

Appendix Report

Project No.:	CISR250409089
Test Engineer:	James Wang
Supervised by:	Rory Huang

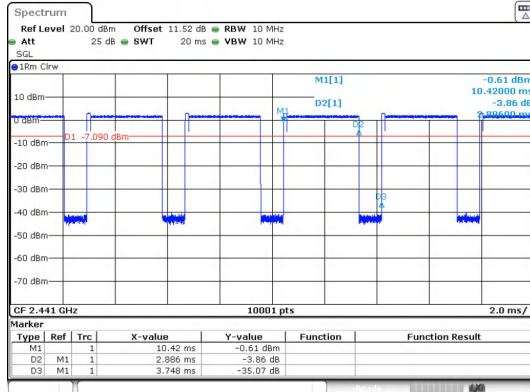
1) Duty Cycle

Test Result

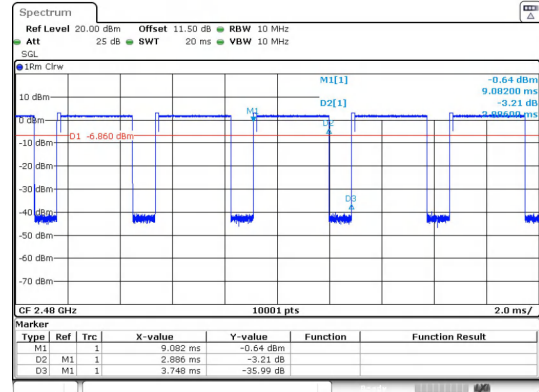
Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.880	3.748	76.84	0.7684	1.1441	0.3472
		39	2.878	3.748	76.79	0.7679	1.147	0.3475
		78	2.878	3.748	76.79	0.7679	1.147	0.3475
$\pi/4$ DQPSK	2-DH5	0	2.884	3.748	76.95	0.7695	1.1379	0.3467
		39	2.886	3.748	77.00	0.7700	1.1351	0.3465
		78	2.886	3.748	77.00	0.7700	1.1351	0.3465
8DPSK	3-DH5	0	2.886	3.748	77.00	0.7700	1.1351	0.3465
		39	2.888	3.748	77.05	0.7705	1.1323	0.3463
		78	2.888	3.748	77.05	0.7705	1.1323	0.3463

Test Graphs

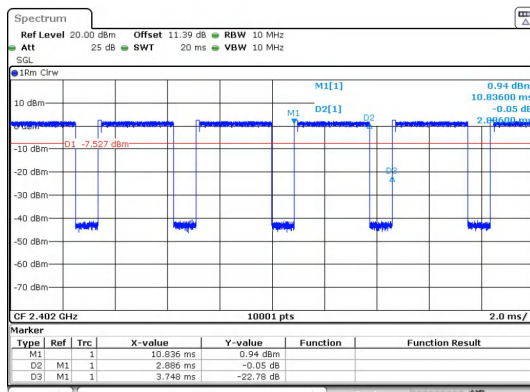




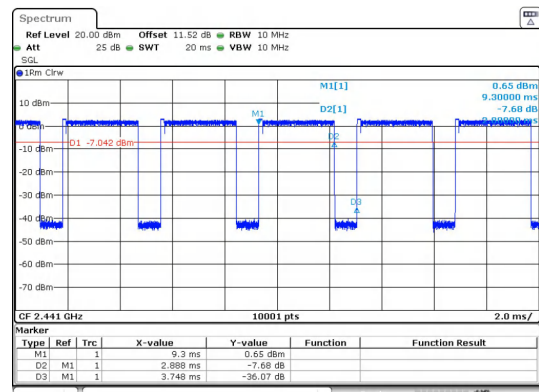
$\pi/4$ DQPSK(2-DH5)_Channel 39



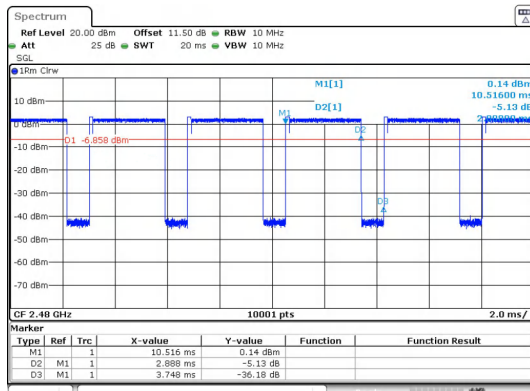
$\pi/4$ DQPSK(2-DH5)_Channel 78



8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39



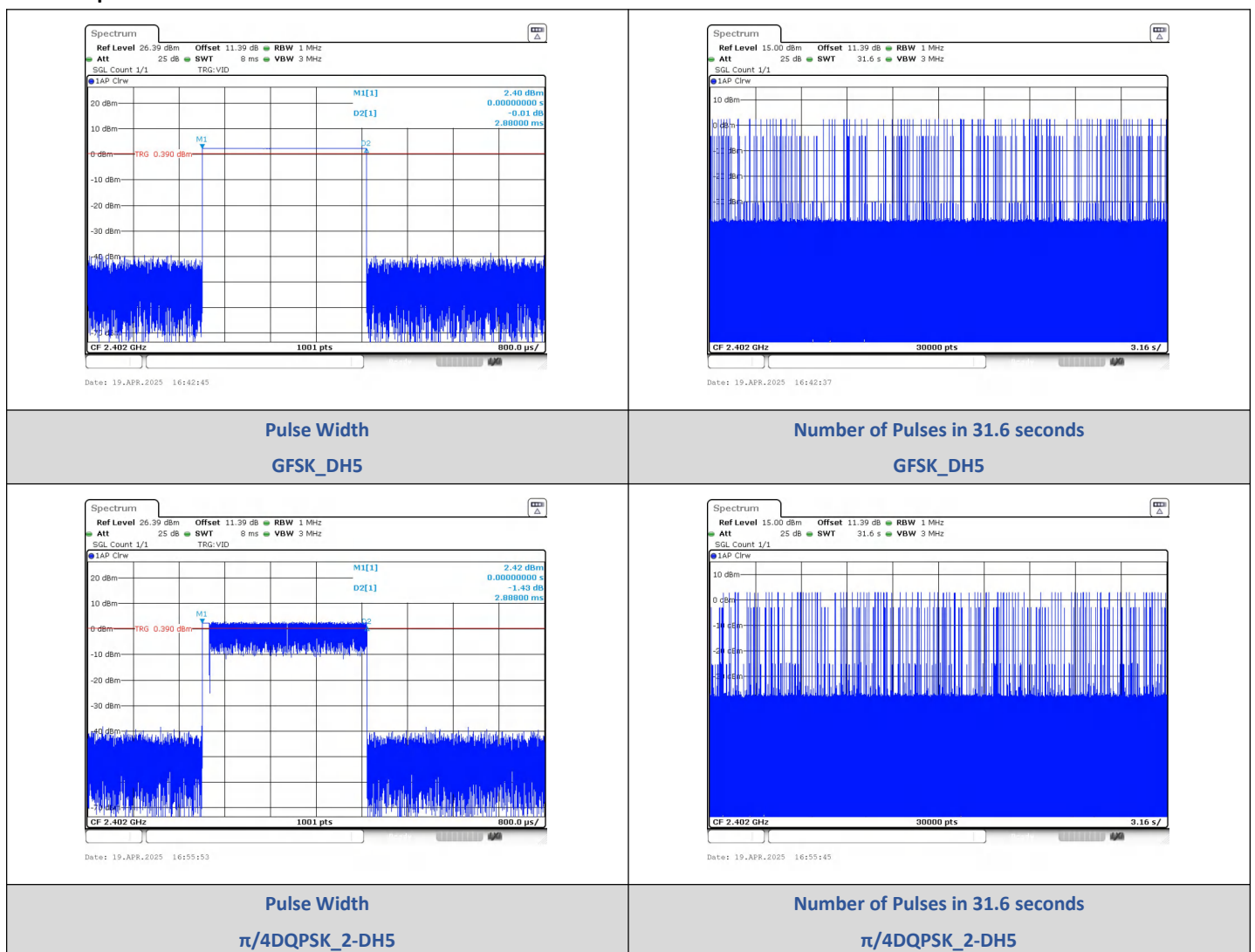
8DPSK(3-DH5)_Channel 78

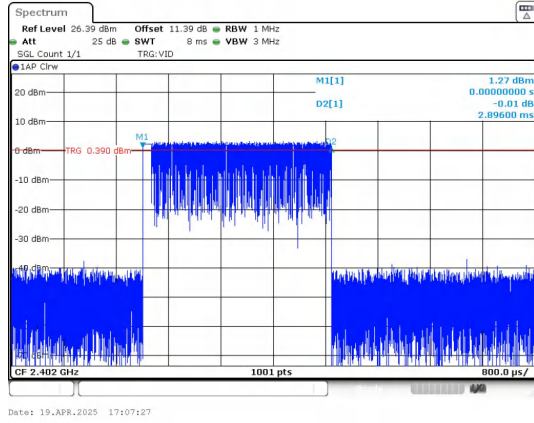
2) Dwell Time

Test Result

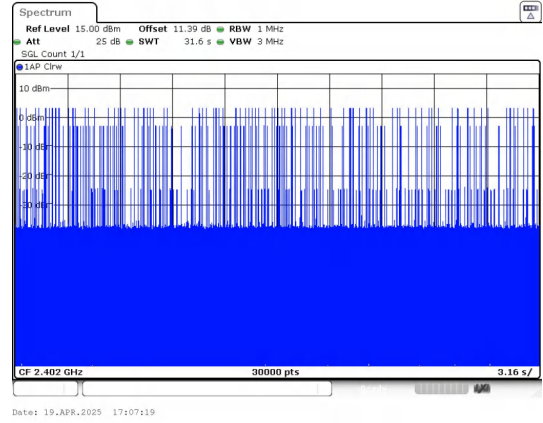
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.880	111	319.68	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.888	110	317.68		PASS
8DPSK	3-DH5		2.896	97	280.91		PASS

Test Graphs





Pulse Width
8DPSK_3-DH5



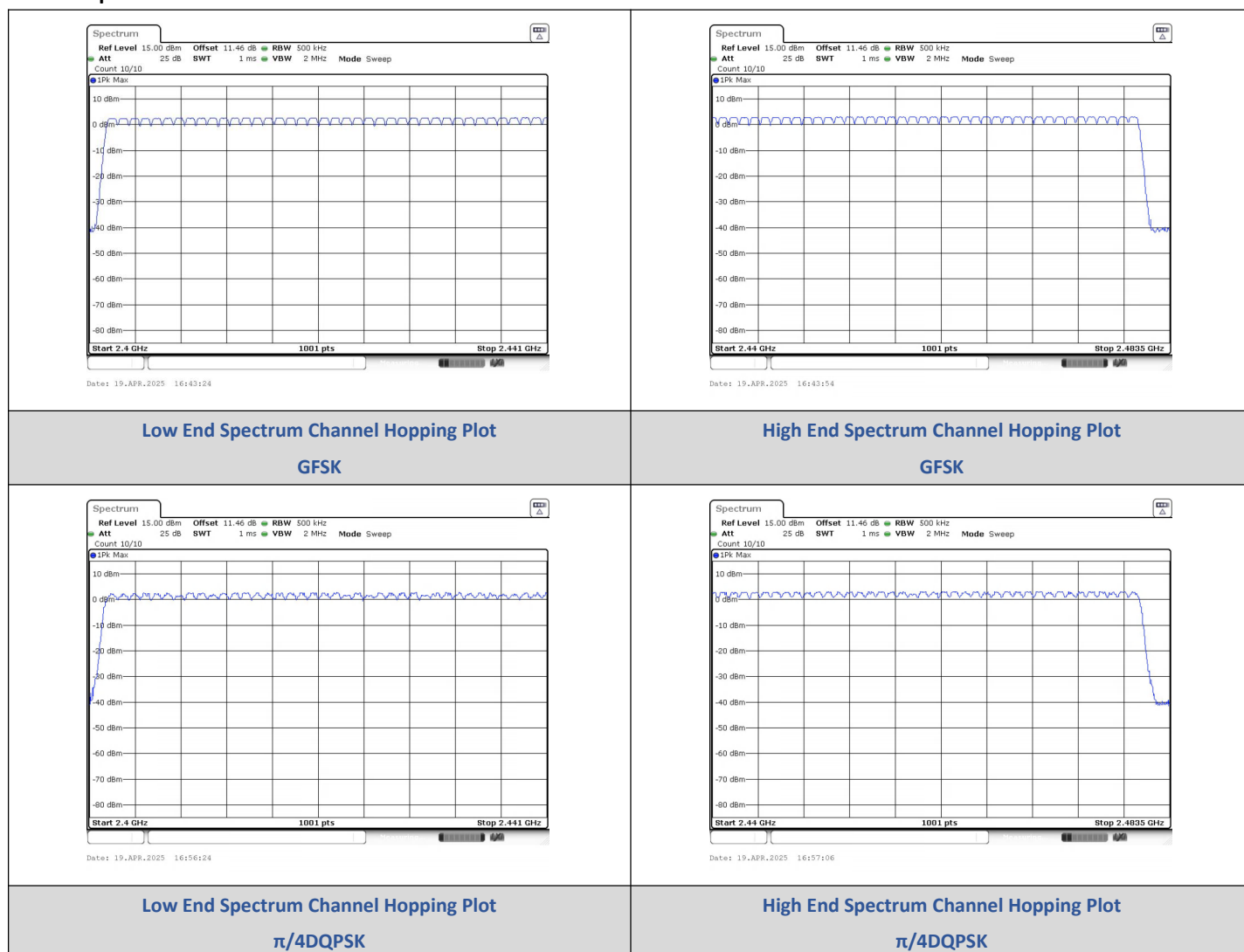
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

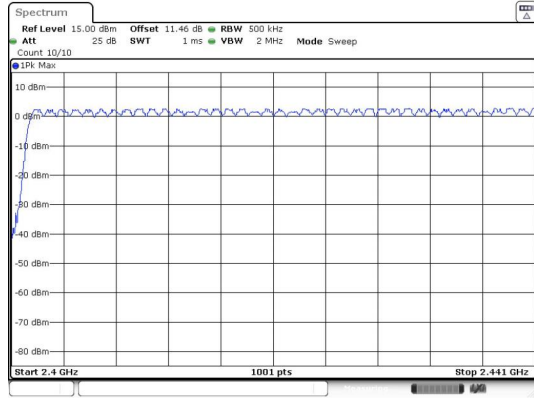
3) Number Of Hopping Channel

Test Result

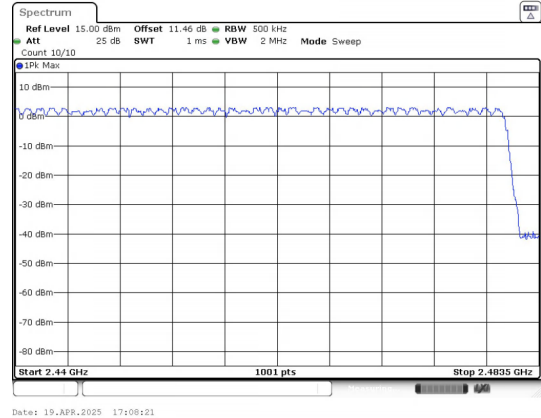
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK



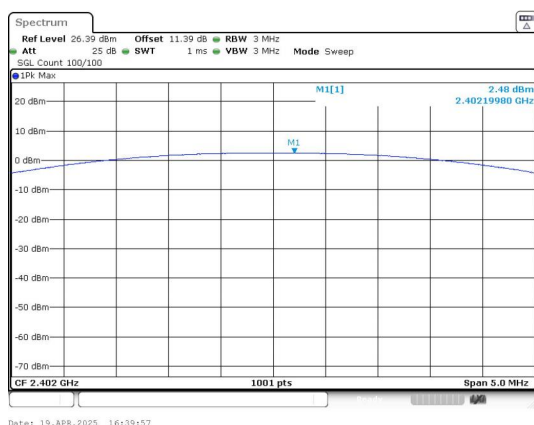
High End Spectrum Channel Hopping Plot
8DPSK

4) Conducted Output Power

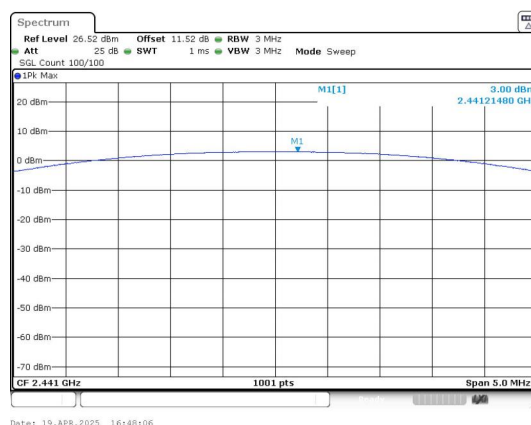
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	2.48	1.77	≤30	PASS
		39	3.00	2.00		PASS
		78	3.15	2.07		PASS
$\pi/4$ DQPSK	2-DH5	0	3.38	2.18	≤20.97	PASS
		39	3.81	2.40		PASS
		78	4.00	2.51		PASS
8DPSK	3-DH5	0	3.77	2.38		PASS
		39	4.22	2.64		PASS
		78	4.37	2.74		PASS

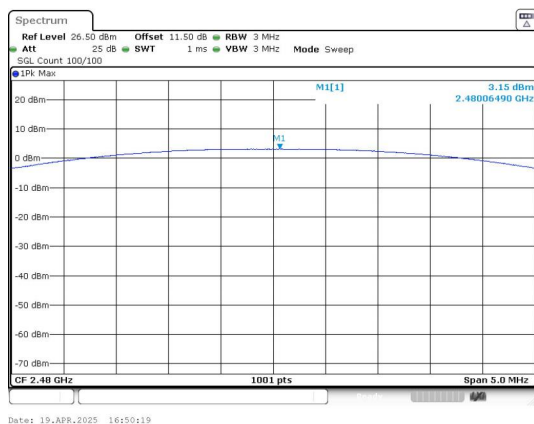
Test Graphs



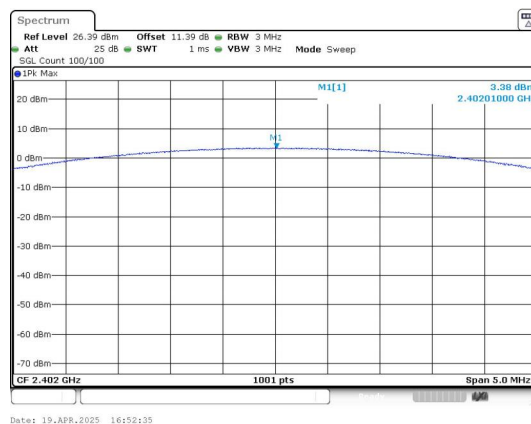
Peak Output Power
GFSK_Channel 0



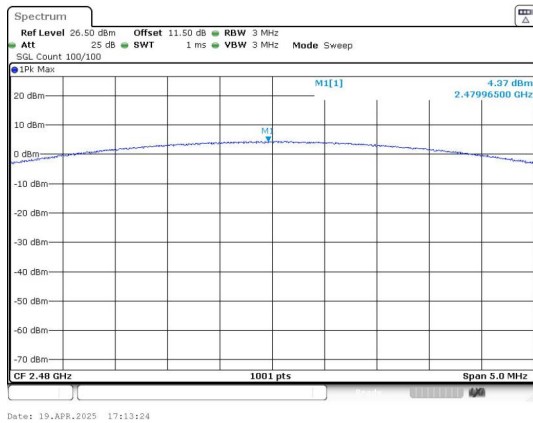
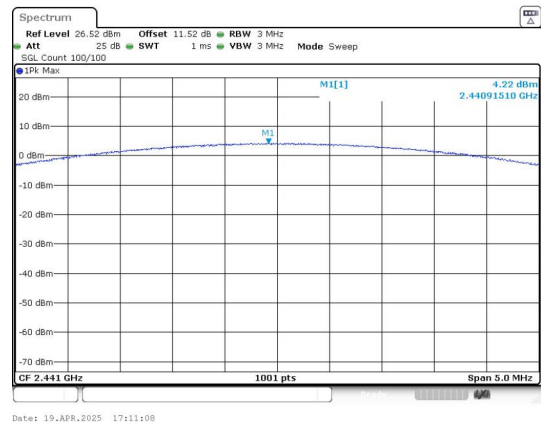
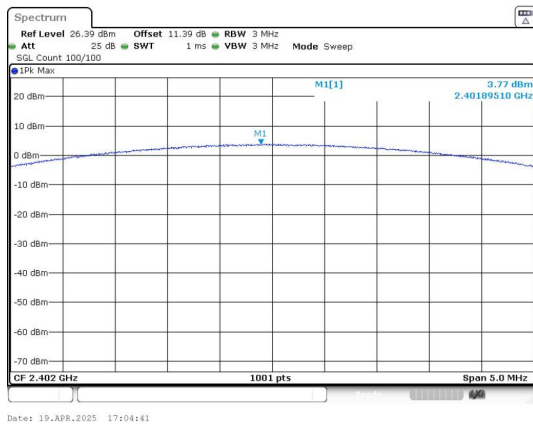
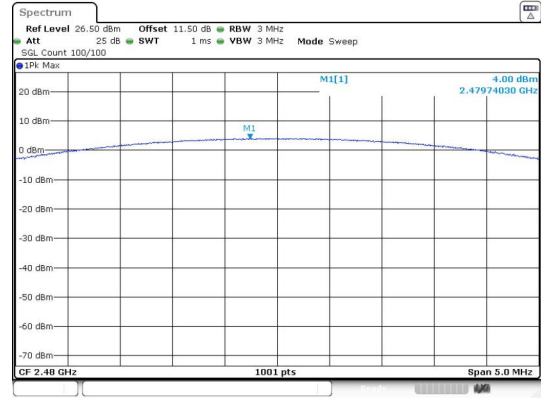
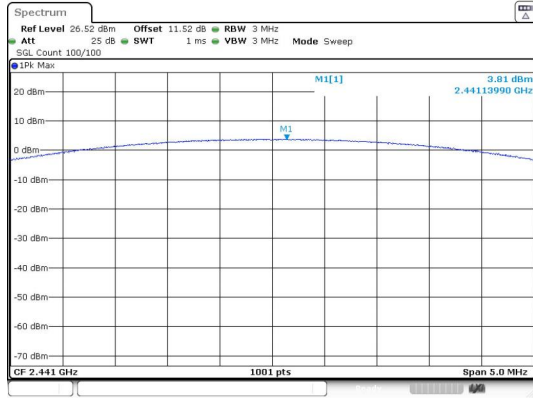
Peak Output Power
GFSK_Channel 39



Peak Output Power
GFSK_Channel 78



Peak Output Power
 $\pi/4$ DQPSK_Channel 0

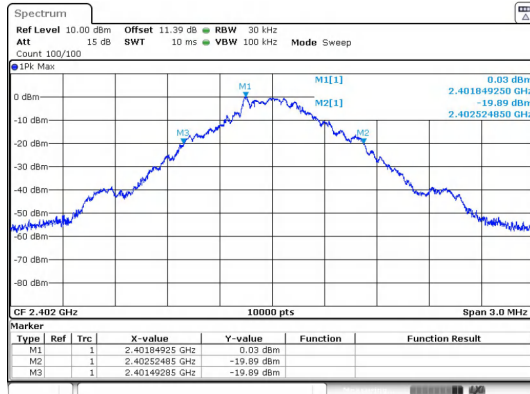


5) 20dB Bandwidth

Test Result

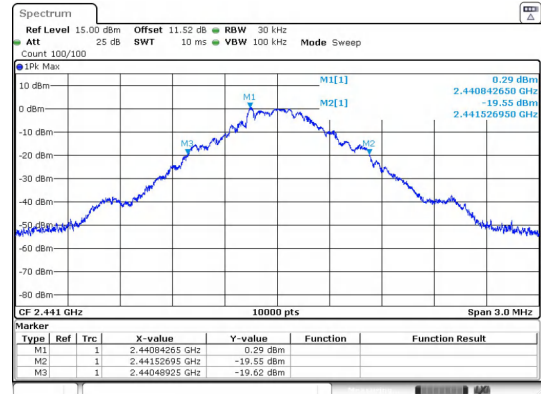
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.03
	39	2441 MHz	1.03
	78	2480 MHz	1.03
$\pi/4$ DQPSK	0	2402 MHz	1.320
	39	2441 MHz	1.330
	78	2480 MHz	1.330
8DPSK	0	2402 MHz	1.290
	39	2441 MHz	1.290
	78	2480 MHz	1.280

Test Graphs



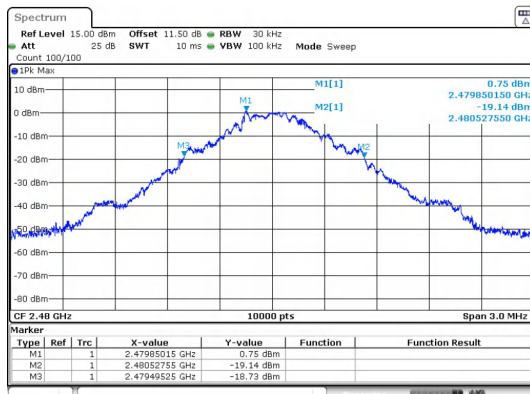
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GFSK_DH5_Channel 0



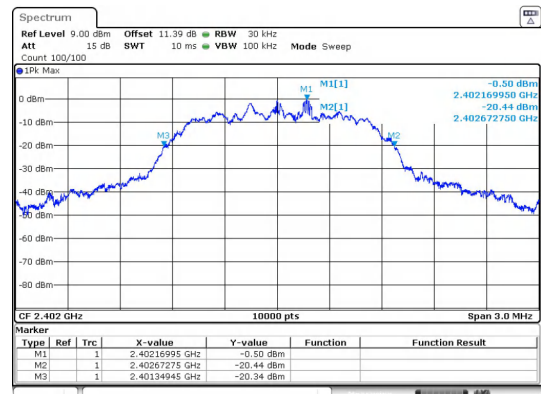
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GFSK_DH5_Channel 39



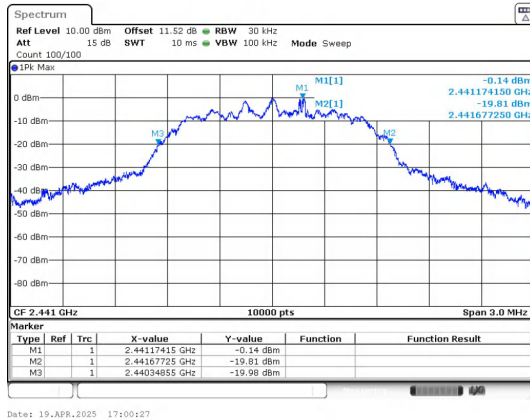
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GFSK_DH5_Channel 78

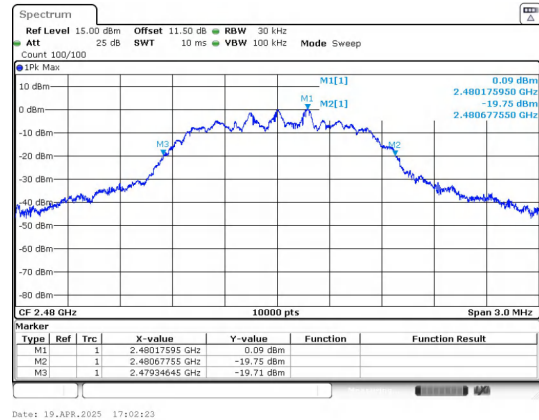


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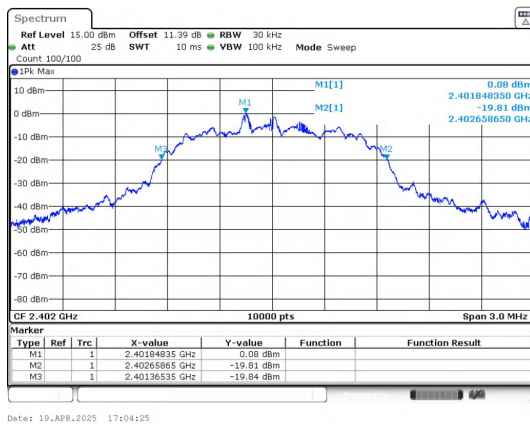
 $\pi/4$ DQPSK_2-DH5_Channel 0



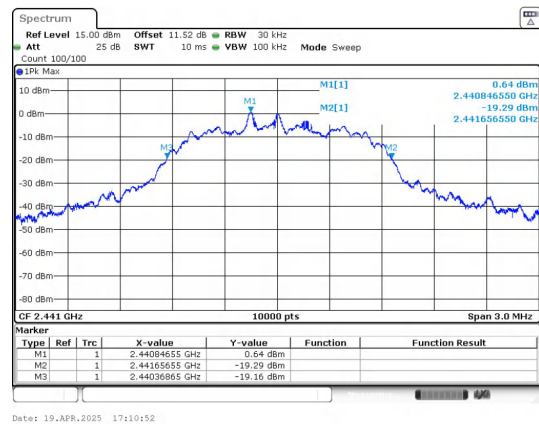
$\pi/4$ DQPSK_2-DH5_Channel 39



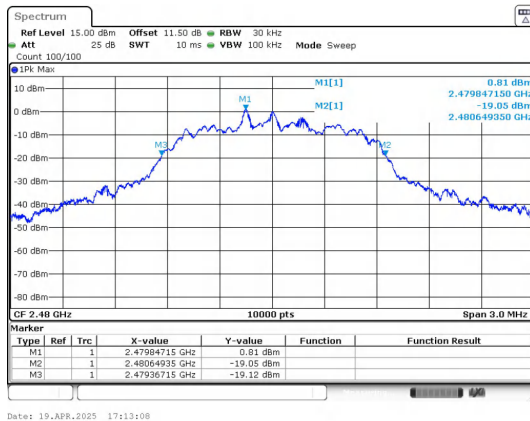
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



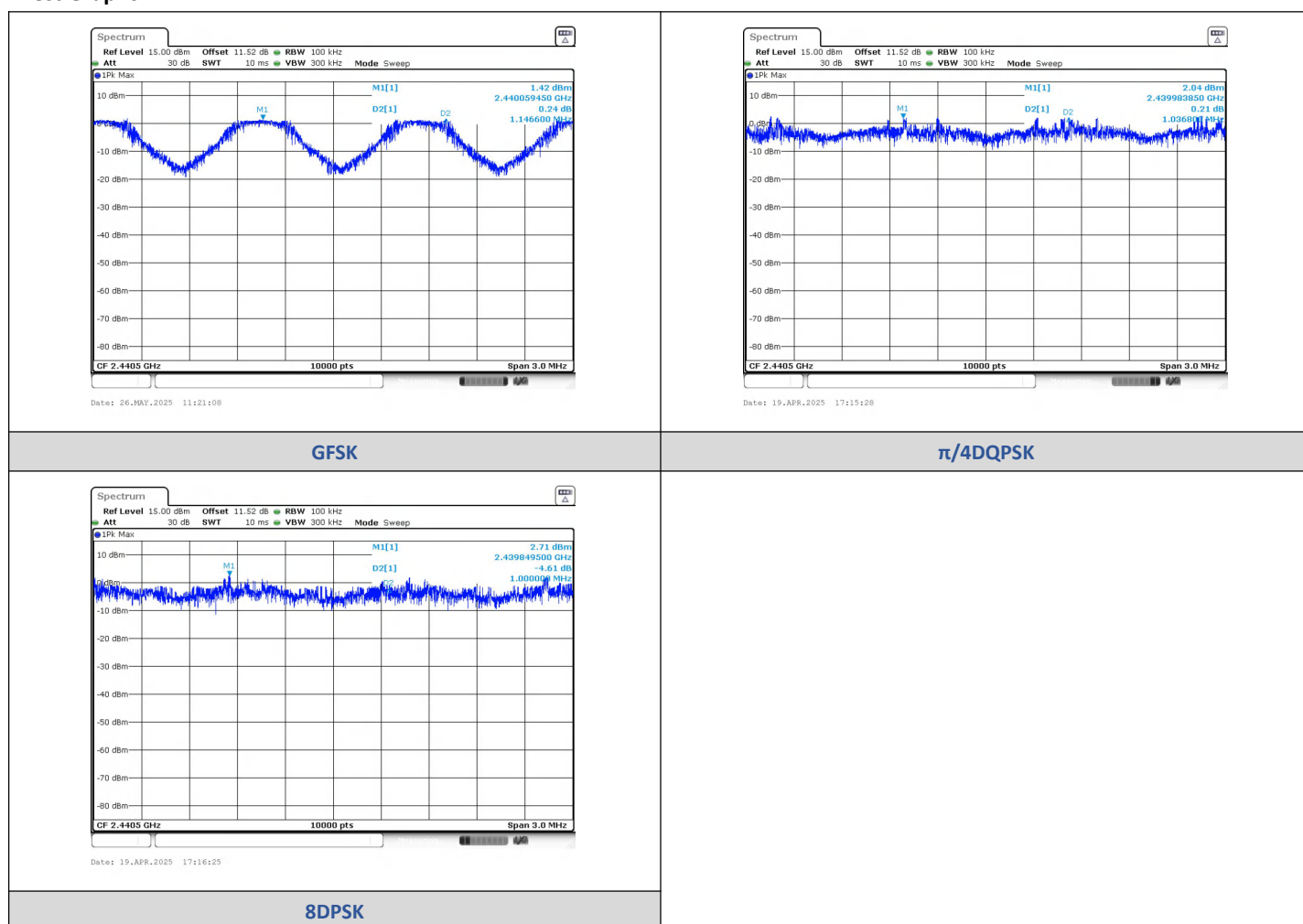
8DPSK_3-DH5_Channel 78

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	2440.0595	2441.206	1.1466	1.04	PASS
$\pi/4$ QPSK	2-DH5	2439.9839	2441.0206	1.0368	0.887	PASS
8DPSK	3-DH5	2439.818	2440.9763	1	0.86	PASS

Test Graphs



7) Conducted Out Of Band Emission

Test Result

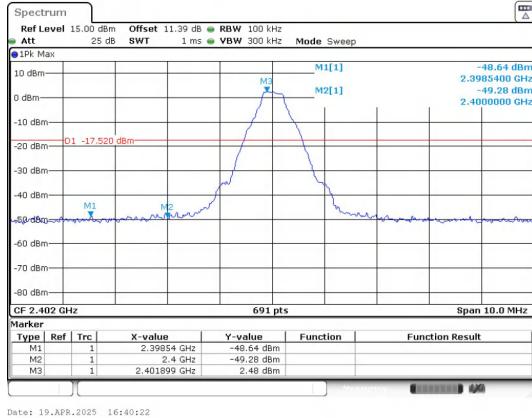
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2398.54	-48.642	-17.52	-31.122	PASS
			2400.00	-49.280	-17.52	-31.760	PASS
			9608.10	-41.885	-17.52	-24.365	PASS
		39	9763.72	-45.588	-17.18	-28.408	PASS
		78	2483.50	-48.760	-16.91	-31.850	PASS
			9920.20	-44.366	-16.91	-27.456	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-47.280	-17.67	-29.610	PASS
			9608.08	-41.613	-17.67	-23.943	PASS
		39	9763.72	-42.740	-17.3	-25.440	PASS
		78	2483.50	-50.820	-17.09	-33.730	PASS
			9920.20	-43.227	-17.09	-26.137	PASS
8DPSK	3-DH5	0	2398.85	-48.481	-17.78	-30.701	PASS
			2400.00	-49.230	-17.78	-31.450	PASS
			9608.10	-41.311	-17.78	-23.531	PASS
		39	9763.72	-42.387	-17.23	-25.157	PASS
		78	2483.50	-49.580	-17.08	-32.500	PASS
			9920.20	-43.958	-17.08	-26.878	PASS

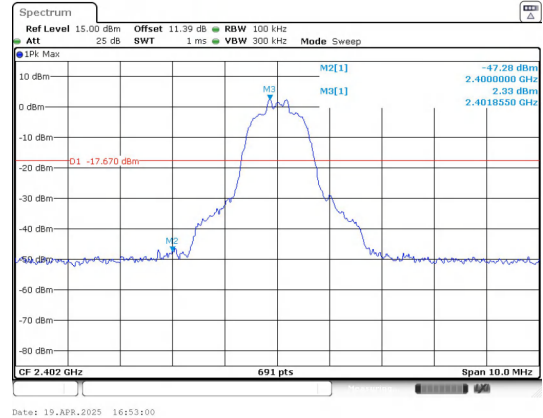
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2396.64	-47.922	-17.56	-30.362	PASS
			2400.00	-48.580	-17.56	-31.020	PASS
			2483.50	-49.210	-17.51	-31.700	PASS
$\pi/4$ DQPSK	2-DH5		2398.26	-48.019	-17.64	-30.379	PASS
			2400.00	-49.570	-17.64	-31.930	PASS
			2483.50	-49.830	-17.35	-32.480	PASS
8DPSK	3-DH5		2396.73	-48.626	-17.68	-30.946	PASS
			2400.00	-50.110	-17.68	-32.430	PASS
			2483.50	-48.210	-17.4	-30.810	PASS

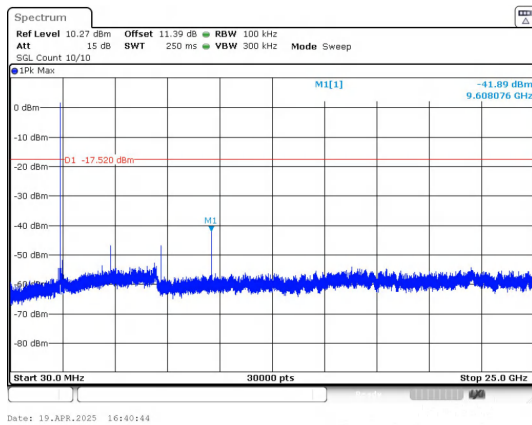
Test Graphs



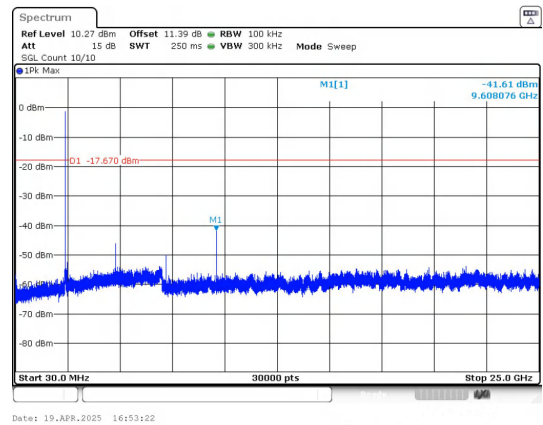
Out Of Band Emission
GFSK_DH5_Channel 0



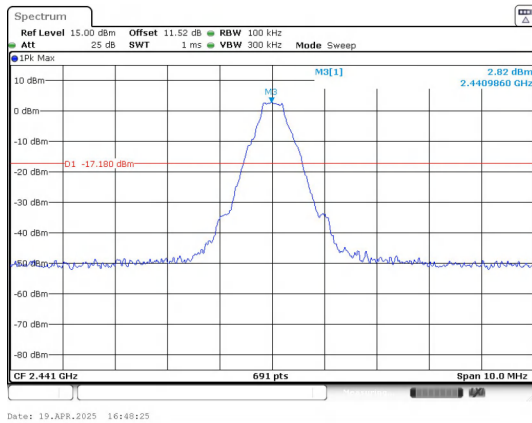
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0



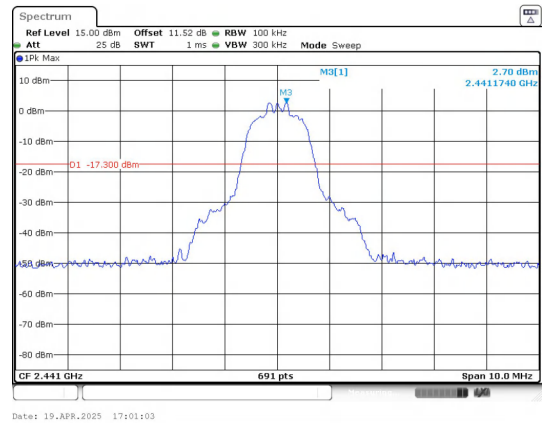
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



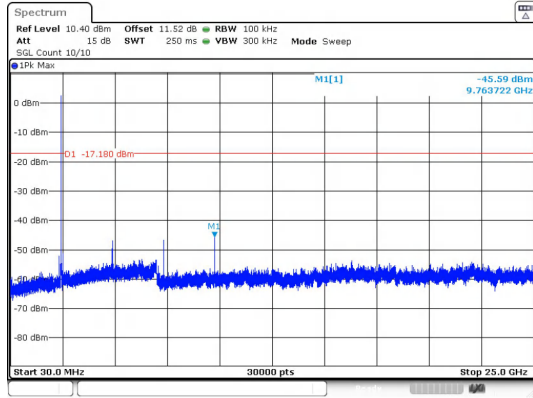
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 0



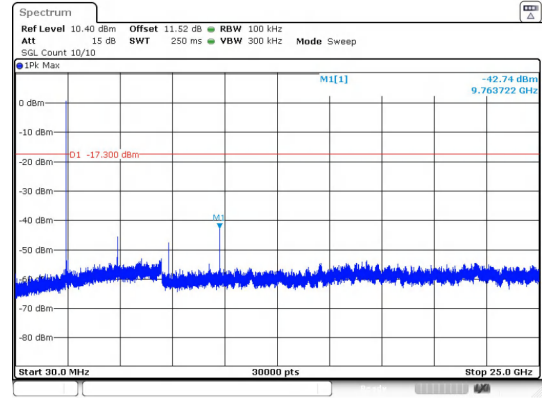
Out Of Band Emission
GFSK_DH5_Channel 39



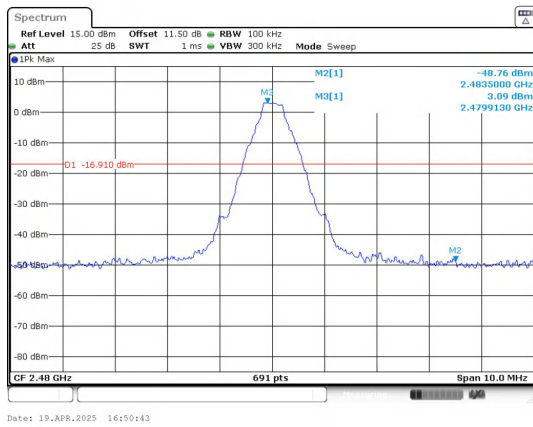
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39



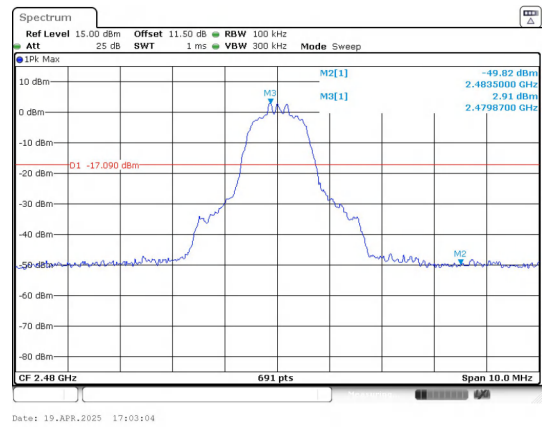
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



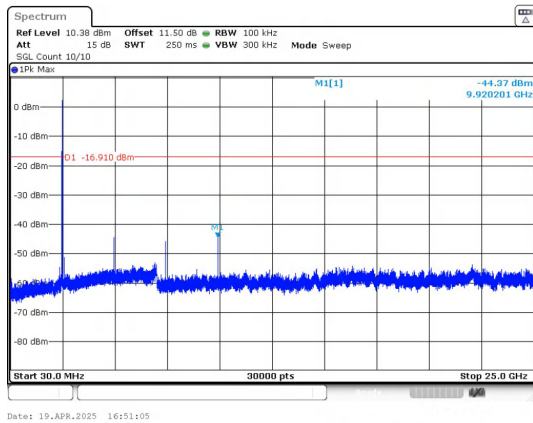
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



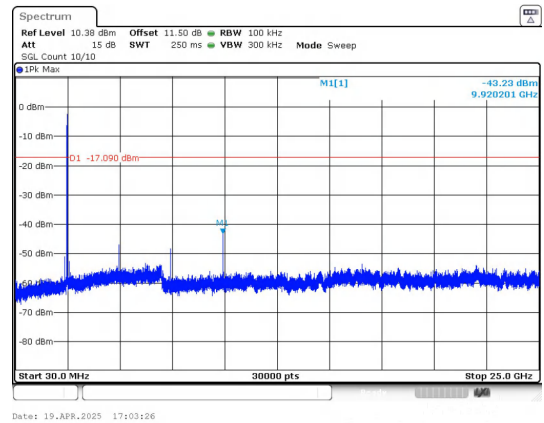
Out Of Band Emission
GFSK_DH5_Channel 78



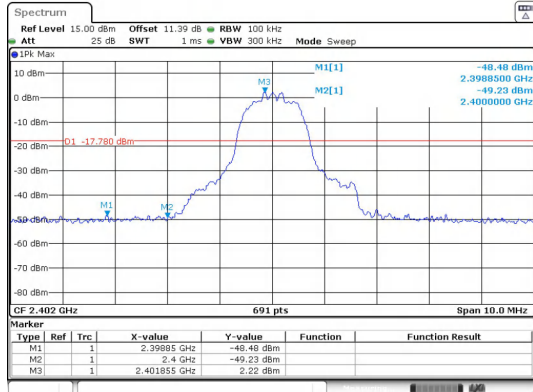
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78



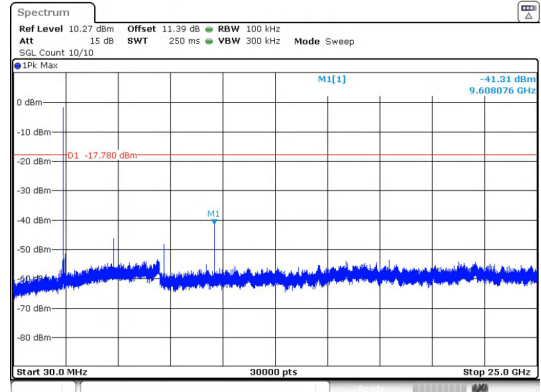
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



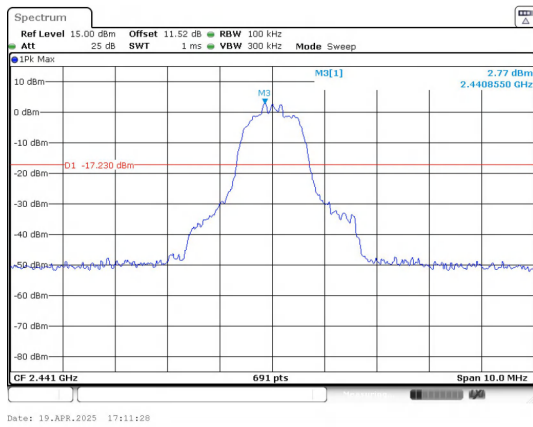
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



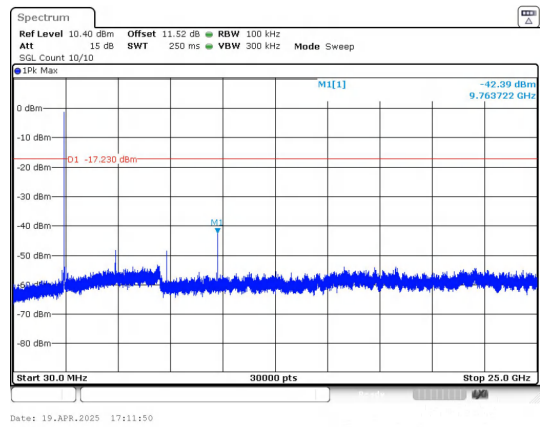
Out Of Band Emission
8DPSK_3-DH5_Channel 0



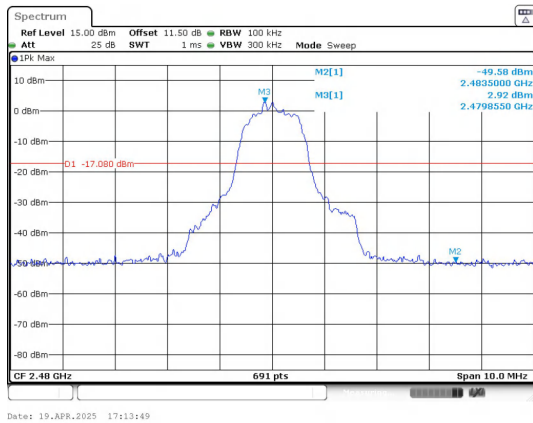
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



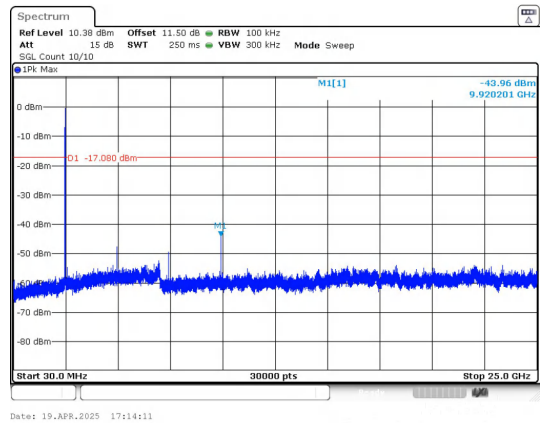
Out Of Band Emission
8DPSK_3-DH5_Channel 39



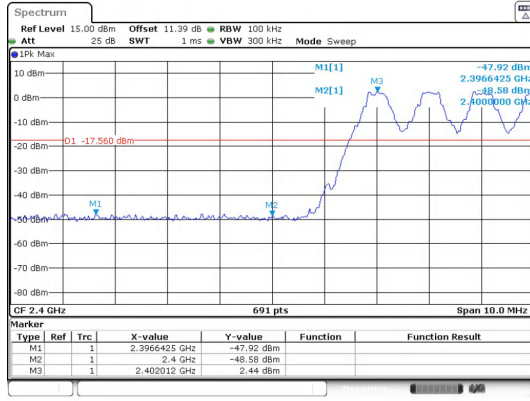
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



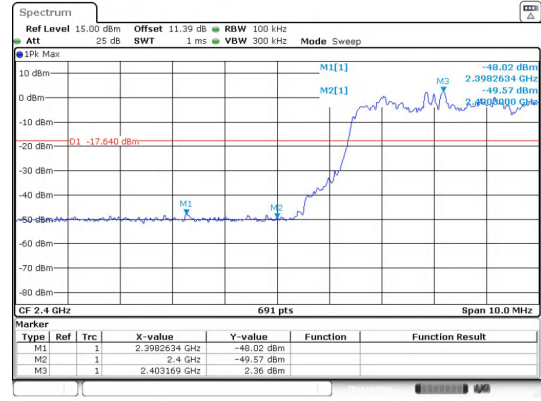
Out Of Band Emission
8DPSK_3-DH5_Channel 78



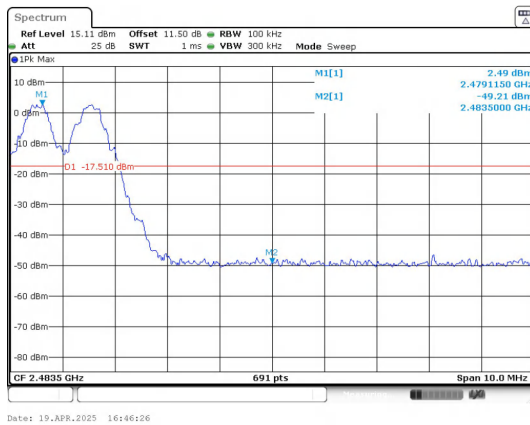
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



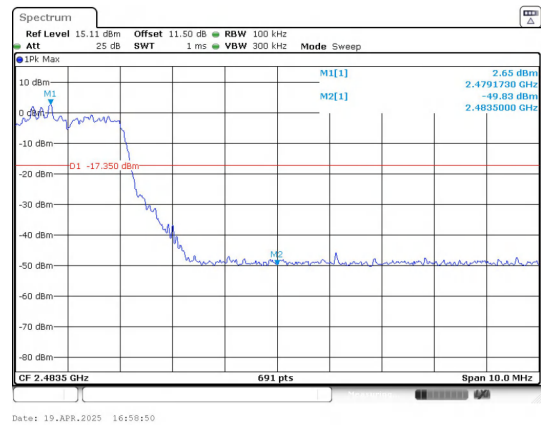
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



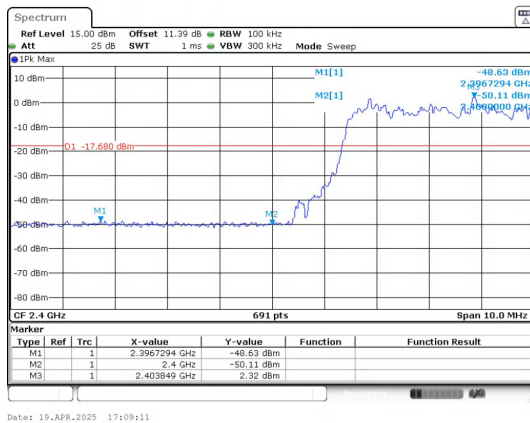
Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



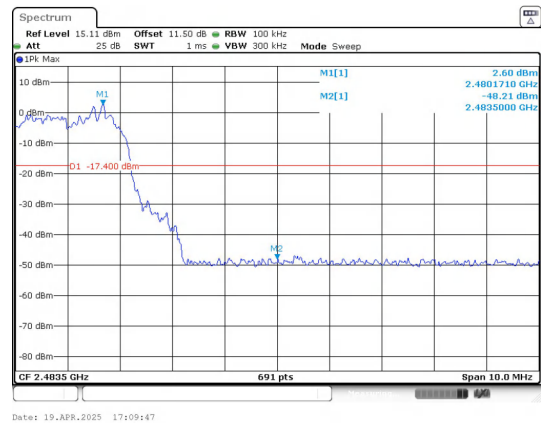
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



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-----