

APPLICATION CERTIFICATION FCC Part 15C
On Behalf of
QUEST USA CORP

IJOY BLAST WIRELESS SPEAKER

Model No.: IJSPBLT01-BJ

FCC ID: 2AJQ7BLAST

Prepared for : QUEST USA CORP
Address : 495 Flatbush Ave, Brooklyn, NY 11225, USA

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. : RSZ201123801-00A
Date of Test : November 24- December 15, 2020
Date of Report : December 15, 2020

TABLE OF CONTENTS

Description	Page
Test Report Certification	
TABLE OF CONTENTS	2
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
2.1. For Radiated Emission Test	7
2.2. For Conducted Emission Test	8
2.3. For Direct conduction measurement	8
3. OPERATION OF EUT DURING TESTING	9
3.1. Operating Mode	9
3.2. Configuration and peripherals	9
4. TEST PROCEDURES AND RESULTS	10
5. 20DB BANDWIDTH TEST	11
5.1. Block Diagram of Test Setup	11
5.2. The Requirement For Section 15.247(a)(1)	11
5.3. EUT Configuration on Test	11
5.4. Operating Condition of EUT	11
5.5. Test Procedure	11
5.6. Test Result	12
6. CARRIER FREQUENCY SEPARATION TEST	17
6.1. Block Diagram of Test Setup	17
6.2. The Requirement For Section 15.247(a)(1)	17
6.3. EUT Configuration on Test	17
6.4. Operating Condition of EUT	17
6.5. Test Procedure	18
6.6. Test Result	18
7. NUMBER OF HOPPING FREQUENCY TEST	24
7.1. Block Diagram of Test Setup	24
7.2. The Requirement For Section 15.247(a)(1)(iii)	24
7.3. EUT Configuration on Test	24
7.4. Operating Condition of EUT	24
7.5. Test Procedure	24
7.6. Test Result	25
8. DWELL TIME TEST	27
8.1. Block Diagram of Test Setup	27
8.2. The Requirement For Section 15.247(a)(1)(iii)	27
8.3. EUT Configuration on Test	27
8.4. Operating Condition of EUT	27
8.5. Test Procedure	27
8.6. Test Result	27
9. MAXIMUM PEAK OUTPUT POWER TEST	34
9.1. Block Diagram of Test Setup	34

9.2.	The Requirement For Section 15.247(b)(1).....	34
9.3.	EUT Configuration on Test	34
9.4.	Operating Condition of EUT	34
9.5.	Test Procedure	34
9.6.	Test Result	35
10.	RADIATED EMISSION TEST	41
10.1.	Block Diagram of Test Setup	41
10.2.	The Limit For Section 15.247(d).....	42
10.3.	Restricted bands of operation	43
10.4.	EUT Configuration on Test	43
10.5.	Operating Condition of EUT	44
10.6.	Test Procedure	44
10.7.	Data Sample.....	45
10.8.	Test Results	45
11.	BAND EDGE COMPLIANCE TEST	58
11.1.	Block Diagram of Test Setup	58
11.2.	The Requirement For Section 15.247(d)	58
11.3.	EUT Configuration on Test	58
11.4.	Operating Condition of EUT	58
11.5.	Test Procedure	59
11.6.	Test Result	59
12.	AC POWER LINE CONDUCTED EMISSION TEST	67
12.1.	Block Diagram of Test Setup	67
12.2.	Power Line Conducted Emission Measurement Limits	67
12.3.	Configuration of EUT on Measurement	67
12.4.	Operating Condition of EUT	67
12.5.	Test Procedure	68
12.6.	DATA SAMPLE	68
12.7.	Test Results	68
13.	ANTENNA REQUIREMENT	71
13.1.	The Requirement	71
13.2.	Antenna Construction.....	71

Test Report Certification

Applicant : QUEST USA CORP
Manufacturer : QUEST USA CORP
Product : IJOY BLAST WIRELESS SPEAKER
Model No. : IJSPBLT01-BJ

Measurement Procedure Used:

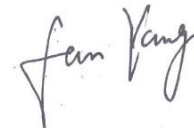
FCC Rules and Regulations Part 15 Subpart C Section 15.247
ANSI C63.10: 2013

The device described above is tested by 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 : November 24- December 15, 2020
Date of Report : December 15, 2020

Prepared by :



(Fan Yang , Engineer)

Approved & Authorized Signer :



(Candy Li, Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Model Number	:	IJSPBLT01-BJ
Frequency Range	:	2402MHz-2480MHz
Number of Channels	:	79
Antenna Gain(Max)	:	-0.68dBi
Antenna type	:	PCB Antenna
Modulation mode	:	GFSK, $\pi/4$ DQPSK, 8DPSK
Trade Mark	:	IJOY
Power supply	:	DC 5V (Powered by USB cable) or DC 3.7V(Powered by Battery)
Applicant	:	QUEST USA CORP
Address	:	495 Flatbush Ave, Brooklyn, NY 11225, USA
Manufacturer	:	QUEST USA CORP
Address	:	495 Flatbush Ave, Brooklyn, NY 11225, USA
Sample No.:	:	RSZ201123801-00A -S1

1.2. Accessory and Auxiliary Equipment

Adapter	:	Manufacturer: HUAWEI M/N: HW-050200C01 Input: 100-240V~ 50/60Hz, 0.5A Output: 5V $\overline{=}$ 2A
---------	---	---

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

Radiated Emission Expanded Uncertainty (9kHz-30MHz)	: U=2.66dB, k=2
Radiated Emission Expanded Uncertainty (30MHz-1000MHz)	: U=4.28dB, k=2
Radiated Emission Expanded Uncertainty (1G-18GHz)	: U=4.98dB, k=2
Radiated Emission Expanded Uncertainty (18G-26.5GHz)	: U=5.06dB, k=2
Conducted Emission Expanded Uncertainty (Mains ports, 9kHz-30MHz)	: U=2.72dB, k=2

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

2.1.For Radiated Emission Test

Item	Equipment	Manufacturer	Type	S/N	Calibrated dates	Validity
1.	Test Receiver	Rohde & Schwarz	ESR	101817	Jan.04, 2020	1 Year
2.	Spectrum Analyzer	Rohde & Schwarz	FSV40	101495	Jan.04, 2020	1 Year
3.	Pre-Amplifier	Agilent	8447D	294A10619	Jan.04, 2020	1 Year
4.	Pre-Amplifier	Rohde & Schwarz	CBLU11835 40-01	3791	Jan.04, 2020	1 Year
5.	50 Coaxial Switch	Anritsu Corp	MP59B	6200237248	Jan.04, 2020	1 Year
6.	Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan.05, 2020	1 Year
7.	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1067	Jan.05, 2020	1 Year
8.	Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan.05, 2020	1 Year
9.	RF Coaxial Cable (Radiated Emission)	SUHNER	N-5m	NO.3	Jan.04, 2020	1 Year
10.	RF Coaxial Cable (Radiated Emission)	SUHNER	N-5m	NO.4	Jan.04, 2020	1 Year
11.	RF Coaxial Cable (Radiated Emission)	SUHNER	N-1m	NO.5	Jan.04, 2020	1 Year
12.	RF Coaxial Cable (Radiated Emission)	SUHNER	N-1m	NO.6	Jan.04, 2020	1 Year
13.	Measurement Software: EZ_EMC V1.1.4.2					

2.2.For Conducted Emission Test

Item	Equipment	Manufacturer	Type	S/N	Calibrated dates	Validity
1.	Test Receiver	Rohde & Schwarz	ESCS30	100307	Jan. 04, 2020	1 Year
2.	L.I.S.N.	Schwarzbeck	NLSK8126	8126431	Jan. 04, 2020	1 Year
3.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100815	Jan. 04, 2020	1 Year
4.	50Ω Coaxial Switch	Anritsu Corp	MP59B	6200283936	Jan. 04, 2020	1 Year
5.	RF Coaxial Cable (Conducted Emission)	SUHNER	N-2m	No.2	Jan. 04, 2020	1 Year
6.	Measurement Software: ES-K1 V1.71					

2.3.For Direct conduction measurement

Item	Equipment	Manufacturer	Type	S/N	Calibrated dates	Validity
1.	Spectrum Analyzer	Rohde & Schwarz	ESPI	100396	Jan. 04, 2020	1 Year
2.	RF Coaxial Cable	N/A	N-0.1m	/	Self calibration	/

3. OPERATION OF EUT DURING TESTING

3.1. Operating Mode

The mode is used: Transmitting mode

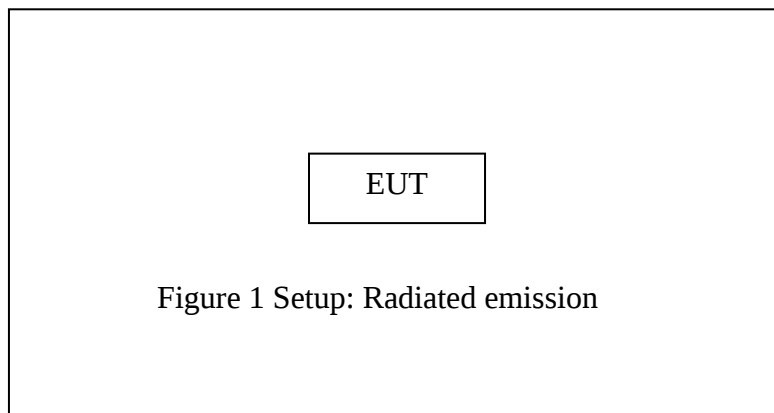
Low Channel: 2402MHz

Middle Channel: 2441MHz

High Channel: 2480MHz

Hopping

3.2. Configuration and peripherals

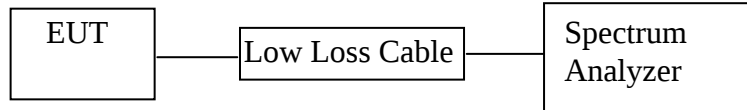


4. TEST PROCEDURES AND RESULTS

FCC Rules	Description of Test	Result
Section 15.247(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 15.207	AC Power Line Conducted Emissions Limits Test	Compliant
Section 15.203	Antenna Requirement	Compliant

5. 20DB BANDWIDTH TEST

5.1. Block Diagram of Test Setup



5.2. The Requirement For 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 Test

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. The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW.

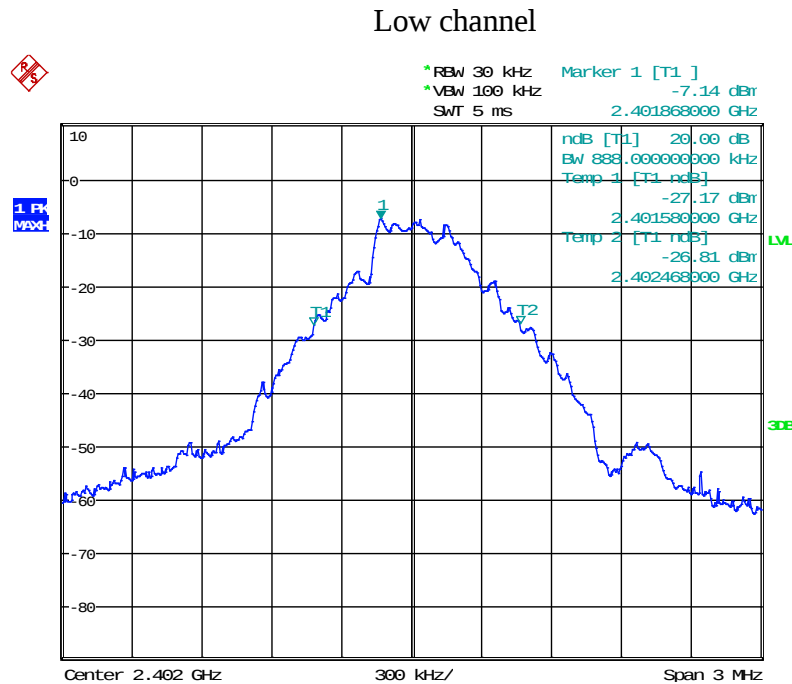
5.5.3. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

5.6. Test Result

Channel	Frequency (MHz)	GFSK 20dB Bandwidth (MHz)	π /4DQPSK 20dB Bandwidth (MHz)	8DPSK 20dB Bandwidth (MHz)	Result
Low	2402	0.888	1.284	1.230	Pass
Middle	2441	0.894	1.290	1.230	Pass
High	2480	0.894	1.314	1.236	Pass

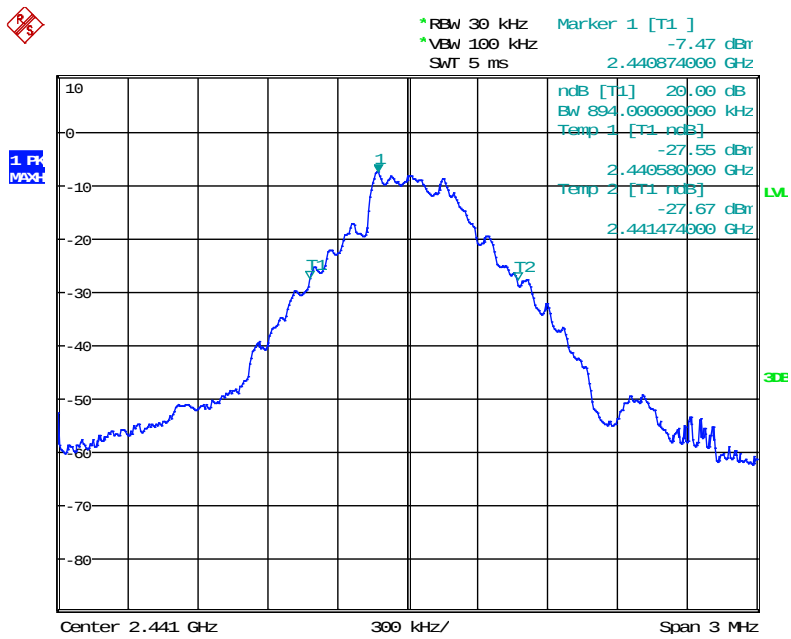
The spectrum analyzer plots are attached as below.

GFSK Mode



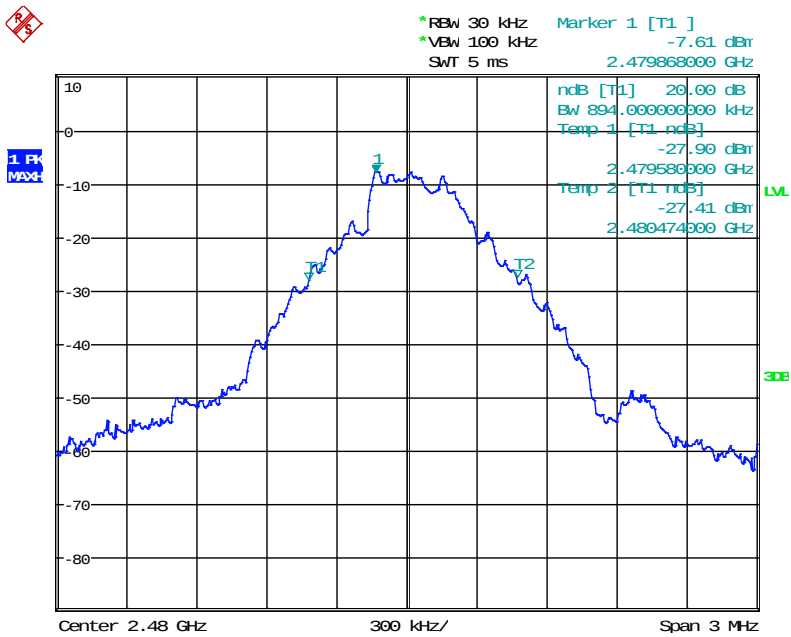
Date: 26.NOV.2020 09:53:38

Middle channel



Date: 26.NOV.2020 09:52:11

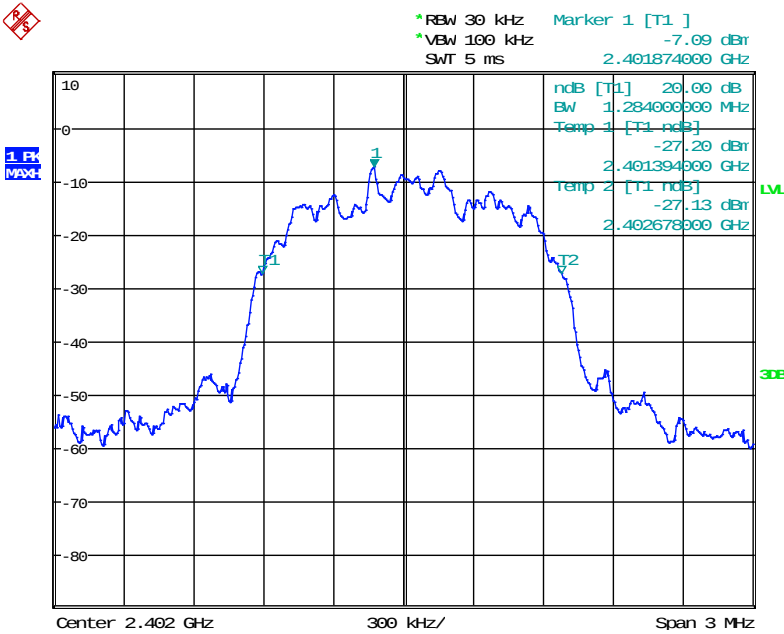
High channel



Date: 26.NOV.2020 09:50:47

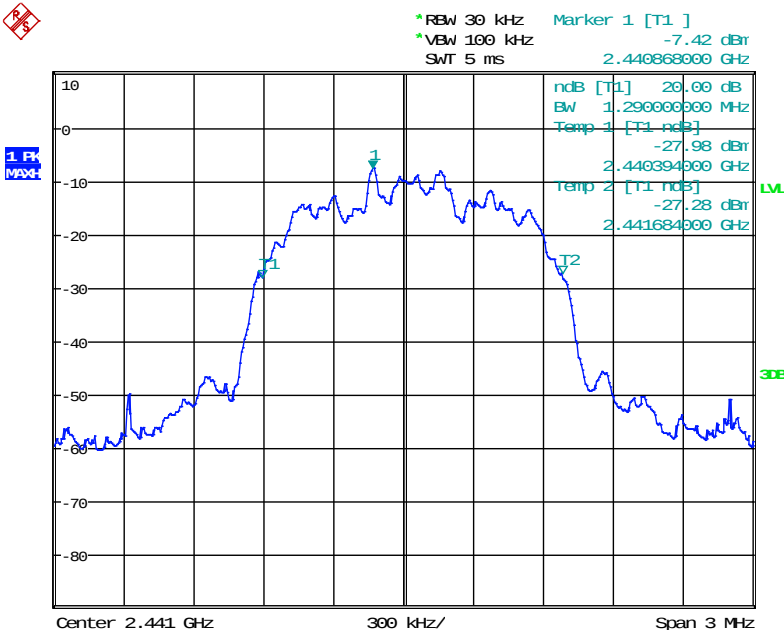
π /4DQPSK Mode

Low channel



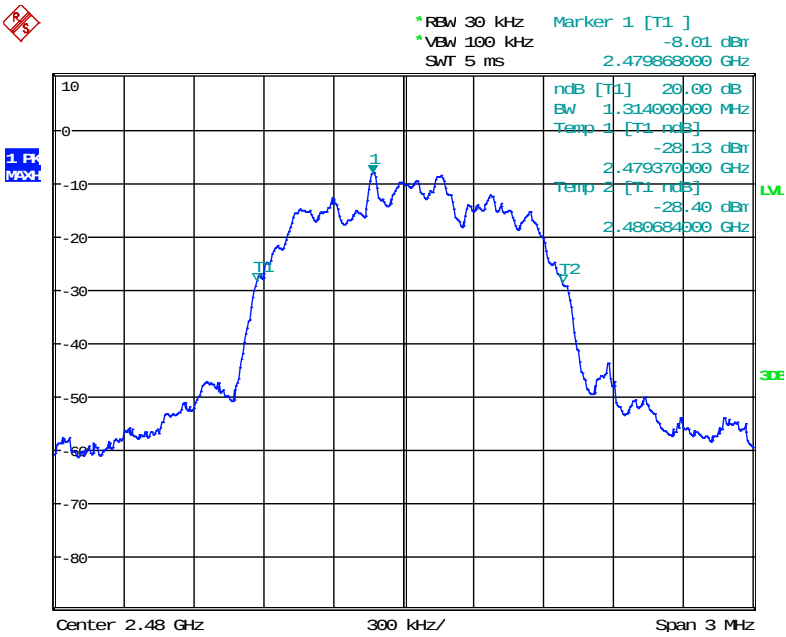
Date: 26.NOV.2020 09:54:45

Middle channel



Date: 26.NOV.2020 09:55:56

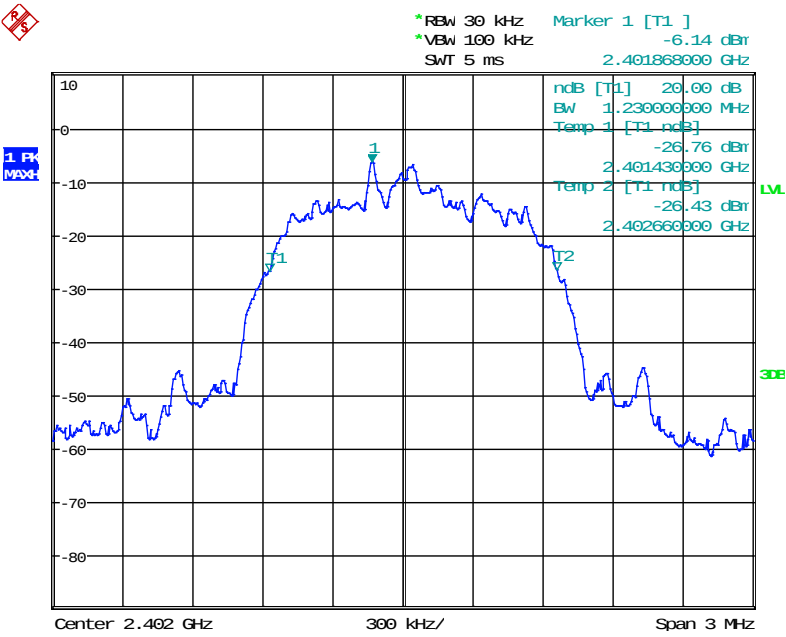
High channel



Date: 26.NOV.2020 09:57:47

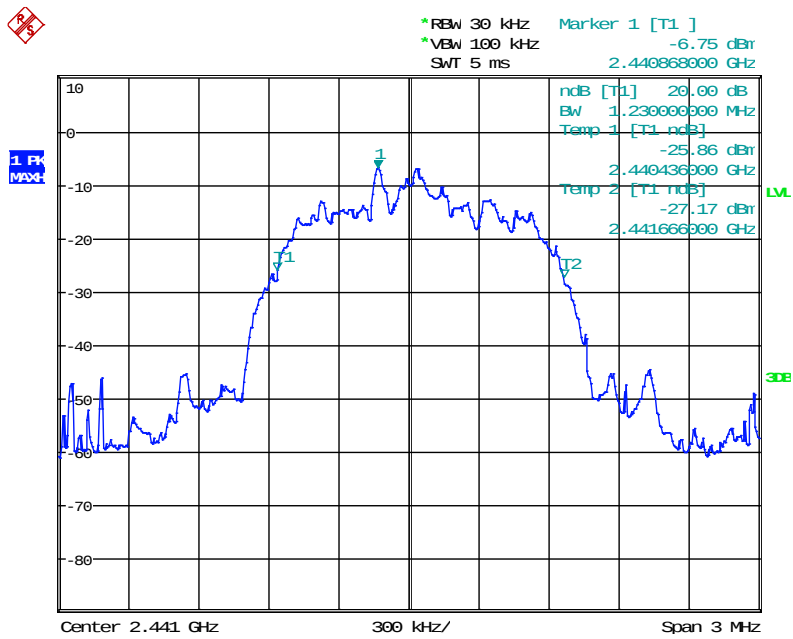
8DPSK Mode

Low channel



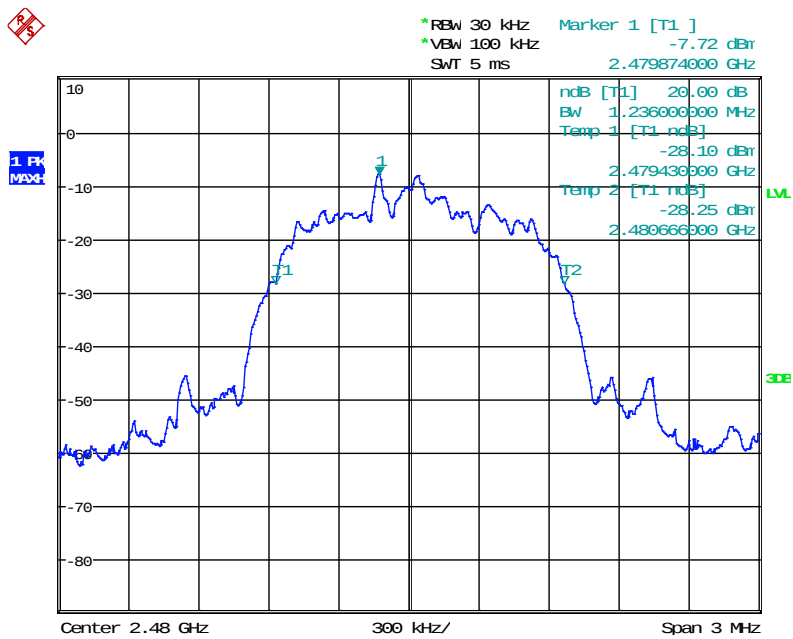
Date: 26.NOV.2020 10:00:38

Middle channel



Date: 26.NOV.2020 09:59:50

High channel



Date: 26.NOV.2020 09:58:57

6. CARRIER FREQUENCY SEPARATION TEST

6.1. Block Diagram of Test Setup



6.2. The Requirement For 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 pseudo randomly 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 Test

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 3MHz.

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	1.140	25kHz or 2/3*20dB bandwidth	Pass
	2403			
Middle	2441	1.002	25kHz or 2/3*20dB bandwidth	Pass
	2442			
High	2479	1.002	25kHz or 2/3*20dB bandwidth	Pass
	2480			

$\pi/4$ DQPSK

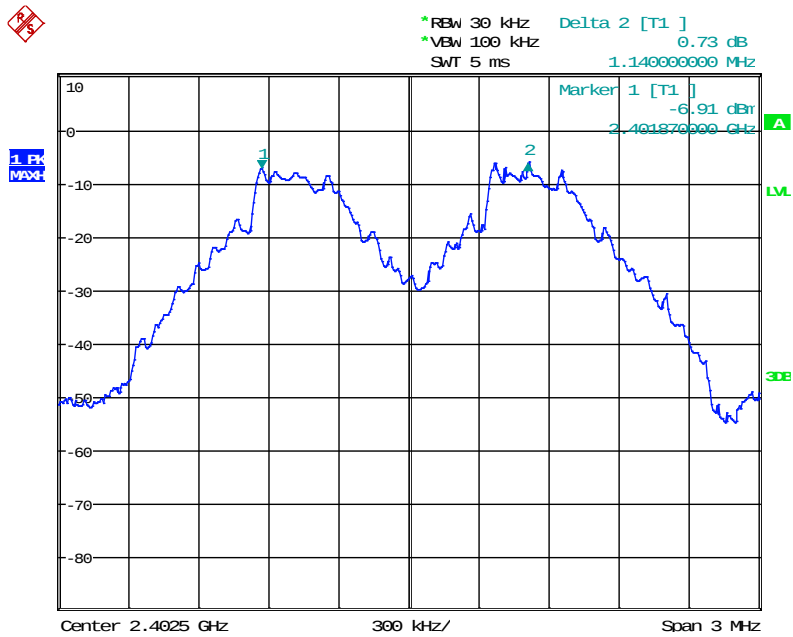
Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.002	25kHz or 2/3*20dB bandwidth	Pass
	2403			
Middle	2441	1.008	25kHz or 2/3*20dB bandwidth	Pass
	2442			
High	2479	1.002	25kHz or 2/3*20dB bandwidth	Pass
	2480			

8DPSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.008	25kHz or 2/3*20dB bandwidth	Pass
	2403			
Middle	2441	1.008	25kHz or 2/3*20dB bandwidth	Pass
	2442			
High	2479	1.002	25kHz or 2/3*20dB bandwidth	Pass
	2480			

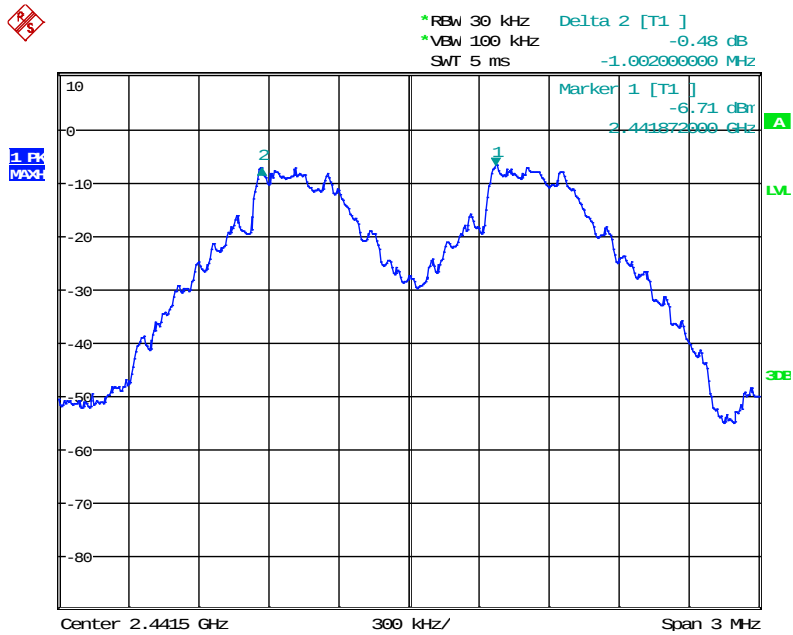
GFSK Mode

Low channel



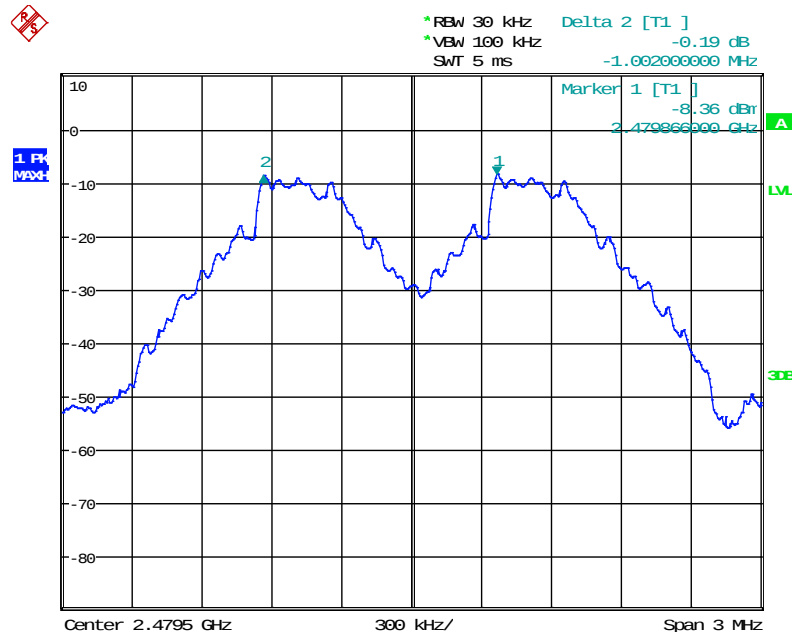
Date: 26.NOV.2020 10:32:26

Middle channel



Date: 26.NOV.2020 10:42:15

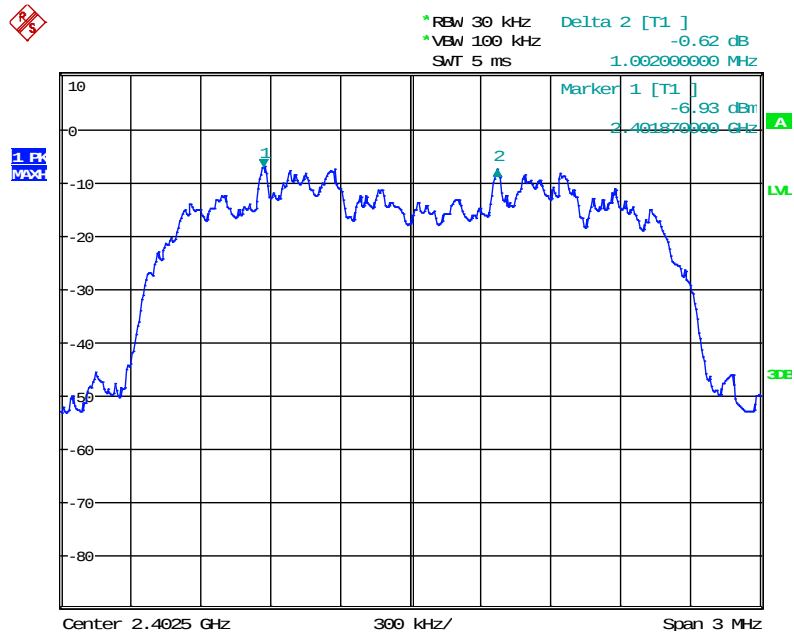
High channel



Date: 26.NOV.2020 10:43:56

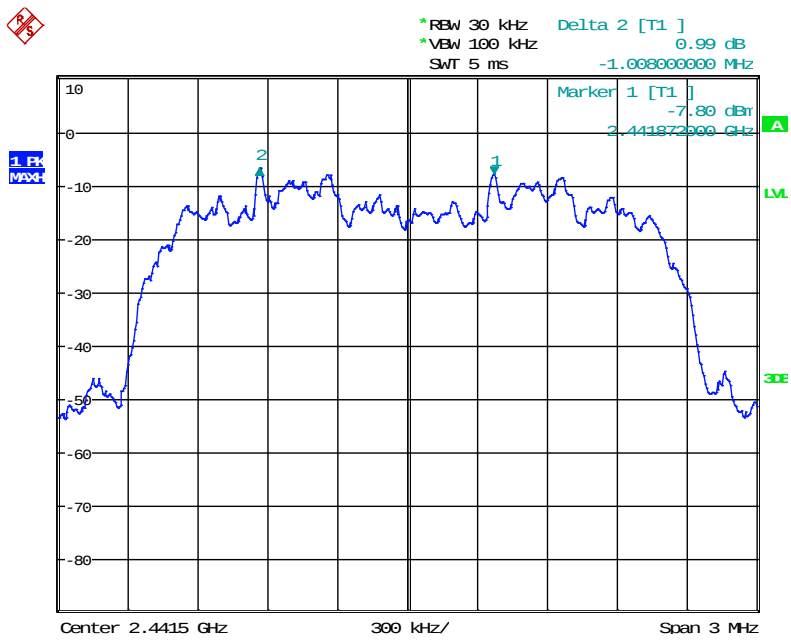
$\pi/4$ DQPSK Mode

Low channel



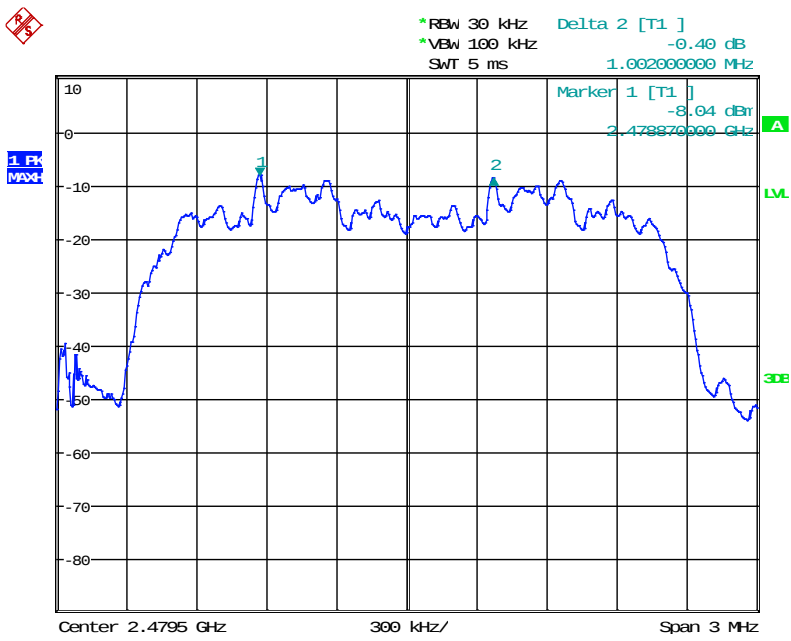
Date: 26.NOV.2020 10:34:37

Middle channel



Date: 26.NOV.2020 10:39:49

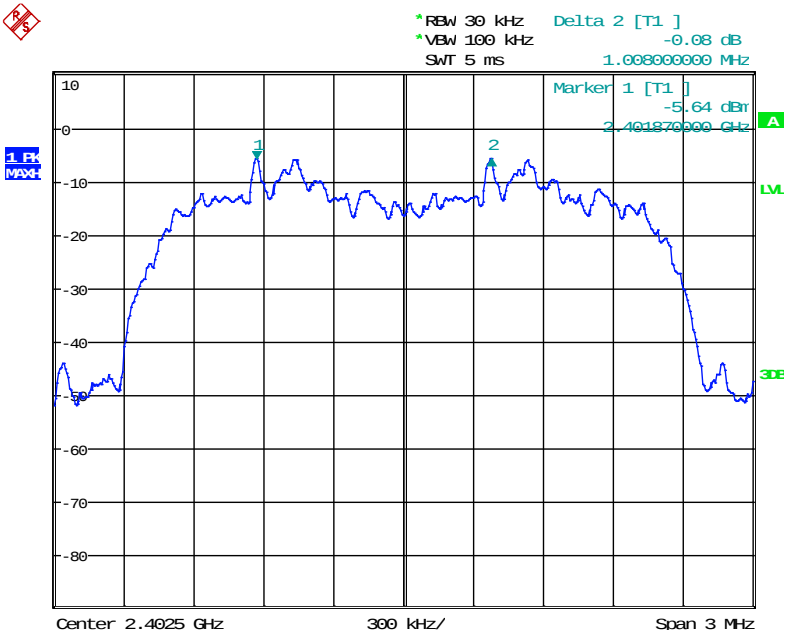
High channel



Date: 26.NOV.2020 10:46:00

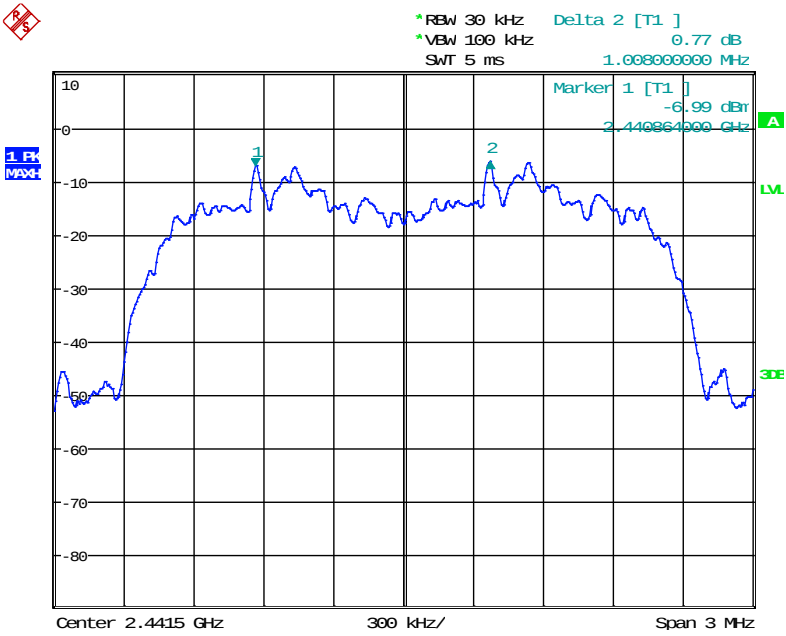
8DPSK Mode

Low channel

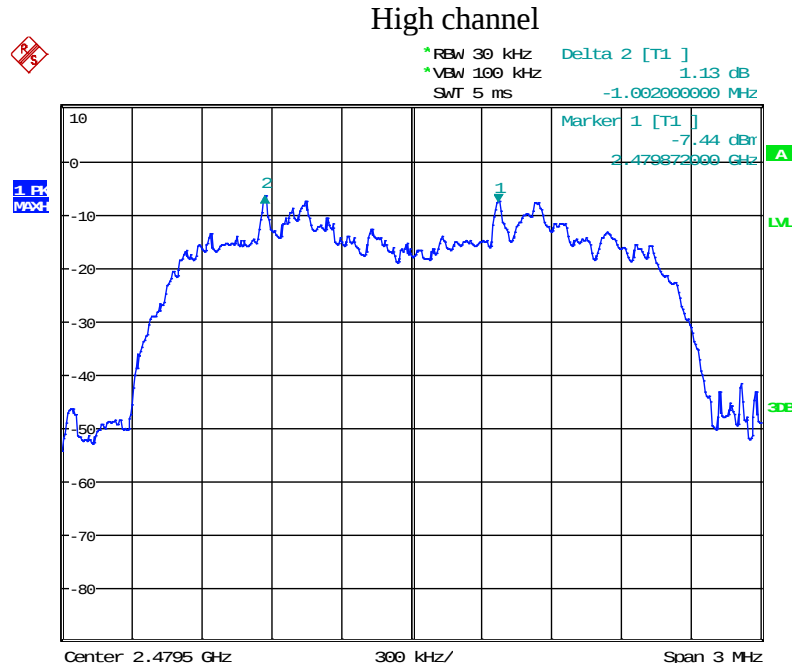


Date: 26.NOV.2020 10:36:14

Middle channel



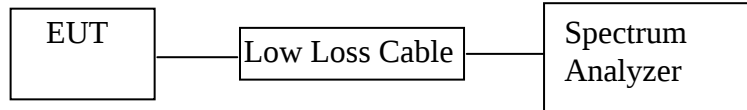
Date: 26.NOV.2020 10:38:20



Date: 26.NOV.2020 10:48:38

7. NUMBER OF HOPPING FREQUENCY TEST

7.1. Block Diagram of Test Setup



7.2. The Requirement For 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 Test

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.

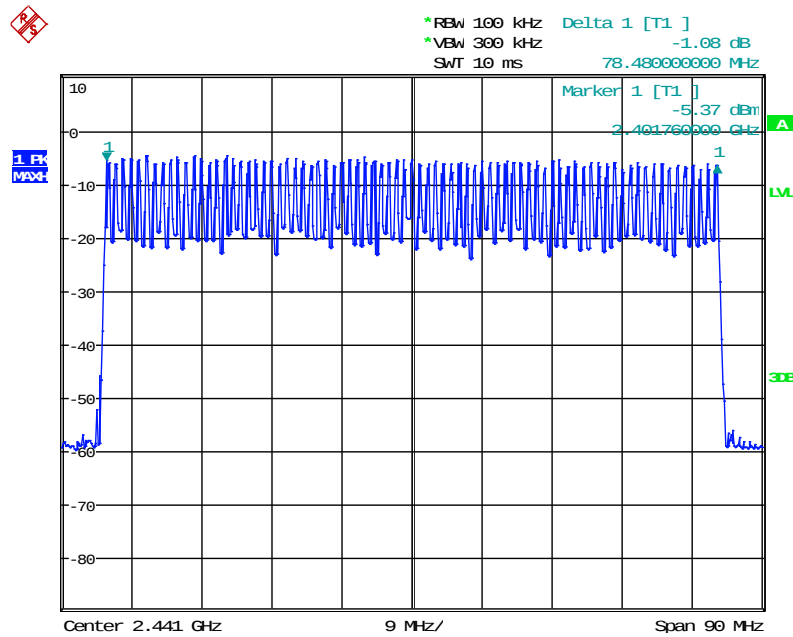
7.5.3. Max hold, view and count how many channel in the band.

7.6.Test Result

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

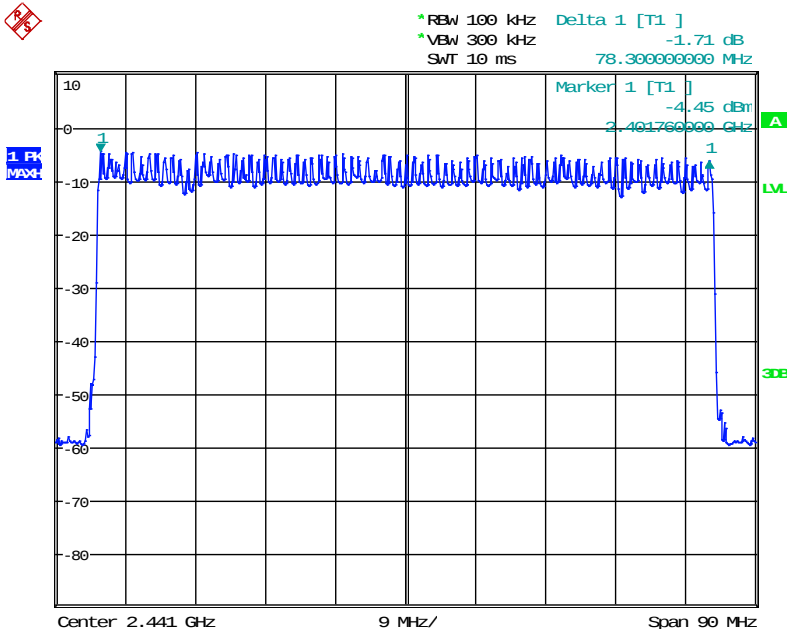
The spectrum analyzer plots are attached as below.

Number of hopping channels (GFSK Mode)



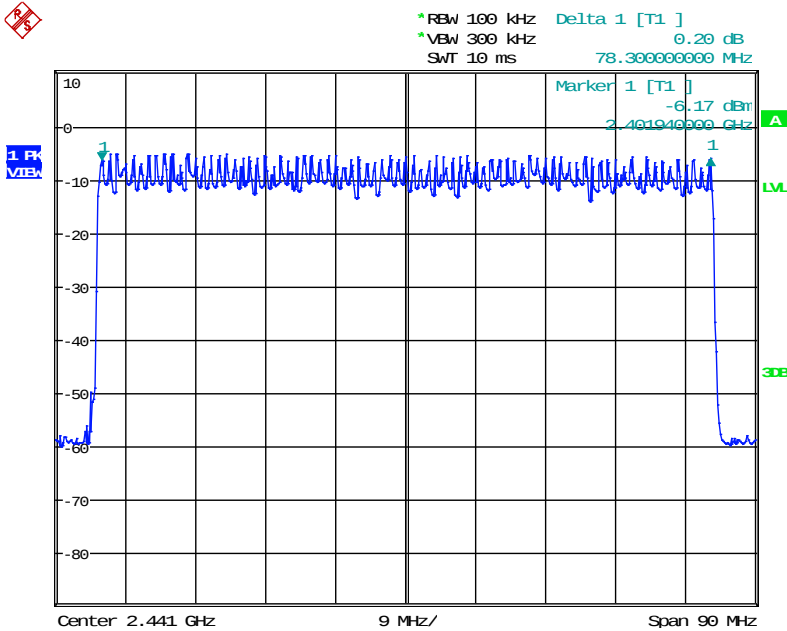
Date: 26.NOV.2020 10:28:53

Number of hopping channels (π /4DQPSK Mode)



Date: 26.NOV.2020 10:25:30

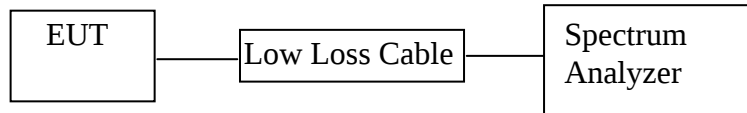
Number of hopping channels (8DPSK Mode)



Date: 26.NOV.2020 10:22:01

8. DWELL TIME TEST

8.1. Block Diagram of Test Setup



8.2. The Requirement For 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 Test

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

Pass.

GFSK Mode (Worse case)

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2441	0.42	134.4	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(2 \times 79)) \times 31.6$				
DH3	2441	1.70	272.0	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(4 \times 79)) \times 31.6$				
DH5	2441	2.94	313.6	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6 \times 79)) \times 31.6$				

$\pi/4$ DQPSK (Worse case)

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
2DH1	2441	0.42	134.4	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(2 \times 79)) \times 31.6$				
2DH3	2441	1.70	272.0	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(4 \times 79)) \times 31.6$				
2DH5	2441	2.94	313.6	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 (Worse case)

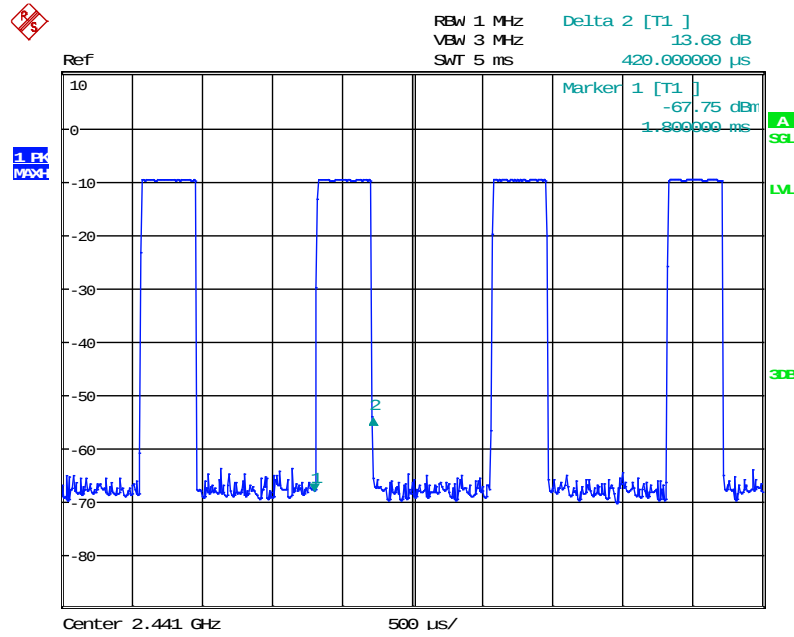
Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
3DH1	2441	0.43	137.6	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(2 \times 79)) \times 31.6$				
3DH3	2441	1.70	272.0	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(4 \times 79)) \times 31.6$				
3DH5	2441	2.97	316.8	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6 \times 79)) \times 31.6$				

Note: We tested the low, middle and high channel of GFSK mode, $\pi/4$ DQPSK & 8DPSK mode and recorded the Worse case data for all test mode.

The spectrum analyzer plots are attached as below.

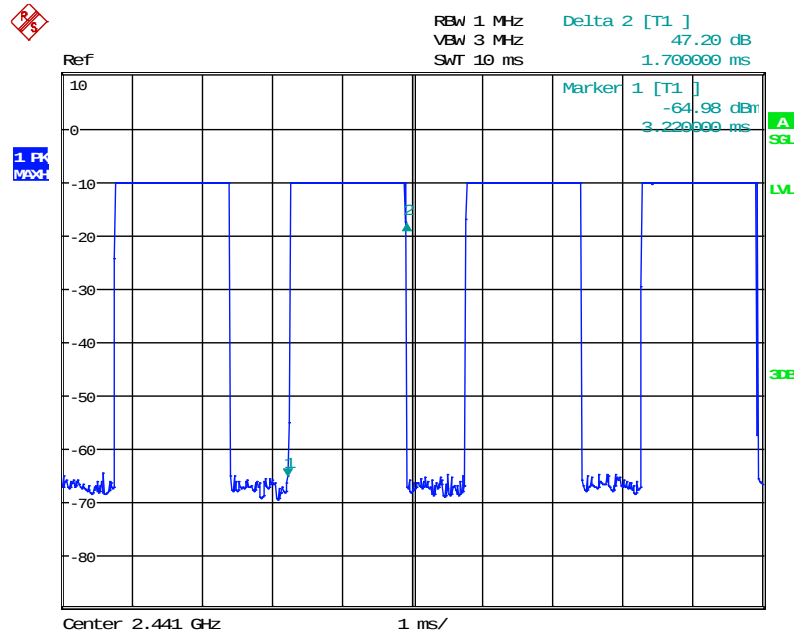
GFSK Mode

DH1 Middle channel



Date: 26.NOV.2020 10:54:18

DH3 Middle channel



Date: 26.NOV.2020 10:58:14

1. PK Max

Ref

RBW 1 MHz
VBW 3 MHz
SMT 15 ms

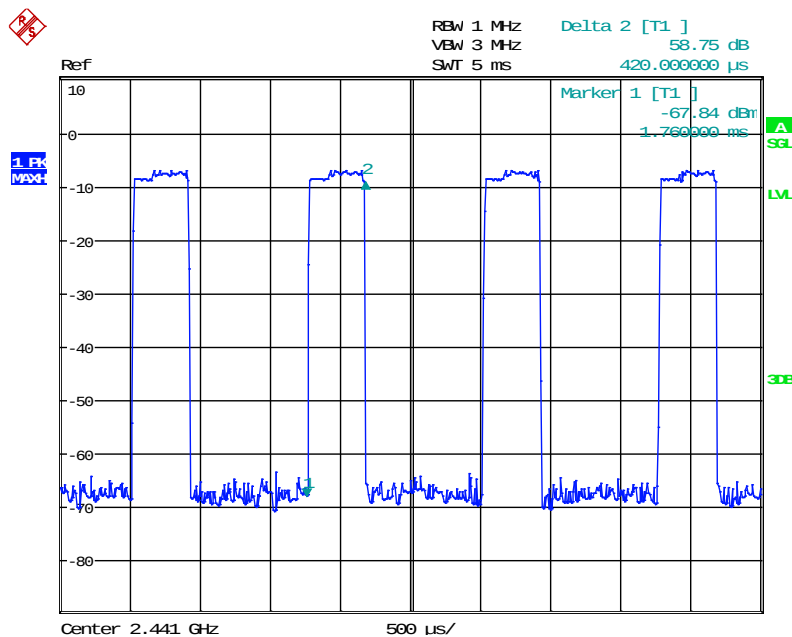
Delta 2 [T1]
56.69 dB
2.940000 ms

Marker 1 [T1]
-66.75 dBm
4.650000 ms

Center 2.441 GHz
1.5 ms/

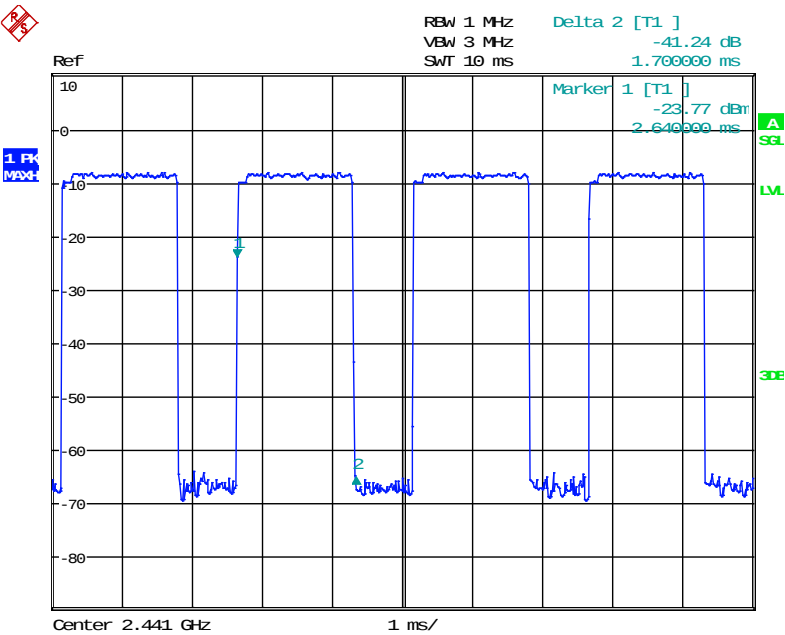
Date: 26.NOV.2020 10:59:14

2DH1 Middle channel



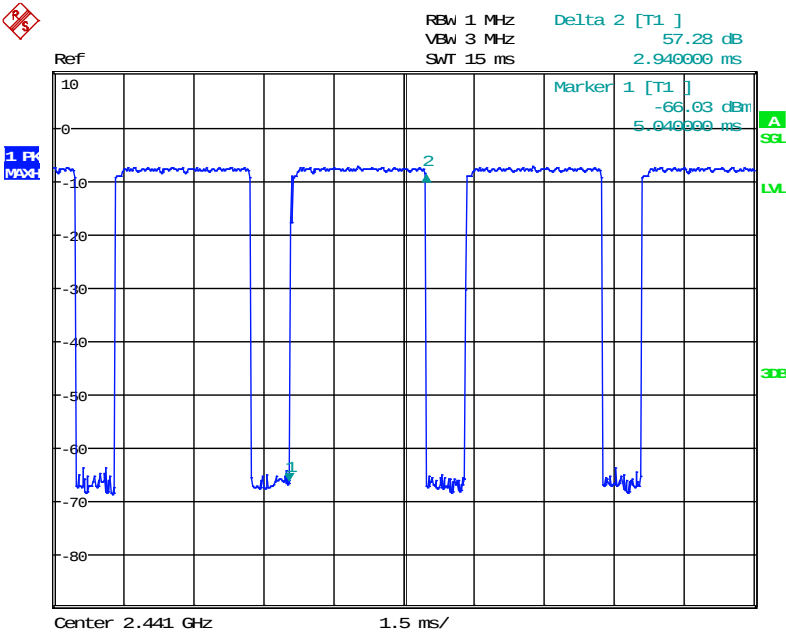
Date: 26.NOV.2020 10:53:18

2DH3 Middle channel



Date: 26.NOV.2020 10:57:17

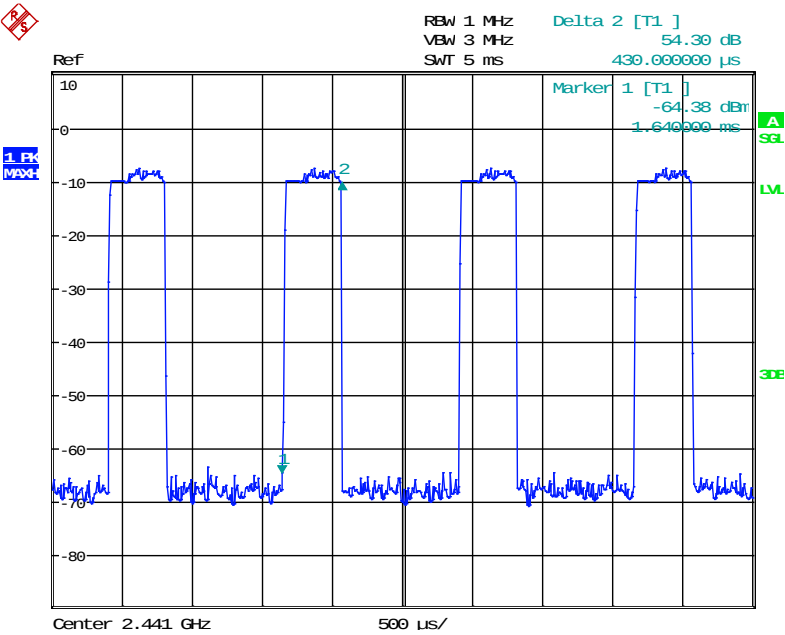
2DH5 Middle channel



Date: 26.NOV.2020 11:00:24

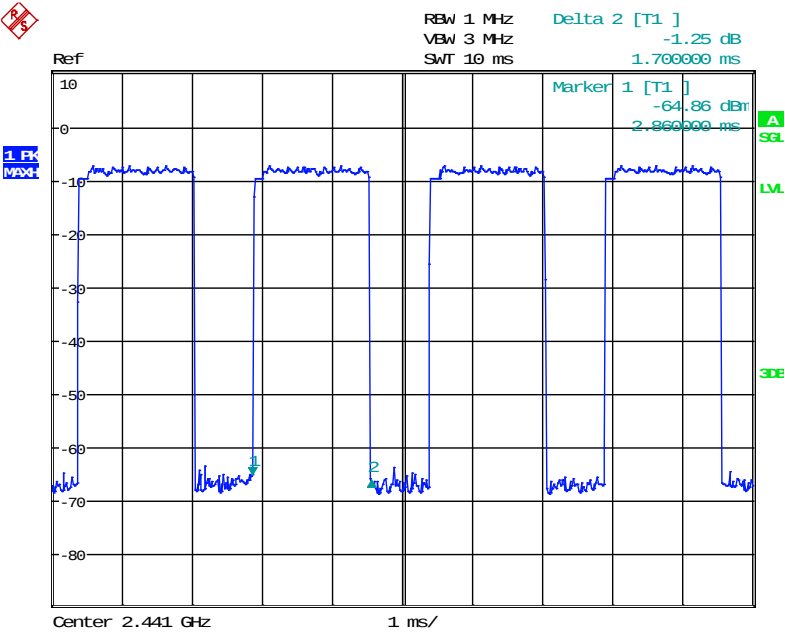
8DPSK Mode

3DH1 Middle channel



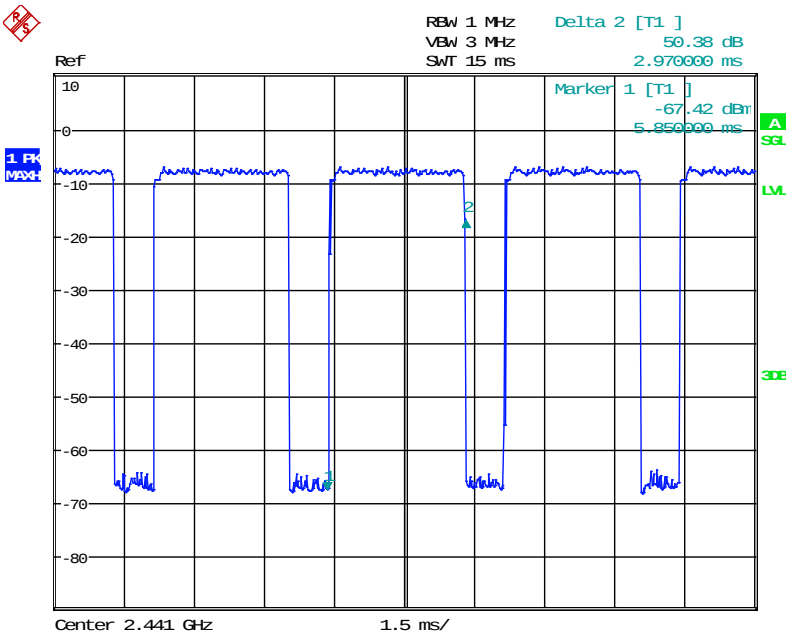
Date: 26.NOV.2020 10:55:21

3DH3 Middle channel



Date: 26.NOV.2020 10:56:28

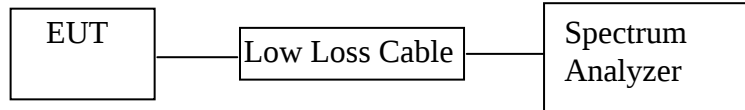
3DH5 Middle channel



Date: 26.NOV.2020 11:01:11

9. MAXIMUM PEAK OUTPUT POWER TEST

9.1. Block Diagram of Test Setup



9.2. The Requirement For 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 Test

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(GFSK) and 3MHz and VBW to 10MHz($\pi/4$ DQPSK and 8DPSK).

9.5.3. Measurement the maximum peak output power.

9.6. Test Result

GFSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm)	Limits (dBm)
Low	2402	-4.92	21
Middle	2441	-5.25	21
High	2480	-5.91	21

$\pi/4$ DQPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm)	Limits (dBm)
Low	2402	-2.59	21
Middle	2441	-3.14	21
High	2480	-2.50	21

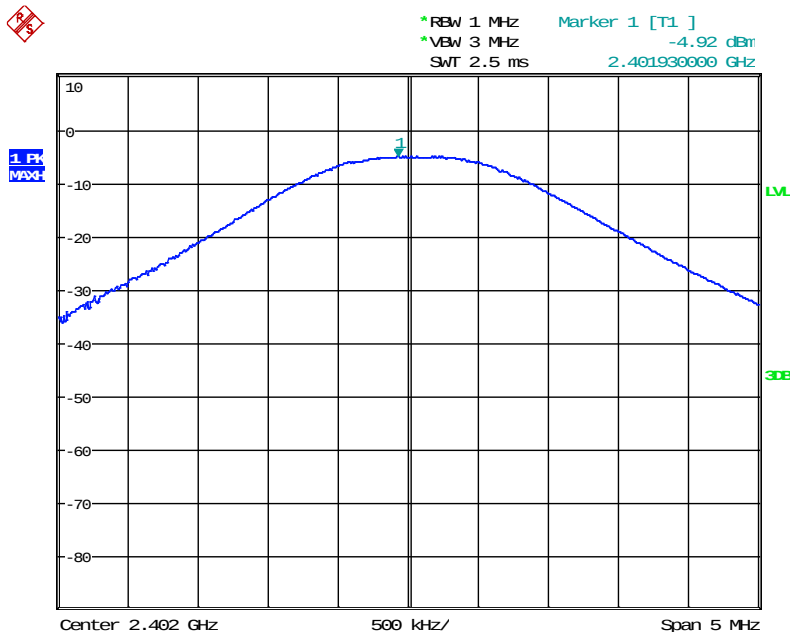
8DPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm)	Limits (dBm)
Low	2402	-1.68	21
Middle	2441	-2.57	21
High	2480	-2.78	21

The spectrum analyzer plots are attached as below.

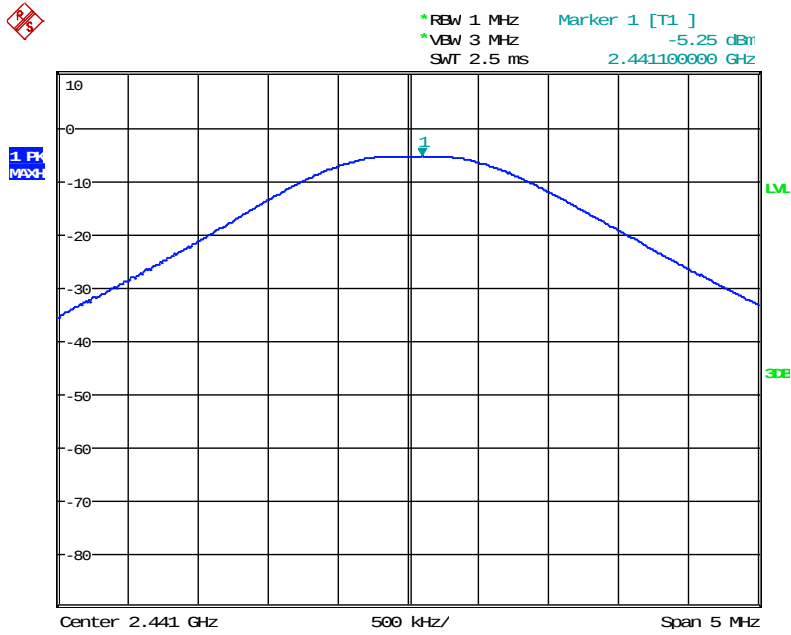
GFSK Mode

Low channel



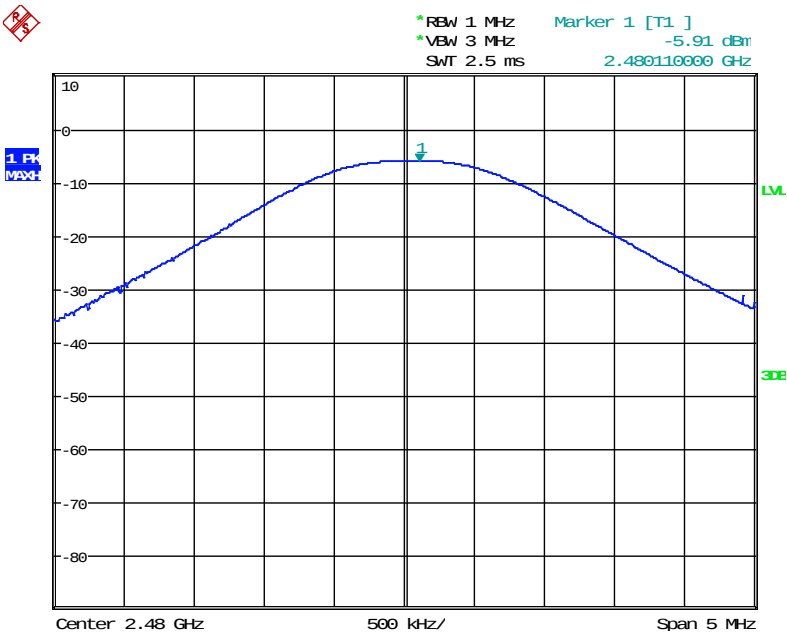
Date: 26.NOV.2020 09:45:06

Middle channel



Date: 26.NOV.2020 09:48:17

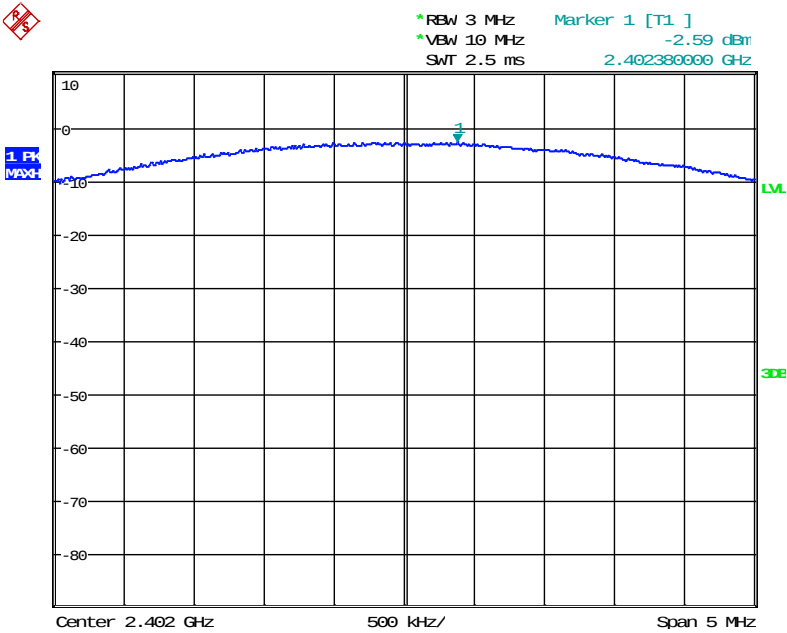
High channel



Date: 26.NOV.2020 09:49:20

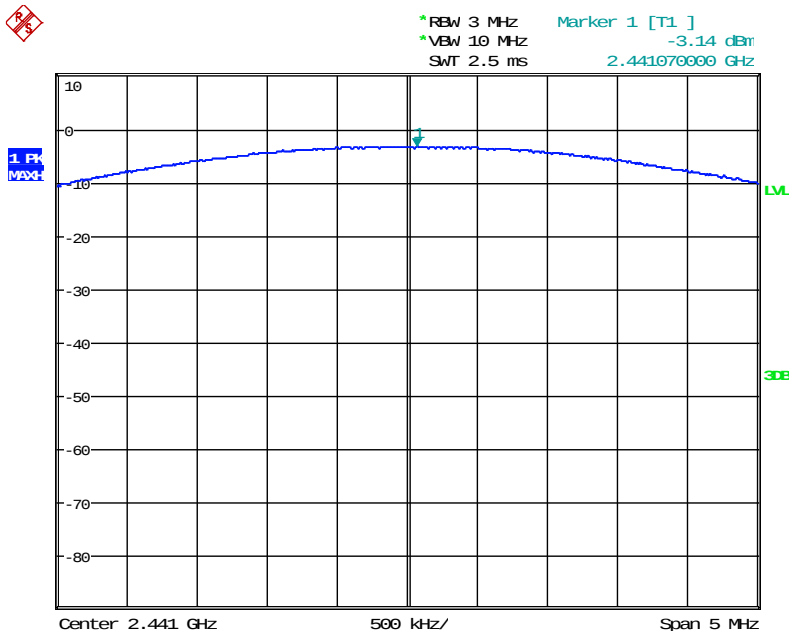
π /4DQPSK Mode

Low channel



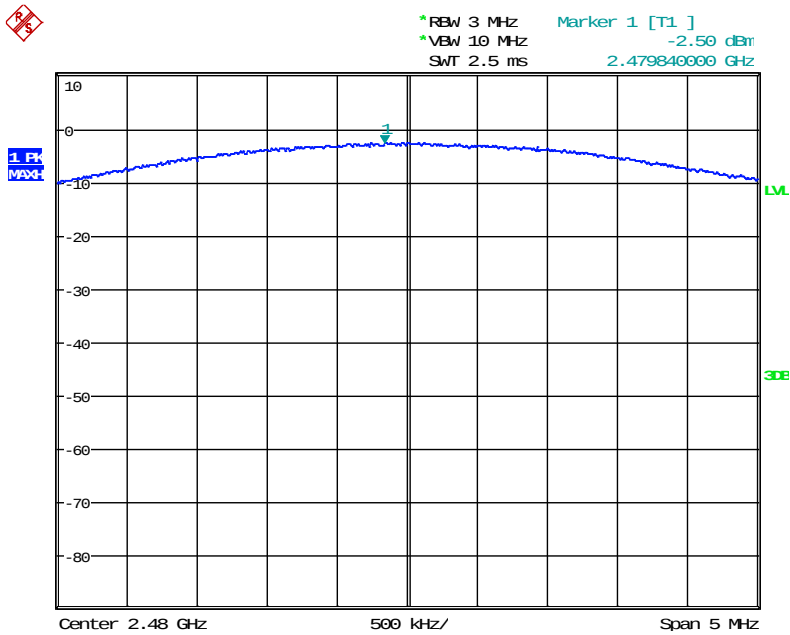
Date: 26.NOV.2020 09:43:40

Middle channel



Date: 26.NOV.2020 09:42:46

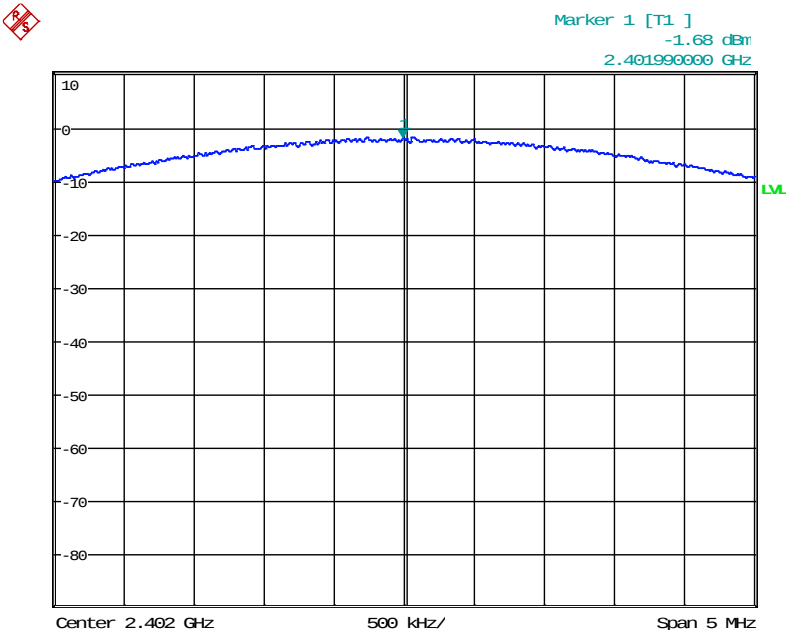
High channel



Date: 26.NOV.2020 09:41:37

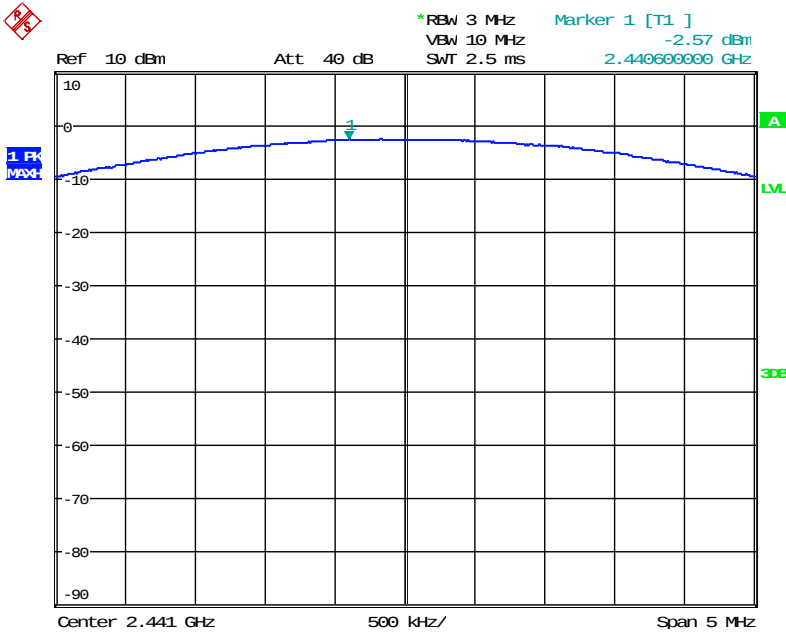
8DPSK Mode

Low channel



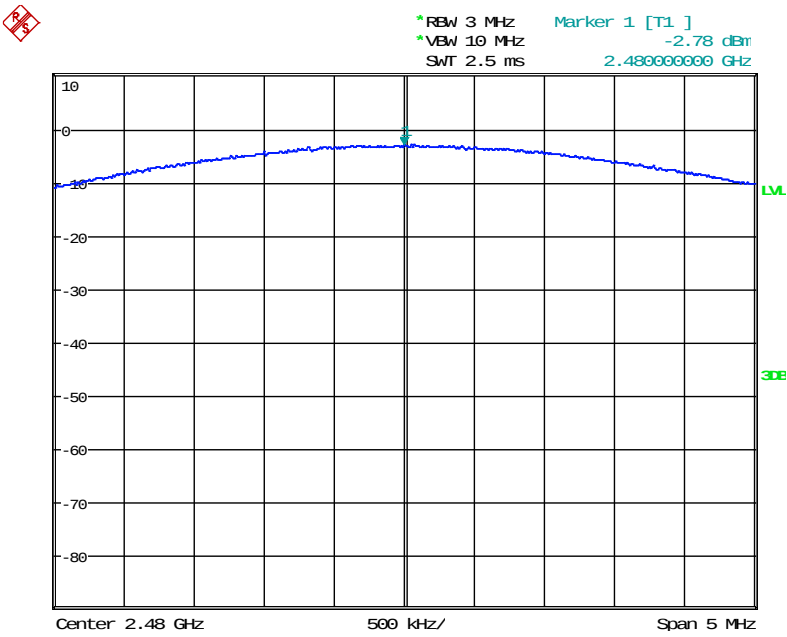
Date: 26.NOV.2020 09:38:49

Middle channel



Date: 3.DEC.2020 13:44:38

High channel

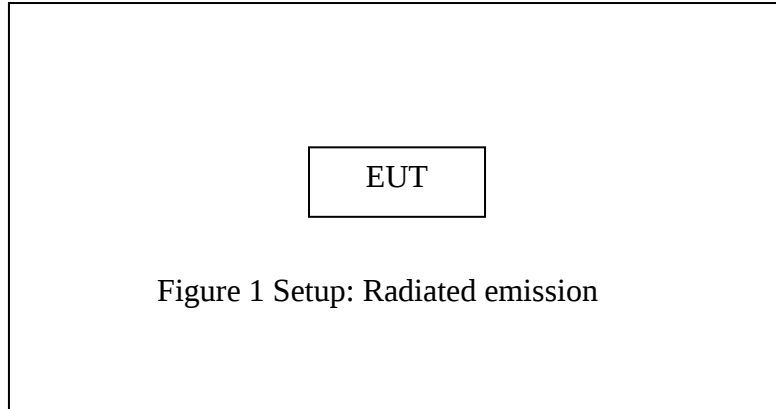


Date: 26.NOV.2020 09:40:54

10.RADIATED EMISSION TEST

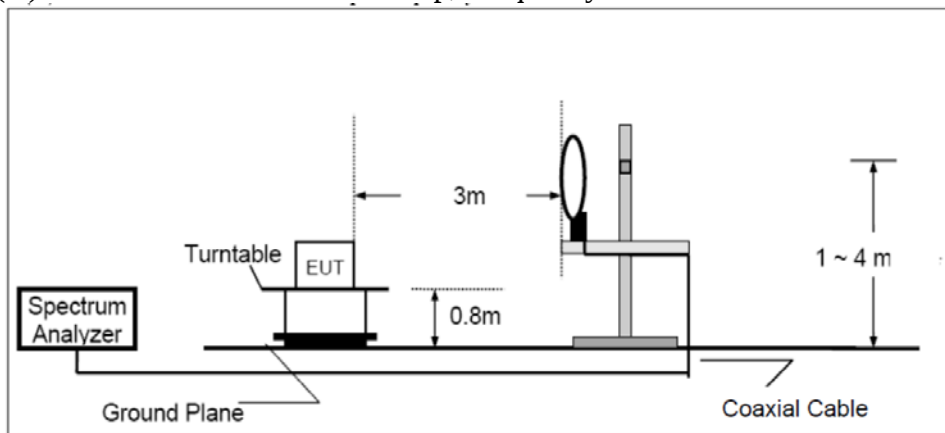
10.1.Block Diagram of Test Setup

10.1.1.Block diagram of connection between the EUT and peripherals

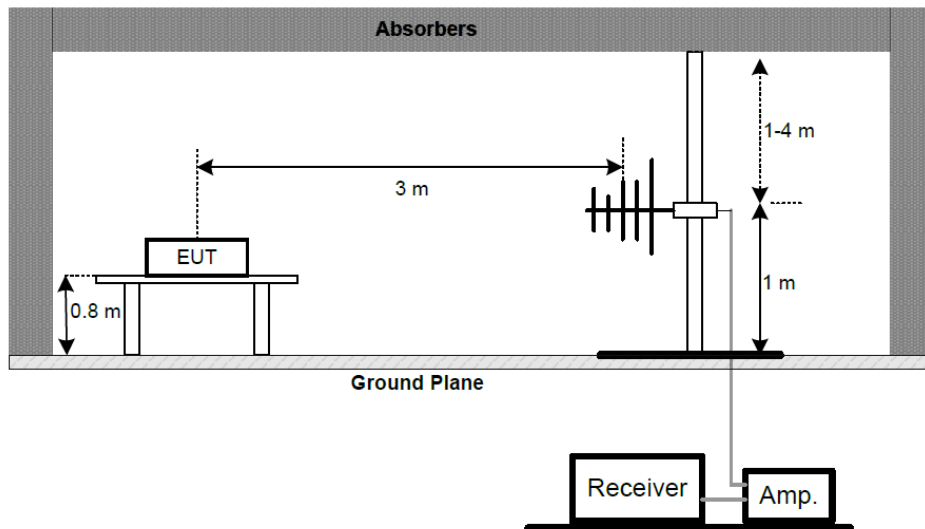


10.1.2.Semi-Anechoic Chamber Test Setup Diagram

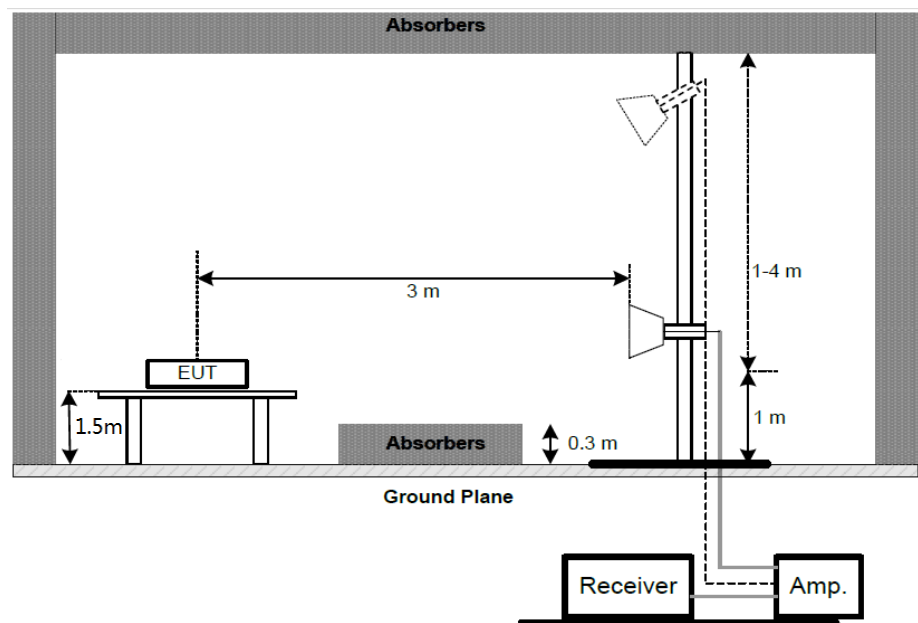
(A) Radiated Emission Test Set-Up, Frequency below 30MHz



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



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.EUT Configuration on Test

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, according to the DA 00-705 Released March 30, 2000, 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 worse 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.Test Results

Pass.

Note: 1. The EUT is tested radiation emission at each test mode (GFSK mode, π /4DQPSK & 8DPSK Mode) in three axes. The worst case data(8DPSK mode) are reflected in the following plots

2. Testing is carried out From 9kHz to 25GHz, The radiation emissions from 9kHz-30MHz and 18-25GHz are not reported, because the results are on the noise floor.

3. The average measurement was not performed when peak measured data under the limit of average detection.

The spectrum analyzer plots are attached as below.

Below 1GHz Worse case data (8DPSK mode)



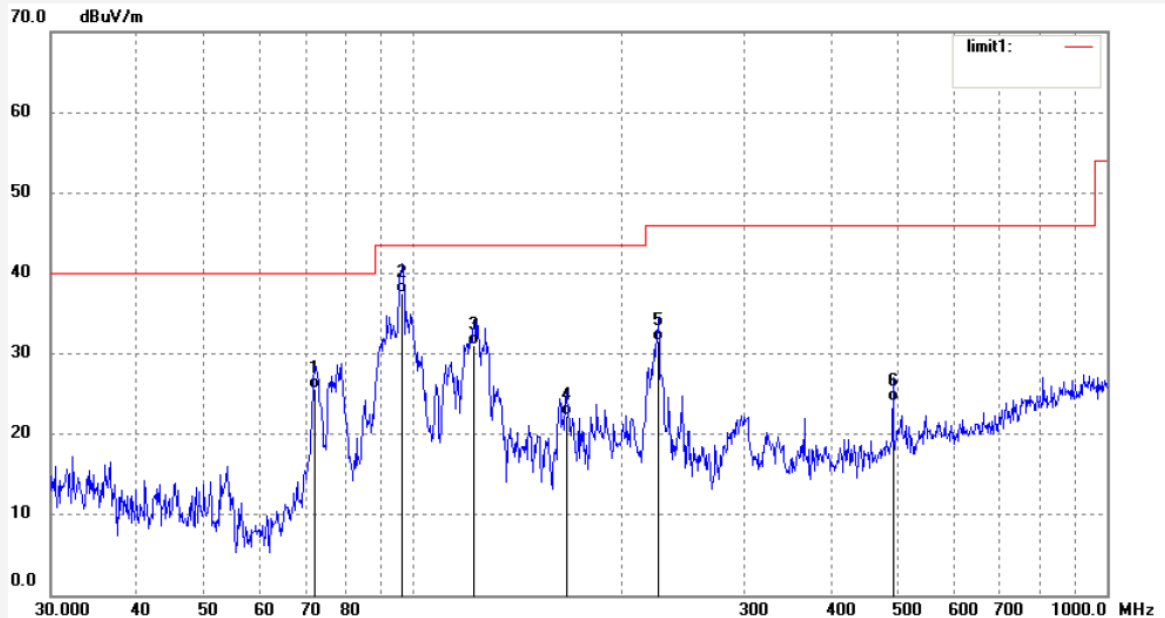
ACCURATE TECHNOLOGY CO., LTD.

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.: fan #318	Polarization: Horizontal
Standard: FCC PART 15.205 & 15.209	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2020/11/30
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 10:46:08
EUT: IJOY BLAST WIRELESS SPEAKER	Engineer Signature: Fan
Mode: TX 2402MHz(8DPSK)	Distance: 3m
Model: IJSPBLT01-BJ	
Manufacturer: QUEST USA CORP	

Note: Report No.: RSZ201123801-00A



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	71.9578	53.16	-27.57	25.59	40.00	-14.41	QP	100	96	
2	96.3230	65.15	-27.58	37.57	43.50	-5.93	QP	100	184	
3	122.3189	58.65	-27.51	31.14	43.50	-12.36	QP	100	258	
4	166.6385	48.62	-26.36	22.26	43.50	-21.24	QP	100	355	
5	225.4267	55.51	-23.93	31.58	46.00	-14.42	QP	100	7	
6	491.7700	40.43	-16.44	23.99	46.00	-22.01	QP	100	19	



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.: fan #319

Standard: FCC PART 15.205 & 15.209

Test item: Radiation Test

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

EUT: IJOY BLAST WIRELESS SPEAKER

Mode: TX2402MHz(8DPSK)

Model: IJSPBLT01-BJ

Manufacturer: QUEST USA CORP

Polarization: Vertical

Power Source: AC 120V/60Hz

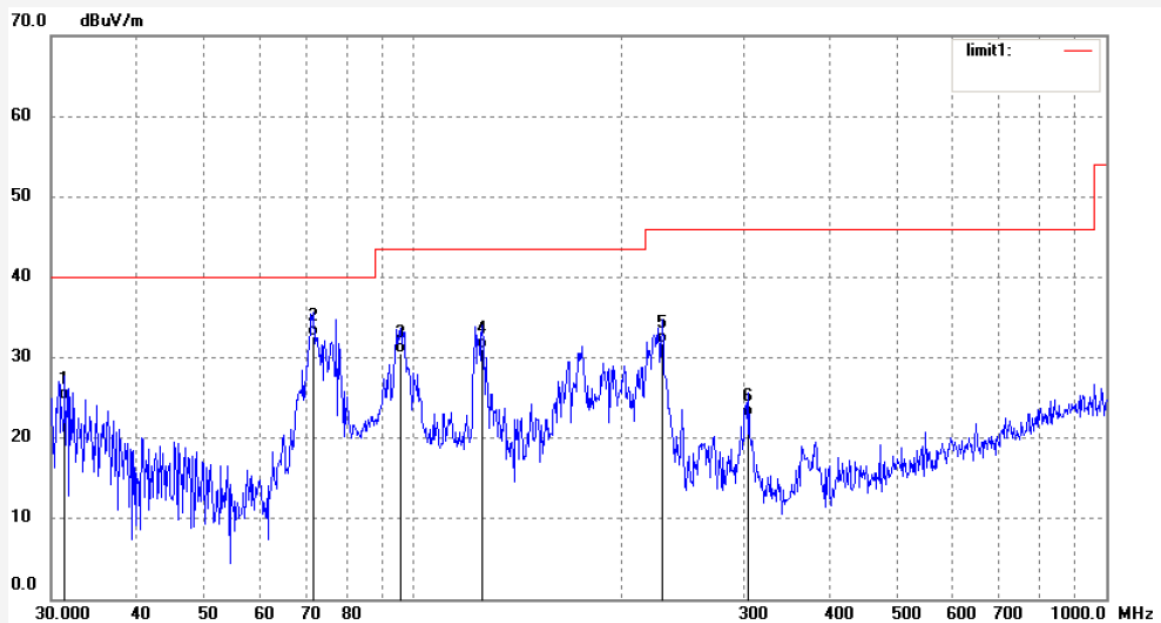
Date: 2020/11/30

Time: 11:10:35

Engineer Signature: Fan

Distance: 3m

Note: Report No.: RSZ201123801-00A



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	31.4021	45.35	-20.55	24.80	40.00	-15.20	QP	100	54	
2	71.7054	60.14	-27.56	32.58	40.00	-7.42	QP	100	185	
3	95.9852	58.03	-27.54	30.49	43.50	-13.01	QP	100	95	
4	125.8059	58.71	-27.60	31.11	43.50	-12.39	QP	100	251	
5	228.6173	55.66	-23.89	31.77	46.00	-14.23	QP	100	9	
6	304.9548	43.65	-21.07	22.58	46.00	-23.42	QP	100	341	



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.: fan #312

Standard: FCC PART 15.205 & 15.209

Test item: Radiation Test

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

EUT: IJOY BLAST WIRELESS SPEAKER

Mode: TX2441MHz(8DPSK)

Model: IJSPBLT01-BJ

Manufacturer: QUEST USA CORP

Polarization: Horizontal

Power Source: AC 120V/60Hz

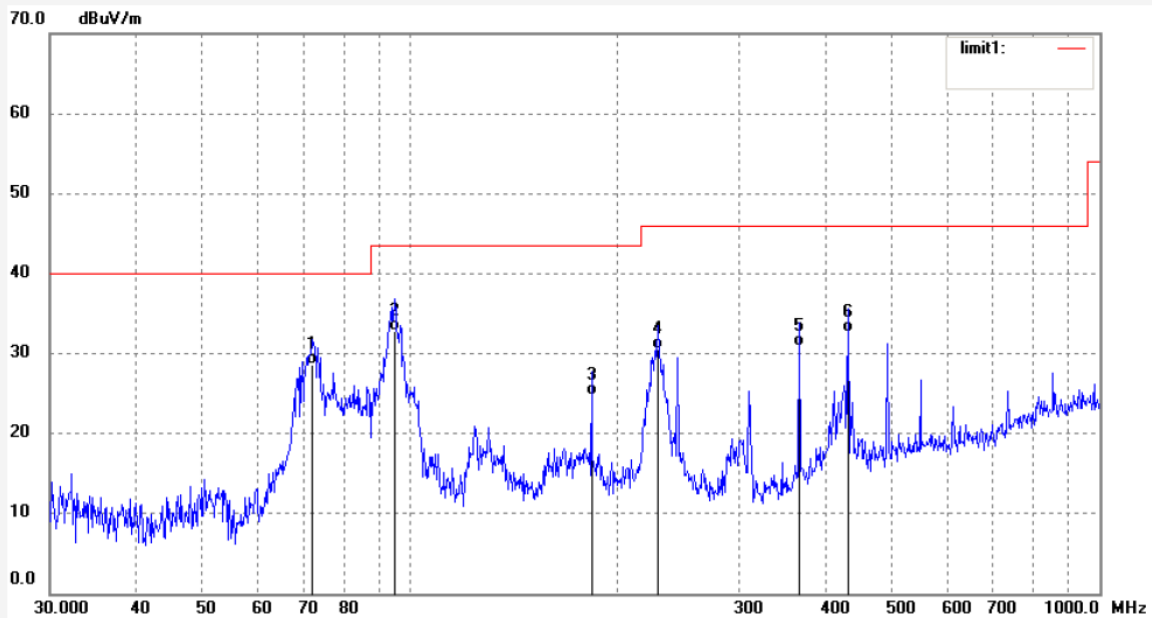
Date: 2020/11/30

Time: 11:50:27

Engineer Signature: Fan

Distance: 3m

Note: Report No.: RSZ201123801-00A



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	72.2111	57.95	-29.26	28.69	40.00	-11.31	QP	100	152	
2	94.9788	58.53	-25.72	32.81	43.50	-10.69	QP	100	284	
3	183.2211	49.94	-25.17	24.77	43.50	-18.73	QP	100	9	
4	228.6173	54.32	-23.79	30.53	46.00	-15.47	QP	100	92	
5	366.0866	50.22	-19.41	30.81	46.00	-15.19	QP	100	135	
6	431.8198	50.19	-17.63	32.56	46.00	-13.44	QP	100	85	



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.: fan #313

Standard: FCC PART 15.205 & 15.209

Test item: Radiation Test

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

EUT: IJOY BLAST WIRELESS SPEAKER

Mode: TX2441MHz(8DPSK)

Model: IJSPBLT01-BJ

Manufacturer: QUEST USA CORP

Polarization: Vertical

Power Source: AC 120V/60Hz

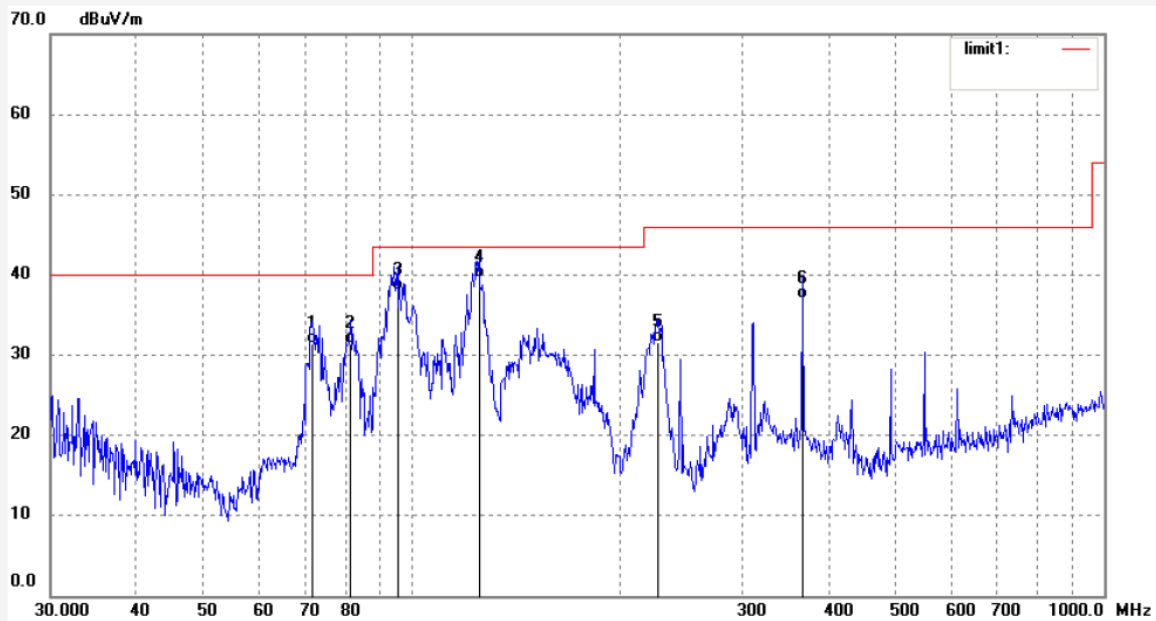
Date: 2020/11/30

Time: 11:53:54

Engineer Signature: Fan

Distance: 3m

Note: Report No.: RSZ201123801-00A



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	71.7053	60.72	-29.29	31.43	40.00	-8.57	QP	100	52	
2	81.3739	58.89	-27.43	31.46	40.00	-8.54	QP	100	84	
3	95.3131	63.69	-25.67	38.02	43.50	-5.48	QP	100	9	
4	124.9248	65.83	-26.14	39.69	43.50	-3.81	QP	100	159	
5	226.2202	55.47	-23.85	31.62	46.00	-14.38	QP	100	357	
6	366.0865	56.41	-19.41	37.00	46.00	-9.00	QP	100	141	



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.: fan #316

Standard: FCC PART 15.205 & 15.209

Test item: Radiation Test

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

EUT: IJOY BLAST WIRELESS SPEAKER

Mode: TX2480MHz(8DPSK)

Model: IJSPBLT01-BJ

Manufacturer: QUEST USA CORP

Polarization: Horizontal

Power Source: AC 120V/60Hz

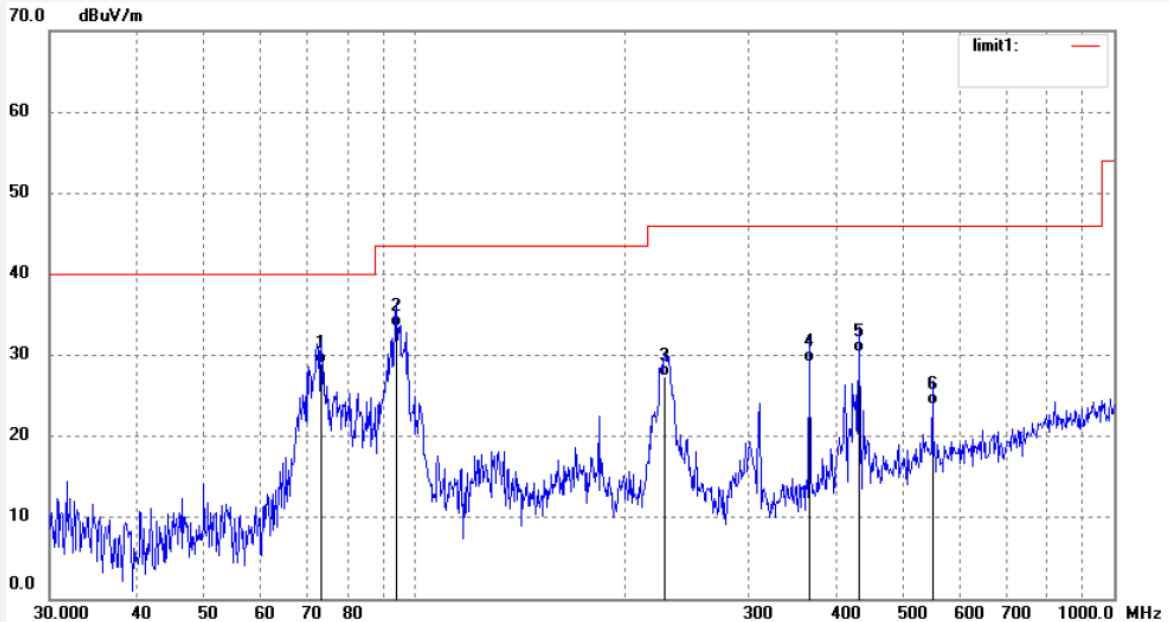
Date: 2020/11/30

Time: 11:59:02

Engineer Signature: Fan

Distance: 3m

Note: Report No.: RSZ201123801-00A



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	73.4908	58.10	-29.16	28.94	40.00	-11.06	QP	100	25	
2	93.9829	59.33	-25.80	33.53	43.50	-9.97	QP	100	154	
3	227.8154	51.18	-23.80	27.38	46.00	-18.62	QP	100	351	
4	366.0865	48.53	-19.41	29.12	46.00	-16.88	QP	100	258	
5	431.8197	48.07	-17.63	30.44	46.00	-15.56	QP	100	9	
6	550.2902	38.50	-14.64	23.86	46.00	-22.14	QP	100	143	



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.: fan #317

Standard: FCC PART 15.205 & 15.209

Test item: Radiation Test

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

EUT: IJOY BLAST WIRELESS SPEAKER

Mode: TX2480MHz(8DPSK)

Model: IJSPBLT01-BJA

Manufacturer: QUEST USA CORP

Polarization: Vertical

Power Source: AC 120V/60Hz

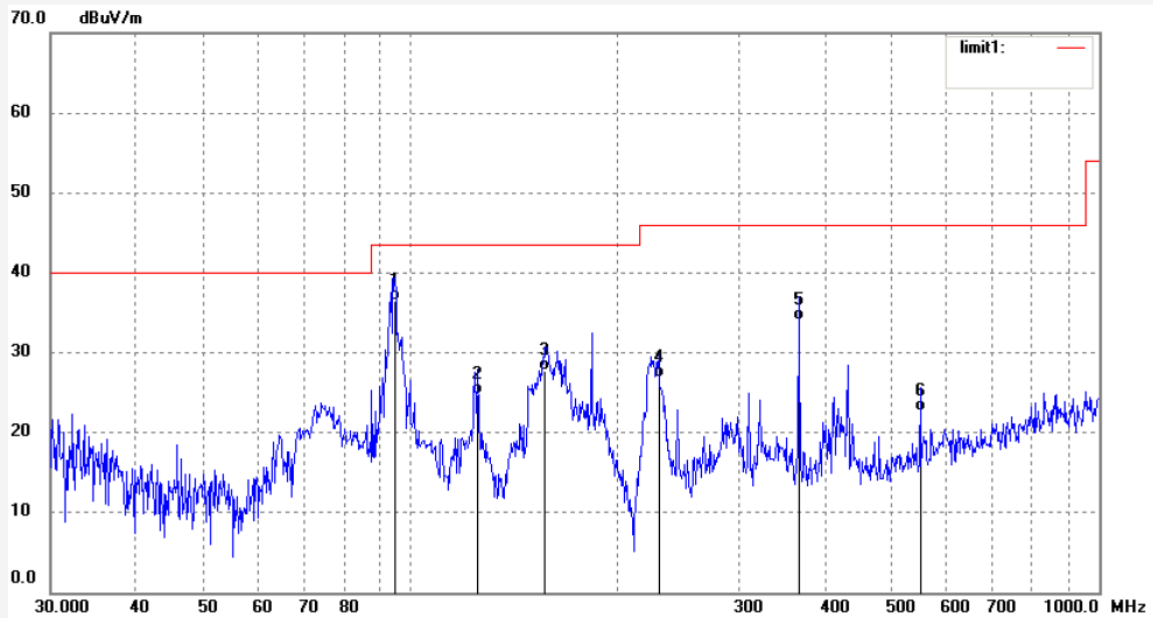
Date: 2020/11/30

Time: 11:56:47

Engineer Signature: Fan

Distance: 3m

Note: Report No.: RSZ201123801-00A



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	94.9788	62.17	-25.72	36.45	43.50	-7.05	QP	100	157	
2	124.9248	50.97	-26.14	24.83	43.50	-18.67	QP	100	59	
3	156.9764	54.68	-26.91	27.77	43.50	-15.73	QP	100	87	
4	229.4219	50.61	-23.76	26.85	46.00	-19.15	QP	100	156	
5	366.0865	53.45	-19.41	34.04	46.00	-11.96	QP	100	284	
6	550.2902	37.29	-14.64	22.65	46.00	-23.35	QP	100	301	

Above 1GHz Worse case data (8DPSK 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.: fan #274

Standard: FCC PART 15.205 & 15.209

Test item: Radiation Test

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

EUT: IJOY BLAST WIRELESS SPEAKER

Mode: TX2402MHz(8DPSK)

Model: IJSPBLT01-BJ

Manufacturer: QUEST USA CORP

Polarization: Horizontal

Power Source: AC 120V/60Hz

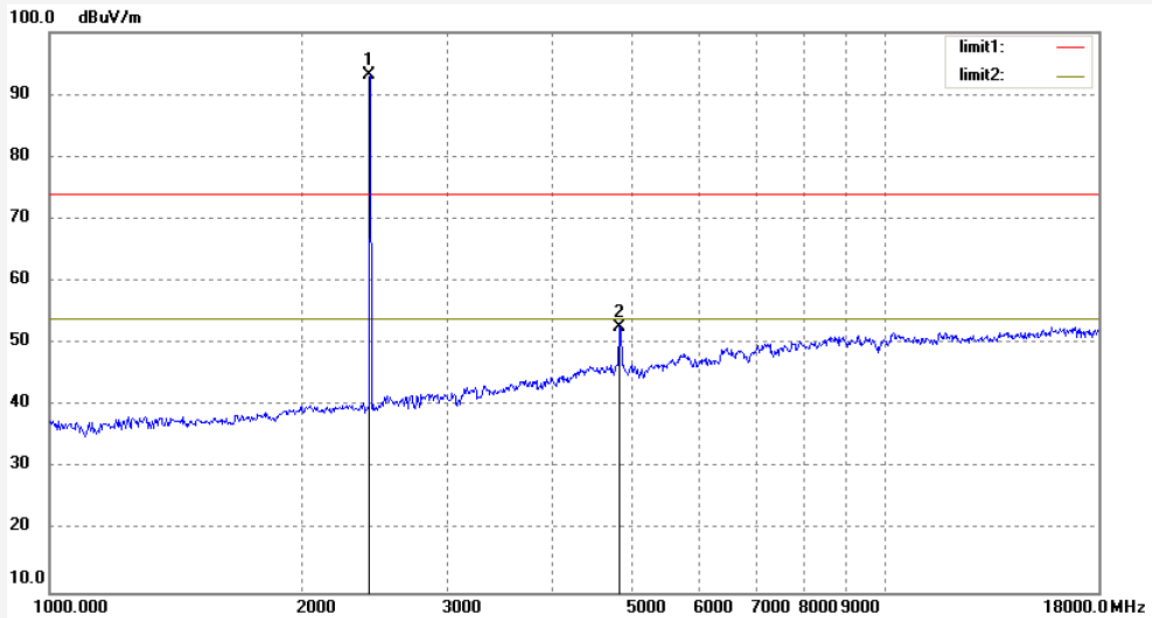
Date: 2020/11/27

Time: 11:10:36

Engineer Signature: Fan

Distance: 3m

Note: Report No.: RSZ201123801-00A



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.662	89.09	3.98	93.07			peak	150	75	
2	4804.324	40.24	12.45	52.69	74.00	-21.31	peak	150	138	


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.: fan #272

Standard: FCC PART 15.205 & 15.209

Test item: Radiation Test

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

EUT: IJOY BLAST WIRELESS SPEAKER

Mode: TX2402MHz(8DPSK)

Model: IJSPBLT01-BJ

Manufacturer: QUEST USA CORP

Polarization: Vertical

Power Source: AC 120V/60Hz

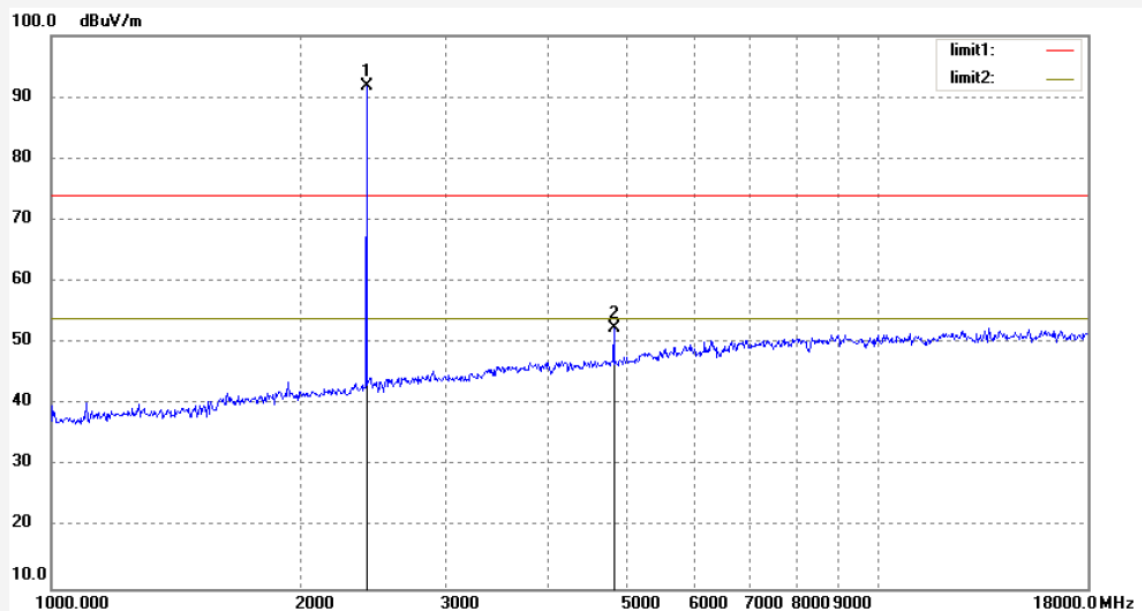
Date: 2020/11/27

Time: 11:01:51

Engineer Signature: Fan

Distance: 3m

Note: Report No.: RSZ201123801-00A



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.600	87.80	3.98	91.78			peak	150	24	
2	4804.000	40.00	12.45	52.45	74.00	-21.55	peak	150	117	



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.: fan #275

Standard: FCC PART 15.205 & 15.209

Test item: Radiation Test

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

EUT: IJOY BLAST WIRELESS SPEAKER

Mode: TX2441MHz(8DPSK)

Model: IJSPBLT01-BJ

Manufacturer: QUEST USA CORP

Polarization: Horizontal

Power Source: AC 120V/60Hz

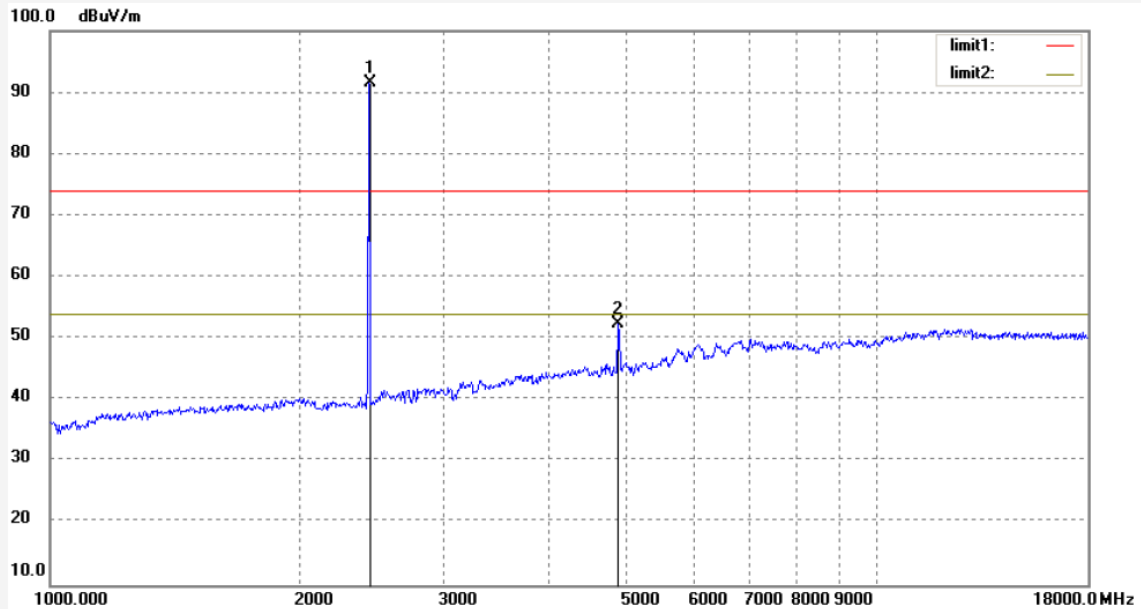
Date: 2020/11/27

Time: 11:10:39

Engineer Signature: Fan

Distance: 3m

Note: Report No.: RSZ201123801-00A



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2441.724	87.55	4.10	91.65			peak	150	157	
2	4882.717	39.19	13.29	52.48	74.00	-21.52	peak	150	28	



ACCURATE TECHNOLOGY CO., LTD.

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

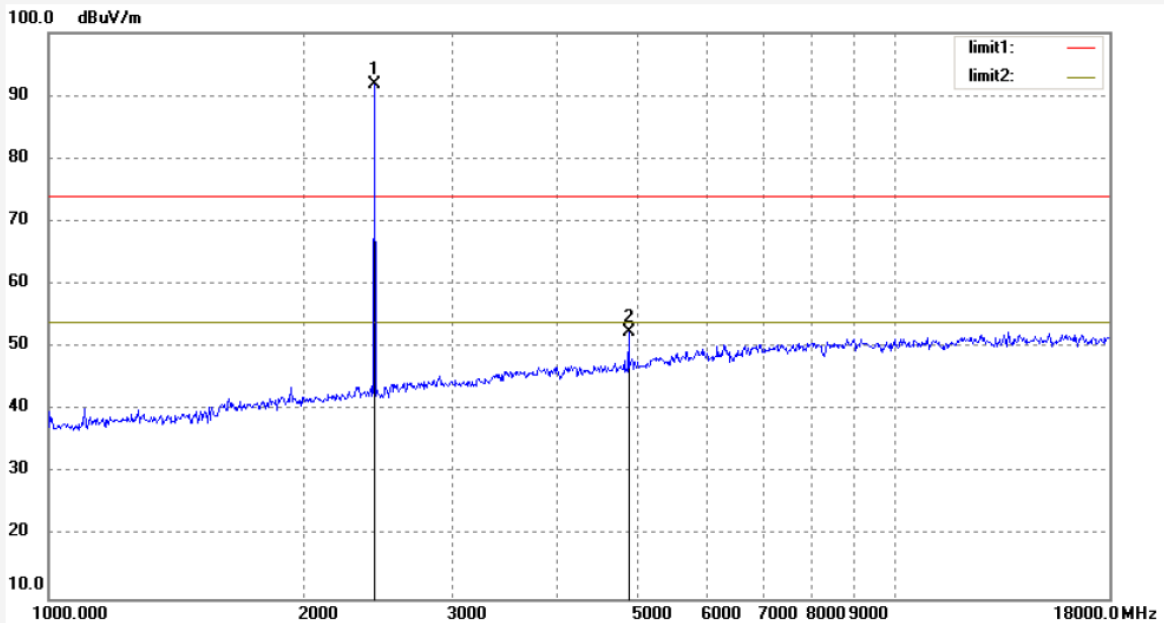
Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: fan #276	Polarization: Vertical
Standard: FCC PART 15.205 & 15.209	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2020/11/27
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 11:11:05
EUT: IJOY BLAST WIRELESS SPEAKER	Engineer Signature: Fan
Mode: TX2441MHz(8DPSK)	Distance: 3m
Model: IJSPBLT01-BJ	
Manufacturer: QUEST USA CORP	

Note: Report No.: RSZ201123801-00A



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2429.724	87.77	4.09	91.86			peak	150	317	
2	4857.557	39.34	13.02	52.36	74.00	-21.64	peak	150	127	



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.: fan #278

Standard: FCC PART 15.205 & 15.209

Test item: Radiation Test

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

EUT: IJOY BLAST WIRELESS SPEAKER

Mode: TX2480MHz(8DPSK)

Model: IJSPBLT01-BJ

Manufacturer: QUEST USA CORP

Polarization: Horizontal

Power Source: AC 120V/60Hz

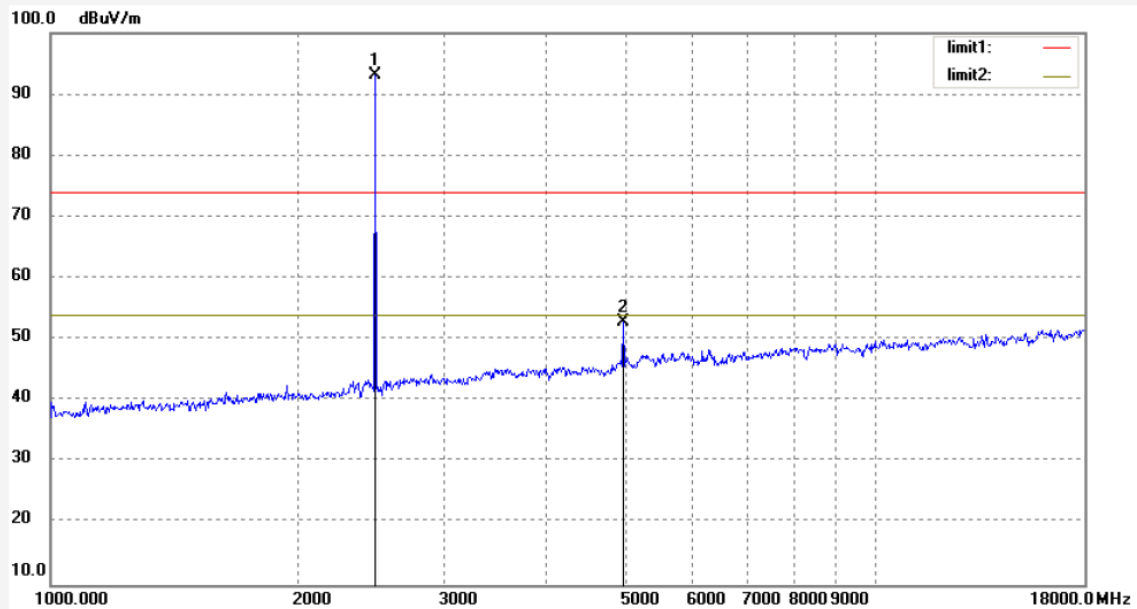
Date: 2020/11/27

Time: 11:11:15

Engineer Signature: Fan

Distance: 3m

Note: Report No.: RSZ201123801-00A



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2479.738	89.10	3.99	93.09			peak	150	184	
2	4960.819	39.19	13.64	52.83	74.00	-21.17	peak	150	65	



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.: fan #277

Standard: FCC PART 15.205 & 15.209

Test item: Radiation Test

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

EUT: IJOY BLAST WIRELESS SPEAKER

Mode: TX2480MHz(8DPSK)

Model: IJSPBLT01-BJ

Manufacturer: QUEST USA CORP

Polarization: Vertical

Power Source: AC 120V/60Hz

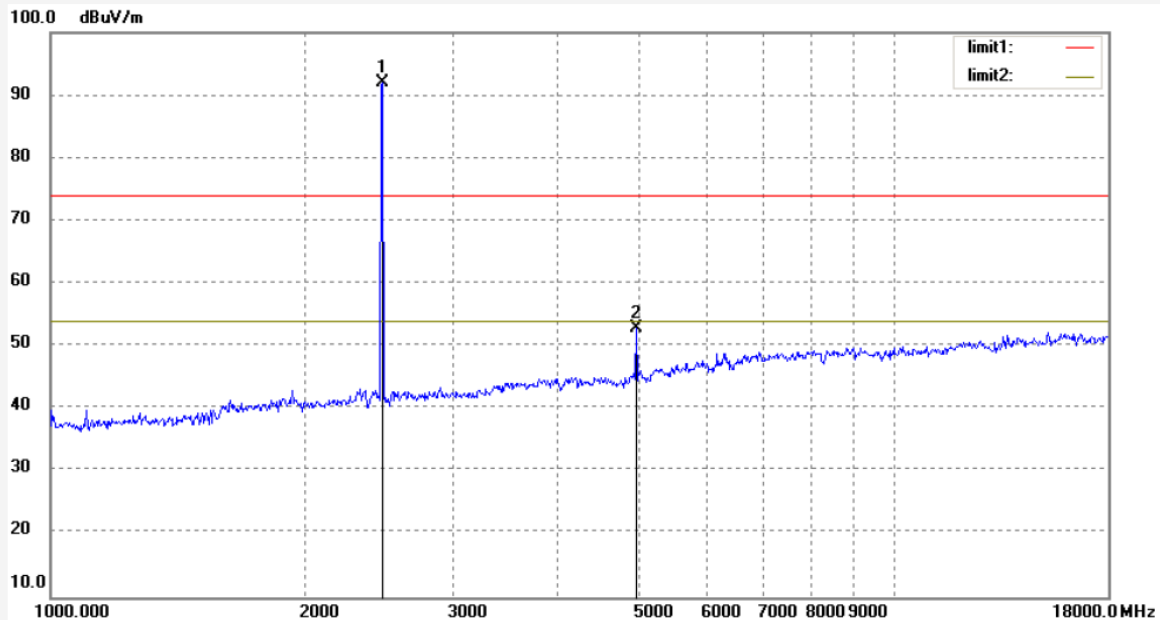
Date: 2020/11/27

Time: 11:11:09

Engineer Signature: Fan

Distance: 3m

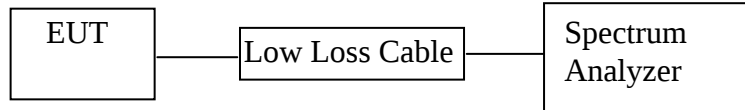
Note: Report No.: RSZ201123801-00A



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2479.738	88.10	3.99	92.09			peak	150	284	
2	4960.546	39.19	13.64	52.83	74.00	-21.17	peak	150	94	

11.BAND EDGE COMPLIANCE TEST

11.1.Block Diagram of Test Setup



11.2.The Requirement For 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 Test

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

Note: Both hopping-on mode and hopping-off mode had been pre-tested, and only the Worse case was recorded in the test report.

Conducted Band Edge Result

Non-hopping mode

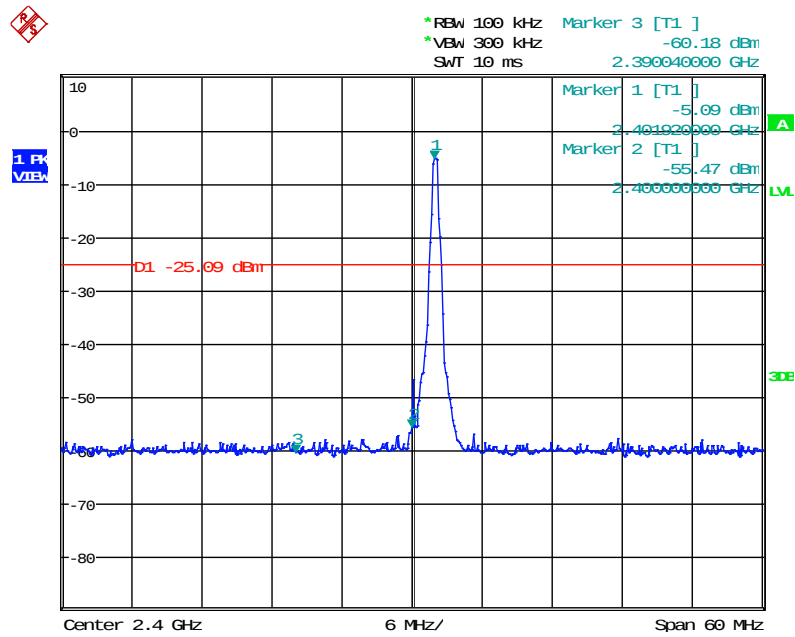
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)	Result
GFSK Mode			
2400.00	50.38	> 20dBc	Pass
2483.50	53.86	> 20dBc	Pass
π /4DQPSK Mode			
2400.00	53.03	> 20dBc	Pass
2483.50	53.31	> 20dBc	Pass
8DPSK Mode			
2400.00	48.30	> 20dBc	Pass
2483.50	54.45	> 20dBc	Pass

Hopping mode

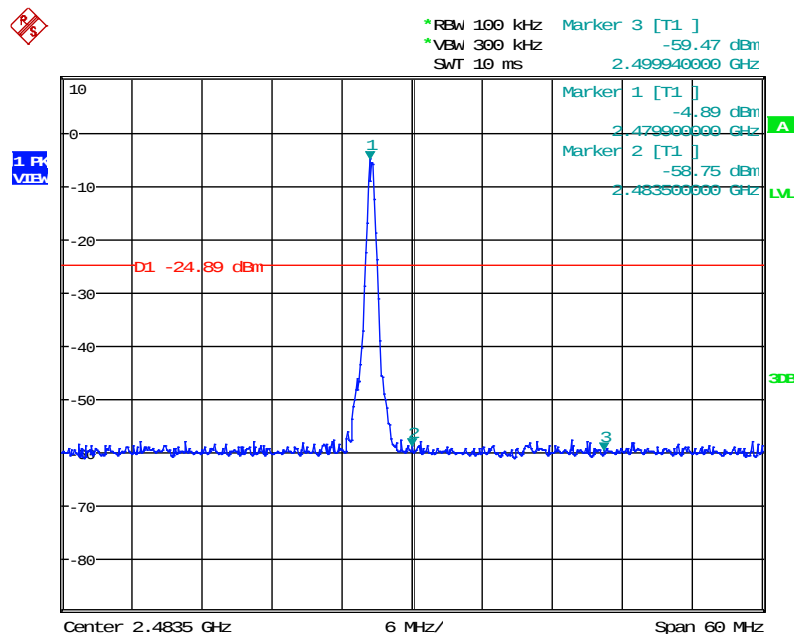
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)	Result
GFSK Mode			
2390.00	48.39	> 20dBc	Pass
2483.50	48.61	> 20dBc	Pass
$\pi/4$ DQPSK Mode			
2390.00	47.83	> 20dBc	Pass
2483.50	47.15	> 20dBc	Pass
8DPSK Mode			
2390.00	49.12	> 20dBc	Pass
2483.50	48.47	> 20dBc	Pass

The spectrum analyzer plots are attached as below.

Non-hopping mode GFSK Mode

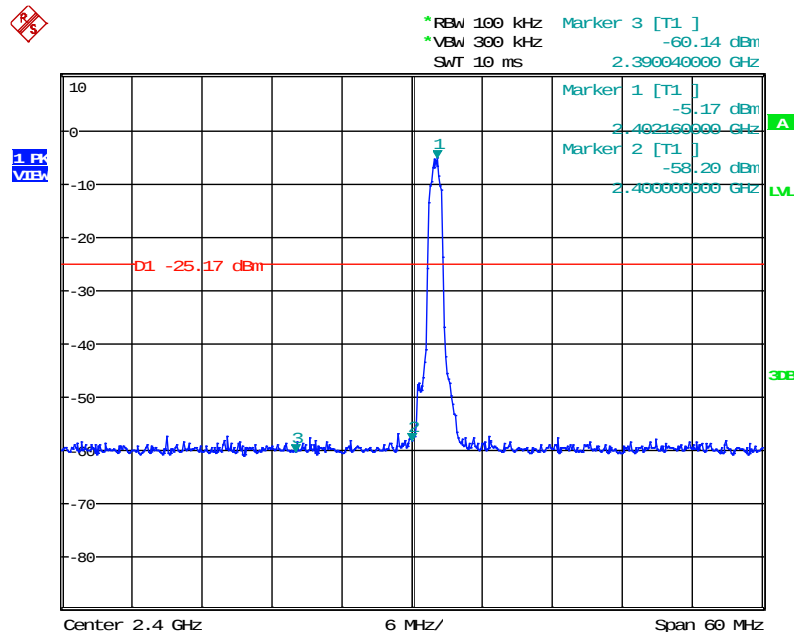


Date: 26.NOV.2020 10:10:32

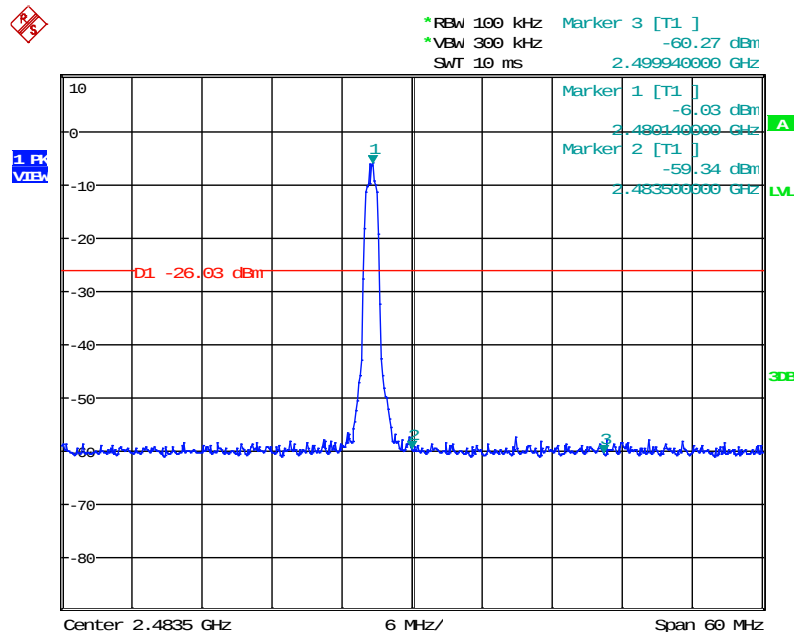


Date: 26.NOV.2020 10:13:34

π /4DQPSK Mode

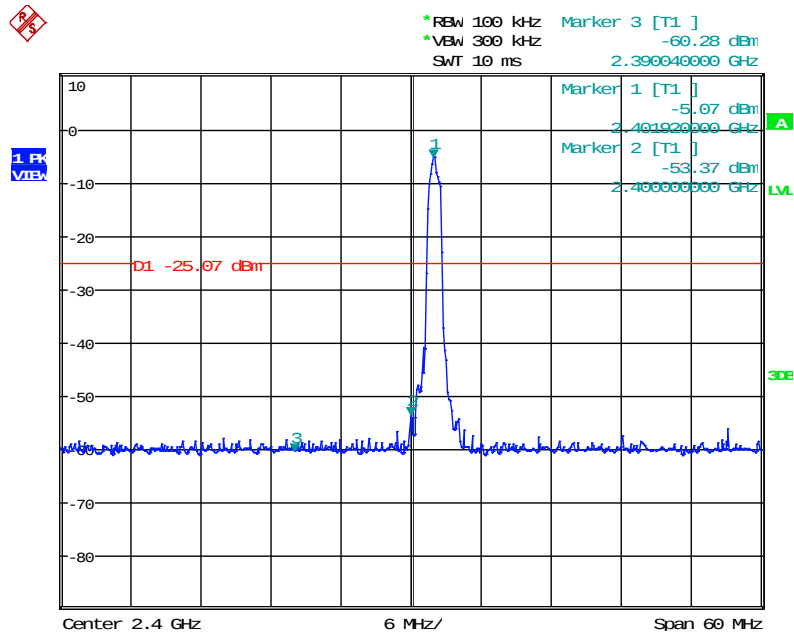


Date: 26.NOV.2020 10:08:51

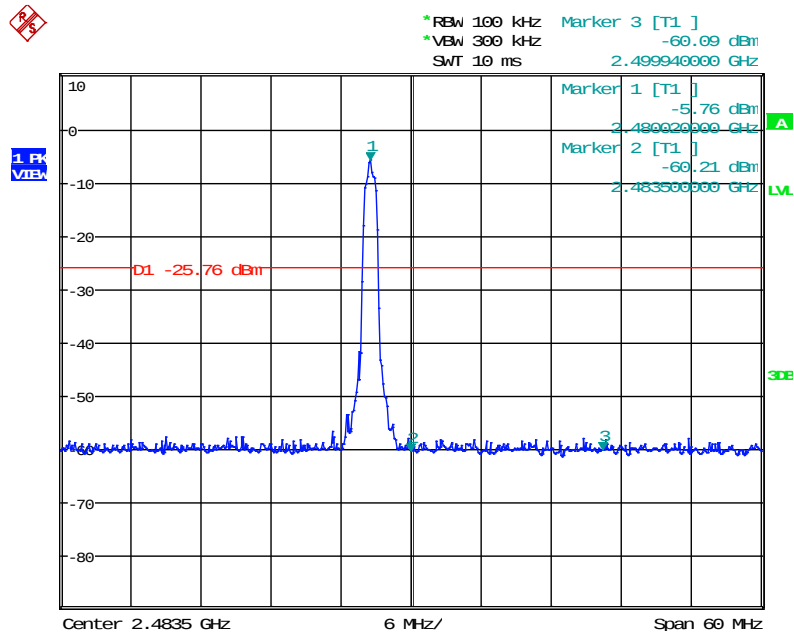


Date: 26.NOV.2020 10:15:28

8DPSK Mode

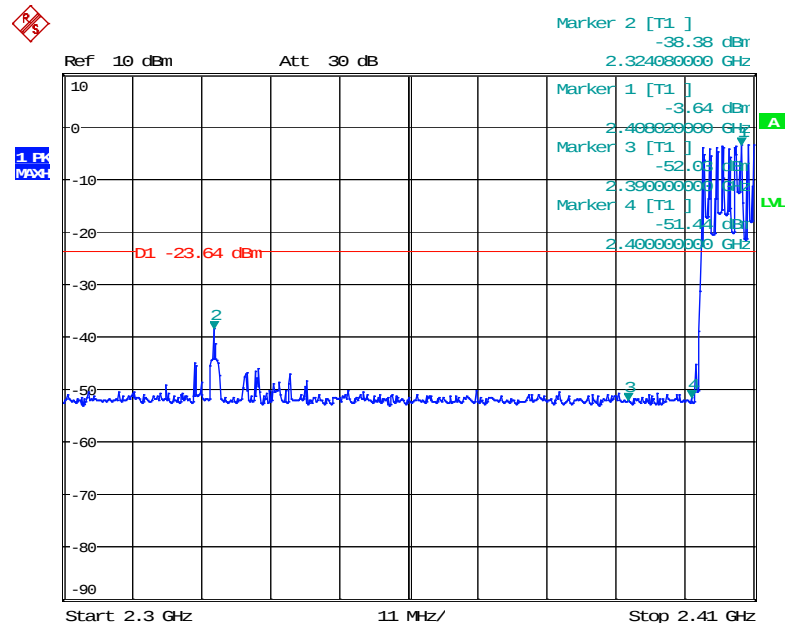


Date: 26.NOV.2020 10:06:09

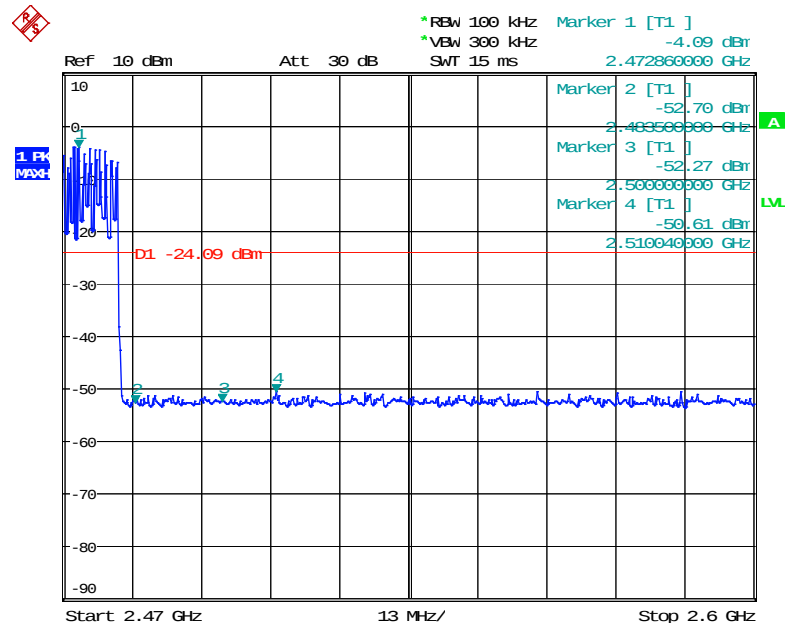


Date: 26.NOV.2020 10:17:12

Hopping mode GFSK Mode

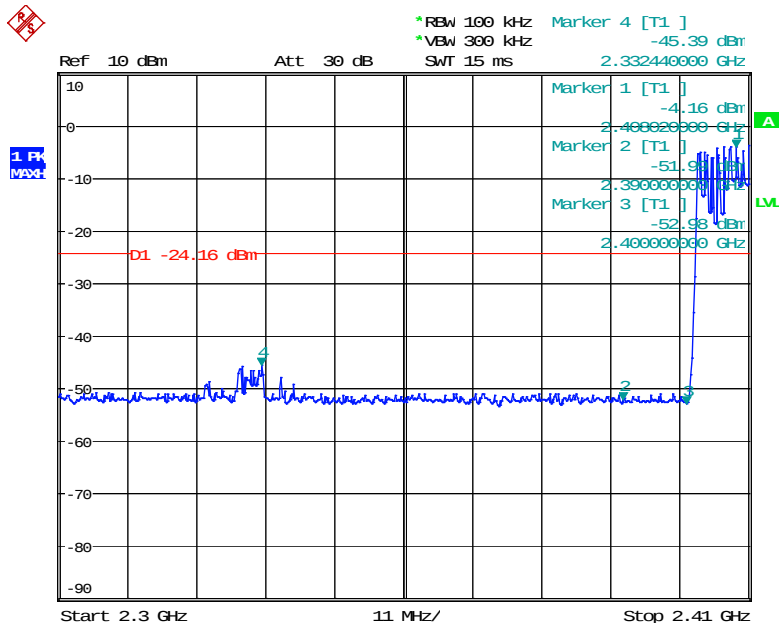


Date: 15.DEC.2020 14:37:33

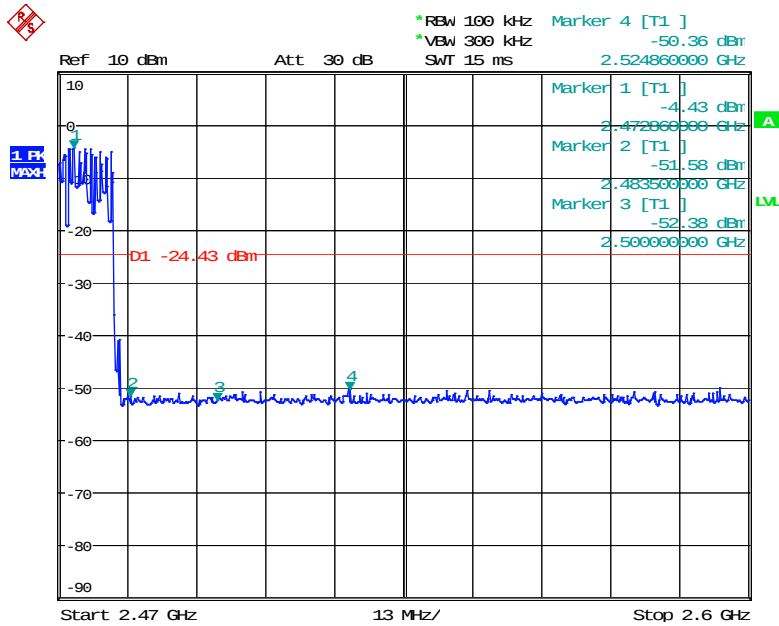


Date: 15.DEC.2020 14:40:06

π /4DQPSK Mode

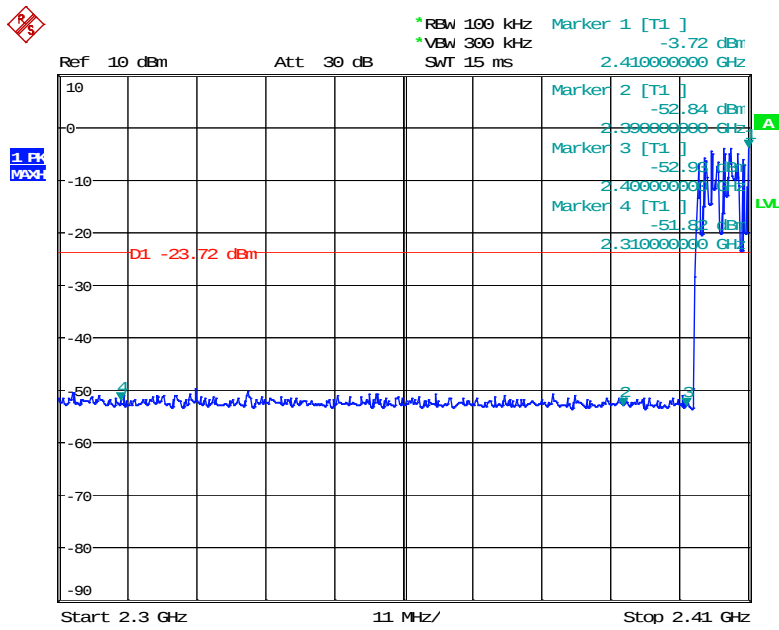


Date: 15.DEC.2020 14:51:42

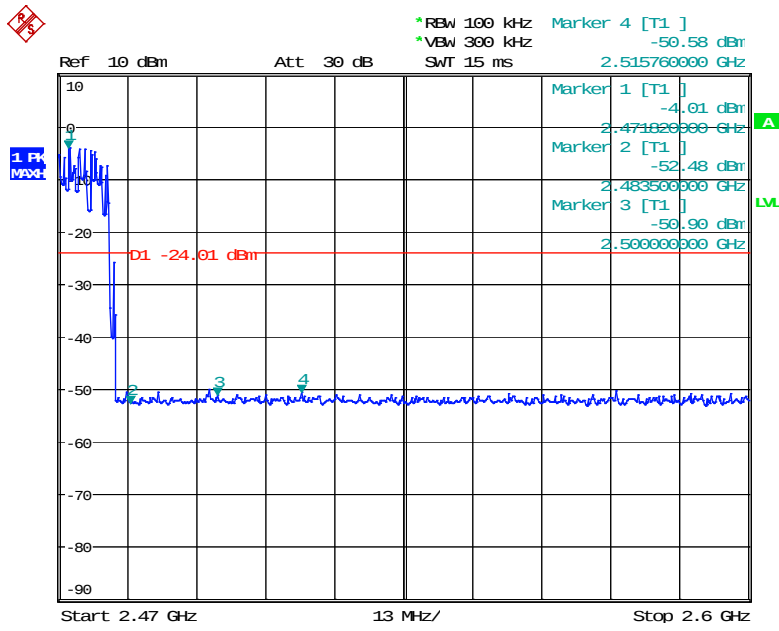


Date: 15.DEC.2020 14:43:09

8DPSK Mode



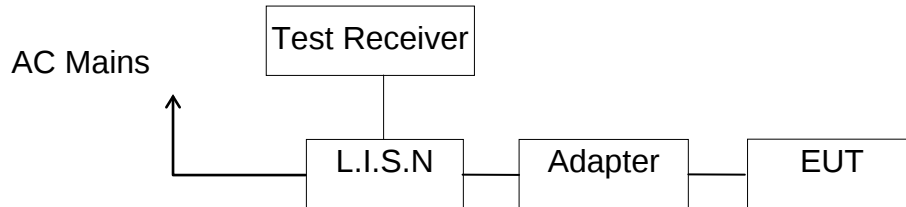
Date: 15.DEC.2020 14:48:41



Date: 15.DEC.2020 14:47:38

12.AC POWER LINE CONDUCTED EMISSION TEST

12.1.Block Diagram of Test Setup



(EUT: IJOY BLAST WIRELESS SPEAKER)

12.2.Power Line Conducted Emission Measurement Limits

Frequency (MHz)	Limit dB(μV)	
	Quasi-peak Level	Average Level
0.15 - 0.50	66.0 – 56.0 *	56.0 – 46.0 *
0.50 - 5.00	56.0	46.0
5.00 - 30.00	60.0	50.0

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 following 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 0.8 m 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)	Quasi Peak Level (dB μ V)	Average Level (dB μ V)	Transducer value (dB)	QuasiPeak Result (dB μ V)	Average Result (dB μ V)	Quasi Peak Limit (dB μ V)	Average Limit (dB μ V)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
X.XX	29.4	18.3	11.1	40.5	29.4	56.0	56.0	15.5	16.6	Pass

Transducer value = Insertion loss of LISN + Cable Loss

Result = Quasi-peak Level/Average Level + Transducer value

Limit = Limit stated in standard

Calculation Formula:

Margin = Limit – Reading level value – Transducer value

12.7.Test 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.

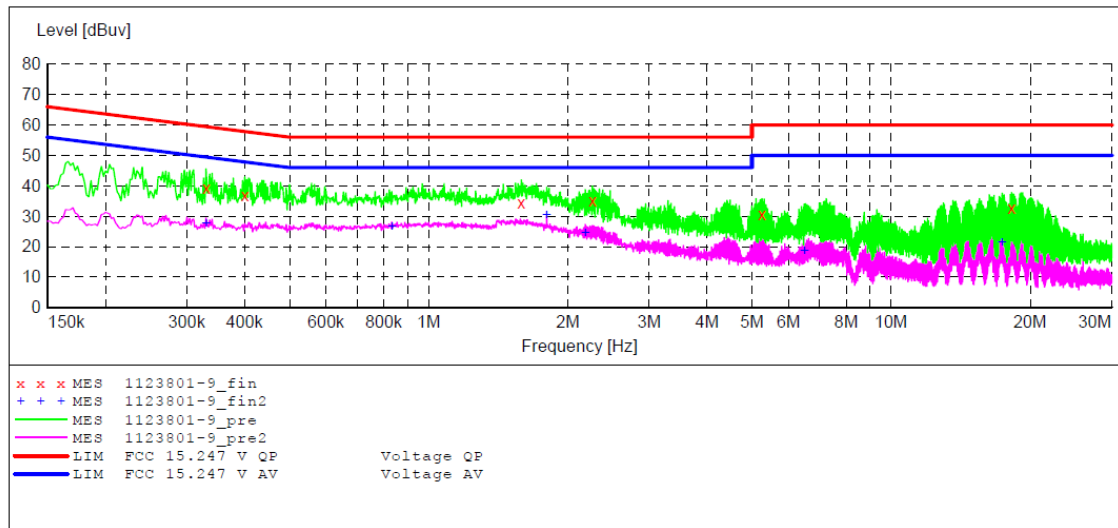
The spectral diagrams are attached as below.

CONDUCTED EMISSION STANDARD FCC 15.247

EUT: IJOY BLAST WIRELESS SPEAKER M/N: IJSPBLT01-BJ
 Manufacturer: QUEST USA CORP
 Operating Condition: BT Playing
 Test Site: 2#Shielding Room
 Operator: Fan
 Test Specification: L 120V/60Hz
 Comment: Report No.: RSZ201123801-00A
 Start of Test: 2020-12-1 / 8:52:20

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: "1123801-9_fin"

2020-12-1 8:54

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.330000	39.10	10.9	60	20.4	QP	L1	GND
0.400000	36.90	11.0	58	21.0	QP	L1	GND
1.586000	34.50	11.2	56	21.5	QP	L1	GND
2.260000	35.00	11.3	56	21.0	QP	L1	GND
5.260000	30.50	11.4	60	29.5	QP	L1	GND
18.225000	32.70	11.7	60	27.3	QP	L1	GND

MEASUREMENT RESULT: "1123801-9_fin2"

2020-12-1 8:54

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.330000	27.60	10.9	50	21.9	AV	L1	GND
0.832000	26.70	11.1	46	19.3	AV	L1	GND
1.800000	30.70	11.2	46	15.3	AV	L1	GND
2.180000	24.80	11.3	46	21.2	AV	L1	GND
6.490000	18.80	11.5	50	31.2	AV	L1	GND
17.390000	21.40	11.7	50	28.6	AV	L1	GND

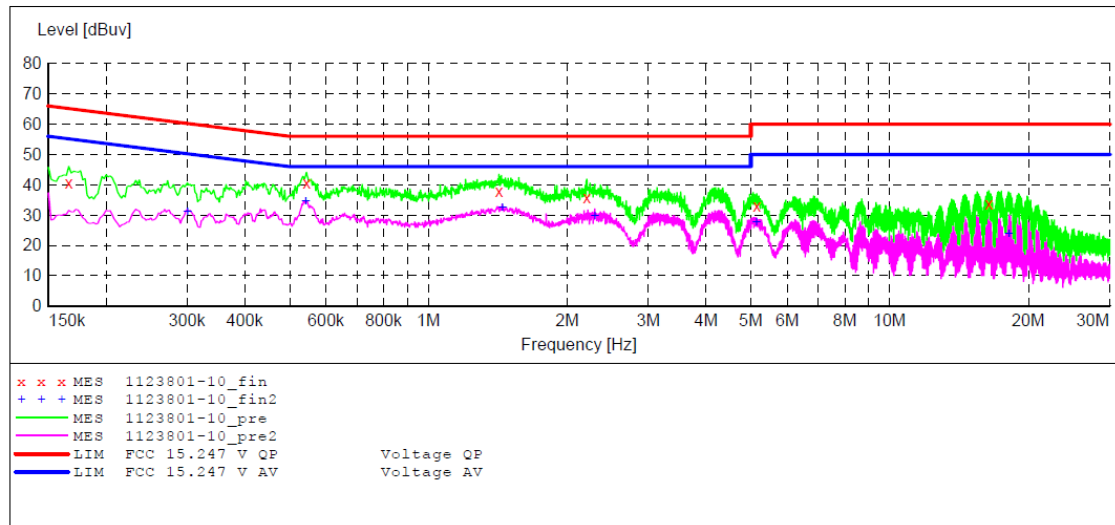
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC 15.247

EUT: IJOY BLAST WIRELESS SPEAKER M/N: IJSPBLT01-BJ
 Manufacturer: QUEST USA CORP
 Operating Condition: BT Playing
 Test Site: 2#Shielding Room
 Operator: Fan
 Test Specification: N 120V/60Hz
 Comment: Report No.: RSZ201123801-00A
 Start of Test: 2020-12-1 / 8:55:21

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: "1123801-10_fin"

2020-12-1 8:57

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.166000	40.50	10.8	65	24.7	QP	N	GND
0.544000	40.70	11.0	56	15.3	QP	N	GND
1.422000	37.80	11.2	56	18.2	QP	N	GND
2.205000	35.70	11.3	56	20.3	QP	N	GND
5.150000	32.90	11.4	60	27.1	QP	N	GND
16.420000	33.70	11.7	60	26.3	QP	N	GND

MEASUREMENT RESULT: "1123801-10_fin2"

2020-12-1 8:57

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.300000	31.10	10.9	50	19.1	AV	N	GND
0.542000	34.60	11.0	46	11.4	AV	N	GND
1.446000	32.50	11.2	46	13.5	AV	N	GND
2.295000	29.70	11.3	46	16.3	AV	N	GND
5.140000	27.80	11.4	50	22.2	AV	N	GND
18.155000	24.00	11.7	50	26.0	AV	N	GND

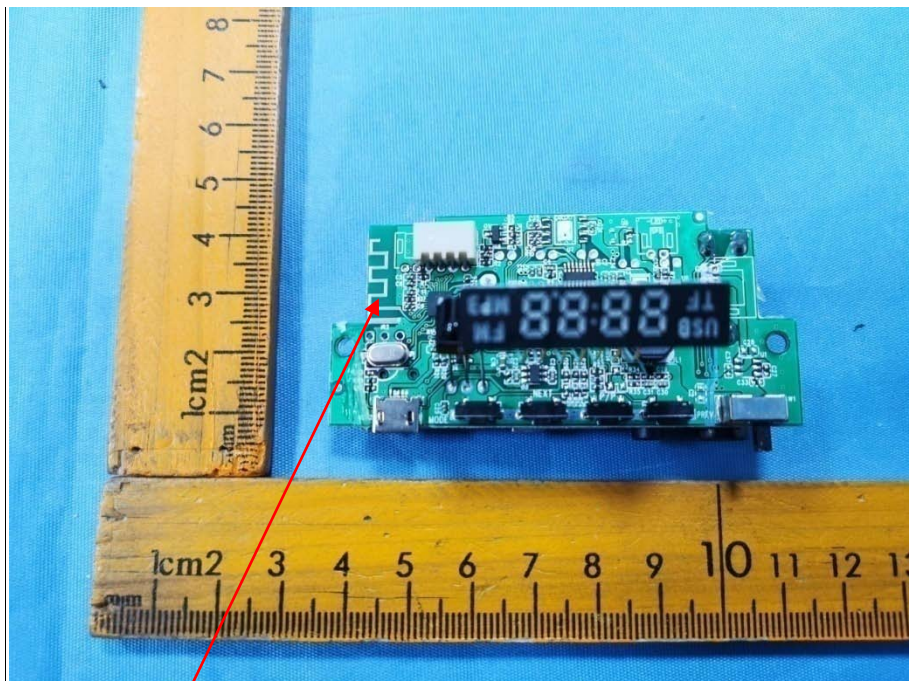
13.ANTENNA REQUIREMENT

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 -0.68dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.



Antenna

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