APPLICATION CERTIFICATION FCC Part 15.247 & RSS-247
On Behalf of
Premium Surge Promotions, LLC

Wireless Bluetooth Speaker
Model No.: BAN-LI-032

FCC ID: 2ATL4-3FSSS9BA
IC: 25105-3FSSS9BA

Prepared for	:	Premium Surge Promotions, LLC
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Report No.	:	ATE20190908
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Test Report Certification

Applicant	:	Premium Surge Promotions, LLC
Address	:	640 N. LaSalle St, Suite 540, Chicago, IL 60654, United States
Product	:	Wireless Bluetooth Speaker
Model No.	:	BAN-LI-032

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247
ANSI C63.10: 2013
RSS-247 Issue 2 February 2017
RSS-Gen Issue 5 April 2018

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 and RSS-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 :	June 5-June 13, 2019
Date of Report :	June 17, 2019
Prepared by :	(Stan Yang, Engineer)
Approved & Authorized Signer :	(Sean Liu, Manager)

1. GENERAL INFORMATION

1.1.Description of Device (EUT)

EUT	:	Wireless Bluetooth Speaker
Model Number	:	BAN-LI-032
HVIN	:	BAN-LI-032
Bluetooth Version	:	V5.0
Frequency Range	:	2402MHz-2480MHz
Number of Channels	:	79
Channel Separation	:	1MHz
Antenna Gain(Max)	:	-0.58dBi
Antenna Type	:	Integral Antenna
Modulation Mode	:	GFSK, π/4 DQPSK
Rating	:	DC 3.7V

1.2.Accessory and Auxiliary Equipment

Description	Manufacturer	Model	S/N
Notebook PC	Lenovo	ThinkPad X240	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

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
Conduction 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

Kind of equipment	Manufacturer	Type	S/N	Calibrated dates	Cal. Interval
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 05, 2019	One Year
EMI Test Receiver	Rohde&Schwarz	ESR	101817	Jan. 05, 2019	One Year
Spectrum Analyzer	Rohde&Schwarz	FSV-40	101495	Jan. 05, 2019	One Year
Pre-Amplifier	Compliance Direction	RSU-M2	38322	Jan. 05, 2019	One Year
Pre-Amplifier	Agilent	8447D	294A10619	Jan. 05, 2019	One Year
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 05, 2019	One Year
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 05, 2019	One Year
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 05, 2019	One Year
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 05, 2019	One Year
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 05, 2019	One Year
Highpass Filter	Wainwright Instruments	WHKX3.6/18G-10SS	N/A	Jan. 05, 2019	One Year
Band Reject Filter	Wainwright Instruments	WRCG2400/2485-2375/2510-60/11SS	N/A	Jan. 05, 2019	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

EUT

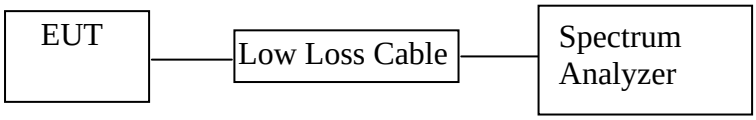
Figure 1 Setup: Transmitting mode

4. TEST PROCEDURES AND RESULTS

FCC&IC Rules	Description of Test	Result
FCC Section 15.247(a)(1) RSS-247 Section 5.1(a)	20dB Bandwidth Test	Compliant
RSS-Gen Section 6.7	99% Occupied Bandwidth	Compliant
FCC Section 15.247(a)(1) RSS-247 Section 5.1(b)	Carrier Frequency Separation Test	Compliant
FCC Section 15.247(a)(1)(iii) RSS-247 Section 5.1(d)	Number Of Hopping Frequency Test	Compliant
FCC Section 15.247(a)(1)(iii) RSS-247 Section 5.1(d)	Dwell Time Test	Compliant
FCC Section 15.247(b)(1) RSS-247 Section 5.4(b)	Maximum Peak Output Power Test	Compliant
FCC Section 15.247(d) FCC Section 15.209 RSS-247 Section 5.5 RSS-Gen Section 6.13 RSS-Gen Section 8.9	Radiated Emission Test	Compliant
FCC Section 15.247(d) RSS-247 Section 5.5 RSS-Gen 8.9 RSS-Gen Section 8.10	Band Edge Compliance Test	Compliant
FCC Section 15.207 RSS-Gen Section 8.8	AC Power Line Conducted Emission Test	Compliant
FCC Section 15.247(d) RSS-247 Section 5.5	Conducted Spurious Emission Test	Compliant
FCC Section 15.203 RSS-Gen Section 6.8	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.The Requirement For RSS-247 Section 5.1(a)

The bandwidth of a frequency hopping channel is the 20 dB emission bandwidth, measured with the hopping stopped. The system's radio frequency (RF) bandwidth is equal to the channel bandwidth multiplied by the number of channels in the hopset. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. 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.

5.4.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.

5.5.Operating Condition of EUT

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

5.5.2.Turn on the power of all equipment.

5.5.3.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.

5.6.Test Procedure

5.6.1.Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

5.6.2.The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five times the OBW.

5.6.3.RBW shall be in the range of 1% to 5% of the OBW and VBW shall be approximately three times RBW.

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

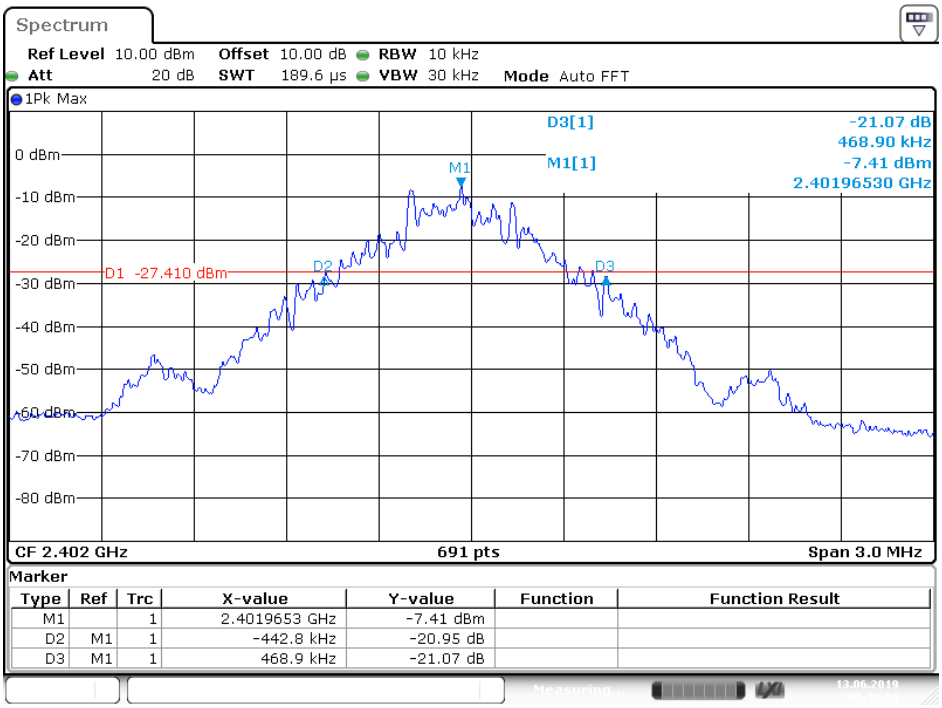
5.7.Test Result

Channel	Frequency (MHz)	GFSK mode 20dB Bandwidth (MHz)	π/4 DQPSK mode 20dB Bandwidth (MHz)	Result
Low	2402	0.912	1.276	Pass
Middle	2441	0.912	1.276	Pass
High	2480	0.951	1.281	Pass

The spectrum analyzer plots are attached as below.

GFSK Mode

Low channel



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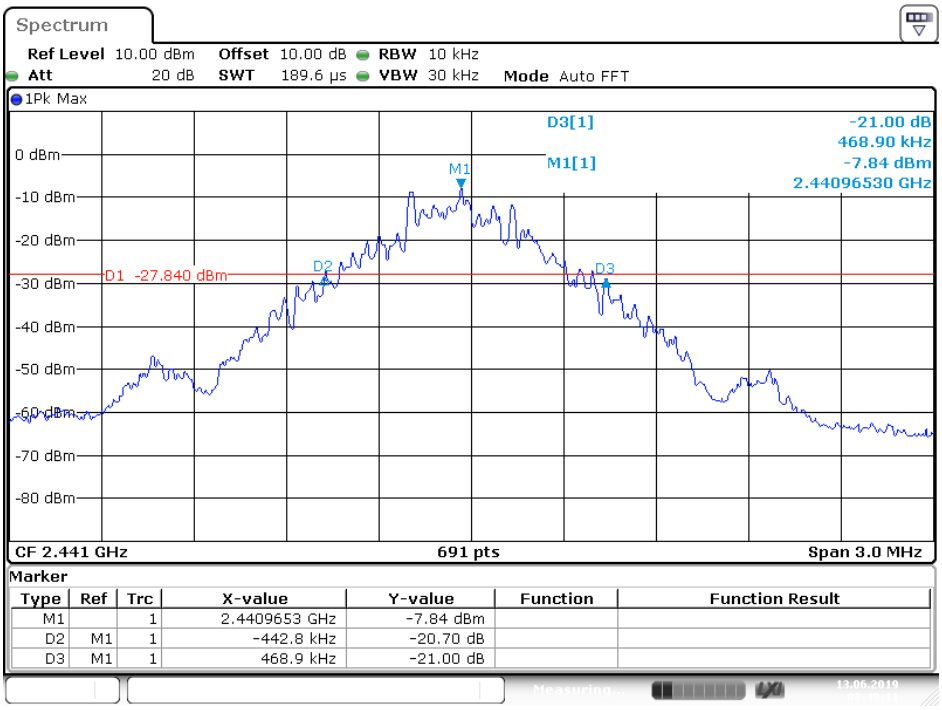
Middle channel



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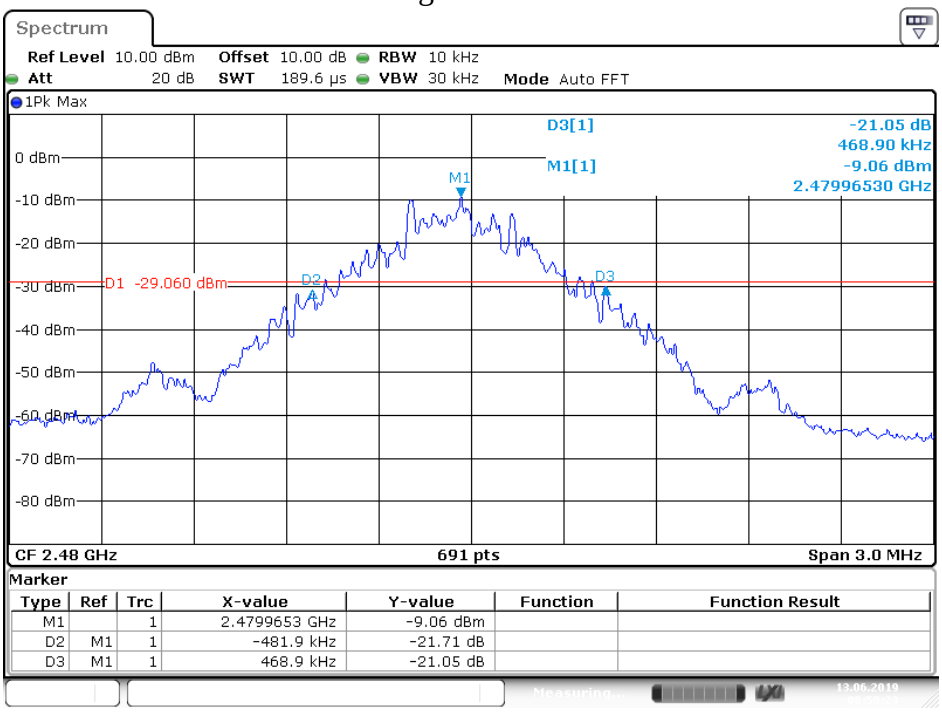
High channel



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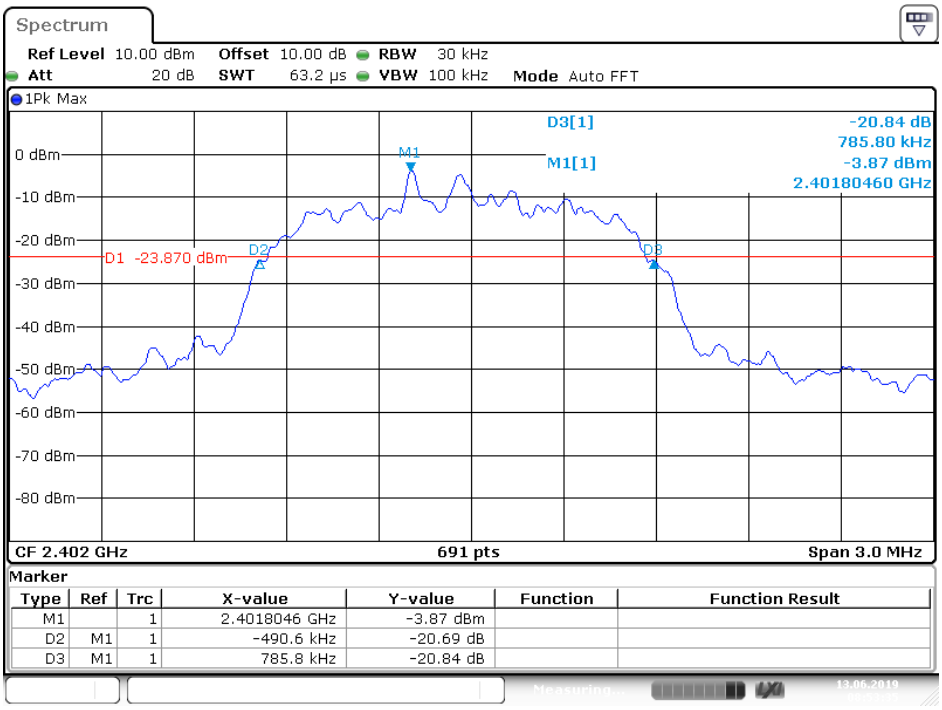
π/4 DQPSK Mode

Low channel



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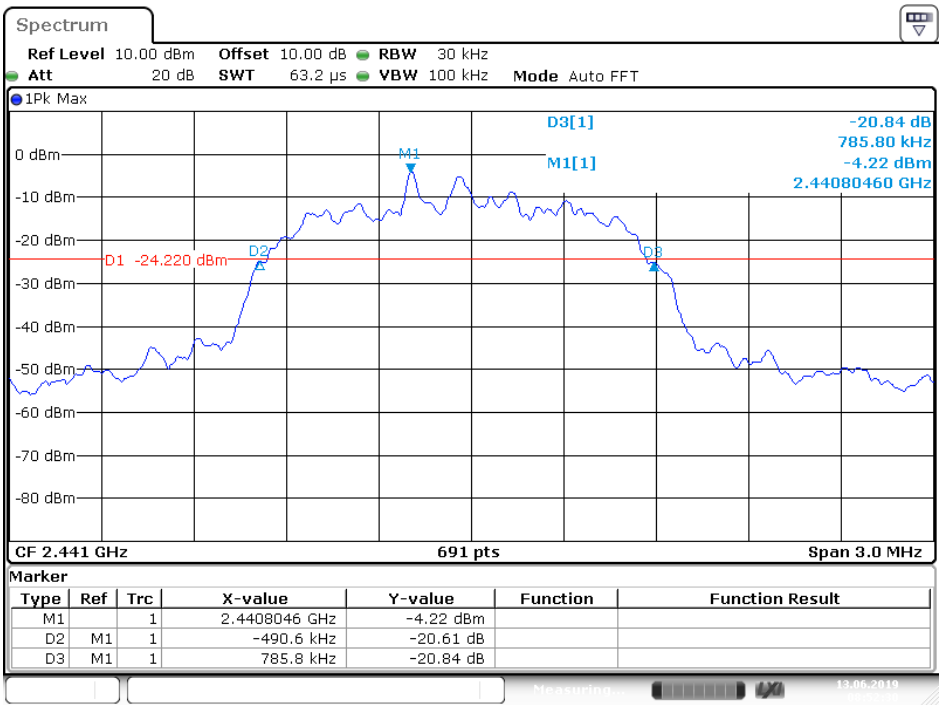
Middle channel



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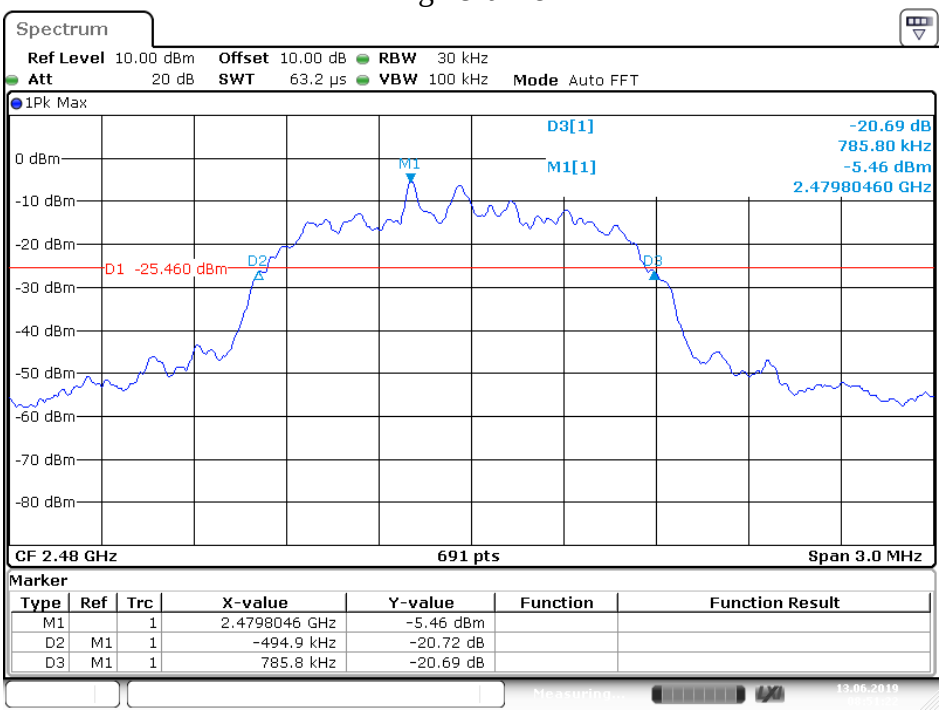
High channel



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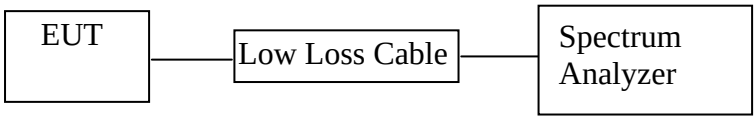
6. 99% OCCUPIED BANDWIDTH TEST

6.1.Block Diagram of Test Setup



6.2.The Requirement for RSS-Gen Clause 6.7

The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.

In some cases, the “x dB bandwidth” is required, which is defined as the frequency range between two points, one at the lowest frequency below and one at the highest frequency above the carrier frequency, at which the maximum power level of the transmitted emission is attenuated x dB below the maximum in-band power level of the modulated signal, where the two points are on the outskirts of the in-band emission.

6.3.EUT Configuration on Measurement

The following equipment is 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 modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, 2480MHz TX frequency to transmit.

6.5.Test Procedure

6.5.1.The transmitter shall be operated at its maximum carrier power measured under normal test conditions. The transmitter output was connected to the spectrum analyzer through a low loss cable.

6.5.2.The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.

6.5.3.The detector of the spectrum analyzer shall be set to “Sample”. However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or “Max Hold”) may be necessary to determine the occupied / x dB bandwidth if the device is not transmitting continuously.

6.5.4. The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

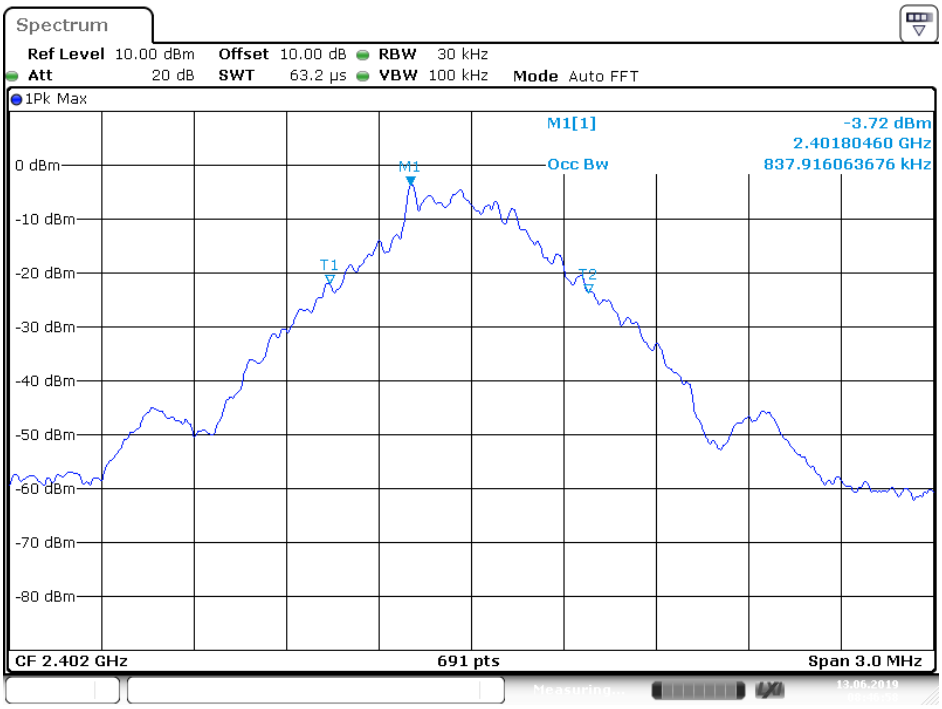
6.6.Test Result

Channel	Frequency (MHz)	GFSK mode 99% Bandwidth (MHz)	π /4 DQPSK mode 99% Bandwidth (MHz)	Result
Low	2402	0.838	1.164	Pass
Middle	2441	0.838	1.164	Pass
High	2480	0.838	1.168	Pass

The spectrum analyzer plots are attached as below.

GFSK Mode

Low channel



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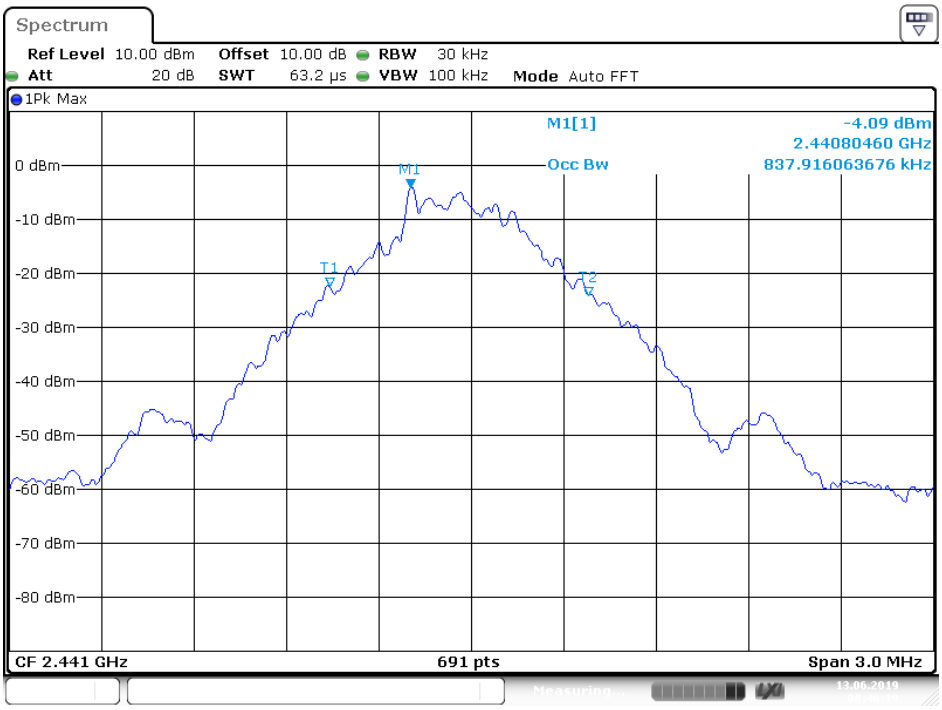
Middle channel



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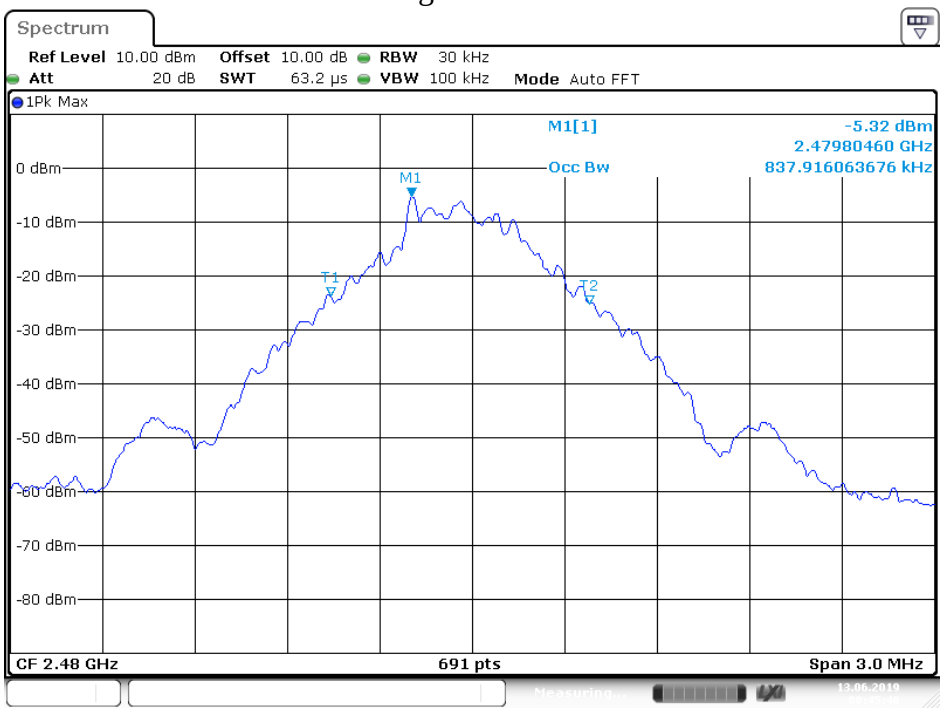
High channel



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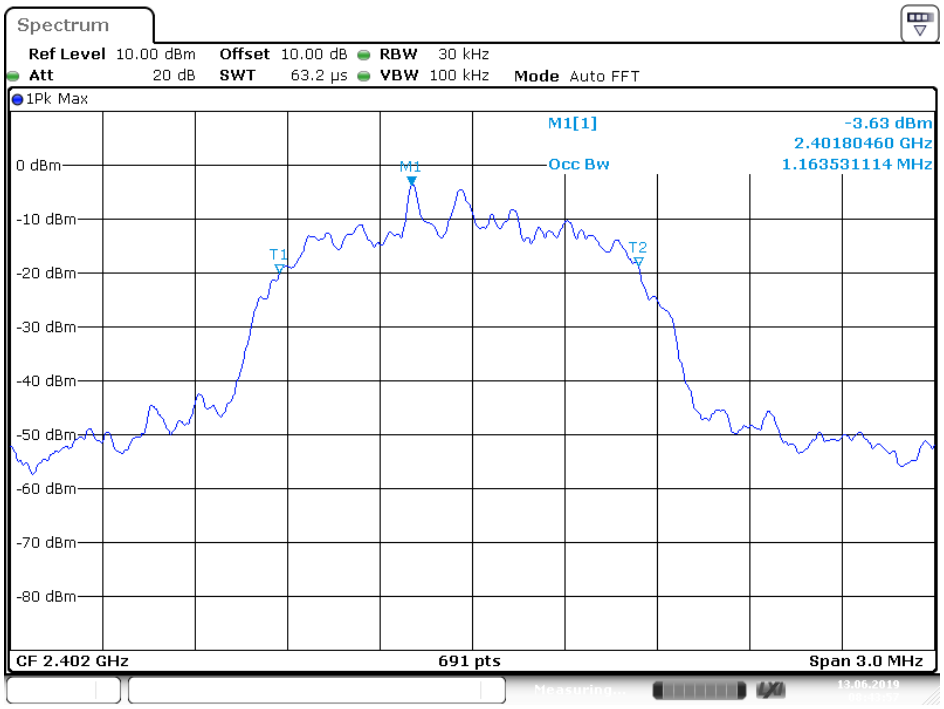
π /4 DQPSK Mode

Low channel



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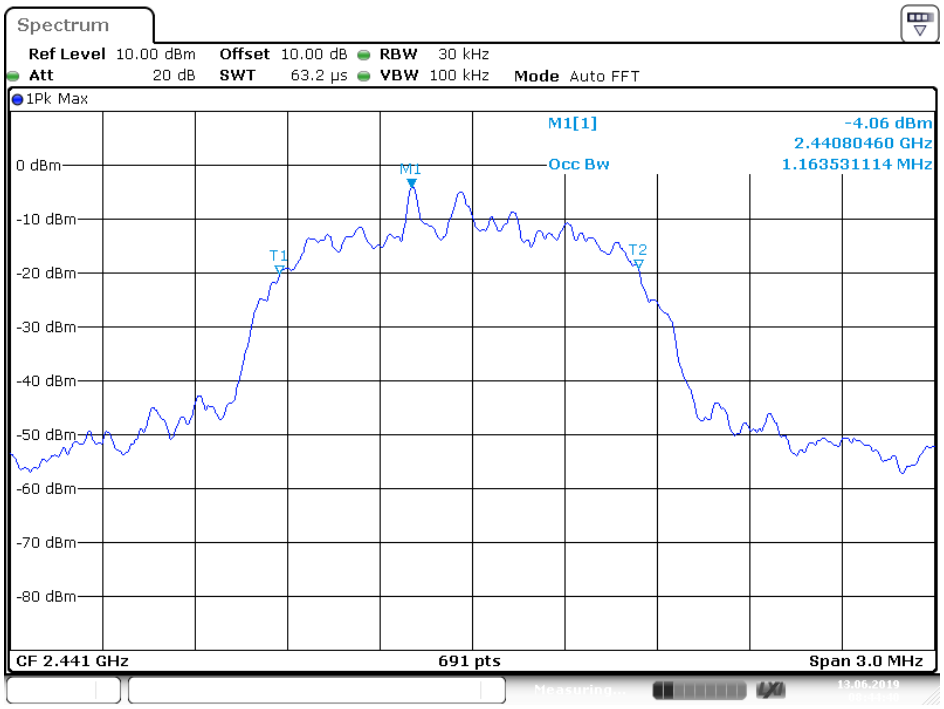
Middle channel



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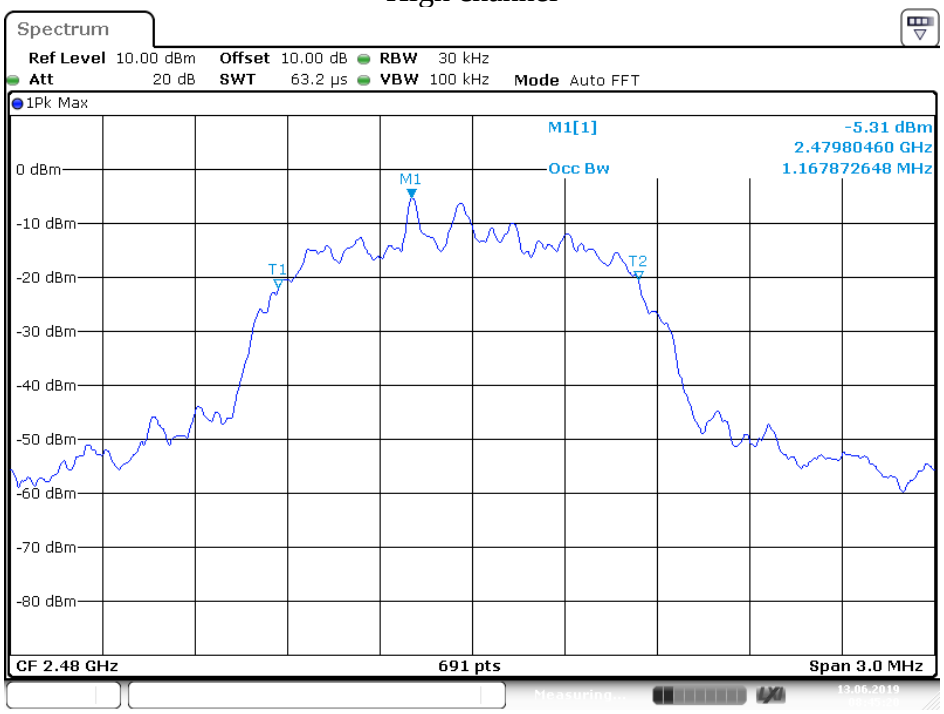
High channel



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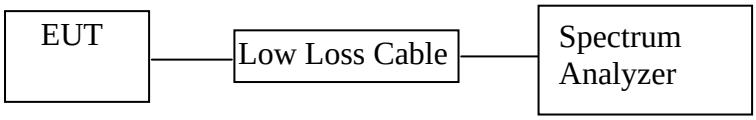
7. CARRIER FREQUENCY SEPARATION TEST

7.1.Block Diagram of Test Setup



7.2.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 pseudorandomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

7.3.The Requirement For RSS-247 Section 5.1(b)

FHSs 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, FHSs operating in the band 2400-2483.5 MHz 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 that the systems operate with an output power no greater than 0.125 W.

7.4.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.

7.5.Operating Condition of EUT

7.5.1.Setup the EUT and simulator as shown as Section 7.1.

7.5.2.Turn on the power of all equipment.

7.5.3.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.

7.6.Test Procedure

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

7.6.2.Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz. Adjust Span to 3MHz.

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

7.6.4.Measurement the channel separation

7.7.Test Result

GFSK mode

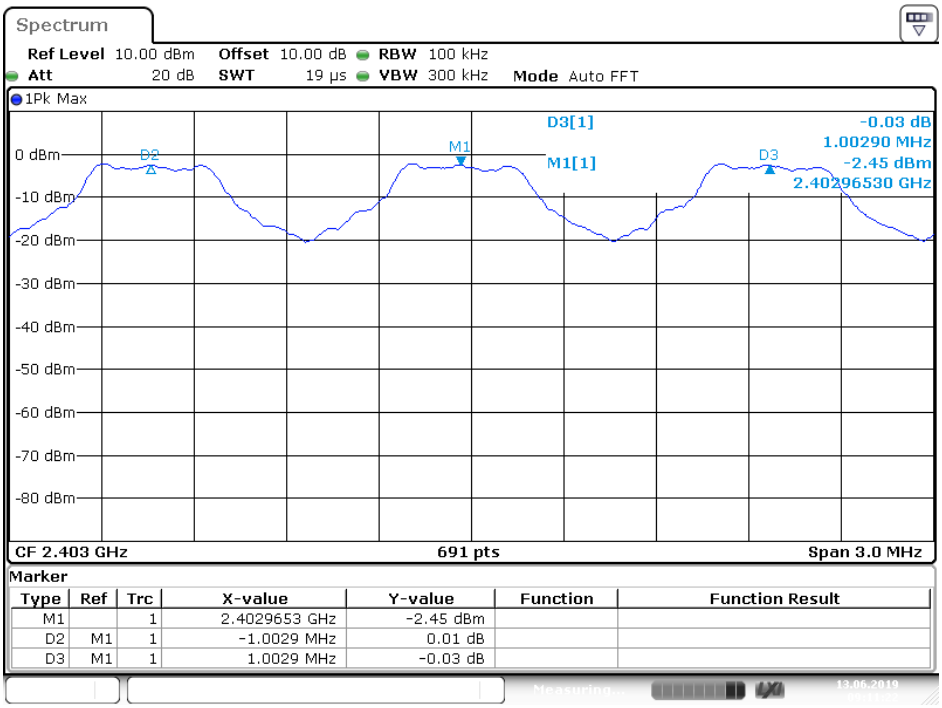
Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.0029	25KHz or 2/3*20dB bandwidth	Pass
	2403			
Middle	2440	1.0029	25KHz or 2/3*20dB bandwidth	Pass
	2441			
High	2479	1.0029	25KHz or 2/3*20dB bandwidth	Pass
	2480			

π /4 DQPSK Mode

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.0029	25KHz or 2/3*20dB bandwidth	Pass
	2403			
Middle	2440	1.0029	25KHz or 2/3*20dB bandwidth	Pass
	2441			
High	2479	1.0029	25KHz or 2/3*20dB bandwidth	Pass
	2480			

GFSK Mode

Low channel



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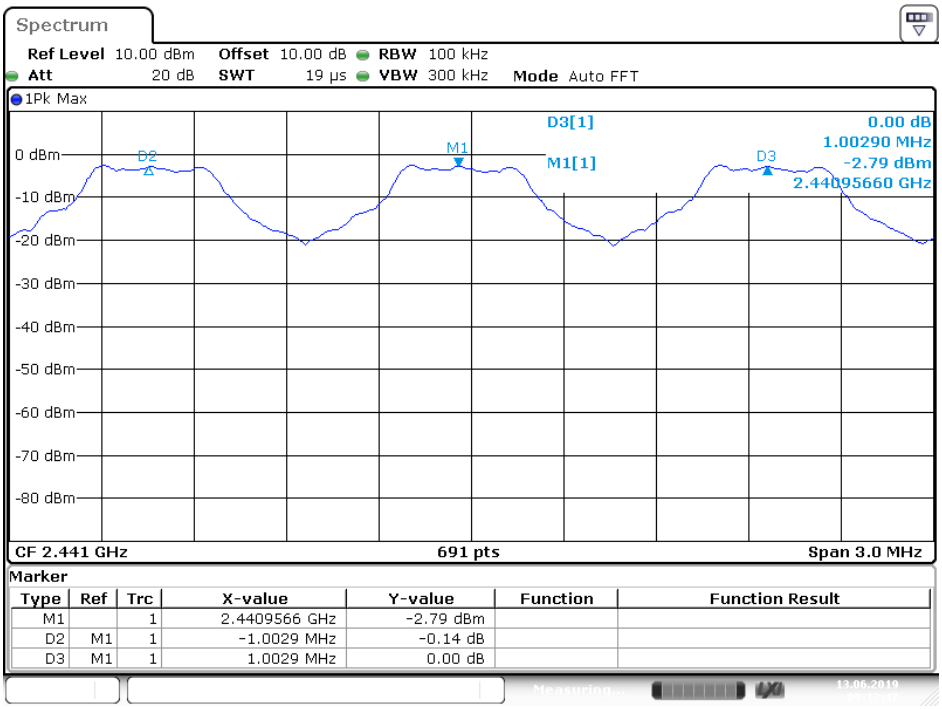
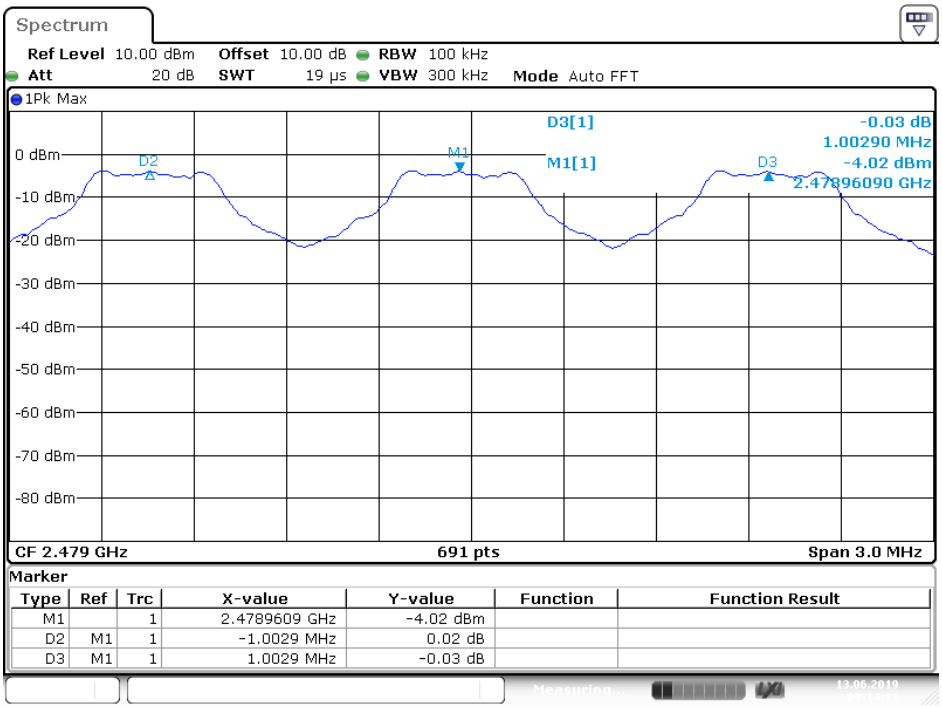
Middle channel



Date: 13.JUN.2019 09:12:48

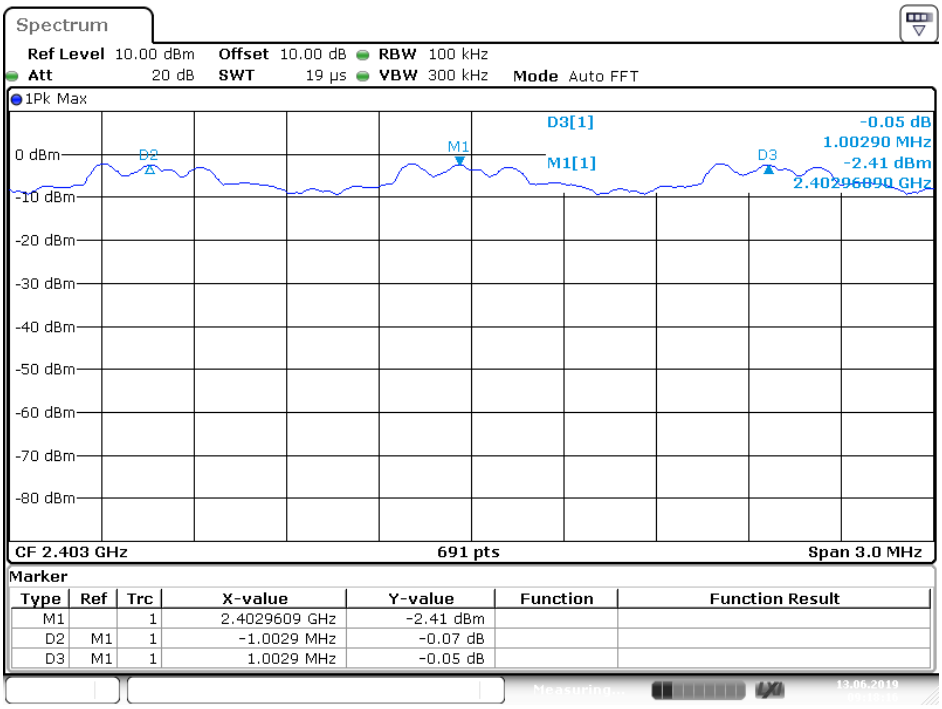
High channel



Date: 13.JUN.2019 09:14:11

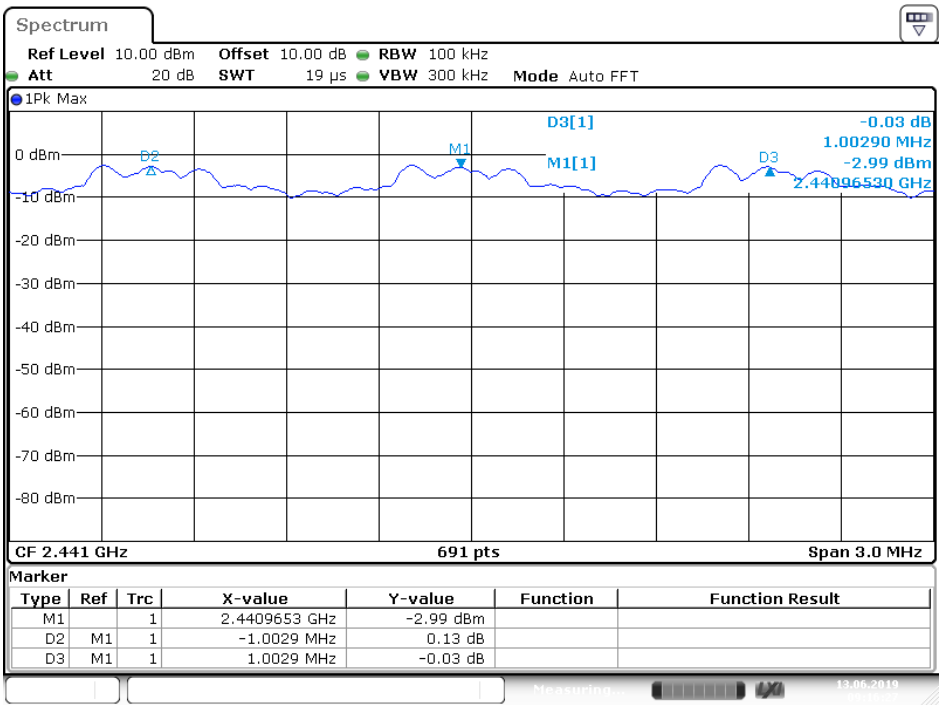
π /4 DQPSK Mode

Low channel



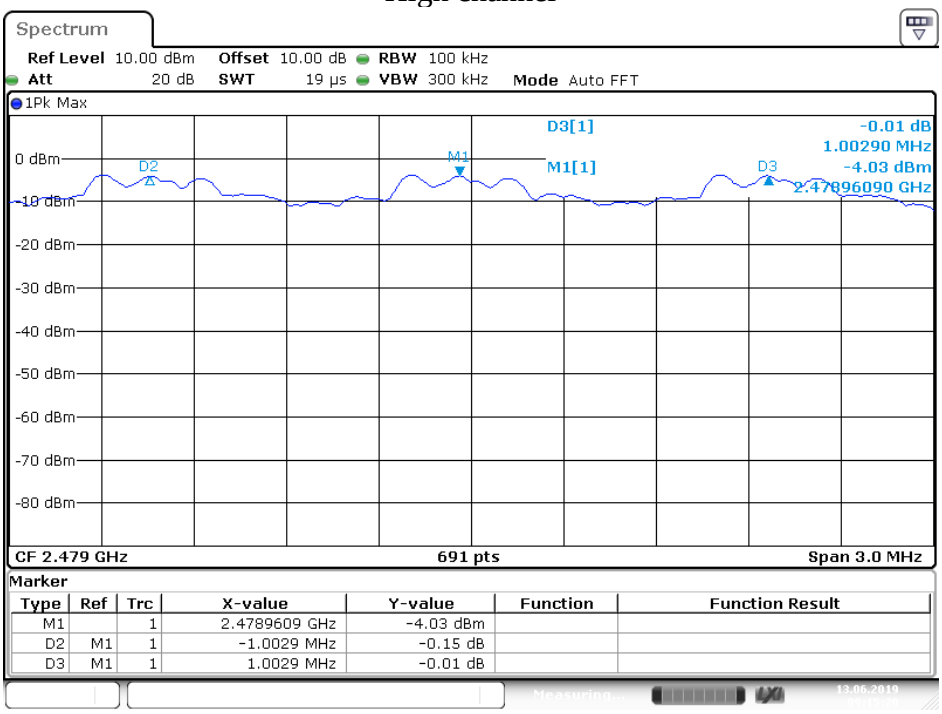
Date: 13.JUN.2019 09:18:16

Middle channel



Date: 13.JUN.2019 09:16:27

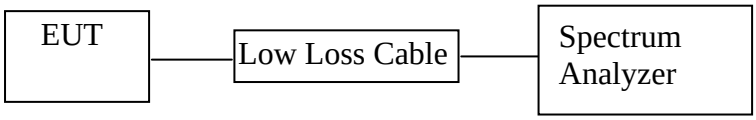
High channel



Date: 13.JUN.2019 09:15:21

8. NUMBER OF HOPPING FREQUENCY 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.

8.3.The Requirement For RSS-247 Section 5.1(d)

FHSs operating in the band 2400-2483.5 MHz shall use at least 15 hopping channels.

8.4.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.

8.5.Operating Condition of EUT

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

8.5.2.Turn on the power of all equipment.

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

8.6.Test Procedure

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

8.6.2.Set the spectrum analyzer as Span=90MHz, RBW=100 kHz, VBW=300 kHz.

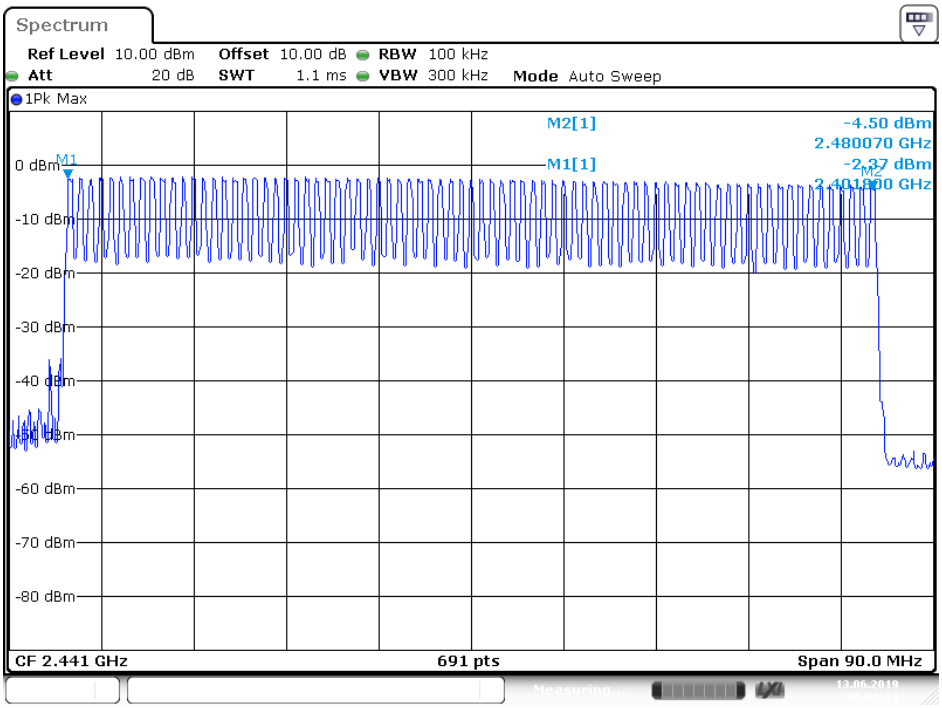
8.6.3.Max hold, view and count how many channel in the band.

8.7.Test Result

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

The spectrum analyzer plots are attached as below.

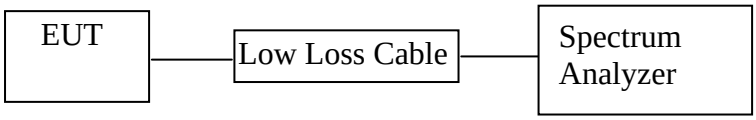
Number of hopping channels (GFSK)



Date: 13.JUN.2019 09:09:11

9. DWELL TIME TEST

9.1.Block Diagram of Test Setup



9.2.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.

9.3.The Requirement For Section RSS-247 Section 5.1(d)

FHSs operating in the band 2400-2483.5 MHz shall use at least 15 hopping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of0.4 seconds, multiplied by the number of hopping channels employed. Transmissions on particular hopping frequencies may be avoided or suppressed provided that at least 15 hopping channels are used.

9.4.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.

9.5.Operating Condition of EUT

9.5.1.Setup the EUT and simulator as shown as Section 9.1.

9.5.2.Turn on the power of all equipment.

9.5.3.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.

9.6.Test Procedure

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

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

9.6.3.Set the spectrum analyzer as RBW=100KHz, VBW=300KHz, Span=0Hz, Adjust Sweep=5ms, 10ms, 15ms. Get the pulse time.

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

9.7.Test Result

Pass.

GFSK Mode

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.399	127.68	400
	2441	0.391	125.12	400
	2480	0.399	127.68	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(2*79))×31.6				
DH3	2402	1.681	268.96	400
	2441	1.667	266.72	400
	2480	1.667	266.72	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(4*79))×31.6				
DH5	2402	2.935	313.07	400
	2441	2.913	310.72	400
	2480	2.935	313.07	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(6*79))×31.6				

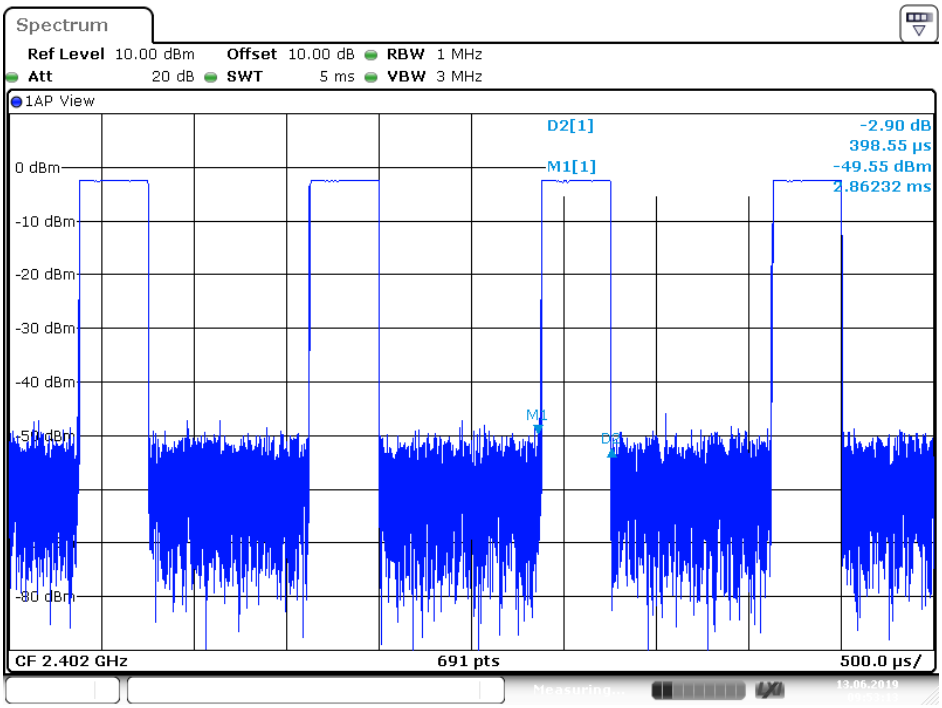
π/4 DQPSK Mode

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
3DH1	2402	0.406	129.92	400
	2441	0.406	129.92	400
	2480	0.406	129.92	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(2*79))×31.6				
3DH3	2402	1.667	266.72	400
	2441	1.681	268.96	400
	2480	1.681	268.96	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(4*79))×31.6				
3DH5	2402	2.935	313.07	400
	2441	2.935	313.07	400
	2480	2.935	313.07	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(6*79))×31.6				

The spectrum analyzer plots are attached as below.

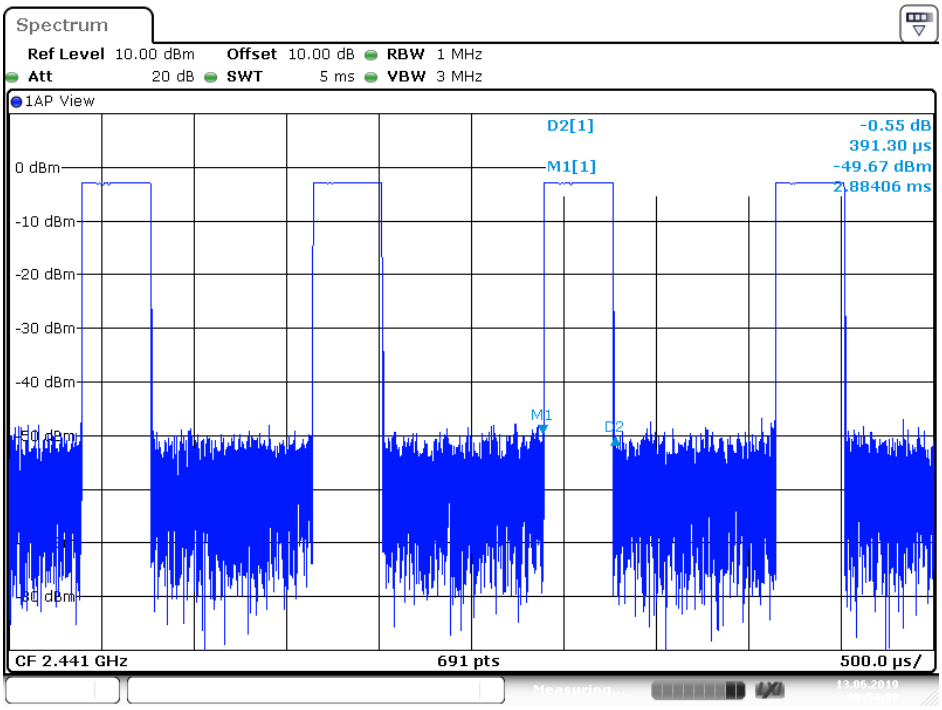
GFSK Mode

DH1 Low channel



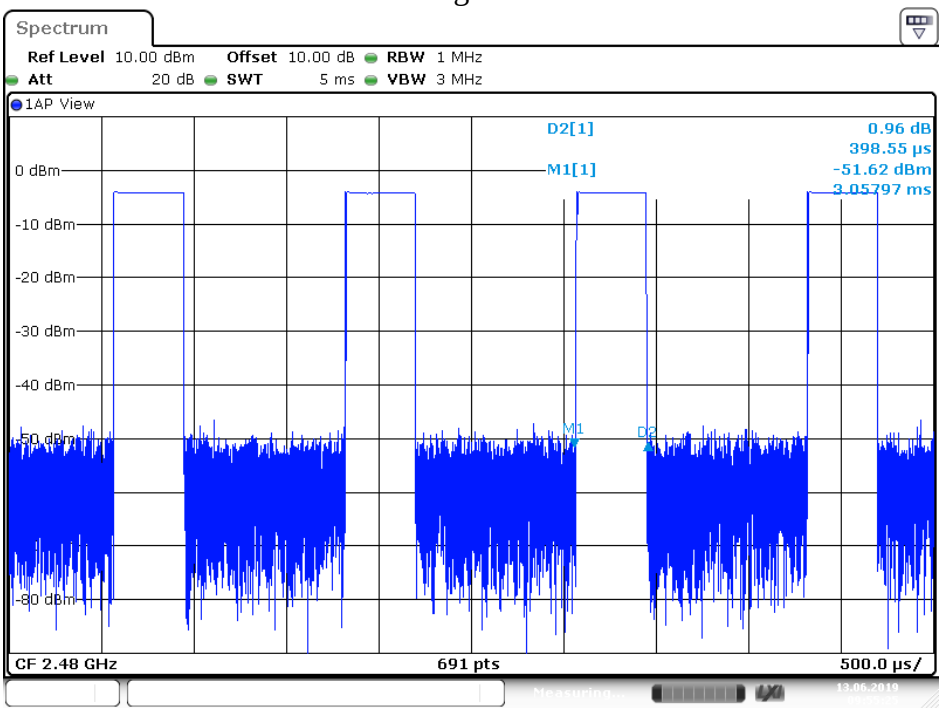
Date: 13.JUN.2019 09:53:14

DH1 Middle channel



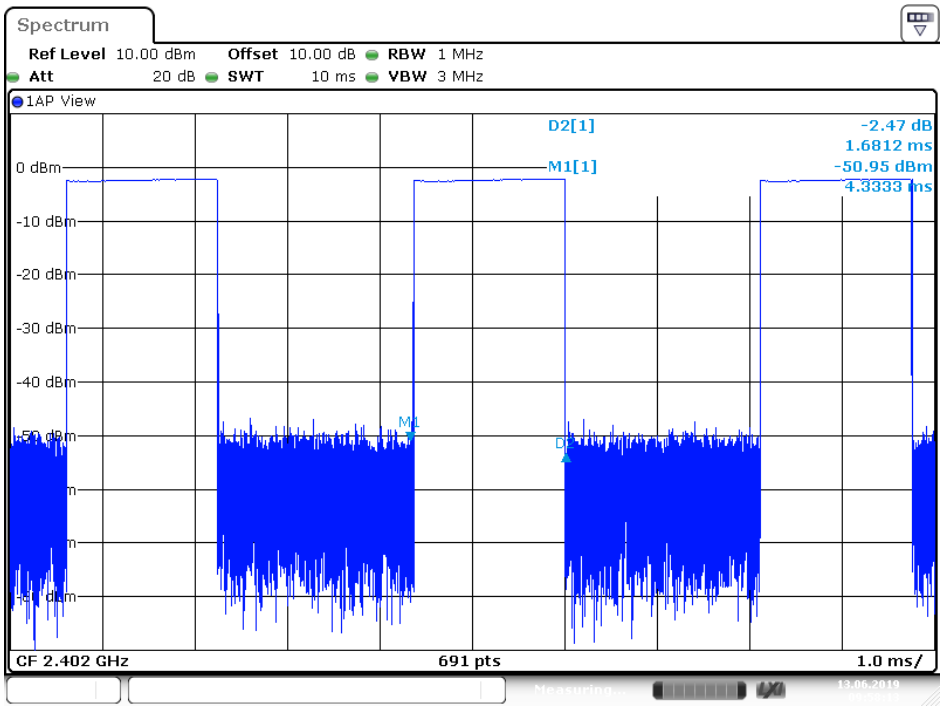
Date: 13.JUN.2019 09:54:08

DH1 High channel



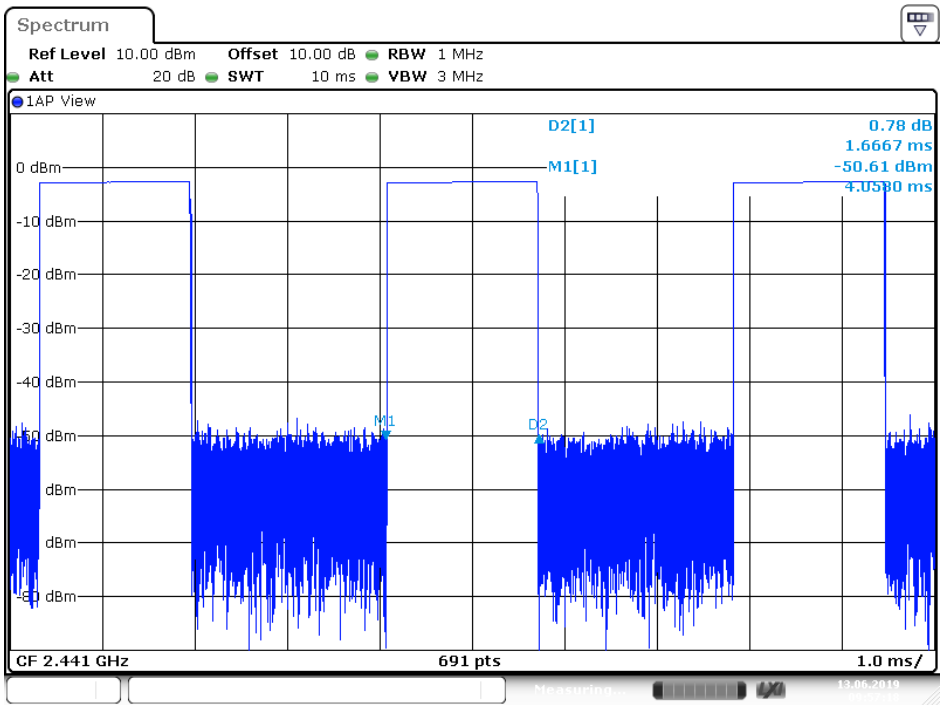
Date: 13.JUN.2019 09:55:25

DH3 Low channel



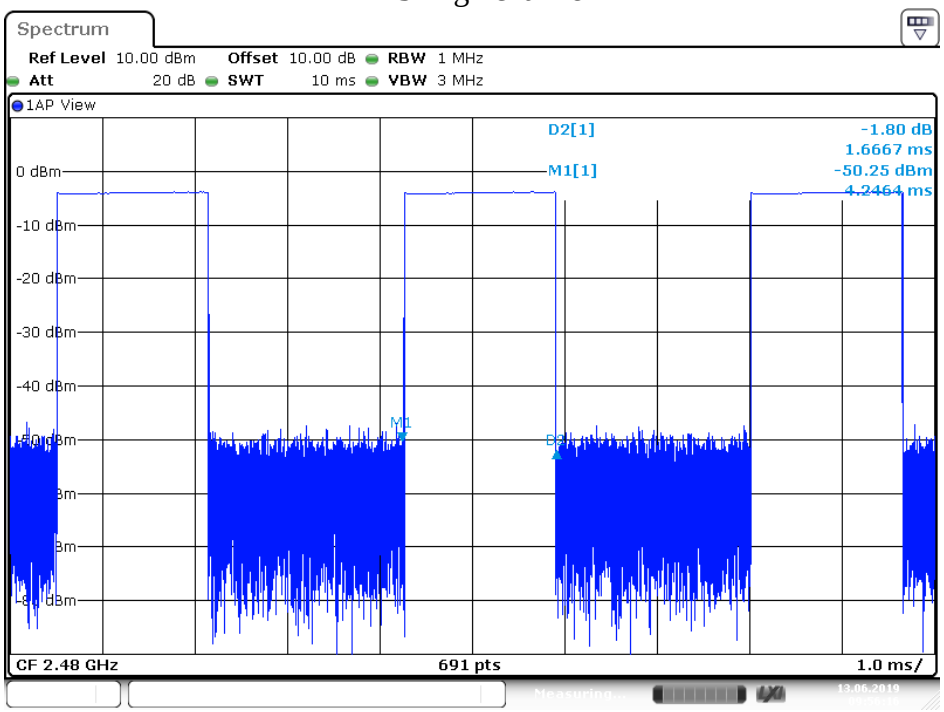
Date: 13.JUN.2019 09:58:14

DH3 Middle channel



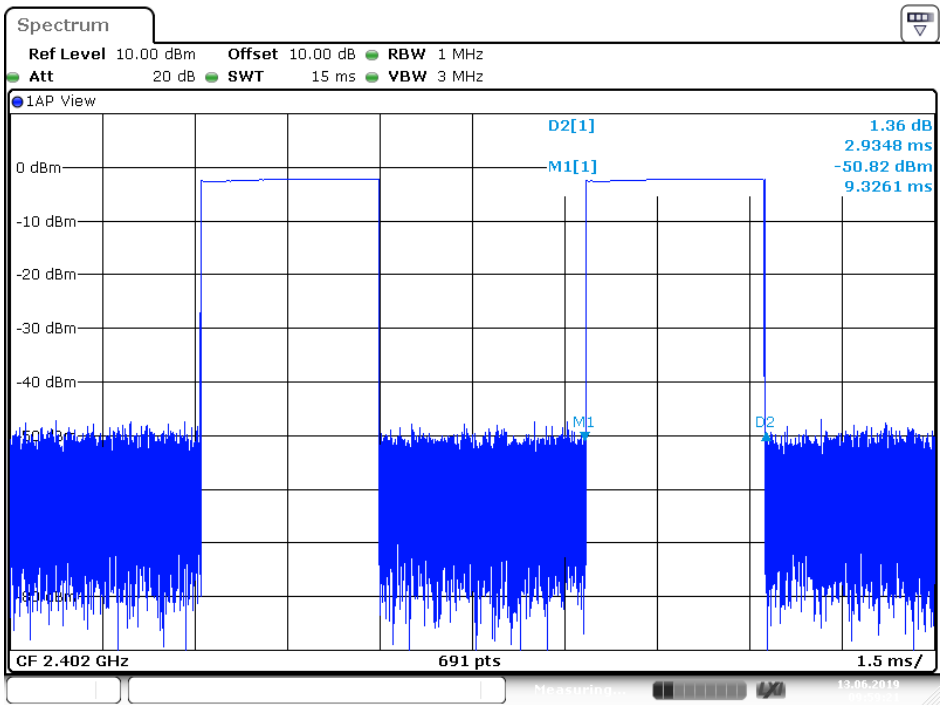
Date: 13.JUN.2019 09:57:19

DH3 High channel



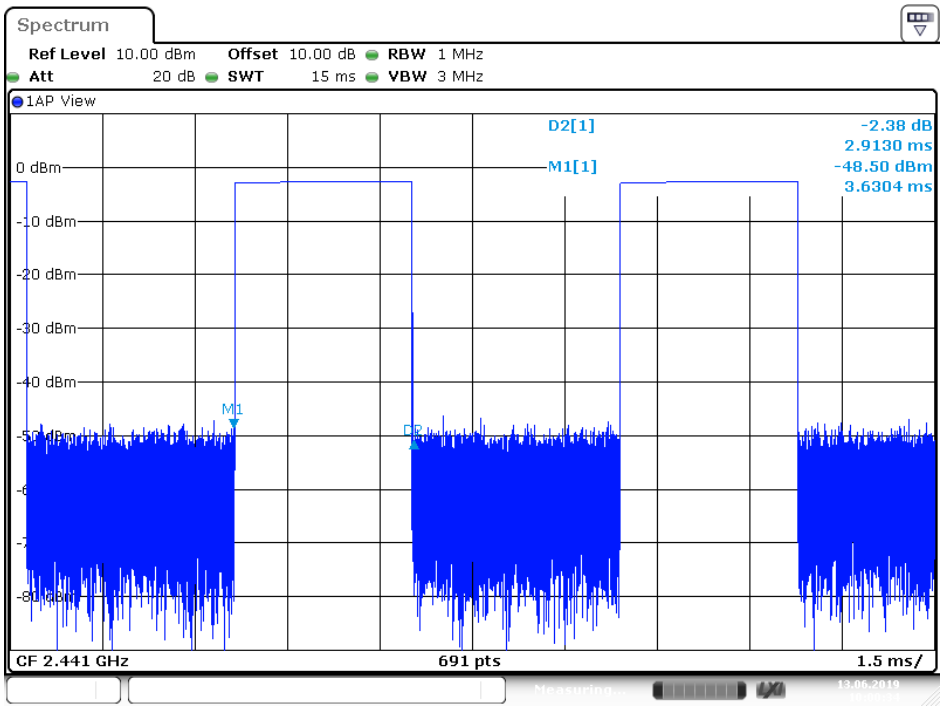
Date: 13.JUN.2019 09:56:16

DH5 Low channel



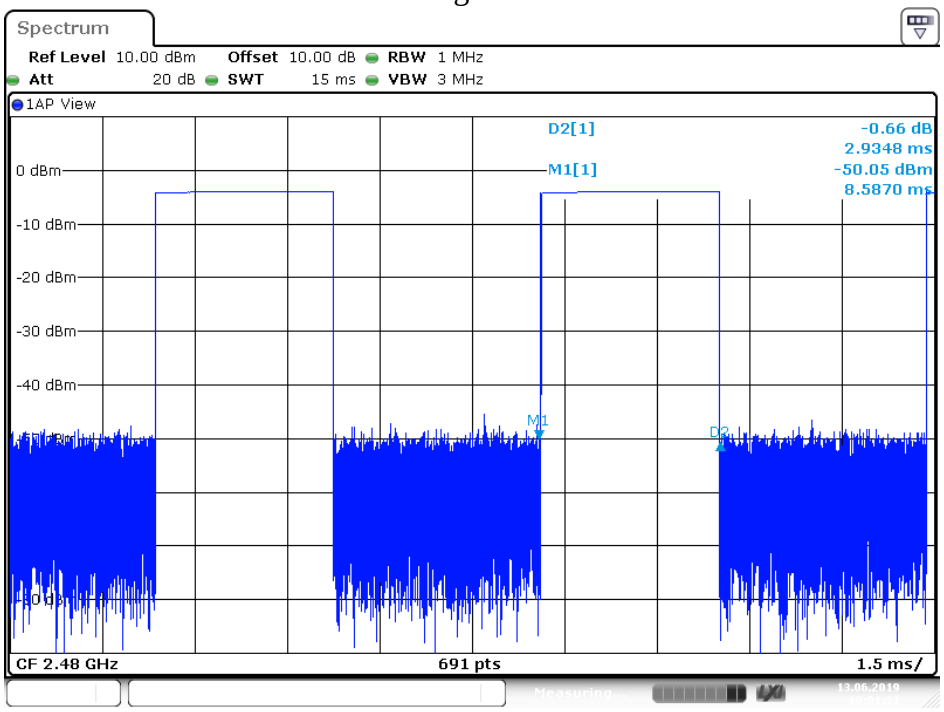
Date: 13.JUN.2019 09:59:21

DH5 Middle channel



Date: 13.JUN.2019 10:00:34

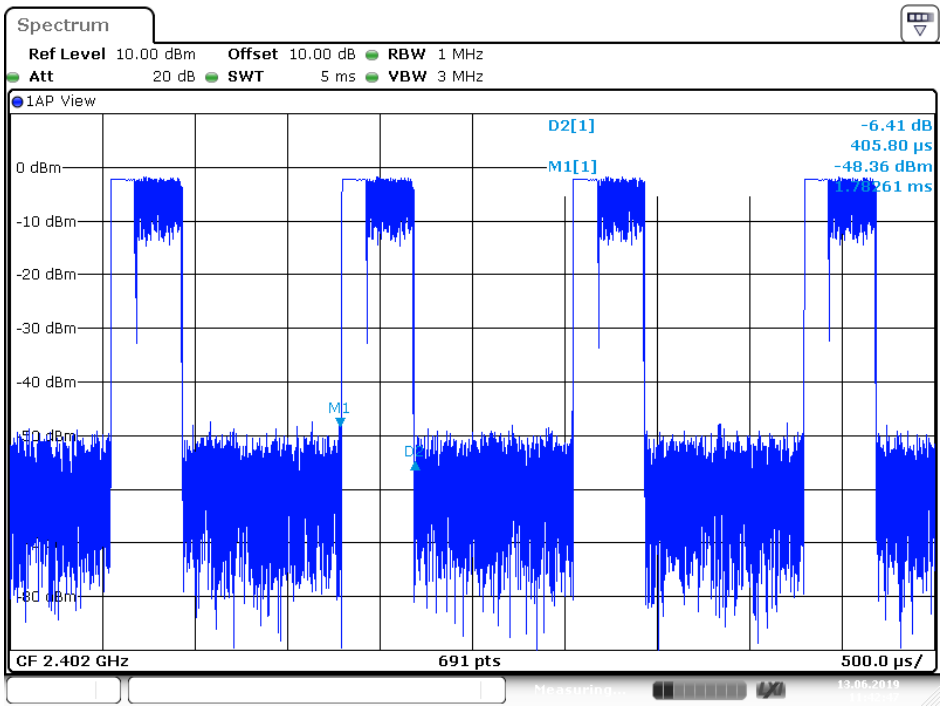
DH5 High channel



Date: 13.JUN.2019 10:01:31

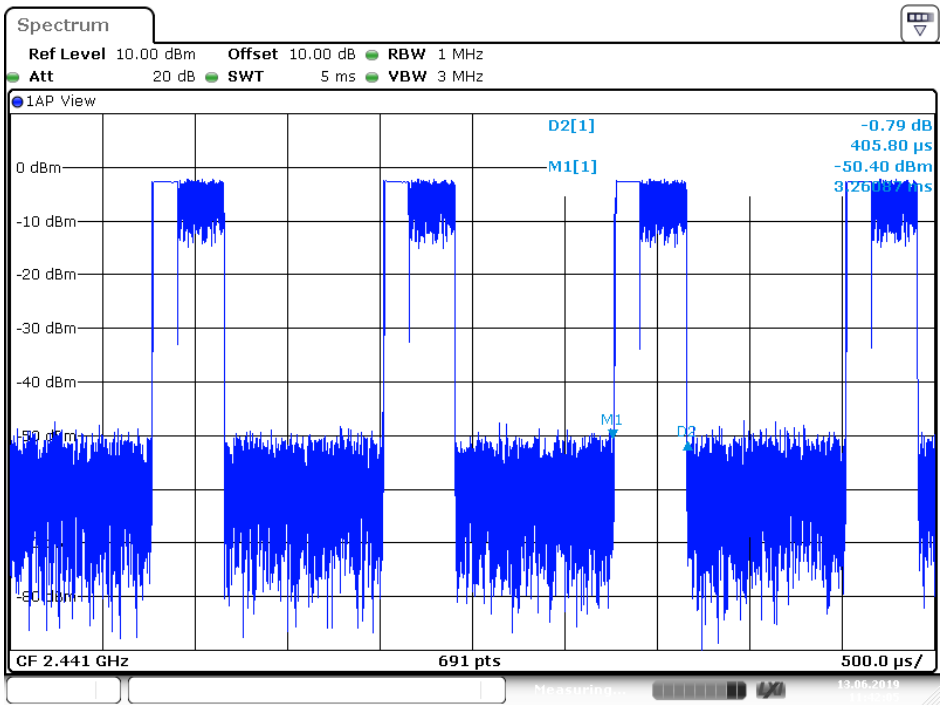
π/4 DQPSK Mode

3DH1 Low channel



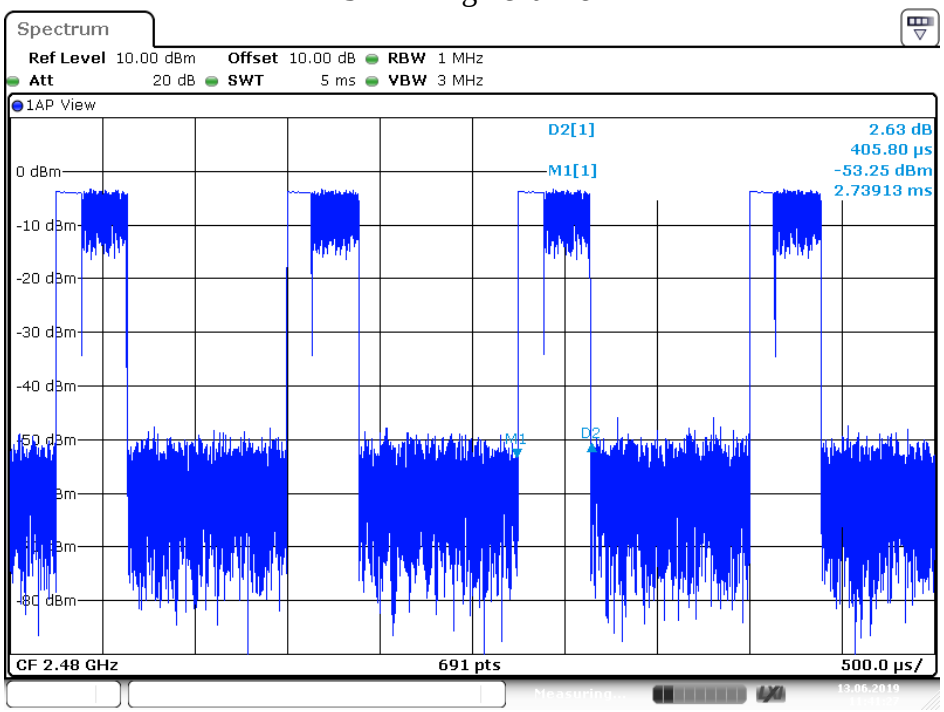
Date: 13.JUN.2019 11:42:47

3DH1 Middle channel



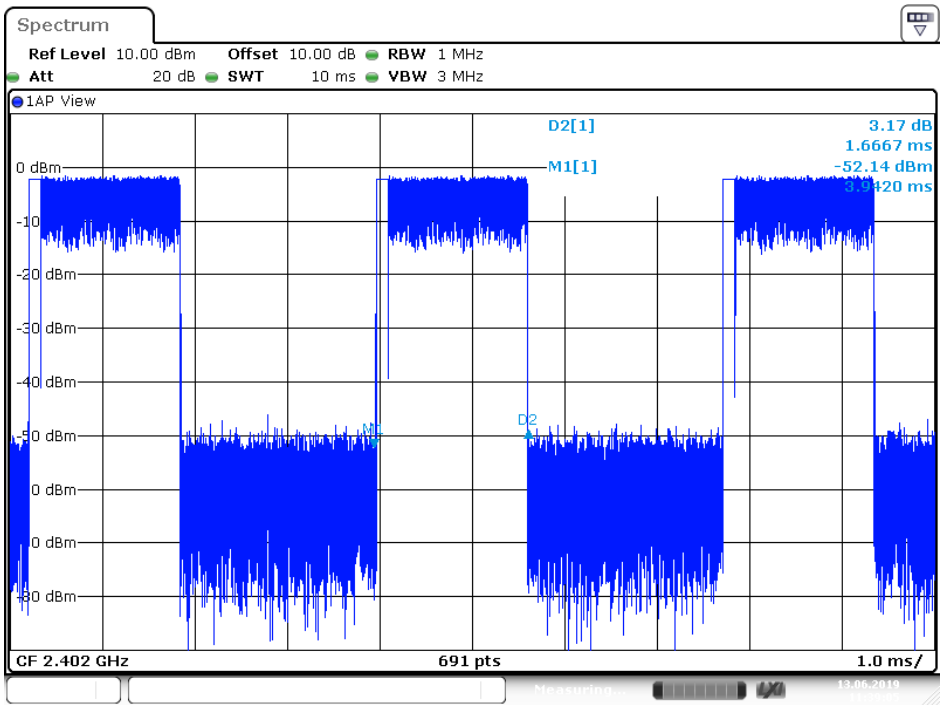
Date: 13.JUN.2019 11:42:06

3DH1 High channel



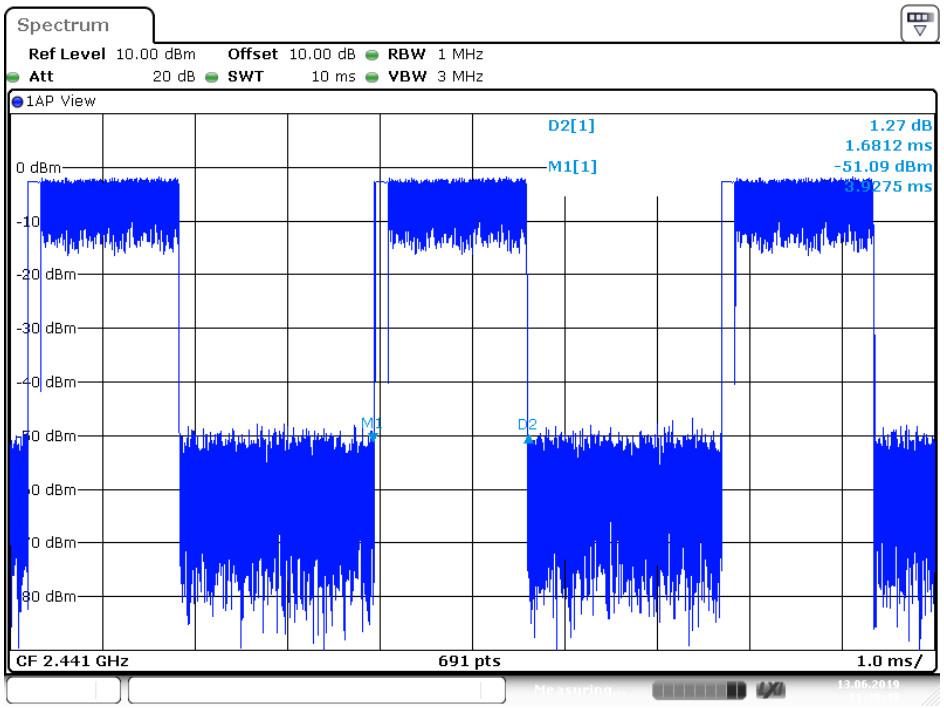
Date: 13.JUN.2019 11:41:28

3DH3 Low channel



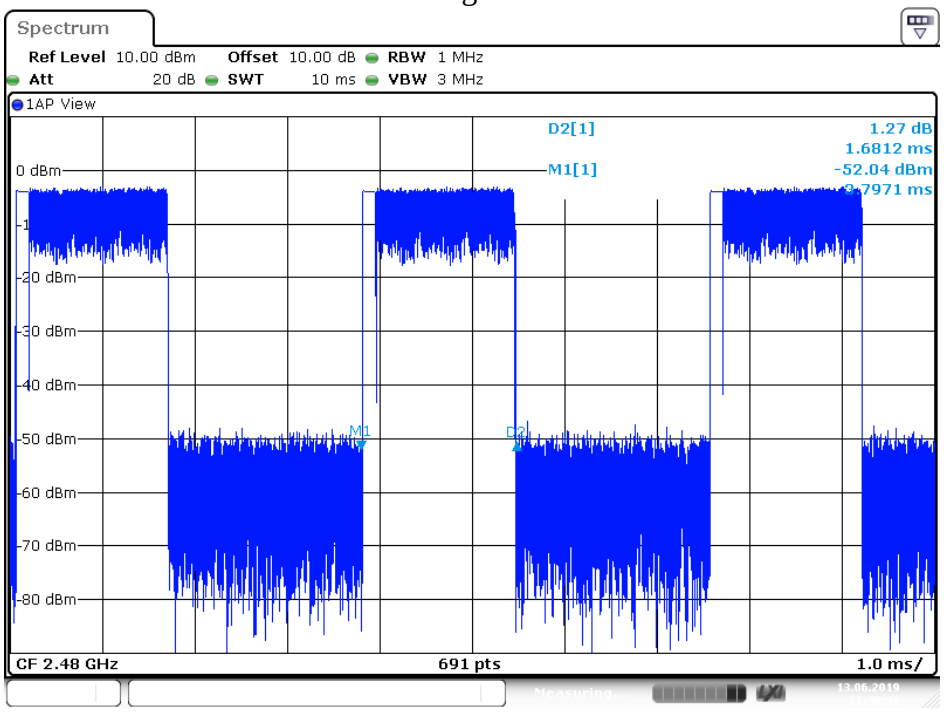
Date: 13.JUN.2019 11:39:05

3DH3 Middle channel



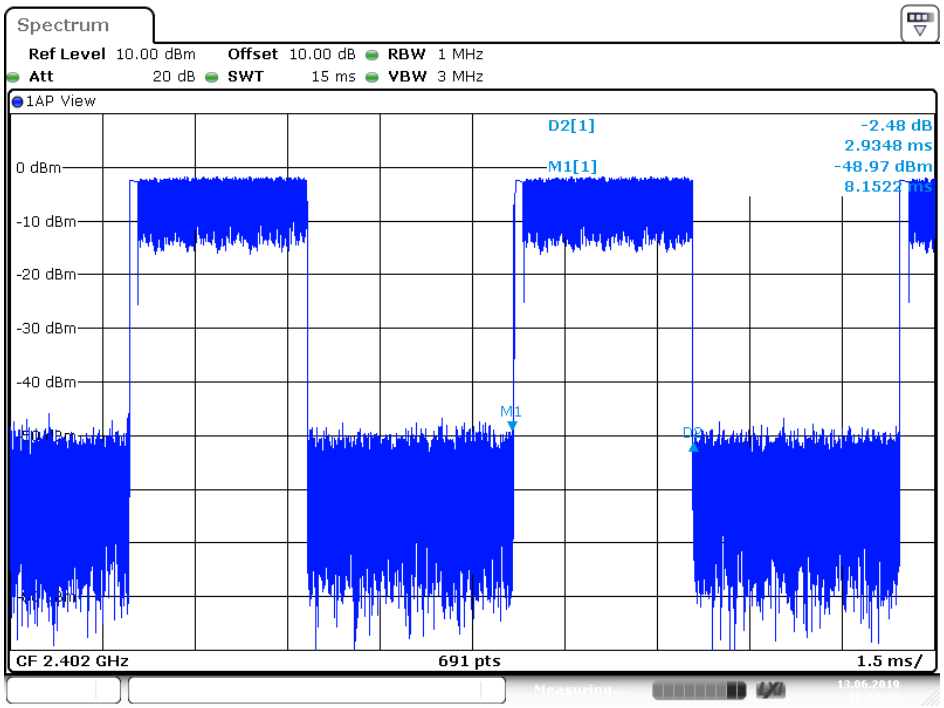
Date: 13.JUN.2019 11:39:47

3DH3 High channel



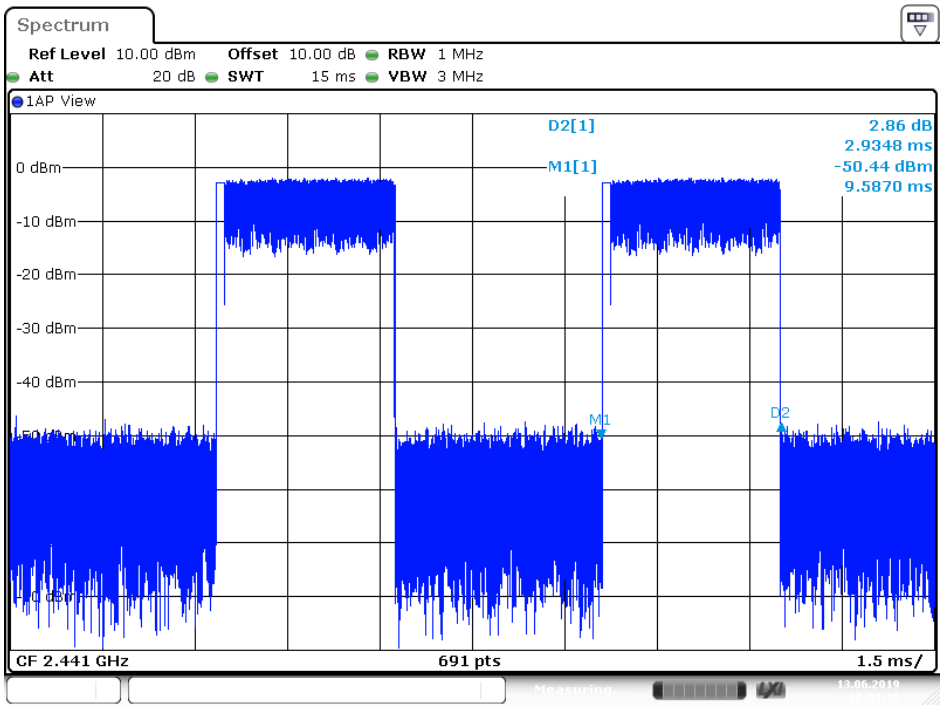
Date: 13.JUN.2019 11:40:47

3DH5 Low channel



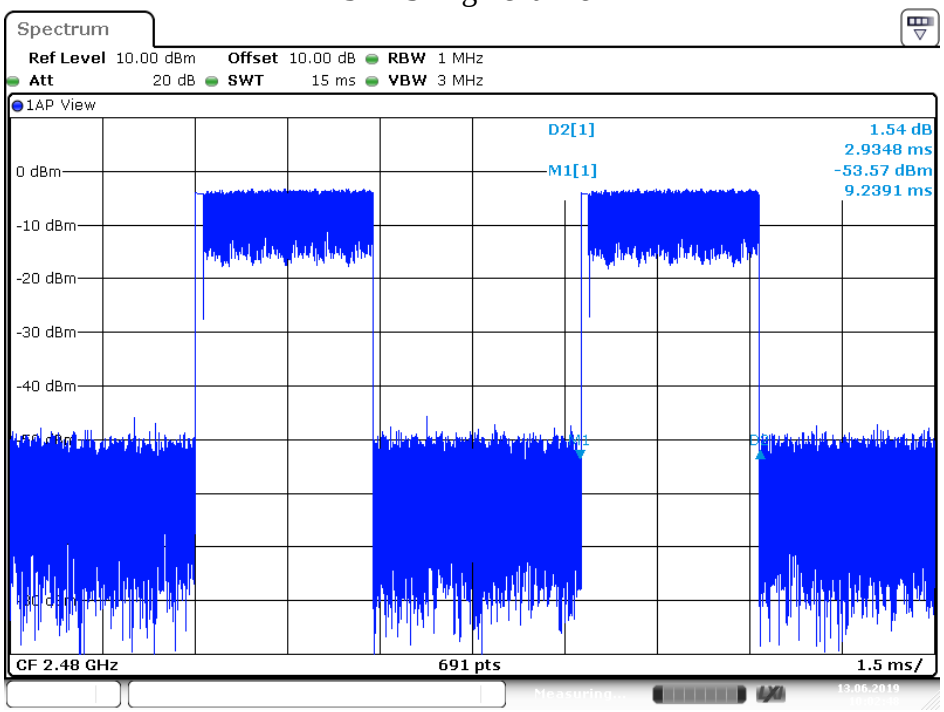
Date: 13.JUN.2019 10:07:48

3DH5 Middle channel



Date: 13.JUN.2019 10:03:39

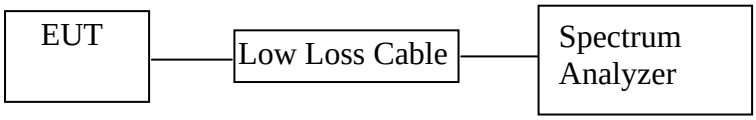
3DH5 High channel



Date: 13.JUN.2019 10:02:48

10.MAXIMUM PEAK OUTPUT POWER TEST

10.1.Block Diagram of Test Setup



10.2.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.

10.3.The Requirement For RSS-247 Section 5.4(b)

For FHSs operating in the band 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1.0 W if the hopset uses 75 or more hopping channels; the maximum peak conducted output power shall not exceed 0.125 W if the hopset uses less than 75 hopping channels. The e.i.r.p. shall not exceed 4 W, except as provided in section 5.4(e).

10.4.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.

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 (Hopping off) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

10.6.Test Procedure

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

10.6.2.Set RBW of spectrum analyzer to 1MHz and VBW to 3MHz for GFSK mode

10.6.3.Set RBW of spectrum analyzer to 3MHz and VBW to 10MHz for π/4 DQPSK mode

10.6.4.Measurement the maximum peak output power.

10.7.Test Result

GFSK Mode

Frequency (MHz)	Maximum peak conducted output power (dBm/W)	e.i.r.p. (dBm/W)	Limits (dBm/W)	Result
2402	-1.16/0.0008	-1.74/0.0007	21 / 0.125	Pass
2441	-1.78/0.0007	-2.36/0.0006	21 / 0.125	Pass
2480	-3.06/0.0005	-3.64/0.0004	21 / 0.125	Pass

π/4 DQPSK Mode

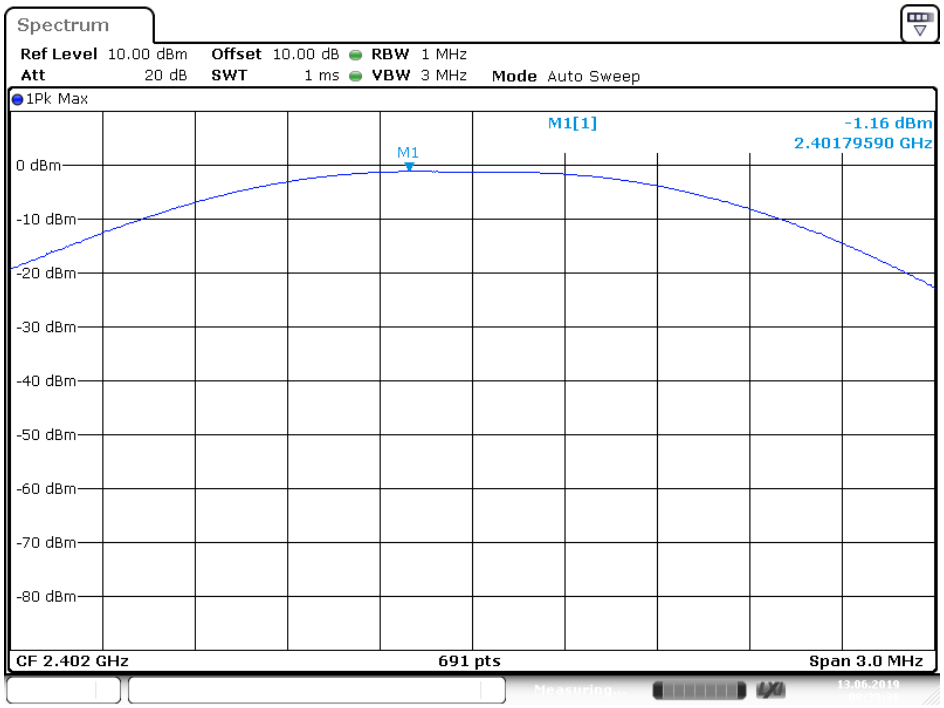
Frequency (MHz)	Maximum peak conducted output power (dBm/W)	e.i.r.p. (dBm/W)	Limits dBm / W	Result
2402	-0.81/0.0008	-1.39/0.0007	21 / 0.125	Pass
2441	-1.16/0.0008	-1.74/0.0007	21 / 0.125	Pass
2480	-2.30/0.0006	-2.88/0.0005	21 / 0.125	Pass

Note: e.i.r.p= Maximum peak conducted output power+Antenna gain(-0.58dBi)

The spectrum analyzer plots are attached as below.

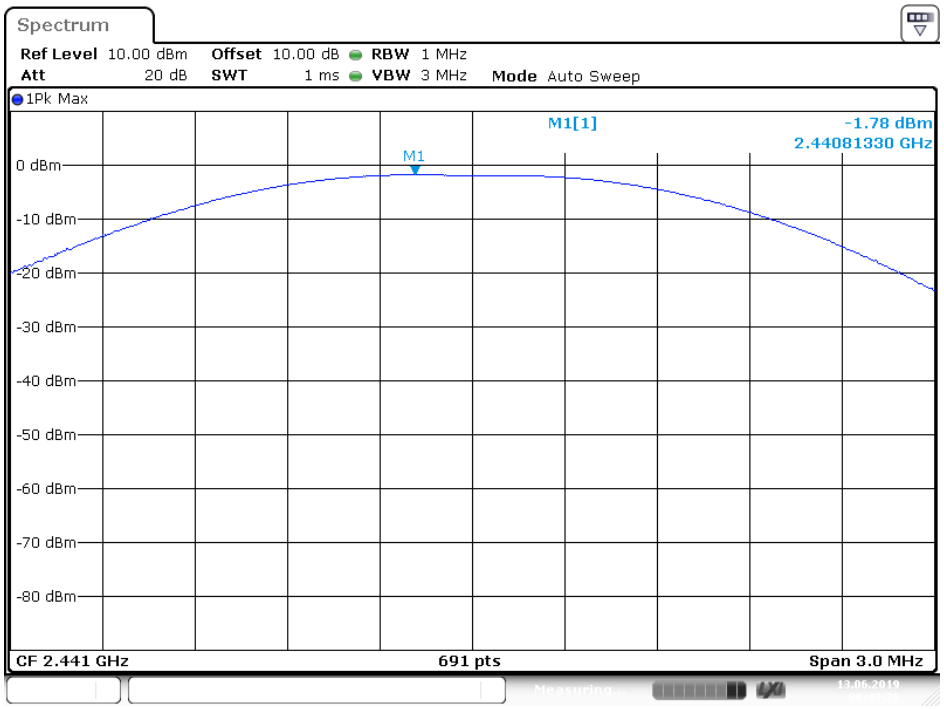
GFSK Mode

Low channel



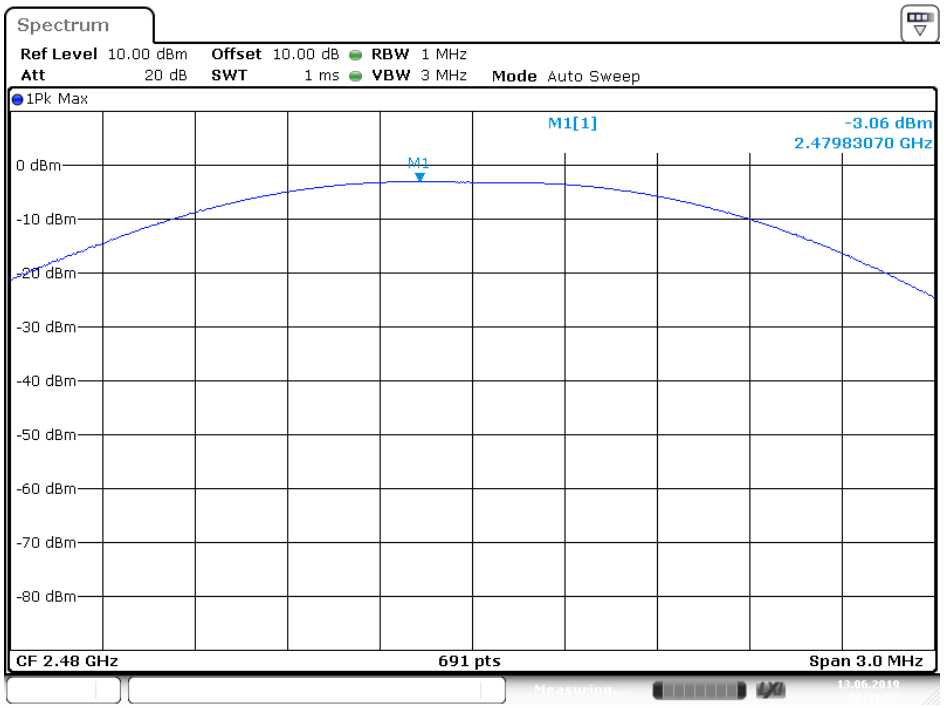
Date: 13.JUN.2019 08:39:37

Middle channel



Date: 13.JUN.2019 08:40:28

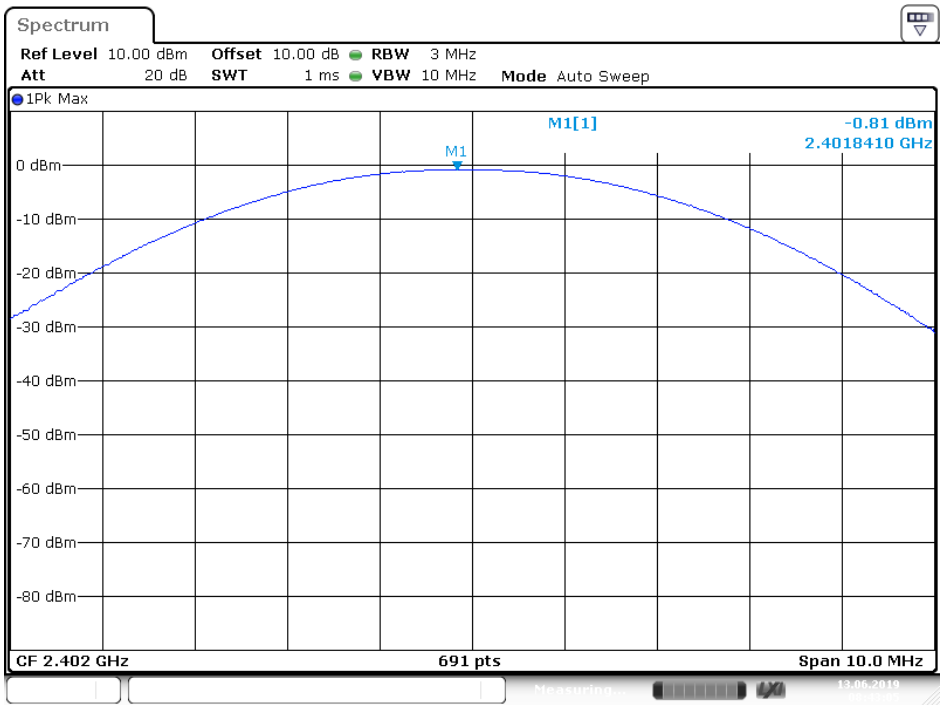
High channel



Date: 13.JUN.2019 08:41:02

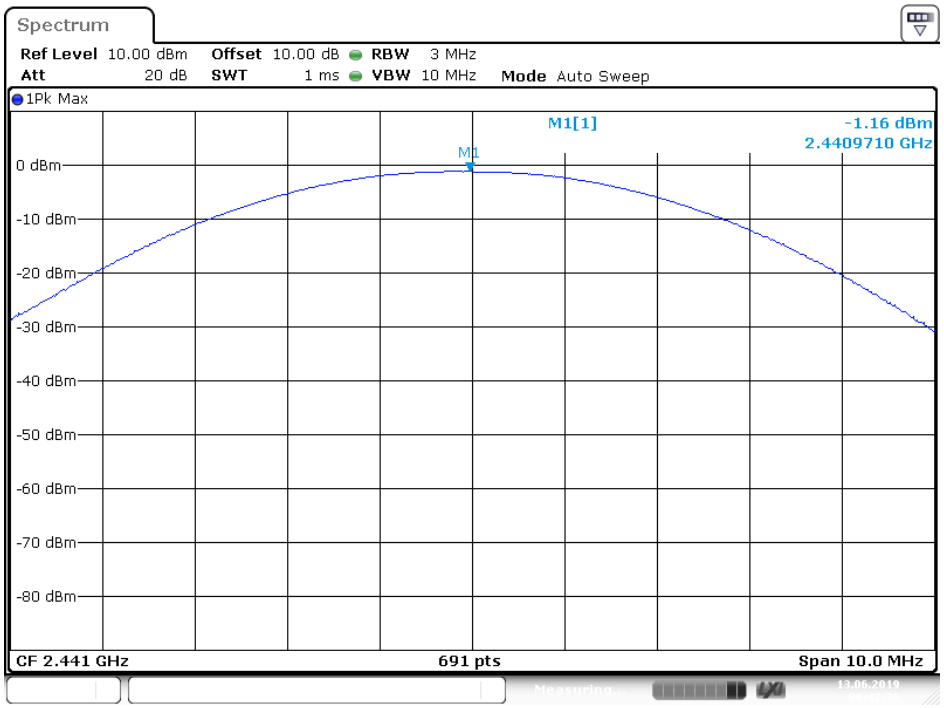
π /4 DQPSK Mode

Low channel



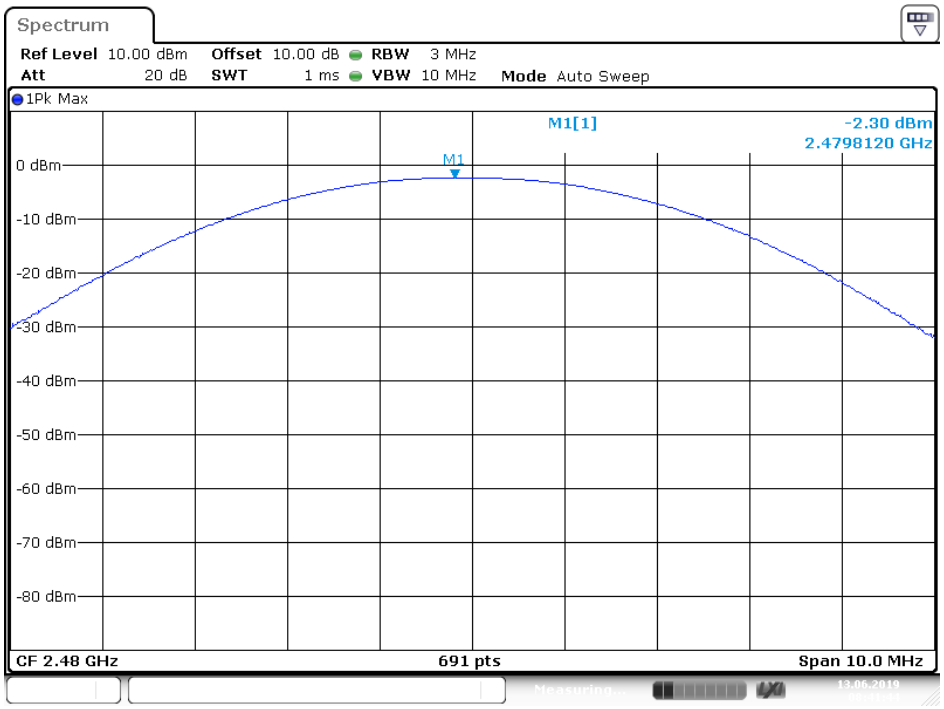
Date: 13.JUN.2019 08:43:06

Middle channel



Date: 13.JUN.2019 08:42:31

High channel



Date: 13.JUN.2019 08:41:45

11.RADIATED EMISSION TEST

11.1.Block Diagram of Test Setup

11.1.1.Block diagram of connection between the EUT and peripherals

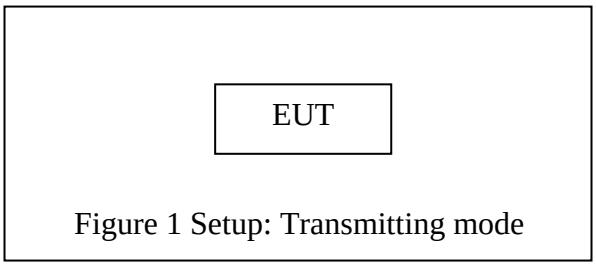
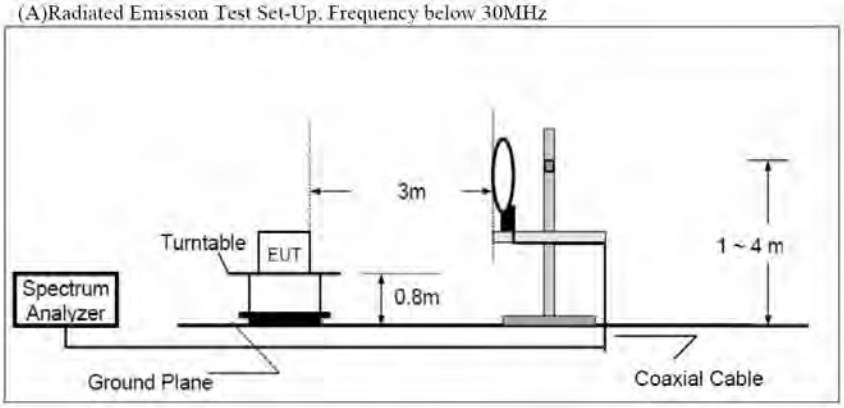


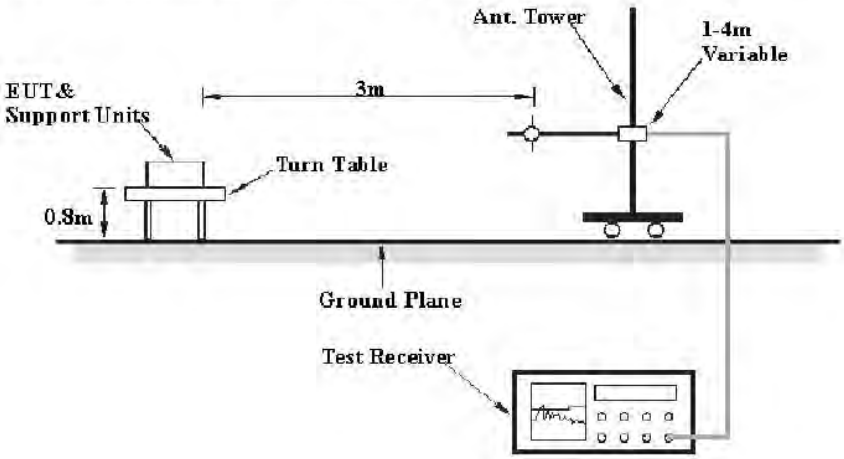
Figure 1 Setup: Transmitting mode

11.1.2.Semi-Anechoic Chamber Test Setup Diagram

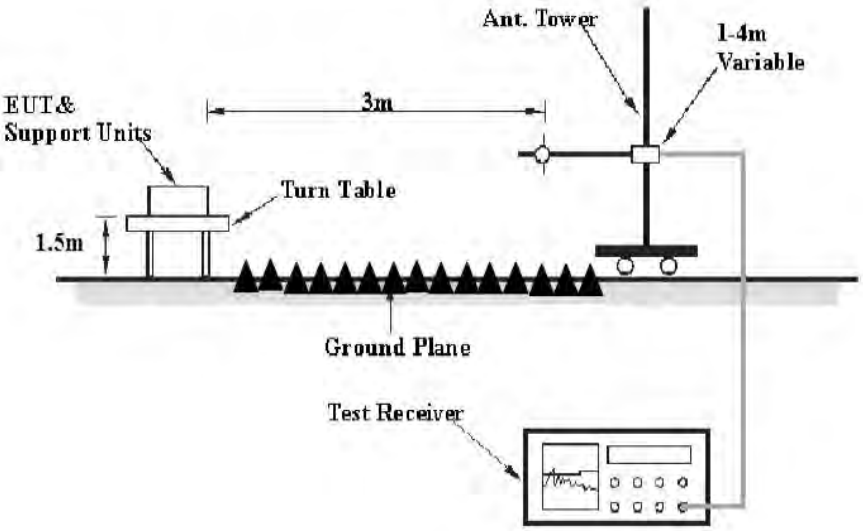
(A)Radiated Emission Test Set-Up, Frequency below 30MHz



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



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



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). (see § 15.205(c)).

11.3.The Requirement For RSS-247 Section 5.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the100 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 that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

11.4.Transmitter Emission Limit

Radiated emissions shall comply with the field strength limits shown in table 5 and table 6. Additionally, the level of any transmitter unwanted emission shall not exceed the level of the transmitter's fundamental emission.

Table 5 – General field strength limits at frequencies above 30 MHz

Frequency (MHz)	Field strength (µV/m at 3 m)
30 – 88	100
88 – 216	150
216 – 960	200
Above 960	500

Table 6 – General field strength limits at frequencies below 30 MHz

Frequency	Magnetic field strength (H-Field) (µA/m)	Measurement distance (m)
9 - 490 kHz [1]	6.37/F (F in kHz)	300
490 - 1705 kHz	63.7/F (F in kHz)	30
1.705 - 30 MHz	0.08	30

Note 1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

11.5.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.

11.6.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.

11.7.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.

11.8.Test Results

Pass.

Note: 1.We tested GFSK mode, π/4 DQPSK Mode and recorded the worse case data(π/4 DQPSK mode) for all test mode.

The spectrum analyzer plots are attached as below.

9kHz-30MHz test data

ACCURATE TECHNOLOGY CO., LTD.

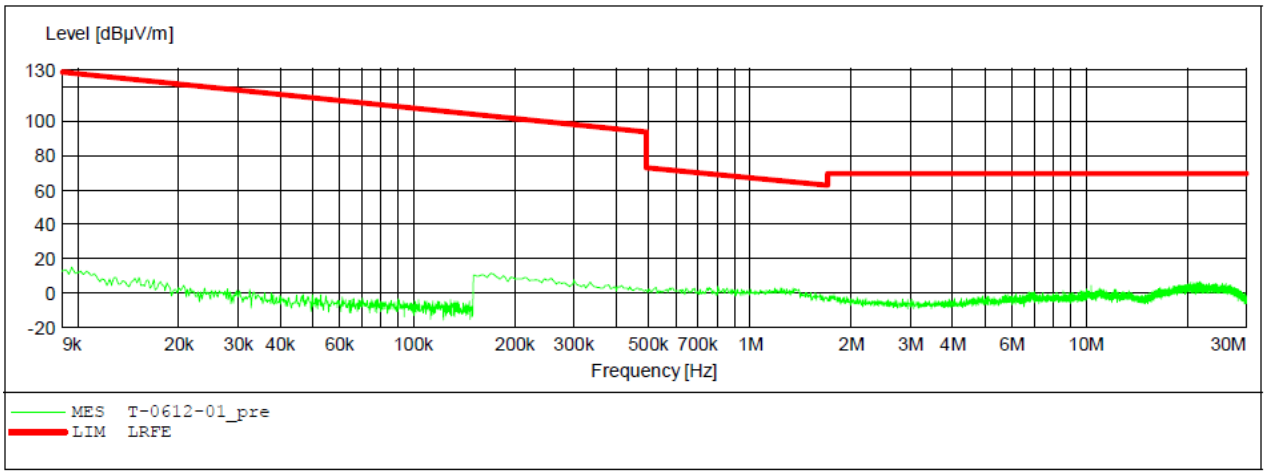
FCC Part 15C 3M Radiated

EUT:	Wireless Bluetooth Speaker M/N:BAN-LI-032
Manufacturer:	Premium Surge Promotions, LLC
Operating Condition:	TX 2402MHz
Test Site:	2# Chamber
Operator:	WADE
Test Specification:	DC 3.7V
Comment:	X
Start of Test:	2019-06-12 /

SCAN TABLE: "LFRE Fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



ACCURATE TECHNOLOGY CO., LTD.

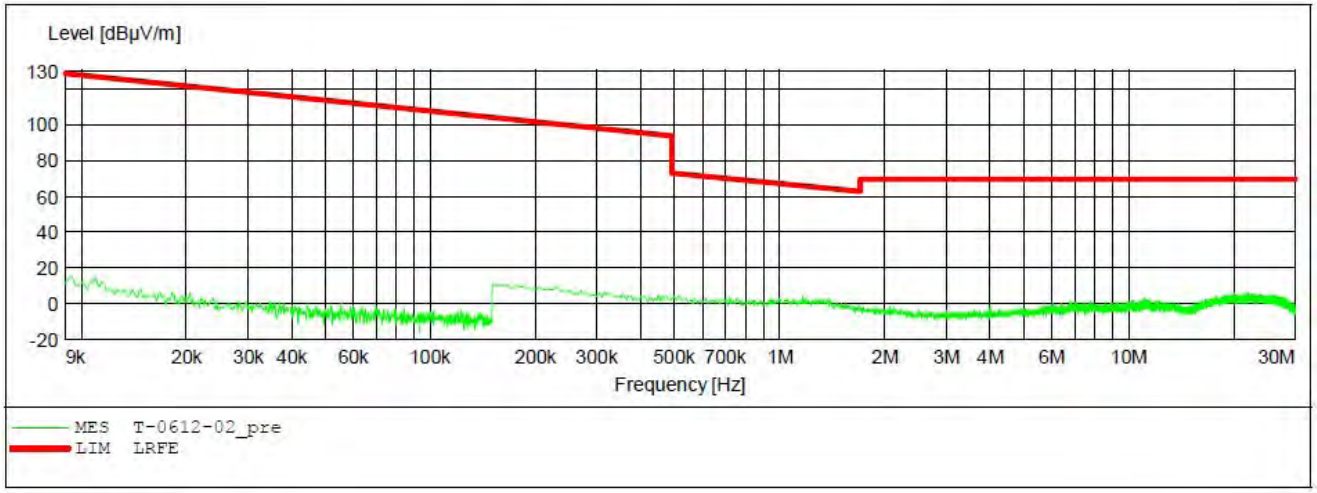
FCC Part 15C 3M Radiated

EUT:	Wireless Bluetooth Speaker M/N:BAN-LI-032
Manufacturer:	Premium Surge Promotions, LLC
Operating Condition:	TX 2402MHz
Test Site:	2# Chamber
Operator:	WADE
Test Specification:	DC 3.7V
Comment:	Y
Start of Test:	2019-06-12 /

SCAN TABLE: "LFRE Fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



ACCURATE TECHNOLOGY CO., LTD.

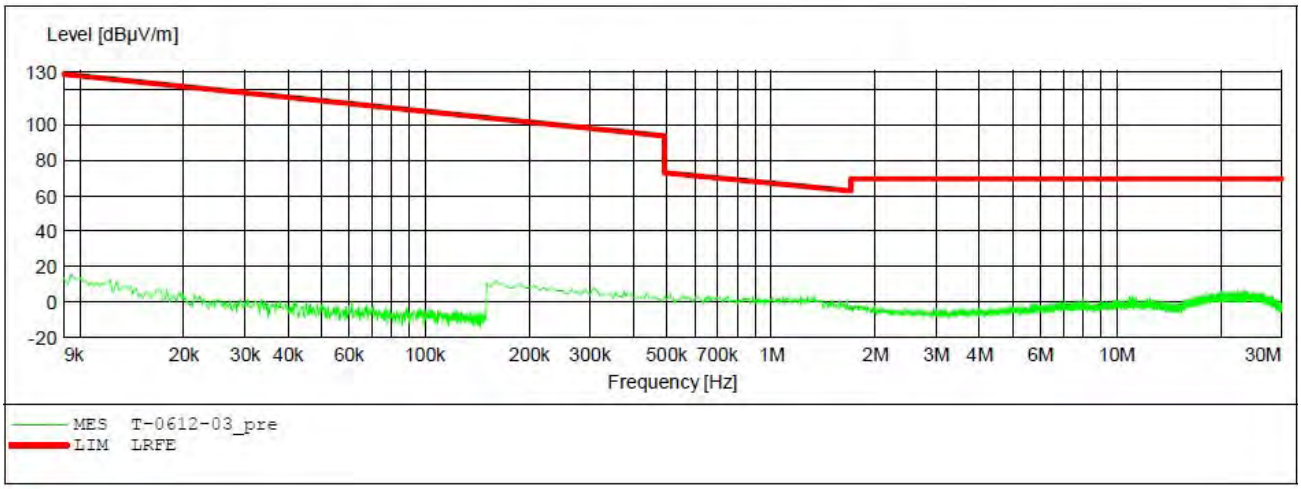
FCC Part 15C 3M Radiated

EUT:	Wireless Bluetooth Speaker M/N:BAN-LI-032
Manufacturer:	Premium Surge Promotions, LLC
Operating Condition:	TX 2402MHz
Test Site:	2# Chamber
Operator:	WADE
Test Specification:	DC 3.7V
Comment:	Z
Start of Test:	2019-06-12 /

SCAN TABLE: "LFRE Fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



ACCURATE TECHNOLOGY CO., LTD.

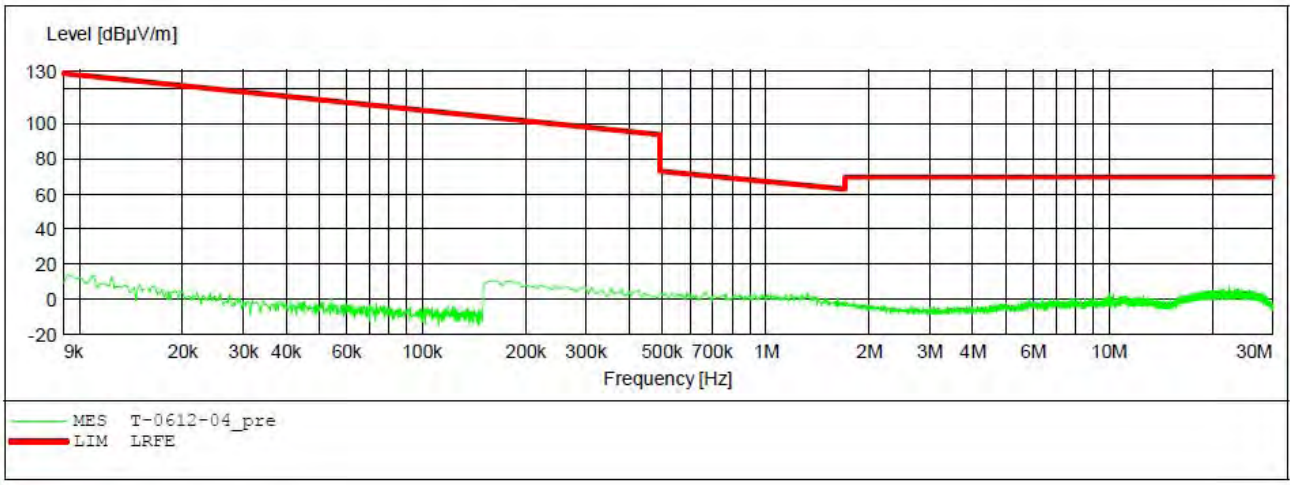
FCC Part 15C 3M Radiated

EUT: Wireless Bluetooth Speaker M/N:BAN-LI-032
Manufacturer: Premium Surge Promotions, LLC
Operating Condition: TX 2441MHz
Test Site: 2# Chamber
Operator: WADE
Test Specification: DC 3.7V
Comment: X
Start of Test: 2019-06-12 /

SCAN TABLE: "LFRE Fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



ACCURATE TECHNOLOGY CO., LTD.

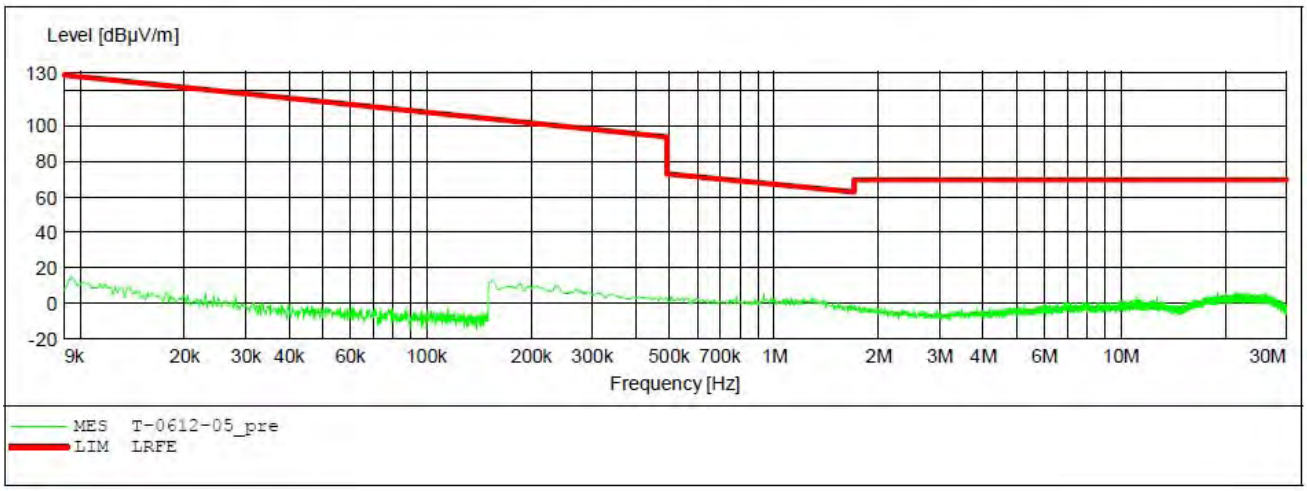
FCC Part 15C 3M Radiated

EUT: Wireless Bluetooth Speaker M/N:BAN-LI-032
Manufacturer: Premium Surge Promotions, LLC
Operating Condition: TX 2441MHz
Test Site: 2# Chamber
Operator: WADE
Test Specification: DC 3.7V
Comment: Y
Start of Test: 2019-06-12 /

SCAN TABLE: "LFRE Fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



ACCURATE TECHNOLOGY CO., LTD.

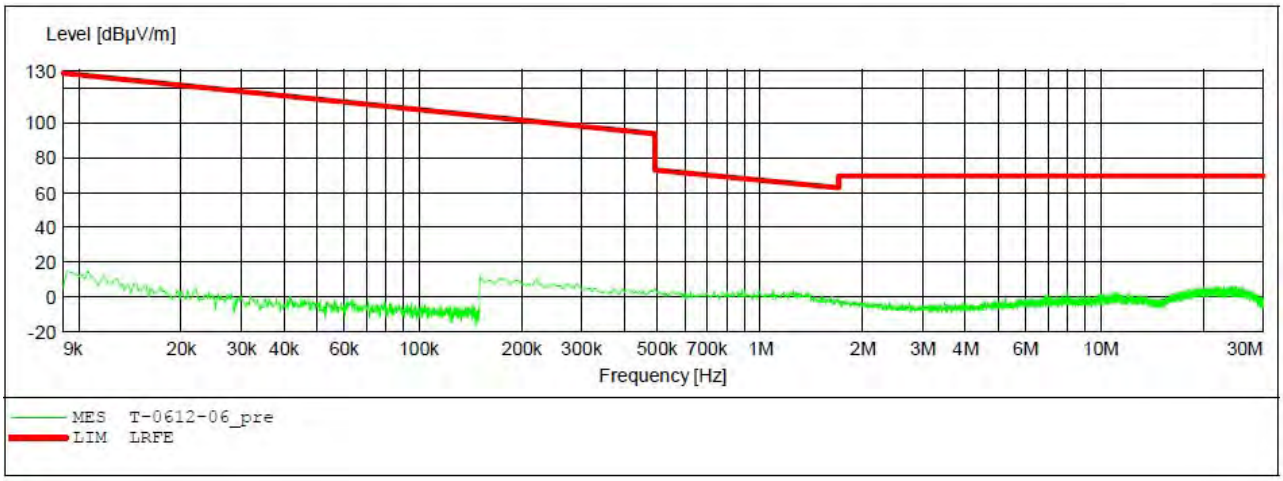
FCC Part 15C 3M Radiated

EUT:	Wireless Bluetooth Speaker M/N:BAN-LI-032
Manufacturer:	Premium Surge Promotions, LLC
Operating Condition:	TX 2441MHz
Test Site:	2# Chamber
Operator:	WADE
Test Specification:	DC 3.7V
Comment:	Z
Start of Test:	2019-06-12 /

SCAN TABLE: "LFRE Fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



ACCURATE TECHNOLOGY CO., LTD.

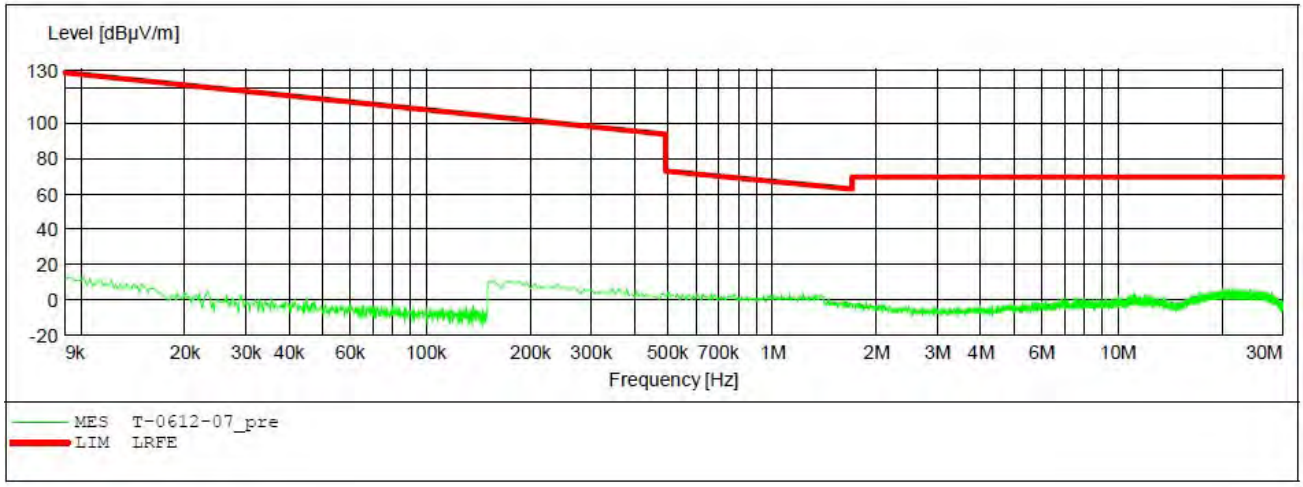
FCC Part 15C 3M Radiated

EUT:	Wireless Bluetooth Speaker M/N:BAN-LI-032
Manufacturer:	Premium Surge Promotions, LLC
Operating Condition:	TX 2480MHz
Test Site:	2# Chamber
Operator:	WADE
Test Specification:	DC 3.7V
Comment:	X
Start of Test:	2019-06-12 /

SCAN TABLE: "LFRE Fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



ACCURATE TECHNOLOGY CO., LTD.

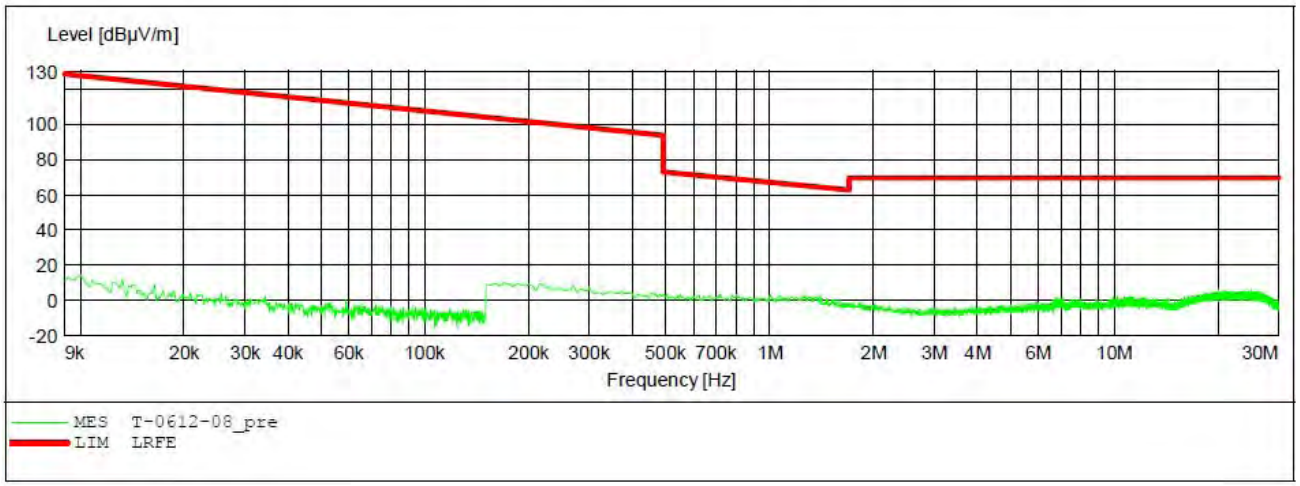
FCC Part 15C 3M Radiated

EUT:	Wireless Bluetooth Speaker M/N:BAN-LI-032
Manufacturer:	Premium Surge Promotions, LLC
Operating Condition:	TX 2480MHz
Test Site:	2# Chamber
Operator:	WADE
Test Specification:	DC 3.7V
Comment:	Y
Start of Test:	2019-06-12 /

SCAN TABLE: "LFRE Fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



ACCURATE TECHNOLOGY CO., LTD.

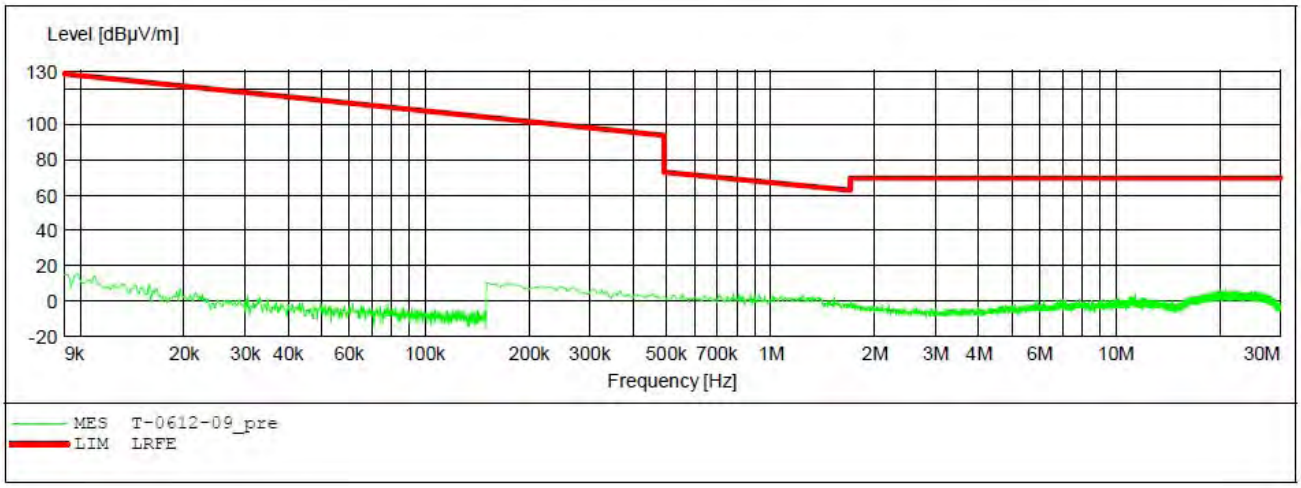
FCC Part 15C 3M Radiated

EUT:	Wireless Bluetooth Speaker M/N:BAN-LI-032
Manufacturer:	Premium Surge Promotions, LLC
Operating Condition:	TX 2480MHz
Test Site:	2# Chamber
Operator:	WADE
Test Specification:	DC 3.7V
Comment:	Z
Start of Test:	2019-06-12 /

SCAN TABLE: "LFRE Fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M

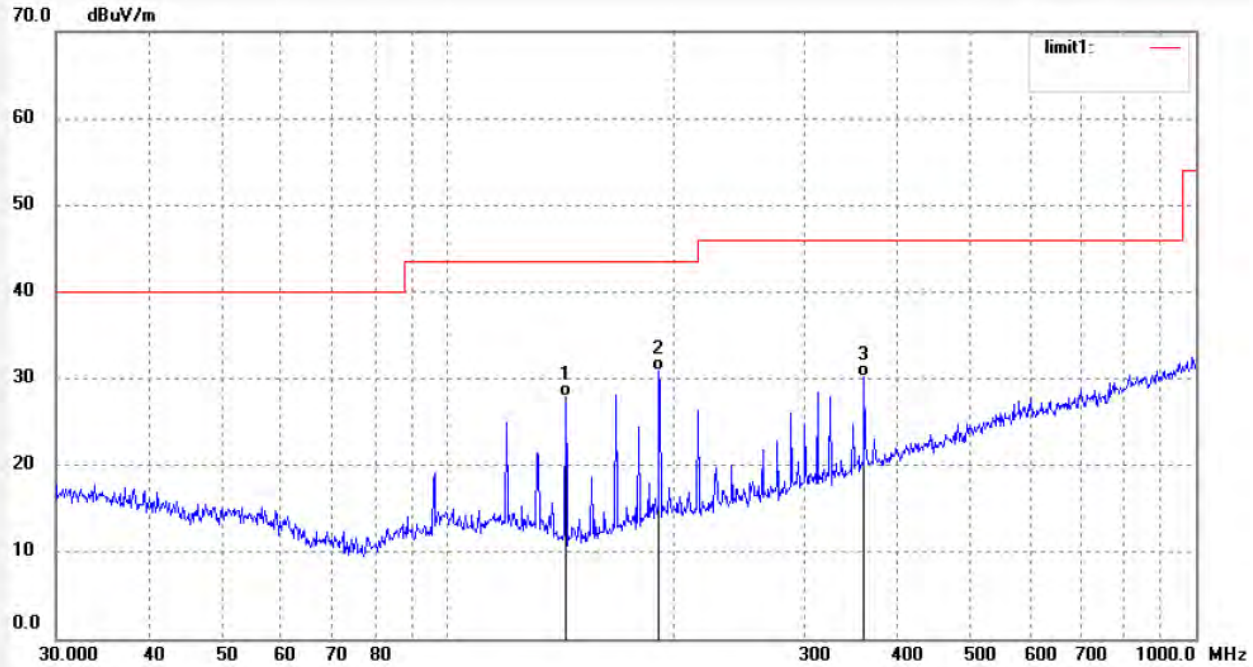


30MHz-1000MHz test data

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2019 #2170	Polarization: Horizontal
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/06/05/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Wireless Bluetooth Speaker	Engineer Signature: WADE
Mode: TX 2402MHz	Distance: 3m
Model: BAN-LI-032	
Manufacturer: Premium Surge Promotions, LLC	

Note:

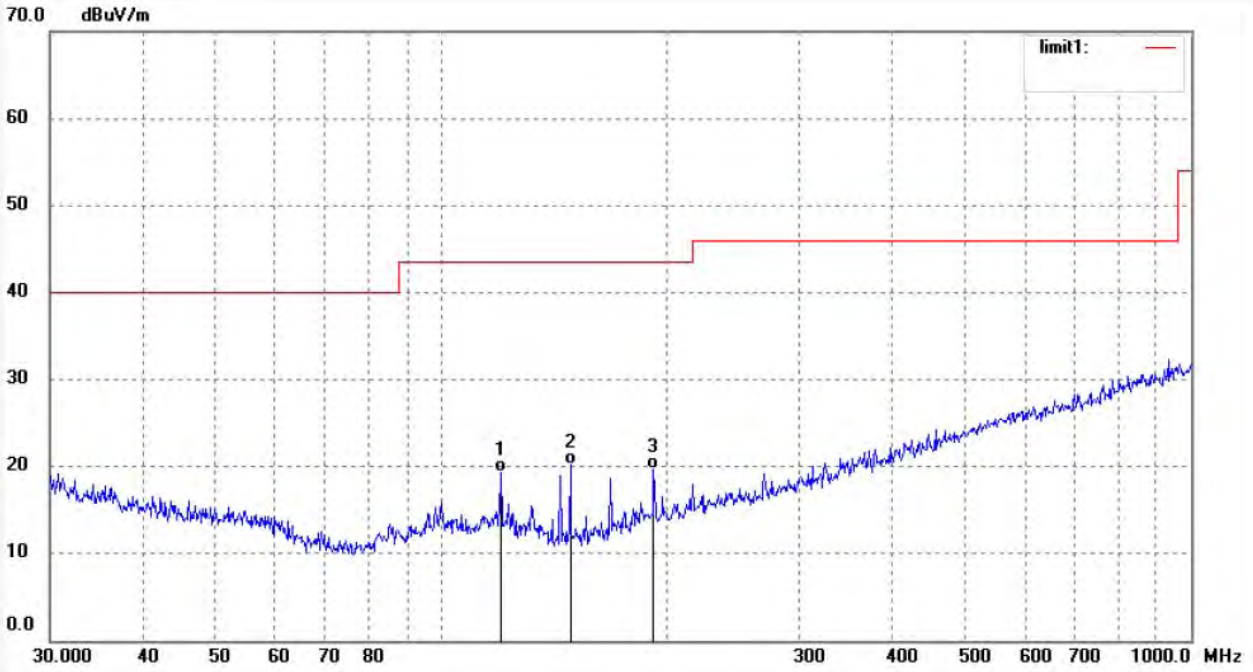


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	143.8294	42.97	-15.11	27.86	43.50	-15.64	QP			
2	191.7450	43.27	-12.42	30.85	43.50	-12.65	QP			
3	360.4476	37.46	-7.26	30.20	46.00	-15.80	QP			

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2019 #2171	Polarization: Vertical
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/06/05/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Wireless Bluetooth Speaker	Engineer Signature: WADE
Mode: TX 2402MHz	Distance: 3m
Model: BAN-LI-032	
Manufacturer: Premium Surge Promotions, LLC	

Note:

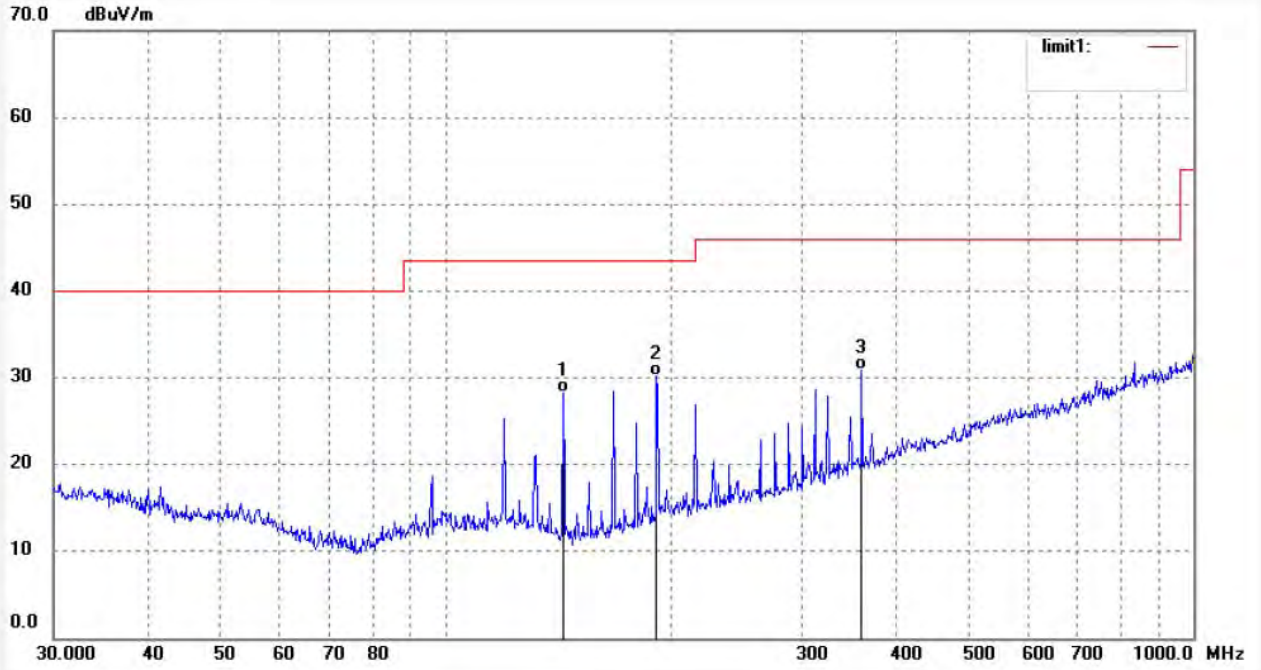


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	119.8555	32.39	-13.06	19.33	43.50	-24.17	QP			
2	148.4410	35.27	-15.06	20.21	43.50	-23.29	QP			
3	191.7450	32.14	-12.42	19.72	43.50	-23.78	QP			

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2019 #2173	Polarization: Horizontal
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/06/05/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Wireless Bluetooth Speaker	Engineer Signature: WADE
Mode: TX 2441MHz	Distance: 3m
Model: BAN-LI-032	
Manufacturer: Premium Surge Promotions, LLC	

Note:

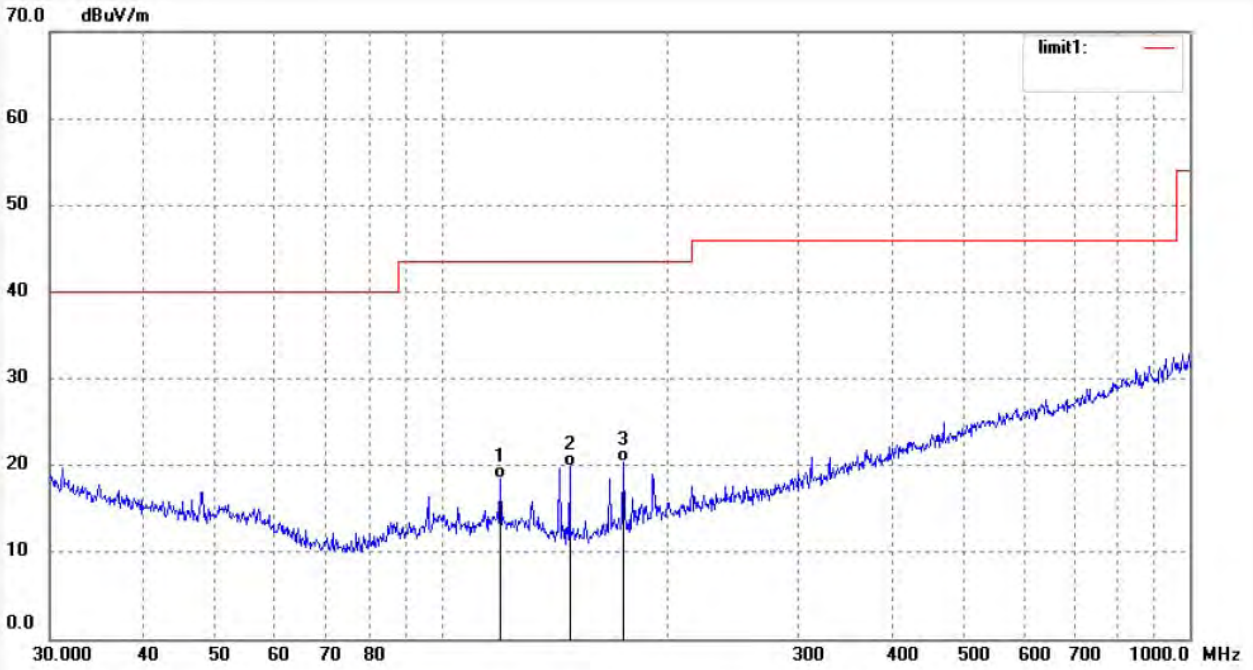


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	143.8294	43.34	-15.11	28.23	43.50	-15.27	QP			
2	191.7450	42.66	-12.42	30.24	43.50	-13.26	QP			
3	360.4476	38.14	-7.26	30.88	46.00	-15.12	QP			

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2019 #2172	Polarization: Vertical
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/06/05/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Wireless Bluetooth Speaker	Engineer Signature: WADE
Mode: TX 2441MHz	Distance: 3m
Model: BAN-LI-032	
Manufacturer: Premium Surge Promotions, LLC	

Note:

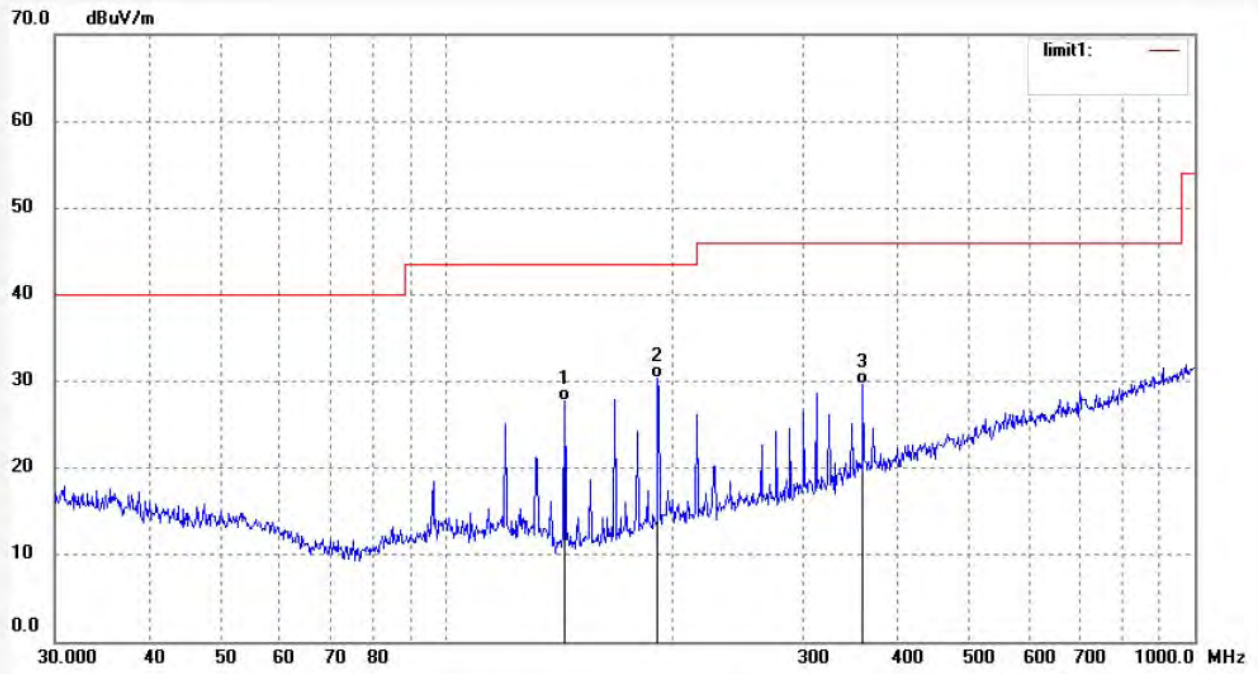


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	119.8555	31.52	-13.06	18.46	43.50	-25.04	QP			
2	148.4410	34.96	-15.06	19.90	43.50	-23.60	QP			
3	175.0367	33.92	-13.48	20.44	43.50	-23.06	QP			

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2019 #2174	Polarization: Horizontal
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/06/05/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Wireless Bluetooth Speaker	Engineer Signature: WADE
Mode: TX 2480MHz	Distance: 3m
Model: BAN-LI-032	
Manufacturer: Premium Surge Promotions, LLC	

Note:

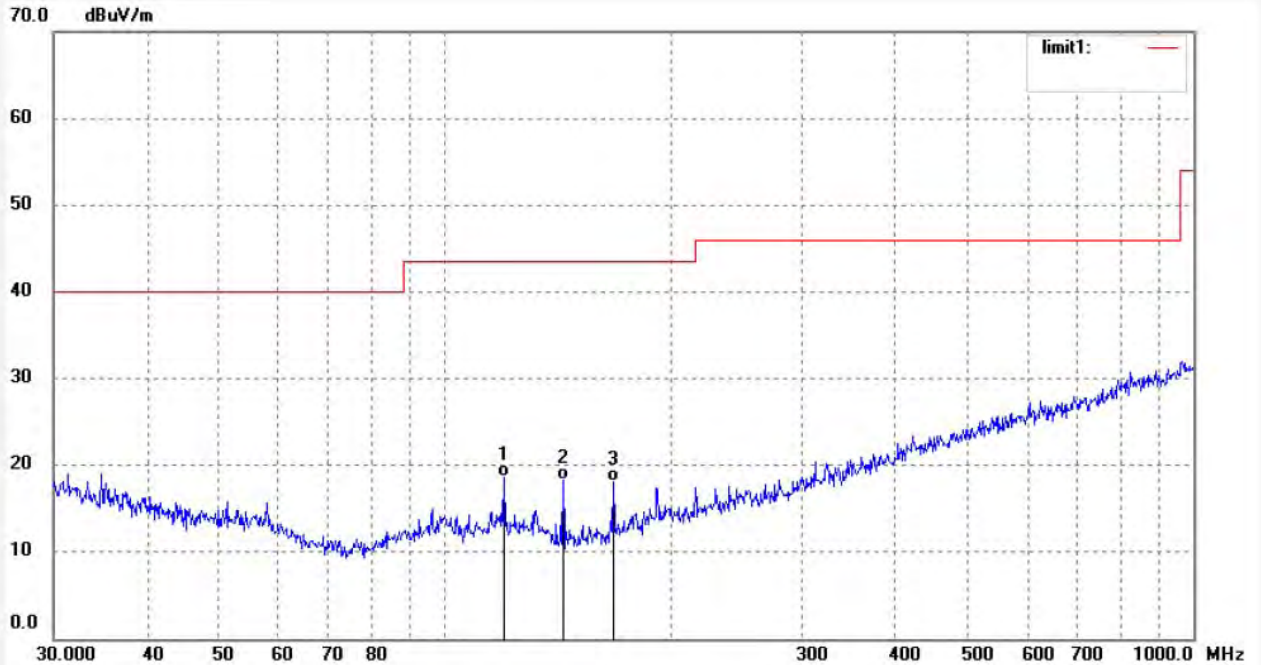


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	143.8294	42.82	-15.11	27.71	43.50	-15.79	QP			
2	191.7450	42.78	-12.42	30.36	43.50	-13.14	QP			
3	360.4476	36.96	-7.26	29.70	46.00	-16.30	QP			

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2019 #2175	Polarization: Vertical
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/06/05/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Wireless Bluetooth Speaker	Engineer Signature: WADE
Mode: TX 2480MHz	Distance: 3m
Model: BAN-LI-032	
Manufacturer: Premium Surge Promotions, LLC	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	119.8555	31.71	-13.06	18.65	43.50	-24.85	QP			
2	143.8294	33.33	-15.11	18.22	43.50	-25.28	QP			
3	167.8242	31.99	-13.88	18.11	43.50	-25.39	QP			

1GHz-18GHz test data

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
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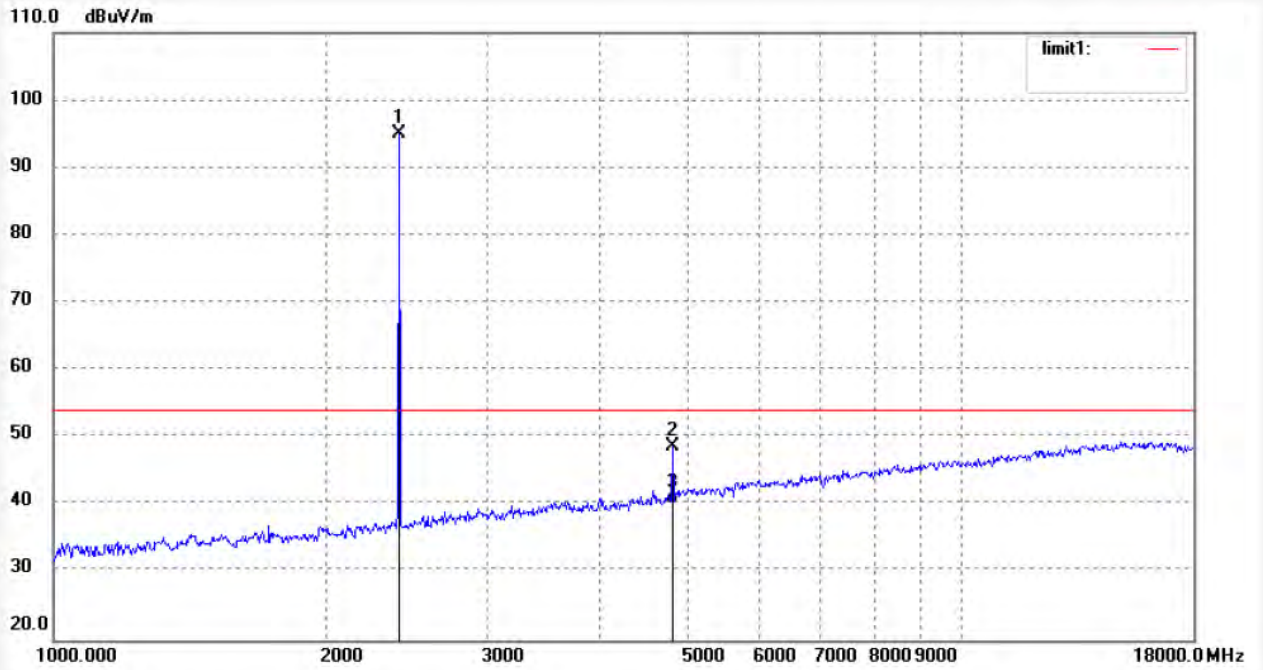
Job No.: LGW2019 #2154	Polarization: Horizontal
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/06/05/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Wireless Bluetooth Speaker	Engineer Signature: WADE
Mode: TX 2402MHz	Distance: 3m
Model: BAN-LI-032	
Manufacturer: Premium Surge Promotions, LLC	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.000	94.20	0.89	95.09	/	/	peak			
2	4804.027	41.23	7.40	48.63	74.00	-25.37	peak			
3	4804.027	32.84	7.40	40.24	54.00	-13.76	AVG			

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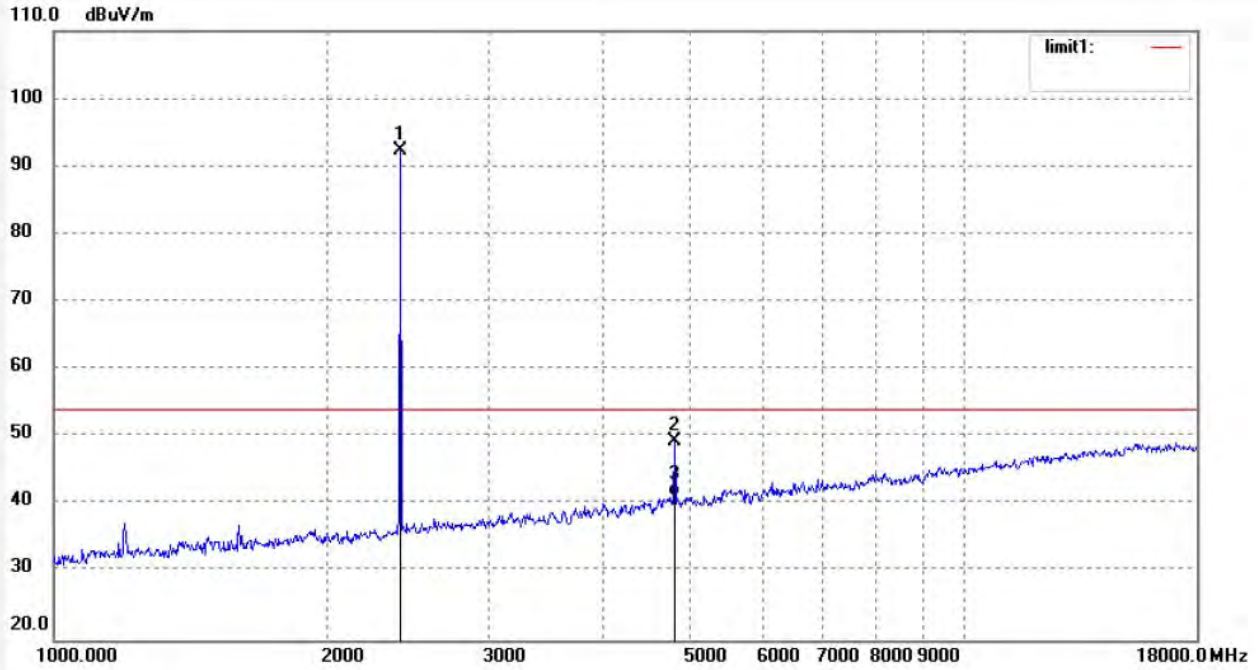
Job No.: LGW2019 #2155	Polarization: Vertical
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/06/05/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Wireless Bluetooth Speaker	Engineer Signature: WADE
Mode: TX 2402MHz	Distance: 3m
Model: BAN-LI-032	
Manufacturer: Premium Surge Promotions, LLC	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.000	91.34	0.89	92.23	/	/	peak			
2	4804.026	41.98	7.40	49.38	74.00	-24.62	peak			
3	4804.026	33.94	7.40	41.34	54.00	-12.66	AVG			

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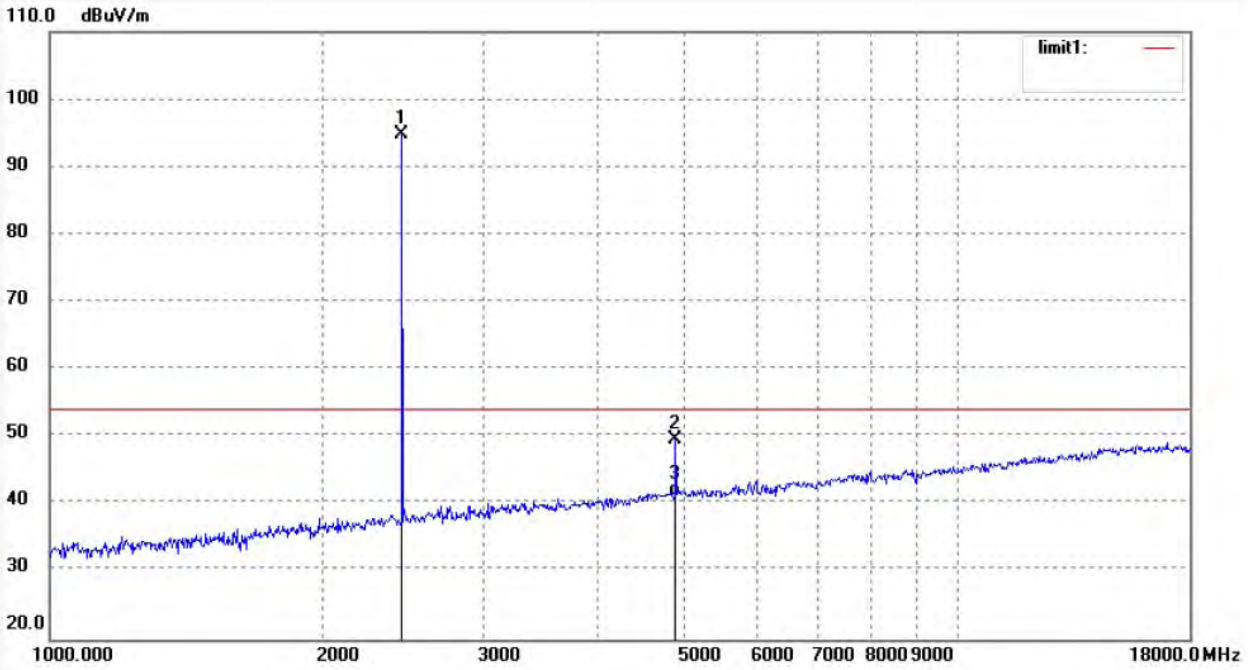
Job No.: LGW2019 #2158	Polarization: Horizontal
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/06/05/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Wireless Bluetooth Speaker	Engineer Signature: WADE
Mode: TX 2441MHz	Distance: 3m
Model: BAN-LI-032	
Manufacturer: Premium Surge Promotions, LLC	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2441.000	93.69	1.06	94.75	/	/	peak			
2	4882.028	41.41	8.11	49.52	74.00	-24.48	peak			
3	4882.028	33.13	8.11	41.24	54.00	-12.76	AVG			

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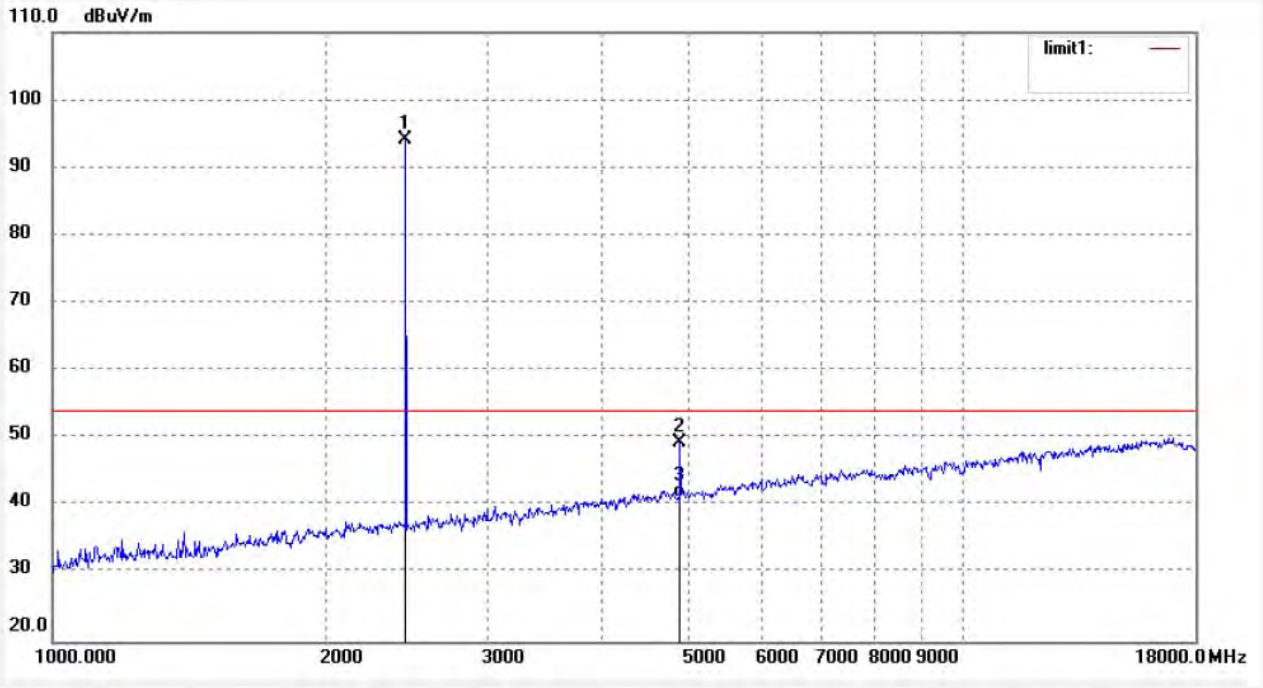
Job No.: LGW2019 #2159	Polarization: Vertical
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/06/05/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Wireless Bluetooth Speaker	Engineer Signature: WADE
Mode: TX 2441MHz	Distance: 3m
Model: BAN-LI-032	
Manufacturer: Premium Surge Promotions, LLC	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2441.000	93.07	1.06	94.13	/	/	peak			
2	4882.026	41.34	8.11	49.45	74.00	-24.55	peak			
3	4882.026	33.16	8.11	41.27	54.00	-12.73	AVG			

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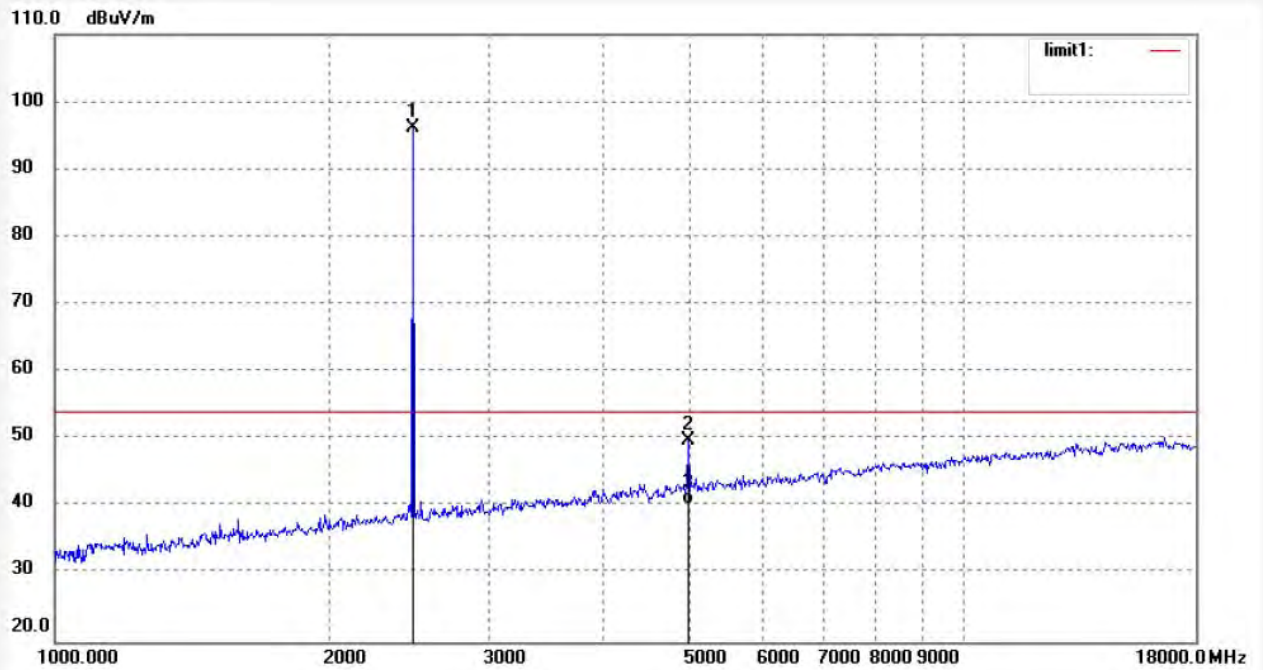
Job No.: LGW2019 #2161	Polarization: Horizontal
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/06/05/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Wireless Bluetooth Speaker	Engineer Signature: WADE
Mode: TX 2480MHz	Distance: 3m
Model: BAN-LI-032	
Manufacturer: Premium Surge Promotions, LLC	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.000	95.10	1.10	96.20	/	/	peak			
2	4960.029	41.20	8.60	49.80	74.00	-24.20	peak			
3	4960.029	31.67	8.60	40.27	54.00	-13.73	AVG			

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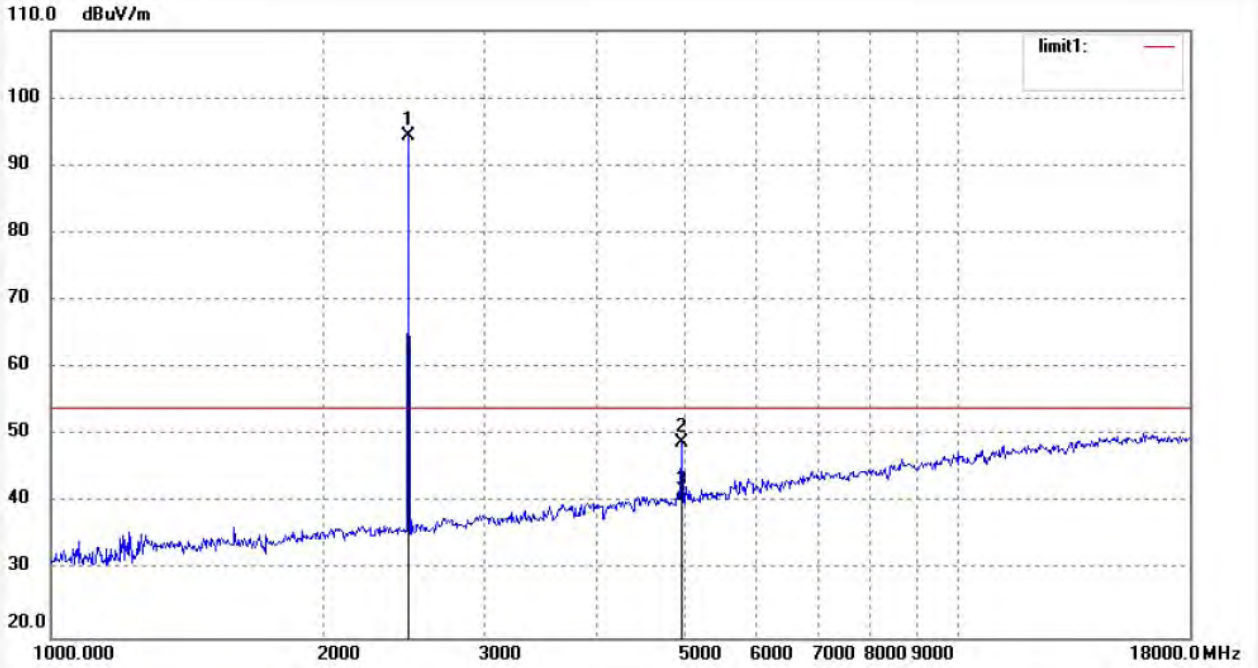
Job No.: LGW2019 #2160	Polarization: Vertical
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/06/05/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Wireless Bluetooth Speaker	Engineer Signature: WADE
Mode: TX 2480MHz	Distance: 3m
Model: BAN-LI-032	
Manufacturer: Premium Surge Promotions, LLC	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.000	93.26	1.10	94.36	/	/	peak			
2	4960.030	40.38	8.60	48.98	74.00	-25.02	peak			
3	4960.030	31.64	8.60	40.24	54.00	-13.76	AVG			

18GHz-26.5GHz test data

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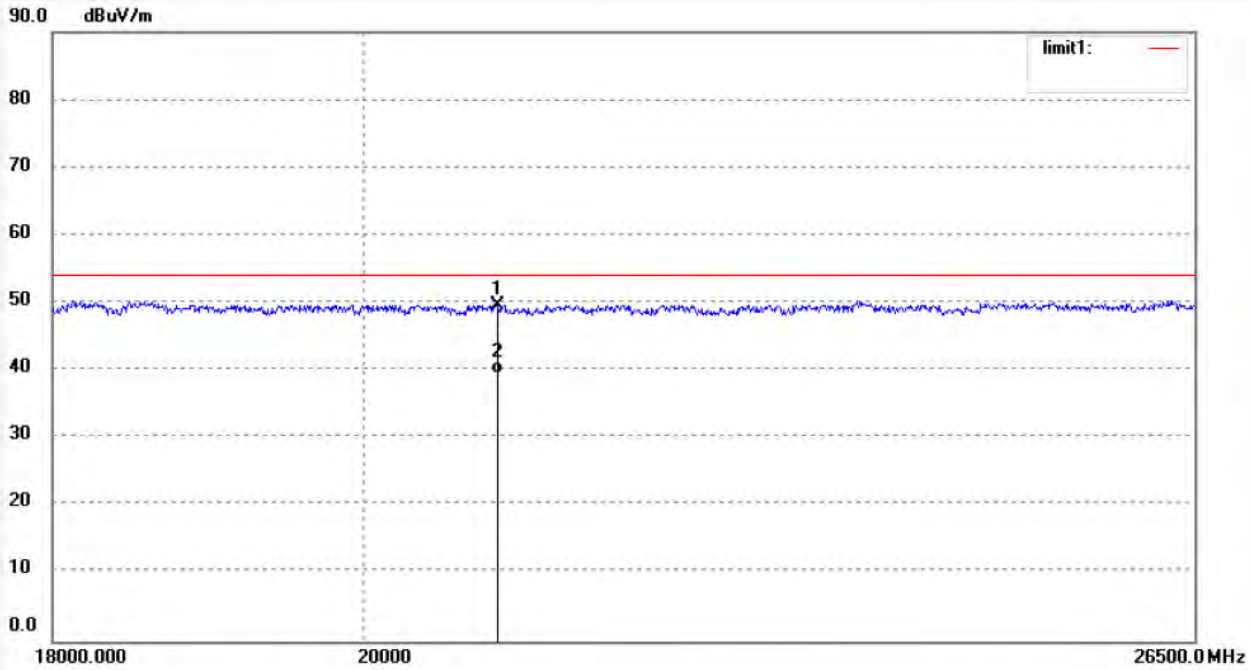
Job No.: LGW2019 #2165	Polarization: Horizontal
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/06/05/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Wireless Bluetooth Speaker	Engineer Signature: WADE
Mode: TX 2402MHz	Distance: 3m
Model: BAN-LI-032	
Manufacturer: Premium Surge Promotions, LLC	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	20930.621	18.34	31.35	49.69	74.00	-24.31	peak			
2	20930.621	8.20	31.35	39.55	54.00	-14.45	AVG			

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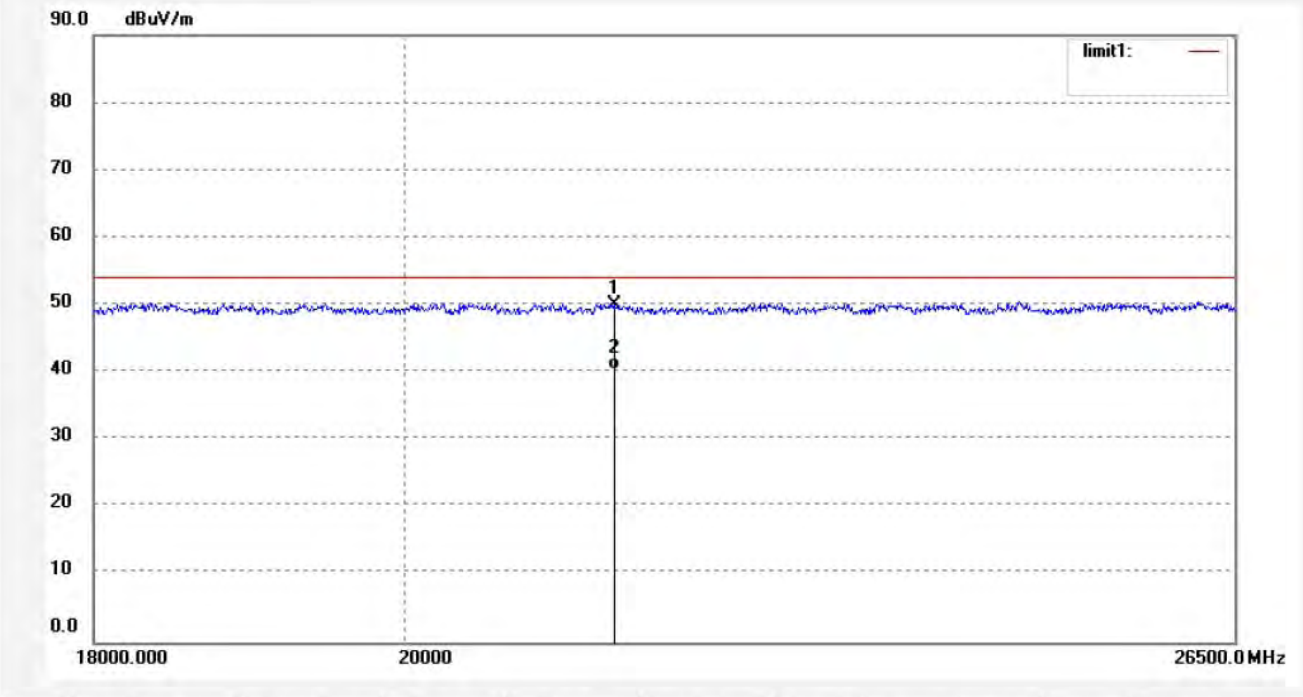
Job No.: LGW2019 #2164	Polarization: Vertical
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/06/05/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Wireless Bluetooth Speaker	Engineer Signature: WADE
Mode: TX 2402MHz	Distance: 3m
Model: BAN-LI-032	
Manufacturer: Premium Surge Promotions, LLC	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	21471.796	17.92	32.14	50.06	74.00	-23.94	peak			
2	21471.796	8.21	32.14	40.35	54.00	-13.65	AVG			

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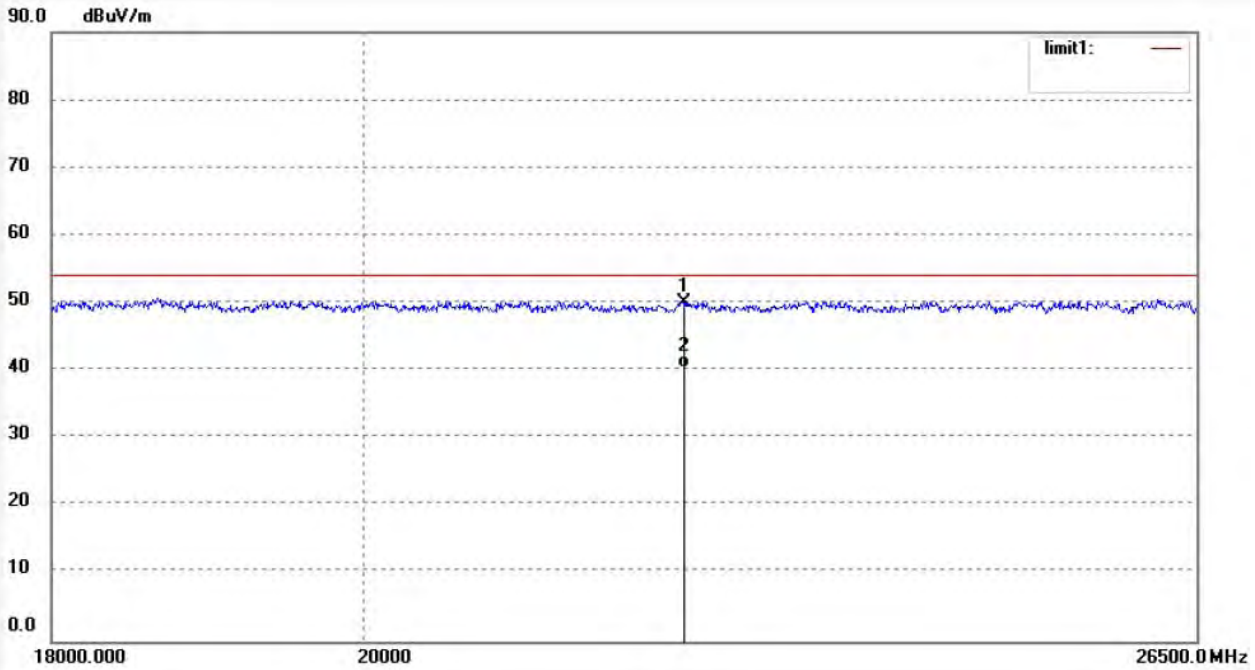
Job No.: LGW2019 #2166	Polarization: Horizontal
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/06/05/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Wireless Bluetooth Speaker	Engineer Signature: WADE
Mode: TX 2441MHz	Distance: 3m
Model: BAN-LI-032	
Manufacturer: Premium Surge Promotions, LLC	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	22284.034	17.75	32.37	50.12	74.00	-23.88	peak			
2	22284.034	7.98	32.37	40.35	54.00	-13.65	AVG			

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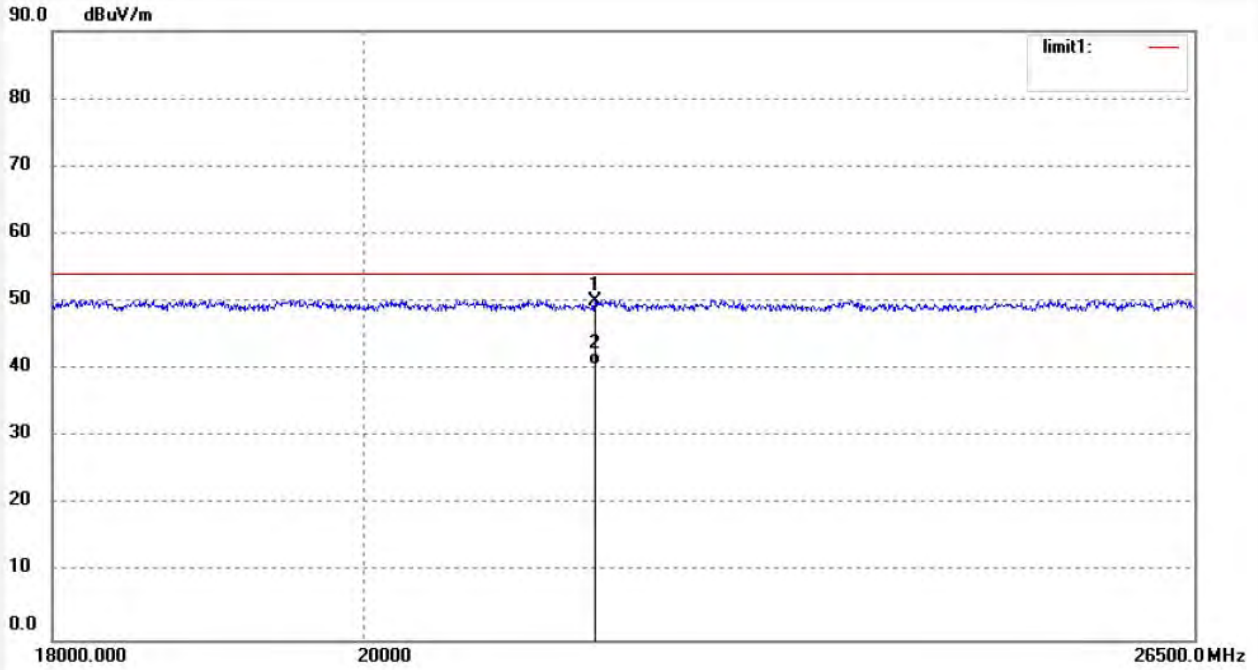
Job No.: LGW2019 #2167	Polarization: Vertical
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/06/05/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Wireless Bluetooth Speaker	Engineer Signature: WADE
Mode: TX 2441MHz	Distance: 3m
Model: BAN-LI-032	
Manufacturer: Premium Surge Promotions, LLC	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	21630.166	18.03	32.10	50.13	74.00	-23.87	peak			
2	21630.166	8.42	32.10	40.52	54.00	-13.48	AVG			

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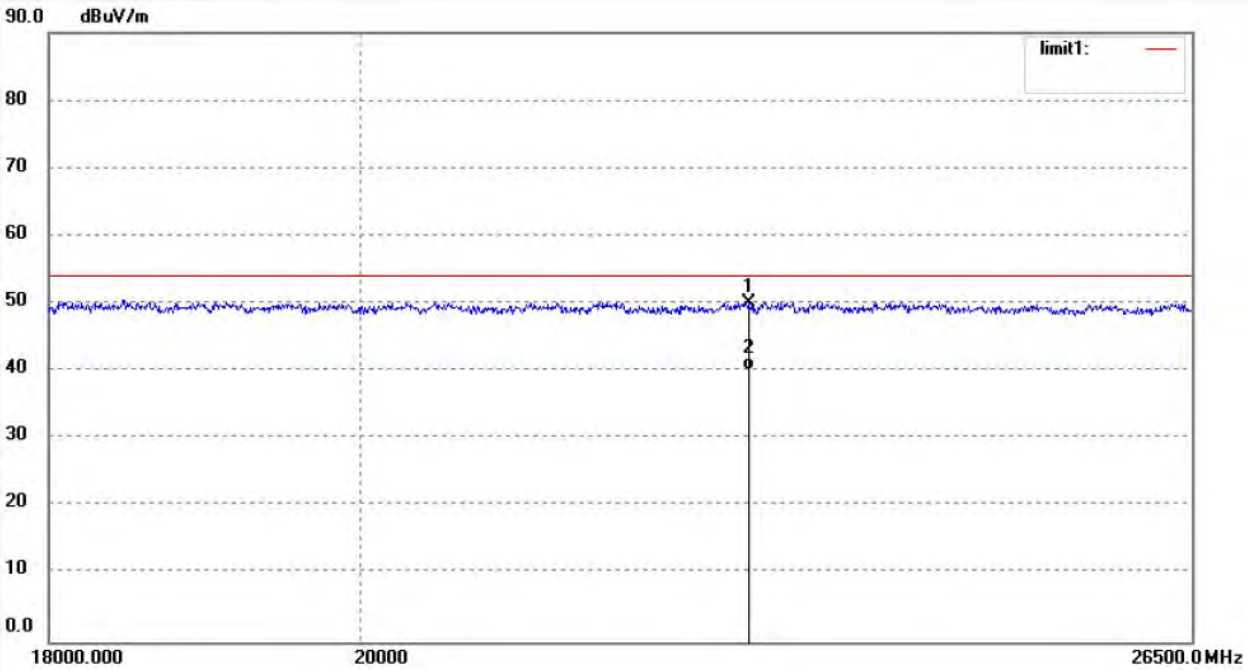
Job No.: LGW2019 #2169	Polarization: Horizontal
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/06/05/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Wireless Bluetooth Speaker	Engineer Signature: WADE
Mode: TX 2480MHz	Distance: 3m
Model: BAN-LI-032	
Manufacturer: Premium Surge Promotions, LLC	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	22816.035	17.74	32.31	50.05	74.00	-23.95	peak			
2	22816.035	7.94	32.31	40.25	54.00	-13.75	AVG			

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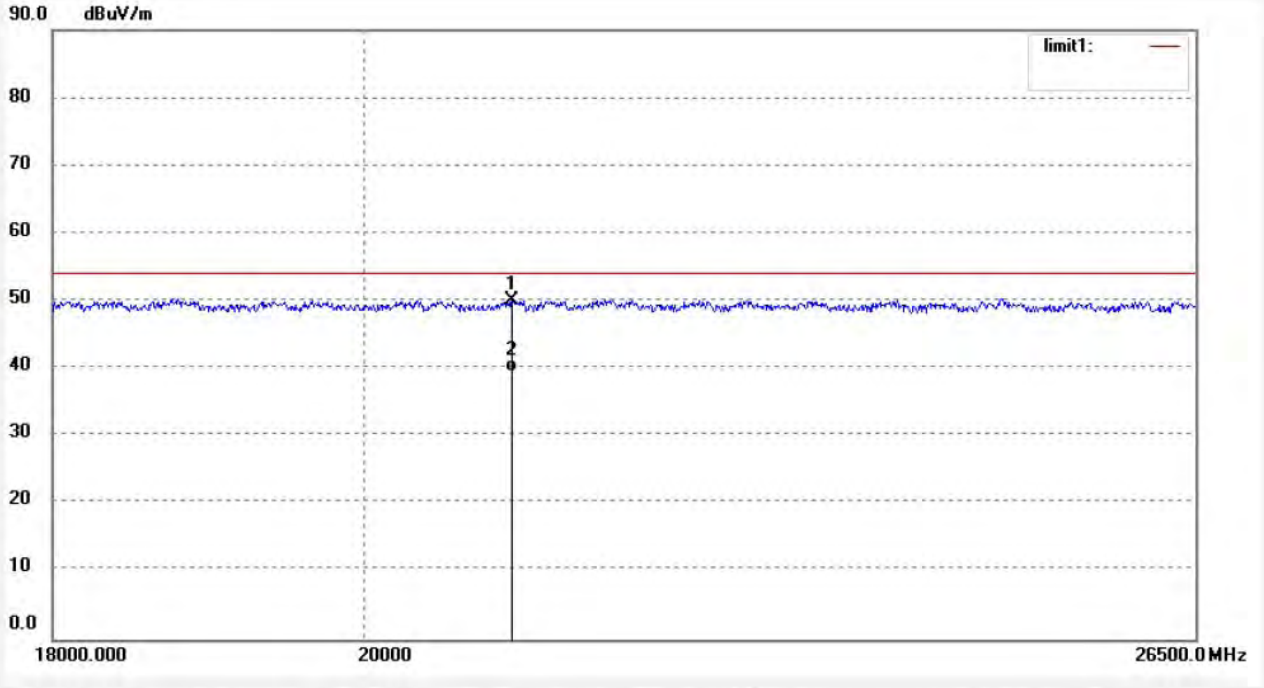
Job No.: LGW2019 #2168	Polarization: Vertical
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/06/05/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Wireless Bluetooth Speaker	Engineer Signature: WADE
Mode: TX 2480MHz	Distance: 3m
Model: BAN-LI-032	
Manufacturer: Premium Surge Promotions, LLC	

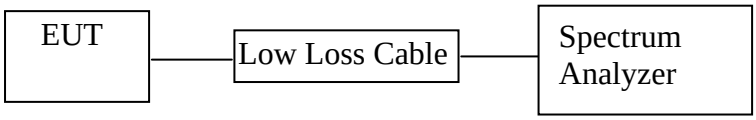
Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	21027.992	17.60	32.36	49.96	74.00	-24.04	peak			
2	21027.992	7.09	32.36	39.45	54.00	-14.55	AVG			

12.BAND EDGE COMPLIANCE TEST

12.1.Block Diagram of Test Setup



12.2.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). (see § 15.205(c)).

12.3.The Requirement For RSS-247 Section 5.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the100 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 that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

12.4.Restricted bands of operation

12.4.1.FCC Part 15.205 Restricted bands of operation

(b) 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

(c) 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.

12.4.2.RSS-Gen 8.10 Restricted bands of operation

Restricted frequency bands, identified in table 7, are designated primarily for safety-of-life services (distress calling and certain aeronautical activities), certain satellite downlinks, radio astronomy and some government uses. Except where otherwise indicated, the following conditions related to the restricted frequency bands apply:

(a)The transmit frequency, including fundamental components of modulation, of licence-exempt radio apparatus shall not fall within the restricted frequency bands listed in table 7 except for apparatus compliant with RSS-287, *Emergency Position Indicating Radio Beacons (EPIRB), Emergency Locator Transmitters (ELT), Personal Locator Beacons (PLB), and Maritime Survivor Locator Devices (MSLD).*

(b) Unwanted emissions that fall into restricted frequency bands listed in table 7 shall comply with the limits specified in table 5 and table 6.

(c) Unwanted emissions that fall into restricted frequency bands listed in table 7 shall comply with the limits specified in table 5 and table 6.

Table 7 – Restricted frequency bands*

MHz	MHz	GHz
0.090 - 0.110	149.9 - 150.05	9.0 - 9.2
0.495 - 0.505	156.52475 - 156.52525	9.3 - 9.5
2.1735 - 2.1905	156.7 - 156.9	10.6 - 12.7
3.020 - 3.026	162.0125 - 167.17	13.25 - 13.4
4.125 - 4.128	167.72 - 173.2	14.47 - 14.5
4.17725 - 4.17775	240 - 285	15.35 - 16.2
4.20725 - 4.20775	322 - 335.4	17.7 - 21.4
5.677 - 5.683	399.9 - 410	22.01 - 23.12
6.215 - 6.218	608 - 614	23.6 - 24.0
6.26775 - 6.26825	960 - 1427	31.2 - 31.8
6.31175 - 6.31225	1435 - 1626.5	36.43 - 36.5
8.291 - 8.294	1645.5 - 1646.5	Above 38.6
8.362 - 8.366	1660 - 1710	
8.37625 - 8.38675	1718.8 - 1722.2	
8.41425 - 8.41475	2200 - 2300	
12.29 - 12.293	2310 - 2390	
12.51975 - 12.52025	2483.5 - 2500	
12.57675 - 12.57725	2655 - 2900	
13.36 - 13.41	3260 - 3267	
16.42 - 16.423	3332 - 3339	
16.69475 - 16.69525	3345.8 - 3358	
16.80425 - 16.80475	3500 - 4400	
25.5 - 25.67	4500 - 5150	
37.5 - 38.25	5350 - 5460	
73 - 74.6	7250 - 7750	
74.8 - 75.2	8025 - 8500	
108 - 138	--	

* Certain frequency bands listed in table 7 and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.

12.5.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.

12.6.Operating Condition of EUT

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

12.6.2.Turn on the power of all equipment.

12.6.3.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.

12.7.Test Procedure

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

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

12.7.3.The band edges was measured and recorded.

12.8.Test Result

Non-hopping mode

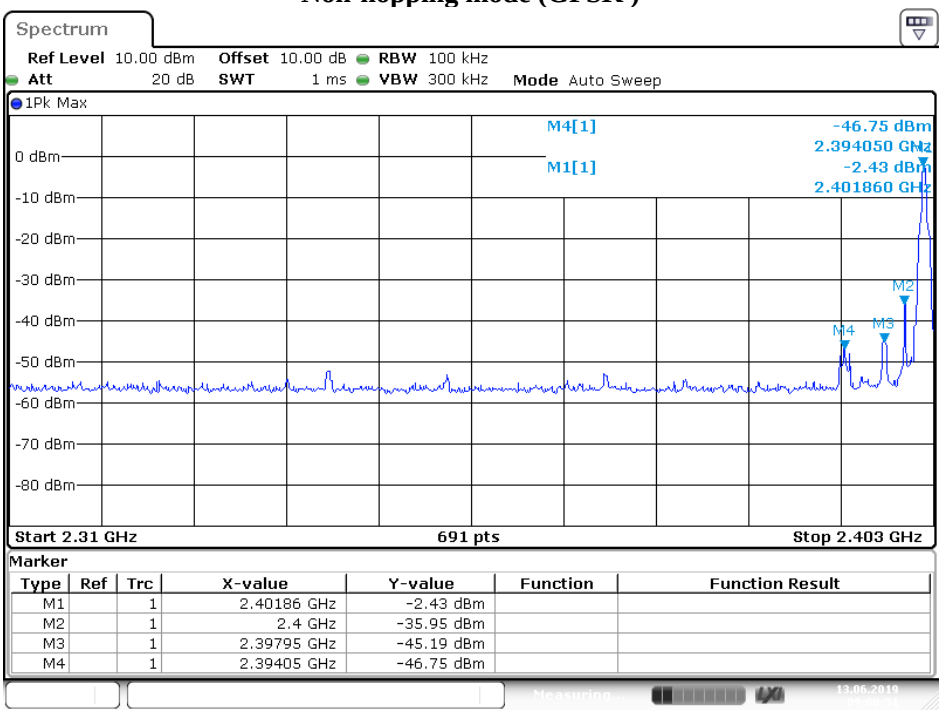
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)	Result
GFSK mode			
2400.00	33.52	> 20dBc	Pass
2483.50	53.55	> 20dBc	Pass
π /4 DQPSK mode			
2400.00	33.41	> 20dBc	Pass
2483.50	55.41	> 20dBc	Pass

Hopping mode

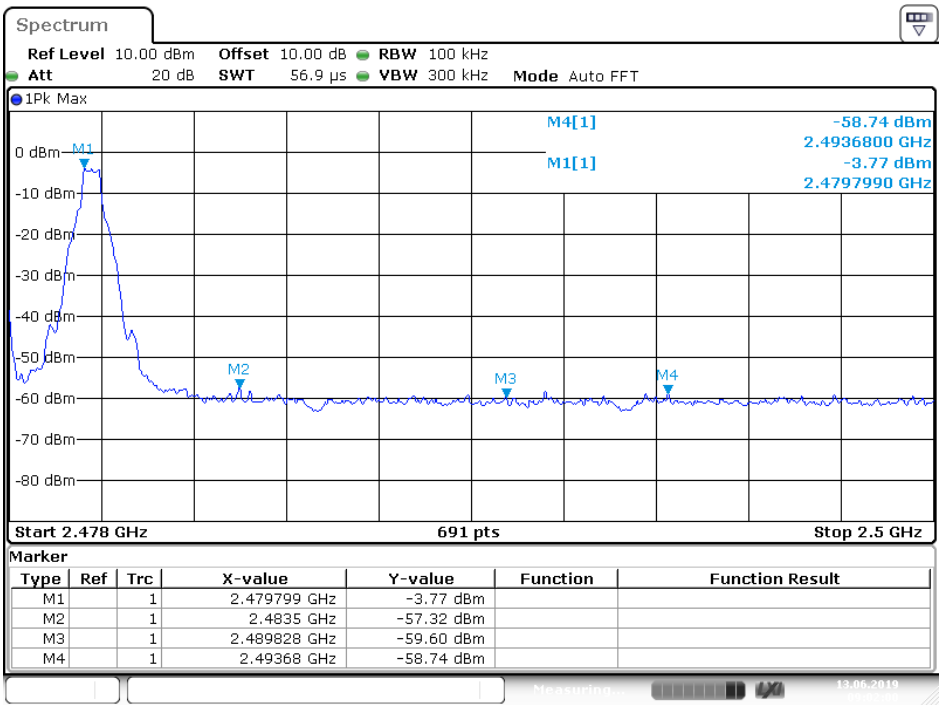
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)	Result
GFSK mode			
2332.89	33.18	> 20dBc	Pass
2488.63	48.92	> 20dBc	Pass
π /4 DQPSK mode			
2358.74	32.40	> 20dBc	Pass
2485.07	53.39	> 20dBc	Pass

The spectrum analyzer plots are attached as below.

Non-hopping mode (GFSK)

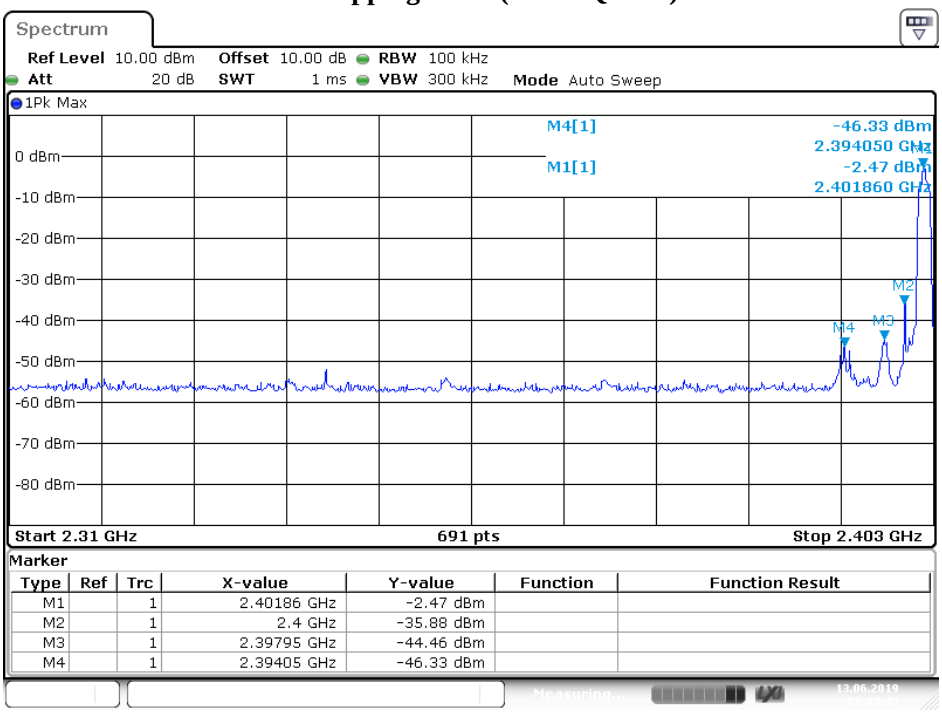


Date: 13.JUN.2019 09:00:51



Date: 13.JUN.2019 09:02:00

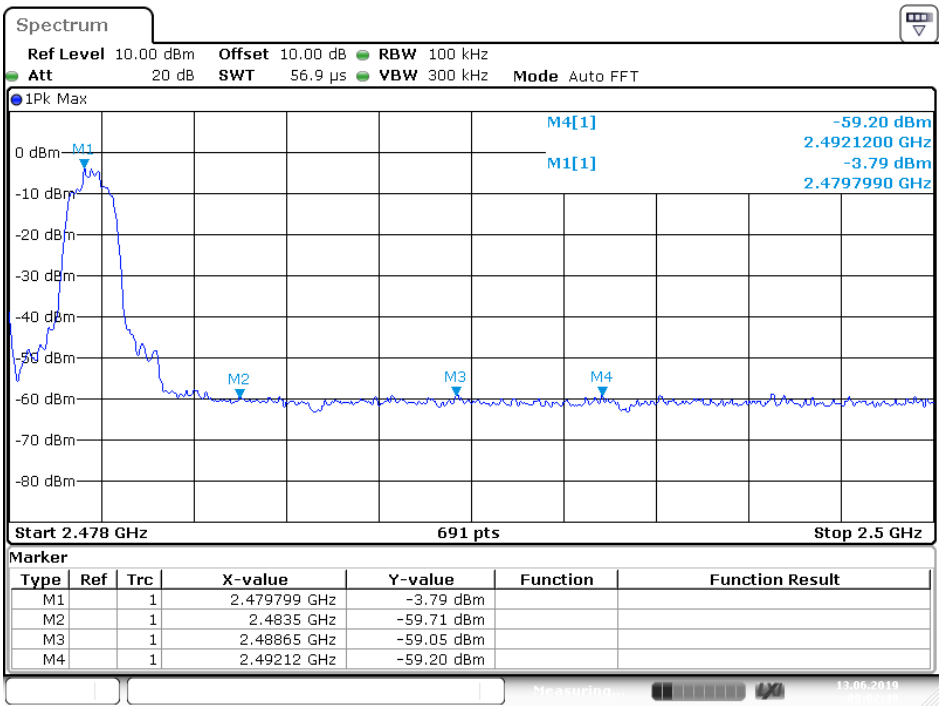
Non-hopping mode (π /4 DQPSK)



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.40186 GHz	-2.47 dBm		
M2		1	2.4 GHz	-35.88 dBm		
M3		1	2.39795 GHz	-44.46 dBm		
M4		1	2.39405 GHz	-46.33 dBm		

Date: 13.JUN.2019 09:03:43

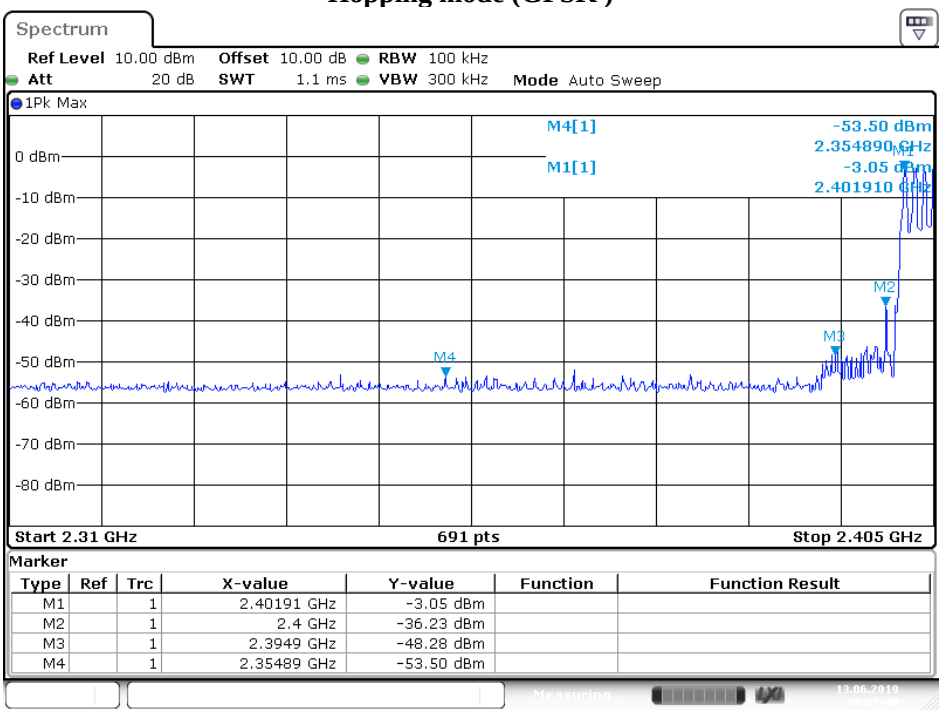


Marker

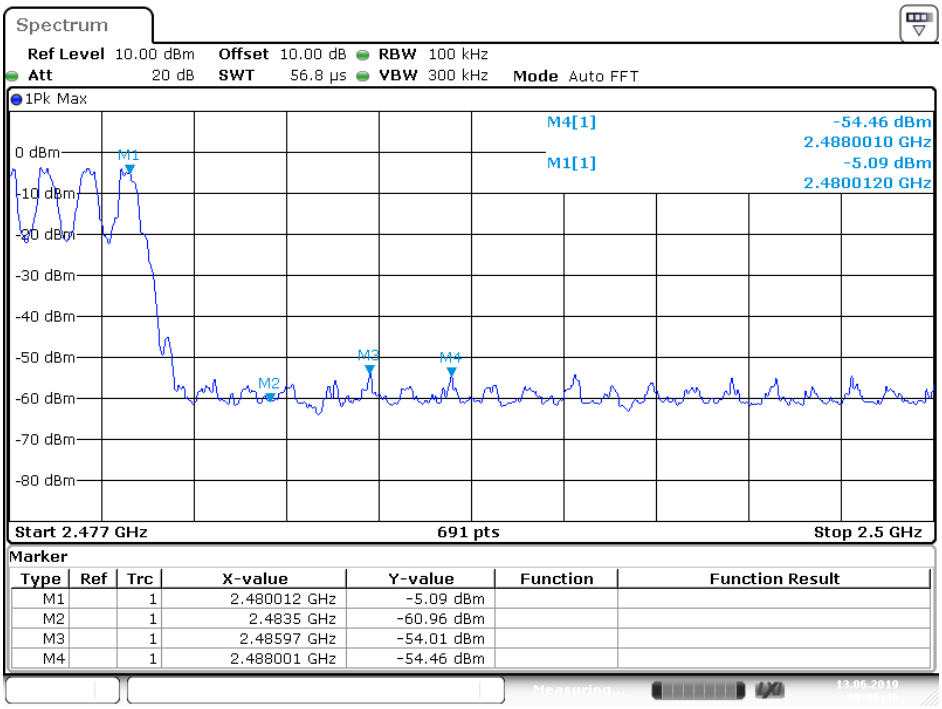
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.479799 GHz	-3.79 dBm		
M2		1	2.4835 GHz	-59.71 dBm		
M3		1	2.48865 GHz	-59.05 dBm		
M4		1	2.49212 GHz	-59.20 dBm		

Date: 13.JUN.2019 09:02:49

Hopping mode (GFSK)

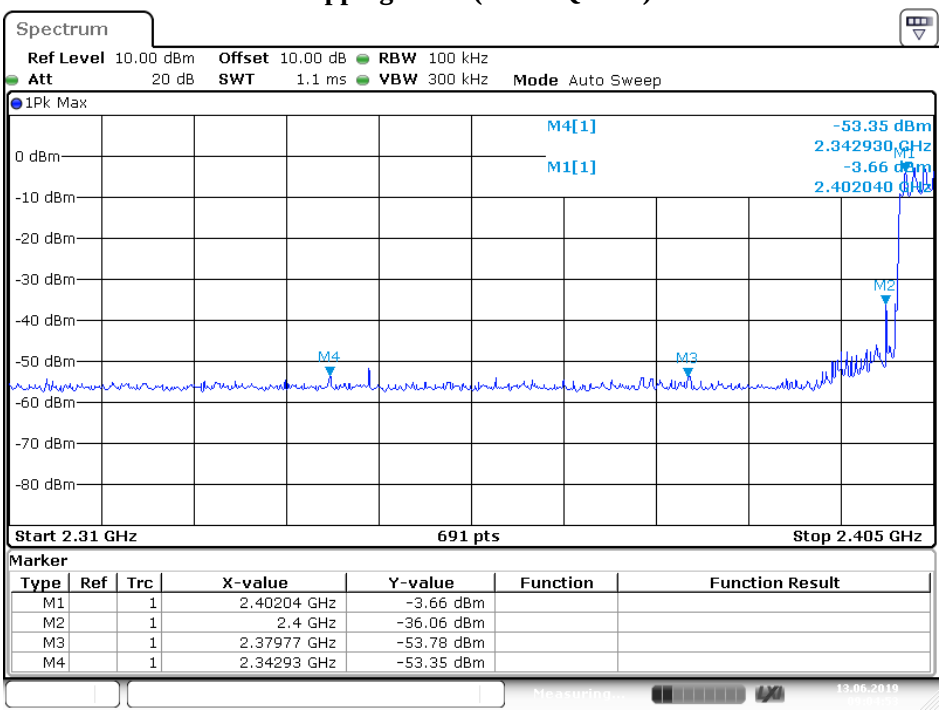


Date: 13.JUN.2019 09:07:40



Date: 13.JUN.2019 09:06:46

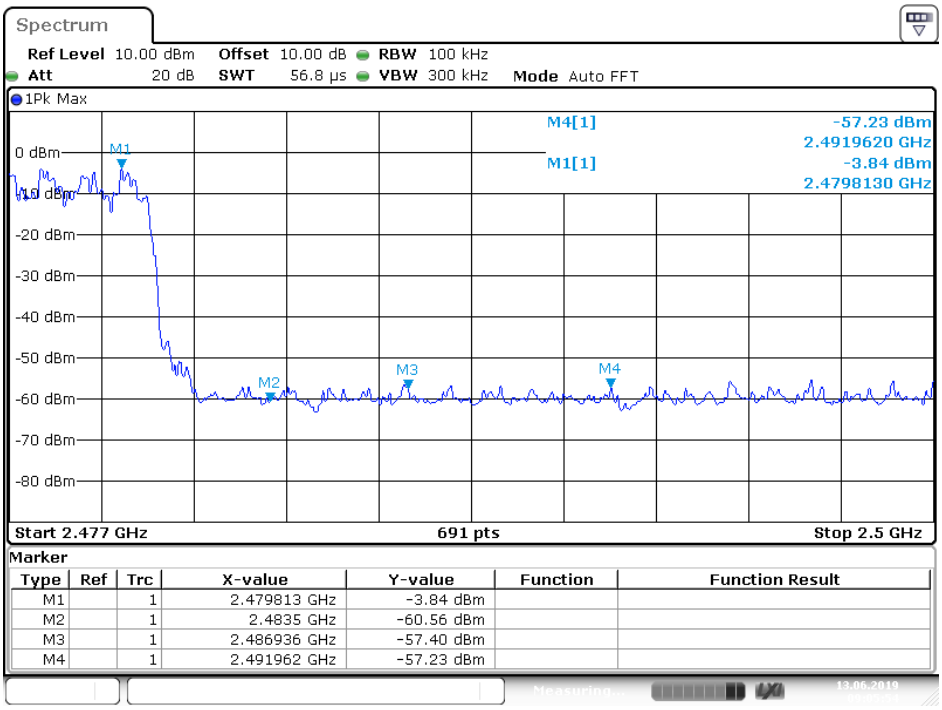
Hopping mode (π /4 DQPSK)



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.40204 GHz	-3.66 dBm		
M2		1	2.4 GHz	-36.06 dBm		
M3		1	2.37977 GHz	-53.78 dBm		
M4		1	2.34293 GHz	-53.35 dBm		

Date: 13.JUN.2019 09:04:53



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.479813 GHz	-3.84 dBm		
M2		1	2.4835 GHz	-60.56 dBm		
M3		1	2.486936 GHz	-57.40 dBm		
M4		1	2.491962 GHz	-57.23 dBm		

Date: 13.JUN.2019 09:05:54

Radiated Band Edge Result

Note:
1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:
Result = Reading + Corrected Factor
3. Display the measurement of peak values.

Test Procedure:

The EUT and its simulators are placed on a turntable, which is 1.5 meter high above ground(Above 1GHz). The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. 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 worse case(π/4 DQPSK Mode) emissions are reported.

Non-hopping mode

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Site: 2# Chamber
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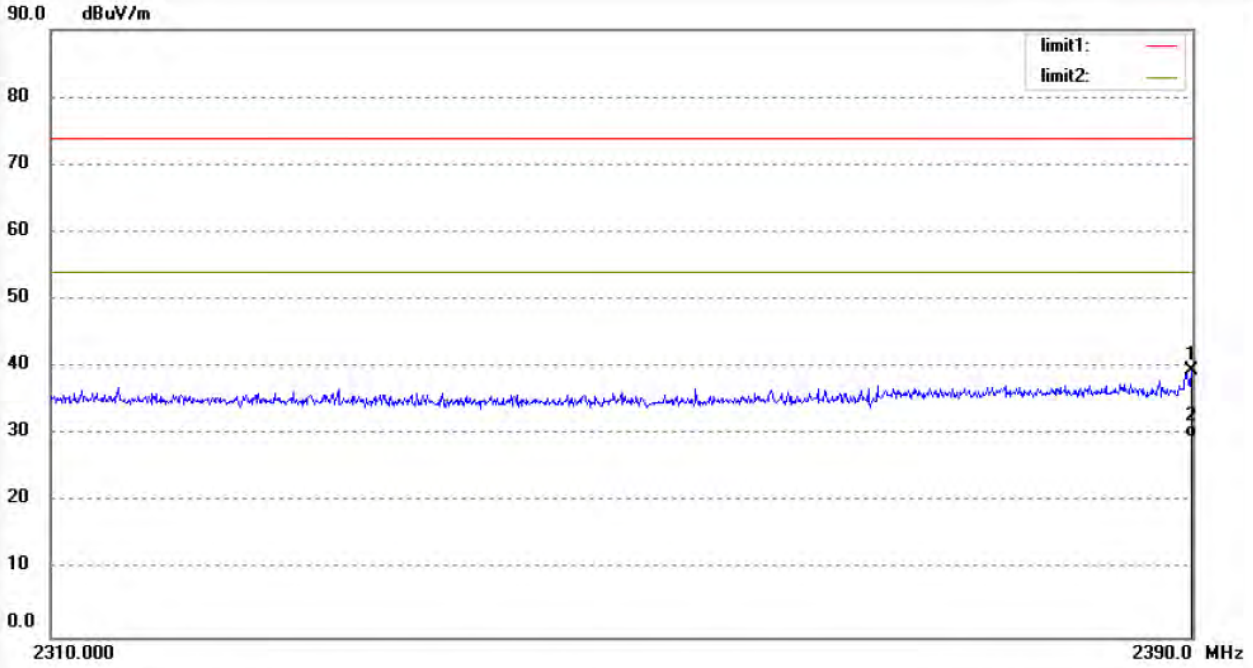
Fax:+86-0755-26503396

Job No.: LGW2019 #2157	Polarization: Horizontal
Standard: FCC (Band Edge)	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/06/05/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Wireless Bluetooth Speaker	Engineer Signature: WADE
Mode: TX 2402MHz	Distance: 3m
Model: BAN-LI-032	
Manufacturer: Premium Surge Promotions, LLC	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2389.920	38.64	0.79	39.43	74.00	-34.57	peak			
2	2389.920	28.75	0.79	29.54	54.00	-24.46	AVG			

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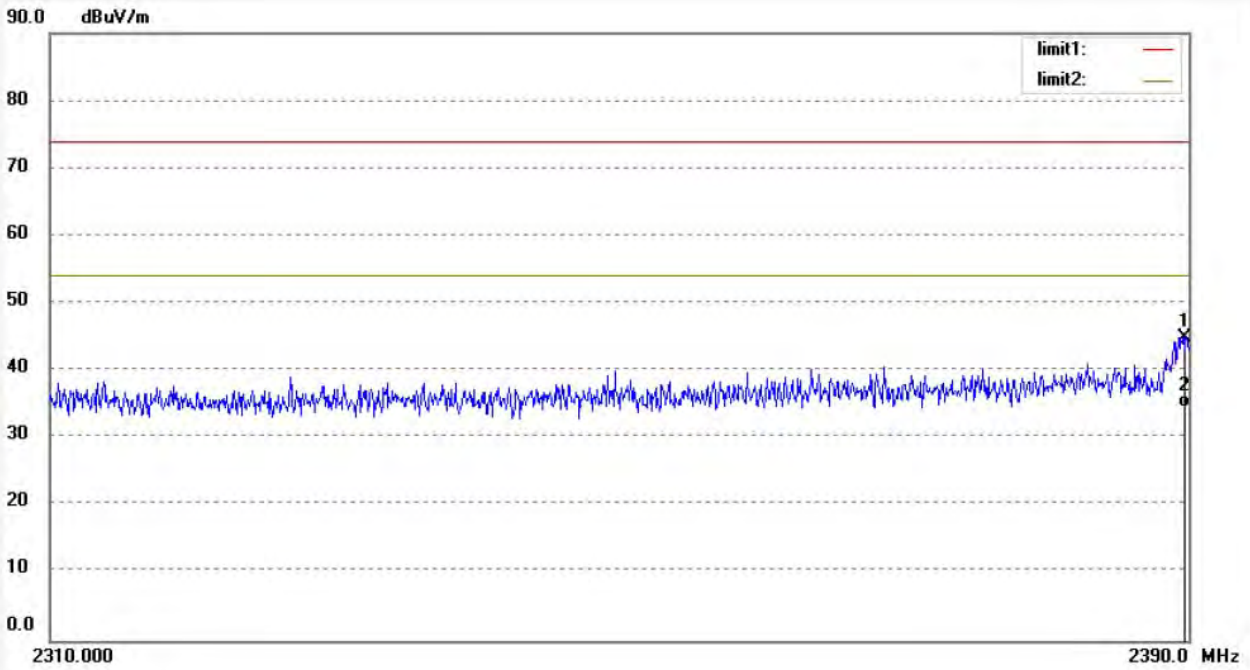
Job No.: LGW2019 #2156	Polarization: Vertical
Standard: FCC (Band Edge)	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/06/05/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Wireless Bluetooth Speaker	Engineer Signature: WADE
Mode: TX 2402MHz	Distance: 3m
Model: BAN-LI-032	
Manufacturer: Premium Surge Promotions, LLC	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2389.760	44.12	0.79	44.91	74.00	-29.09	peak			
2	2389.760	33.72	0.79	34.51	54.00	-19.49	AVG			

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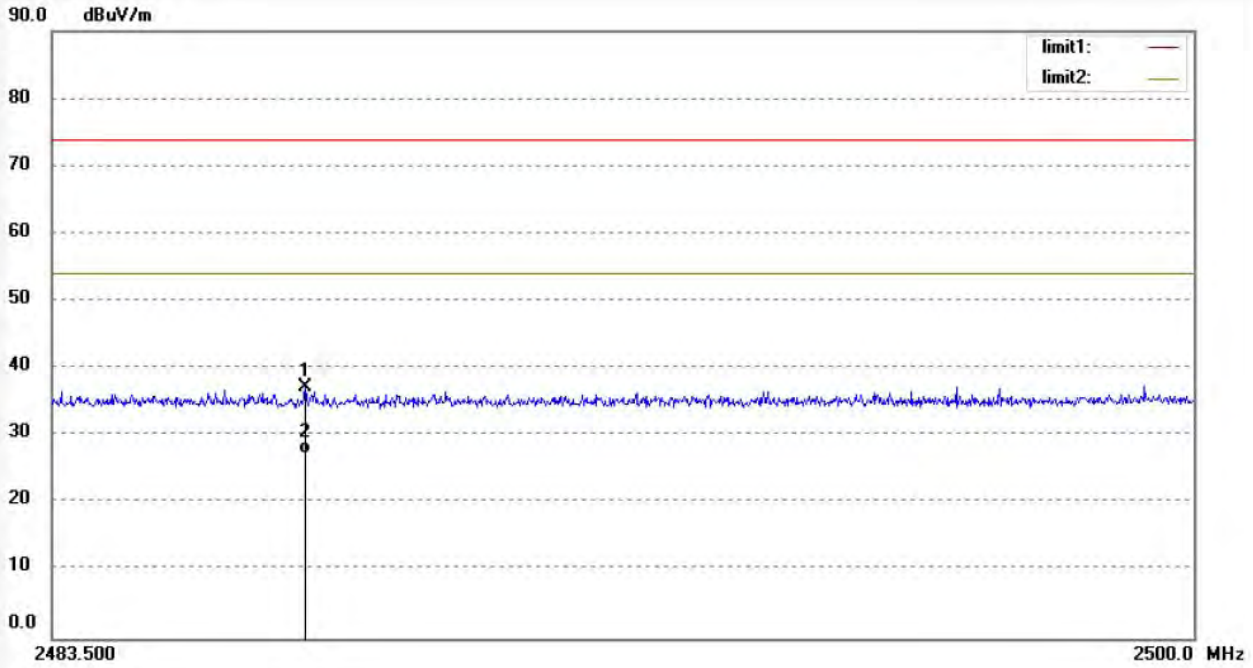
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2019 #2162
Standard: FCC (Band Edge)
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Wireless Bluetooth Speaker
Mode: TX 2480MHz
Model: BAN-LI-032
Manufacturer: Premium Surge Promotions, LLC

Polarization: Horizontal
Power Source: DC 3.7V
Date: 19/06/05/
Time:
Engineer Signature: WADE
Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2487.163	36.10	1.10	37.20	74.00	-36.80	peak			
2	2487.163	26.29	1.10	27.39	54.00	-26.61	AVG			

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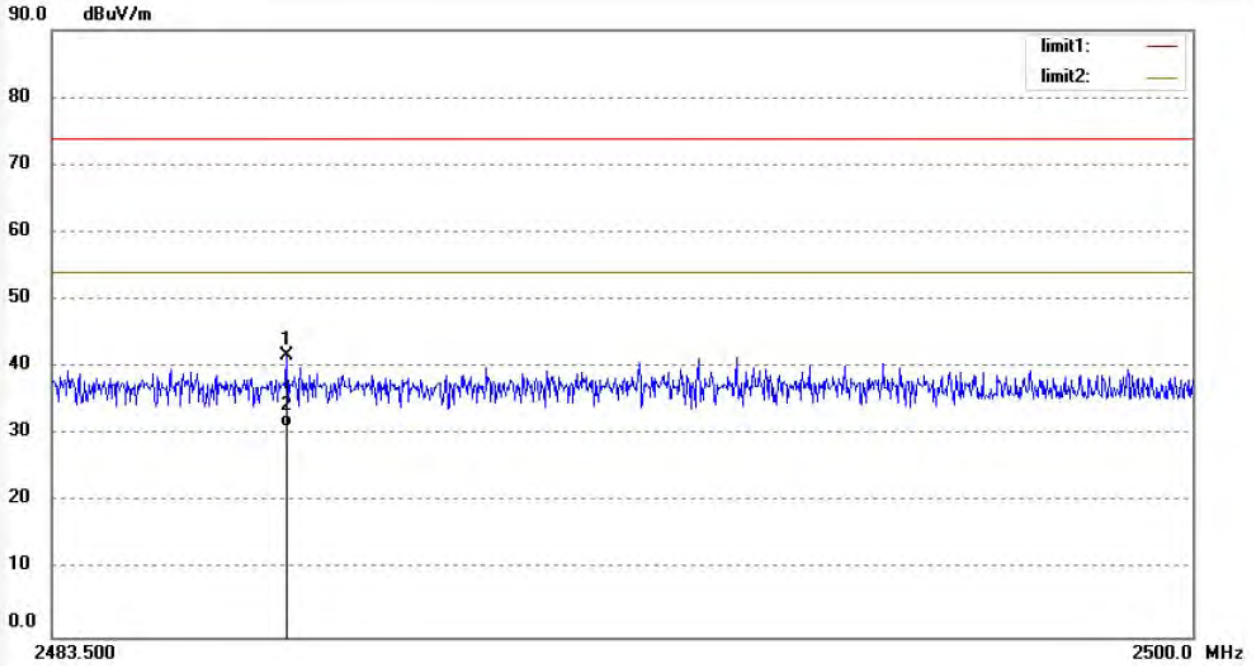
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2019 #2163
Standard: FCC (Band Edge)
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Wireless Bluetooth Speaker
Mode: TX 2480MHz
Model: BAN-LI-032
Manufacturer: Premium Surge Promotions, LLC

Polarization: Vertical
Power Source: DC 3.7V
Date: 19/06/05/
Time:
Engineer Signature: WADE
Distance: 3m

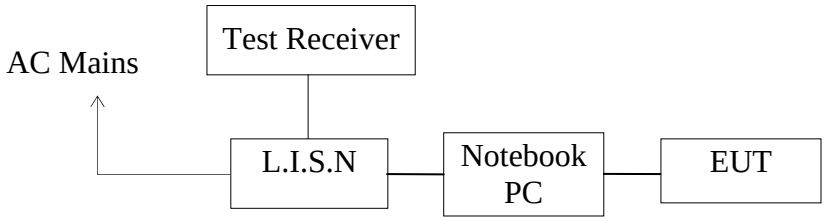
Note:



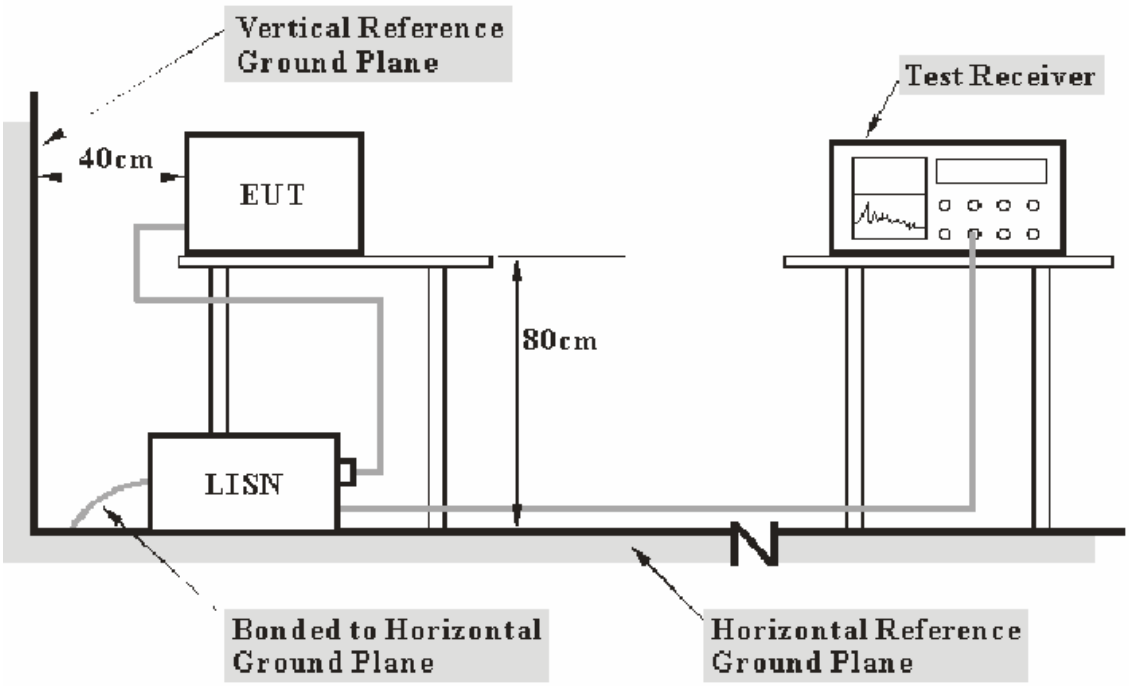
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2486.899	40.69	1.10	41.79	74.00	-32.21	peak			
2	2486.899	30.14	1.10	31.24	54.00	-22.76	AVG			

13. AC POWER LINE CONDUCTED EMISSION TEST

13.1. Block Diagram of Test Setup



13.2. 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.

13.3.Conducted Emission Test 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.		

13.4.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.

13.5.Operating Condition of EUT

13.5.1.Setup the EUT and simulator as shown as Section 13.1.

13.5.2.Turn on the power of all equipment.

13.5.3.Let the EUT work in test mode and measure it.

13.6.Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4: 2014 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.

13.7.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

Calculation Formula:
Margin = Limit (dBμV) - Level (dBμV)

13.8.Test Results

Pass.

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

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.

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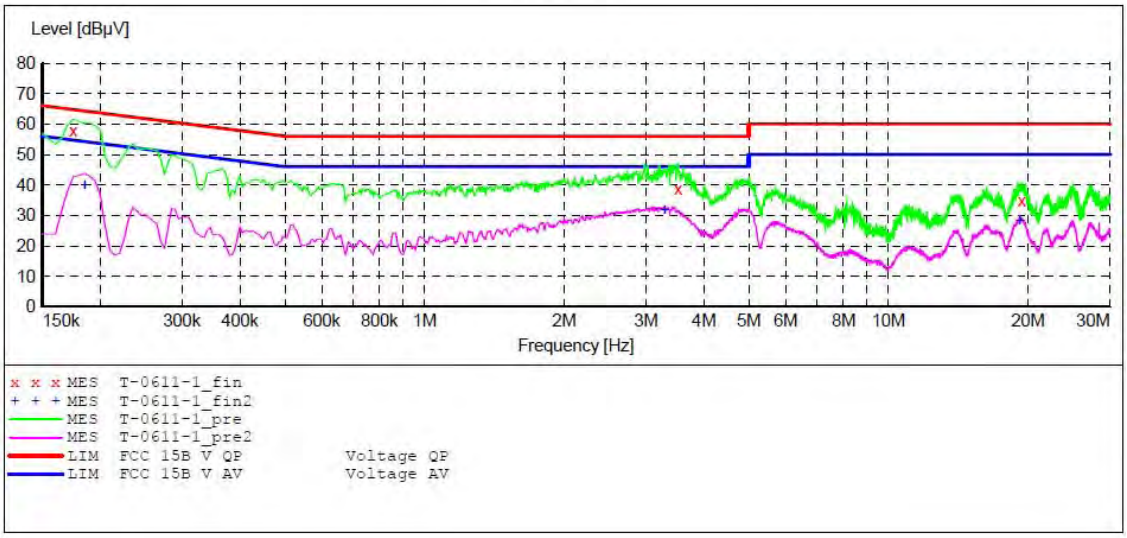
CONDUCTED EMISSION STANDARD FCC PART 15 C

EUT: Wireless Bluetooth Speaker M/N:BAN-LI-032
Manufacturer: Premium Surge Promotions, LLC
Operating Condition: BT Communication
Test Site: 1#Shielding Room
Operator: WADE
Test Specification: N 120V/60Hz
Comment:
Start of Test: 6/11/2019 /

SCAN TABLE: "V 9K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak Average	1.0 s	200 Hz	NSLK8126 2008
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak Average	1.0 s	9 kHz	NSLK8126 2008



MEASUREMENT RESULT: "T-0611-1_fin"

6/11/2019

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.175000	57.90	10.5	65	6.8	QP	N	GND
3.520000	38.80	11.1	56	17.2	QP	N	GND
19.375000	34.80	11.4	60	25.2	QP	N	GND

MEASUREMENT RESULT: "T-0611-1_fin2"

6/11/2019

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.185000	39.90	10.5	54	14.4	AV	N	GND
3.290000	31.50	11.1	46	14.5	AV	N	GND
19.180000	28.10	11.4	50	21.9	AV	N	GND

ACCURATE TECHNOLOGY CO.,LTD

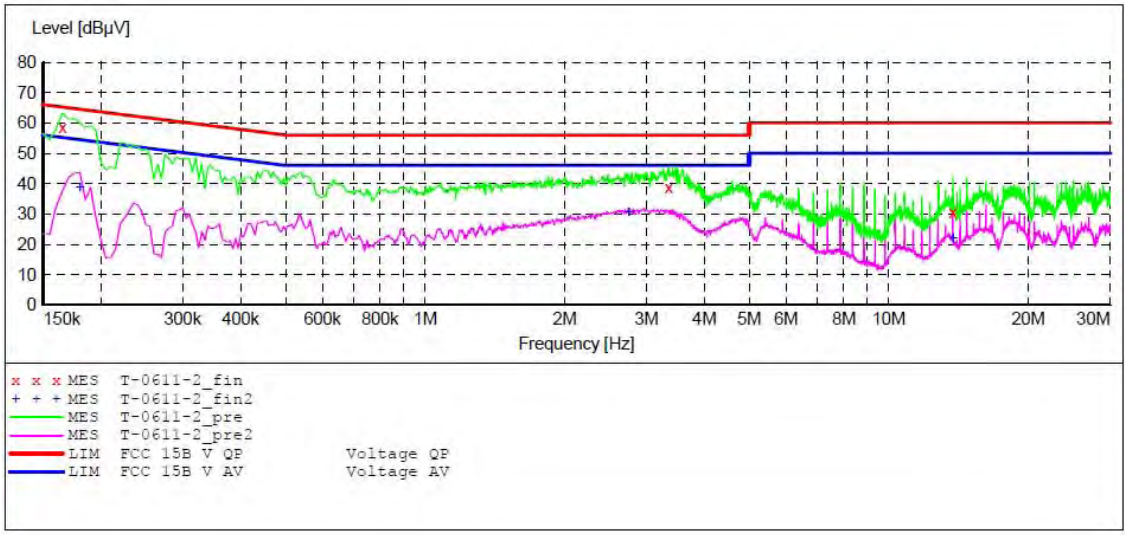
CONDUCTED EMISSION STANDARD FCC PART 15 C

EUT: Wireless Bluetooth Speaker M/N:BAN-LI-032
Manufacturer: Premium Surge Promotions, LLC
Operating Condition: BT Communication
Test Site: 1#Shielding Room
Operator: WADE
Test Specification: L 120V/60Hz
Comment:
Start of Test: 6/11/2019 /

SCAN TABLE: "V 9K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak Average	1.0 s	200 Hz	NSLK8126 2008
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak Average	1.0 s	9 kHz	NSLK8126 2008



MEASUREMENT RESULT: "T-0611-2_fin"

6/11/2019

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.165000	58.40	10.5	65	6.8	QP	L1	GND
3.350000	38.60	11.1	56	17.4	QP	L1	GND
13.750000	30.50	11.3	60	29.5	QP	L1	GND

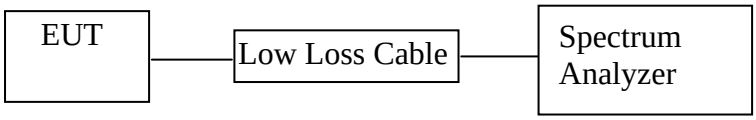
MEASUREMENT RESULT: "T-0611-2_fin2"

6/11/2019

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.180000	38.60	10.5	55	15.9	AV	L1	GND
2.750000	30.50	11.0	46	15.5	AV	L1	GND
13.750000	22.10	11.3	50	27.9	AV	L1	GND

14. CONDUCTED SPURIOUS EMISSION COMPLIANCE TEST

14.1. Block Diagram of Test Setup



14.2. 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). (see § 15.205(c)).

14.3. The Requirement For RSS-247 Section 5.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the100 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 that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

14.4.EUT Configuration on Measurement

The equipment is 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.

14.5.Operating Condition of EUT

14.5.1.Setup the EUT and simulator as shown as Section 14.1.

14.5.2.Turn on the power of all equipment.

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

14.6.Test Procedure

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

14.6.2.Set RBW of spectrum analyzer to 100kHz and VBW to 300kHz

14.6.3.The Conducted Spurious Emission was measured and recorded.

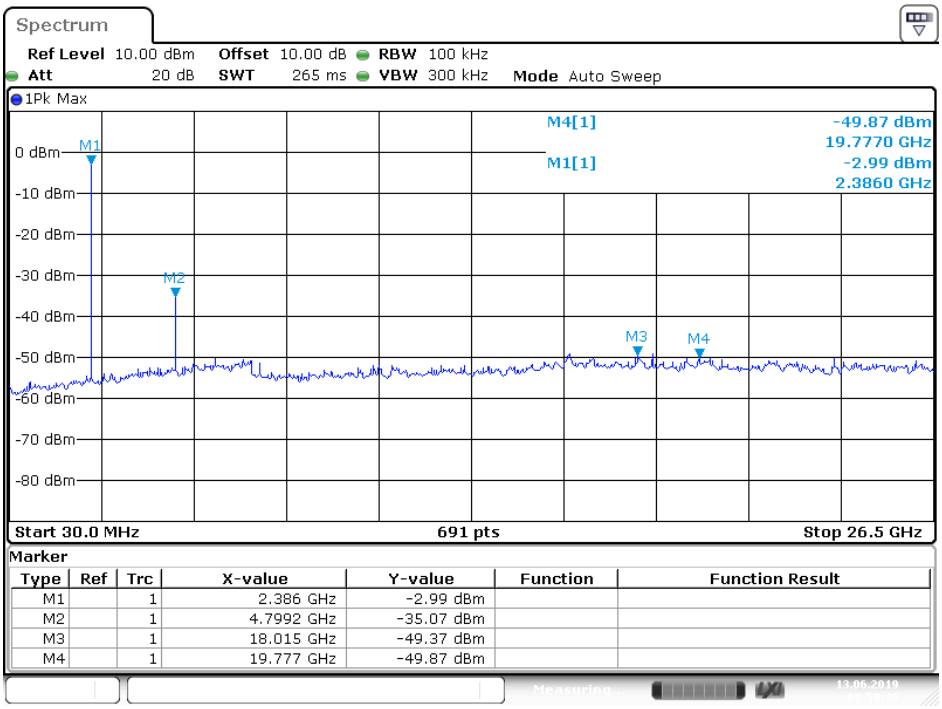
14.7.Test Result

Pass.

The spectrum analyzer plots are attached as below.

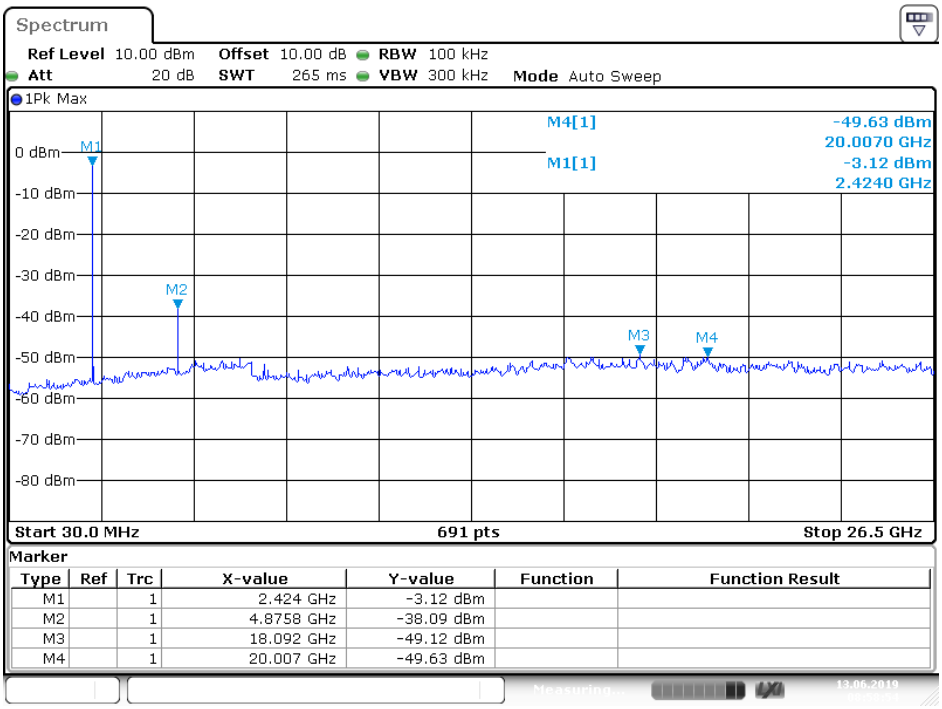
GFSK mode

Low Channel



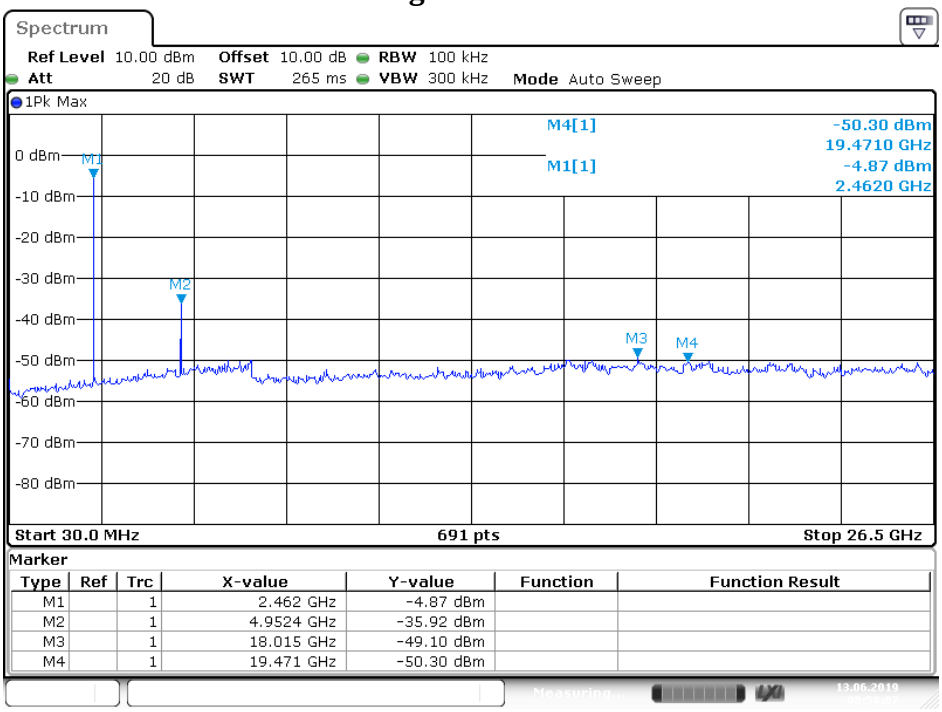
Date: 13.JUN.2019 08:59:46

Middle Channel



Date: 13.JUN.2019 08:58:54

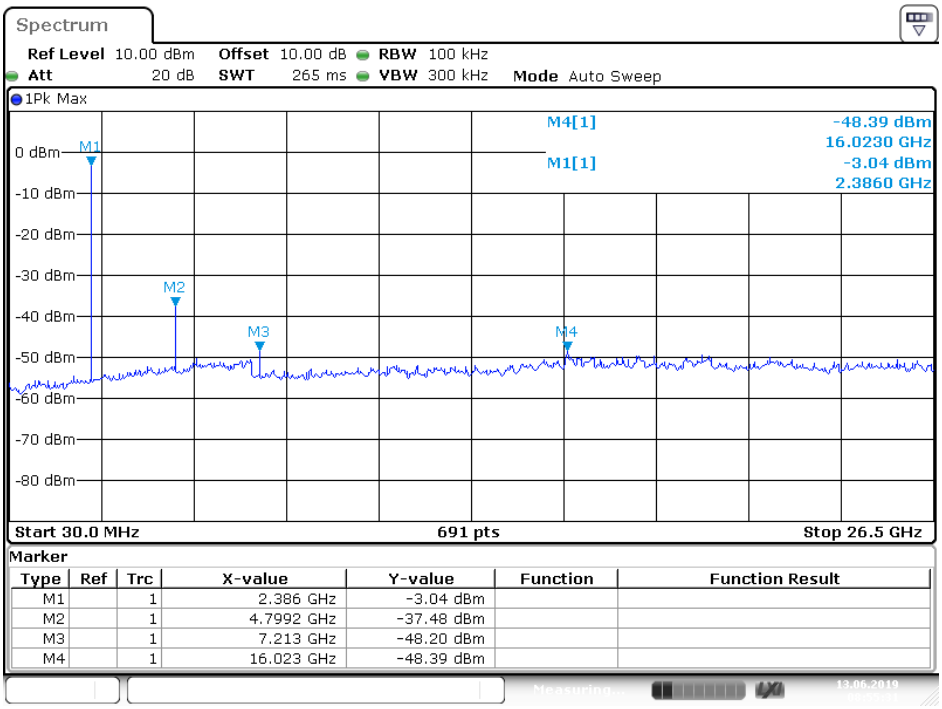
High Channel



Date: 13.JUN.2019 08:58:07

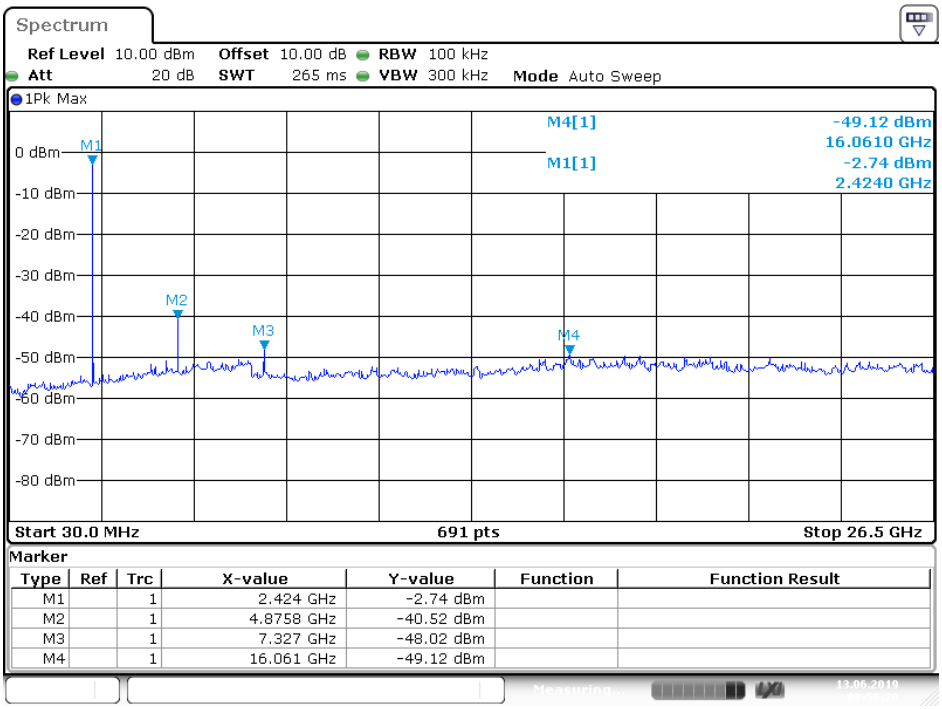
π /4 DQPSK mode

Low Channel



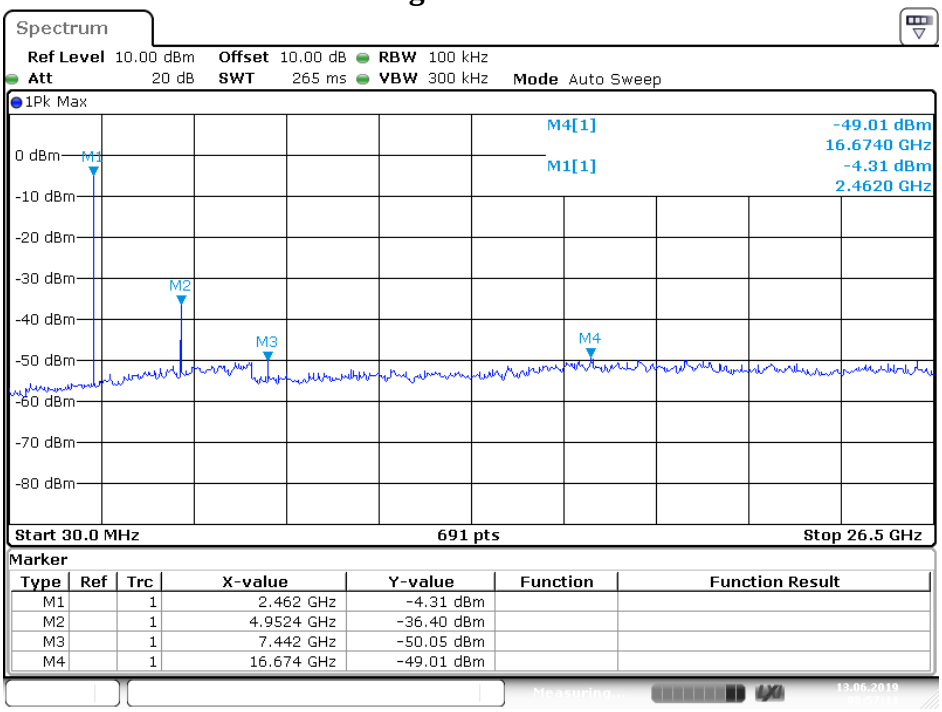
Date: 13.JUN.2019 08:55:31

Middle Channel



Date: 13.JUN.2019 08:56:21

High Channel



Date: 13.JUN.2019 08:57:12

15. ANTENNA REQUIREMENT

15.1. The Requirement

According to FCC Section 15.203 and RSS-Gen Section 6.8, 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.

15.2. Antenna Construction

Device is equipped with permanent attached antenna, which isn't displaced by other antenna. The Max Antenna gain of EUT is -0.58dBi. Therefore, the equipment complies with the antenna requirement of FCC Section 15.203 and RSS-Gen Section 6.8.

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