Appendix A

Report No.:	CISRR240510018
FCC ID:	2BGGM-P2961
Product Name:	bluetooth headset
Model No.:	P2961
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

1) Conducted Peak Output Power

Test Result

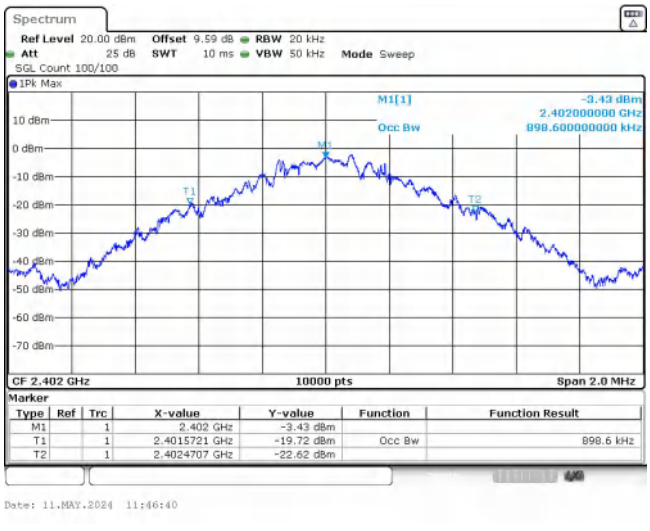
Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	1.777	1.506	30	PASS
		39	1.249	1.333		PASS
		78	1.327	1.357		PASS
π/4DQPSK	2-DH5	0	1.611	1.449	20.97	PASS
		39	1.034	1.269		PASS
		78	1.115	1.293		PASS
8DPSK	3-DH5	0	1.283	1.344		PASS
		39	0.586	1.144		PASS
		78	0.694	1.173		PASS

2) 99% Bandwidth

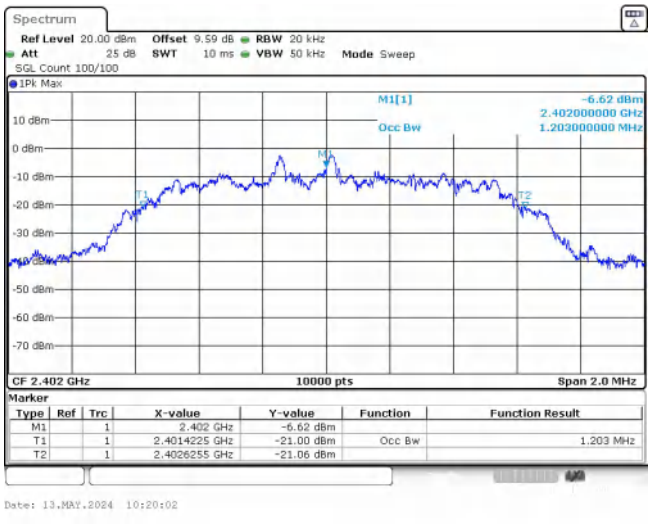
Test Result

Modulation	Channel	99% BW (MHz)
GFSK	0	0.89860
	39	0.91680
	78	0.89260
π/4DQPSK	0	1.2030
	39	1.2040
	78	1.1980
8DPSK	0	1.2230
	39	1.2160
	78	1.2170

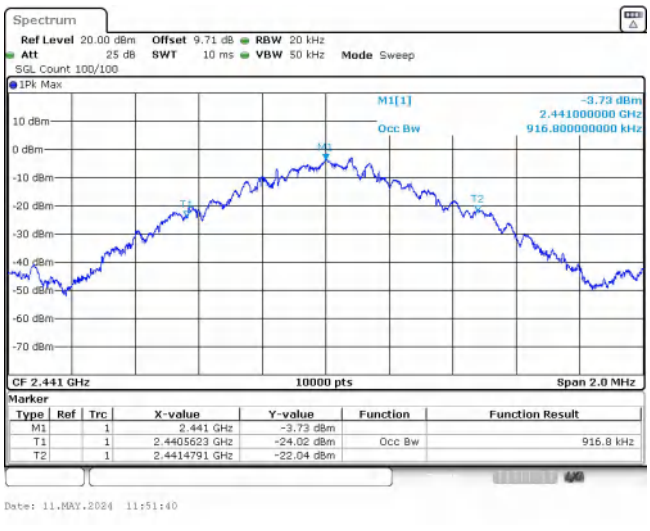
Test Graphs



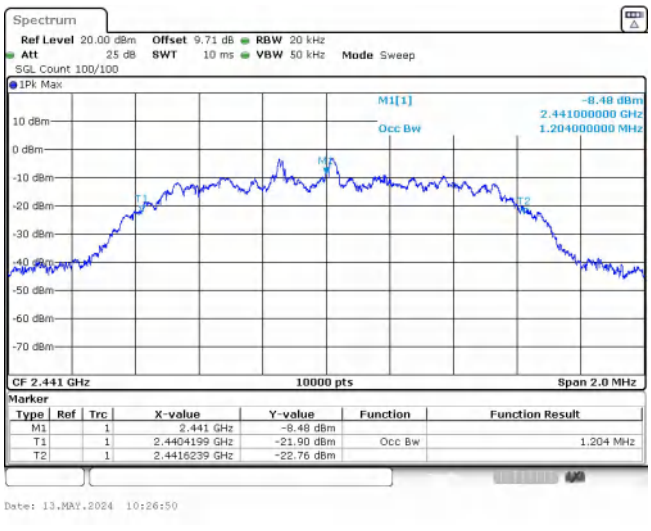
GFSK_DH5_Channel 0



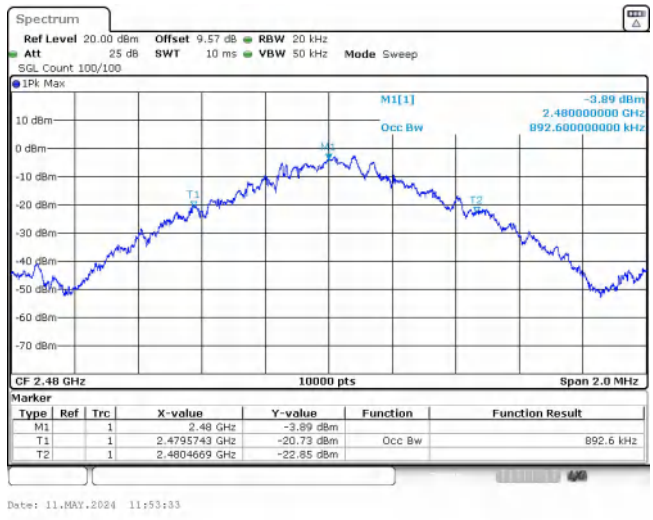
π/4DQPSK_2-DH5_Channel 0



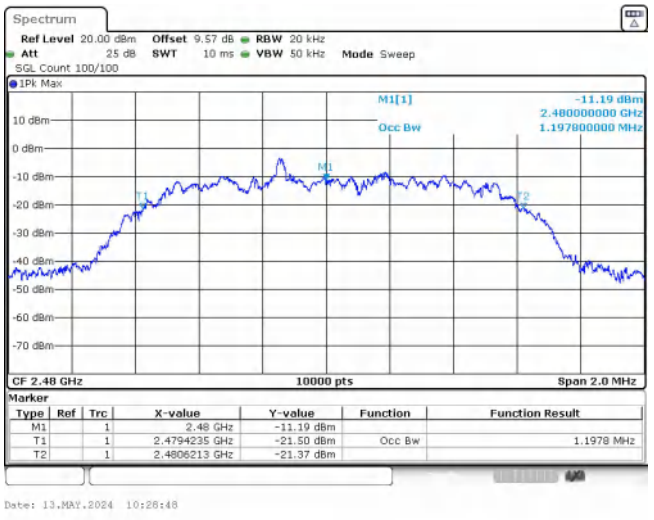
GFSK_DH5_Channel 39



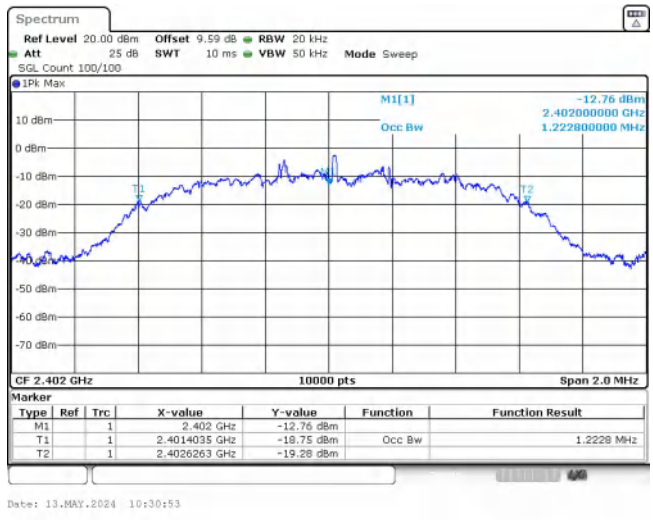
π/4DQPSK_2-DH5_Channel 39



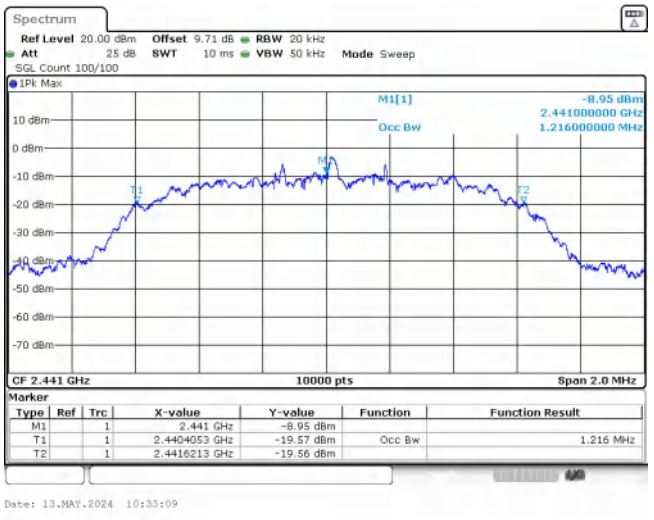
GFSK_DH5_Channel 78



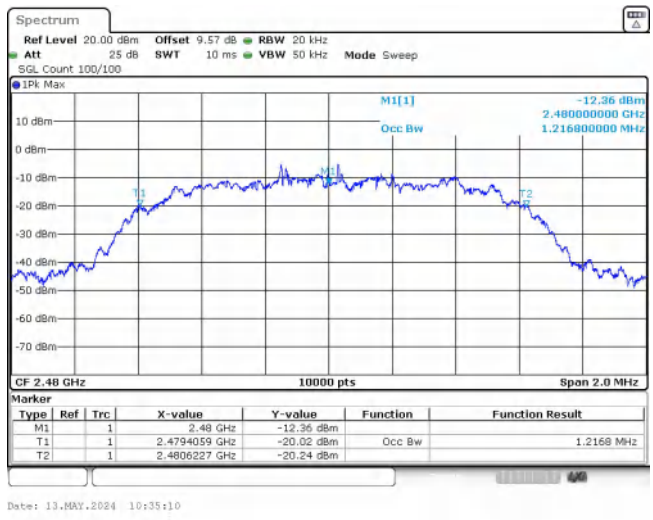
π/4DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



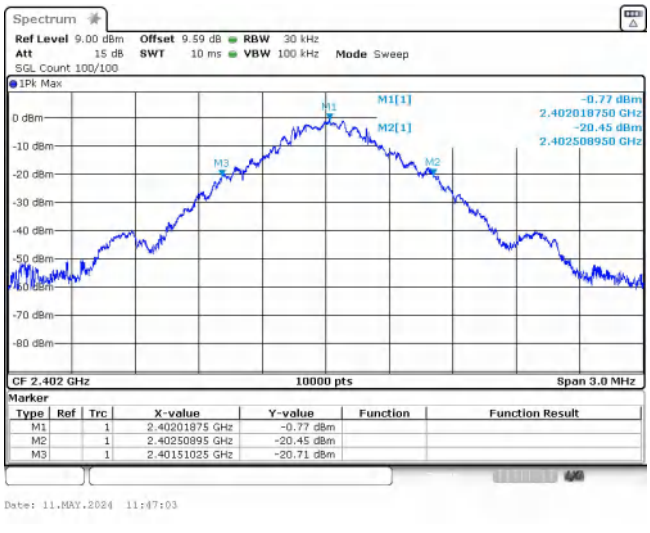
8DPSK_3-DH5_Channel 78

3) 20dB Bandwidth

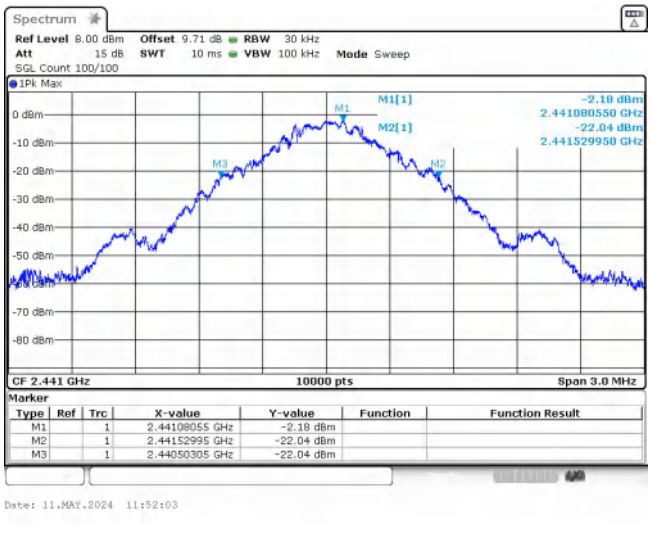
Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.000
	39	2441 MHz	1.030
	78	2480 MHz	1.010
π/4DQPSK	0	2402 MHz	1.320
	39	2441 MHz	1.300
	78	2480 MHz	1.310
8DPSK	0	2402 MHz	1.290
	39	2441 MHz	1.290
	78	2480 MHz	1.300

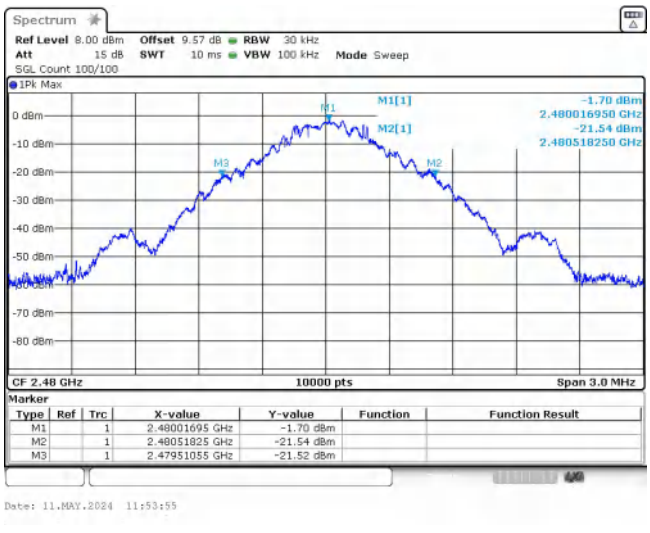
Test Graphs



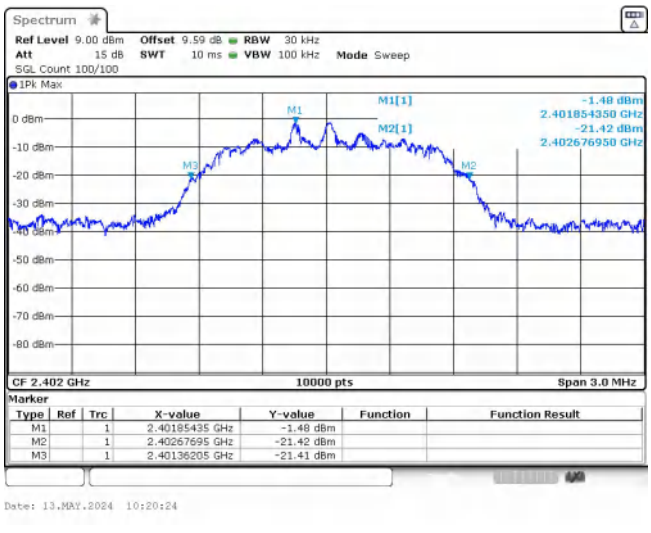
GFSK_DH5_Channel 0



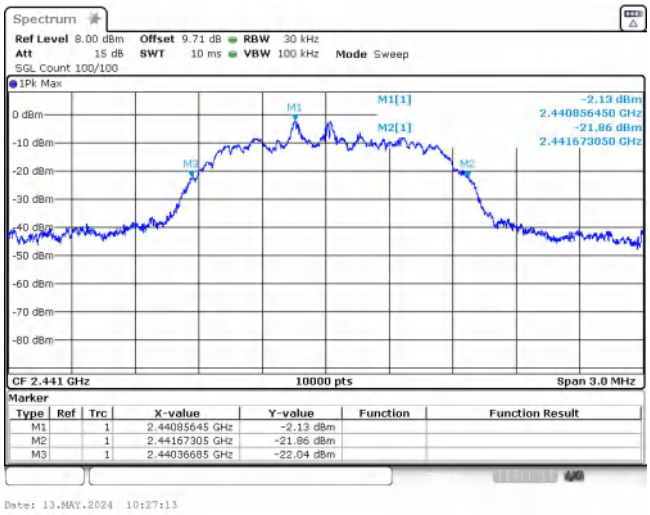
GFSK_DH5_Channel 39



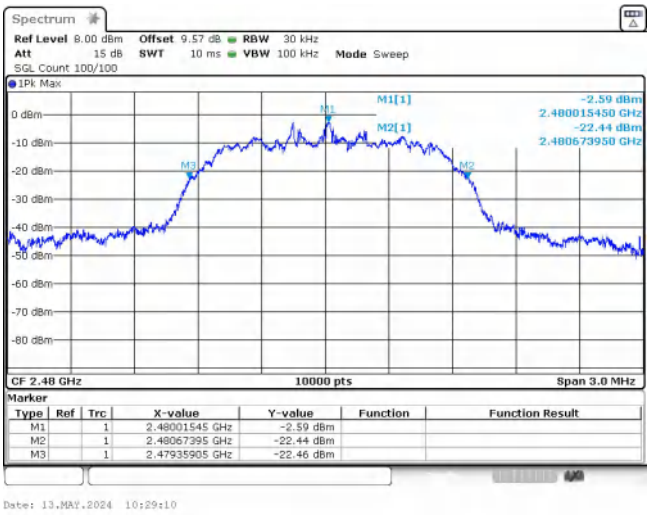
GFSK_DH5_Channel 78



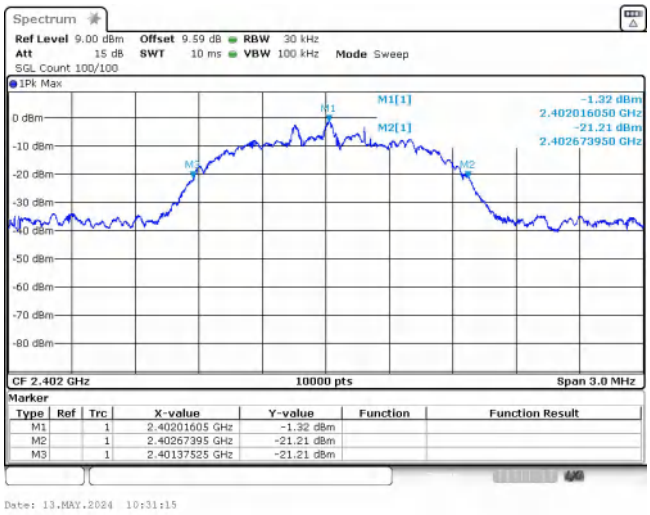
π/4DQPSK_2-DH5_Channel 0



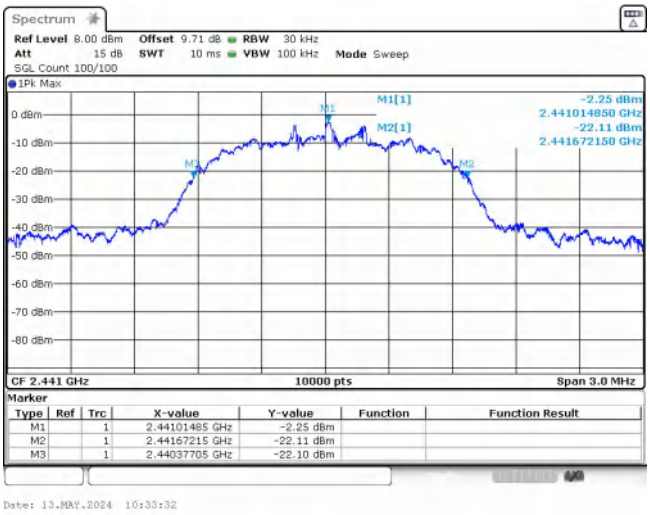
π/4DQPSK_2-DH5_Channel 39



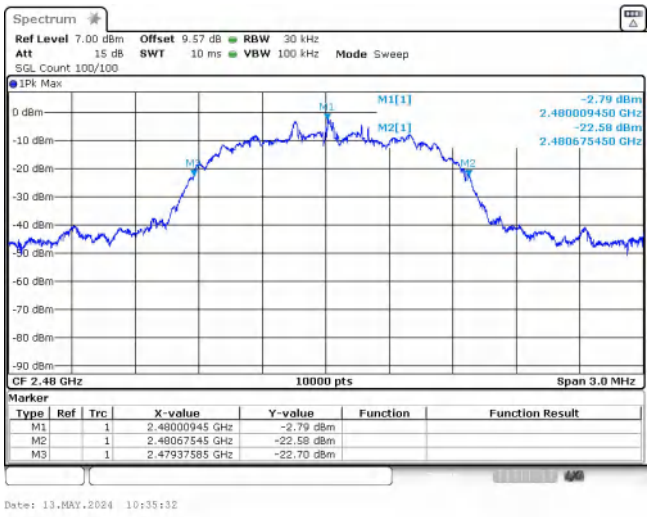
π/4DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



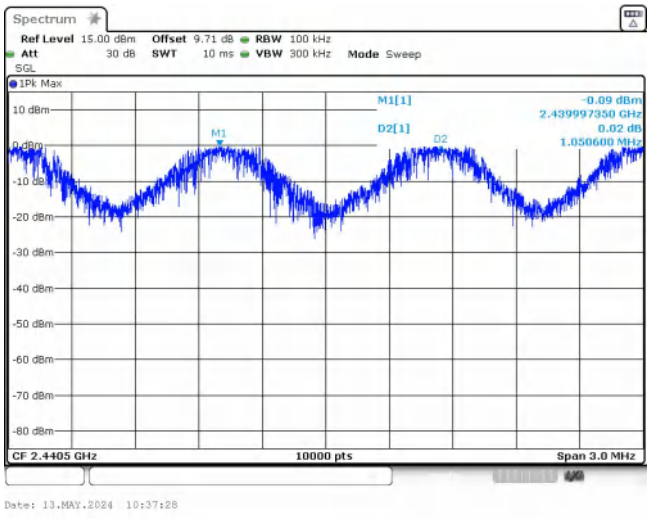
8DPSK_3-DH5_Channel 78

4) Carrier Frequencies Separation

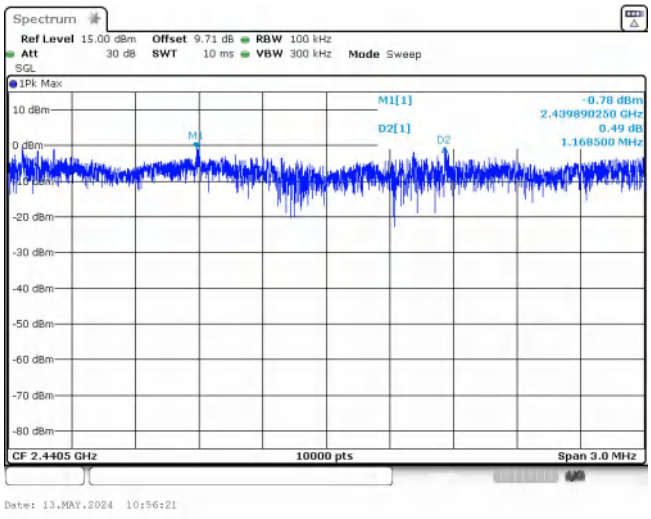
Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2439.9974	2441.048	1.0506	0.667	PASS
π/4DQPSK	2-DH5	2439.8902	2441.0588	1.1685	0.88	PASS
8DPSK	3-DH5	2440.0421	2441.2288	1.1868	0.86	PASS

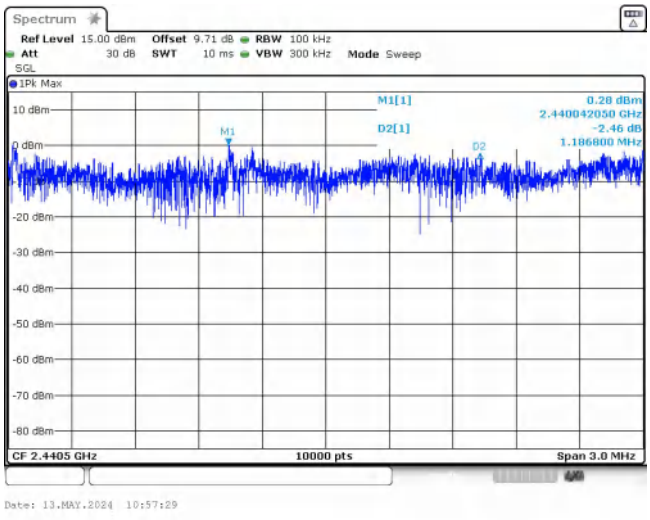
Test Graphs



GFSK



π/4DQPSK



8DPSK

5) Conducted Out Of Band Emission

Test Result

Non-Hopping

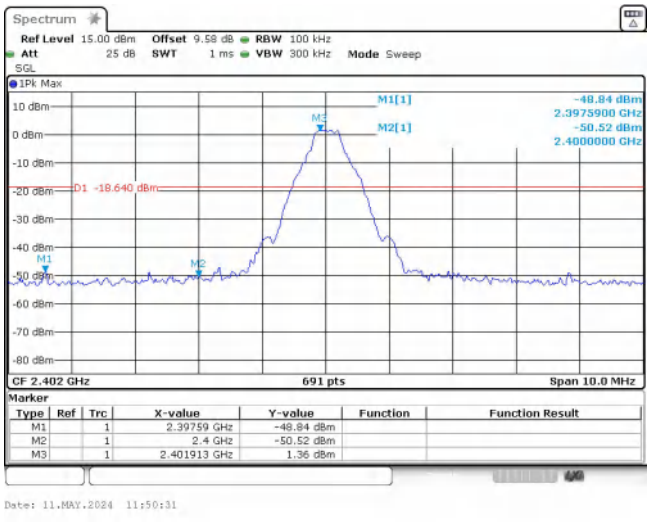
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2397.59	-48.843	-18.64	-30.203	PASS
			2400.00	-50.525	-18.64	-31.885	PASS
			5190.10	-39.405	-18.64	-20.765	PASS
		39	9763.72	-42.733	-19.25	-23.483	PASS
		78	2483.50	-50.784	-19.19	-31.594	PASS
			9920.20	-40.738	-19.19	-21.548	PASS
π/4DQPSK	2-DH5	0	2400.00	-46.820	-19.07	-27.750	PASS
			9920.20	-41.209	-19.07	-22.139	PASS
		39	9763.72	-40.760	-20.07	-20.690	PASS
		78	2483.50	-52.057	-19.72	-32.337	PASS
			9920.20	-40.388	-19.72	-20.668	PASS
8DPSK	3-DH5	0	2400.00	-48.920	-19.35	-29.570	PASS
			7205.96	-44.031	-19.35	-24.681	PASS
		39	9763.72	-41.615	-19.76	-21.855	PASS
		78	2483.50	-52.220	-19.76	-32.460	PASS
			9920.20	-40.837	-19.76	-21.077	PASS

Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2398.54	-49.501	-19.02	-30.481	PASS
			2400.00	-52.104	-19.02	-33.084	PASS
			2483.50	-52.245	-19.84	-32.405	PASS
			2397.29	-50.222	-19.02	-31.202	PASS
			2400.00	-50.960	-19.02	-31.940	PASS
			2483.50	-51.511	-19.89	-31.621	PASS
π/4DQPSK	2-DH5		2398.02	-50.280	-20.26	-30.020	PASS
			2400.00	-53.052	-20.26	-32.792	PASS
			2483.50	-51.673	-23.64	-28.033	PASS
			2396.95	-50.050	-21.92	-28.130	PASS
			2400.00	-51.300	-21.92	-29.380	PASS
			2483.50	-51.652	-20.04	-31.612	PASS
8DPSK	3-DH5		2395.77	-49.212	-19.02	-30.192	PASS
			2400.00	-51.796	-19.02	-32.776	PASS
			2483.50	-52.017	-22.42	-29.597	PASS
			2398.60	-50.096	-19.99	-30.106	PASS
			2400.00	-51.455	-19.99	-31.465	PASS

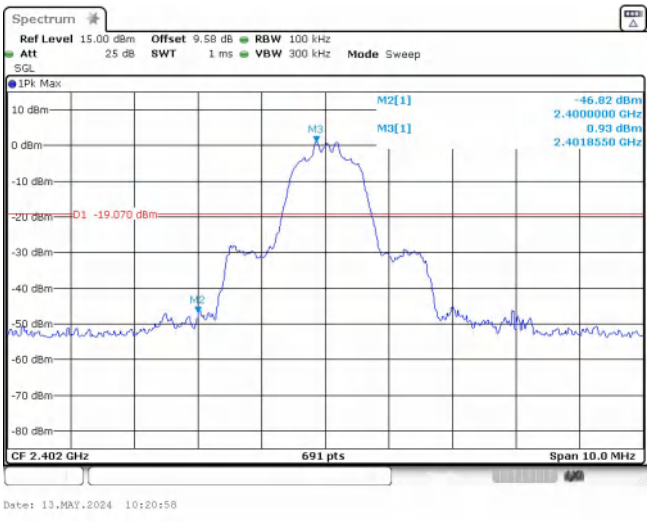
			2483.50	-50.170	-20.0	-30.170	PASS

Test Graphs



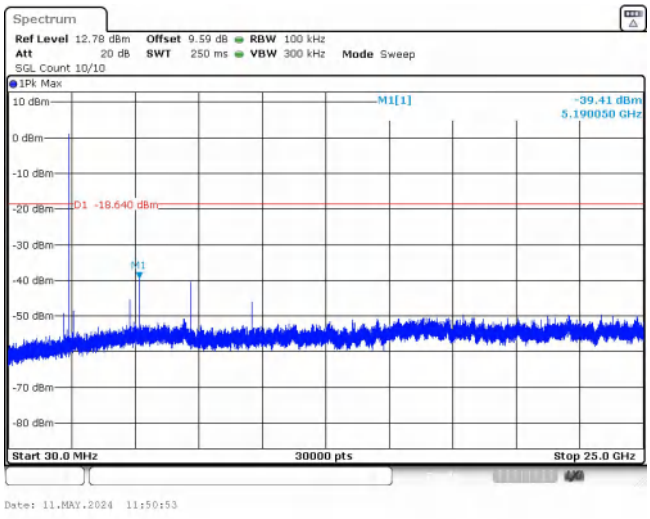
Out Of Band Emission

GFSK_DH5_Channel 0



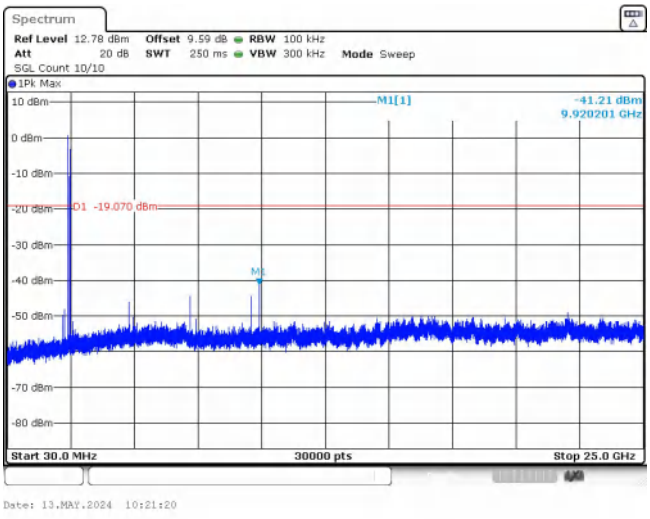
Out Of Band Emission

π/4DQPSK_2-DH5_Channel 0



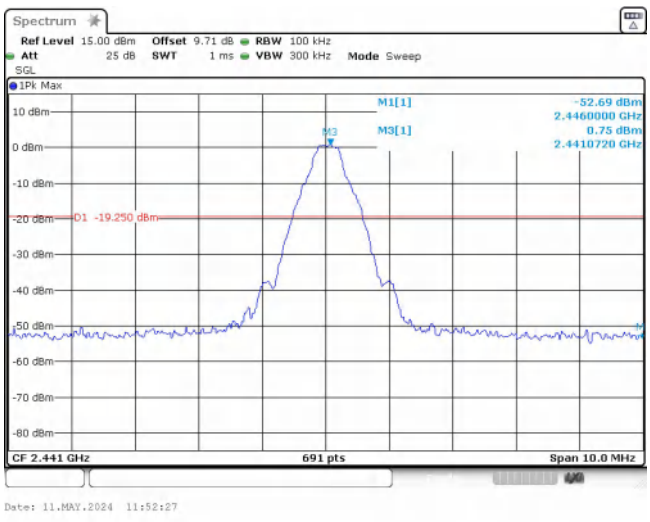
30.0 MHz - 25000.0 MHz

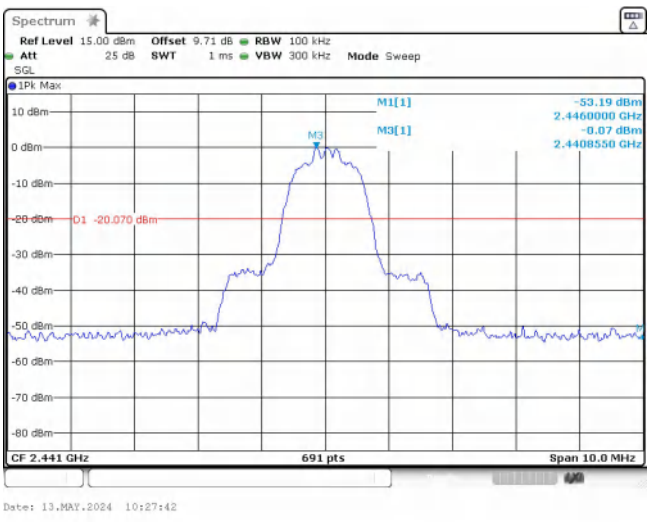
GFSK_DH5_Channel 0

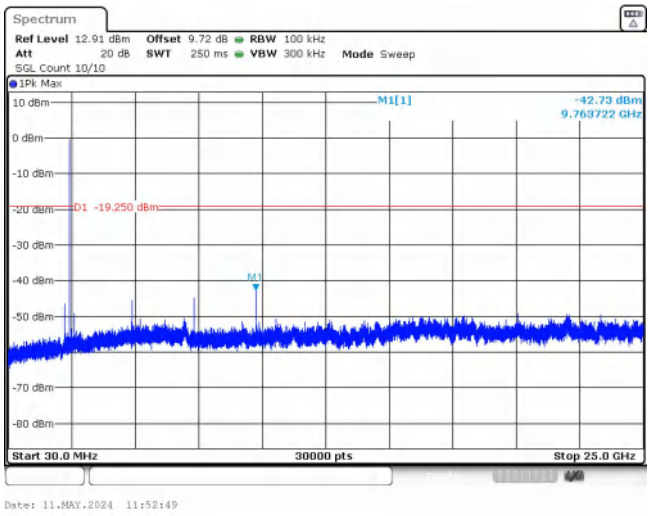
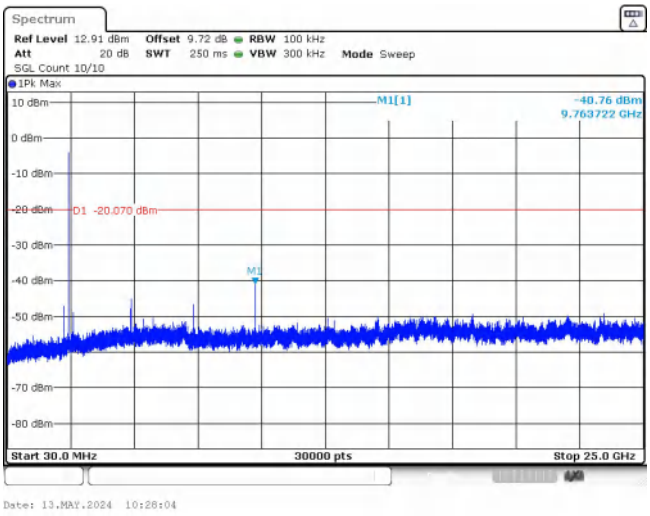
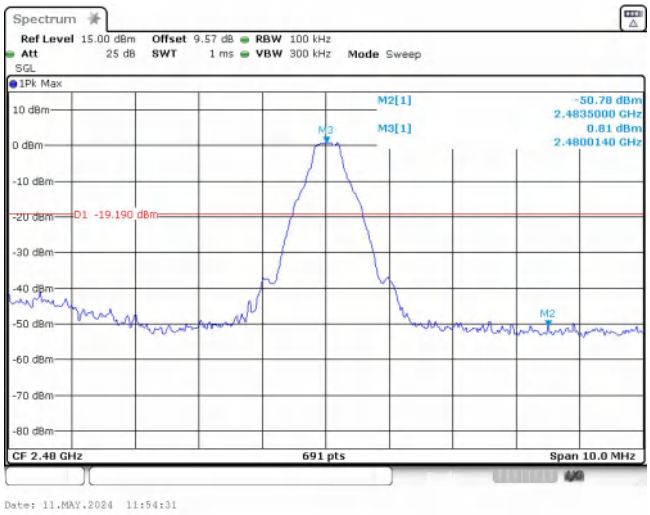
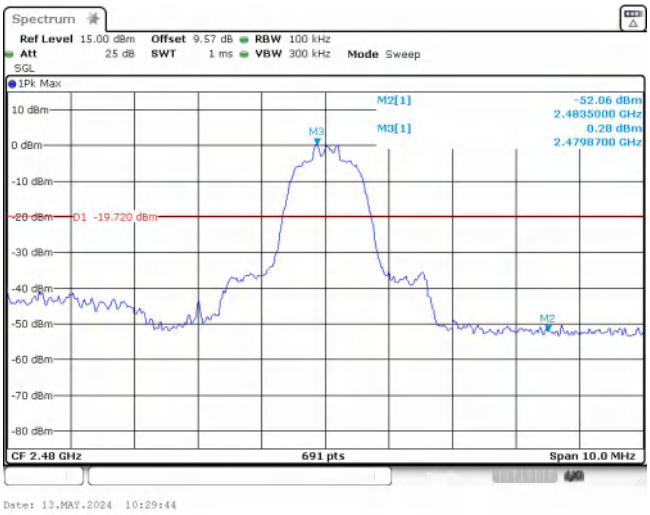
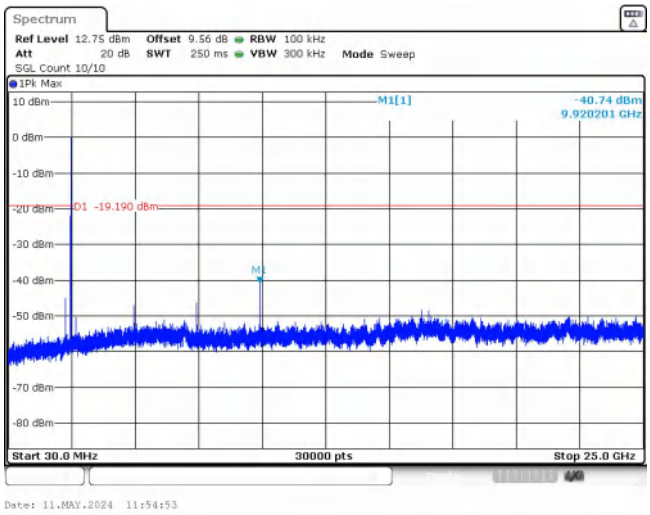
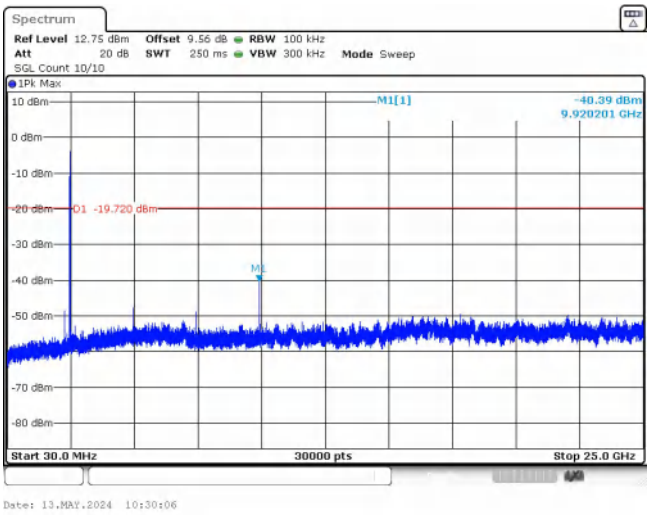


Spurious Emission

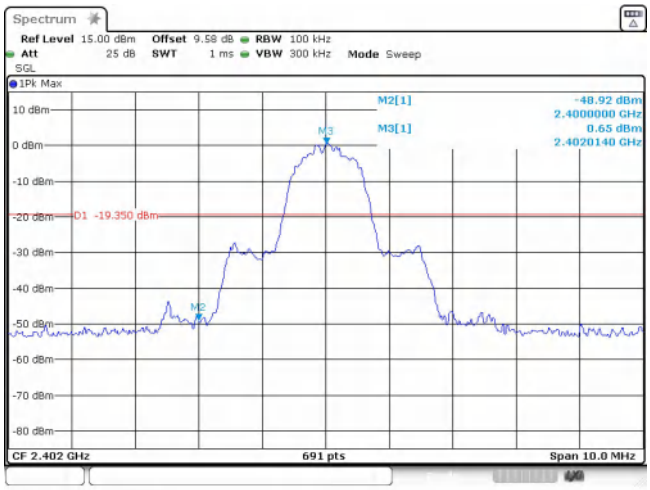
π/4DQPSK_2-DH5_Channel 0

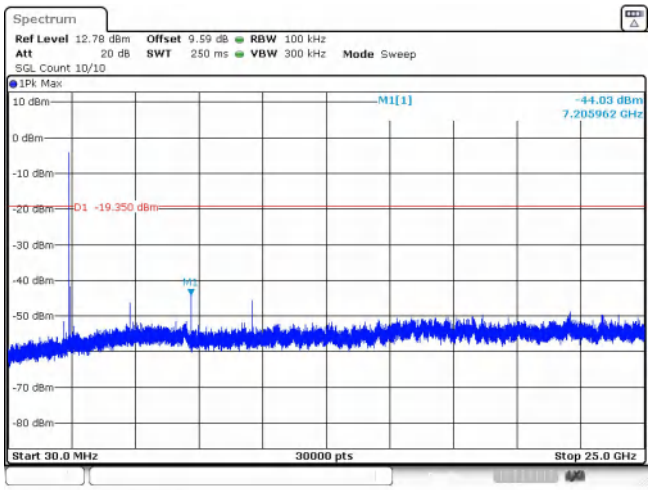




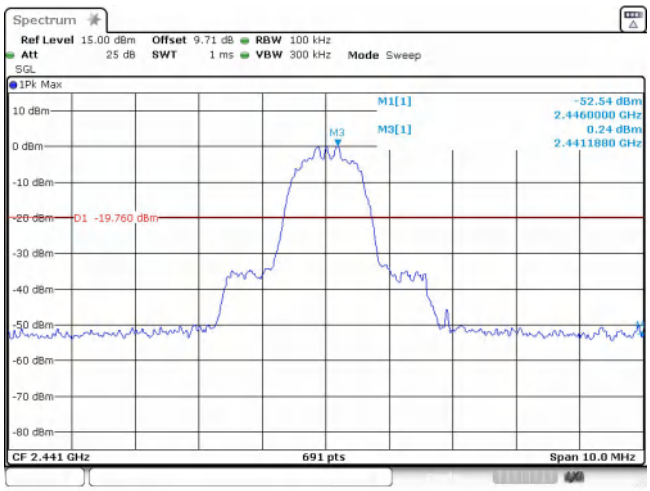
Out Of Band Emission GFSK_DH5_Channel 39	Out Of Band Emission π/4DQPSK_2-DH5_Channel 39
	
30.0 MHz - 25000.0 MHz **GFSK_DH5_Channel 39**	**Spurious Emissions** **π/4DQPSK_2-DH5_Channel 39**
	
Out Of Band Emission **GFSK_DH5_Channel 78**	**Out Of Band Emission** **π/4DQPSK_2-DH5_Channel 78**
	
30.0 MHz - 25000.0 MHz	**Spurious Emission**

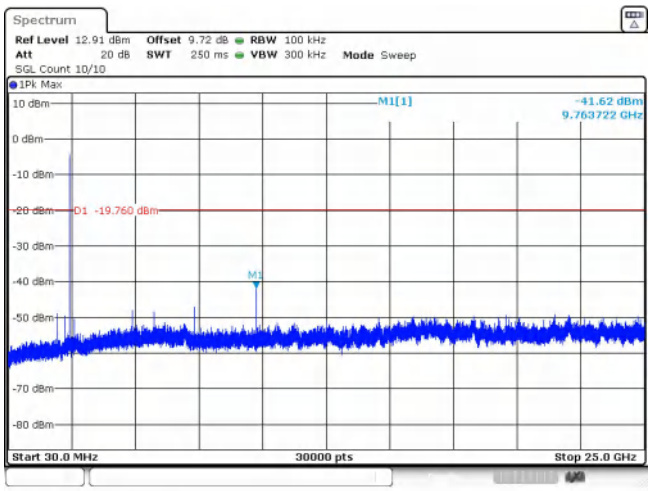
GFSK_DH5_Channel 78	π/4DQPSK_2-DH5_Channel 78



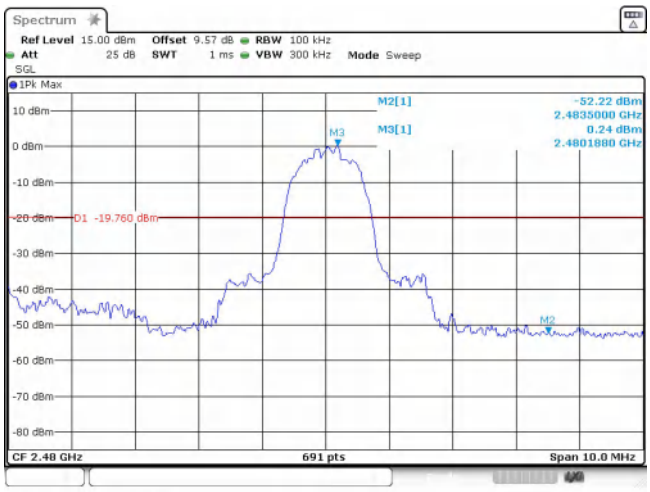


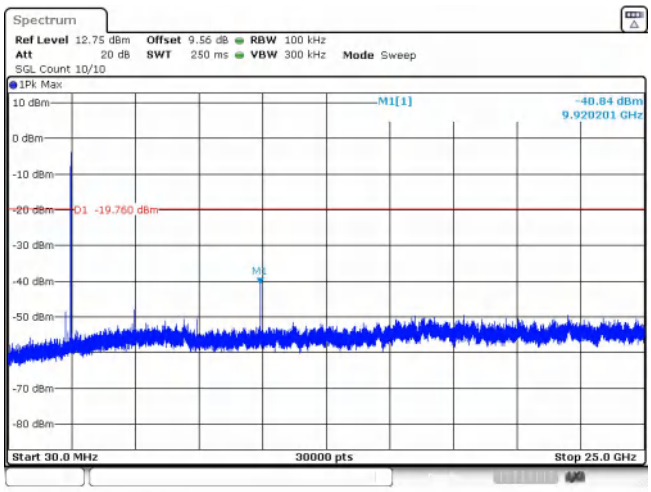
Out Of Band Emission 8DPSK_3-DH5_Channel 0	Spurious Emission 8DPSK_3-DH5_Channel 0





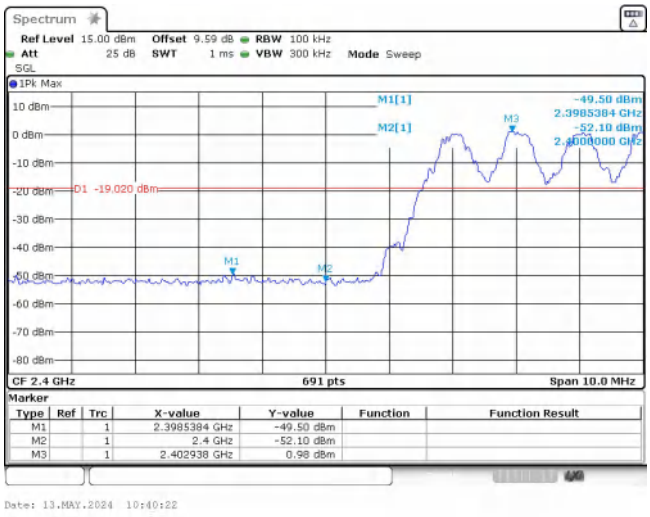
Out Of Band Emission 8DPSK_3-DH5_Channel 39	Spurious Emissions 8DPSK_3-DH5_Channel 39

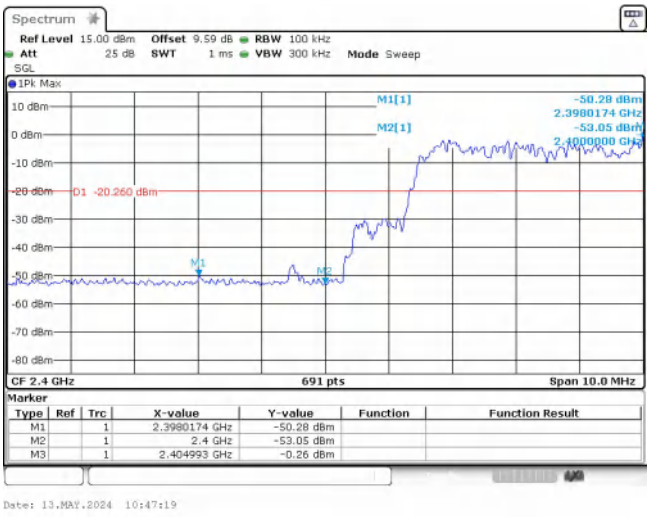




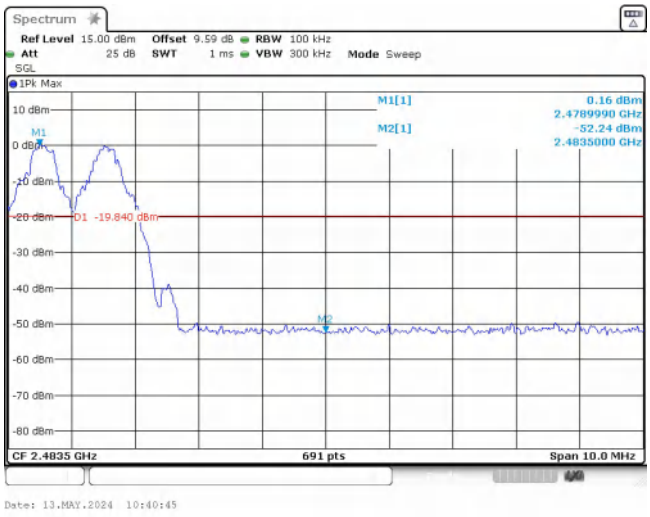
Out Of Band Emission	Spurious Emission

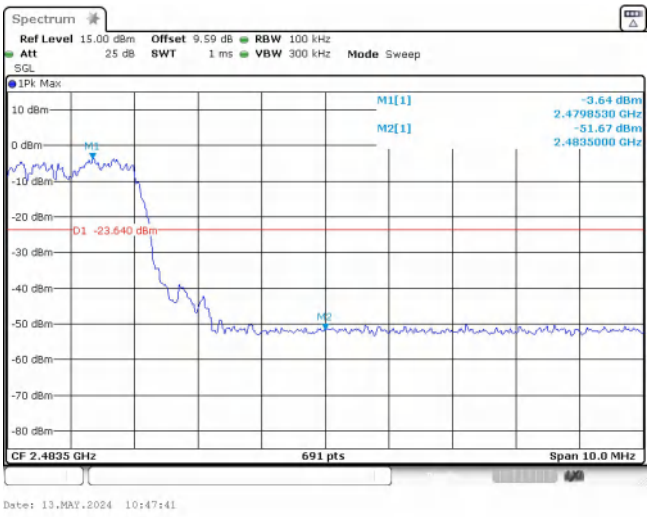
8DPSK_3-DH5_Channel 78	8DPSK_3-DH5_Channel 78



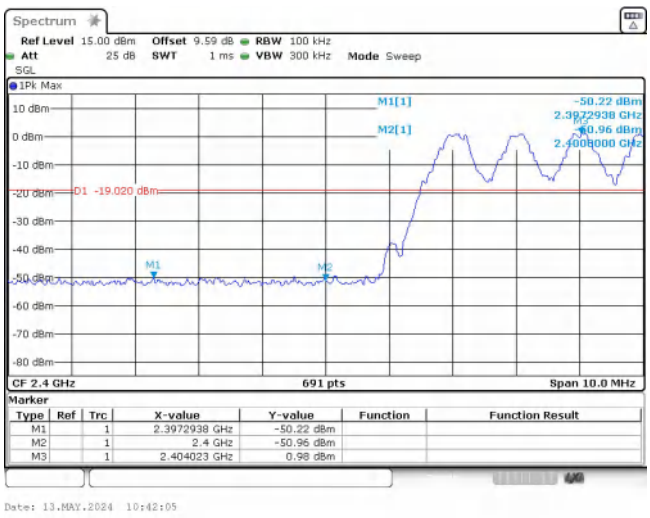


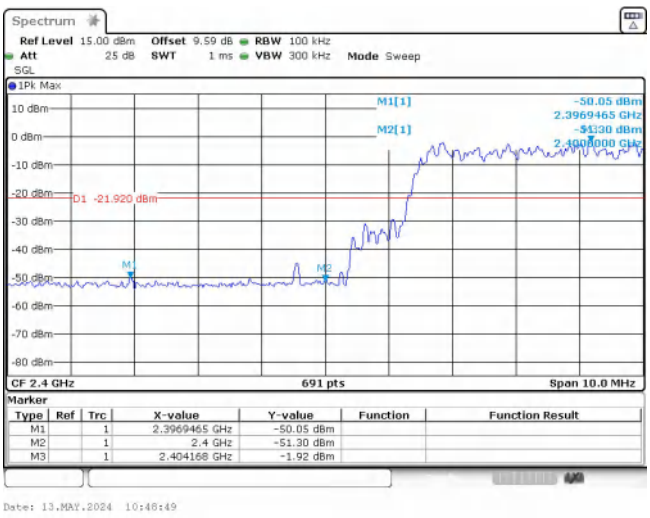
Out Of Band Emission(Left) GFSK_DH5_Channel Hopping	Out Of Band Emission(Left) π/4DQPSK_2-DH5_Channel Hopping

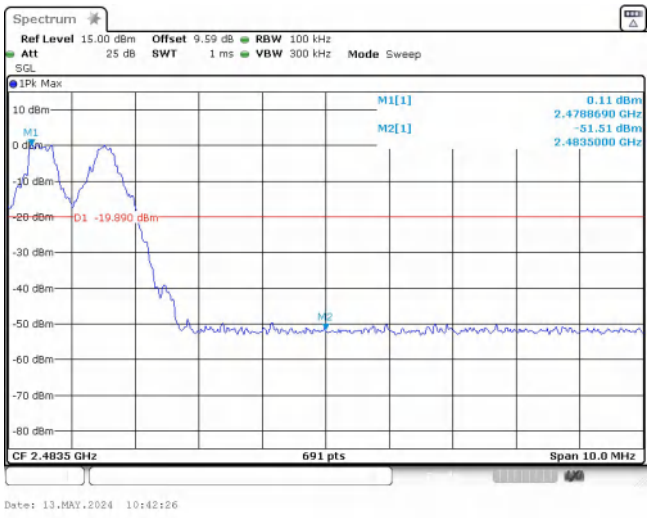
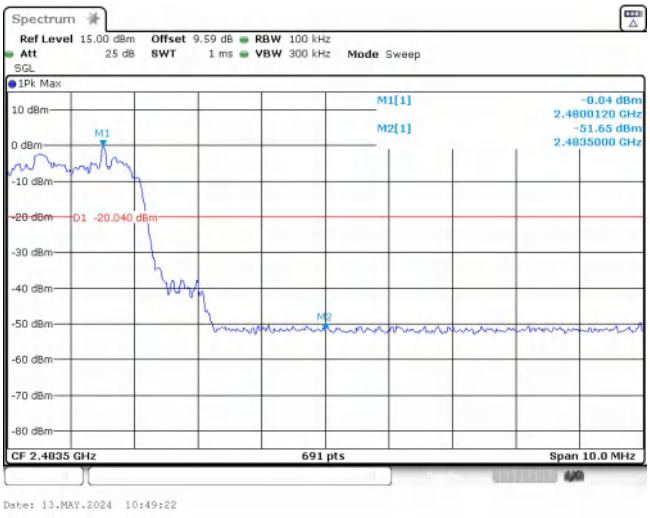
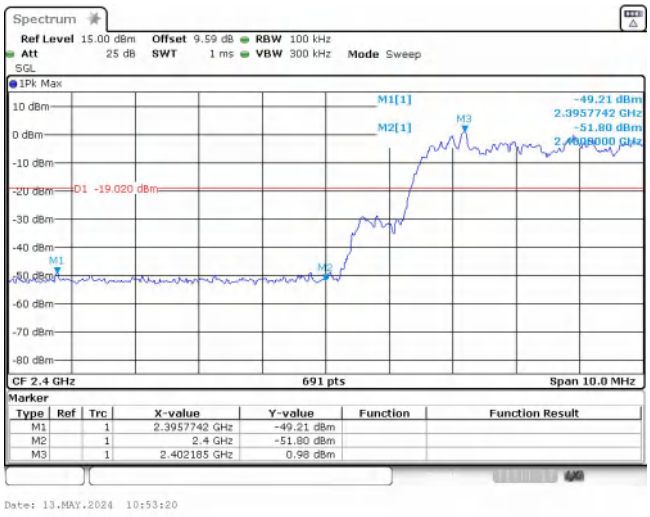
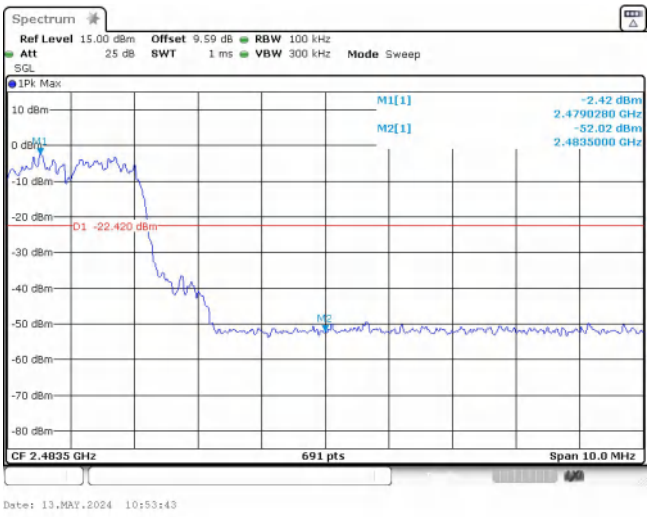
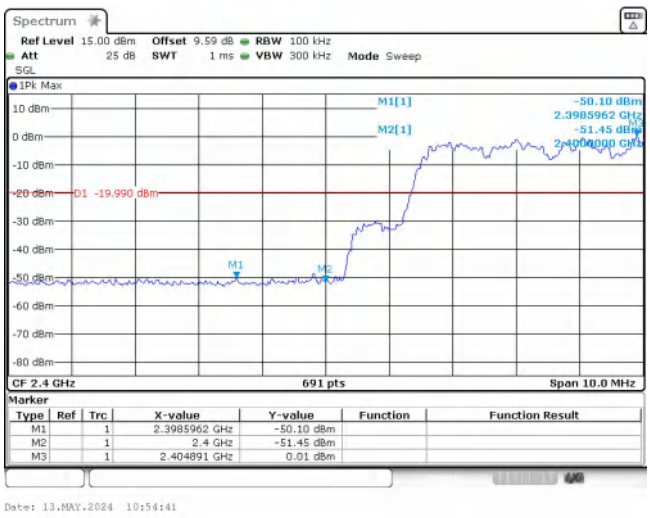
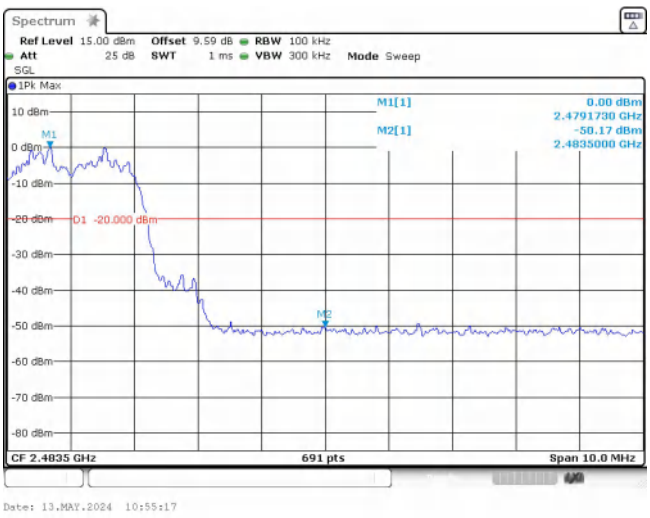




Out Of Band Emission(Right) GFSK_DH5_Channel Hopping	Out Of Band Emission(Right) π/4DQPSK_2-DH5_Channel Hopping





Out Of Band Emission(Left) 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
	

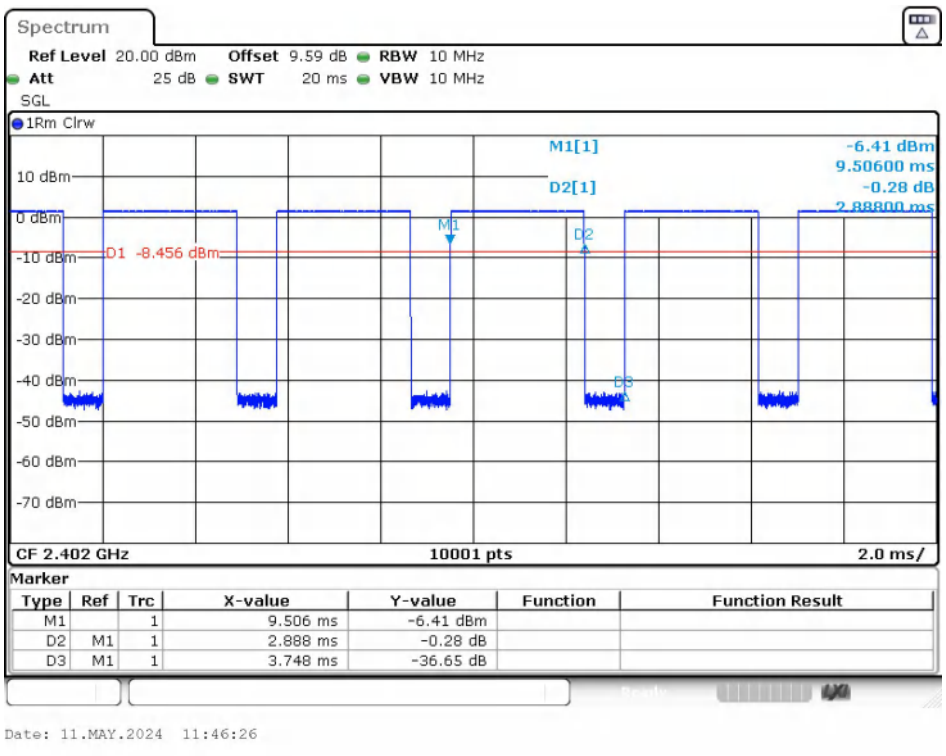
Out Of Band Emission(Left) 8DPSK_3-DH5_Channel Hopping	Out Of Band Emission(Right) 8DPSK_3-DH5_Channel Hopping

6) Duty Cycle

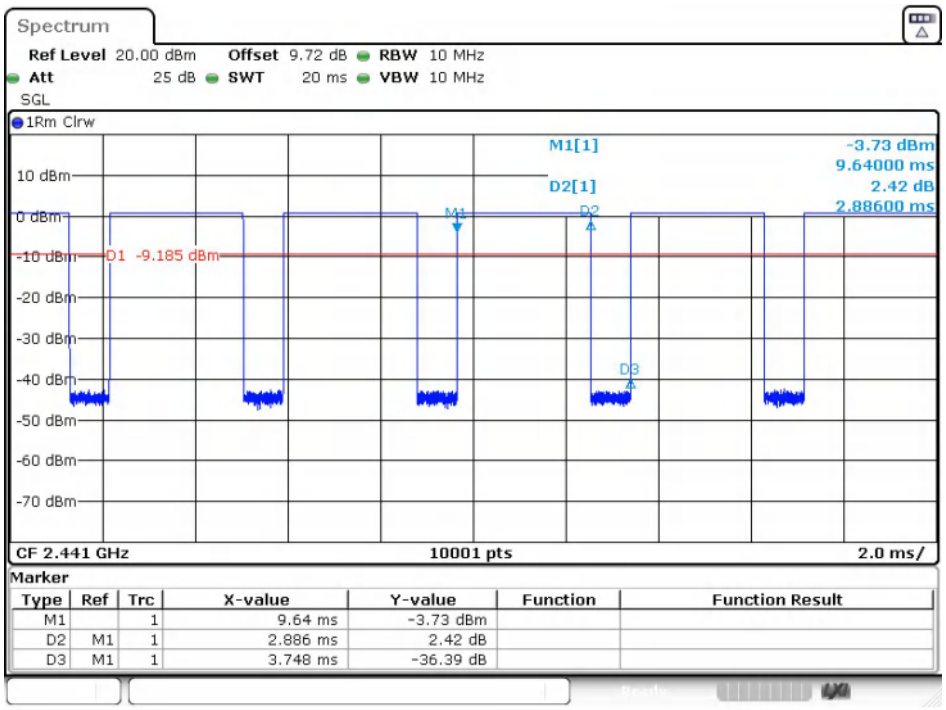
Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.888	3.748	77.05	0.7705	1.1323	0.35
		39	2.886	3.748	77.00	0.7700	1.1351	0.35
		78	2.886	3.748	77.00	0.7700	1.1351	0.35
π/4DQPSK	2-DH5	0	2.890	3.748	77.11	0.7711	1.1289	0.35
		39	2.890	3.748	77.11	0.7711	1.1289	0.35
		78	2.890	3.748	77.11	0.7711	1.1289	0.35
8DPSK	3-DH5	0	2.892	3.748	77.16	0.7716	1.1261	0.35
		39	2.892	3.748	77.16	0.7716	1.1261	0.35
		78	2.892	3.748	77.16	0.7716	1.1261	0.35

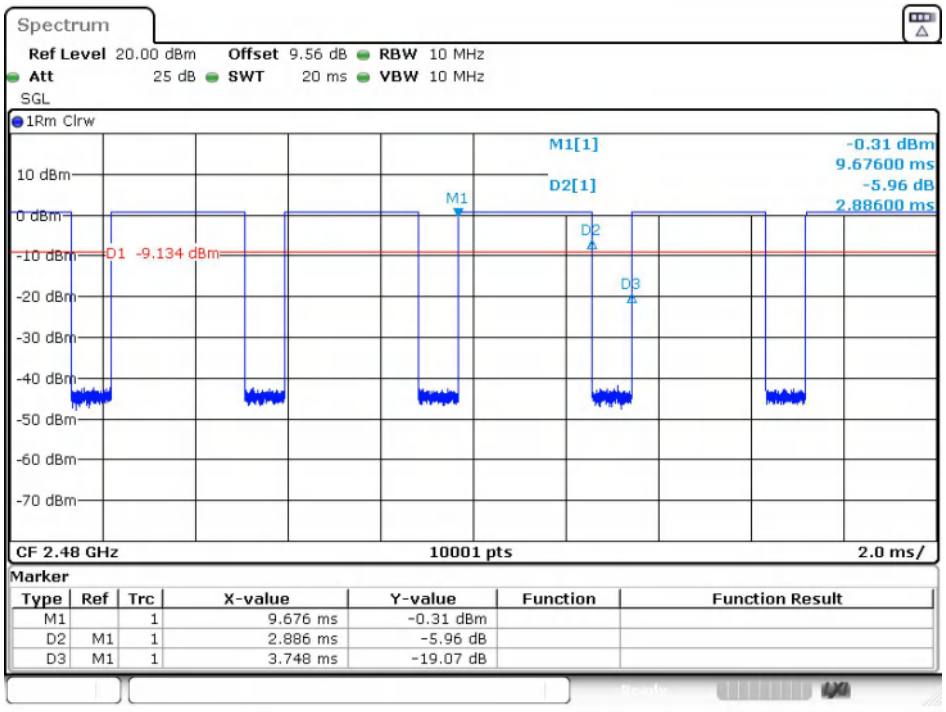
Test Graphs



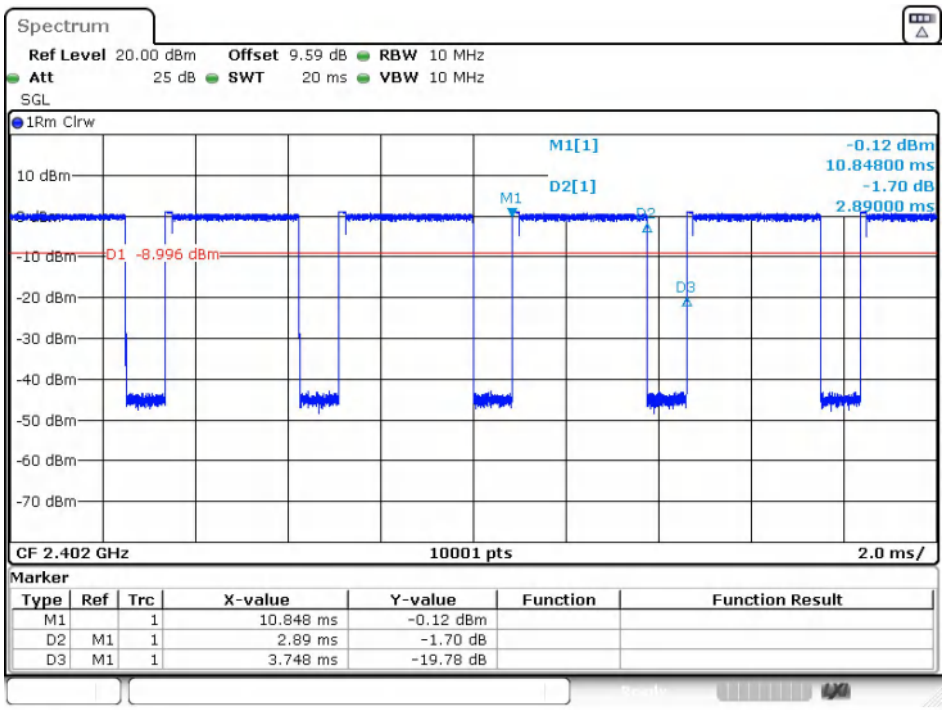
GFSK(DH5)_Channel 0



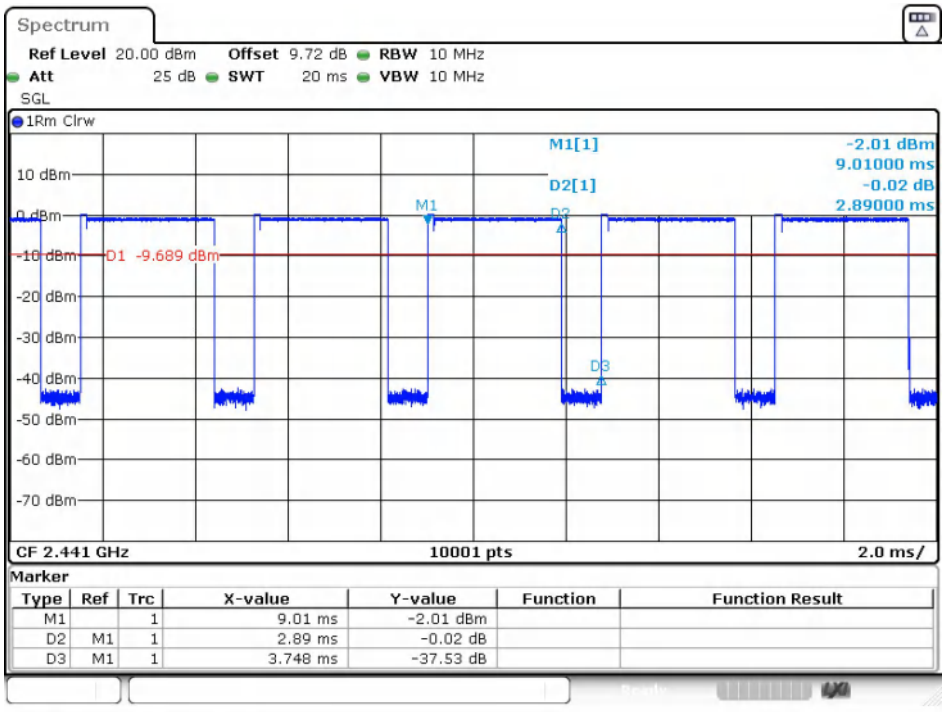
GFSK(DH5)_Channel 39



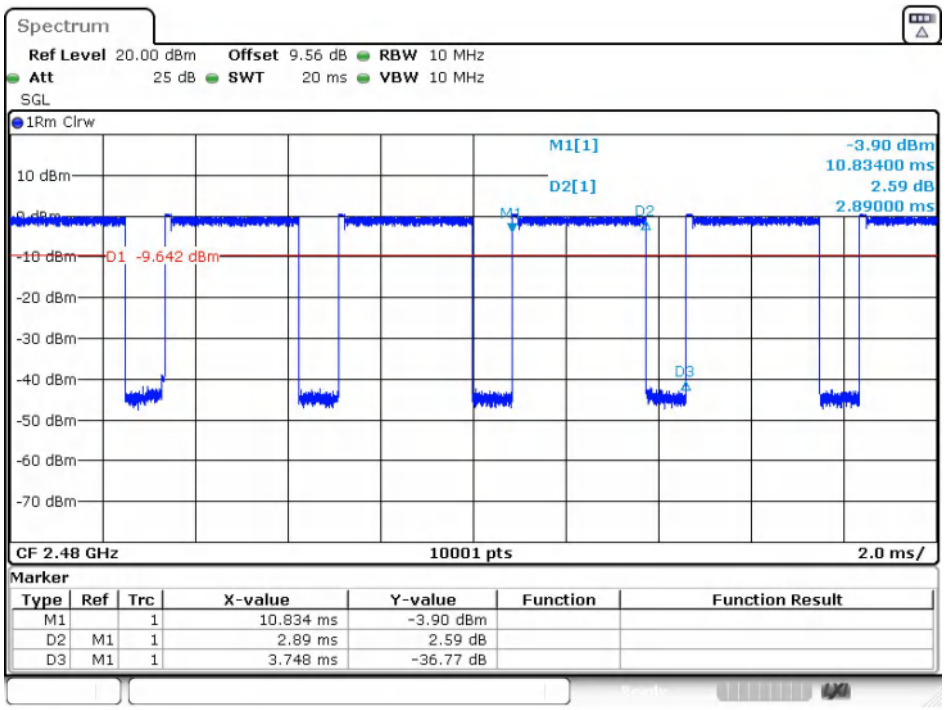
GFSK(DH5)_Channel 78



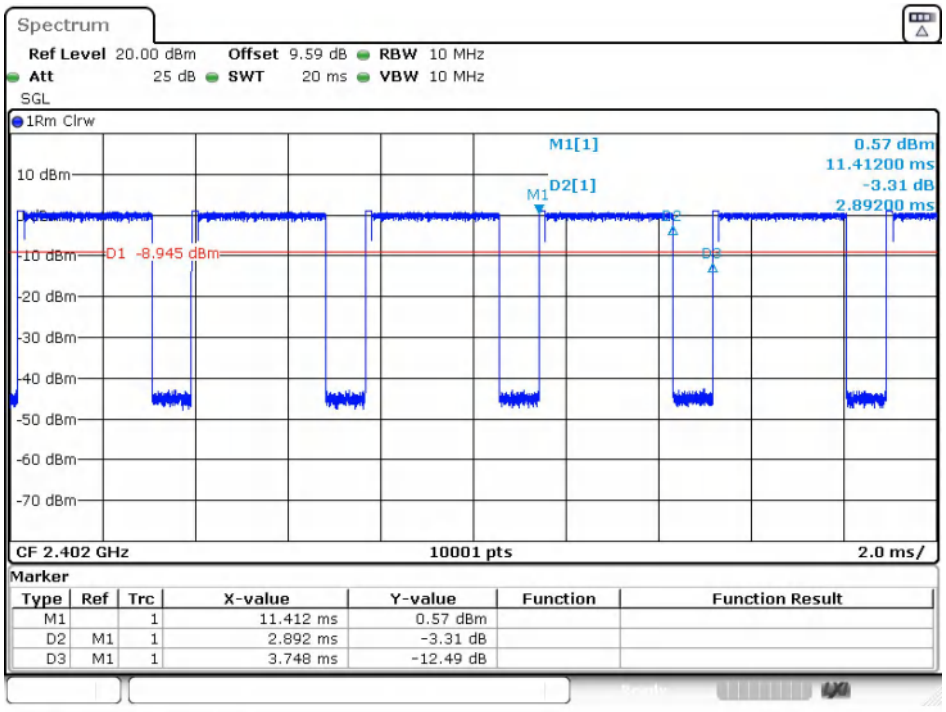
π/4DQPSK(2-DH5)_Channel 0



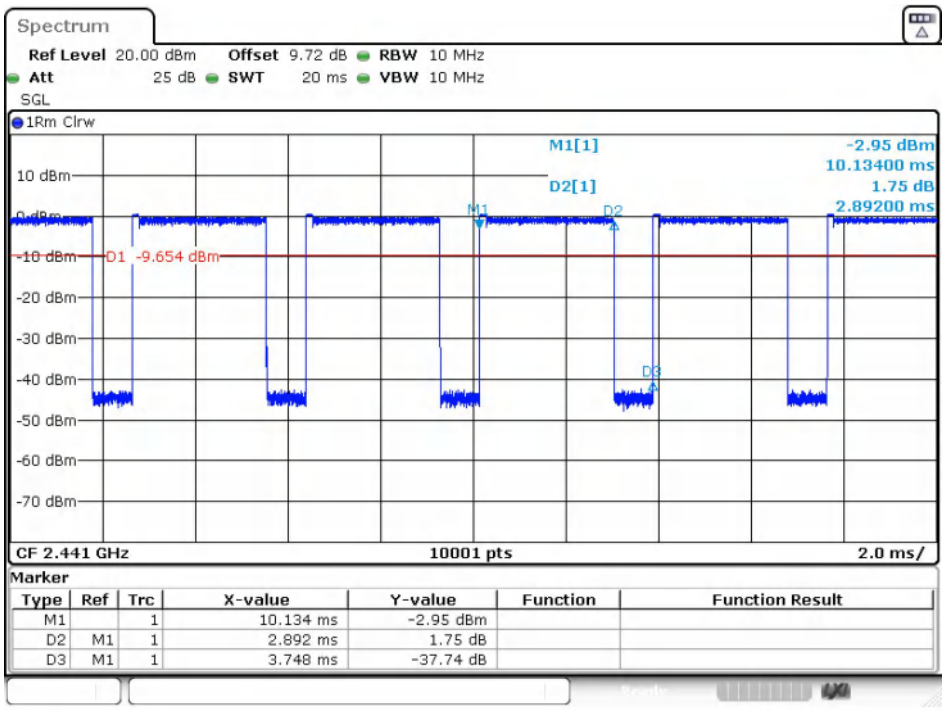
π/4DQPSK(2-DH5)_Channel 39



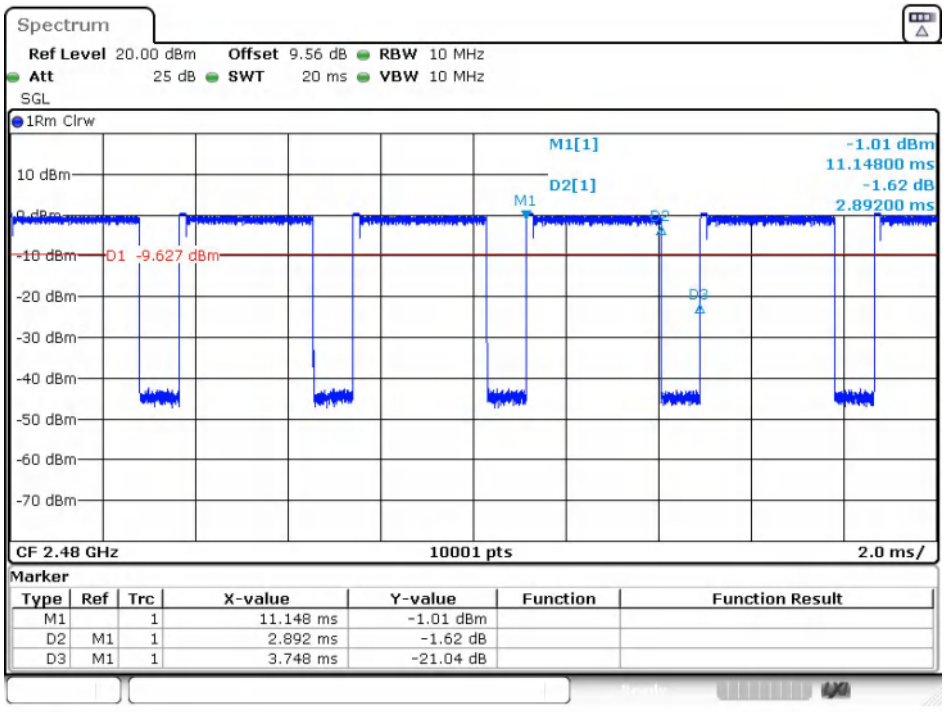
π/4DQPSK(2-DH5)_Channel 78



8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39



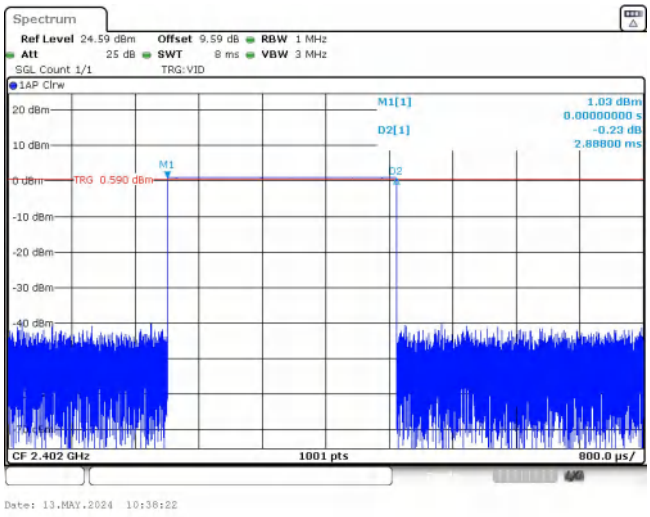
8DPSK(3-DH5)_Channel 78

7) Dwell Time

Test Result

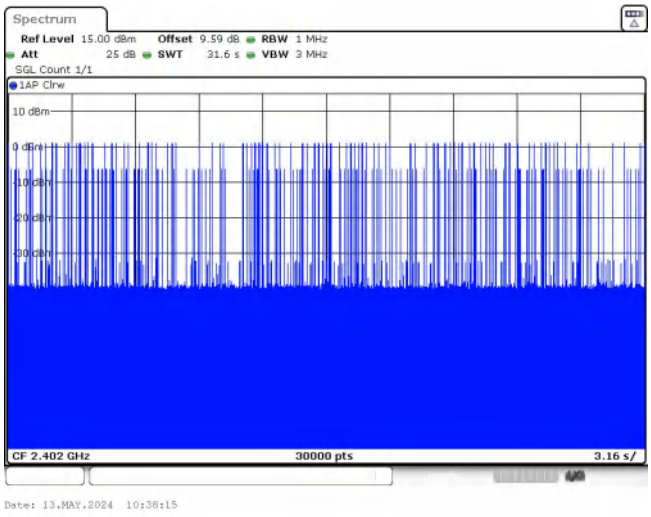
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.888	119	343.67	< 400	PASS
π/4DQPSK	2-DH5		2.896	100	289.6		PASS
8DPSK	3-DH5		2.896	109	315.66		PASS

Test Graphs



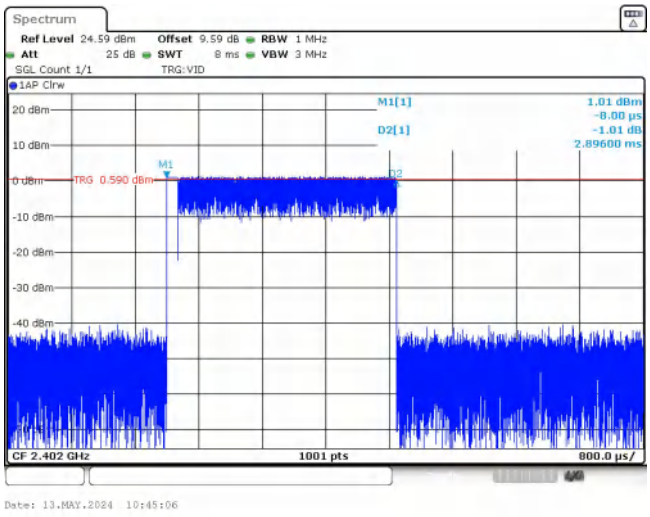
Pulse Width

GFSK_DH5



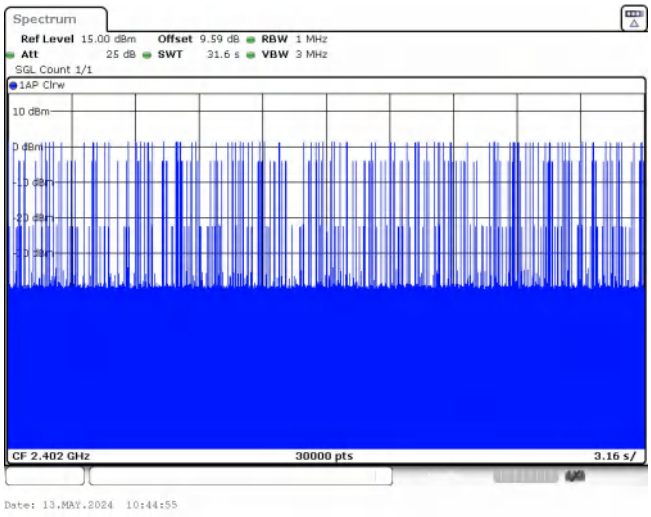
Number of Pulses in 31.6 seconds

GFSK_DH5



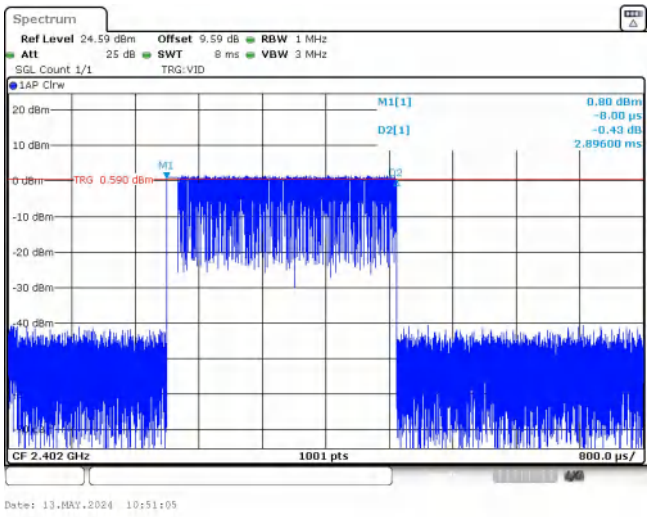
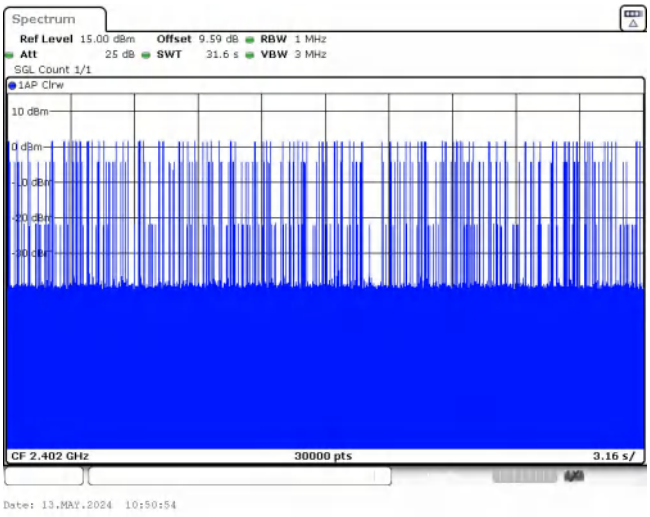
Pulse Width

π/4DQPSK_2-DH5



Number of Pulses in 31.6 seconds

π/4DQPSK_2-DH5

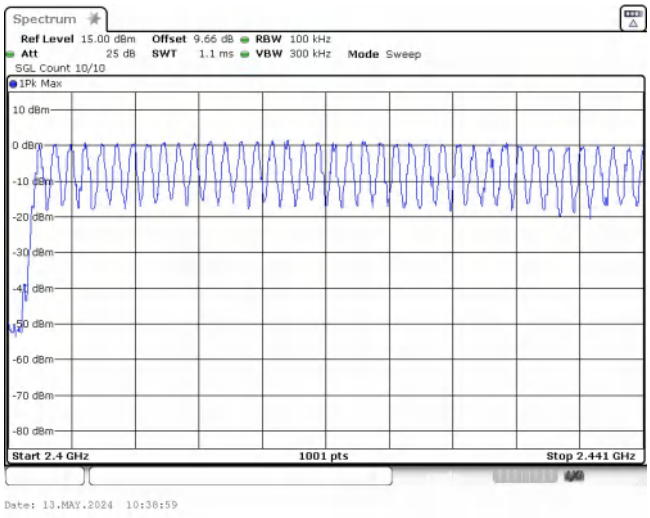
	
Pulse Width **8DPSK_3-DH5**	**Number of Pulses in 31.6 seconds** **8DPSK_3-DH5**

8) Number Of Hopping Channel

Test Result

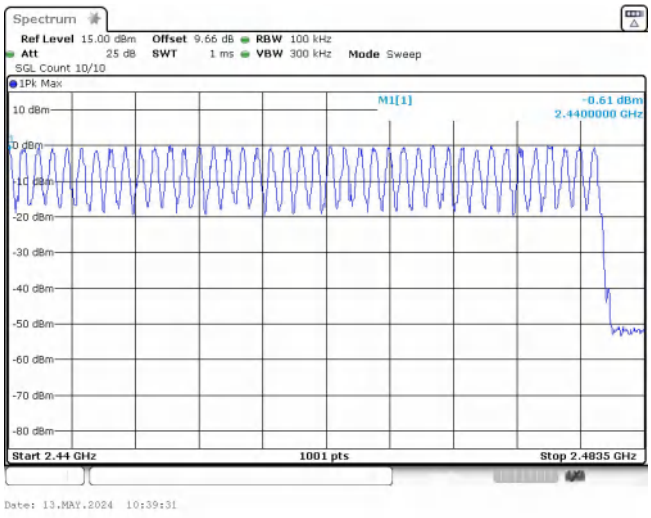
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
π/4DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs



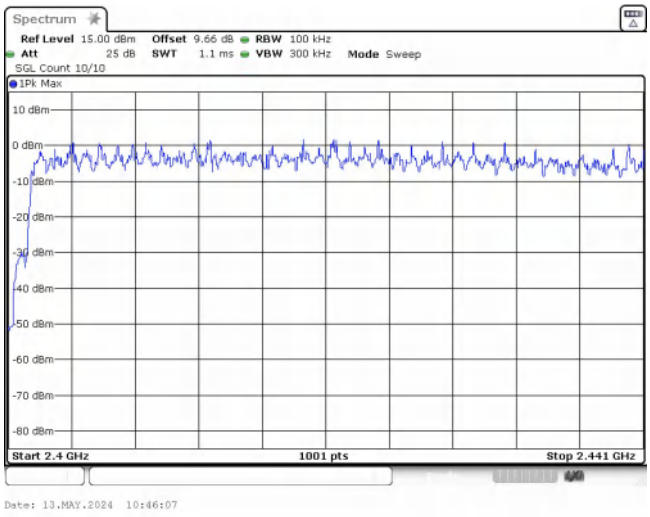
Low End Spectrum Channel Hopping Plot

GFSK



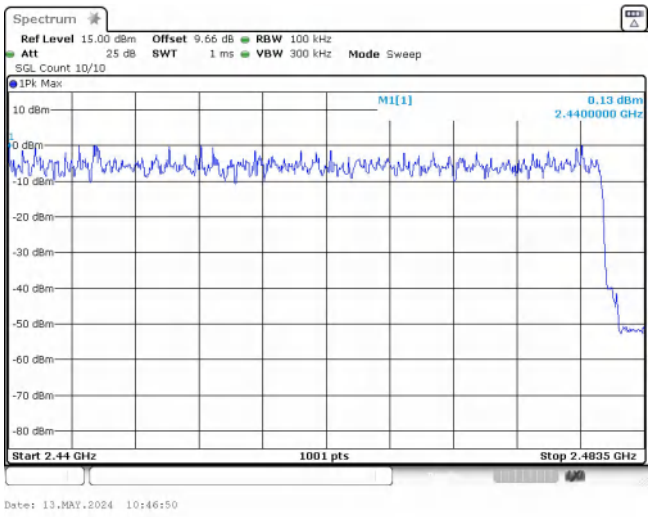
High End Spectrum Channel Hopping Plot

GFSK



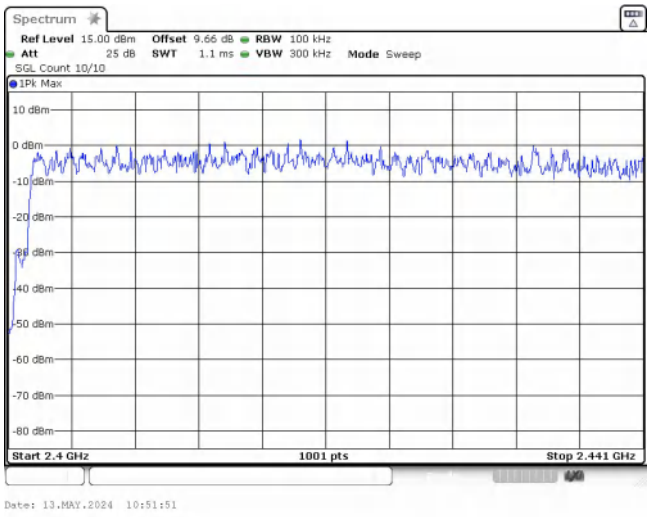
Low End Spectrum Channel Hopping Plot

π/4DQPSK



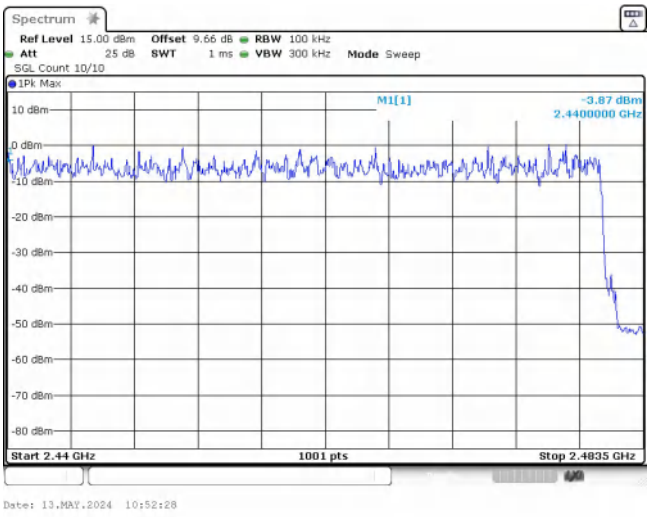
High End Spectrum Channel Hopping Plot

π/4DQPSK



Low End Spectrum Channel Hopping Plot

8DPSK



High End Spectrum Channel Hopping Plot

8DPSK