Appendix Report

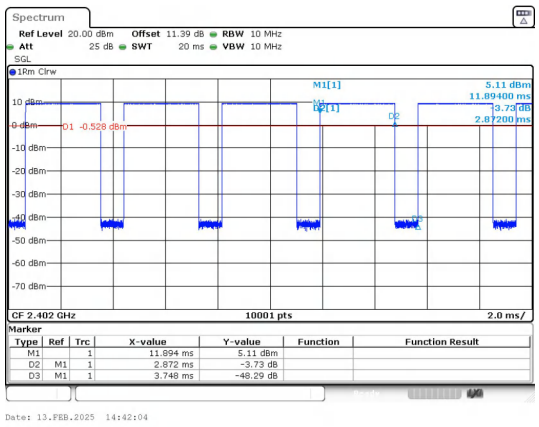
Report No.:	CISRR25011311101
Test Engineer:	Mark Fu
Supervised by:	Rory Huang

1) Duty Cycle

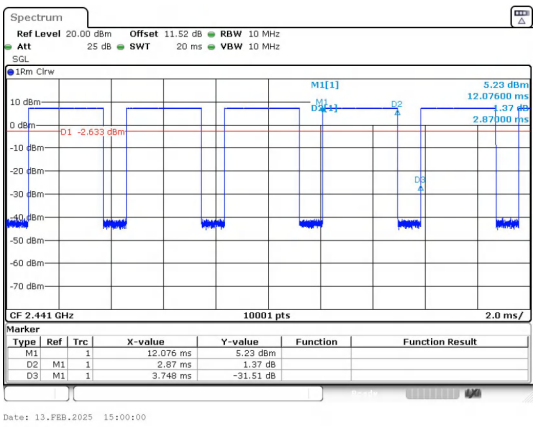
Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.872	3.748	76.63	0.7663	1.156	0.3482
		39	2.870	3.748	76.57	0.7657	1.1594	0.3484
		78	2.872	3.748	76.63	0.7663	1.156	0.3482
π/4DQPSK	2-DH5	0	2.876	3.748	76.73	0.7673	1.1503	0.3477
		39	2.876	3.748	76.73	0.7673	1.1503	0.3477
		78	2.876	3.748	76.73	0.7673	1.1503	0.3477
8DPSK	3-DH5	0	2.880	3.748	76.84	0.7684	1.1441	0.3472
		39	2.878	3.748	76.79	0.7679	1.147	0.3475
		78	2.880	3.748	76.84	0.7684	1.1441	0.3472

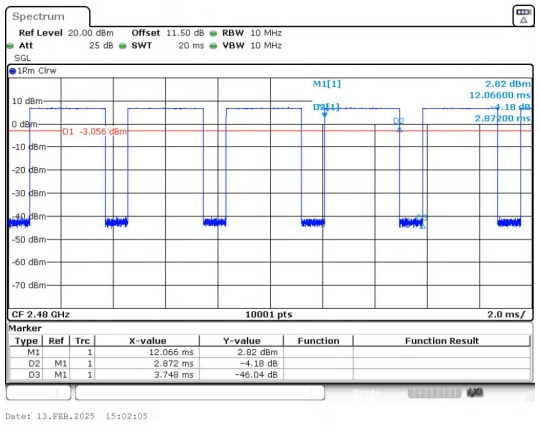
Test Graphs



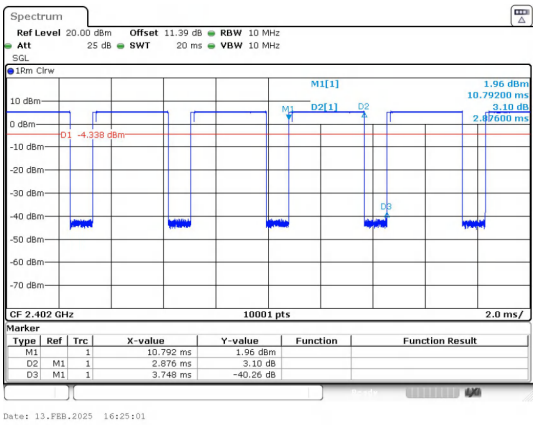
GFSK(DH5)_Channel 0



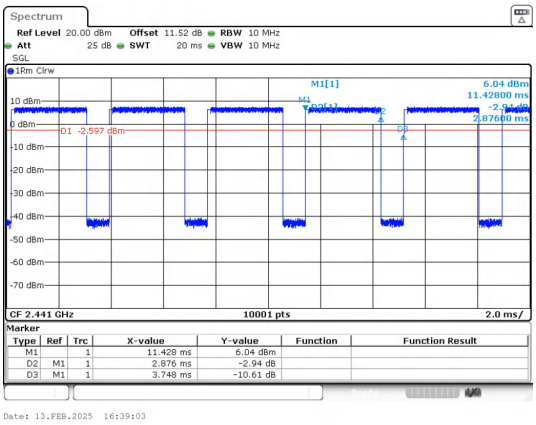
GFSK(DH5)_Channel 39



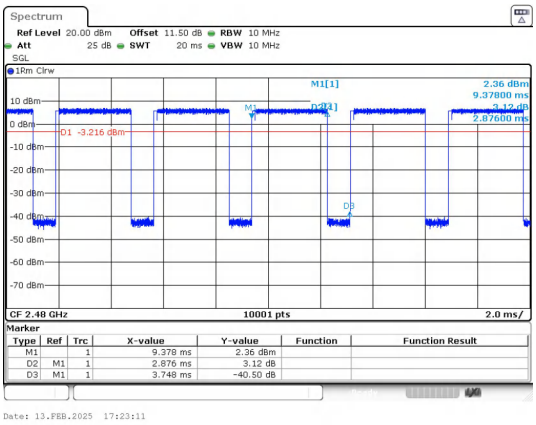
GFSK(DH5)_Channel 78



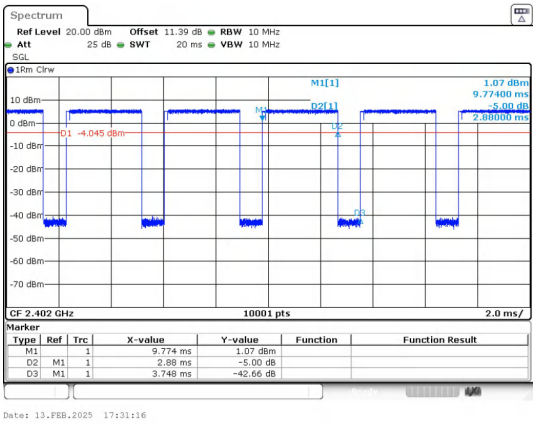
π/4DQPSK(2-DH5)_Channel 0



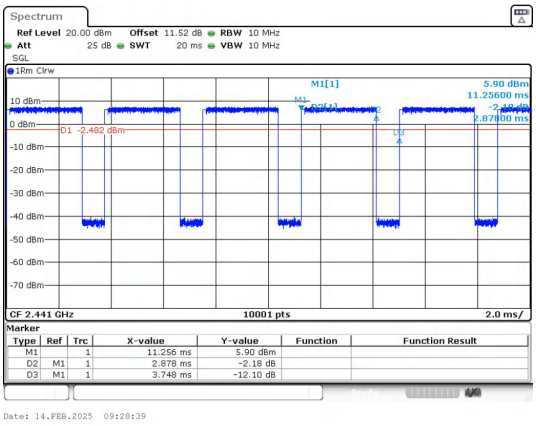
π/4DQPSK(2-DH5)_Channel 39



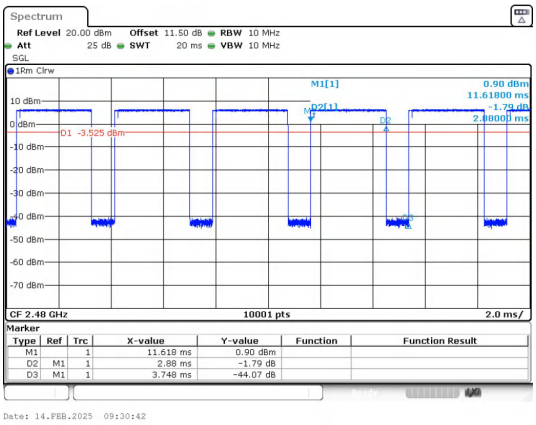
π/4DQPSK(2-DH5)_Channel 78



8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39



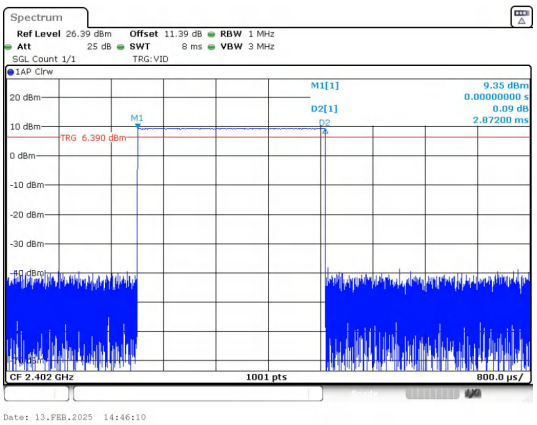
8DPSK(3-DH5)_Channel 78

2) Dwell Time

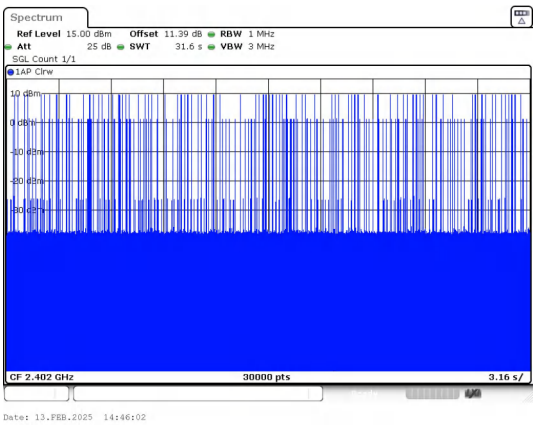
Test Result

Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.872	101	290.07	< 400	PASS
π/4DQPSK	2-DH5		2.880	116	334.08		PASS
8DPSK	3-DH5		2.880	106	305.28		PASS

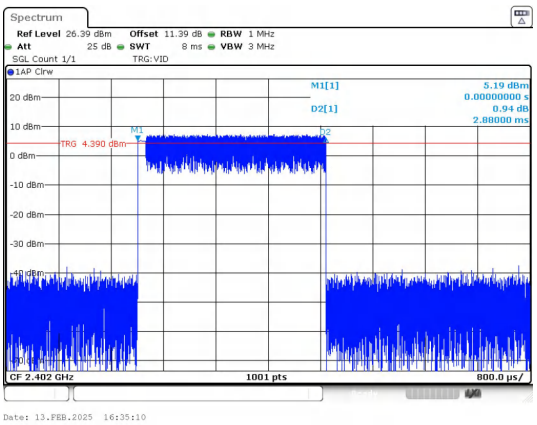
Test Graphs



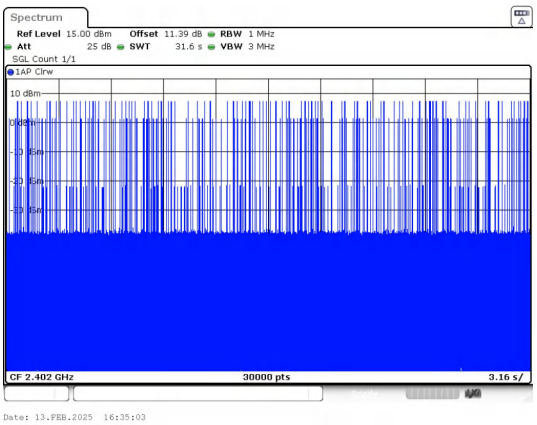
Pulse Width
GFSK_DH5



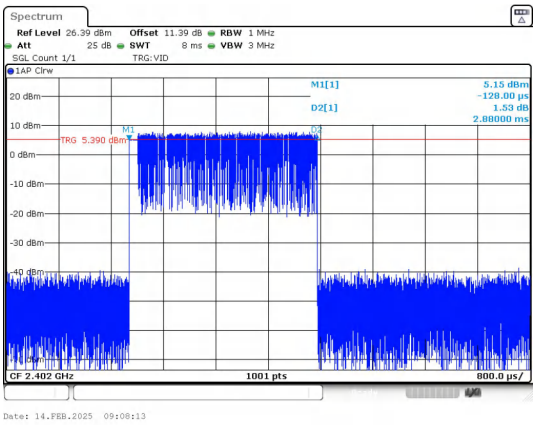
Number of Pulses in 31.6 seconds
GFSK_DH5



Pulse Width
π/4DQPSK_2-DH5

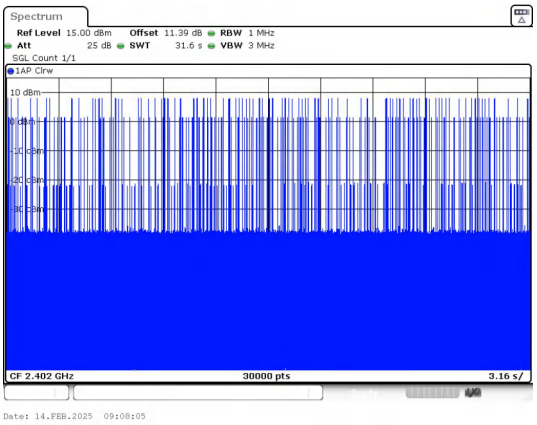


Number of Pulses in 31.6 seconds
π/4DQPSK_2-DH5



Pulse Width

8DPSK_3-DH5



Number of Pulses in 31.6 seconds

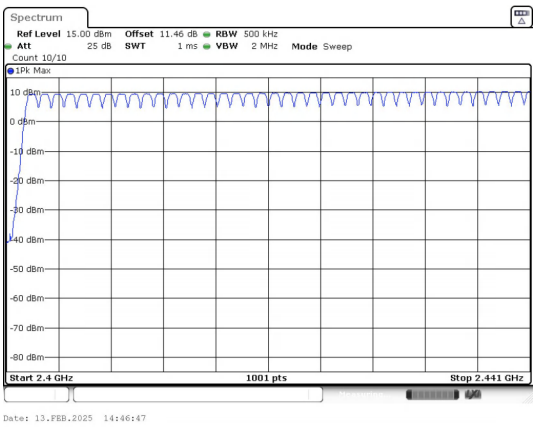
8DPSK_3-DH5

3) Number Of Hopping Channel

Test Result

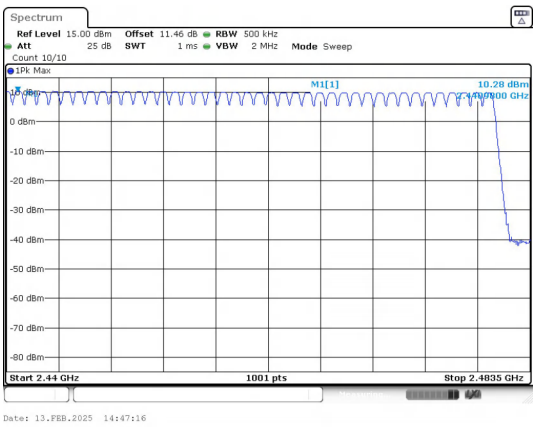
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
π/4DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs



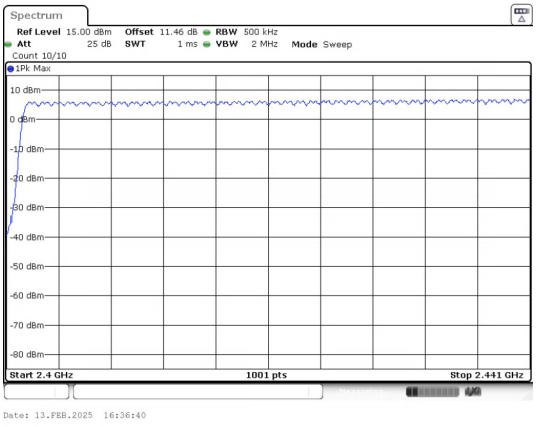
Low End Spectrum Channel Hopping Plot

GFSK



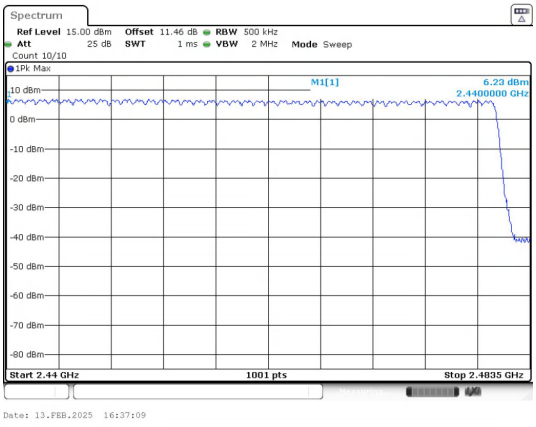
High End Spectrum Channel Hopping Plot

GFSK



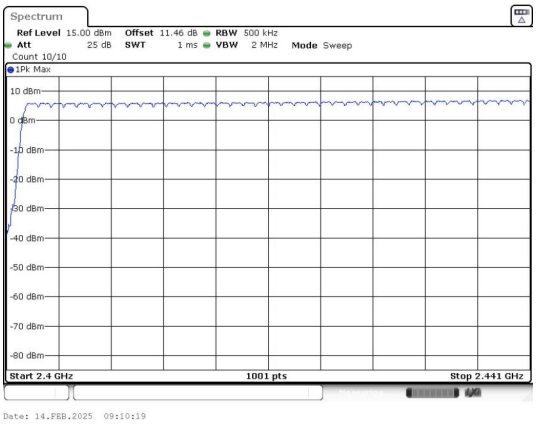
Low End Spectrum Channel Hopping Plot

π/4DQPSK



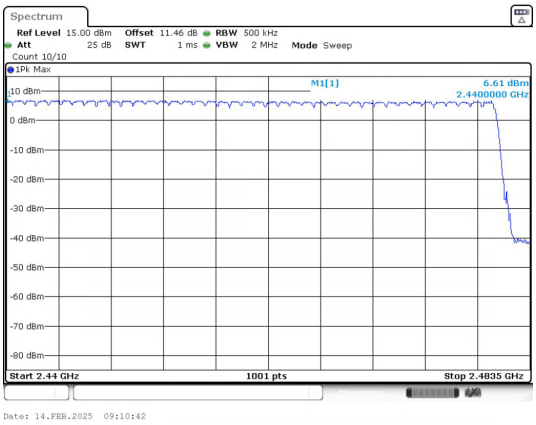
High End Spectrum Channel Hopping Plot

π/4DQPSK



Low End Spectrum Channel Hopping Plot

8DPSK



High End Spectrum Channel Hopping Plot

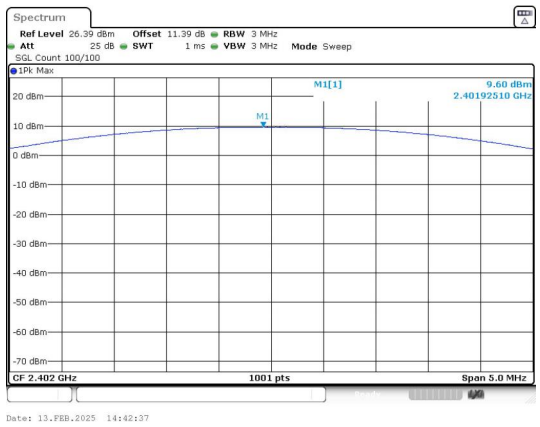
8DPSK

4) Conducted Output Power

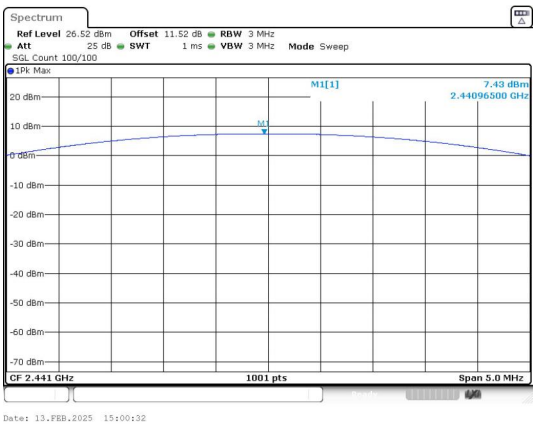
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	9.60	9.12	≤30	PASS
		39	7.43	5.53		PASS
		78	7.04	5.06		PASS
π/4DQPSK	2-DH5	0	7.55	5.69	≤20.97	PASS
		39	9.23	8.38		PASS
		78	8.56	7.18		PASS
8DPSK	3-DH5	0	8.42	6.95		PASS
		39	9.62	9.16		PASS
		78	9.31	8.53		PASS

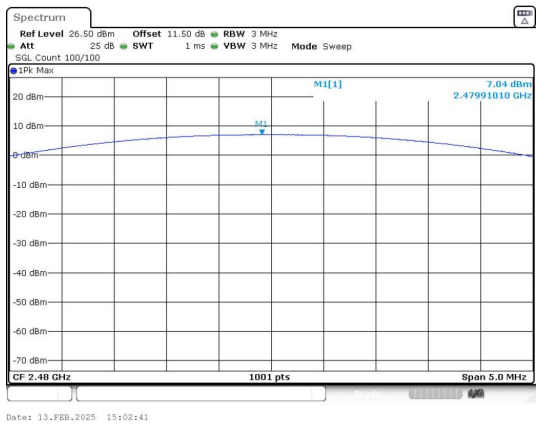
Test Graphs



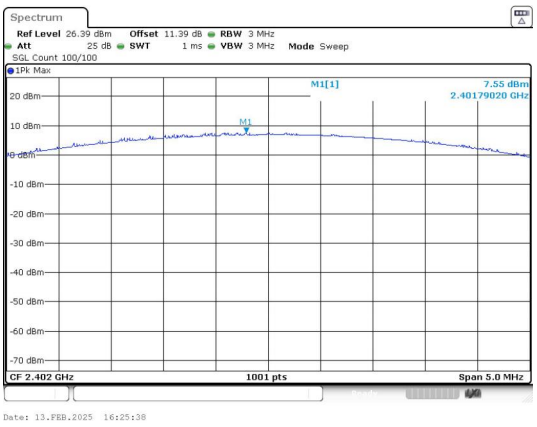
Peak Output Power
GFSK_Channel 0



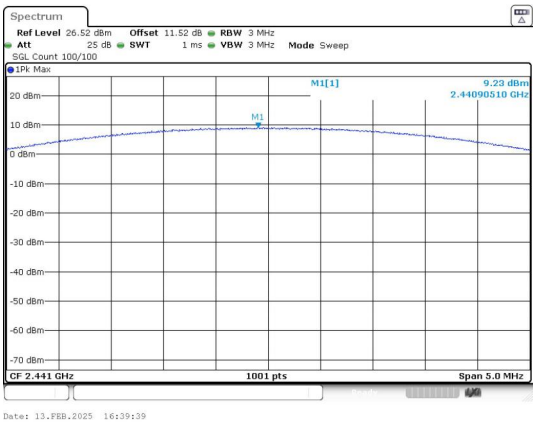
Peak Output Power
GFSK_Channel 39



Peak Output Power
GFSK_Channel 78

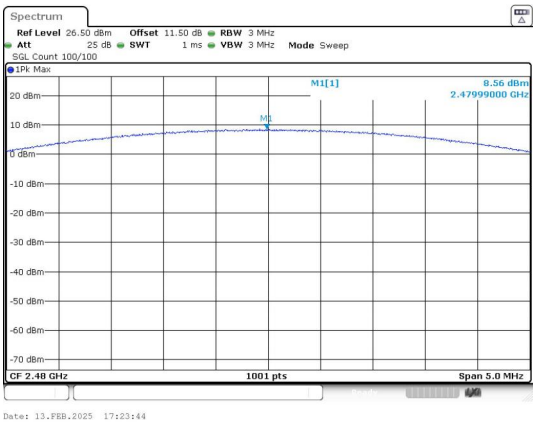


Peak Output Power
π/4DQPSK_Channel 0



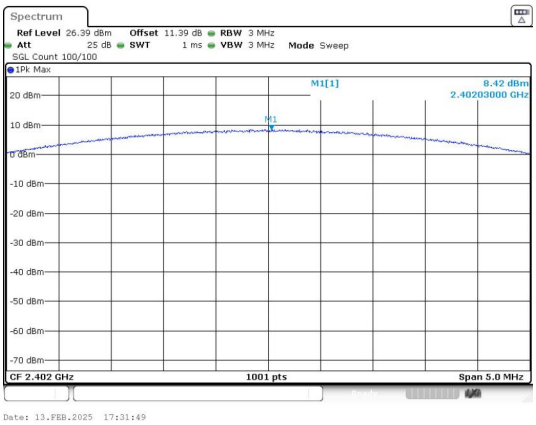
Peak Output Power

π/4DQPSK_Channel 39



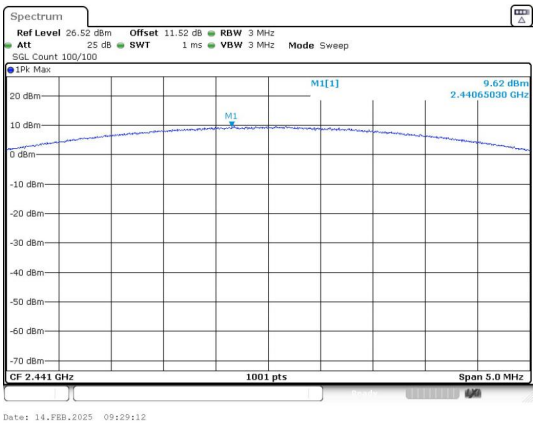
Peak Output Power

π/4DQPSK_Channel 78



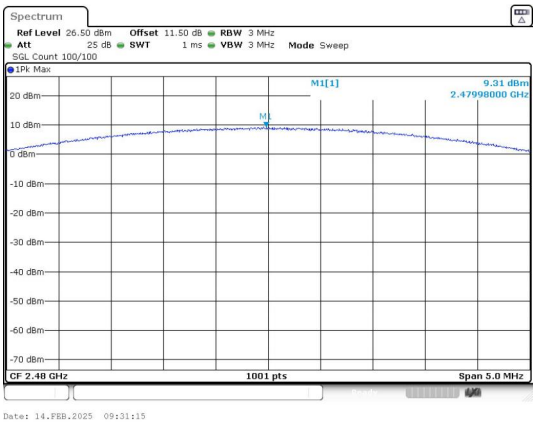
Peak Output Power

8DPSK_Channel 0



Peak Output Power

8DPSK_Channel 39



Peak Output Power

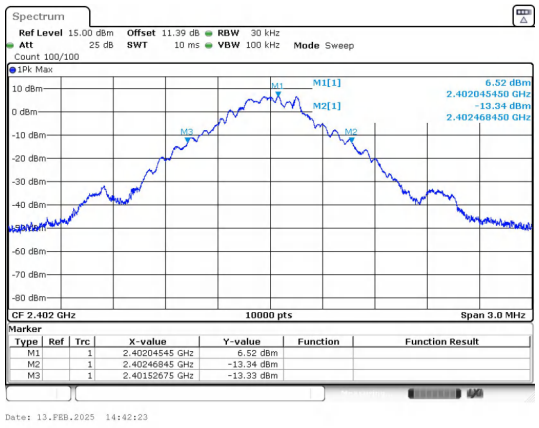
8DPSK_Channel 78

5) 20dB Bandwidth

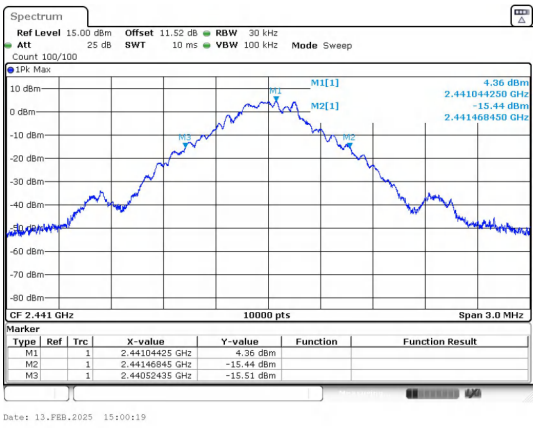
Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	0.9400
	39	2441 MHz	0.9500
	78	2480 MHz	0.9500
π/4DQPSK	0	2402 MHz	1.270
	39	2441 MHz	1.280
	78	2480 MHz	1.280
8DPSK	0	2402 MHz	1.320
	39	2441 MHz	1.320
	78	2480 MHz	1.330

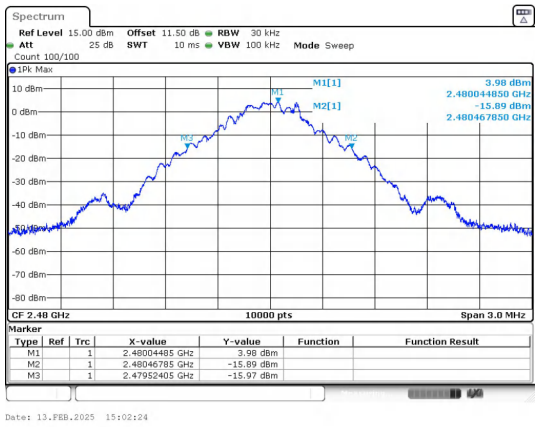
Test Graphs



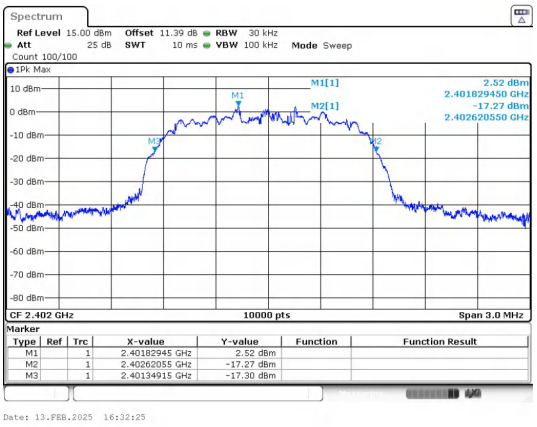
GFSK_DH5_Channel 0



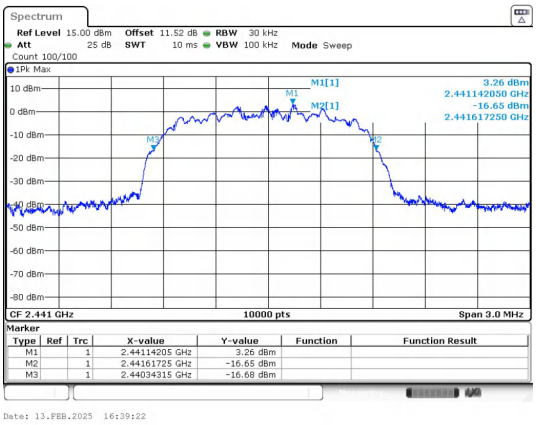
GFSK_DH5_Channel 39



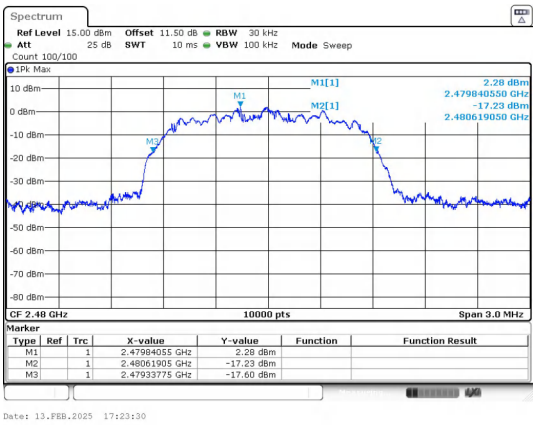
GFSK_DH5_Channel 78



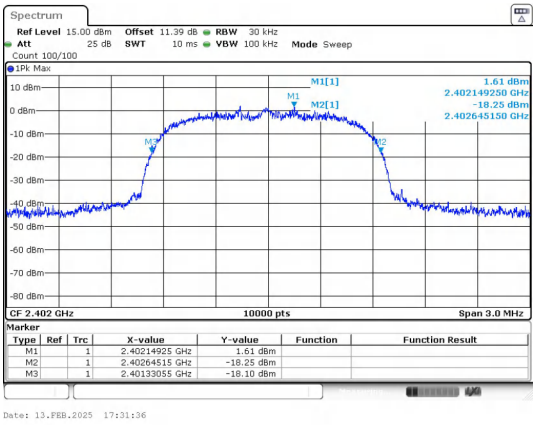
π/4DQPSK_2-DH5_Channel 0



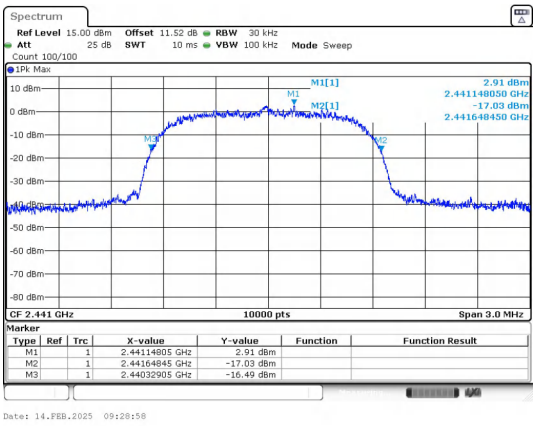
π/4DQPSK_2-DH5_Channel 39



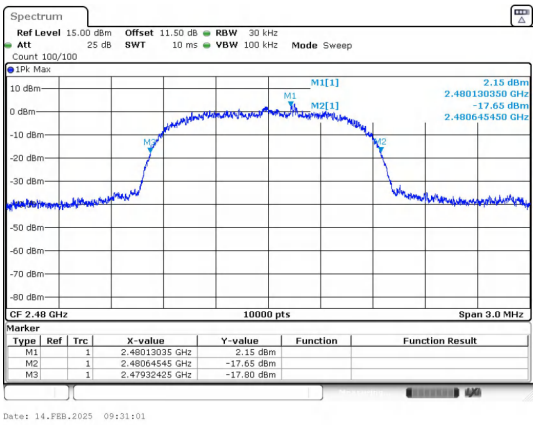
π/4DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



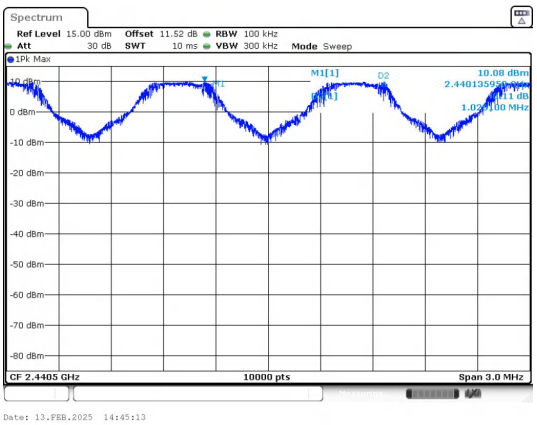
8DPSK_3-DH5_Channel 78

6) Carrier Frequencies Separation

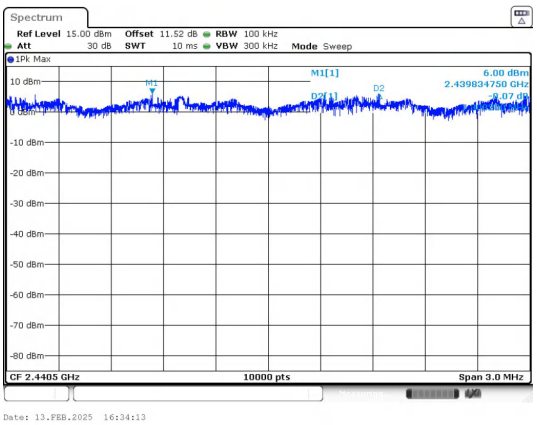
Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2440.1359	2441.164	1.0281	0.94	PASS
π/4DQPSK	2-DH5	2439.8347	2441.1379	1.3032	0.847	PASS
8DPSK	3-DH5	2439.8522	2440.84	0.9879	0.88	PASS

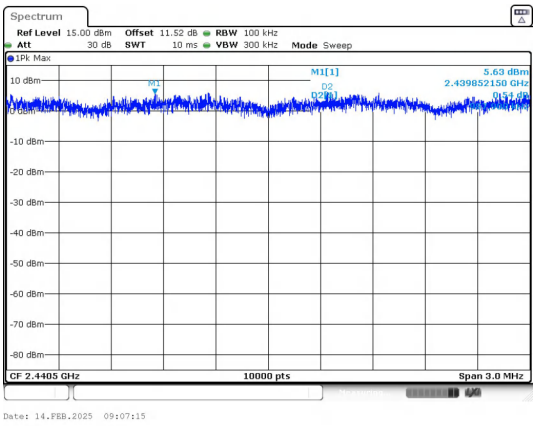
Test Graphs



GFSK



π/4DQPSK



8DPSK

7) Conducted Out Of Band Emission

Test Result

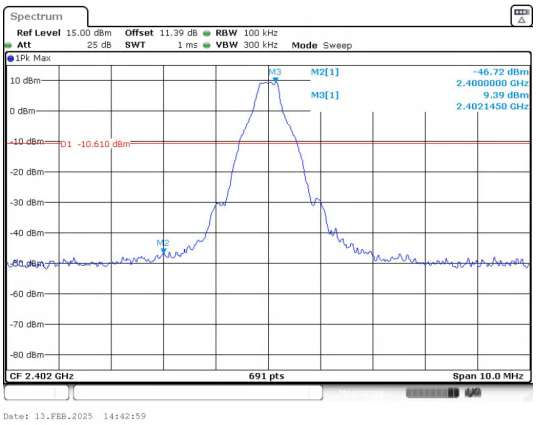
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-46.720	-10.61	-36.110	PASS
			4804.68	-48.352	-10.61	-37.742	PASS
		39	44.57	-50.060	-12.77	-37.290	PASS
		78	42.90	-49.672	-13.17	-36.502	PASS
			2483.50	-50.820	-13.17	-37.650	PASS
π/4DQPSK	2-DH5	0	2400.00	-47.680	-15.37	-32.310	PASS
			4803.85	-52.633	-15.37	-37.263	PASS
		39	42.90	-50.986	-14.23	-36.756	PASS
		78	43.73	-49.550	-14.45	-35.100	PASS
			2483.50	-49.670	-14.45	-35.220	PASS
8DPSK	3-DH5	0	43.70	-49.366	-14.99	-34.376	PASS
			2397.21	-48.124	-14.99	-33.134	PASS
			2400.00	-48.220	-14.99	-33.230	PASS
		39	36.24	-48.002	-14.74	-33.262	PASS
		78	36.24	-48.397	-14.25	-34.147	PASS
			2483.50	-49.640	-14.25	-35.390	PASS

Hopping

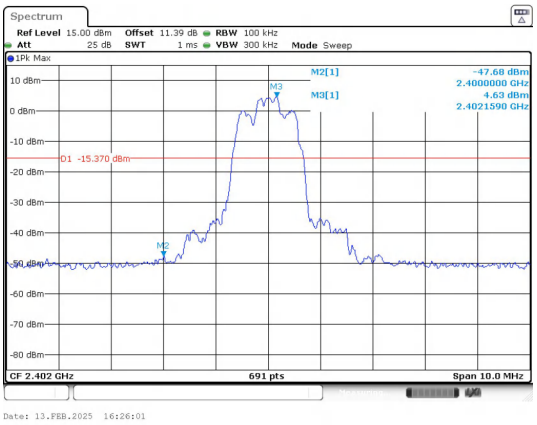
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2400.00	-47.660	-10.81	-36.850	PASS
			2483.50	-48.980	-10.19	-38.790	PASS
π/4DQPSK	2-DH5		2397.89	-47.477	-16.7	-30.777	PASS
			2400.00	-50.210	-16.7	-33.510	PASS
			2483.50	-49.970	-15.98	-33.990	PASS
8DPSK	3-DH5		2398.67	-47.633	-14.81	-32.823	PASS
			2400.00	-48.150	-14.81	-33.340	PASS
			2483.50	-48.650	-16.0	-32.650	PASS

Test Graphs



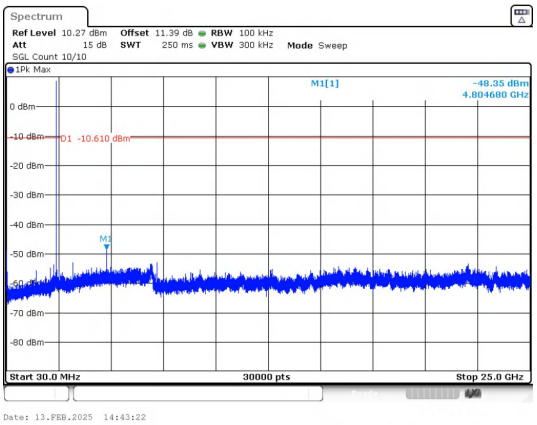
Out Of Band Emission

GFSK_DH5_Channel 0



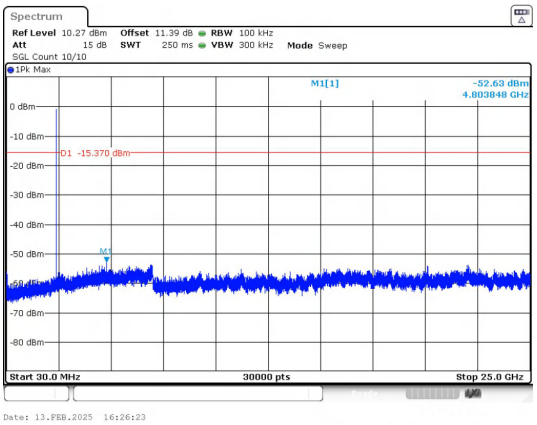
Out Of Band Emission

π/4DQPSK_2-DH5_Channel 0



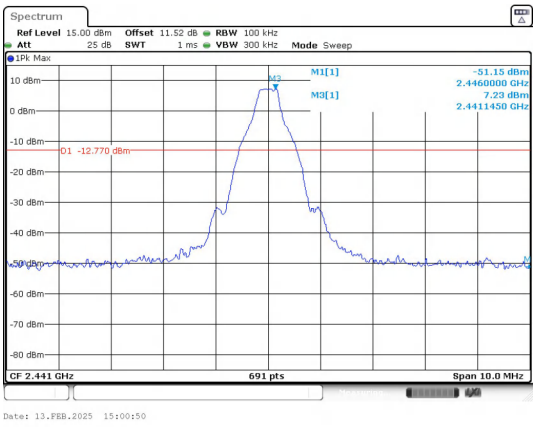
30.0 MHz - 25000.0 MHz

GFSK_DH5_Channel 0



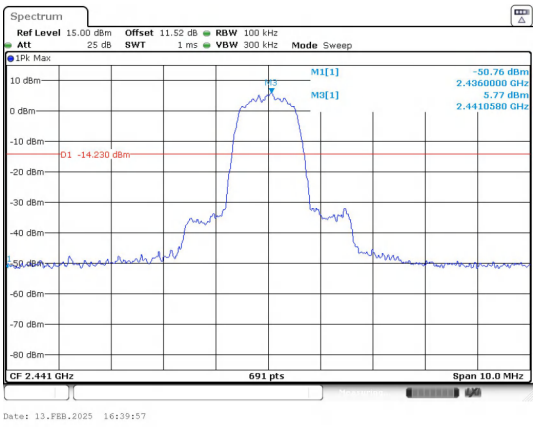
30.0 MHz - 25000.0 MHz

π/4DQPSK_2-DH5_Channel 0



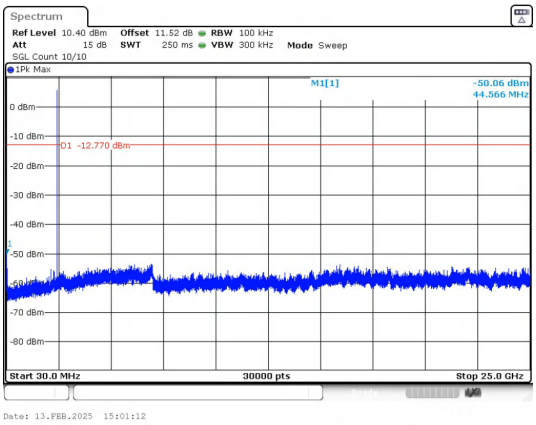
Out Of Band Emission

GFSK_DH5_Channel 39



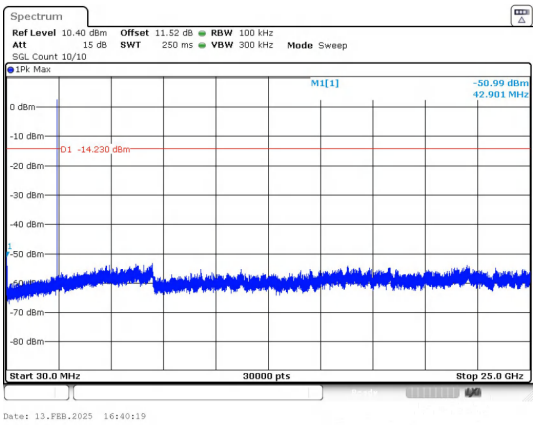
Out Of Band Emission

π/4DQPSK_2-DH5_Channel 39



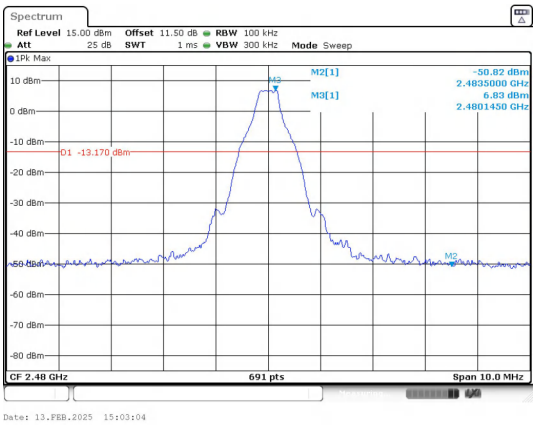
30.0 MHz - 25000.0 MHz

GFSK_DH5_Channel 39



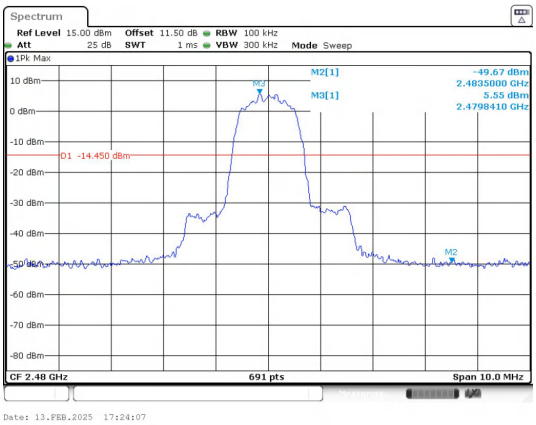
30.0 MHz - 25000.0 MHz

π/4DQPSK_2-DH5_Channel 39



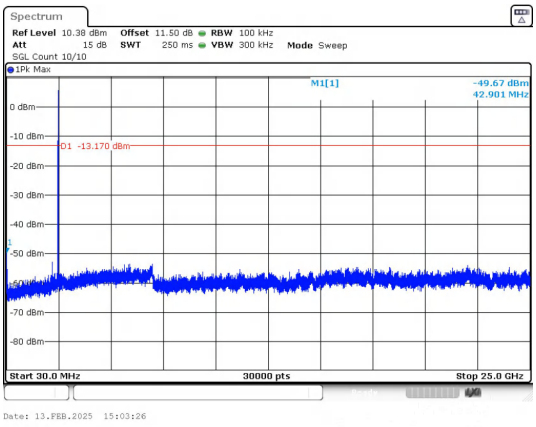
Out Of Band Emission

GFSK_DH5_Channel 78



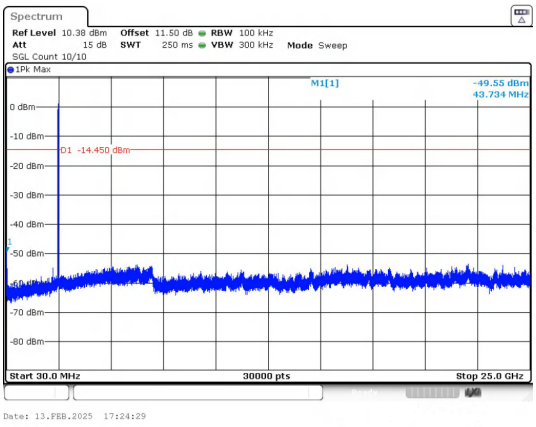
Out Of Band Emission

π/4DQPSK_2-DH5_Channel 78



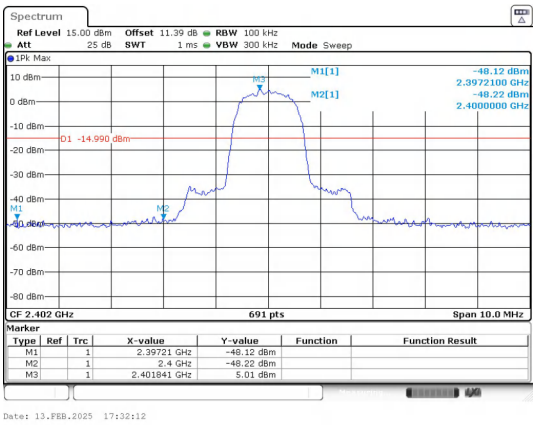
30.0 MHz - 25000.0 MHz

GFSK_DH5_Channel 78



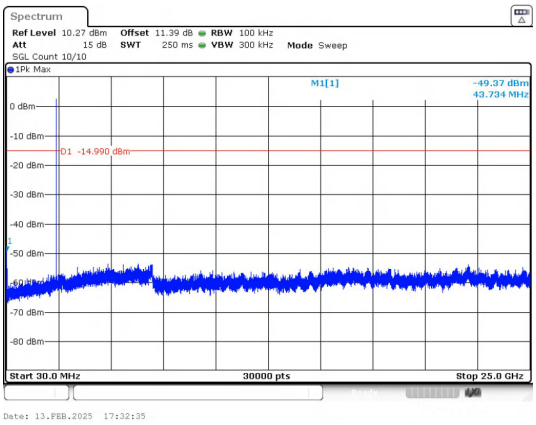
30.0 MHz - 25000.0 MHz

π/4DQPSK_2-DH5_Channel 78



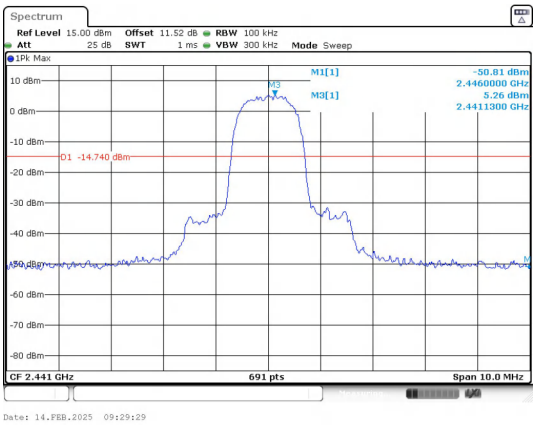
Out Of Band Emission

8DPSK_3-DH5_Channel 0



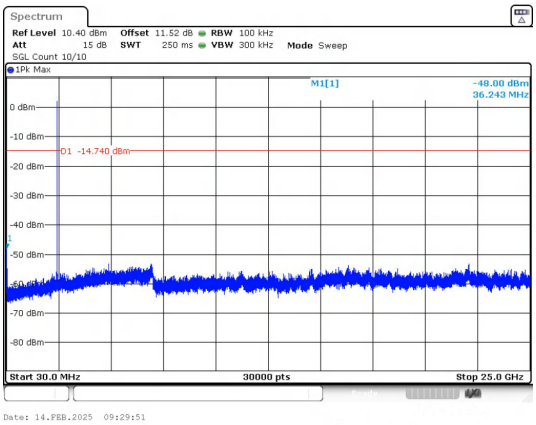
30.0 MHz - 25000.0 MHz

8DPSK_3-DH5_Channel 0



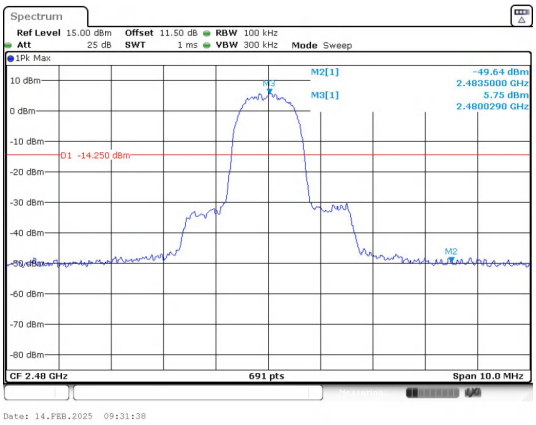
Out Of Band Emission

8DPSK_3-DH5_Channel 39



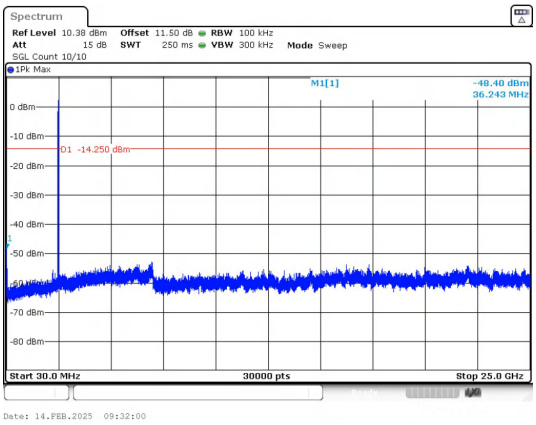
30.0 MHz - 25000.0 MHz

8DPSK_3-DH5_Channel 39



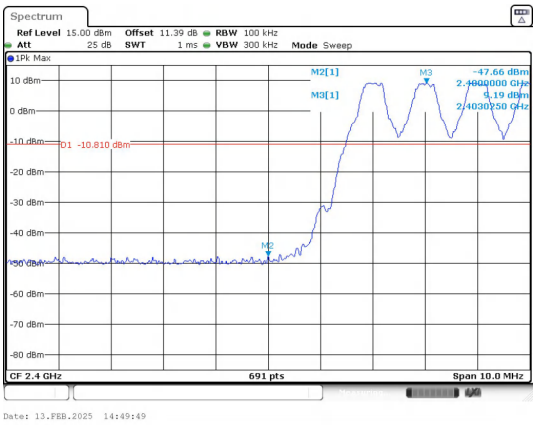
Out Of Band Emission

8DPSK_3-DH5_Channel 78



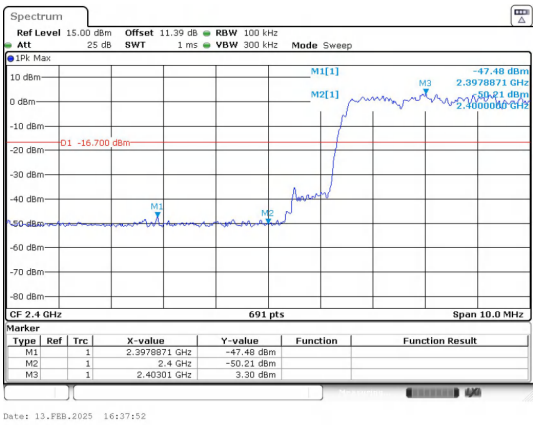
30.0 MHz - 25000.0 MHz

8DPSK_3-DH5_Channel 78



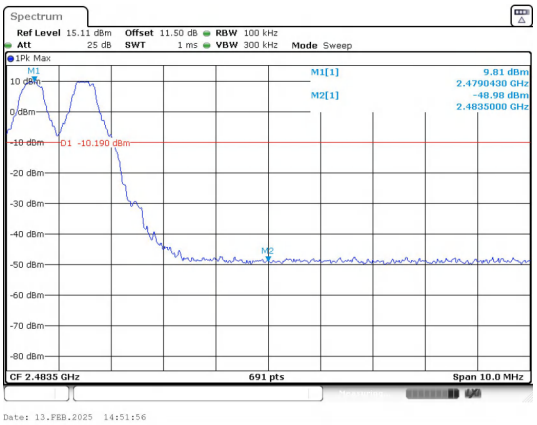
Out Of Band Emission(Left)

GFSK_DH5_Channel Hopping



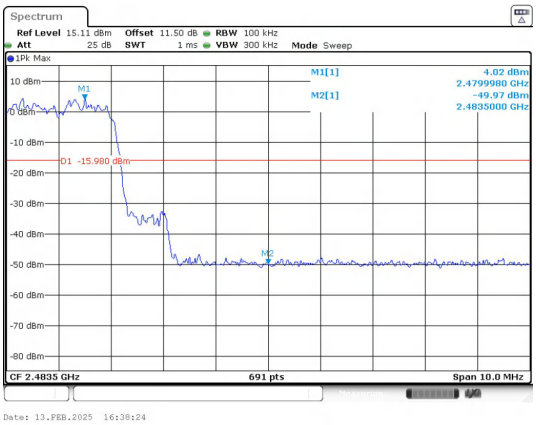
Out Of Band Emission(Left)

π/4DQPSK_2-DH5_Channel Hopping



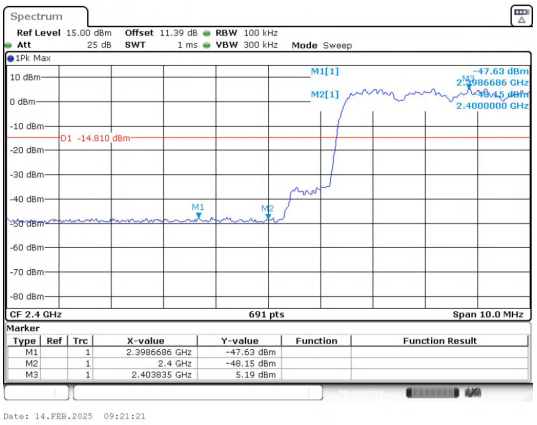
Out Of Band Emission(Right)

GFSK_DH5_Channel Hopping



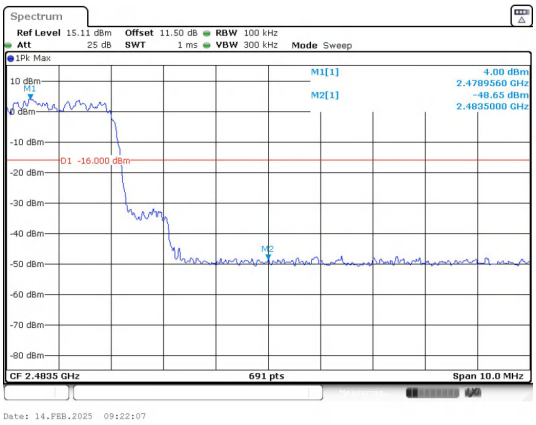
Out Of Band Emission(Right)

π/4DQPSK_2-DH5_Channel Hopping



Out Of Band Emission(Left)

8DPSK_3-DH5_Channel Hopping



Out Of Band Emission(Right)

8DPSK_3-DH5_Channel Hopping

------End of the report-----