

Appendix Report

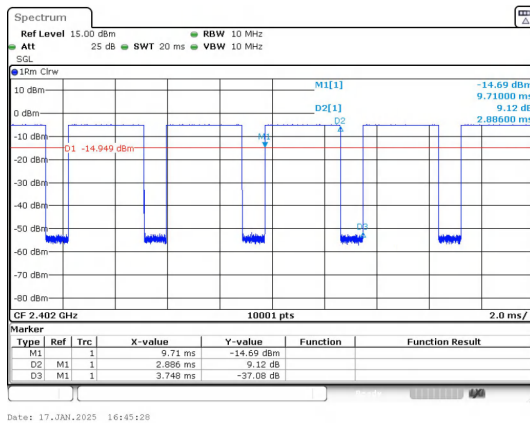
Report No.:	CISRR25011614201
Test Engineer:	Mark Fu
Supervised by:	Rory Huang

1) Duty Cycle

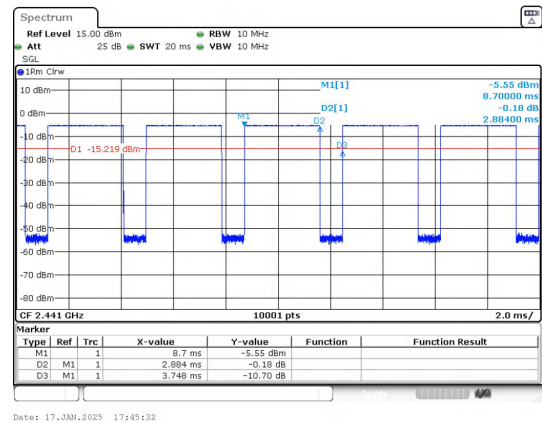
Test Result

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	2.884	3.748	76.95	0.7695	1.1379	0.3467
		78	2.886	3.748	77.00	0.7700	1.1351	0.3465
$\pi/4$ DQPSK	2-DH5	0	2.892	3.748	77.16	0.7716	1.1261	0.3458
		39	2.890	3.748	77.11	0.7711	1.1289	0.3460
		78	2.890	3.746	77.15	0.7715	1.1266	0.3460
8DPSK	3-DH5	0	2.892	3.748	77.16	0.7716	1.1261	0.3458
		39	2.894	3.748	77.21	0.7721	1.1233	0.3455
		78	2.892	3.748	77.16	0.7716	1.1261	0.3458

Test Graphs



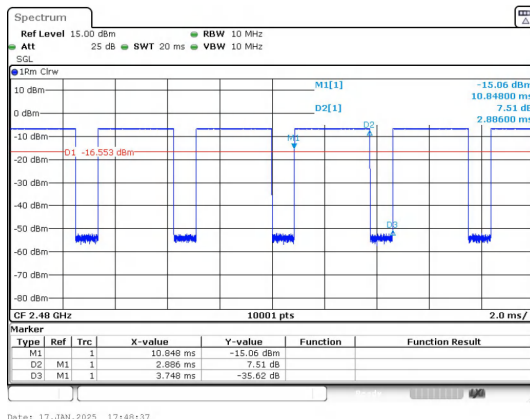
Date: 17.JAN.2025 16:45:28



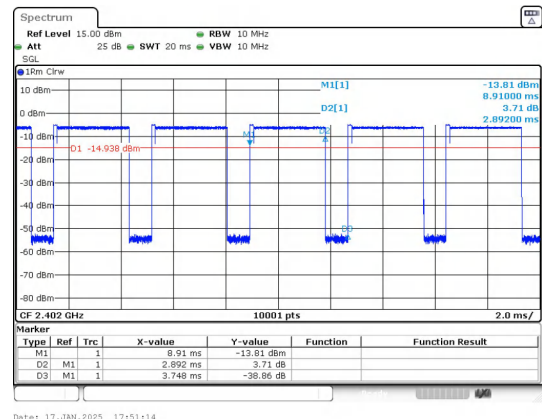
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GFSK(DH5)_Channel 0

GFSK(DH5)_Channel 39



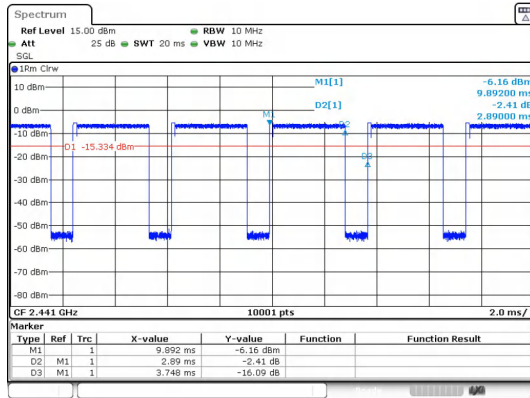
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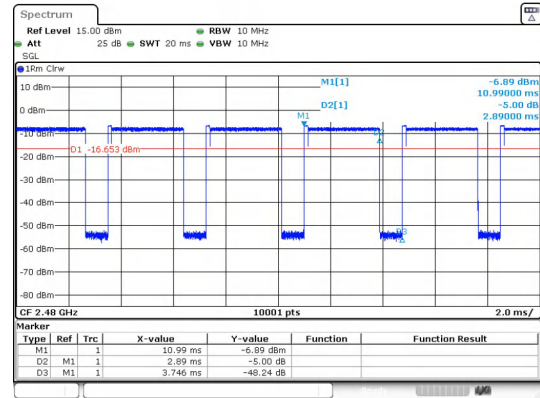
Date: 17.JAN.2025 17:51:14

GFSK(DH5)_Channel 78

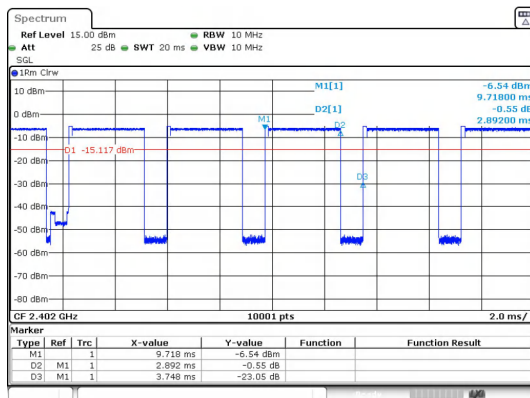
 $\pi/4$ DQPSK(2-DH5)_Channel 0



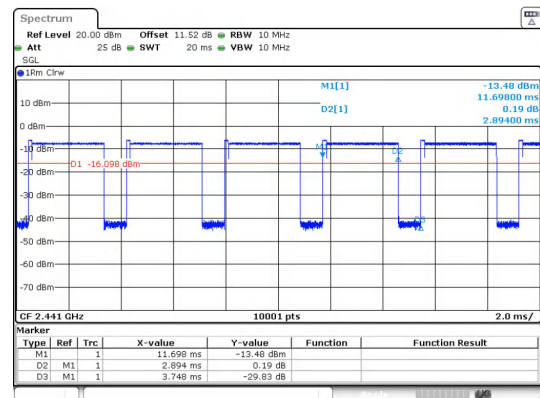
$\pi/4$ DQPSK(2-DH5)_Channel 39



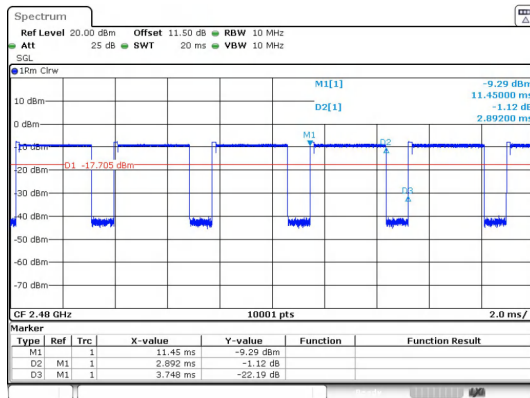
$\pi/4$ DQPSK(2-DH5)_Channel 78



8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39



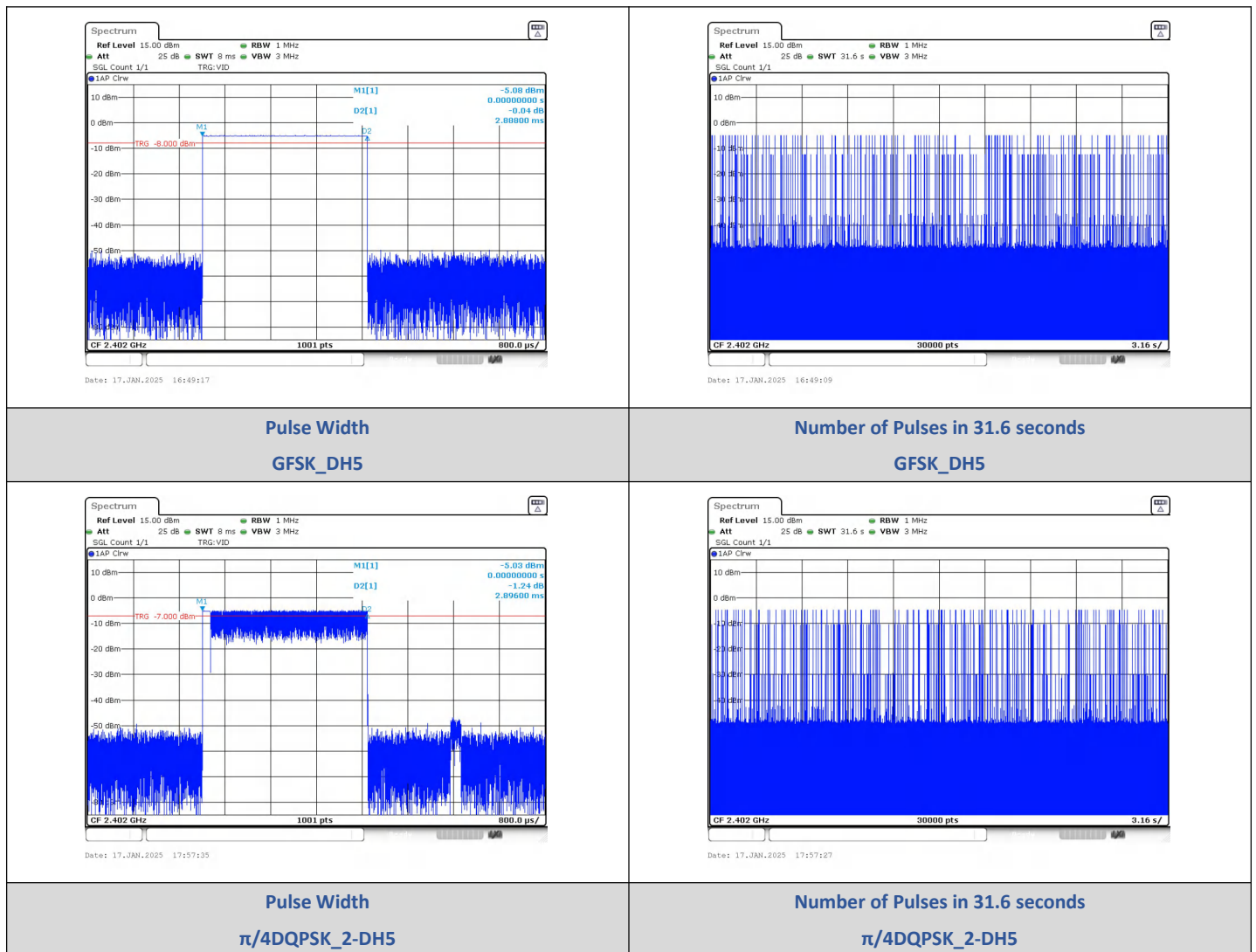
8DPSK(3-DH5)_Channel 78

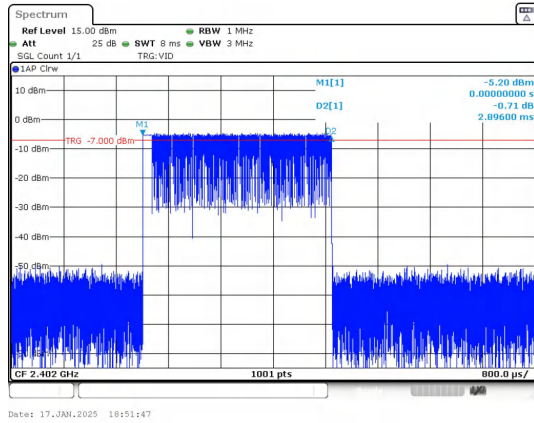
2) Dwell Time

Test Result

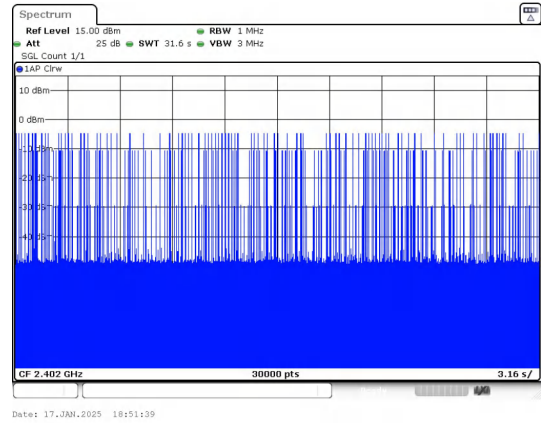
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.888	117	337.9	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.896	118	341.73		PASS
8DPSK	3-DH5		2.896	112	324.35		PASS

Test Graphs





Pulse Width
8DPSK_3-DH5



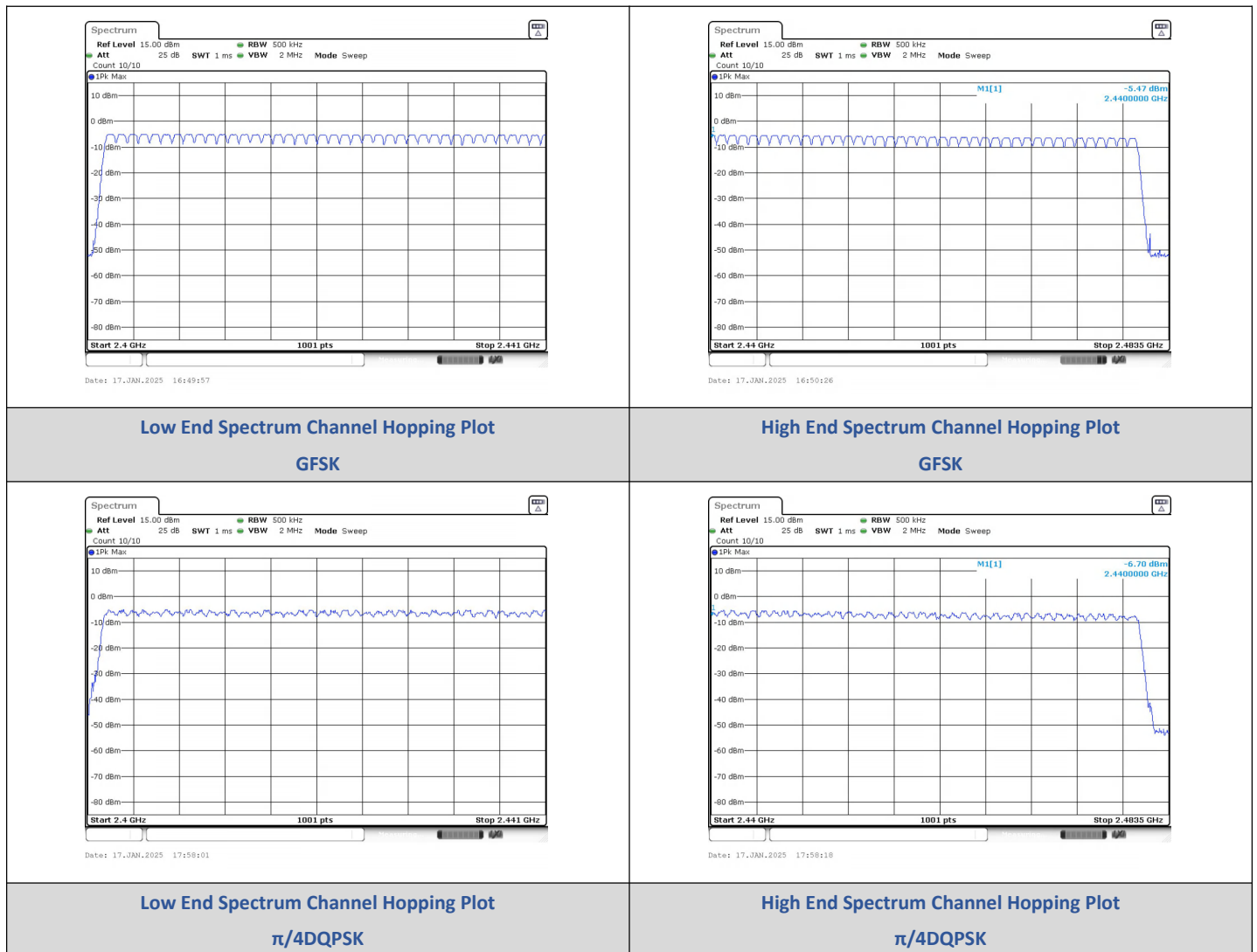
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

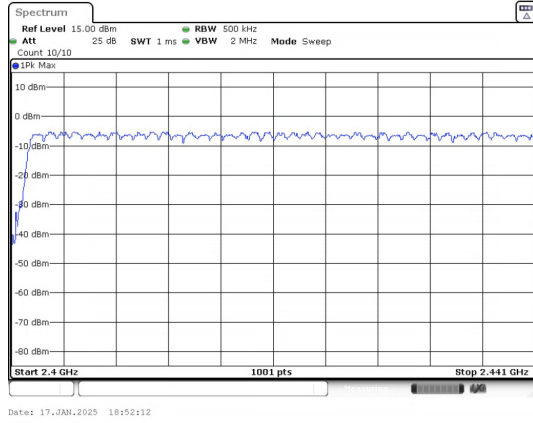
3) Number Of Hopping Channel

Test Result

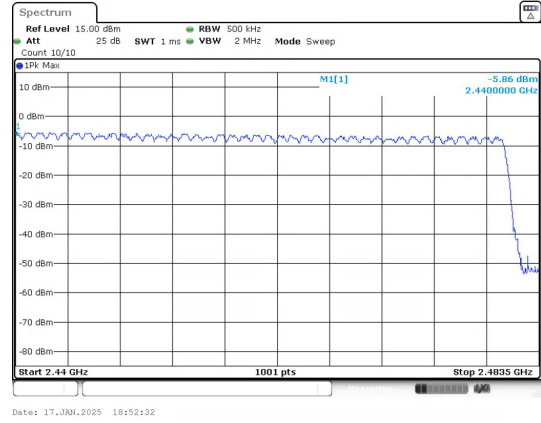
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK



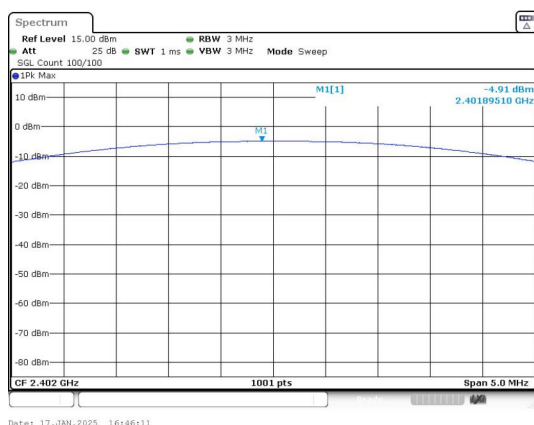
High End Spectrum Channel Hopping Plot
8DPSK

4) Conducted Output Power

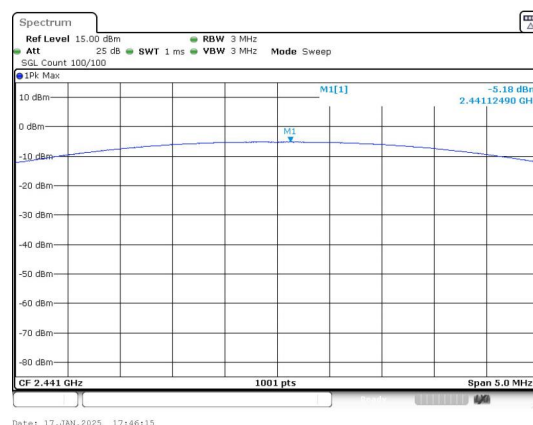
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	-4.91	0.32	≤30	PASS
		39	-5.18	0.30		PASS
		78	-6.53	0.22		PASS
$\pi/4$ DQPSK	2-DH5	0	-4.36	0.37	≤20.97	PASS
		39	-4.68	0.34		PASS
		78	-5.94	0.25		PASS
8DPSK	3-DH5	0	-4.34	0.37		PASS
		39	-4.78	0.33		PASS
		78	-6.34	0.23		PASS

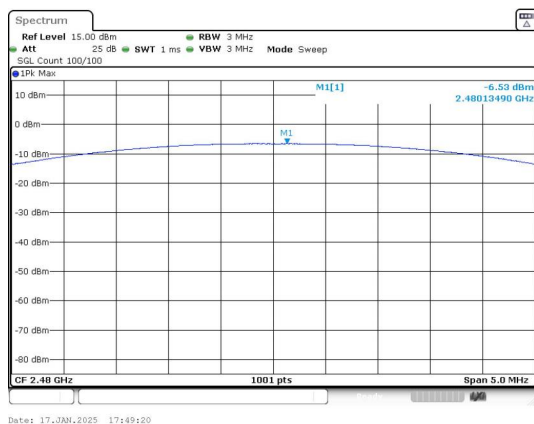
Test Graphs



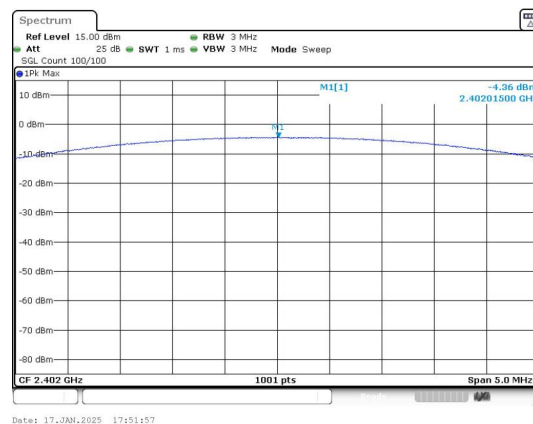
Peak Output Power
GFSK_Channel 0



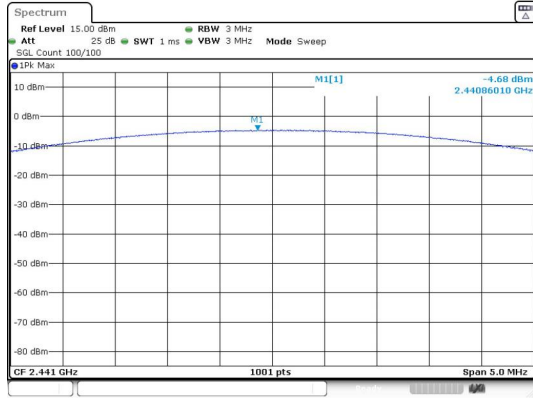
Peak Output Power
GFSK_Channel 39



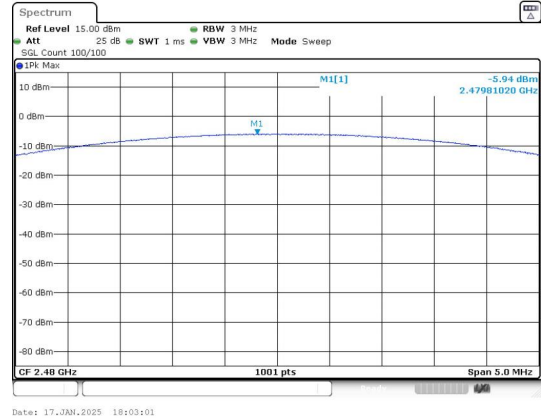
Peak Output Power
GFSK_Channel 78



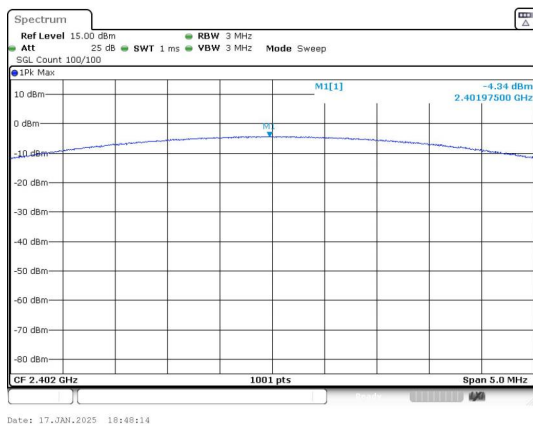
Peak Output Power
 $\pi/4$ DQPSK_Channel 0



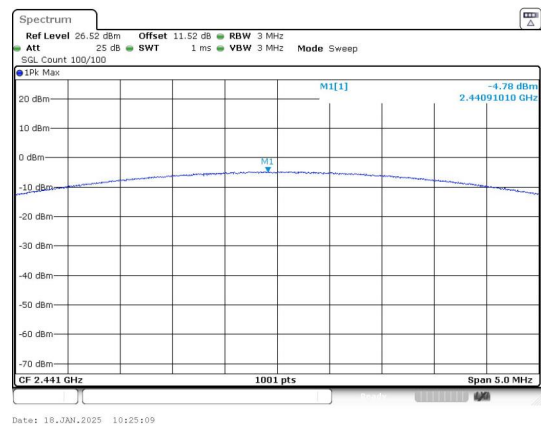
Peak Output Power
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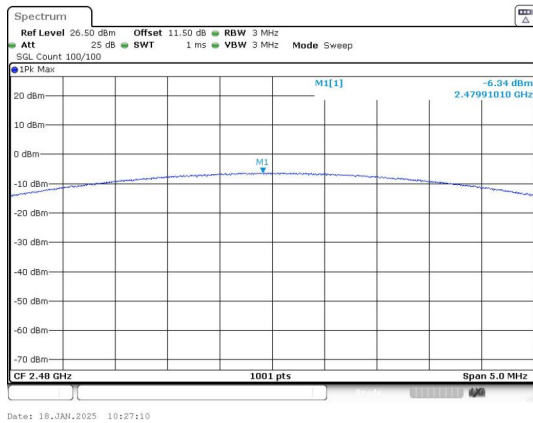
Peak Output Power
 $\pi/4$ DQPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



Peak Output Power
8DPSK_Channel 39



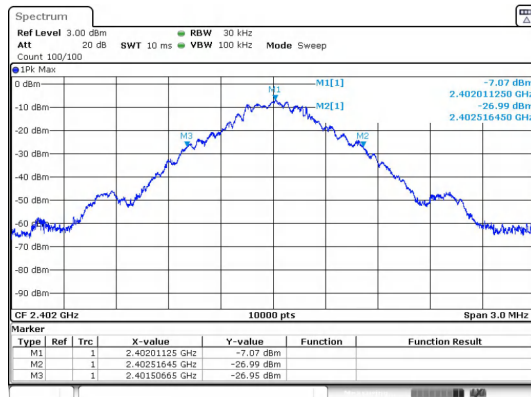
Peak Output Power
8DPSK_Channel 78

5) 20dB Bandwidth

Test Result

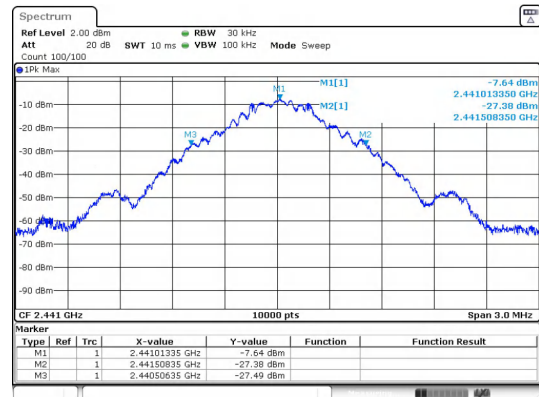
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.010
	39	2441 MHz	1.000
	78	2480 MHz	1.020
π /4DQPSK	0	2402 MHz	1.310
	39	2441 MHz	1.310
	78	2480 MHz	1.310
8DPSK	0	2402 MHz	1.300
	39	2441 MHz	1.290
	78	2480 MHz	1.290

Test Graphs



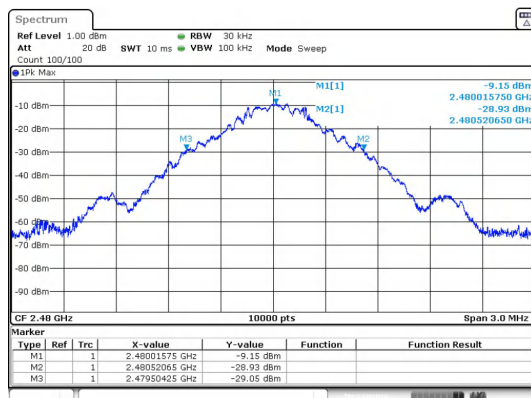
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GFSK_DH5_Channel 0



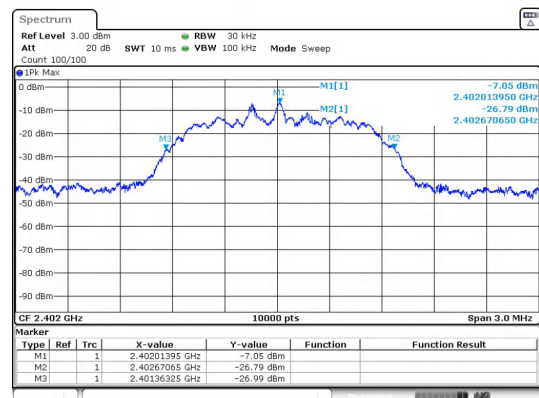
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GFSK_DH5_Channel 39



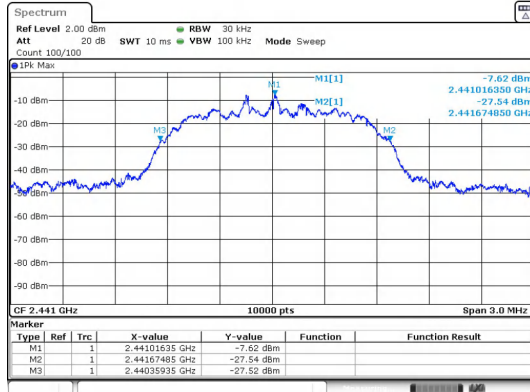
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GFSK_DH5_Channel 78

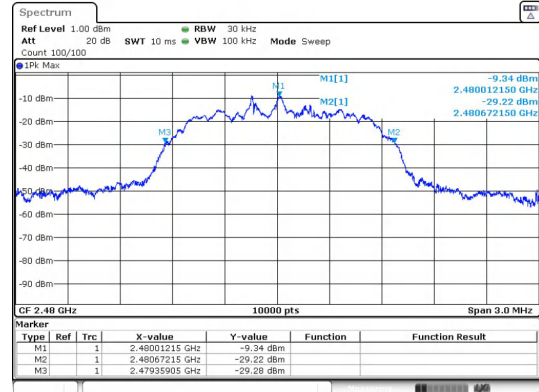


Date: 17, JAN, 2025 17:51:40

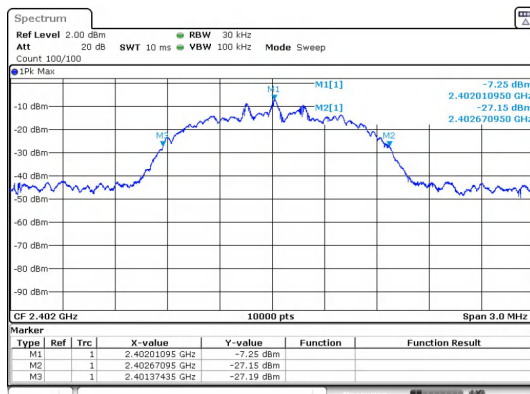
 π /4DQPSK_2-DH5_Channel 0



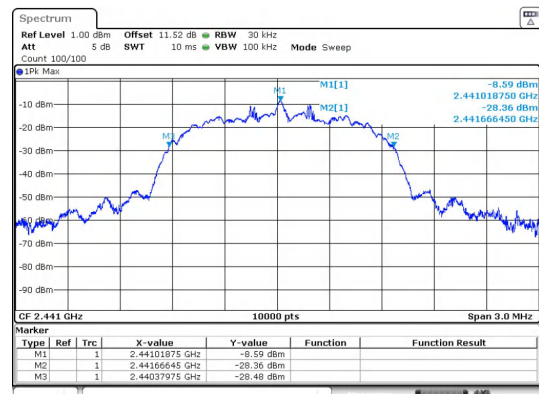
$\pi/4$ DQPSK_2-DH5_Channel 39



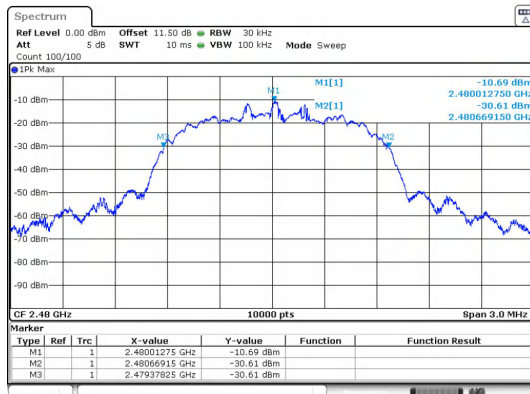
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



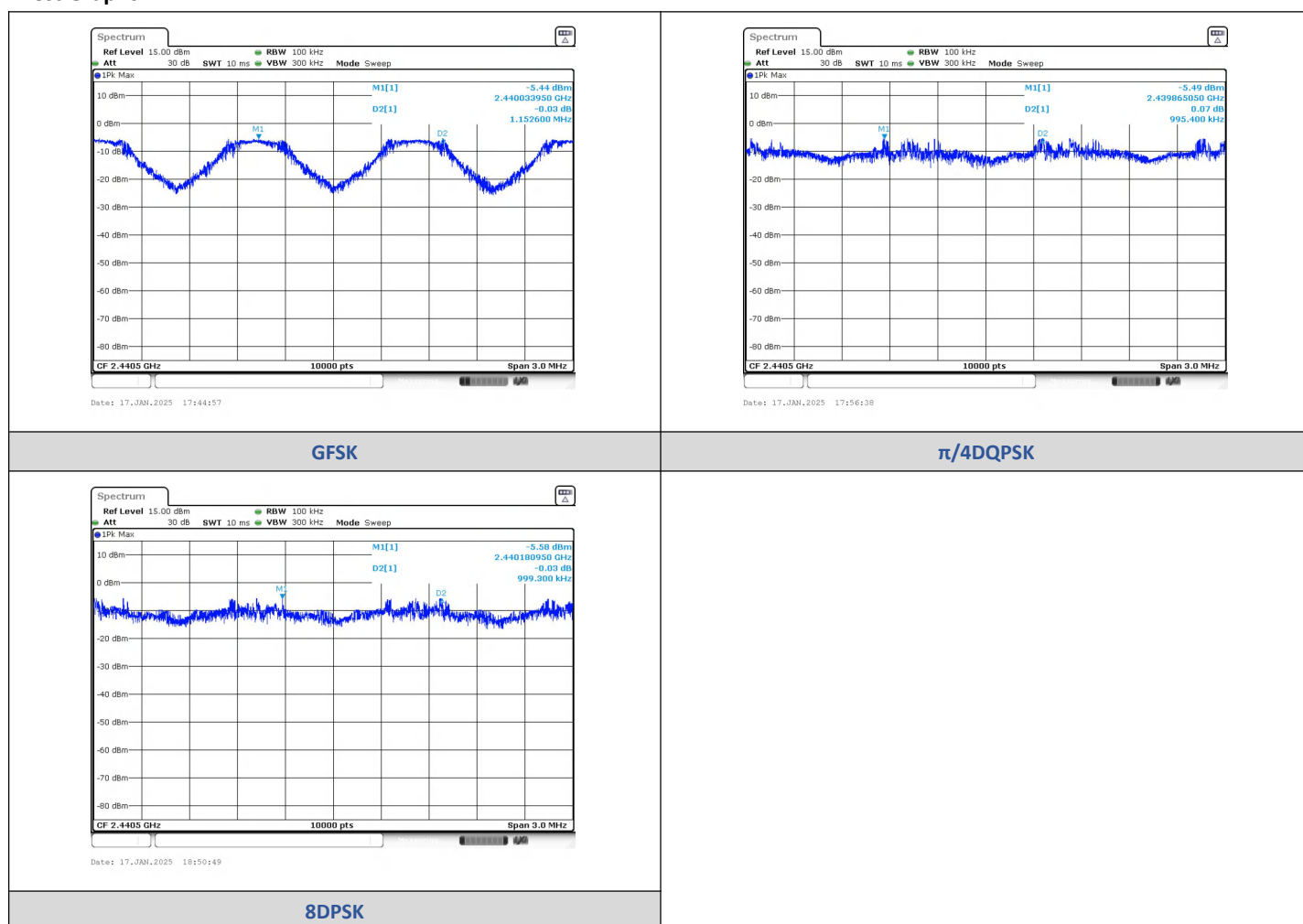
8DPSK_3-DH5_Channel 78

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	2440.034	2441.1865	1.1526	1.01	PASS
$\pi/4$ DQPSK	2-DH5	2439.865	2440.8605	0.9954	0.873	PASS
8DPSK	3-DH5	2440.1809	2441.1802	0.9993	0.867	PASS

Test Graphs



7) Conducted Out Of Band Emission

Test Result

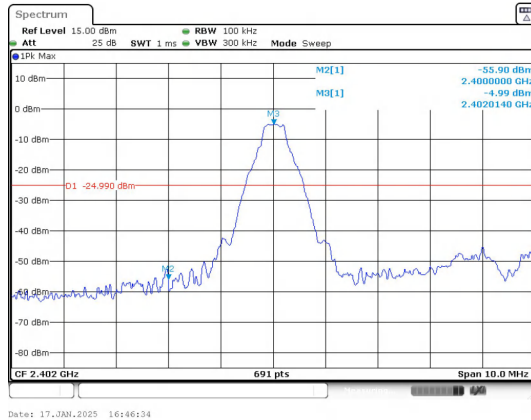
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-55.900	-24.99	-30.910	PASS
			22031.5	-44.643	-24.99	-19.653	PASS
		39	6141.41	-43.796	-25.37	-18.426	PASS
		78	2483.50	-62.190	-26.63	-35.560	PASS
			6290.40	-43.927	-26.63	-17.297	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-54.360	-25.07	-29.290	PASS
			6911.32	-44.845	-25.07	-19.775	PASS
		39	6959.59	-44.773	-25.6	-19.173	PASS
		78	2483.50	-61.500	-26.77	-34.730	PASS
			6981.23	-45.023	-26.77	-18.253	PASS
8DPSK	3-DH5	0	2400.00	-57.050	-25.29	-31.760	PASS
			6908.82	-44.382	-25.29	-19.092	PASS
		39	5746.05	-36.275	-26.16	-10.115	PASS
		78	2483.50	-50.890	-27.87	-23.020	PASS
			9920.20	-41.081	-27.87	-13.211	PASS

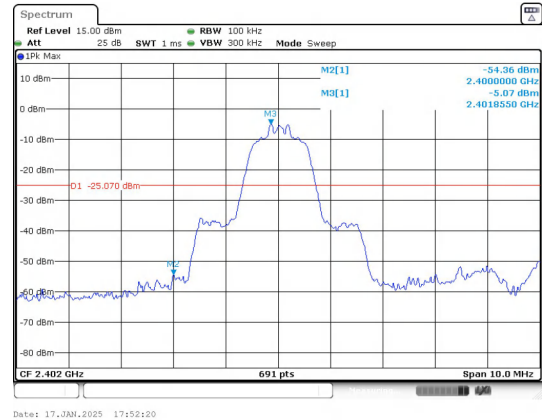
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2398.96	-57.639	-25.03	-32.609	PASS
			2400.00	-59.460	-25.03	-34.430	PASS
			2483.50	-59.660	-26.39	-33.270	PASS
$\pi/4$ DQPSK	2-DH5		2400.00	-58.630	-27.95	-30.680	PASS
			2483.50	-61.510	-27.24	-34.270	PASS
8DPSK	3-DH5		2400.00	-58.390	-25.21	-33.180	PASS
			2483.50	-61.220	-27.06	-34.160	PASS

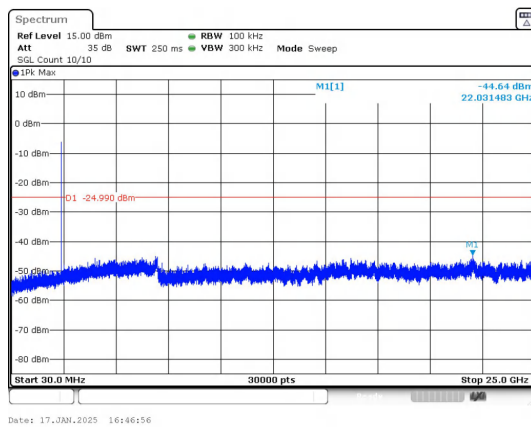
Test Graphs



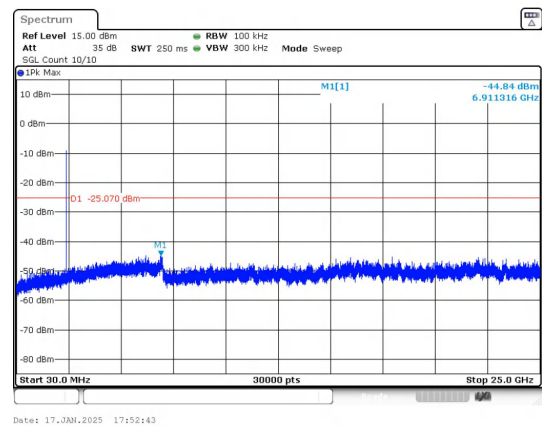
Out Of Band Emission
GFSK_DH5_Channel 0



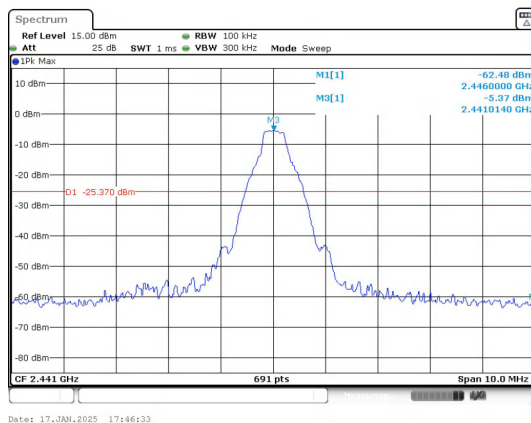
Out Of Band Emission
 $\pi/4$ QPSK_2-DH5_Channel 0



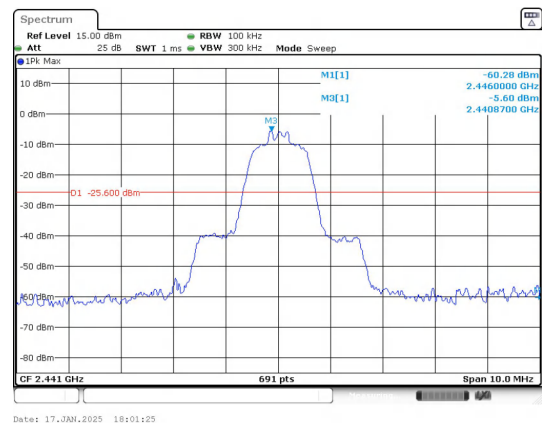
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



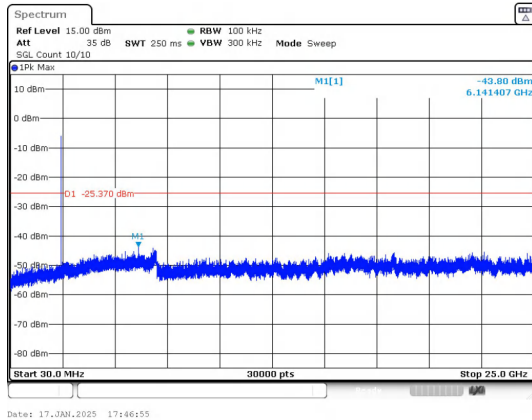
30.0 MHz - 25000.0 MHz
 $\pi/4$ QPSK_2-DH5_Channel 0



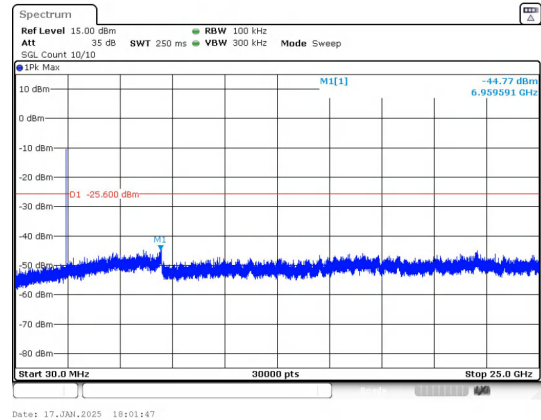
Out Of Band Emission
GFSK_DH5_Channel 39



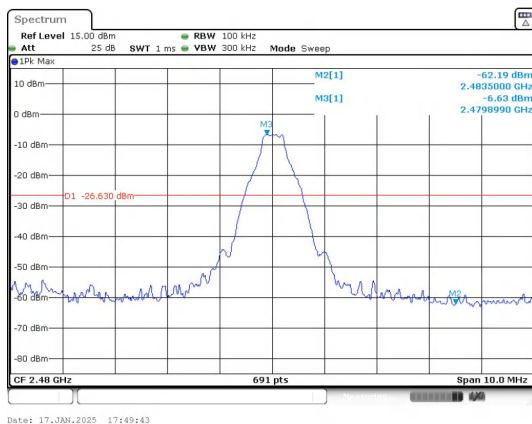
Out Of Band Emission
 $\pi/4$ QPSK_2-DH5_Channel 39



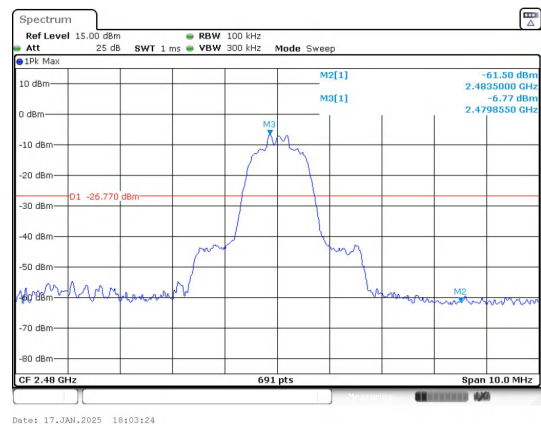
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



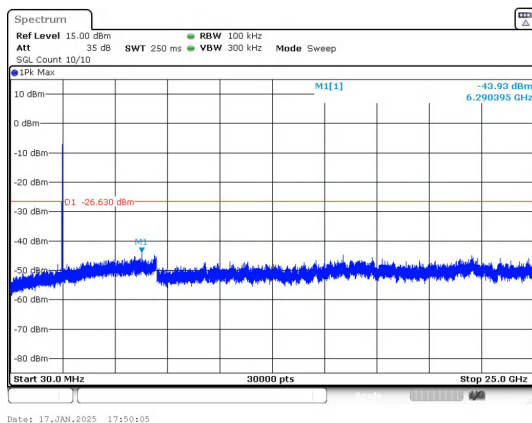
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



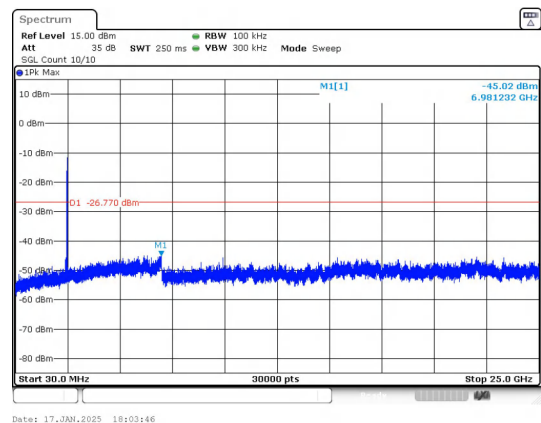
Out Of Band Emission
GFSK_DH5_Channel 78



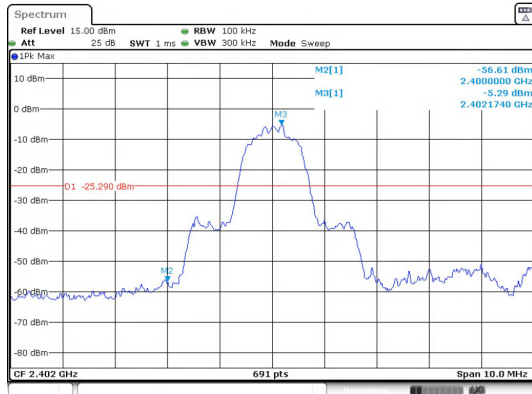
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78



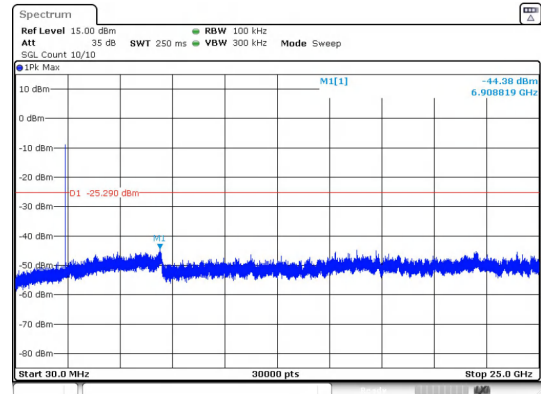
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



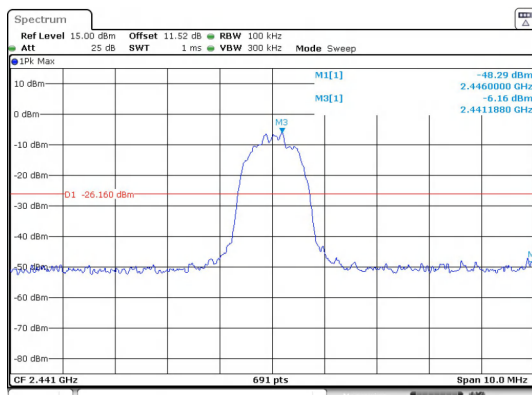
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



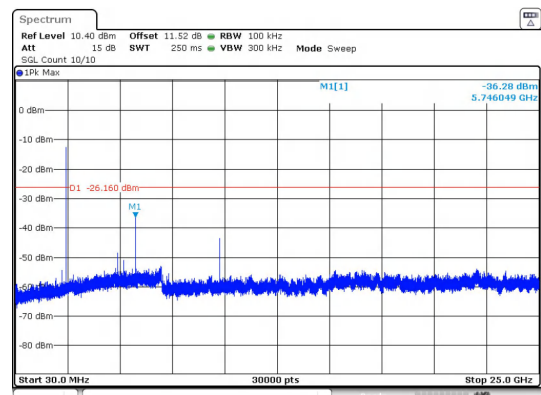
Out Of Band Emission
8DPSK_3-DH5_Channel 0



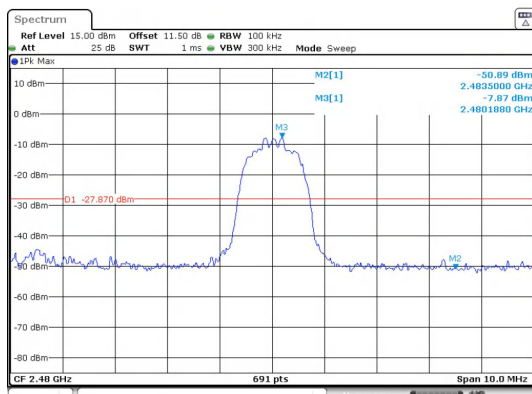
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



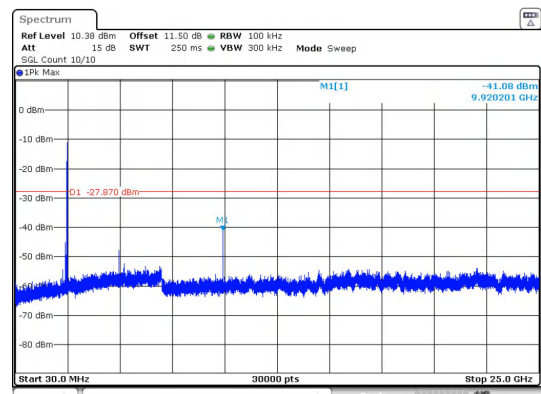
Out Of Band Emission
8DPSK_3-DH5_Channel 39



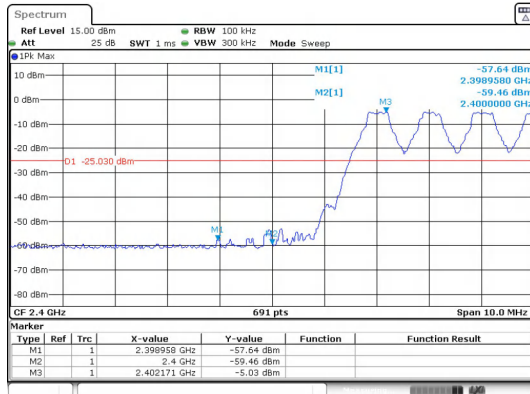
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



Out Of Band Emission
8DPSK_3-DH5_Channel 78

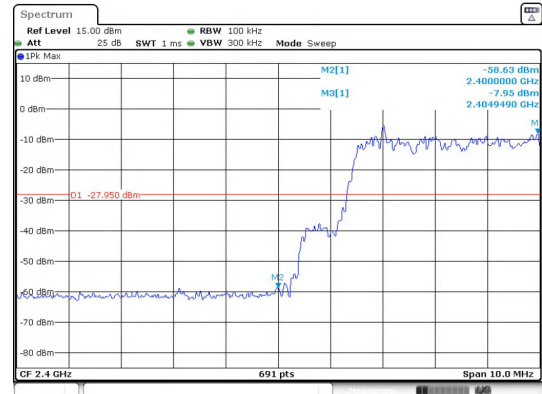


30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



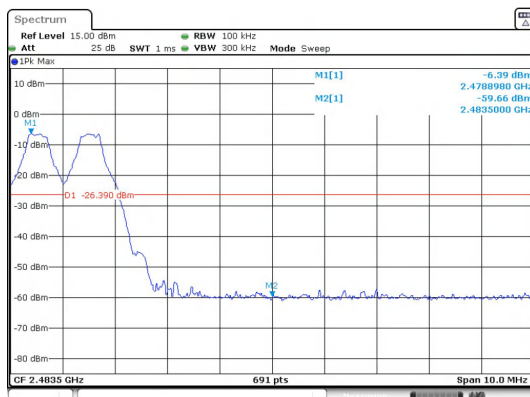
Date: 17.JAN.2025 16:54:15

Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



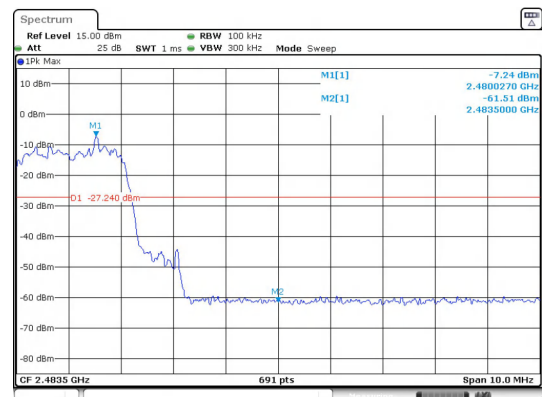
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Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



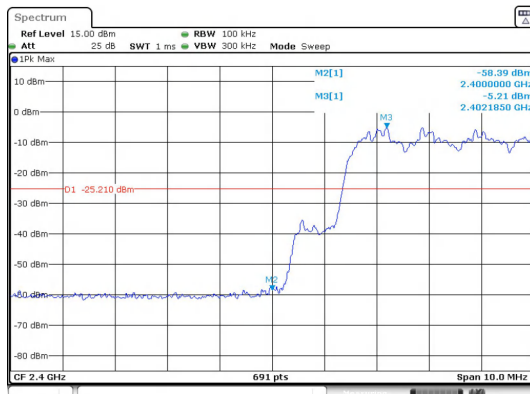
Date: 17.JAN.2025 16:58:49

Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



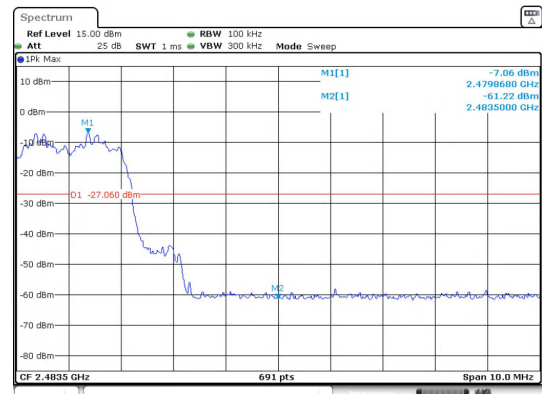
Date: 17.JAN.2025 17:59:53

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



Date: 17.JAN.2025 18:56:07

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



Date: 17.JAN.2025 18:57:30

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

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