

Appendix Report

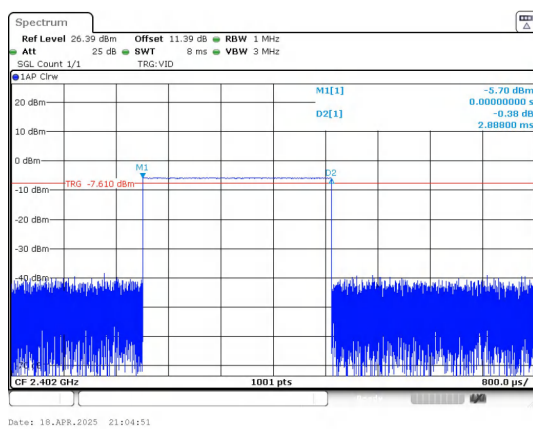
Project No.:	CISR250416167
Test Engineer:	James Wang
Supervised by:	Rory Huang

1) Dwell Time

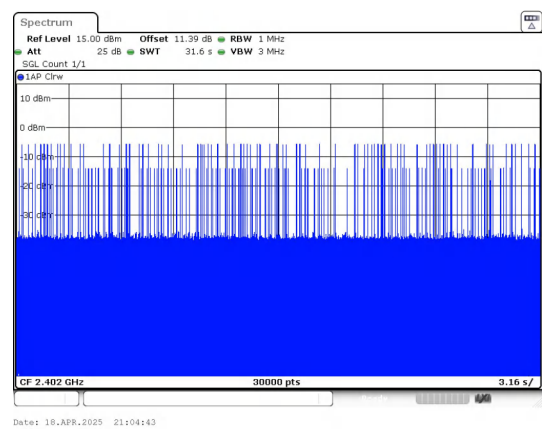
Test Result

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	101	291.69	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.896	107	309.87		PASS
8DPSK	3-DH5		2.896	107	309.87		PASS

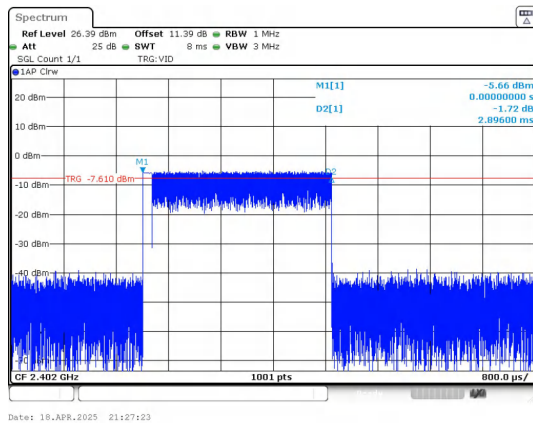
Test Graphs



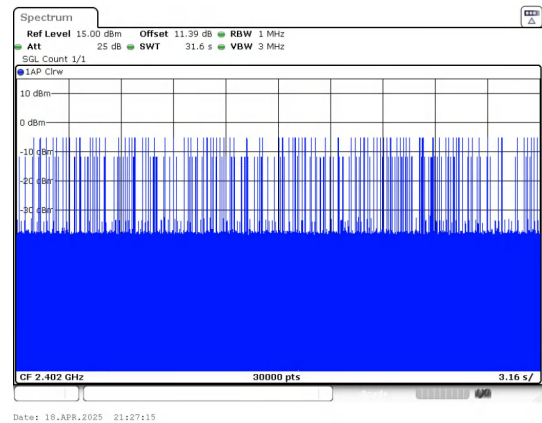
Pulse Width
GFSK_DH5



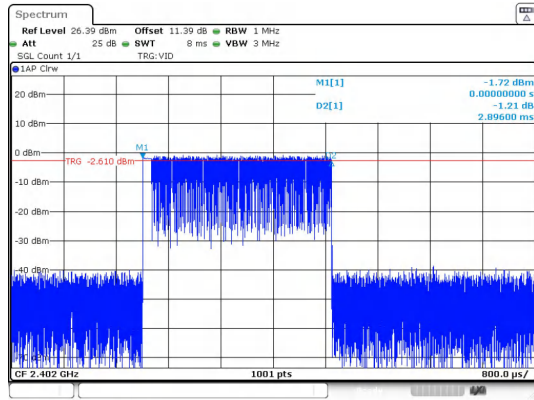
Number of Pulses in 31.6 seconds
GFSK_DH5



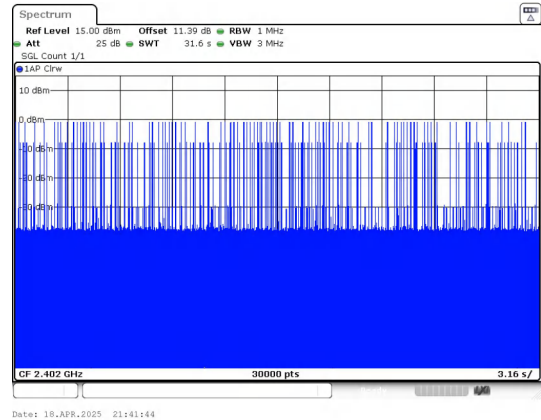
Pulse Width
 $\pi/4$ DQPSK_2-DH5



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



Pulse Width
8DPSK_3-DH5



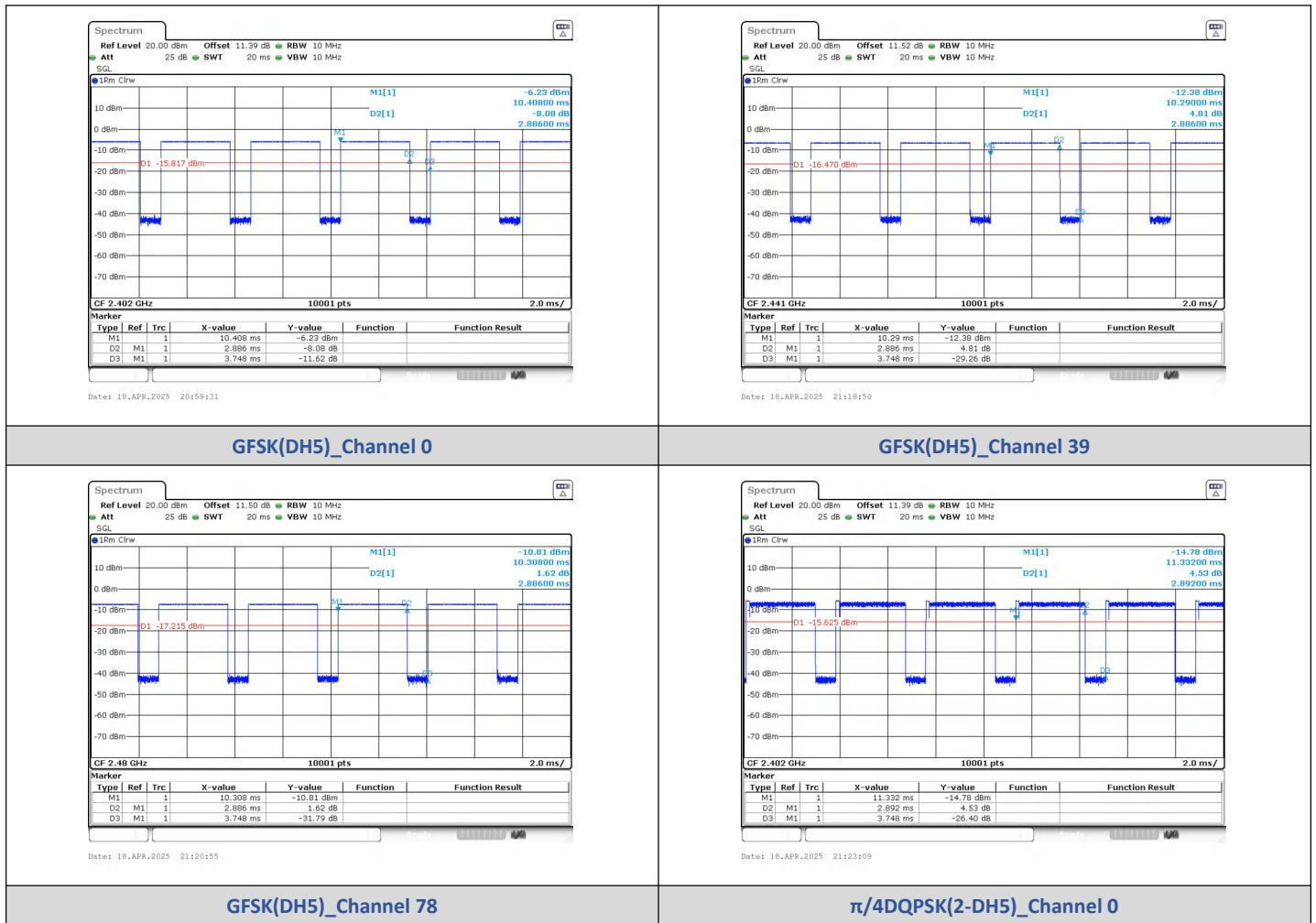
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

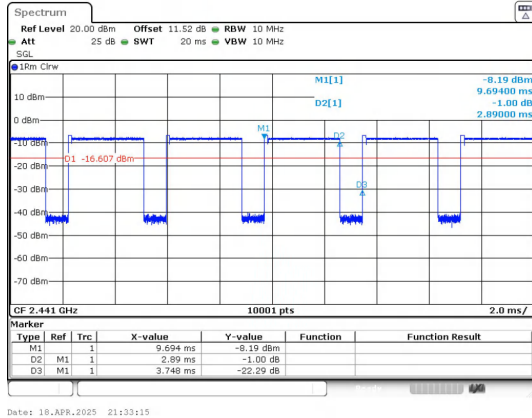
2) Duty Cycle

Test Result

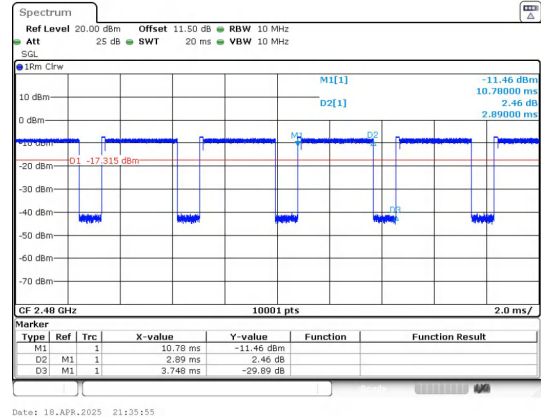
Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.886	3.748	77.00	0.7700	1.1351	0.3465
		39	2.886	3.748	77.00	0.7700	1.1351	0.3465
		78	2.886	3.748	77.00	0.7700	1.1351	0.3465
$\pi/4$ DQPSK	2-DH5	0	2.892	3.748	77.16	0.7716	1.1261	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	2.892	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

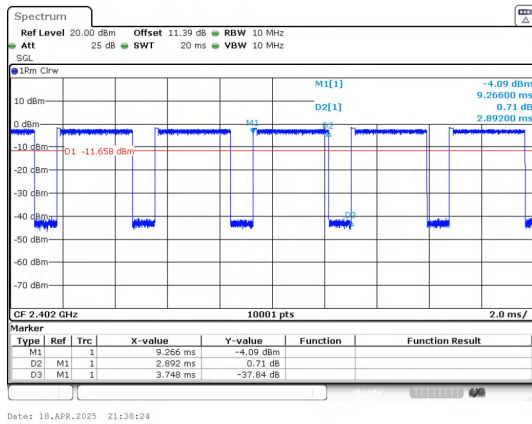




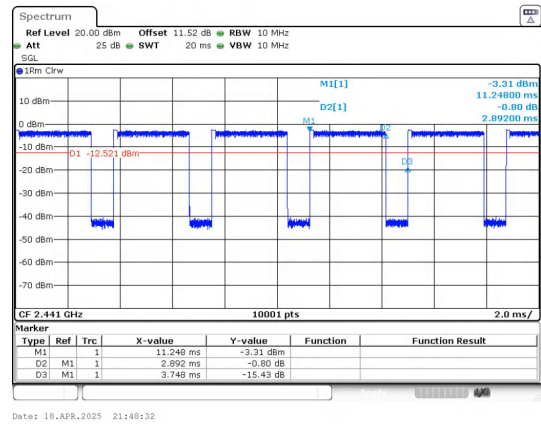
$\pi/4$ DQPSK(2-DH5)_Channel 39



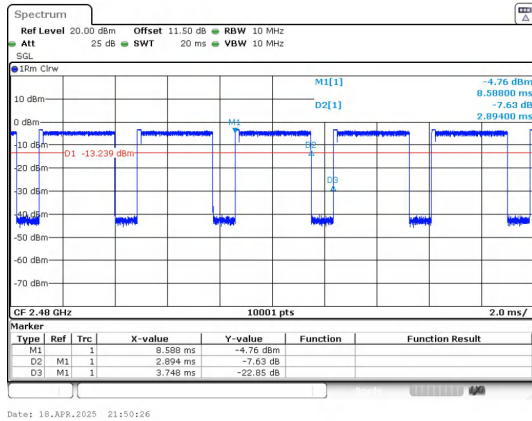
$\pi/4$ DQPSK(2-DH5)_Channel 78



8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39



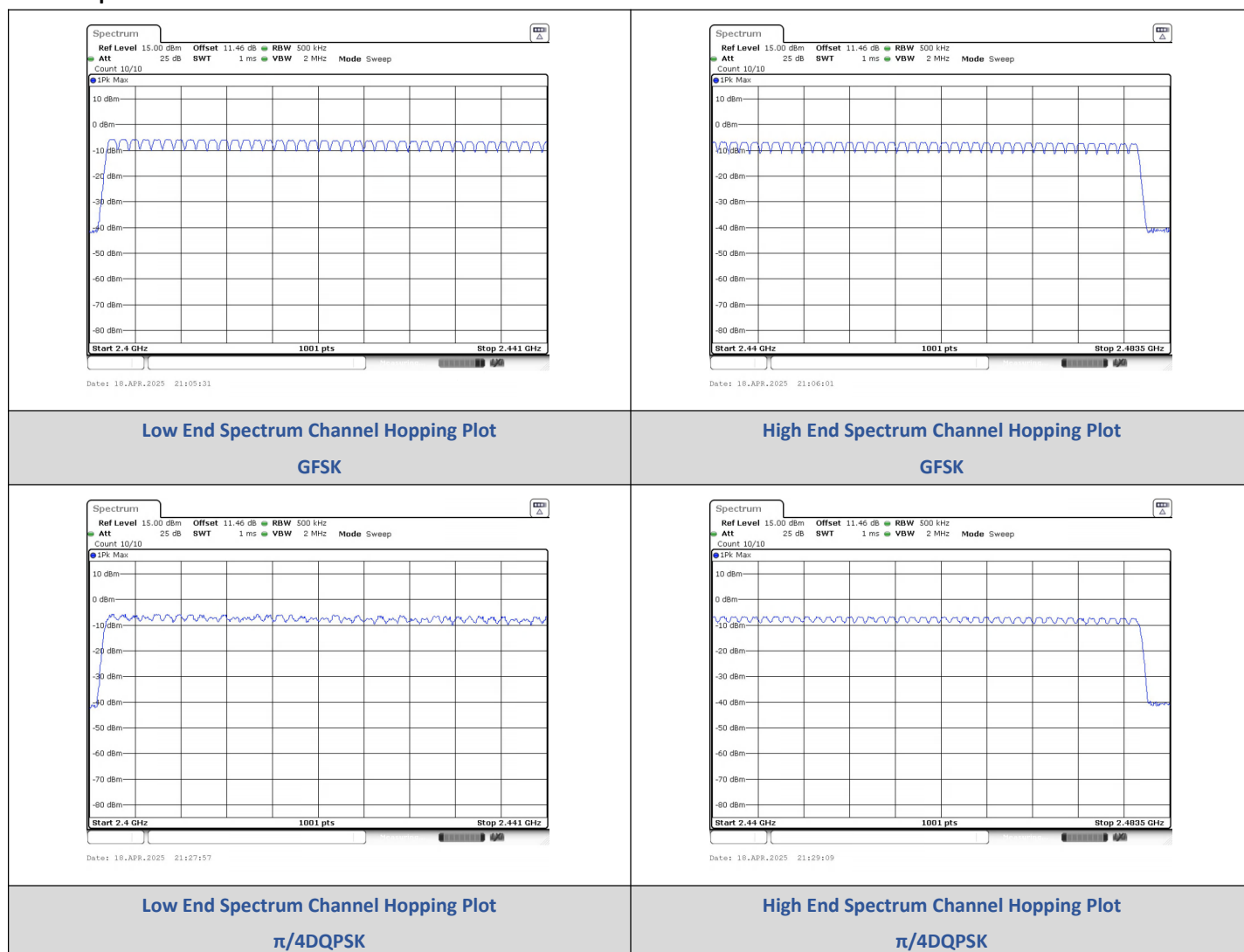
8DPSK(3-DH5)_Channel 78

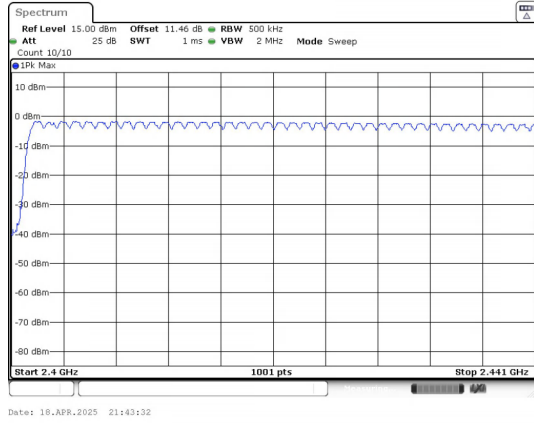
3) Number Of Hopping Channel

Test Result

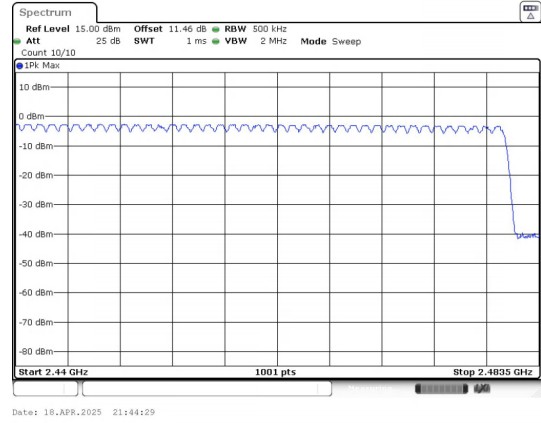
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK



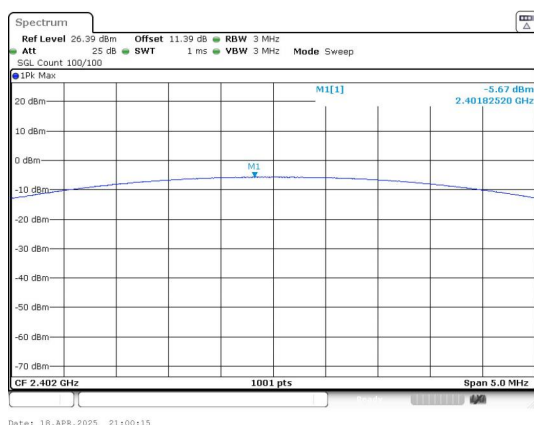
High End Spectrum Channel Hopping Plot
8DPSK

4) Conducted Output Power

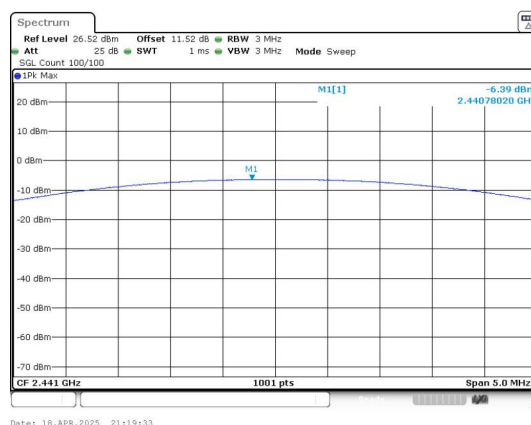
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	-5.67	0.27	≤30	PASS
		39	-6.39	0.23		PASS
		78	-7.07	0.20		PASS
$\pi/4$ DQPSK	2-DH5	0	-4.70	0.34	≤20.97	PASS
		39	-5.55	0.28		PASS
		78	-6.22	0.24		PASS
8DPSK	3-DH5	0	-0.39	0.91		PASS
		39	-1.25	0.75		PASS
		78	-1.95	0.64		PASS

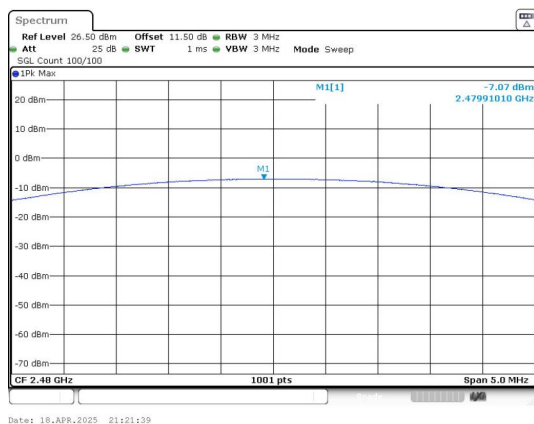
Test Graphs



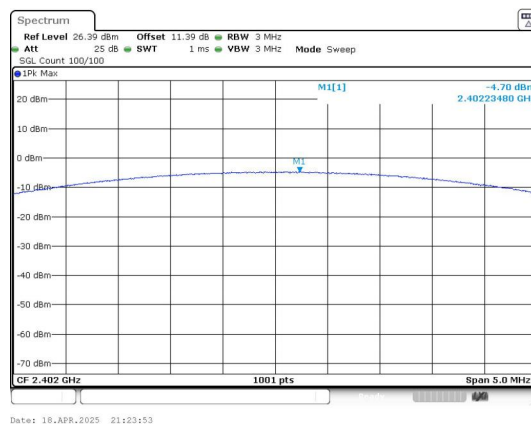
Peak Output Power
GFSK_Channel 0



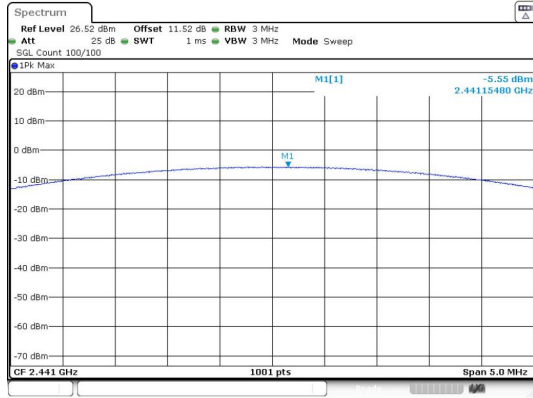
Peak Output Power
GFSK_Channel 39



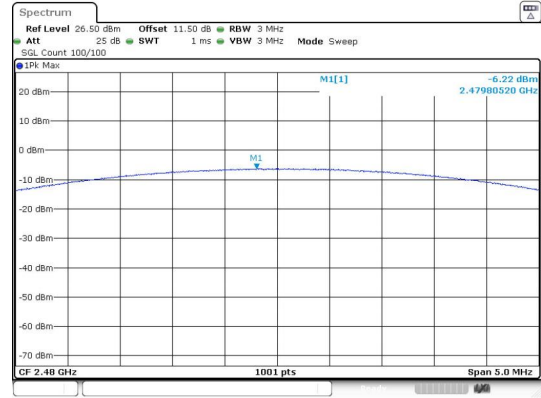
Peak Output Power
GFSK_Channel 78



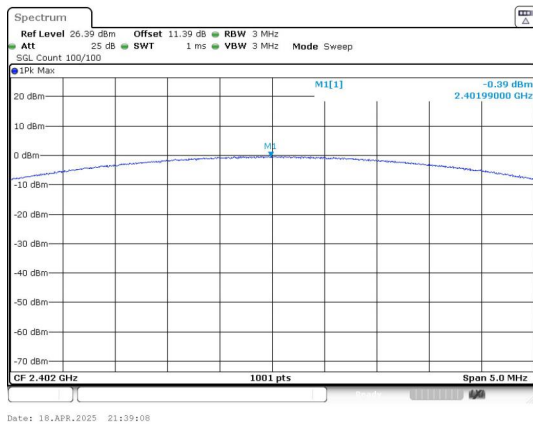
Peak Output Power
 $\pi/4$ DQPSK_Channel 0



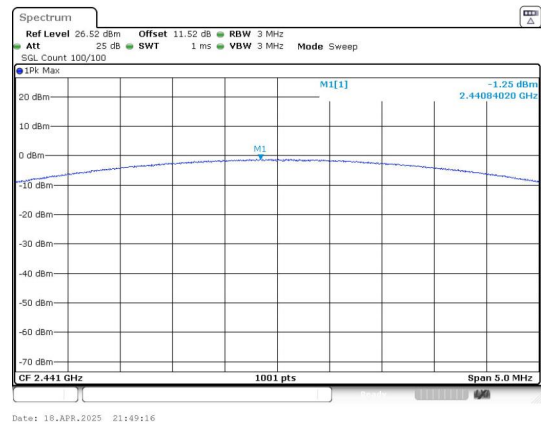
Peak Output Power
 $\pi/4$ DQPSK_Channel 39



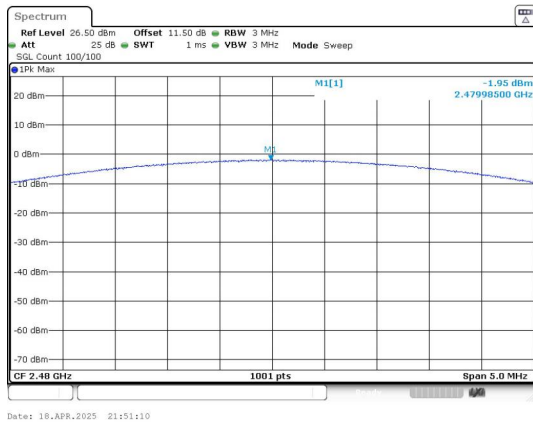
Peak Output Power
 $\pi/4$ DQPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



Peak Output Power
8DPSK_Channel 39



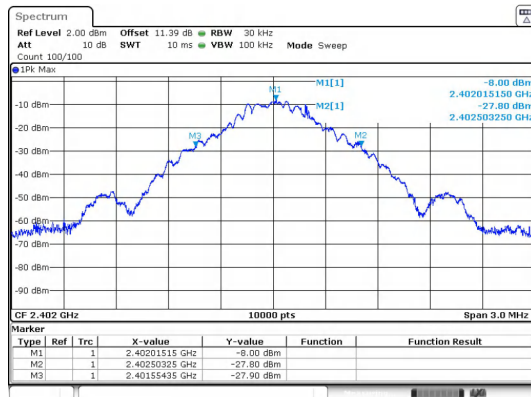
Peak Output Power
8DPSK_Channel 78

5) 20dB Bandwidth

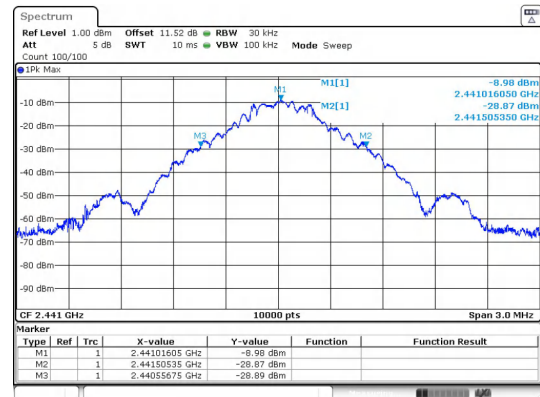
Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	0.95
	39	2441 MHz	0.95
	78	2480 MHz	0.95
$\pi/4$ DQPSK	0	2402 MHz	1.280
	39	2441 MHz	1.280
	78	2480 MHz	1.280
8DPSK	0	2402 MHz	1.280
	39	2441 MHz	1.290
	78	2480 MHz	1.290

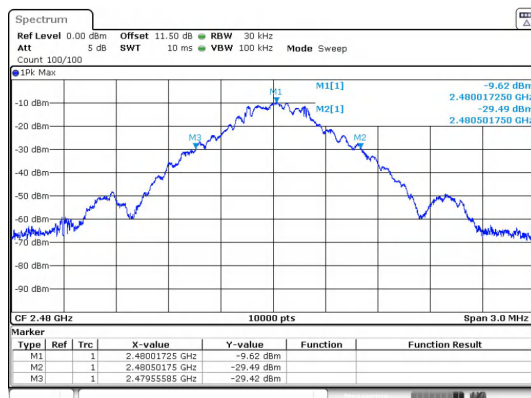
Test Graphs



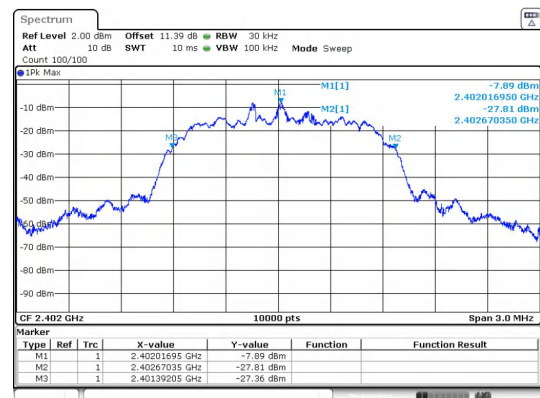
GFSK_DH5_Channel 0

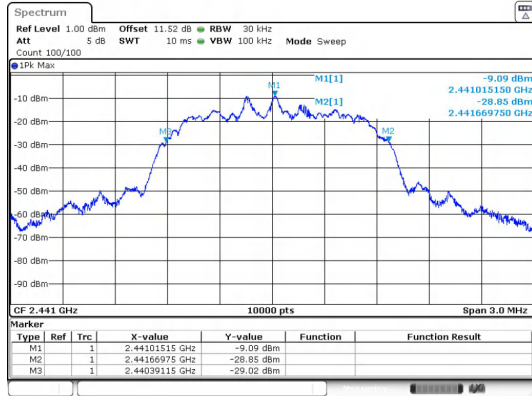


GFSK_DH5_Channel 39

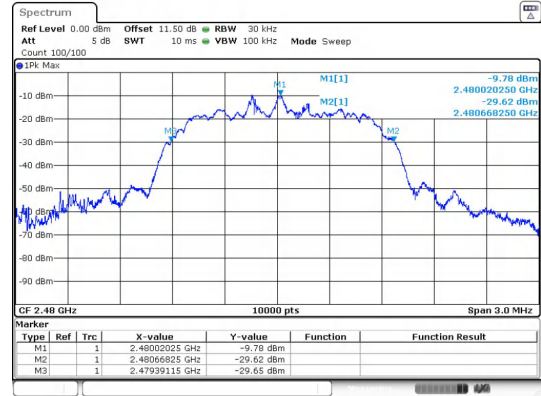


GFSK_DH5_Channel 78

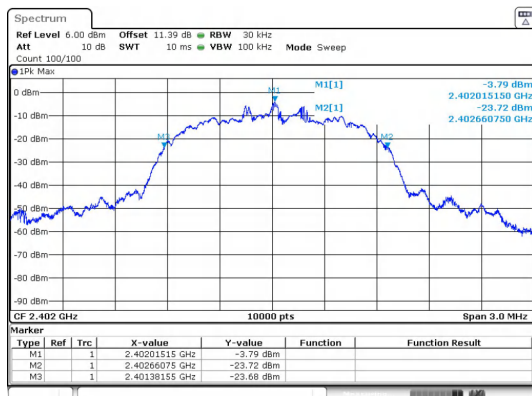

 $\pi/4$ DQPSK_2-DH5_Channel 0



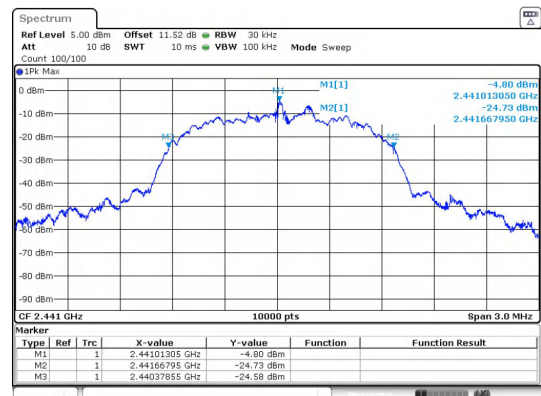
$\pi/4$ DQPSK_2-DH5_Channel 39



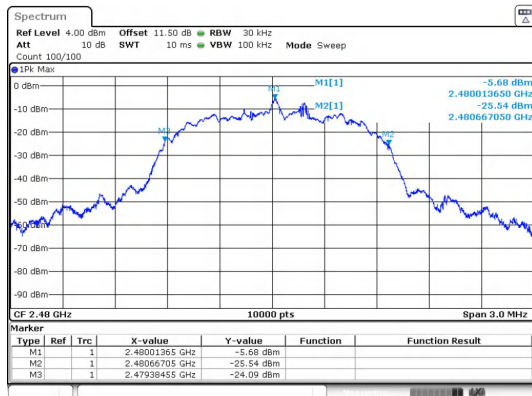
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



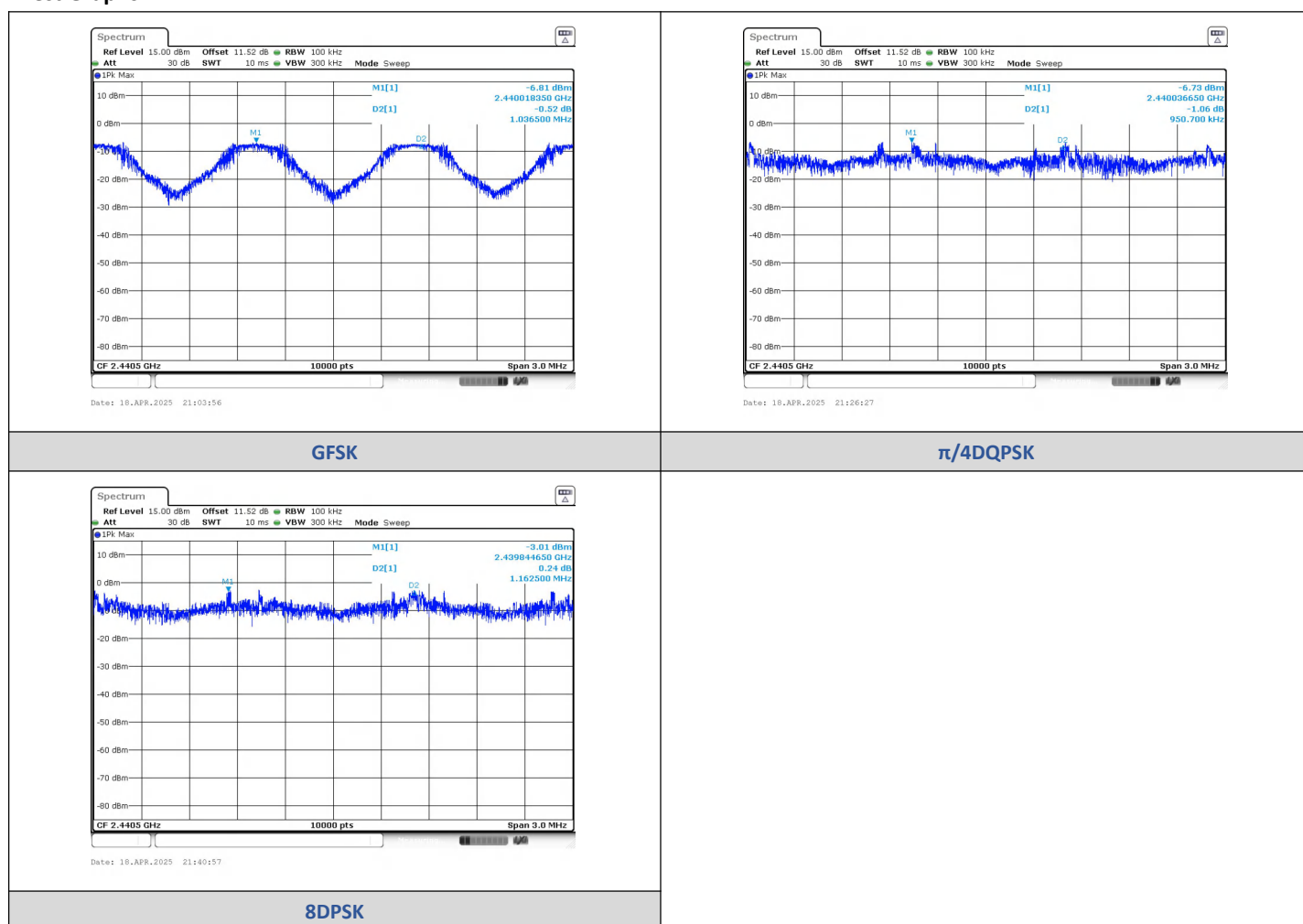
8DPSK_3-DH5_Channel 78

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	2440.0183	2441.0548	1.0365	0.95	PASS
$\pi/4$ DQPSK	2-DH5	2440.0367	2440.9873	0.9507	0.853	PASS
8DPSK	3-DH5	2439.8447	2441.0071	1.1625	0.853	PASS

Test Graphs



7) Conducted Out Of Band Emission

Test Result

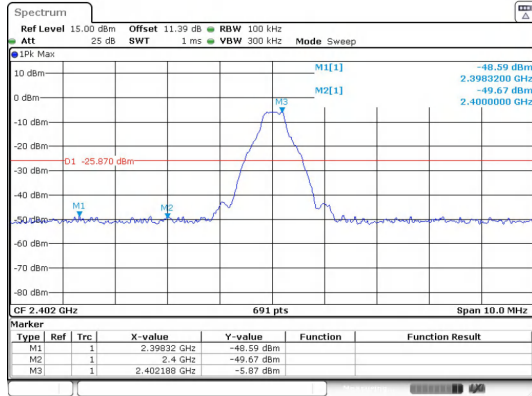
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	830.30	-43.927	-25.87	-18.057	PASS
			2398.32	-48.593	-25.87	-22.723	PASS
			2400.00	-49.670	-25.87	-23.800	PASS
		39	9763.72	-44.610	-26.61	-18.000	PASS
		78	2483.50	-49.810	-27.31	-22.500	PASS
			9920.20	-41.510	-27.31	-14.200	PASS
$\pi/4$ DQPSK	2-DH5	0	2398.44	-49.118	-25.89	-23.228	PASS
			2400.00	-51.820	-25.89	-25.930	PASS
			9608.10	-46.315	-25.89	-20.425	PASS
		39	9763.72	-44.211	-26.71	-17.501	PASS
		78	2483.50	-51.150	-27.38	-23.770	PASS
			9920.20	-41.246	-27.38	-13.866	PASS
8DPSK	3-DH5	0	2398.98	-48.998	-21.7	-27.298	PASS
			2400.00	-50.130	-21.7	-28.430	PASS
			9608.10	-44.599	-21.7	-22.899	PASS
		39	9763.72	-43.300	-22.69	-20.610	PASS
		78	2483.50	-49.940	-23.33	-26.610	PASS
			9920.20	-40.332	-23.33	-17.002	PASS

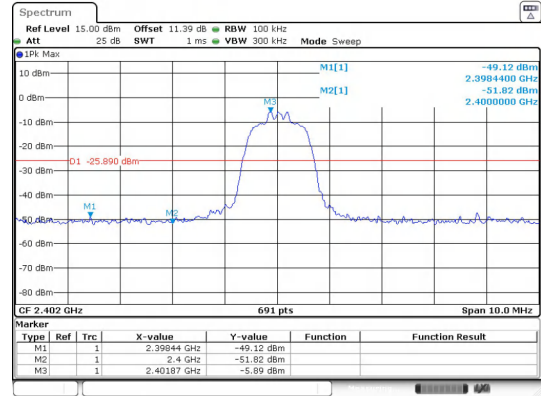
Hopping

Hopping							
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2395.20	-46.861	-25.81	-21.051	PASS
			2400.00	-48.430	-25.81	-22.620	PASS
			2483.50	-50.560	-27.49	-23.070	PASS
$\pi/4$ DQPSK	2-DH5		2398.36	-48.136	-25.71	-22.426	PASS
			2400.00	-50.230	-25.71	-24.520	PASS
			2483.50	-49.380	-27.49	-21.890	PASS
8DPSK	3-DH5		2396.89	-47.976	-22.44	-25.536	PASS
			2400.00	-49.560	-22.44	-27.120	PASS
			2483.50	-48.710	-25.37	-23.340	PASS

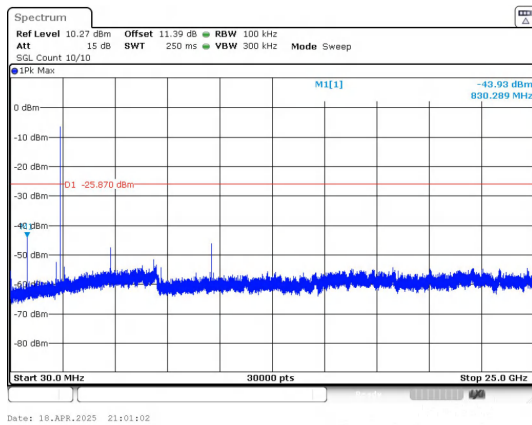
Test Graphs



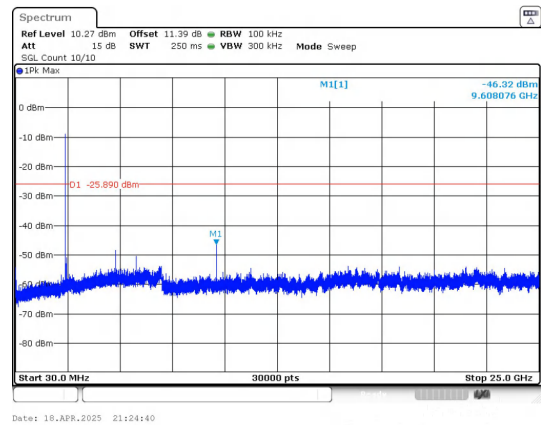
Out Of Band Emission
GFSK_DH5_Channel 0



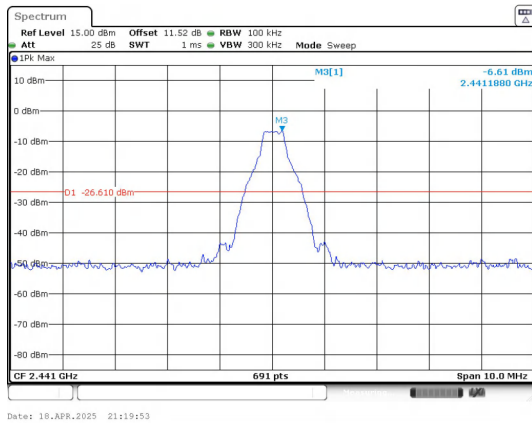
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0



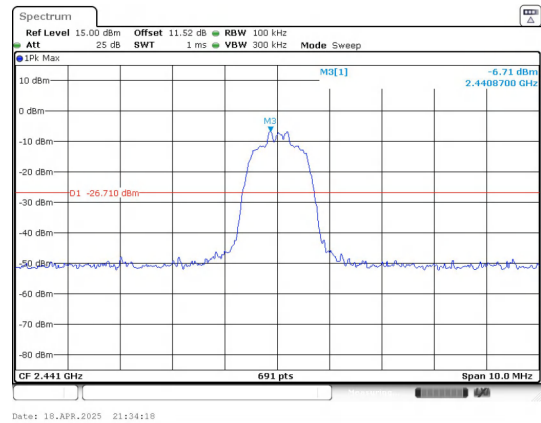
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



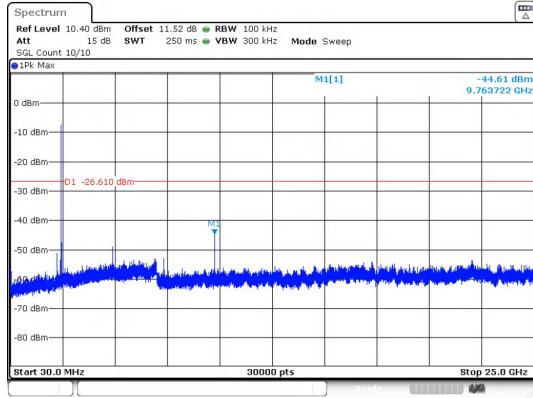
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 0



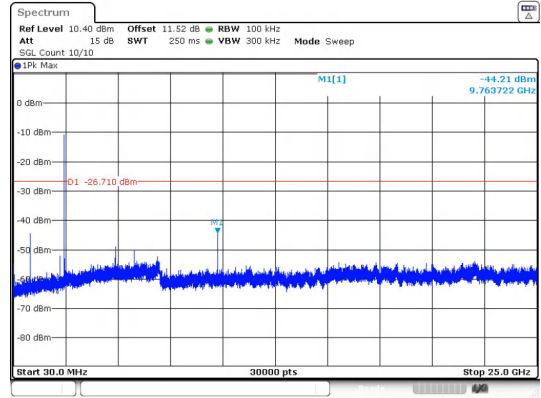
Out Of Band Emission
GFSK_DH5_Channel 39



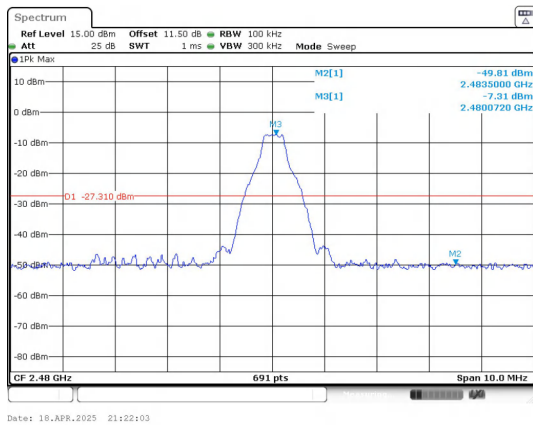
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39



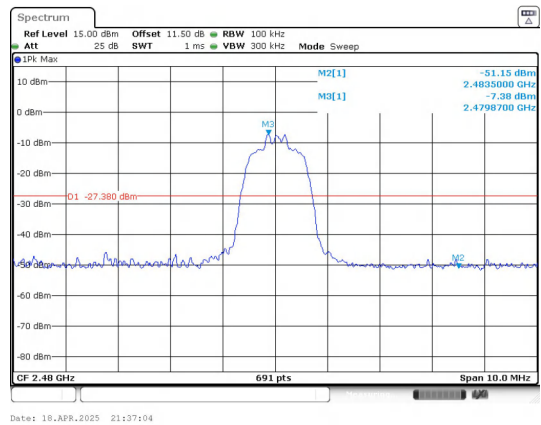
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



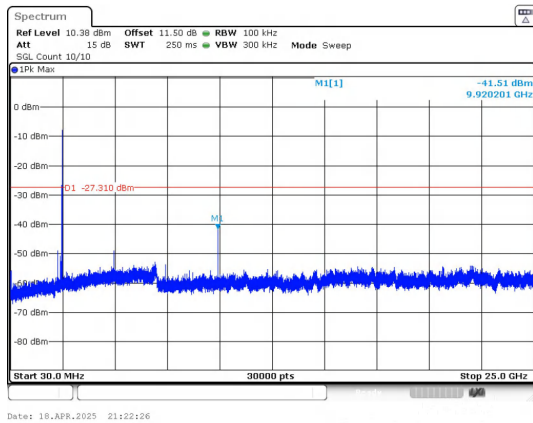
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



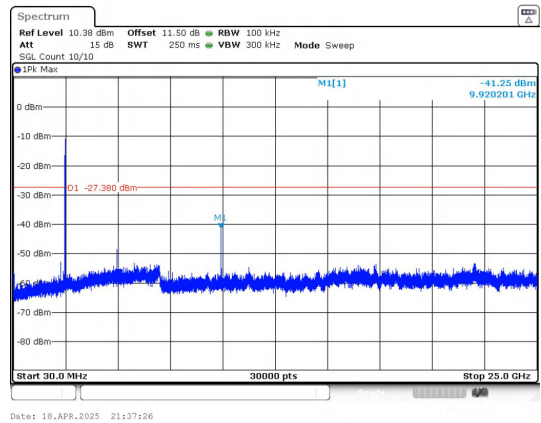
Out Of Band Emission
GFSK_DH5_Channel 78



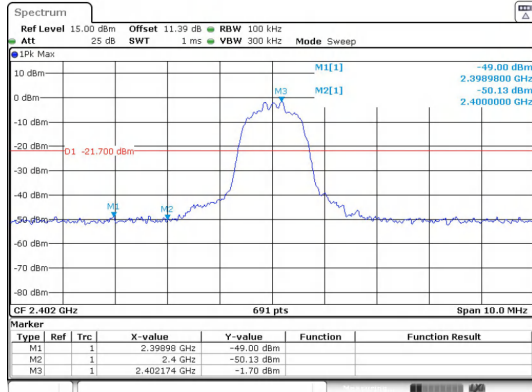
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78



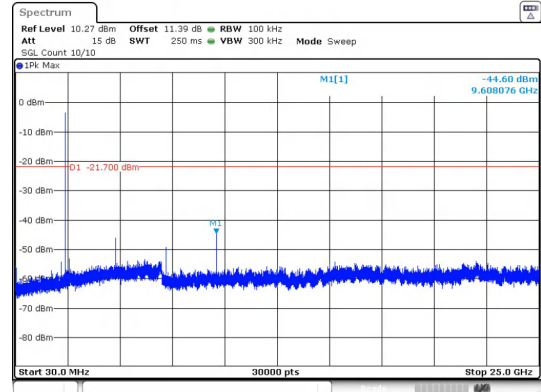
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



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



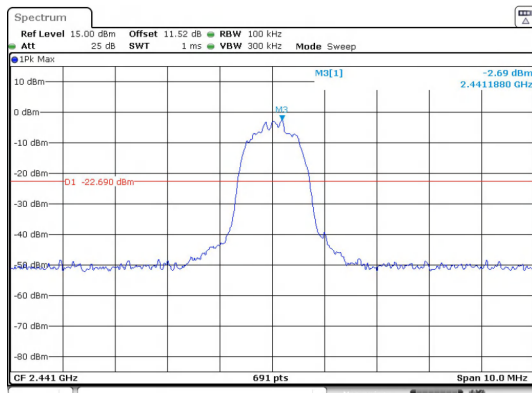
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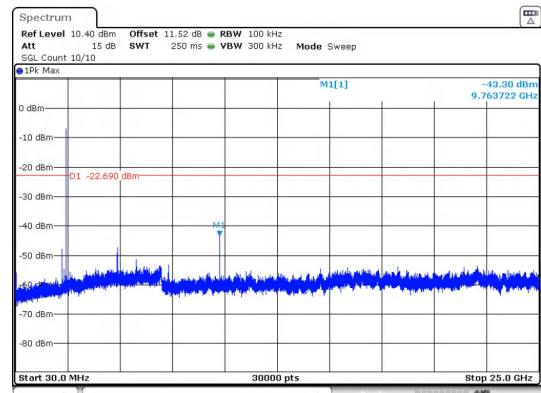
Date: 18.APR.2025 21:13:55

Out Of Band Emission
8DPSK_3-DH5_Channel 0

30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



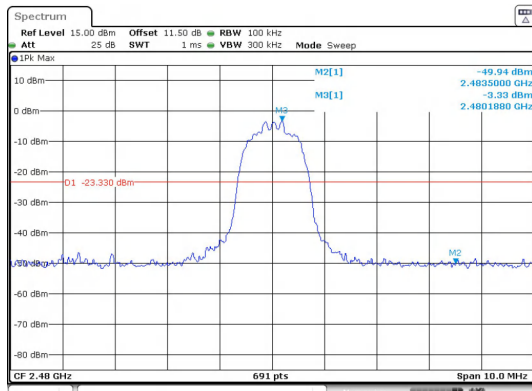
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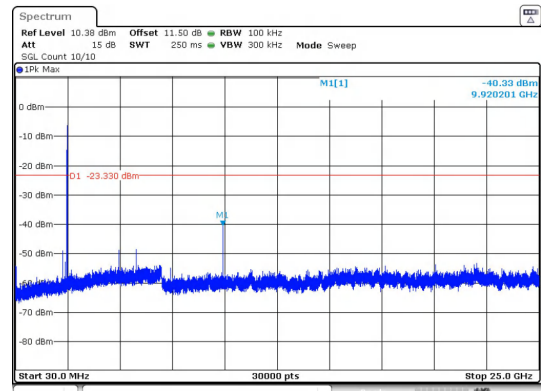
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Out Of Band Emission
8DPSK_3-DH5_Channel 39

30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



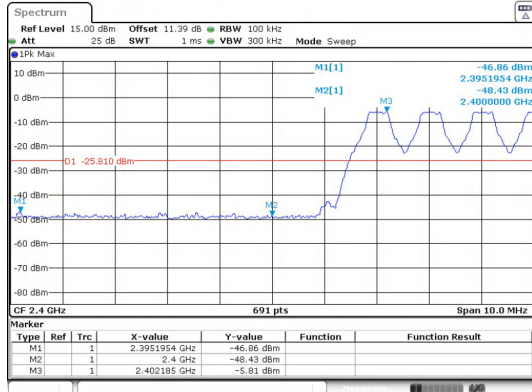
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Date: 18.APR.2025 21:51:57

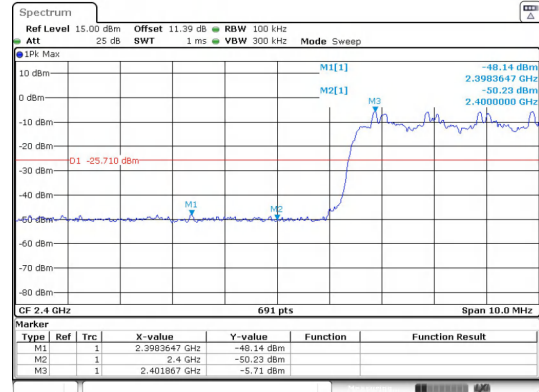
Out Of Band Emission
8DPSK_3-DH5_Channel 78

30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



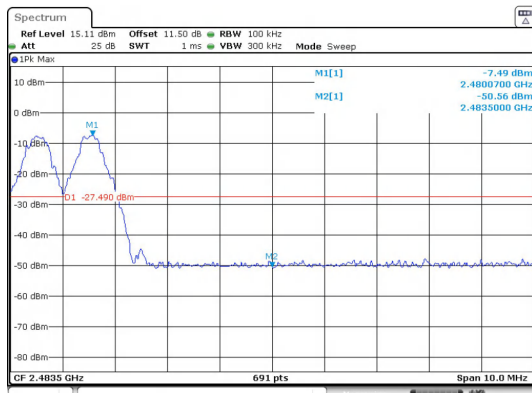
Date: 18.APR.2025 21:17:15

Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



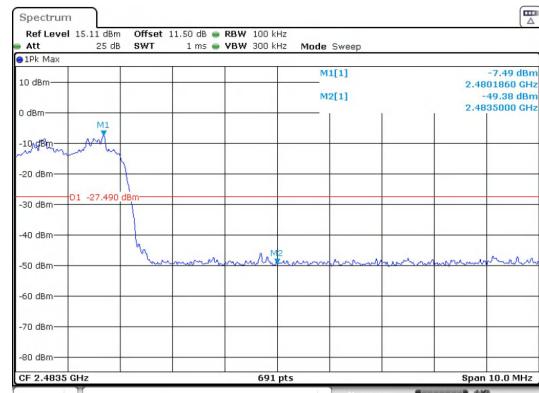
Date: 18.APR.2025 21:30:41

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



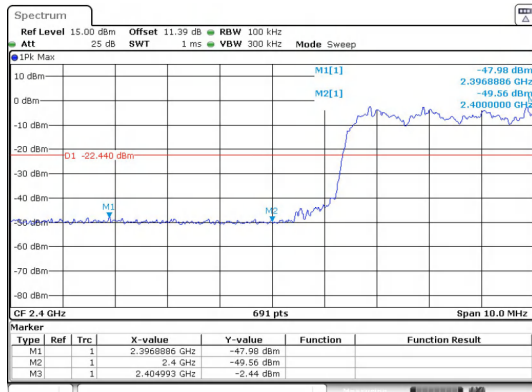
Date: 18.APR.2025 21:17:49

Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



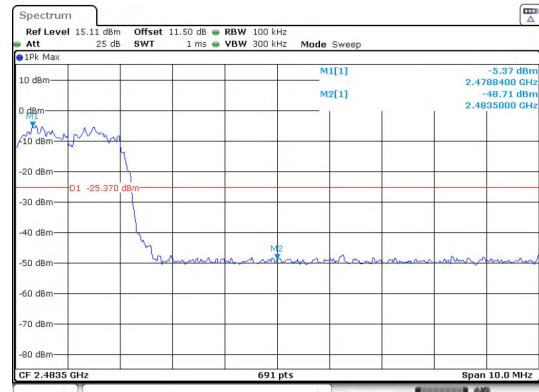
Date: 18.APR.2025 21:32:13

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



Date: 18.APR.2025 21:46:42

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



Date: 18.APR.2025 21:47:31

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

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