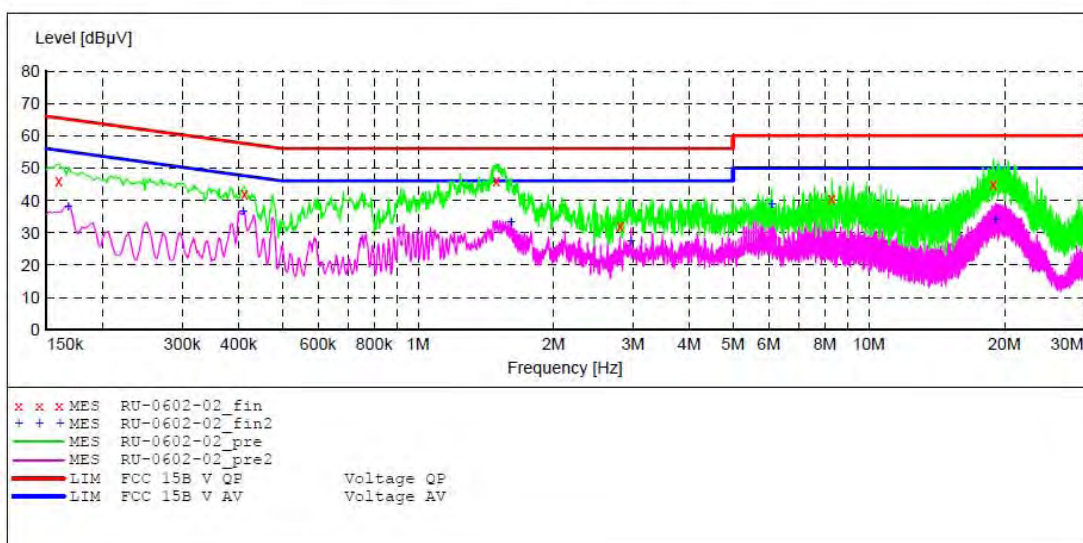
ACCURATE TECHNOLOGY CO., LTD

CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: Wireless bluetooth earphones M/N:SG1
 Manufacturer: OLALA
 Operating Condition: Charging
 Test Site: 2#Shielding Room
 Operator: DING
 Test Specification: N 240V/60Hz
 Comment: Report NO.:ATE20171962
 Start of Test: 2017-10-25 / 17:50:20

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

Short Description: _SUB_STD VTERM2 1.70
 Start Stop Step _Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average



MEASUREMENT RESULT: "RU-0602-02_fin"

2017-10-25 17:51

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.160000	46.00	10.4	66	19.5	QP	N	GND
0.412000	41.90	10.6	58	15.7	QP	N	GND
1.494000	46.10	10.8	56	9.9	QP	N	GND
2.810000	32.20	11.0	56	23.8	QP	N	GND
8.285000	40.70	11.2	60	19.3	QP	N	GND
18.895000	44.90	11.3	60	15.1	QP	N	GND

MEASUREMENT RESULT: "RU-0602-02_fin2"

2017-10-25 17:51

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.168000	38.30	10.4	55	16.8	AV	N	GND
0.410000	37.00	10.6	48	10.6	AV	N	GND
1.610000	33.40	10.9	46	12.6	AV	N	GND
2.970000	27.60	11.0	46	18.4	AV	N	GND
6.090000	38.90	11.1	50	11.1	AV	N	GND
19.115000	34.40	11.3	50	15.6	AV	N	GND

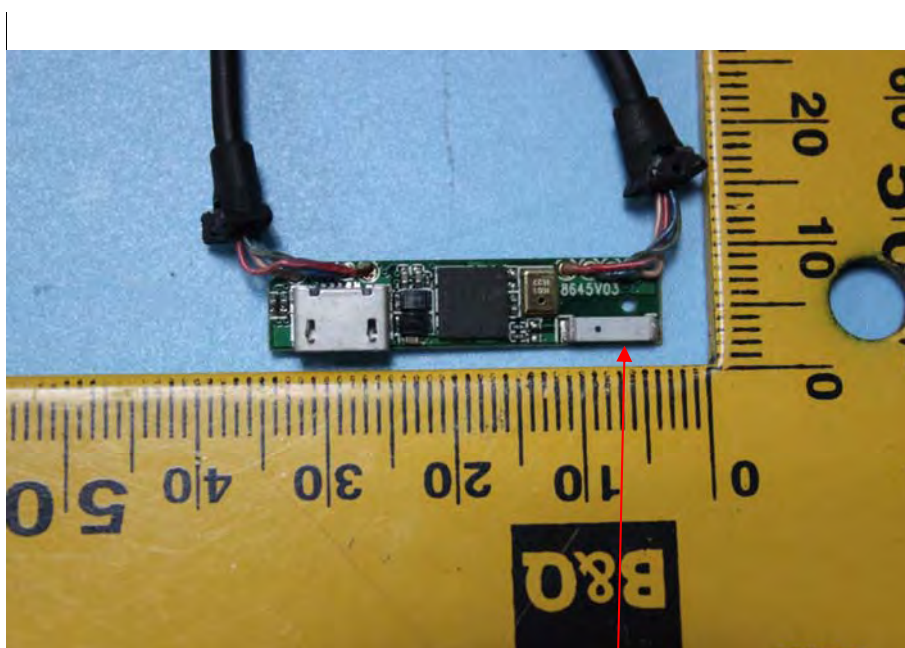
13.ANTENNA REQUIREMENT

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

Device is equipped with permanent attached antenna, which isn't displaced by other antenna. The Max Antenna gain of EUT is 0 dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.



Antenna

***** End of Test Report *****