

FCC - TEST REPORT

Report Number : **6895025122201** Date of Issue: **2025-08-04**

Model : **MQTWSTX**

Product Type : **MQTWSTX**

Applicant : **ACCO Brands USA LLC**

Address : **4 Corporate Drive Lake Zurich Illinois 60047 United States**

Manufacturer : **Dongguan Laccess Electronic Technology Ltd**

Address : **NO.20 Xiang Yang Road, Tianxin, Qiaotou Town, DongGuan,**
GuanDong, China

Test Result : ☒ **Positive** ☐ **Negative**

Total pages including Appendices : **76**

Any use for advertising purposes must be granted in writing. This technical report may only be quoted in full. This report is the result of a single examination of the object in question and is not generally applicable evaluation of the quality of other products in regular production. For further details, please see testing and certification regulation, chapter A-3.4.

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2 Details about the Test Laboratory

Details about the Test Laboratory

Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12 & 13, Zhiheng Wisdomland Business Park, Guankou Erlu, Nantou,
Nanshan District
Shenzhen 518052
P.R. China

Telephone: 86 755 8828 6998

Fax: 86 755 828 5299

FCC Registration No.: 514049

FCC Designation Number: CN5009

3 Description of the Equipment Under Test

Product:	MQTWSTX
Model no.:	MQTWSTX
FCC ID:	YFK-MQTWSTXLB
Software Version:	V2.015
Hardware Version:	V1.1
Options and accessories:	Charging Case, Power Cable
Rating:	5VDC, 25mA
RF Transmission Frequency:	2402MHz-2480MHz
No. of Operated Channel:	79
Modulation:	GFSK, $\pi/4$ -DQPSK, 8DPSK
Antenna Type:	FPC Antenna
Antenna Gain:	4.0dBi
Description of the EUT:	The EUT is a Dongle. It supports Bluetooth BDR+EDR function. Only Bluetooth (BR+EDR) is included in this report.

NOTE 1: The above EUT's information is declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2024 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

All the test methods were according to KDB 558074 D01 15.247 Meas Guidance v05r02 Measurement Guidance and ANSI C63.10-2020.

5 Summary of Test Results

Technical Requirements			
FCC Part 15 Subpart C			
Test Condition		Test Site	Test Result
§15.207	Conducted emission AC power port	Site 1	Pass
§15.247(b)(1)	Conducted peak output power	Site 1	Pass
§15.247(a)(1)	20dB bandwidth	Site 1	Pass
§15.247(a)(1)	Carrier channel frequency separation	Site 1	Pass
§15.247(a)(1)(iii)	Number of hopping frequencies	Site 1	Pass
§15.247(a)(1)(iii)	Dwell Time - Average Time of Occupancy	Site 1	Pass
§15.247(d)	Spurious RF conducted emissions	Site 1	Pass
§15.247(d)	Band edge	Site 1	Pass
§15.247(d) & §15.209 & §15.205	Spurious radiated emissions for transmitter	Site 1	Pass
§15.203	Antenna requirement	See note 2	Pass

Note 1: N/A=Not Applicable.

Note 2: The EUT uses a FPC antenna, which gain is 4.0dBi. In accordance with §15.203, it is considered sufficiently to comply with the provisions of this section.

6 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: YFK-MQTWSTXLB complies with Section 15.205, 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C rules.

SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

□ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements.

□ - **Does not** fulfill the general approval requirements.

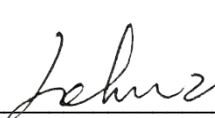
Sample Received Date: 2025-07-07

Testing Start Date: 2025-07-07

Testing End Date: 2025-07-30

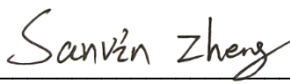
- TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch -

Reviewed by:

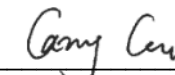

John Zhi
Section Manager



Prepared by:

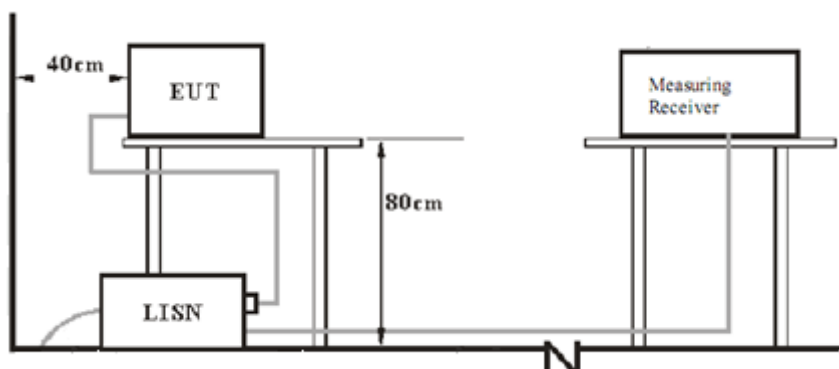

Sanvin Zheng
Project Engineer

Tested by:


Carry Cai
Test Engineer

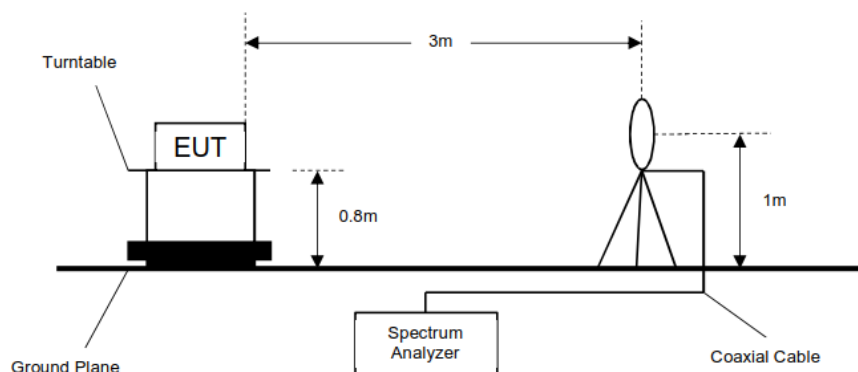
7 Test Setups

7.1 AC Power Line Conducted Emission test setups

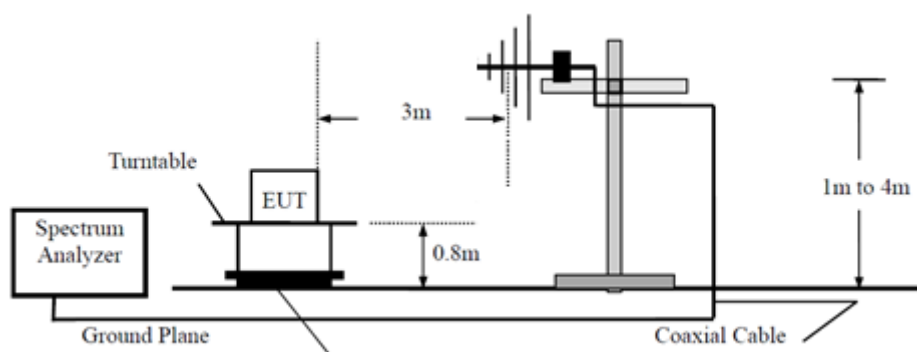


7.2 Radiated test setups

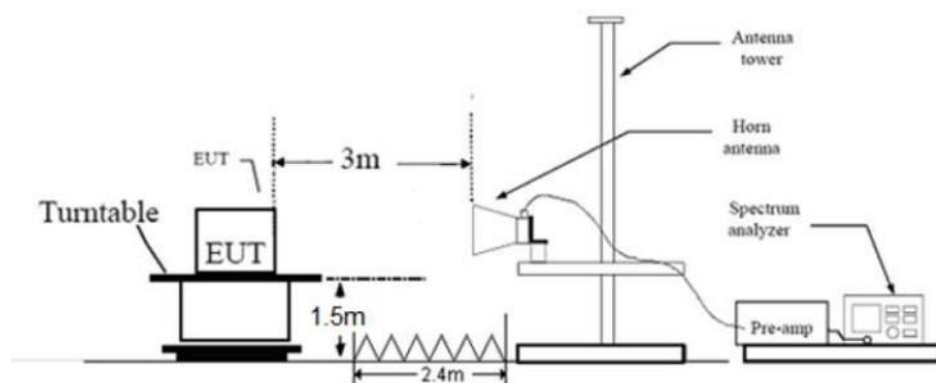
9KHz - 30MHz



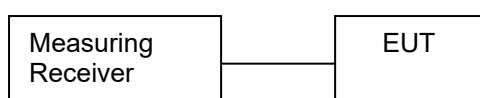
30MHz - 1GHz



Above 1GHz



7.3 Conducted RF test setups



8 Systems Test Configuration

Auxiliary Equipment Used during Test:

Description	Manufacturer	Model NO.	S/N
Notebook	LENOVO	X220	429044C
VR Headset	Meta	Meta Quest 3s	---
Gamepad	Meta	---	---
Adapter	Meta	MA0122	---

Cables Used During Test:

Cable	Length	Shielded/unshielded	With / without ferrite
---	---	---	---

Test software information:

Test Software	ATS303X_FCC_V3.0.exe	
Modulation	Setting TX Power	Packet Type
GFSK	Default	PRBS9
$\pi/4$ -DQPSK	Default	PRBS9
8DPSK	Default	PRBS9

The system was configured to hopping mode and non-hopping mode.

Hopping mode: typical working mode (normal hopping status)

Non-hopping mode: The system was configured to operate at a signal channel transmitting. The test software allows the configuration and operation at the worst-case duty and the highest transmit power.

9 Technical Requirement

9.1 Conducted Emission

Test Method

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. Both sides of AC line were checked for maximum conducted interference.
6. The frequency range from 150 kHz to 30 MHz was searched.
7. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

Limit

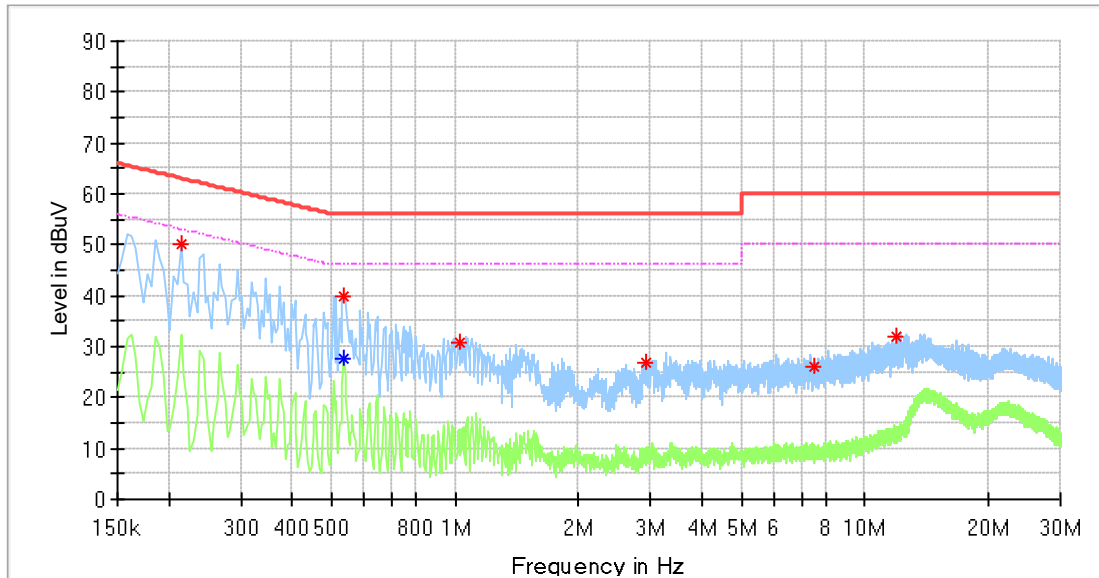
According to §15.207, conducted emissions limit as below:

Frequency MHz	QP Limit dB μ V	AV Limit dB μ V
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

*Decreasing linearly with logarithm of the frequency

Conducted Emission

Product Type : MQTWSTX
 M/N : MQTWSTX
 Operating Condition : Transmitting mode
 Test Specification : Line
 Comment : 5VDC (Powered by Adapter AC 120V/60Hz)



Frequency (MHz)	MaxPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr. (dB)
0.214000	50.10	---	63.05	12.95	L1	10.02
0.534000	40.03	---	56.00	15.97	L1	10.04
0.534000	---	27.63	46.00	18.37	L1	10.04
1.022000	30.85	---	56.00	25.15	L1	10.05
2.938000	26.65	---	56.00	29.35	L1	10.06
7.506000	26.14	---	60.00	33.86	L1	10.28
11.910000	31.85	---	60.00	28.15	L1	10.50

Remark:

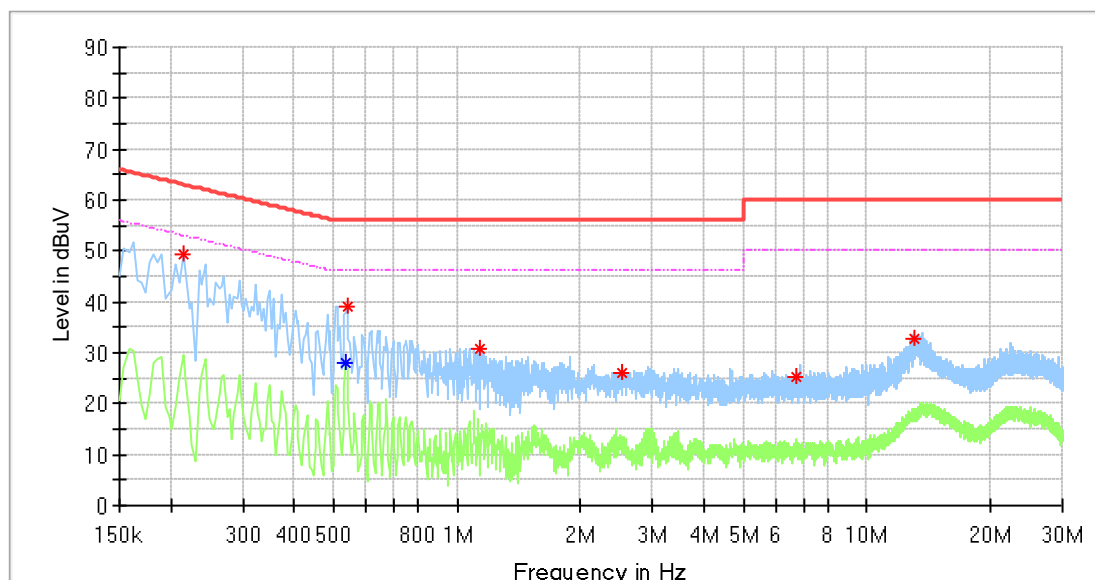
Level=Reading Level + Correction Factor

Correction Factor=Cable Loss + LISN Factor

(The Reading Level is recorded by software which is not shown in the sheet)

Conducted Emission

Product Type : MQTWSTX
 M/N : MQTWSTX
 Operating Condition : Transmitting mode
 Test Specification : Neutral
 Comment : 5VDC (Powered by Adapter AC 120V/60Hz)



Frequency (MHz)	MaxPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr. (dB)
0.214000	49.38	---	63.05	13.67	N	10.07
0.534000	---	27.93	46.00	18.07	N	10.05
0.538000	38.96	---	56.00	17.04	N	10.05
1.130000	30.74	---	56.00	25.26	N	10.06
2.530000	26.14	---	56.00	29.86	N	10.11
6.738000	25.39	---	60.00	34.61	N	10.30
13.078000	32.70	---	60.00	27.30	N	10.57

Remark:

Level=Reading Level + Correction Factor

Correction Factor=Cable Loss + LISN Factor

(The Reading Level is recorded by software which is not shown in the sheet)

9.2 Conducted Peak Output Power

Test Method

1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Use the following test receiver settings:
Span = approximately 5 times the 20dB bandwidth, centered on a hopping channel
RBW > the 20dB bandwidth of the emission being measured, VBW ≥ RBW,
Sweep = auto, Detector function = peak, Trace = max hold
4. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power and record the results in the test report.
5. Repeat above procedures until all frequencies measured were complete.

Limits

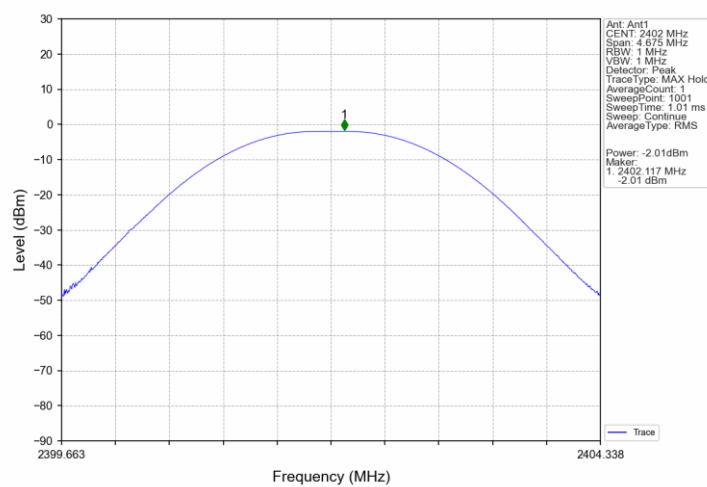
According to §15.247 (b) (1), conducted peak output power limit as below:

Frequency Range MHz	Limit W	Limit dBm
2400-2483.5	≤1	≤30

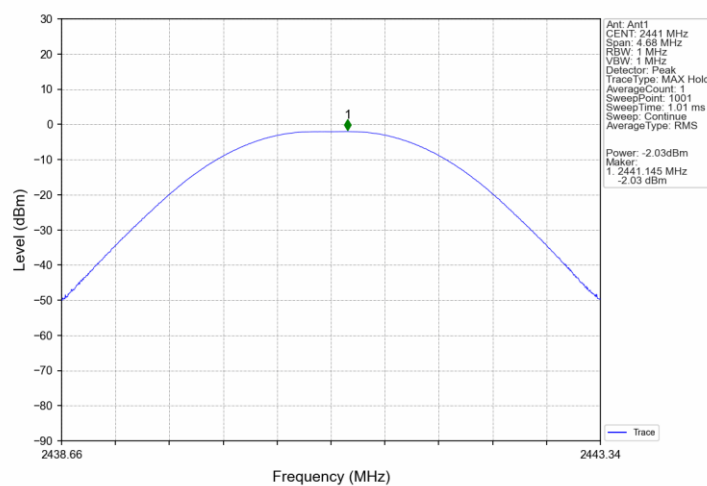
Conducted Peak Output Power

Mode	TX Type	Frequency (MHz)	Packet Type	Maximum Peak Conducted Output Power (dBm)		Verdict
				ANT1	Limit	
GFSK	SISO	2402	DH5	-2.01	<=30	Pass
		2441	DH5	-2.03	<=30	Pass
		2480	DH5	-2.01	<=30	Pass
Pi/4DQPSK	SISO	2402	2DH5	-1.96	<=30	Pass
		2441	2DH5	-2.00	<=30	Pass
		2480	2DH5	-1.99	<=30	Pass
8DPSK	SISO	2402	3DH5	-1.98	<=30	Pass
		2441	3DH5	-2.00	<=30	Pass
		2480	3DH5	-1.99	<=30	Pass

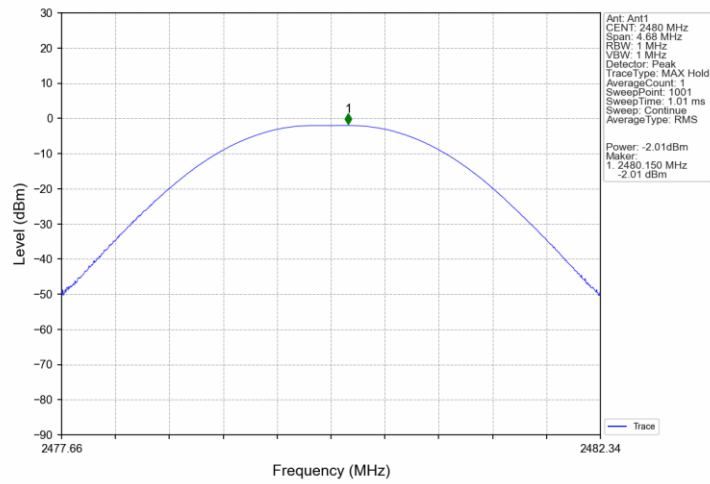
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



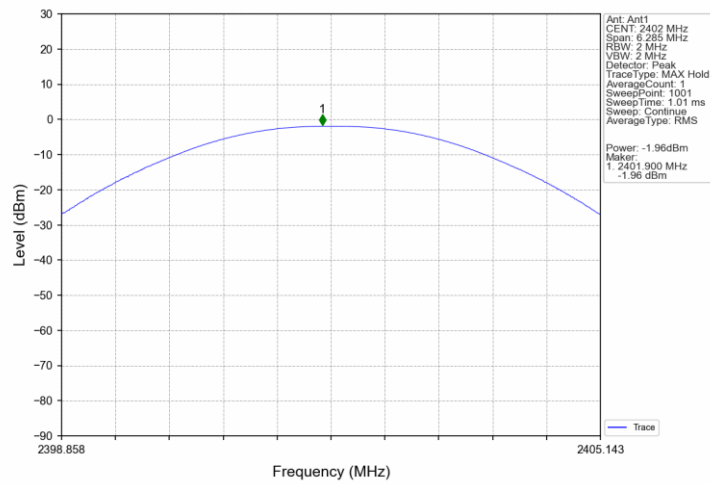
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



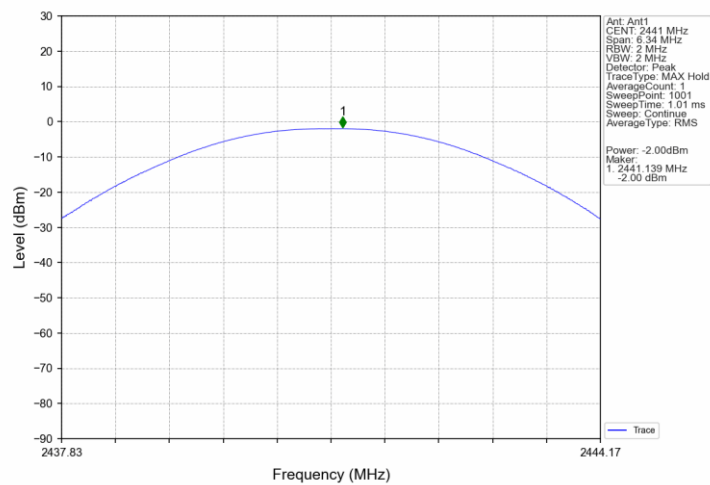
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



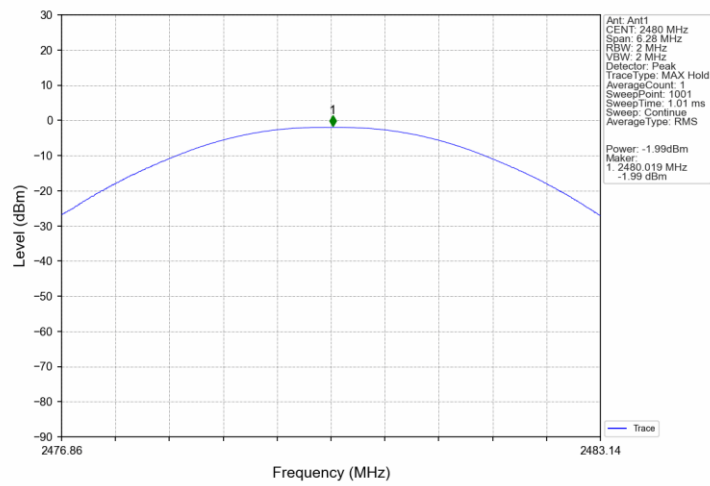
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



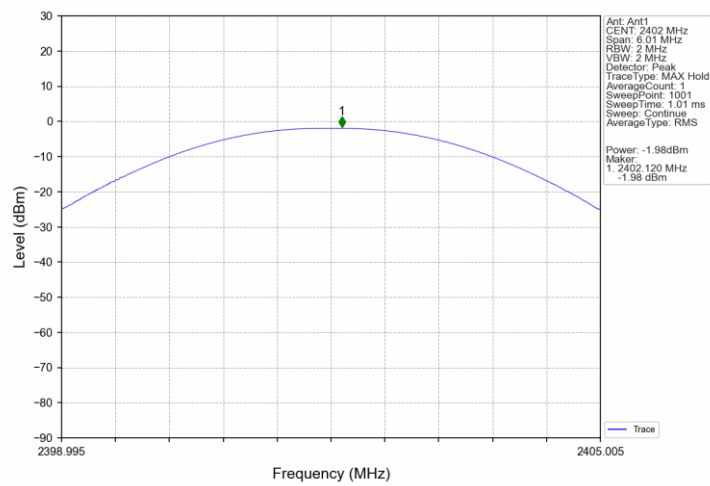
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



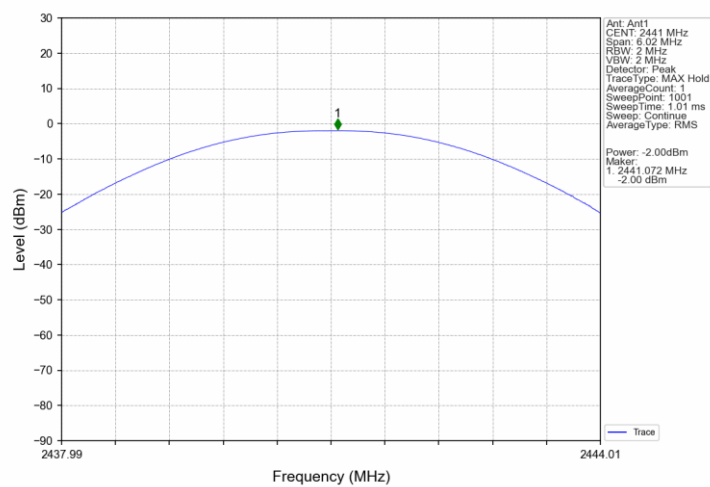
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



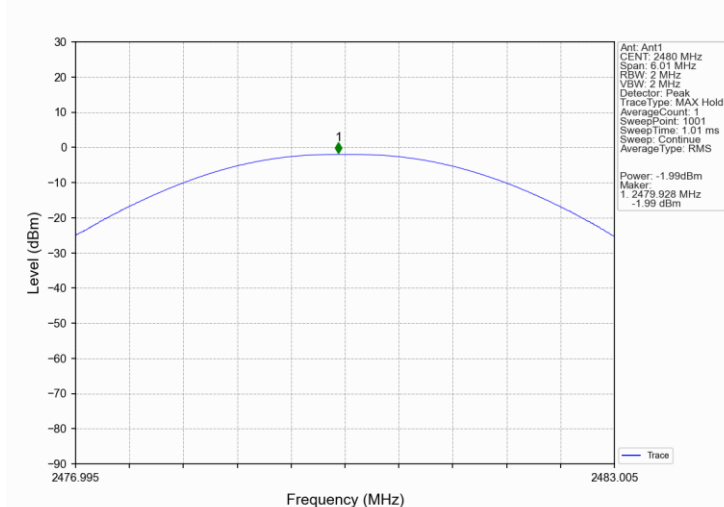
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



9.3 20 dB Bandwidth

Test Method

1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Use the following test receiver settings:
Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel
RBW $\geq 1\%$ to 5% of the 20 dB bandwidth, VBW ≥ 3 RBW,
Sweep = auto, Detector function = peak, Trace = max hold
4. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth. Record the results.
5. Repeat above procedures until all frequencies measured were complete.

Limit

According to §15.247(a)(1), 20 dB Bandwidth limit as below:

Limit [kHz]

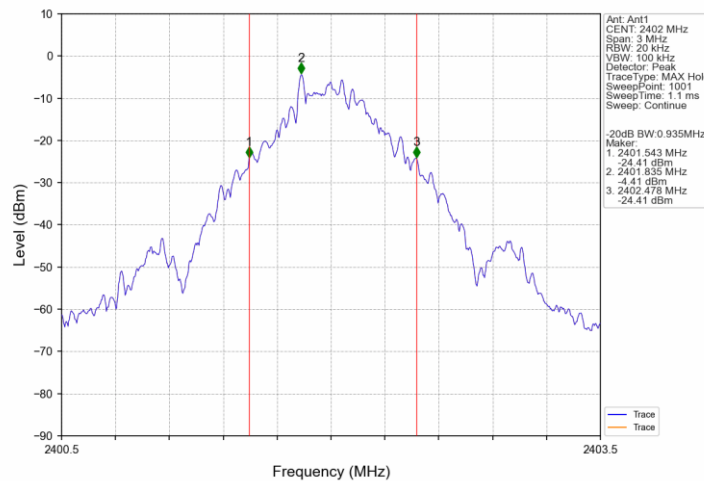
N/A

20 dB bandwidth

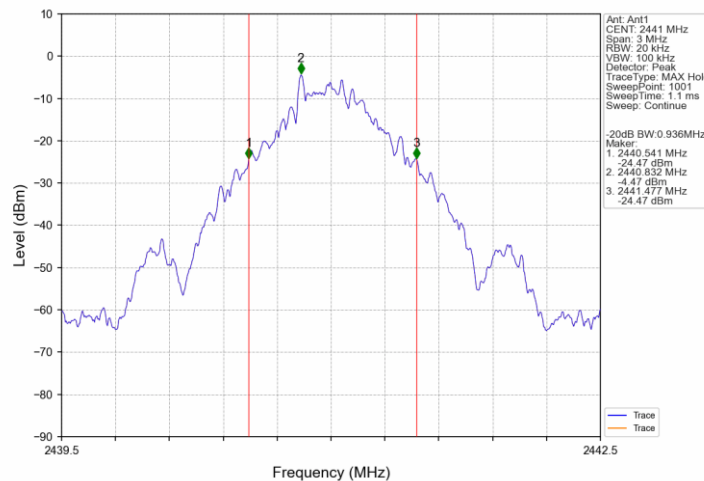
Test result

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	20dB Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	0.935	/	Pass
		2441	DH5	1	0.936	/	Pass
		2480	DH5	1	0.936	/	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	1.257	/	Pass
		2441	2DH5	1	1.268	/	Pass
		2480	2DH5	1	1.256	/	Pass
8DPSK	SISO	2402	3DH5	1	1.202	/	Pass
		2441	3DH5	1	1.204	/	Pass
		2480	3DH5	1	1.202	/	Pass

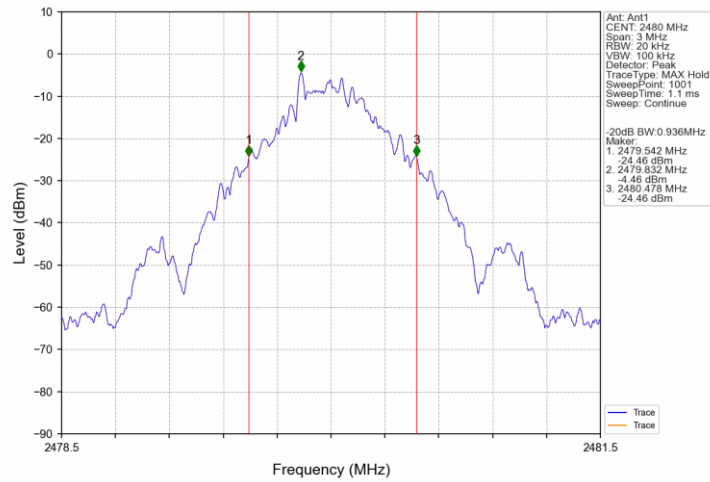
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



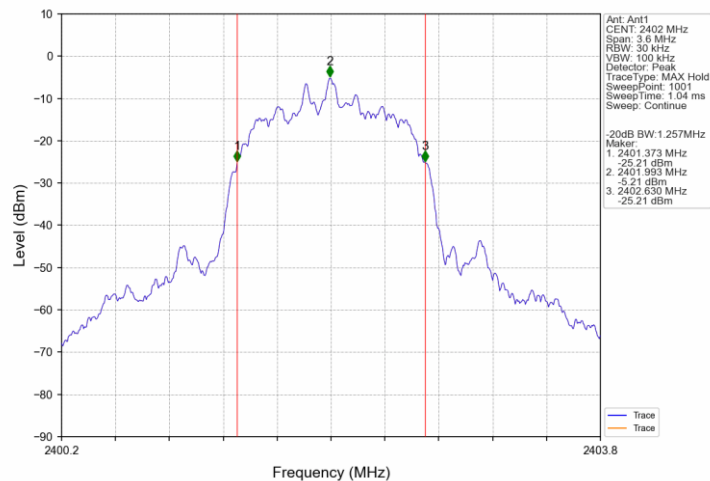
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



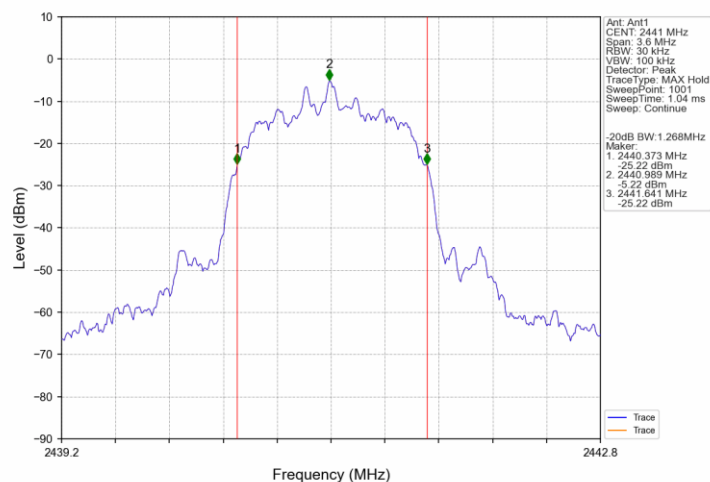
GFSK DH5 HCH 2480MHz Ant1 NTN



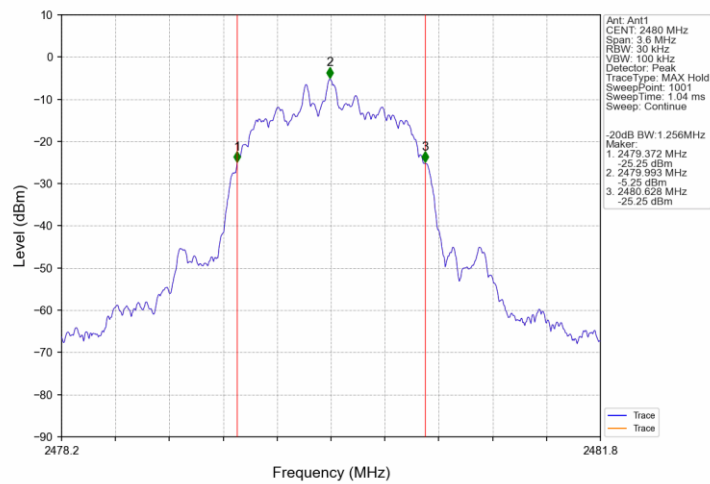
Pi/4DQPSK 2DH5 LCH 2402MHz Ant1 NTN



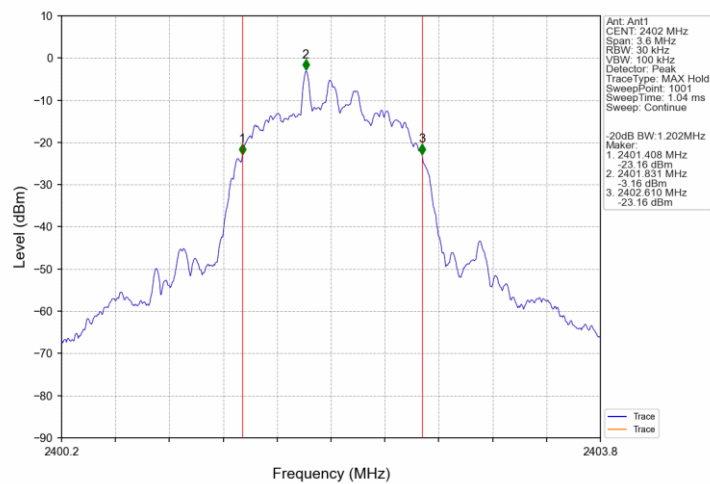
Pi/4DQPSK 2DH5 MCH 2441MHz Ant1 NTN



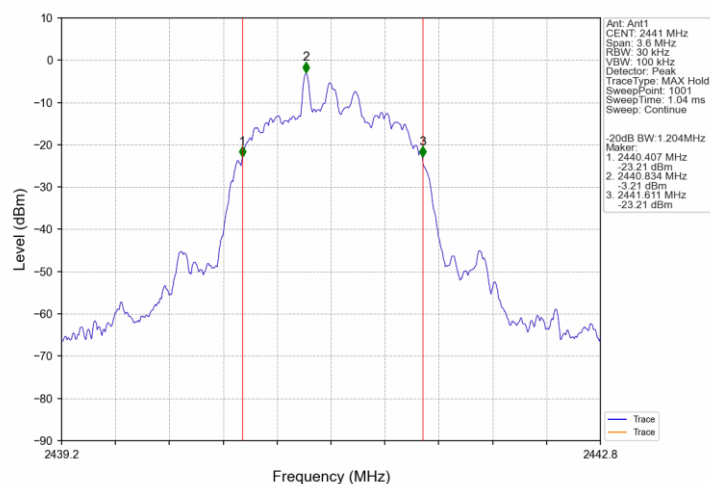
Pi/4QPSK_2DH5_HCH_2480MHz_Ant1_NTNV



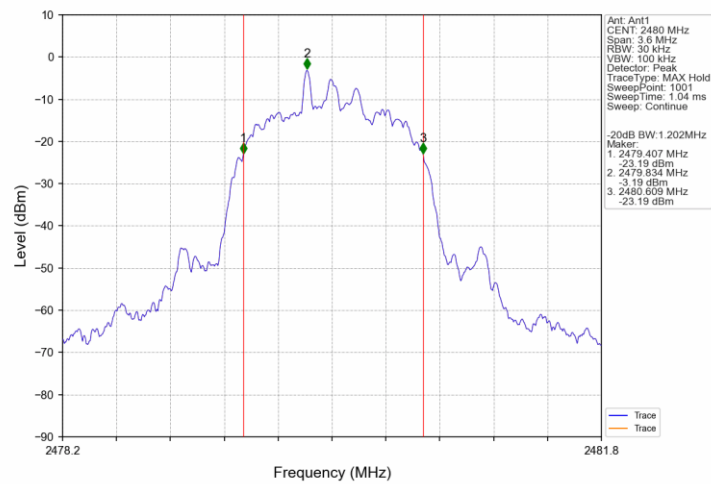
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



9.4 Carrier Frequency Separation

Test Method

1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit to hopping mode.
3. Use the following spectrum analyzer settings:
Span = wide enough to capture the peaks of two adjacent channels, RBW: Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel. VBW $\geq$ RBW, Sweep = auto, Detector function = peak.
4. By using the Max-Hold function record the separation of two adjacent channels.
5. Measure the frequency difference of these two adjacent channels by spectrum analyzer marker function. Record the results.
6. Repeat above procedures until all frequencies measured were complete.

Limit

According to §15.247(a)(1), Carrier Frequency Separation limit as below:

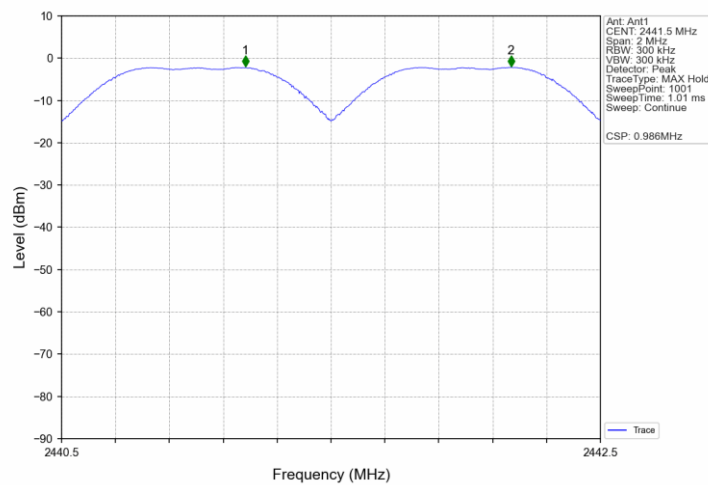
Limit kHz
$\geq 25\text{KHz}$ or $2/3$ of the 20 dB bandwidth which is greater

Carrier Frequency Separation

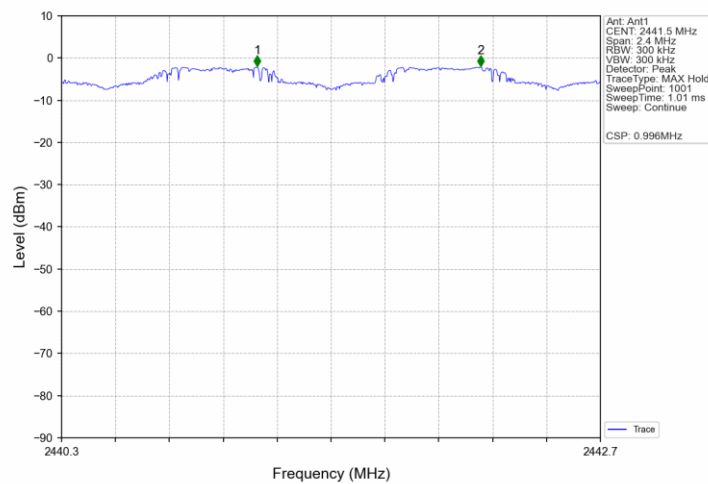
Test result: The measurement was performed with the typical configuration (normal hopping status).

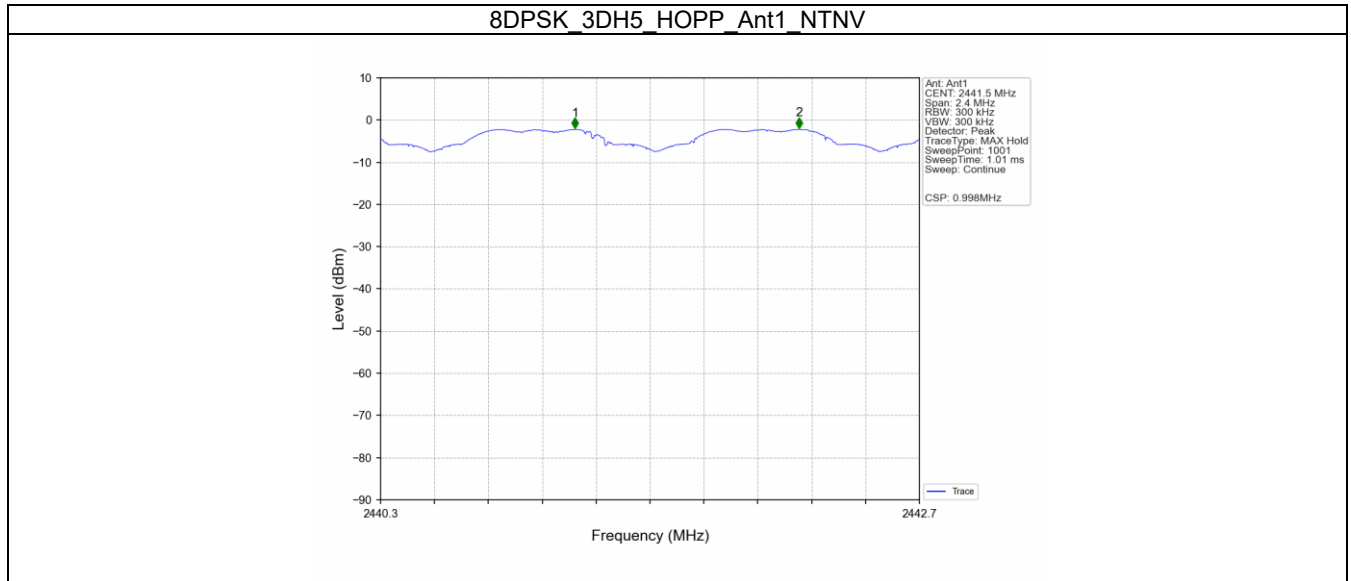
Ant1							
Mode	TX Type	Frequency (MHz)	Packet Type	Channel Separation (MHz)	20dB Bandwidth (MHz)	Limit (MHz)	Verdict
GFSK	SISO	HOPP	DH5	0.986	0.936	≥ 0.624	Pass
Pi/4DQPSK	SISO	HOPP	2DH5	0.996	1.268	≥ 0.845	Pass
8DPSK	SISO	HOPP	3DH5	0.998	1.204	≥ 0.803	Pass

GFSK_DH5_HOPP_Ant1_NTNV



Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV





9.5 Number of Hopping Frequencies

Test Method

1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit to hopping mode.
3. 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.
4. Allow the trace to stabilize. It may prove necessary to break the span up to sections, in order to clearly show all of the hopping frequencies. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s).

Limit

According to §15.247(a)(1)(iii), Number of Hopping Frequencies limit as below:

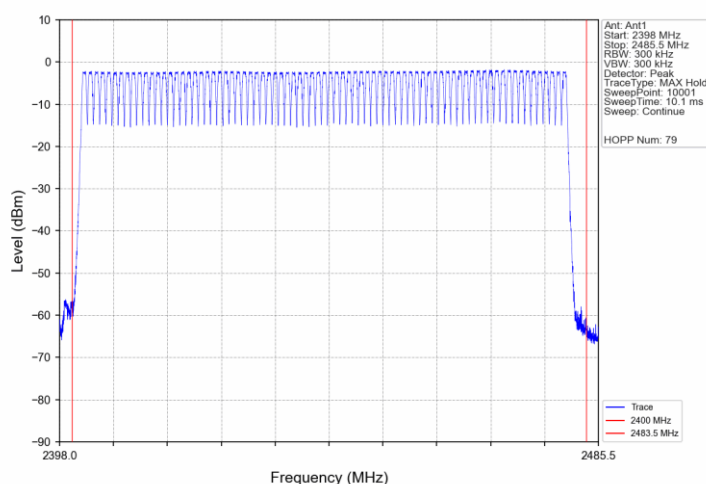
**Limit
number**

≥ 15

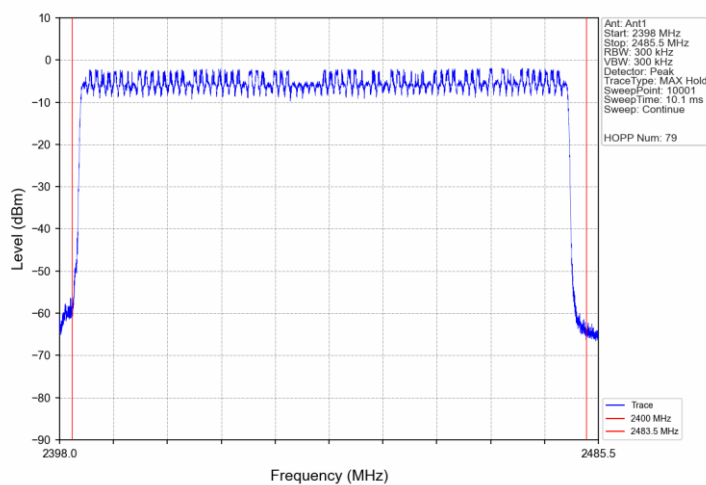
Number of Hopping Frequencies

Mode	TX Type	Frequency (MHz)	Packet Type	Num of Hopping Frequencies		Verdict
				ANT1	Limit	
GFSK	SISO	HOPP	DH5	79	≥ 15	Pass
Pi/4DQPSK	SISO	HOPP	2DH5	79	≥ 15	Pass
8DPSK	SISO	HOPP	3DH5	79	≥ 15	Pass

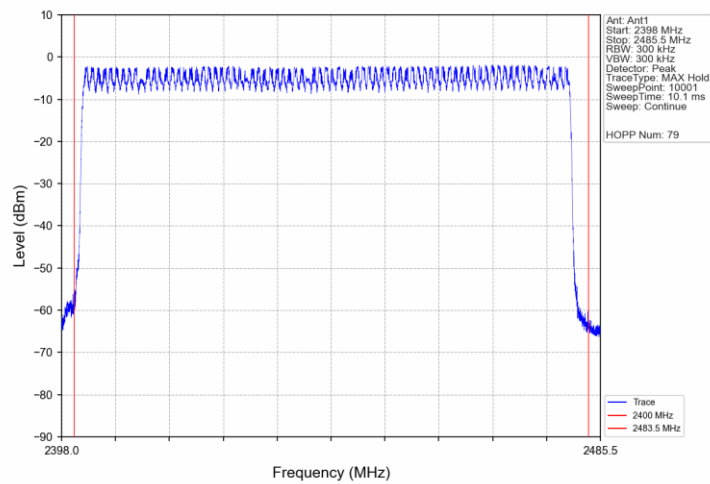
GFSK_DH5_HOPP_Ant1_NTNV



Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



9.6 Dwell Time

Test Method

1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit to hopping mode.
3. Span: Zero span, centered on a hopping channel.
4. 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.
5. Sweep: As necessary to capture the entire dwell time per hopping channel; where possible use a video trigger and trigger delay so that the transmitted signal starts a little to the right of the start of the plot. The trigger level might need slight adjustment to prevent triggering when the system hops on an adjacent channel; a second plot might be needed with a longer sweep time to show two successive hops on a channel.
6. Detector function: Peak.
7. 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.

Limit

According to §15.247(a)(1)(iii), Dwell Time limit as below:

The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

Dwell Time

Dwell time

The maximum dwell time shall be 0.4 s.

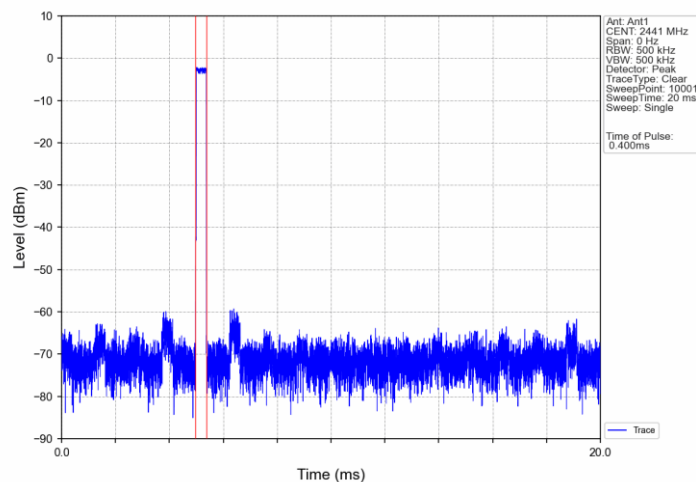
According to the Bluetooth Core Specification,

The duration for dwell time calculation: $0.4 \text{ [s]} \times \text{hopping number} = 0.4 \text{ [s]} \times 79 \text{ [ch]} = 31.6 \text{ [s]}$

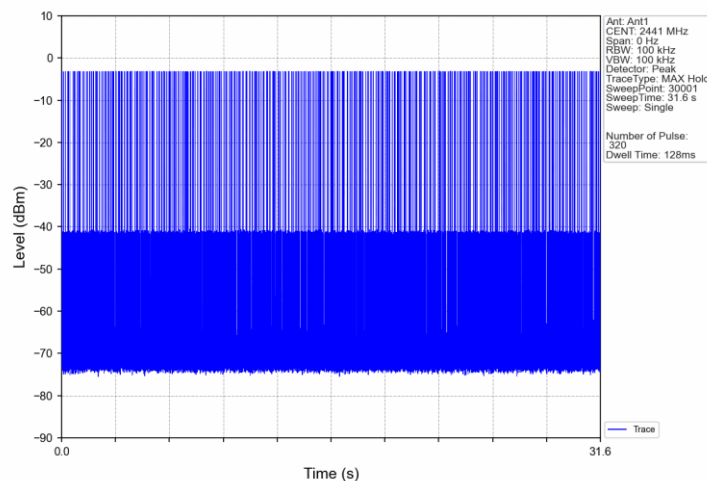
The Dwell Time = Burst Width * Total Hops.

Ant1									
Mode	Tx Type	Frequency (MHz)	Packet Type	Duration of Single Pulse (ms)	Observation Period (s)	Num of Pulse in Observation Period	Dwell Time (ms)	Limit (ms)	Verdict
GFSK	SISO	HOPP	DH1	0.400	31.600	320	128.000	<=400	Pass
			DH3	1.650	31.600	160	264.000	<=400	Pass
			DH5	2.898	31.600	105	304.290	<=400	Pass
Pi/4DQPSK	SISO	HOPP	2DH1	0.410	31.600	319	130.790	<=400	Pass
			2DH3	1.660	31.600	159	263.940	<=400	Pass
			2DH5	2.910	31.600	106	308.460	<=400	Pass
8DPSK	SISO	HOPP	3DH1	0.410	31.600	320	131.200	<=400	Pass
			3DH3	1.660	31.600	161	267.260	<=400	Pass
			3DH5	2.910	31.600	106	308.460	<=400	Pass

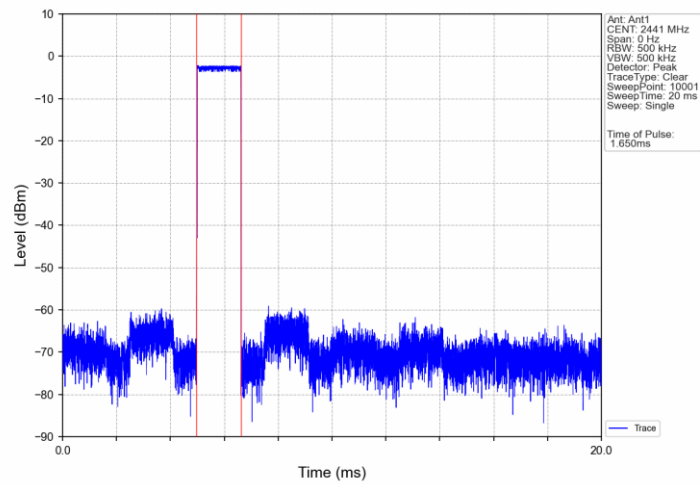
GFSK DH1 HOPP Ant1 NTNV



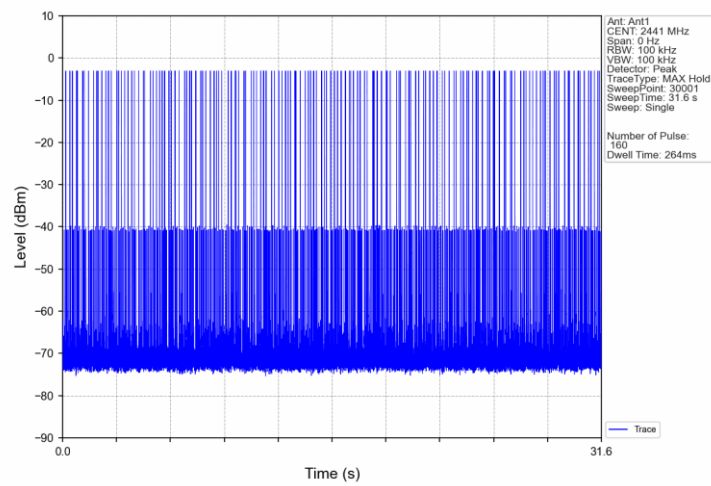
GFSK DH1 HOPP Ant1 NTNV



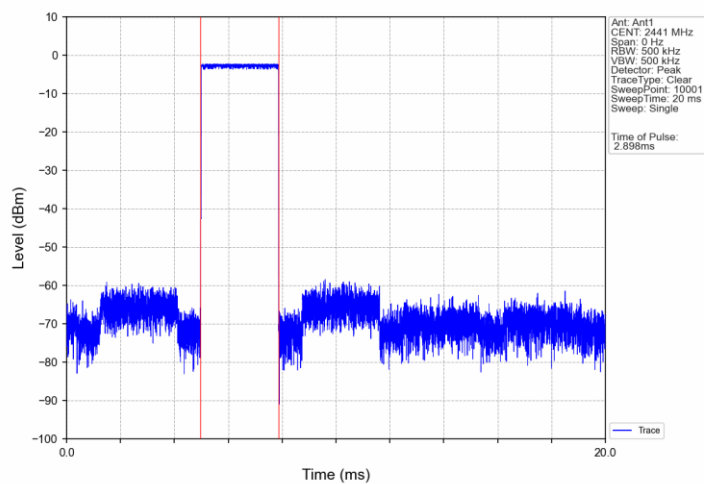
GFSK_DH3_HOPP_Ant1_NTNV



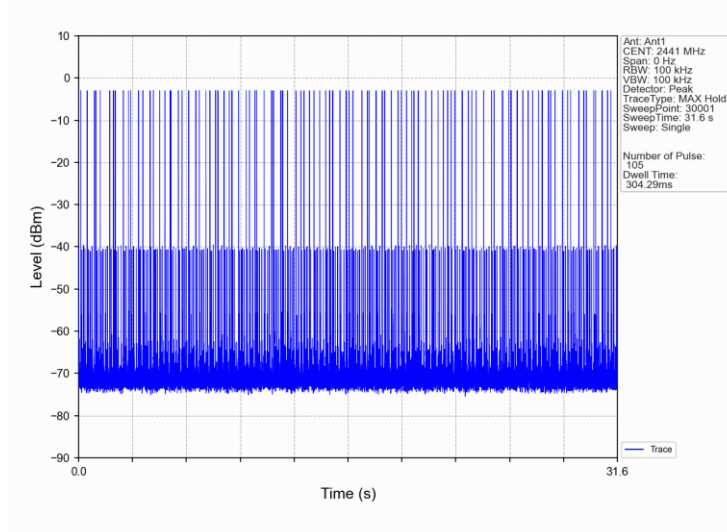
GFSK_DH3_HOPP_Ant1_NTNV



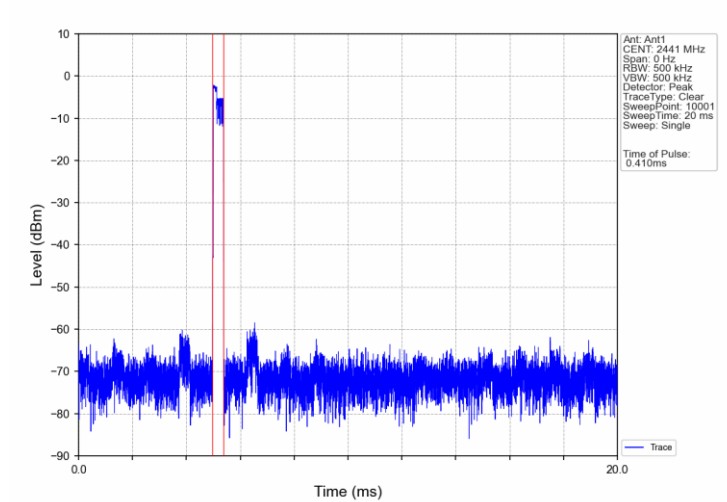
GFSK_DH5_HOPP_Ant1_NTNV



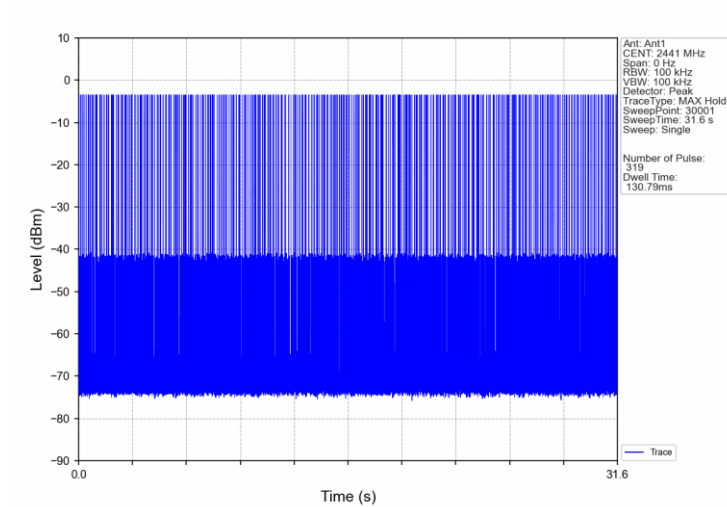
GFSK_DH5_HOPP_Ant1_NTNV



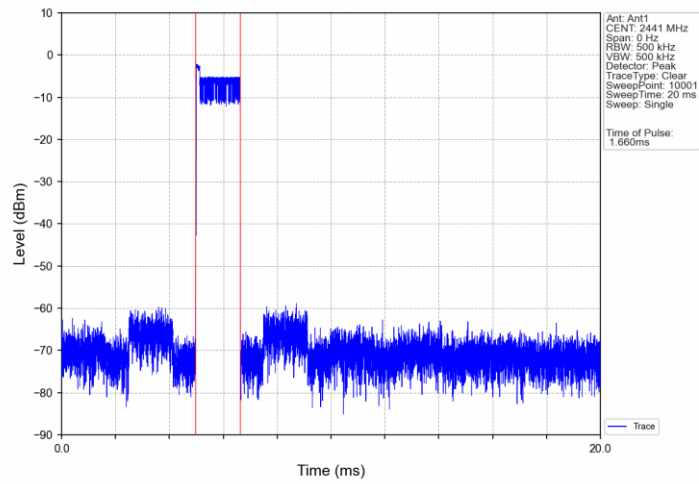
Pi/4DQPSK_2DH1_HOPP_Ant1_NTNV



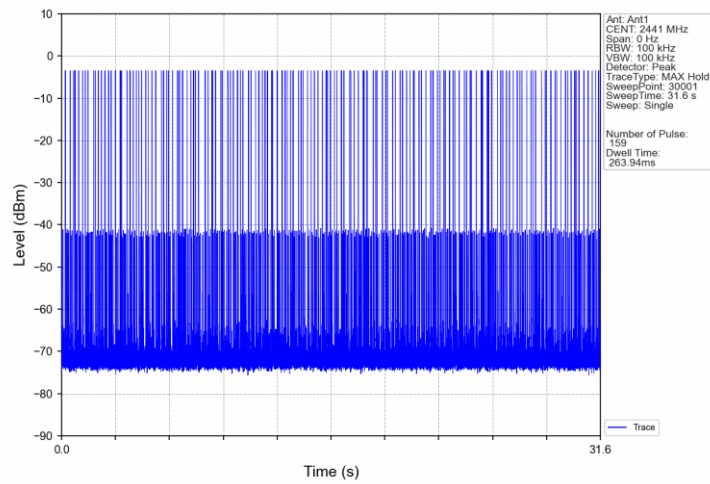
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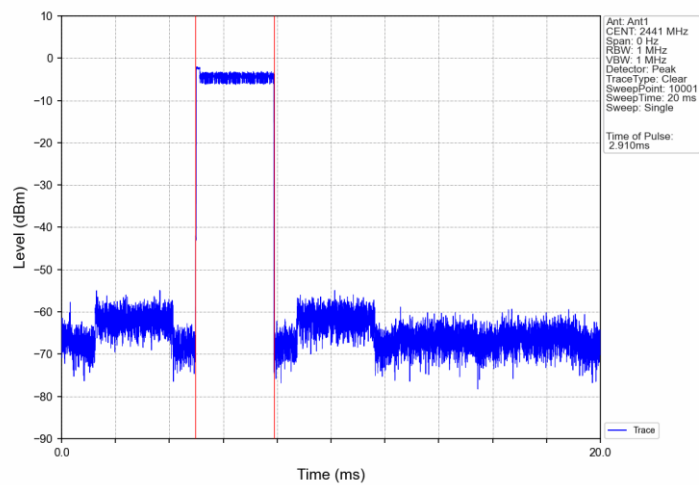
Pi/4DQPSK_2DH3_HOPP_Ant1_NTNV



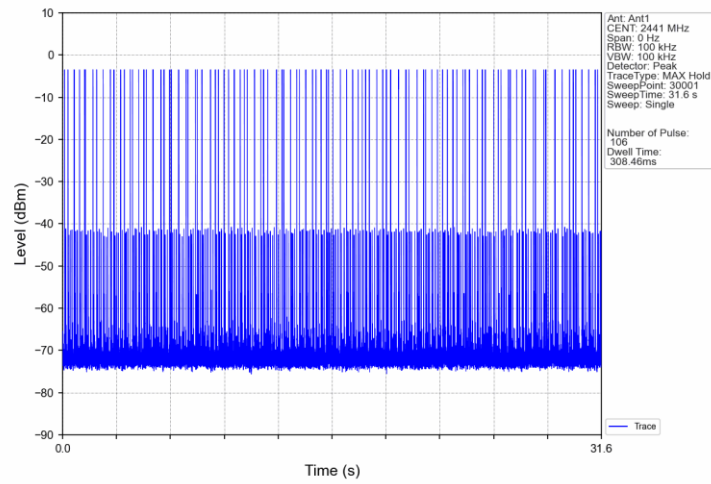
Pi/4DQPSK_2DH3_HOPP_Ant1_NTNV



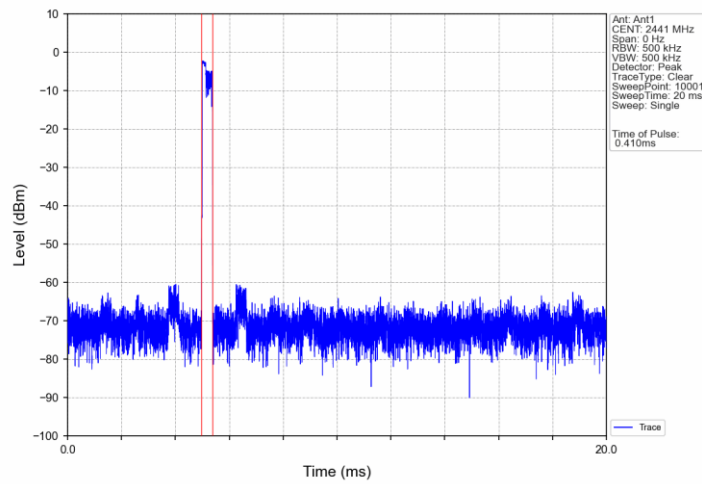
Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



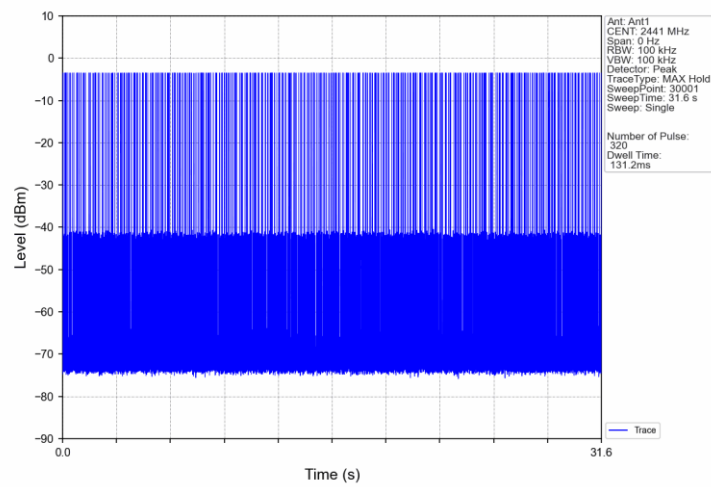
Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



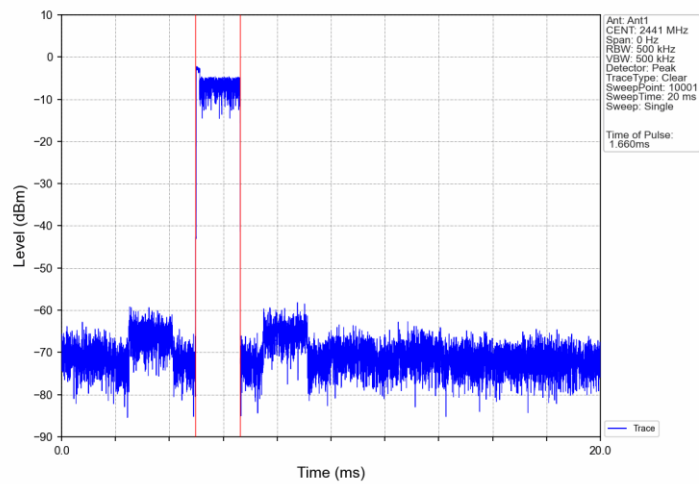
8DPSK_3DH1_HOPP_Ant1_NTNV



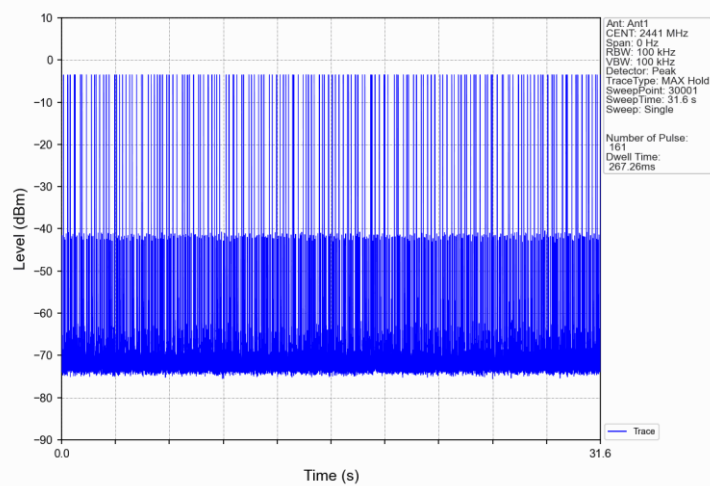
8DPSK_3DH1_HOPP_Ant1_NTNV



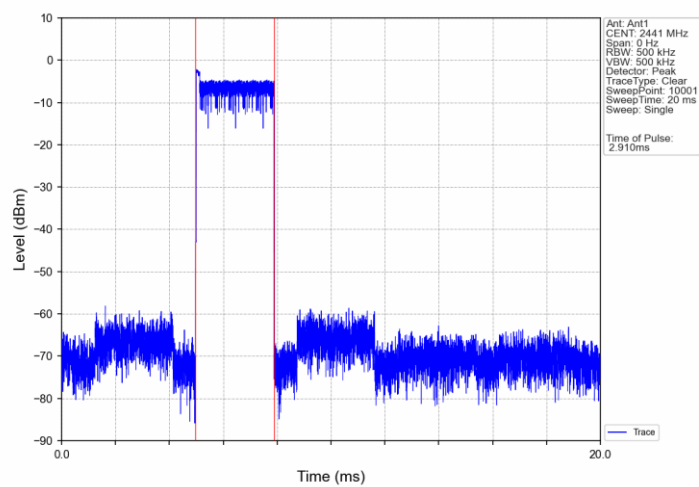
8DPSK_3DH3_HOPP_Ant1_NTNV



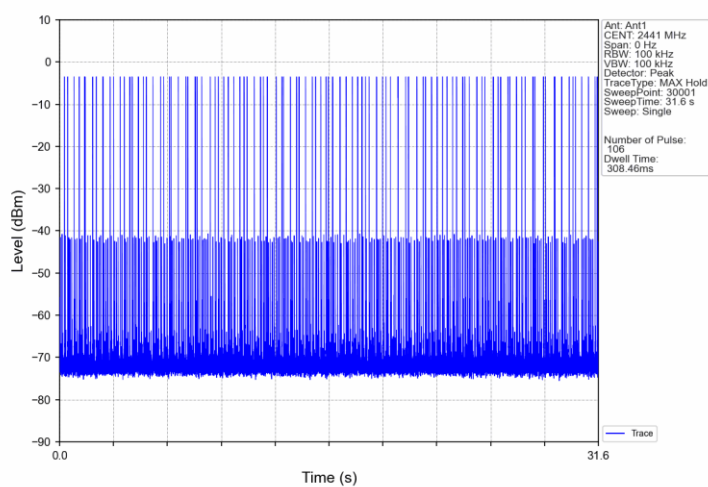
8DPSK_3DH3_HOPP_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



9.7 Spurious RF Conducted Emissions

Test Method

1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector, Sweep = auto, Span = wide enough to capture the peak level of the in-band emission and all spurious emissions, Trace = max hold. Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this Section.
4. Measure and record the results in the test report.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency

Limit

According to §15.247(d), Spurious RF Conducted Emissions limit as below:

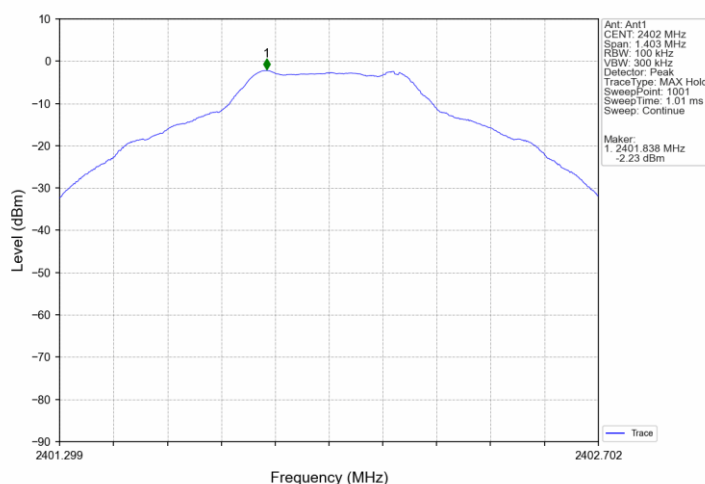
Frequency Range MHz	Limit (dBc)
30-25000	-20

Spurious RF Conducted Emissions

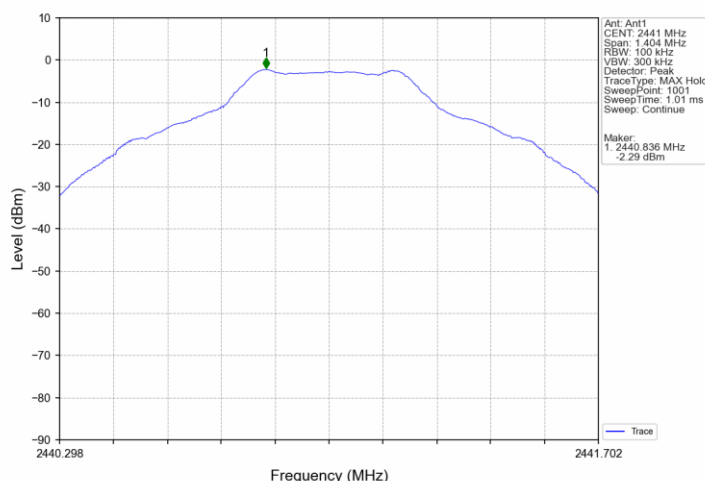
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
GFSK	SISO	2402	DH5	1	-2.23	-22.23	Pass
		2441	DH5	1	-2.29	-22.29	Pass
		2480	DH5	1	-2.25	-22.25	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	-2.48	-22.48	Pass
		2441	2DH5	1	-2.51	-22.51	Pass
		2480	2DH5	1	-2.57	-22.57	Pass
8DPSK	SISO	2402	3DH5	1	-2.28	-22.28	Pass
		2441	3DH5	1	-2.33	-22.33	Pass
		2480	3DH5	1	-2.30	-22.30	Pass

Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2020, the channel contains the maximum PSD level was used to establish the reference level.

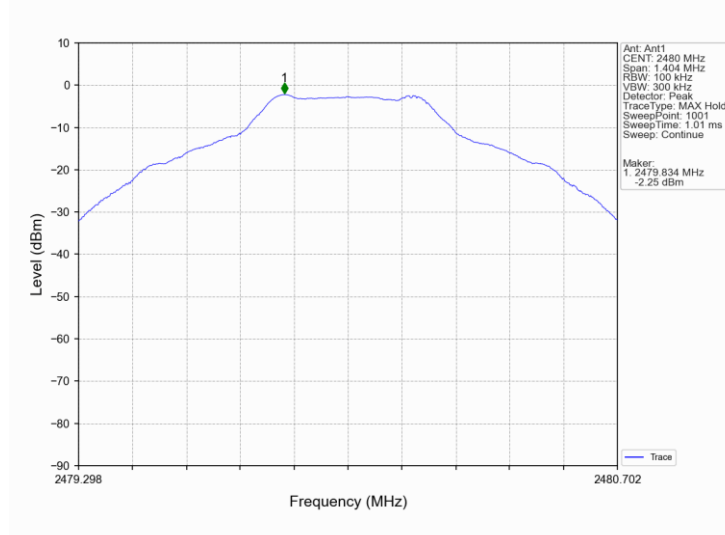
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



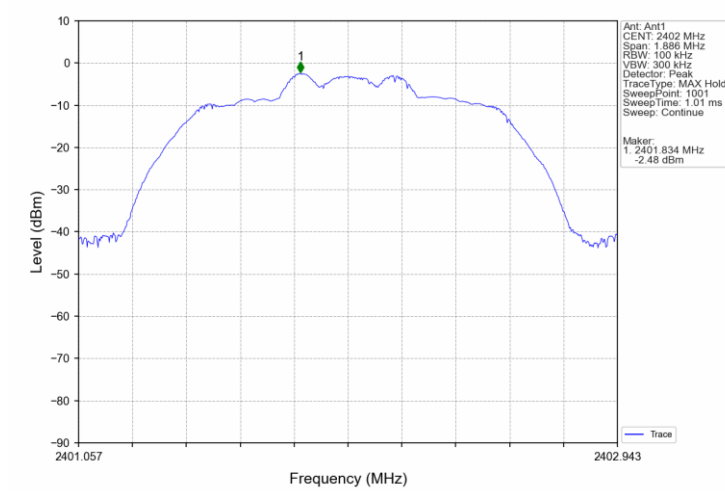
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



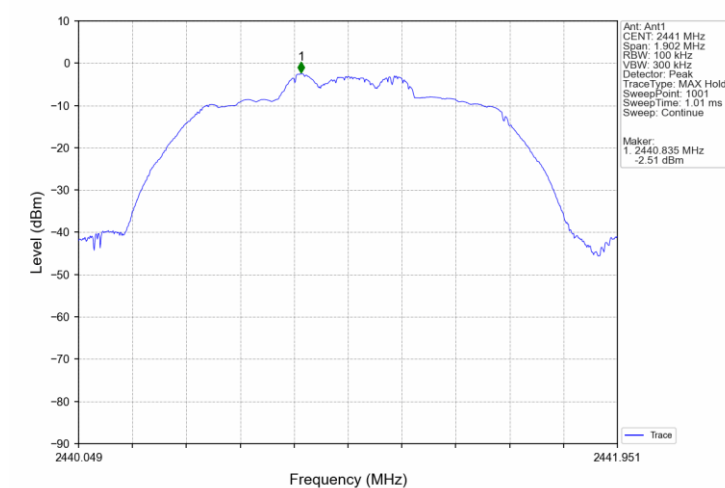
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



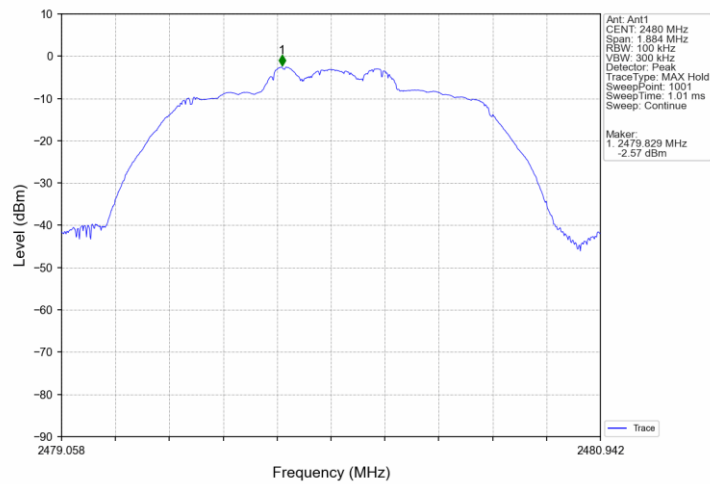
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



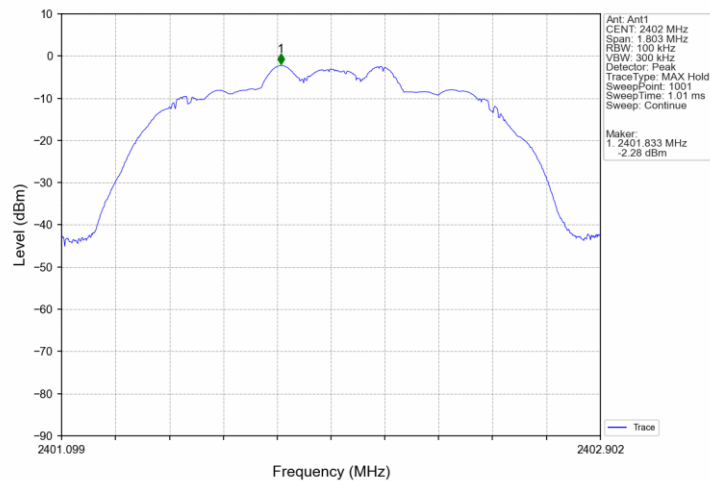
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



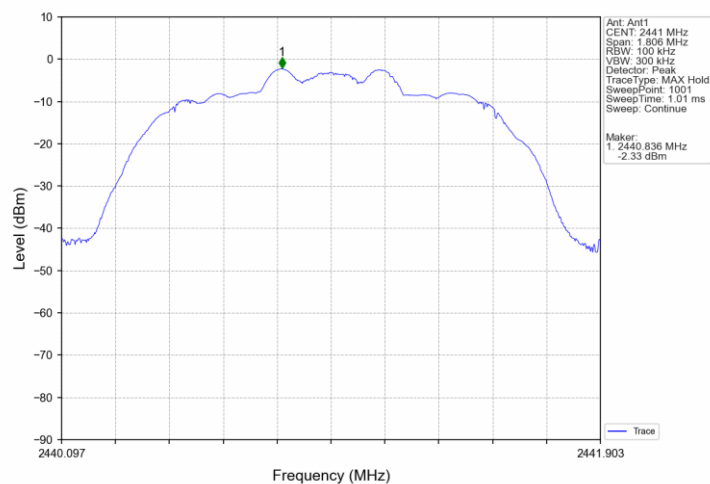
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



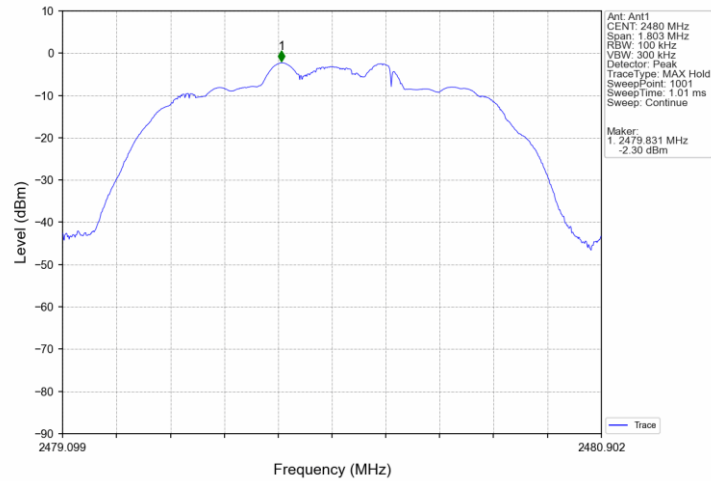
8DPSK 3DH5 LCH 2402MHz Ant1 NTN



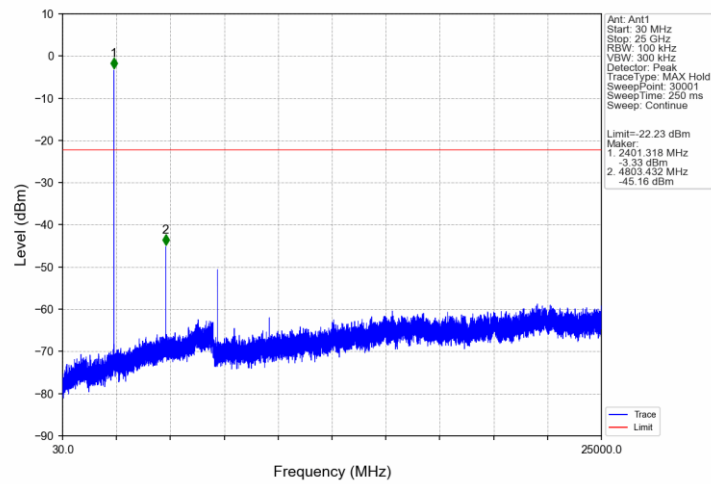
8DPSK 3DH5 MCH 2441MHz Ant1 NTN



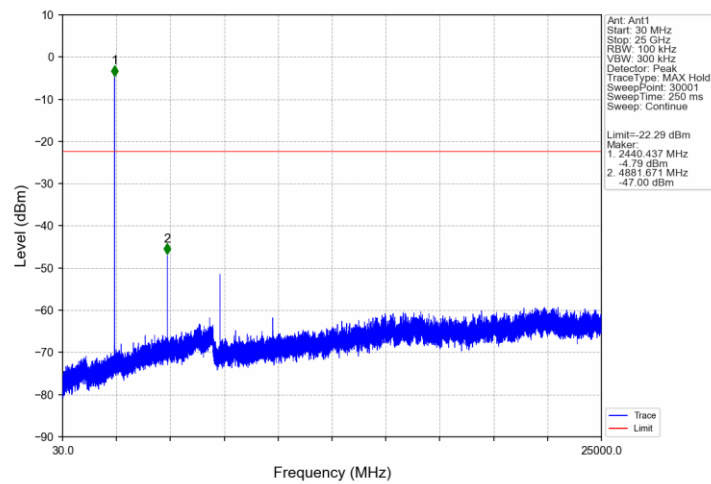
8DPSK 3DH5 HCH 2480MHz Ant1 NTN



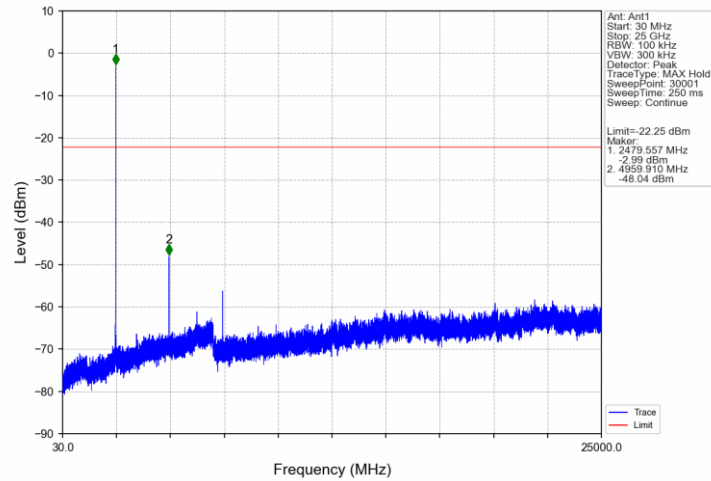
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



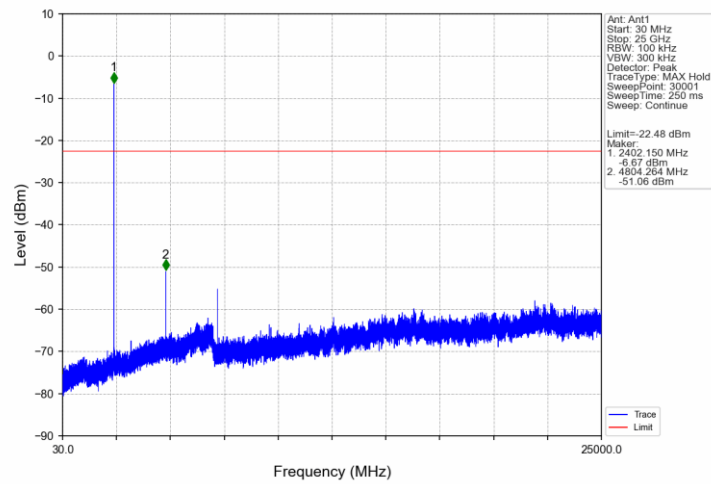
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



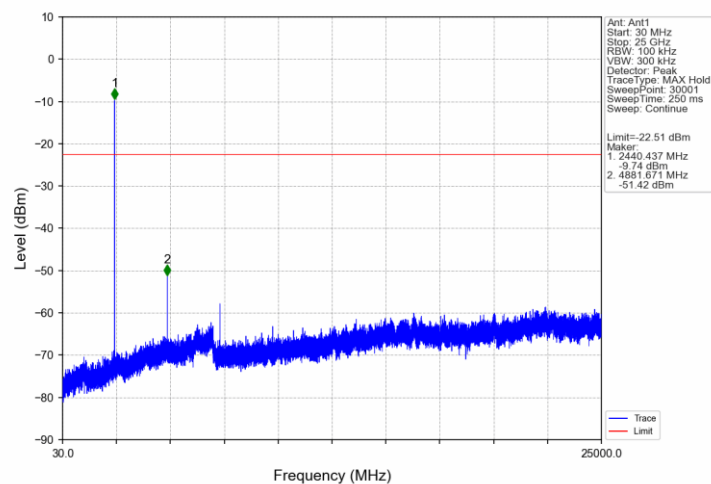
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



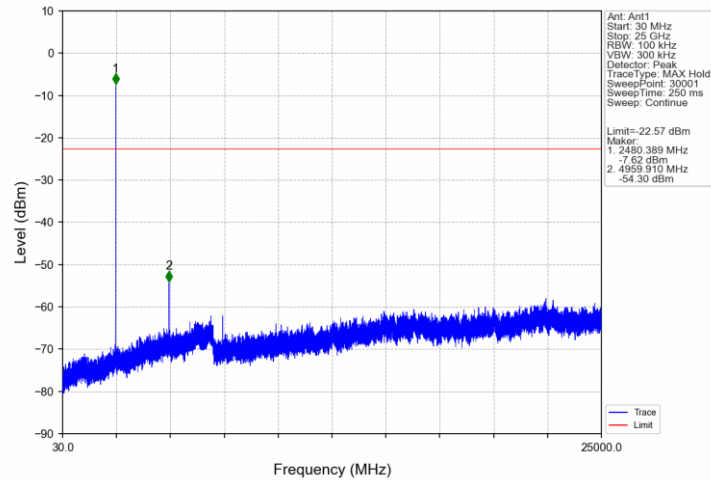
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



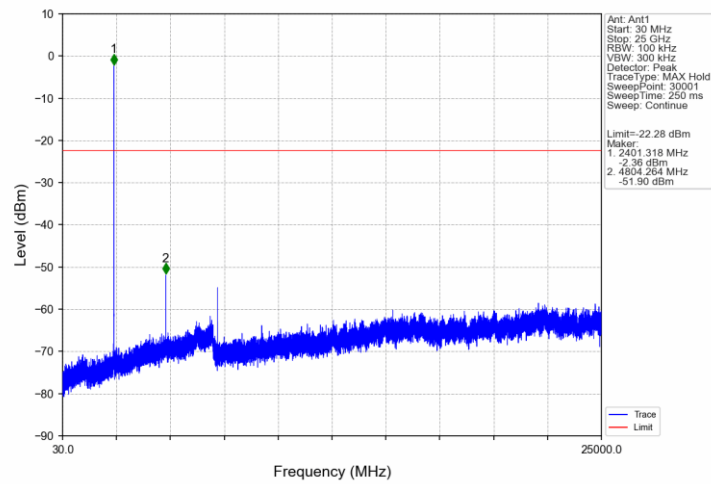
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



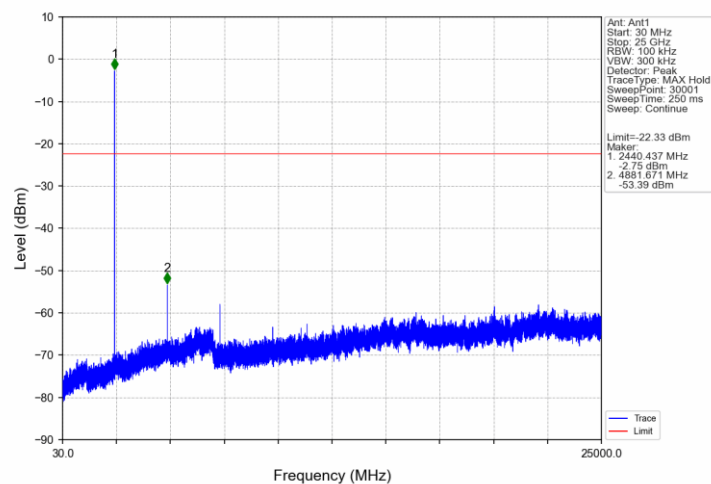
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



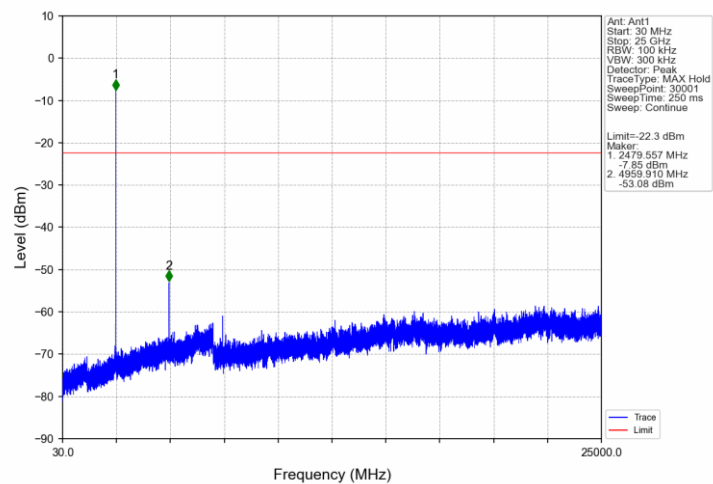
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



9.8 Band Edge

Test Method

1. The RF output of EUT was connected to the test receiver by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously. Set the EUT to the lowest frequency channel.
3. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector, Trace: Max hold, Sweep time: Coupled, Span: Wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products that fall outside of the authorized band of operation. Allow the trace to stabilize.
4. Set the marker on the emission at the band edge, or on the highest modulation product outside of the band, if this level is greater than that at the band edge. Enable the marker-delta function, and then use the marker-to-peak function to move the marker to the peak of the in-band emission.
5. Set the EUT to the highest frequency channel and repeat step 2) to 4)
6. Enable the EUT hopping mode, repeat the test.

Limit:

According to §15.247(d), Band Edge limit as below:

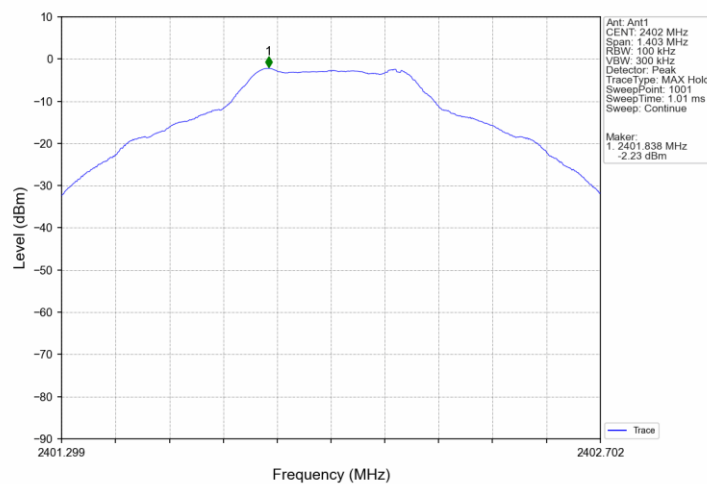
In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits.

Band Edge

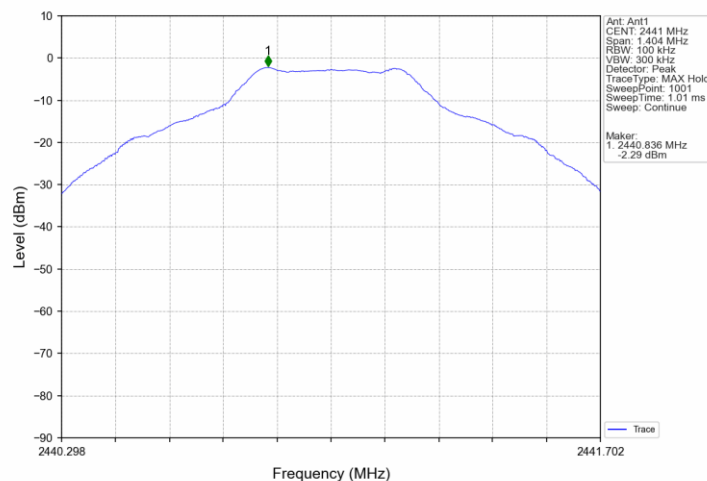
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
GFSK	SISO	2402	DH5	1	-2.23	-22.23	Pass
		2441	DH5	1	-2.29	-22.29	Pass
		2480	DH5	1	-2.25	-22.25	Pass
		HOPP	DH5	1	-2.07	-22.07	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	-2.48	-22.48	Pass
		2441	2DH5	1	-2.51	-22.51	Pass
		2480	2DH5	1	-2.57	-22.57	Pass
		HOPP	2DH5	1	-2.09	-22.09	Pass
8DPSK	SISO	2402	3DH5	1	-2.28	-22.28	Pass
		2441	3DH5	1	-2.33	-22.33	Pass
		2480	3DH5	1	-2.30	-22.30	Pass
		HOPP	3DH5	1	-1.94	-21.94	Pass

Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2020, the channel contains the maximum PSD level was used to establish the reference level.

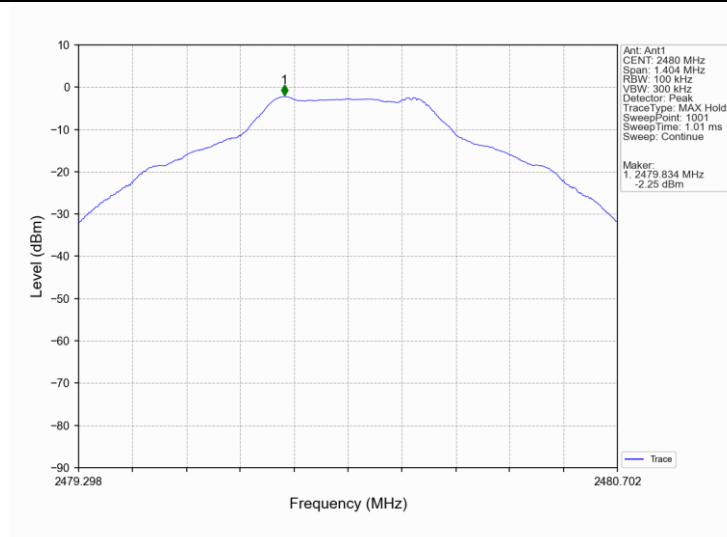
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



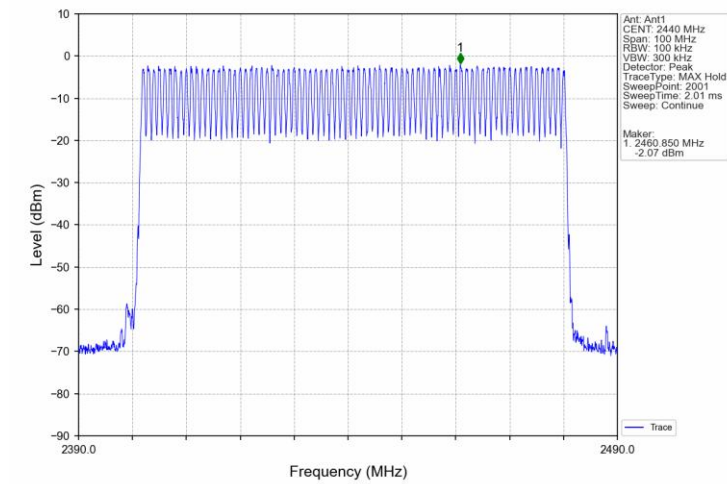
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



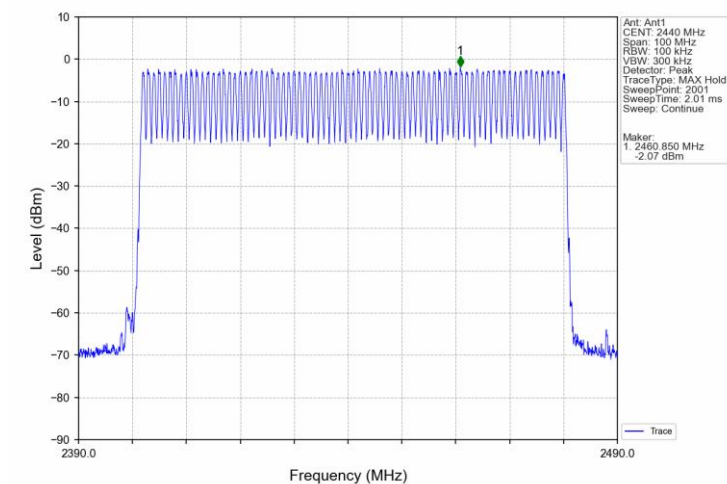
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



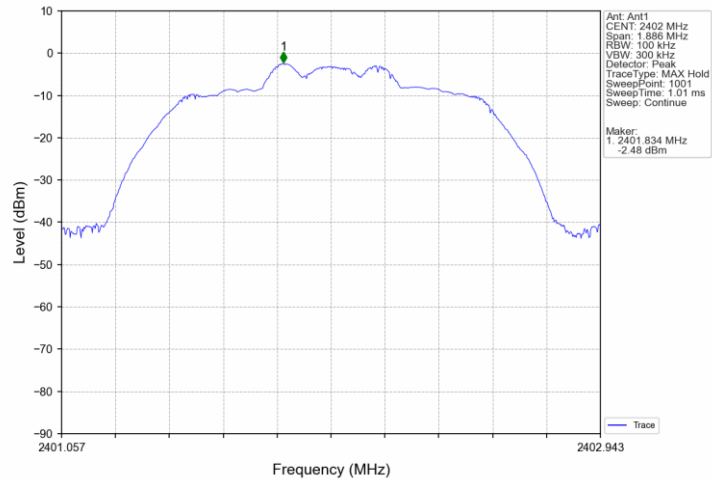
GFSK DH5 HOPP Ant1 NTNv



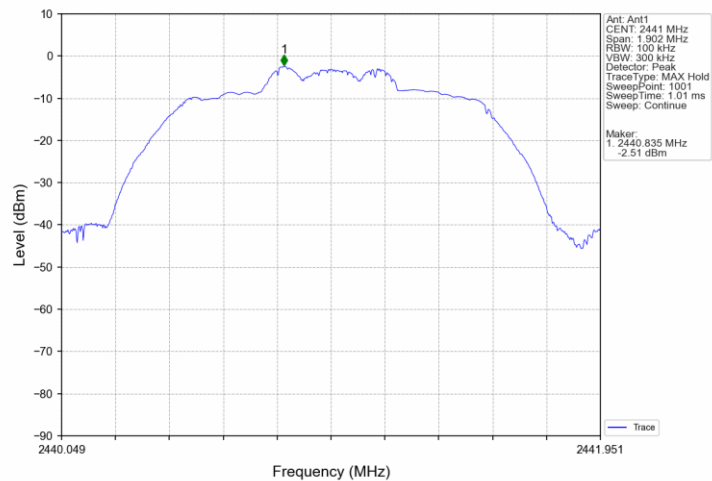
GFSK DH5 HOPP Ant1 NTNv



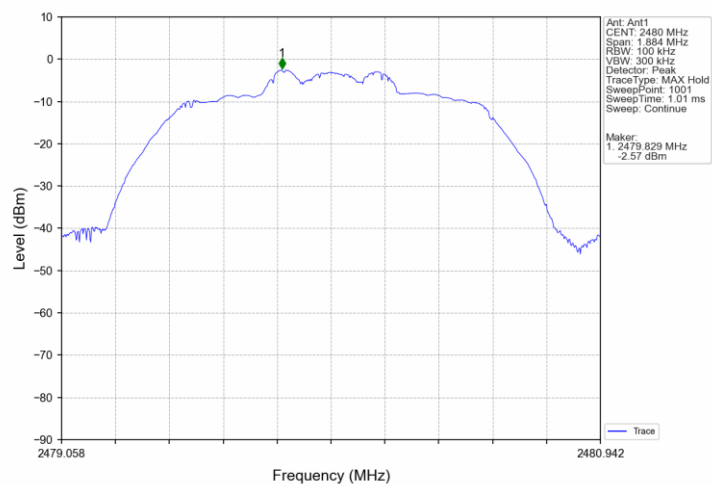
Pi/4DQPSK 2DH5 LCH 2402MHz Ant1 NTNv



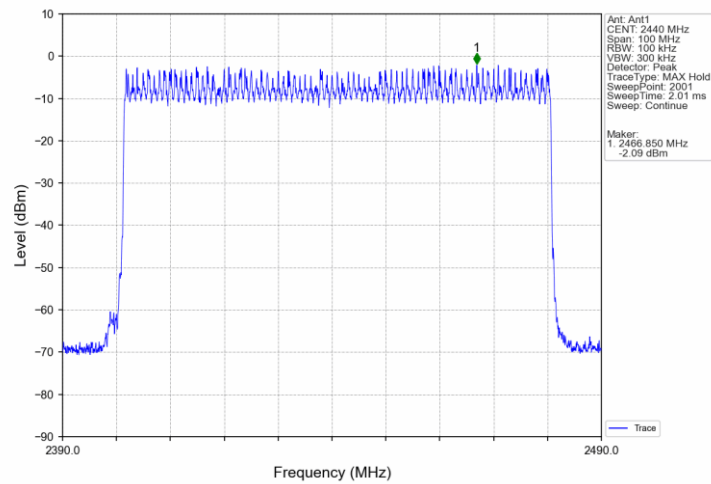
Pi/4DQPSK 2DH5 MCH 2441MHz Ant1 NTNv



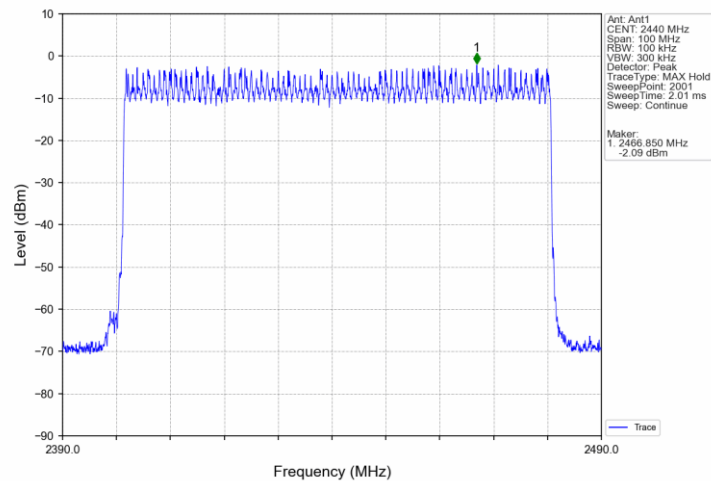
Pi/4DQPSK 2DH5 HCH 2480MHz Ant1 NTNv



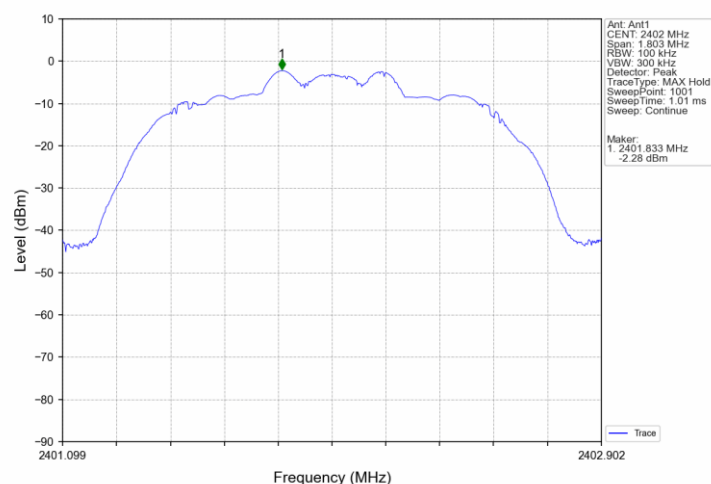
Pi/4DQPSK 2DH5 HOPP Ant1 NTNv



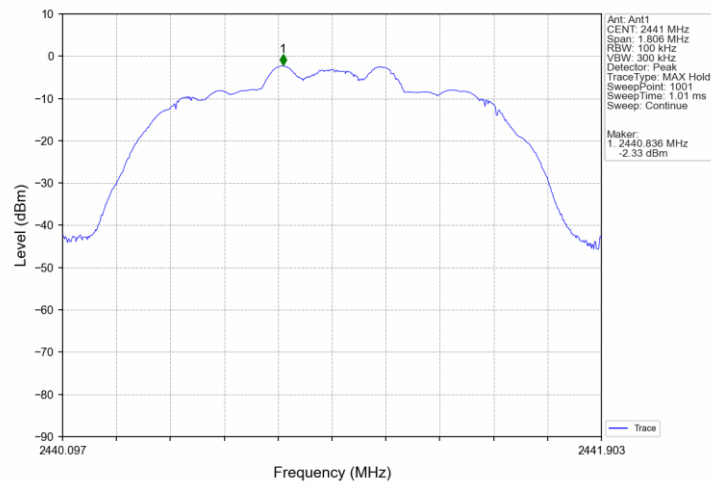
Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



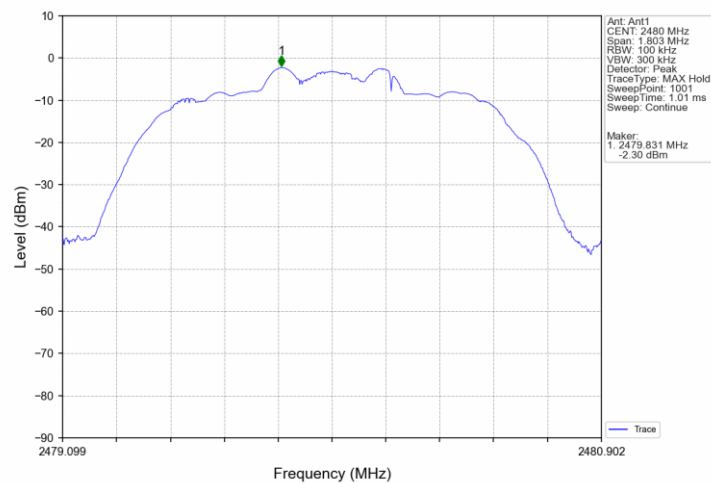
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



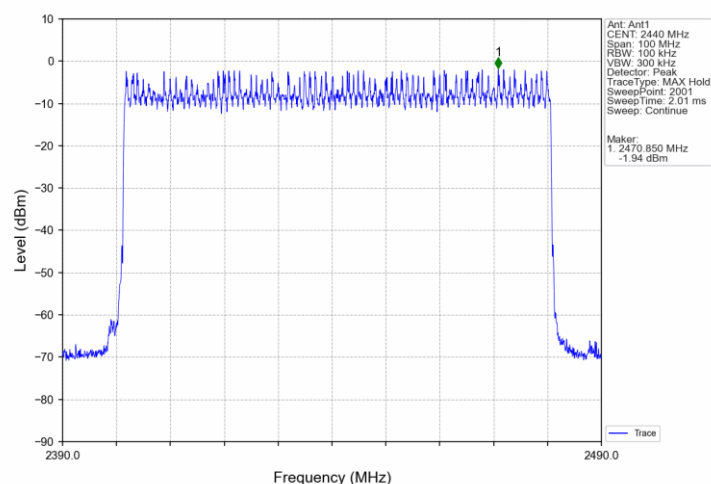
8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



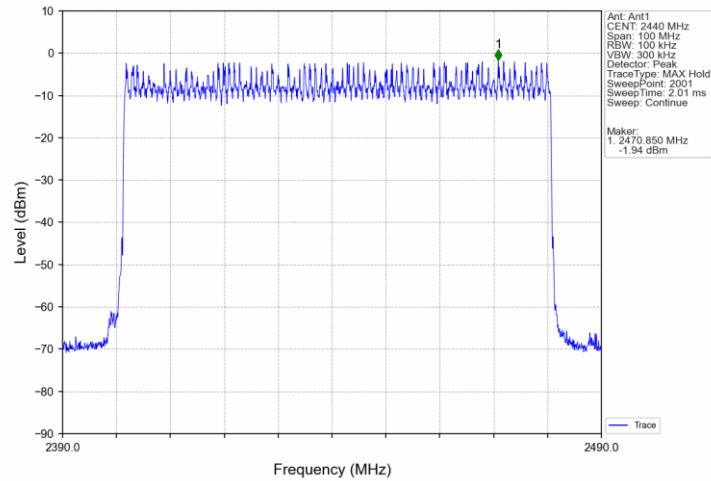
8DPSK 3DH5_HCH_2480MHz_Ant1_NTNV



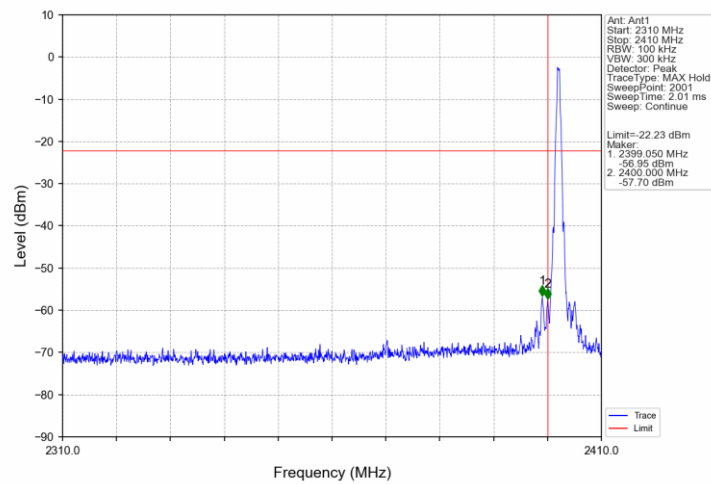
8DPSK 3DH5_HOPP_Ant1_NTNV



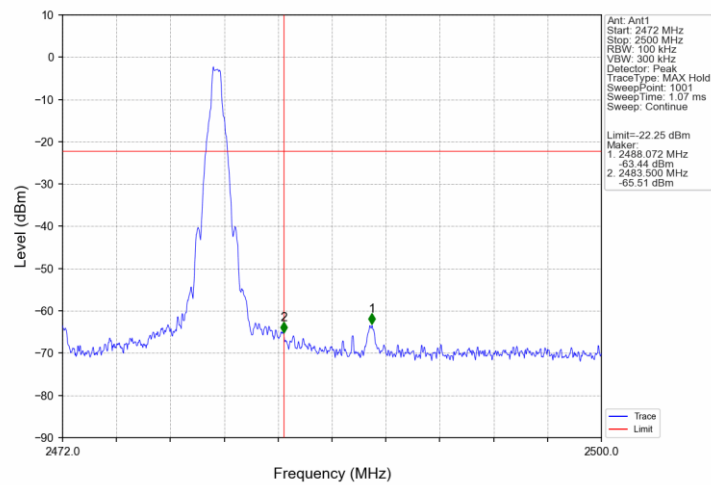
8DPSK 3DH5_HOPP_Ant1_NTNV



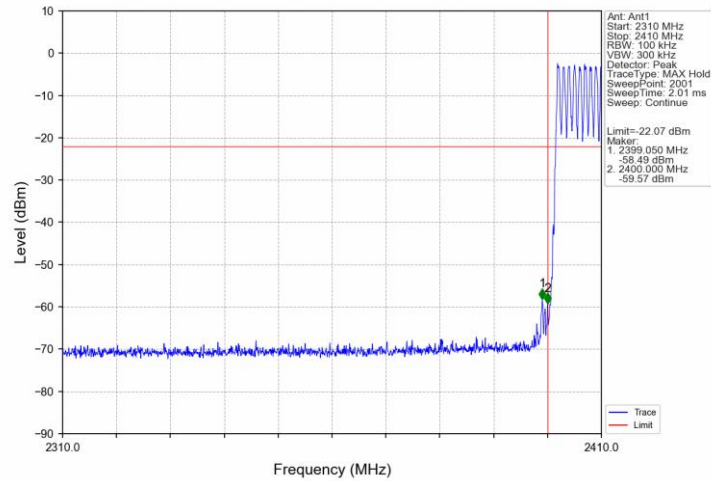
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



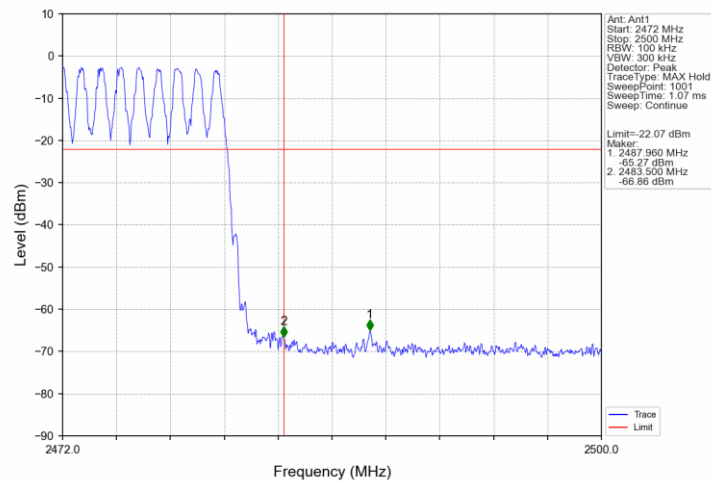
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



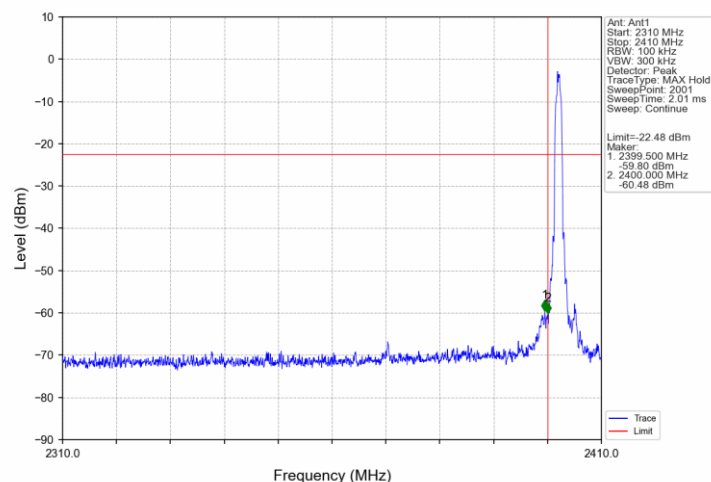
GFSK_DH5_HOPP_Ant1_NTNV



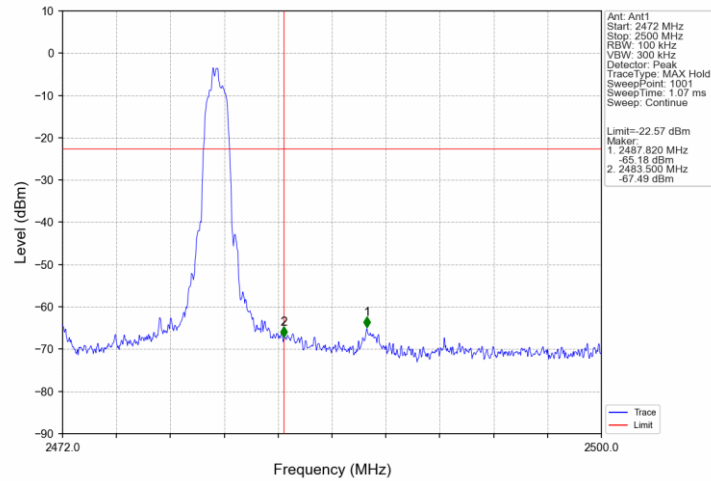
GFSK_DH5_HOPP_Ant1_NTNV



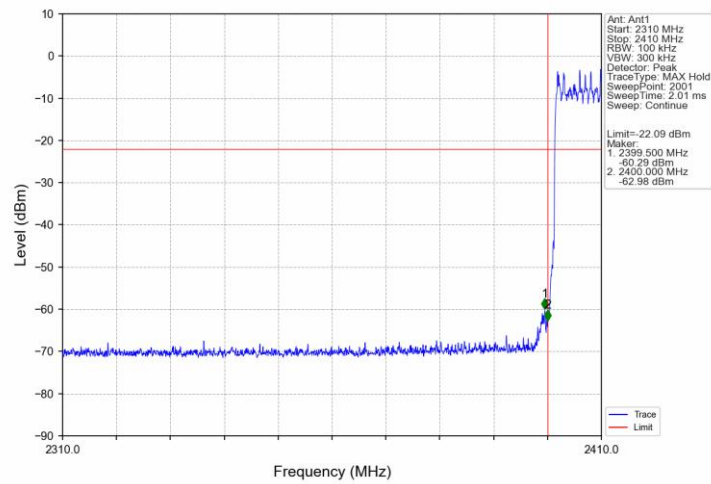
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



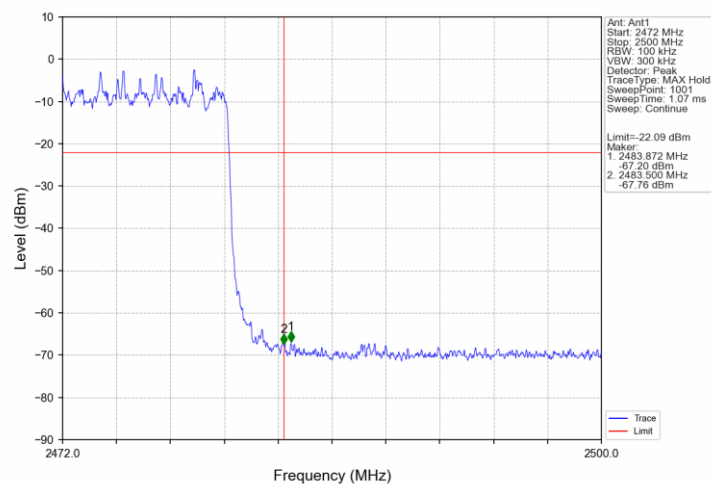
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



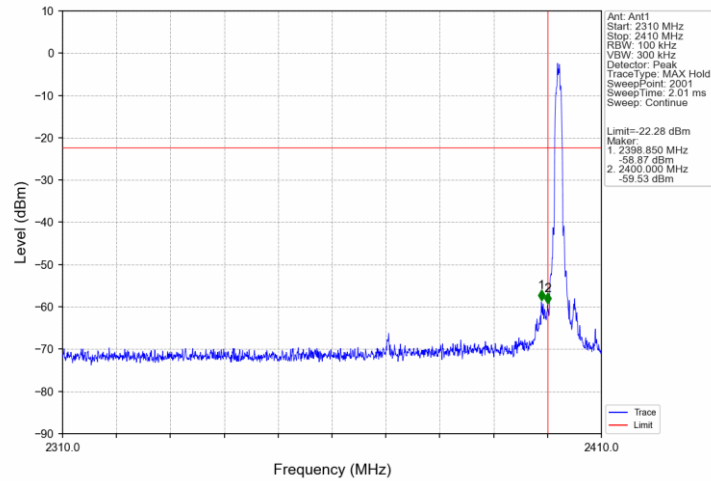
Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



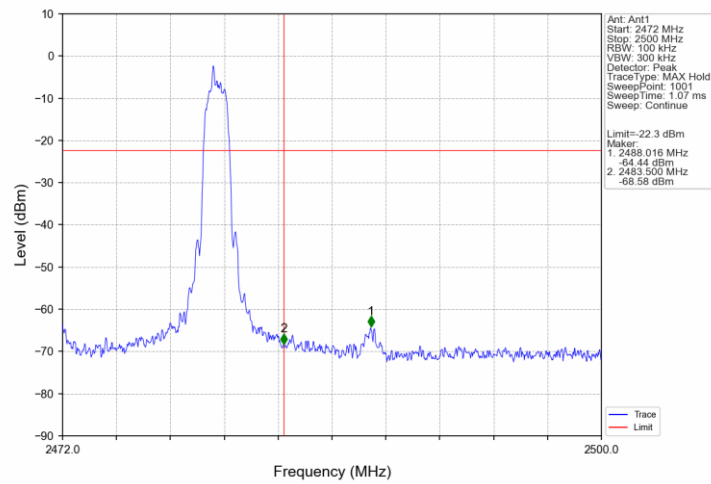
Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



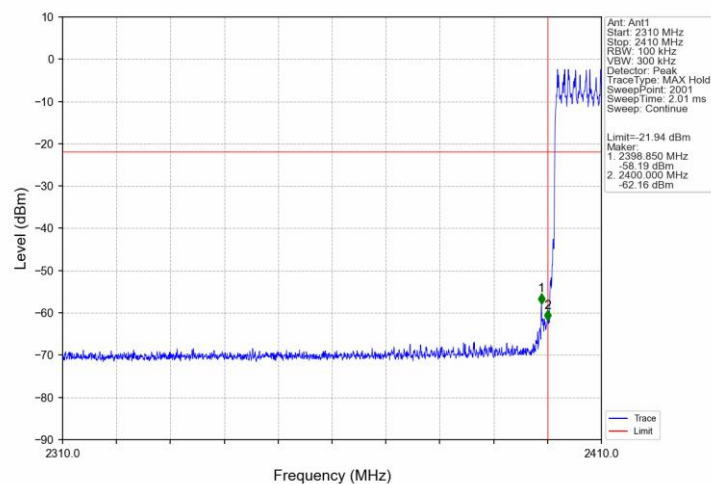
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



PSK_3DH5_HCH_2480MHz_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV

