

Appendix Report

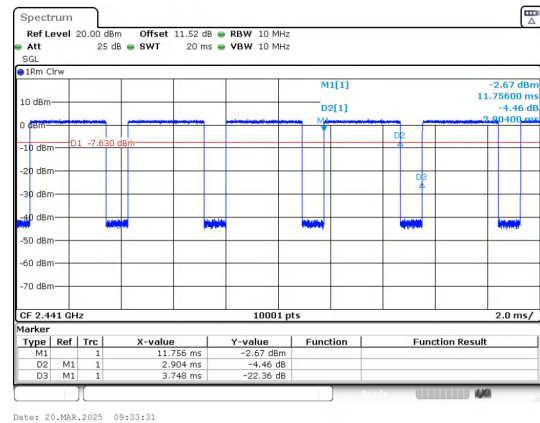
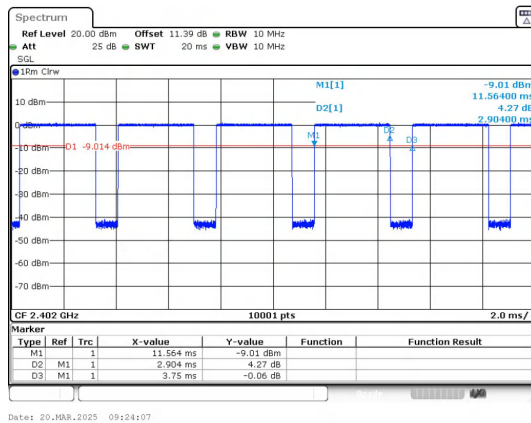
Report No.:	CISRR250319149
Test Engineer:	Mark Fu
Supervised by:	Rory Huang

1) Duty Cycle

Test Result

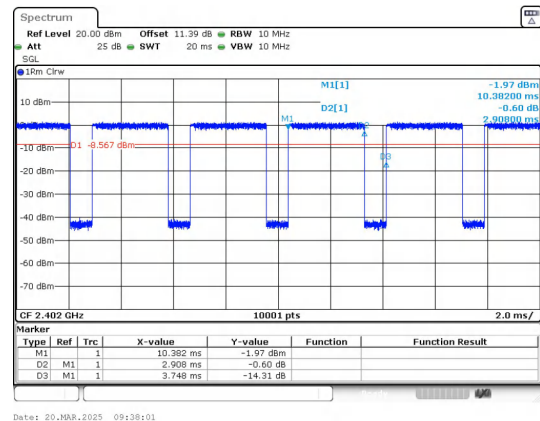
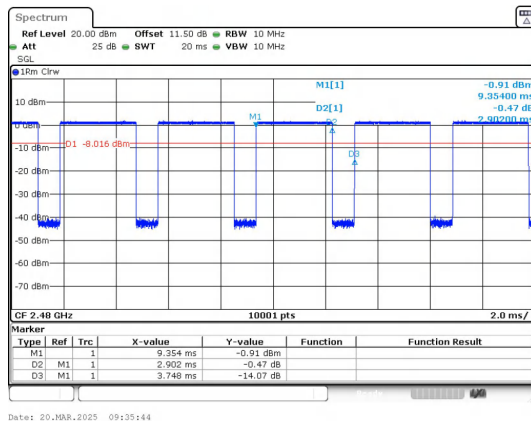
Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.904	3.750	77.44	0.7744	1.1103	0.3444
		39	2.904	3.748	77.48	0.7748	1.1081	0.3444
		78	2.902	3.748	77.43	0.7743	1.1109	0.3446
$\pi/4$ DQPSK	2-DH5	0	2.908	3.748	77.59	0.7759	1.1019	0.3439
		39	2.908	3.748	77.59	0.7759	1.1019	0.3439
		78	2.910	3.748	77.64	0.7764	1.0991	0.3436
8DPSK	3-DH5	0	2.910	3.748	77.64	0.7764	1.0991	0.3436
		39	2.910	3.748	77.64	0.7764	1.0991	0.3436
		78	2.910	3.748	77.64	0.7764	1.0991	0.3436

Test Graphs



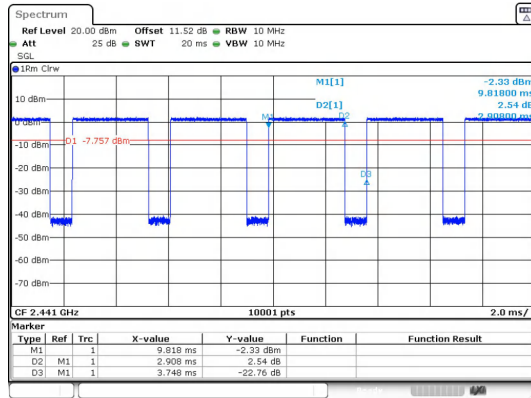
GFSK(DH5)_Channel 0

GFSK(DH5)_Channel 39

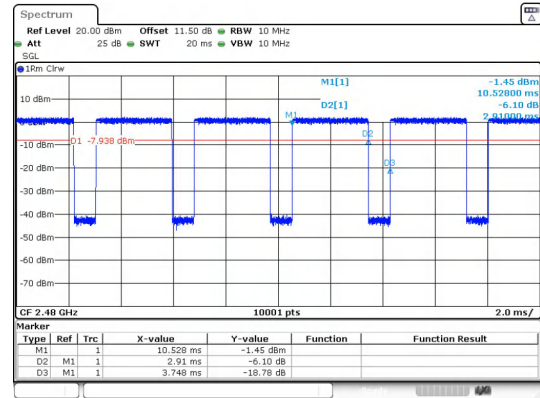


GFSK(DH5)_Channel 78

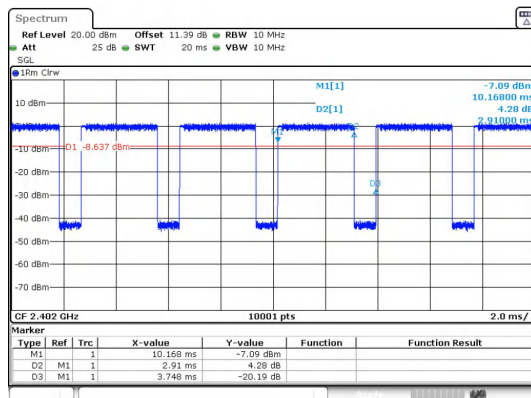
 $\pi/4$ DQPSK(2-DH5)_Channel 0



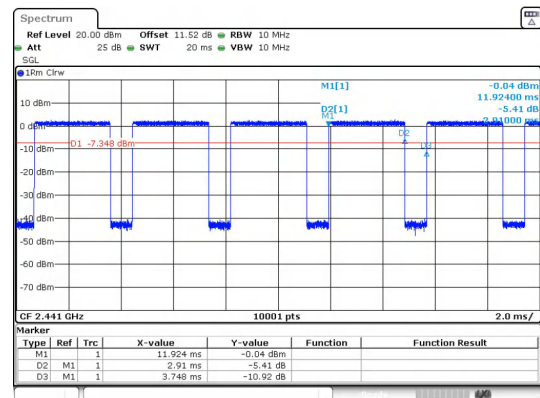
$\pi/4$ DQPSK(2-DH5)_Channel 39



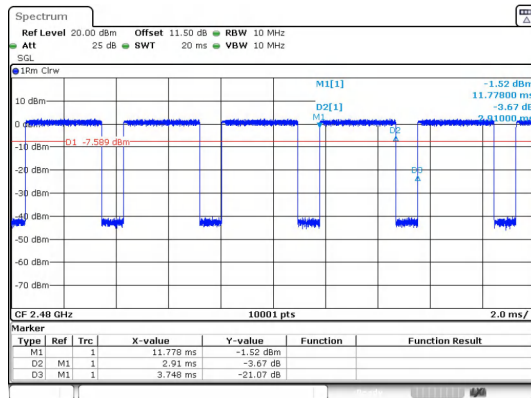
$\pi/4$ DQPSK(2-DH5)_Channel 78



8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39



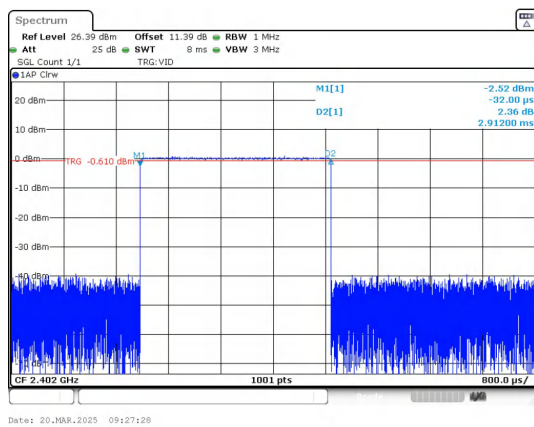
8DPSK(3-DH5)_Channel 78

2) Dwell Time

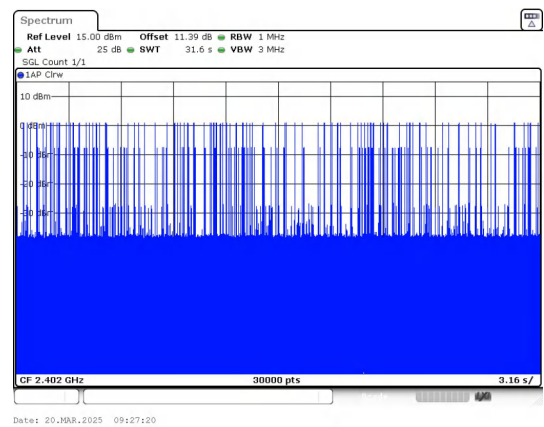
Test Result

Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.912	110	320.32	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.912	108	314.5		PASS
8DPSK	3-DH5		2.912	101	294.11		PASS

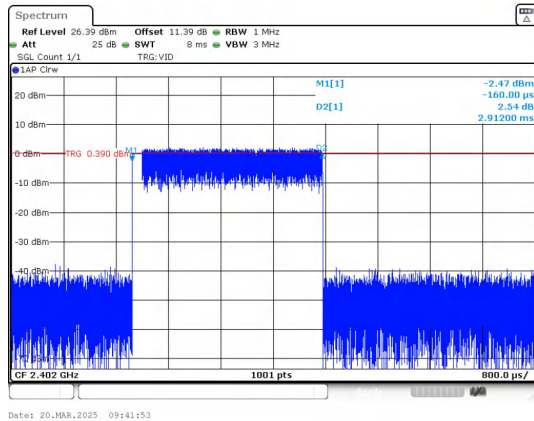
Test Graphs



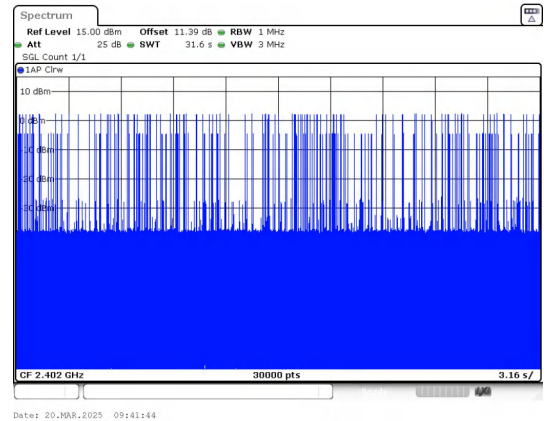
Pulse Width
GFSK_DH5



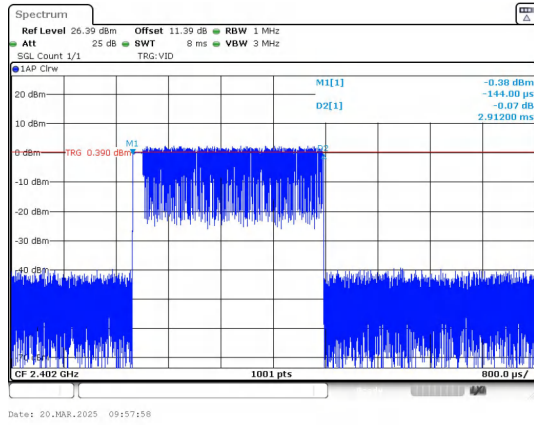
Number of Pulses in 31.6 seconds
GFSK_DH5



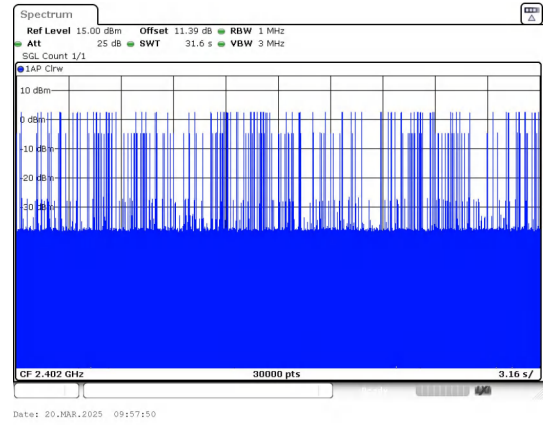
Pulse Width
 $\pi/4$ DQPSK_2-DH5



Number of Pulses in 31.6 seconds
 $\pi/4$ DQPSK_2-DH5



Pulse Width
8DPSK_3-DH5



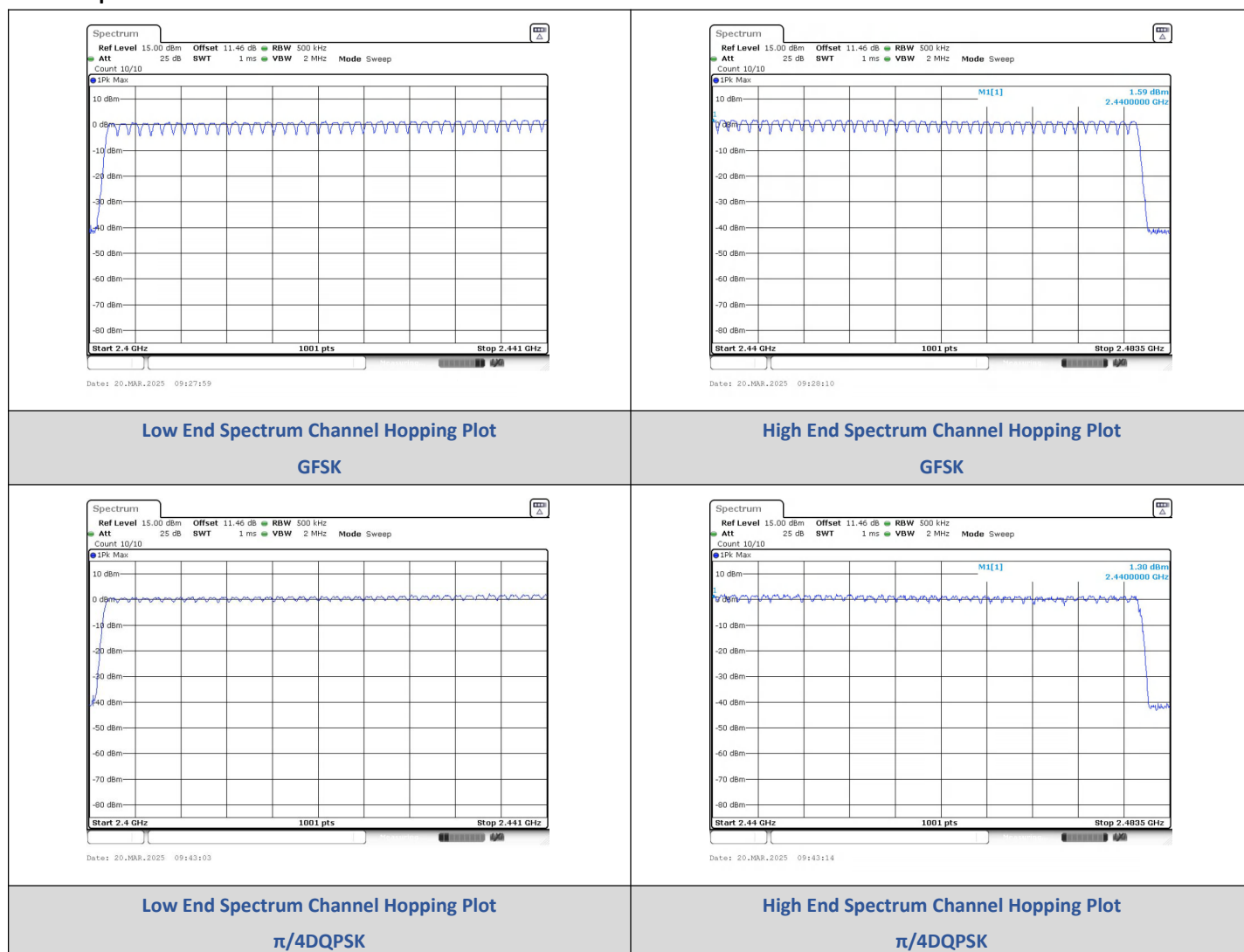
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

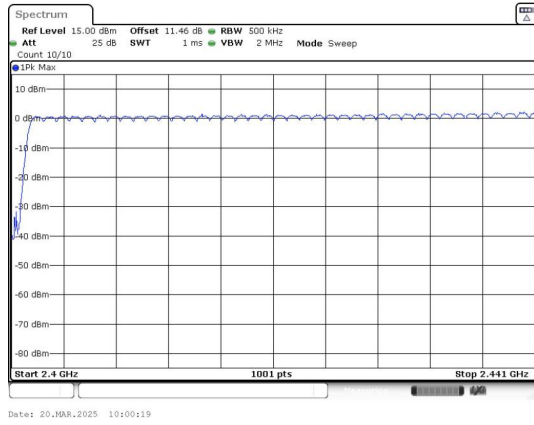
3) Number Of Hopping Channel

Test Result

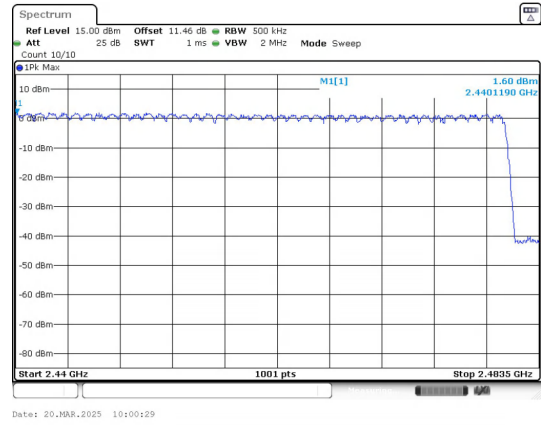
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK



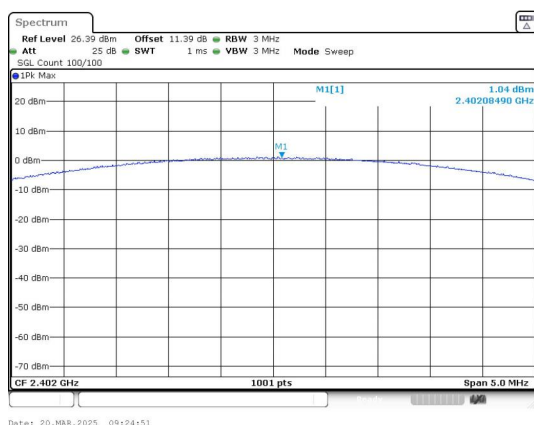
High End Spectrum Channel Hopping Plot
8DPSK

4) Conducted Output Power

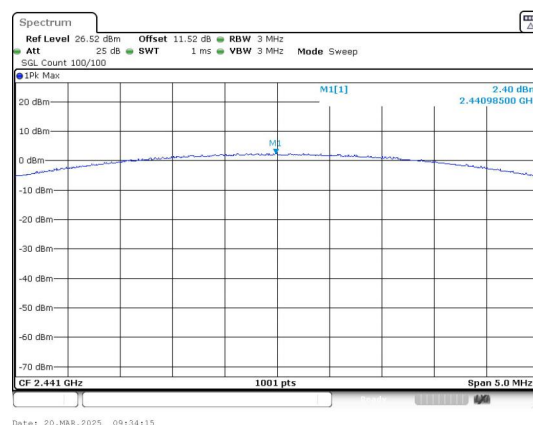
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	1.04	1.27	≤30	PASS
		39	2.40	1.74		PASS
		78	2.02	1.59		PASS
$\pi/4$ DQPSK	2-DH5	0	2.80	1.91	≤20.97	PASS
		39	4.40	2.75		PASS
		78	3.82	2.41		PASS
8DPSK	3-DH5	0	3.10	2.04		PASS
		39	4.56	2.86		PASS
		78	4.06	2.55		PASS

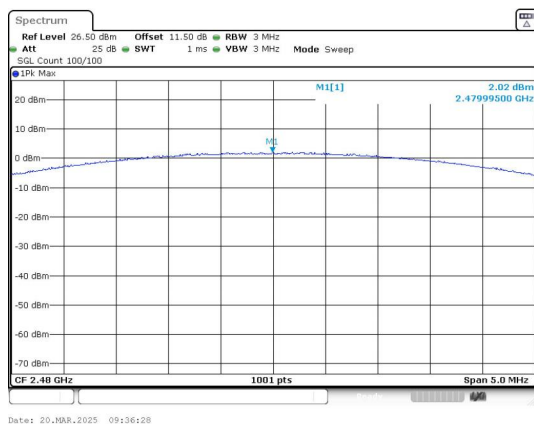
Test Graphs



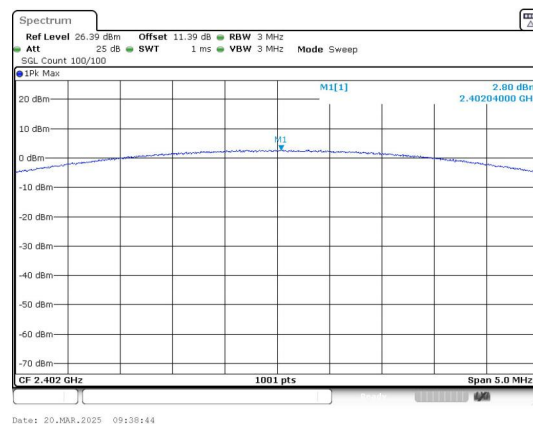
Peak Output Power
GFSK_Channel 0



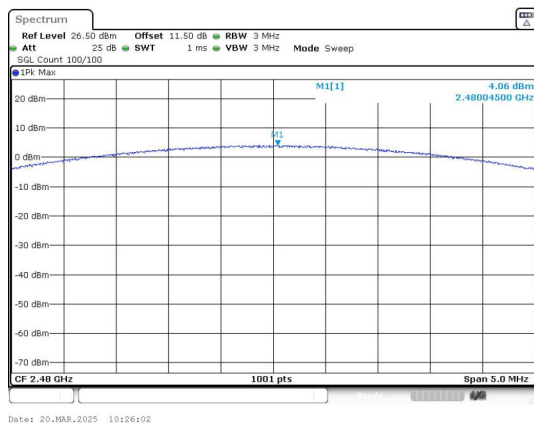
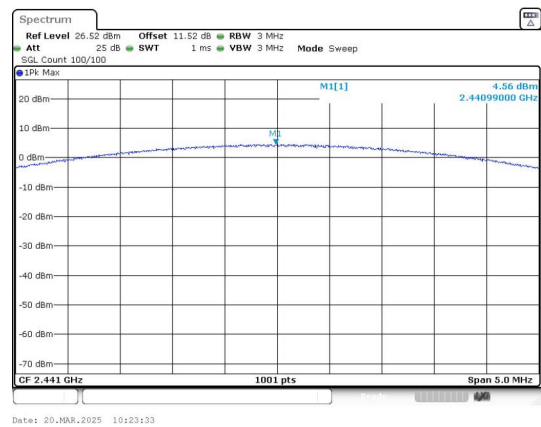
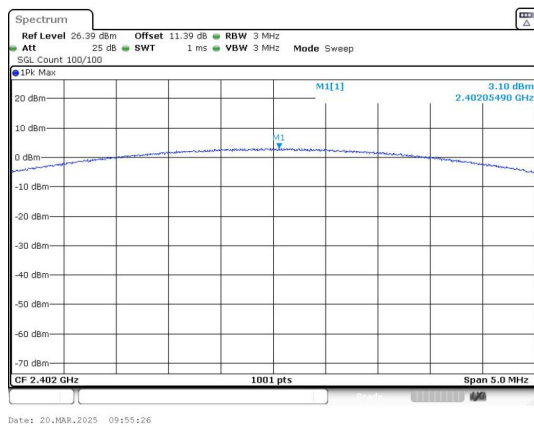
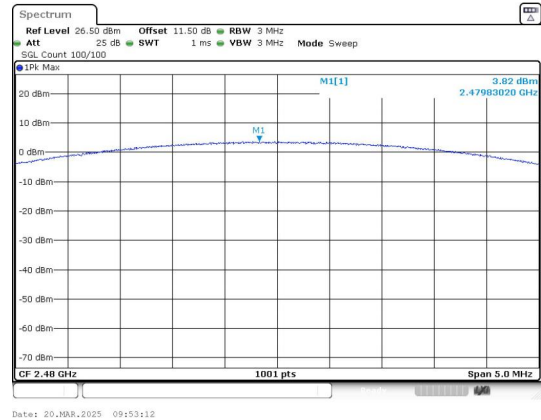
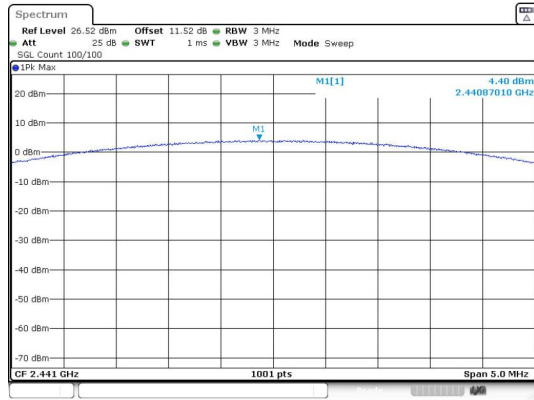
Peak Output Power
GFSK_Channel 39



Peak Output Power
GFSK_Channel 78



Peak Output Power
 $\pi/4$ DQPSK_Channel 0

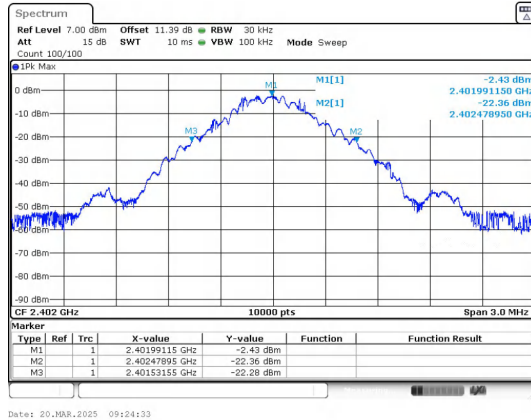


5) 20dB Bandwidth

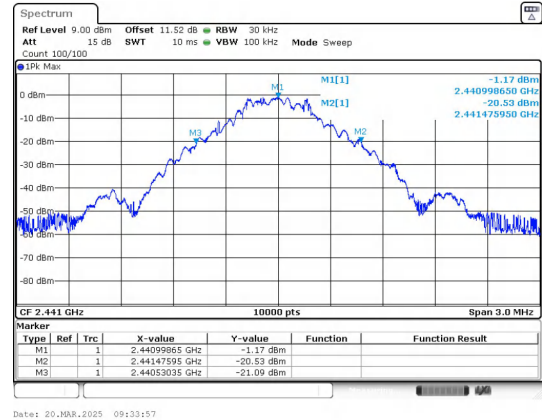
Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	0.9500
	39	2441 MHz	0.9500
	78	2480 MHz	0.9500
$\pi/4$ DQPSK	0	2402 MHz	1.310
	39	2441 MHz	1.310
	78	2480 MHz	1.310
8DPSK	0	2402 MHz	1.290
	39	2441 MHz	1.300
	78	2480 MHz	1.290

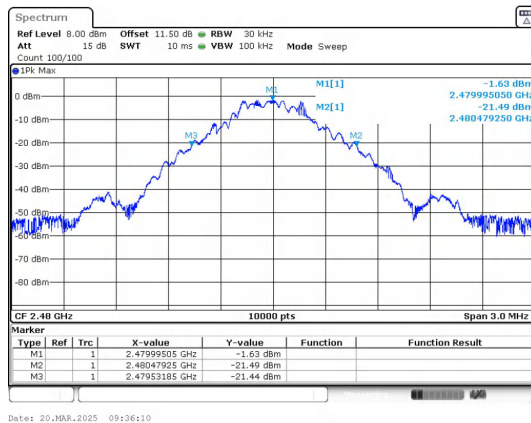
Test Graphs



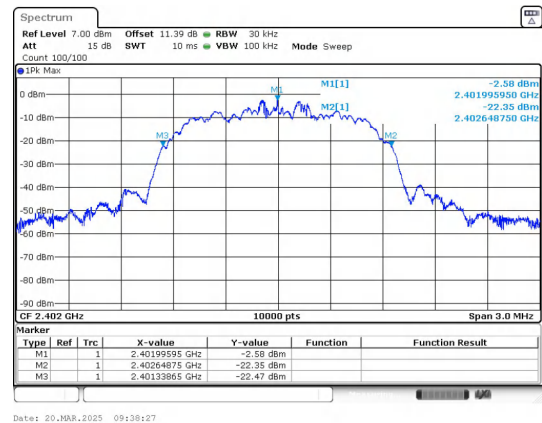
GFSK_DH5_Channel 0



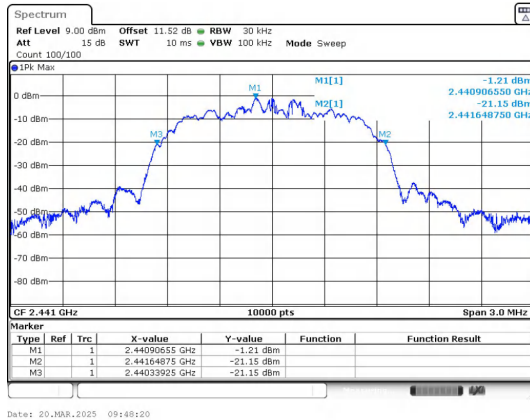
GFSK_DH5_Channel 39



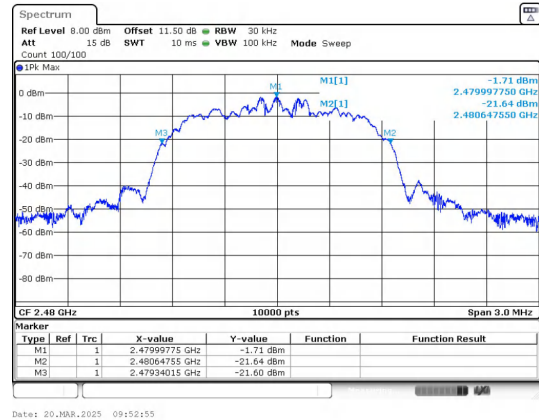
GFSK_DH5_Channel 78



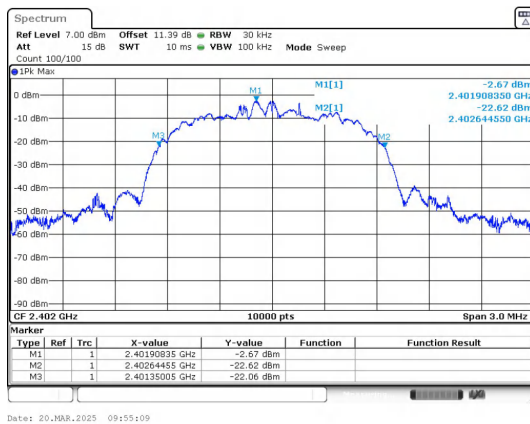
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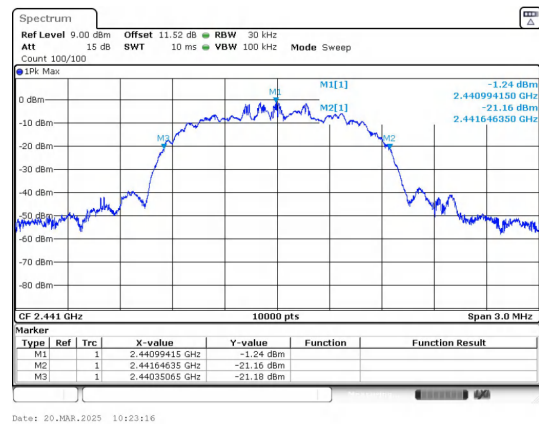
$\pi/4$ DQPSK_2-DH5_Channel 39



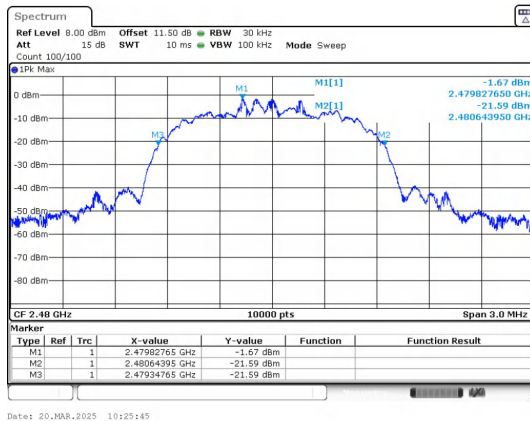
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



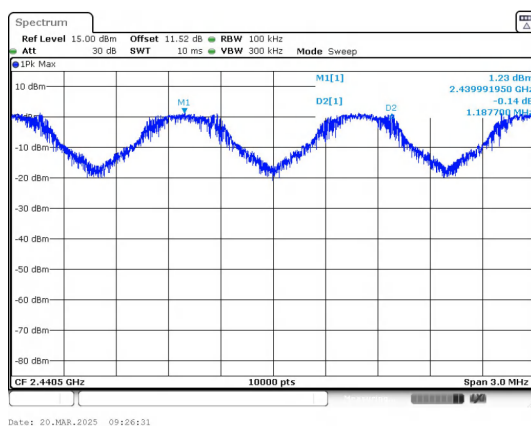
8DPSK_3-DH5_Channel 78

6) Carrier Frequencies Separation

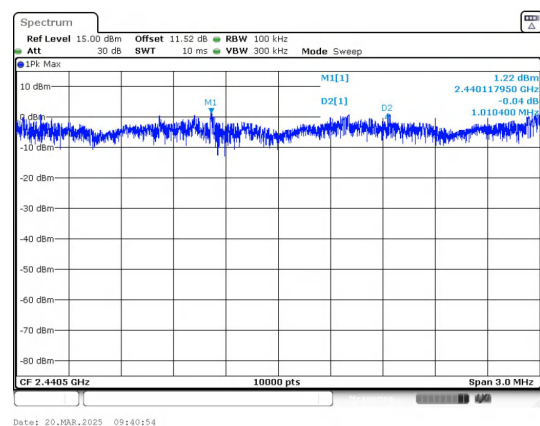
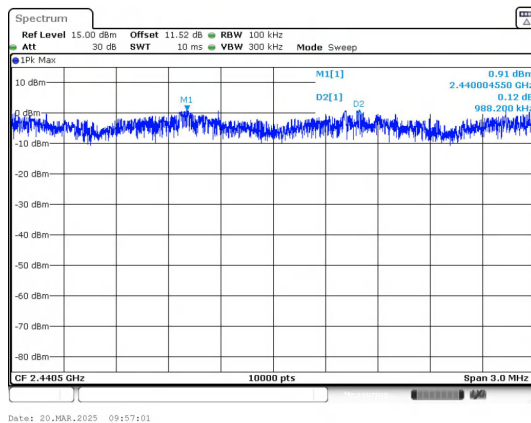
Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2439.992	2441.1797	1.1877	0.95	PASS
$\pi/4$ DQPSK	2-DH5	2440.1179	2441.1283	1.0104	0.873	PASS
8DPSK	3-DH5	2440.0046	2440.9927	0.9882	0.86	PASS

Test Graphs



GFSK


 $\pi/4$ DQPSK


8DPSK

7) Conducted Out Of Band Emission

Test Result

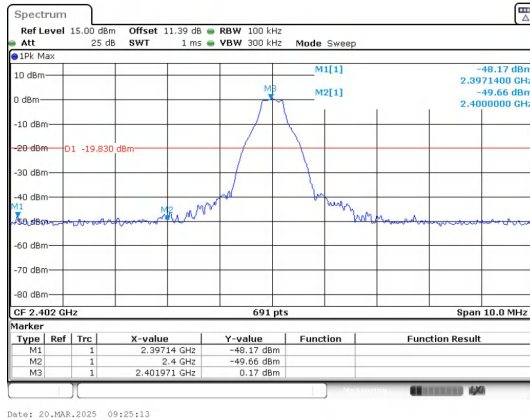
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2397.14	-48.173	-19.83	-28.343	PASS
			2400.00	-49.660	-19.83	-29.830	PASS
			4804.70	-52.034	-19.83	-32.204	PASS
		39	4882.09	-50.675	-18.34	-32.335	PASS
		78	2483.50	-50.290	-18.72	-31.570	PASS
			4960.33	-51.742	-18.72	-33.022	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-47.640	-20.18	-27.460	PASS
			22064.8	-53.360	-20.18	-33.180	PASS
		39	4882.09	-51.045	-18.81	-32.235	PASS
		78	2483.50	-51.060	-19.19	-31.870	PASS
			4960.33	-52.518	-19.19	-33.328	PASS
8DPSK	3-DH5	0	2400.00	-46.470	-20.11	-26.360	PASS
			4803.02	-53.120	-20.11	-33.010	PASS
		39	4882.09	-51.775	-18.38	-33.395	PASS
		78	2483.50	-49.570	-18.84	-30.730	PASS
			6768.99	-53.115	-18.84	-34.275	PASS

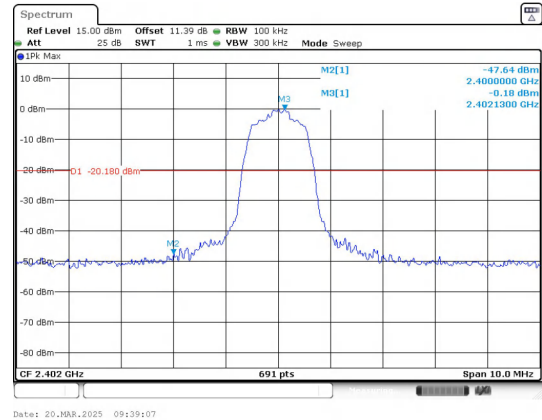
Hopping

Hopping							
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2400.00	-47.100	-19.7	-27.400	PASS
			2483.50	-49.650	-18.93	-30.720	PASS
$\pi/4$ DQPSK	2-DH5		2395.04	-48.417	-20.29	-28.127	PASS
			2400.00	-49.570	-20.29	-29.280	PASS
			2483.50	-50.220	-19.48	-30.740	PASS
8DPSK	3-DH5		2396.34	-48.277	-19.9	-28.377	PASS
			2400.00	-49.420	-19.9	-29.520	PASS
			2483.50	-49.420	-18.92	-30.500	PASS

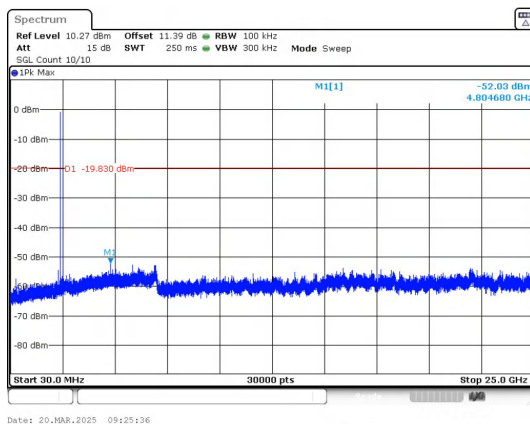
Test Graphs



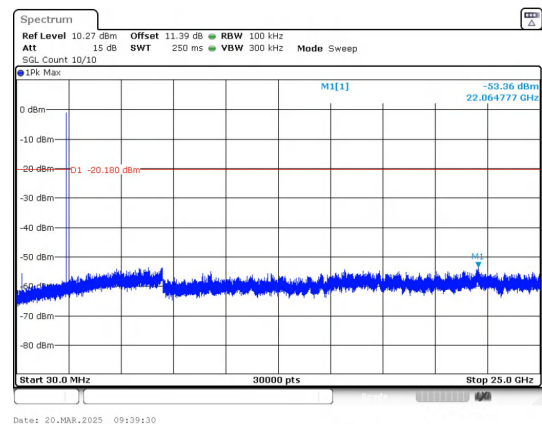
Out Of Band Emission
GFSK_DH5_Channel 0



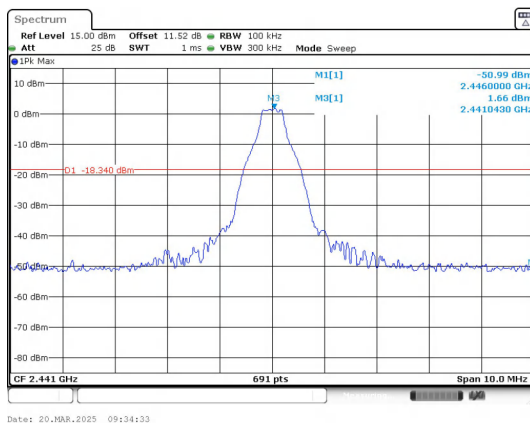
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0



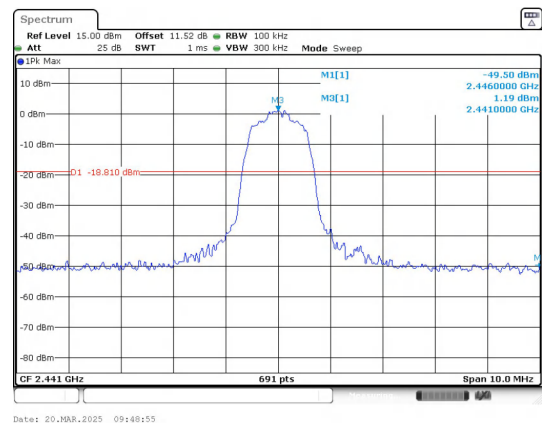
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



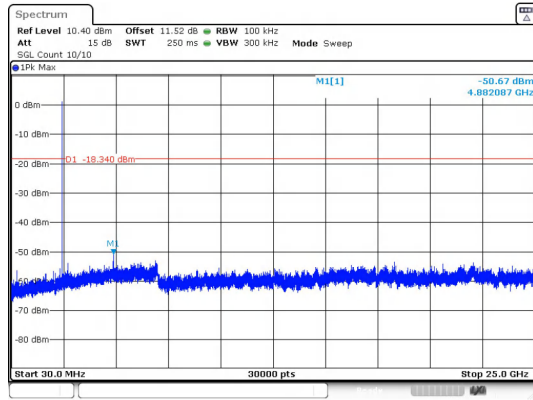
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 0



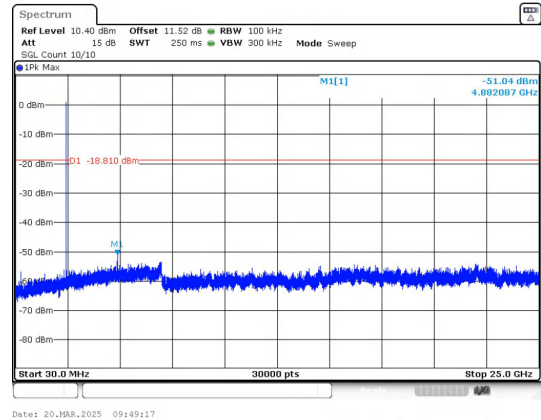
Out Of Band Emission
GFSK_DH5_Channel 39



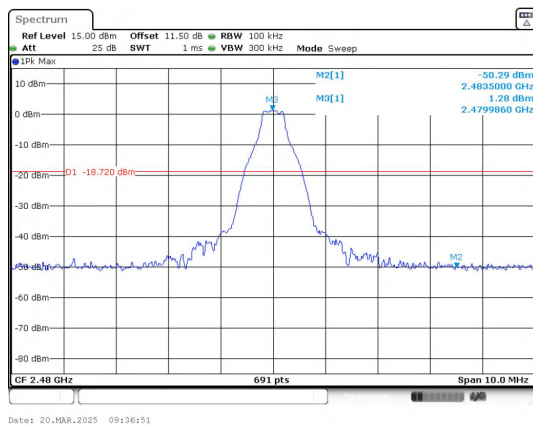
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39



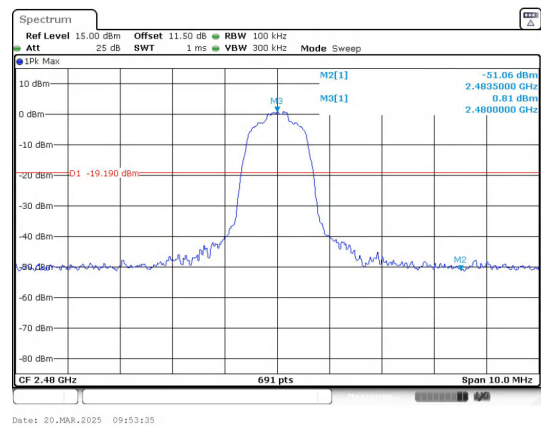
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



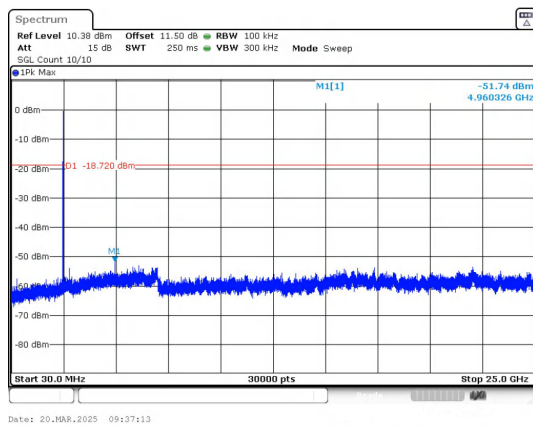
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



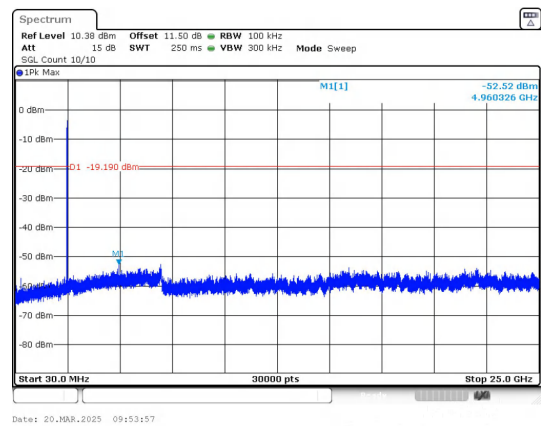
Out Of Band Emission
GFSK_DH5_Channel 78



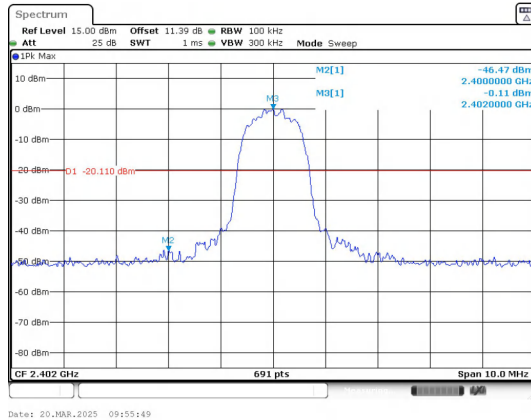
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78



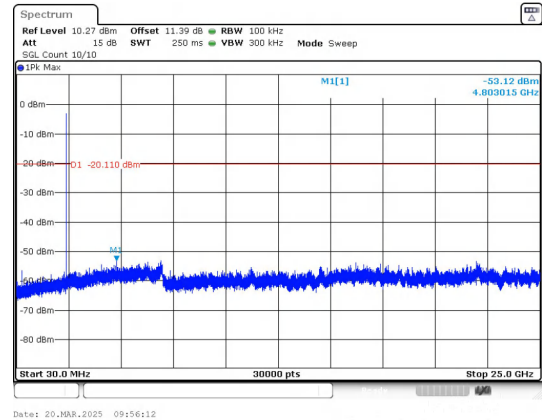
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



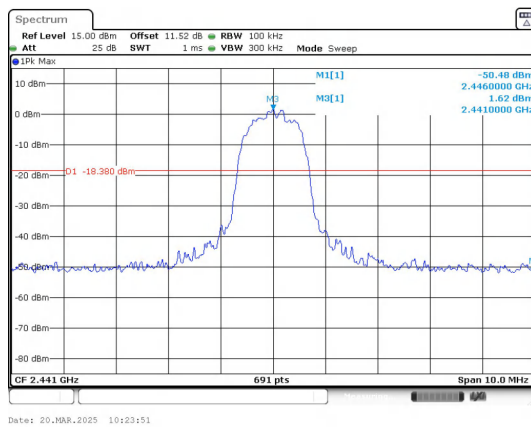
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



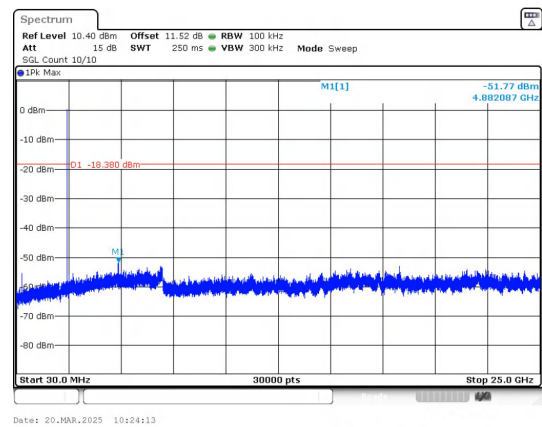
Out Of Band Emission
8DPSK_3-DH5_Channel 0



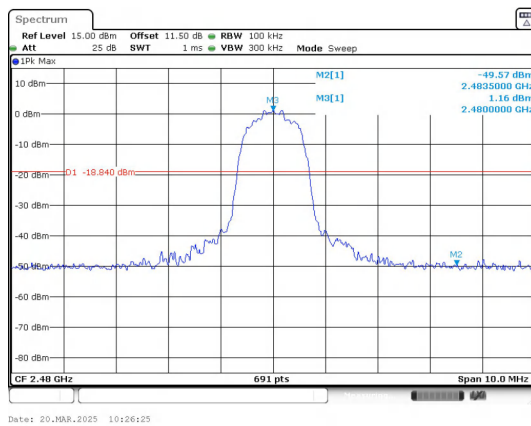
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



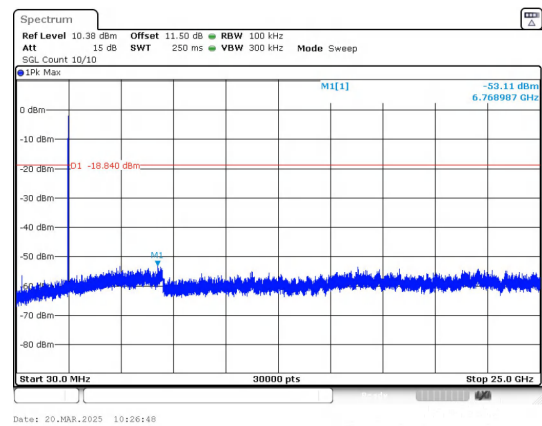
Out Of Band Emission
8DPSK_3-DH5_Channel 39



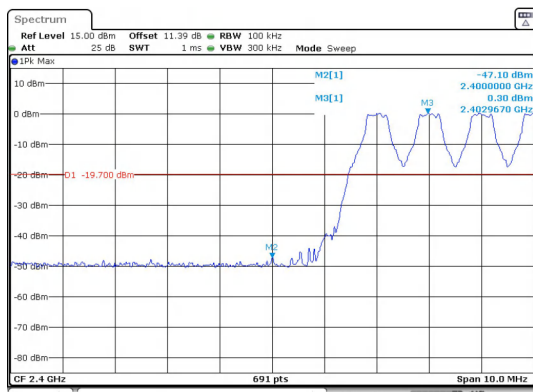
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



Out Of Band Emission
8DPSK_3-DH5_Channel 78

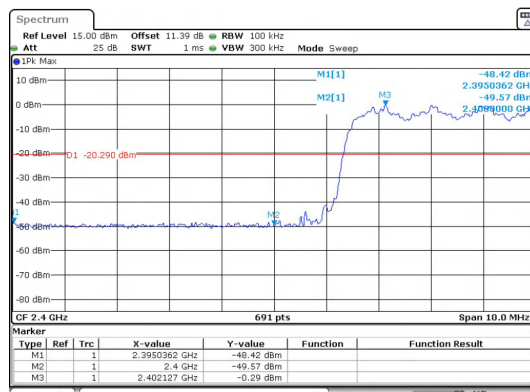


30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



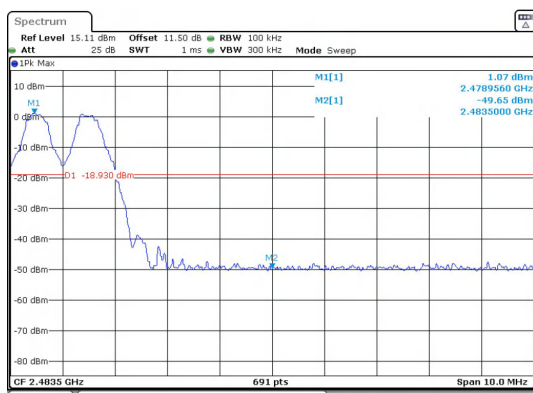
Date: 20.MAR.2025 09:13:156

Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



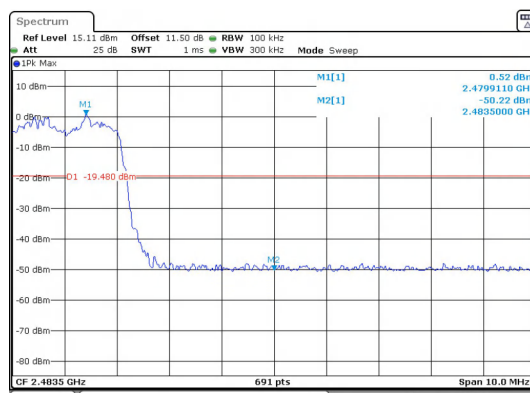
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Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



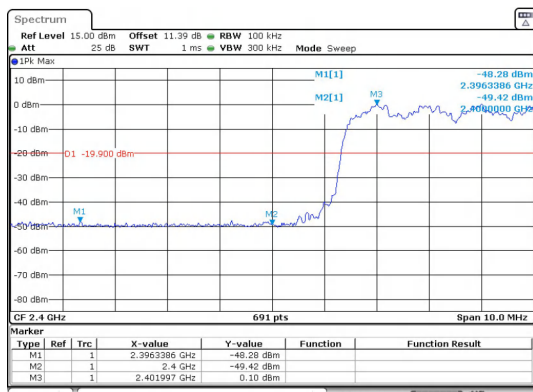
Date: 20.MAR.2025 09:13:254

Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



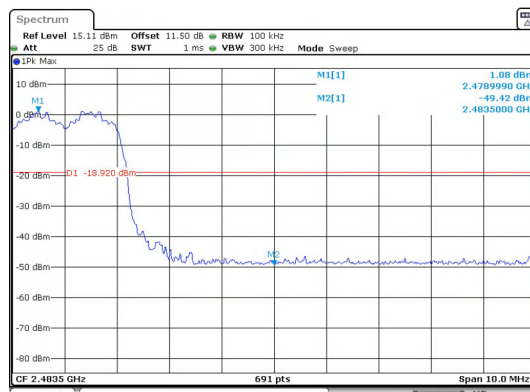
Date: 20.MAR.2025 09:14:108

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



Date: 20.MAR.2025 10:04:05

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



Date: 20.MAR.2025 10:12:10

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

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