

Appendix Report

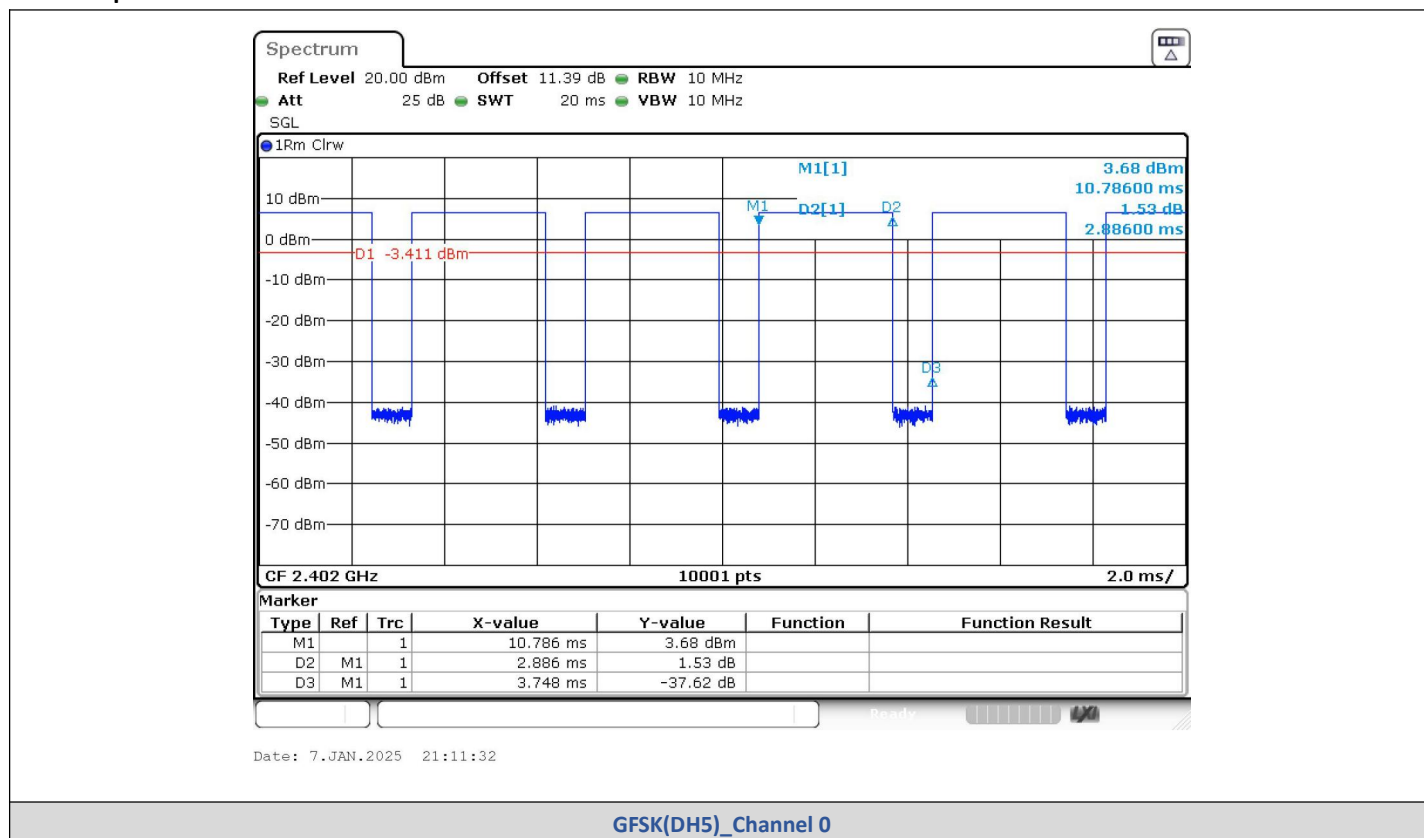
Report No.:	CISRR250106022
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

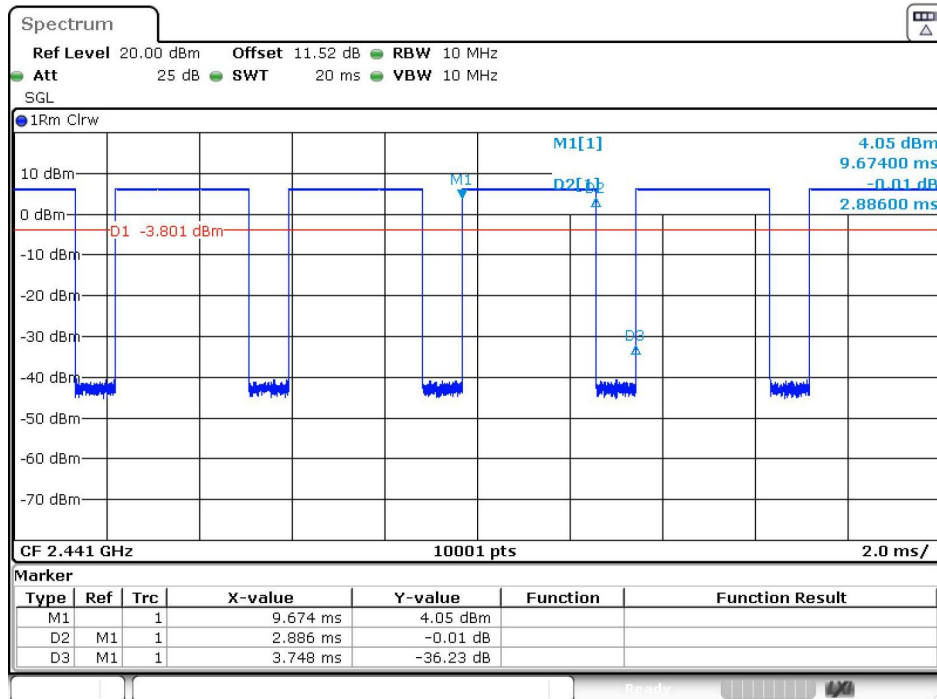
1) Duty Cycle

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	2.890	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	2.894	3.748	77.21	0.7721	1.1233	0.3455
		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

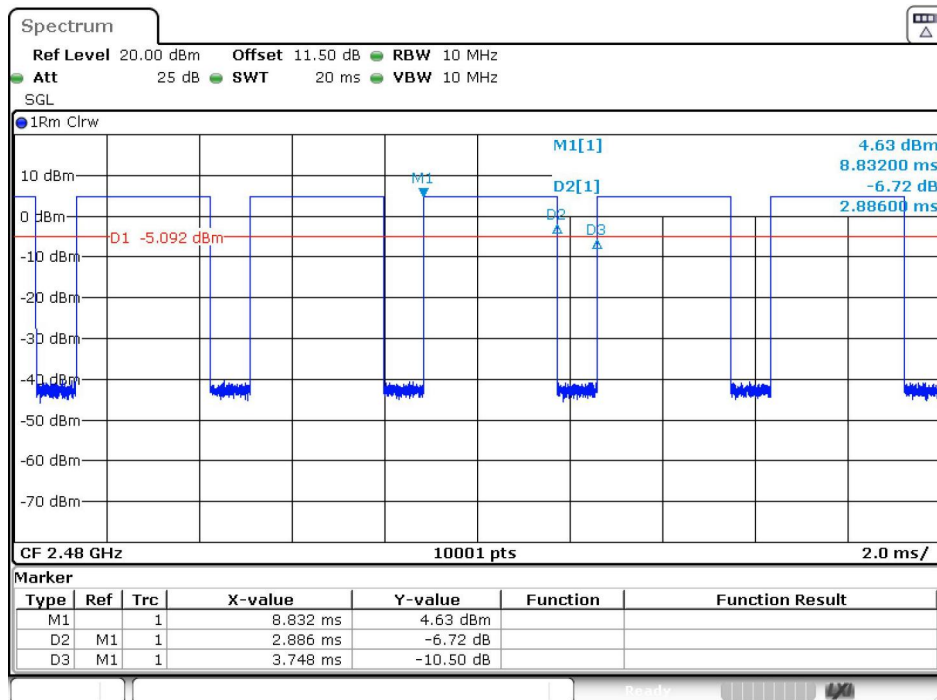
Test Graphs





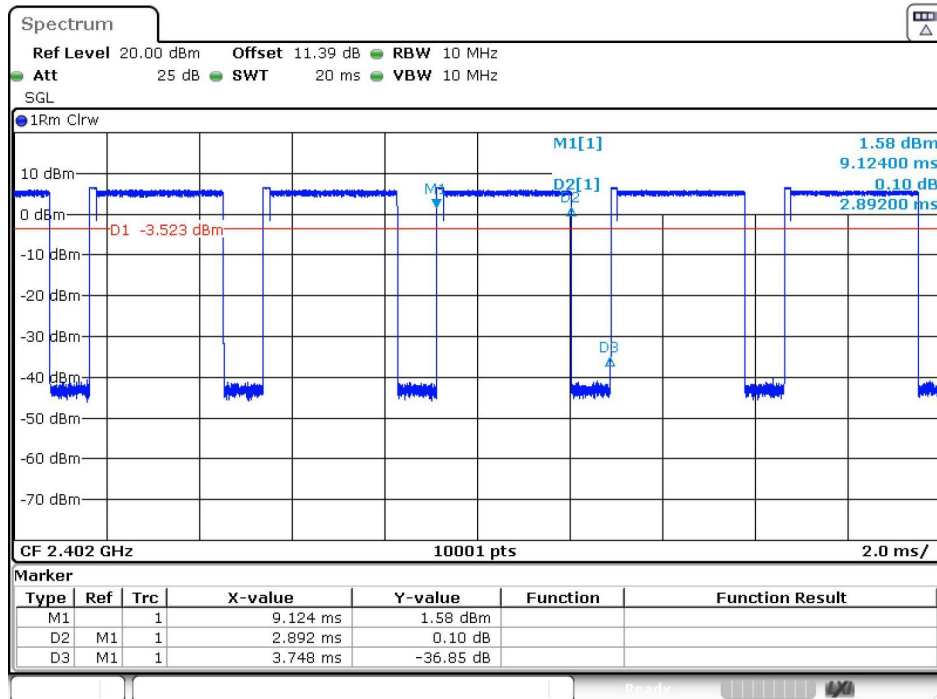
Date: 7.JAN.2025 21:21:01

GFSK(DH5)_Channel 39



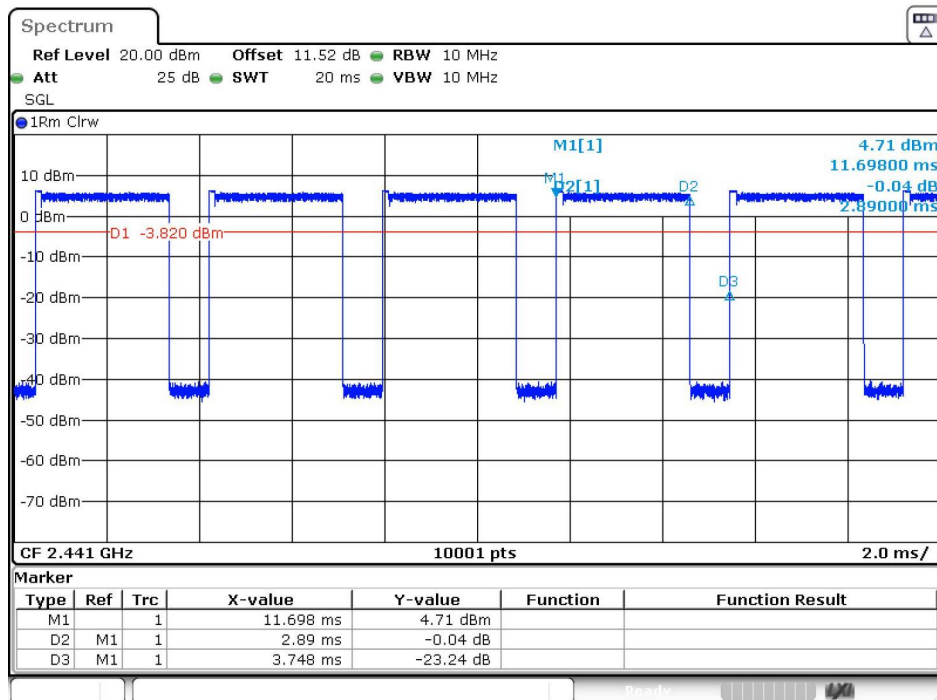
Date: 7.JAN.2025 21:24:15

GFSK(DH5)_Channel 78



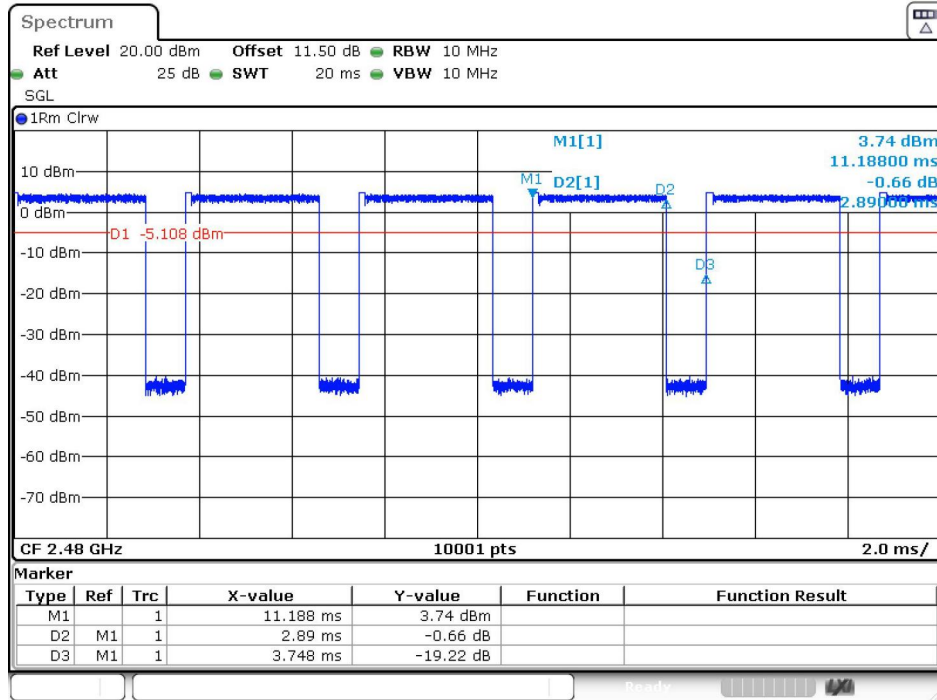
Date: 7. JAN. 2025 21:26:21

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



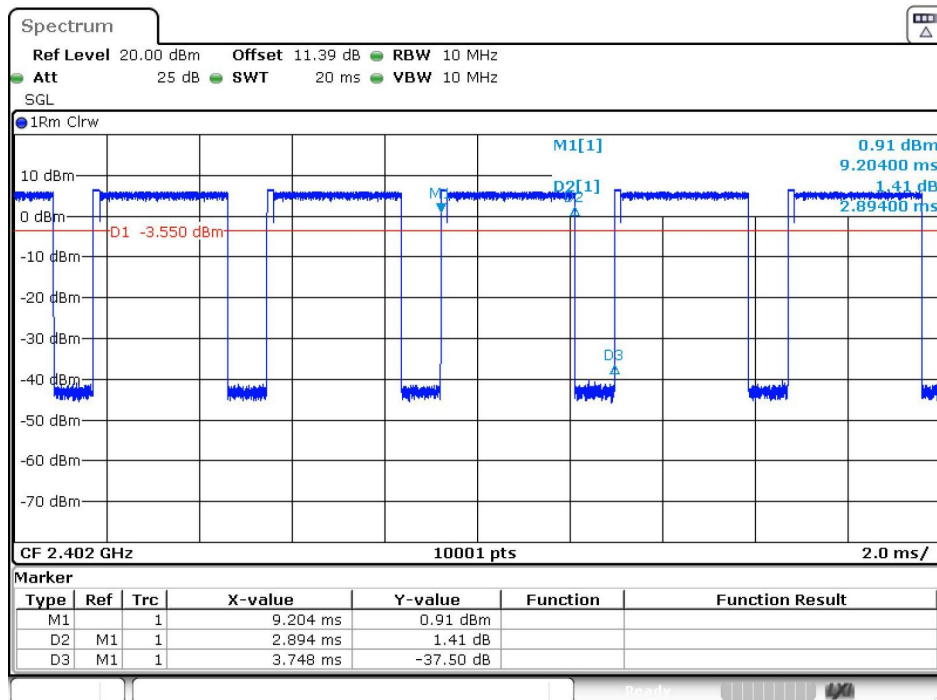
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$\pi/4$ QPSK(2-DH5)_Channel 39



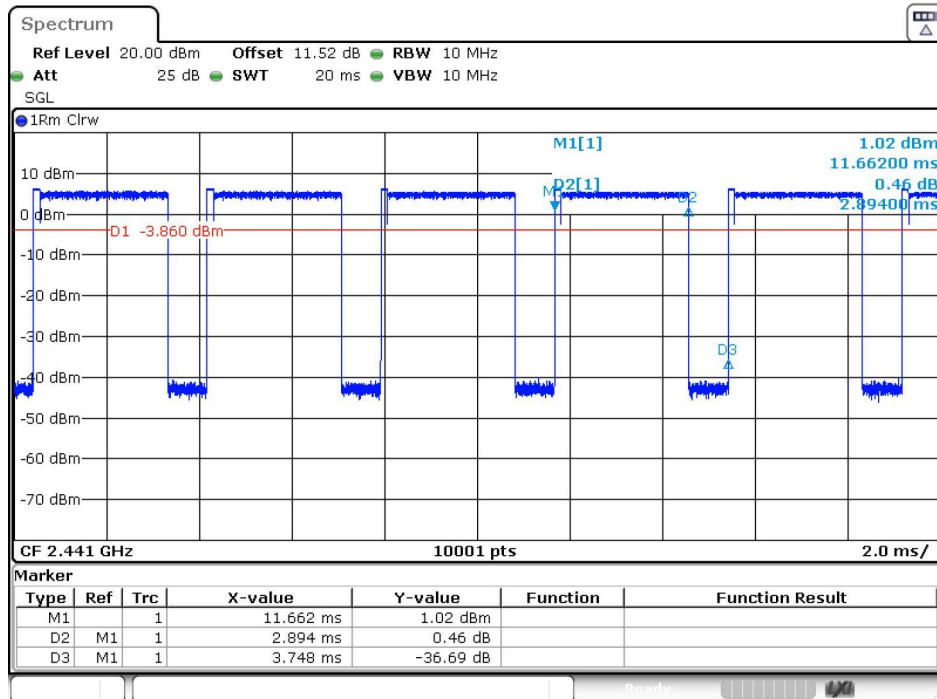
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$\pi/4$ DQPSK(2-DH5)_Channel 78



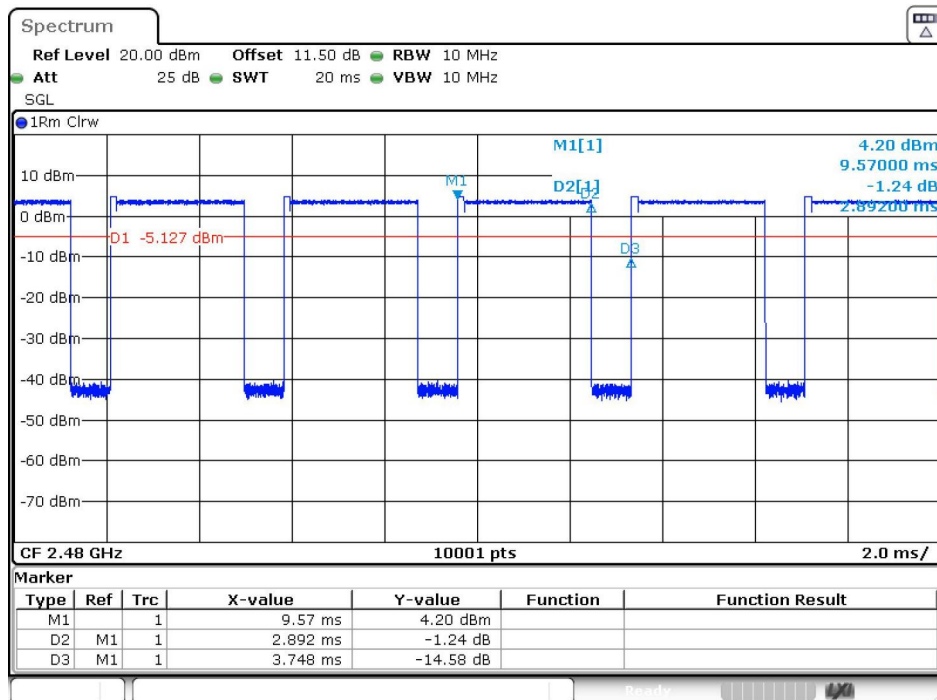
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8DPSK(3-DH5)_Channel 0



Date: 7.JAN.2025 21:43:31

8DPSK(3-DH5)_Channel 39



Date: 7.JAN.2025 21:45:16

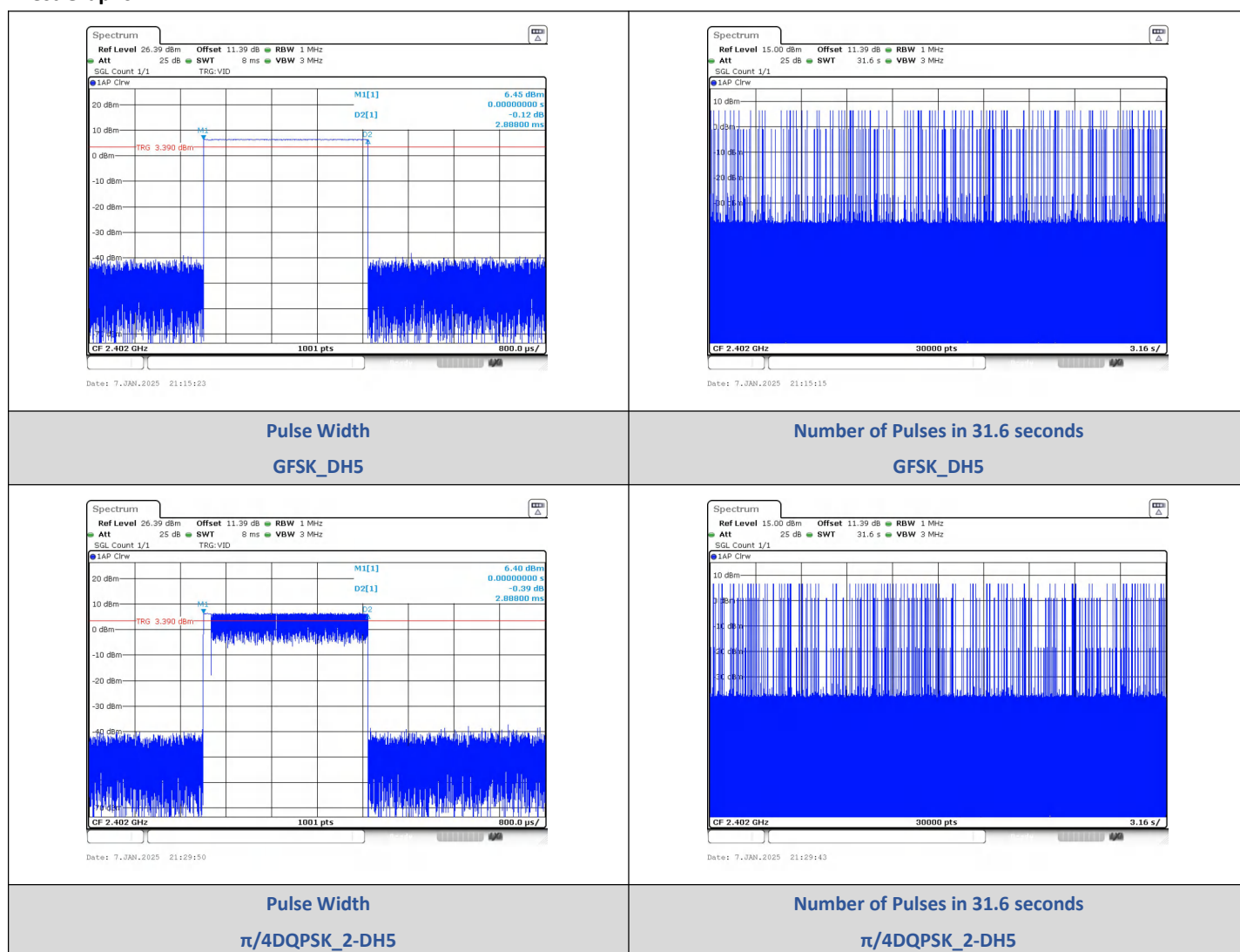
8DPSK(3-DH5)_Channel 78

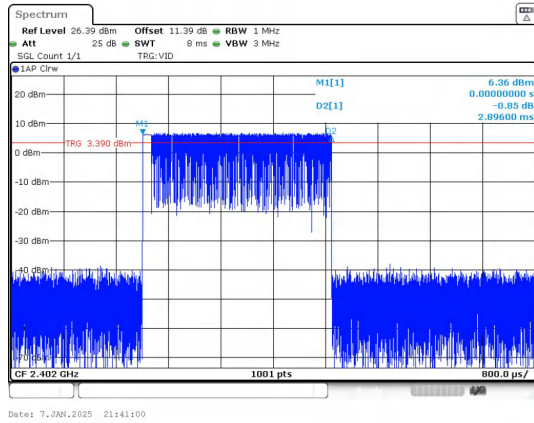
2) Dwell Time

Test Result

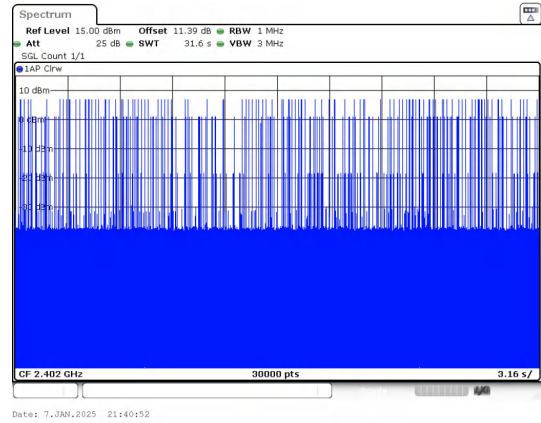
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.888	107	309.02	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.888	120	346.56		PASS
8DPSK	3-DH5		2.896	109	315.66		PASS

Test Graphs





Pulse Width
8DPSK_3-DH5



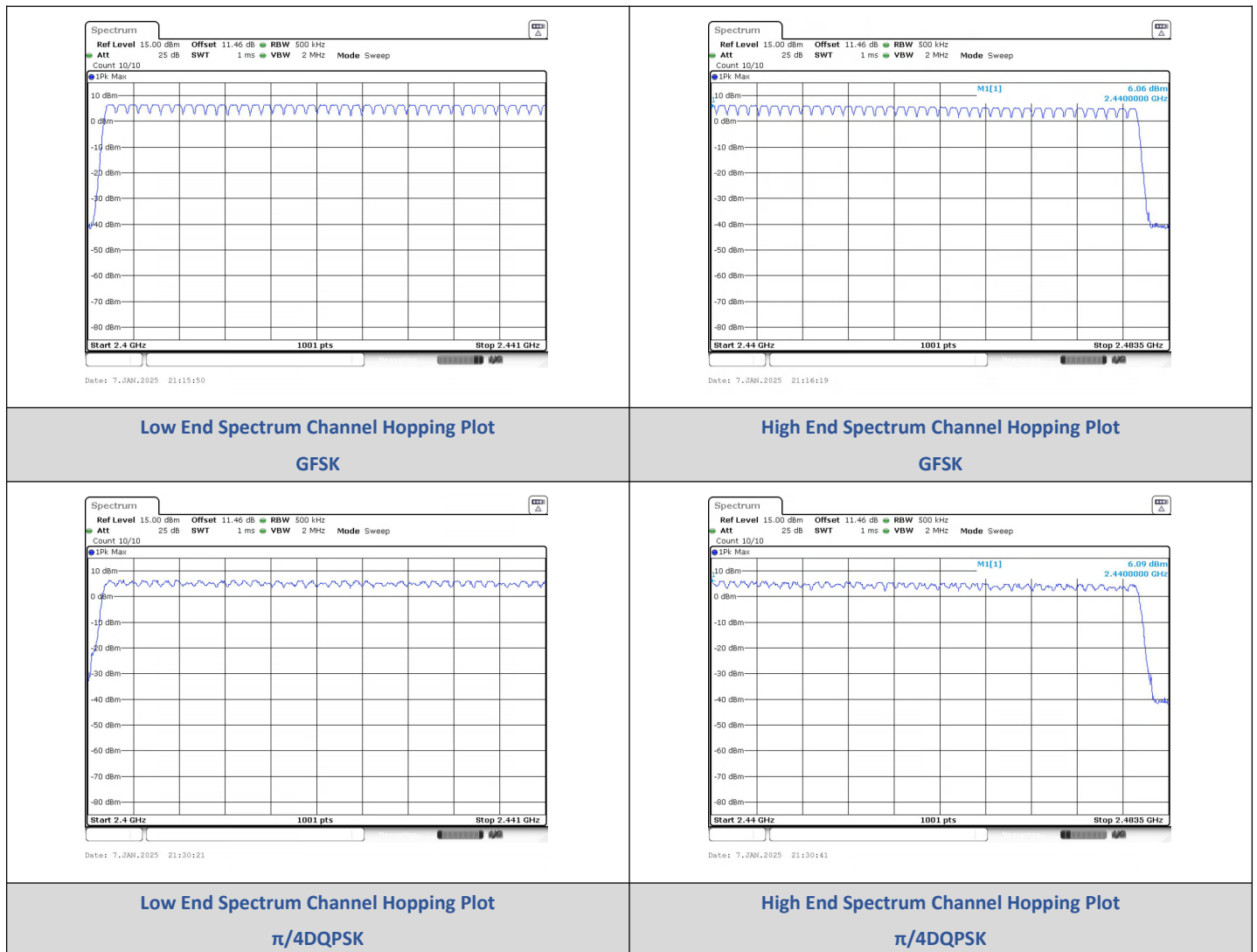
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

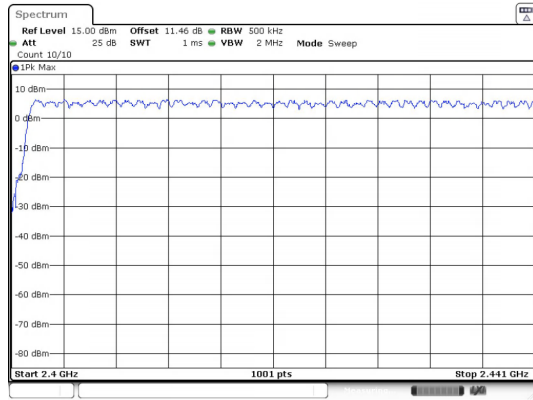
3) Number Of Hopping Channel

Test Result

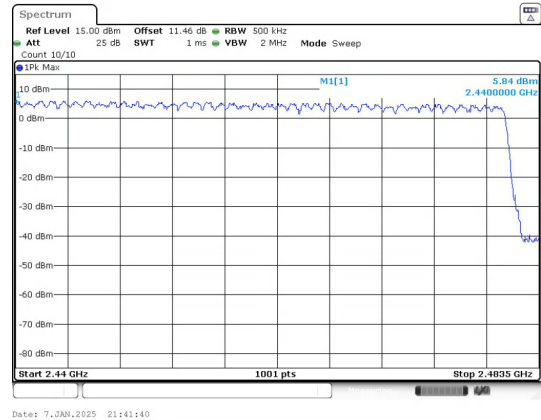
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK



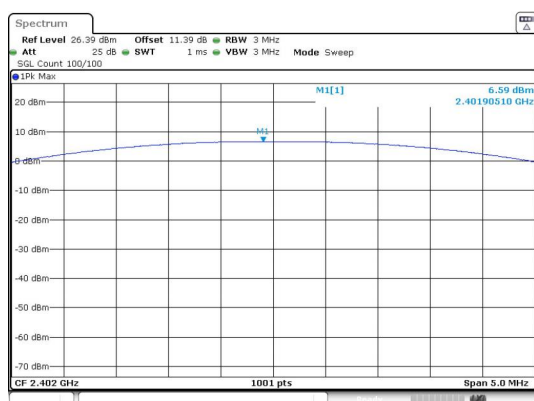
High End Spectrum Channel Hopping Plot
8DPSK

4) Conducted Peak Output Power

Test Result

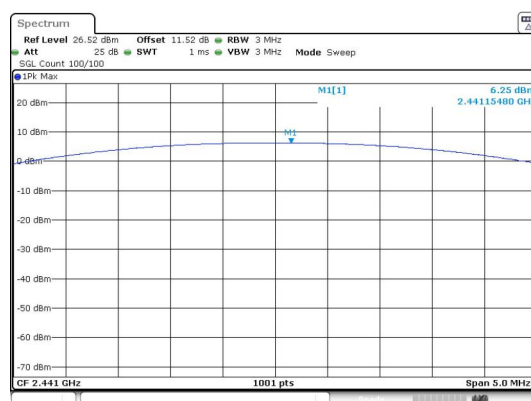
Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	6.59	4.56	≤30	PASS
		39	6.25	4.22		PASS
		78	4.97	3.14		PASS
$\pi/4$ DQPSK	2-DH5	0	7.09	5.12	≤20.97	PASS
		39	6.85	4.84		PASS
		78	5.61	3.64		PASS
8DPSK	3-DH5	0	7.24	5.30		PASS
		39	7.02	5.04		PASS
		78	5.82	3.82		PASS

Test Graphs



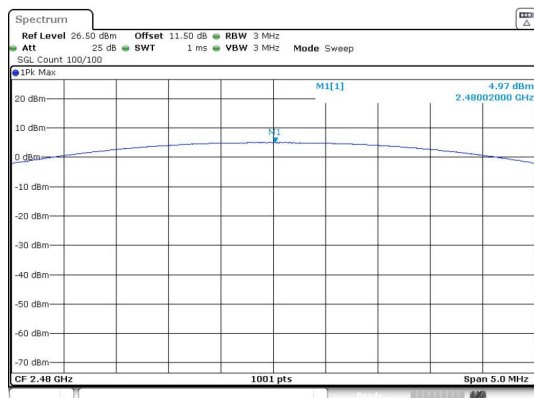
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Peak Output Power
GFSK_Channel 0

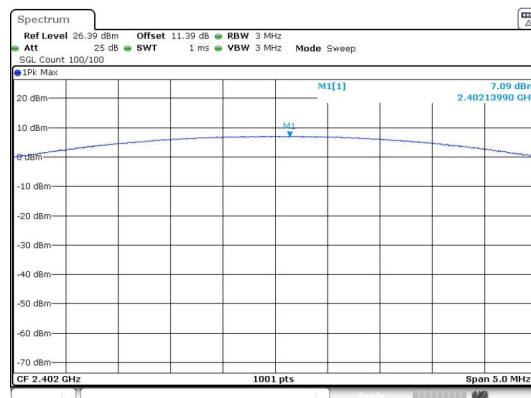


Date: 7.JAN.2025 21:21:33

Peak Output Power
GFSK_Channel 39

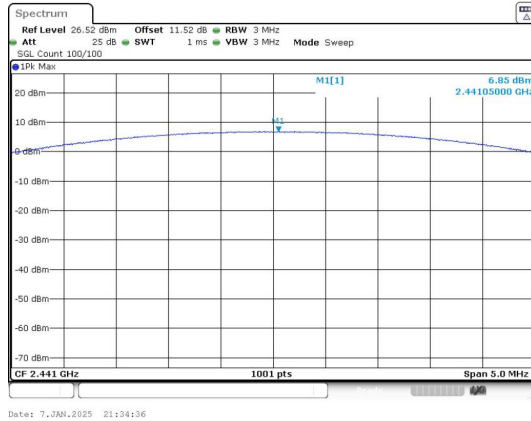


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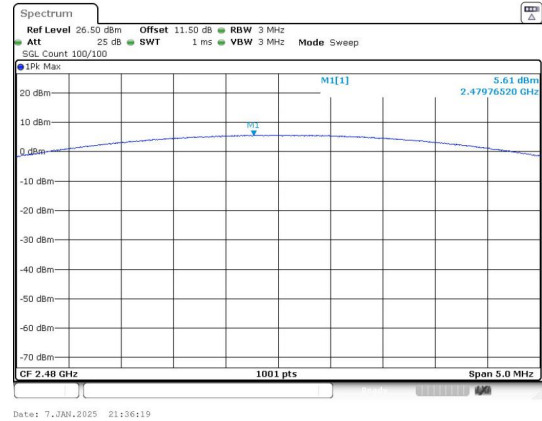


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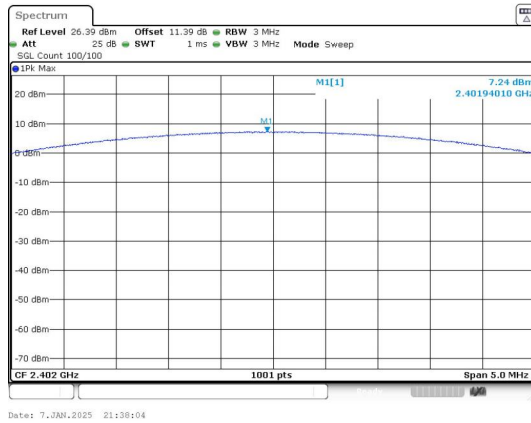
Peak Output Power
GFSK_Channel 78



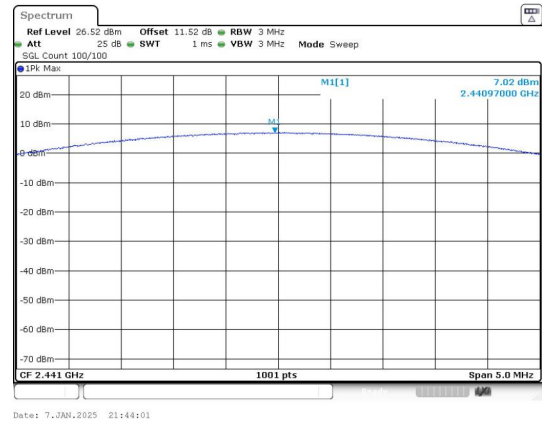
Peak Output Power
 $\pi/4$ DQPSK_Channel 0



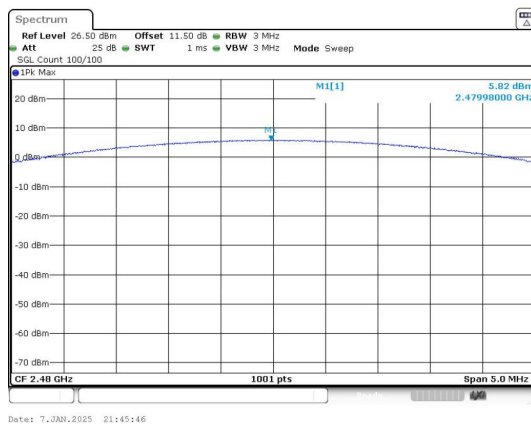
Peak Output Power
 $\pi/4$ DQPSK_Channel 39



Peak Output Power
 $\pi/4$ DQPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



Peak Output Power
8DPSK_Channel 39

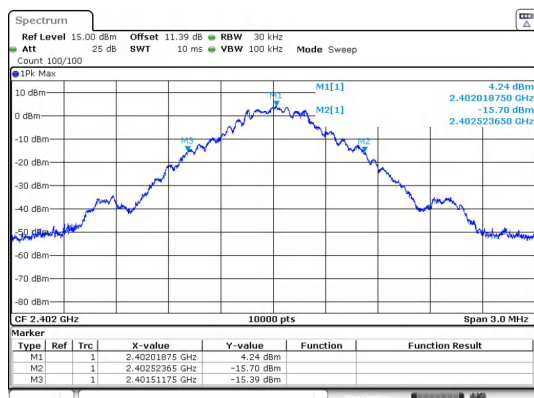
Peak Output Power
8DPSK_Channel 78

5) 20dB Bandwidth

Test Result

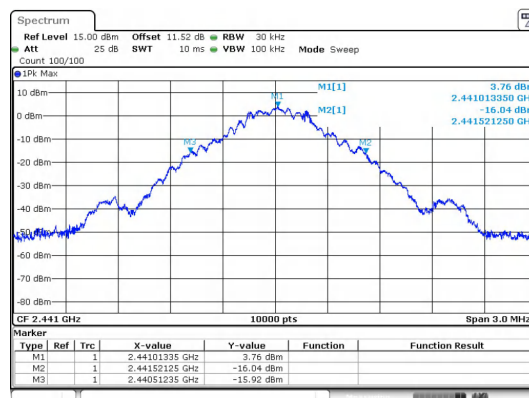
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.010
	39	2441 MHz	1.010
	78	2480 MHz	1.000
$\pi/4$ DQPSK	0	2402 MHz	1.320
	39	2441 MHz	1.310
	78	2480 MHz	1.310
8DPSK	0	2402 MHz	1.310
	39	2441 MHz	1.300
	78	2480 MHz	1.290

Test Graphs



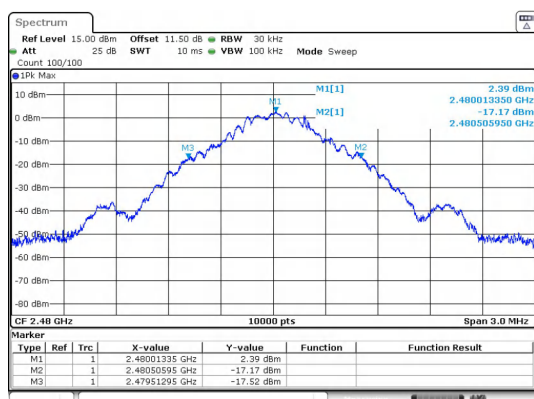
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GFSK_DH5_Channel 0



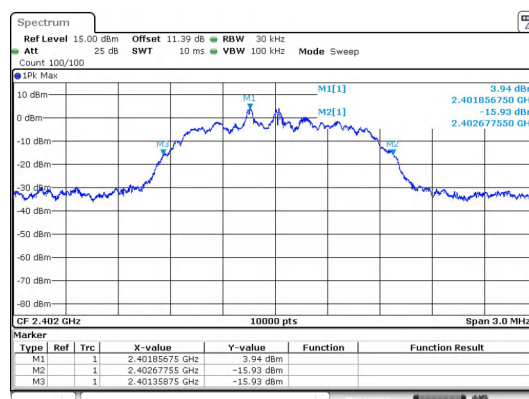
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GFSK_DH5_Channel 39



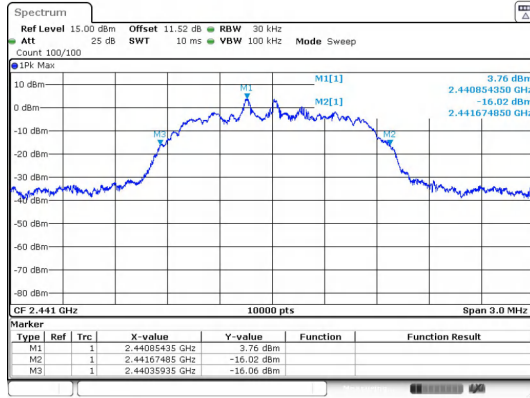
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GFSK_DH5_Channel 78

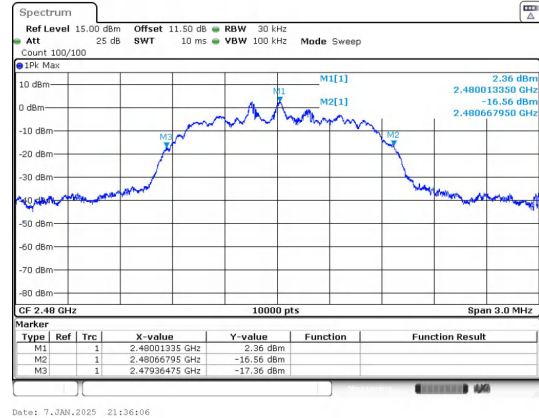


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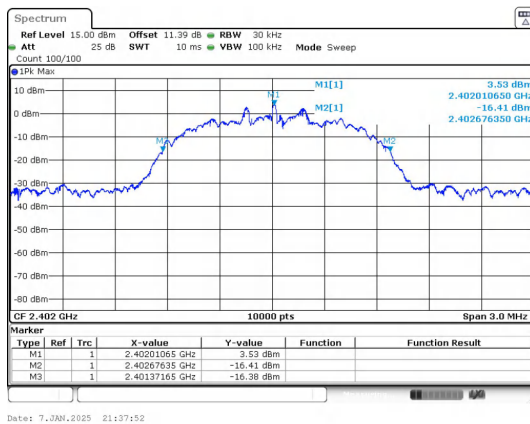
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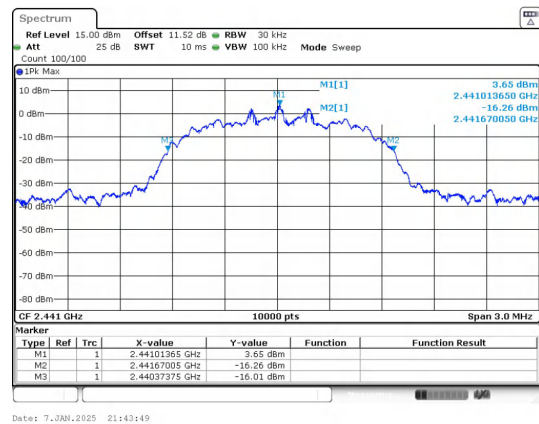
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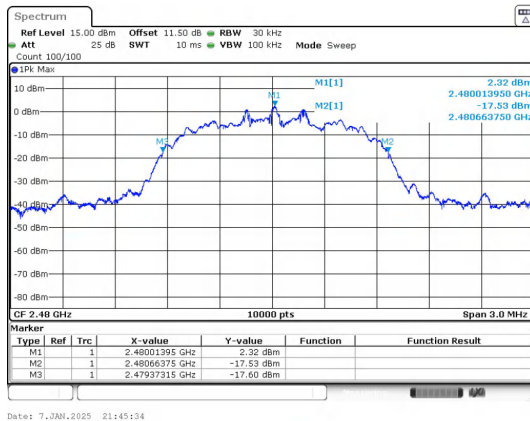
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



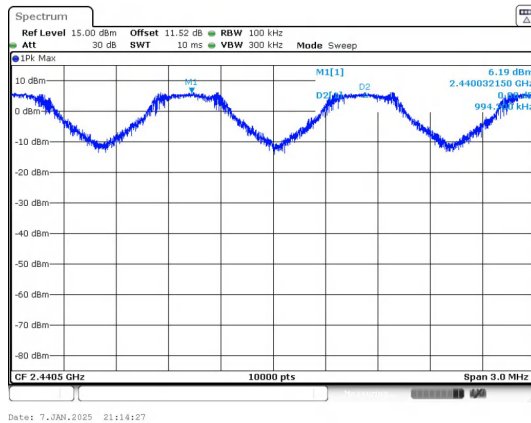
8DPSK_3-DH5_Channel 78

6) Carrier Frequencies Separation

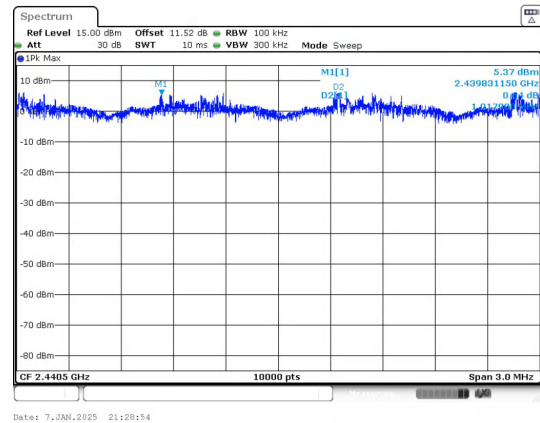
Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2440.0322	2441.0264	0.9942	1.01	FAIL
$\pi/4$ DQPSK	2-DH5	2439.8311	2440.849	1.0179	0.88	PASS
8DPSK	3-DH5	2440.0096	2441.0114	1.0017	0.873	PASS

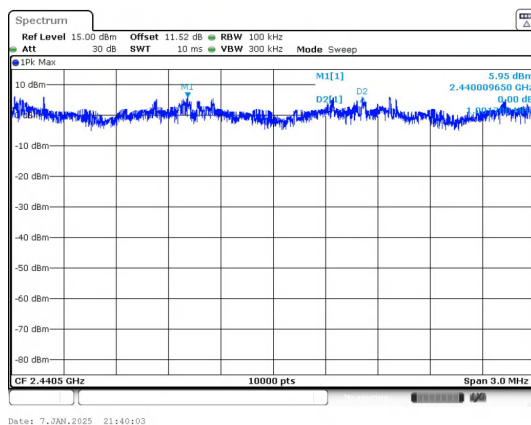
Test Graphs



GFSK



$\pi/4$ DQPSK



8DPSK

7) Conducted Out Of Band Emission

Test Result

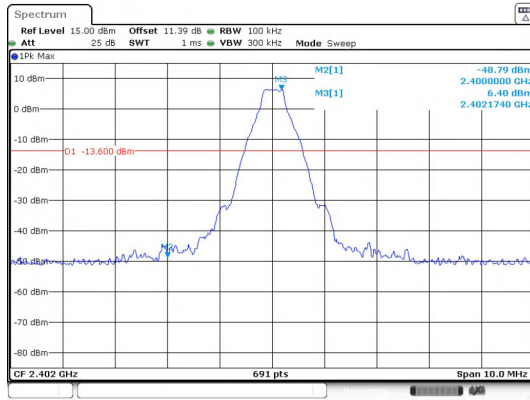
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-48.790	-13.6	-35.190	PASS
			7205.96	-39.144	-13.6	-25.544	PASS
		39	9763.72	-40.290	-13.94	-26.350	PASS
		78	2483.50	-49.230	-15.21	-34.020	PASS
			9920.20	-38.019	-15.21	-22.809	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-45.260	-13.64	-31.620	PASS
			9608.08	-41.505	-13.64	-27.865	PASS
		39	9763.72	-40.022	-13.94	-26.082	PASS
		78	2483.50	-49.460	-15.25	-34.210	PASS
			9920.20	-38.037	-15.25	-22.787	PASS
8DPSK	3-DH5	0	2400.00	-46.340	-13.74	-32.600	PASS
			9608.08	-41.788	-13.74	-28.048	PASS
		39	9763.72	-40.114	-14.29	-25.824	PASS
		78	2483.50	-50.080	-15.3	-34.780	PASS
			9920.20	-38.138	-15.3	-22.838	PASS

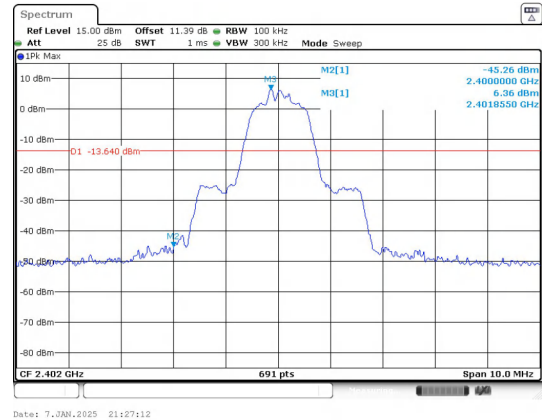
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2398.08	-47.871	-14.01	-33.861	PASS
			2400.00	-49.280	-14.01	-35.270	PASS
			2483.50	-49.050	-15.29	-33.760	PASS
$\pi/4$ DQPSK	2-DH5		2395.30	-48.171	-15.35	-32.821	PASS
			2400.00	-48.800	-15.35	-33.450	PASS
			2483.50	-48.200	-15.32	-32.880	PASS
8DPSK	3-DH5		2396.76	-47.439	-14.17	-33.269	PASS
			2400.00	-48.690	-14.17	-34.520	PASS
			2483.50	-48.500	-16.12	-32.380	PASS

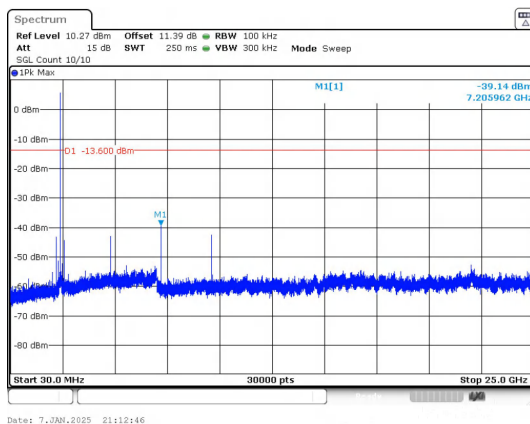
Test Graphs



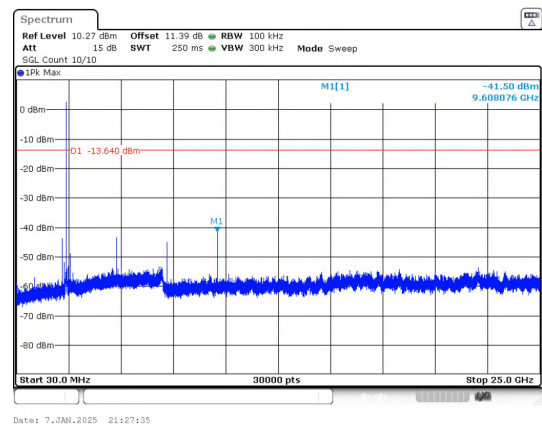
Out Of Band Emission
GFSK_DH5_Channel 0



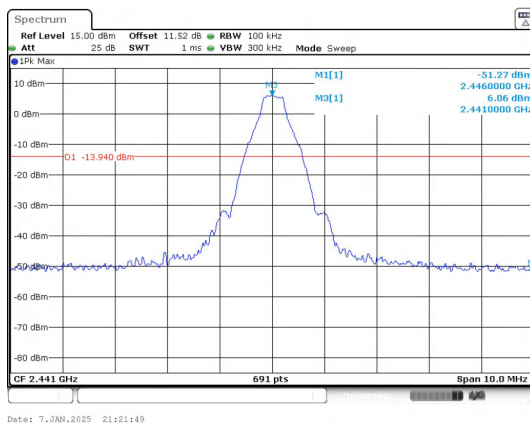
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0



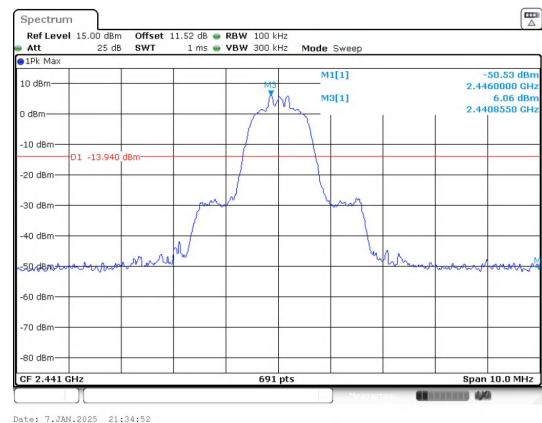
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



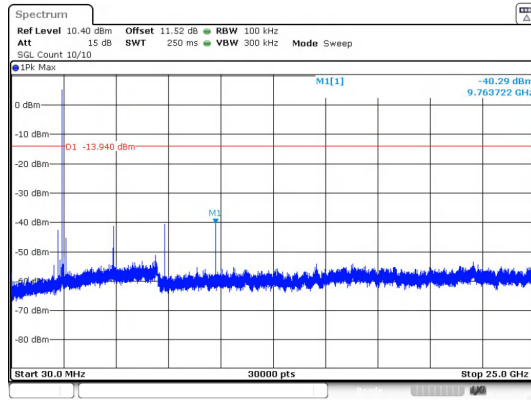
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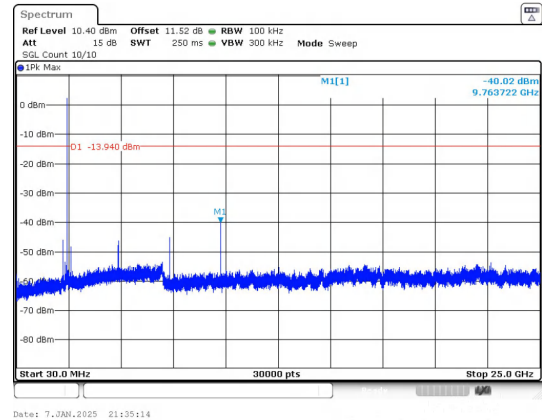
Out Of Band Emission
GFSK_DH5_Channel 39



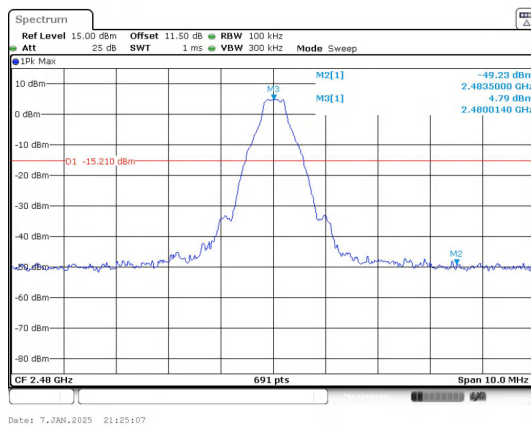
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39



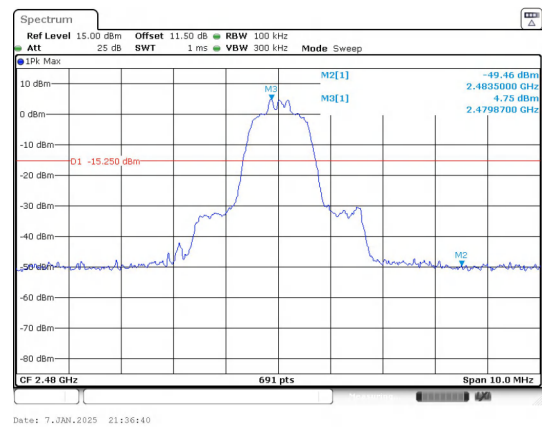
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



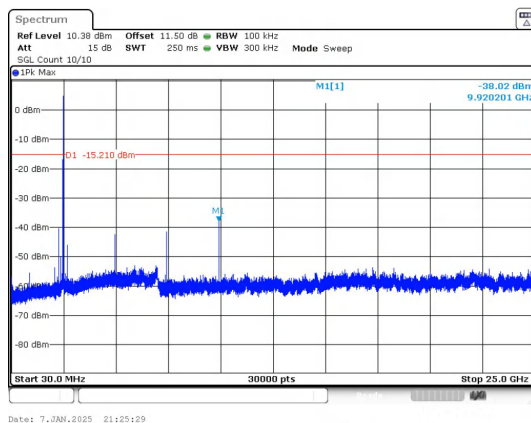
30.0 MHz - 25000.0 MHz
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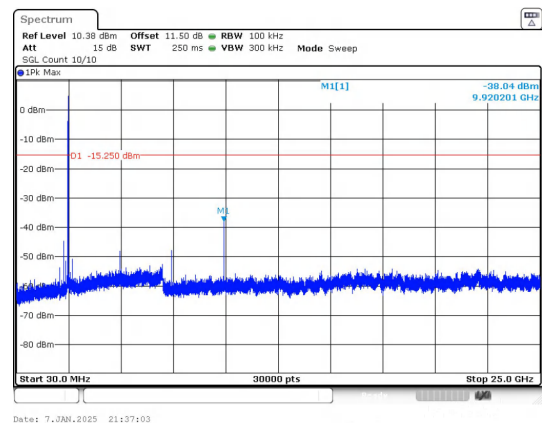
Out Of Band Emission
GFSK_DH5_Channel 78



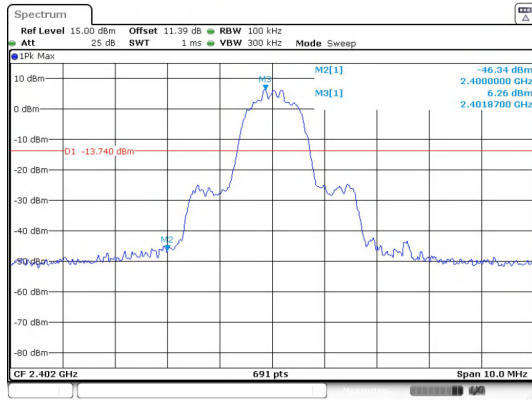
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78



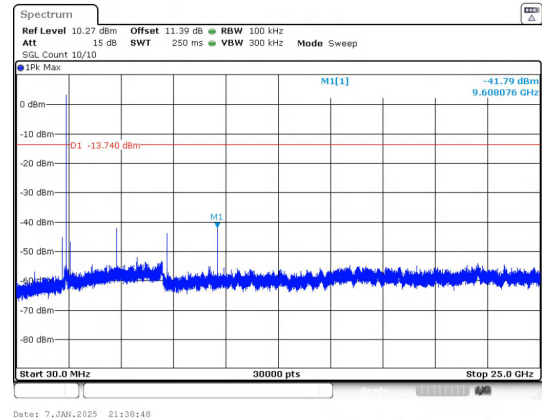
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



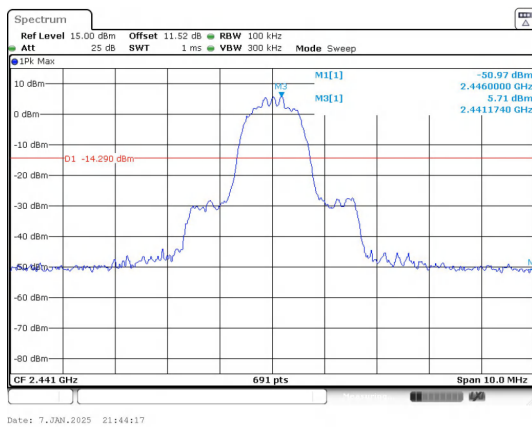
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



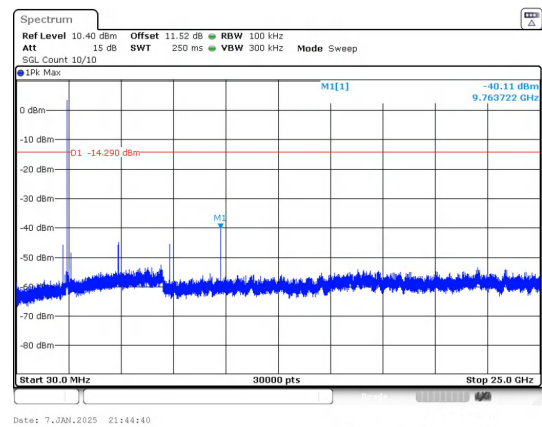
Out Of Band Emission
8DPSK_3-DH5_Channel 0



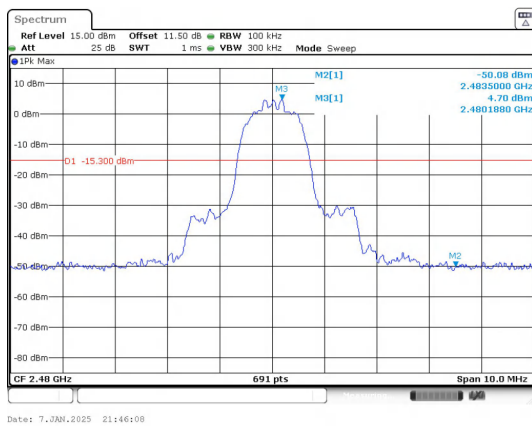
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



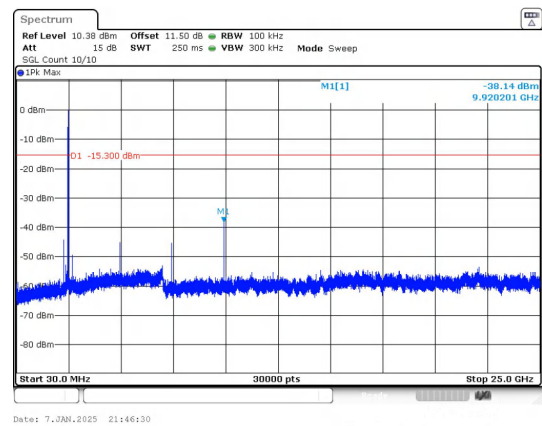
Out Of Band Emission
8DPSK_3-DH5_Channel 39



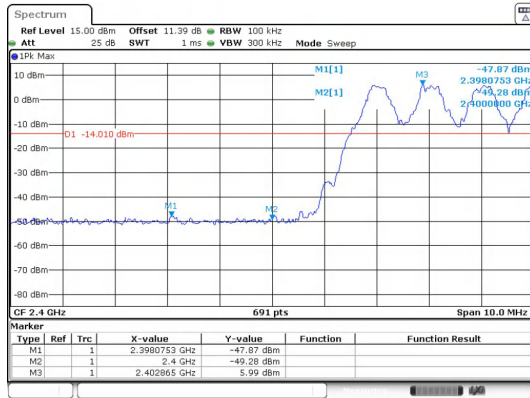
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



Out Of Band Emission
8DPSK_3-DH5_Channel 78

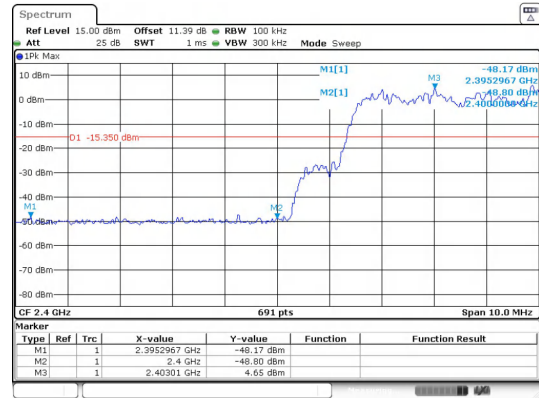


30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



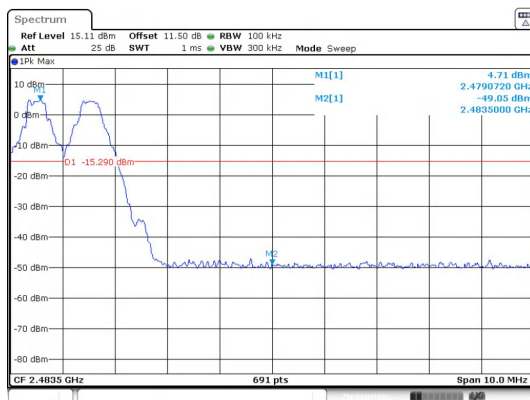
Date: 7.JAN.2025 21:16:59

Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



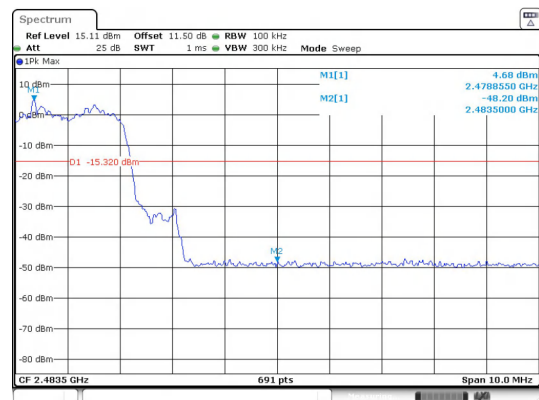
Date: 7.JAN.2025 21:31:38

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



Date: 7.JAN.2025 21:17:41

Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



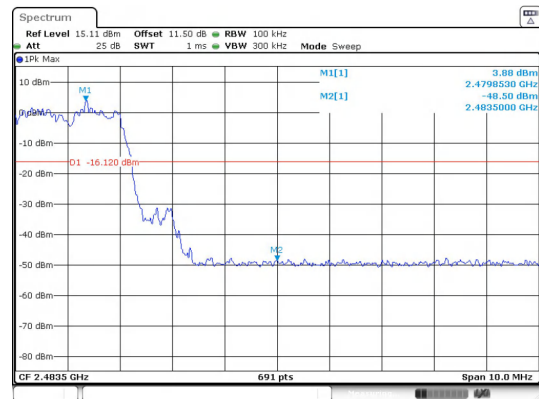
Date: 7.JAN.2025 21:33:30

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



Date: 7.JAN.2025 21:42:29

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



Date: 7.JAN.2025 21:43:01

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

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