Appendix A

Report No.:	CISRR231201004
FCC ID:	2BD2Y-F-SL001A
Product Name:	Hanging ear Bluetooth headphones
Model No.:	F-SL001A
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

1) Conducted Peak Output Power

Test Result

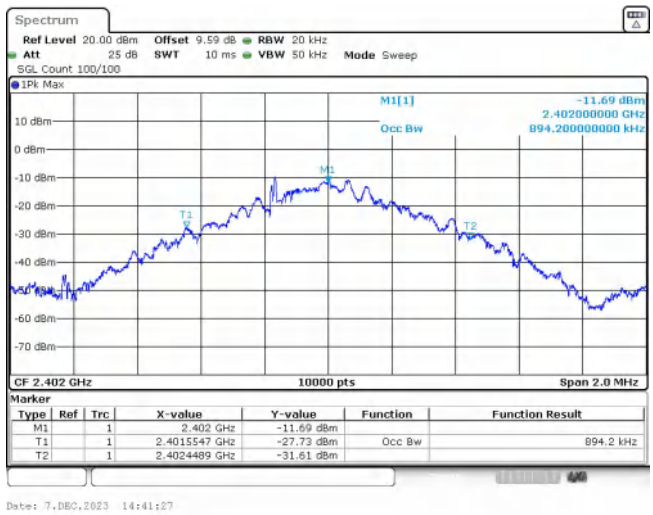
Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	-1.677	0.680	30	PASS
		39	-2.345	0.583		PASS
		78	-0.422	0.907		PASS
π/4DQPSK	2-DH5	0	0.010	1.002	20.97	PASS
		39	-0.515	0.888		PASS
		78	1.232	1.328		PASS
8DPSK	3-DH5	0	-1.260	0.748		PASS
		39	-1.925	0.642		PASS
		78	0.065	1.015		PASS

2) 99% Bandwidth

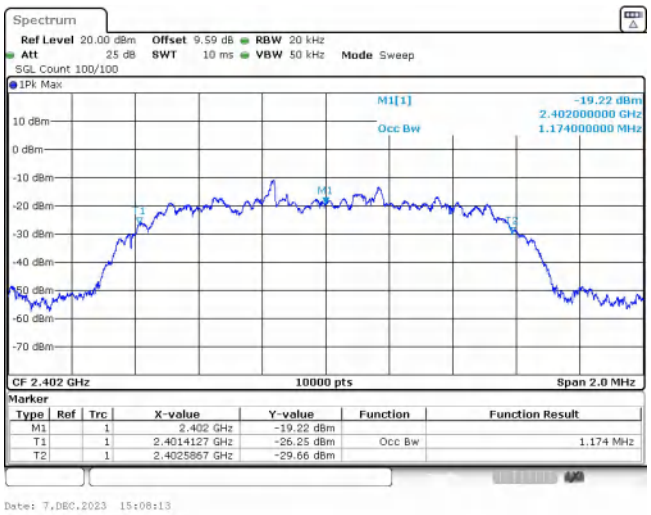
Test Result

Modulation	Channel	99% BW (MHz)
GFSK	0	0.89420
	39	0.89340
	78	0.91140
π/4DQPSK	0	1.1740
	39	1.1650
	78	1.1650
8DPSK	0	1.1600
	39	1.1560
	78	1.1710

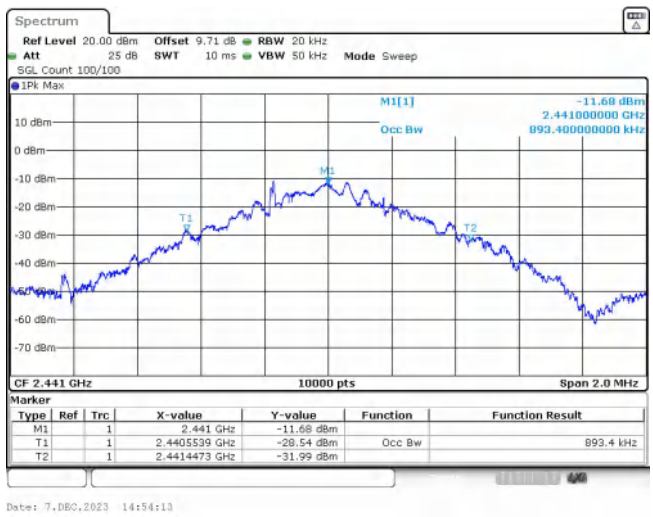
Test Graphs



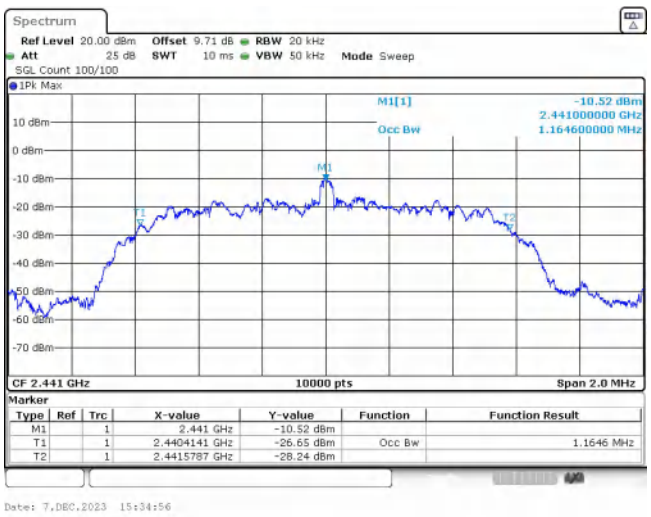
GFSK_DH5_Channel 0



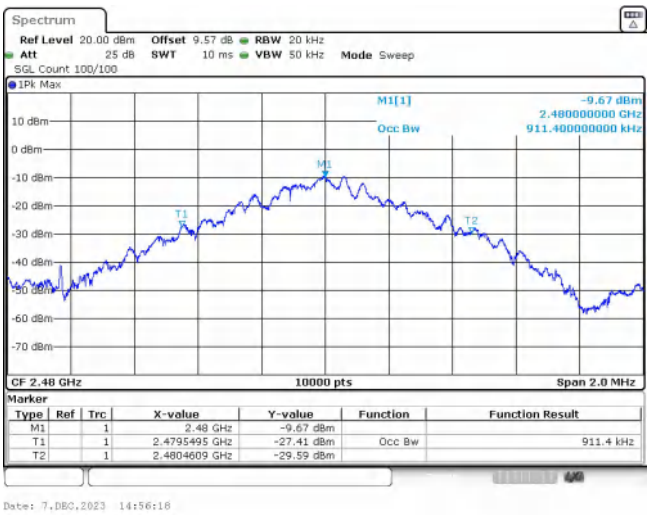
π/4DQPSK_2-DH5_Channel 0



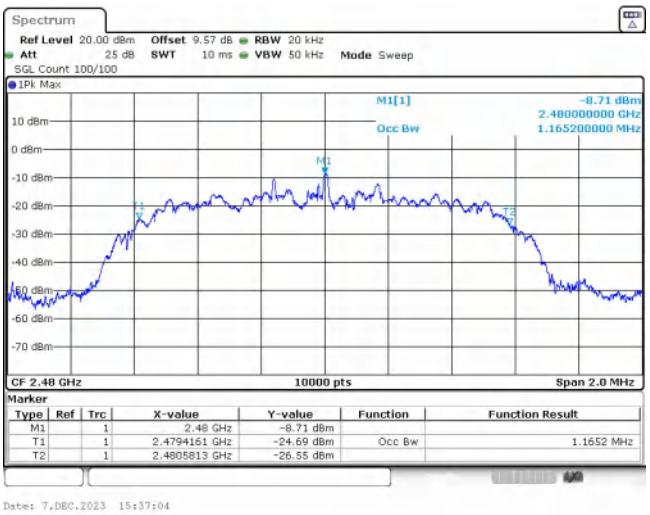
GFSK_DH5_Channel 39



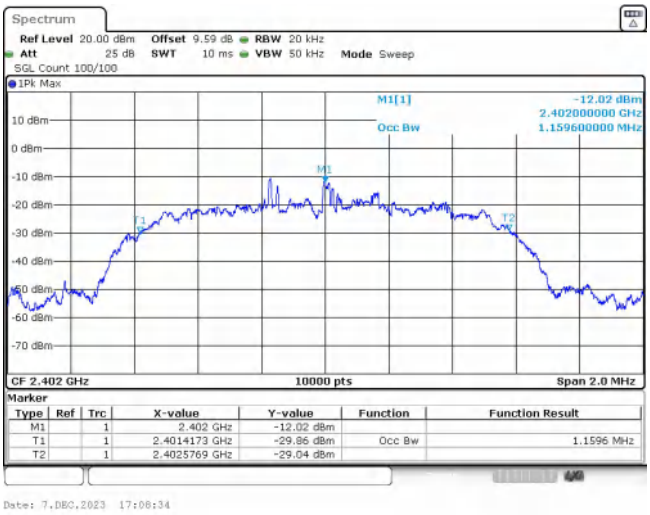
π/4DQPSK_2-DH5_Channel 39



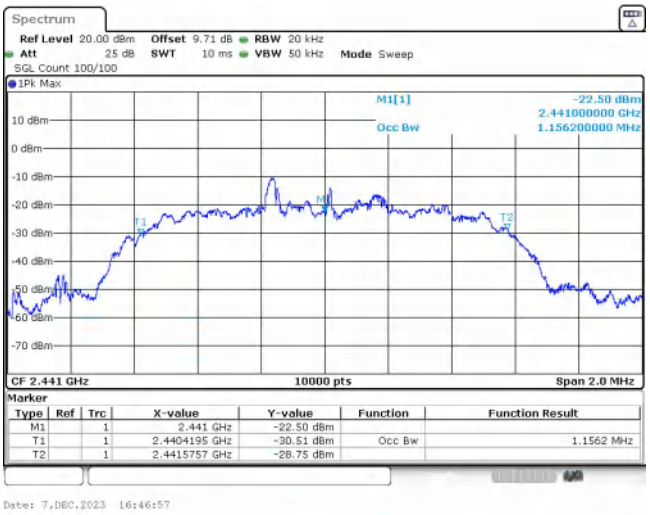
GFSK_DH5_Channel 78



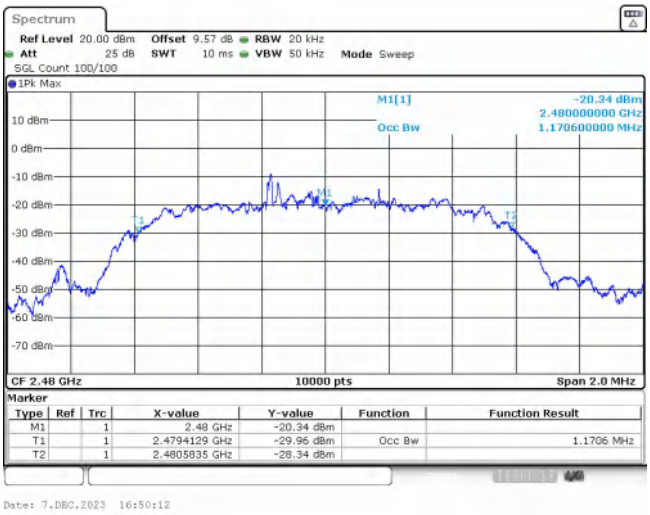
π/4DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



8DPSK_3-DH5_Channel 78

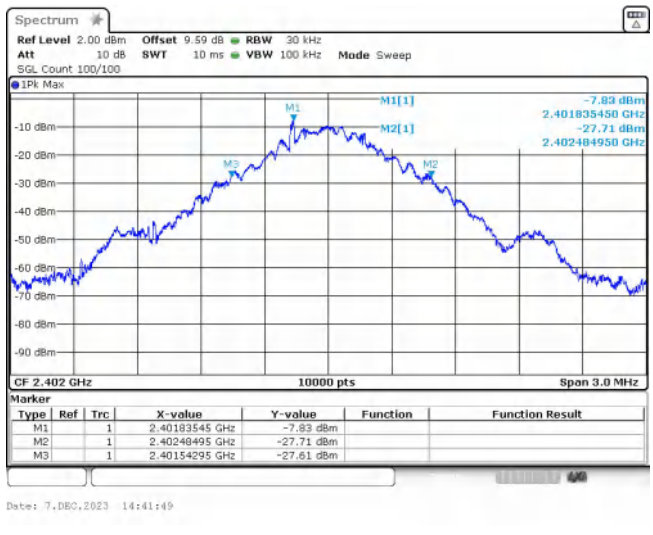
Void

3) 20dB Bandwidth

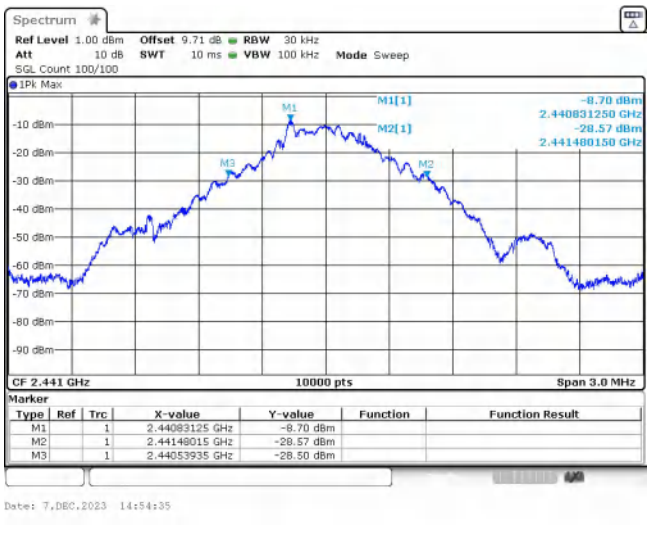
Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	0.9400
	39	2441 MHz	0.9400
	78	2480 MHz	0.9500
π/4DQPSK	0	2402 MHz	1.260
	39	2441 MHz	1.230
	78	2480 MHz	1.230
8DPSK	0	2402 MHz	1.190
	39	2441 MHz	1.190
	78	2480 MHz	1.190

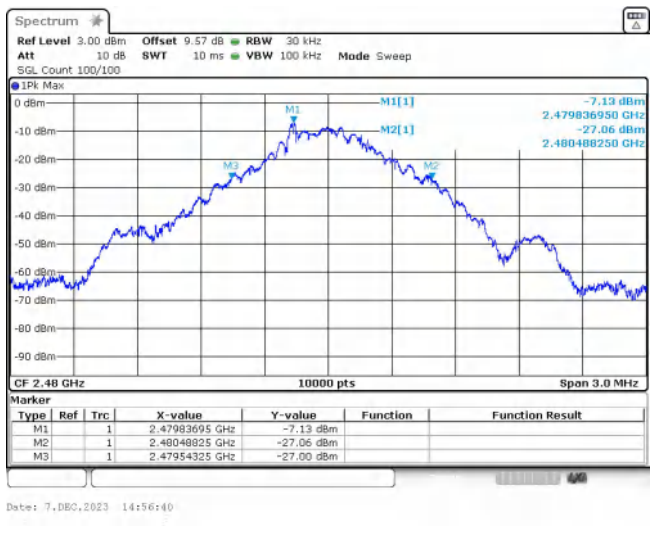
Test Graphs



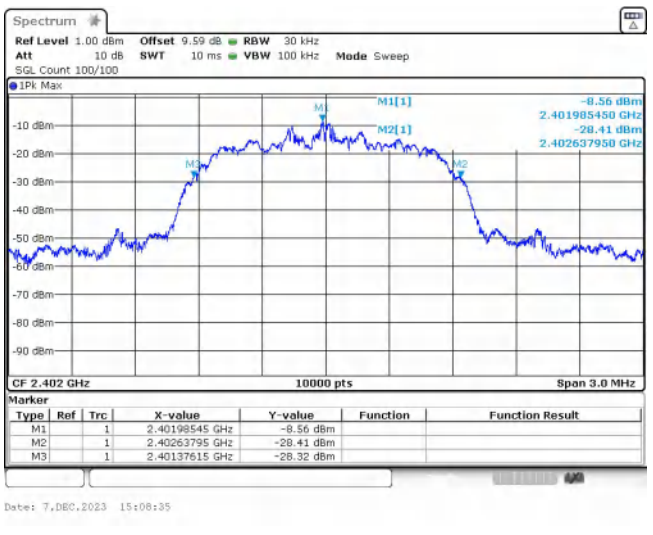
GFSK_DH5_Channel 0



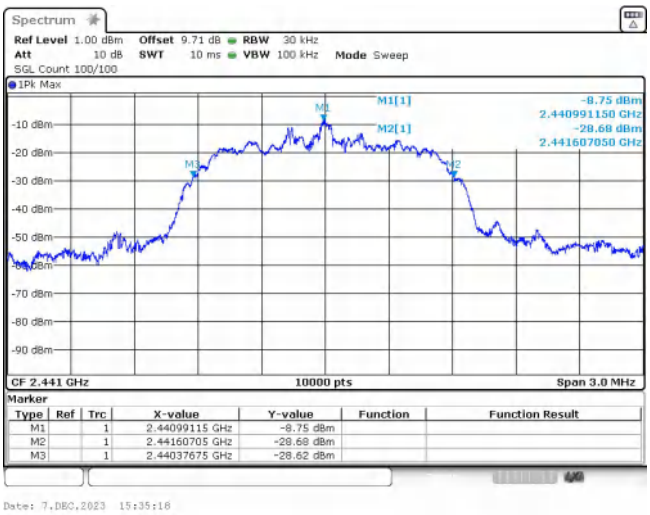
GFSK_DH5_Channel 39



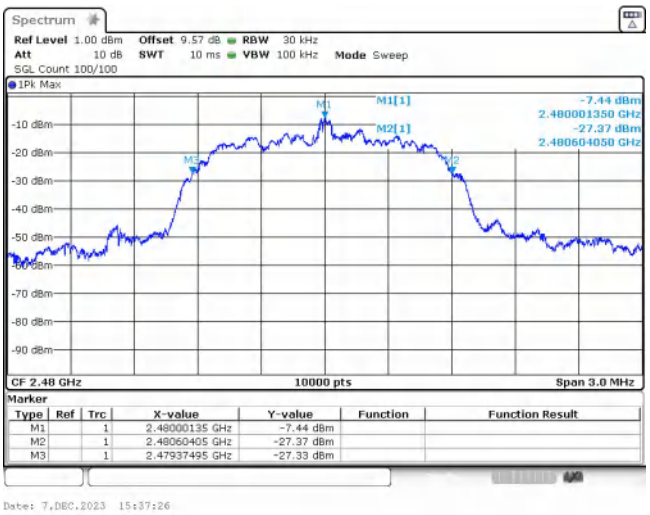
GFSK_DH5_Channel 78



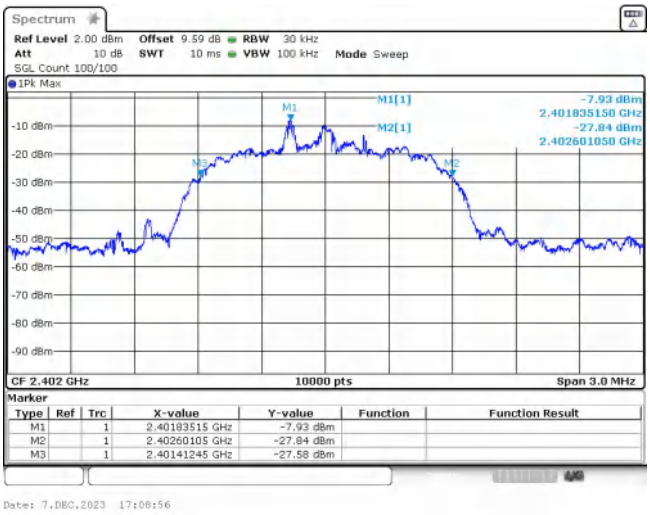
π/4DQPSK_2-DH5_Channel 0



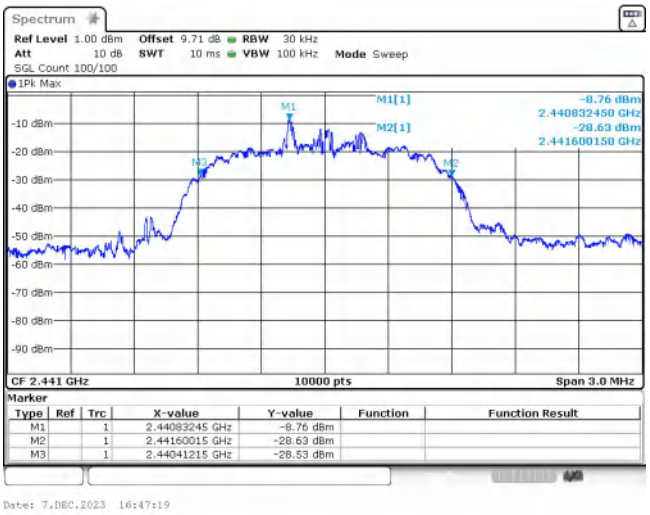
π/4DQPSK_2-DH5_Channel 39



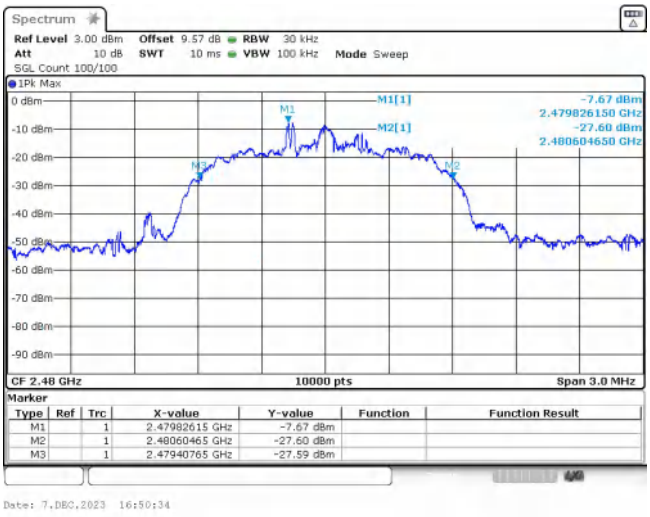
π/4DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



8DPSK_3-DH5_Channel 78

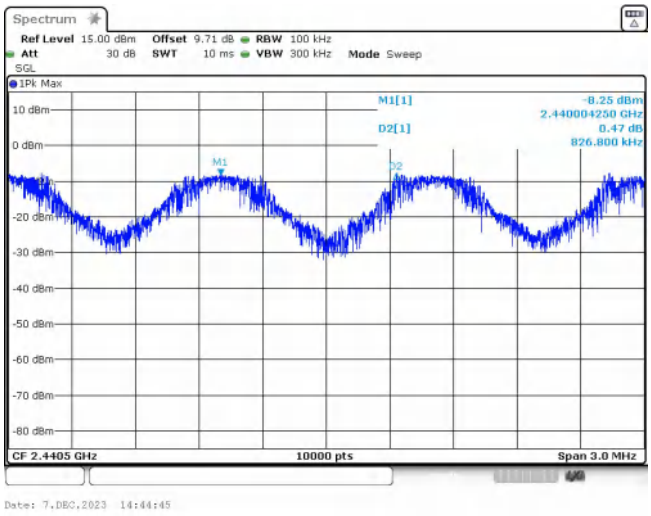
Void

4) Carrier Frequencies Separation

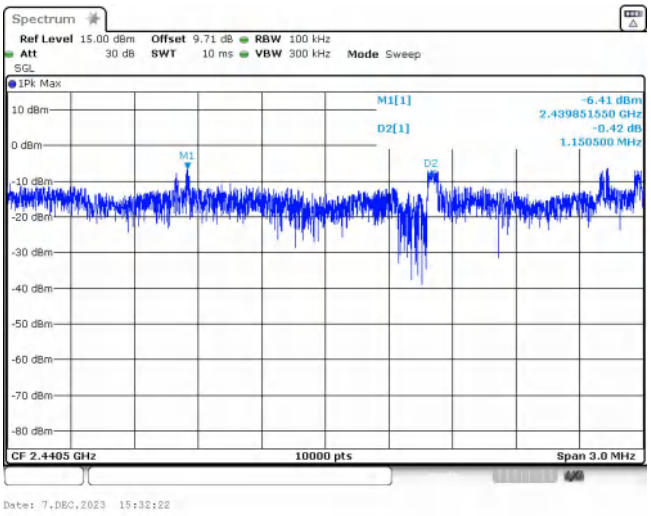
Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2440.0042	2440.831	0.8268	0.627	PASS
π/4DQPSK	2-DH5	2439.8515	2441.0021	1.1505	0.84	PASS
8DPSK	3-DH5	2439.9781	2441.2094	1.2312	0.793	PASS

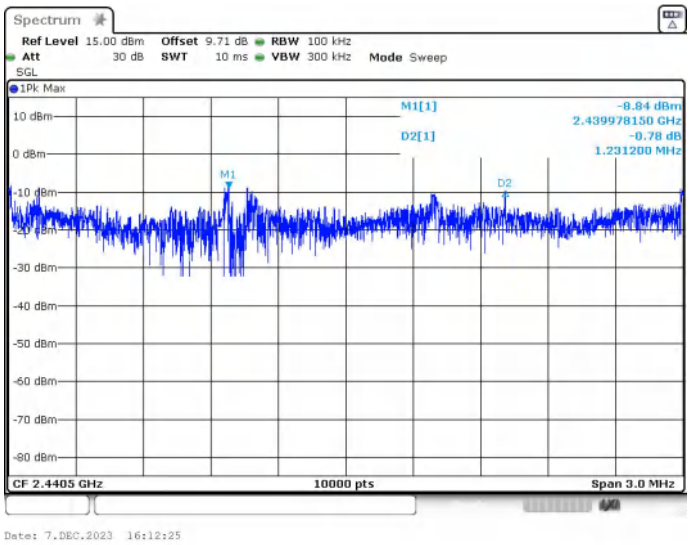
Test Graphs



GFSK



π/4DQPSK



8DPSK

Void

5) Conducted Out Of Band Emission

Test Result

Non-Hopping

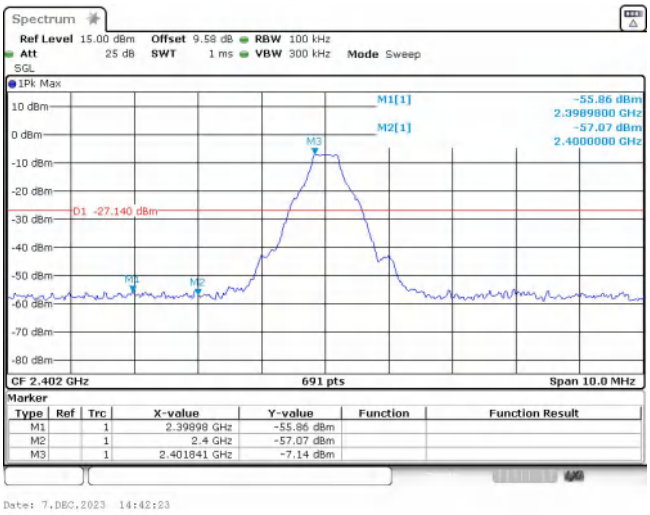
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-57.069	-27.14	-29.929	PASS
			2398.98	-55.863	-27.14	-28.723	PASS
			7206.00	-41.457	-27.14	-14.317	PASS
		39	4882.09	-38.378	-27.87	-10.508	PASS
		78	2483.50	-57.624	-25.97	-31.654	PASS
			4960.33	-39.125	-25.97	-13.155	PASS
π/4DQPSK	2-DH5	0	2400.00	-56.343	-25.67	-30.673	PASS
			2397.35	-55.781	-25.67	-30.111	PASS
			4803.80	-43.082	-25.67	-17.412	PASS
		39	4882.09	-40.907	-26.18	-14.727	PASS
		78	2483.50	-55.906	-24.38	-31.526	PASS
			4959.49	-40.623	-24.38	-16.243	PASS
8DPSK	3-DH5	0	2400.00	-57.493	-27.12	-30.373	PASS
			2397.76	-56.014	-27.12	-28.894	PASS
			7206.00	-46.218	-27.12	-19.098	PASS
		39	4882.09	-44.894	-27.79	-17.104	PASS
		78	2483.50	-56.809	-25.82	-30.989	PASS
			4960.33	-40.065	-25.82	-14.245	PASS

Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2398.45	-55.269	-27.31	-27.959	PASS
			2400.00	-55.965	-27.31	-28.655	PASS
			2483.50	-56.764	-26.0	-30.764	PASS
			2396.82	-54.405	-27.28	-27.125	PASS
			2400.00	-55.625	-27.28	-28.345	PASS
			2483.50	-56.572	-25.93	-30.642	PASS
π/4DQPSK	2-DH5		2395.46	-55.106	-26.09	-29.016	PASS
			2400.00	-56.923	-26.09	-30.833	PASS
			2483.50	-55.752	-25.26	-30.492	PASS
			2396.14	-54.870	-25.8	-29.070	PASS
			2400.00	-55.809	-25.8	-30.009	PASS
			2483.50	-56.502	-24.48	-32.022	PASS
8DPSK	3-DH5		2396.82	-54.593	-27.4	-27.193	PASS
			2400.00	-56.856	-27.4	-29.456	PASS
			2483.50	-55.848	-25.72	-30.128	PASS

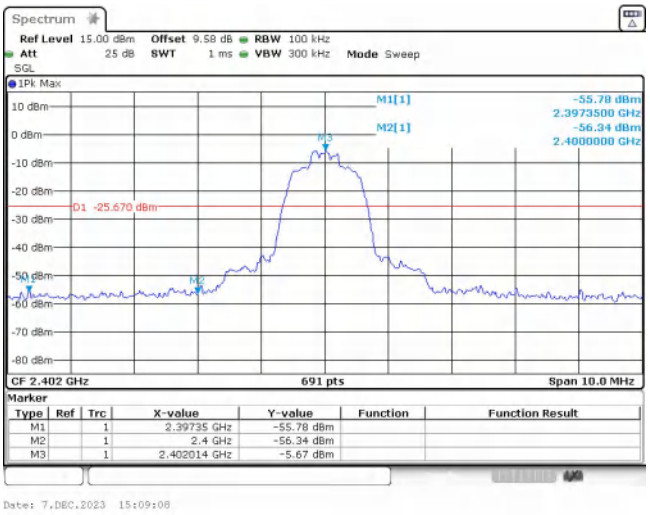
			2398.26	-54.434	-27.17	-27.264	PASS
			2400.00	-56.161	-27.17	-28.991	PASS
			2483.50	-54.732	-25.84	-28.892	PASS

Test Graphs



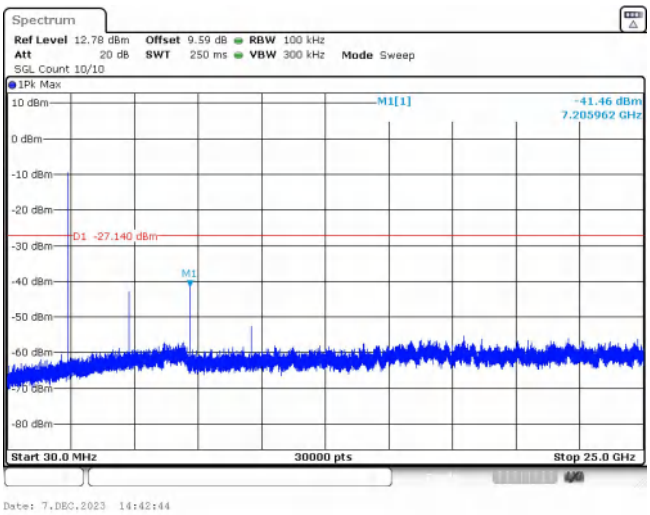
Out Of Band Emission

GFSK_DH5_Channel 0



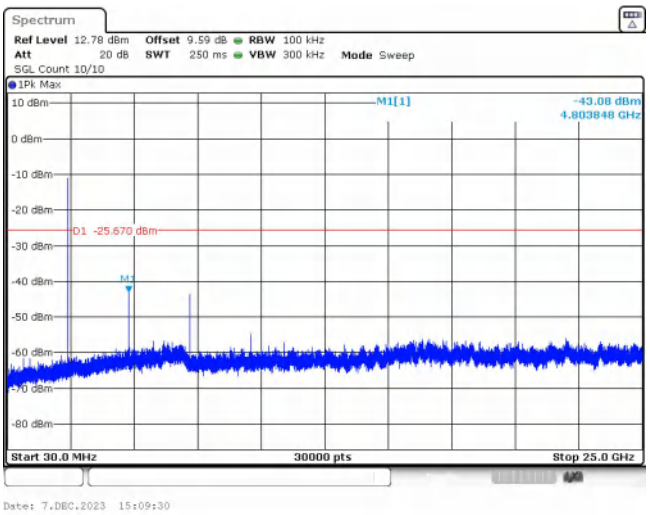
Out Of Band Emission

π/4DQPSK_2-DH5_Channel 0



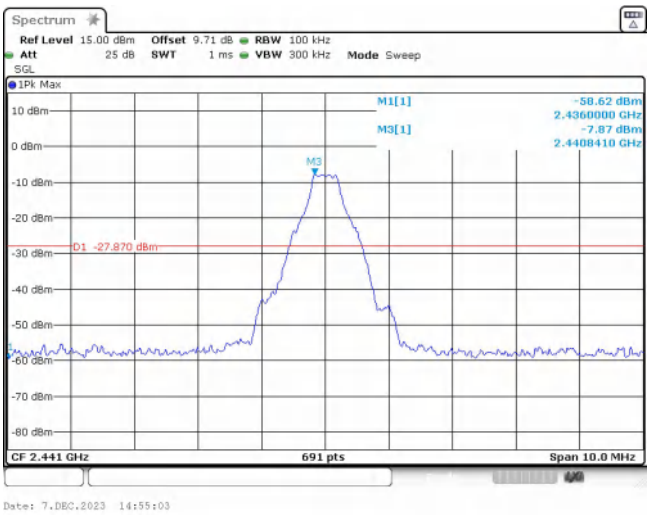
Spurious Emission

GFSK_DH5_Channel 0



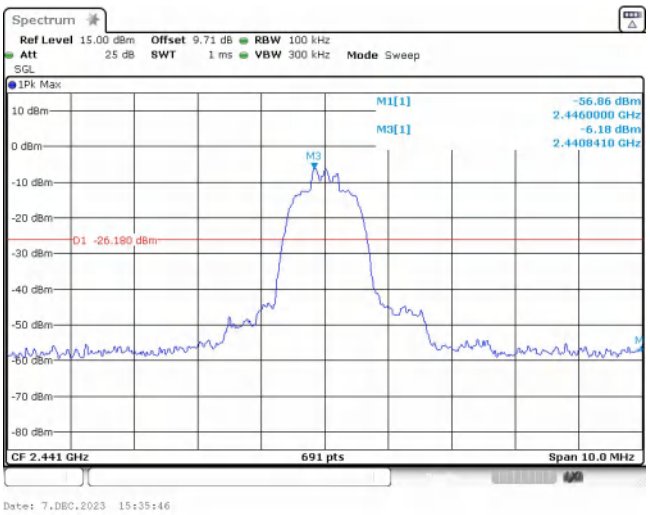
Spurious Emission

π/4DQPSK_2-DH5_Channel 0



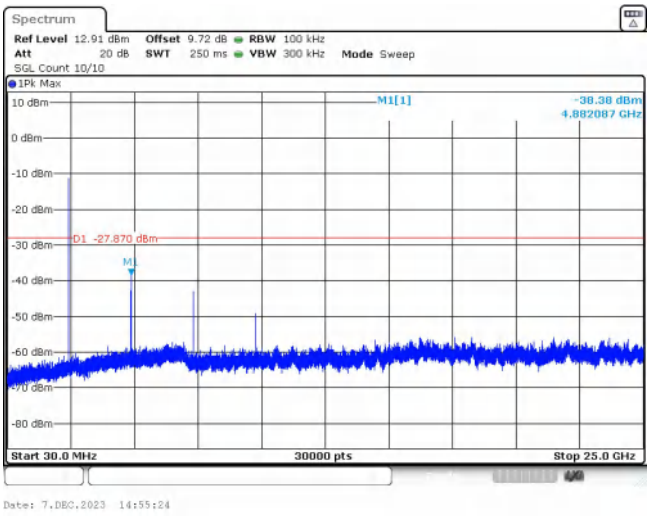
Out Of Band Emission

GFSK_DH5_Channel 39



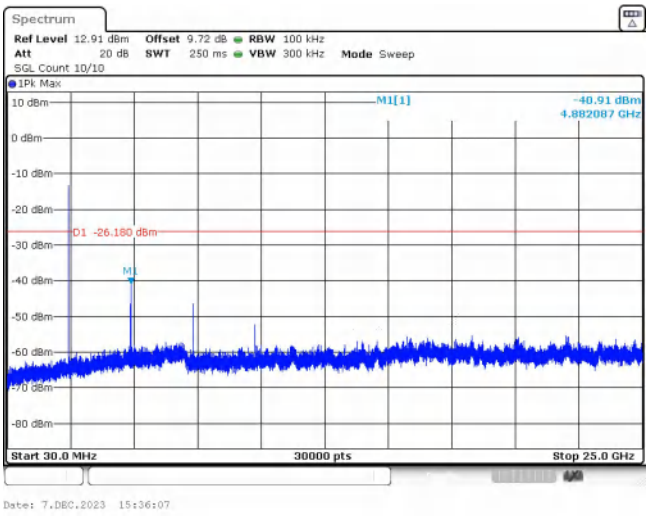
Out Of Band Emission

π/4DQPSK_2-DH5_Channel 39



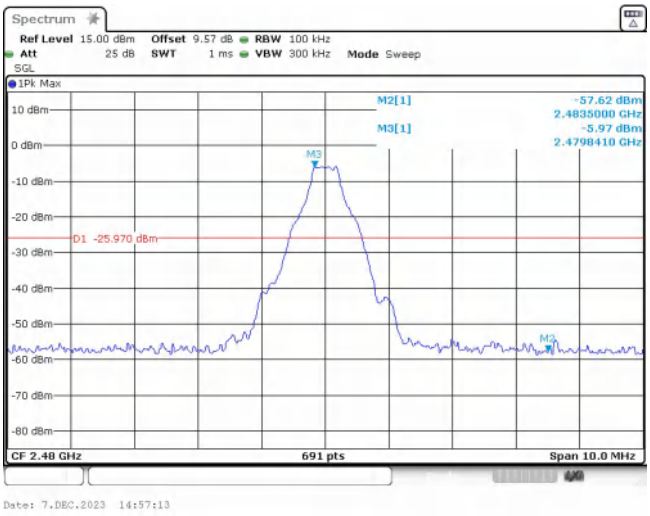
Spurious Emissions

GFSK_DH5_Channel 39



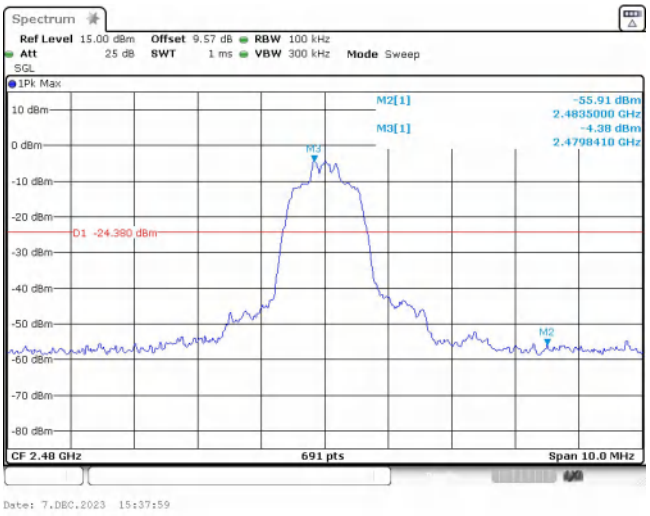
Spurious Emissions

π/4DQPSK_2-DH5_Channel 39



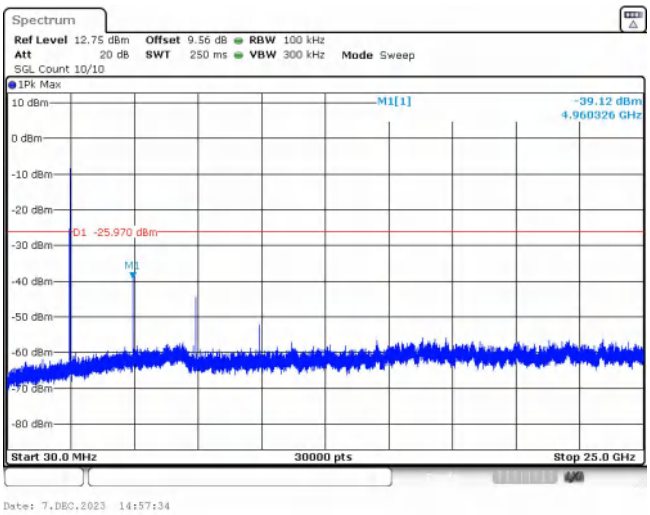
Out Of Band Emission

GFSK_DH5_Channel 78



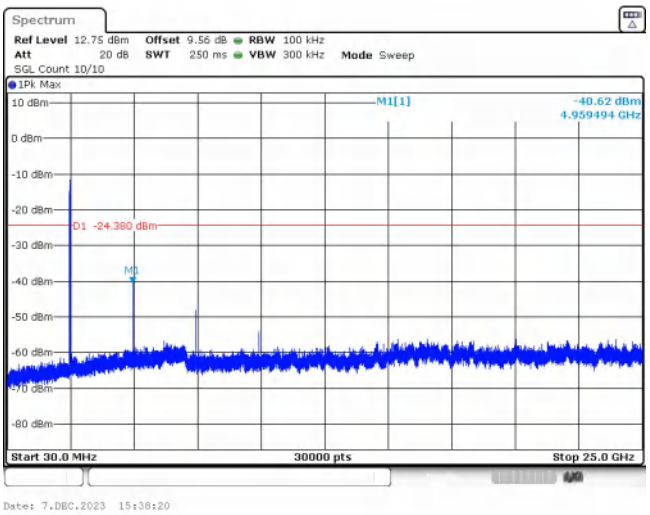
Out Of Band Emission

π/4DQPSK_2-DH5_Channel 78



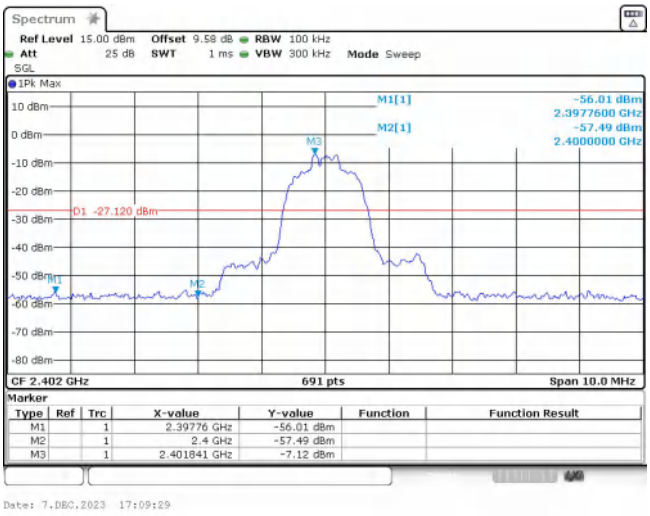
Spurious Emission

GFSK_DH5_Channel 78



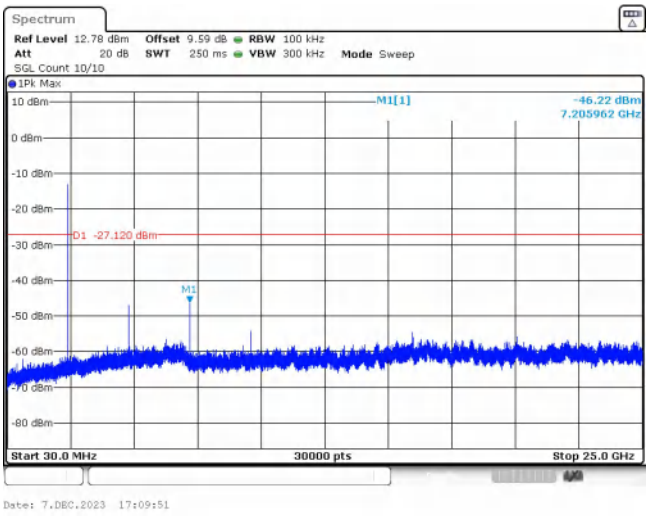
Spurious Emission

π/4DQPSK_2-DH5_Channel 78



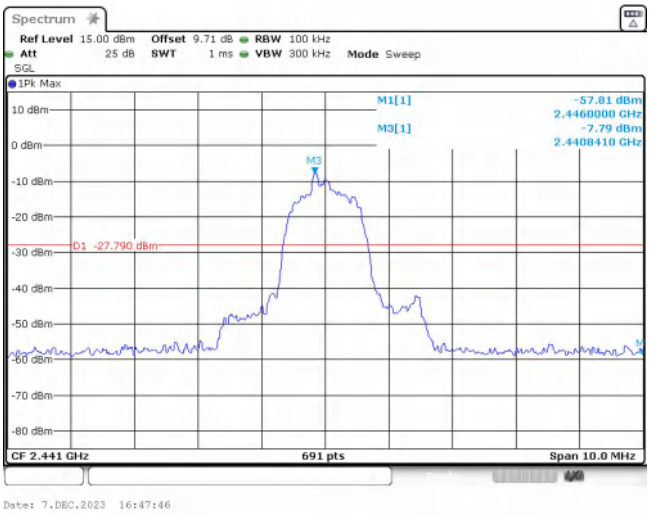
Out Of Band Emission

8DPSK_3-DH5_Channel 0



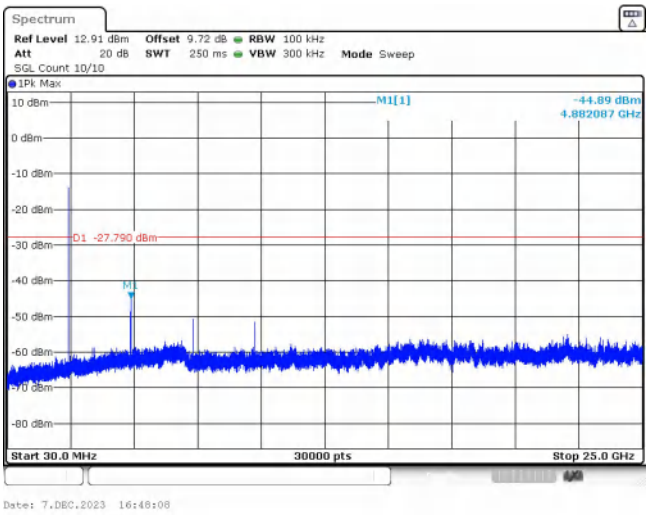
Spurious Emission

8DPSK_3-DH5_Channel 0



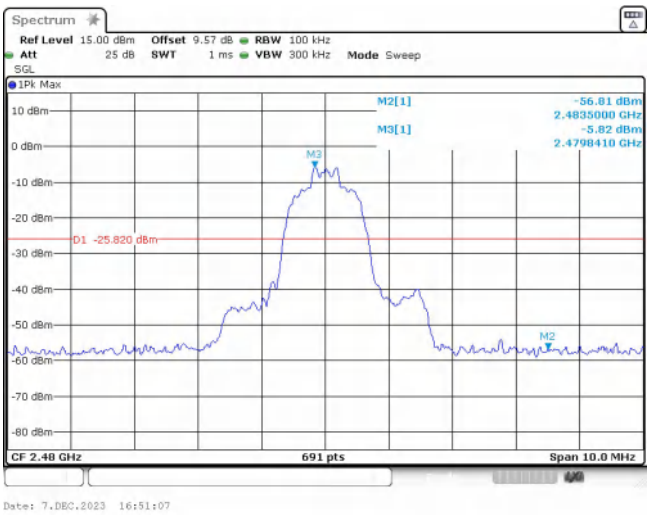
Out Of Band Emission

8DPSK_3-DH5_Channel 39



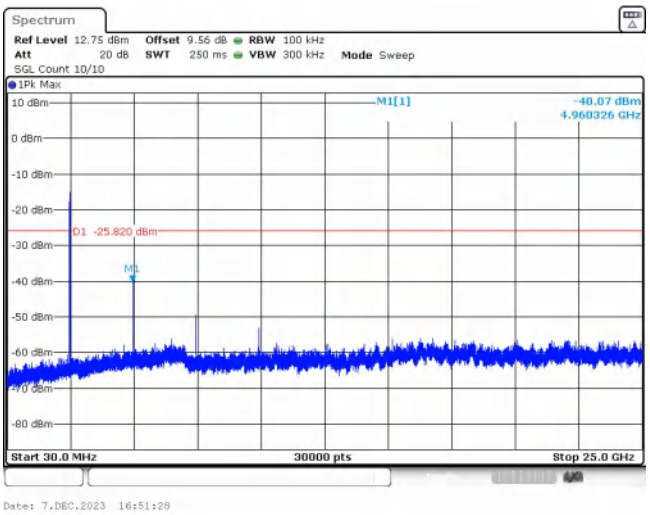
Spurious Emissions

8DPSK_3-DH5_Channel 39



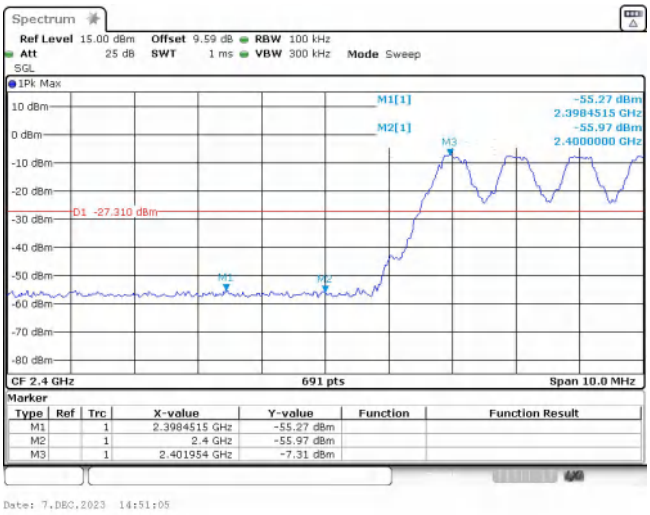
Out Of Band Emission

8DPSK_3-DH5_Channel 78



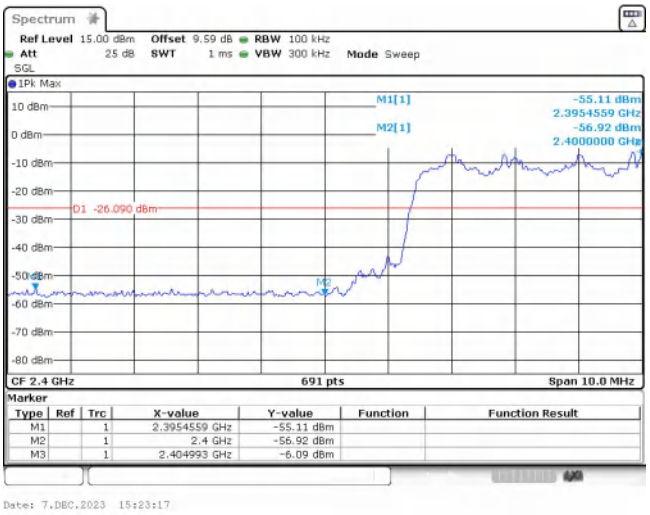
Spurious Emission

8DPSK_3-DH5_Channel 78



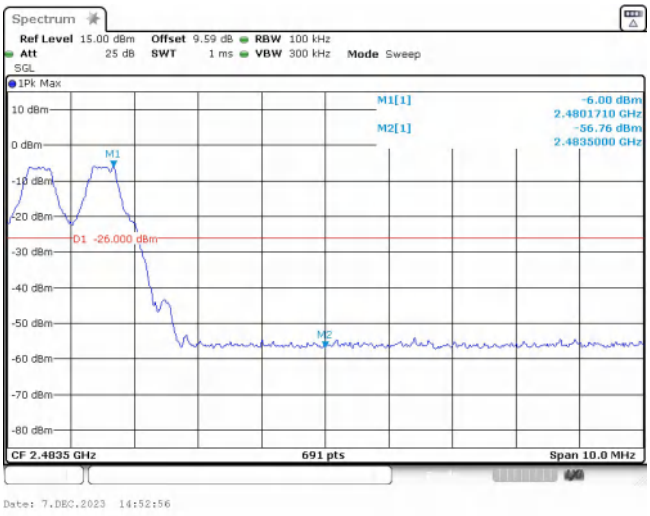
Out Of Band Emission(Left)

GFSK_DH5_Channel Hopping

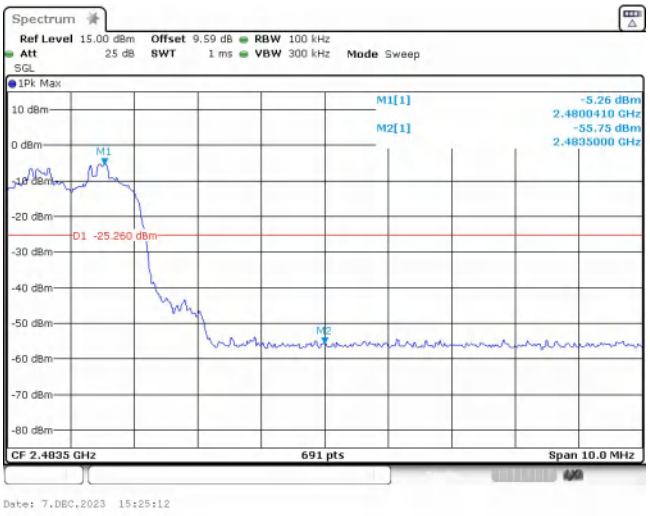


Out Of Band Emission(Left)

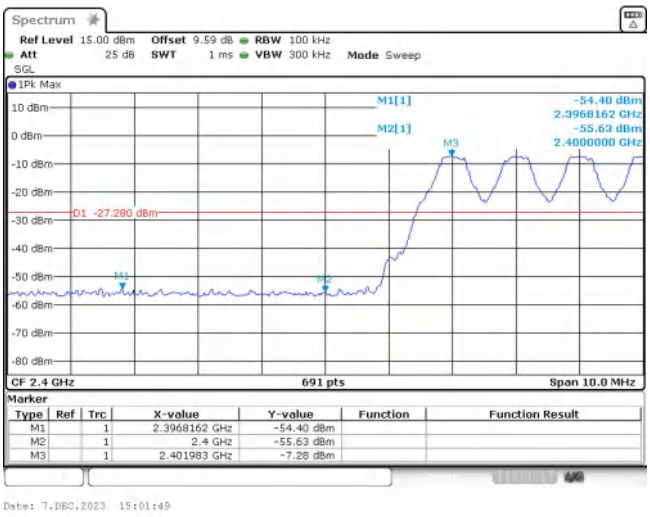
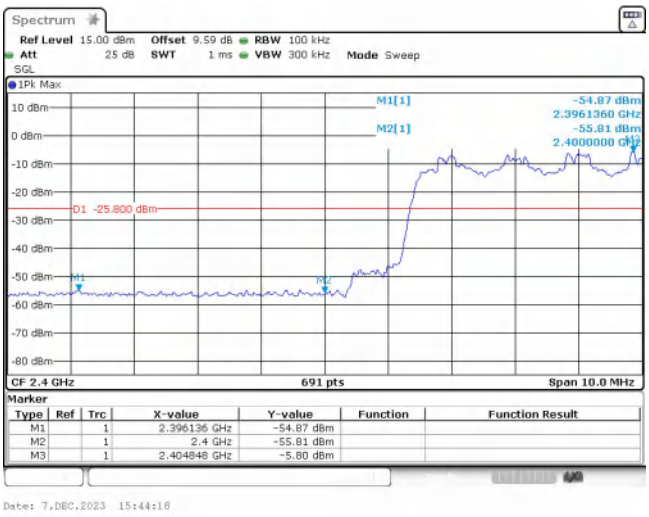
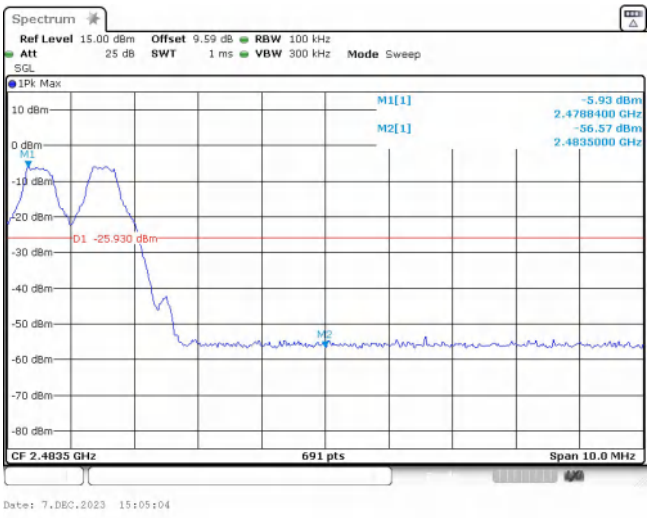
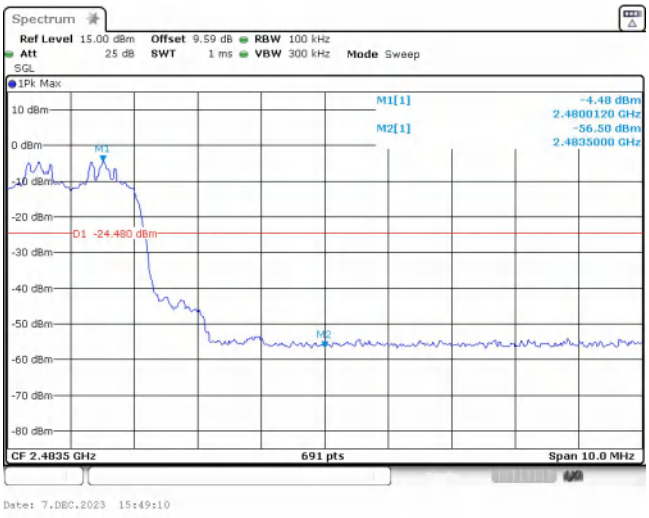
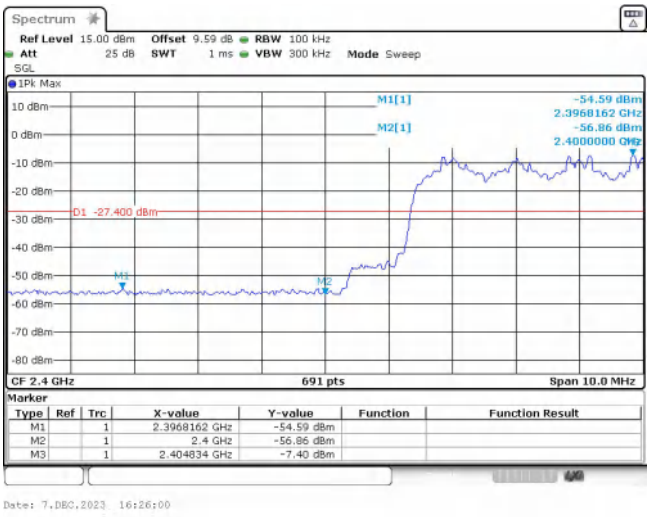
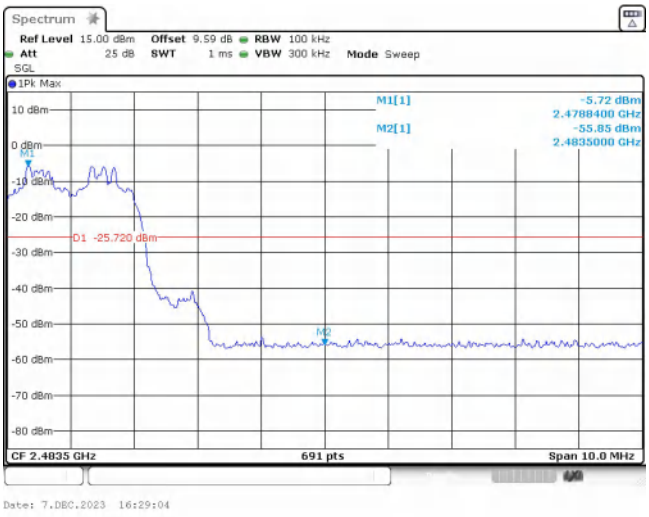
π/4DQPSK_2-DH5_Channel Hopping

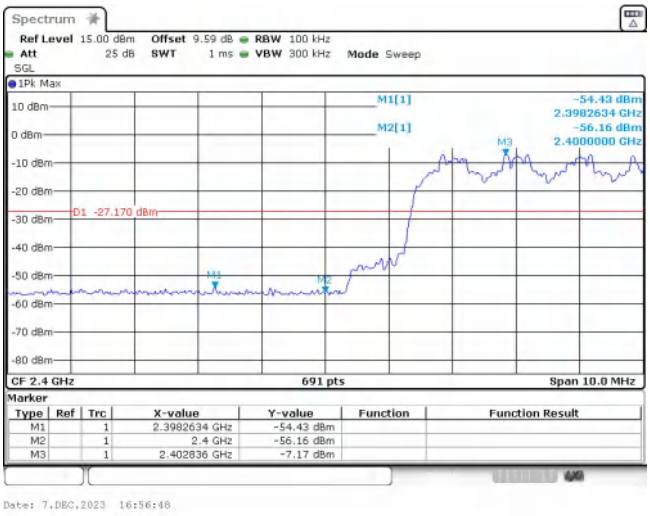
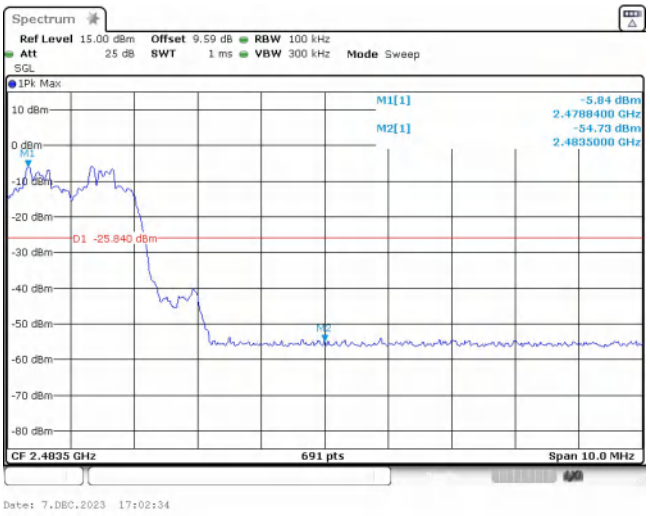


Out Of Band Emission(Right)



Out Of Band Emission(Right)

GFSK_DH5_Channel Hopping	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)	Out Of Band Emission(Right)

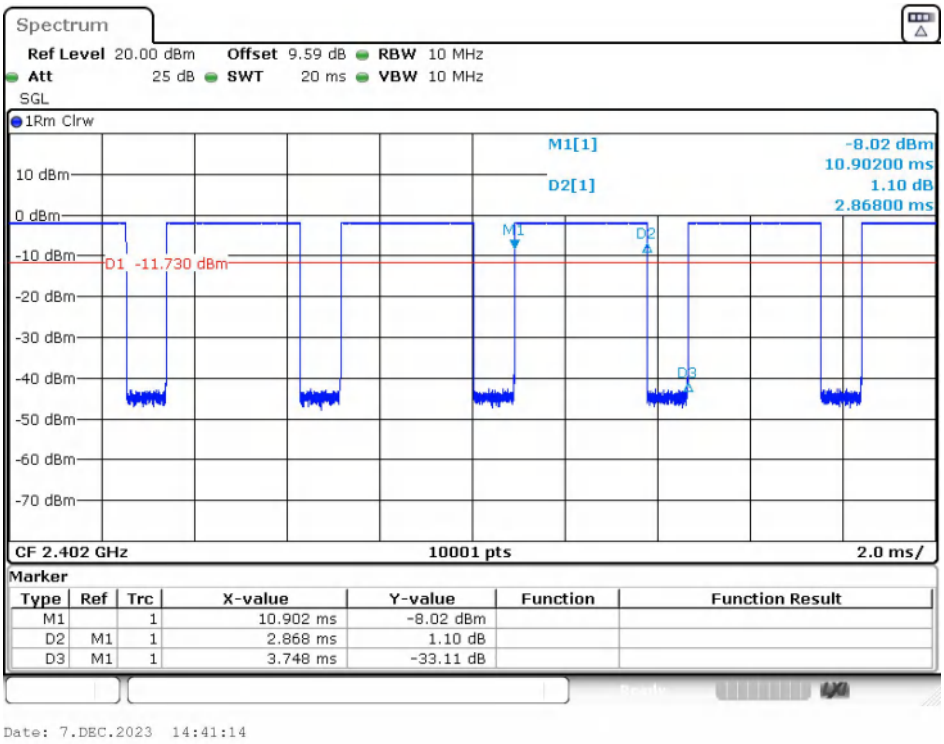
8DPSK_3-DH5_Channel Hopping	8DPSK_3-DH5_Channel Hopping
	
Out Of Band Emission(Left) 8DPSK_3-DH5_Channel Hopping	Out Of Band Emission(Right) 8DPSK_3-DH5_Channel Hopping

6) Duty Cycle

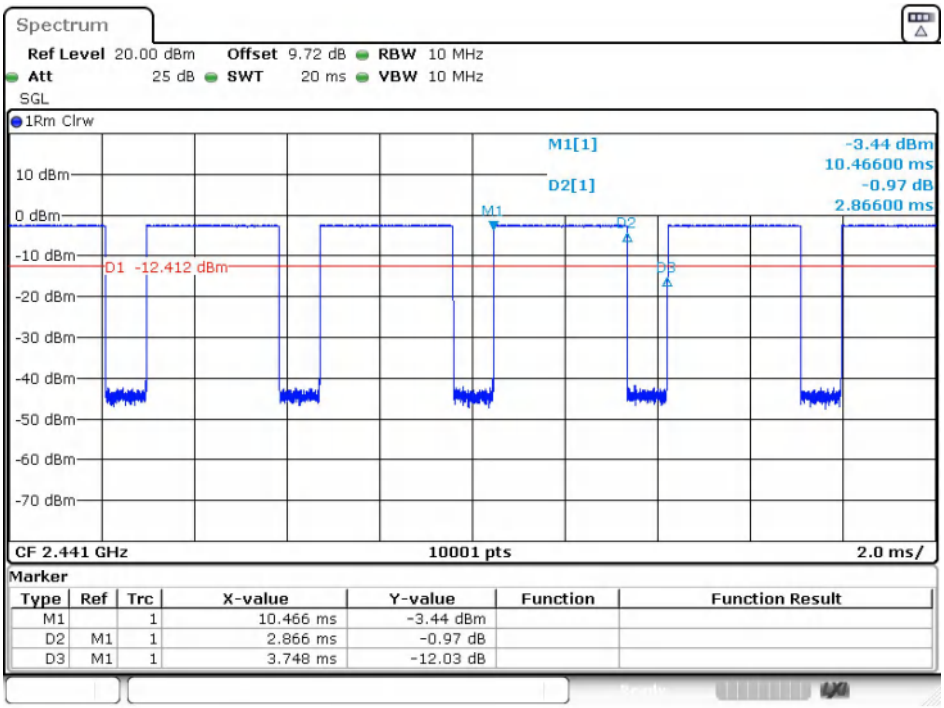
Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.868	3.748	76.52	0.7652	1.1623	0.35
		39	2.866	3.748	76.47	0.7647	1.1651	0.35
		78	2.866	3.748	76.47	0.7647	1.1651	0.35
π/4DQPSK	2-DH5	0	2.873	3.740	76.80	0.7680	1.1464	0.35
		39	2.873	3.740	76.80	0.7680	1.1464	0.35
		78	2.878	3.748	76.79	0.7679	1.147	0.35
8DPSK	3-DH5	39	2.880	3.748	76.84	0.7684	1.1441	0.35
		78	2.880	3.748	76.84	0.7684	1.1441	0.35

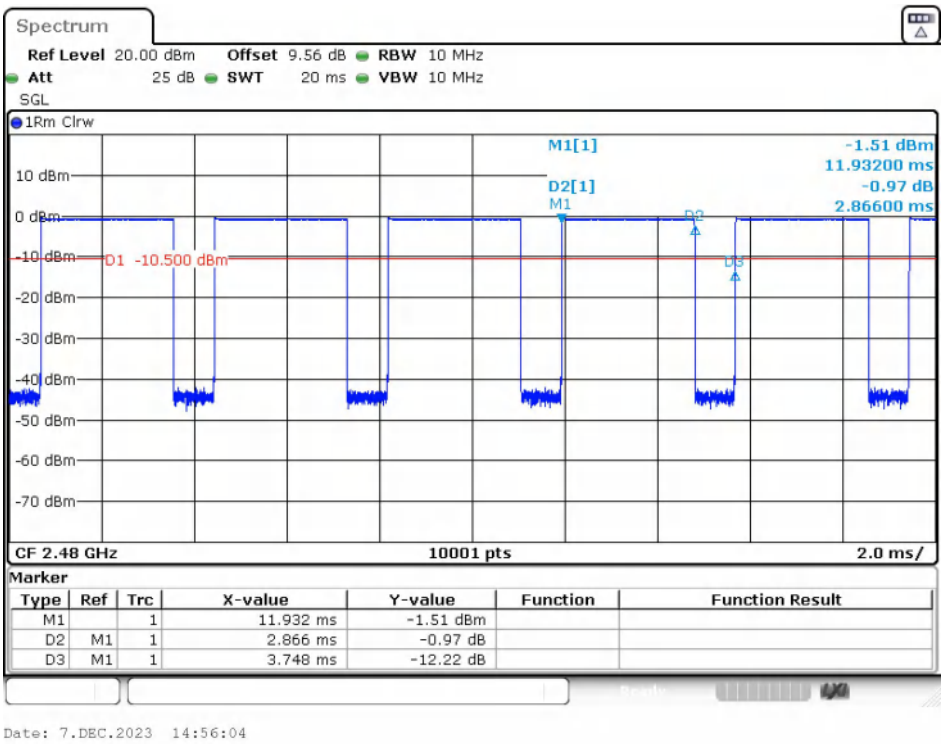
Test Graphs



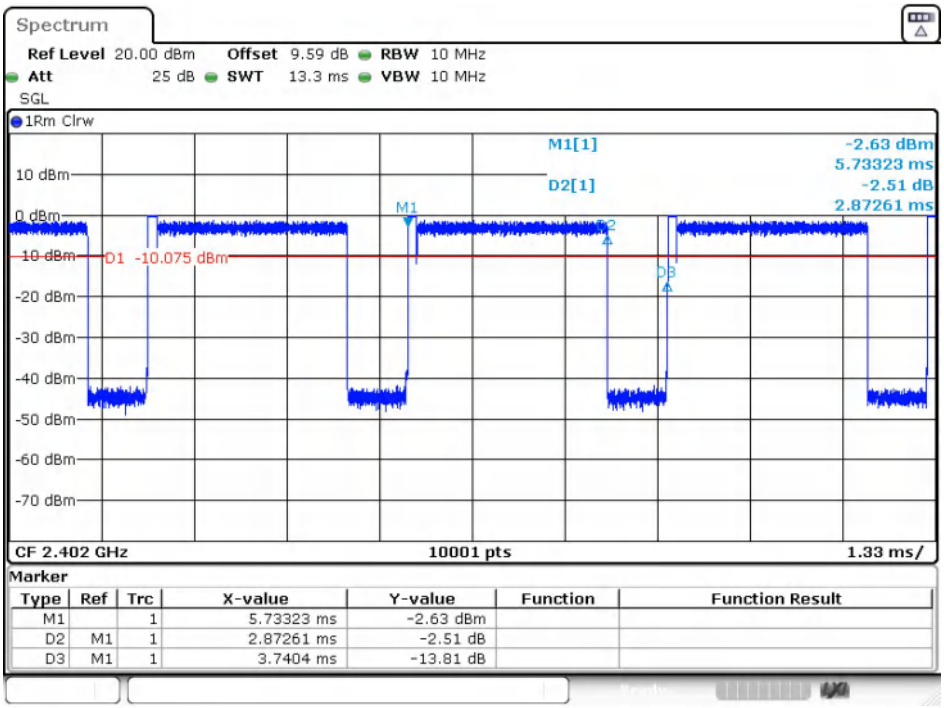
GFSK(DH5)_Channel 0



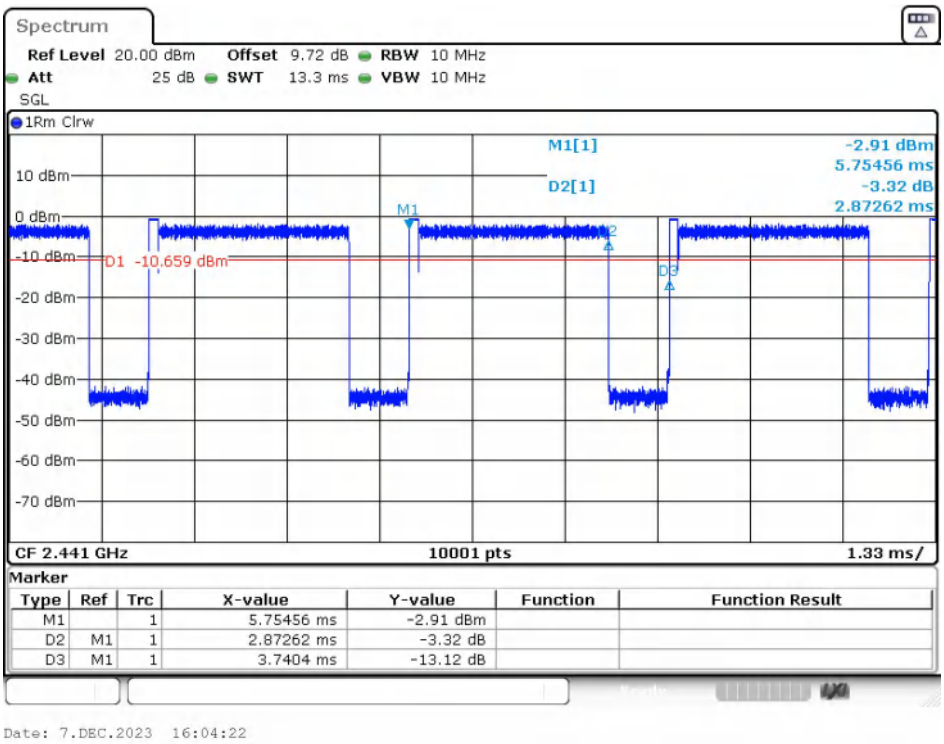
GFSK(DH5)_Channel 39



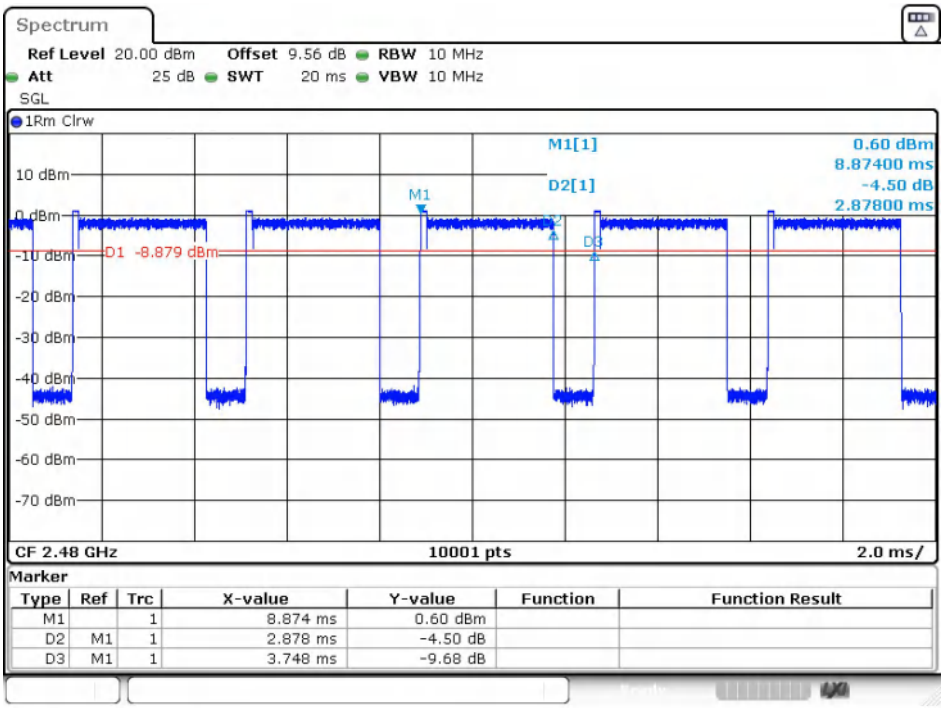
GFSK(DH5)_Channel 78



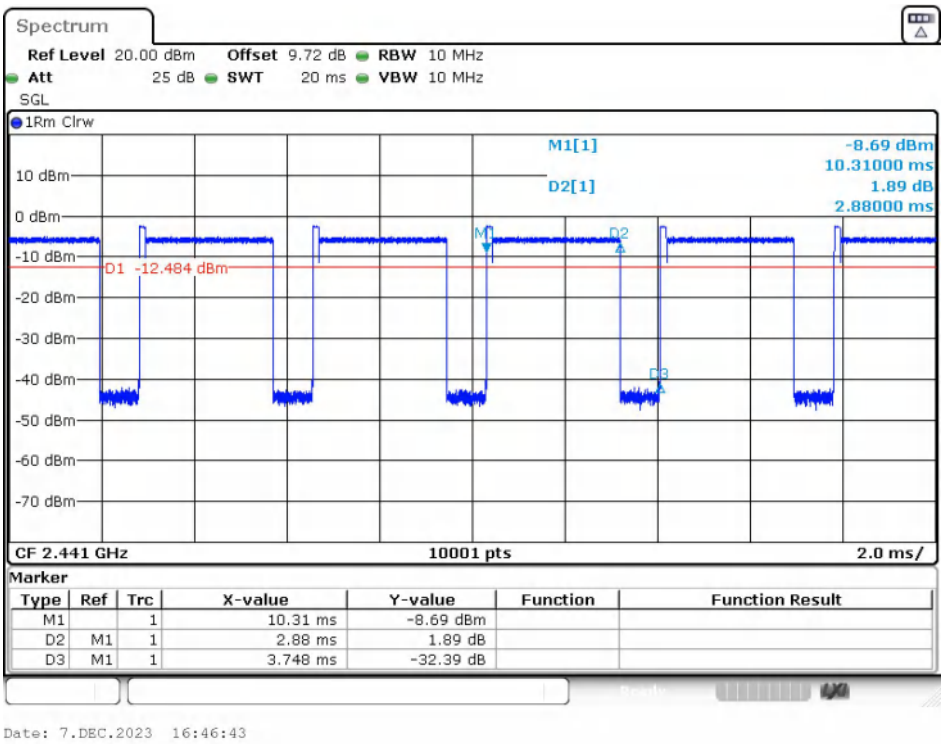
π/4DQPSK(2-DH5)_Channel 0



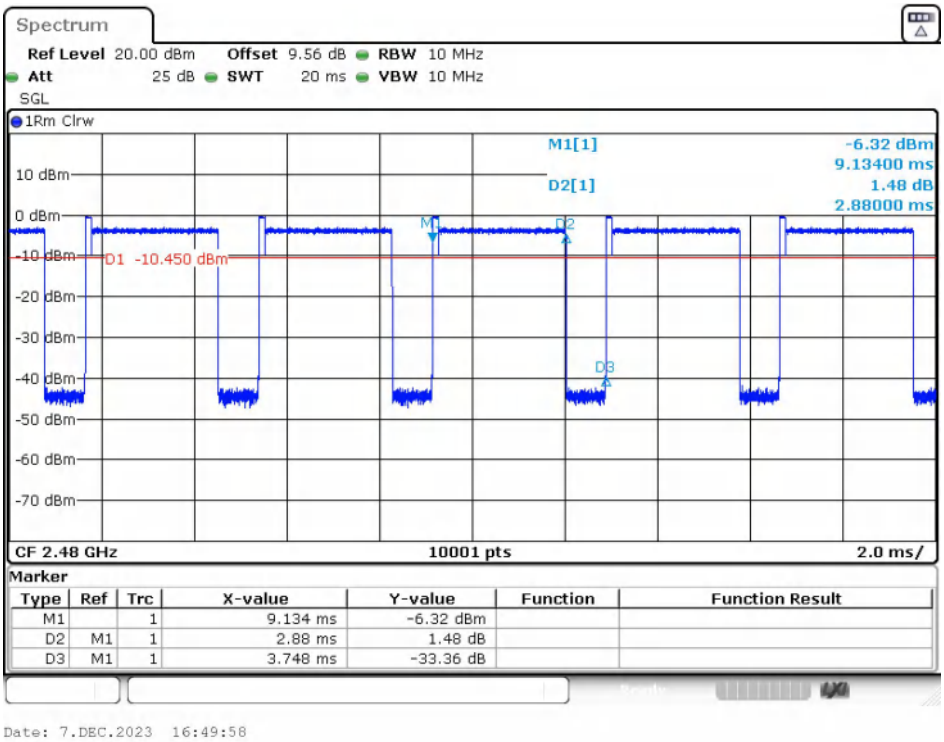
π/4DQPSK(2-DH5)_Channel 39



π/4DQPSK(2-DH5)_Channel 78



8DPSK(3-DH5)_Channel 39



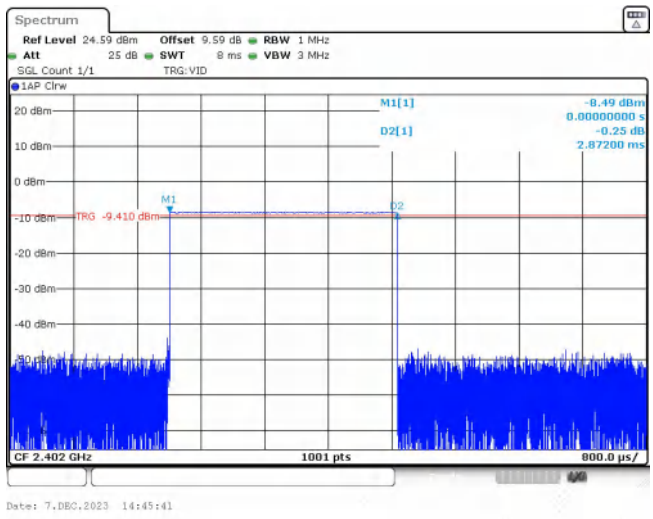
8DPSK(3-DH5)_Channel 78

7) Dwell Time

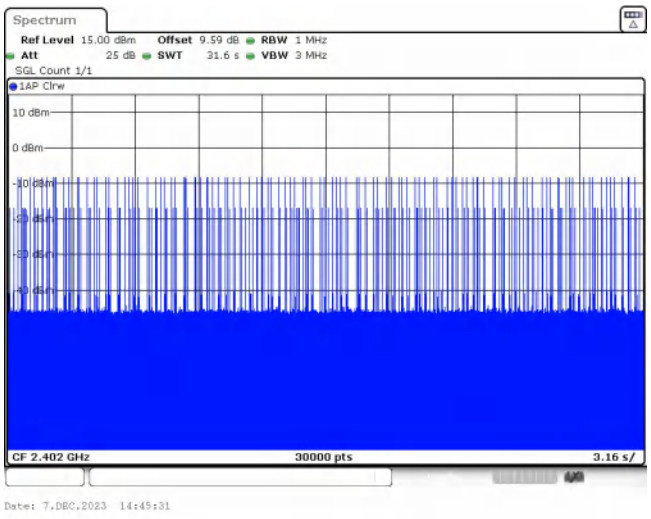
Test Result

Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.872	105	301.56	< 400	PASS
π/4DQPSK	2-DH5		2.888	107	309.02		PASS
8DPSK	3-DH5		2.880	107	308.16		PASS

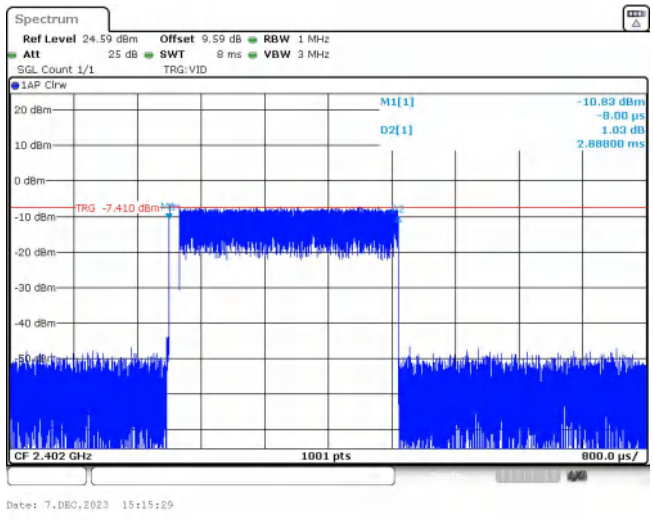
Test Graphs



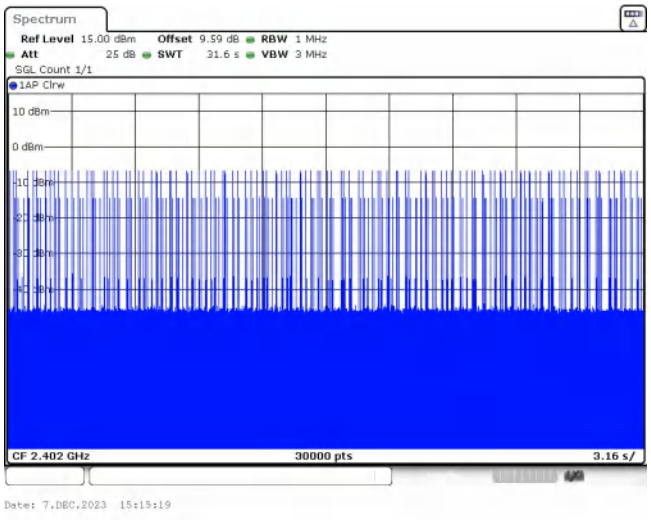
Pulse Width
GFSK_DH5



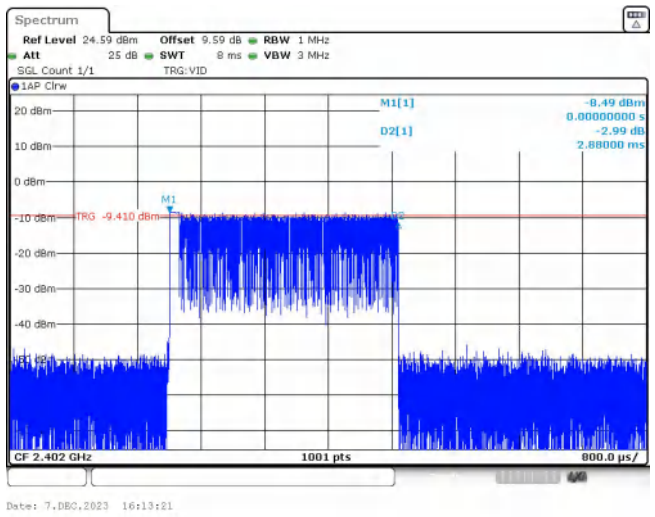
Number of Pulses in 31.6 seconds
GFSK_DH5



Pulse Width
π/4DQPSK_2-DH5

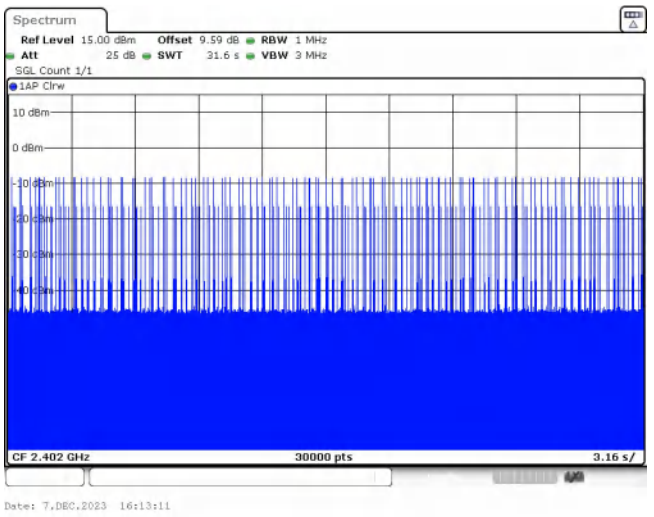


Number of Pulses in 31.6 seconds
π/4DQPSK_2-DH5



Pulse Width

8DPSK_3-DH5



Number of Pulses in 31.6 seconds

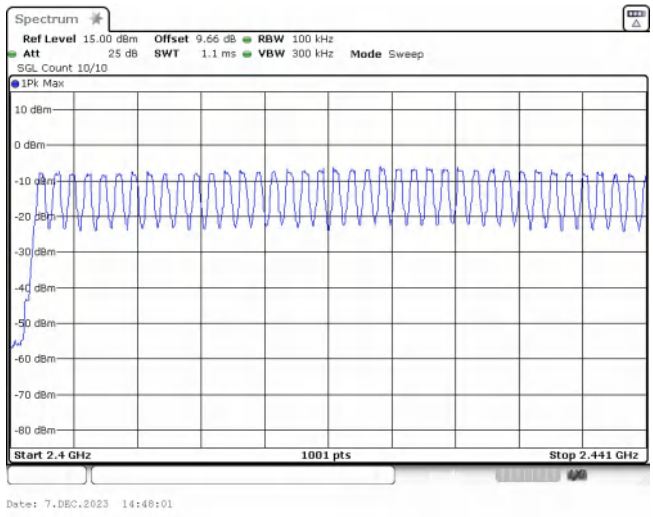
8DPSK_3-DH5

8) Number Of Hopping Channel

Test Result

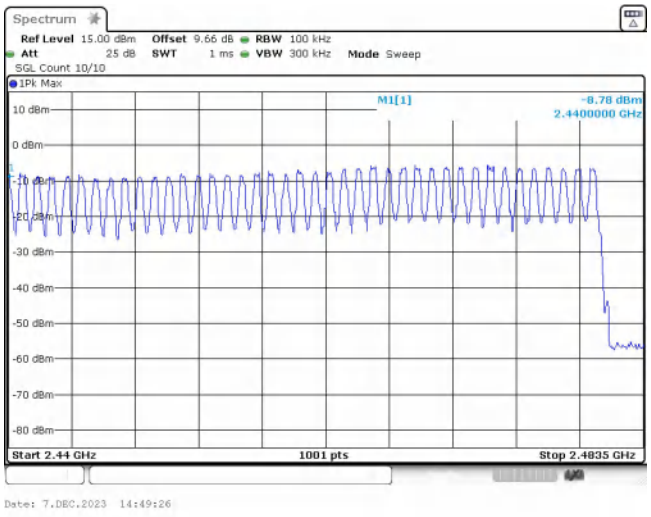
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
π/4DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs



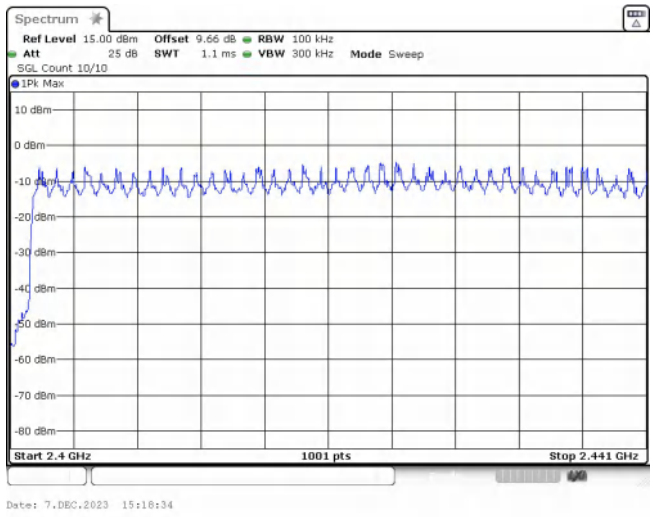
Low End Spectrum Channel Hopping Plot

GFSK



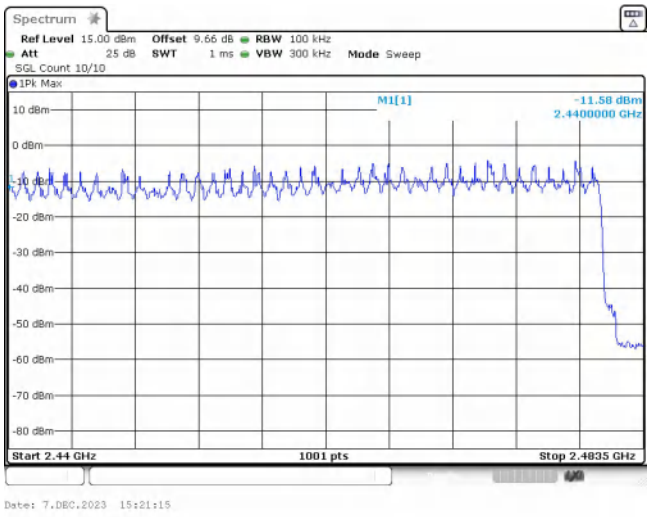
High End Spectrum Channel Hopping Plot

GFSK



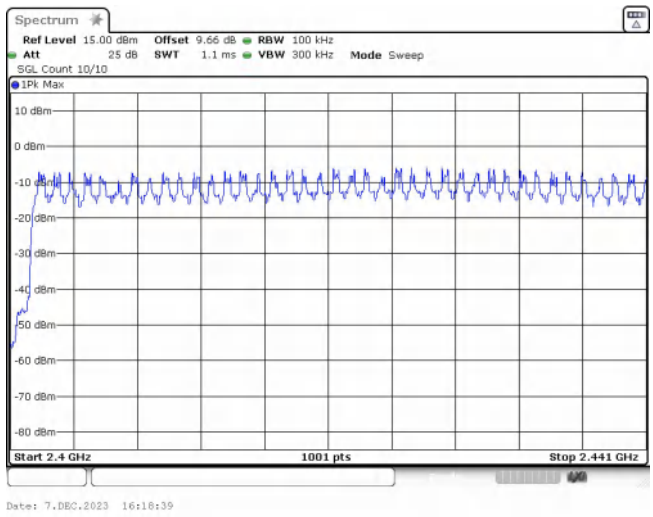
Low End Spectrum Channel Hopping Plot

π/4DQPSK



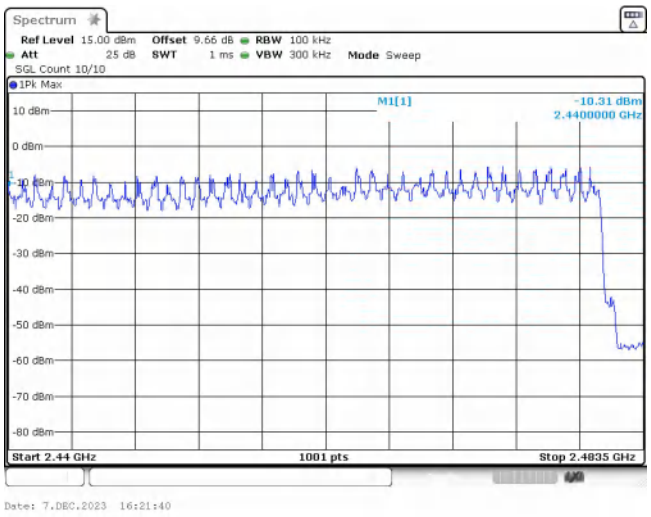
High End Spectrum Channel Hopping Plot

π/4DQPSK



Low End Spectrum Channel Hopping Plot

8DPSK



High End Spectrum Channel Hopping Plot

8DPSK