Appendix A

Report No.:	CISRR240327131
FCC ID:	2A5TA-I39
Product Name:	Bluetooth headset
Model No.:	i39
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

1) Conducted Peak Output Power

Test Result

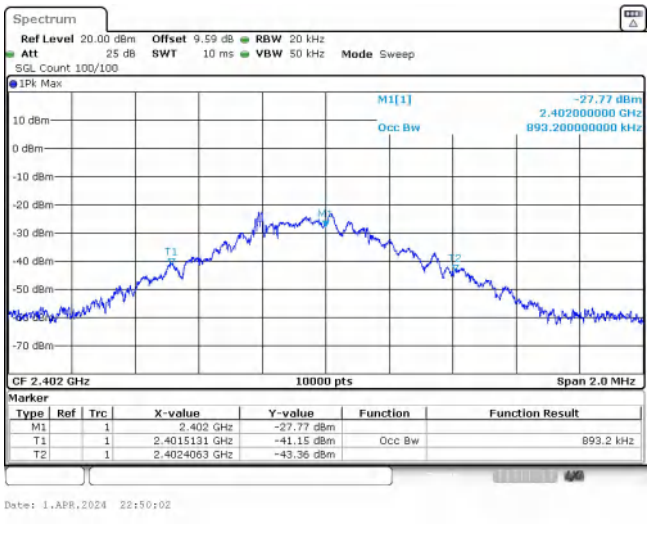
Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	-8.897	0.13	30	PASS
		39	-9.000	0.13		PASS
		78	-7.458	0.18		PASS
π/4DQPSK	2-DH5	0	-8.834	0.13	20.97	PASS
		39	-8.776	0.13		PASS
		78	-7.064	0.20		PASS
8DPSK	3-DH5	0	-8.677	0.14		PASS
		39	-8.642	0.14		PASS
		78	-6.904	0.20		PASS

2) 99% Bandwidth

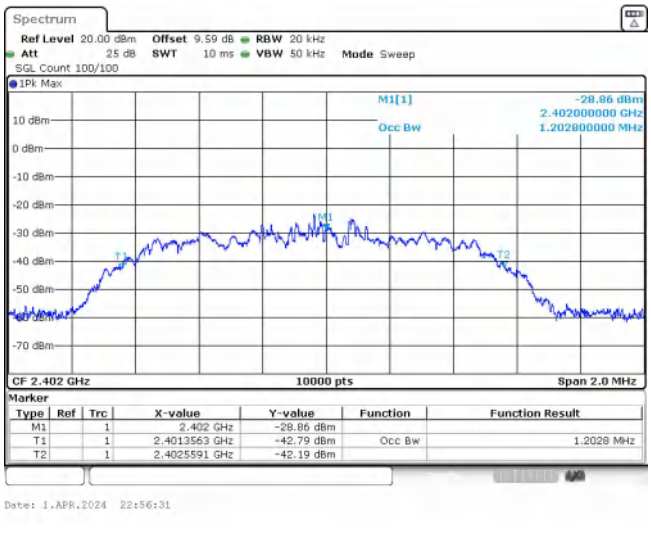
Test Result

Modulation	Channel	99% BW (MHz)
GFSK	0	0.89320
	39	0.88720
	78	0.88760
π/4DQPSK	0	1.2030
	39	1.2020
	78	1.1820
8DPSK	0	1.2070
	39	1.1930
	78	1.1830

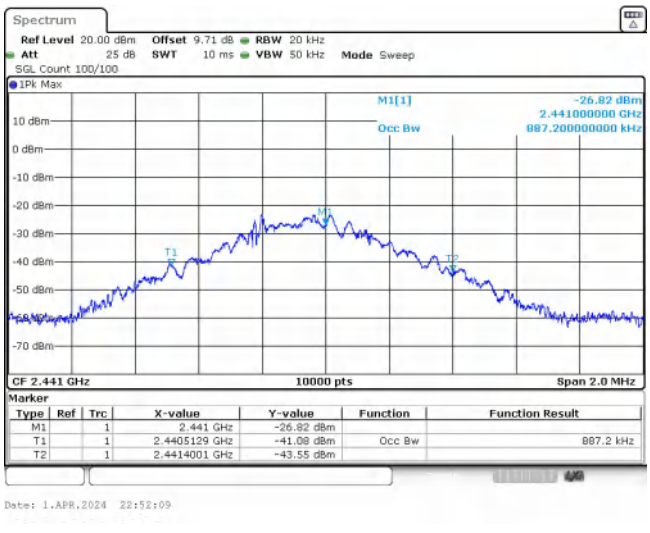
Test Graphs



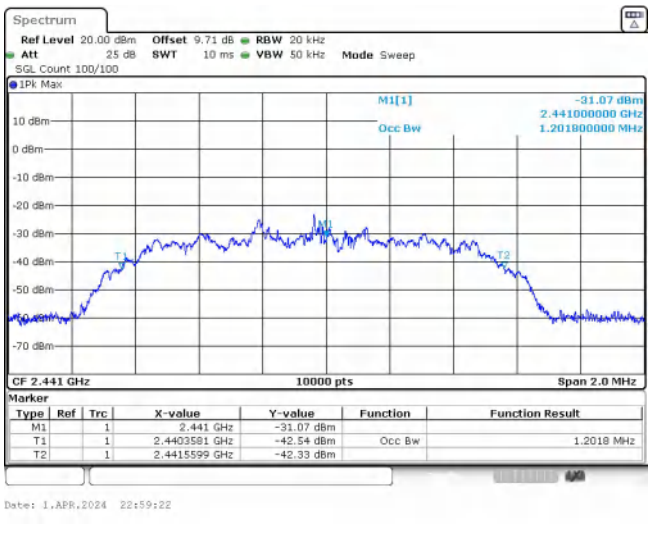
GFSK_DH5_Channel 0



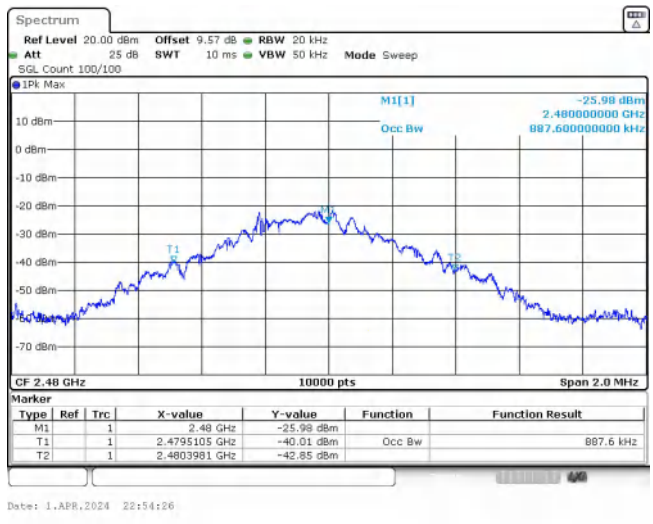
π/4DQPSK_2-DH5_Channel 0



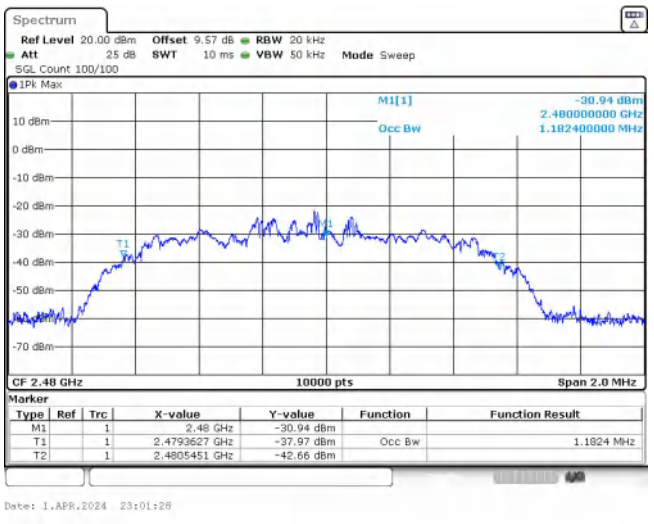
GFSK_DH5_Channel 39



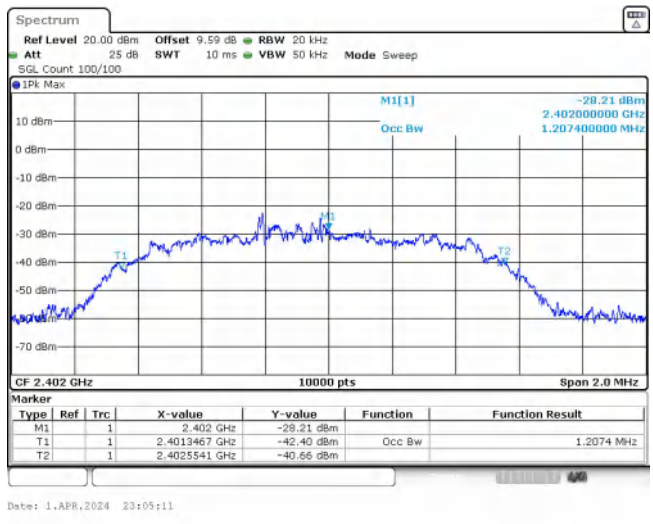
π/4DQPSK_2-DH5_Channel 39



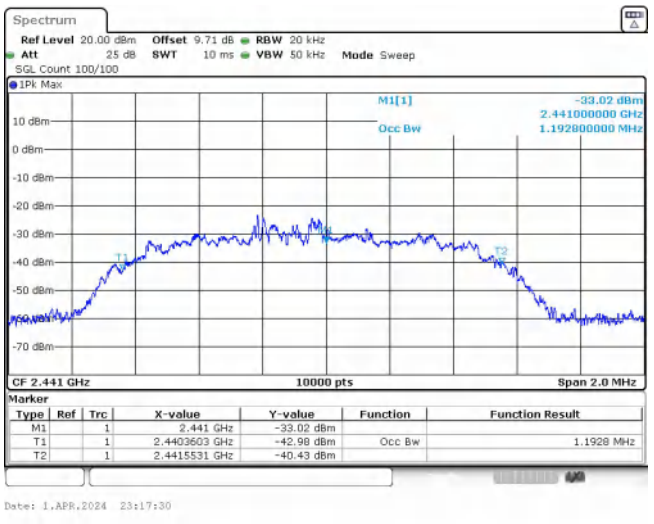
GFSK_DH5_Channel 78



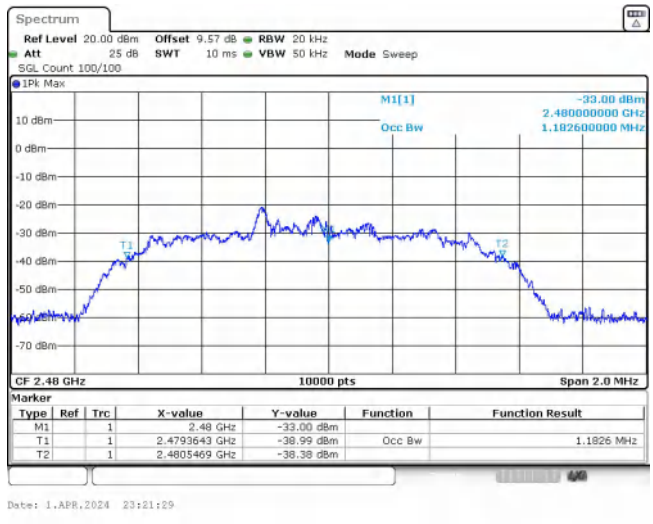
π/4DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



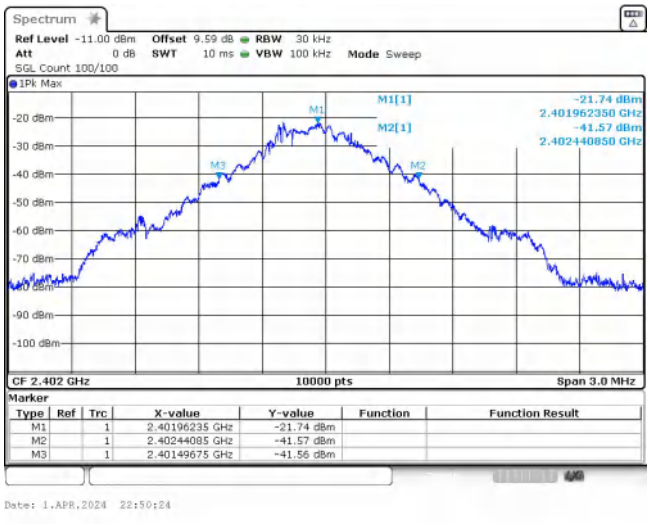
8DPSK_3-DH5_Channel 78

3) 20dB Bandwidth

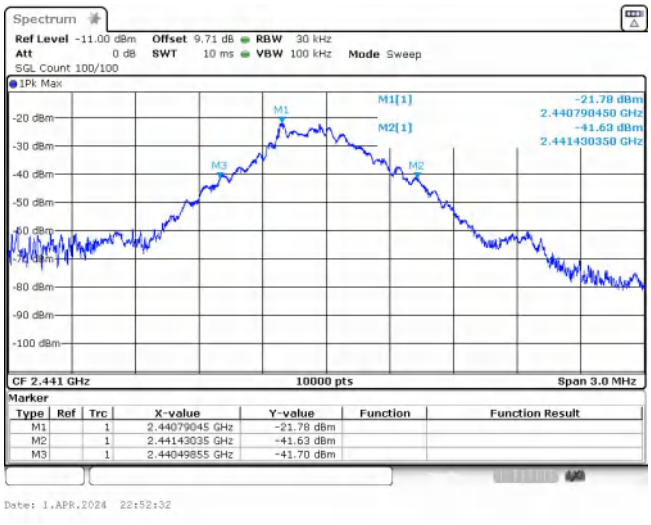
Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	0.9400
	39	2441 MHz	0.9300
	78	2480 MHz	0.9300
π/4DQPSK	0	2402 MHz	1.260
	39	2441 MHz	1.260
	78	2480 MHz	1.230
8DPSK	0	2402 MHz	1.270
	39	2441 MHz	1.270
	78	2480 MHz	1.280

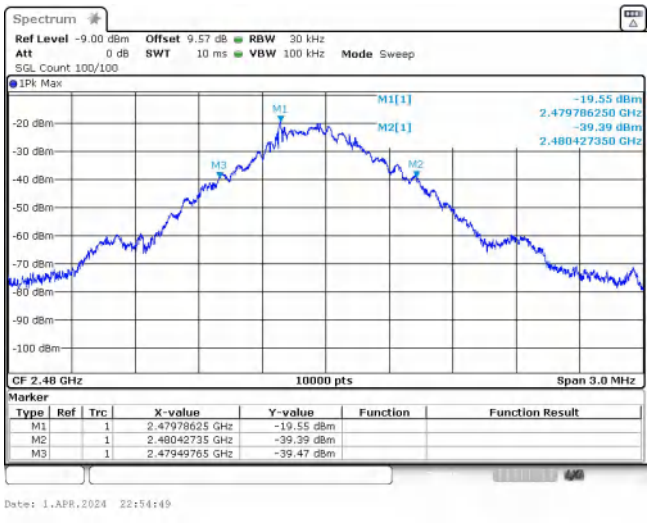
Test Graphs



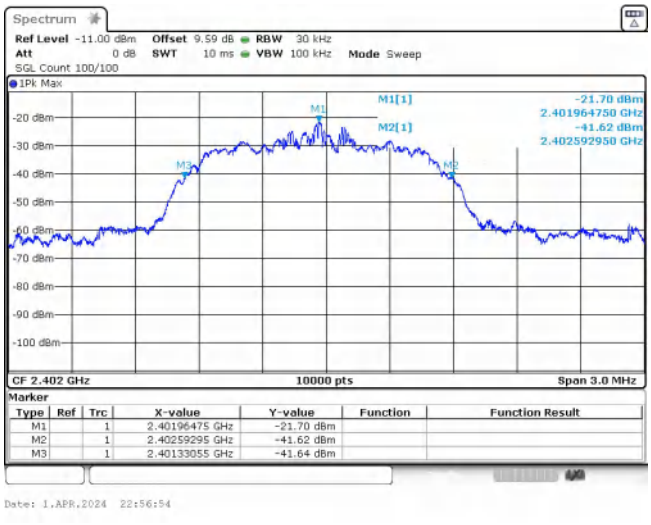
GFSK_DH5_Channel 0



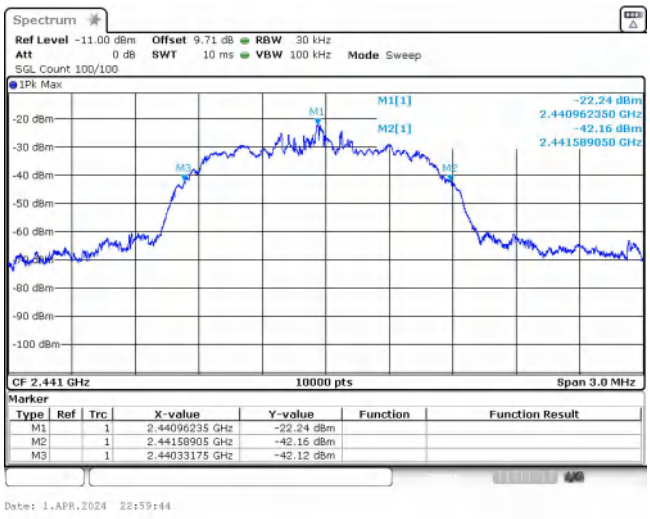
GFSK_DH5_Channel 39



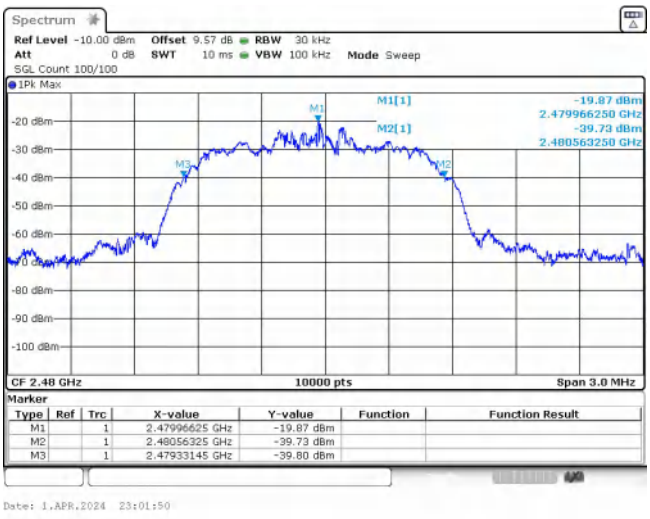
GFSK_DH5_Channel 78



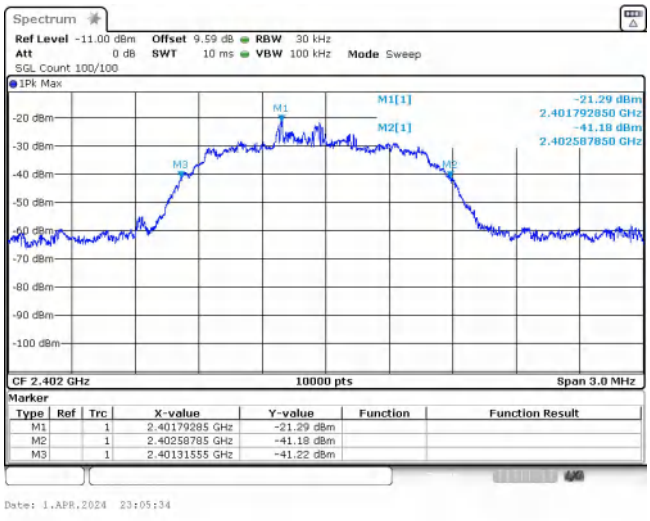
π/4DQPSK_2-DH5_Channel 0



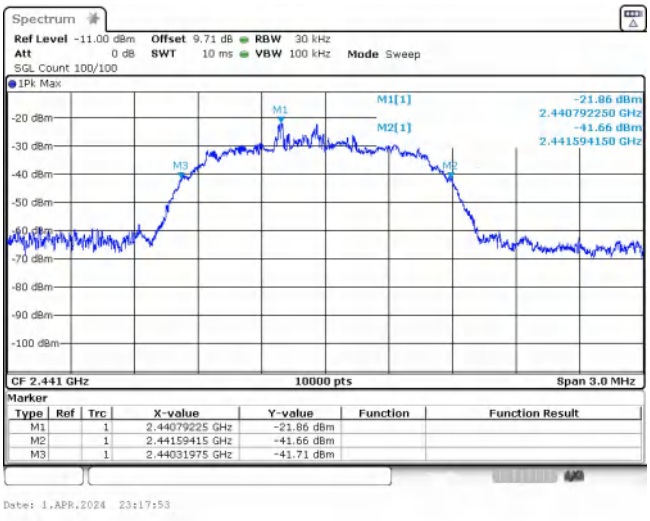
π/4DQPSK_2-DH5_Channel 39



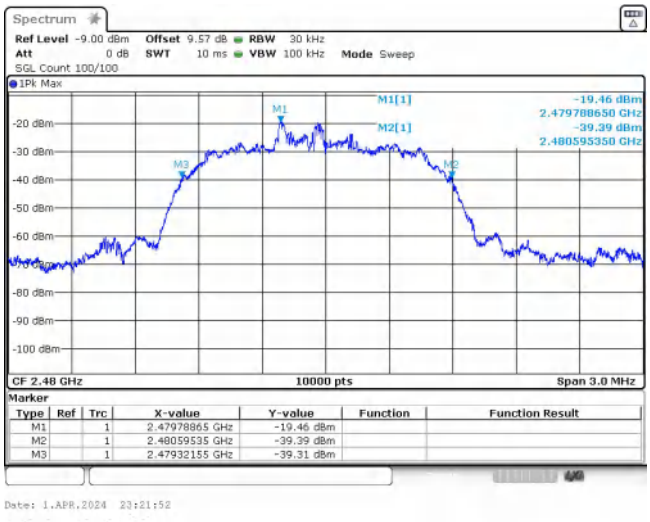
π/4DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



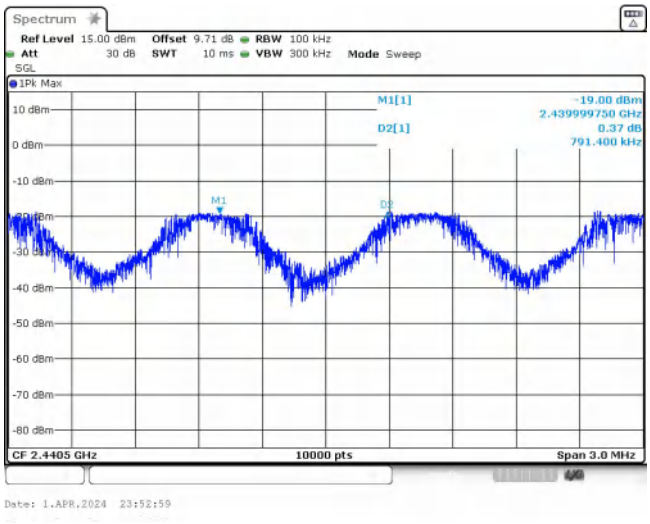
8DPSK_3-DH5_Channel 78

4) Carrier Frequencies Separation

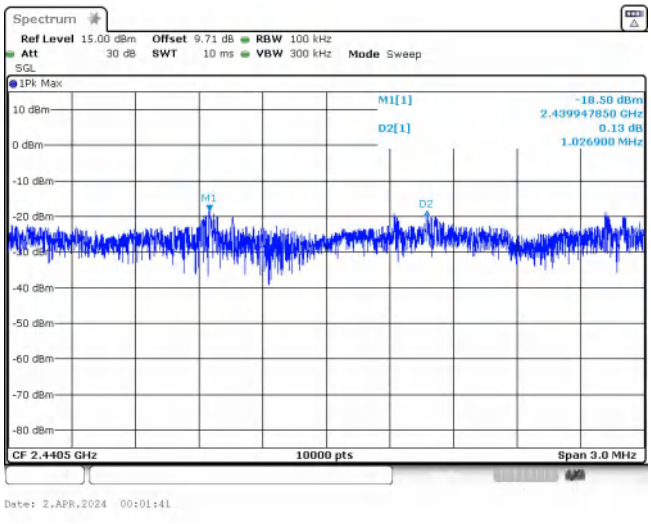
Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2439.9997	2440.7912	0.7914	0.627	PASS
π/4DQPSK	2-DH5	2439.9479	2440.9747	1.0269	0.84	PASS
8DPSK	3-DH5	2439.7928	2440.892	1.0992	0.847	PASS

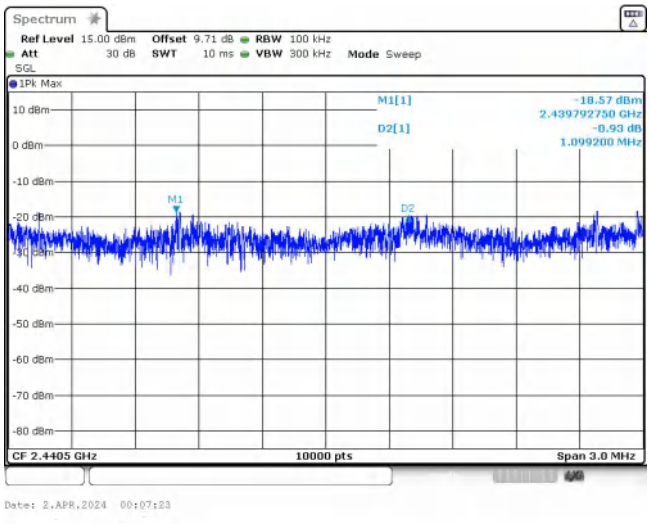
Test Graphs



GFSK



π/4DQPSK



8DPSK

5) Conducted Out Of Band Emission

Test Result

Non-Hopping

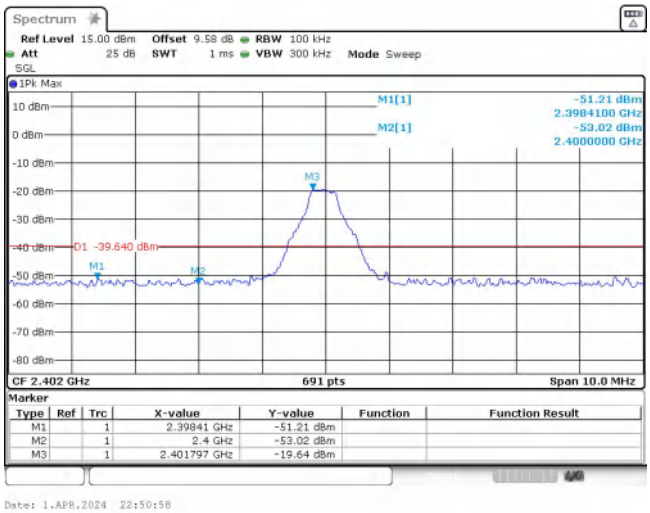
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-53.020	-39.64	-13.380	PASS
			2398.41	-51.214	-39.64	-11.574	PASS
			4803.80	-46.284	-39.64	-6.644	PASS
		39	4882.09	-47.002	-39.6	-7.402	PASS
		78	2483.50	-53.683	-38.08	-15.603	PASS
			16223.5	-49.534	-38.08	-11.454	PASS
π/4DQPSK	2-DH5	0	2400.00	-52.095	-39.54	-12.555	PASS
			2398.48	-50.829	-39.54	-11.289	PASS
			16245.1	-49.673	-39.54	-10.133	PASS
		39	23744.4	-49.045	-39.61	-9.435	PASS
		78	2483.50	-52.695	-38.04	-14.655	PASS
			17702.5	-49.725	-38.04	-11.685	PASS
8DPSK	3-DH5	0	2400.00	-52.645	-39.62	-13.025	PASS
			2397.20	-49.952	-39.62	-10.332	PASS
			4803.80	-46.431	-39.62	-6.811	PASS
		39	24749.0	-49.365	-39.81	-9.555	PASS
		78	2483.50	-51.856	-37.88	-13.976	PASS
			16348.3	-49.230	-37.88	-11.350	PASS

Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2398.31	-49.418	-39.12	-10.298	PASS
			2400.00	-50.836	-39.12	-11.716	PASS
			2483.50	-52.384	-36.61	-15.774	PASS
			2397.24	-50.484	-39.29	-11.194	PASS
			2400.00	-51.485	-39.29	-12.195	PASS
			2483.50	-53.391	-36.62	-16.771	PASS
π/4DQPSK	2-DH5		2397.50	-50.460	-38.97	-11.490	PASS
			2400.00	-53.225	-38.97	-14.255	PASS
			2483.50	-51.946	-39.61	-12.336	PASS
			2395.18	-50.509	-41.96	-8.549	PASS
			2400.00	-52.282	-41.96	-10.322	PASS
			2483.50	-50.941	-39.04	-11.901	PASS
8DPSK	3-DH5		2395.80	-49.776	-39.05	-10.726	PASS
			2400.00	-52.454	-39.05	-13.404	PASS
			2483.50	-50.905	-35.87	-15.035	PASS

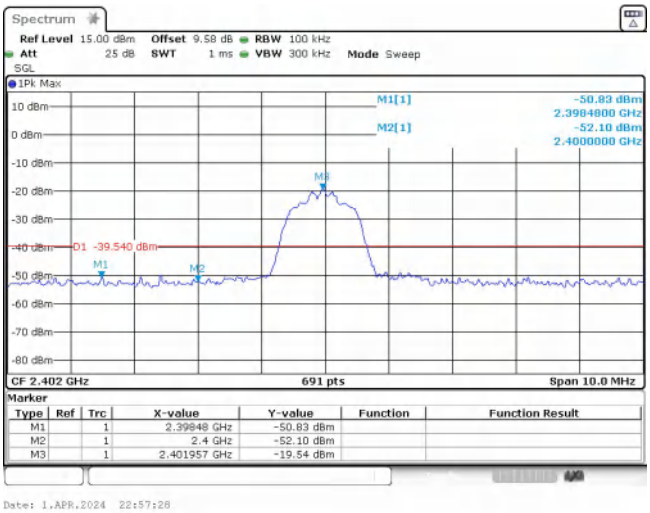
			2398.55	-50.531	-39.21	-11.321	PASS
			2400.00	-51.455	-39.21	-12.245	PASS
			2483.50	-50.901	-35.91	-14.992	PASS

Test Graphs



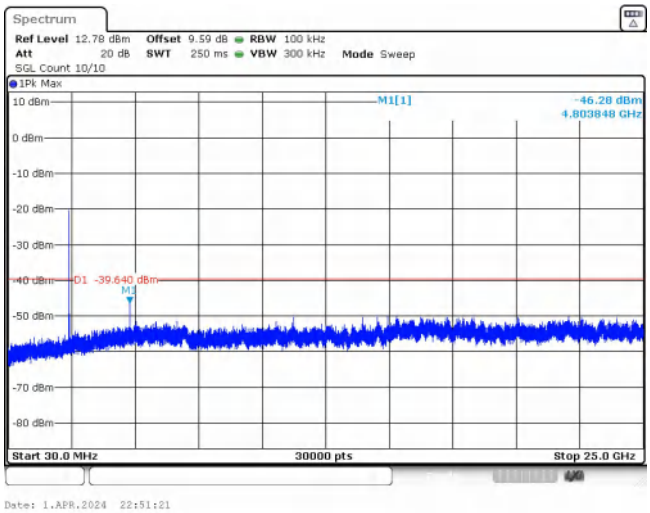
Out Of Band Emission

GFSK_DH5_Channel 0



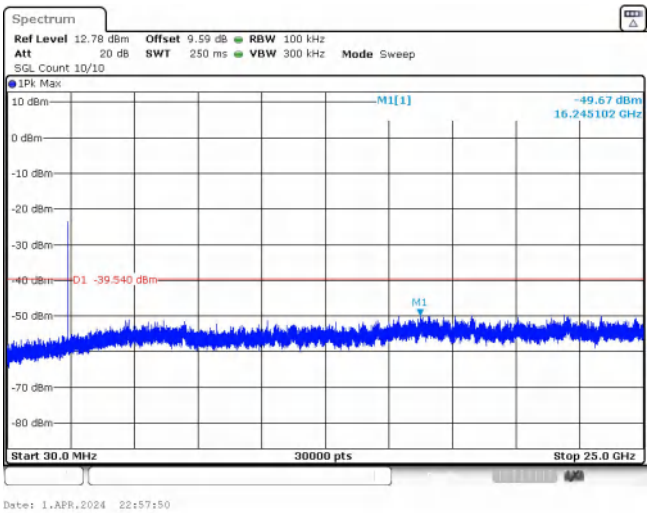
Out Of Band Emission

π/4DQPSK_2-DH5_Channel 0



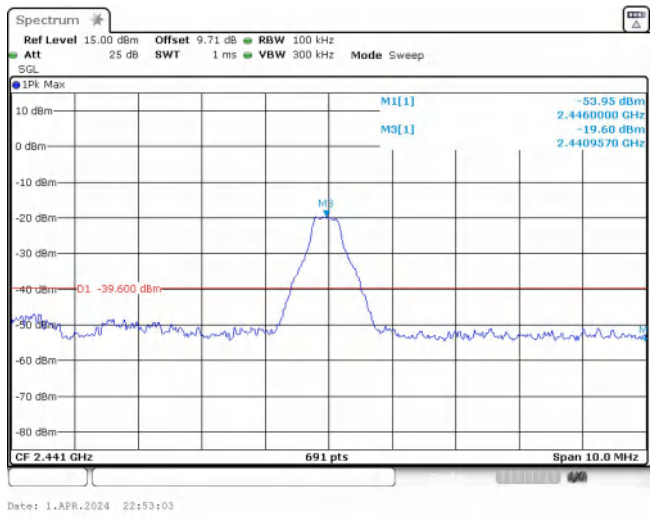
Spurious Emission

GFSK_DH5_Channel 0



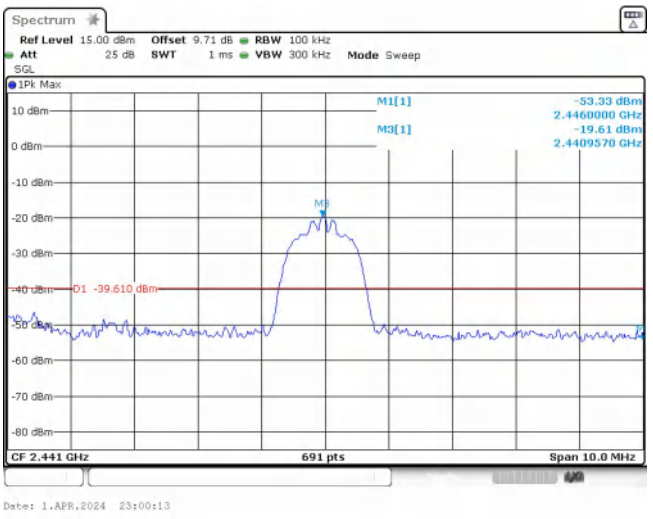
Spurious Emission

π/4DQPSK_2-DH5_Channel 0



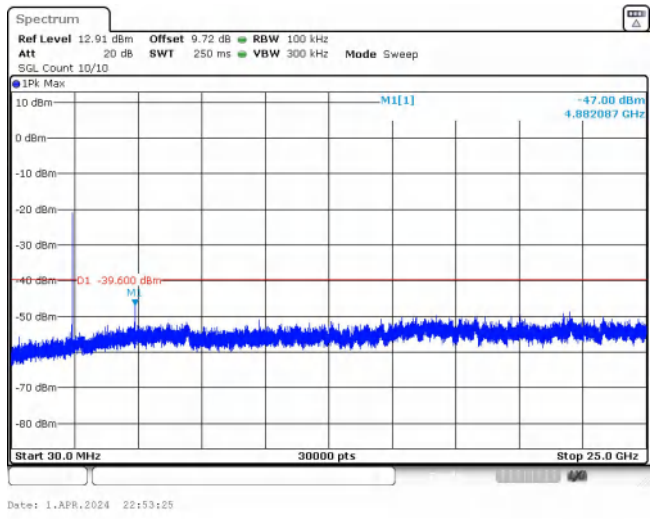
Out Of Band Emission

GFSK_DH5_Channel 39



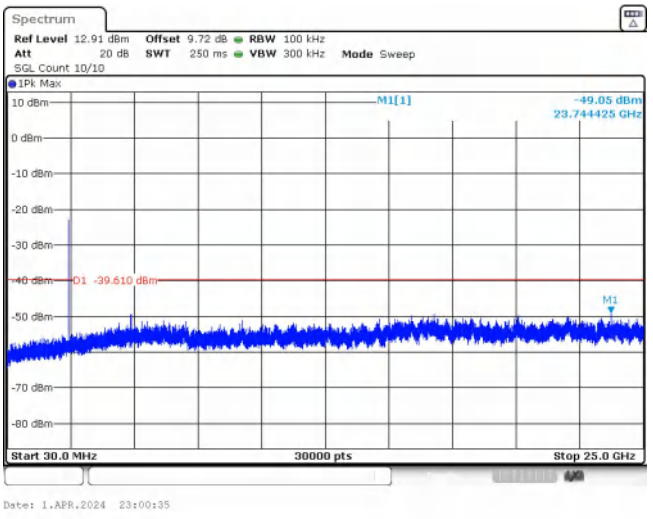
Out Of Band Emission

π/4DQPSK_2-DH5_Channel 39



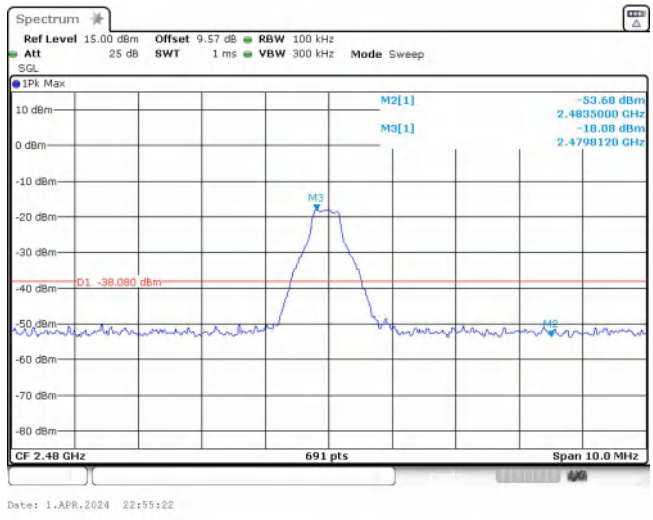
Spurious Emissions

GFSK_DH5_Channel 39



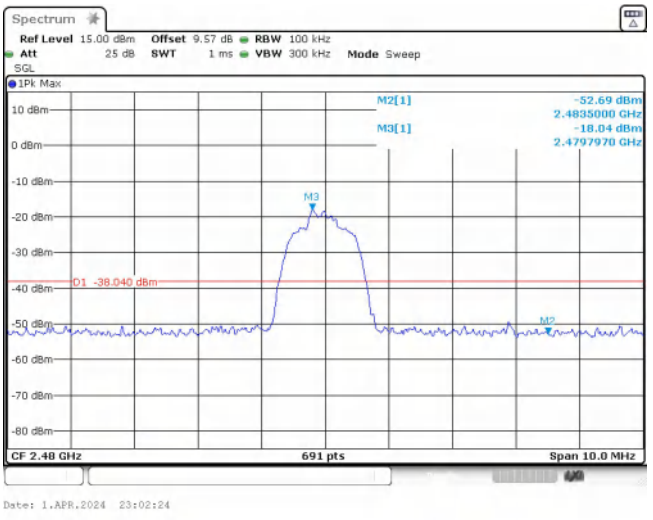
Spurious Emissions

π/4DQPSK_2-DH5_Channel 39



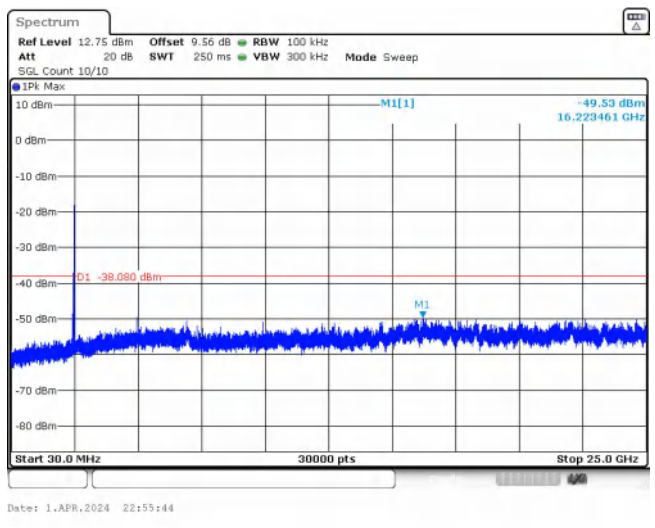
Out Of Band Emission

GFSK_DH5_Channel 78



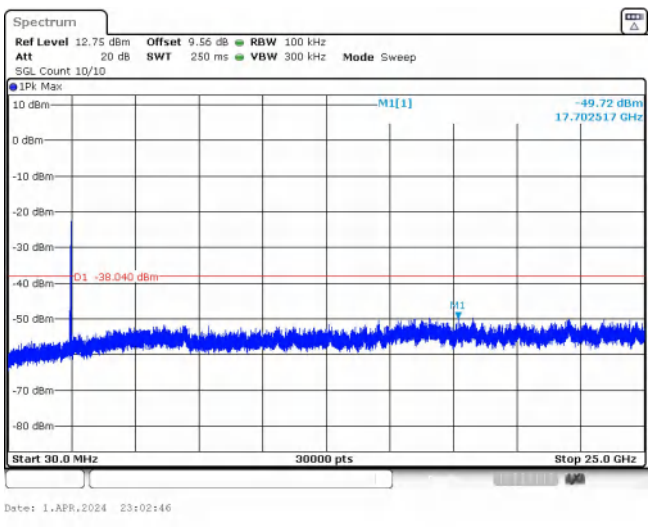
Out Of Band Emission

π/4DQPSK_2-DH5_Channel 78



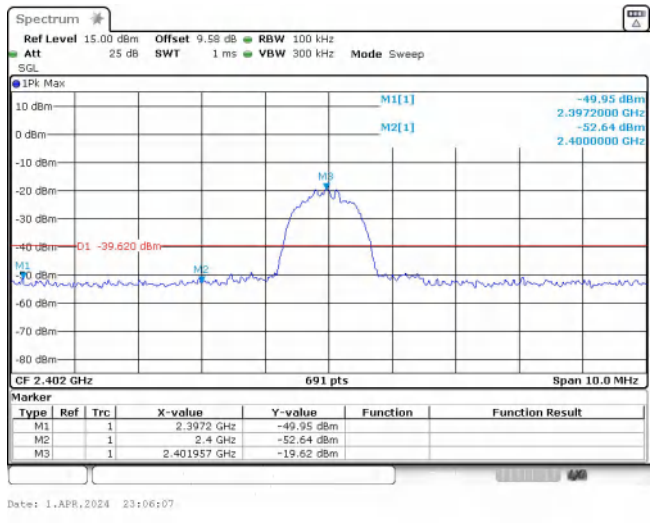
Spurious Emission

GFSK_DH5_Channel 78



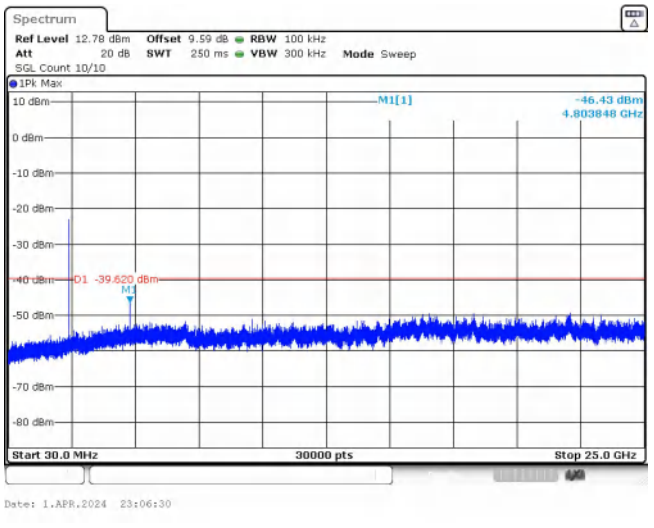
Spurious Emission

π/4DQPSK_2-DH5_Channel 78



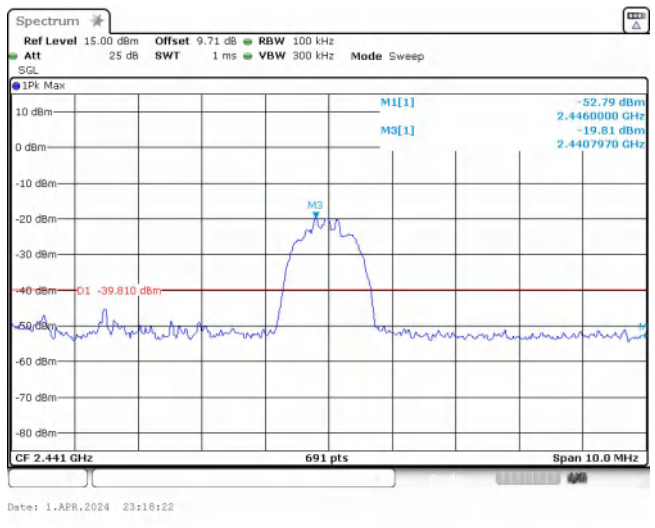
Out Of Band Emission

8DPSK_3-DH5_Channel 0



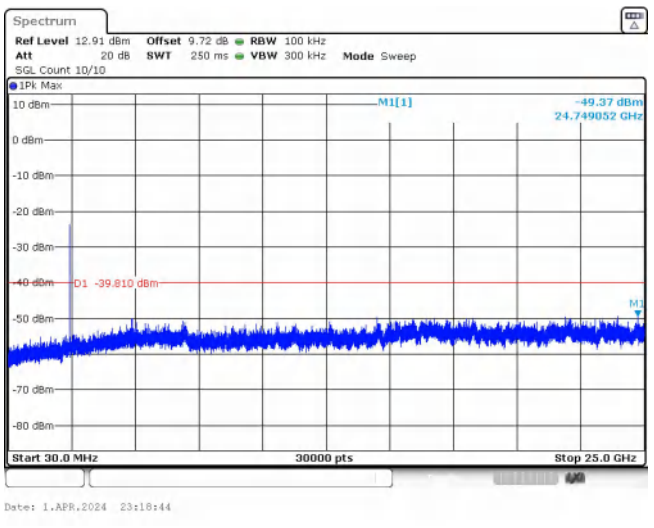
Spurious Emission

8DPSK_3-DH5_Channel 0



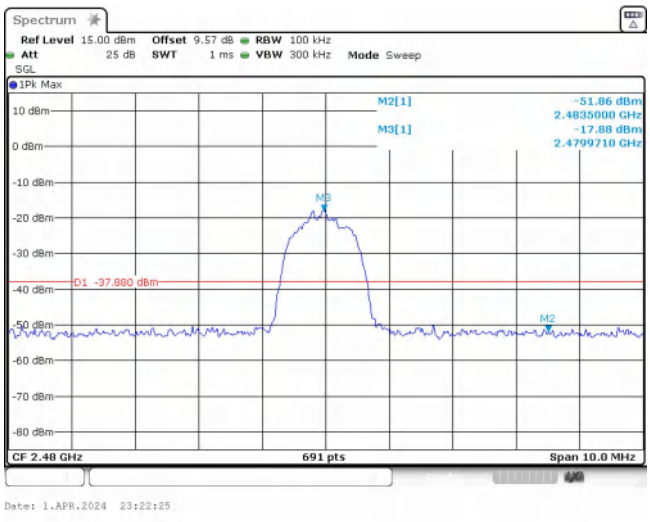
Out Of Band Emission

8DPSK_3-DH5_Channel 39



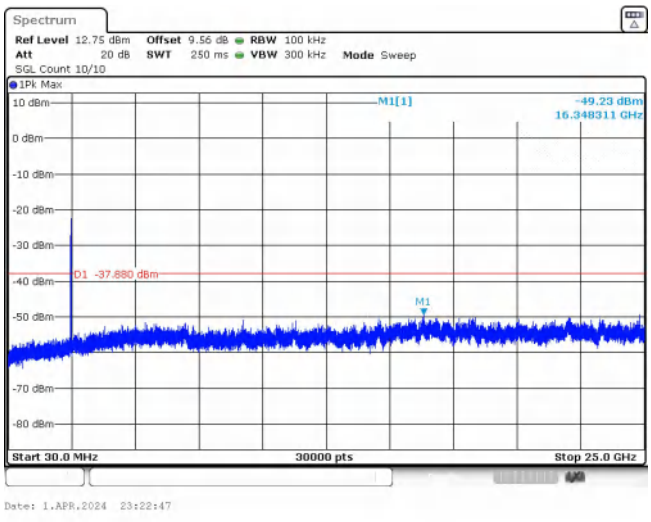
Spurious Emissions

8DPSK_3-DH5_Channel 39



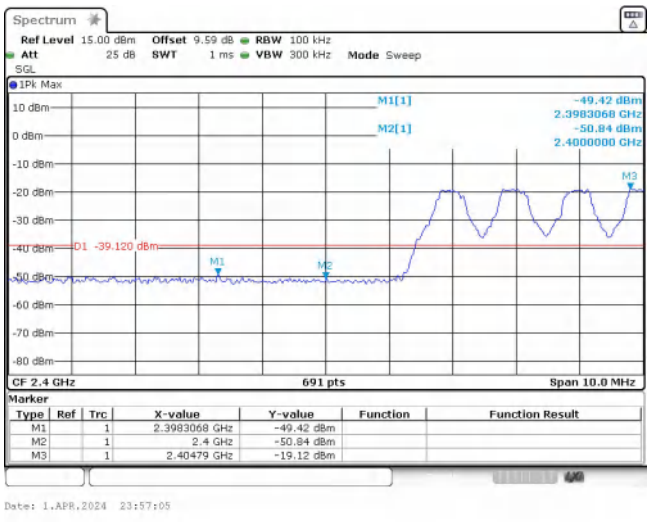
Out Of Band Emission

8DPSK_3-DH5_Channel 78



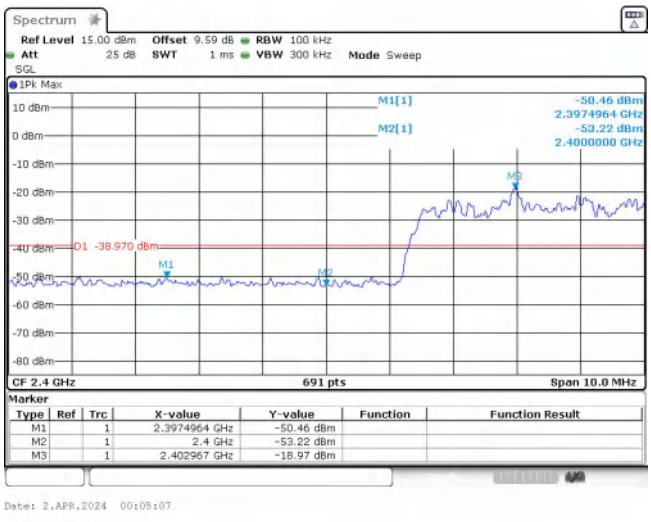
Spurious Emission

8DPSK_3-DH5_Channel 78



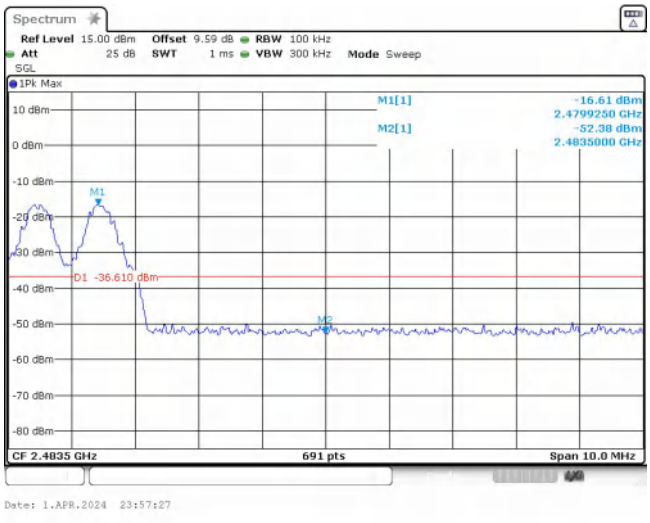
Out Of Band Emission(Left)

GFSK_DH5_Channel Hopping

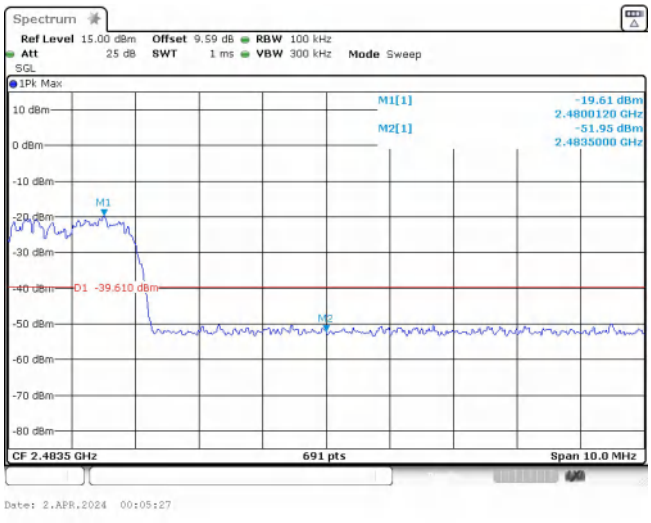


Out Of Band Emission(Left)

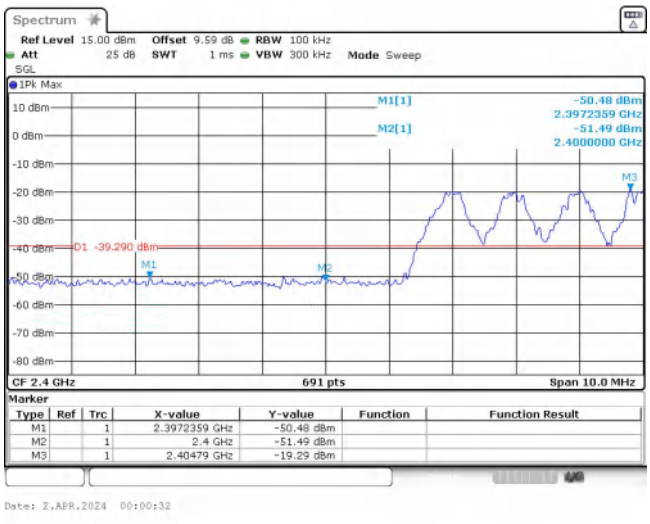
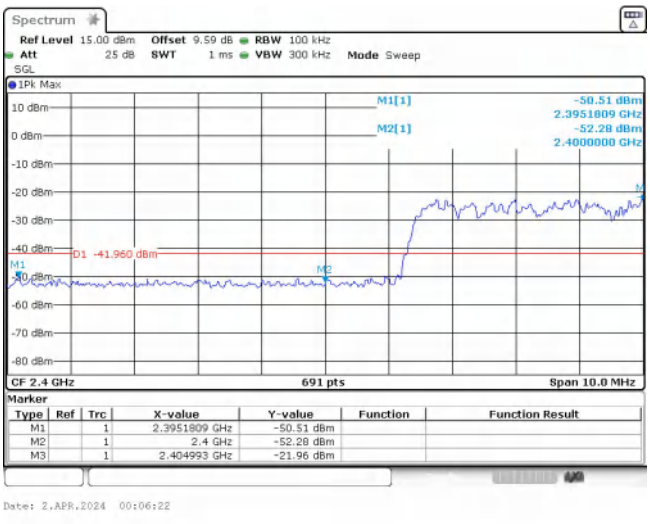
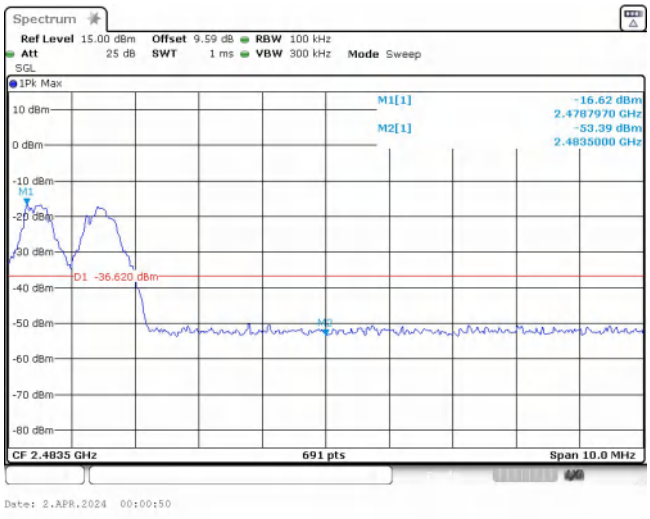
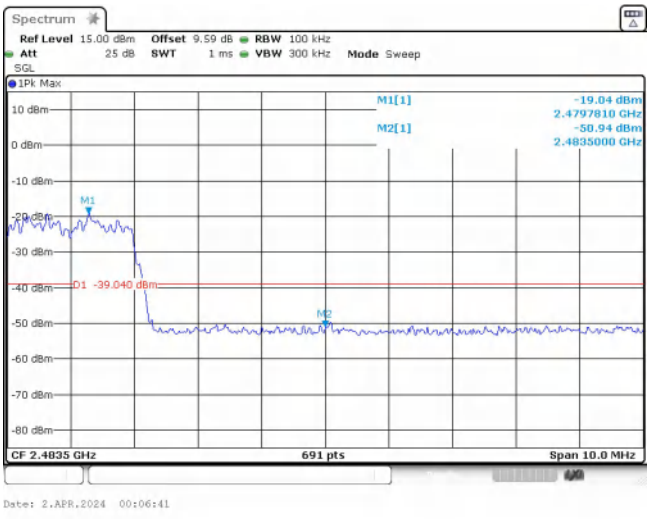
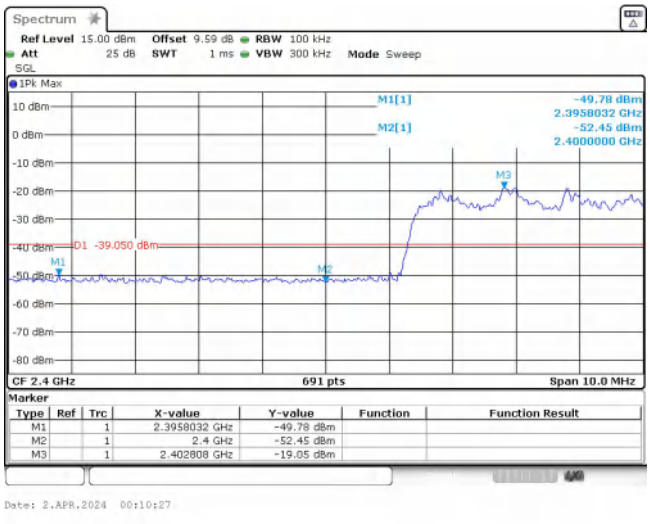
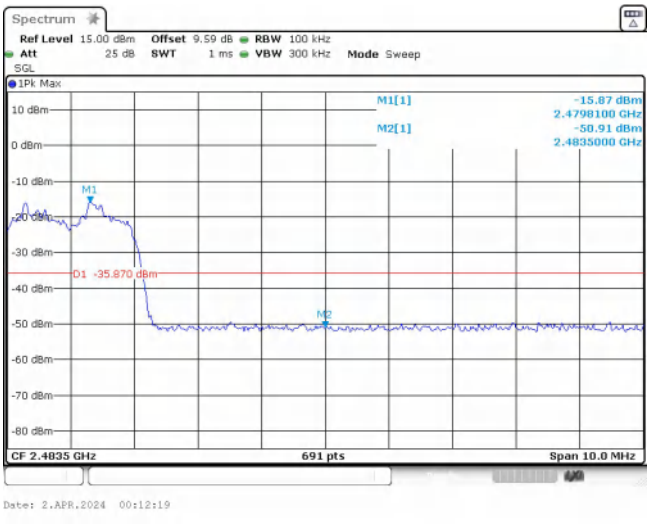
π/4DQPSK_2-DH5_Channel Hopping

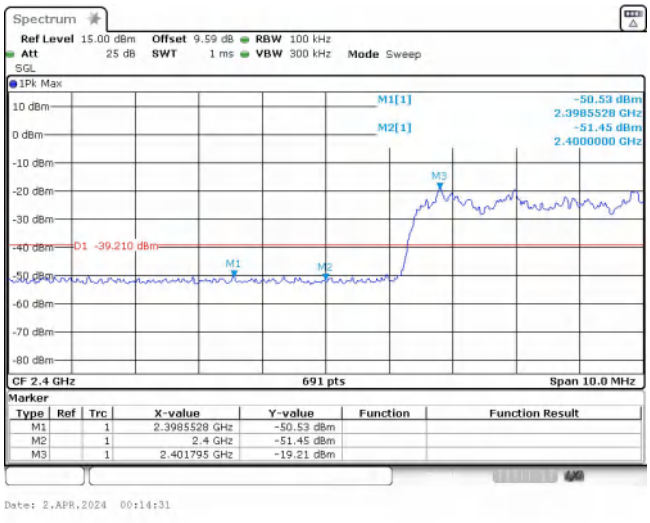
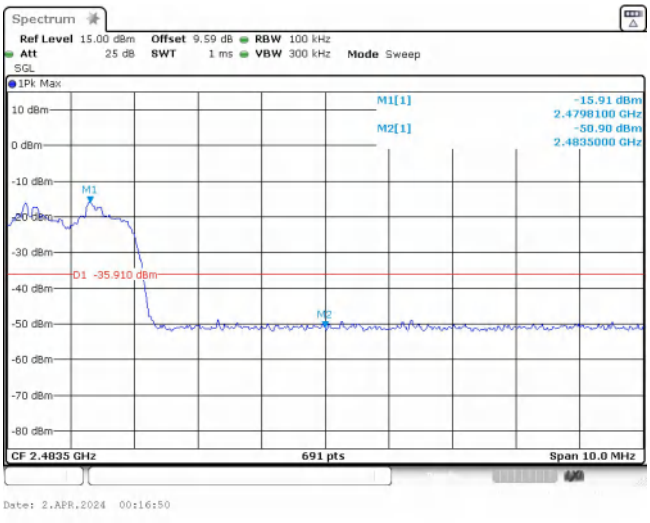


Out Of Band Emission(Right)



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)

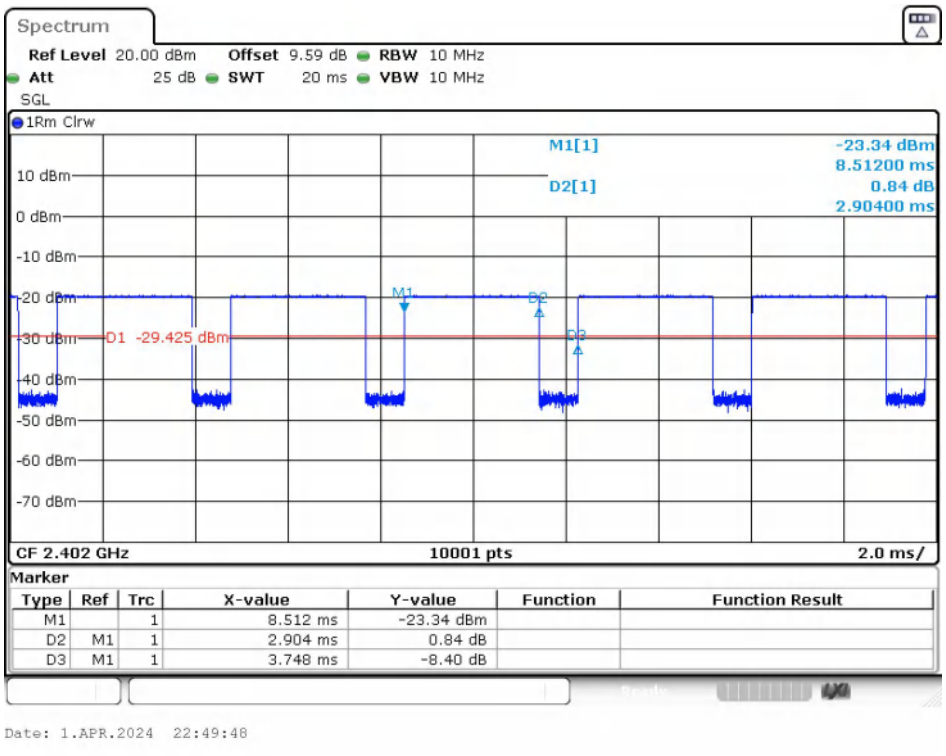
8DPSK_3-DH5_Channel Hopping	8DPSK_3-DH5_Channel Hopping
	
Out Of Band Emission(Left) 8DPSK_3-DH5_Channel Hopping	Out Of Band Emission(Right) 8DPSK_3-DH5_Channel Hopping

6) Duty Cycle

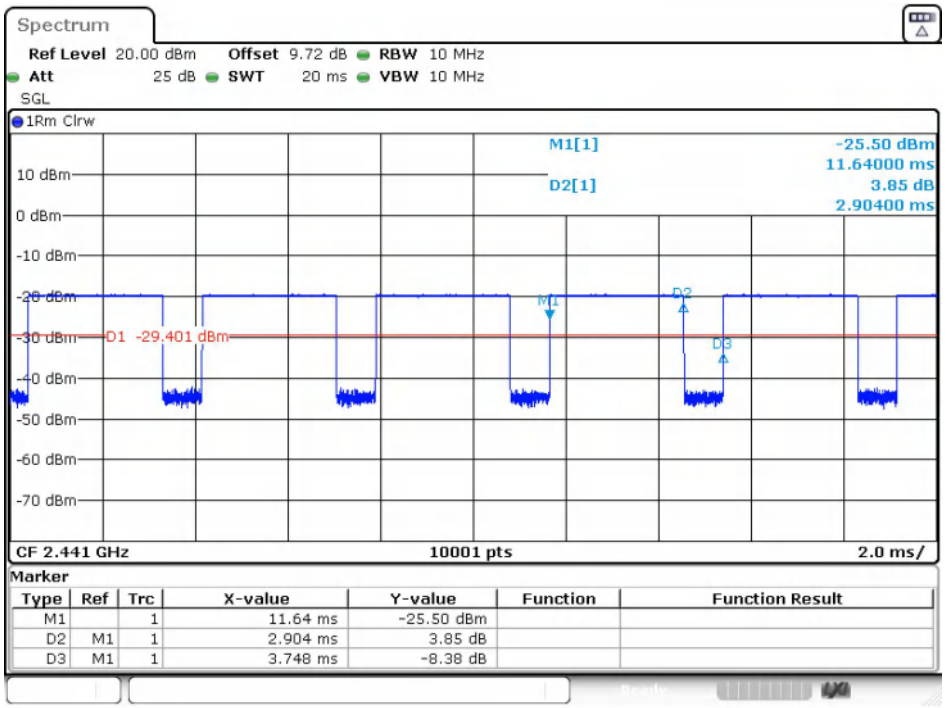
Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.904	3.748	77.48	0.7748	1.1081	0.34
		39	2.904	3.748	77.48	0.7748	1.1081	0.34
		78	2.904	3.748	77.48	0.7748	1.1081	0.34
π/4DQPSK	2-DH5	0	2.910	3.748	77.64	0.7764	1.0991	0.34
		39	2.910	3.748	77.64	0.7764	1.0991	0.34
		78	2.910	3.748	77.64	0.7764	1.0991	0.34
8DPSK	3-DH5	0	2.914	3.748	77.75	0.7775	1.093	0.34
		39	2.912	3.748	77.69	0.7769	1.0963	0.34
		78	2.912	3.748	77.69	0.7769	1.0963	0.34

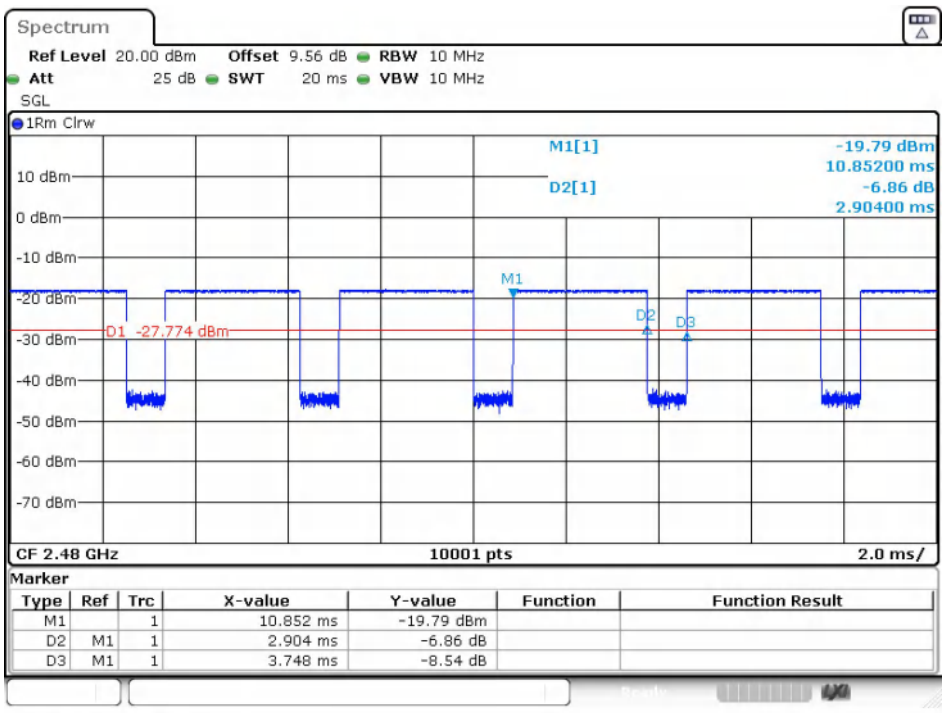
Test Graphs



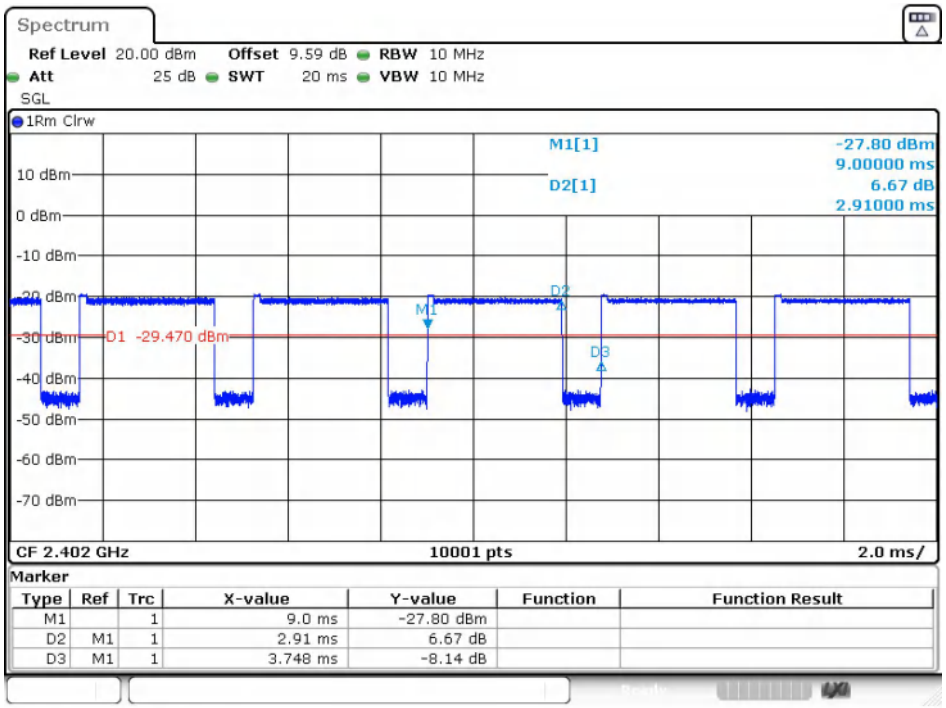
GFSK(DH5)_Channel 0



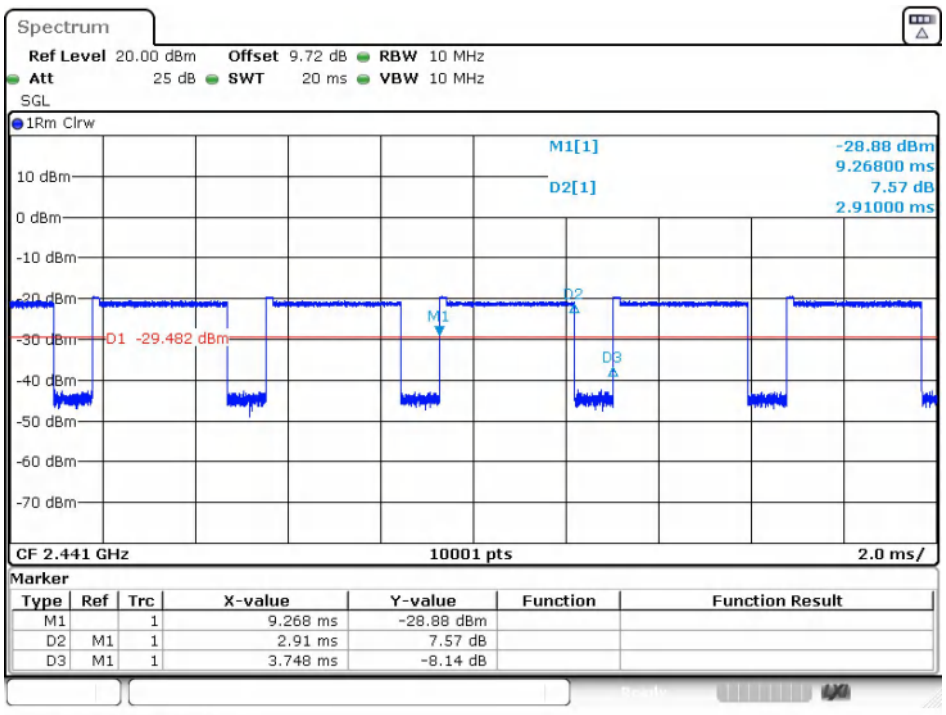
GFSK(DH5)_Channel 39



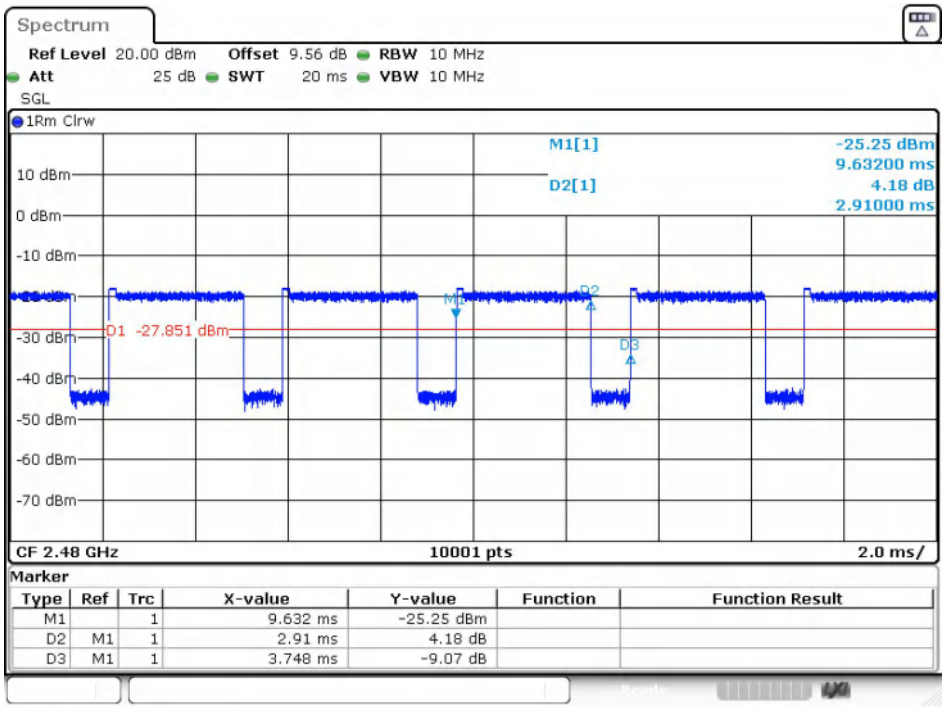
GFSK(DH5)_Channel 78



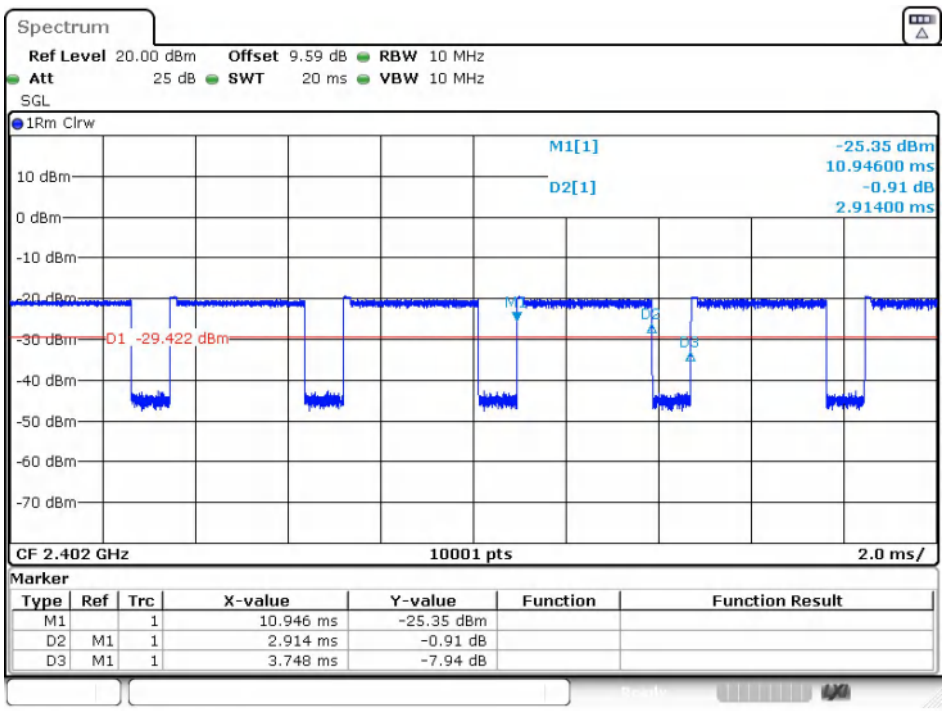
π/4DQPSK(2-DH5)_Channel 0



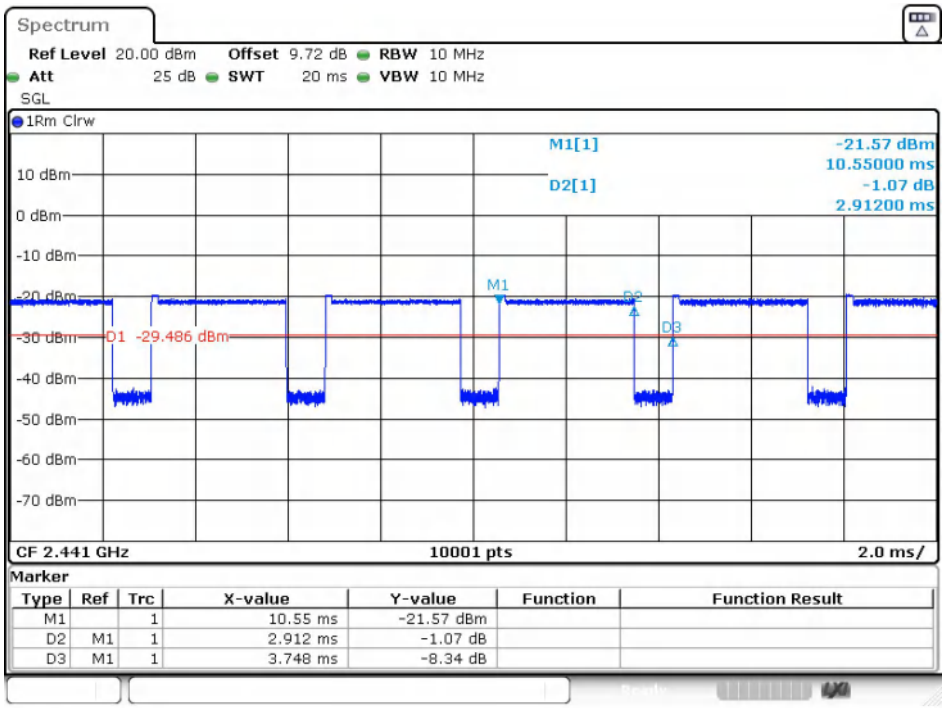
π/4DQPSK(2-DH5)_Channel 39



π/4DQPSK(2-DH5)_Channel 78

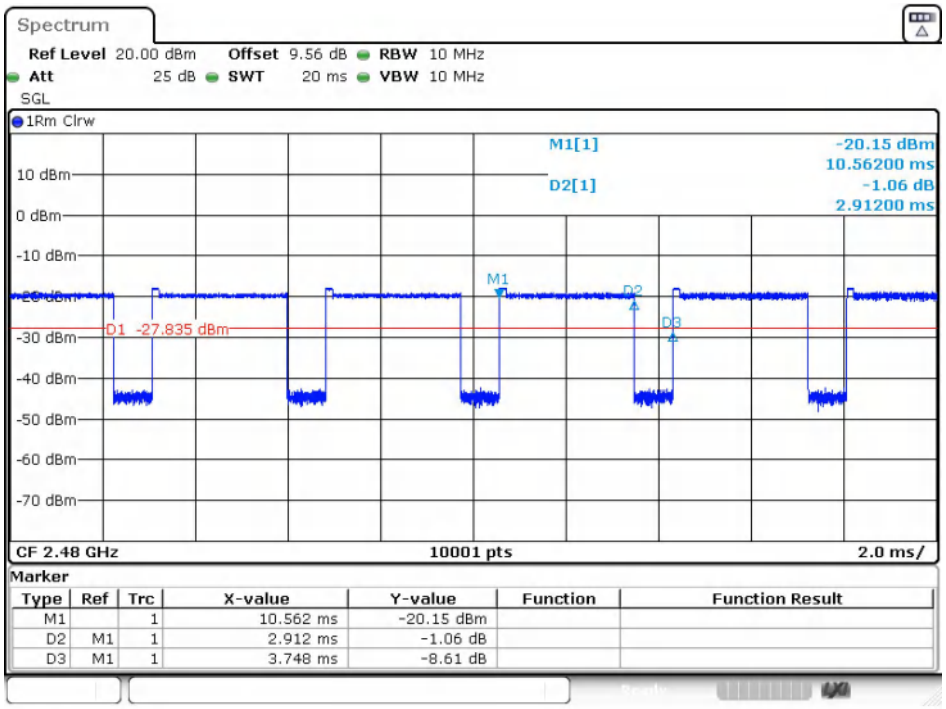


8DPSK(3-DH5)_Channel 0



Date: 1.APR.2024 23:17:16

8DPSK(3-DH5)_Channel 39



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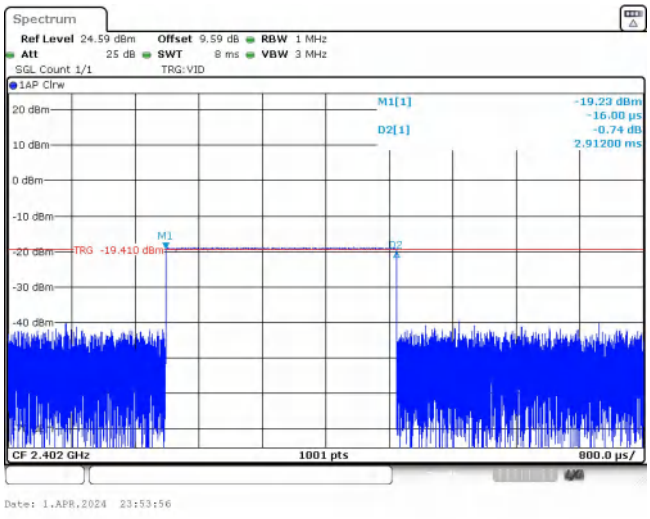
8DPSK(3-DH5)_Channel 78

7) Dwell Time

Test Result

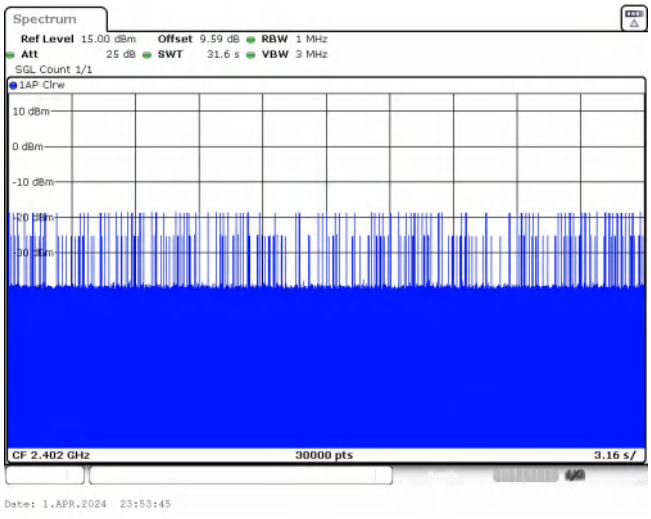
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.912	115	334.88	< 400	PASS
π/4DQPSK	2-DH5		2.912	108	314.5		PASS
8DPSK	3-DH5		2.912	102	297.02		PASS

Test Graphs



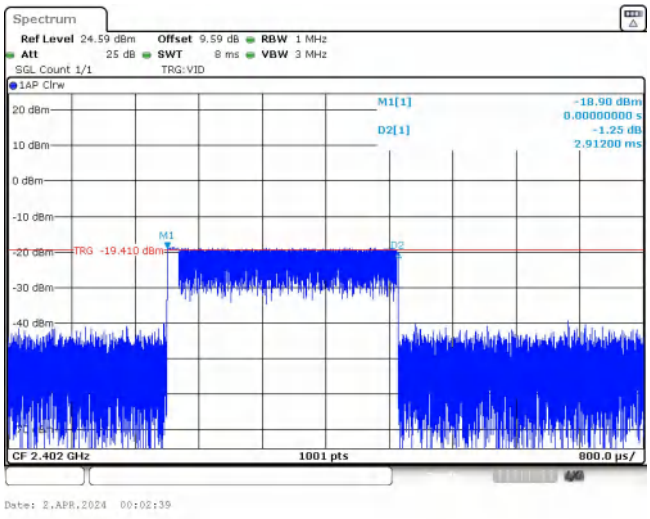
Pulse Width

GFSK_DH5



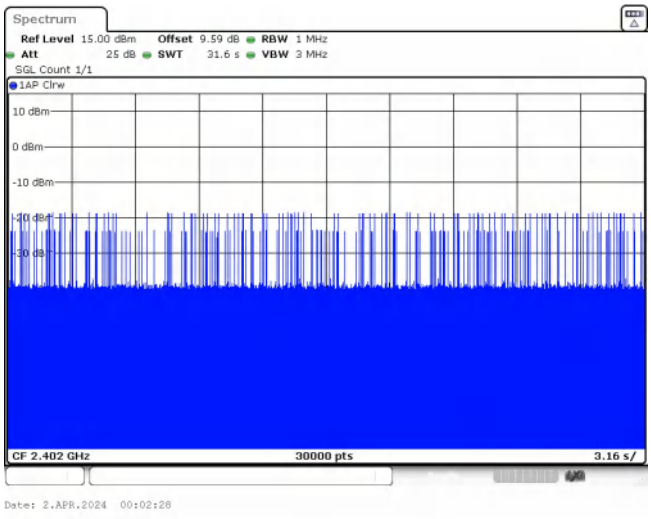
Number of Pulses in 31.6 seconds

GFSK_DH5



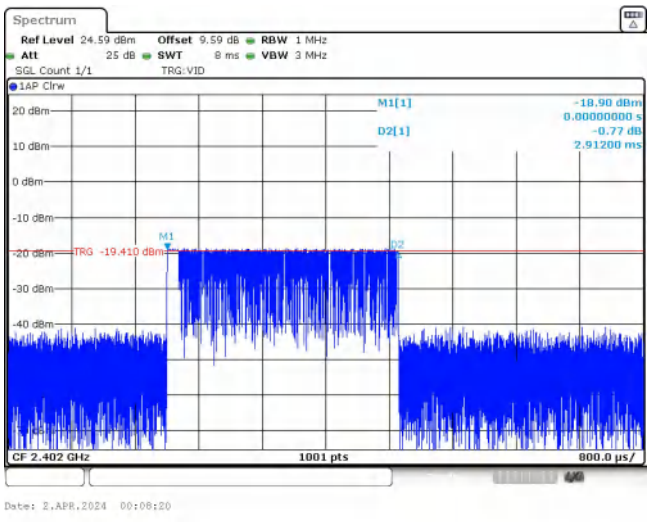
Pulse Width

π/4DQPSK_2-DH5



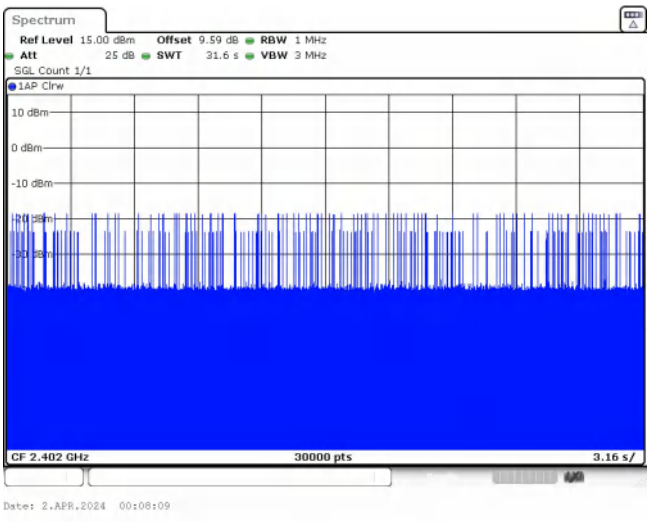
Number of Pulses in 31.6 seconds

π/4DQPSK_2-DH5



Pulse Width

8DPSK_3-DH5



Number of Pulses in 31.6 seconds

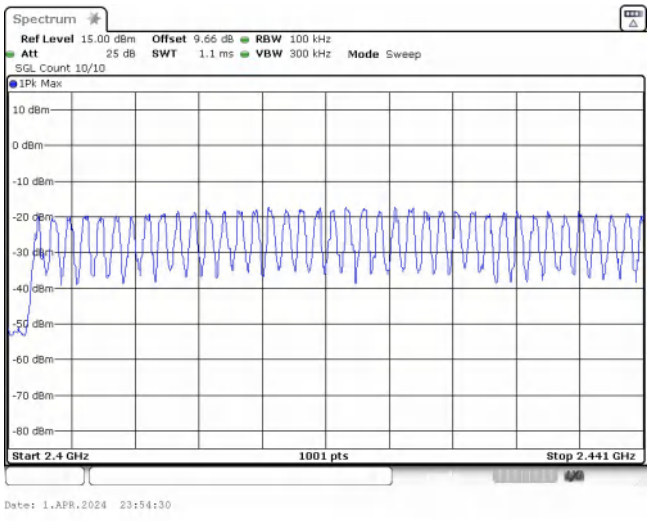
8DPSK_3-DH5

8) Number Of Hopping Channel

Test Result

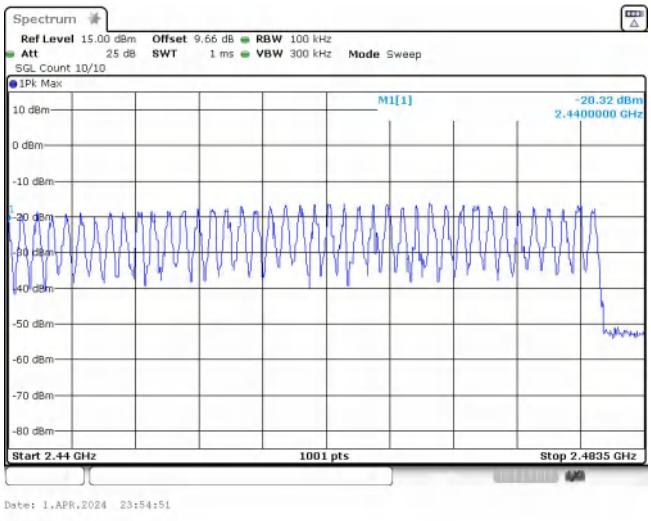
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
π/4DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs



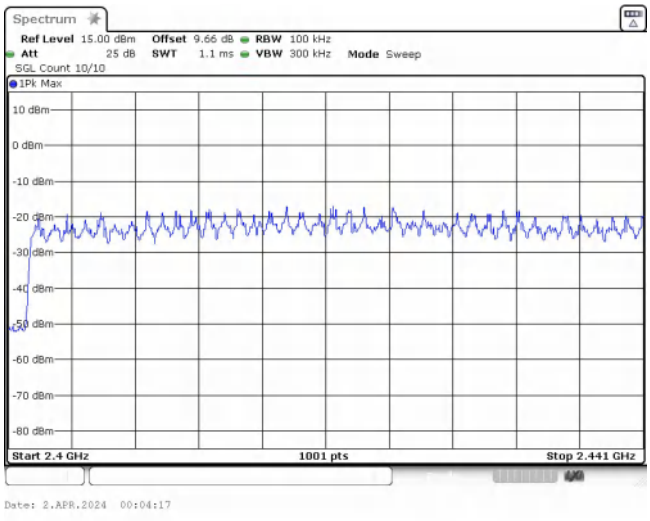
Low End Spectrum Channel Hopping Plot

GFSK



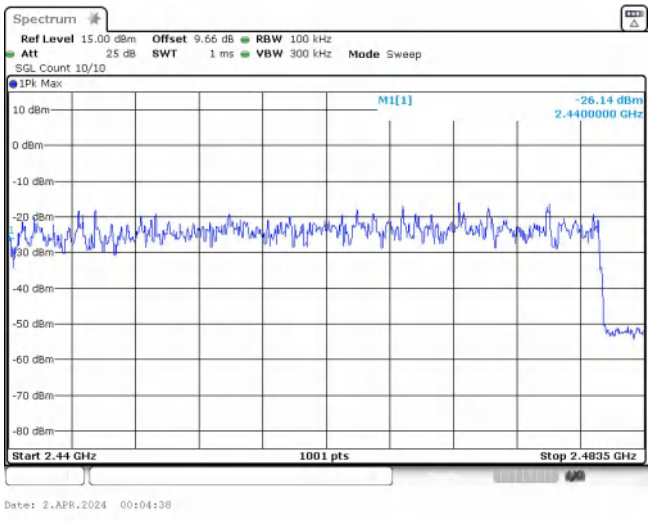
High End Spectrum Channel Hopping Plot

GFSK



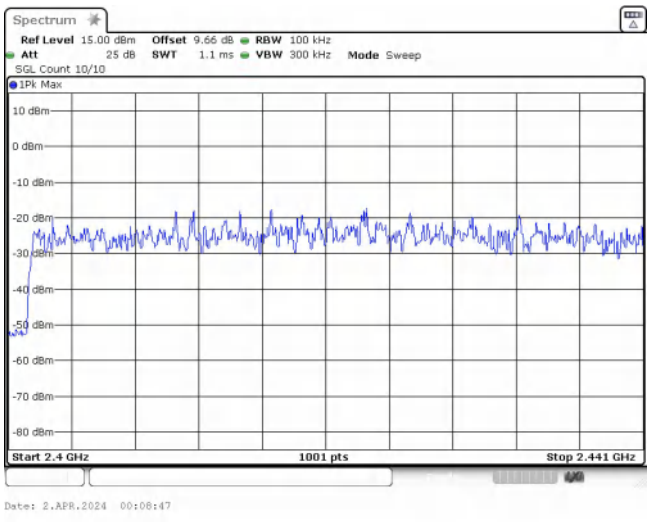
Low End Spectrum Channel Hopping Plot

π/4DQPSK



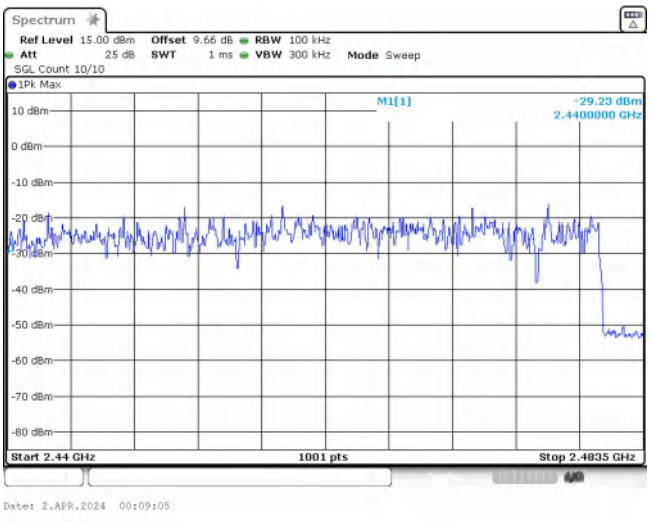
High End Spectrum Channel Hopping Plot

π/4DQPSK



Low End Spectrum Channel Hopping Plot

8DPSK



High End Spectrum Channel Hopping Plot

8DPSK