Appendix A

RF Test Data for BT(BDR/EDR) (Conducted Measurement)

Product Name: True wireless earbuds

Trade Mark: N/A

Test Model: TWS6

Environmental Conditions

Temperature:	25.2℃
Relative Humidity:	51.2%
ATM Pressure:	101Kpa
Test Engineer:	Simba Huang
Supervised by:	Seal Chen

Contents

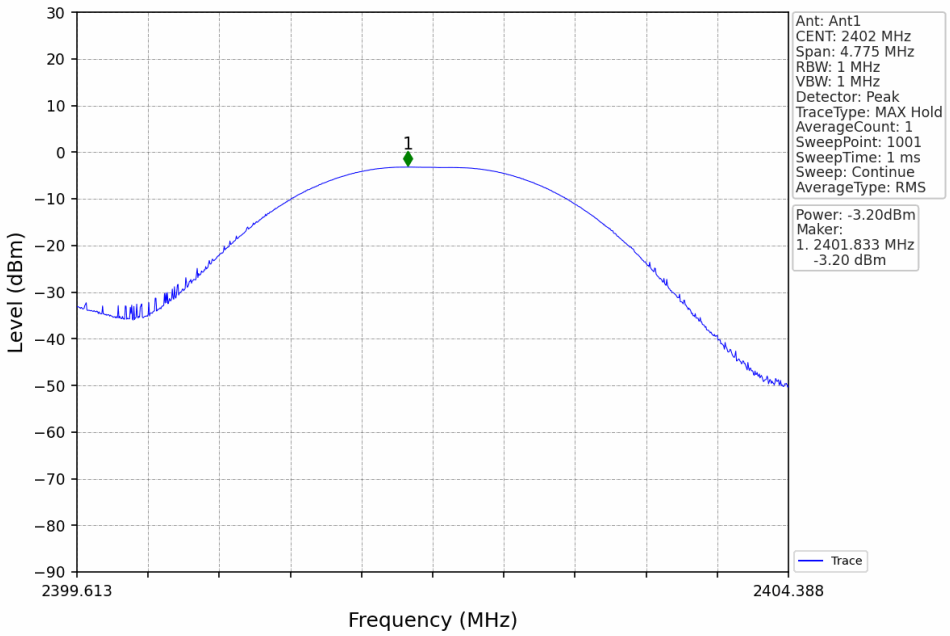
1 Maximum Conducted Peak Output Power

1.1 Test Result

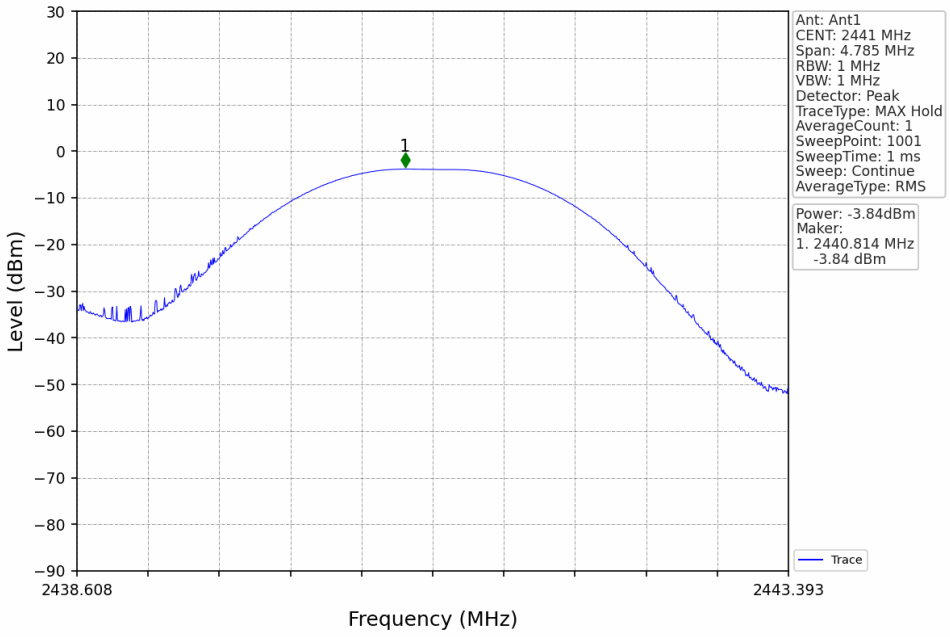
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-3.20	21	Pass
	MCH	-3.84	21	Pass
	HCH	-4.03	21	Pass
π/4-DQPSK	LCH	-2.22	21	Pass
	MCH	-2.82	21	Pass
	HCH	-3.03	21	Pass

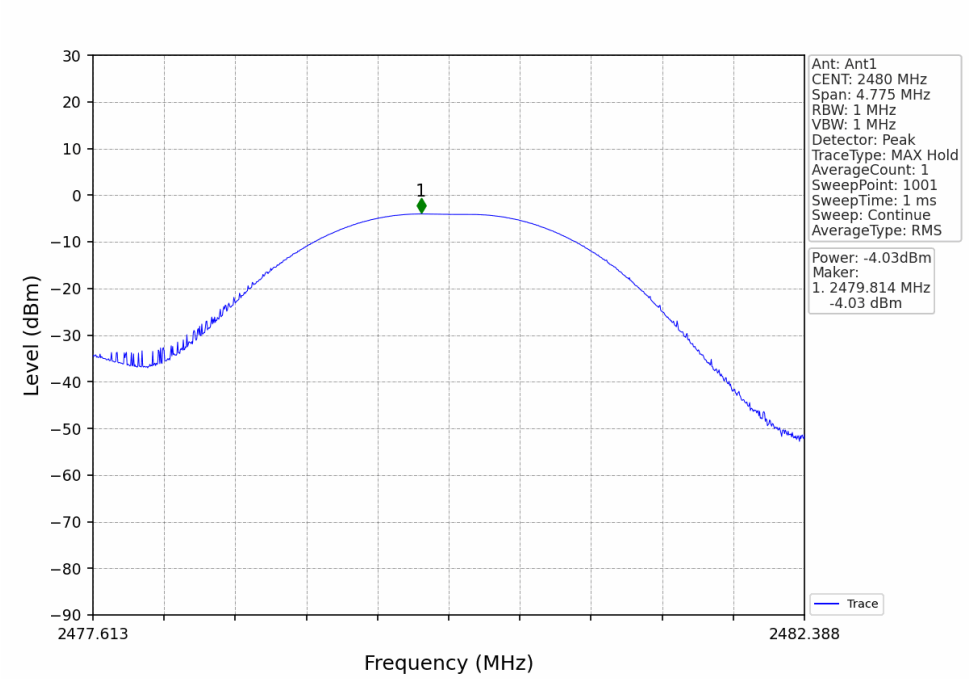
1.2 Test Graphs

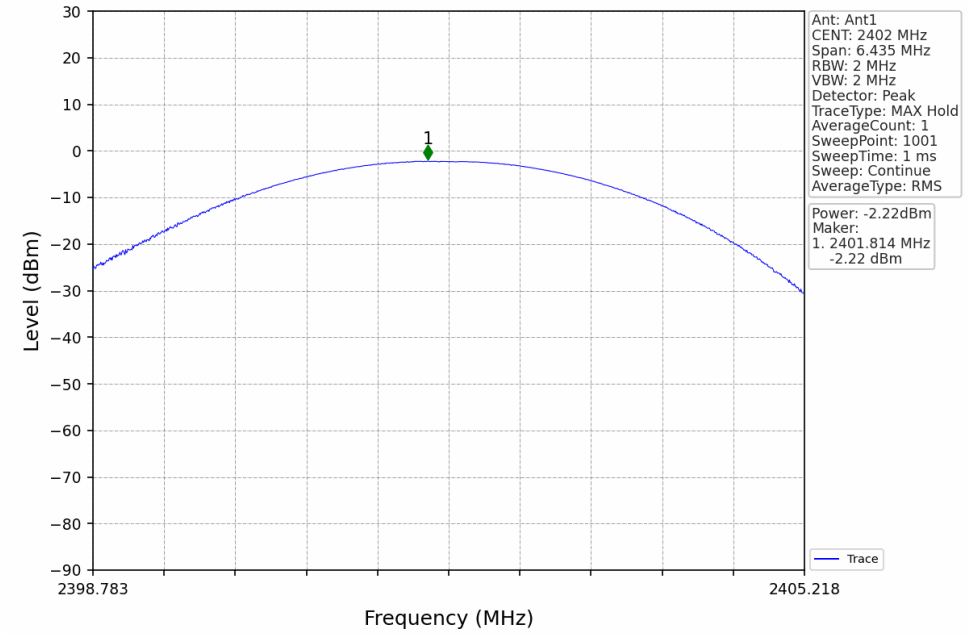
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



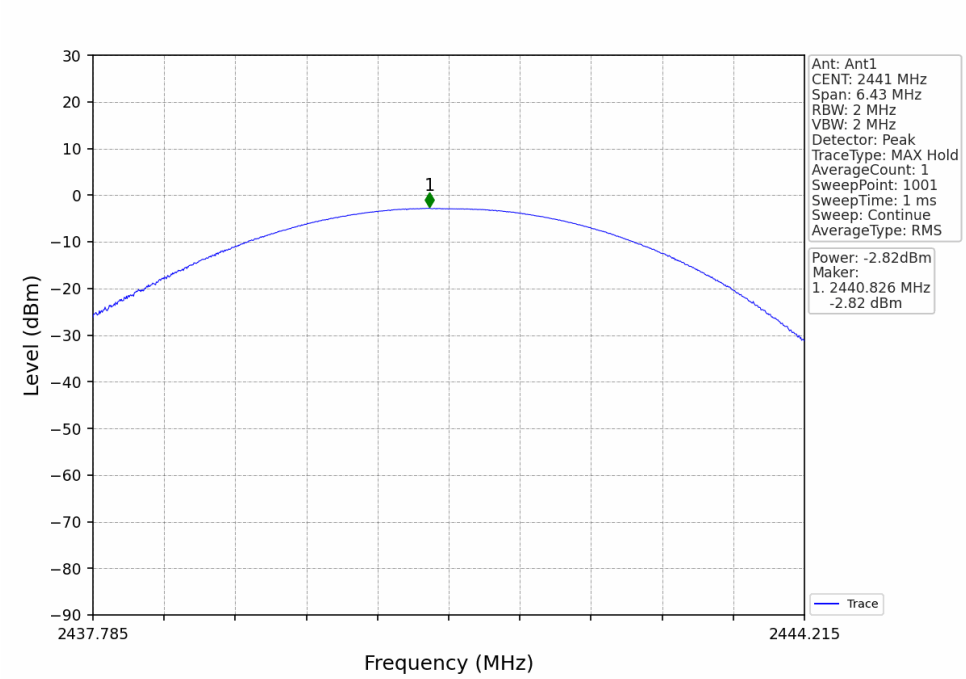
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



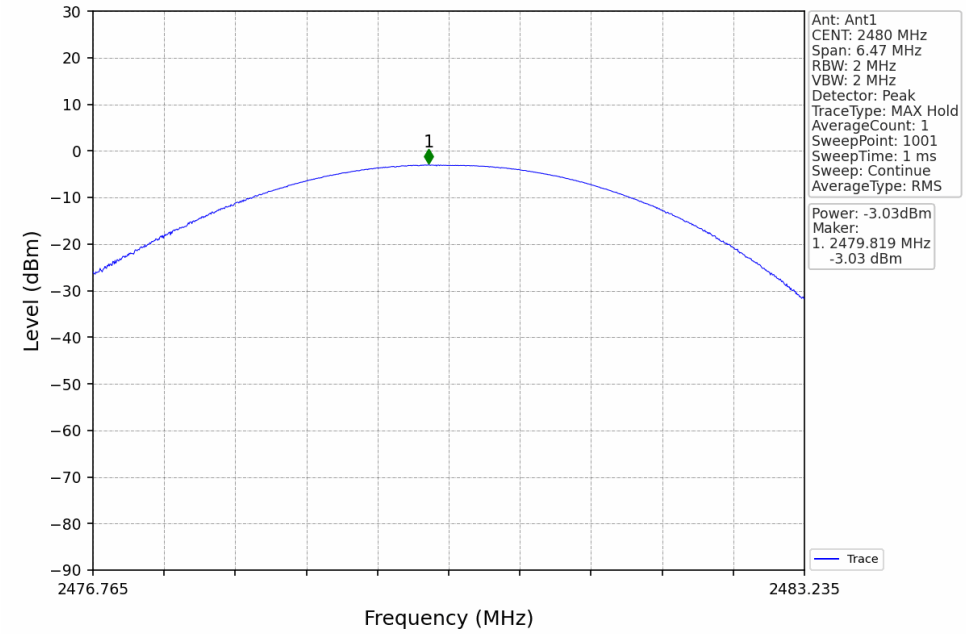
GFSK_DH5_HCH_2480MHz_Ant1_NTNV


π/4-DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV


π/4-DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



π/4-DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



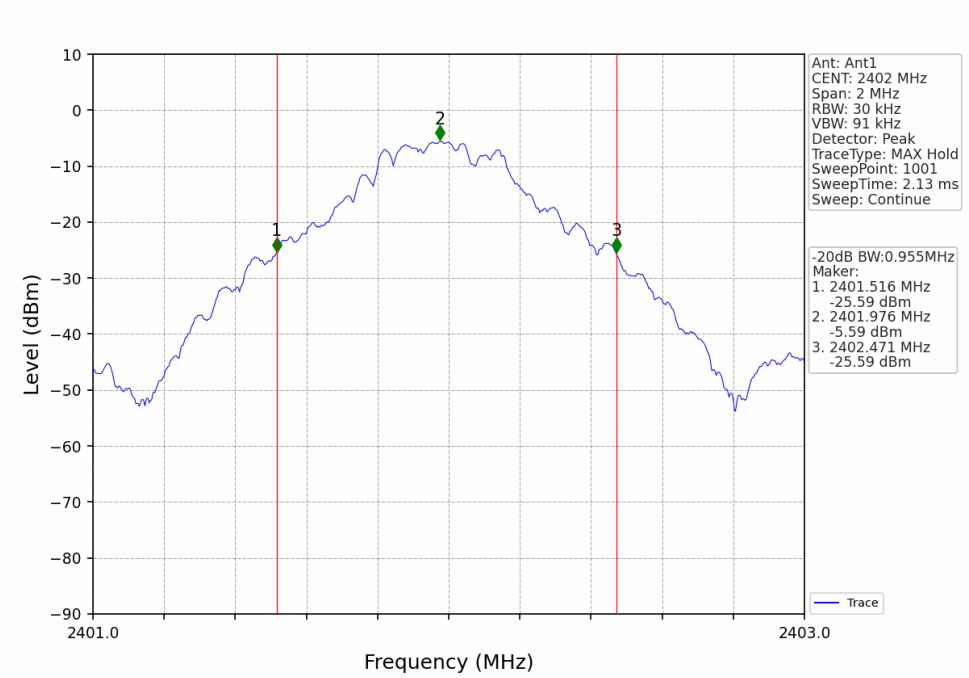
2 20dB Bandwidth

2.1 Test Result

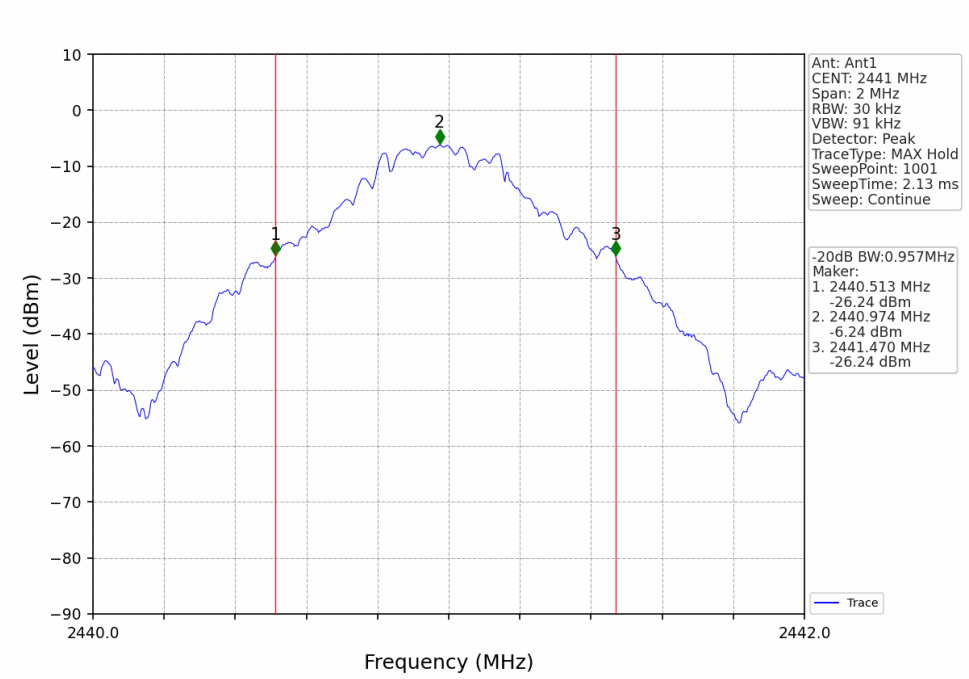
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.955	Not Specified	Pass
	MCH	0.957	Not Specified	Pass
	HCH	0.955	Not Specified	Pass
π/4-DQPSK	LCH	1.287	Not Specified	Pass
	MCH	1.286	Not Specified	Pass
	HCH	1.294	Not Specified	Pass

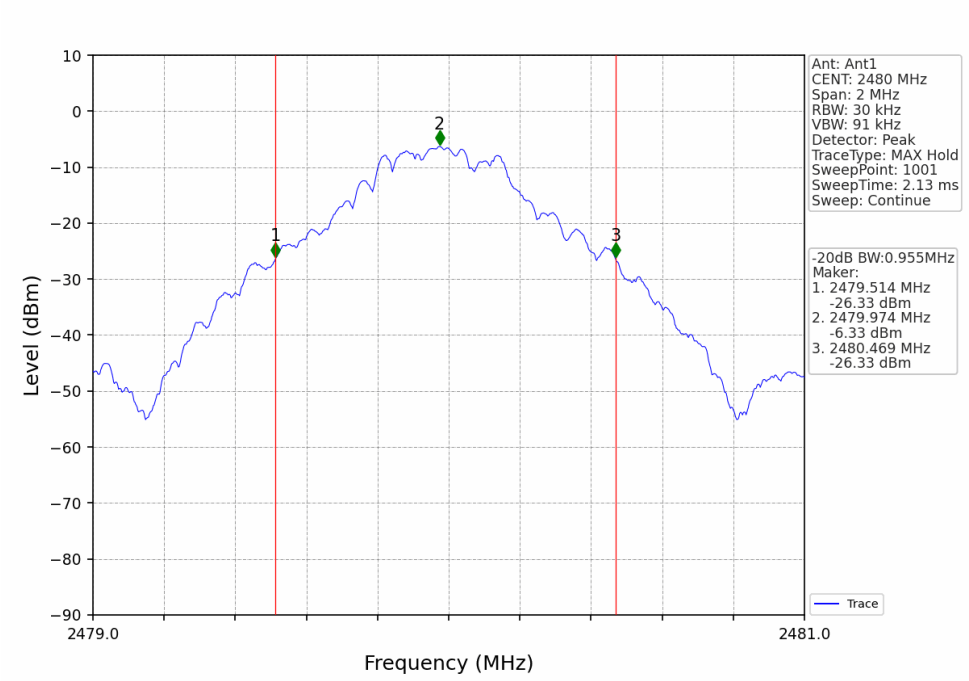
2.2 Test Graphs

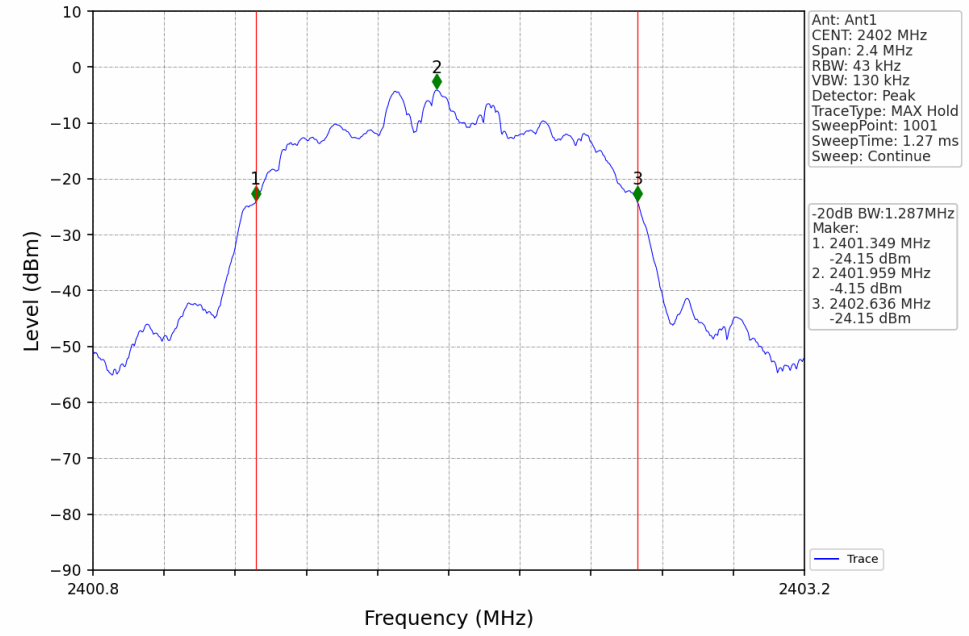
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



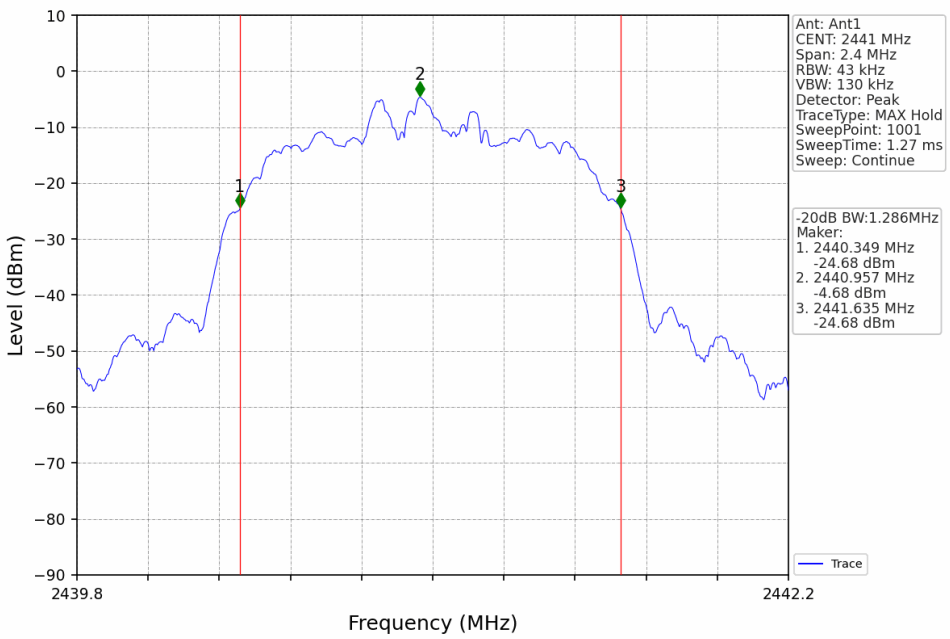
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



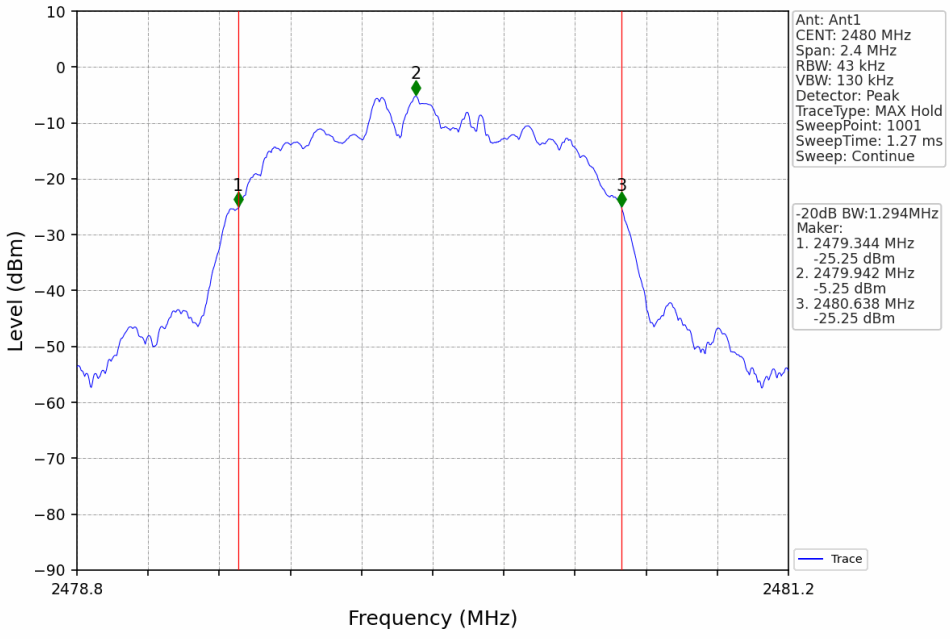
GFSK_DH5_HCH_2480MHz_Ant1_NTNV


π/4-DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV


π/4-DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



π/4-DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



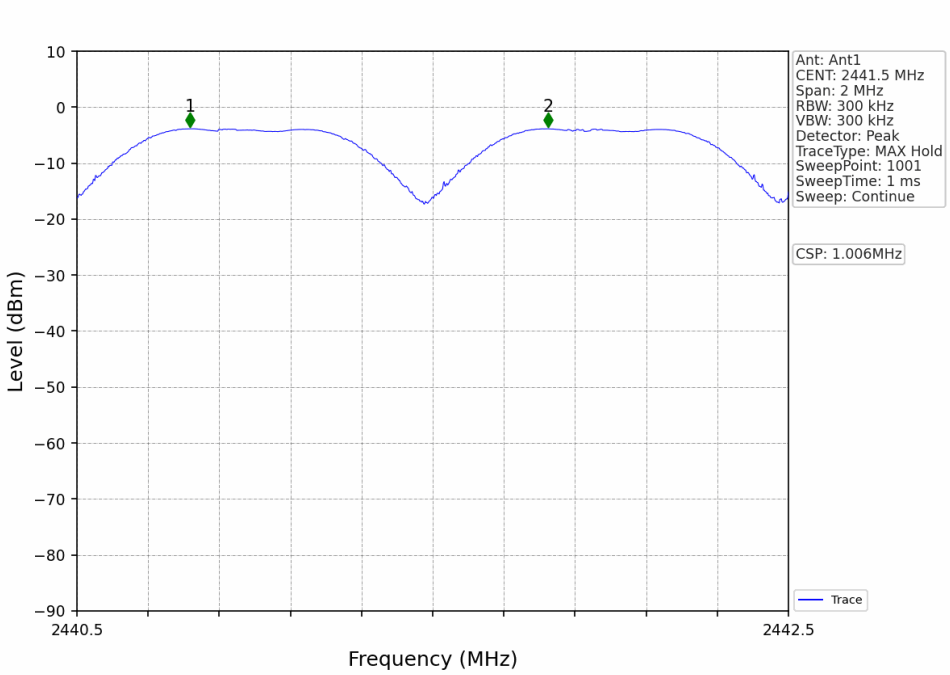
3 Carrier Frequency Separation

3.1 Test Result

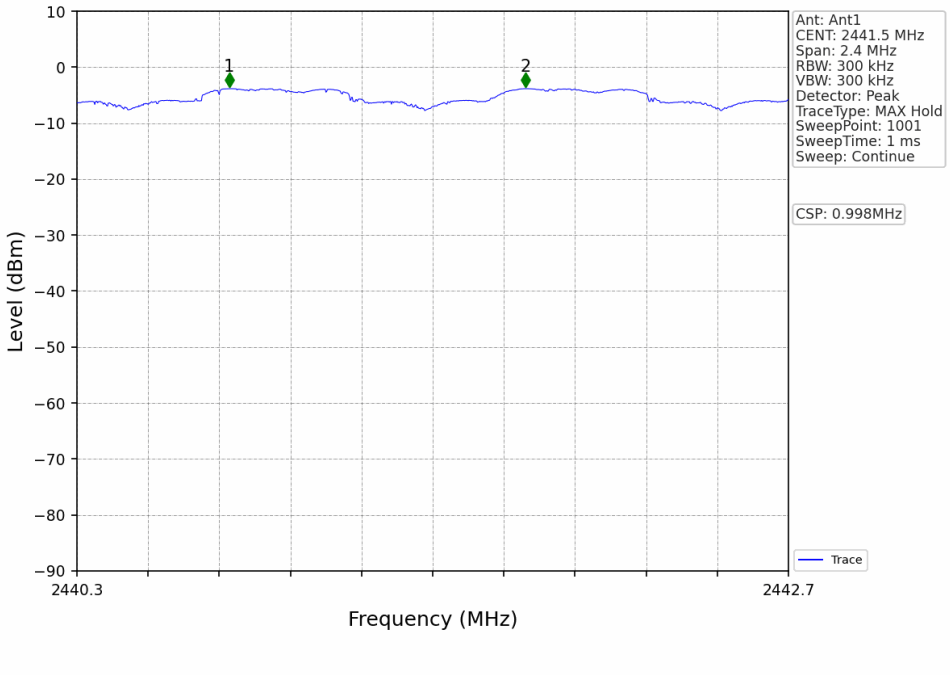
Mode	Channel.	Carrier Frequency Separation [MHz]	20dB Bandwidth (MHz)	Limit [MHz]	Verdict
GFSK	MCH	1.006	0.957	>=0.957	Pass
π/4-DQPSK	MCH	0.998	1.294	>=0.863	Pass

3.2 Test Graphs

GFSK_DH5_HOPP_Ant1_NTNV



π/4-DQPSK_2DH5_HOPP_Ant1_NTNV

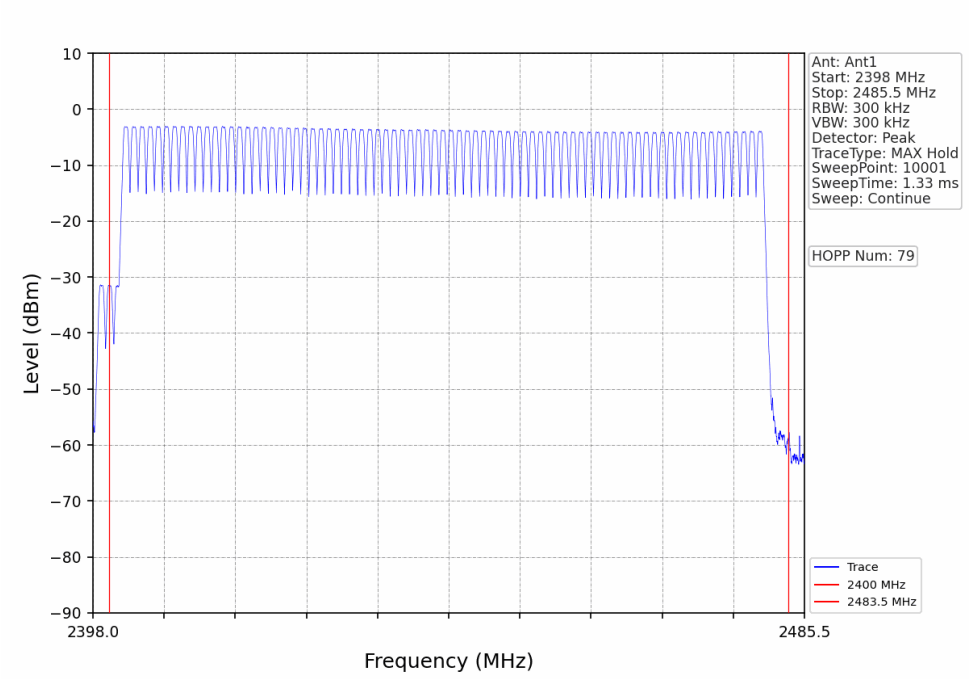
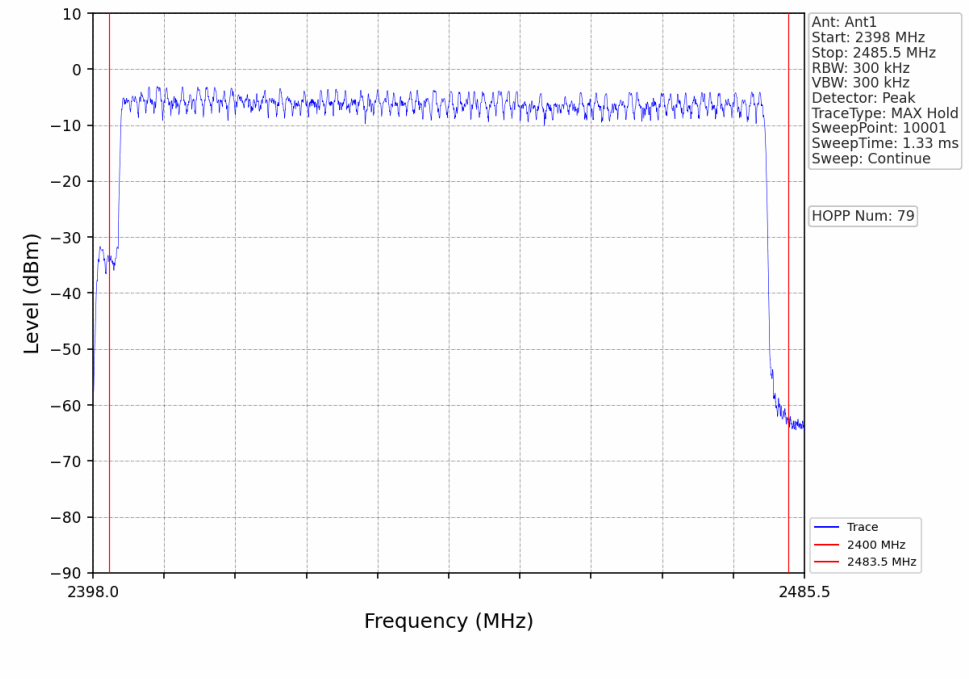


4 Hopping Channel Number

4.1 Test Result

Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
π/4-DQPSK	Hop	79	>=15	PASS

4.2 Test Graphs

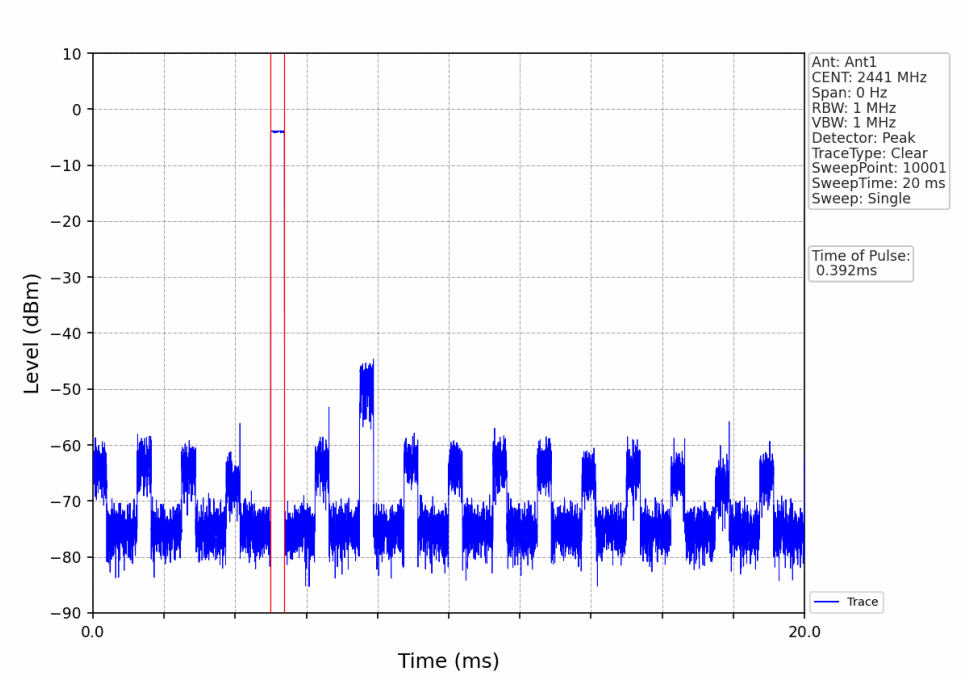
GFSK_DH5_HOPP_Ant1_NTNV

π/4-DQPSK_2DH5_HOPP_Ant1_NTNV


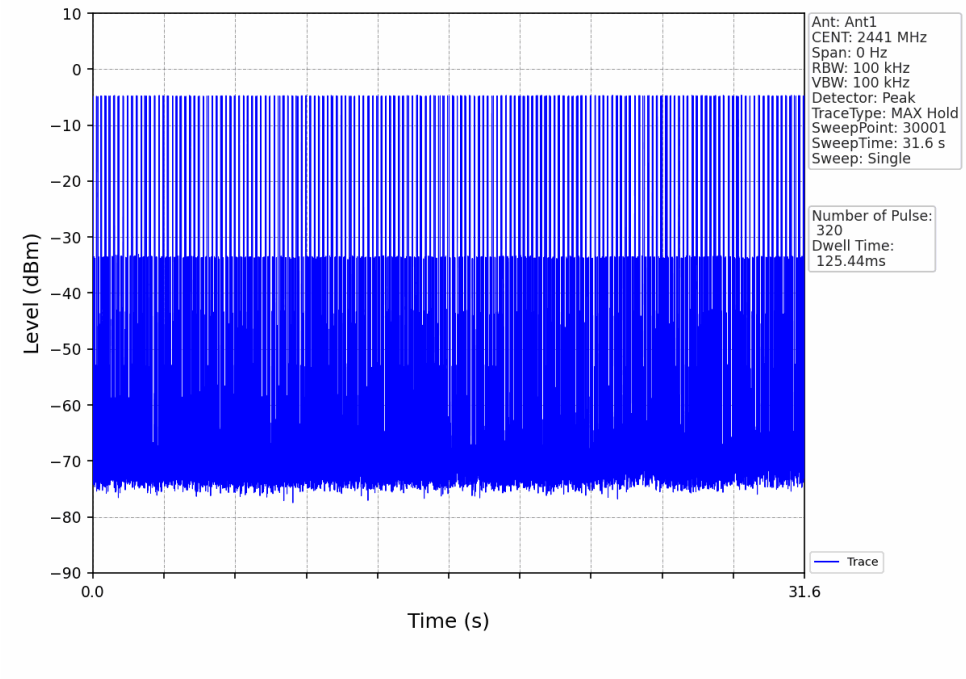
5 Dwell Time

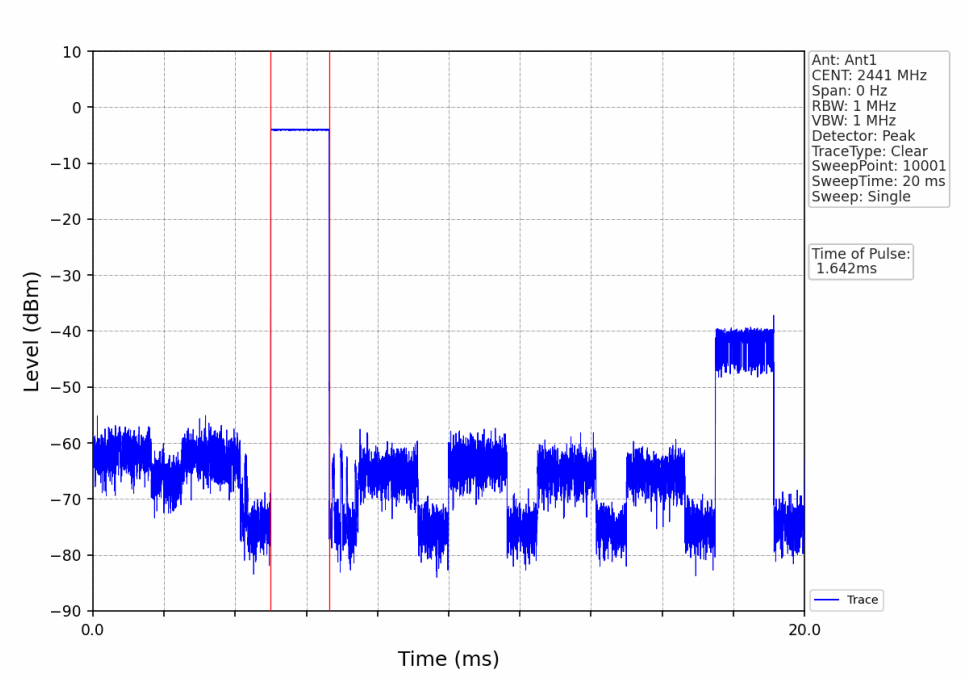
5.1 Test Result

Mode	Packet	Channel	Duration of Single Pulse (ms)	Observation Period (s)	Num of Pulse in Observation Period	Dwell Time (ms)	Limit (ms)	Verdict
GFSK	DH5	LCH	0.392	31.600	320	125.440	<=400	Pass
		MCH	1.642	31.600	160	262.720	<=400	Pass
		HCH	2.892	31.600	118	341.256	<=400	Pass
π/4-DQPSK	2DH5	LCH	0.396	31.600	319	126.324	<=400	Pass
		MCH	1.648	31.600	165	271.920	<=400	Pass
		HCH	2.896	31.600	103	298.288	<=400	Pass

5.2 Test Graphs

GFSK_DH1_HOPP_Ant1_NTNV


GFSK_DH1_HOPP_Ant1_NTNV


GFSK_DH3_HOPP_Ant1_NTNV


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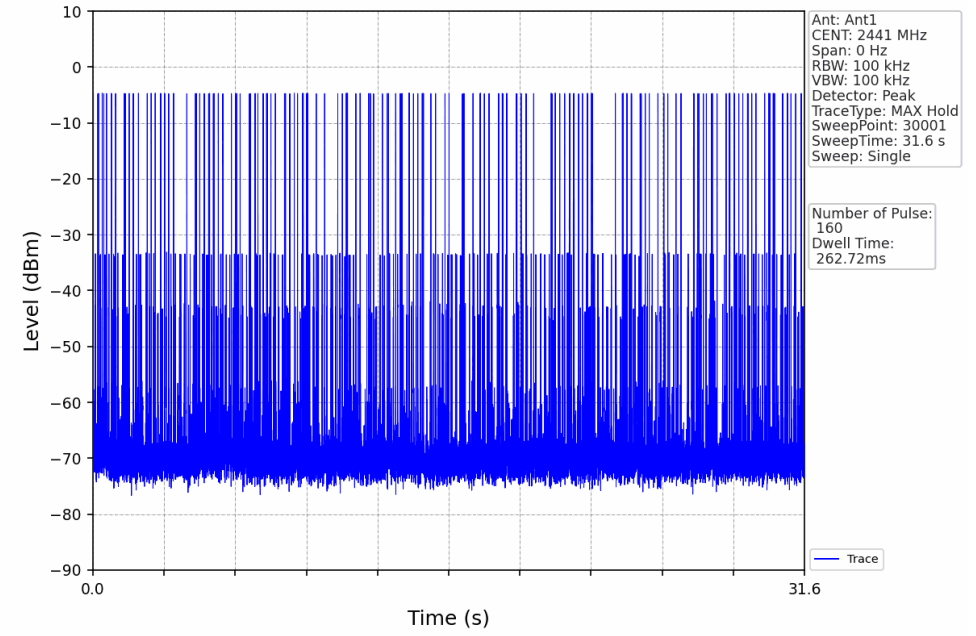

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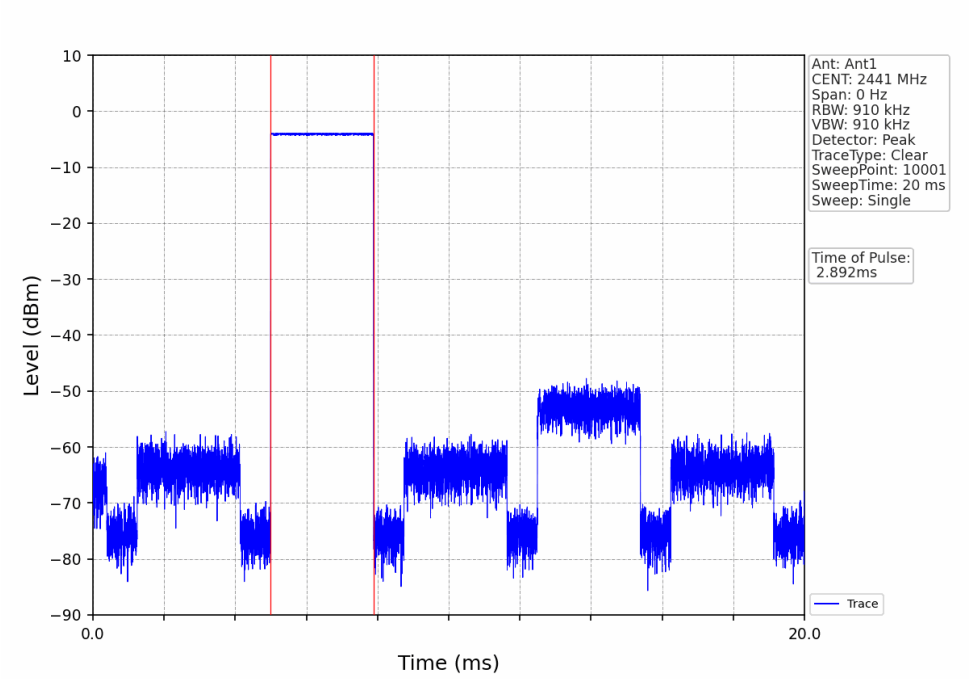

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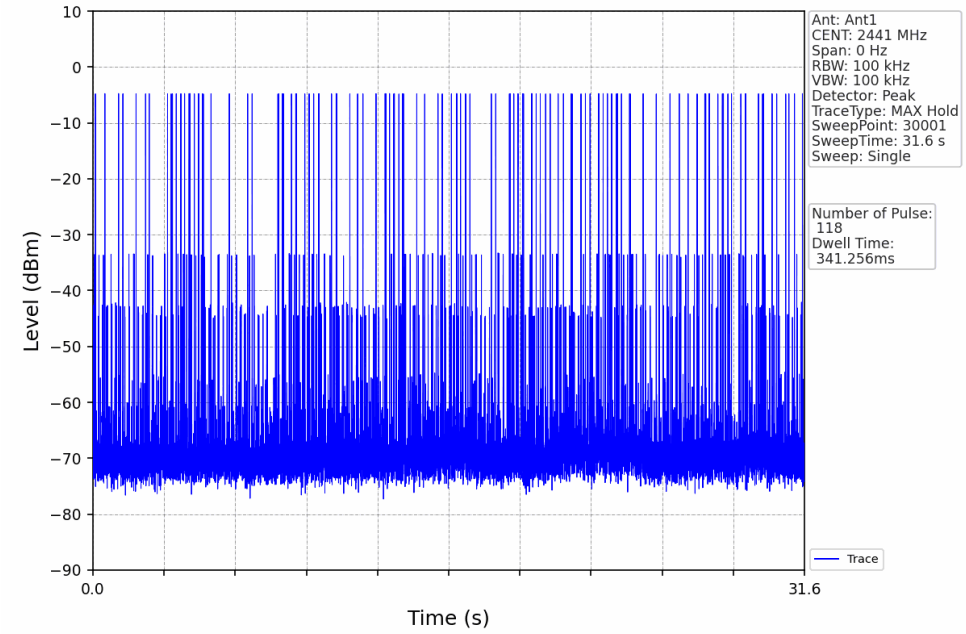
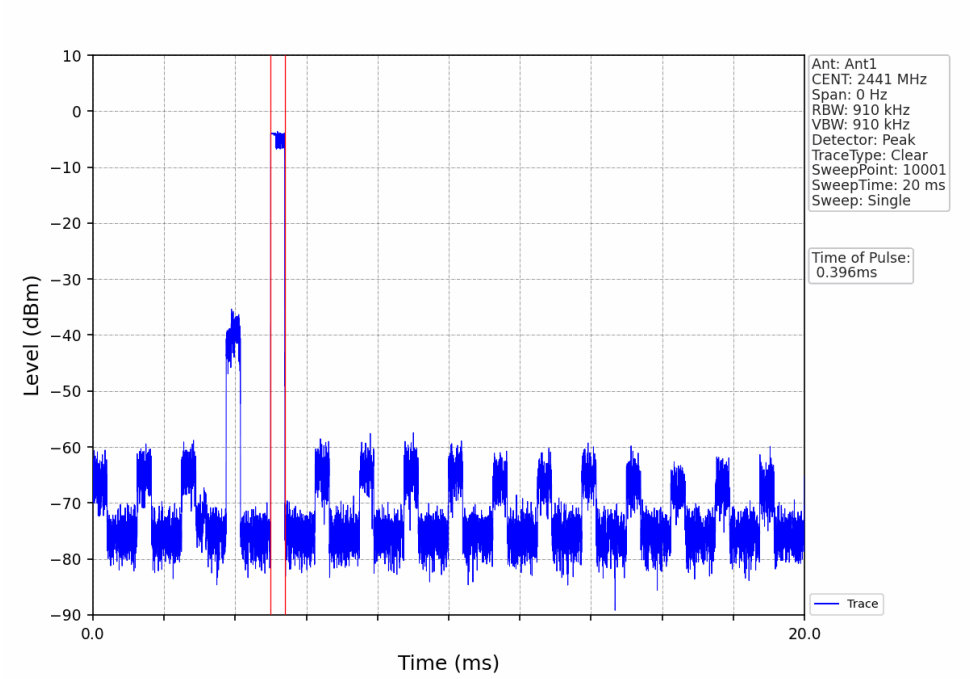


π/4-DQPSK_2DH1_HOPP_Ant1_NTNV


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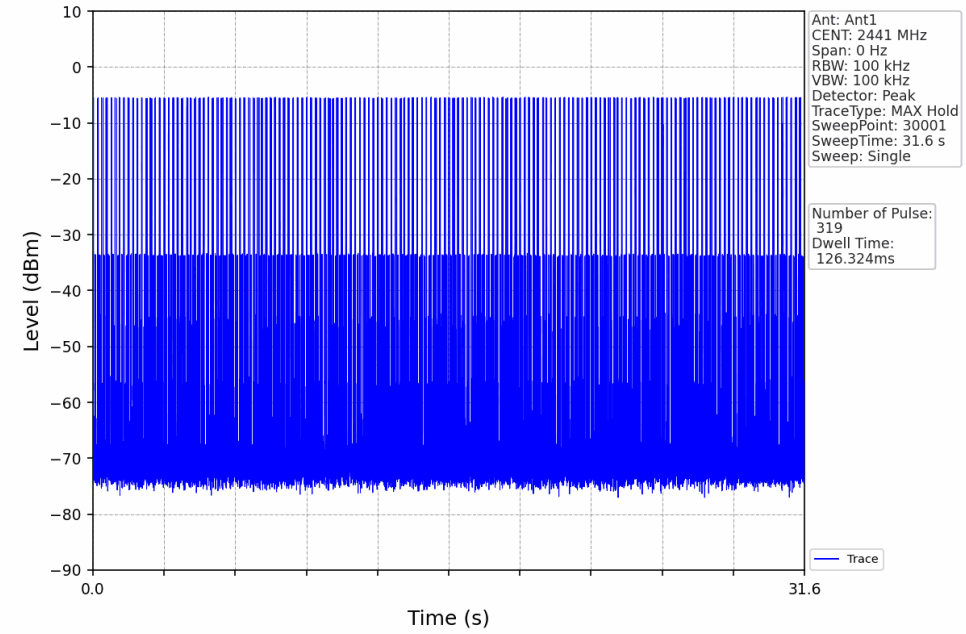

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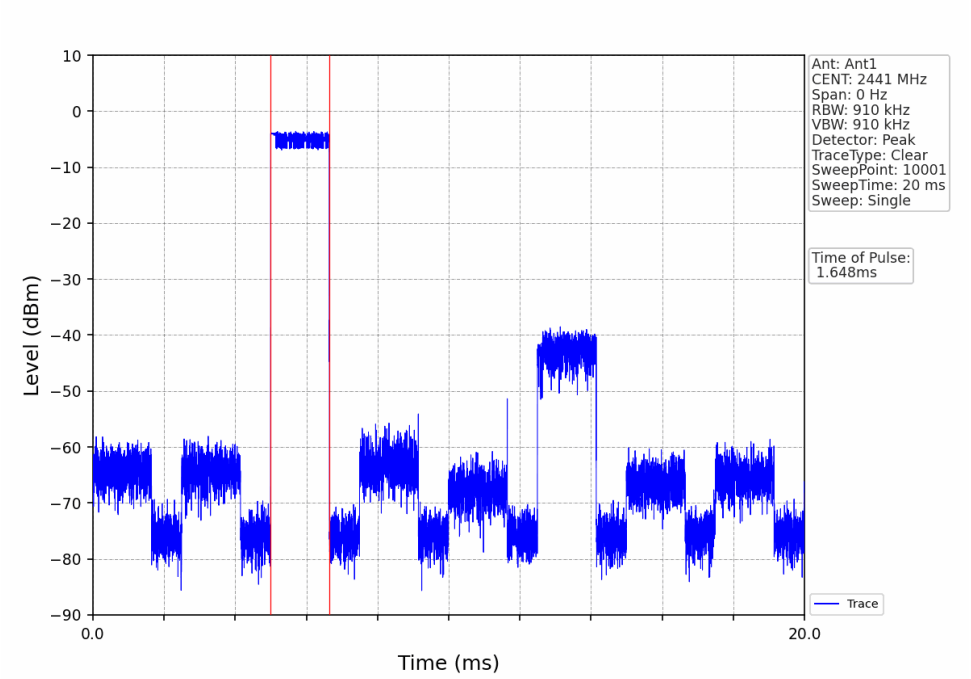

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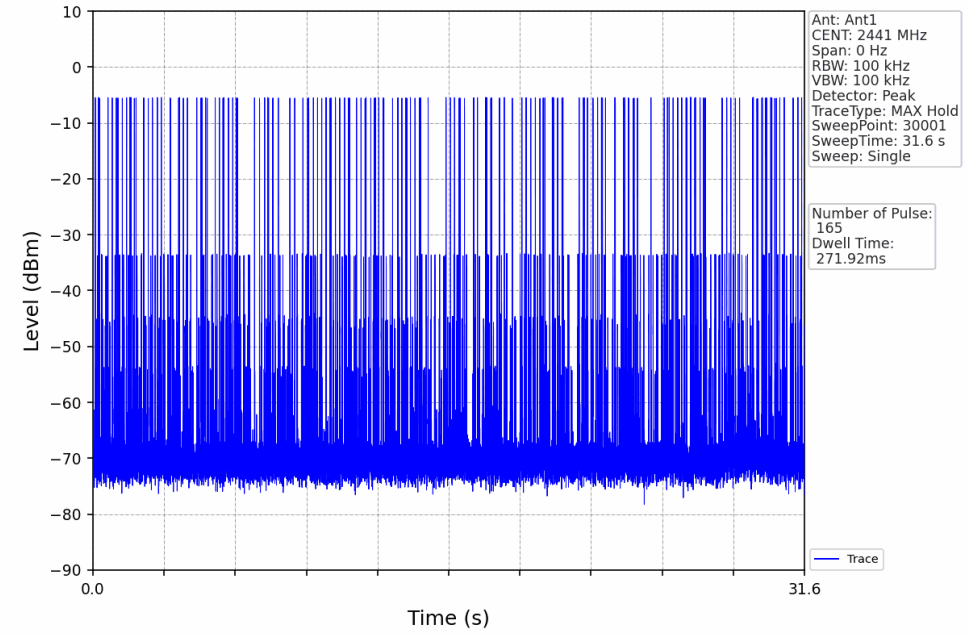

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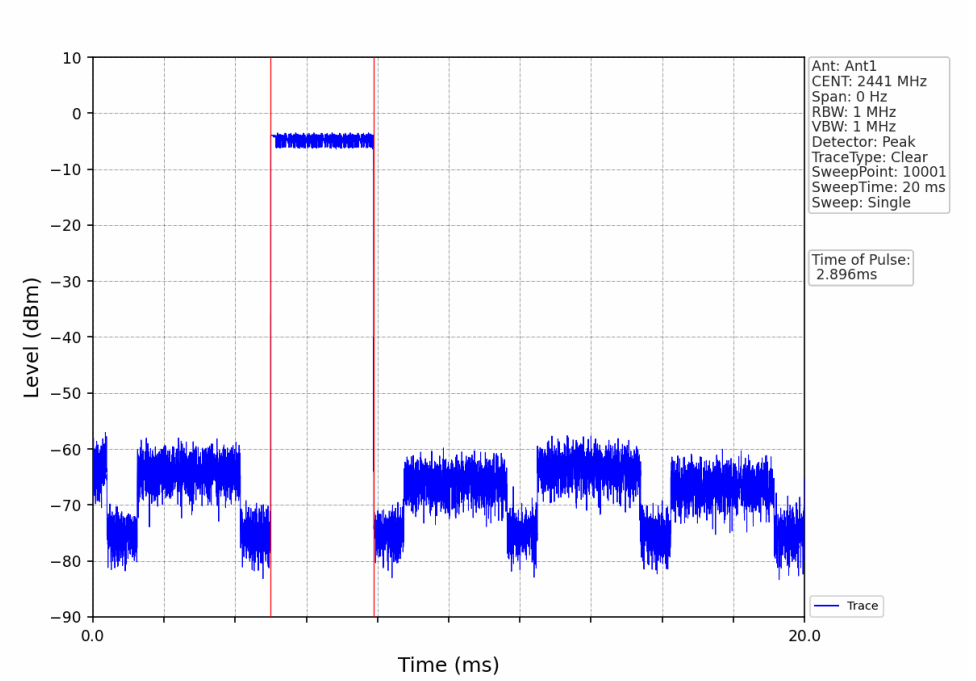

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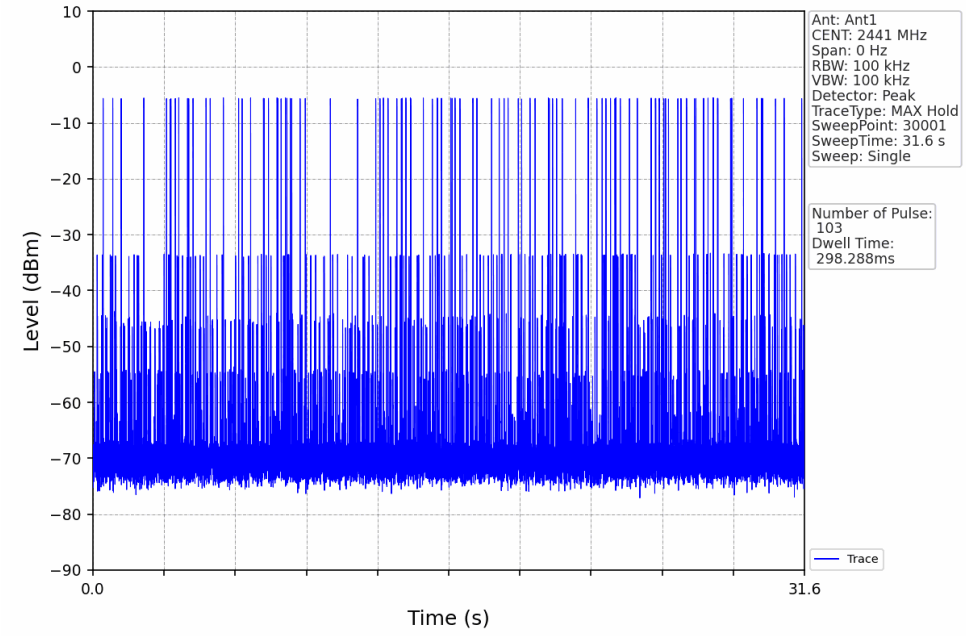


6 Conducted Spurious Emissions and Band Edges Test

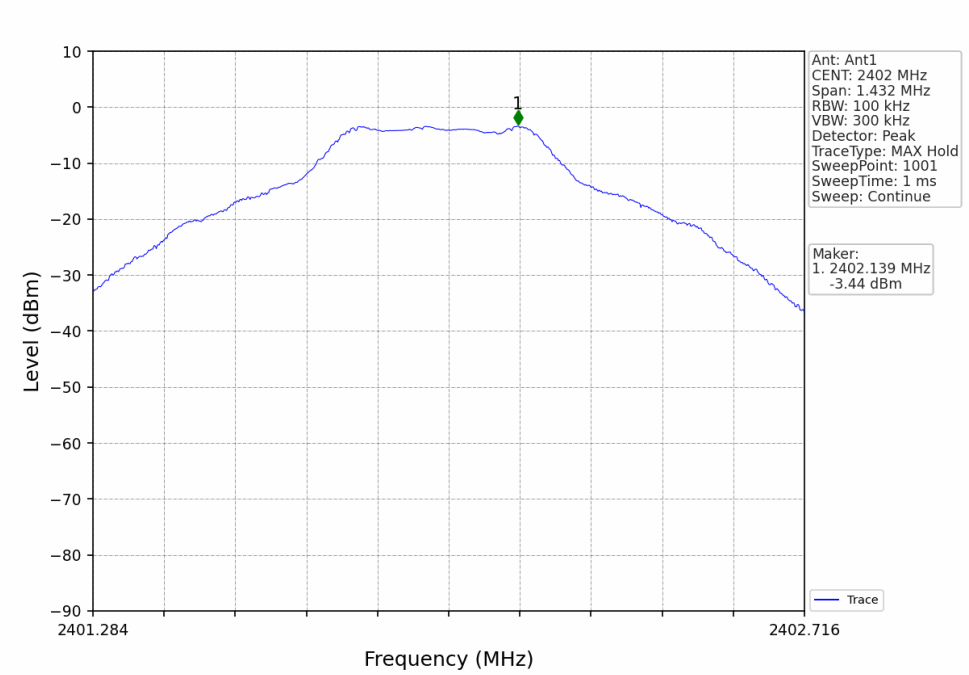
6.1 Test Result

Mode	Channel	Max. Level [dBc]	Limit [dBc]	Verdict
GFSK	LCH	-3.44	-20	Pass
	MCH	-4.11	-20	Pass
	HCH	-4.27	-20	Pass
π/4-DQPSK	LCH	-3.33	-20	Pass
	MCH	-3.95	-20	Pass
	HCH	-4.19	-20	Pass

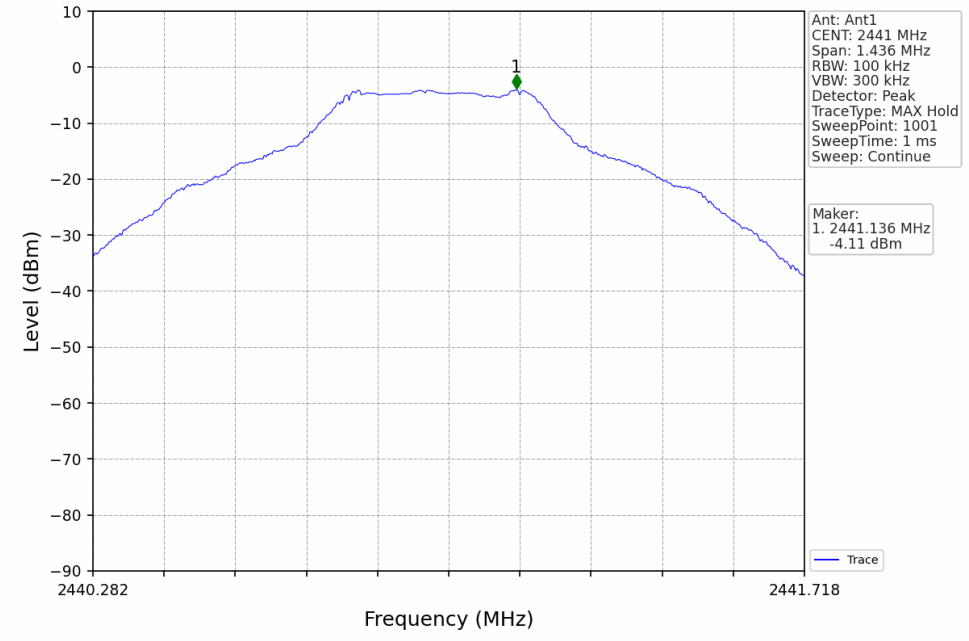
Mode	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
GFSK	2402	DH5	1	-3.44	-23.44	Pass
	2441	DH5	1	-3.44	-23.44	Pass
	2480	DH5	1	-3.44	-23.44	Pass
	HOPP	DH5	1	-3.44	-23.44	Pass
π/4-DQPSK	2402	2DH5	1	-3.33	-23.33	Pass
	2441	2DH5	1	-3.33	-23.33	Pass
	2480	2DH5	1	-3.33	-23.33	Pass
	HOPP	2DH5	1	-3.33	-23.33	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.						

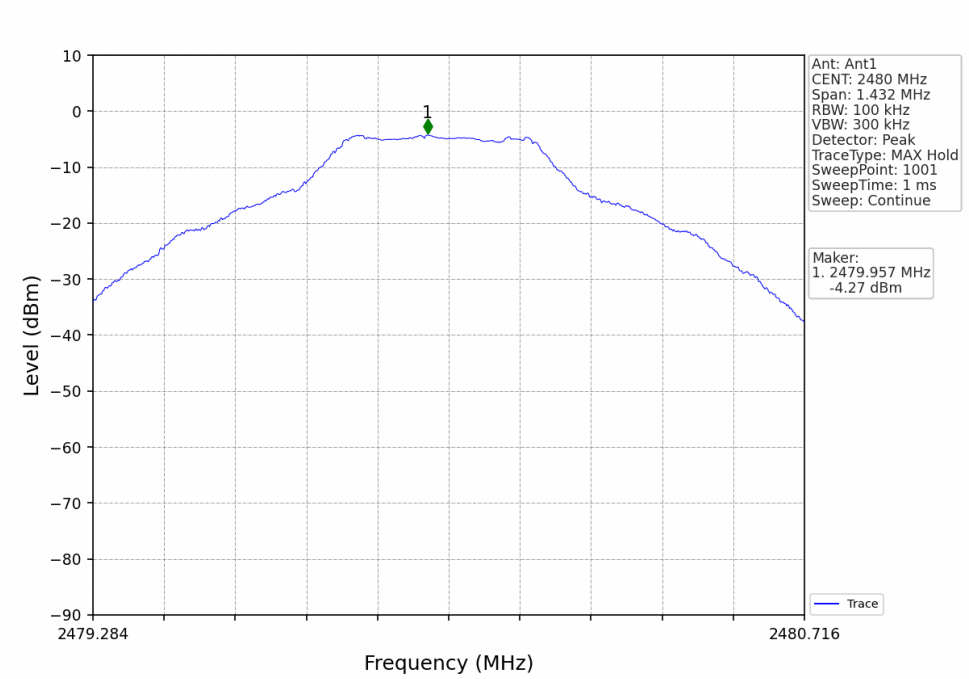
6.2 Test Graphs

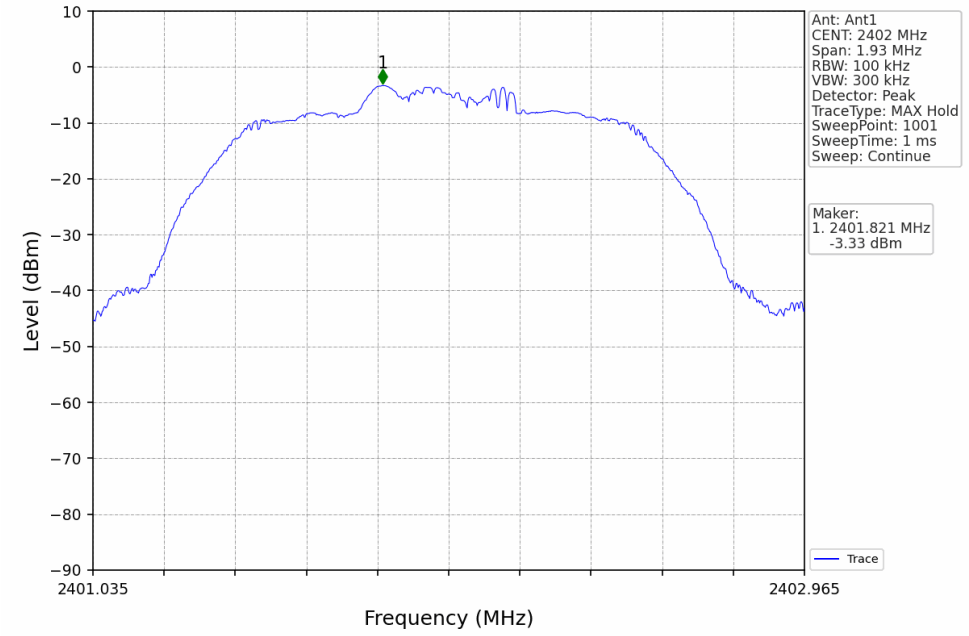
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



GFSK_DH5_MCH_2441MHz_Ant1_NTNV



GFSK_DH5_HCH_2480MHz_Ant1_NTNV


π/4-DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV


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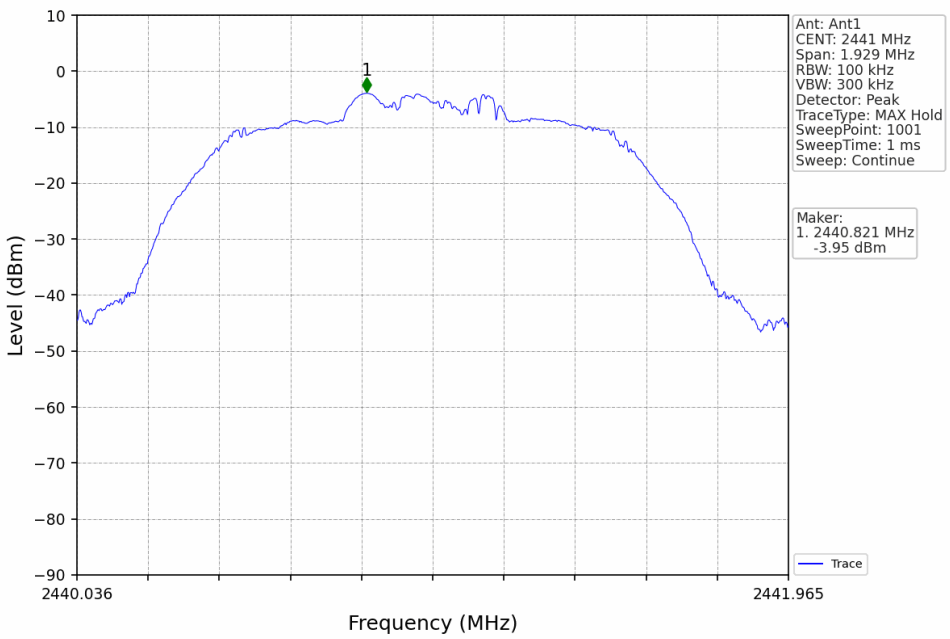
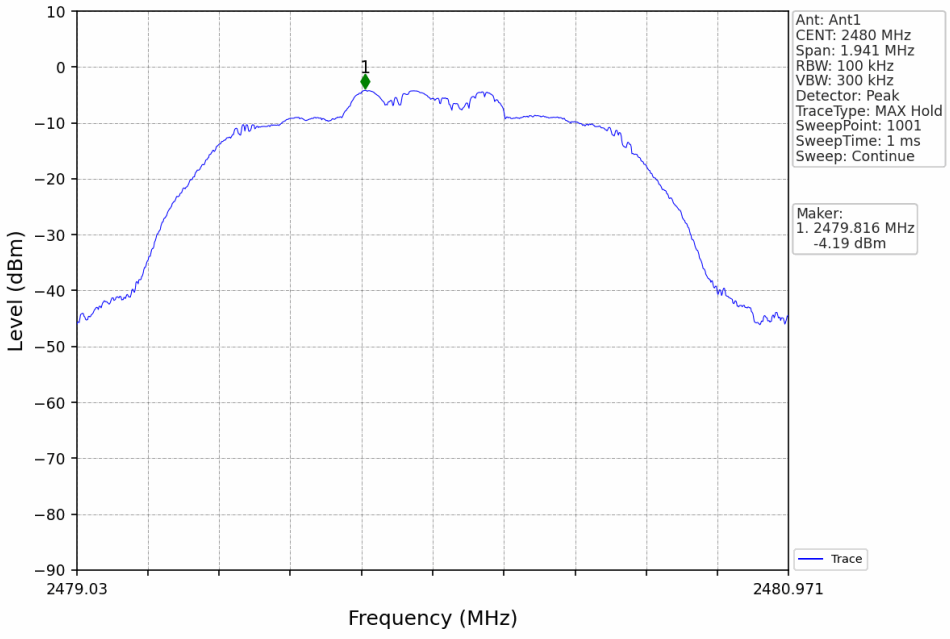
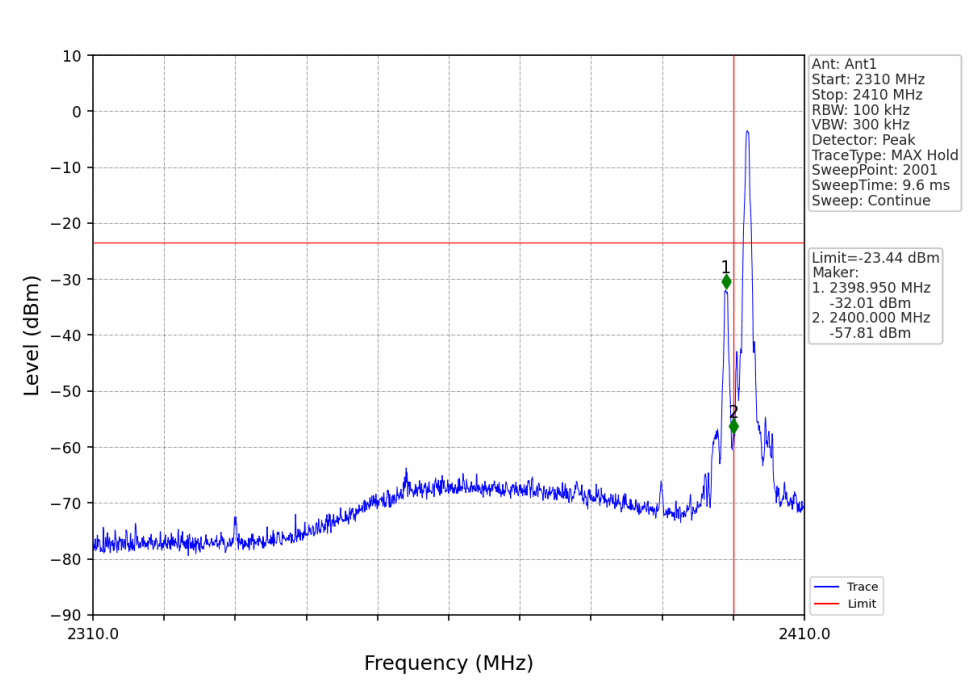


π/4-DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV

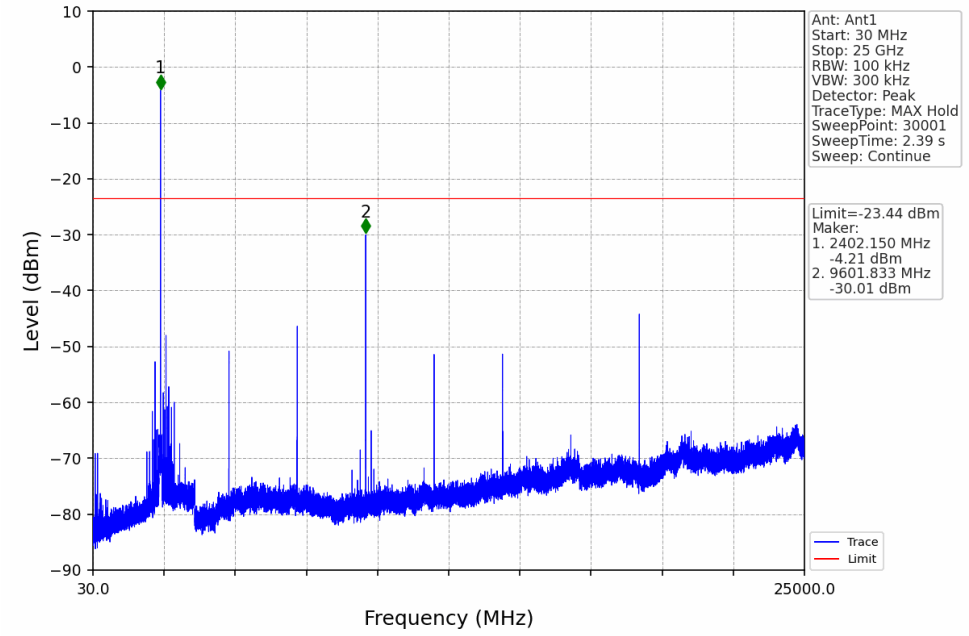


CSE

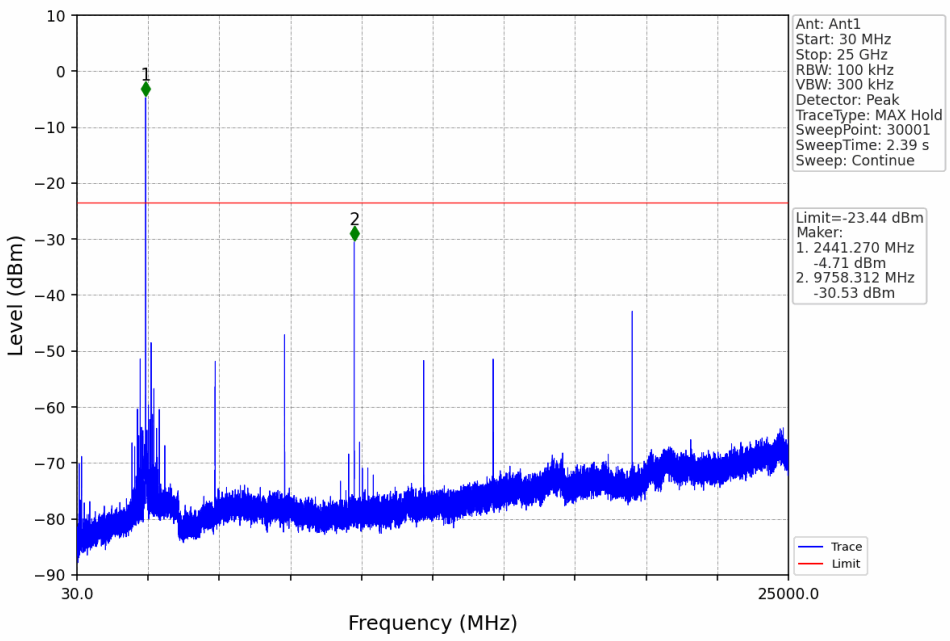
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



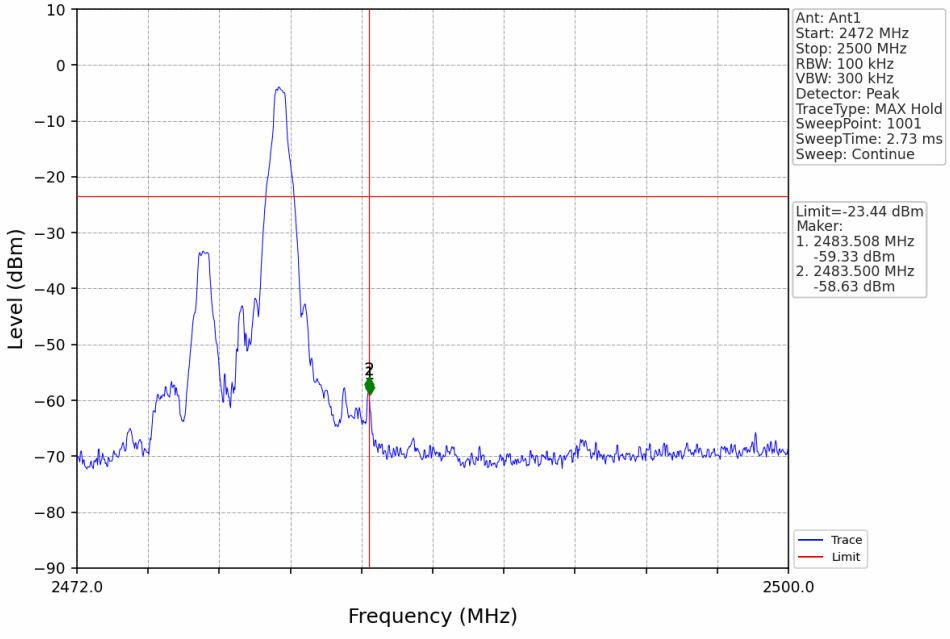
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



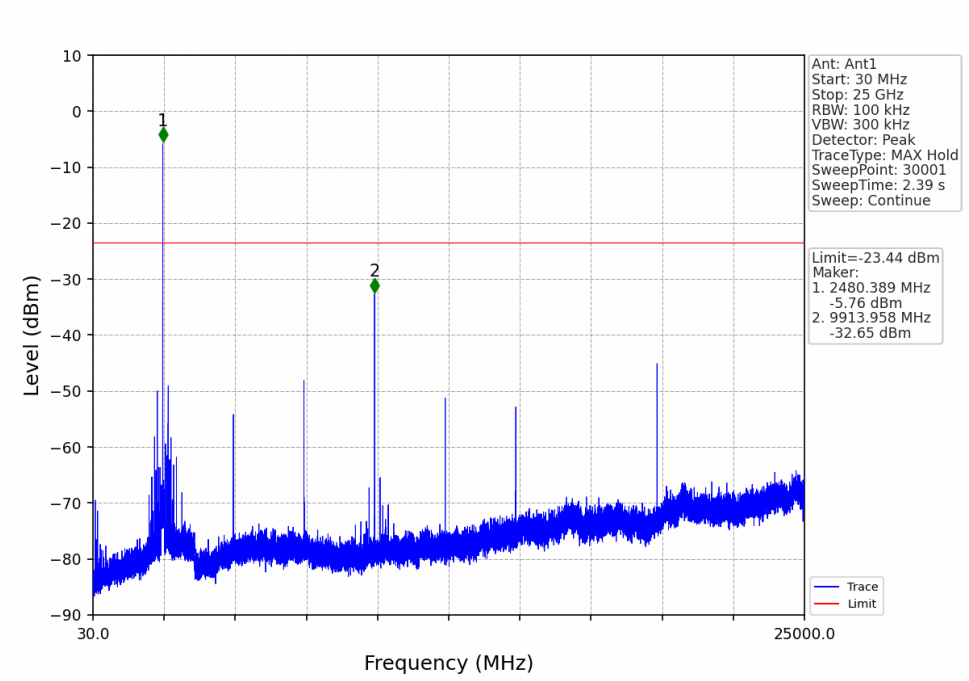
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



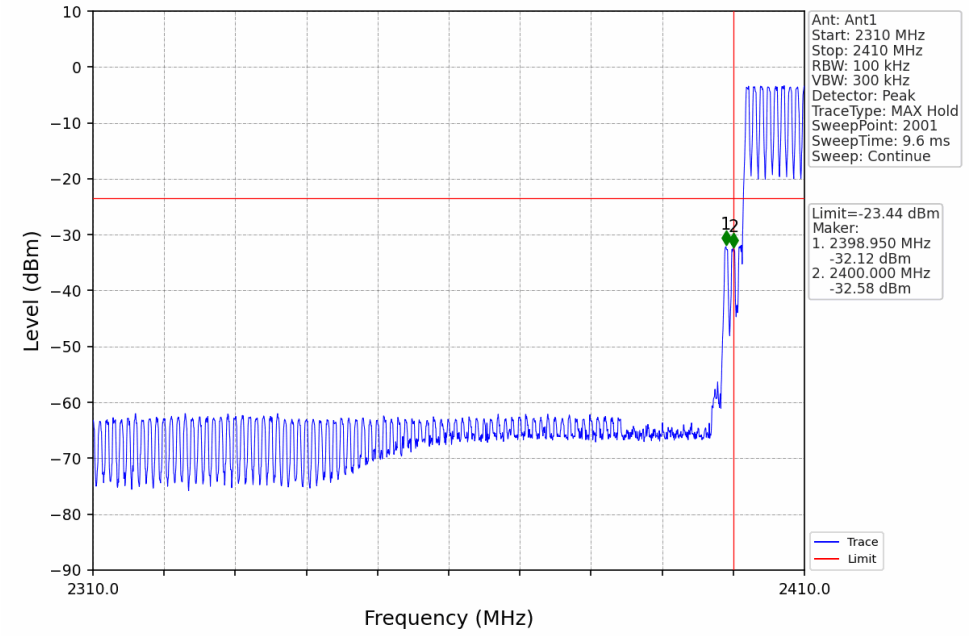
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



GFSK_DH5_HCH_2480MHz_Ant1_NTNV



GFSK_DH5_HOPP_Ant1_NTNV



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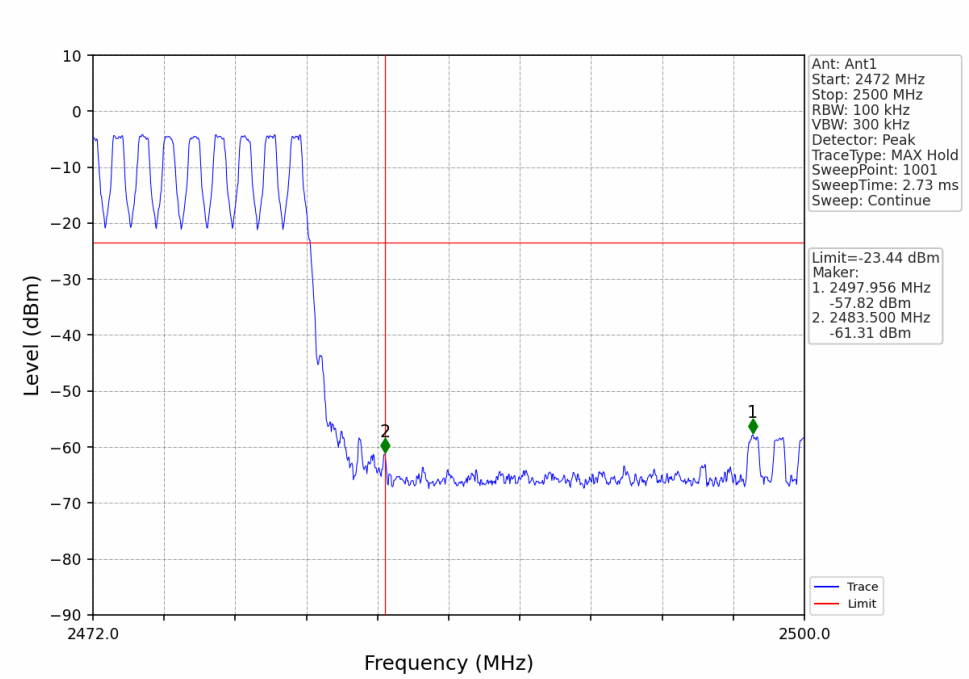
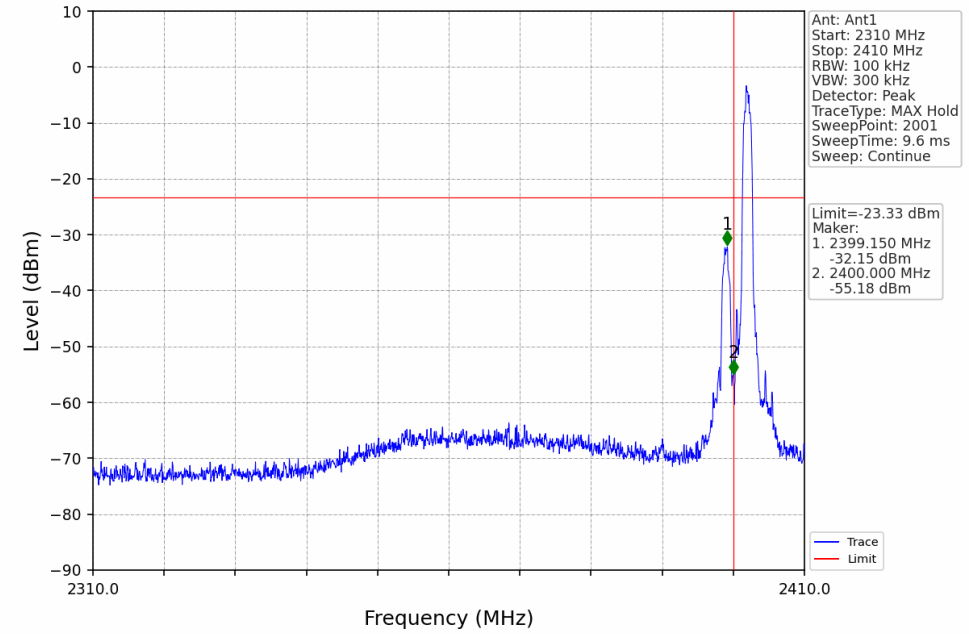
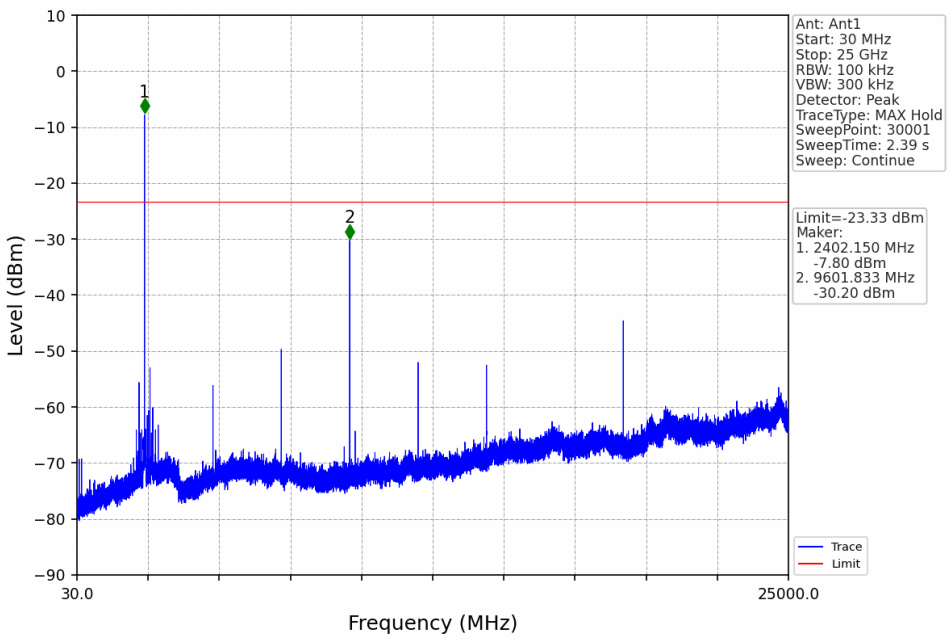


π/4-DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV


π/4-DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



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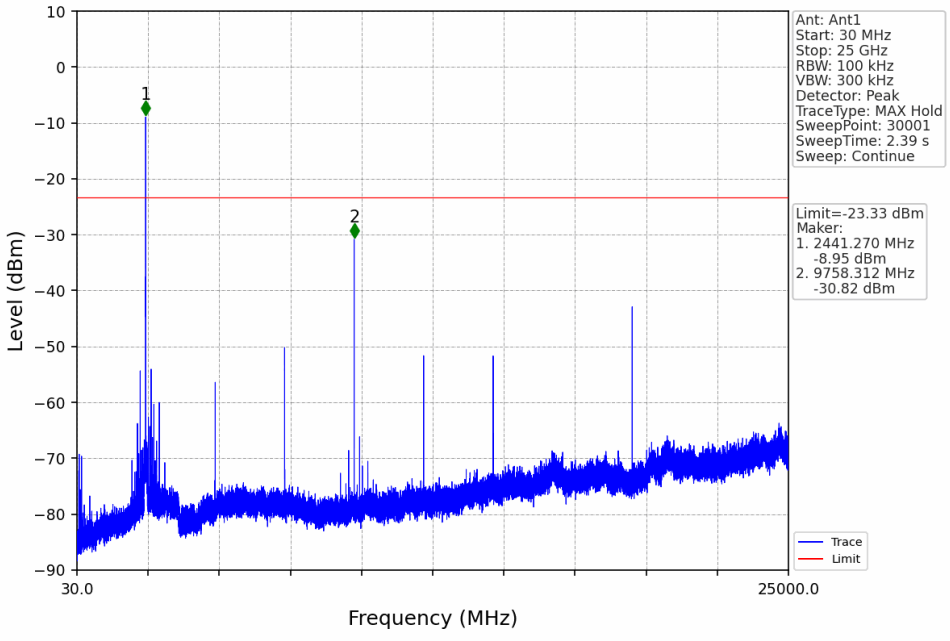

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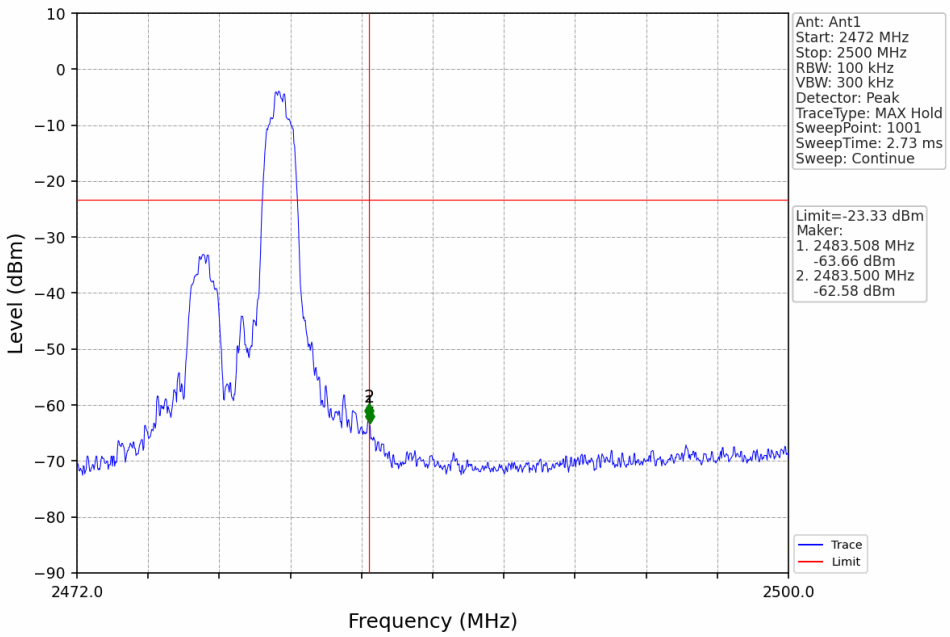
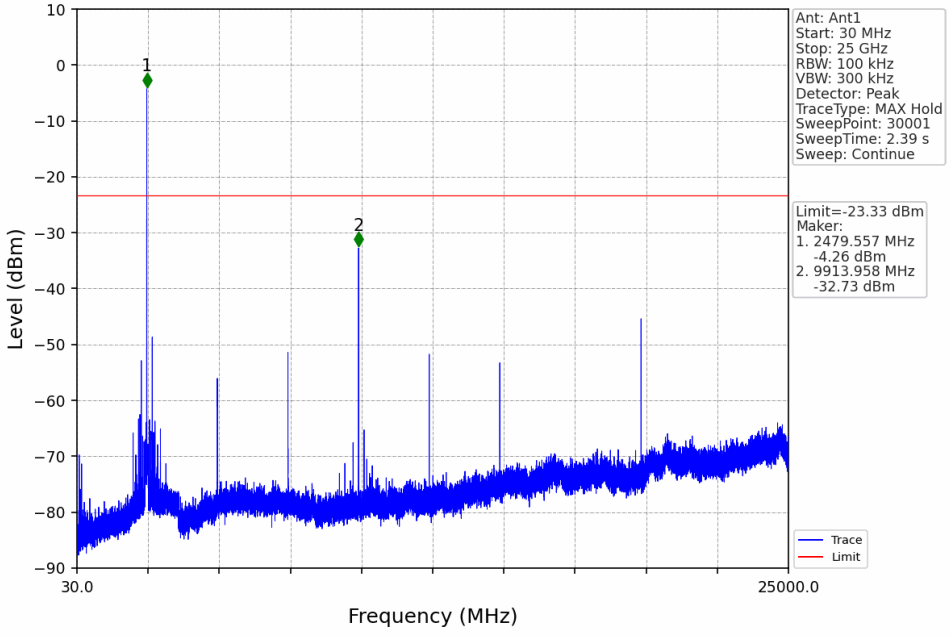
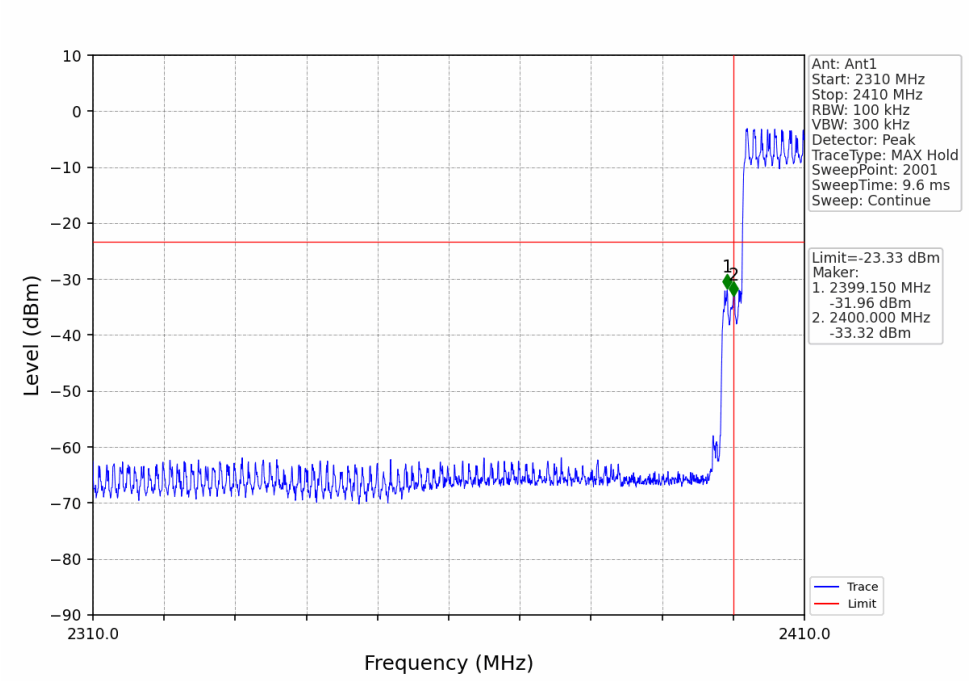


π/4-DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



π/4-DQPSK_2DH5_HOPP_Ant1_NTNV


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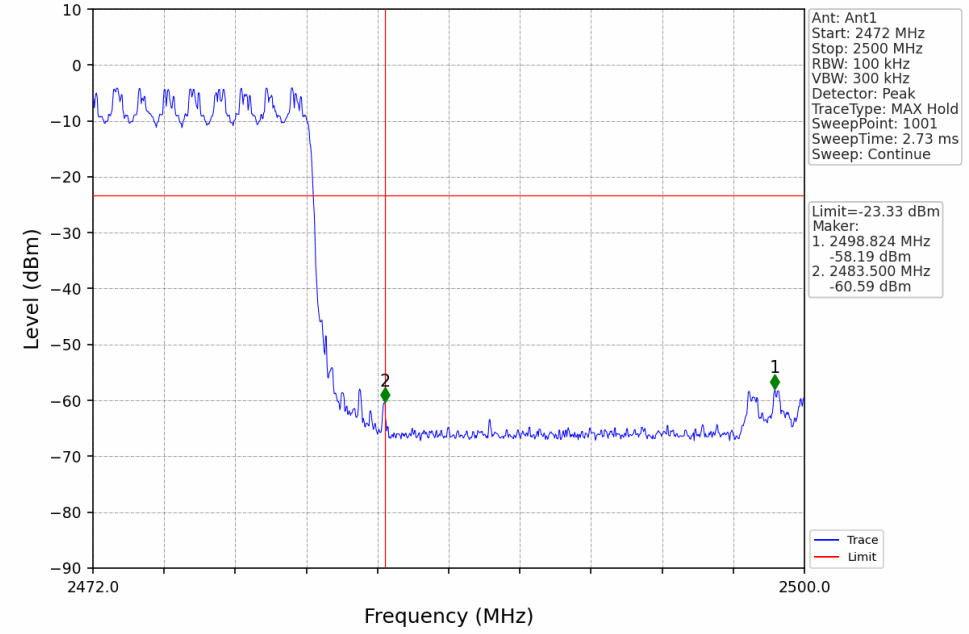

7 Band-edge for RF Conducted Emissions

7.1 Test Result

Test Mode: GFKS										
Pol.	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type	Result
Low Channel: 2402MHz										
H	2310.00	46.44	29.15	3.41	34.01	44.99	74.00	-29.01	PK	PASS
H	2390.00	63.74	29.16	3.43	34.01	62.32	74.00	-11.68	PK	PASS
V	2310.00	47.33	29.15	3.41	34.01	45.88	74.00	-28.12	PK	PASS
V	2390.00	66.16	29.16	3.43	34.01	64.74	74.00	-9.26	PK	PASS
H	2310.00	36.19	29.15	3.41	34.01	34.74	54.00	-19.26	AV	PASS
H	2390.00	47.64	29.16	3.43	34.01	46.22	54.00	-7.78	AV	PASS
V	2310.00	36.39	29.15	3.41	34.01	34.94	54.00	-19.06	AV	PASS
V	2390.00	49.62	29.16	3.43	34.01	48.20	54.00	-5.80	AV	PASS
High Channel: 2480MHz										
H	2483.50	48.97	29.28	3.53	34.03	47.75	74.00	-26.25	PK	PASS
H	2500.00	47.46	29.30	3.56	34.03	46.29	74.00	-27.71	PK	PASS
V	2483.50	50.41	29.28	3.53	34.03	49.19	74.00	-24.81	PK	PASS
V	2500.00	48.80	29.30	3.56	34.03	47.63	74.00	-26.37	PK	PASS
H	2483.50	39.06	29.28	3.53	34.03	37.84	54.00	-16.16	AV	PASS
H	2500.00	36.55	29.30	3.56	34.03	35.38	54.00	-18.62	AV	PASS
V	2483.50	40.57	29.28	3.53	34.03	39.35	54.00	-14.65	AV	PASS
V	2500.00	36.77	29.30	3.56	34.03	35.60	54.00	-18.40	AV	PASS

Test Mode: π/4-DQPSK										
Pol.	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type	Result
Low Channel: 2402MHz										
H	2310.00	46.47	29.15	3.41	34.01	45.02	74.00	-28.98	PK	PASS
H	2390.00	63.77	29.16	3.43	34.01	62.35	74.00	-11.65	PK	PASS
V	2310.00	47.36	29.15	3.41	34.01	45.91	74.00	-28.09	PK	PASS
V	2390.00	66.19	29.16	3.43	34.01	64.77	74.00	-9.23	PK	PASS
H	2310.00	36.21	29.15	3.41	34.01	34.76	54.00	-19.24	AV	PASS
H	2390.00	47.66	29.16	3.43	34.01	46.24	54.00	-7.76	AV	PASS
V	2310.00	36.41	29.15	3.41	34.01	34.96	54.00	-19.04	AV	PASS
V	2390.00	49.65	29.16	3.43	34.01	48.23	54.00	-5.77	AV	PASS
High Channel: 2480MHz										
H	2483.50	49.00	29.28	3.53	34.03	47.78	74.00	-26.22	PK	PASS
H	2500.00	47.49	29.30	3.56	34.03	46.32	74.00	-27.68	PK	PASS
V	2483.50	50.44	29.28	3.53	34.03	49.22	74.00	-24.78	PK	PASS
V	2500.00	48.83	29.30	3.56	34.03	47.66	74.00	-26.34	PK	PASS
H	2483.50	39.08	29.28	3.53	34.03	37.86	54.00	-16.14	AV	PASS
H	2500.00	36.57	29.30	3.56	34.03	35.40	54.00	-18.60	AV	PASS
V	2483.50	40.59	29.28	3.53	34.03	39.37	54.00	-14.63	AV	PASS
V	2500.00	36.79	29.30	3.56	34.03	35.62	54.00	-18.38	AV	PASS

Remark:

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

------End------