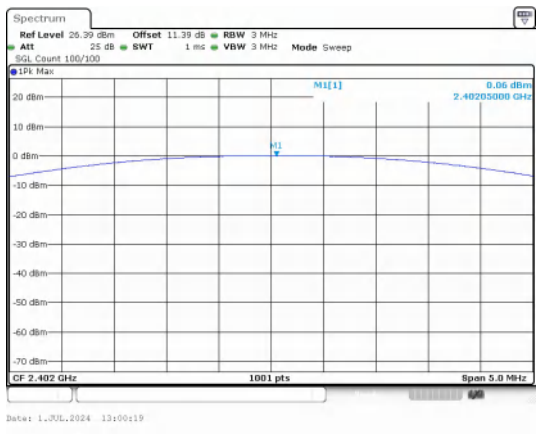
Appendix A

Report No.:	CISRR24062418301
FCC ID:	2A5TA-AM-2301
Product Name:	Wireless speaker
Model No.:	AM-2301
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

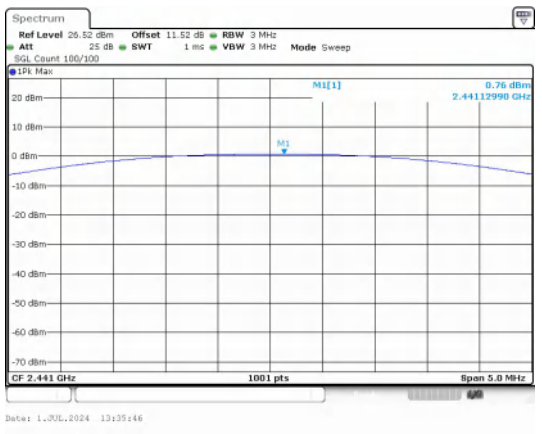
1) Conducted Peak Output Power

Test Result

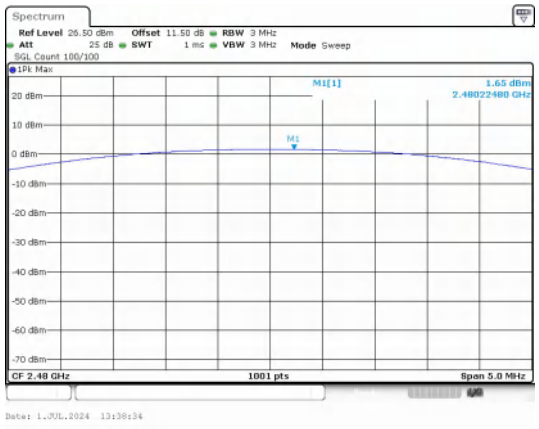
Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	0.06	1.01	30	PASS
		39	0.76	1.19		PASS
		78	1.65	1.46		PASS
π/4DQPSK	2-DH5	0	0.91	1.23	20.97	PASS
		39	1.55	1.43		PASS
		78	2.49	1.77		PASS
8DPSK	3-DH5	0	1.35	1.37		PASS
		39	1.90	1.55		PASS
		78	2.77	1.89		PASS



Peak Output Power
GFSK_Channel 0

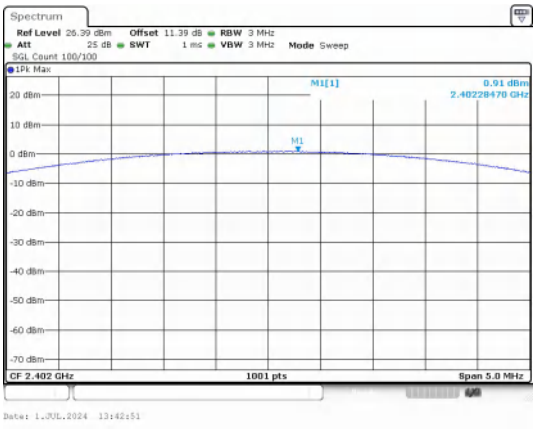


Peak Output Power
GFSK_Channel 39



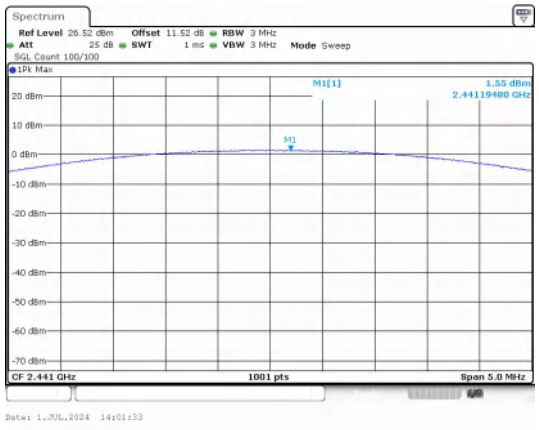
Peak Output Power

GFSK_Channel 78



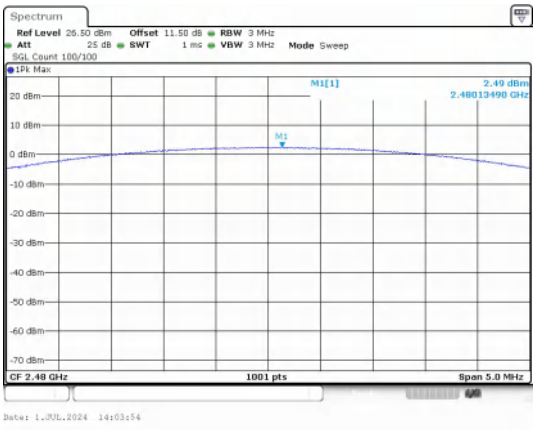
Peak Output Power

π/4DQPSK_Channel 0



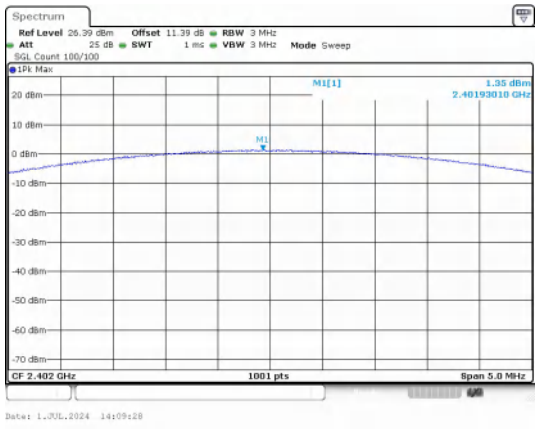
Peak Output Power

π/4DQPSK_Channel 39



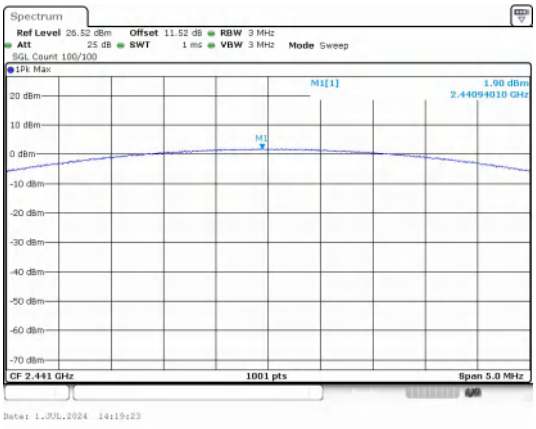
Peak Output Power

π/4DQPSK_Channel 78



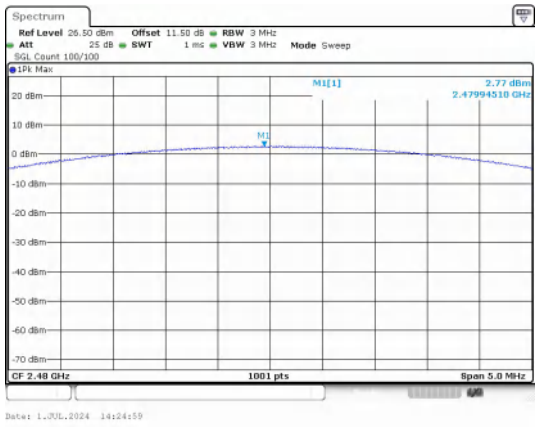
Peak Output Power

8DPSK_Channel 0



Peak Output Power

8DPSK_Channel 39



Peak Output Power

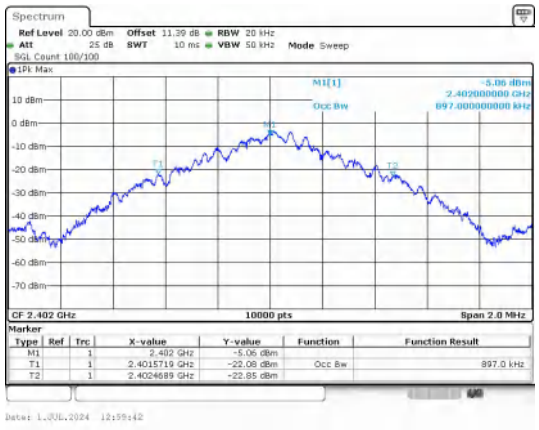
8DPSK_Channel 78

2) 99% Bandwidth

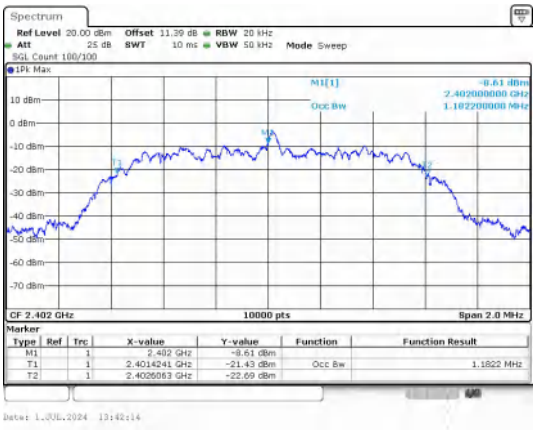
Test Result

Modulation	Channel	Center Frequency (MHz)	99% BW (MHz)
GFSK	0	2402	0.8970
	39	2441	0.9062
	78	2480	0.9086
π/4DQPSK	0	2402	1.1822
	39	2441	1.1976
	78	2480	1.2064
8DPSK	0	2402	1.2040
	39	2441	1.2022
	78	2480	1.2080

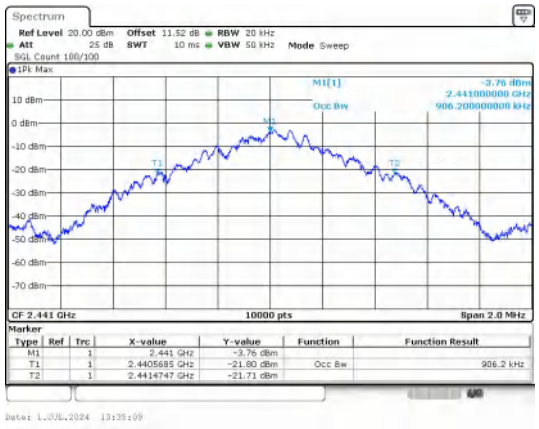
Test Graphs



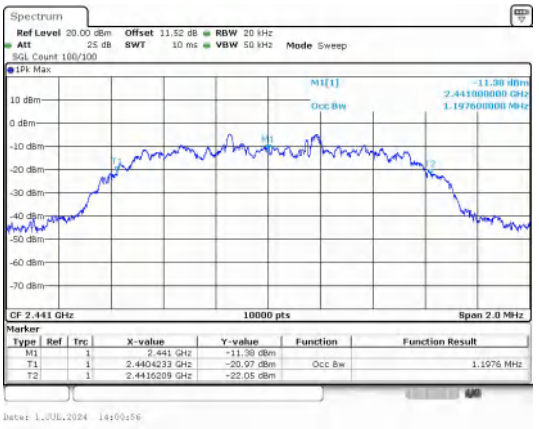
GFSK_DH5_Channel 0



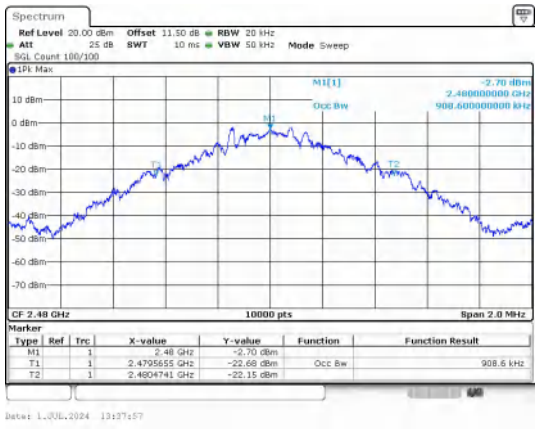
π/4DQPSK_2-DH5_Channel 0



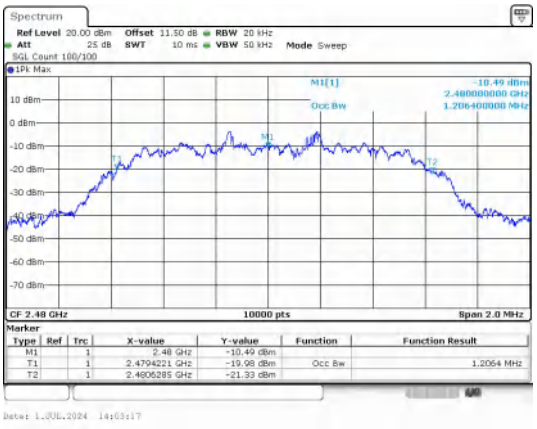
GFSK_DH5_Channel 39



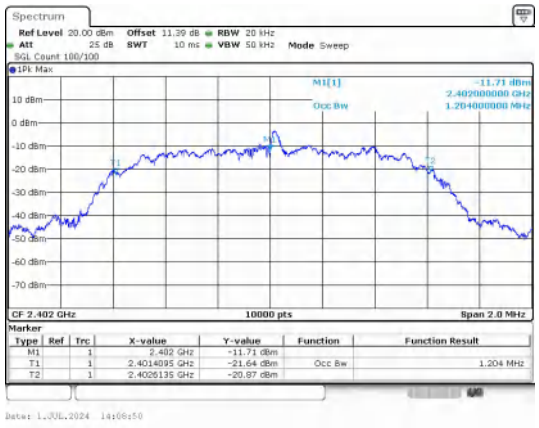
π/4DQPSK_2-DH5_Channel 39



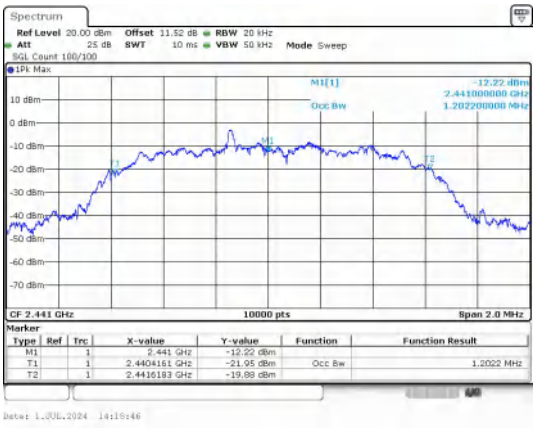
GFSK_DH5_Channel 78



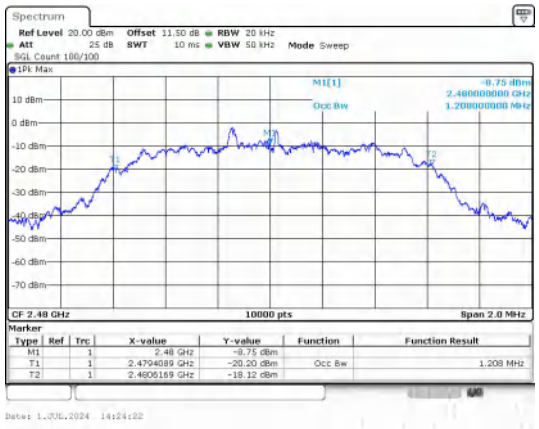
π/4DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



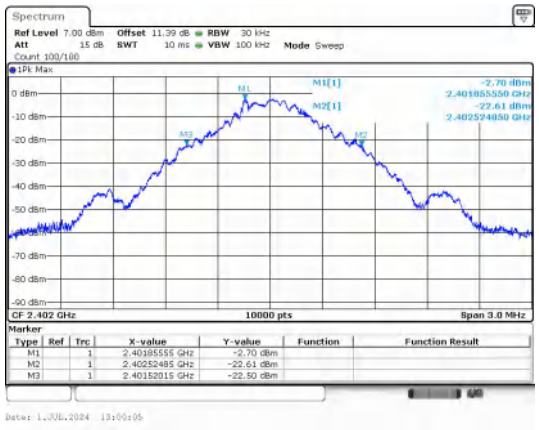
8DPSK_3-DH5_Channel 78

3) 20dB Bandwidth

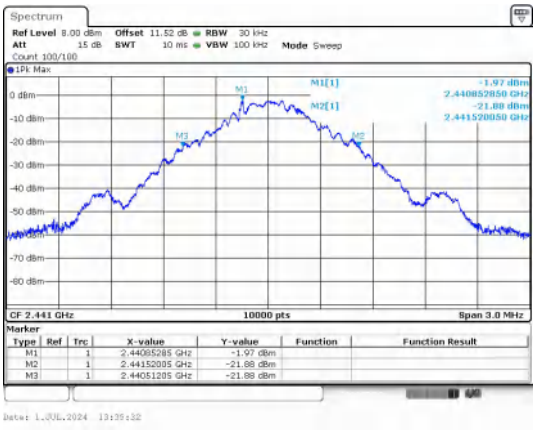
Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.000
	39	2441 MHz	1.010
	78	2480 MHz	1.020
π/4DQPSK	0	2402 MHz	1.290
	39	2441 MHz	1.320
	78	2480 MHz	1.310
8DPSK	0	2402 MHz	1.290
	39	2441 MHz	1.300
	78	2480 MHz	1.290

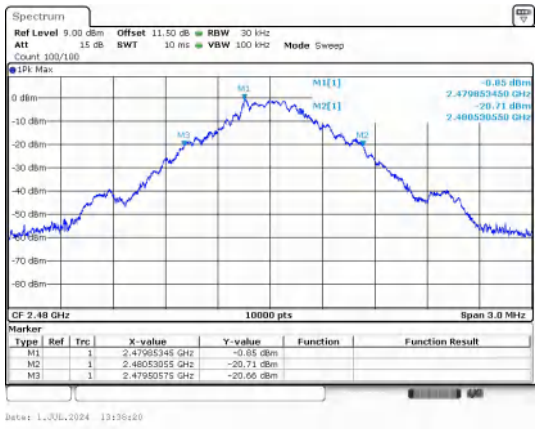
Test Graphs



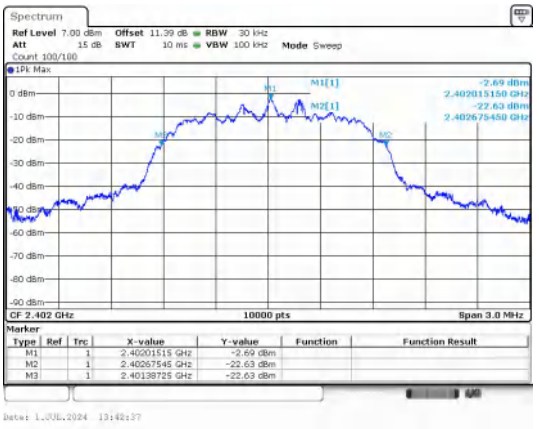
GFSK_DH5_Channel 0



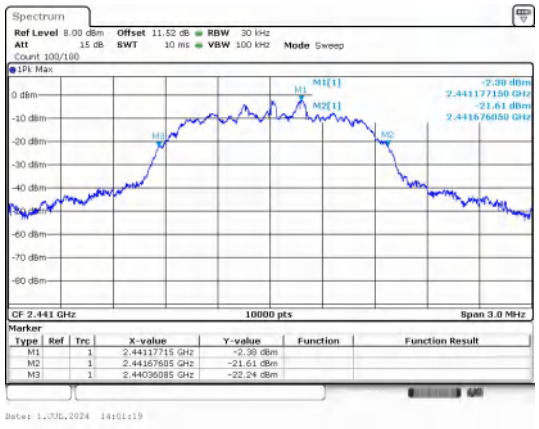
GFSK_DH5_Channel 39



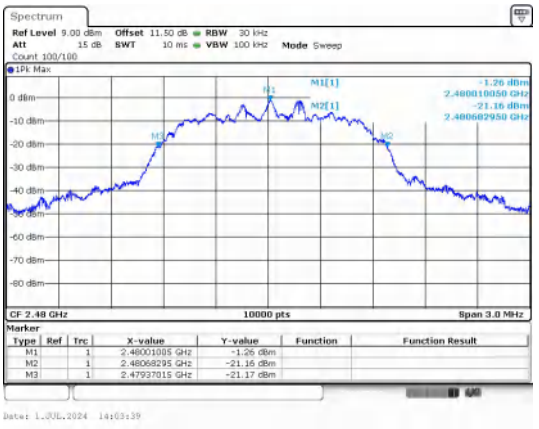
GFSK_DH5_Channel 78



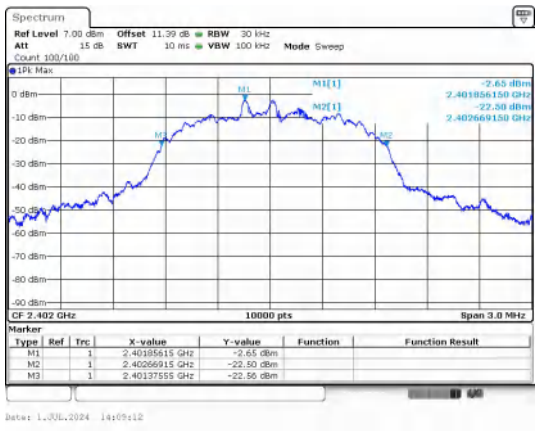
π/4DQPSK_2-DH5_Channel 0



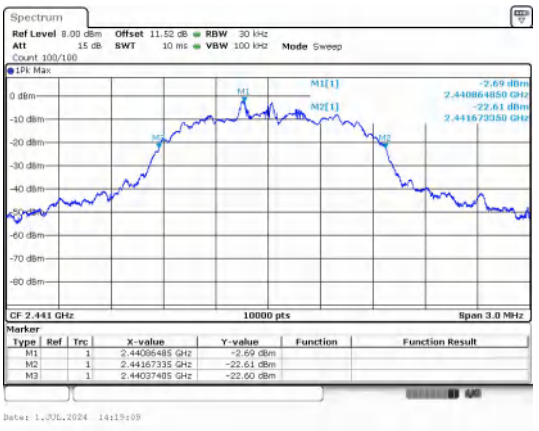
π/4DQPSK_2-DH5_Channel 39



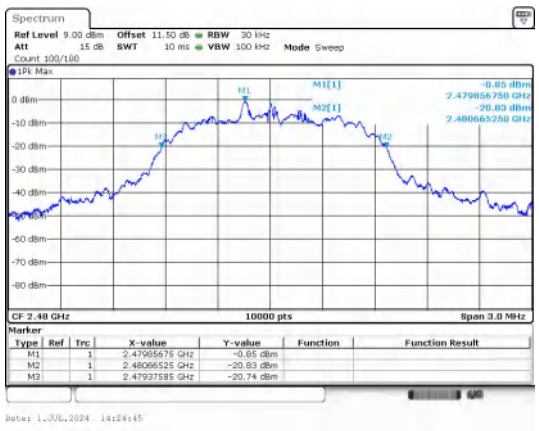
π/4DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



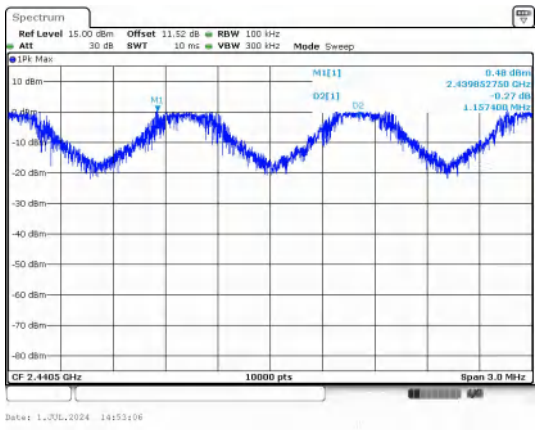
8DPSK_3-DH5_Channel 78

4) Carrier Frequencies Separation

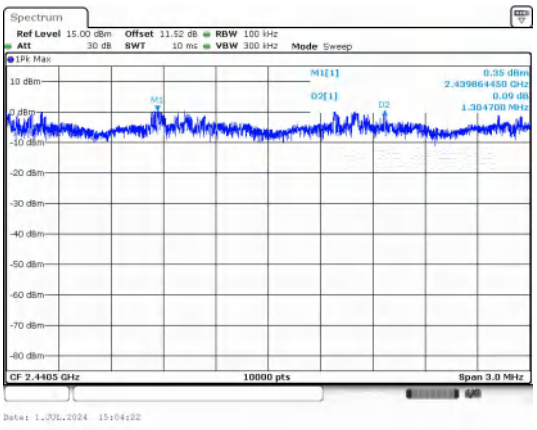
Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2439.8528	2441.0102	1.1574	1.020	PASS
π/4DQPSK	2-DH5	2439.8645	2441.1692	1.3047	0.86	PASS
8DPSK	3-DH5	2439.8609	2441.1964	1.3356	0.86	PASS

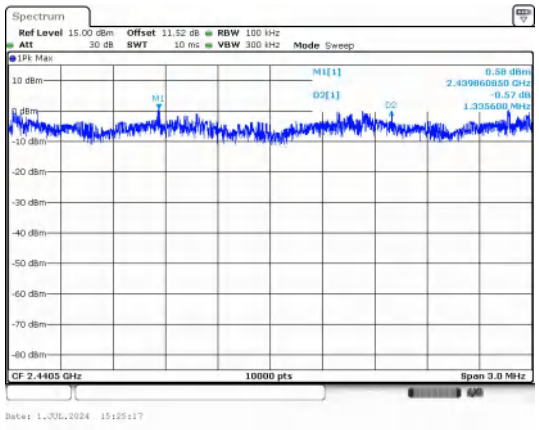
Test Graphs



GFSK



π/4DQPSK



8DPSK

5) Conducted Out Of Band Emission

Test Result

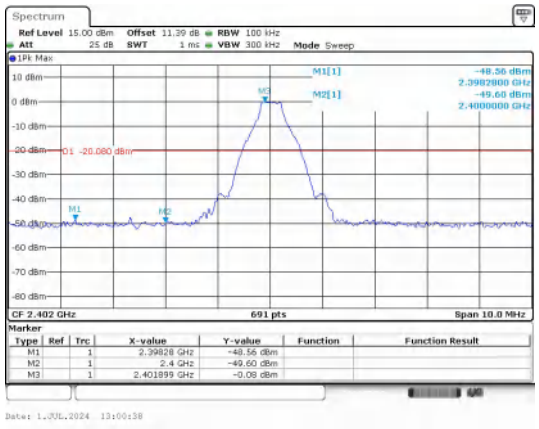
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2398.28	-48.563	-20.08	-28.483	PASS
			2400.00	-49.600	-20.08	-29.520	PASS
			9608.10	-47.915	-20.08	-27.835	PASS
		39	9763.72	-45.356	-19.35	-26.006	PASS
		78	2483.50	-49.581	-18.41	-31.171	PASS
			4960.33	-43.374	-18.41	-24.964	PASS
π/4DQPSK	2-DH5	0	2398.37	-49.087	-19.99	-29.097	PASS
			2400.00	-49.714	-19.99	-29.724	PASS
		39	9608.10	-48.084	-19.99	-28.094	PASS
		78	9763.72	-45.828	-19.34	-26.488	PASS
			2483.50	-50.515	-18.55	-31.965	PASS
8DPSK	3-DH5	0	4959.49	-48.712	-18.55	-30.162	PASS
			2398.11	-48.573	-20.06	-28.513	PASS
		39	2400.00	-50.194	-20.06	-30.134	PASS
		78	9608.10	-46.411	-20.06	-26.351	PASS
			4882.09	-46.528	-19.5	-27.028	PASS

Hopping

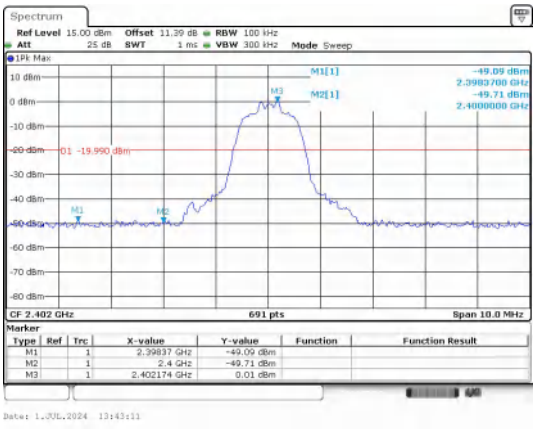
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2395.05	-47.125	-19.96	-27.165	PASS
			2400.00	-47.899	-19.96	-27.939	PASS
			2483.50	-49.198	-18.48	-30.718	PASS
			2398.51	-47.563	-20.0	-27.563	PASS
			2400.00	-49.287	-20.0	-29.287	PASS
			2483.50	-49.159	-18.62	-30.539	PASS
π/4DQPSK	2-DH5		2397.12	-47.585	-20.02	-27.565	PASS
			2400.00	-49.497	-20.02	-29.477	PASS
			2483.50	-49.370	-19.21	-30.160	PASS
			2395.51	-47.744	-20.0	-27.744	PASS
8DPSK	3-DH5		2400.00	-49.000	-20.0	-29.000	PASS
			2483.50	-49.494	-19.95	-29.544	PASS
			2397.28	-47.684	-20.43	-27.254	PASS
			2400.00	-48.630	-20.43	-28.200	PASS
			2483.50	-49.116	-18.83	-30.286	PASS
			2397.76	-47.432	-20.0	-27.432	PASS

Test Graphs



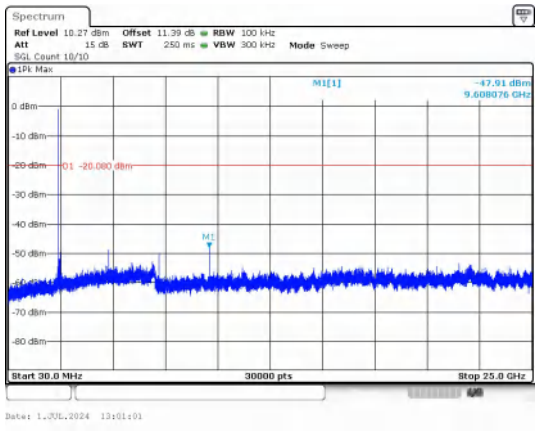
Out Of Band Emission

GFSK_DH5_Channel 0



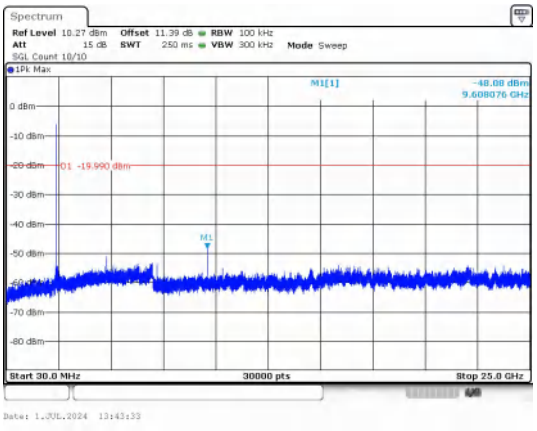
Out Of Band Emission

π/4DQPSK_2-DH5_Channel 0



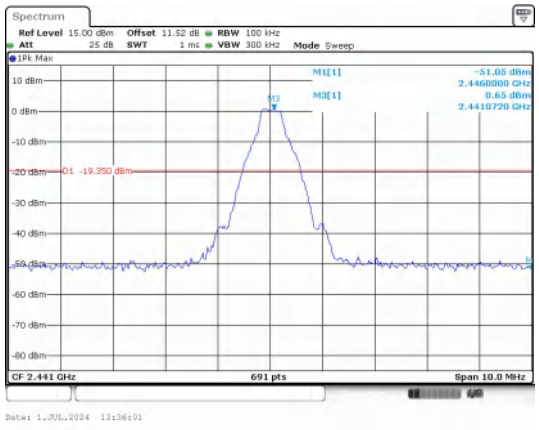
30.0 MHz - 25000.0 MHz

GFSK_DH5_Channel 0



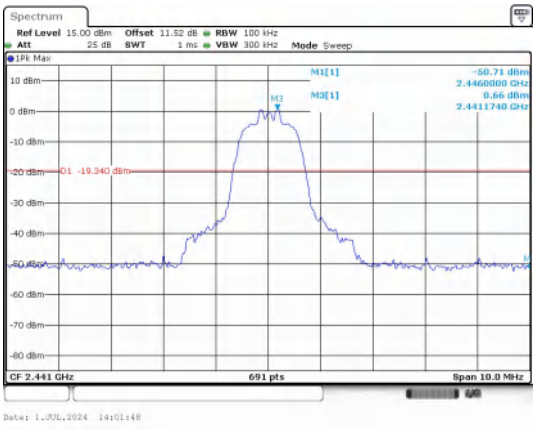
30.0 MHz - 25000.0 MHz

π/4DQPSK_2-DH5_Channel 0



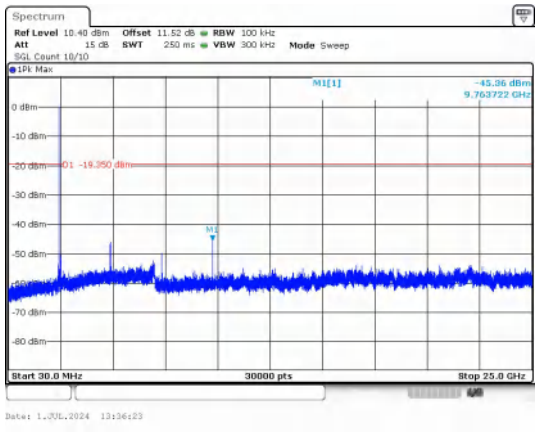
Out Of Band Emission

GFSK_DH5_Channel 39



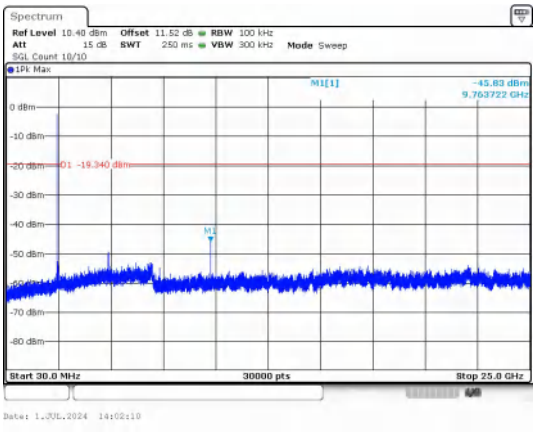
Out Of Band Emission

π/4DQPSK_2-DH5_Channel 39



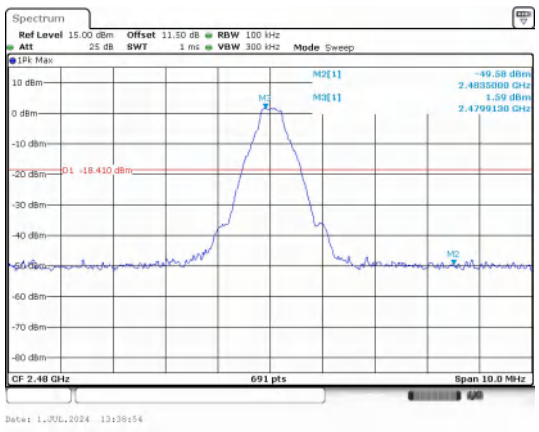
30.0 MHz - 25000.0 MHz

GFSK_DH5_Channel 39



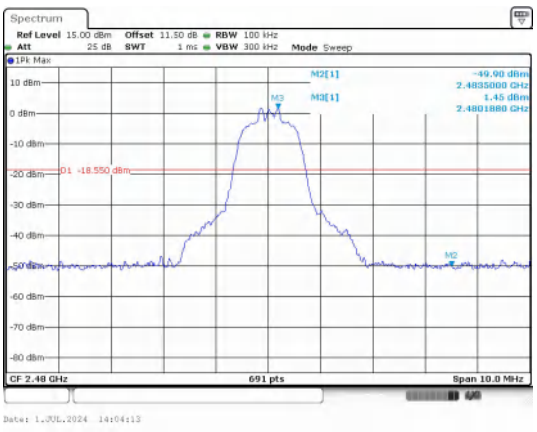
30.0 MHz - 25000.0 MHz

π/4DQPSK_2-DH5_Channel 39



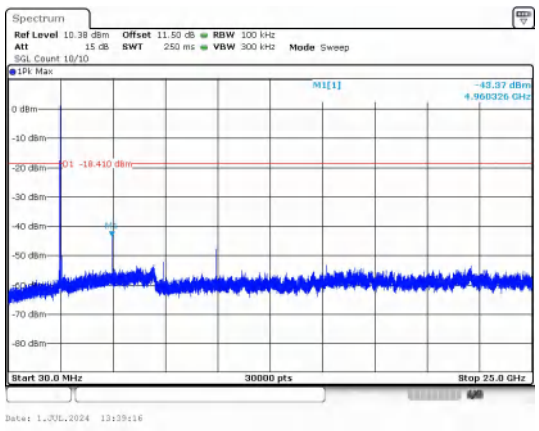
Out Of Band Emission

GFSK_DH5_Channel 78



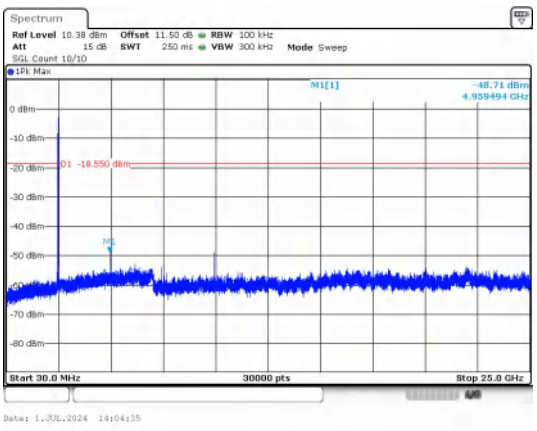
Out Of Band Emission

π/4DQPSK_2-DH5_Channel 78



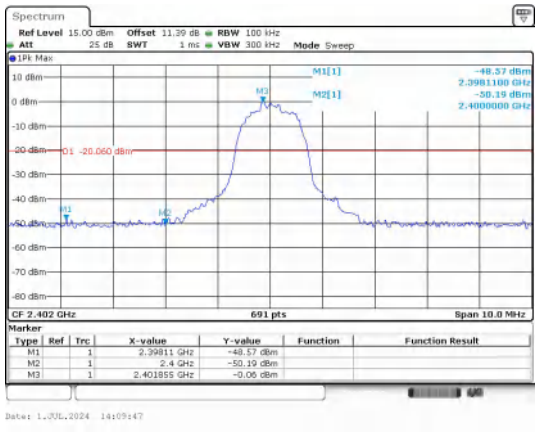
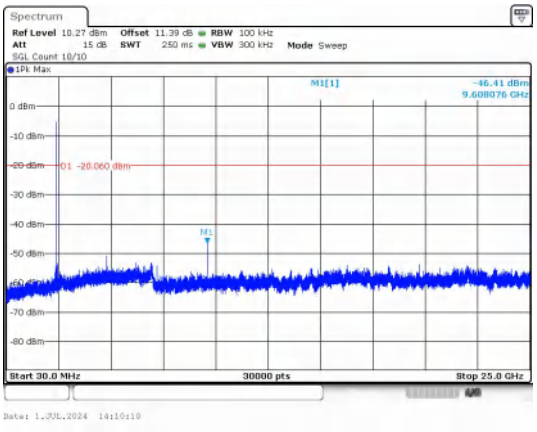
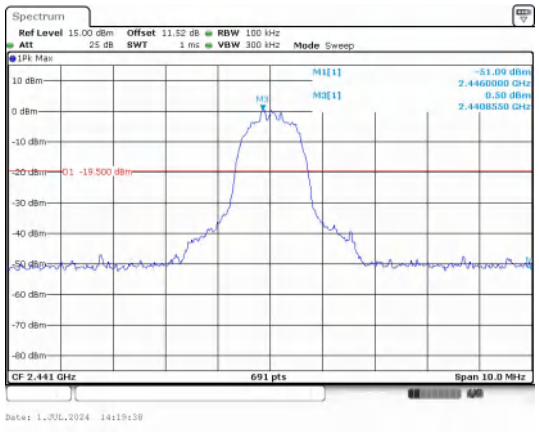
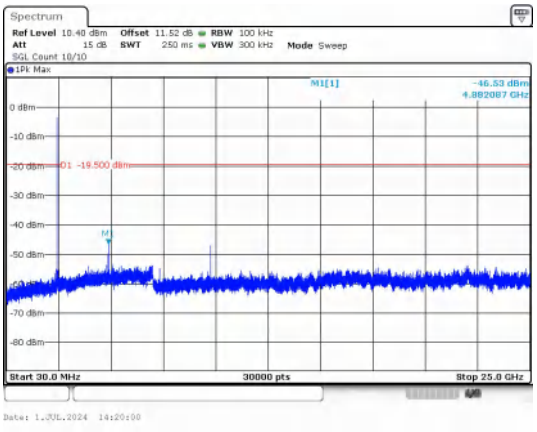
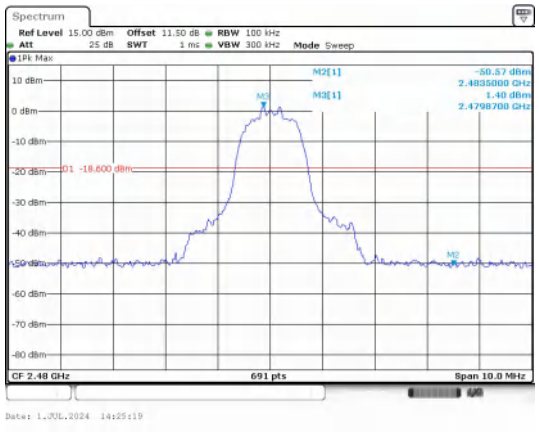
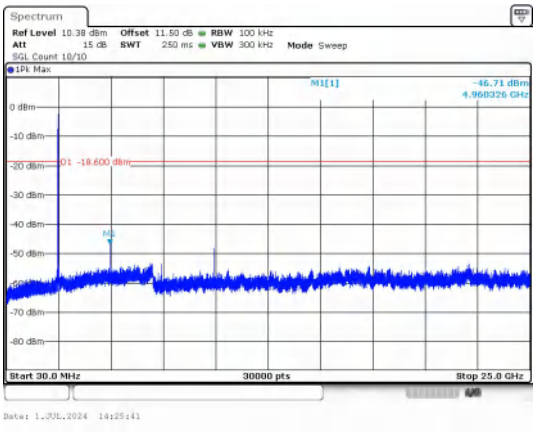
30.0 MHz - 25000.0 MHz

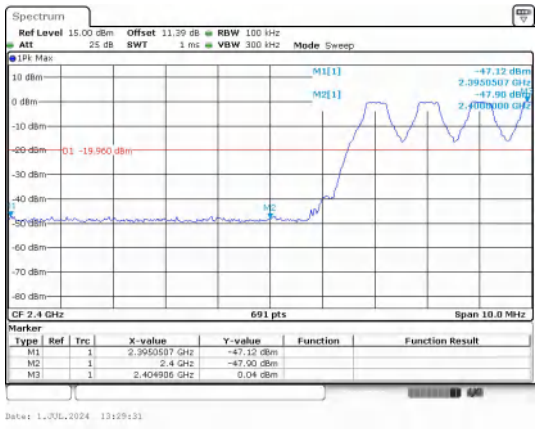
GFSK_DH5_Channel 78



30.0 MHz - 25000.0 MHz

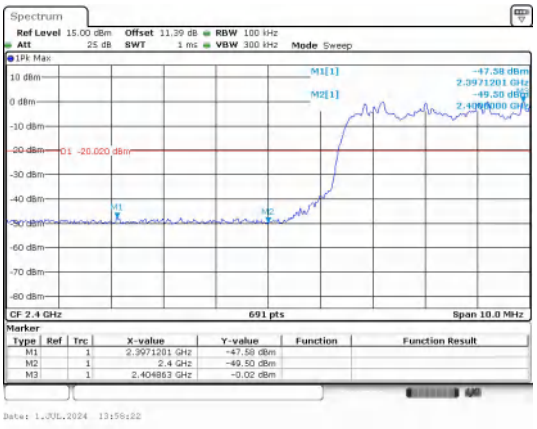
π/4DQPSK_2-DH5_Channel 78

	
Out Of Band Emission 8DPSK_3-DH5_Channel 0	30.0 MHz - 25000.0 MHz 8DPSK_3-DH5_Channel 0
	
Out Of Band Emission 8DPSK_3-DH5_Channel 39	30.0 MHz - 25000.0 MHz 8DPSK_3-DH5_Channel 39
	
Out Of Band Emission 8DPSK_3-DH5_Channel 78	30.0 MHz - 25000.0 MHz 8DPSK_3-DH5_Channel 78



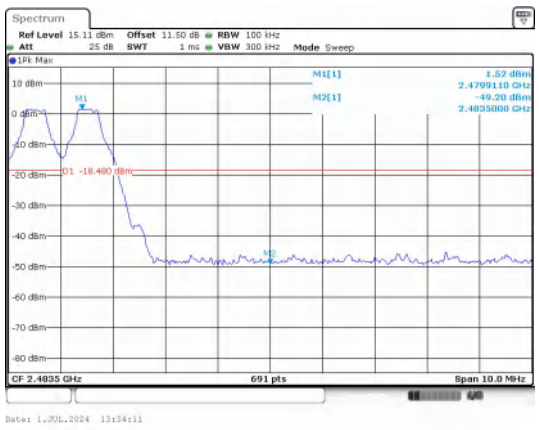
Out Of Band Emission(Left)

GFSK_DH5_Channel Hopping



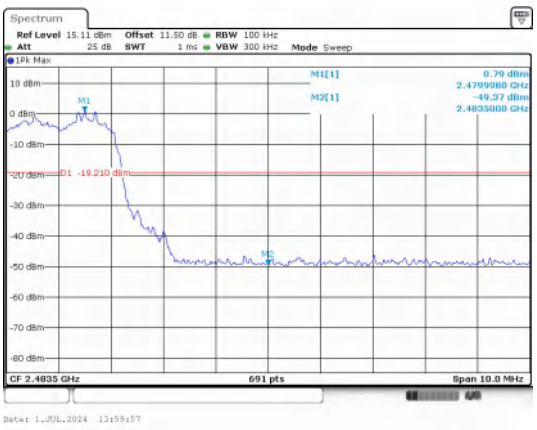
Out Of Band Emission(Left)

π/4DQPSK_2-DH5_Channel Hopping



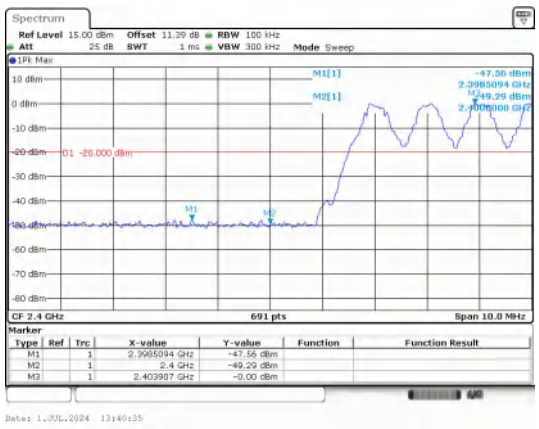
Out Of Band Emission(Right)

GFSK_DH5_Channel Hopping



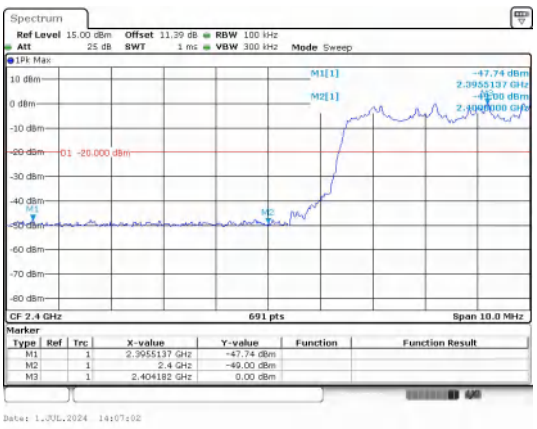
Out Of Band Emission(Right)

π/4DQPSK_2-DH5_Channel Hopping



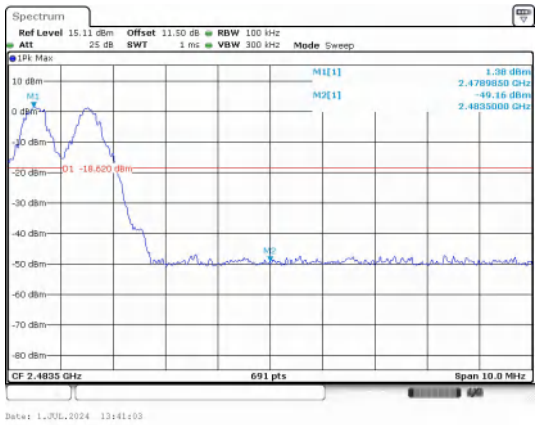
Out Of Band Emission(Left)

GFSK_DH5_Channel Hopping



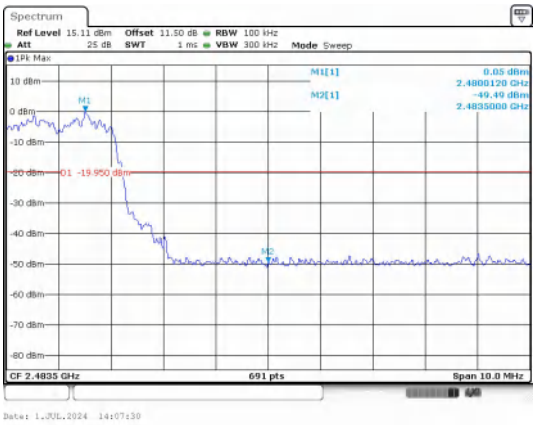
Out Of Band Emission(Left)

π/4DQPSK_2-DH5_Channel Hopping



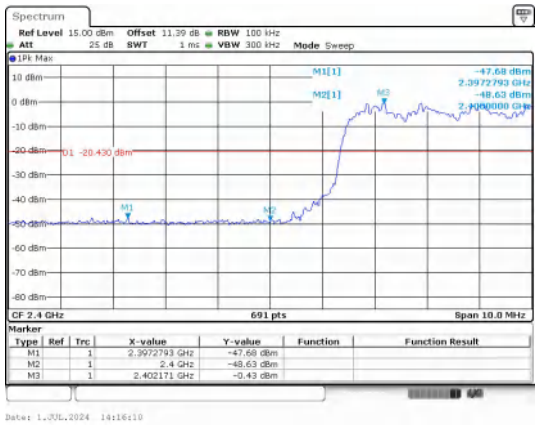
Out Of Band Emission(Right)

GFSK_DH5_Channel Hopping



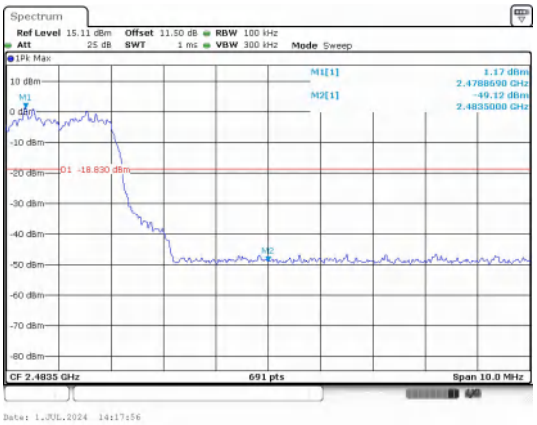
Out Of Band Emission(Right)

π/4DQPSK_2-DH5_Channel Hopping



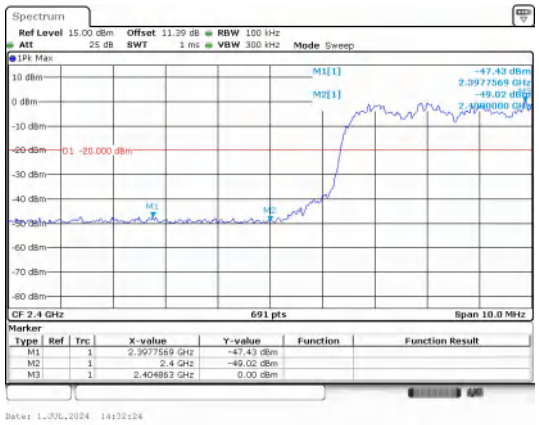
Out Of Band Emission(Left)

8DPSK_3-DH5_Channel Hopping



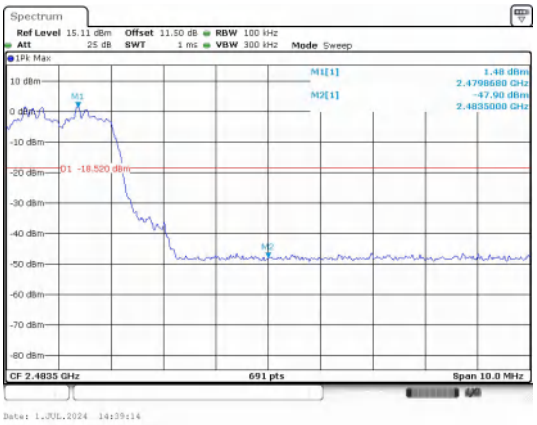
Out Of Band Emission(Right)

8DPSK_3-DH5_Channel Hopping



Out Of Band Emission(Left)

8DPSK_3-DH5_Channel Hopping



Out Of Band Emission(Right)

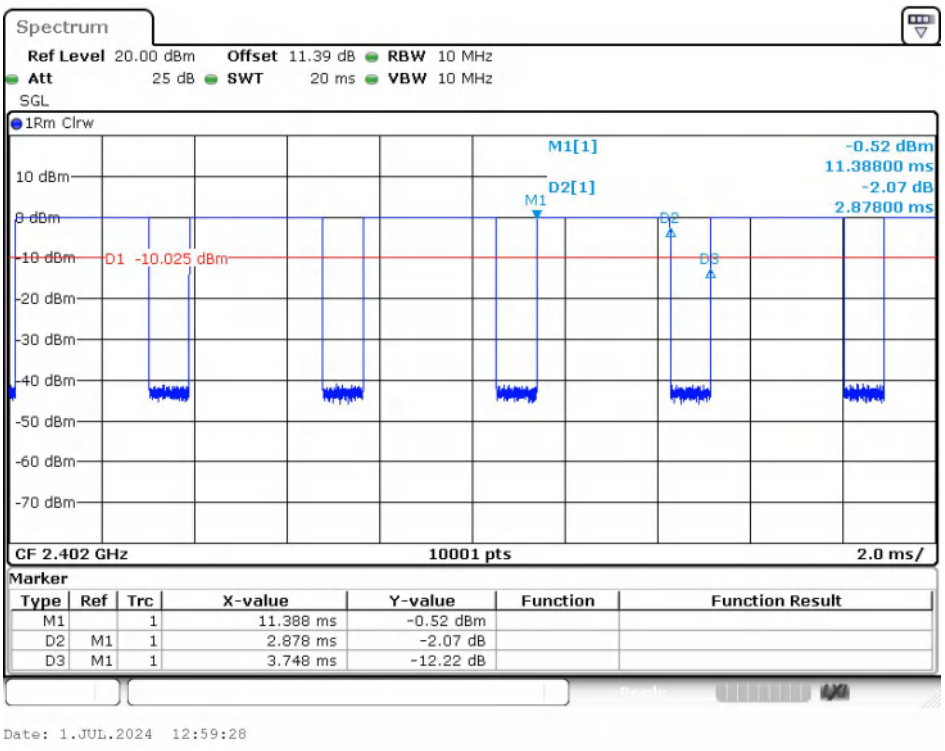
8DPSK_3-DH5_Channel Hopping

6) Duty Cycle

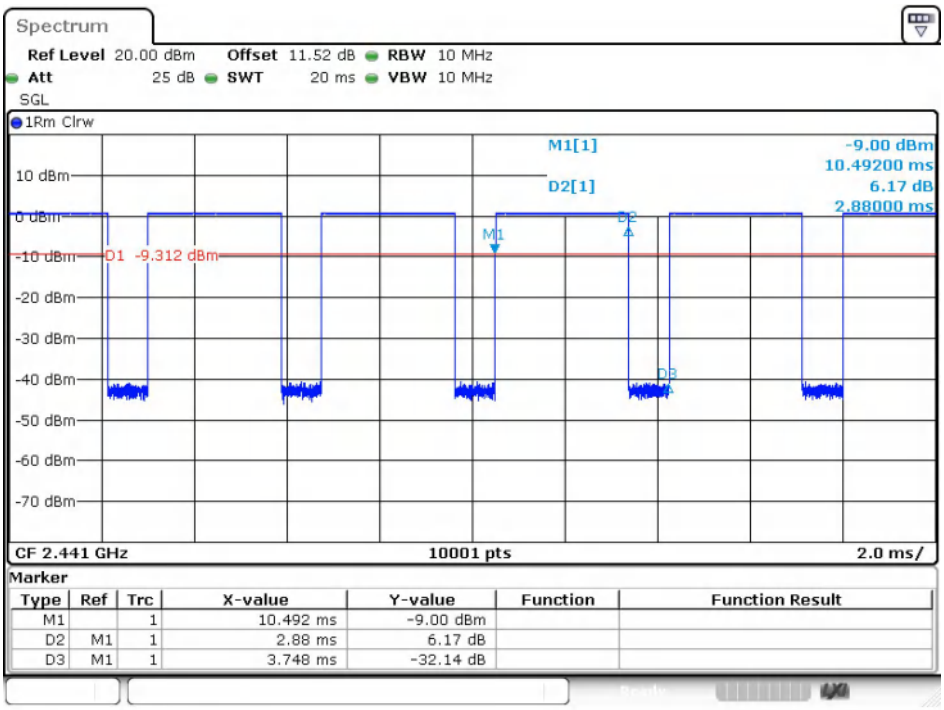
Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.878	3.748	76.79	0.7679	1.147	0.35
		39	2.880	3.748	76.84	0.7684	1.1441	0.35
		78	2.878	3.748	76.79	0.7679	1.147	0.35
π/4DQPSK	2-DH5	0	2.884	3.748	76.95	0.7695	1.1379	0.35
		39	2.884	3.748	76.95	0.7695	1.1379	0.35
		78	2.884	3.748	76.95	0.7695	1.1379	0.35
8DPSK	3-DH5	0	2.888	3.748	77.05	0.7705	1.1323	0.35
		39	2.886	3.748	77.00	0.7700	1.1351	0.35
		78	2.888	3.748	77.05	0.7705	1.1323	0.35

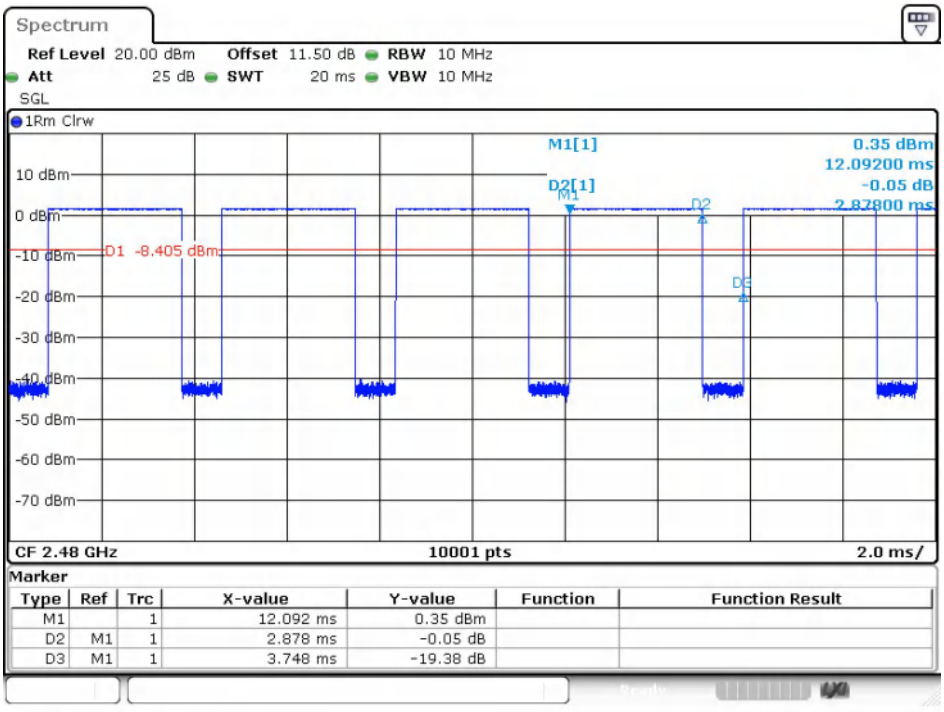
Test Graphs



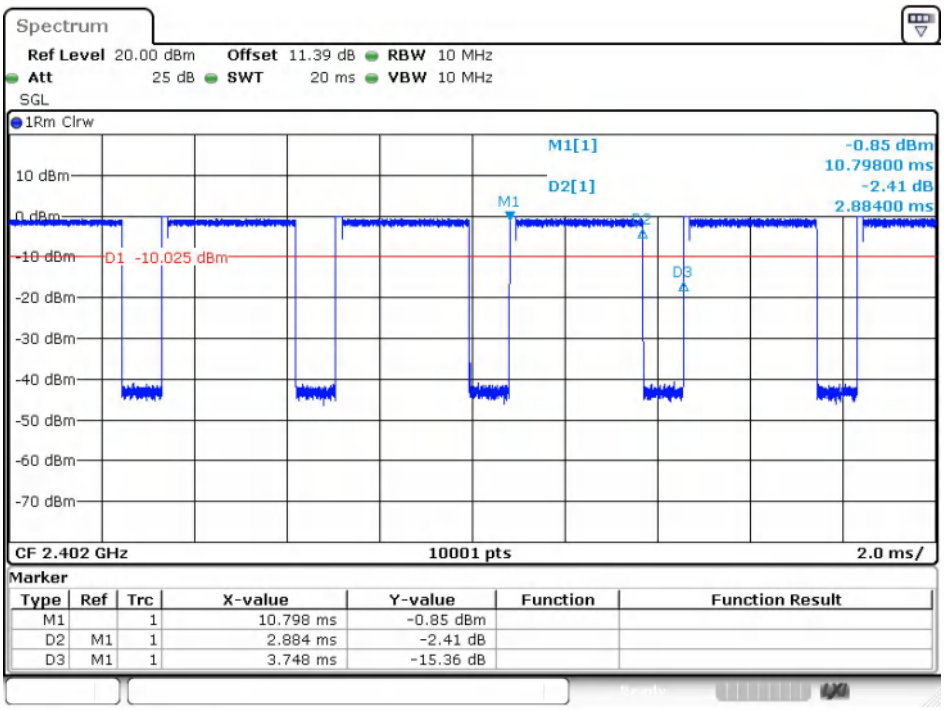
GFSK(DH5)_Channel 0



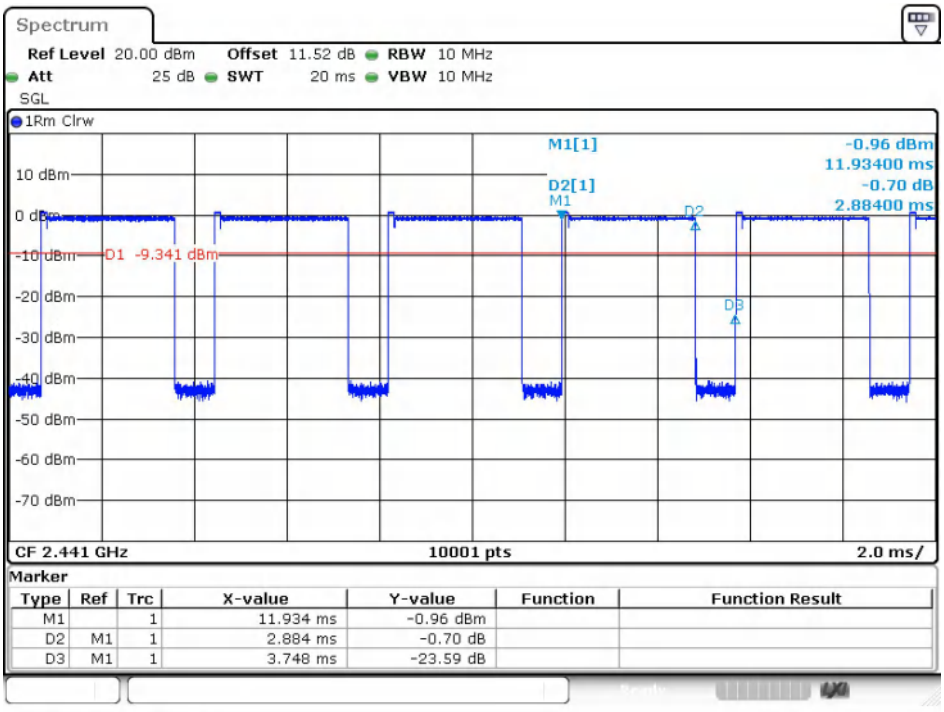
GFSK(DH5)_Channel 39



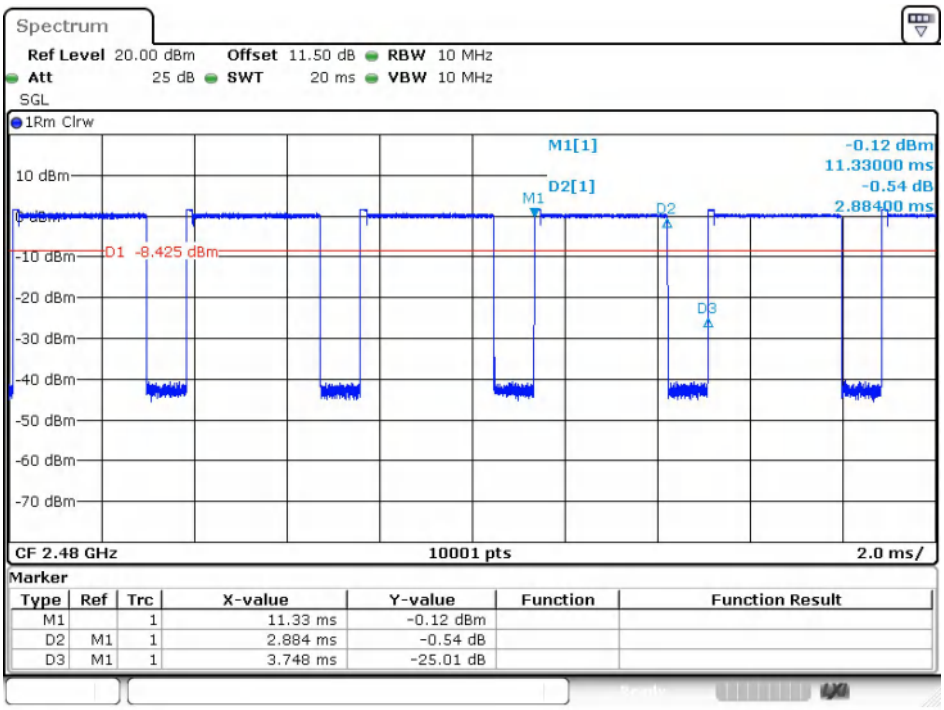
GFSK(DH5)_Channel 78



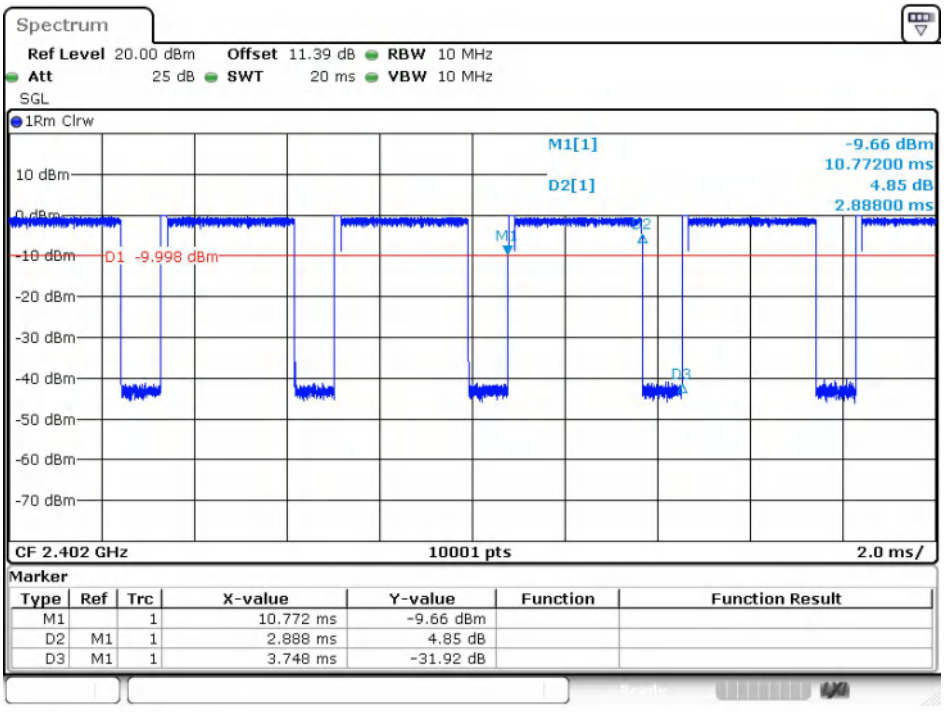
π/4DQPSK(2-DH5)_Channel 0



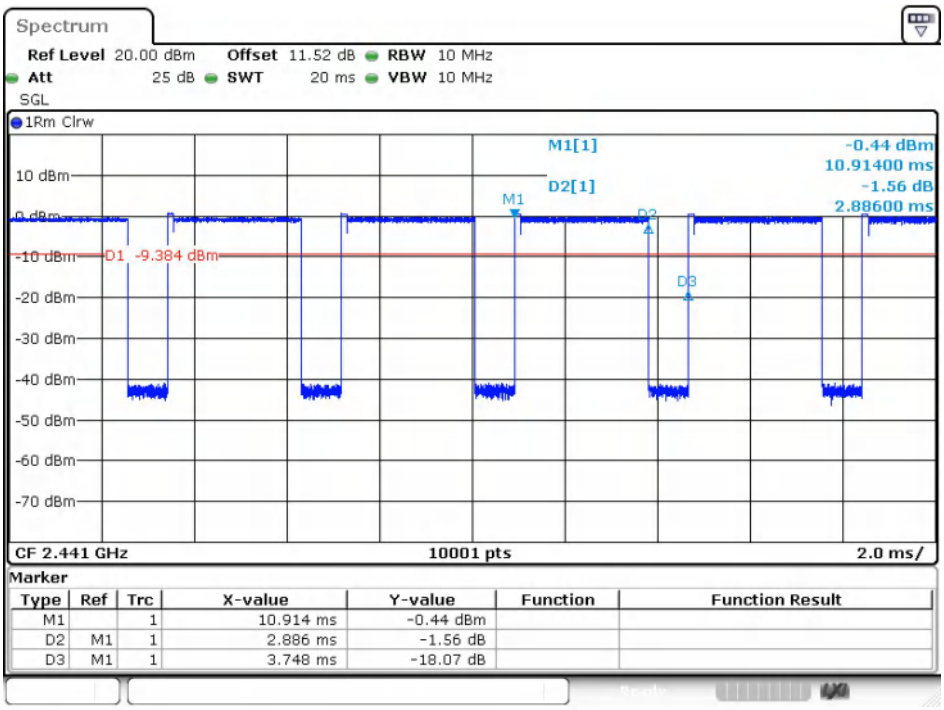
π/4DQPSK(2-DH5)_Channel 39



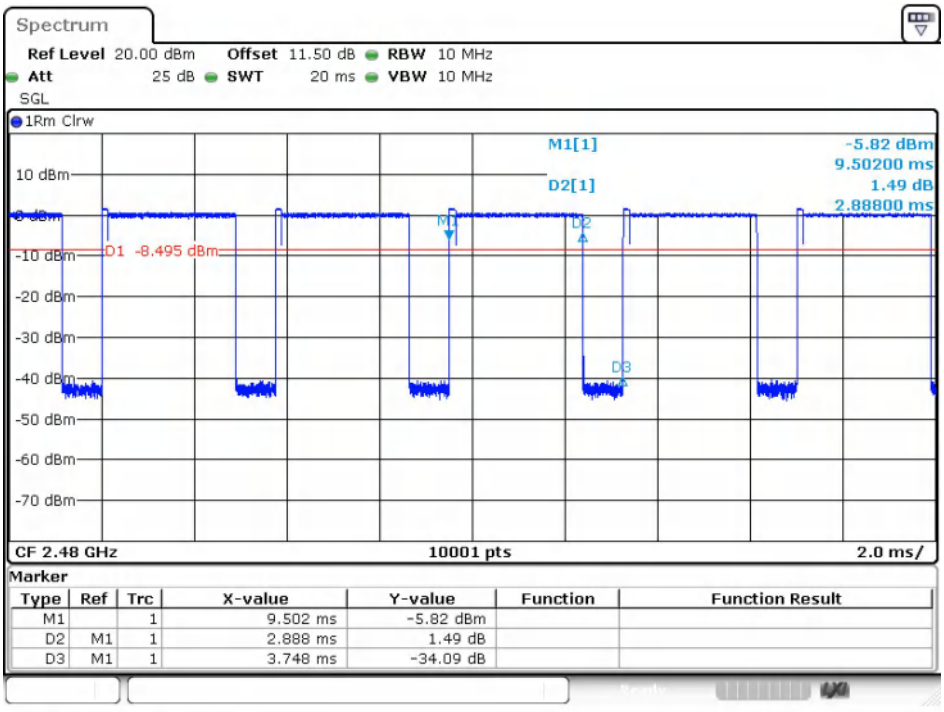
π/4DQPSK(2-DH5)_Channel 78



8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39



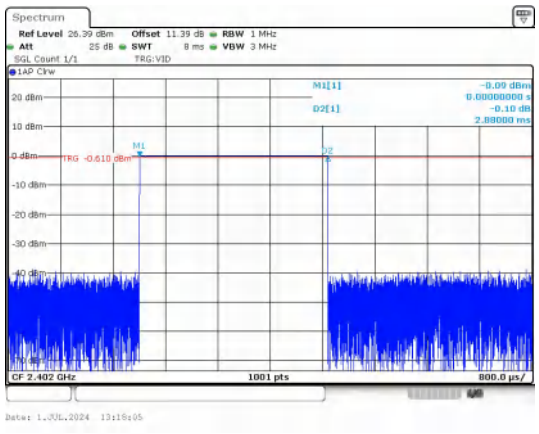
8DPSK(3-DH5)_Channel 78

7) Dwell Time

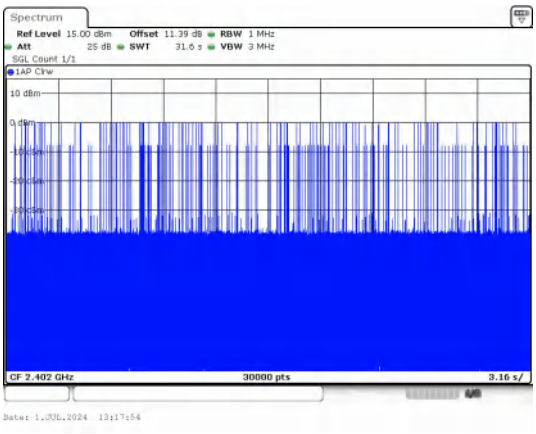
Test Result

Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.880	109	313.92	< 400	PASS
π/4DQPSK	2-DH5		2.888	105	303.24		PASS
8DPSK	3-DH5		2.888	101	291.69		PASS

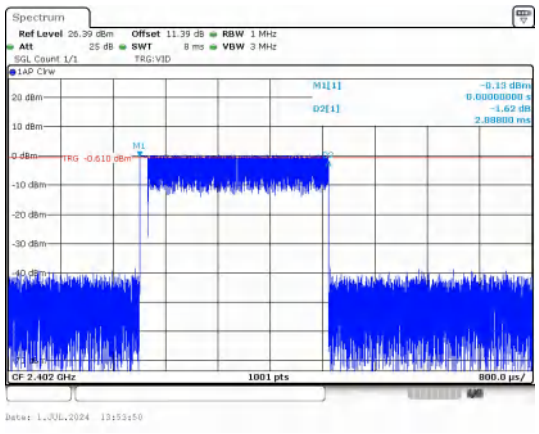
Test Graphs



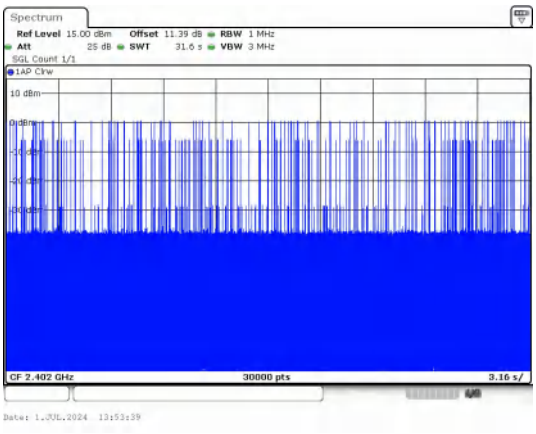
Pulse Width
GFSK_DH5



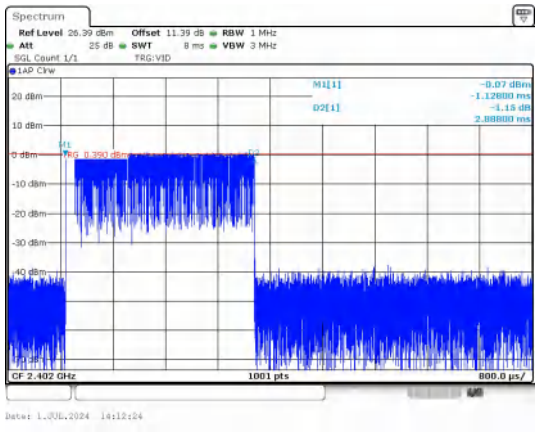
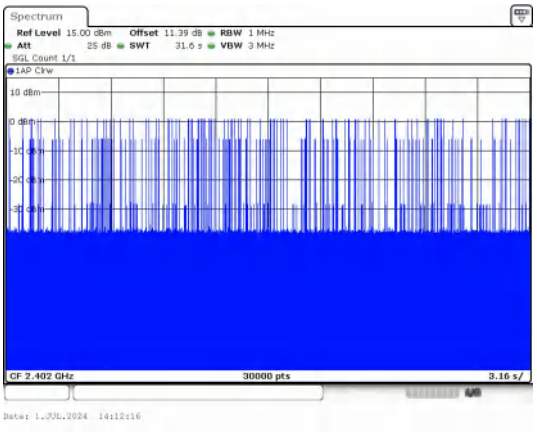
Number of Pulses in 31.6 seconds
GFSK_DH5



Pulse Width
π/4DQPSK_2-DH5



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

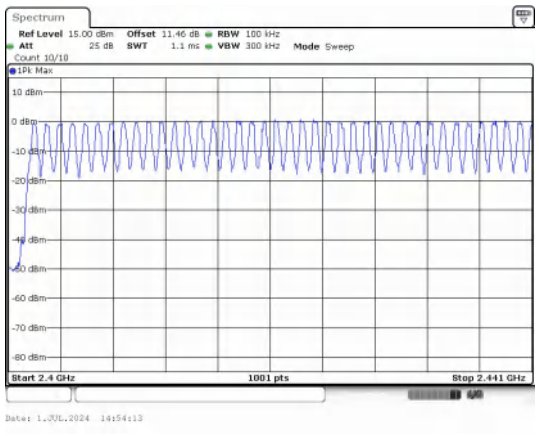
	
Pulse Width **8DPSK_3-DH5**	**Number of Pulses in 31.6 seconds** **8DPSK_3-DH5**

8) Number Of Hopping Channel

Test Result

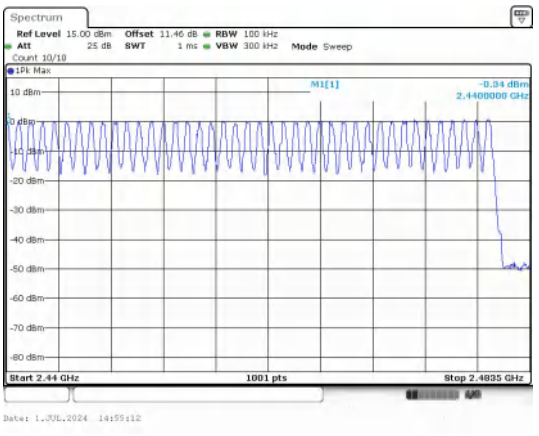
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
π/4DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs



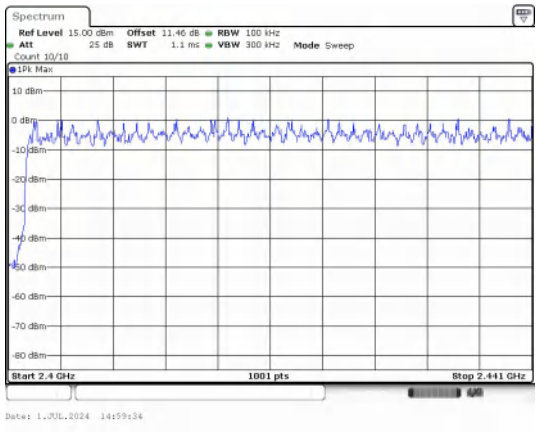
Low End Spectrum Channel Hopping Plot

GFSK



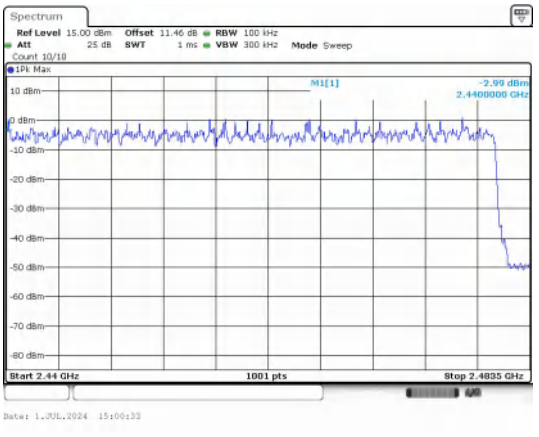
High End Spectrum Channel Hopping Plot

GFSK



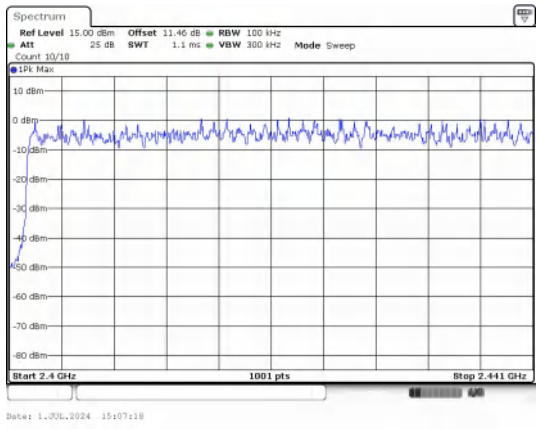
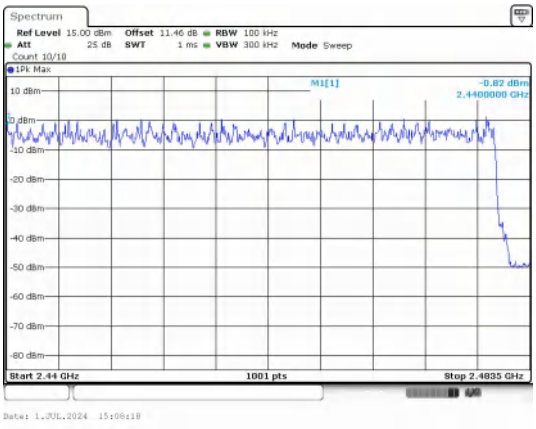
Low End Spectrum Channel Hopping Plot

π/4DQPSK



High End Spectrum Channel Hopping Plot

π/4DQPSK

	
Low End Spectrum Channel Hopping Plot **8DPSK**	**High End Spectrum Channel Hopping Plot** **8DPSK**