

Appendix Report

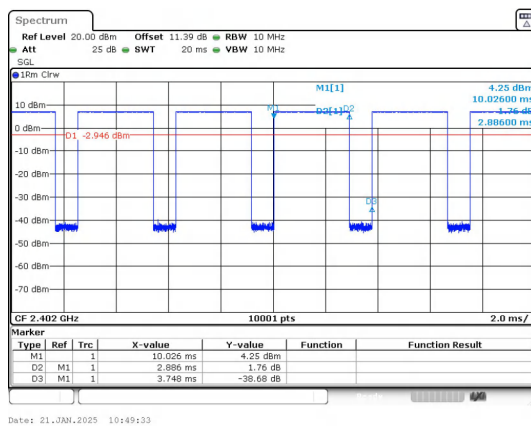
Report No.:	CISRR25011715601
Test Engineer:	Mark Fu
Supervised by:	Rory Huang

1) Duty Cycle

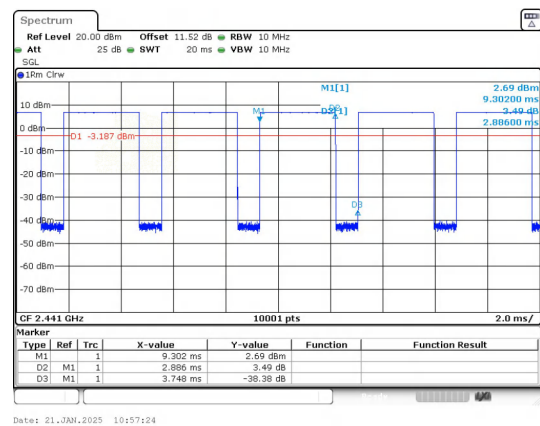
Test Result

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	2.888	3.748	77.05	0.7705	1.1323	0.3463
$\pi/4$ 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	2.894	3.748	77.21	0.7721	1.1233	0.3455

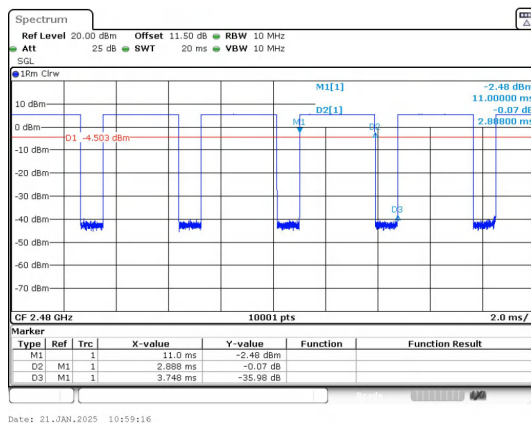
Test Graphs



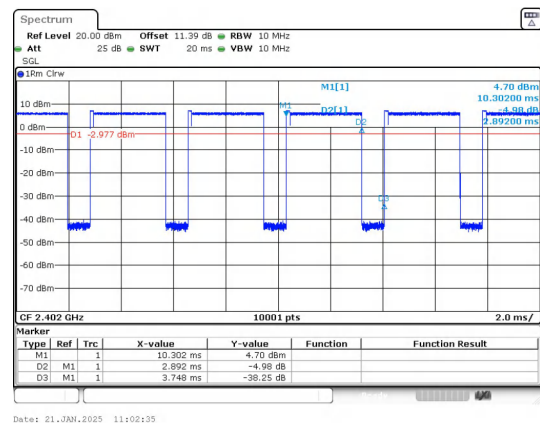
GFSK(DH5)_Channel 0

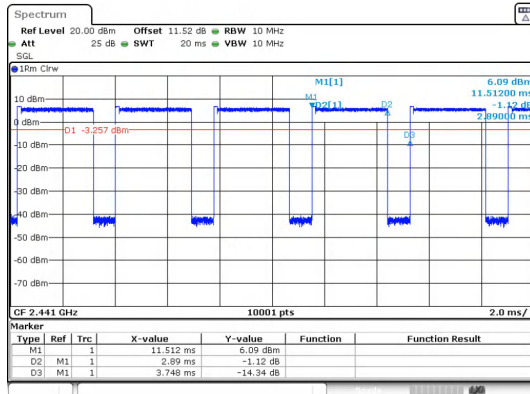


GFSK(DH5)_Channel 39

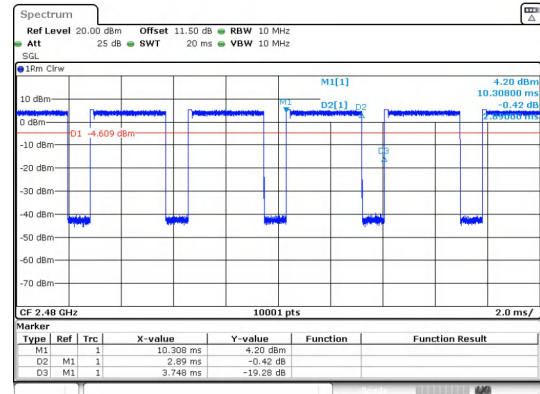


GFSK(DH5)_Channel 78

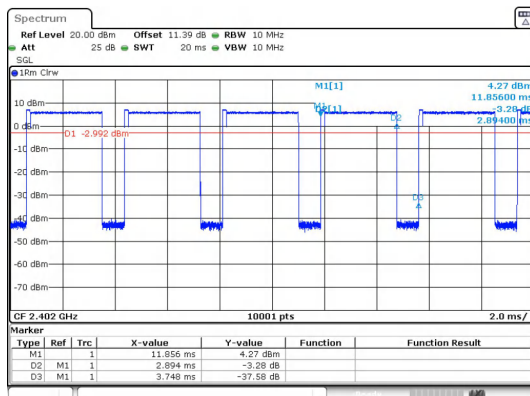

 $\pi/4$ DQPSK(2-DH5)_Channel 0



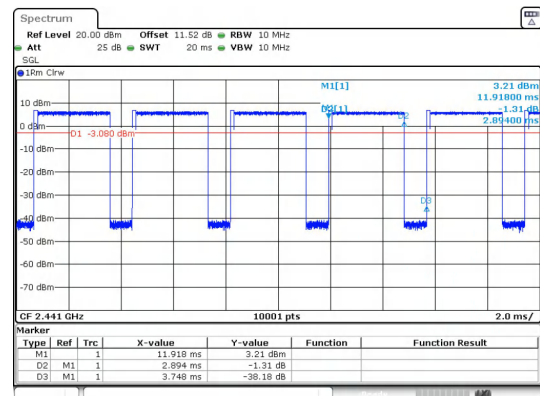
$\pi/4$ DQPSK(2-DH5)_Channel 39



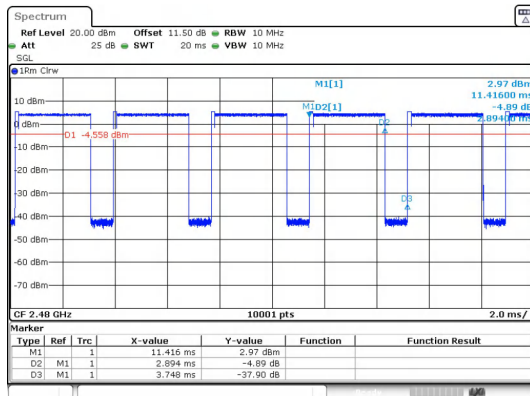
$\pi/4$ DQPSK(2-DH5)_Channel 78



8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39



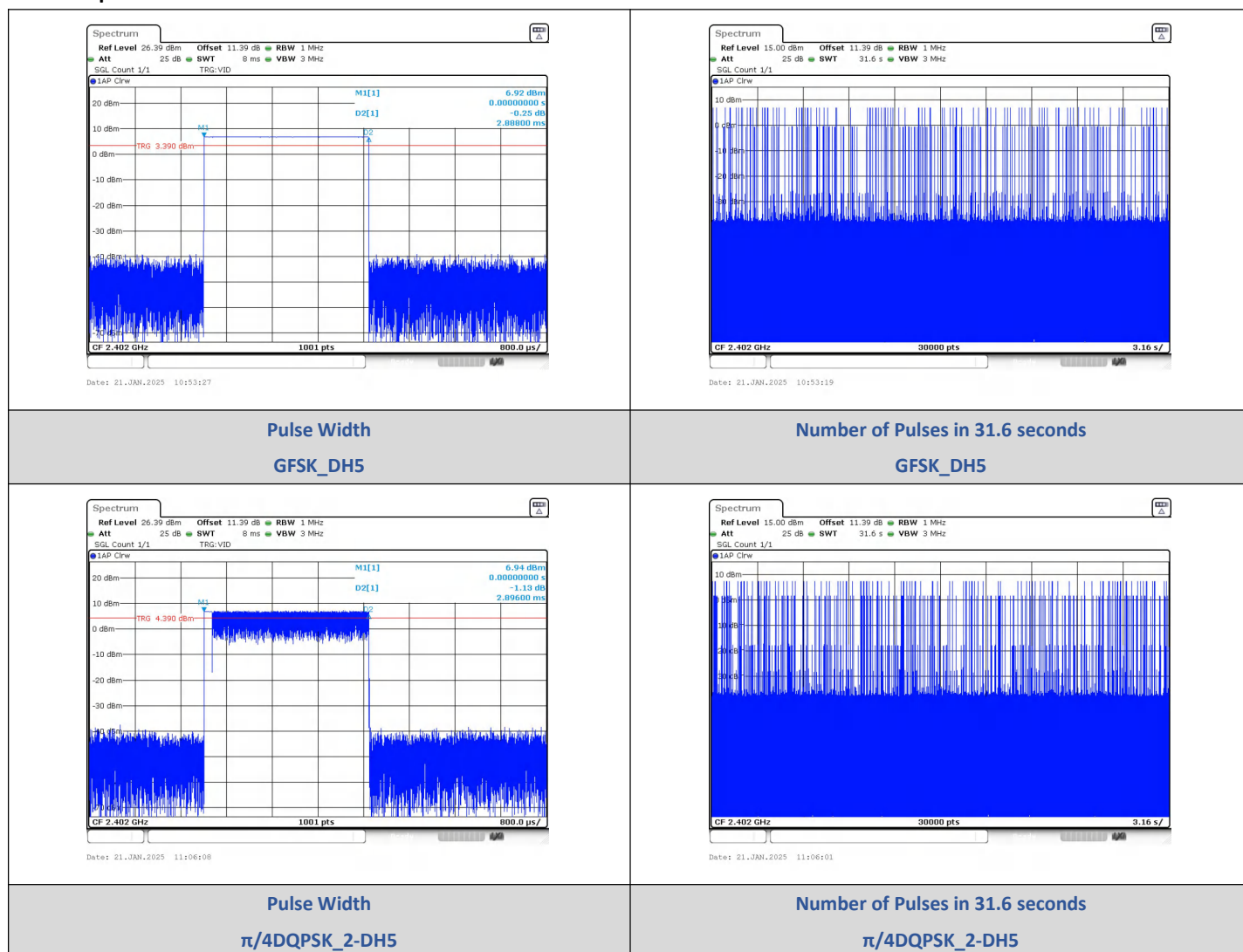
8DPSK(3-DH5)_Channel 78

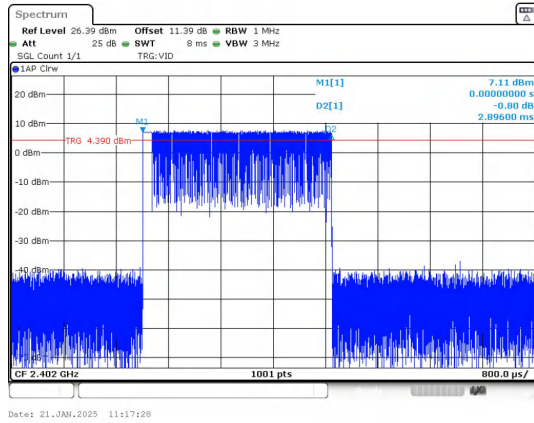
2) Dwell Time

Test Result

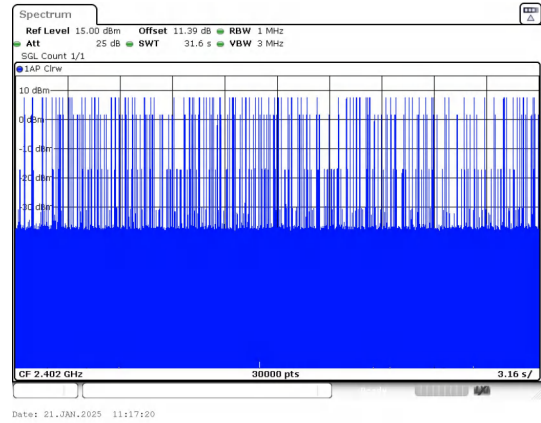
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.888	104	300.35	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.896	112	324.35		PASS
8DPSK	3-DH5		2.896	108	312.77		PASS

Test Graphs





Pulse Width
8DPSK_3-DH5



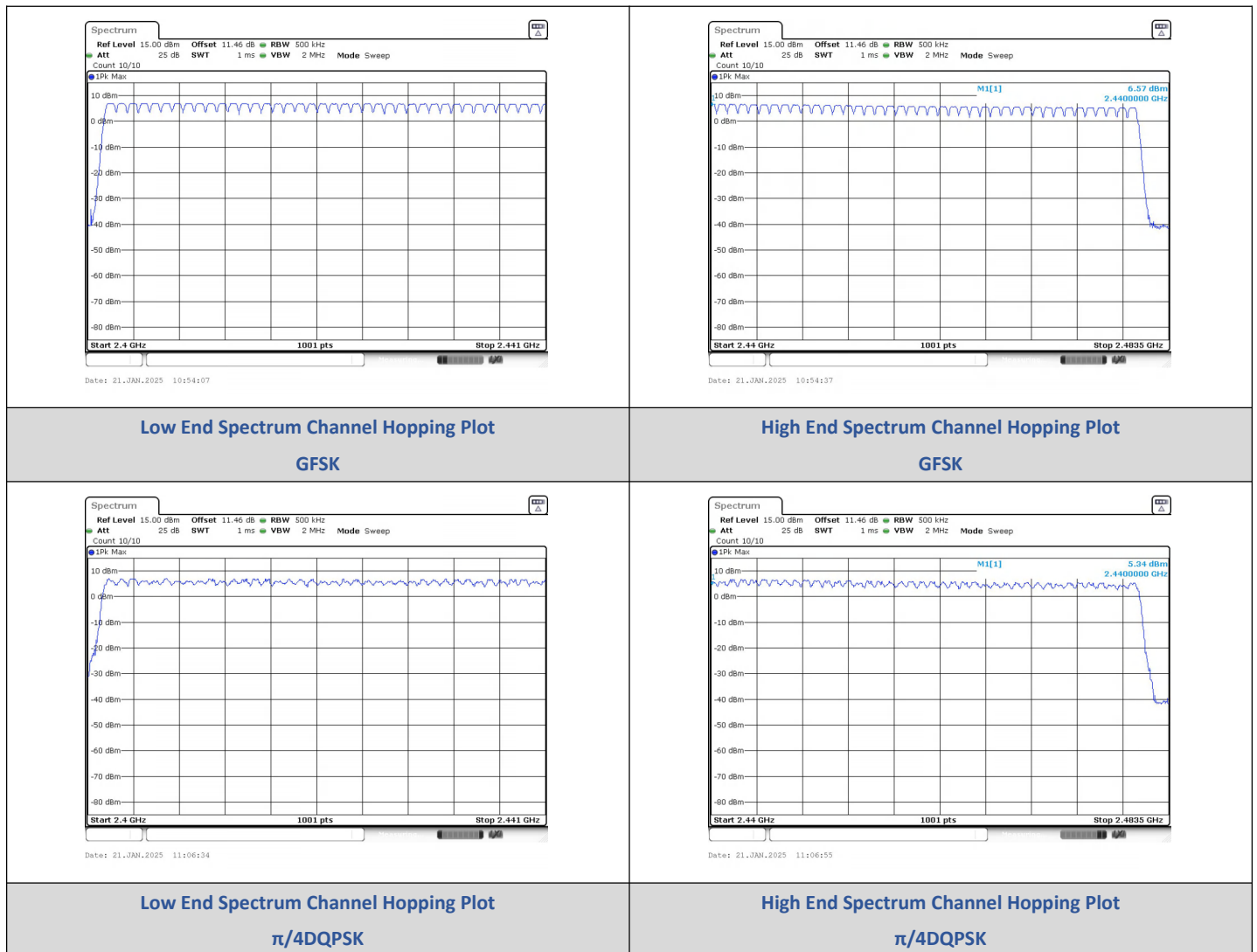
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

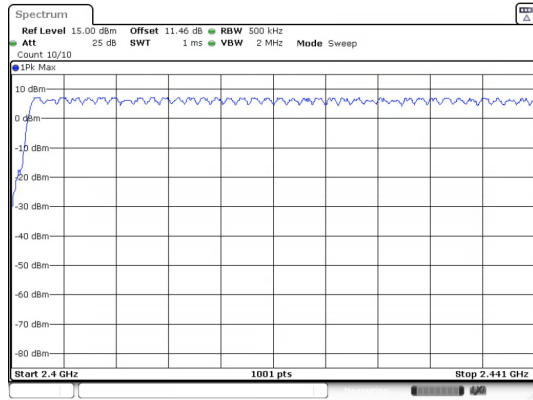
3) Number Of Hopping Channel

Test Result

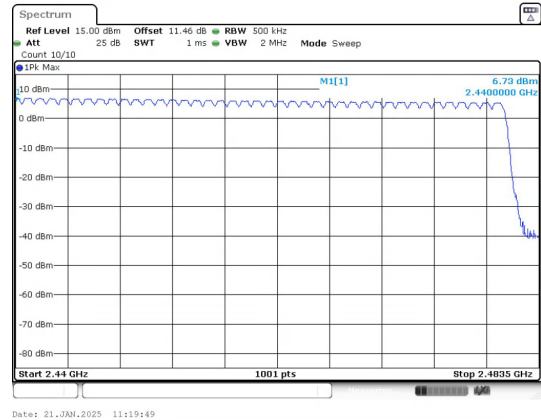
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK



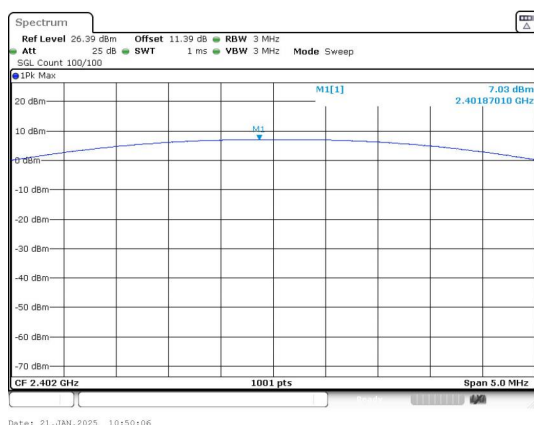
High End Spectrum Channel Hopping Plot
8DPSK

4) Conducted Output Power

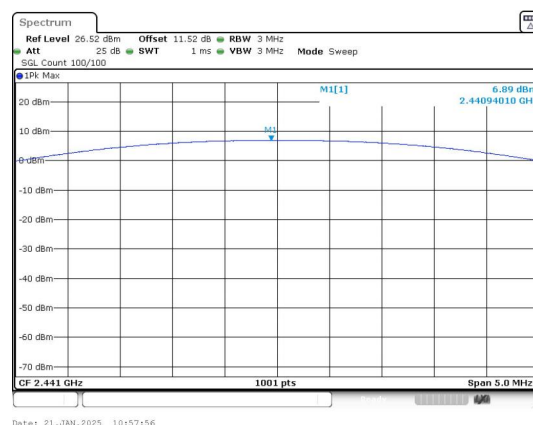
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	7.03	5.05	≤30	PASS
		39	6.89	4.89		PASS
		78	5.54	3.58		PASS
$\pi/4$ DQPSK	2-DH5	0	7.65	5.82	≤20.97	PASS
		39	7.42	5.52		PASS
		78	6.15	4.12		PASS
8DPSK	3-DH5	0	7.81	6.04		PASS
		39	7.78	6.00		PASS
		78	6.36	4.33		PASS

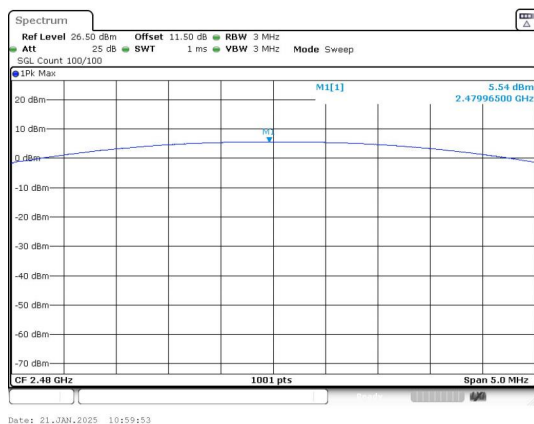
Test Graphs



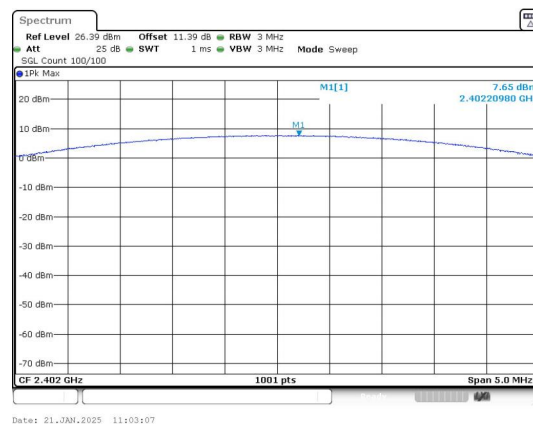
Peak Output Power
GFSK_Channel 0



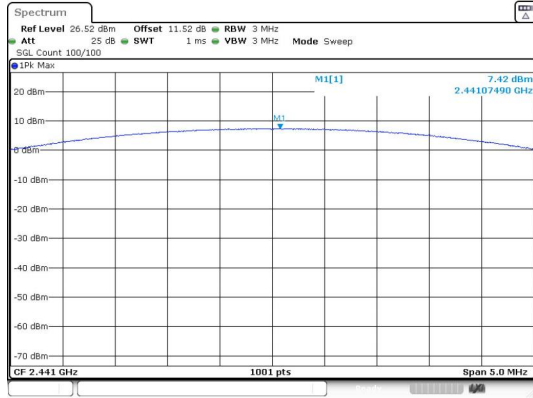
Peak Output Power
GFSK_Channel 39



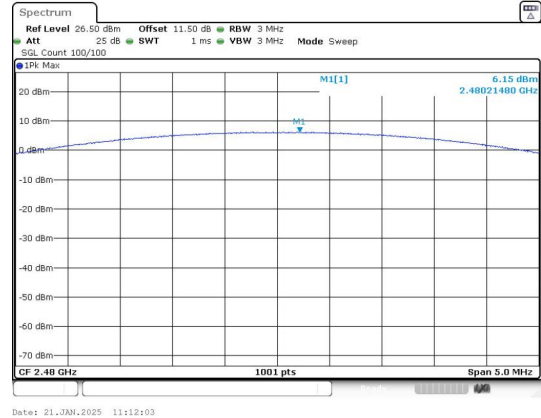
Peak Output Power
GFSK_Channel 78



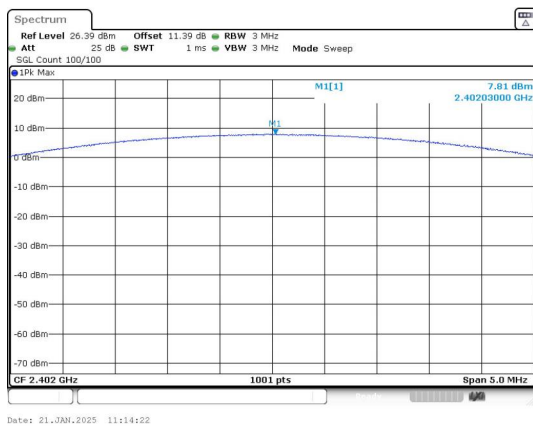
Peak Output Power
 $\pi/4$ DQPSK_Channel 0



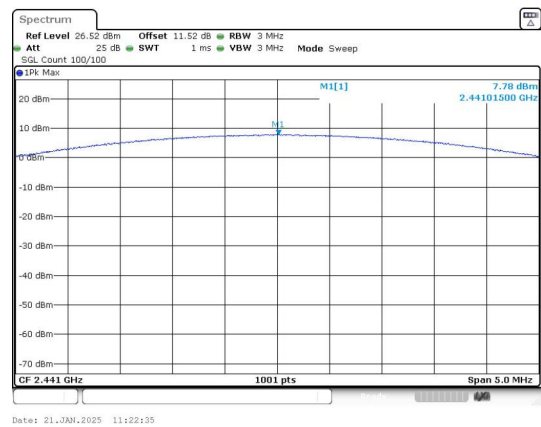
Peak Output Power
 $\pi/4$ DQPSK_Channel 39



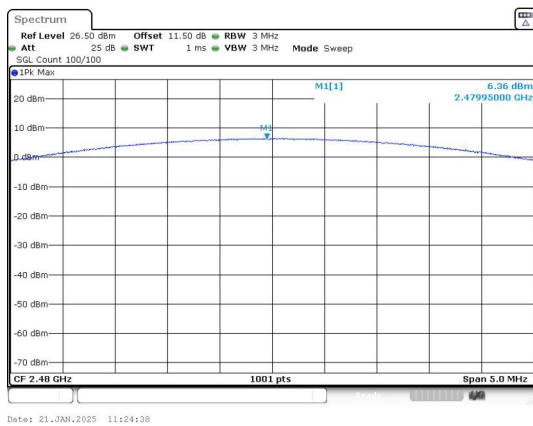
Peak Output Power
 $\pi/4$ DQPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



Peak Output Power
8DPSK_Channel 39



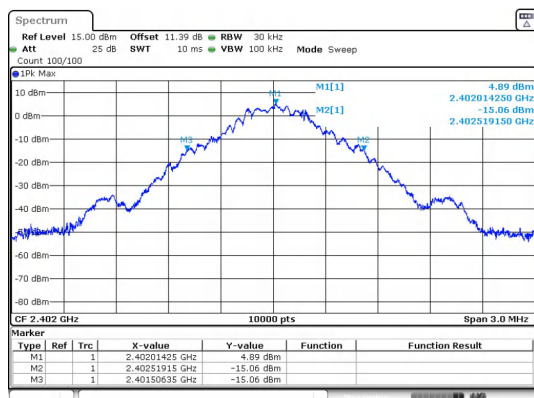
Peak Output Power
8DPSK_Channel 78

5) 20dB Bandwidth

Test Result

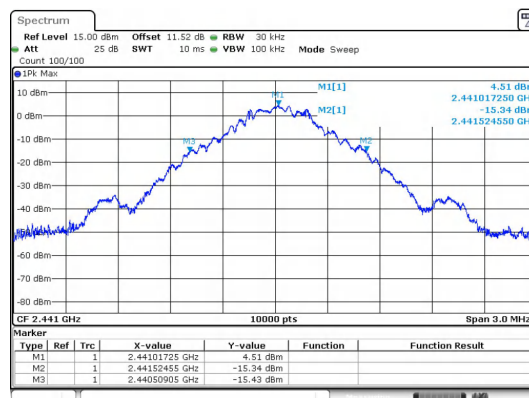
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.010
	39	2441 MHz	1.010
	78	2480 MHz	1.010
$\pi/4$ DQPSK	0	2402 MHz	1.320
	39	2441 MHz	1.310
	78	2480 MHz	1.310
8DPSK	0	2402 MHz	1.290
	39	2441 MHz	1.310
	78	2480 MHz	1.290

Test Graphs



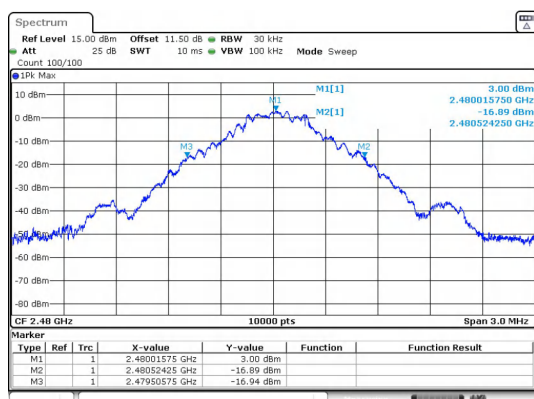
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GFSK_DH5_Channel 0



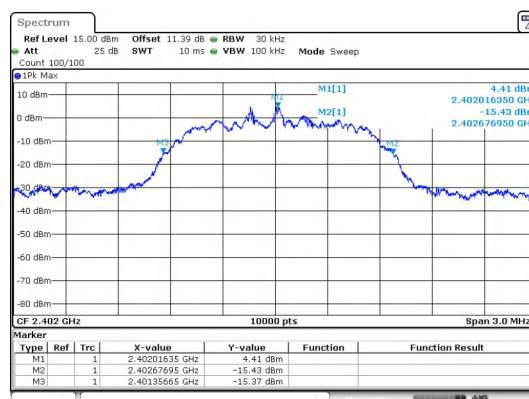
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GFSK_DH5_Channel 39



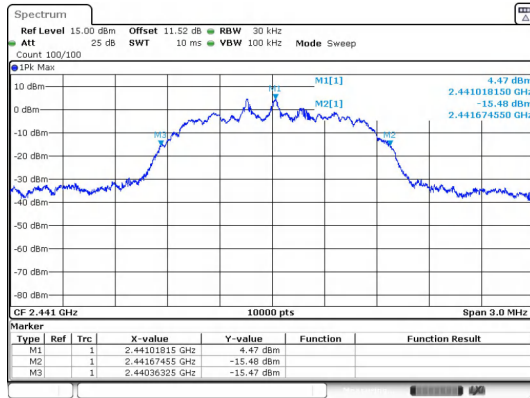
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GFSK_DH5_Channel 78

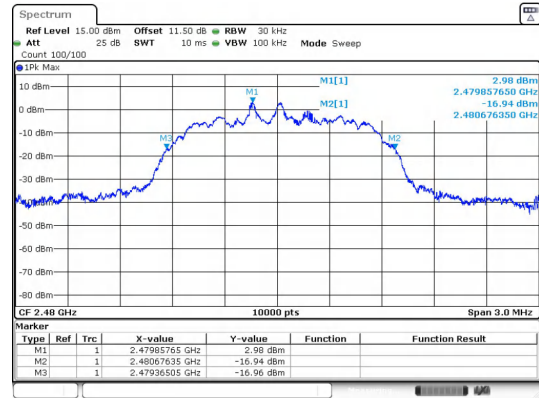


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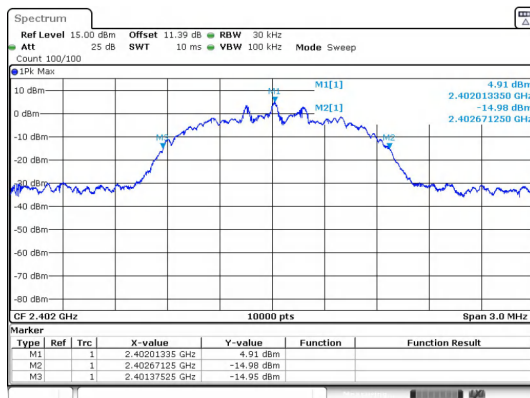
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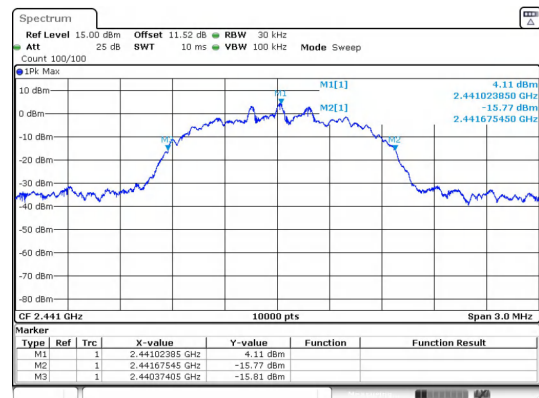
$\pi/4$ DQPSK_2-DH5_Channel 39



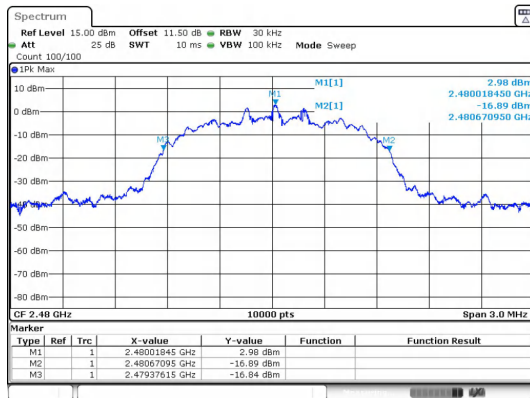
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



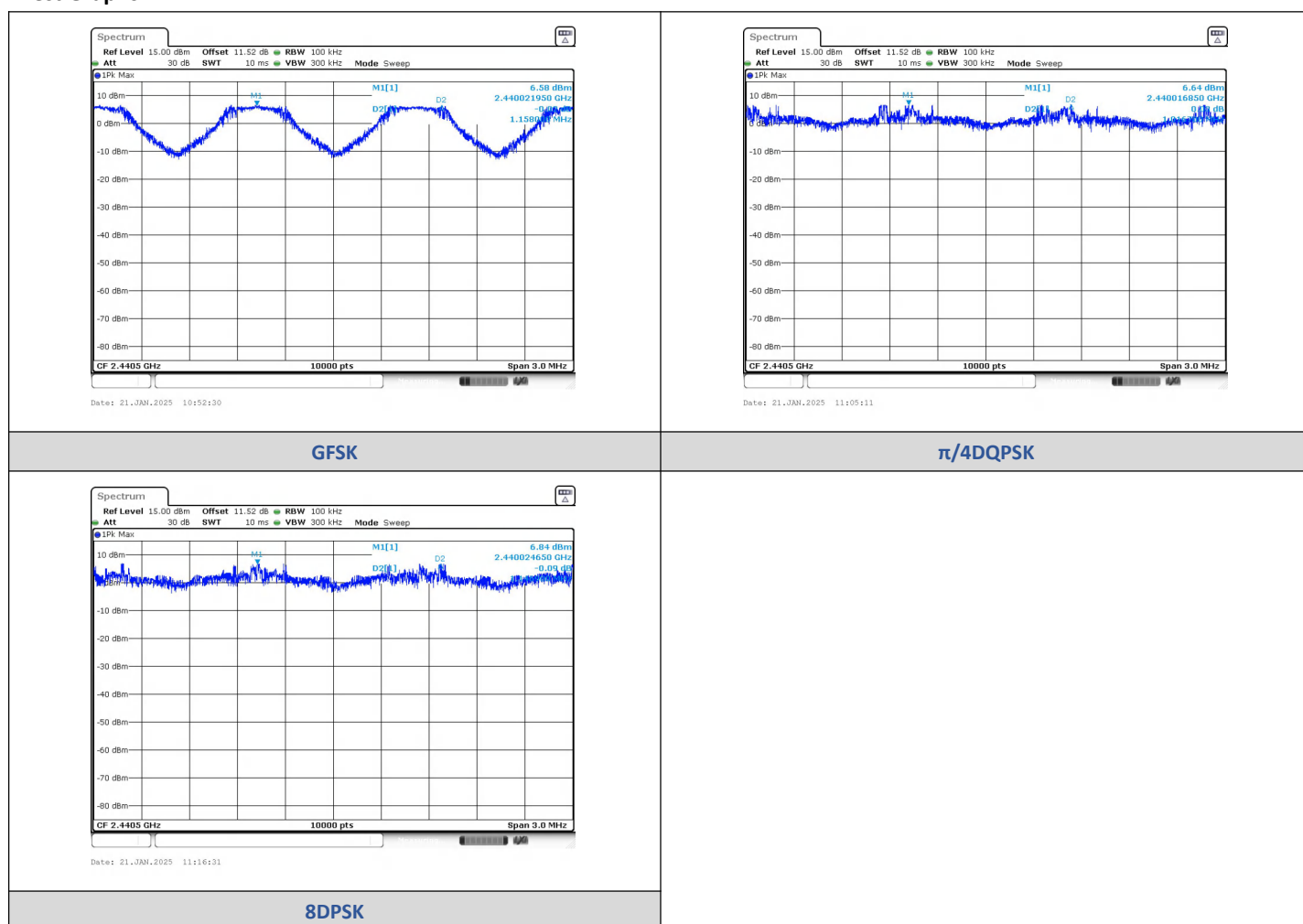
8DPSK_3-DH5_Channel 78

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	2440.0219	2441.18	1.1580	1.01	PASS
$\pi/4$ DQPSK	2-DH5	2440.0168	2441.0336	1.0167	0.88	PASS
8DPSK	3-DH5	2440.0246	2441.1716	1.1469	0.86	PASS

Test Graphs



7) Conducted Out Of Band Emission

Test Result

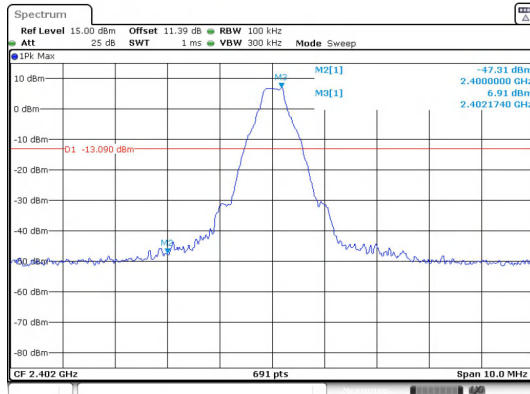
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-47.310	-13.09	-34.220	PASS
			7205.96	-38.152	-13.09	-25.062	PASS
		39	2249.42	-40.404	-13.26	-27.144	PASS
		78	2483.50	-47.530	-14.54	-32.990	PASS
			9920.20	-37.950	-14.54	-23.410	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-42.910	-13.03	-29.880	PASS
			7205.96	-40.369	-13.03	-27.339	PASS
		39	7322.49	-40.891	-13.29	-27.601	PASS
		78	2483.50	-49.280	-14.69	-34.590	PASS
			5826.79	-37.559	-14.69	-22.869	PASS
8DPSK	3-DH5	0	2400.00	-45.110	-13.2	-31.910	PASS
			7205.96	-41.137	-13.2	-27.937	PASS
		39	9763.72	-41.273	-13.22	-28.053	PASS
		78	2483.50	-50.390	-14.77	-35.620	PASS
			5827.62	-36.932	-14.77	-22.162	PASS

Hopping

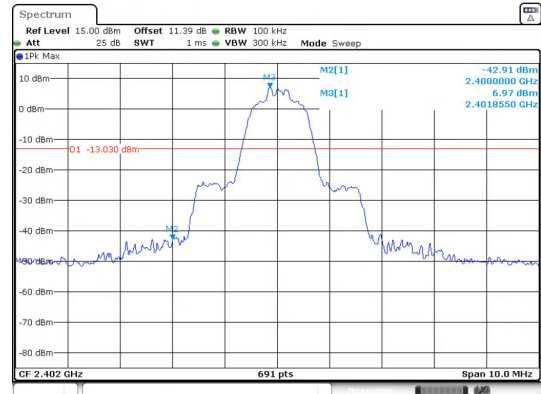
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2397.26	-47.107	-13.21	-33.897	PASS
			2400.00	-49.040	-13.21	-35.830	PASS
			2483.50	-49.100	-14.9	-34.200	PASS
$\pi/4$ DQPSK	2-DH5		2396.64	-48.183	-13.27	-34.913	PASS
			2400.00	-48.860	-13.27	-35.590	PASS
			2483.50	-50.370	-15.61	-34.760	PASS
8DPSK	3-DH5		2395.46	-47.379	-13.44	-33.939	PASS
			2400.00	-49.460	-13.44	-36.020	PASS
			2483.50	-49.010	-17.77	-31.240	PASS

Test Graphs



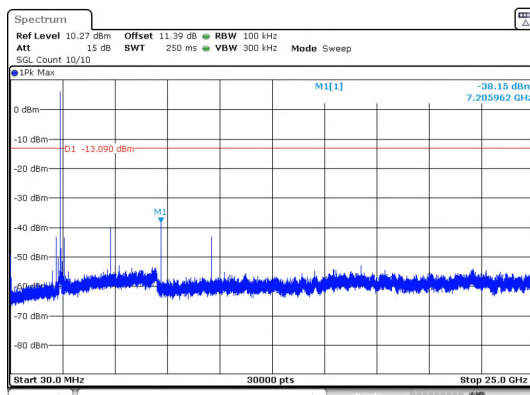
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Out Of Band Emission
GFSK_DH5_Channel 0



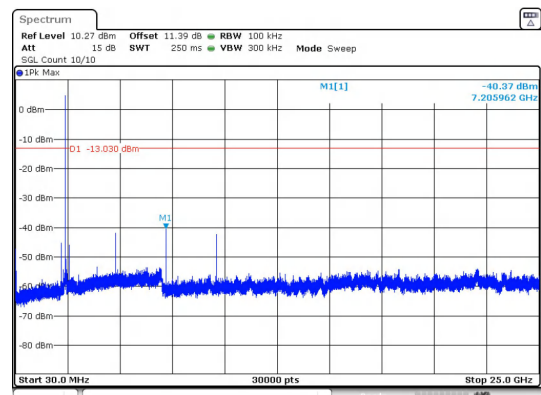
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Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0



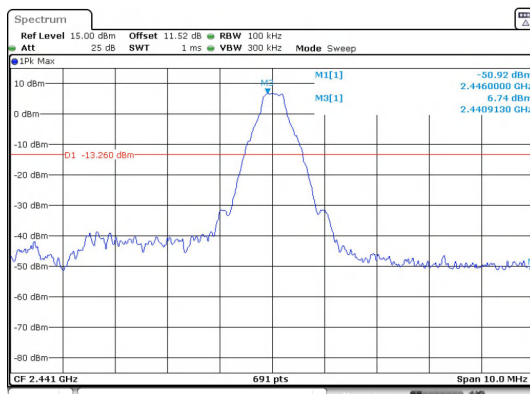
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30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



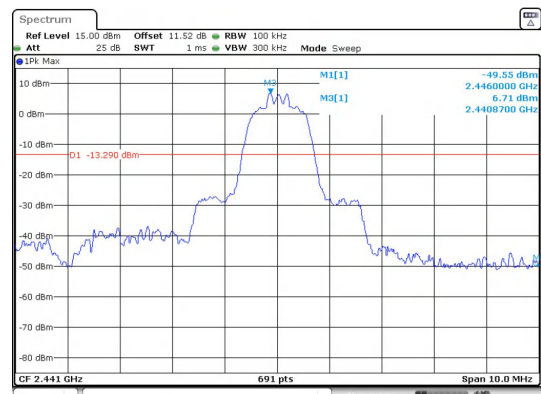
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30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 0



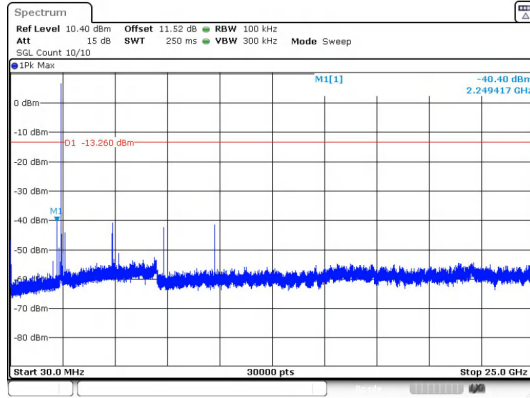
Date: 21.JAN.2025 10:58:14

Out Of Band Emission
GFSK_DH5_Channel 39

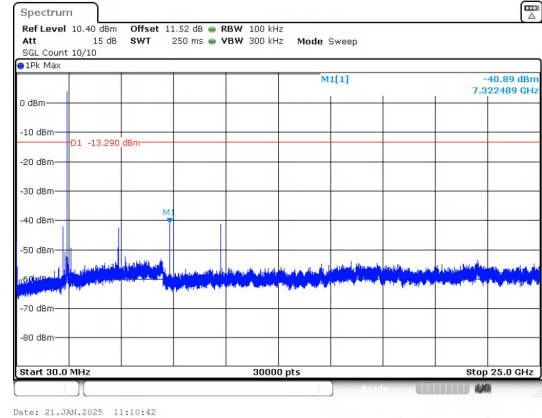


Date: 21.JAN.2025 11:10:19

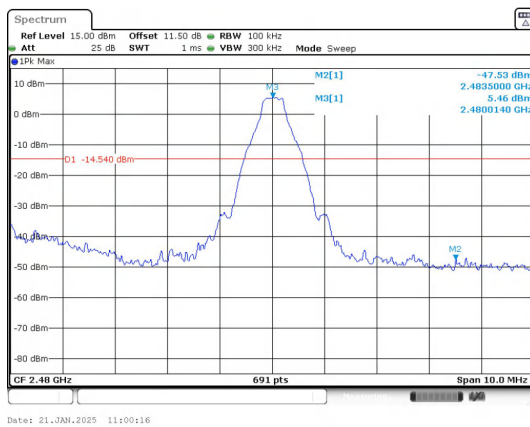
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39



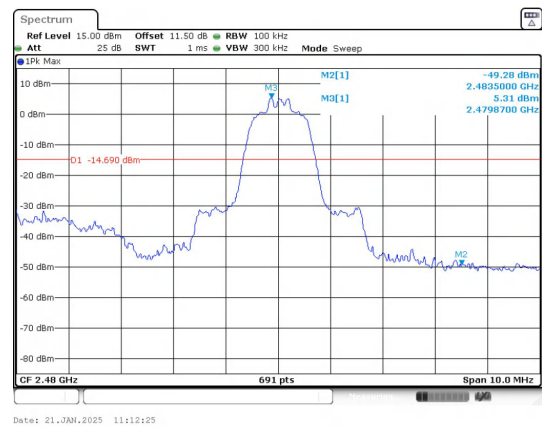
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



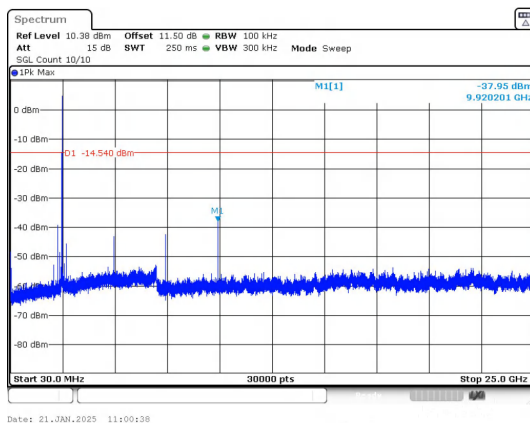
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



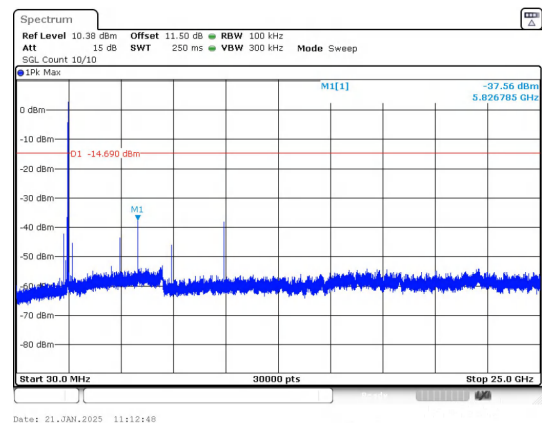
Out Of Band Emission
GFSK_DH5_Channel 78



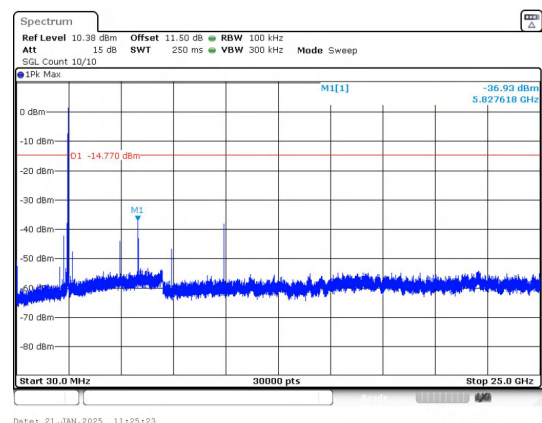
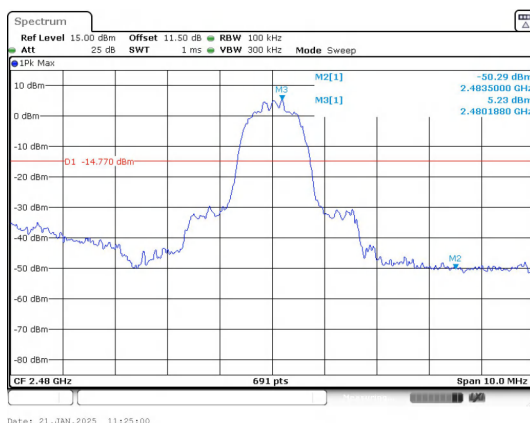
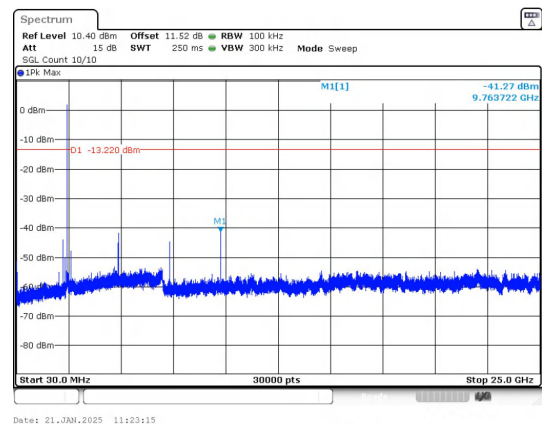
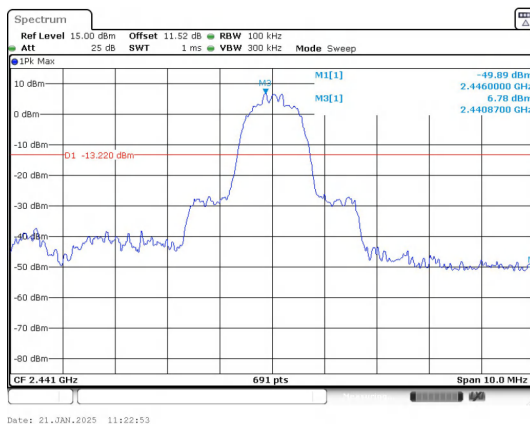
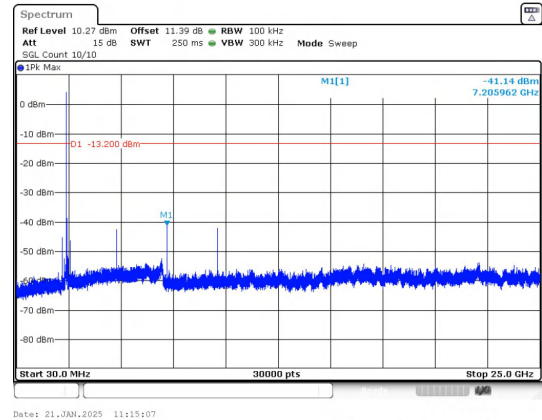
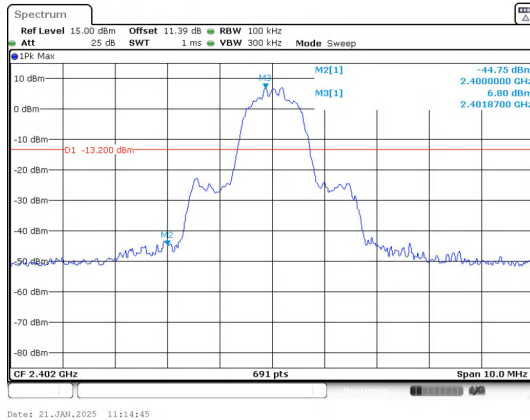
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78

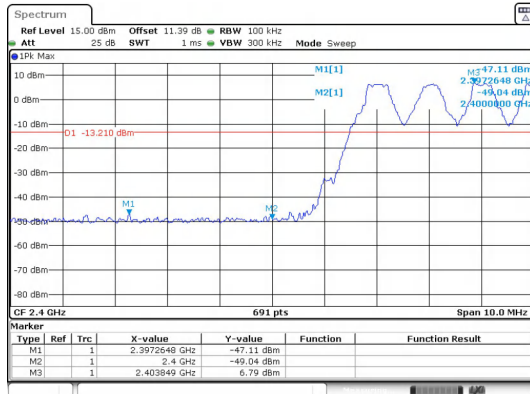


30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



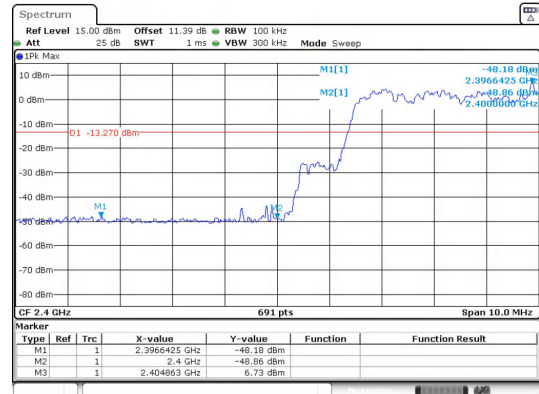
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78





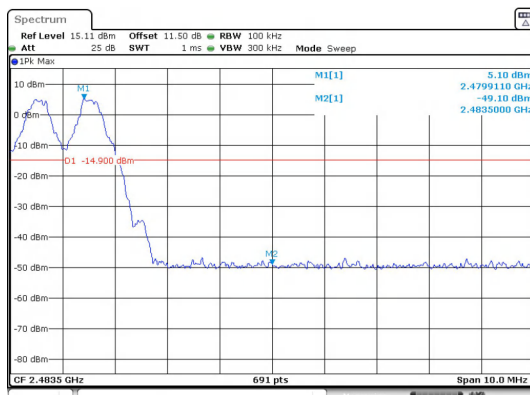
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Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



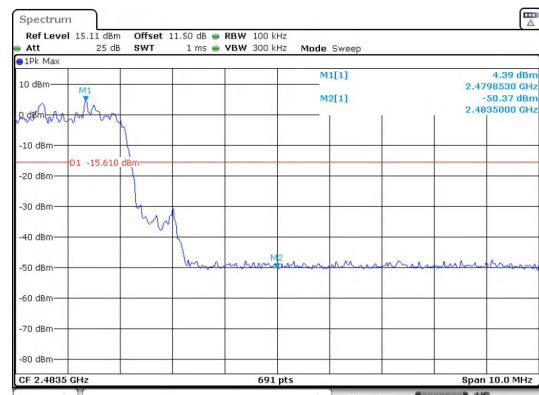
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Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



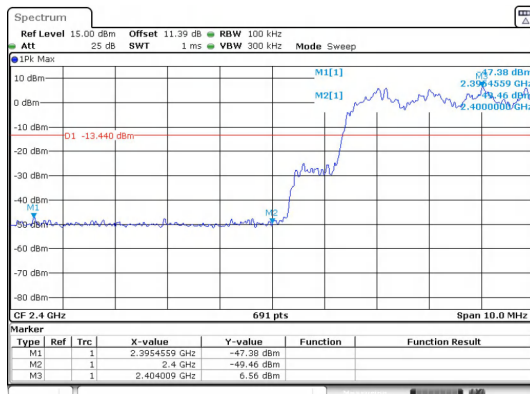
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Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



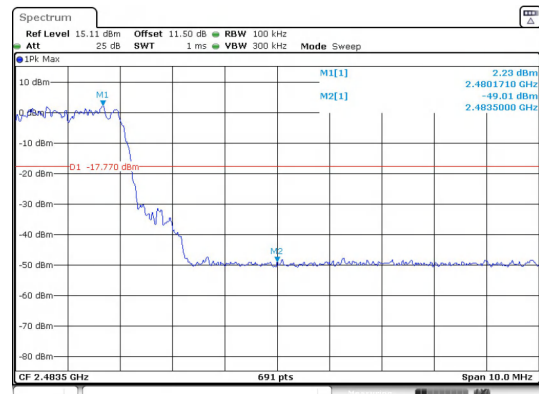
Date: 21.JAN.2025 11:08:25

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



Date: 21.JAN.2025 11:20:56

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



Date: 21.JAN.2025 11:21:23

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

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