

Appendix Report

Report No.: CISRR25021404805

Test Engineer: Mark Fu

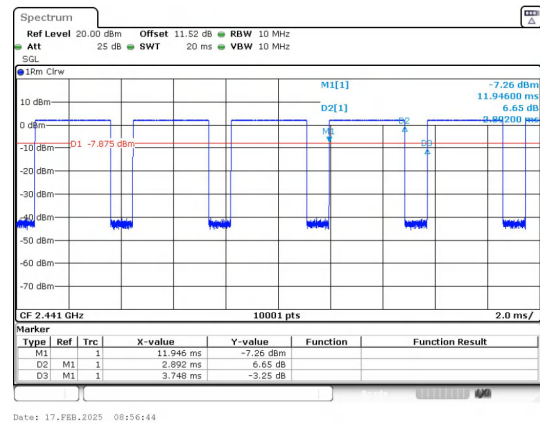
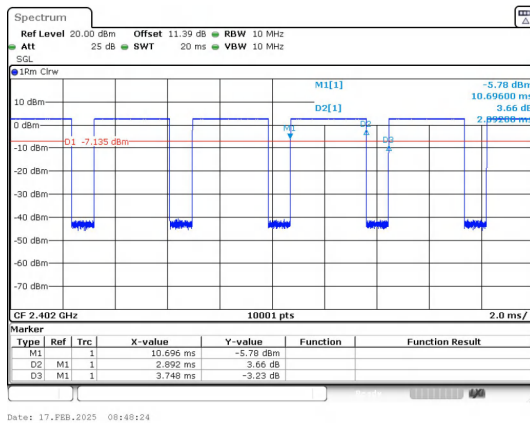
Supervised by: Rory Huang

1) Duty Cycle

Test Result

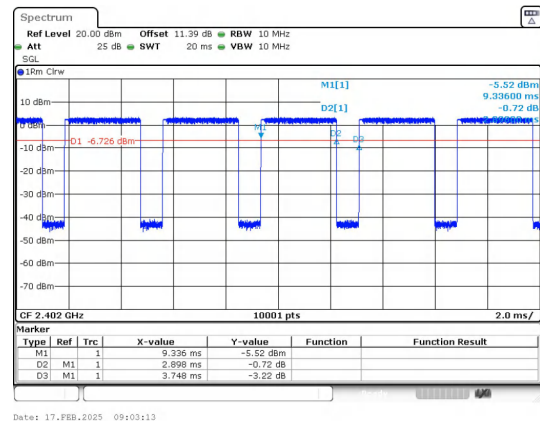
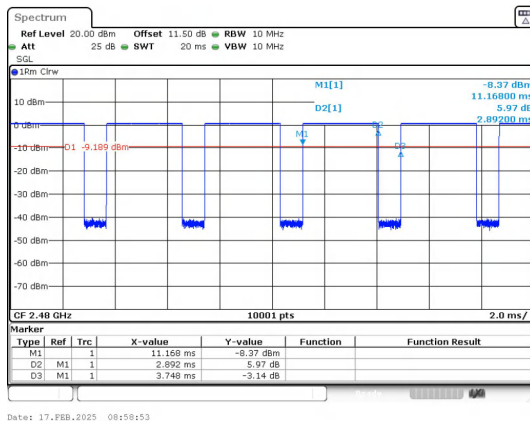
Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.892	3.748	77.16	0.7716	1.1261	0.3458
		39	2.892	3.748	77.16	0.7716	1.1261	0.3458
		78	2.892	3.748	77.16	0.7716	1.1261	0.3458
$\pi/4$ DQPSK	2-DH5	0	2.898	3.748	77.32	0.7732	1.1171	0.3451
		39	2.896	3.748	77.27	0.7727	1.1199	0.3453
		78	2.898	3.748	77.32	0.7732	1.1171	0.3451
8DPSK	3-DH5	0	2.900	3.748	77.37	0.7737	1.1143	0.3448
		39	2.900	3.748	77.37	0.7737	1.1143	0.3448
		78	2.900	3.748	77.37	0.7737	1.1143	0.3448

Test Graphs



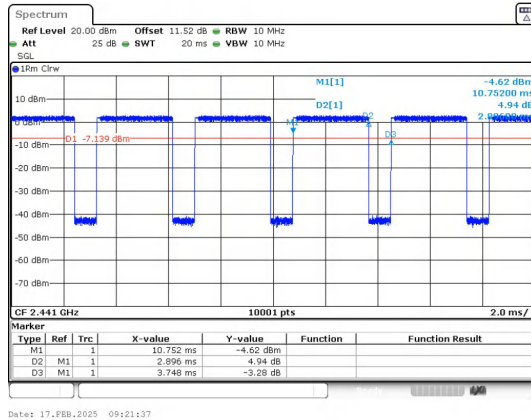
GFSK(DH5)_Channel 0

GFSK(DH5)_Channel 39

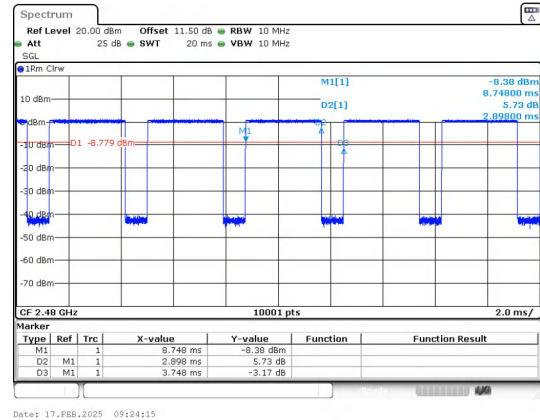


GFSK(DH5)_Channel 78

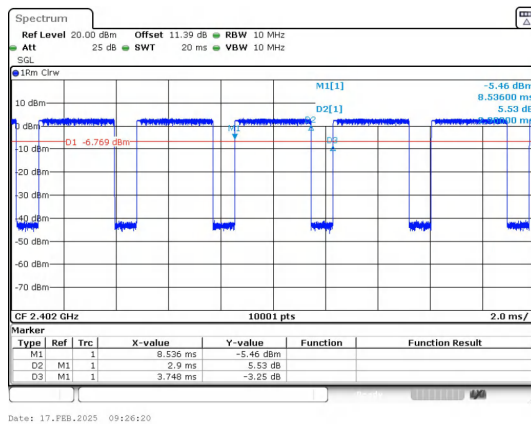
 $\pi/4$ DQPSK(2-DH5)_Channel 0



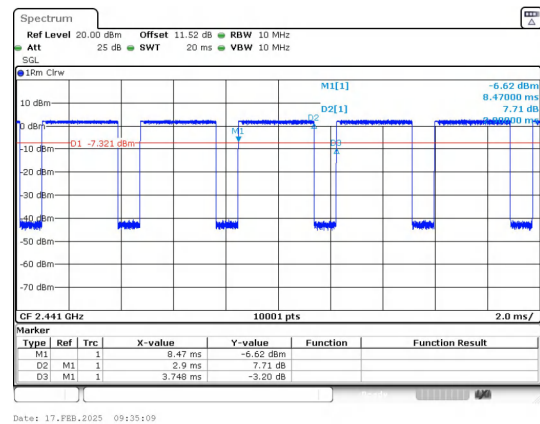
$\pi/4$ DQPSK(2-DH5)_Channel 39



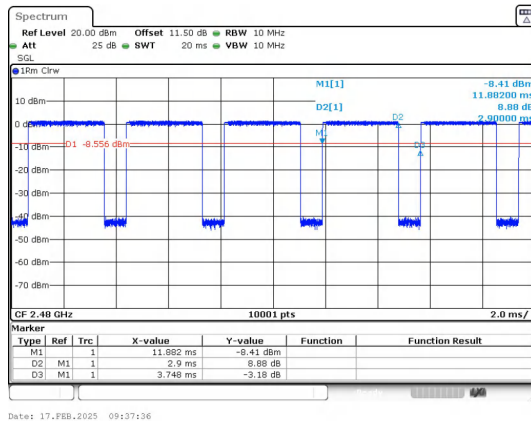
$\pi/4$ DQPSK(2-DH5)_Channel 78



8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39



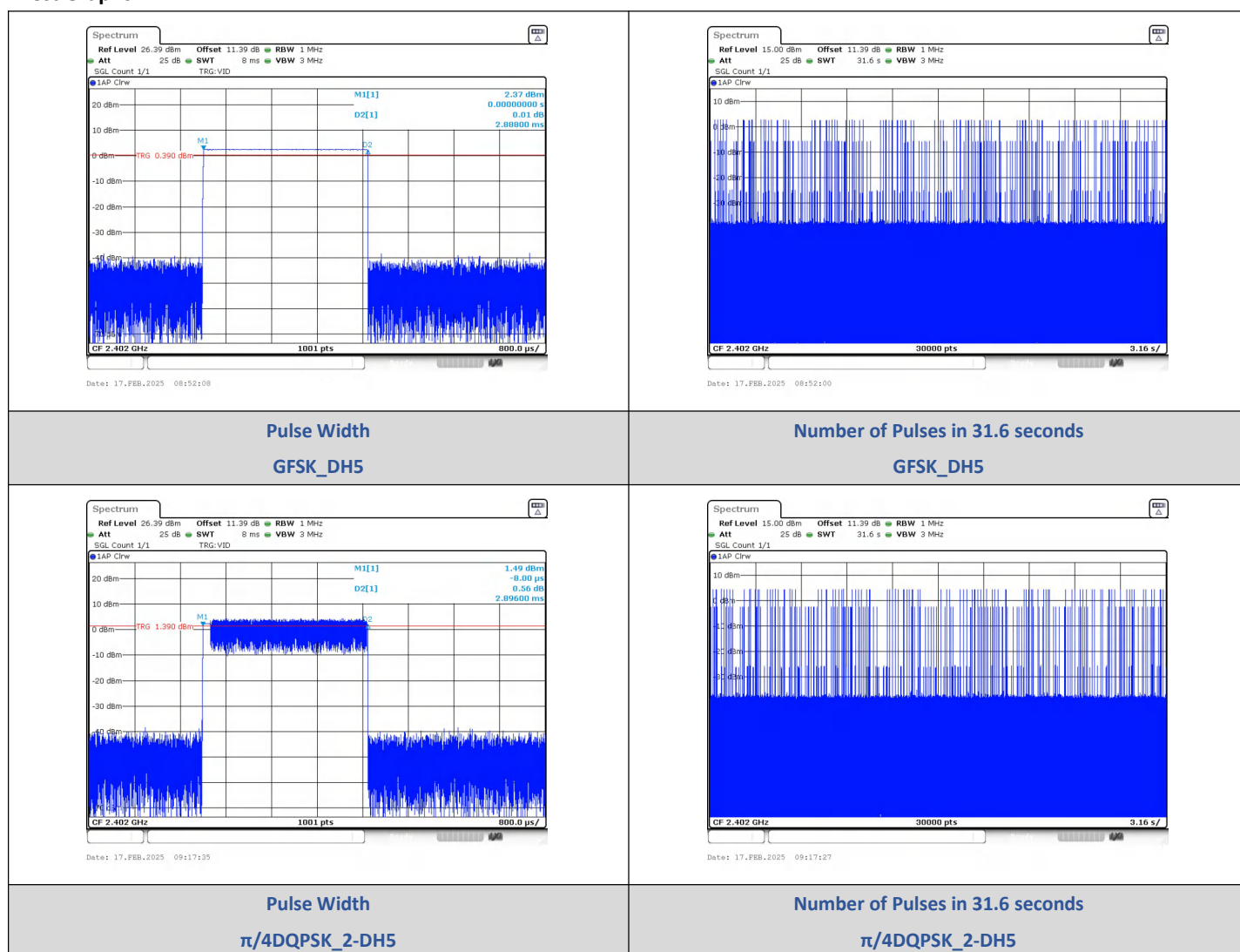
8DPSK(3-DH5)_Channel 78

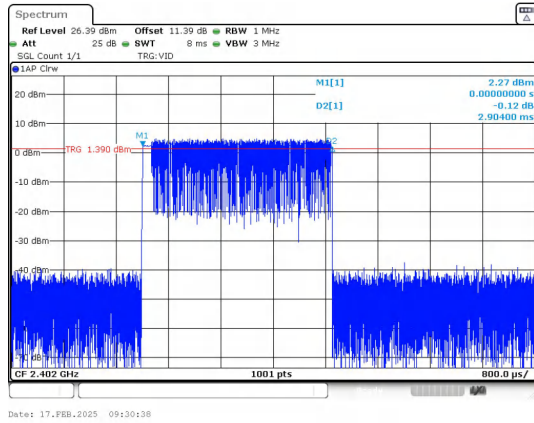
2) Dwell Time

Test Result

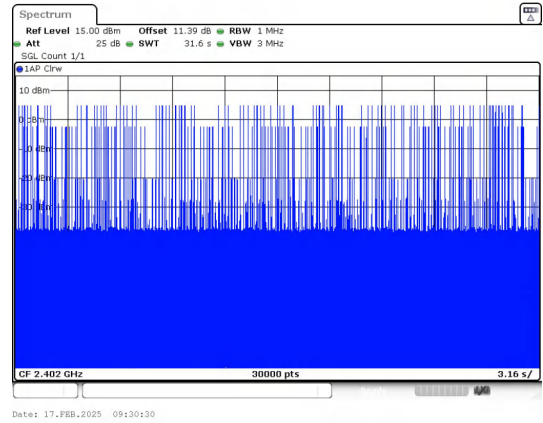
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.888	105	303.24	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.896	105	304.08		PASS
8DPSK	3-DH5		2.904	106	307.82		PASS

Test Graphs





Pulse Width
8DPSK_3-DH5



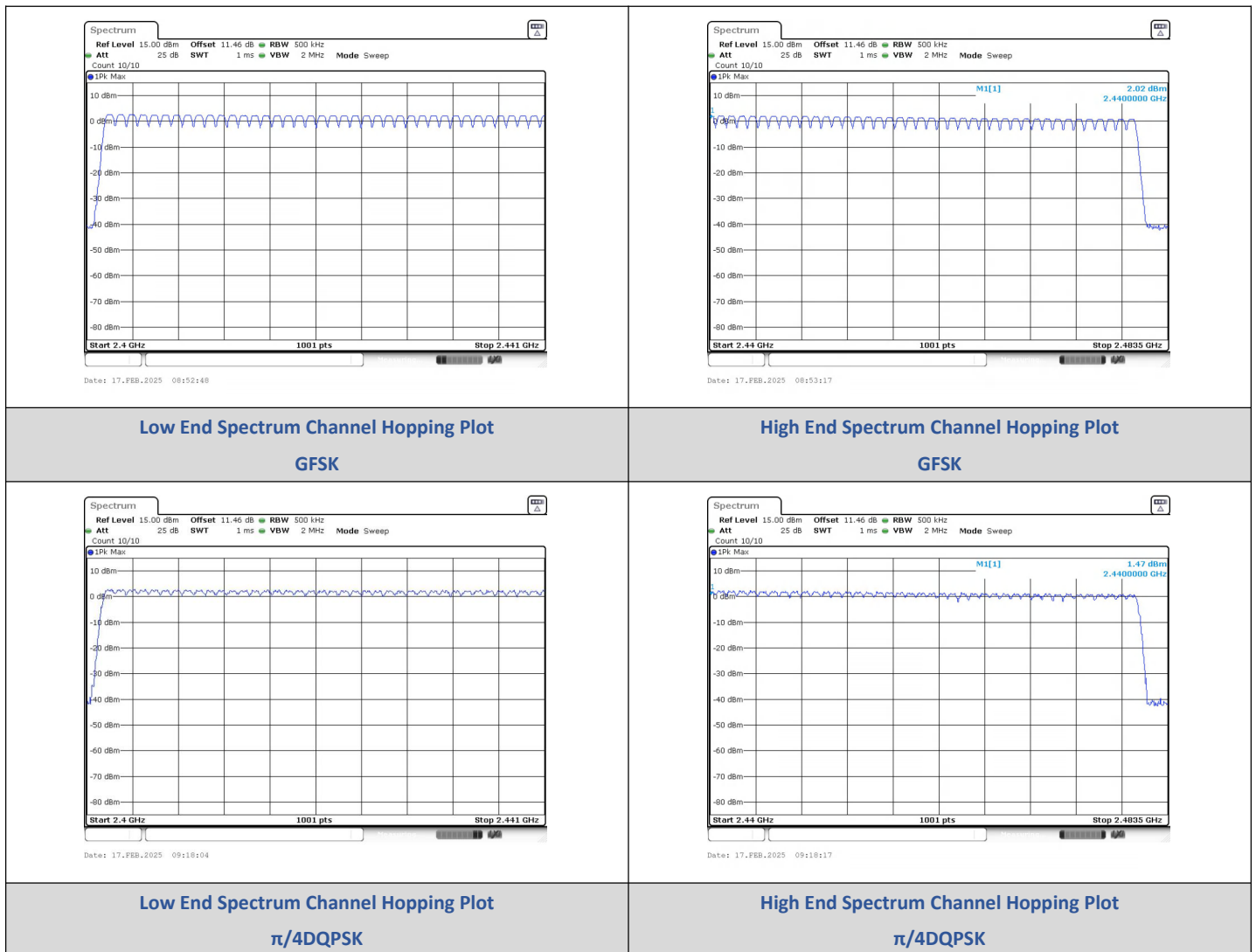
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

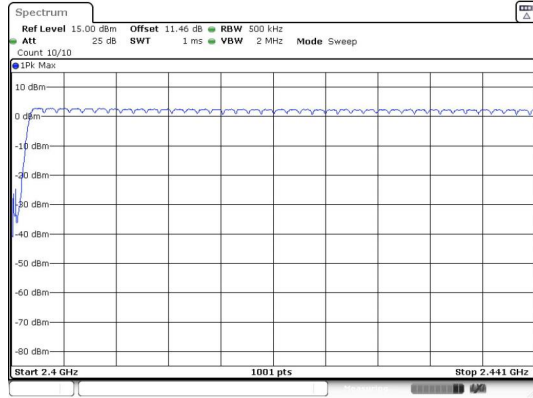
3) Number Of Hopping Channel

Test Result

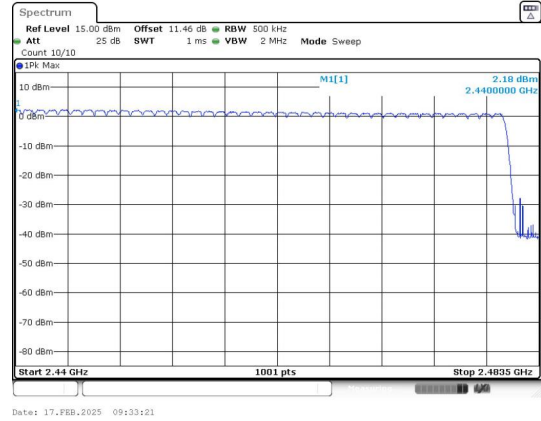
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK



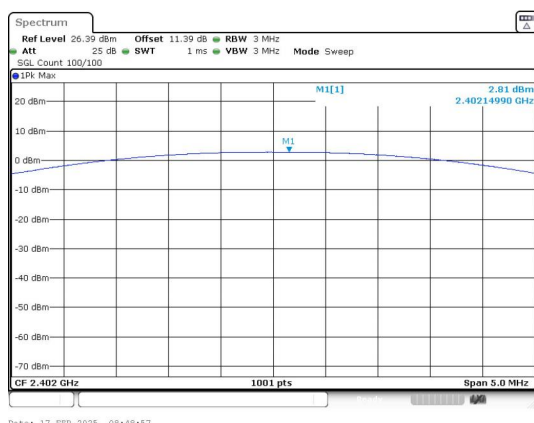
High End Spectrum Channel Hopping Plot
8DPSK

4) Conducted Output Power

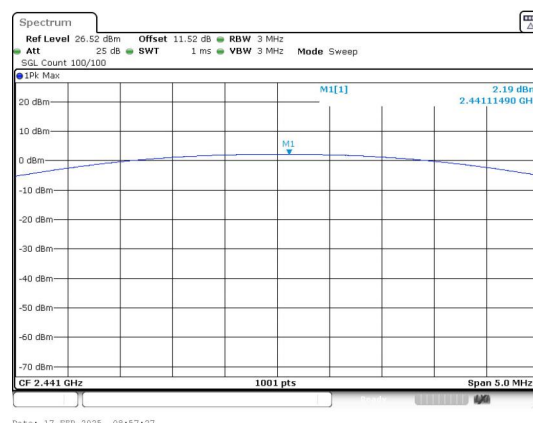
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	2.81	1.91	≤30	PASS
		39	2.19	1.66		PASS
		78	0.84	1.21		PASS
$\pi/4$ DQPSK	2-DH5	0	4.99	3.16	≤20.97	PASS
		39	4.53	2.84		PASS
		78	3.18	2.08		PASS
8DPSK	3-DH5	0	5.37	3.44		PASS
		39	5.05	3.20		PASS
		78	3.67	2.33		PASS

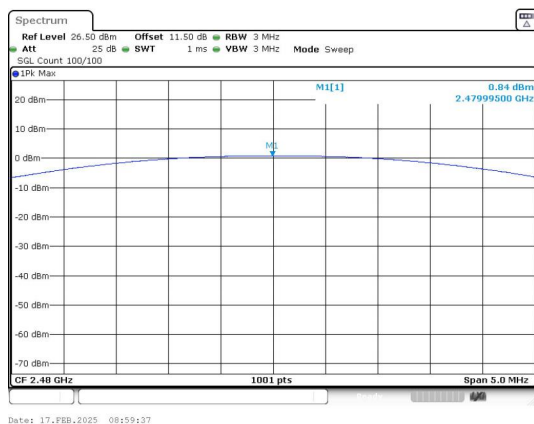
Test Graphs



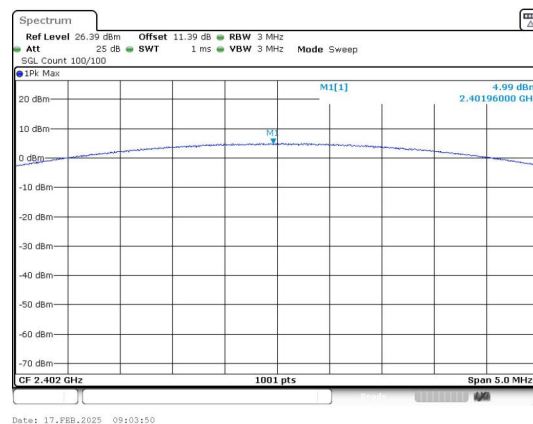
Peak Output Power
GFSK_Channel 0



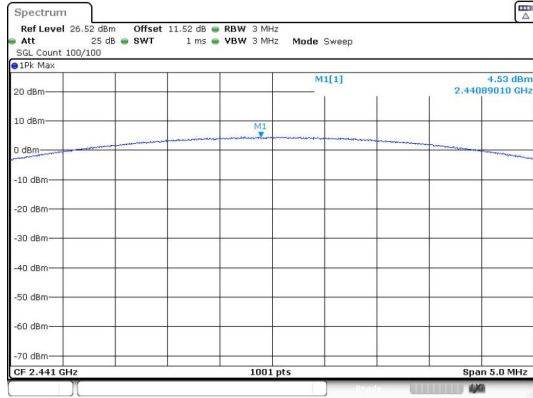
Peak Output Power
GFSK_Channel 39



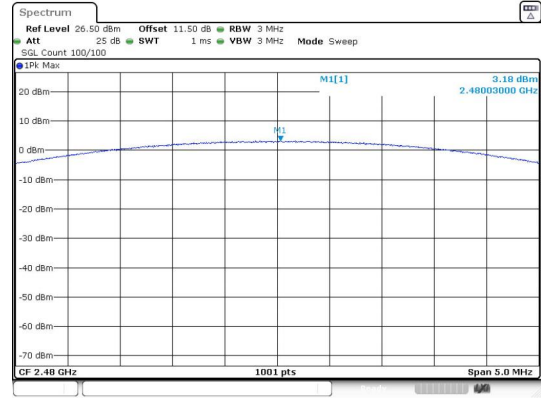
Peak Output Power
GFSK_Channel 78



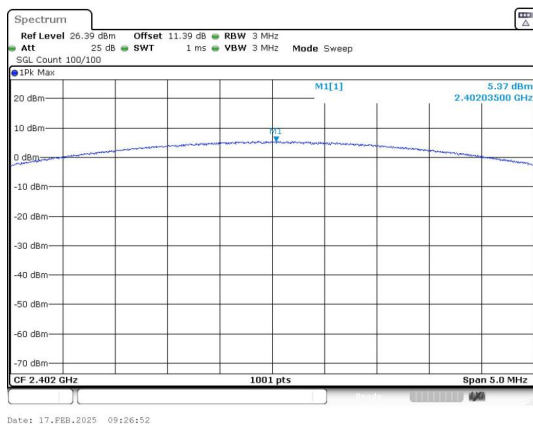
Peak Output Power
 $\pi/4$ DQPSK_Channel 0



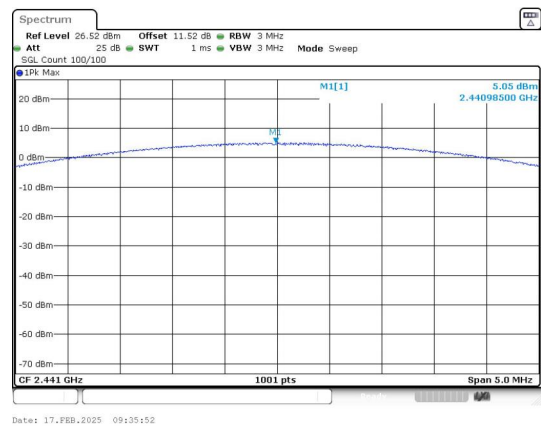
Peak Output Power
 $\pi/4$ DQPSK_Channel 39



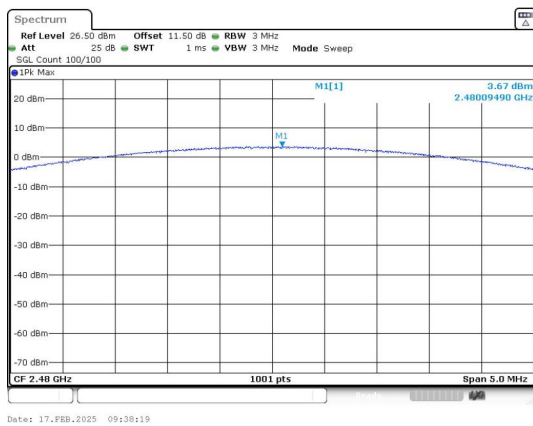
Peak Output Power
 $\pi/4$ DQPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



Peak Output Power
8DPSK_Channel 39



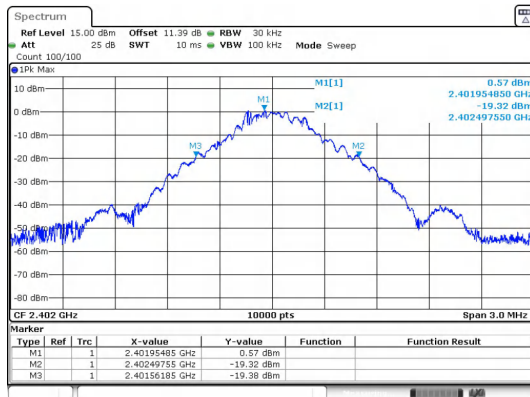
Peak Output Power
8DPSK_Channel 78

5) 20dB Bandwidth

Test Result

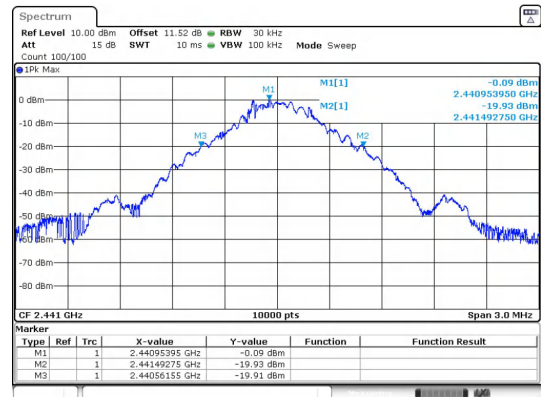
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	0.9400
	39	2441 MHz	0.9300
	78	2480 MHz	0.9400
$\pi/4$ DQPSK	0	2402 MHz	1.280
	39	2441 MHz	1.300
	78	2480 MHz	1.310
8DPSK	0	2402 MHz	1.290
	39	2441 MHz	1.300
	78	2480 MHz	1.280

Test Graphs



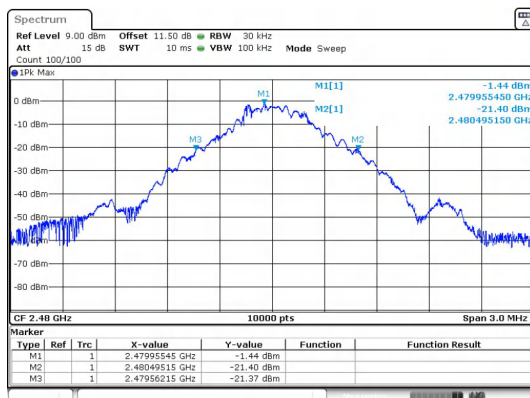
Date: 17.FEB.2025 08:14:43

GFSK_DH5_Channel 0



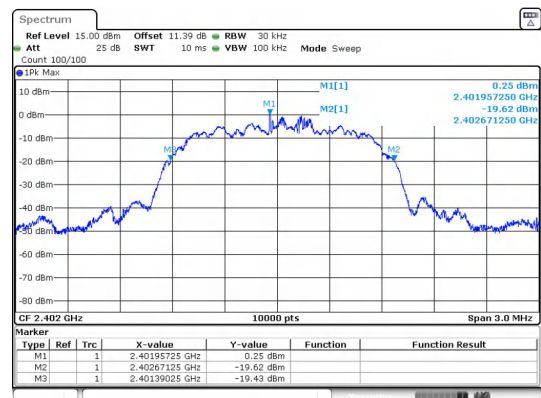
Date: 17.FEB.2025 08:17:10

GFSK_DH5_Channel 39



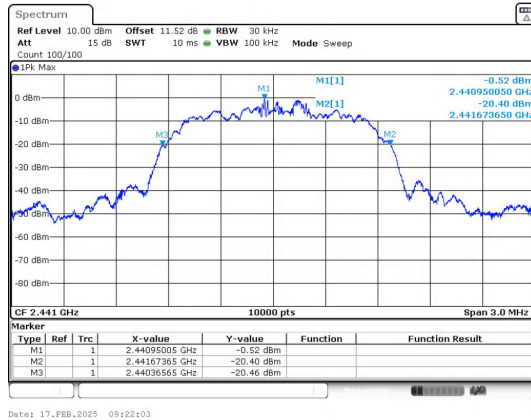
Date: 17.FEB.2025 08:59:19

GFSK_DH5_Channel 78

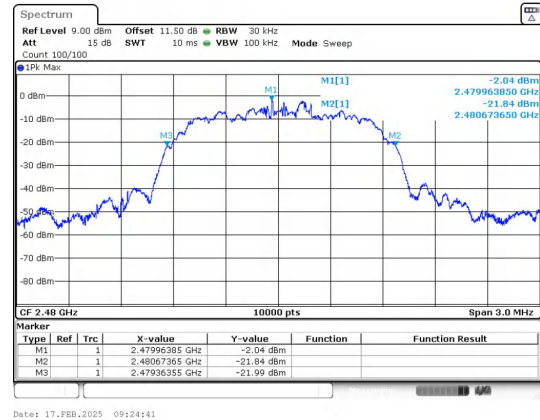


Date: 17.FEB.2025 09:03:32

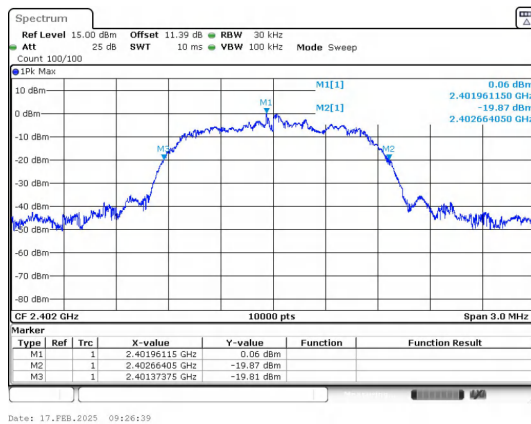
 $\pi/4$ DQPSK_2-DH5_Channel 0



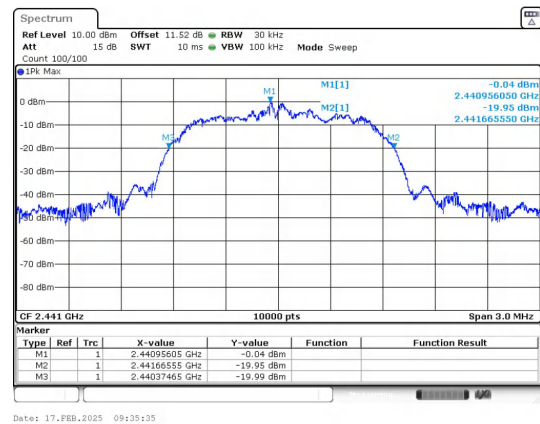
$\pi/4$ DQPSK_2-DH5_Channel 39



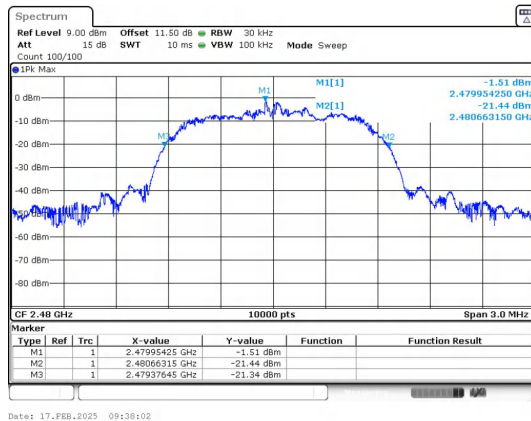
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



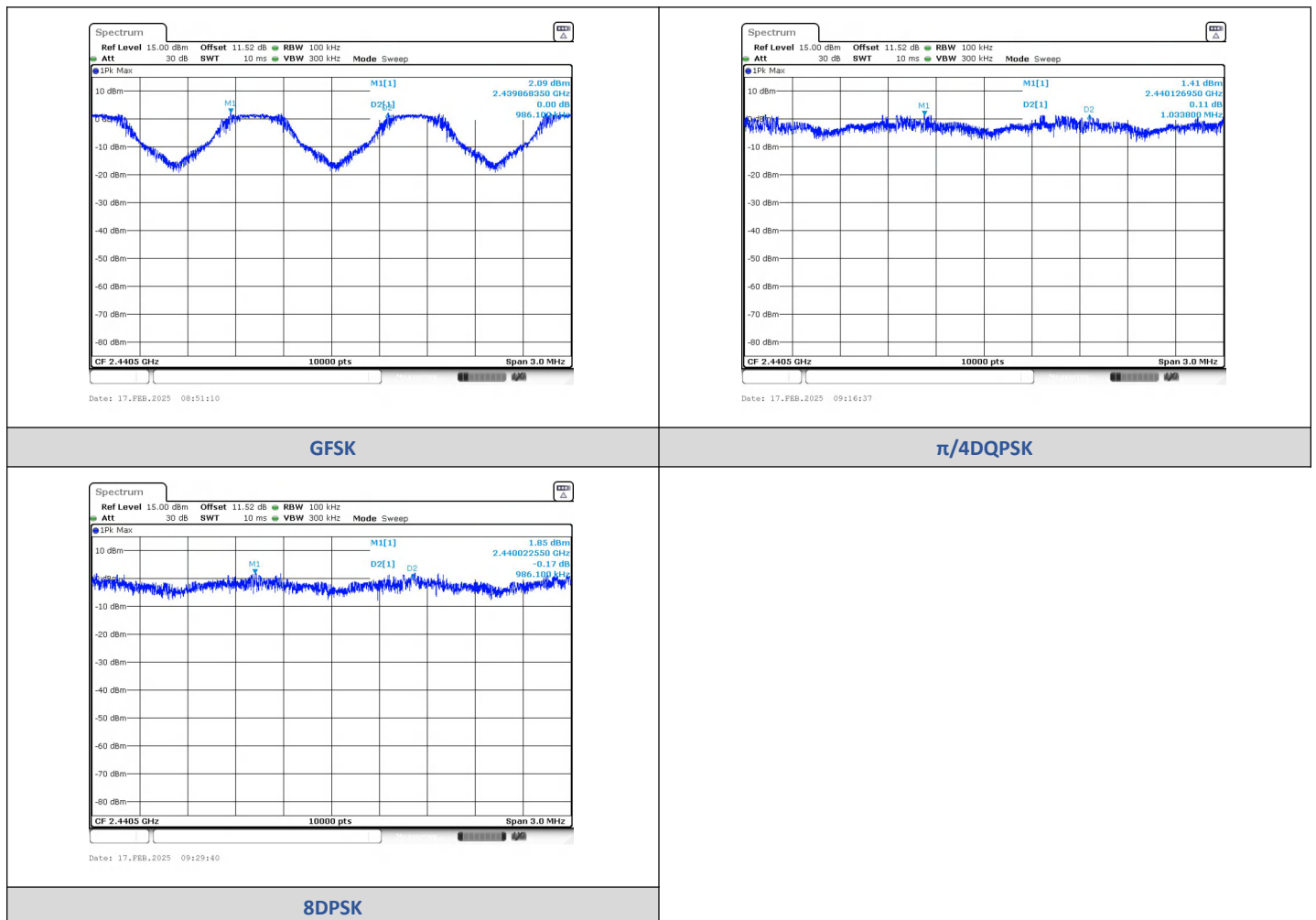
8DPSK_3-DH5_Channel 78

6) Carrier Frequencies Separation

Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2439.8684	2440.8544	0.9861	0.94	PASS
$\pi/4$ DQPSK	2-DH5	2440.1269	2441.1608	1.0338	0.853	PASS
8DPSK	3-DH5	2440.0226	2441.0087	0.9861	0.86	PASS

Test Graphs



7) Conducted Out Of Band Emission

Test Result

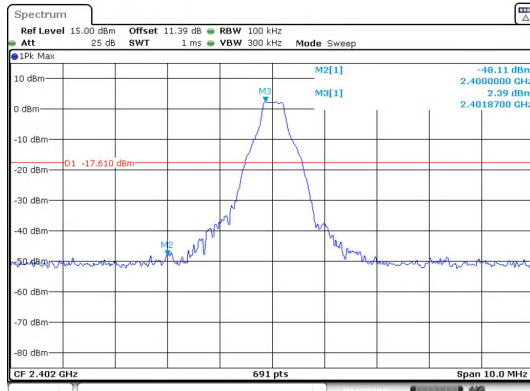
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	1765.83	-41.490	-17.61	-23.880	PASS
			2400.00	-48.110	-17.61	-30.500	PASS
		39	4882.09	-42.761	-18.1	-24.661	PASS
		78	2483.50	-49.210	-19.36	-29.850	PASS
			4959.49	-44.628	-19.36	-25.268	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-47.220	-17.73	-29.490	PASS
			4803.85	-44.267	-17.73	-26.537	PASS
		39	4882.09	-46.547	-18.17	-28.377	PASS
		78	2483.50	-51.080	-19.53	-31.550	PASS
			9920.20	-45.981	-19.53	-26.451	PASS
8DPSK	3-DH5	0	2400.00	-42.790	-17.77	-25.020	PASS
			9608.08	-48.409	-17.77	-30.639	PASS
		39	4882.09	-46.508	-18.12	-28.388	PASS
		78	2483.50	-49.590	-19.48	-30.110	PASS
			4960.33	-44.660	-19.48	-25.180	PASS

Hopping

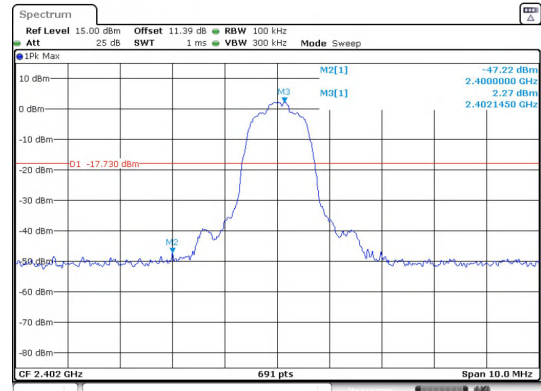
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2400.00	-46.090	-17.6	-28.490	PASS
			2483.50	-49.470	-19.39	-30.080	PASS
π/4DQPSK	2-DH5		2397.74	-47.837	-18.51	-29.327	PASS
			2400.00	-49.150	-18.51	-30.640	PASS
			2483.50	-49.860	-19.64	-30.220	PASS
8DPSK	3-DH5		2396.05	-46.934	-17.78	-29.154	PASS
			2400.00	-50.360	-17.78	-32.580	PASS
			2483.50	-50.060	-19.48	-30.580	PASS

Test Graphs



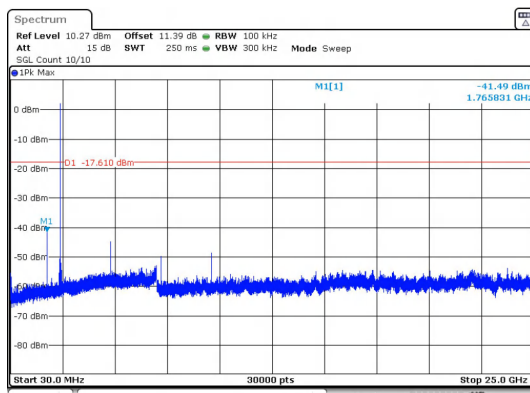
Date: 17.FEB.2025 09:40:06

Out Of Band Emission
GFSK_DH5_Channel 0



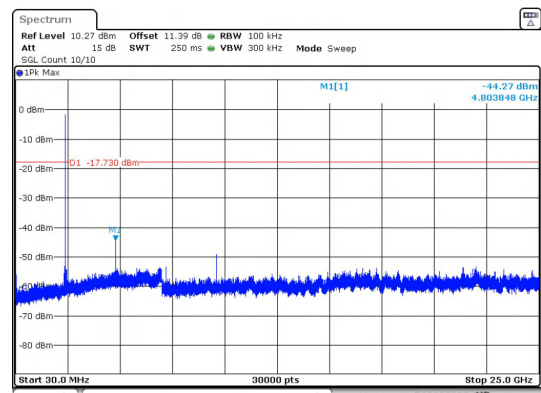
Date: 17.FEB.2025 09:42:43

Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0



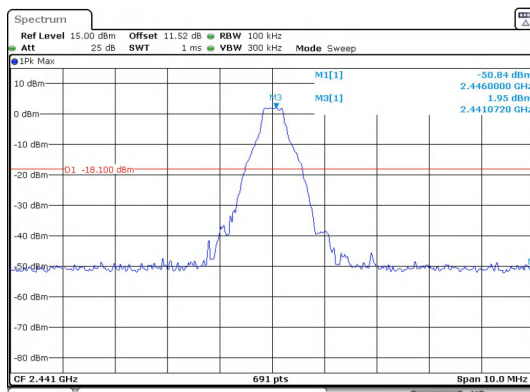
Date: 17.FEB.2025 09:40:28

30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



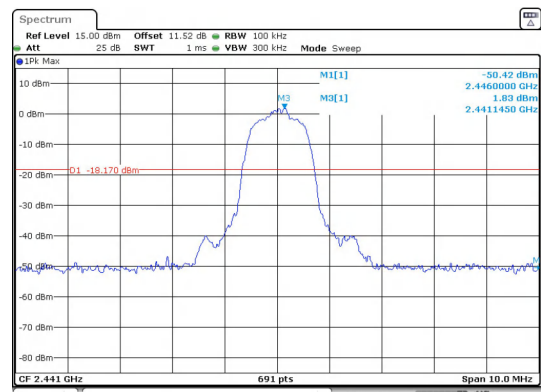
Date: 17.FEB.2025 09:43:05

30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 0



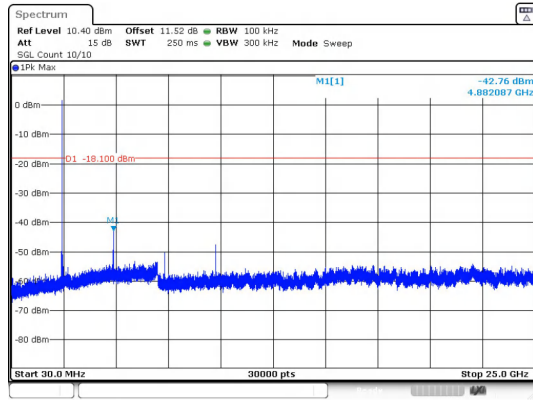
Date: 17.FEB.2025 08:57:45

Out Of Band Emission
GFSK_DH5_Channel 39

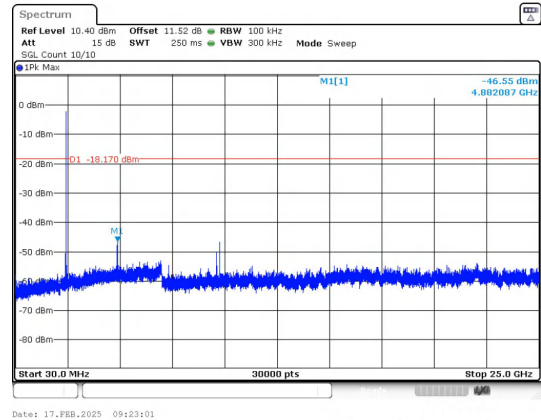


Date: 17.FEB.2025 09:22:38

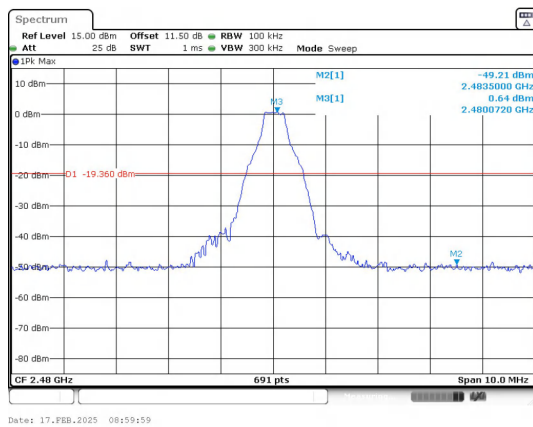
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39



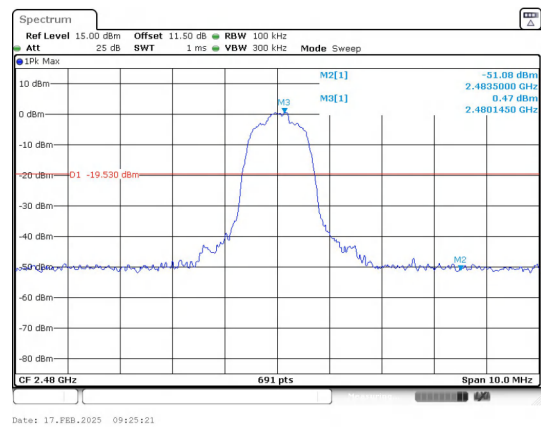
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



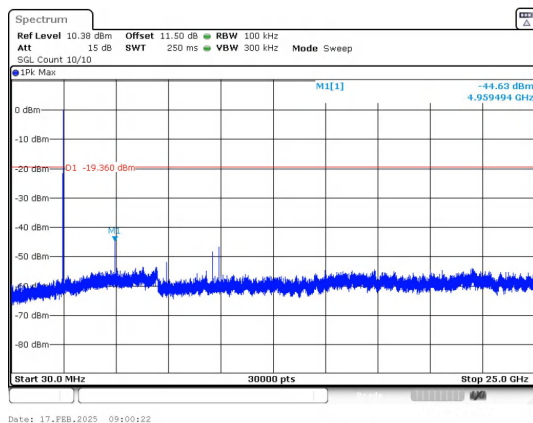
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



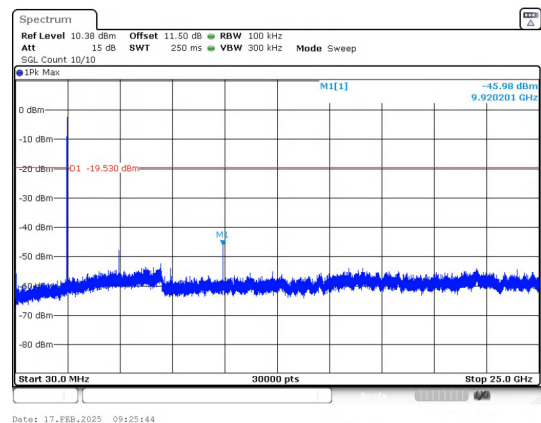
Out Of Band Emission
GFSK_DH5_Channel 78



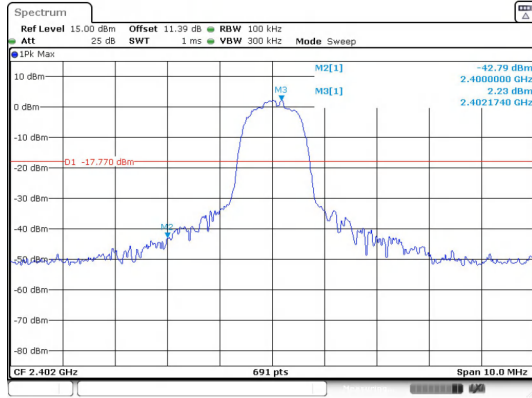
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78



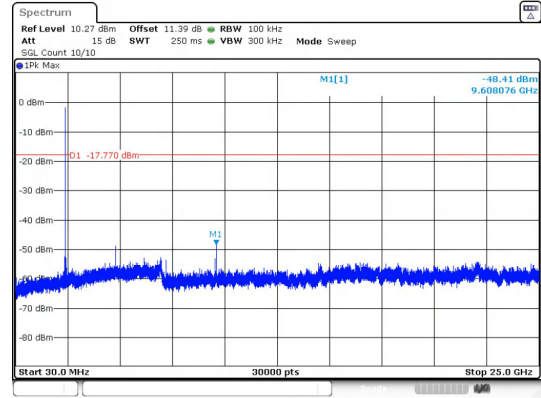
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



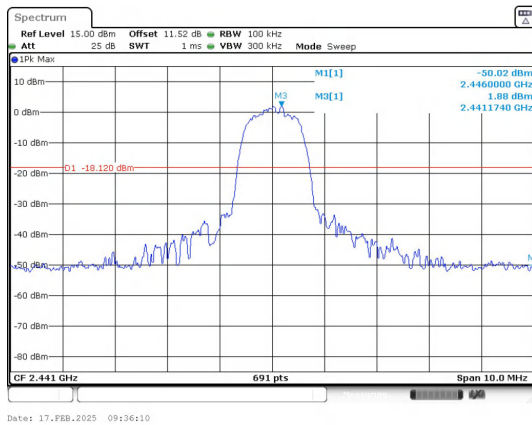
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



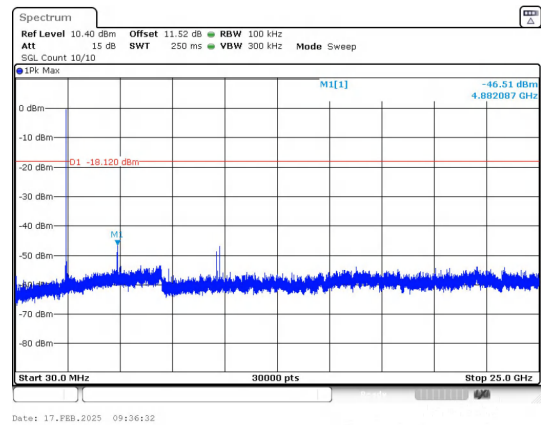
Out Of Band Emission
8DPSK_3-DH5_Channel 0



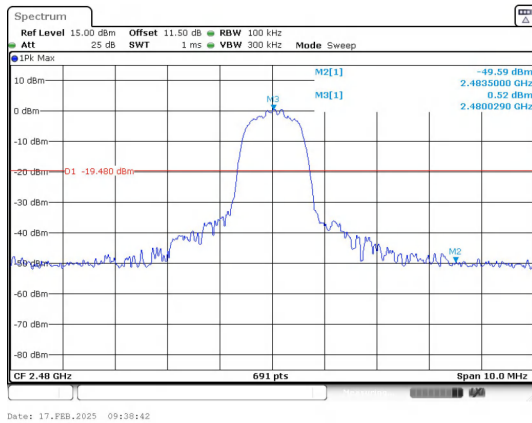
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



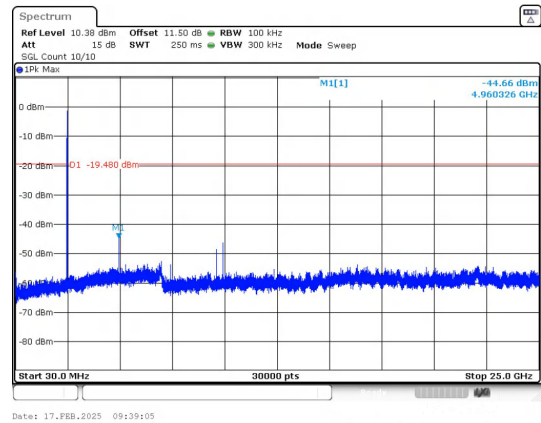
Out Of Band Emission
8DPSK_3-DH5_Channel 39



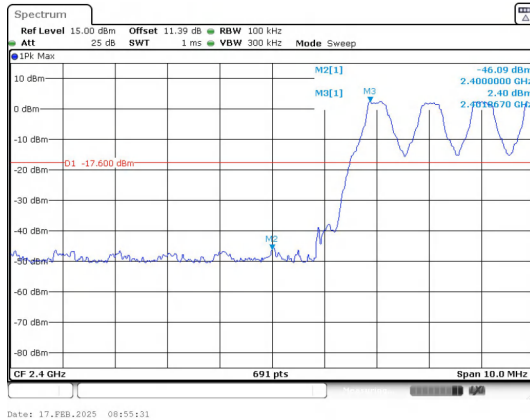
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



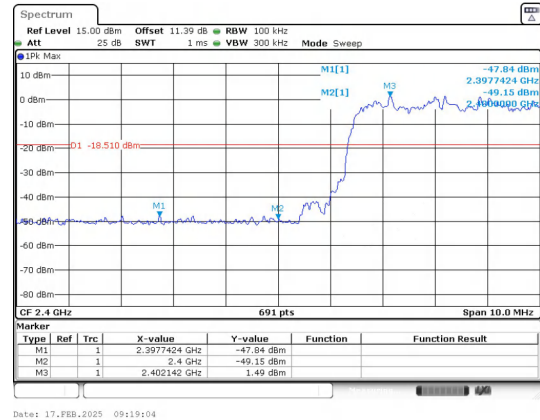
Out Of Band Emission
8DPSK_3-DH5_Channel 78



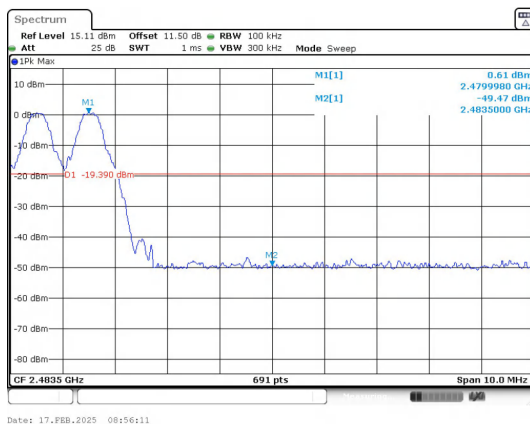
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



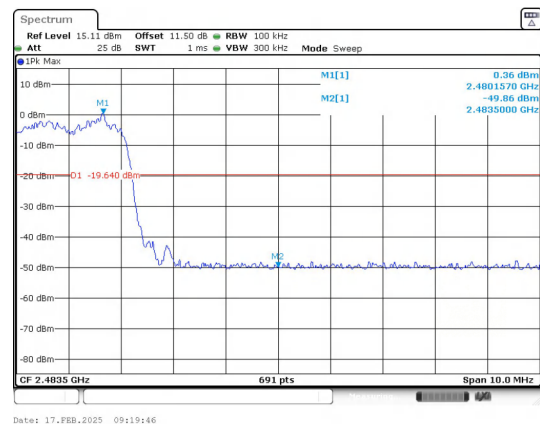
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



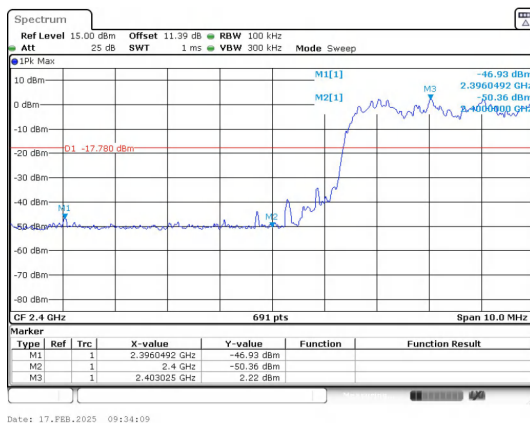
Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



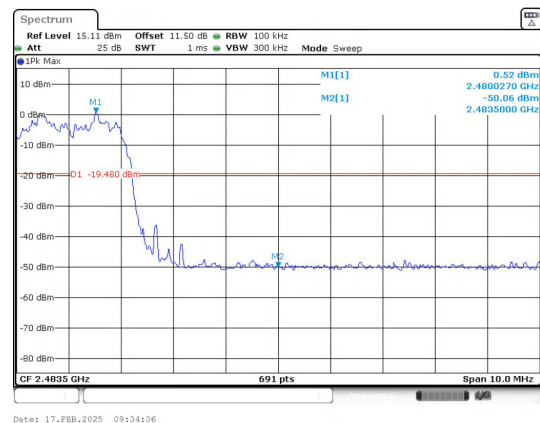
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



Out Of Band Emission(Right)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



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



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

-----End of the report-----