

Appendix A

RF Test Data for BR_EDR(Conducted Measurement)

Product Name: Bluetooth speaker

Trade Mark: N/A

Test Model: WE-AstroLite, EQT2-2101687

Environmental Conditions

Temperature:	24.6°C
Relative Humidity:	51.4%
ATM Pressure:	101Kpa
Test Engineer:	Simba Huang
Supervised by:	Seal Chen

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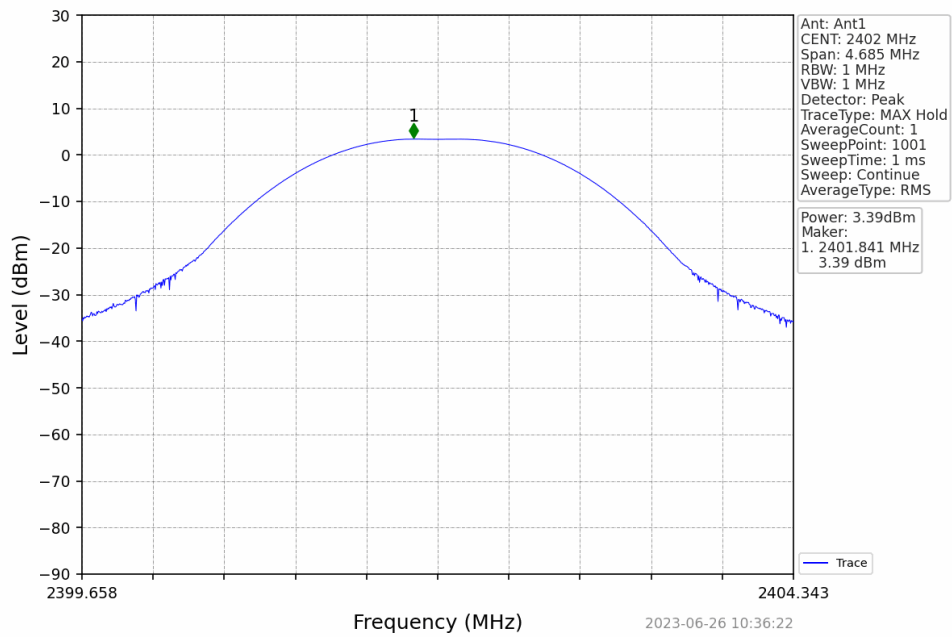
1 Maximum Conducted Peak Output Power

1.1 Test Result

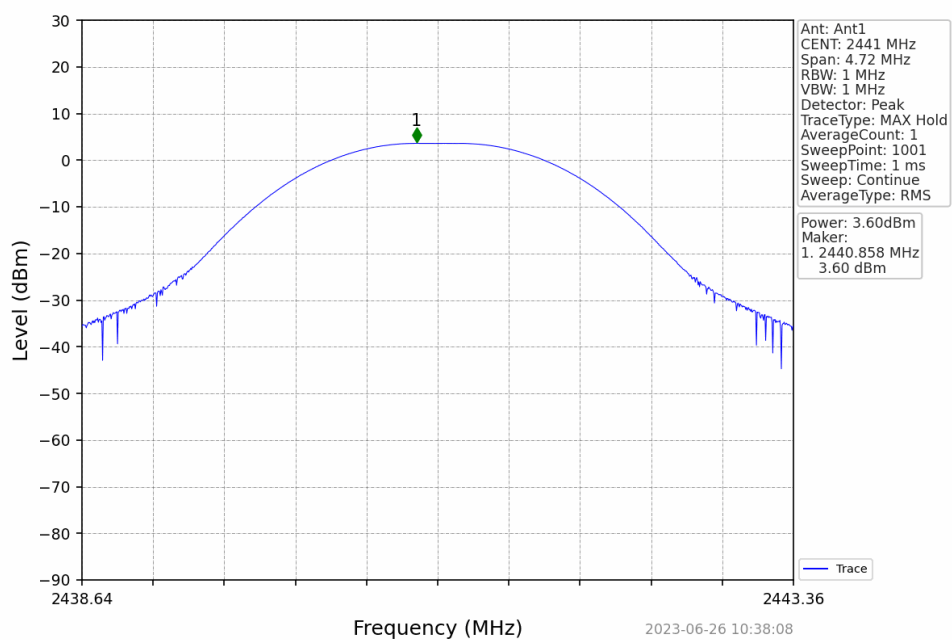
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.39	<=30	Pass
	MCH	3.60	<=30	Pass
	HCH	5.09	<=30	Pass
$\pi/4$ -DQPSK	LCH	5.42	<=20.97	Pass
	MCH	5.72	<=20.97	Pass
	HCH	7.21	<=20.97	Pass
8-DPSK	LCH	5.79	<=20.97	Pass
	MCH	6.04	<=20.97	Pass
	HCH	7.55	<=20.97	Pass

1.2 Test Graphs

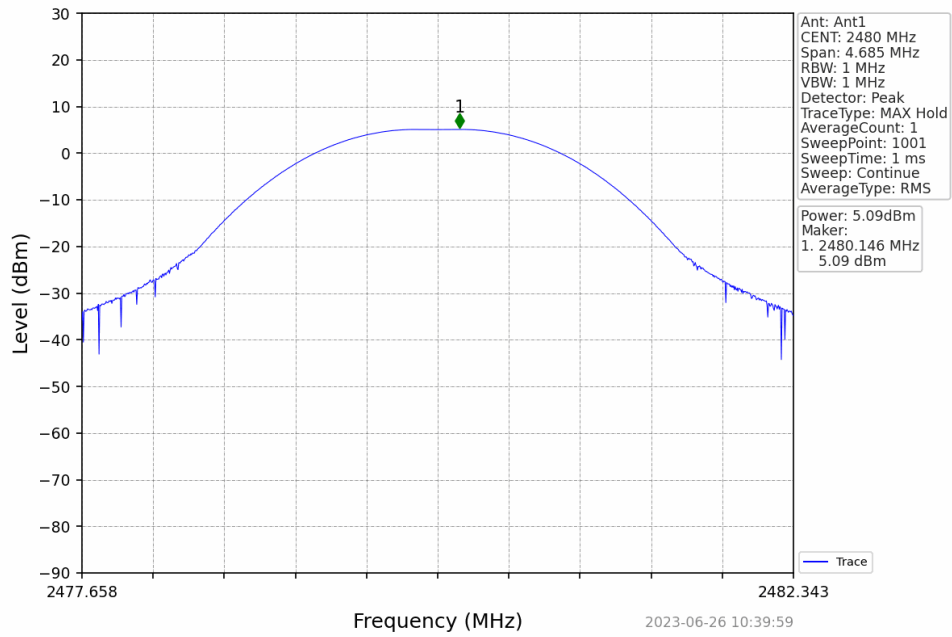
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



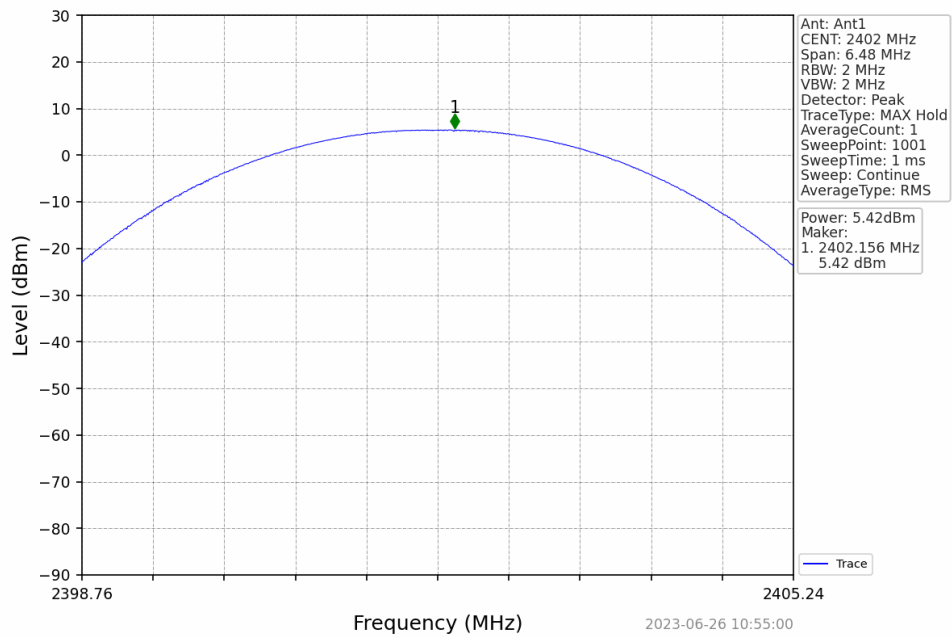
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



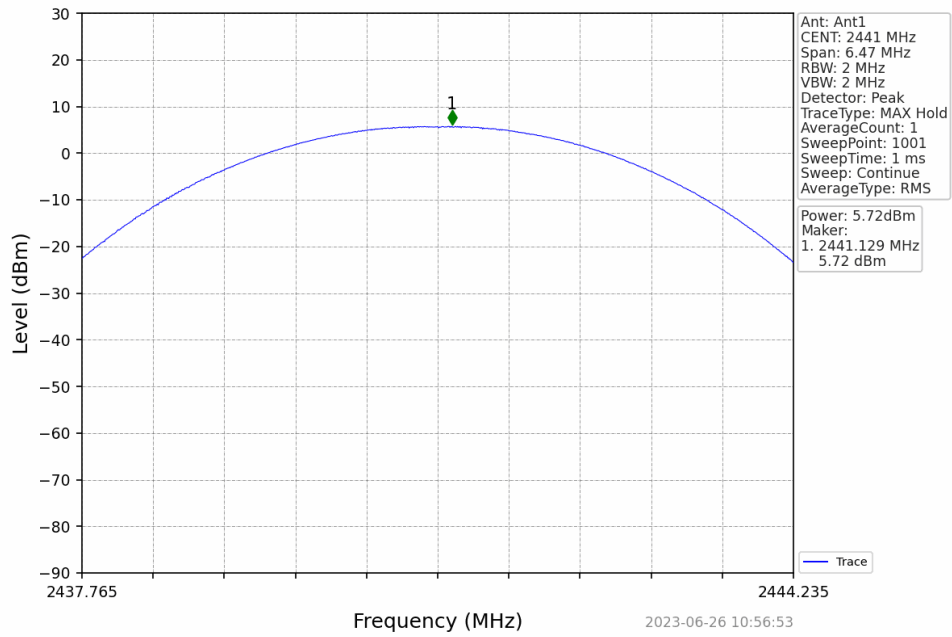
GFSK DH5 HCH 2480MHz Ant1 NTN



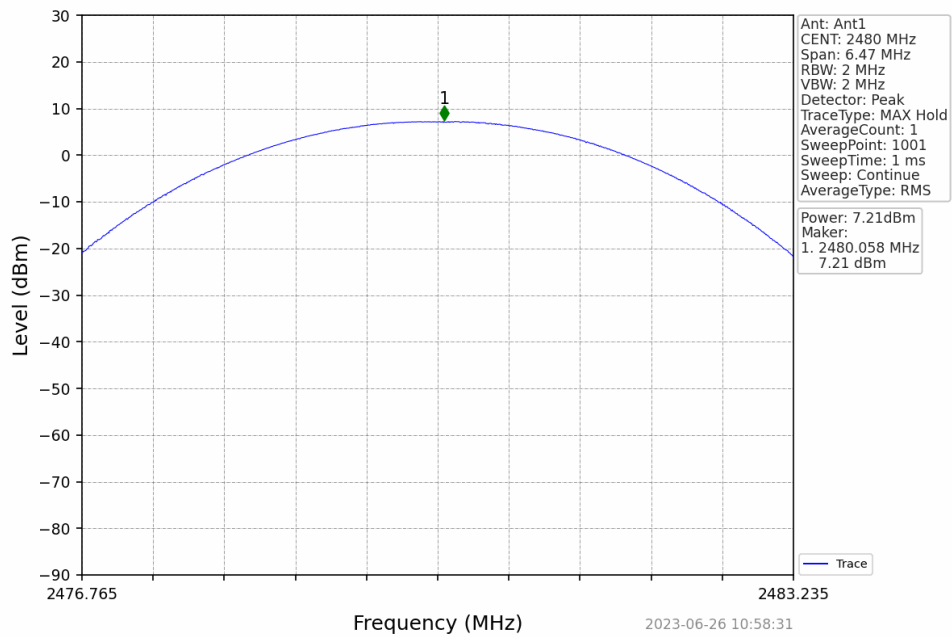
$\pi/4$ -DQPSK 2DH5 LCH 2402MHz Ant1 NTN



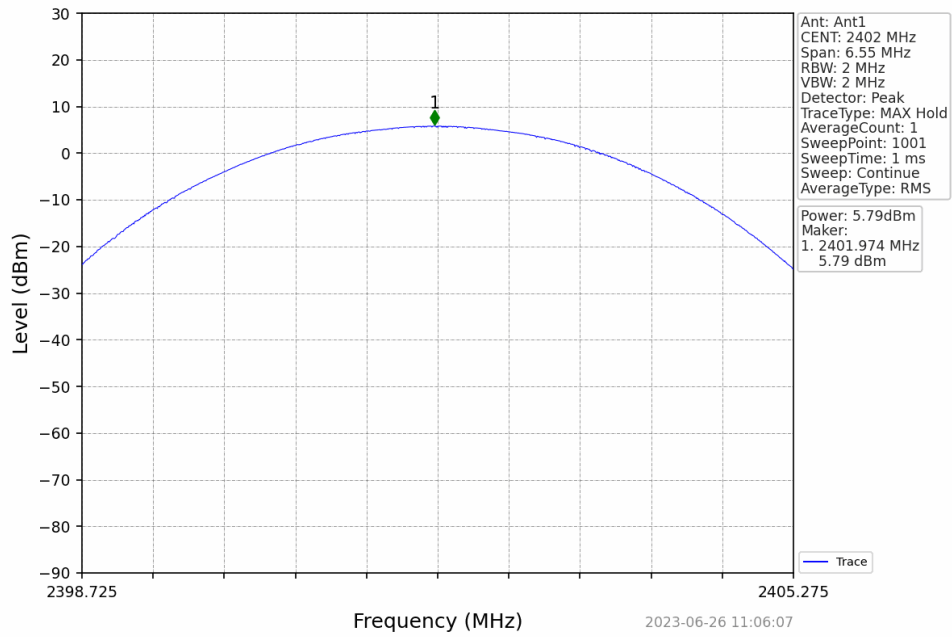
$\pi/4$ -DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



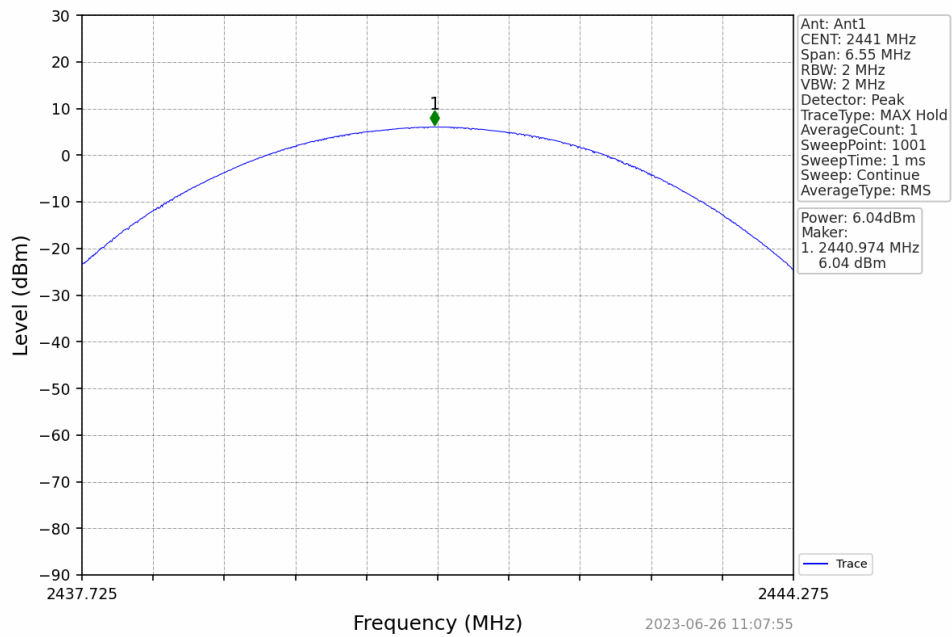
$\pi/4$ -DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



8-DPSK 3DH5_LCH_2402MHz_Ant1_NTNV

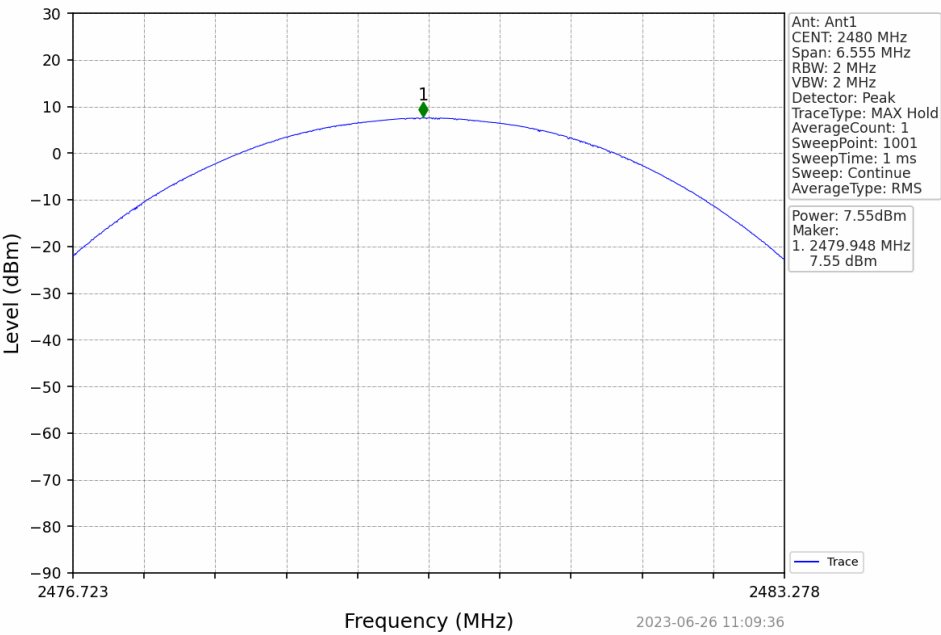


8-DPSK 3DH5_MCH_2441MHz_Ant1_NTNV





8-DPSK 3DH5_HCH_2480MHz_Ant1_NTNV



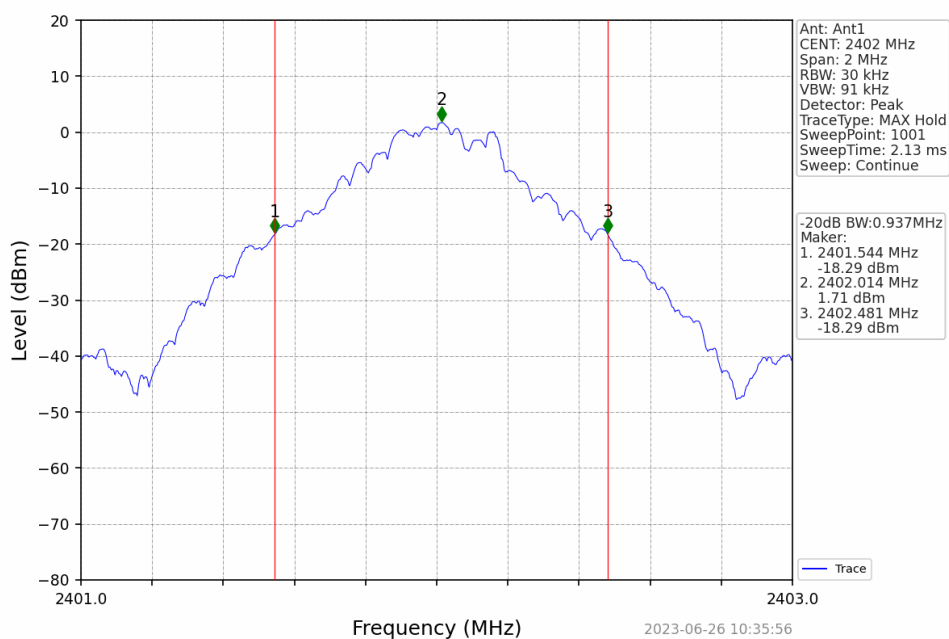
2 20dB Bandwidth

2.1 Test Result

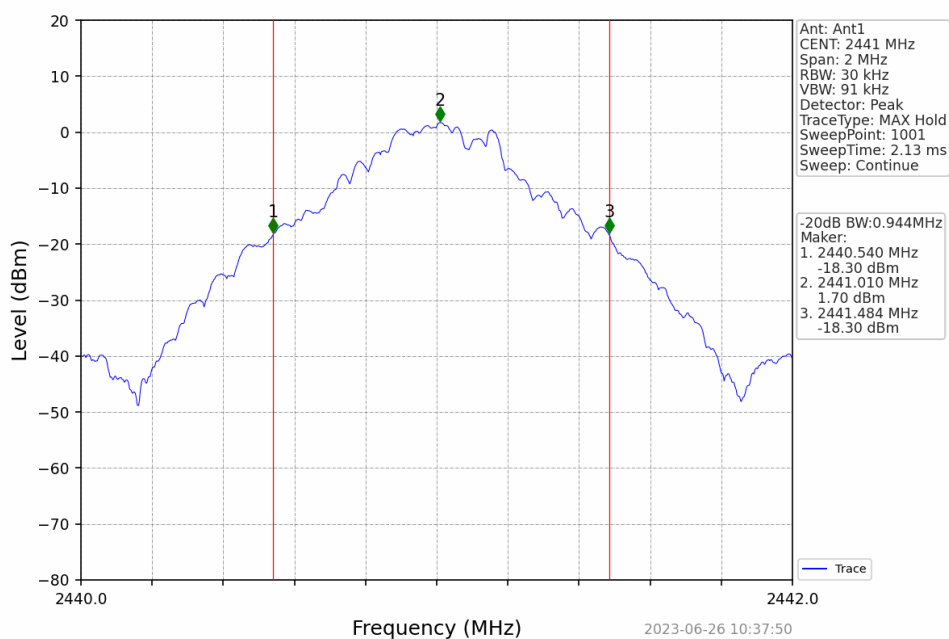
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.937	Not Specified	Pass
	MCH	0.944	Not Specified	Pass
	HCH	0.937	Not Specified	Pass
$\pi/4$ -DQPSK	LCH	1.296	Not Specified	Pass
	MCH	1.294	Not Specified	Pass
	HCH	1.294	Not Specified	Pass
8-DPSK	LCH	1.310	Not Specified	Pass
	MCH	1.310	Not Specified	Pass
	HCH	1.311	Not Specified	Pass

2.2 Test Graphs

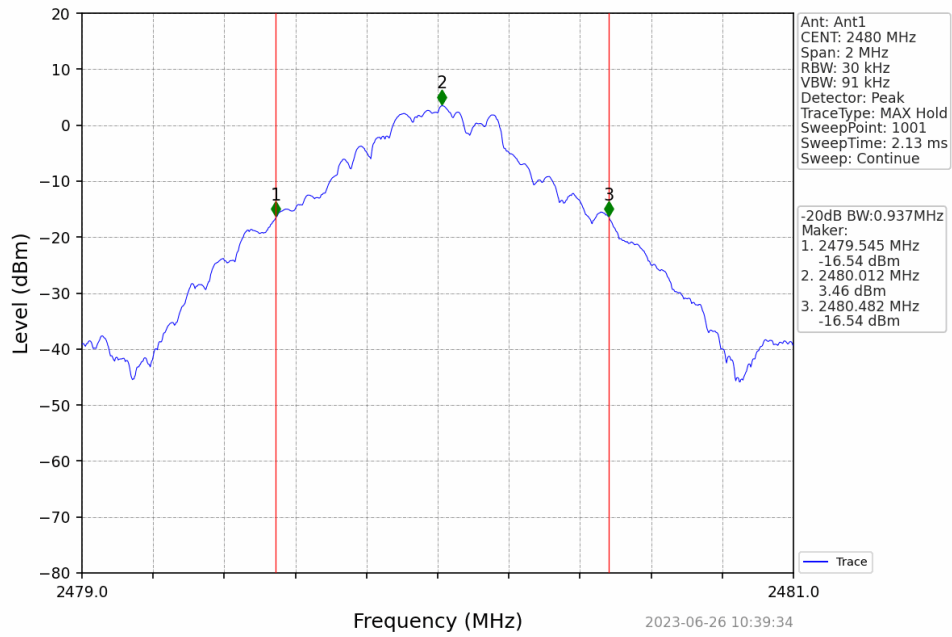
GFSK DH5 LCH 2402MHz Ant1 NTN



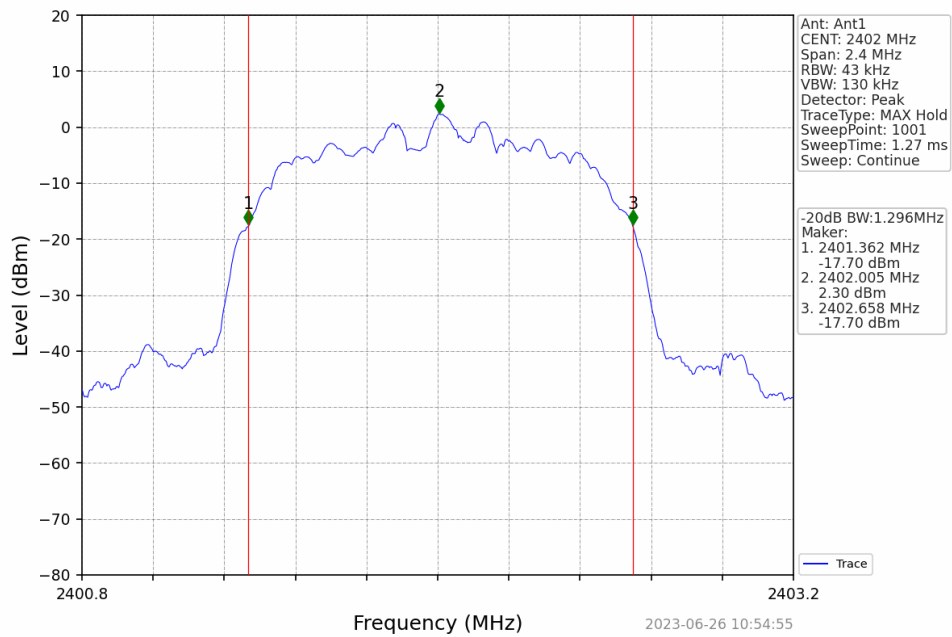
GFSK DH5 MCH 2441MHz Ant1 NTN



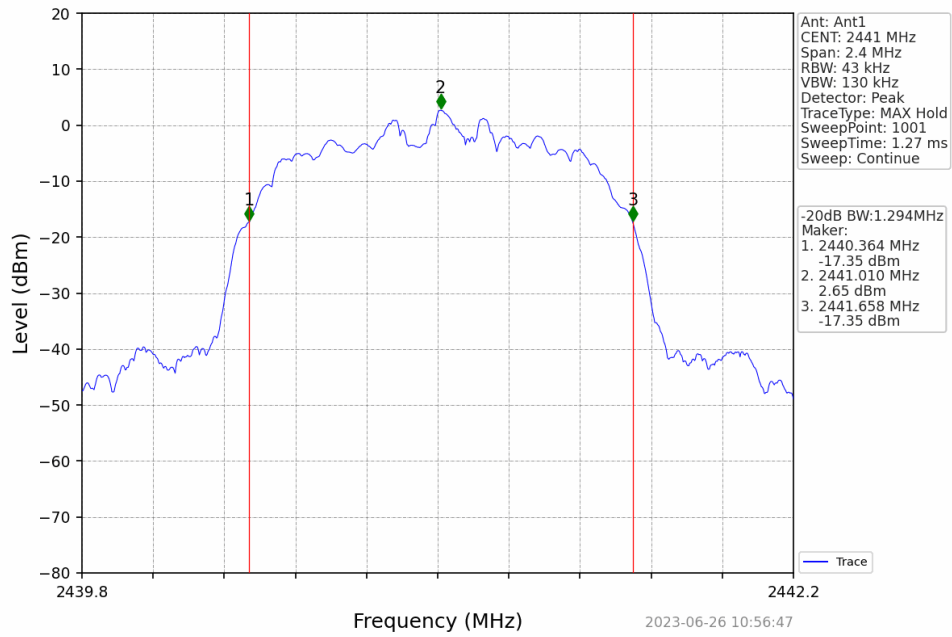
GFSK DH5 HCH 2480MHz Ant1 NTN



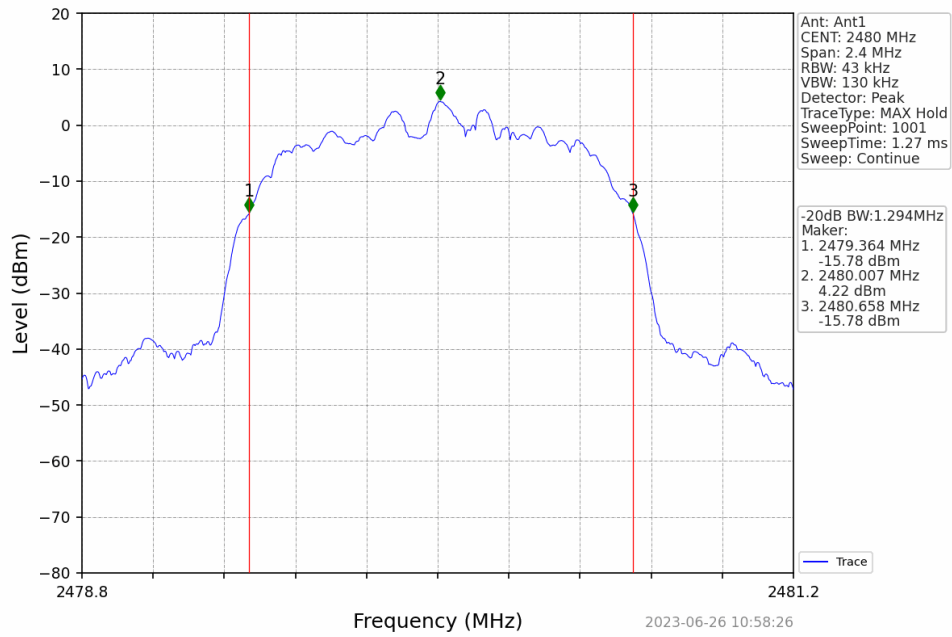
$\pi/4$ -DQPSK 2DH5 LCH 2402MHz Ant1 NTN



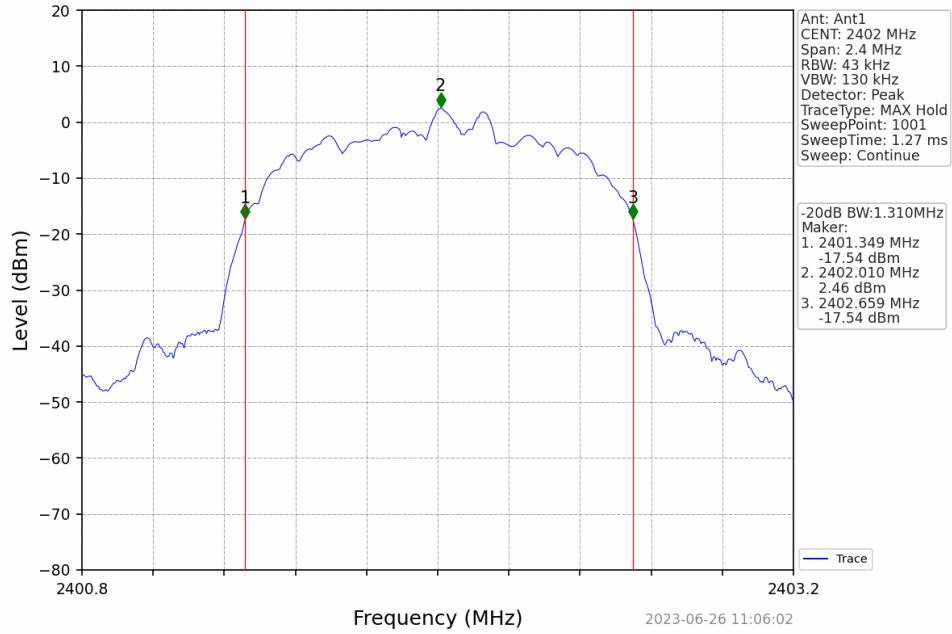
$\pi/4$ -DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



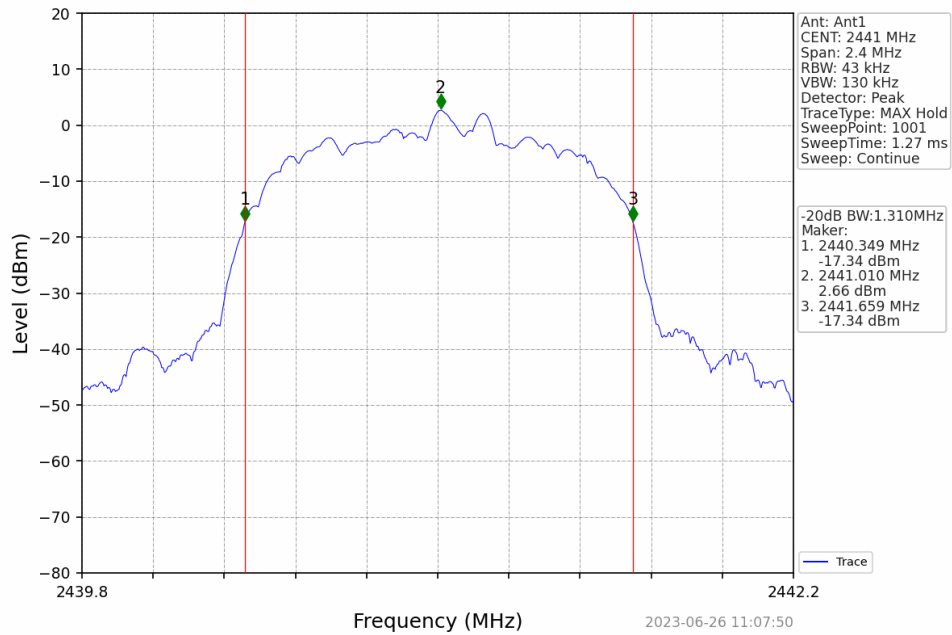
$\pi/4$ -DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



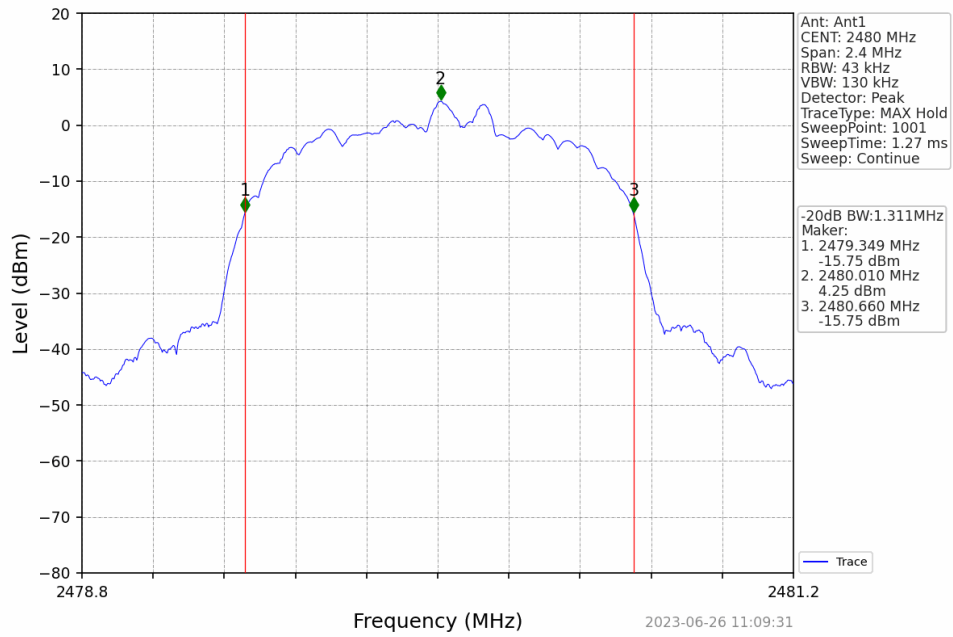
8-DPSK 3DH5_LCH_2402MHz_Ant1_NTNV



8-DPSK 3DH5_MCH_2441MHz_Ant1_NTNV



8-DPSK 3DH5_HCH_2480MHz_Ant1_NTNV



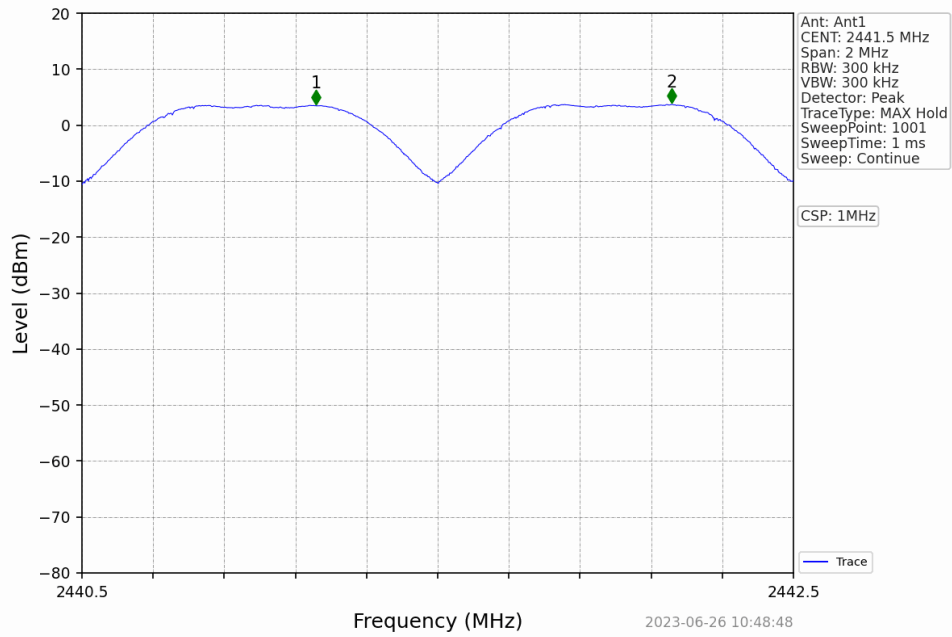
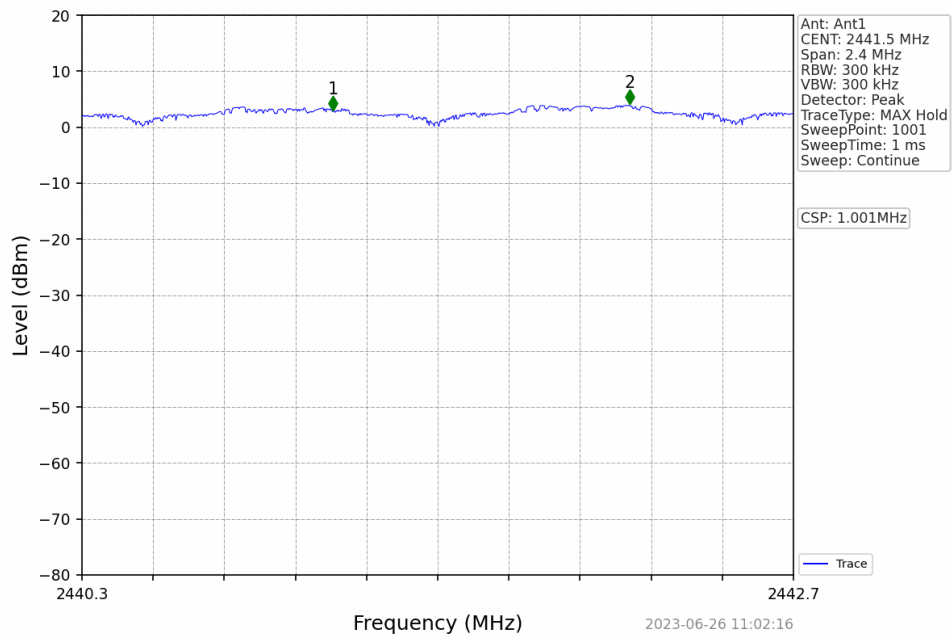
3 Carrier Frequency Separation

3.1 Test Result

Mode	Channel.	Carrier Frequency Separation [MHz]	20dB Bandwidth (MHz)	Limit [MHz]	Verdict
GFSK	MCH	1.000	0.944	≥ 0.944	Pass
$\pi/4$ -DQPSK	MCH	1.001	1.296	≥ 0.864	Pass
8-DPSK	MCH	0.984	1.311	≥ 0.874	Pass

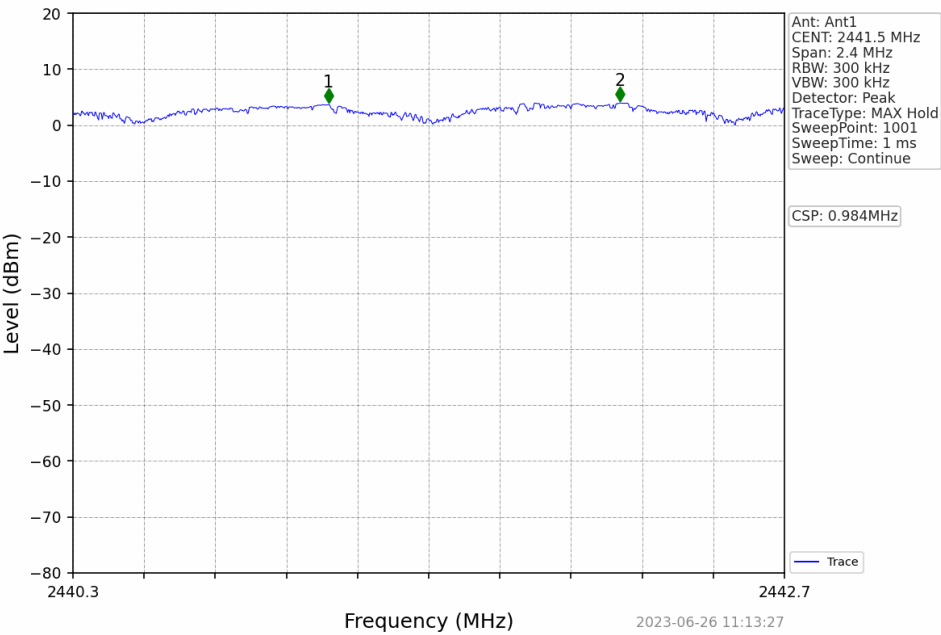
3.2 Test Graphs

GFSK_DH5_HOPP_Ant1_NTNV


 $\pi/4$ -DQPSK_2DH5_HOPP_Ant1_NTNV




8-DPSK_3DH5_HOPP_Ant1_NTNV



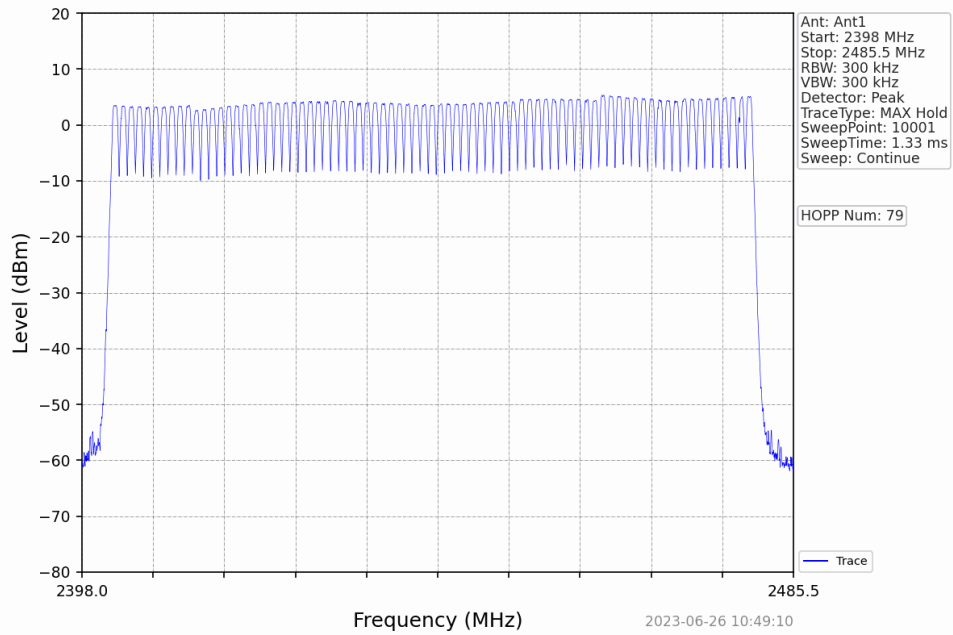
4 Hopping Channel Number

4.1 Test Result

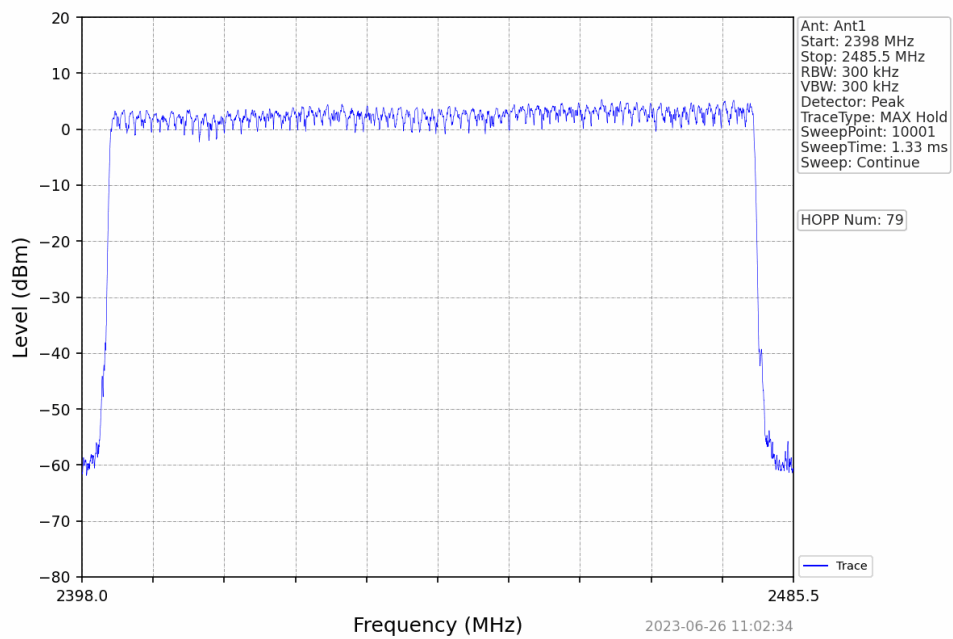
Mode	Channel	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ -DQPSK	Hop	79	≥ 15	PASS
8-DPSK	Hop	79	≥ 15	PASS

4.2 Test Graphs

GFSK_DH5_HOPP_Ant1_NTNV

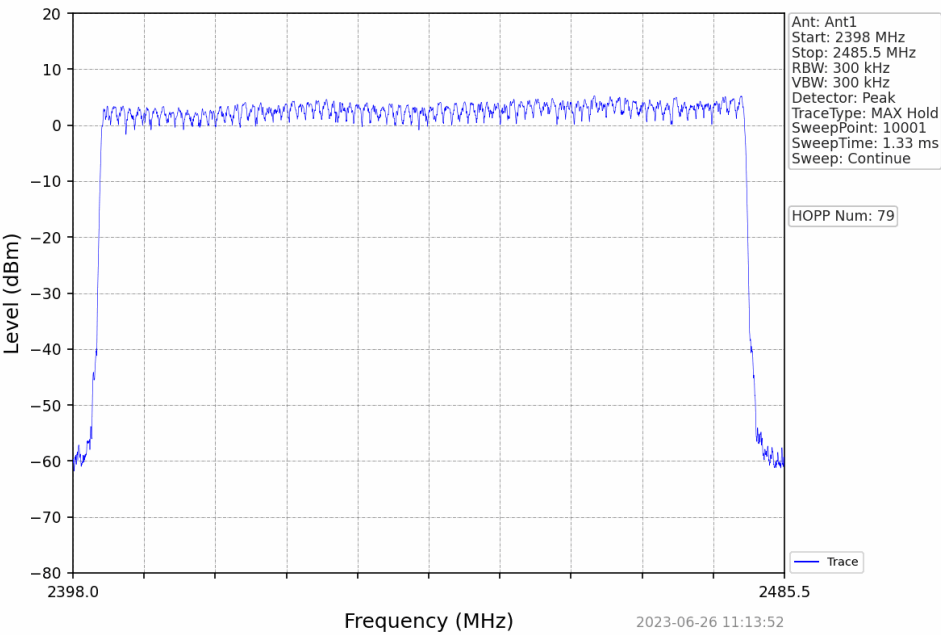


$\pi/4$ -DQPSK_2DH5_HOPP_Ant1_NTNV





8-DPSK_3DH5_HOPP_Ant1_NTNV



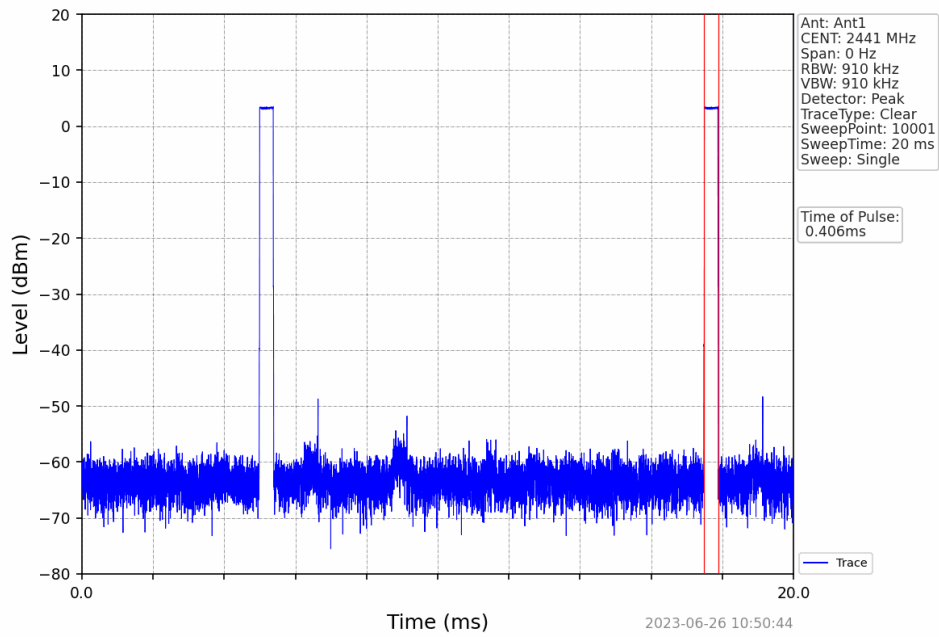
5 Dwell Time

5.1 Test Result

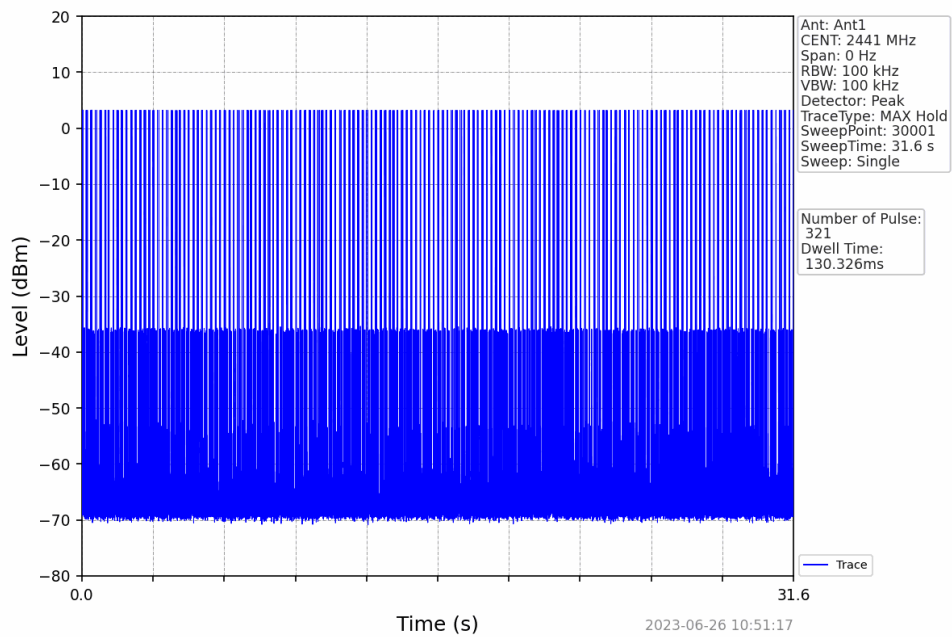
Mode	Packet	Channel	Duration of Single Pulse (ms)	Observation Period (s)	Num of Pulse in Observation Period	Dwell Time[ms]	Limit [s]	Verdict
GFSK	DH5	LCH	0.406	31.600	321	130.326	0.4	Pass
		MCH	1.662	31.600	167	277.554	0.4	Pass
		HCH	2.910	31.600	105	305.550	0.4	Pass
$\pi/4$ -DQPSK	2DH5	LCH	0.412	31.600	320	131.840	0.4	Pass
		MCH	1.664	31.600	168	279.552	0.4	Pass
		HCH	2.912	31.600	100	291.200	0.4	Pass
8-DPSK	3DH5	LCH	0.412	31.600	318	131.016	0.4	Pass
		MCH	1.650	31.600	156	257.400	0.4	Pass
		HCH	2.914	31.600	109	317.626	0.4	Pass

5.2 Test Graphs

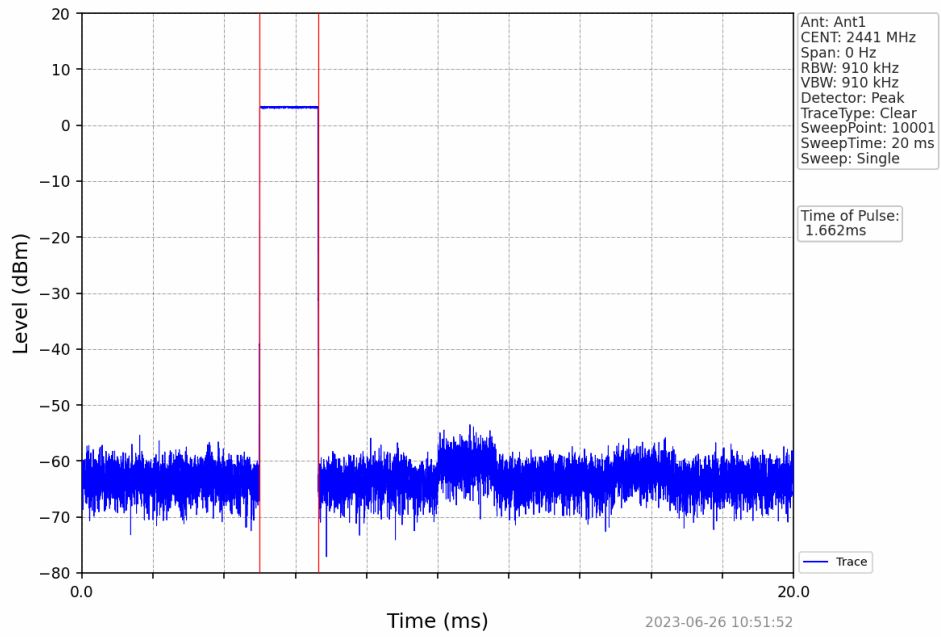
GFSK_DH1_HOPP_Ant1_NTNV



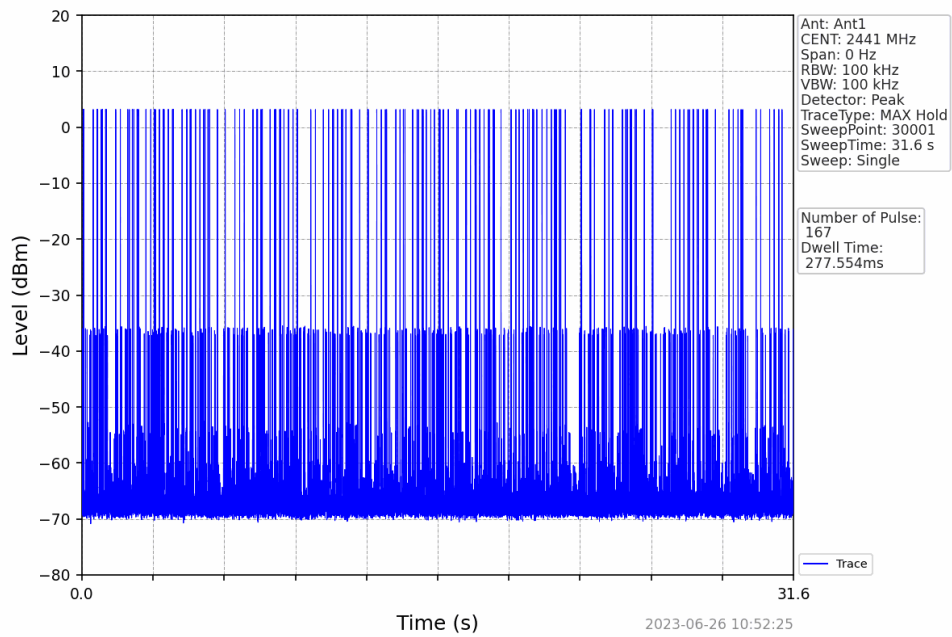
GFSK_DH1_HOPP_Ant1_NTNV



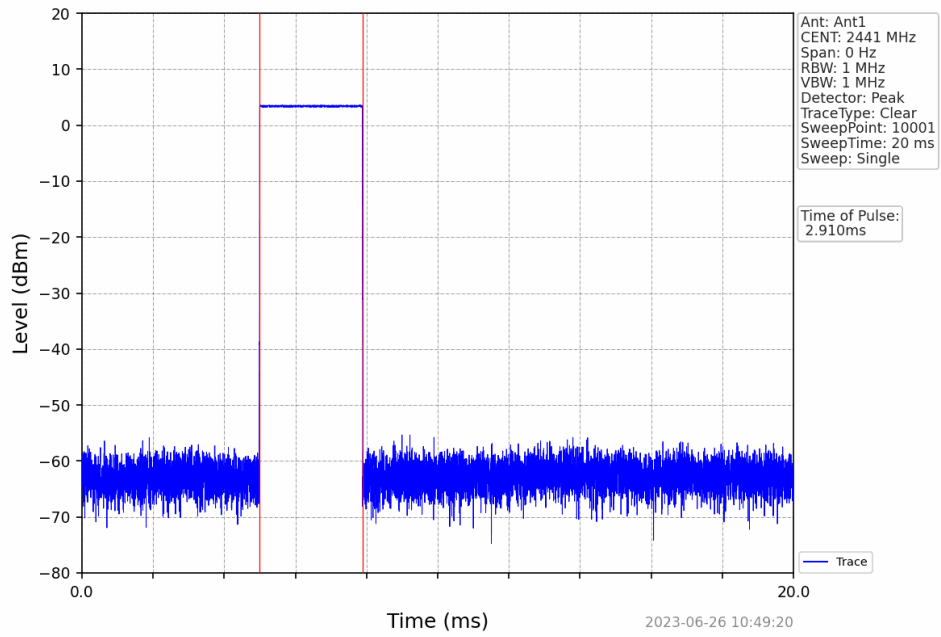
GFSK_DH3_HOPP_Ant1_NTNV



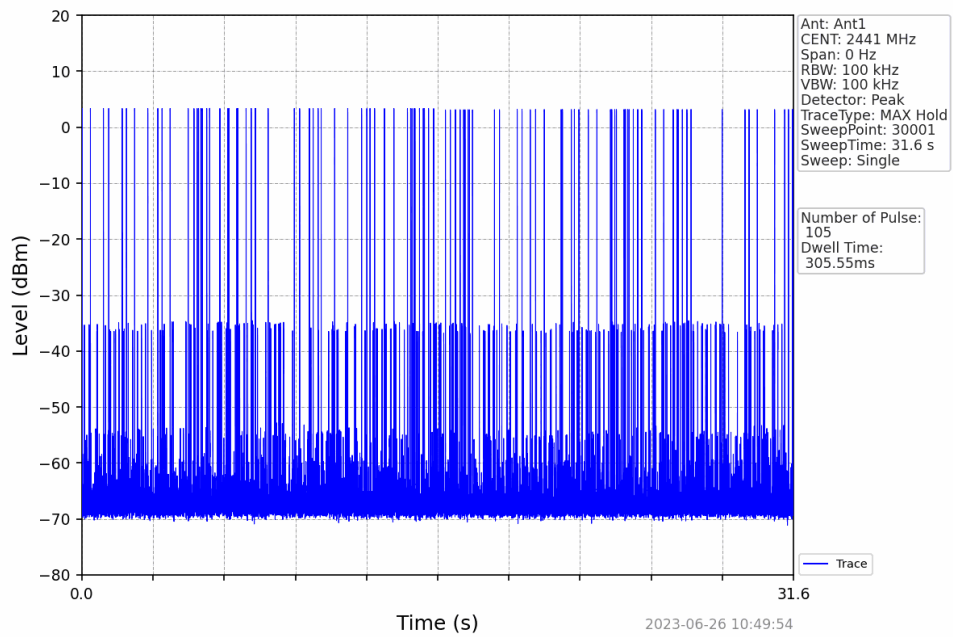
GFSK_DH3_HOPP_Ant1_NTNV



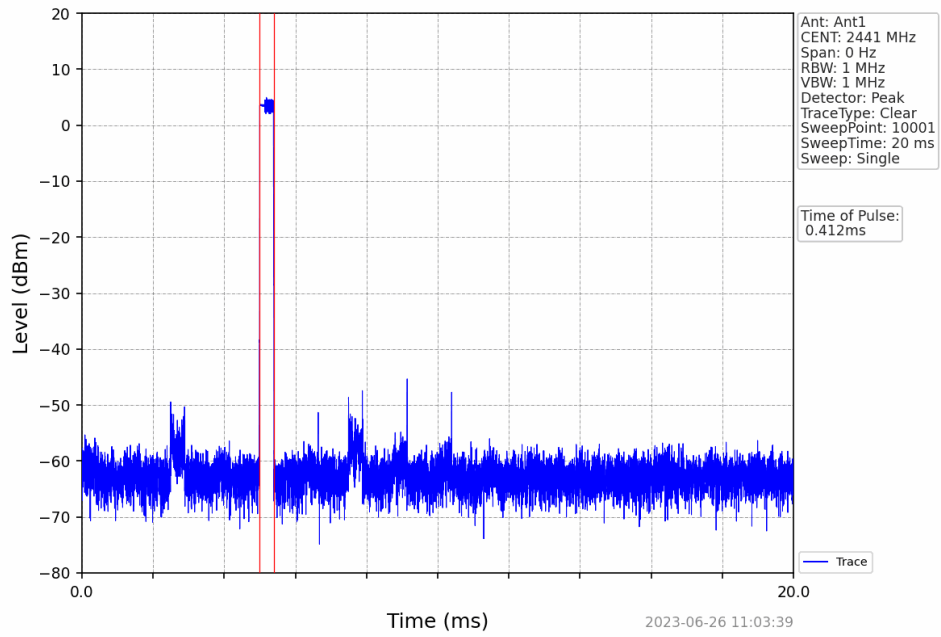
GFSK_DH5_HOPP_Ant1_NTNV



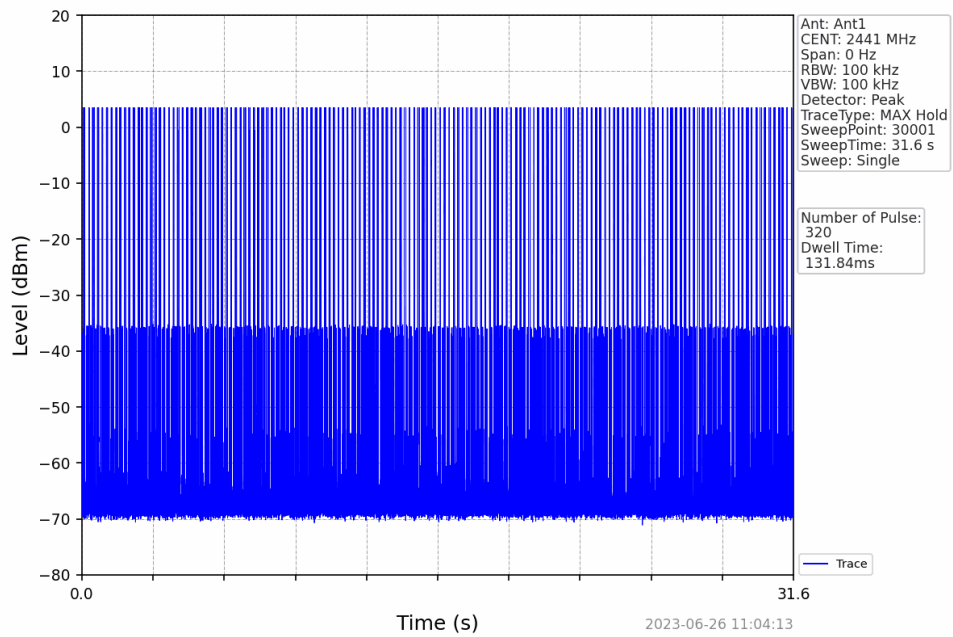
GFSK_DH5_HOPP_Ant1_NTNV



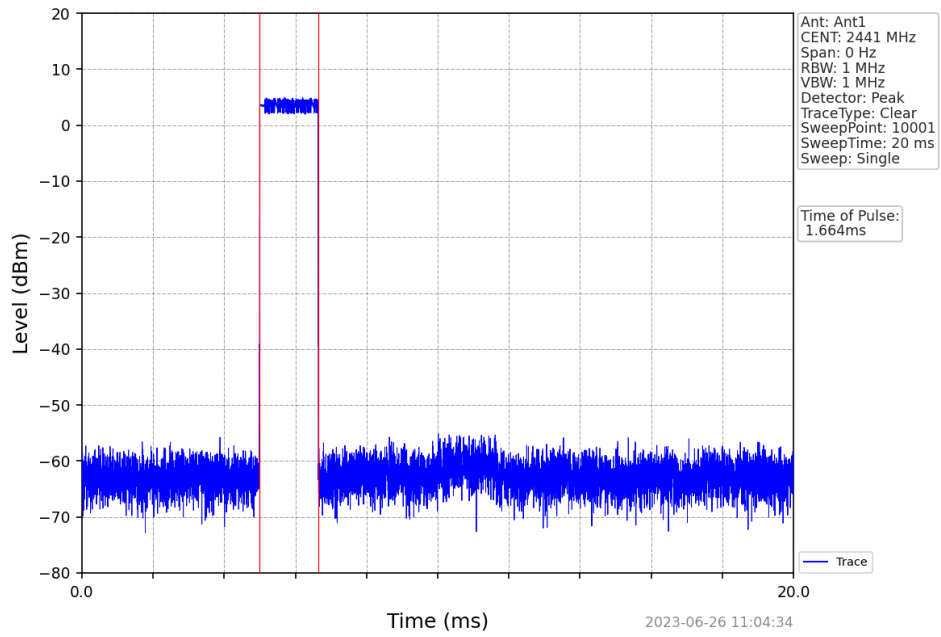
$\pi/4$ -DQPSK 2DH1_HOPP_Ant1_NTNV



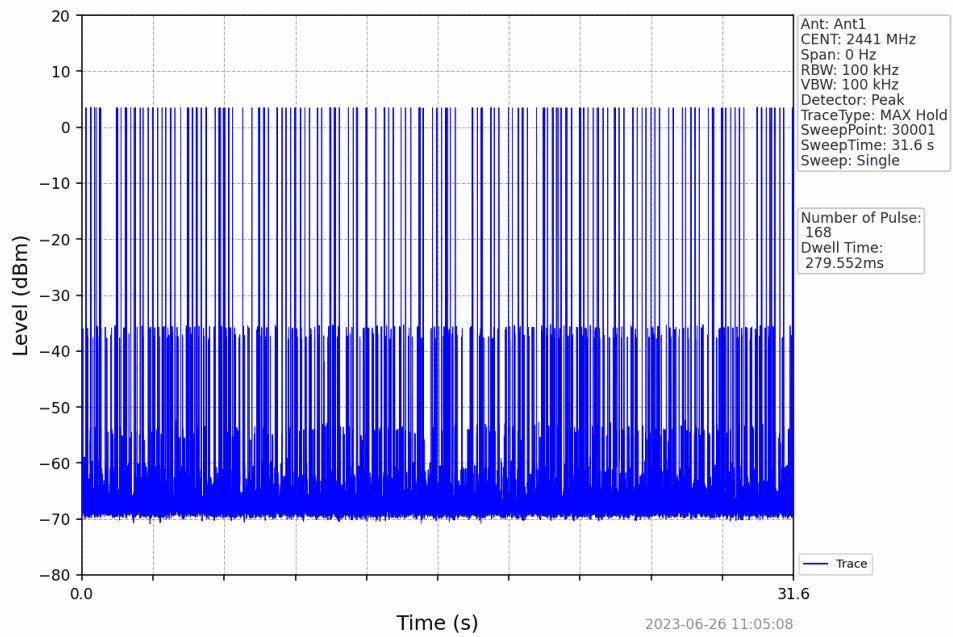
$\pi/4$ -DQPSK 2DH1_HOPP_Ant1_NTNV



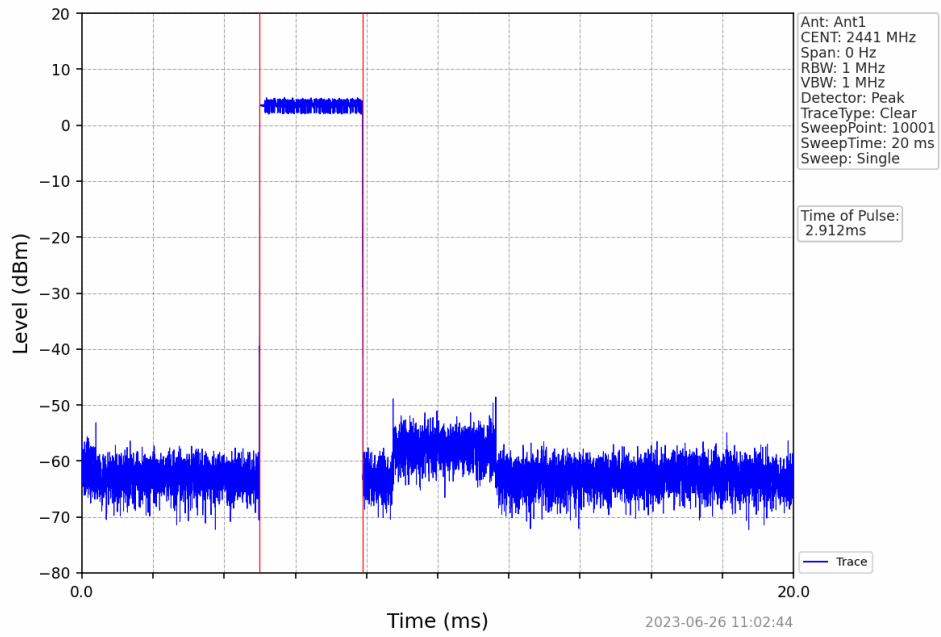
$\pi/4$ -DQPSK 2DH3_HOPP_Ant1_NTNV



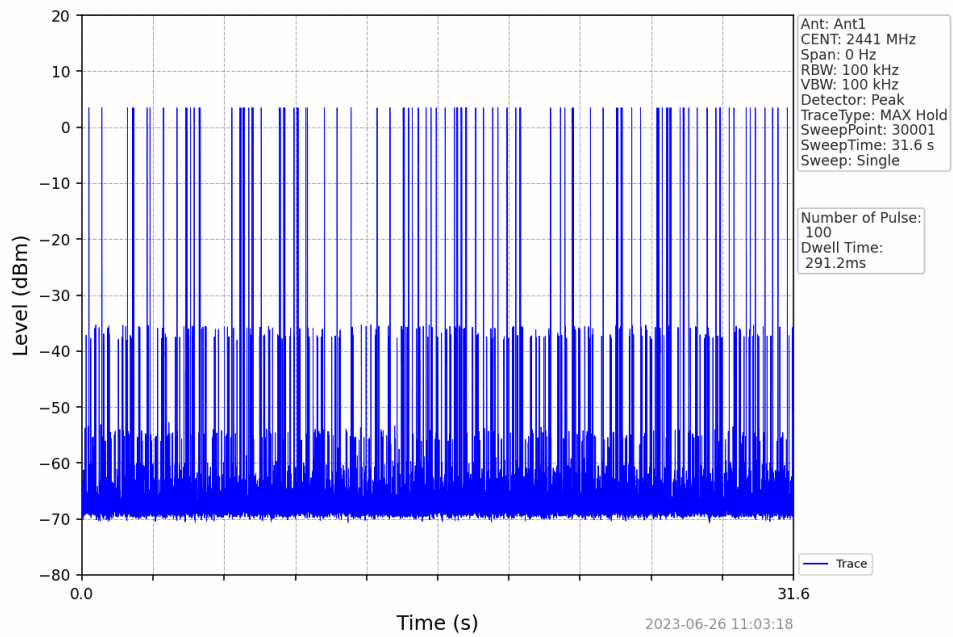
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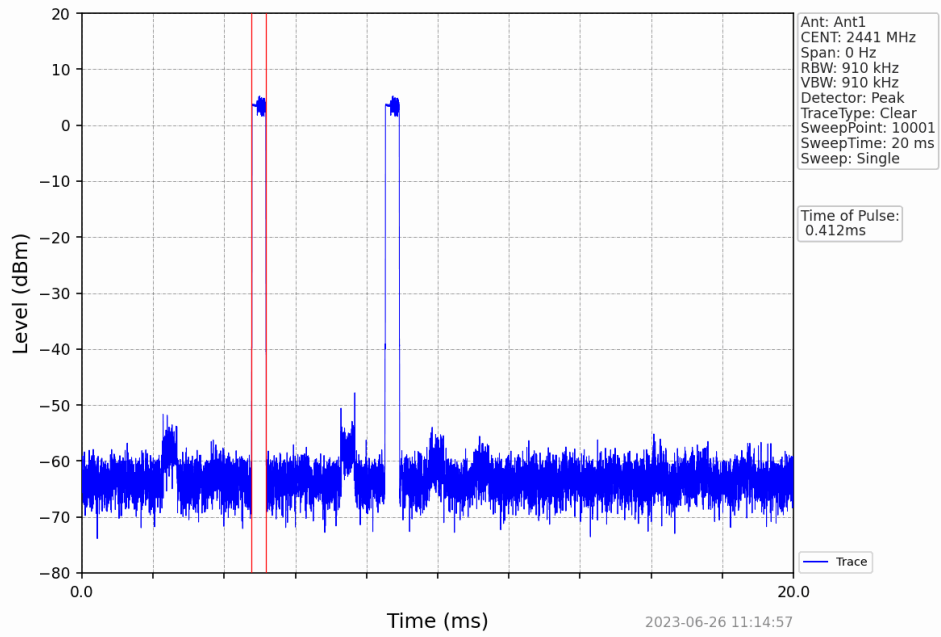
$\pi/4$ -DQPSK 2DH5_HOPP_Ant1_NTNV



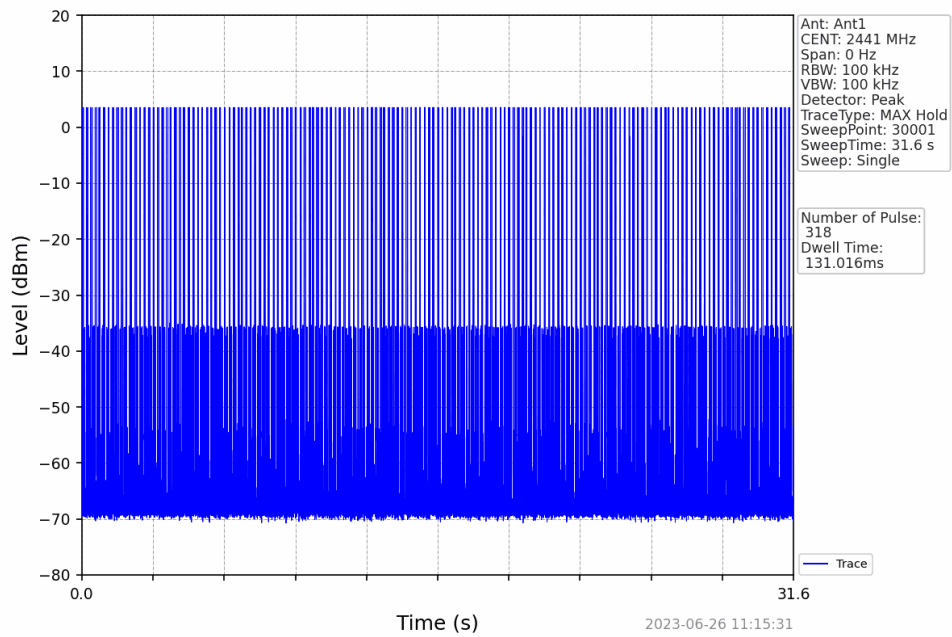
$\pi/4$ -DQPSK 2DH5_HOPP_Ant1_NTNV



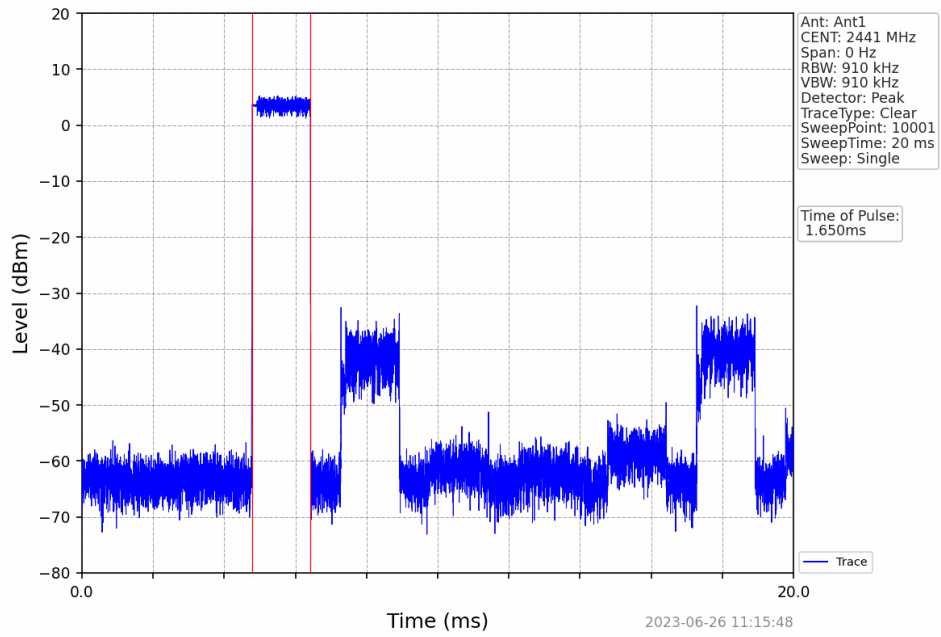
8-DPSK_3DH1_HOPP_Ant1_NTNV



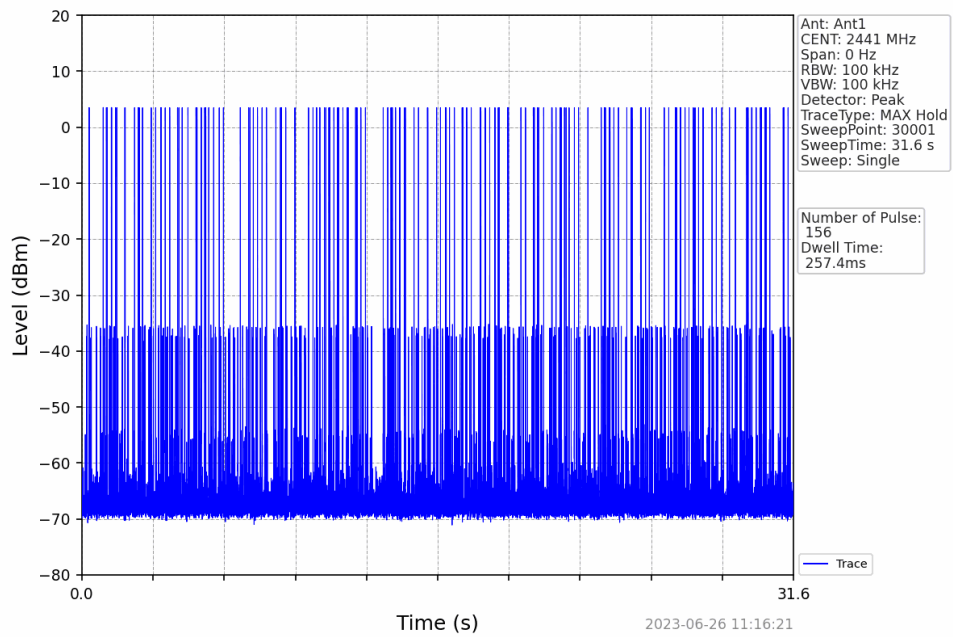
8-DPSK_3DH1_HOPP_Ant1_NTNV



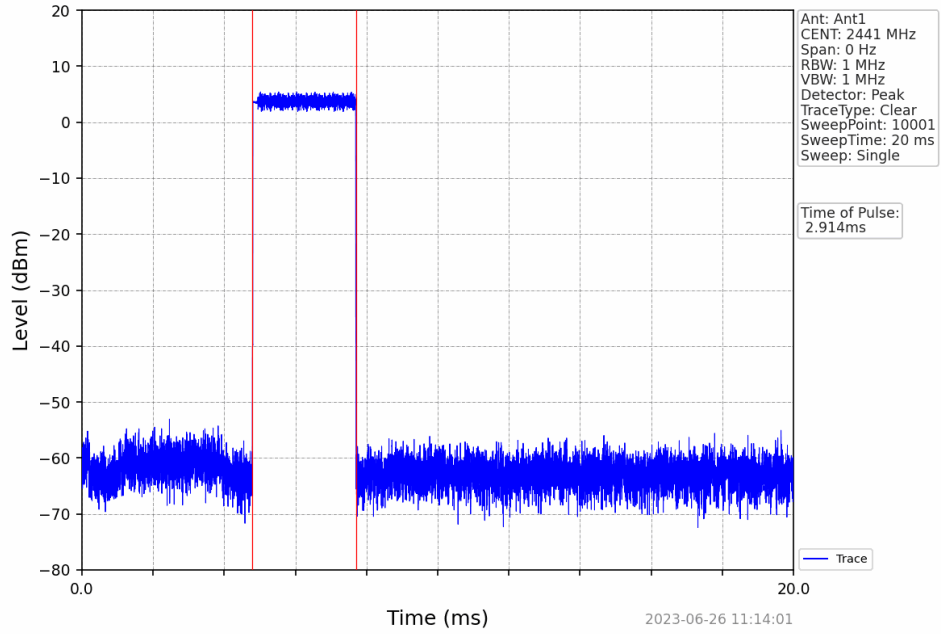
8-DPSK_3DH3_HOPP_Ant1_NTNV



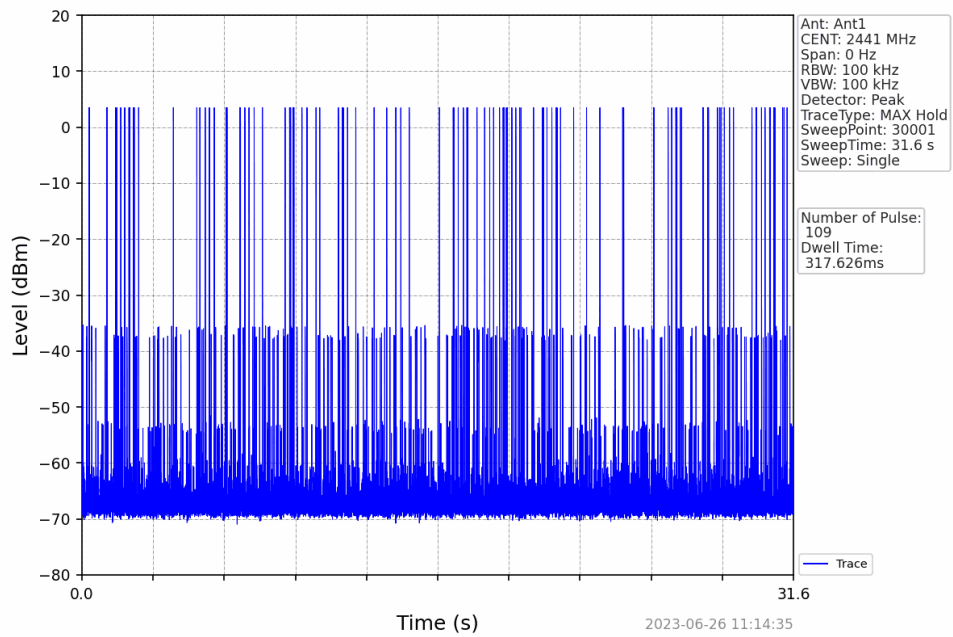
8-DPSK_3DH3_HOPP_Ant1_NTNV



8-DPSK_3DH5_HOPP_Ant1_NTNV



8-DPSK_3DH5_HOPP_Ant1_NTNV



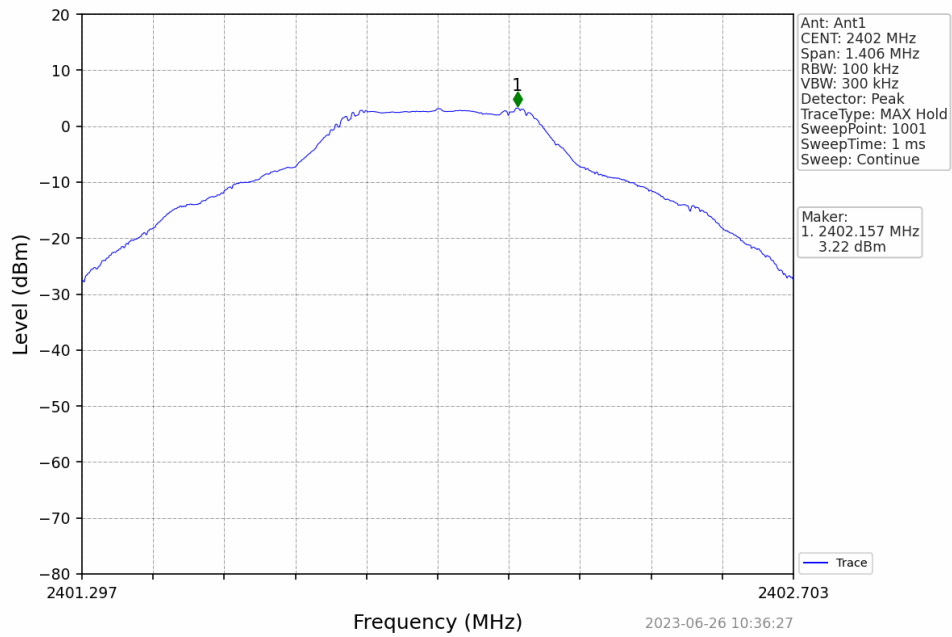
6 Conducted Spurious Emissions and Band Edges Test

6.1 Test Result

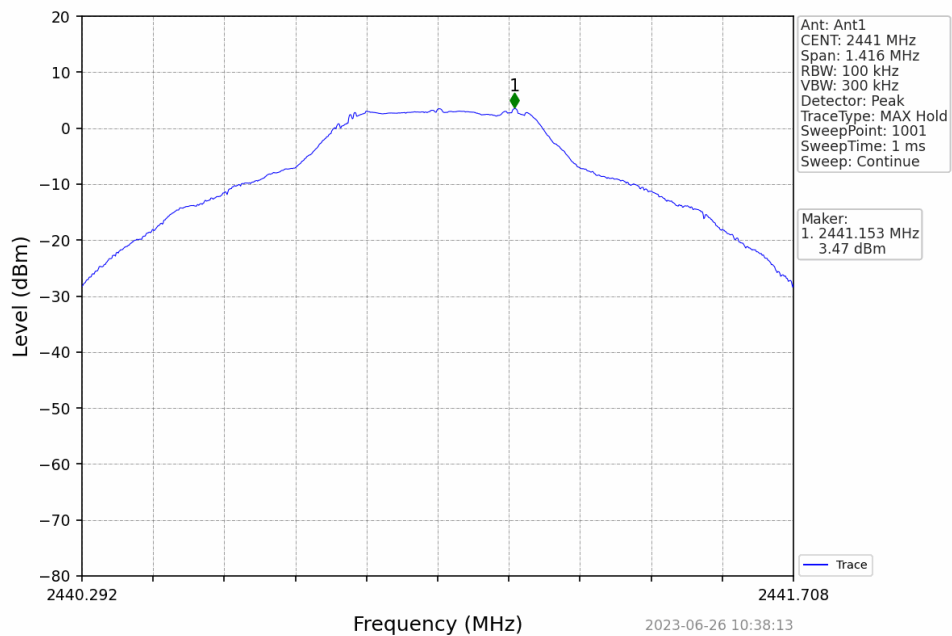
Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	3.22	-20	Pass
	MCH	3.47	-20	Pass
	HCH	4.92	-20	Pass
$\pi/4$ -DQPSK	LCH	3.34	-20	Pass
	MCH	3.58	-20	Pass
	HCH	5.11	-20	Pass
8-DPSK	LCH	3.38	-20	Pass
	MCH	3.58	-20	Pass
	HCH	5.17	-20	Pass

6.2 Test Graphs

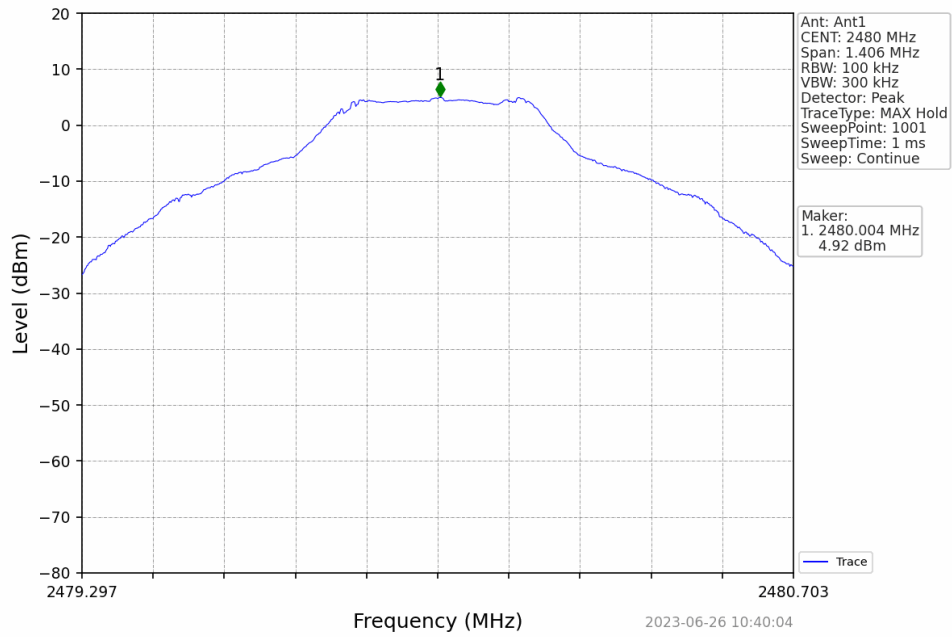
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



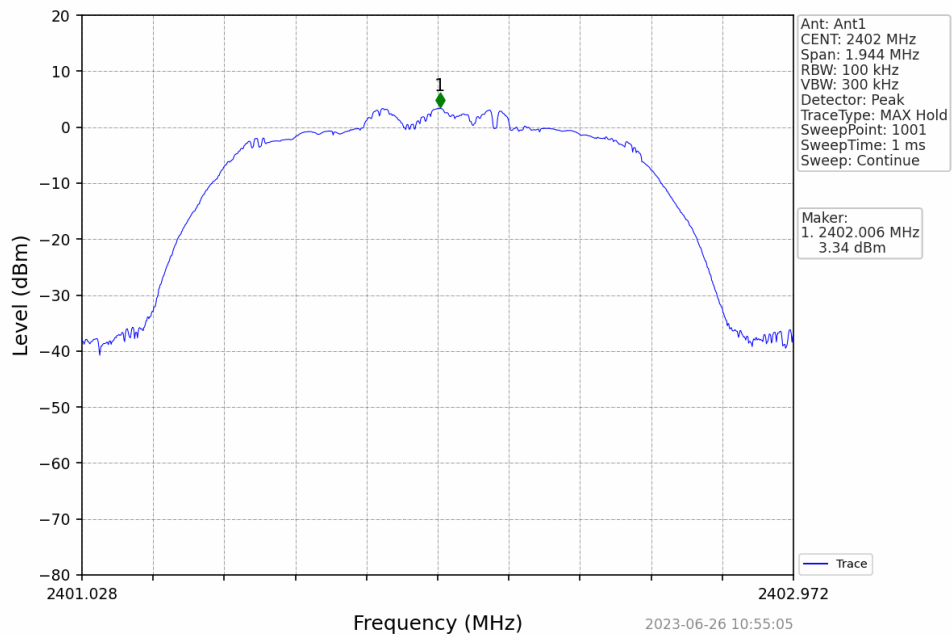
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



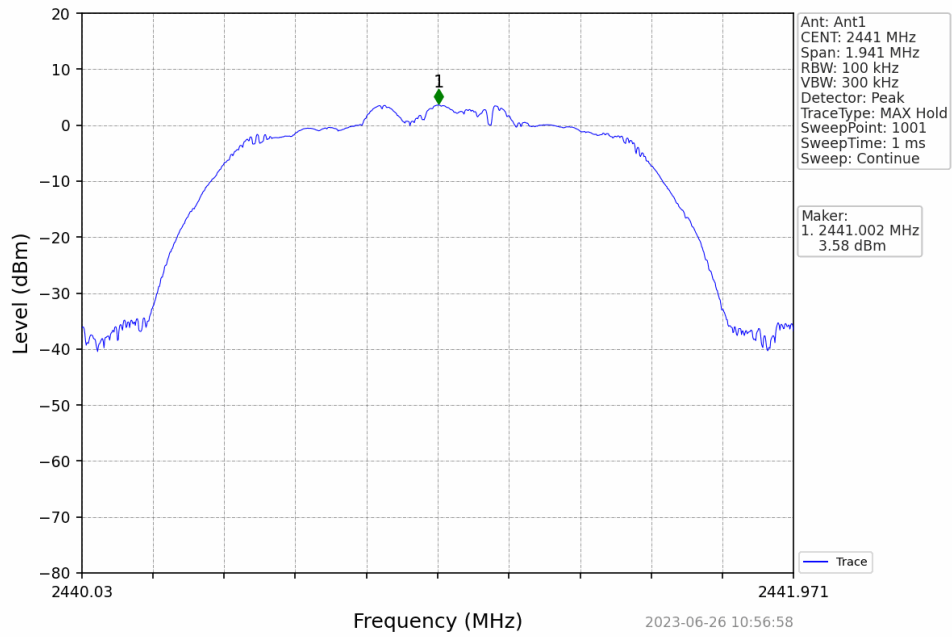
GFSK DH5 HCH 2480MHz Ant1 NTN



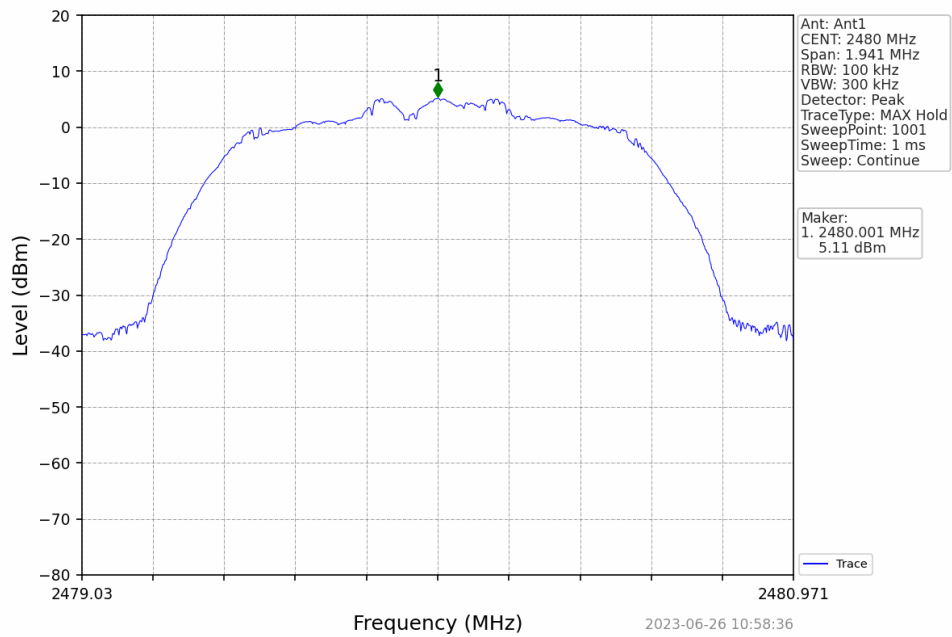
$\pi/4$ -DQPSK 2DH5 LCH 2402MHz Ant1 NTN



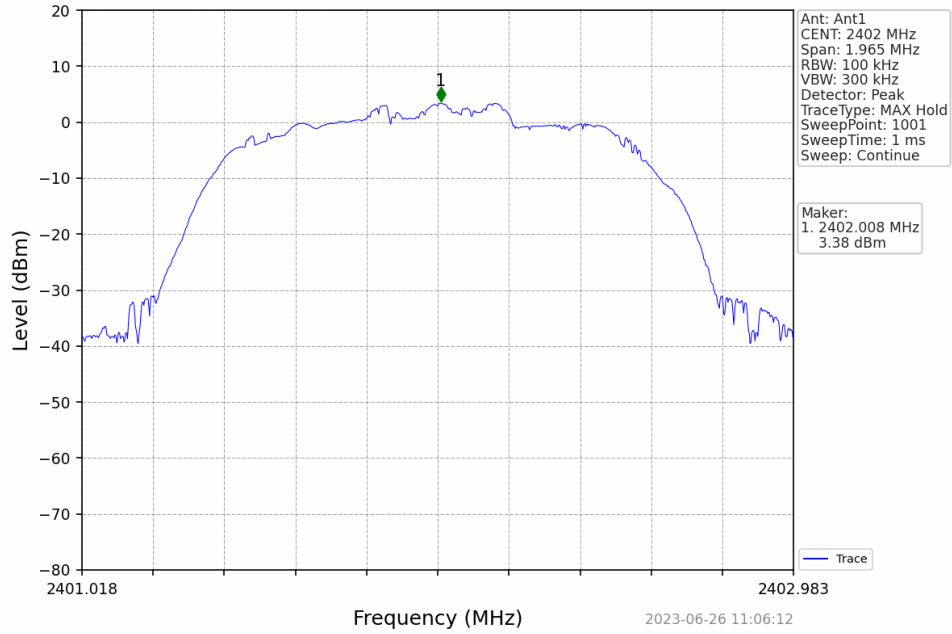
$\pi/4$ -DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



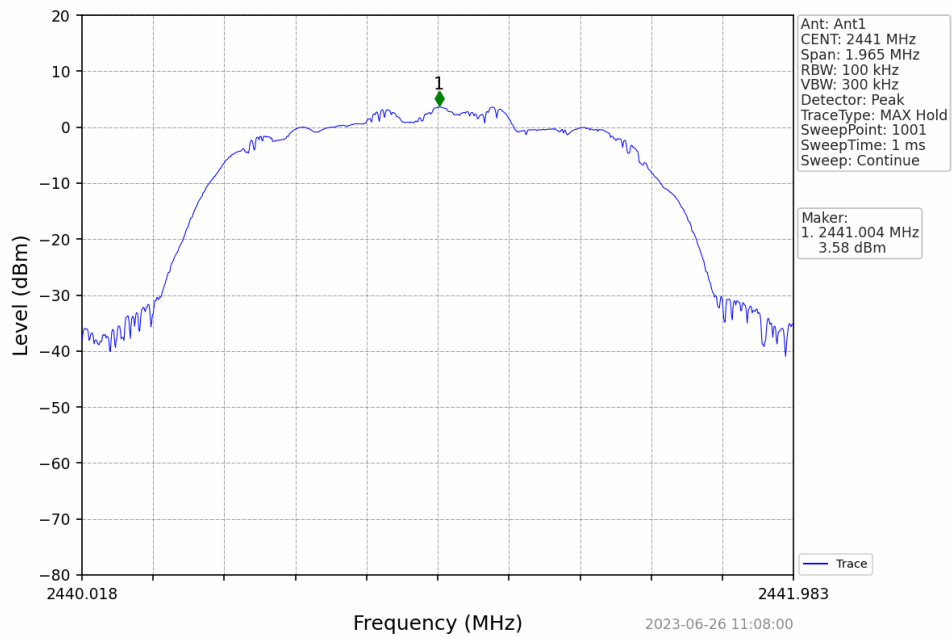
$\pi/4$ -DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



8-DPSK 3DH5_LCH_2402MHz_Ant1_NTNV

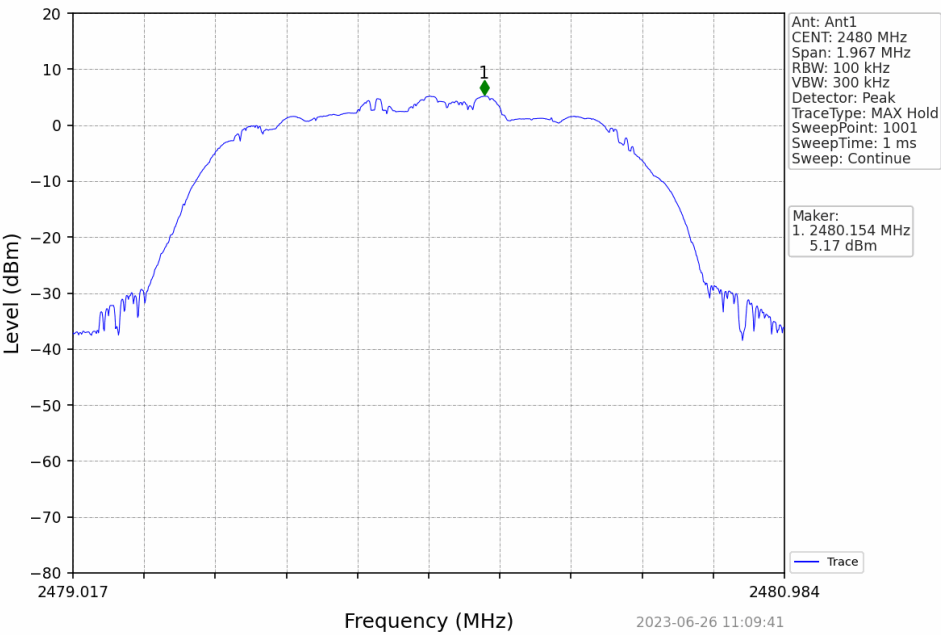


8-DPSK 3DH5_MCH_2441MHz_Ant1_NTNV





8-DPSK 3DH5_HCH_2480MHz_Ant1_NTNV

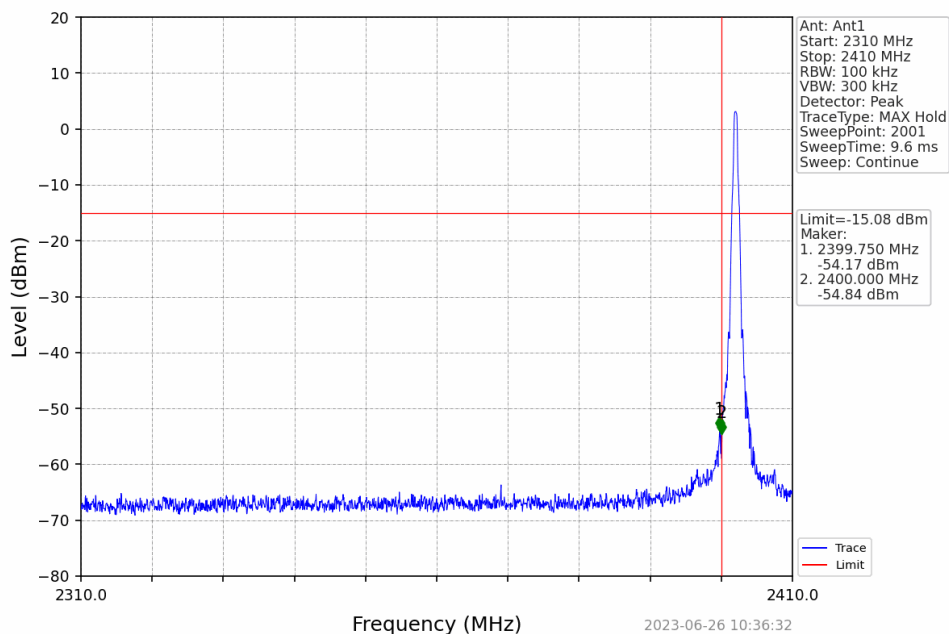


6.3 Conducted Spurious Emission

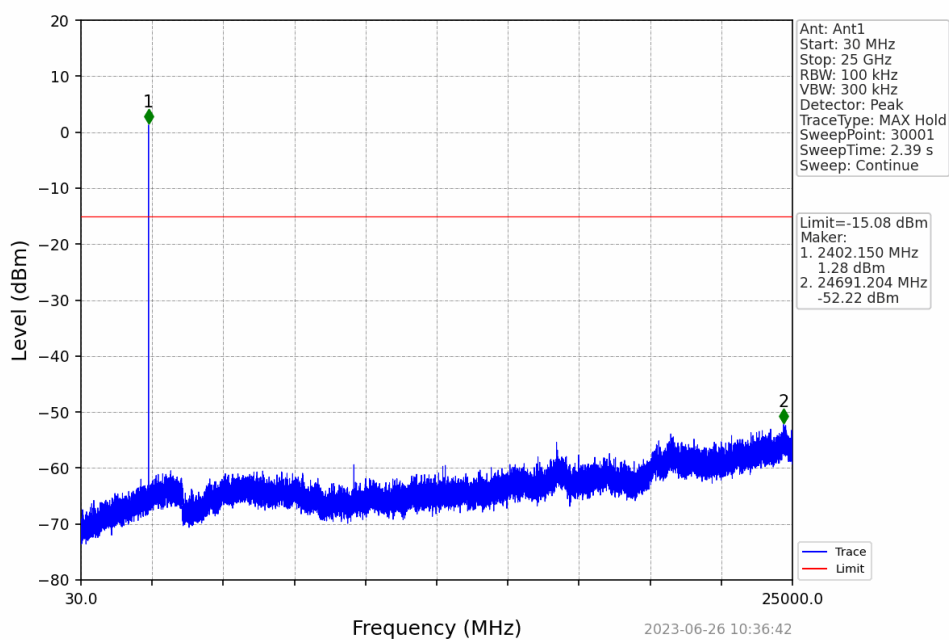
Mode	Channel	Carrier Frequency [MHz]	Frequency Hopping	Max Spurious Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	2402	Off	4.92	-15.08	Pass
	MCH	22440	On	4.92	-15.08	Pass
	HCH	2480	Off	4.92	-15.08	Pass
	HCH	HOPP	On	4.92	-15.08	Pass
$\pi/4$ -DQPSK	LCH	2402	Off	5.11	-14.89	Pass
	MCH	22440	On	5.11	-14.89	Pass
	HCH	2480	Off	5.11	-14.89	Pass
	HCH	HOPP	On	5.11	-14.89	Pass
8-DPSK	LCH	2402	Off	5.17	-14.83	Pass
	MCH	22440	On	5.17	-14.83	Pass
	HCH	2480	Off	5.17	-14.83	Pass
	HCH	HOPP	On	5.17	-14.83	Pass

6.4 Test Graphs

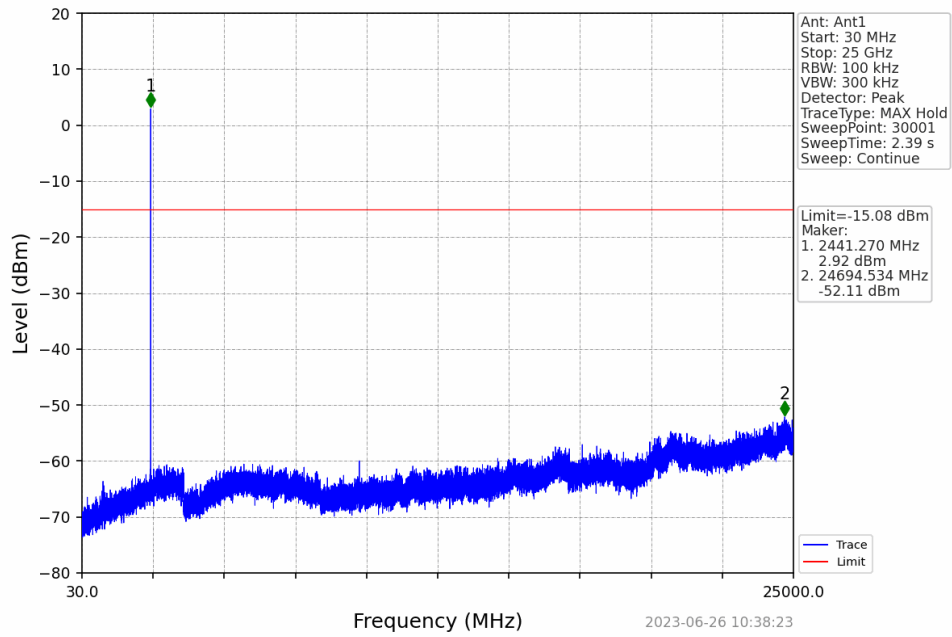
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



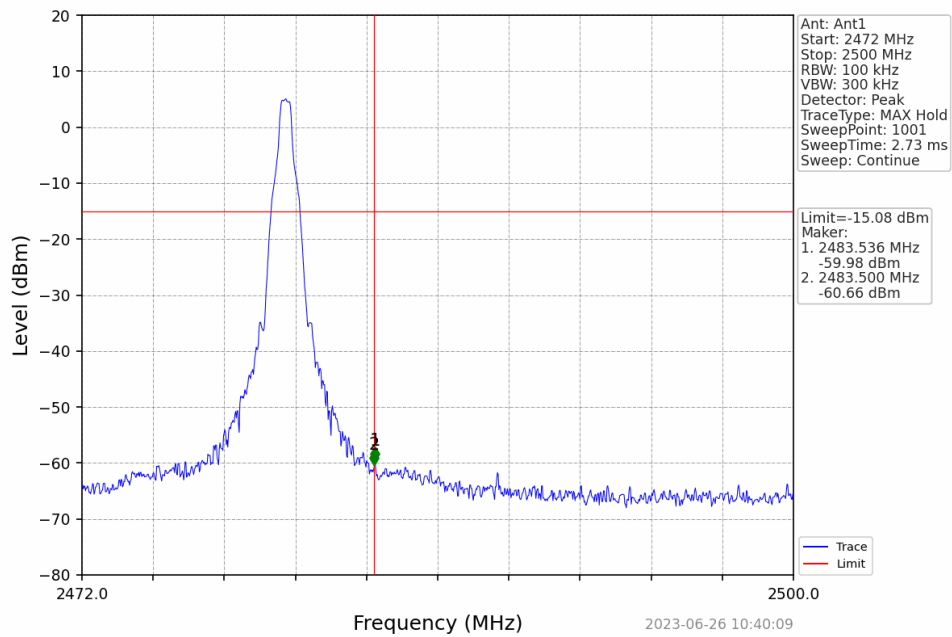
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



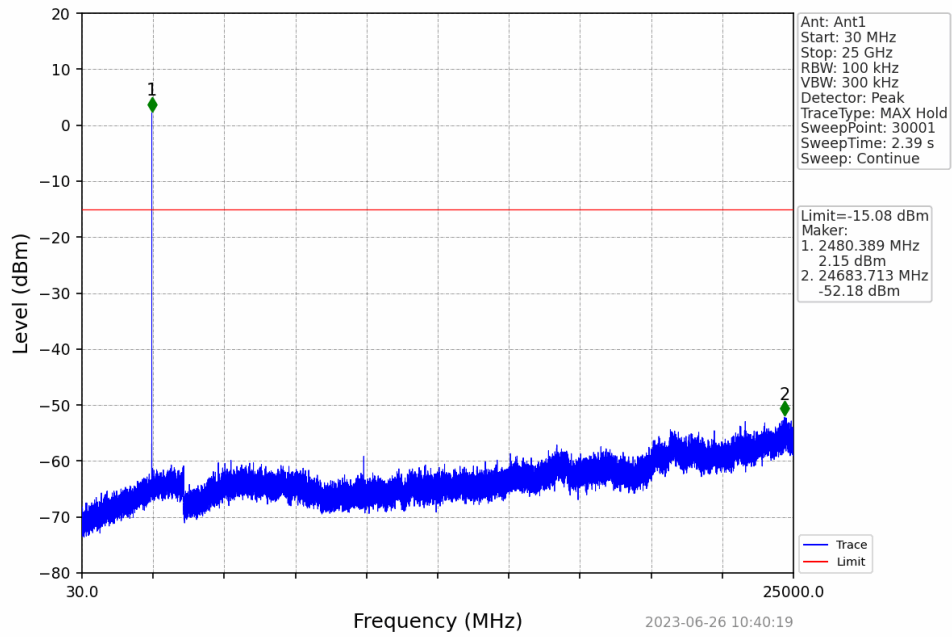
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



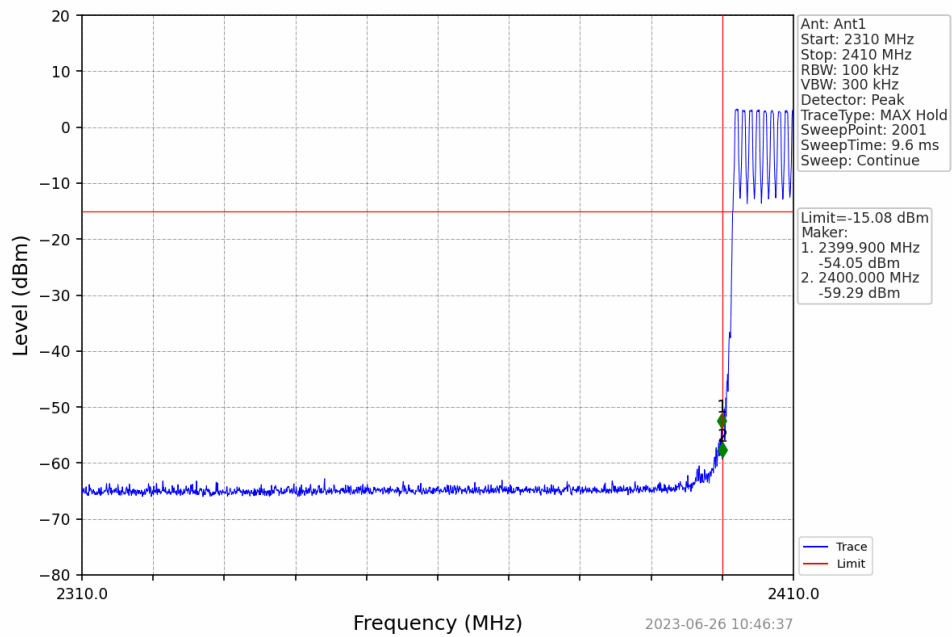
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



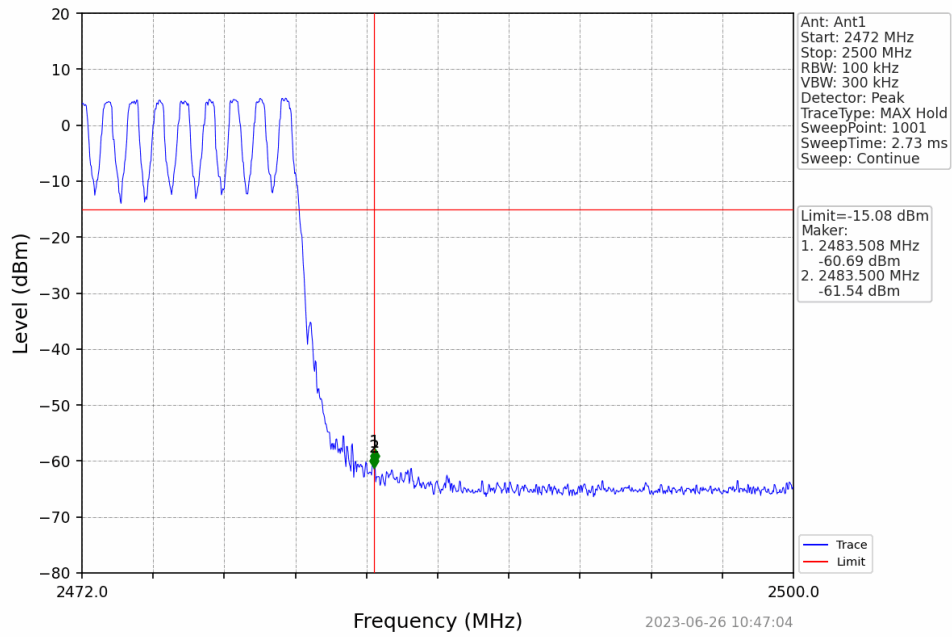
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



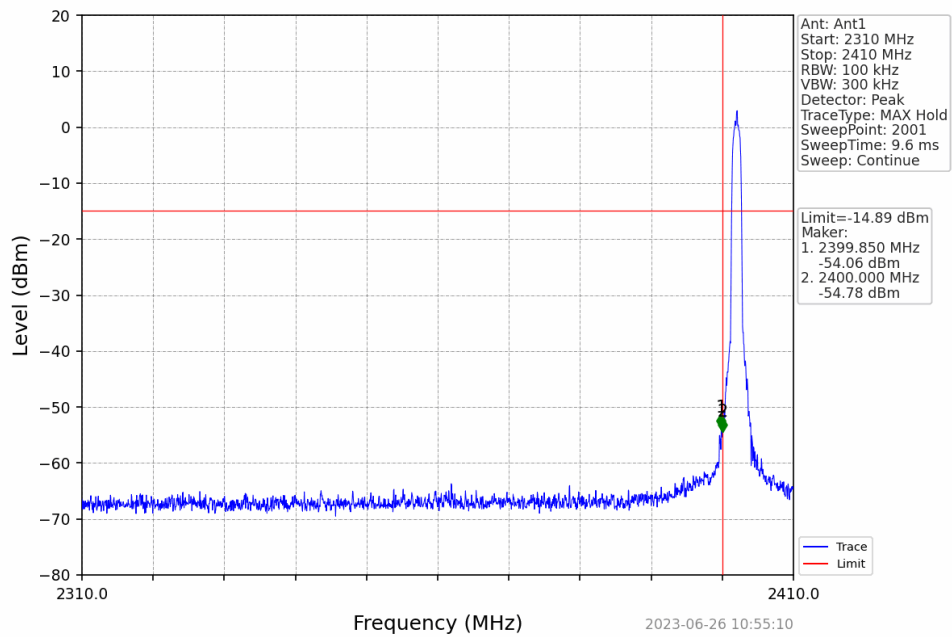
GFSK_DH5_HOPP_Ant1_NTNV



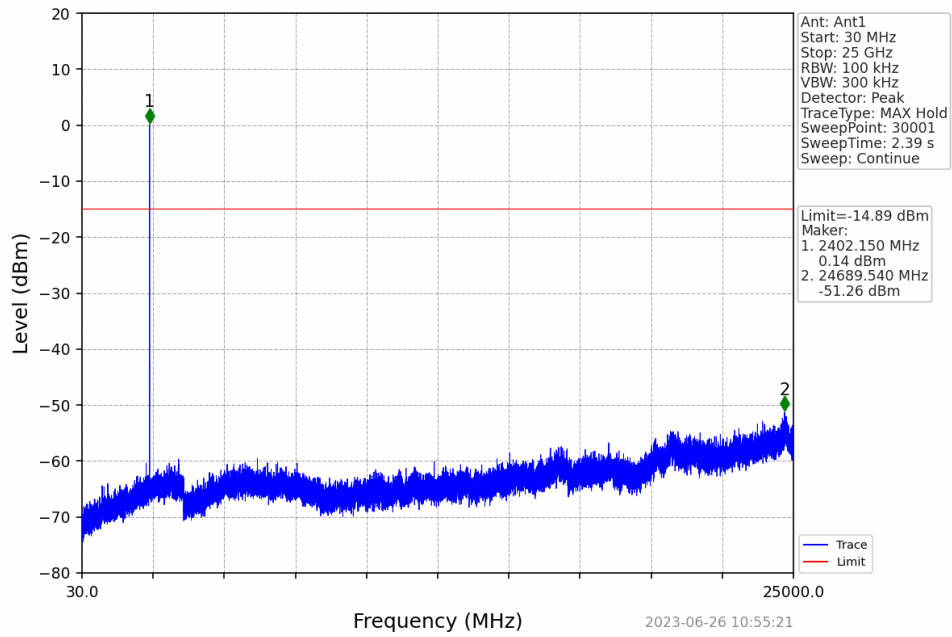
GFSK_DH5_HOPP_Ant1_NTNV



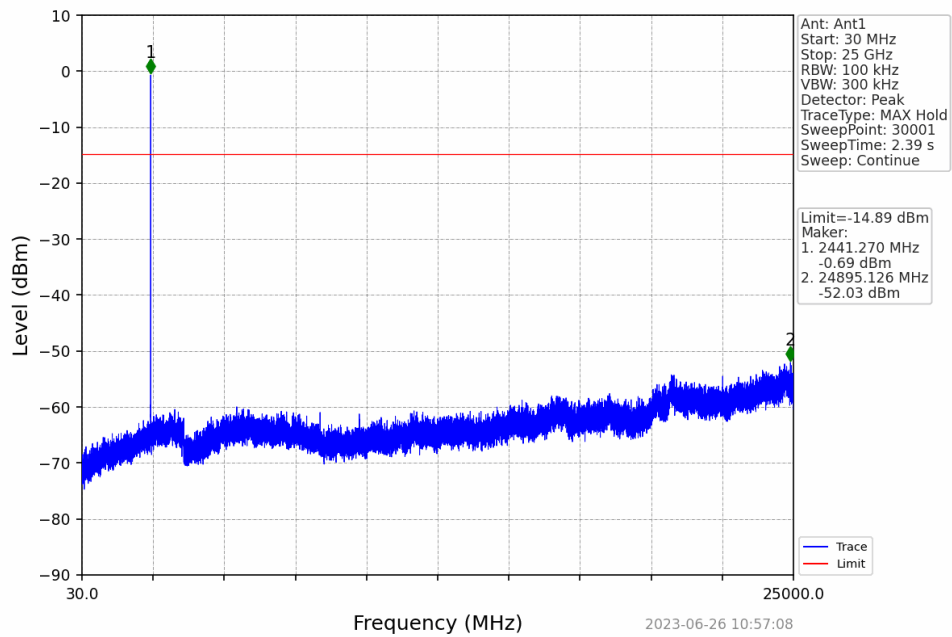
$\pi/4$ -DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



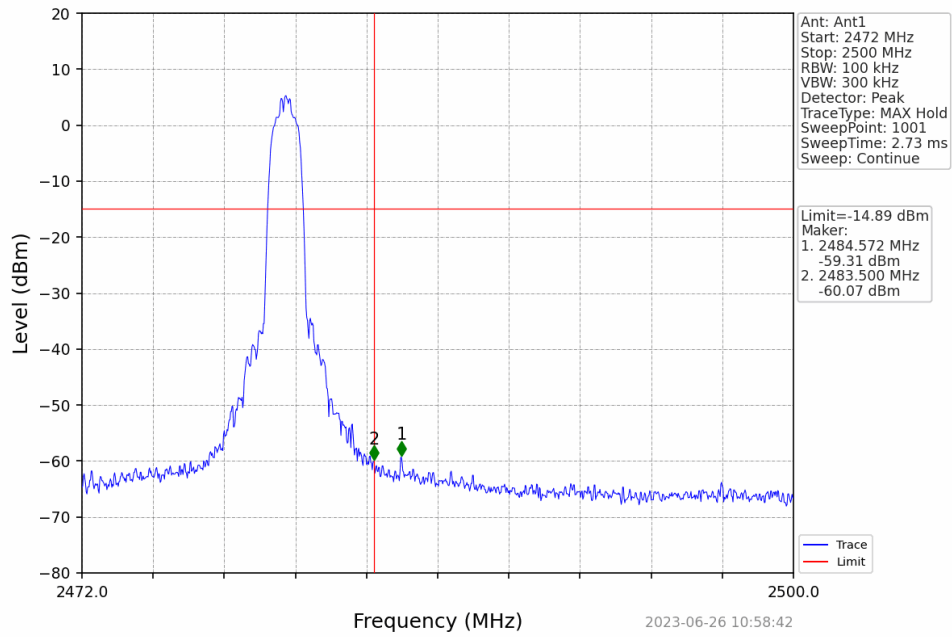
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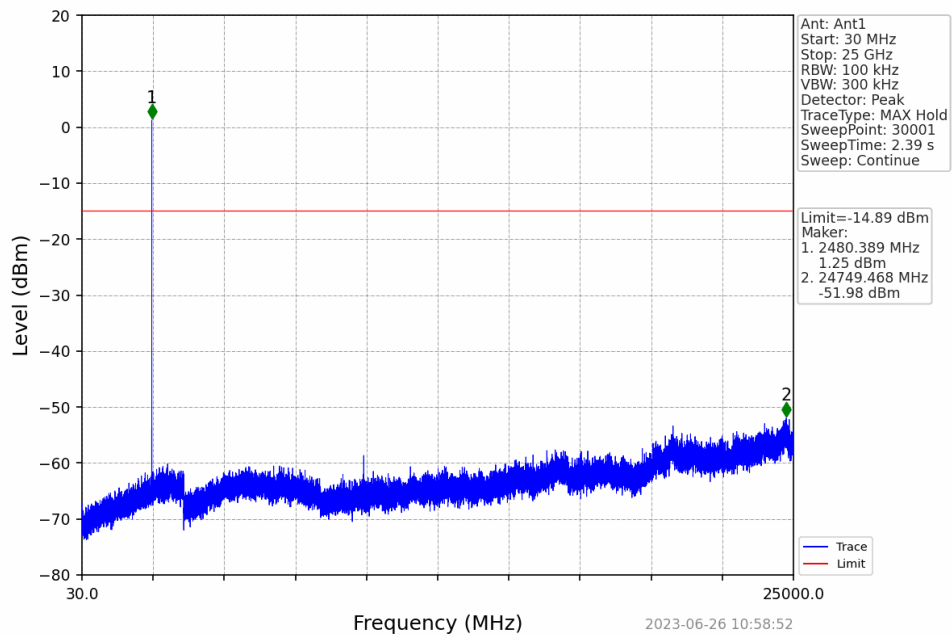
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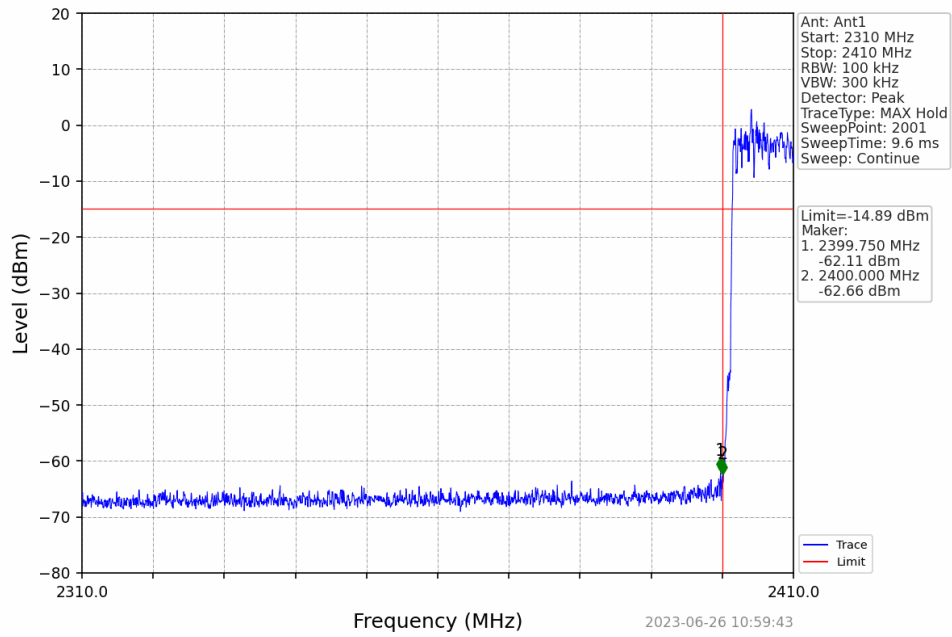
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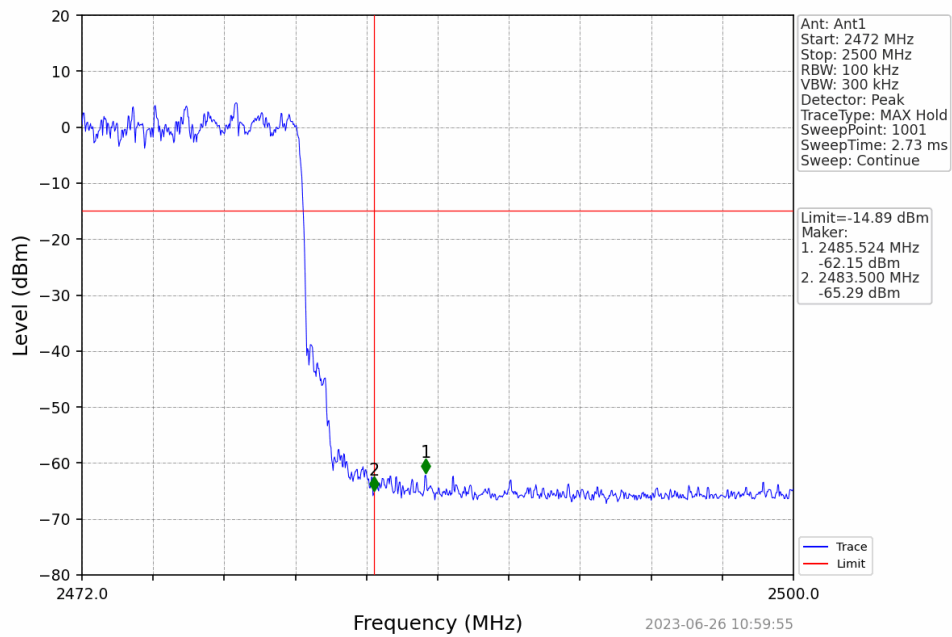
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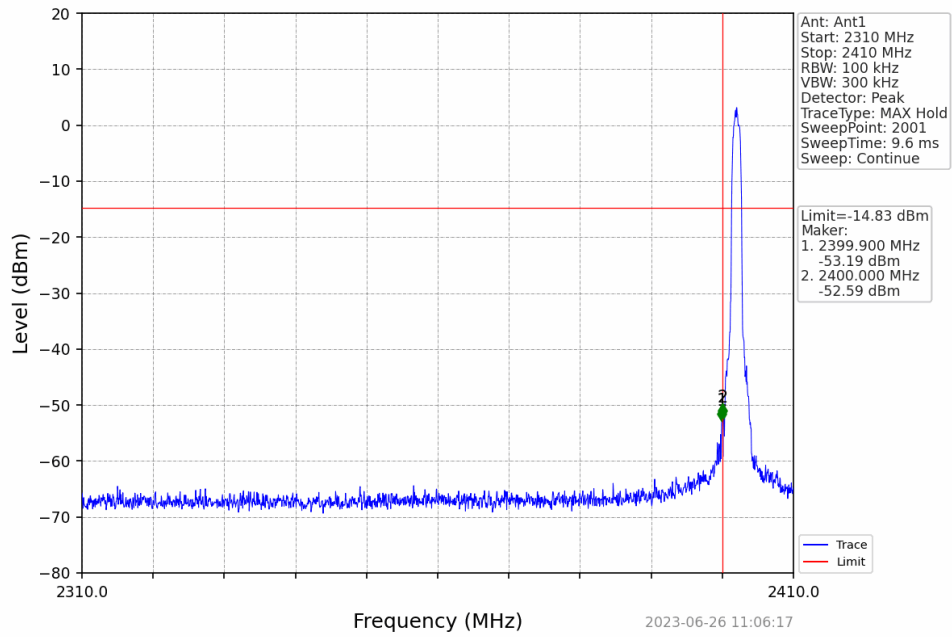
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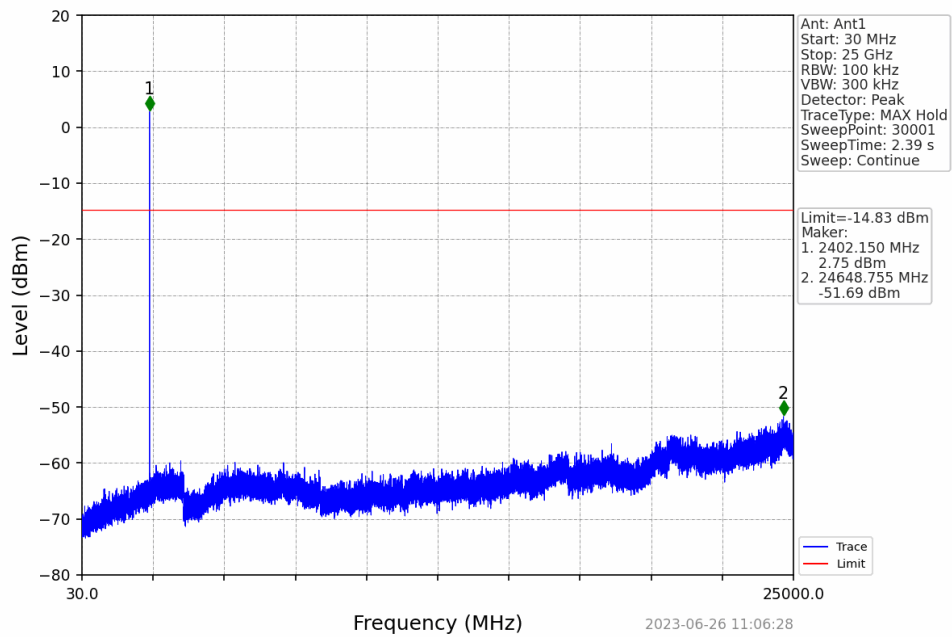
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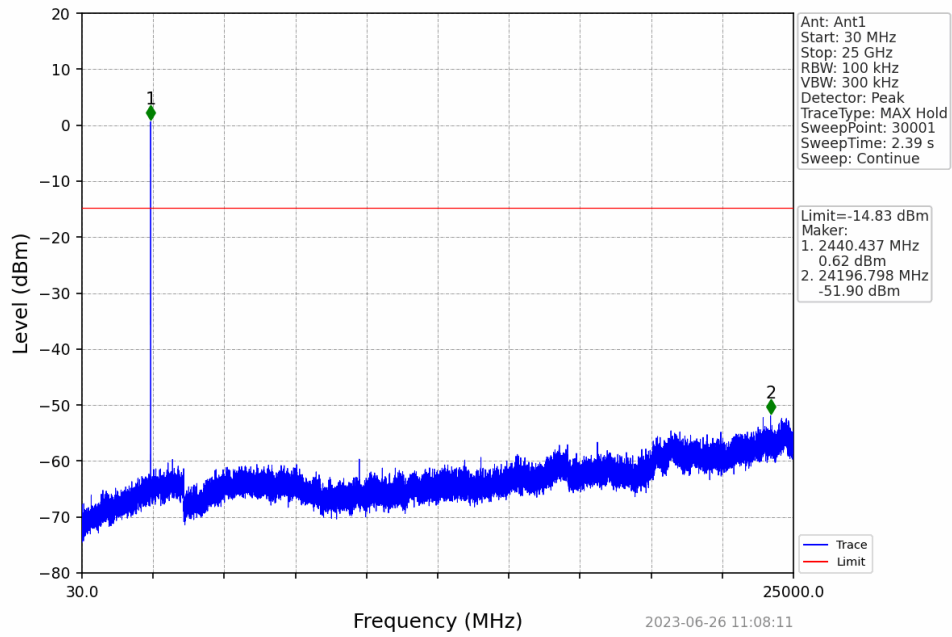
8-DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



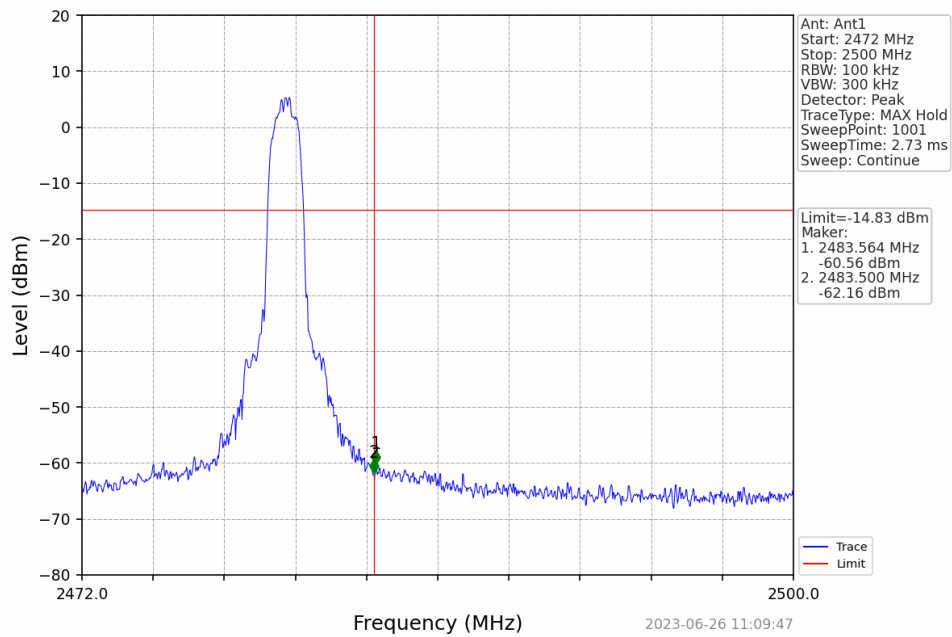
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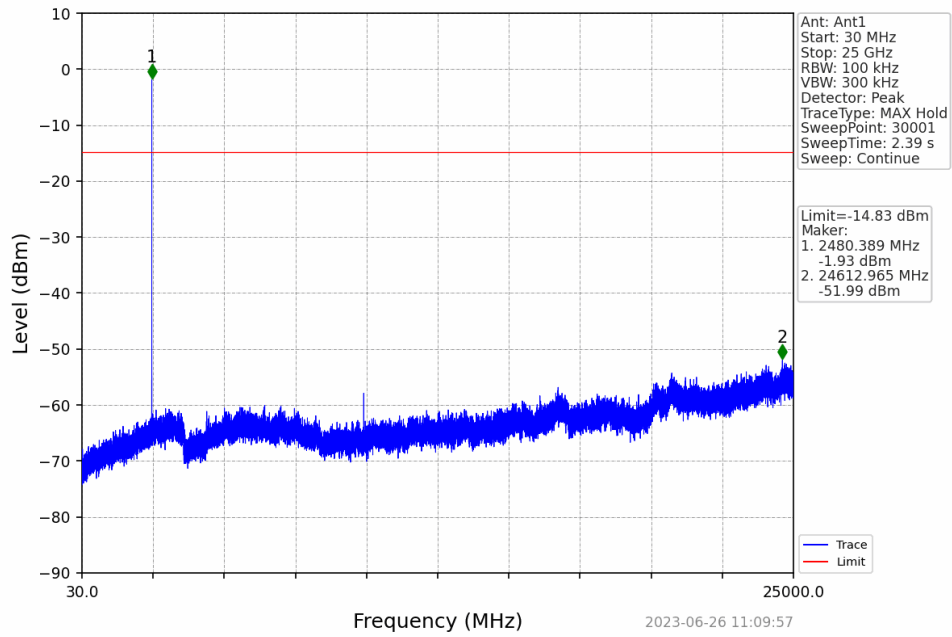
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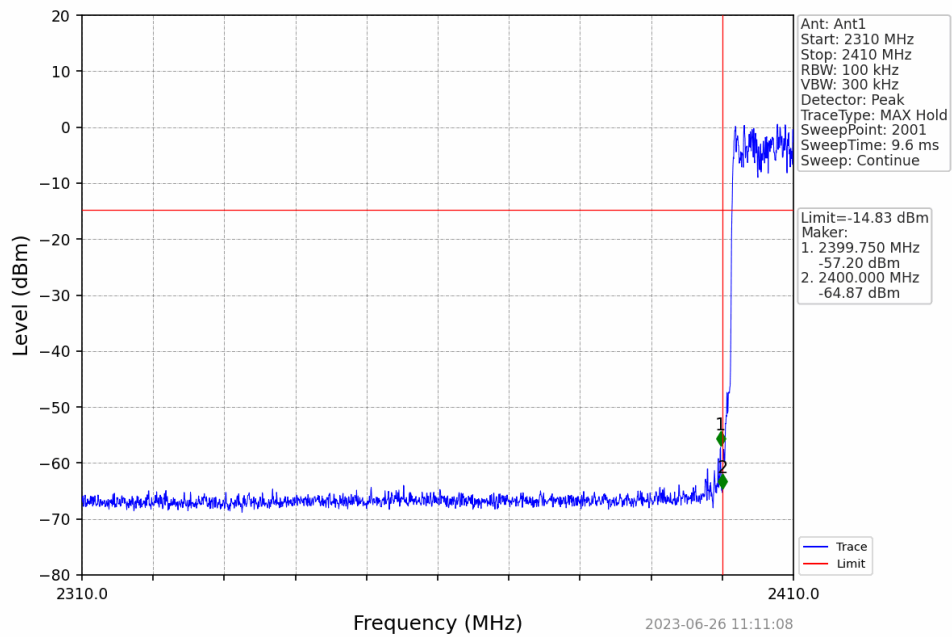
8-DPSK 3DH5_HCH_2480MHz_Ant1_NTNV



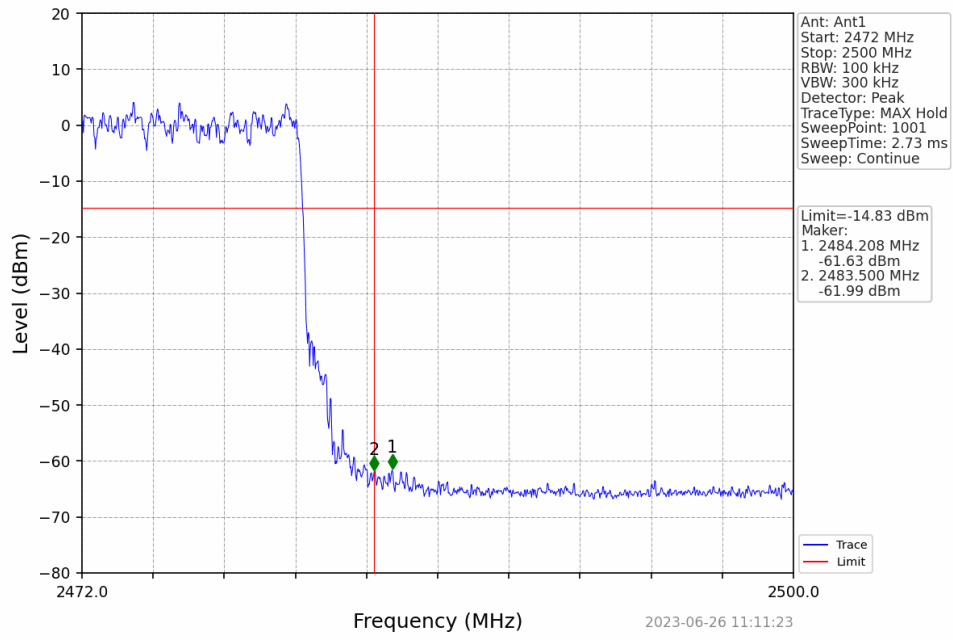
8-DPSK 3DH5_HCH_2480MHz_Ant1_NTNV



8-DPSK 3DH5_HOPP_Ant1_NTNV



8-DPSK_3DH5_HOPP_Ant1_NTNV





7 Restrict-band Band-edge Test

7.1 Test Result

Test Mode: GFKS										
Pol.	Frequen cy (MHz)	Meter Reading (dBuV)	Pre- amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV/ m)	Margin (dB)	Detect or Type	Result
Low Channel: 2402MHz										
H	2390.00	47.21	29.15	3.41	34.01	45.76	74.00	-28.24	PK	PASS
H	2400.00	64.61	29.16	3.43	34.01	63.19	74.00	-10.81	PK	PASS
V	2390.00	48.17	29.15	3.41	34.01	46.72	74.00	-27.28	PK	PASS
V	2400.00	67.11	29.16	3.43	34.01	65.69	74.00	-8.31	PK	PASS
H	2390.00	36.78	29.15	3.41	34.01	35.33	54.00	-18.67	AV	PASS
H	2400.00	48.27	29.16	3.43	34.01	46.85	54.00	-7.15	AV	PASS
V	2390.00	37.03	29.15	3.41	34.01	35.58	54.00	-18.42	AV	PASS
V	2400.00	50.33	29.16	3.43	34.01	48.91	54.00	-5.09	AV	PASS
High Channel: 2480MHz										
H	2483.50	49.83	29.28	3.53	34.03	48.61	74.00	-25.39	PK	PASS
H	2500.00	48.17	29.30	3.56	34.03	47.00	74.00	-27.00	PK	PASS
V	2483.50	51.39	29.28	3.53	34.03	50.17	74.00	-23.83	PK	PASS
V	2500.00	49.59	29.30	3.56	34.03	48.42	74.00	-25.58	PK	PASS
H	2483.50	39.66	29.28	3.53	34.03	38.44	54.00	-15.56	AV	PASS
H	2500.00	37.04	29.30	3.56	34.03	35.87	54.00	-18.13	AV	PASS
V	2483.50	41.23	29.28	3.53	34.03	40.01	54.00	-13.99	AV	PASS
V	2500.00	37.32	29.30	3.56	34.03	36.15	54.00	-17.85	AV	PASS

Test Mode: $\pi/4$ -DQPSK										
Pol.	Frequen cy (MHz)	Meter Reading (dBuV)	Pre- amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV/ m)	Margin (dB)	Detect or Type	Result
Low Channel: 2402MHz										
H	2390.00	46.75	29.15	3.41	34.01	45.30	74.00	-28.70	PK	PASS
H	2400.00	64.10	29.16	3.43	34.01	62.68	74.00	-11.32	PK	PASS
V	2390.00	47.67	29.15	3.41	34.01	46.22	74.00	-27.78	PK	PASS
V	2400.00	66.55	29.16	3.43	34.01	65.13	74.00	-8.87	PK	PASS
H	2390.00	36.43	29.15	3.41	34.01	34.98	54.00	-19.02	AV	PASS
H	2400.00	47.90	29.16	3.43	34.01	46.48	54.00	-7.52	AV	PASS
V	2390.00	36.65	29.15	3.41	34.01	35.20	54.00	-18.80	AV	PASS
V	2400.00	49.91	29.16	3.43	34.01	48.49	54.00	-5.51	AV	PASS
High Channel: 2480MHz										
H	2483.50	49.32	29.28	3.53	34.03	48.10	74.00	-25.90	PK	PASS
H	2500.00	47.75	29.30	3.56	34.03	46.58	74.00	-27.42	PK	PASS
V	2483.50	50.81	29.28	3.53	34.03	49.59	74.00	-24.41	PK	PASS
V	2500.00	49.12	29.30	3.56	34.03	47.95	74.00	-26.05	PK	PASS
H	2483.50	39.30	29.28	3.53	34.03	38.08	54.00	-15.92	AV	PASS
H	2500.00	36.75	29.30	3.56	34.03	35.58	54.00	-18.42	AV	PASS
V	2483.50	40.84	29.28	3.53	34.03	39.62	54.00	-14.38	AV	PASS
V	2500.00	36.99	29.30	3.56	34.03	35.82	54.00	-18.18	AV	PASS



Test Mode: 8-DPSK										
Pol.	Frequen cy (MHz)	Meter Reading (dBuV)	Pre- amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV/ m)	Margin (dB)	Detect or Type	Result
Low Channel: 2402MHz										
H	2390.00	46.94	29.15	3.41	34.01	45.49	74.00	-28.51	PK	PASS
H	2400.00	64.31	29.16	3.43	34.01	62.89	74.00	-11.11	PK	PASS
V	2390.00	47.87	29.15	3.41	34.01	46.42	74.00	-27.58	PK	PASS
V	2400.00	66.78	29.16	3.43	34.01	65.36	74.00	-8.64	PK	PASS
H	2390.00	36.57	29.15	3.41	34.01	35.12	54.00	-18.88	AV	PASS
H	2400.00	48.05	29.16	3.43	34.01	46.63	54.00	-7.37	AV	PASS
V	2390.00	36.80	29.15	3.41	34.01	35.35	54.00	-18.65	AV	PASS
V	2400.00	50.08	29.16	3.43	34.01	48.66	54.00	-5.34	AV	PASS
High Channel: 2480MHz										
H	2483.50	49.53	29.28	3.53	34.03	48.31	74.00	-25.69	PK	PASS
H	2500.00	47.92	29.30	3.56	34.03	46.75	74.00	-27.25	PK	PASS
V	2483.50	51.05	29.28	3.53	34.03	49.83	74.00	-24.17	PK	PASS
V	2500.00	49.31	29.30	3.56	34.03	48.14	74.00	-25.86	PK	PASS
H	2483.50	39.45	29.28	3.53	34.03	38.23	54.00	-15.77	AV	PASS
H	2500.00	36.87	29.30	3.56	34.03	35.70	54.00	-18.30	AV	PASS
V	2483.50	41.00	29.28	3.53	34.03	39.78	54.00	-14.22	AV	PASS
V	2500.00	37.13	29.30	3.56	34.03	35.96	54.00	-18.04	AV	PASS

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit

.....End.....