Appendix A

Report No.:	CISRR24041105801
FCC ID:	2BFVE-VSIDEA-A15S
Product Name:	TWS wireless earphones
Model No.:	Vsidea-A15S
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	3.126	2.054	30	PASS
		39	1.881	1.540		PASS
		78	1.749	1.500		PASS
π/4DQPSK	2-DH5	0	2.844	1.925	20.97	PASS
		39	1.730	1.489		PASS
		78	1.603	1.446		PASS
8DPSK	3-DH5	0	1.819	1.520		PASS
		39	1.982	1.578		PASS
		78	2.096	1.620		PASS

Right

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	2.978	1.985	30	PASS
		39	1.879	1.540		PASS
		78	1.800	1.510		PASS
π/4DQPSK	2-DH5	0	2.744	1.881	20.97	PASS
		39	1.607	1.448		PASS
		78	1.534	1.424		PASS
8DPSK	3-DH5	0	1.968	1.573		PASS
		39	1.908	1.552		PASS
		78	1.750	1.496		PASS

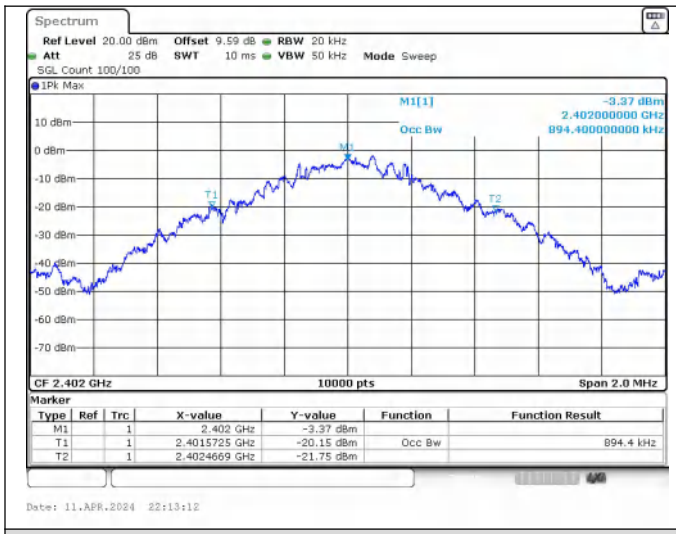
99% Bandwidth

Test Result

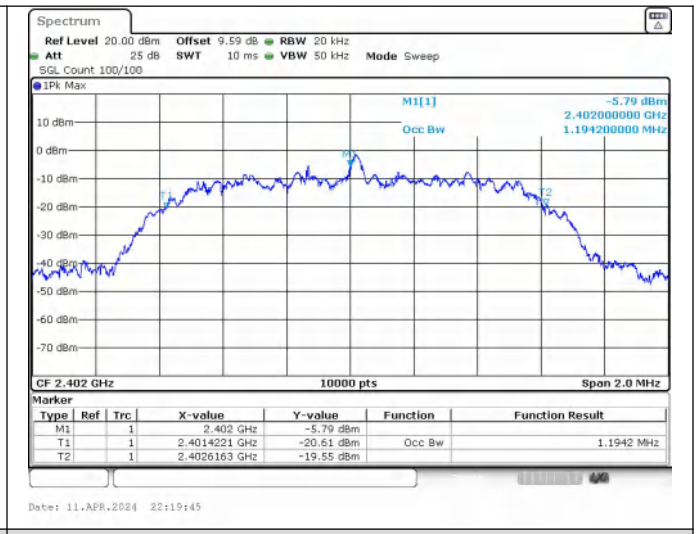
Left

Modulation	Channel	99% BW (MHz)
GFSK	0	0.89440
	39	0.87620
	78	0.88200
π/4DQPSK	0	1.1940
	39	1.1950
	78	1.1980
8DPSK	0	1.2090
	39	1.2060
	78	1.2030

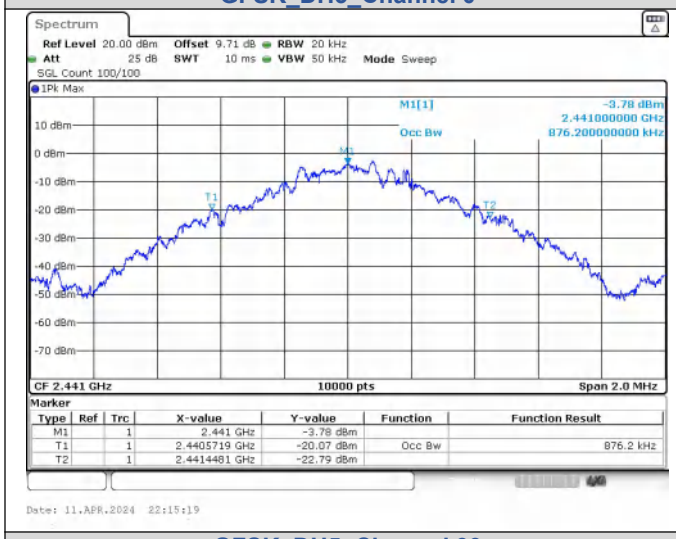
Test Graphs



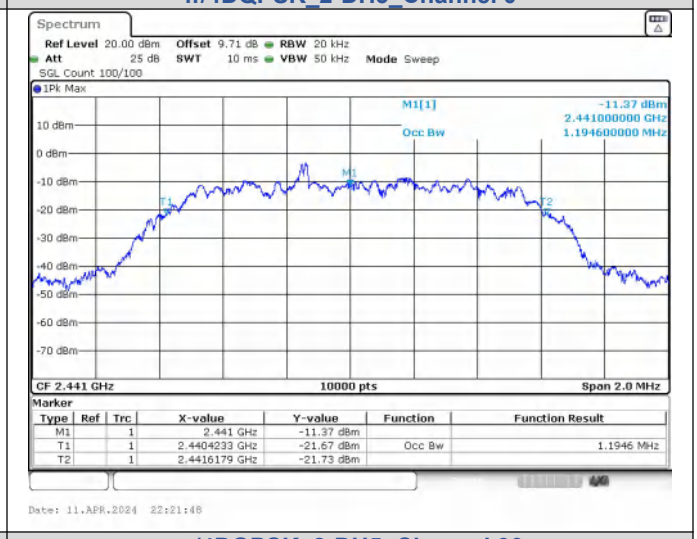
GFSK_DH5_Channel 0



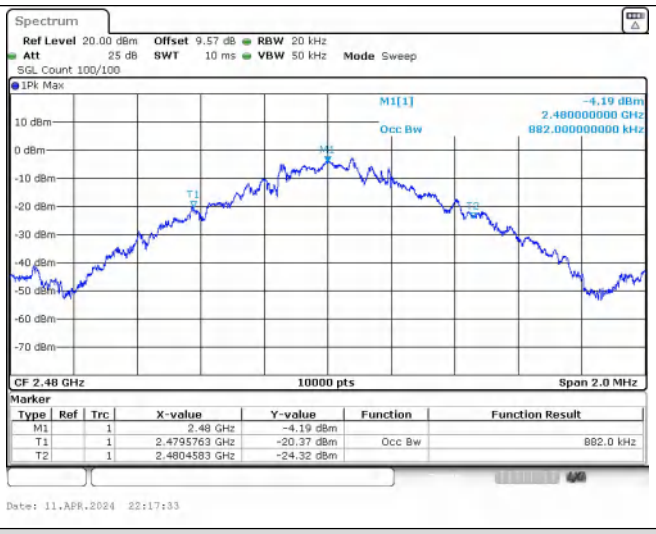
π/4DQPSK_2-DH5_Channel 0



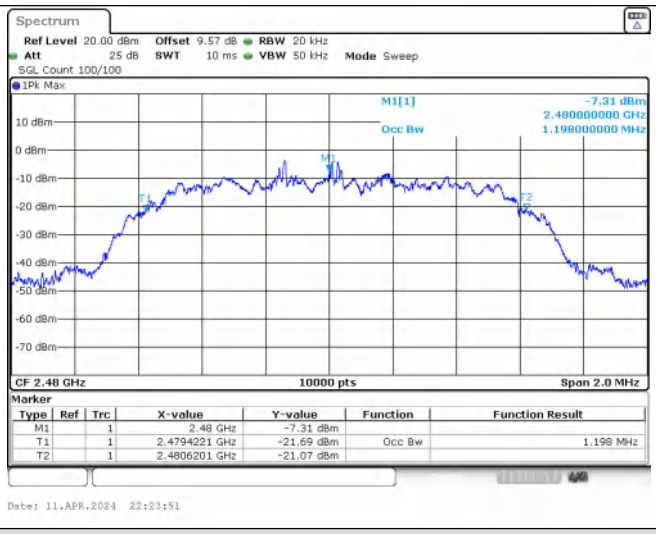
GFSK_DH5_Channel 39



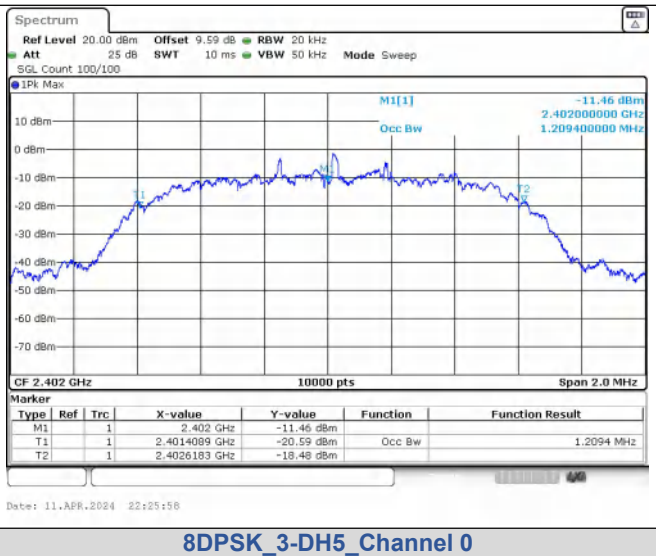
π/4DQPSK_2-DH5_Channel 39



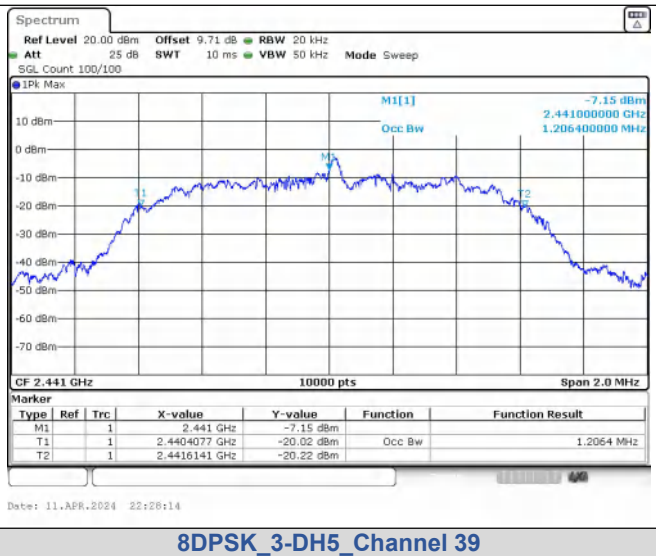
GFSK_DH5_Channel 78



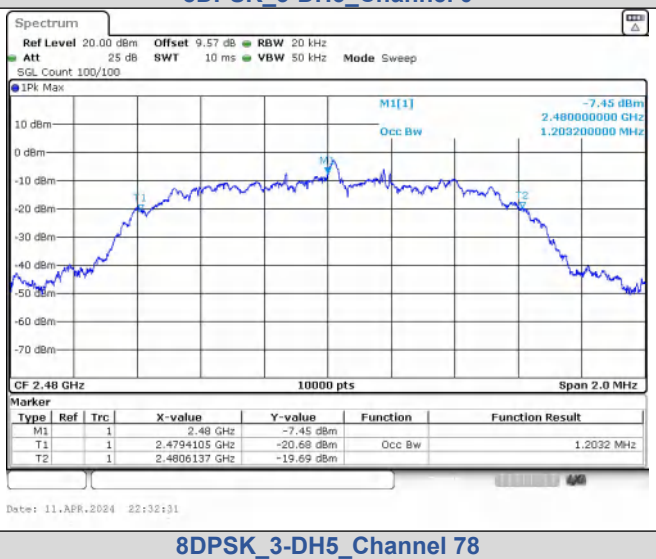
π/4DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



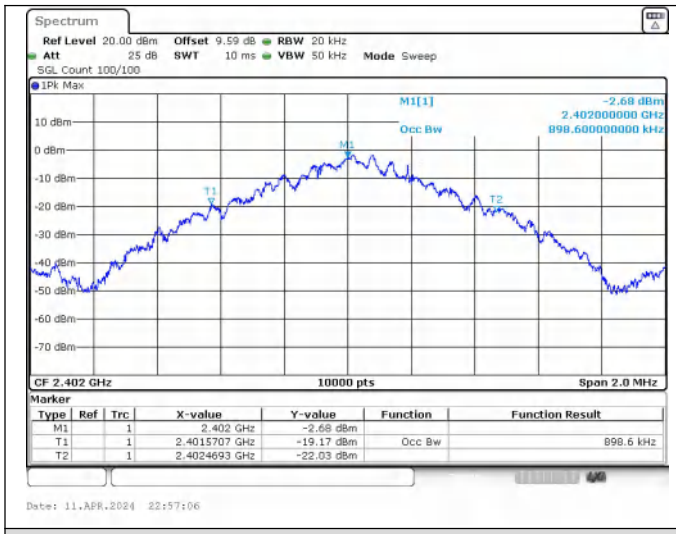
8DPSK_3-DH5_Channel 78

Right

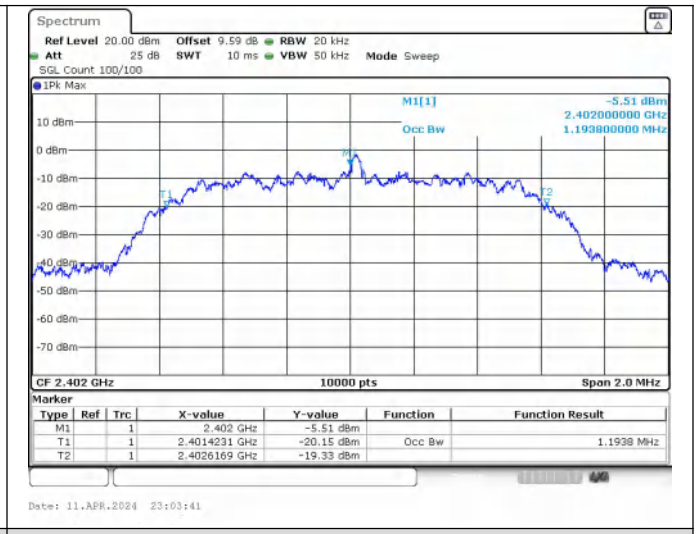
Test Result

Modulation	Channel	99% BW (MHz)
GFSK	0	0.89860
	39	0.90000
	78	0.88540
π/4DQPSK	0	1.1940
	39	1.1970
	78	1.1910
8DPSK	0	1.2100
	39	1.2070
	78	1.2080

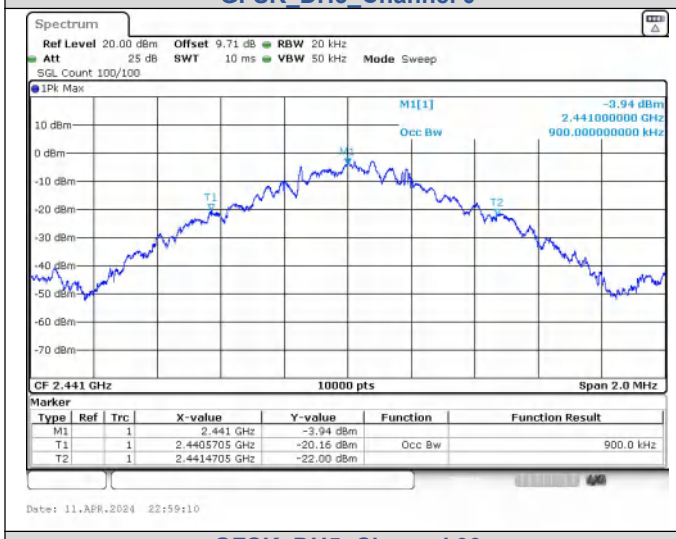
Test Graphs



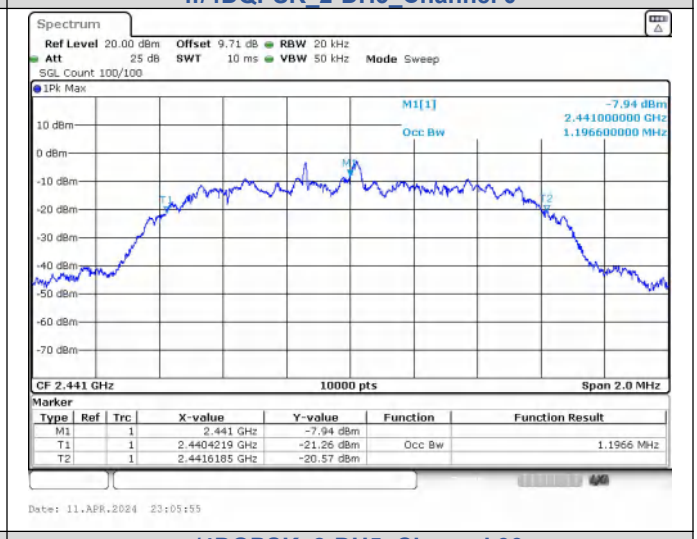
GFSK_DH5_Channel 0



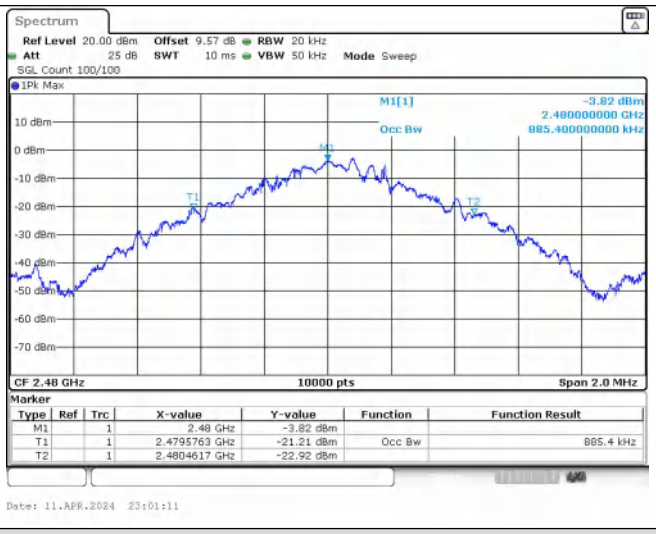
π/4DQPSK_2-DH5_Channel 0



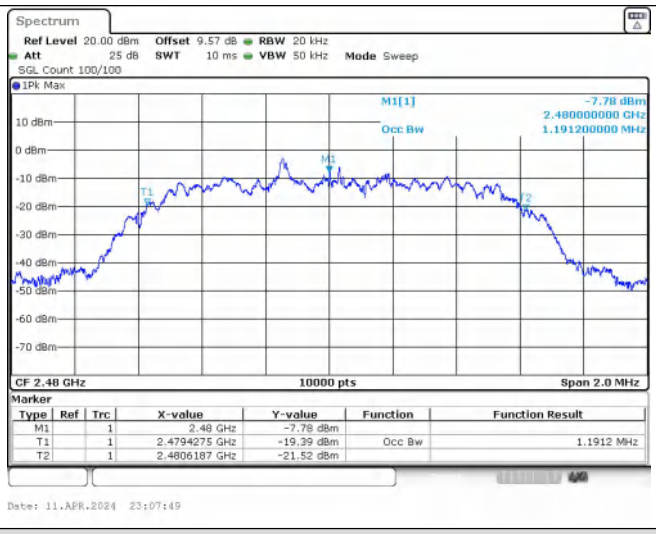
GFSK_DH5_Channel 39



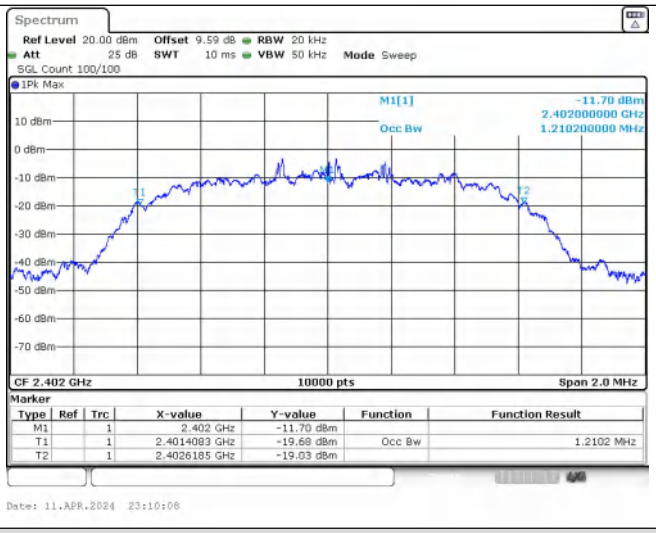
π/4DQPSK_2-DH5_Channel 39



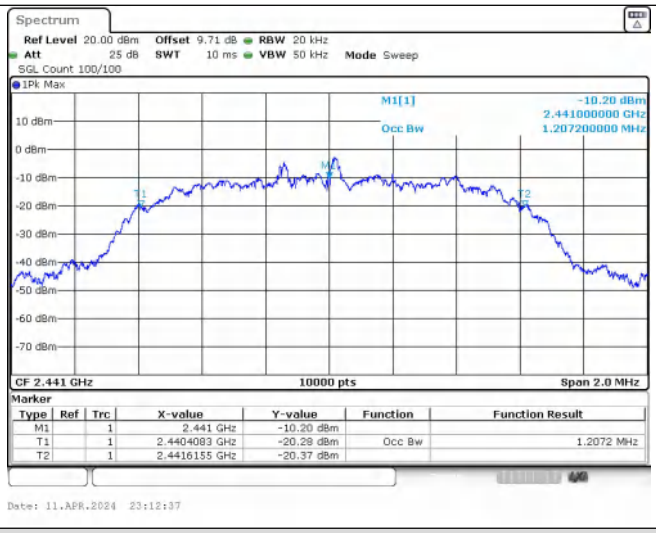
GFSK_DH5_Channel 78



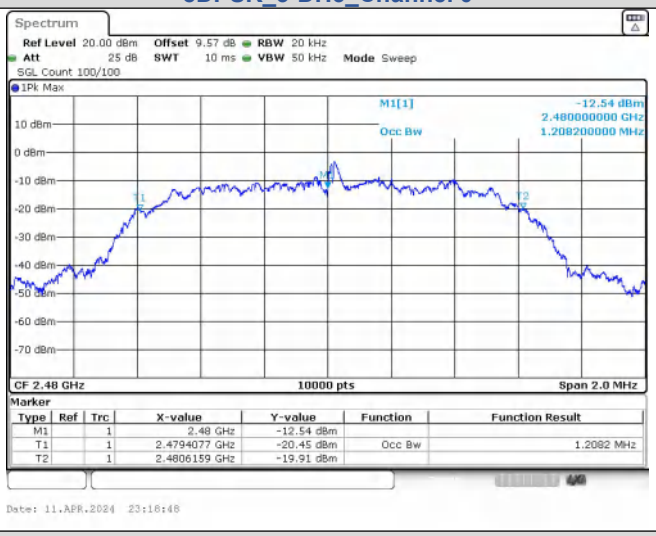
π/4DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



8DPSK_3-DH5_Channel 78

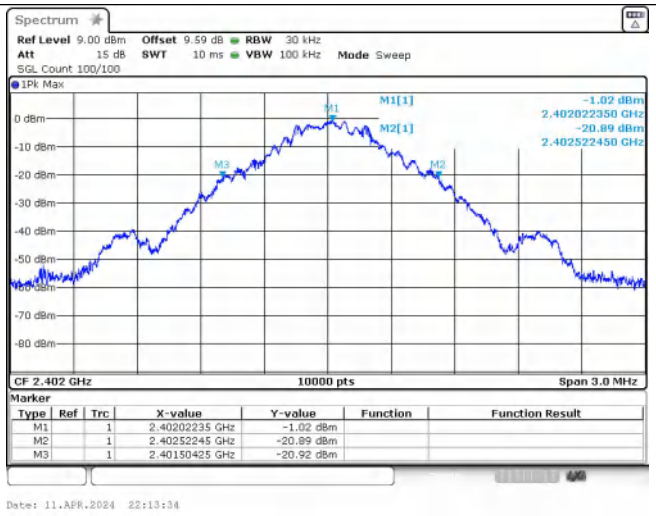
20dB Bandwidth

Test Result

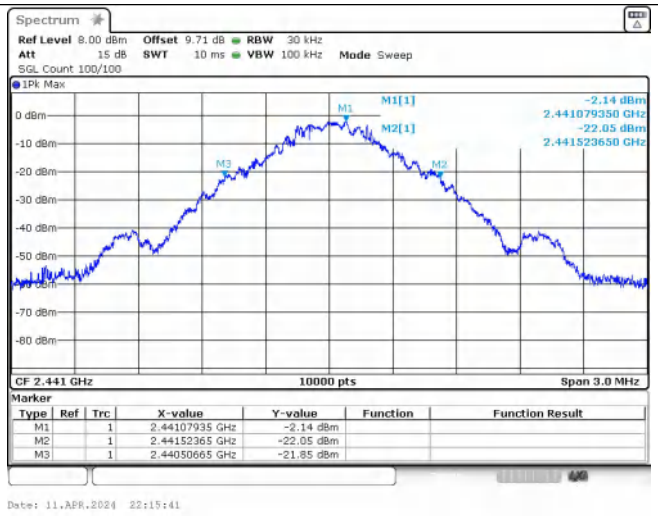
Left

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.020
	39	2441 MHz	1.010
	78	2480 MHz	1.000
π/4DQPSK	0	2402 MHz	1.280
	39	2441 MHz	1.310
	78	2480 MHz	1.310
8DPSK	0	2402 MHz	1.290
	39	2441 MHz	1.300
	78	2480 MHz	1.290

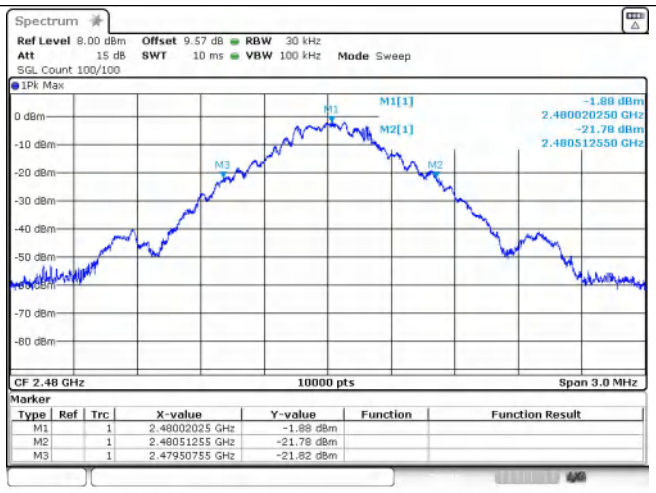
Test Graphs



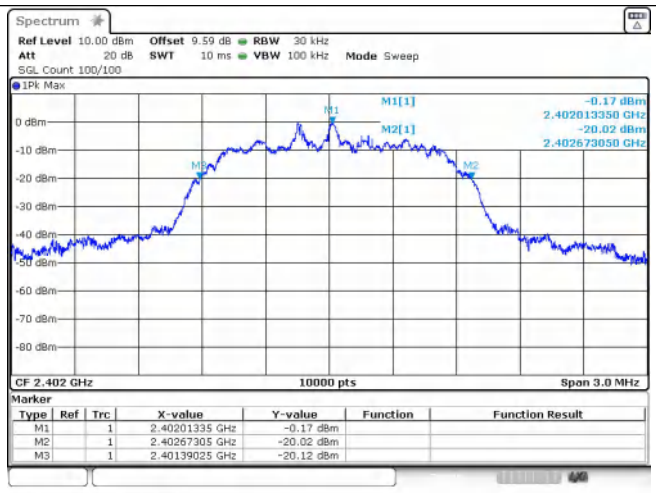
GFSK_DH5_Channel 0



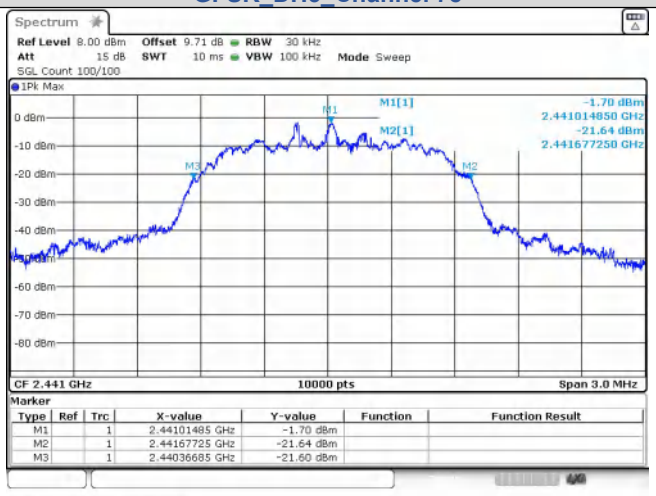
GFSK_DH5_Channel 39



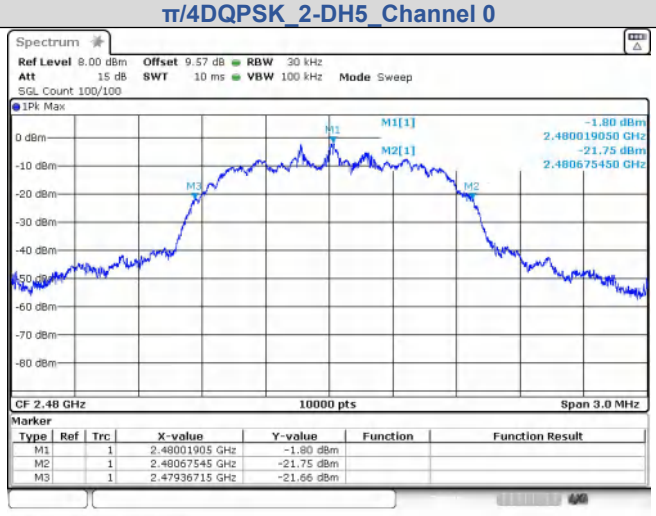
GFSK_DH5_Channel 78



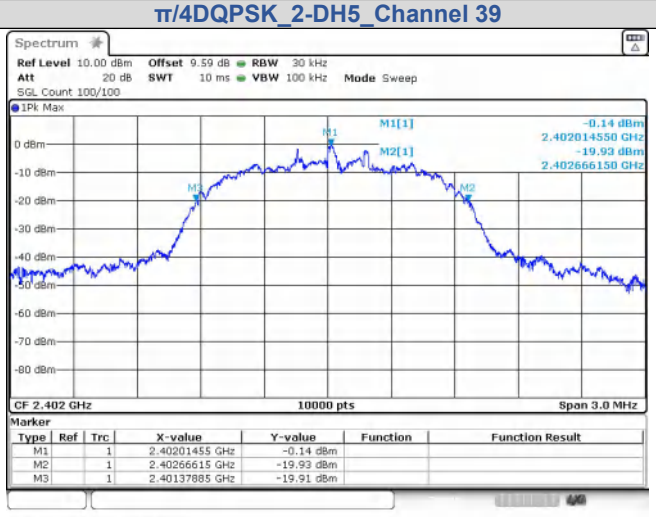
π/4DQPSK_2-DH5_Channel 0



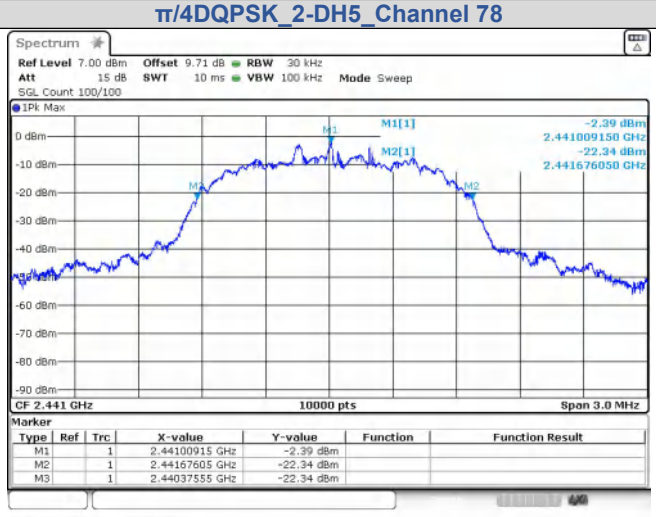
π/4DQPSK_2-DH5_Channel 39



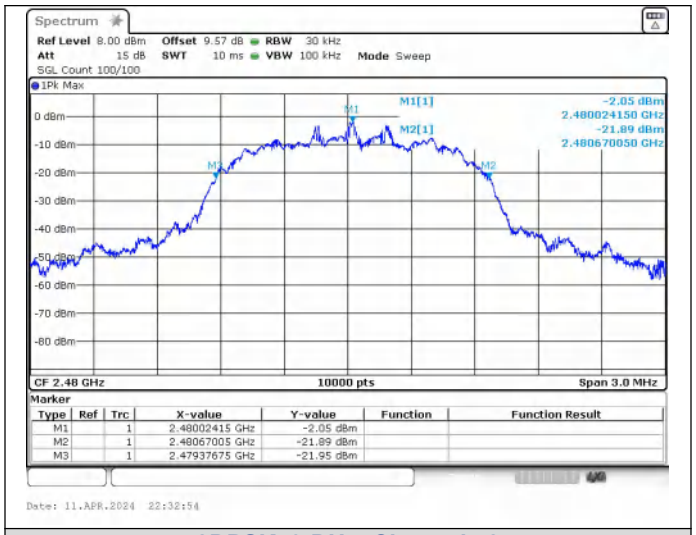
π/4DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



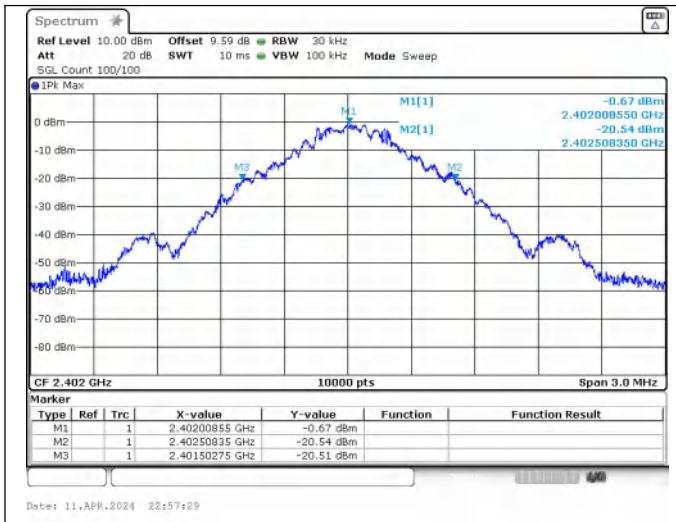
8DPSK_3-DH5_Channel 78

Right

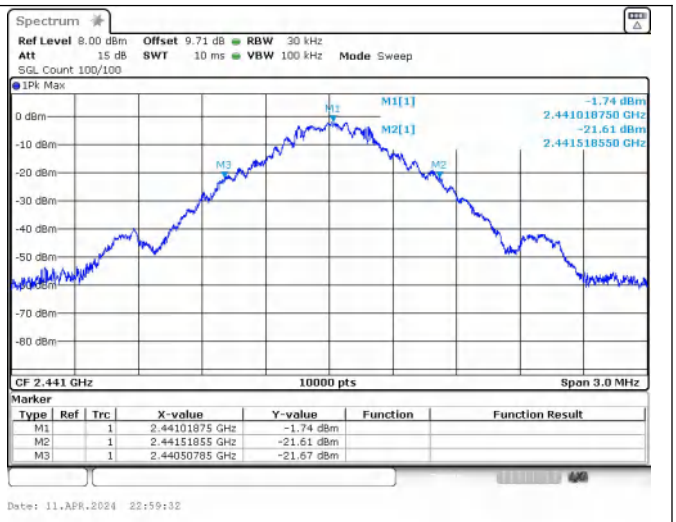
Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.010
	39	2441 MHz	1.010
	78	2480 MHz	0.9800
π/4DQPSK	0	2402 MHz	1.300
	39	2441 MHz	1.310
	78	2480 MHz	1.300
8DPSK	0	2402 MHz	1.290
	39	2441 MHz	1.290
	78	2480 MHz	1.290

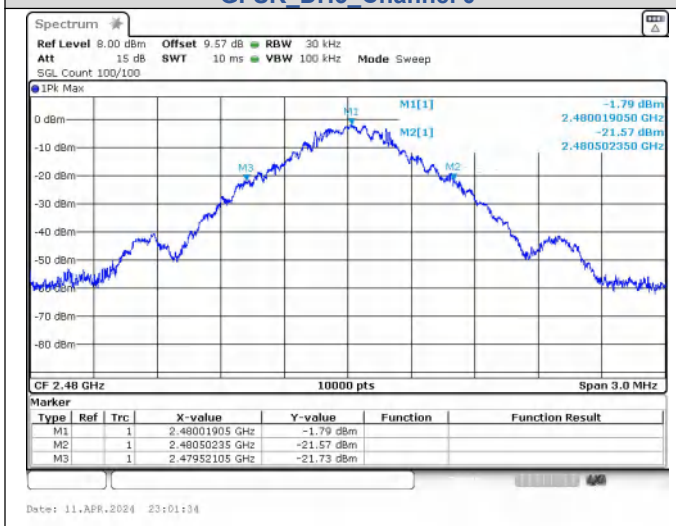
Test Graphs



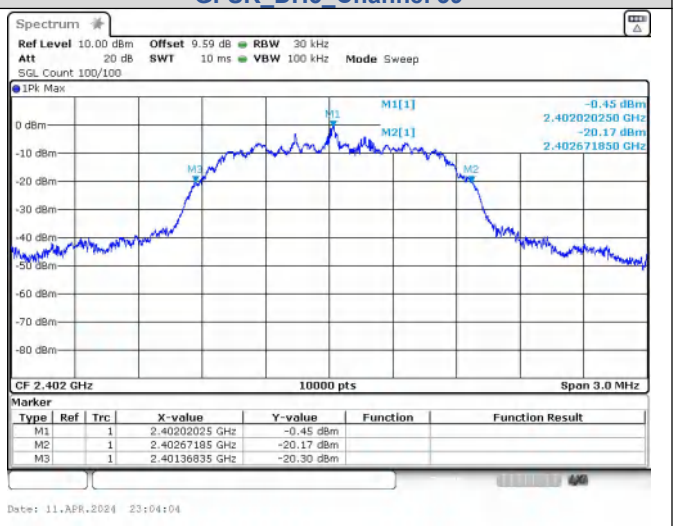
GFSK_DH5_Channel 0



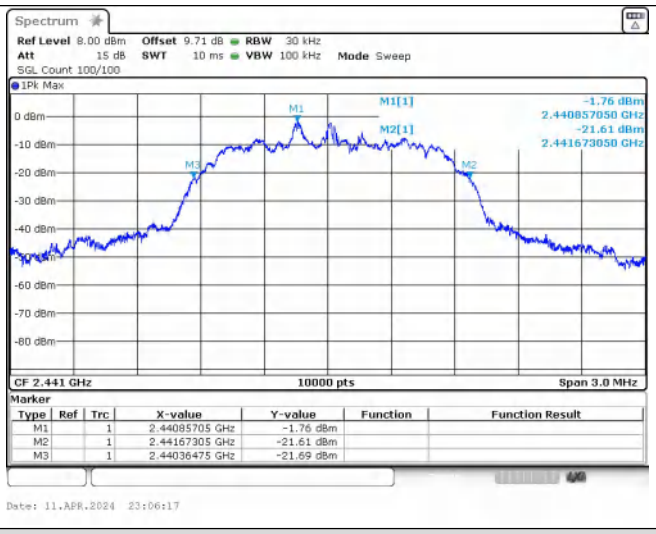
GFSK_DH5_Channel 39



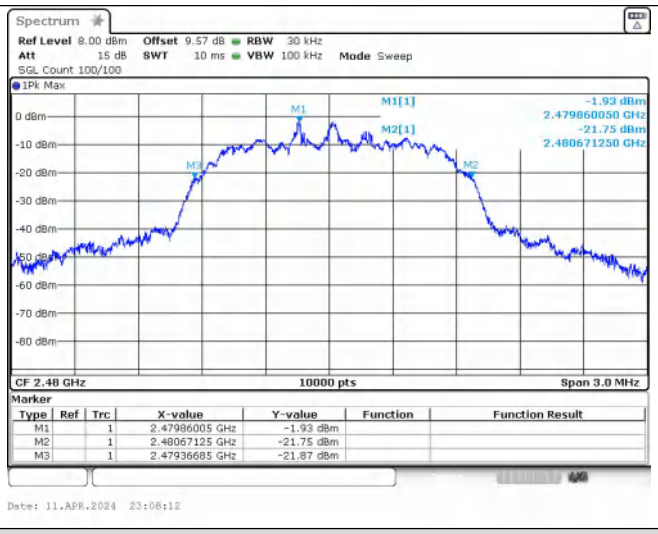
GFSK_DH5_Channel 78



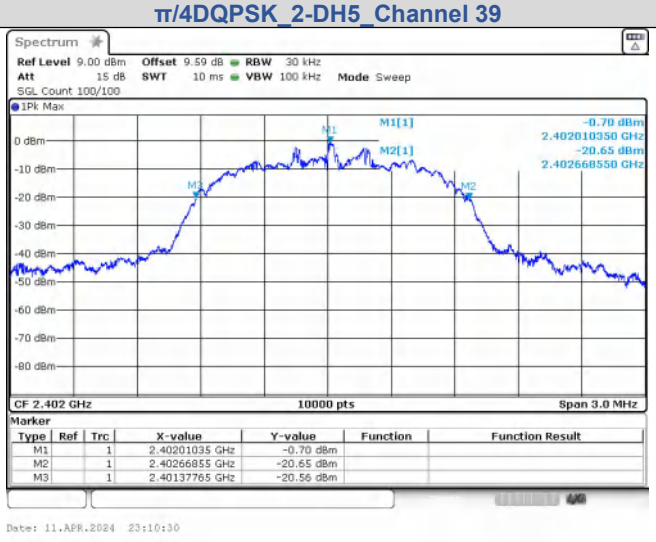
π/4DQPSK_2-DH5_Channel 0



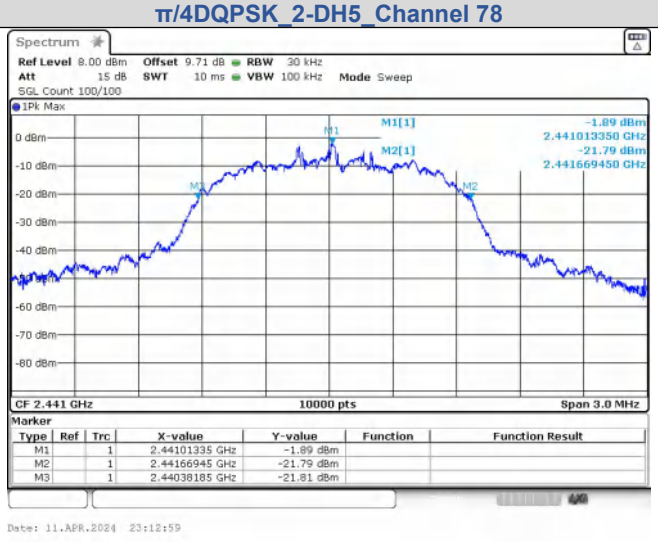
π/4DQPSK_2-DH5_Channel 39



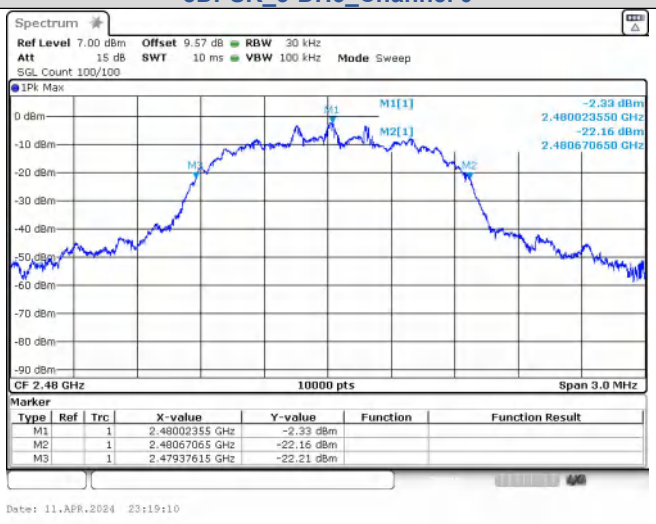
π/4DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



8DPSK_3-DH5_Channel 78

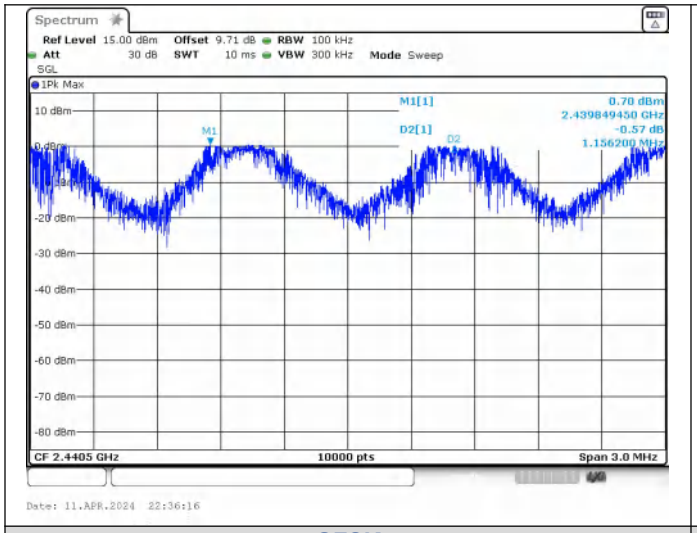
Carrier Frequencies Separation

Test Result

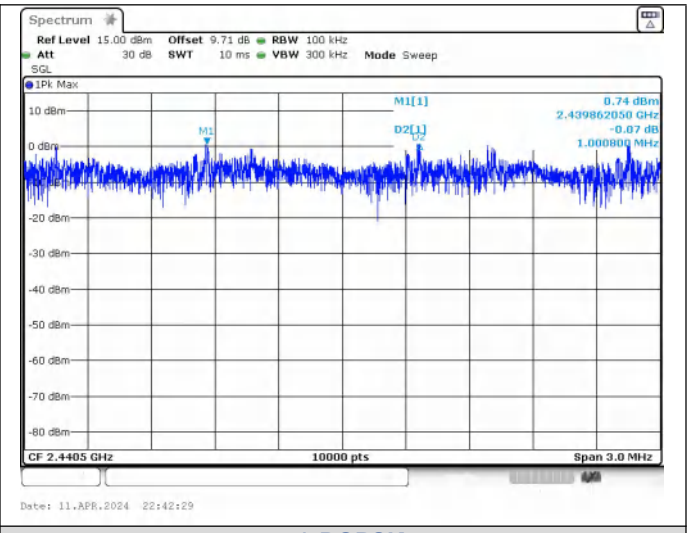
Left

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2439.8495	2441.0057	1.1562	0.68	PASS
π/4DQPSK	2-DH5	2439.8621	2440.8628	1.0008	0.853	PASS
8DPSK	3-DH5	2440.1842	2441.0615	0.8772	0.86	PASS

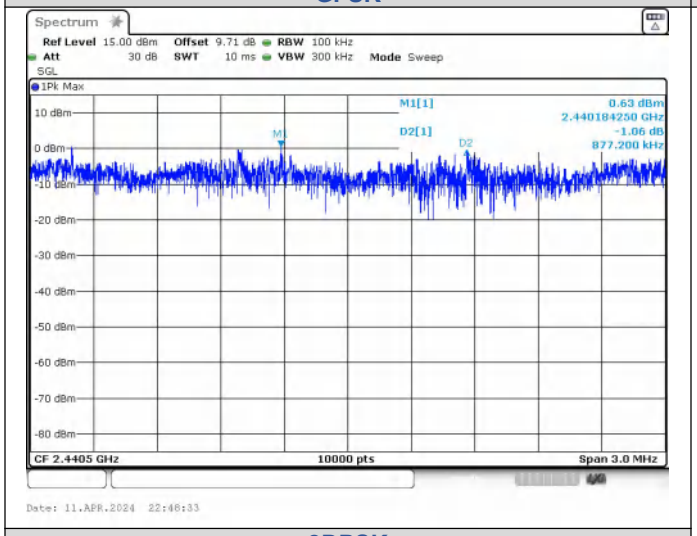
Test Graphs



GFSK



π/4DQPSK



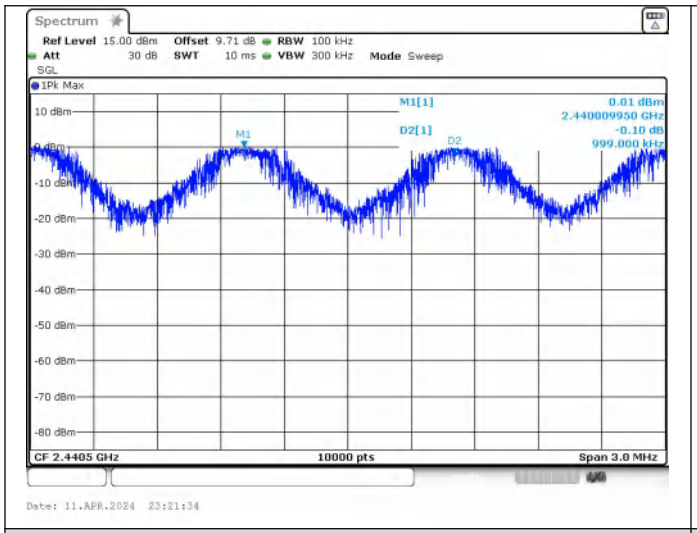
8DPSK

Right

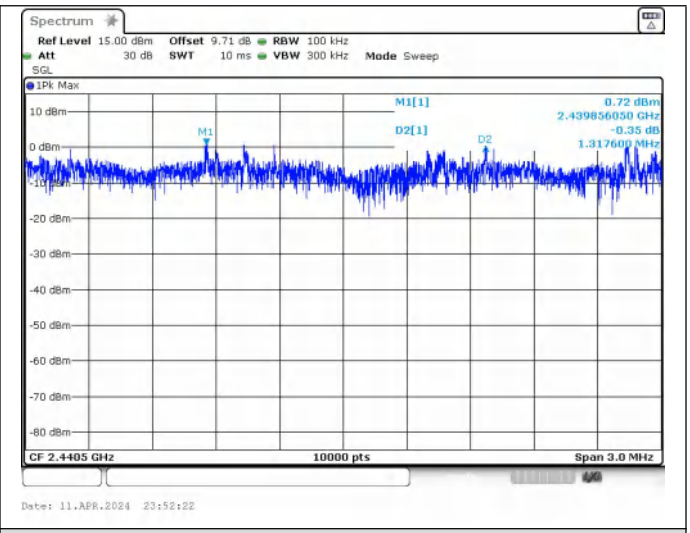
Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2440.01	2441.0089	0.9990	0.673	PASS
π/4DQPSK	2-DH5	2439.856	2441.1737	1.3176	0.867	PASS
8DPSK	3-DH5	2439.8983	2440.9981	1.0998	0.86	PASS

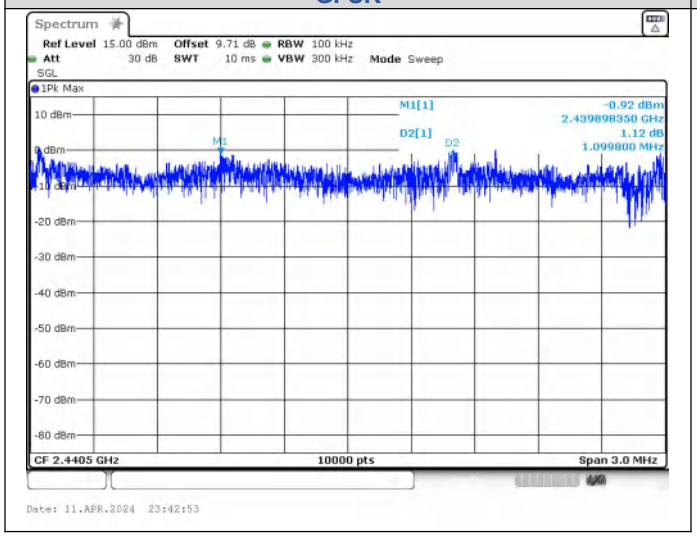
Test Graphs



GFSK



π/4DQPSK



Conducted Out Of Band Emission

Test Result

Left

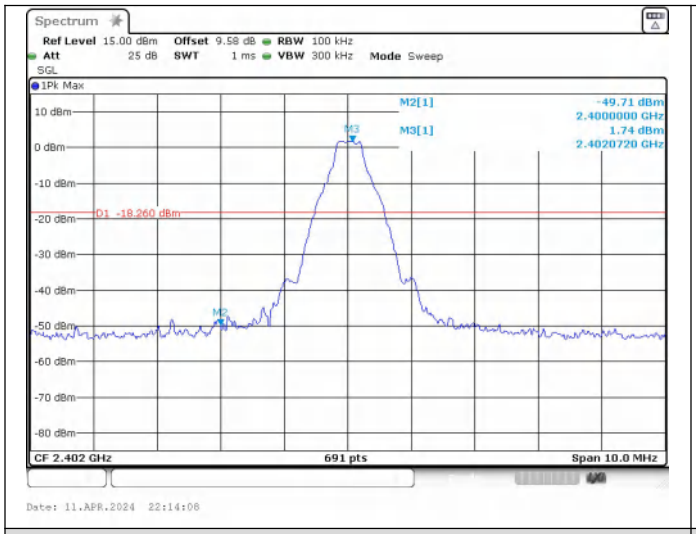
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-49.711	-18.26	-31.451	PASS
			9608.08	-40.319	-18.26	-22.059	PASS
		39	9763.72	-41.464	-19.29	-22.174	PASS
		78	2483.50	-52.732	-19.42	-33.312	PASS
			9920.20	-41.750	-19.42	-22.330	PASS
π/4DQPSK	2-DH5	0	2400.00	-51.433	-18.08	-33.353	PASS
			2397.08	-50.556	-18.08	-32.476	PASS
			9608.10	-40.197	-18.08	-22.117	PASS
		39	9763.72	-41.211	-19.43	-21.781	PASS
		78	2483.50	-51.159	-19.49	-31.669	PASS
			9920.20	-41.395	-19.49	-21.905	PASS
8DPSK	3-DH5	0	2400.00	-47.674	-18.25	-29.424	PASS
			9608.08	-40.232	-18.25	-21.982	PASS
		39	9763.72	-40.704	-19.38	-21.324	PASS
		78	2483.50	-52.553	-19.42	-33.133	PASS
			9920.20	-41.310	-19.42	-21.890	PASS

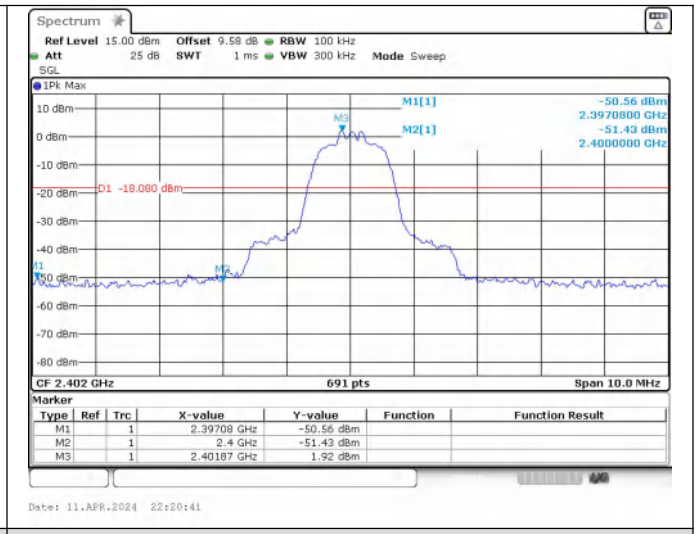
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2396.40	-49.970	-18.27	-31.700	PASS
			2400.00	-51.365	-18.27	-33.095	PASS
			2483.50	-52.065	-19.75	-32.315	PASS
			2395.69	-49.997	-18.19	-31.807	PASS
			2400.00	-50.751	-18.19	-32.561	PASS
			2483.50	-51.818	-19.47	-32.348	PASS
π/4DQPSK	2-DH5		2396.45	-49.872	-18.69	-31.182	PASS
			2400.00	-51.284	-18.69	-32.594	PASS
			2483.50	-51.737	-23.28	-28.457	PASS
			2397.05	-50.480	-19.22	-31.260	PASS
			2400.00	-52.721	-19.22	-33.501	PASS
			2483.50	-51.476	-23.97	-27.506	PASS
8DPSK	3-DH5		2397.79	-49.318	-18.28	-31.038	PASS
			2400.00	-51.448	-18.28	-33.168	PASS
			2483.50	-51.968	-22.72	-29.248	PASS
			2397.92	-50.493	-18.88	-31.613	PASS
			2400.00	-52.063	-18.88	-33.183	PASS
			2483.50	-52.258	-20.47	-31.788	PASS

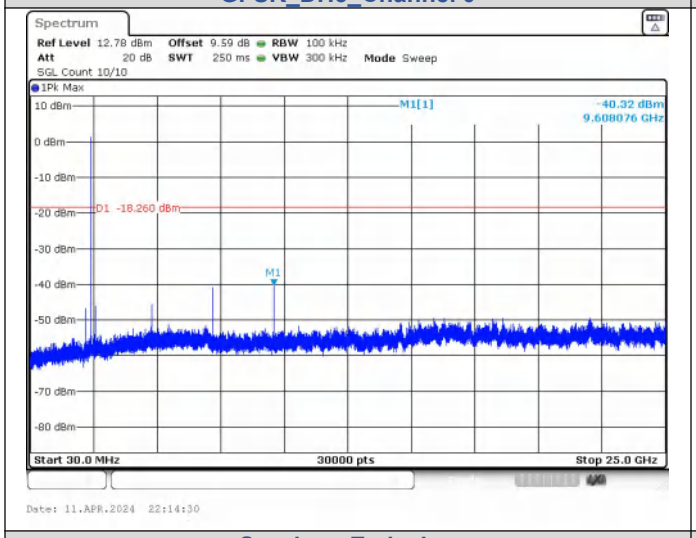
Test Graphs



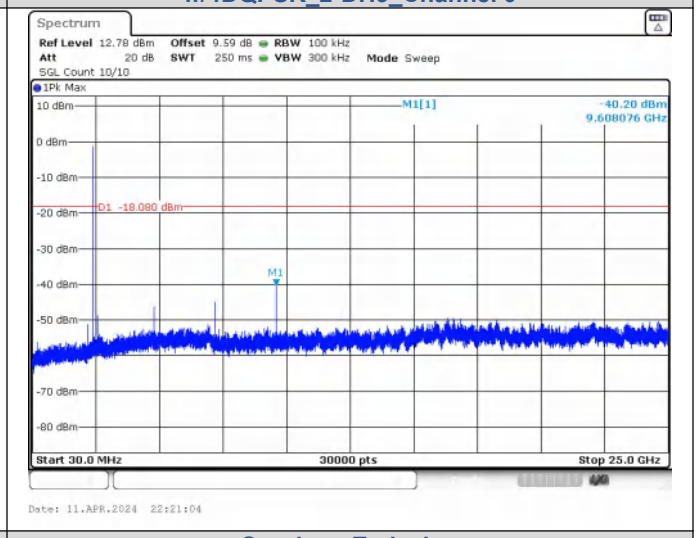
Out Of Band Emission
GFSK_DH5_Channel 0



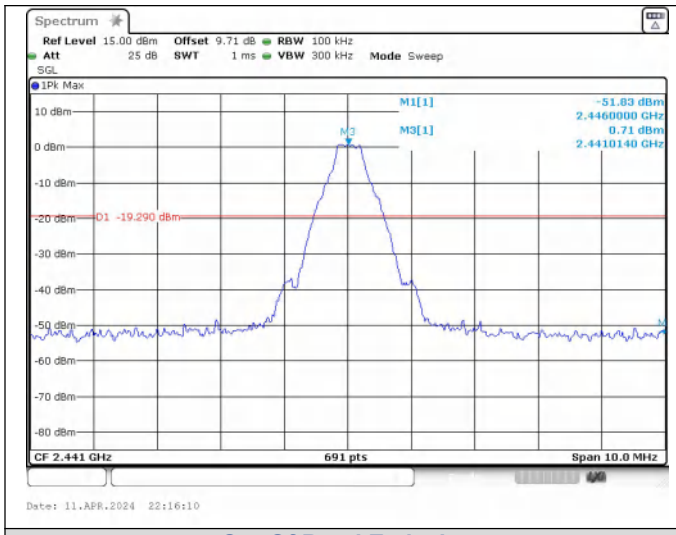
Out Of Band Emission
π/4DQPSK_2-DH5_Channel 0



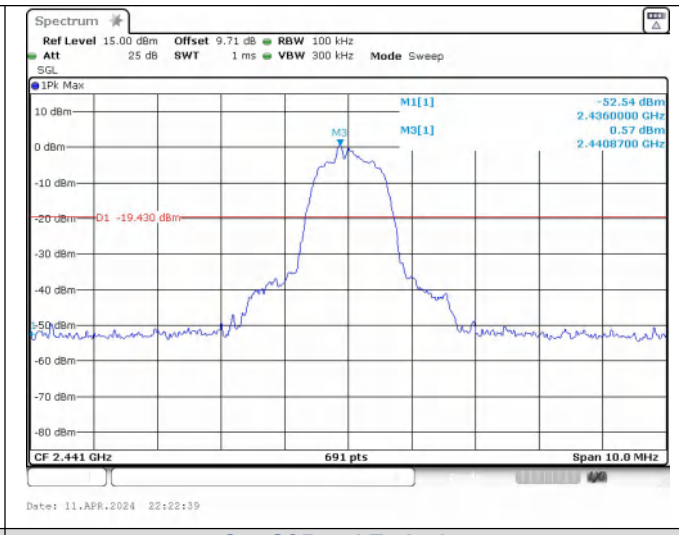
Spurious Emission
GFSK_DH5_Channel 0



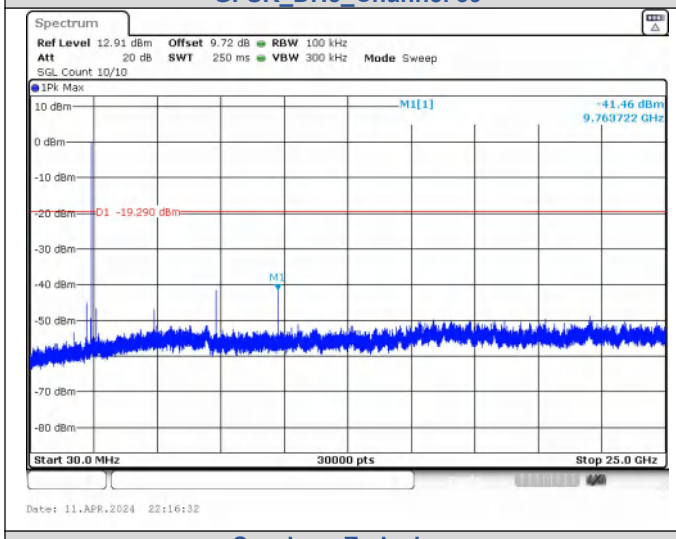
Spurious Emission
π/4DQPSK_2-DH5_Channel 0



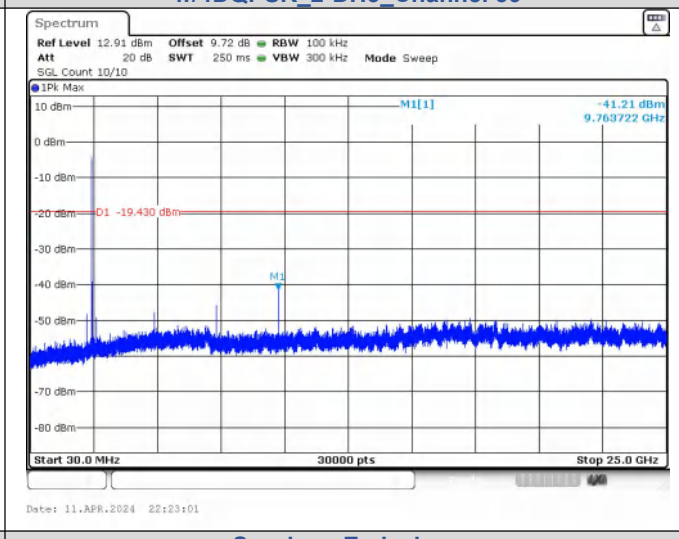
Out Of Band Emission
GFSK_DH5_Channel 39



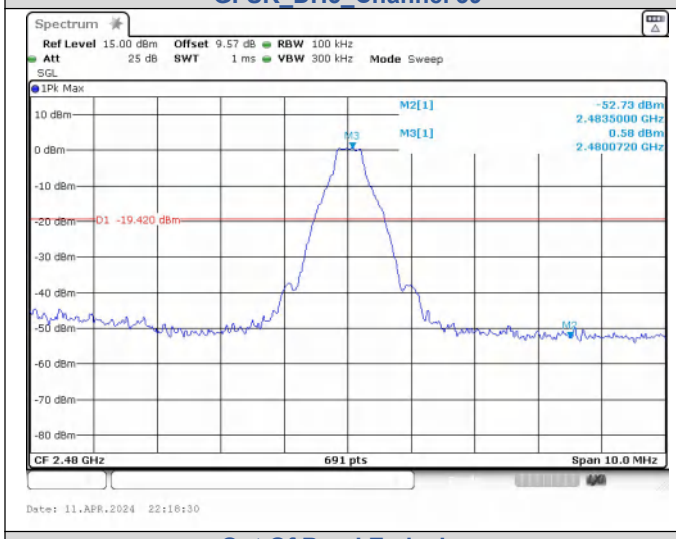
Out Of Band Emission
π/4DQPSK_2-DH5_Channel 39



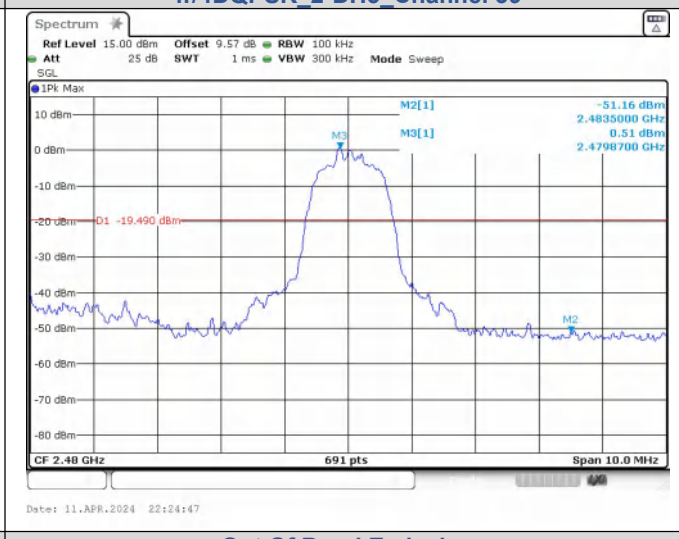
Spurious Emissions
GFSK_DH5_Channel 39



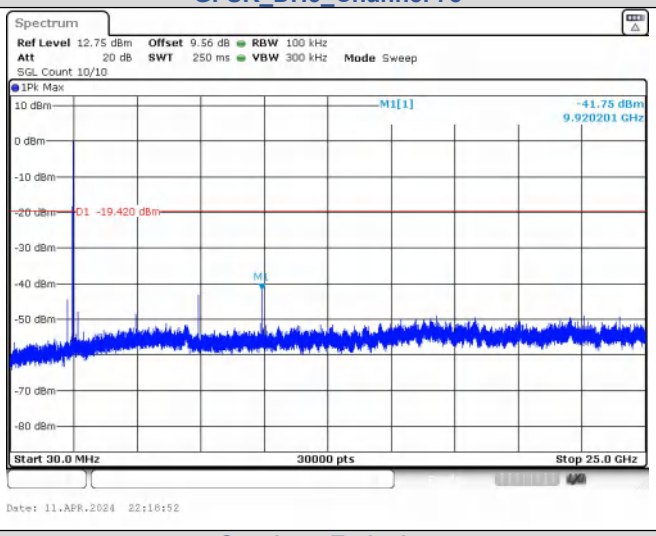
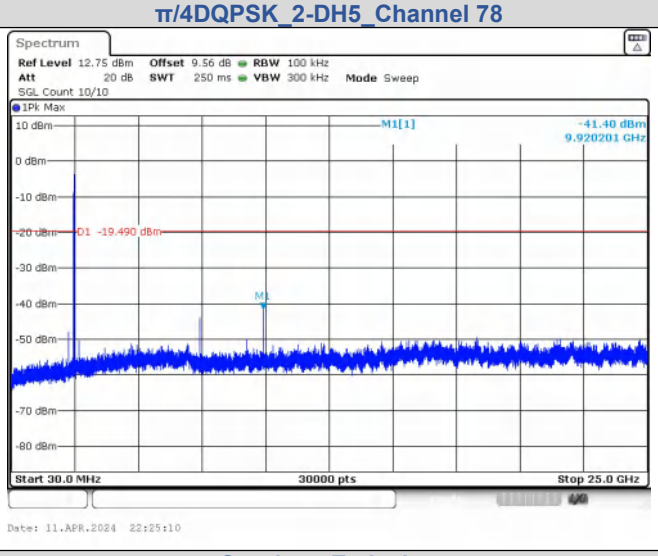
Spurious Emissions
π/4DQPSK_2-DH5_Channel 39

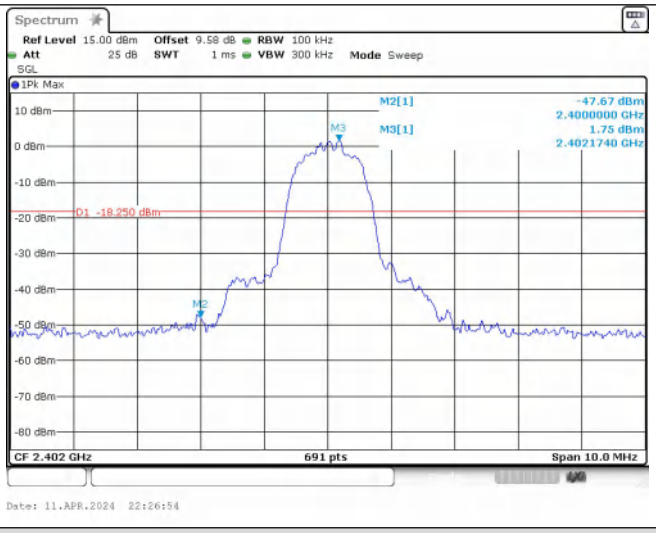
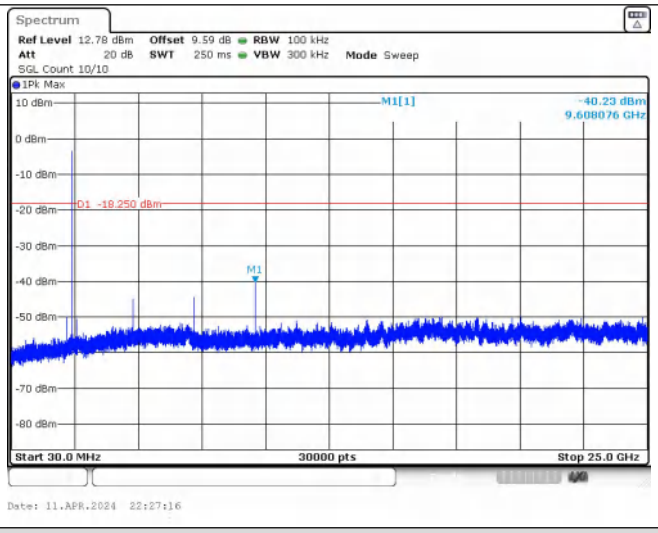


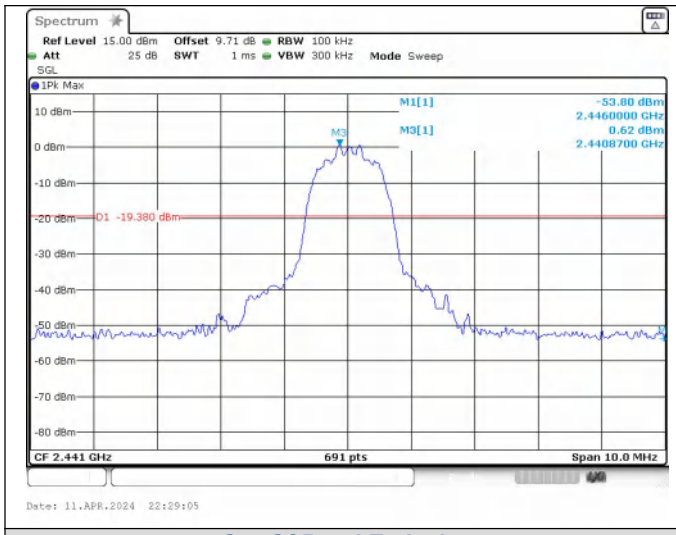
Out Of Band Emission



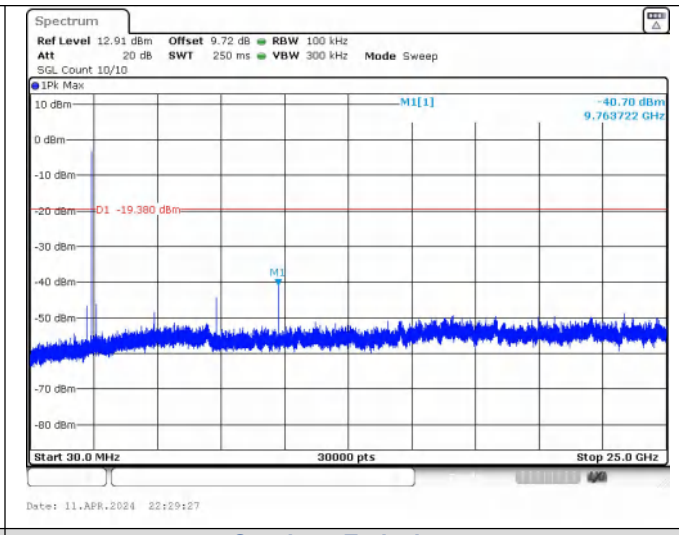
Out Of Band Emission

GFSK_DH5_Channel 78	π/4DQPSK_2-DH5_Channel 78
	
Spurious Emission GFSK_DH5_Channel 78	Spurious Emission π/4DQPSK_2-DH5_Channel 78

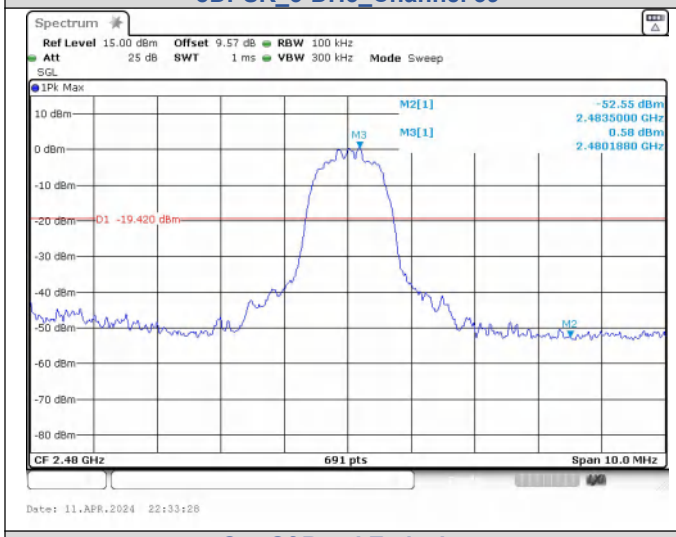
	
Out Of Band Emission 8DPSK_3-DH5_Channel 0	Spurious Emission 8DPSK_3-DH5_Channel 0



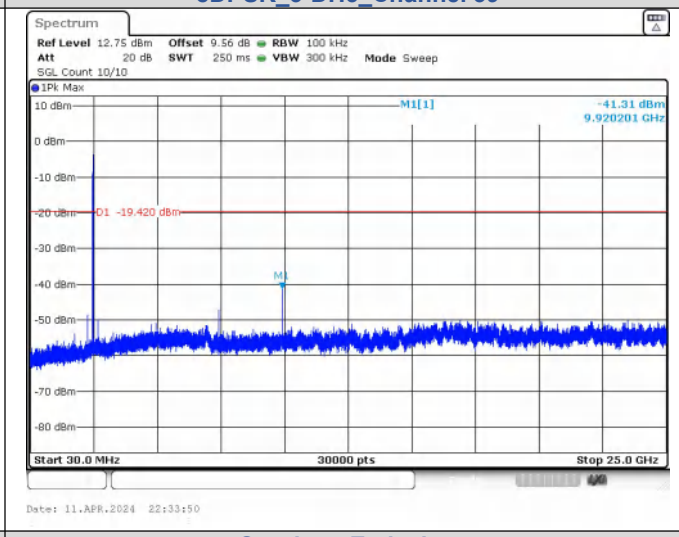
Out Of Band Emission
8DPSK_3-DH5_Channel 39



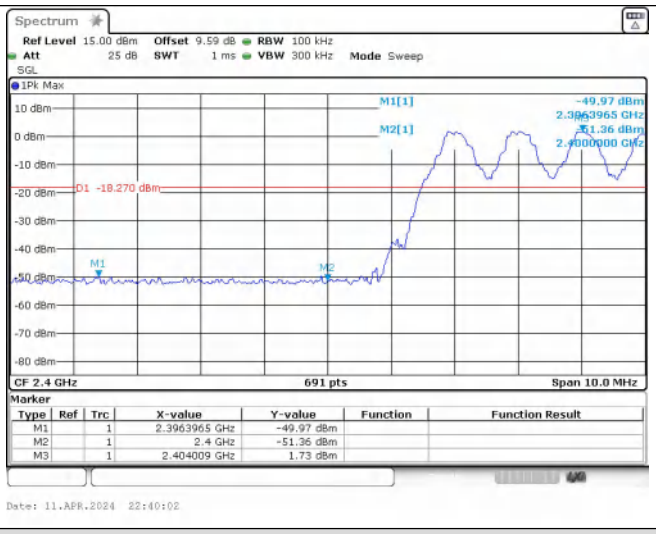
Spurious Emissions
8DPSK_3-DH5_Channel 39



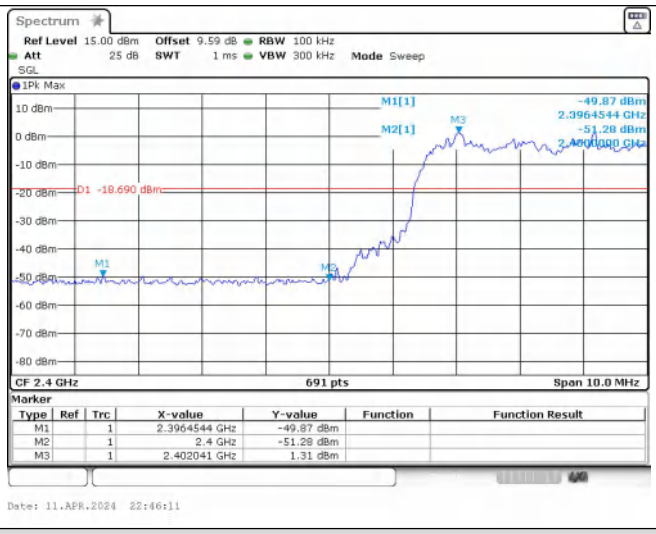
Out Of Band Emission
8DPSK_3-DH5_Channel 78



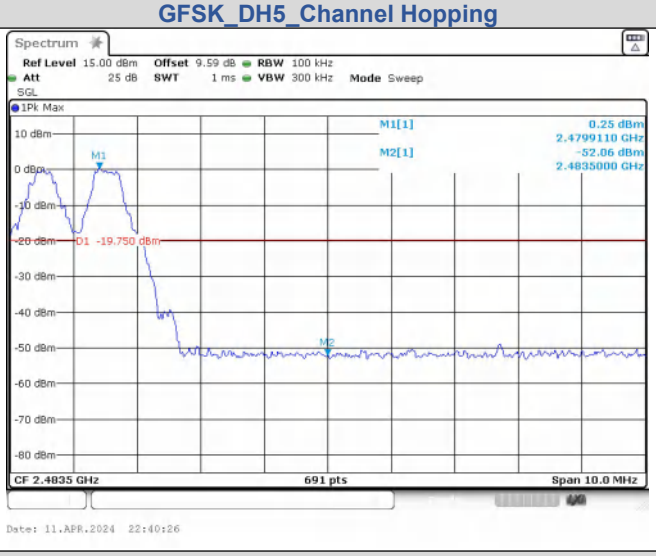
Spurious Emission
8DPSK_3-DH5_Channel 78



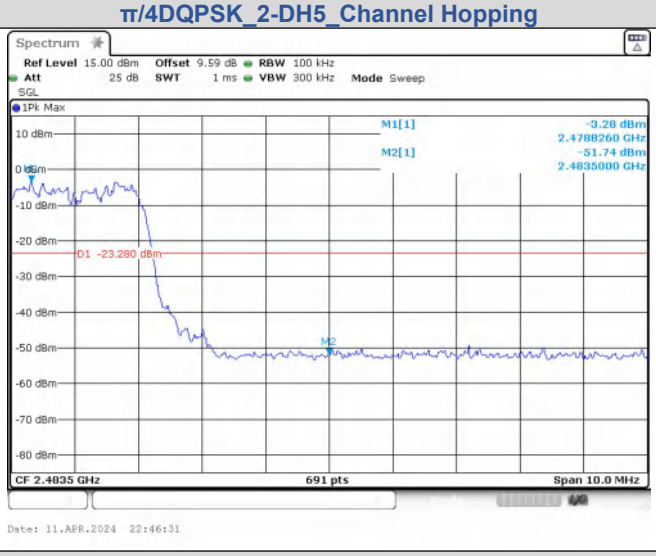
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



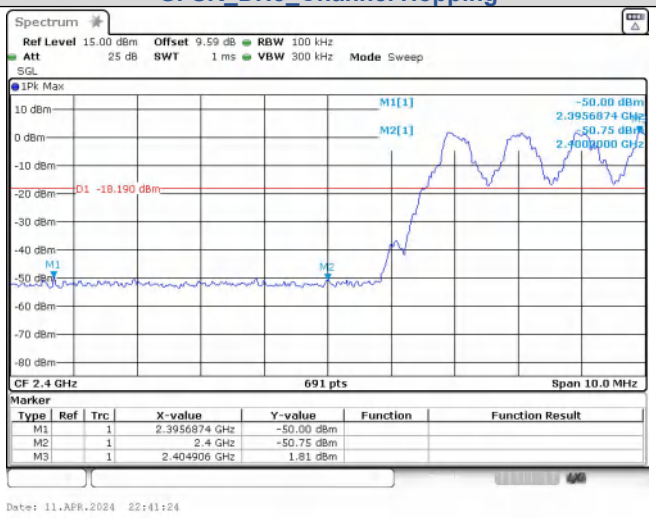
Out Of Band Emission(Left)
π/4DQPSK_2-DH5_Channel Hopping



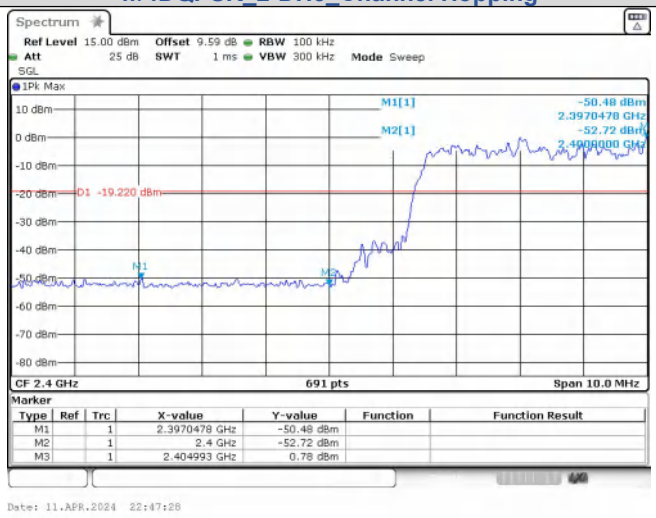
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



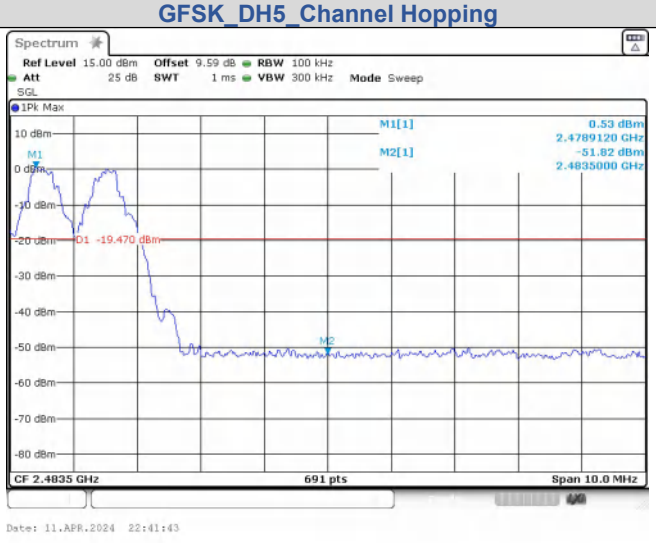
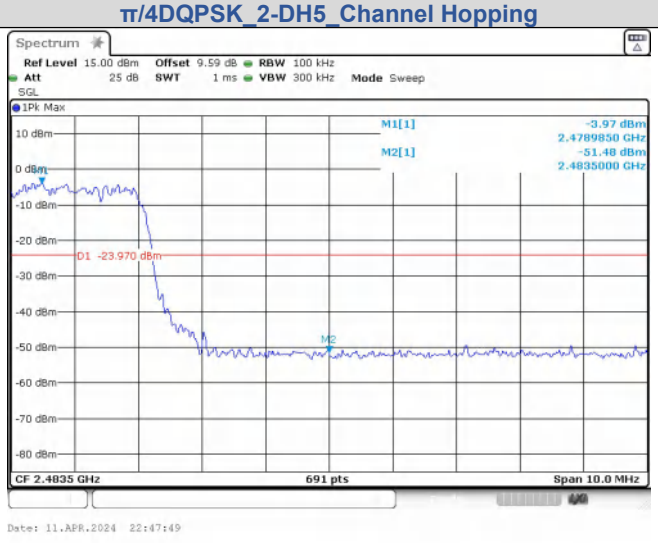
Out Of Band Emission(Right)
π/4DQPSK_2-DH5_Channel Hopping

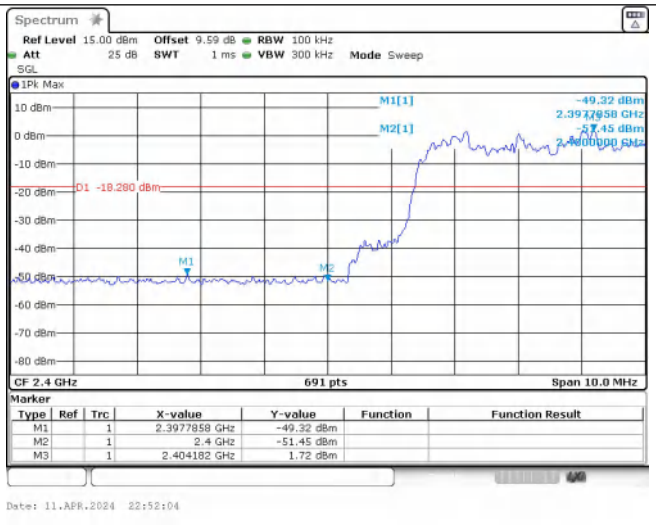
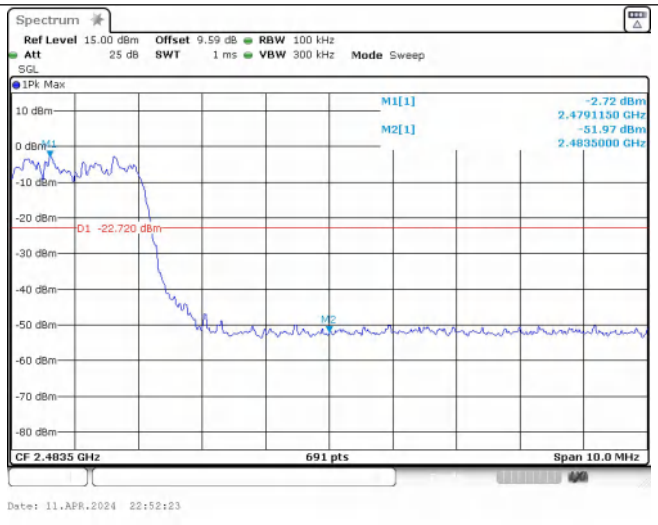


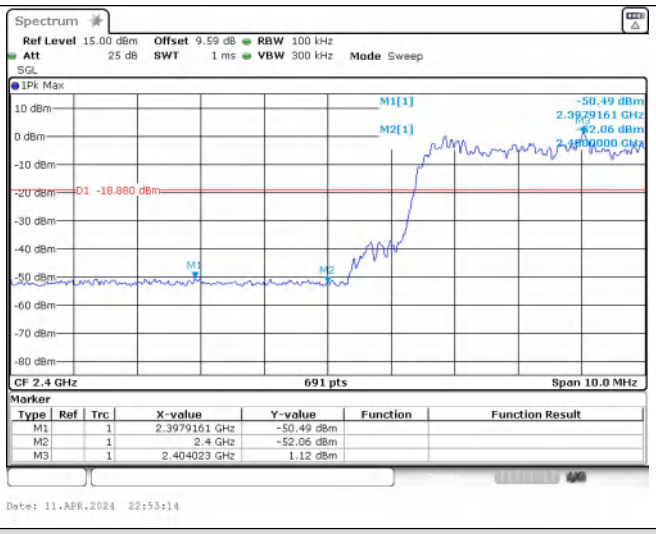
Out Of Band Emission(Left)



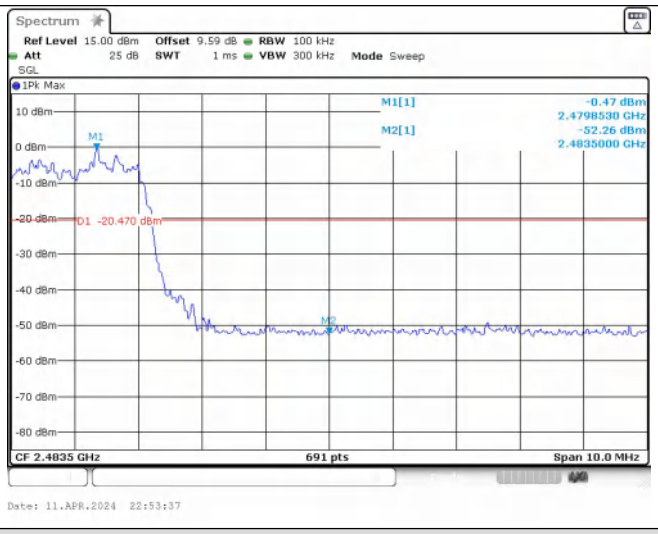
Out Of Band Emission(Left)

GFSK_DH5_Channel Hopping	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

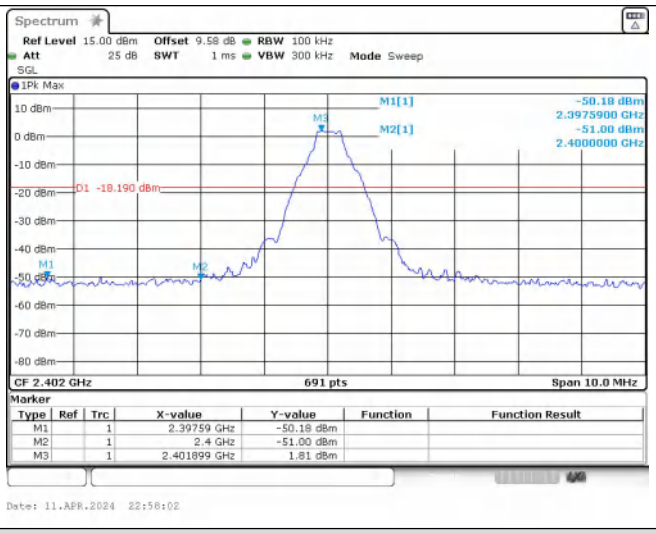
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-51.001	-18.19	-32.811	PASS
			2397.59	-50.181	-18.19	-31.991	PASS
			9608.10	-40.623	-18.19	-22.433	PASS
		39	9763.72	-40.196	-19.33	-20.866	PASS
		78	2483.50	-51.273	-19.31	-31.963	PASS
			9920.20	-40.817	-19.31	-21.507	PASS
π/4DQPSK	2-DH5	0	2400.00	-50.898	-18.27	-32.628	PASS
			2397.20	-50.757	-18.27	-32.487	PASS
			9608.10	-40.244	-18.27	-21.974	PASS
		39	9763.72	-40.430	-19.34	-21.090	PASS
		78	2483.50	-51.640	-19.9	-31.740	PASS
			9920.20	-41.393	-19.9	-21.493	PASS
8DPSK	3-DH5	0	2400.00	-49.632	-18.27	-31.362	PASS
			9608.08	-39.968	-18.27	-21.698	PASS
		39	9763.72	-40.450	-19.54	-20.910	PASS
		78	2483.50	-52.120	-19.93	-32.190	PASS
			9920.20	-41.100	-19.93	-21.170	PASS

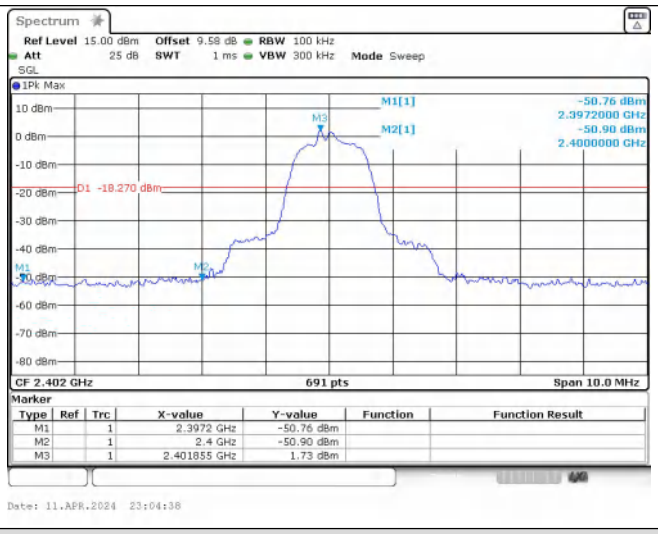
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2400.00	-49.837	-18.36	-31.477	PASS
			2483.50	-52.138	-19.42	-32.718	PASS
			2398.89	-50.162	-18.19	-31.972	PASS
			2400.00	-50.952	-18.19	-32.762	PASS
			2483.50	-50.522	-19.32	-31.202	PASS
π/4DQPSK	2-DH5		2395.66	-49.492	-18.25	-31.242	PASS
			2400.00	-50.004	-18.25	-31.754	PASS
			2483.50	-51.327	-19.88	-31.447	PASS
			2397.22	-48.523	-18.49	-30.033	PASS
			2400.00	-52.505	-18.49	-34.015	PASS
			2483.50	-51.612	-20.1	-31.512	PASS
8DPSK	3-DH5		2397.70	-49.598	-19.12	-30.478	PASS
			2400.00	-50.948	-19.12	-31.828	PASS
			2483.50	-51.537	-20.67	-30.867	PASS
			2398.08	-49.696	-18.31	-31.386	PASS
			2400.00	-50.480	-18.31	-32.170	PASS
			2483.50	-51.777	-21.09	-30.687	PASS

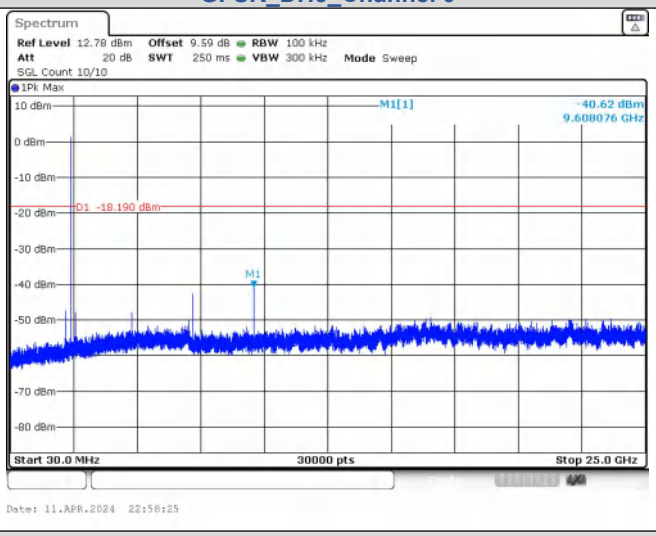
Test Graphs



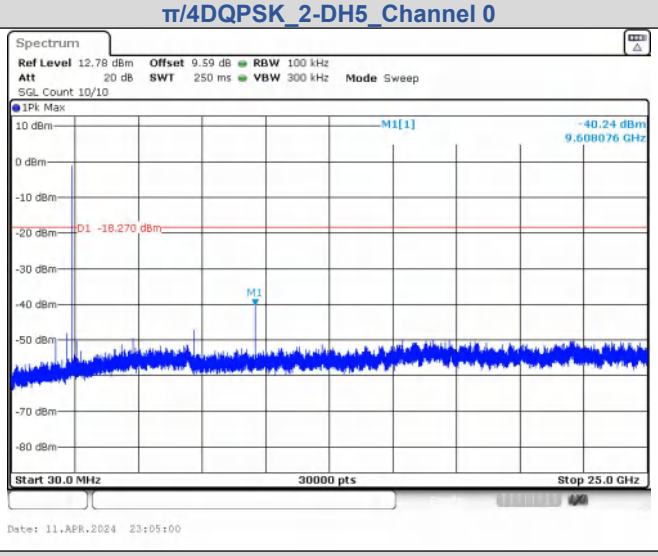
Out Of Band Emission
GFSK_DH5_Channel 0



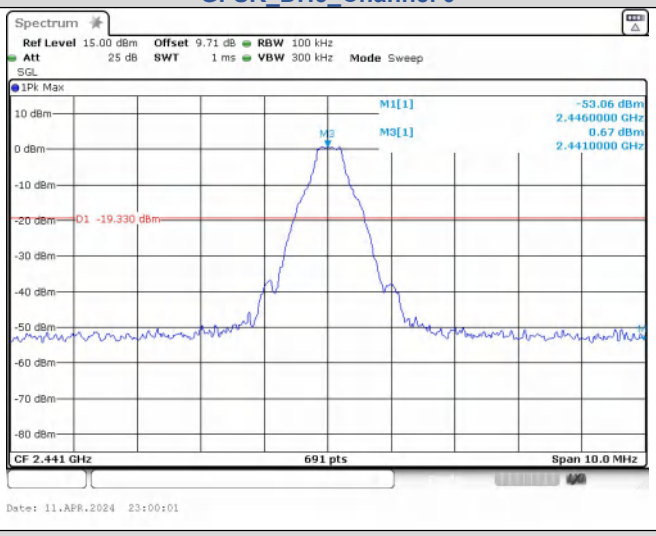
Out Of Band Emission
π/4DQPSK_2-DH5_Channel 0



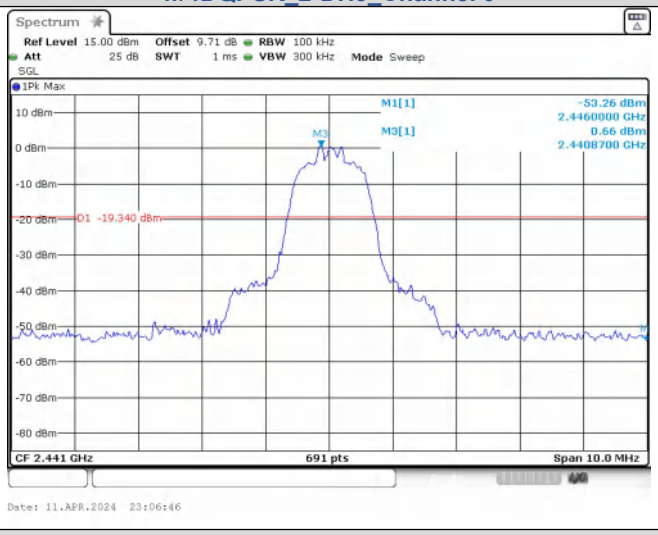
Spurious Emission
GFSK_DH5_Channel 0



Spurious Emission
π/4DQPSK_2-DH5_Channel 0

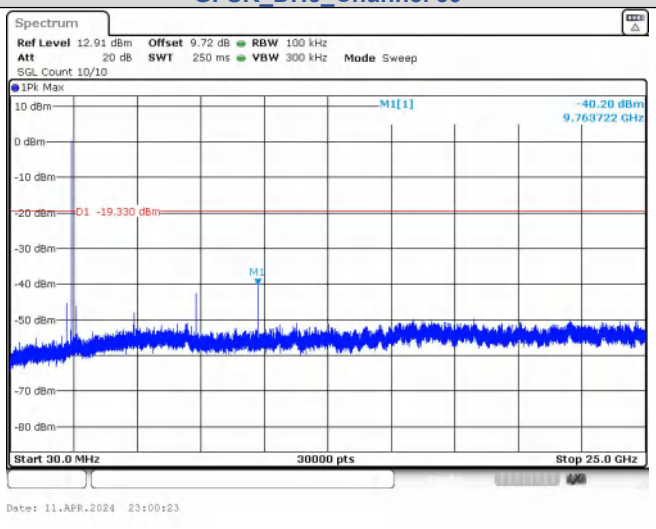


Out Of Band Emission

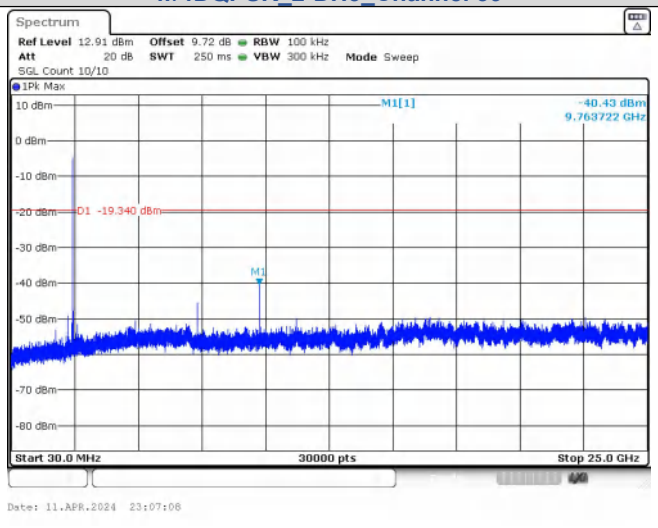


Out Of Band Emission

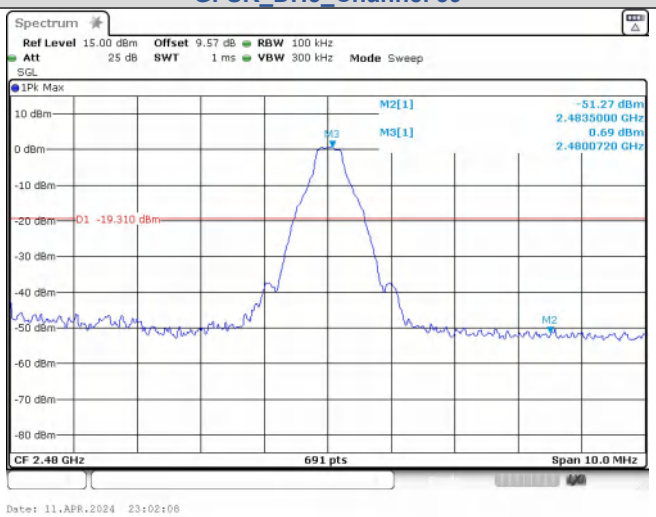
GFSK_DH5_Channel 39



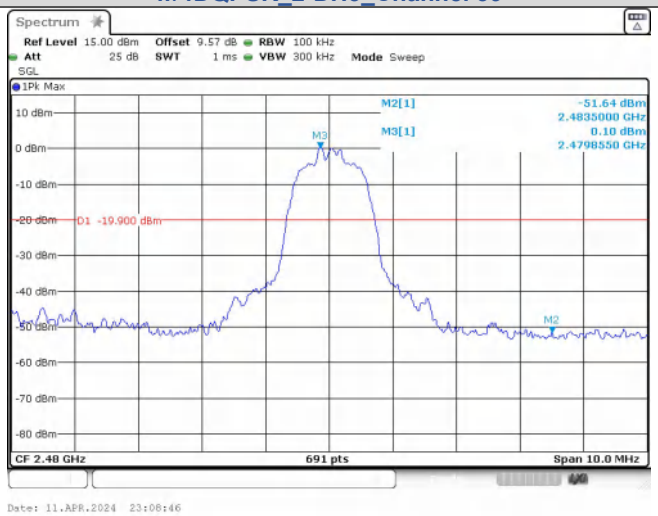
π/4DQPSK_2-DH5_Channel 39



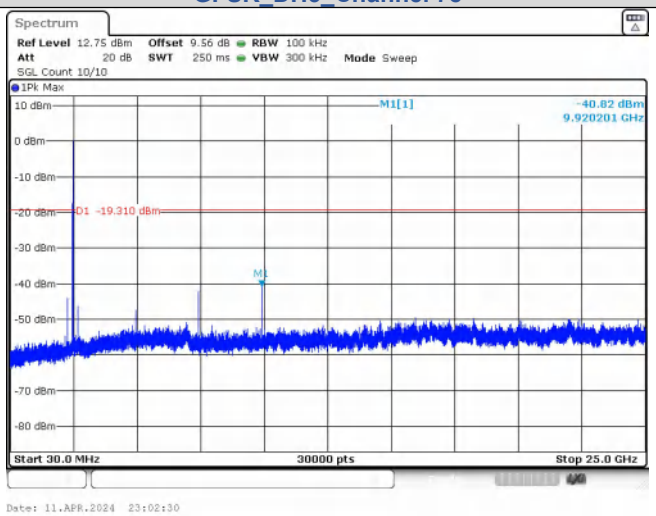
Spurious Emissions GFSK_DH5_Channel 39



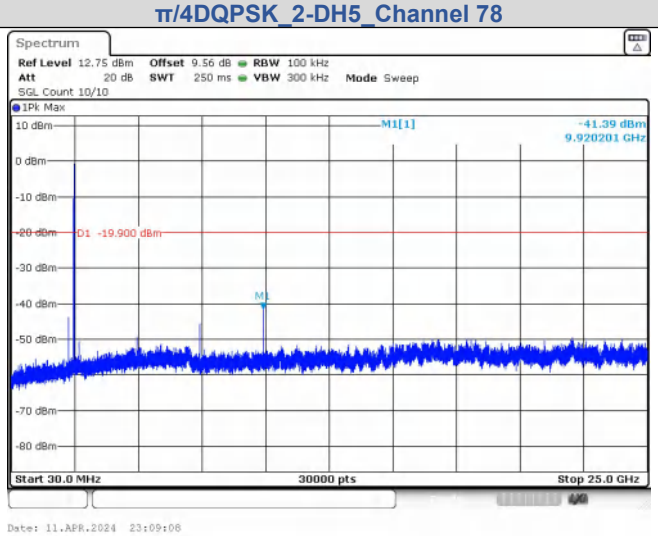
Spurious Emissions π/4DQPSK_2-DH5_Channel 39

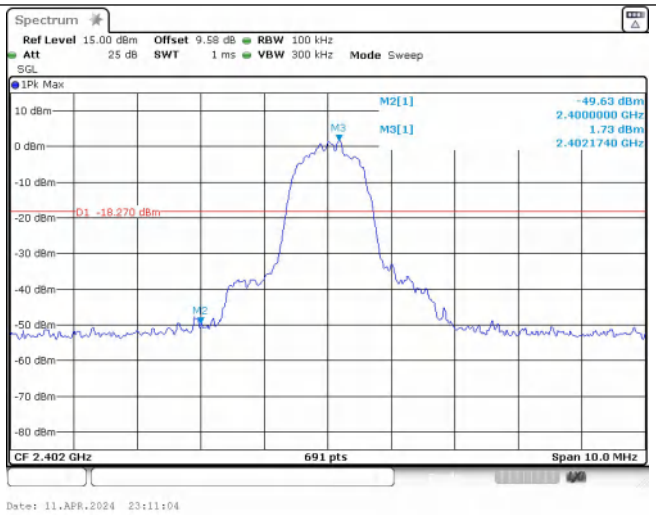
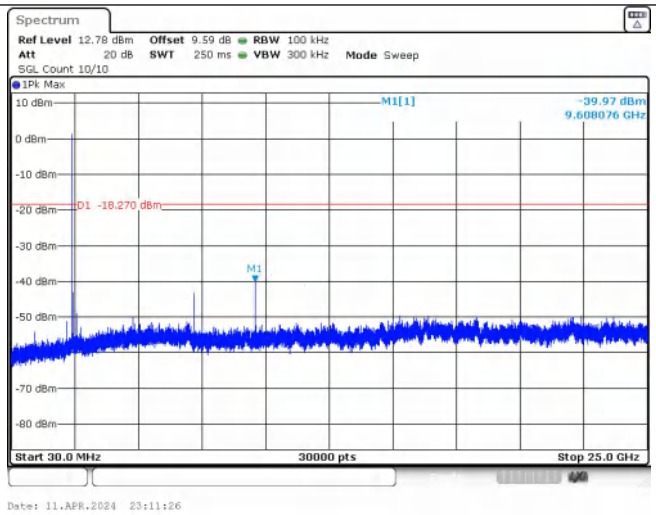
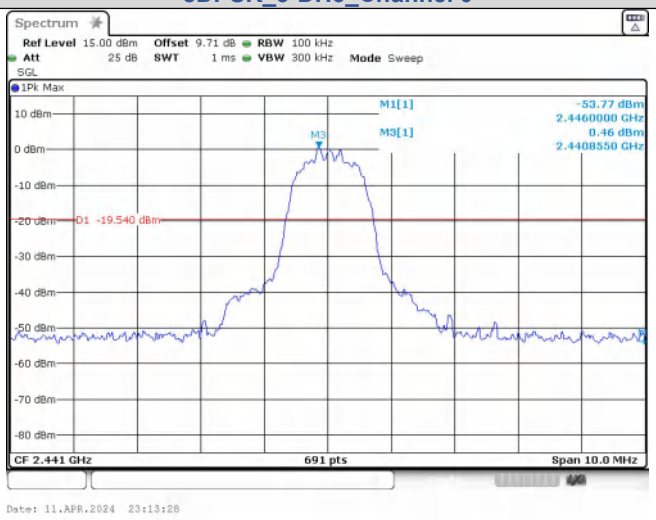
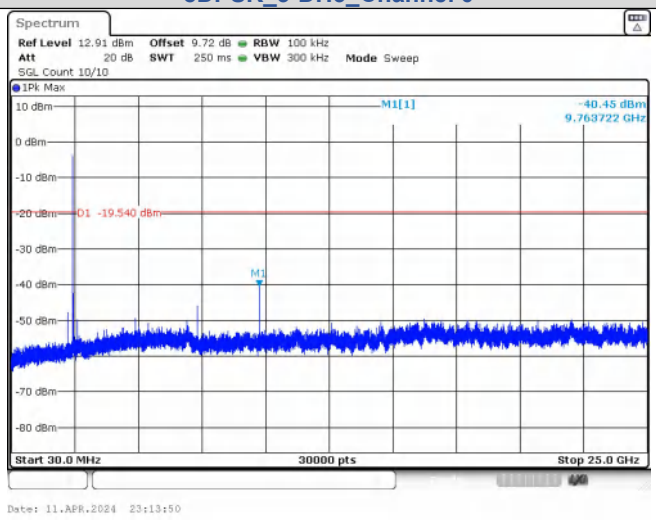


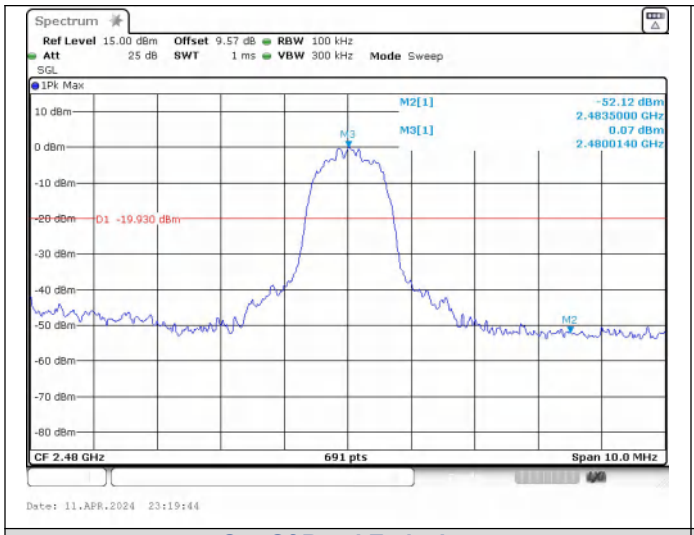
Out Of Band Emission GFSK_DH5_Channel 78



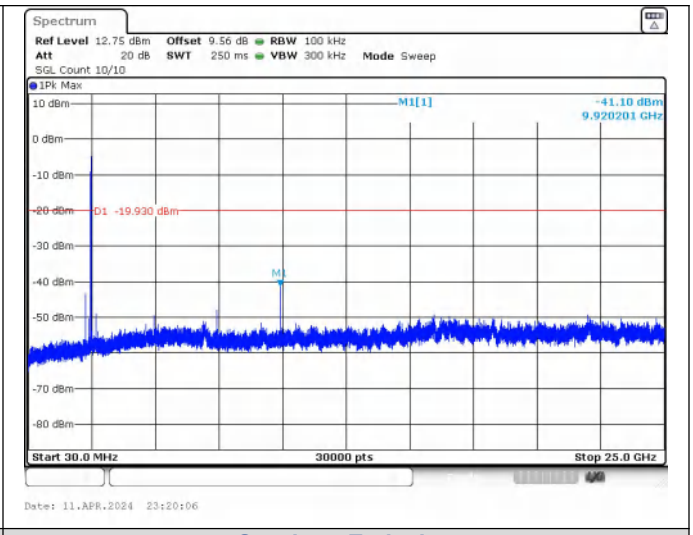
Out Of Band Emission π/4DQPSK_2-DH5_Channel 78



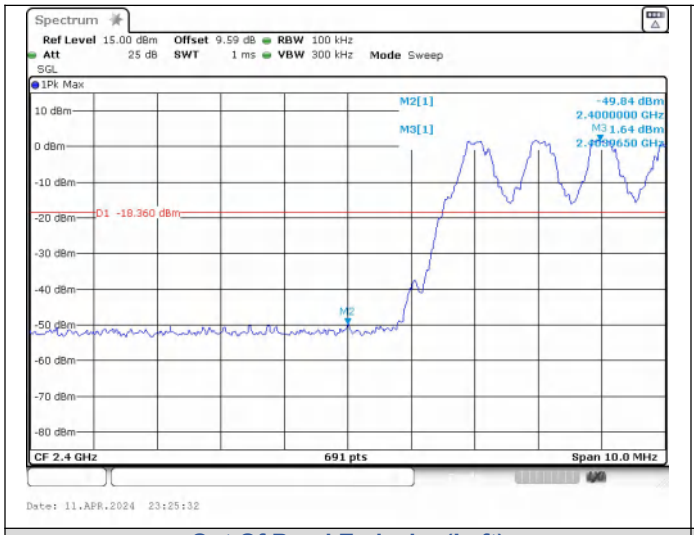
Spurious Emission GFSK_DH5_Channel 78	Spurious Emission π/4DQPSK_2-DH5_Channel 78
	
Out Of Band Emission 8DPSK_3-DH5_Channel 0	**Spurious Emission 8DPSK_3-DH5_Channel 0**
	
Out Of Band Emission 8DPSK_3-DH5_Channel 39	**Spurious Emissions 8DPSK_3-DH5_Channel 39**



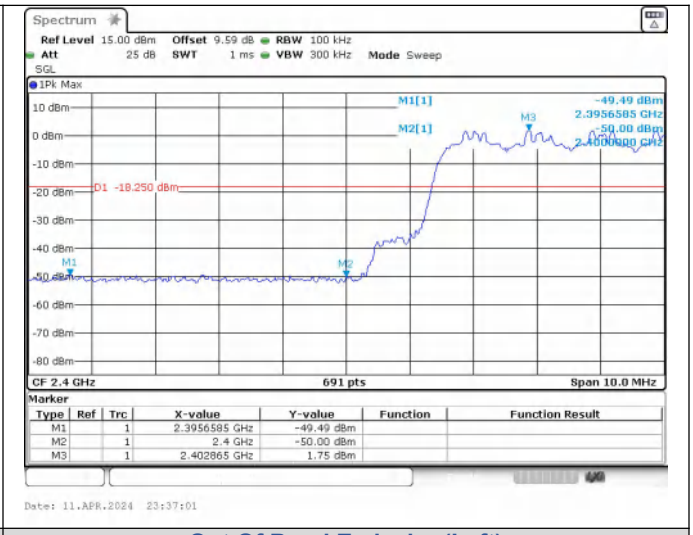
Out Of Band Emission
8DPSK_3-DH5_Channel 78



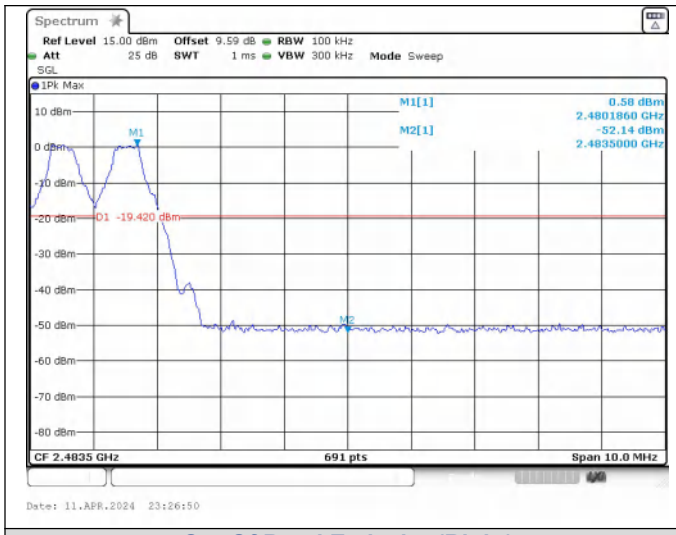
Spurious Emission
8DPSK_3-DH5_Channel 78



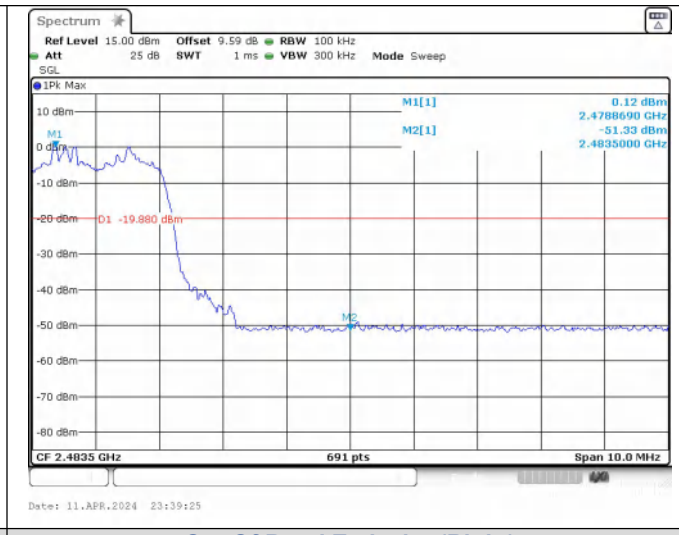
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



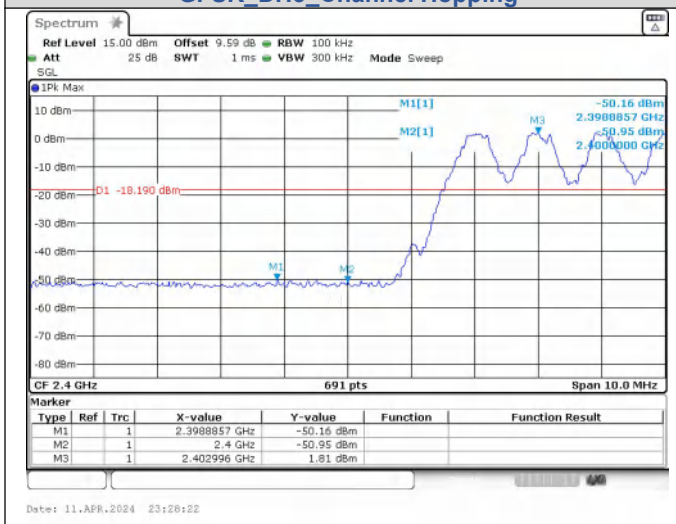
Out Of Band Emission(Left)
π/4DQPSK_2-DH5_Channel Hopping



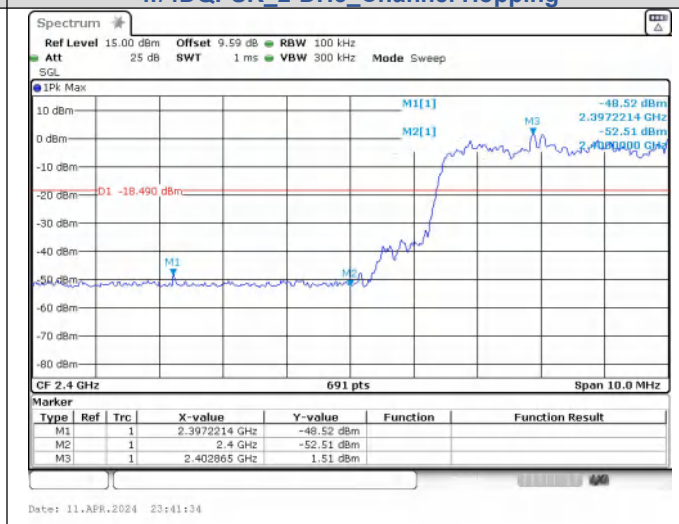
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



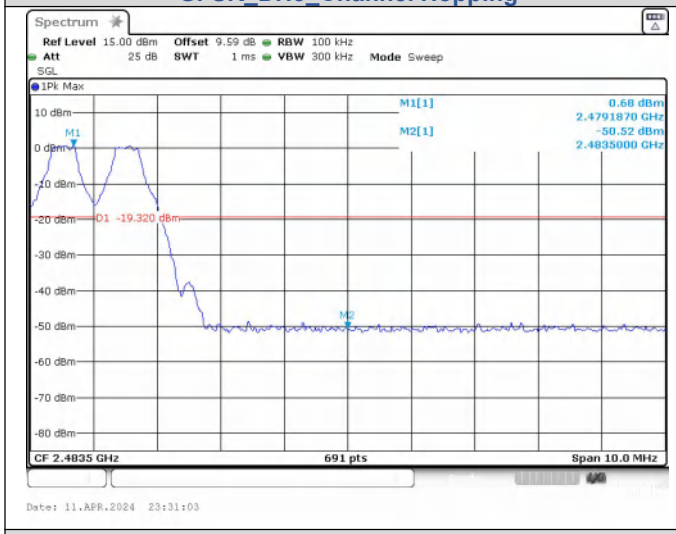
Out Of Band Emission(Right)
π/4DQPSK_2-DH5_Channel Hopping



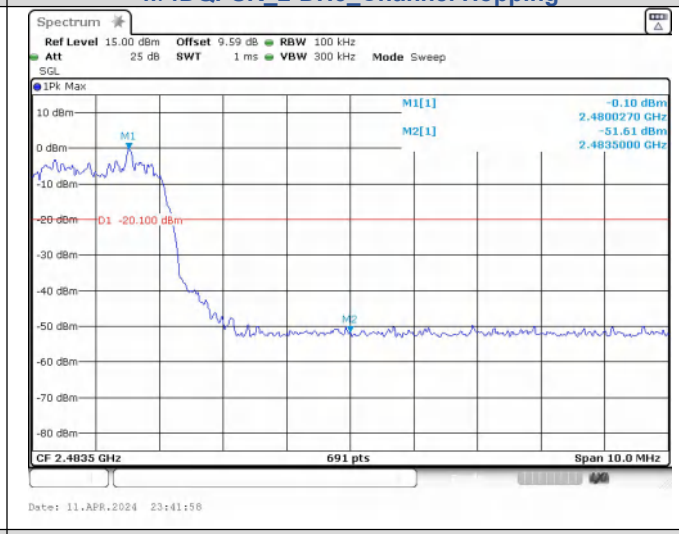
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



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

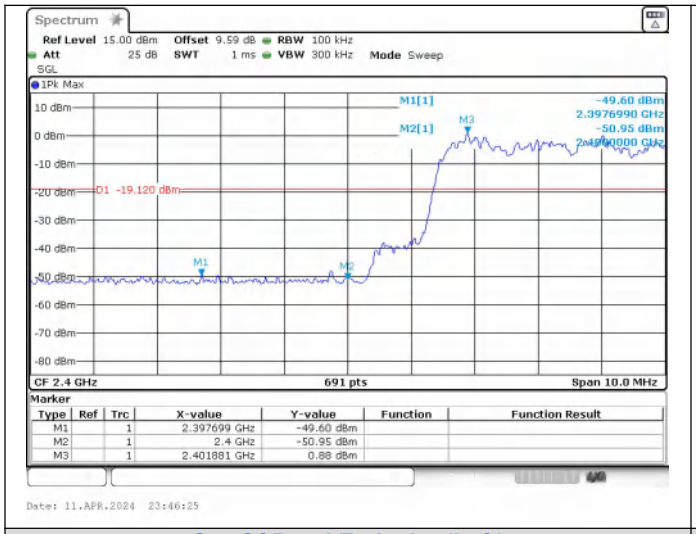


Out Of Band Emission(Right)

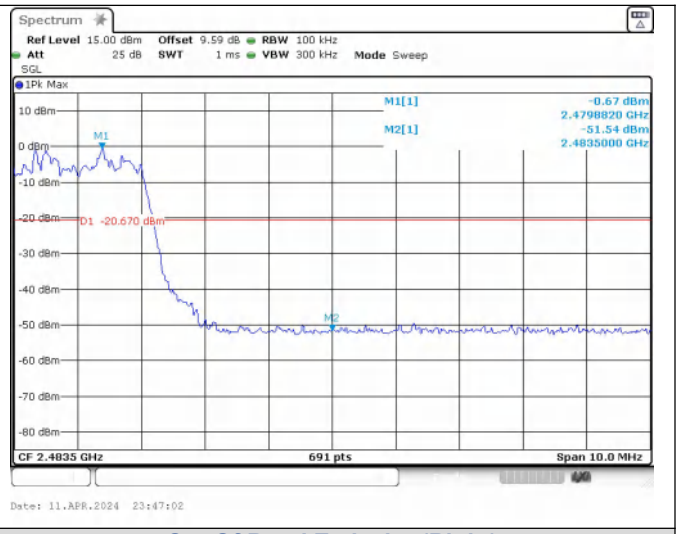


Out Of Band Emission(Right)

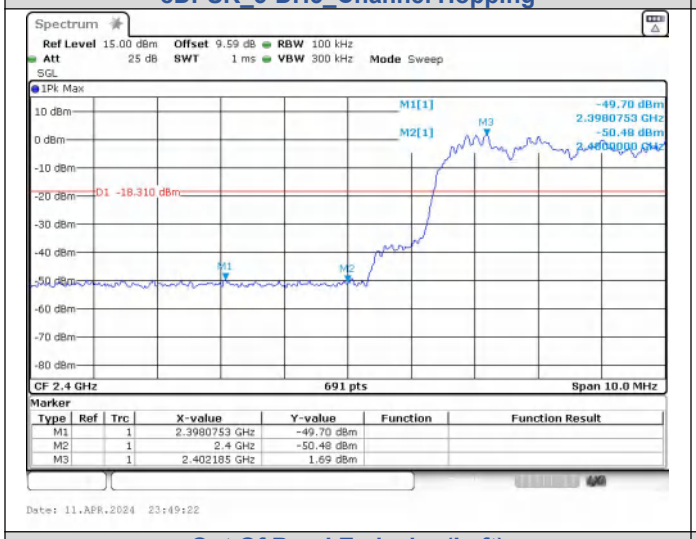
GFSK_DH5_Channel Hopping	π/4DQPSK_2-DH5_Channel Hopping



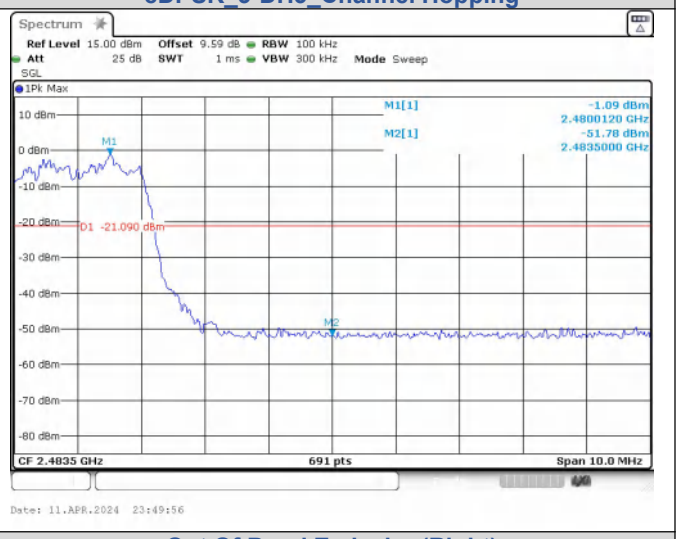
Out Of Band Emission(Left)
8DPSK_3-DH5_Channel Hopping



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

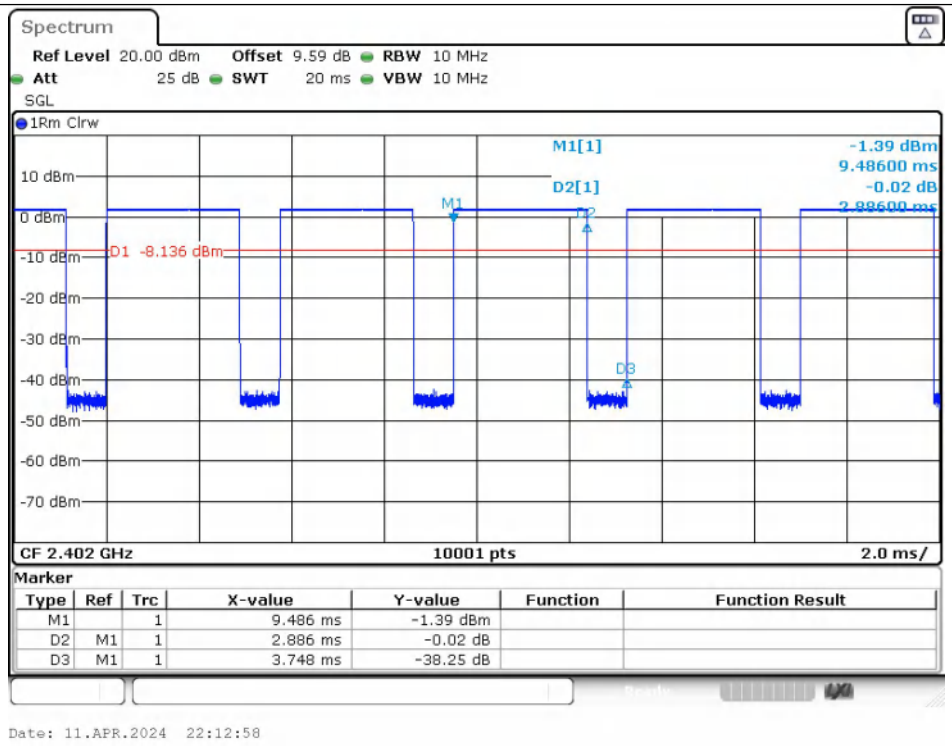
Duty Cycle

Left

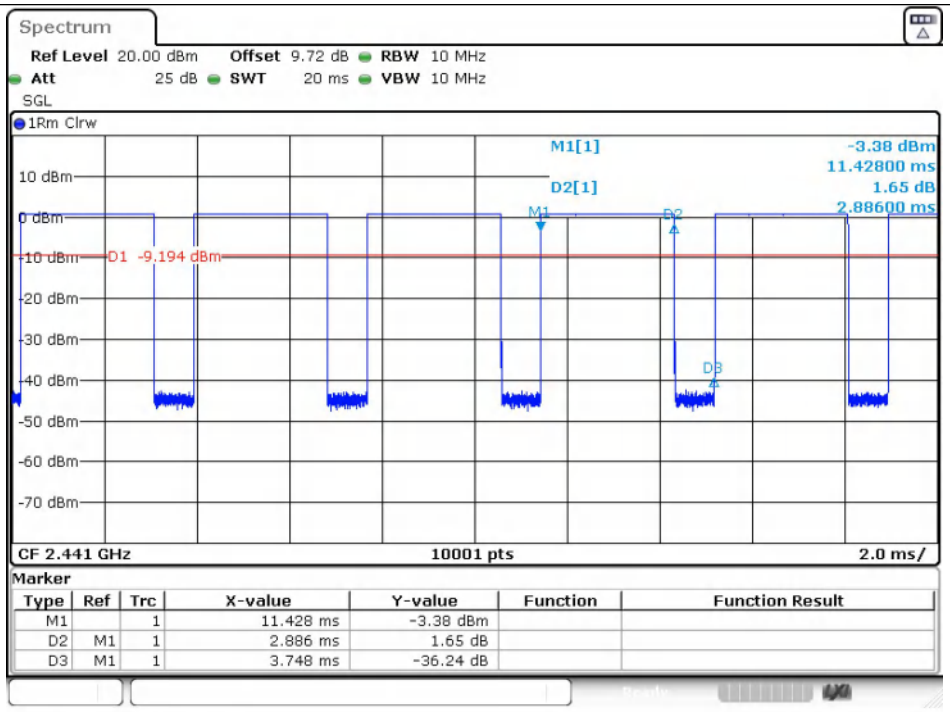
Test Result

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	2.890	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	3.748	77.16	0.7716	1.1261	0.35
		39	2.892	3.748	77.16	0.7716	1.1261	0.35
		78	2.892	3.748	77.16	0.7716	1.1261	0.35

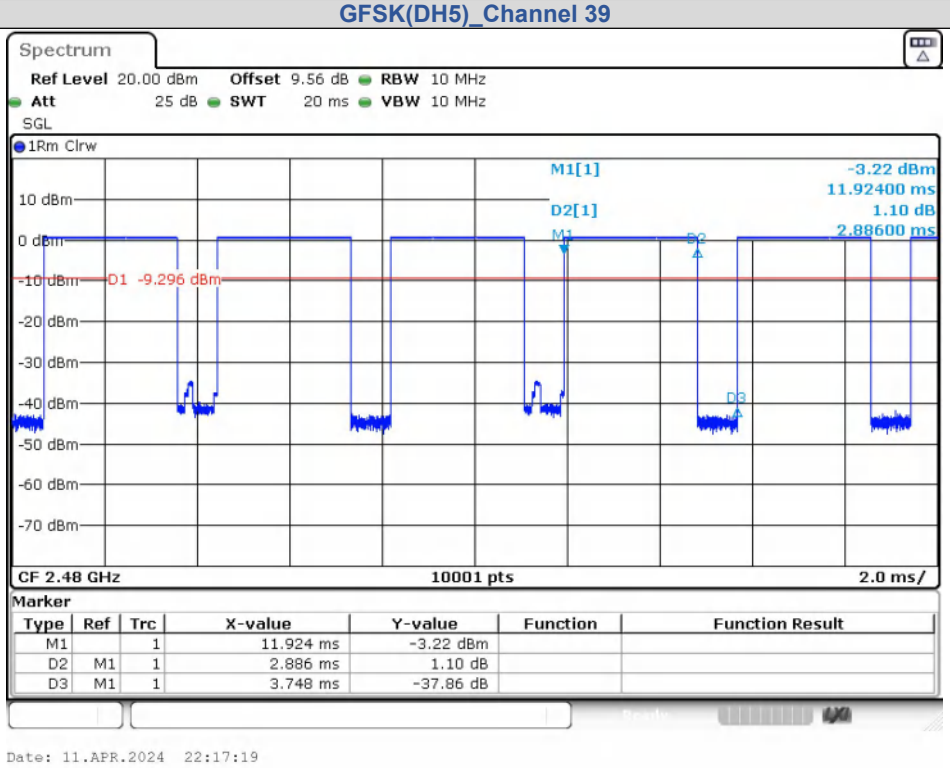
Test Graphs



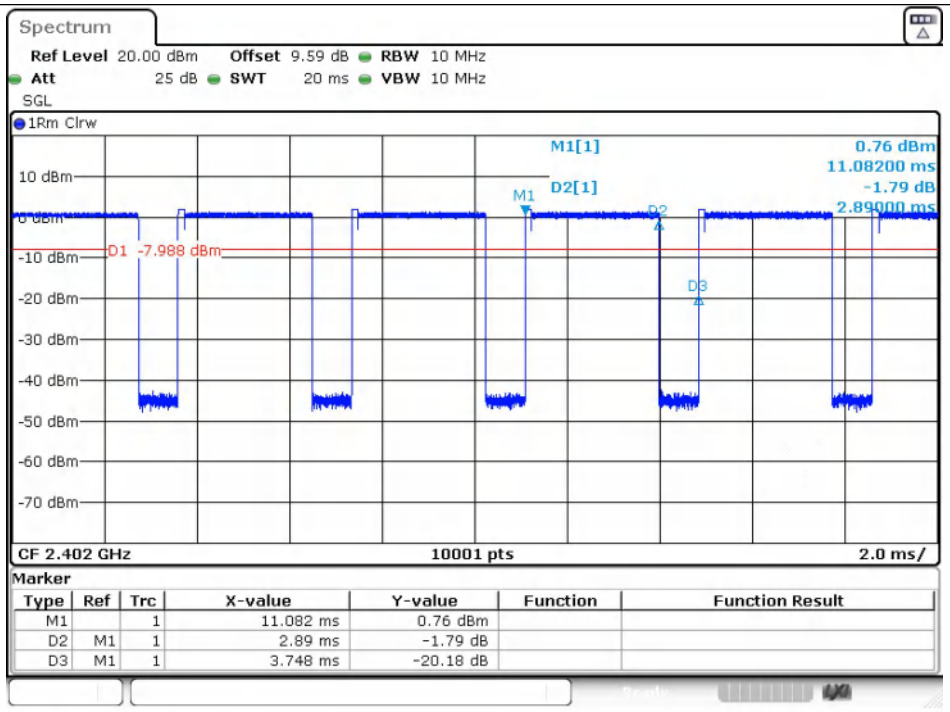
GFSK(DH5)_Channel 0



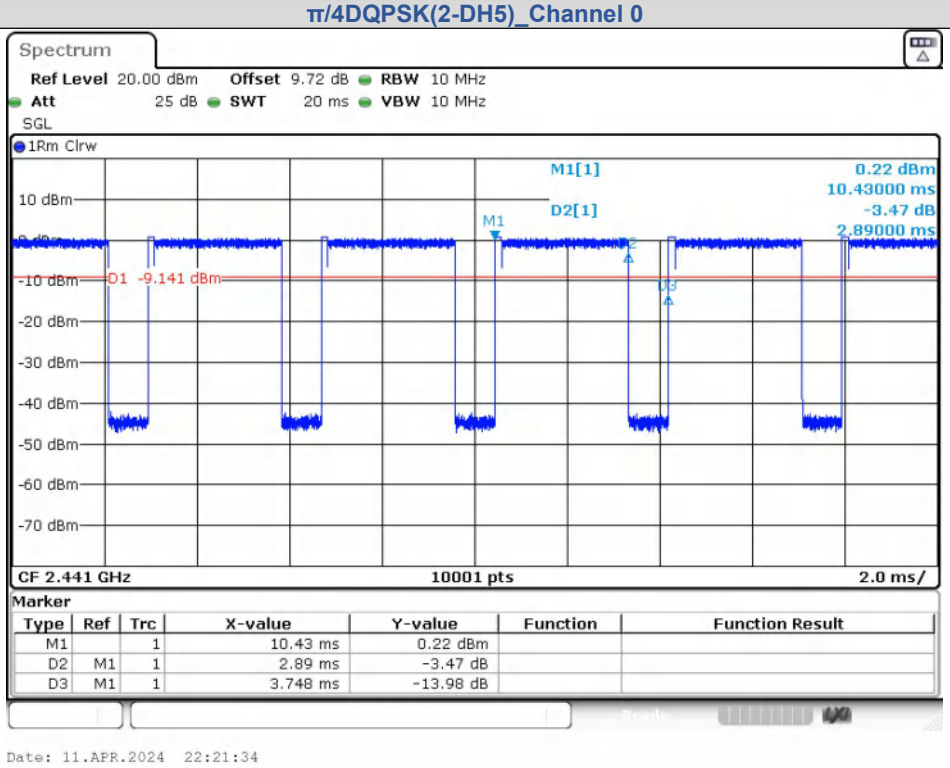
GFSK(DH5)_Channel 39



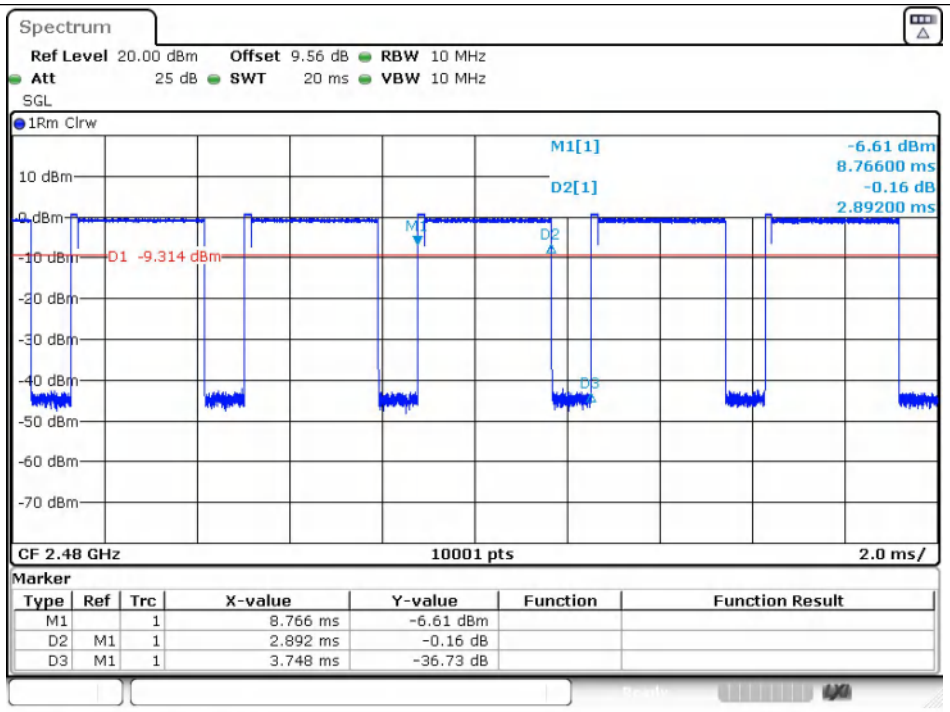
GFSK(DH5)_Channel 78



π/4DQPSK(2-DH5)_Channel 0



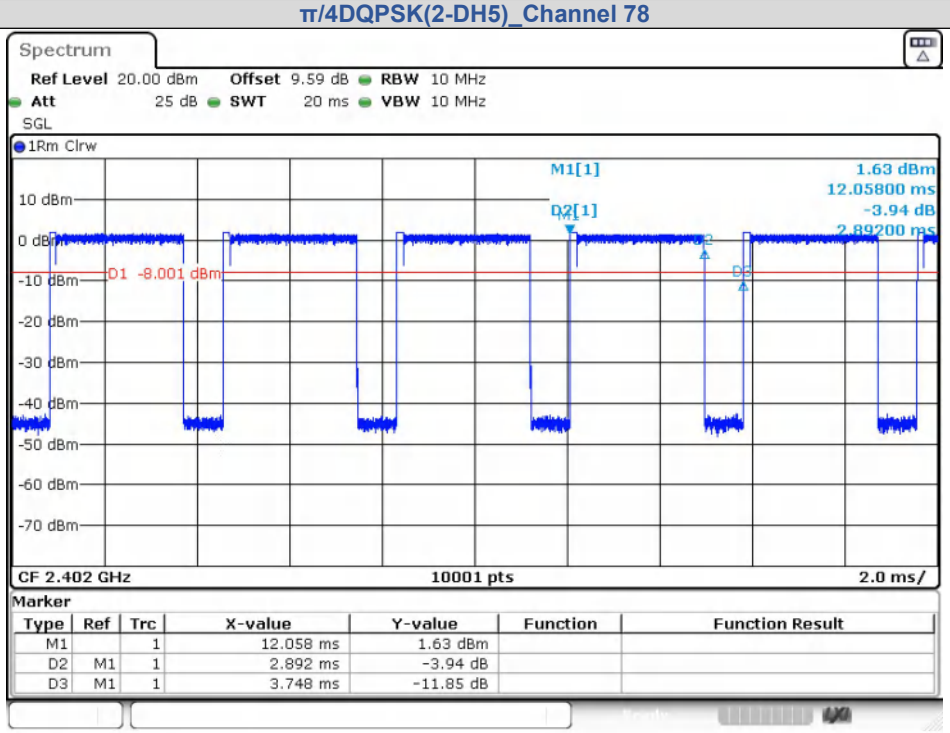
π/4DQPSK(2-DH5)_Channel 39



Marker						
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	8.766 ms	-6.61 dBm		
D2	M1	1	2.892 ms	-0.16 dB		
D3	M1	1	3.748 ms	-36.73 dB		

Date: 11.APR.2024 22:23:37

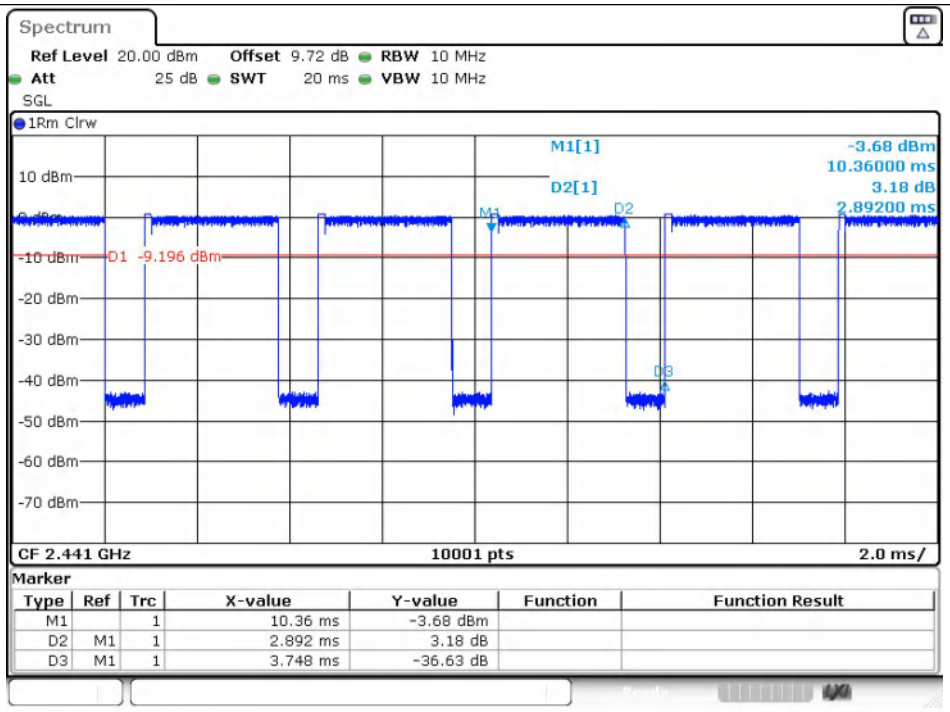
π/4DQPSK(2-DH5)_Channel 78



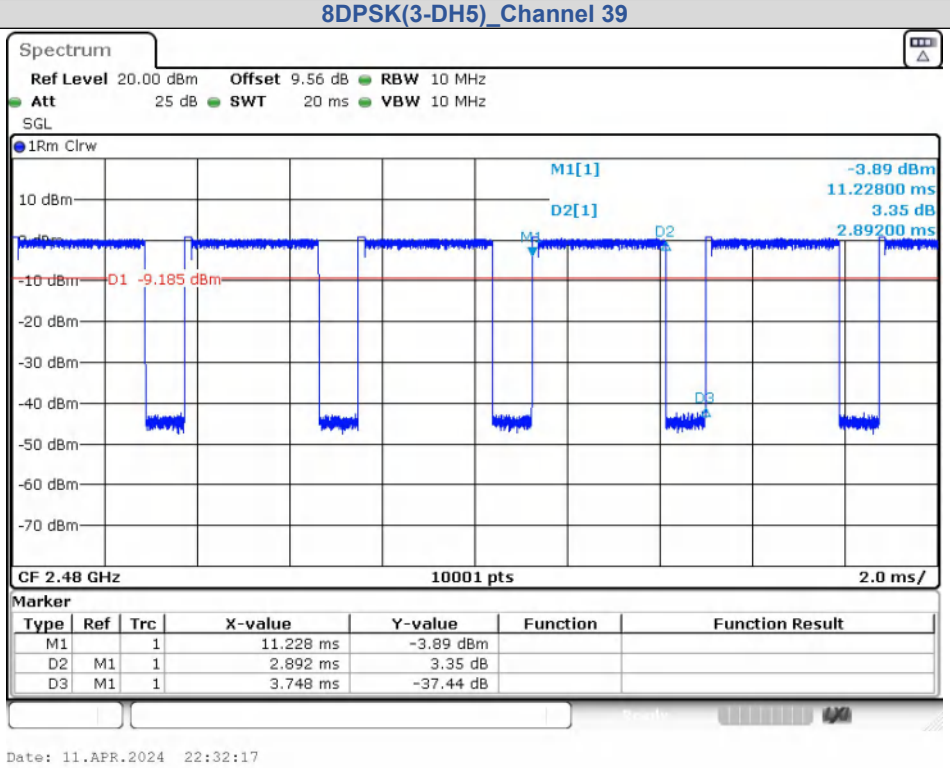
Marker						
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	12.058 ms	1.63 dBm		
D2	M1	1	2.892 ms	-3.94 dB		
D3	M1	1	3.748 ms	-11.85 dB		

Date: 11.APR.2024 22:25:43

8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39



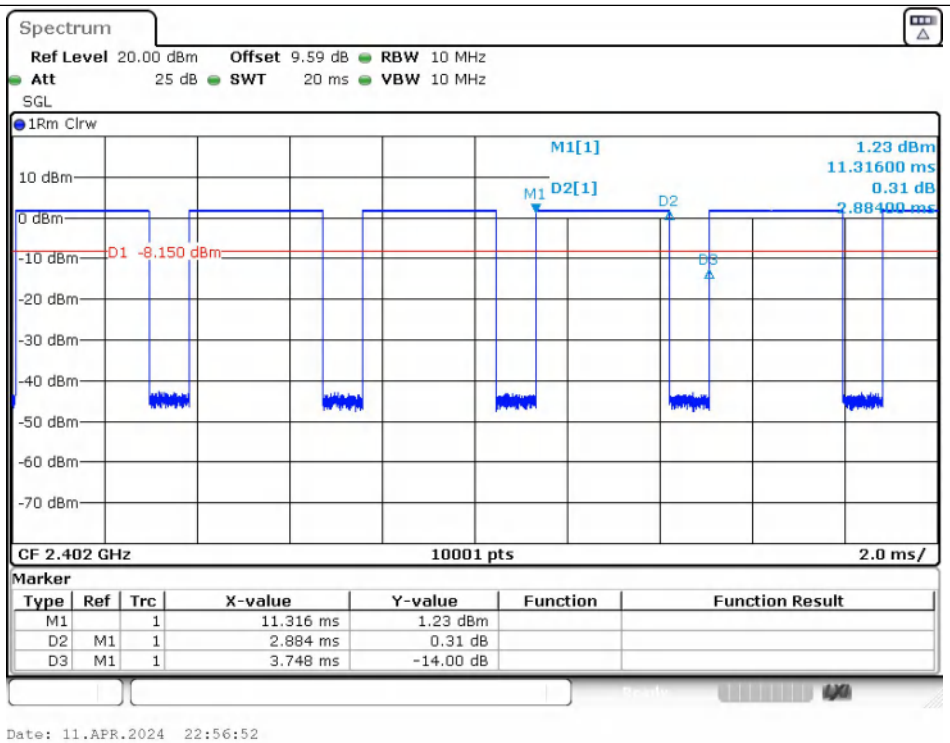
8DPSK(3-DH5)_Channel 78

Right

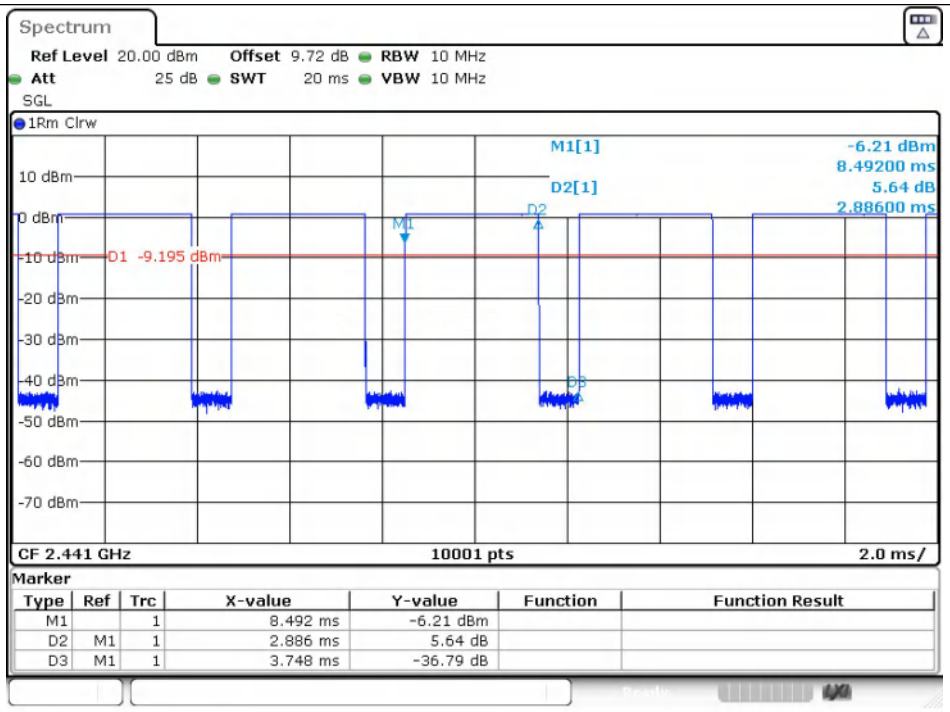
Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.884	3.748	76.95	0.7695	1.1379	0.35
		39	2.886	3.748	77.00	0.7700	1.1351	0.35
		78	2.886	3.748	77.00	0.7700	1.1351	0.35
π/4DQPSK	2-DH5	0	2.890	3.748	77.11	0.7711	1.1289	0.35
		39	2.890	3.748	77.11	0.7711	1.1289	0.35
		78	2.890	3.748	77.11	0.7711	1.1289	0.35
8DPSK	3-DH5	0	2.894	3.748	77.21	0.7721	1.1233	0.35
		39	2.892	3.748	77.16	0.7716	1.1261	0.35
		78	2.894	3.748	77.21	0.7721	1.1233	0.35

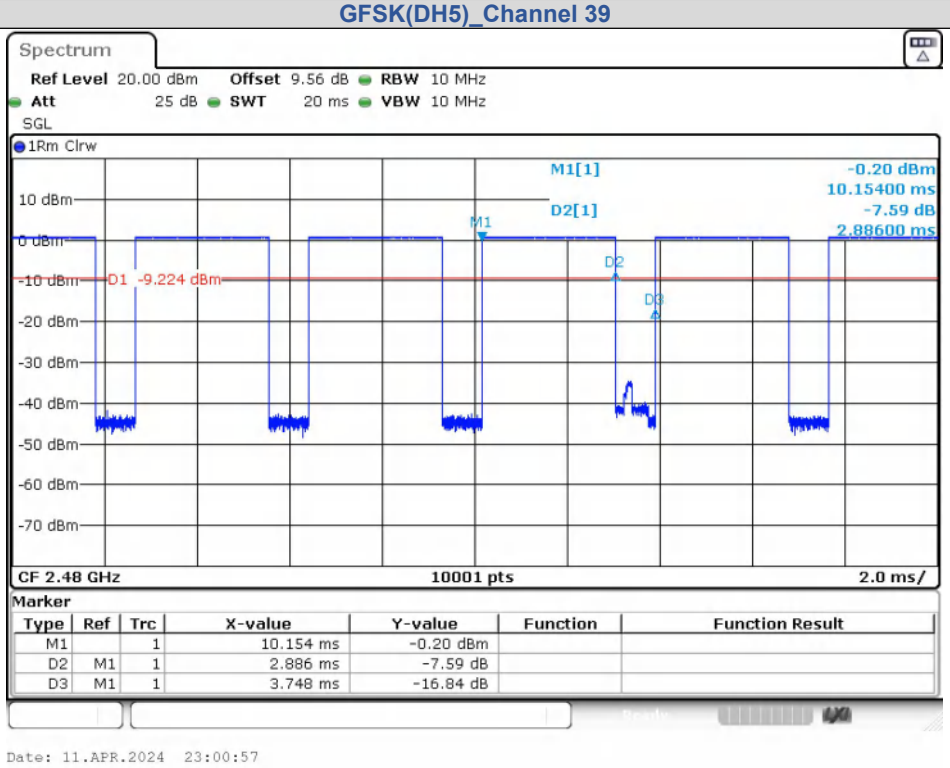
Test Graphs



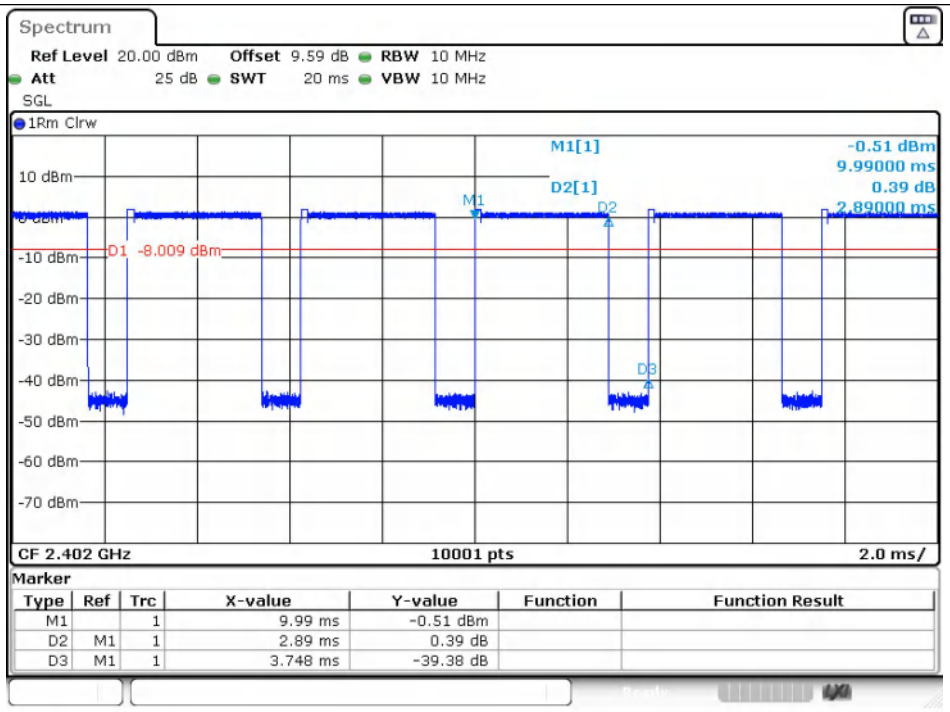
GFSK(DH5)_Channel 0



GFSK(DH5)_Channel 39



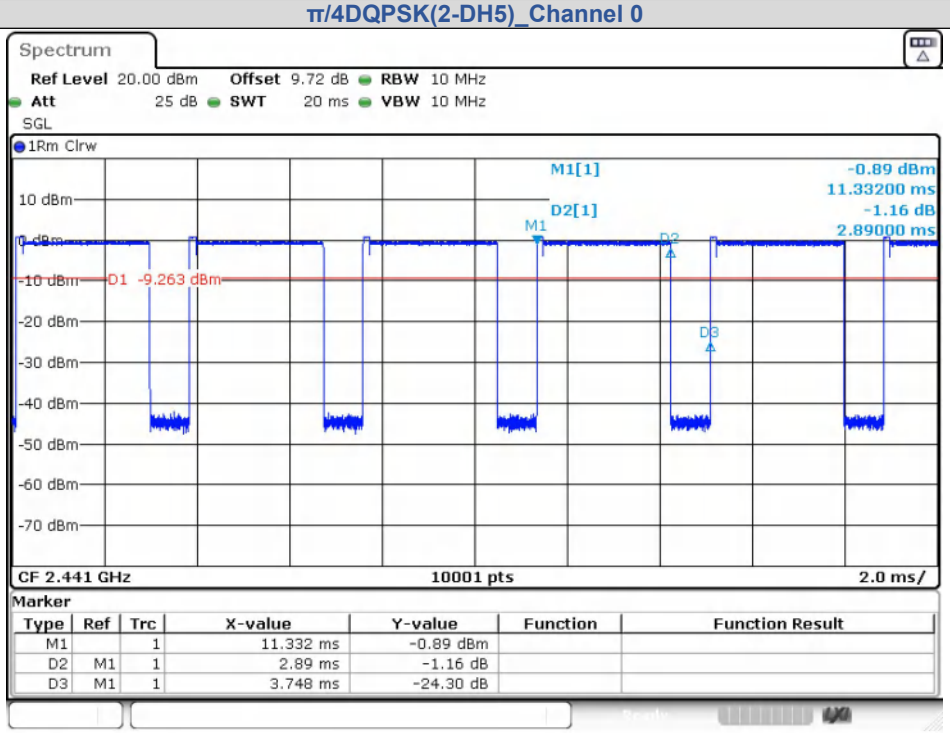
GFSK(DH5)_Channel 78



Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	9.99 ms	-0.51 dBm		
D2	M1	1	2.89 ms	0.39 dB		
D3	M1	1	3.748 ms	-39.38 dB		

Date: 11.APR.2024 23:03:27

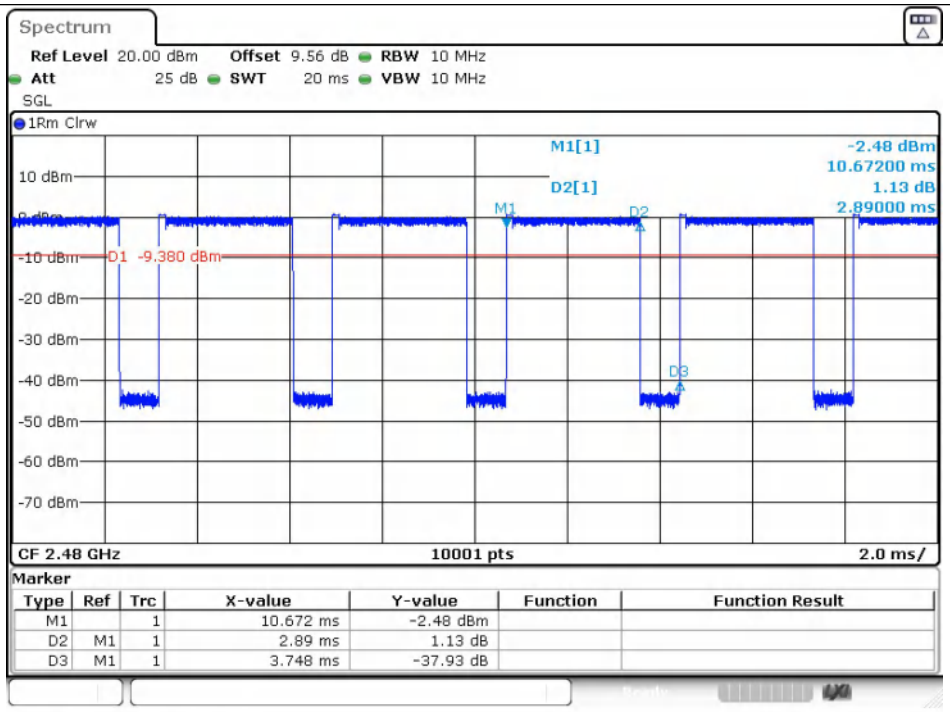
π/4DQPSK(2-DH5)_Channel 0



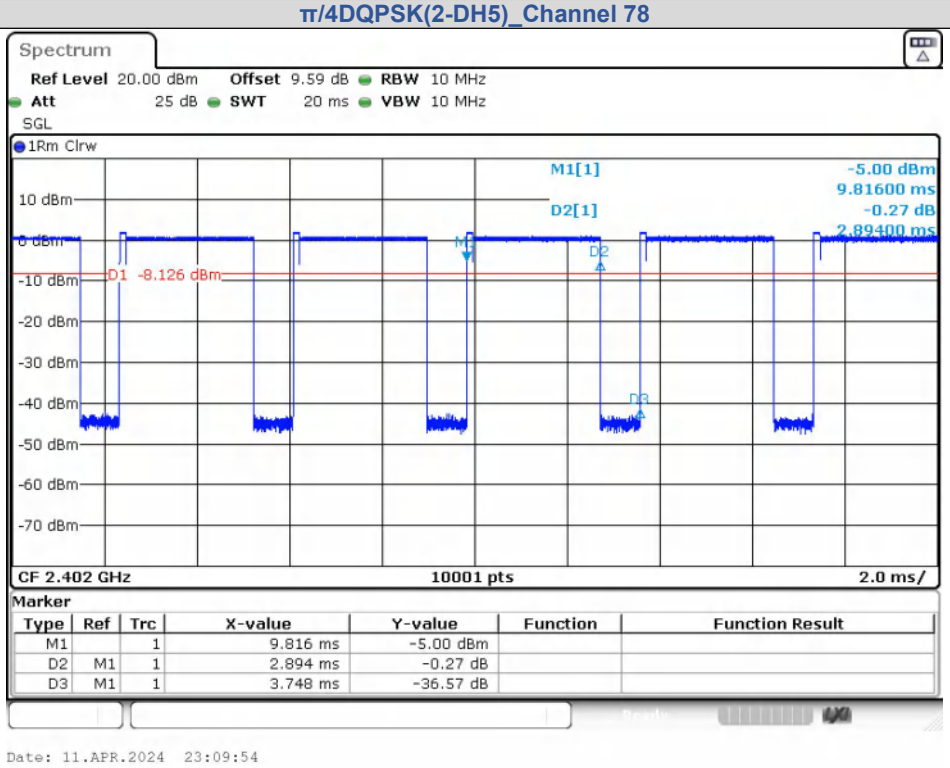
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	11.332 ms	-0.89 dBm		
D2	M1	1	2.89 ms	-1.16 dB		
D3	M1	1	3.748 ms	-24.30 dB		

Date: 11.APR.2024 23:05:41

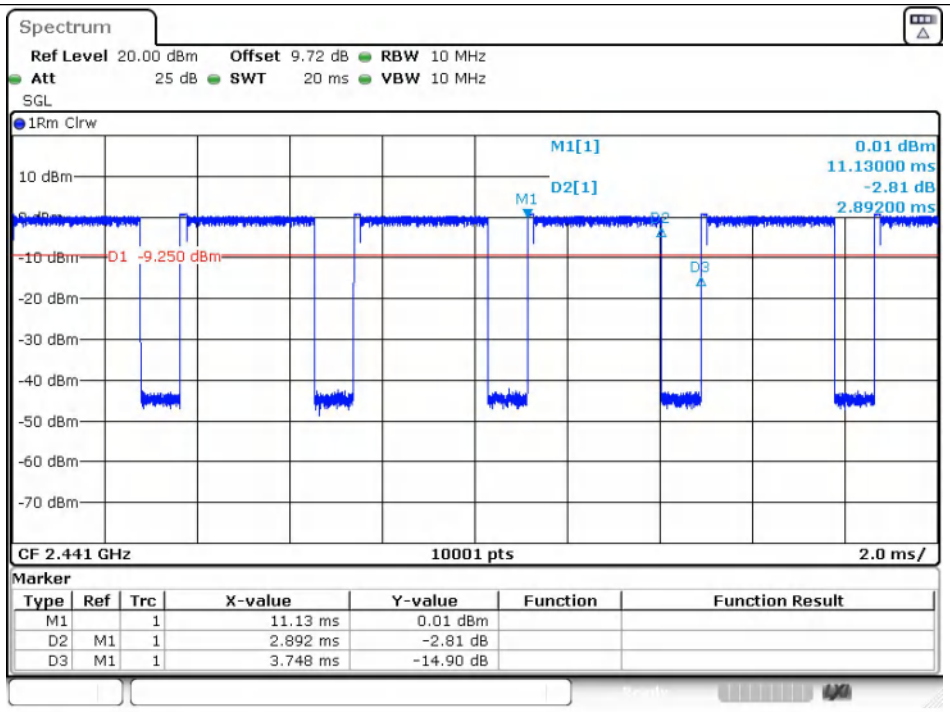
π/4DQPSK(2-DH5)_Channel 39



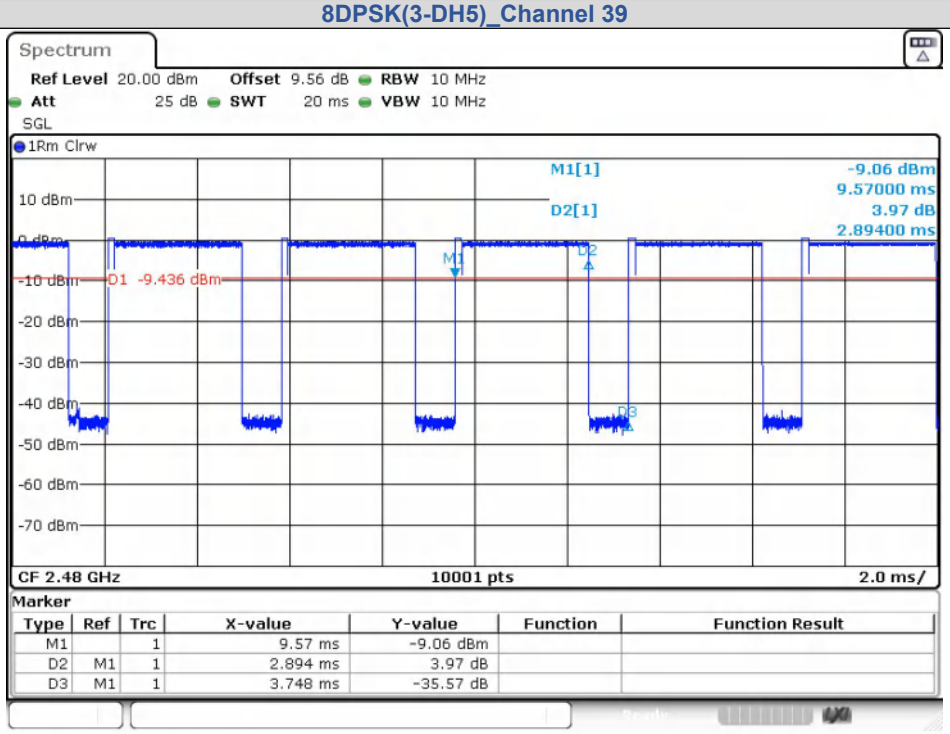
π/4DQPSK(2-DH5)_Channel 78



8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39



8DPSK(3-DH5)_Channel 78

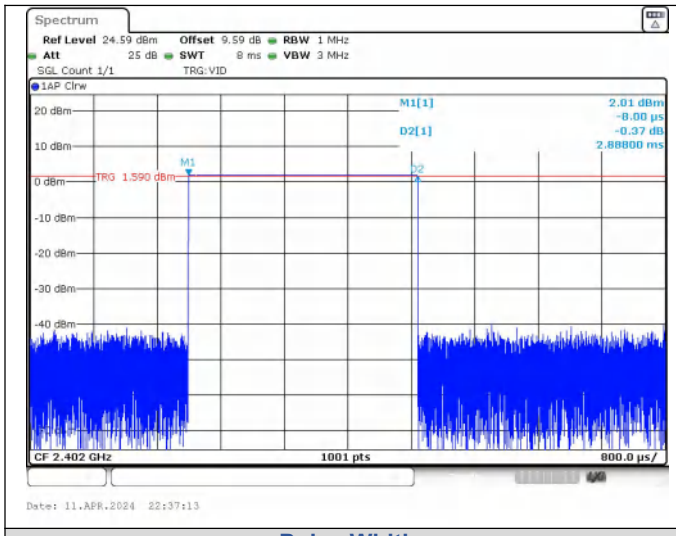
Dwell Time

Left

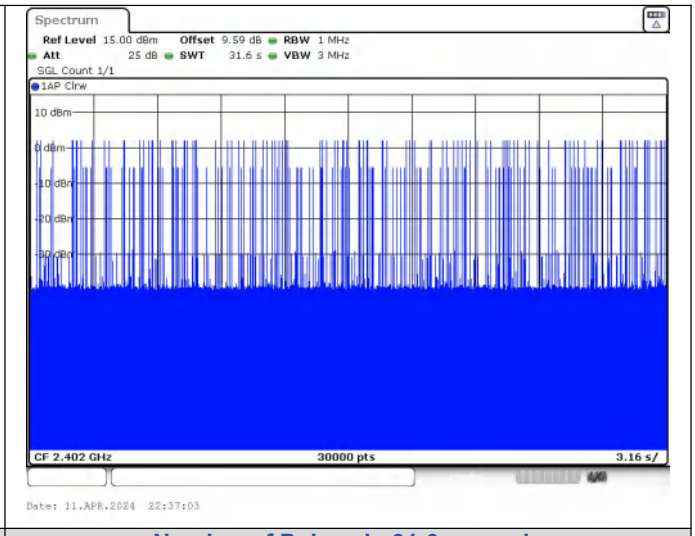
Test Result

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	104	300.35	< 400	PASS
π/4DQPSK	2-DH5		2.888	100	288.8		PASS
8DPSK	3-DH5		2.896	105	304.08		PASS

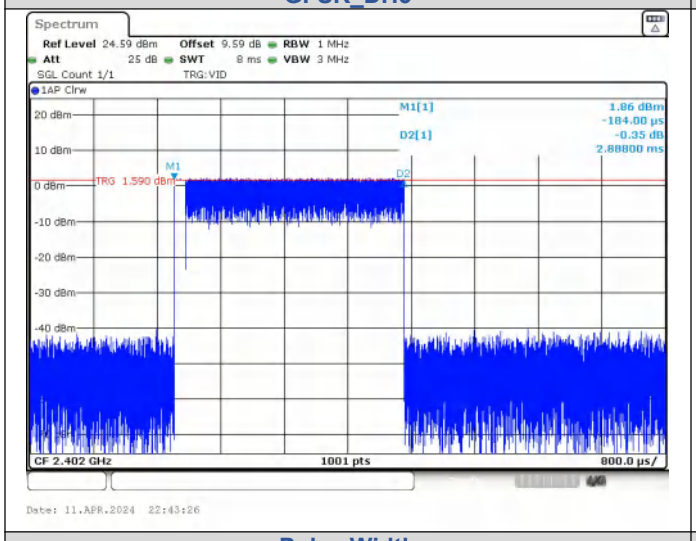
Test Graphs



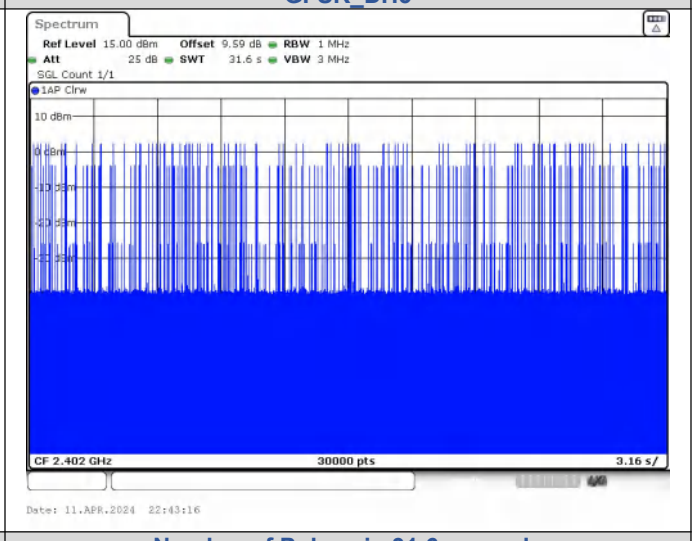
Pulse Width
GFSK_DH5



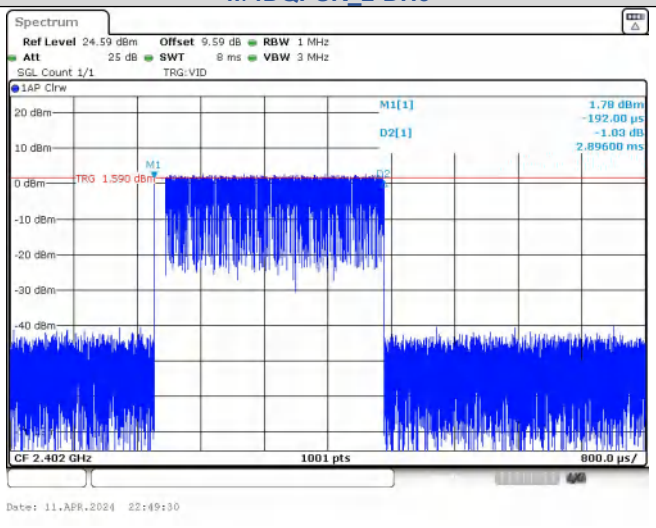
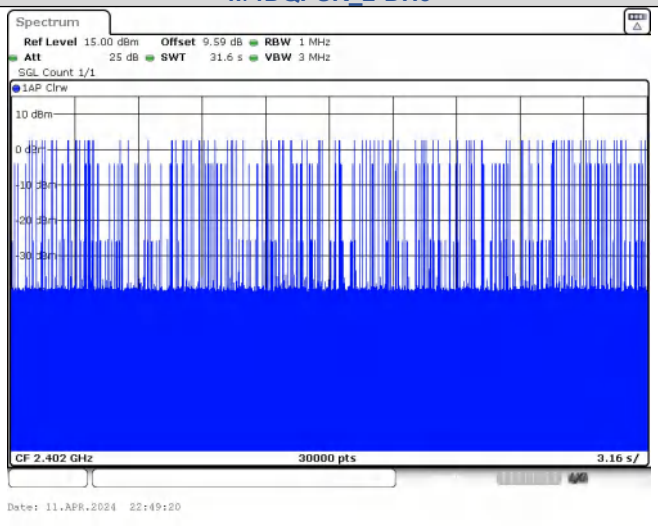
Number of Pulses in 31.6 seconds
GFSK_DH5



Pulse Width



Number of Pulses in 31.6 seconds

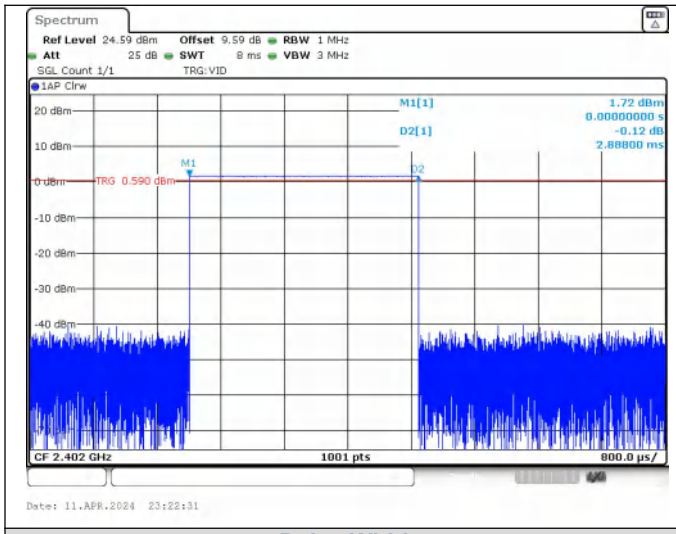
π/4DQPSK_2-DH5	π/4DQPSK_2-DH5
	
Pulse Width **8DPSK_3-DH5**	**Number of Pulses in 31.6 seconds** **8DPSK_3-DH5**

Right

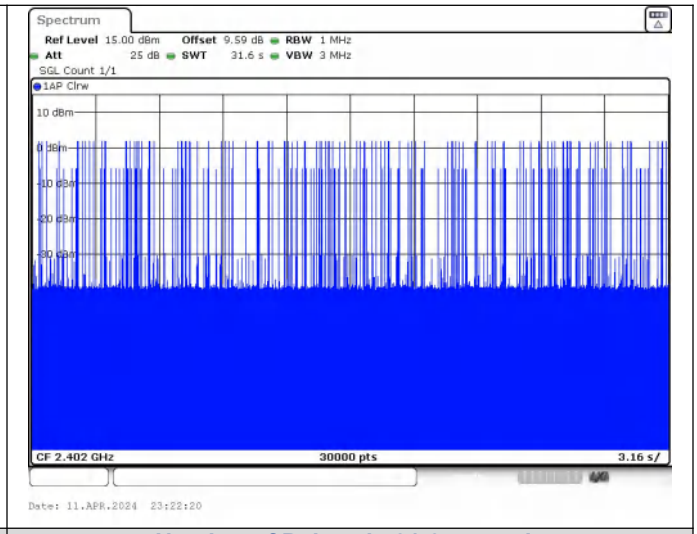
Test Result

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	112	323.46	< 400	PASS
π/4DQPSK	2-DH5		2.896	112	324.35		PASS
8DPSK	3-DH5		2.896	87	251.95		PASS

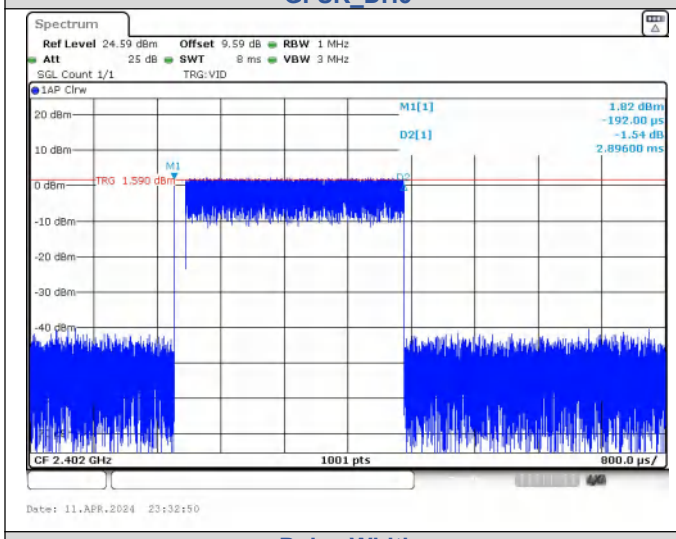
Test Graphs



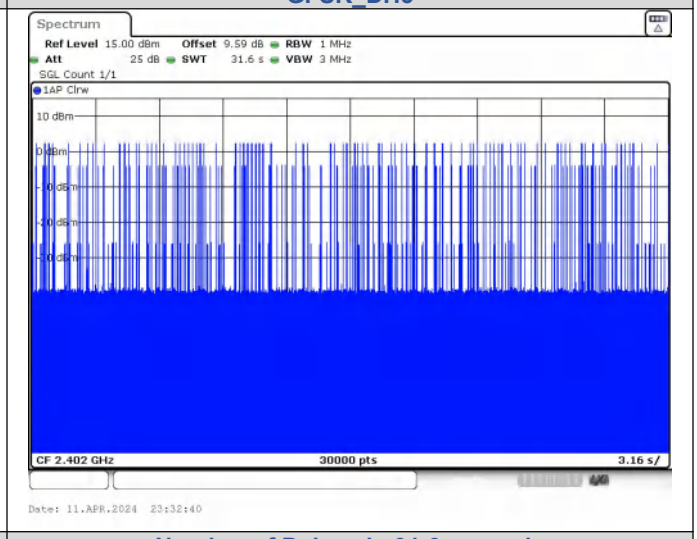
Pulse Width
GFSK_DH5



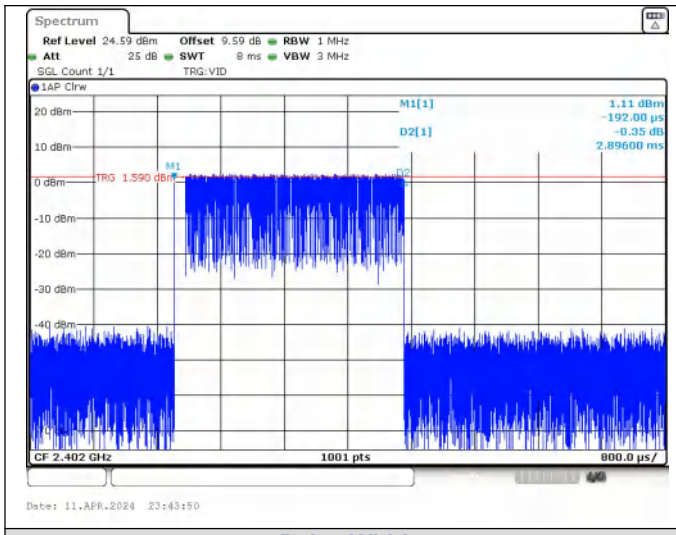
Number of Pulses in 31.6 seconds
GFSK_DH5



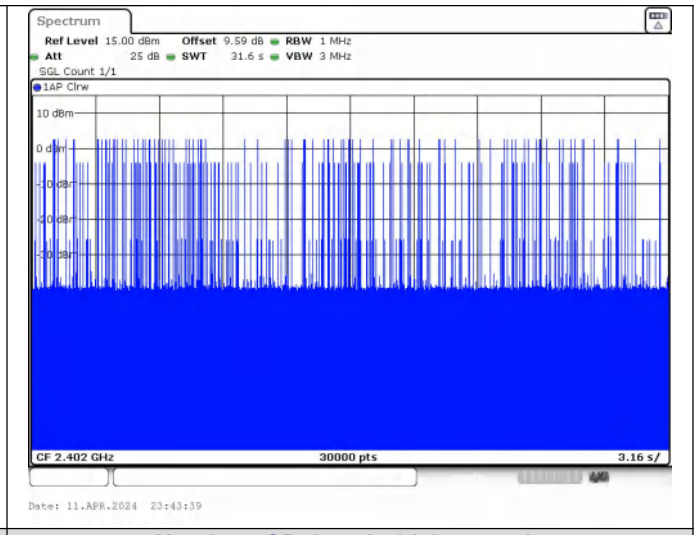
Pulse Width
π/4DQPSK_2-DH5



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

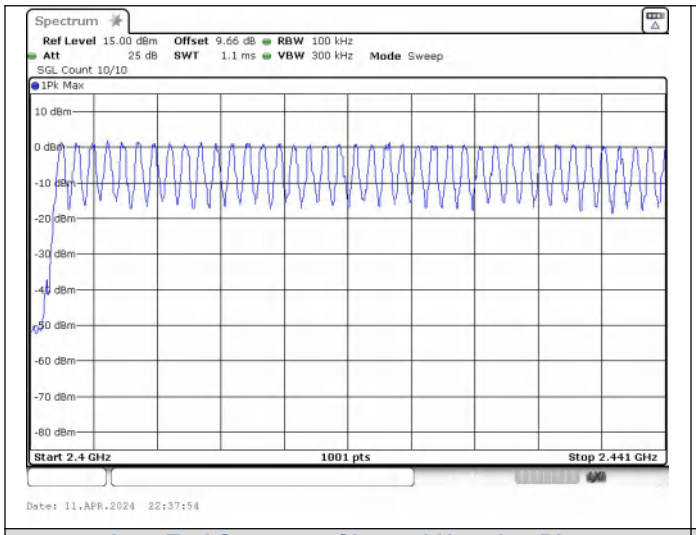
Number Of Hopping Channel

Left

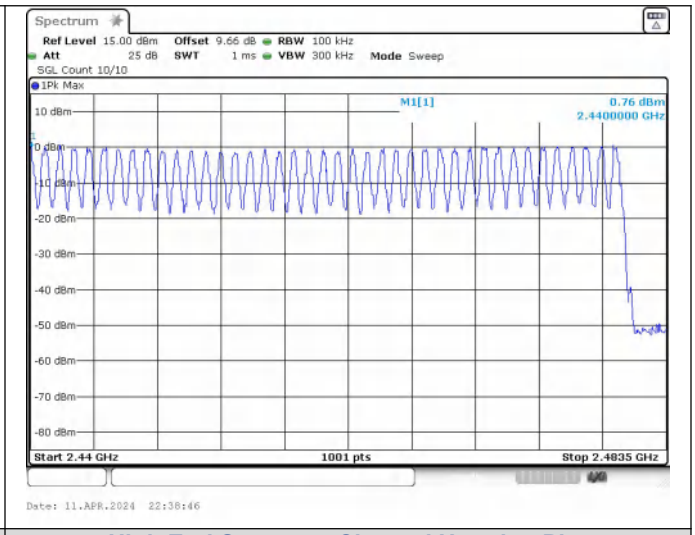
Test Result

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

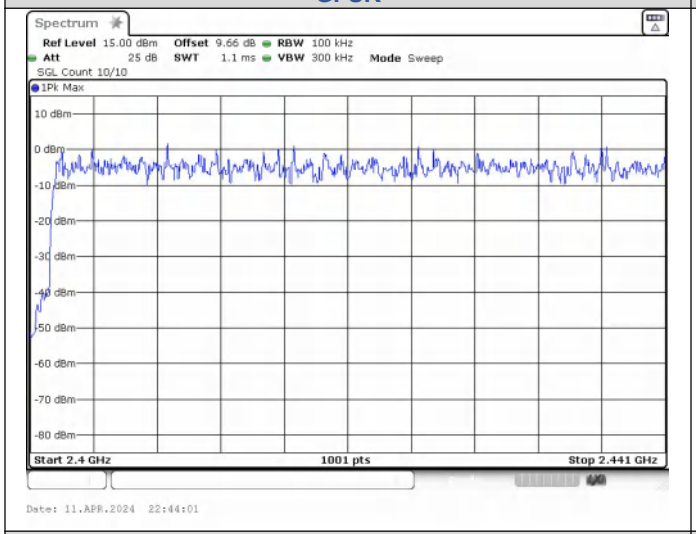
Test Graphs



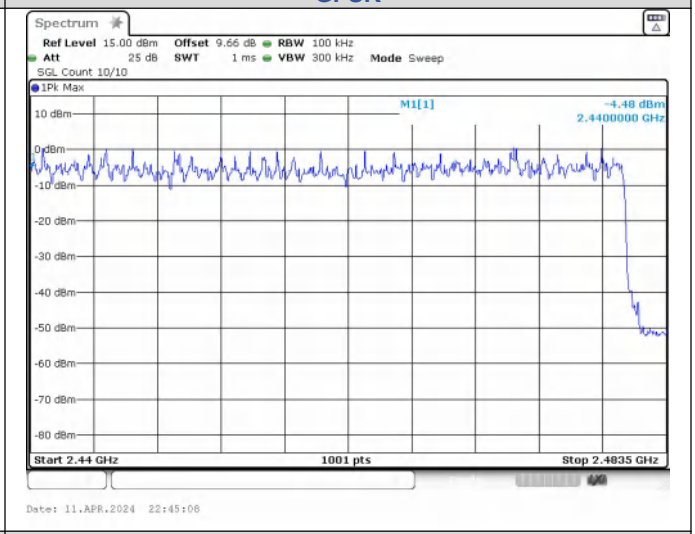
Low End Spectrum Channel Hopping Plot
GFSK



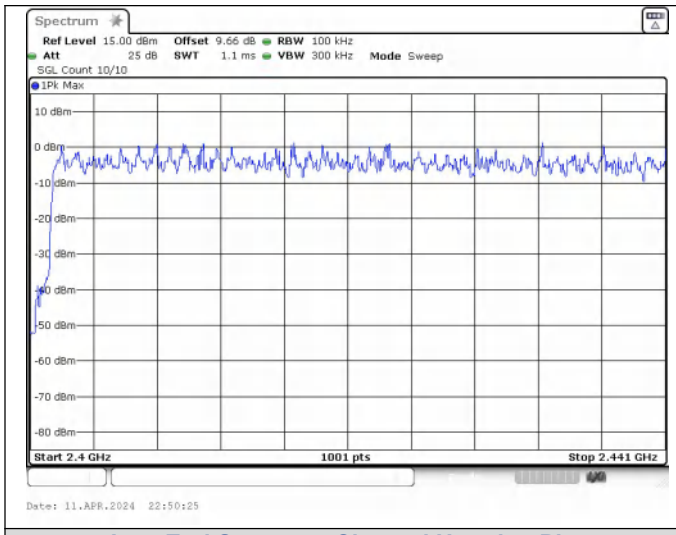
High End Spectrum Channel Hopping Plot
GFSK



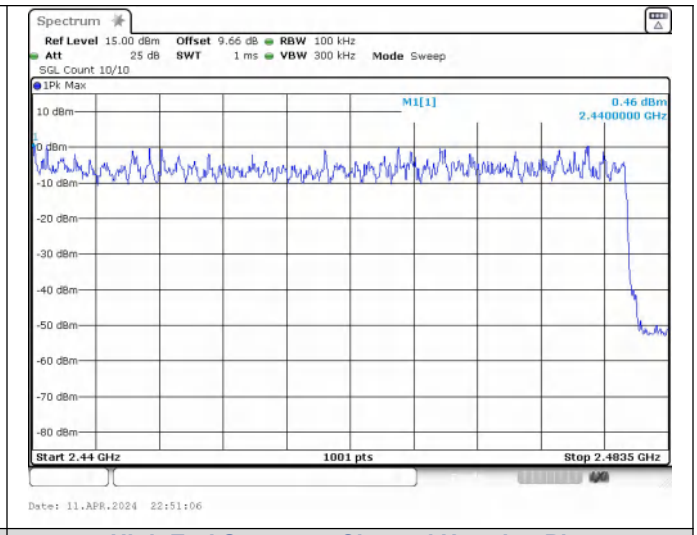
Low End Spectrum Channel Hopping Plot
π/4DQPSK



High End Spectrum Channel Hopping Plot
π/4DQPSK



Low End Spectrum Channel Hopping Plot
8DPSK



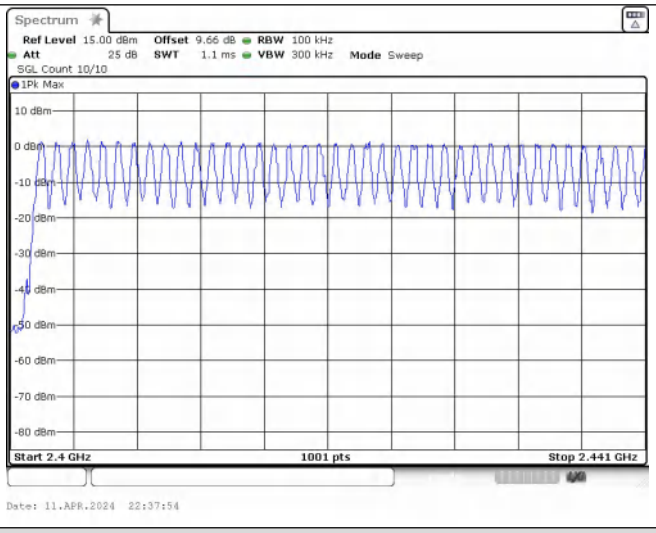
High End Spectrum Channel Hopping Plot
8DPSK

Right

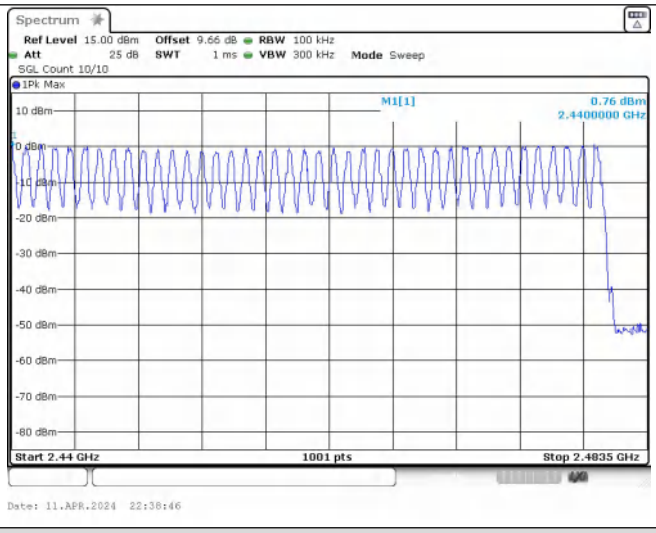
Test Result

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

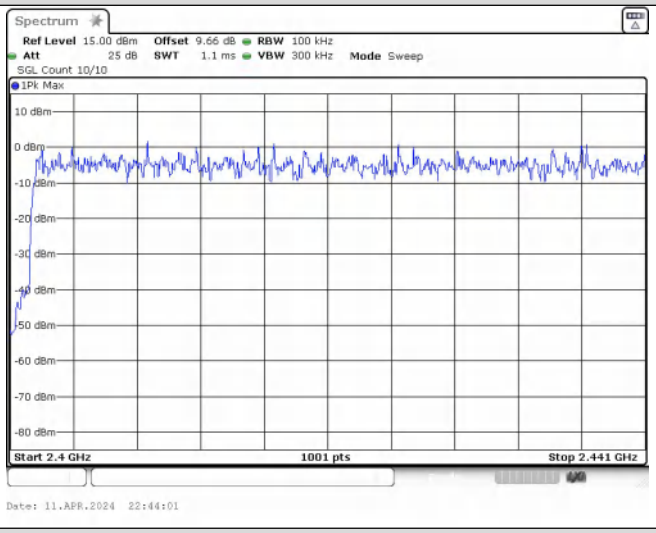
Test Graphs



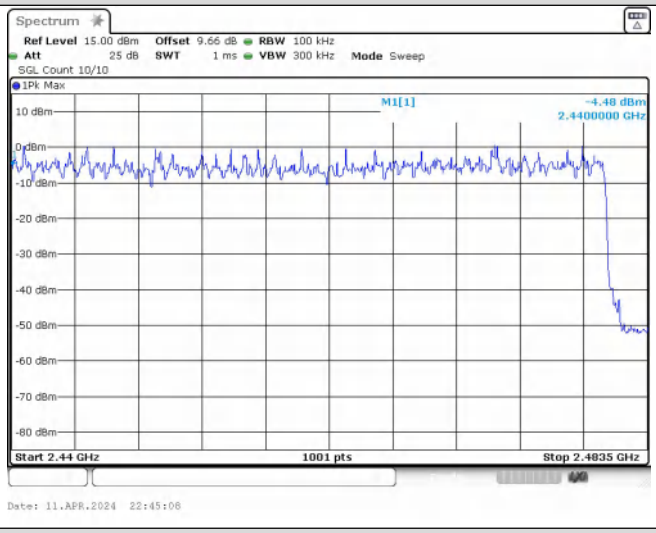
Low End Spectrum Channel Hopping Plot
GFSK



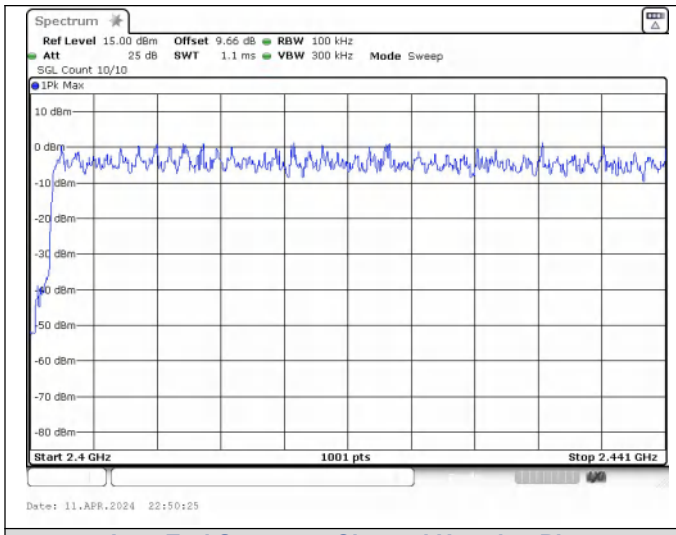
High End Spectrum Channel Hopping Plot
GFSK



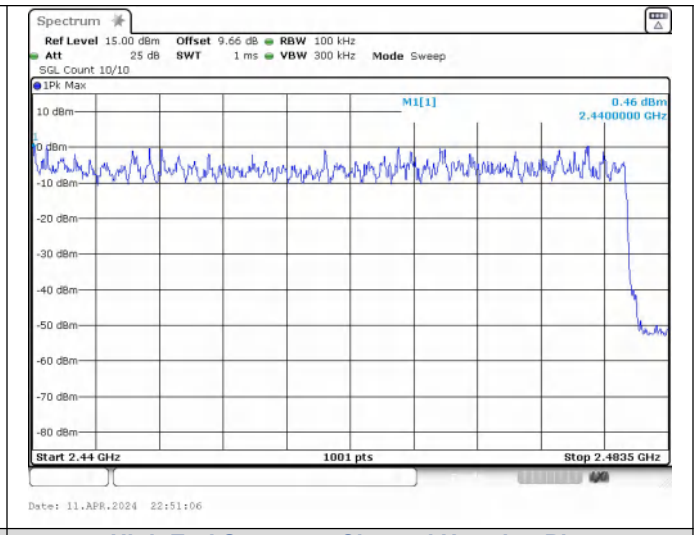
Low End Spectrum Channel Hopping Plot
π/4DQPSK



High End Spectrum Channel Hopping Plot
π/4DQPSK



Low End Spectrum Channel Hopping Plot
8DPSK



High End Spectrum Channel Hopping Plot
8DPSK