

Appendix Report

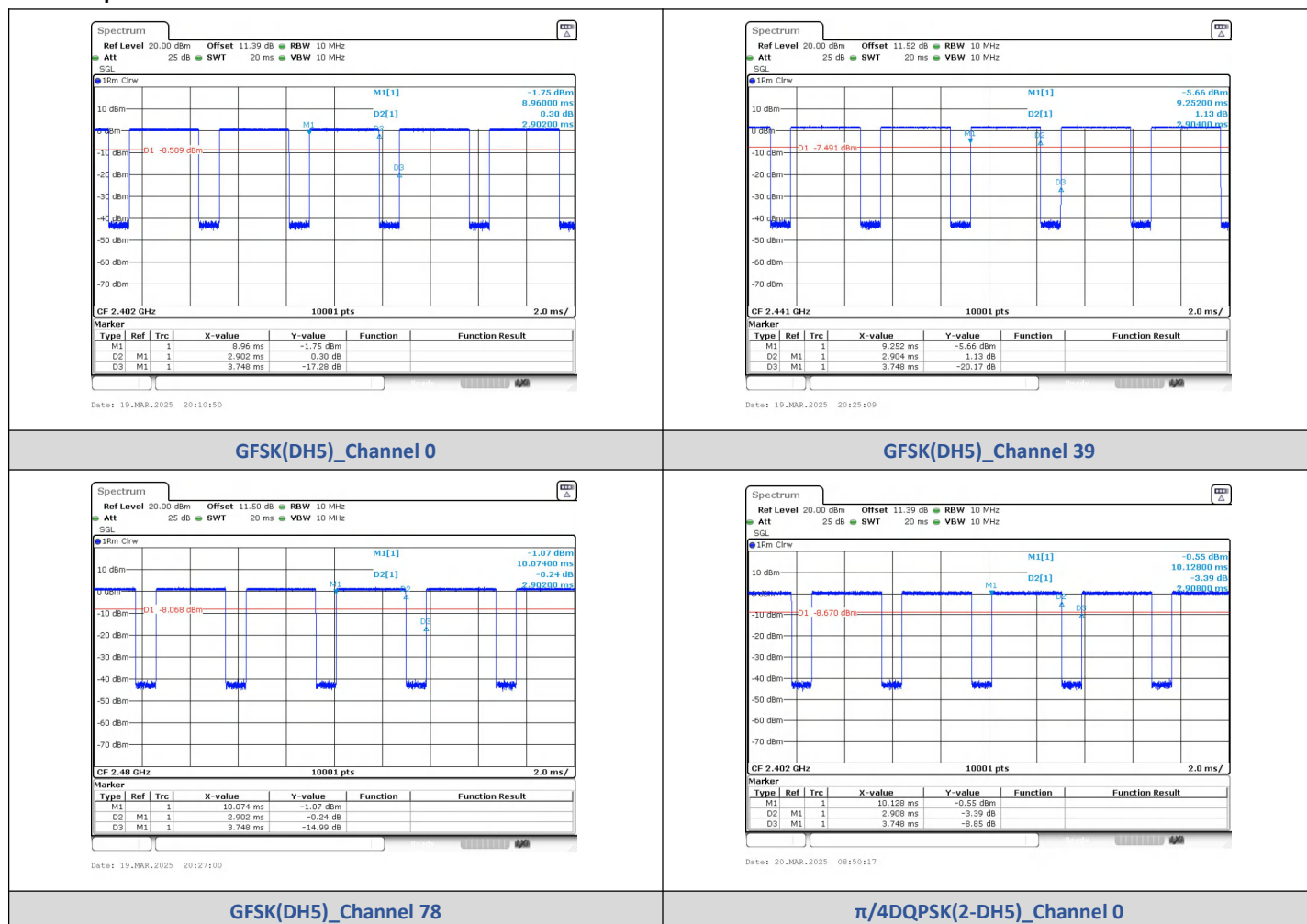
Report No.:	CISRR250319148
Test Engineer:	Mark Fu
Supervised by:	Rory Huang

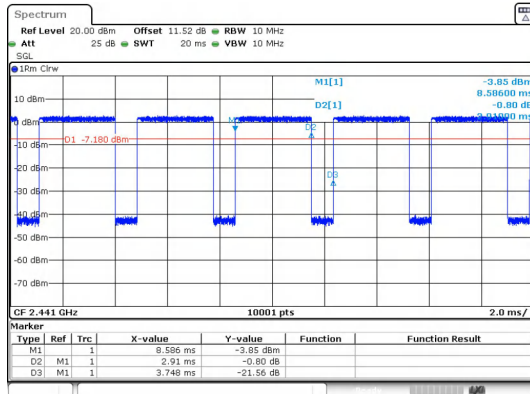
1) Duty Cycle

Test Result

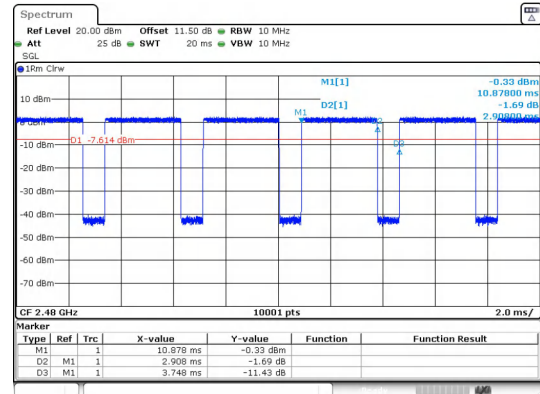
Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.902	3.748	77.43	0.7743	1.1109	0.3446
		39	2.904	3.748	77.48	0.7748	1.1081	0.3444
		78	2.902	3.748	77.43	0.7743	1.1109	0.3446
$\pi/4$ DQPSK	2-DH5	0	2.908	3.748	77.59	0.7759	1.1019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

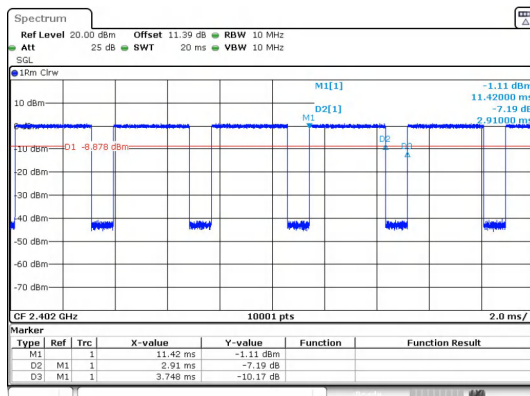




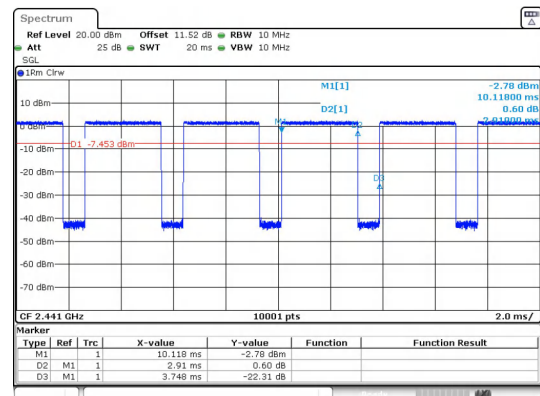
$\pi/4$ DQPSK(2-DH5)_Channel 39



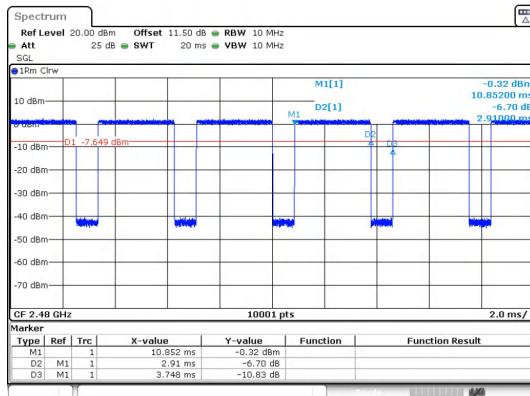
$\pi/4$ DQPSK(2-DH5)_Channel 78



8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39



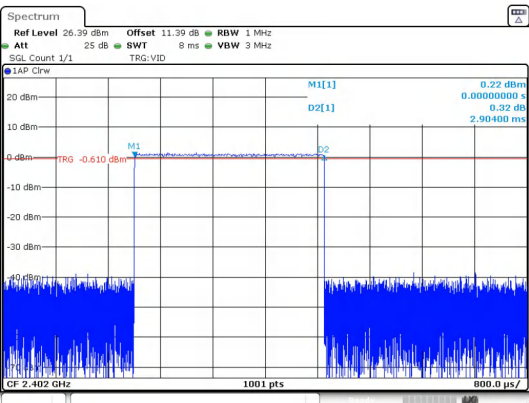
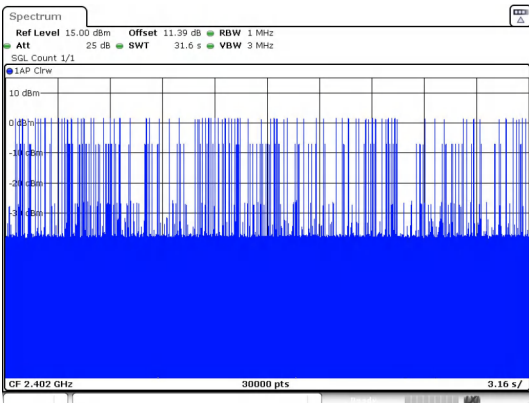
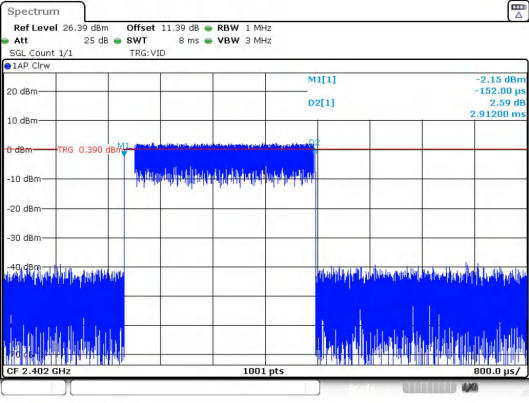
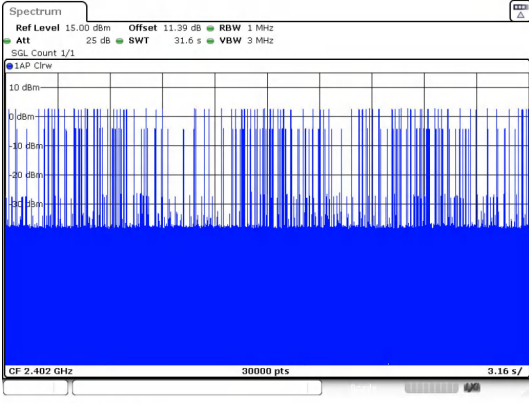
8DPSK(3-DH5)_Channel 78

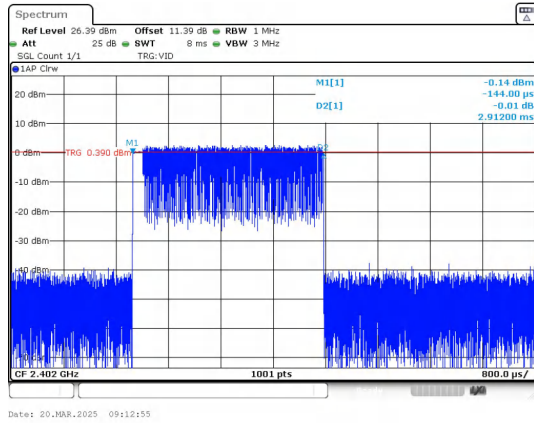
2) Dwell Time

Test Result

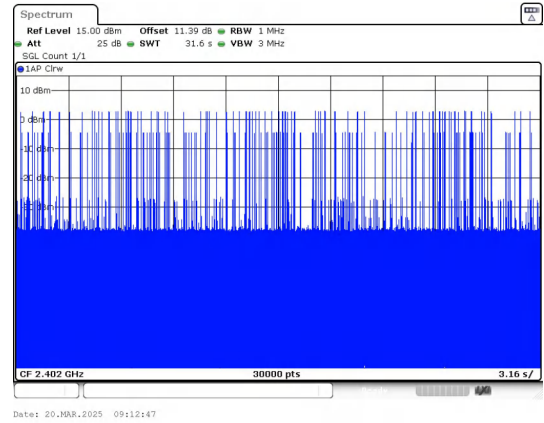
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.904	106	307.82	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.912	107	311.58		PASS
8DPSK	3-DH5		2.912	97	282.46		PASS

Test Graphs

 Date: 19.MAR.2025 20:14:11	 Date: 19.MAR.2025 20:14:03
Pulse Width GFSK_DH5	Number of Pulses in 31.6 seconds GFSK_DH5
 Date: 20.MAR.2025 08:57:37	 Date: 20.MAR.2025 08:57:29
Pulse Width $\pi/4$DQPSK_2-DH5	Number of Pulses in 31.6 seconds $\pi/4$DQPSK_2-DH5



Pulse Width
8DPSK_3-DH5



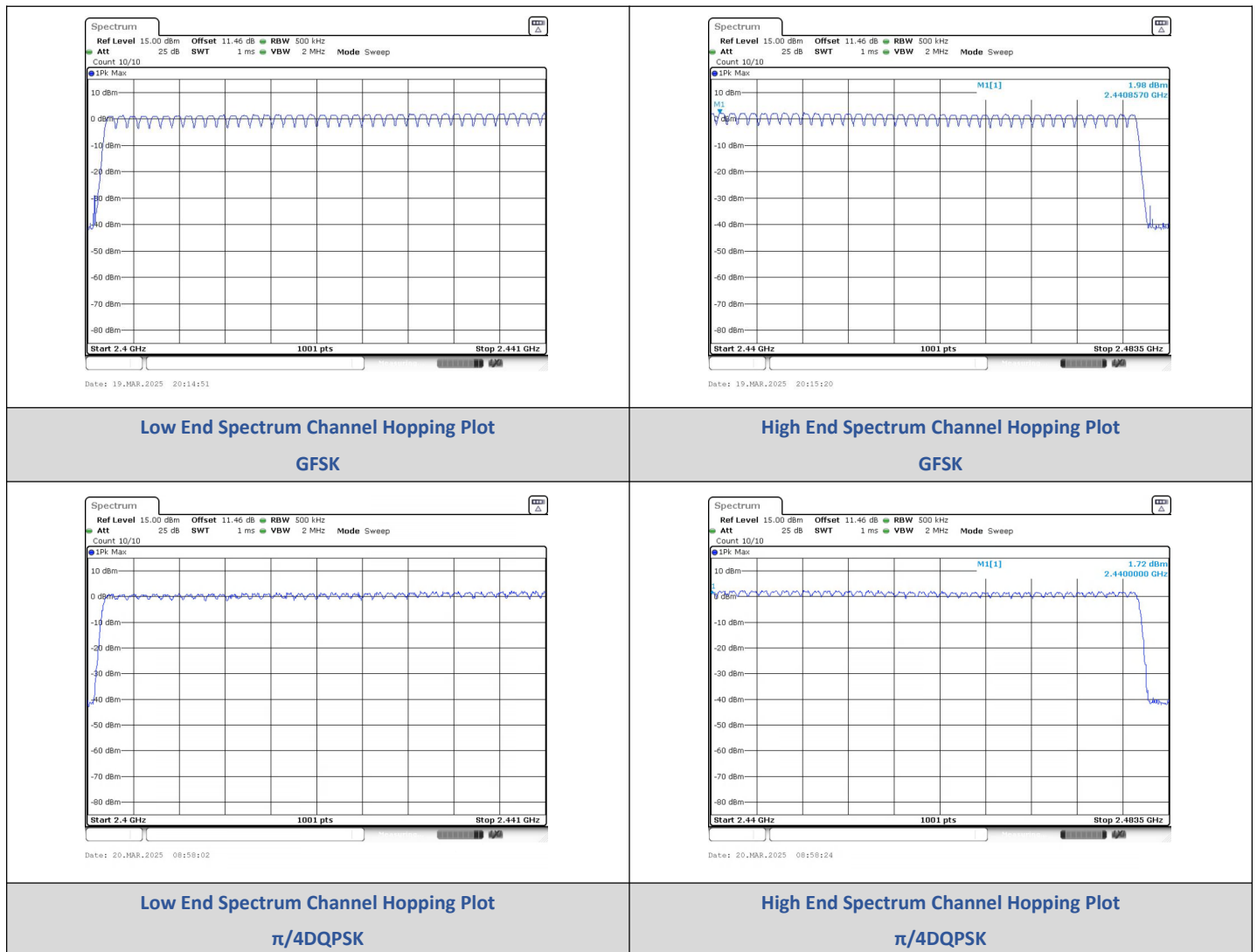
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

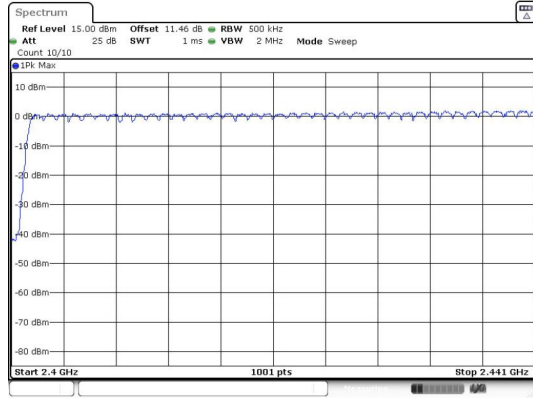
3) Number Of Hopping Channel

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

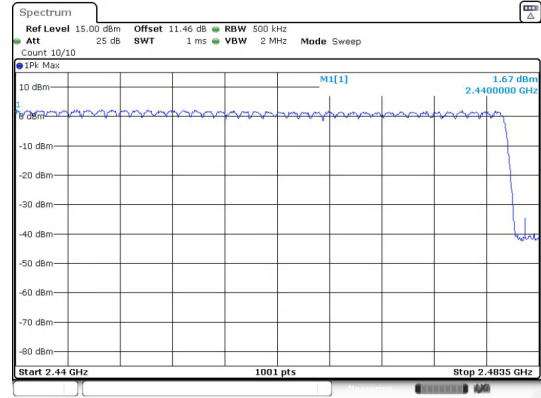
Test Graphs





Date: 20.MAR.2025 09:13:22

Low End Spectrum Channel Hopping Plot
8DPSK



Date: 20.MAR.2025 09:13:39

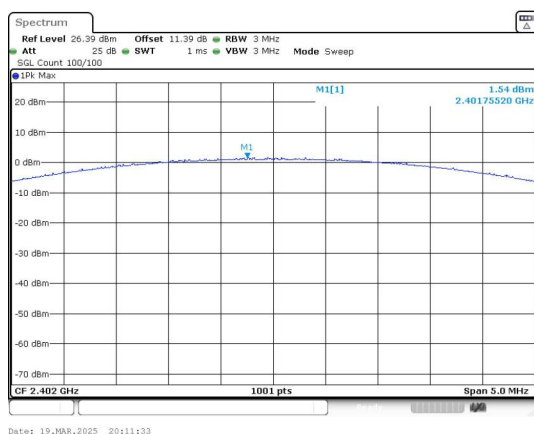
High End Spectrum Channel Hopping Plot
8DPSK

4) Conducted Output Power

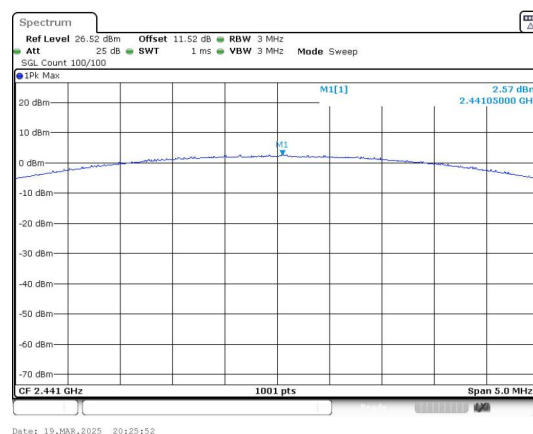
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	1.54	1.43	≤30	PASS
		39	2.57	1.81		PASS
		78	1.98	1.58		PASS
$\pi/4$ DQPSK	2-DH5	0	3.38	2.18	≤20.97	PASS
		39	4.60	2.88		PASS
		78	3.95	2.48		PASS
8DPSK	3-DH5	0	3.36	2.17		PASS
		39	4.75	2.99		PASS
		78	4.37	2.74		PASS

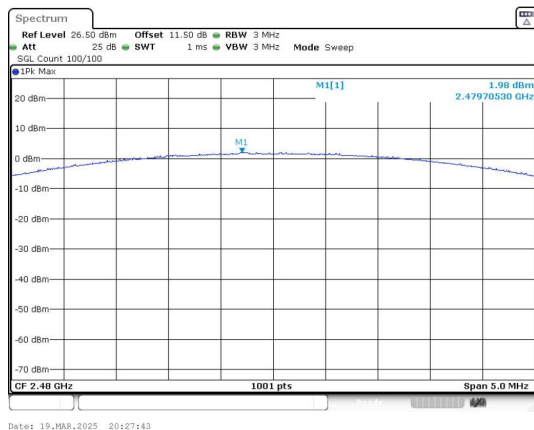
Test Graphs



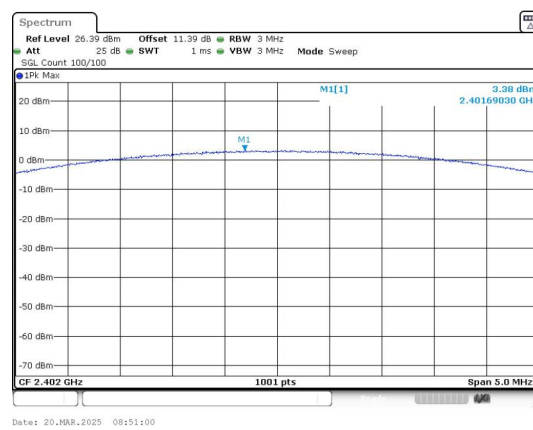
Peak Output Power
GFSK_Channel 0



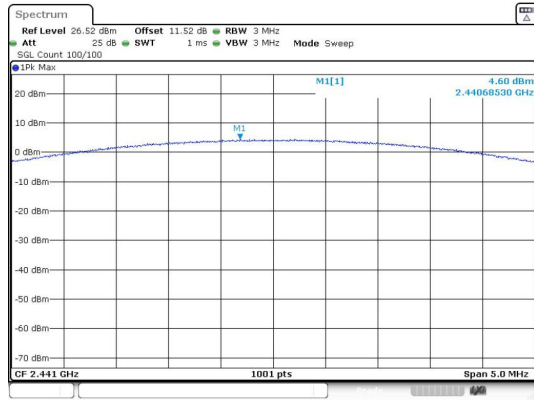
Peak Output Power
GFSK_Channel 39



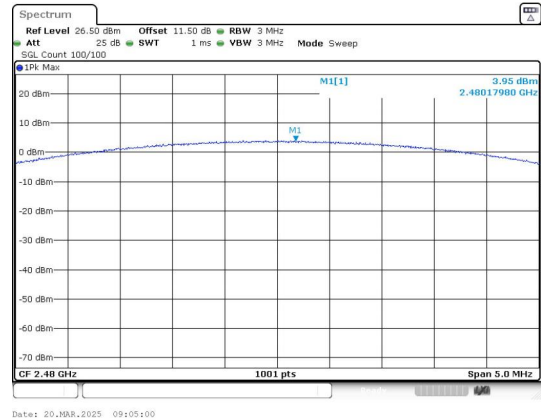
Peak Output Power
GFSK_Channel 78



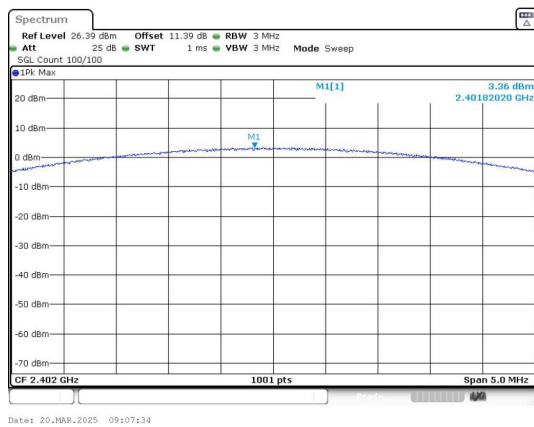
Peak Output Power
 $\pi/4$ DQPSK_Channel 0



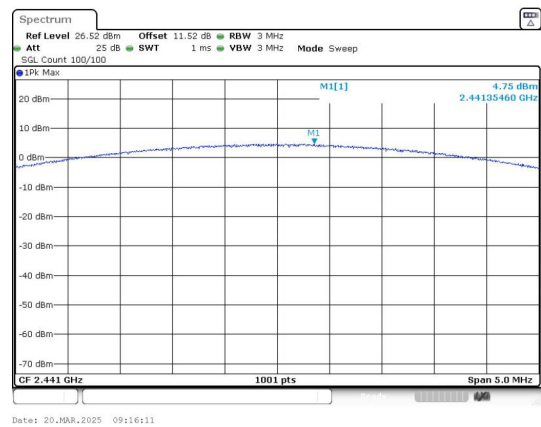
Peak Output Power
 $\pi/4$ DQPSK_Channel 39



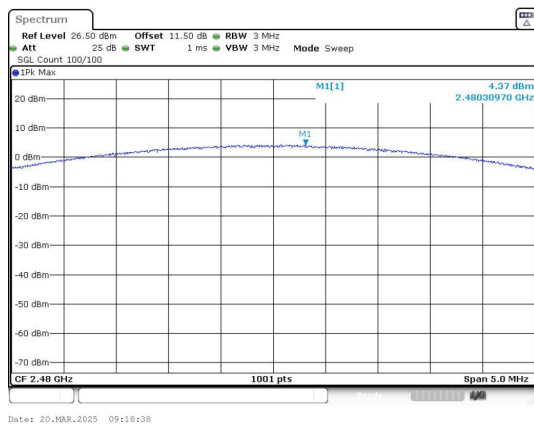
Peak Output Power
 $\pi/4$ DQPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



Peak Output Power
8DPSK_Channel 39



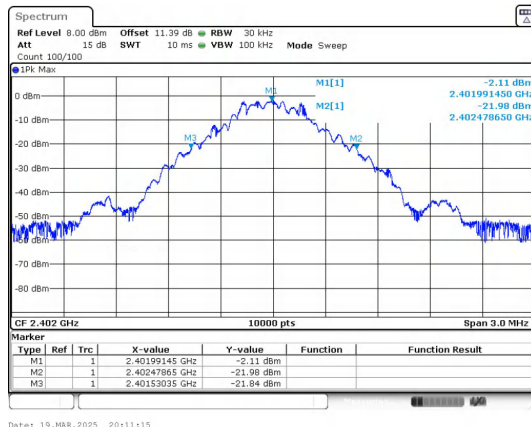
Peak Output Power
8DPSK_Channel 78

5) 20dB Bandwidth

Test Result

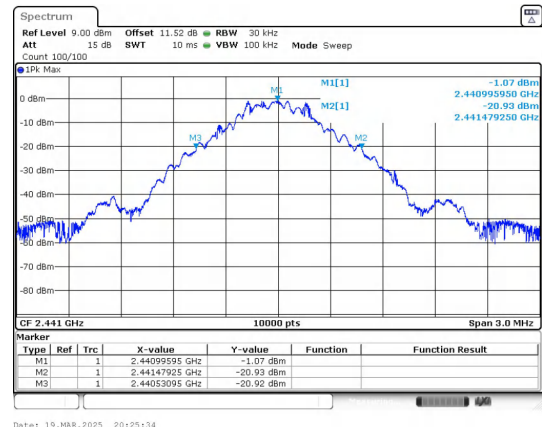
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	0.9500
	39	2441 MHz	0.9500
	78	2480 MHz	0.9500
$\pi/4$ DQPSK	0	2402 MHz	1.310
	39	2441 MHz	1.310
	78	2480 MHz	1.310
8DPSK	0	2402 MHz	1.300
	39	2441 MHz	1.300
	78	2480 MHz	1.300

Test Graphs



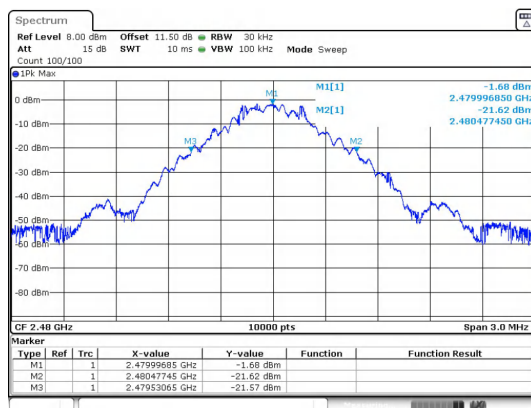
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GFSK_DH5_Channel 0



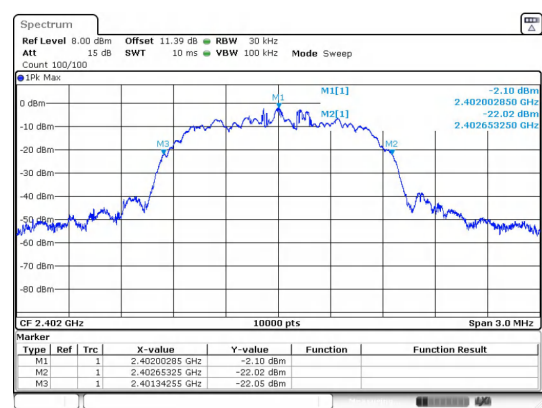
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GFSK_DH5_Channel 39



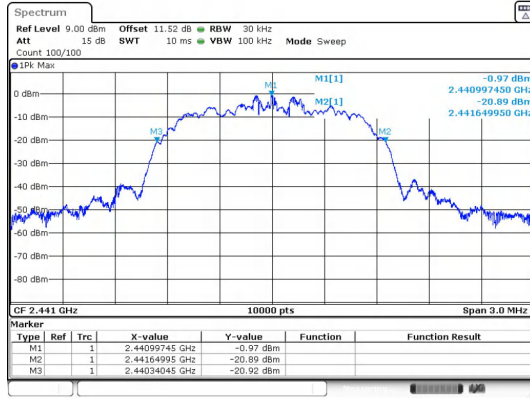
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GFSK_DH5_Channel 78

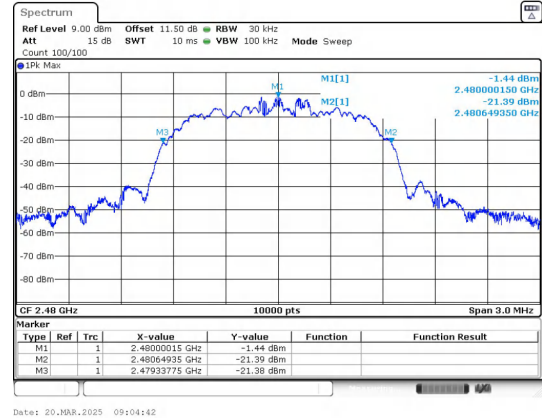


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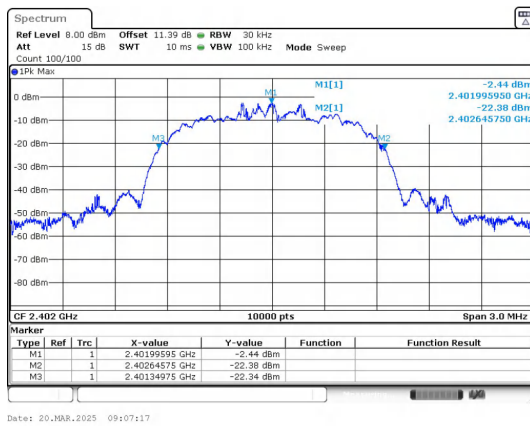
 $\pi/4$ DQPSK_2-DH5_Channel 0



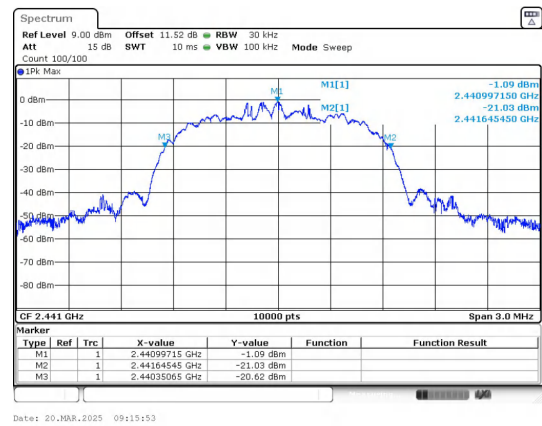
$\pi/4$ DQPSK_2-DH5_Channel 39



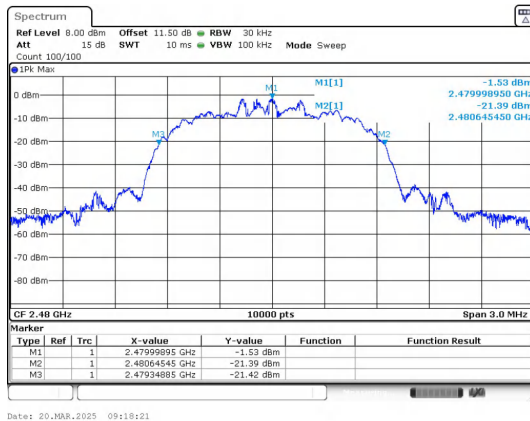
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



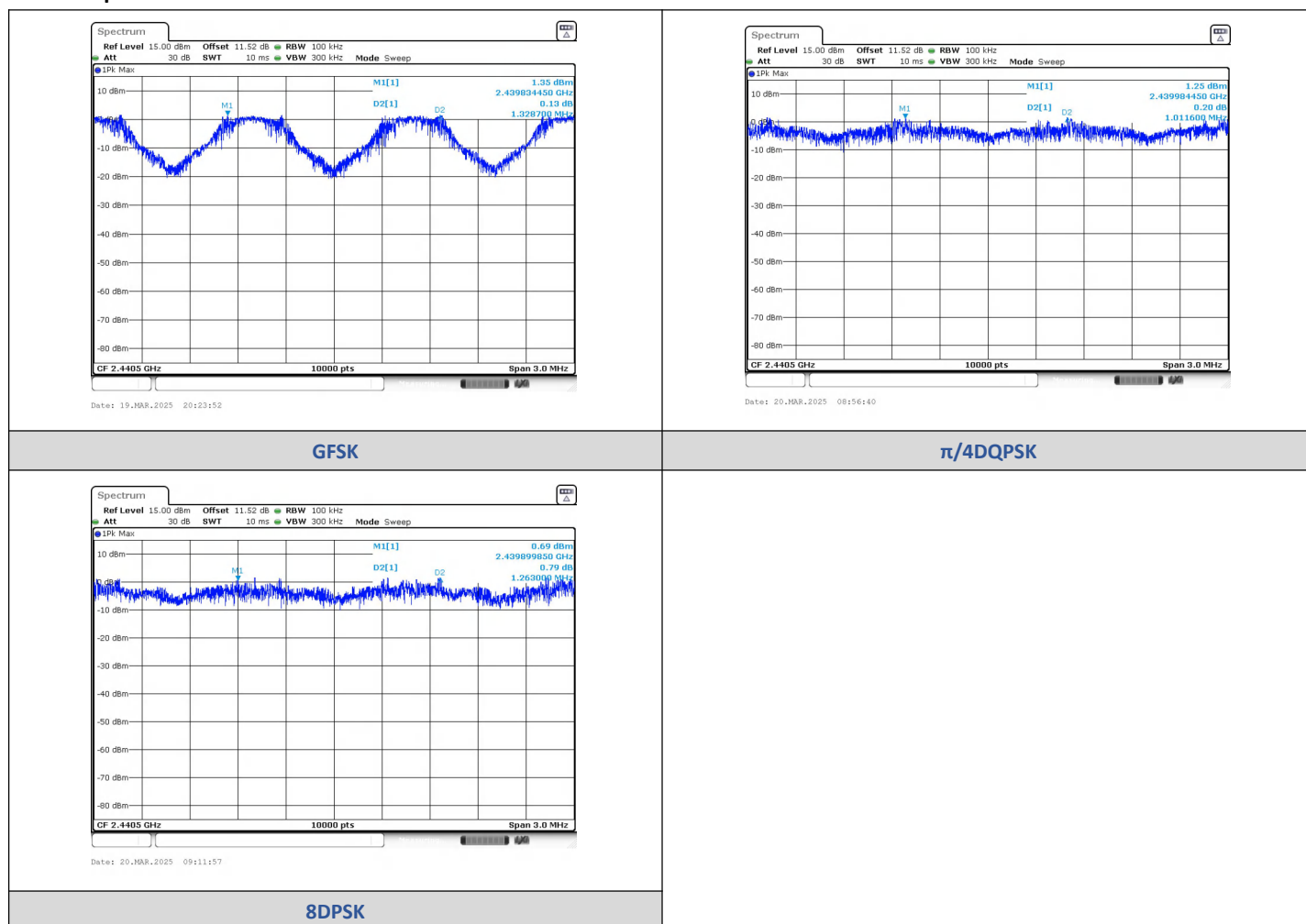
8DPSK_3-DH5_Channel 78

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	2439.8344	2441.1631	1.3287	0.95	PASS
$\pi/4$ DQPSK	2-DH5	2439.9844	2440.9961	1.0116	0.873	PASS
8DPSK	3-DH5	2439.8998	2441.1629	1.2630	0.867	PASS

Test Graphs



7) Conducted Out Of Band Emission

Test Result

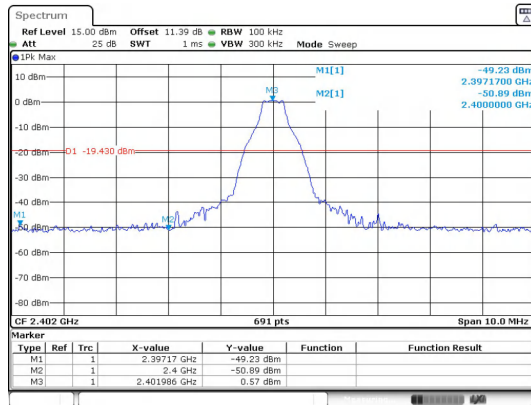
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2397.17	-49.232	-19.43	-29.802	PASS
			2400.00	-51.170	-19.43	-31.740	PASS
			4803.80	-50.089	-19.43	-30.659	PASS
		39	4881.25	-47.194	-18.29	-28.904	PASS
		78	2483.50	-48.280	-18.95	-29.330	PASS
			4959.49	-50.571	-18.95	-31.621	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-47.120	-19.72	-27.400	PASS
			6927.13	-52.549	-19.72	-32.829	PASS
		39	4882.09	-51.317	-18.51	-32.807	PASS
		78	2483.50	-50.560	-19.06	-31.500	PASS
			4960.33	-51.984	-19.06	-32.924	PASS
8DPSK	3-DH5	0	2400.00	-48.900	-19.75	-29.150	PASS
			4818.83	-53.319	-19.75	-33.569	PASS
		39	4882.09	-51.192	-18.69	-32.502	PASS
		78	2483.50	-50.180	-18.32	-31.860	PASS
			4959.49	-52.428	-18.32	-34.108	PASS

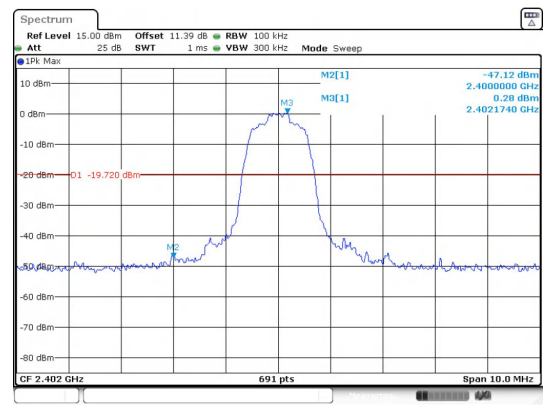
Hopping

Hopping							
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2395.67	-48.064	-19.25	-28.814	PASS
			2400.00	-49.670	-19.25	-30.420	PASS
			2483.50	-49.090	-18.71	-30.380	PASS
$\pi/4$ DQPSK	2-DH5		2397.89	-48.173	-20.16	-28.013	PASS
			2400.00	-49.770	-20.16	-29.610	PASS
			2483.50	-48.660	-18.99	-29.670	PASS
8DPSK	3-DH5		2397.77	-48.400	-19.76	-28.640	PASS
			2400.00	-49.460	-19.76	-29.700	PASS
			2483.50	-49.600	-19.04	-30.560	PASS

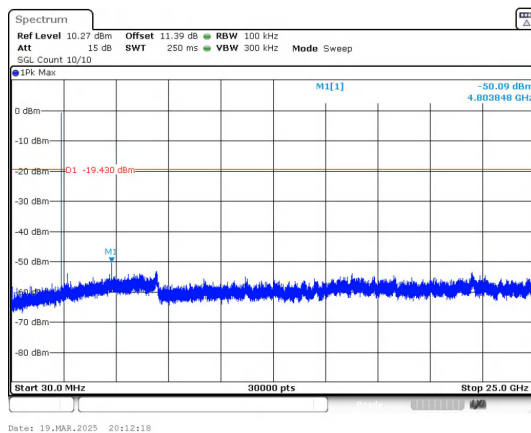
Test Graphs



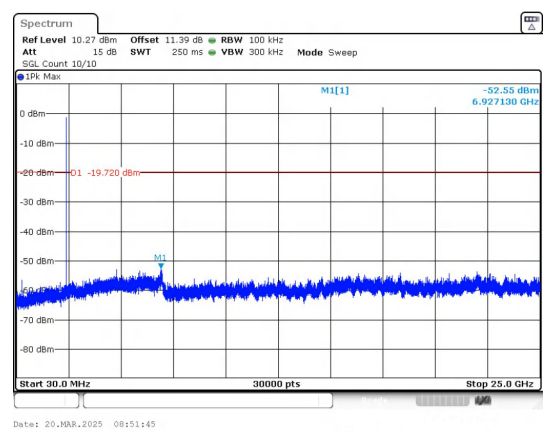
Out Of Band Emission
GFSK_DH5_Channel 0



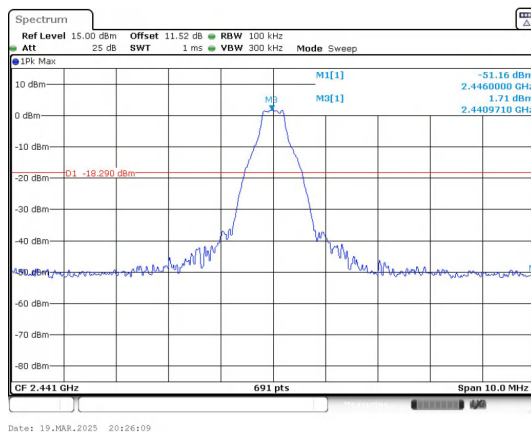
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0



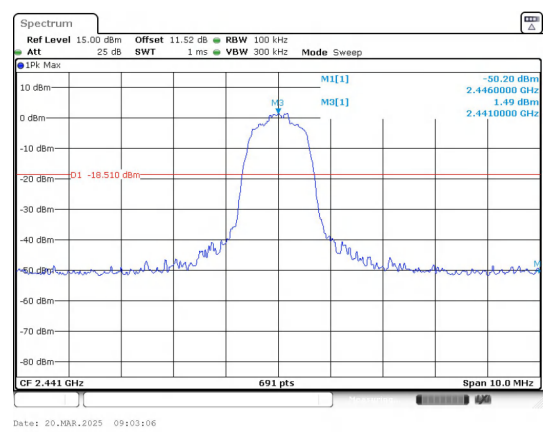
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



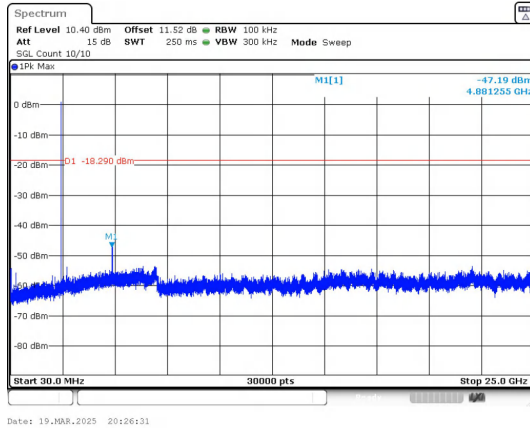
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 0



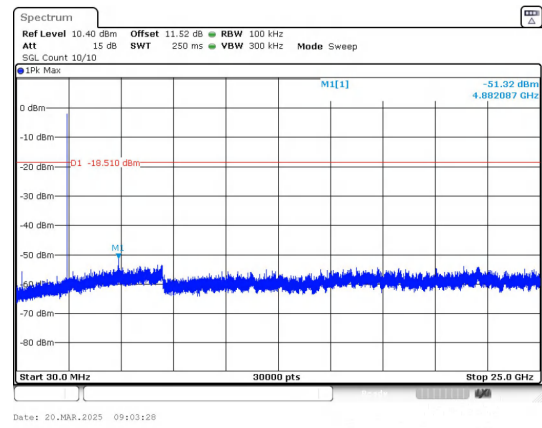
Out Of Band Emission
GFSK_DH5_Channel 39



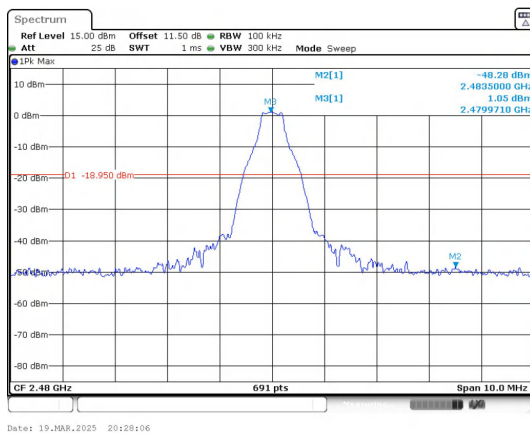
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39



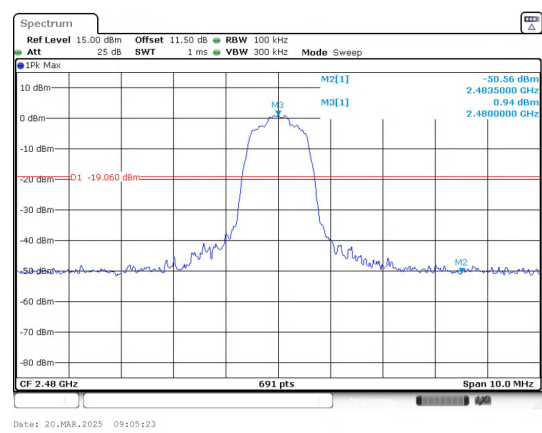
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



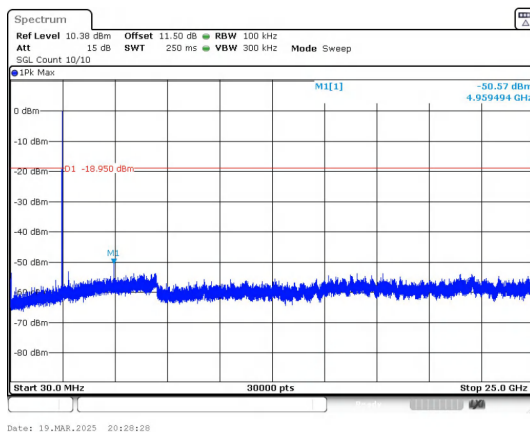
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



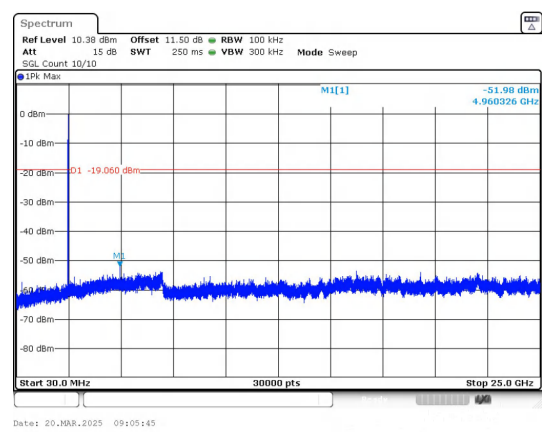
Out Of Band Emission
GFSK_DH5_Channel 78



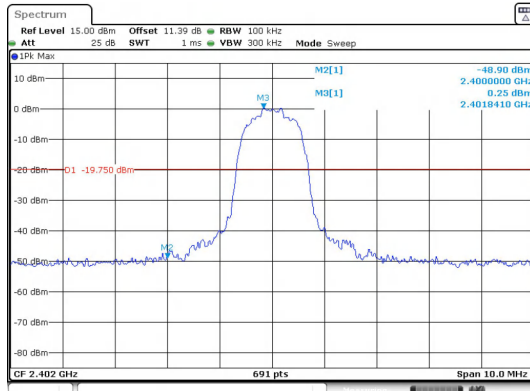
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78



30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78

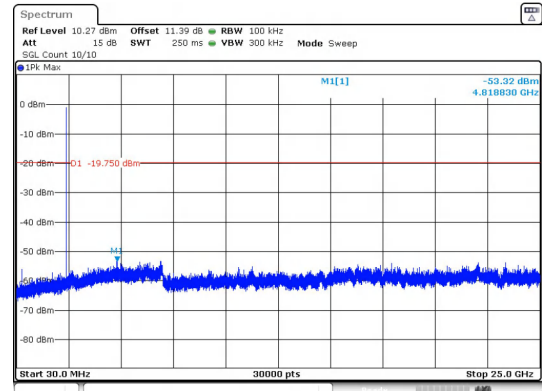


30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



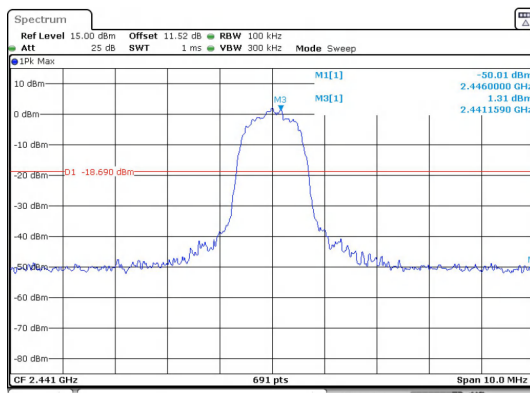
Date: 20.MAR.2025 09:07:57

Out Of Band Emission
8DPSK_3-DH5_Channel 0



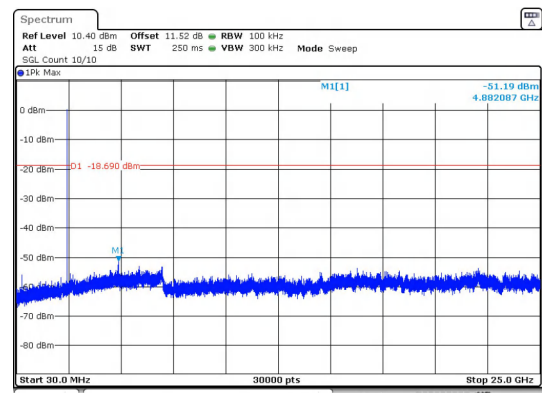
Date: 20.MAR.2025 09:08:20

30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



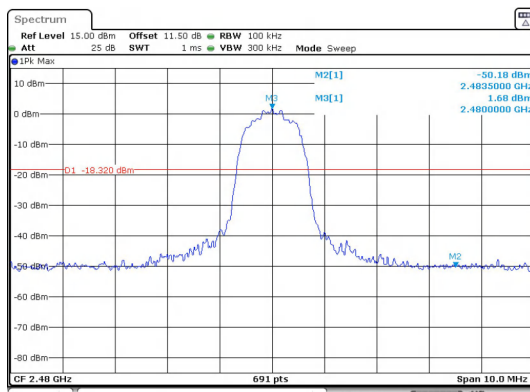
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Out Of Band Emission
8DPSK_3-DH5_Channel 39



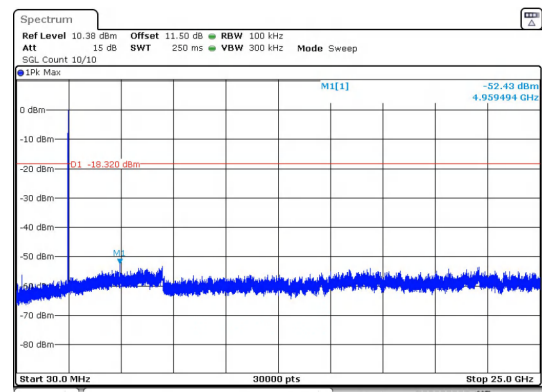
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30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



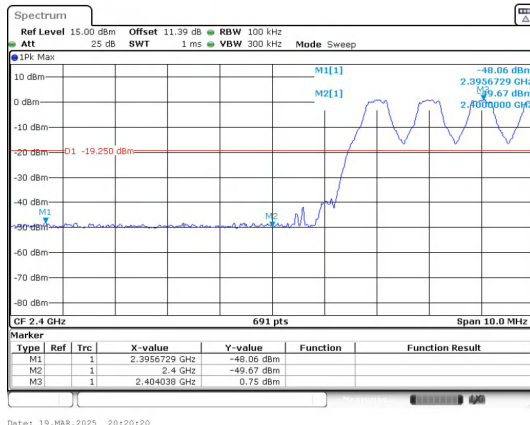
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Out Of Band Emission
8DPSK_3-DH5_Channel 78

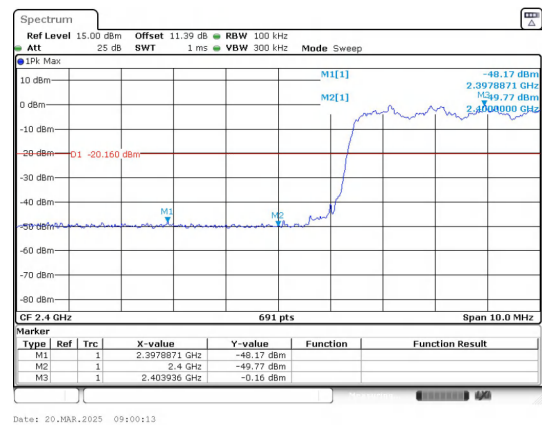


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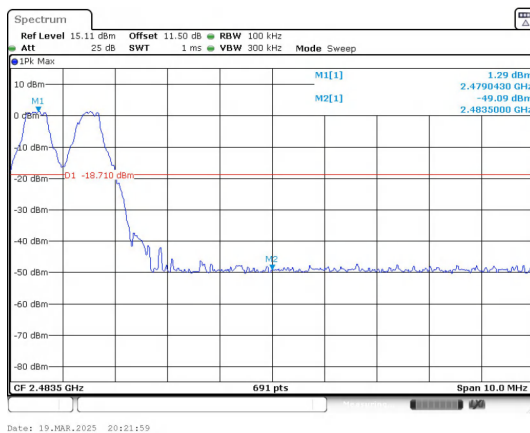
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



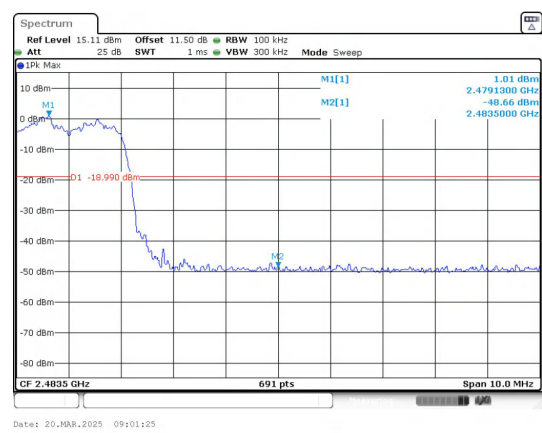
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



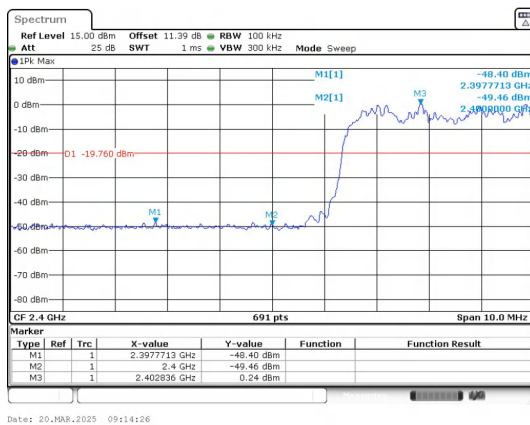
Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



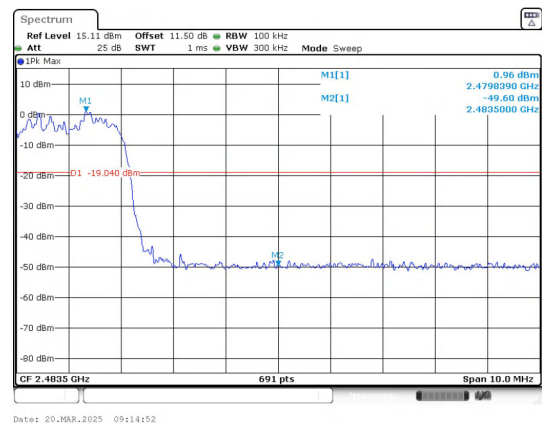
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



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-----