Appendix A

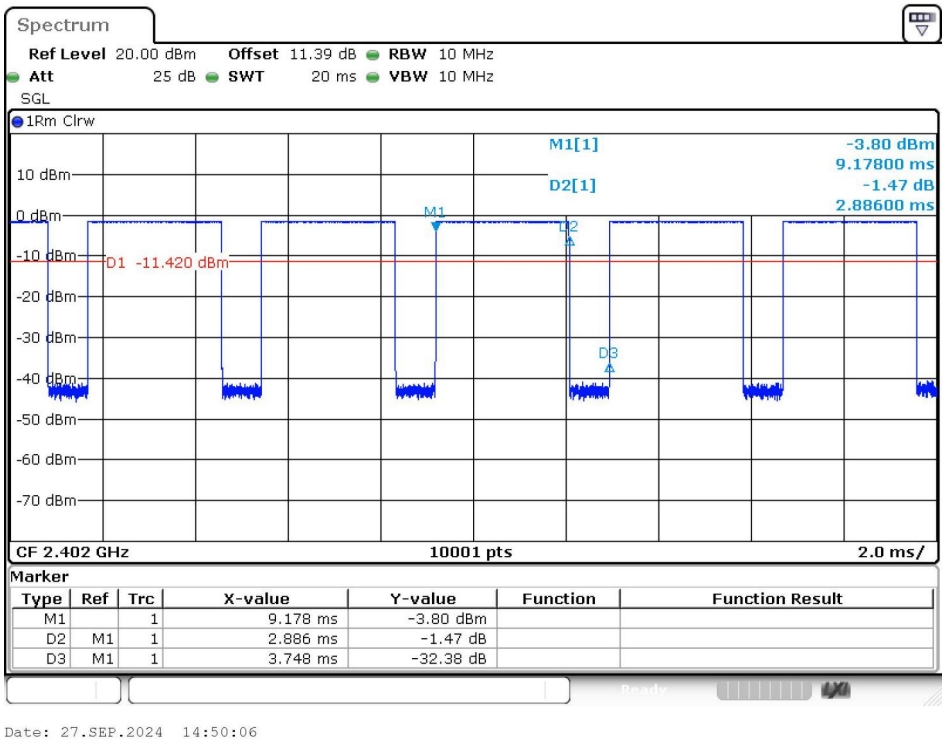
Report No.:	CISRR240925237
FCC ID:	2BLFB-ML520
Product Name:	CD Player
Model No.:	ML520
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

1) Duty Cycle

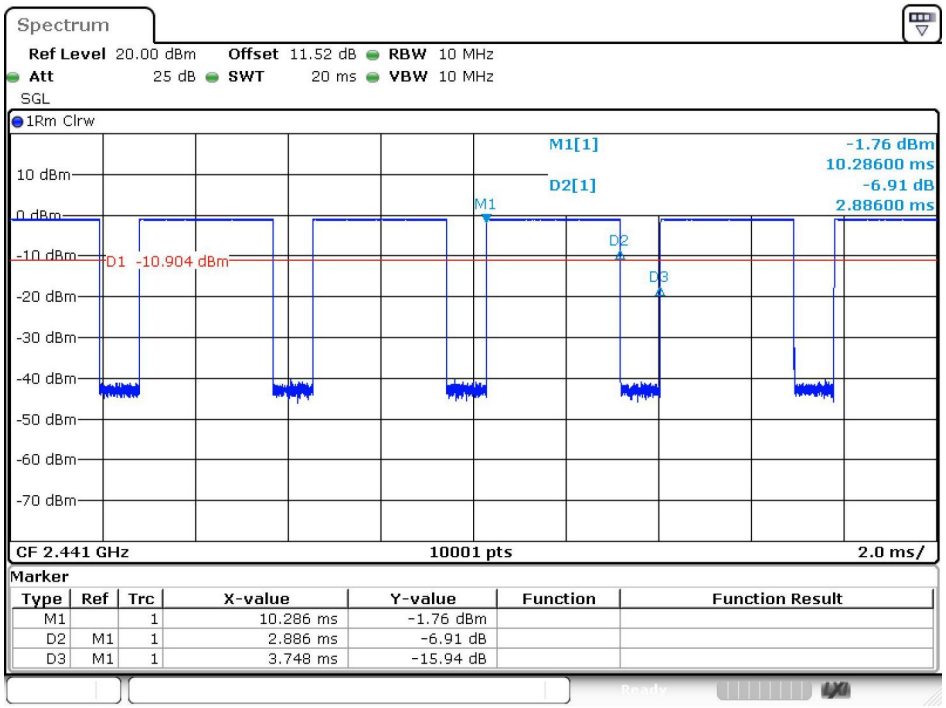
Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.886	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	2.892	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	2.892	3.748	77.16	0.7716	1.1261	0.35
		39	2.892	3.748	77.16	0.7716	1.1261	0.35
		78	2.894	3.748	77.21	0.7721	1.1233	0.35

Test Graphs

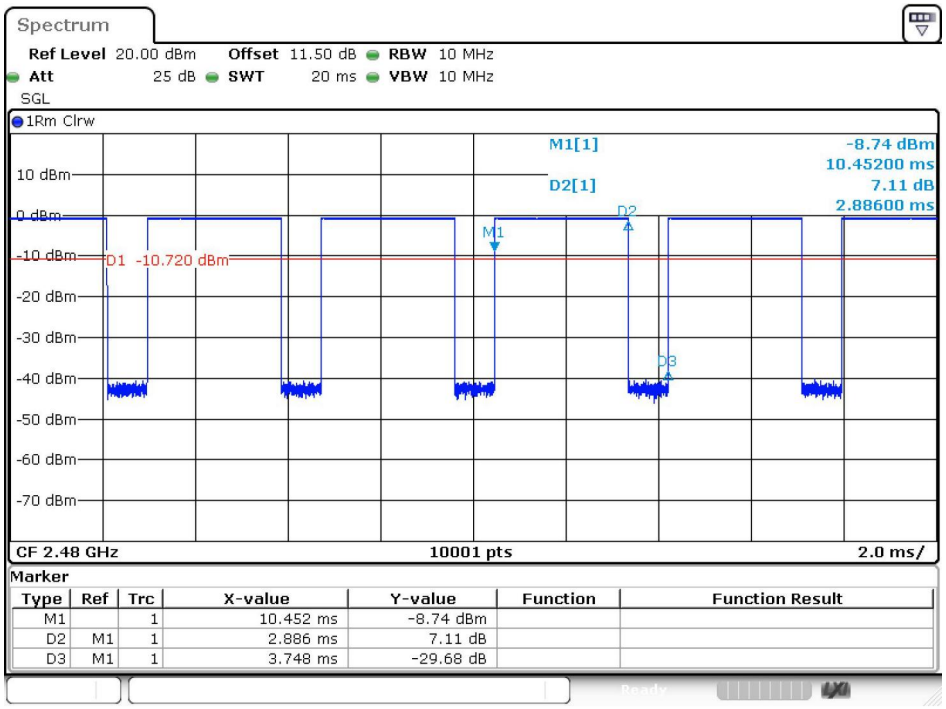


GFSK(DH5)_Channel 0



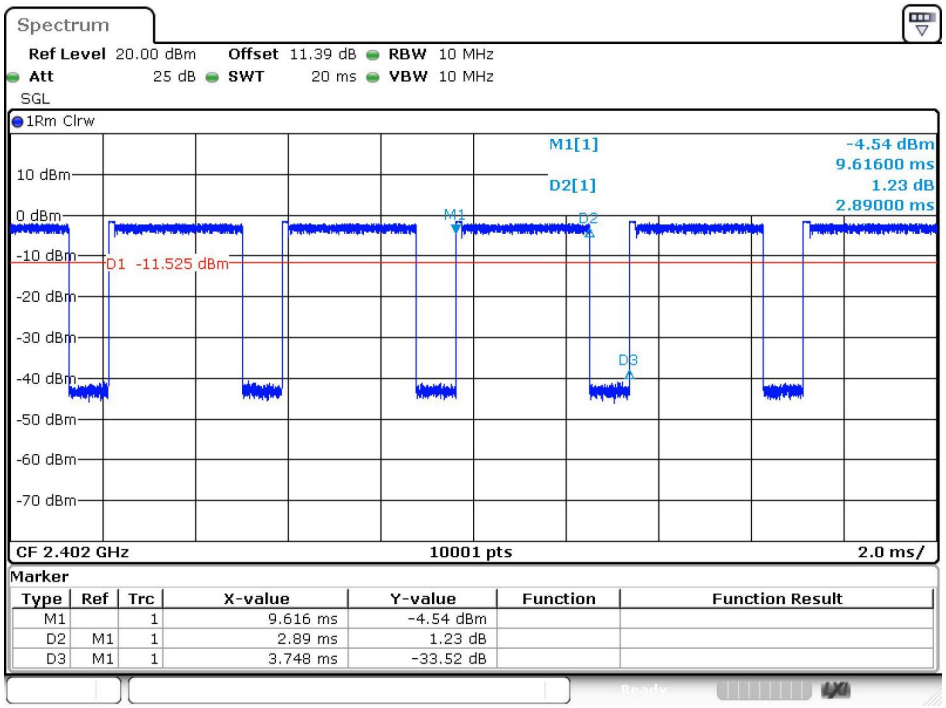
Date: 27.SEP.2024 14:59:30

GFSK(DH5)_Channel 39



Date: 27.SEP.2024 15:01:53

GFSK(DH5)_Channel 78



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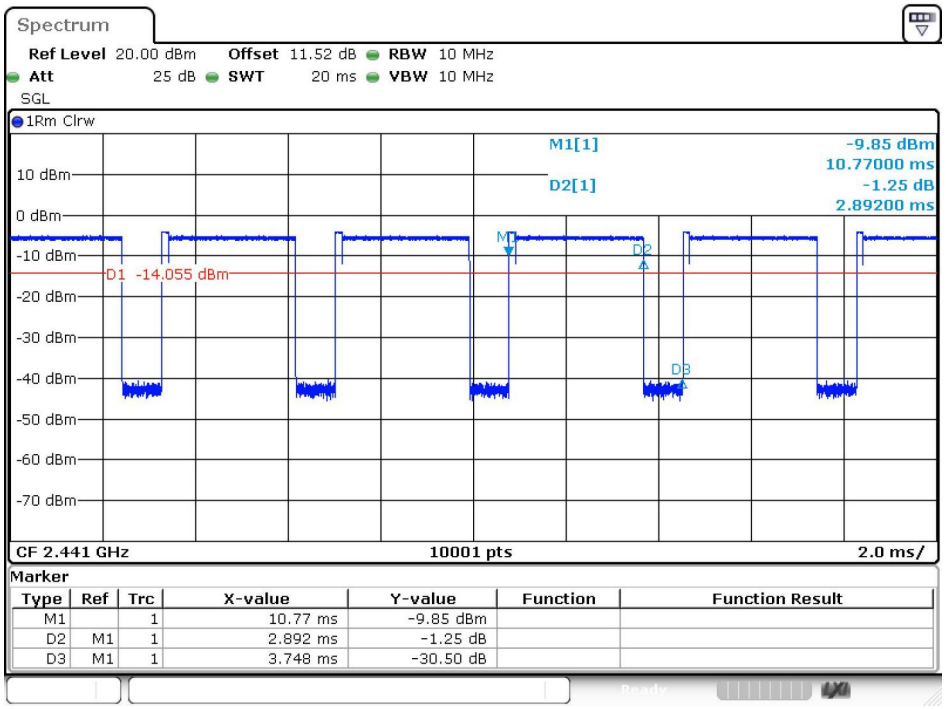
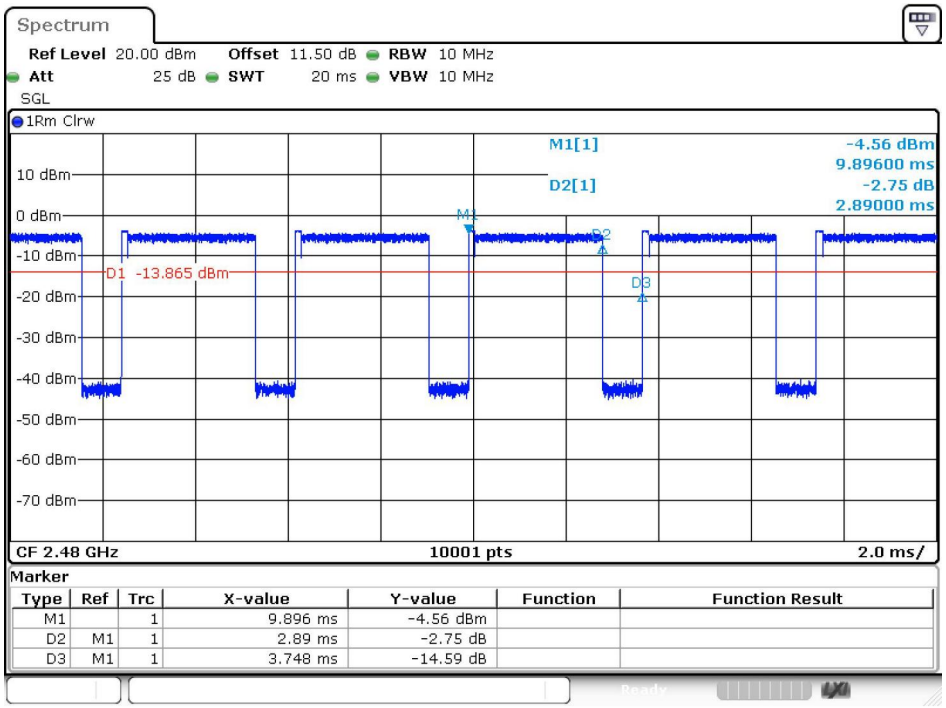
π/4DQPSK(2-DH5)_Channel 0

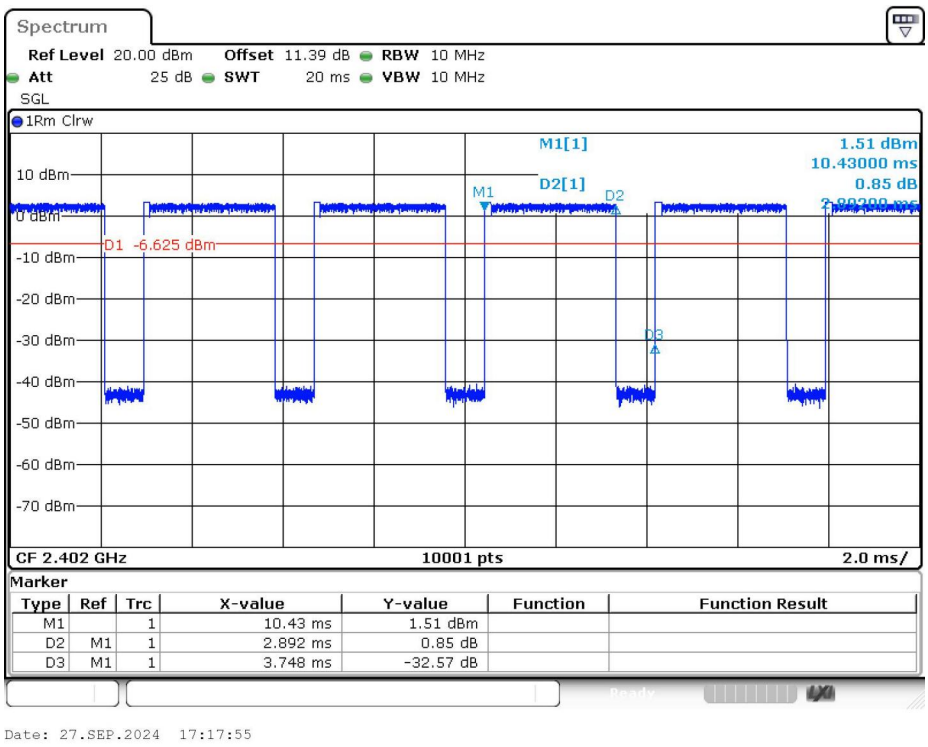


Date: 27.SEP.2024 15:26:52

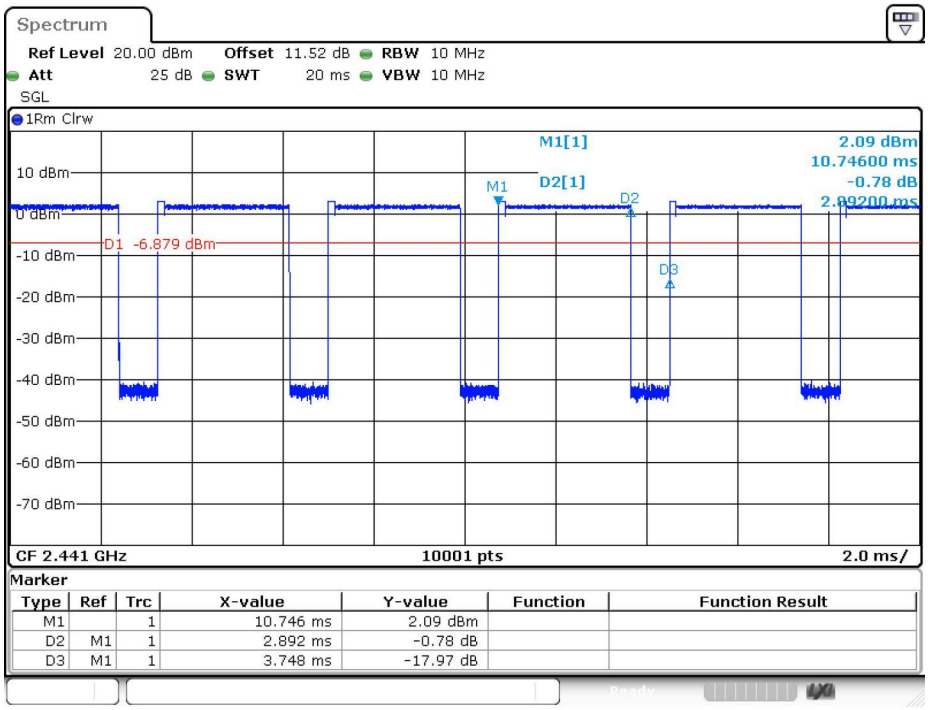
π/4DQPSK(2-DH5)_Channel 39



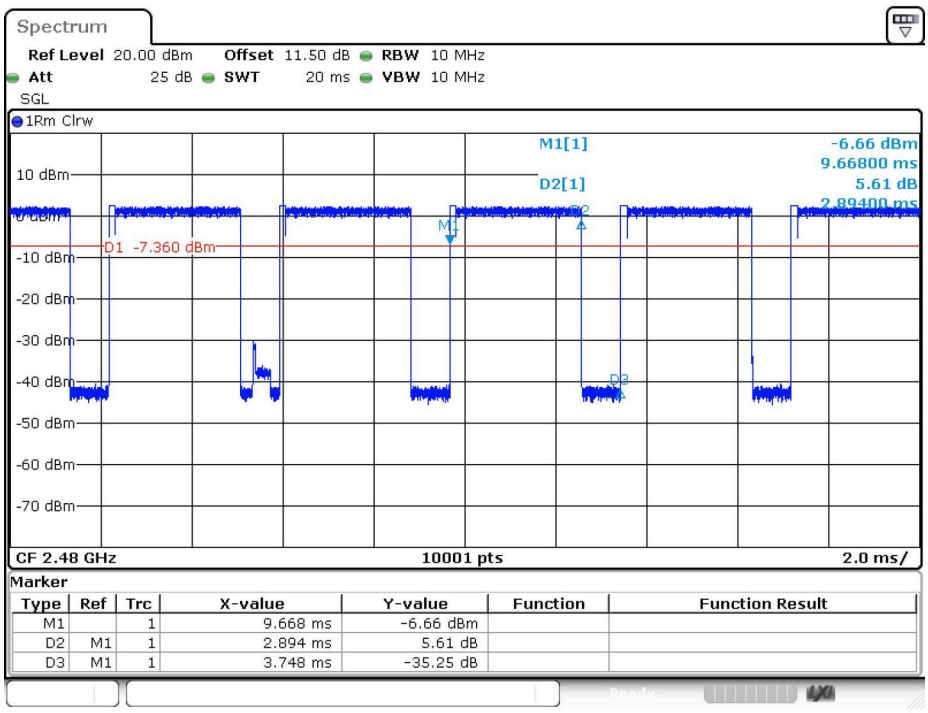
π/4DQPSK(2-DH5)_Channel 78



8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39



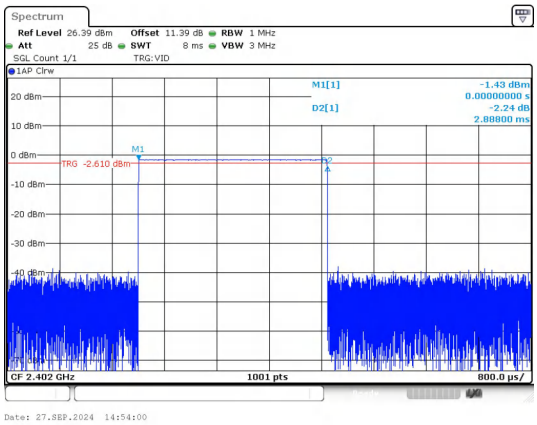
8DPSK(3-DH5)_Channel 78

2) Dwell Time

Test Result

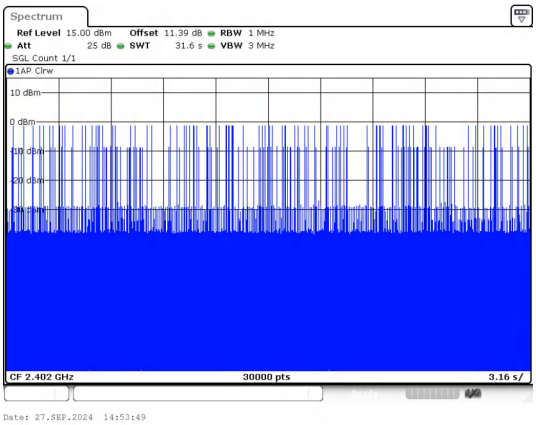
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.888	91	262.81	< 400	PASS
π/4DQPSK	2-DH5		2.896	96	278.02		PASS
8DPSK	3-DH5		2.896	106	306.98		PASS

Test Graphs



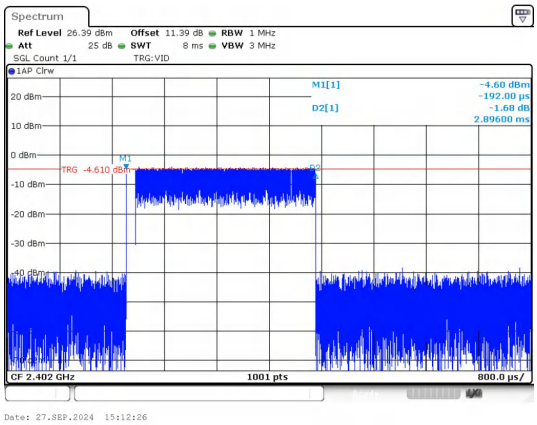
Pulse Width

GFSK_DH5



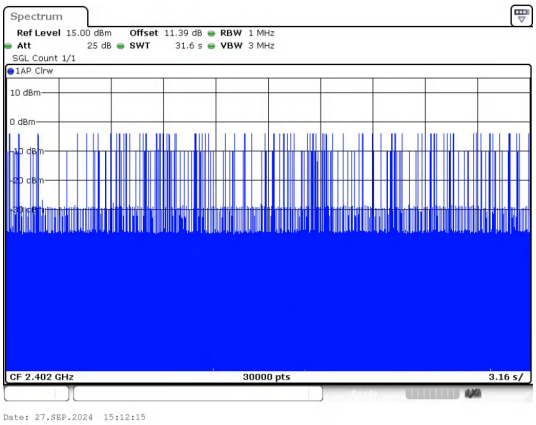
Number of Pulses in 31.6 seconds

GFSK_DH5



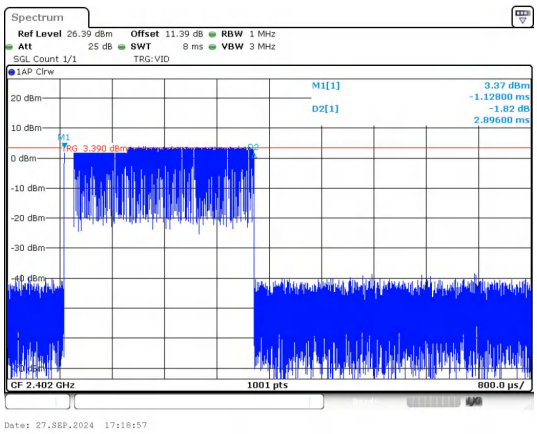
Pulse Width

π/4DQPSK_2-DH5



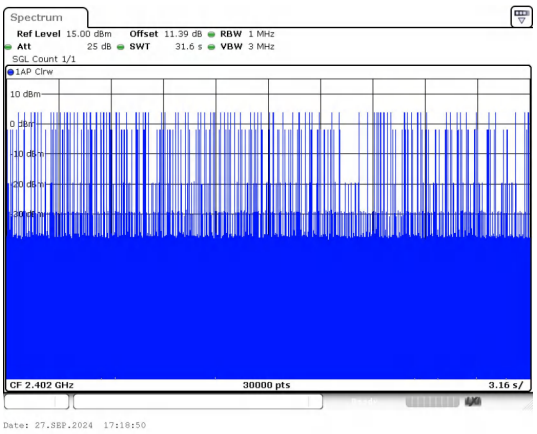
Number of Pulses in 31.6 seconds

π/4DQPSK_2-DH5



Pulse Width

8DPSK_3-DH5



Number of Pulses in 31.6 seconds

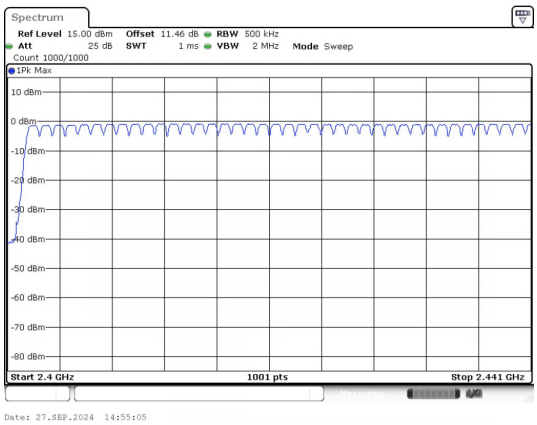
8DPSK_3-DH5

3) Number Of Hopping Channel

Test Result

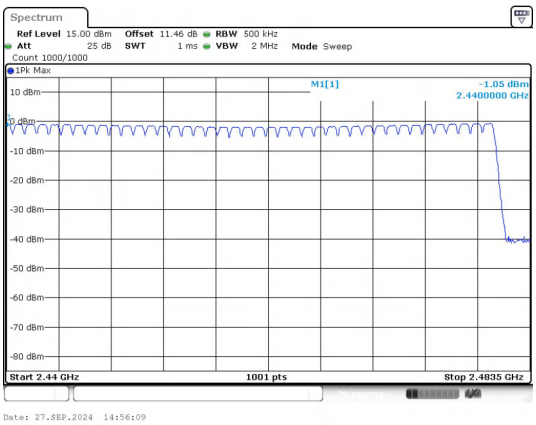
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
π/4DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs



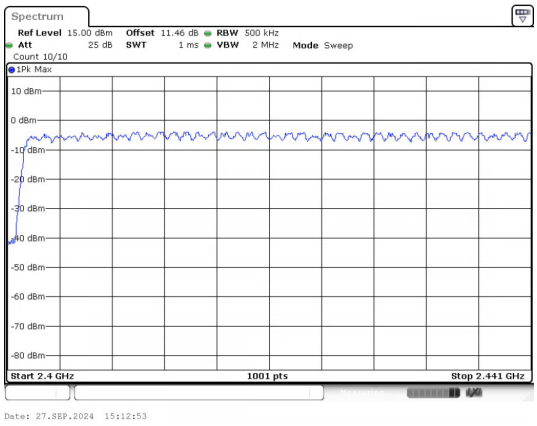
Low End Spectrum Channel Hopping Plot

GFSK



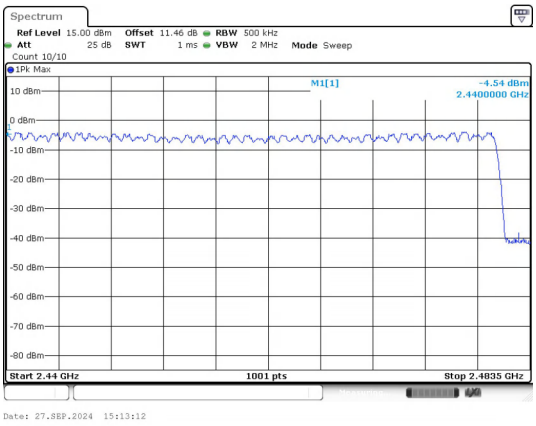
High End Spectrum Channel Hopping Plot

GFSK



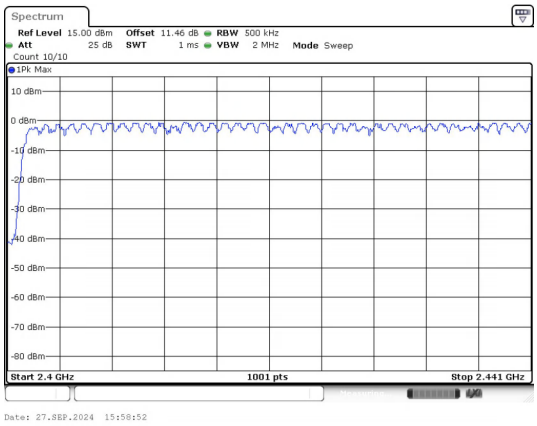
Low End Spectrum Channel Hopping Plot

π/4DQPSK



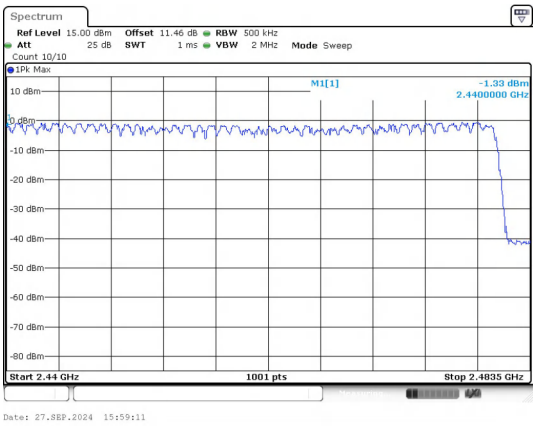
High End Spectrum Channel Hopping Plot

π/4DQPSK



Low End Spectrum Channel Hopping Plot

8DPSK



High End Spectrum Channel Hopping Plot

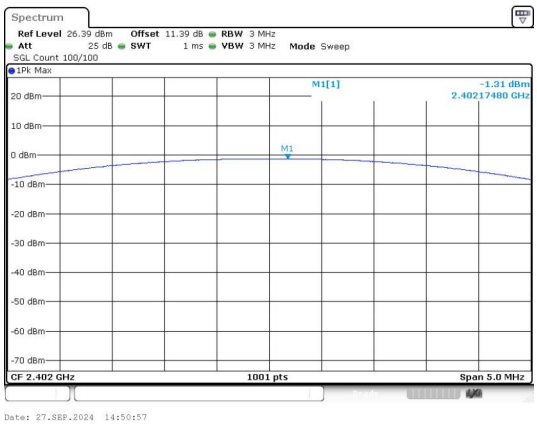
8DPSK

4) Conducted Peak Output Power

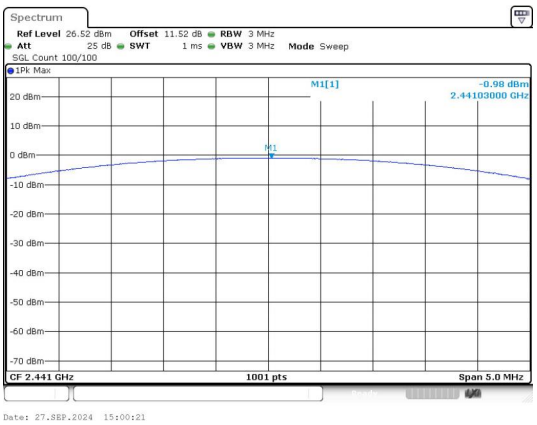
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	-1.306	0.740	≤30	PASS
		39	-0.980	0.798		PASS
		78	-0.670	0.857		PASS
π/4DQPSK	2-DH5	0	-0.620	0.867	≤20.97	PASS
		39	-3.099	0.490		PASS
		78	-2.821	0.522		PASS
8DPSK	3-DH5	0	-3.304	0.467		PASS
		39	0.280	1.067		PASS
		78	0.546	1.134		PASS

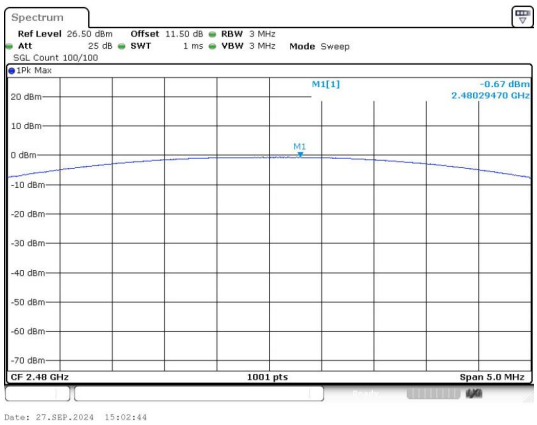
Test Graphs



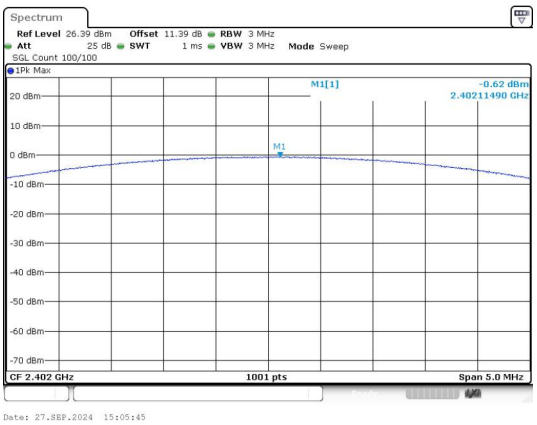
Peak Output Power
GFSK_Channel 0



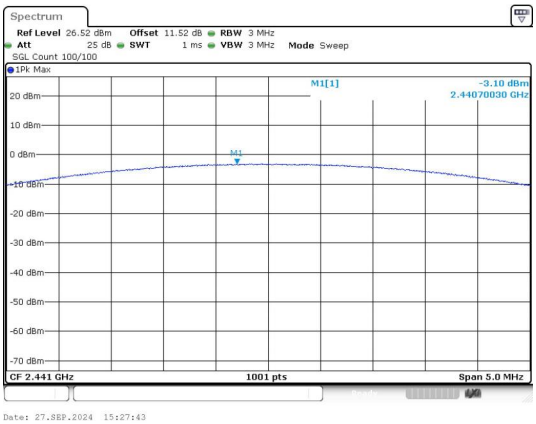
Peak Output Power
GFSK_Channel 39



Peak Output Power
GFSK_Channel 78

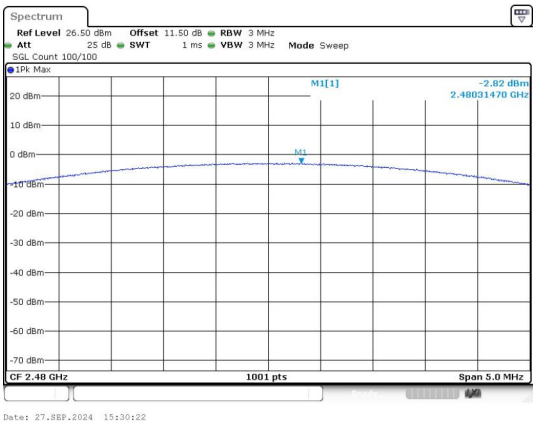


Peak Output Power
π/4DQPSK_Channel 0



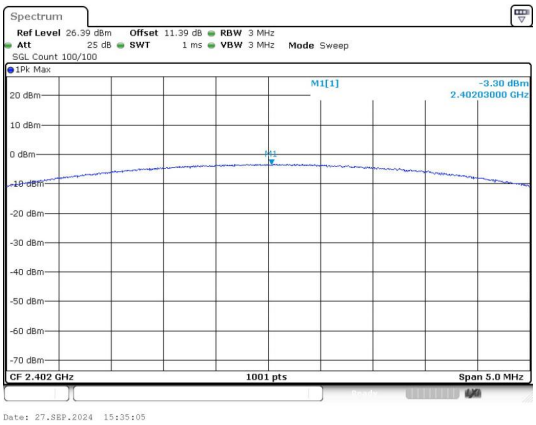
Peak Output Power

π/4DQPSK_Channel 39



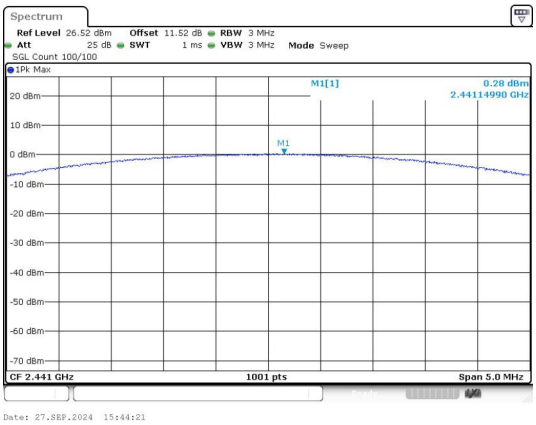
Peak Output Power

π/4DQPSK_Channel 78



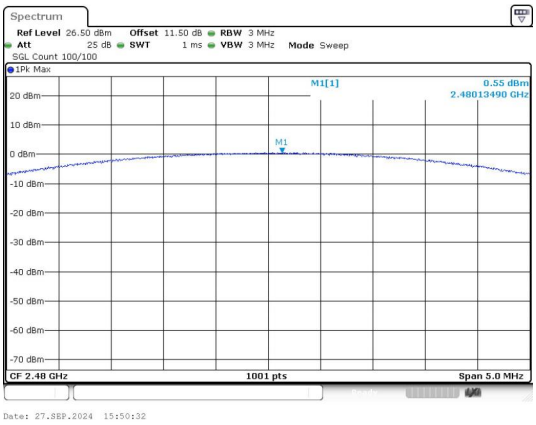
Peak Output Power

8DPSK_Channel 0



Peak Output Power

8DPSK_Channel 39



Peak Output Power

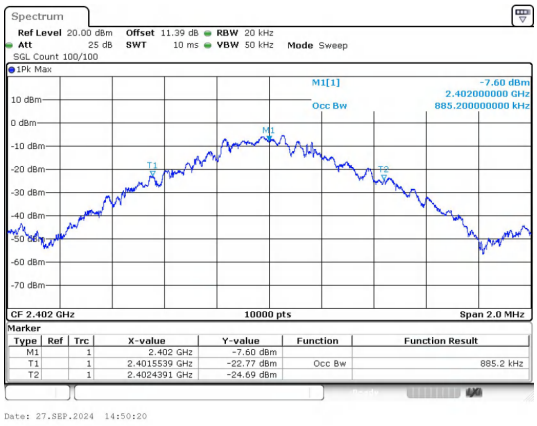
8DPSK_Channel 78

5) 99% Bandwidth

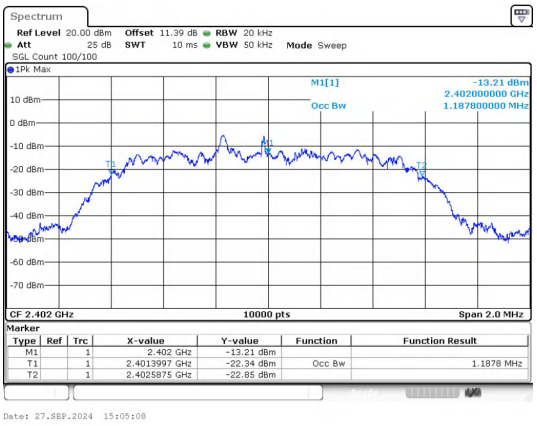
Test Result

Modulation	Channel	Center Frequency (MHz)	99% BW (MHz)
GFSK	0	2402	0.88520
	39	2441	0.89280
	78	2480	0.90600
π/4DQPSK	0	2402	1.1880
	39	2441	1.1990
	78	2480	1.1890
8DPSK	0	2402	1.1900
	39	2441	1.1490
	78	2480	1.1670

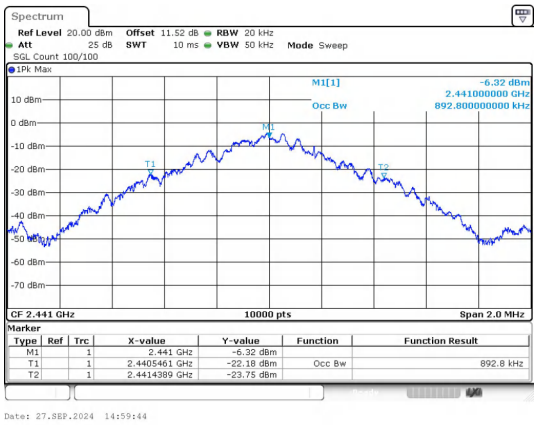
Test Graphs



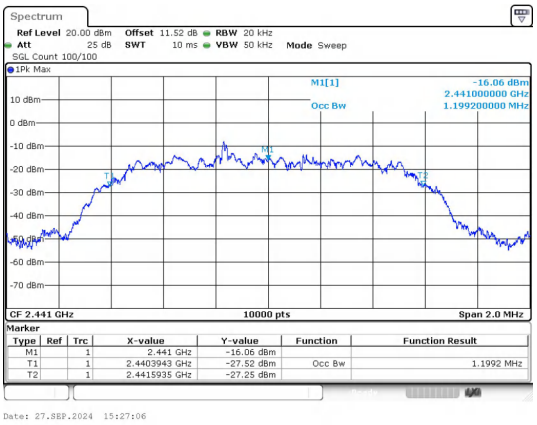
GFSK_DH5_Channel 0



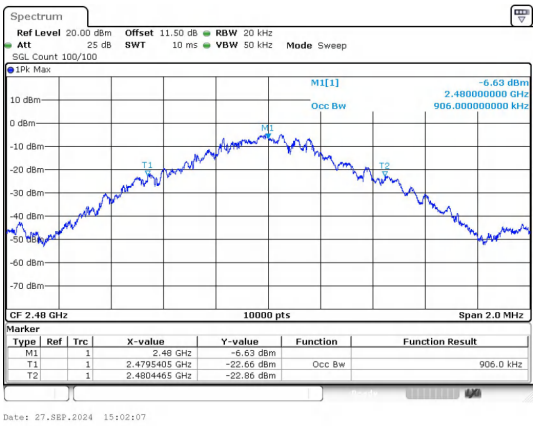
π/4DQPSK_2-DH5_Channel 0



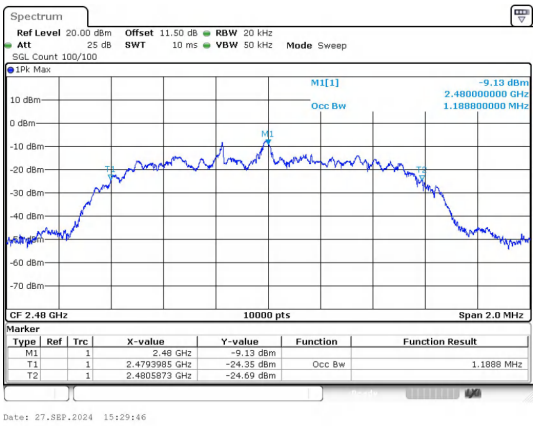
GFSK_DH5_Channel 39



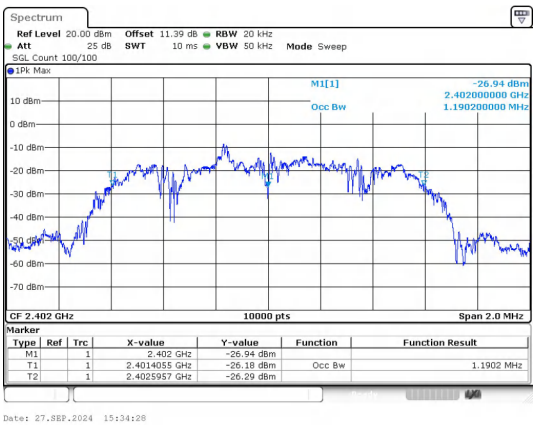
π/4DQPSK_2-DH5_Channel 39



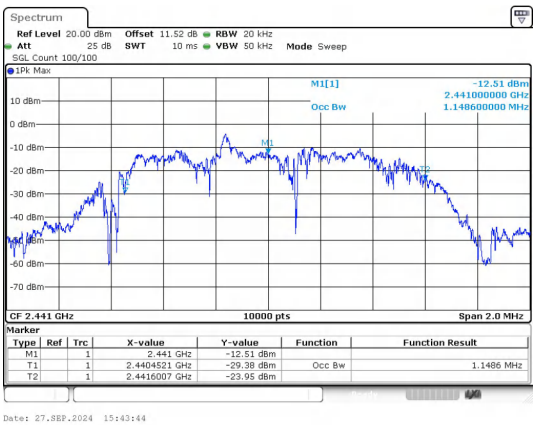
GFSK_DH5_Channel 78



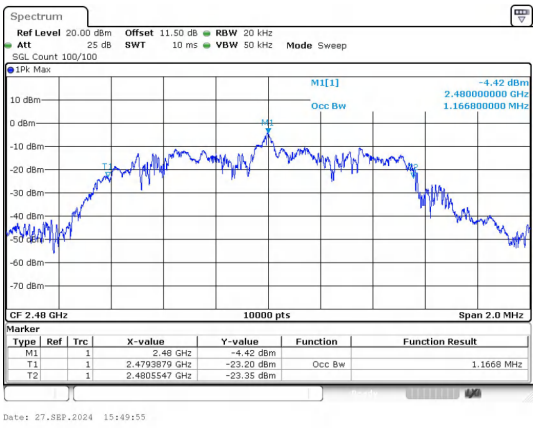
π/4DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



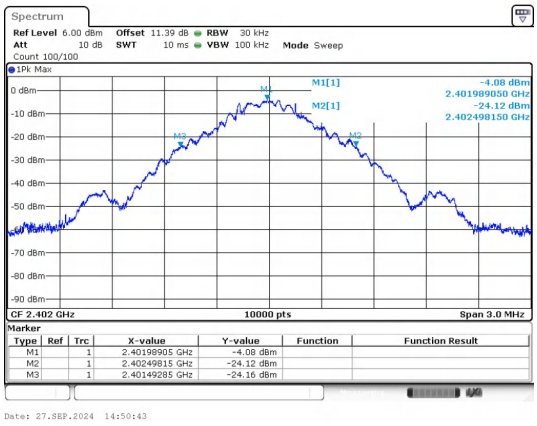
8DPSK_3-DH5_Channel 78

6) 20dB Bandwidth

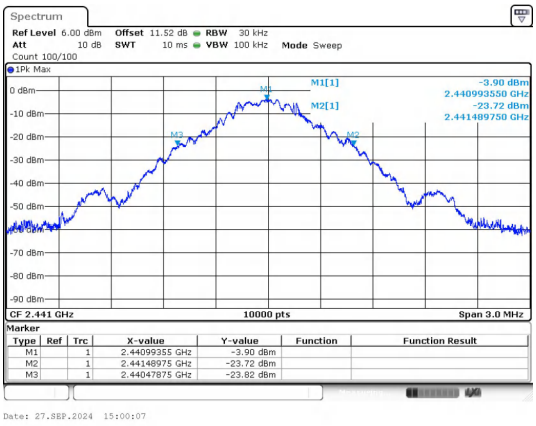
Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.010
	39	2441 MHz	1.010
	78	2480 MHz	1.020
π/4DQPSK	0	2402 MHz	1.290
	39	2441 MHz	1.290
	78	2480 MHz	1.290
8DPSK	0	2402 MHz	1.270
	39	2441 MHz	1.270
	78	2480 MHz	1.260

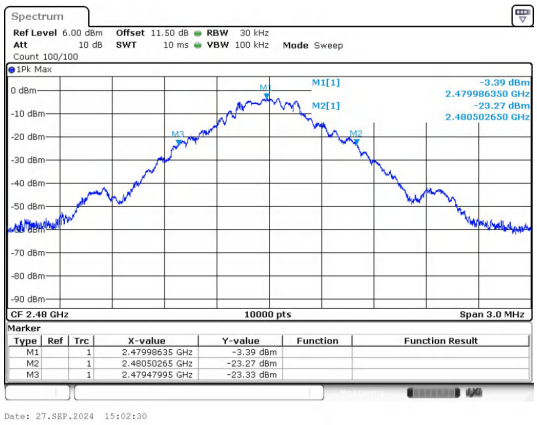
Test Graphs



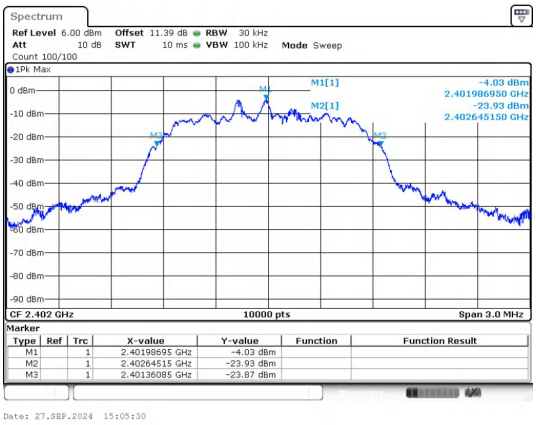
GFSK_DH5_Channel 0



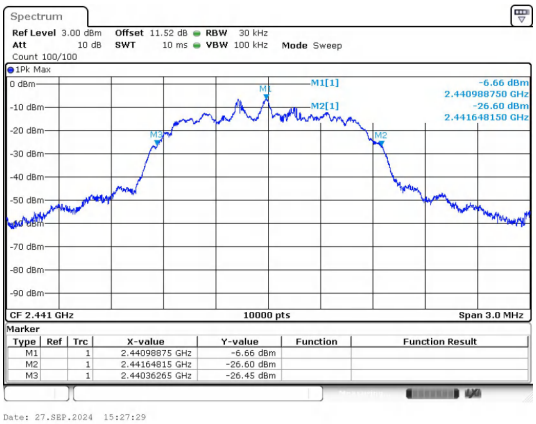
GFSK_DH5_Channel 39



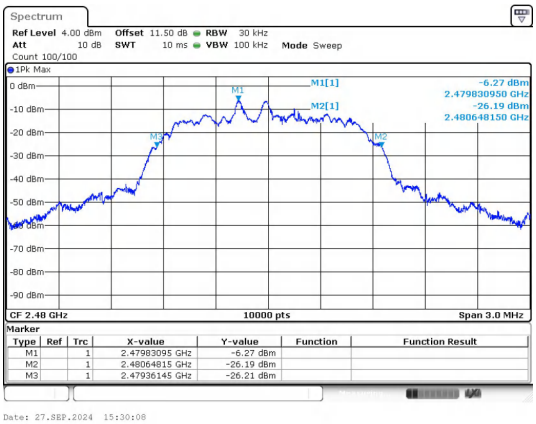
GFSK_DH5_Channel 78



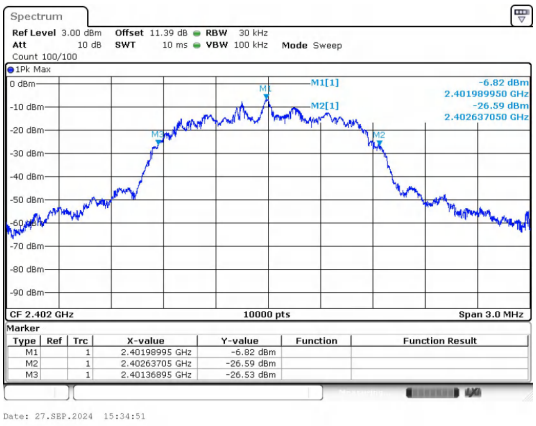
π/4DQPSK_2-DH5_Channel 0



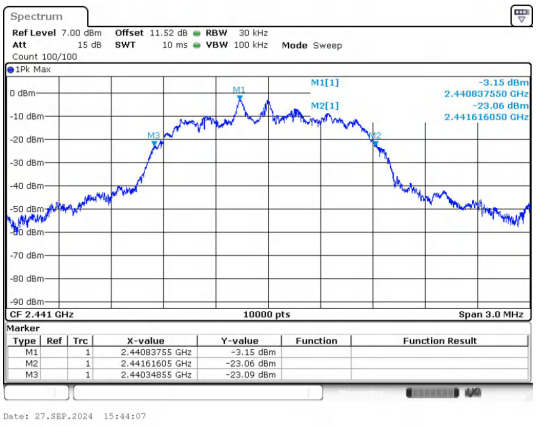
π/4DQPSK_2-DH5_Channel 39



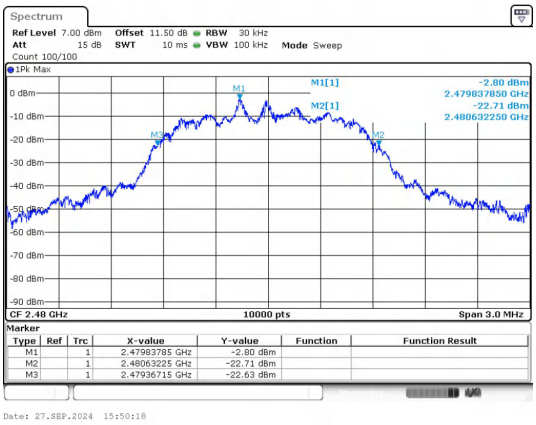
π/4DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



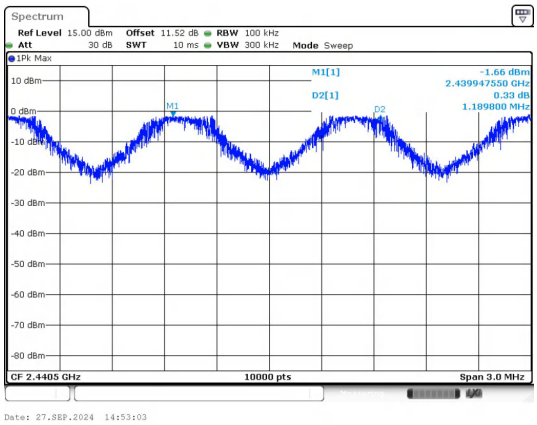
8DPSK_3-DH5_Channel 78

7) Carrier Frequencies Separation

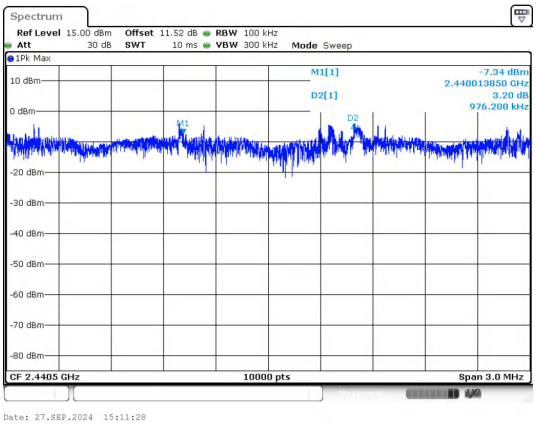
Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2439.9475	2441.1373	1.1898	1.020	PASS
π/4DQPSK	2-DH5	2440.0138	2440.99	0.9762	0.86	PASS
8DPSK	3-DH5	2440.162	2441.1377	0.9756	0.847	PASS

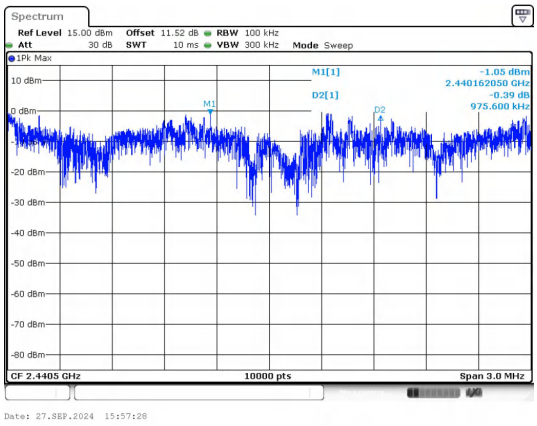
Test Graphs



GFSK



π/4DQPSK



8DPSK

8) Conducted Out Of Band Emission

Test Result

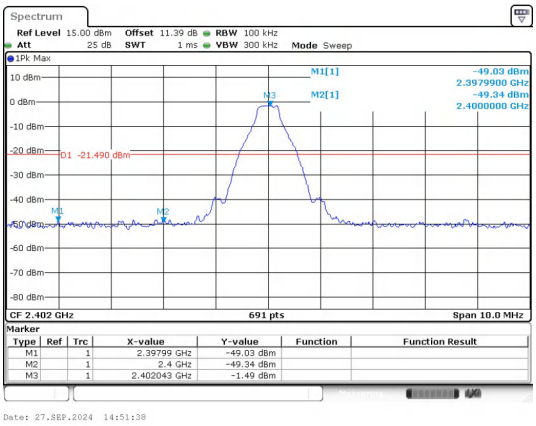
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2397.99	-49.029	-21.49	-27.539	PASS
			2400.00	-49.336	-21.49	-27.846	PASS
			9608.10	-46.852	-21.49	-25.362	PASS
		39	9763.72	-44.275	-21.03	-23.245	PASS
		78	2483.50	-50.911	-20.76	-30.151	PASS
			9920.20	-45.243	-20.76	-24.483	PASS
π/4DQPSK	2-DH5	0	2397.44	-48.101	-21.64	-26.461	PASS
			2400.00	-49.068	-21.64	-27.428	PASS
			9608.10	-46.450	-21.64	-24.810	PASS
		39	9763.72	-45.506	-24.18	-21.326	PASS
		78	2483.50	-51.063	-24.04	-27.023	PASS
			9920.20	-45.906	-24.04	-21.866	PASS
8DPSK	3-DH5	0	2397.44	-48.415	-24.41	-24.005	PASS
			2400.00	-50.172	-24.41	-25.762	PASS
			9608.10	-48.943	-24.41	-24.533	PASS
		39	9763.72	-44.291	-20.9	-23.391	PASS
		78	2483.50	-50.727	-20.42	-30.306	PASS
			9920.20	-45.464	-20.42	-25.044	PASS

Hopping

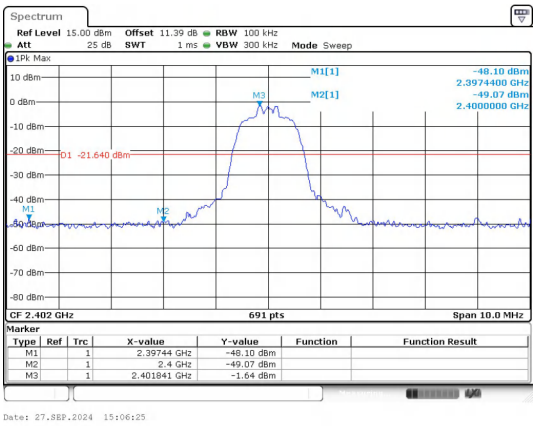
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2396.21	-47.739	-21.35	-26.389	PASS
			2400.00	-49.629	-21.35	-28.279	PASS
			2483.50	-49.905	-20.75	-29.155	PASS
π/4DQPSK	2-DH5		2396.47	-47.857	-24.49	-23.367	PASS
			2400.00	-49.895	-24.49	-25.405	PASS
			2483.50	-48.659	-23.87	-24.789	PASS
8DPSK	3-DH5		2398.97	-48.365	-21.09	-27.275	PASS
			2400.00	-49.641	-21.09	-28.551	PASS
			2483.50	-49.171	-20.68	-28.491	PASS

Test Graphs



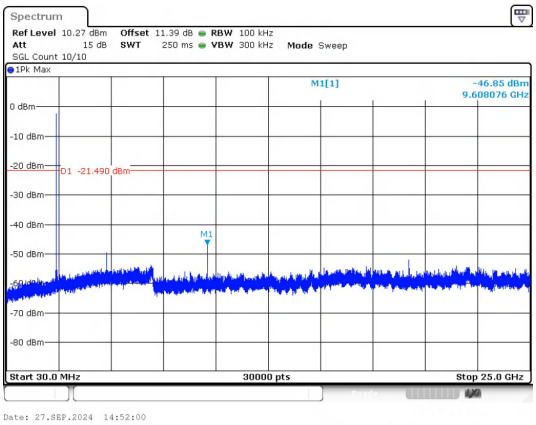
Out Of Band Emission

GFSK_DH5_Channel 0



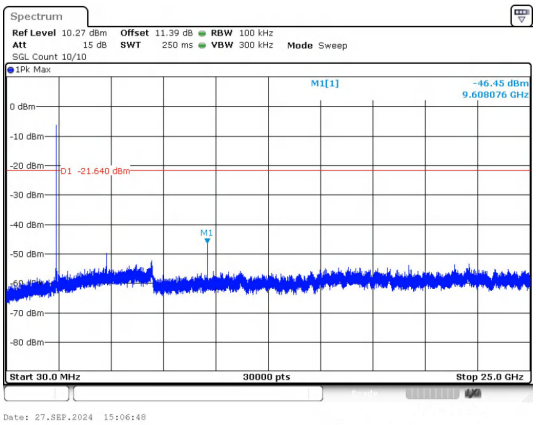
Out Of Band Emission

π/4DQPSK_2-DH5_Channel 0



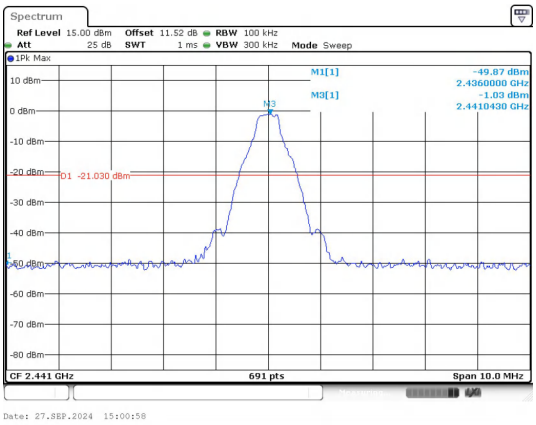
30.0 MHz - 25000.0 MHz

GFSK_DH5_Channel 0



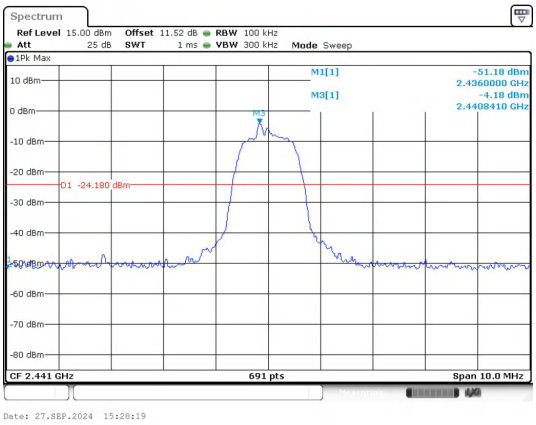
30.0 MHz - 25000.0 MHz

π/4DQPSK_2-DH5_Channel 0



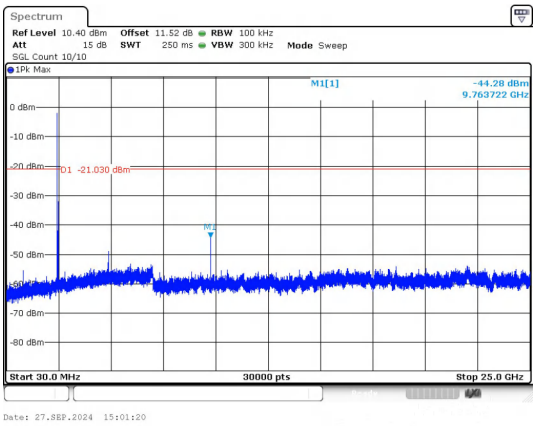
Out Of Band Emission

GFSK_DH5_Channel 39



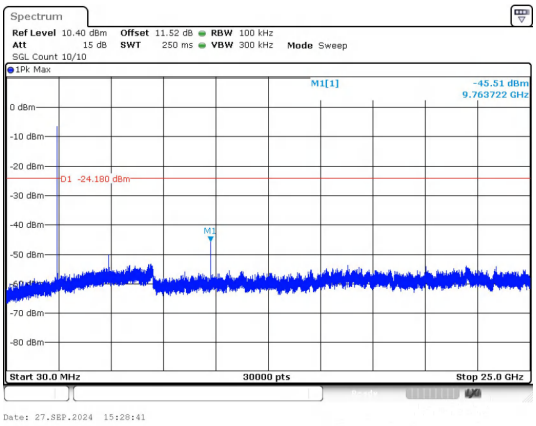
Out Of Band Emission

π/4DQPSK_2-DH5_Channel 39



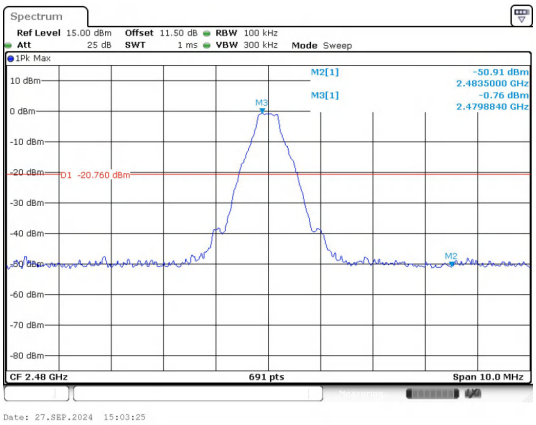
30.0 MHz - 25000.0 MHz

GFSK_DH5_Channel 39



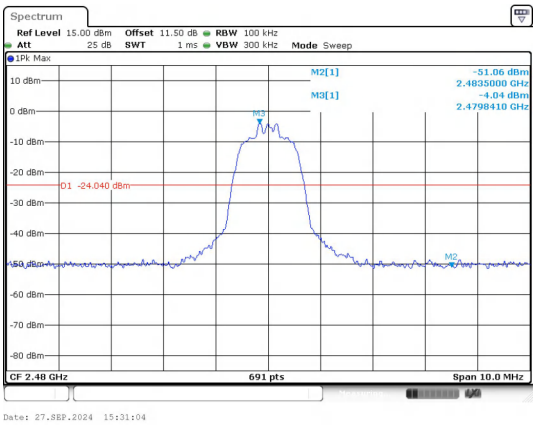
30.0 MHz - 25000.0 MHz

π/4DQPSK_2-DH5_Channel 39



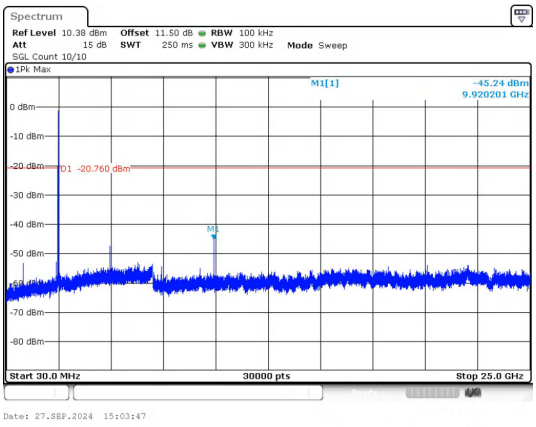
Out Of Band Emission

GFSK_DH5_Channel 78



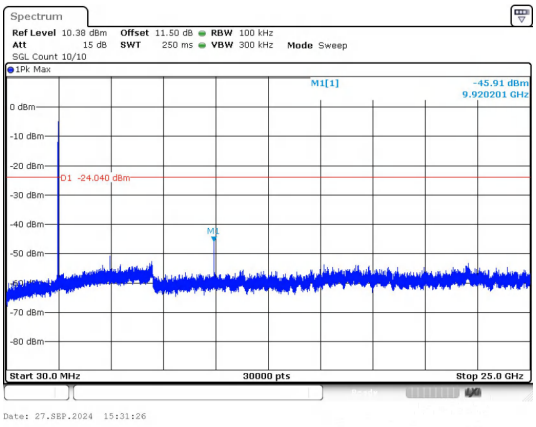
Out Of Band Emission

π/4DQPSK_2-DH5_Channel 78



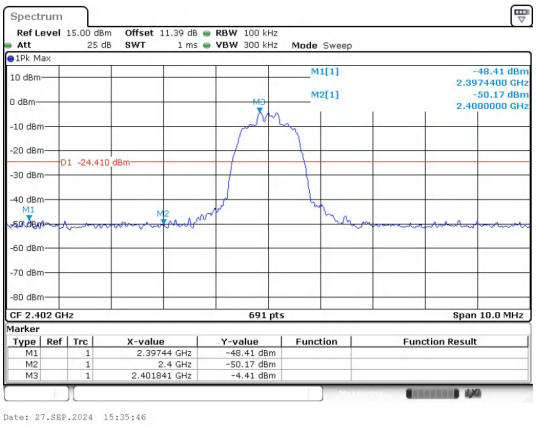
30.0 MHz - 25000.0 MHz

GFSK_DH5_Channel 78



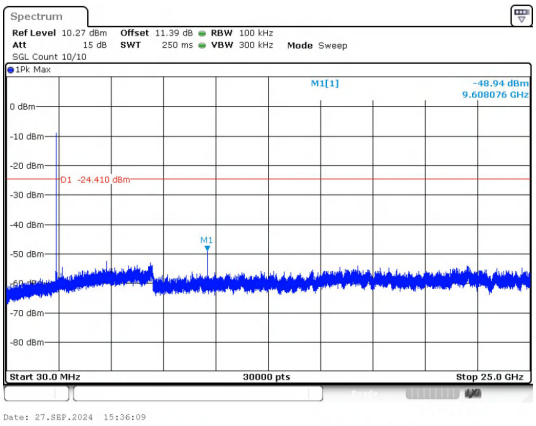
30.0 MHz - 25000.0 MHz

π/4DQPSK_2-DH5_Channel 78



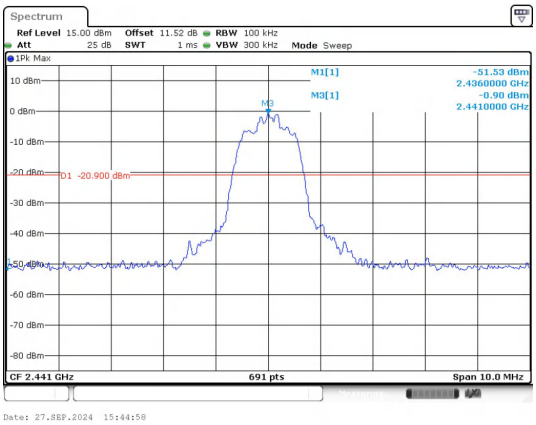
Out Of Band Emission

8DPSK_3-DH5_Channel 0



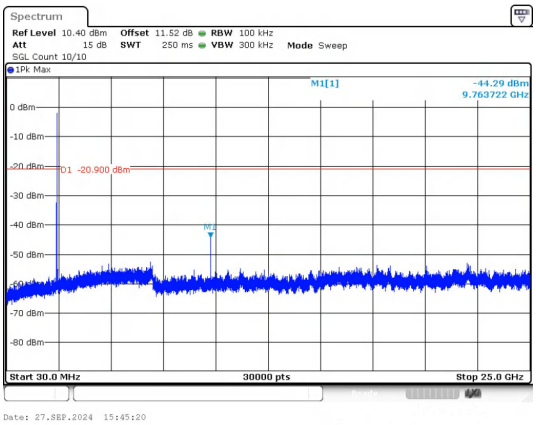
30.0 MHz - 25000.0 MHz

8DPSK_3-DH5_Channel 0



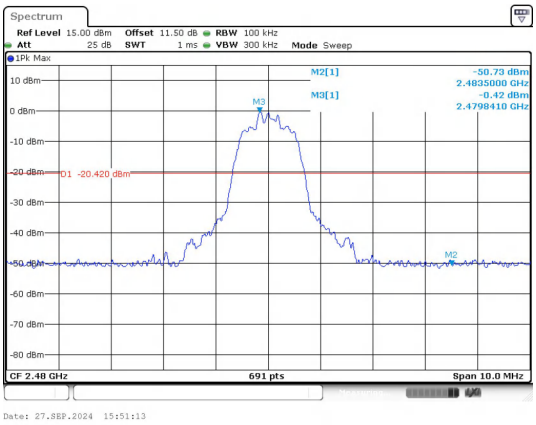
Out Of Band Emission

8DPSK_3-DH5_Channel 39



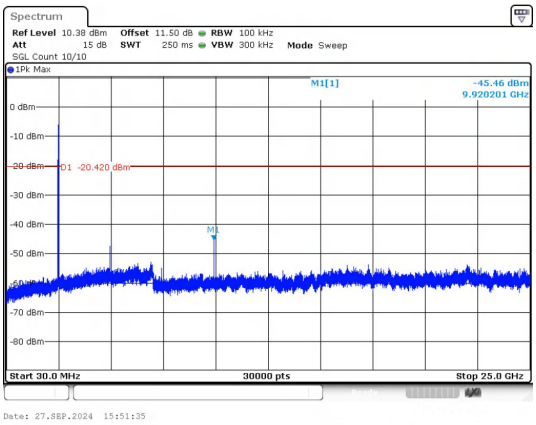
30.0 MHz - 25000.0 MHz

8DPSK_3-DH5_Channel 39



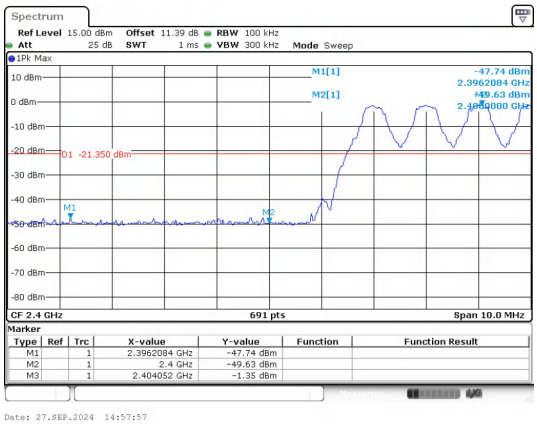
Out Of Band Emission

8DPSK_3-DH5_Channel 78



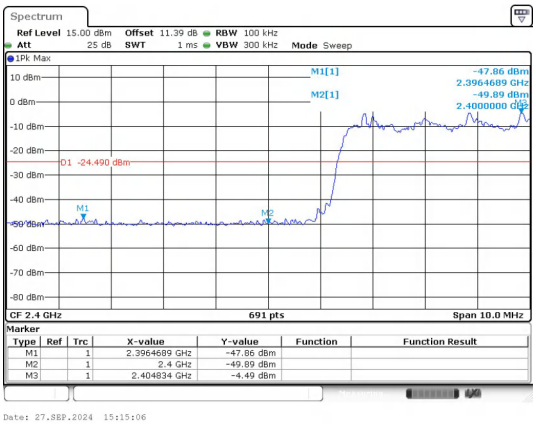
30.0 MHz - 25000.0 MHz

8DPSK_3-DH5_Channel 78



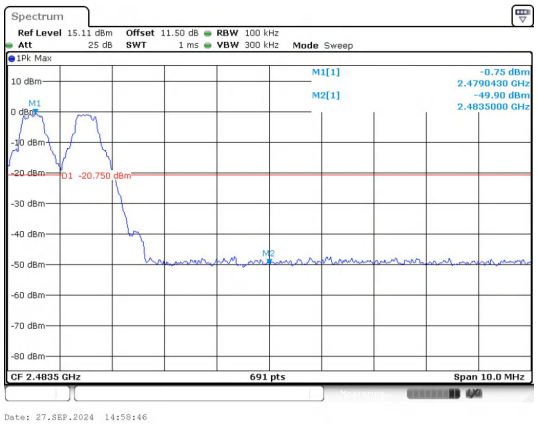
Out Of Band Emission(Left)

GFSK_DH5_Channel Hopping



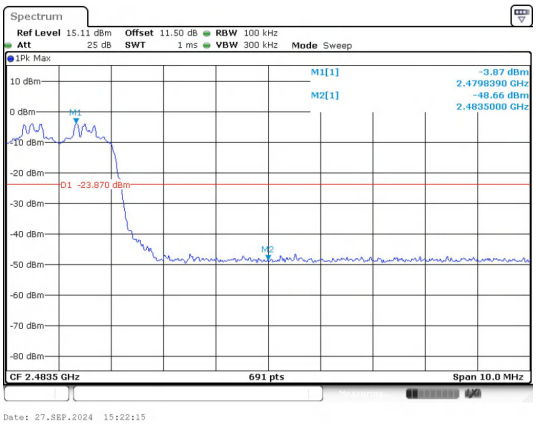
Out Of Band Emission(Left)

π/4DQPSK_2-DH5_Channel Hopping



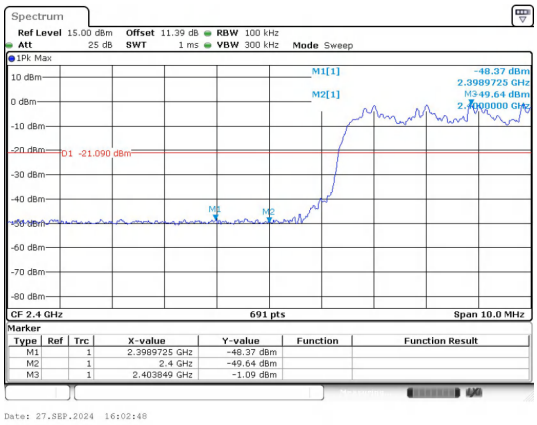
Out Of Band Emission(Right)

GFSK_DH5_Channel Hopping



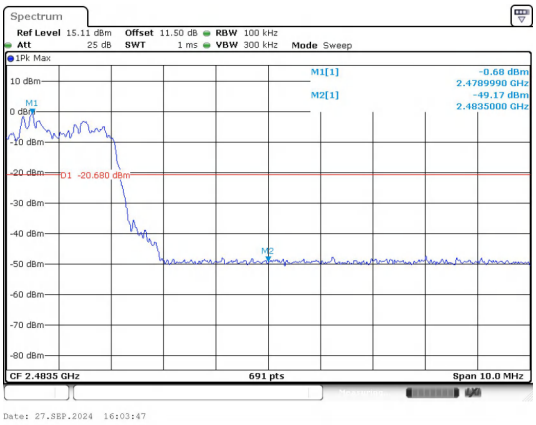
Out Of Band Emission(Right)

π/4DQPSK_2-DH5_Channel Hopping



Out Of Band Emission(Left)

8DPSK_3-DH5_Channel Hopping



Out Of Band Emission(Right)

8DPSK_3-DH5_Channel Hopping