Appendix A

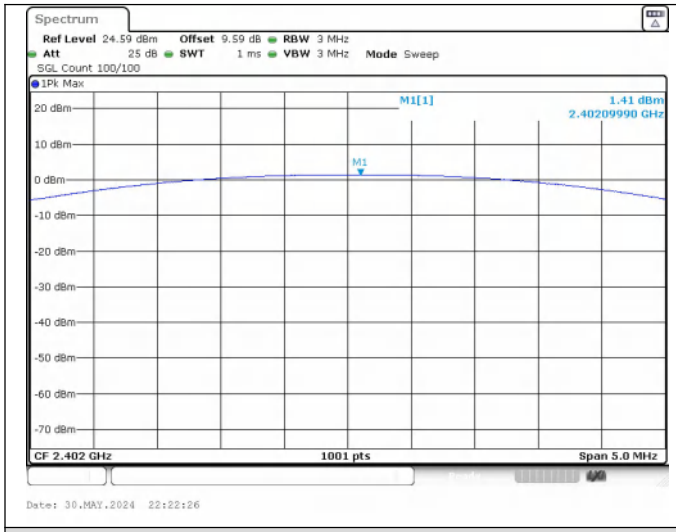
Report No.:	CISRR240525152
FCC ID:	2BGO5-LY7
Product Name:	Ear mounted sports earphones
Model No.:	LY7
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

Conducted Peak Output Power

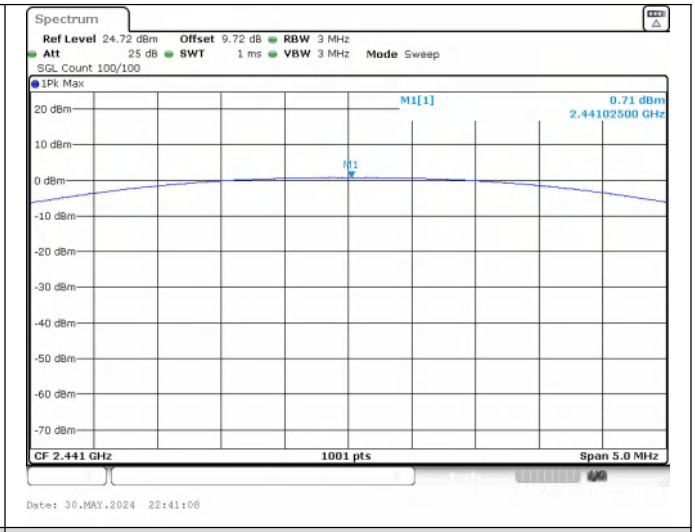
Test Result

Left

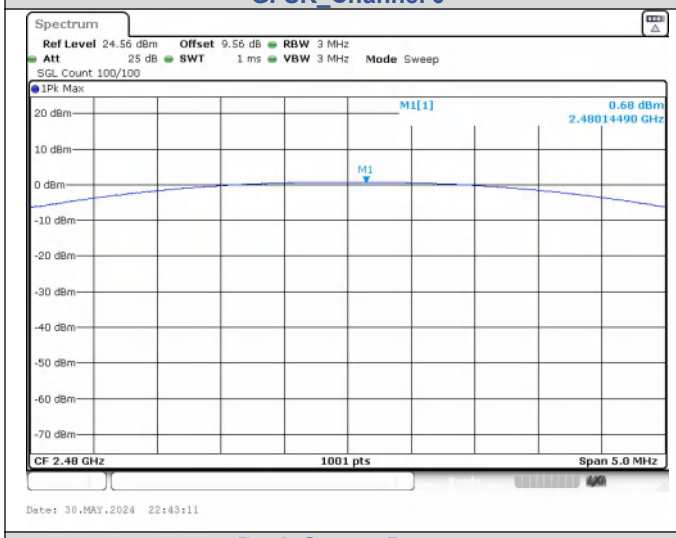
Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	1.41	1.38	30	PASS
		39	0.71	1.18		PASS
		78	0.68	1.17		PASS
π/4DQPSK	2-DH5	0	1.80	1.51	20.97	PASS
		39	1.28	1.34		PASS
		78	1.25	1.33		PASS
8DPSK	3-DH5	0	1.85	1.53	20.97	PASS
		39	1.43	1.39		PASS
		78	1.42	1.39		PASS



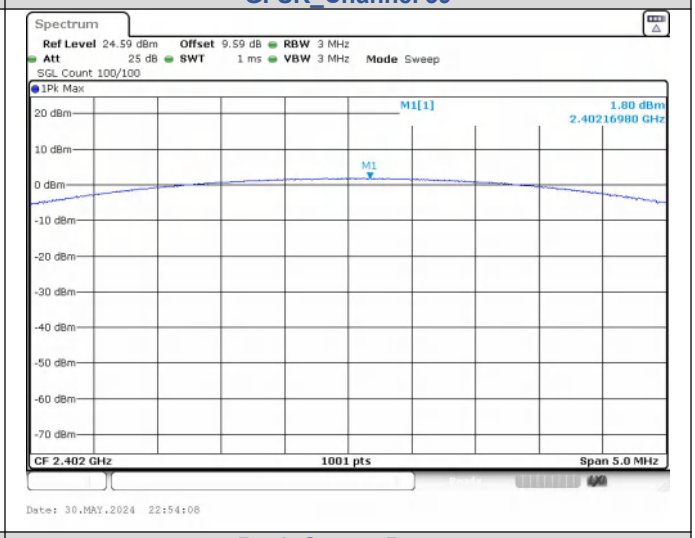
Peak Output Power
GFSK_Channel 0



Peak Output Power
GFSK_Channel 39

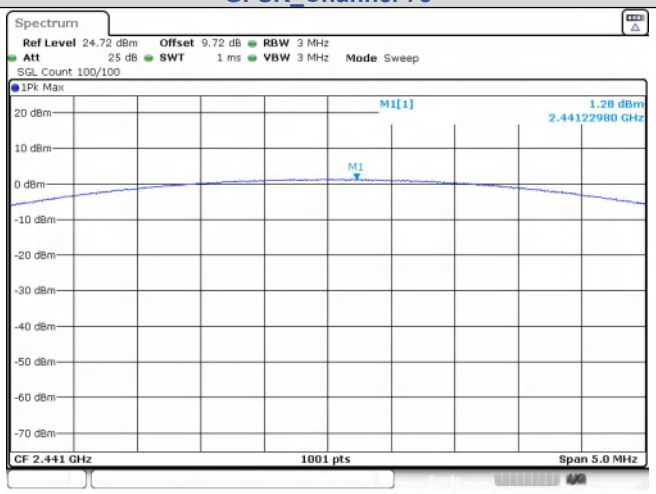


Peak Output Power

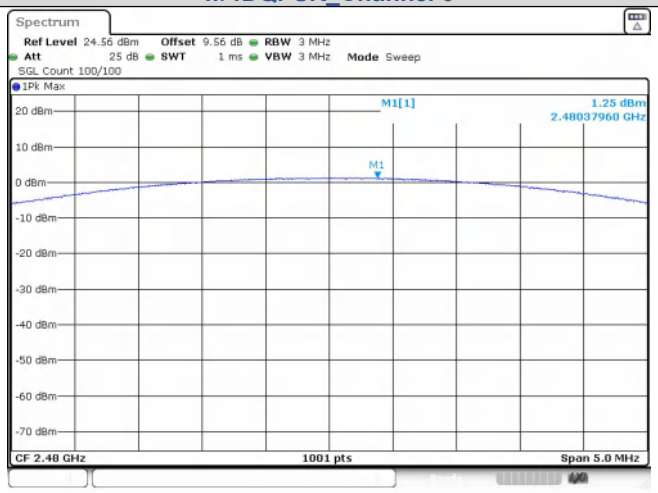


Peak Output Power

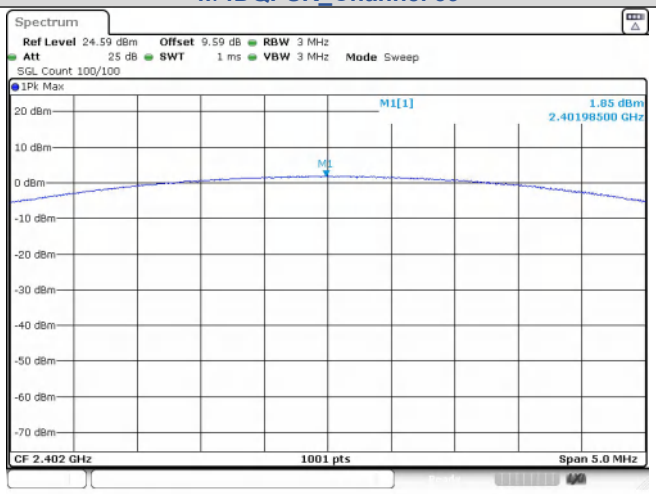
GFSK_Channel 78



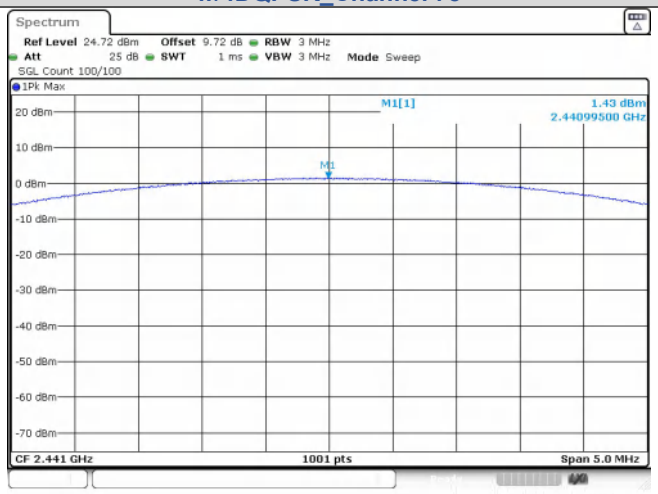
π/4DQPSK_Channel 0



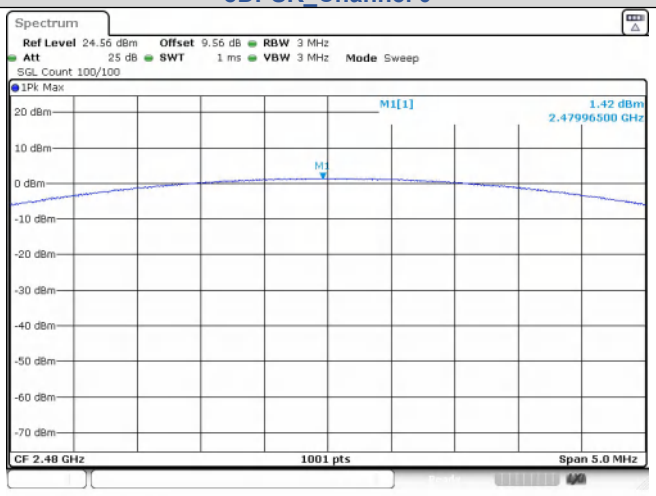
Peak Output Power π/4DQPSK_Channel 39



Peak Output Power π/4DQPSK_Channel 78



Peak Output Power 8DPSK_Channel 0

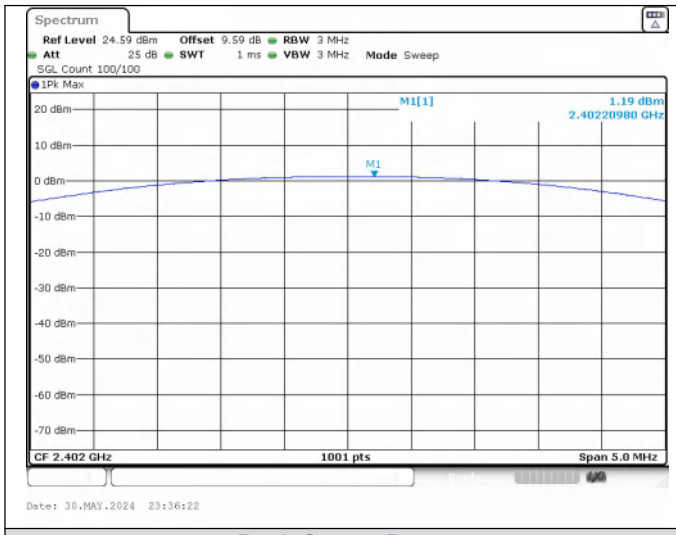


Peak Output Power 8DPSK_Channel 39

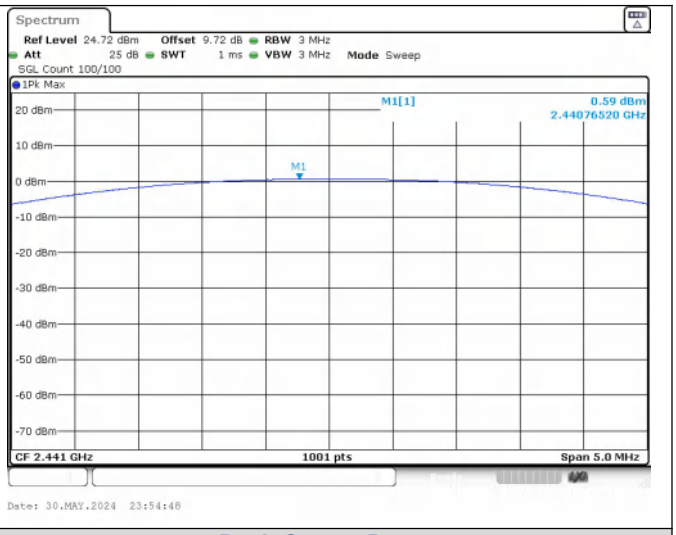
Peak Output Power
8DPSK_Channel 78

Right

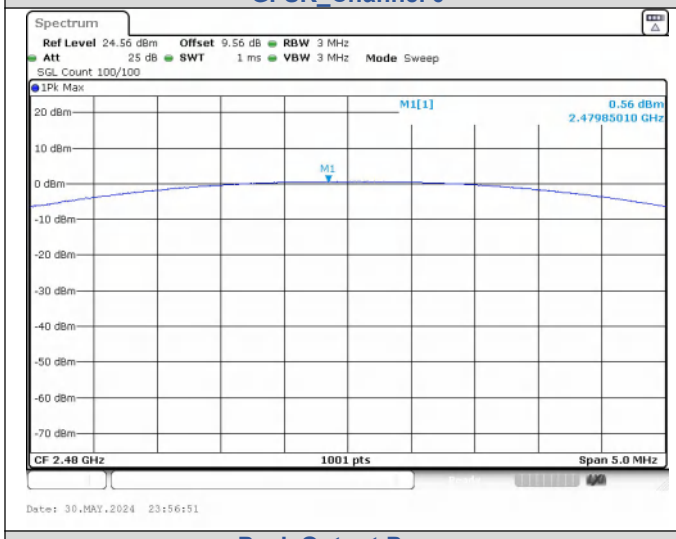
Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	1.19	1.32	30	PASS
		39	0.59	1.15		PASS
		78	0.56	1.14		PASS
π/4DQPSK	2-DH5	0	1.64	1.46	20.97	PASS
		39	1.03	1.27		PASS
		78	1.08	1.28		PASS
8DPSK	3-DH5	0	1.64	1.46	20.97	PASS
		39	1.20	1.32		PASS
		78	1.30	1.35		PASS



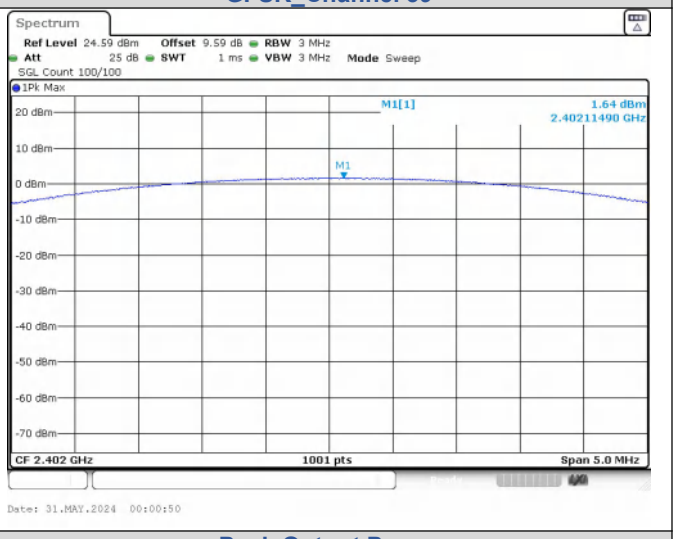
Peak Output Power
GFSK_Channel 0



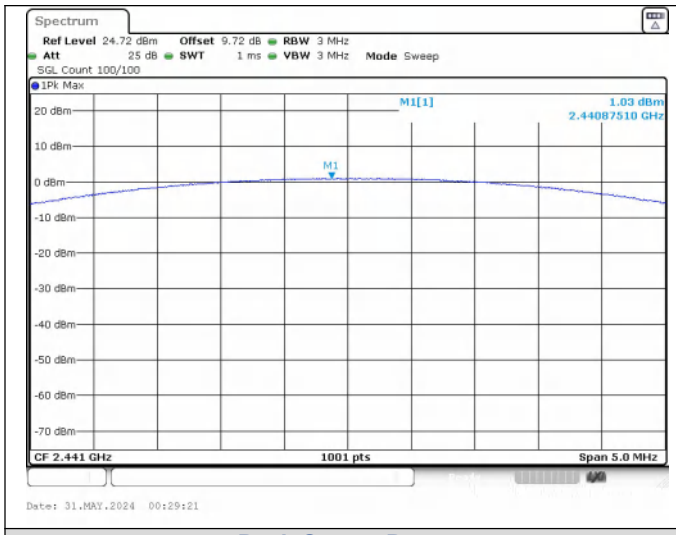
Peak Output Power
GFSK_Channel 39



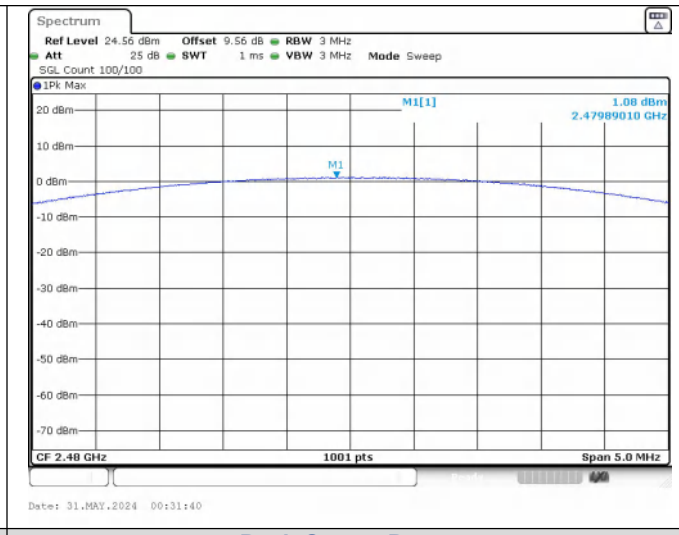
Peak Output Power
GFSK_Channel 78



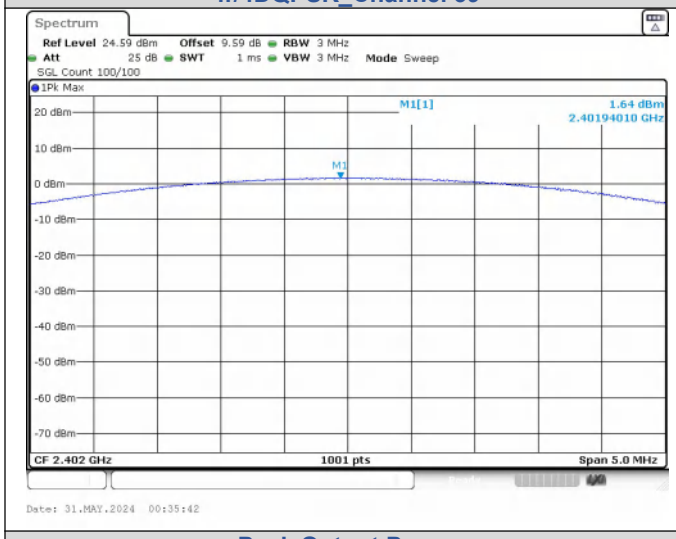
Peak Output Power
π/4DQPSK_Channel 0



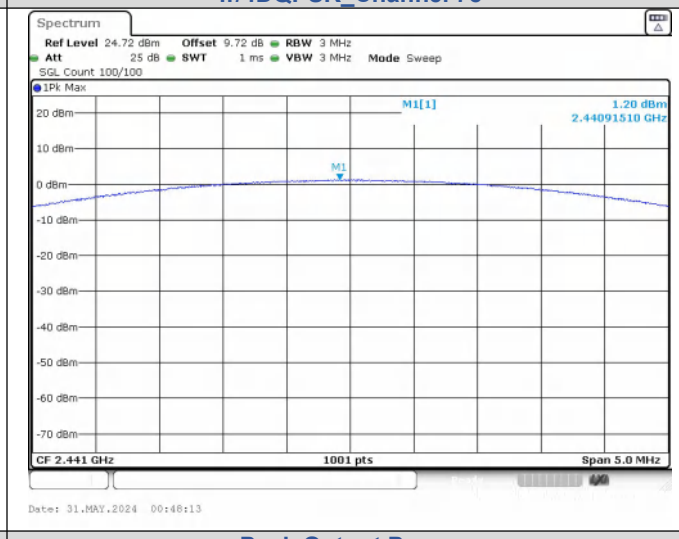
Peak Output Power
π/4DQPSK_Channel 39



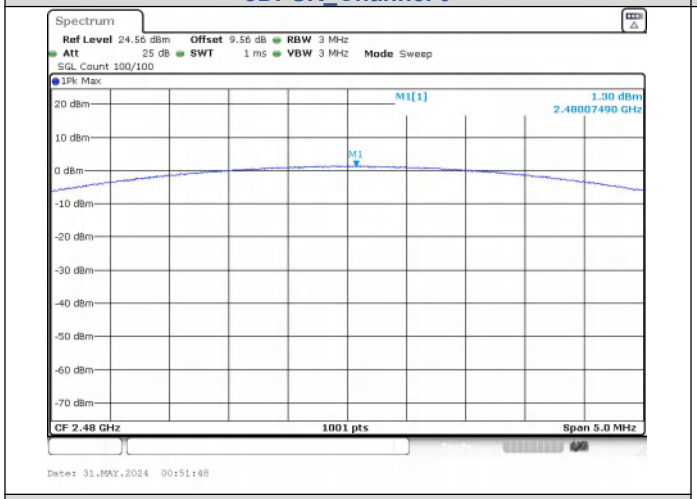
Peak Output Power
π/4DQPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



Peak Output Power
8DPSK_Channel 39



Peak Output Power
8DPSK_Channel 78

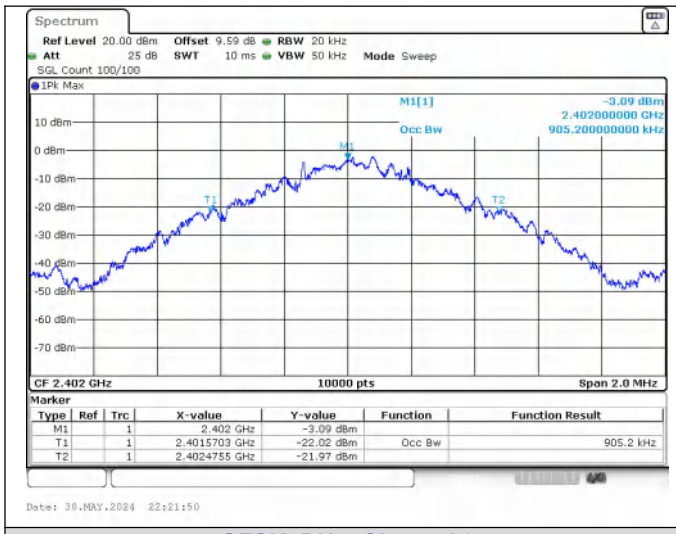
99% Bandwidth

Test Result

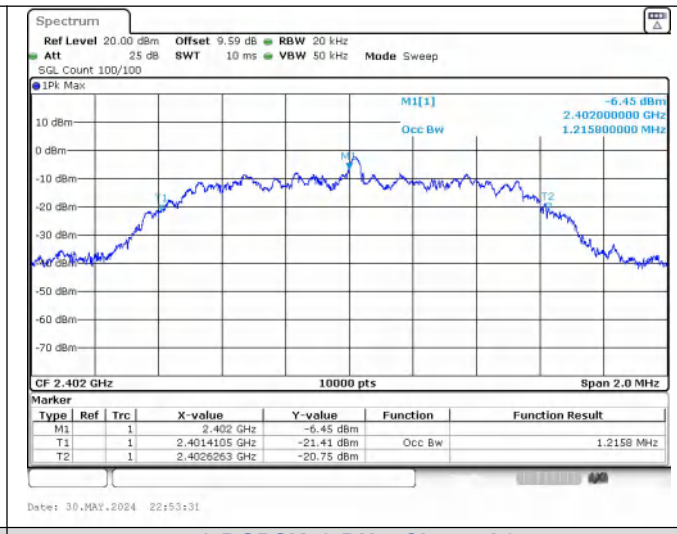
Left

Modulation	Channel	99% BW (MHz)
GFSK	0	0.9052
	39	0.9056
	78	0.8952
π/4DQPSK	0	1.2158
	39	1.2138
	78	1.2038
8DPSK	0	1.2240
	39	1.2142
	78	1.2108

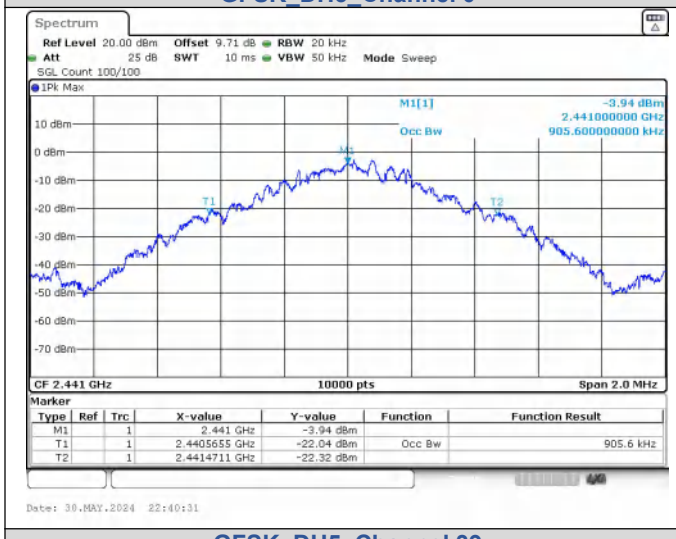
Test Graphs



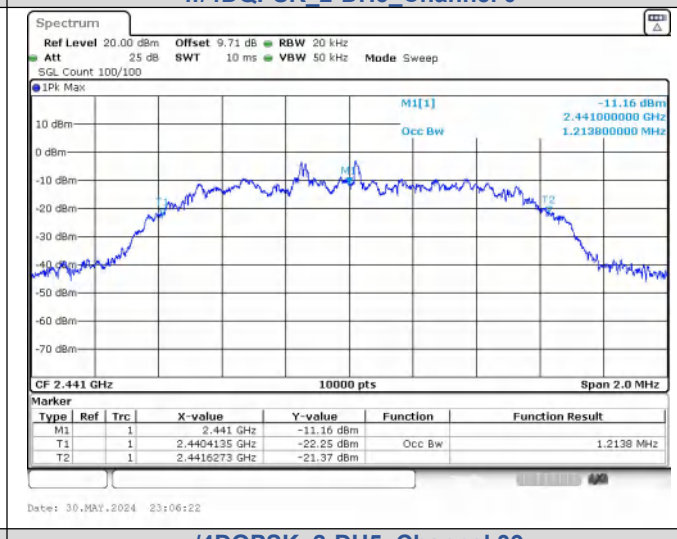
GFSK_DH5_Channel 0



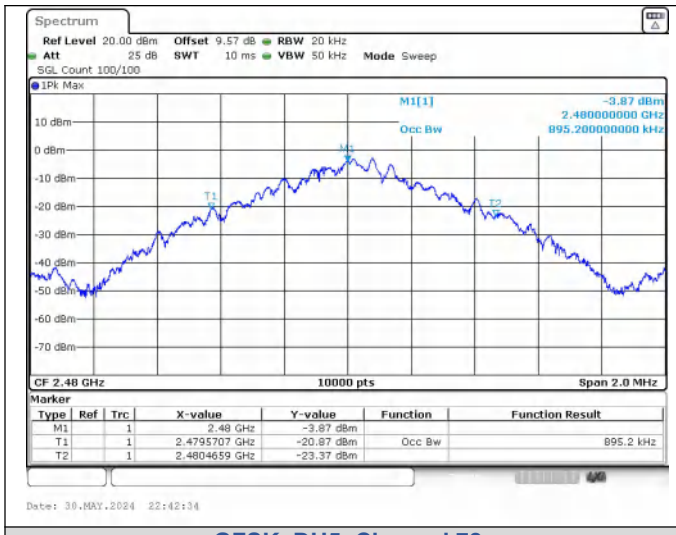
π/4DQPSK_2-DH5_Channel 0



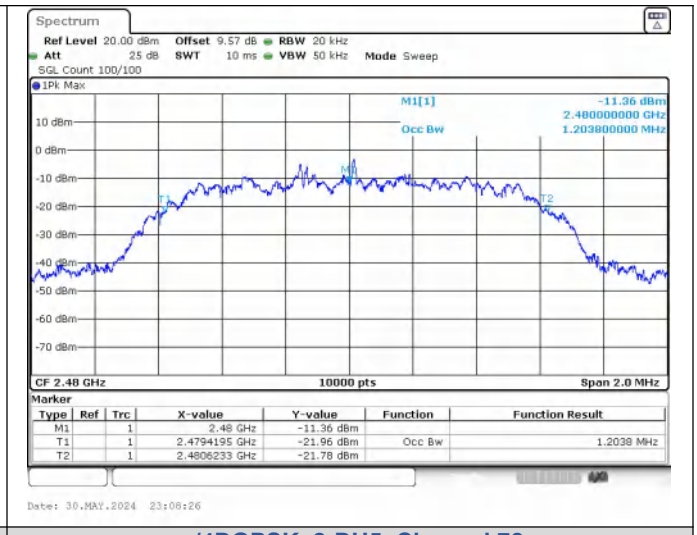
GFSK_DH5_Channel 39



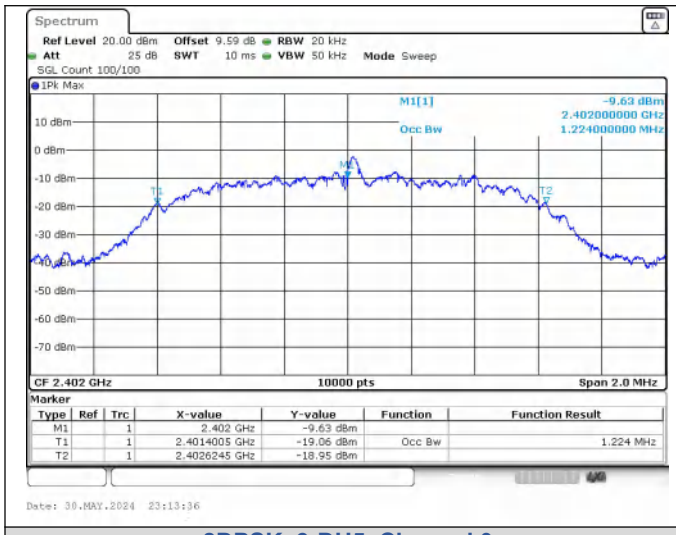
π/4DQPSK_2-DH5_Channel 39



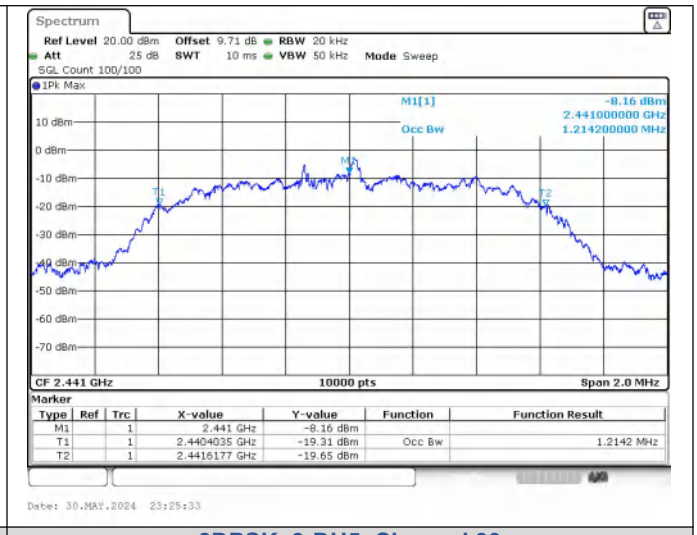
GFSK_DH5_Channel 78



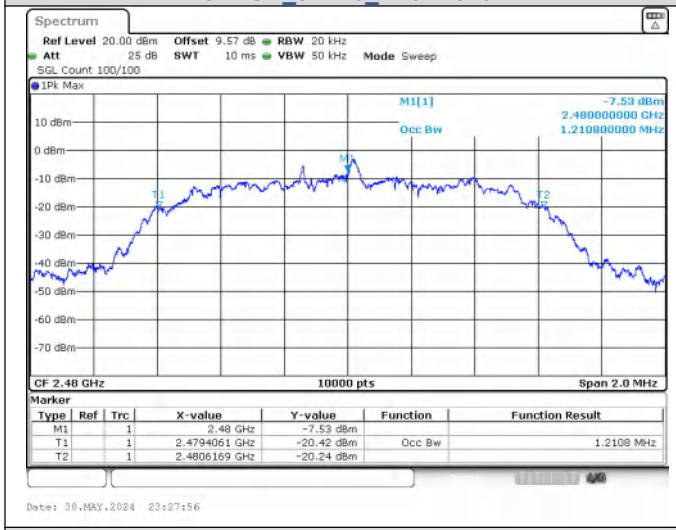
π/4DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



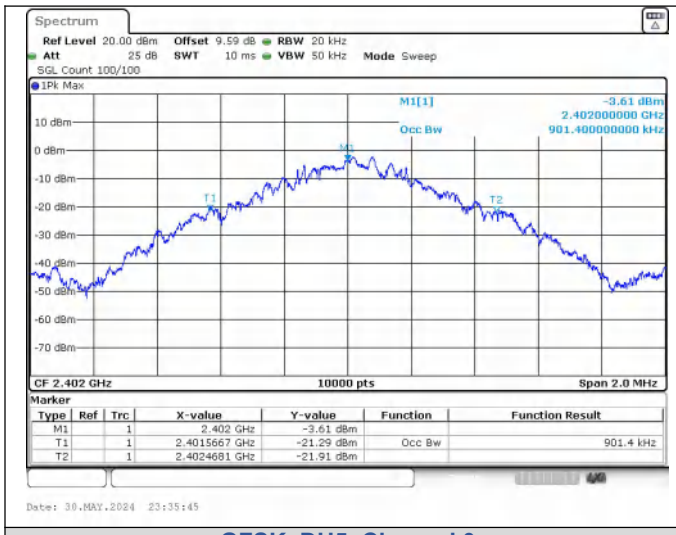
8DPSK_3-DH5_Channel 78

Right

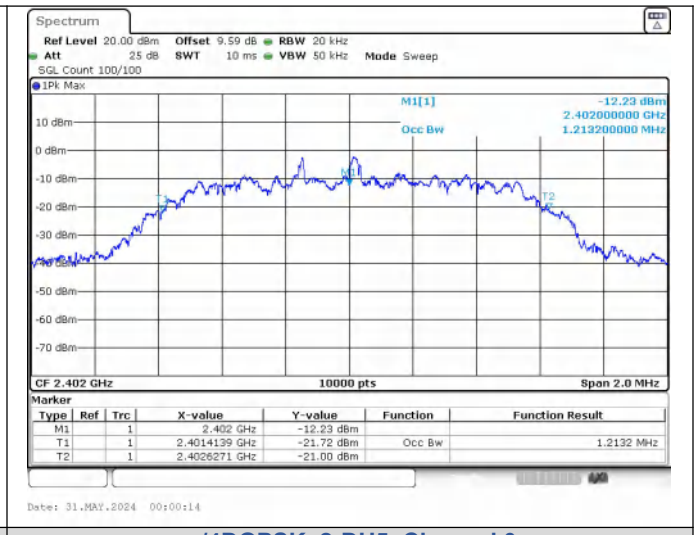
Test Result

Modulation	Channel	99% BW (MHz)
GFSK	0	0.9014
	39	0.9098
	78	0.8914
π/4DQPSK	0	1.2132
	39	1.2022
	78	1.1954
8DPSK	0	1.2268
	39	1.2148
	78	1.2090

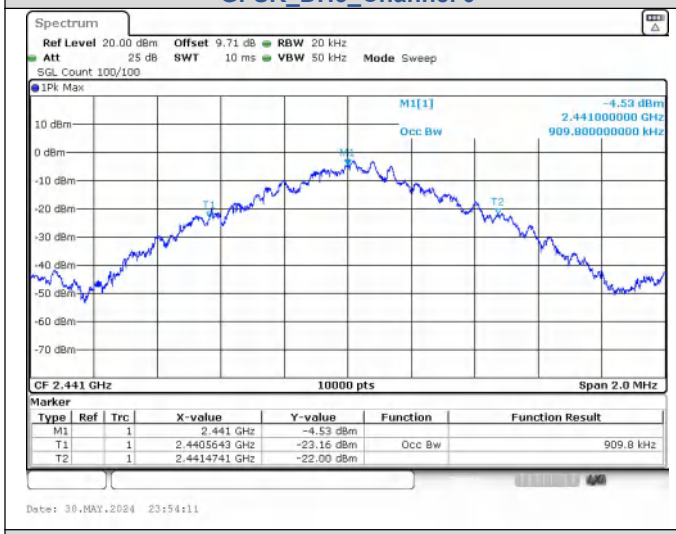
Test Graphs



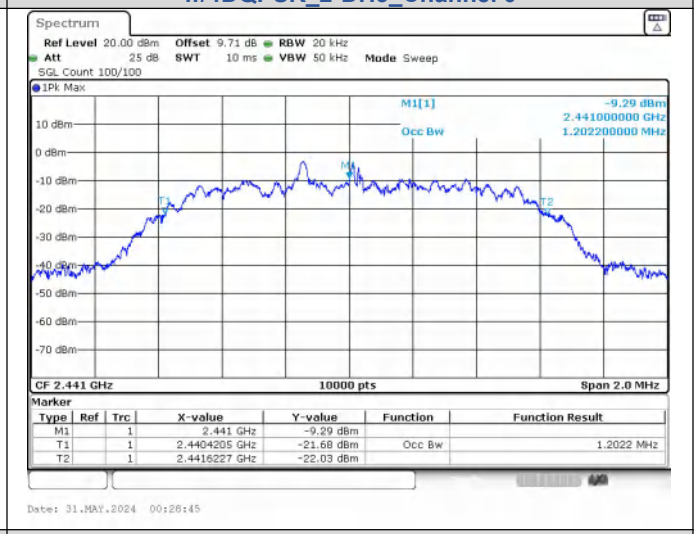
GFSK_DH5_Channel 0



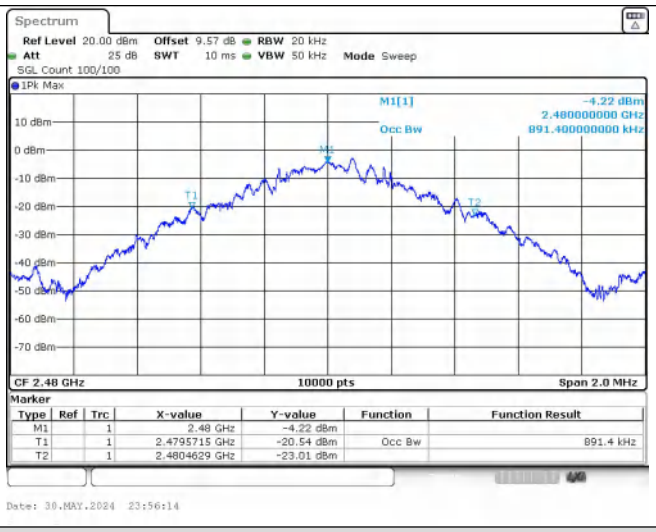
π/4DQPSK_2-DH5_Channel 0



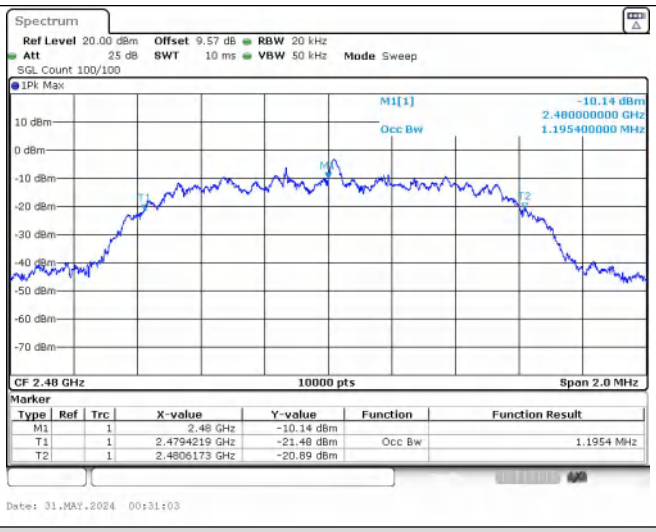
GFSK_DH5_Channel 39



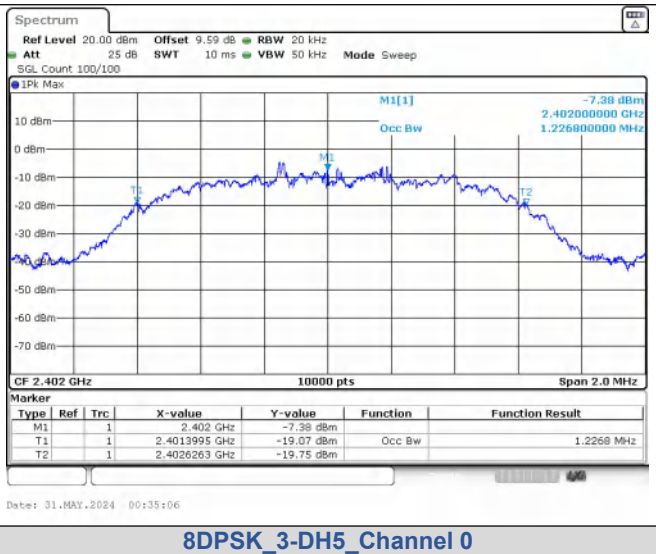
π/4DQPSK_2-DH5_Channel 39



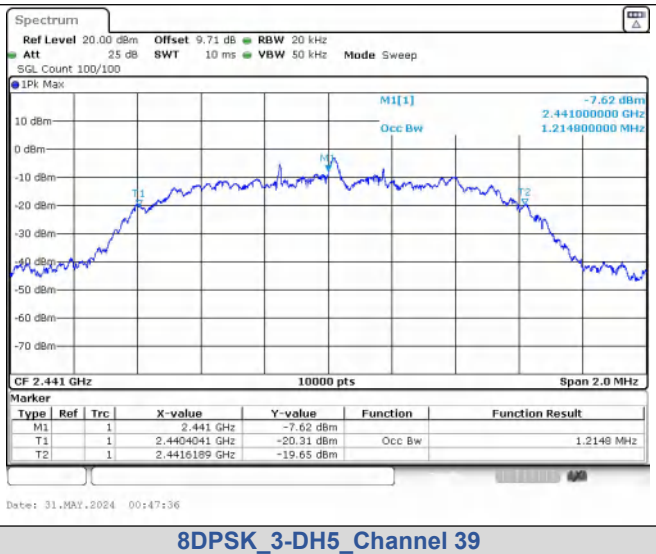
GFSK_DH5_Channel 78



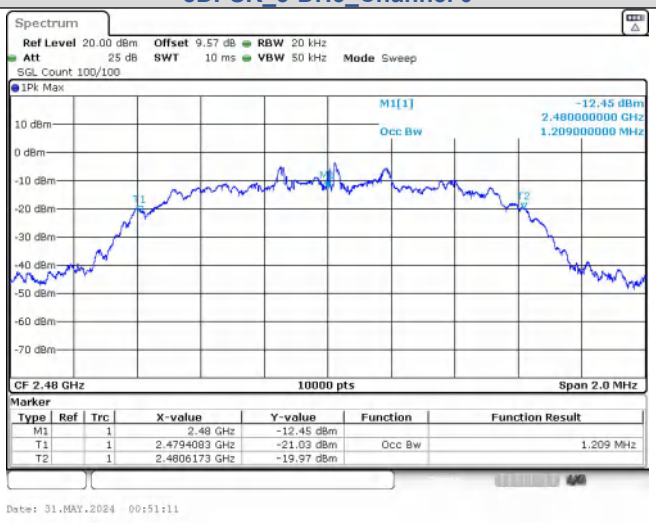
π/4DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



8DPSK_3-DH5_Channel 78

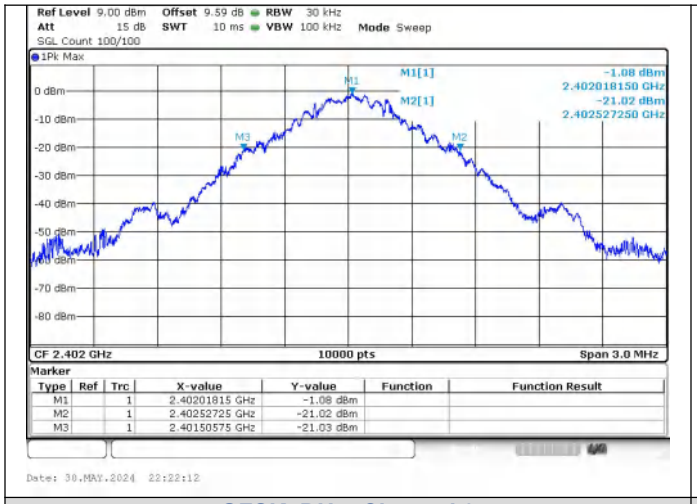
20dB Bandwidth

Test Result

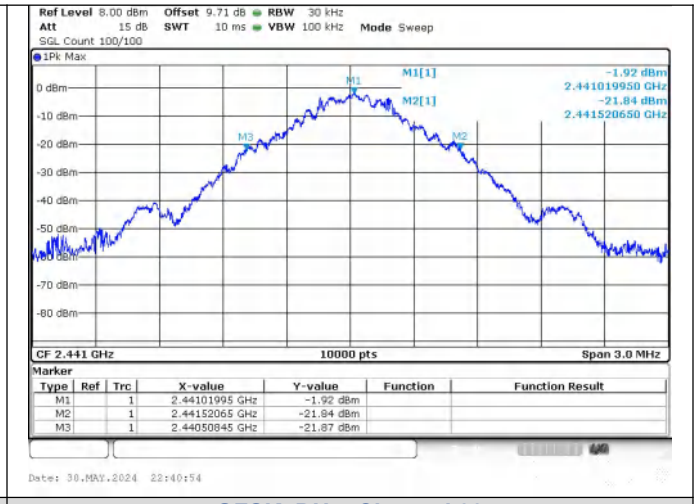
Left

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.020
	39	2441 MHz	1.010
	78	2480 MHz	1.030
π/4DQPSK	0	2402 MHz	1.320
	39	2441 MHz	1.320
	78	2480 MHz	1.320
8DPSK	0	2402 MHz	1.300
	39	2441 MHz	1.300
	78	2480 MHz	1.290

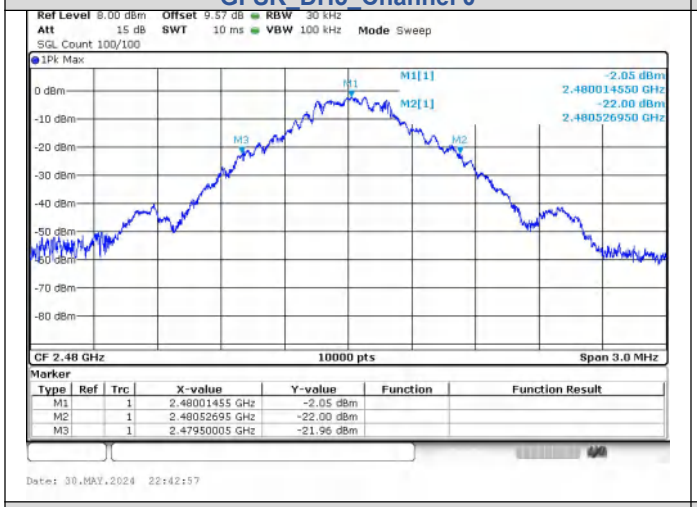
Test Graphs



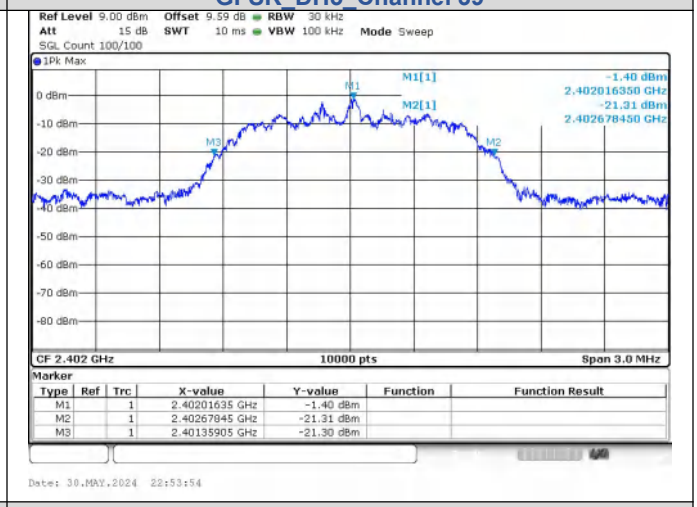
GFSK_DH5_Channel 0



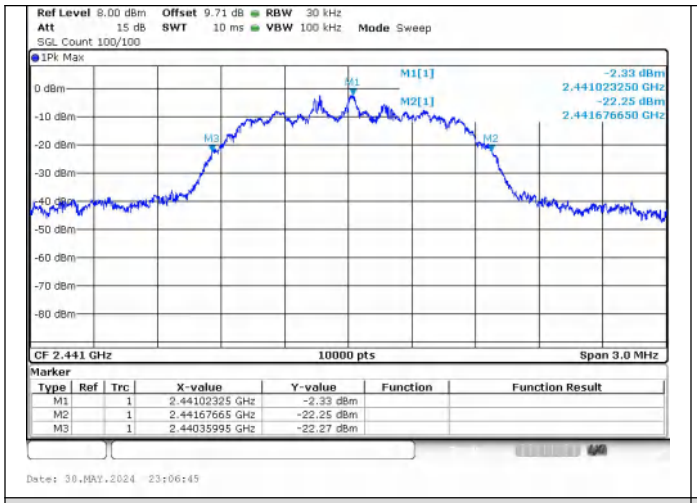
GFSK_DH5_Channel 39



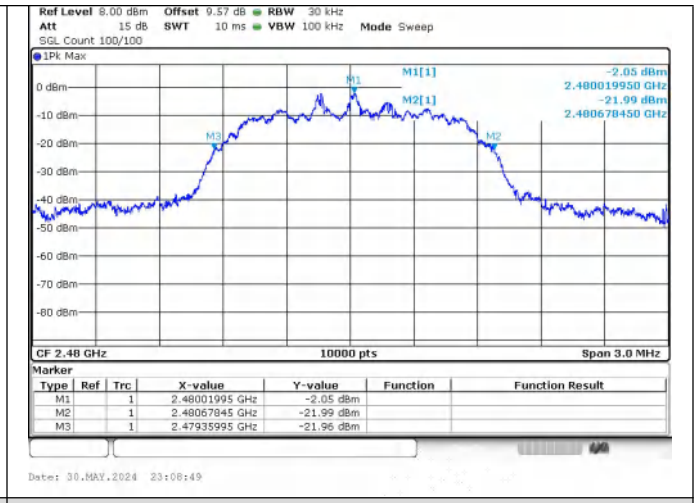
GFSK_DH5_Channel 78



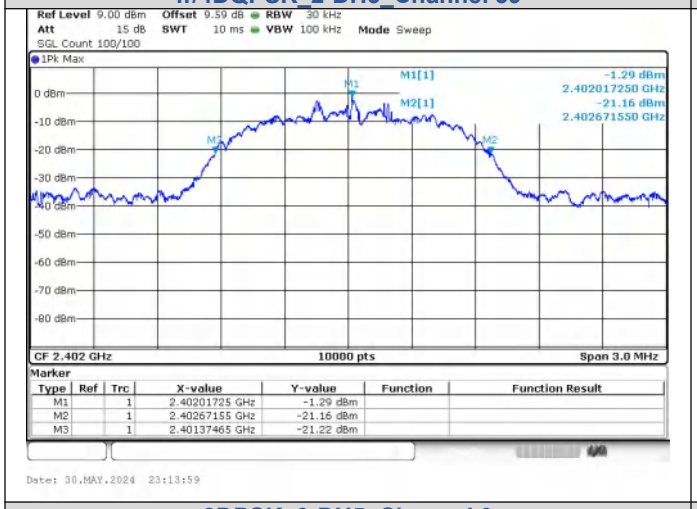
π/4DQPSK_2-DH5_Channel 0



π/4DQPSK_2-DH5_Channel 39

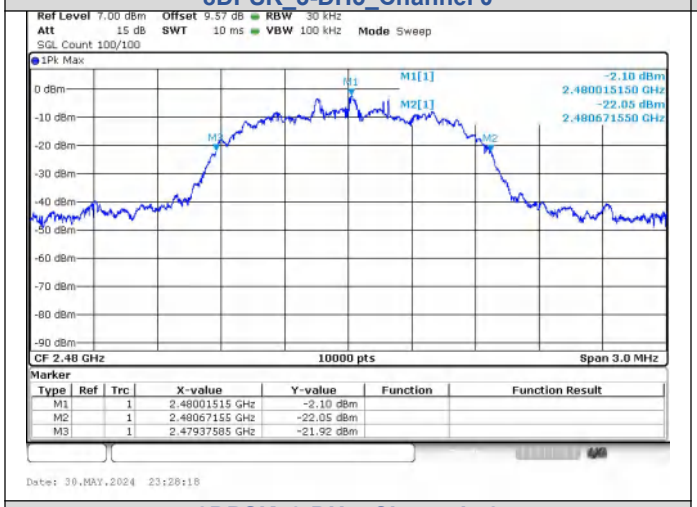


π/4DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0

8DPSK_3-DH5_Channel 39



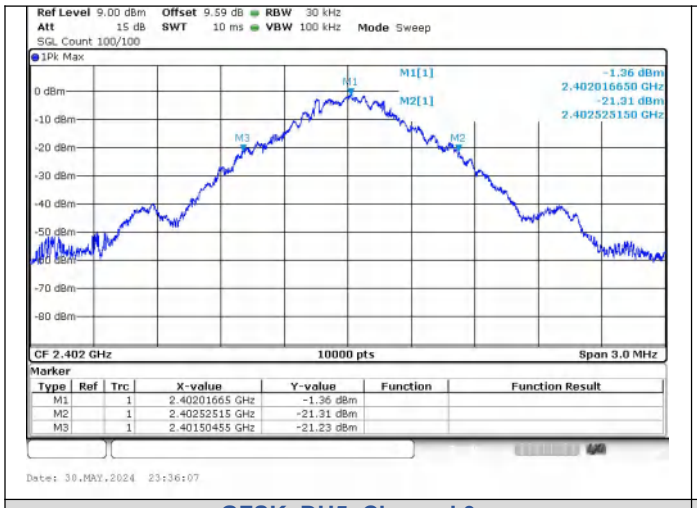
8DPSK_3-DH5_Channel 78

Right

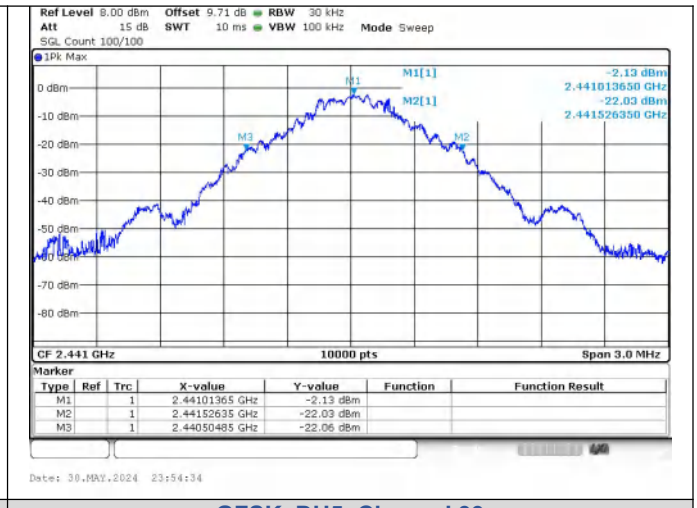
Test Result

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

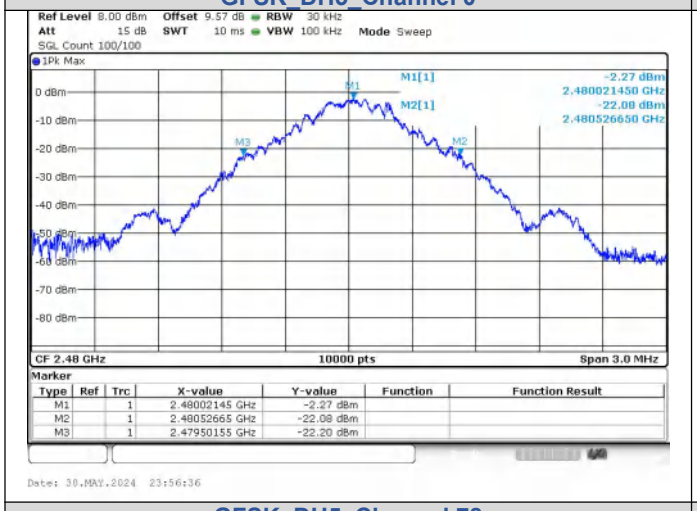
Test Graphs



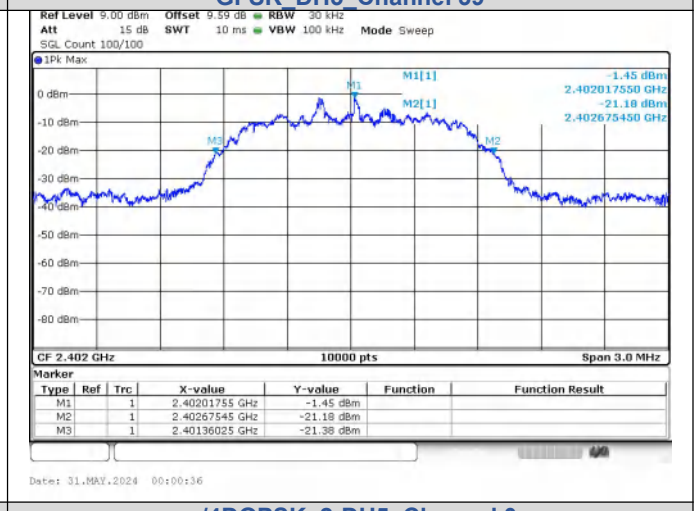
GFSK_DH5_Channel 0



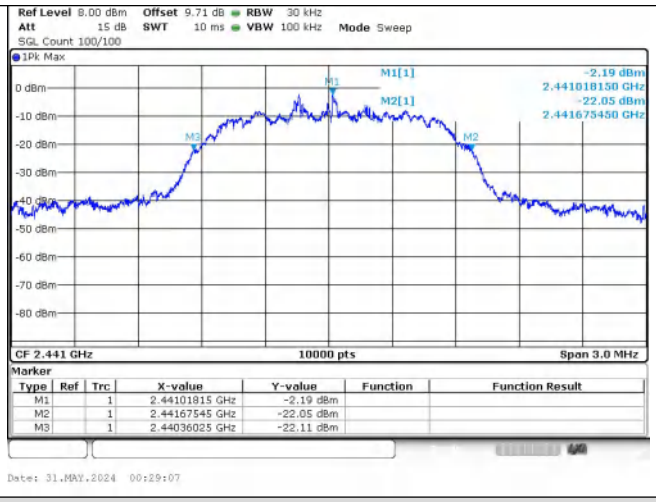
GFSK_DH5_Channel 39



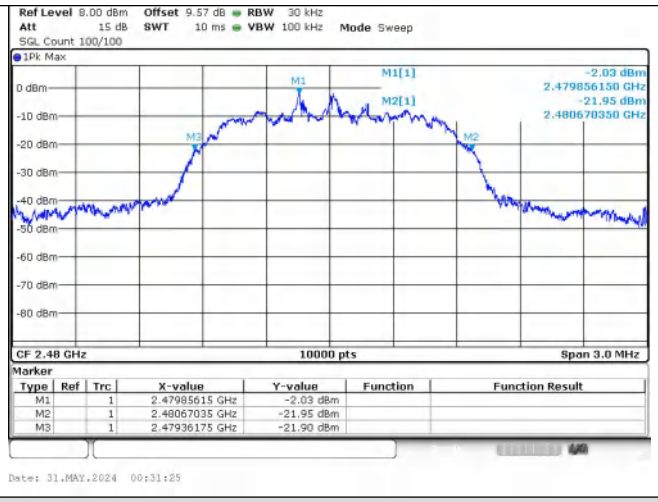
GFSK_DH5_Channel 78



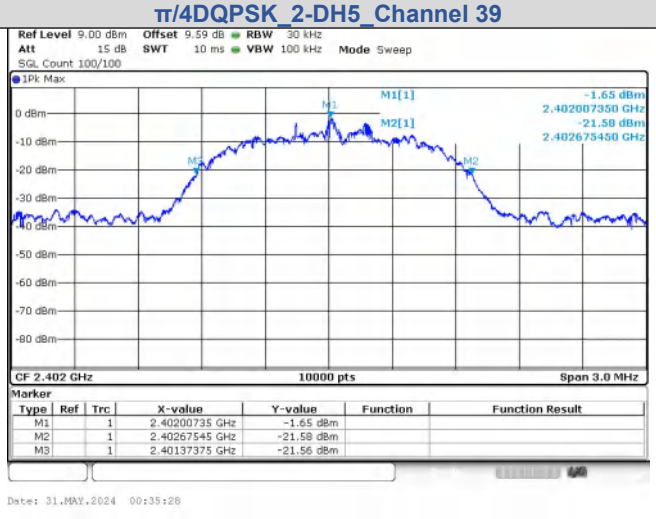
π/4DQPSK_2-DH5_Channel 0



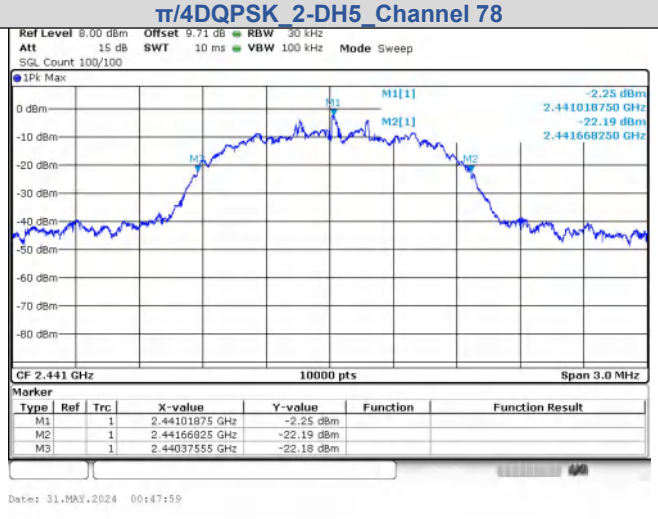
π/4DQPSK_2-DH5_Channel 39



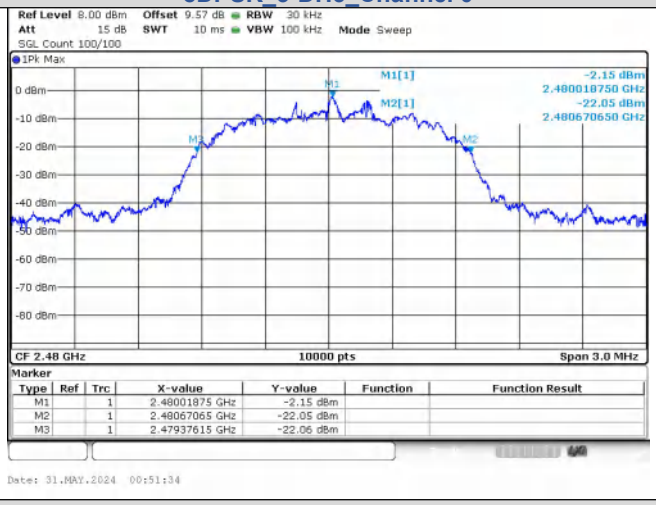
π/4DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



8DPSK_3-DH5_Channel 78

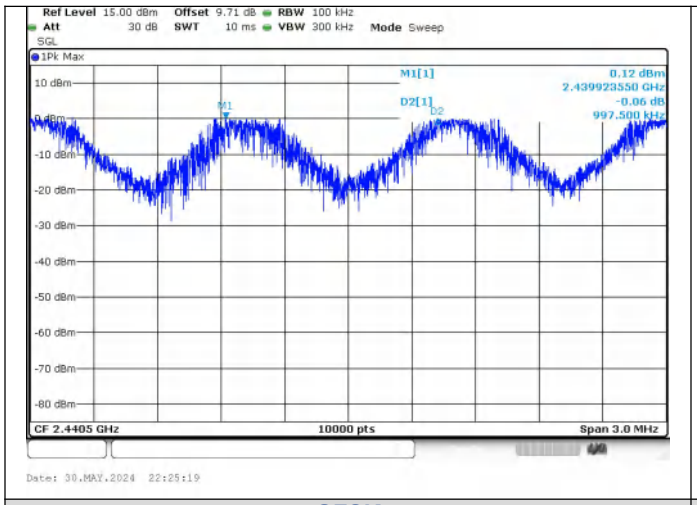
Carrier Frequencies Separation

Test Result

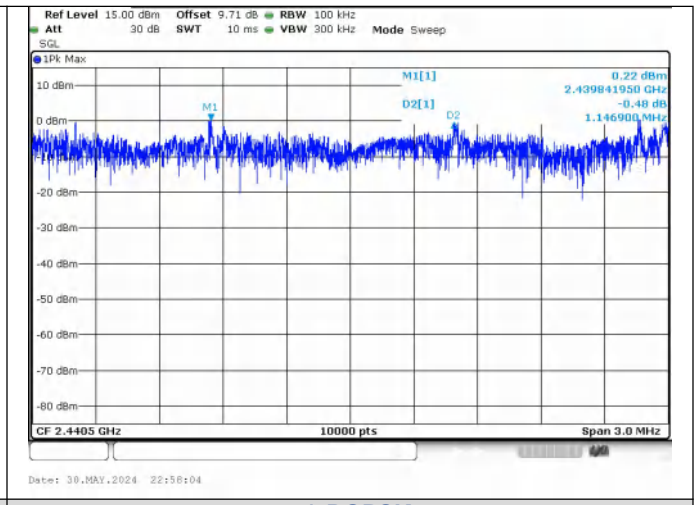
Left

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2439.9235	2440.921	0.9975	0.68	PASS
π/4DQPSK	2-DH5	2439.8419	2440.9889	1.1469	0.88	PASS
8DPSK	3-DH5	2440.003	2441.2081	1.2051	0.867	PASS

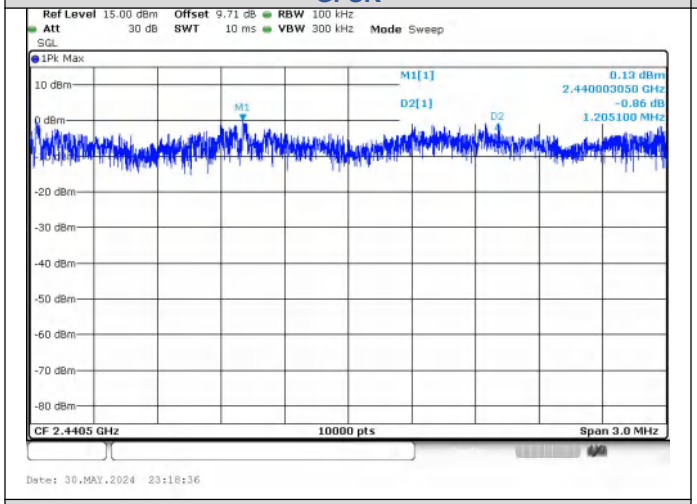
Test Graphs



GFSK



π/4DQPSK



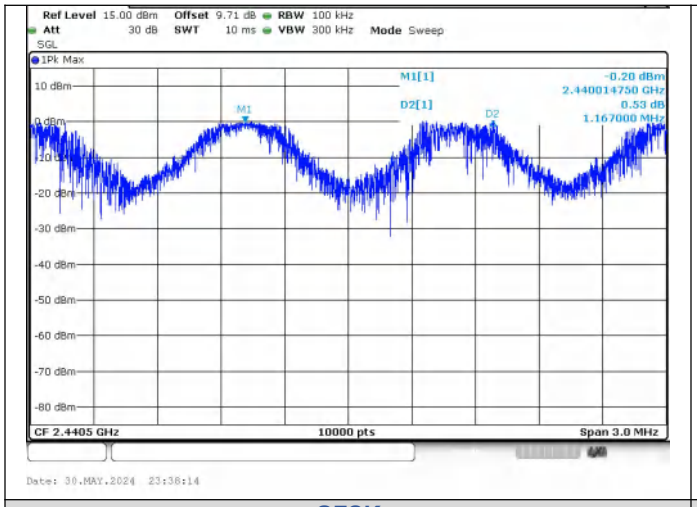
8DPSK

Right

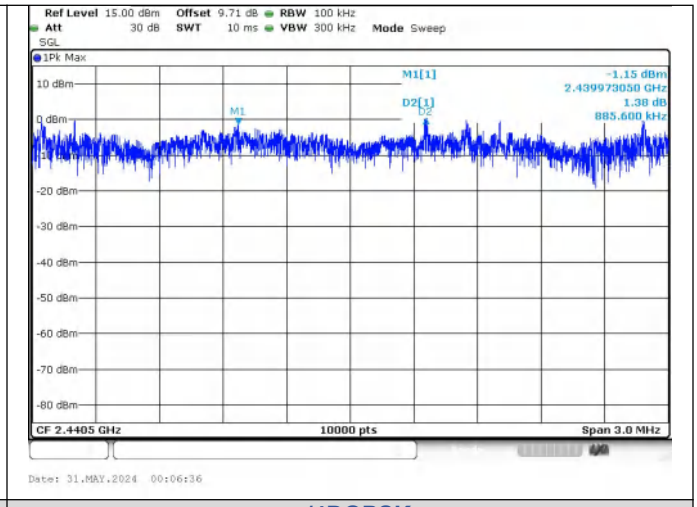
Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2440.0147	2441.1818	1.1670	0.687	PASS
π/4DQPSK	2-DH5	2439.9731	2440.8587	0.8856	0.88	PASS
8DPSK	3-DH5	2439.8317	2441.006	1.1742	0.873	PASS

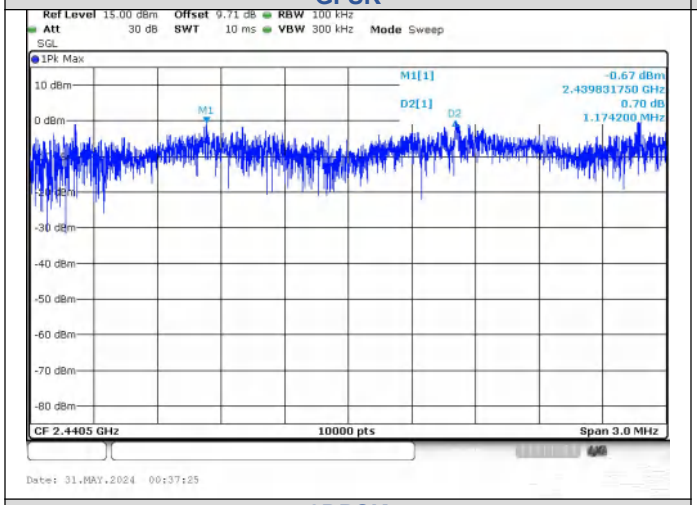
Test Graphs



GFSK



π/4DQPSK



8DPSK

Conducted Out Of Band Emission

Test Result

Left

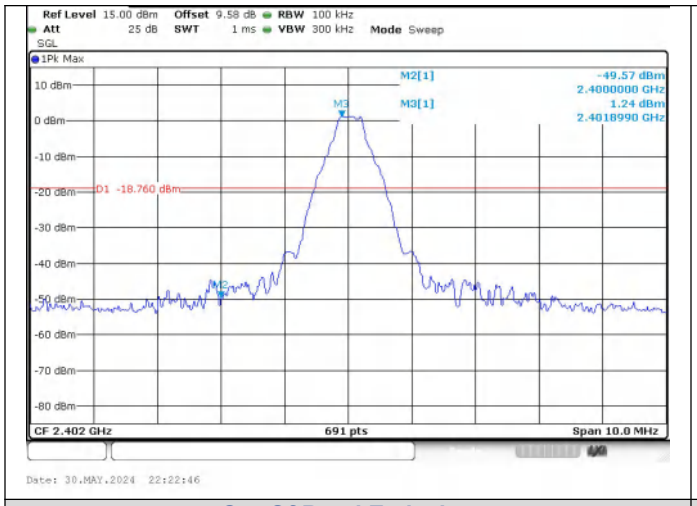
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-49.571	-18.76	-30.811	PASS
			7205.96	-42.071	-18.76	-23.311	PASS
		39	9763.72	-43.084	-19.56	-23.524	PASS
		78	2483.50	-52.346	-19.5	-32.846	PASS
			9920.20	-40.630	-19.5	-21.130	PASS
π/4DQPSK	2-DH5	0	2400.00	-48.470	-18.93	-29.540	PASS
			7205.96	-42.062	-18.93	-23.132	PASS
		39	9763.72	-41.638	-19.51	-22.128	PASS
		78	2483.50	-51.962	-19.56	-32.402	PASS
			9920.20	-40.817	-19.56	-21.257	PASS
8DPSK	3-DH5	0	2400.00	-48.520	-19.19	-29.330	PASS
			1958.93	-43.530	-19.19	-24.340	PASS
		39	9763.72	-41.735	-19.63	-22.105	PASS
		78	2483.50	-52.664	-19.65	-33.014	PASS
			9920.20	-40.176	-19.65	-20.526	PASS

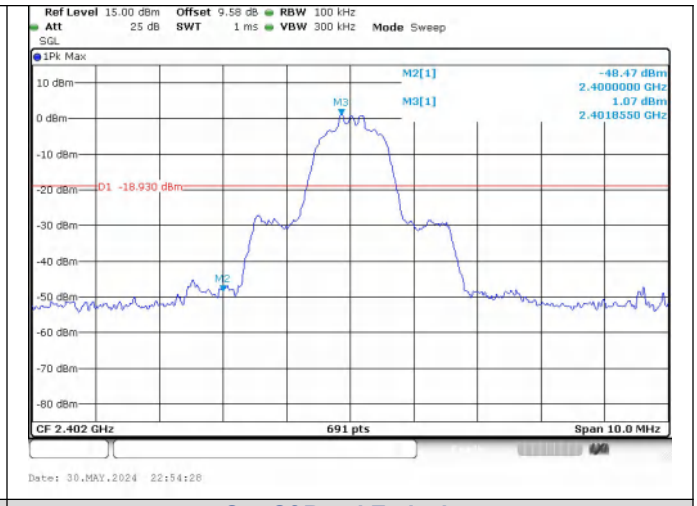
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2396.56	-49.384	-18.65	-30.734	PASS
			2400.00	-51.067	-18.65	-32.417	PASS
			2483.50	-49.941	-19.56	-30.381	PASS
			2398.44	-49.562	-18.64	-30.922	PASS
			2400.00	-51.122	-18.64	-32.482	PASS
			2483.50	-51.589	-19.55	-32.039	PASS
π/4DQPSK	2-DH5		2395.48	-50.126	-19.16	-30.966	PASS
			2400.00	-50.933	-19.16	-31.773	PASS
			2483.50	-50.332	-20.5	-29.832	PASS
			2396.77	-49.299	-19.28	-30.019	PASS
			2400.00	-51.290	-19.28	-32.010	PASS
			2483.50	-51.725	-19.56	-32.165	PASS
8DPSK	3-DH5		2397.38	-50.345	-19.51	-30.835	PASS
			2400.00	-50.979	-19.51	-31.469	PASS
			2483.50	-51.365	-19.67	-31.695	PASS
			2397.96	-49.442	-18.83	-30.612	PASS
			2400.00	-49.713	-18.83	-30.883	PASS
			2483.50	-50.687	-20.01	-30.677	PASS

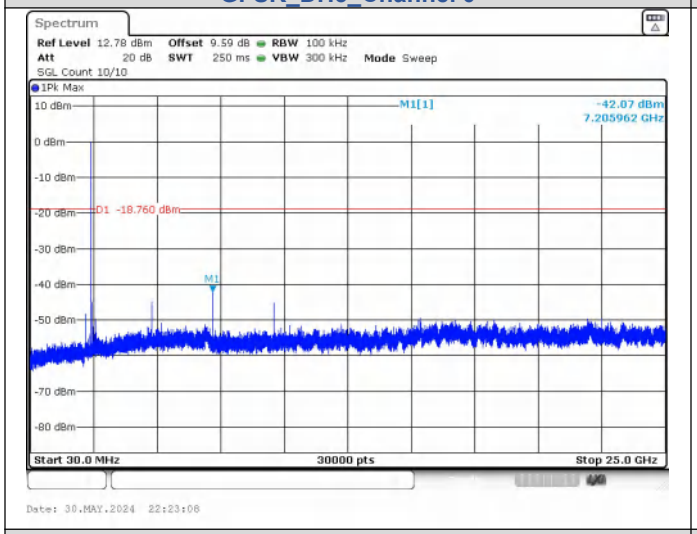
Test Graphs



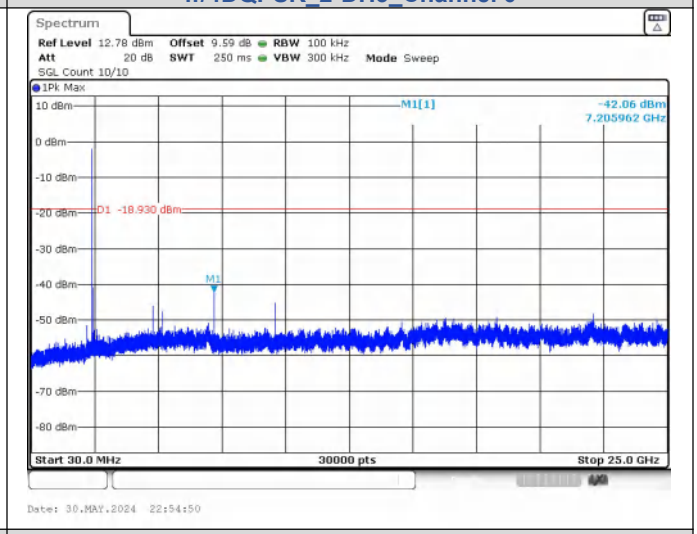
Out Of Band Emission
GFSK_DH5_Channel 0



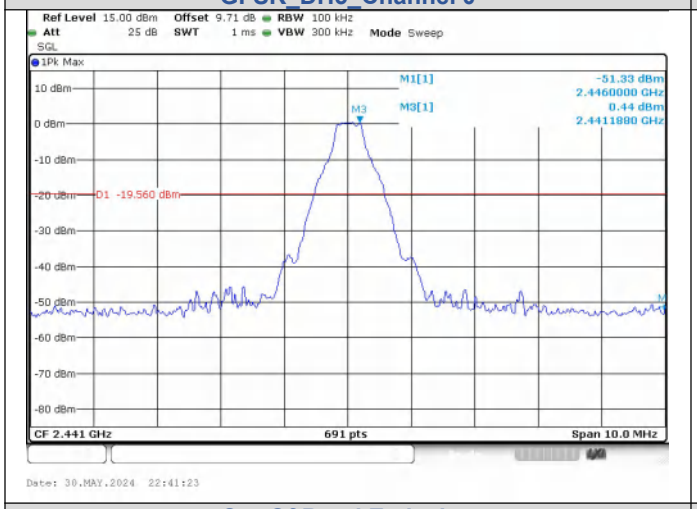
Out Of Band Emission
π/4DQPSK_2-DH5_Channel 0



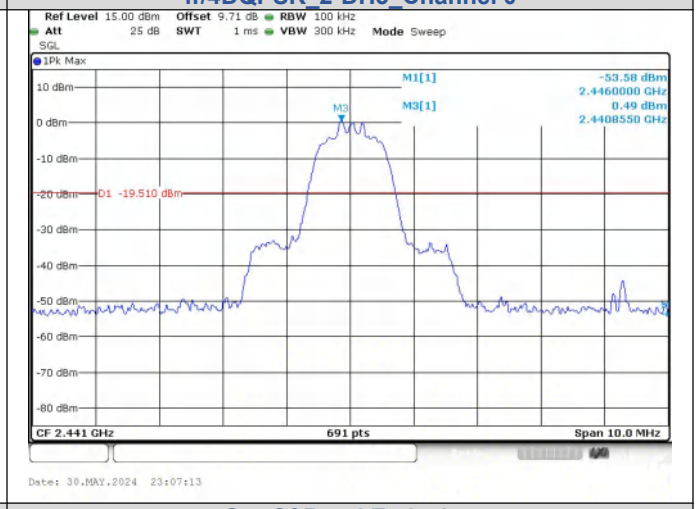
Spurious Emission
GFSK_DH5_Channel 0



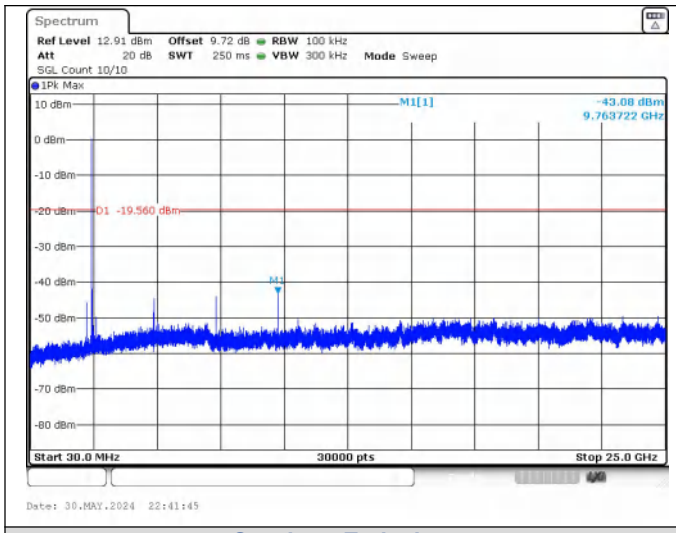
Spurious Emission
π/4DQPSK_2-DH5_Channel 0



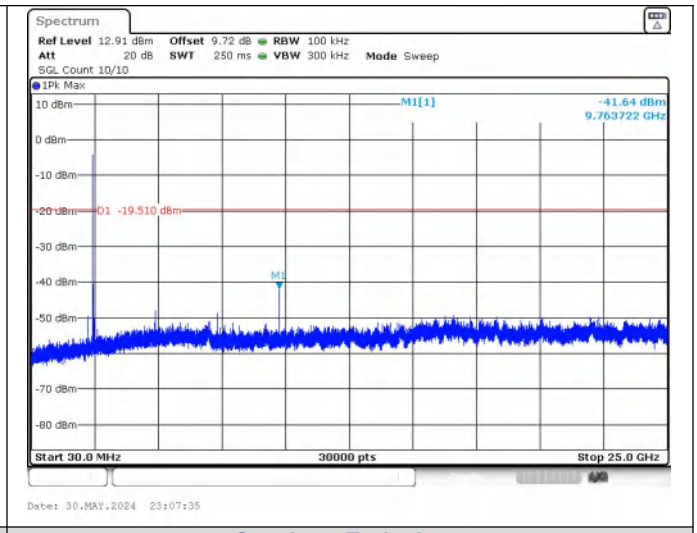
Out Of Band Emission
GFSK_DH5_Channel 39



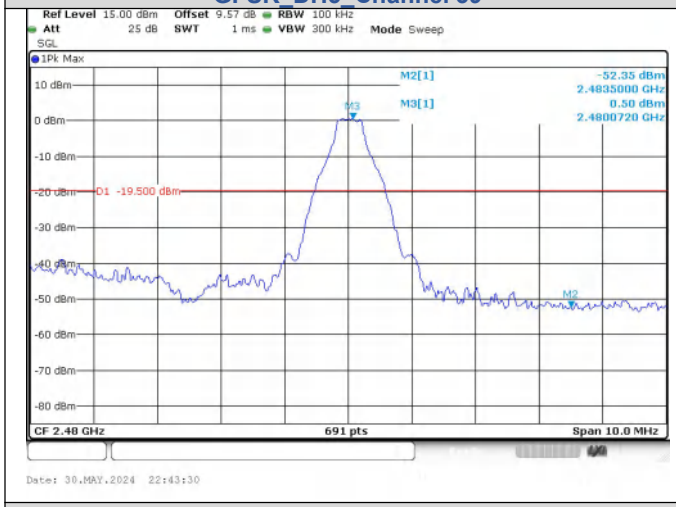
Out Of Band Emission
π/4DQPSK_2-DH5_Channel 39



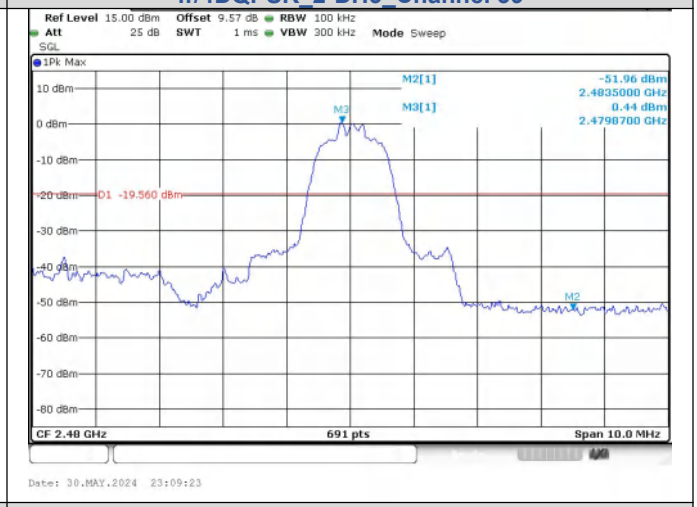
Spurious Emissions
GFSK_DH5_Channel 39



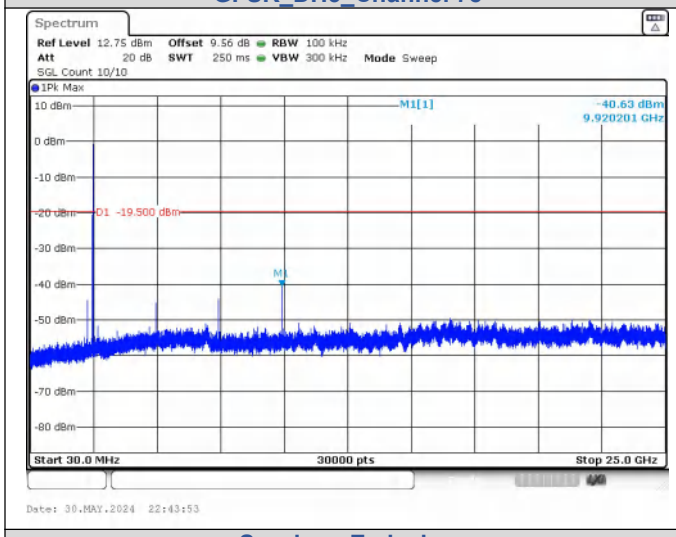
Spurious Emissions
π/4DQPSK_2-DH5_Channel 39



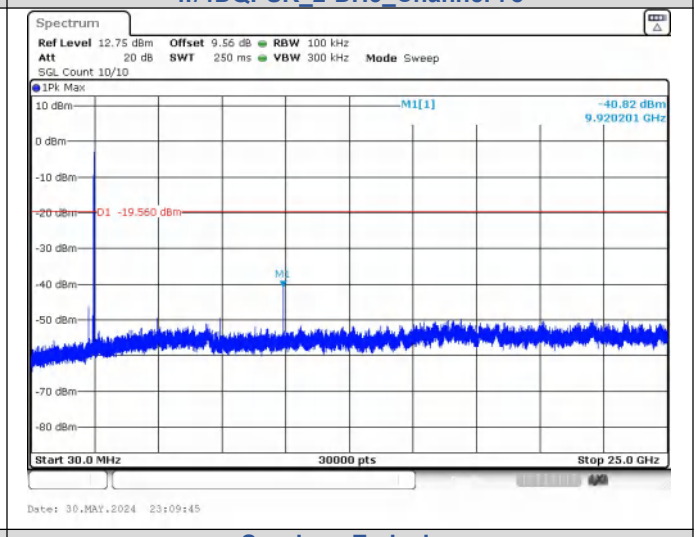
Out Of Band Emission
GFSK_DH5_Channel 78



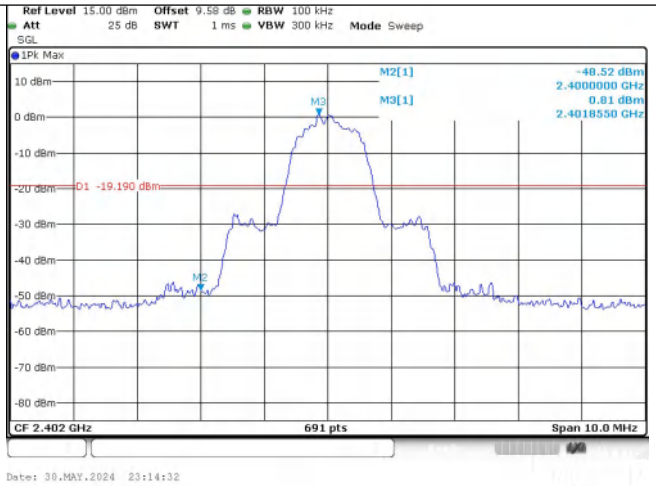
Out Of Band Emission
π/4DQPSK_2-DH5_Channel 78



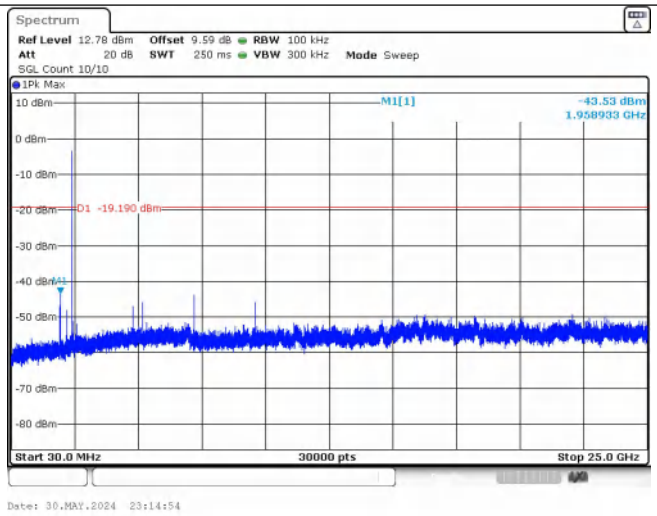
Spurious Emission
GFSK_DH5_Channel 78



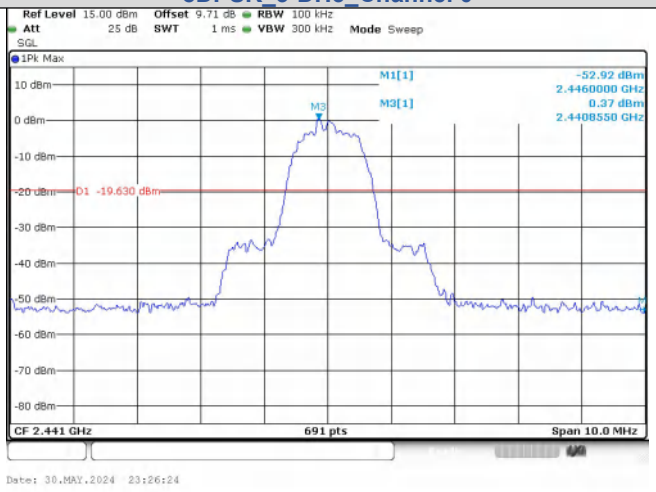
Spurious Emission
π/4DQPSK_2-DH5_Channel 78



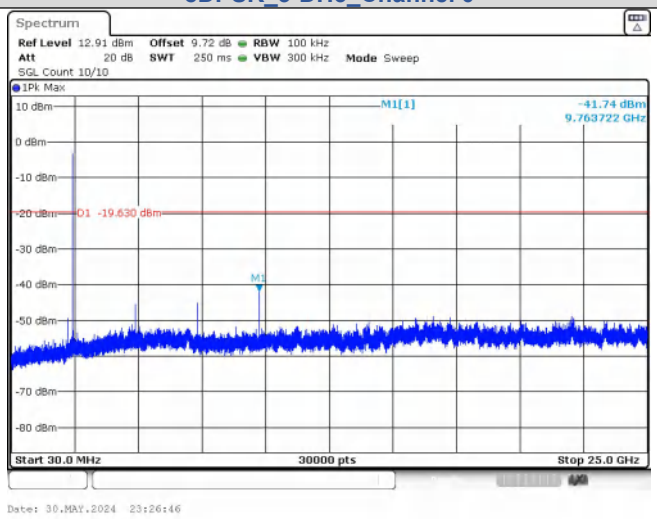
Out Of Band Emission
8DPSK_3-DH5_Channel 0



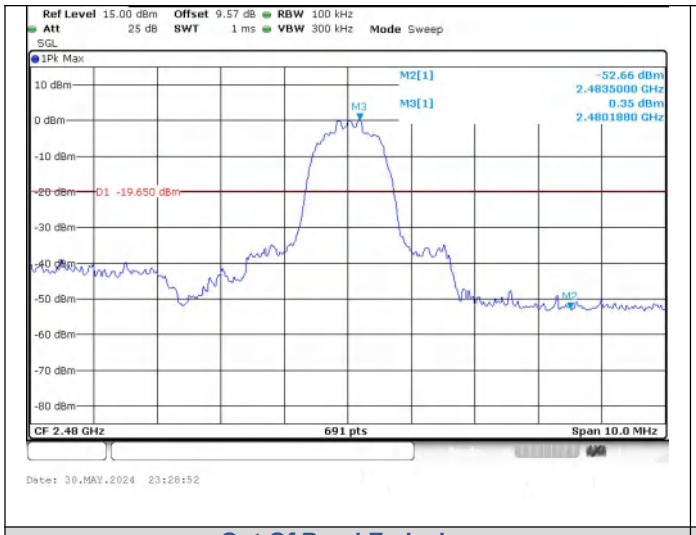
Spurious Emission
8DPSK_3-DH5_Channel 0



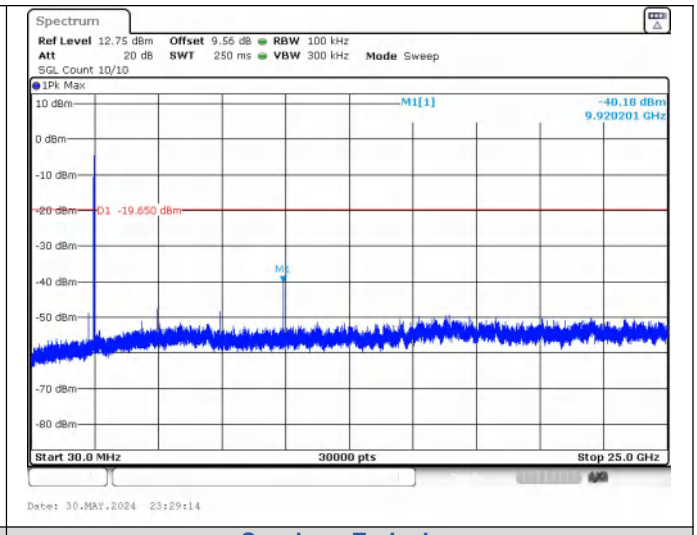
Out Of Band Emission
8DPSK_3-DH5_Channel 39



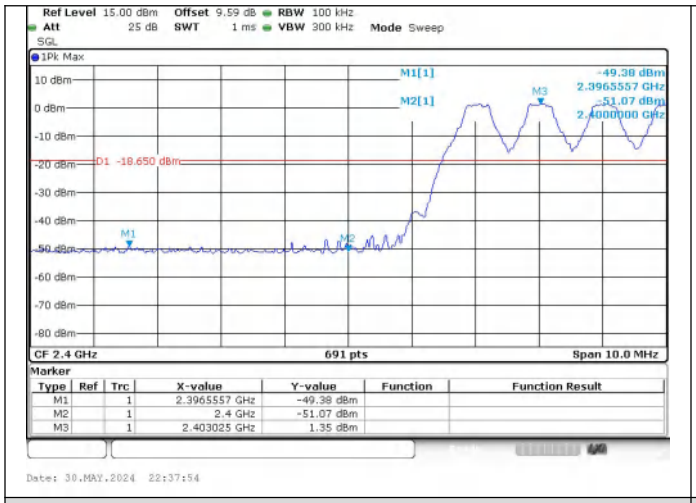
Spurious Emissions
8DPSK_3-DH5_Channel 39



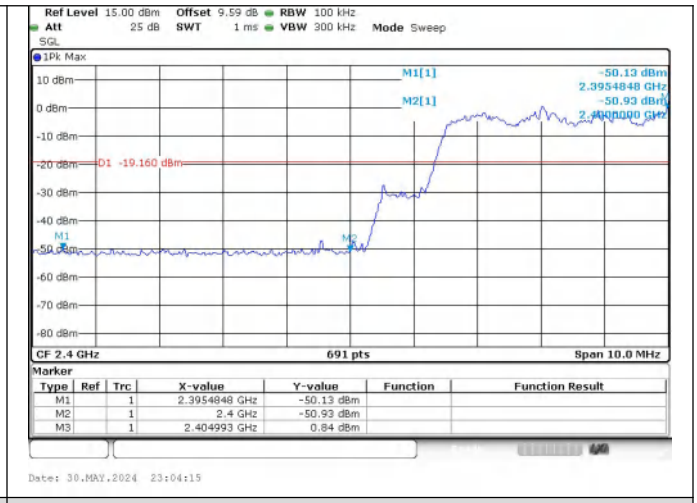
Out Of Band Emission
8DPSK_3-DH5_Channel 78



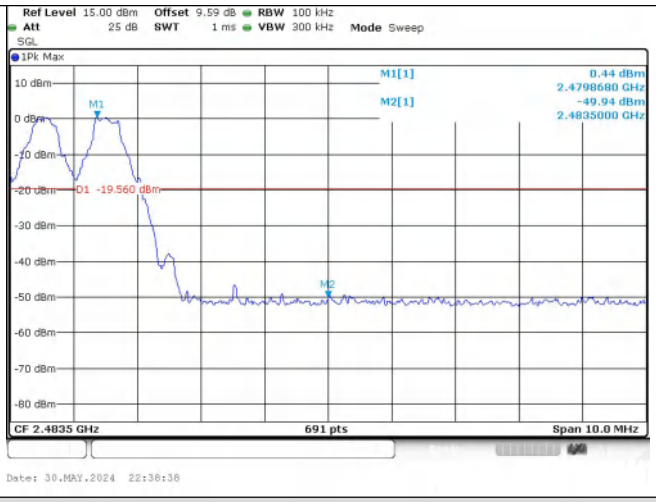
Spurious Emission
8DPSK_3-DH5_Channel 78



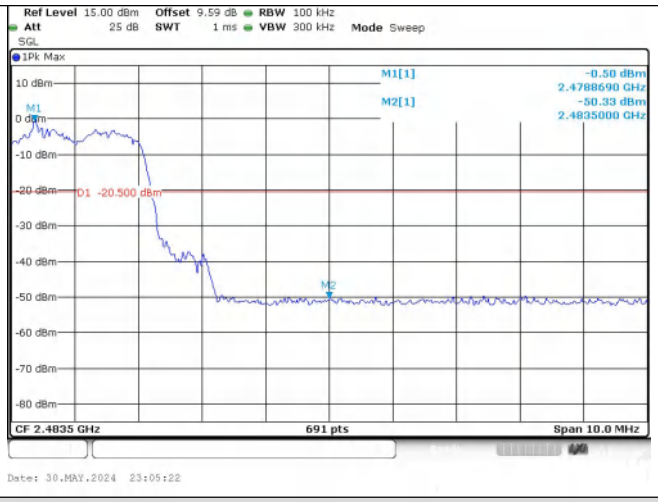
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



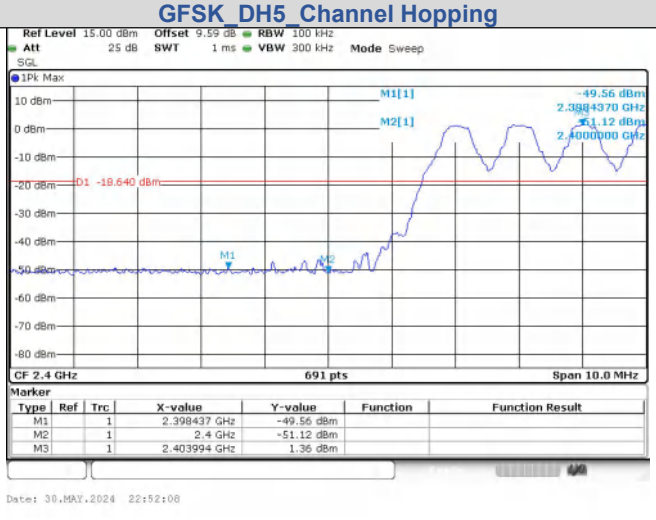
Out Of Band Emission(Left)
π/4DQPSK_2-DH5_Channel Hopping



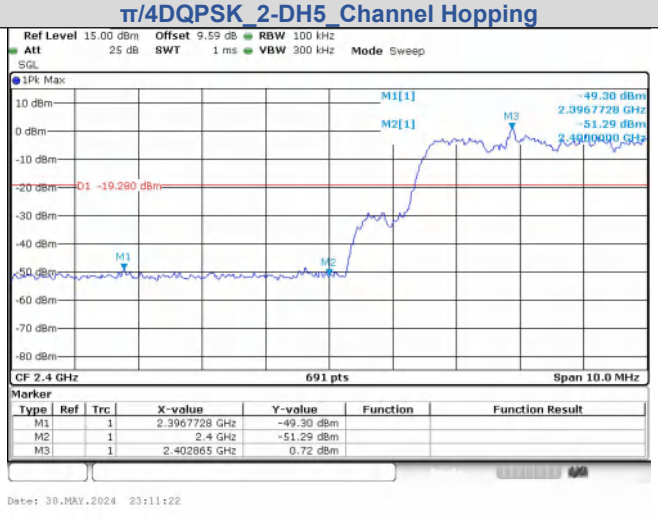
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



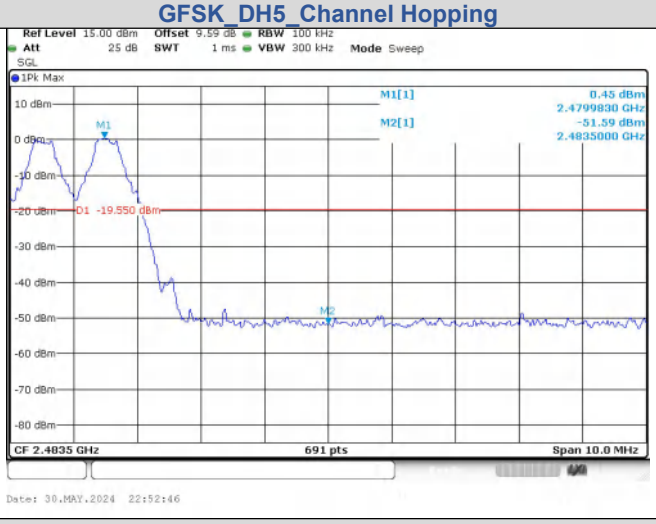
Out Of Band Emission(Right)
π/4DQPSK_2-DH5_Channel Hopping



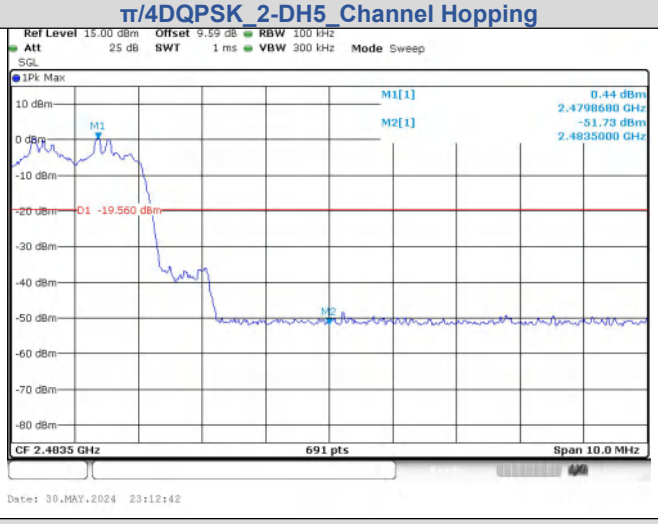
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



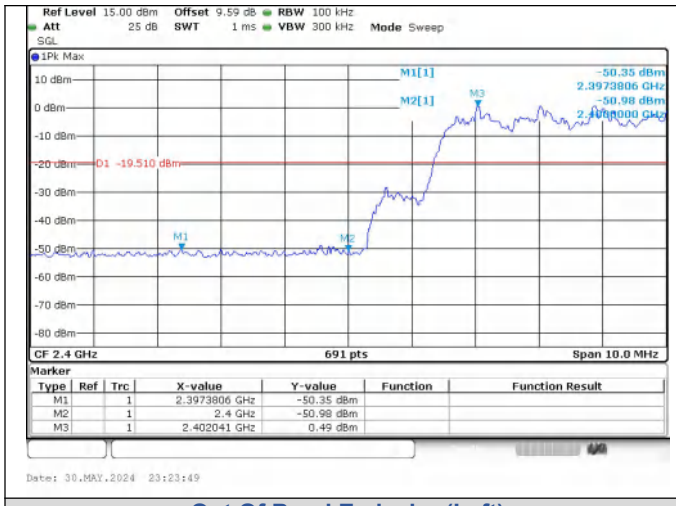
Out Of Band Emission(Left)
π/4DQPSK_2-DH5_Channel Hopping



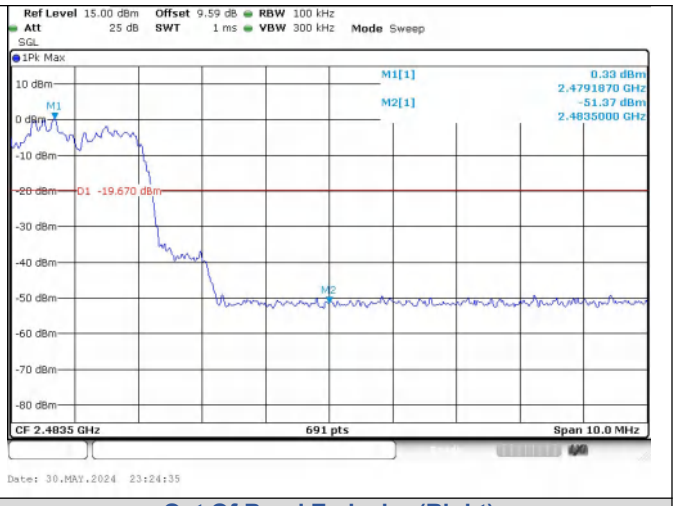
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



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

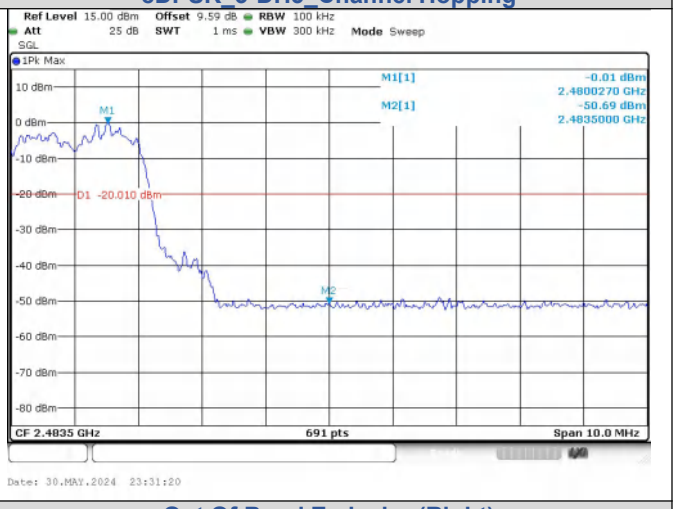


Out Of Band Emission(Left)
8DPSK_3-DH5_Channel Hopping



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

Right

Test Result

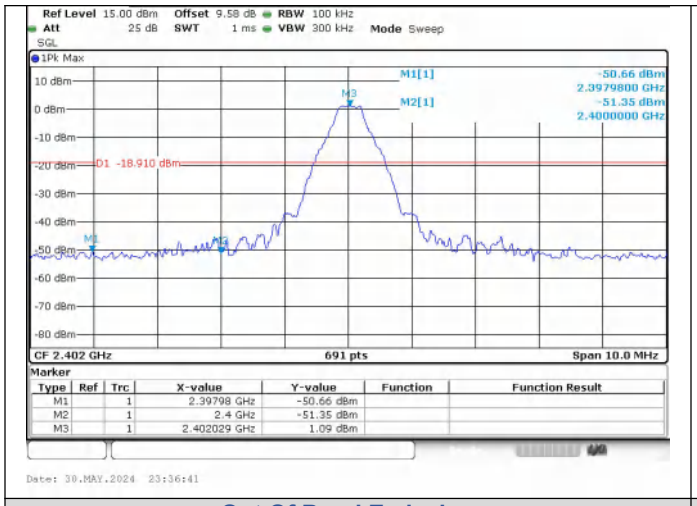
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-51.347	-18.91	-32.437	PASS
			2397.98	-50.661	-18.91	-31.751	PASS
			7206.00	-40.536	-18.91	-21.626	PASS
		39	9763.72	-42.522	-19.62	-22.902	PASS
		78	2483.50	-52.564	-19.6	-32.964	PASS
			9920.20	-40.540	-19.6	-20.940	PASS
π/4DQPSK	2-DH5	0	2400.00	-48.023	-18.98	-29.043	PASS
			7205.96	-43.974	-18.98	-24.994	PASS
		39	9764.55	-42.575	-20.6	-21.975	PASS
		78	2483.50	-50.799	-19.74	-31.059	PASS
			9920.20	-40.731	-19.74	-20.991	PASS
8DPSK	3-DH5	0	2400.00	-49.467	-19.15	-30.317	PASS
			7205.96	-41.646	-19.15	-22.496	PASS
		39	9763.72	-43.119	-19.85	-23.269	PASS
		78	2483.50	-52.919	-19.79	-33.130	PASS
			9920.20	-40.525	-19.79	-20.735	PASS

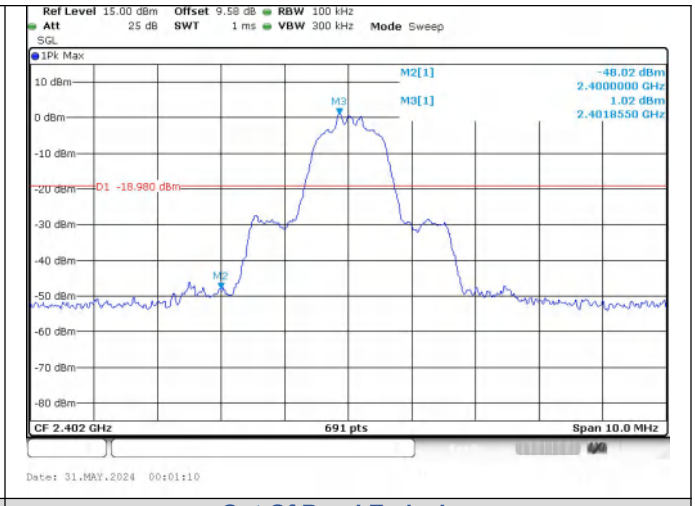
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2398.08	-50.296	-19.1	-31.196	PASS
			2400.00	-52.566	-19.1	-33.466	PASS
			2483.50	-52.114	-19.73	-32.384	PASS
			2396.95	-50.364	-19.09	-31.274	PASS
			2400.00	-50.781	-19.09	-31.691	PASS
			2483.50	-51.307	-19.74	-31.567	PASS
π/4DQPSK	2-DH5		2400.00	-47.765	-19.73	-28.035	PASS
			2483.50	-50.690	-19.71	-30.980	PASS
			2395.59	-50.283	-19.73	-30.553	PASS
			2400.00	-51.769	-19.73	-32.039	PASS
			2483.50	-51.718	-19.94	-31.778	PASS
8DPSK	3-DH5		2395.04	-49.587	-19.58	-30.007	PASS
			2400.00	-51.633	-19.58	-32.053	PASS
			2483.50	-50.866	-20.26	-30.606	PASS
			2395.53	-49.331	-19.2	-30.131	PASS
			2400.00	-50.492	-19.2	-31.292	PASS
			2483.50	-51.027	-19.83	-31.197	PASS

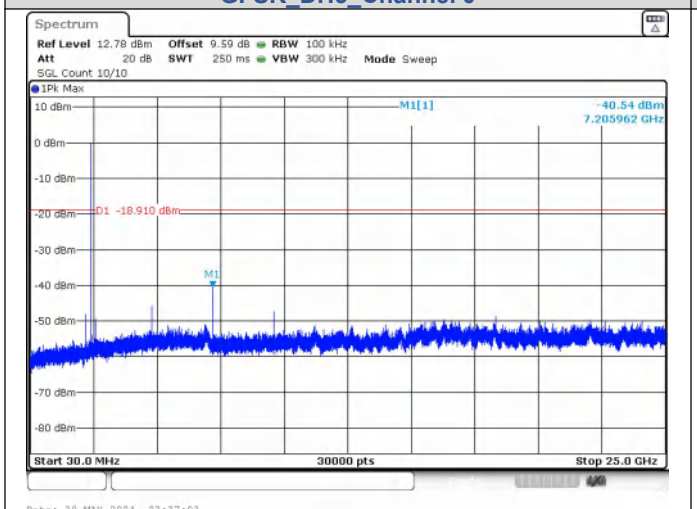
Test Graphs



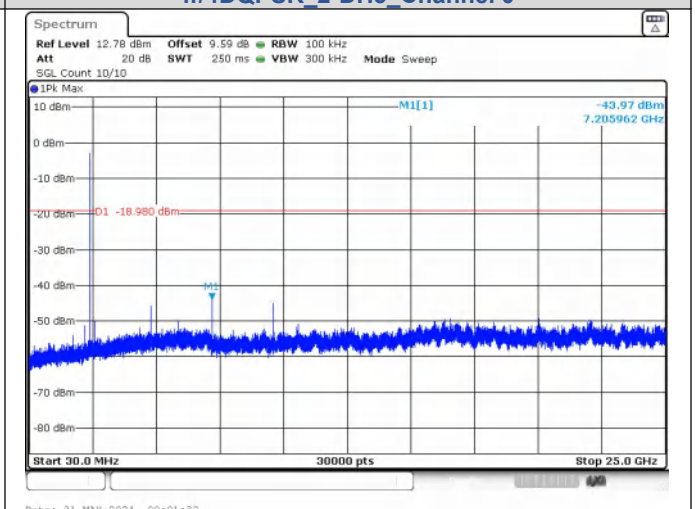
Out Of Band Emission
GFSK_DH5_Channel 0



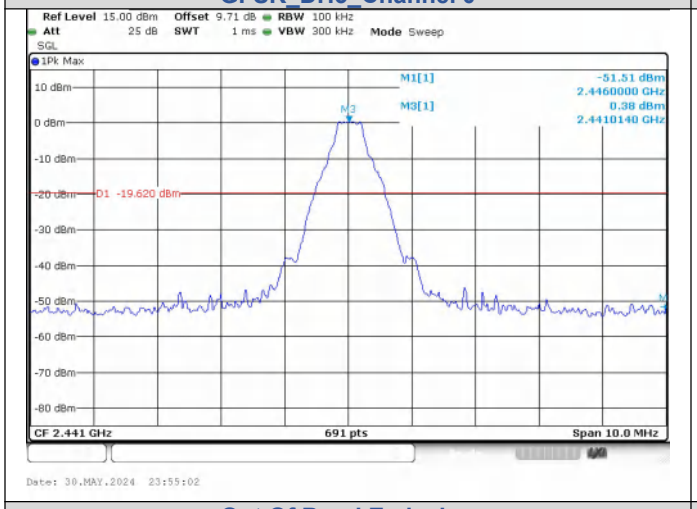
Out Of Band Emission
π/4DQPSK_2-DH5_Channel 0



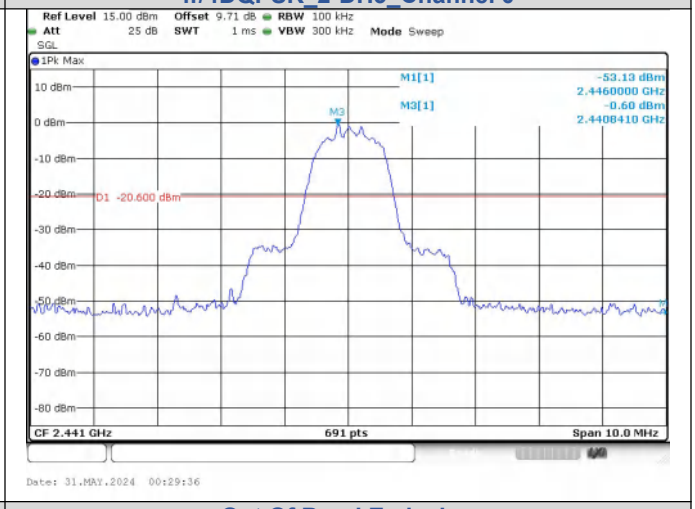
Spurious Emission
GFSK_DH5_Channel 0



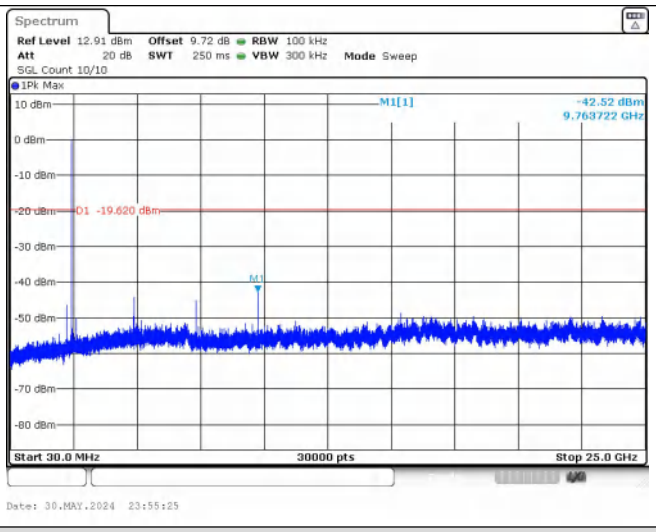
Spurious Emission
π/4DQPSK_2-DH5_Channel 0



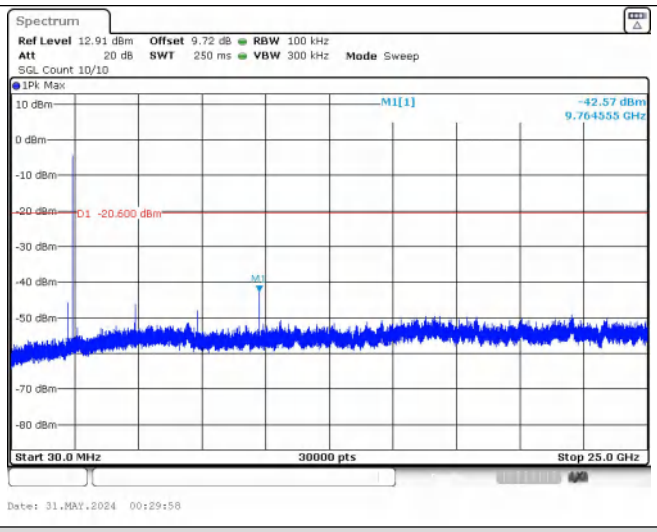
Out Of Band Emission
GFSK_DH5_Channel 39



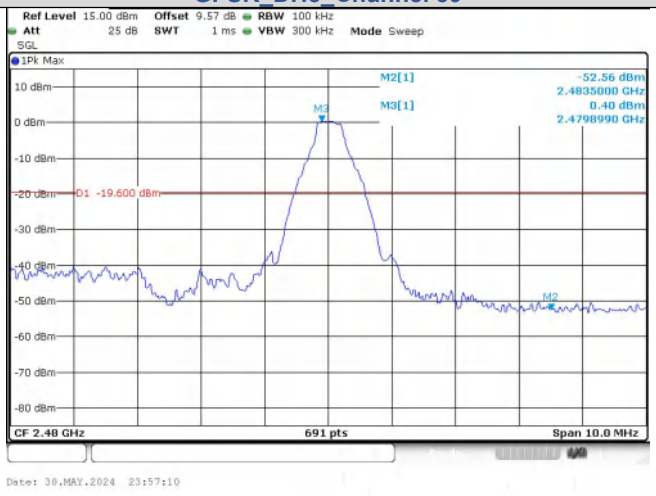
Out Of Band Emission
π/4DQPSK_2-DH5_Channel 39



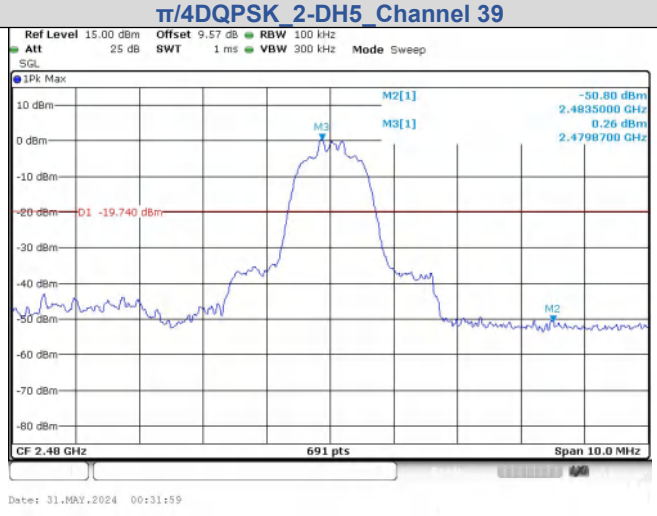
Spurious Emissions
GFSK_DH5_Channel 39



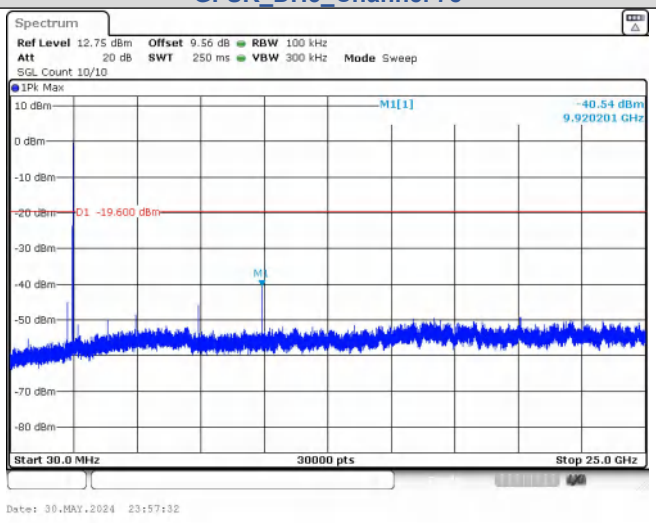
Spurious Emissions
π/4DQPSK_2-DH5_Channel 39



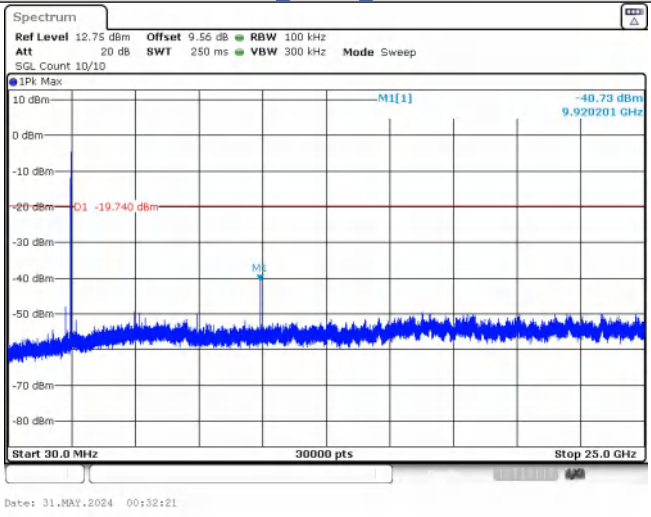
Out Of Band Emission
GFSK_DH5_Channel 78



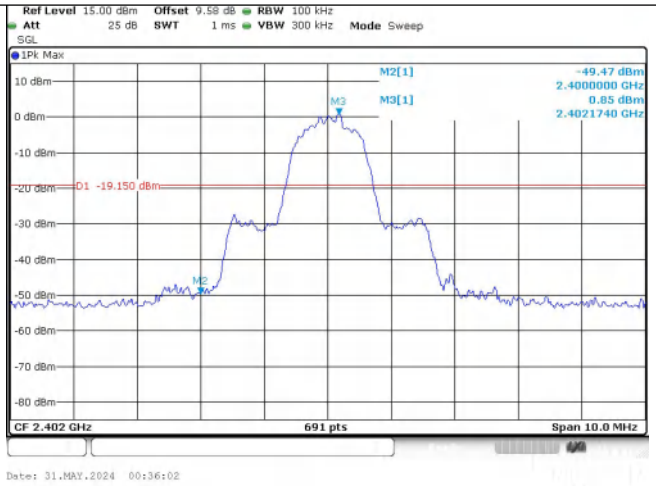
Out Of Band Emission
π/4DQPSK_2-DH5_Channel 78



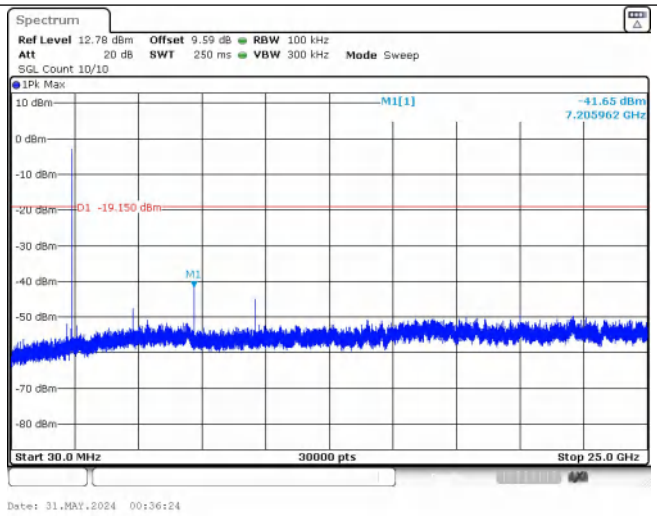
Spurious Emission
GFSK_DH5_Channel 78



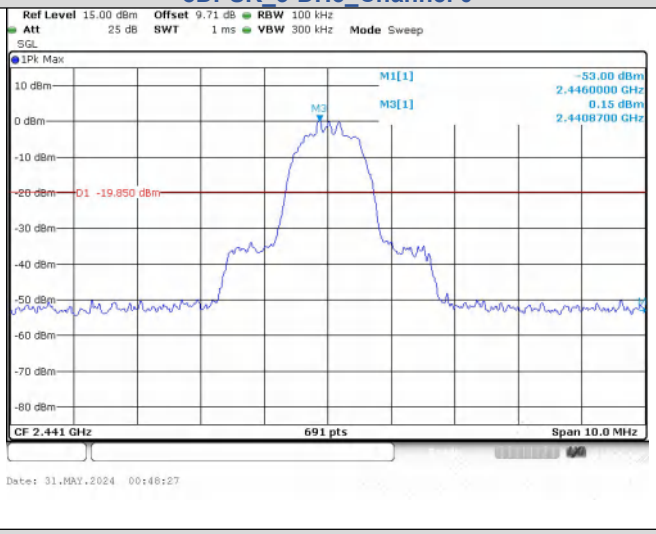
Spurious Emission
π/4DQPSK_2-DH5_Channel 78



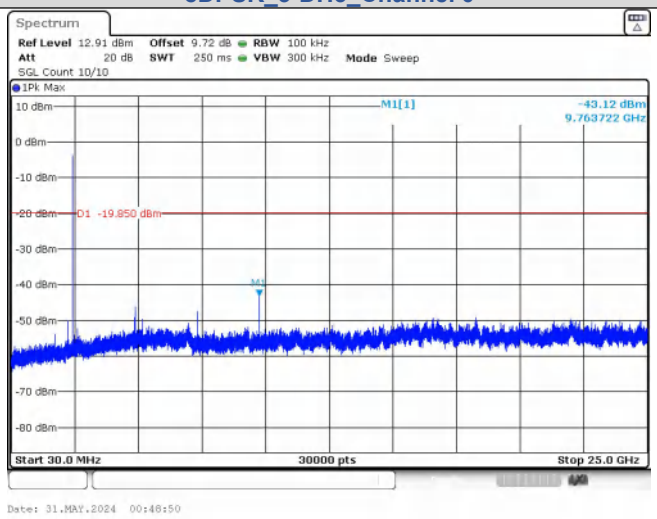
Out Of Band Emission
8DPSK_3-DH5_Channel 0



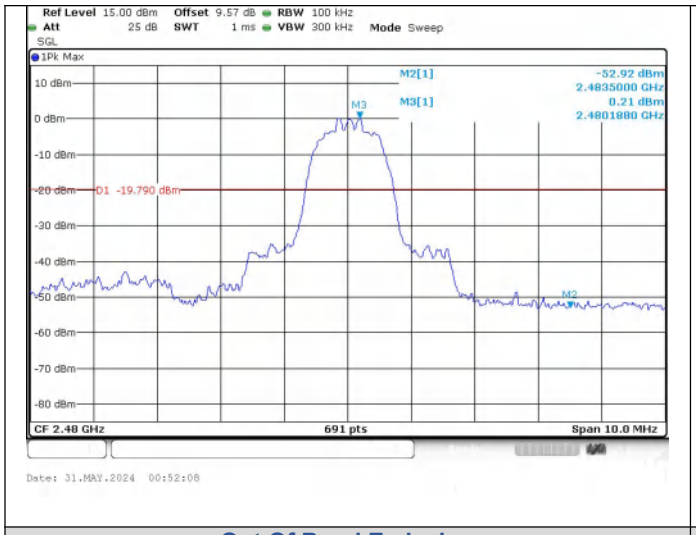
Spurious Emission
8DPSK_3-DH5_Channel 0



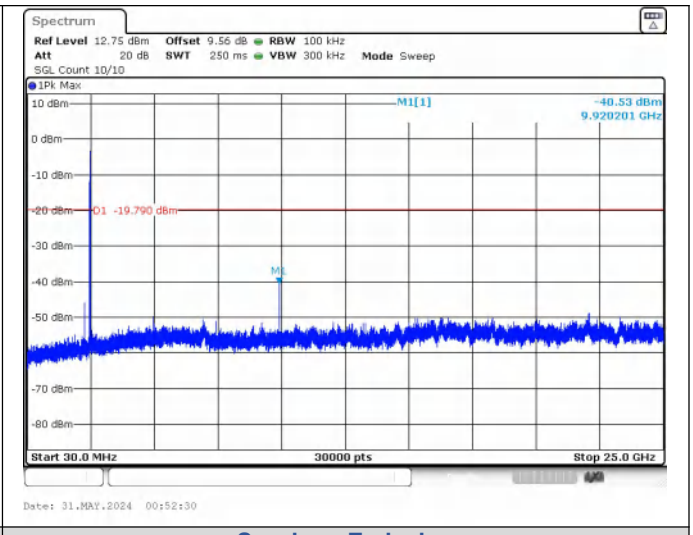
Out Of Band Emission
8DPSK_3-DH5_Channel 39



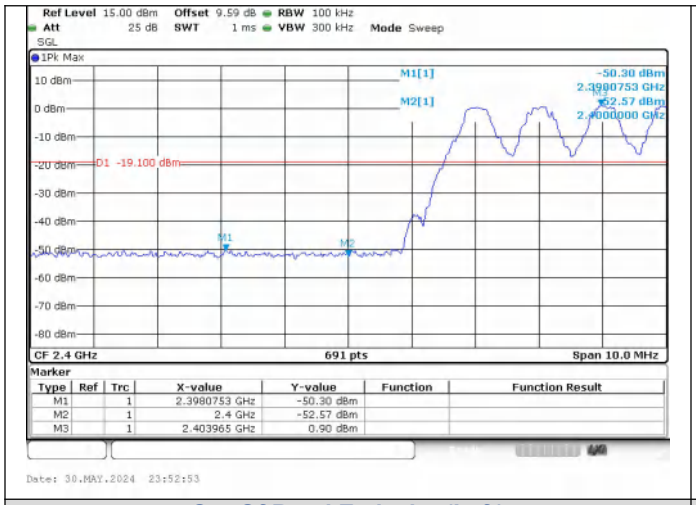
Spurious Emissions
8DPSK_3-DH5_Channel 39



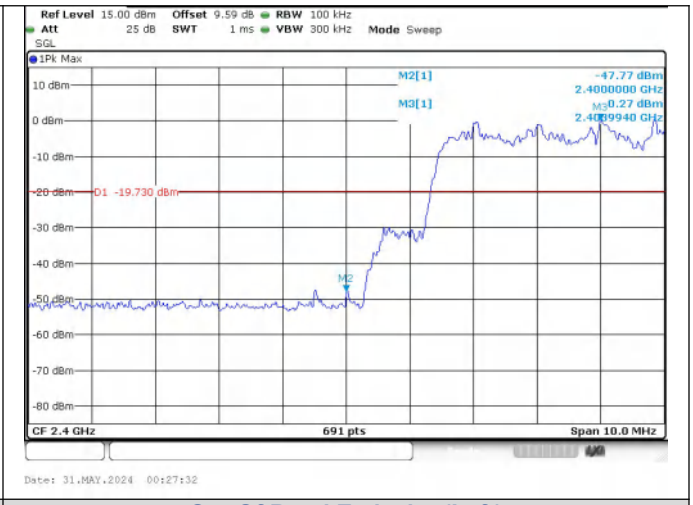
Out Of Band Emission
8DPSK_3-DH5_Channel 78



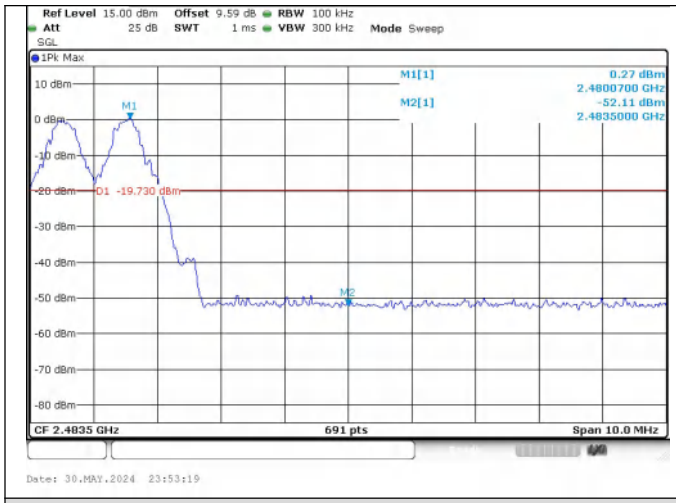
Spurious Emission
8DPSK_3-DH5_Channel 78



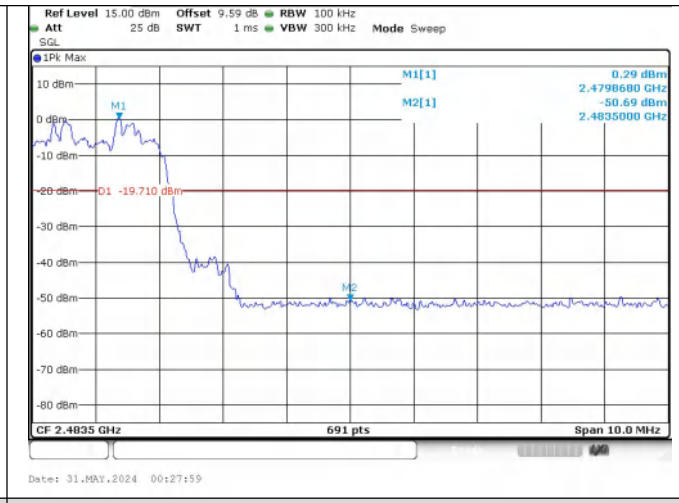
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



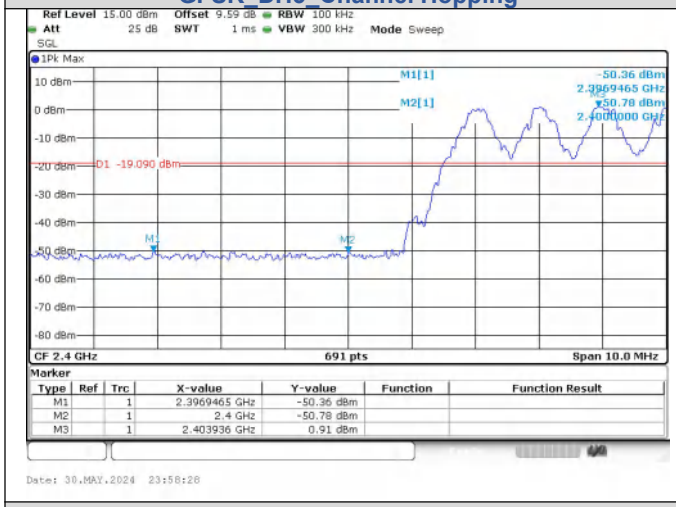
Out Of Band Emission(Left)
π/4DQPSK_2-DH5_Channel Hopping



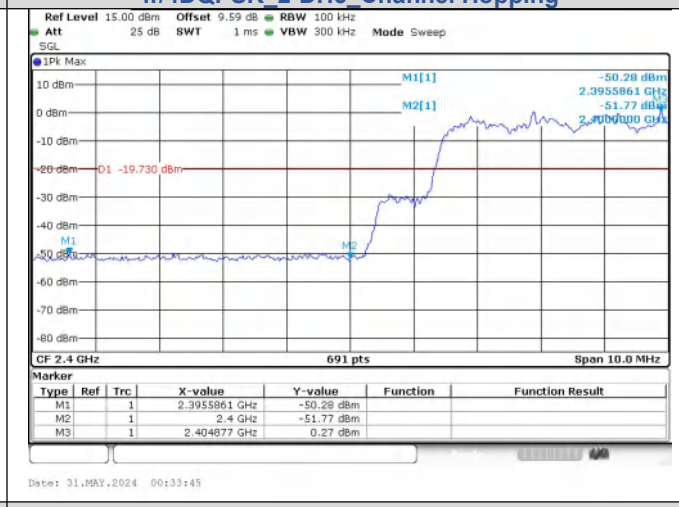
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



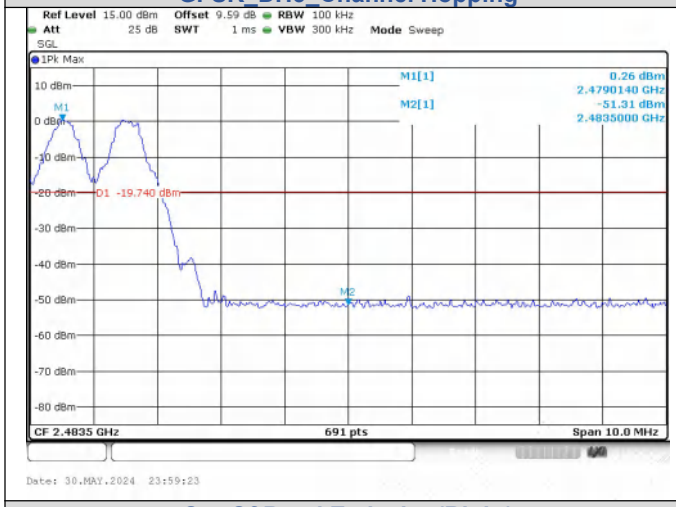
Out Of Band Emission(Right)
π/4DQPSK_2-DH5_Channel Hopping



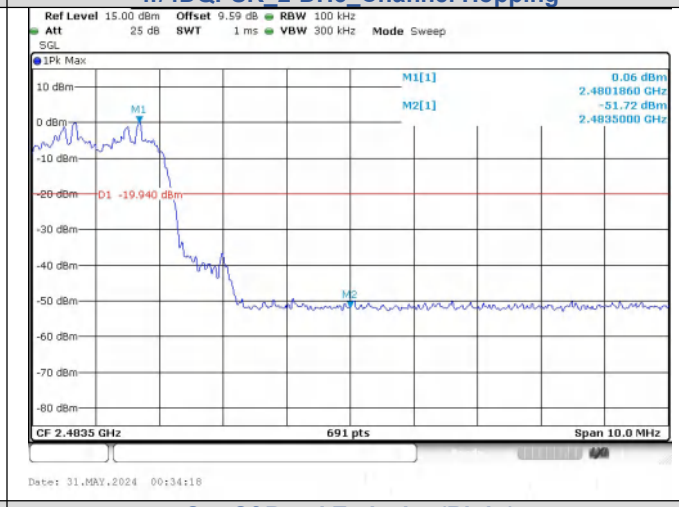
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



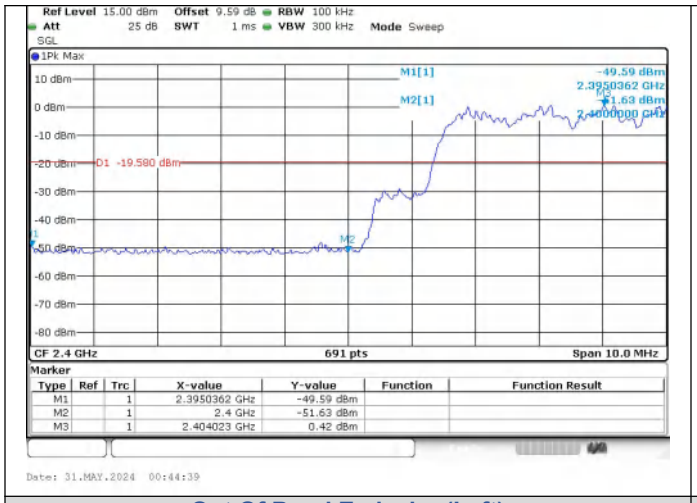
Out Of Band Emission(Left)
π/4DQPSK_2-DH5_Channel Hopping



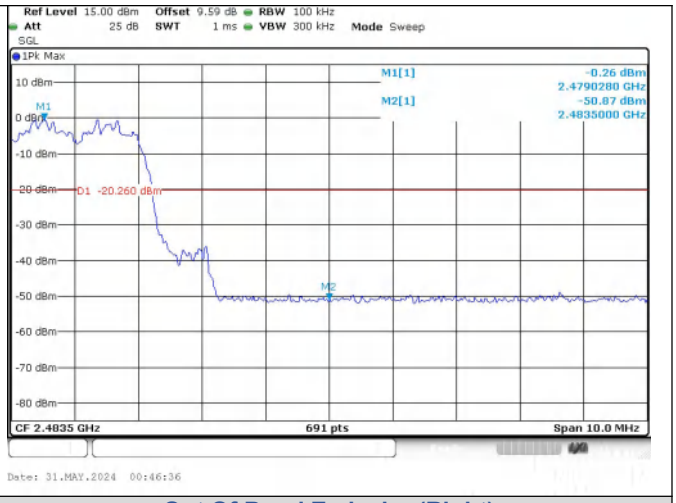
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



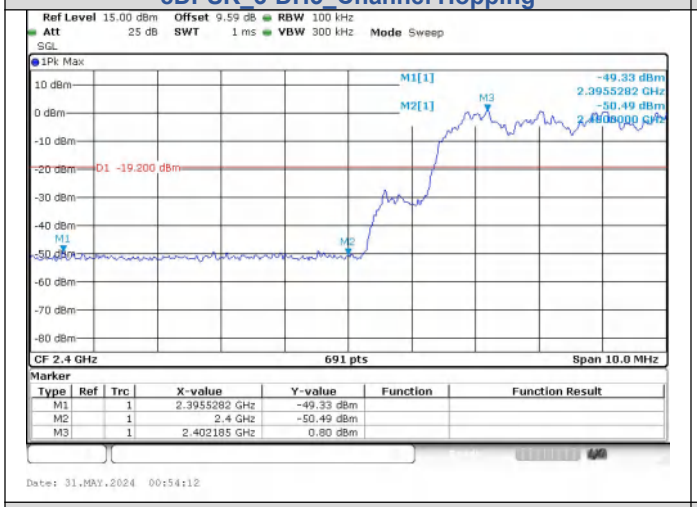
Out Of Band Emission(Right)
π/4DQPSK_2-DH5_Channel Hopping



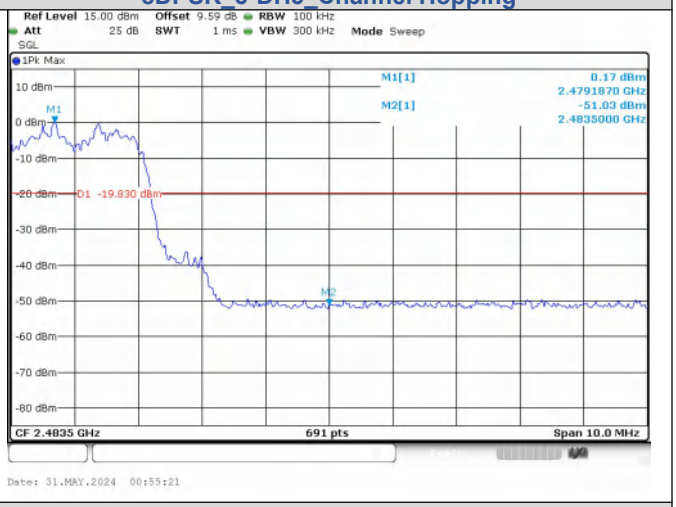
Out Of Band Emission(Left)
8DPSK_3-DH5_Channel Hopping



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

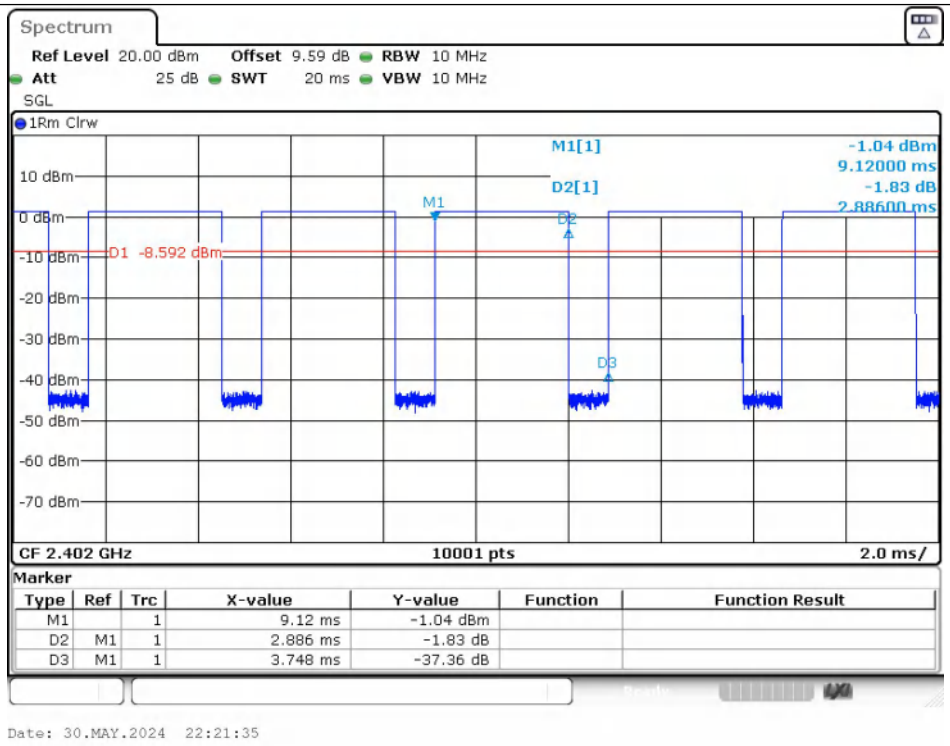
Duty Cycle

Left

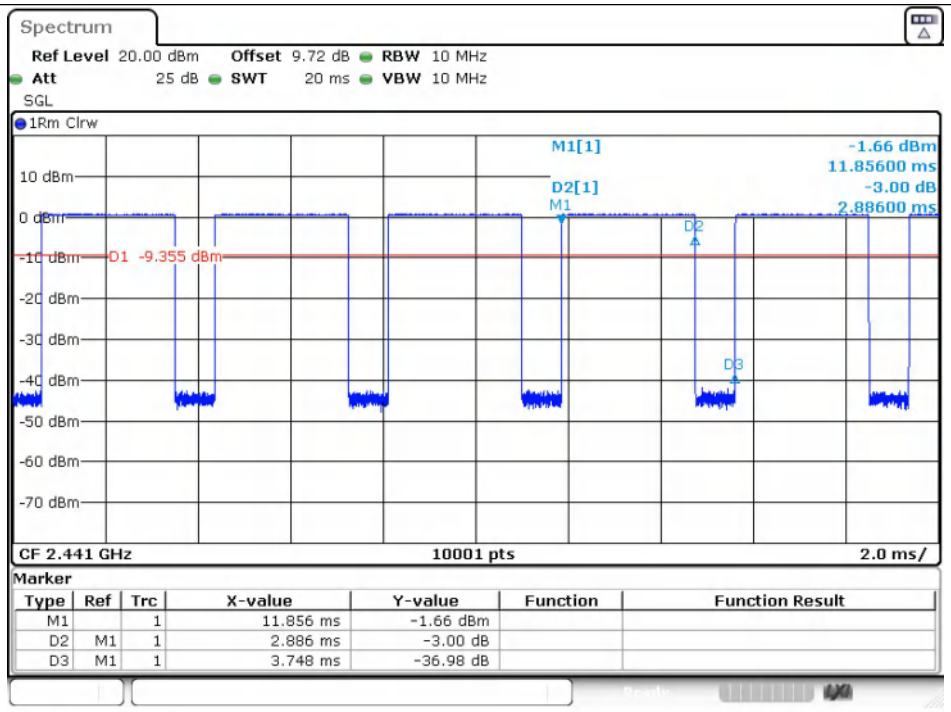
Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.886	3.748	77.00	0.7700	1.1351	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	2.892	3.748	77.16	0.7716	1.1261	0.35
		39	2.892	3.748	77.16	0.7716	1.1261	0.35
		78	2.890	3.748	77.11	0.7711	1.1289	0.35
8DPSK	3-DH5	0	2.894	3.748	77.21	0.7721	1.1233	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

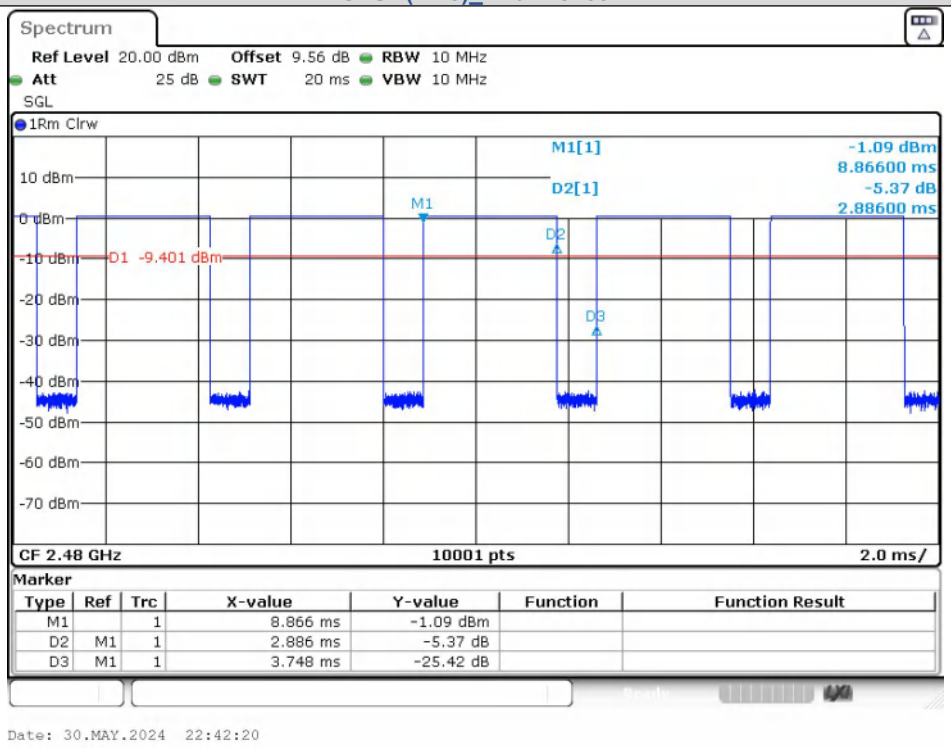
Test Graphs



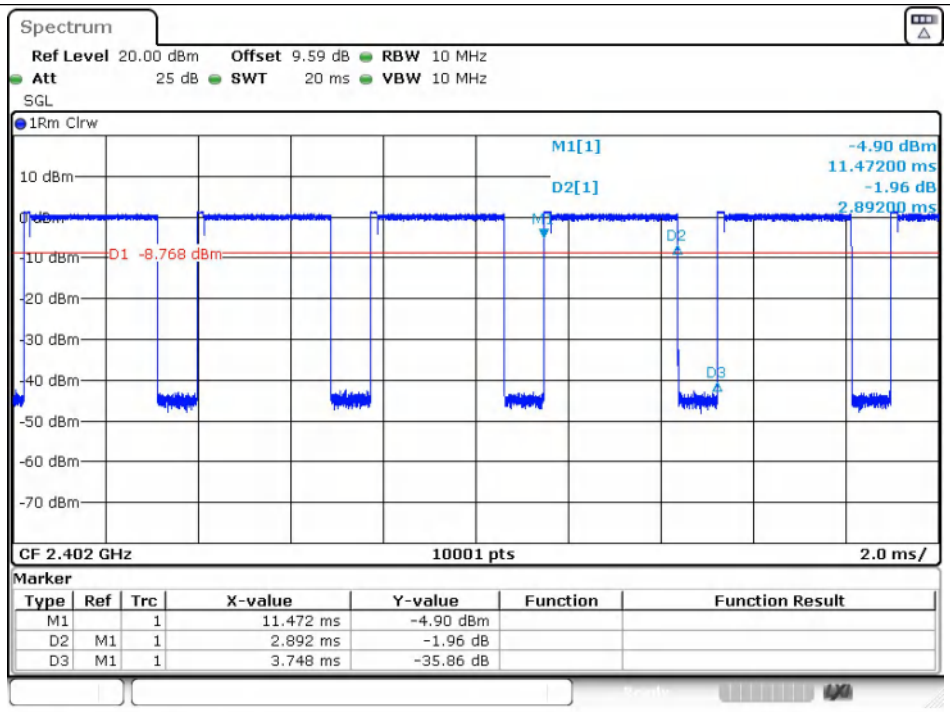
GFSK(DH5)_Channel 0



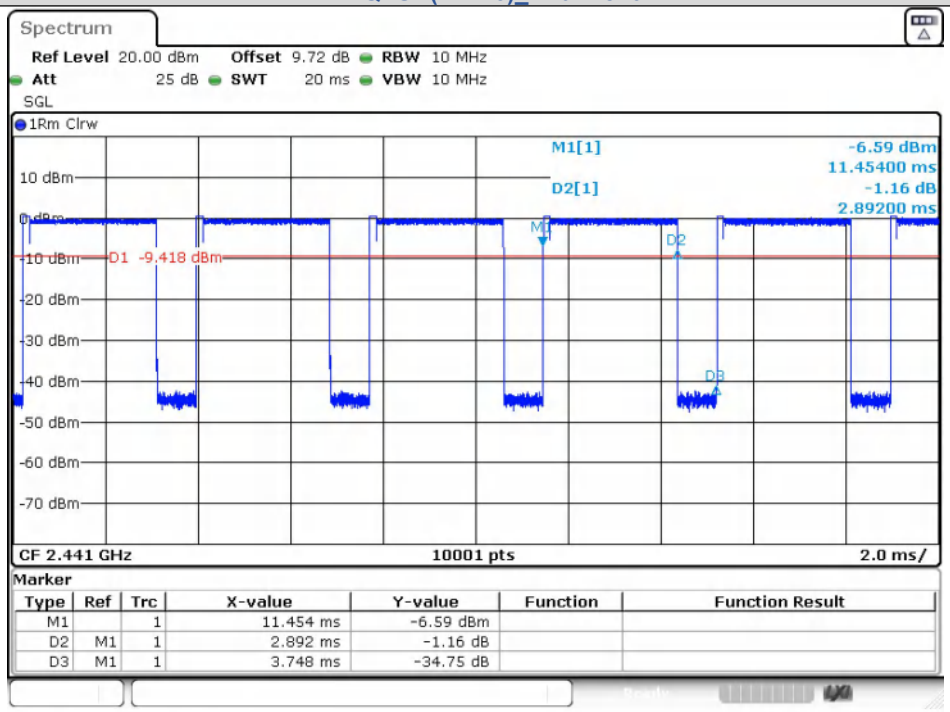
GFSK(DH5)_Channel 39



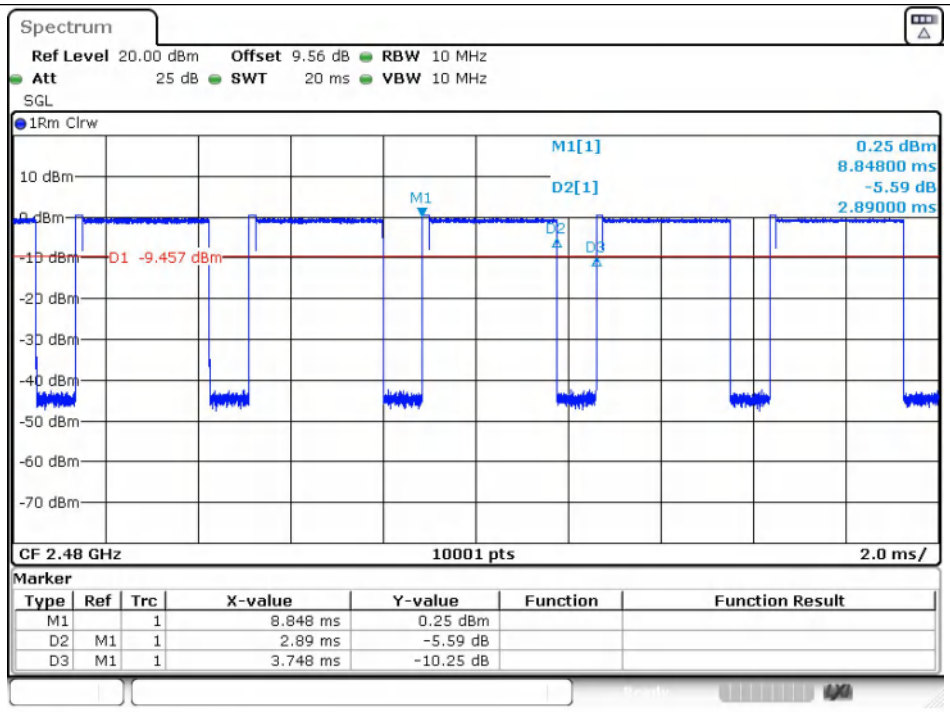
GFSK(DH5)_Channel 78



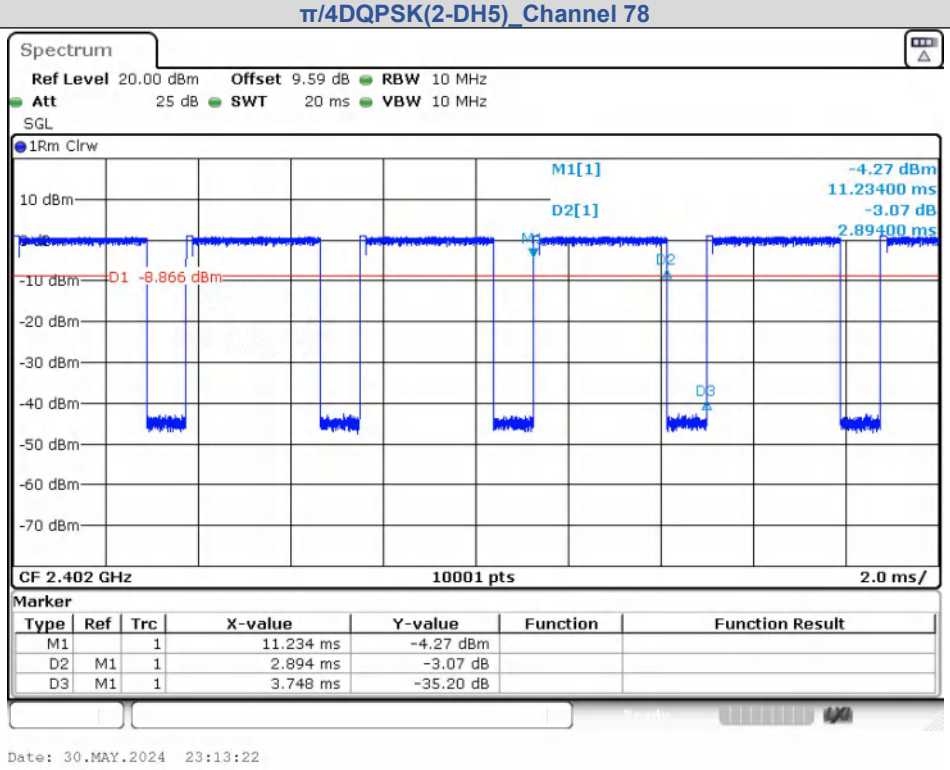
π/4DQPSK(2-DH5)_Channel 0



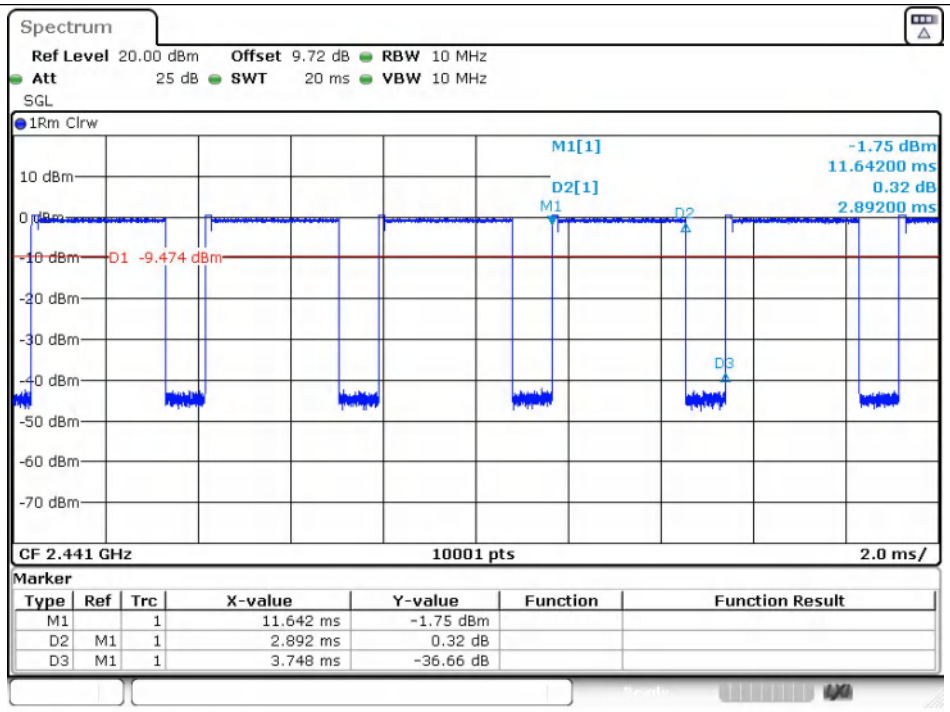
π/4DQPSK(2-DH5)_Channel 39



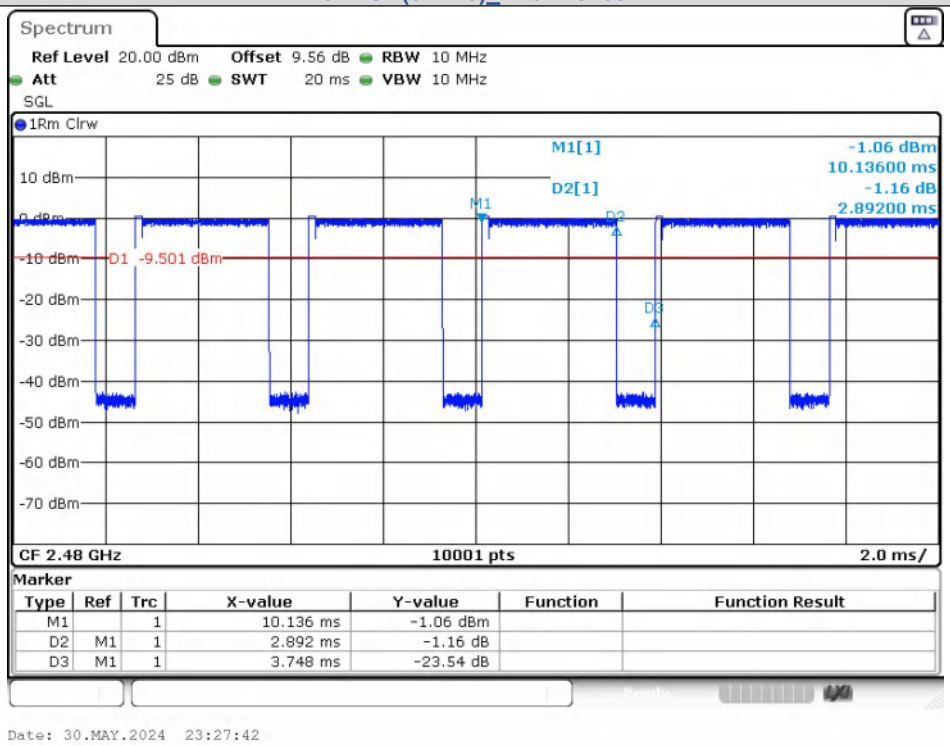
π/4DQPSK(2-DH5)_Channel 78



8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39



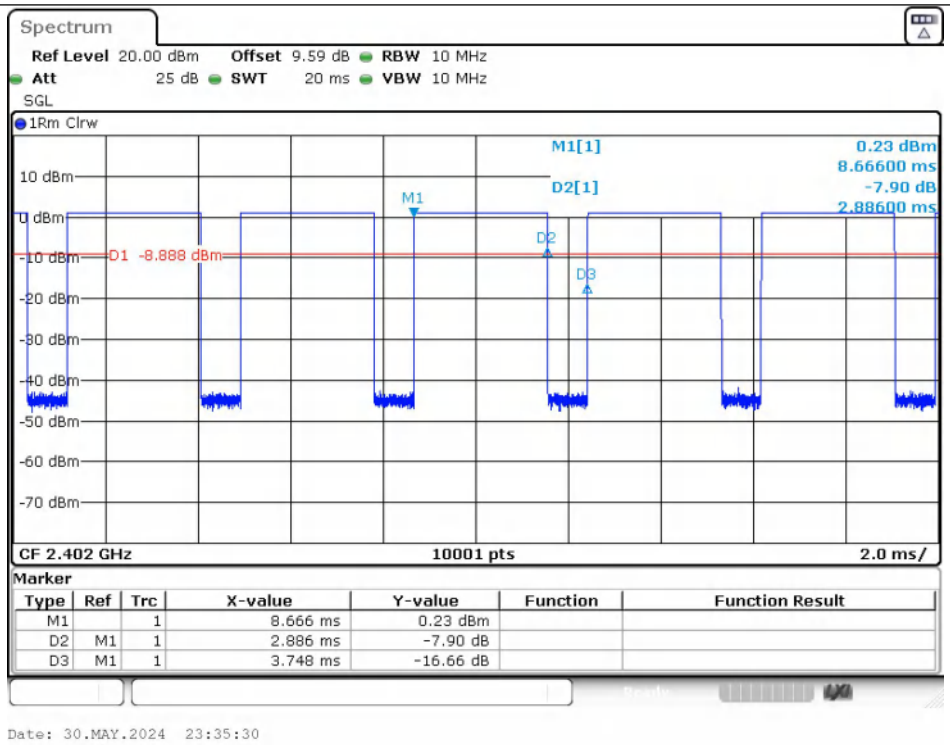
8DPSK(3-DH5)_Channel 78

Right

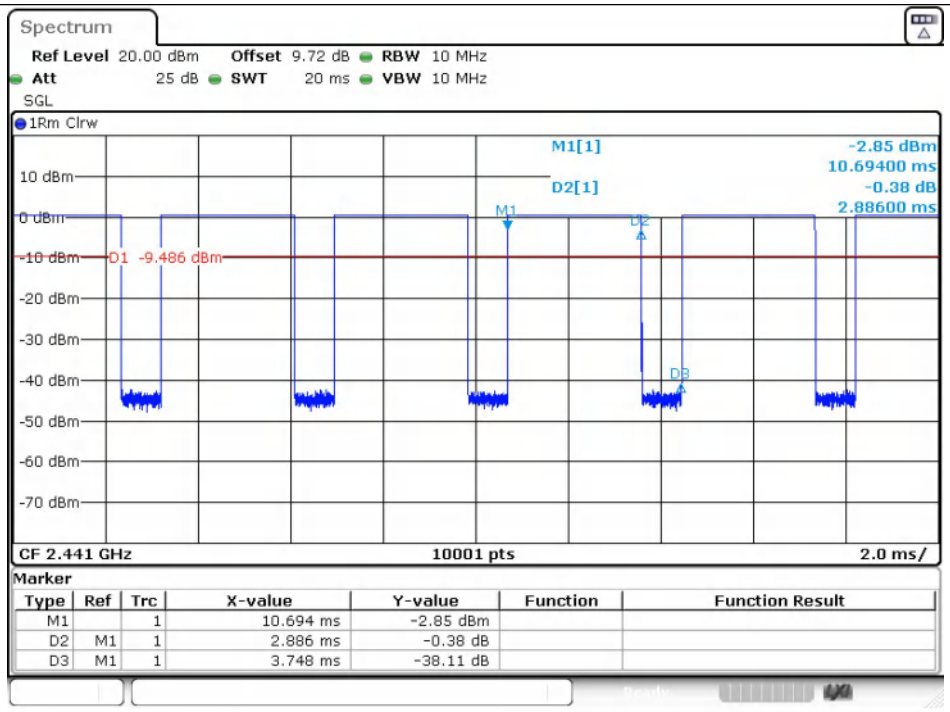
Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.886	3.748	77.00	0.7700	1.1351	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	2.892	3.748	77.16	0.7716	1.1261	0.35
8DPSK	3-DH5	0	2.892	3.746	77.20	0.7720	1.1238	0.35
		39	2.894	3.748	77.21	0.7721	1.1233	0.35
		78	2.892	3.748	77.16	0.7716	1.1261	0.35

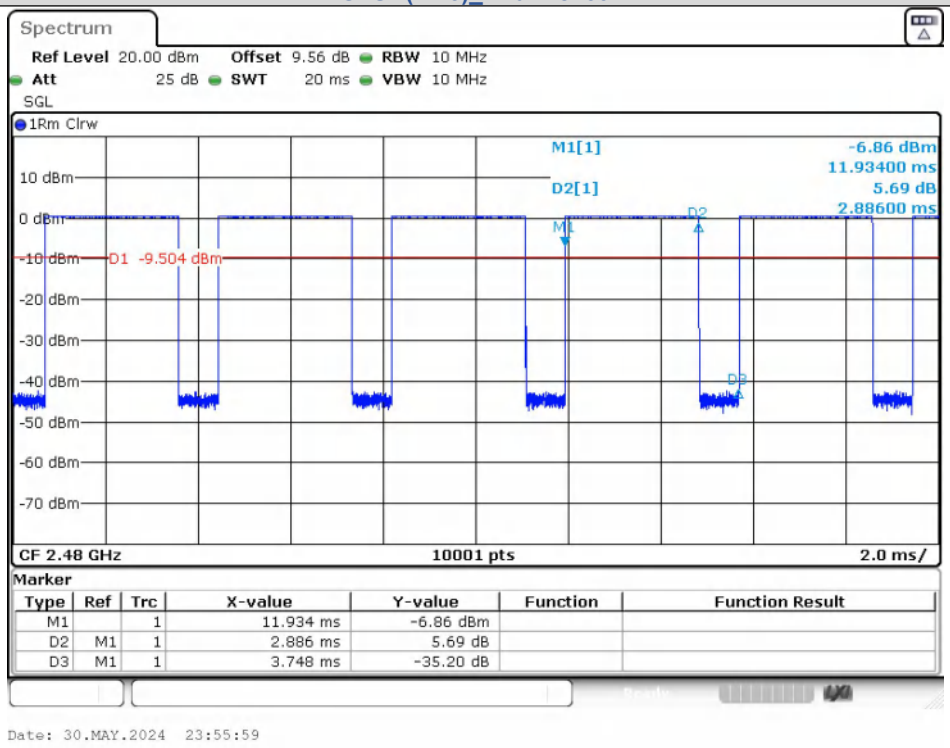
Test Graphs



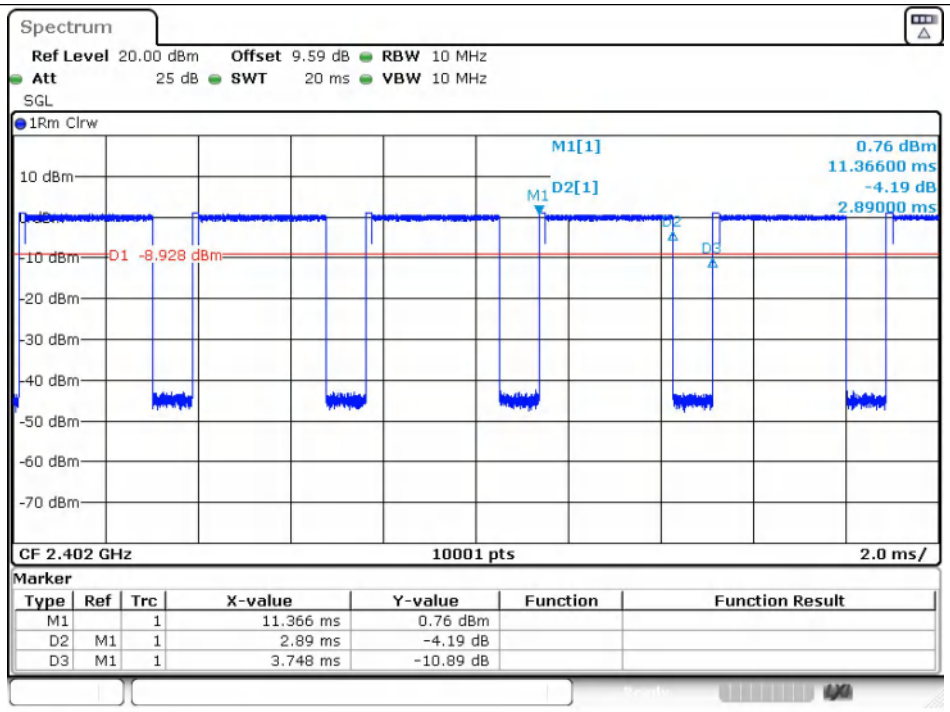
GFSK(DH5)_Channel 0



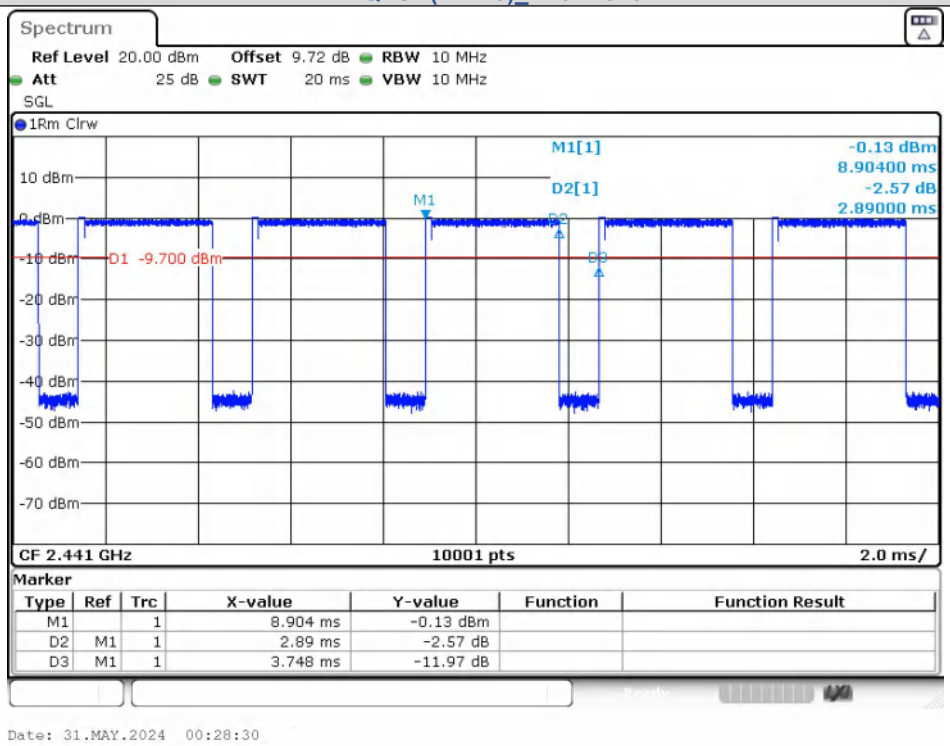
GFSK(DH5)_Channel 39



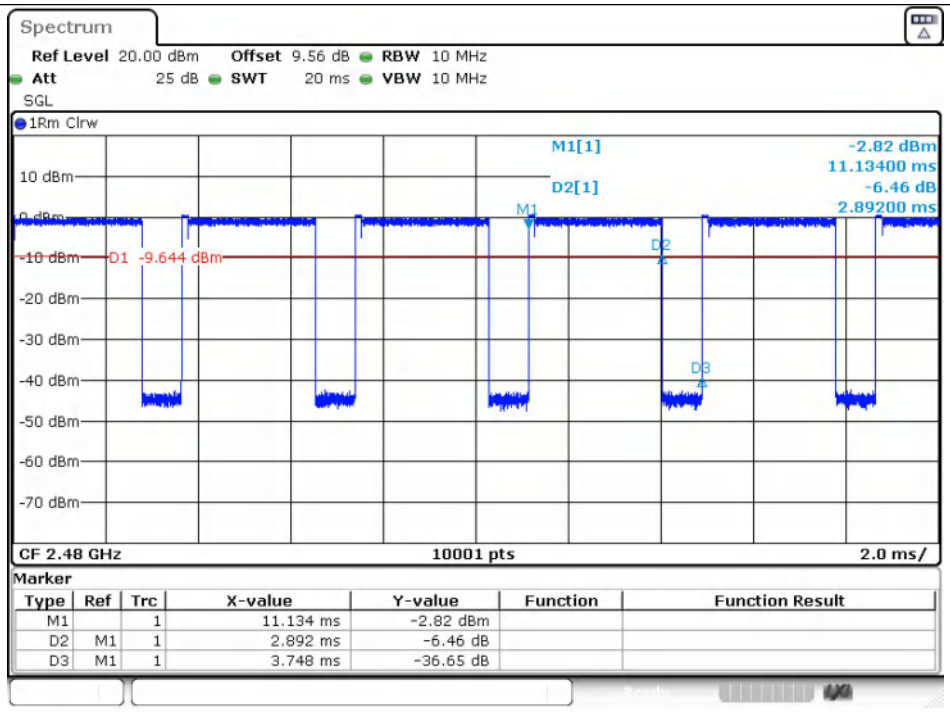
GFSK(DH5)_Channel 78



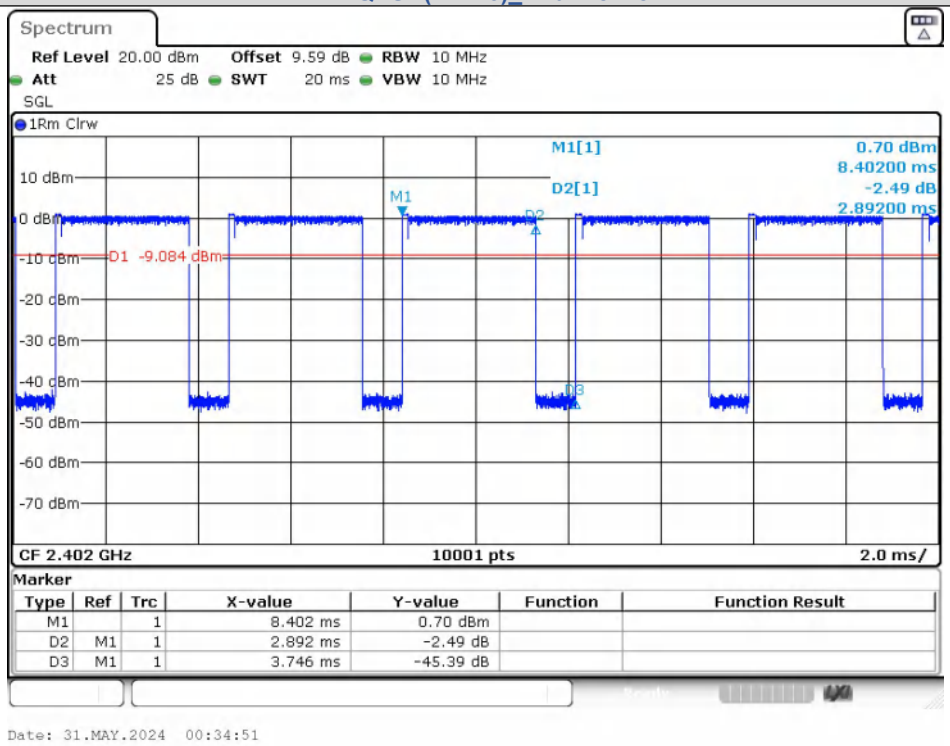
π/4DQPSK(2-DH5)_Channel 0



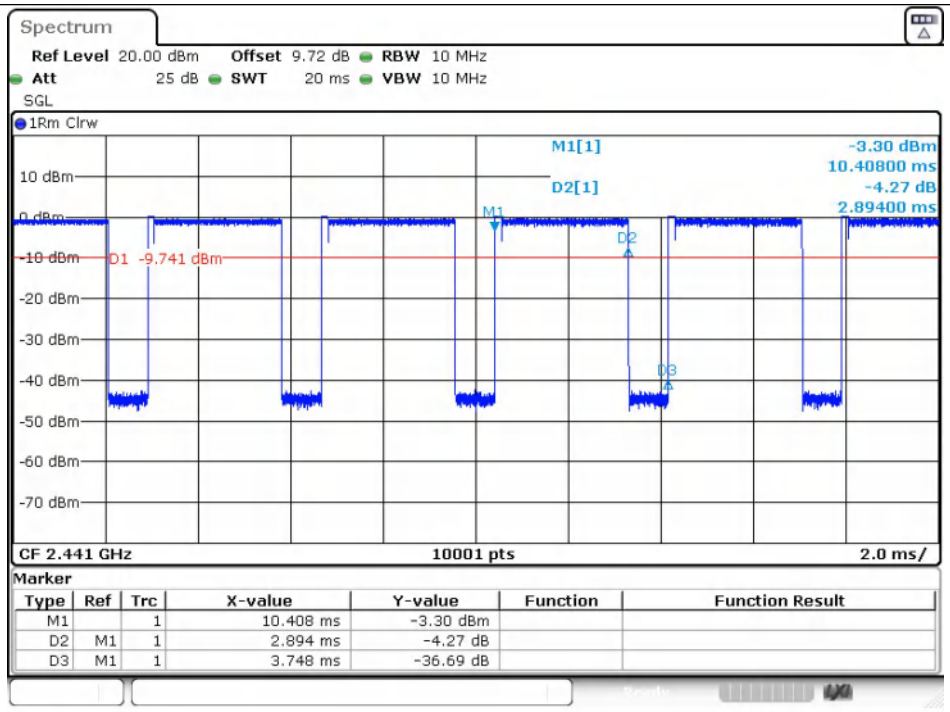
π/4DQPSK(2-DH5)_Channel 39



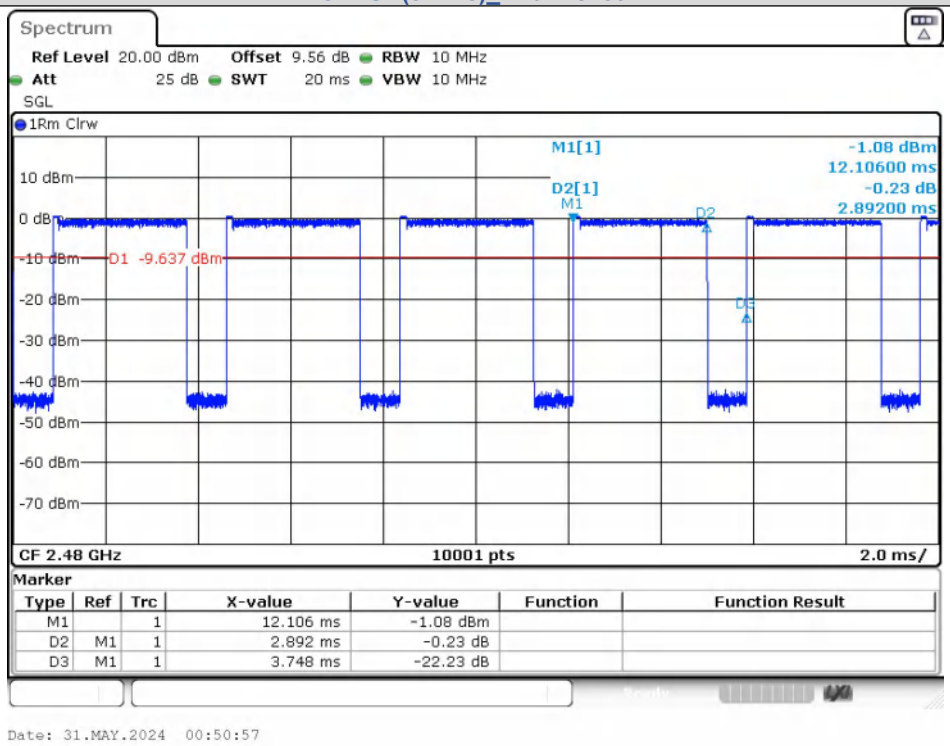
π/4DQPSK(2-DH5)_Channel 78



8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39



8DPSK(3-DH5)_Channel 78

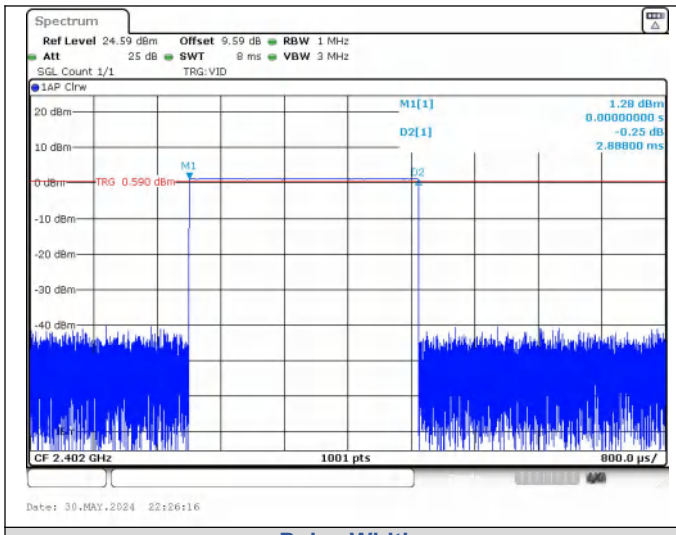
Dwell Time

Left

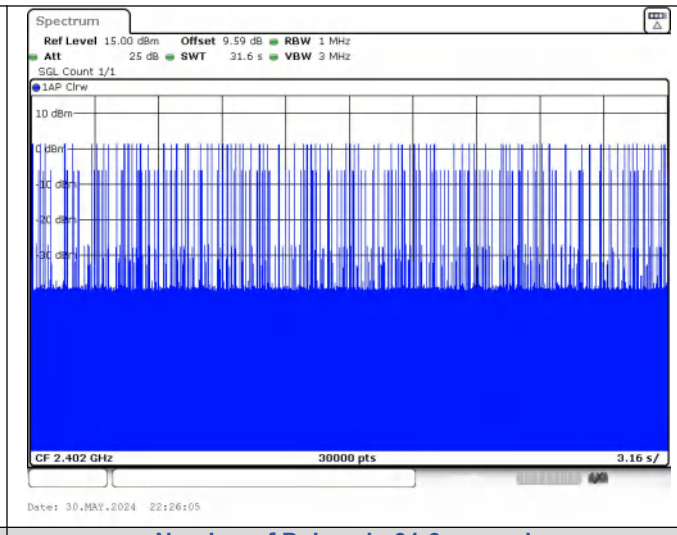
Test Result

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	107	309.02	< 400	PASS
π/4DQPSK	2-DH5		2.896	100	289.6		PASS
8DPSK	3-DH5		2.896	89	257.74		PASS

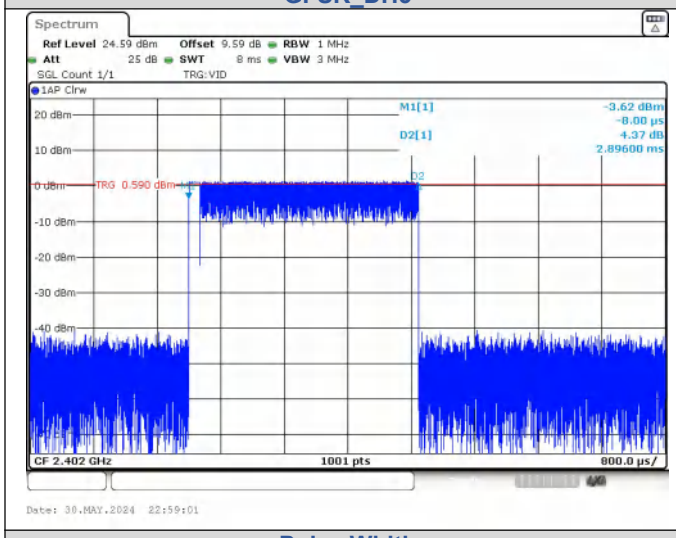
Test Graphs



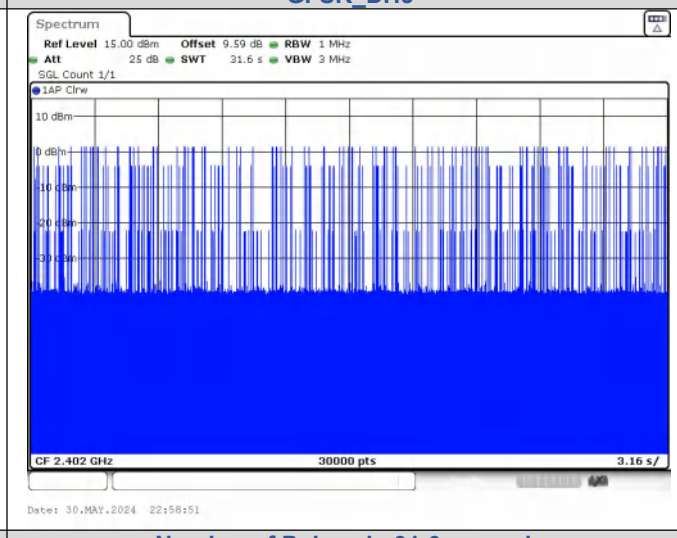
Pulse Width
GFSK_DH5



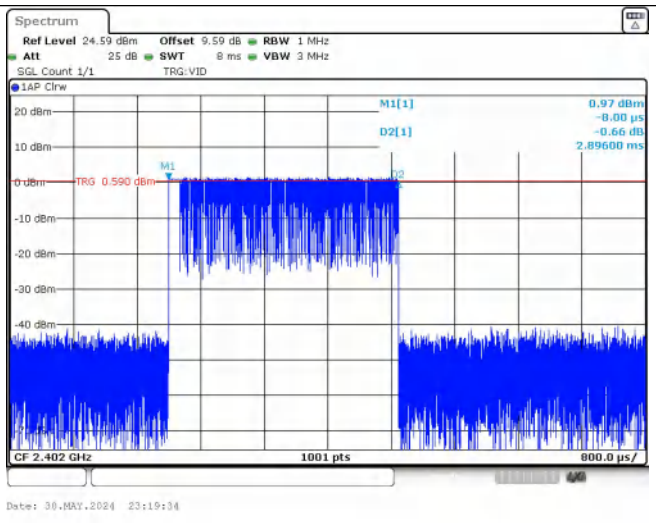
Number of Pulses in 31.6 seconds
GFSK_DH5



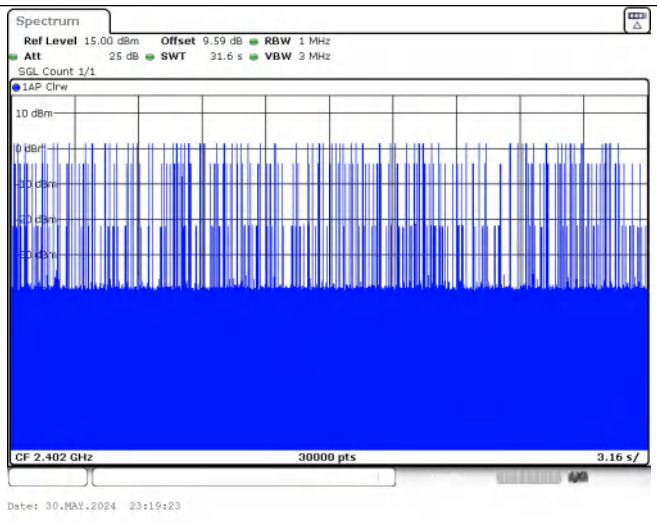
Pulse Width
π/4DQPSK_2-DH5



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



Pulse Width
8DPSK_3-DH5



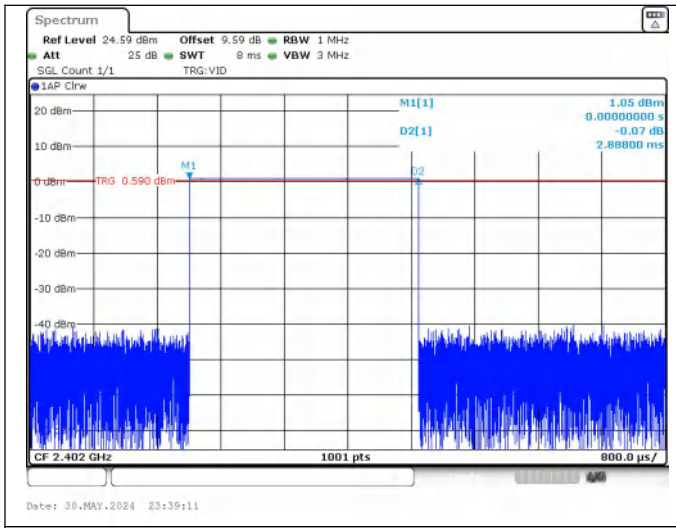
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

Right

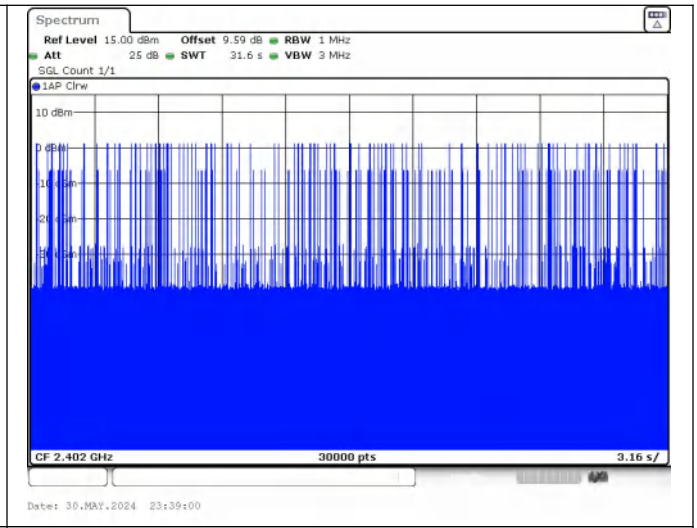
Test Result

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	110	317.68	< 400	PASS
π/4DQPSK	2-DH5		2.888	108	311.9		PASS
8DPSK	3-DH5		2.896	108	312.77		PASS

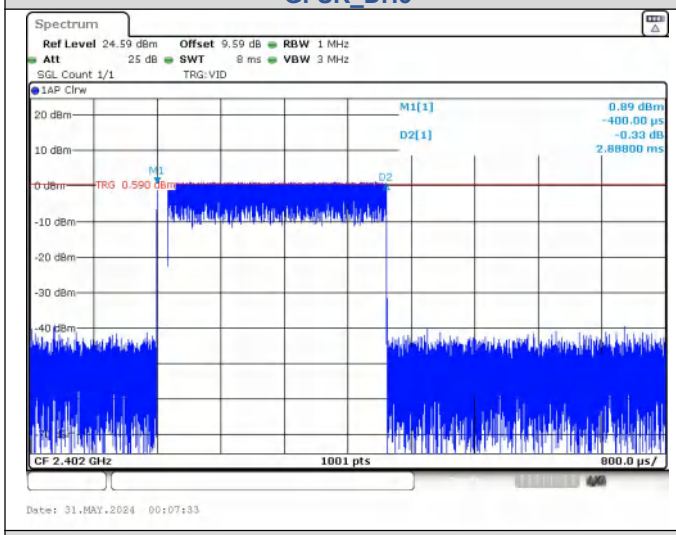
Test Graphs



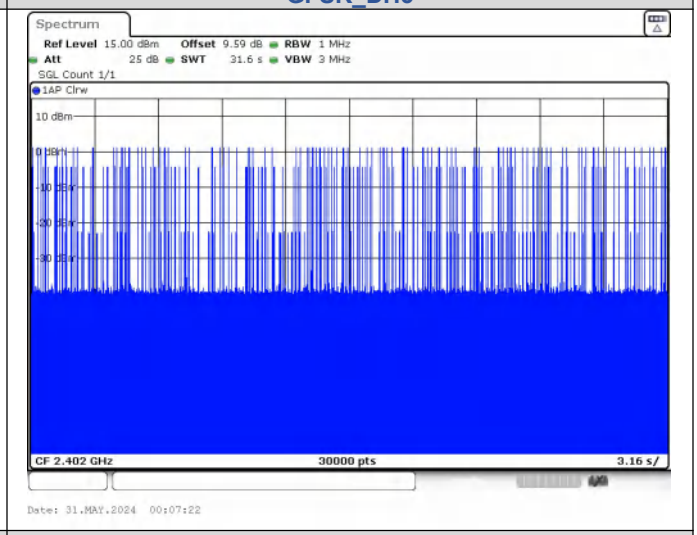
Pulse Width
GFSK_DH5



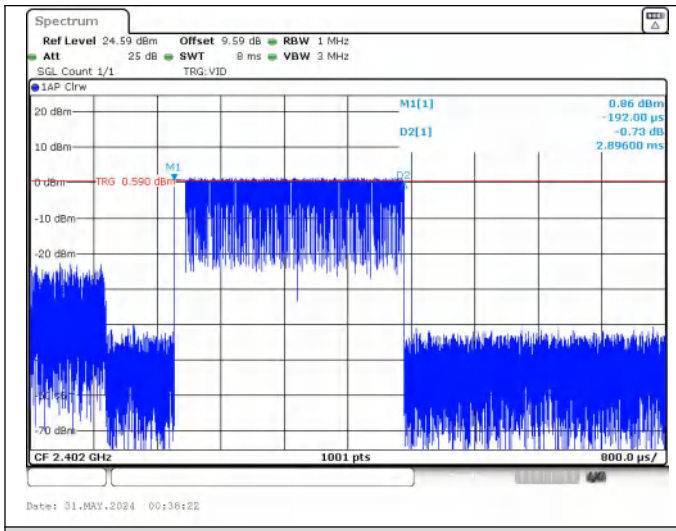
Number of Pulses in 31.6 seconds
GFSK_DH5



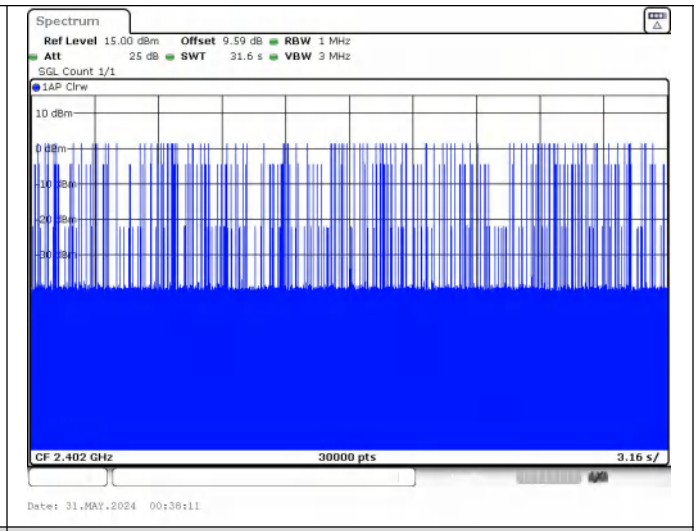
Pulse Width
π/4DQPSK_2-DH5



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

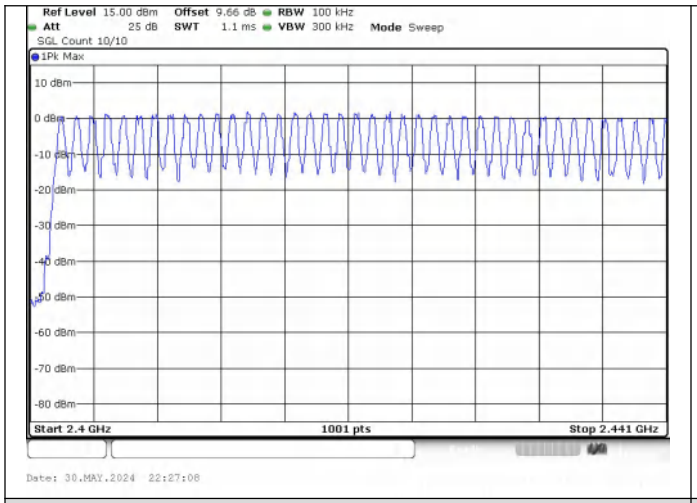
Number Of Hopping Channel

Left

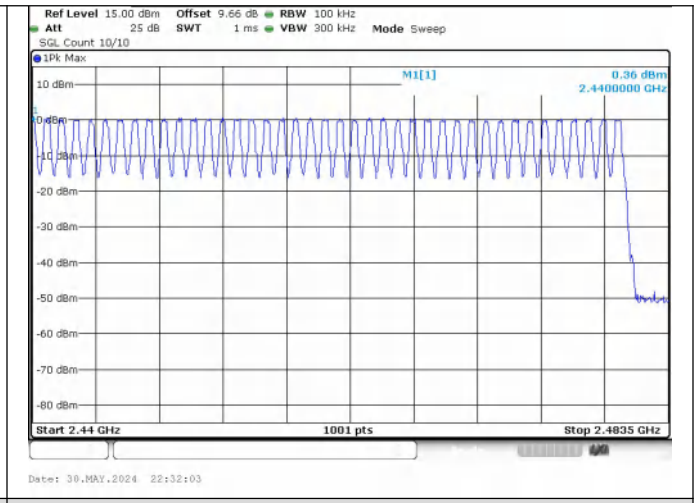
Test Result

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

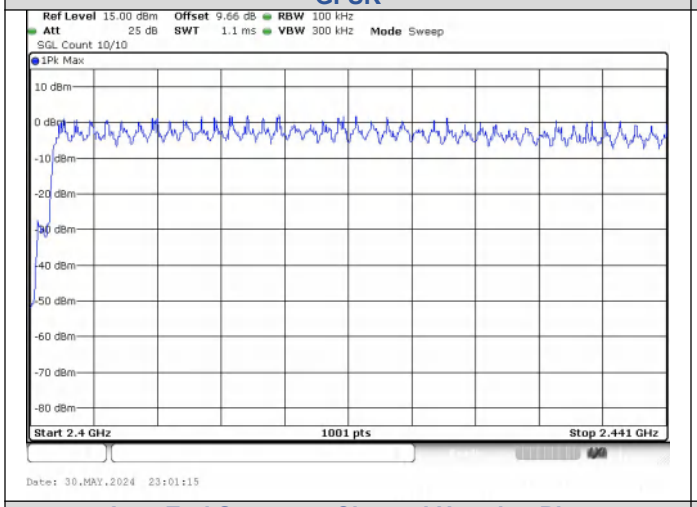
Test Graphs



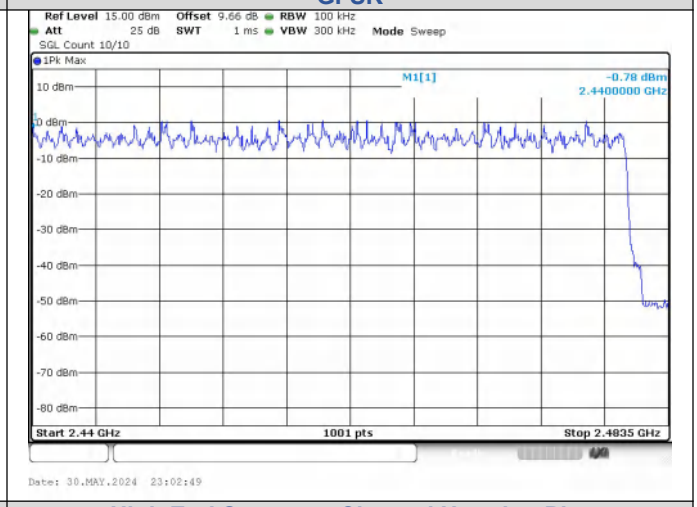
Low End Spectrum Channel Hopping Plot
GFSK



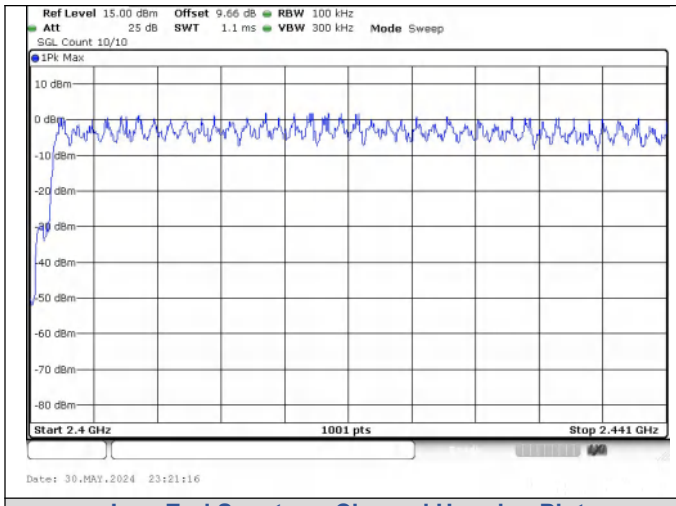
High End Spectrum Channel Hopping Plot
GFSK



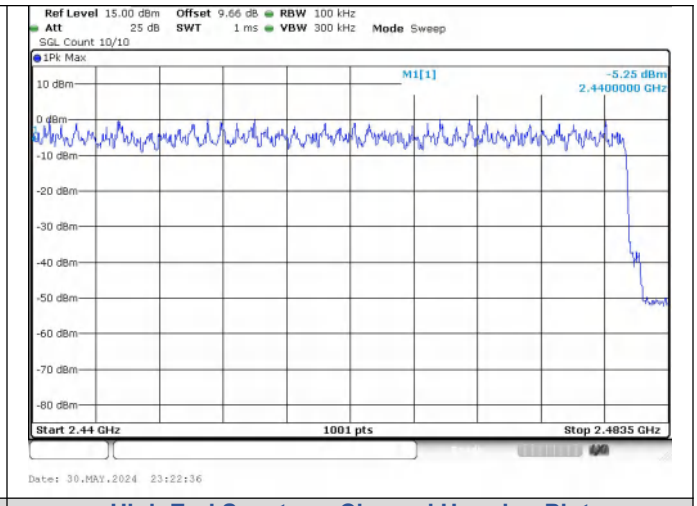
Low End Spectrum Channel Hopping Plot
π/4DQPSK



High End Spectrum Channel Hopping Plot
π/4DQPSK



Low End Spectrum Channel Hopping Plot
8DPSK

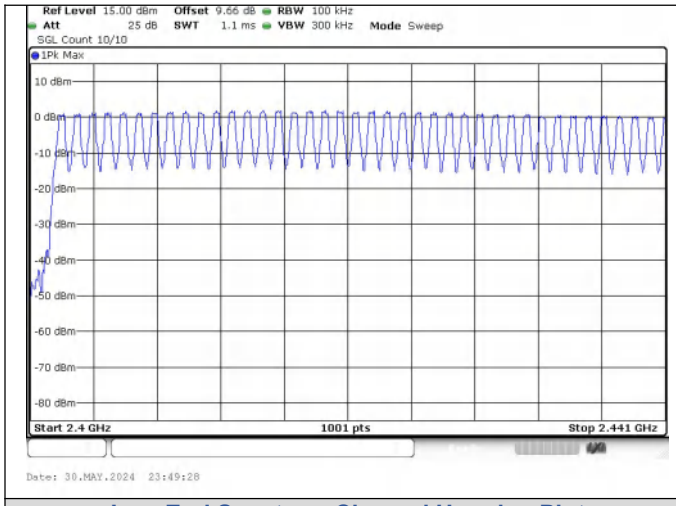


High End Spectrum Channel Hopping Plot
8DPSK

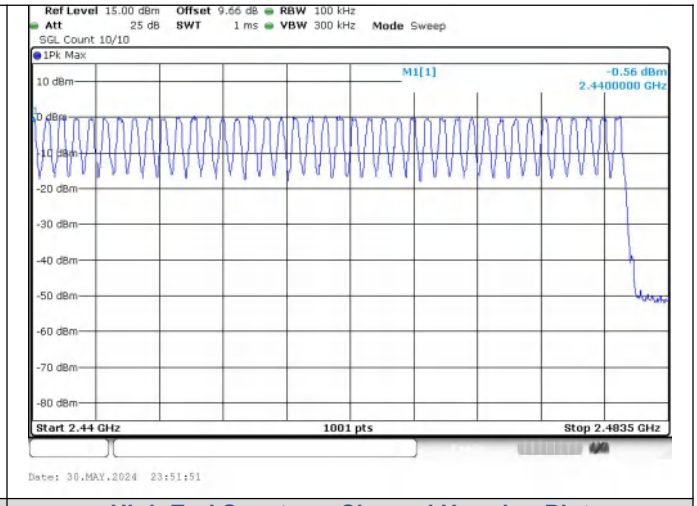
Right
Test Result

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

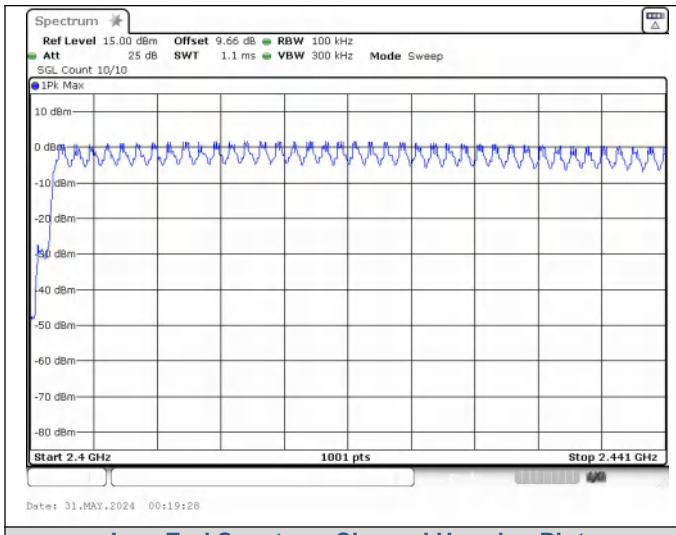
Test Graphs



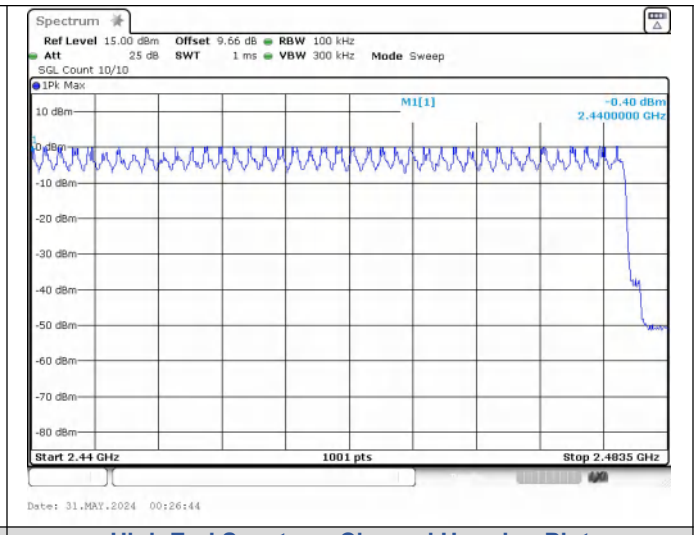
Low End Spectrum Channel Hopping Plot
GFSK



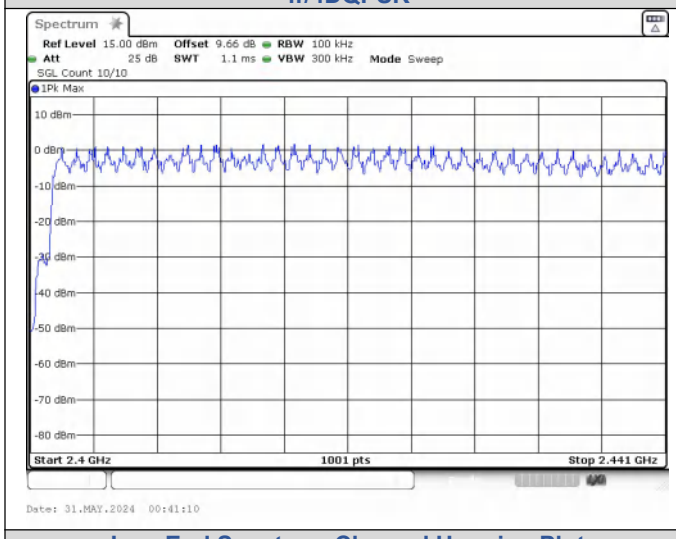
High End Spectrum Channel Hopping Plot
GFSK



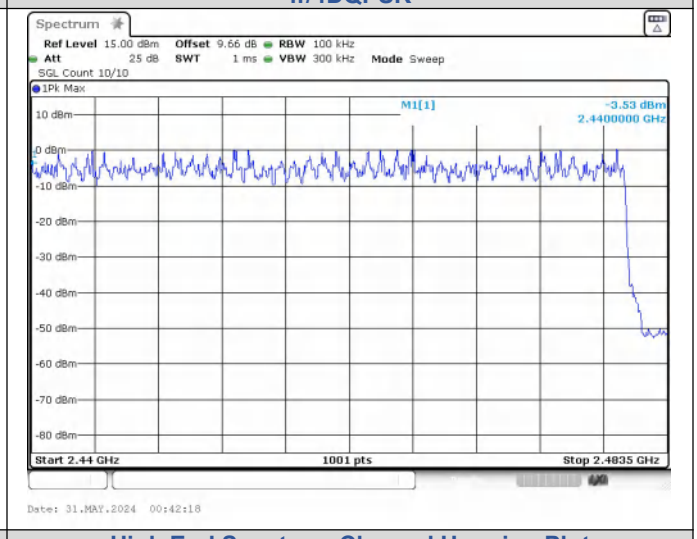
Low End Spectrum Channel Hopping Plot
π/4DQPSK



High End Spectrum Channel Hopping Plot
π/4DQPSK



Low End Spectrum Channel Hopping Plot
8DPSK



High End Spectrum Channel Hopping Plot
8DPSK