

Appendix Report

Report No.:	CISRR25030402704
Test Engineer:	Mark Fu
Supervised by:	Rory Huang

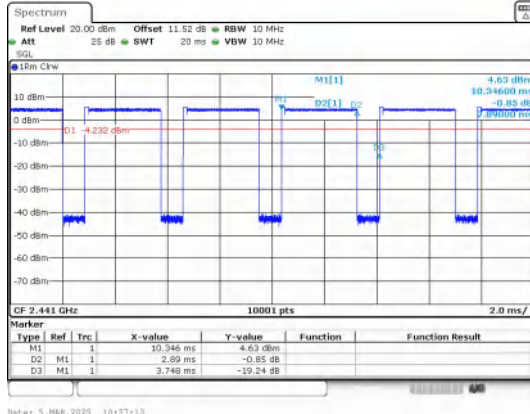
1) Duty Cycle

Test Result

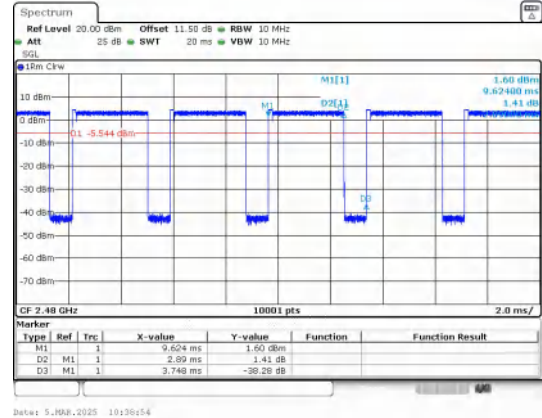
Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.886	3.748	77.00	0.7700	1.1351	0.3465
		39	2.886	3.748	77.00	0.7700	1.1351	0.3465
		78	2.886	3.748	77.00	0.7700	1.1351	0.3465
$\pi/4$ DQPSK	2-DH5	0	2.890	3.746	77.15	0.7715	1.1266	0.3460
		39	2.890	3.748	77.11	0.7711	1.1289	0.3460
		78	2.890	3.748	77.11	0.7711	1.1289	0.3460
8DPSK	3-DH5	0	2.894	3.748	77.21	0.7721	1.1233	0.3455
		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

Test Graphs

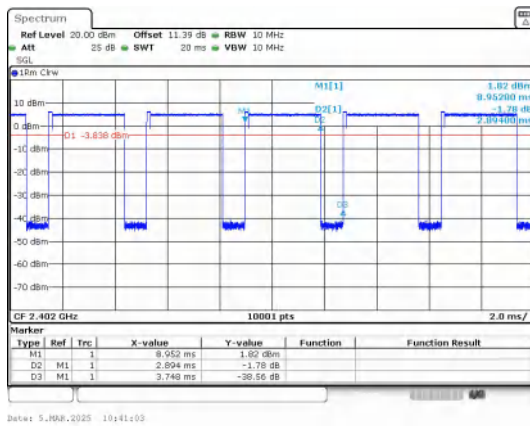




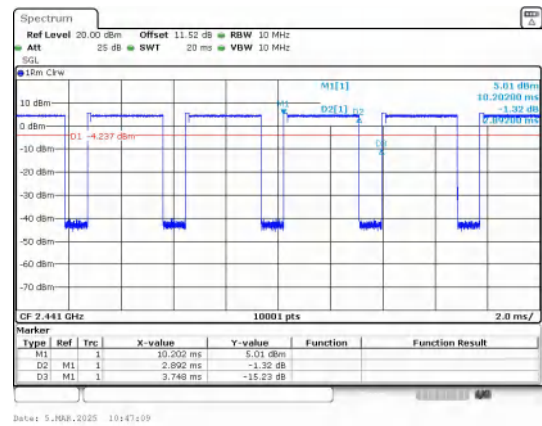
$\pi/4$ DQPSK(2-DH5)_Channel 39



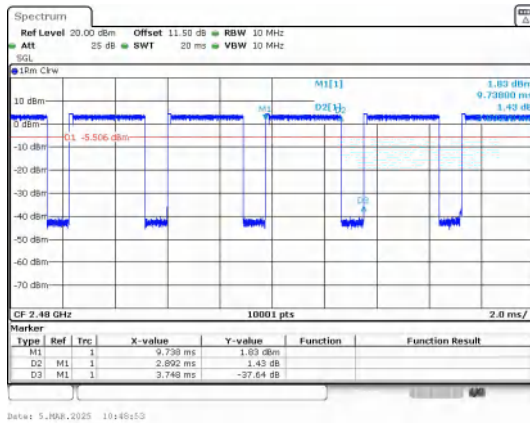
$\pi/4$ DQPSK(2-DH5)_Channel 78



8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39



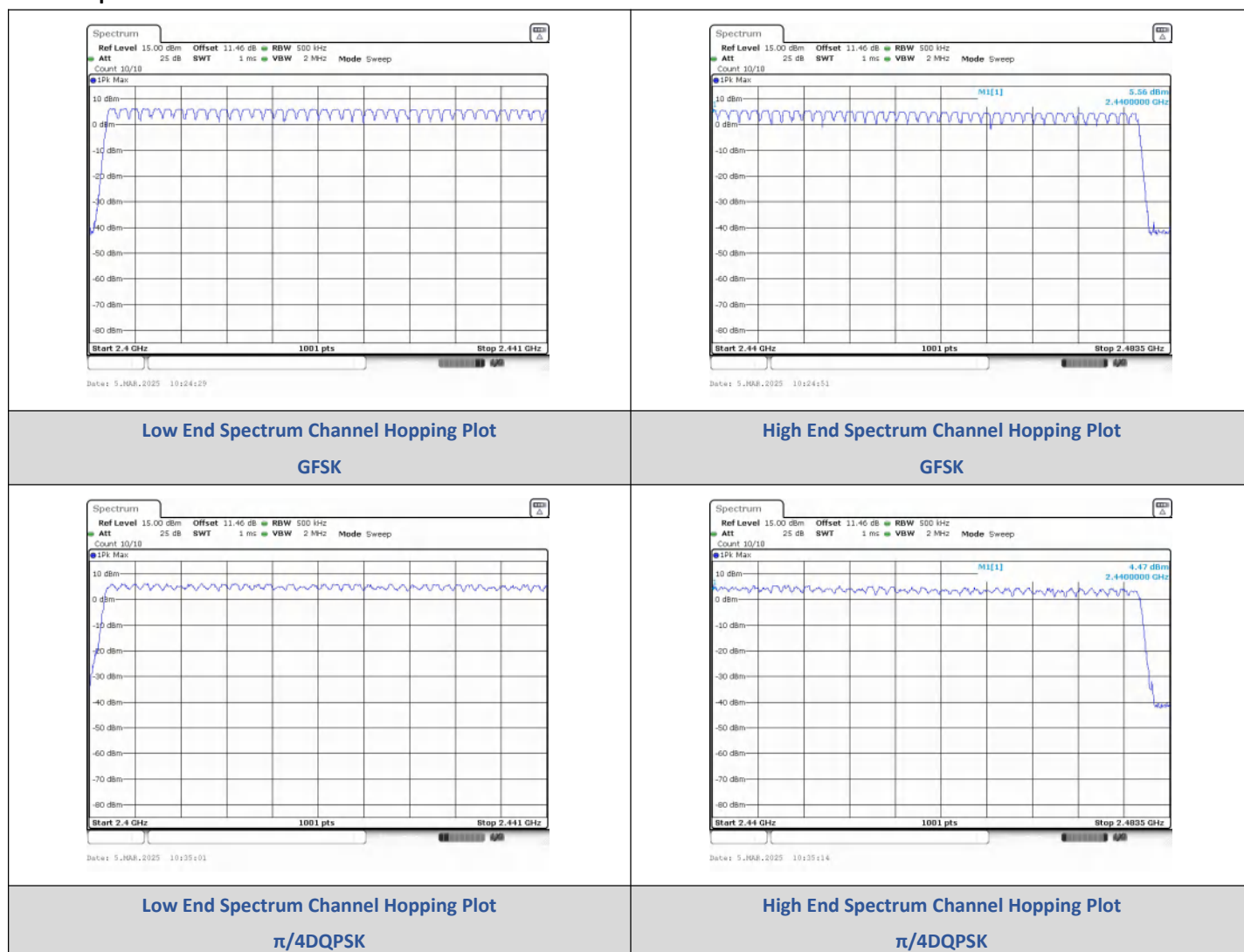
8DPSK(3-DH5)_Channel 78

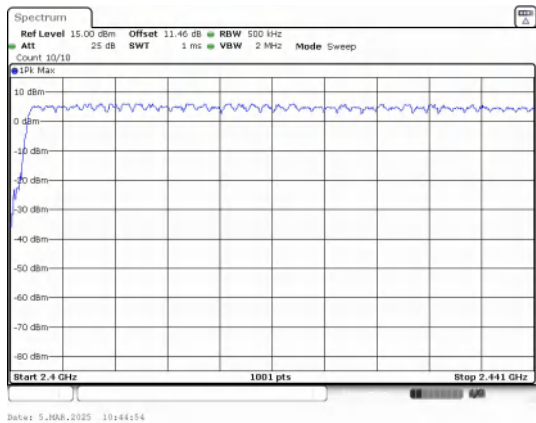
2) Number Of Hopping Channel

Test Result

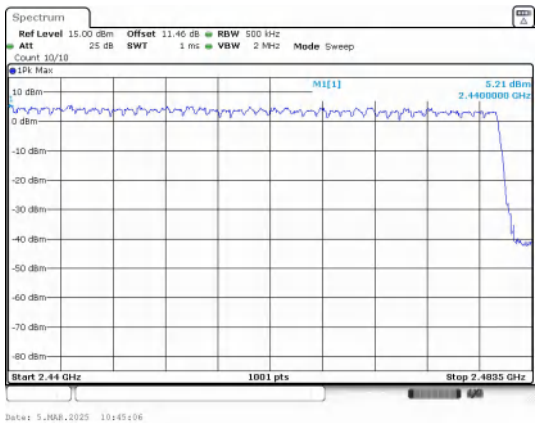
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK



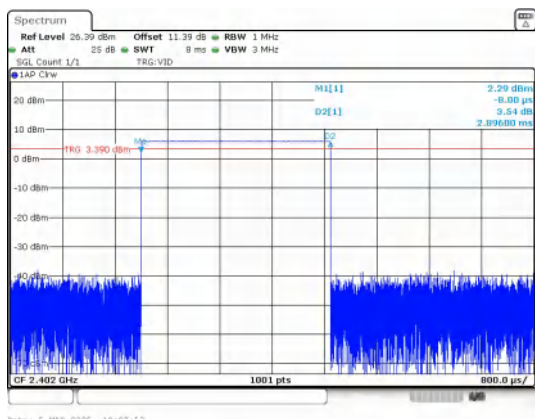
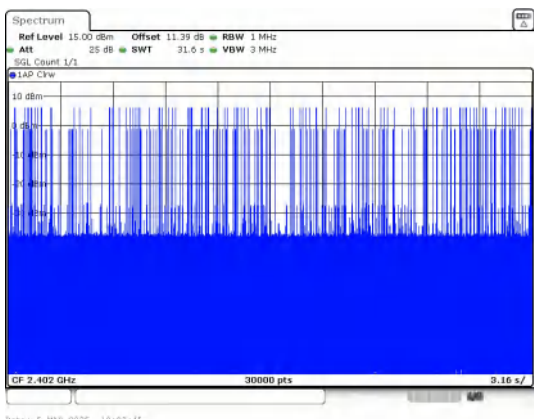
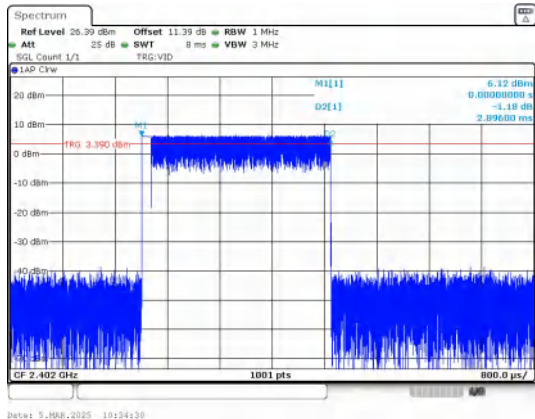
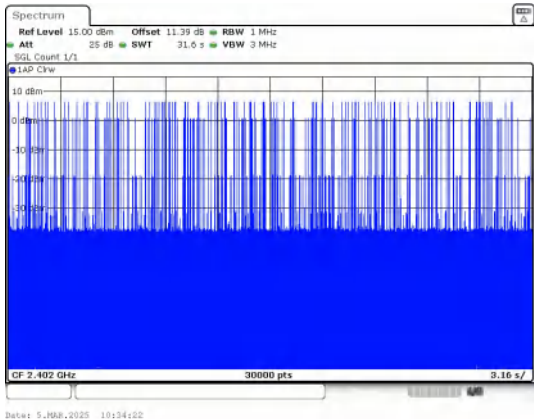
High End Spectrum Channel Hopping Plot
8DPSK

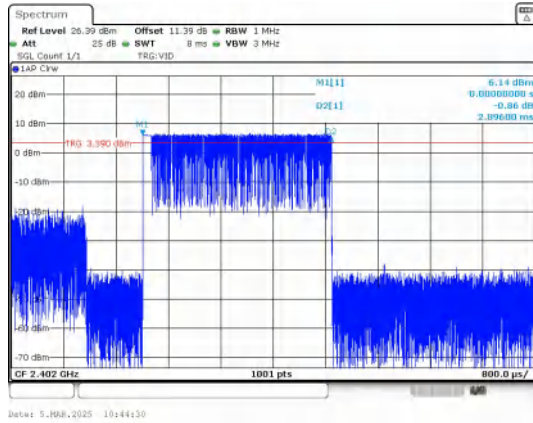
3) Dwell Time

Test Result

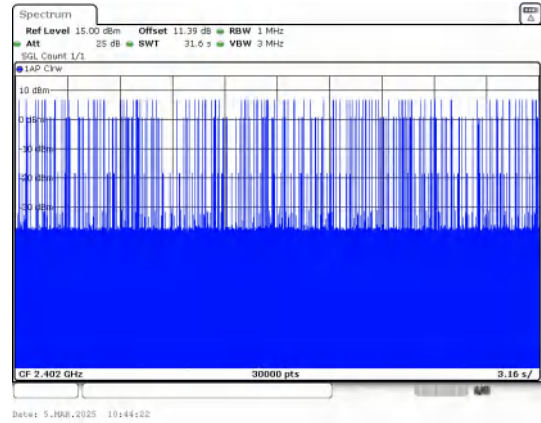
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.896	108	312.77	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.896	107	309.87		PASS
8DPSK	3-DH5		2.896	107	309.87		PASS

Test Graphs

 Ref Level 26.39 dBm Offset 11.39 dB RBW 1 MHz Att 25 dB SWT 8 ms VBW 3 MHz SQL Count 1/1 TRG:VID M1[1] 2.29 dBm D2[1] -5.00 dB 3.54 dB 2.89600 ms CF 2.402 GHz 1001 pts 800.0 μs Date: 5.HAR.2025 10:23:53	 Ref Level 15.00 dBm Offset 11.39 dB RBW 1 MHz Att 25 dB SWT 31.6 s VBW 3 MHz SQL Count 1/1 CF 2.402 GHz 30000 pts 3.16 s Date: 5.HAR.2025 10:23:45
Pulse Width GFSK_DH5	Number of Pulses in 31.6 seconds GFSK_DH5
 Ref Level 26.39 dBm Offset 11.39 dB RBW 1 MHz Att 25 dB SWT 8 ms VBW 3 MHz SQL Count 1/1 TRG:VID M1[1] 6.12 dBm D2[1] 0.00000000 s -1.18 dB 2.89600 ms CF 2.402 GHz 1001 pts 800.0 μs Date: 5.HAR.2025 10:24:30	 Ref Level 15.00 dBm Offset 11.39 dB RBW 1 MHz Att 25 dB SWT 31.6 s VBW 3 MHz SQL Count 1/1 CF 2.402 GHz 30000 pts 3.16 s Date: 5.HAR.2025 10:24:02
Pulse Width $\pi/4$DQPSK_2-DH5	Number of Pulses in 31.6 seconds $\pi/4$DQPSK_2-DH5



Pulse Width
8DPSK_3-DH5



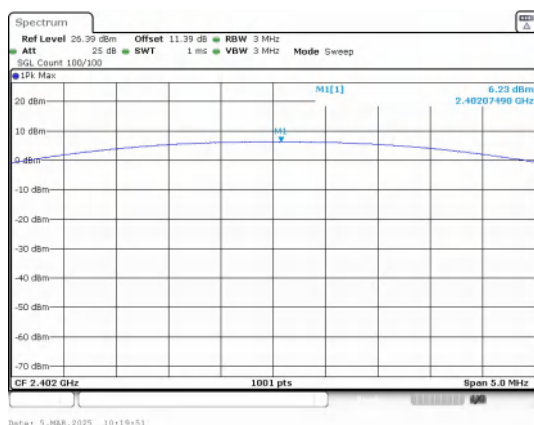
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

4) Conducted Output Power

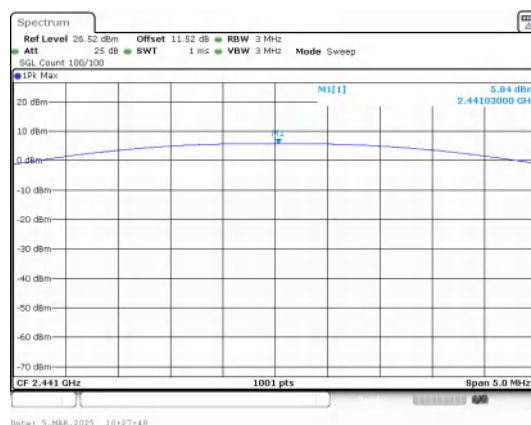
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	6.23	4.20	≤30	PASS
		39	5.84	3.84		PASS
		78	4.55	2.85		PASS
$\pi/4$ DQPSK	2-DH5	0	6.82	4.81	≤20.97	PASS
		39	6.49	4.46		PASS
		78	5.20	3.31		PASS
8DPSK	3-DH5	0	6.98	4.99		PASS
		39	6.65	4.62		PASS
		78	5.43	3.49		PASS

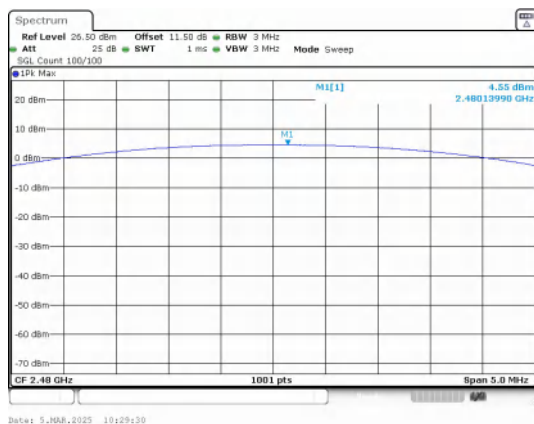
Test Graphs



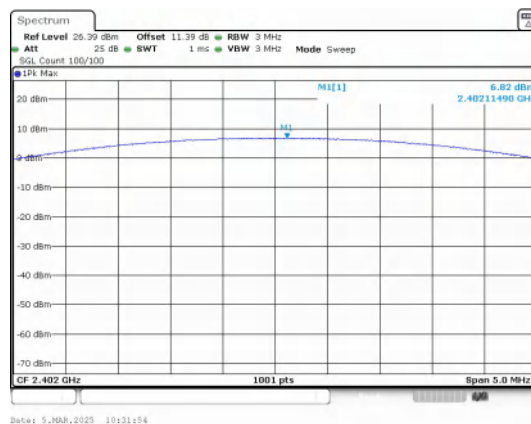
Peak Output Power
GFSK_Channel 0



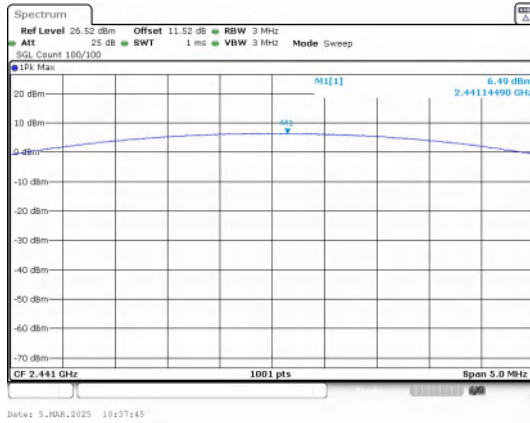
Peak Output Power
GFSK_Channel 39



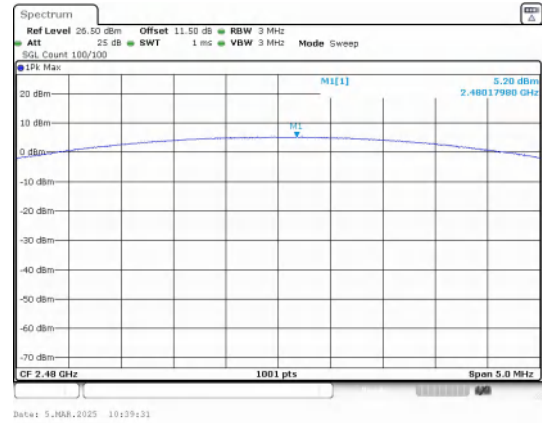
Peak Output Power
GFSK_Channel 78



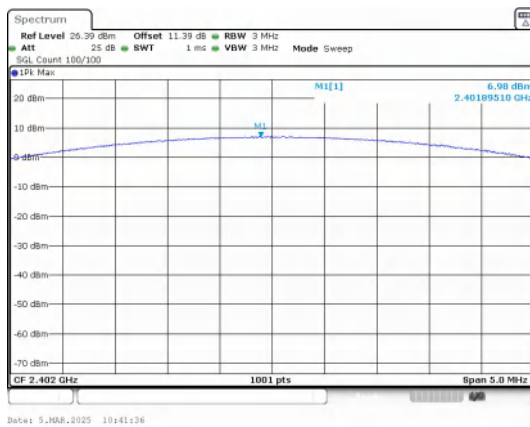
Peak Output Power
 $\pi/4$ DQPSK_Channel 0



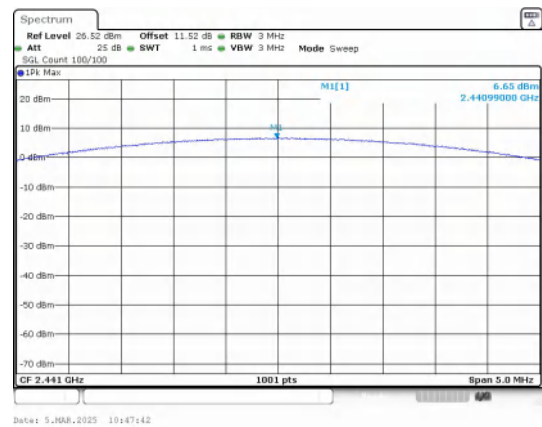
Peak Output Power
 $\pi/4$ DQPSK_Channel 39



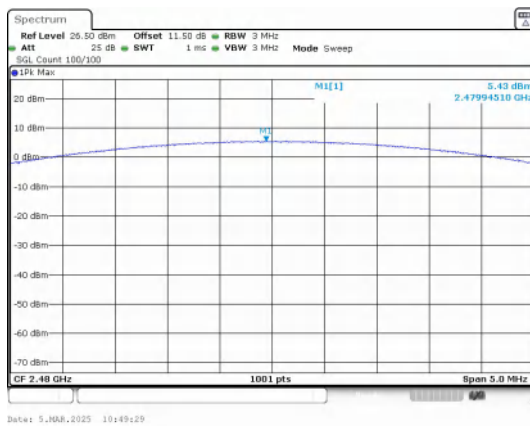
Peak Output Power
 $\pi/4$ DQPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



Peak Output Power
8DPSK_Channel 39



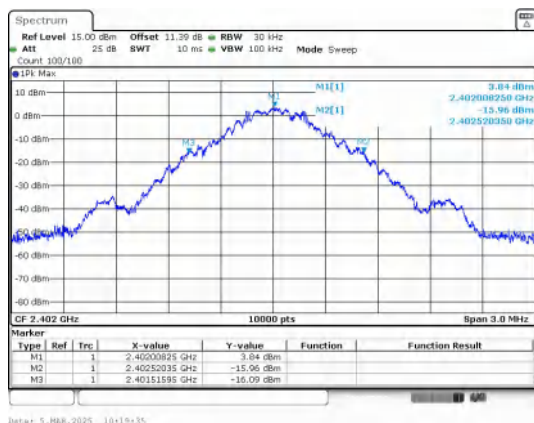
Peak Output Power
8DPSK_Channel 78

5) 20dB Bandwidth

Test Result

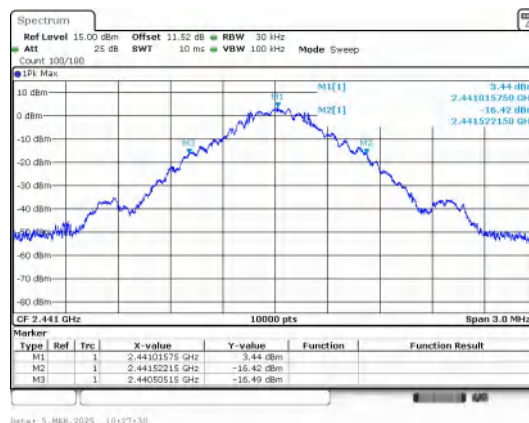
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.000
	39	2441 MHz	1.010
	78	2480 MHz	1.010
$\pi/4$ DQPSK	0	2402 MHz	1.300
	39	2441 MHz	1.310
	78	2480 MHz	1.310
8DPSK	0	2402 MHz	1.300
	39	2441 MHz	1.300
	78	2480 MHz	1.300

Test Graphs



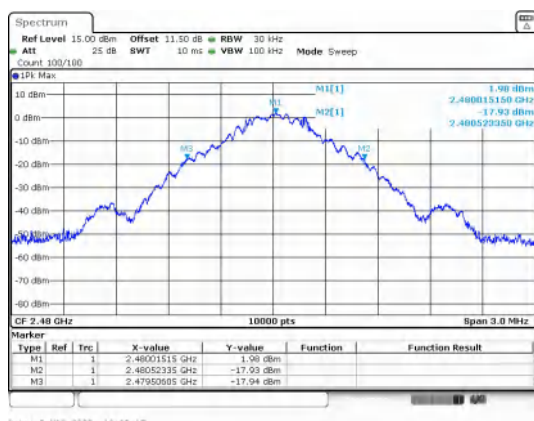
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GFSK_DH5_Channel 0



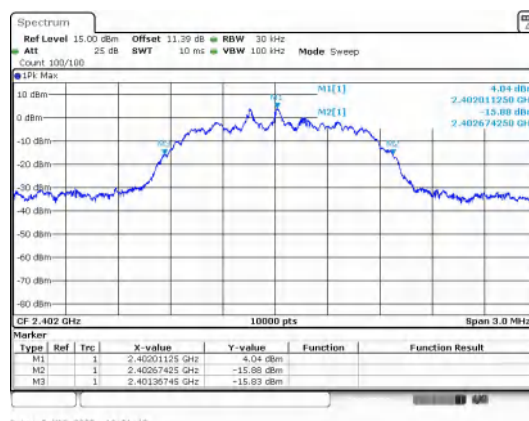
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GFSK_DH5_Channel 39



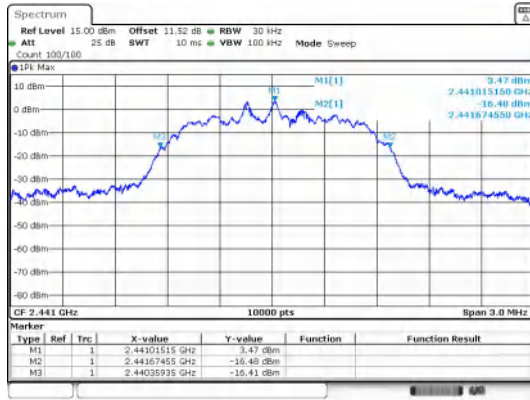
Date: 5/10/2025 10:12:17

GFSK_DH5_Channel 78

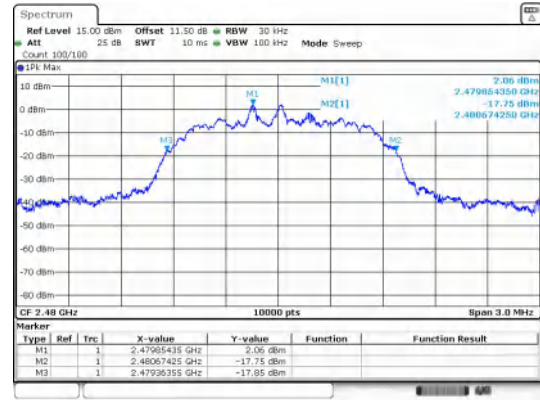


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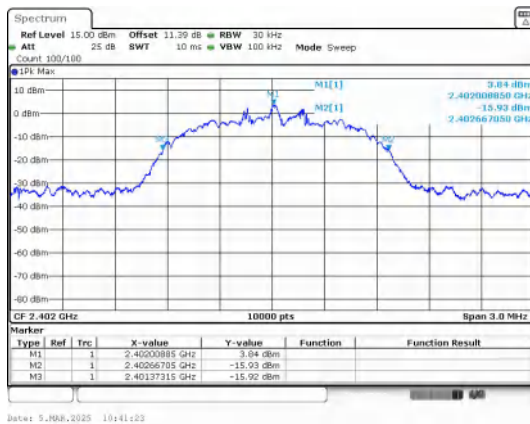
 $\pi/4$ DQPSK_2-DH5_Channel 0



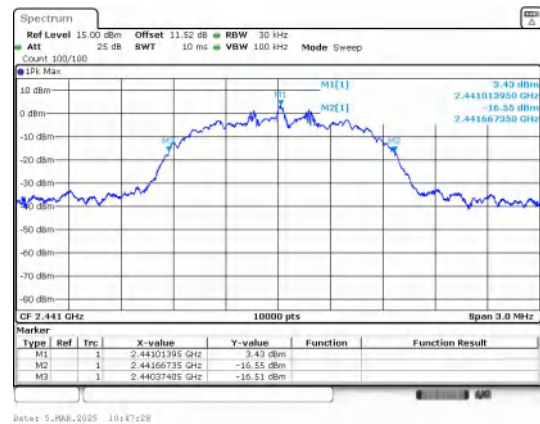
$\pi/4$ DQPSK_2-DH5_Channel 39



$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



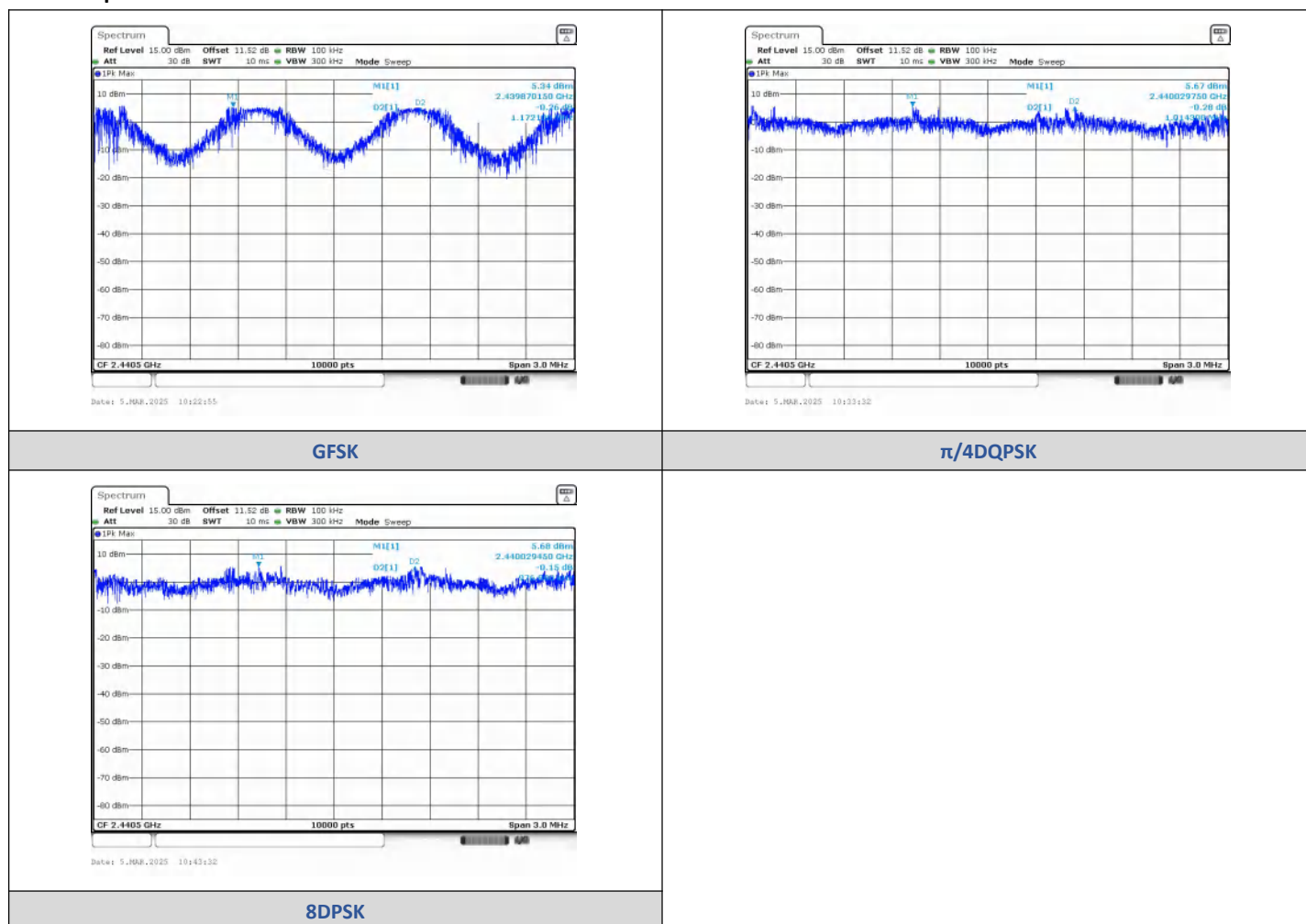
8DPSK_3-DH5_Channel 78

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	2439.8702	2441.0422	1.1721	1.0	PASS
$\pi/4$ DQPSK	2-DH5	2440.0298	2441.044	1.0143	0.867	PASS
8DPSK	3-DH5	2440.0294	2441.0062	0.9768	0.867	PASS

Test Graphs



7) Conducted Out Of Band Emission

Test Result

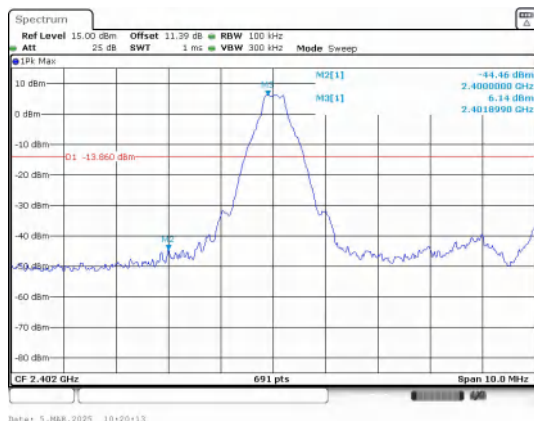
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-44.460	-13.86	-30.600	PASS
			7205.96	-39.489	-13.86	-25.629	PASS
		39	7323.32	-41.579	-14.43	-27.149	PASS
		78	2483.50	-51.090	-15.64	-35.450	PASS
			9920.20	-38.051	-15.64	-22.411	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-44.260	-13.92	-30.340	PASS
			9608.08	-42.650	-13.92	-28.730	PASS
		39	9763.72	-41.595	-14.33	-27.265	PASS
		78	2483.50	-50.680	-15.62	-35.060	PASS
			9920.20	-37.746	-15.62	-22.126	PASS
8DPSK	3-DH5	0	2400.00	-46.730	-14.04	-32.690	PASS
			9608.08	-42.593	-14.04	-28.553	PASS
		39	9763.72	-41.579	-14.37	-27.209	PASS
		78	2483.50	-50.660	-15.67	-34.990	PASS
			9920.20	-37.497	-15.67	-21.827	PASS

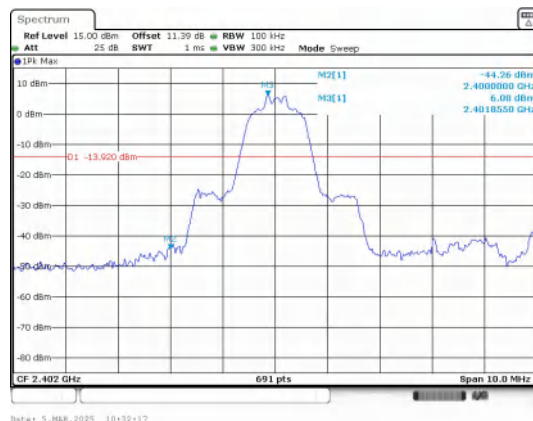
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2398.22	-47.868	-13.89	-33.978	PASS
			2400.00	-48.910	-13.89	-35.020	PASS
			2483.50	-49.240	-15.61	-33.630	PASS
$\pi/4$ DQPSK	2-DH5		2395.28	-47.928	-14.68	-33.248	PASS
			2400.00	-49.120	-14.68	-34.440	PASS
			2483.50	-49.470	-15.75	-33.720	PASS
8DPSK	3-DH5		2396.99	-47.233	-13.93	-33.303	PASS
			2400.00	-50.550	-13.93	-36.620	PASS
			2483.50	-50.150	-15.95	-34.200	PASS

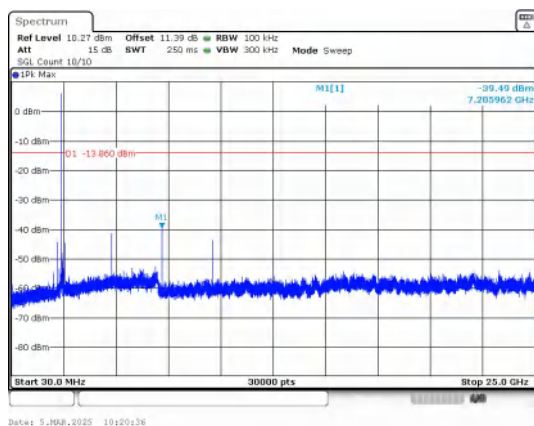
Test Graphs



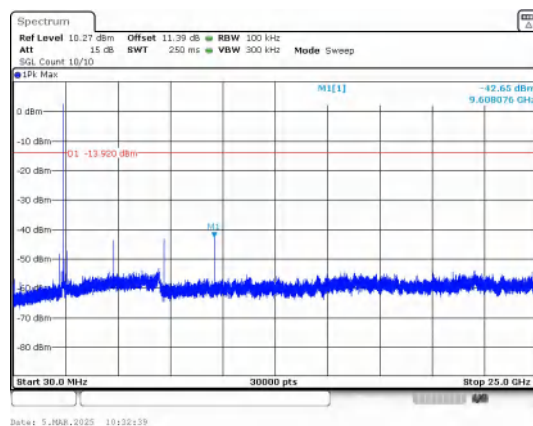
Out Of Band Emission
GFSK_DH5_Channel 0



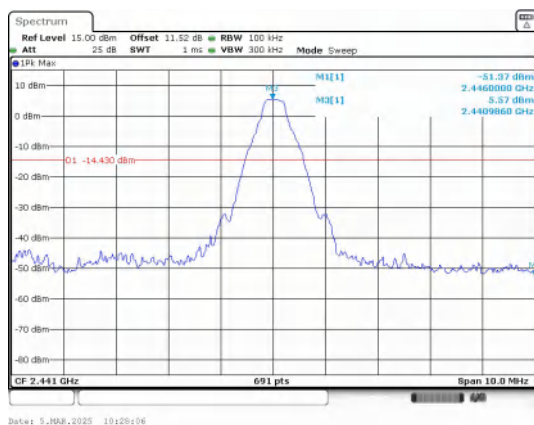
Out Of Band Emission
 $\pi/4$ QPSK_2-DH5_Channel 0



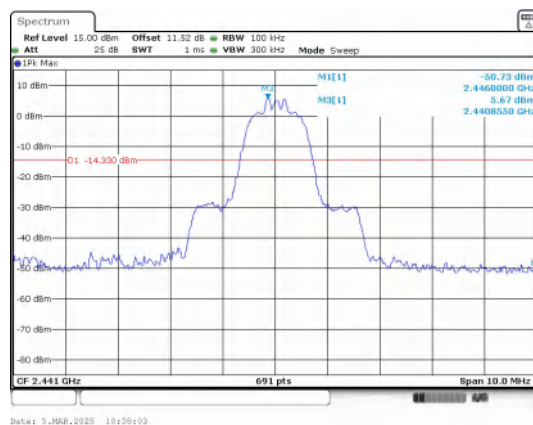
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



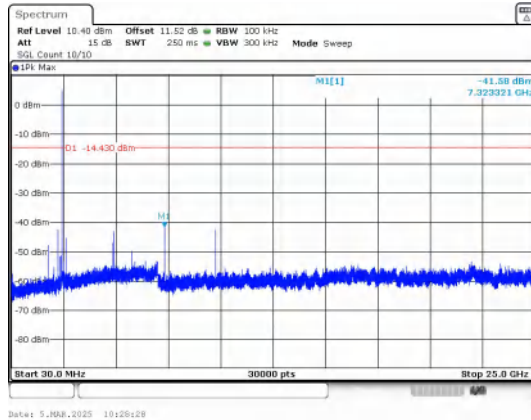
30.0 MHz - 25000.0 MHz
 $\pi/4$ QPSK_2-DH5_Channel 0



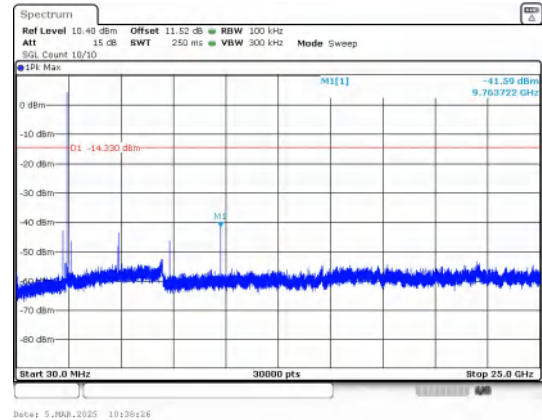
Out Of Band Emission
GFSK_DH5_Channel 39



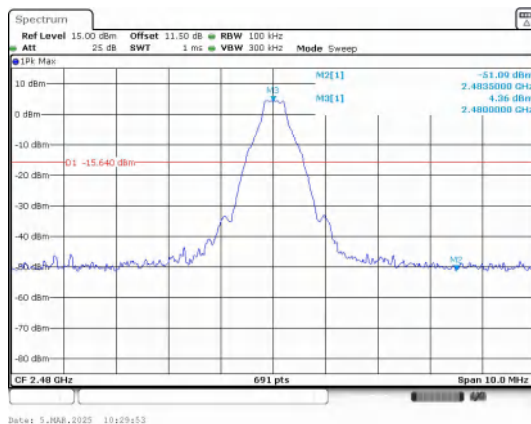
Out Of Band Emission
 $\pi/4$ QPSK_2-DH5_Channel 39



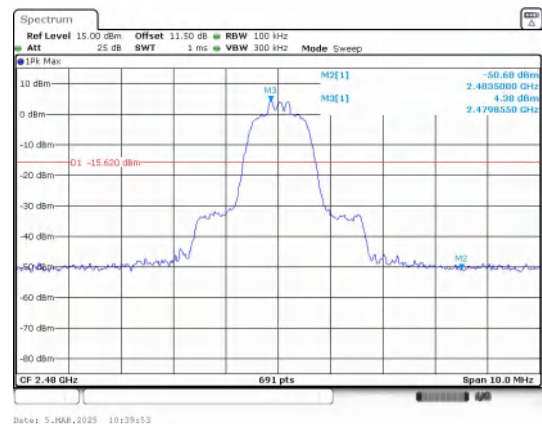
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



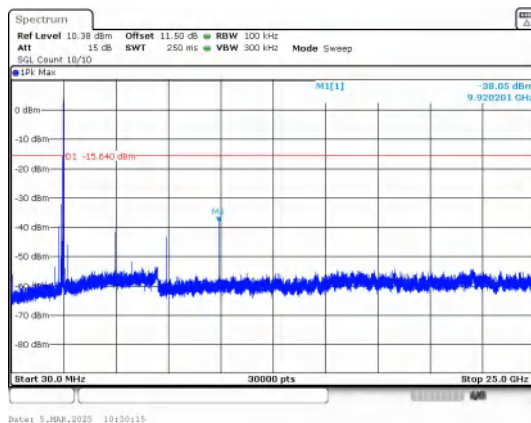
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



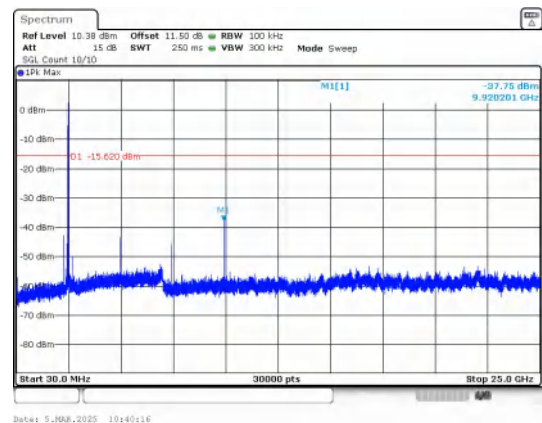
Out Of Band Emission
GFSK_DH5_Channel 78



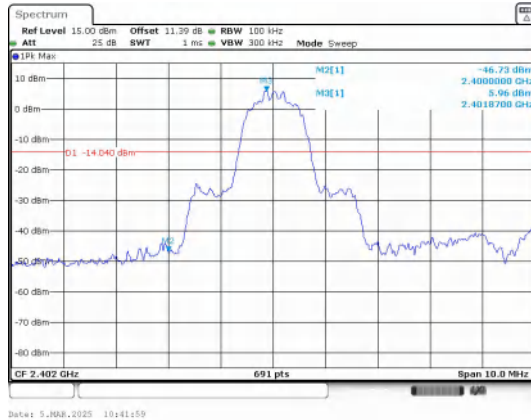
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78



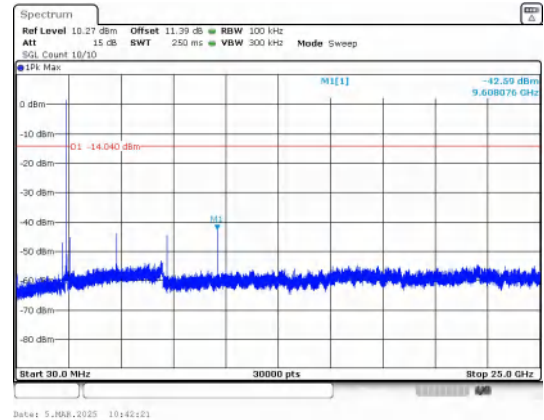
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



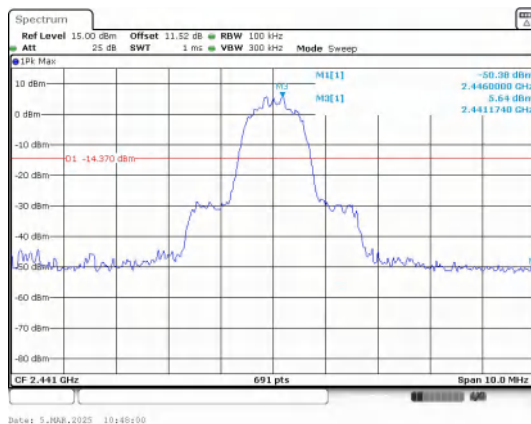
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



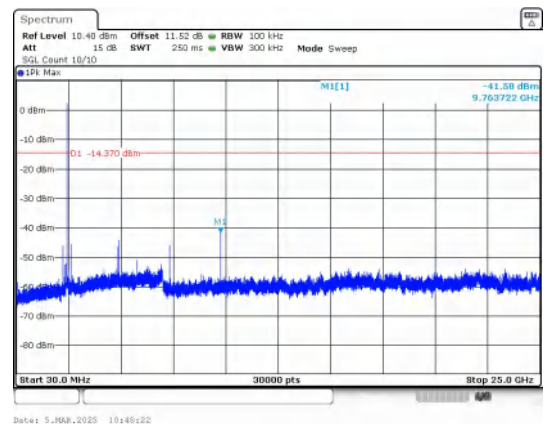
Out Of Band Emission
8DPSK_3-DH5_Channel 0



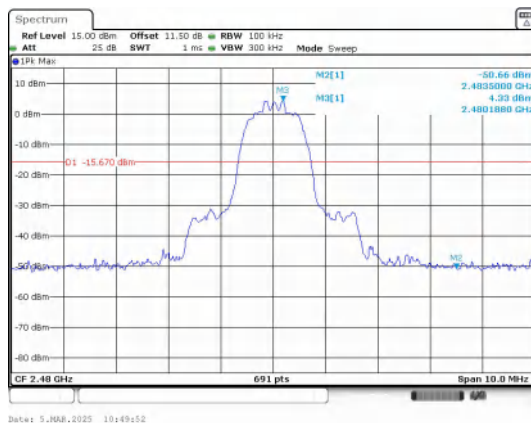
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



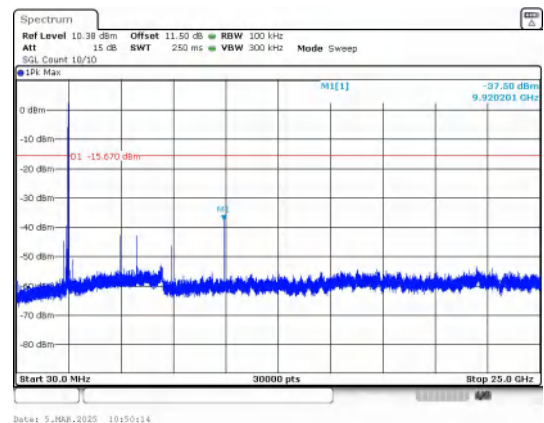
Out Of Band Emission
8DPSK_3-DH5_Channel 39



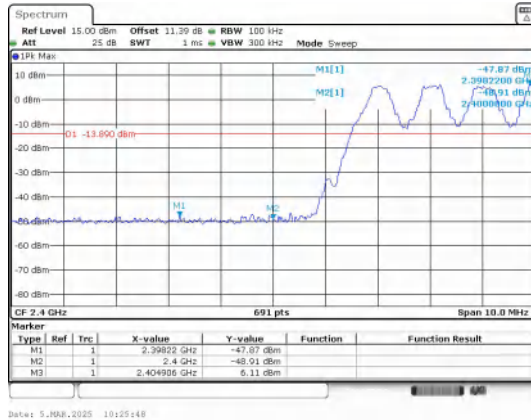
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



Out Of Band Emission
8DPSK_3-DH5_Channel 78



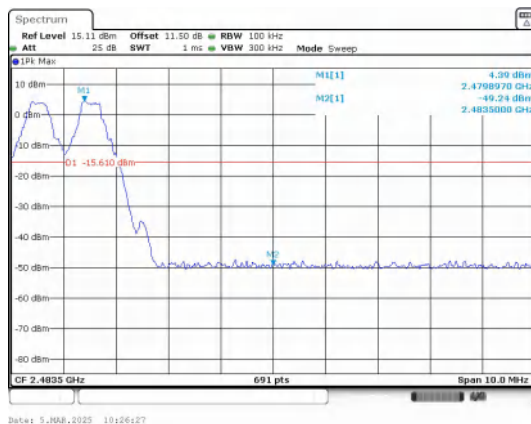
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



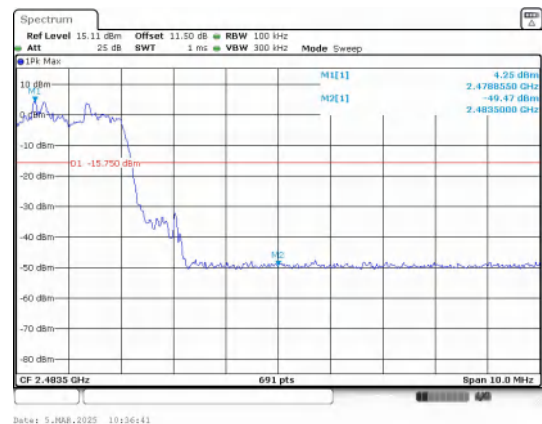
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



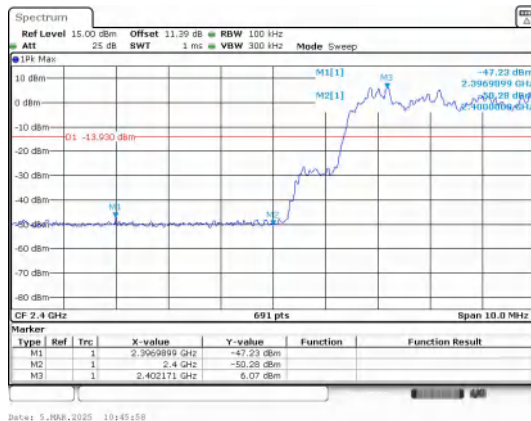
Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



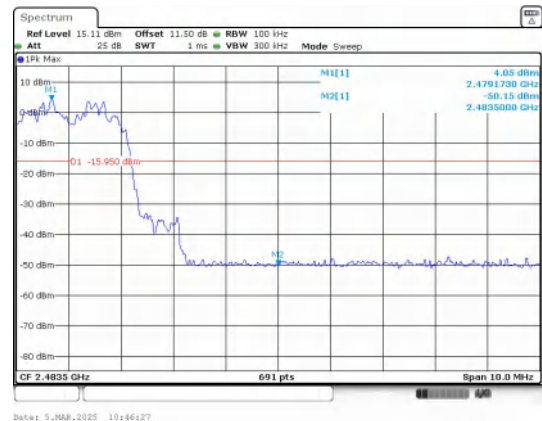
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



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-----