

Appendix RF test data for BT

(Module 2: BL-M8852BS2)

1. Bandwidth

1.1 Test Result

1.1.1 OBW

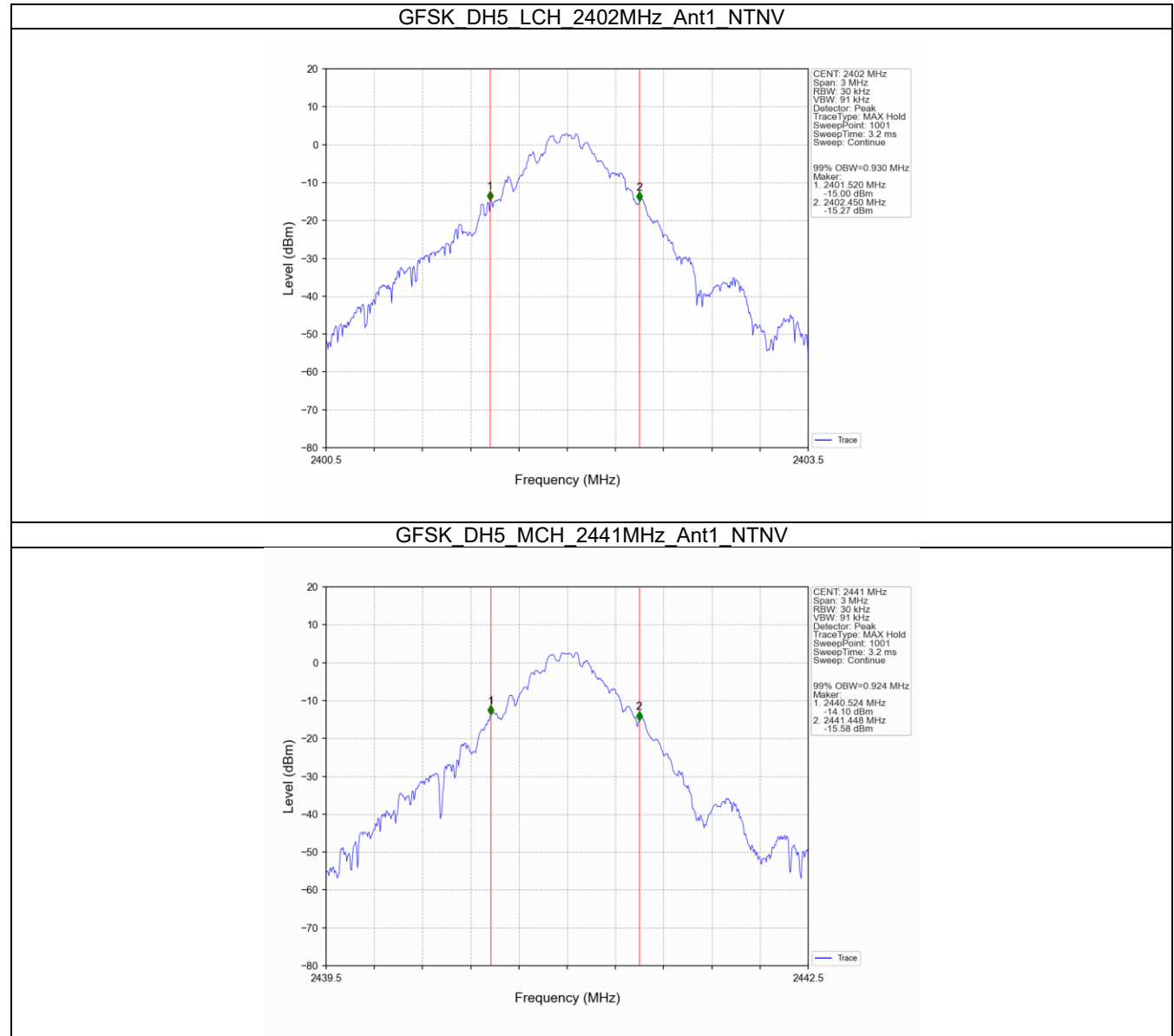
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	99% Occupied Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	0.930	/	Pass
		2441	DH5	1	0.924	/	Pass
		2480	DH5	1	0.902	/	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	1.177	/	Pass
		2441	2DH5	1	1.184	/	Pass
		2480	2DH5	1	1.180	/	Pass
8DPSK	SISO	2402	3DH5	1	1.181	/	Pass
		2441	3DH5	1	1.186	/	Pass
		2480	3DH5	1	1.182	/	Pass

1.1.2 20dB BW

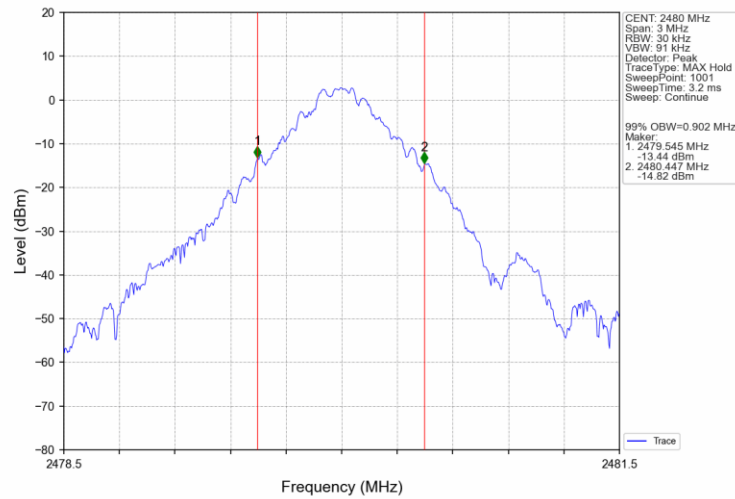
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	20dB Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	1.020	/	Pass
		2441	DH5	1	1.002	/	Pass
		2480	DH5	1	0.968	/	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	1.291	/	Pass
		2441	2DH5	1	1.290	/	Pass
		2480	2DH5	1	1.290	/	Pass
8DPSK	SISO	2402	3DH5	1	1.307	/	Pass
		2441	3DH5	1	1.302	/	Pass
		2480	3DH5	1	1.309	/	Pass

1.2 Test Graph

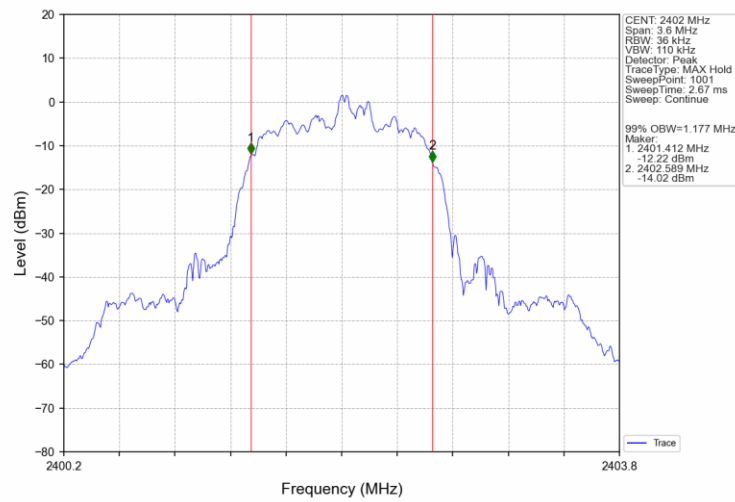
1.2.1 OBW



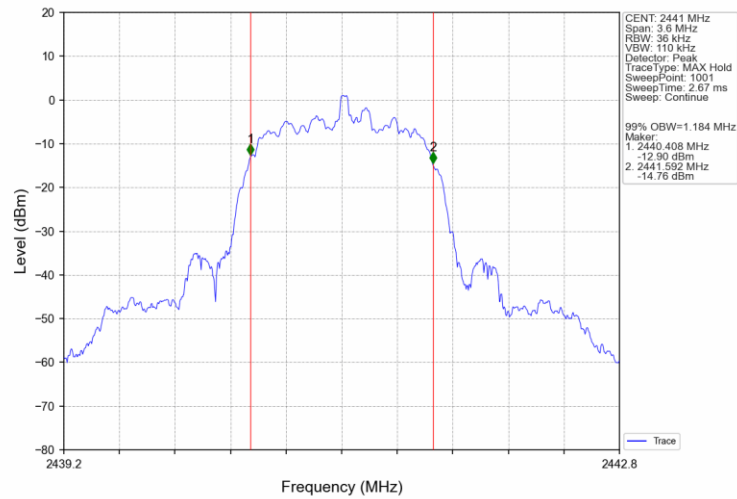
GFSK DH5 HCH 2480MHz Ant1 NTN



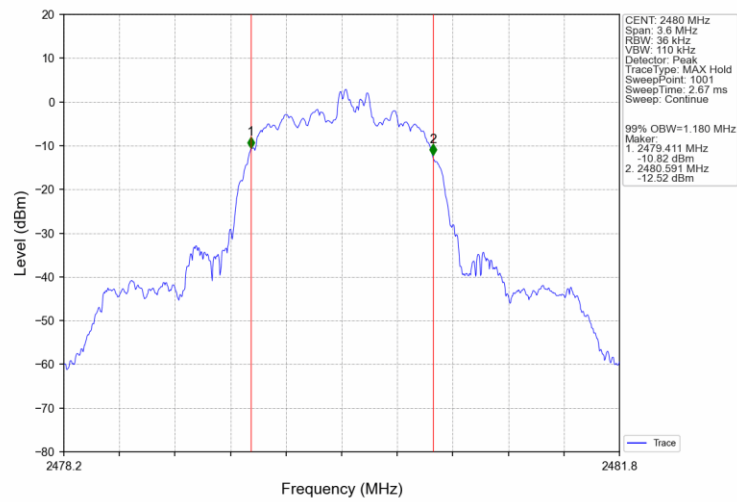
Pi/4DQPSK 2DH5 LCH 2402MHz Ant1 NTN



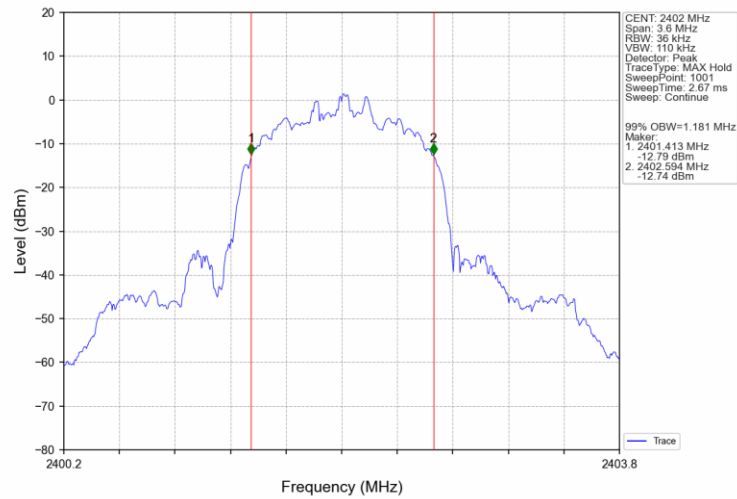
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



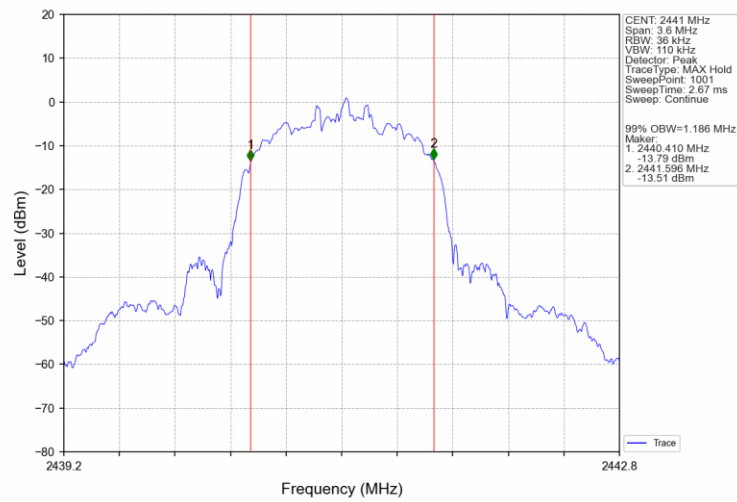
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



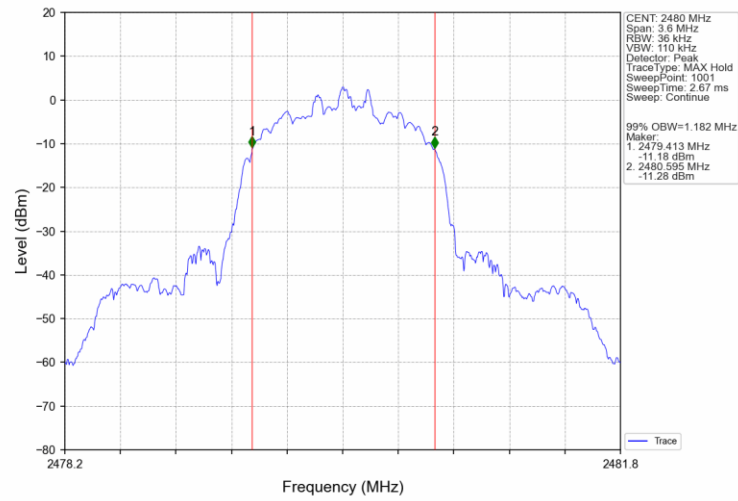
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV

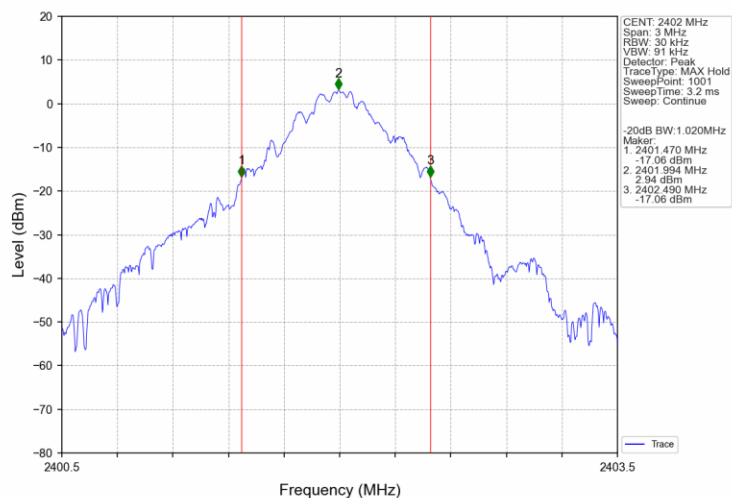


8DPSK 3DH5 HCH 2480MHz Ant1 NTN

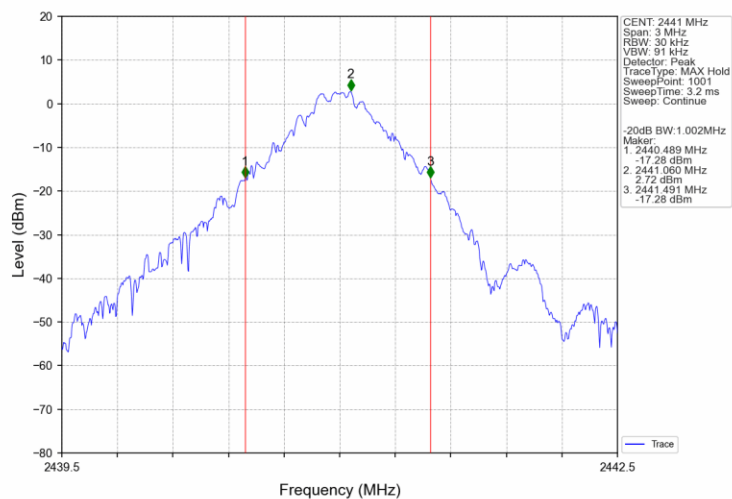


1.2.2 20dB BW

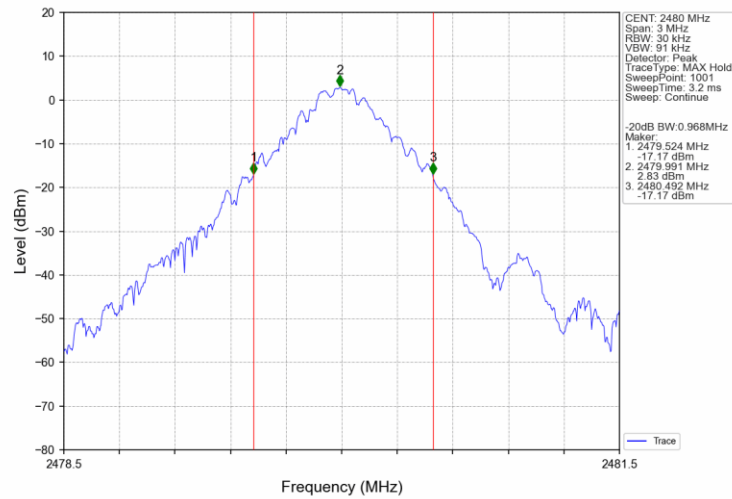
GFSK DH5 LCH 2402MHz Ant1 NTN



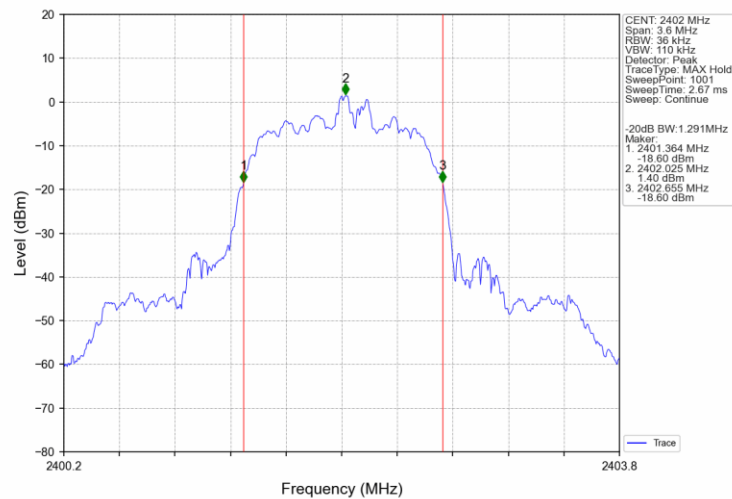
GFSK DH5 MCH 2441MHz Ant1 NTN



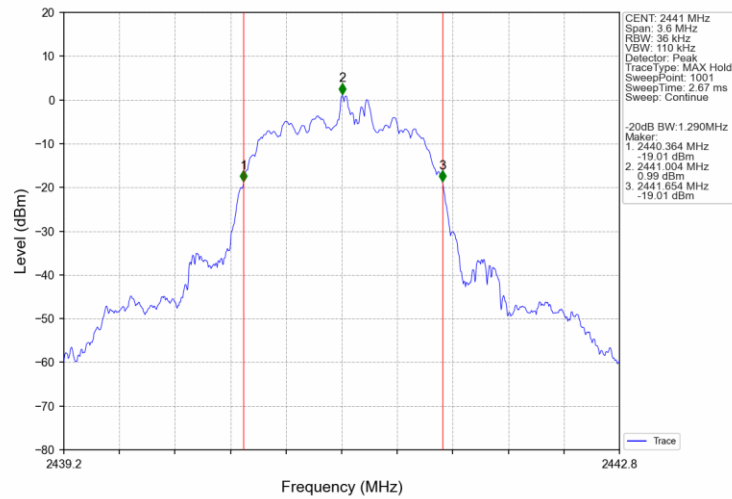
GFSK DH5 HCH 2480MHz Ant1 NTN



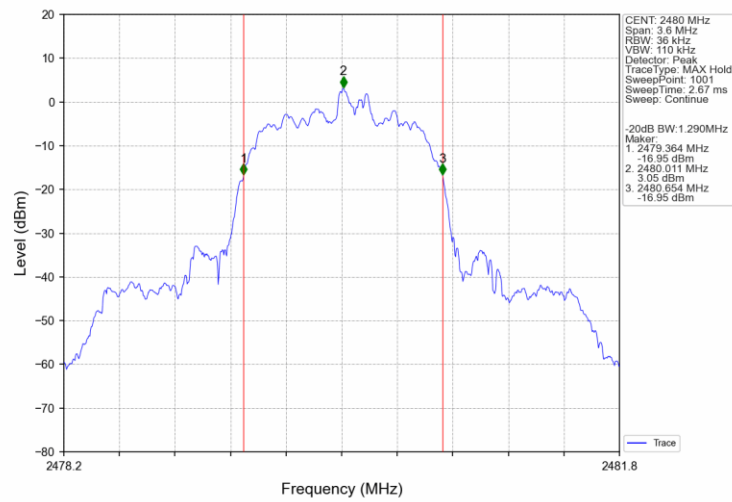
Pi/4DQPSK 2DH5 LCH 2402MHz Ant1 NTN



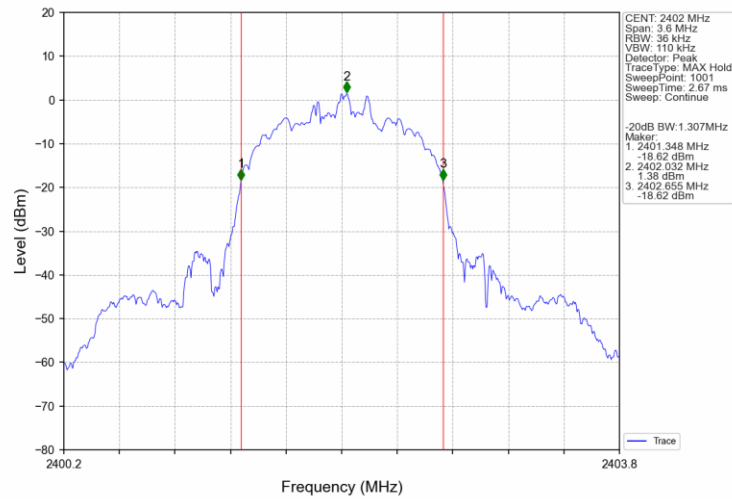
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



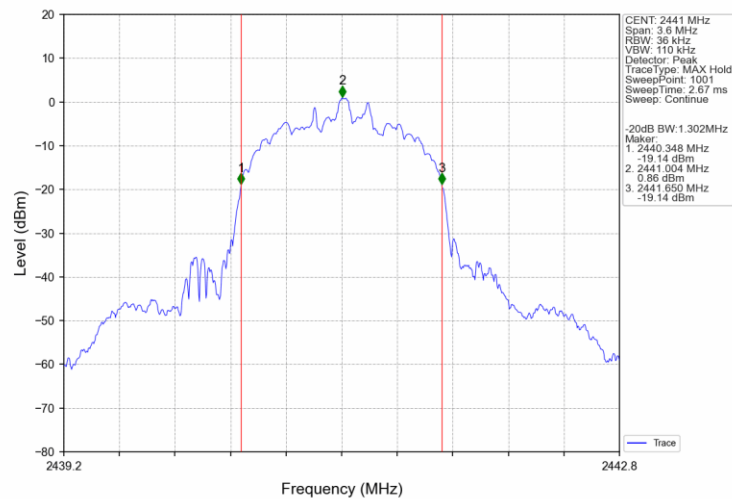
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



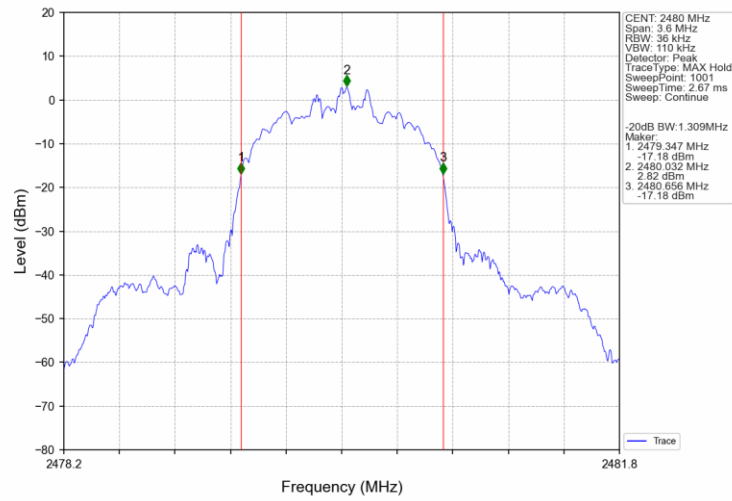
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



8DPSK 3DH5 HCH 2480MHz Ant1 NTN



2. Maximum Conducted Output Power

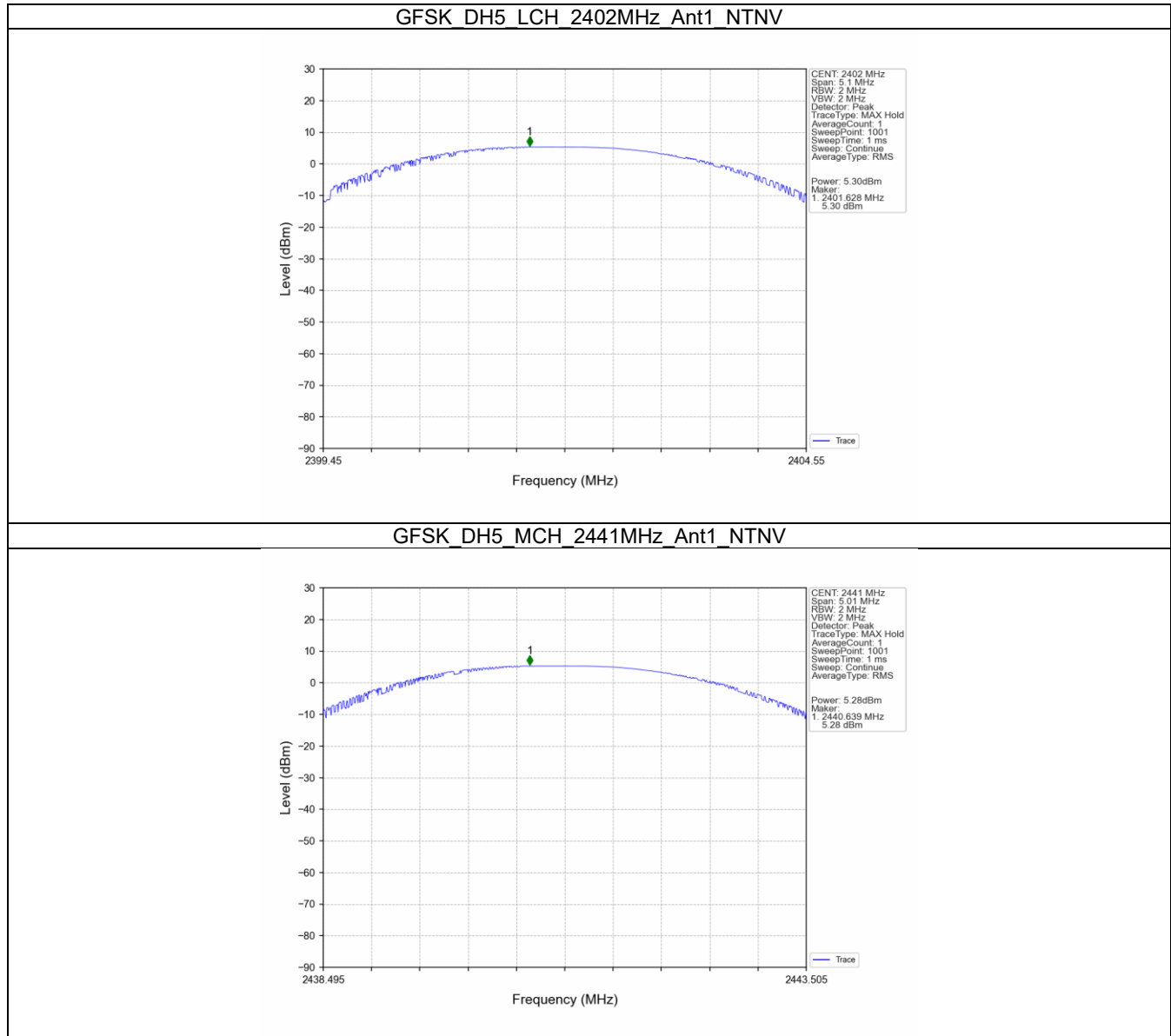
2.1 Test Result

2.1.1 Power

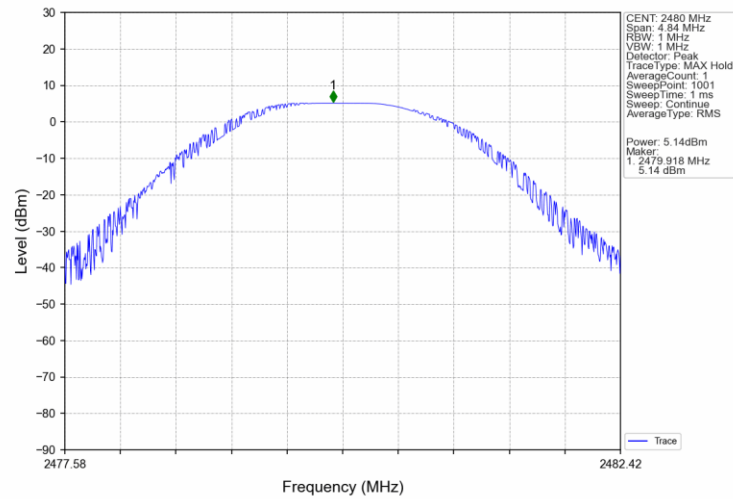
Mode	TX Type	Frequency (MHz)	Packet Type	Maximum Peak Conducted Output Power (dBm)		Verdict
				ANT1	Limit	
GFSK	SISO	2402	DH5	5.30	≤ 20.97	Pass
		2441	DH5	5.28	≤ 20.97	Pass
		2480	DH5	5.14	≤ 20.97	Pass
Pi/4DQPSK	SISO	2402	2DH5	4.84	≤ 20.97	Pass
		2441	2DH5	4.33	≤ 20.97	Pass
		2480	2DH5	6.21	≤ 20.97	Pass
8DPSK	SISO	2402	3DH5	5.09	≤ 20.97	Pass
		2441	3DH5	4.52	≤ 20.97	Pass
		2480	3DH5	6.40	≤ 20.97	Pass

2.2 Test Graph

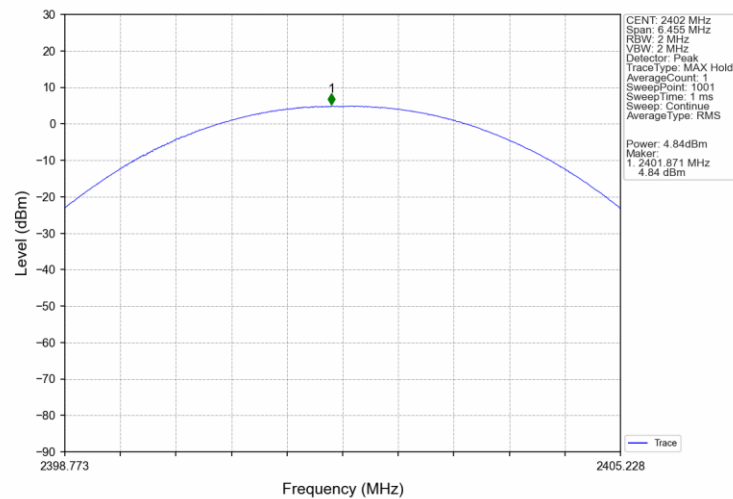
2.2.1 Power



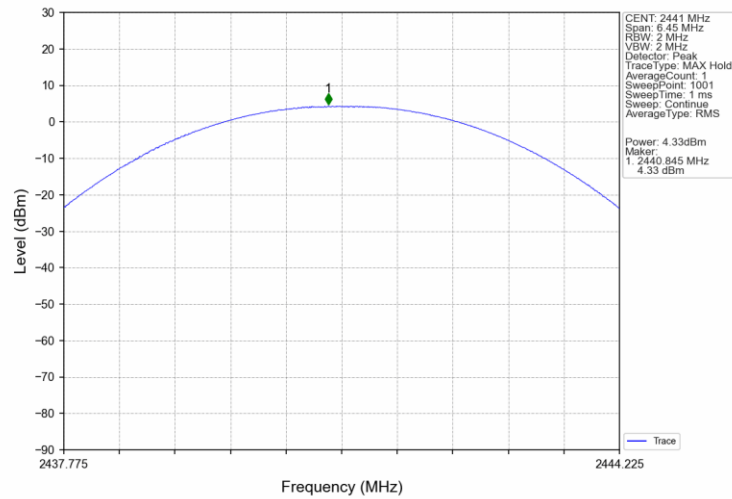
GFSK DH5 HCH 2480MHz Ant1 NTNV



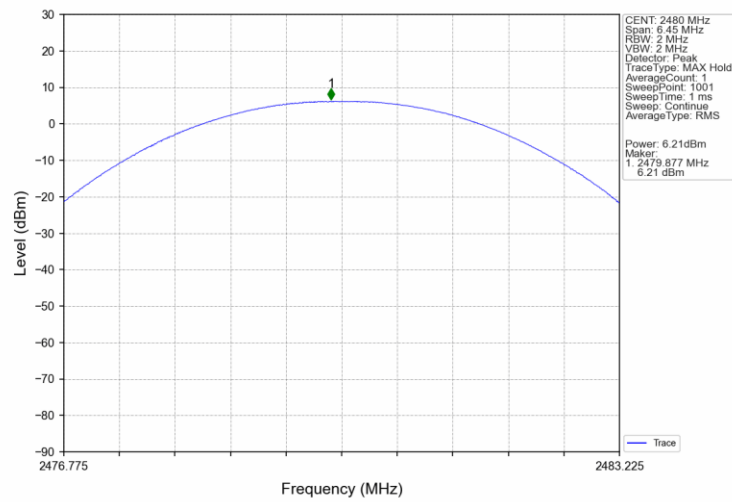
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



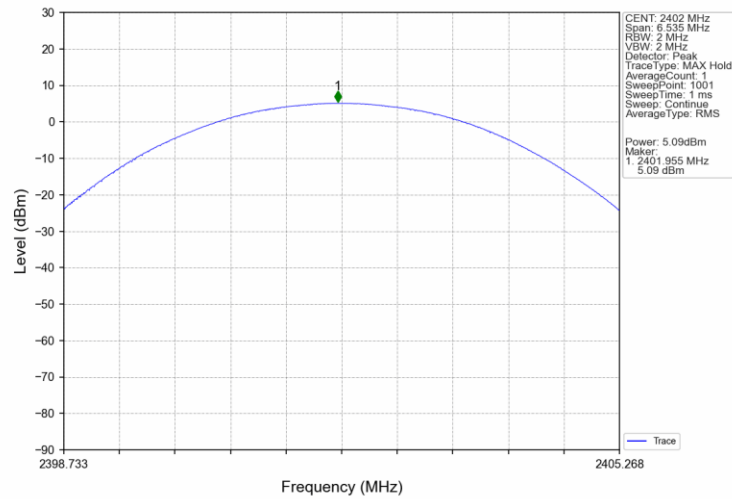
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



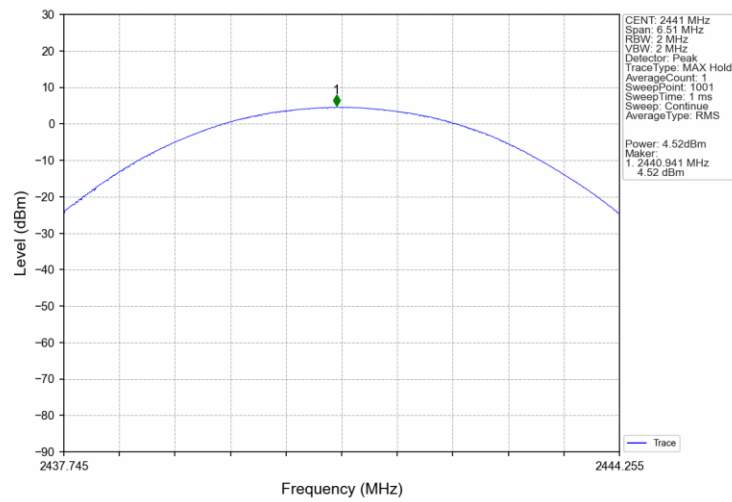
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



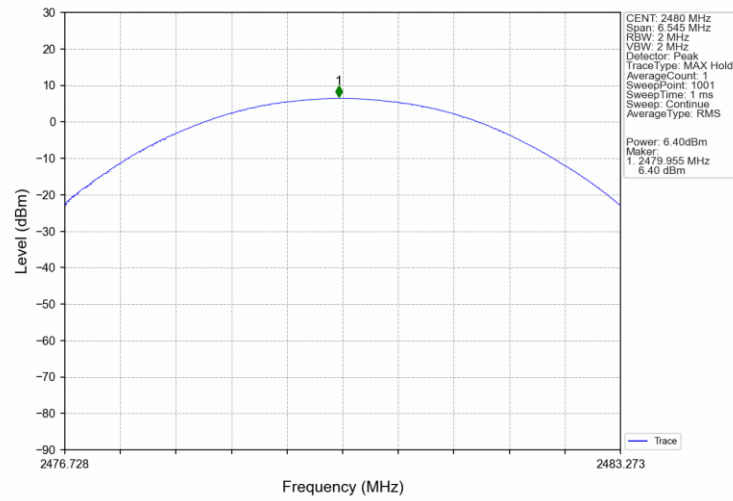
8DPSK 3DH5 LCH 2402MHz Ant1 NTN



8DPSK 3DH5 MCH 2441MHz Ant1 NTN



8DPSK 3DH5 HCH 2480MHz Ant1 NTN



3. Carrier Frequency Separation

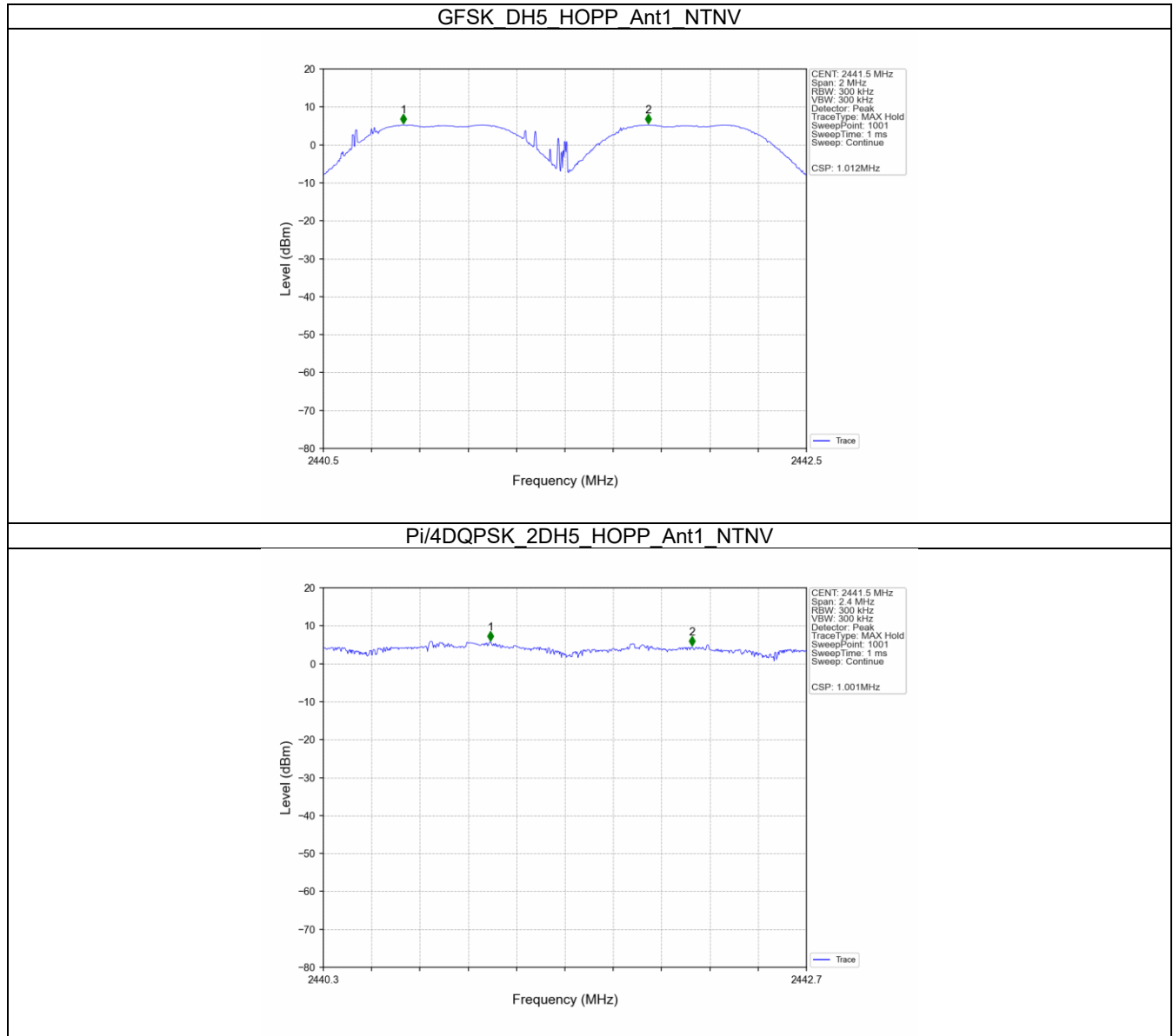
3.1 Test Result

3.1.1 Ant1

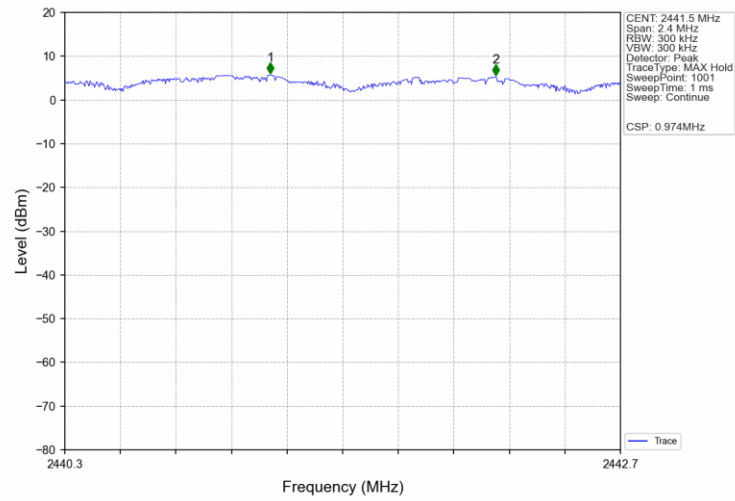
Ant1							
Mode	TX Type	Frequency (MHz)	Packet Type	Channel Separation (MHz)	20dB Bandwidth (MHz)	Limit (MHz)	Verdict
GFSK	SISO	HOPP	DH5	1.012	1.020	≥ 0.68	Pass
PI/4DQPSK	SISO	HOPP	2DH5	1.001	1.291	≥ 0.861	Pass
8DPSK	SISO	HOPP	3DH5	0.974	1.309	≥ 0.873	Pass

3.2 Test Graph

3.2.1 Ant1



8DPSK 3DH5 HOPP Ant1 NTN



4. Number of Hopping Frequencies

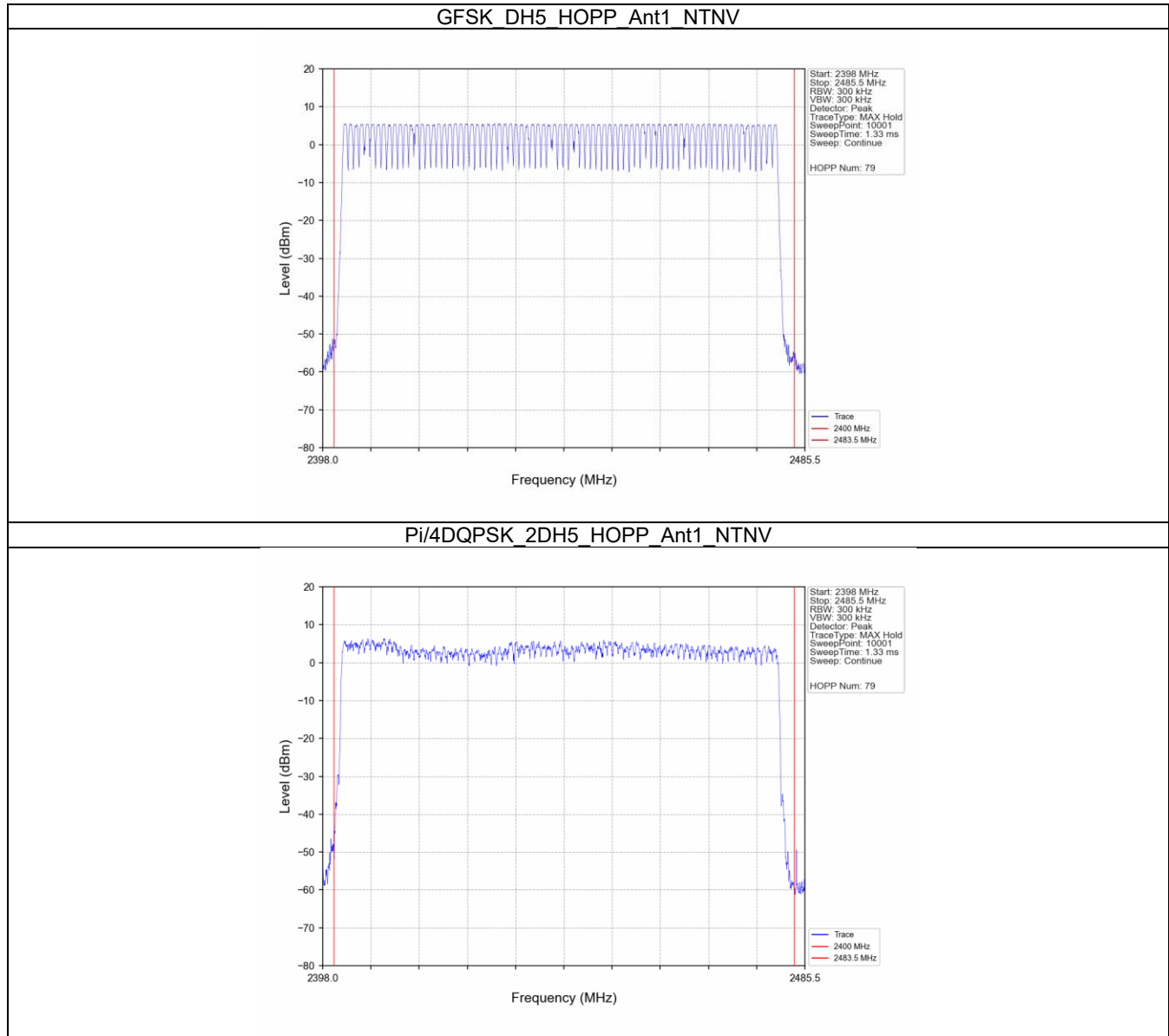
4.1 Test Result

4.1.1 HoppNum

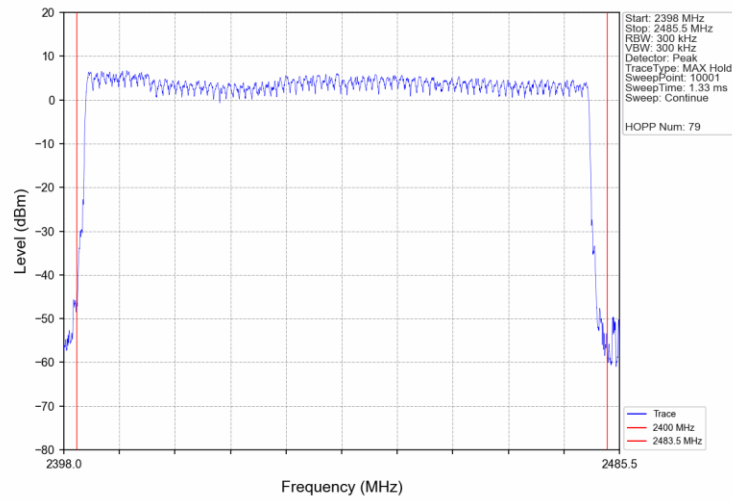
Mode	TX Type	Frequency (MHz)	Packet Type	Num of Hopping Frequencies		Verdict
				ANT1	Limit	
GFSK	SISO	HOPP	DH5	79	≥ 15	Pass
Pi/4DQPSK	SISO	HOPP	2DH5	79	≥ 15	Pass
8DPSK	SISO	HOPP	3DH5	79	≥ 15	Pass

4.2 Test Graph

4.2.1 HoppNum



8DPSK 3DH5 HOPP Ant1 NTN



5. Time of Occupancy (Dwell Time)

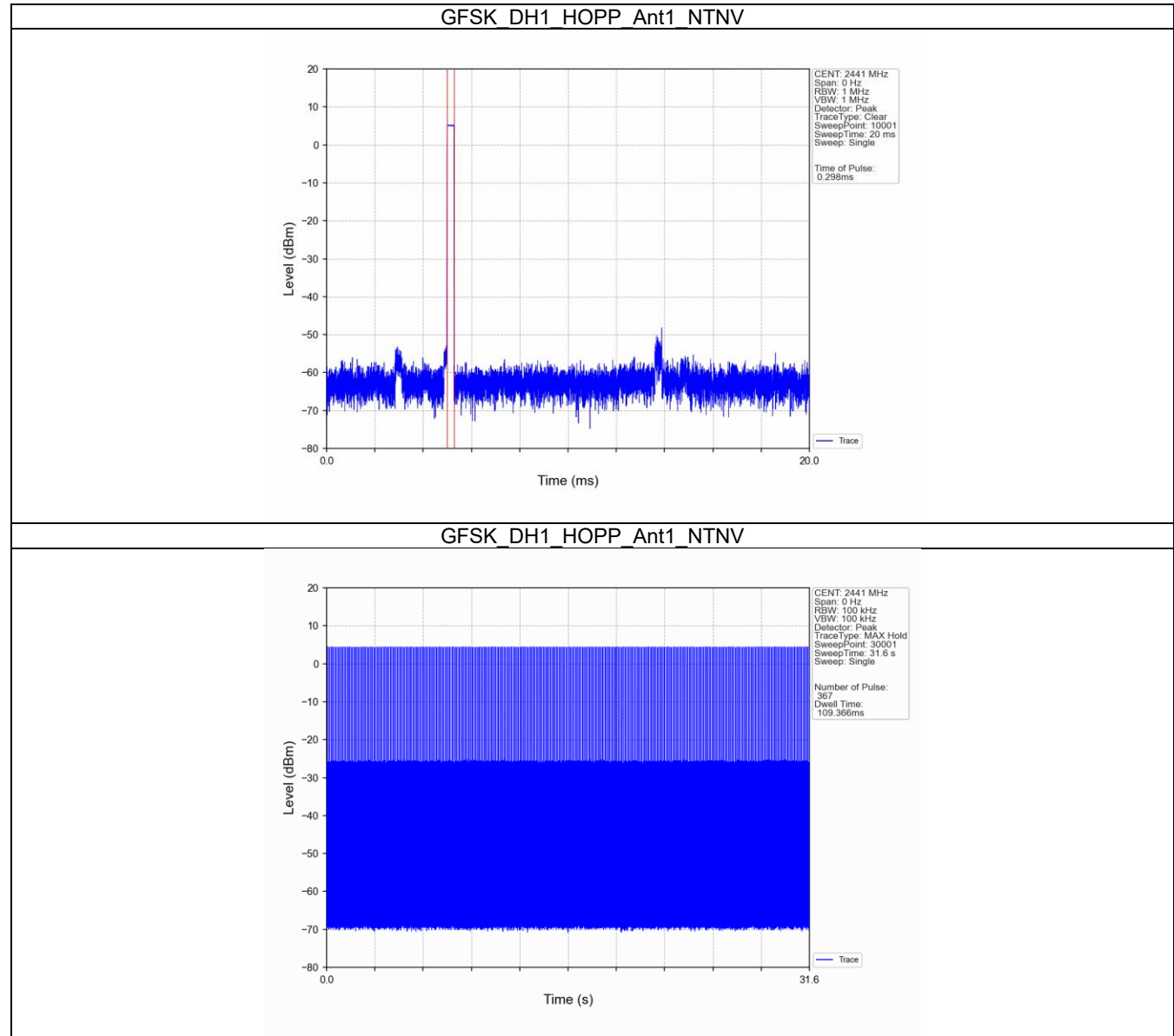
5.1 Test Result

5.1.1 Ant1

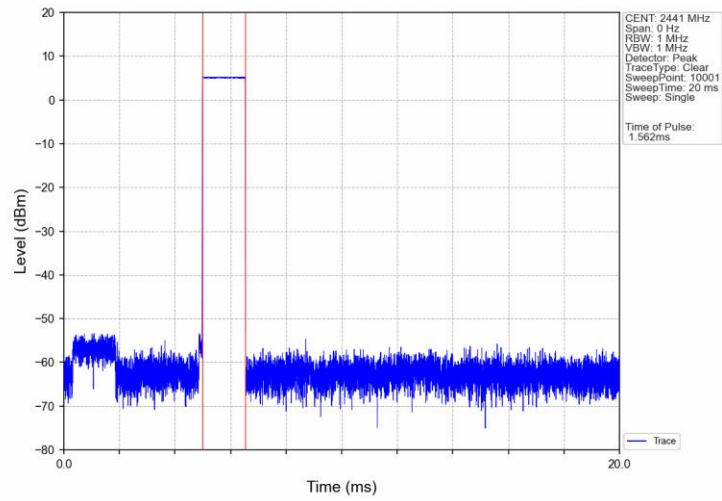
Ant1									
Mode	TX Type	Frequency (MHz)	Packet Type	Duration of Single Pulse (ms)	Observation Period (s)	Num of Pulse in Observation Period	Dwell Time (ms)	Limit (ms)	Verdict
GFSK	SISO	HOPP	DH1	0.298	31.600	367	109.366	<=400	Pass
			DH3	1.562	31.600	169	263.978	<=400	Pass
			DH5	2.802	31.600	110	308.220	<=400	Pass
Pi/4DQPSK	SISO	HOPP	2DH1	0.402	31.600	319	128.238	<=400	Pass
			2DH3	1.654	31.600	153	253.062	<=400	Pass
			2DH5	2.934	31.600	100	293.400	<=400	Pass
8DPSK	SISO	HOPP	3DH1	0.426	31.600	319	135.894	<=400	Pass
			3DH3	1.676	31.600	166	278.216	<=400	Pass
			3DH5	2.932	31.600	106	310.792	<=400	Pass

5.2 Test Graph

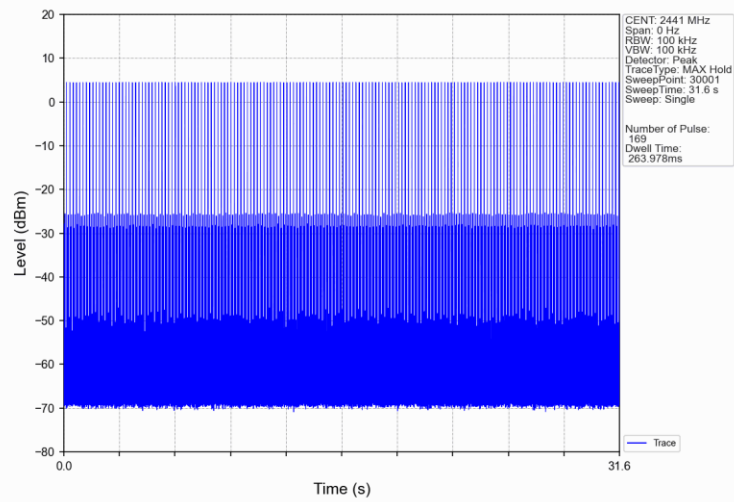
5.2.1 Ant1



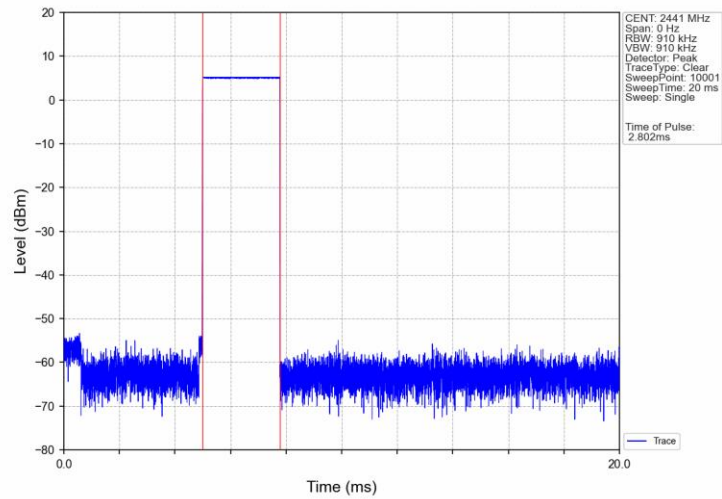
GFSK_DH3_HOPP_Ant1_NTNV



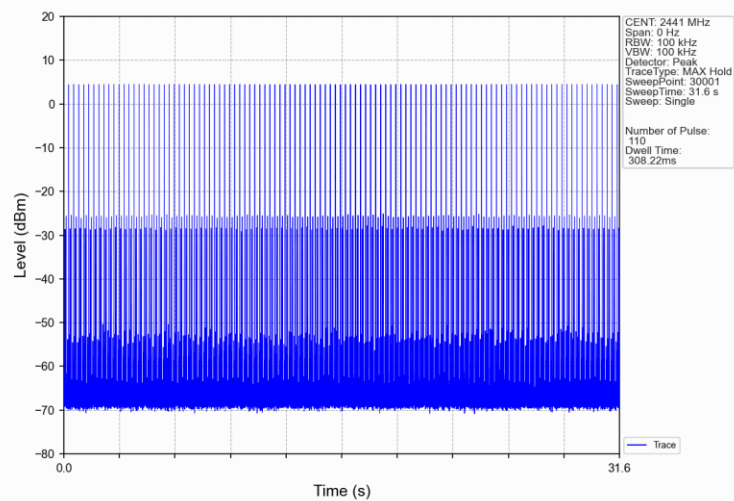
GFSK_DH3_HOPP_Ant1_NTNV



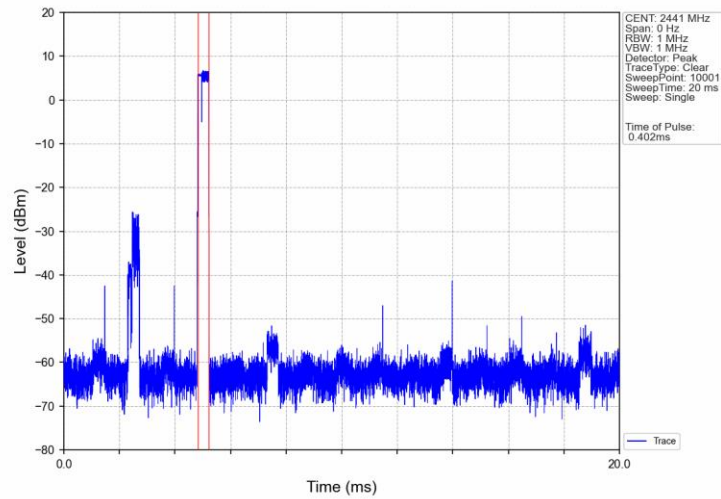
GFSK_DH5_HOPP_Ant1_NTNV



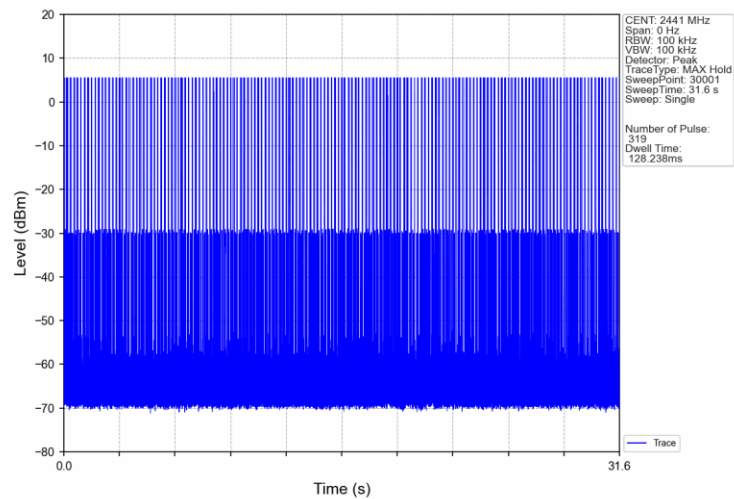
GFSK_DH5_HOPP_Ant1_NTNV



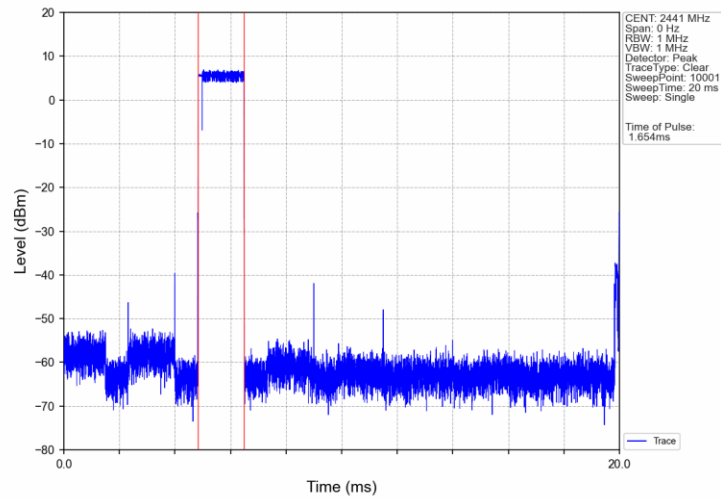
Pi/4DQPSK_2DH1_HOPP_Ant1_NTNV



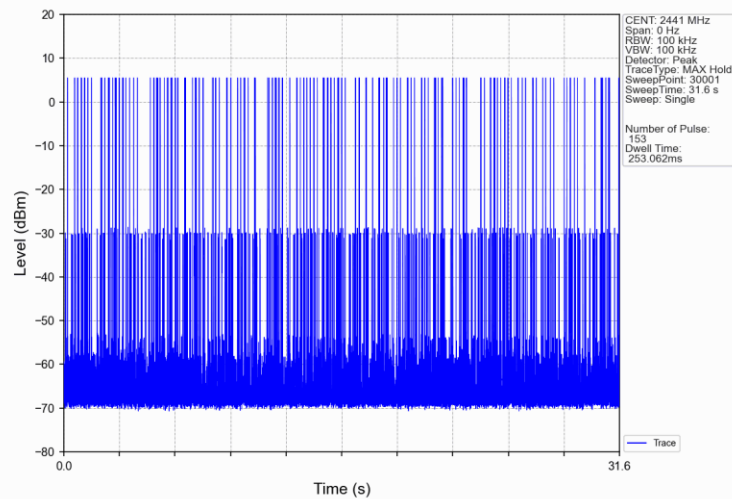
Pi/4DQPSK_2DH1_HOPP_Ant1_NTNV



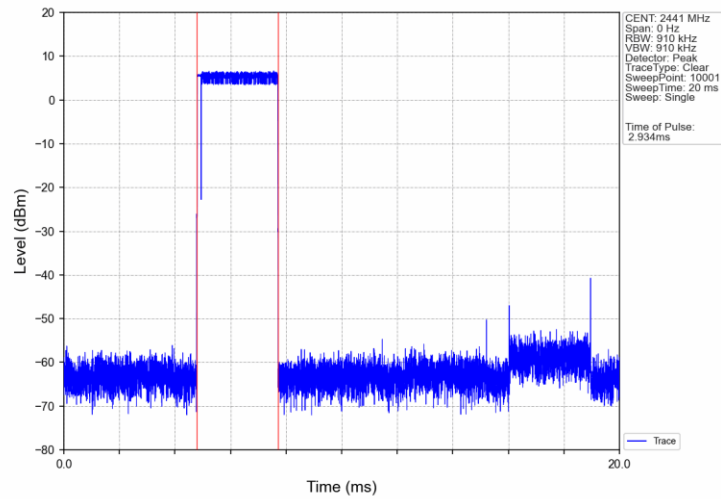
Pi/4DQPSK_2DH3_HOPP_Ant1_NTNV



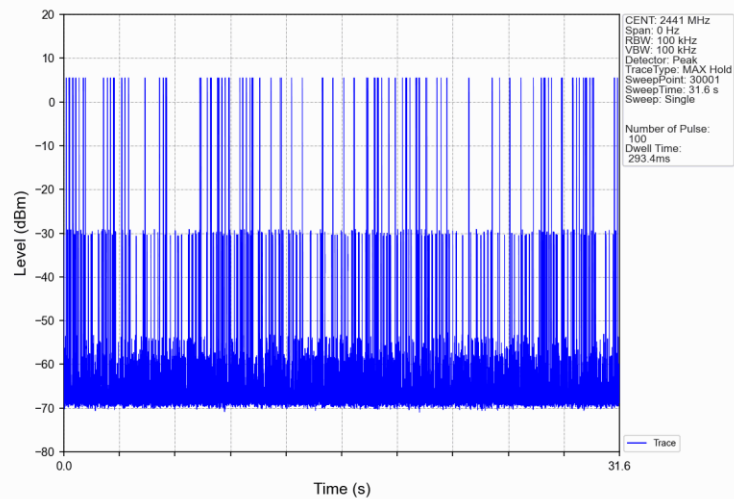
Pi/4DQPSK_2DH3_HOPP_Ant1_NTNV



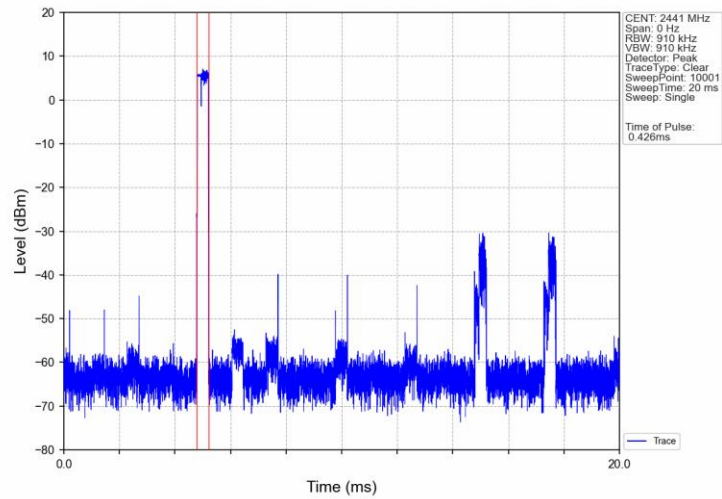
Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



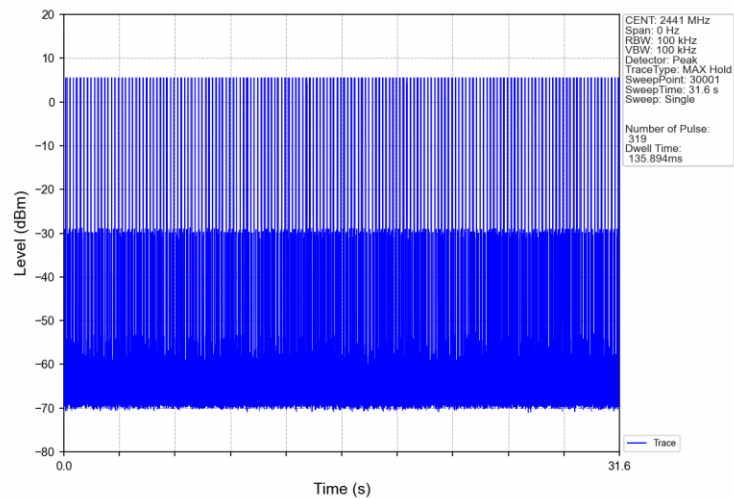
Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



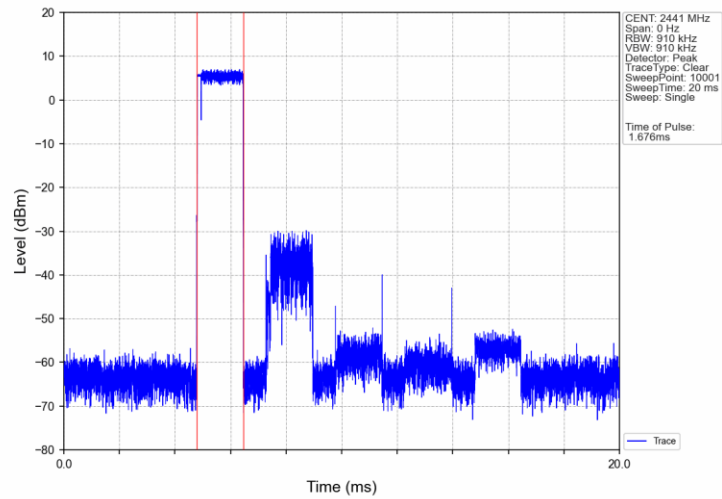
8DPSK 3DH1 HOPP_Ant1_NTNV



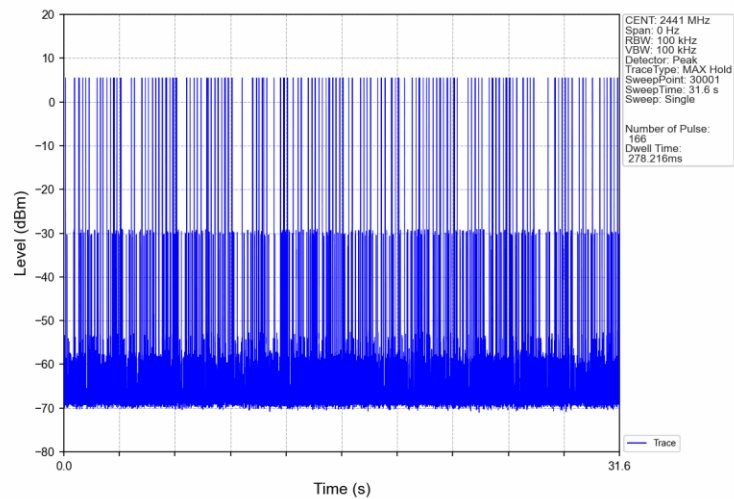
8DPSK 3DH1_HOPP_Ant1_NTNV



8DPSK 3DH3 HOPP Ant1 NTN

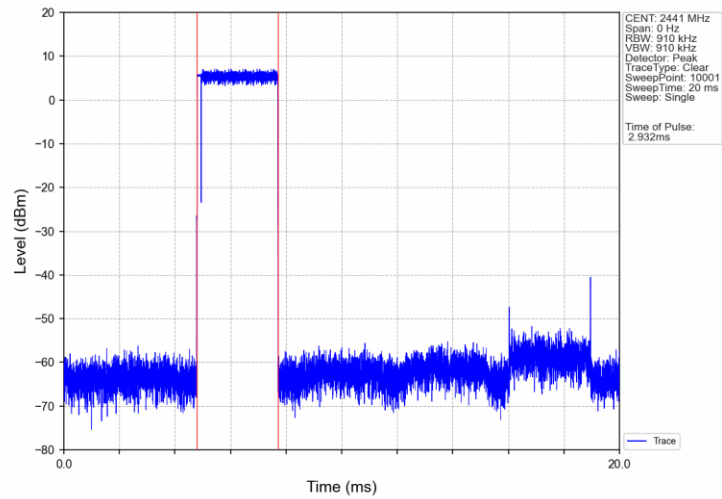


8DPSK 3DH3 HOPP Ant1 NTN

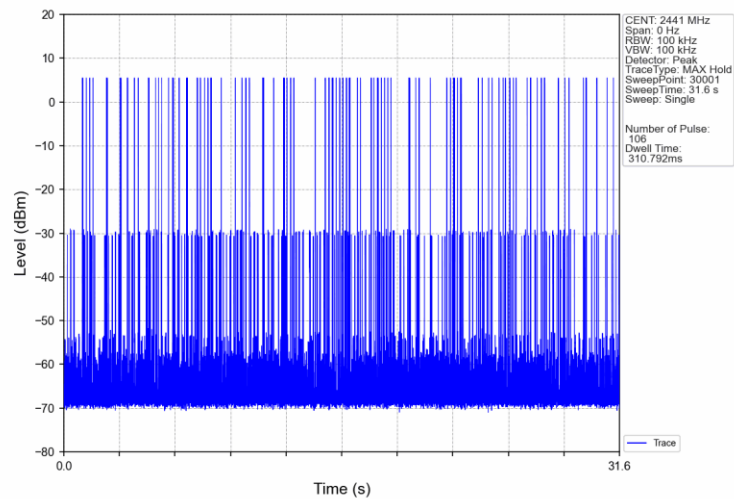




8DPSK_3DH5_HOPP_Ant1_NTNV



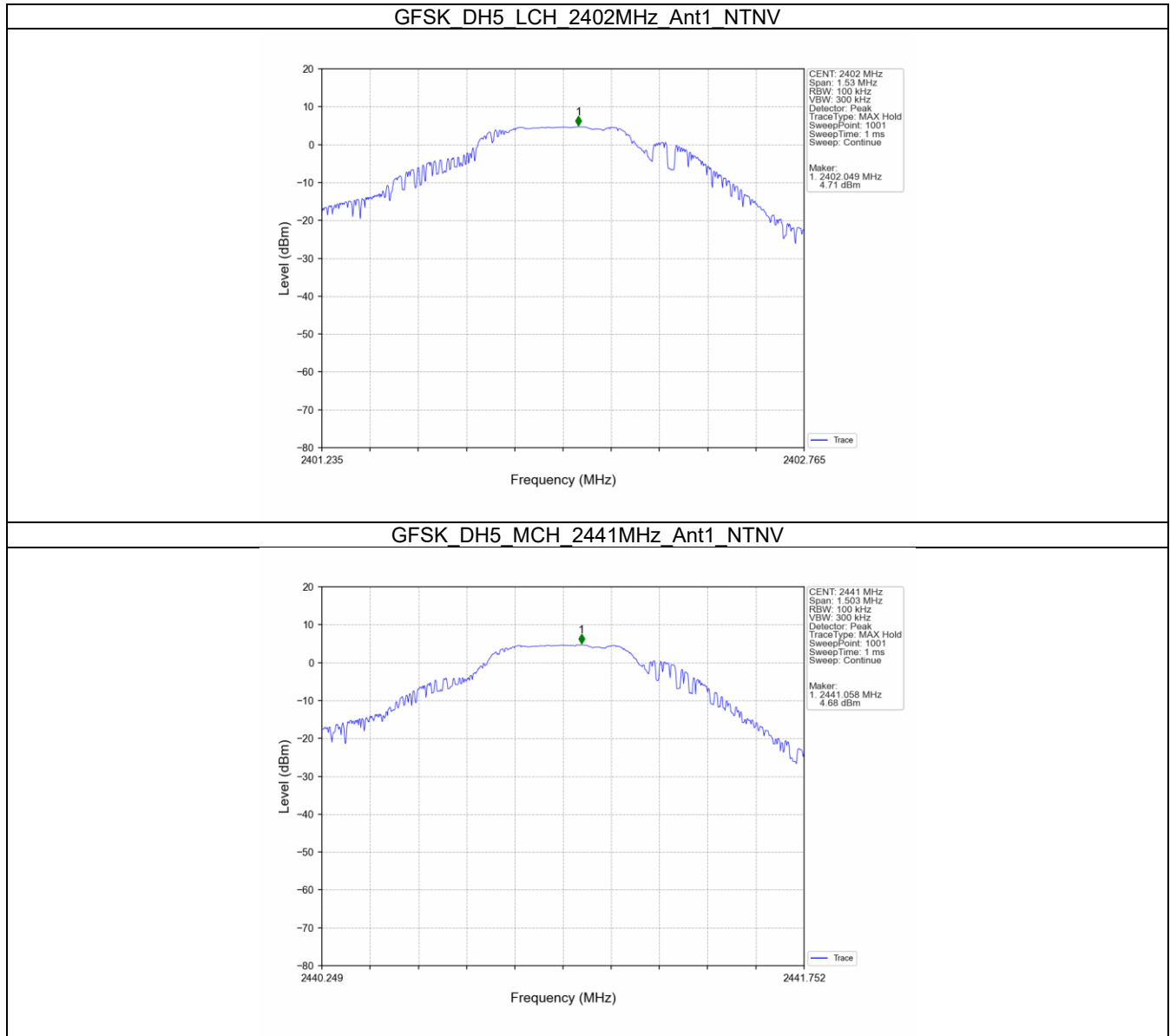
8DPSK_3DH5_HOPP_Ant1_NTNV



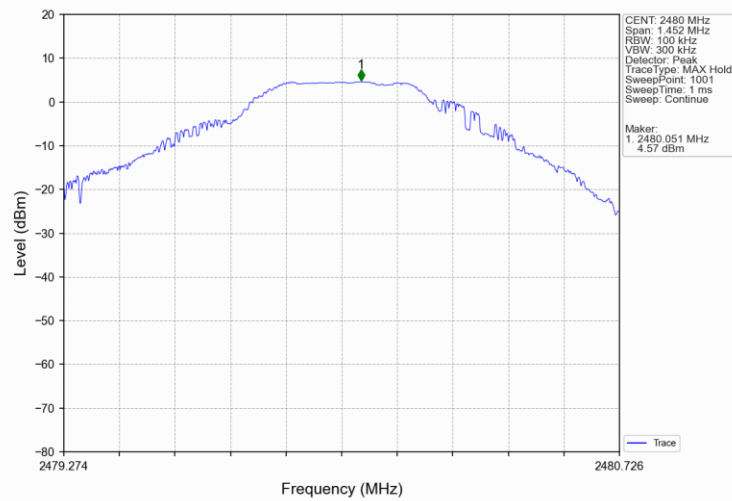
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
GFSK	SISO	2402	DH5	1	4.71	-15.29	Pass
		2441	DH5	1	4.68	-15.32	Pass
		2480	DH5	1	4.57	-15.43	Pass
		HOPP	DH5	1	5.18	-14.82	Pass
					5.18	-14.82	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	2.71	-17.29	Pass
		2441	2DH5	1	2.21	-17.79	Pass
		2480	2DH5	1	4.16	-15.84	Pass
		HOPP	2DH5	1	6.31	-13.69	Pass
					6.31	-13.69	Pass
8DPSK	SISO	2402	3DH5	1	2.83	-17.17	Pass
		2441	3DH5	1	2.17	-17.83	Pass
		2480	3DH5	1	4.17	-15.83	Pass
		HOPP	3DH5	1	6.40	-13.60	Pass
					6.40	-13.60	Pass
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.							

6.2 Test Graph

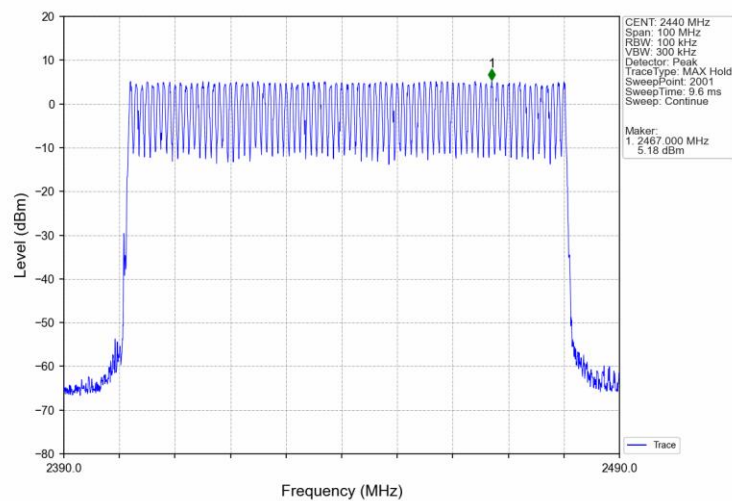
6.2.1 Ref



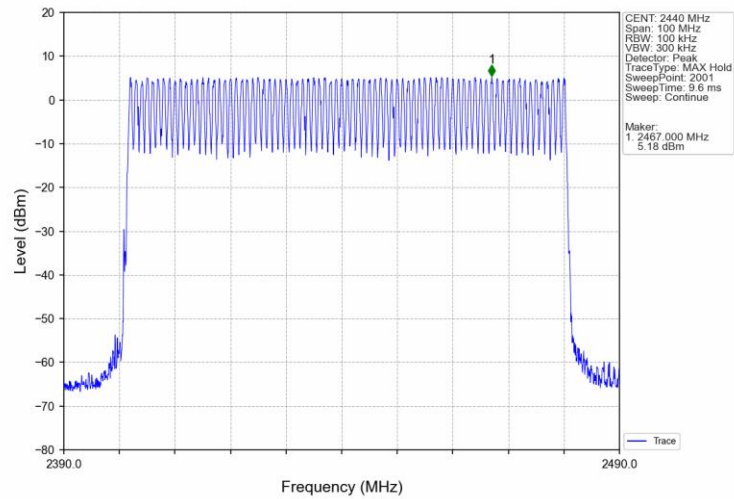
GFSK DH5 HCH 2480MHz Ant1 NTN



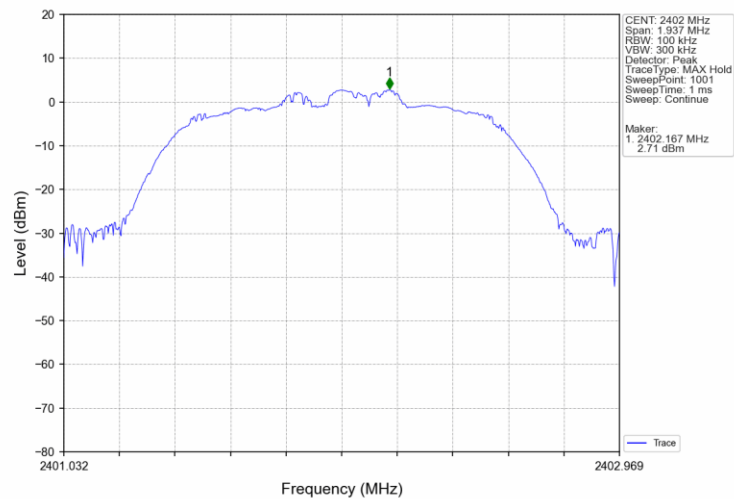
GFSK_DH5_HOPP_Ant1 NTN



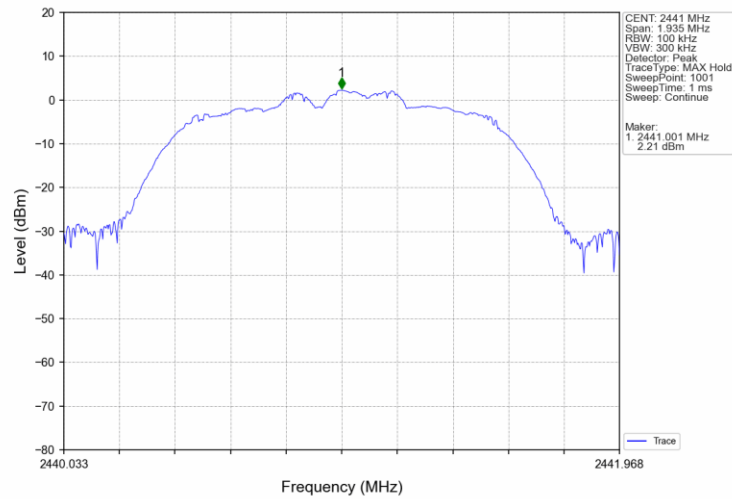
GFSK DH5 HOPP Ant1 NTN



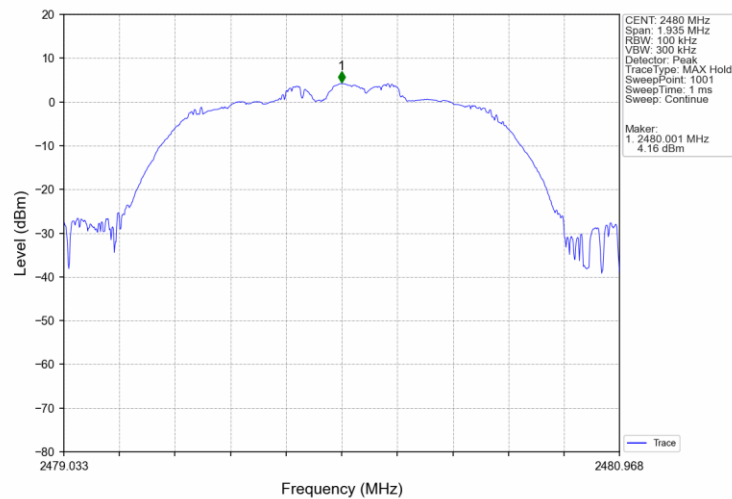
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1 NTN



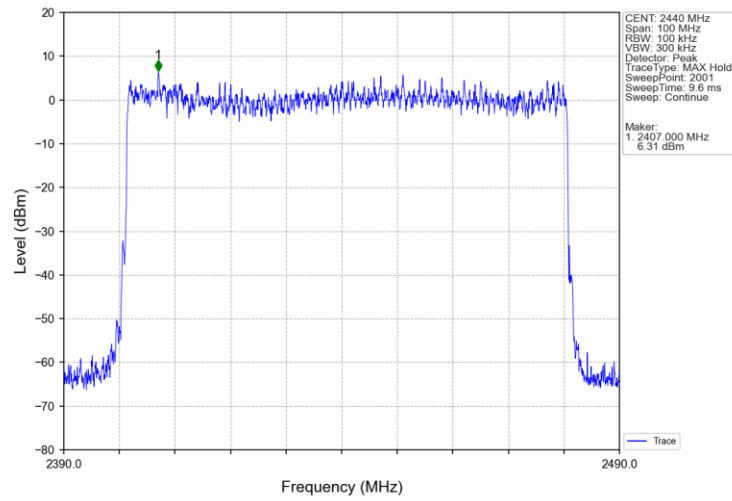
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



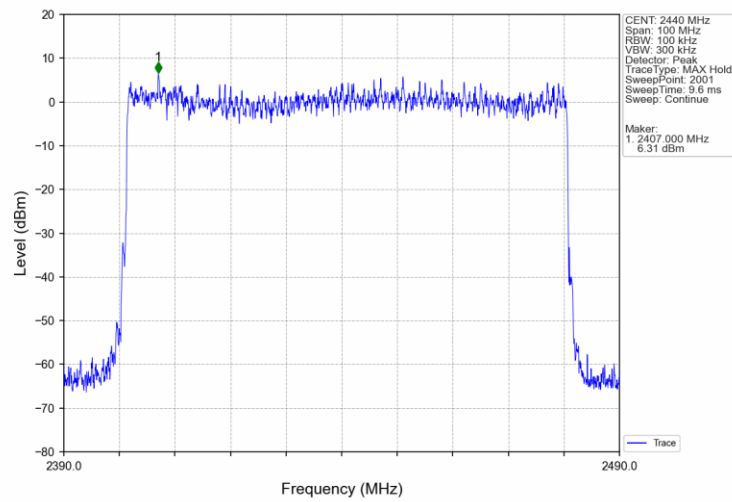
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV

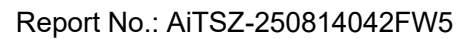


Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV





CENT: 2402 MHz
 Span: 1.961 MHz
 RBW: 100 kHz
 VBW: 300 kHz
 Detector: Peak
 TraceType: MAX Hold
 SweepPoint: 1001
 SweepTime: 1 ms
 Sweep: Continue

Marker:
 1, 2402.163 MHz
 2.83 dBm

Level (dBm)

Frequency (MHz)

Trace

CENT: 2441 MHz
 Span: 1.953 MHz
 RBW: 100 kHz
 VBW: 300 kHz
 Detector: Peak
 TraceType: MAX Hold
 SweepPoint: 1001
 SweepTime: 1 ms
 Sweep: Continue

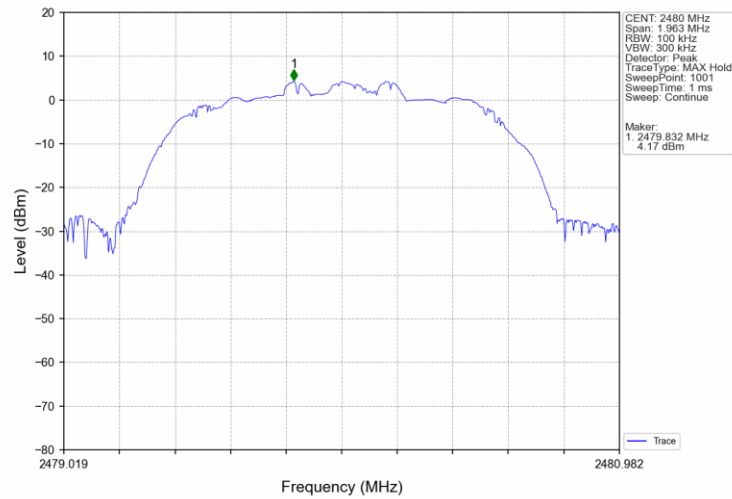
Marker:
 1, 2441.168 MHz
 2.17 dBm

Level (dBm)

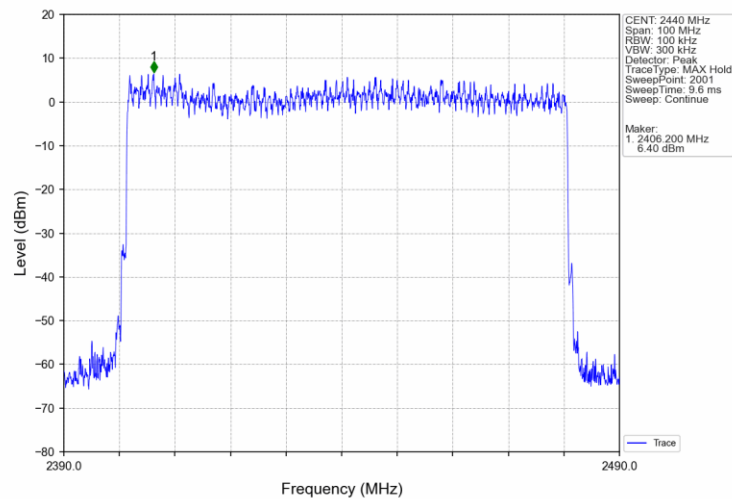
Frequency (MHz)

Trace

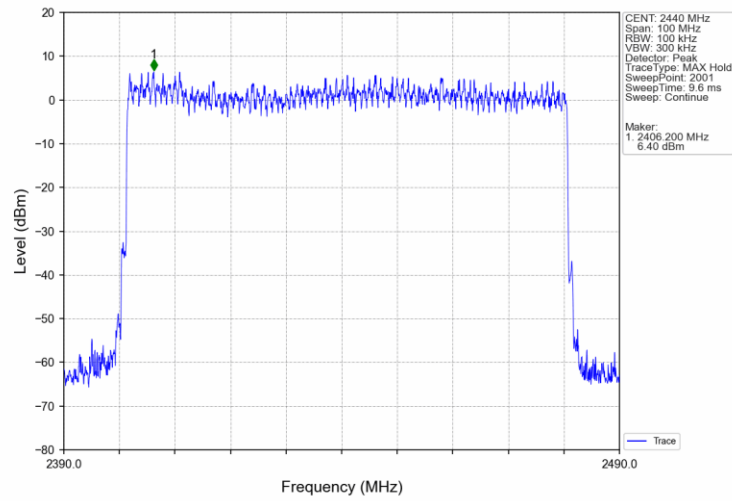
8DPSK 3DH5 HCH 2480MHz Ant1 NTN



8DPSK 3DH5 HOPP Ant1 NTN

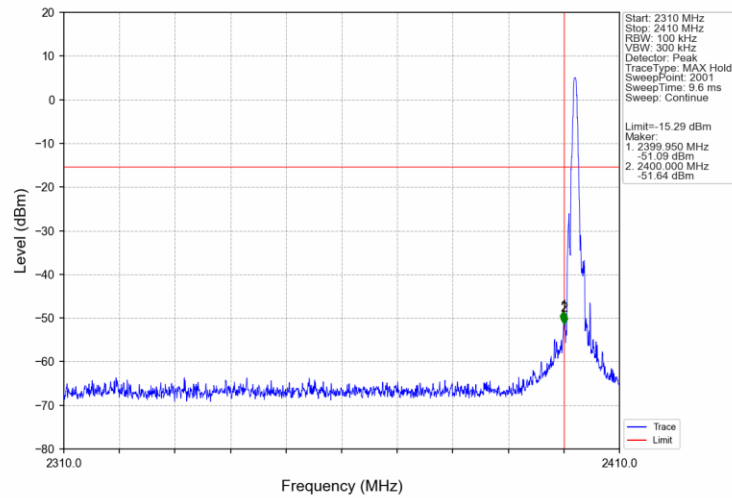


8DPSK 3DH5 HOPP Ant1 NTN

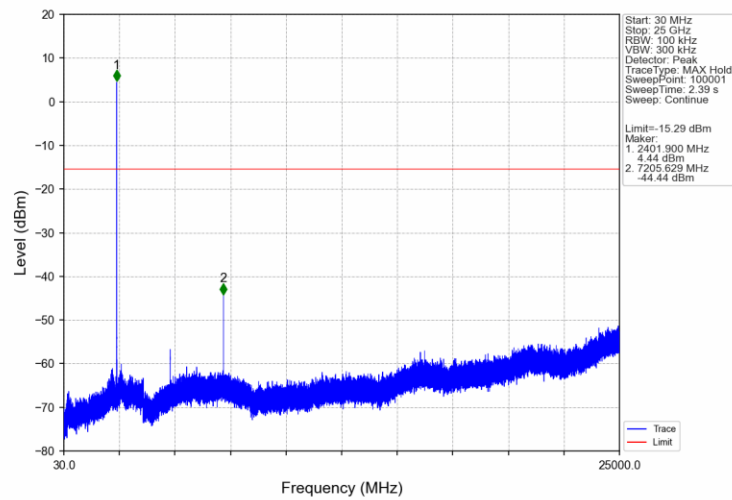


6.2.2 CSE

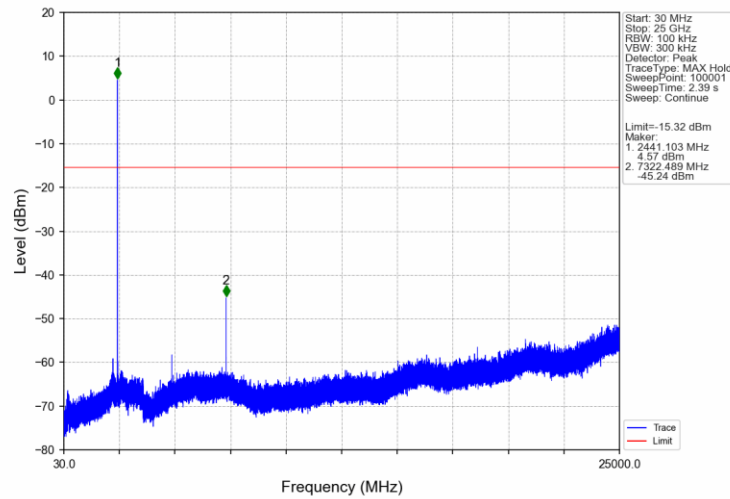
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



GFSK_DH5_LCH_2402MHz_Ant1_NTNV



GFSK DH5 MCH 2441MHz Ant1 NTN



GFSK_DH5_HCH_2480MHz_Ant1_NTN

