Appendix A

Report No.:	CISRR23121910901
FCC ID:	2BECV-B152
Product Name:	Speaker Set
Model No.:	B152
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

1) Conducted Peak Output Power

Test Result

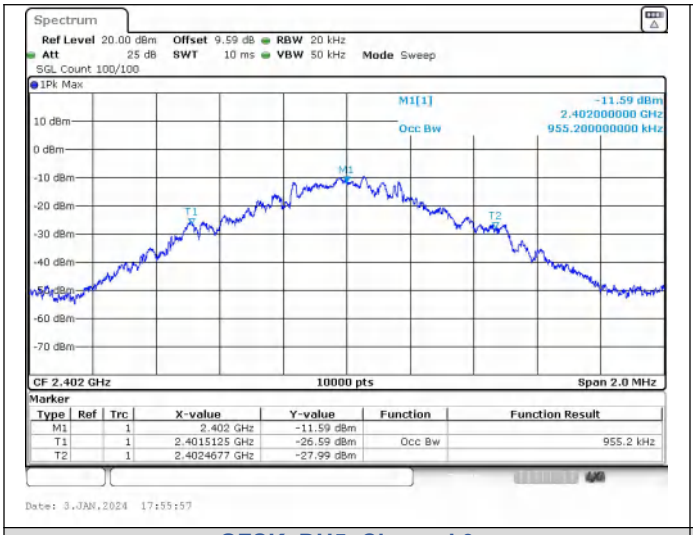
Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	-0.564	0.878	30	PASS
		39	0.123	1.029		PASS
		78	-0.995	0.795		PASS
π/4DQPSK	2-DH5	0	0.311	1.074	20.97	PASS
		39	1.111	1.292		PASS
		78	-0.014	0.997		PASS
8DPSK	3-DH5	0	0.532	1.130		PASS
		39	1.242	1.331		PASS
		78	0.180	1.042		PASS

2) 99% Bandwidth

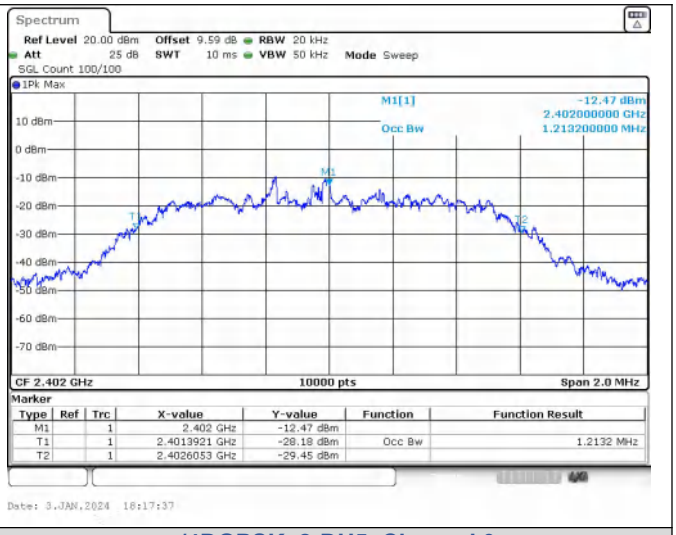
Test Result

Modulation	Channel	99% BW (MHz)
GFSK	0	0.95520
	39	0.95640
	78	0.96040
π/4DQPSK	0	1.2130
	39	1.2140
	78	1.2300
8DPSK	0	1.1890
	39	1.1920
	78	1.2160

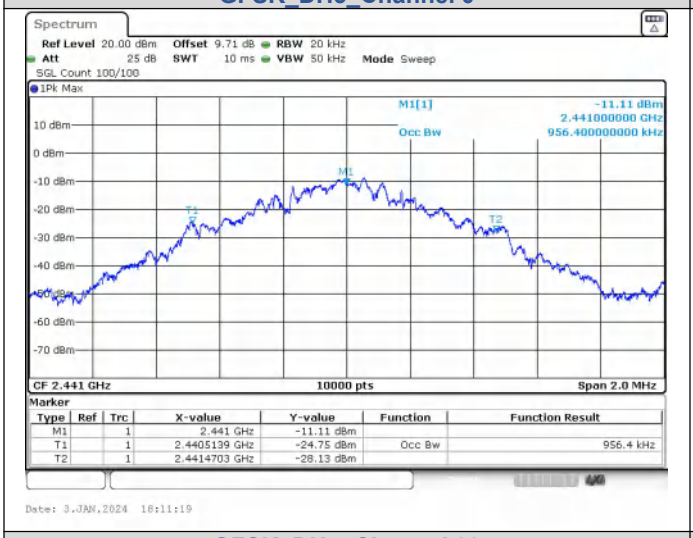
Test Graphs



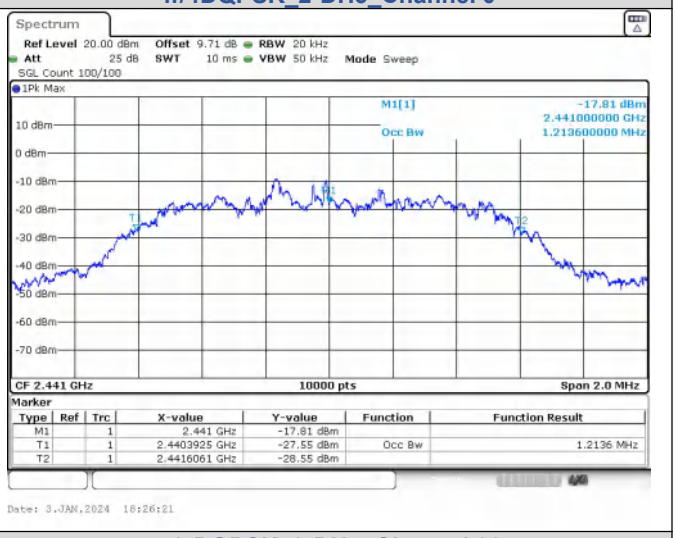
GFSK_DH5_Channel 0



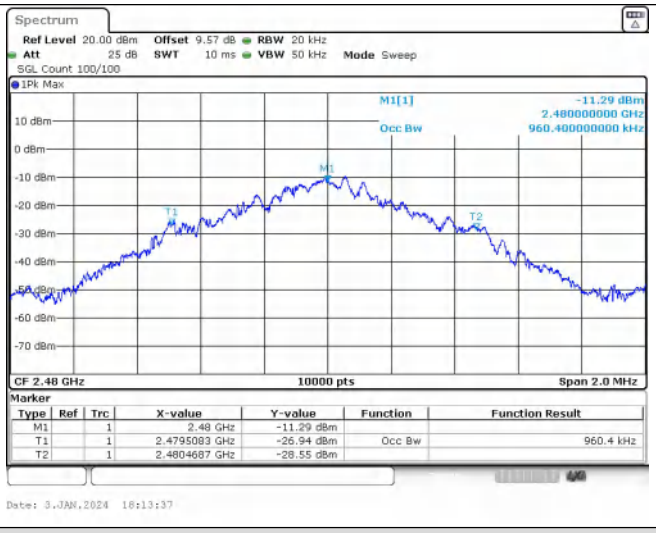
π/4DQPSK_2-DH5_Channel 0



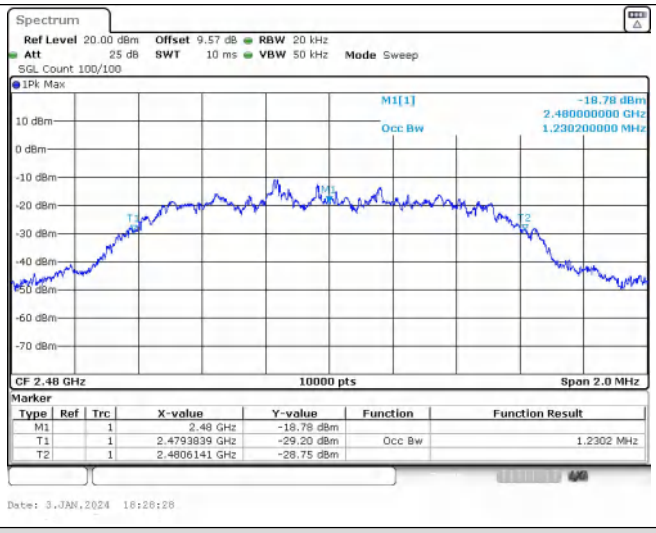
GFSK_DH5_Channel 39



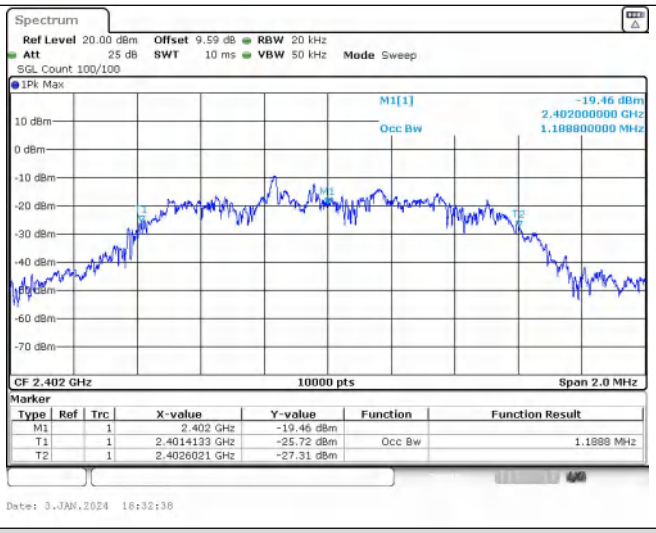
π/4DQPSK_2-DH5_Channel 39



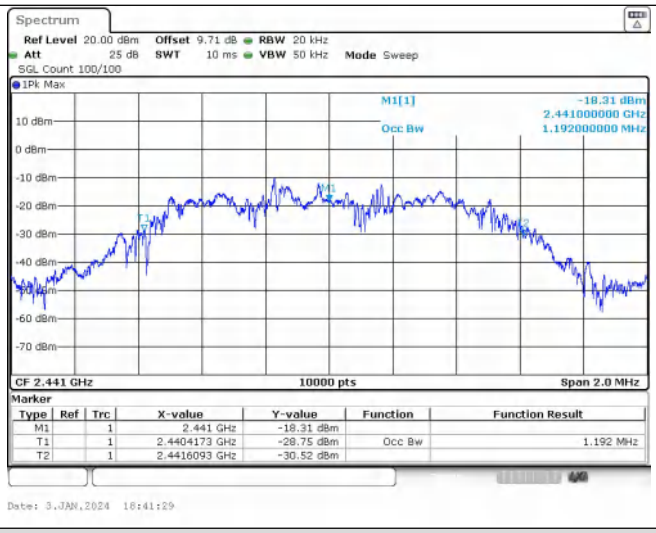
GFSK_DH5_Channel 78



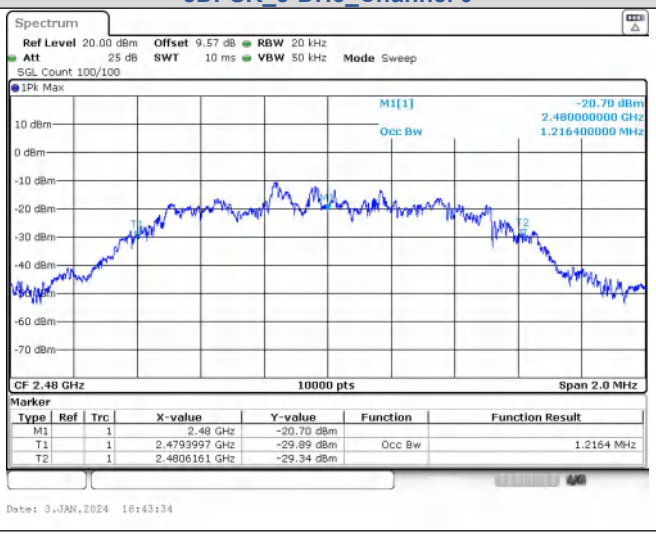
π/4DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



Void

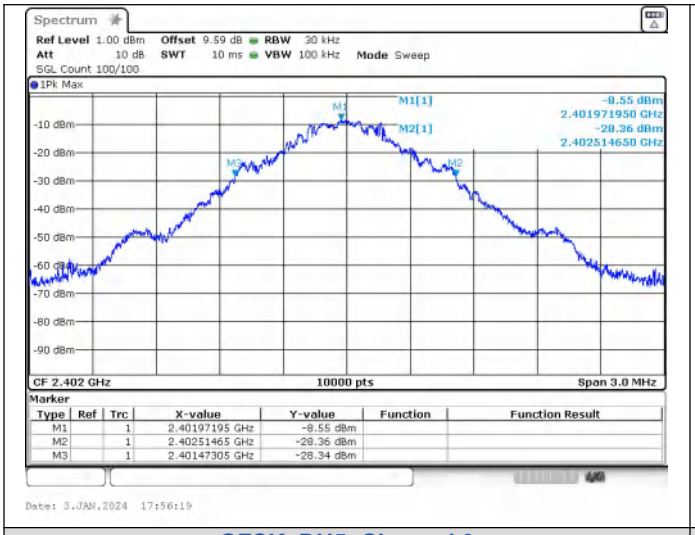
8DPSK_3-DH5_Channel 78	

3) 20dB Bandwidth

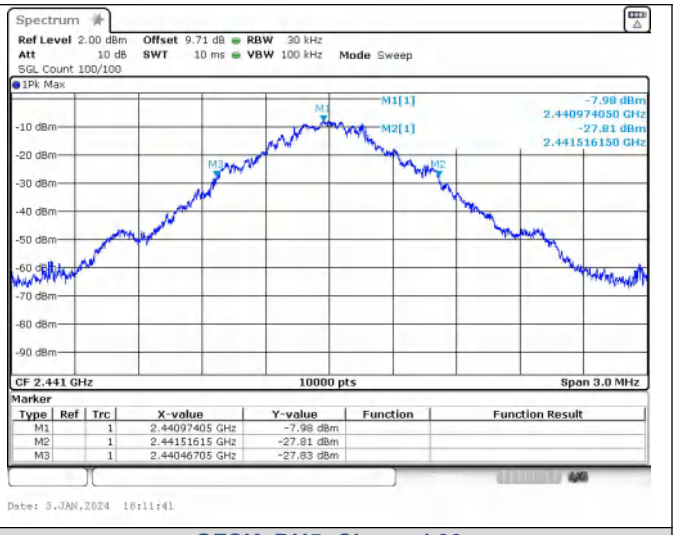
Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.040
	39	2441 MHz	1.050
	78	2480 MHz	1.060
π/4DQPSK	0	2402 MHz	1.320
	39	2441 MHz	1.300
	78	2480 MHz	1.330
8DPSK	0	2402 MHz	1.310
	39	2441 MHz	1.290
	78	2480 MHz	1.300

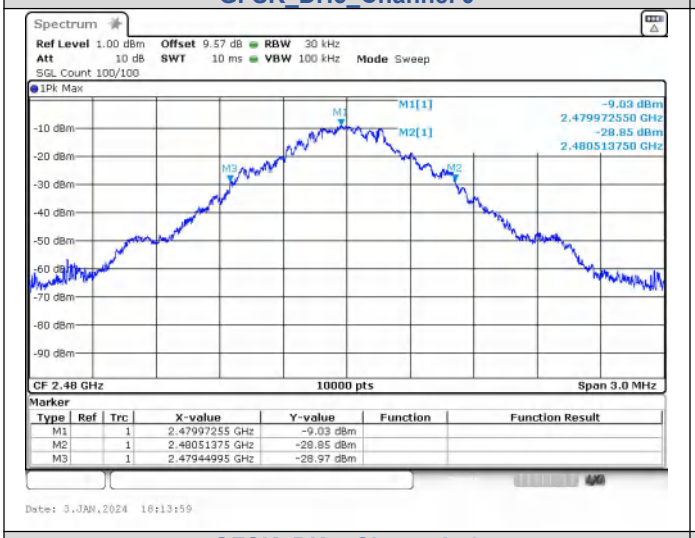
Test Graphs



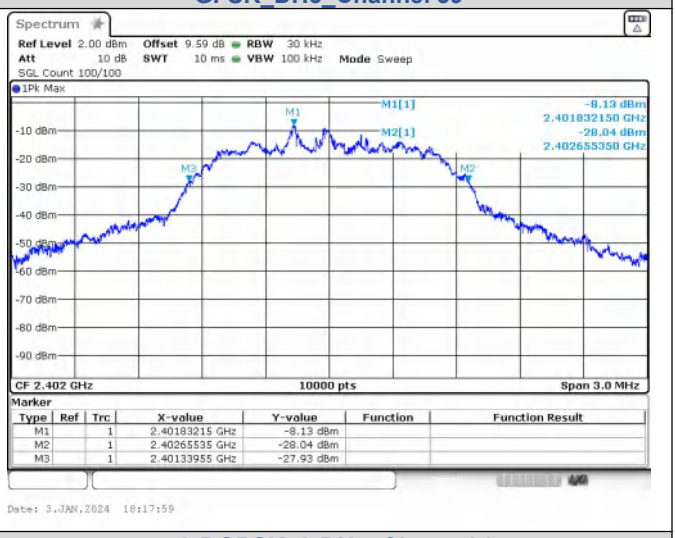
GFSK_DH5_Channel 0



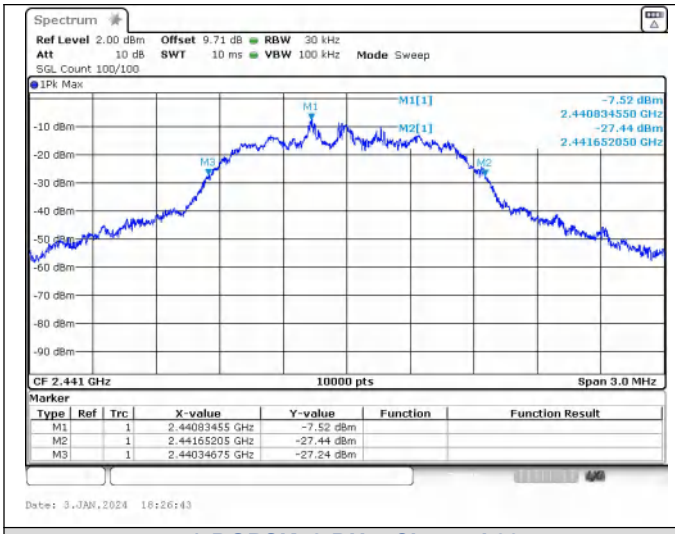
GFSK_DH5_Channel 39



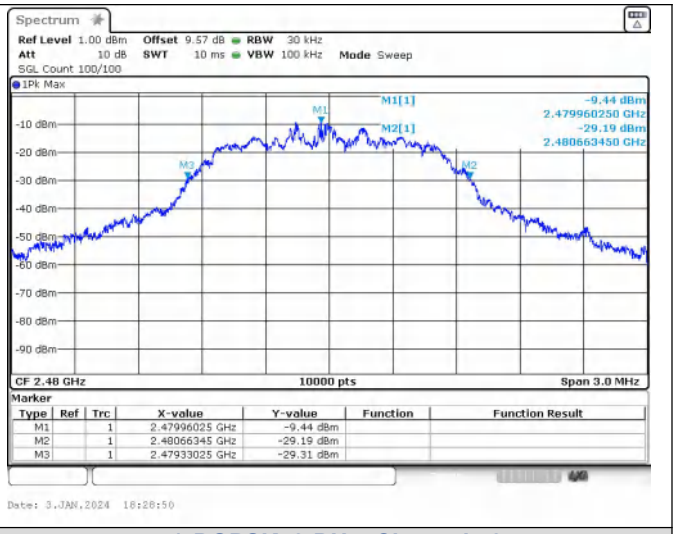
GFSK_DH5_Channel 78



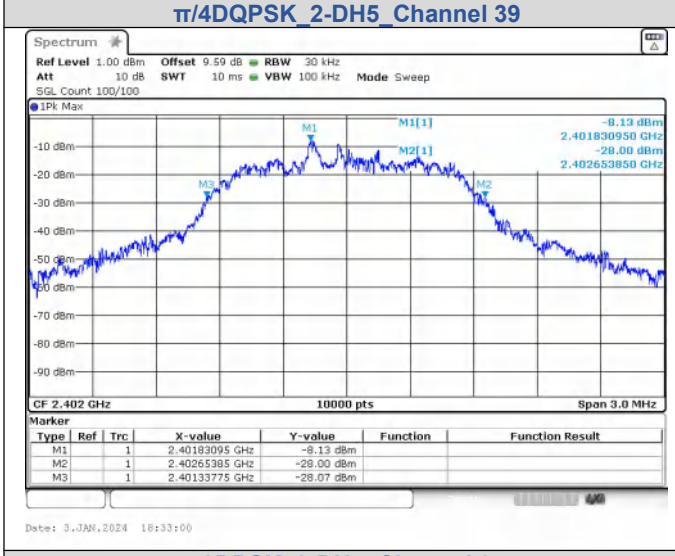
π/4DQPSK_2-DH5_Channel 0



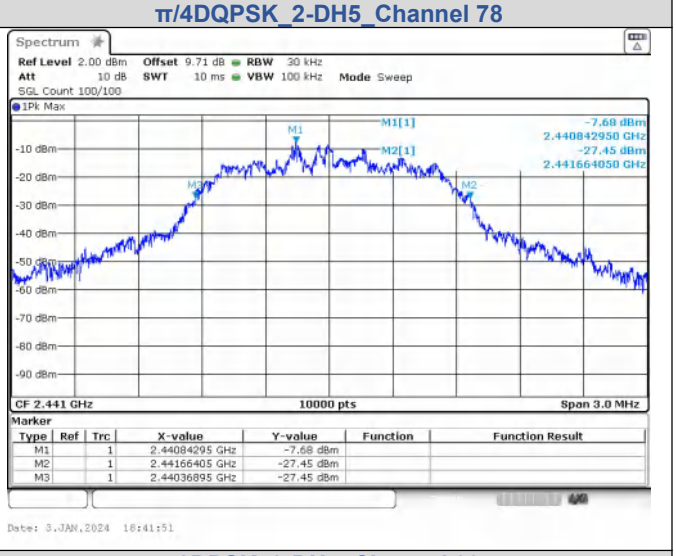
π/4DQPSK_2-DH5_Channel 39



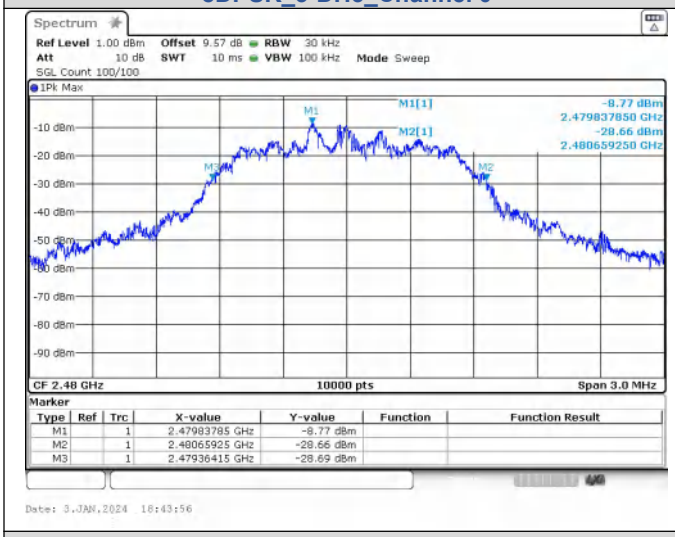
π/4DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



8DPSK_3-DH5_Channel 78

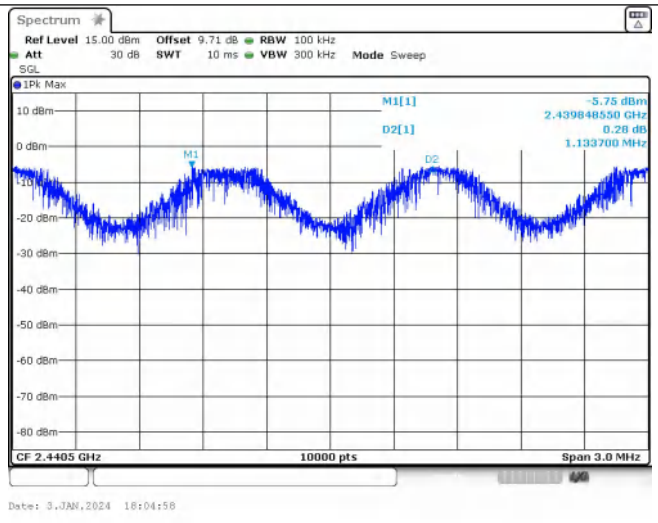
Void

4) Carrier Frequencies Separation

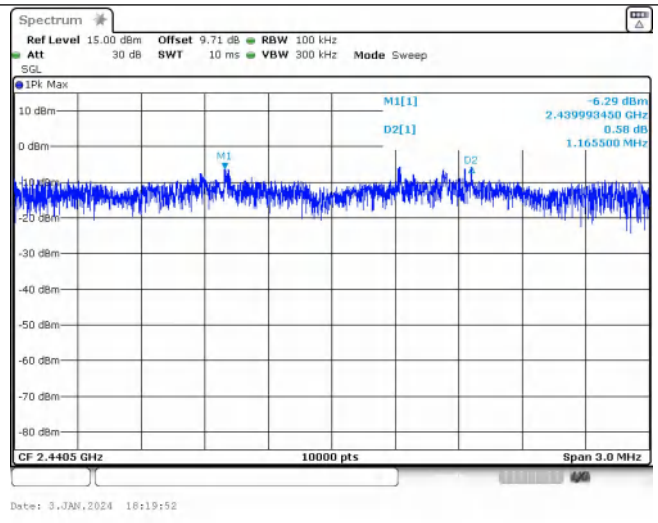
Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2439.8486	2440.9823	1.1337	0.693	PASS
π/4DQPSK	2-DH5	2439.9934	2441.159	1.1655	0.88	PASS
8DPSK	3-DH5	2440.1269	2441.1716	1.0446	0.873	PASS

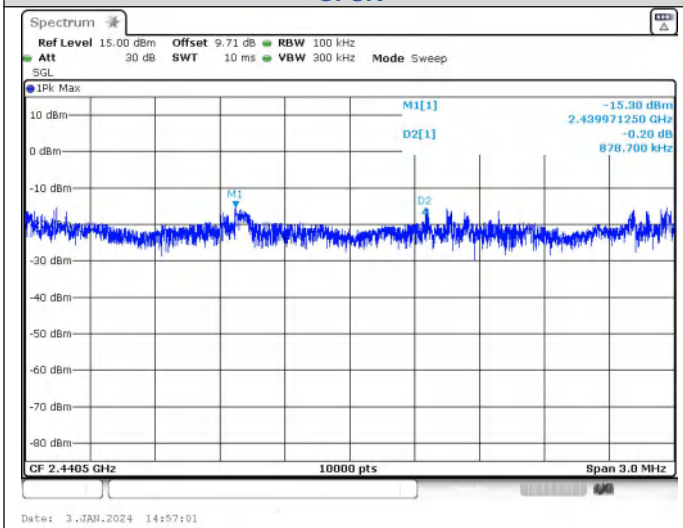
Test Graphs



GFSK



π/4DQPSK



8DPSK

Void

5) Conducted Out Of Band Emission

Test Result

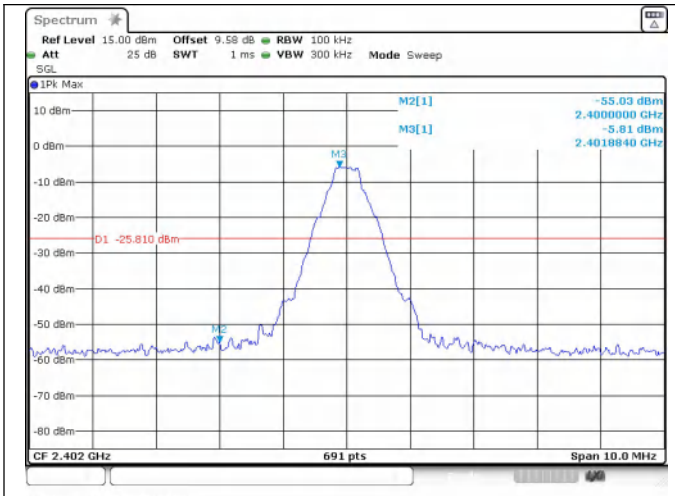
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-55.027	-25.81	-29.217	PASS
			9608.08	-50.946	-25.81	-25.136	PASS
		39	9763.72	-45.584	-25.24	-20.344	PASS
		78	2483.50	-57.654	-26.18	-31.474	PASS
			9920.20	-50.361	-26.18	-24.181	PASS
π/4DQPSK	2-DH5	0	2400.00	-55.911	-25.9	-30.011	PASS
			2397.64	-55.718	-25.9	-29.818	PASS
			9608.10	-50.249	-25.9	-24.349	PASS
		39	9763.72	-45.755	-24.84	-20.915	PASS
		78	2483.50	-57.114	-26.02	-31.095	PASS
			9920.20	-47.257	-26.02	-21.237	PASS
8DPSK	3-DH5	0	2400.00	-57.812	-25.35	-32.462	PASS
			2398.76	-55.572	-25.35	-30.222	PASS
			9608.10	-49.372	-25.35	-24.022	PASS
		39	9763.72	-44.918	-24.69	-20.228	PASS
		78	2483.50	-57.826	-25.79	-32.036	PASS
			9920.20	-49.690	-25.79	-23.900	PASS

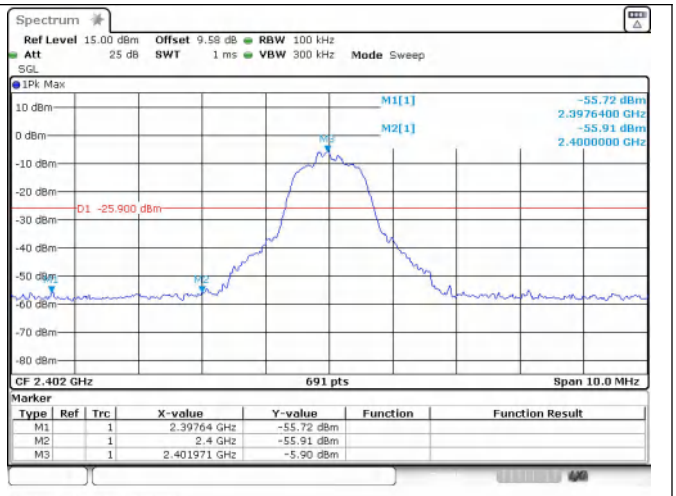
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2395.50	-55.109	-25.82	-29.289	PASS
			2400.00	-56.897	-25.82	-31.077	PASS
			2483.50	-56.718	-26.18	-30.538	PASS
			2396.69	-55.661	-25.86	-29.801	PASS
			2400.00	-58.080	-25.86	-32.220	PASS
			2483.50	-57.140	-26.34	-30.800	PASS
π/4DQPSK	2-DH5		2397.21	-55.630	-28.02	-27.610	PASS
			2400.00	-56.686	-28.02	-28.666	PASS
			2483.50	-57.551	-26.49	-31.061	PASS
			2395.15	-54.943	-26.2	-28.743	PASS
			2400.00	-56.434	-26.2	-30.234	PASS
			2483.50	-56.225	-26.18	-30.045	PASS
8DPSK	3-DH5		2398.28	-53.936	-25.4	-28.536	PASS
			2400.00	-56.045	-25.4	-30.645	PASS
			2483.50	-57.052	-28.5	-28.552	PASS
			2395.41	-55.235	-25.74	-29.495	PASS
			2400.00	-57.419	-25.74	-31.679	PASS
			2483.50	-56.429	-25.86	-30.569	PASS

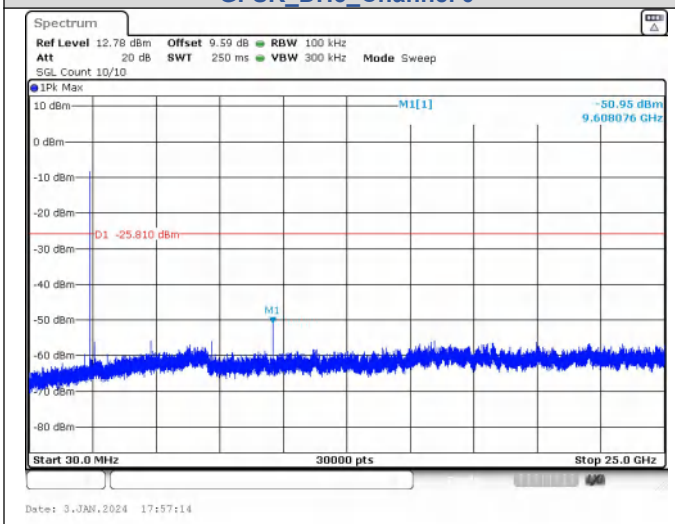
Test Graphs



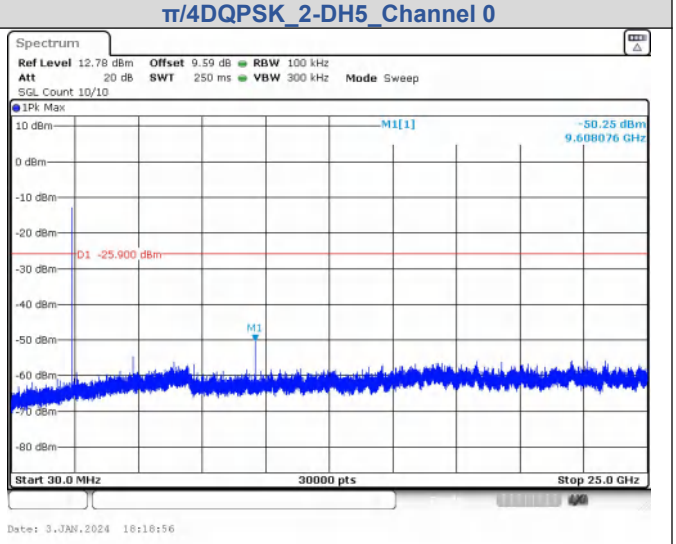
Out Of Band Emission
GFSK_DH5_Channel 0



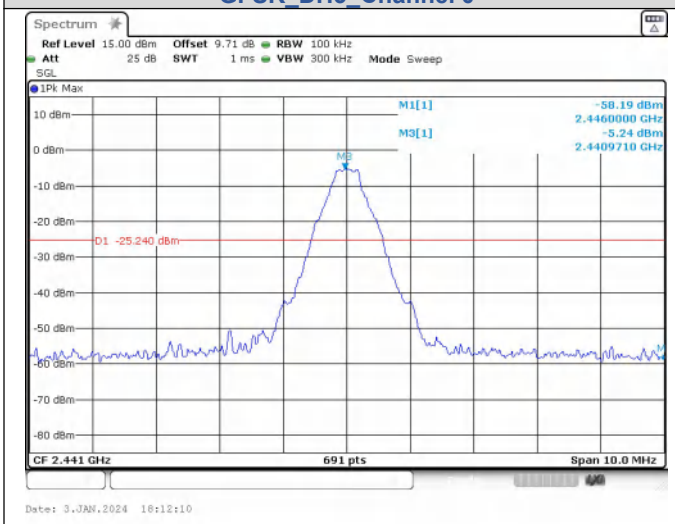
Out Of Band Emission
π/4DQPSK_2-DH5_Channel 0



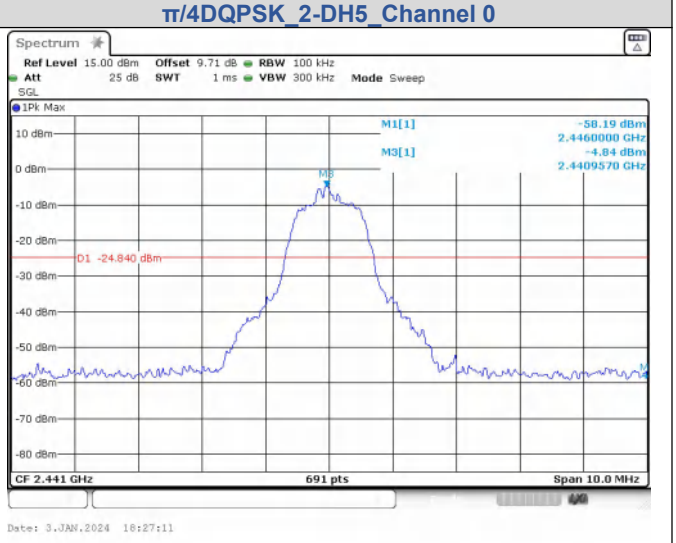
Spurious Emission
GFSK_DH5_Channel 0



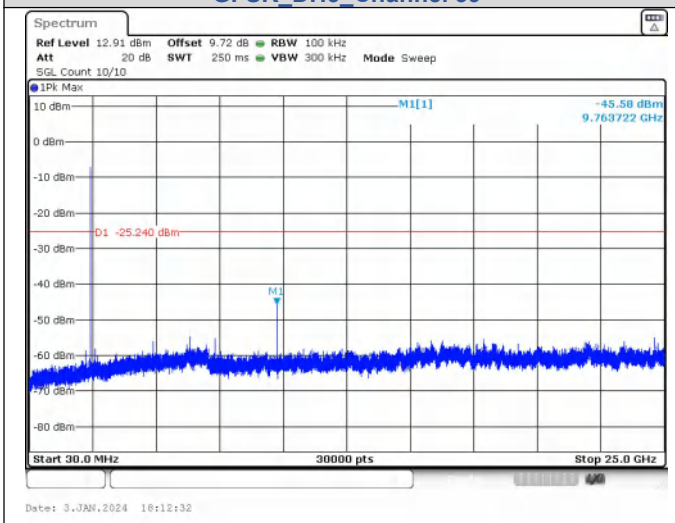
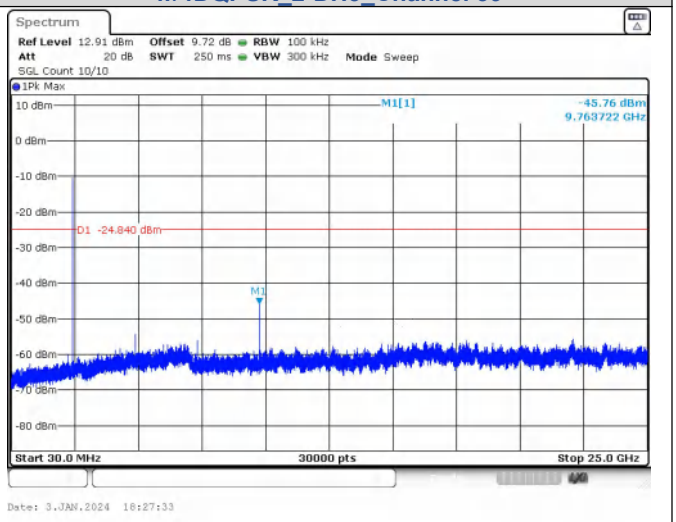
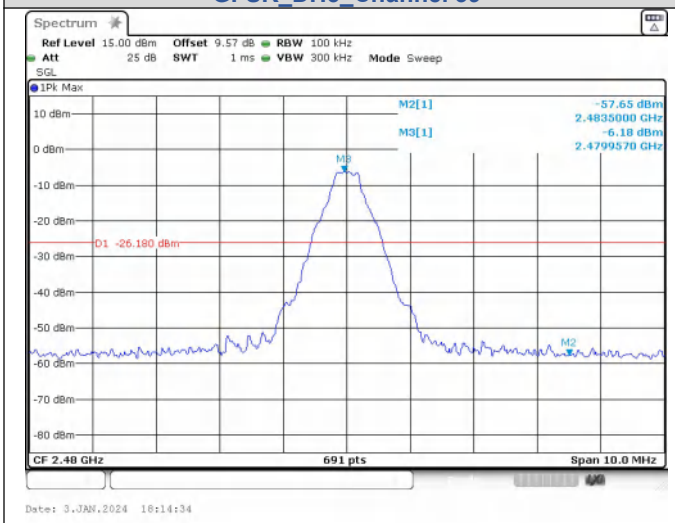
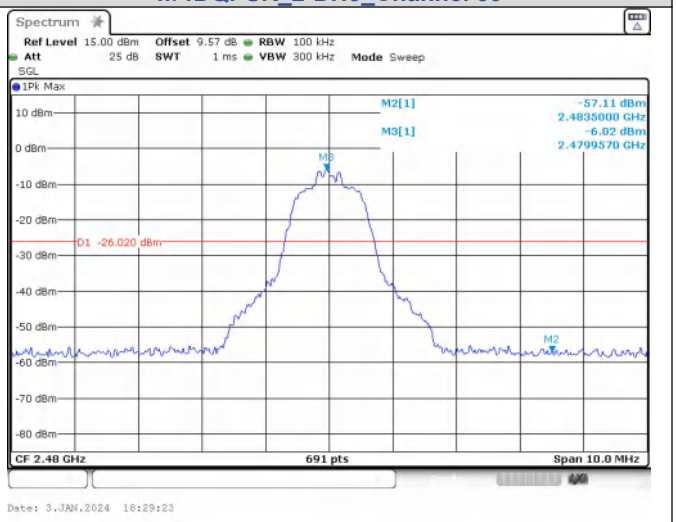
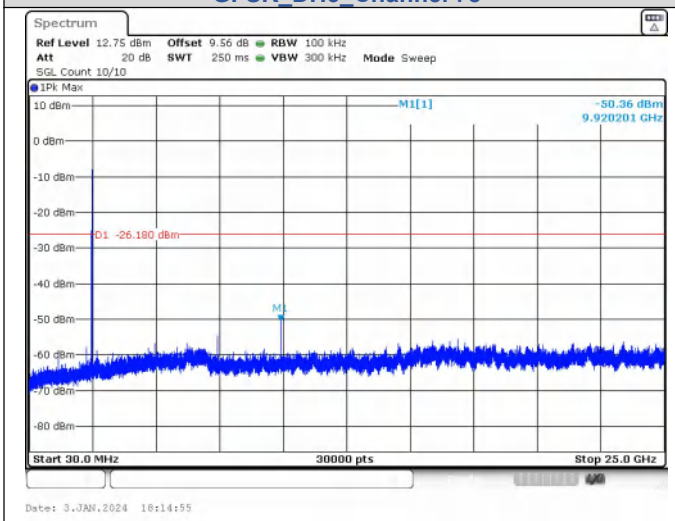
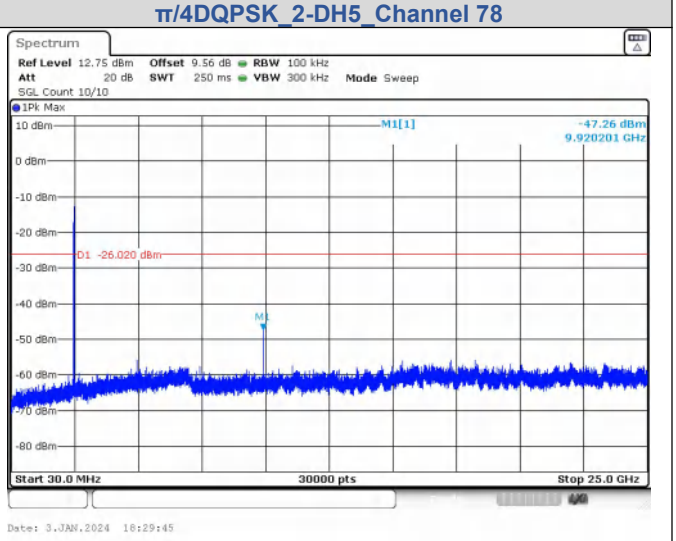
Spurious Emission
π/4DQPSK_2-DH5_Channel 0

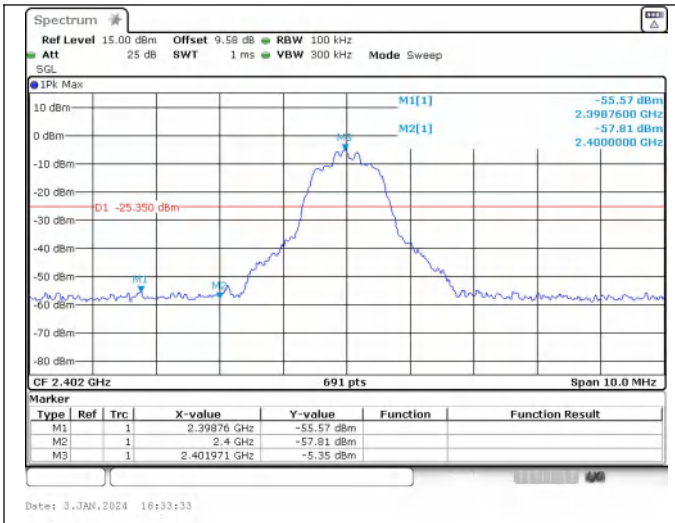
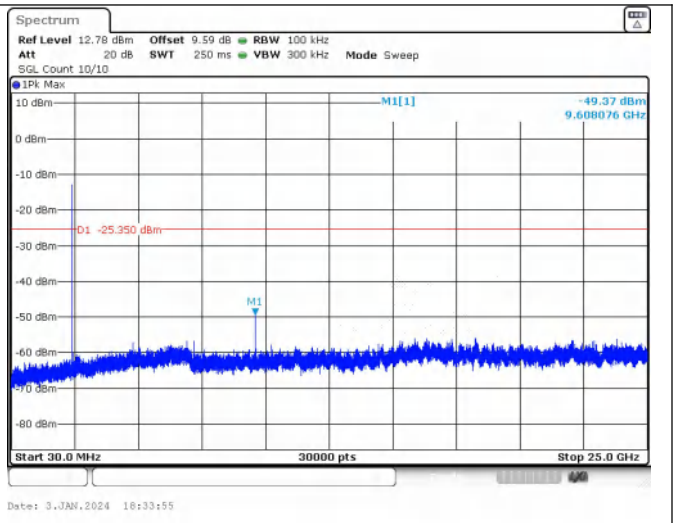
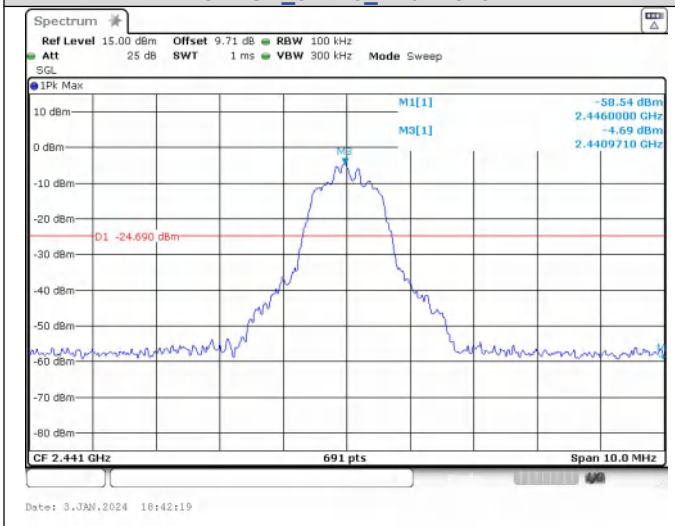
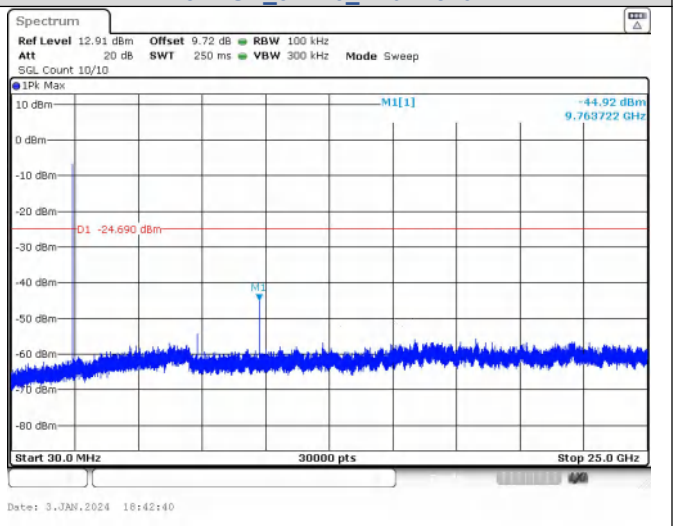


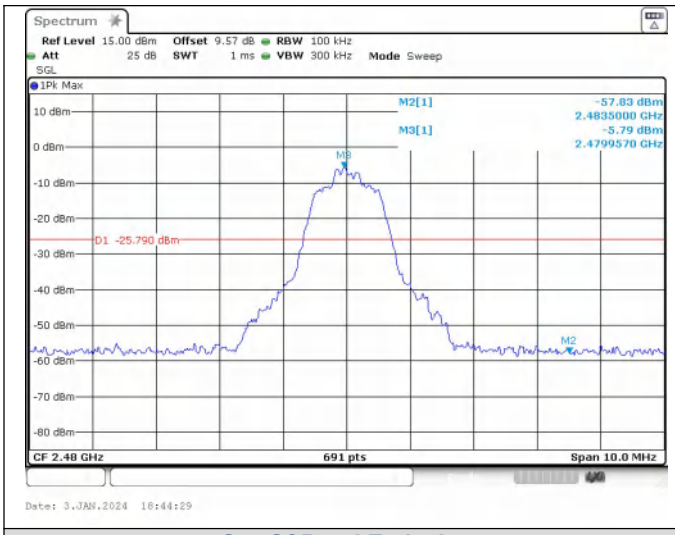
Out Of Band Emission



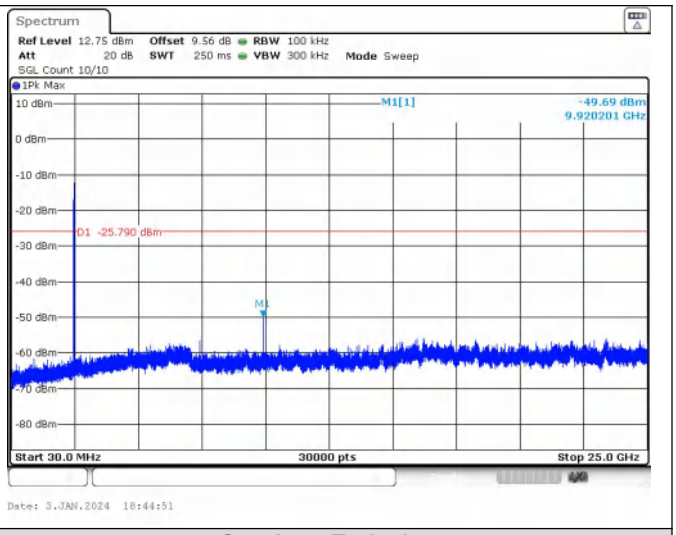
Out Of Band Emission

GFSK_DH5_Channel 39	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**
	

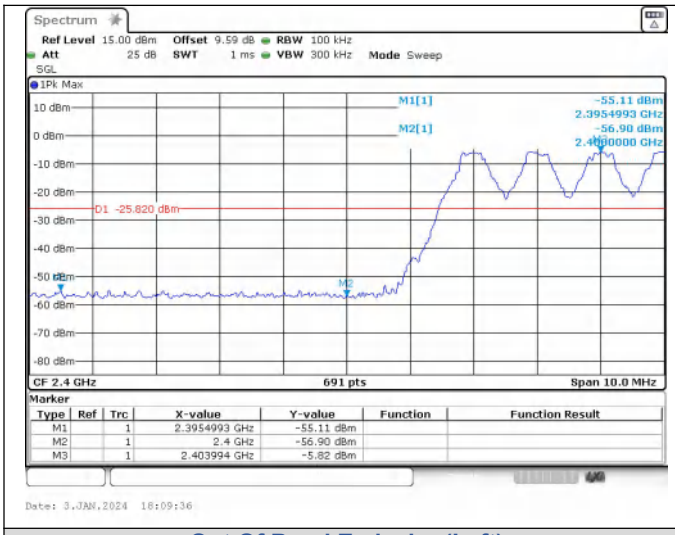
Spurious Emission GFSK_DH5_Channel 78	Spurious Emission π/4DQPSK_2-DH5_Channel 78
	
Out Of Band Emission 8DPSK_3-DH5_Channel 0	Spurious Emission 8DPSK_3-DH5_Channel 0
	
Out Of Band Emission 8DPSK_3-DH5_Channel 39	Spurious Emissions 8DPSK_3-DH5_Channel 39



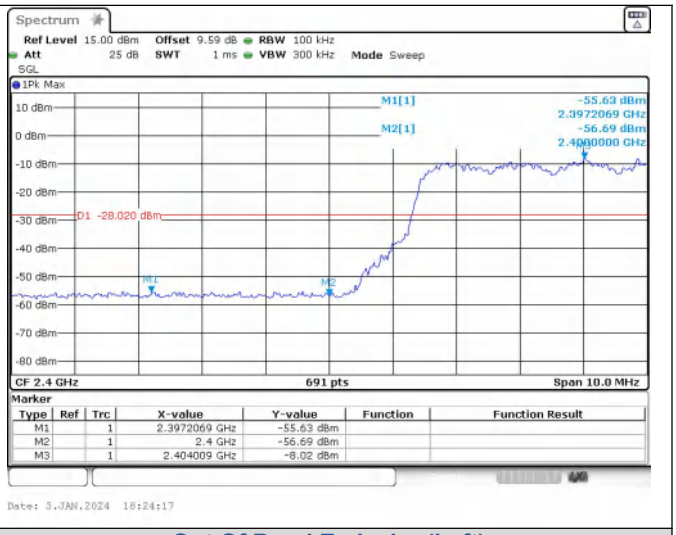
Out Of Band Emission
8DPSK_3-DH5_Channel 78



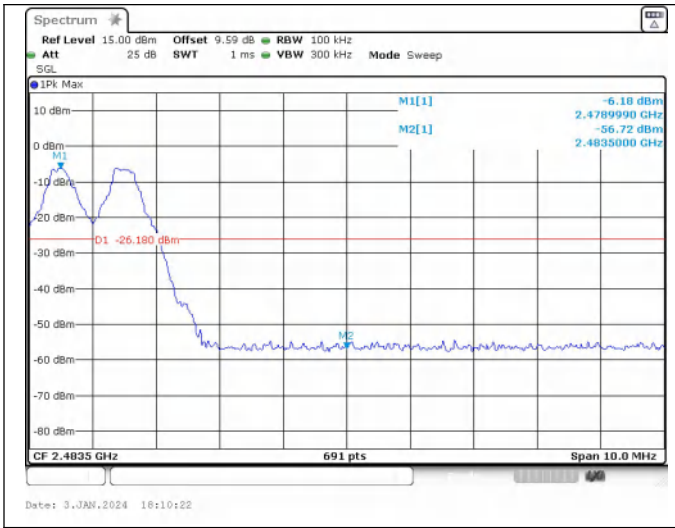
Spurious Emission
8DPSK_3-DH5_Channel 78



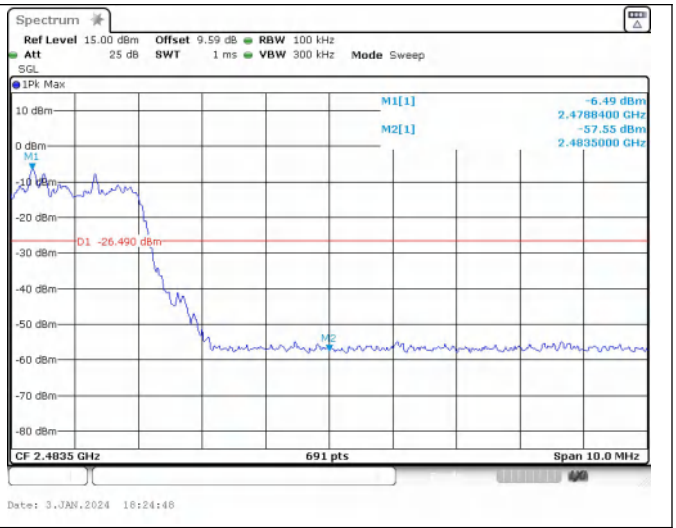
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



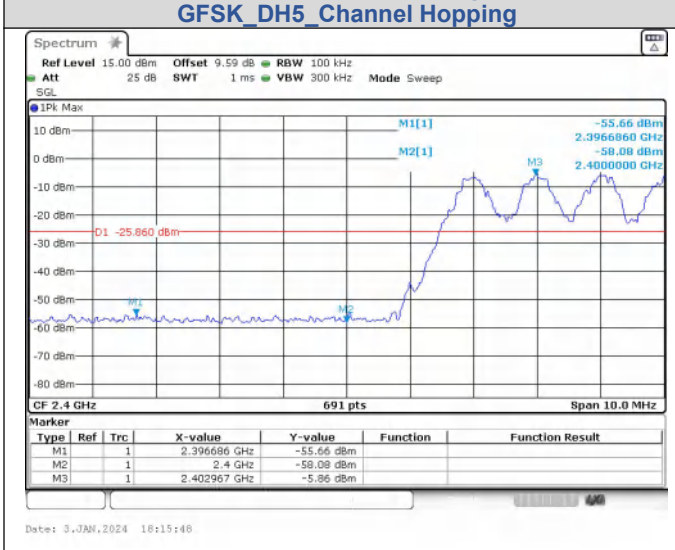
Out Of Band Emission(Left)
π/4DQPSK_2-DH5_Channel Hopping



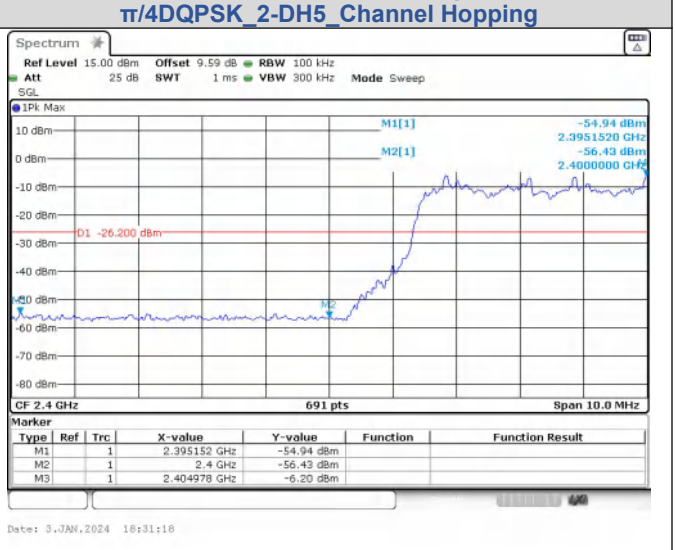
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



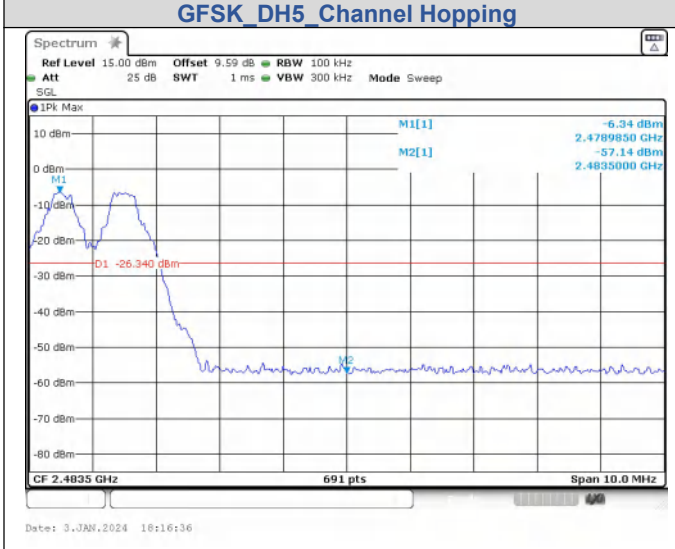
Out Of Band Emission(Right)
π/4DQPSK_2-DH5_Channel Hopping



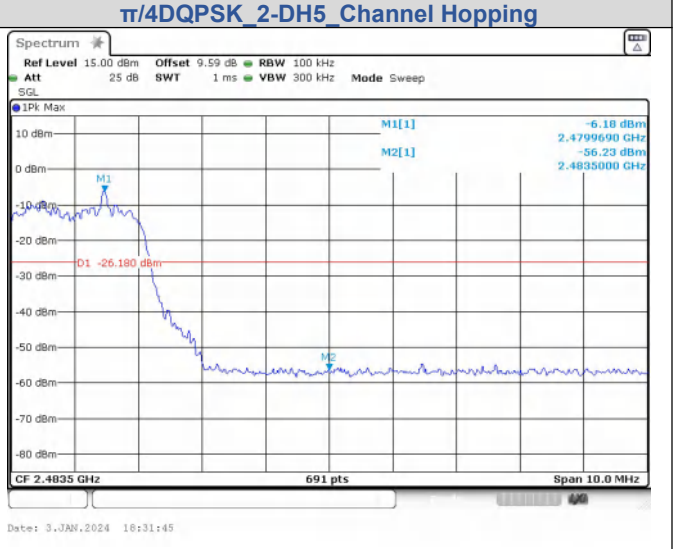
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



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

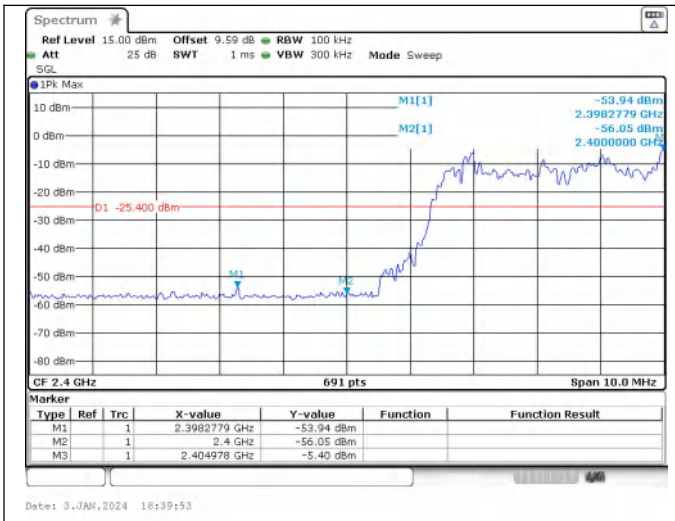


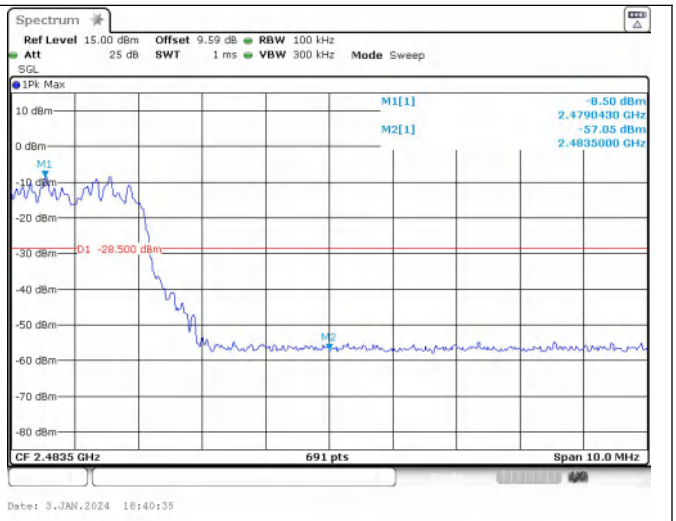
Out Of Band Emission(Right)



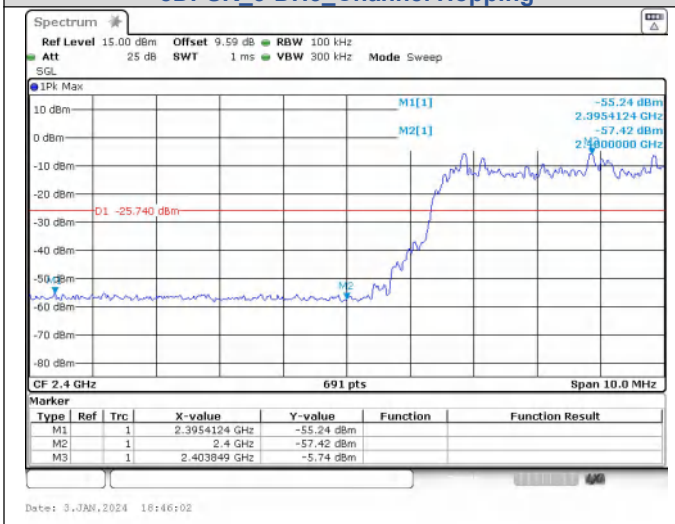
Out Of Band Emission(Right)

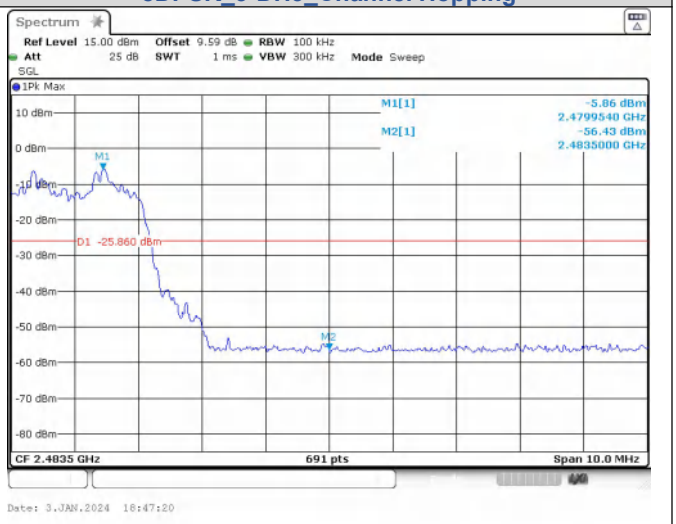
GFSK_DH5_Channel Hopping	π/4DQPSK_2-DH5_Channel Hopping





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





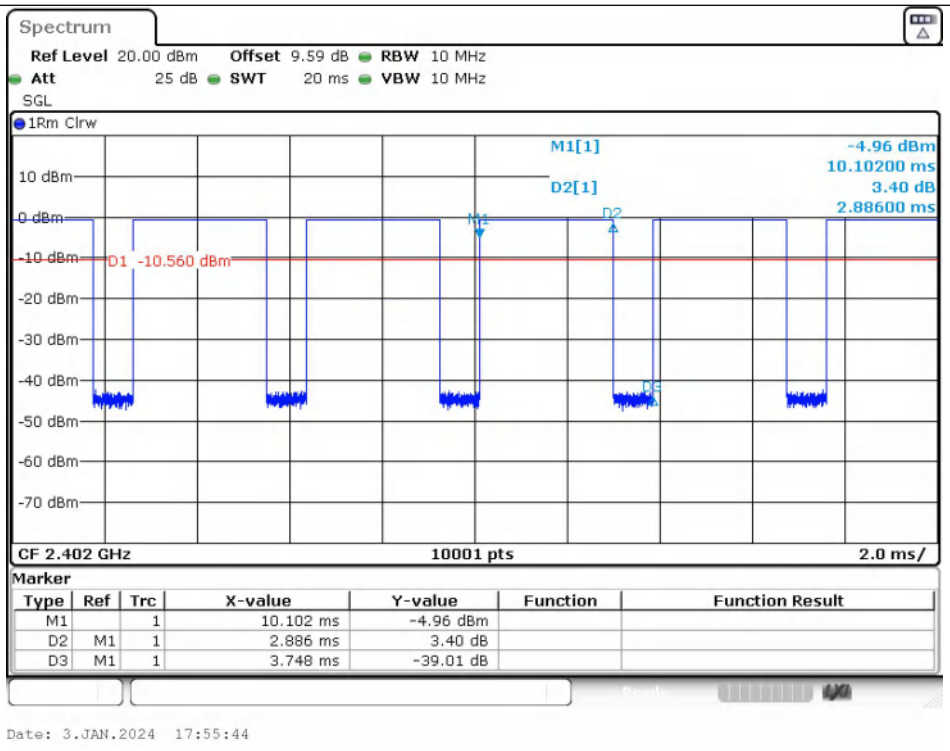
Out Of Band Emission(Left) 8DPSK_3-DH5_Channel Hopping	Out Of Band Emission(Right) 8DPSK_3-DH5_Channel Hopping

6) Duty Cycle

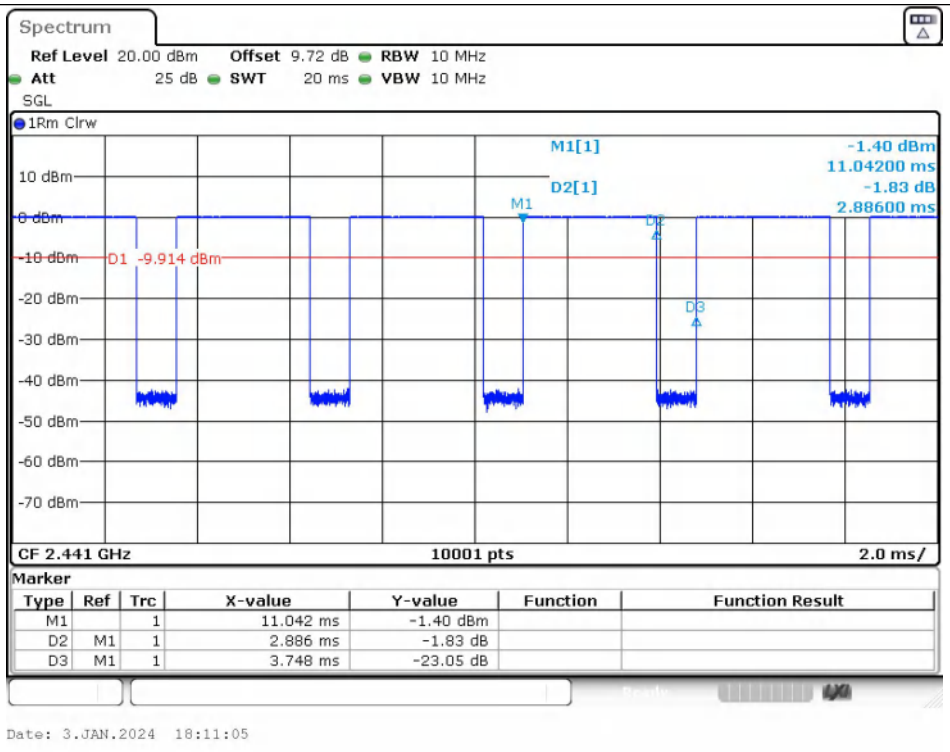
Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)
GFSK	DH5	0	2.886	3.748	77.00	0.7700	1.1351
		39	2.886	3.748	77.00	0.7700	1.1351
		78	2.886	3.748	77.00	0.7700	1.1351
π/4DQPSK	2-DH5	0	2.892	3.748	77.16	0.7716	1.1261
		39	2.890	3.748	77.11	0.7711	1.1289
		78	2.892	3.748	77.16	0.7716	1.1261
8DPSK	3-DH5	0	2.890	3.748	23.91	0.2391	6.2142
		39	2.890	3.748	23.85	0.2385	6.2251
		78	2.890	3.748	23.85	0.2385	6.2251

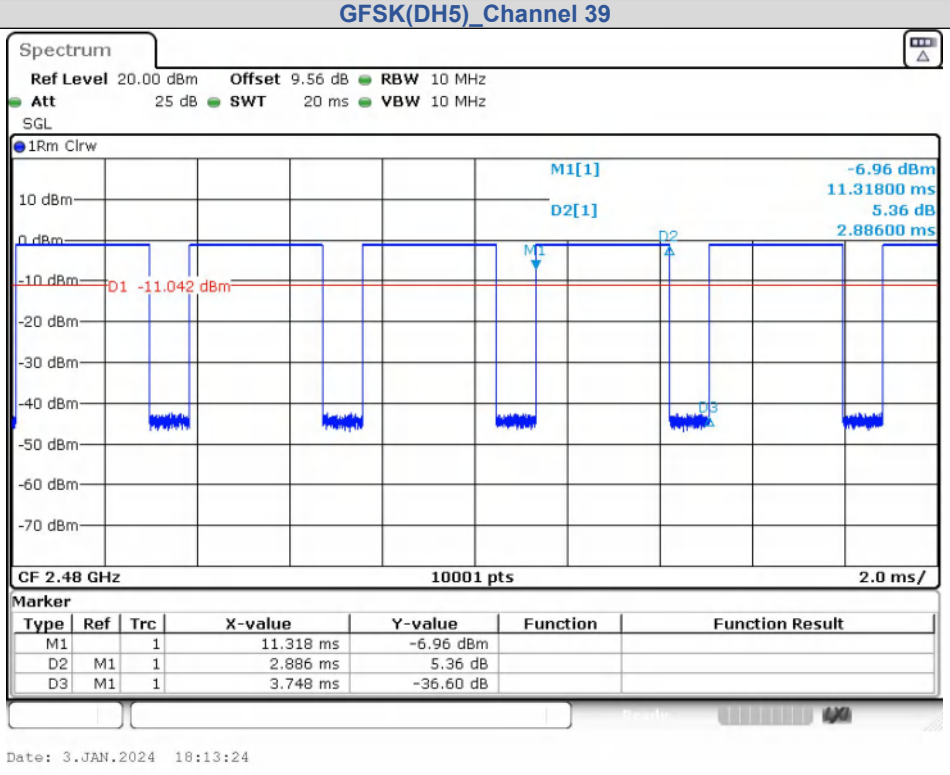
Test Graphs



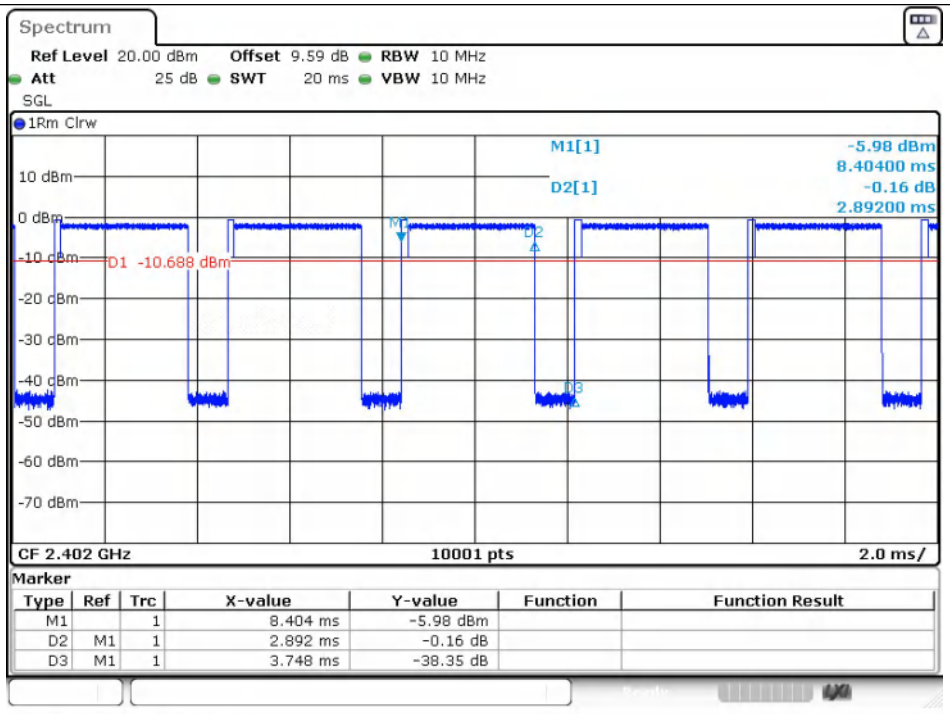
GFSK(DH5)_Channel 0



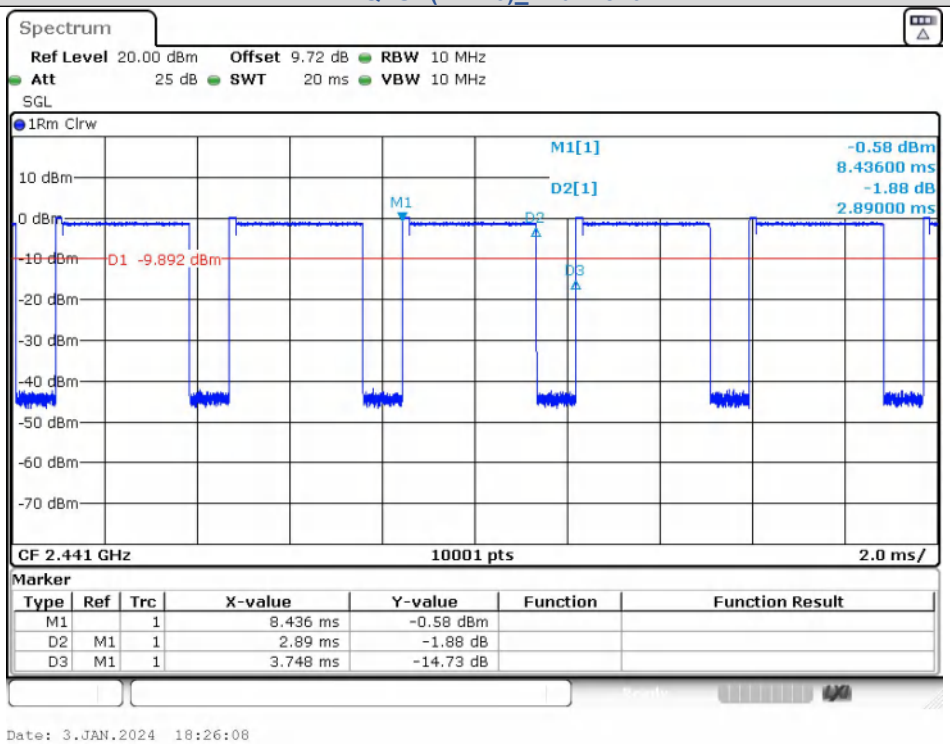
GFSK(DH5)_Channel 39



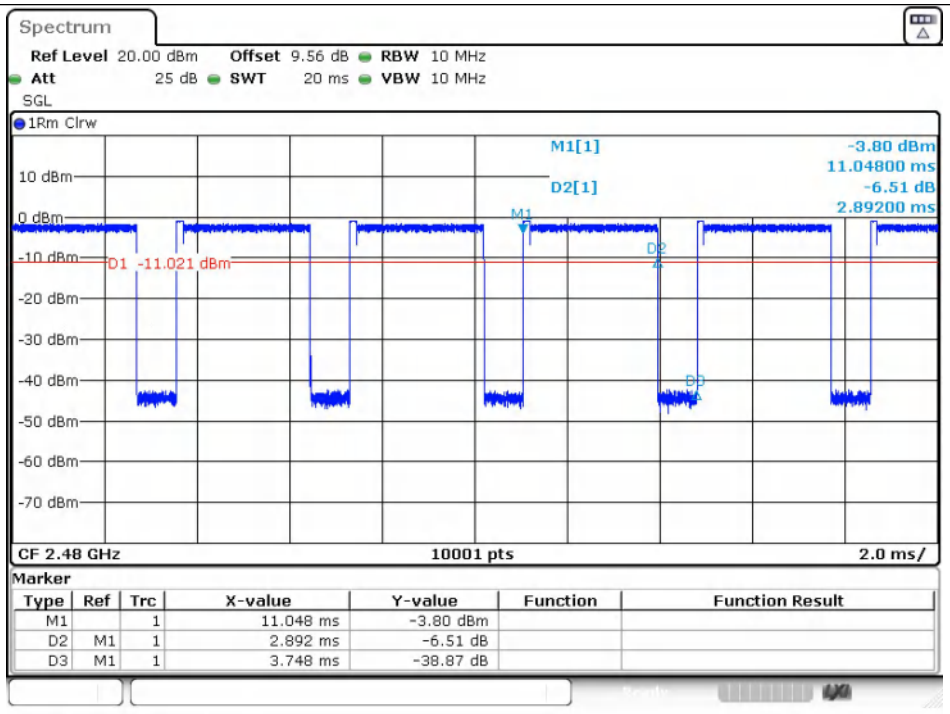
GFSK(DH5)_Channel 78



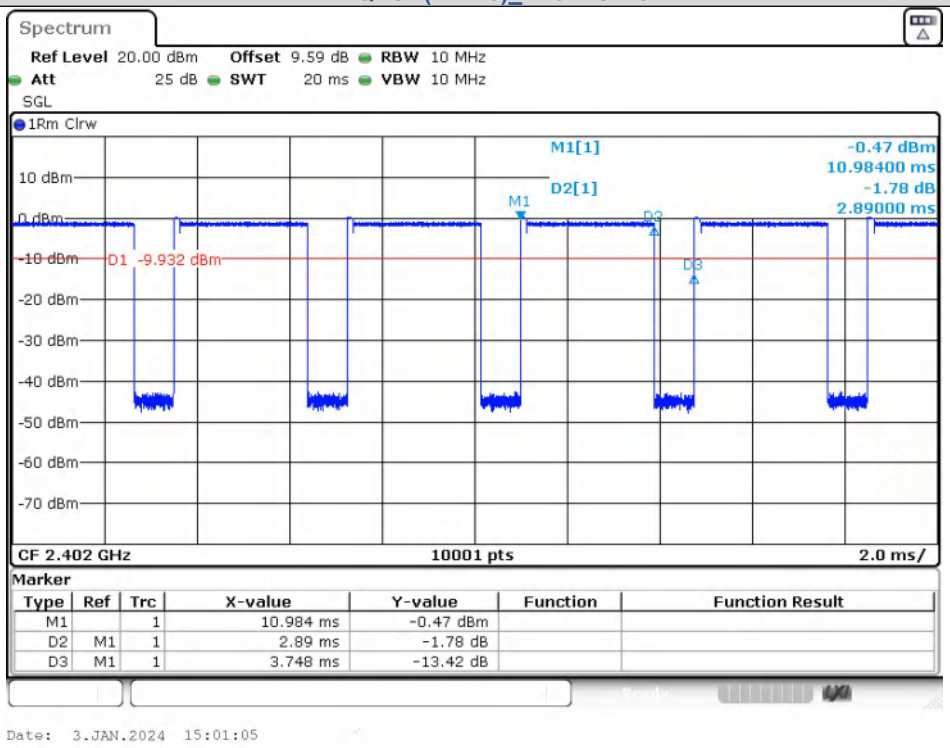
π/4DQPSK(2-DH5)_Channel 0



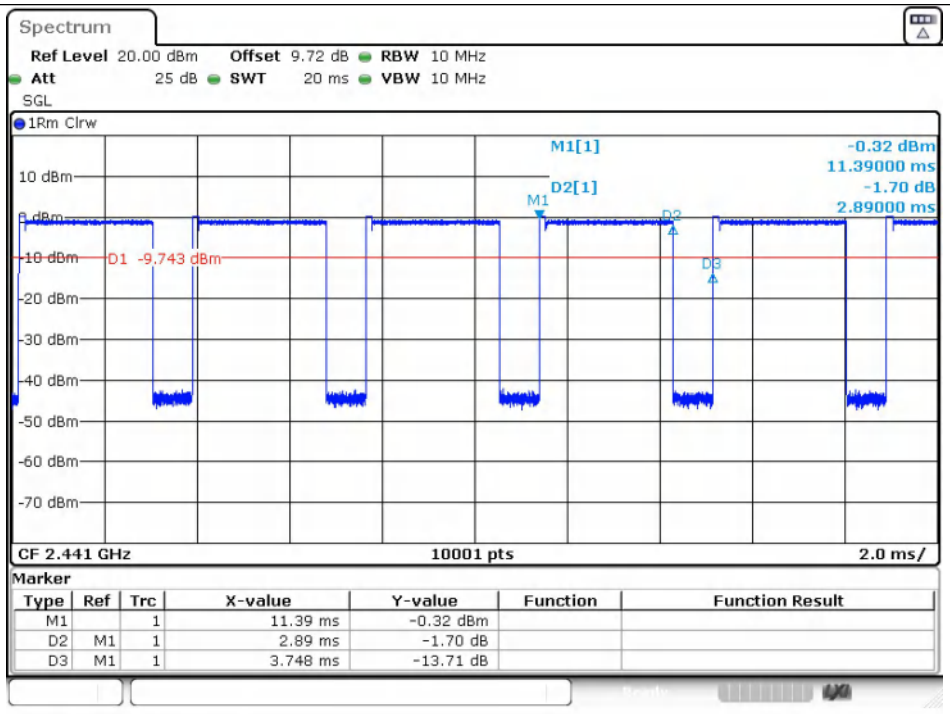
π/4DQPSK(2-DH5)_Channel 39



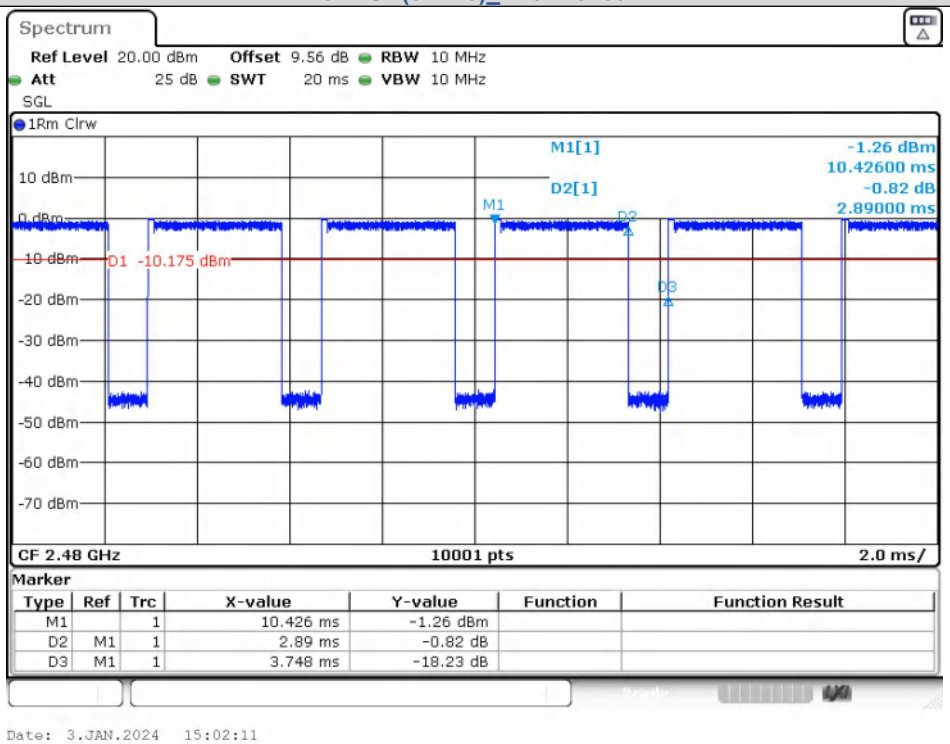
π/4DQPSK(2-DH5)_Channel 78



8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39



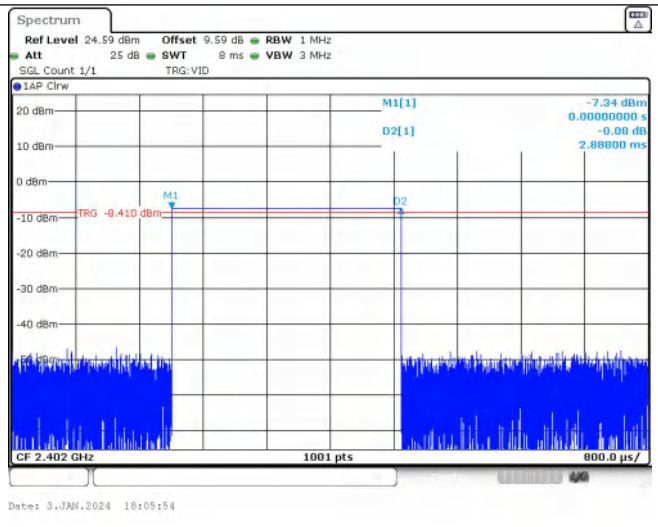
8DPSK(3-DH5)_Channel 78

7) Dwell Time

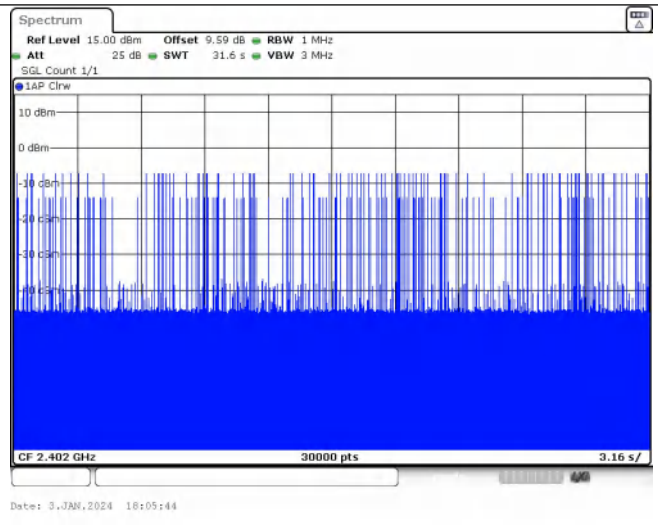
Test Result

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	101	291.69	< 400	PASS
π/4DQPSK	2-DH5		2.896	113	327.25		PASS
8DPSK	3-DH5		2.896	112	325.17		PASS

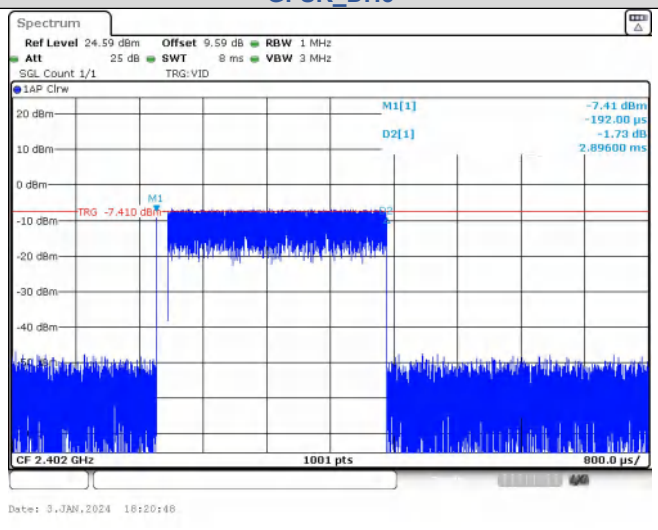
Test Graphs



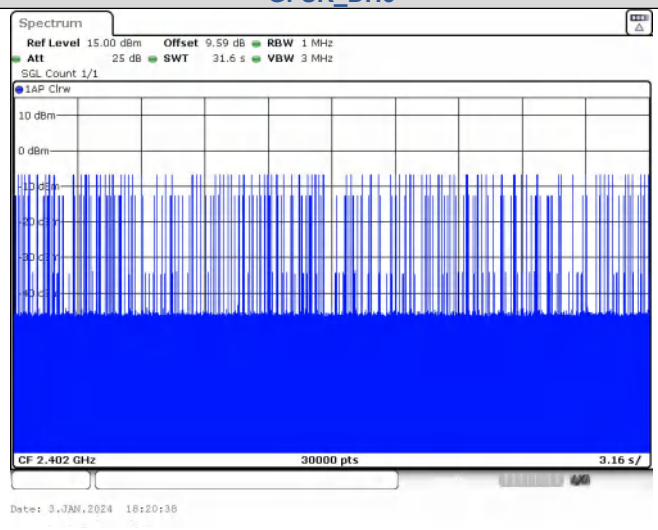
Pulse Width
GFSK_DH5



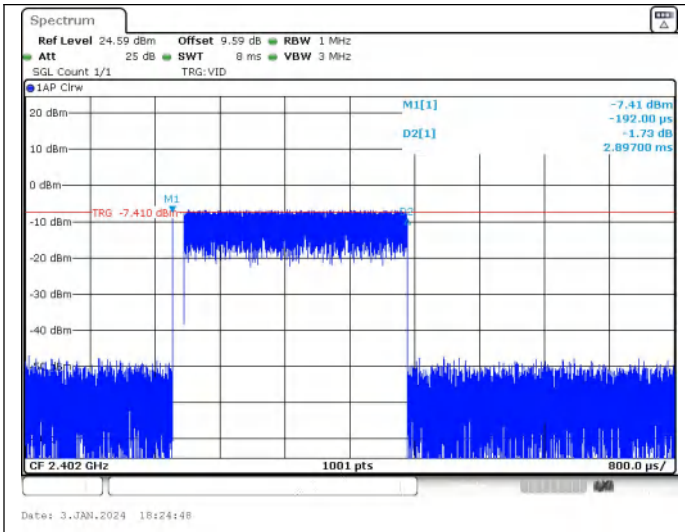
Number of Pulses in 31.6 seconds
GFSK_DH5



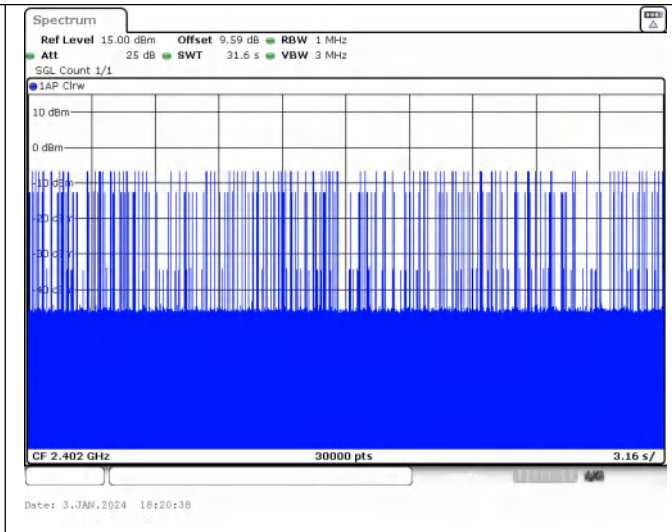
Pulse Width
π/4DQPSK_2-DH5



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



Pulse Width
8DPSK_3-DH5



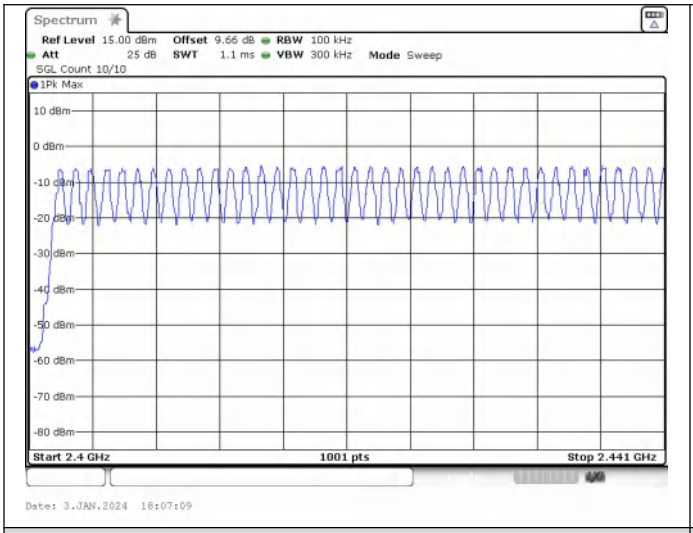
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

8) Number Of Hopping Channel

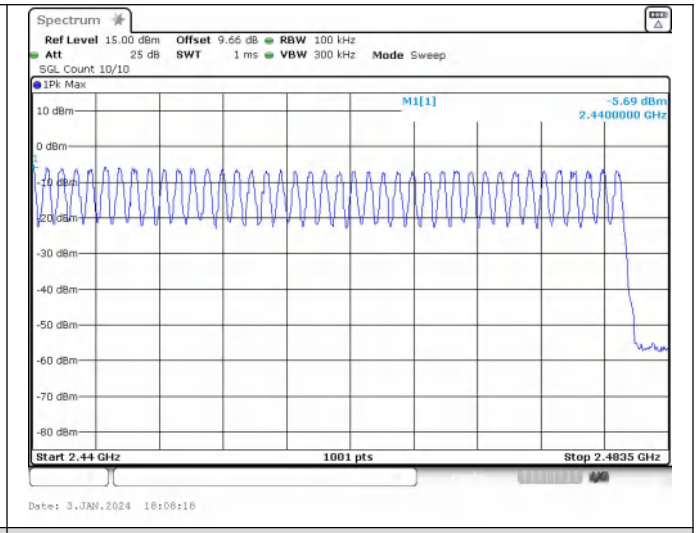
Test Result

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

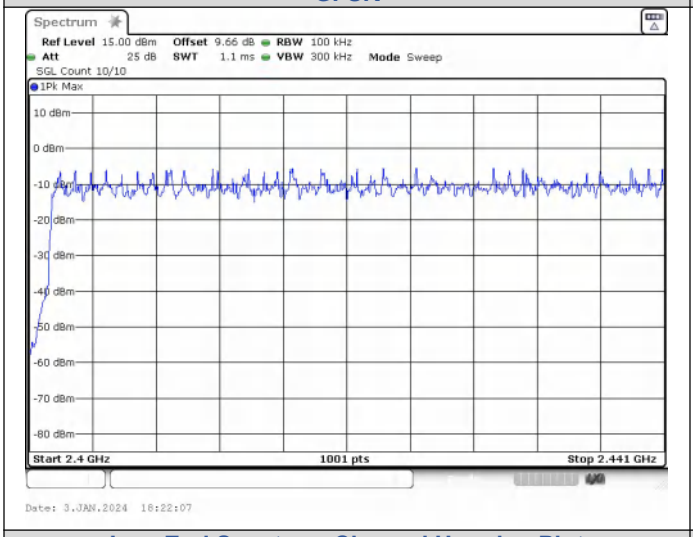
Test Graphs



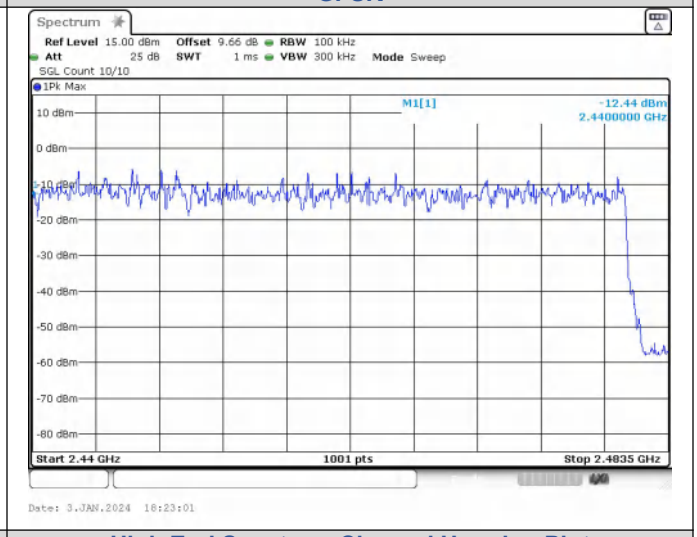
Low End Spectrum Channel Hopping Plot
GFSK



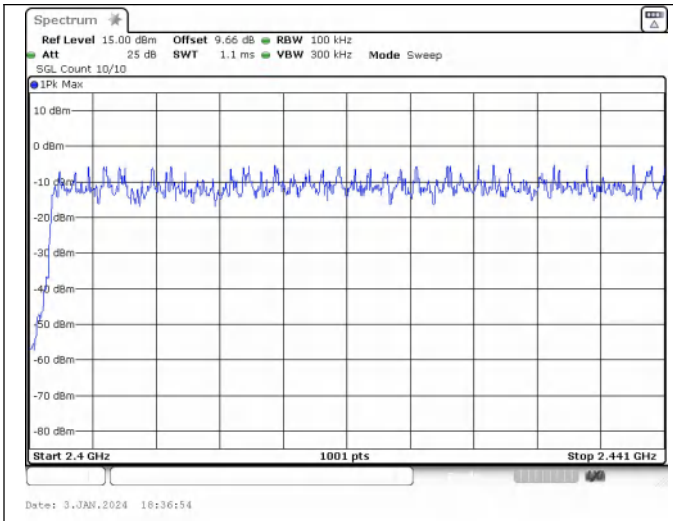
High End Spectrum Channel Hopping Plot
GFSK



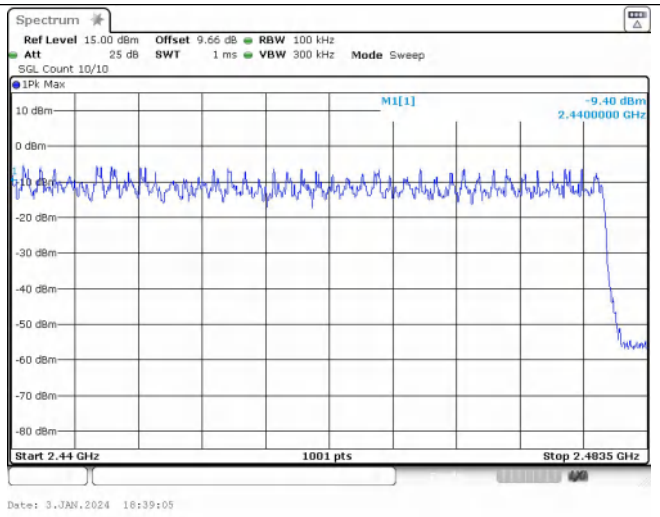
Low End Spectrum Channel Hopping Plot
π/4DQPSK



High End Spectrum Channel Hopping Plot
π/4DQPSK



Low End Spectrum Channel Hopping Plot
8DPSK



High End Spectrum Channel Hopping Plot
8DPSK