APPLICATION CERTIFICATION FCC Part 15.247 & RSS-247
On Behalf of
Compupal Group Corporation

Bluetooth Headset
Model No.: NS-MBTHS, NS-MBTHS-C
NS-MBTxxxxxxx, DX-MBTxxxxxxx, MD-MBTxxxxxxx

FCC ID: Z5YNS-MBTHS
IC: 10828A-MBTHS

Prepared for	:	Compupal Group Corporation
Address	:	No.1555 Jiashan Avenue, Jiashan 314113, Zhejiang, China
Prepared by	:	Shenzhen Accurate Technology Co., Ltd.
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Report No.	:	ATE20190993
Date of Test	:	June 26-June 29, 2019
Date of Report	:	July 3, 2019

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Test Report Certification

Applicant	:	Compupal Group Corporation
Address	:	No.1555 Jiashan Avenue, Jiashan 314113, Zhejiang, China
Product	:	Bluetooth Headset
Model No.	:	NS-MBTHS, NS-MBTHS-C NS-MBTxxxxxxx, DX-MBTxxxxxxx, MD-MBTxxxxxxx ("x"=0-9, A-Z, a-z, - or blank, for market purpose only, all models are identical except the model number or color or brand)

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 and IC 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 26-June 29, 2019
Date of Report : July 3, 2019

Prepared by : _____
(Star Yang, Engineer)

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

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Model Number	:	NS-MBTHS, NS-MBTHS-C, NS-MBTxxxxxxx, DX-MBTxxxxxxx, MD-MBTxxxxxxx ("x"=0-9, A-Z, a-z, - or blank, for market purpose only, all models are identical except the model number or color or brand, NS-MBTHS is for America market and NS-MBTHS-C is for Canada market, all test items were applied on model NS-MBTHS)
HVIN	:	NS-MBTHS-C
Bluetooth Version	:	V5.0
Range of Frequency	:	2402-2480MHz
Number of Channels	:	79
Antenna Gain(Max)	:	0dBi
Type of Antenna	:	Integral Antenna
Modulation mode	:	GFSK, π/4 DQPSK, 8DPSK
Power supply	:	DC 3.7V
Trademark	:	INSIGNIA, DYNEX, MODAL

1.2. Accessory and Auxiliary Equipment

Notebook PC:	Manufacturer: Lenovo M/N: ThinkPad X240 S/N: 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 (Radiated Emission)	Compliance Direction	RSU-M2	38322	Jan. 05, 2019	One Year
Pre-Amplifier (Radiated Emission)	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
RF Coaxial Cable (Conducted Emission)	SUHNER	N-2m	No.2	Jan. 05, 2019	One Year
RF Coaxial Cable (Radiated Emission)	RESENBERGER	N-12m	No.11	Jan. 05, 2019	One Year
RF Coaxial Cable (Radiated Emission)	RESENBERGER	N-0.5m	No.12	Jan. 05, 2019	One Year
RF Coaxial Cable (Radiated Emission)	SUHNER	N-2m	No.13	Jan. 05, 2019	One Year
RF Coaxial Cable (Radiated Emission)	SUHNER	N-0.5m	No.15	Jan. 05, 2019	One Year
RF Coaxial Cable (Radiated Emission)	SUHNER	N-2m	No.16	Jan. 05, 2019	One Year
RF Coaxial Cable (Radiated Emission)	RESENBERGER	N-6m	No.17	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

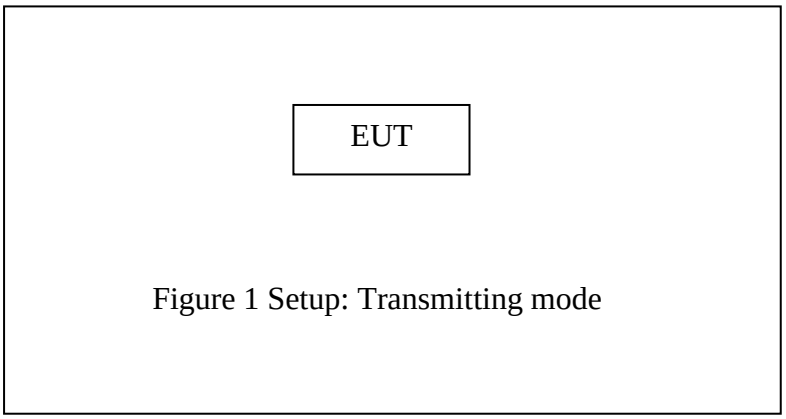


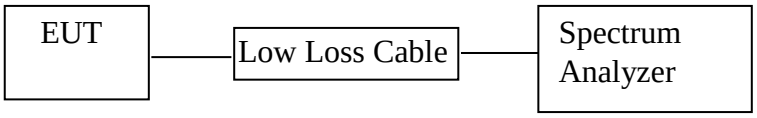
Figure 1 Setup: Transmitting mode

4. TEST PROCEDURES AND RESULTS

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 Test	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 Emissions Limits 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 Test

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

5.5. 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.

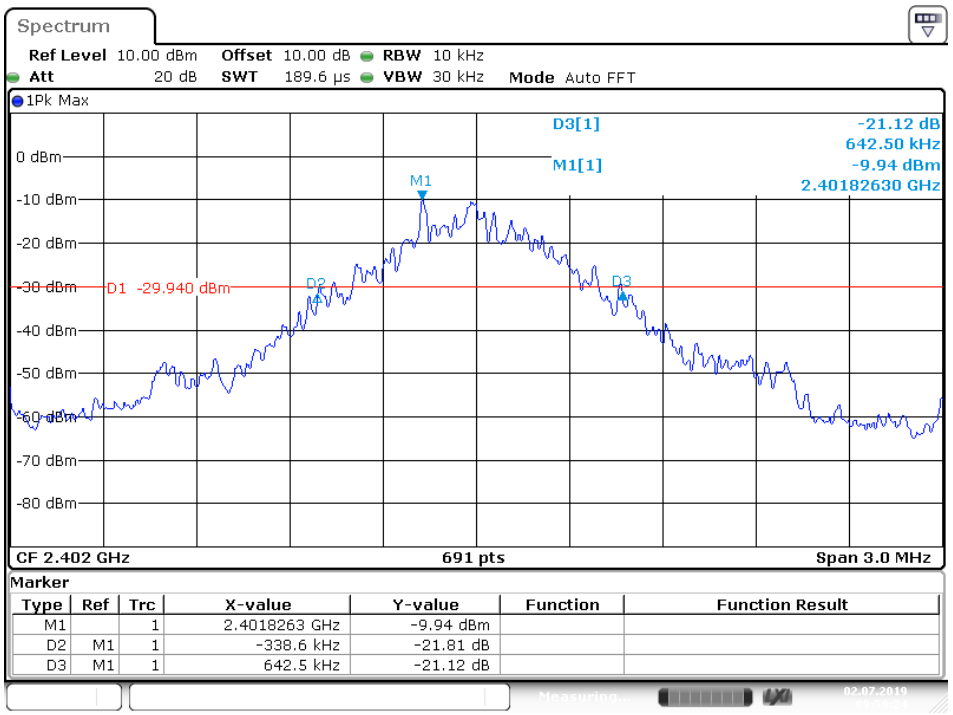
5.7. Test Result

Channel	Frequency (MHz)	GFSK 20dB Bandwidth (MHz)	8DPSK 20dB Bandwidth (MHz)	Result
Low	2402	0.981	1.268	Pass
Middle	2441	0.981	1.281	Pass
High	2480	0.986	1.303	Pass

The spectrum analyzer plots are attached as below.

GFSK Mode

Low channel



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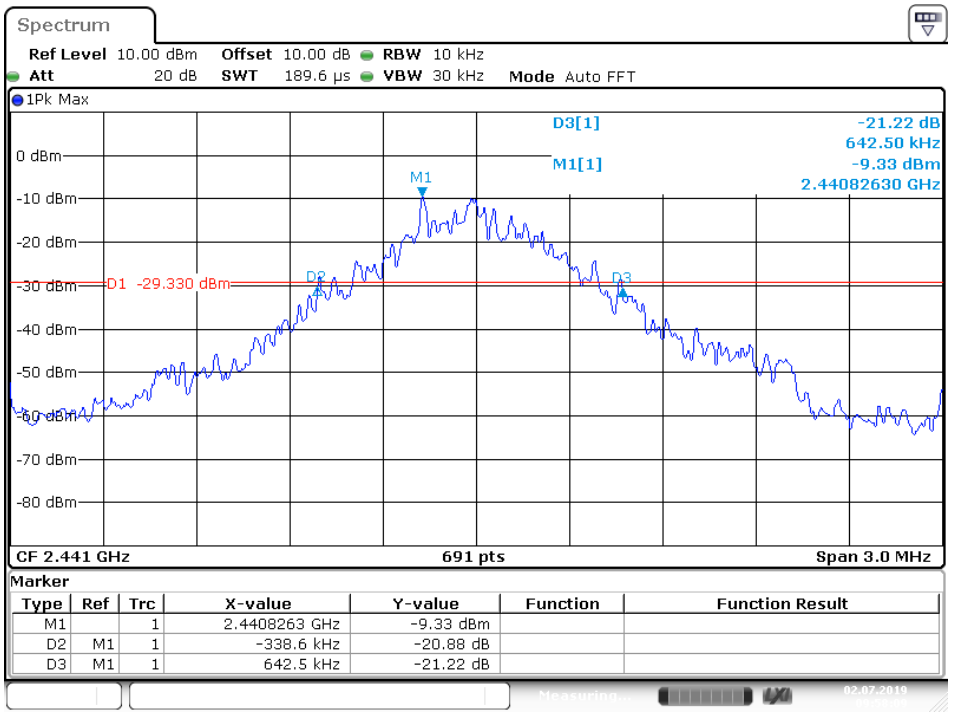
Middle channel



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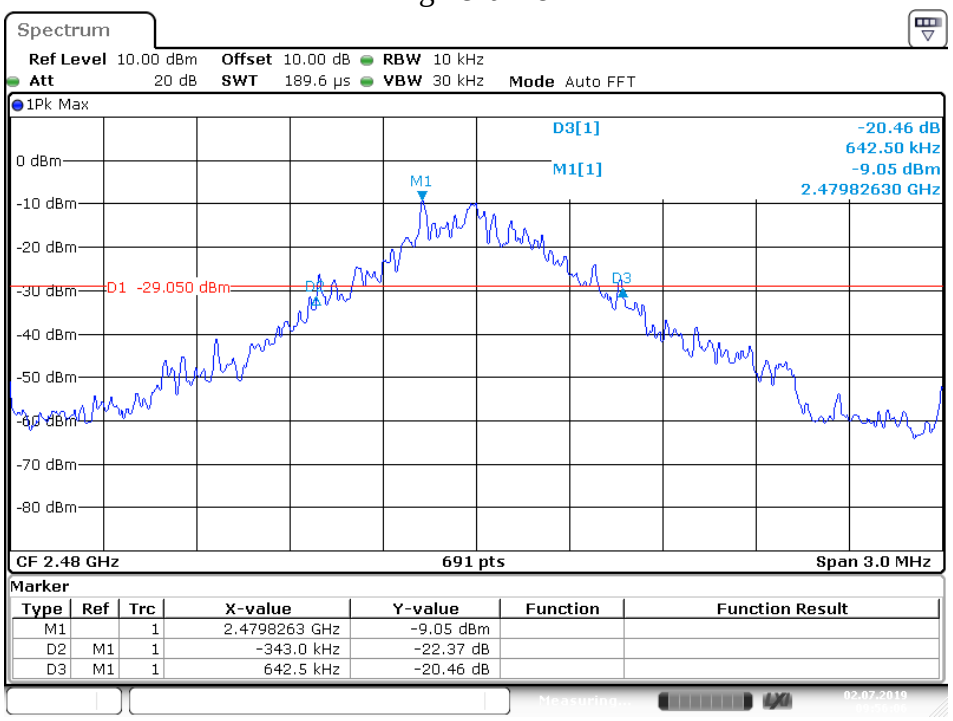
High channel



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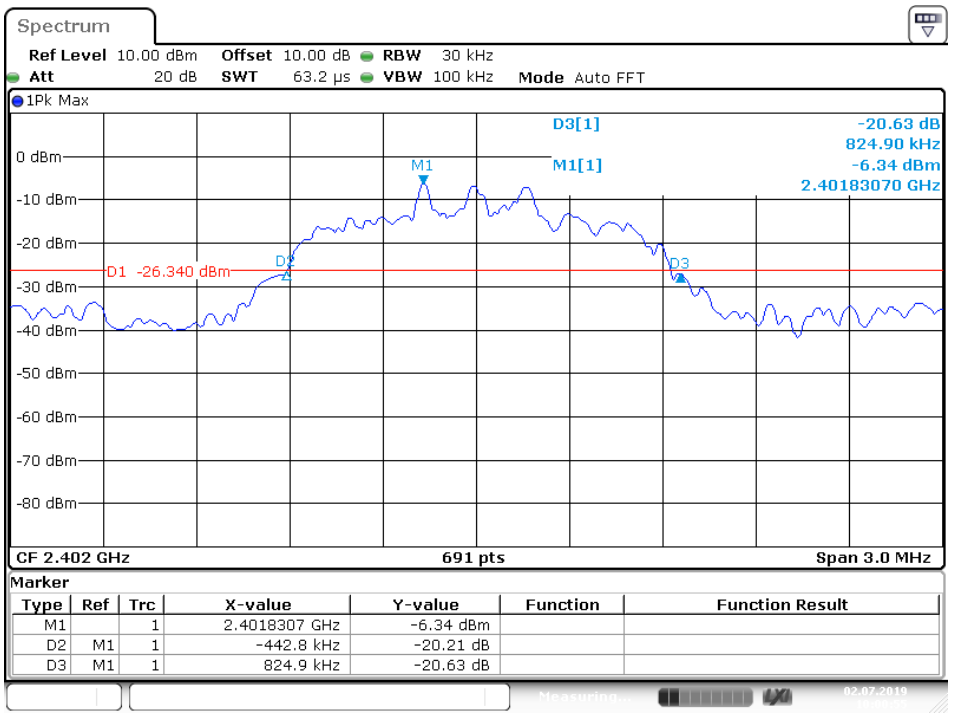
8DPSK Mode

Low channel



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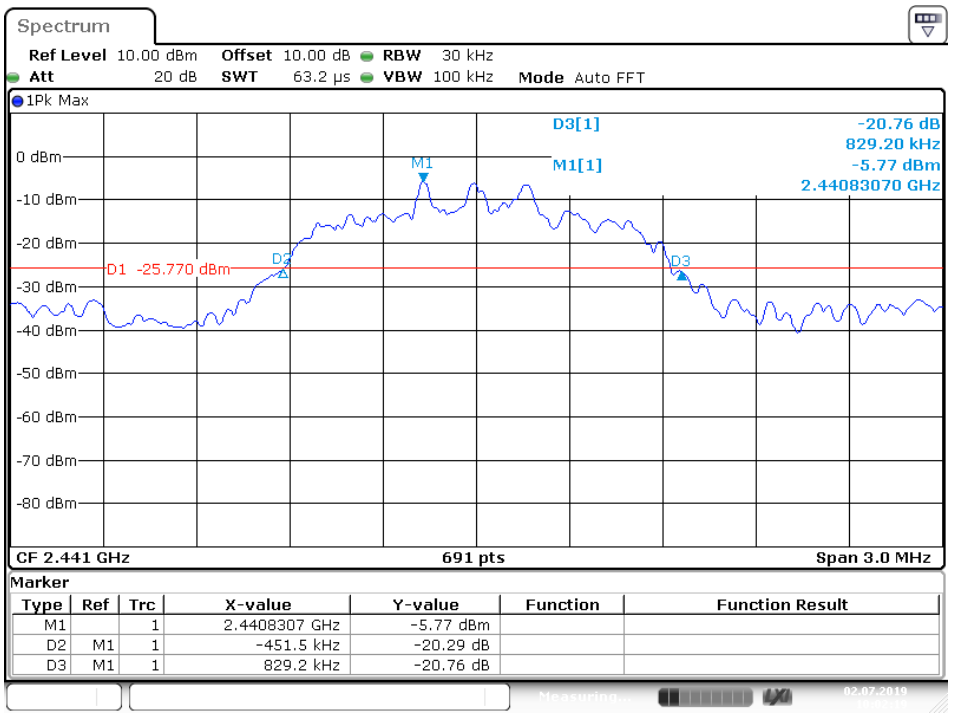
Middle channel



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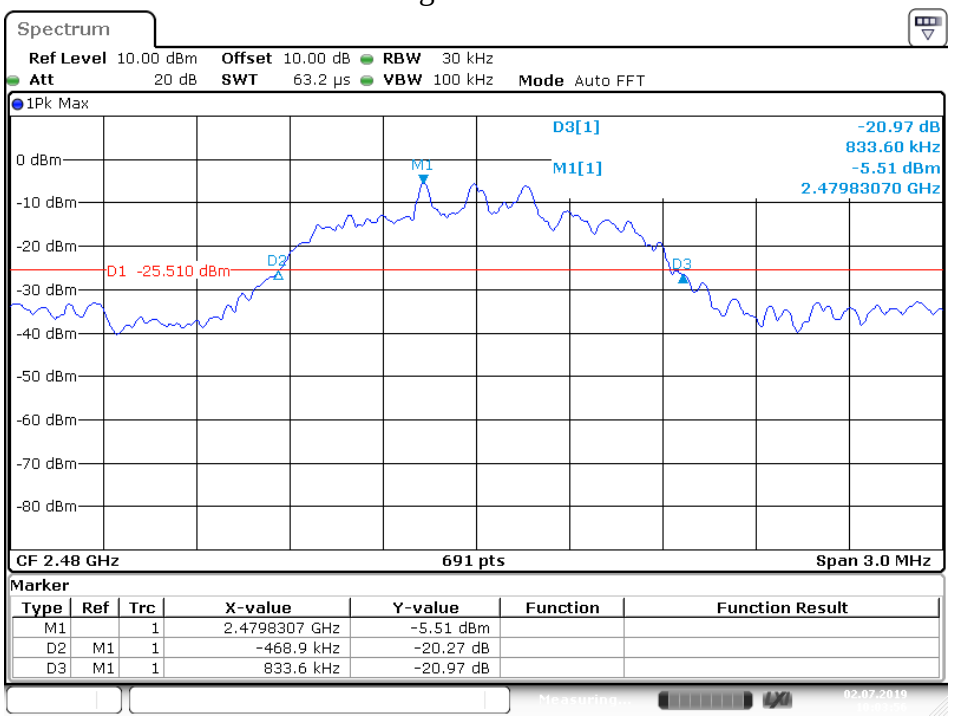
High channel



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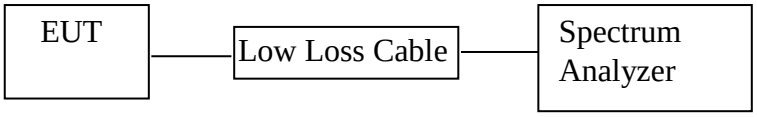
6. 99% OCCUPIED BANDWIDTH TEST

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 Test

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.

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.

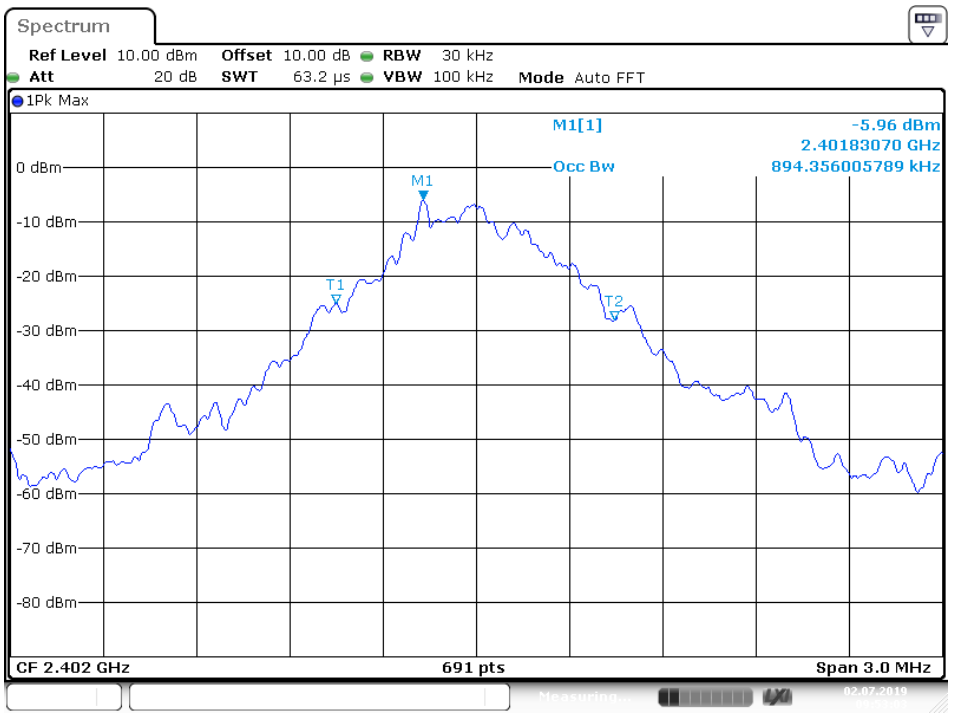
6.6. Test Result

Channel	Frequency (MHz)	GFSK 99% Bandwidth (MHz)	8DPSK 99% Bandwidth (MHz)	Result
Low	2402	0.894	1.124	Pass
Middle	2441	0.907	1.124	Pass
High	2480	0.938	1.124	Pass

The spectrum analyzer plots are attached as below.

GFSK Mode

Low channel



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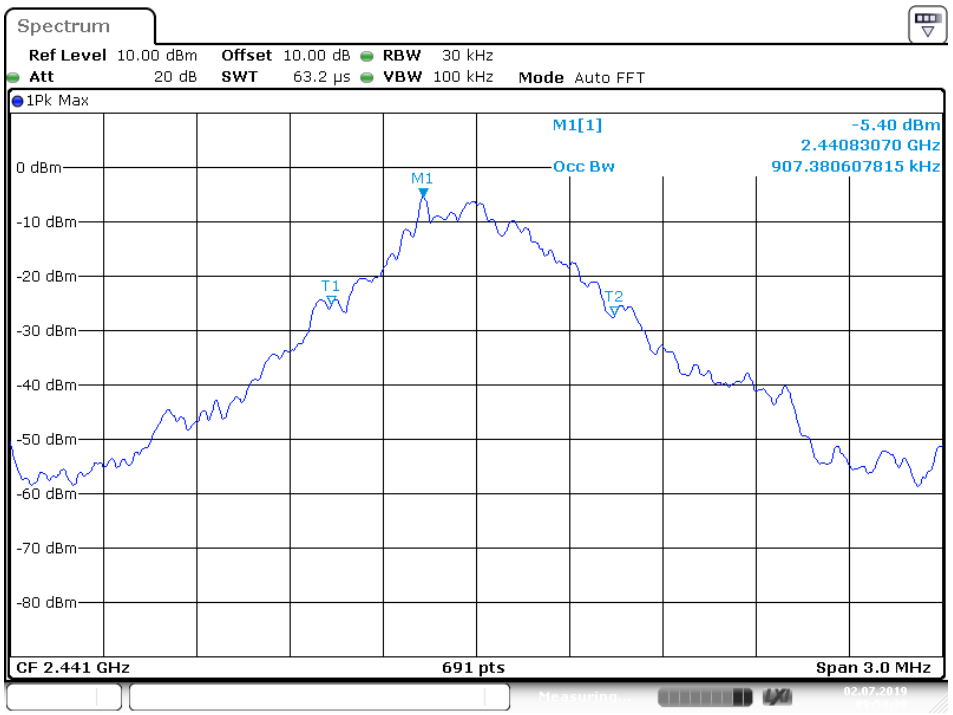
Middle channel



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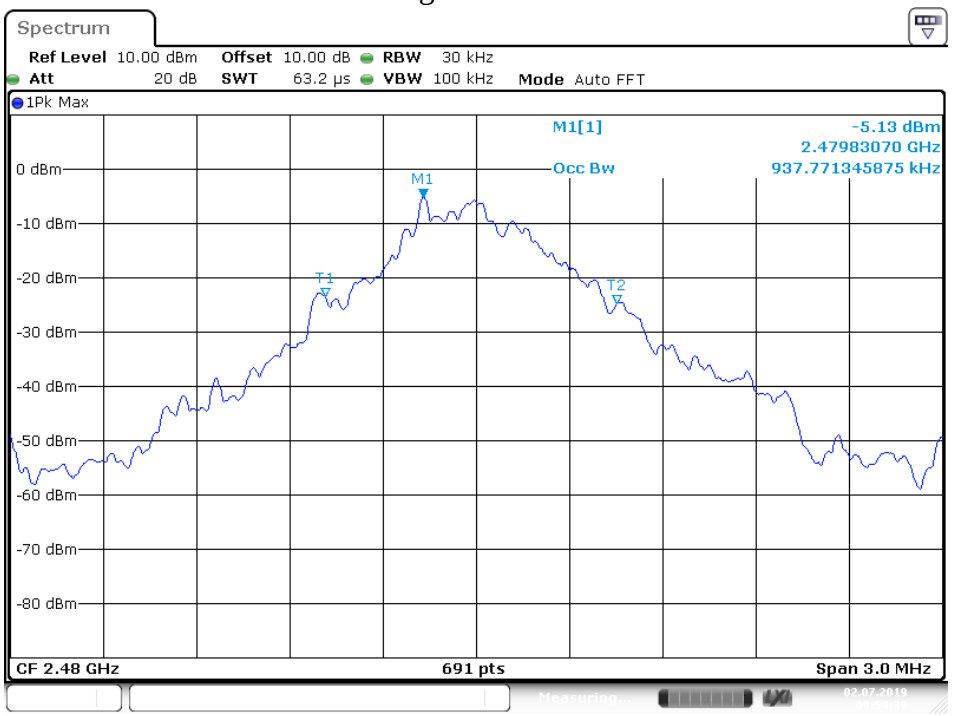
High channel



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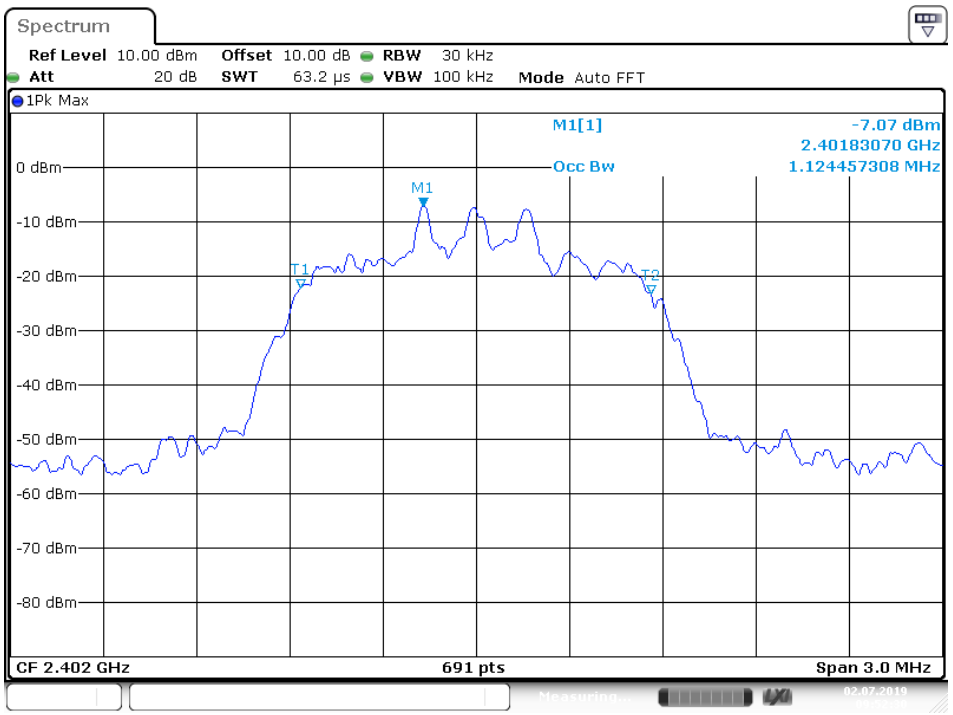
8DPSK Mode

Low channel



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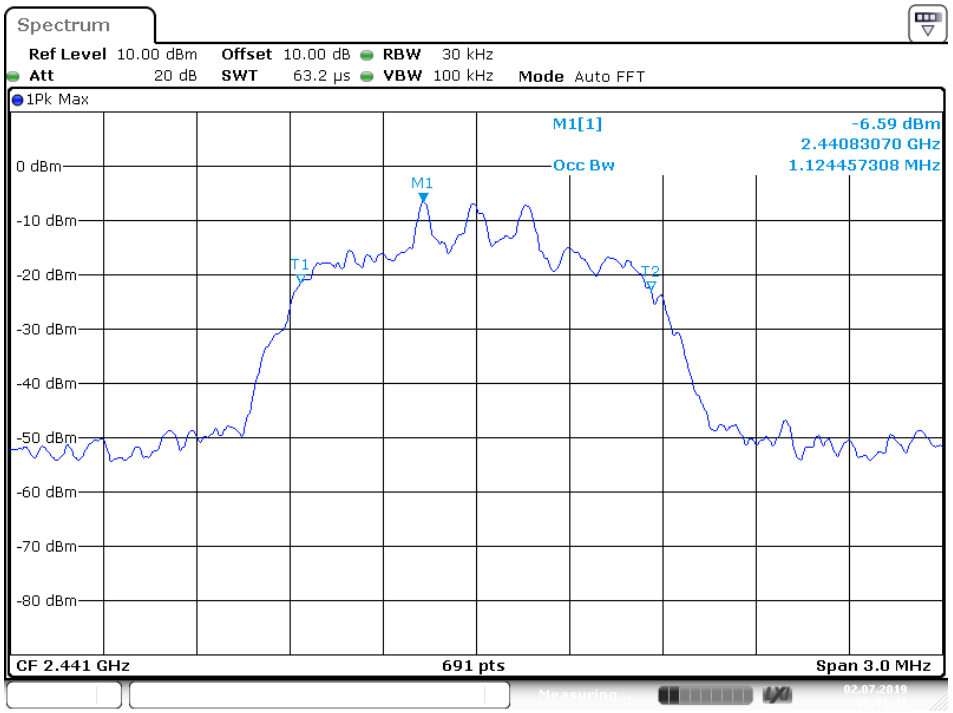
Middle channel



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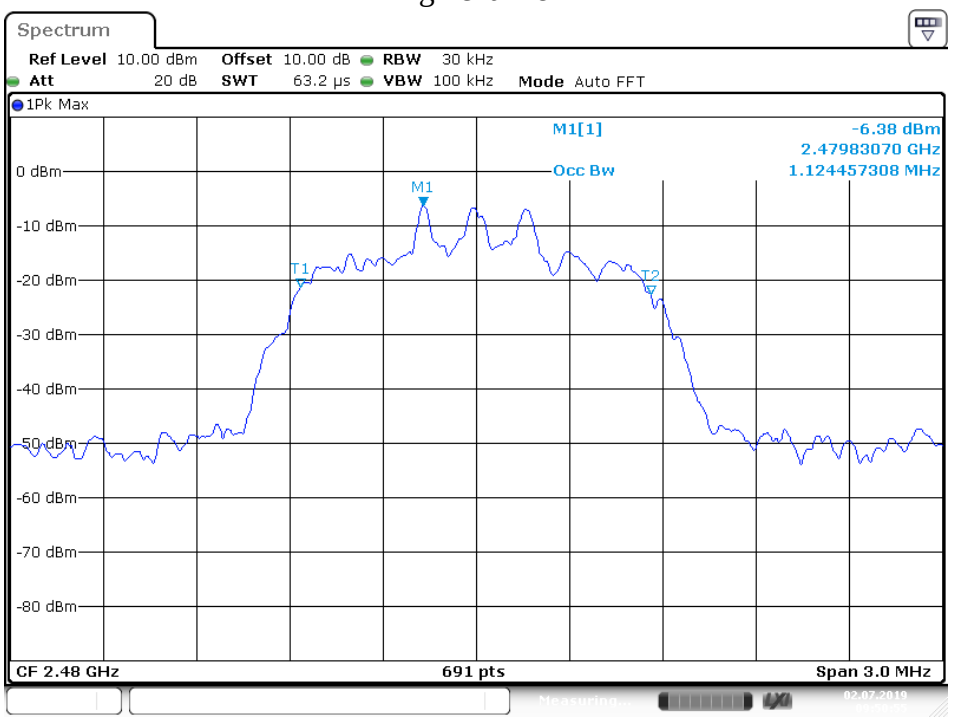
High channel



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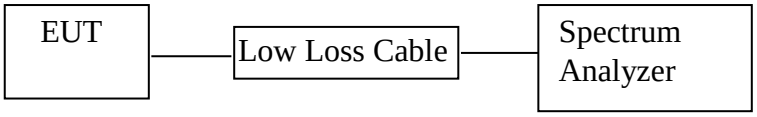
7. CARRIER FREQUENCY SEPARATION TEST

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

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 Test

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

7.5. 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 30 kHz and VBW to 100 kHz. Adjust Span to 2MHz.

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			

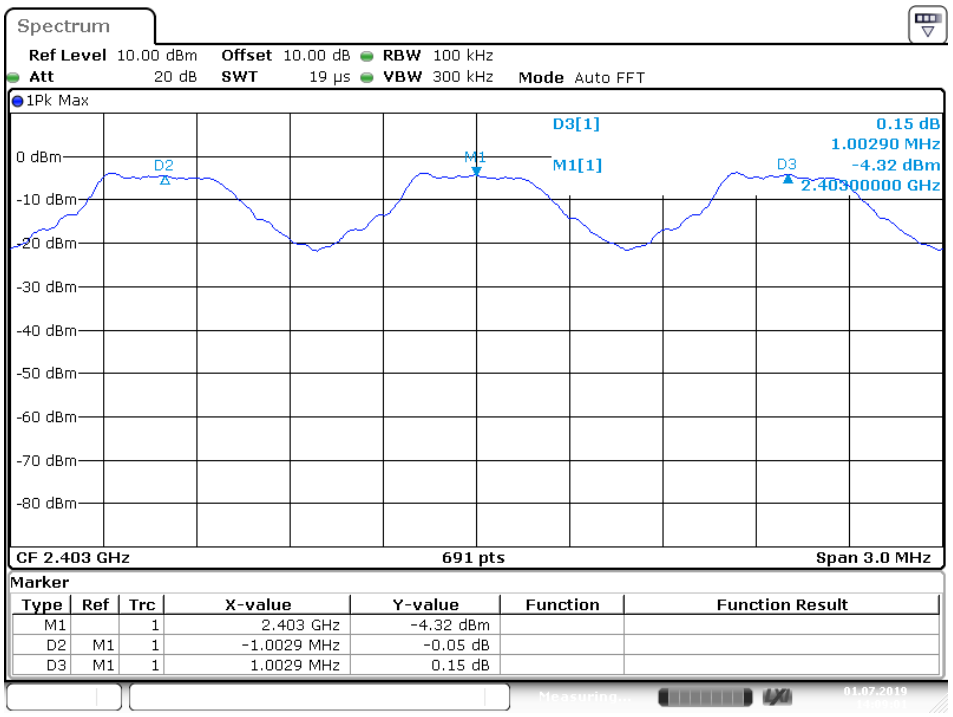
8DPSK Mode

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			

The spectrum analyzer plots are attached as below.

GFSK Mode

Low channel



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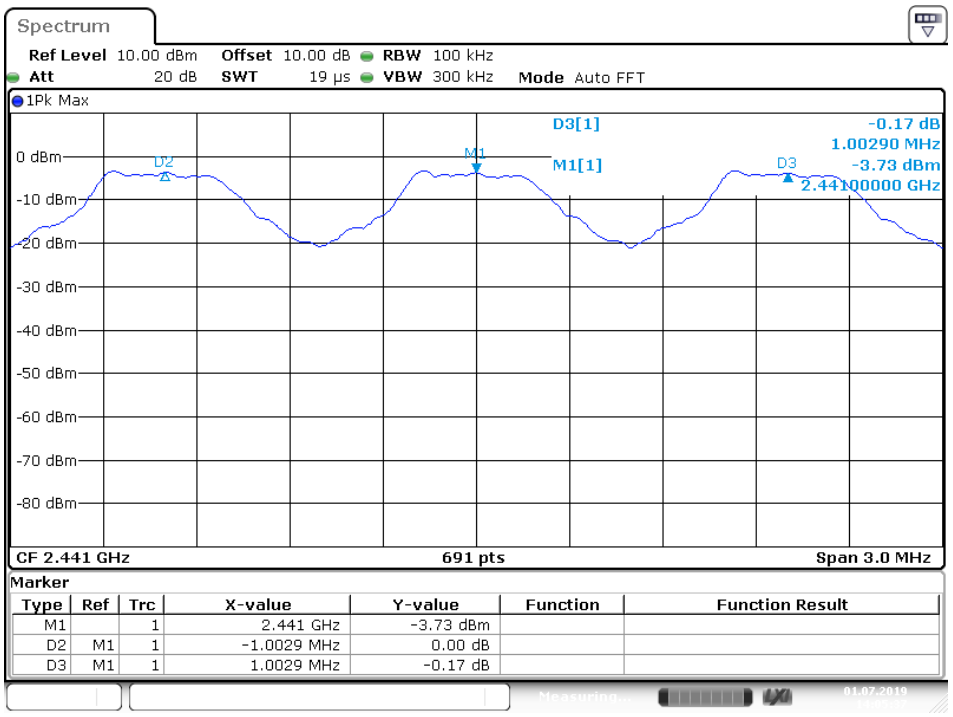
Middle channel



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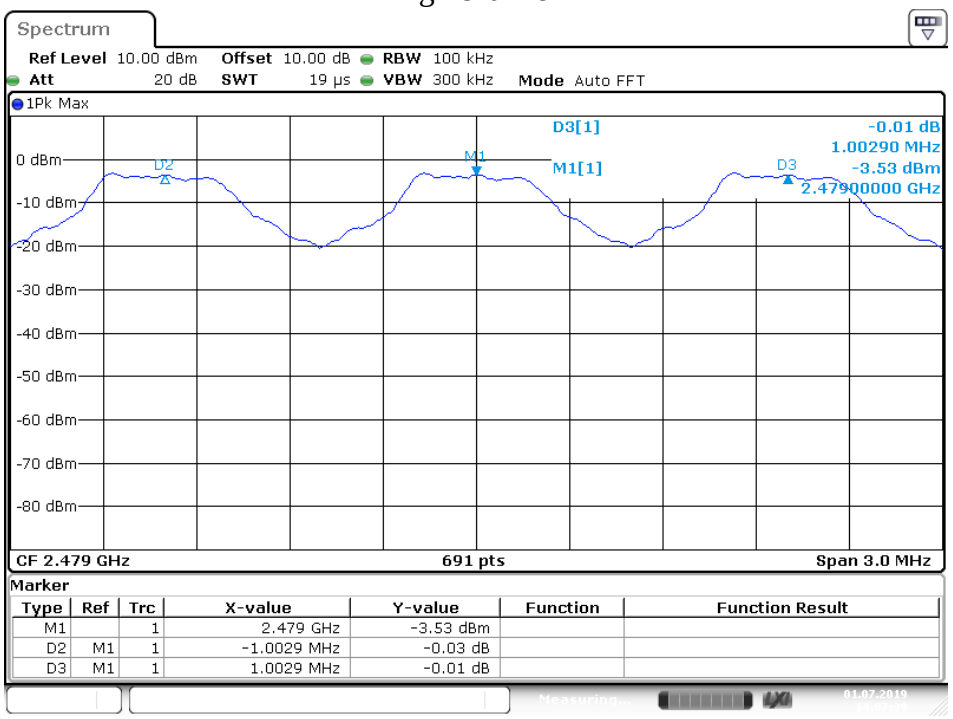
High channel



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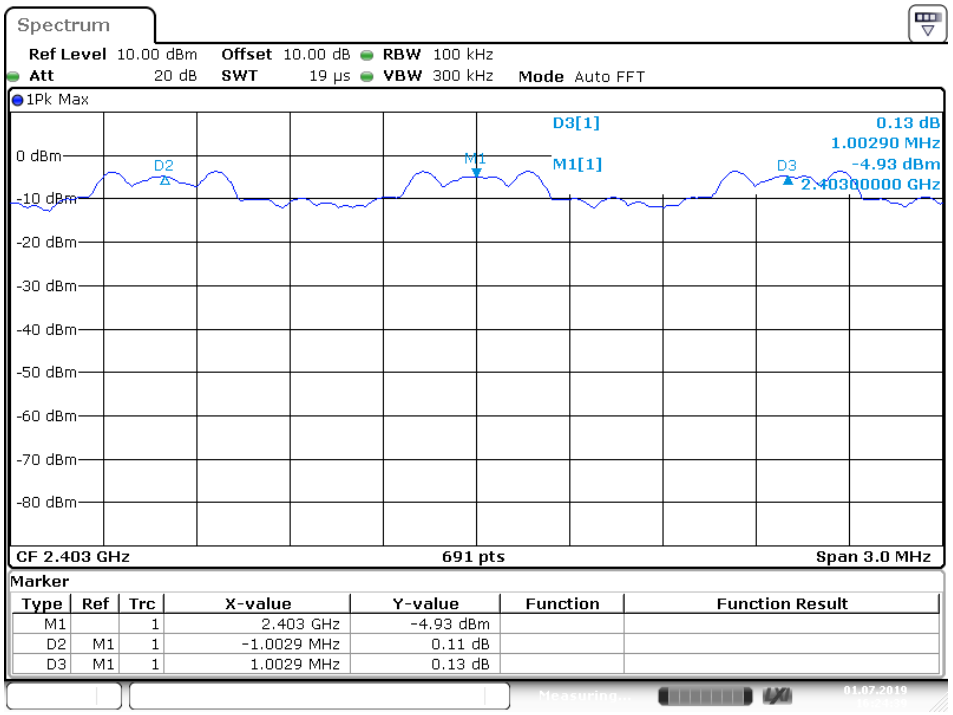
8DPSK Mode

Low channel



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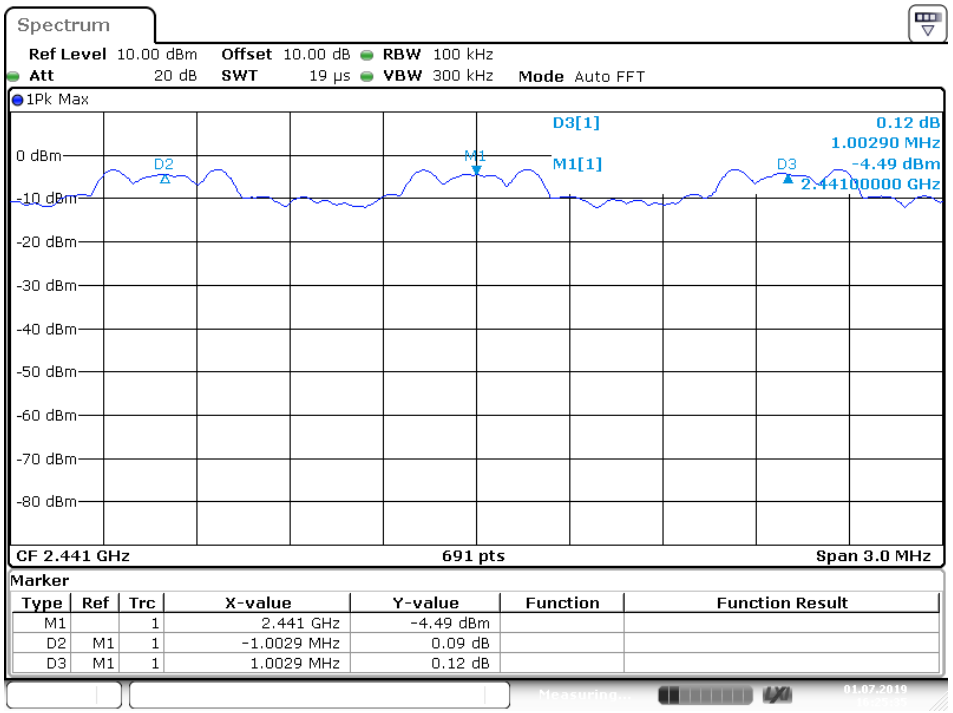
Middle channel



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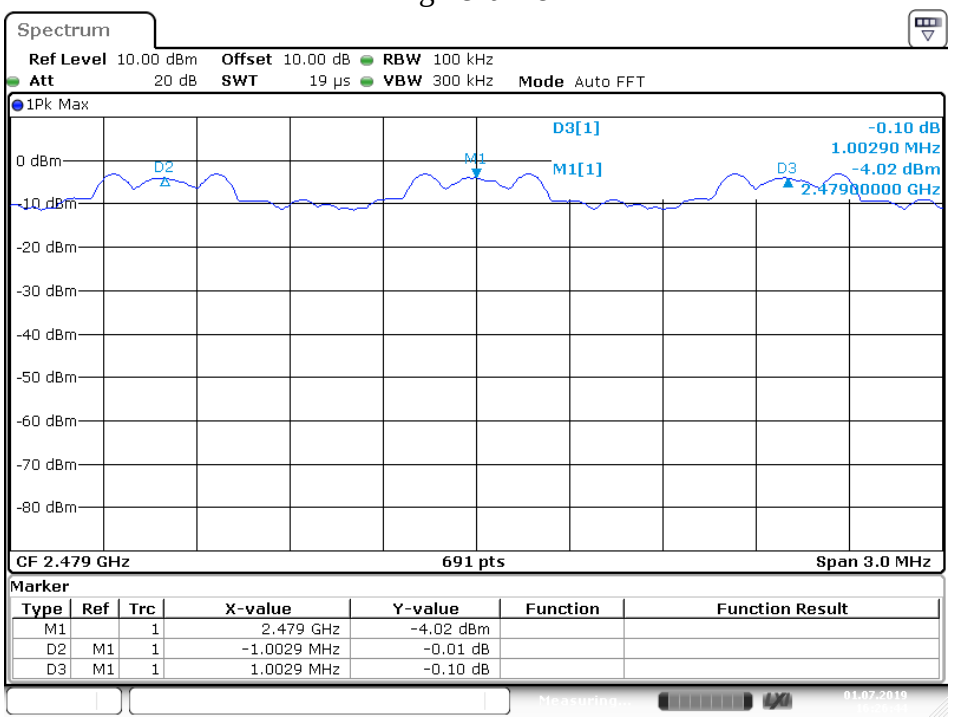
High channel



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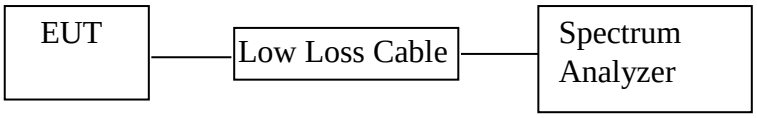
8. NUMBER OF HOPPING FREQUENCY TEST

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 Test

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

8.5. 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 RBW=100 kHz, VBW=300 kHz.

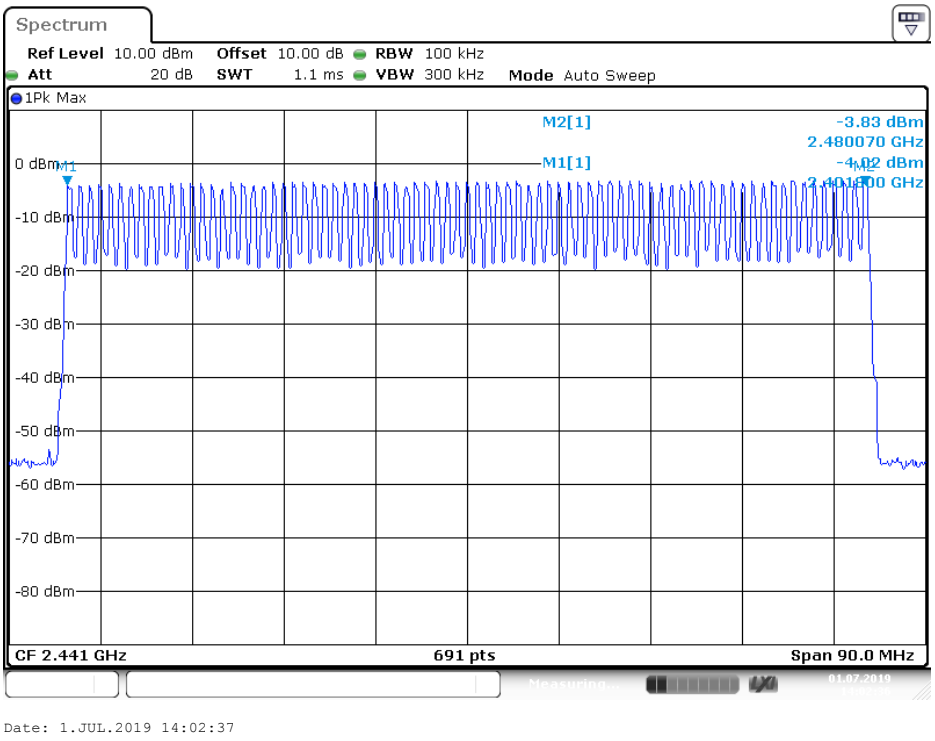
8.6.3.Max hold, view and count how many channel in the band.

8.7. Test Result

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

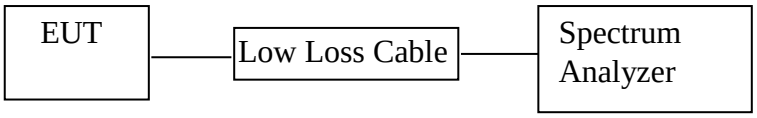
The spectrum analyzer plots are attached as below.

Number of hopping channels (GFSK Mode)



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 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 of 0.4 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 Test

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

9.5. 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=1MHz, VBW=3MHz, 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	0.428	136.96	400
	2441	0.413	132.16	400
	2480	0.420	134.40	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	1.696	271.36	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(4*79))×31.6				
DH5	2402	2.957	315.41	400
	2441	2.957	315.41	400
	2480	2.957	315.41	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(6*79))×31.6				

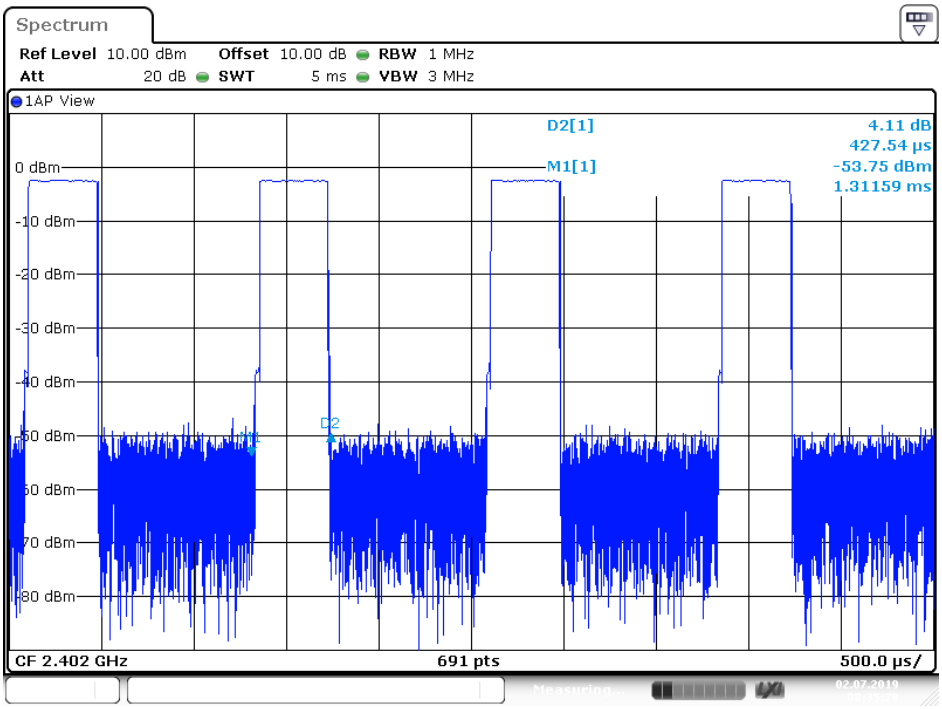
8DPSK Mode

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
3DH1	2402	0.420	134.40	400
	2441	0.420	134.40	400
	2480	0.420	134.40	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(2*79))×31.6				
3DH3	2402	1.696	271.36	400
	2441	1.710	273.60	400
	2480	1.710	273.60	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(4*79))×31.6				
3DH5	2402	2.957	315.41	400
	2441	2.957	315.41	400
	2480	2.957	315.41	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.

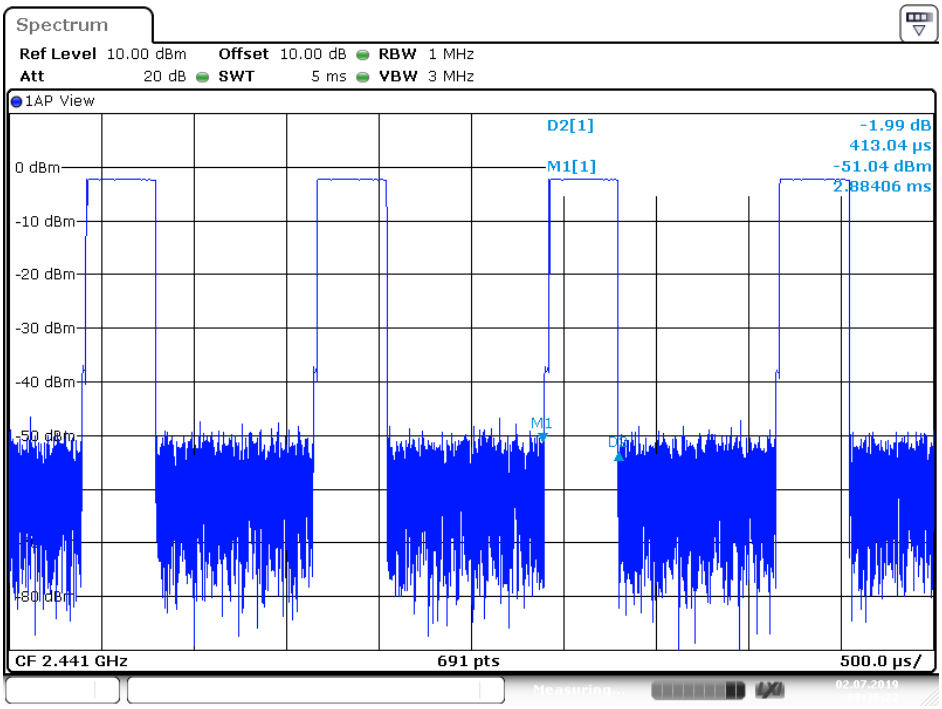
GFSK Mode

DH1 Low channel



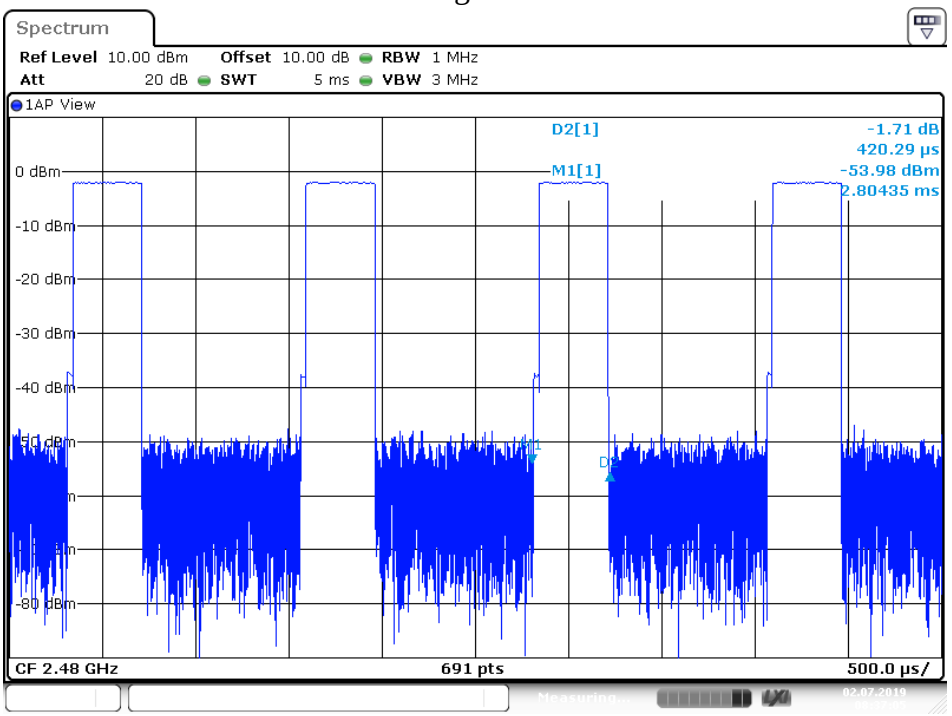
Date: 2.JUL.2019 08:35:27

DH1 Middle channel



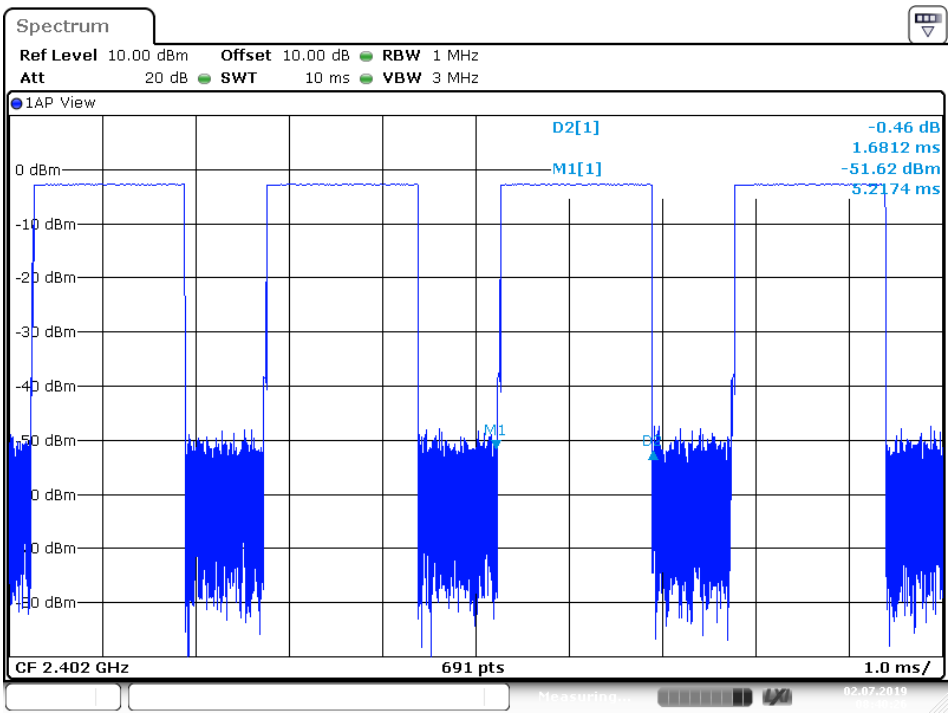
Date: 2.JUL.2019 08:36:22

DH1 High channel



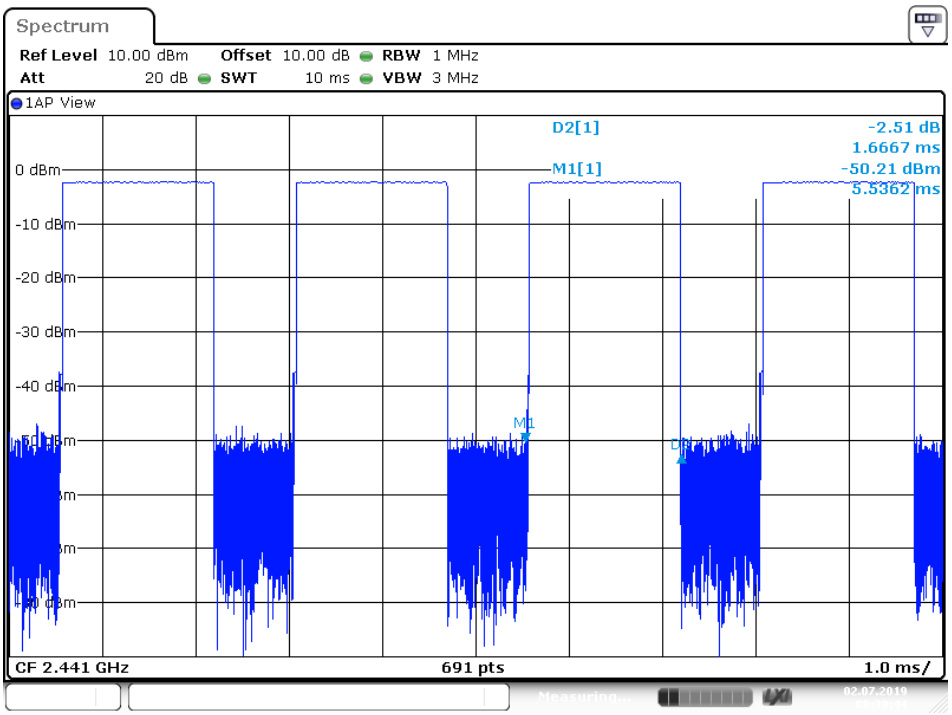
Date: 2.JUL.2019 08:37:05

DH3 Low channel



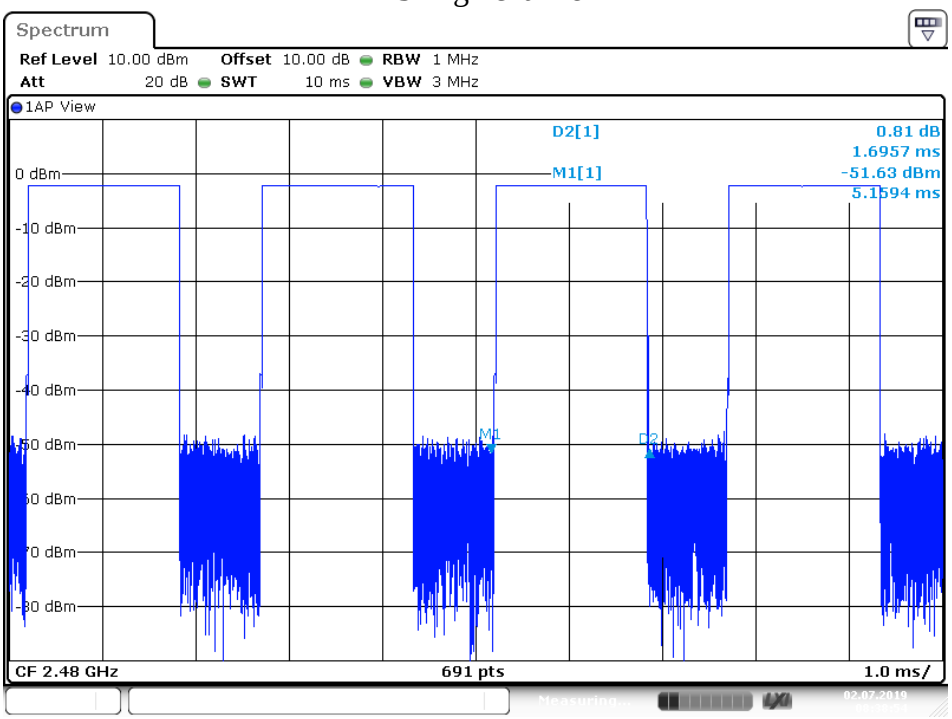
Date: 2.JUL.2019 08:40:26

DH3 Middle channel



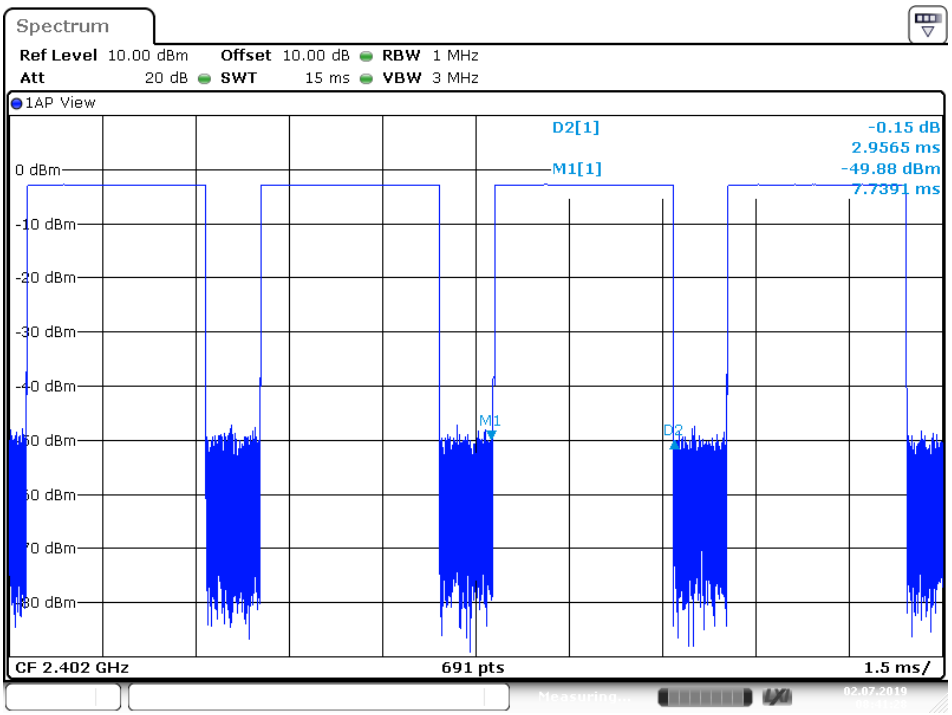
Date: 2.JUL.2019 08:39:44

DH3 High channel



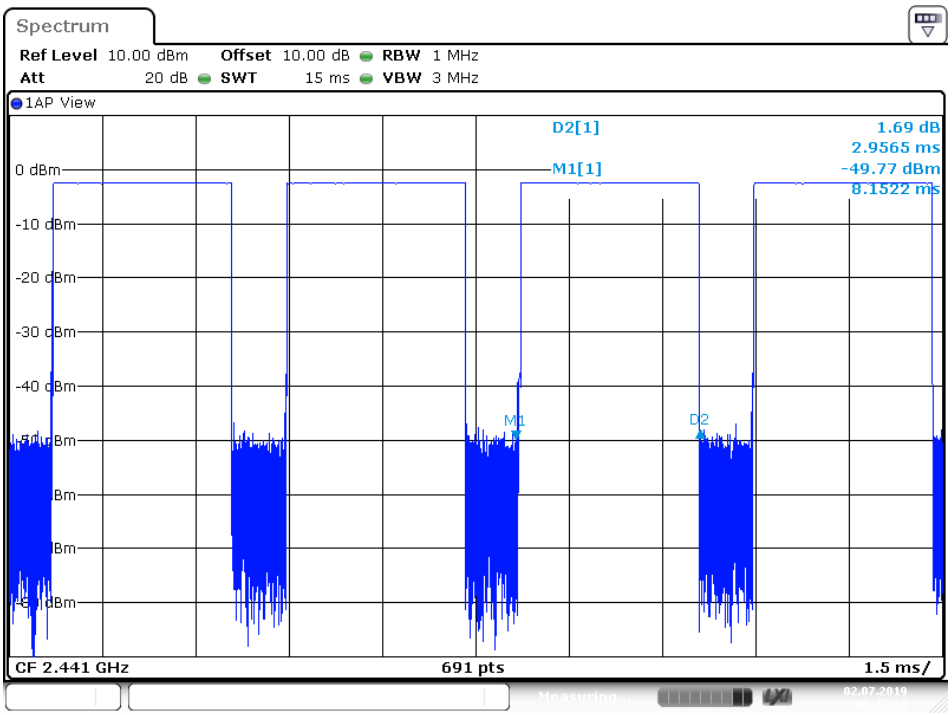
Date: 2.JUL.2019 08:38:54

DH5 Low channel



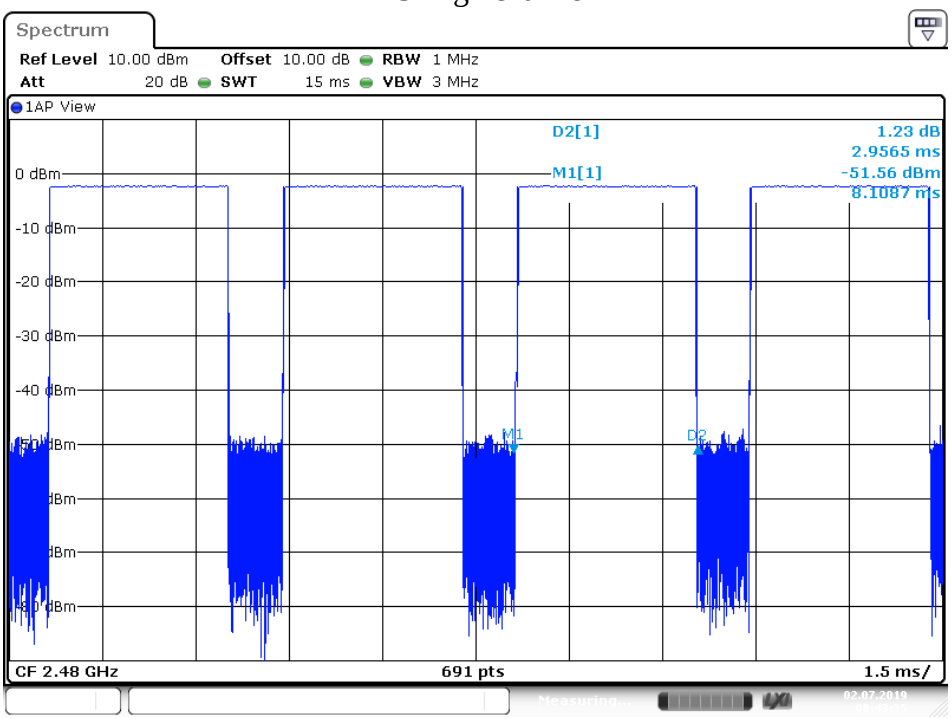
Date: 2.JUL.2019 08:41:28

DH5 Middle channel



Date: 2.JUL.2019 08:42:31

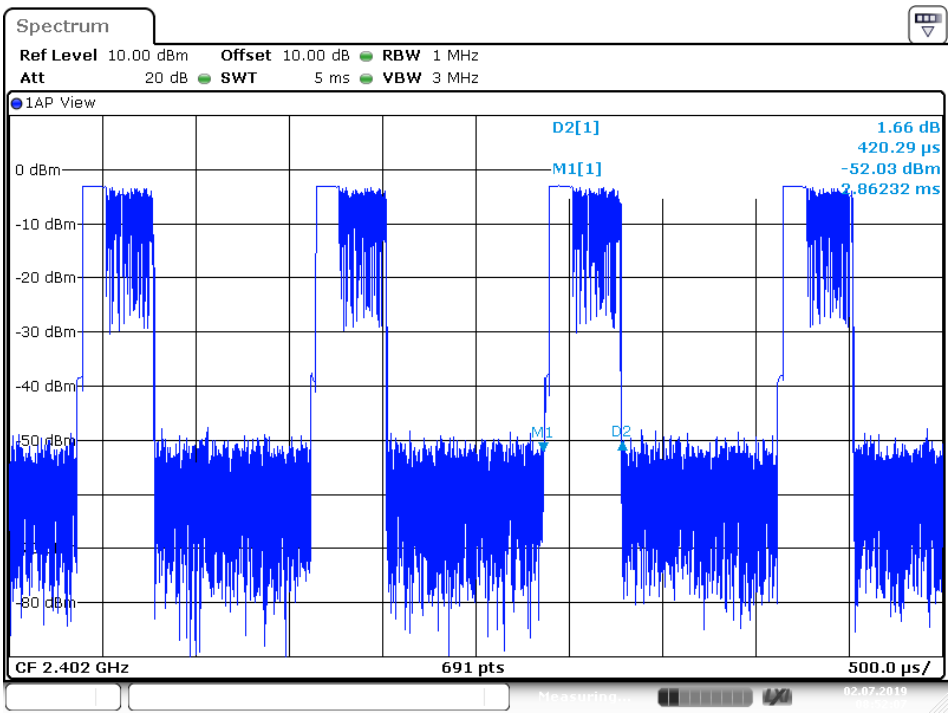
DH5 High channel



Date: 2.JUL.2019 08:43:35

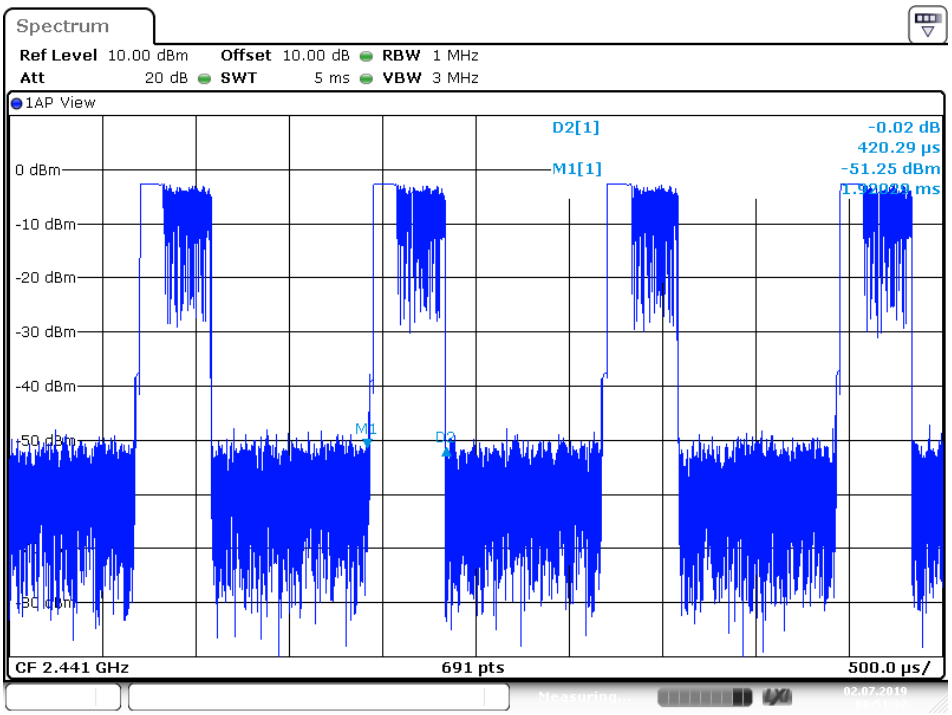
8DPSK Mode

3DH1 Low channel



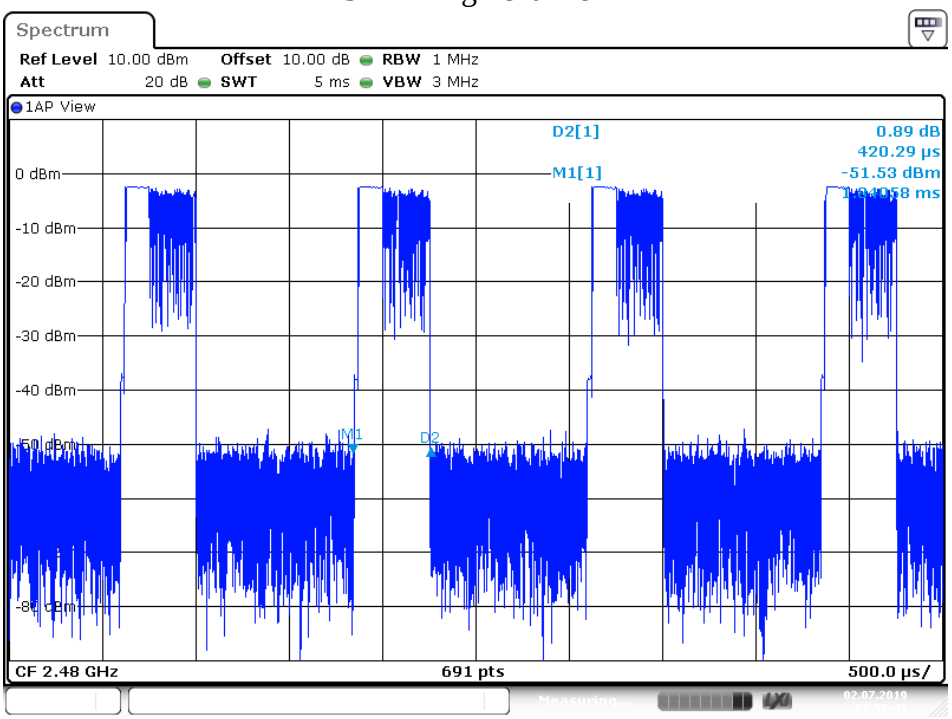
Date: 2.JUL.2019 08:52:07

3DH1 Middle channel



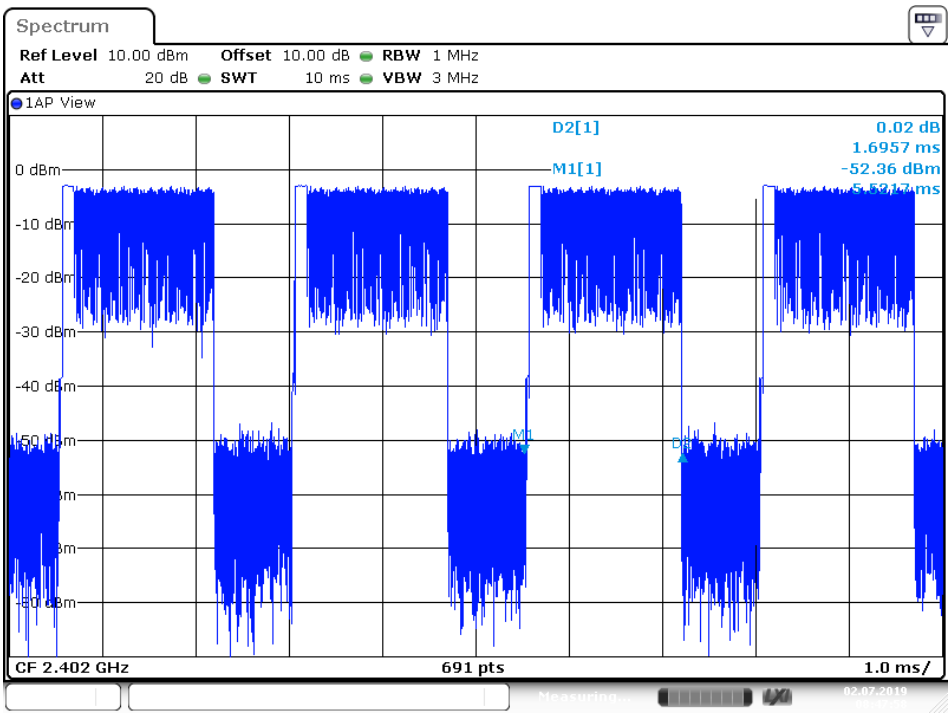
Date: 2.JUL.2019 08:51:32

3DH1 High channel



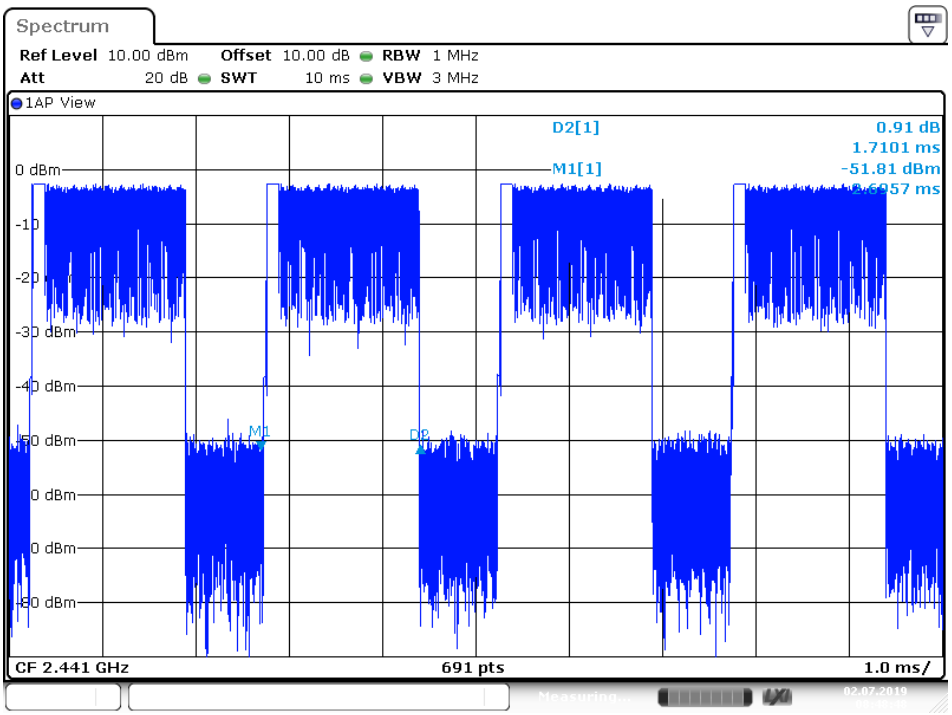
Date: 2.JUL.2019 08:50:43

3DH3 Low channel



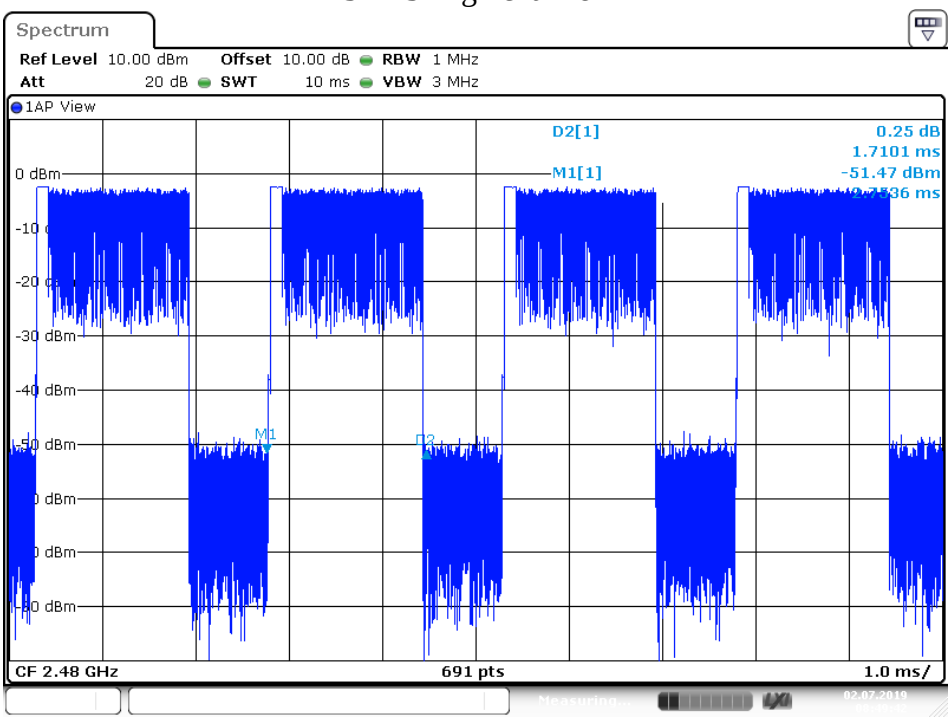
Date: 2.JUL.2019 08:47:58

3DH3 Middle channel



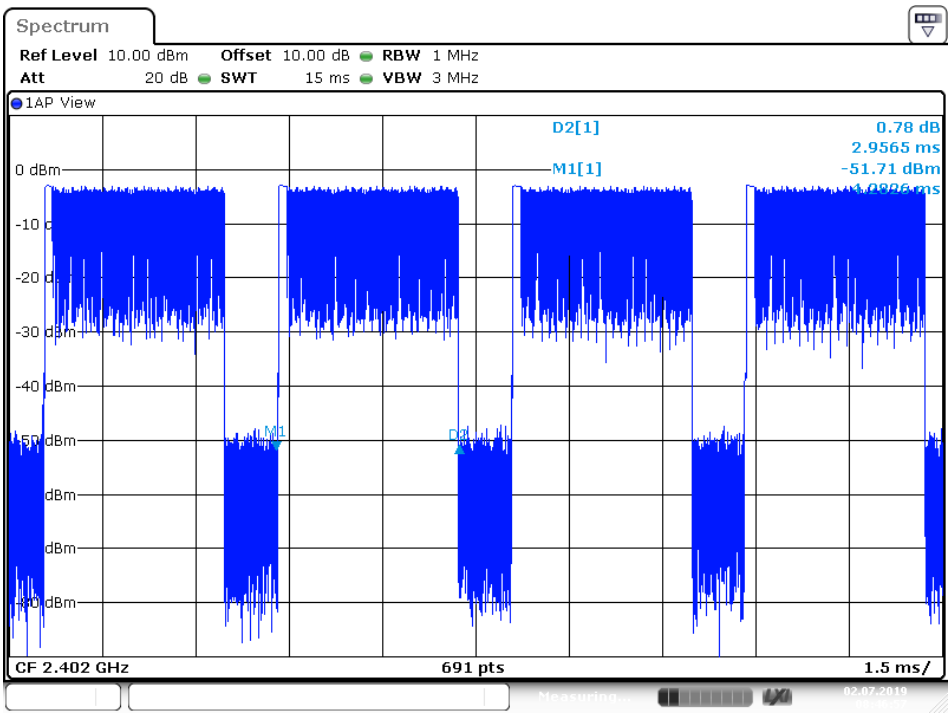
Date: 2.JUL.2019 08:48:48

3DH3 High channel



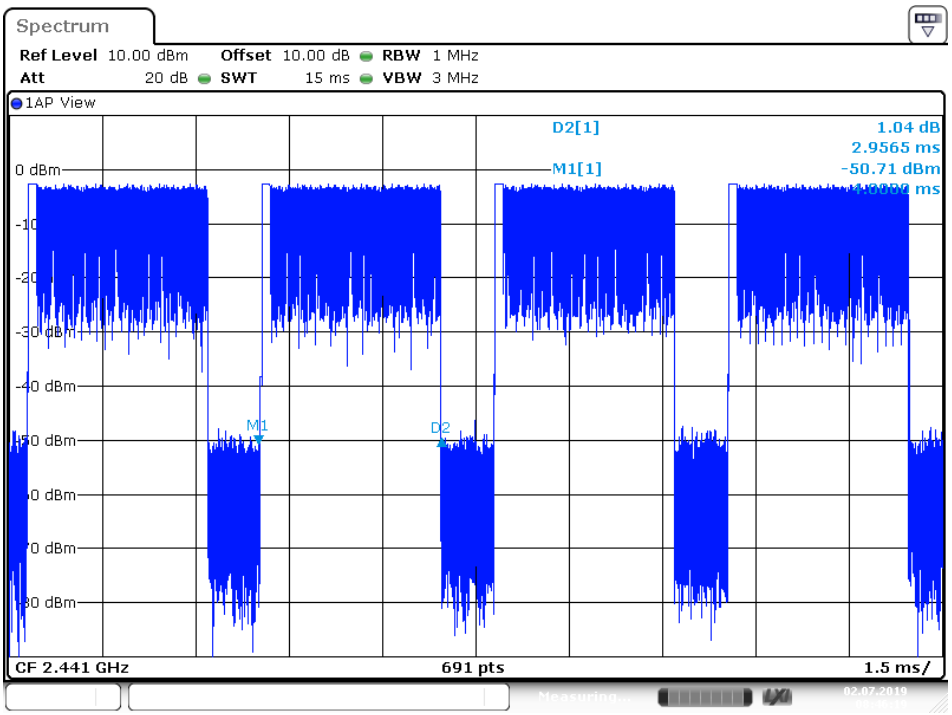
Date: 2.JUL.2019 08:49:41

3DH5 Low channel



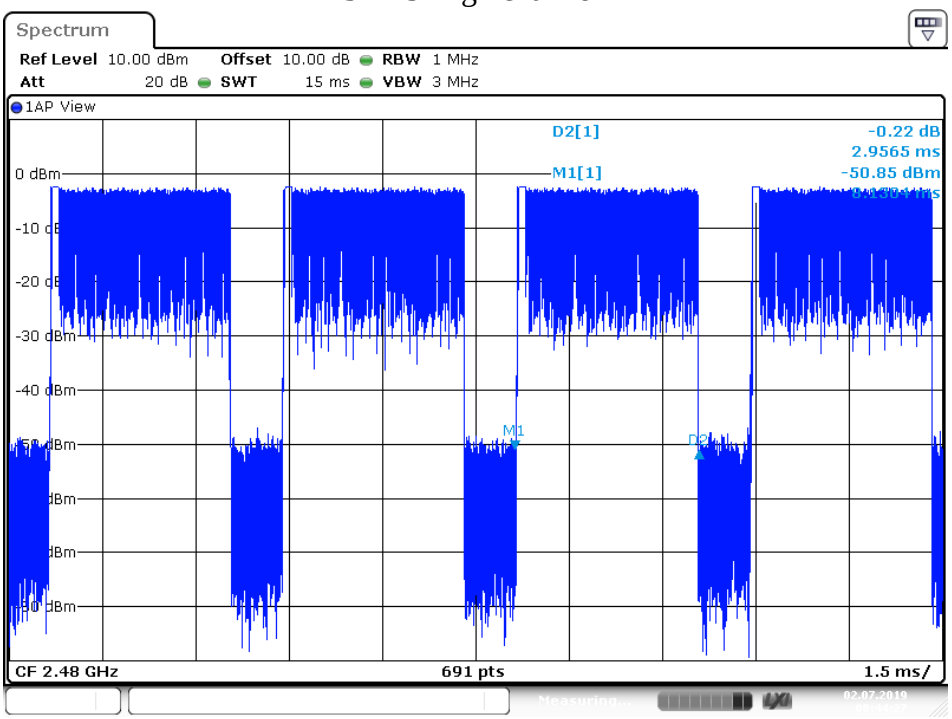
Date: 2.JUL.2019 08:46:57

3DH5 Middle channel



Date: 2.JUL.2019 08:46:19

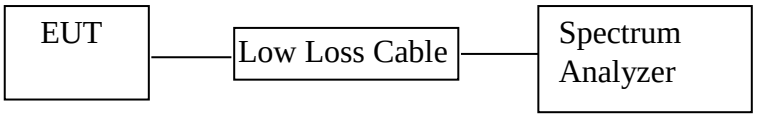
3DH5 High channel



Date: 2.JUL.2019 08:44:27

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 Test

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

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 3MHz and VBW to 10MHz.

10.6.3.Measurement the maximum peak output power.

10.7. Test Result

GFSK Mode

Frequency (MHz)	Peak Output Power (dBm/W)	E.I.R.P (dBm/W)	Limits (dBm/W)	Result
2402	-3.51/0.0004	-3.51/0.0004	21 / 0.125	Pass
2441	-3.12/0.0005	-3.12/0.0005	21 / 0.125	Pass
2480	-2.95/0.0005	-2.95/0.0005	21 / 0.125	Pass

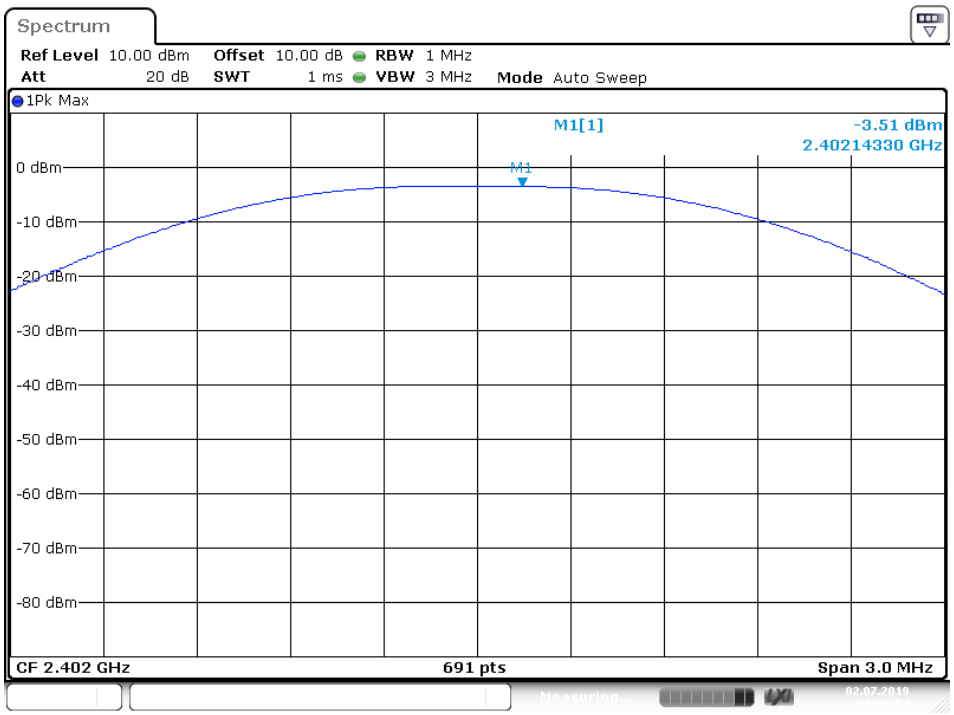
8DPSK Mode

Frequency (MHz)	Peak Output Power (dBm/W)	E.I.R.P (dBm/W)	Limits (dBm/W)	Result
2402	-2.41/0.0006	-2.41/0.0006	21 / 0.125	Pass
2441	-2.02/0.0006	-2.02/0.0006	21 / 0.125	Pass
2480	-1.92/0.0006	-1.92/0.0006	21 / 0.125	Pass

The spectrum analyzer plots are attached as below.

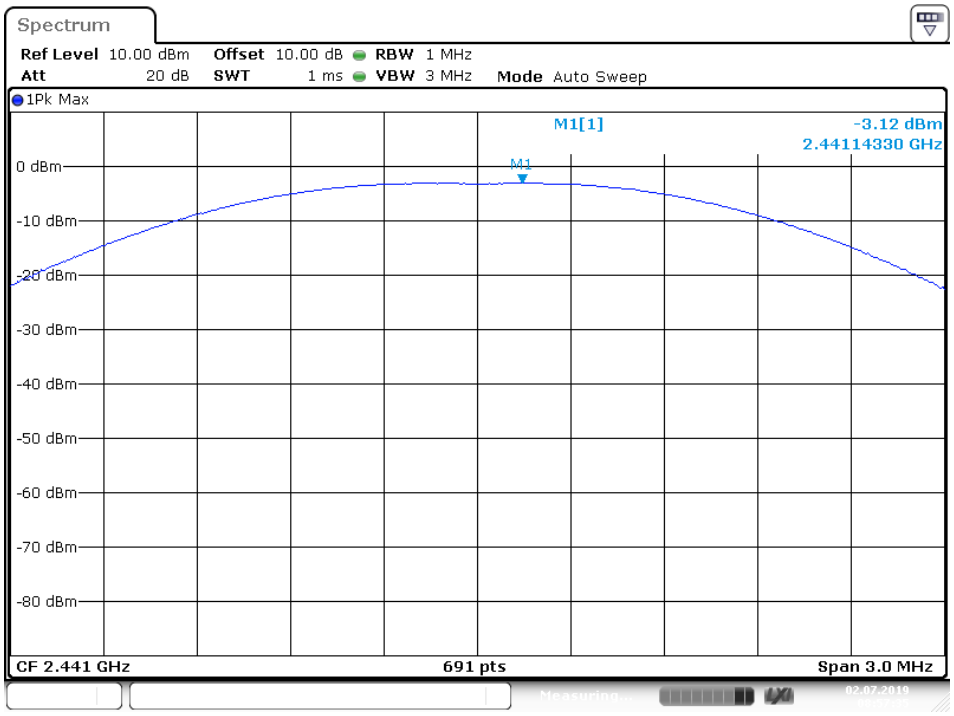
GFSK Mode

Low channel



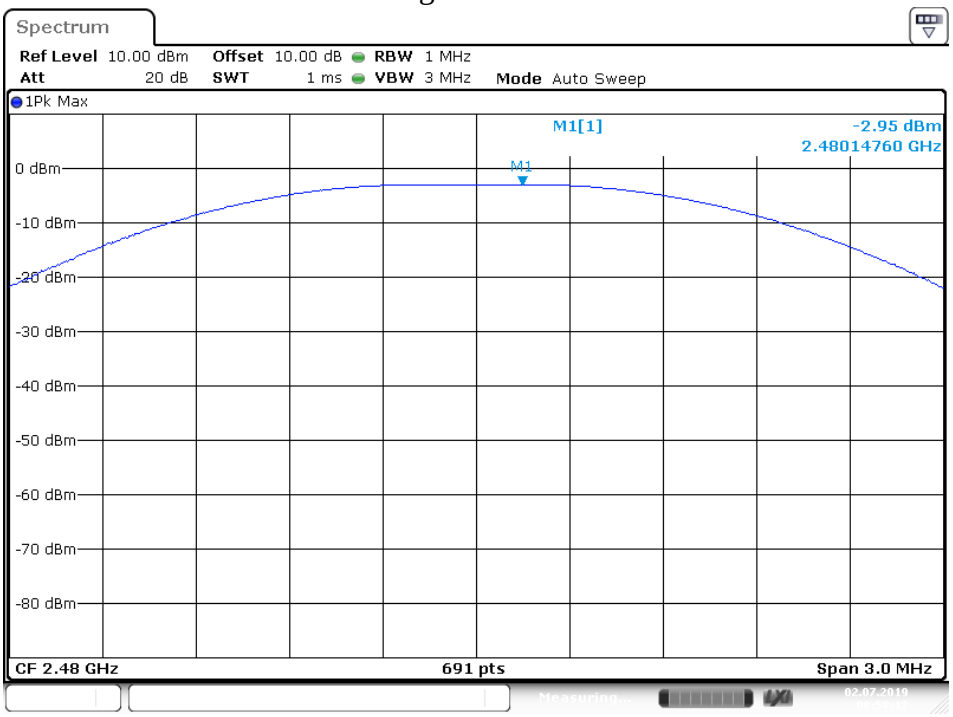
Date: 2.JUL.2019 08:56:54

Middle channel



Date: 2.JUL.2019 08:57:35

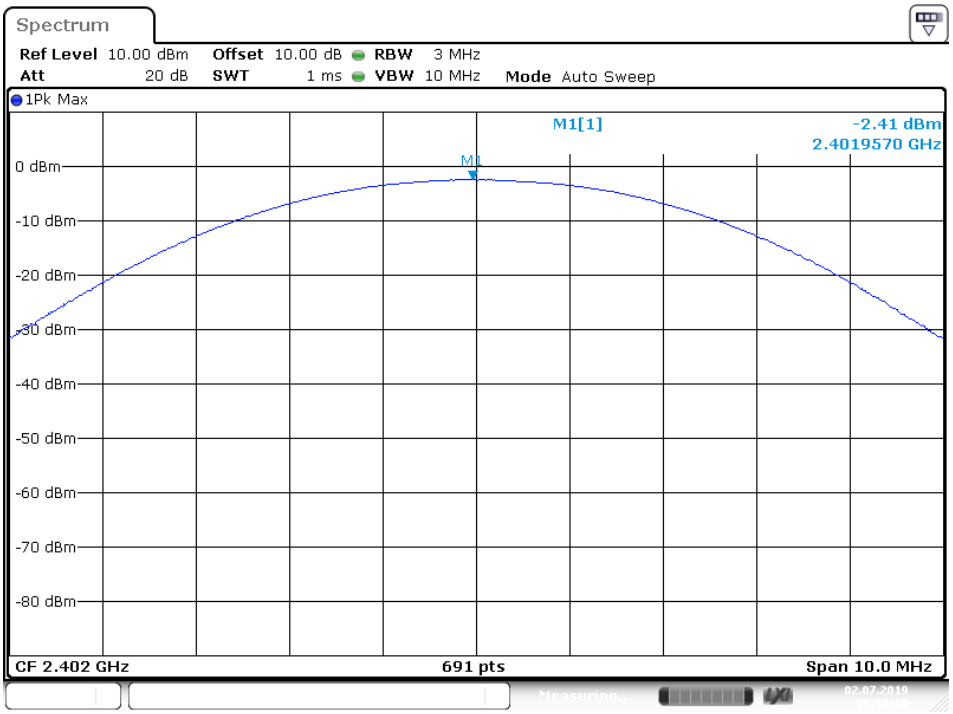
High channel



Date: 2.JUL.2019 08:58:12

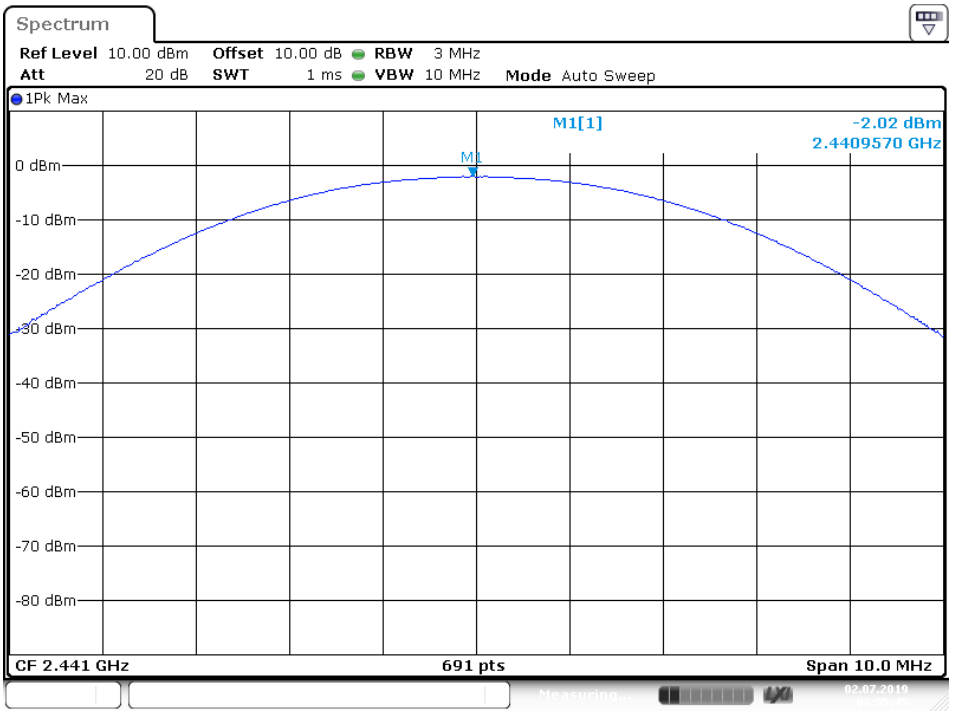
8DPSK Mode

Low channel



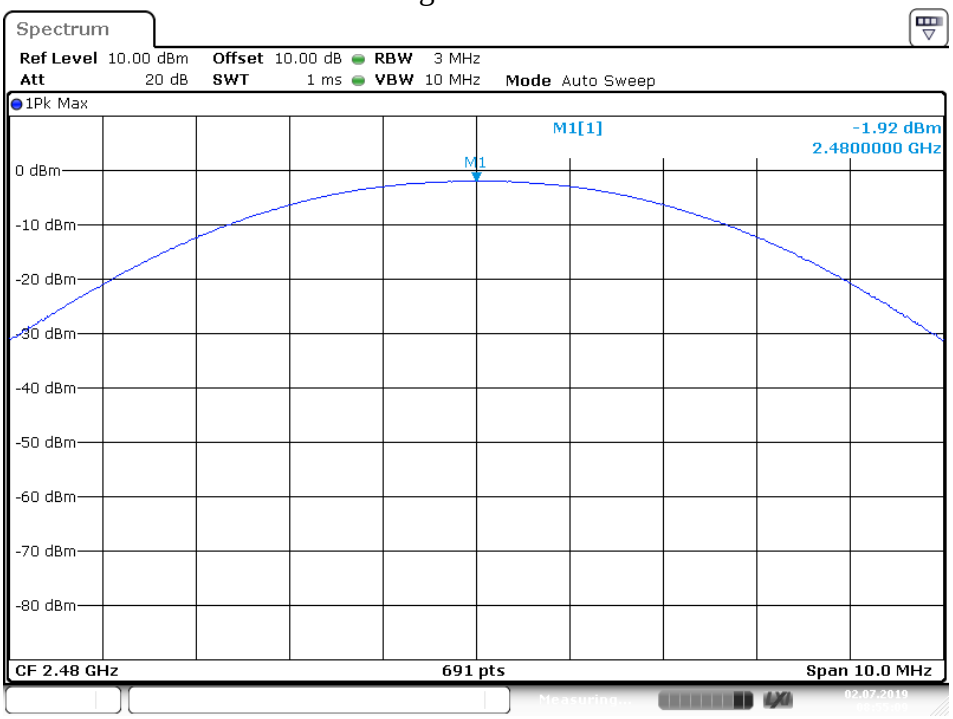
Date: 2.JUL.2019 08:56:10

Middle channel



Date: 2.JUL.2019 08:55:45

High channel

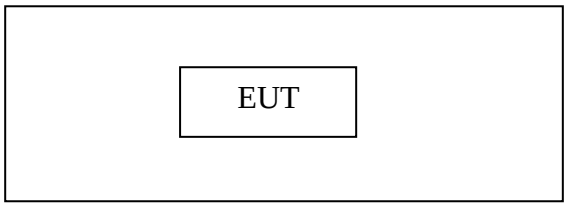


Date: 2.JUL.2019 08:55:09

11. RADIATED EMISSION TEST

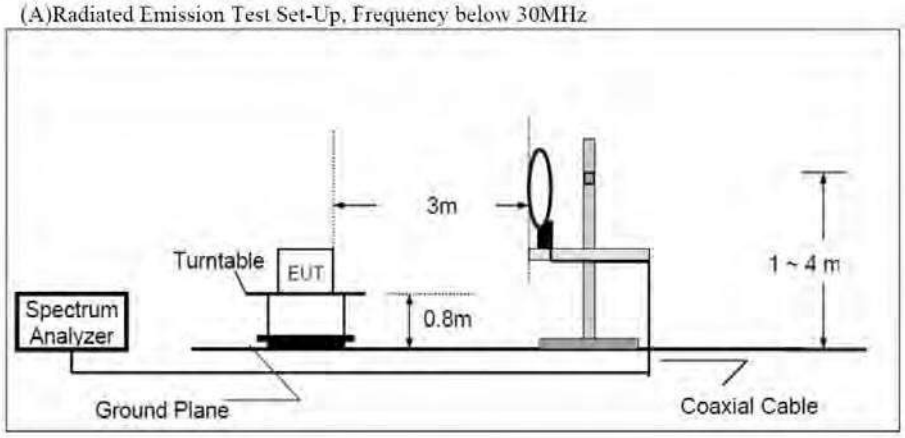
11.1. Block Diagram of Test Setup

11.1.1. Block diagram of connection between the EUT and peripherals

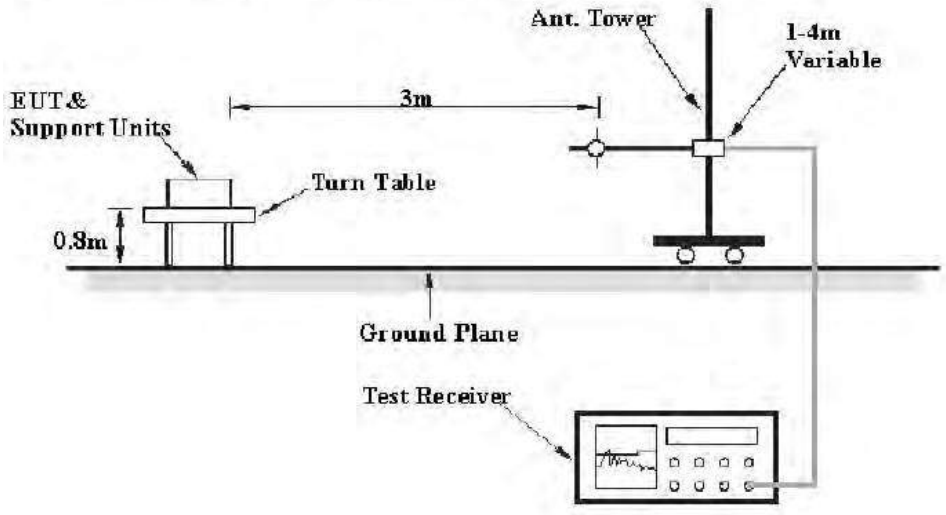


11.1.2. Semi-Anechoic Chamber Test Setup Diagram

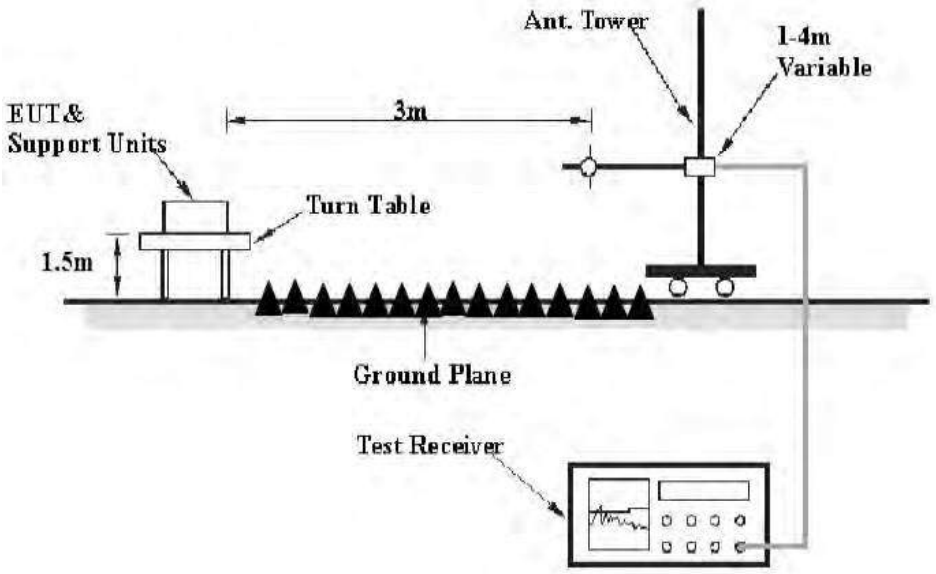
(A)Radiated Emission Test Set-Up, Frequency below 30MHz



(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).

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

Except where otherwise indicated in the applicable RSS, 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. 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.

11.6. EUT Configuration on Test

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

11.7. 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 worse case emissions are reported.

11.8. Data Sample

Frequency (MHz)	Reading (dBμv)	Factor (dB/m)	Result (dBμv/m)	Limit (dBμv/m)	Margin (dB)	Remark
X.XX	28.66	-15.19	13.47	40.0	-26.53	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.

11.9. Test Result

Pass.

The frequency range from 9KHz to 26.5GHz is investigated.

We tested GFSK mode, Π/4-DQPSK & 8DPSK Mode and recorded the Worse case data (8DPSK mode) for all test mode.

The spectrum analyzer plots are attached as below.

9kHz-30MHz test data

ACCURATE TECHNOLOGY CO.,LTD

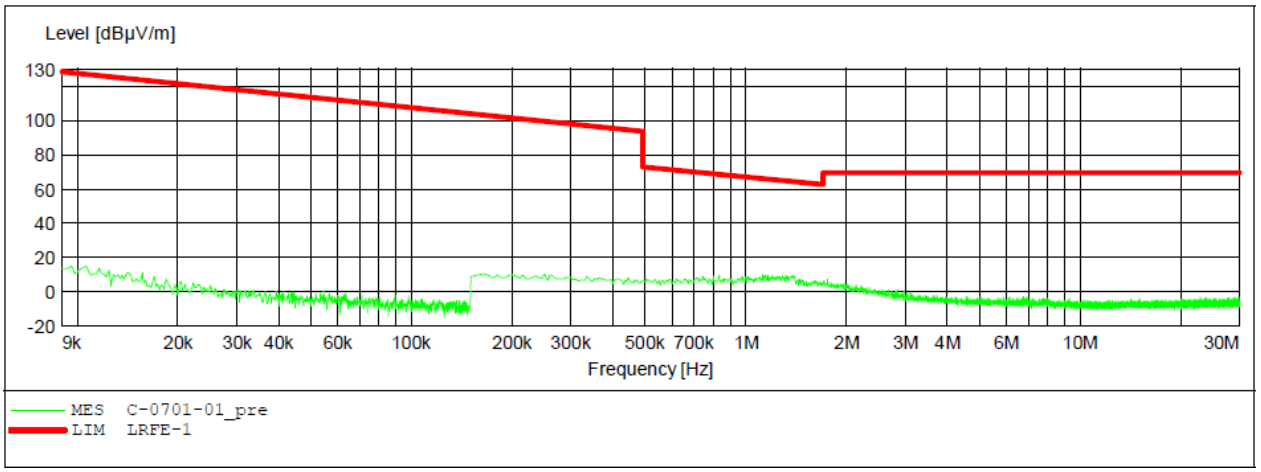
FCC Part 15C 3M Radiated

EUT:	Bluetooth Headset M/N:NS-MBTHS
Manufacturer:	Compupal Group Corporation
Operating Condition:	TX 2402MHz
Test Site:	2# Chamber
Operator:	WADE
Test Specification:	DC 3.7V
Comment:	X
Start of Test:	2019-7-1 /

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

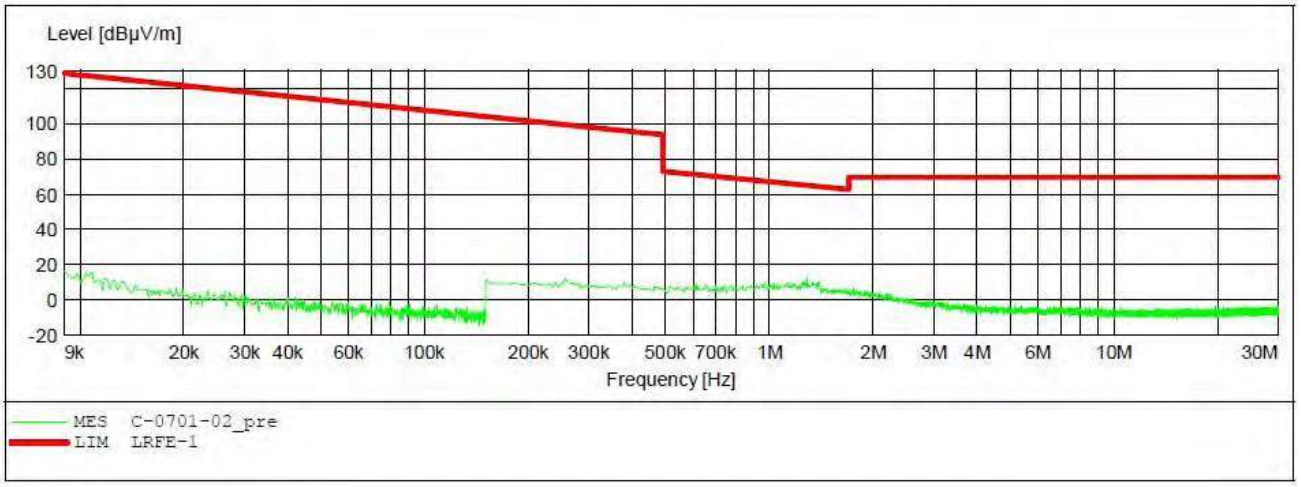
FCC Part 15C 3M Radiated

EUT: Bluetooth Headset M/N:NS-MBTHS
Manufacturer: Compupal Group Corporation
Operating Condition: TX 2402MHz
Test Site: 2# Chamber
Operator: WADE
Test Specification: DC 3.7V
Comment: Y
Start of Test: 2019-7-1 /

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

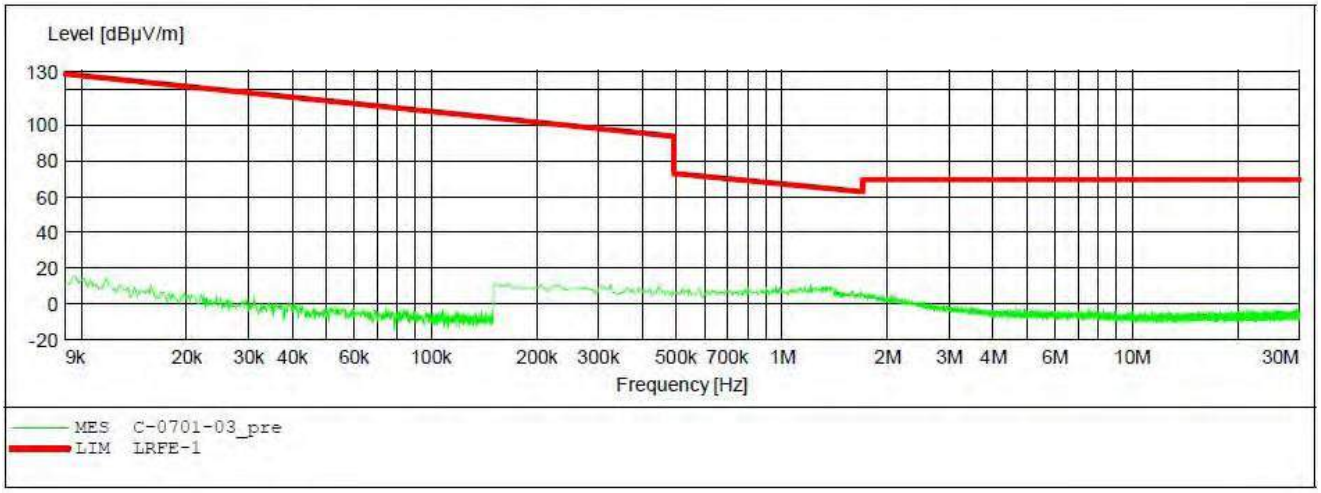
FCC Part 15C 3M Radiated

EUT:	Bluetooth Headset M/N:NS-MBTHS
Manufacturer:	Compupal Group Corporation
Operating Condition:	TX 2402MHz
Test Site:	2# Chamber
Operator:	WADE
Test Specification:	DC 3.7V
Comment:	Z
Start of Test:	2019-7-1 /

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

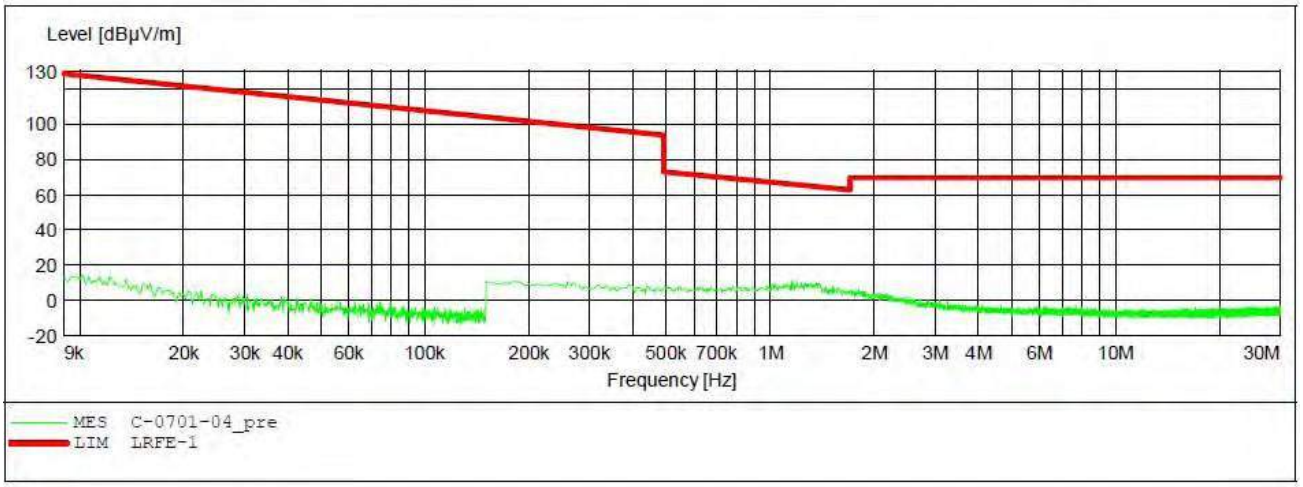
FCC Part 15C 3M Radiated

EUT:	Bluetooth Headset M/N:NS-MBTHS
Manufacturer:	Compupal Group Corporation
Operating Condition:	TX 2441MHz
Test Site:	2# Chamber
Operator:	WADE
Test Specification:	DC 3.7V
Comment:	X
Start of Test:	2019-7-1 /

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

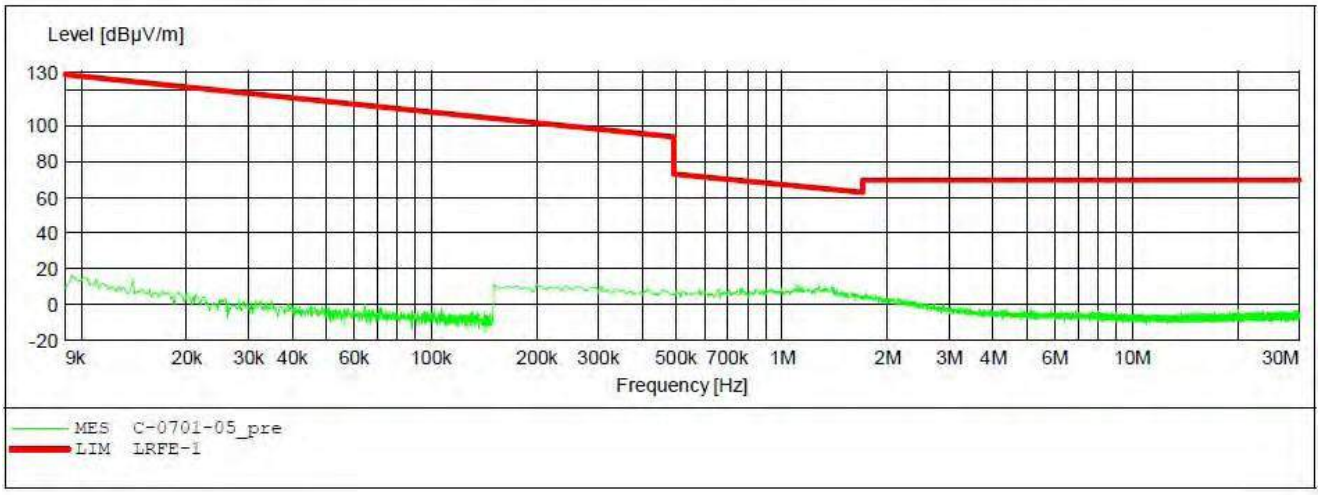
FCC Part 15C 3M Radiated

EUT:	Bluetooth Headset M/N:NS-MBTHS
Manufacturer:	Compupal Group Corporation
Operating Condition:	TX 2441MHz
Test Site:	2# Chamber
Operator:	WADE
Test Specification:	DC 3.7V
Comment:	Y
Start of Test:	2019-7-1 /

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

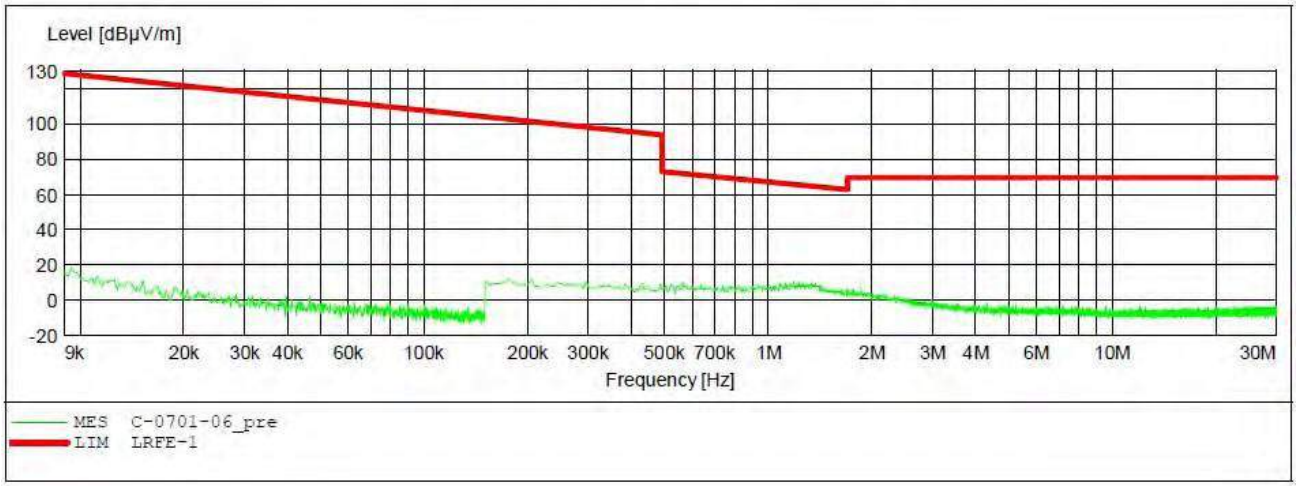
FCC Part 15C 3M Radiated

EUT:	Bluetooth Headset M/N:NS-MBTHS
Manufacturer:	Compupal Group Corporation
Operating Condition:	TX 2441MHz
Test Site:	2# Chamber
Operator:	WADE
Test Specification:	DC 3.7V
Comment:	Z
Start of Test:	2019-7-1 /

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

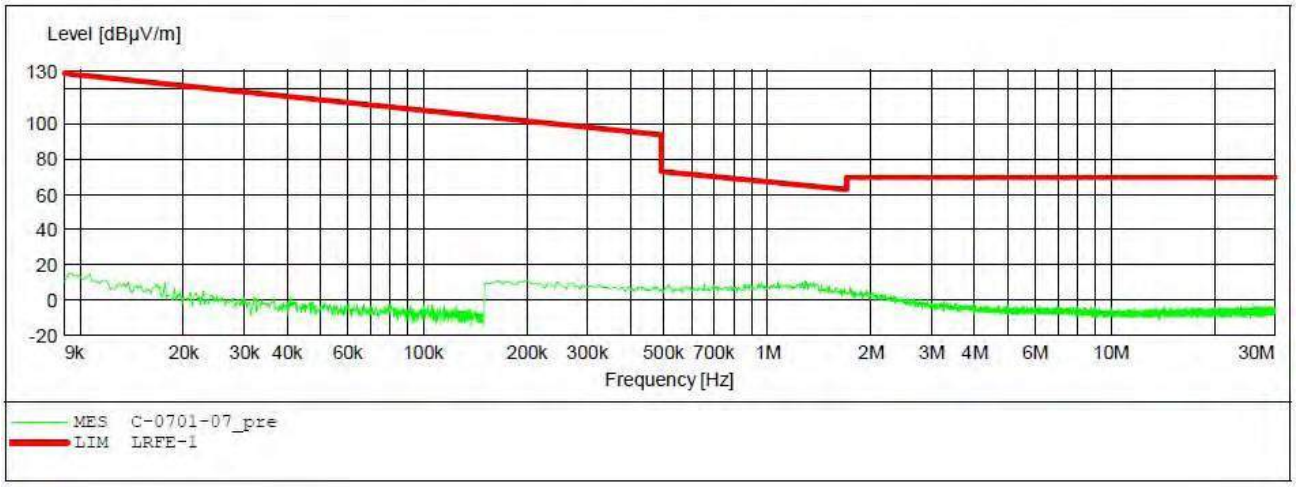
FCC Part 15C 3M Radiated

EUT:	Bluetooth Headset M/N:NS-MBTHS
Manufacturer:	Compupal Group Corporation
Operating Condition:	TX 2480MHz
Test Site:	2# Chamber
Operator:	WADE
Test Specification:	DC 3.7V
Comment:	X
Start of Test:	2019-7-1 /

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

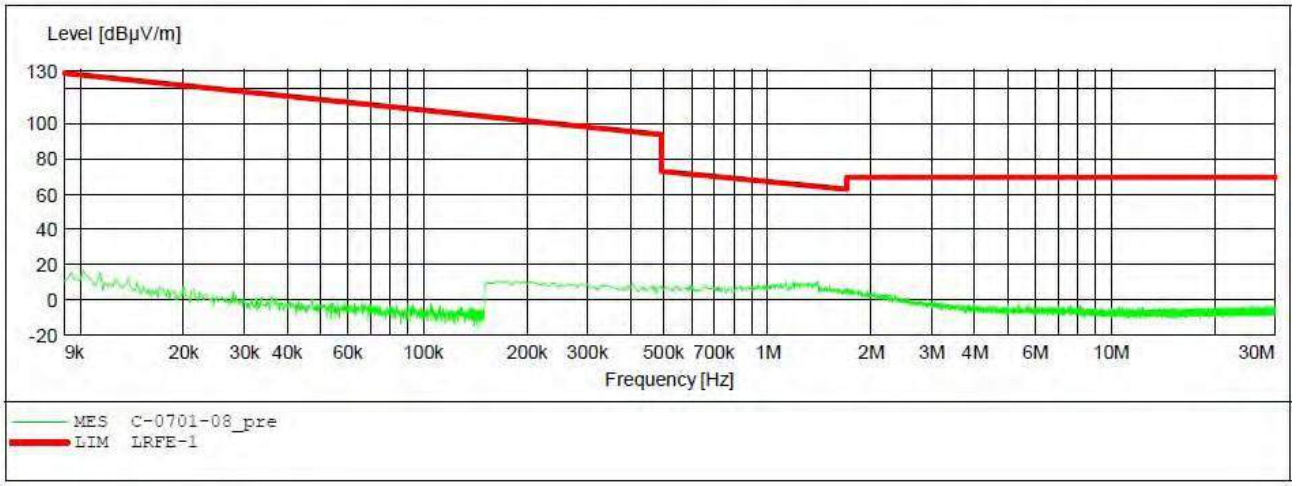
FCC Part 15C 3M Radiated

EUT: Bluetooth Headset M/N:NS-MBTHS
Manufacturer: Compupal Group Corporation
Operating Condition: TX 2480MHz
Test Site: 2# Chamber
Operator: WADE
Test Specification: DC 3.7V
Comment: Y
Start of Test: 2019-7-1 /

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

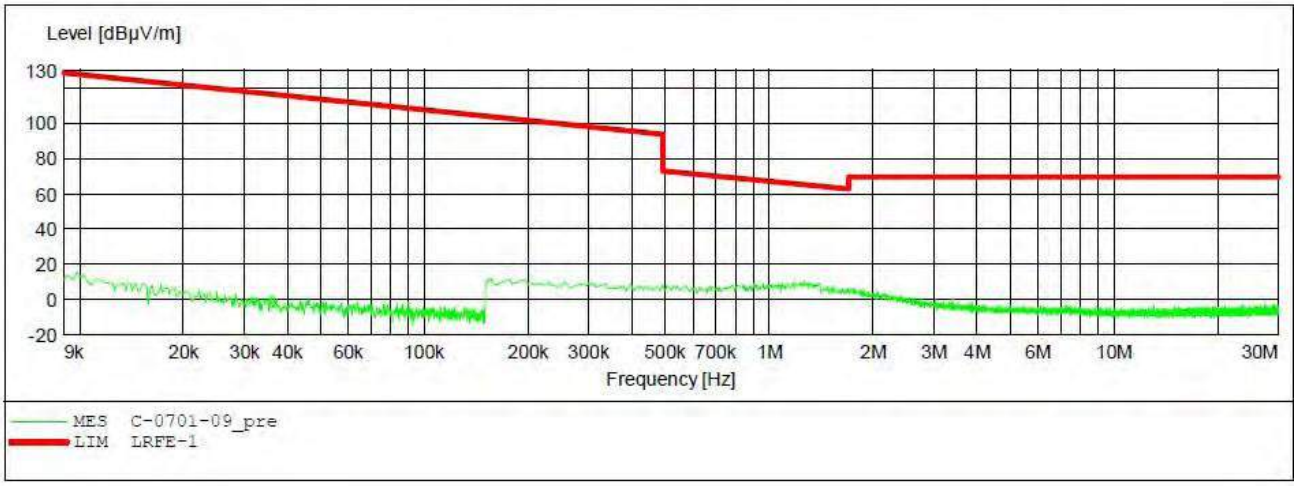
FCC Part 15C 3M Radiated

EUT:	Bluetooth Headset M/N:NS-MBTHS
Manufacturer:	Compupal Group Corporation
Operating Condition:	TX 2480MHz
Test Site:	2# Chamber
Operator:	WADE
Test Specification:	DC 3.7V
Comment:	Z
Start of Test:	2019-7-1 /

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



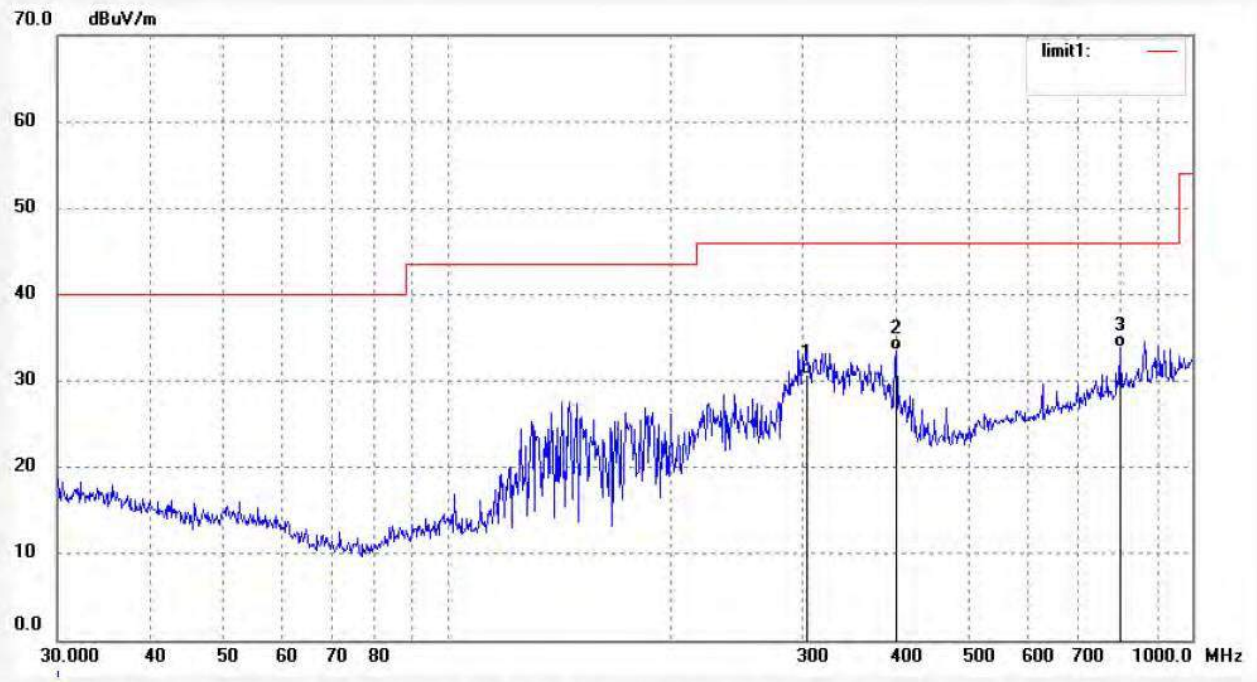
30MHz-1GHz test data

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 #2597
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth Headset
Mode: TX 2402MHz
Model: NS-MBTHS
Manufacturer: Compupal Group Corporation

Polarization: Horizontal
Power Source: DC 3.7V
Date: 19/06/26/
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	303.5437	39.67	-8.96	30.71	46.00	-15.29	QP			
2	400.4318	39.86	-6.43	33.43	46.00	-12.57	QP			
3	798.9796	33.04	0.81	33.85	46.00	-12.15	QP			

ACCURATE TECHNOLOGY CO., LTD.
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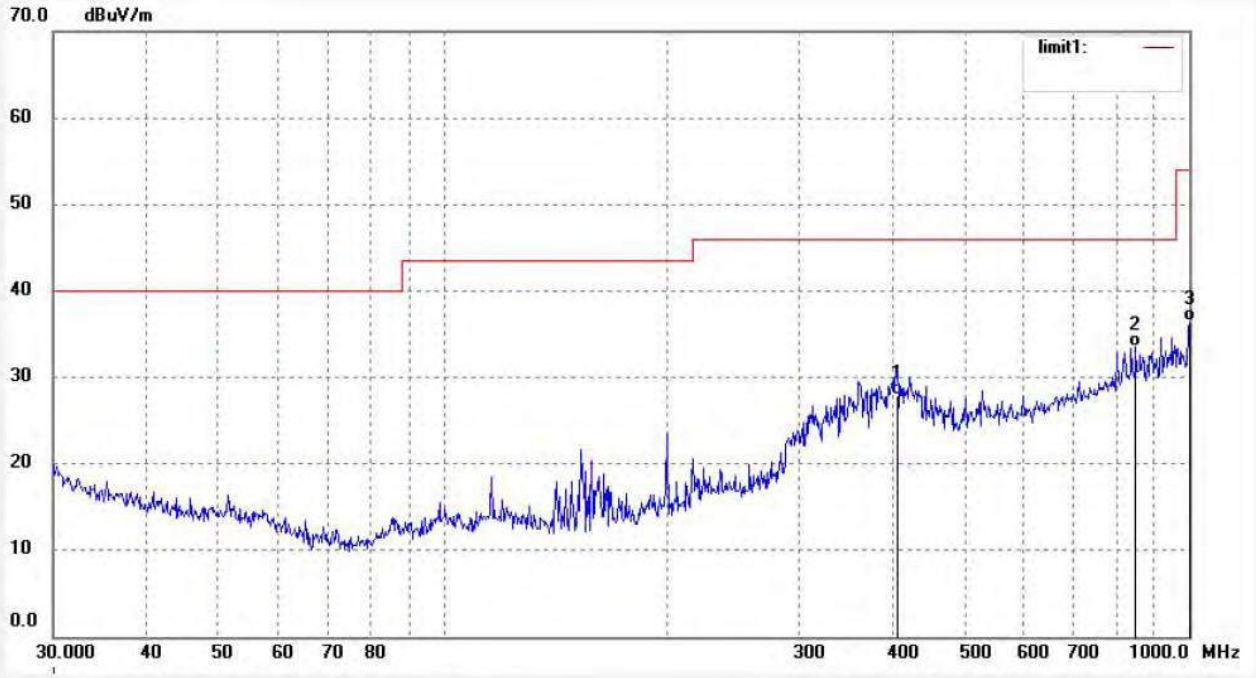
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2019 #2598
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth Headset
Mode: TX 2402MHz
Model: NS-MBTHS
Manufacturer: Compupal Group Corporation

Polarization: Vertical
Power Source: DC 3.7V
Date: 19/06/26/
Time:
Engineer Signature: WADE
Distance: 3m

Note:



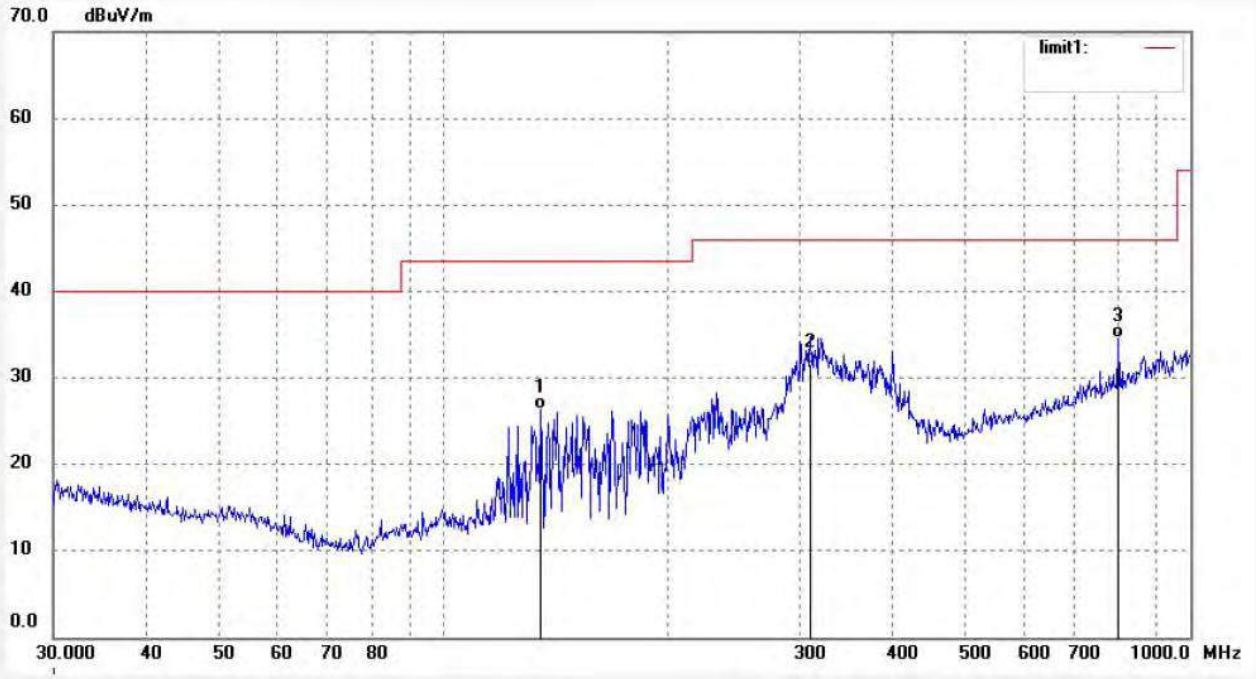
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	406.0880	34.26	-6.30	27.96	46.00	-18.04	QP			
2	848.0562	31.91	1.54	33.45	46.00	-12.55	QP			
3	1000.0000	32.68	3.84	36.52	54.00	-17.48	QP			

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 #2600
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth Headset
Mode: TX 2441MHz
Model: NS-MBTHS
Manufacturer: Compupal Group Corporation

Polarization: Horizontal
Power Source: DC 3.7V
Date: 19/06/26/
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	134.5592	40.31	-13.95	26.36	43.50	-17.14	QP			
2	309.9977	40.38	-8.73	31.65	46.00	-14.35	QP			
3	801.7862	33.73	0.87	34.60	46.00	-11.40	QP			

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F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
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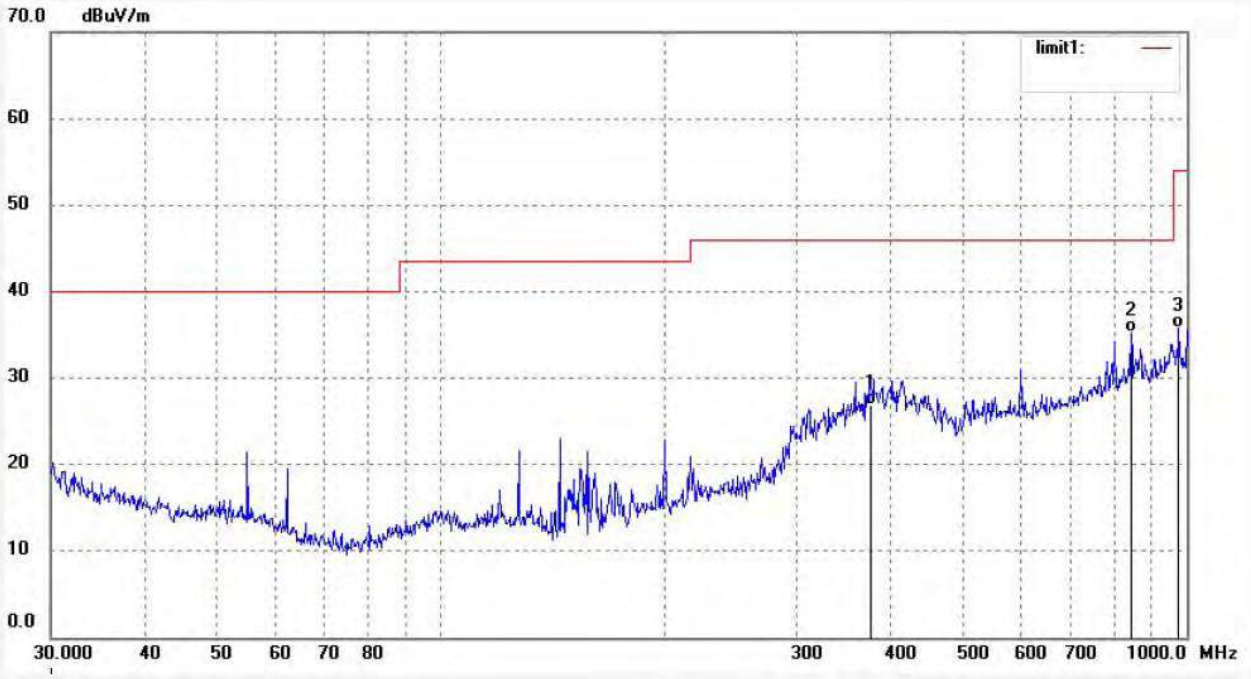
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2019 #2599
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth Headset
Mode: TX 2441MHz
Model: NS-MBTHS
Manufacturer: Compupal Group Corporation

Polarization: Vertical
Power Source: DC 3.7V
Date: 19/06/26/
Time:
Engineer Signature: WADE
Distance: 3m

Note:



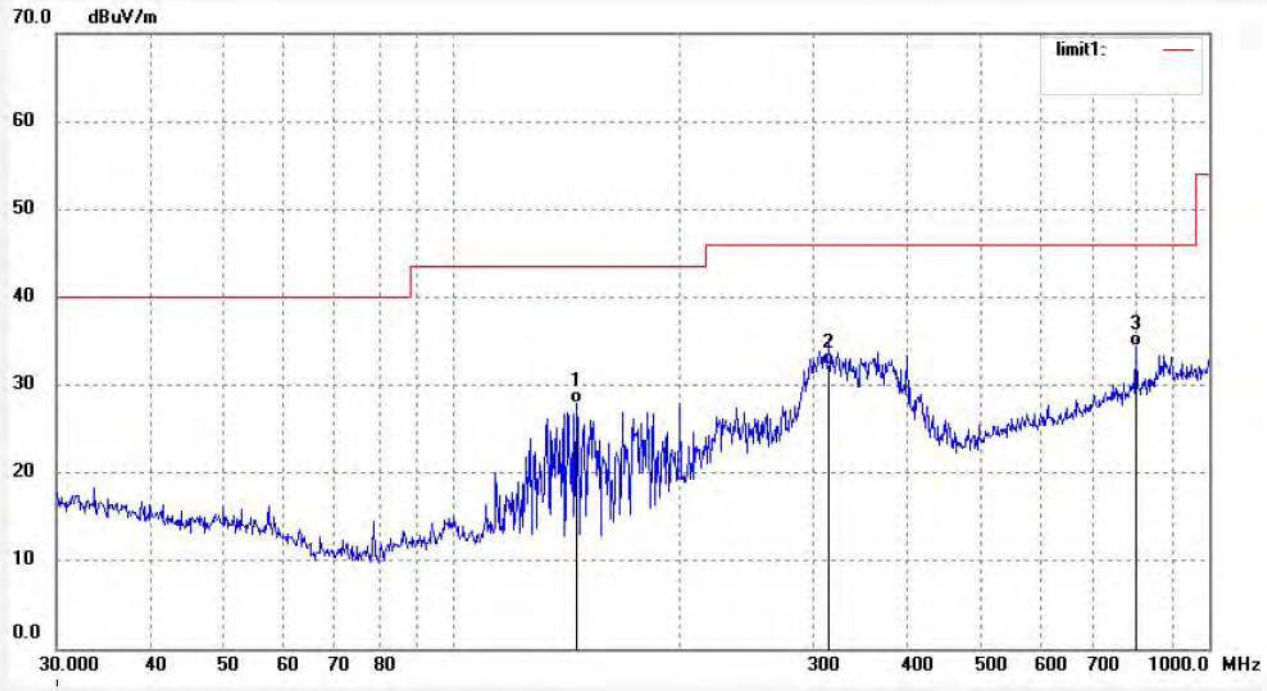
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	377.2590	33.96	-7.04	26.92	46.00	-19.08	QP			
2	842.1295	33.72	1.50	35.22	46.00	-10.78	QP			
3	975.7528	32.35	3.49	35.84	54.00	-18.16	QP			

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 #2601
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth Headset
Mode: TX 2480MHz
Model: NS-MBTHS
Manufacturer: Compupal Group Corporation

Polarization: Horizontal
Power Source: DC 3.7V
Date: 19/06/26/
Time:
Engineer Signature: WADE
Distance: 3m

Note:



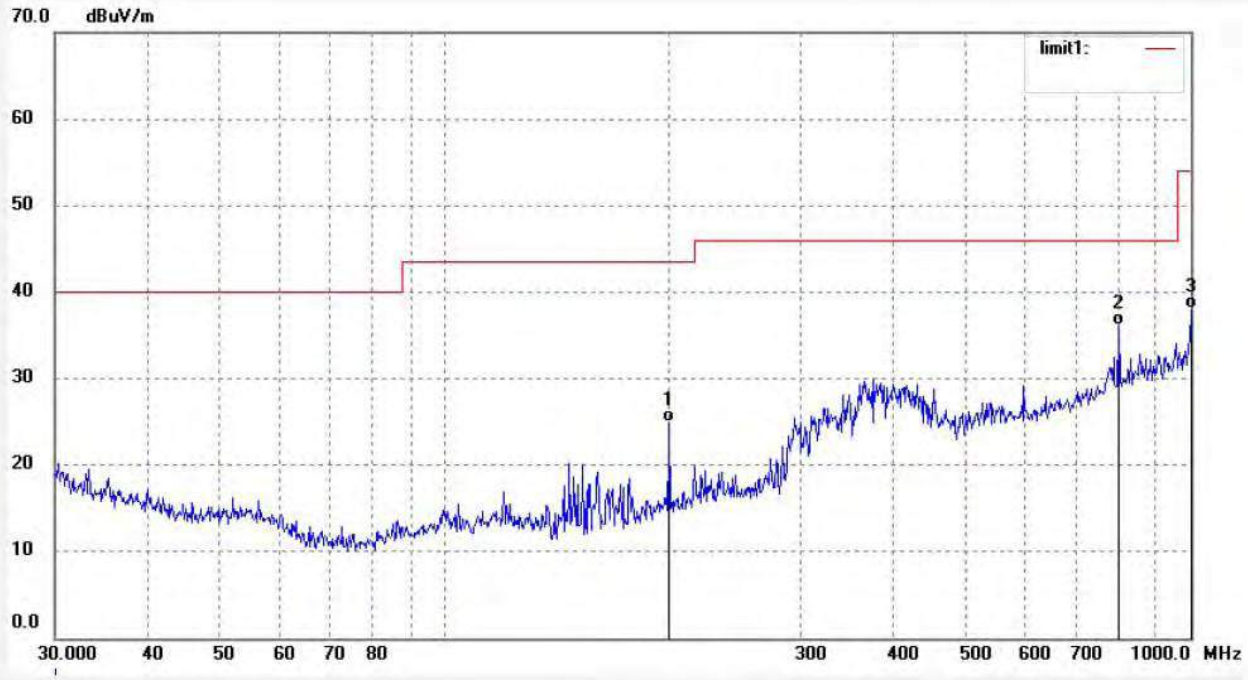
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	145.8610	42.96	-15.09	27.87	43.50	-15.63	QP			
2	314.3765	40.81	-8.60	32.21	46.00	-13.79	QP			
3	798.9796	33.60	0.81	34.41	46.00	-11.59	QP			

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 #2602
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth Headset
Mode: TX 2480MHz
Model: NS-MBTHS
Manufacturer: Compupal Group Corporation

Polarization: Vertical
Power Source: DC 3.7V
Date: 19/06/26/
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	199.9856	37.13	-12.26	24.87	43.50	-18.63	QP			
2	801.7862	35.26	0.87	36.13	46.00	-9.87	QP			
3	1000.0000	34.29	3.84	38.13	54.00	-15.87	QP			

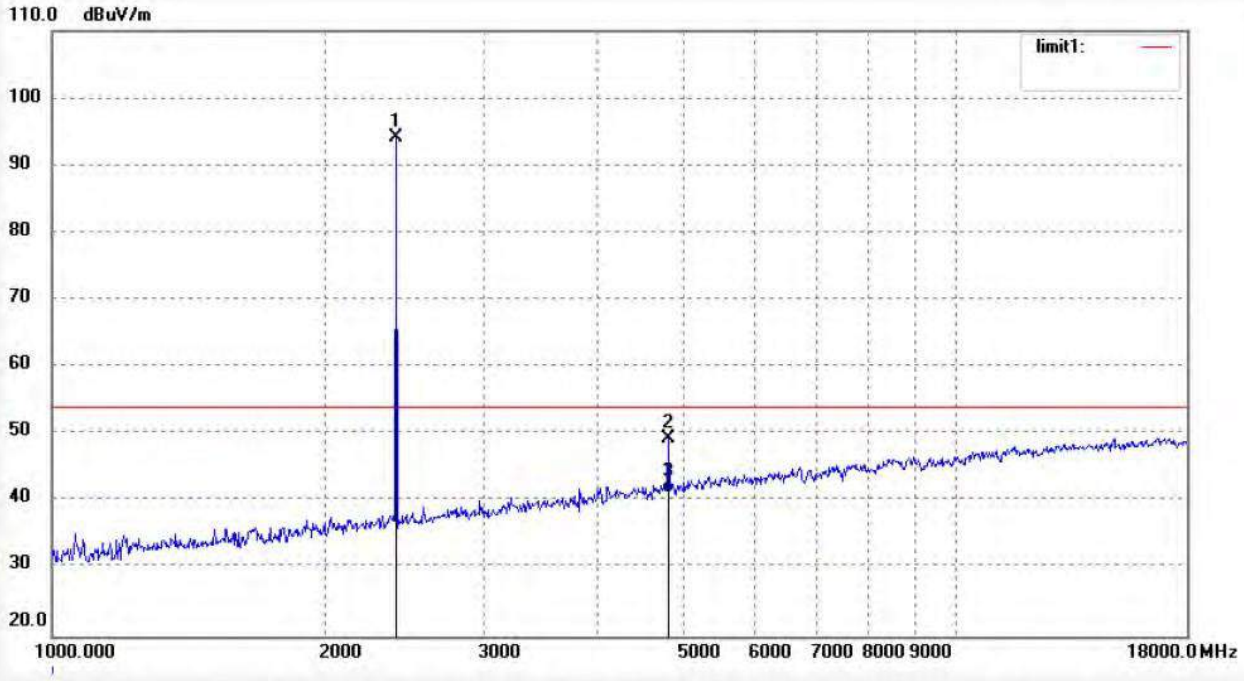
1GHz-18GHz test data

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

Job No.: LGW2019 #2581
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth Headset
Mode: TX 2402MHz
Model: NS-MBTHS
Manufacturer: Compupal Group Corporation

Polarization: Horizontal
Power Source: DC 3.7V
Date: 19/06/26/
Time:
Engineer Signature: WADE
Distance: 3m

Note:



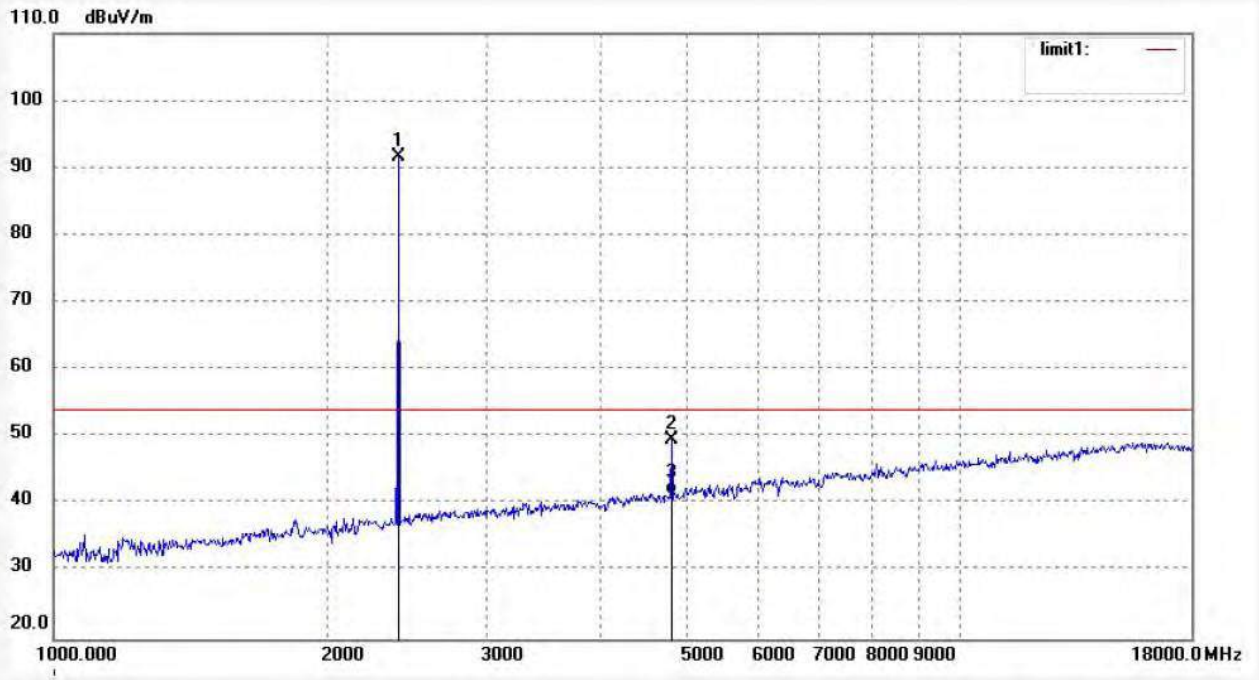
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.000	93.22	0.89	94.11	/	/	peak			
2	4804.026	41.91	7.40	49.31	74.00	-24.69	peak			
3	4804.026	33.95	7.40	41.35	54.00	-12.65	AVG			

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 #2582
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth Headset
Mode: TX 2402MHz
Model: NS-MBTHS
Manufacturer: Compupal Group Corporation

Polarization: Vertical
Power Source: DC 3.7V
Date: 19/06/26/
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	2402.000	90.84	0.89	91.73	/	/	peak			
2	4804.027	42.18	7.40	49.58	74.00	-24.42	peak			
3	4804.027	34.13	7.40	41.53	54.00	-12.47	AVG			

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
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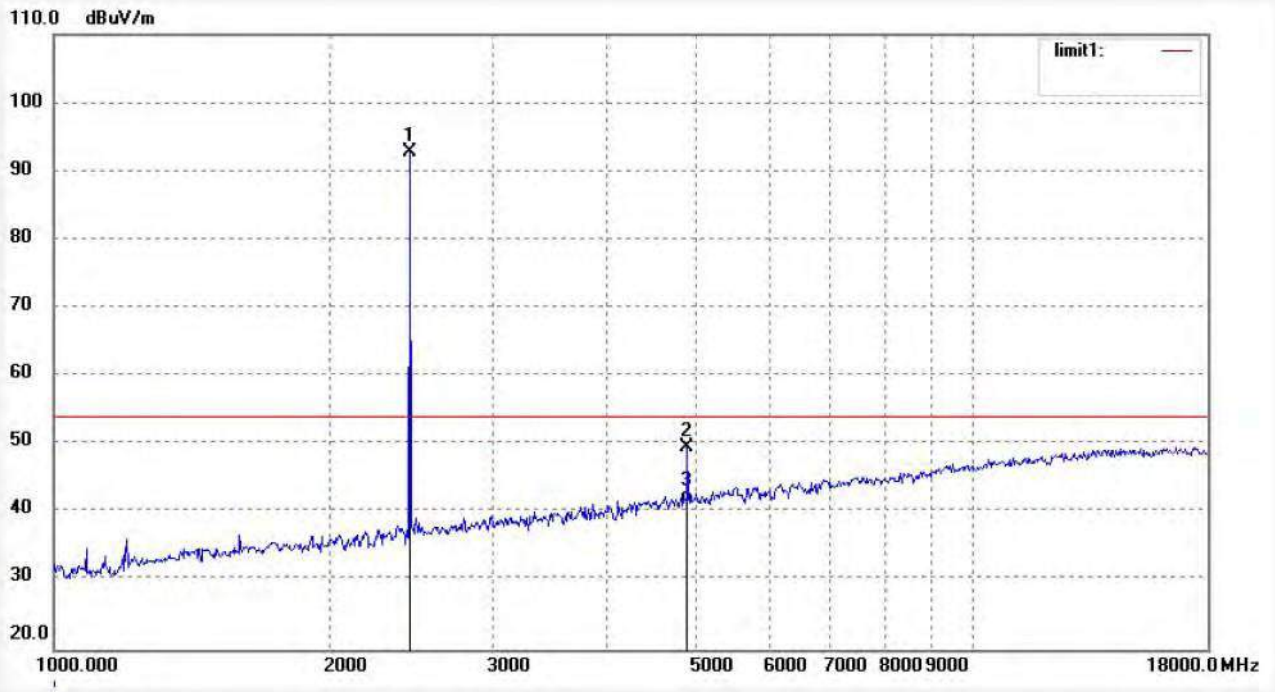
Job No.: LGW2019 #2585
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth Headset
Mode: TX 2441MHz
Model: NS-MBTHS
Manufacturer: Compupal Group Corporation

Polarization: Horizontal
Power Source: DC 3.7V
Date: 19/06/26/
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	2441.000	91.67	1.06	92.73	/	/	peak			
2	4882.024	41.57	8.11	49.68	74.00	-24.32	peak			
3	4882.024	33.43	8.11	41.54	54.00	-12.46	AVG			

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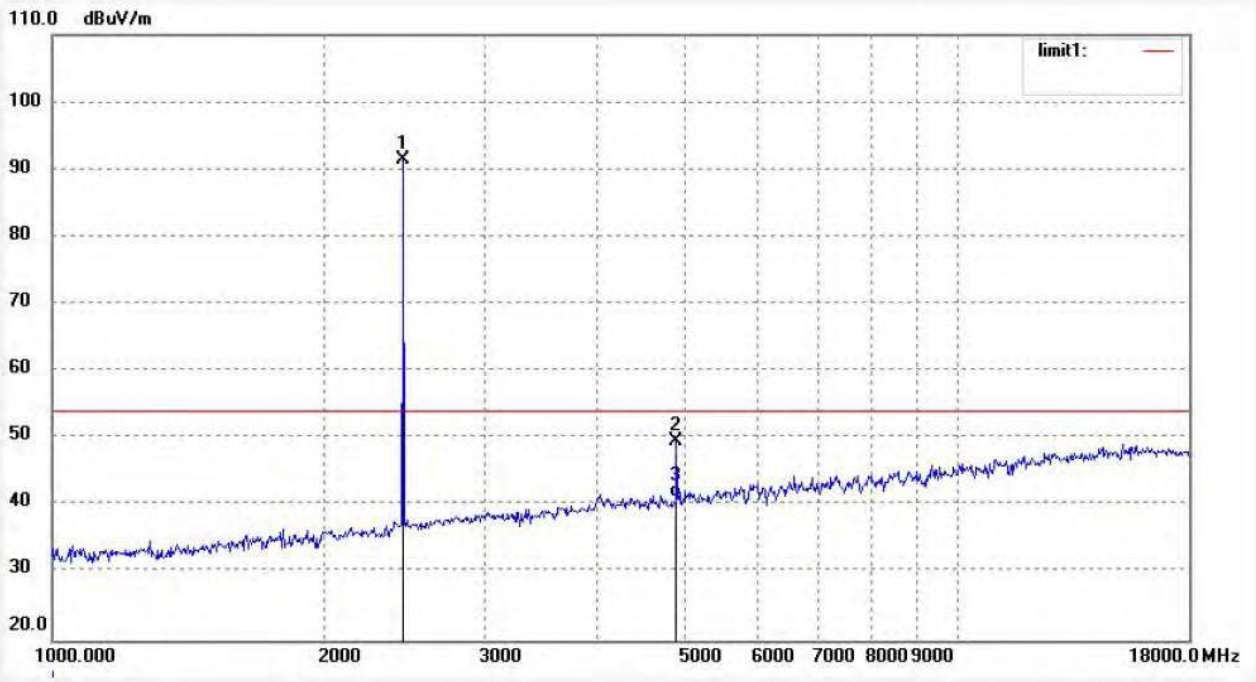
Job No.: LGW2019 #2586
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth Headset
Mode: TX 2441MHz
Model: NS-MBTHS
Manufacturer: Compupal Group Corporation

Polarization: Vertical
Power Source: DC 3.7V
Date: 19/06/26/
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	2441.000	90.45	1.06	91.51	/	/	peak			
2	4882.027	41.55	8.11	49.66	74.00	-24.34	peak			
3	4882.027	33.25	8.11	41.36	54.00	-12.64	AVG			

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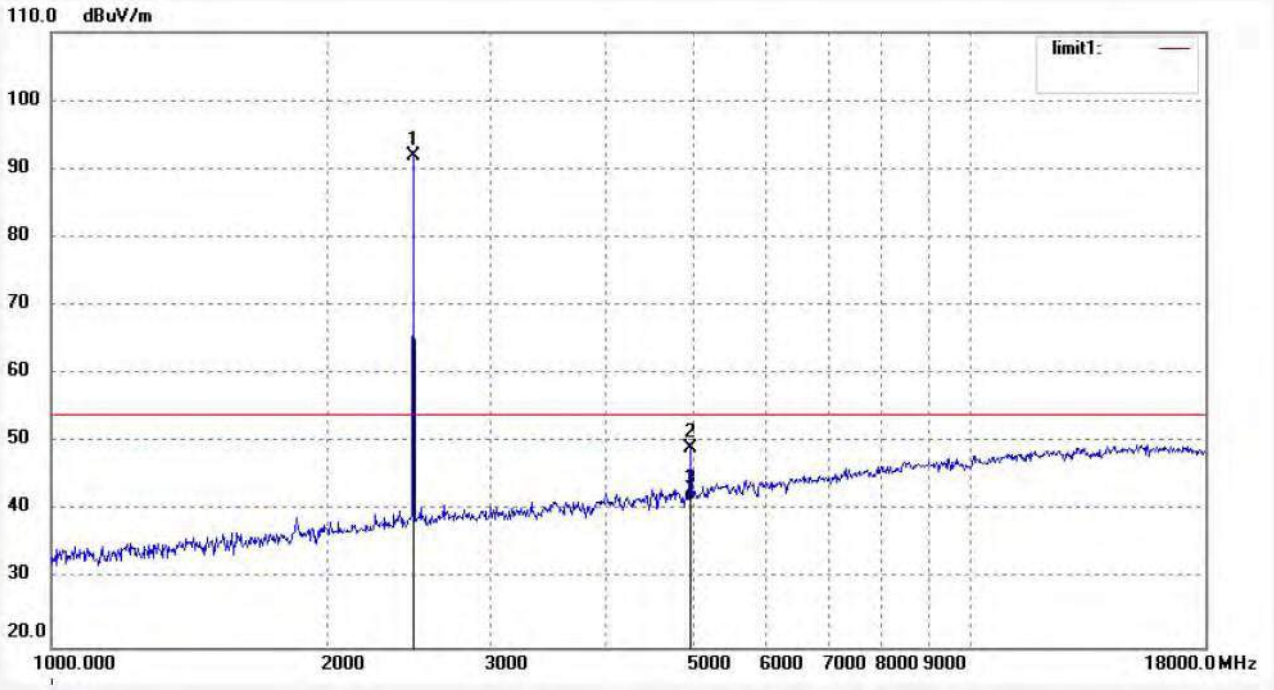
Job No.: LGW2019 #2588
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth Headset
Mode: TX 2480MHz
Model: NS-MBTHS
Manufacturer: Compupal Group Corporation

Polarization: Horizontal
Power Source: DC 3.7V
Date: 19/06/26/
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	2480.000	90.73	1.10	91.83	/	/	peak			
2	4960.027	40.57	8.60	49.17	74.00	-24.83	peak			
3	4960.027	32.97	8.60	41.57	54.00	-12.43	AVG			

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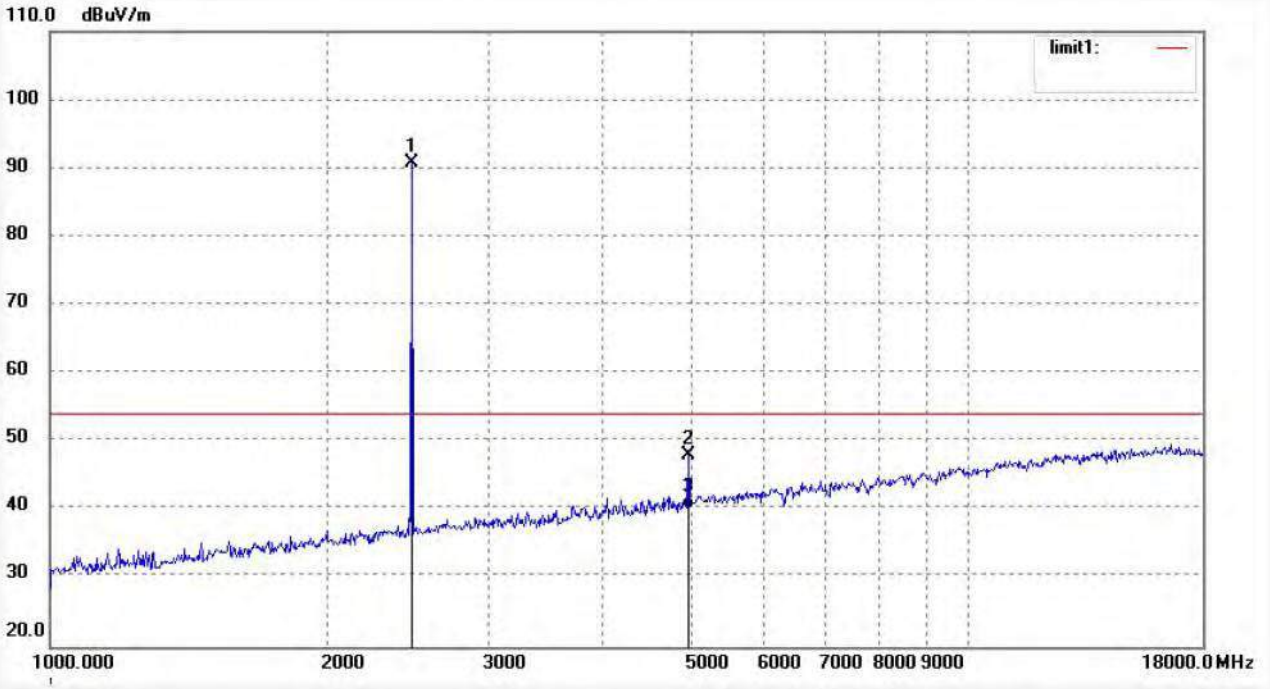
Job No.: LGW2019 #2587
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth Headset
Mode: TX 2480MHz
Model: NS-MBTHS
Manufacturer: Compupal Group Corporation

Polarization: Vertical
Power Source: DC 3.7V
Date: 19/06/26/
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	2480.000	89.70	1.10	90.80	/	/	peak			
2	4960.028	39.46	8.60	48.06	74.00	-25.94	peak			
3	4960.028	31.64	8.60	40.24	54.00	-13.76	AVG			

18GHz-26.5GHz test data

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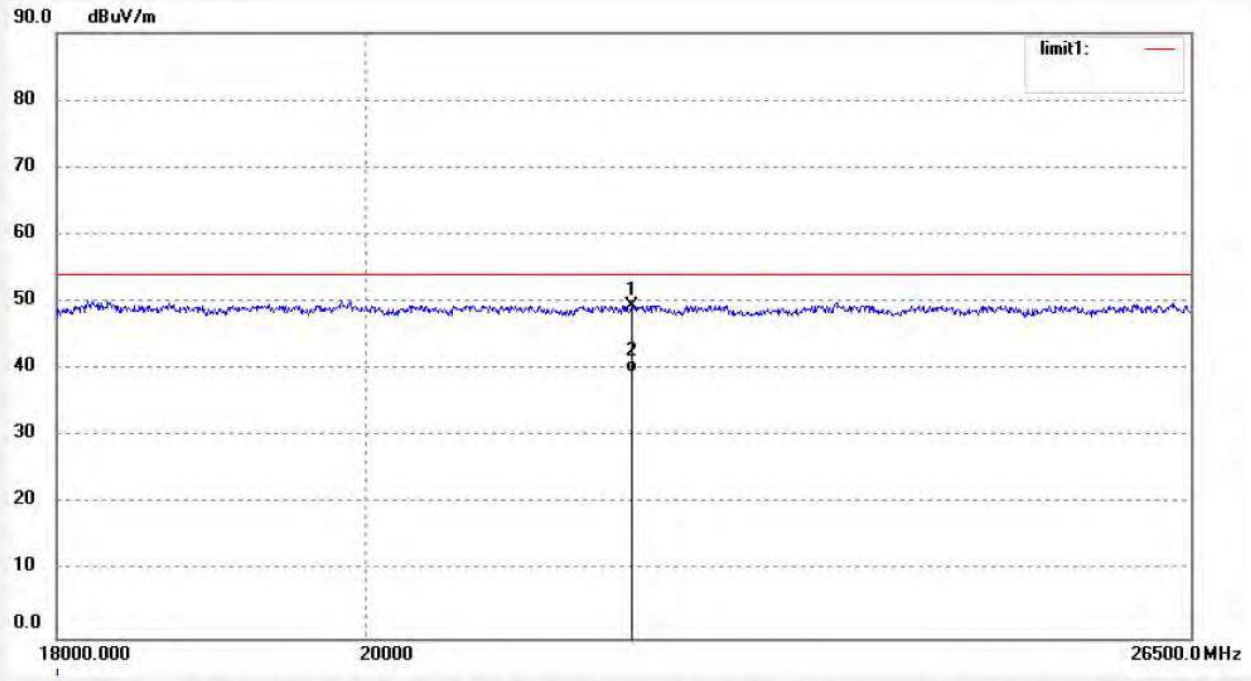
Job No.: LGW2019 #2592
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth Headset
Mode: TX 2402MHz
Model: NS-MBTHS
Manufacturer: Compupal Group Corporation

Polarization: Horizontal
Power Source: DC 3.7V
Date: 19/06/26/
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	21899.540	17.47	32.02	49.49	74.00	-24.51	peak			
2	21899.540	7.52	32.02	39.54	54.00	-14.46	AVG			

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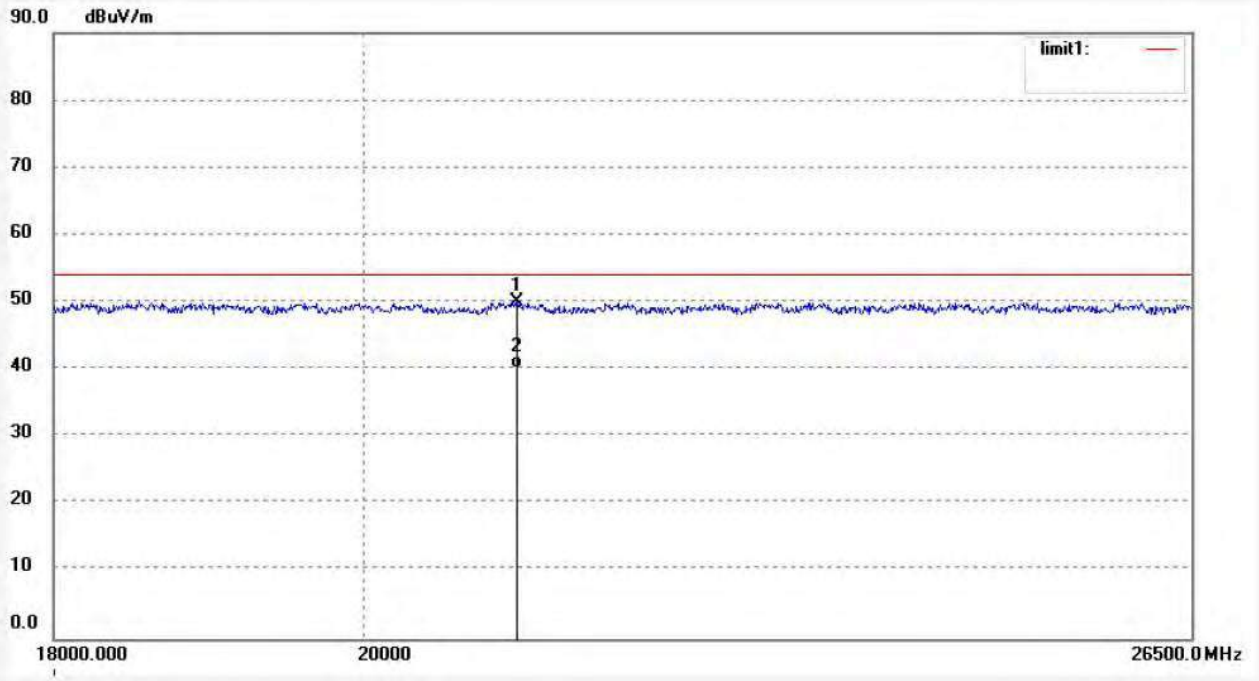
Job No.: LGW2019 #2591
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth Headset
Mode: TX 2402MHz
Model: NS-MBTHS
Manufacturer: Compupal Group Corporation

Polarization: Vertical
Power Source: DC 3.7V
Date: 19/06/26/
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	21068.696	17.71	32.33	50.04	74.00	-23.96	peak			
2	21068.696	7.91	32.33	40.24	54.00	-13.76	AVG			

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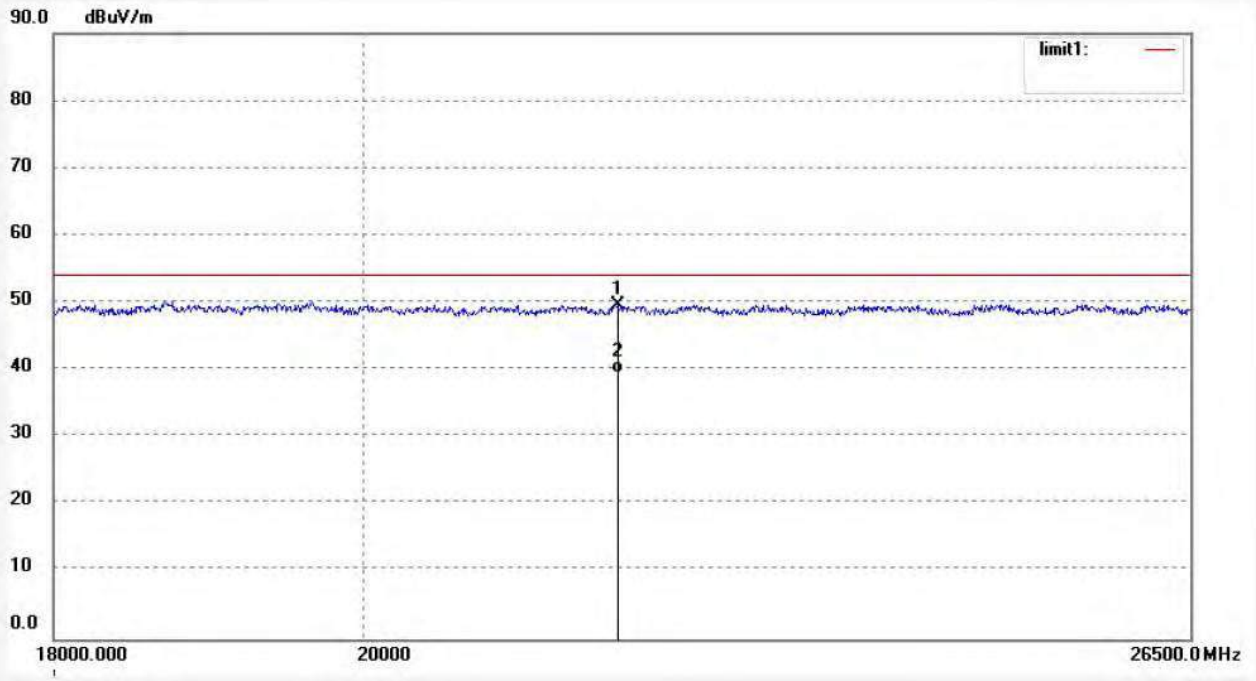
Job No.: LGW2019 #2593
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth Headset
Mode: TX 2441MHz
Model: NS-MBTHS
Manufacturer: Compupal Group Corporation

Polarization: Horizontal
Power Source: DC 3.7V
Date: 19/06/26/
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	21806.567	17.70	31.88	49.58	74.00	-24.42	peak			
2	21806.567	7.57	31.88	39.45	54.00	-14.55	AVG			

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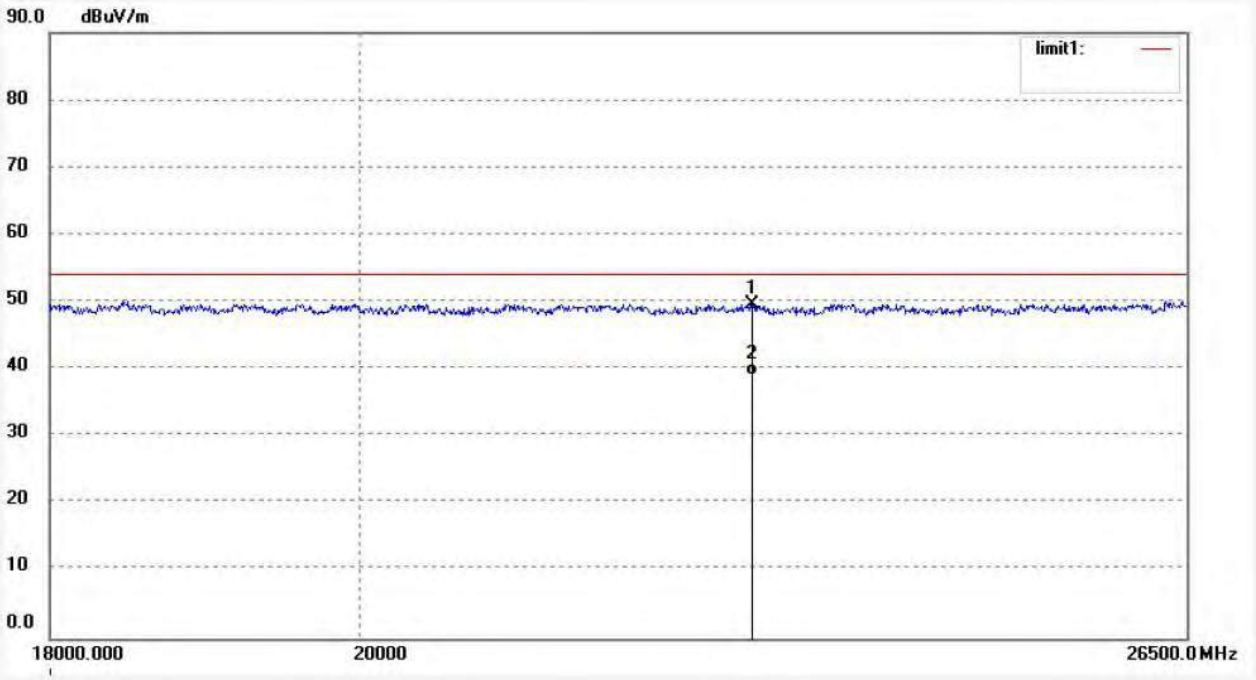
Job No.: LGW2019 #2594
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth Headset
Mode: TX 2441MHz
Model: NS-MBTHS
Manufacturer: Compupal Group Corporation

Polarization: Vertical
Power Source: DC 3.7V
Date: 19/06/26/
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	22860.201	17.21	32.33	49.54	74.00	-24.46	peak			
2	22860.201	6.79	32.33	39.12	54.00	-14.88	AVG			

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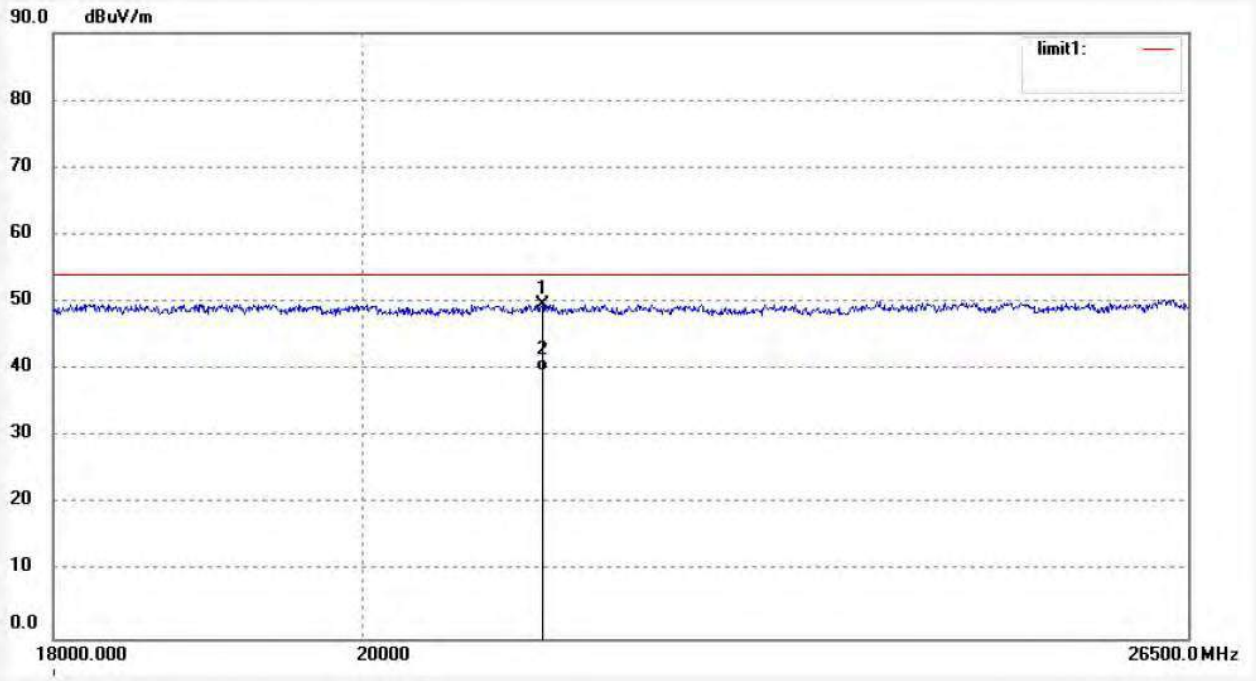
Job No.: LGW2019 #2596
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth Headset
Mode: TX 2480MHz
Model: NS-MBTHS
Manufacturer: Compupal Group Corporation

Polarization: Horizontal
Power Source: DC 3.7V
Date: 19/06/26/
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	21265.178	18.21	31.38	49.59	74.00	-24.41	peak			
2	21265.178	8.36	31.38	39.74	54.00	-14.26	AVG			

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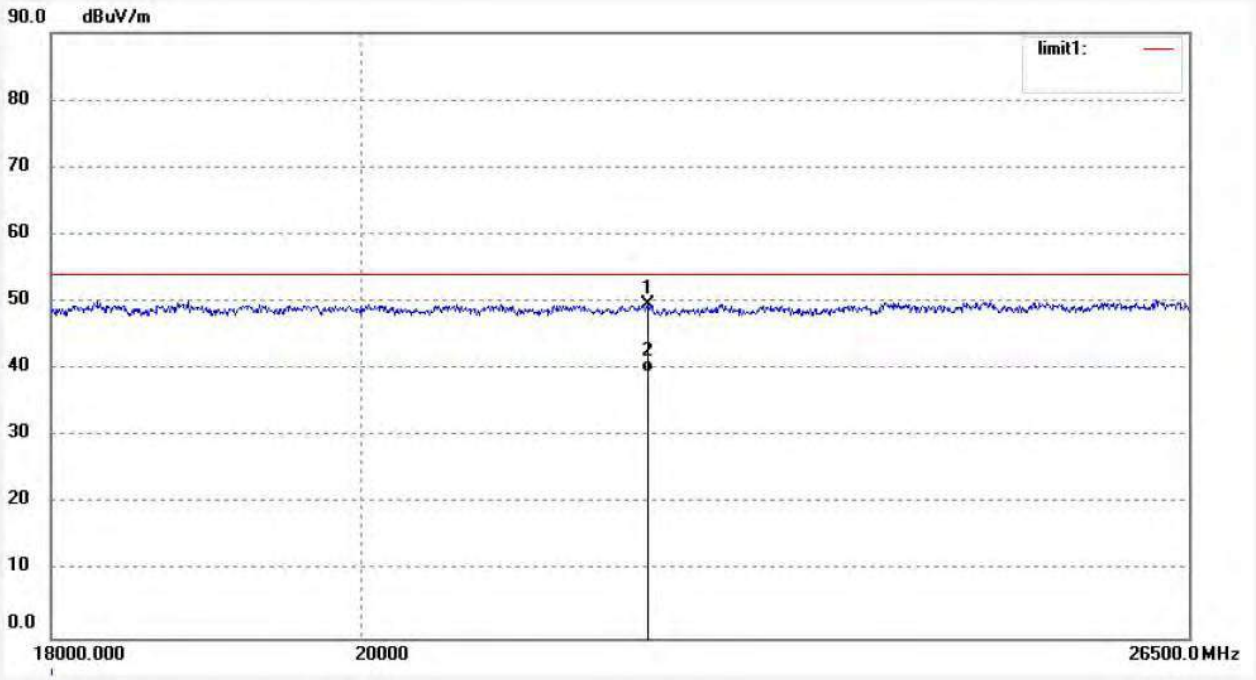
Job No.: LGW2019 #2595
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth Headset
Mode: TX 2480MHz
Model: NS-MBTHS
Manufacturer: Compupal Group Corporation

Polarization: Vertical
Power Source: DC 3.7V
Date: 19/06/26/
Time:
Engineer Signature: WADE
Distance: 3m

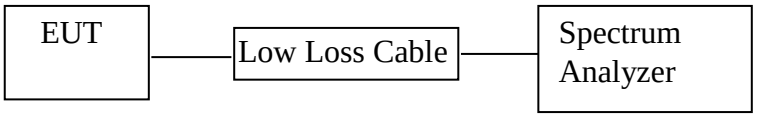
Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	22044.007	17.51	32.00	49.51	74.00	-24.49	peak			
2	22044.007	7.45	32.00	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).

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 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 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. EUT Configuration on Test

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

12.5. Operating Condition of EUT

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

12.5.2. Turn on the power of all equipment.

12.5.3. 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.

12.6. Test Procedure

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

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

12.6.3. The band edges was measured and recorded.

12.7. Test Result

Conducted Band Edge Result

Non-hopping mode

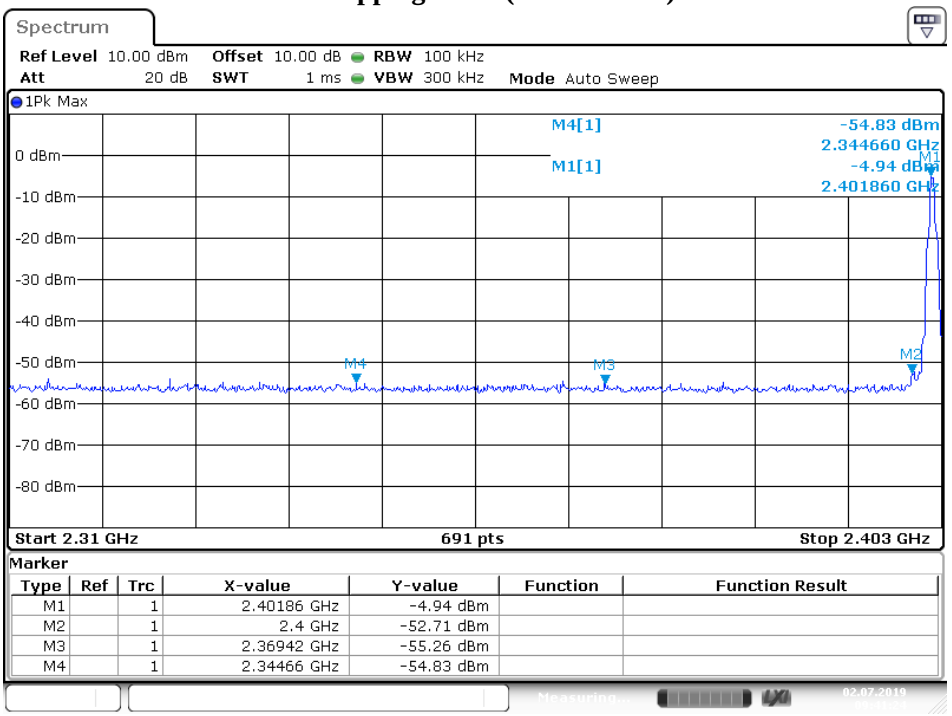
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)	Result
GFSK mode			
2400.000	47.77	> 20dBc	Pass
2489.509	55.78	> 20dBc	Pass
8DPSK mode			
2400.000	48.62	> 20dBc	Pass
2484.957	55.93	> 20dBc	Pass

Hopping mode

Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)	Result
GFSK mode			
2350.900	48.23	> 20dBc	Pass
2494.196	54.76	> 20dBc	Pass
8DPSK mode			
2378.810	49.21	> 20dBc	Pass
2489.232	54.58	> 20dBc	Pass

The spectrum analyzer plots are attached as below.

Non-hopping mode (GFSK Mode)



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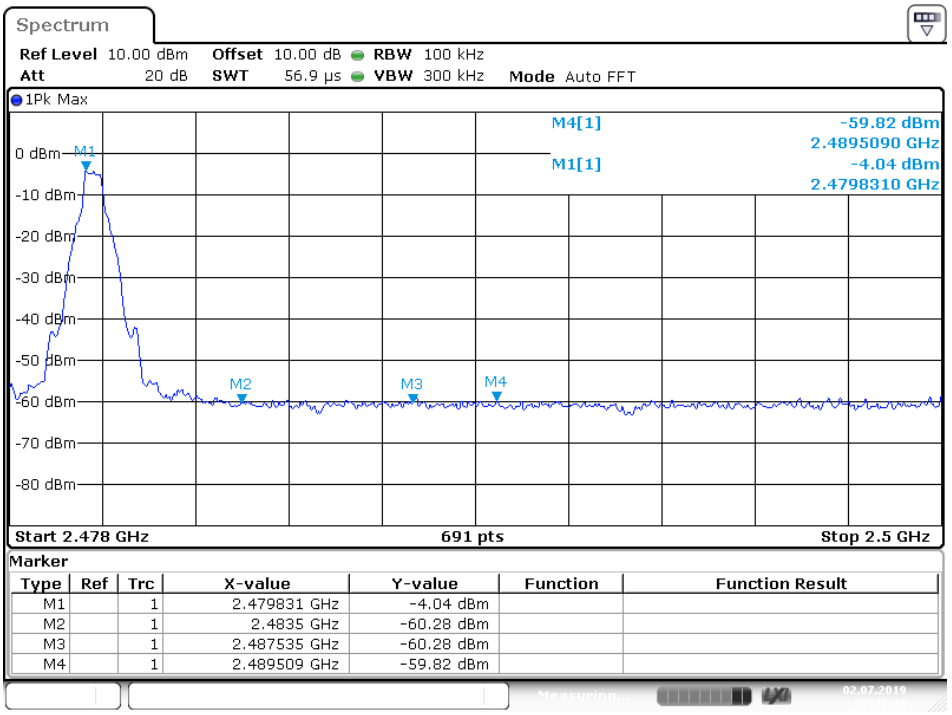
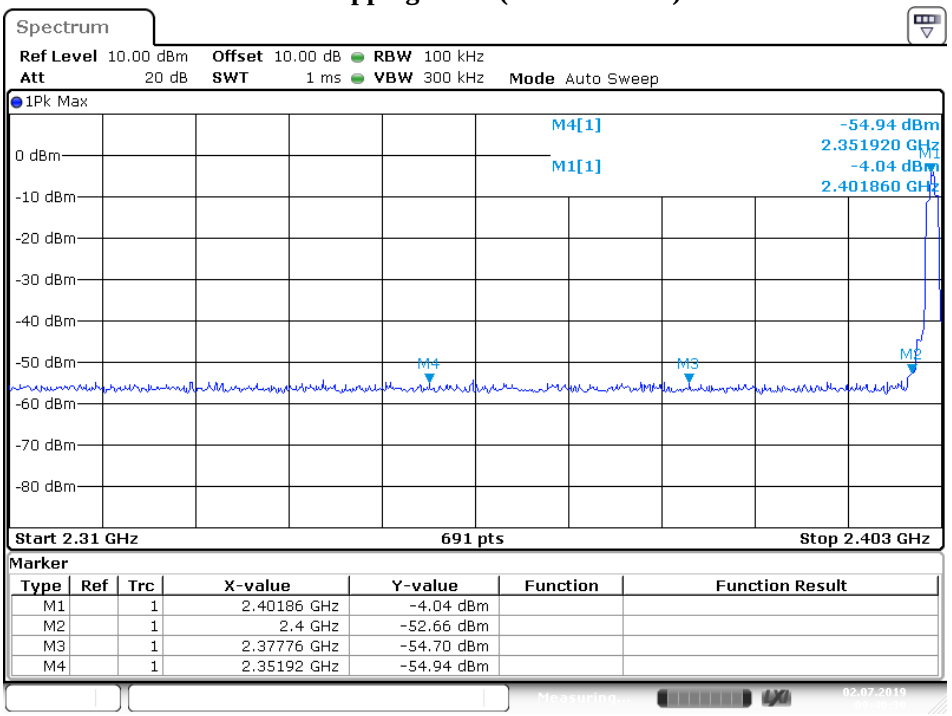
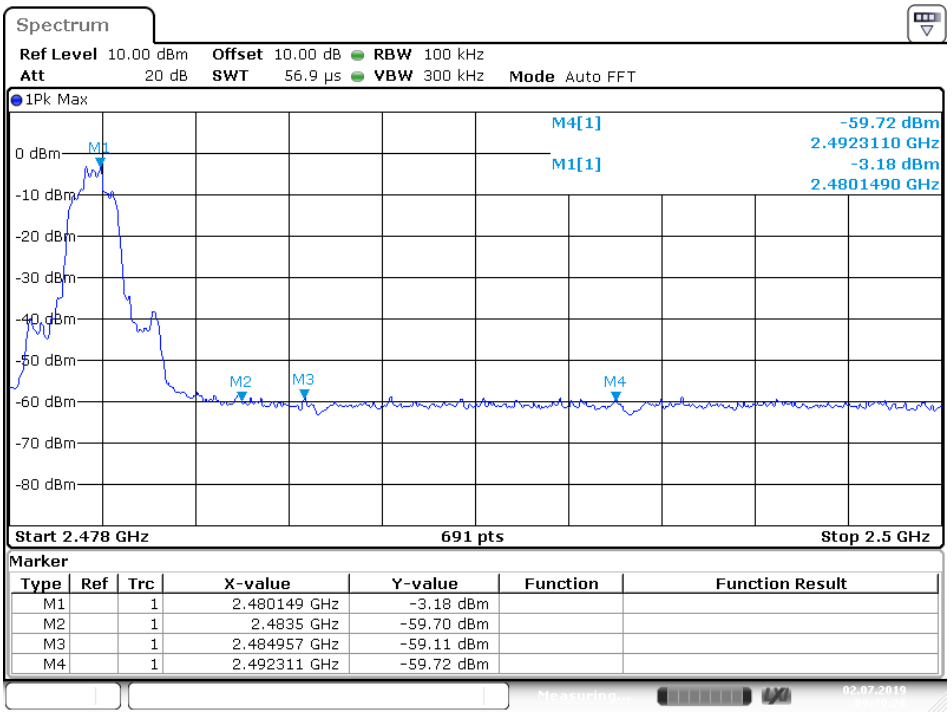


Date: 2.JUL.2019 09:42:49

Non-hopping mode (8DPSK Mode)

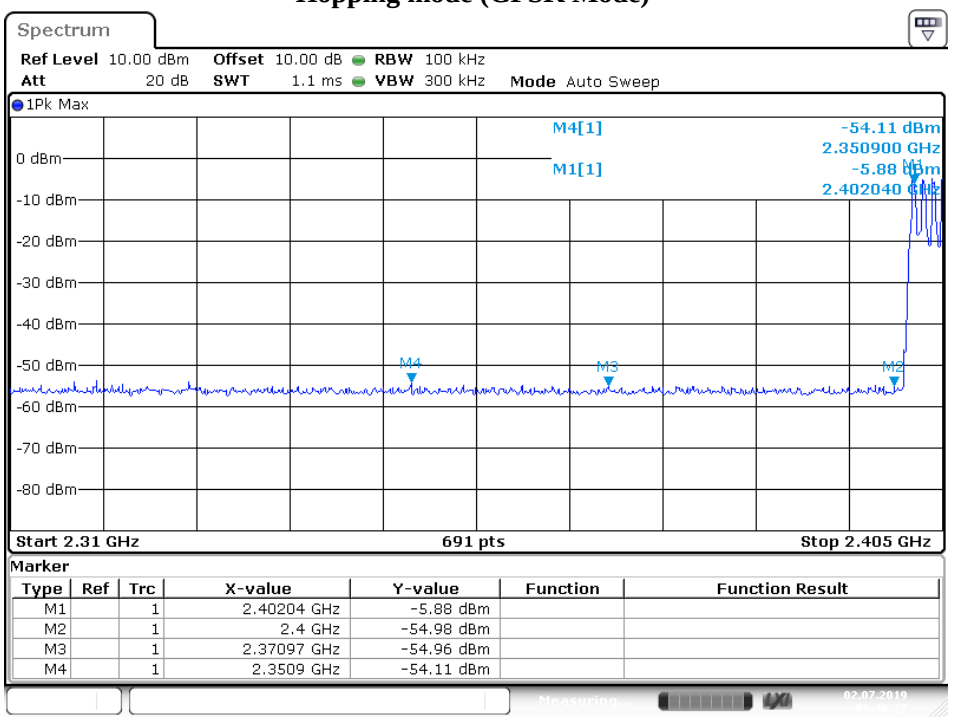


Date: 2.JUL.2019 09:40:30



Date: 2.JUL.2019 09:39:26

Hopping mode (GFSK Mode)



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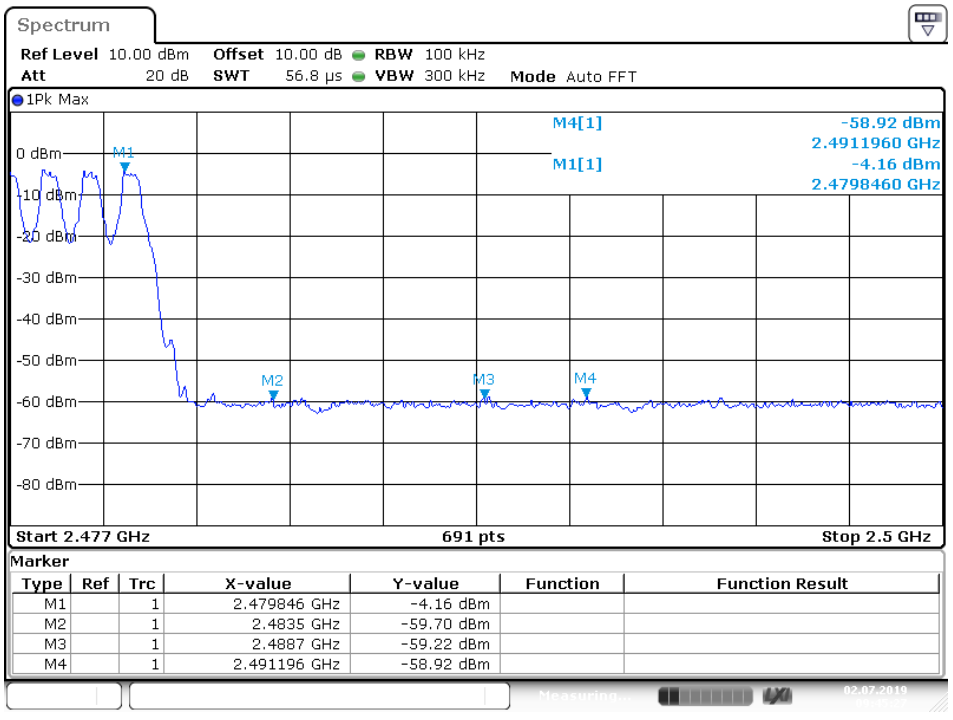
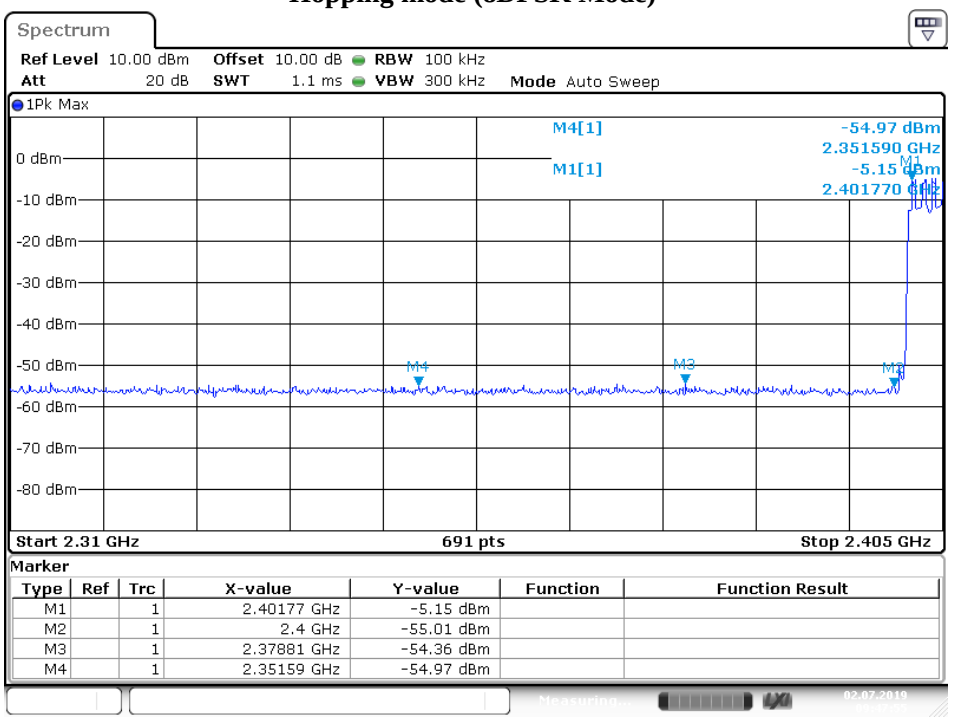


Date: 2.JUL.2019 09:45:27

Hopping mode (8DPSK Mode)



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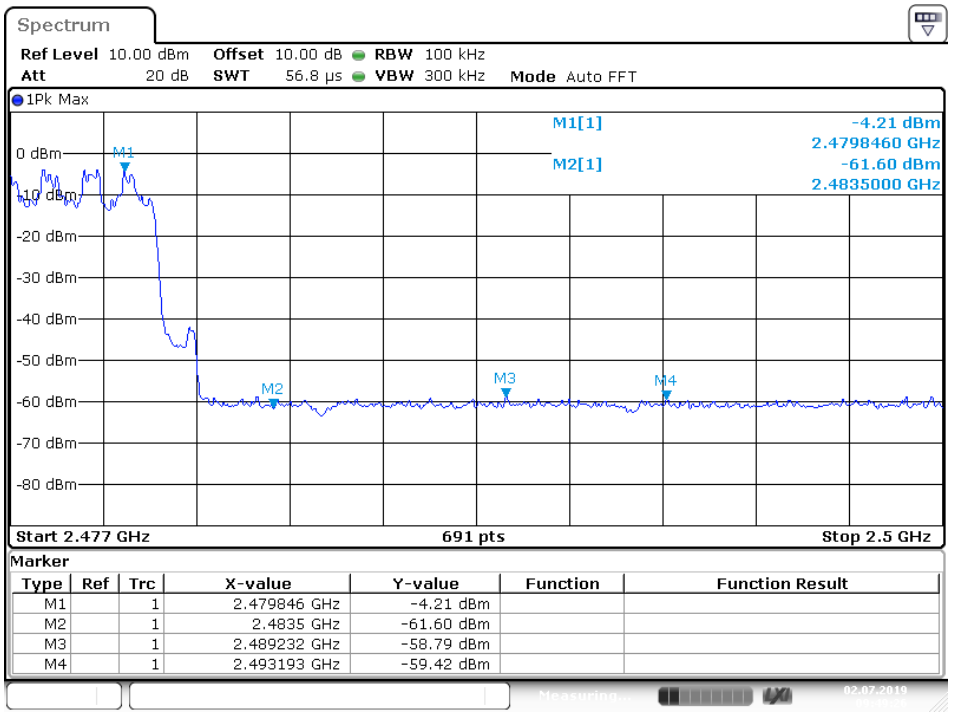

Date: 2.JUL.2019 09:49:26

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. 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 (8DPSK mode) emissions are reported.

The spectrum analyzer plots are attached as below.

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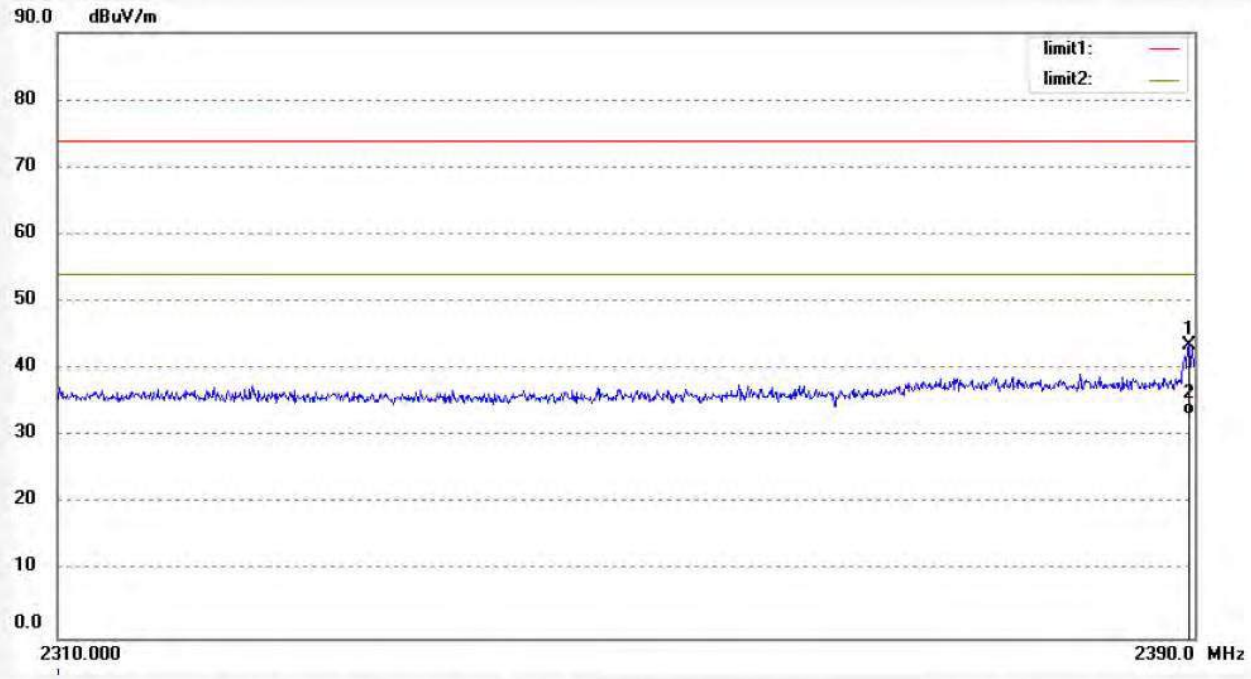
Job No.: LGW2019 #2584
Standard: FCC (Band Edge)
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth Headset
Mode: TX 2402MHz
Model: NS-MBTHS
Manufacturer: Compupal Group Corporation

Polarization: Horizontal
Power Source: DC 3.7V
Date: 19/06/26/
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	2389.600	42.74	0.79	43.53	74.00	-30.47	peak			
2	2389.600	32.45	0.79	33.24	54.00	-20.76	AVG			

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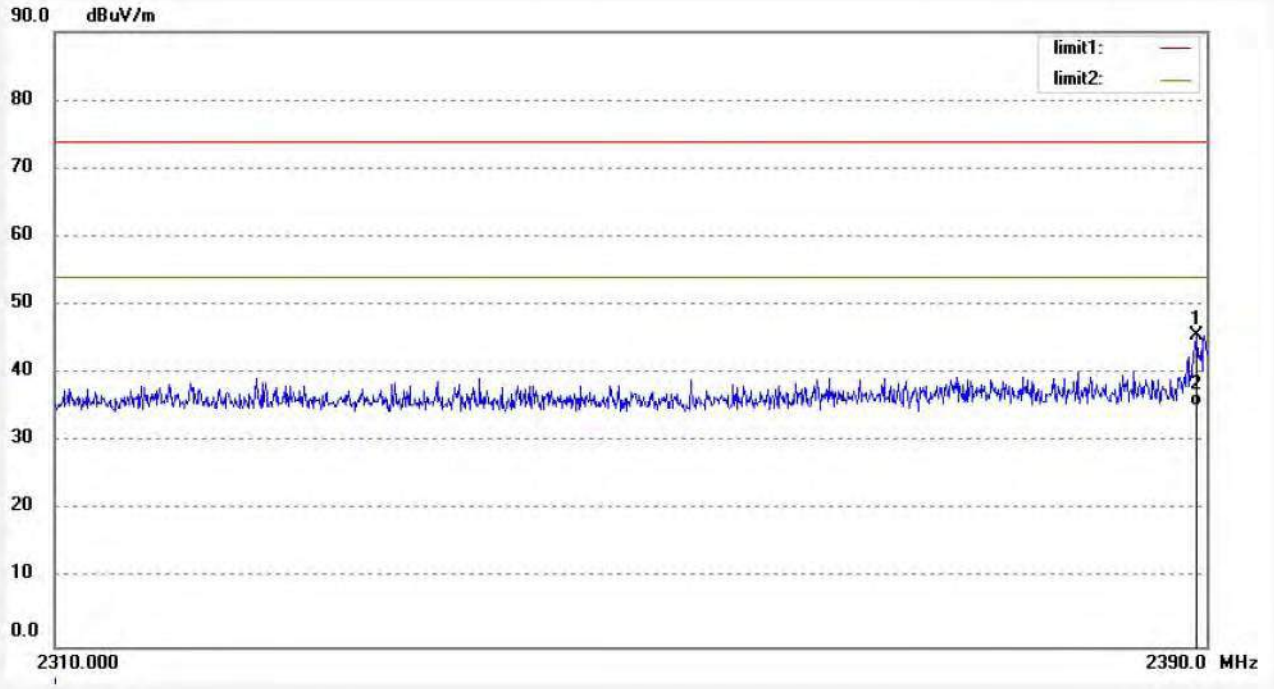
Job No.: LGW2019 #2583
Standard: FCC (Band Edge)
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth Headset
Mode: TX 2402MHz
Model: NS-MBTHS
Manufacturer: Compupal Group Corporation

Polarization: Vertical
Power Source: DC 3.7V
Date: 19/06/26/
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	2389.280	44.73	0.79	45.52	74.00	-28.48	peak			
2	2389.280	34.45	0.79	35.24	54.00	-18.76	AVG			

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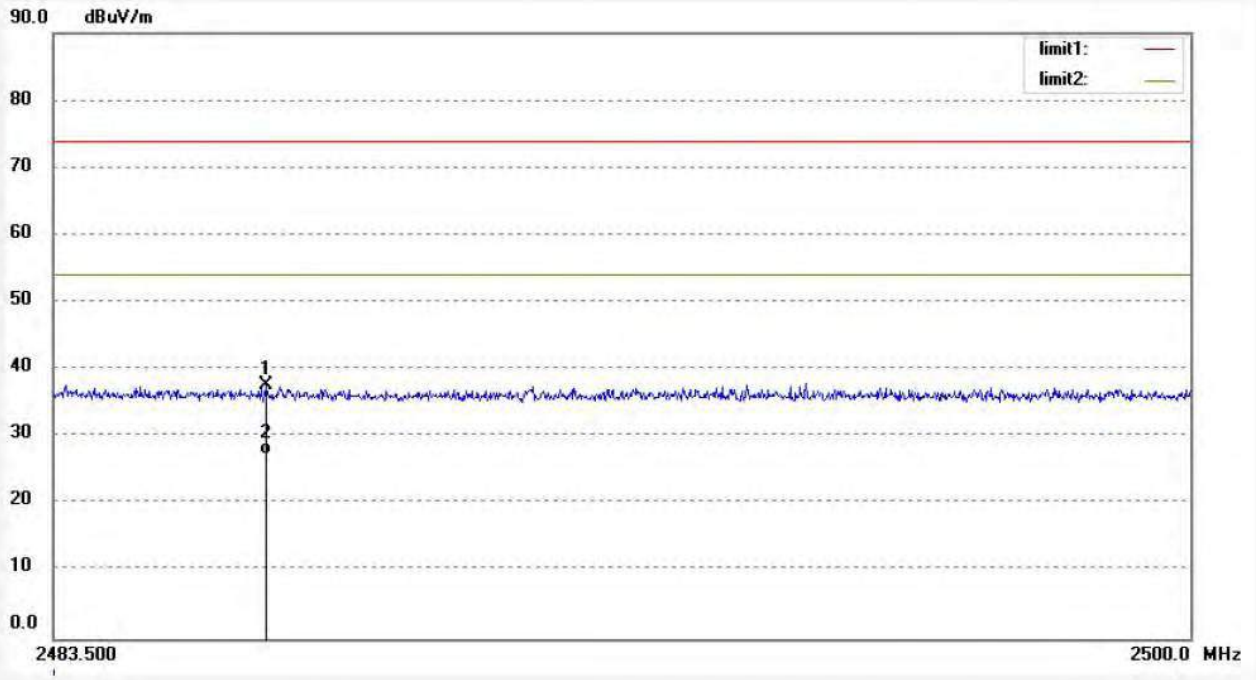
Fax:+86-0755-26503396

Job No.: LGW2019 #2589
Standard: FCC (Band Edge)
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth Headset
Mode: TX 2480MHz
Model: NS-MBTHS
Manufacturer: Compupal Group Corporation

Polarization: Horizontal
Power Source: DC 3.7V
Date: 19/06/26/
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	2486.586	36.57	1.10	37.67	74.00	-36.33	peak			
2	2486.586	26.26	1.10	27.36	54.00	-26.64	AVG			

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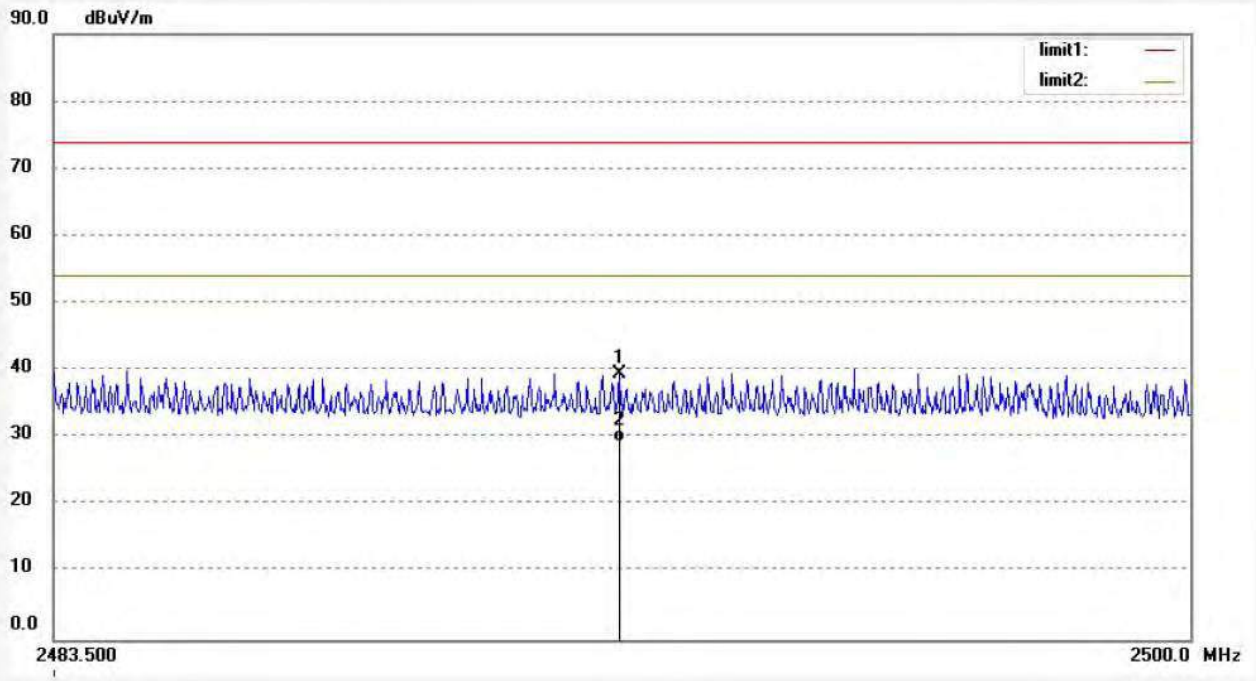
Job No.: LGW2019 #2590
Standard: FCC (Band Edge)
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth Headset
Mode: TX 2480MHz
Model: NS-MBTHS
Manufacturer: Compupal Group Corporation

Polarization: Vertical
Power Source: DC 3.7V
Date: 19/06/26/
Time:
Engineer Signature: WADE
Distance: 3m

Note:

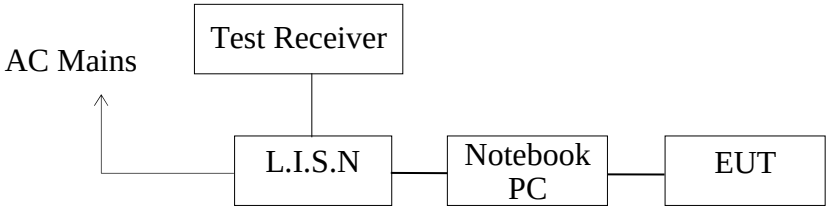


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2491.717	38.49	1.10	39.59	74.00	-34.41	peak			
2	2491.717	28.35	1.10	29.45	54.00	-24.55	AVG			

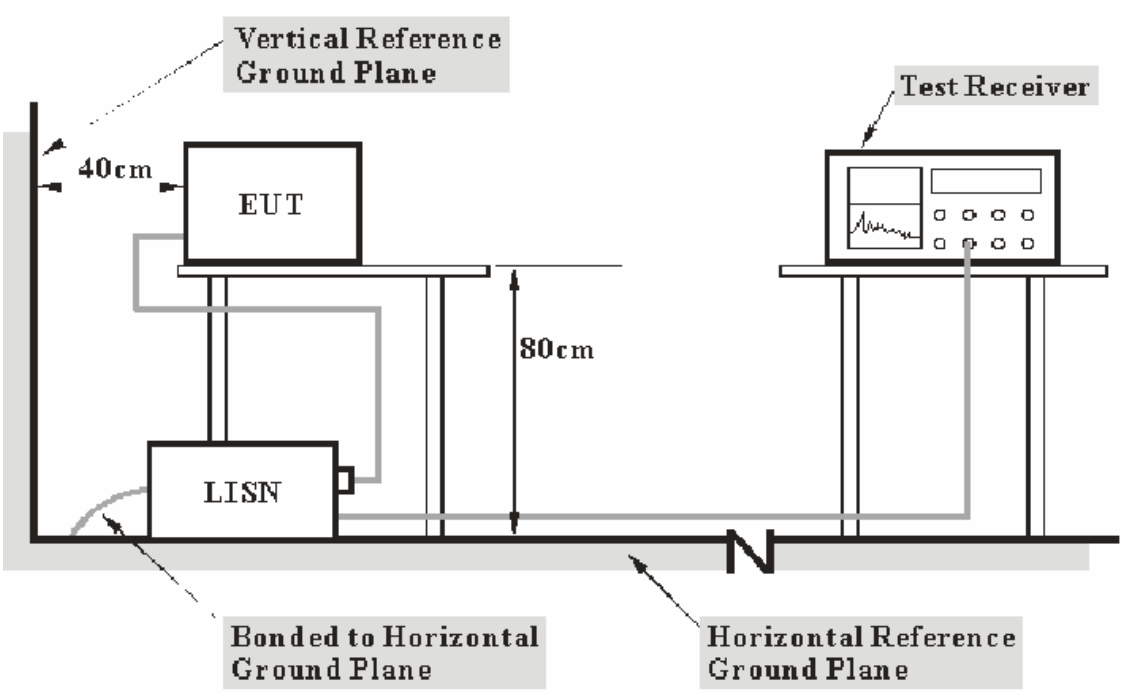
13. AC POWER LINE CONDUCTED EMISSION TEST

13.1. Block Diagram of Test Setup

13.1.1. Block diagram of connection between the EUT and simulators



13.1.2. Test System Setup



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

13.2. Conducted Emission Test Limits

Frequency (MHz)	Conducted Limit dB(μV)	
	Quasi-peak Level	Average Level
0.15 - 0.50	66.0 – 56.0 *	56.0 – 46.0 *
0.50 - 5.00	56.0	46.0
5.00 - 30.00	60.0	50.0
NOTE1: The lower limit shall apply at the transition frequencies. NOTE2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.		

13.3. EUT Configuration on Test

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.

13.4. Operating Condition of EUT

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

13.4.2.Turn on the power of all equipment.

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

13.5. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2013 on Conducted Emission Measurement.

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

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

13.6. Data Sample

Frequency (MHz)	Transducer value (dB)	QuasiPeak Level (dBμV)	Average Level (dBμV)	QuasiPeak Limit (dBμV)	Average Limit (dBμV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
X.XX	10.6	25.3	17.0	59.0	49.0	33.4	31.7	Pass

Frequency(MHz) = Emission frequency in MHz
Transducer value(dB) = Insertion loss of LISN + Cable Loss
Level(dBμV) = Quasi-peak Reading/Average Reading + Transducer value
Limit (dBμV) = Limit stated in standard
Margin = Limit (dBμV) - Level (dBμV)

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

13.7. Test Result

Pass.

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

Maximizing procedure was performed on the four (4) highest emissions of the EUT. Emissions attenuated more than 20 dB below the permissible value are not reported.

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

The spectral diagrams are attached as below.

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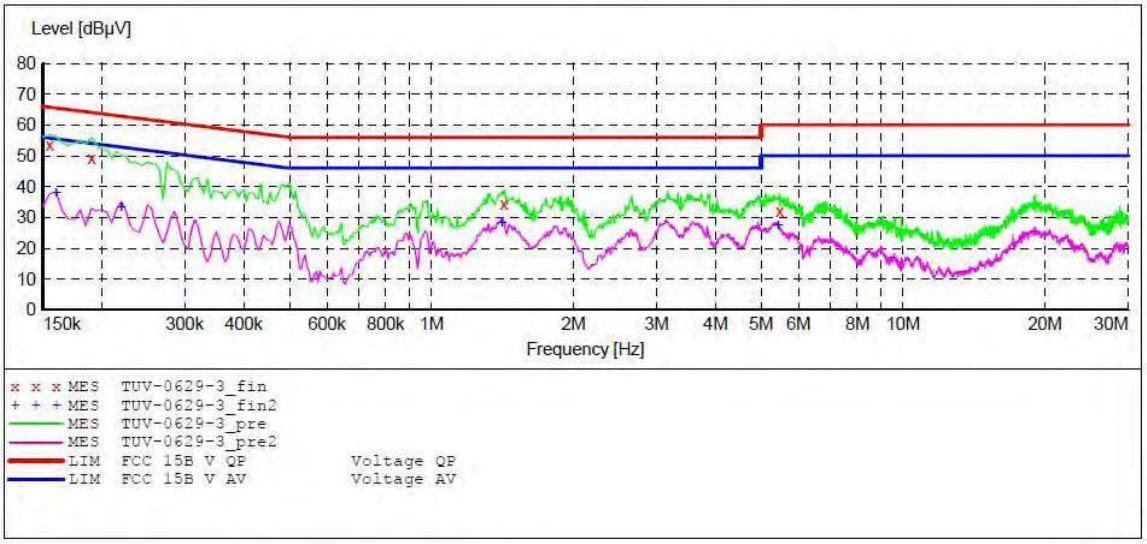
CONDUCTED EMISSION STANDARD FCC PART 15 C

EUT: Bluetooth Headset M/N:NS-MBTHS
Manufacturer: Compupal Group Corporation
Operating Condition: BT Communication
Test Site: 1#Shielding Room
Operator: WADE
Test Specification: N 120V/60Hz
Comment: Mains port
Start of Test: 6/29/2019 /

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: "TUV-0629-3_fin"

6/29/2019

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.155000	53.60	10.5	66	12.1	QP	N	GND
0.190000	49.30	10.5	64	14.7	QP	N	GND
1.425000	34.20	10.7	56	21.8	QP	N	GND
5.470000	32.20	10.8	60	27.8	QP	N	GND

MEASUREMENT RESULT: "TUV-0629-3_fin2"

6/29/2019

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.160000	37.90	10.5	56	17.6	AV	N	GND
0.220000	33.20	10.5	53	19.6	AV	N	GND
1.410000	28.30	10.7	46	17.7	AV	N	GND
5.430000	27.40	10.8	50	22.6	AV	N	GND

ACCURATE TECHNOLOGY CO.,LTD

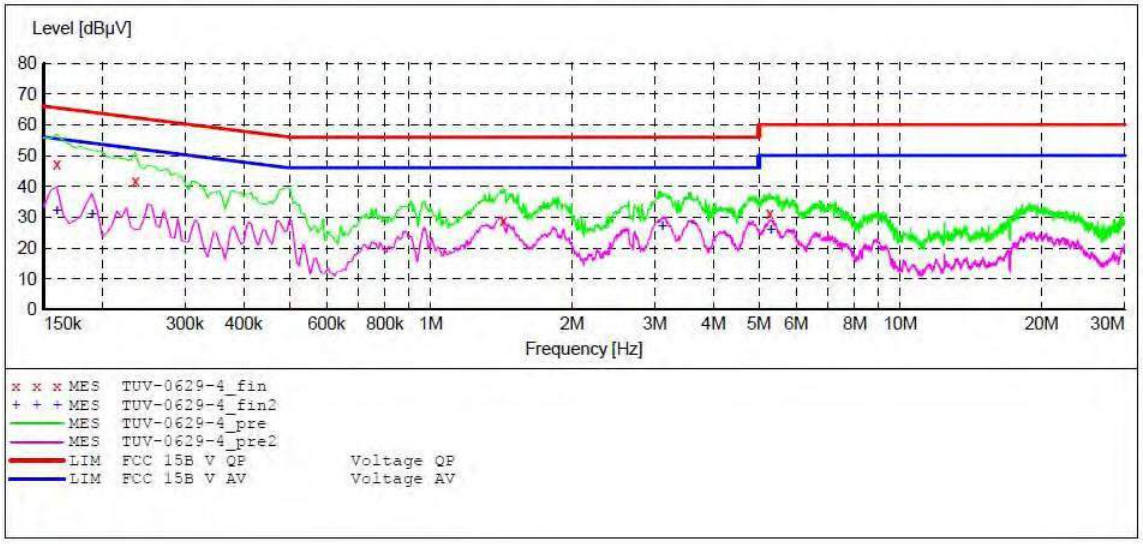
CONDUCTED EMISSION STANDARD FCC PART 15 C

EUT: Bluetooth Headset M/N:NS-MBTHS
Manufacturer: Compupal Group Corporation
Operating Condition: BT Communication
Test Site: 1#Shielding Room
Operator: WADE
Test Specification: L 120V/60Hz
Comment: Mains port
Start of Test: 6/29/2019 /

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: "TUV-0629-4_fin"

6/29/2019

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.160000	47.10	10.5	66	18.4	QP	L1	GND
0.235000	41.60	10.5	62	20.7	QP	L1	GND
1.430000	28.90	10.7	56	27.1	QP	L1	GND
5.270000	31.10	10.8	60	28.9	QP	L1	GND

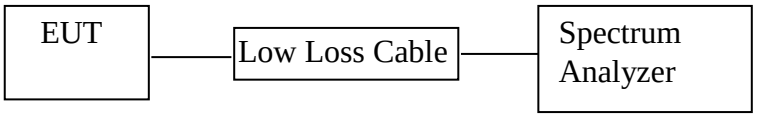
MEASUREMENT RESULT: "TUV-0629-4_fin2"

6/29/2019

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.160000	32.20	10.5	56	23.3	AV	L1	GND
0.190000	30.80	10.5	54	23.2	AV	L1	GND
3.120000	27.10	10.8	46	18.9	AV	L1	GND
5.310000	25.70	10.8	50	24.3	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).

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.

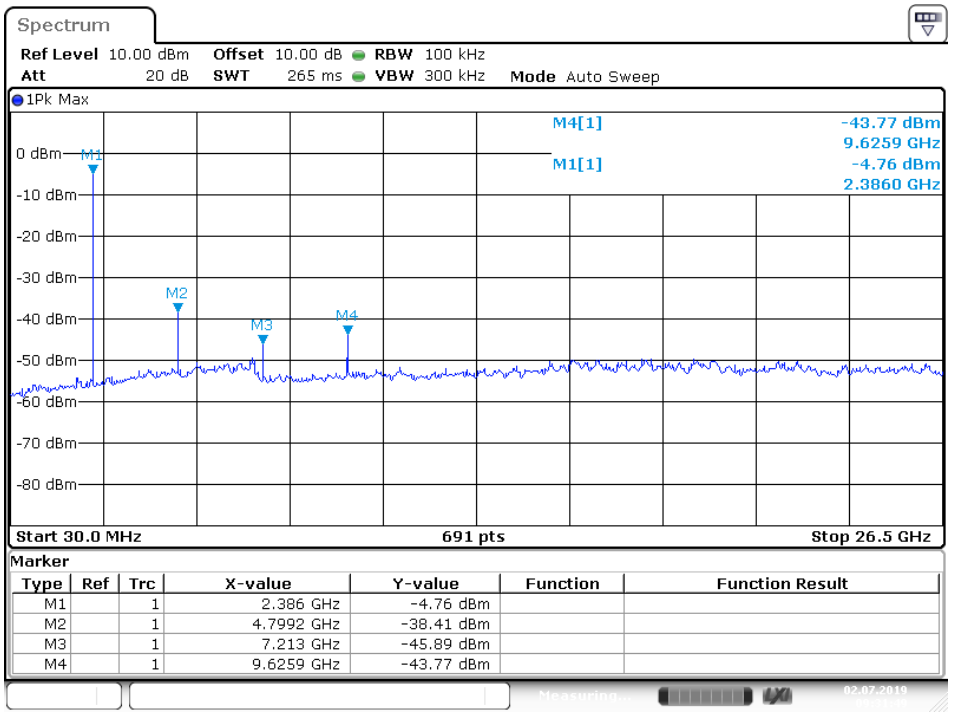
14.7. Test Result

Pass.

The spectrum analyzer plots are attached as below.

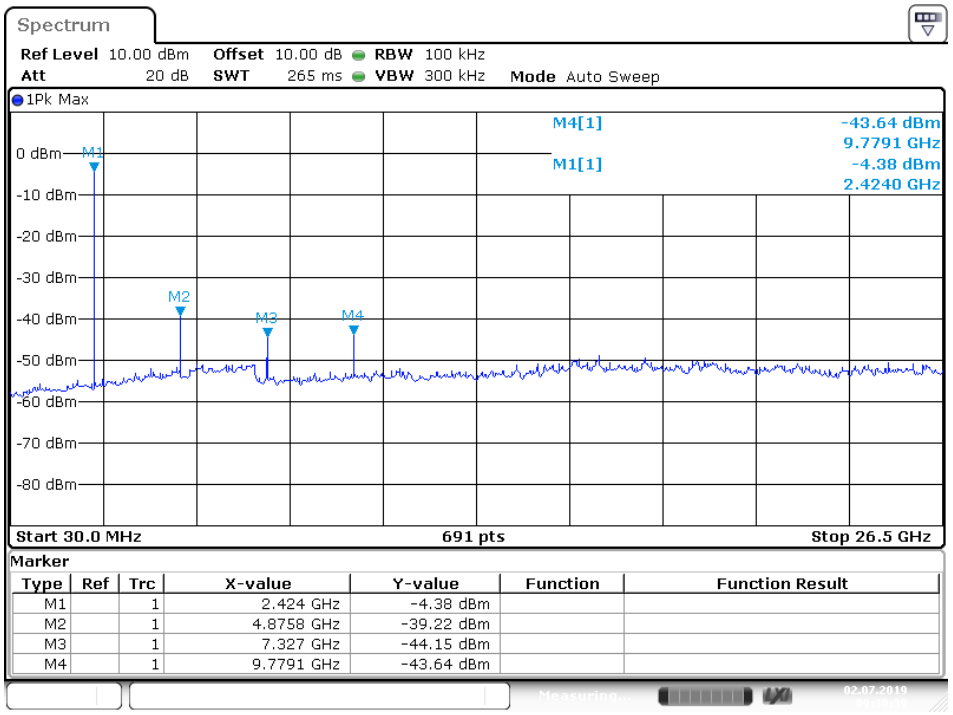
GFSK mode

Low Channel



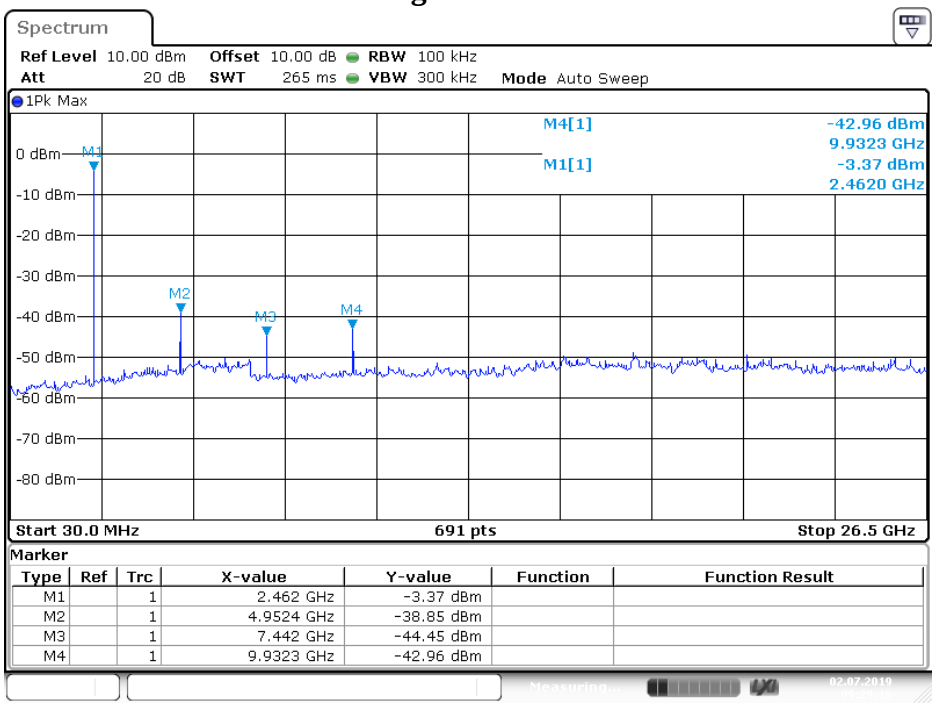
Date: 2.JUL.2019 09:31:49

Middle Channel



Date: 2.JUL.2019 09:30:39

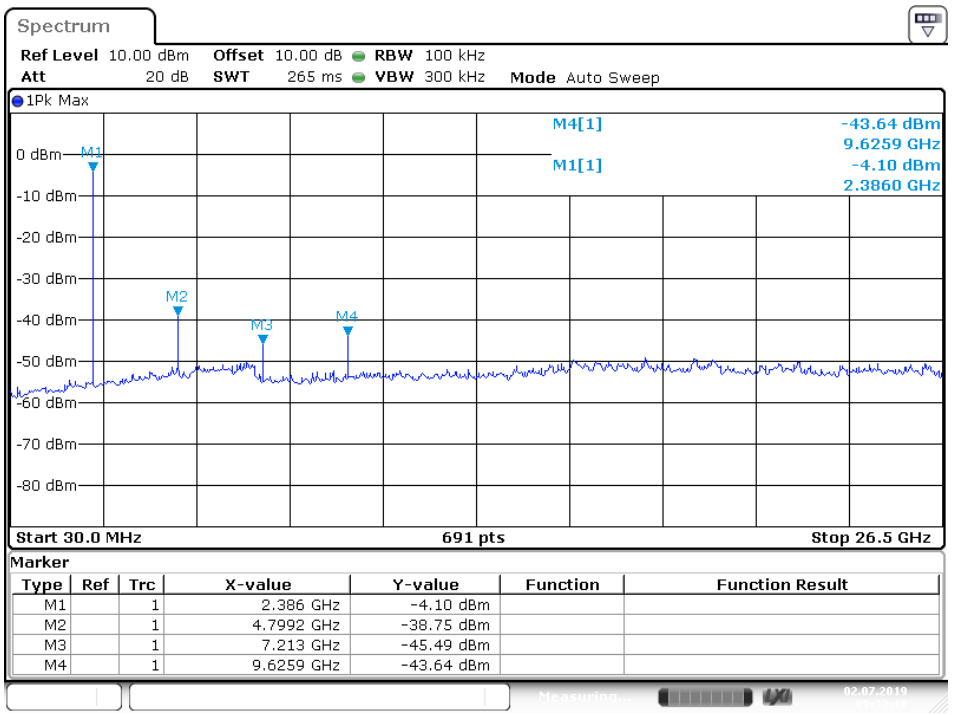
High Channel



Date: 2.JUL.2019 09:29:16

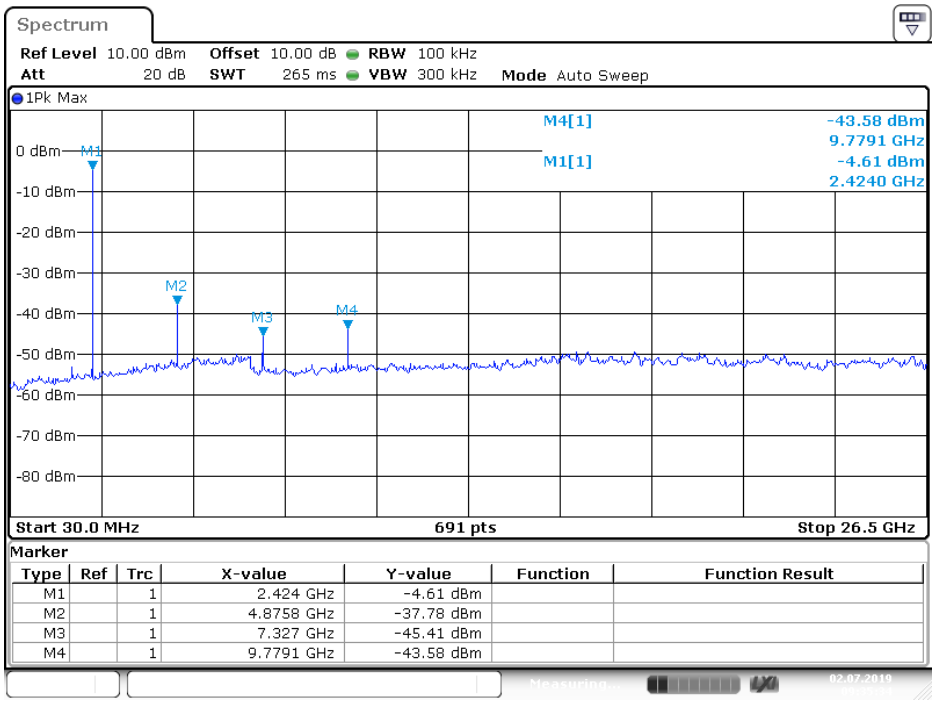
8DPSK mode

Low Channel



Date: 2.JUL.2019 09:33:18

Middle Channel

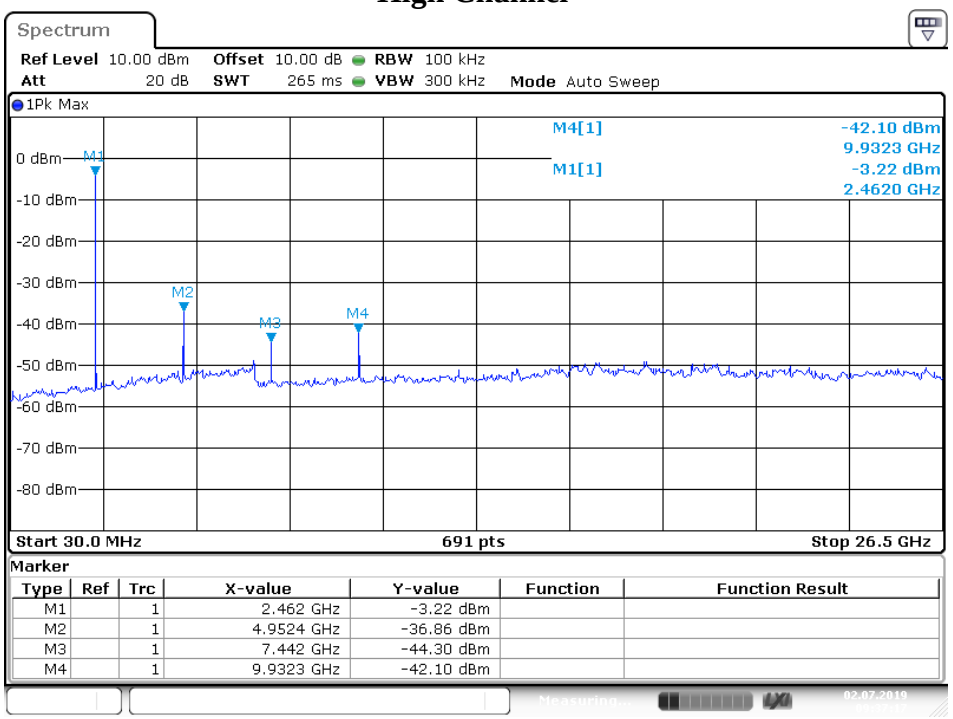


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.424 GHz	-4.61 dBm		
M2		1	4.8758 GHz	-37.78 dBm		
M3		1	7.327 GHz	-45.41 dBm		
M4		1	9.7791 GHz	-43.58 dBm		

Date: 2.JUL.2019 09:35:34

High Channel



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.462 GHz	-3.22 dBm		
M2		1	4.9524 GHz	-36.86 dBm		
M3		1	7.442 GHz	-44.30 dBm		
M4		1	9.9323 GHz	-42.10 dBm		

Date: 2.JUL.2019 09:37:17

15. ANTENNA REQUIREMENT

15.1. The Requirement

According to Section Section 15.203 and RSS GEN 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 0dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203 and RSS GEN 6.8.

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