

TEST REPORT

Applicant: NOTHING TECHNOLOGY LIMITED
Address: Bedford House, 21A John Street, London, United Kingdom WC1N 2BF
Equipment Type: Wireless Headphone
Model Name: B192
Brand Name: NOTHING
FCC ID: 2AZEQ-B192
ISED Number: 27102-B192
Test Standard: 47 CFR Part 15 Subpart C
RSS-Gen Issue 5
RSS-247 Issue 4
(refer to section 3.1)
Sample Arrival Date: Jun. 01, 2026
Test Date: Jun. 10, 2026 - Jul. 21, 2026
Date of Issue: Jul. 27, 2026

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.



Tested by: Li Renyu

Checked by: Li Ganming

Approved by: Tolan Tu
(Testing Director)

Li Renyu

Li Ganming

Tolan Tu

Revision History

Version	Issue Date	Revisions
<u>Rev. 01</u>	<u>Jul. 27, 2026</u>	<u>Initial Issue</u>

TABLE OF CONTENTS

1	GENERAL INFORMATION	4
1.1	Test Laboratory	4
1.2	Test Location	4
2	PRODUCT INFORMATION	5
2.1	Applicant Information	5
2.2	Manufacturer Information	5
2.3	General Description for Equipment under Test (EUT)	5
2.4	Technical Information	6
2.5	Additional Instructions	8
3	SUMMARY OF TEST RESULTS	9
3.1	Test Standards	9
3.2	Test Verdict	10
4	GENERAL TEST CONFIGURATIONS	11
4.1	Test Environments	11
4.2	Test Equipment List	11
4.3	Test Software List	11
4.4	Measurement Uncertainty	12
4.5	Description of Test Setup	12
4.6	Measurement Results Explanation Example	15
5	TEST ITEMS	16
5.1	Antenna Requirements	16
5.2	Frequency Hopping Systems	17
5.3	Number of Hopping Frequencies	19
5.4	Peak Output Power and E.I.R.P	20

5.5	Occupied Bandwidth.....	21
5.6	Carrier Frequency Separation.....	22
5.7	Time of Occupancy (Dwell time)	23
5.8	Conducted Spurious Emission & Authorized-band band-edge.....	25
5.9	Conducted Emission.....	26
5.10	Radiated Spurious Emission.....	27
5.11	Band Edge (Restricted-band band-edge).....	32
ANNEX A	TEST RESULT	35
A.1	Number of Hopping Frequency.....	35
A.2	Peak Output Power and E.I.R.P	36
A.3	20 dB and 99% bandwidth	40
A.4	Hopping Frequency Separation	45
A.5	Average Time of Occupancy.....	46
A.6	Conducted Spurious Emissions & Authorized-band band-edge	49
A.7	Conducted Emissions	56
A.8	Radiated Spurious Emission.....	58
A.9	Band Edge (Restricted-band band-edge).....	72
ANNEX B	TEST SETUP PHOTOS	76
ANNEX C	EUT EXTERNAL PHOTOS.....	76
ANNEX D	EUT INTERNAL PHOTOS.....	76

1 GENERAL INFORMATION

1.1 Test Laboratory

Name	Shenzhen BALUN Technology Co., Ltd.
Address	601, Building 2, Intelligent Connected Vehicle Industrial Park, No.55, Xiangshan Road, Luotian Community, Yanluo Sub-district, Bao'an District, Shenzhen
Phone Number	+86 755 6685 0100

1.2 Test Location

Name	Shenzhen BALUN Technology Co., Ltd.
Location	☐ Building 2, Intelligent Connected Vehicle Industrial Park, No.55, Xiangshan Road, Luotian Community, Yanluo Sub-district, Bao'an District, Shenzhen, Guangdong
	☒ 1/F., Building B, Ganghongji High-Tech Intelligent Industrial Park, No.1008, Songbai Road, Yangguang Community, Xili Subdistrict, Nanshan District, Shenzhen, Guangdong
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196. The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The CAB identifier number is CN0030.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	NOTHING TECHNOLOGY LIMITED
Address	Bedford House, 21A John Street, London, United Kingdom WC1N 2BF

2.2 Manufacturer Information

Manufacturer	NOTHING TECHNOLOGY LIMITED
Address	Bedford House, 21A John Street, London, United Kingdom WC1N 2BF

2.3 General Description for Equipment under Test (EUT)

EUT Name	Wireless Headphone
Model Name Under Test	B192
Series Model Name	N/A
Description of Model name differentiation	N/A
Serial Number	1351192607000089
Hardware Version	V3.0
Software Version	V1.0.1.29
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.4 Technical Information

Network and Wireless connectivity	Bluetooth (BR+EDR+BLE)
-----------------------------------	------------------------

The requirement for the following technical information of the EUT was tested in this report:

Modulation Technology	FHSS
Modulation Type	GFSK, $\pi/4$ -DQPSK, 8DPSK
Product Type	☐ Mobile ☒ Portable ☐ Fix Location
Transfer Rate	DH5: 1 Mbps 2DH5: 2 Mbps 3DH5: 3 Mbps
Frequency Range	The frequency range used is 2400 MHz to 2483.5 MHz.
Number of Channel	79 (at intervals of 1 MHz)
Tested Channel	0 (2402 MHz), 39 (2441 MHz), 78 (2480 MHz)
Antenna Type	FPC Antenna
Antenna Gain	-0.86 dBi
Antenna Impedance	50 Ω
Antenna System (MIMO Smart Antenna)	N/A

All channel was listed on the following table:

Channel Number	Freq. (MHz)	Channel Number	Freq. (MHz)	Channel Number	Freq. (MHz)	Channel Number	Freq. (MHz)
0	2402	21	2423	42	2444	63	2465
1	2403	22	2424	43	2445	64	2466
2	2404	23	2425	44	2446	65	2467
3	2405	24	2426	45	2447	66	2468
4	2406	25	2427	46	2448	67	2469
5	2407	26	2428	47	2449	68	2470
6	2408	27	2429	48	2450	69	2471
7	2409	28	2430	49	2451	70	2472
8	2410	29	2431	50	2452	71	2473
9	2411	30	2432	51	2453	72	2474
10	2412	31	2433	52	2454	73	2475
11	2413	32	2434	53	2455	74	2476
12	2414	33	2435	54	2456	75	2477
13	2415	34	2436	55	2457	76	2478
14	2416	35	2437	56	2458	77	2479
15	2417	36	2438	57	2459	78	2480
16	2418	37	2439	58	2460	-	-
17	2419	38	2440	59	2461	-	-
18	2420	39	2441	60	2462	-	-
19	2421	40	2442	61	2463	-	-
20	2422	41	2443	62	2464	-	-

2.5 Additional Instructions

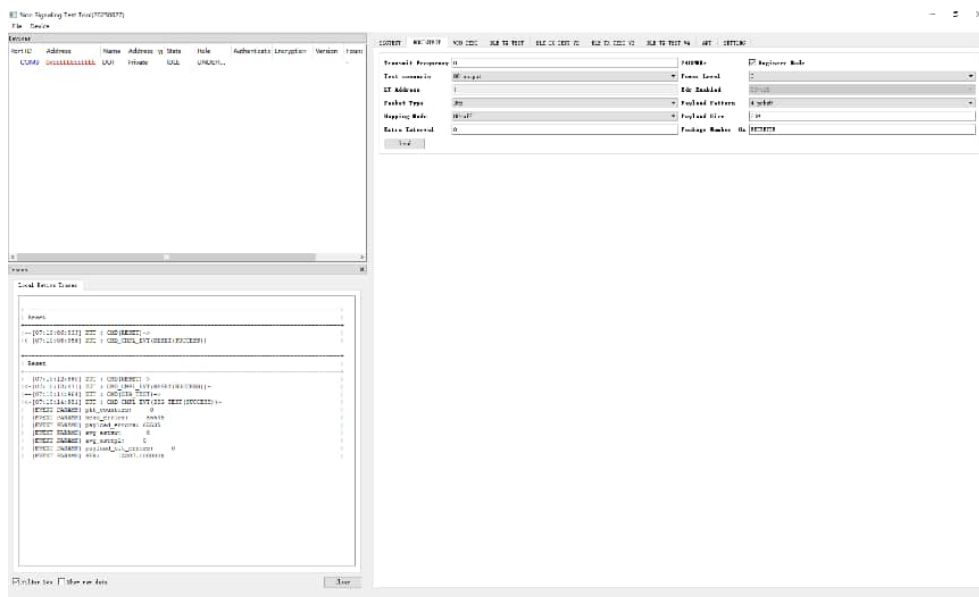
EUT Software Settings:

Mode	☒ Bluetooth test mode loop back enabled. EUT is controlled over CBT / CMW.
	☒ Special software is used. The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

During testing. Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Power level setup in software			
Test Software Version	BQB_20250627		
Support Units (Software installation media)	Description	Manufacturer	Model
	Tablet Computer	N/A	N/A
Mode	Channel	Frequency (MHz)	Soft Set
GFSK (DH5)	0	2402	3
	39	2441	
	78	2480	
$\pi/4$ -DQPSK (2DH5)	0	2402	3
	39	2441	
	78	2480	
8DPSK(3DH5)	0	2402	3
	39	2441	
	78	2480	

Run Software:



3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 15, Subpart C	Intentional radiators of radio frequency equipment
2	RSS-Gen Issue 5	General Requirements for Compliance of Radio Apparatus
3	RSS-247 Issue 4	Digital Transmission Systems, Frequency Hopping Systems and LicenceExempt Local Area Network Devices in 902-928 MHz, 2400-2483.5 MHz, 5150-5350 MHz, and 5470-5895 MHz bands
4	ANSI C63.10-2020 + Cor. 1-2023 + C63.10a-2024 + Errata to C63.10a-2024	American National Standard for Procedures for Compliance Testing of Unlicensed Wireless Devices
5	KDB 558074 D01 15.247 Meas Guidance v05r02	Guidance for compliance measurements on digital transmission system, frequency hopping spread spectrum system, and hybrid system devices operating under section 15.247 of the FCC rules

3.2 Test Verdict

No.	Description	FCC Part No.	ISED Part No.	Channel	Test Result	Verdict	Remark
1	Antenna Requirement	15.203	RSS-Gen, 6.8	N/A	--	Pass	Note ¹
2	Number of Hopping Frequencies	15.247(a)	RSS-247, 6.2.3.1 (b)	Hopping Mode	ANNEX A.1	Pass	Note ²
3	Peak Output Power and E.I.R.P	15.247(b)	RSS-247, 6.2.3.2	Low/Middle/High	ANNEX A.2	Pass	--
4	Occupied Bandwidth	15.247(a)	RSS-247, 6.2.1 (a)	Low/Middle/High	ANNEX A.3	Pass	--
5	Carrier Frequency Separation	15.247(a)	RSS-247, 6.2.3.1 (a)	Hopping Mode	ANNEX A.4	Pass	Note ²
6	Time of Occupancy (Dwell time)	15.247(a)	RSS-247, 6.2.3.1 (b)	Hopping Mode	ANNEX A.5	Pass	Note ²
7	Conducted Spurious Emission & Authorized-band band-edge	15.247(d)	RSS-247, 6.6	Hopping Mode; Low/Middle/High	ANNEX A.6	Pass	Note ²
8	Conducted Emission	15.207	RSS-GEN, 8.8	Low/Middle/High	ANNEX A.7	Pass	Note ²
9	Radiated Spurious Emission	15.209 15.247(d)	RSS-247, 6.6	Low/Middle/High	ANNEX A.8	Pass	Note ²
10	Band Edge(Restricted-band band-edge)	15.209 15.247(d)	RSS-247, 6.6	Low/High	ANNEX A.9	Pass	Note ²
11	Receiver Spurious Emissions	--	RSS-Gen, 7.3	--	--	N/A	Note ³

Note ¹: The EUT has a permanently and irreplaceable attached antenna, which complies with the requirement FCC 15.203.

Note ²: $\pi/4$ -DQPSK is the EDR 2M rate mode, 8DPSK is the EDR 3M rate mode. The consistency of test results in $\pi/4$ -DQPSK and 8DPSK is very high. So we chose 8DPSK as a typical representative to appear on the report. Another we will show all the modes on the RF output power test item.

Note ³: Only radio communication receivers operating in stand-alone mode within the band 30-960 MHz, as well as scanner receivers, are subject to Industry Canada requirements, so this test is not applicable.

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

During the measurement, the normal environmental conditions were within the listed ranges:

Relative Humidity	48% to 69%	
Atmospheric Pressure	100 kPa to 102 kPa	
Temperature	NT (Normal Temperature)	+18.4℃ to +26.3℃
Working Voltage of the EUT	NV (Normal Voltage)	3.85V

4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	KEYSIGHT	N9020A	MY54420186	2026.05.11	2027.05.10
Spectrum Analyzer	KEYSIGHT	N9020A	MY56060127	2025.12.25	2026.12.24
Test Antenna-Horn	A-INFO	LB-180400KF	J211060273	2024.06.15	2027.06.14
Test Antenna-Bi-Log	Schwarzbeck	VULB 9163	01414	2023.11.03	2026.11.02
Test Antenna-Horn	Schwarzbeck	BBHA 9120D	02459	2023.10.26	2026.10.25
Test Antenna-Loop	Schwarzbeck	FMZB 1513-60	00015	2026.05.12	2028.05.11
Anechoic Chamber	YIHENG	C8-966	N/A	2024.05.12	2027.05.11
EMI Receiver	Keysight	N9038A	MY55330121	2025.12.26	2026.12.25
Filtering unit	BALUN	SU319F	LW-SZ19D0001F01	N/A	N/A
Switching unit	BALUN	SU319	LW-SZ19D0001S01	N/A	N/A
EMI Receiver	keysight	N9038B	MY61380132	2025.12.26	2026.12.25
LISN	SCHWARZBECK MESS- ELEKTRONIK	NSLK8127	01009	2025.07.15	2026.07.14
				2026.06.22	2027.06.21
Shielded Enclosure	YiHeng Electronic Co., Ltd	4.3m*2.9m*2.4 m	235	2024.11.05	2027.11.04

4.3 Test Software List

Description	Manufacturer	Software Version	Serial No.	Applicable test Setup
BL410R	BALUN	V3.0.1.528	N/A	The section 4.5.1
BL410E	BALUN	V22.930	N/A	The section 4.5.2&4.5.3&4.5.4&4.5.5

4.4 Measurement Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Parameters	Uncertainty
Occupied Channel Bandwidth	2.8%
RF output power, conducted	1.28 dB
Power Spectral Density, conducted	1.30 dB
Unwanted Emissions, conducted	1.84 dB
All emissions, radiated	5.36 dB
Temperature	0.8°C
Humidity	4%

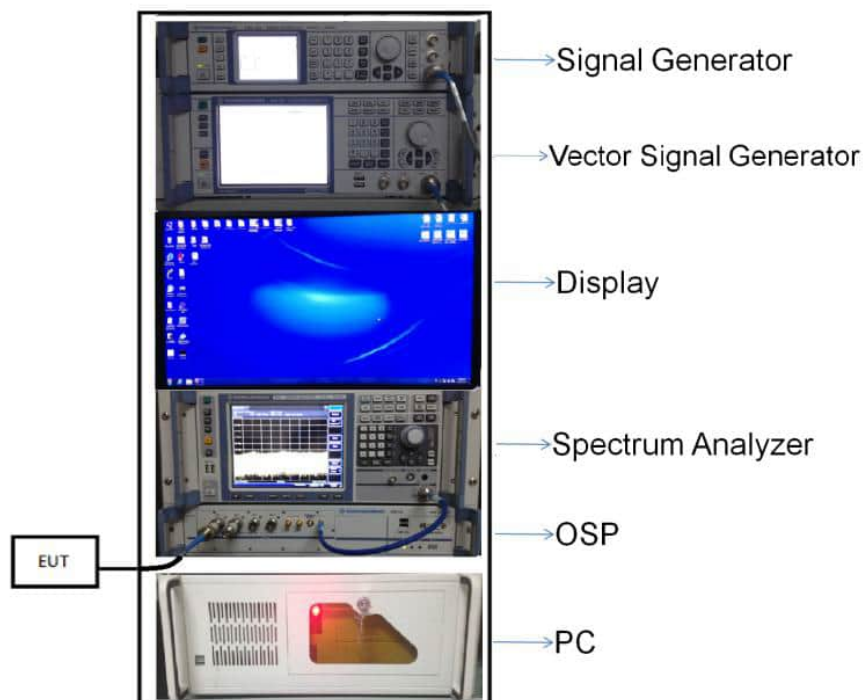
4.5 Description of Test Setup

4.5.1 For Antenna Port Test

Conducted value (dBm) = Measurement value (dBm) + cable loss (dB)

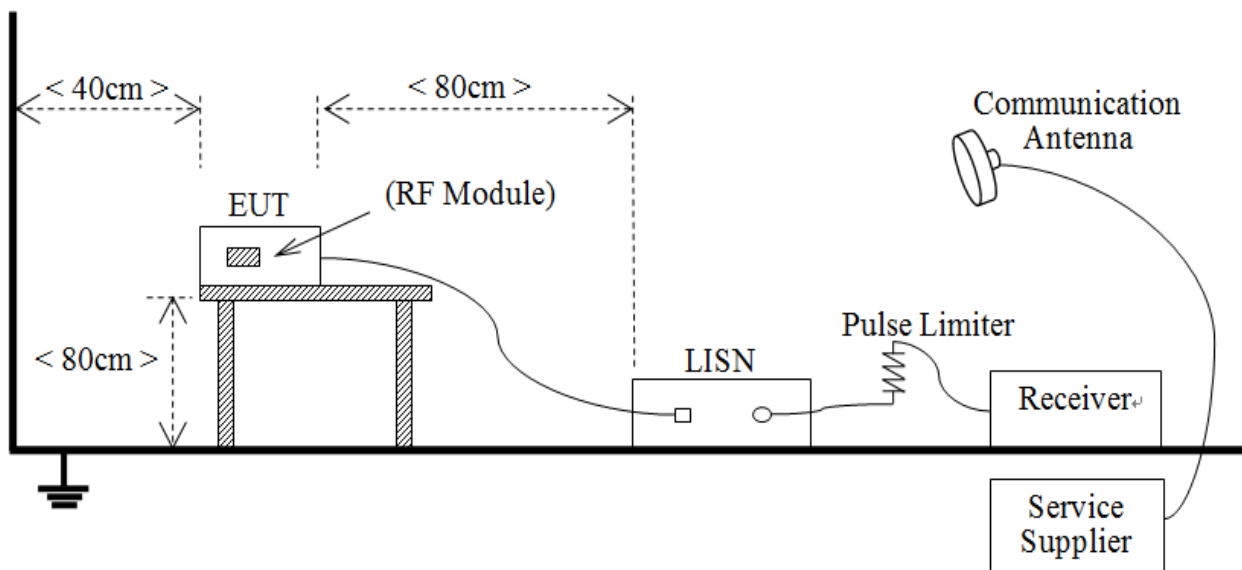
For example: the measurement value is 10 dBm and the cable 0.5dBm used, then the final result of EUT:

Conducted value (dBm) = 10 dBm + 0.5 dB = 10.5 dBm



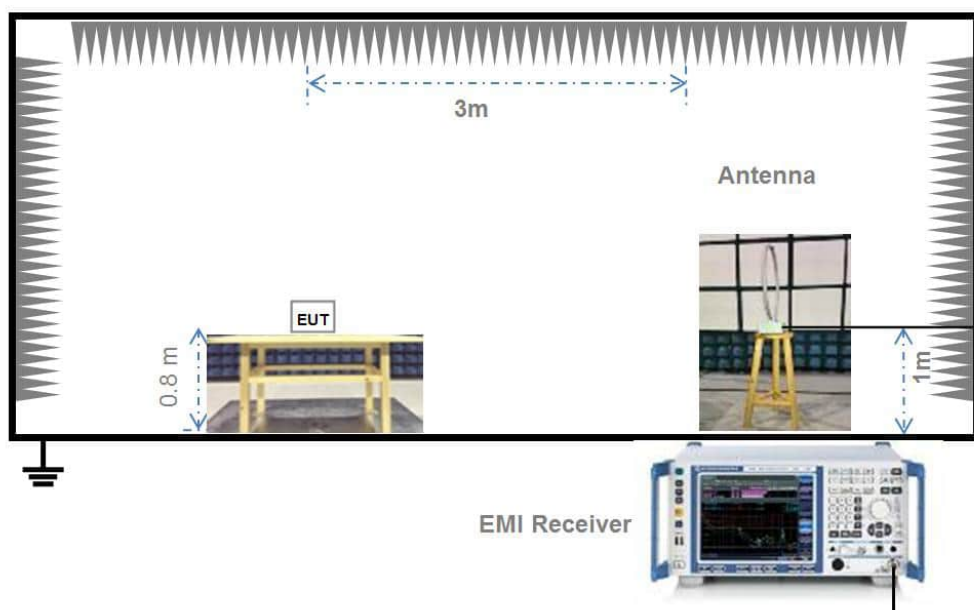
(Diagram 1)

4.5.2 For AC Power Supply Port Test



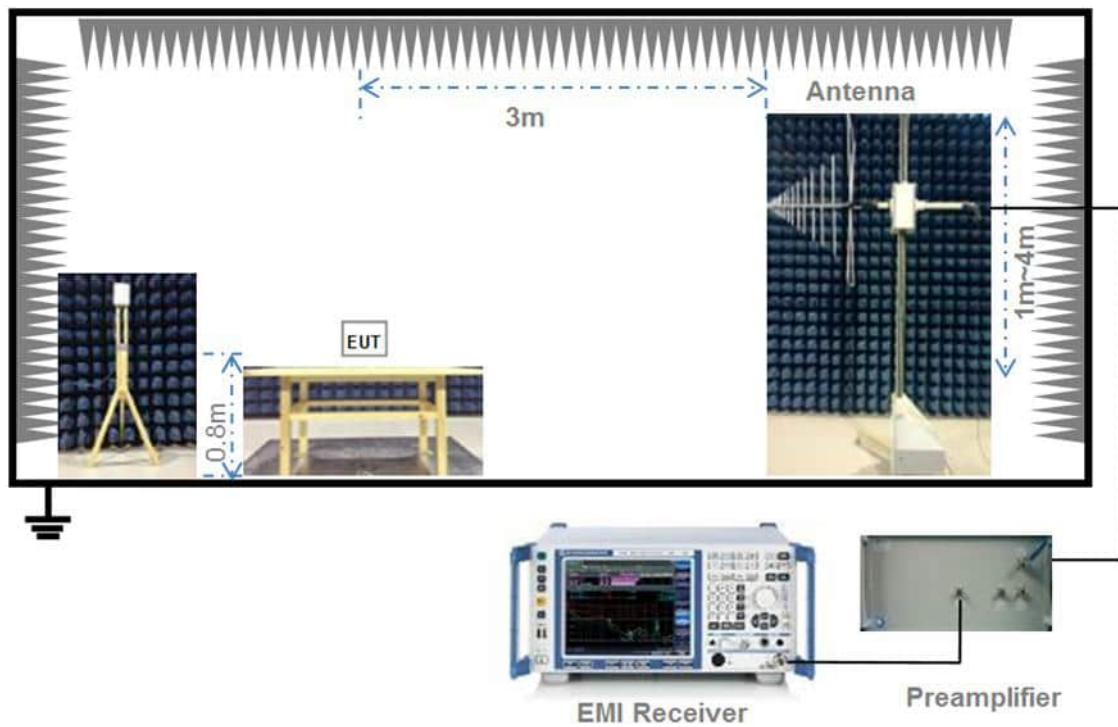
(Diagram 2)

4.5.3 For Radiated Test (Below 30 MHz)



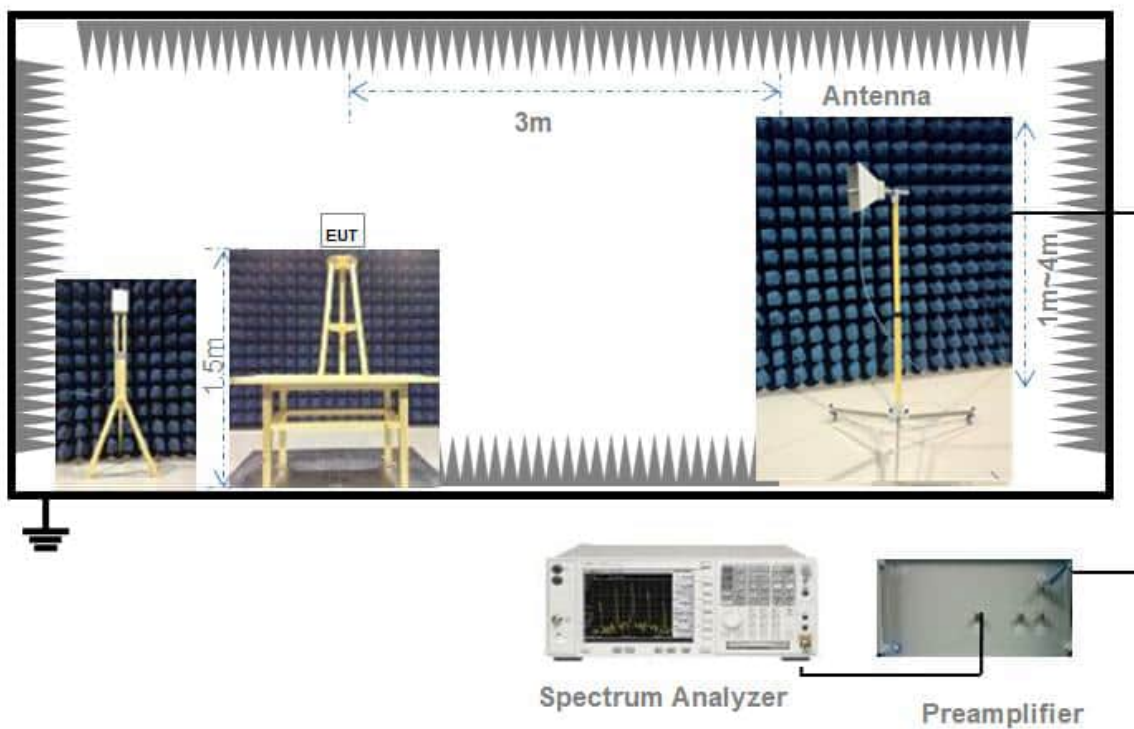
(Diagram 3)

4.5.4 For Radiated Test (30 MHz-1 GHz)



(Diagram 4)

4.5.5 For Radiated Test (Above 1 GHz)



(Diagram 5)

4.6 Measurement Results Explanation Example

4.6.1 For conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

5 TEST ITEMS

5.1 Antenna Requirements

5.1.1 Relevant Standards

FCC §15.203 & 15.247(b); 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

If directional gain of transmitting antennas is greater than 6 dBi, the power shall be reduced by the same level in dB comparing to gain minus 6 dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

5.1.2 Antenna Anti-Replacement Construction

The Antenna Anti-Replacement as following method:

Protected Method	Description
The antenna is embedded in the product.	An embedded-in antenna design is used.

Reference Documents	Item
Photo	Please refer to the EUT Photo documents.

5.1.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

5.2 Frequency Hopping Systems

5.2.1 Relevant Standards

FCC §15.247(a) (1) (i) (ii) (iii) (iv); FCC §15.247(g); FCC §15.247(h);

Describe how the hopping sequence is generated. Provide an example of the hopping sequence channels, to demonstrate that the sequence meets the requirement specified in the definition of an FHSS system. Per the definition in Section 2.1(c), the hop set shall appear as random in the near term, shall appear as evenly distributed in the long term, and sequential hops shall be randomly distributed in both direction and magnitude of change.

Describe how each individual EUT meets the requirement that each of its hopping channels is used equally on average (e.g., that each new transmission event begins on the next channel in the hopping sequence after the final channel used in the previous transmission event).

Describe how the associated receiver(s) complies with the requirement that the input bandwidth (either RF or IF) matches the bandwidth of the transmitted signal.

Describe how the associated receiver(s) has the ability to shift frequencies in synchronization with the transmitted signals.

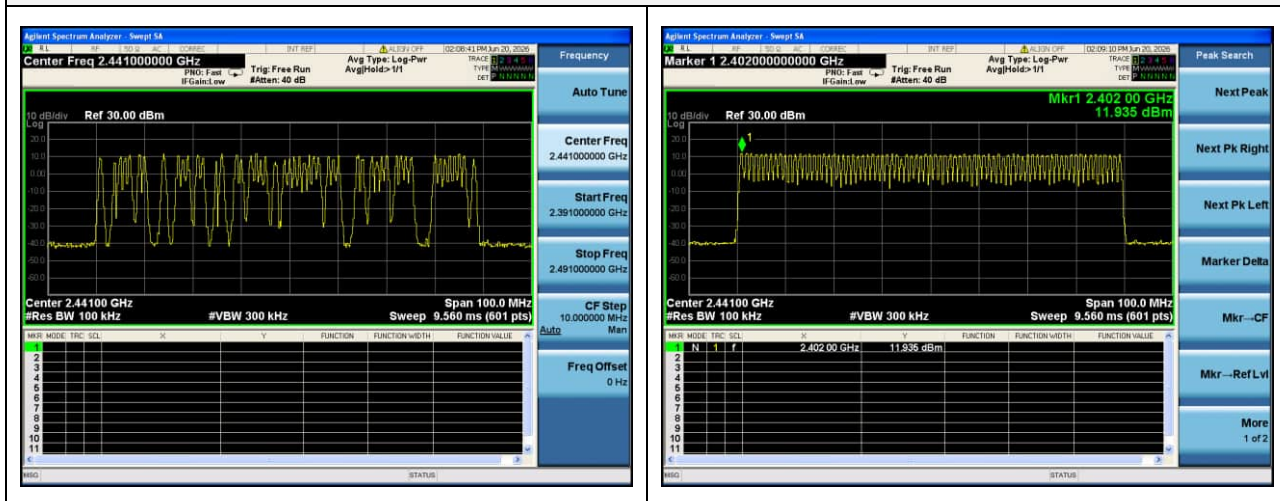
For short burst systems, describe how the EUT complies with the requirement that it be designed to be capable of operating as a true frequency hopping system. Specifically, the device shall comply with the equal frequency use and pseudorandom hopping sequence requirement when transmitting in short bursts, and shall be designed to comply when presented with continuous data (or information) stream.

Describe how the EUT complies with the requirement that it not have the ability to be coordinated with other FHSS systems in an effort to avoid the simultaneous occupancy of individual hopping frequencies by multiple transmitters.

5.2.2 Description of the systems

1. According to the preset procedure of the whole network, all the stations in the automatic control network synchronously change the frequency multiple times within one second, and temporarily stay on each frequency hopping channel. Periodic synchronization signaling is sent from the primary station, instructing all slaves to simultaneously change the operating frequency, then the hopping sequence is generated.
2. The hop set shall appear as random in the near term, shall appear as evenly distributed in the long term, and sequential hops shall be randomly distributed in both direction and magnitude of change.

Reference Documents



3. Channels are classified into two categories, used and unused, where used channels are part of the hopping sequence and unused channels are replaced in the hopping sequence by used channels in a pseudo-random way. Make each individual EUT meets the requirement that each of its hopping channels is used equally on average.
4. The input bandwidth and transmitted bandwidth are both 1MHz, the associated receiver(s) complies with the requirement that the input bandwidth matches the bandwidth of the transmitted signal.
5. Connected devices communicate on the same physical channel by synchronizing with a common clock and hopping sequence.
6. EUT isn't short burst systems.
7. EUT can't have the ability to be coordinated with other FHSS systems in an effort.

5.3 Number of Hopping Frequencies

5.3.1 Limit

FCC §15.247(a) (1) (iii); RSS-247, 6.2.3.1(b)

Frequency hopping systems operating in the 2400 MHz to 2483.5 MHz bands shall use at least 15 hopping frequencies.

5.3.2 Test Setup

See section 4.5.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.3.3 Test Procedure

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

Span = The frequency band of operation

RBW = To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize

5.3.4 Test Result

Please refer to ANNEX A.1.

5.4 Peak Output Power and E.I.R.P

5.4.1 Test Limit

FCC § 15.247(b)

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

RSS-247, 6.2.3.2

The following transmitter output power and e.i.r.p. requirements shall apply:

- a. if the hopset uses 75 or more hopping channels, the maximum peak conducted output power shall not exceed 1.0 W.
- b. if the hopset uses less than 75 hopping channels the maximum peak conducted output power shall not exceed 0.125 W.
- c. the e.i.r.p. shall not exceed 4 W, except as provided in sections 6.5 a) and b).

5.4.2 Test Setup

See section 4.5.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.4.3 Test Procedure

The Module operates at hopping-off test mode. The lowest, middle and highest channels are selected to perform testing to verify the conducted RF output peak power of the Module.

Use the following spectrum analyzer settings:

Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel

RBW > the 20 dB bandwidth of the emission being measured

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize.

5.4.4 Test Result

Please refer to ANNEX A.2.

5.5 Occupied Bandwidth

5.5.1 Limit

FCC §15.247(a); RSS-247, 6.2.1 (a)

Measurement of the 20dB bandwidth of the modulated signal.

5.5.2 Test Setup

See section 4.5.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.5.3 Test Procedure

20dB bandwidth

use the following spectrum analyzer settings:

Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hopping channel

RBW = in the range of 1% to 5% of the OBW

VBW $\geq 3 \times$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

The EUT should be transmitting at its maximum data rate, Allow the trace to stabilize.

99% bandwidth

use the following spectrum analyzer settings:

Span = approximately 1.5 to 5 times the 99% bandwidth, centered on a hopping channel

RBW = in the range of 1% to 5% of the OBW

VBW $\geq 3 \times$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

The EUT should be transmitting at its maximum data rate, Allow the trace to stabilize.

Use the 99% power bandwidth function of the instrument and report the measured bandwidth.

5.5.4 Test Result

Please refer to ANNEX A.3.

5.6 Carrier Frequency Separation

5.6.1 Limit

FCC §15.247(a); RSS-247, 6.2.3.1(a)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 2/3 of the 20 dB bandwidth of the hopping channel, whichever is greater.

5.6.2 Test Setup

See section 4.5.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.6.3 Test Procedure

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

Span = wide enough to capture the peaks of two adjacent channels

Resolution (or IF) Bandwidth (RBW) $\geq 1\%$ of the span

Video (or Average) Bandwidth (VBW) $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

5.6.4 Test Result

Please refer to ANNEX A.4.

5.7 Time of Occupancy (Dwell time)

5.7.1 Limit

FCC §15.247(a); RSS-247, 6.2.3.1(b)

Frequency hopping systems in the 2400 MHz - 2483.5 MHz band shall use at least 15 non-overlapping 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.

5.7.2 Test Setup

See section 4.5.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.7.3 Test Procedure

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

Span: Zero span, centered on a hopping channel

RBW shall be $\leq$ channel spacing and where possible RBW should be set $\gg 1/T$, where T is the expected dwell time per channel

Sweep: Set so that the start of the first transmission and end of the last transmission for the hop are clearly captured. Setting the sweep time to be slightly longer than the hopping period per channel (hopping period = $1/\text{hopping rate}$) should achieve this.

Detector function: Peak

Trace: Max hold

Use the marker-delta function to determine the transmit time per hop. If this value varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation in transmit time.

The average time of occupancy on any channel within the Period can be calculated with formulas:

For GFSK and 8DPSK:

For DH1 package type

$$\{\text{Total of Dwell}\} = \{\text{Pulse Time}\} * (1600 / 2) / \{\text{Number of Hopping Frequency}\} * \{\text{Period}\}$$

$$\{\text{Period}\} = 0.4 \text{ s} * \{\text{Number of Hopping Frequency}\}$$

For DH3 package type

$$\{\text{Total of Dwell}\} = \{\text{Pulse Time}\} * (1600 / 4) / \{\text{Number of Hopping Frequency}\} * \{\text{Period}\}$$

$$\{\text{Period}\} = 0.4 \text{ s} * \{\text{Number of Hopping Frequency}\}$$

For DH5 package type

$$\{\text{Total of Dwell}\} = \{\text{Pulse Time}\} * (1600 / 6) / \{\text{Number of Hopping Frequency}\} * \{\text{Period}\}$$

$$\{\text{Period}\} = 0.4 \text{ s} * \{\text{Number of Hopping Frequency}\}$$

For AFH Mode:

For DH1 package type

$$\{\text{Total of Dwell}\} = \{\text{Pulse Time}\} * (800 / 2) / \{\text{Number of Hopping Frequency}\} * \{\text{Period}\}$$

$$\{\text{Period}\} = 0.4 \text{ s} * \{\text{Number of Hopping Frequency}\}$$

For DH3 package type

$$\{\text{Total of Dwell}\} = \{\text{Pulse Time}\} * (800 / 4) / \{\text{Number of Hopping Frequency}\} * \{\text{Period}\}$$

$$\{\text{Period}\} = 0.4 \text{ s} * \{\text{Number of Hopping Frequency}\}$$

For DH5 package type

$$\{\text{Total of Dwell}\} = \{\text{Pulse Time}\} * (800 / 6) / \{\text{Number of Hopping Frequency}\} * \{\text{Period}\}$$

$$\{\text{Period}\} = 0.4 \text{ s} * \{\text{Number of Hopping Frequency}\}$$

The lowest, middle and highest channels are selected to perform testing to record the dwell time of each occupation measured in this channel, which is called Pulse Time here.

5.7.4 Test Result

Please refer to ANNEX A.5.

5.8 Conducted Spurious Emission & Authorized-band band-edge

5.8.1 Limit

FCC §15.247(d); RSS-247, 6.6

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.

5.8.2 Test Setup

See section 4.5.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.8.3 Test Procedure

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.

RBW = 100 kHz

VBW = 300 kHz

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize

5.8.4 Test Result

Please refer to ANNEX A.6.

5.9 Conducted Emission

5.9.1 Limit

FCC §15.207; RSS-GEN, 8.8

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dB μ V)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
0.50 - 30	60	50

5.9.2 Test Setup

See section 4.5.2 for test setup description for the AC power supply port. The photo of test setup please refer to ANNEX B.

5.9.3 Test Procedure

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.

Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. A device rated for 50/60 Hz operation need not be tested at both frequencies provided the radiated and line conducted emissions are the same at both frequencies.

5.9.4 Test Result

Please refer to ANNEX A.7.

5.10 Radiated Spurious Emission

5.10.1 Limit

FCC §15.209&15.247(d); RSS-247, 6.6

Radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009 - 0.490	$2400/F(\text{kHz})$	300
0.490 - 1.705	$24000/F(\text{kHz})$	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

Note:

1. Field Strength ($\text{dB}\mu\text{V/m}$) = $20 \times \log[\text{Field Strength } (\mu\text{V/m})]$.
2. In the emission tables above, the tighter limit applies at the band edges.
3. For Above 1000 MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.
4. For above 1000 MHz, limit field strength of harmonics: $54\text{dB}\mu\text{V/m}@3\text{m}$ (AV) and $74\text{dB}\mu\text{V/m}@3\text{m}$ (PK).

5.10.2 Test Setup

See section 4.5.3 to 4.5.5 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.10.3 Test Procedure

Since the emission limits are specified in terms of radiated field strength levels, measurements performed to demonstrate compliance have traditionally relied on a radiated test configuration. Radiated measurements remain the principal method for demonstrating compliance to the specified limits; however antenna-port conducted measurements are also now acceptable to demonstrate compliance (see below for details). When radiated measurements are utilized, test site requirements and procedures for maximizing and measuring radiated emissions that are described in ANSI C63.10 shall be followed.

Antenna-port conducted measurements may also be used as an alternative to radiated measurements

for demonstrating compliance in the restricted frequency bands. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test for cabinet/case spurious emissions is required.

General Procedure for conducted measurements in restricted bands

- a) Measure the conducted output power (in dBm) using the detector specified (see guidance regarding measurement procedures for determining quasi-peak, peak, and average conducted output power, respectively).
- b) Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP level (see guidance on determining the applicable antenna gain)
- c) Add the appropriate maximum ground reflection factor to the EIRP level (6 dB for frequencies ≤ 30 MHz, 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive and 0 dB for frequencies > 1000 MHz).
- d) For devices with multiple antenna-ports, measure the power of each individual chain and sum the EIRP of all chains in linear terms (e.g., Watts, mW).
- e) Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:

$$E = \text{EIRP} - 20 \log D + 104.8$$

where:

E = electric field strength in dB μ V/m,

EIRP = equivalent isotropic radiated power in dBm

D = specified measurement distance in meters.

- f) Compare the resultant electric field strength level to the applicable limit.
- g) Perform radiated spurious emission test.

Quasi-Peak measurement procedure

The specifications for measurements using the CISPR quasi-peak detector can be found in Publication 16 of the International Special Committee on Radio Frequency Interference (CISPR) of the International Electrotechnical Commission.

As an alternative to CISPR quasi-peak measurement, compliance can be demonstrated to the applicable emission limits using a peak detector.

Peak power measurement procedure

Peak emission levels are measured by setting the instrument as follows:

- a) RBW = as specified in Table 1.
- b) VBW $\geq 3 \times$ RBW.
- c) Detector = Peak.

- d) Sweep time = auto.
- e) Trace mode = max hold.
- f) Allow sweeps to continue until the trace stabilizes. (Note that the required measurement time may be longer for low duty cycle applications).

Table 1—RBW as a function of frequency

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

If the peak-detected amplitude can be shown to comply with the average limit, then it is not necessary to perform a separate average measurement.

Trace averaging across on and off times of the EUT transmissions followed by duty cycle correction

If continuous transmission of the EUT (i.e., duty cycle ≥ 98 percent) cannot be achieved and the duty cycle is constant (i.e., duty cycle variations are less than ± 2 percent), then the following procedure shall be used:

- a) The EUT shall be configured to operate at the maximum achievable duty cycle.
- b) Measure the duty cycle, x , of the transmitter output signal as described in section 6.0.
- c) RBW = 1 MHz (unless otherwise specified).
- d) VBW $\geq 3 \times$ RBW.
- e) Detector = RMS, if $\text{span}/(\# \text{ of points in sweep}) \leq (\text{RBW}/2)$. Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.
- f) Averaging type = power (i.e., RMS).
 - 1) As an alternative, the detector and averaging type may be set for linear voltage averaging.
 - 2) Some instruments require linear display mode in order to use linear voltage averaging. Log or dB averaging shall not be used.
- g) Sweep time = auto.
- h) Perform a trace average of at least 100 traces.
- i) A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:
 - 1) If power averaging (RMS) mode was used in step f), then the applicable correction factor is $10 \log(1/x)$, where x is the duty cycle.

2) If linear voltage averaging mode was used in step f), then the applicable correction factor is $20 \log(1/x)$, where x is the duty cycle.

3) If a specific emission is demonstrated to be continuous (≥ 98 percent duty cycle) rather than turning on and off with the transmit cycle, then no duty cycle correction is required for that emission.

NOTE: Reduction of the measured emission amplitude levels to account for operational duty factor is not permitted. Compliance is based on emission levels occurring during transmission - not on an average across on and off times of the transmitter.

Determining the applicable transmit antenna gain

A conducted power measurement will determine the maximum output power associated with a restricted band emission; however, in order to determine the associated EIRP level, the gain of the transmitting antenna (in dBi) must be added to the measured output power (in dBm).

Since the out-of-band characteristics of the EUT transmit antenna will often be unknown, the use of a conservative antenna gain value is necessary. Thus, when determining the EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2 dBi, whichever is greater. However, for devices that operate in multiple frequency bands while using the same transmit antenna, the highest gain of the antenna within the operating band nearest in frequency to the restricted band emission being measured may be used in lieu of the overall highest gain when the emission is at a frequency that is within 20 percent of the nearest band edge frequency, but in no case shall a value less than 2 dBi be used.

See KDB 662911 for guidance on calculating the additional array gain term when determining the effective antenna gain for a EUT with multiple outputs occupying the same or overlapping frequency ranges in the same band.

Radiated spurious emission test

An additional consideration when performing conducted measurements of restricted band emissions is that unwanted emissions radiating from the EUT cabinet, control circuits, power leads, or intermediate circuit elements will likely go undetected in a conducted measurement configuration. To address this concern, a radiated test shall be performed to ensure that emissions emanating from the EUT cabinet (rather than the antenna port) also comply with the applicable limits.

For these cabinet radiated spurious emission measurements the EUT transmit antenna may be replaced with a termination matching the nominal impedance of the antenna. Procedures for performing radiated measurements are specified in ANSI C63.10. All detected emissions shall comply with the applicable limits.

The measurement frequency range is from 30 MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360° , and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth

verified. Only the worst RB size/offset presented.

The power of the EUT transmitting frequency should be ignored.

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

5.10.4 Test Result

Please refer to ANNEX A.8.

5.11 Band Edge (Restricted-band band-edge)

5.11.1 Limit

FCC §15.209&15.247(d)

Radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

5.11.2 Test Setup

See section 4.5.3 to 4.5.5 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.11.3 Test Procedure

The following procedures may be used to determine the average field strength or power of an unwanted emission that is within 2 MHz of the authorized band-edge. Use the procedure described in 11.12.3.2.2 when using an average detector and the EUT can be configured to transmit continuously (i.e., $D \geq 98\%$). Use the procedure described in 11.12.3.2.3 when using an average detector and the EUT cannot be configured to transmit continuously but the duty cycle is constant (i.e., duty cycle variations are less than $\pm 2\%$). Use the procedure described in 11.12.3.2.4 when using an average detector for those cases where the EUT cannot be configured to transmit continuously and the duty cycle is not constant (duty cycle variations equal or exceed 2%).

If the EUT can be configured or modified to transmit continuously ($D \geq 98\%$), measured using the following method (with EUT transmitting continuously):

Use the following spectrum analyzer settings:

Set instrument center frequency to the frequency of the emission to be measured (must be within 2 MHz of the authorized band-edge).

RBW = 100 kHz.

VBW $\geq [3 \times \text{RBW}]$.

Detector = Power averaging (rms), if $[\text{span} / (\# \text{ of points in sweep})] \leq (\text{RBW} / 2)$.

Averaging type = power (i.e., rms):

As an alternative, the detector and averaging type may be set for linear voltage averaging.

Some instruments require linear display mode to use linear voltage averaging. Log or dB averaging shall not be used.

Sweep time = auto.

Perform a trace average of at least 100 traces.

Compute the power by integrating the spectrum over 1 MHz using the analyzer's band-power

measurement function with band limits set equal to the emission frequency (femission) ± 0.5 MHz. If the instrument does not have a band-power function, then sum the amplitude levels (in power units) at 100 kHz intervals extending across the 1 MHz spectrum defined by femission) ± 0.5 MHz.

If continuous transmission of the EUT ($D \geq 98\%$) cannot be achieved and the duty cycle is constant (duty cycle variations are less $\pm 2\%$), then the following procedure may be used to measure the average power of unwanted emissions within 2 MHz of the authorized band-edge:

RBW = 100 kHz.

VBW $\geq [3 \times \text{RBW}]$.

Detector = Power averaging (rms), if $[\text{span} / (\# \text{ of points in sweep})] \leq (\text{RBW} / 2)$.

Averaging type = power (i.e., rms):

Detector = Power averaging (rms), if $[\text{span} / (\# \text{ of points in sweep})] \leq (\text{RBW} / 2)$. Satisfying this condition might require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.

Averaging type = power (i.e., rms):

- 1) As an alternative, the detector and averaging type may be set for linear voltage averaging
- 2) Some instruments require linear display mode to use linear voltage averaging. Log or dB averaging shall not be used.

Sweep time = auto.

Perform a trace average of at least 100 traces.

Compute the power by integrating the spectrum over 1 MHz using the instrument's band-power measurement function with band limits set equal to the emission frequency (femission) ± 0.5 MHz. If the spectrum analyzer does not have a band-power function, then sum the amplitude levels (in power units) at 100 kHz intervals extending across the 1 MHz spectrum defined by femission ± 0.5 MHz.

A correction factor shall be added to the measurement results prior to comparing with the emission limit to compute the emission level that would have been measured had the test been performed at 100% duty cycle. The correction factor is computed as follows:

1) If power averaging (rms) mode was used in step f), then the applicable correction factor is $[10 \log (1 / D)]$, where D is the duty cycle.

2) If linear voltage averaging mode was used in step f), then the applicable correction factor is $[20 \log (1 / D)]$, where D is the duty cycle.

3) If a specific emission is demonstrated to be continuous ($D \geq 98\%$) rather than turning ON and

OFF with the transmit cycle, then no duty cycle correction is required for that emission.

Reduction of the measured emission amplitude levels to account for operational duty cycle is not permitted. Determining compliance is based on emission levels occurring during transmission—it is not based on an average across ON and OFF times of the transmitter.

5.11.4 Test Result

Please refer to ANNEX A.9.

ANNEX A TEST RESULT

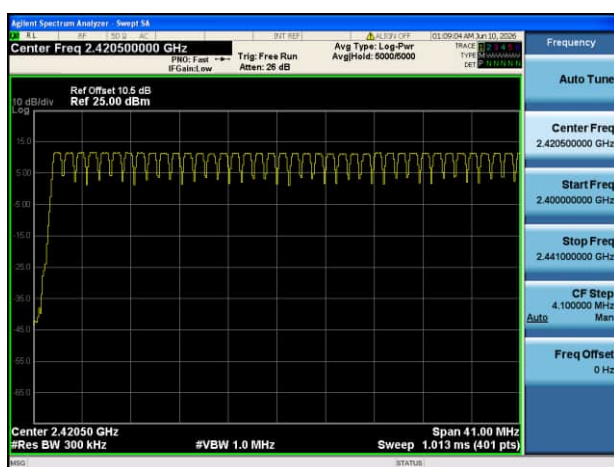
A.1 Number of Hopping Frequency

Test Data

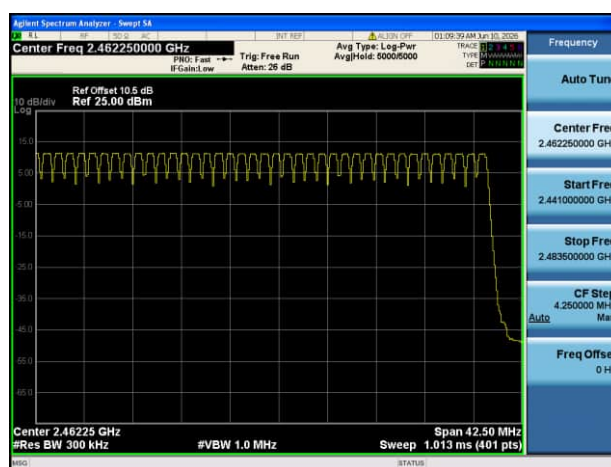
Test Mode	Frequency Block (MHz)	Measured Channel Numbers	Min. Limit	Verdict
GFSK	2400 - 2483.5	79	15	Pass
8DPSK	2400 - 2483.5	79	15	Pass

Test Plots

GFSK 2.4 GHz ~ 2.4415 GHz



GFSK 2.4415 GHz ~ 2.4835 GHz



8DPSK 2.4 GHz ~ 2.4415 GHz



8DPSK 2.4415 GHz ~ 2.4835 GHz



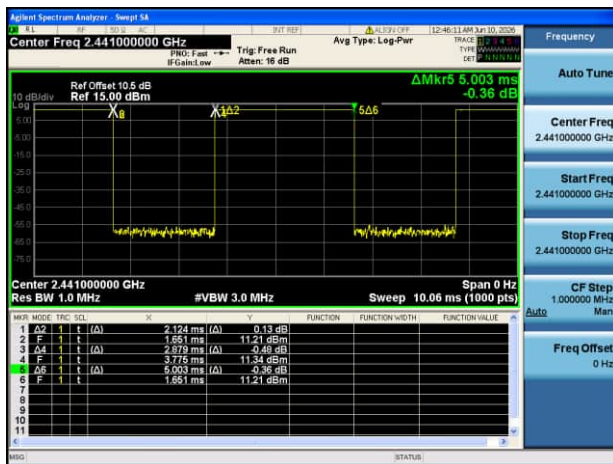
A.2 Peak Output Power and E.I.R.P

Duty Cycle

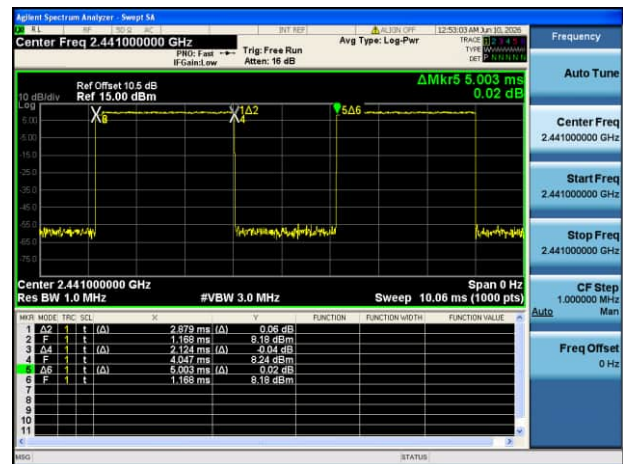
Test Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle	Duty Factor
GFSK	2.879	5.003	57.55%	2.40
$\pi/4$ -DQPSK	2.879	5.003	57.55%	2.40
8DPSK	2.879	4.993	57.66%	2.39

Test Plots

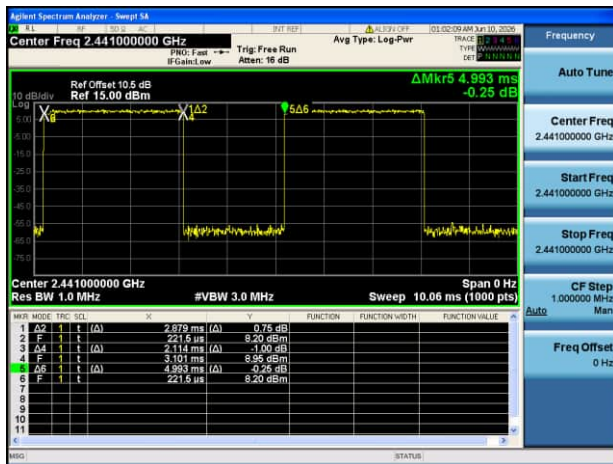
GFSK



$\pi/4$ -DQPSK



8DPSK



Peak Power Test Data

Channel	Measured Output Peak Power						Limit		Verdict
	GFSK		$\pi/4$ -DQPSK		8DPSK		dBm	mW	
	dBm	mW	dBm	mW	dBm	mW			
Low	12.27	16.88	11.46	13.98	12.07	16.10	21	125	Pass
Middle	12.02	15.93	11.22	13.26	11.83	15.24			Pass
High	11.77	15.02	10.98	12.53	11.59	14.42			Pass

E.I.R.P Test Data (For ISSED)

Channel	E.I.R.P						Limit		Verdict
	GFSK		$\pi/4$ -DQPSK		8DPSK		dBm	mW	
	dBm	mW	dBm	mW	dBm	mW			
Low	11.41	13.85	10.60	11.47	11.21	13.20	36	4000	Pass
Middle	11.16	13.07	10.36	10.87	10.97	12.50			Pass
High	10.91	12.33	10.12	10.28	10.73	11.83			Pass

Test Plots

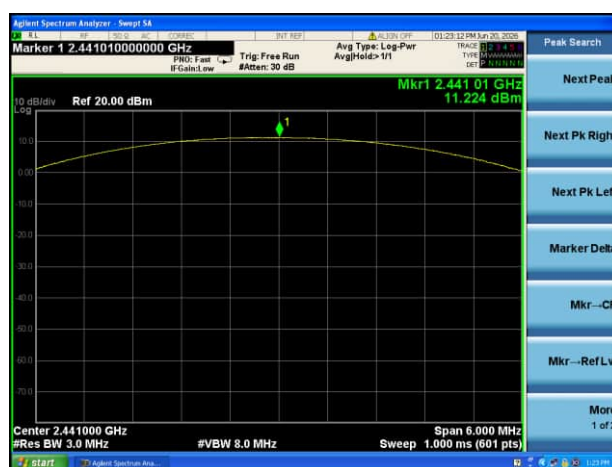
GFSK LOW CHANNEL



GFSK MIDDLE CHANNEL



GFSK HIGH CHANNEL

 $\pi/4$ -DQPSK LOW CHANNEL $\pi/4$ -DQPSK MIDDLE CHANNEL

$\pi/4$ -DQPSK HIGH CHANNEL



8DPSK LOW CHANNEL



8DPSK MIDDLE CHANNEL



8DPSK HIGH CHANNEL



A.3 20 dB and 99% bandwidth

Test Data

GFSK		
Channel	20 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	1.050000	0.940290
Middle	1.050000	0.930720
High	1.050000	0.942590
$\pi/4$ -DQPSK		
Channel	20 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	1.290000	1.179900
Middle	1.290000	1.177800
High	1.290000	1.182400
8DPSK		
Channel	20 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	1.297600	1.181600
Middle	1.297600	1.188500
High	1.290000	1.180800

Test Plots

20 dB Bandwidth

GFSK LOW CHANNEL



GFSK MIDDLE CHANNEL



GFSK HIGH CHANNEL



π/4-DQPSK LOW CHANNEL



π/4-DQPSK MIDDLE CHANNEL



$\pi/4$ -DQPSK HIGH CHANNEL



8DPSK LOW CHANNEL



8DPSK MIDDLE CHANNEL



8DPSK HIGH CHANNEL



99% Bandwidth

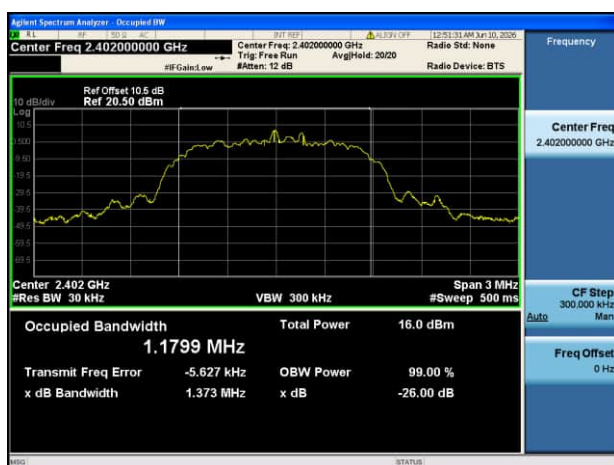
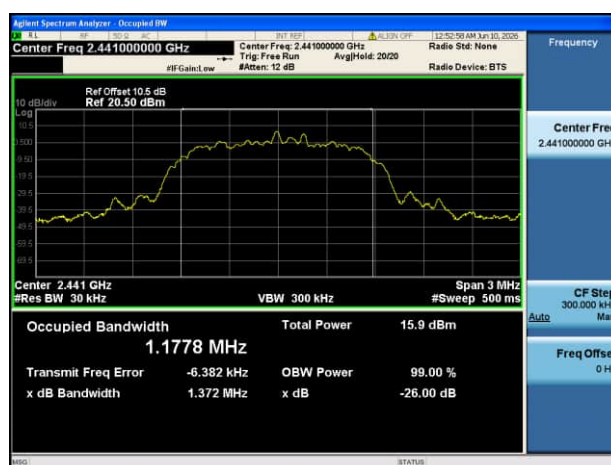
GFSK LOW CHANNEL



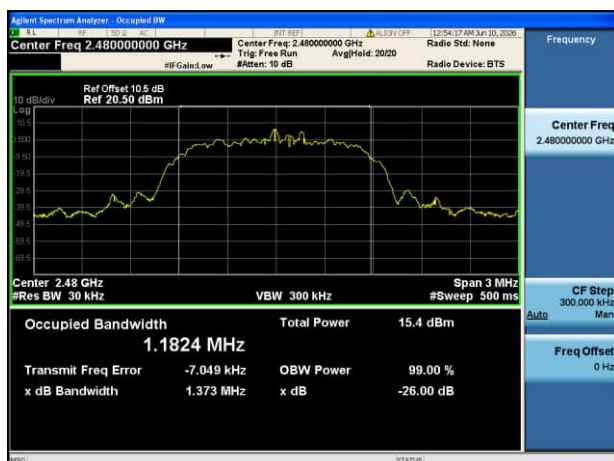
GFSK MIDDLE CHANNEL



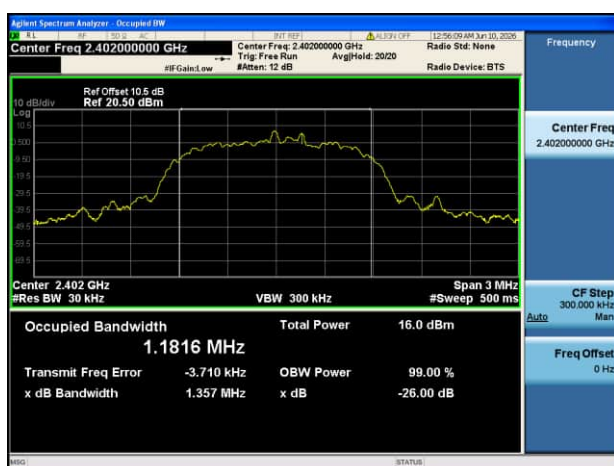
GFSK HIGH CHANNEL

 $\pi/4$ -DQPSK LOW CHANNEL $\pi/4$ -DQPSK MIDDLE CHANNEL

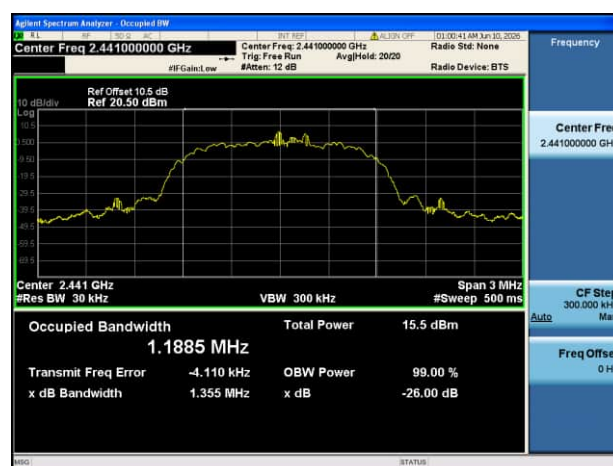
$\pi/4$ -DQPSK HIGH CHANNEL



8DPSK LOW CHANNEL



8DPSK MIDDLE CHANNEL



8DPSK HIGH CHANNEL



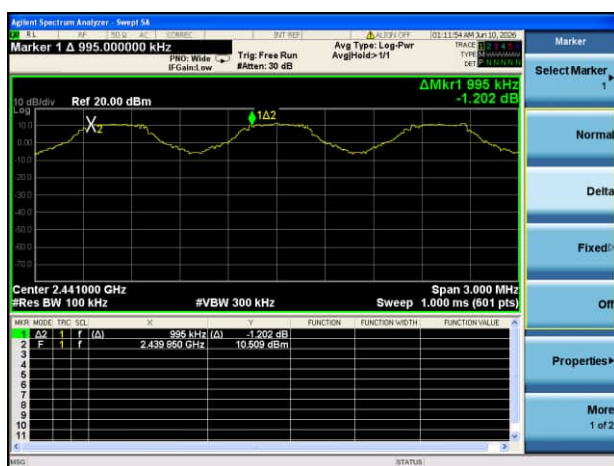
A.4 Hopping Frequency Separation

Test Data

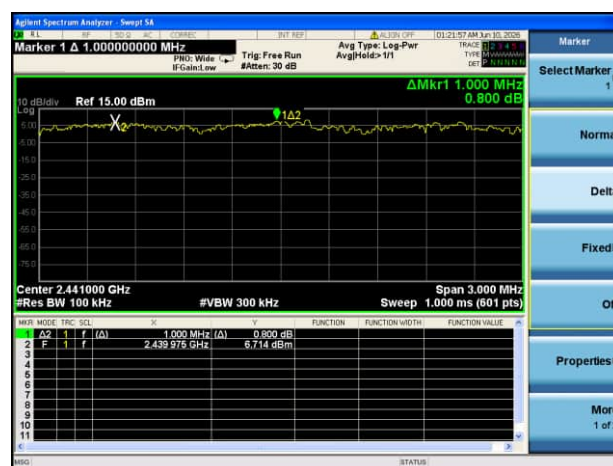
Mode	Frequency separation (MHz)	2/3 of the 20 dB Bandwidth (MHz)	Verdict
GFSK	0.995	0.700	Pass
8DPSK	1.000	0.865	Pass

Test Plots

GFSK



8DPSK



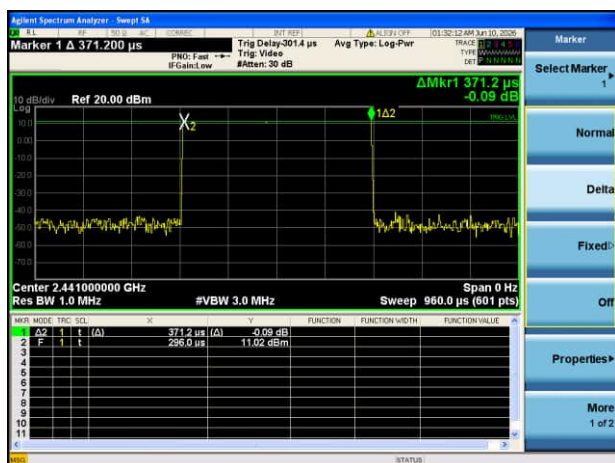
A.5 Average Time of Occupancy

Test Data

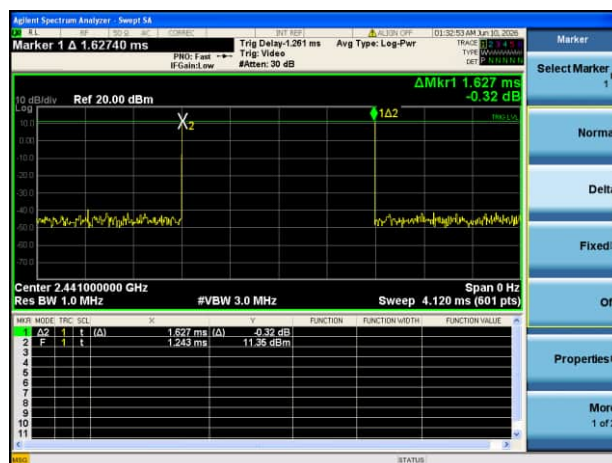
GFSK				
DH Packet	Pulse Width (ms)	Total of Dwell (ms)	Limit (sec)	Verdict
DH 1	0.37120	118.784	0.4	Pass
DH 3	1.62700	260.320	0.4	Pass
DH 5	2.87600	306.773	0.4	Pass
8DPSK				
DH Packet	Pulse Width (ms)	Total of Dwell (ms)	Limit (sec)	Verdict
3DH 1	0.38240	122.368	0.4	Pass
3DH 3	1.63400	261.440	0.4	Pass
3DH 5	2.88800	308.053	0.4	Pass
AFH Mode				
DH Packet	Pulse Width (ms)	Total of Dwell (ms)	Limit (sec)	Verdict
DH 1	0.37120	59.392	0.4	Pass
DH 3	1.62700	130.160	0.4	Pass
DH 5	2.87600	153.387	0.4	Pass

Test Plots

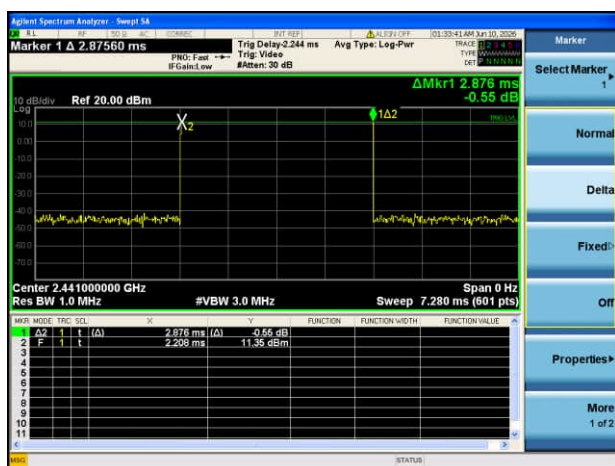
GFSK DH1



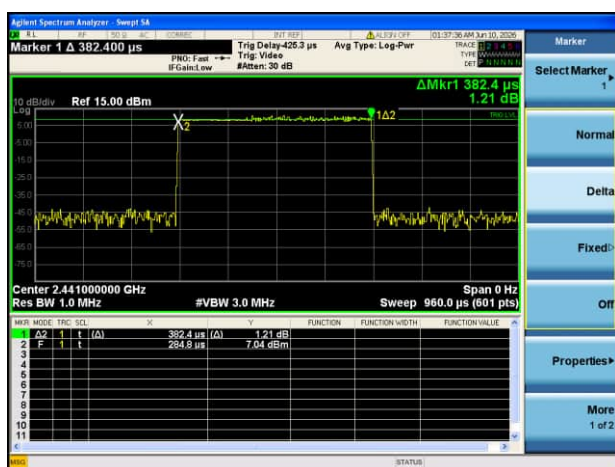
GFSK DH3



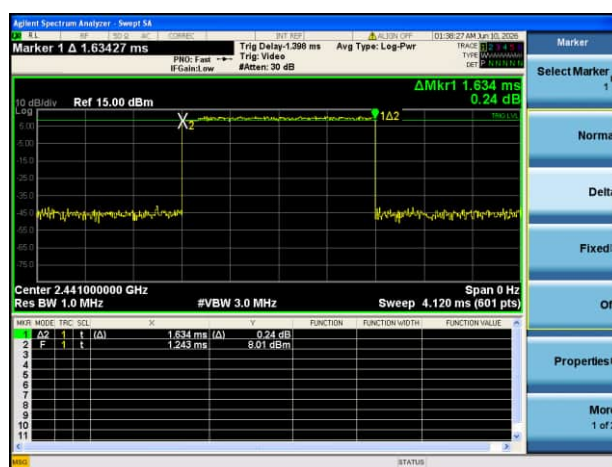
GFSK DH5



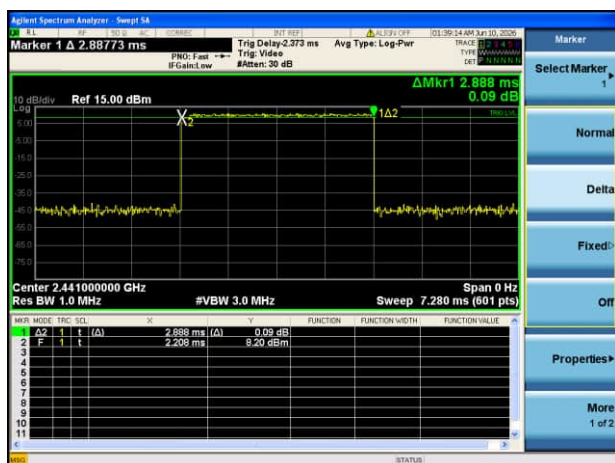
8DPSK 3DH1



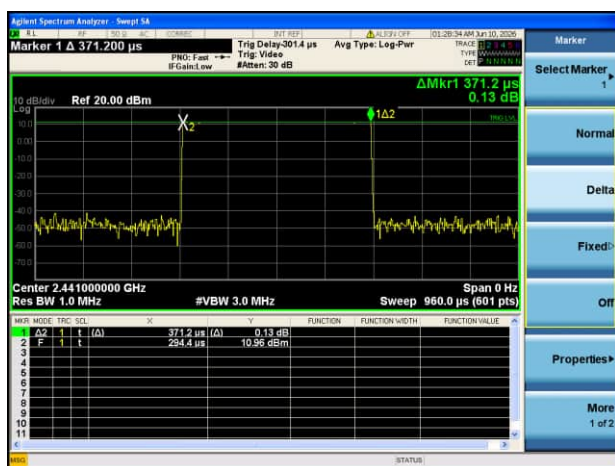
8DPSK 3DH3



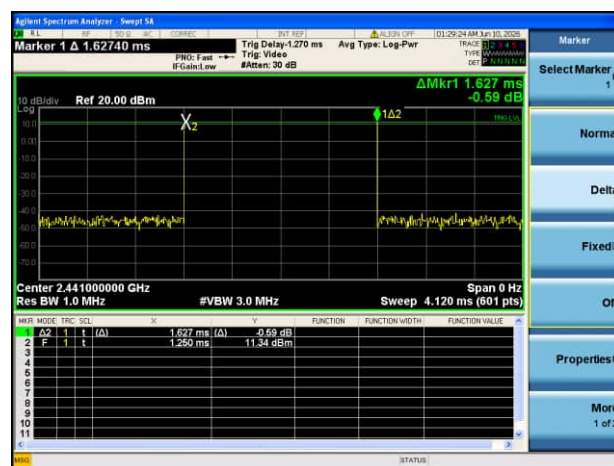
8DPSK 3DH5



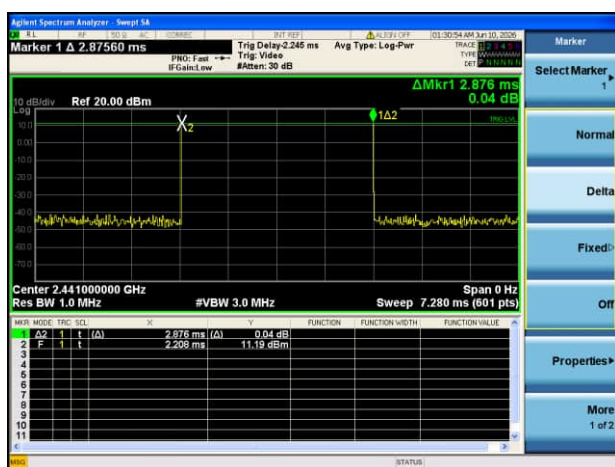
AFH Mode DH1



AFH Mode DH3



AFH Mode DH5



A.6 Conducted Spurious Emissions & Authorized-band band-edge

Test Data

GFSK				
Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-36.27	11.90	-8.10	Pass
Middle	-36.12	11.80	-8.20	Pass
High	-37.00	11.41	-8.59	Pass
8DPSK				
Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-36.94	8.97	-11.03	Pass
Middle	-35.75	8.61	-11.39	Pass
High	-36.02	8.49	-11.51	Pass
Hopping Mode				
Mode	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
GFSK	-26.08	11.94	-8.06	Pass
8DPSK	-26.89	8.63	-11.37	Pass

Test Plots

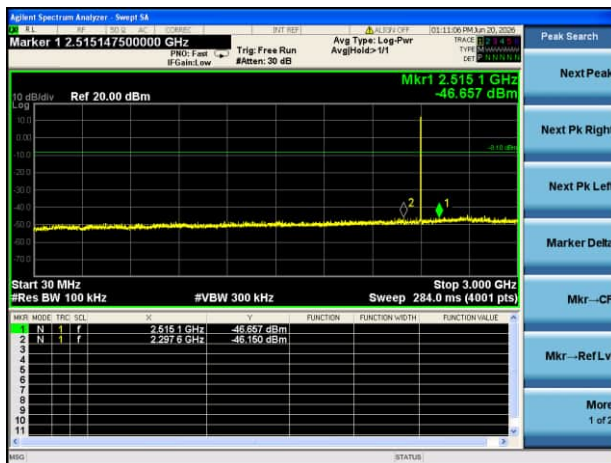
GFSK LOW CHANNEL, CARRIER LEVEL



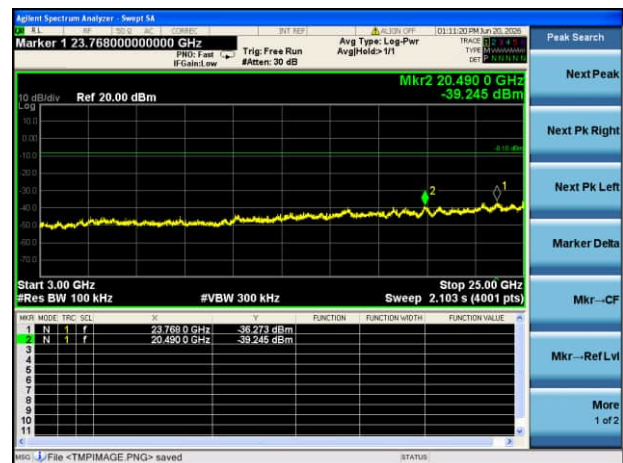
GFSK LOW CHANNEL, BAND EDGE



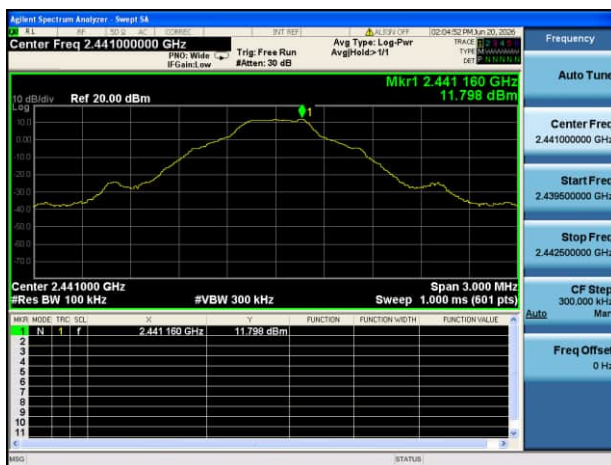
GFSK LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



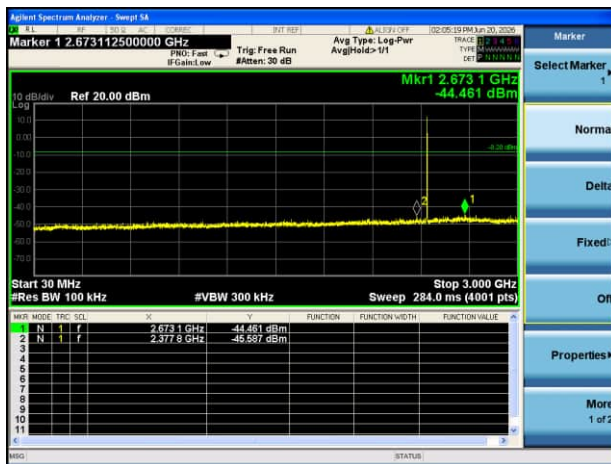
GFSK LOW CHANNEL, SPURIOUS 3 GHz ~ 25 GHz



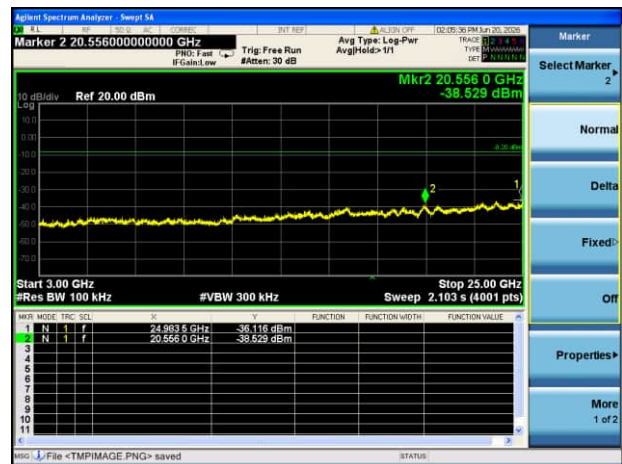
GFSK MIDDLE CHANNEL, CARRIER LEVEL



GFSK MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



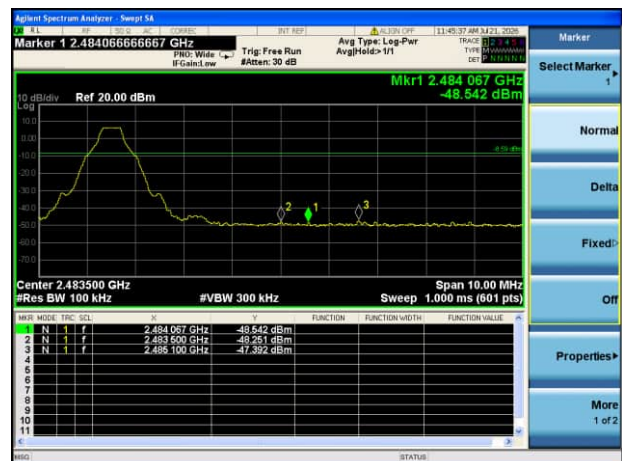
GFSK MIDDLE CHANNEL, SPURIOUS 3 GHz ~ 25 GHz



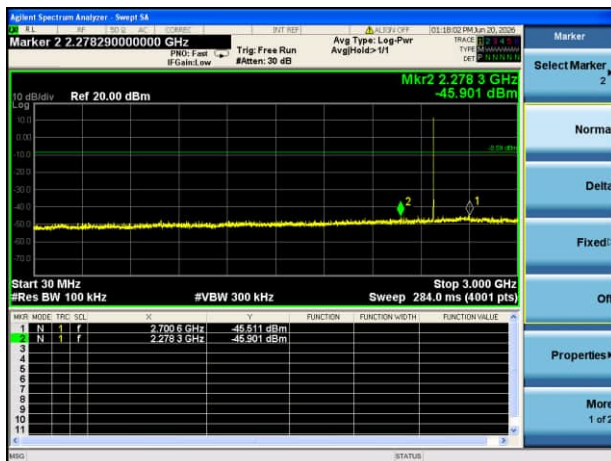
GFSK HIGH CHANNEL, CARRIER LEVEL



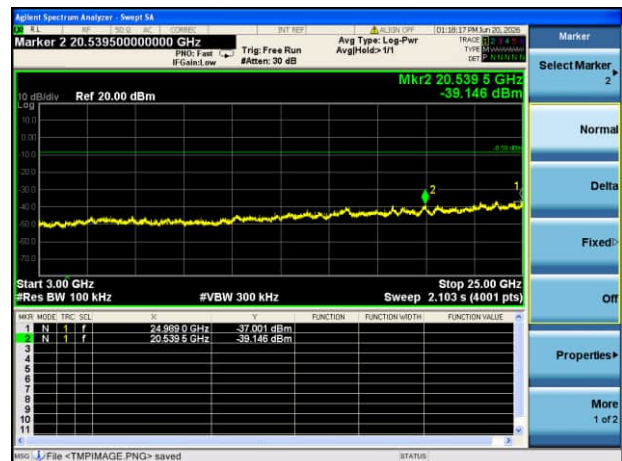
GFSK HIGH CHANNEL, BAND EDGE



GFSK HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



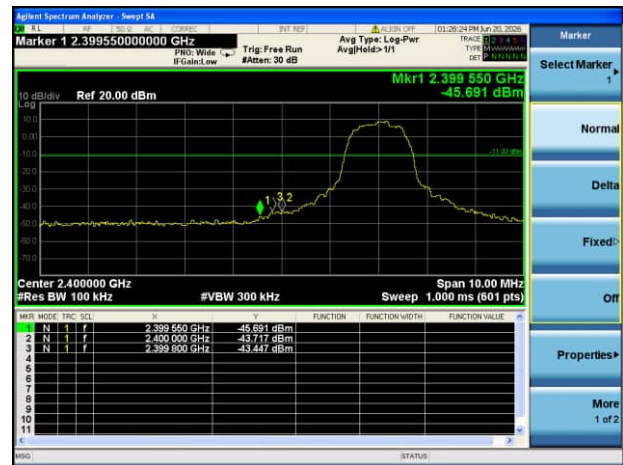
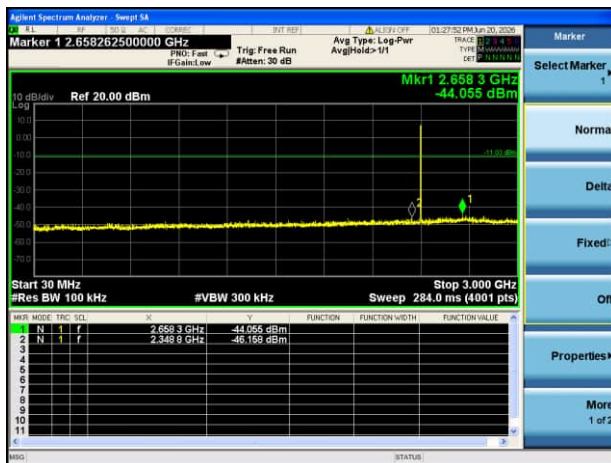
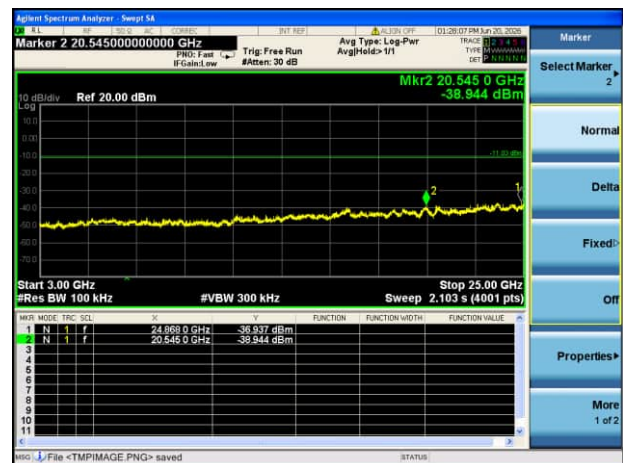
GFSK HIGH CHANNEL, SPURIOUS 3 GHz ~ 25 GHz



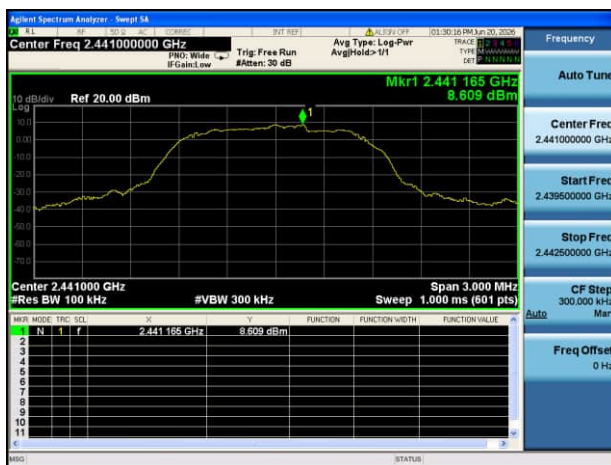
8DPSK LOW CHANNEL, CARRIER LEVEL



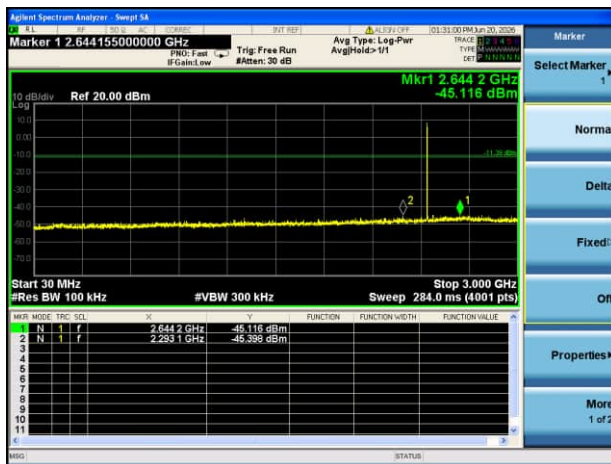
8DPSK LOW CHANNEL, BAND EDGE

8DPSK LOW CHANNEL, SPURIOUS
30 MHz ~ 3 GHz8DPSK LOW CHANNEL, SPURIOUS
3 GHz ~ 25 GHz

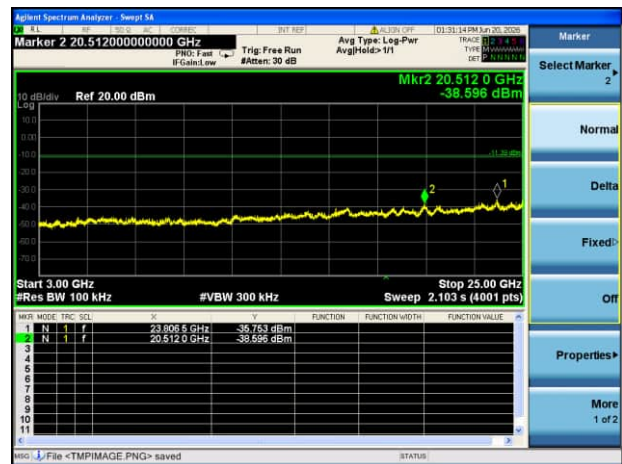
8DPSK MIDDLE CHANNEL, CARRIER LEVEL



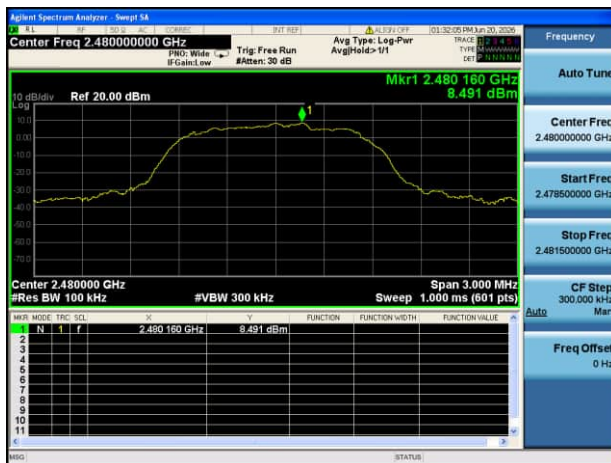
8DPSK MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



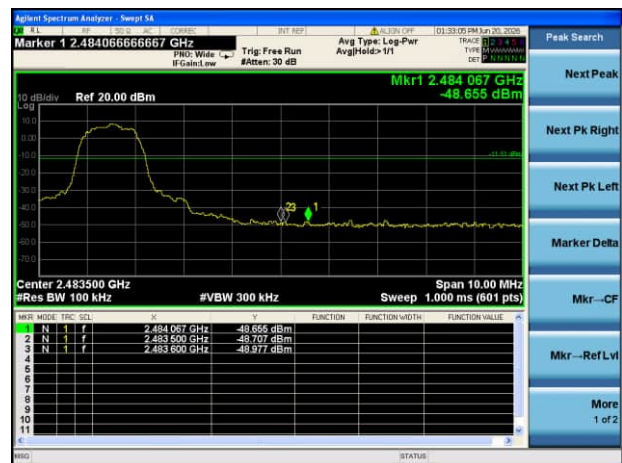
8DPSK MIDDLE CHANNEL, SPURIOUS 3 GHz ~ 25 GHz



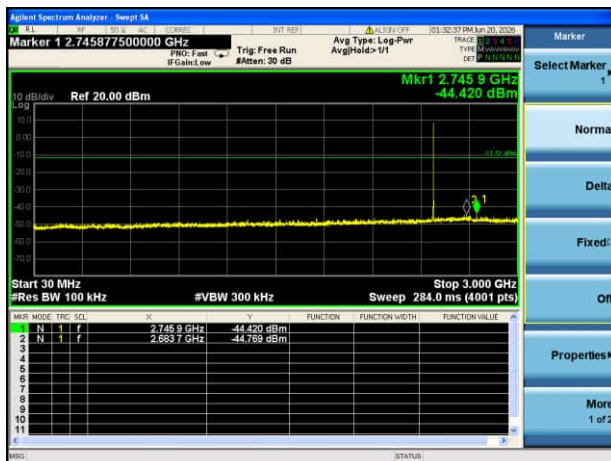
8DPSK HIGH CHANNEL, CARRIER LEVEL



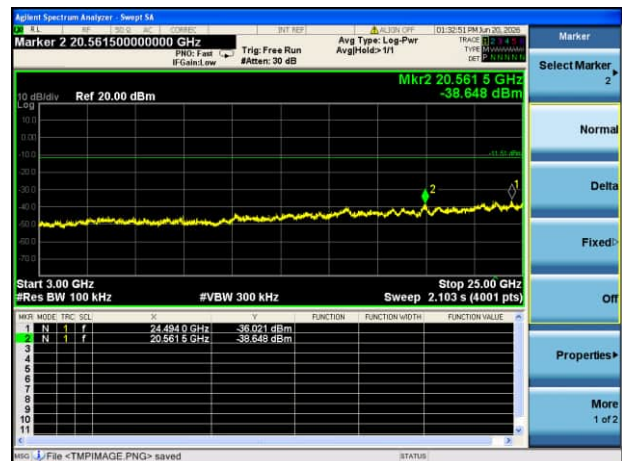
8DPSK HIGH CHANNEL, BAND EDGE



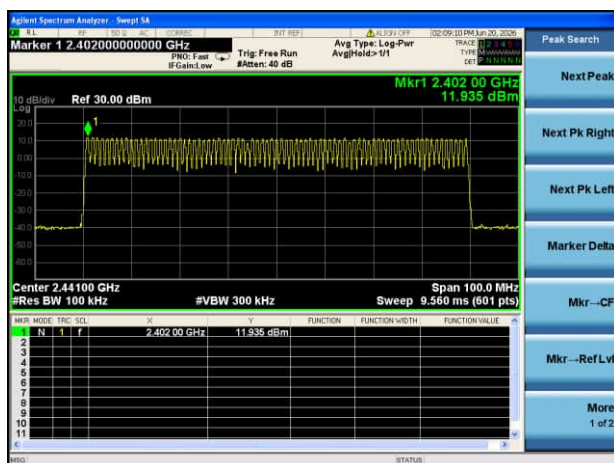
8DPSK HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



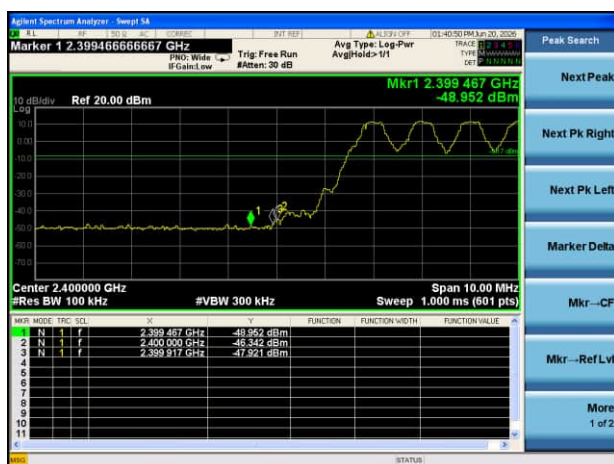
8DPSK HIGH CHANNEL, SPURIOUS 3 GHz ~ 25 GHz



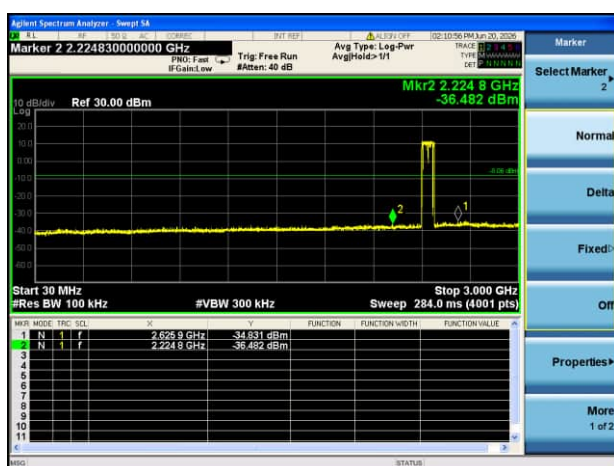
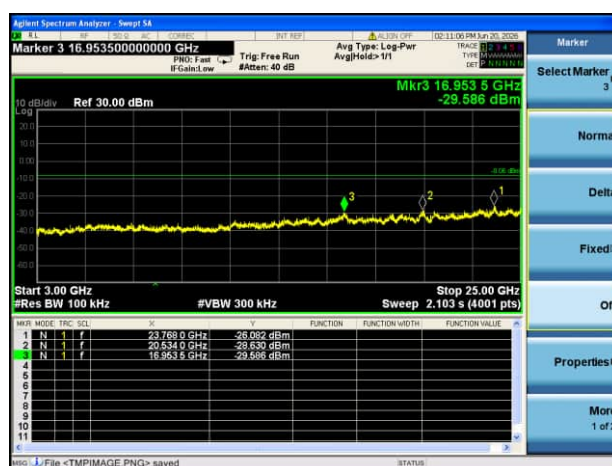
GFSK HOPPING, CARRIER LEVEL



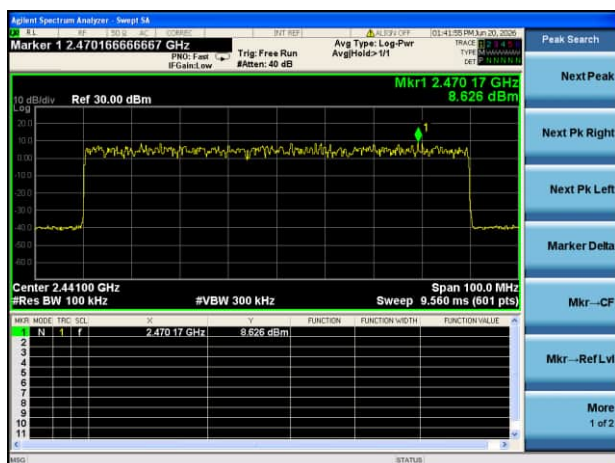
GFSK HOPPING BAND EDGE (LOW)



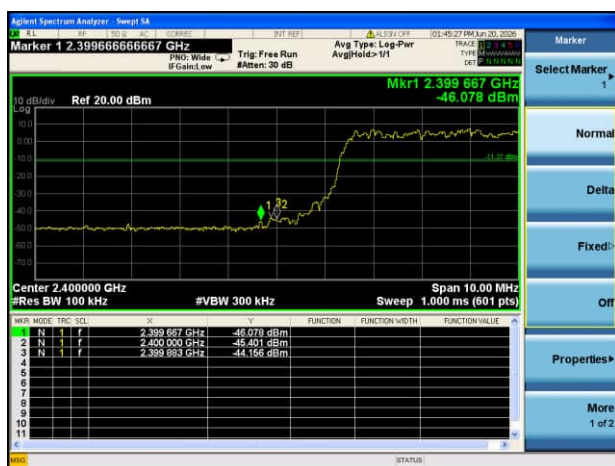
GFSK HOPPING BAND EDGE (HIGH)

GFSK Hopping Mode, SPURIOUS
30 MHz ~ 3 GHzGFSK Hopping Mode, SPURIOUS
3GHz ~ 25 GHz

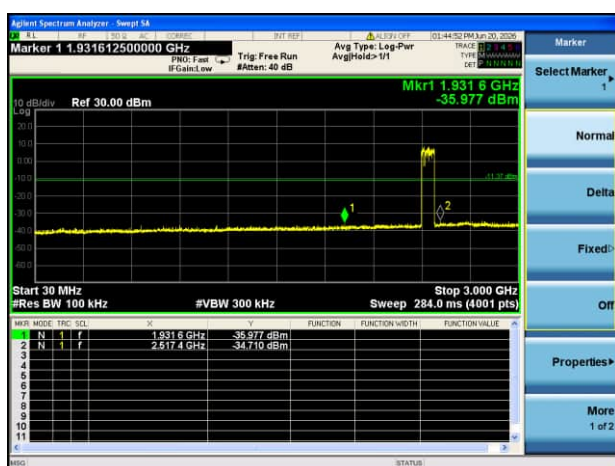
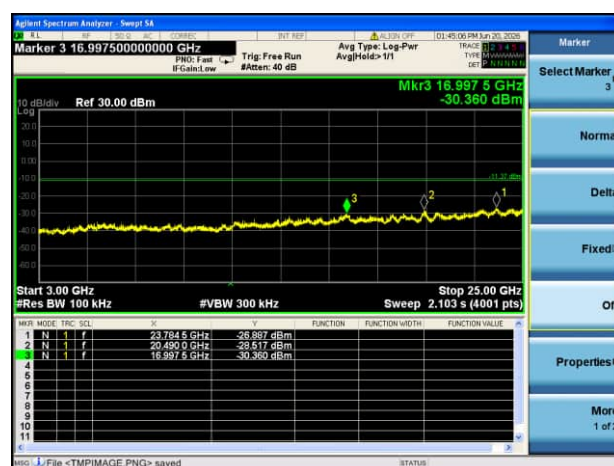
8DPSK HOPPING, CARRIER LEVEL



8DPSK Hopping BAND EDGE (LOW)



8DPSK Hopping BAND EDGE (HIGH)

8DPSK Hopping Mode, SPURIOUS
30 MHz ~ 3 GHz8DPSK Hopping Mode, SPURIOUS
3GHz ~ 25 GHz

A.7 Conducted Emissions

Note ¹: The EUT is working in the Normal link mode. All modes have been tested and normal link mode is worst.

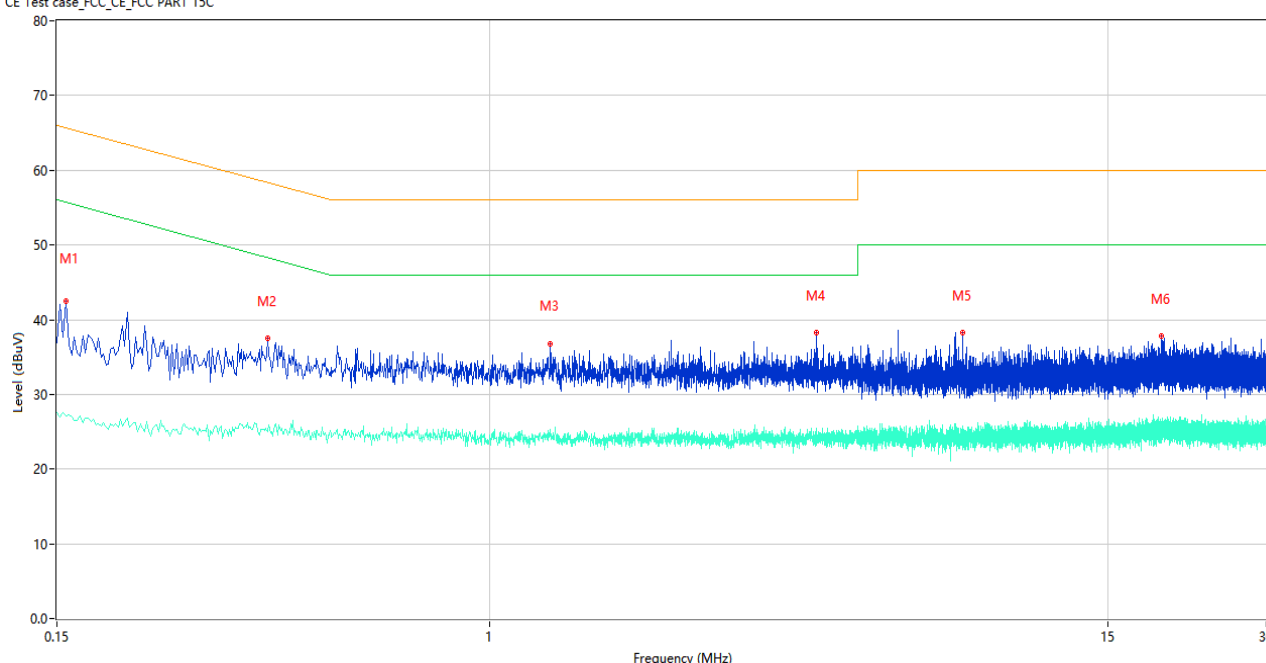
Note ²: Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 60 Hz and 240 VAC, 50 Hz) for which the device is capable of operation. So, The configuration 120 VAC, 60 Hz and 240 VAC, 50 Hz were tested respectively, but only the worst configuration (120 VAC, 60 Hz) shown here.

Note ³: Results (dBUV) = Original reading level of Spectrum Analyzer (dBUV) + Factor (dB)

Test Data and Plots

PHASE L

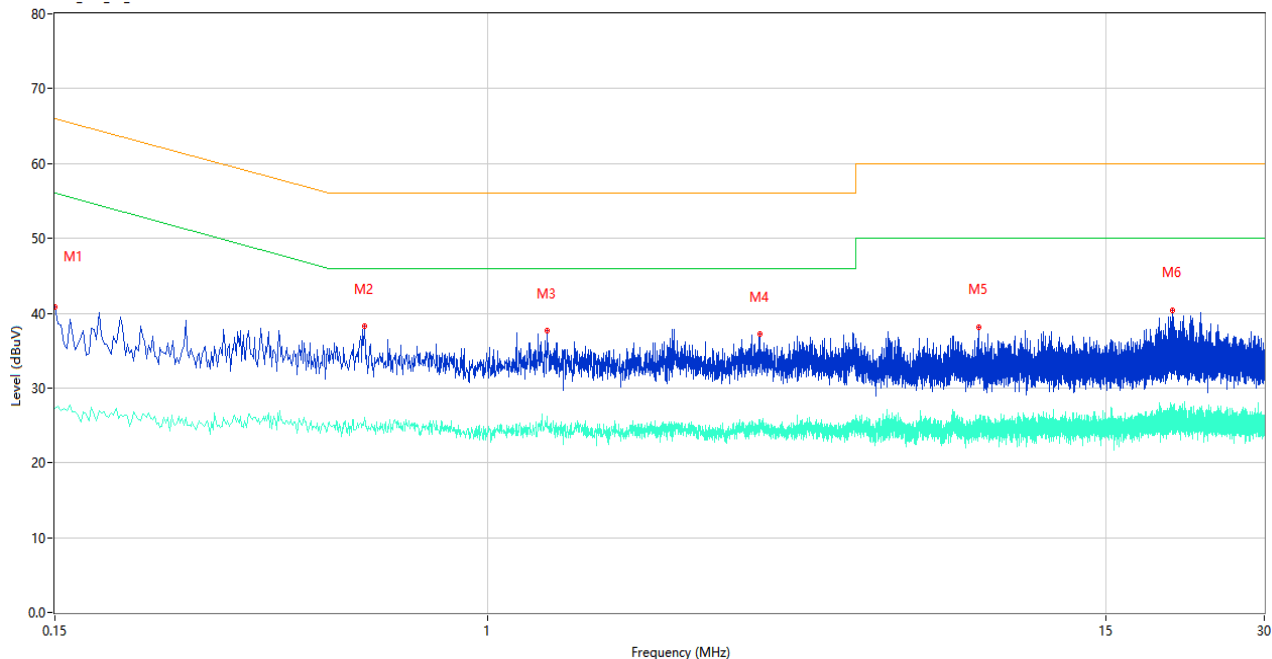
CE Test case_FCC_CE_FCC PART 15C



No.	Frequency (MHz)	Results (dBUV)	Factor (dB)	Limit (dBUV)	Margin (dB)	Detector	Line	Verdict
1	0.156	42.49	9.86	65.67	23.18	Peak	L	Pass
1**	0.156	27.12	9.86	55.67	28.55	AV	L	Pass
2	0.378	37.50	10.70	58.32	20.82	Peak	L	Pass
2**	0.378	25.07	10.70	48.32	23.25	AV	L	Pass
3	1.302	36.82	10.54	56.00	19.18	Peak	L	Pass
3**	1.302	25.25	10.54	46.00	20.75	AV	L	Pass
4	4.172	38.33	10.07	56.00	17.67	Peak	L	Pass
4**	4.172	24.14	10.07	46.00	21.86	AV	L	Pass
5	7.926	38.28	10.36	60.00	21.72	Peak	L	Pass
5**	7.926	24.37	10.36	50.00	25.63	AV	L	Pass
6	18.976	37.82	10.91	60.00	22.18	Peak	L	Pass
6**	18.976	24.78	10.91	50.00	25.22	AV	L	Pass

PHASE N

CE Test case_FCC_CE_FCC PART 15C



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.150	40.83	9.86	66.00	25.17	Peak	N	Pass
1**	0.150	27.20	9.86	56.00	28.80	AV	N	Pass
2	0.582	38.25	10.17	56.00	17.75	Peak	N	Pass
2**	0.582	26.07	10.17	46.00	19.93	AV	N	Pass
3	1.294	37.63	10.57	56.00	18.37	Peak	N	Pass
3**	1.294	24.77	10.57	46.00	21.23	AV	N	Pass
4	3.296	37.21	10.38	56.00	18.79	Peak	N	Pass
4**	3.296	25.65	10.38	46.00	20.35	AV	N	Pass
5	8.586	38.19	10.57	60.00	21.81	Peak	N	Pass
5**	8.586	25.72	10.57	50.00	24.28	AV	N	Pass
6	20.058	40.43	11.13	60.00	19.57	Peak	N	Pass
6**	20.058	26.03	11.13	50.00	23.97	AV	N	Pass

A.8 Radiated Spurious Emission

Note ¹: The symbol of "--" in the table which means not application.

Note ²: For the test data above 1 GHz, according the ANSI C63.10-2020 + Cor. 1-2023 + C63.10a-2024 + Errata to C63.10a-2024, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Note ³: The EUT is working in the Normal link mode below 1 GHz. All modes have been tested and DH5-Hopping mode is the worst.

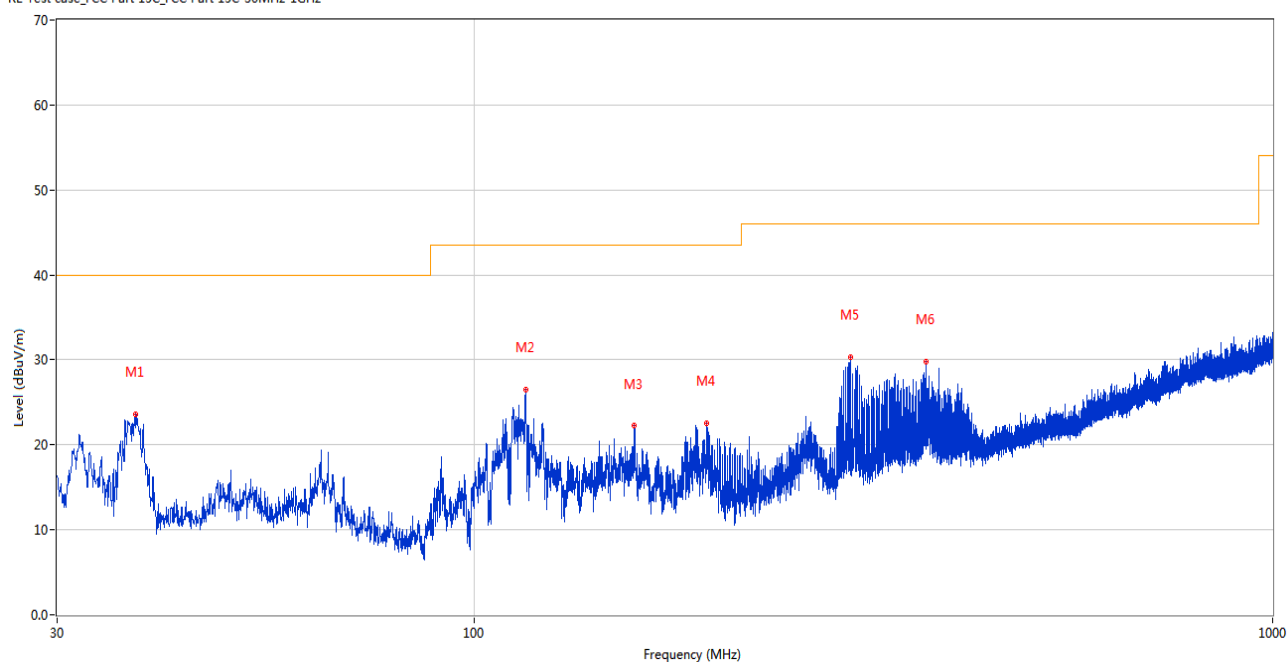
Note ⁴: Results (dBuV/m) = Original reading level of Spectrum Analyzer (dBuV/m) + Factor (dB)

The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

Test Data and Plots

30 MHz to 1 GHz, ANT H

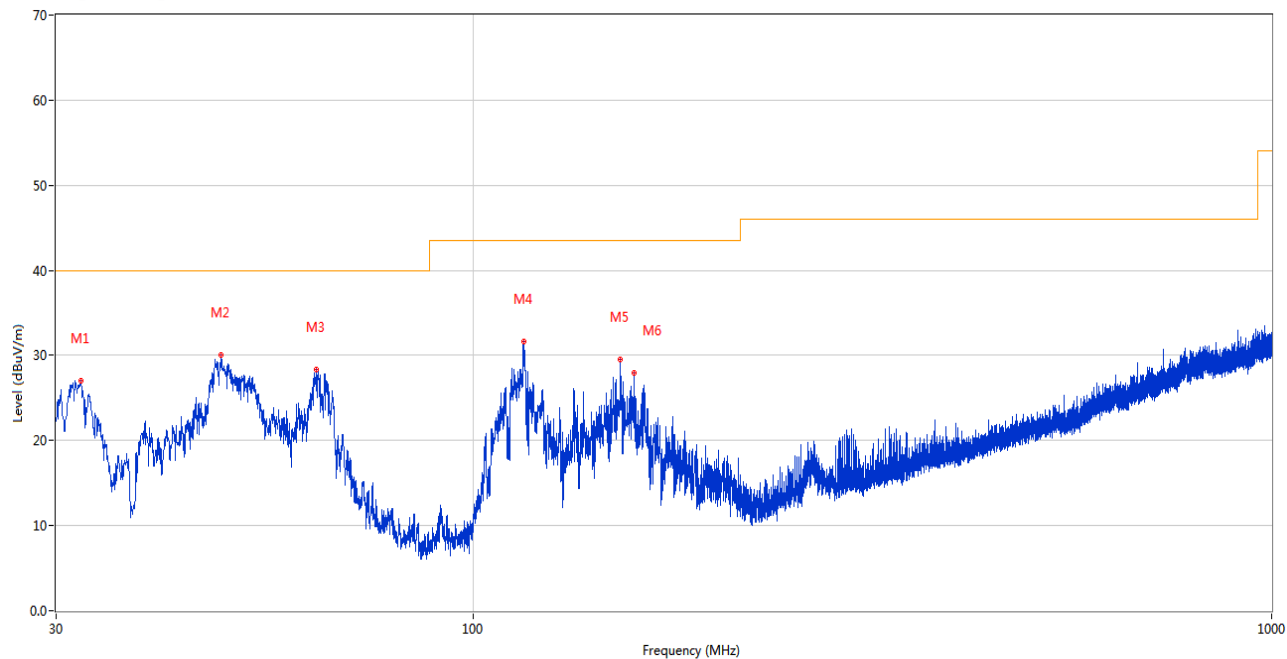
RE Test case_FCC Part 15C_FCC Part 15C-30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	37.566	23.55	-25.88	40.0	16.45	Peak	0.00	100	Horizontal	Pass
2	115.845	26.46	-27.07	43.5	17.04	Peak	192.00	200	Horizontal	Pass
3	158.670	22.22	-23.70	43.5	21.28	Peak	62.00	200	Horizontal	Pass
4	195.482	22.56	-26.61	43.5	20.94	Peak	79.00	200	Horizontal	Pass
5	296.120	30.29	-22.19	46.0	15.71	Peak	360.00	100	Horizontal	Pass
6	368.384	29.79	-20.00	46.0	16.21	Peak	242.00	100	Horizontal	Pass

30 MHz to 1 GHz, ANT V

RE Test case_FCC Part 15C_FCC Part 15C-30MHz-1GHz



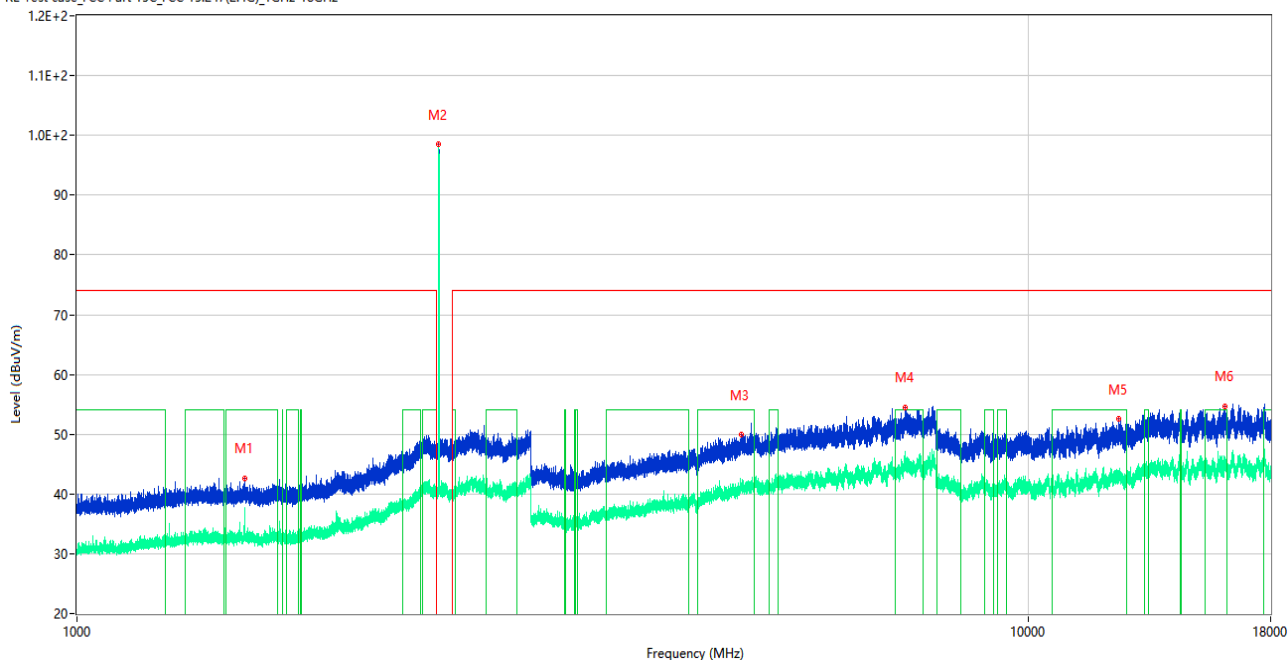
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	32.231	27.06	-26.73	40.0	12.94	Peak	321.00	100	Vertical	Pass
2	48.333	30.08	-24.79	40.0	9.92	Peak	360.00	100	Vertical	Pass
3	63.514	28.32	-26.09	40.0	11.68	Peak	0.00	100	Vertical	Pass
4	115.554	31.60	-27.11	43.5	11.90	Peak	341.00	100	Vertical	Pass
5	152.802	29.48	-23.59	43.5	14.02	Peak	287.00	100	Vertical	Pass
6	158.913	28.00	-23.71	43.5	15.50	Peak	243.00	100	Vertical	Pass

Note¹: The marked spikes near 2400 MHz with circle should be ignored because they are Fundamental signal.

Note²: The spurious from 18GHz-25GHz is noise only, do not show on the report.

GFSK LOW CHANNEL 1 GHz to 18 GHz, ANT H

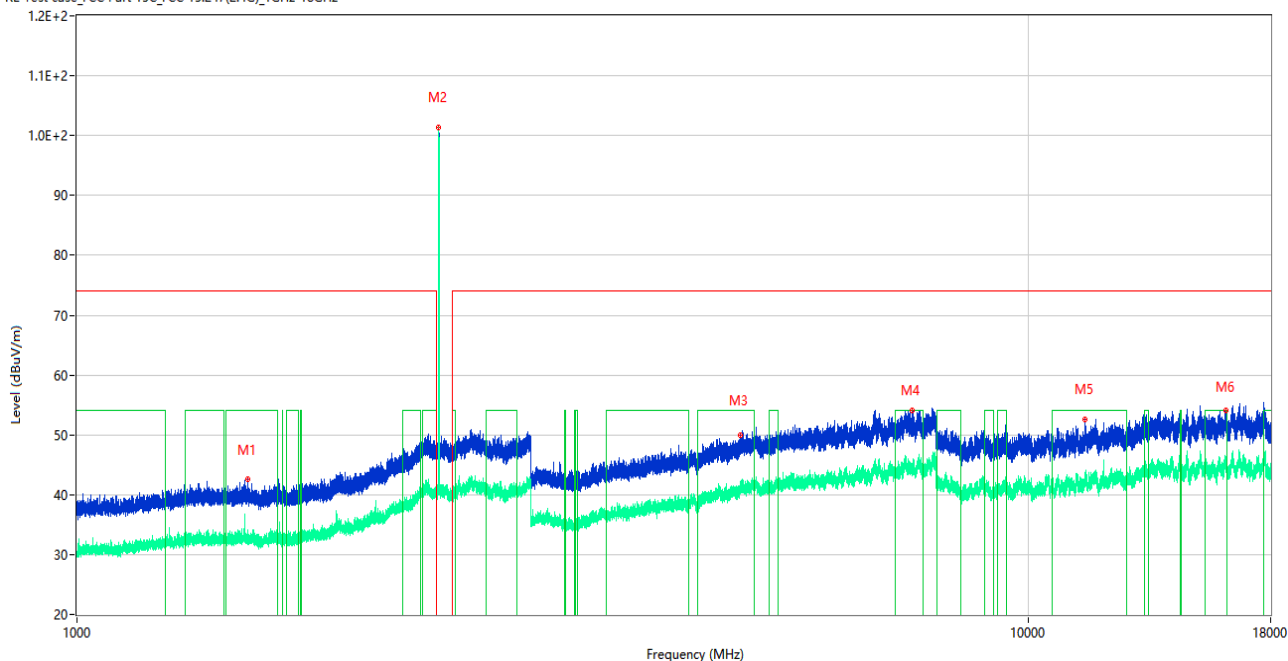
RE Test case_FCC Part 15C_FCC 15.247(2.4G)_1GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1499.800	42.64	74.0	31.36	Peak	0.00	200	Horizontal	Pass
1**	1499.800	36.72	54.0	17.28	AV	0.00	200	Horizontal	Pass
2	2401.900	98.46	--	--	Peak	145.00	150	Horizontal	N/A
2**	2401.900	98.23	--	--	AV	145.00	150	Horizontal	N/A
3	4996.250	49.85	74.0	24.15	Peak	80.00	100	Horizontal	Pass
3**	4996.250	40.68	54.0	13.32	AV	80.00	100	Horizontal	Pass
4	7423.250	54.52	74.0	19.48	Peak	302.00	100	Horizontal	Pass
4**	7423.250	45.43	54.0	8.57	AV	302.00	100	Horizontal	Pass
5	12469.276	52.52	74.0	21.48	Peak	203.00	150	Horizontal	Pass
5**	12469.276	42.11	54.0	11.89	AV	203.00	150	Horizontal	Pass
6	16111.050	54.68	74.0	19.32	Peak	61.00	400	Horizontal	Pass
6**	16111.050	44.76	54.0	9.24	AV	61.00	400	Horizontal	Pass

GFSK LOW CHANNEL 1 GHz to 18 GHz, ANT V

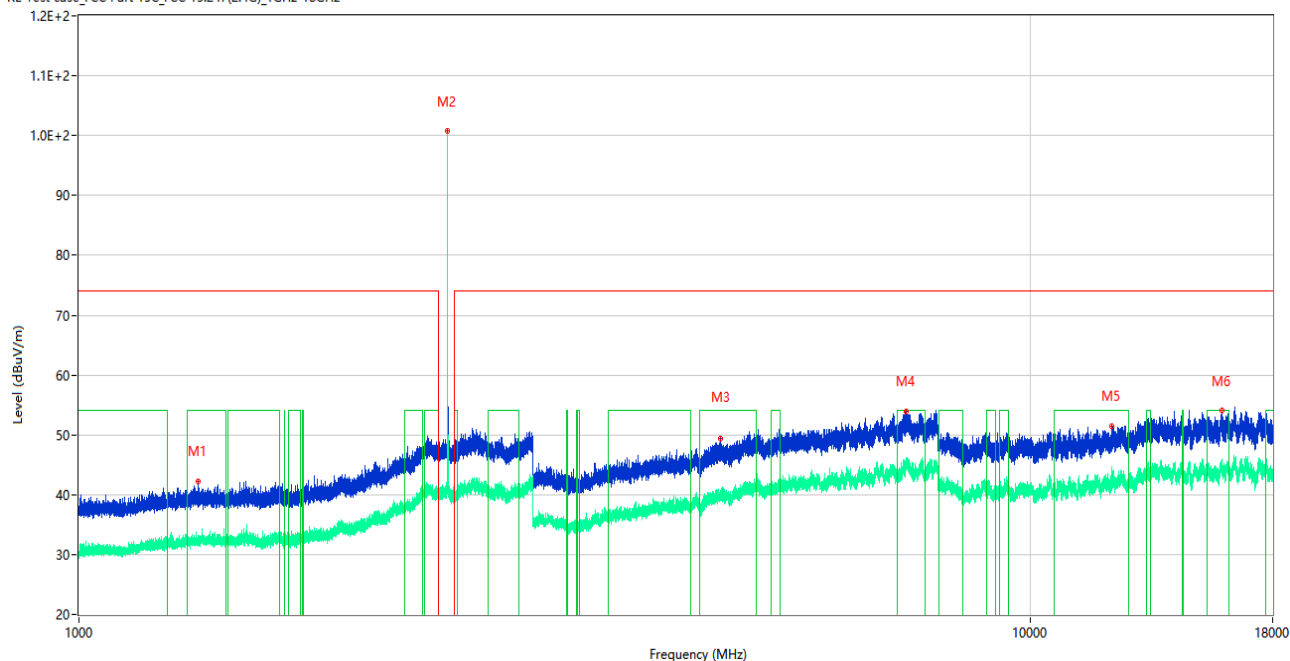
RE Test case_FCC Part 15C_FCC 15.247(2.4G)_1GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1511.400	42.54	74.0	31.46	Peak	162.00	300	Vertical	Pass
1**	1511.400	33.99	54.0	20.01	AV	162.00	300	Vertical	Pass
2	2402.200	101.43	--	--	Peak	179.00	100	Vertical	N/A
2**	2402.200	101.15	--	--	AV	179.00	100	Vertical	N/A
3	4988.750	49.98	74.0	24.02	Peak	174.00	100	Vertical	Pass
3**	4988.750	42.16	54.0	11.84	AV	174.00	100	Vertical	Pass
4	7562.500	54.11	74.0	19.89	Peak	207.00	100	Vertical	Pass
4**	7562.500	44.25	54.0	9.75	AV	207.00	100	Vertical	Pass
5	11493.387	52.64	74.0	21.36	Peak	310.00	200	Vertical	Pass
5**	11493.387	43.48	54.0	10.52	AV	310.00	200	Vertical	Pass
6	16137.825	54.01	74.0	19.99	Peak	164.00	200	Vertical	Pass
6**	16137.825	45.44	54.0	8.56	AV	164.00	200	Vertical	Pass

GFSK MIDDLE CHANNEL 1 GHz to 18 GHz, ANT H

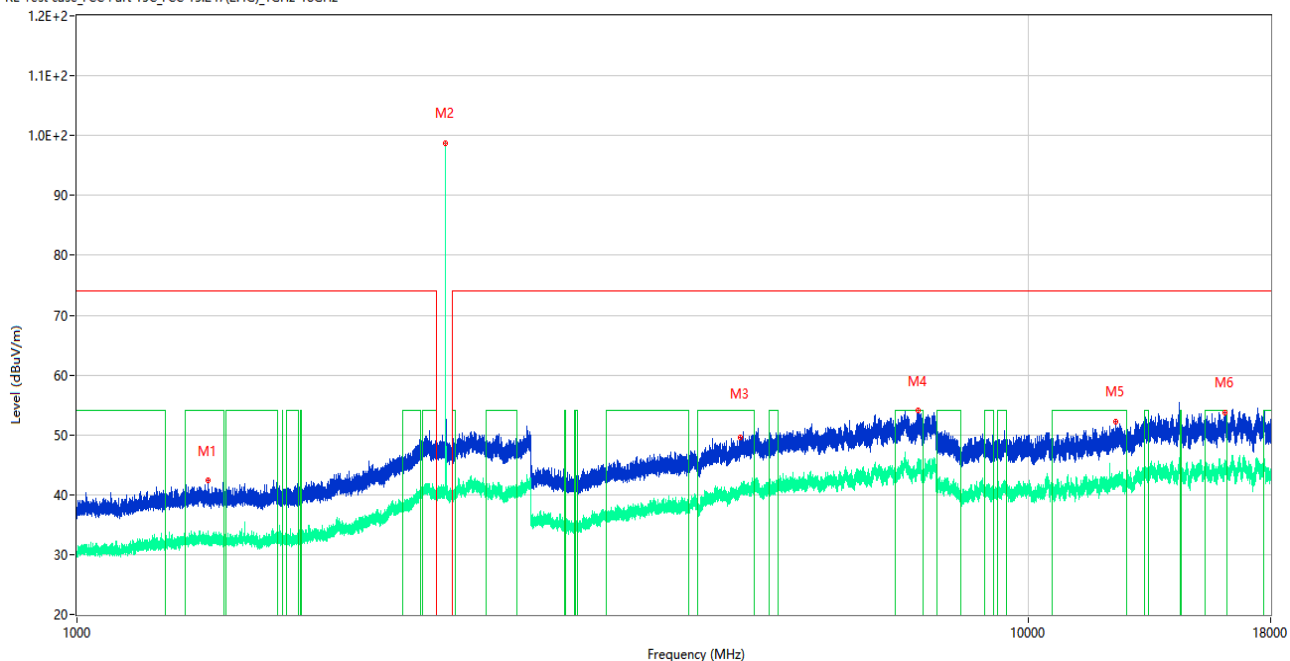
RE Test case_FCC Part 15C_FCC 15.247(2.4G)_1GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1335.100	42.28	74.0	31.72	Peak	37.00	400	Horizontal	Pass
1**	1335.100	32.17	54.0	21.83	AV	37.00	400	Horizontal	Pass
2	2440.800	100.78	--	--	Peak	155.00	150	Horizontal	N/A
2**	2440.800	99.45	--	--	AV	155.00	150	Horizontal	N/A
3	4724.750	49.40	74.0	24.60	Peak	360.00	150	Horizontal	Pass
3**	4724.750	39.65	54.0	14.35	AV	360.00	150	Horizontal	Pass
4	7419.500	53.91	74.0	20.09	Peak	322.00	300	Horizontal	Pass
4**	7419.500	45.67	54.0	8.33	AV	322.00	300	Horizontal	Pass
5	12205.412	51.52	74.0	22.48	Peak	211.00	200	Horizontal	Pass
5**	12205.412	44.21	54.0	9.79	AV	211.00	200	Horizontal	Pass
6	15920.213	54.06	74.0	19.94	Peak	188.00	400	Horizontal	Pass
6**	15920.213	44.53	54.0	9.47	AV	188.00	400	Horizontal	Pass

GFSK MIDDLE CHANNEL 1 GHz to 18 GHz, ANT V

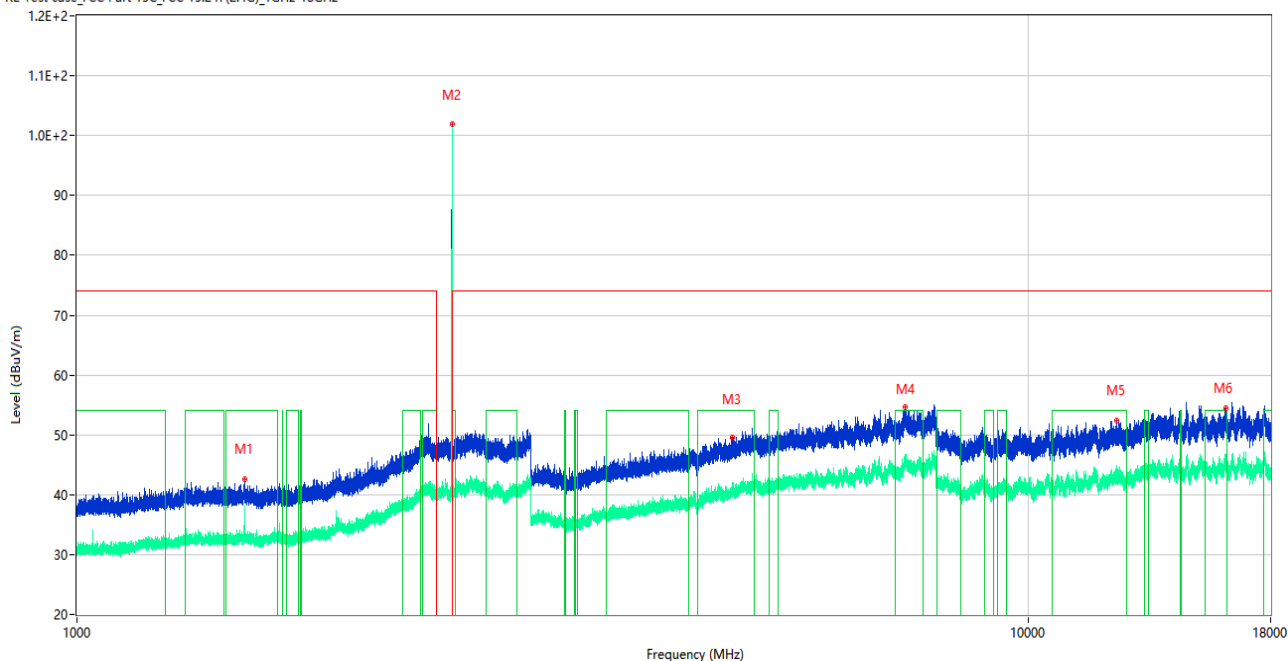
RE Test case_FCC Part 15C_FCC 15.247(2.4G)_1GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1374.700	42.37	74.0	31.63	Peak	0.00	300	Vertical	Pass
1**	1374.700	33.42	54.0	20.58	AV	0.00	300	Vertical	Pass
2	2440.800	98.78	--	--	Peak	179.00	100	Vertical	N/A
2**	2440.800	97.63	--	--	AV	179.00	100	Vertical	N/A
3	4990.250	49.64	74.0	24.36	Peak	104.00	100	Vertical	Pass
3**	4990.250	40.92	54.0	13.08	AV	104.00	100	Vertical	Pass
4	7662.750	54.06	74.0	19.94	Peak	266.00	100	Vertical	Pass
4**	7662.750	45.25	54.0	8.75	AV	266.00	100	Vertical	Pass
5	12372.850	52.24	74.0	21.76	Peak	351.00	200	Vertical	Pass
5**	12372.850	42.44	54.0	11.56	AV	351.00	200	Vertical	Pass
6	16116.825	53.80	74.0	20.20	Peak	222.00	300	Vertical	Pass
6**	16116.825	44.33	54.0	9.67	AV	222.00	300	Vertical	Pass

GFSK HIGH CHANNEL 1 GHz to 18 GHz, ANT H

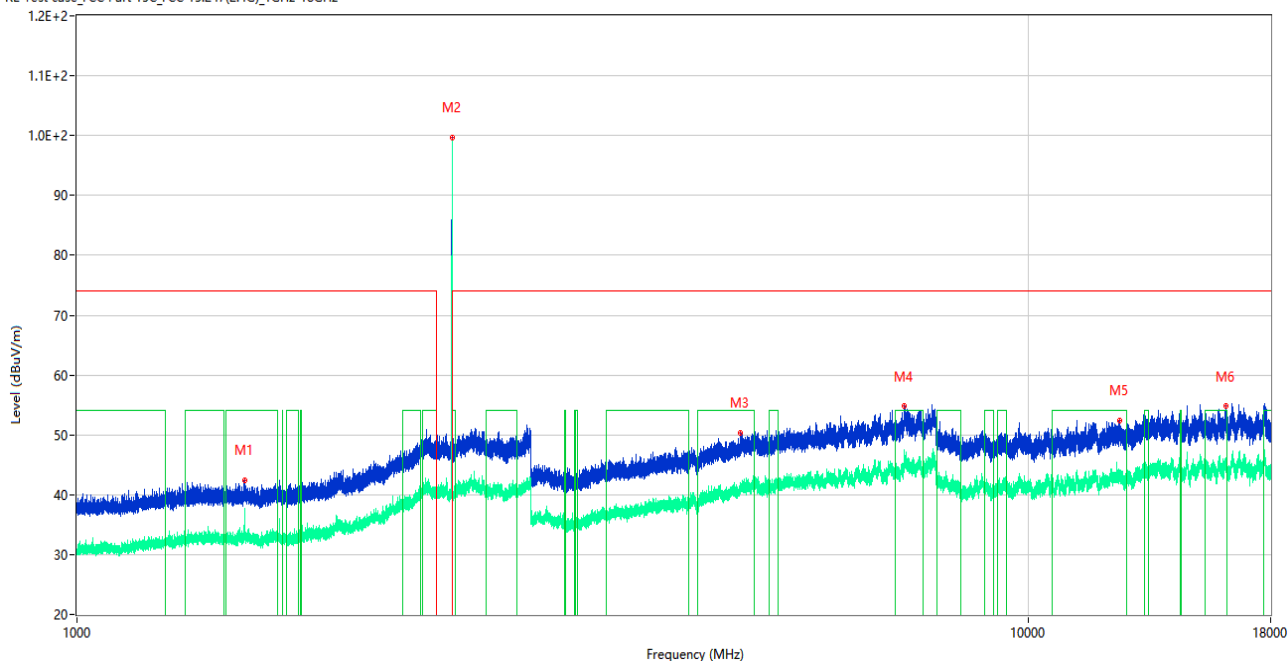
RE Test case_FCC Part 15C_FCC 15.247(2.4G)_1GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1500.200	42.69	74.0	31.31	Peak	0.00	100	Horizontal	Pass
1**	1500.200	38.08	54.0	15.92	AV	0.00	100	Horizontal	Pass
2	2480.100	101.87	--	--	Peak	162.00	150	Horizontal	N/A
2**	2480.100	101.68	--	--	AV	162.00	150	Horizontal	N/A
3	4890.250	49.56	74.0	24.44	Peak	0.00	150	Horizontal	Pass
3**	4890.250	41.97	54.0	12.03	AV	0.00	150	Horizontal	Pass
4	7426.250	54.67	74.0	19.33	Peak	31.00	400	Horizontal	Pass
4**	7426.250	46.26	54.0	7.74	AV	31.00	400	Horizontal	Pass
5	12390.901	52.43	74.0	21.57	Peak	325.00	150	Horizontal	Pass
5**	12390.901	42.87	54.0	11.13	AV	325.00	150	Horizontal	Pass
6	16146.224	54.49	74.0	19.51	Peak	43.00	200	Horizontal	Pass
6**	16146.224	44.62	54.0	9.38	AV	43.00	200	Horizontal	Pass

GFSK HIGH CHANNEL 1 GHz to 18 GHz, ANT V

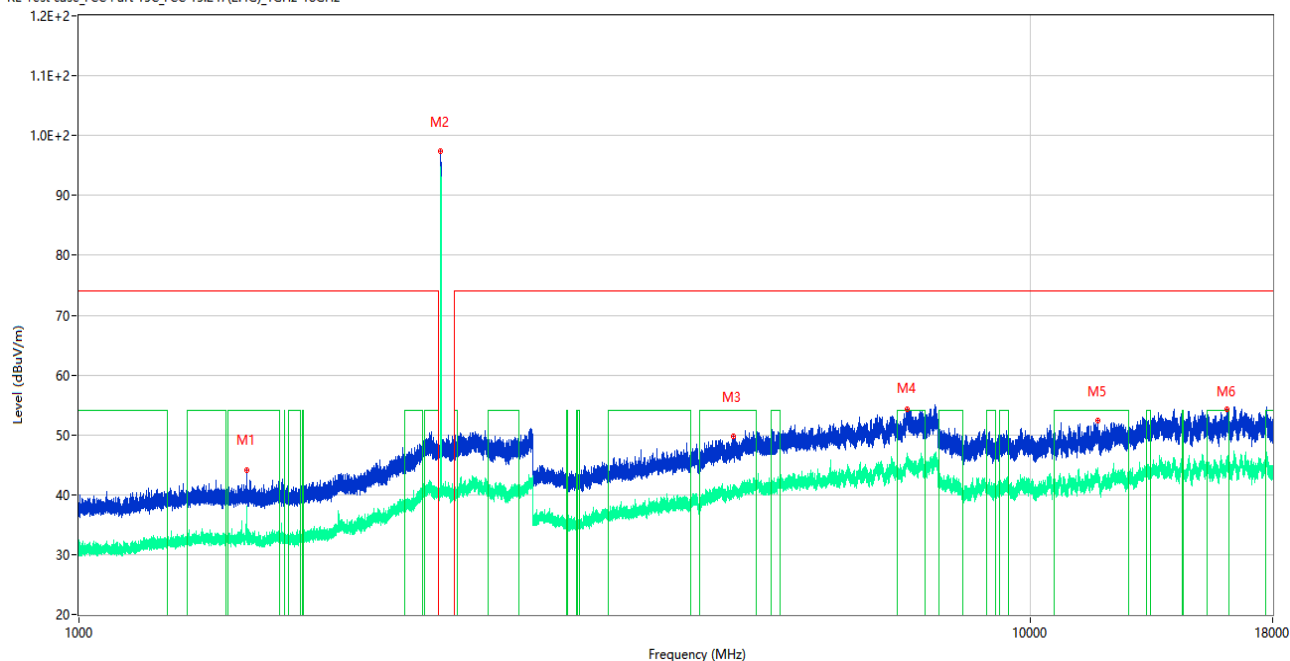
RE Test case_FCC Part 15C_FCC 15.247(2.4G)_1GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1499.800	42.42	74.0	31.58	Peak	329.00	300	Vertical	Pass
1**	1499.800	36.73	54.0	17.27	AV	329.00	300	Vertical	Pass
2	2480.100	99.69	--	--	Peak	181.00	150	Vertical	N/A
2**	2480.100	99.46	--	--	AV	181.00	150	Vertical	N/A
3	4990.000	50.41	74.0	23.59	Peak	5.00	100	Vertical	Pass
3**	4990.000	40.77	54.0	13.23	AV	5.00	100	Vertical	Pass
4	7419.250	54.76	74.0	19.24	Peak	196.00	300	Vertical	Pass
4**	7419.250	47.57	54.0	6.43	AV	196.00	300	Vertical	Pass
5	12487.562	52.44	74.0	21.56	Peak	178.00	150	Vertical	Pass
5**	12487.562	43.44	54.0	10.56	AV	178.00	150	Vertical	Pass
6	16134.674	54.77	74.0	19.23	Peak	99.00	100	Vertical	Pass
6**	16134.674	45.90	54.0	8.10	AV	99.00	100	Vertical	Pass

8DPSK LOW CHANNEL 1 GHz to 18 GHz, ANT H

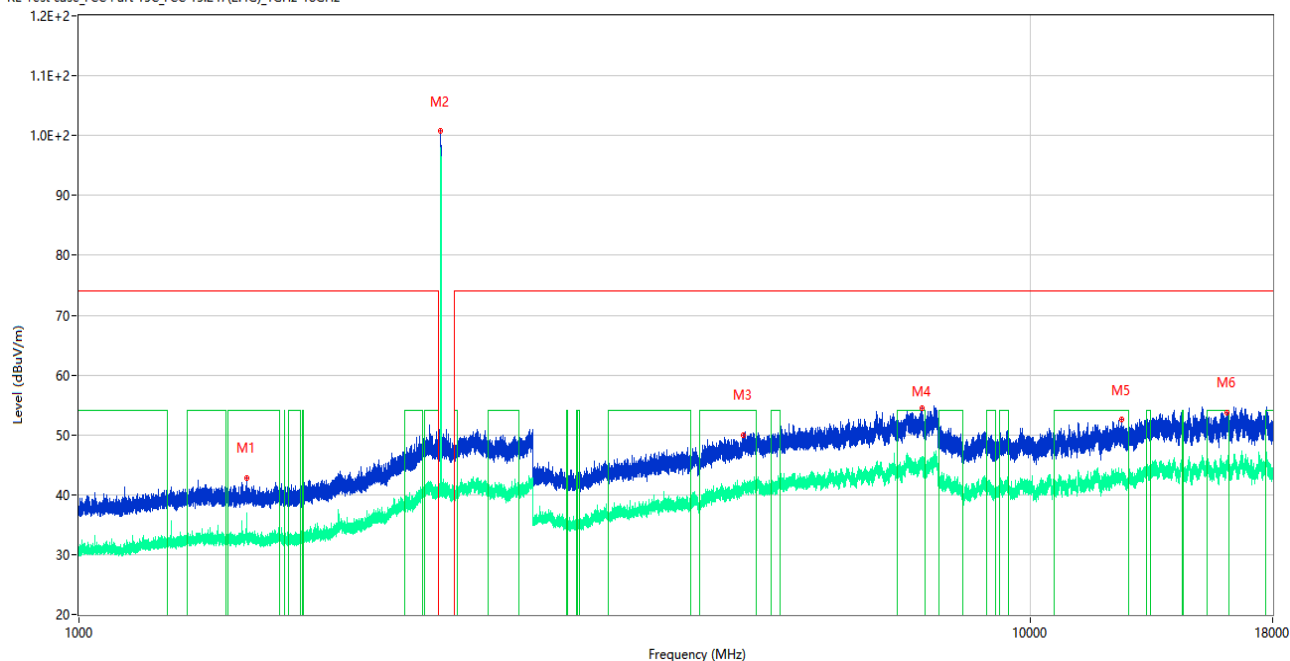
RE Test case_FCC Part 15C_FCC 15.247(2.4G)_1GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1500.200	44.12	74.0	29.88	Peak	84.00	300	Horizontal	Pass
1**	1500.200	37.26	54.0	16.74	AV	84.00	300	Horizontal	Pass
2	2401.900	97.36	--	--	Peak	132.00	100	Horizontal	N/A
2**	2401.900	94.19	--	--	AV	132.00	100	Horizontal	N/A
3	4874.500	49.77	74.0	24.23	Peak	0.00	100	Horizontal	Pass
3**	4874.500	40.68	54.0	13.32	AV	0.00	100	Horizontal	Pass
4	7426.500	54.34	74.0	19.66	Peak	360.00	400	Horizontal	Pass
4**	7426.500	46.05	54.0	7.95	AV	360.00	400	Horizontal	Pass
5	11784.800	52.37	74.0	21.63	Peak	249.00	100	Horizontal	Pass
5**	11784.800	42.96	54.0	11.04	AV	249.00	100	Horizontal	Pass
6	16107.375	54.22	74.0	19.78	Peak	268.00	100	Horizontal	Pass
6**	16107.375	45.32	54.0	8.68	AV	268.00	100	Horizontal	Pass

8DPSK LOW CHANNEL 1 GHz to 18 GHz, ANT V

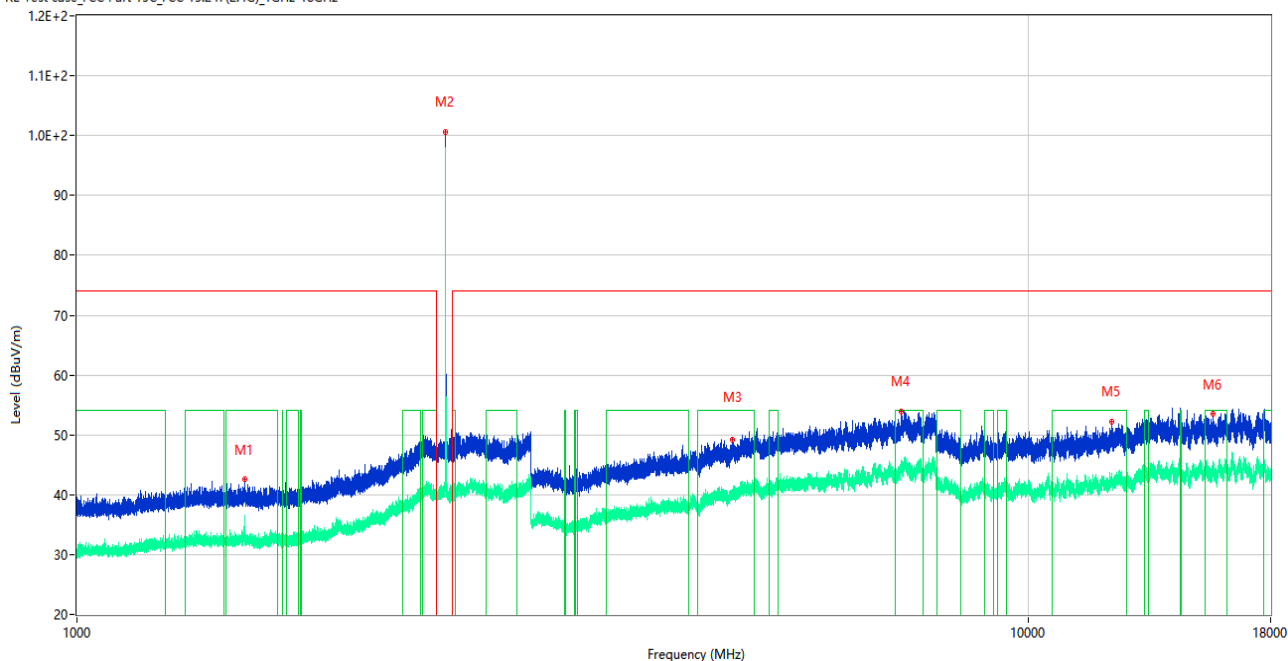
RE Test case_FCC Part 15C_FCC 15.247(2.4G)_1GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1499.800	42.81	74.0	31.19	Peak	360.00	200	Vertical	Pass
1**	1499.800	35.46	54.0	18.54	AV	360.00	200	Vertical	Pass
2	2402.000	100.78	--	--	Peak	175.00	100	Vertical	N/A
2**	2402.000	97.59	--	--	AV	175.00	100	Vertical	N/A
3	4994.500	49.92	74.0	24.08	Peak	213.00	200	Vertical	Pass
3**	4994.500	41.07	54.0	12.93	AV	213.00	200	Vertical	Pass
4	7704.750	54.43	74.0	19.57	Peak	305.00	200	Vertical	Pass
4**	7704.750	45.54	54.0	8.46	AV	305.00	200	Vertical	Pass
5	12489.463	52.54	74.0	21.46	Peak	144.00	150	Vertical	Pass
5**	12489.463	43.67	54.0	10.33	AV	144.00	150	Vertical	Pass
6	16132.575	53.75	74.0	20.25	Peak	113.00	200	Vertical	Pass
6**	16132.575	45.41	54.0	8.59	AV	113.00	200	Vertical	Pass

8DPSK MIDDLE CHANNEL 1 GHz to 18 GHz, ANT H

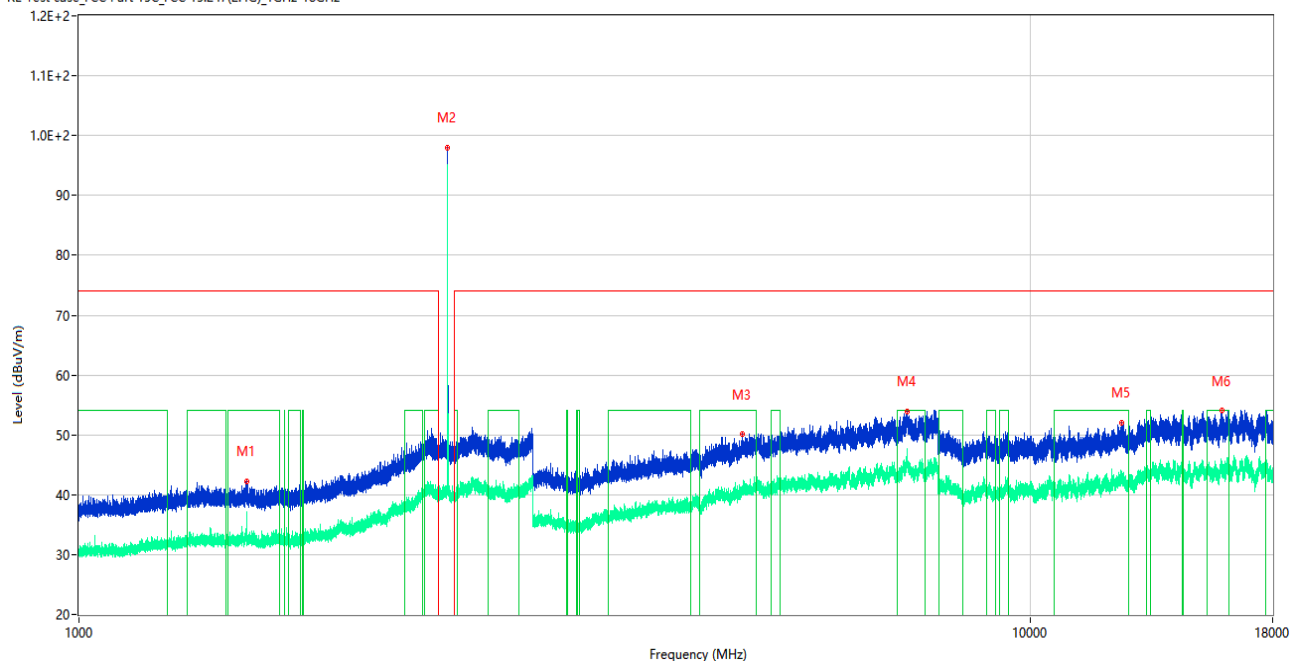
RE Test case_FCC Part 15C_FCC 15.247(2.4G)_1GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1500.300	42.55	74.0	31.45	Peak	0.00	300	Horizontal	Pass
1**	1500.300	35.65	54.0	18.35	AV	0.00	300	Horizontal	Pass
2	2441.100	100.65	--	--	Peak	171.00	100	Horizontal	N/A
2**	2441.100	98.02	--	--	AV	171.00	100	Horizontal	N/A
3	4887.500	49.28	74.0	24.72	Peak	6.00	150	Horizontal	Pass
3**	4887.500	39.98	54.0	14.02	AV	6.00	150	Horizontal	Pass
4	7354.750	53.99	74.0	20.01	Peak	21.00	200	Horizontal	Pass
4**	7354.750	44.86	54.0	9.14	AV	21.00	200	Horizontal	Pass
5	12250.299	52.29	74.0	21.71	Peak	17.00	150	Horizontal	Pass
5**	12250.299	42.99	54.0	11.01	AV	17.00	150	Horizontal	Pass
6	15651.937	53.46	74.0	20.54	Peak	125.00	300	Horizontal	Pass
6**	15651.937	43.65	54.0	10.35	AV	125.00	300	Horizontal	Pass

8DPSK MIDDLE CHANNEL 1 GHz to 18 GHz, ANT V

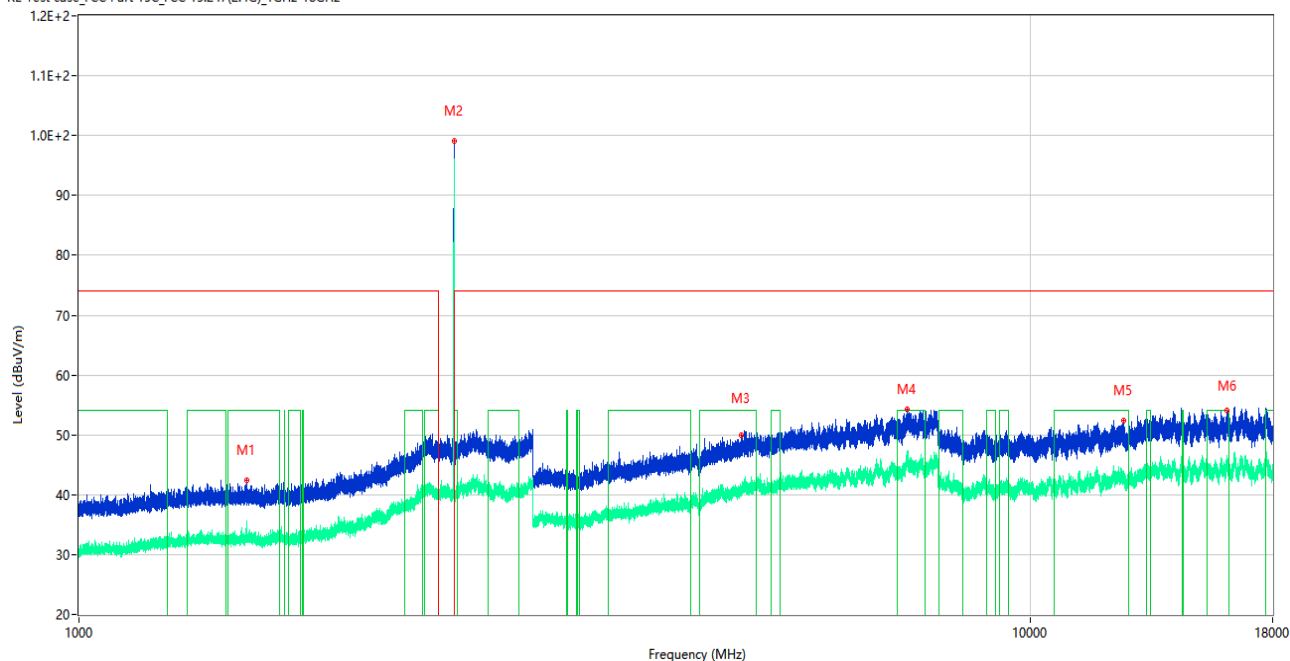
RE Test case_FCC Part 15C_FCC 15.247(2.4G)_1GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1500.000	42.28	74.0	31.72	Peak	306.00	200	Vertical	Pass
1**	1500.000	37.19	54.0	16.81	AV	306.00	200	Vertical	Pass
2	2441.000	97.99	--	--	Peak	203.00	200	Vertical	N/A
2**	2441.000	95.01	--	--	AV	203.00	200	Vertical	N/A
3	4982.500	50.07	74.0	23.93	Peak	201.00	200	Vertical	Pass
3**	4982.500	41.15	54.0	12.85	AV	201.00	200	Vertical	Pass
4	7424.500	53.95	74.0	20.05	Peak	36.00	400	Vertical	Pass
4**	7424.500	44.81	54.0	9.19	AV	36.00	400	Vertical	Pass
5	12495.638	52.09	74.0	21.91	Peak	154.00	150	Vertical	Pass
5**	12495.638	42.29	54.0	11.71	AV	154.00	150	Vertical	Pass
6	15912.600	54.03	74.0	19.97	Peak	9.00	300	Vertical	Pass
6**	15912.600	43.81	54.0	10.19	AV	9.00	300	Vertical	Pass

8DPSK HIGH CHANNEL 1 GHz to 18 GHz, ANT H

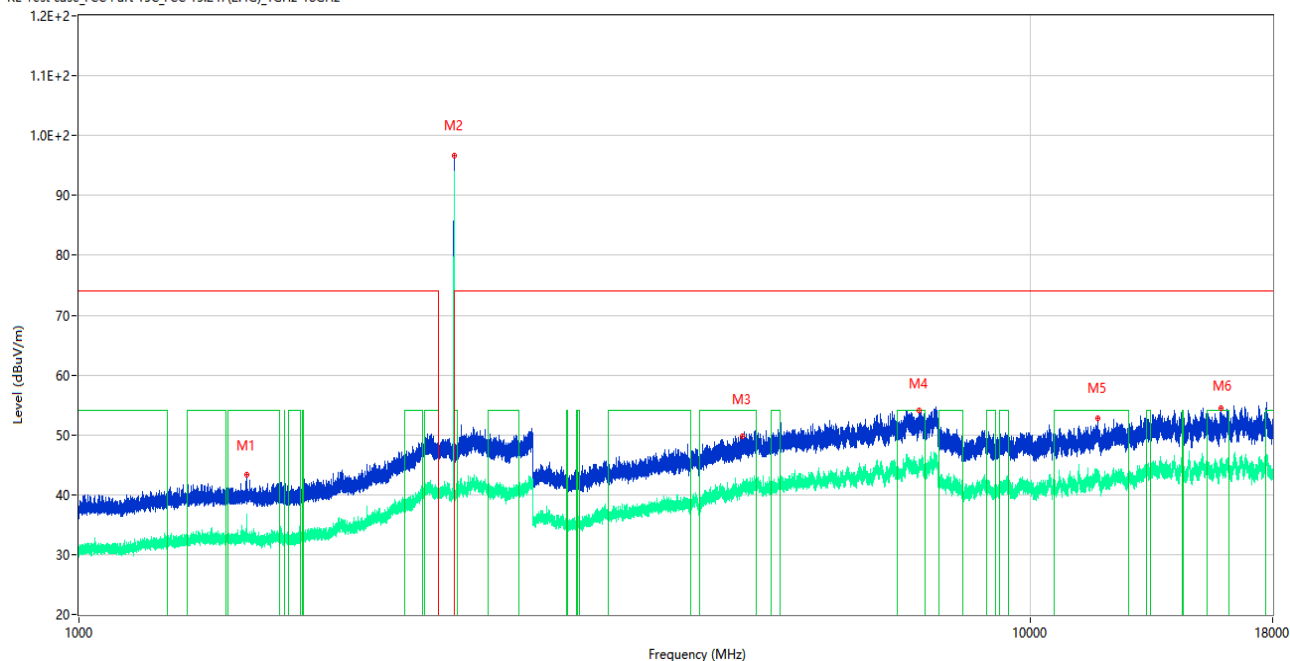
RE Test case_FCC Part 15C_FCC 15.247(2.4G)_1GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1499.800	42.49	74.0	31.51	Peak	86.00	100	Horizontal	Pass
1**	1499.800	35.31	54.0	18.69	AV	86.00	100	Horizontal	Pass
2	2480.100	99.14	--	--	Peak	152.00	200	Horizontal	N/A
2**	2480.100	95.73	--	--	AV	152.00	200	Horizontal	N/A
3	4967.000	49.97	74.0	24.03	Peak	184.00	100	Horizontal	Pass
3**	4967.000	40.25	54.0	13.75	AV	184.00	100	Horizontal	Pass
4	7424.750	54.23	74.0	19.77	Peak	57.00	100	Horizontal	Pass
4**	7424.750	45.46	54.0	8.54	AV	57.00	100	Horizontal	Pass
5	12539.575	52.41	74.0	21.59	Peak	268.00	100	Horizontal	Pass
5**	12539.575	42.07	54.0	11.93	AV	268.00	100	Horizontal	Pass
6	16122.599	54.11	74.0	19.89	Peak	353.00	400	Horizontal	Pass
6**	16122.599	44.85	54.0	9.15	AV	353.00	400	Horizontal	Pass

8DPSK HIGH CHANNEL 1 GHz to 18 GHz, ANT V

RE Test case_FCC Part 15C_FCC 15.247(2.4G)_1GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1499.600	43.27	74.0	30.73	Peak	282.00	300	Vertical	Pass
1**	1499.600	34.10	54.0	19.90	AV	282.00	300	Vertical	Pass
2	2480.100	96.73	--	--	Peak	99.00	100	Vertical	N/A
2**	2480.100	93.94	--	--	AV	99.00	100	Vertical	N/A
3	4990.000	49.84	74.0	24.16	Peak	154.00	100	Vertical	Pass
3**	4990.000	41.97	54.0	12.03	AV	154.00	100	Vertical	Pass
4	7654.250	54.05	74.0	19.95	Peak	0.00	100	Vertical	Pass
4**	7654.250	45.90	54.0	8.10	AV	0.00	100	Vertical	Pass
5	11783.850	52.83	74.0	21.17	Peak	360.00	150	Vertical	Pass
5**	11783.850	43.24	54.0	10.76	AV	360.00	150	Vertical	Pass
6	15887.400	54.41	74.0	19.59	Peak	2.00	300	Vertical	Pass
6**	15887.400	45.31	54.0	8.69	AV	2.00	300	Vertical	Pass

A.9 Band Edge (Restricted-band band-edge)

Note¹: The lowest and highest channels are tested to verify the band edge emissions. Please refer to the following the plots for emissions values.

Note²: The test data all are tested in the vertical and horizontal antenna which the trace is max hold. So these plots have shown the worst case.

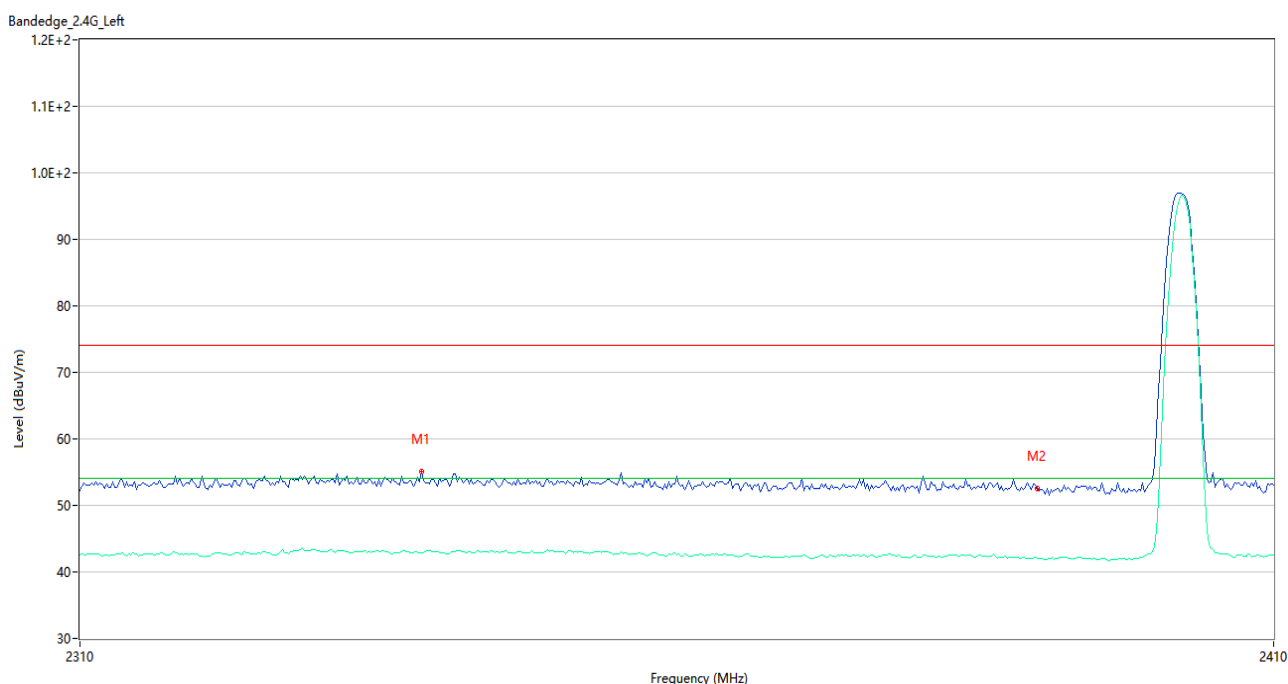
Note³: According the ANSI C63.10-2020 + Cor. 1-2023 + C63.10a-2024 + Errata to C63.10a-2024, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Note⁴: The Level (dBuV/m) has been corrected by factor.

Note⁵: Both horizontal and vertical directions were pre tested, only the worst configuration has been reported in this report.

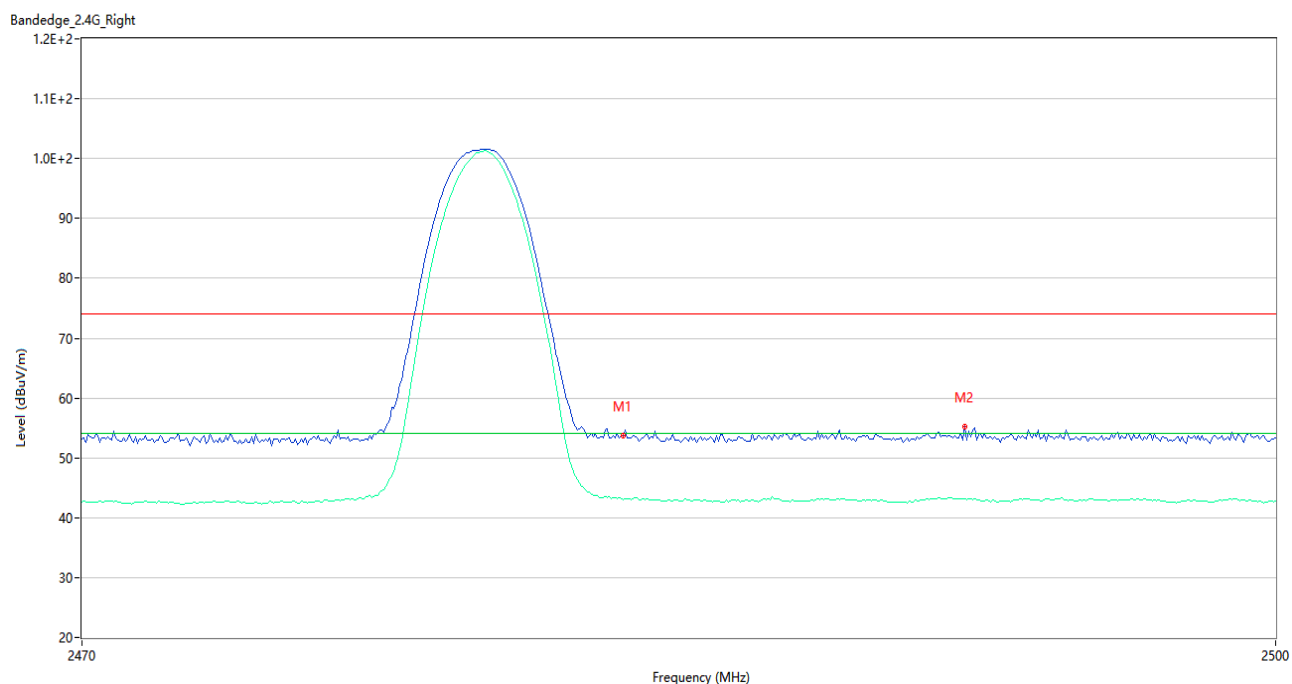
Test Data and Plots

GFSK LOW CHANNEL



No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2338.167	55.01	74.0	18.99	Peak	164.00	100	Horizontal	Pass
1**	2338.167	42.90	54.0	11.10	AV	164.00	100	Horizontal	Pass
2	2389.833	52.54	74.0	21.46	Peak	263.00	150	Horizontal	Pass
2**	2389.833	42.05	54.0	11.95	AV	263.00	150	Horizontal	Pass

GFSK HIGH CHANNEL



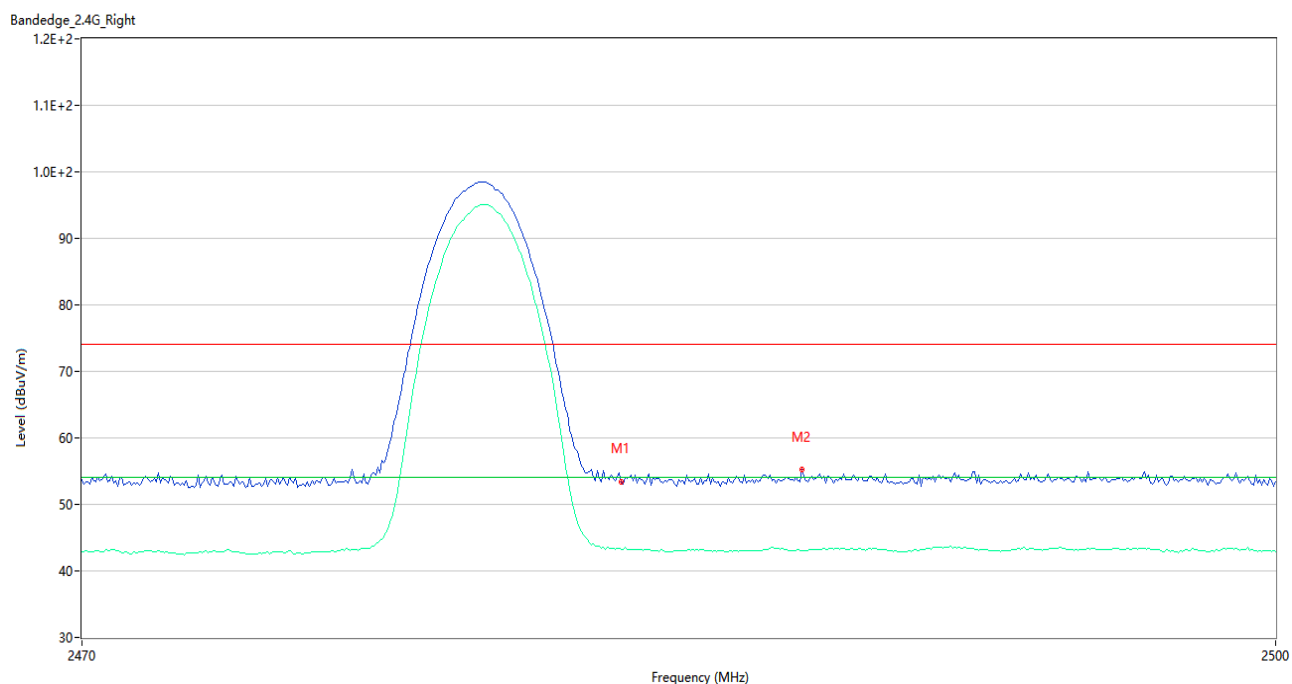
No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2483.550	53.68	74.0	20.32	Peak	213.00	150	Horizontal	Pass
1**	2483.550	43.05	54.0	10.95	AV	213.00	150	Horizontal	Pass
2	2492.150	55.14	74.0	18.86	Peak	65.00	150	Horizontal	Pass
2**	2492.150	43.12	54.0	10.88	AV	65.00	150	Horizontal	Pass

8DPSK LOW CHANNEL



No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2318.333	55.67	74.0	18.33	Peak	304.00	200	Horizontal	Pass
1**	2318.333	42.95	54.0	11.05	AV	304.00	200	Horizontal	Pass
2	2389.833	53.61	74.0	20.39	Peak	193.00	150	Horizontal	Pass
2**	2389.833	42.38	54.0	11.62	AV	193.00	150	Horizontal	Pass

8DPSK HIGH CHANNEL



No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2483.500	53.44	74.0	20.56	Peak	98.00	100	Horizontal	Pass
1**	2483.500	43.30	54.0	10.70	AV	98.00	100	Horizontal	Pass
2	2488.050	55.21	74.0	18.79	Peak	155.00	150	Horizontal	Pass
2**	2488.050	43.10	54.0	10.90	AV	155.00	150	Horizontal	Pass

ANNEX B TEST SETUP PHOTOS

Please refer the document “Ti-EE26060166-AR.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “Ti-EE26060166-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “Ti-EE26060166-AI.PDF”.

Statement

1. The laboratory guarantees the scientificity, accuracy and impartiality of the test, and is responsible for all the information in the report, except the information provided by the customer. The customer is responsible for the impact of the information provided on the validity of the results.
2. The report without China inspection body and laboratory Mandatory Approval (CMA) mark has no effect of proving to the society.
3. For the report with CNAS mark or A2LA mark, the items marked with "☆" are not within the accredited scope.
4. This report is invalid if it is altered, without the signature of the testing and approval personnel, or without the "inspection and testing dedicated stamp" or test report stamp.
5. The test data and results are only valid for the tested samples provided by the customer.
6. This report shall not be partially reproduced without the written permission of the laboratory.
7. Any objection shall be raised to the laboratory within 30 days after receiving the report.

--END OF REPORT--