

Appendix Report

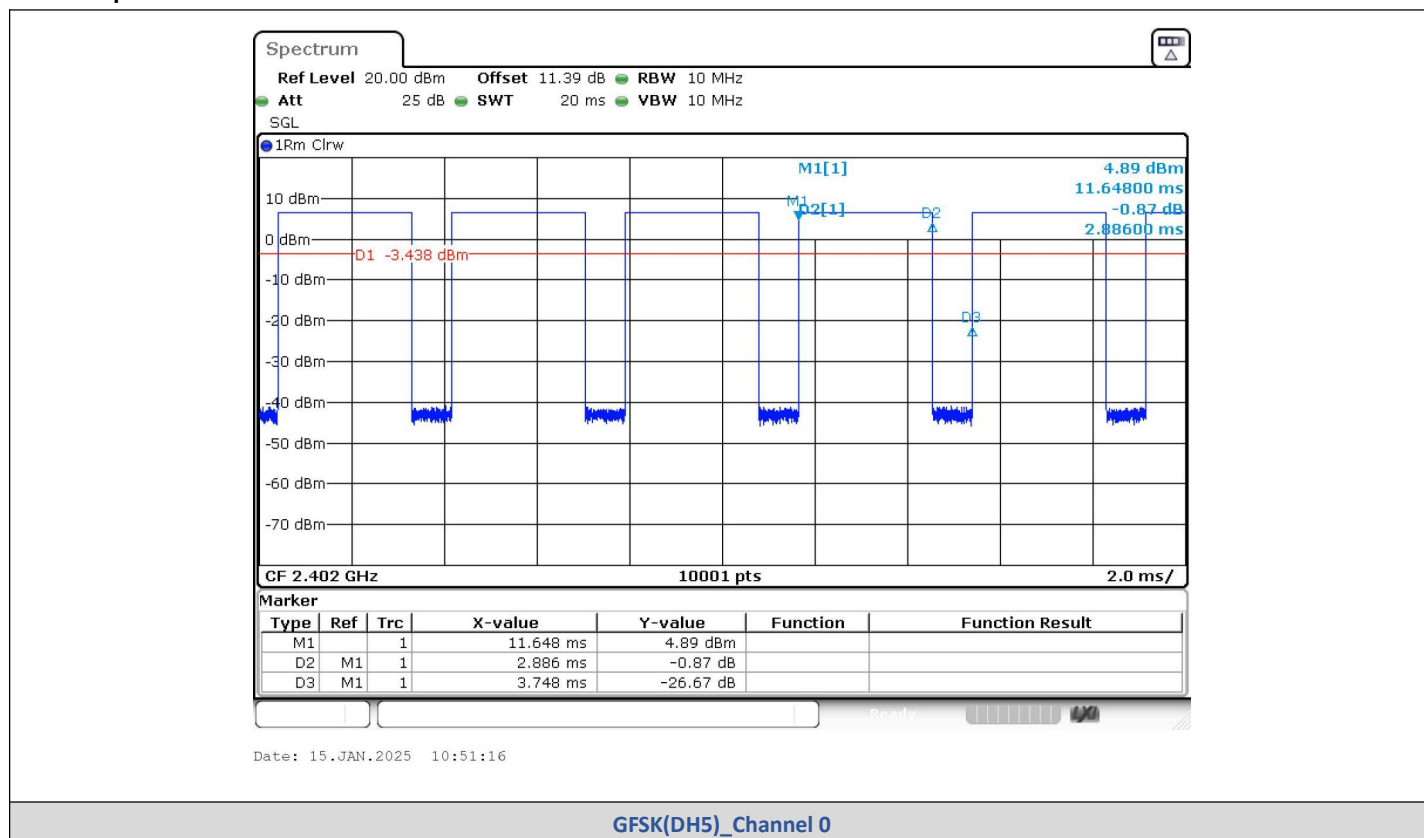
Report No.:	CISRR25011008409
Test Engineer:	Mark Fu
Supervised by:	Rory Huang

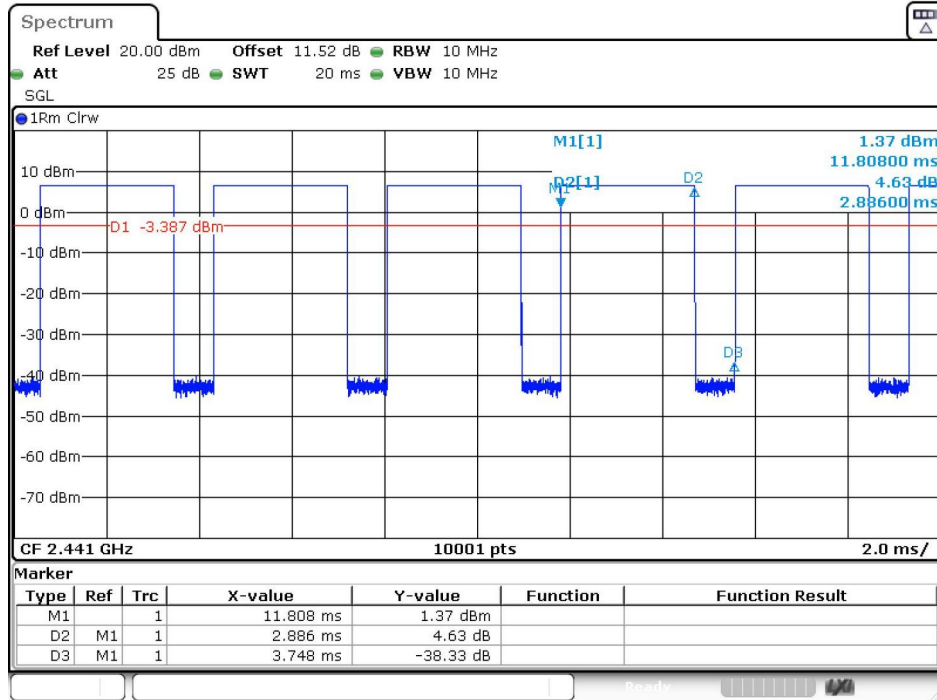
1) Duty Cycle

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	2.892	3.748	77.16	0.7716	1.1261	0.3458
		39	2.892	3.748	77.16	0.7716	1.1261	0.3458
		78	2.890	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	2.892	3.748	77.16	0.7716	1.1261	0.3458

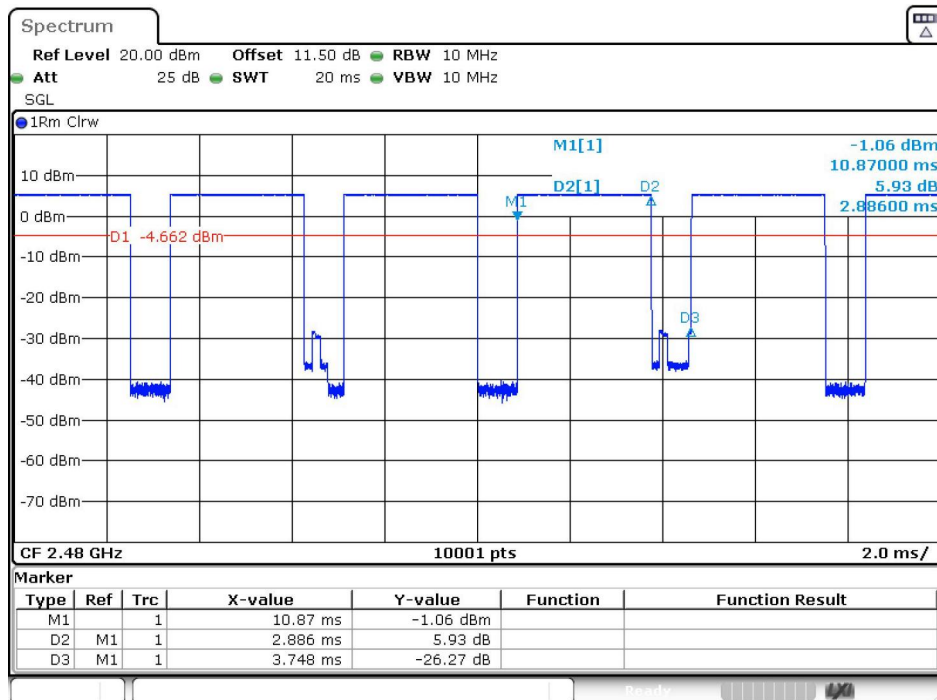
Test Graphs





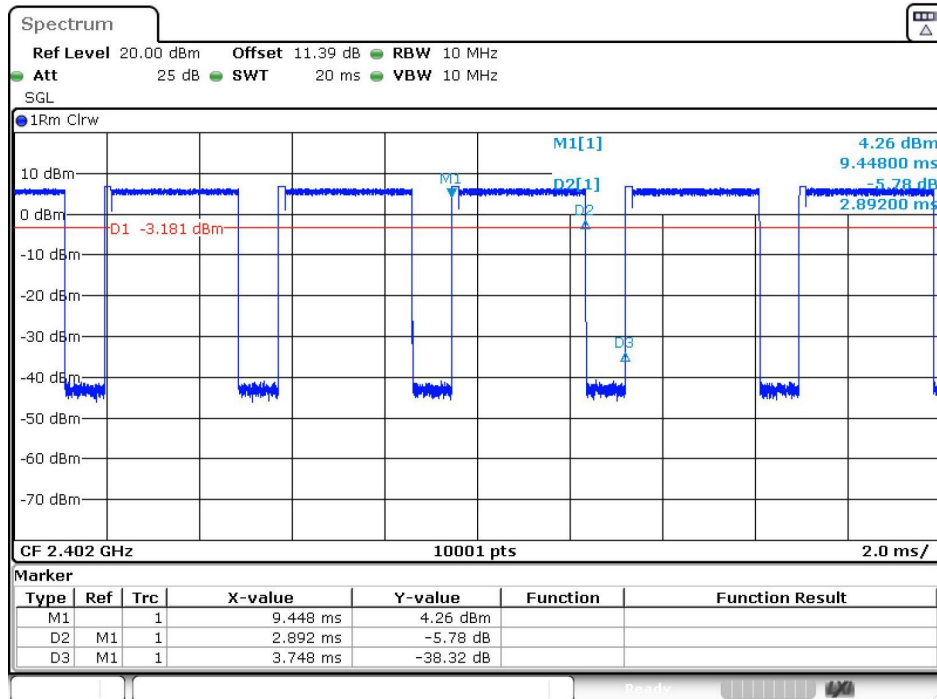
Date: 15, JAN, 2025 11:17:46

GFSK(DH5)_Channel 39



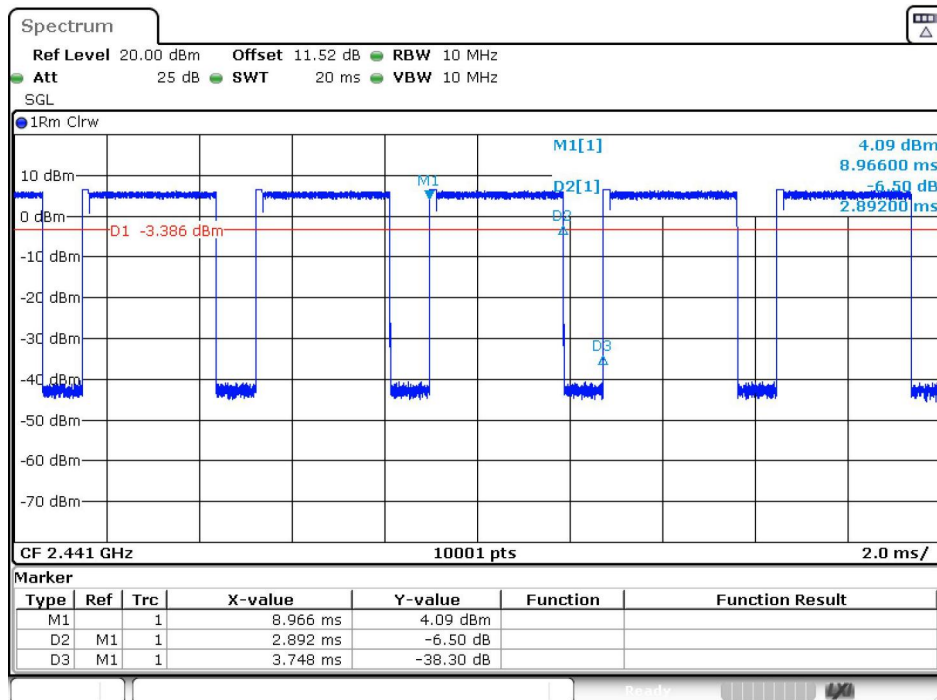
Date: 15, JAN, 2025 11:19:25

GFSK(DH5)_Channel 78



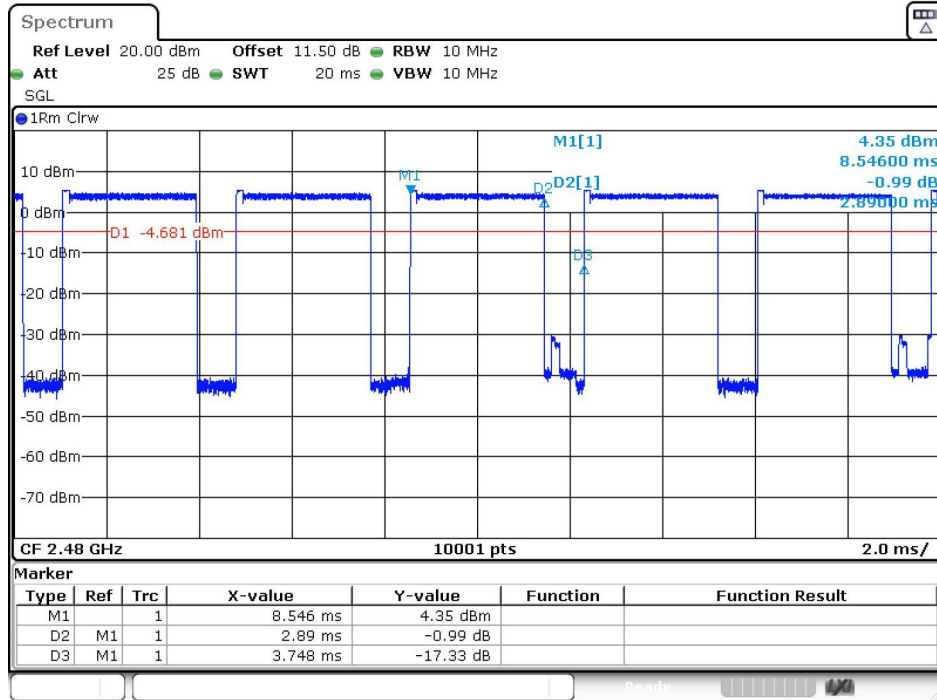
Date: 15, JAN, 2025 11:21:15

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



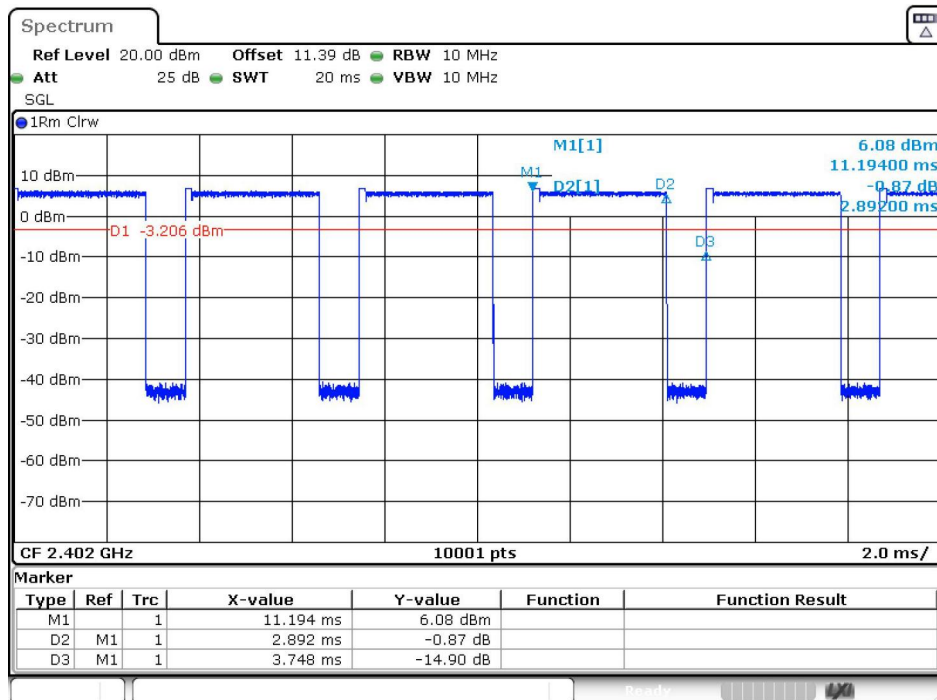
Date: 15, JAN, 2025 11:27:06

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



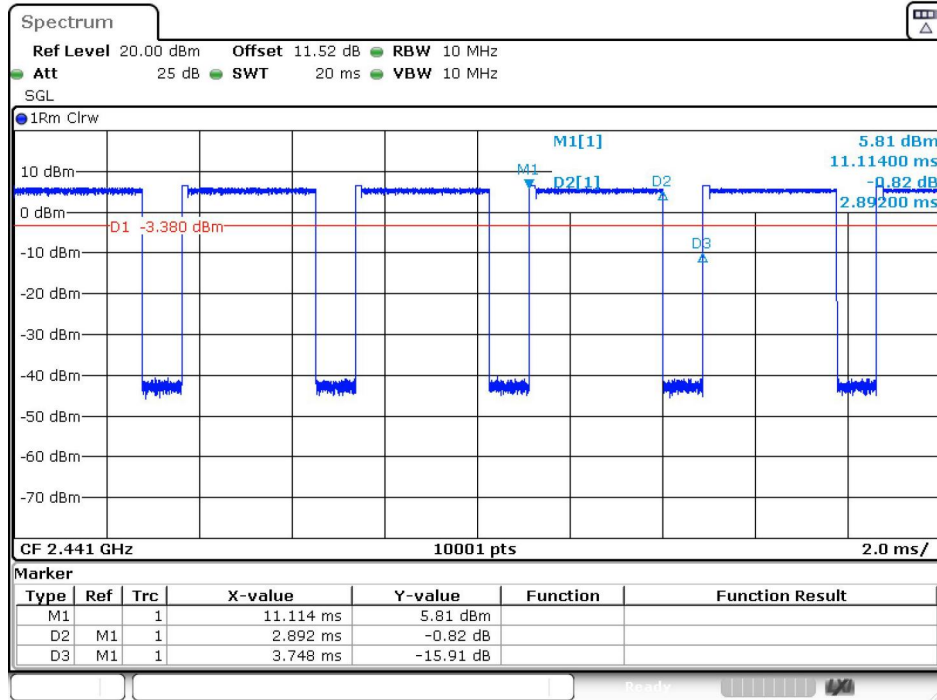
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$\pi/4$ DQPSK(2-DH5)_Channel 78



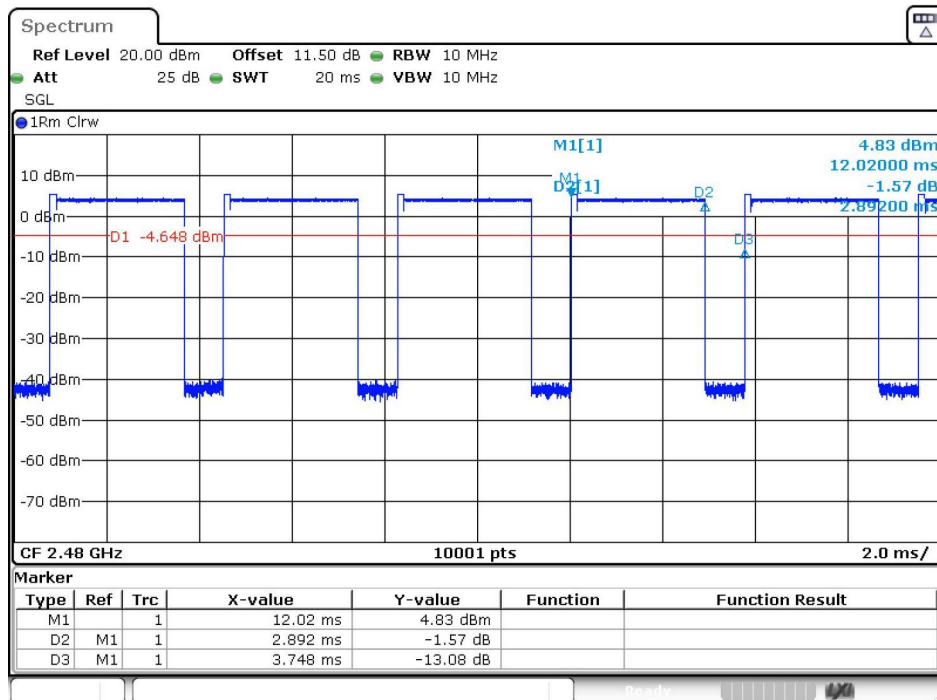
Date: 15, JAN, 2025 11:31:50

8DPSK(3-DH5)_Channel 0



Date: 15, JAN, 2025 11:40:02

8DPSK(3-DH5)_Channel 39



Date: 15, JAN, 2025 11:41:42

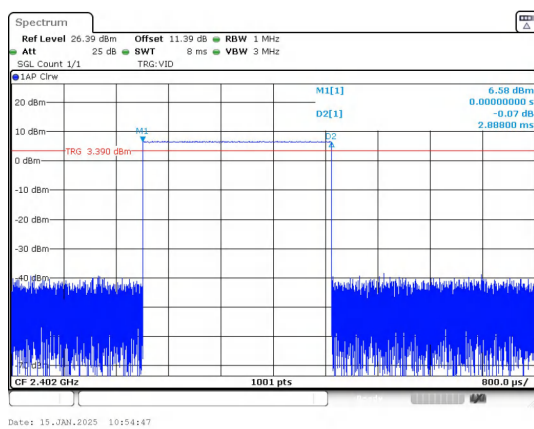
8DPSK(3-DH5)_Channel 78

2) Dwell Time

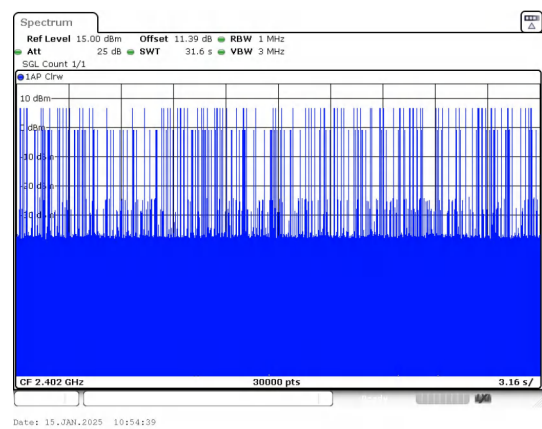
Test Result

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	98	283.02	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.896	105	304.08		PASS
8DPSK	3-DH5		2.896	104	301.18		PASS

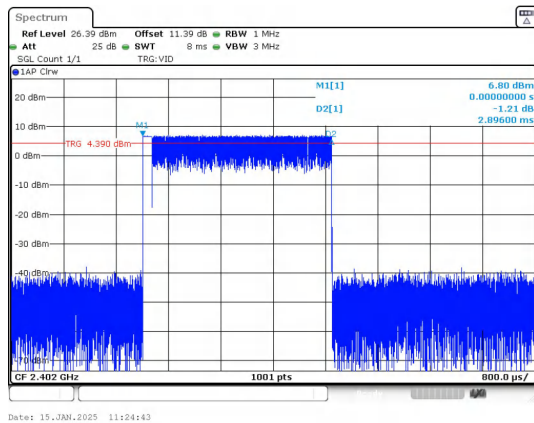
Test Graphs



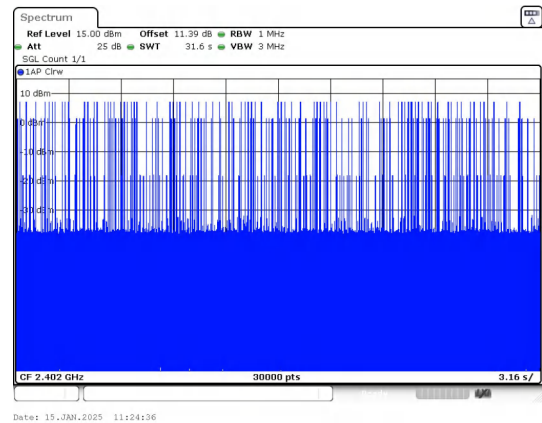
Pulse Width
GFSK_DH5



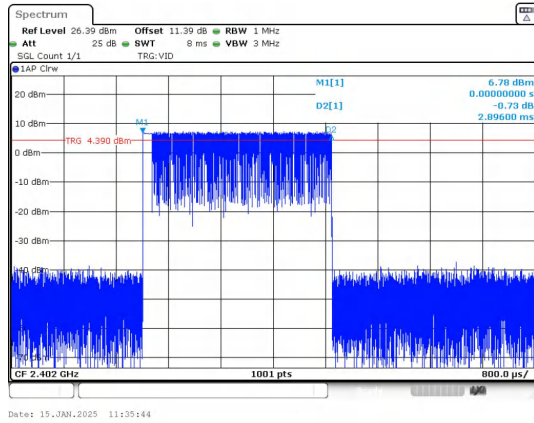
Number of Pulses in 31.6 seconds
GFSK_DH5



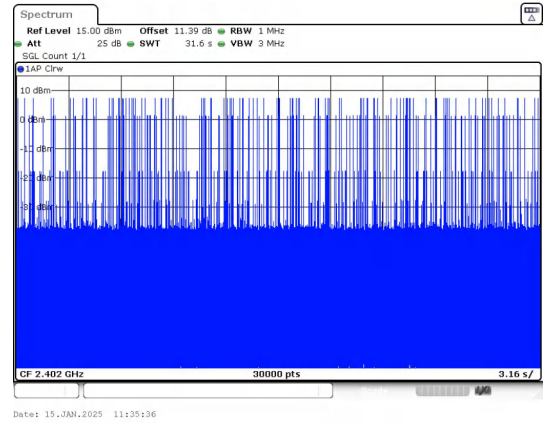
Pulse Width
 $\pi/4$ DQPSK_2-DH5



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



Pulse Width
8DPSK_3-DH5



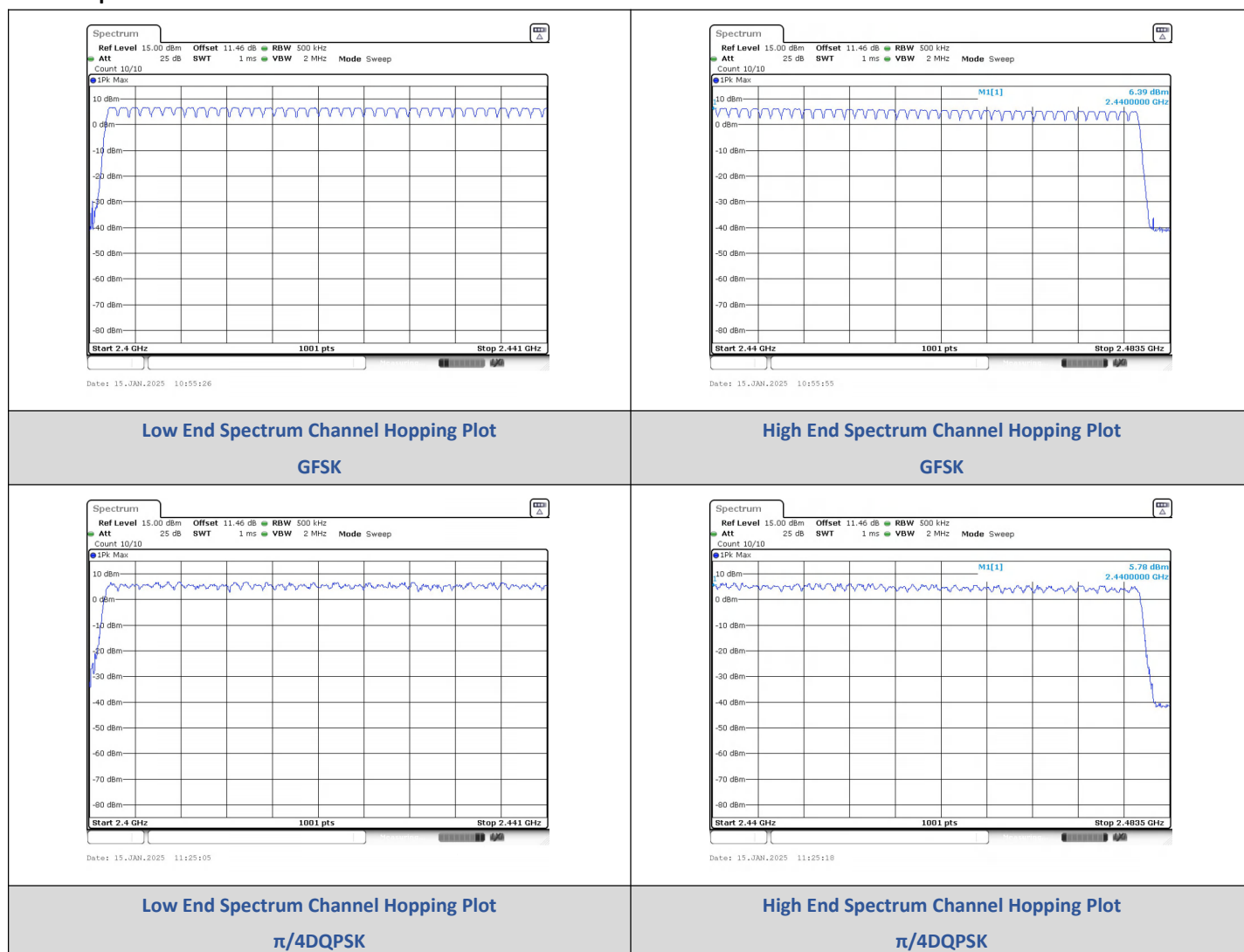
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

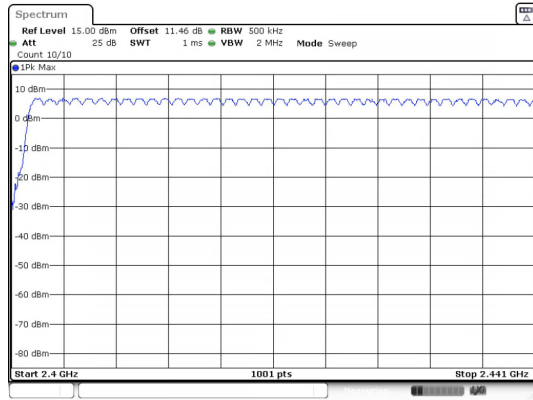
3) Number Of Hopping Channel

Test Result

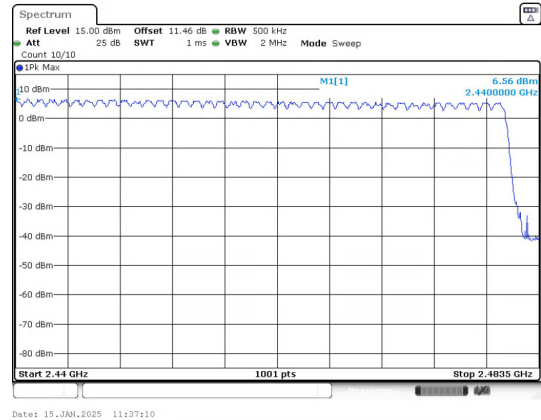
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK



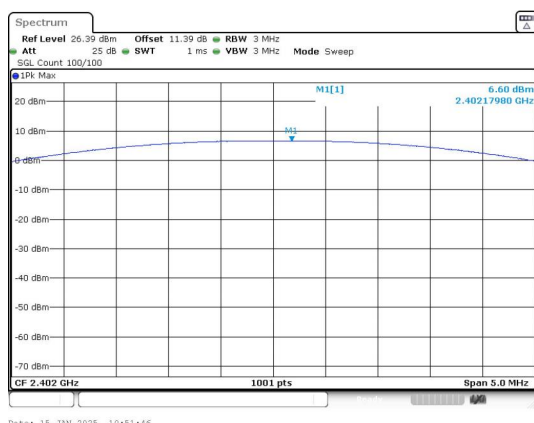
High End Spectrum Channel Hopping Plot
8DPSK

4) Conducted Output Power

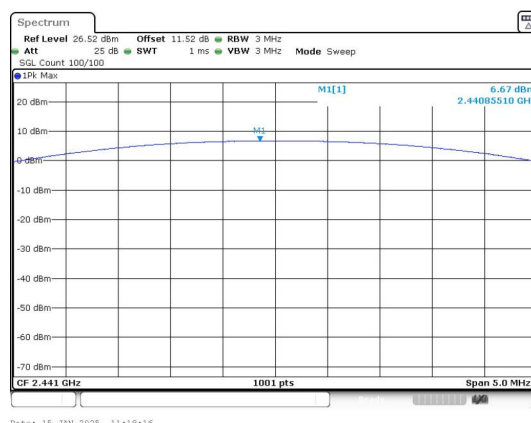
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	6.60	4.57	≤30	PASS
		39	6.67	4.65		PASS
		78	5.38	3.45		PASS
$\pi/4$ DQPSK	2-DH5	0	7.42	5.52	≤20.97	PASS
		39	7.28	5.35		PASS
		78	6.03	4.01		PASS
8DPSK	3-DH5	0	7.59	5.74		PASS
		39	7.52	5.65		PASS
		78	6.34	4.31		PASS

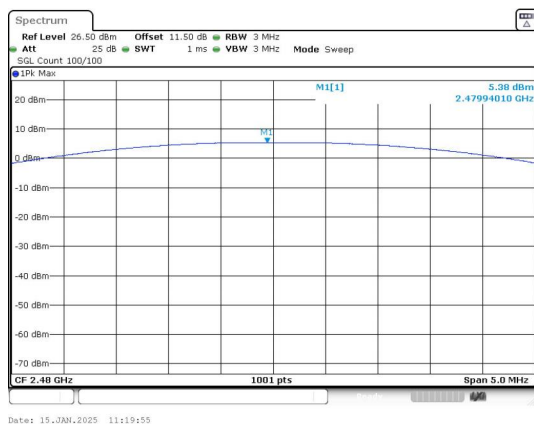
Test Graphs



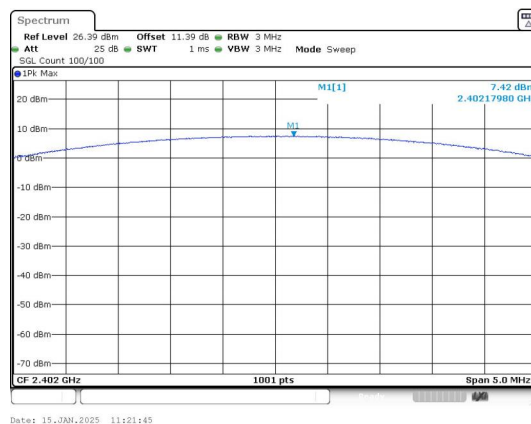
Peak Output Power
GFSK_Channel 0



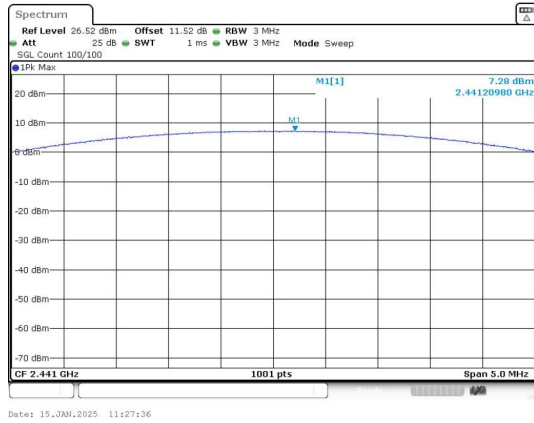
Peak Output Power
GFSK_Channel 39



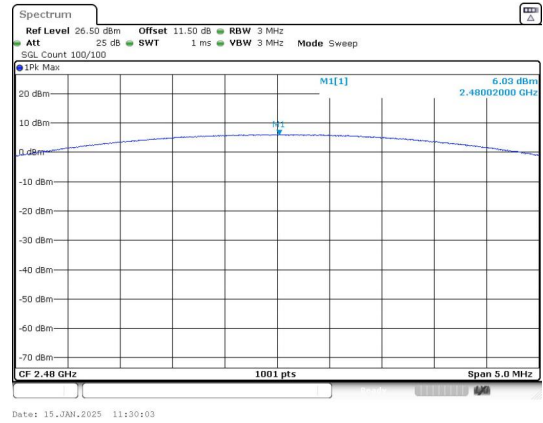
Peak Output Power
GFSK_Channel 78



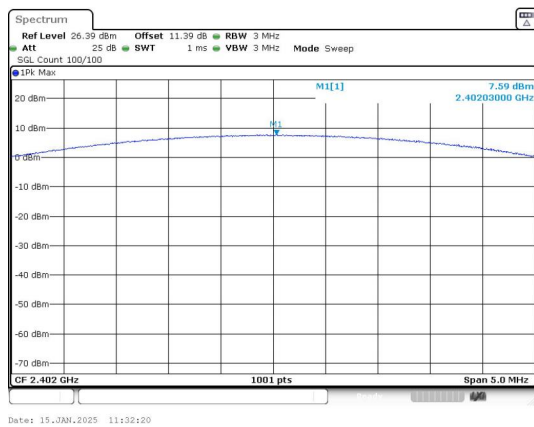
Peak Output Power
 $\pi/4$ DQPSK_Channel 0



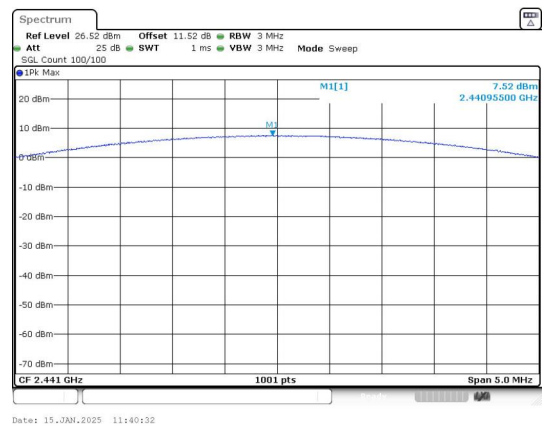
Peak Output Power
 $\pi/4$ DQPSK_Channel 39



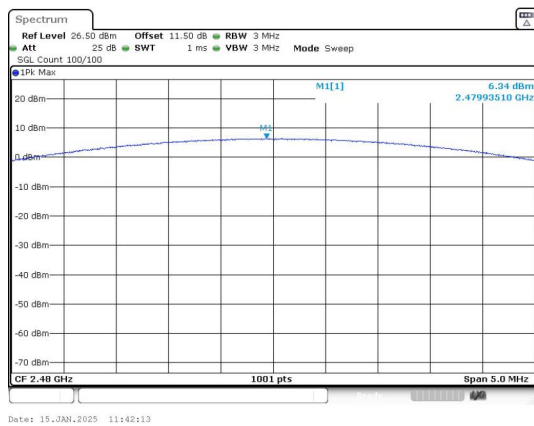
Peak Output Power
 $\pi/4$ DQPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



Peak Output Power
8DPSK_Channel 39



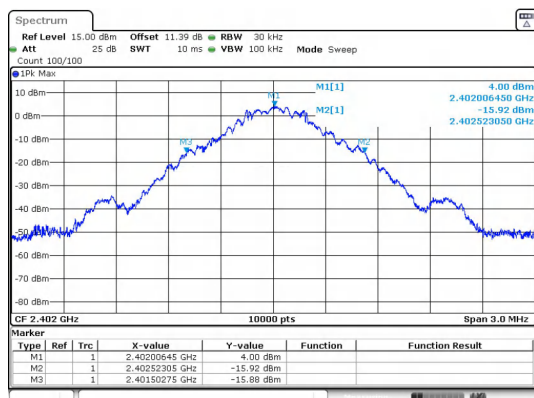
Peak Output Power
8DPSK_Channel 78

5) 20dB Bandwidth

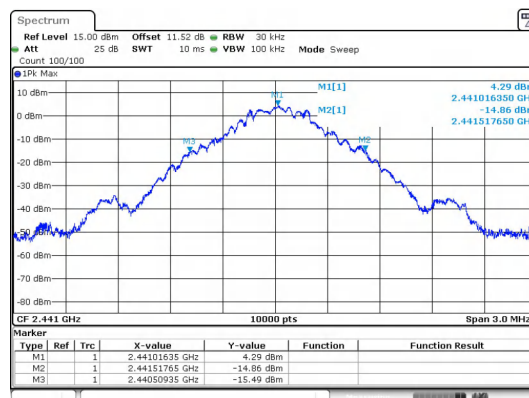
Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.020
	39	2441 MHz	1.010
	78	2480 MHz	1.000
$\pi/4$ DQPSK	0	2402 MHz	1.310
	39	2441 MHz	1.320
	78	2480 MHz	1.310
8DPSK	0	2402 MHz	1.290
	39	2441 MHz	1.300
	78	2480 MHz	1.290

Test Graphs



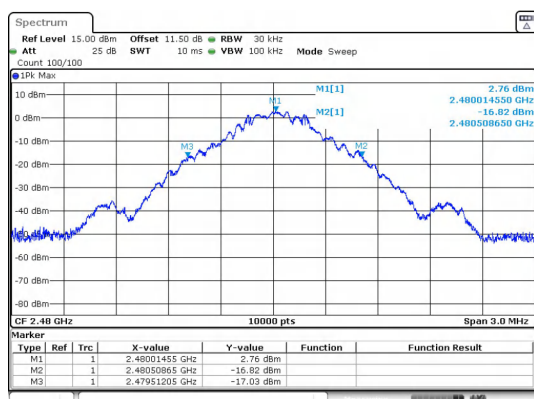
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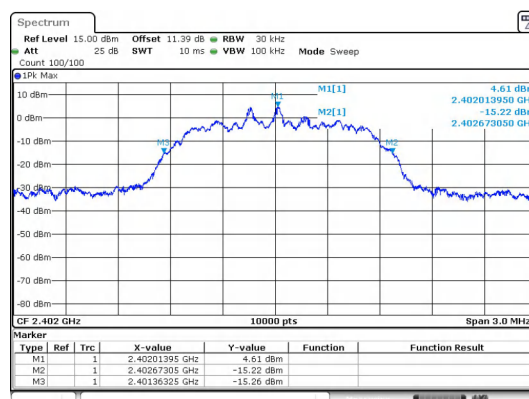
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GFSK_DH5_Channel 0

GFSK_DH5_Channel 39



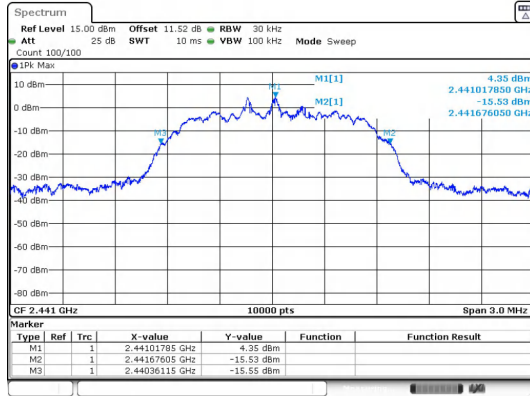
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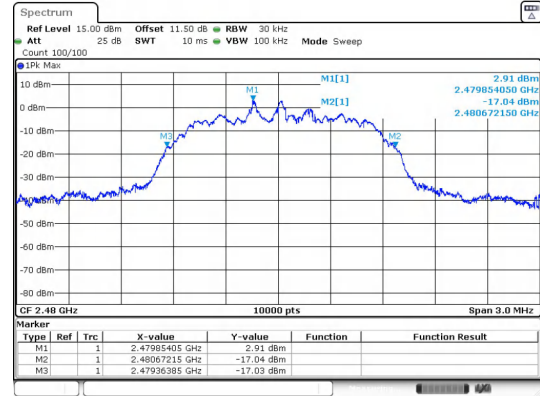
Date: 15.JAN.2025 11:21:33

GFSK_DH5_Channel 78

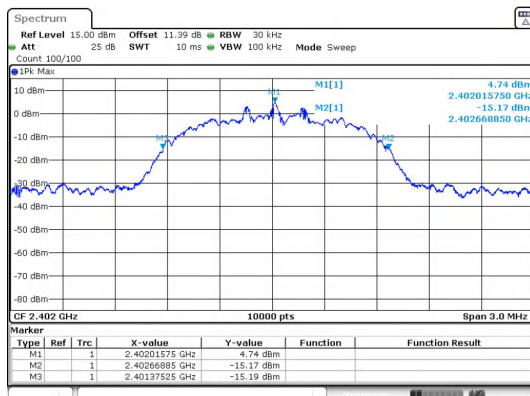
 $\pi/4$ DQPSK_2-DH5_Channel 0



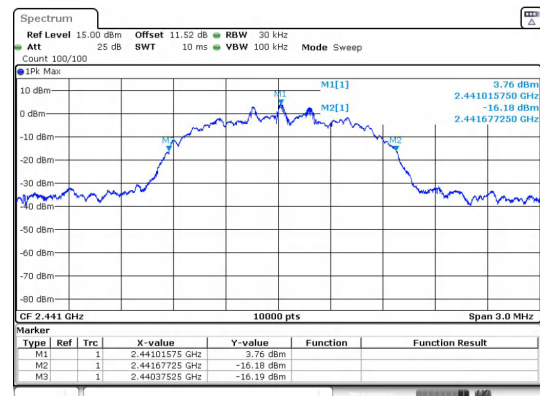
$\pi/4$ DQPSK_2-DH5_Channel 39



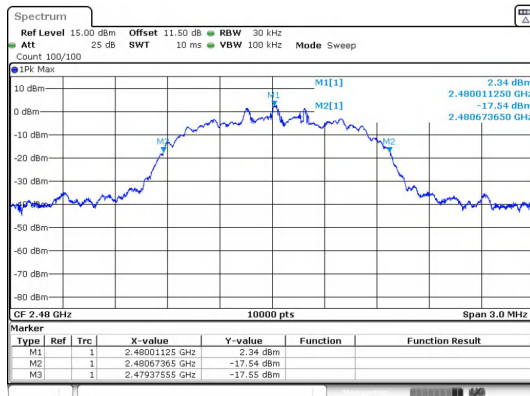
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



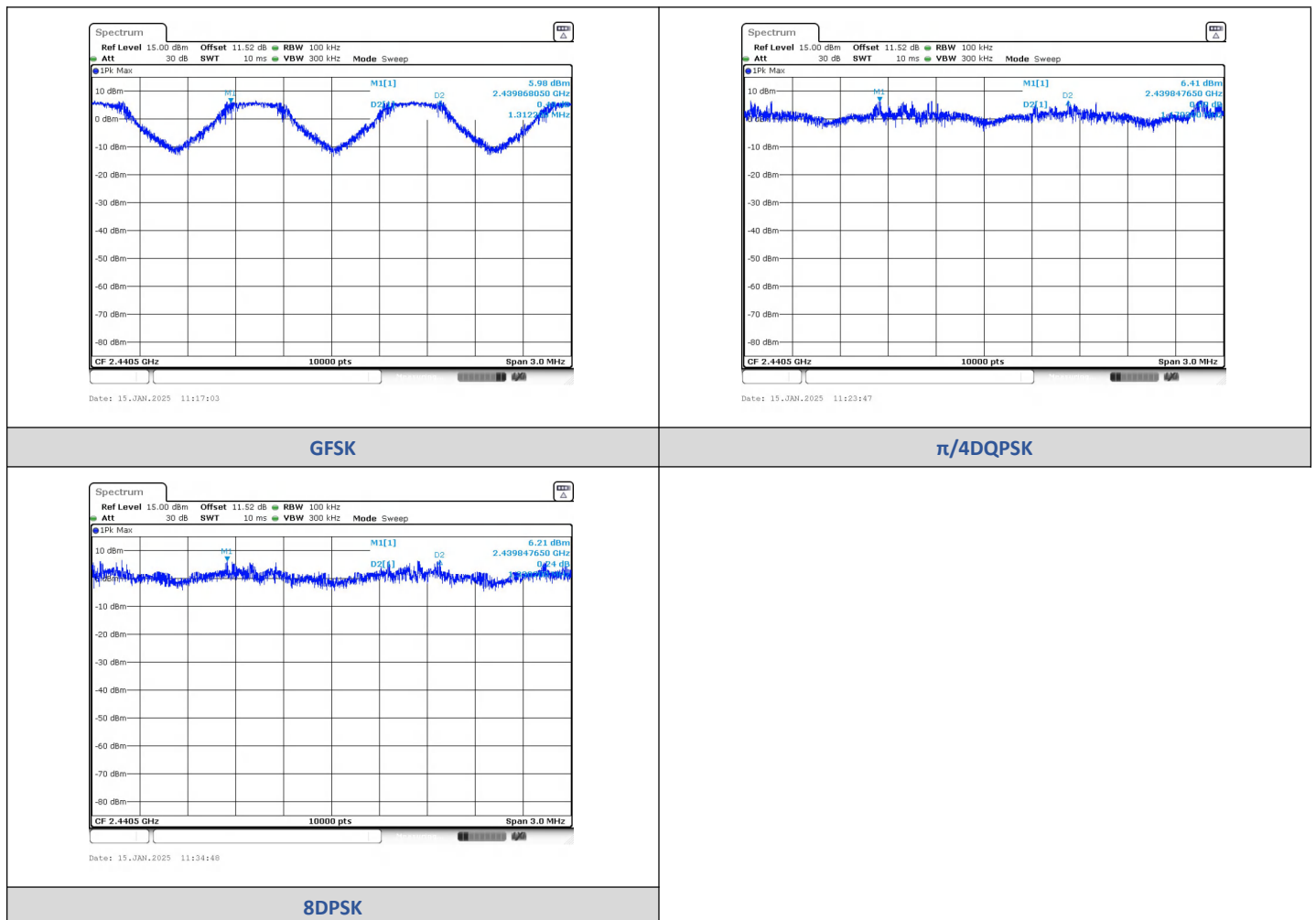
8DPSK_3-DH5_Channel 78

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	2439.8681	2441.1802	1.3122	1.02	PASS
$\pi/4$ DQPSK	2-DH5	2439.8477	2441.0269	1.1793	0.873	PASS
8DPSK	3-DH5	2439.8477	2441.1779	1.3302	0.86	PASS

Test Graphs



7) Conducted Out Of Band Emission

Test Result

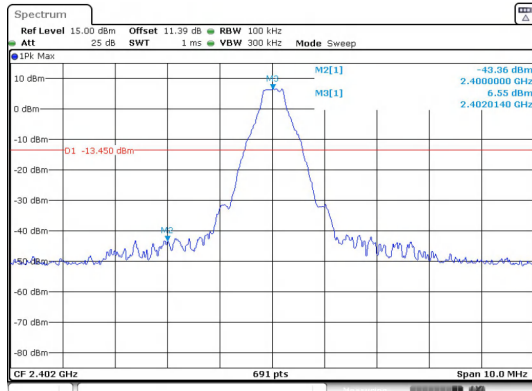
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-43.360	-13.45	-29.910	PASS
			4803.85	-40.451	-13.45	-27.001	PASS
		39	9763.72	-40.206	-13.52	-26.686	PASS
		78	2483.50	-50.060	-14.72	-35.340	PASS
			9920.20	-37.455	-14.72	-22.735	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-43.570	-13.22	-30.350	PASS
			9608.08	-41.431	-13.22	-28.211	PASS
		39	9763.72	-39.910	-13.46	-26.450	PASS
		78	2483.50	-50.380	-14.74	-35.640	PASS
			9920.20	-37.279	-14.74	-22.539	PASS
8DPSK	3-DH5	0	2400.00	-44.330	-13.39	-30.940	PASS
			9608.08	-40.969	-13.39	-27.579	PASS
		39	9763.72	-39.864	-13.88	-25.984	PASS
		78	2483.50	-49.960	-14.77	-35.190	PASS
			9920.20	-37.467	-14.77	-22.697	PASS

Hopping

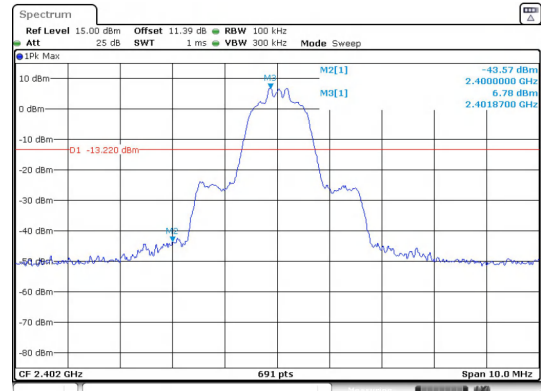
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2400.00	-45.530	-13.37	-32.160	PASS
			2483.50	-50.240	-15.0	-35.240	PASS
$\pi/4$ DQPSK	2-DH5		2395.40	-46.994	-14.85	-32.144	PASS
			2400.00	-48.310	-14.85	-33.460	PASS
			2483.50	-50.620	-14.71	-35.910	PASS
8DPSK	3-DH5		2400.00	-43.850	-13.92	-29.930	PASS
			2483.50	-50.010	-15.08	-34.930	PASS

Test Graphs



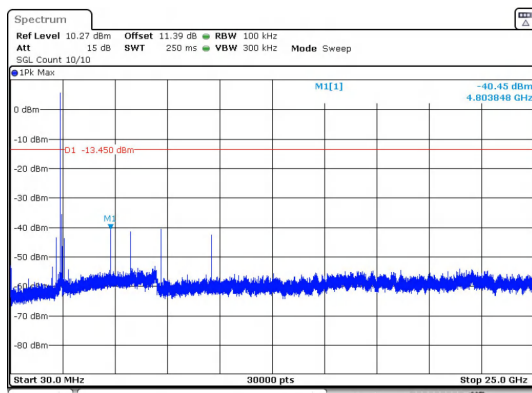
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Out Of Band Emission
GFSK_DH5_Channel 0



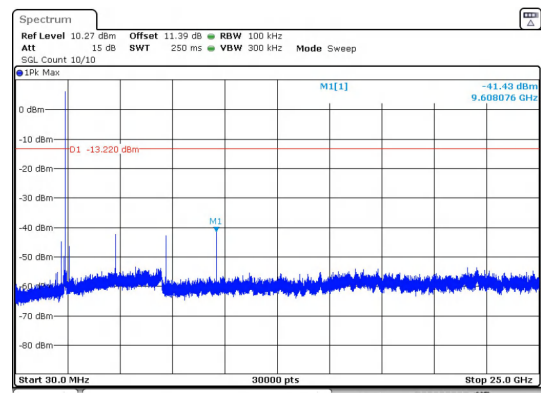
Date: 15.JAN.2025 11:22:06

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



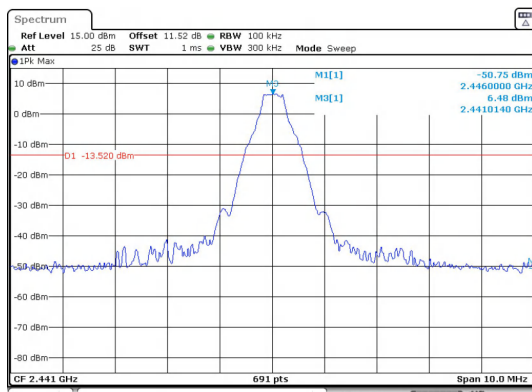
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30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



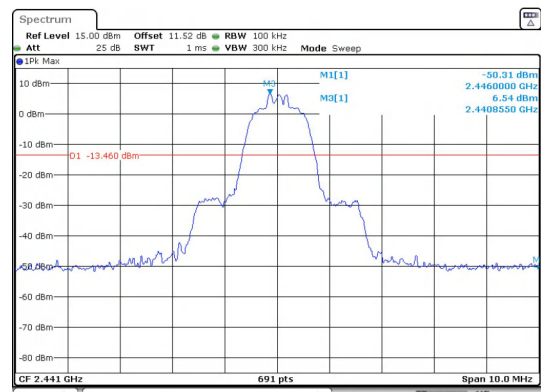
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30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 0



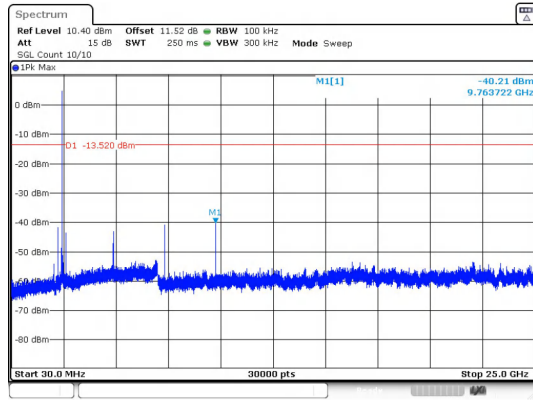
Date: 15.JAN.2025 11:18:32

Out Of Band Emission
GFSK_DH5_Channel 39

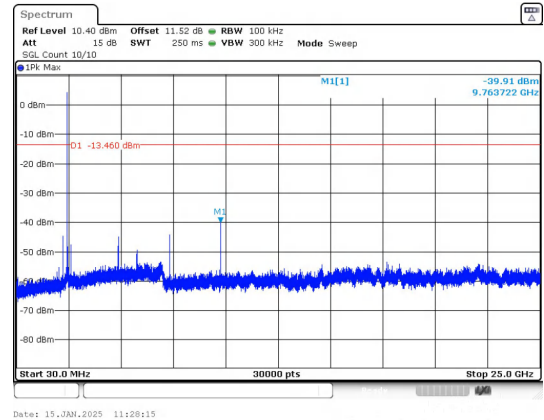


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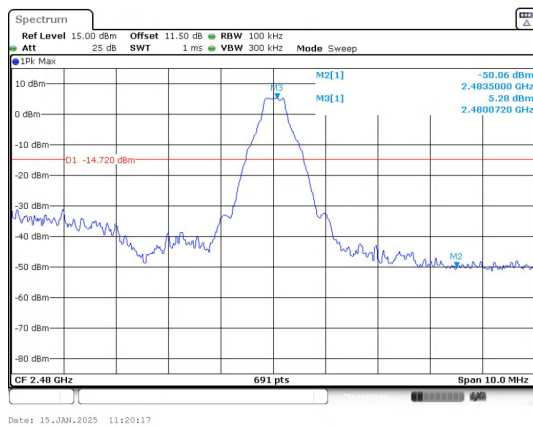
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39



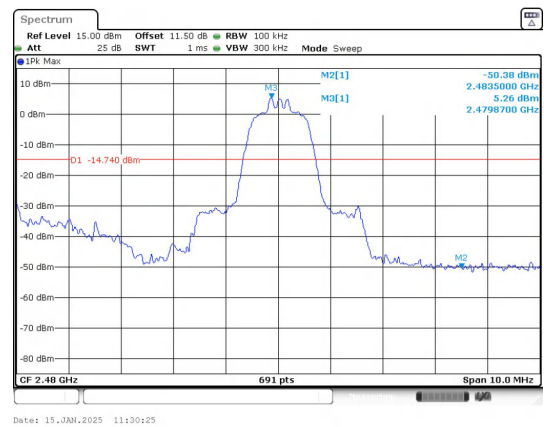
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



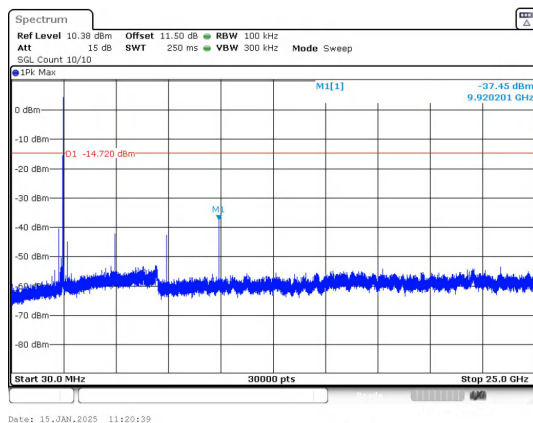
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



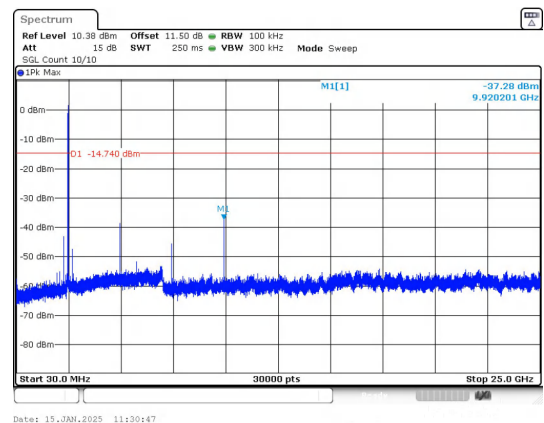
Out Of Band Emission
GFSK_DH5_Channel 78



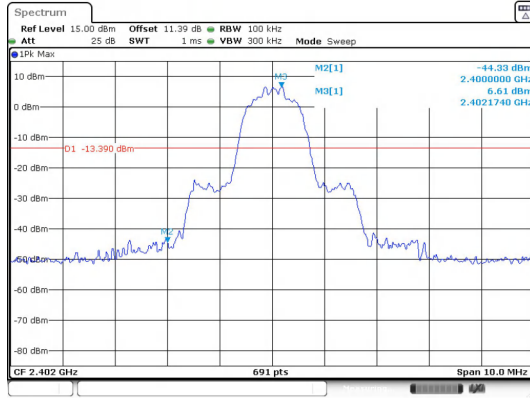
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78



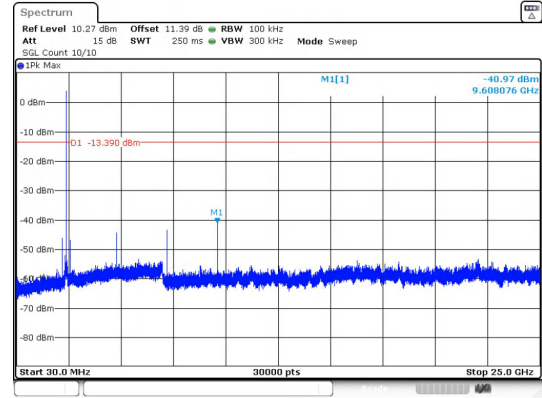
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



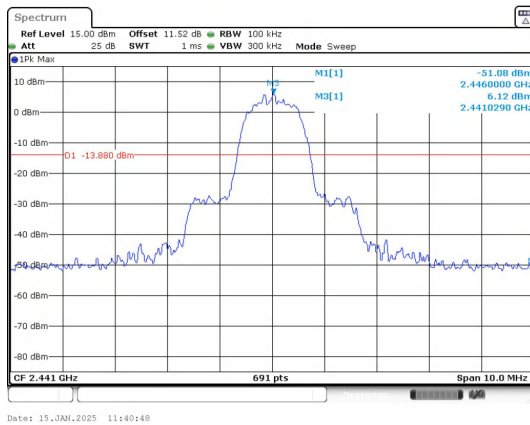
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



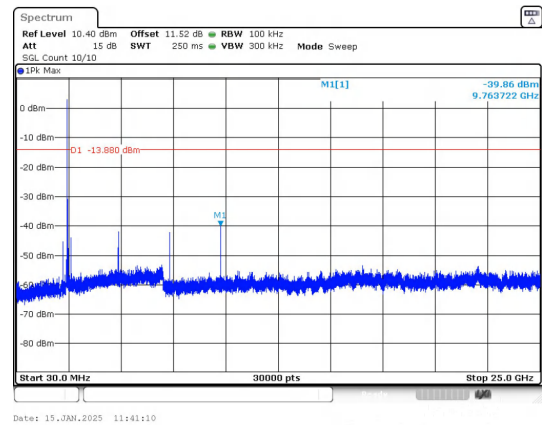
Out Of Band Emission
8DPSK_3-DH5_Channel 0



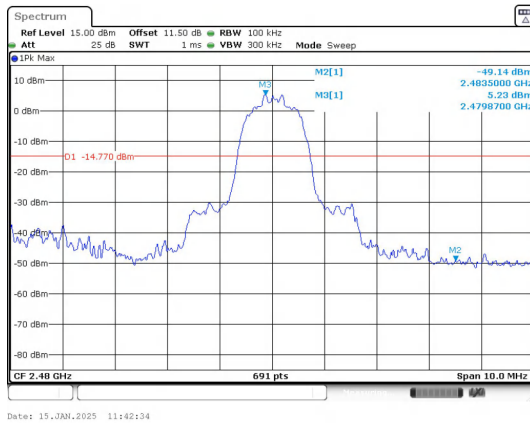
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



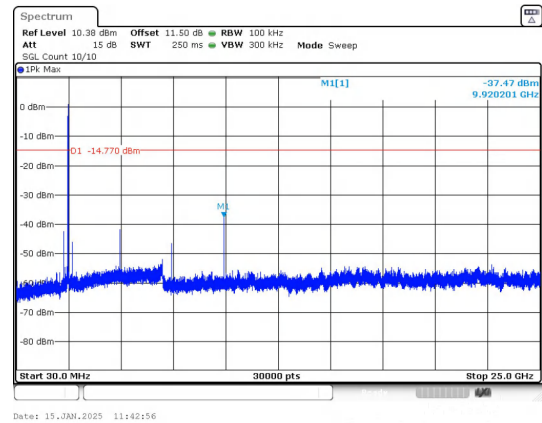
Out Of Band Emission
8DPSK_3-DH5_Channel 39



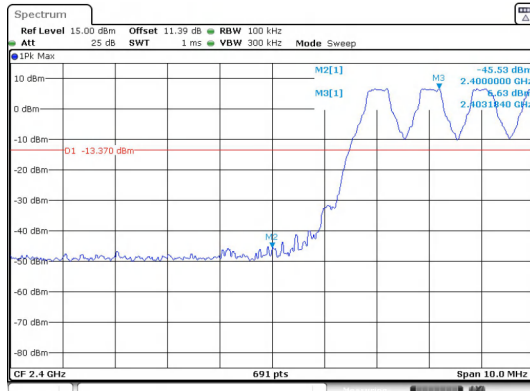
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



Out Of Band Emission
8DPSK_3-DH5_Channel 78

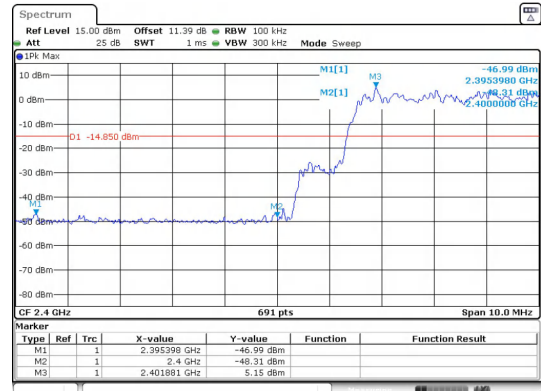


30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



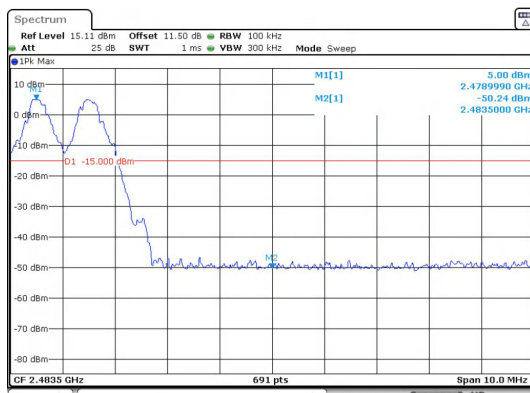
Date: 15.JAN.2025 11:00:37

Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



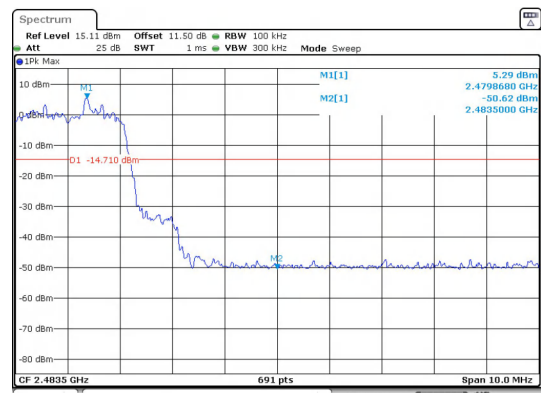
Date: 15.JAN.2025 11:26:02

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



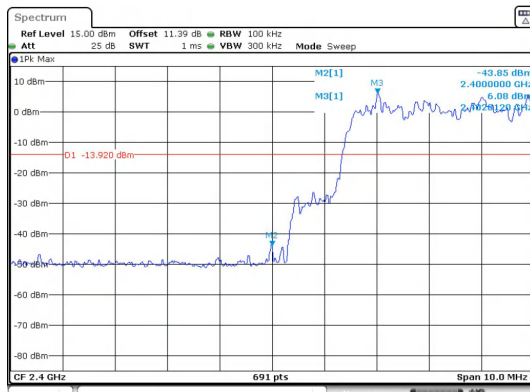
Date: 15.JAN.2025 11:01:05

Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



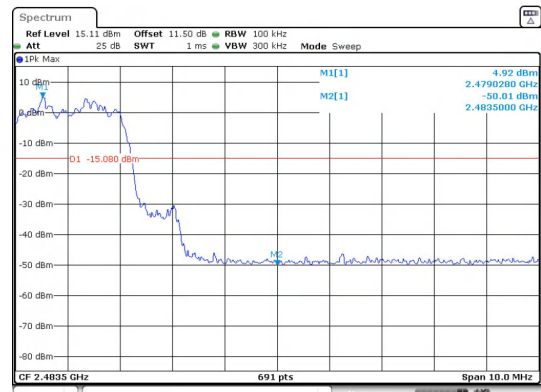
Date: 15.JAN.2025 11:26:34

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



Date: 15.JAN.2025 11:38:01

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



Date: 15.JAN.2025 11:39:29

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

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