

Appendix Report

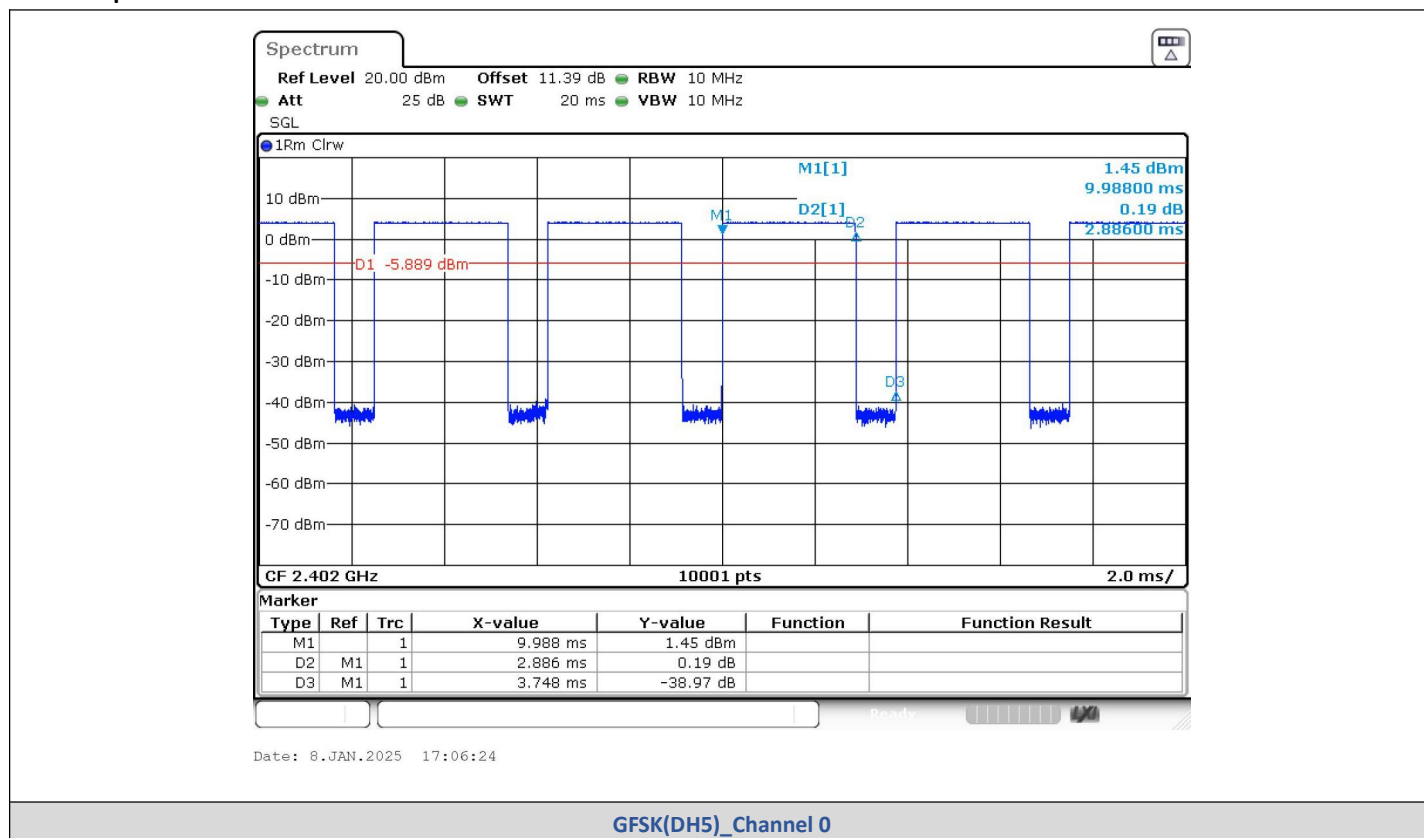
Report No.:	CISRR250107023
Test Engineer:	Mark Fu
Supervised by:	Rory Huang

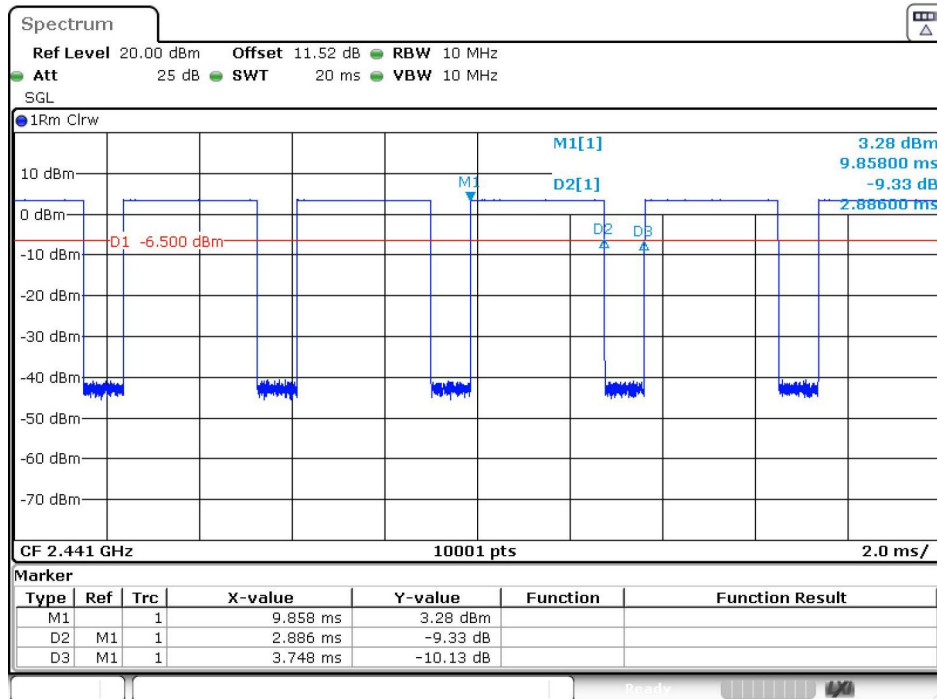
1) Duty Cycle

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	2.892	3.748	77.16	0.7716	1.1261	0.3458
		39	2.892	3.748	77.16	0.7716	1.1261	0.3458
		78	2.894	3.748	77.21	0.7721	1.1233	0.3455

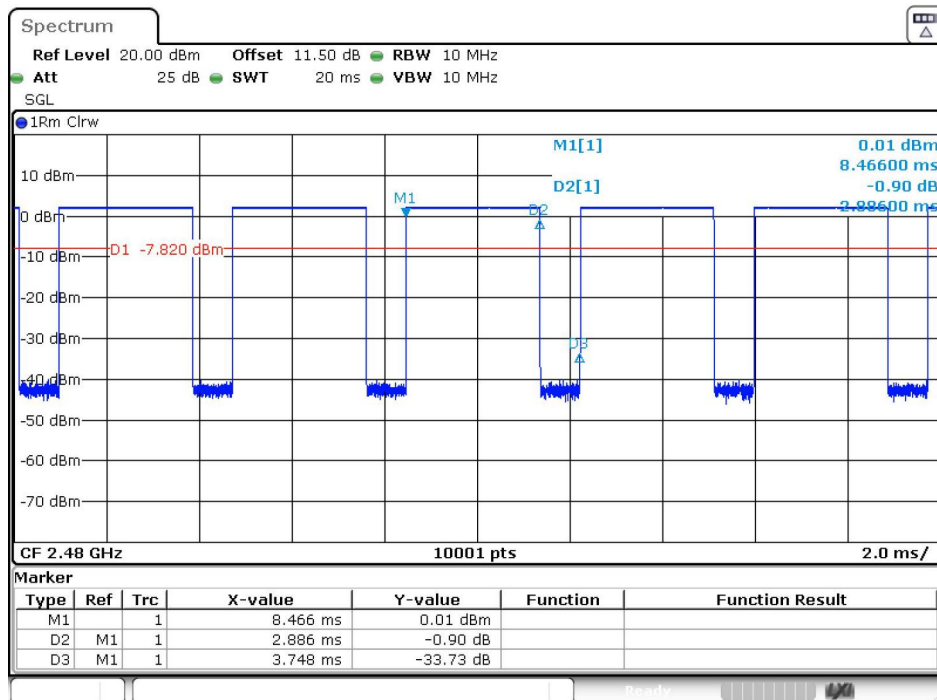
Test Graphs





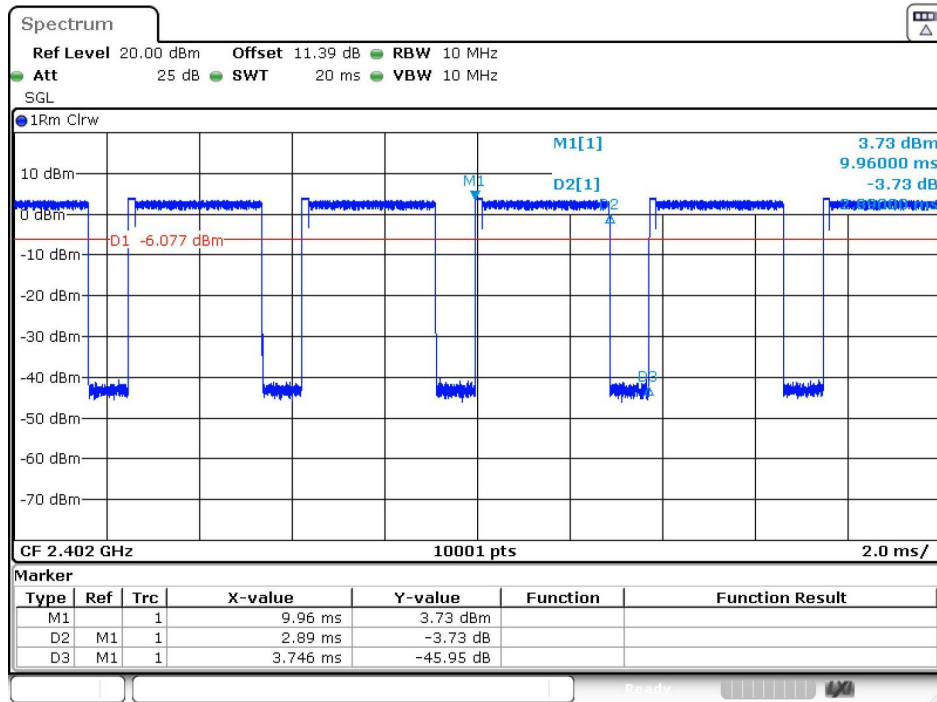
Date: 8.JAN.2025 17:27:40

GFSK(DH5)_Channel 39



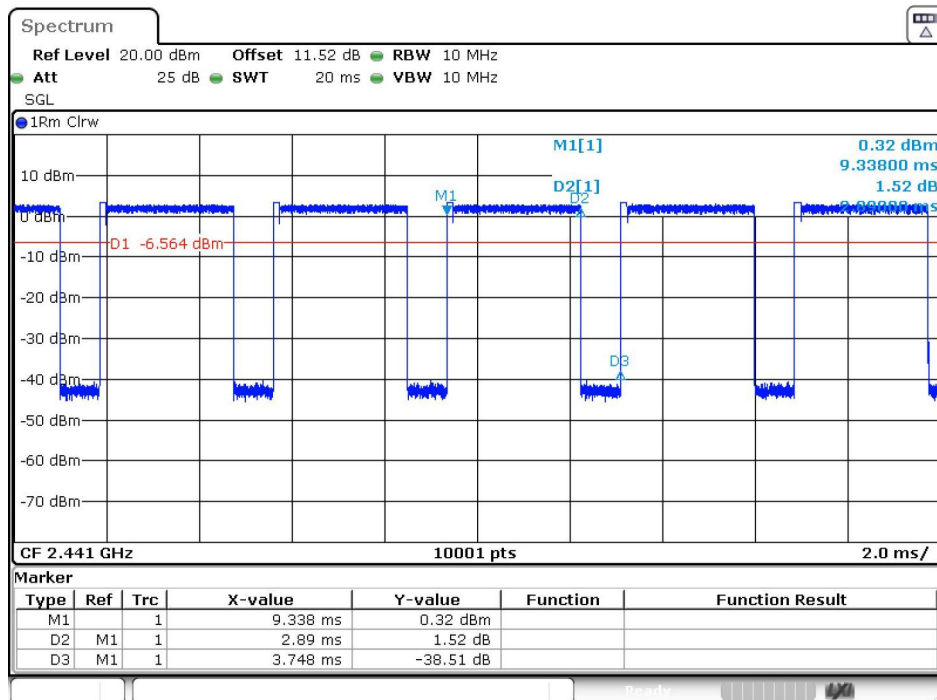
Date: 8.JAN.2025 17:30:24

GFSK(DH5)_Channel 78



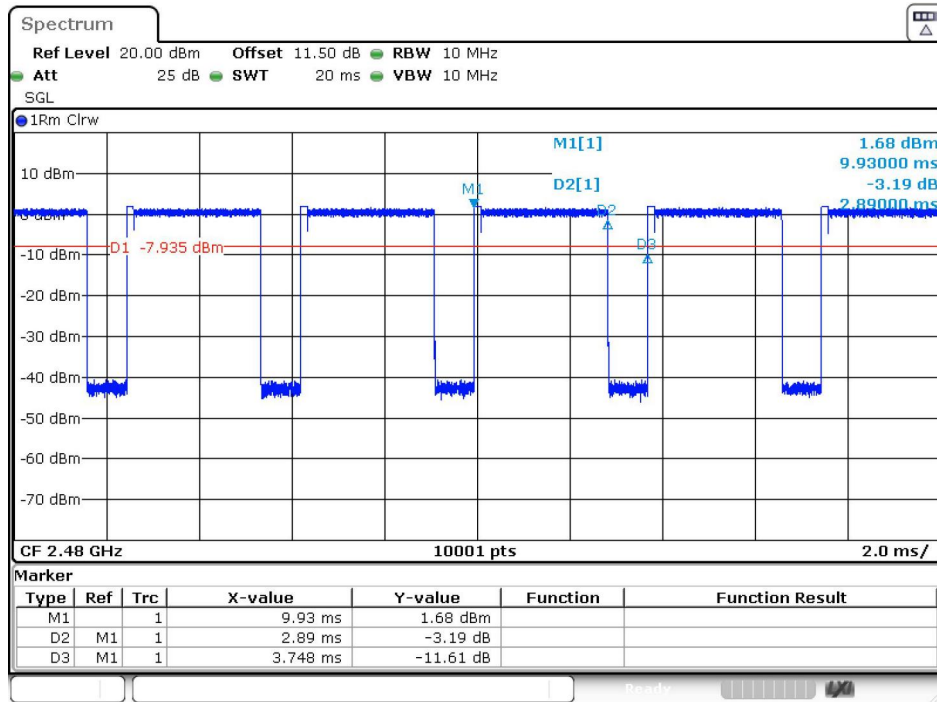
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$\pi/4$ DQPSK(2-DH5)_Channel 0



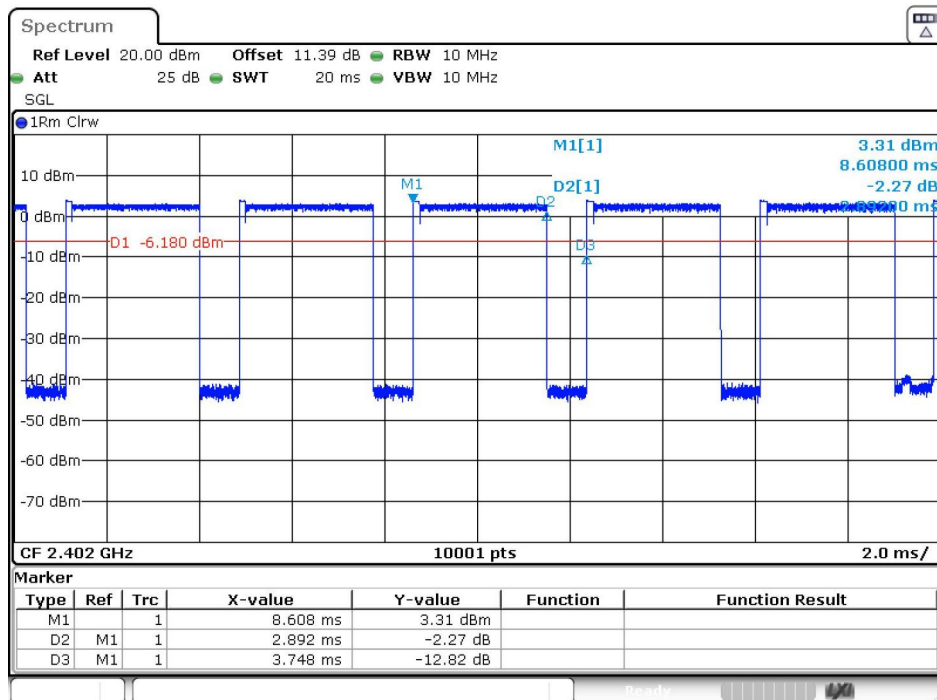
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$\pi/4$ DQPSK(2-DH5)_Channel 39



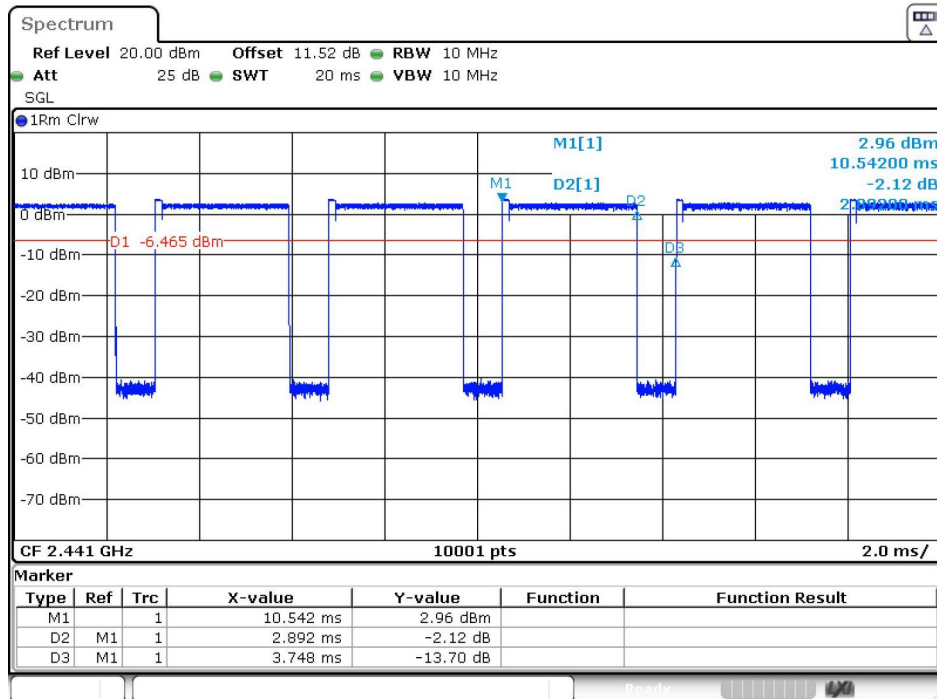
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$\pi/4$ DQPSK(2-DH5)_Channel 78



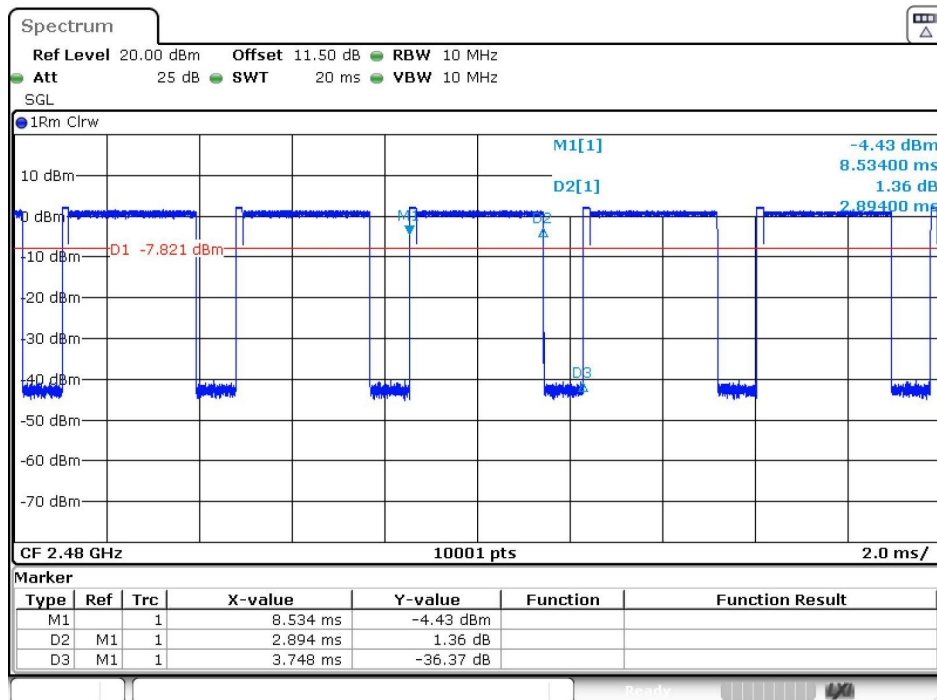
Date: 8.JAN.2025 17:47:17

8DPSK(3-DH5)_Channel 0



Date: 8.JAN.2025 17:56:49

8DPSK(3-DH5)_Channel 39



Date: 8.JAN.2025 17:58:26

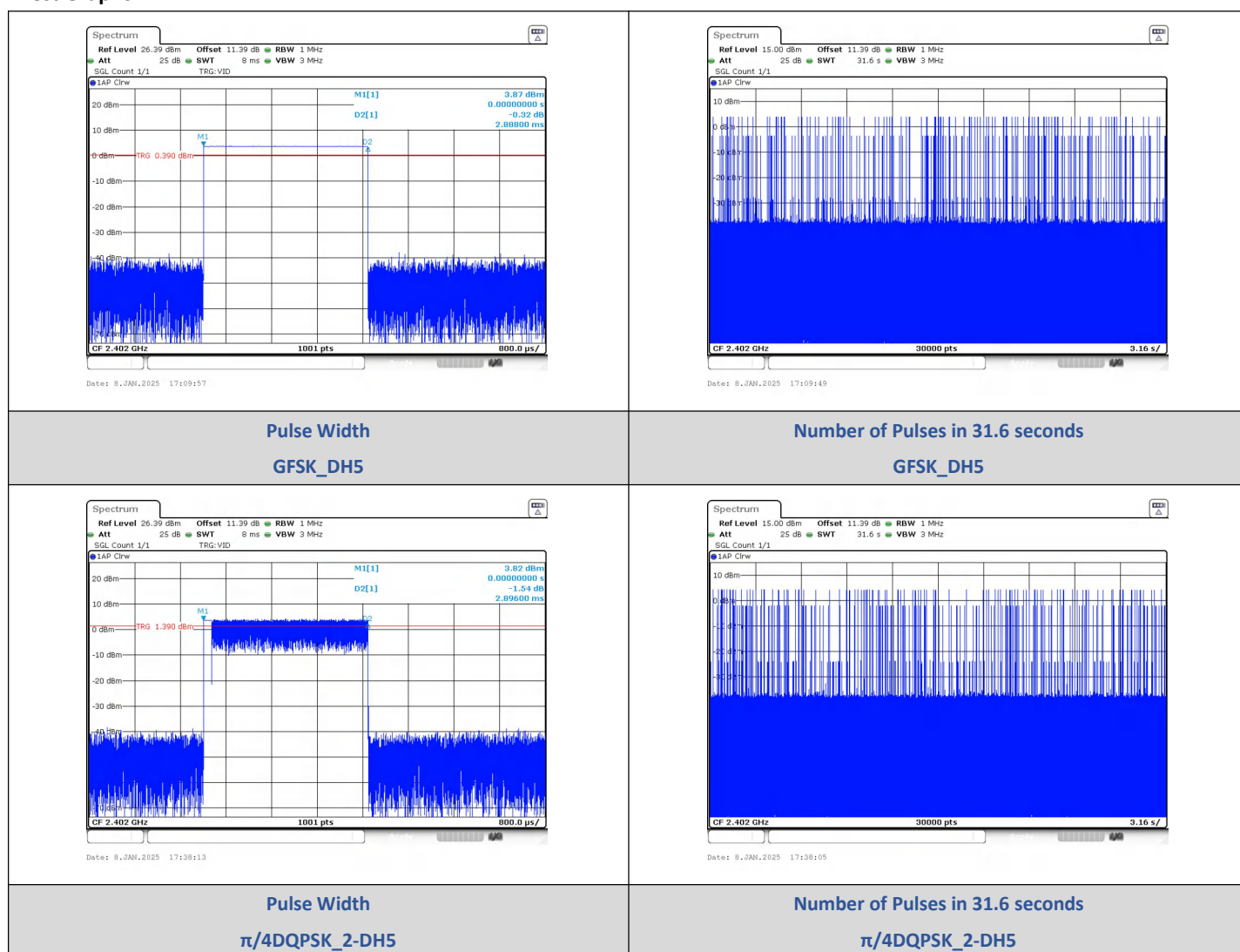
8DPSK(3-DH5)_Channel 78

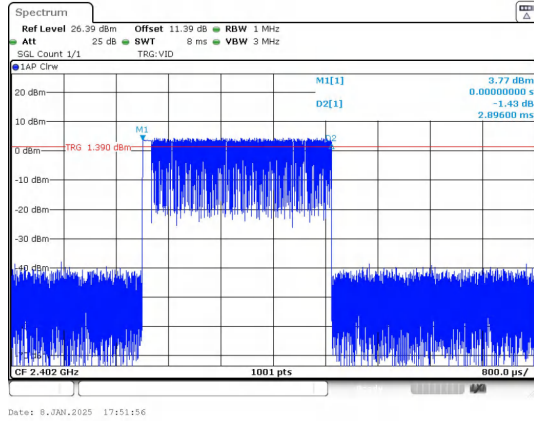
2) Dwell Time

Test Result

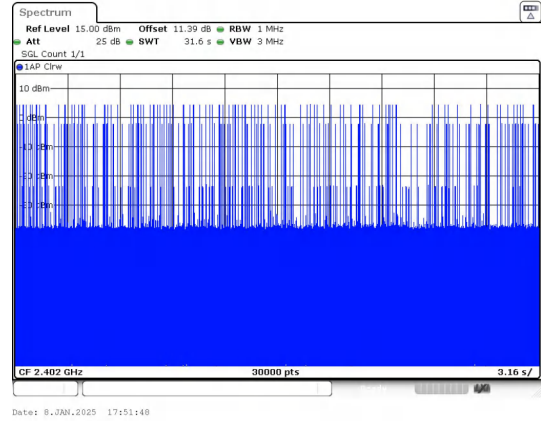
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.888	113	326.34	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.896	111	321.46		PASS
8DPSK	3-DH5		2.896	103	298.29		PASS

Test Graphs





Pulse Width
8DPSK_3-DH5



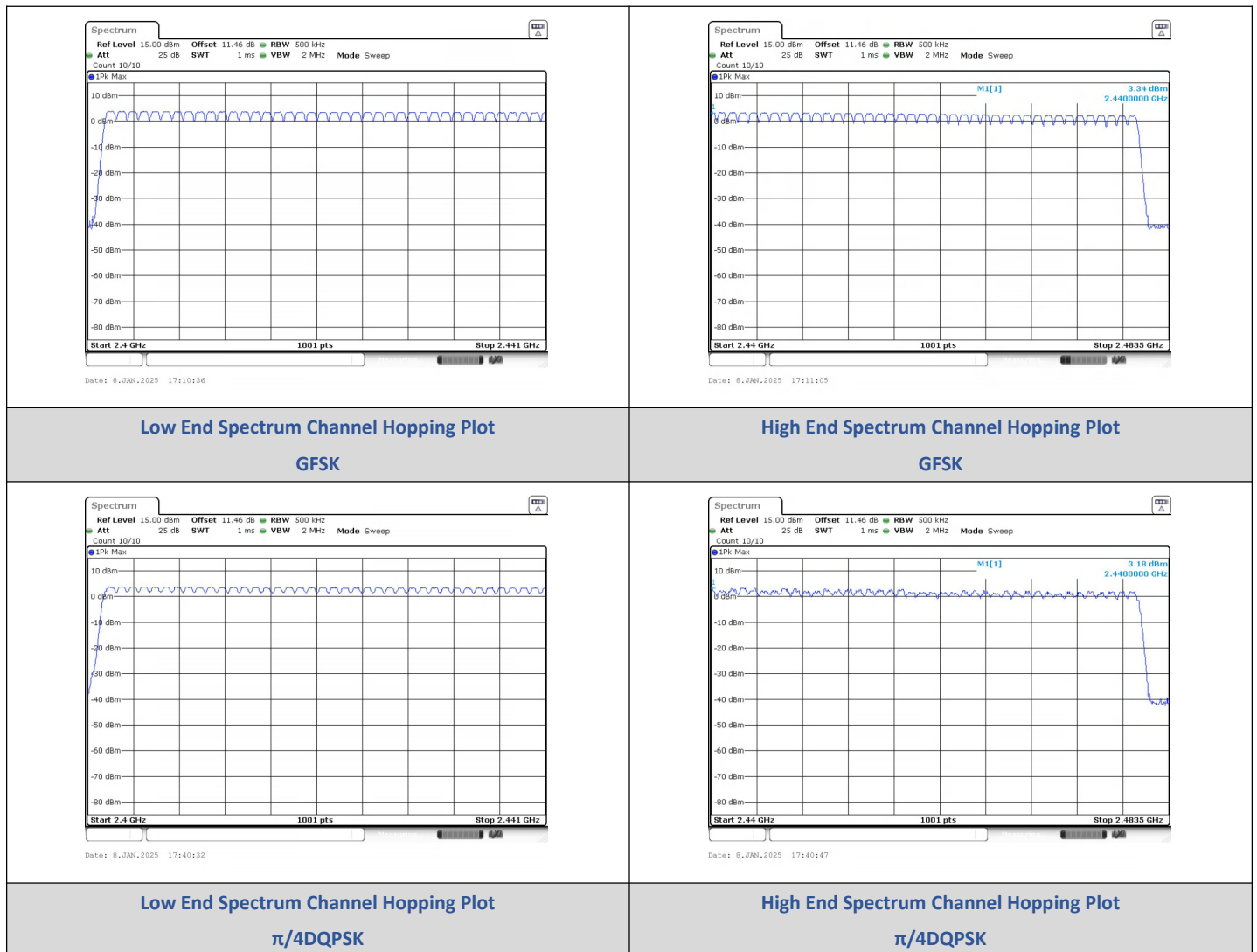
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

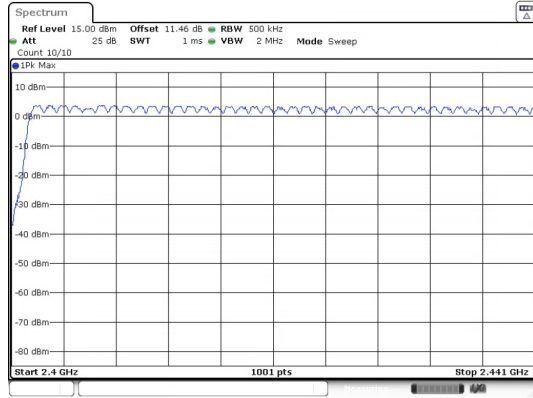
3) Number Of Hopping Channel

Test Result

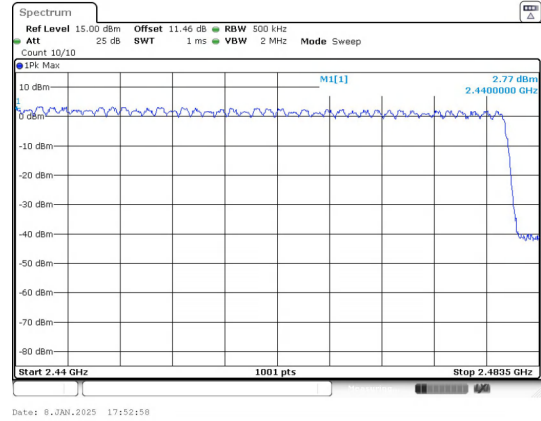
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK



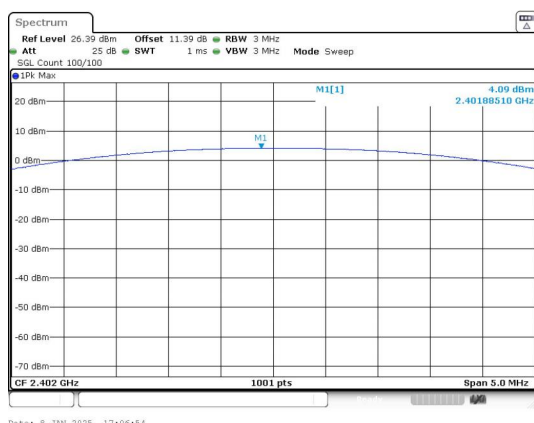
High End Spectrum Channel Hopping Plot
8DPSK

4) Conducted Output Power

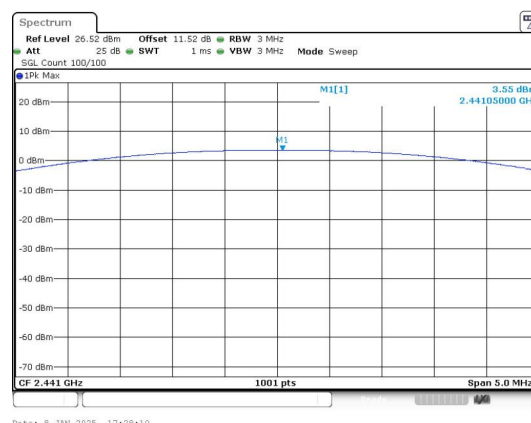
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	4.09	2.56	≤30	PASS
		39	3.55	2.26		PASS
		78	2.22	1.67		PASS
$\pi/4$ DQPSK	2-DH5	0	4.71	2.96	≤20.97	PASS
		39	4.32	2.70		PASS
		78	2.92	1.96		PASS
8DPSK	3-DH5	0	4.90	3.09		PASS
		39	4.74	2.98		PASS
		78	3.43	2.20		PASS

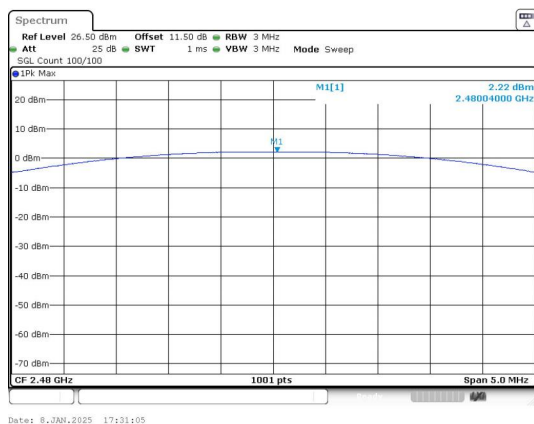
Test Graphs



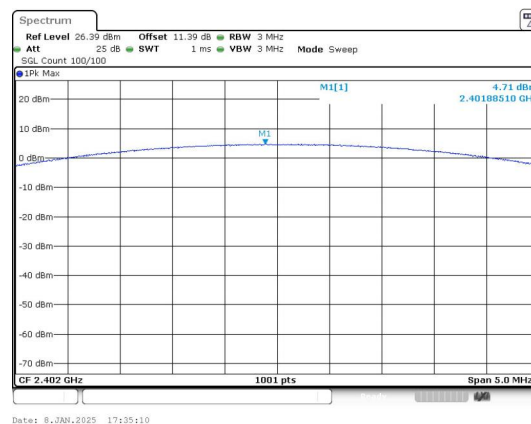
Peak Output Power
GFSK_Channel 0



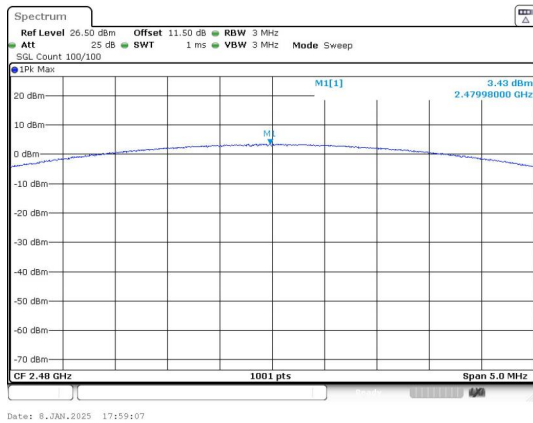
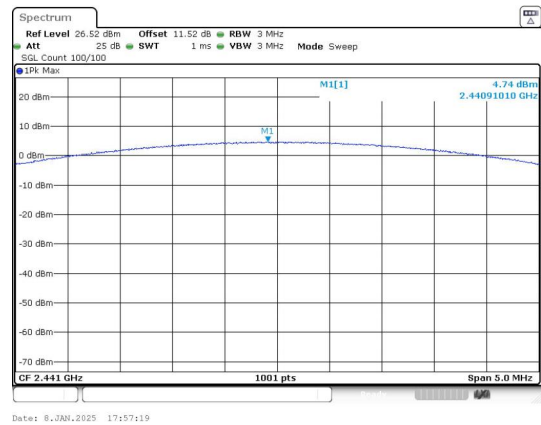
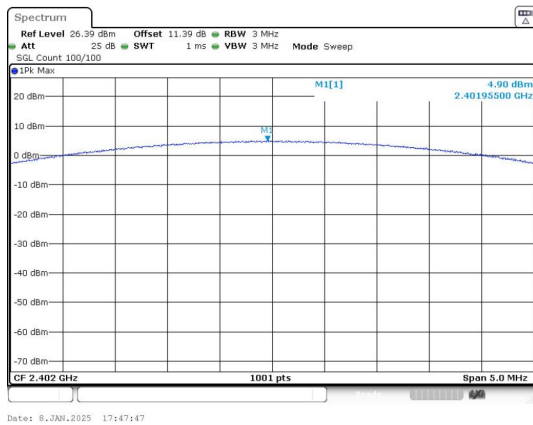
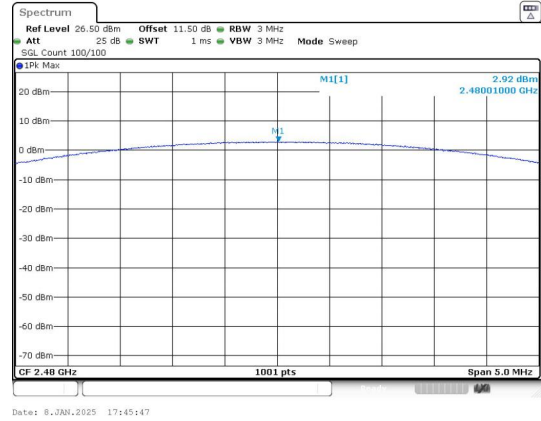
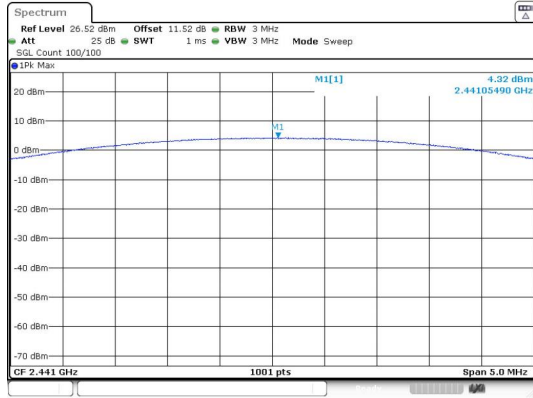
Peak Output Power
GFSK_Channel 39



Peak Output Power
GFSK_Channel 78



Peak Output Power
 $\pi/4$ DQPSK_Channel 0

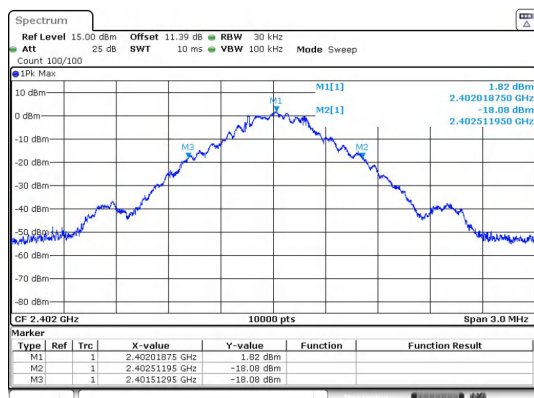


5) 20dB Bandwidth

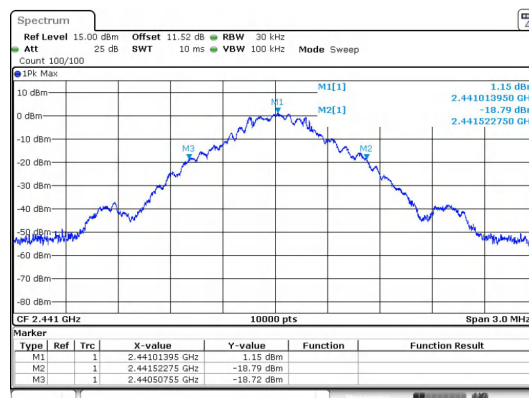
Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.000
	39	2441 MHz	1.010
	78	2480 MHz	1.010
$\pi/4$ DQPSK	0	2402 MHz	1.280
	39	2441 MHz	1.320
	78	2480 MHz	1.280
8DPSK	0	2402 MHz	1.290
	39	2441 MHz	1.290
	78	2480 MHz	1.290

Test Graphs



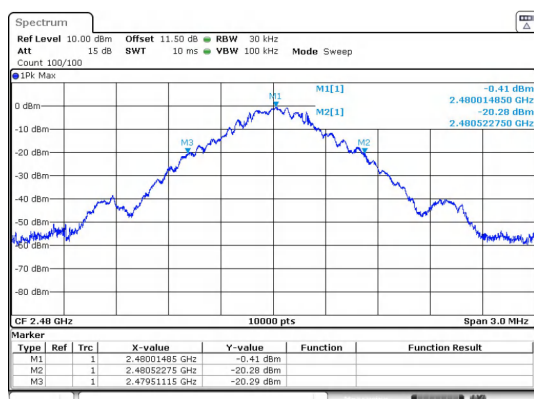
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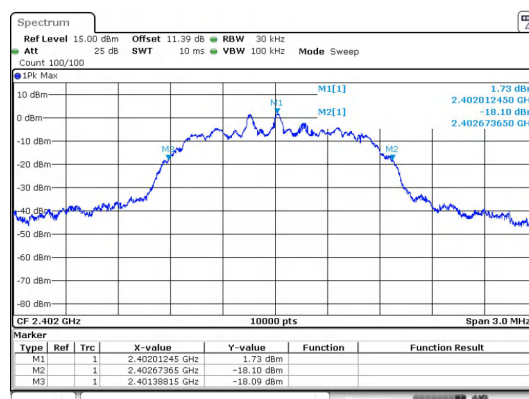
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GFSK_DH5_Channel 0

GFSK_DH5_Channel 39



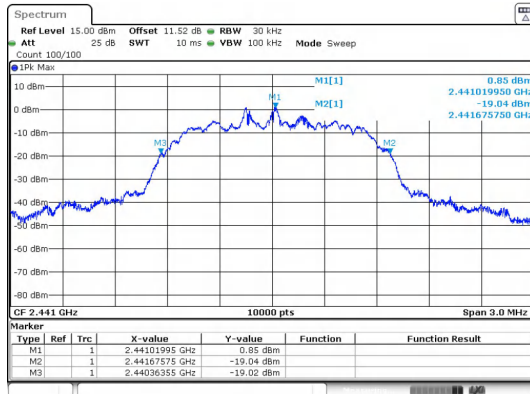
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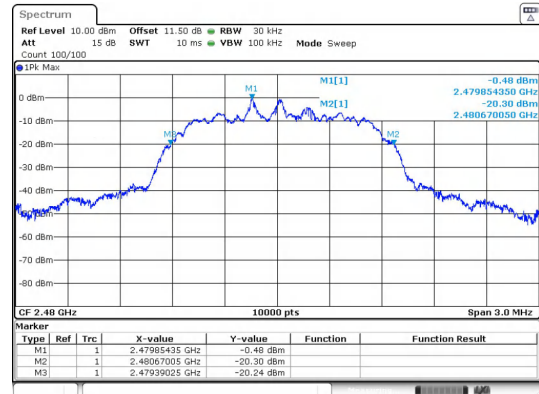
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GFSK_DH5_Channel 78

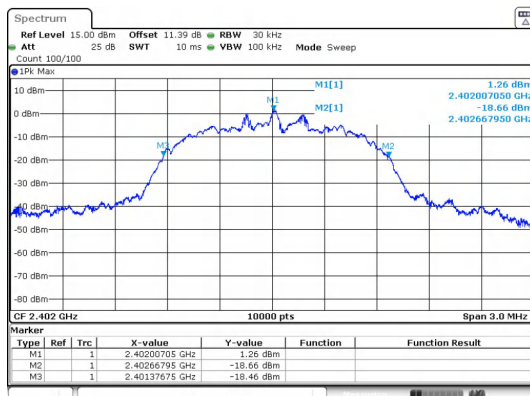
 $\pi/4$ DQPSK_2-DH5_Channel 0



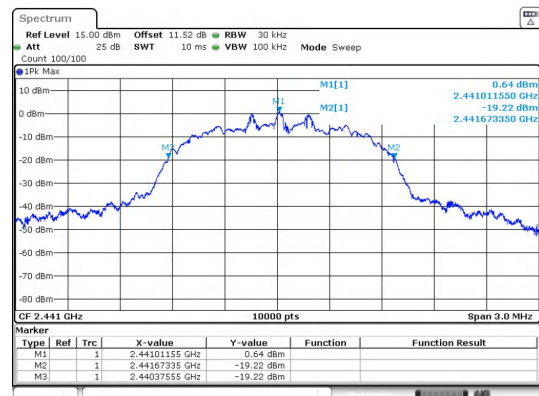
$\pi/4$ DQPSK_2-DH5_Channel 39



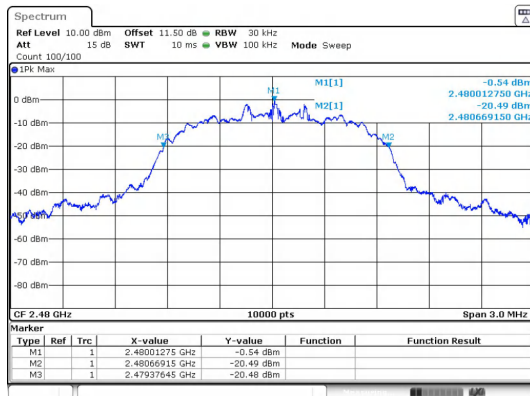
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



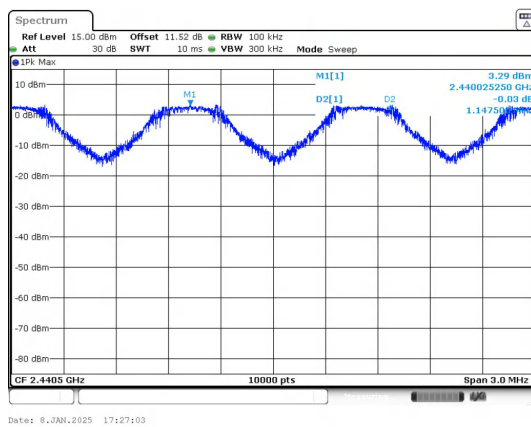
8DPSK_3-DH5_Channel 78

6) Carrier Frequencies Separation

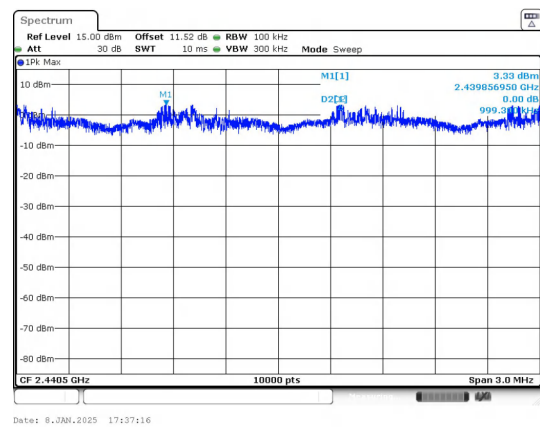
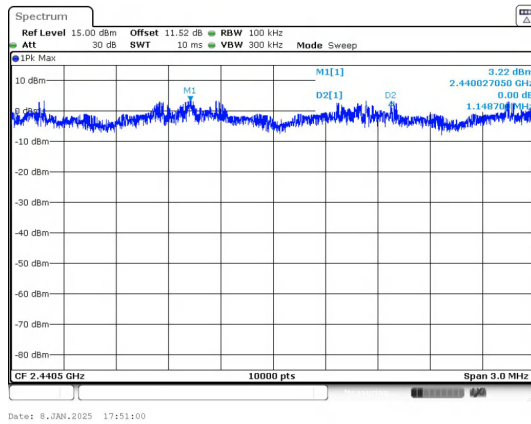
Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2440.0253	2441.1728	1.1475	1.0	PASS
$\pi/4$ DQPSK	2-DH5	2439.8569	2440.8562	0.9993	0.853	PASS
8DPSK	3-DH5	2440.0271	2441.1757	1.1487	0.86	PASS

Test Graphs



GFSK


 $\pi/4$ DQPSK


8DPSK

7) Conducted Out Of Band Emission

Test Result

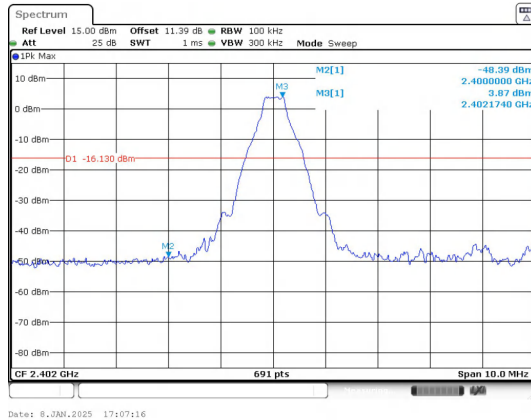
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-48.570	-16.13	-32.440	PASS
			9608.08	-43.520	-16.13	-27.390	PASS
		39	9763.72	-42.079	-16.67	-25.409	PASS
		78	2483.50	-50.700	-17.92	-32.780	PASS
			9920.20	-39.212	-17.92	-21.292	PASS
$\pi/4$ DQPSK	2-DH5	0	908.53	-28.838	-16.16	-12.678	PASS
			2400.00	-46.140	-16.16	-29.980	PASS
		39	9763.72	-41.660	-16.71	-24.950	PASS
		78	2483.50	-51.090	-18.16	-32.930	PASS
			9920.20	-39.575	-18.16	-21.415	PASS
8DPSK	3-DH5	0	2400.00	-45.840	-16.48	-29.360	PASS
			9608.08	-43.458	-16.48	-26.978	PASS
		39	905.20	-36.838	-16.63	-20.208	PASS
		78	906.03	-33.822	-18.04	-15.782	PASS
			2483.50	-49.840	-18.04	-31.800	PASS

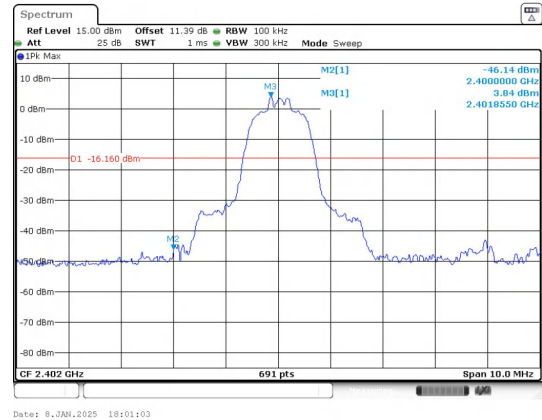
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2398.26	-47.177	-16.29	-30.887	PASS
			2400.00	-48.730	-16.29	-32.440	PASS
			2483.50	-50.360	-18.33	-32.030	PASS
$\pi/4$ DQPSK	2-DH5		2398.74	-48.308	-17.0	-31.308	PASS
			2400.00	-50.840	-17.0	-33.840	PASS
			2483.50	-49.060	-18.28	-30.780	PASS
8DPSK	3-DH5		2400.00	-47.060	-17.96	-29.100	PASS
			2483.50	-49.590	-18.11	-31.480	PASS

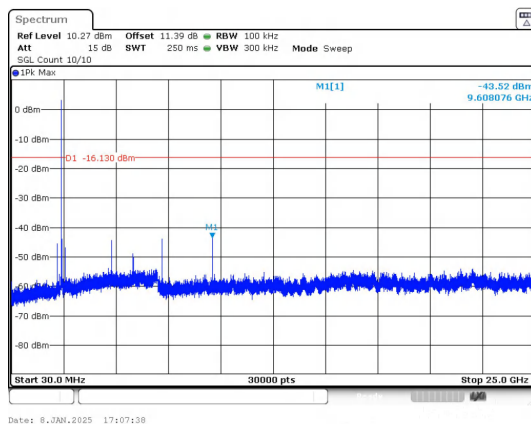
Test Graphs



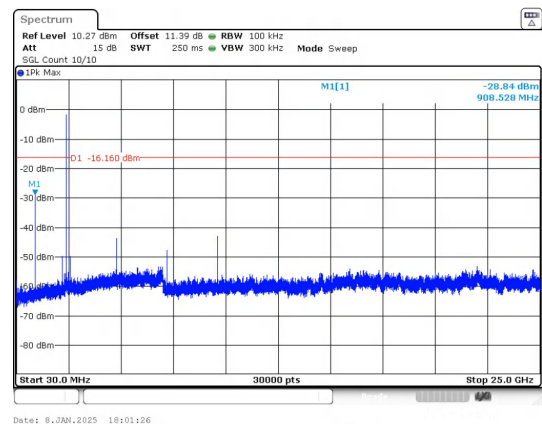
Out Of Band Emission
GFSK_DH5_Channel 0



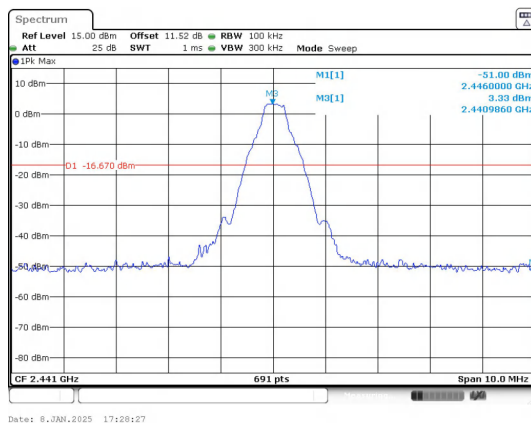
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0



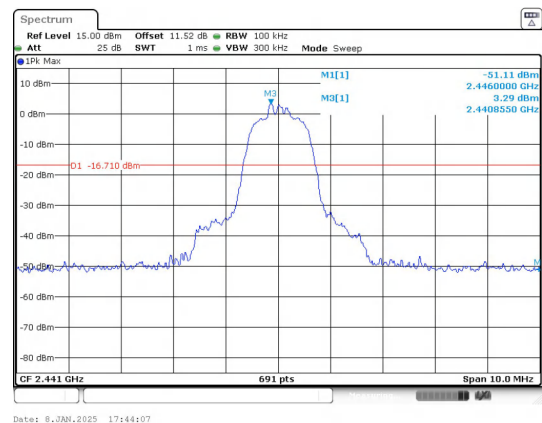
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



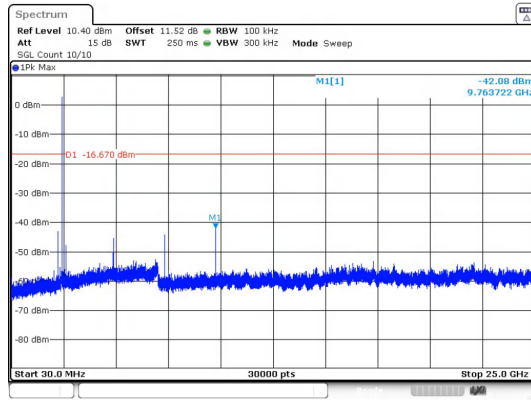
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 0



Out Of Band Emission
GFSK_DH5_Channel 39

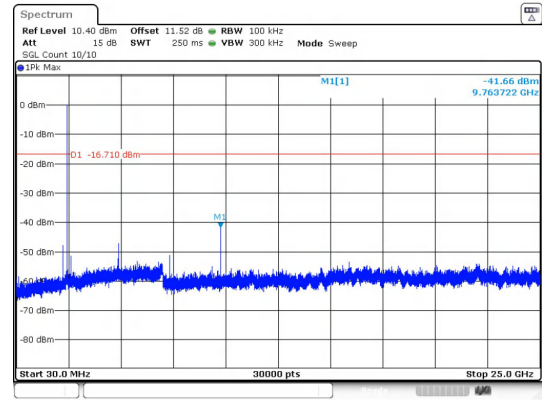


Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39



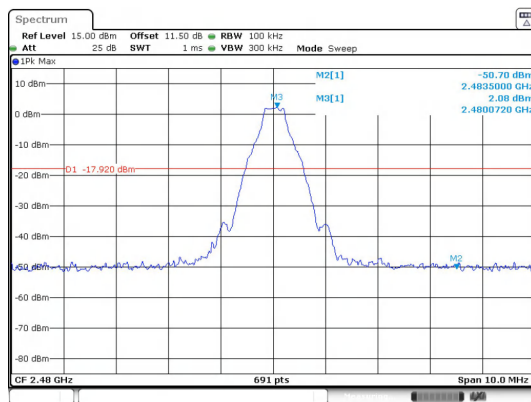
Date: 8.JAN.2025 17:28:49

30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



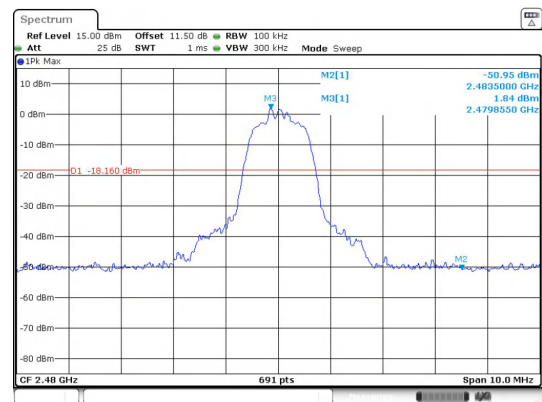
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30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



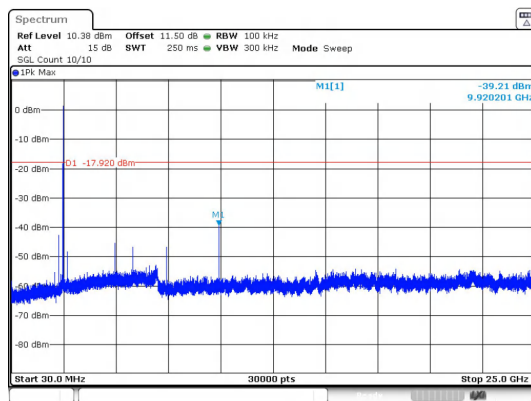
Date: 8.JAN.2025 17:31:27

Out Of Band Emission
GFSK_DH5_Channel 78



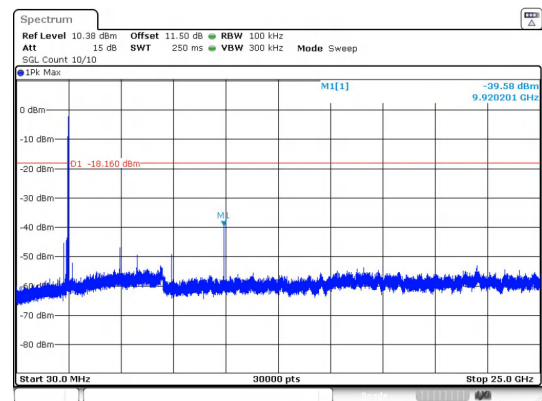
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Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78



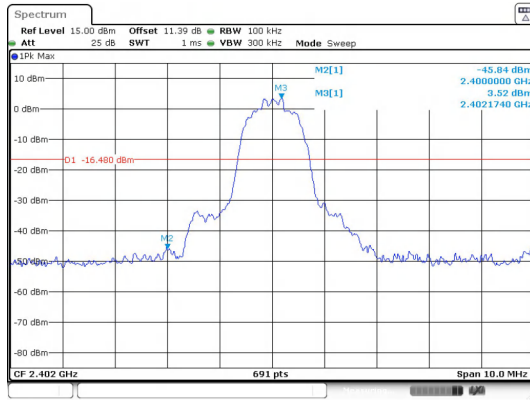
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30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78

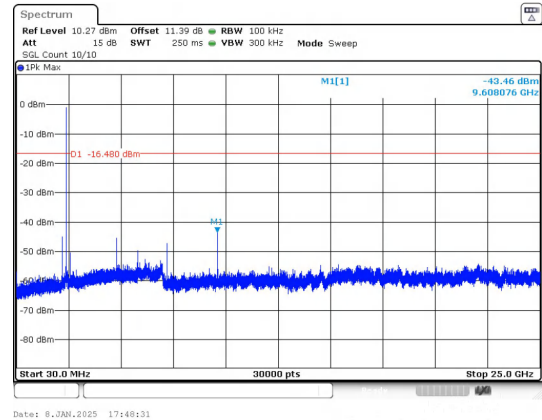


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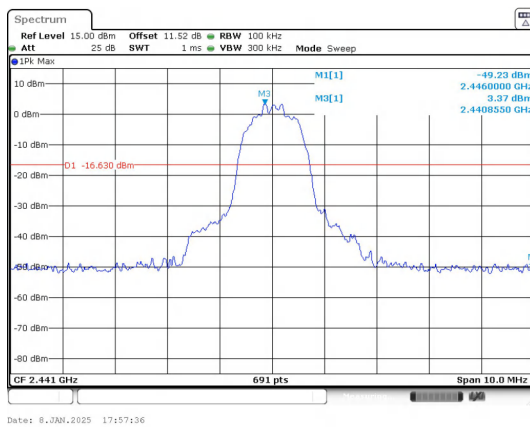
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



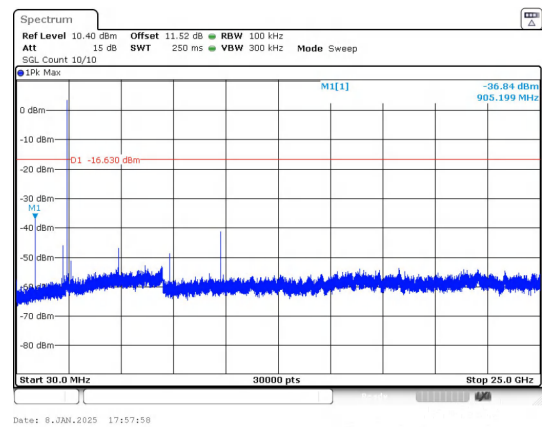
Out Of Band Emission
8DPSK_3-DH5_Channel 0



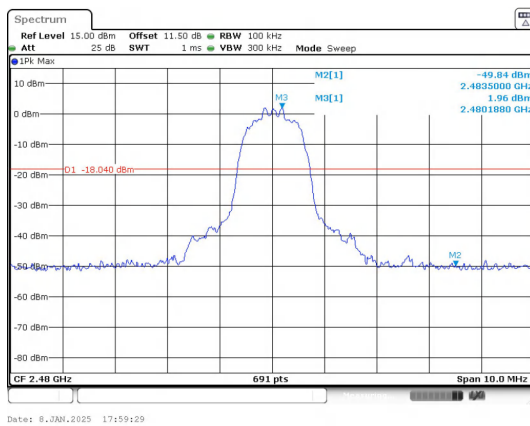
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



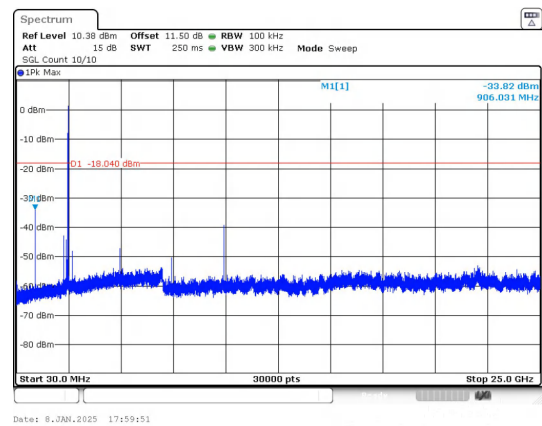
Out Of Band Emission
8DPSK_3-DH5_Channel 39



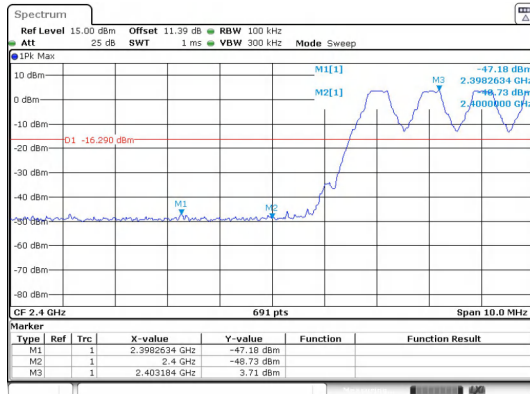
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



Out Of Band Emission
8DPSK_3-DH5_Channel 78

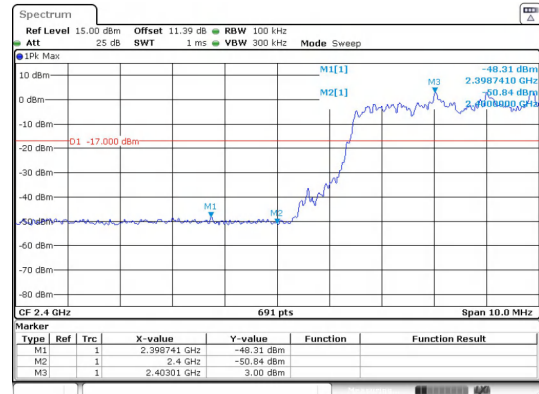


30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



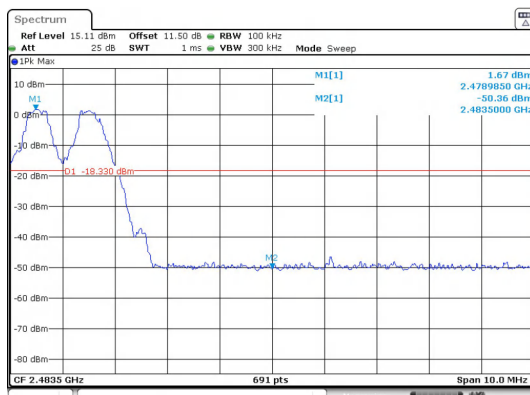
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Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



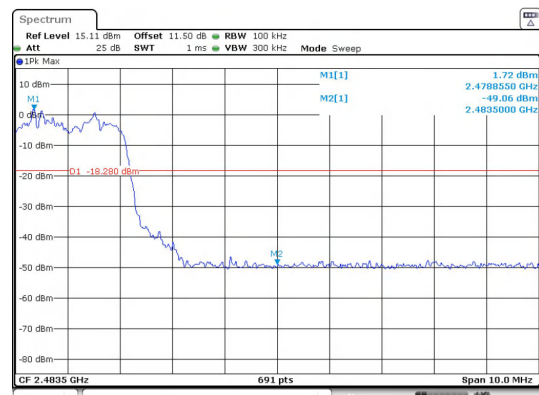
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Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



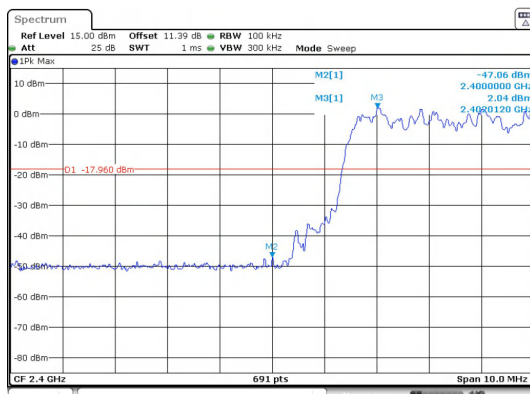
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Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



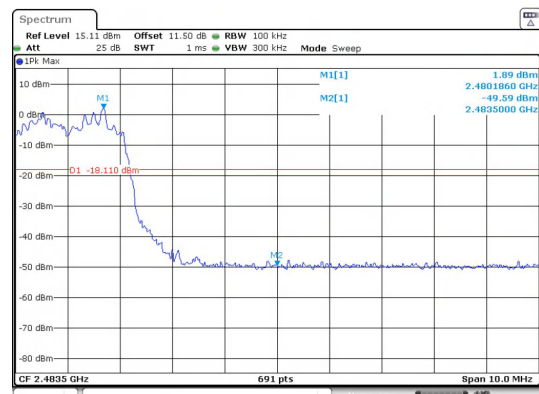
Date: 8.JAN.2025 17:42:46

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



Date: 8.JAN.2025 17:53:37

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



Date: 8.JAN.2025 17:54:06

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

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