APPLICATION CERTIFICATION FCC Part 15C
On Behalf of
Cyber Acoustics (HK) Ltd.

AmazonBasics AC Powered 2.1 30W Bluetooth Speakers with Subwoofer
Model No.: B07J647XGT

FCC ID: ODL-AC-21C

Prepared for	:	Cyber Acoustics (HK) Ltd.
Address	:	Unit A-B, 8/F, Yue Hing Building, 103 Hennessy Road, Wanchai, Hongkong
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
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Report No.	:	ATE20181670
Date of Test	:	September 10-September 20, 2018
Date of Report	:	October 15, 2018

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Description Page

Test Report Certification

Applicant	:	Cyber Acoustics (HK) Ltd.
Manufacturer	:	ZheJiang TianLe Audio Co.,Ltd.
EUT Description	:	AmazonBasics AC Powered 2.1 30W Bluetooth Speakers with Subwoofer
Model No.	:	B07J647XGT

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 :	September 10-September 20, 2018
Date of Report :	October 15, 2018

Prepared by : _____
(Star Yang, Engineer)

Approved & Authorized Signer : _____
(Sean Liu, Manager)

1. GENERAL INFORMATION

1.1.Description of Device (EUT)

Model Number	:	B07J647XGT
Bluetooth version	:	V4.0
Frequency Range	:	2402MHz-2480MHz
Number of Channels	:	79
Antenna Gain(Max)	:	2dBi
Antenna type	:	PCB Antenna
Modulation mode	:	GFSK, π/4 DQPSK, 8DPSK
Trade Mark	:	AmazonBasics
Power supply	:	AC 120V/60Hz
Applicant	:	Cyber Acoustics (HK) Ltd.
Address	:	Unit A-B, 8/F, Yue Hing Building, 103 Hennessy Road, Wanchai, Hongkong
Manufacturer	:	ZheJiang TianLe Audio Co.,Ltd.
Address	:	No.8 Dacheng Rd. Economic Developing Zone, ShenZhou, ZheJiang Province, China

1.2.Accessory and Auxiliary Equipment

N/A

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 (ISEDC) 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	Cal. Interval
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 06, 2018	One Year
EMI Test Receiver	Rohde&Schwarz	ESR	101817	Jan. 06, 2018	One Year
Spectrum Analyzer	Rohde&Schwarz	FSV-40	101495	Jan. 06, 2018	One Year
Pre-Amplifier	Rohde&Schwarz	CBLU1183540-01	3791	Jan. 06, 2018	One Year
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 06, 2018	One Year
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 06, 2018	One Year
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 06, 2018	One Year
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 06, 2018	One Year
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 06, 2018	One Year
Highpass Filter	Wainwright Instruments	WHKX3.6/18G-10SS	N/A	Jan. 06, 2018	One Year
Band Reject Filter	Wainwright Instruments	WRCG2400/2485-2375/2510-60/11SS	N/A	Jan. 06, 2018	One Year
Conducted Emission Measurement Software: ES-K1 V1.71					
Radiated Emission Measurement Software: EZ_EMC V1.1.4.2					

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

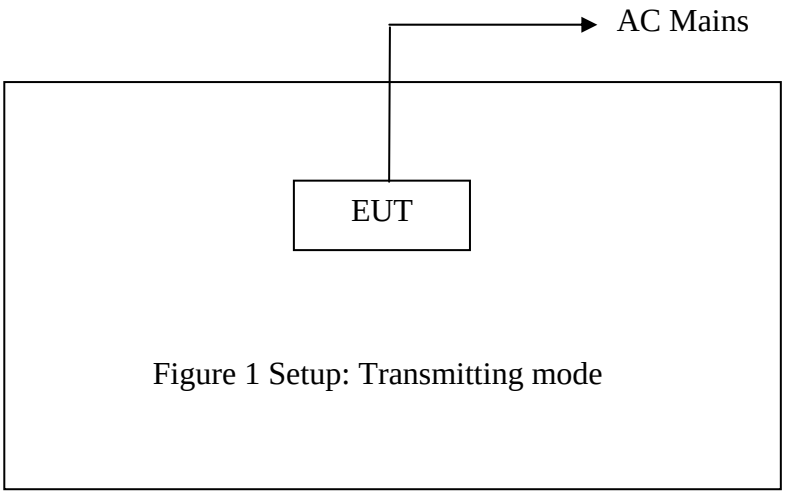


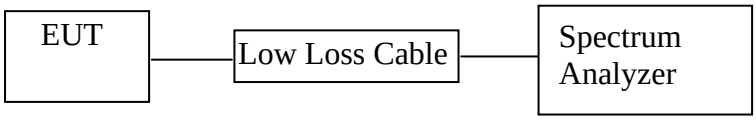
Figure 1 Setup: Transmitting mode

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)

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.

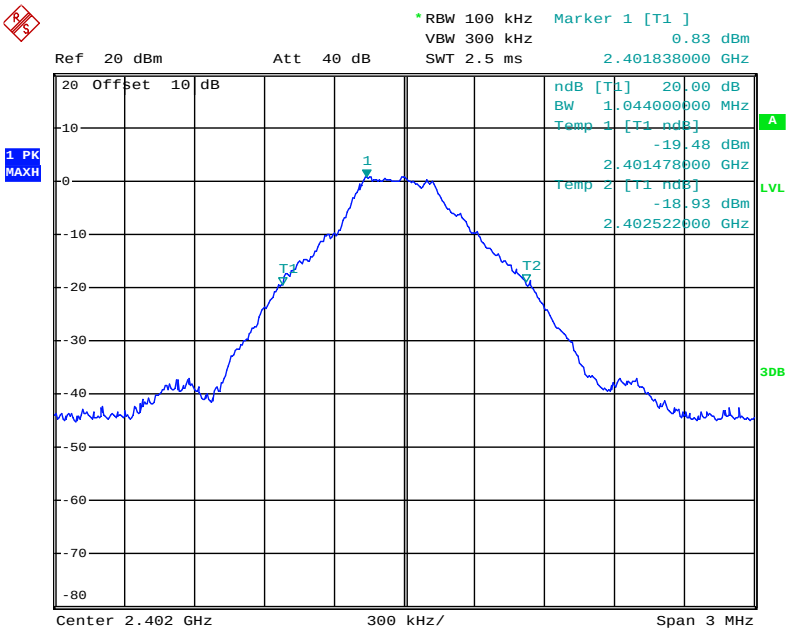
5.6.Test Result

Channel	Frequency (MHz)	GFSK 20dB Bandwidth (MHz)	Π/4-DQPSK 20dB Bandwidth (MHz)	8DPSK 20dB Bandwidth (MHz)	Result
Low	2402	1.044	1.350	1.380	Pass
Middle	2441	1.056	1.356	1.374	Pass
High	2480	1.086	1.368	1.362	Pass

The spectrum analyzer plots are attached as below.

GFSK Mode

Low channel



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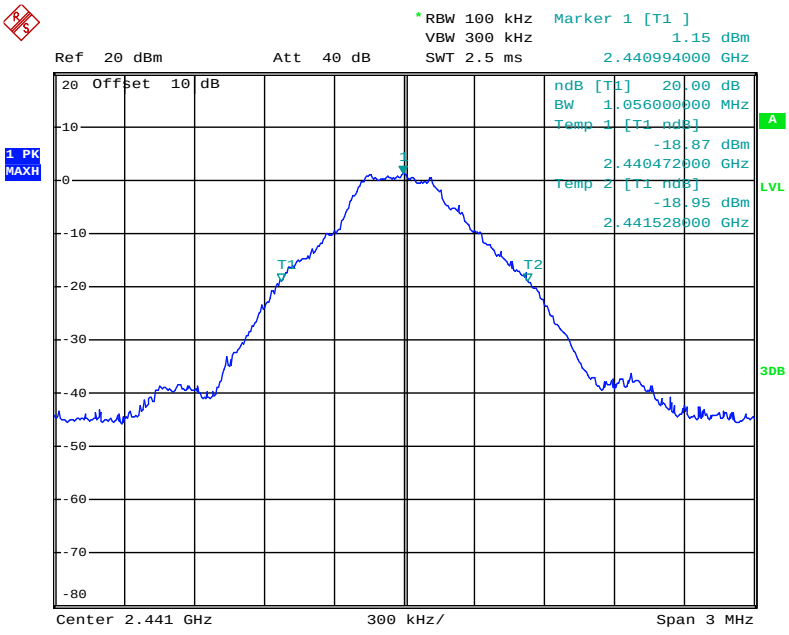
Middle channel



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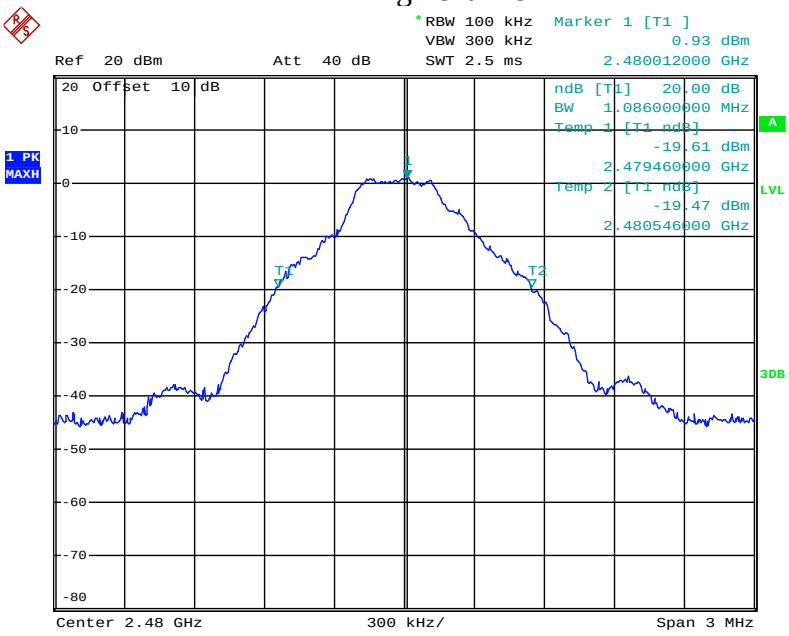
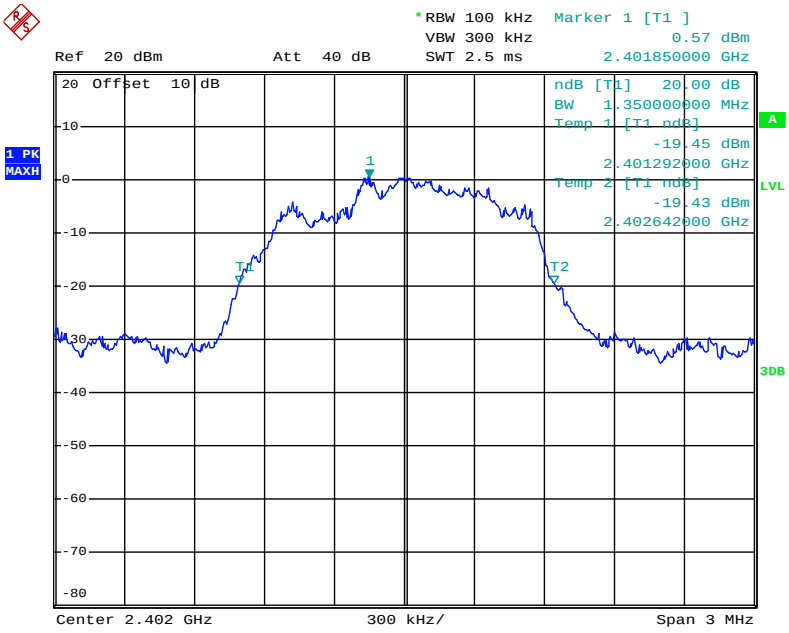
High channel



Date: 10.SEP.2018 09:48:42

Π/4-DQPSK Mode

Low channel



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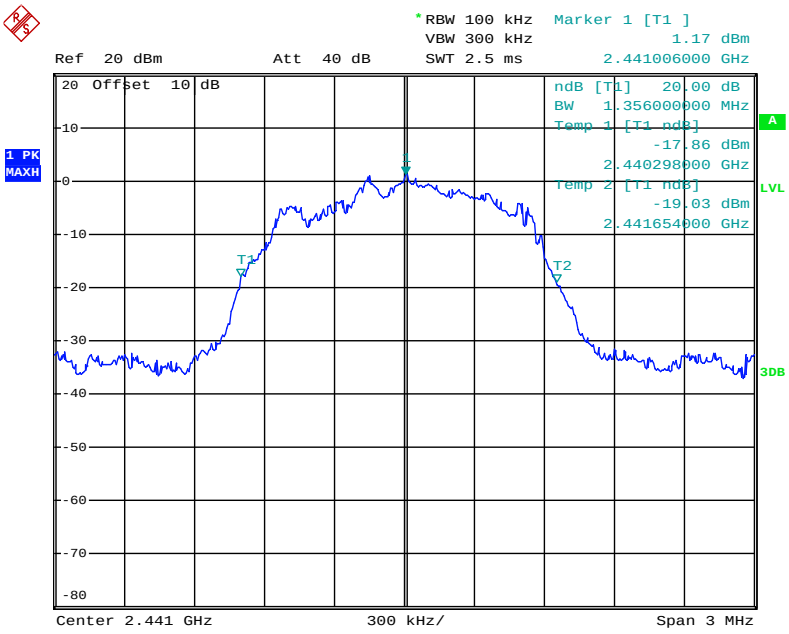
Middle channel



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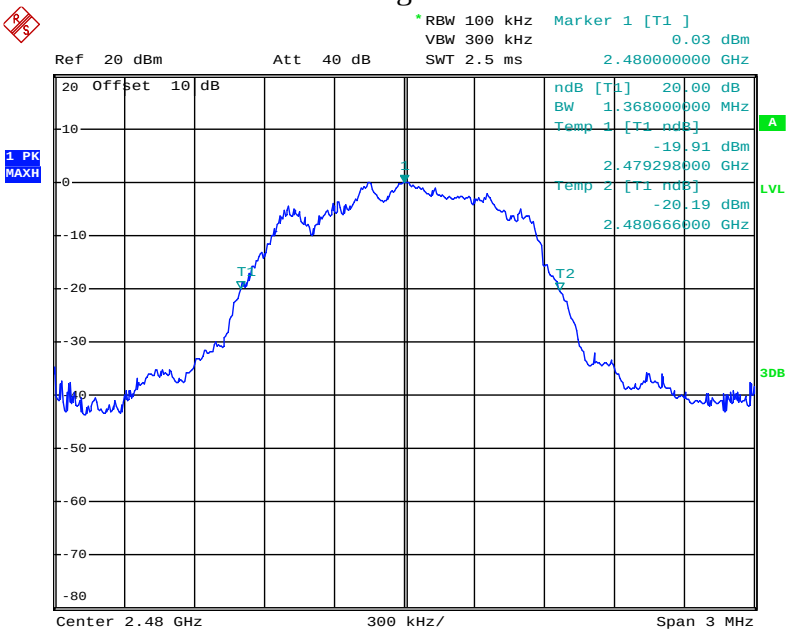
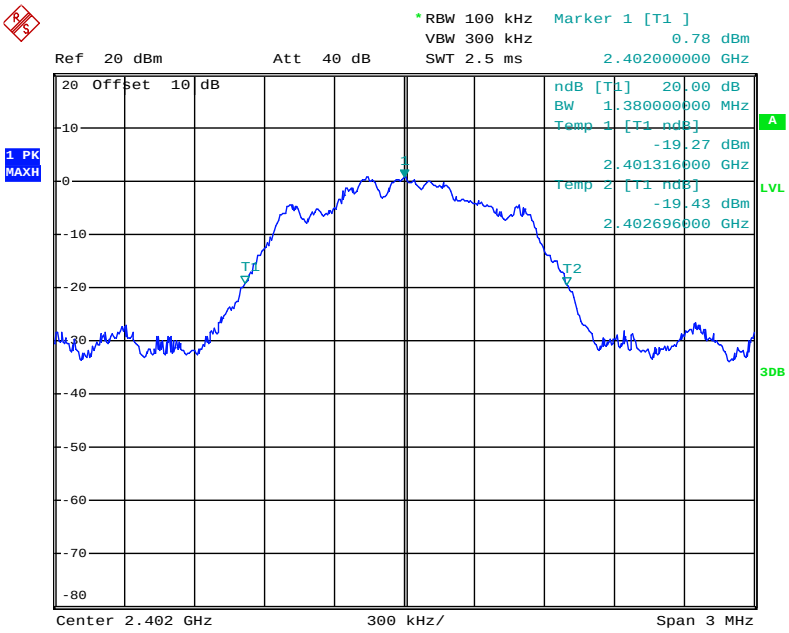
High channel



Date: 10.SEP.2018 09:49:35

8DPSK Mode

Low channel



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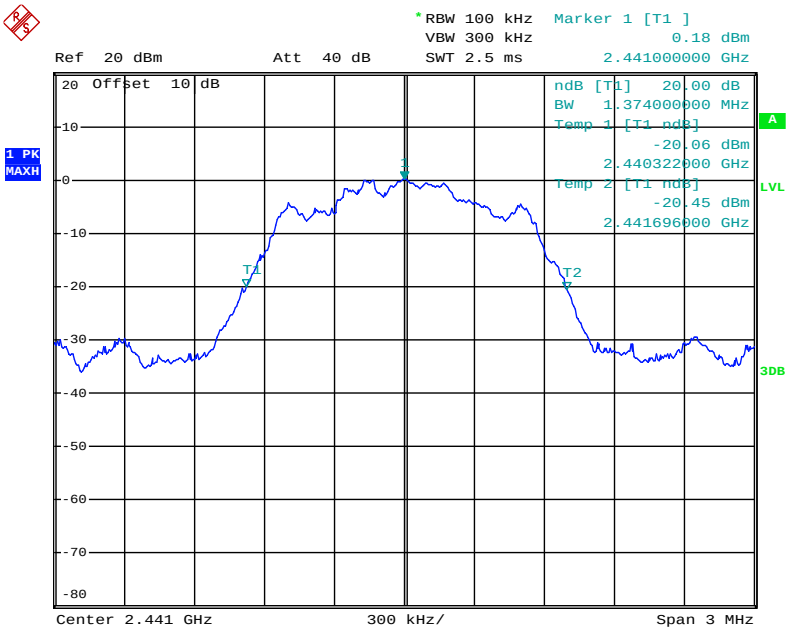
Middle channel



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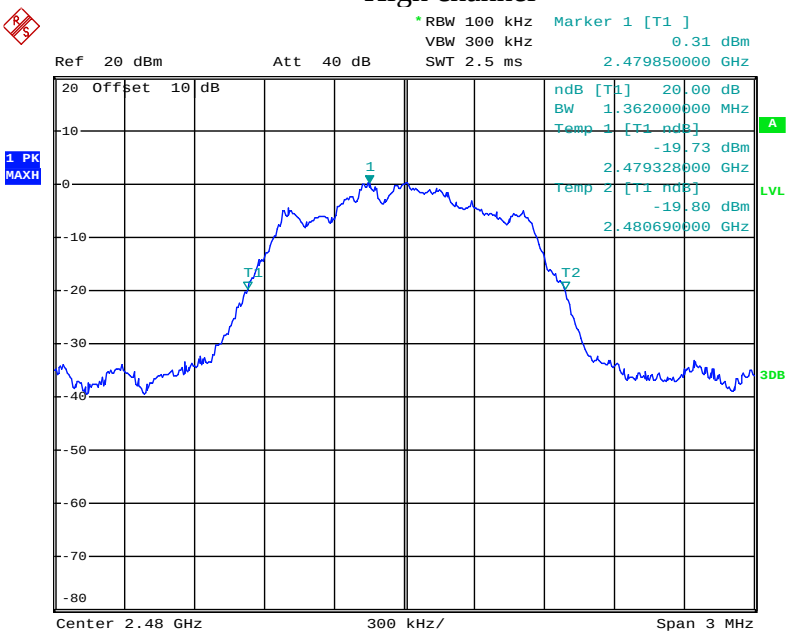
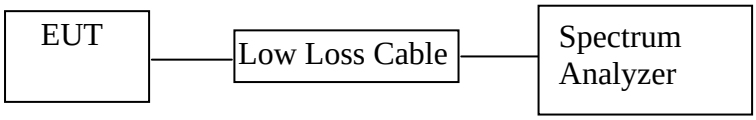
High channel



Date: 10.SEP.2018 10:03:47

6. CARRIER FREQUENCY SEPARATION TEST

6.1.Block Diagram of Test Setup



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 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 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 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 Mode

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	0.996	25KHz or 2/3*20dB bandwidth	Pass
	2403			
Middle	2440	1.008	25KHz or 2/3*20dB bandwidth	Pass
	2441			
High	2479	1.008	25KHz or 2/3*20dB bandwidth	Pass
	2480			

Π/4-DQPSK Mode

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	0.996	25KHz or 2/3*20dB bandwidth	Pass
	2403			
Middle	2440	1.008	25KHz or 2/3*20dB bandwidth	Pass
	2441			
High	2479	0.996	25KHz or 2/3*20dB bandwidth	Pass
	2480			

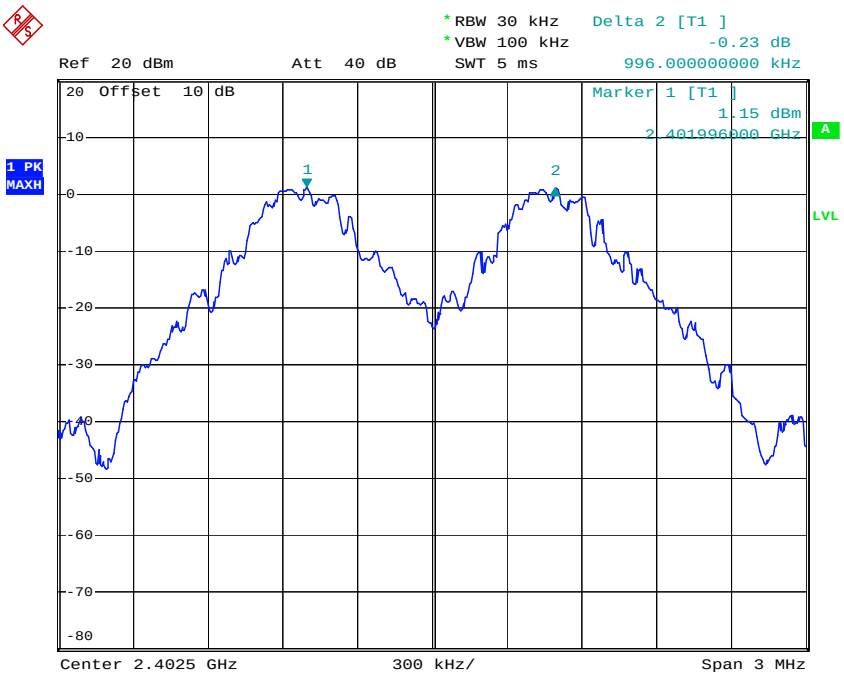
8DPSK Mode

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	0.996	25KHz or 2/3*20dB bandwidth	Pass
	2403			
Middle	2440	1.008	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.

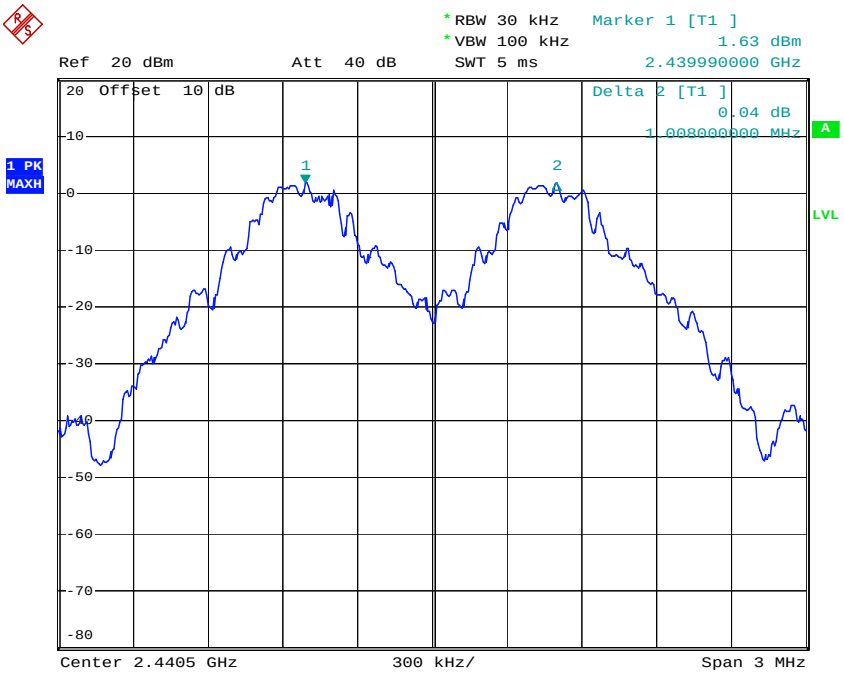
GFSK Mode

Low channel



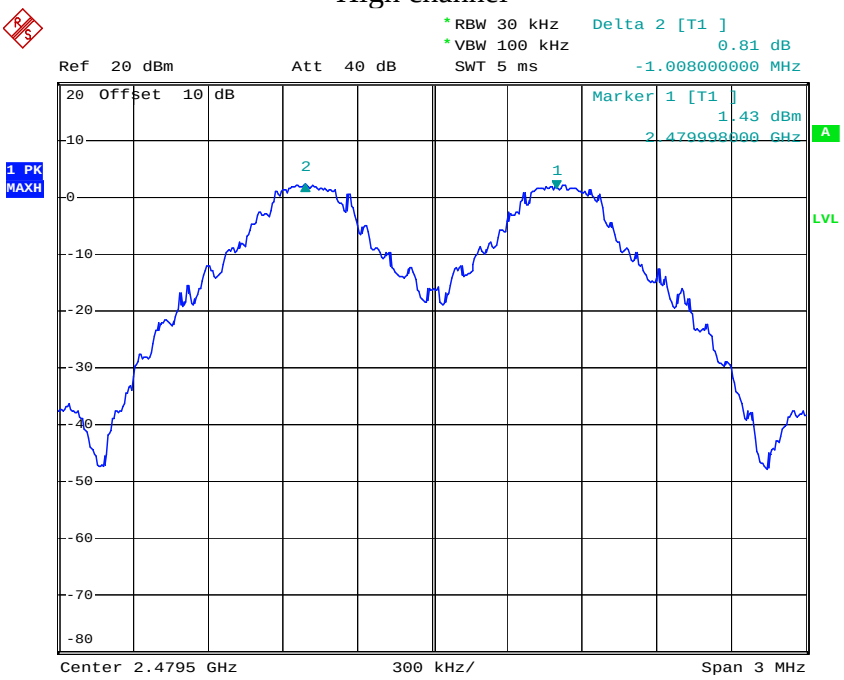
Comment A:
Date: 10.SEP.2018 20:01:17

Middle channel



Comment A:
Date: 10.SEP.2018 20:02:14

High channel



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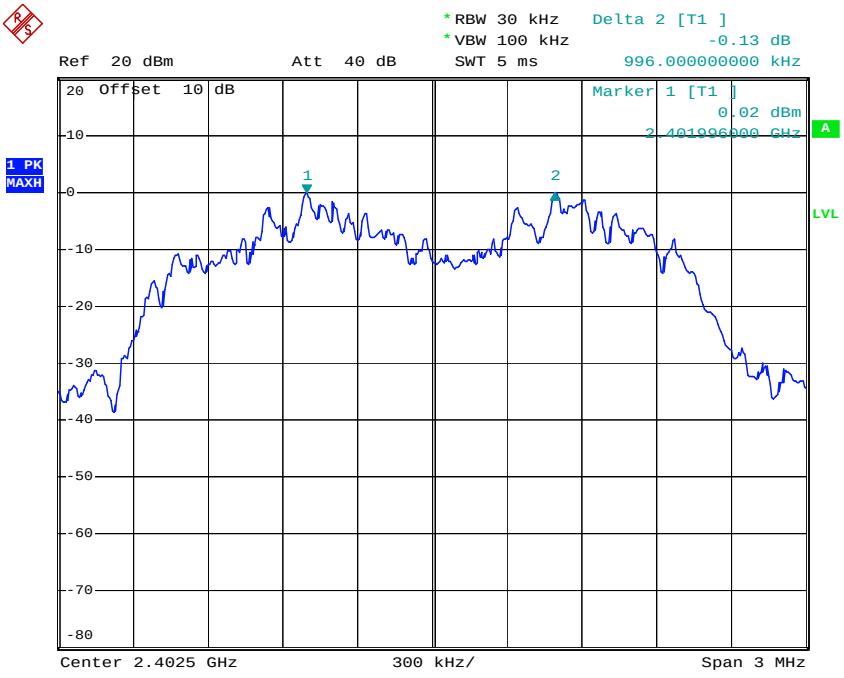
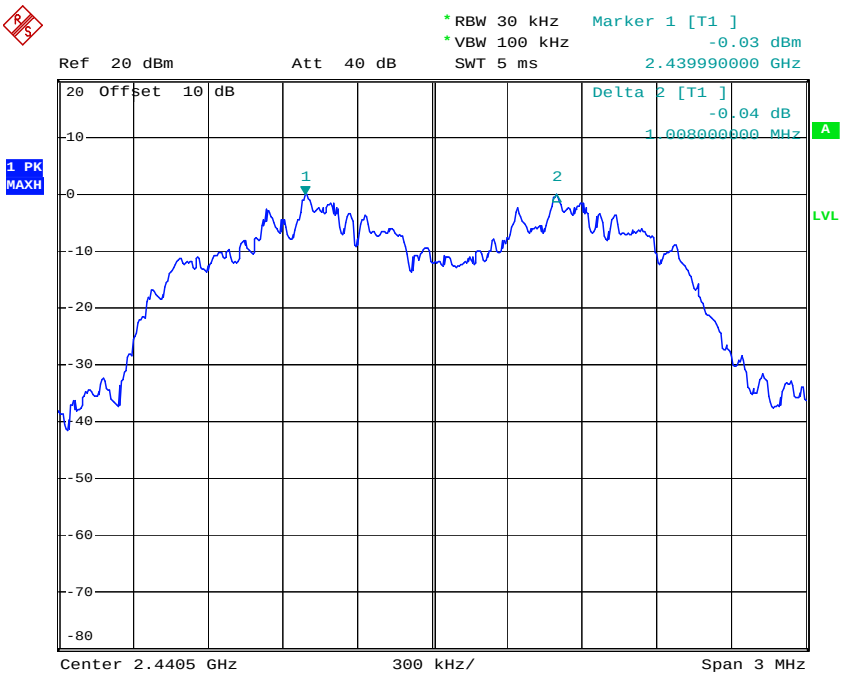
Π/4-DQPSK Mode

Low channel



Comment A:
Date: 10.SEP.2018 20:00:20

Middle channel



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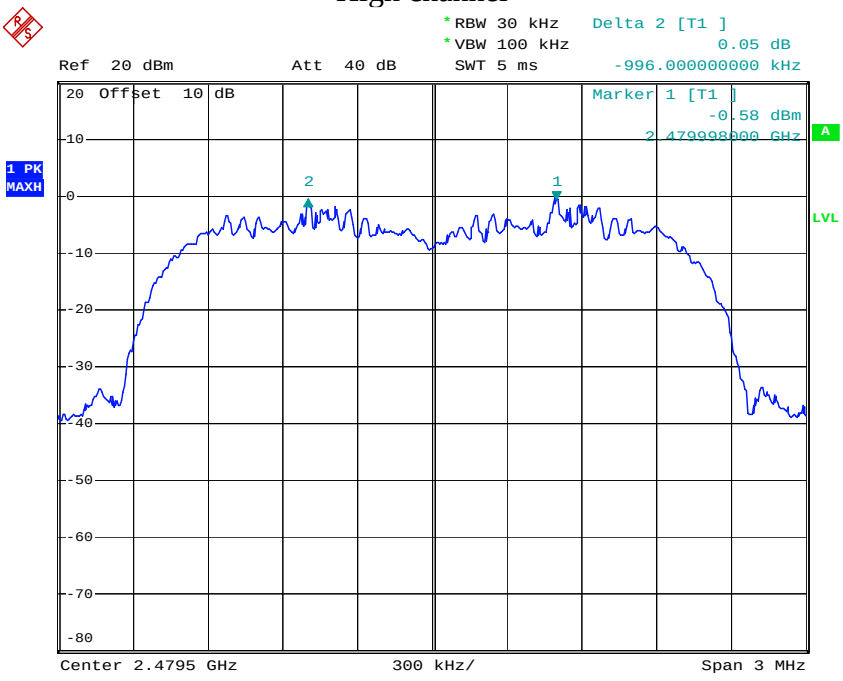
High channel



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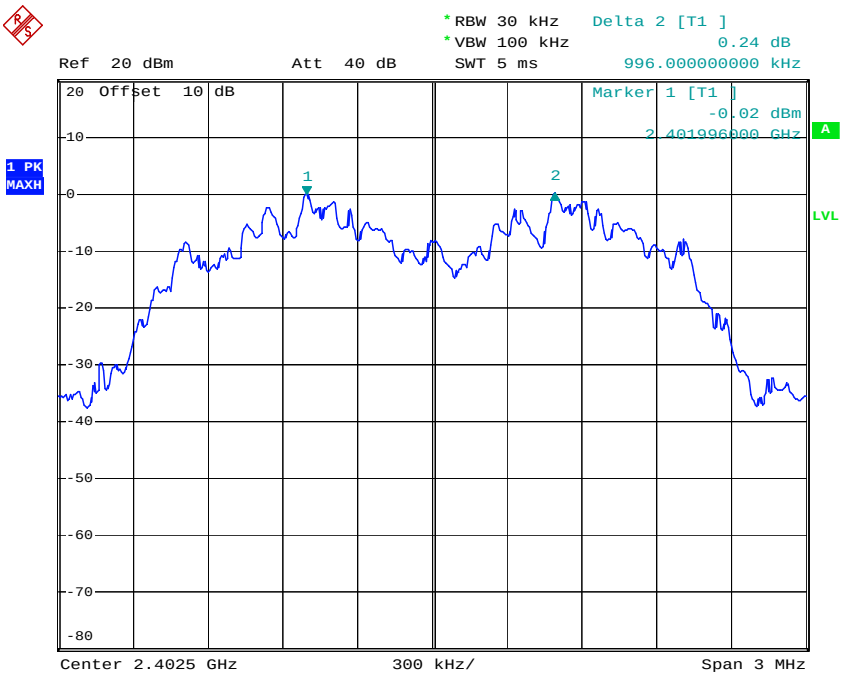
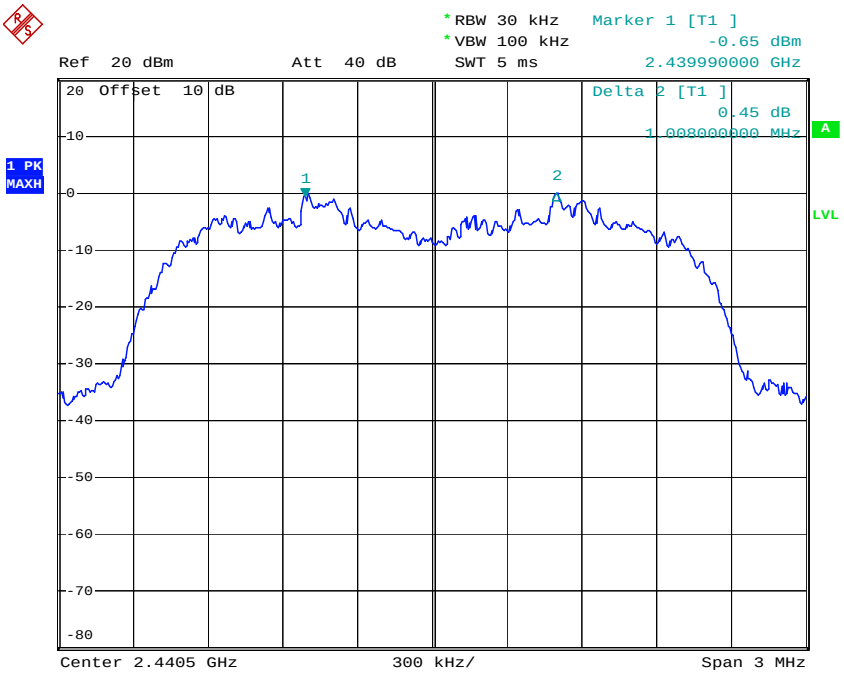
8DPSK Mode

Low channel



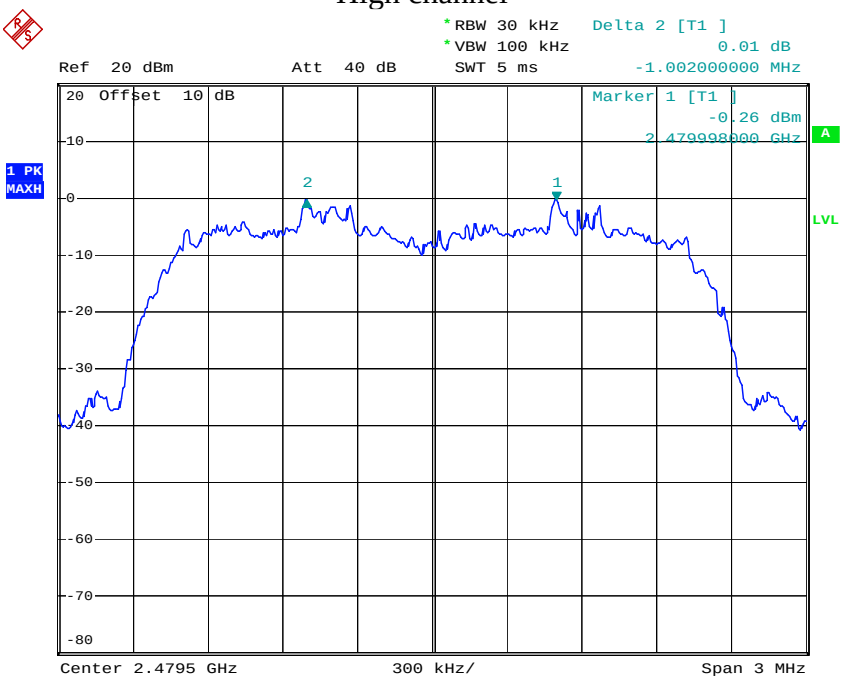
Comment A:
Date: 10.SEP.2018 19:58:32

Middle channel



Comment A:
Date: 10.SEP.2018 20:03:25

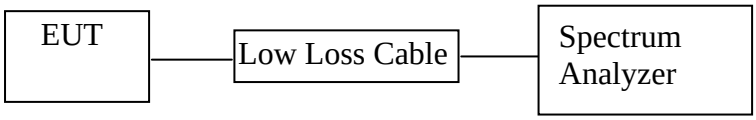
High channel



Comment A:
Date: 10.SEP.2018 20:04:31

7. NUMBER OF HOPPING FREQUENCY TEST

7.1.Block Diagram of Test Setup



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.

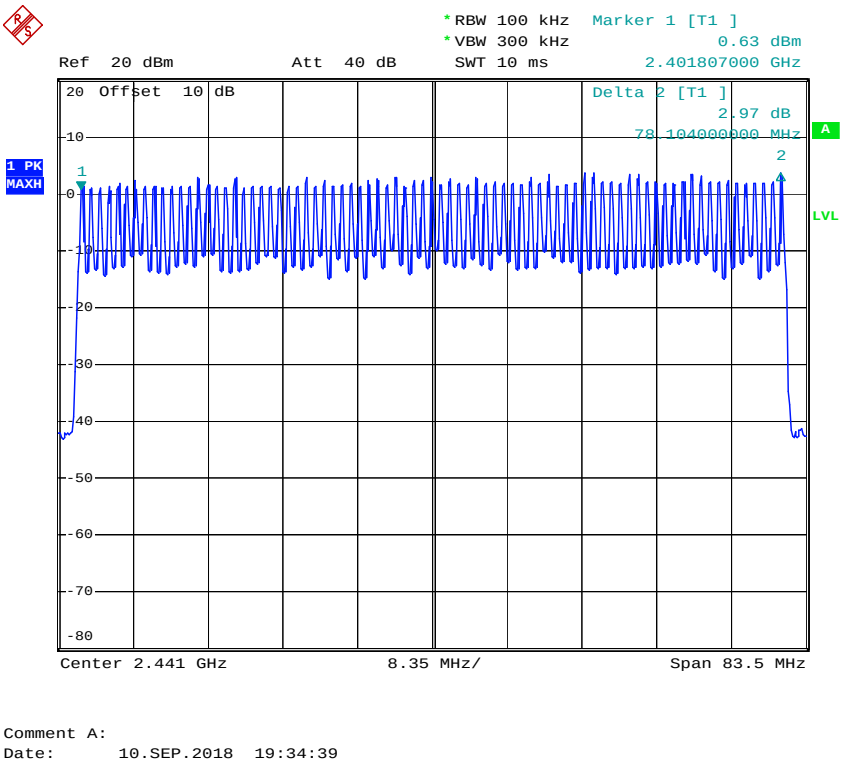
7.5.3.Max hold, view and count how many channel in the band.

7.6.Test Result

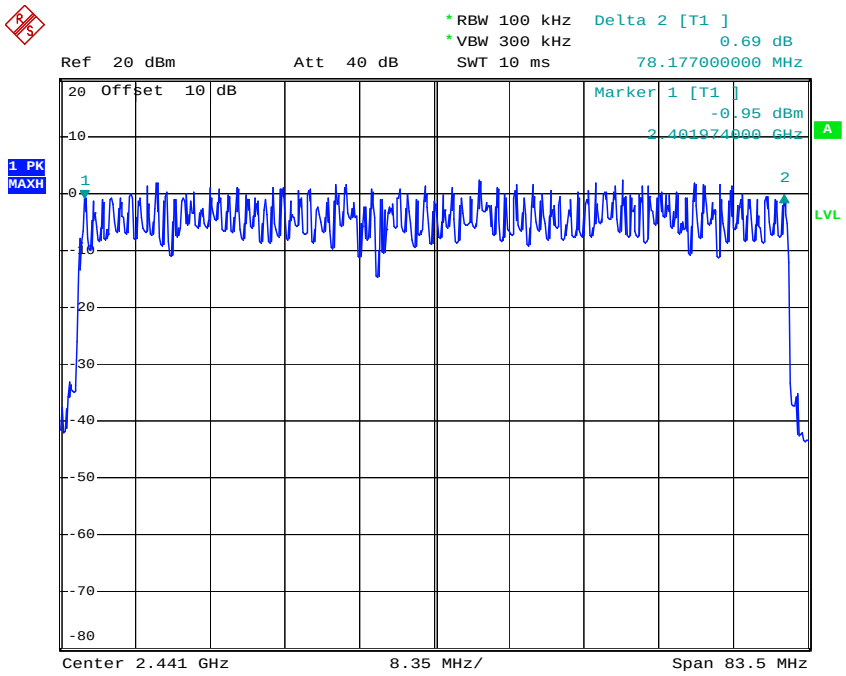
Total number of hopping channel	Measurement result(CH)	Limit(CH)	Result
	79	⩾15	Pass

The spectrum analyzer plots are attached as below.

Number of hopping channels (GFSK Mode)

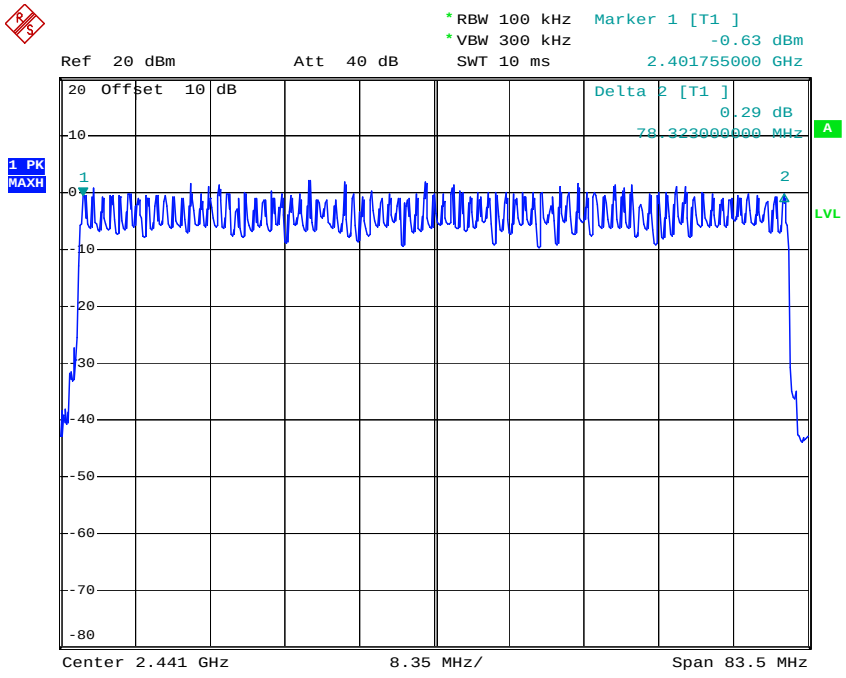


Number of hopping channels (Π/4-DQPSK Mode)



Comment A:
Date: 10.SEP.2018 19:38:48

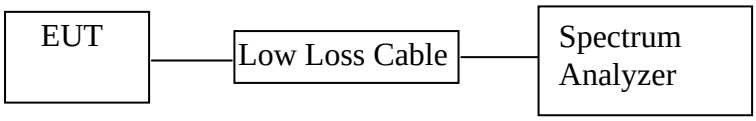
Number of hopping channels (8DPSK Mode)



Comment A:
Date: 10.SEP.2018 19:42:15

8. DWELL TIME TEST

8.1.Block Diagram of Test Setup



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

PASS.

GFSK Mode (Worst case)

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2441	0.410	131.2	400
A period transmit time = 0.4 × 79 = 31.6		Dwell time = pulse time × (1600/(2*79))×31.6		
DH3	2441	1.690	270.4	400
A period transmit time = 0.4 × 79 = 31.6		Dwell time = pulse time × (1600/(4*79))×31.6		
DH5	2441	2.950	314.7	400
A period transmit time = 0.4 × 79 = 31.6		Dwell time = pulse time × (1600/(6*79))×31.6		

Π/4-DQPSK Mode (Worst case)

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2441	0.410	131.2	400
A period transmit time = 0.4 × 79 = 31.6		Dwell time = pulse time × (1600/(2*79))×31.6		
DH3	2441	1.690	270.4	400
A period transmit time = 0.4 × 79 = 31.6		Dwell time = pulse time × (1600/(4*79))×31.6		
DH5	2441	2.950	314.7	400
A period transmit time = 0.4 × 79 = 31.6		Dwell time = pulse time × (1600/(6*79))×31.6		

8DPSK Mode (Worst case)

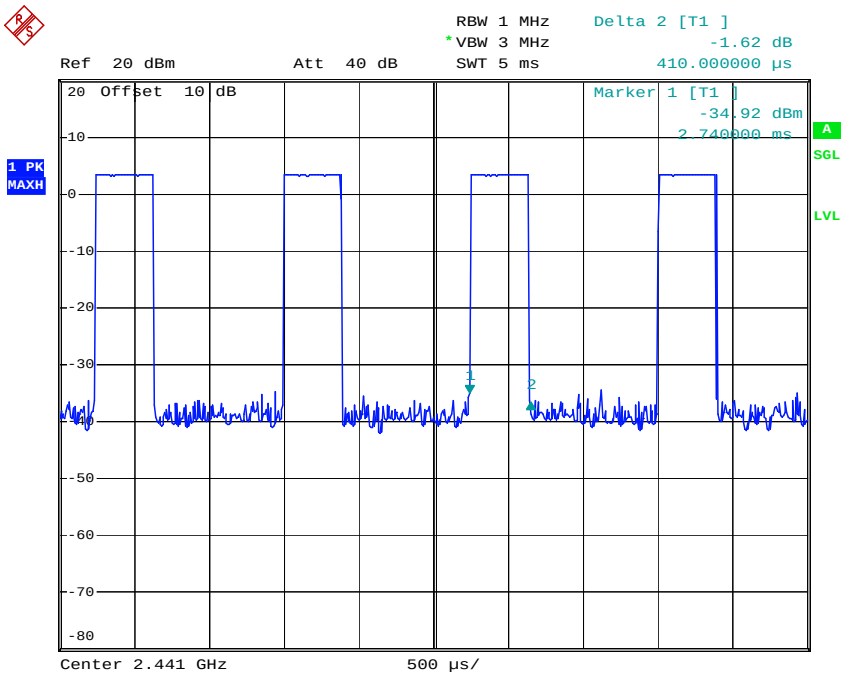
Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2441	0.420	134.4	400
A period transmit time = 0.4 × 79 = 31.6		Dwell time = pulse time × (1600/(2*79))×31.6		
DH3	2441	1.670	267.2	400
A period transmit time = 0.4 × 79 = 31.6		Dwell time = pulse time × (1600/(4*79))×31.6		
DH5	2441	2.950	314.7	400
A period transmit time = 0.4 × 79 = 31.6		Dwell time = pulse time × (1600/(6*79))×31.6		

Note: We tested GFSK mode and Π/4-DQPSK & 8DPSK mode the low, middle and high channel and recorded the worst case data for all test mode.

The spectrum analyzer plots are attached as below.

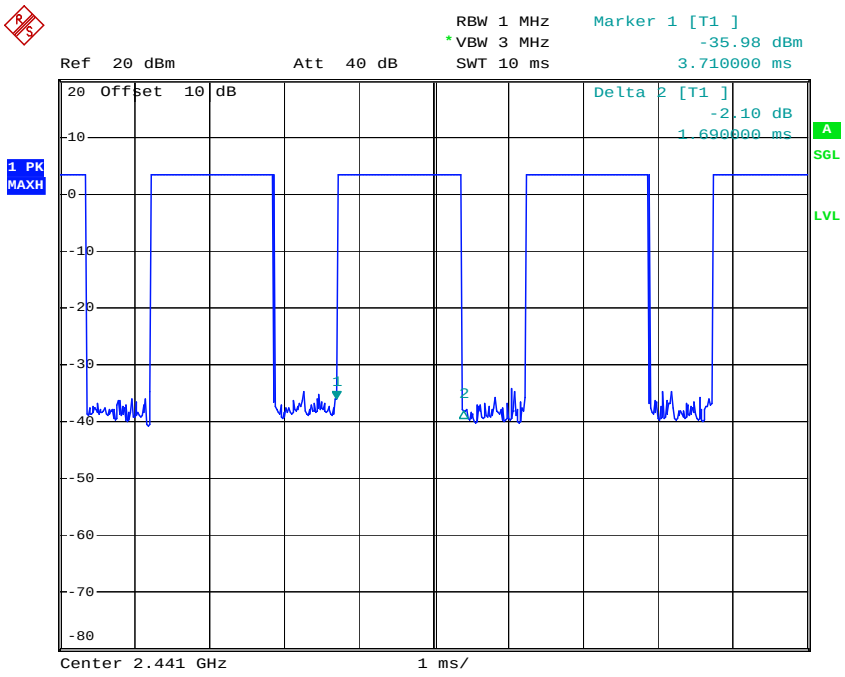
GFSK Mode

DH1 Middle channel



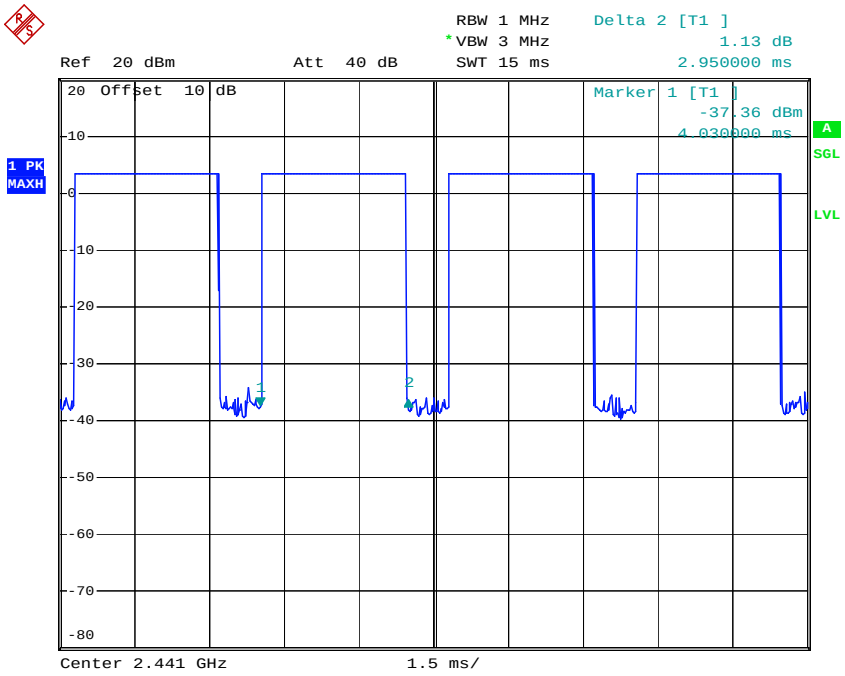
Comment A:
Date: 10.SEP.2018 20:20:41

DH3 Middle channel



Comment A:
Date: 10.SEP.2018 20:20:10

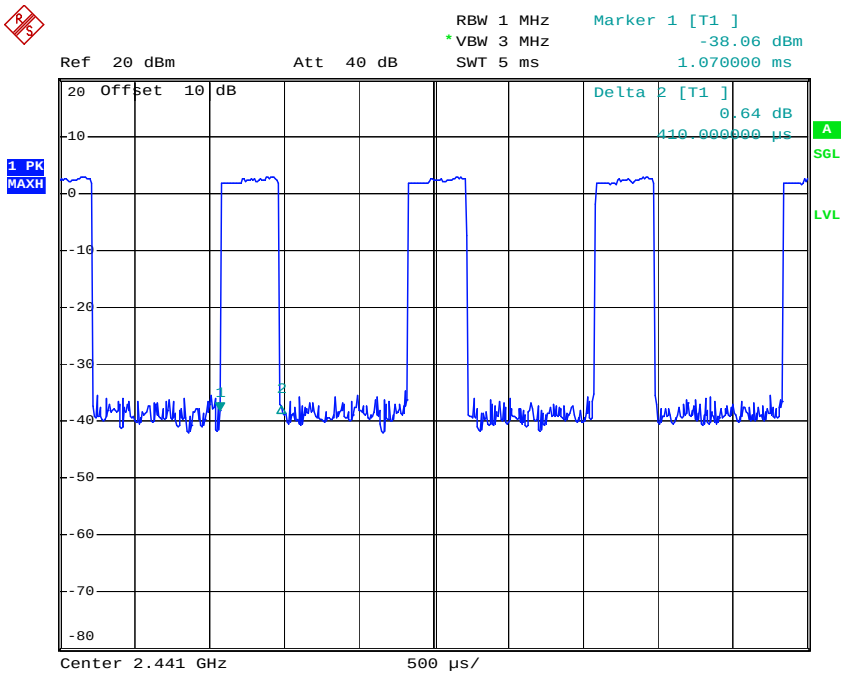
DH5 Middle channel



Comment A:
Date: 10.SEP.2018 20:19:37

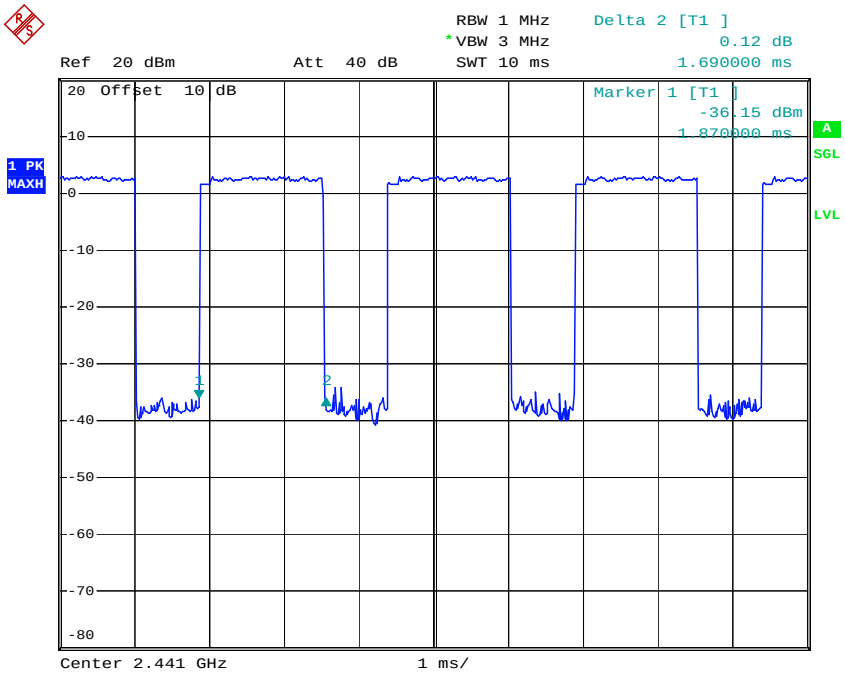
Π/4-DQPSK Mode

2-DH1 Middle channel



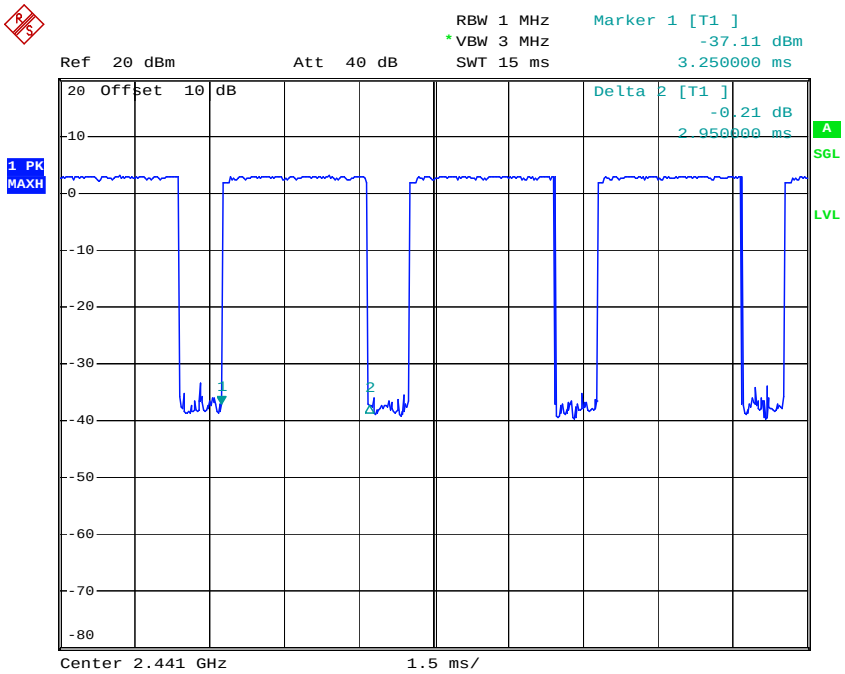
Comment A:
Date: 10.SEP.2018 20:15:41

2-DH3 Middle channel



Comment A:
Date: 10.SEP.2018 20:17:35

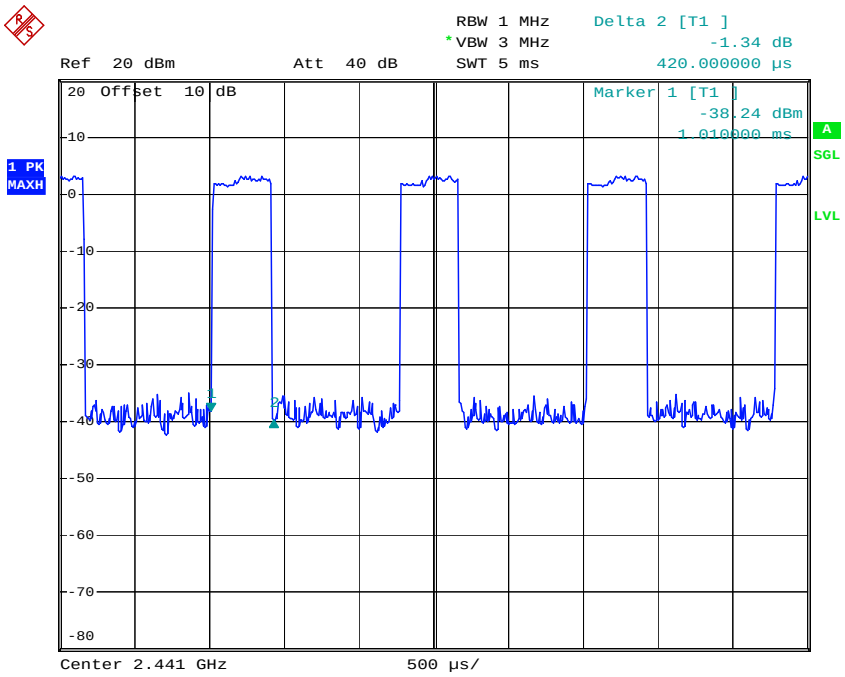
2-DH5 Middle channel



Comment A:
Date: 10.SEP.2018 20:19:08

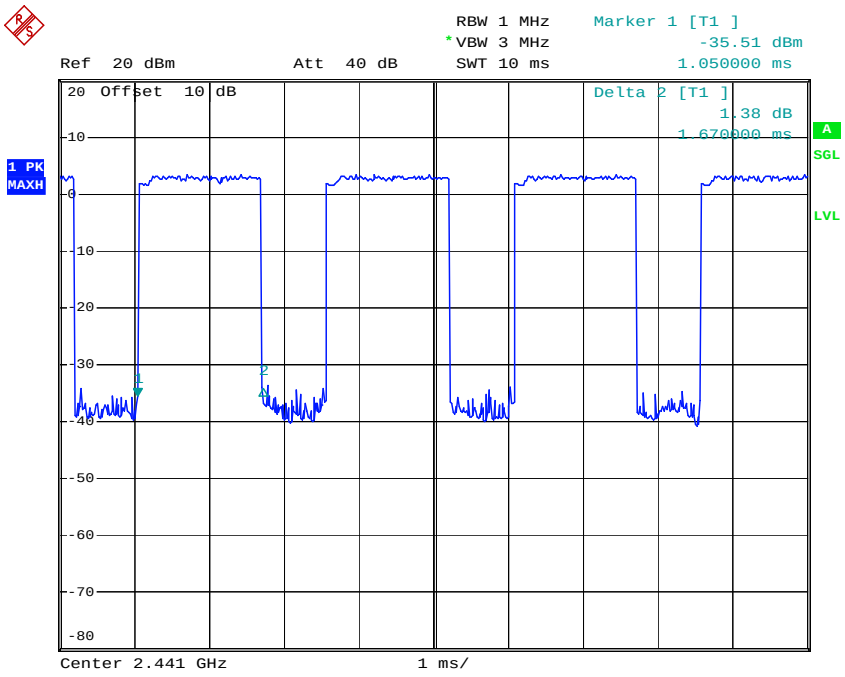
8DPSK Mode

3-DH1 Middle channel



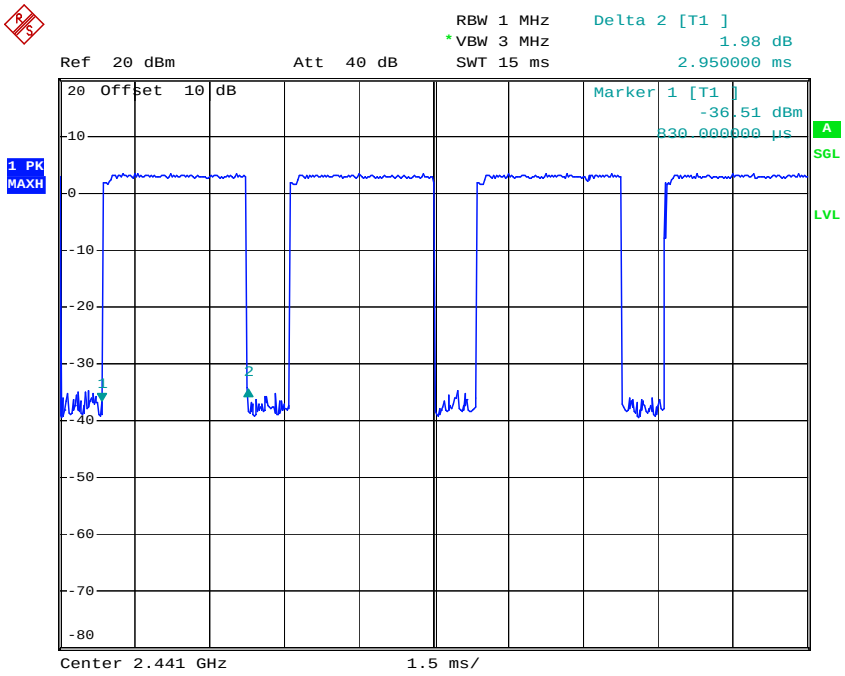
Comment A:
Date: 10.SEP.2018 20:15:11

3-DH3 Middle channel



Comment A:
Date: 10.SEP.2018 20:14:46

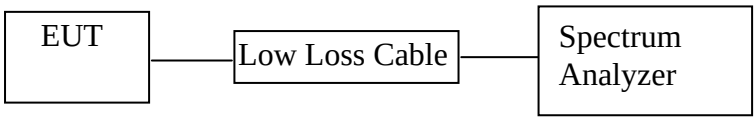
3-DH5 Middle channel



Comment A:
Date: 10.SEP.2018 20:14:17

9. MAXIMUM PEAK OUTPUT POWER TEST

9.1.Block Diagram of Test Setup



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 10MHz.

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	Result
Low	2402	1.97/0.002	21 / 0.125	Pass
Middle	2441	2.39/0.002	21 / 0.125	Pass
High	2480	2.33/0.002	21 / 0.125	Pass

Π/4-DQPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W	Result
Low	2402	2.00/0.002	21 / 0.125	Pass
Middle	2441	2.27/0.002	21 / 0.125	Pass
High	2480	2.03/0.002	21 / 0.125	Pass

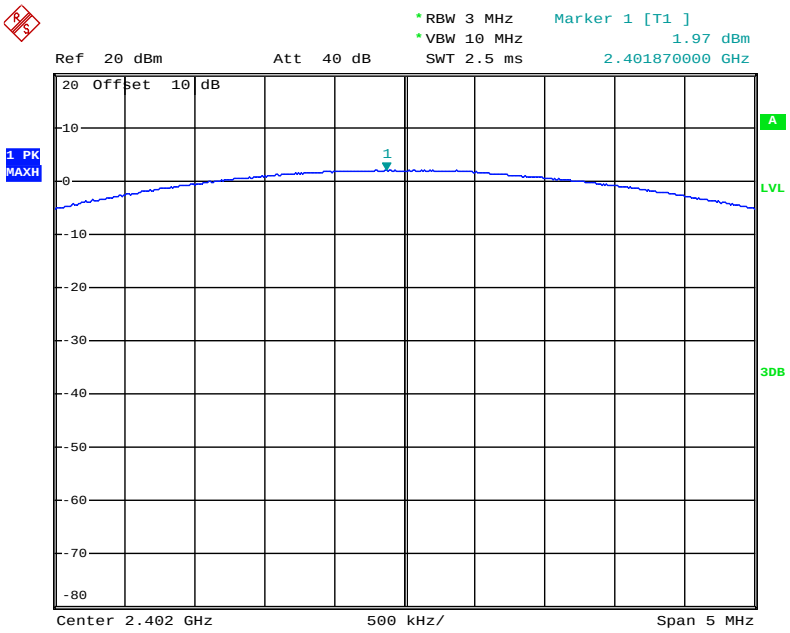
8DPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W	Result
Low	2402	2.33/0.002	21 / 0.125	Pass
Middle	2441	2.88/0.002	21 / 0.125	Pass
High	2480	2.67/0.002	21 / 0.125	Pass

The spectrum analyzer plots are attached as below.

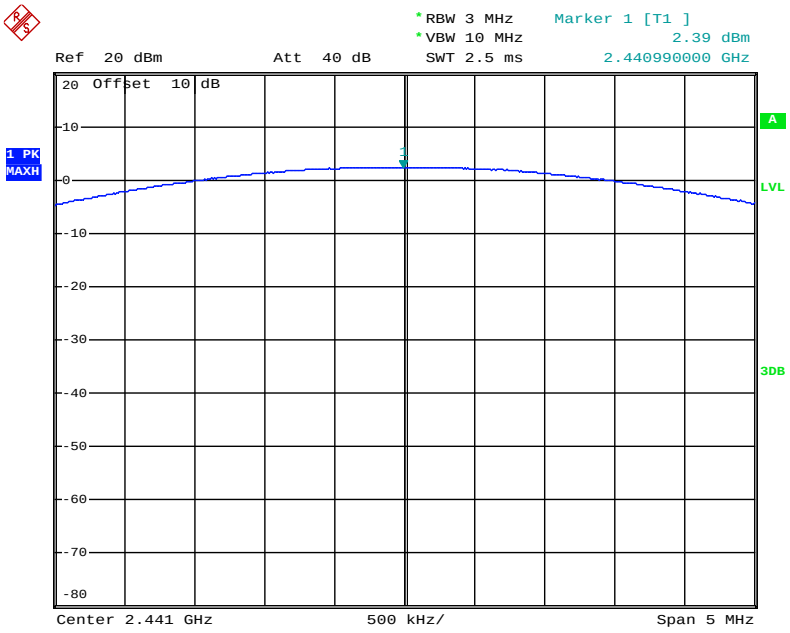
GFSK Mode

Low channel



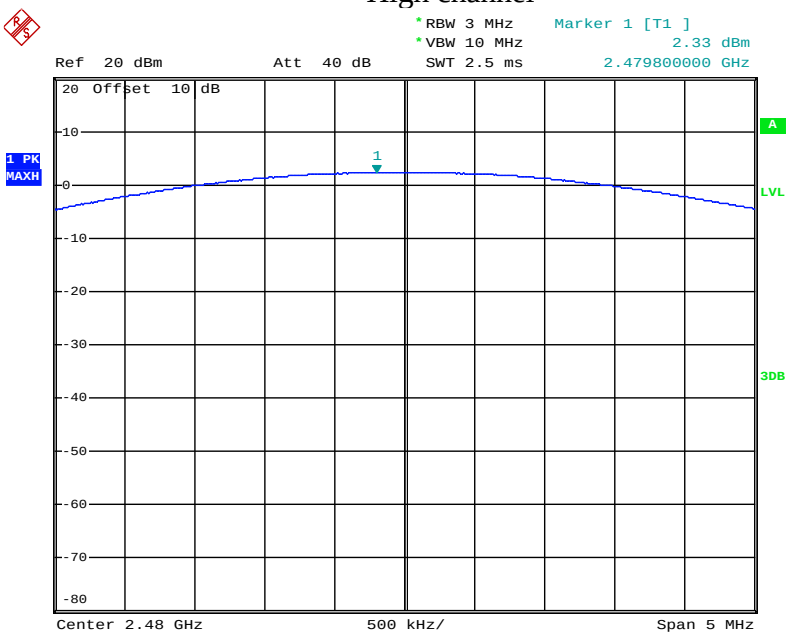
Date: 10.SEP.2018 10:16:50

Middle channel



Date: 10.SEP.2018 10:16:05

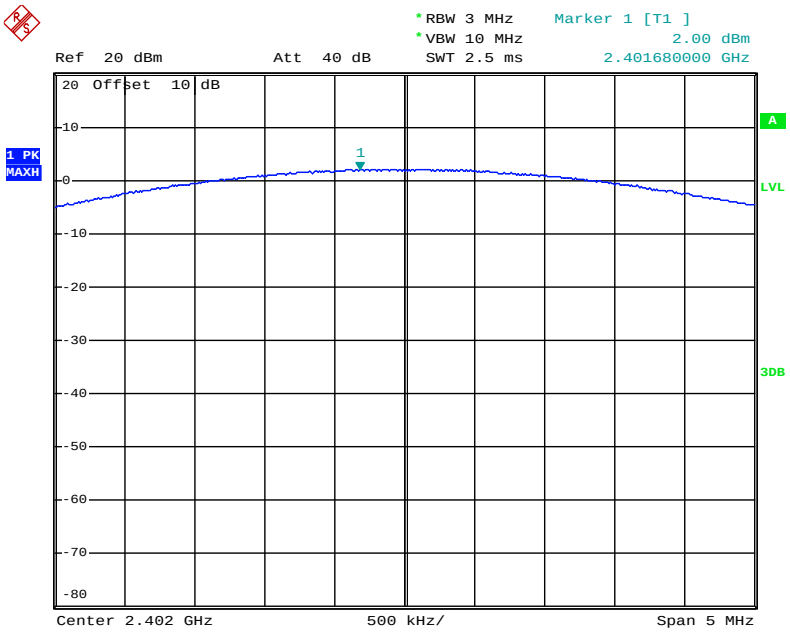
High channel



Date: 10.SEP.2018 10:15:36

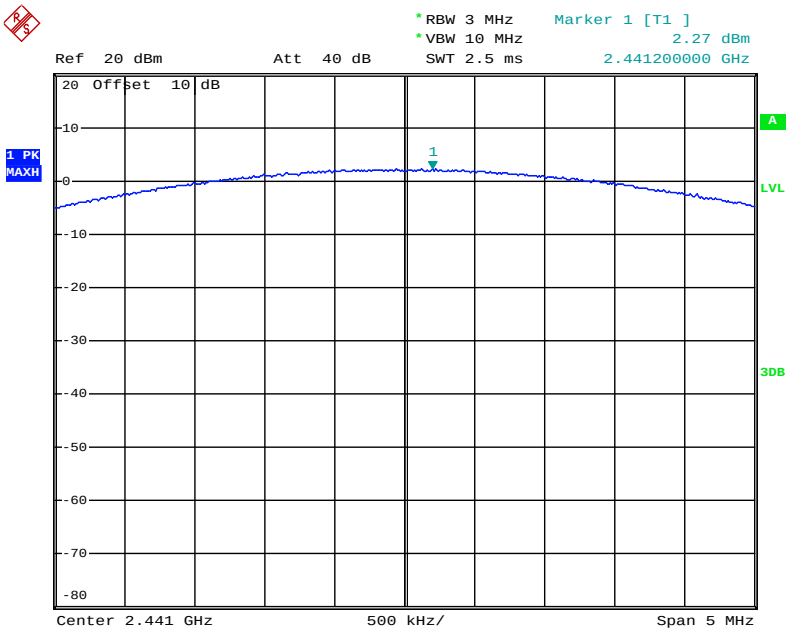
Π/4-DQPSK Mode

Low channel



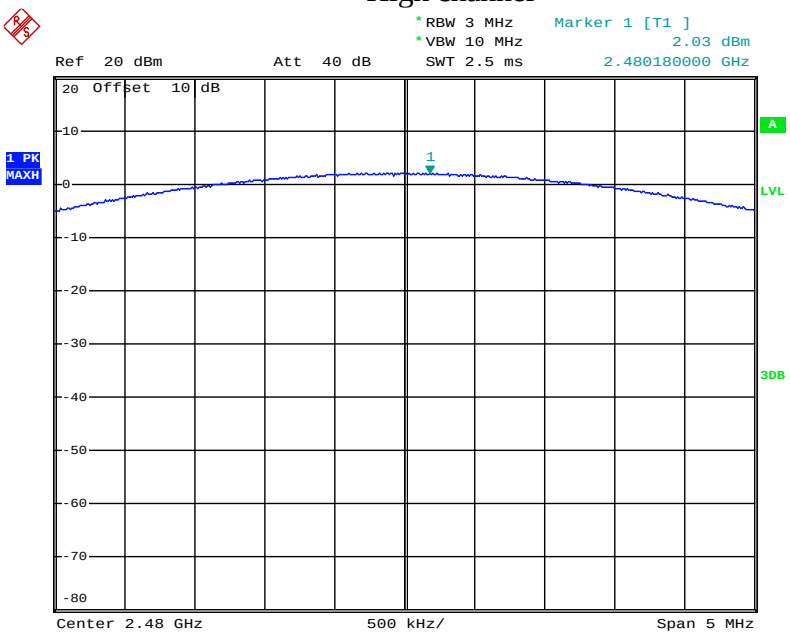
Date: 10.SEP.2018 10:14:10

Middle channel



Date: 10.SEP.2018 10:13:34

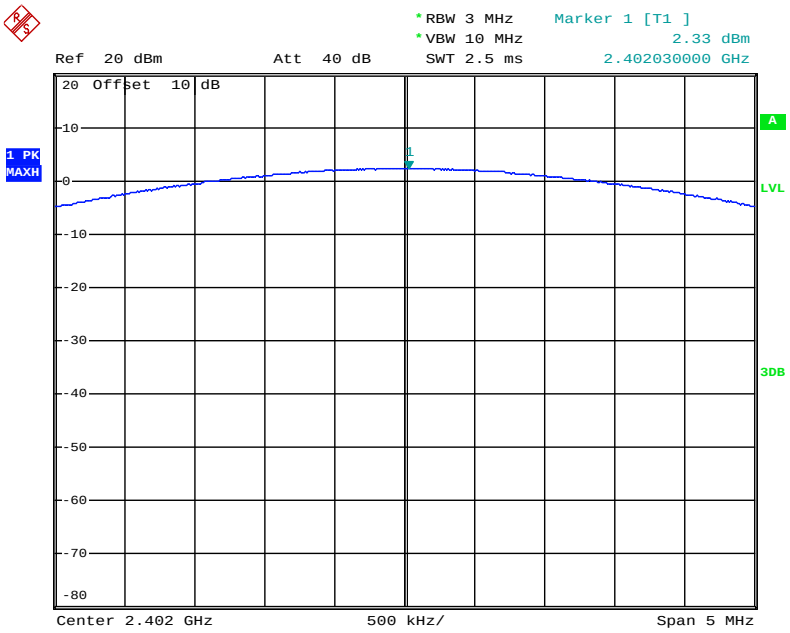
High channel



Date: 10.SEP.2018 10:14:51

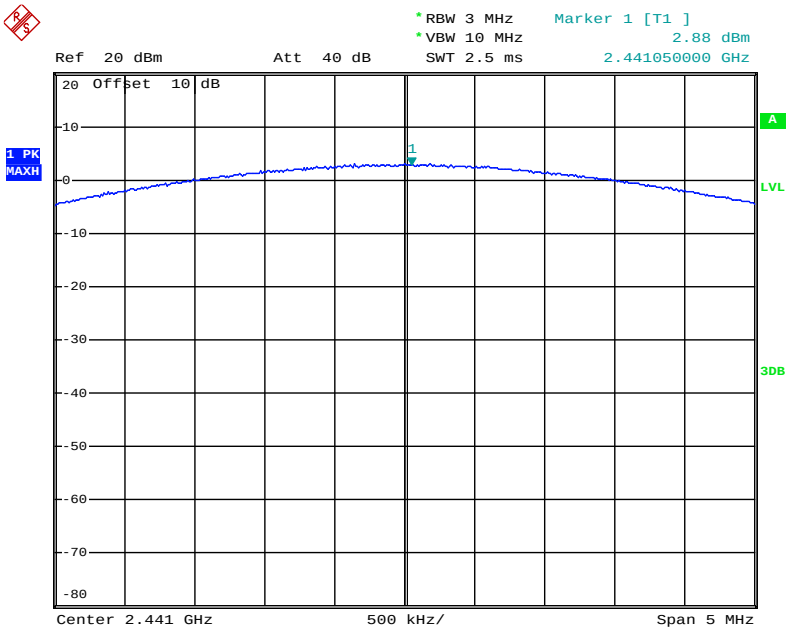
8DPSK Mode

Low channel



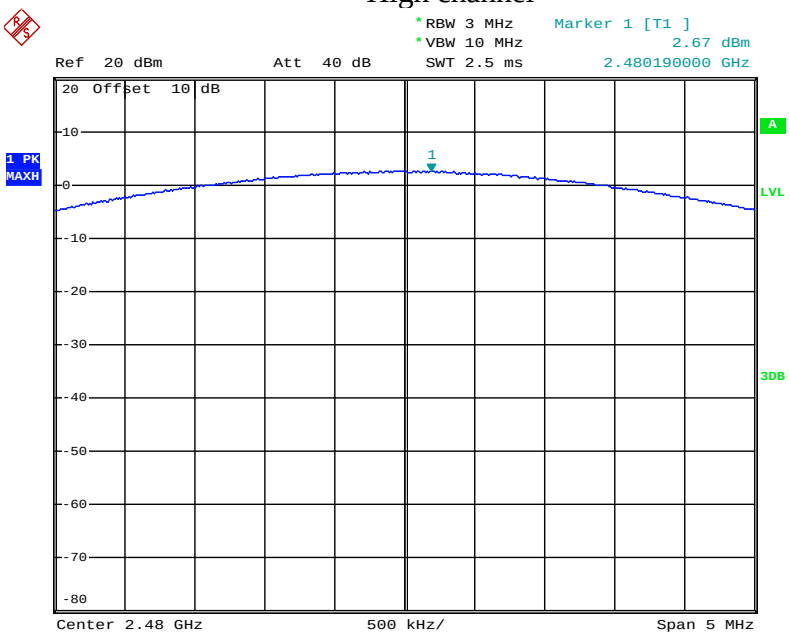
Date: 10.SEP.2018 10:10:36

Middle channel



Date: 10.SEP.2018 10:12:16

High channel

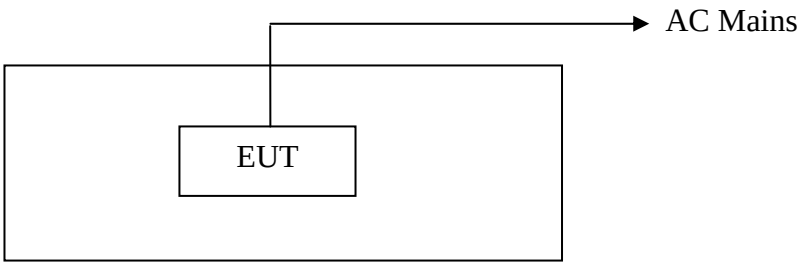


Date: 10.SEP.2018 10:08:00

10. RADIATED EMISSION TEST

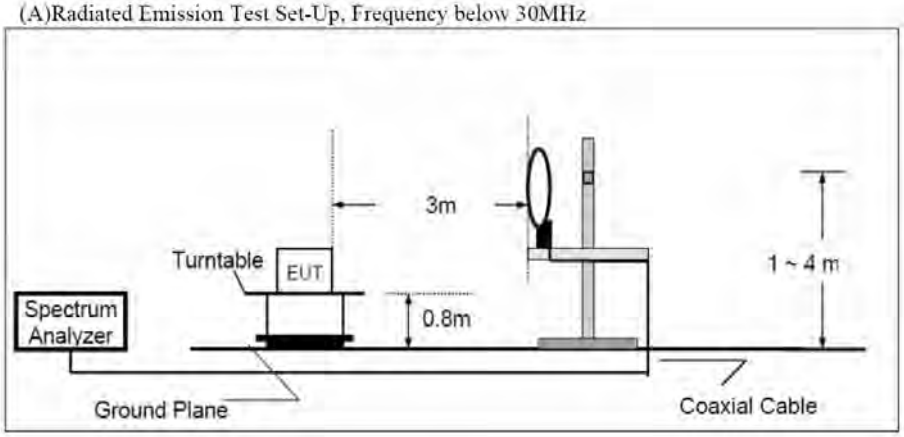
10.1. Block Diagram of Test Setup

10.1.1. Block diagram of connection between the EUT and peripherals

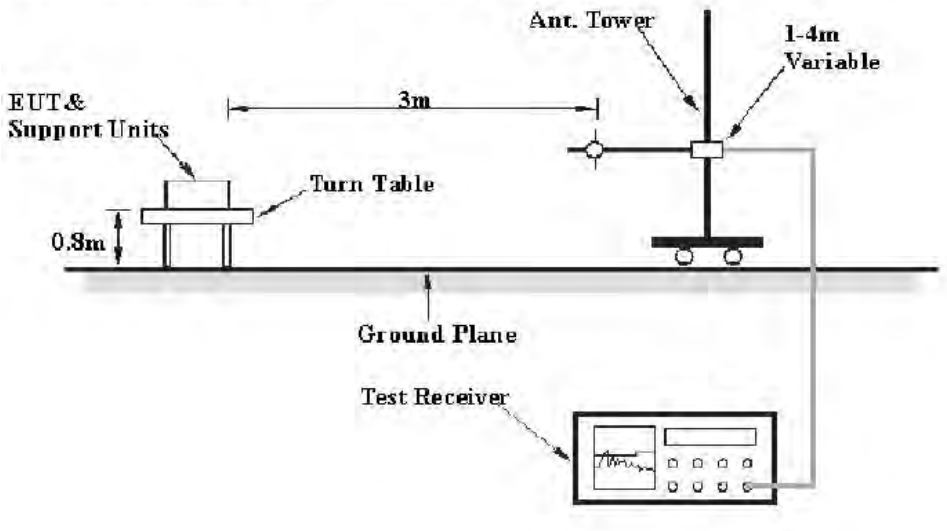


10.1.2. Semi-Anechoic Chamber Test Setup Diagram

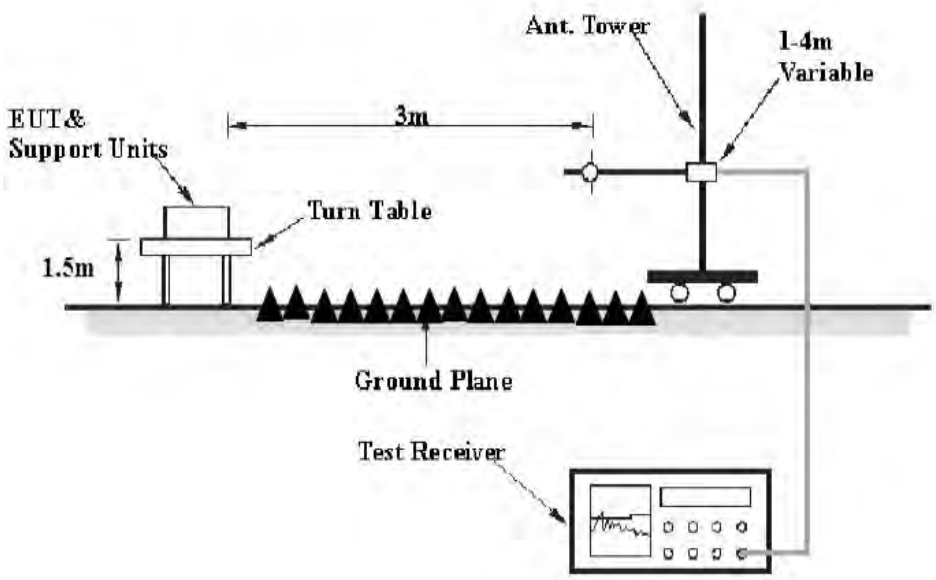
(A)Radiated Emission Test Set-Up, Frequency below 30MHz



(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			

[1]Until February 1, 1999, this restricted band shall be 0.490-0.510
[2]Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in 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. This EUT was tested in 3 orthogonal positions and the worst case position data was reported.

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 (dBμv)	Factor (dB/m)	Result (dBμv/m)	Limit (dBμv/m)	Margin (dB)	Remark
X.XX	48.69	-13.35	35.34	46	-10.66	QP

Frequency(MHz) = Emission frequency in MHz
Reading(dBμv) = Uncorrected Analyzer/Receiver reading
Factor (dB/m) = Antenna factor + Cable Loss – Amplifier gain
Result(dBμv/m) = Reading(dBμv) + Factor(dB/m)
Limit (dBμv/m) = Limit stated in standard
Margin (dB) = Result(dBμv/m) - Limit (dBμv/m)
QP = Quasi-peak Reading

Calculation Formula:
Margin(dB) = Result (dBμV/m)–Limit(dBμV/m)
Result(dBμV/m)= Reading(dBμV)+ 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, Π/4-DQPSK & 8DPSK Mode and recorded the worst case data (8DPSK mode) for all test mode.

2. Testing is carried out with frequency rang 9kHz to the tenth harmonics, which above 3th Harmonics are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
The measurements greater than 20dB below the limit from 9kHz to 30MHz and 18 to 26.5GHz.

The spectrum analyzer plots are attached as below.

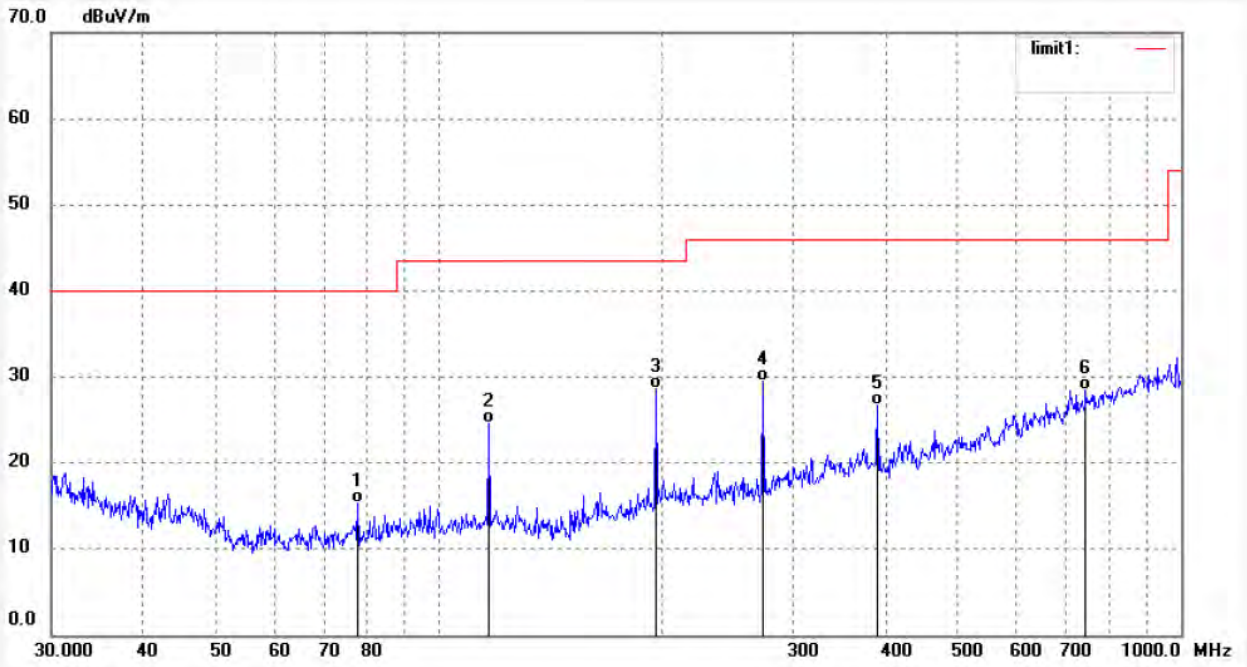
Below 1GHz

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.: frank2018 #1579
Standard: FCC PART 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: AmazonBasics AC Powered 2.1 30W Bluetooth Speakers with Subwoofer
Mode: TX 2402MHz (8DPSK)
Model: B07J647XGT
Manufacturer: ZheJiang TianLe Audio Co.,Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/09/13/
Time: 9/28/56

Note: Report NO.:ATE20181670



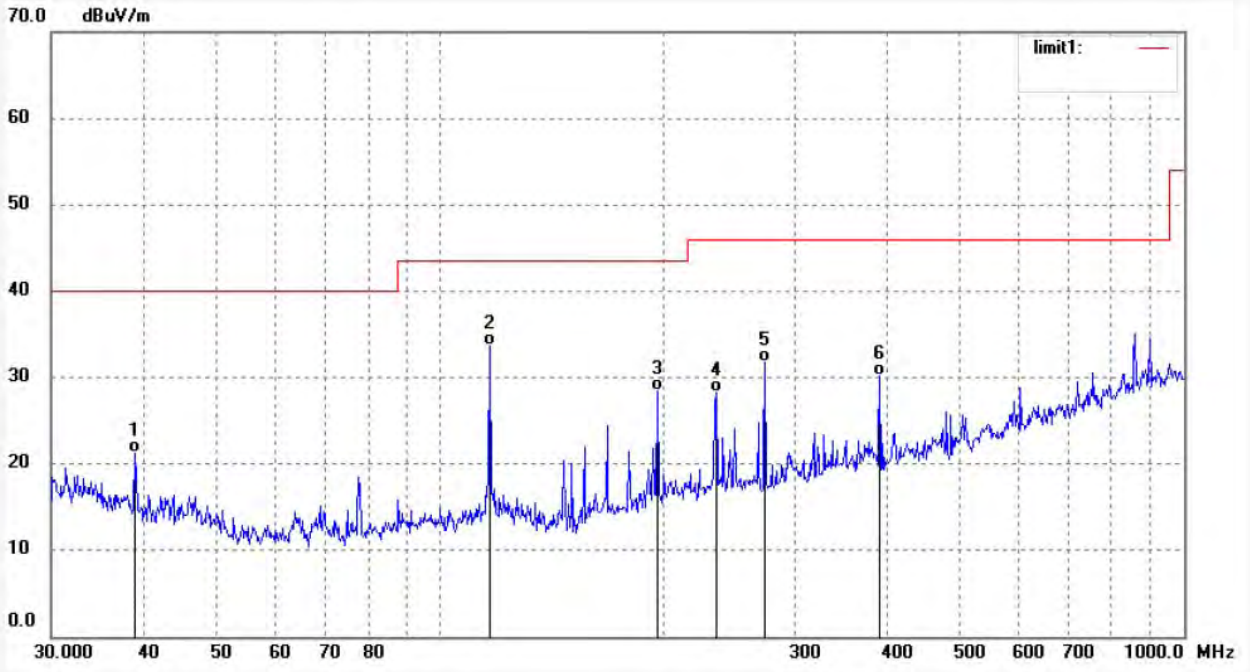
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	77.7407	38.25	-22.99	15.26	40.00	-24.74	QP	200	285	
2	116.8573	45.79	-21.25	24.54	43.50	-18.96	QP	200	231	
3	195.8701	47.61	-18.93	28.68	43.50	-14.82	QP	200	156	
4	273.4837	46.50	-17.02	29.48	46.00	-16.52	QP	200	95	
5	389.9873	40.72	-14.09	26.63	46.00	-19.37	QP	200	156	
6	744.4265	35.40	-6.89	28.51	46.00	-17.49	QP	200	302	

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.: frank2018 #1578
Standard: FCC PART 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: AmazonBasics AC Powered 2.1 30W Bluetooth Speakers with Subwoofer
Mode: TX 2402MHz (8DPSK)
Model: B07J647XGT
Manufacturer: ZheJiang TianLe Audio Co.,Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/09/13/
Time: 9/28/09

Note: Report NO.:ATE20181670



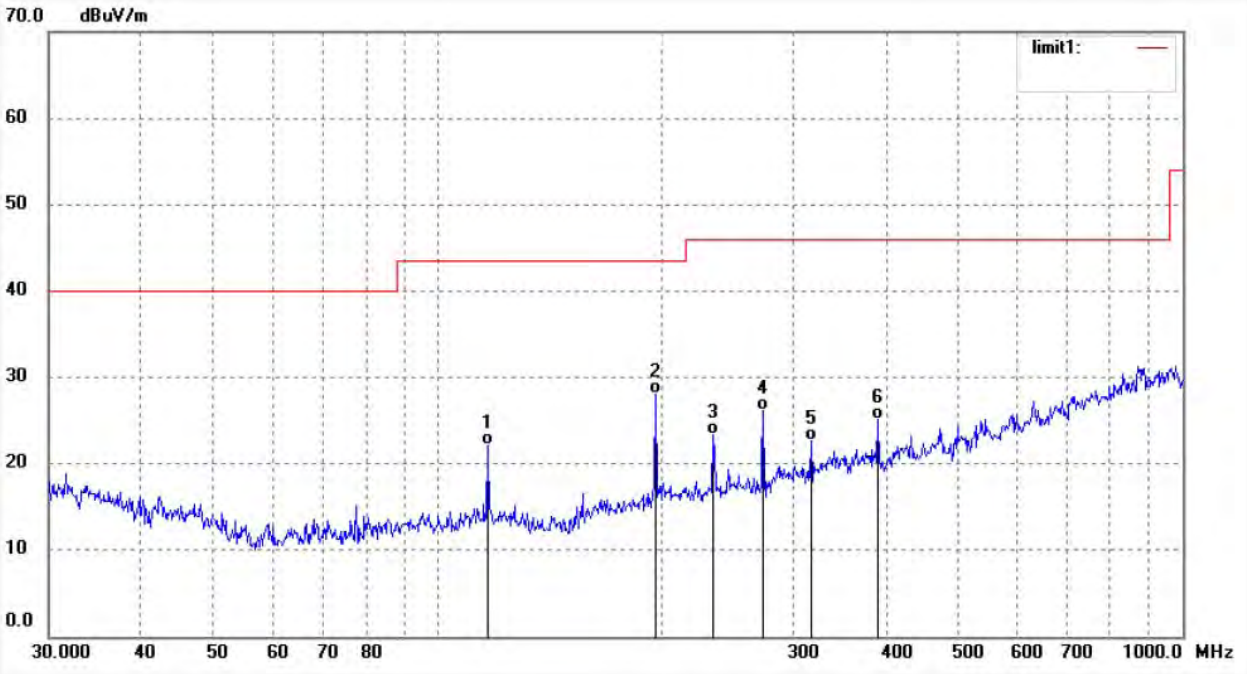
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	38.9080	40.03	-18.75	21.28	40.00	-18.72	QP	100	104	
2	116.4475	55.00	-21.25	33.75	43.50	-9.75	QP	100	41	
3	195.8701	47.45	-18.93	28.52	43.50	-14.98	QP	100	71	
4	235.1346	46.61	-18.28	28.33	46.00	-17.67	QP	100	49	
5	273.4837	48.75	-17.02	31.73	46.00	-14.27	QP	100	233	
6	389.9873	44.30	-14.09	30.21	46.00	-15.79	QP	100	106	

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.: frank2018 #1580
Standard: FCC PART 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: AmazonBasics AC Powered 2.1 30W Bluetooth Speakers with Subwoofer
Mode: TX 2441MHz (8DPSK)
Model: B07J647XGT
Manufacturer: ZheJiang TianLe Audio Co.,Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/09/13/
Time: 9/30/34

Note: Report NO.:ATE20181670



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	116.4475	43.43	-21.25	22.18	43.50	-21.32	QP	200	66	
2	195.8701	47.02	-18.93	28.09	43.50	-15.41	QP	200	302	
3	234.3098	41.58	-18.29	23.29	46.00	-22.71	QP	200	40	
4	273.4837	43.19	-17.02	26.17	46.00	-19.83	QP	200	59	
5	316.9717	38.58	-15.88	22.70	46.00	-23.30	QP	200	136	
6	389.9873	39.23	-14.09	25.14	46.00	-20.86	QP	200	108	

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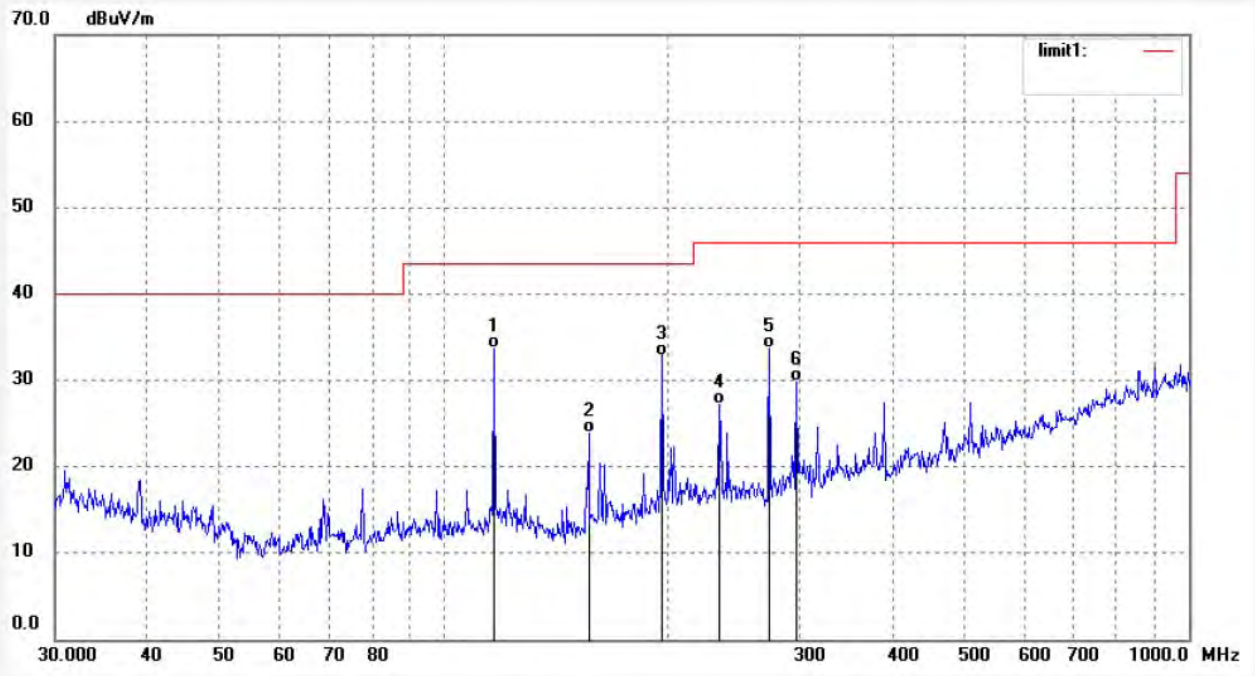
Job No.: frank2018 #1581
Standard: FCC PART 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: AmazonBasics AC Powered 2.1 30W Bluetooth Speakers with Subwoofer
Mode: TX 2441MHz (8DPSK)
Model: B07J647XGT
Manufacturer: ZheJiang TianLe Audio Co.,Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/09/13/
Time: 9/31/26

Note: Report NO.:ATE20181670



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	116.4475	54.95	-21.25	33.70	43.50	-9.80	QP	100	202	
2	156.4259	45.60	-21.73	23.87	43.50	-19.63	QP	100	165	
3	195.8701	51.83	-18.93	32.90	43.50	-10.60	QP	100	55	
4	234.3098	45.48	-18.29	27.19	46.00	-18.81	QP	100	197	
5	273.4837	50.68	-17.02	33.66	46.00	-12.34	QP	100	165	
6	297.5459	46.25	-16.33	29.92	46.00	-16.08	QP	100	302	

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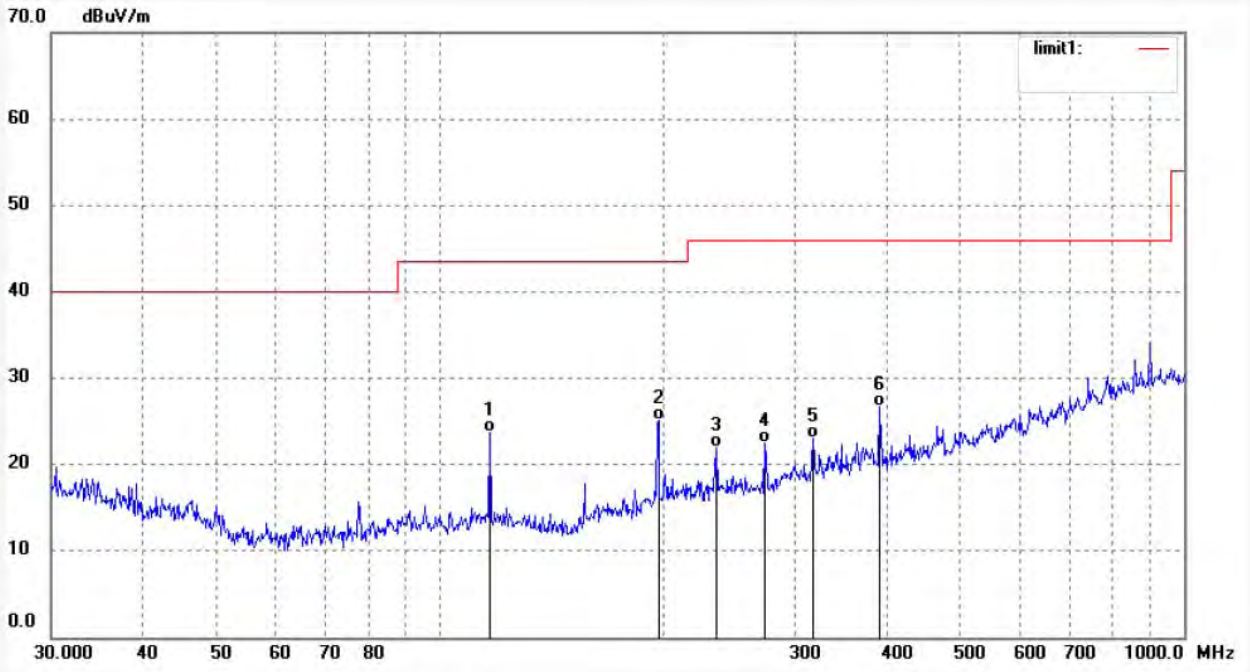
Job No.: frank2018 #1583
Standard: FCC PART 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: AmazonBasics AC Powered 2.1 30W Bluetooth Speakers with Subwoofer
Mode: TX 2480MHz (8DPSK)
Model: B07J647XGT
Manufacturer: ZheJiang TianLe Audio Co.,Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/09/13/
Time: 9/33/26

Note: Report NO.:ATE20181670



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	116.8573	45.04	-21.25	23.79	43.50	-19.71	QP	200	230	
2	196.5595	44.02	-18.89	25.13	43.50	-18.37	QP	200	254	
3	235.1346	40.26	-18.28	21.98	46.00	-24.02	QP	200	265	
4	273.4837	39.56	-17.02	22.54	46.00	-23.46	QP	200	169	
5	316.9717	38.87	-15.88	22.99	46.00	-23.01	QP	200	56	
6	389.9873	40.72	-14.09	26.63	46.00	-19.37	QP	200	302	

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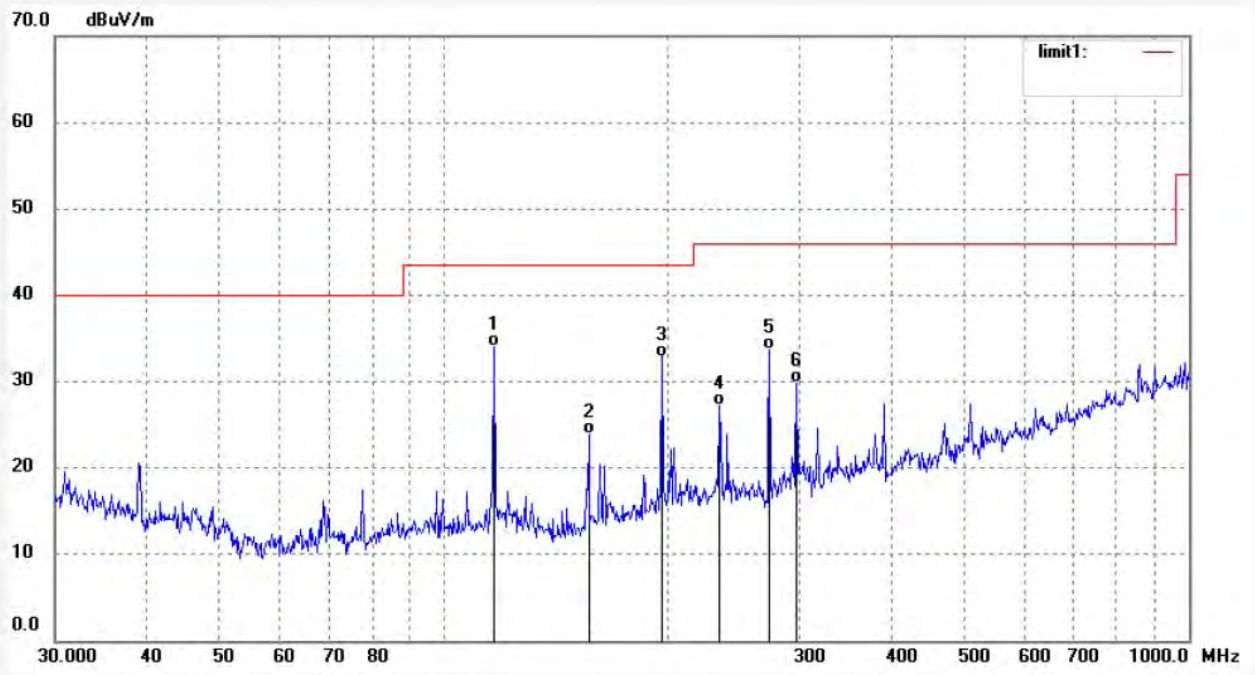
Job No.: frank2018 #1582
Standard: FCC PART 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: AmazonBasics AC Powered 2.1 30W Bluetooth Speakers with Subwoofer
Mode: TX 2480MHz (8DPSK)
Model: B07J647XGT
Manufacturer: ZheJiang TianLe Audio Co.,Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/09/13/
Time: 9/31/35

Note: Report NO.:ATE20181670



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	116.8573	55.28	-21.25	34.03	43.50	-9.47	QP	100	210	
2	156.4259	45.60	-21.73	23.87	43.50	-19.63	QP	100	231	
3	195.8701	51.83	-18.93	32.90	43.50	-10.60	QP	100	58	
4	234.3098	45.48	-18.29	27.19	46.00	-18.81	QP	100	159	
5	273.4837	50.68	-17.02	33.66	46.00	-12.34	QP	100	56	
6	297.5459	46.25	-16.33	29.92	46.00	-16.08	QP	100	306	

Above 1GHz

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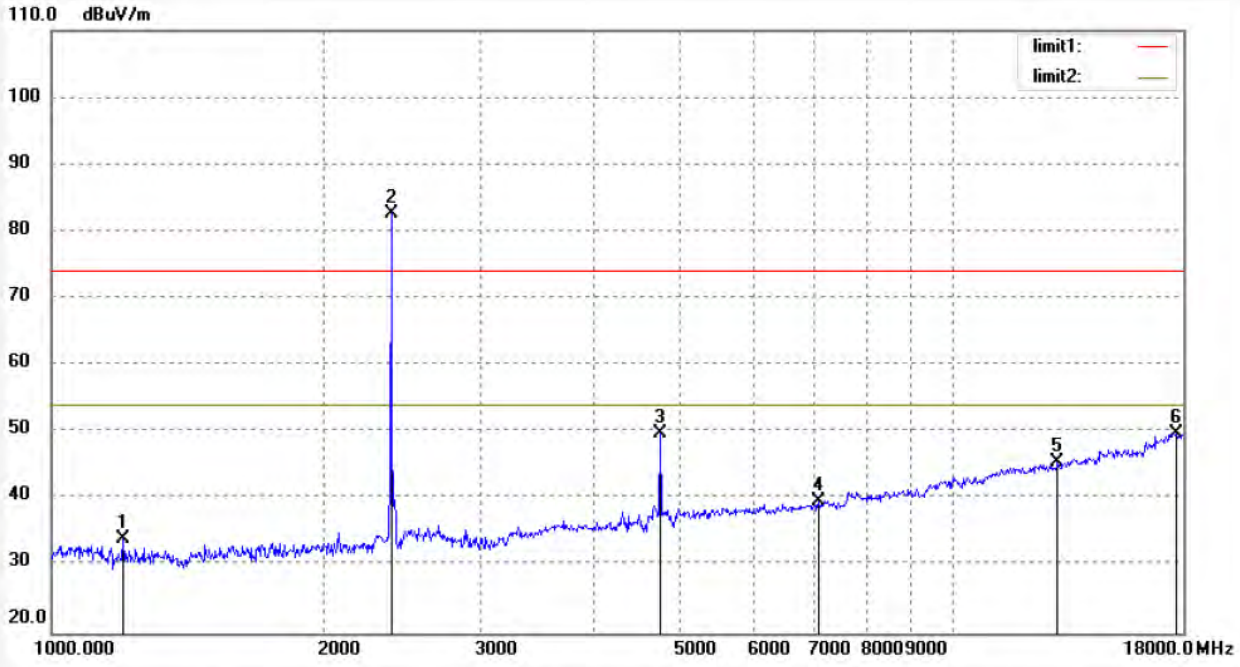
Job No.: frank2018 #1741
Standard: FCC PART 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: AmazonBasics AC Powered 2.1 30W Bluetooth Speakers with Subwoofer
Mode: TX 2402MHz (8DPSK)
Model: B07J647XGT
Manufacturer: ZheJiang TianLe Audio Co.,Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2018/09/20
Time: 17:13:26

Note: Report NO.:ATE20181670



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1201.267	46.24	-12.18	34.06	74.00	-39.94	peak	200	204	
2	2402.019	90.69	-8.03	82.66			peak	200	154	
3	4804.057	52.38	-2.53	49.85	74.00	-24.15	peak	200	69	
4	7091.754	37.80	1.92	39.72	74.00	-34.28	peak	200	201	
5	13068.302	36.02	9.47	45.49	74.00	-28.51	peak	200	123	
6	17688.369	34.53	15.29	49.82	74.00	-24.18	peak	250	302	

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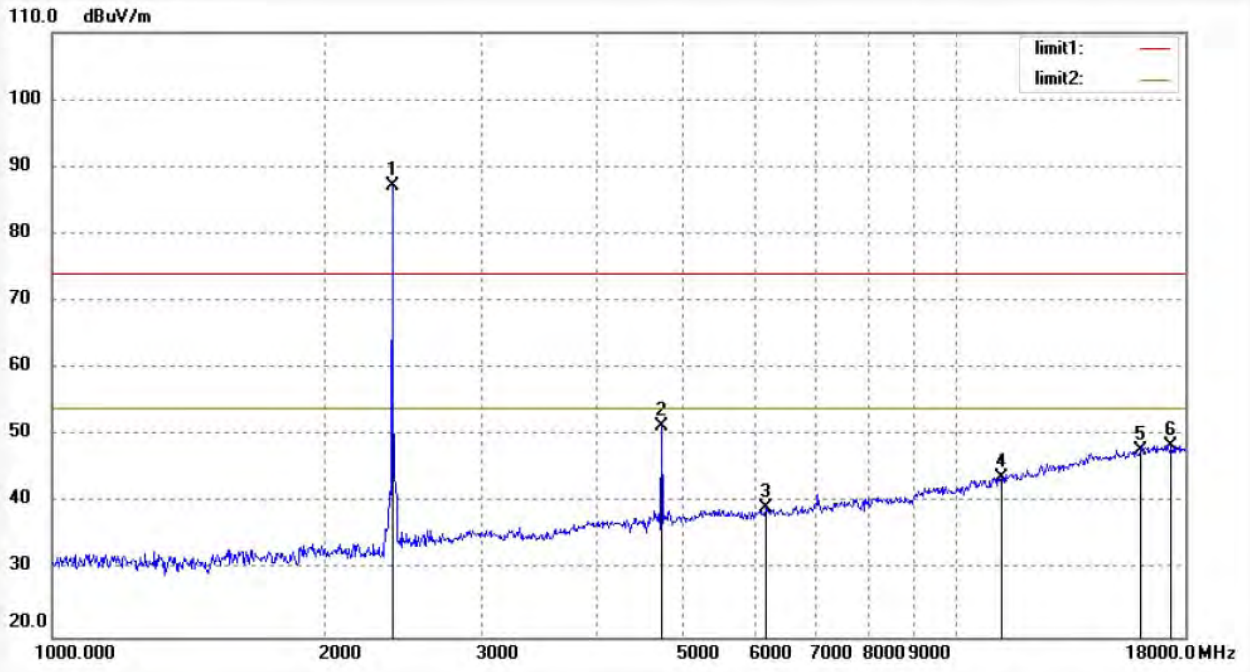
Job No.: frank2018 #1740
Standard: FCC PART 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: AmazonBasics AC Powered 2.1 30W Bluetooth Speakers with Subwoofer
Mode: TX 2402MHz (8DPSK)
Model: B07J647XGT
Manufacturer: ZheJiang TianLe Audio Co.,Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2018/09/20
Time: 17:11:51

Note: Report NO.:ATE20181670



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	95.25	-8.03	87.22			peak	150	320	
2	4804.057	53.99	-2.53	51.46	74.00	-22.54	peak	150	263	
3	6167.027	38.75	0.40	39.15	74.00	-34.85	peak	150	102	
4	11265.461	37.62	6.22	43.84	74.00	-30.16	peak	150	85	
5	16068.368	34.90	12.87	47.77	74.00	-26.23	peak	150	216	
6	17382.132	33.32	15.11	48.43	74.00	-25.57	peak	150	103	

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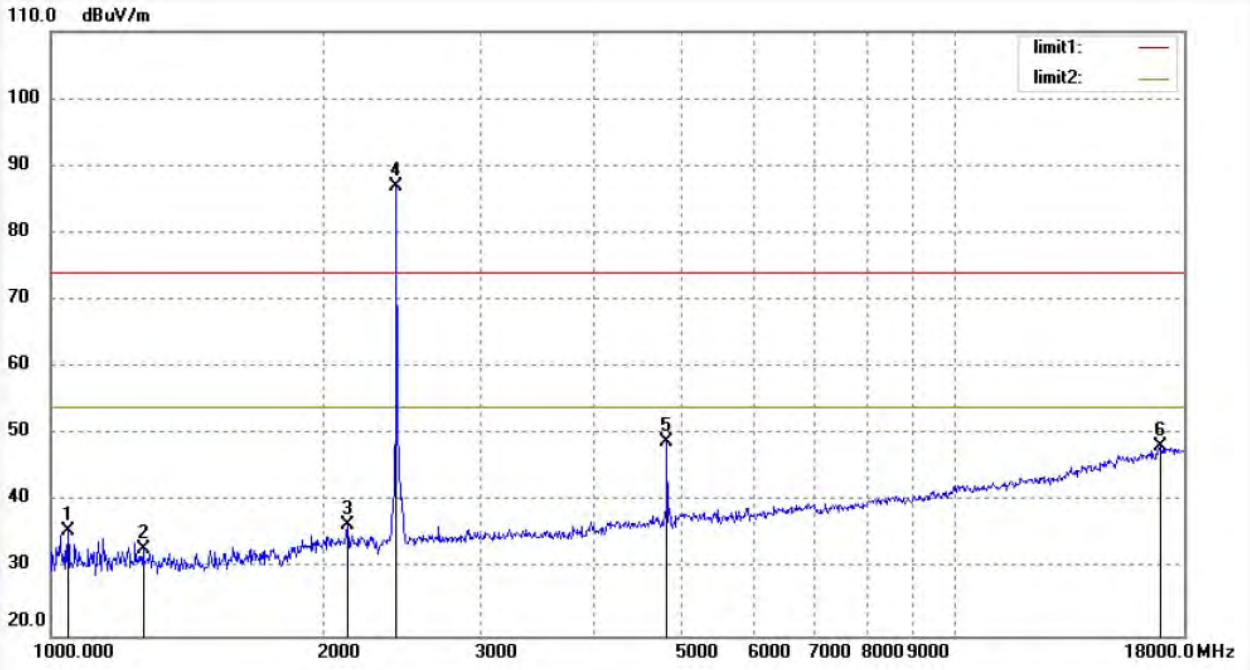
Job No.: frank2018 #1742
Standard: FCC PART 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: AmazonBasics AC Powered 2.1 30W Bluetooth Speakers with Subwoofer
Mode: TX 2441MHz (8DPSK)
Model: B07J647XGT
Manufacturer: ZheJiang TianLe Audio Co.,Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2018/09/20
Time: 17:15:39

Note: Report NO.:ATE20181670



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1044.628	48.20	-12.64	35.56	74.00	-38.44	peak	250	99	
2	1265.884	44.96	-11.99	32.97	74.00	-41.03	peak	200	201	
3	2131.432	45.24	-8.68	36.56	74.00	-37.44	peak	200	123	
4	2441.021	94.95	-7.93	87.02			peak	200	184	
5	4882.324	51.08	-2.25	48.83	74.00	-25.17	peak	200	126	
6	16932.690	33.43	14.72	48.15	74.00	-25.85	peak	200	106	

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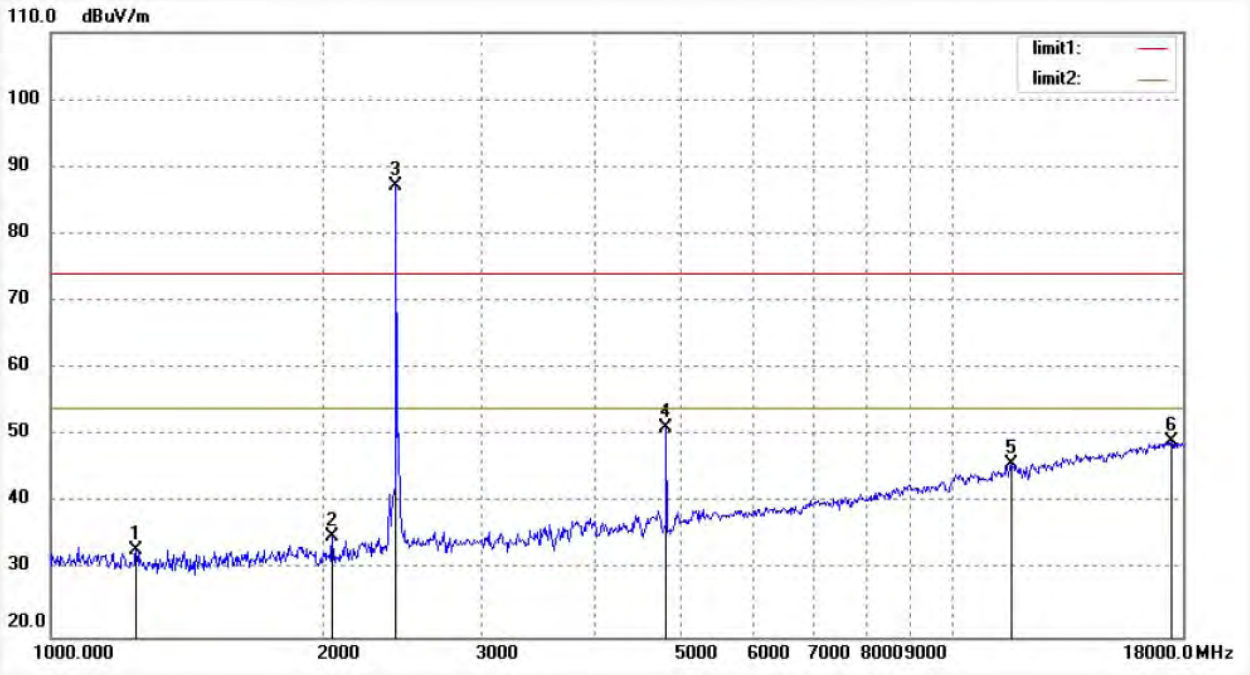
Job No.: frank2018 #1743
Standard: FCC PART 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: AmazonBasics AC Powered 2.1 30W Bluetooth Speakers with Subwoofer
Mode: TX 2441MHz (8DPSK)
Model: B07J647XGT
Manufacturer: ZheJiang TianLe Audio Co.,Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2018/09/20
Time: 17:16:49

Note: Report NO.:ATE20181670



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1243.967	45.09	-12.05	33.04	74.00	-40.96	peak	150	279	
2	2052.286	43.82	-8.88	34.94	74.00	-39.06	peak	150	93	
3	2441.021	95.19	-7.93	87.26			peak	150	201	
4	4842.324	53.48	-2.25	51.23	74.00	-22.77	peak	150	55	
5	11631.997	39.15	6.71	45.86	74.00	-28.14	peak	150	156	
6	17483.617	33.91	15.15	49.06	74.00	-24.94	peak	150	302	

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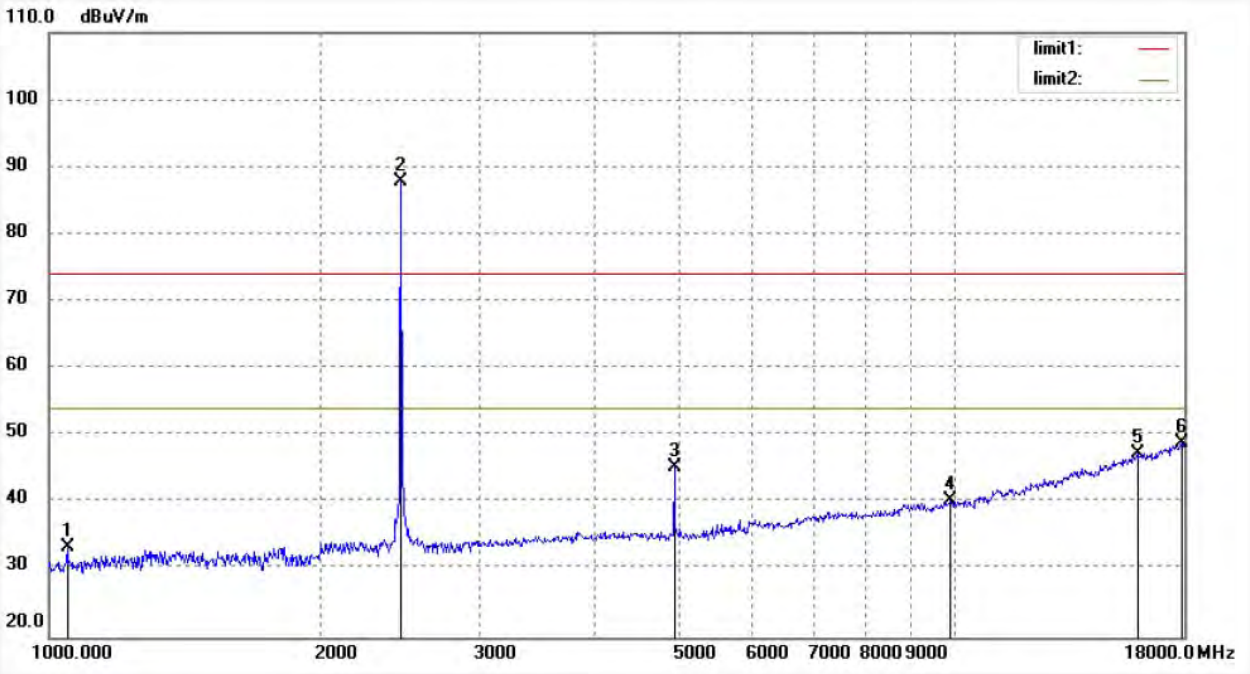
Job No.: frank2018 #1745
Standard: FCC PART 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: AmazonBasics AC Powered 2.1 30W Bluetooth Speakers with Subwoofer
Mode: TX 2480MHz (8DPSK)
Model: B07J647XGT
Manufacturer: ZheJiang TianLe Audio Co.,Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2018/09/20
Time: 17:19:40

Note: Report NO.:ATE20181670



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1047.674	46.10	-12.62	33.48	74.00	-40.52	peak	250	321	
2	2480.034	95.79	-7.84	87.95			peak	250	204	
3	4960.044	47.19	-1.92	45.27	74.00	-28.73	peak	250	162	
4	9940.123	34.83	5.45	40.28	74.00	-33.72	peak	250	52	
5	15975.098	34.57	12.78	47.35	74.00	-26.65	peak	250	215	
6	17895.518	33.56	15.42	48.98	74.00	-25.02	peak	250	103	

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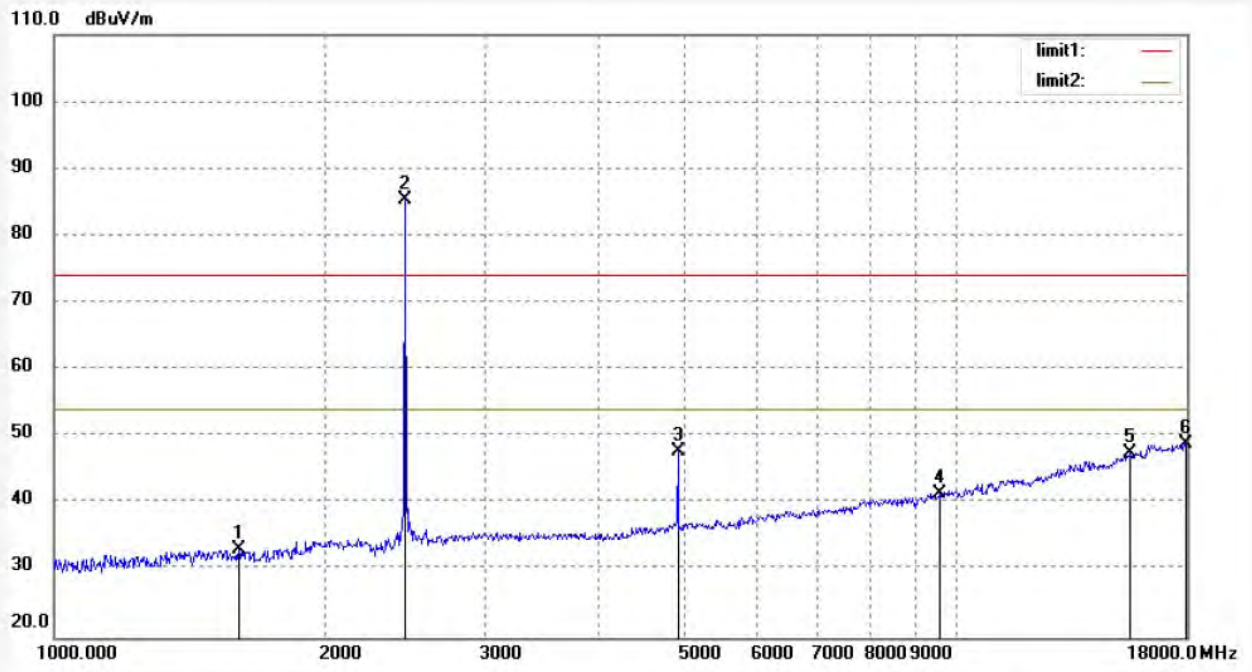
Job No.: frank2018 #1744 Polarization: Vertical
Standard: FCC PART 15C 3M Radiated Power Source: AC 120V/60Hz
Test item: Radiation Test Date: 2018/09/20
Temp.(C)/Hum.(%) 25 C / 55 % Time: 17:18:25
EUT: AmazonBasics AC Powered 2.1 30W Bluetooth Speakers with Subwoofer
Mode: TX 2480MHz (8DPSK)
Model: B07J647XGT
Manufacturer: ZheJiang TianLe Audio Co.,Ltd.

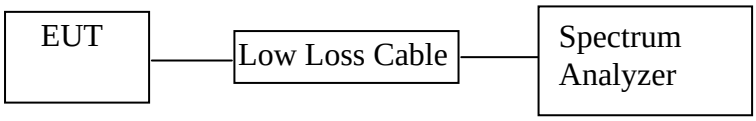
Note: Report NO.:ATE20181670



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1602.462	43.93	-10.83	33.10	74.00	-40.90	peak	150	88	
2	2480.034	93.11	-7.84	85.27			peak	150	149	
3	4960.044	49.81	-1.92	47.89	74.00	-26.11	peak	150	320	
4	9598.918	36.00	5.49	41.49	74.00	-32.51	peak	150	92	
5	15607.400	34.93	12.64	47.57	74.00	-26.43	peak	150	166	
6	17947.683	33.49	15.45	48.94	74.00	-25.06	peak	150	102	

11.BAND EDGE COMPLIANCE TEST

11.1.Block Diagram of Test Setup



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

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

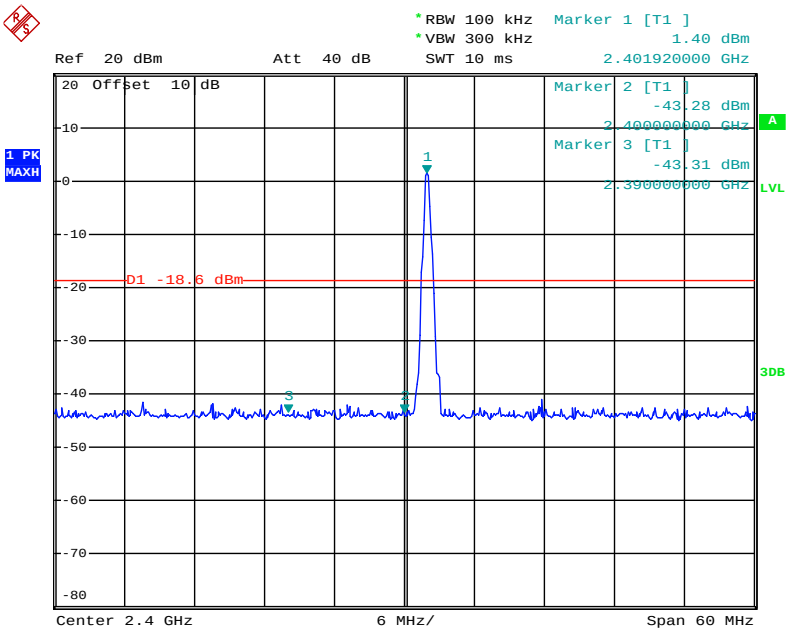
Conducted Band Edge Result

Non-hopping mode

Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)	Result
GFSK Mode			
2400.00	44.68	> 20dBc	Pass
2483.50	45.04	> 20dBc	Pass
Π/4-DQPSK Mode			
2400.00	37.53	> 20dBc	Pass
2483.50	44.54	> 20dBc	Pass
8DPSK Mode			
2400.00	37.67	> 20dBc	Pass
2483.50	44.81	> 20dBc	Pass

The spectrum analyzer plots are attached as below.

GFSK Mode



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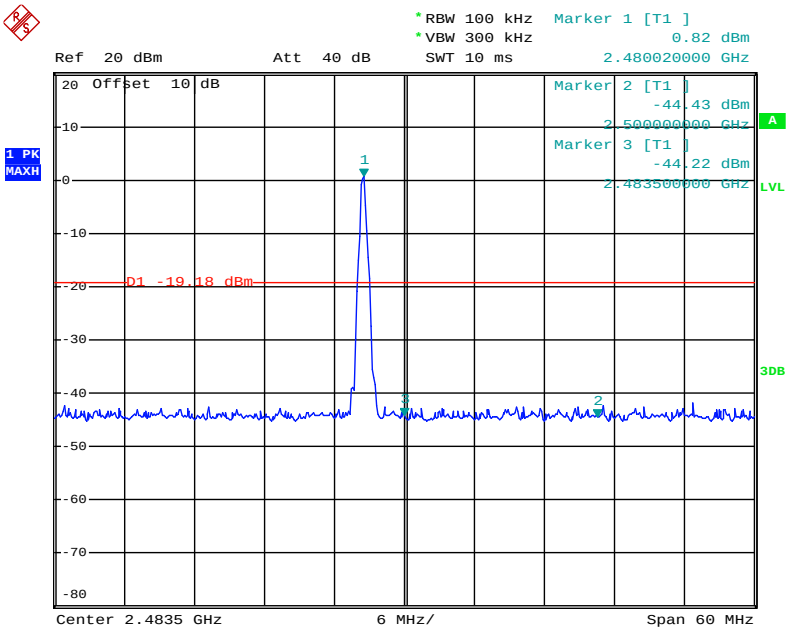
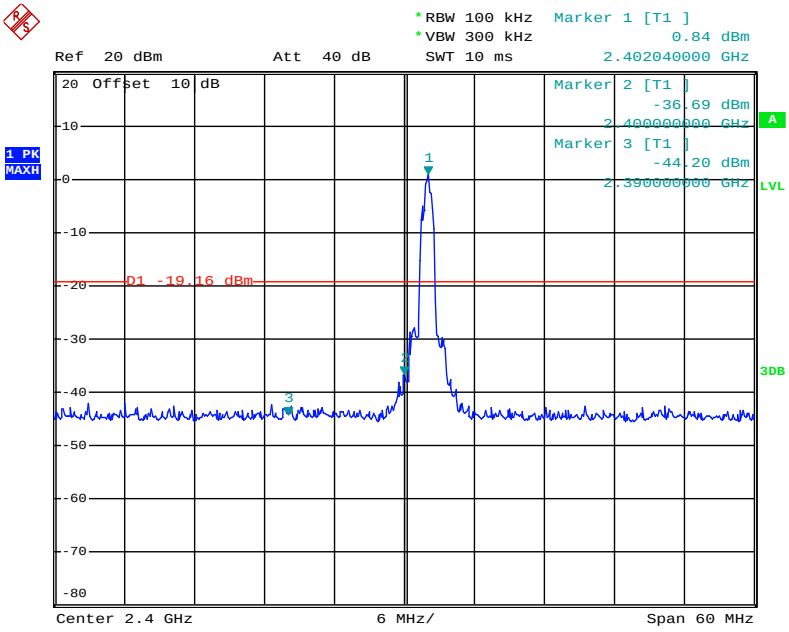
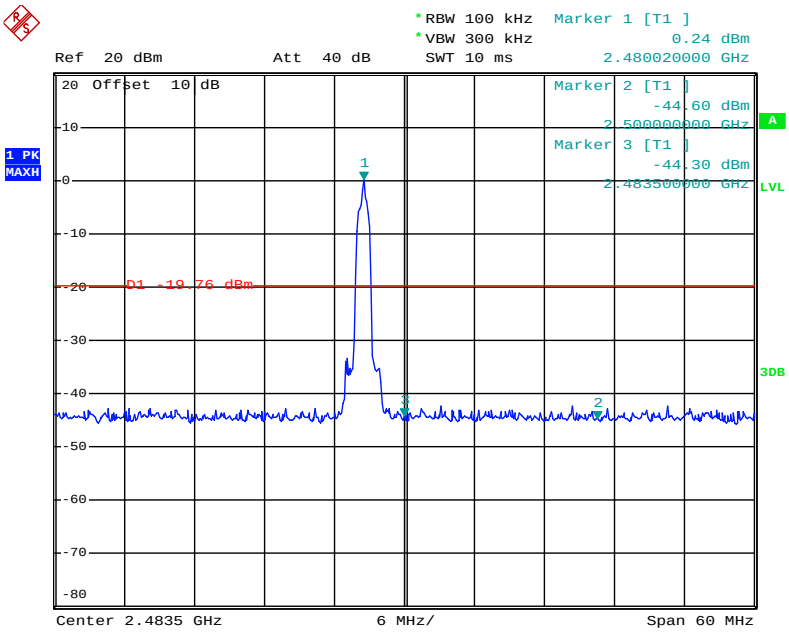


Date: 10.SEP.2018 14:08:36

Π/4-DQPSK Mode

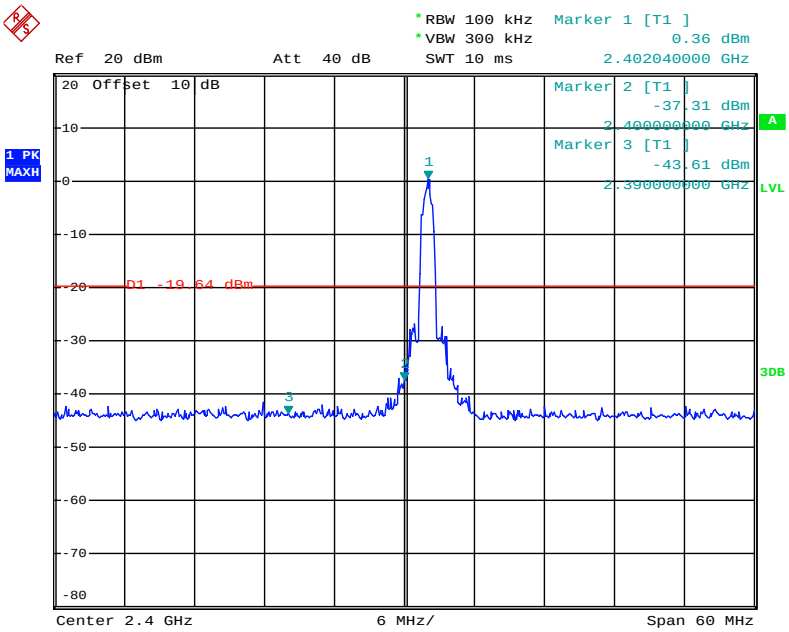


Date: 10.SEP.2018 14:12:44

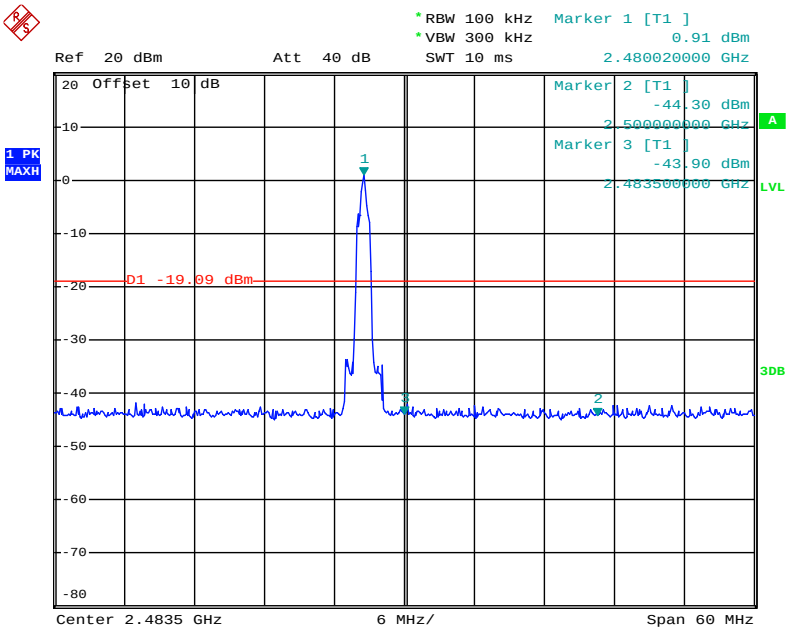


Date: 10.SEP.2018 14:09:44

8DPSK Mode



Date: 10.SEP.2018 14:12:12



Date: 10.SEP.2018 14:11:02

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 0.1 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated 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. This EUT was tested in 3 orthogonal positions and the worst case position data was reported.

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 (8DPSK mode) emissions are reported.

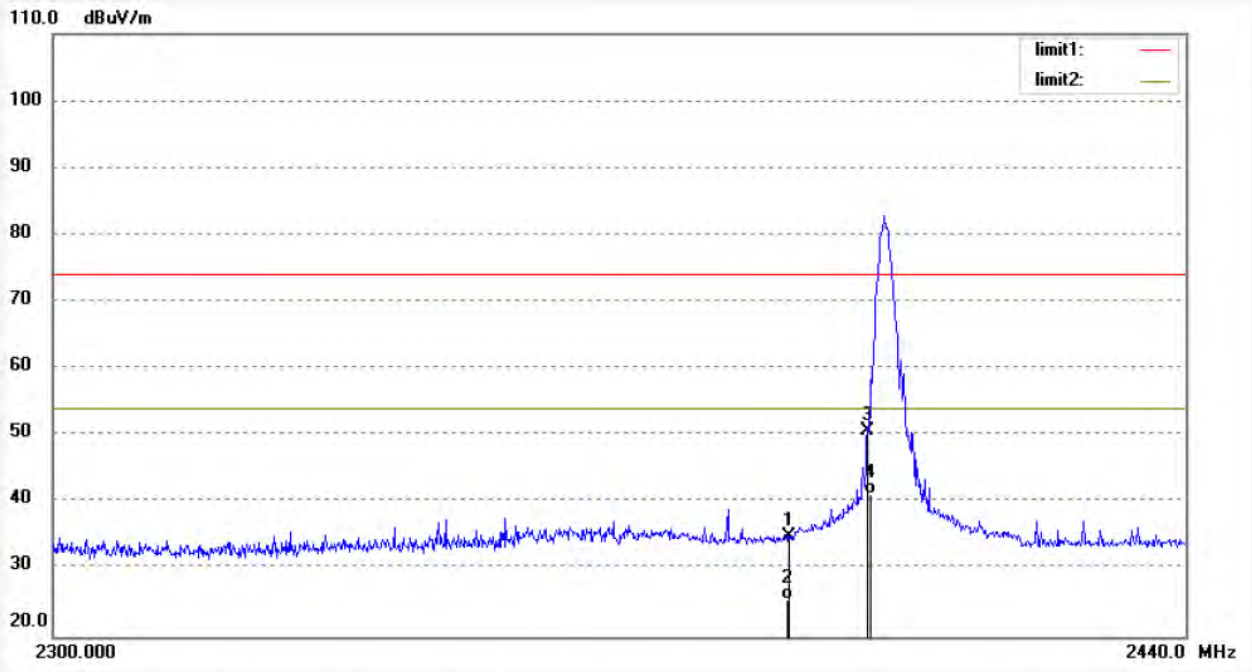
The spectrum analyzer plots are attached as below.

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.: frank2018 #1753 Polarization: Horizontal
Standard: FCC PART 15C 3M Radiated Power Source: AC 120V/60Hz
Test item: Radiation Test Date: 2018/09/20
Temp.(C)/Hum.(%) 25 C / 55 % Time: 17:33:15
EUT: AmazonBasics AC Powered 2.1 30W Bluetooth Speakers with Subwoofer
Mode: TX 2402MHz(8DPSK)
Model: B07J647XGT
Manufacturer: ZheJiang TianLe Audio Co.,Ltd.

Note: Report NO.:ATE20181670



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	42.95	-8.00	34.95	74.00	-39.05	peak	250	37	
2	2390.000	33.50	-8.00	25.50	54.00	-28.50	AVG	200	169	
3	2400.000	58.78	-7.97	50.81	74.00	-23.19	peak	250	201	
4	2400.000	49.13	-7.97	41.16	54.00	-12.84	AVG	200	264	

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

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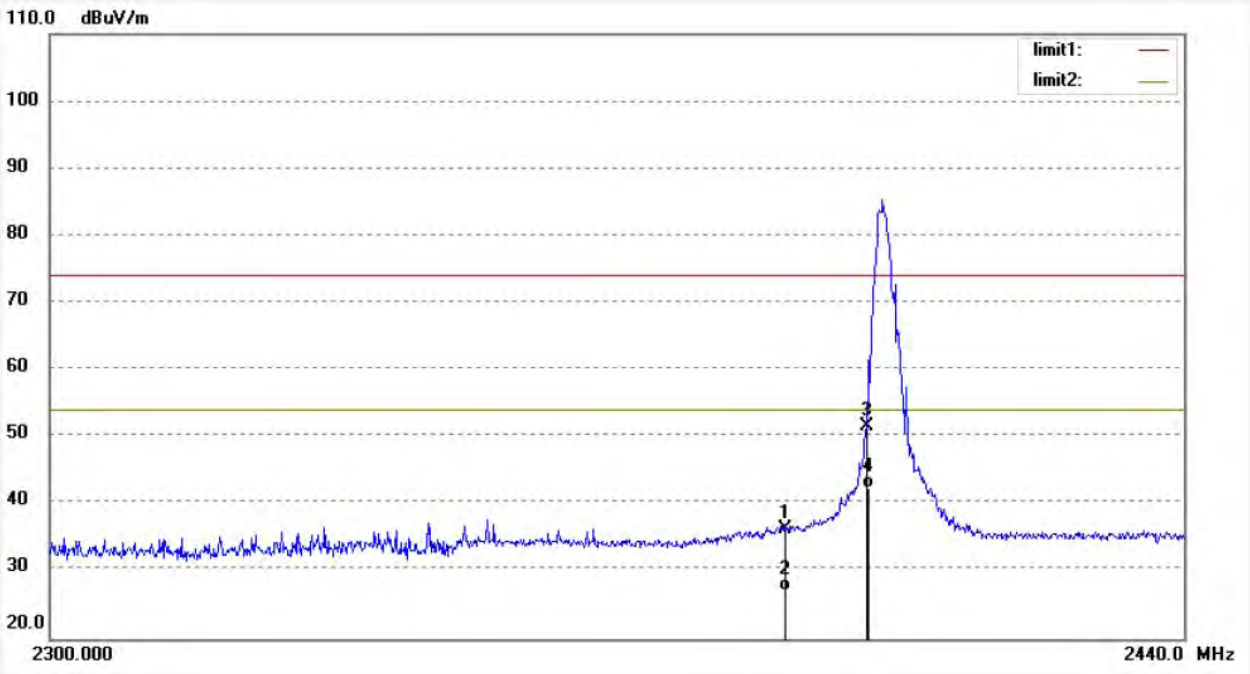
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: frank2018 #1752
Standard: FCC PART 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: AmazonBasics AC Powered 2.1 30W Bluetooth Speakers with Subwoofer
Mode: TX 2402MHz(8DPSK)
Model: B07J647XGT
Manufacturer: ZheJiang TianLe Audio Co.,Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2018/09/20
Time: 17:32:13

Note: Report NO.:ATE20181670



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	44.23	-8.00	36.23	74.00	-37.77	peak	150	92	
2	2390.000	35.15	-8.00	27.15	54.00	-26.85	AVG	150	159	
3	2400.000	59.48	-7.97	51.51	74.00	-22.49	peak	150	212	
4	2400.000	50.46	-7.97	42.49	54.00	-11.51	AVG	150	306	

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

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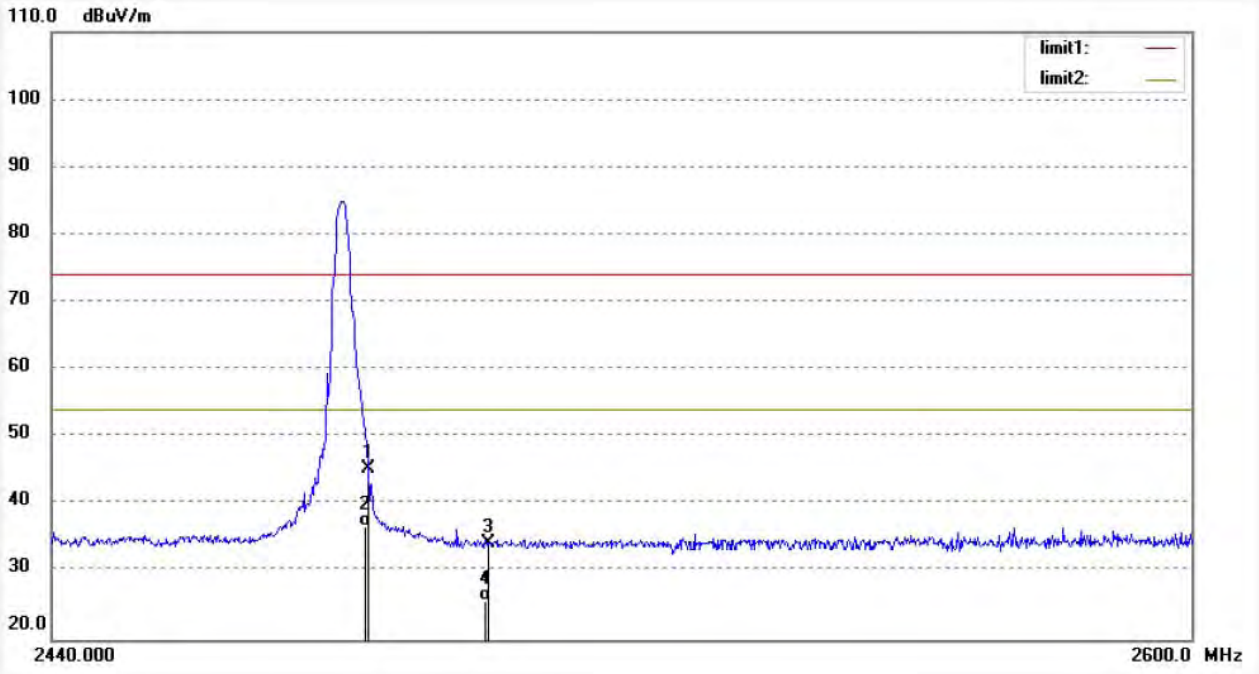
Job No.: frank2018 #1750 Polarization: Horizontal
Standard: FCC PART 15C 3M Radiated Power Source: AC 120V/60Hz
Test item: Radiation Test Date: 2018/09/20
Temp.(C)/Hum.(%) 25 C / 55 % Time: 17:29:10
EUT: AmazonBasics AC Powered 2.1 30W Bluetooth Speakers with Subwoofer
Mode: TX 2480MHz(8DPSK)
Model: B07J647XGT
Manufacturer: ZheJiang TianLe Audio Co.,Ltd.

Note: Report NO.:ATE20181670



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	53.12	-7.76	45.36	74.00	-28.64	peak	250	148	
2	2483.500	44.54	-7.76	36.78	54.00	-17.22	AVG	200	65	
3	2500.000	42.08	-7.71	34.37	74.00	-39.63	peak	250	159	
4	2500.000	33.45	-7.71	25.74	54.00	-28.26	AVG	200	302	

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

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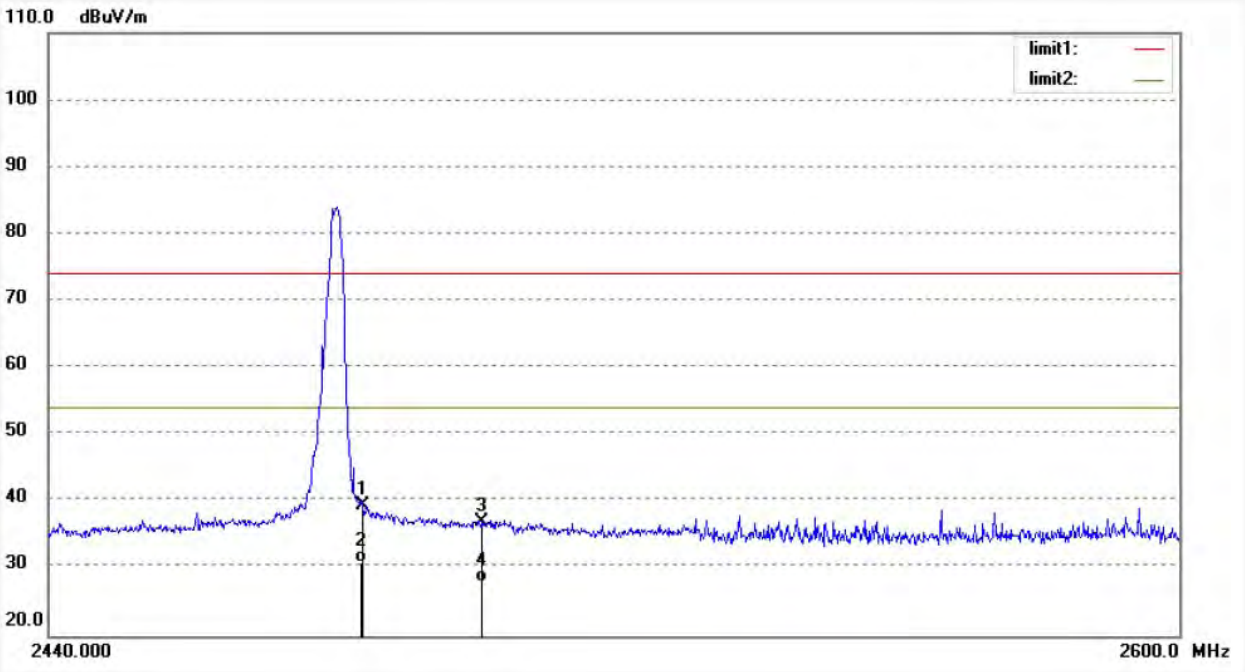
Job No.: frank2018 #1751
Standard: FCC PART 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: AmazonBasics AC Powered 2.1 30W Bluetooth Speakers with Subwoofer
Mode: TX 2480MHz(8DPSK)
Model: B07J647XGT
Manufacturer: ZheJiang TianLe Audio Co.,Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2018/09/20
Time: 17:30:47

Note: Report NO.:ATE20181670



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	47.26	-7.76	39.50	74.00	-34.50	peak	150	81	
2	2483.500	38.65	-7.76	30.89	54.00	-23.11	AVG	150	231	
3	2500.000	44.76	-7.71	37.05	74.00	-36.95	peak	150	92	
4	2500.000	35.65	-7.71	27.94	54.00	-26.06	AVG	150	310	

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

Hopping mode

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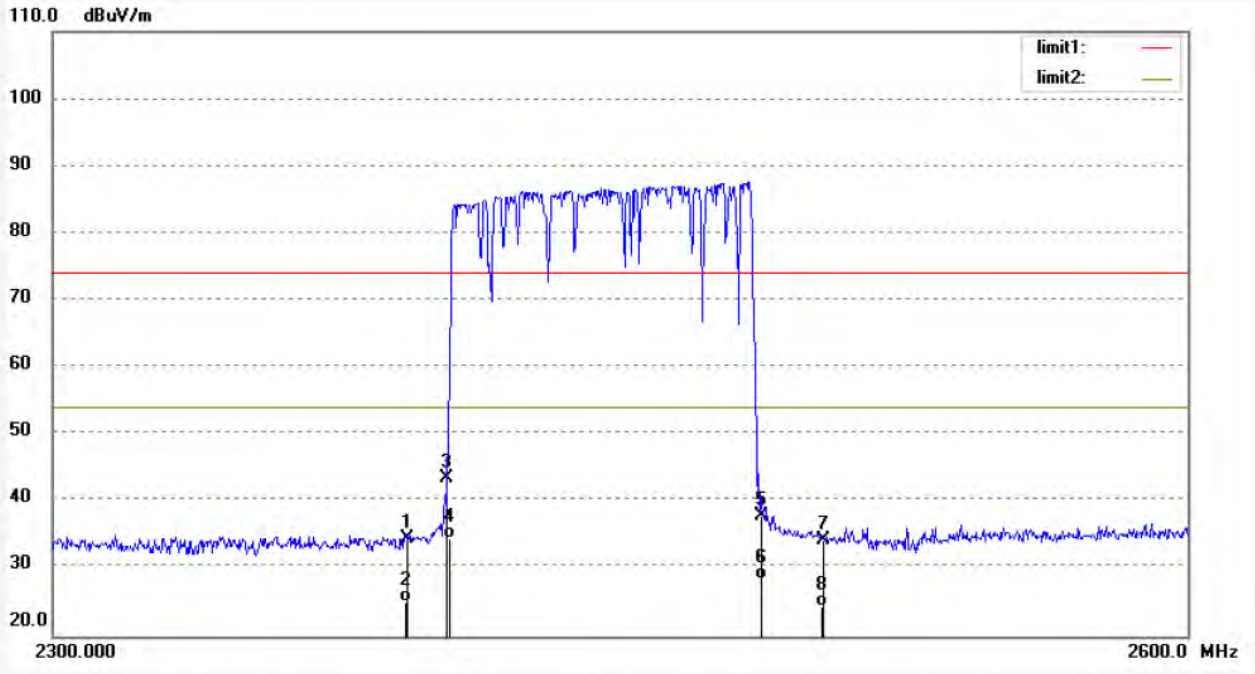
Job No.: frank2018 #1758
Standard: FCC PART 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: AmazonBasics AC Powered 2.1 30W Bluetooth Speakers with Subwoofer
Mode: HOPPING (8DPSK)
Model: B07J647XGT
Manufacturer: ZheJiang TianLe Audio Co.,Ltd.

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2018/09/20
Time: 17:45:51

Note: Report NO.:ATE20181670



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	42.44	-8.00	34.44	74.00	-39.56	peak	250	156	
2	2390.000	33.15	-8.00	25.15	54.00	-28.85	AVG	250	302	
3	2400.000	51.43	-7.97	43.46	74.00	-30.54	peak	250	233	
4	2400.000	42.42	-7.97	34.45	54.00	-19.55	AVG	200	41	
5	2483.500	45.55	-7.76	37.79	74.00	-36.21	peak	250	268	
6	2483.500	36.15	-7.76	28.39	54.00	-25.61	AVG	200	62	
7	2500.000	41.95	-7.71	34.24	74.00	-39.76	peak	250	136	
8	2500.000	32.15	-7.71	24.44	54.00	-29.56	AVG	200	102	

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

ACCURATE TECHNOLOGY CO., LTD.
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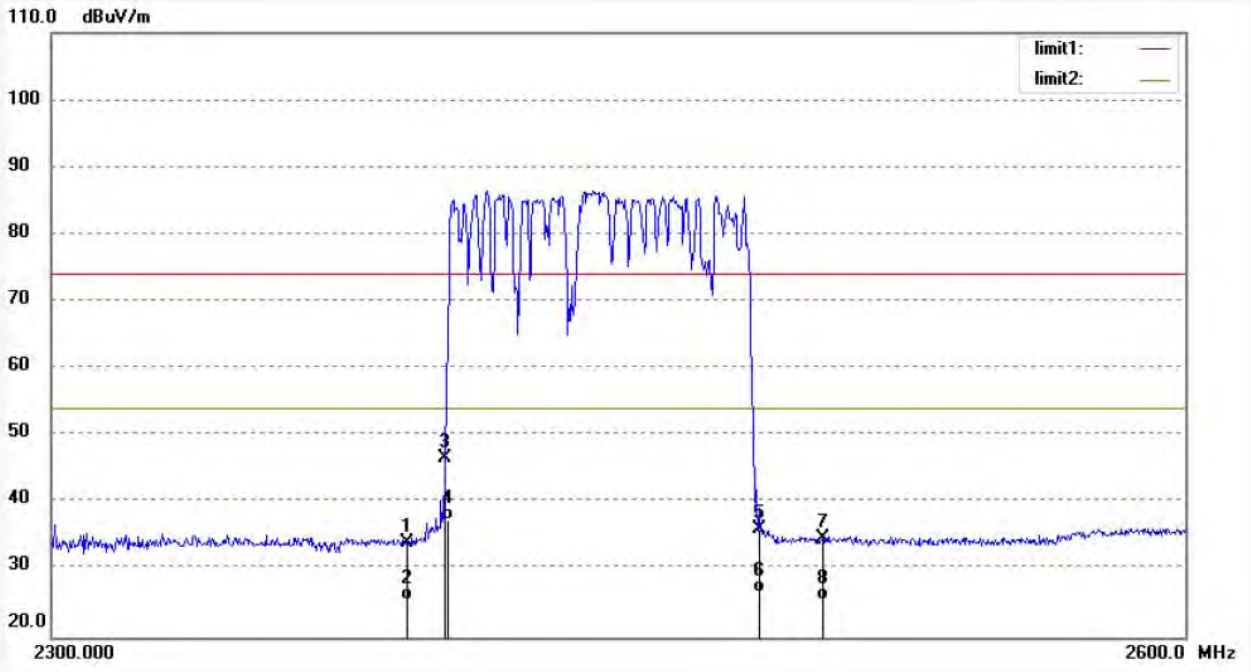
Fax:+86-0755-26503396

Job No.: frank2018 #1759
Standard: FCC PART 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: AmazonBasics AC Powered 2.1 30W Bluetooth Speakers with Subwoofer
Mode: HOPPING (8DPSK)
Model: B07J647XGT
Manufacturer: ZheJiang TianLe Audio Co.,Ltd.

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2018/09/20
Time: 17:48:52

Note: Report NO.:ATE20181670



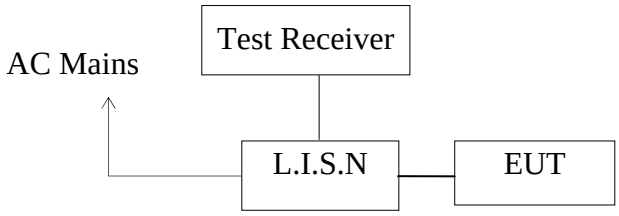
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	42.04	-8.00	34.04	74.00	-39.96	peak	150	197	
2	2390.000	33.45	-8.00	25.45	54.00	-28.55	AVG	150	256	
3	2400.000	54.56	-7.97	46.59	74.00	-27.41	peak	150	156	
4	2400.000	45.45	-7.97	37.48	54.00	-16.52	AVG	150	92	
5	2483.500	43.77	-7.76	36.01	74.00	-37.99	peak	150	50	
6	2483.500	34.45	-7.76	26.69	54.00	-27.31	AVG	150	41	
7	2500.000	42.44	-7.71	34.73	74.00	-39.27	peak	150	116	
8	2500.000	33.15	-7.71	25.44	54.00	-28.56	AVG	150	302	

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

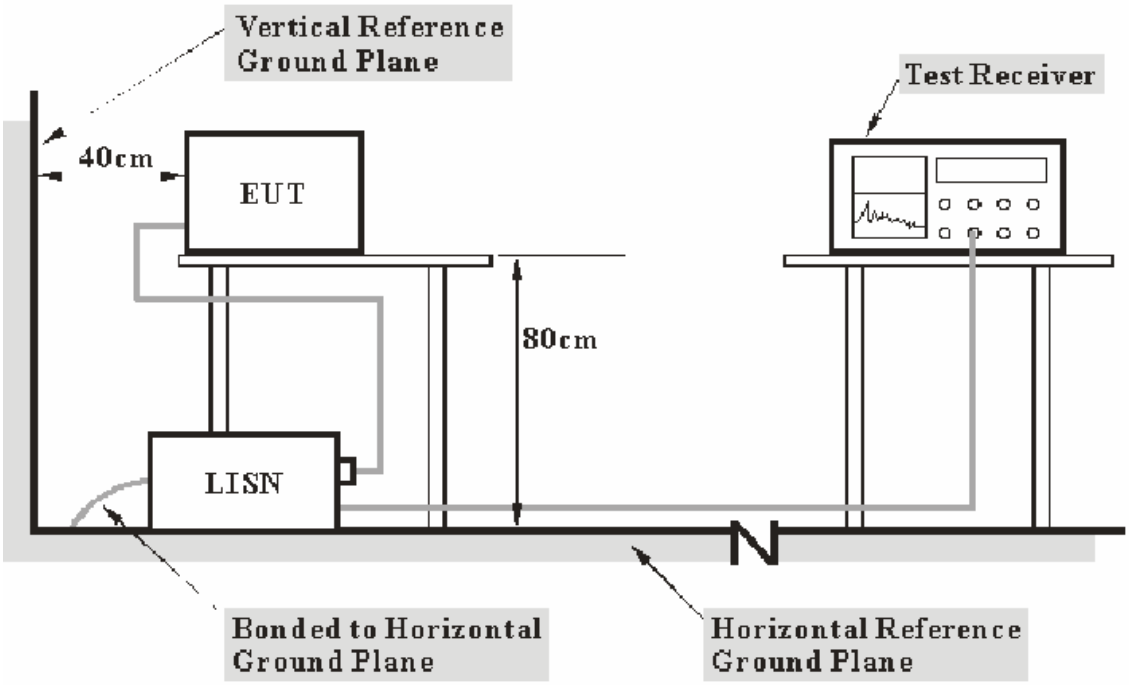
12. AC POWER LINE CONDUCTED EMISSION TEST

12.1. Block Diagram of Test Setup

12.1.1. Block diagram of connection between the EUT and simulators



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)	Conducted 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 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.

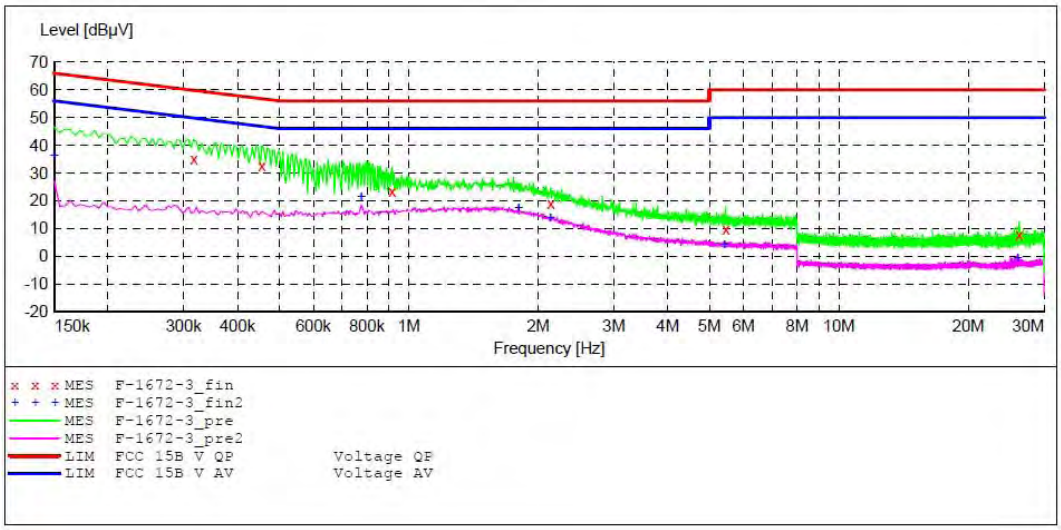
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15C

```
EUT:                  AmazonBasics AC Powered 2.1 30W Bluetooth Speakers with Subwoofer
Manufacturer:         ZheJiang TianLe Audio Co.,Ltd.
Operating Condition:  BT Communication
Test Site:            2#Shielding Room
Operator:             Frank
Test Specification:   N  120V/60Hz
Comment:              Report NO.:ATE20181670   M/N:B07J647XGT
Start of Test:        2018-9-12 / 16:31:36
```

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: "F-1672-3_fin"

2018-9-12 16:33

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.316500	34.90	10.9	60	24.9	QP	N	GND
0.456000	32.50	11.0	57	24.3	QP	N	GND
0.915000	23.30	11.1	56	32.7	QP	N	GND
2.139000	19.00	11.3	56	37.0	QP	N	GND
5.455500	9.70	11.5	60	50.3	QP	N	GND
26.268000	7.90	11.8	60	52.1	QP	N	GND

MEASUREMENT RESULT: "F-1672-3_fin2"

2018-9-12 16:33

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	36.40	10.8	56	19.6	AV	N	GND
0.775500	21.30	11.1	46	24.7	AV	N	GND
1.801500	17.30	11.2	46	28.7	AV	N	GND
2.134500	13.60	11.3	46	32.4	AV	N	GND
5.424000	4.20	11.5	50	45.8	AV	N	GND
26.088000	-0.60	11.8	50	50.6	AV	N	GND

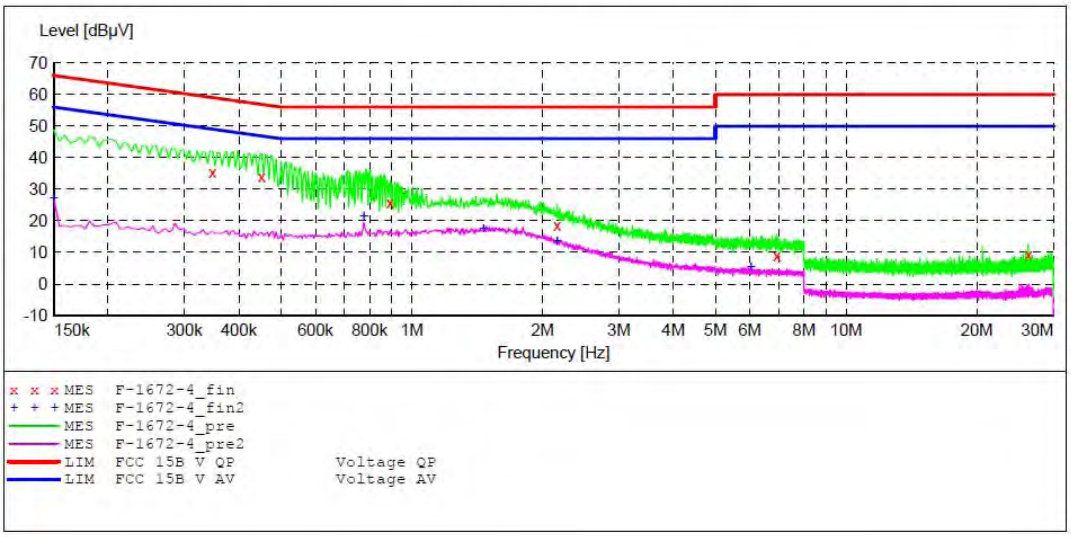
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15C

```
EUT:                 AmazonBasics AC Powered 2.1 30W Bluetooth Speakers with Subwoofer
Manufacturer:        ZheJiang TianLe Audio Co.,Ltd.
Operating Condition: BT Communication
Test Site:           2#Shielding Room
Operator:            Frank
Test Specification:  L  120V/60Hz
Comment:             Report NO.:ATE20181670   M/N:B07J647XGT
Start of Test:       2018-9-12 / 16:35:06
```

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: "F-1672-4_fin"

2018-9-12 16:37

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.348000	35.50	10.9	59	23.5	QP	L1	GND
0.451500	33.80	11.0	57	23.0	QP	L1	GND
0.892500	25.70	11.1	56	30.3	QP	L1	GND
2.161500	18.60	11.3	56	37.4	QP	L1	GND
6.918000	9.00	11.5	60	51.0	QP	L1	GND
26.268000	9.40	11.8	60	50.6	QP	L1	GND

MEASUREMENT RESULT: "F-1672-4_fin2"

2018-9-12 16:37

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	27.30	10.8	56	28.7	AV	L1	GND
0.775500	21.40	11.1	46	24.6	AV	L1	GND
1.464000	17.40	11.2	46	28.6	AV	L1	GND
2.161500	13.40	11.3	46	32.6	AV	L1	GND
6.031500	5.30	11.5	50	44.7	AV	L1	GND

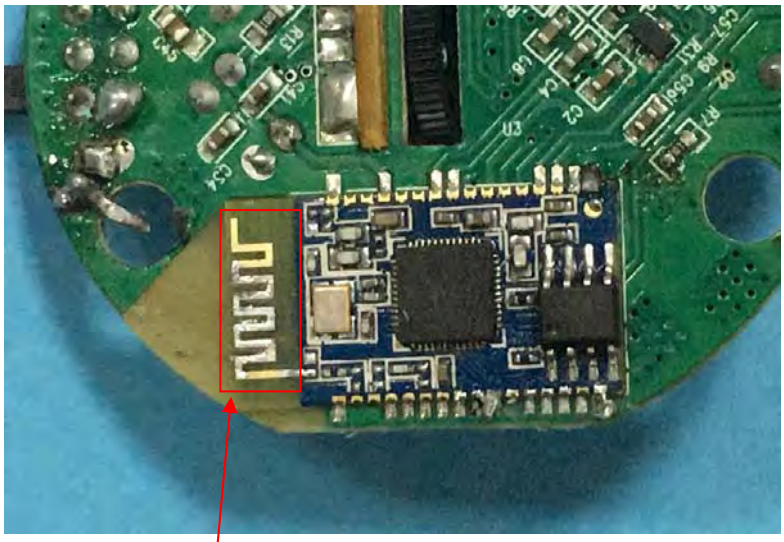
13. ANTENNA REQUIREMENT

13.1. The Requirement

According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

13.2. Antenna Construction

Device is equipped with permanent attached antenna, which isn't displaced by other antenna. The Max Antenna gain of EUT is 2dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.



Antenna

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