

Appendix Report

Report No.:	CISRR25022815205
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

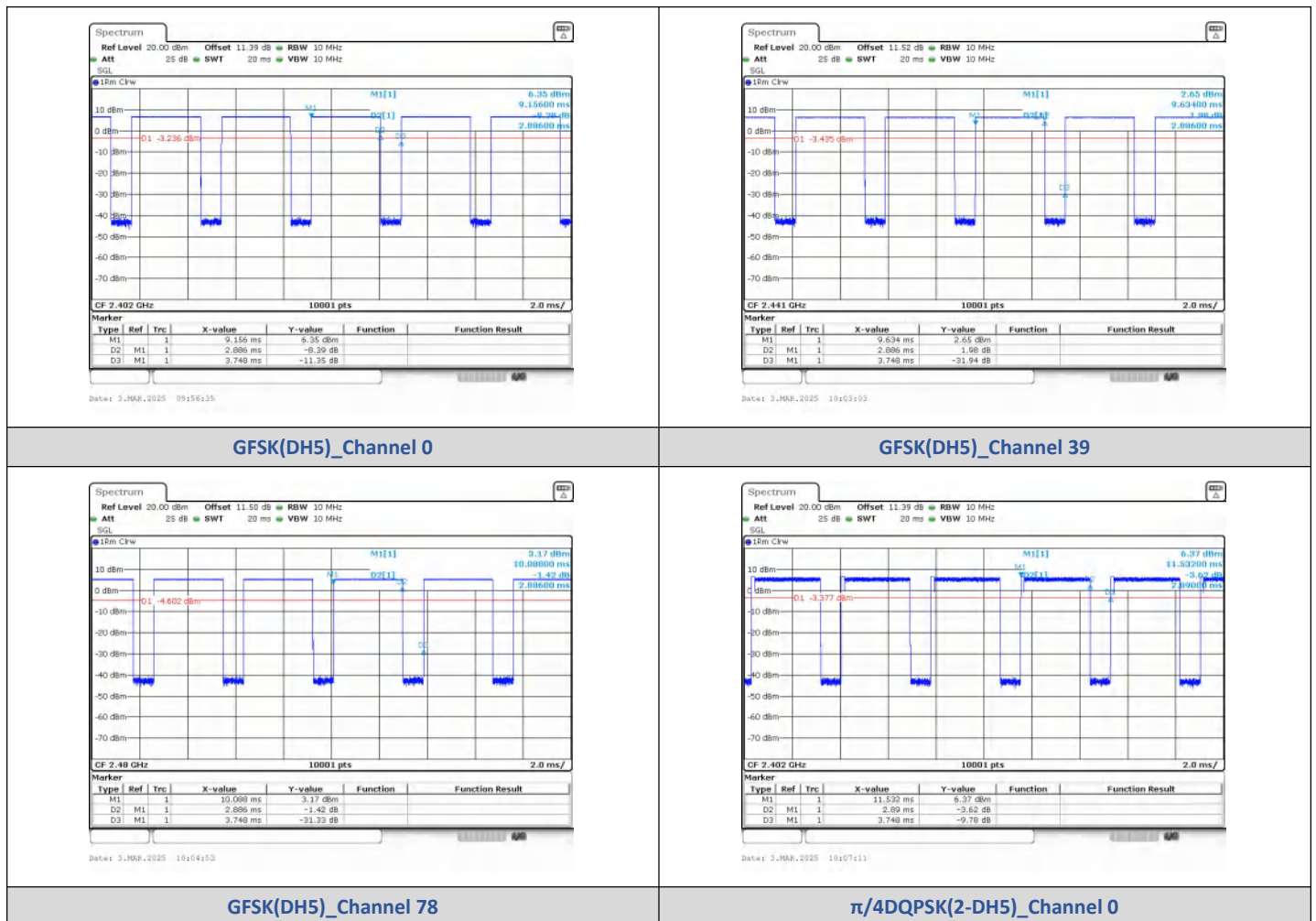
1) Duty Cycle

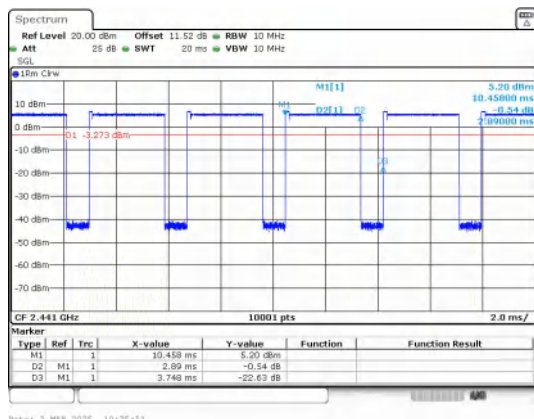
Test Result

Left:

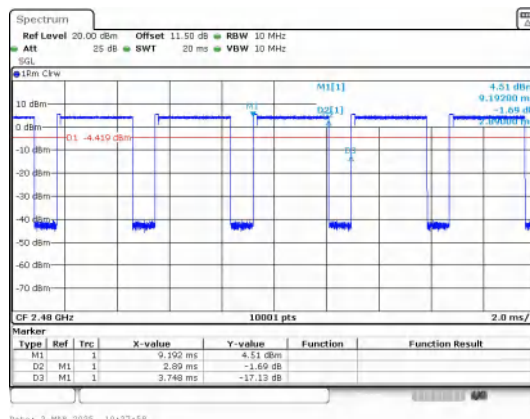
Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.886	3.748	77.00	0.7700	1.1351	0.3465
		39	2.886	3.748	77.00	0.7700	1.1351	0.3465
		78	2.886	3.748	77.00	0.7700	1.1351	0.3465
$\pi/4$ DQPSK	2-DH5	0	2.890	3.748	77.11	0.7711	1.1289	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	2.894	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

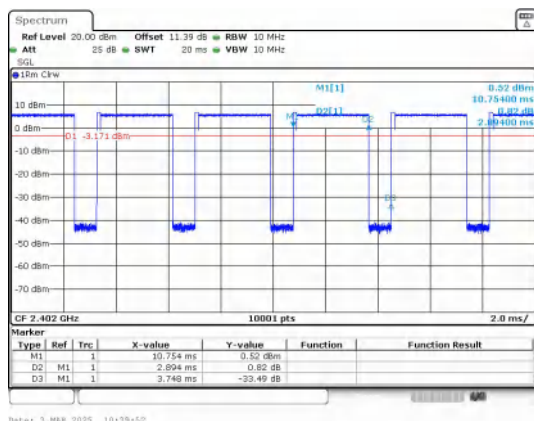




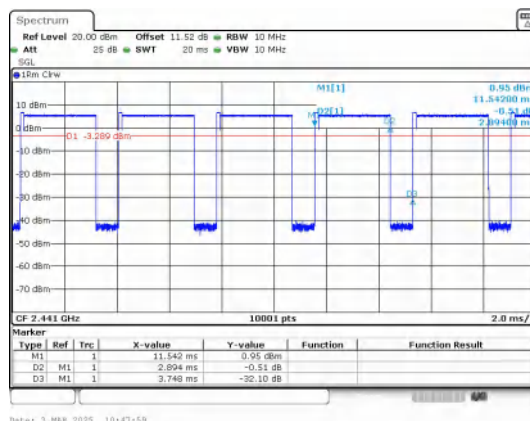
$\pi/4$ DQPSK(2-DH5)_Channel 39



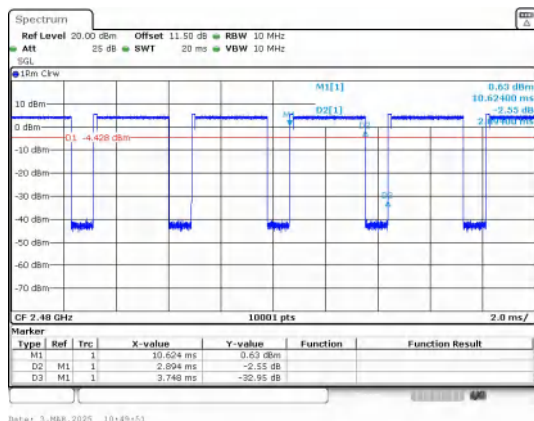
$\pi/4$ DQPSK(2-DH5)_Channel 78



8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39



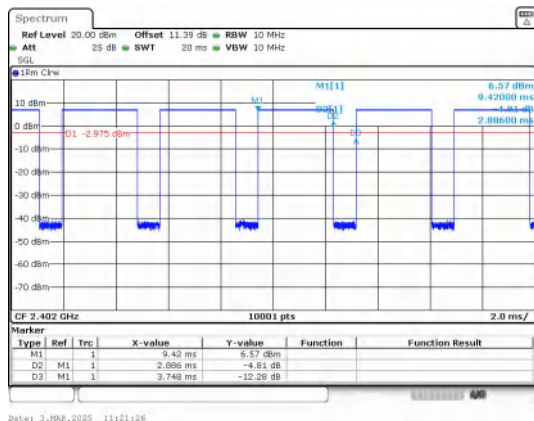
8DPSK(3-DH5)_Channel 78

Right:

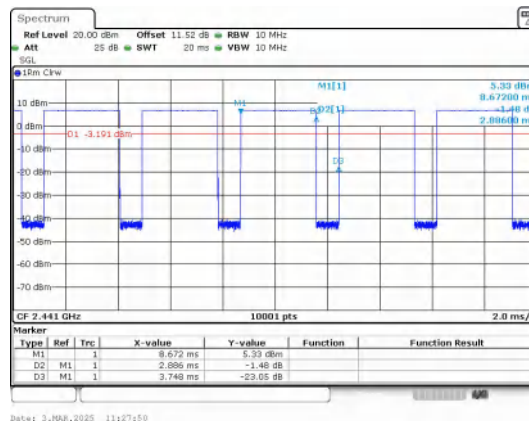
Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.886	3.748	77.00	0.7700	1.1351	0.3465
		39	2.886	3.748	77.00	0.7700	1.1351	0.3465
		78	2.886	3.748	77.00	0.7700	1.1351	0.3465
$\pi/4$ DQPSK	2-DH5	0	2.890	3.748	77.11	0.7711	1.1289	0.3460
		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

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

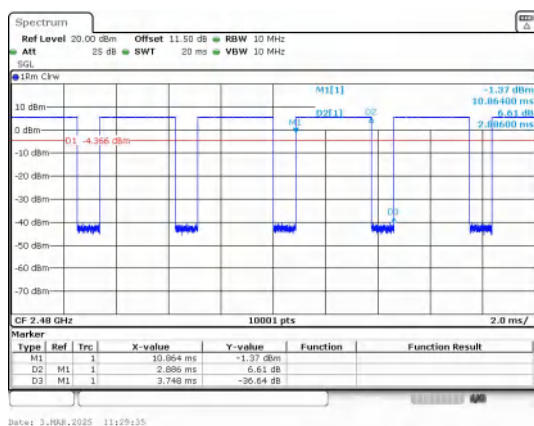
Test Graphs



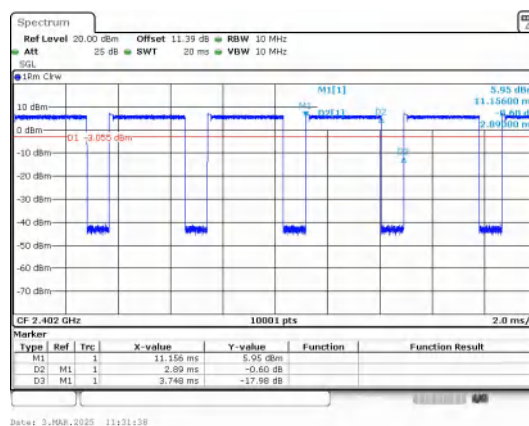
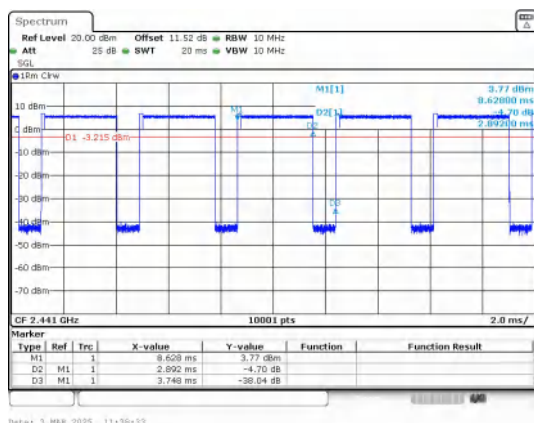
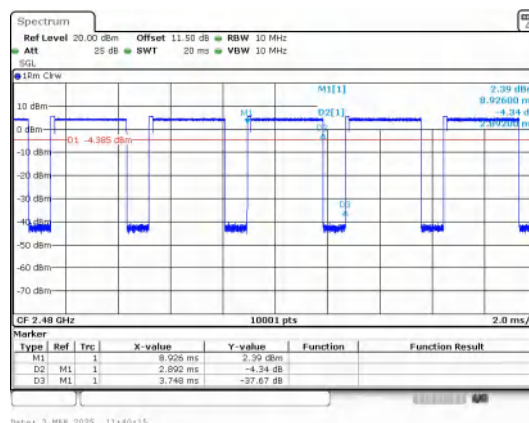
GFSK(DH5)_Channel 0

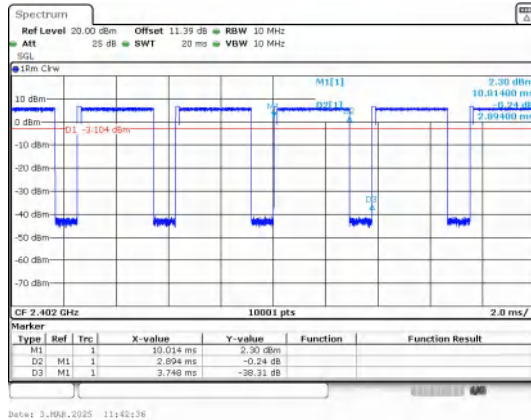


GFSK(DH5)_Channel 39

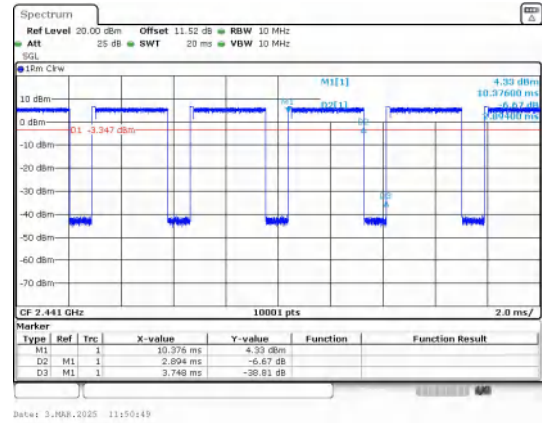


GFSK(DH5)_Channel 78

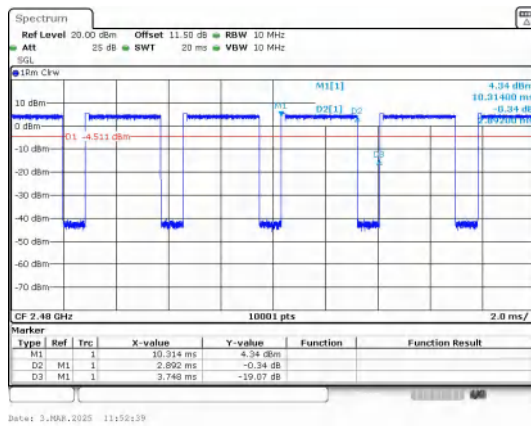

 $\pi/4$ DQPSK(2-DH5)_Channel 0

 $\pi/4$ 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

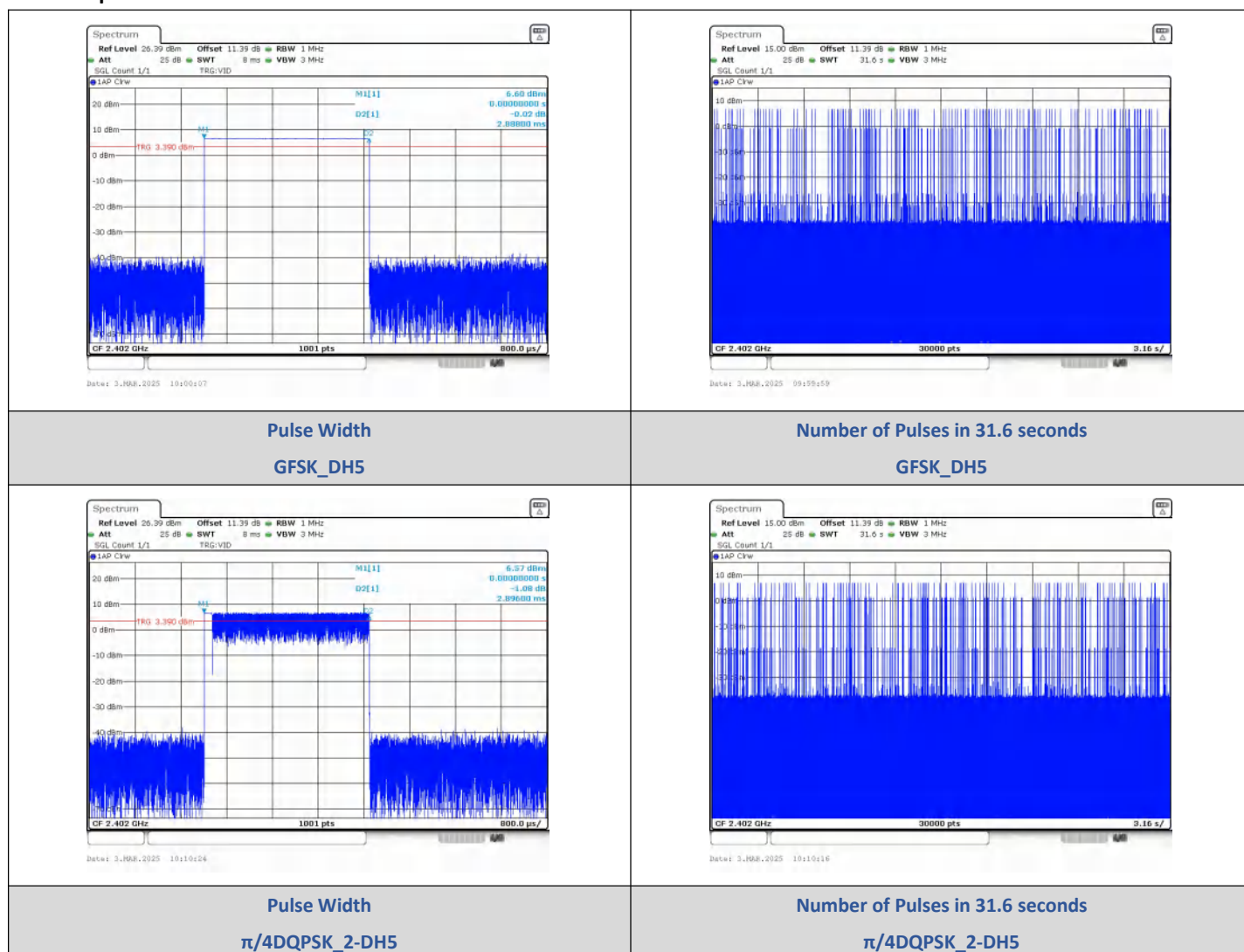
2) Dwell Time

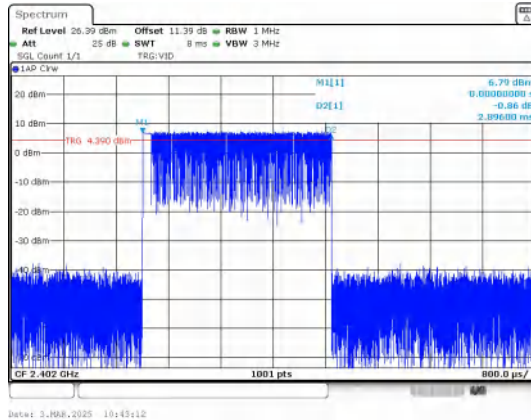
Test Result

Left:

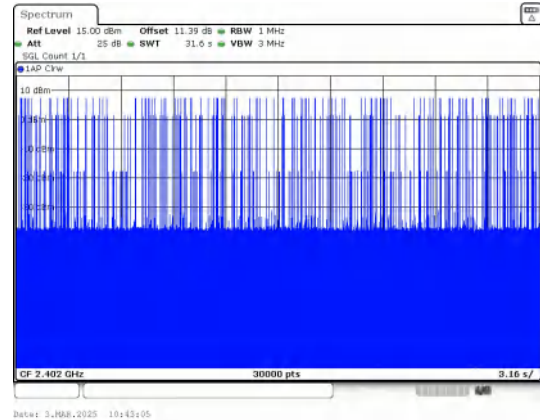
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.888	116	335.01	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.896	110	318.56		PASS
8DPSK	3-DH5		2.896	117	338.83		PASS

Test Graphs





Pulse Width
8DPSK_3-DH5

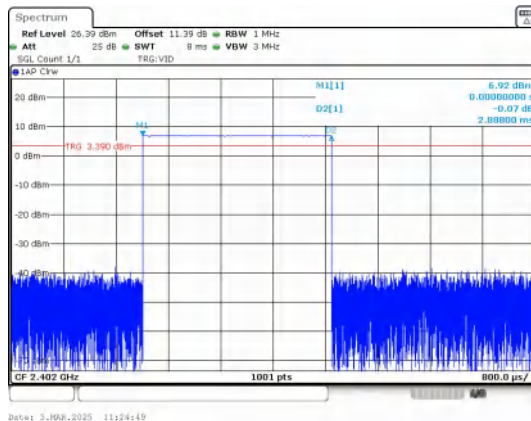


Number of Pulses in 31.6 seconds
8DPSK_3-DH5

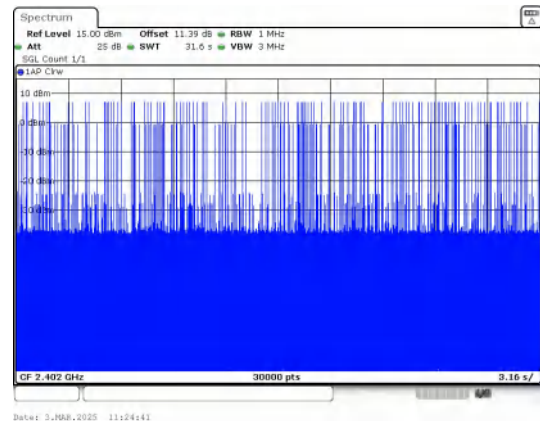
Right:

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	114	329.23	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.888	117	337.9		PASS
8DPSK	3-DH5		2.896	117	338.83		PASS

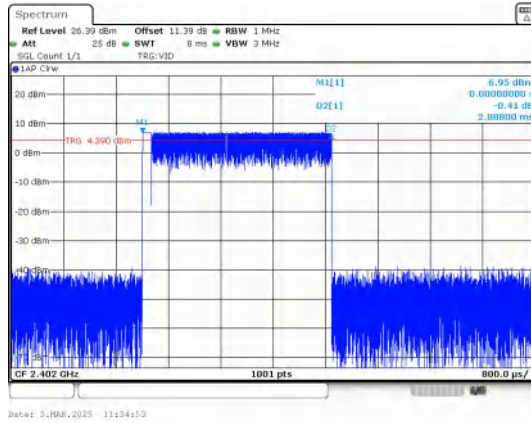
Test Graphs



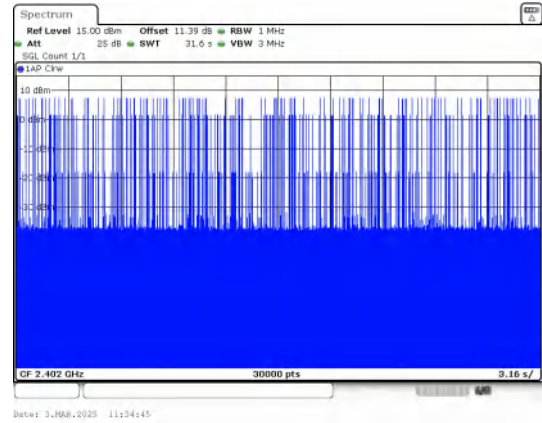
Pulse Width
GFSK_DH5



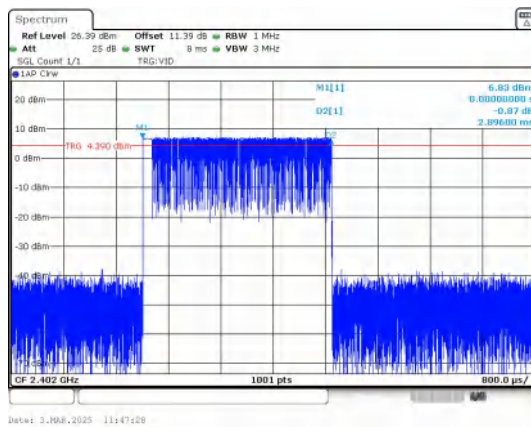
Number of Pulses in 31.6 seconds
GFSK_DH5



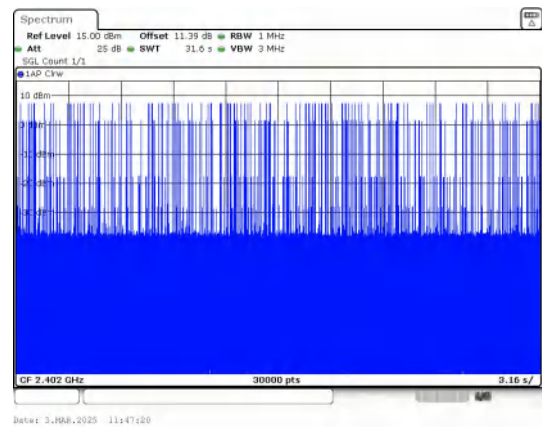
Pulse Width
 $\pi/4$ DQPSK_2-DH5



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

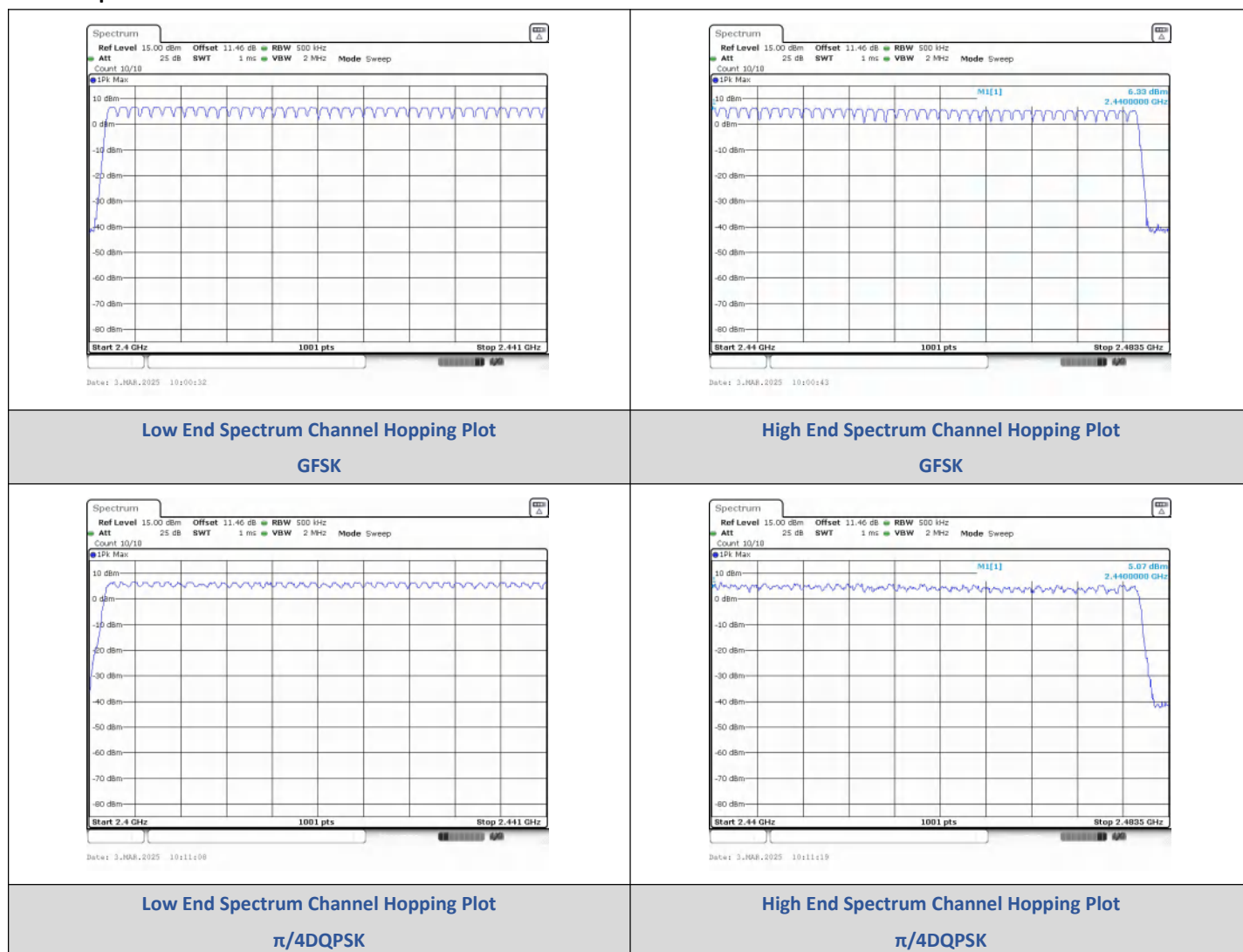
3) Number Of Hopping Channel

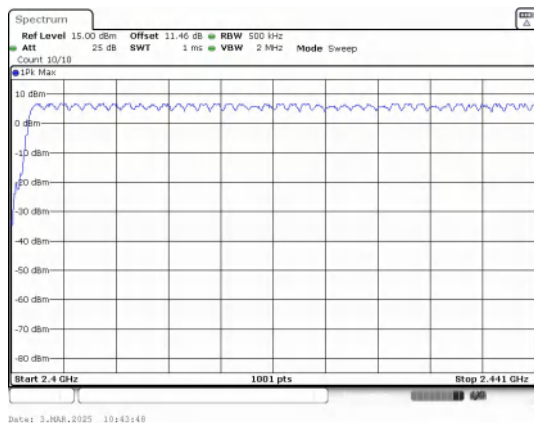
Test Result

Left:

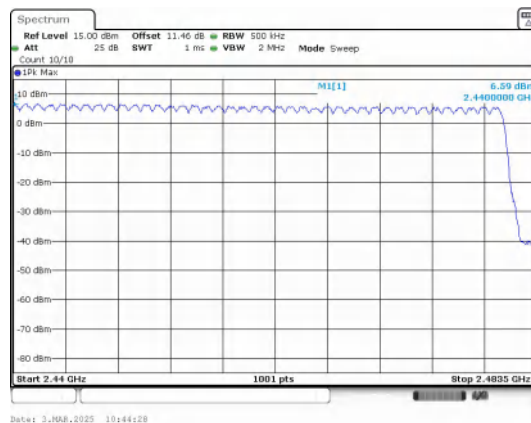
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK

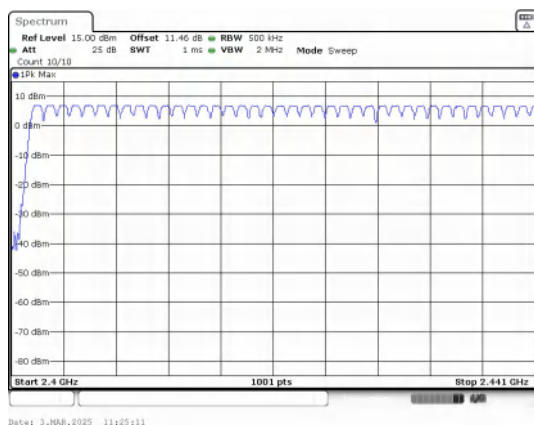


High End Spectrum Channel Hopping Plot
8DPSK

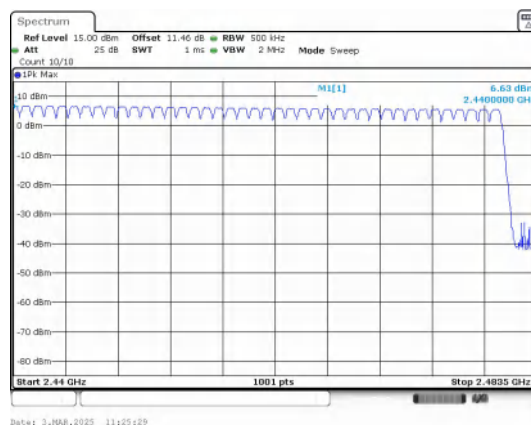
Right:

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

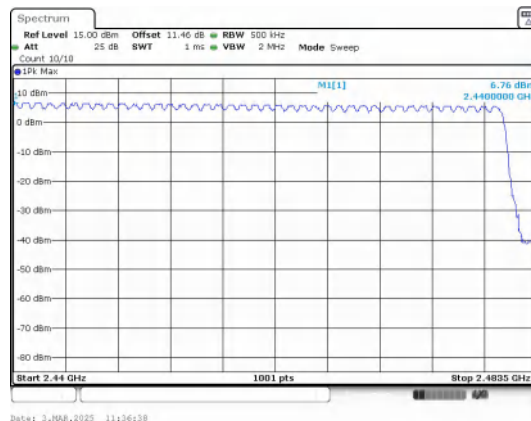
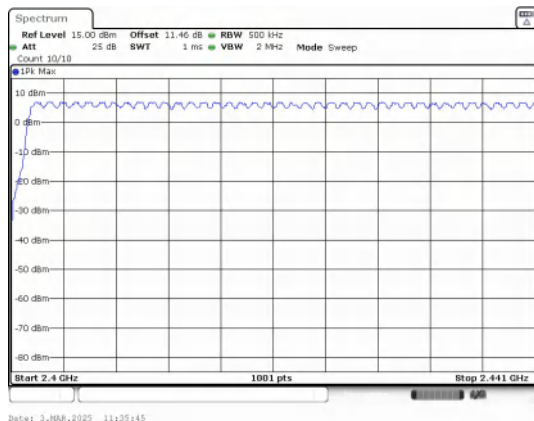
Test Graphs

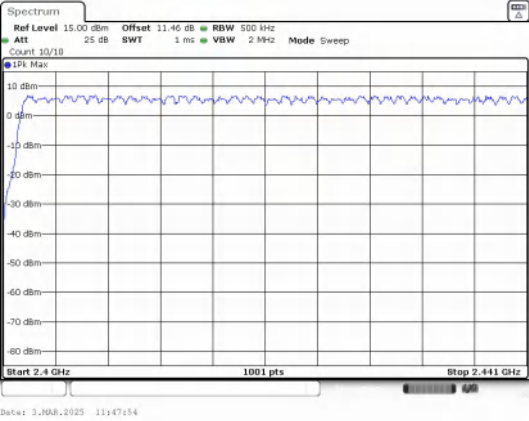
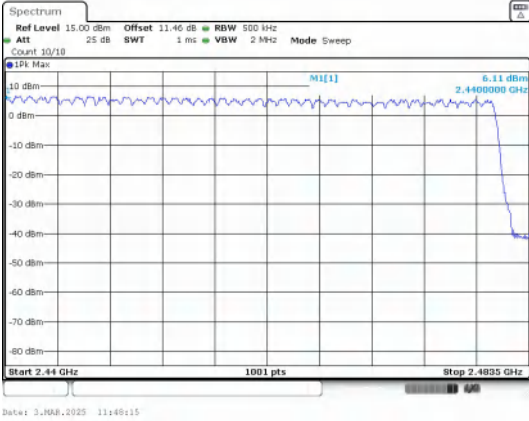


Low End Spectrum Channel Hopping Plot
GFSK



High End Spectrum Channel Hopping Plot
GFSK



Low End Spectrum Channel Hopping Plot $\pi/4$DQPSK 	High End Spectrum Channel Hopping Plot $\pi/4$DQPSK 
Low End Spectrum Channel Hopping Plot 8DPSK	High End Spectrum Channel Hopping Plot 8DPSK

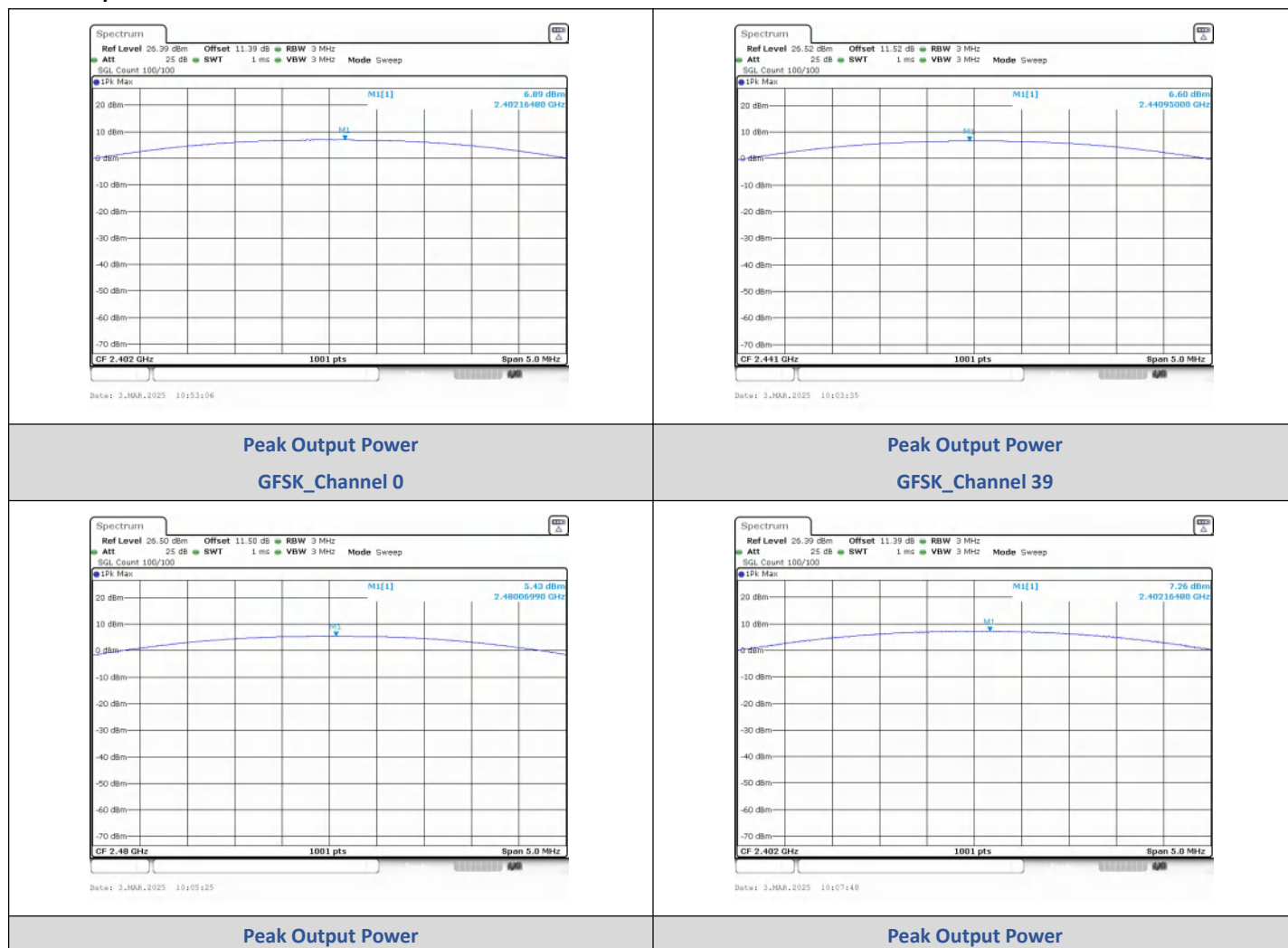
4) Conducted Peak Output Power

Test Result

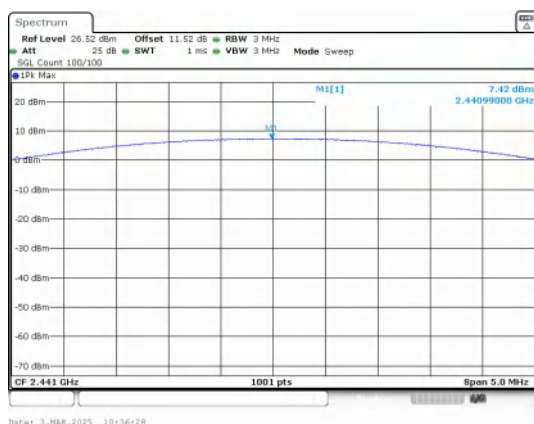
Left:

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	6.89	4.89	≤30	PASS
		39	6.60	4.57		PASS
		78	5.43	3.49		PASS
$\pi/4$ DQPSK	2-DH5	0	7.26	5.32	≤20.97	PASS
		39	7.42	5.52		PASS
		78	6.28	4.25		PASS
8DPSK	3-DH5	0	7.71	5.90		PASS
		39	7.64	5.81		PASS
		78	6.53	4.50		PASS

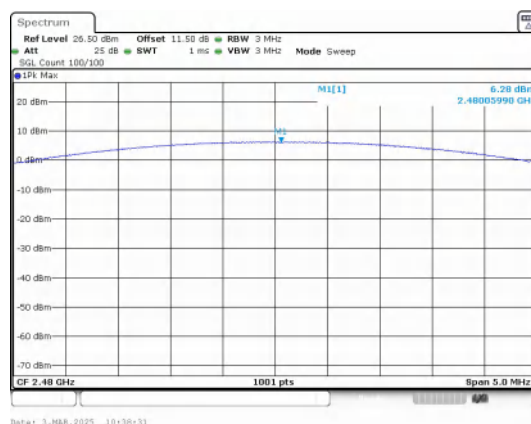
Test Graphs



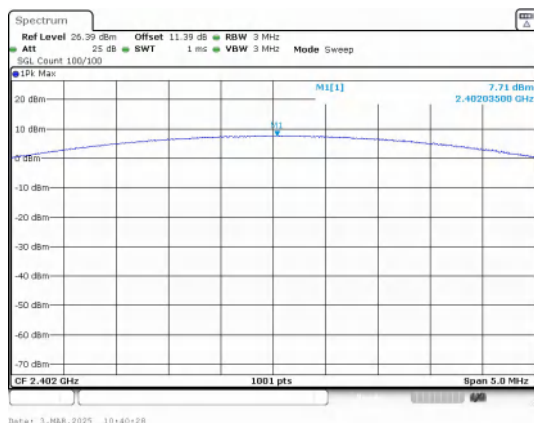
GFSK_Channel 78



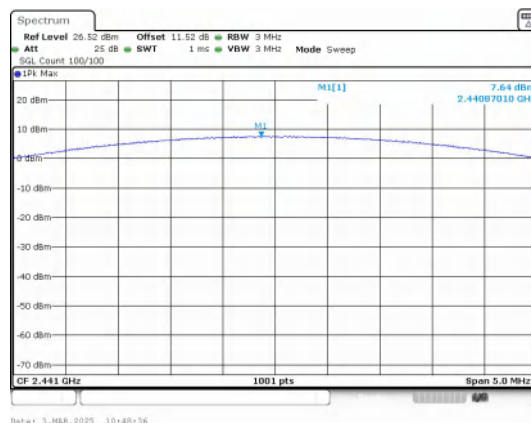
π /4DQPSK_Channel 0



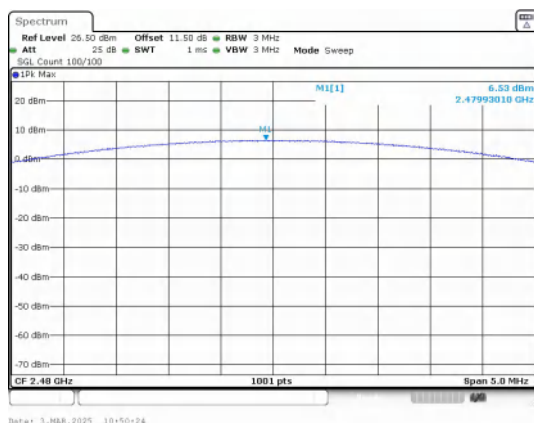
Peak Output Power
 π /4DQPSK_Channel 39



Peak Output Power
 π /4DQPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



Peak Output Power
8DPSK_Channel 39

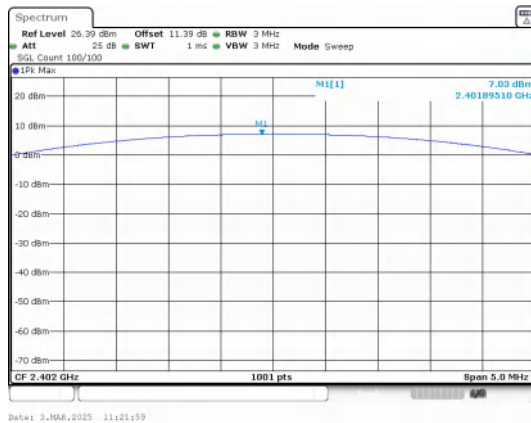
Peak Output Power
8DPSK_Channel 78

Right:

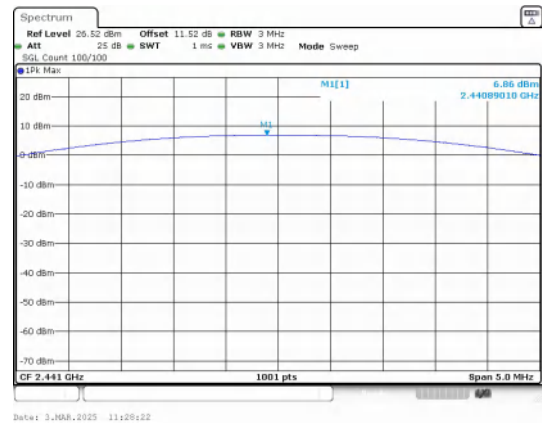
Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	7.03	5.05	≤30	PASS

		39	6.86	4.85		PASS
		78	5.69	3.71		PASS
		0	7.56	5.70		PASS
$\pi/4$ DQPSK	2-DH5	39	7.48	5.60	≤ 20.97	PASS
		78	6.32	4.29		PASS
		0	7.71	5.90		PASS
8DPSK	3-DH5	39	7.54	5.68		PASS
		78	6.43	4.40		PASS
						PASS

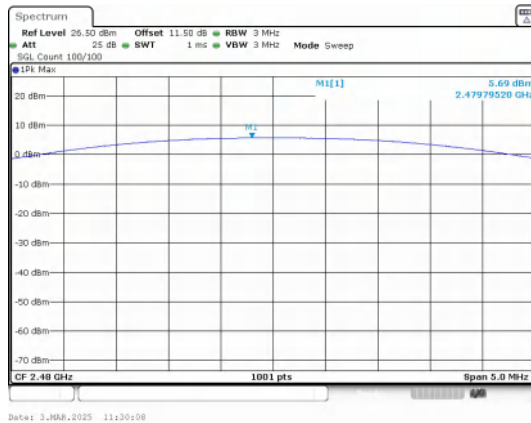
Test Graphs



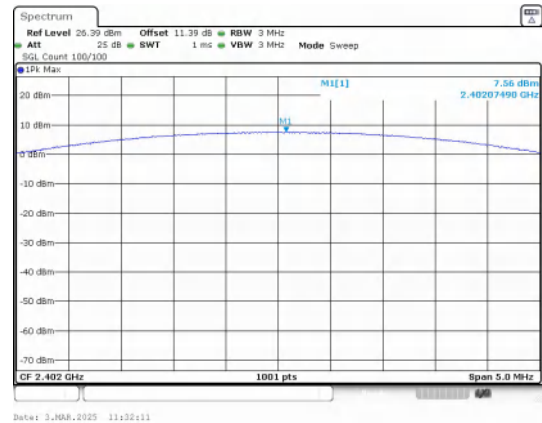
Peak Output Power
GFSK_Channel 0



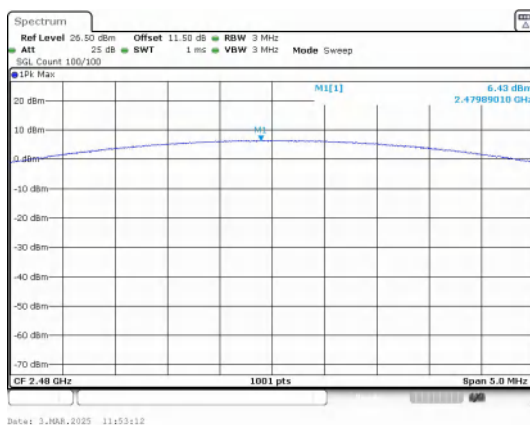
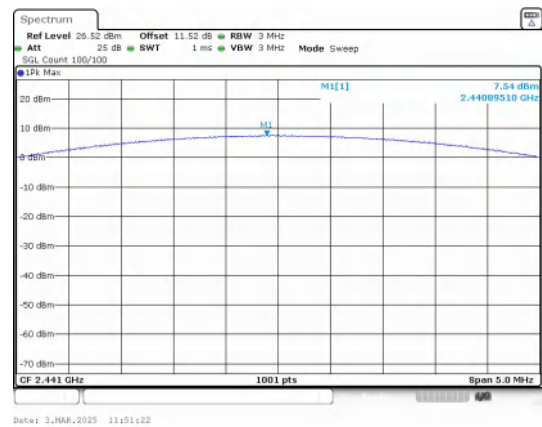
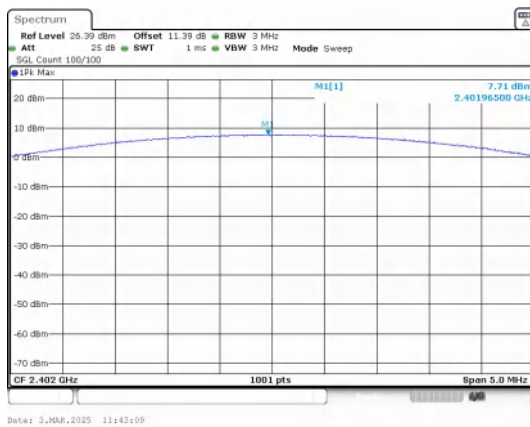
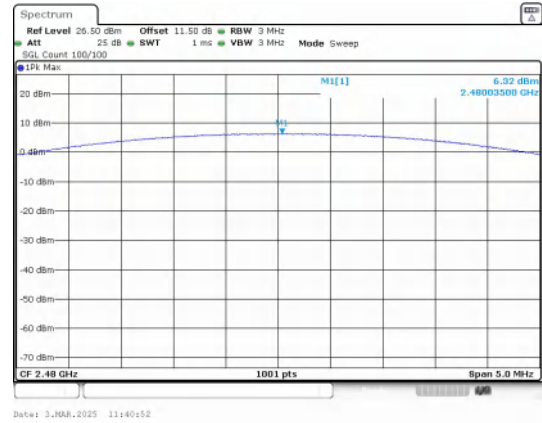
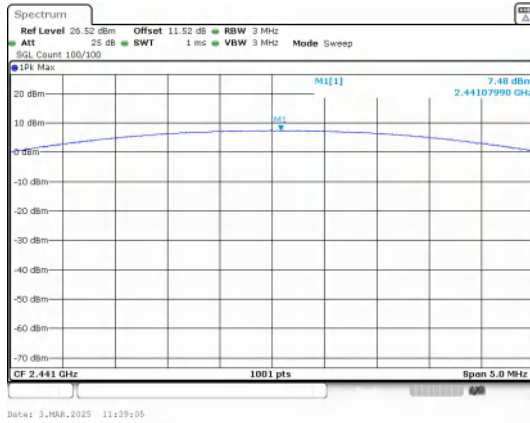
Peak Output Power
GFSK_Channel 39



Peak Output Power
GFSK_Channel 78



Peak Output Power
 $\pi/4$ DQPSK_Channel 0



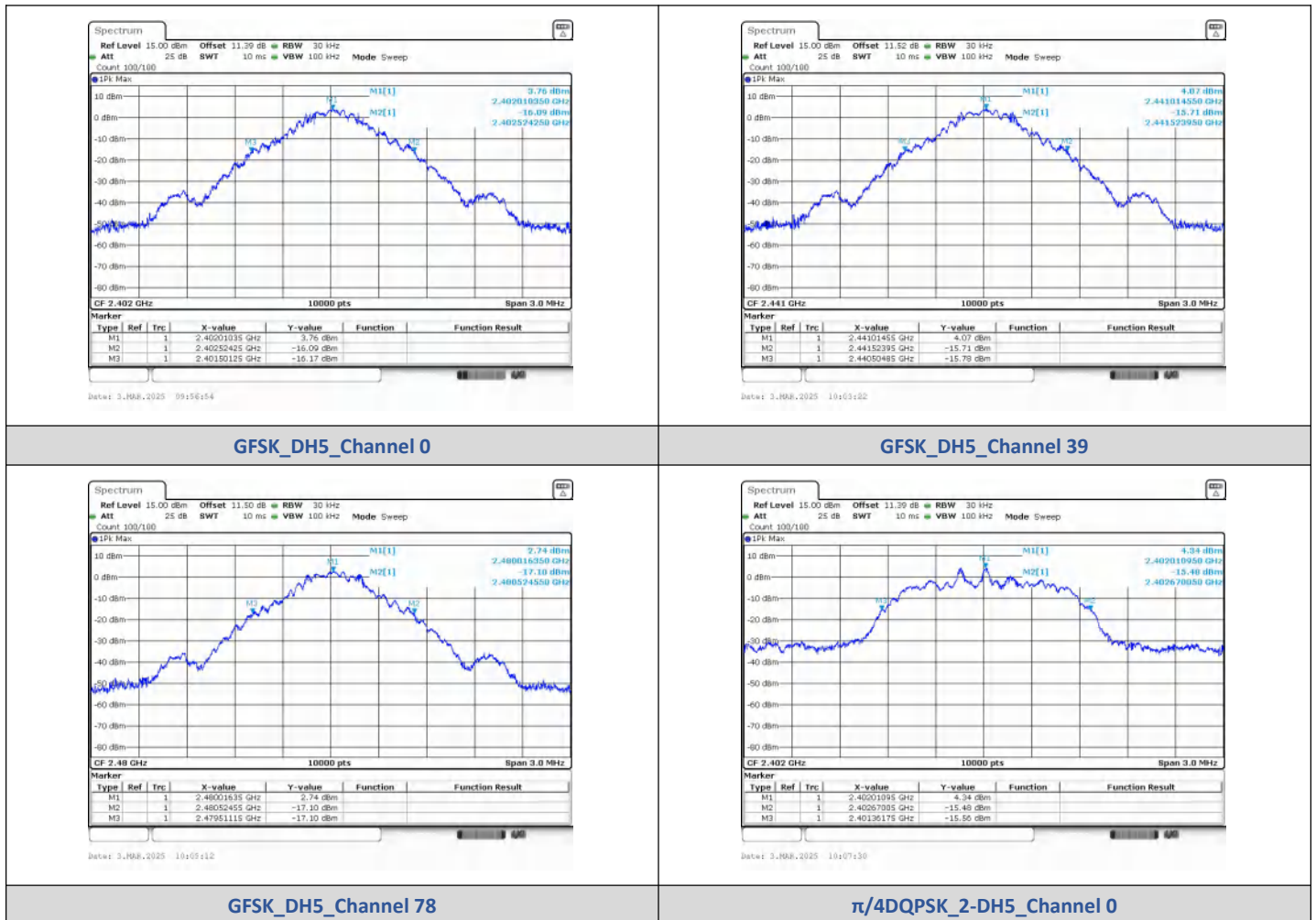
5) 20dB Bandwidth

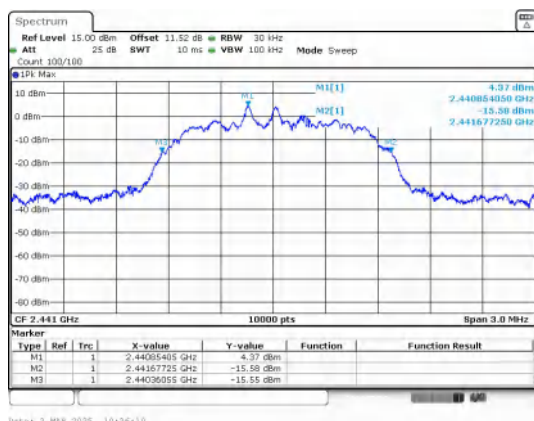
Test Result

Left:

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

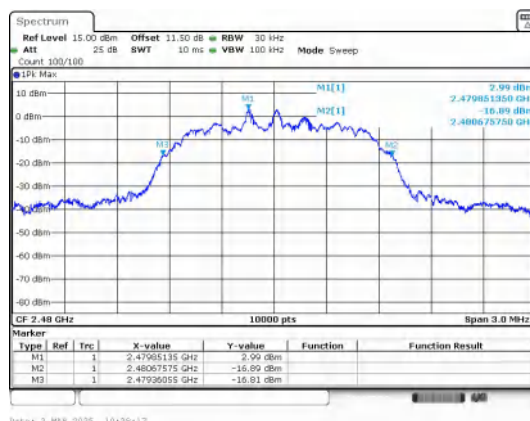
Test Graphs





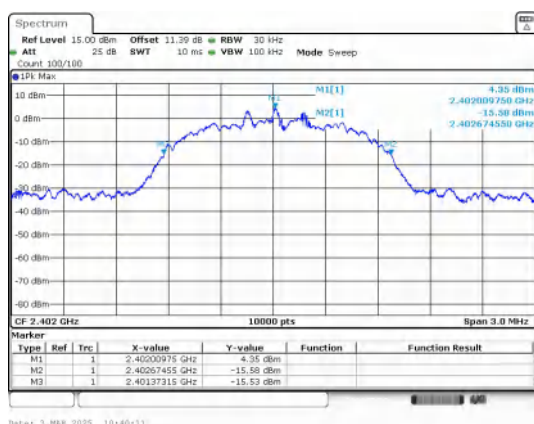
Date: 3.09.2025 10:36:10

$\pi/4$ DQPSK_2-DH5_Channel 39



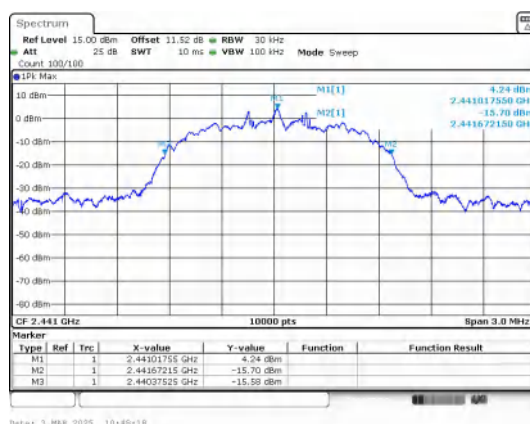
Date: 3.09.2025 10:36:17

$\pi/4$ DQPSK_2-DH5_Channel 78



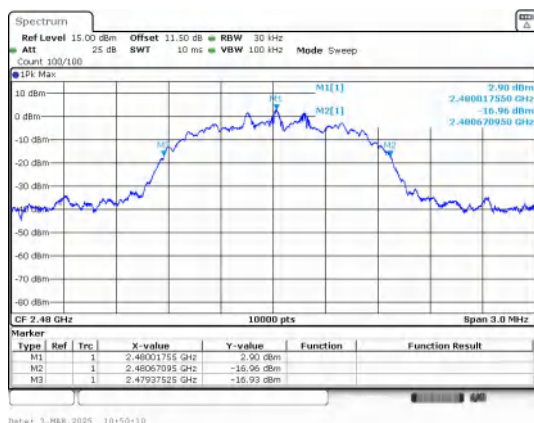
Date: 3.09.2025 10:40:11

8DPSK_3-DH5_Channel 0



Date: 3.09.2025 10:40:18

8DPSK_3-DH5_Channel 39



Date: 3.09.2025 10:50:10

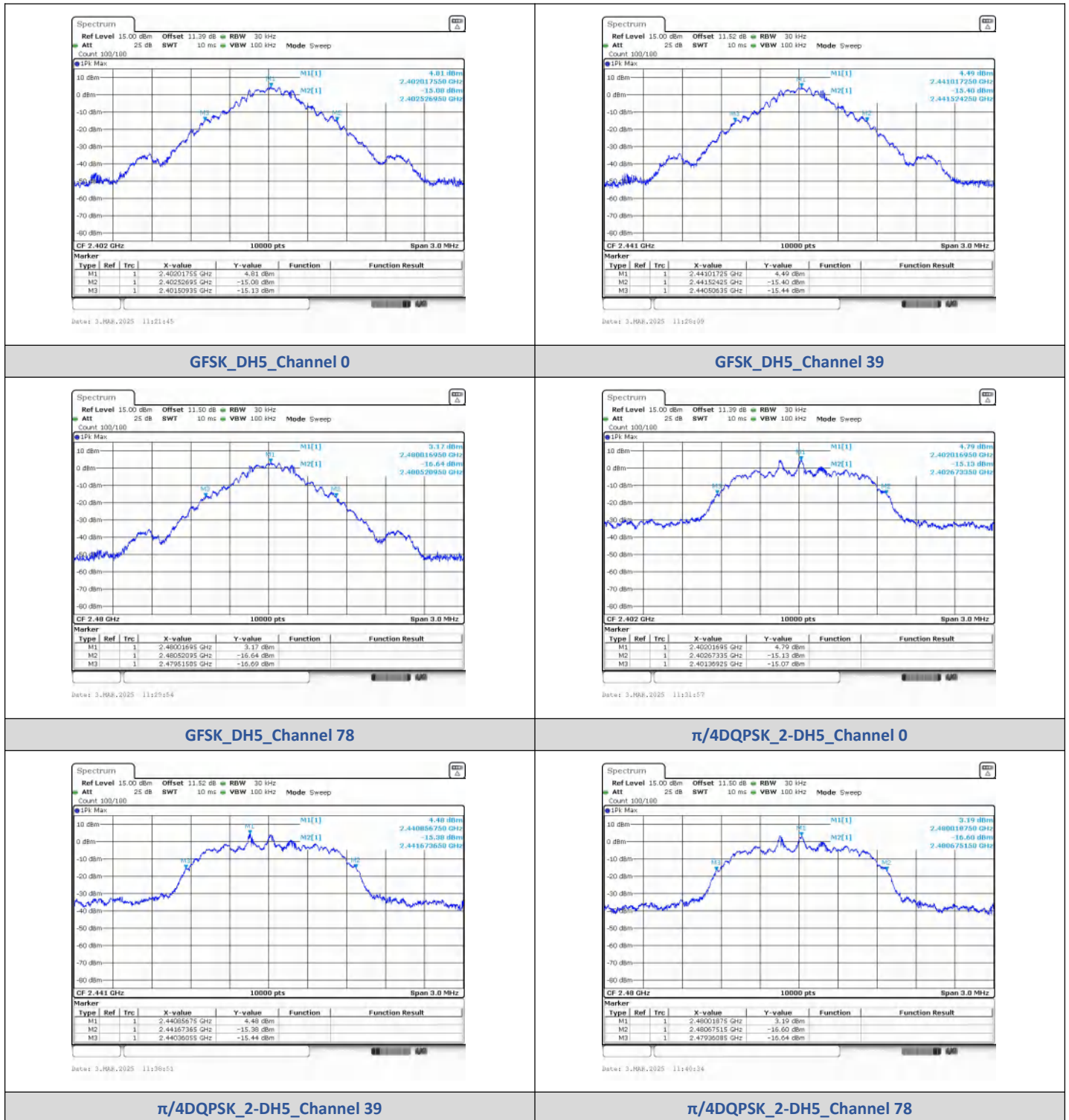
8DPSK_3-DH5_Channel 78

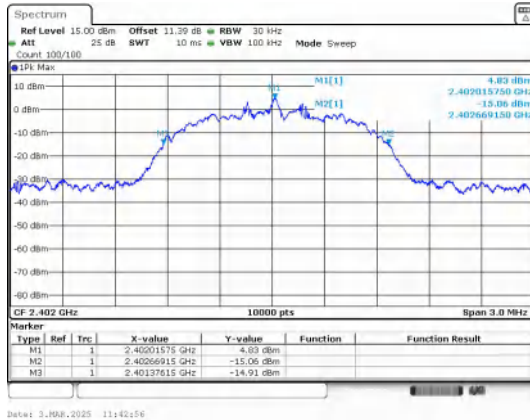
Right:

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	1.300
	39	2441 MHz	1.310
	78	2480 MHz	1.320

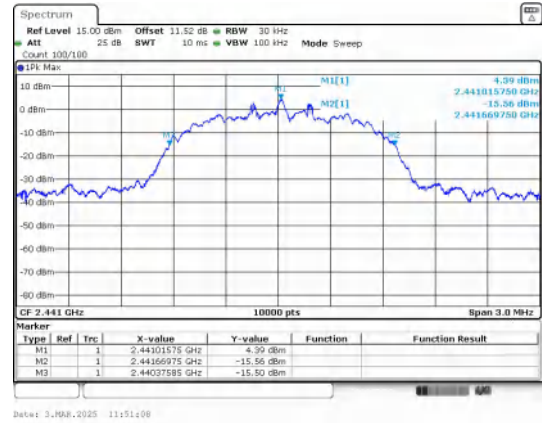
8DPSK	0	2402 MHz	1.290
	39	2441 MHz	1.290
	78	2480 MHz	1.290

Test Graphs

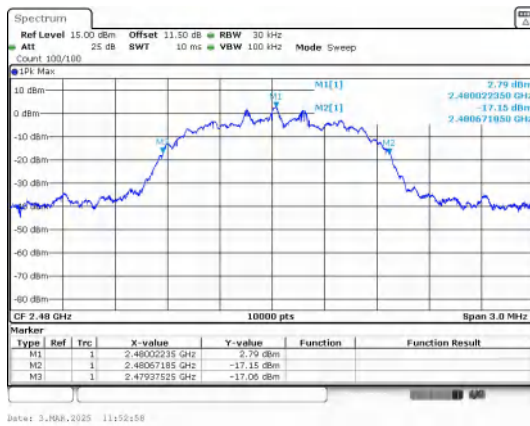




8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



8DPSK_3-DH5_Channel 78

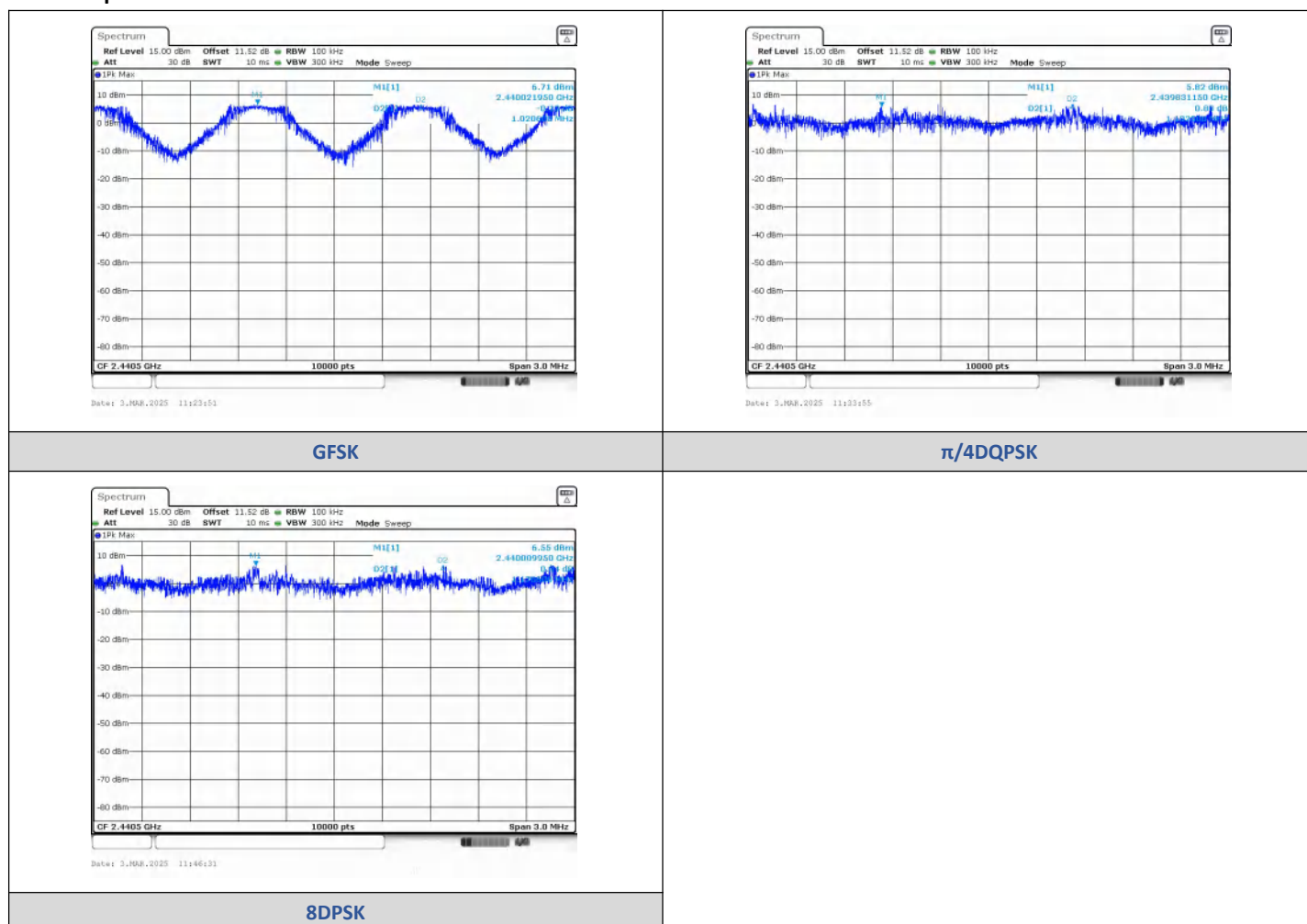
6) Carrier Frequencies Separation

Test Result

Left:

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2440.0219	2441.0426	1.0206	1.02	PASS
$\pi/4$ DQPSK	2-DH5	2439.8311	2441.0237	1.1925	0.867	PASS
8DPSK	3-DH5	2440.01	2441.1806	1.1706	0.86	PASS

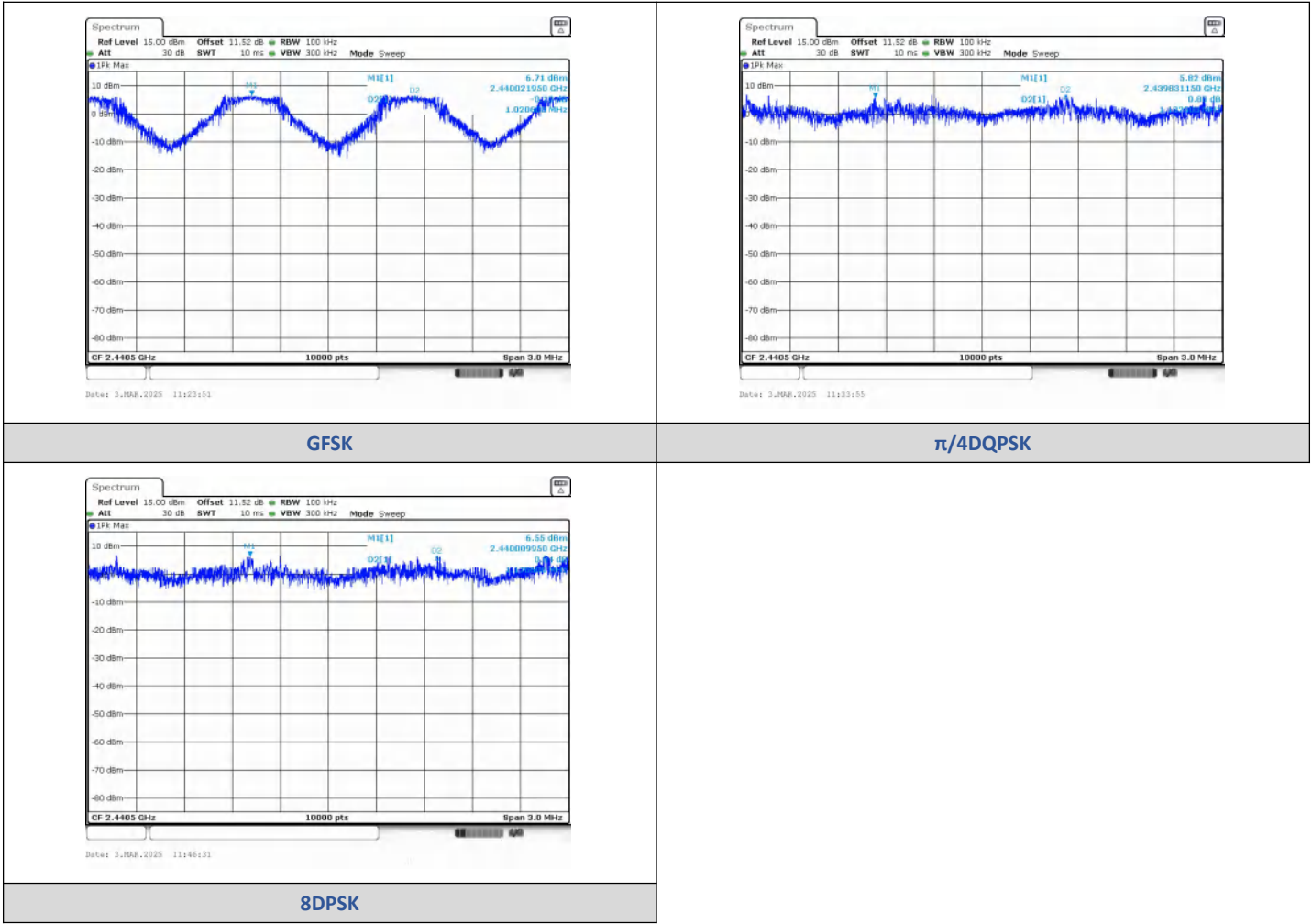
Test Graphs



Right:

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2440.0219	2441.0426	1.0206	1.02	PASS
$\pi/4$ DQPSK	2-DH5	2439.8311	2441.0237	1.1925	0.867	PASS
8DPSK	3-DH5	2440.01	2441.1806	1.1706	0.86	PASS

Test Graphs



7) Conducted Out Of Band Emission

Test Result

Left:

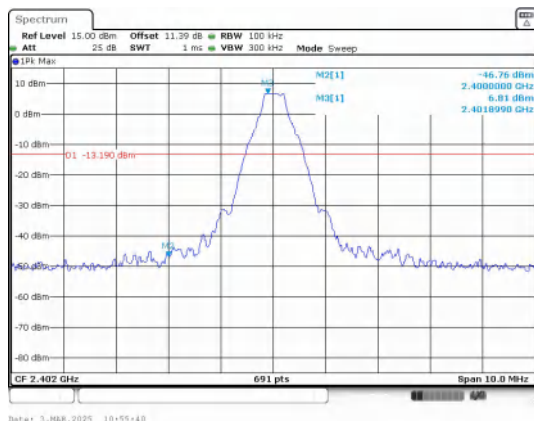
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-46.760	-13.19	-33.570	PASS
			7205.96	-36.973	-13.19	-23.783	PASS
		39	4882.09	-39.141	-13.55	-25.591	PASS
		78	2483.50	-49.260	-14.72	-34.540	PASS
			9920.20	-37.633	-14.72	-22.913	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-44.250	-13.42	-30.830	PASS
			7206.79	-40.607	-13.42	-27.187	PASS
		39	9763.72	-40.611	-13.36	-27.251	PASS
		78	2483.50	-48.950	-14.54	-34.410	PASS
			9920.20	-37.240	-14.54	-22.700	PASS
8DPSK	3-DH5	0	2400.00	-44.300	-13.15	-31.150	PASS
			9608.08	-42.143	-13.15	-28.993	PASS
		39	5825.95	-39.731	-13.39	-26.341	PASS
		78	2483.50	-49.720	-14.6	-35.120	PASS
			9920.20	-37.163	-14.6	-22.563	PASS

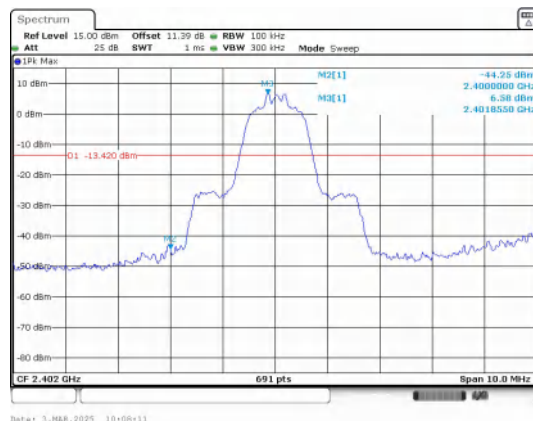
Hopping

Hopping							
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2396.22	-48.551	-13.44	-35.111	PASS
			2400.00	-49.760	-13.44	-36.320	PASS
			2483.50	-49.640	-14.58	-35.060	PASS
$\pi/4$ DQPSK	2-DH5		2400.00	-43.480	-13.78	-29.700	PASS
			2483.50	-50.560	-17.32	-33.240	PASS
8DPSK	3-DH5		2400.00	-47.470	-13.27	-34.200	PASS
			2483.50	-48.990	-14.62	-34.370	PASS

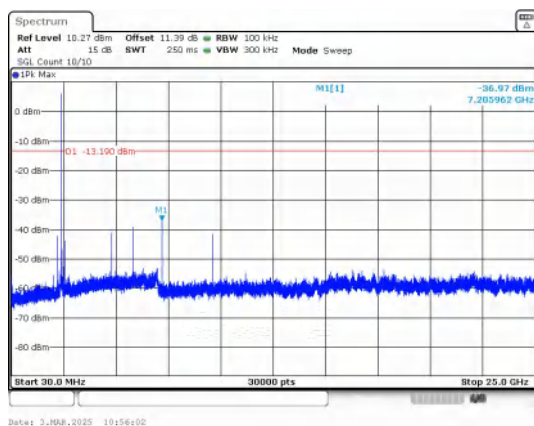
Test Graphs



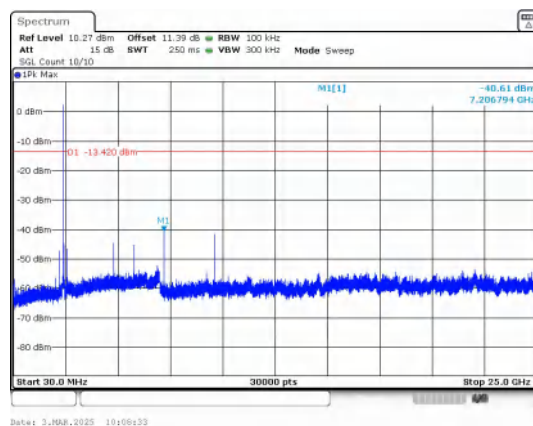
Out Of Band Emission
GFSK_DH5_Channel 0



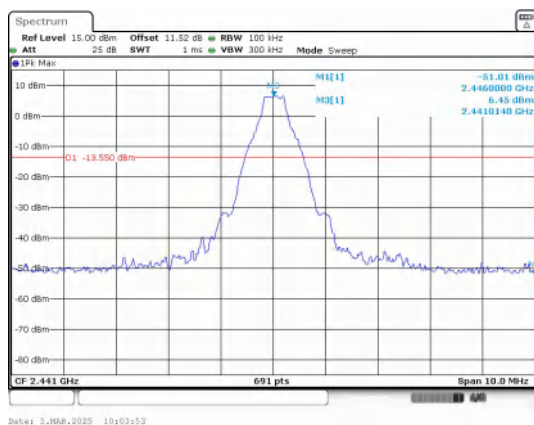
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0



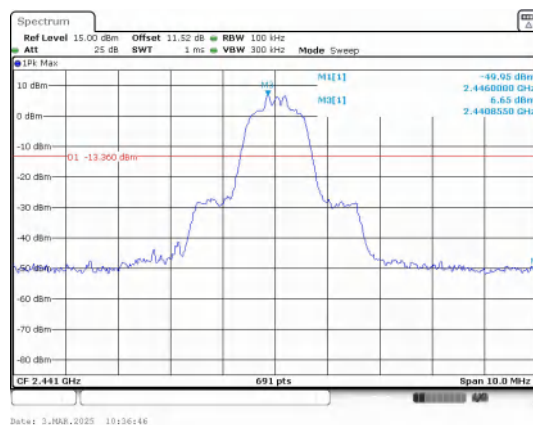
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



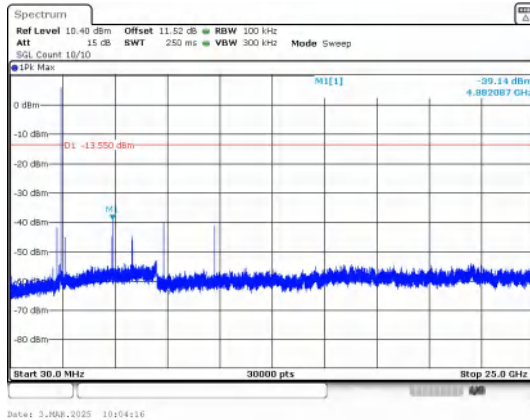
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 0



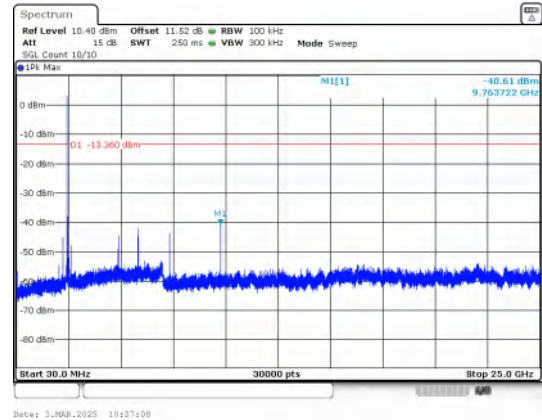
Out Of Band Emission
GFSK_DH5_Channel 39



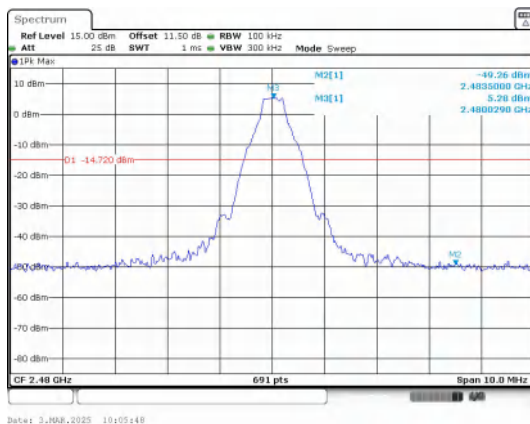
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39



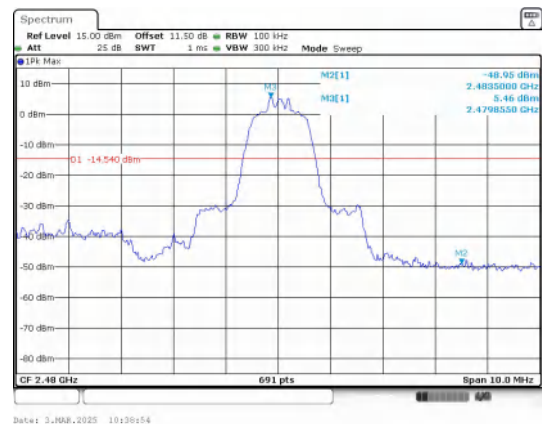
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



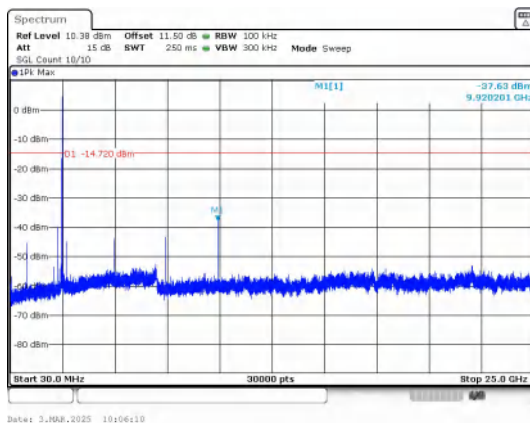
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



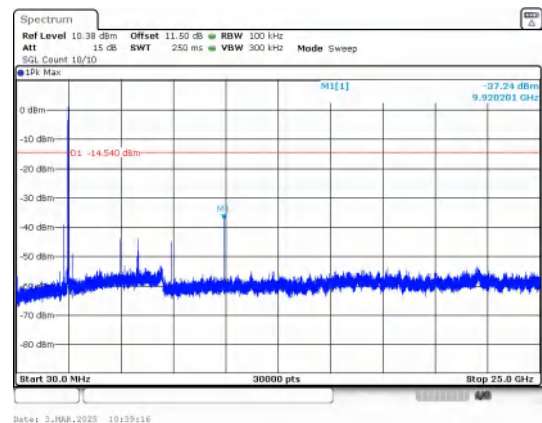
Out Of Band Emission
GFSK_DH5_Channel 78



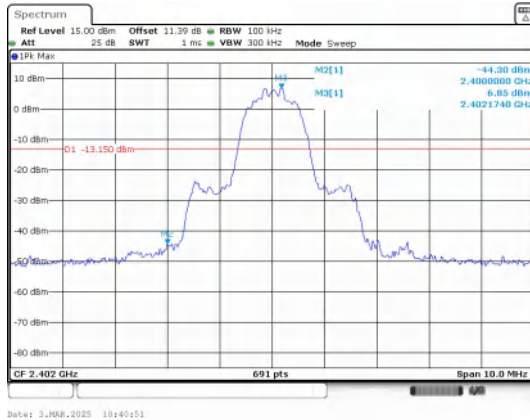
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78



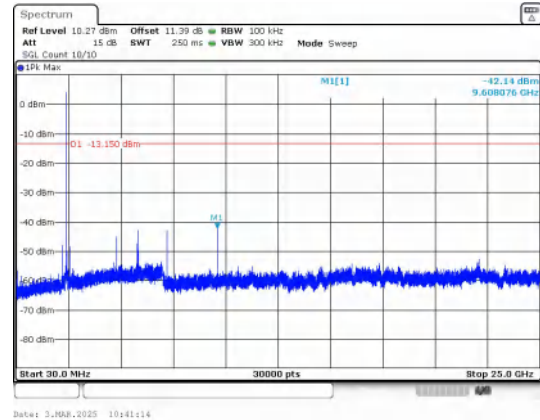
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



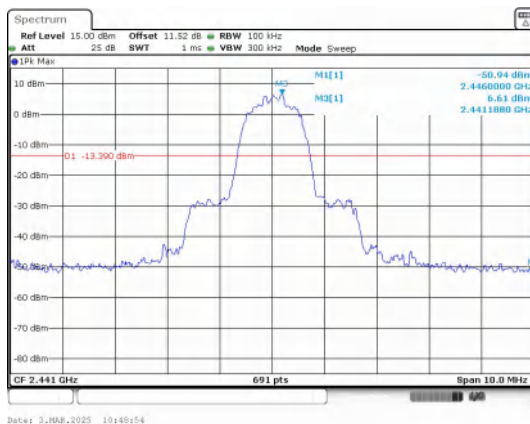
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



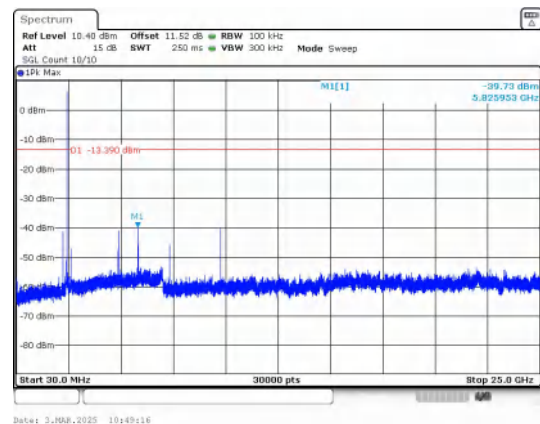
Out Of Band Emission
8DPSK_3-DH5_Channel 0



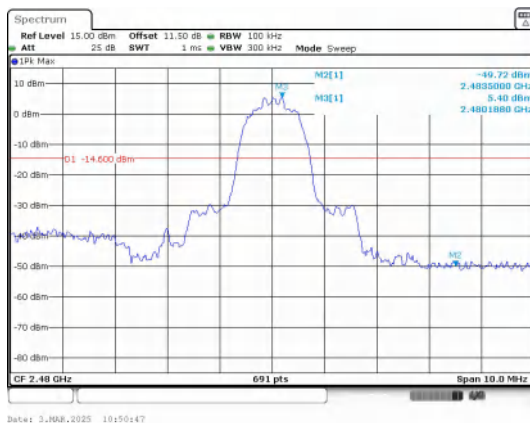
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



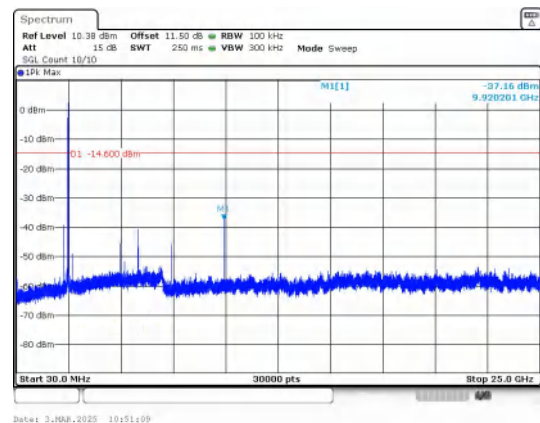
Out Of Band Emission
8DPSK_3-DH5_Channel 39



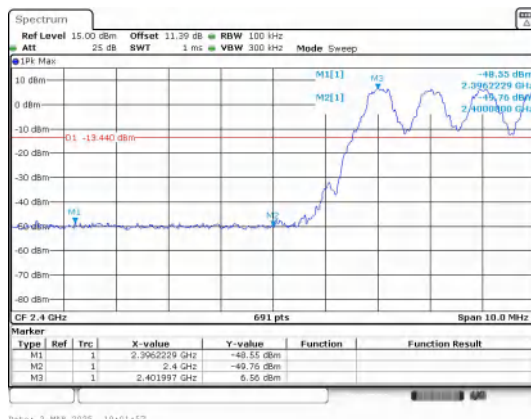
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



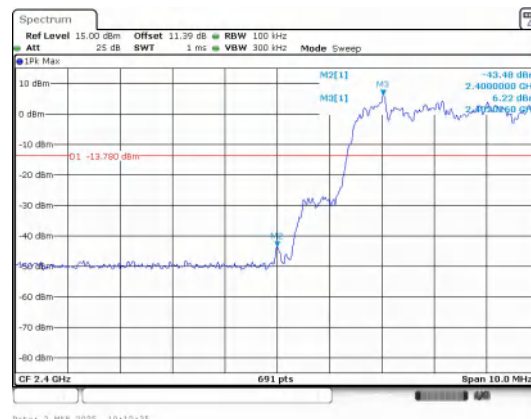
Out Of Band Emission
8DPSK_3-DH5_Channel 78



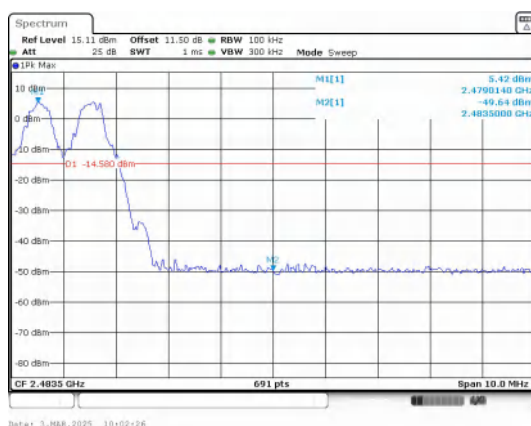
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



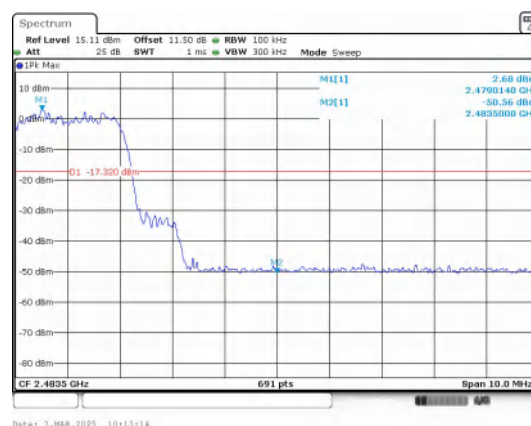
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



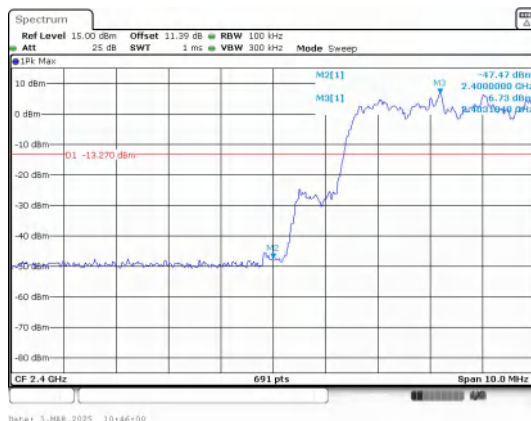
Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



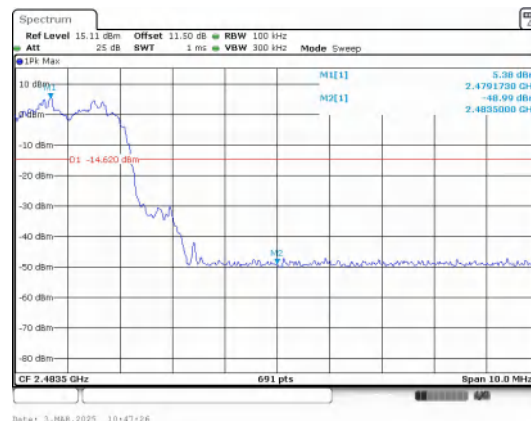
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



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



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



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

Right:
Non-Hopping

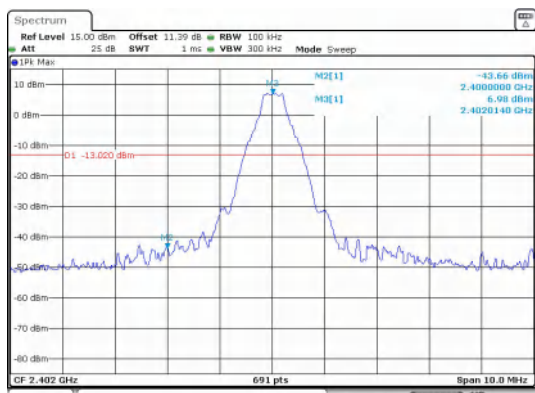
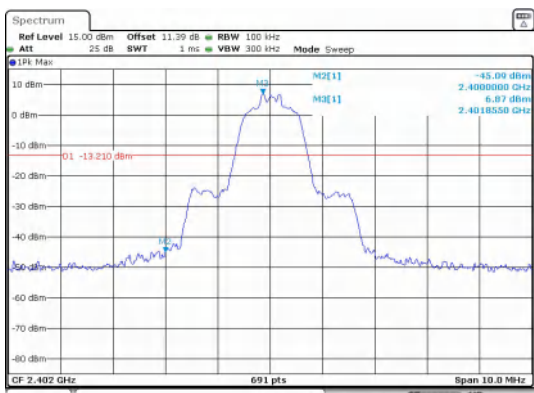
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
------------	--------	---------	------------------------------------	--------------------------------	----------------	--------------------	--------

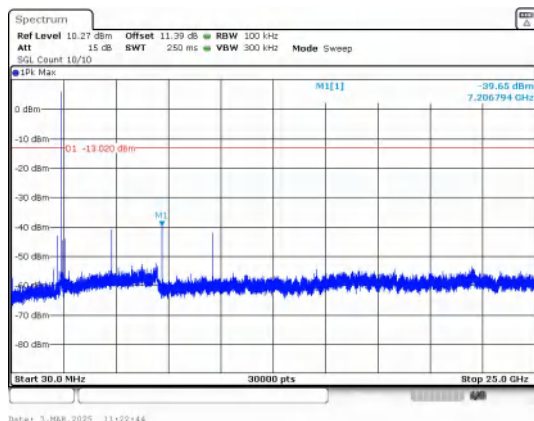
GFSK	DH5	0	2400.00	-43.660	-13.02	-30.640	PASS
			7206.79	-39.653	-13.02	-26.633	PASS
		39	9763.72	-40.589	-13.26	-27.329	PASS
		78	2483.50	-50.670	-14.47	-36.200	PASS
			9920.20	-37.388	-14.47	-22.918	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-45.090	-13.21	-31.880	PASS
			9608.08	-41.361	-13.21	-28.151	PASS
		39	9763.72	-40.029	-13.53	-26.499	PASS
		78	2483.50	-50.580	-14.4	-36.180	PASS
			9920.20	-36.820	-14.4	-22.420	PASS
8DPSK	3-DH5	0	2400.00	-45.500	-13.26	-32.240	PASS
			9608.08	-41.617	-13.26	-28.357	PASS
		39	4882.09	-39.374	-13.76	-25.614	PASS
		78	2483.50	-49.620	-14.63	-34.990	PASS
			9920.20	-37.065	-14.63	-22.435	PASS

Hopping

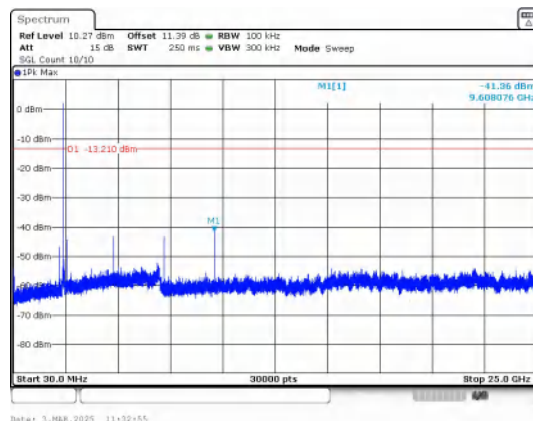
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2397.53	-47.394	-13.4	-33.994	PASS
			2400.00	-48.870	-13.4	-35.470	PASS
			2483.50	-49.440	-14.81	-34.630	PASS
$\pi/4$ DQPSK	2-DH5		2396.95	-48.266	-13.61	-34.656	PASS
			2400.00	-48.270	-13.61	-34.660	PASS
			2483.50	-49.120	-17.86	-31.260	PASS
8DPSK	3-DH5		2400.00	-45.400	-14.1	-31.300	PASS
			2483.50	-48.620	-17.73	-30.890	PASS

Test Graphs

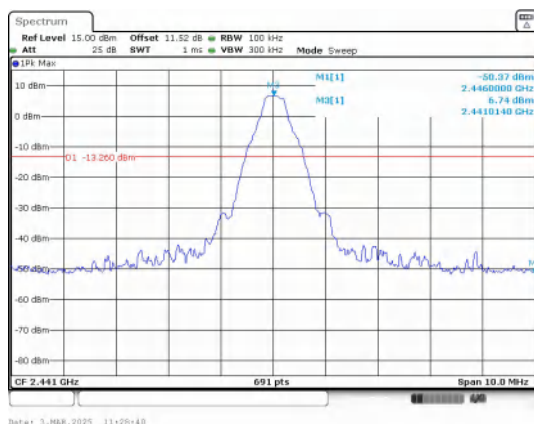
 Out Of Band Emission GFSK_DH5_Channel 0	 Out Of Band Emission $\pi/4$DQPSK_2-DH5_Channel 0
--	--



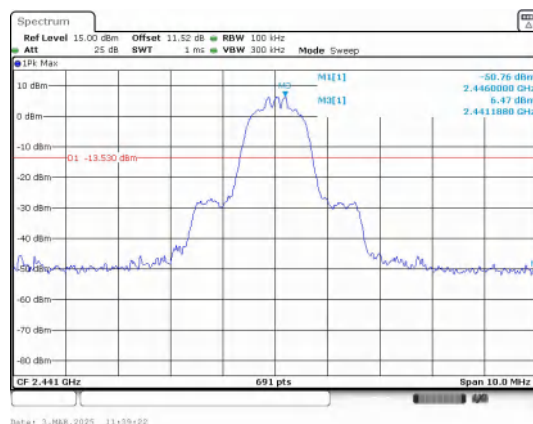
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



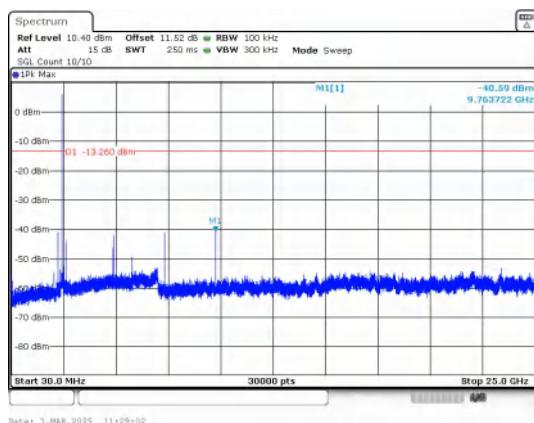
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 0



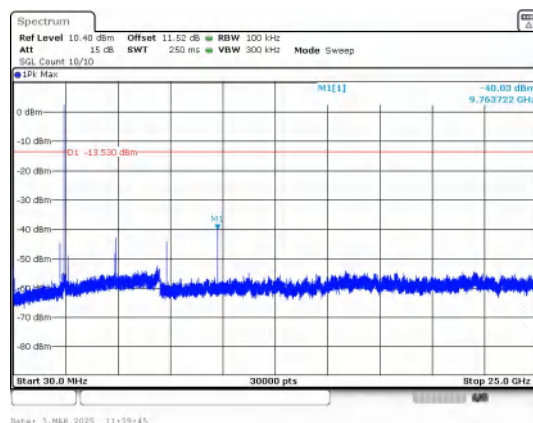
Out Of Band Emission
GFSK_DH5_Channel 39



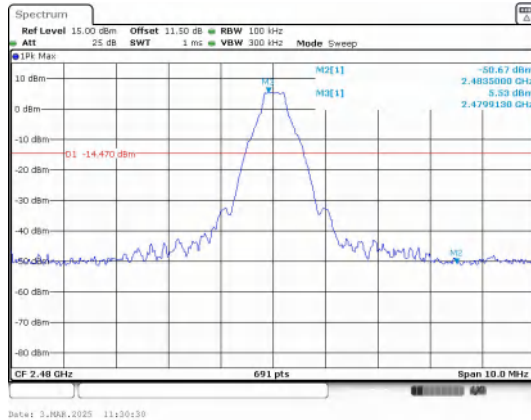
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39



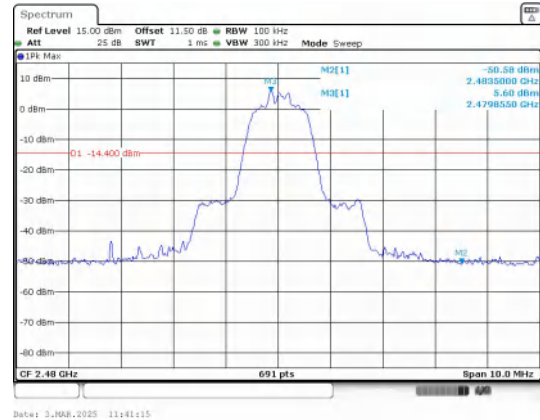
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



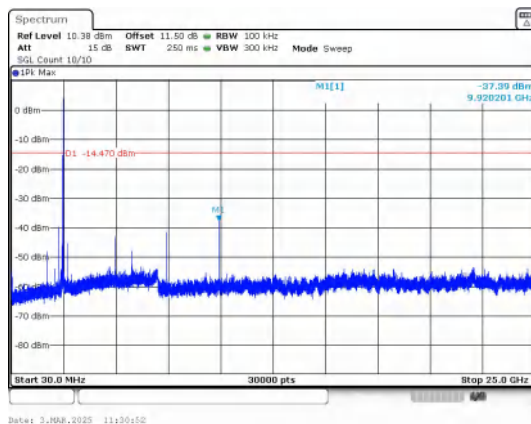
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



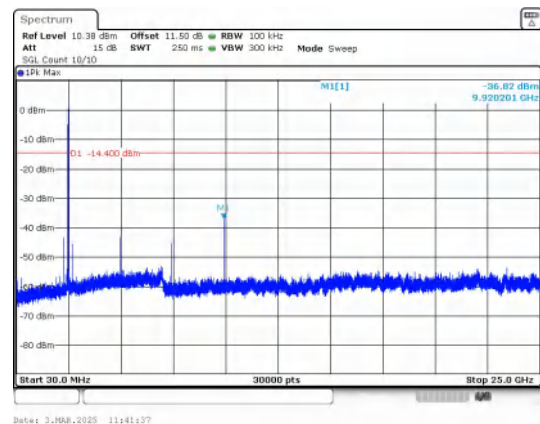
Out Of Band Emission
GFSK_DH5_Channel 78



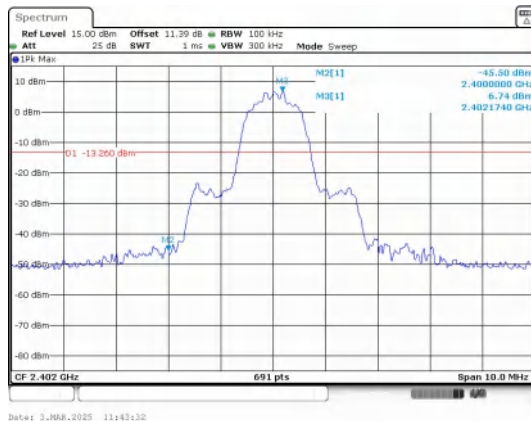
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78



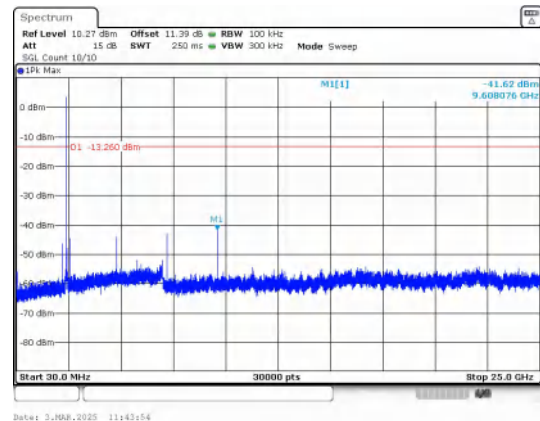
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



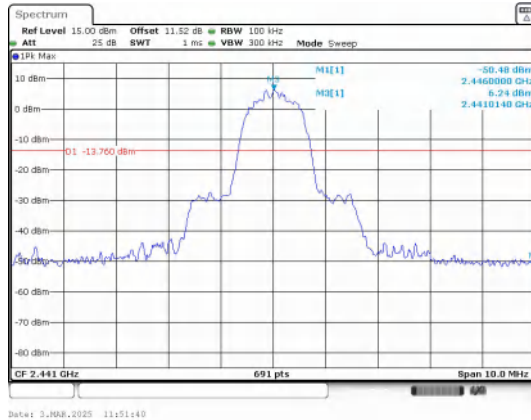
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



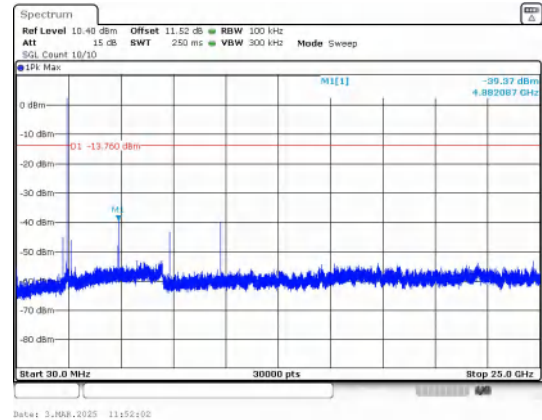
Out Of Band Emission
8DPSK_3-DH5_Channel 0



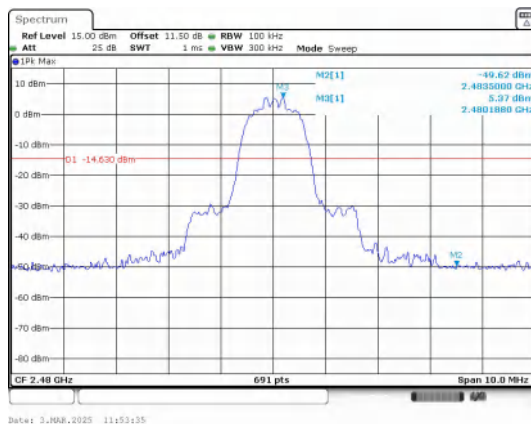
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



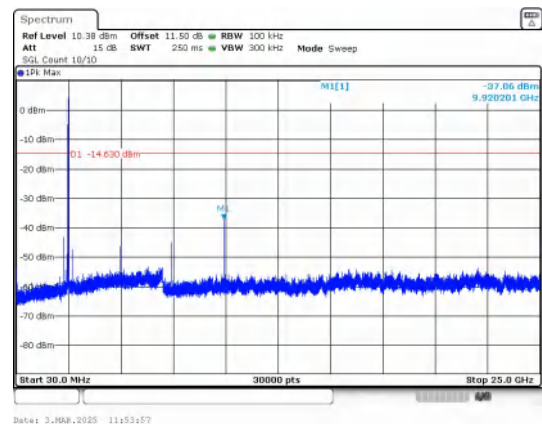
Out Of Band Emission
8DPSK_3-DH5_Channel 39



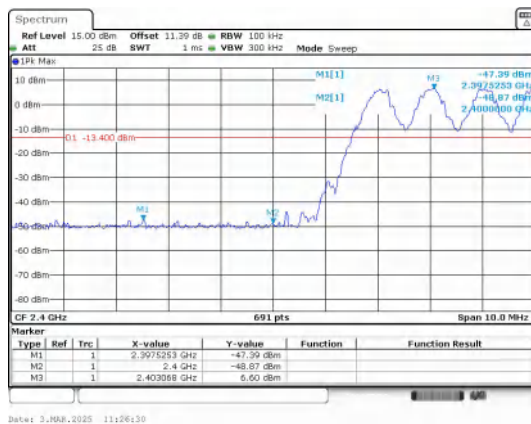
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



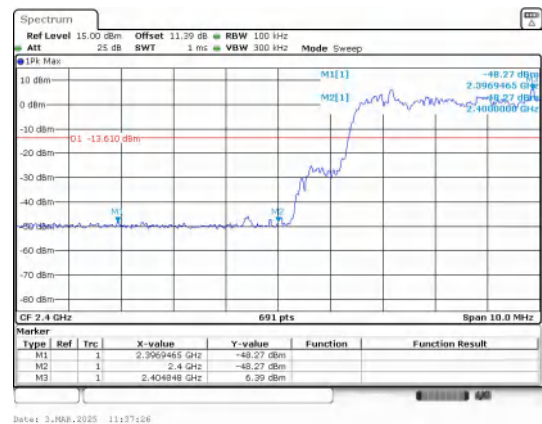
Out Of Band Emission
8DPSK_3-DH5_Channel 78



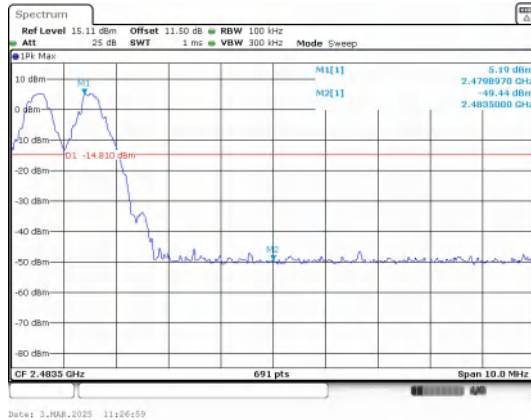
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



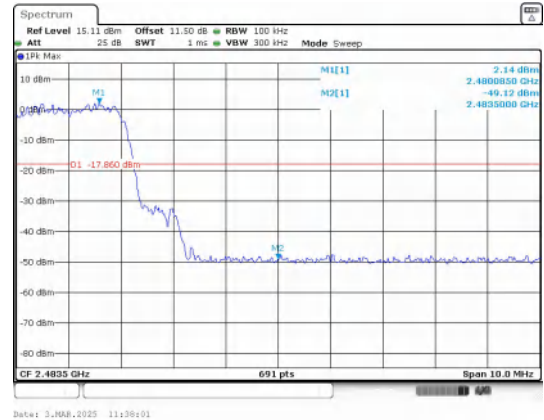
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



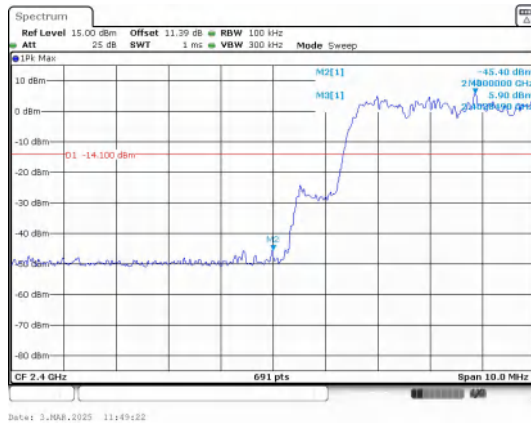
Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



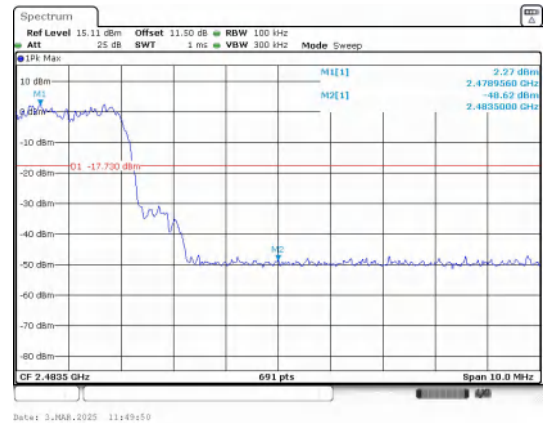
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



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



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



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

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