

Appendix Report

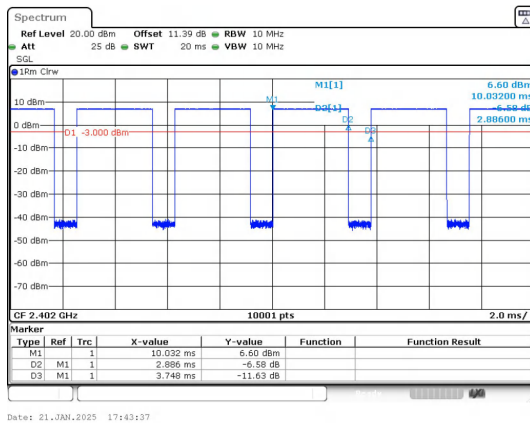
Report No.:	CISRR25011715304
Test Engineer:	Mark Fu
Supervised by:	Rory Huang

1) Duty Cycle

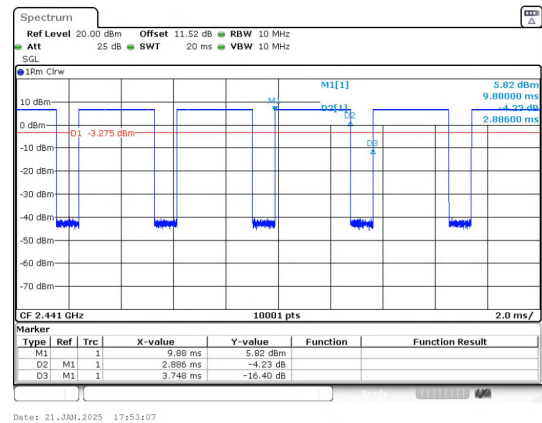
Test Result

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	3.748	77.11	0.7711	1.1289	0.3460
		39	2.892	3.748	77.16	0.7716	1.1261	0.3458
		78	2.890	3.748	77.11	0.7711	1.1289	0.3460
8DPSK	3-DH5	0	2.892	3.746	77.20	0.7720	1.1238	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

Test Graphs



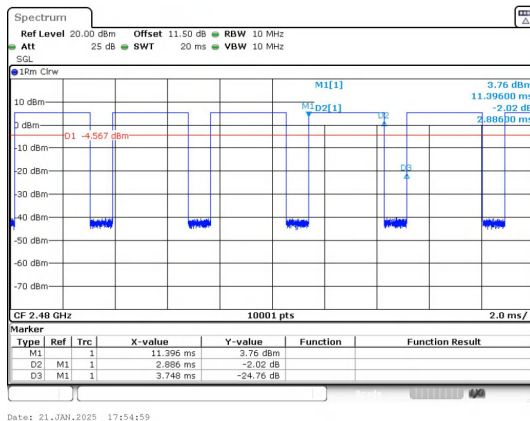
Date: 21.JAN.2025 17:43:17



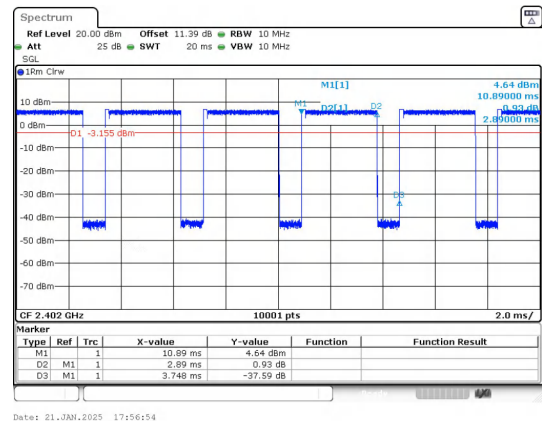
Date: 21.JAN.2025 17:53:07

GFSK(DH5)_Channel 0

GFSK(DH5)_Channel 39



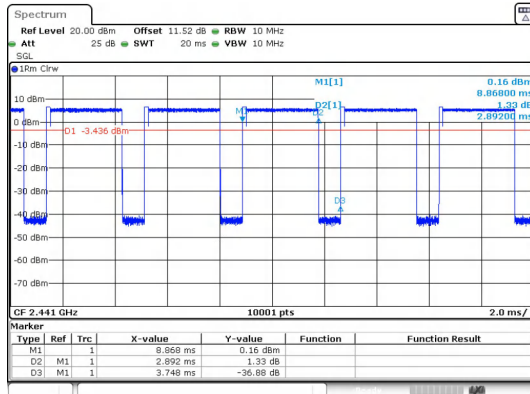
Date: 21.JAN.2025 17:54:59



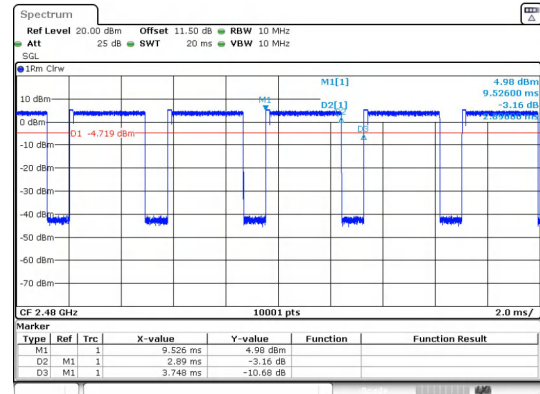
Date: 21.JAN.2025 17:56:54

GFSK(DH5)_Channel 78

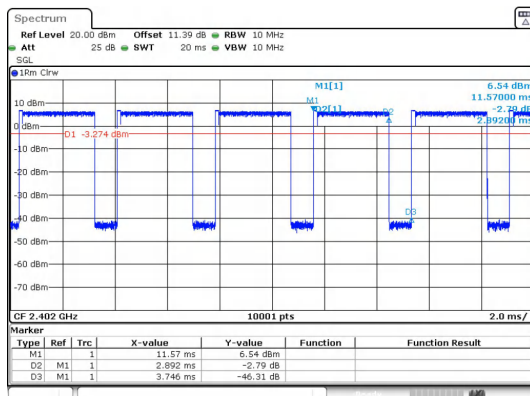
 $\pi/4$ DQPSK(2-DH5)_Channel 0



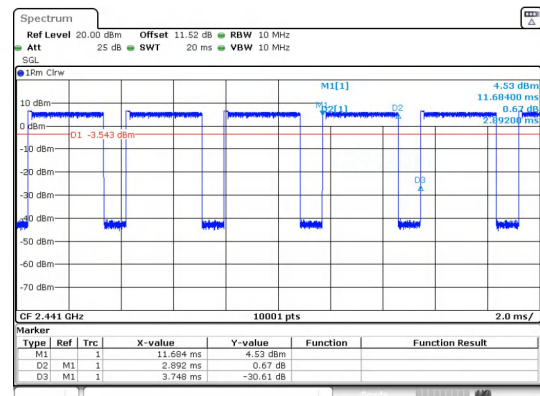
$\pi/4$ DQPSK(2-DH5)_Channel 39



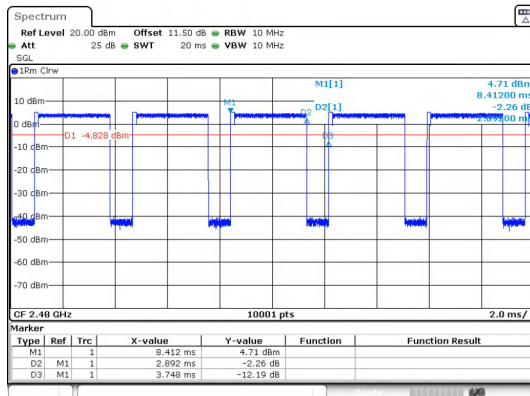
$\pi/4$ DQPSK(2-DH5)_Channel 78



8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39



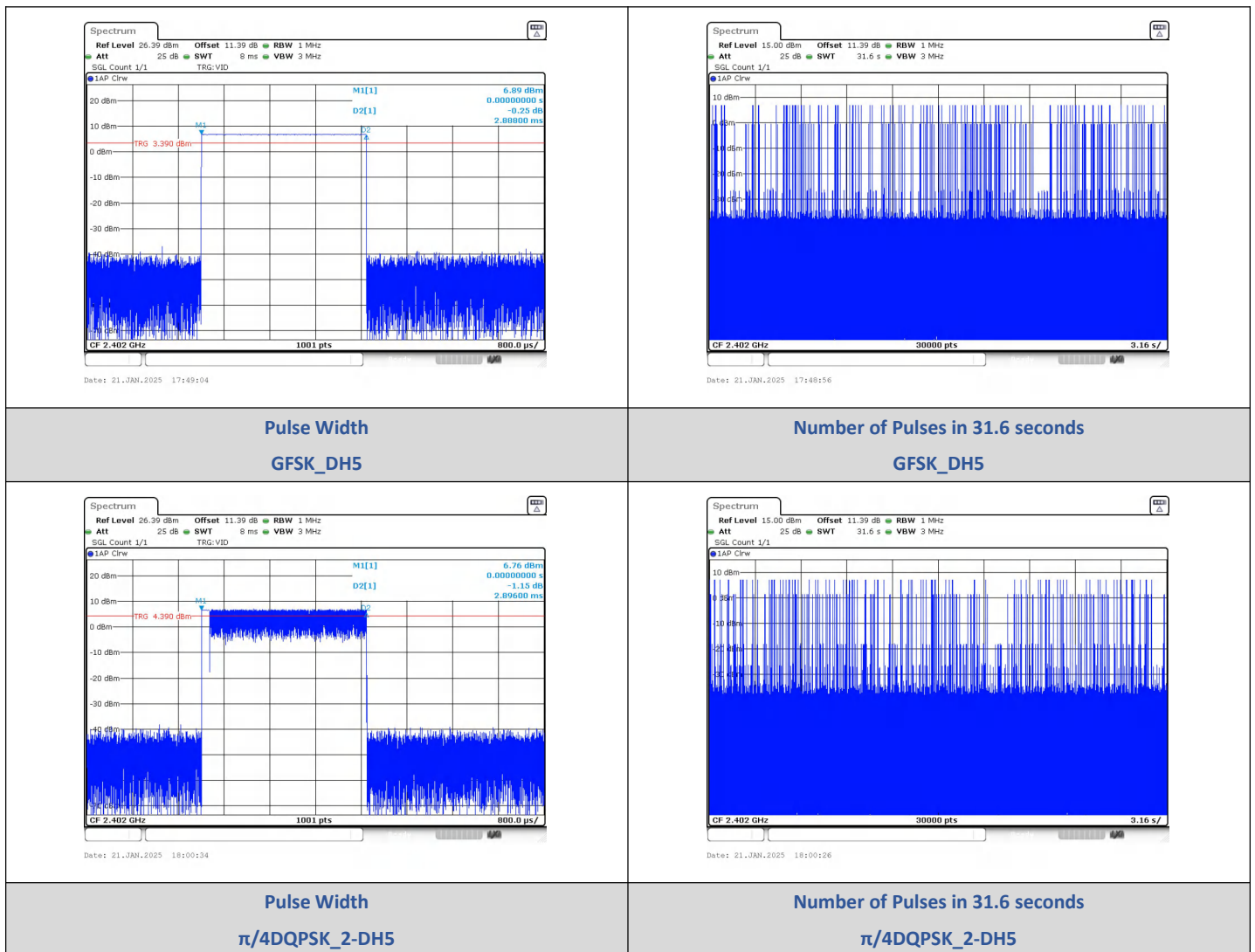
8DPSK(3-DH5)_Channel 78

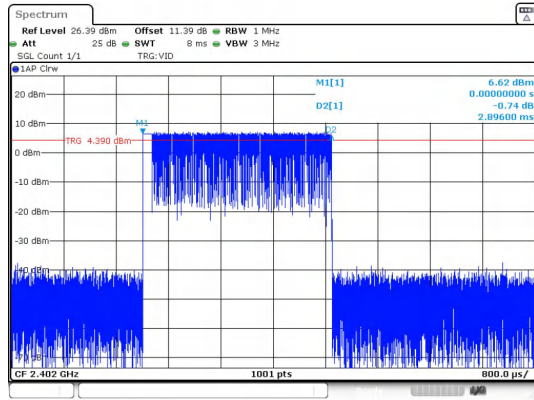
2) Dwell Time

Test Result

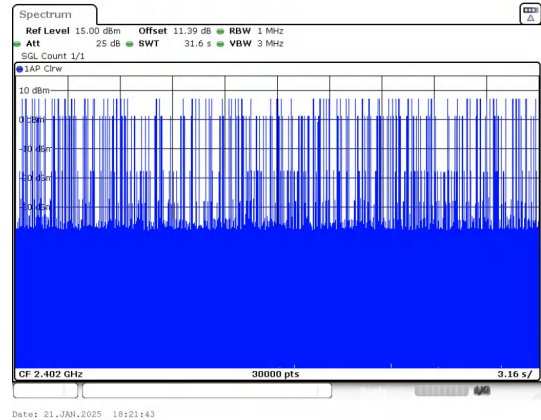
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.888	109	314.79	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.896	94	272.22		PASS
8DPSK	3-DH5		2.896	105	304.08		PASS

Test Graphs





Pulse Width
8DPSK_3-DH5



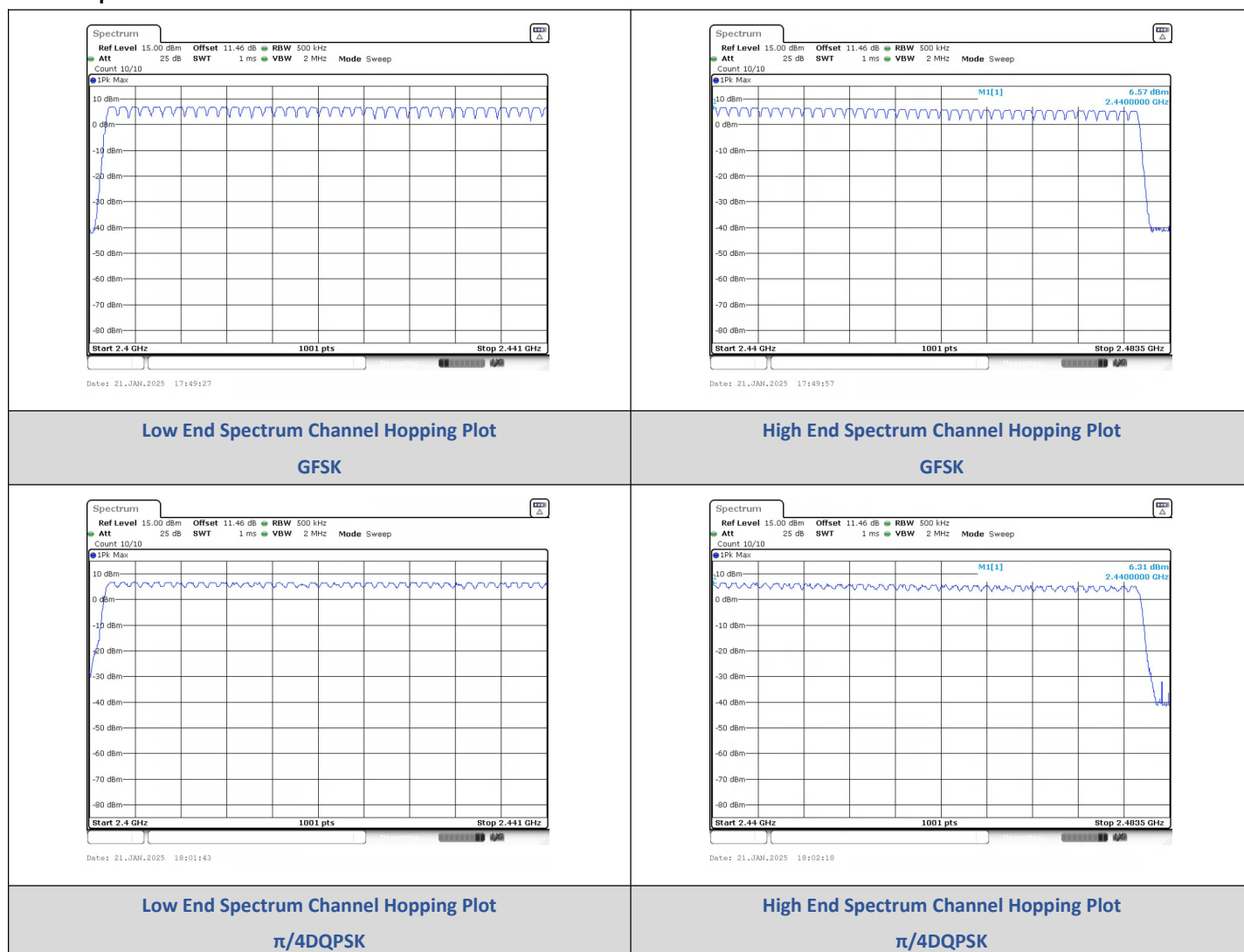
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

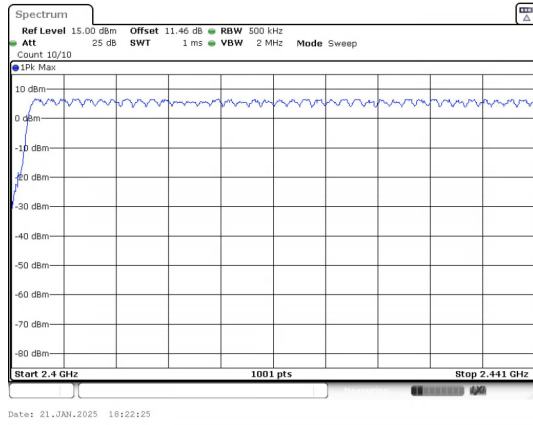
3) Number Of Hopping Channel

Test Result

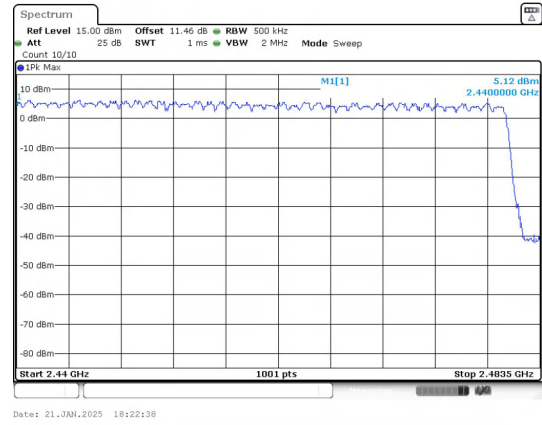
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK



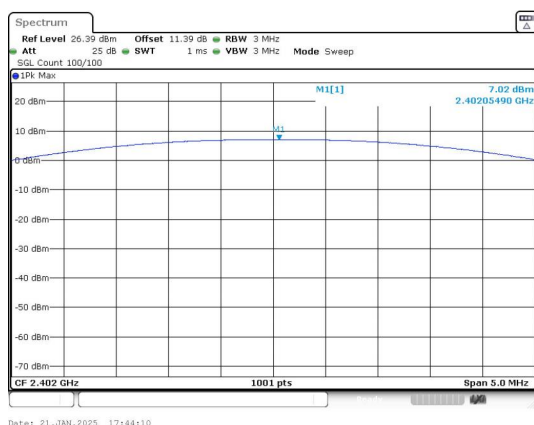
High End Spectrum Channel Hopping Plot
8DPSK

4) Conducted Output Power

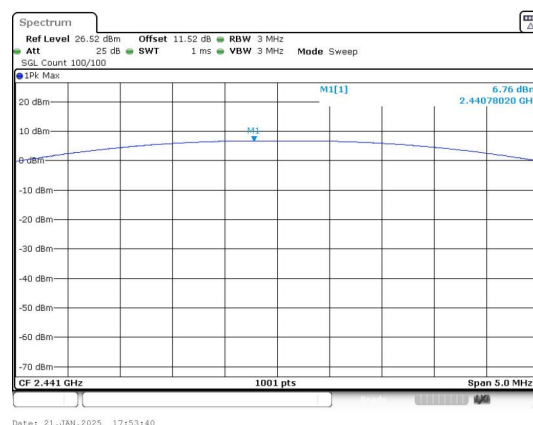
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	7.02	5.04	≤30	PASS
		39	6.76	4.74		PASS
		78	5.45	3.51		PASS
$\pi/4$ DQPSK	2-DH5	0	7.44	5.55	≤20.97	PASS
		39	7.23	5.28		PASS
		78	6.02	4.00		PASS
8DPSK	3-DH5	0	7.52	5.65		PASS
		39	7.34	5.42		PASS
		78	6.15	4.12		PASS

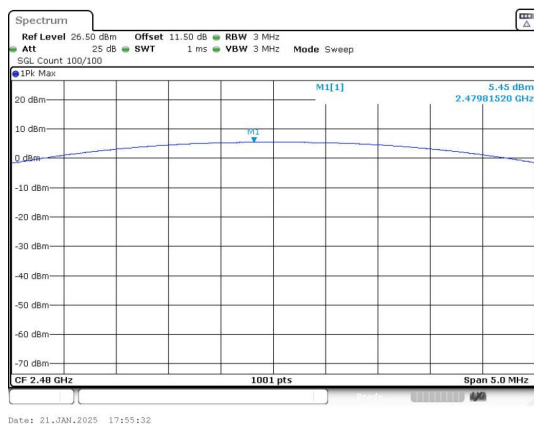
Test Graphs



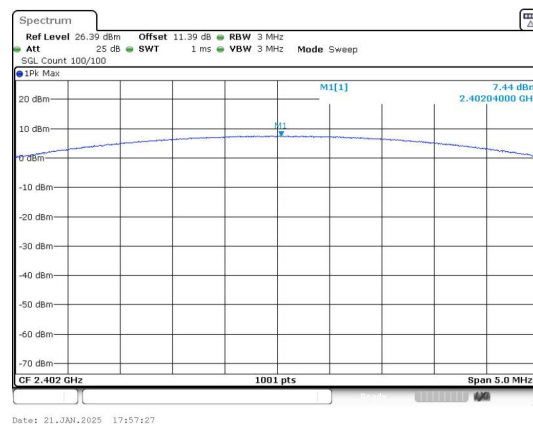
Peak Output Power
GFSK_Channel 0



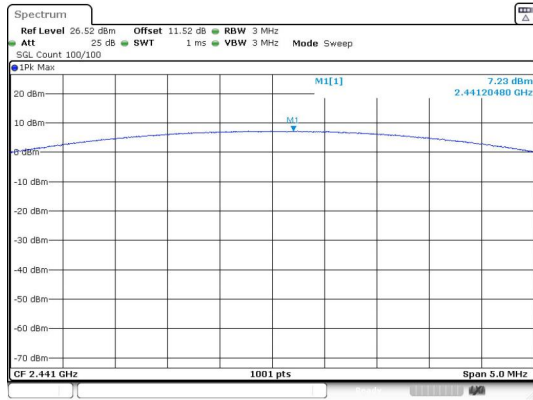
Peak Output Power
GFSK_Channel 39



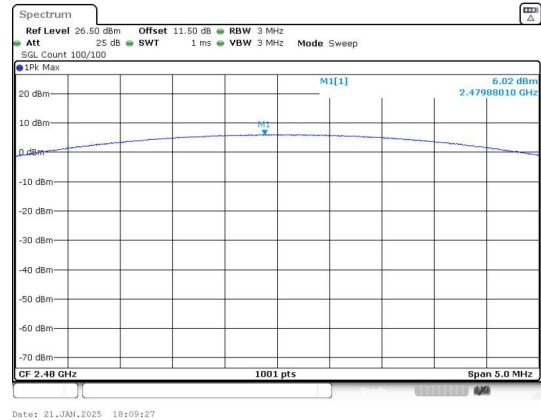
Peak Output Power
GFSK_Channel 78



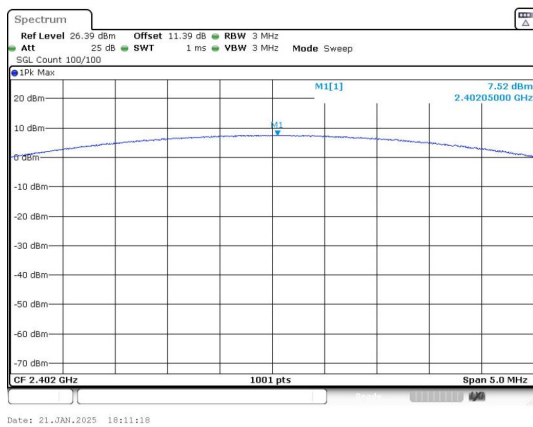
Peak Output Power
 $\pi/4$ DQPSK_Channel 0



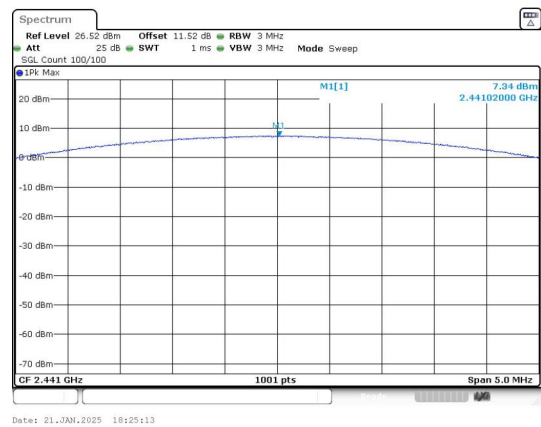
Peak Output Power
 $\pi/4$ DQPSK_Channel 39



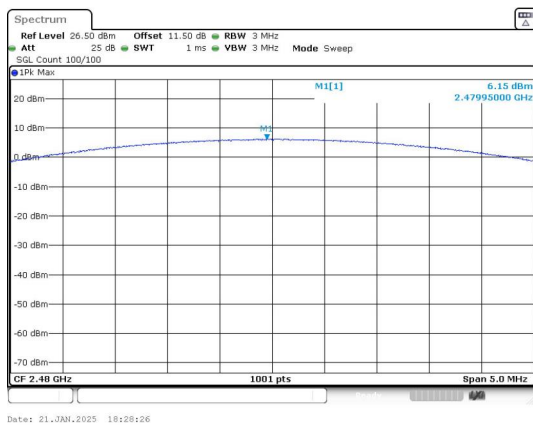
Peak Output Power
 $\pi/4$ DQPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



Peak Output Power
8DPSK_Channel 39



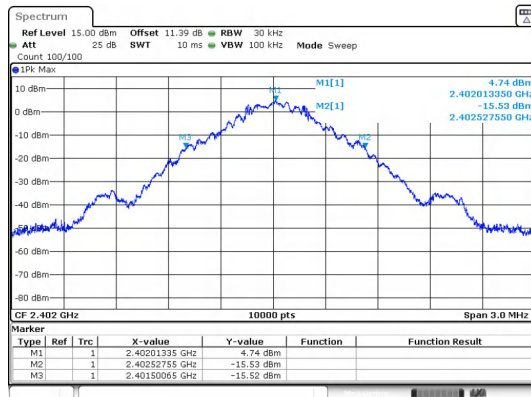
Peak Output Power
8DPSK_Channel 78

5) 20dB Bandwidth

Test Result

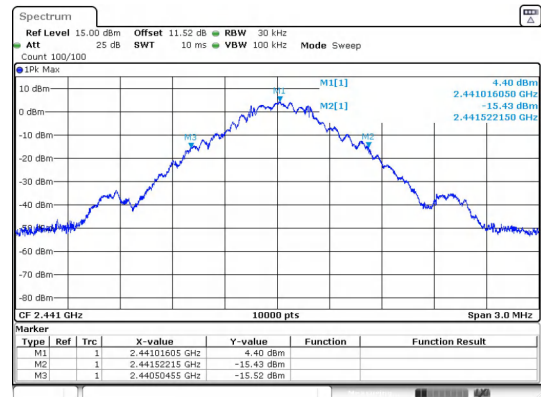
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.030
	39	2441 MHz	1.020
	78	2480 MHz	1.020
π /4DQPSK	0	2402 MHz	1.310
	39	2441 MHz	1.310
	78	2480 MHz	1.310
8DPSK	0	2402 MHz	1.300
	39	2441 MHz	1.300
	78	2480 MHz	1.300

Test Graphs



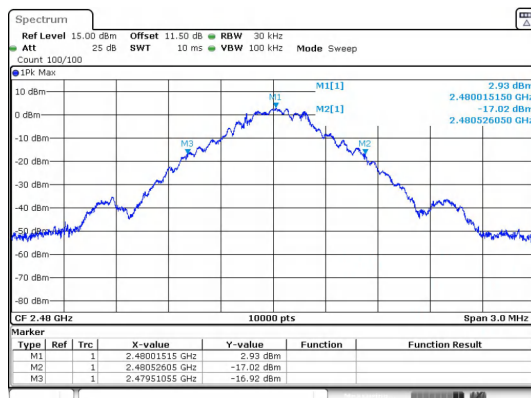
Date: 21.JAN.2025 17:43:156

GFSK_DH5_Channel 0



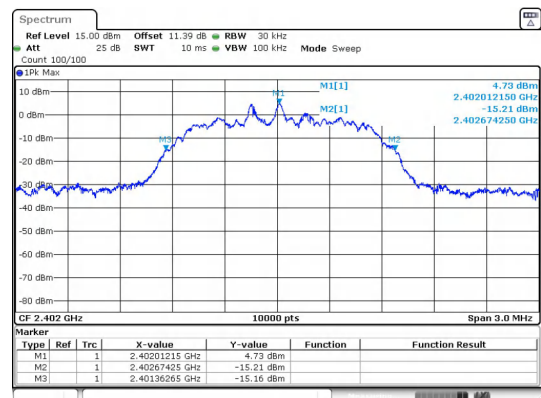
Date: 21.JAN.2025 17:53:126

GFSK_DH5_Channel 39



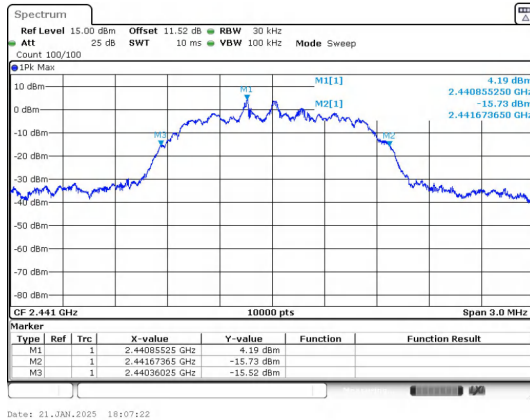
Date: 21.JAN.2025 17:55:118

GFSK_DH5_Channel 78

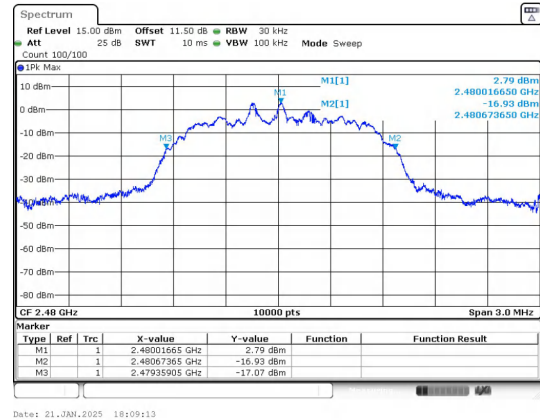


Date: 21.JAN.2025 17:57:113

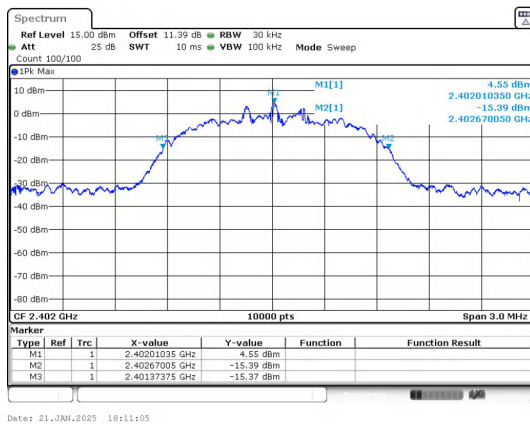
 π /4DQPSK_2-DH5_Channel 0



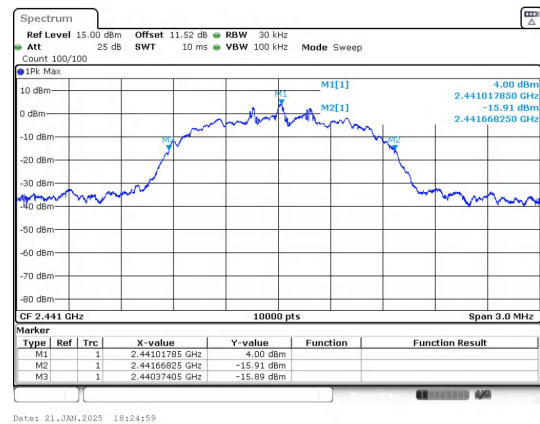
$\pi/4$ DQPSK_2-DH5_Channel 39



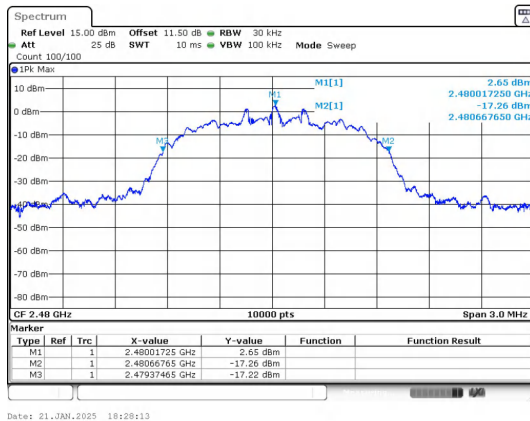
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



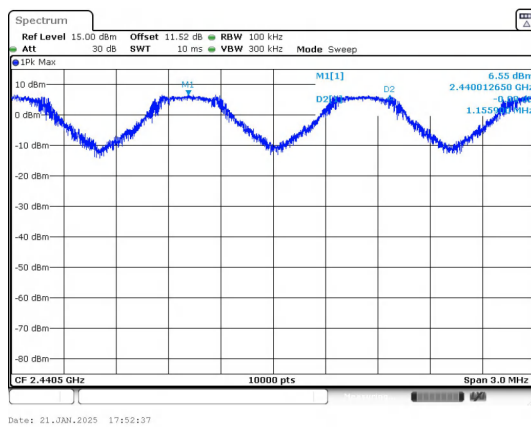
8DPSK_3-DH5_Channel 78

6) Carrier Frequencies Separation

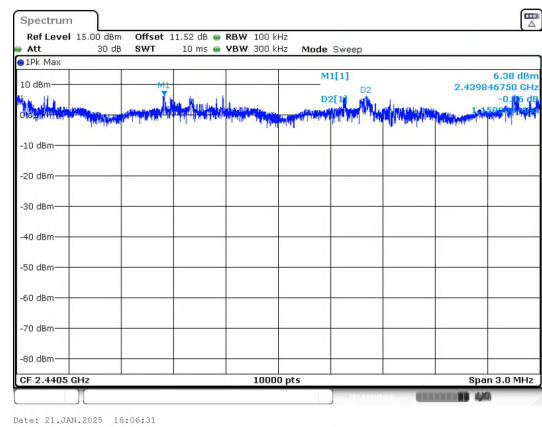
Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2440.0127	2441.1685	1.1559	1.03	PASS
$\pi/4$ DQPSK	2-DH5	2439.8468	2441.006	1.1592	0.873	PASS
8DPSK	3-DH5	2440.0258	2441.023	0.9972	0.867	PASS

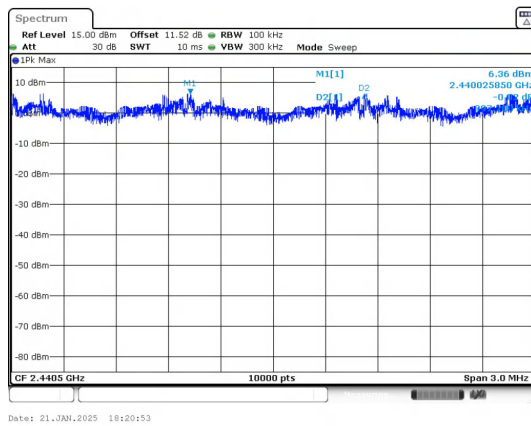
Test Graphs



GFSK



$\pi/4$ DQPSK



8DPSK

7) Conducted Out Of Band Emission

Test Result

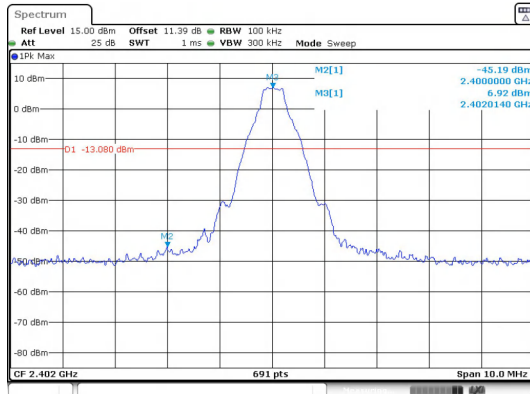
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-45.190	-13.08	-32.110	PASS
			7205.96	-40.765	-13.08	-27.685	PASS
		39	4882.09	-40.308	-13.37	-26.938	PASS
		78	2483.50	-49.640	-14.7	-34.940	PASS
			9920.20	-38.645	-14.7	-23.945	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-43.540	-13.36	-30.180	PASS
			7205.96	-42.322	-13.36	-28.962	PASS
		39	9763.72	-41.950	-13.54	-28.410	PASS
		78	2483.50	-49.730	-14.87	-34.860	PASS
			9920.20	-38.698	-14.87	-23.828	PASS
8DPSK	3-DH5	0	1747.52	-36.547	-13.45	-23.097	PASS
			2400.00	-43.730	-13.45	-30.280	PASS
		39	2248.58	-41.167	-13.86	-27.307	PASS
		78	2483.50	-50.570	-14.99	-35.580	PASS
			9920.20	-38.959	-14.99	-23.969	PASS

Hopping

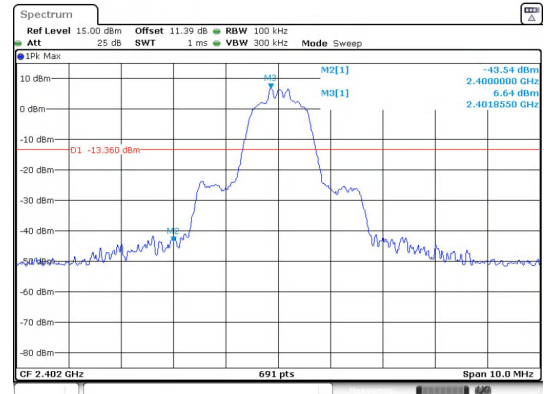
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2396.48	-48.016	-13.48	-34.536	PASS
			2400.00	-48.900	-13.48	-35.420	PASS
			2483.50	-50.430	-14.92	-35.510	PASS
π/4DQPSK	2-DH5		2400.00	-43.650	-13.4	-30.250	PASS
			2483.50	-49.690	-16.02	-33.670	PASS
8DPSK	3-DH5		2395.34	-47.389	-14.03	-33.359	PASS
			2400.00	-50.500	-14.03	-36.470	PASS
			2483.50	-48.760	-16.34	-32.420	PASS

Test Graphs



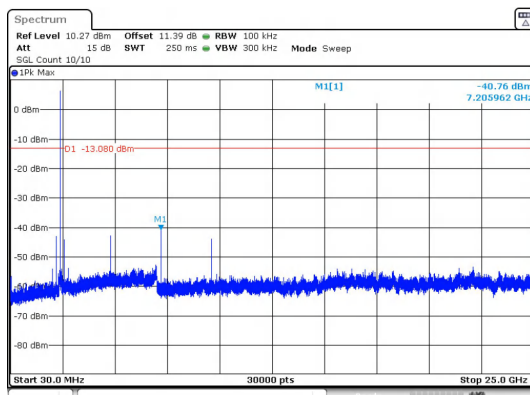
Date: 21.JAN.2025 17:44:133

Out Of Band Emission
GFSK_DH5_Channel 0



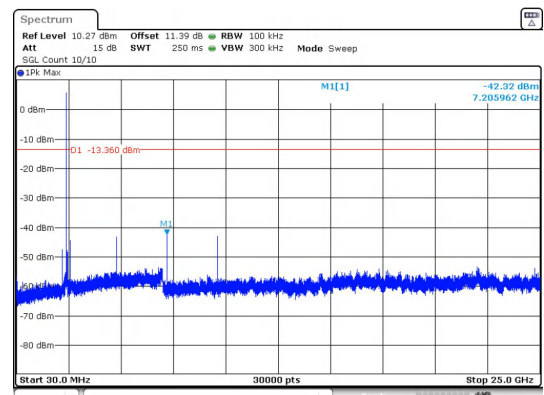
Date: 21.JAN.2025 17:57:150

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



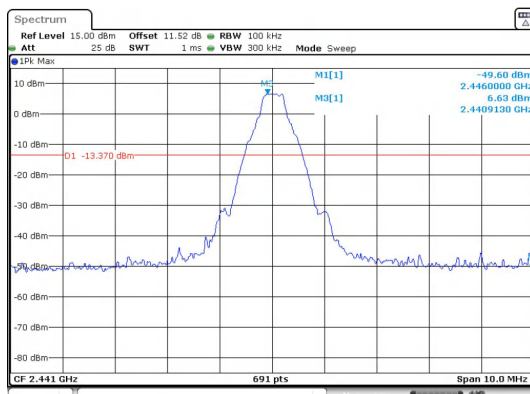
Date: 21.JAN.2025 17:44:155

30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



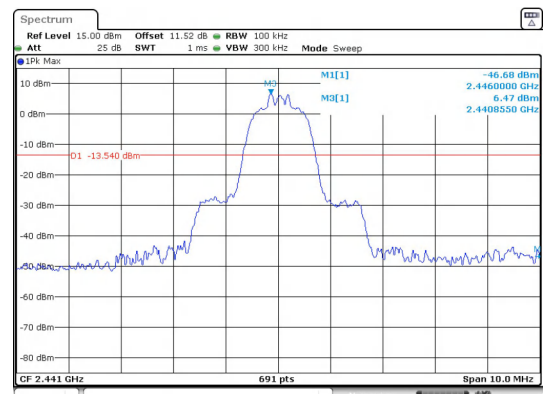
Date: 21.JAN.2025 17:58:112

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



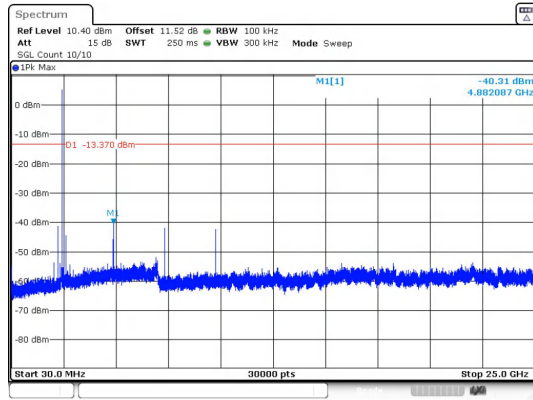
Date: 21.JAN.2025 17:53:157

Out Of Band Emission
GFSK_DH5_Channel 39

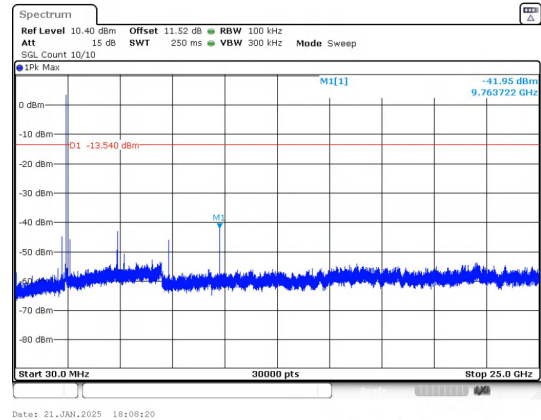


Date: 21.JAN.2025 18:07:158

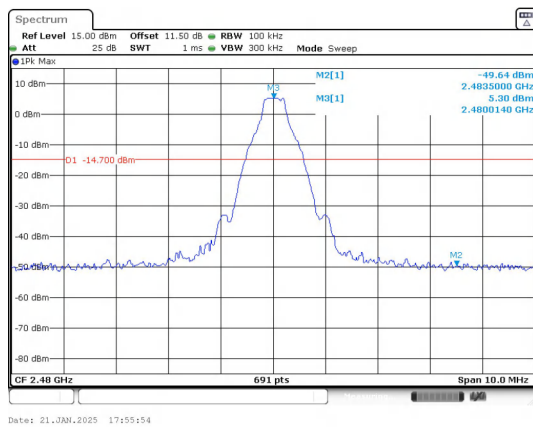
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39



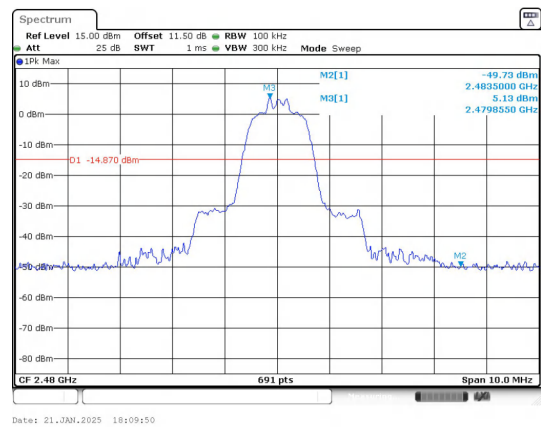
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



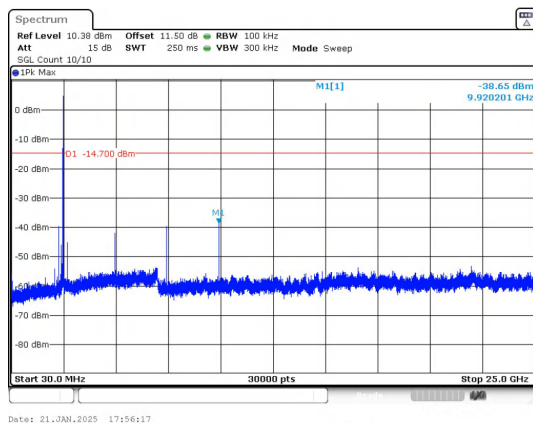
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



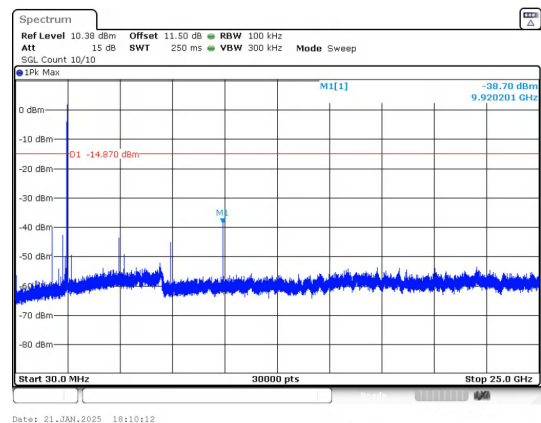
Out Of Band Emission
GFSK_DH5_Channel 78



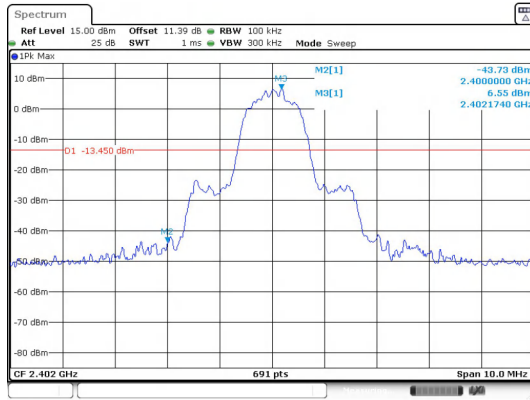
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78



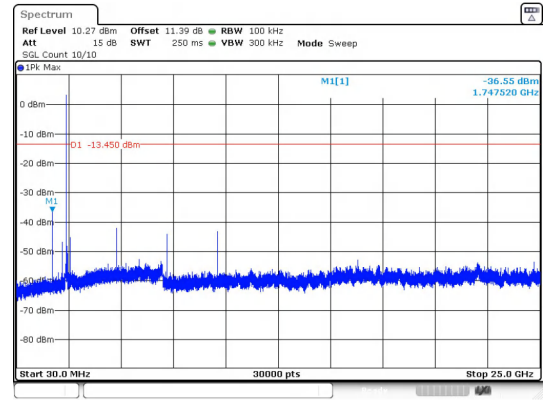
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



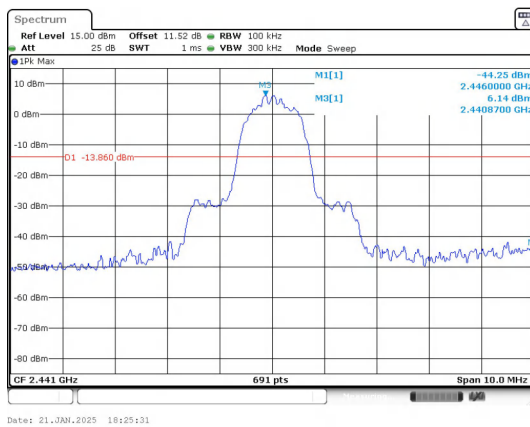
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



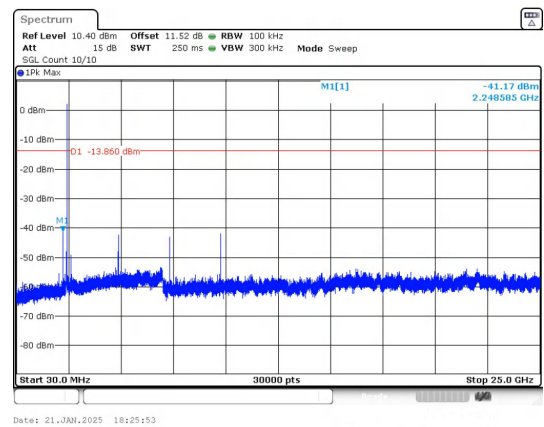
Out Of Band Emission
8DPSK_3-DH5_Channel 0



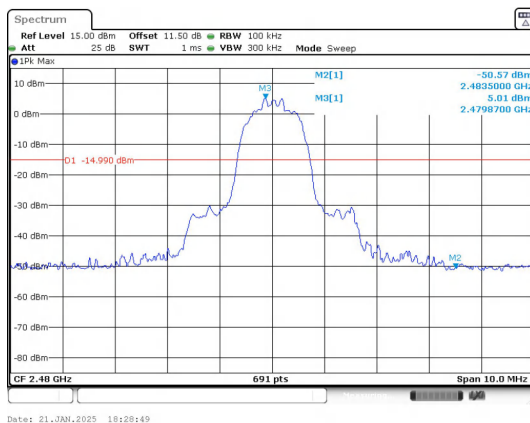
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



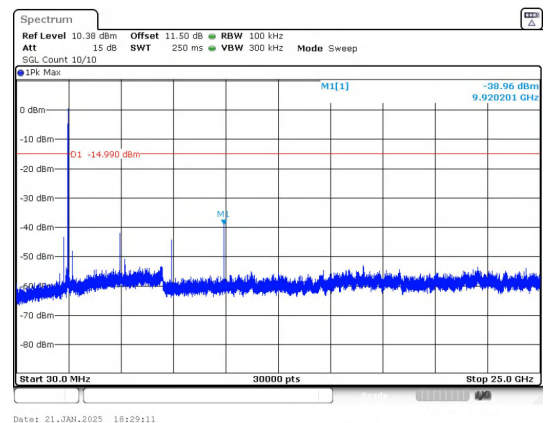
Out Of Band Emission
8DPSK_3-DH5_Channel 39



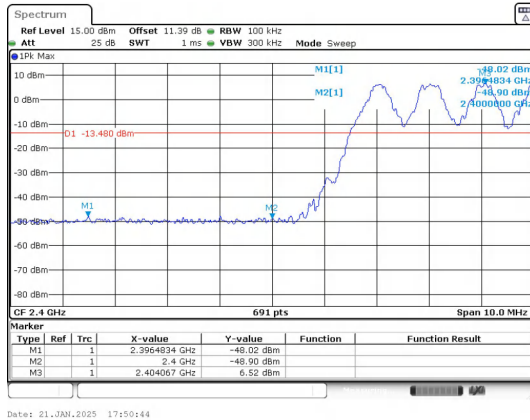
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



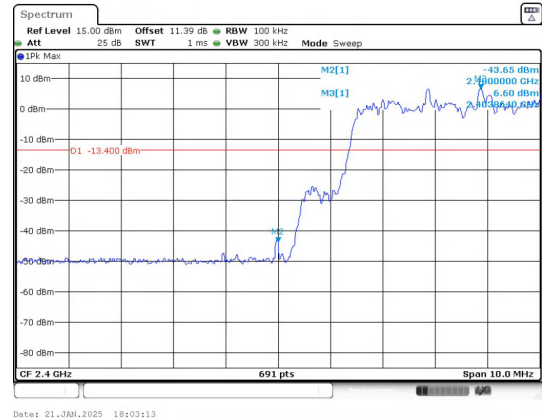
Out Of Band Emission
8DPSK_3-DH5_Channel 78



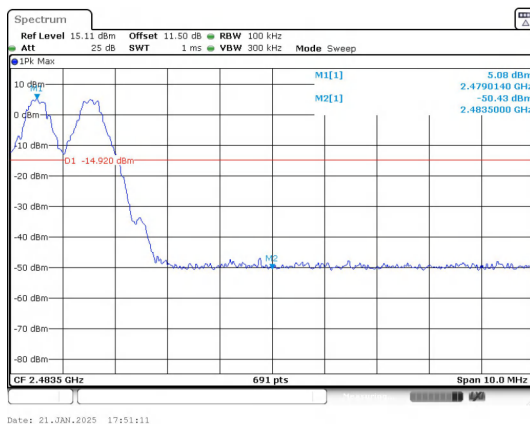
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



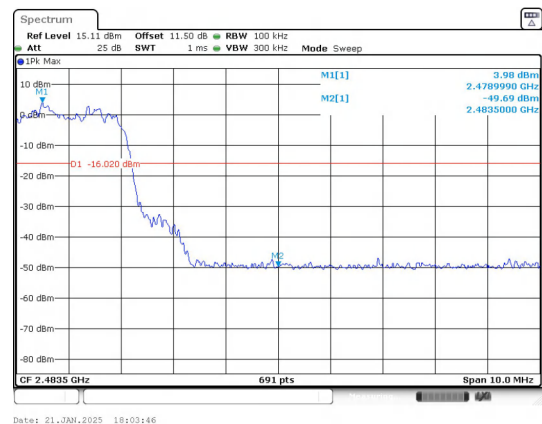
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



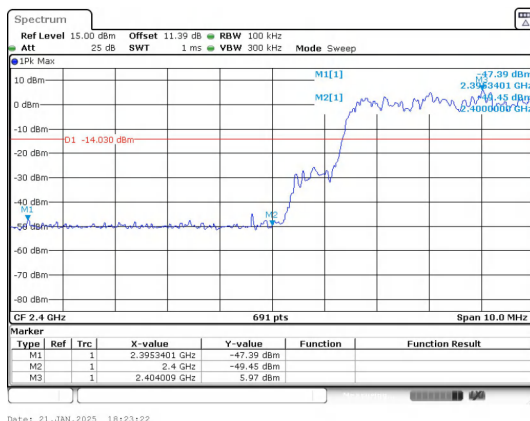
Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



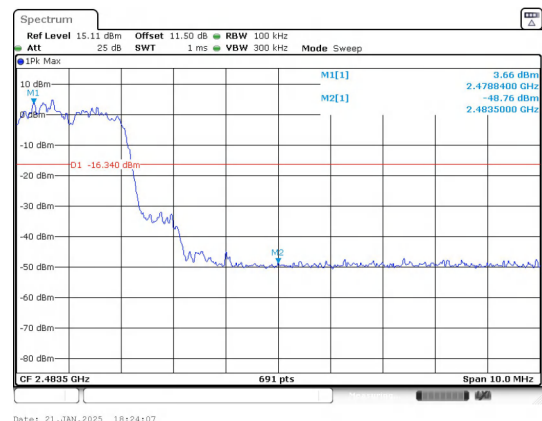
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



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-----