

Appendix Report

Report No.:	CISR250324204
Test Engineer:	James Wang
Supervised by:	Rory Huang

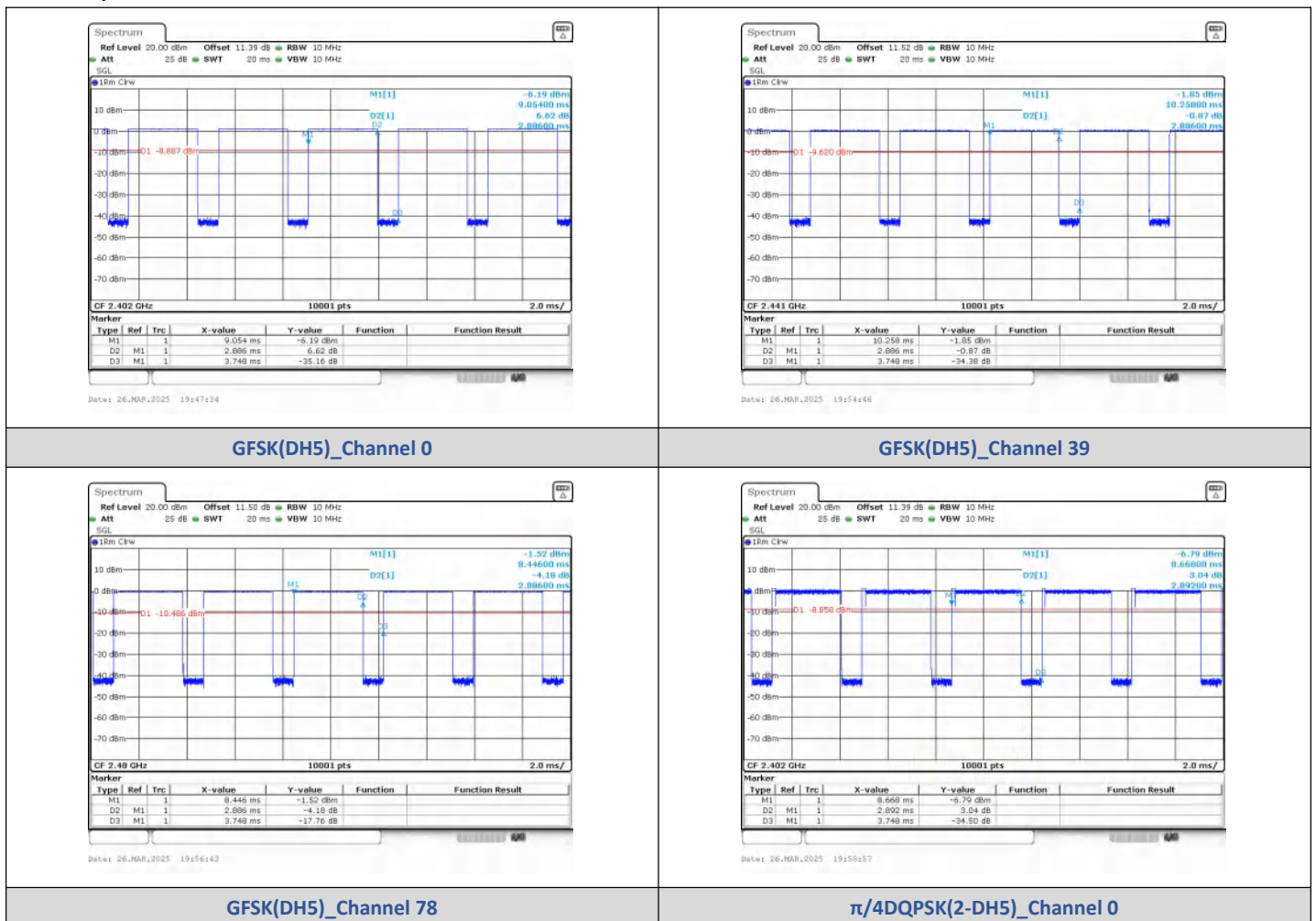
1) Duty Cycle

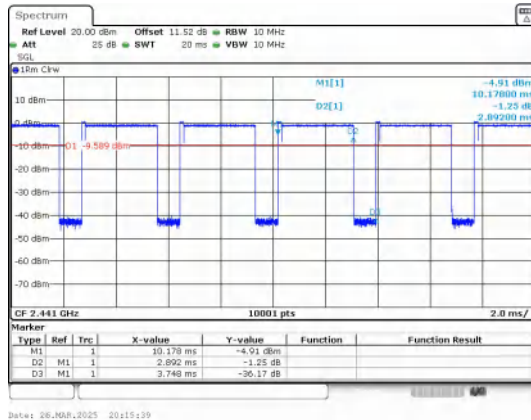
Test Result

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	2.892	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	3.746	77.20	0.7720	1.1238	0.3458

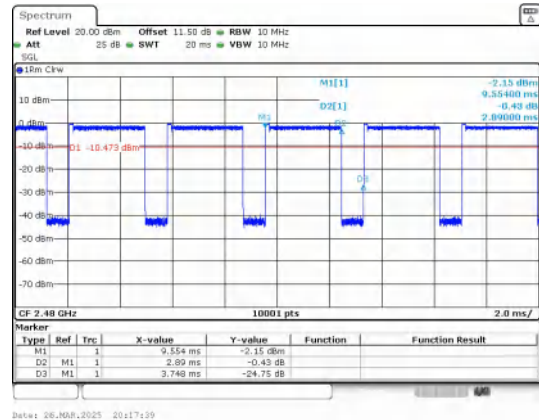
Test Graphs





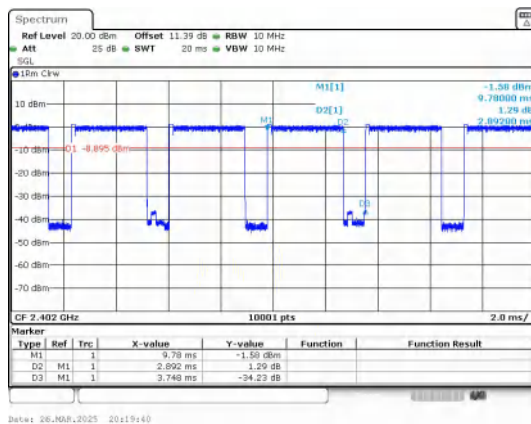
Date: 26.Nov.2025 20:15:39

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



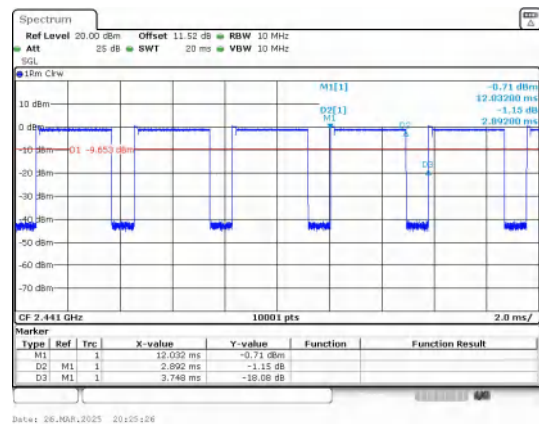
Date: 26.Nov.2025 20:17:39

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



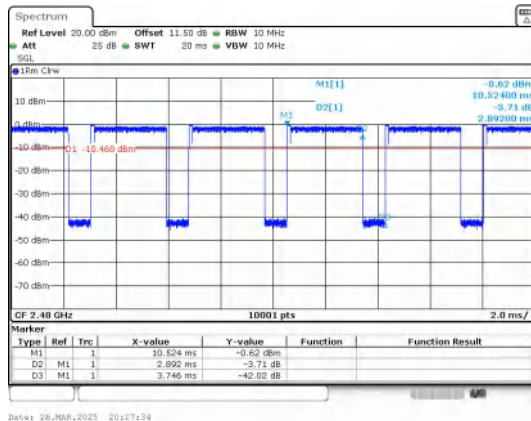
Date: 26.Nov.2025 20:19:40

8DPSK(3-DH5)_Channel 0



Date: 26.Nov.2025 20:25:26

8DPSK(3-DH5)_Channel 39



Date: 26.Nov.2025 20:27:34

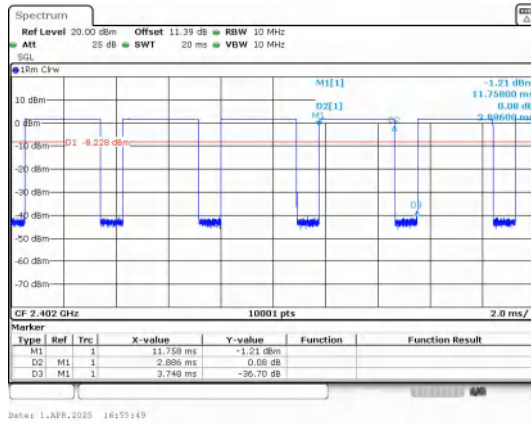
8DPSK(3-DH5)_Channel 78

Right:

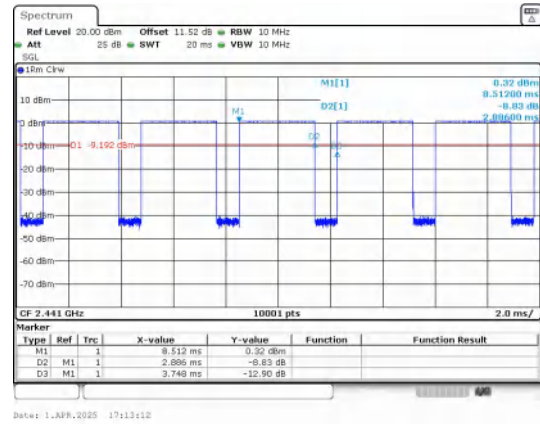
Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.886	3.748	77.00	0.7700	1.1351	0.3465
		39	2.886	3.748	77.00	0.7700	1.1351	0.3465
		78	2.886	3.748	77.00	0.7700	1.1351	0.3465
$\pi/4$ DQPSK	2-DH5	0	2.890	3.748	77.11	0.7711	1.1289	0.3460
		39	2.892	3.748	77.16	0.7716	1.1261	0.3458
		78	2.890	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	2.892	3.748	77.16	0.7716	1.1261	0.3458
		78	2.892	3.748	77.16	0.7716	1.1261	0.3458

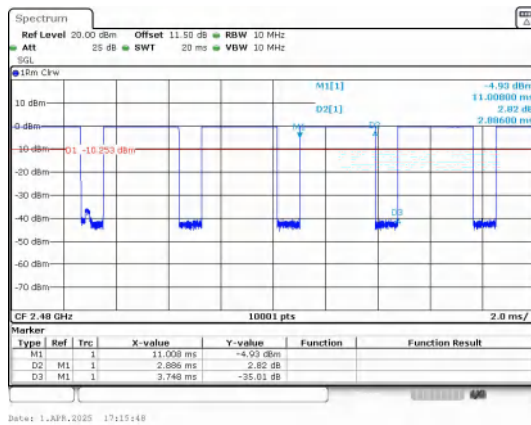
Test Graphs



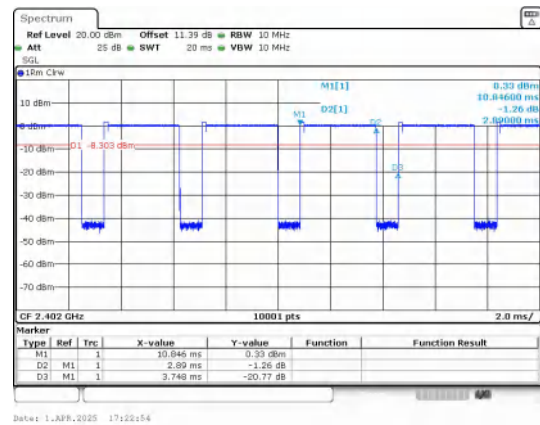
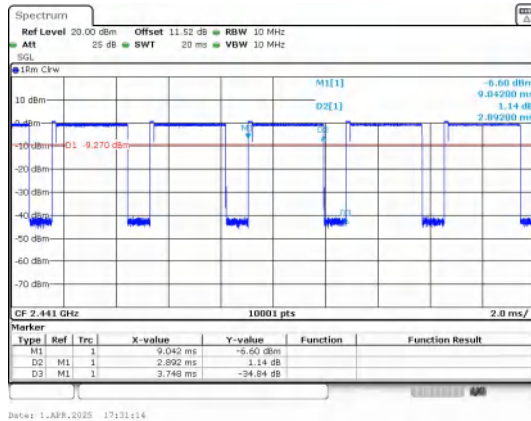
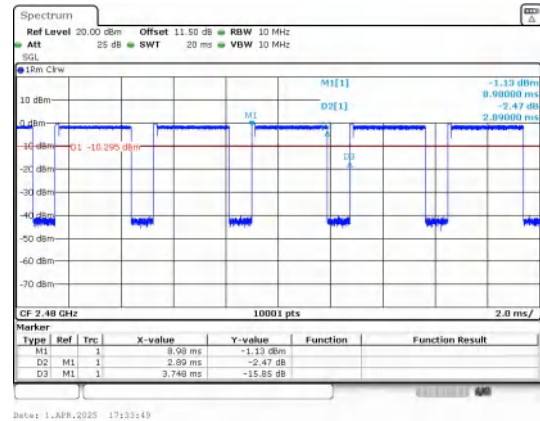
GFSK(DH5)_Channel 0

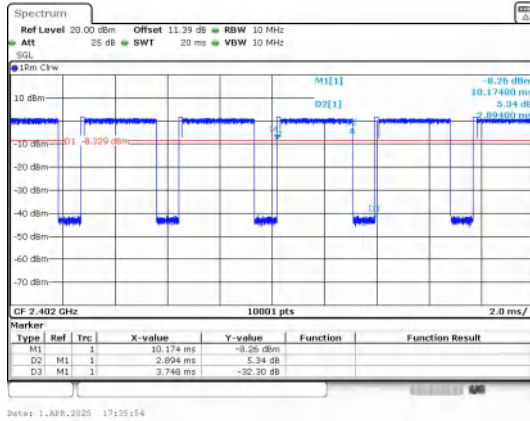


GFSK(DH5)_Channel 39

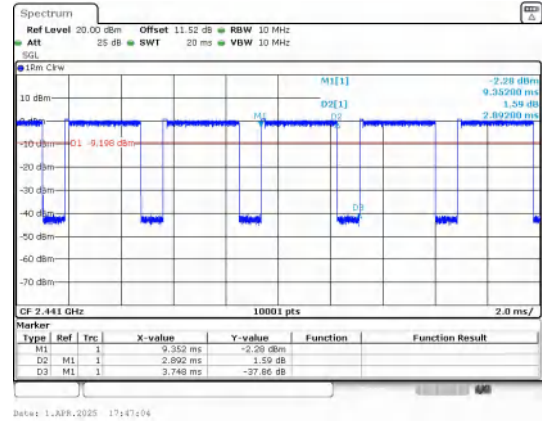


GFSK(DH5)_Channel 78

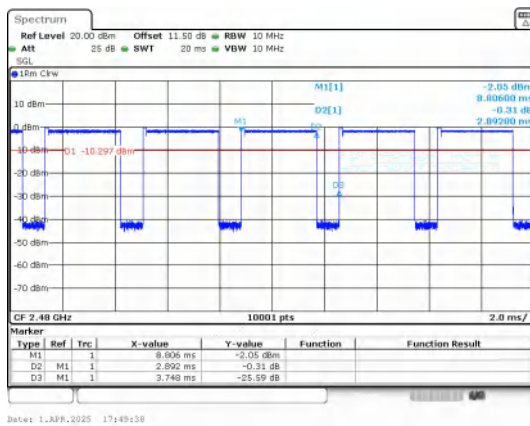

 $\pi/4$ DQPSK(2-DH5)_Channel 0

 $\pi/4$ 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

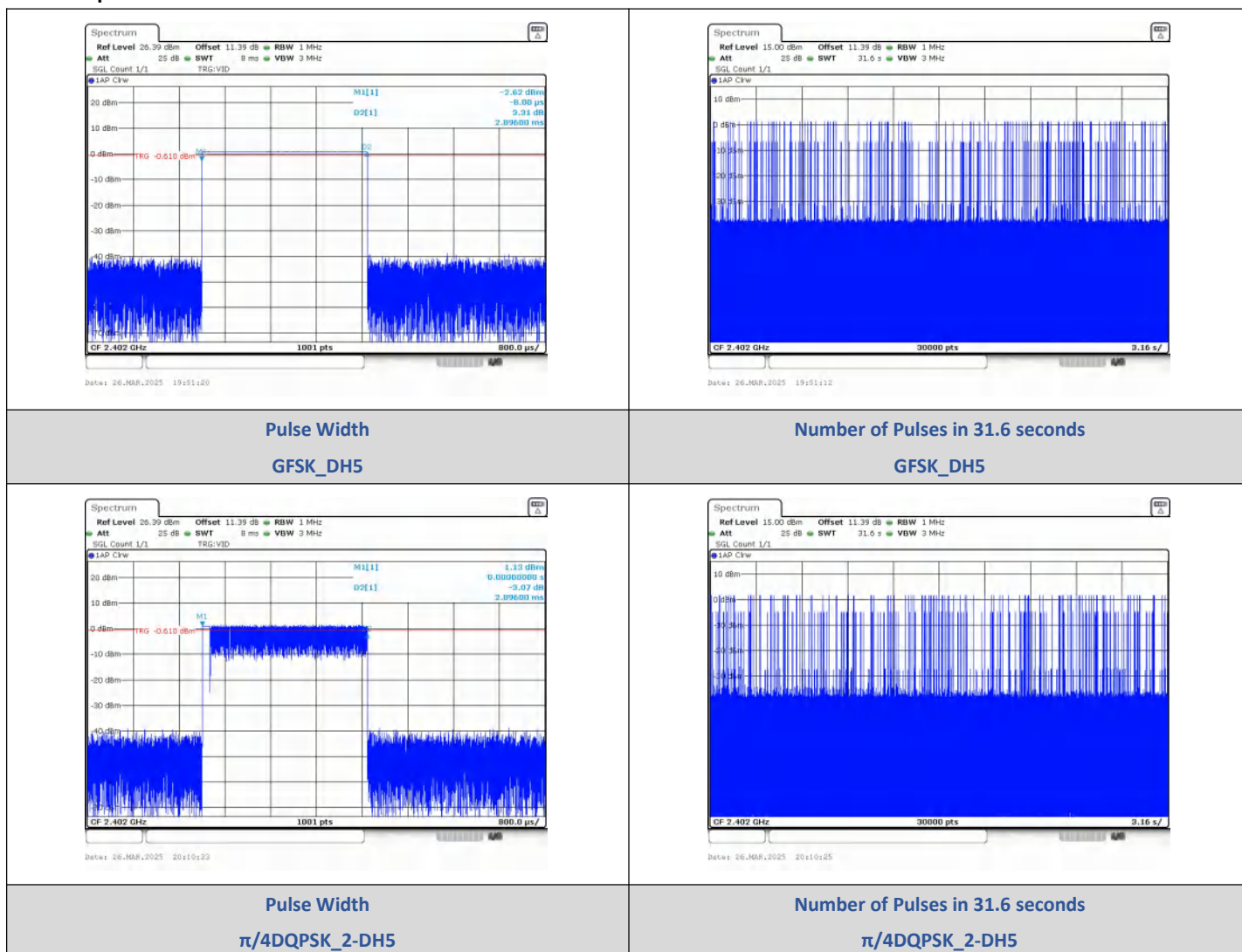
2) Dwell Time

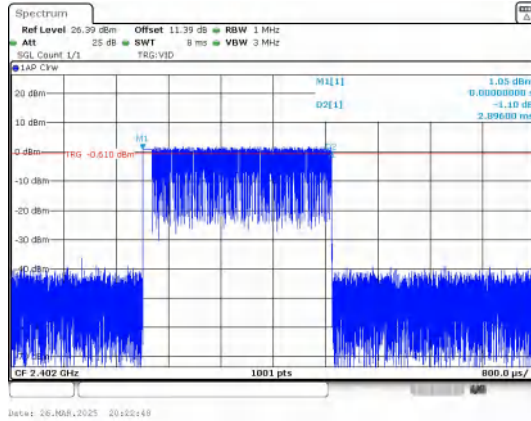
Test Result

Left:

Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.896	113	327.25	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.896	112	324.35		PASS
8DPSK	3-DH5		2.896	112	324.35		PASS

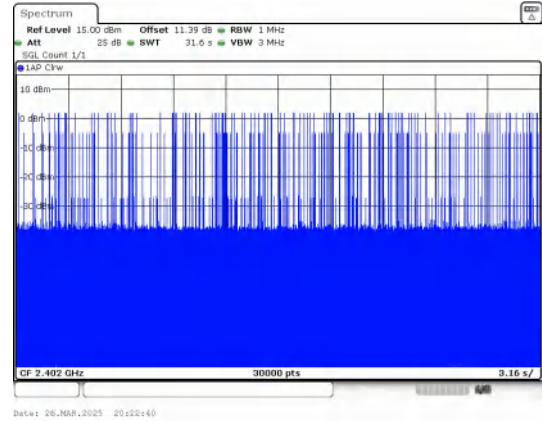
Test Graphs





Pulse Width

8DPSK_3-DH5



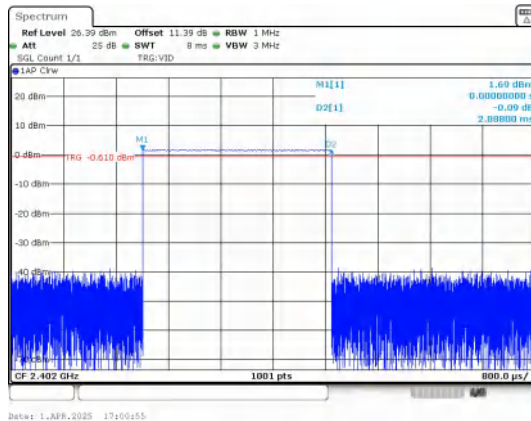
Number of Pulses in 31.6 seconds

8DPSK_3-DH5

Right:

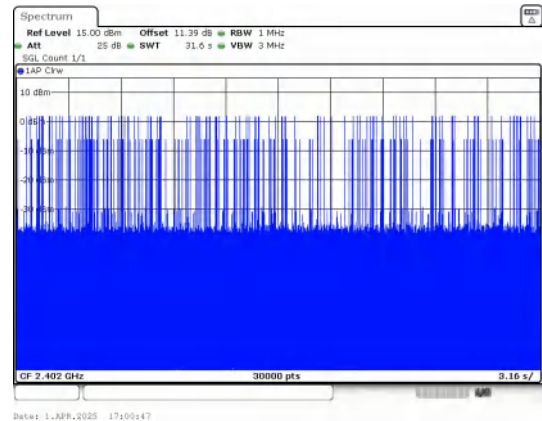
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.888	114	329.23	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.896	103	298.29		PASS
8DPSK	3-DH5		2.896	105	304.08		PASS

Test Graphs



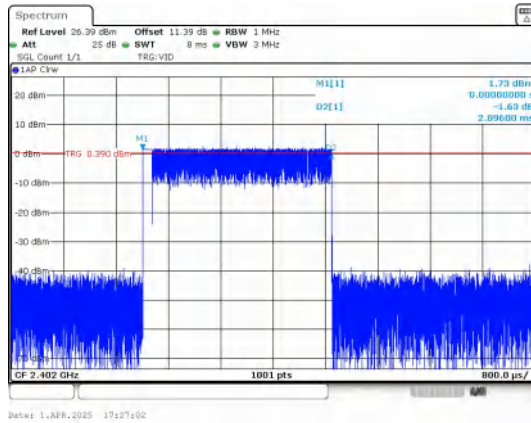
Pulse Width

GFSK_DH5

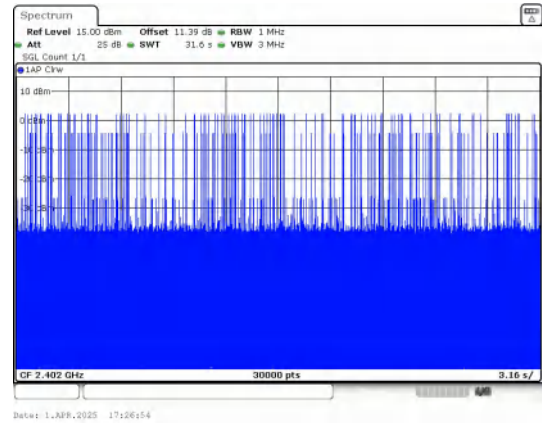


Number of Pulses in 31.6 seconds

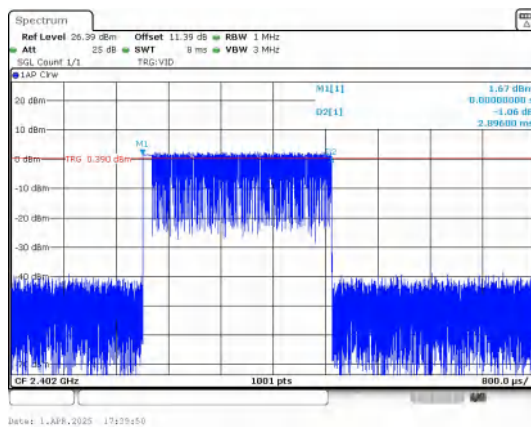
GFSK_DH5



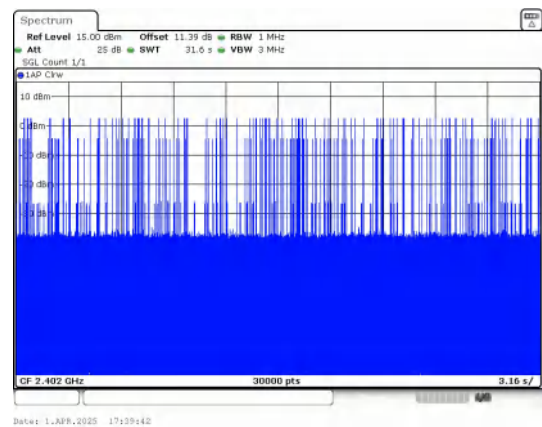
Pulse Width
 $\pi/4$ DQPSK_2-DH5



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

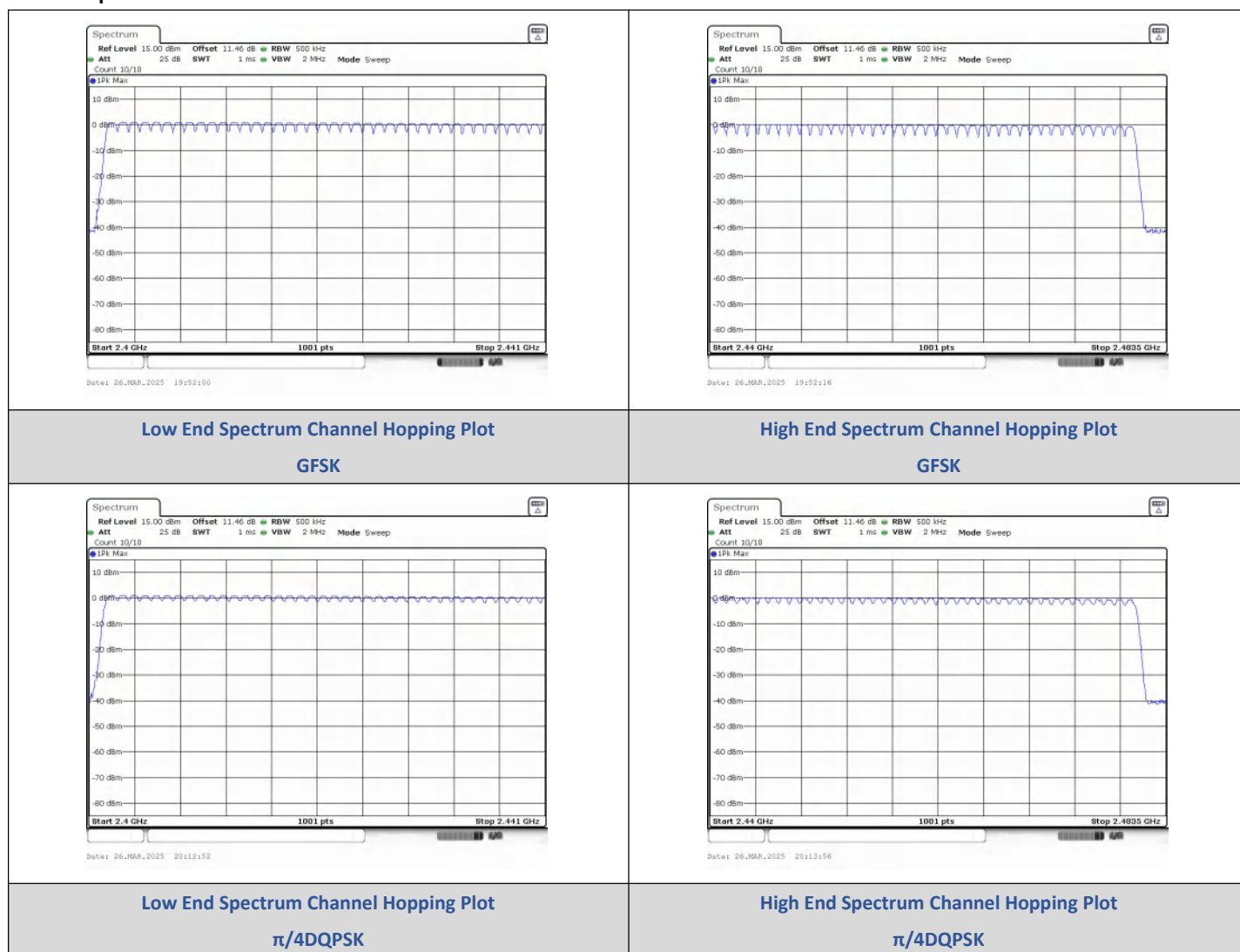
3) Number Of Hopping Channel

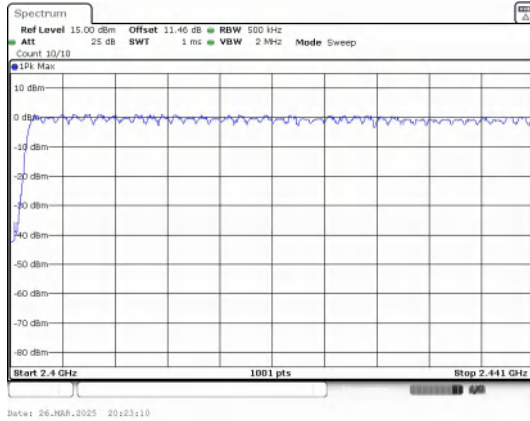
Test Result

Left:

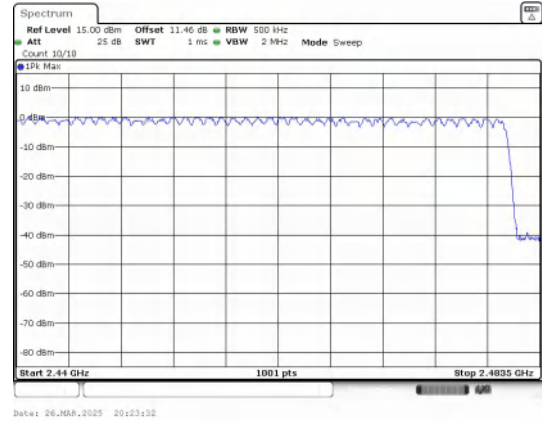
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK

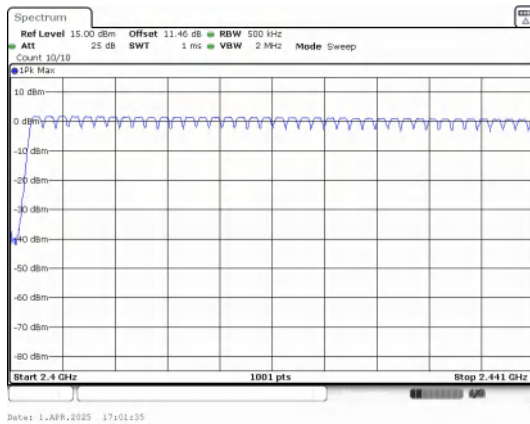


High End Spectrum Channel Hopping Plot
8DPSK

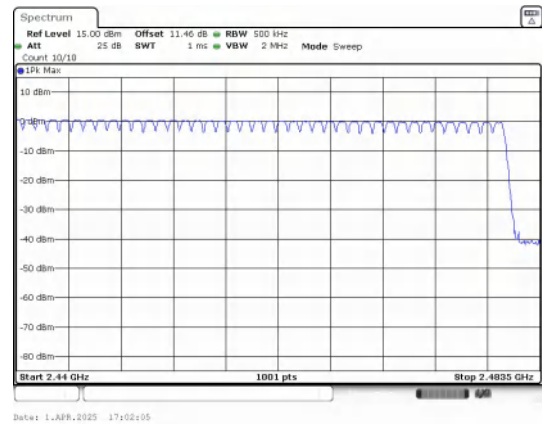
Right:

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

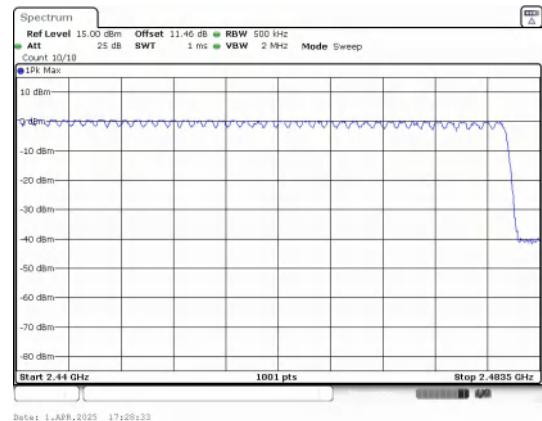
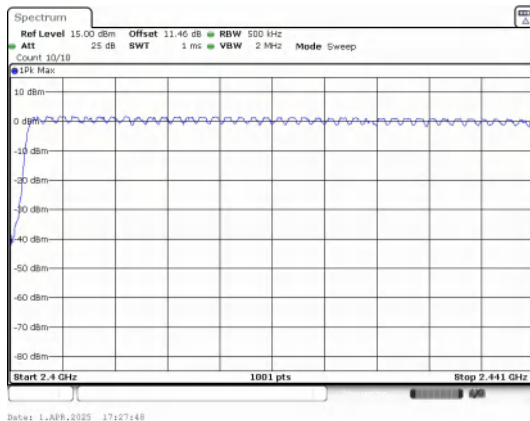
Test Graphs



Low End Spectrum Channel Hopping Plot
GFSK

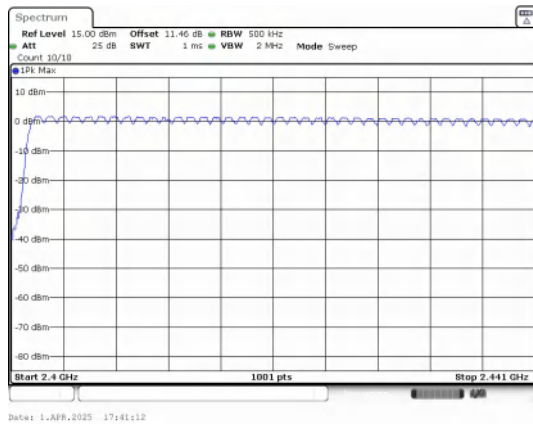


High End Spectrum Channel Hopping Plot
GFSK



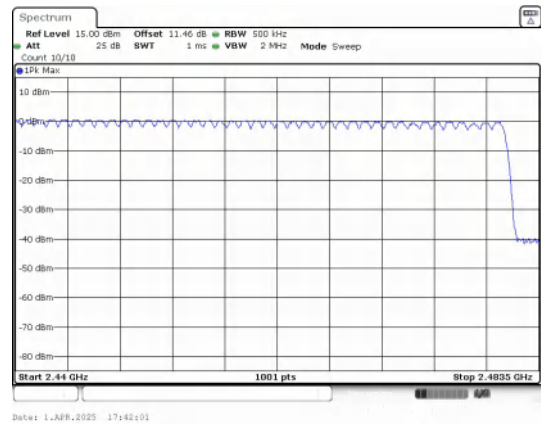
Low End Spectrum Channel Hopping Plot

$\pi/4$ QPSK



High End Spectrum Channel Hopping Plot

$\pi/4$ QPSK



Low End Spectrum Channel Hopping Plot

8DPSK

High End Spectrum Channel Hopping Plot

8DPSK

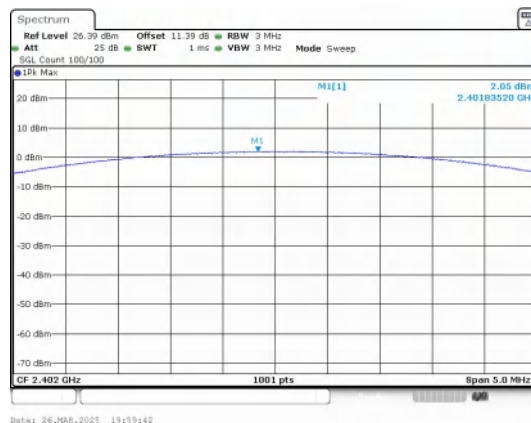
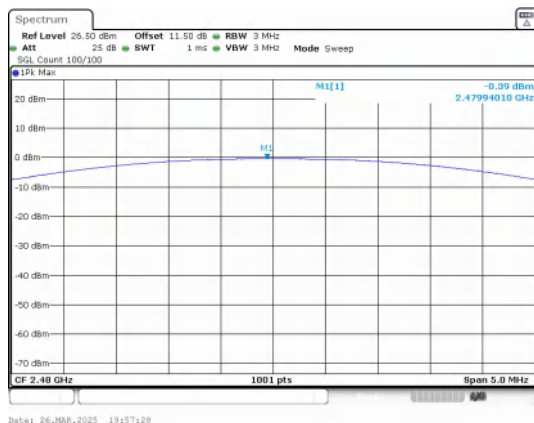
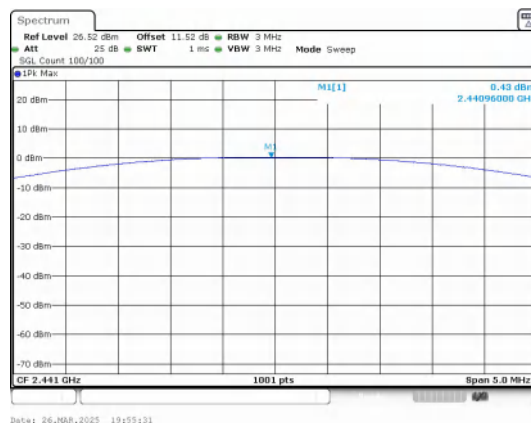
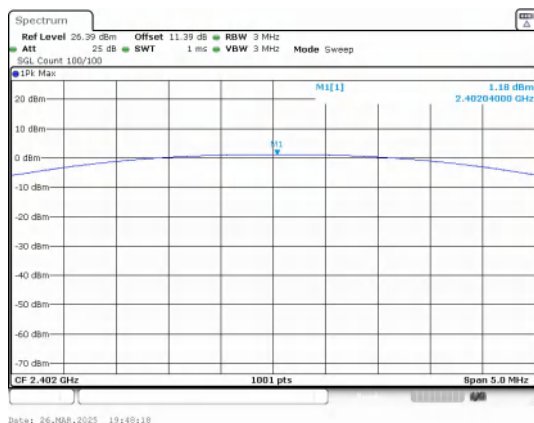
4) Conducted Peak Output Power

Test Result

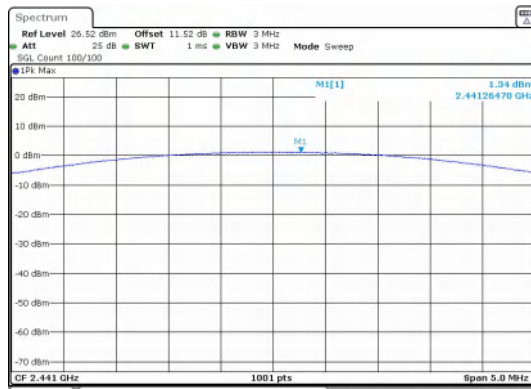
Left:

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	1.18	1.31	≤30	PASS
		39	0.43	1.10		PASS
		78	-0.39	0.91		PASS
$\pi/4$ DQPSK	2-DH5	0	2.05	1.60	≤20.97	PASS
		39	1.34	1.36		PASS
		78	0.46	1.11		PASS
8DPSK	3-DH5	0	2.35	1.72		PASS
		39	1.62	1.45		PASS
		78	0.80	1.20		PASS

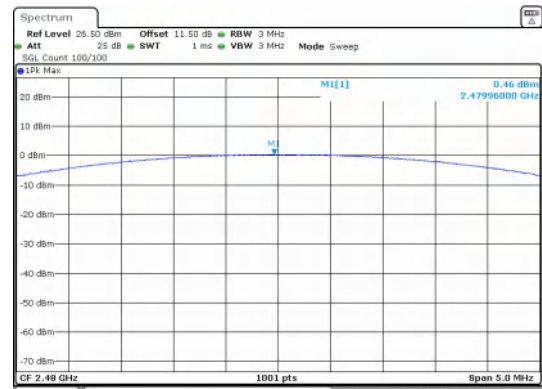
Test Graphs



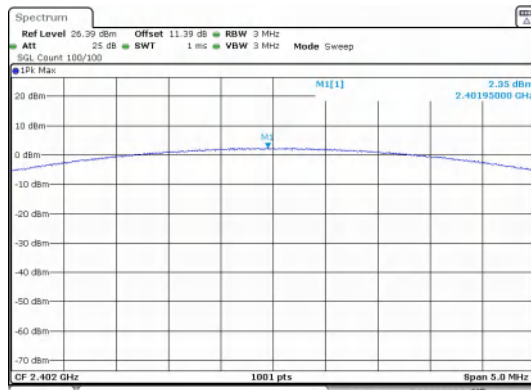
GFSK_Channel 78



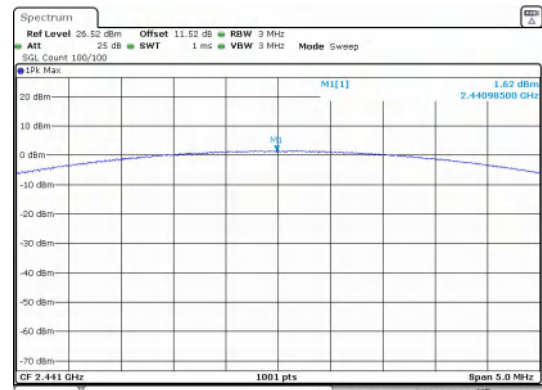
$\pi/4$ DQPSK_Channel 0



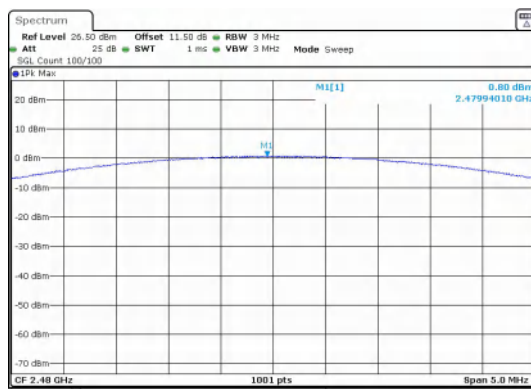
Peak Output Power
 $\pi/4$ DQPSK_Channel 39



Peak Output Power
 $\pi/4$ DQPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



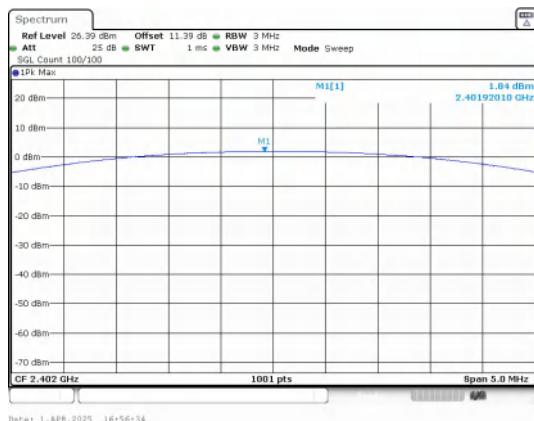
Peak Output Power
8DPSK_Channel 39

Peak Output Power
8DPSK_Channel 78

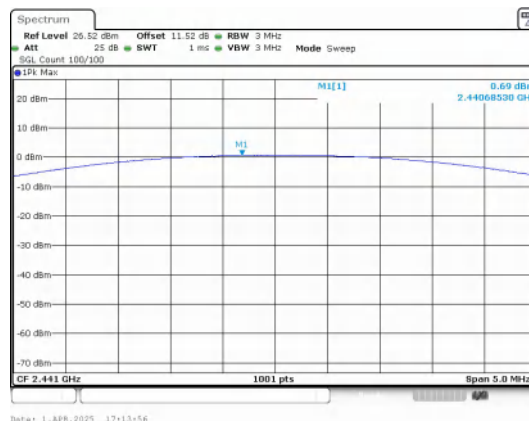
Right:

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	1.84	1.53	≤30	PASS
		39	0.69	1.17		PASS
		78	-0.13	0.97		PASS
$\pi/4$ DQPSK	2-DH5	0	2.62	1.83	≤20.97	PASS
		39	1.70	1.48		PASS
		78	0.67	1.17		PASS
8DPSK	3-DH5	0	2.93	1.96		PASS
		39	2.05	1.60		PASS
		78	0.93	1.24		PASS

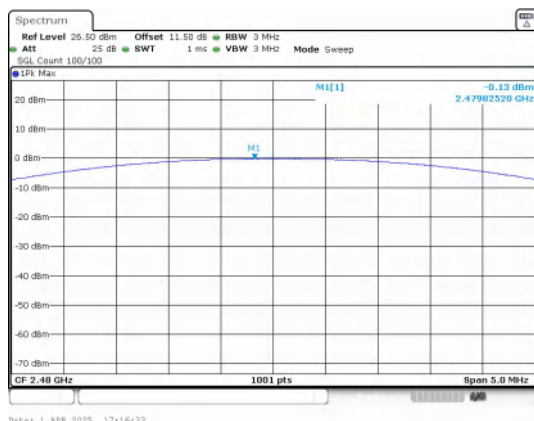
Test Graphs



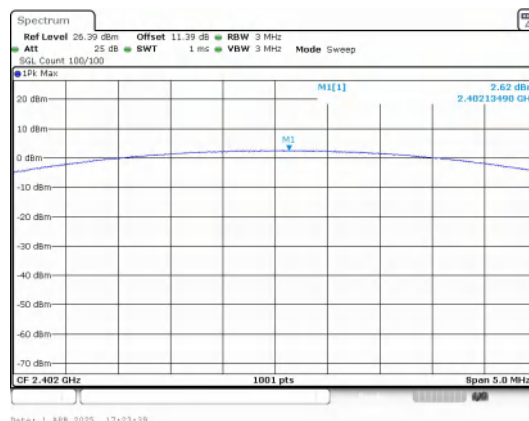
Peak Output Power
GFSK_Channel 0



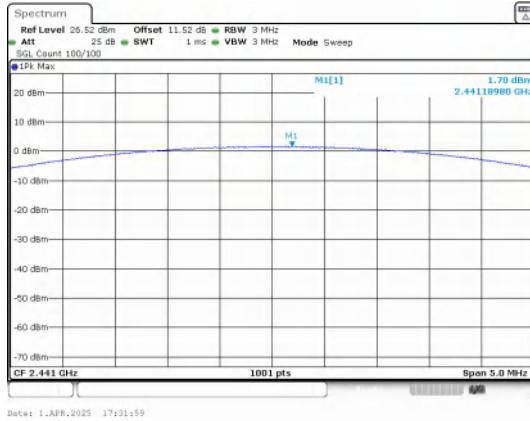
Peak Output Power
GFSK_Channel 39



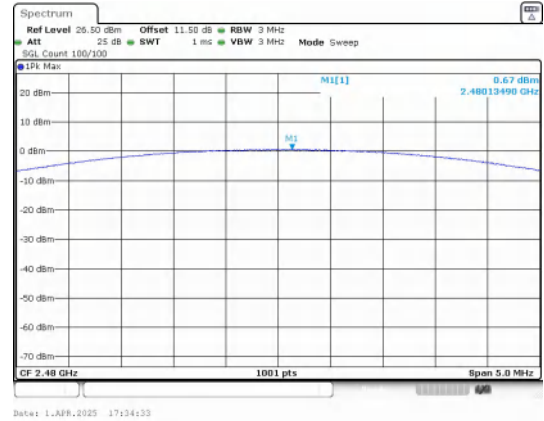
Peak Output Power
GFSK_Channel 78



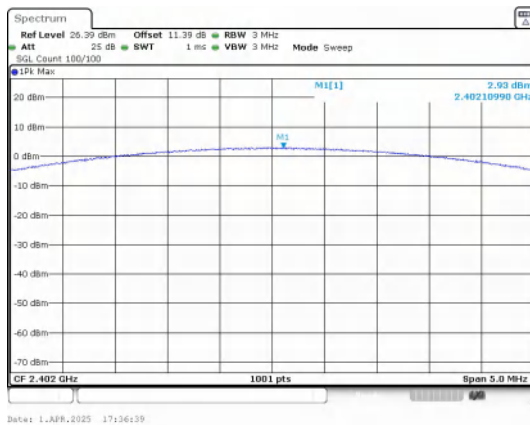
Peak Output Power
 $\pi/4$ DQPSK_Channel 0



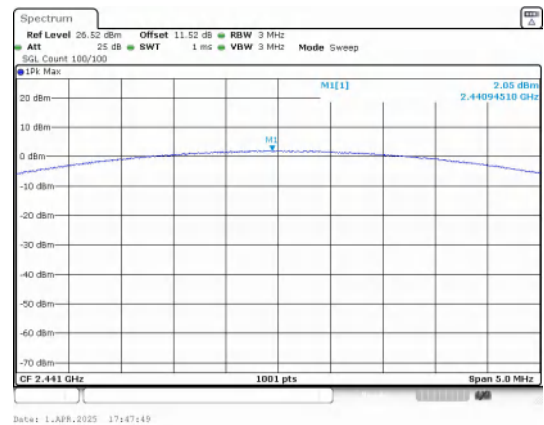
Peak Output Power
 $\pi/4$ QPSK_Channel 39



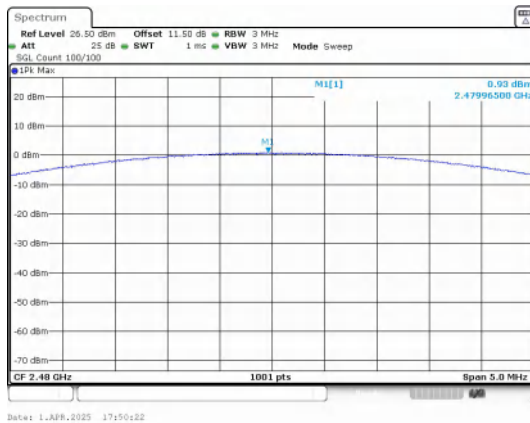
Peak Output Power
 $\pi/4$ QPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



Peak Output Power
8DPSK_Channel 39



Peak Output Power
8DPSK_Channel 78

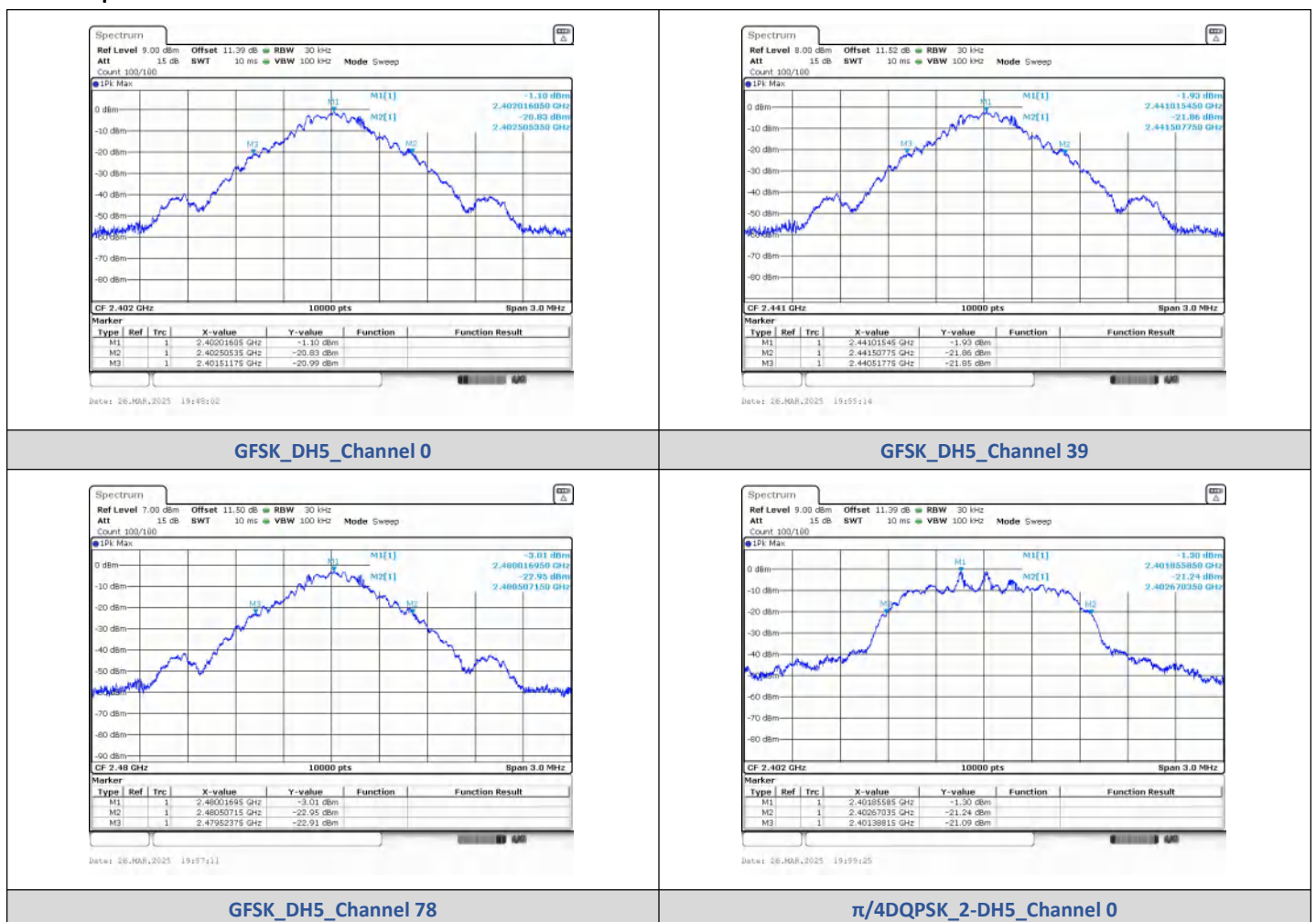
5) 20dB Bandwidth

Test Result

Left:

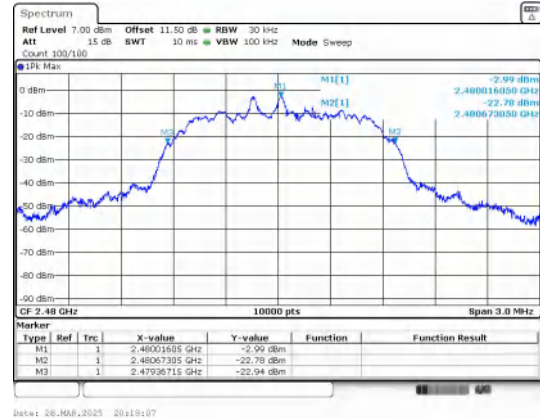
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.0
	39	2441 MHz	1.0
	78	2480 MHz	1.0
$\pi/4$ DQPSK	0	2402 MHz	1.280
	39	2441 MHz	1.300
	78	2480 MHz	1.300
8DPSK	0	2402 MHz	1.290
	39	2441 MHz	1.290
	78	2480 MHz	1.290

Test Graphs





$\pi/4$ DQPSK_2-DH5_Channel 39



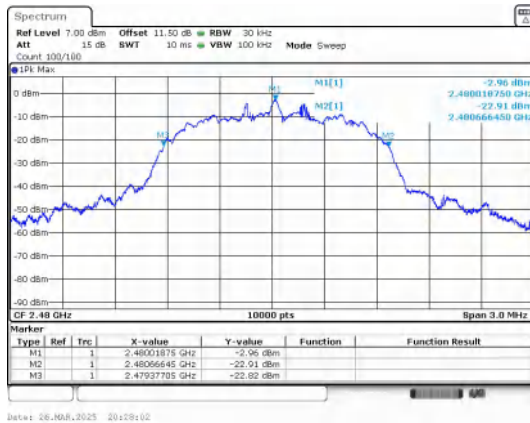
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



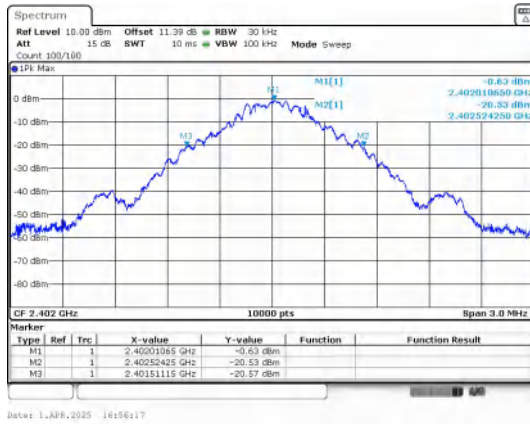
8DPSK_3-DH5_Channel 78

Right:

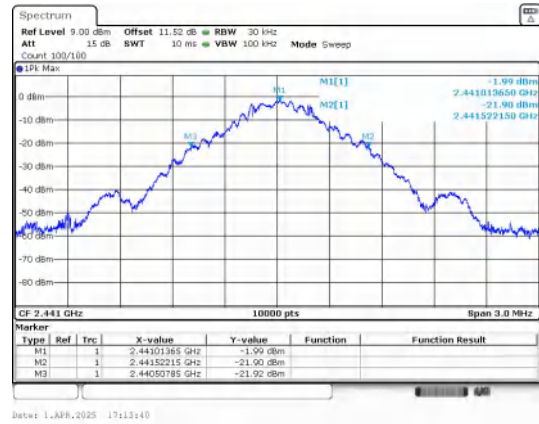
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.010
	39	2441 MHz	1.010
	78	2480 MHz	1.000
$\pi/4$ DQPSK	0	2402 MHz	1.280
	39	2441 MHz	1.280
	78	2480 MHz	1.300

8DPSK	0	2402 MHz	1.280
	39	2441 MHz	1.290
	78	2480 MHz	1.290

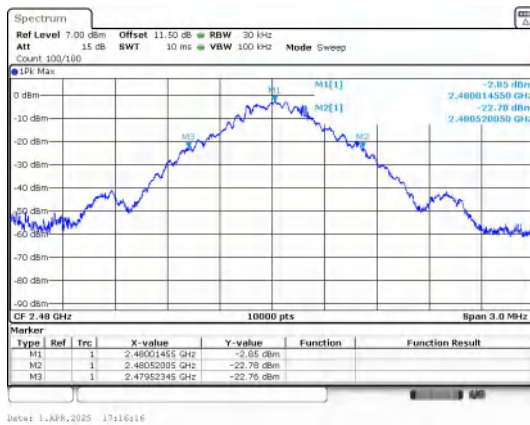
Test Graphs



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

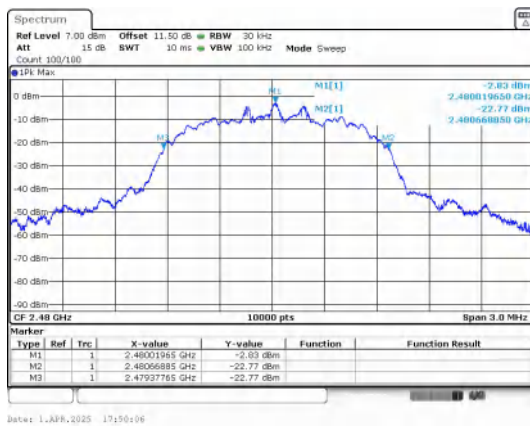
 $\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



8DPSK_3-DH5_Channel 78

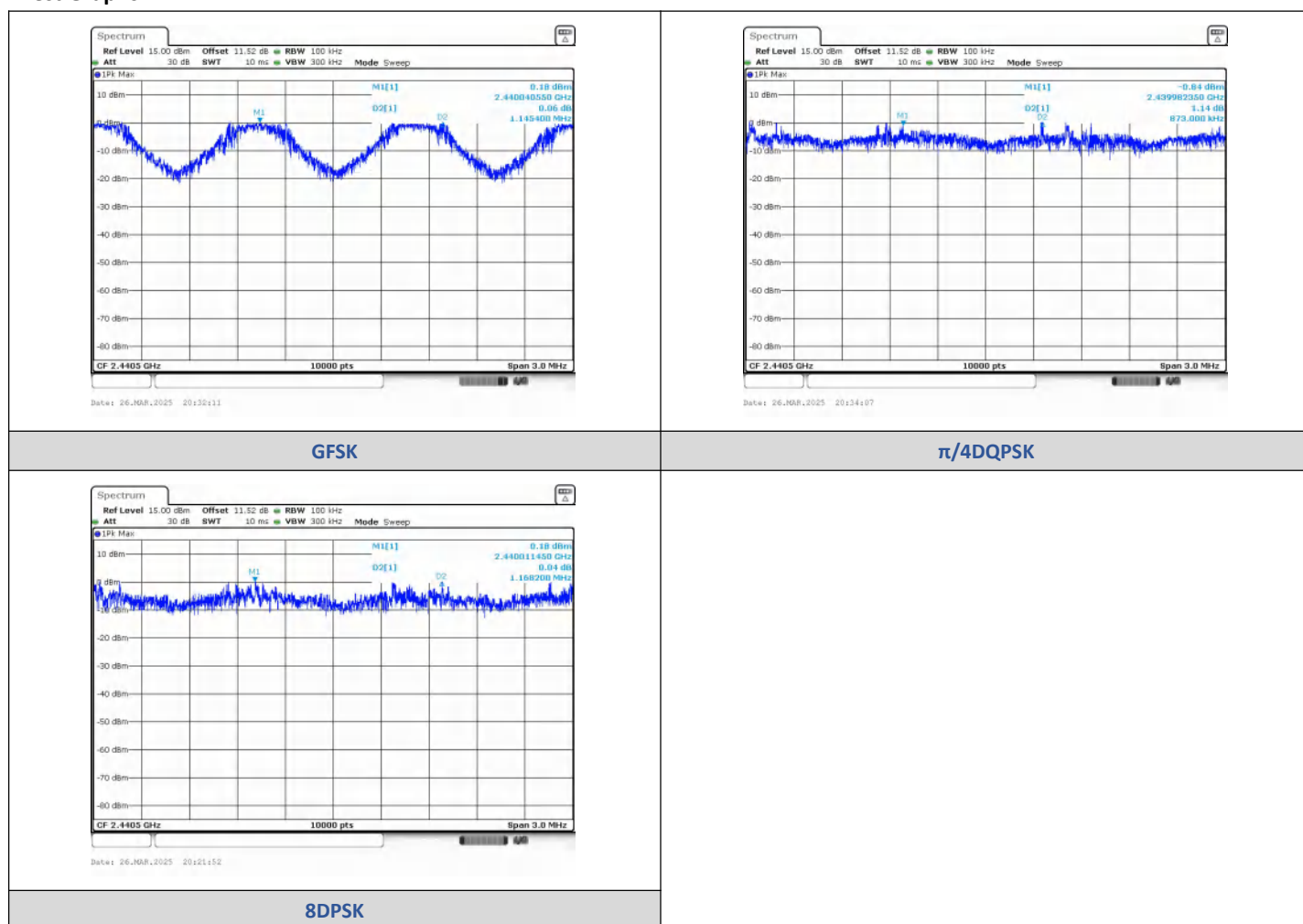
6) Carrier Frequencies Separation

Test Result

Left:

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2440.0406	2441.186	1.1454	1.0	PASS
$\pi/4$ DQPSK	2-DH5	2439.9824	2440.8553	0.8730	0.867	PASS
8DPSK	3-DH5	2440.0114	2441.1797	1.1682	0.86	PASS

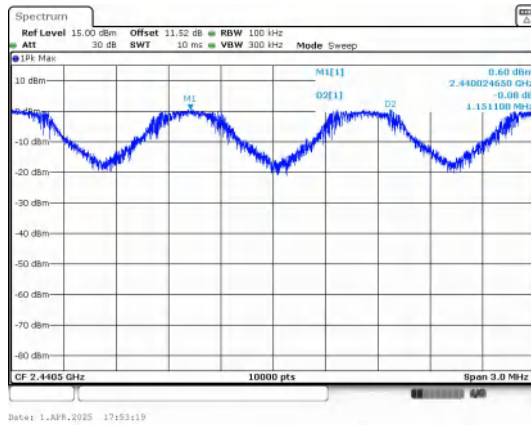
Test Graphs



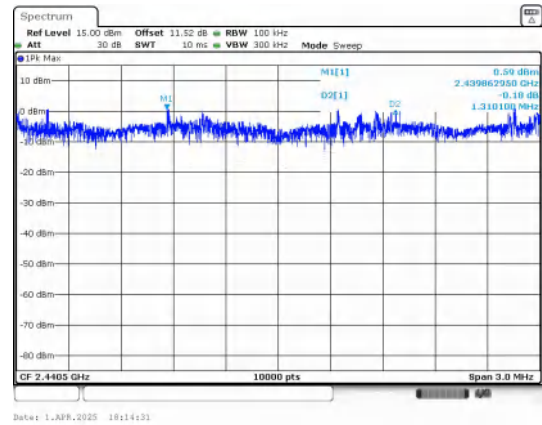
Right:

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2440.0246	2441.1757	1.1511	1.01	PASS
$\pi/4$ DQPSK	2-DH5	2439.863	2441.173	1.3101	0.867	PASS
8DPSK	3-DH5	2440.1759	2441.1707	0.9948	0.853	PASS

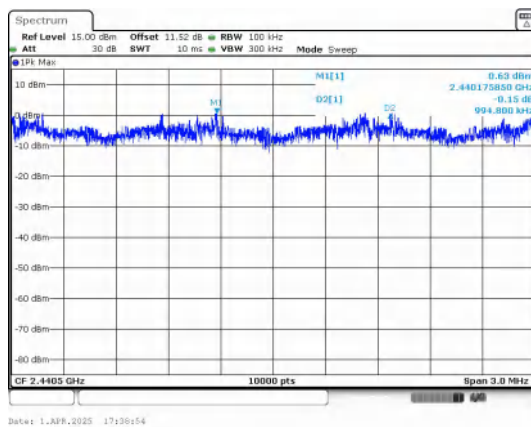
Test Graphs



GFSK



$\pi/4$ DQPSK



8DPSK

7) Conducted Out Of Band Emission

Test Result

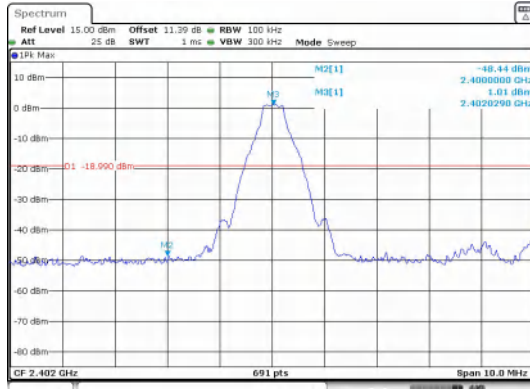
Left:

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-48.440	-18.99	-29.450	PASS
			9608.08	-44.721	-18.99	-25.731	PASS
		39	9763.72	-43.401	-19.72	-23.681	PASS
		78	2483.50	-51.670	-20.55	-31.120	PASS
			9920.20	-39.237	-20.55	-18.687	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-48.620	-19.01	-29.610	PASS
			9608.08	-44.718	-19.01	-25.708	PASS
		39	9763.72	-42.773	-19.96	-22.813	PASS
		78	2483.50	-51.000	-20.62	-30.380	PASS
			9920.20	-39.265	-20.62	-18.645	PASS
8DPSK	3-DH5	0	2397.24	-48.917	-19.02	-29.897	PASS
			2400.00	-50.950	-19.02	-31.930	PASS
			5743.60	-41.174	-19.02	-22.154	PASS
		39	9763.72	-43.133	-19.77	-23.363	PASS
		78	2483.50	-48.000	-20.57	-27.430	PASS
			5741.89	-36.599	-20.57	-16.029	PASS

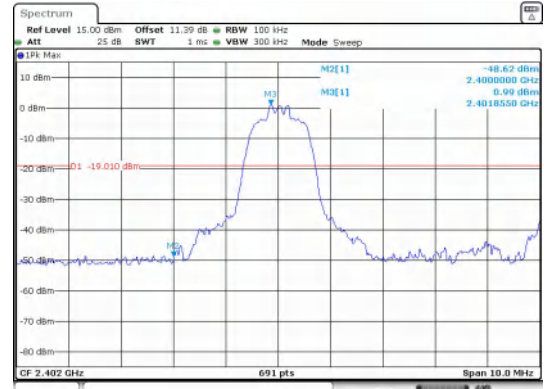
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2395.31	-47.043	-19.21	-27.833	PASS
			2400.00	-50.170	-19.21	-30.960	PASS
			2483.50	-49.210	-20.62	-28.590	PASS
$\pi/4$ DQPSK	2-DH5		2395.83	-48.527	-19.02	-29.507	PASS
			2400.00	-49.910	-19.02	-30.890	PASS
			2483.50	-49.530	-20.52	-29.010	PASS
8DPSK	3-DH5		2397.73	-48.307	-19.21	-29.097	PASS
			2400.00	-50.030	-19.21	-30.820	PASS
			2483.50	-49.850	-23.1	-26.750	PASS

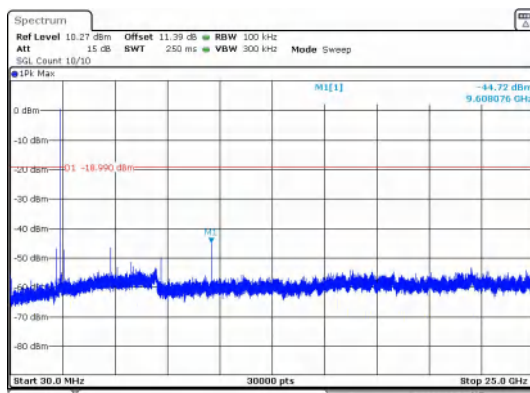
Test Graphs



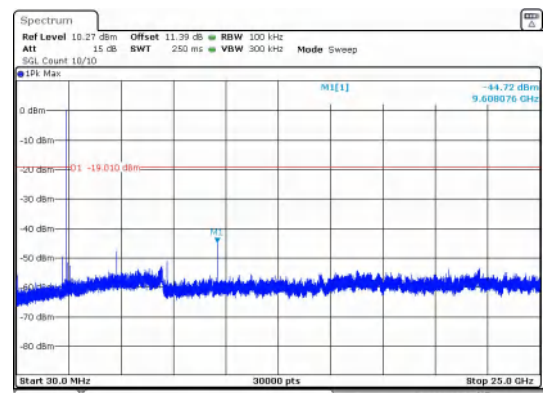
Out Of Band Emission
GFSK_DH5_Channel 0



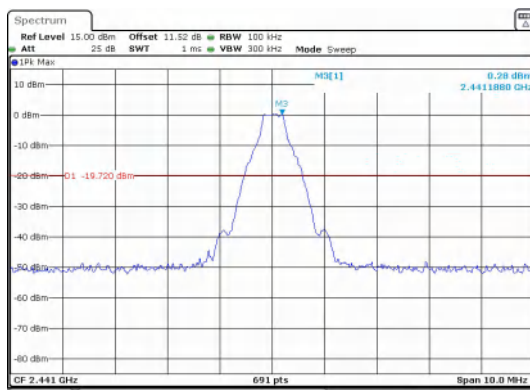
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0



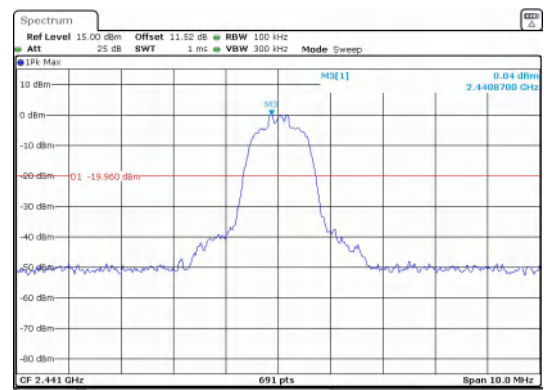
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



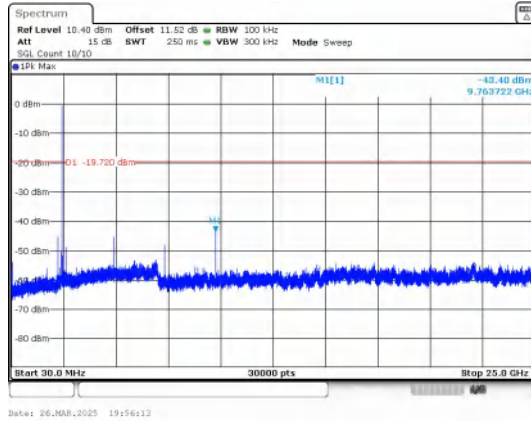
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 0



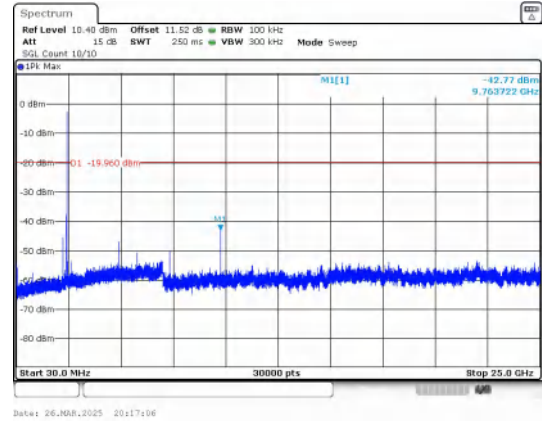
Out Of Band Emission
GFSK_DH5_Channel 39



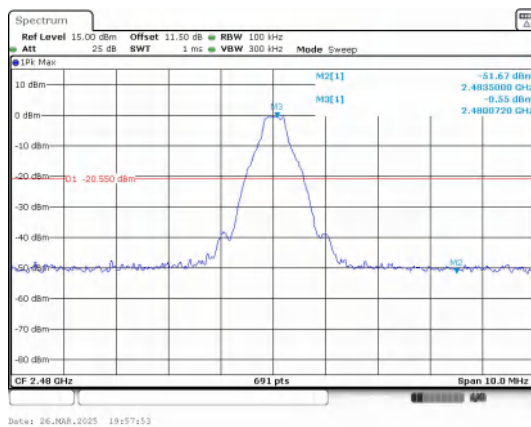
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39



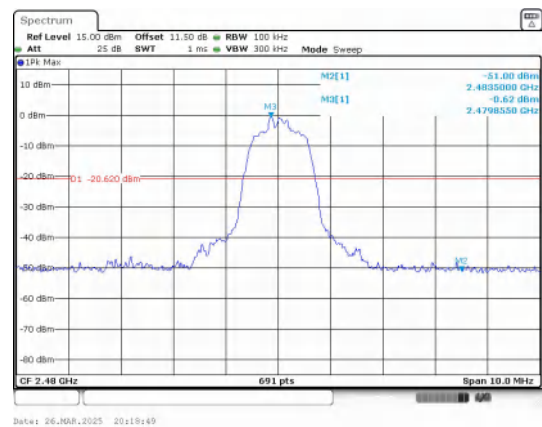
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



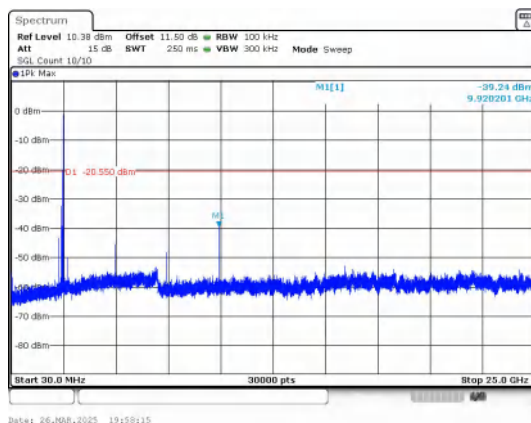
30.0 MHz - 25000.0 MHz
 $\pi/4$ QPSK_2-DH5_Channel 39



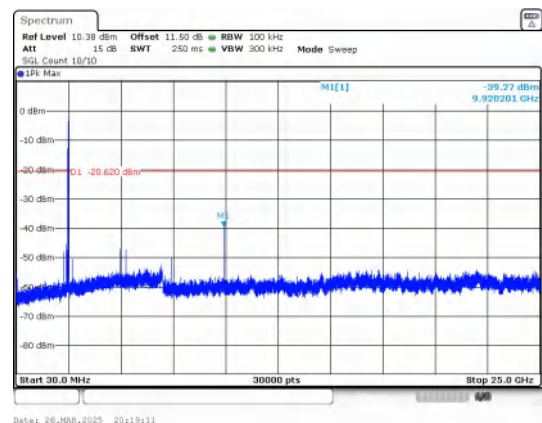
Out Of Band Emission
GFSK_DH5_Channel 78



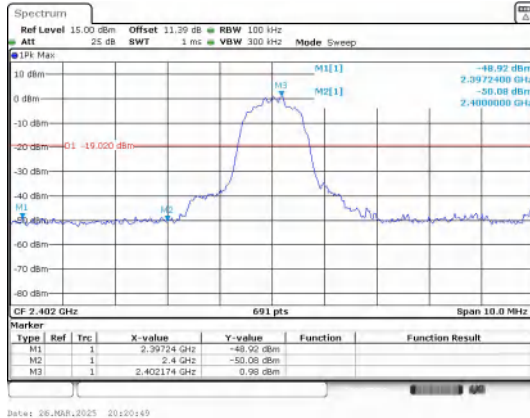
Out Of Band Emission
 $\pi/4$ QPSK_2-DH5_Channel 78



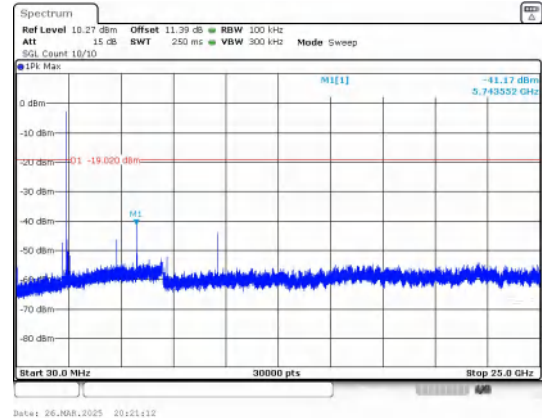
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



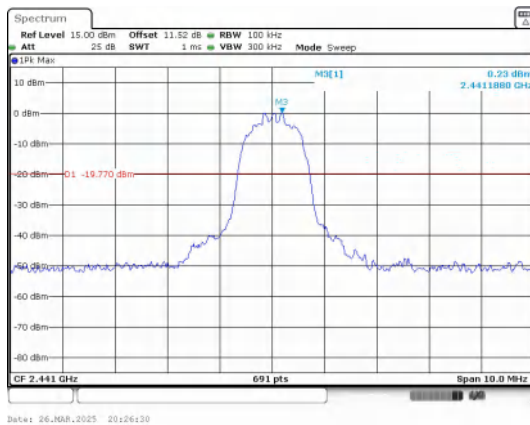
30.0 MHz - 25000.0 MHz
 $\pi/4$ QPSK_2-DH5_Channel 78



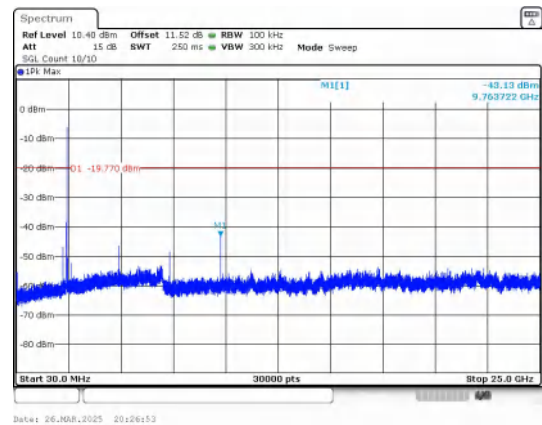
Out Of Band Emission
8DPSK_3-DH5_Channel 0



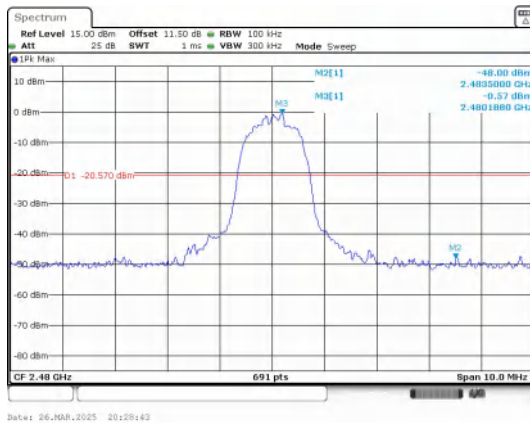
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



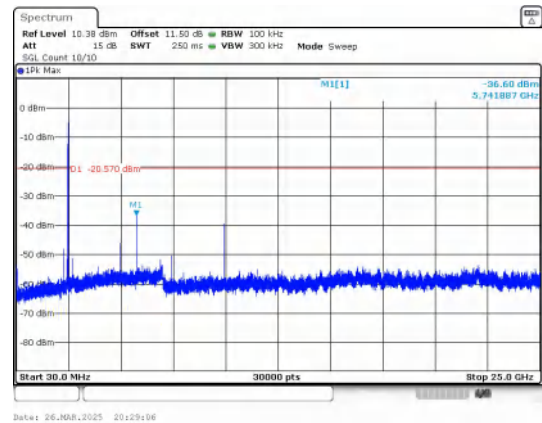
Out Of Band Emission
8DPSK_3-DH5_Channel 39



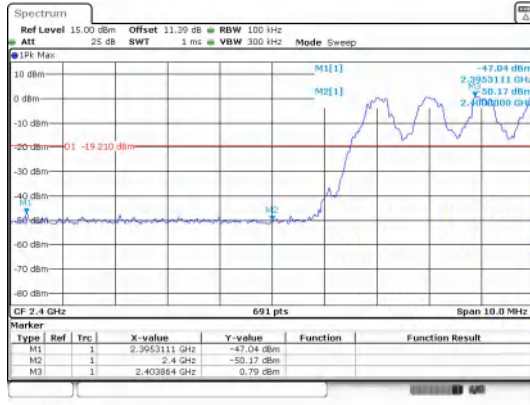
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



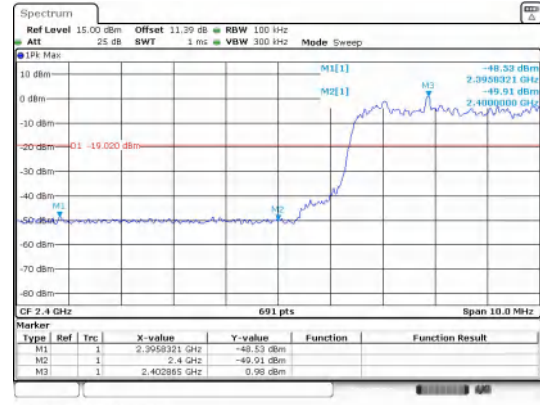
Out Of Band Emission
8DPSK_3-DH5_Channel 78



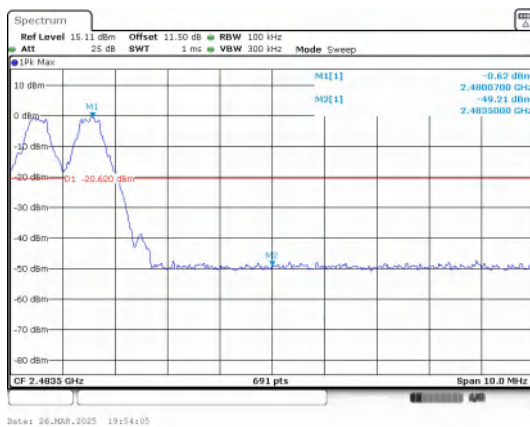
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



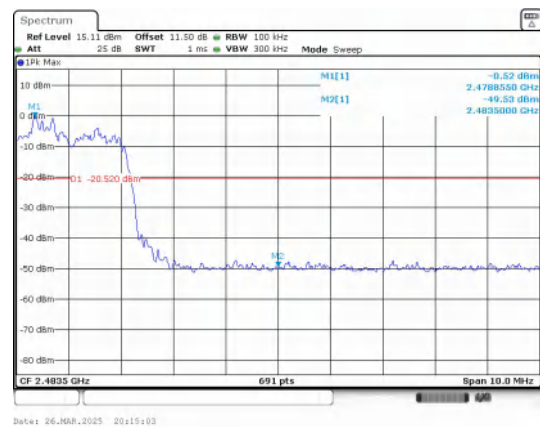
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



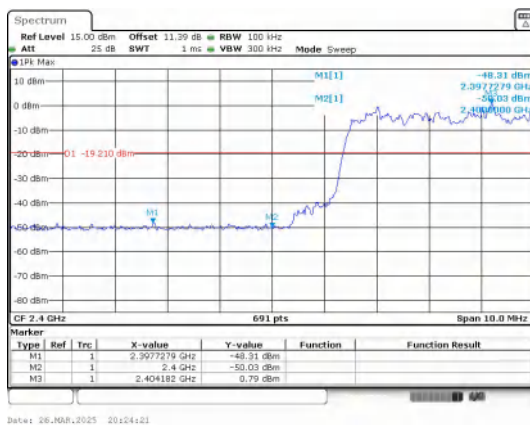
Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



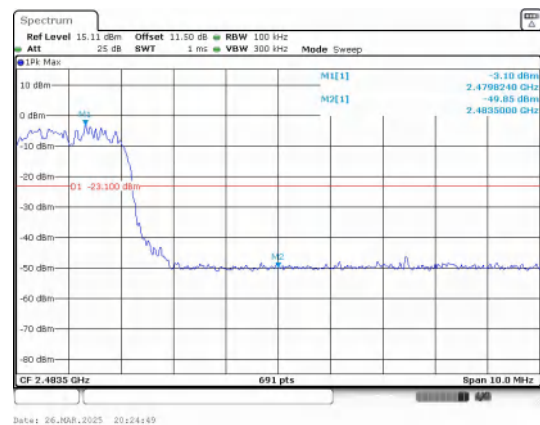
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



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

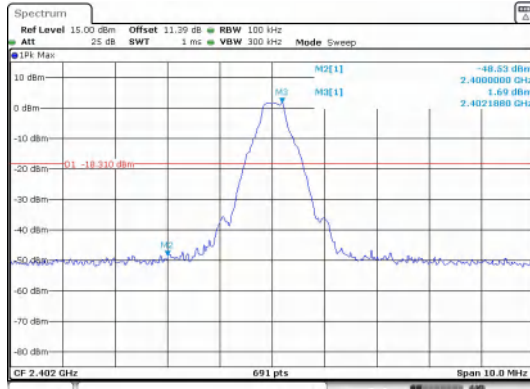
Modulation	Packet	Channel	OOB Emission Frequency	OOB Emission Level	Limit (dBm)	Over Limit (dB)	Result
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			(MHz)	(dBm)			
GFSK	DH5	0	2400.00	-48.530	-18.31	-30.220	PASS
			4803.85	-44.578	-18.31	-26.268	PASS
		39	9763.72	-43.174	-19.36	-23.814	PASS
		78	2483.50	-50.620	-20.29	-30.330	PASS
			9920.20	-39.415	-20.29	-19.125	PASS
$\pi/4$ DQPSK	2-DH5	0	2398.93	-47.416	-18.34	-29.076	PASS
			2400.00	-47.890	-18.34	-29.550	PASS
			9608.10	-44.412	-18.34	-26.072	PASS
		39	9763.72	-43.116	-19.3	-23.816	PASS
		78	826.13	-39.312	-20.41	-18.902	PASS
			2483.50	-50.380	-20.41	-29.970	PASS
8DPSK	3-DH5	0	2399.00	-48.876	-18.42	-30.456	PASS
			2400.00	-49.040	-18.42	-30.620	PASS
			5745.20	-35.288	-18.42	-16.868	PASS
		39	9763.72	-42.738	-19.38	-23.358	PASS
		78	2483.50	-50.790	-20.52	-30.270	PASS
			9920.20	-39.589	-20.52	-19.069	PASS

Hopping

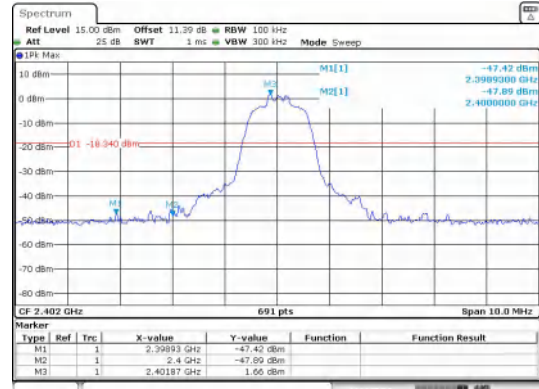
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2395.83	-47.671	-18.44	-29.231	PASS
			2400.00	-50.040	-18.44	-31.600	PASS
			2483.50	-48.990	-20.36	-28.630	PASS
$\pi/4$ DQPSK	2-DH5		2398.67	-48.006	-18.85	-29.156	PASS
			2400.00	-49.860	-18.85	-31.010	PASS
			2483.50	-50.230	-20.68	-29.550	PASS
8DPSK	3-DH5		2398.68	-47.389	-18.71	-28.679	PASS
			2400.00	-49.190	-18.71	-30.480	PASS
			2483.50	-49.430	-21.98	-27.450	PASS

Test Graphs



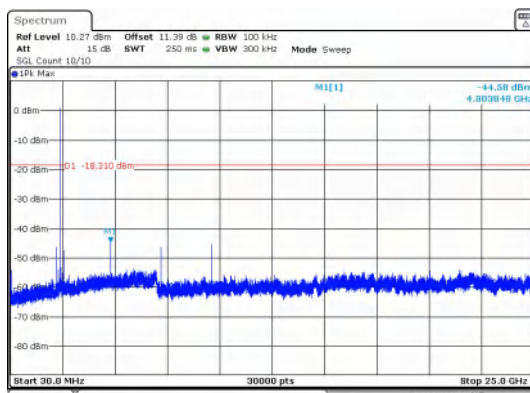
Date: 1.APR.2025 16:56:59

Out Of Band Emission
GFSK_DH5_Channel 0



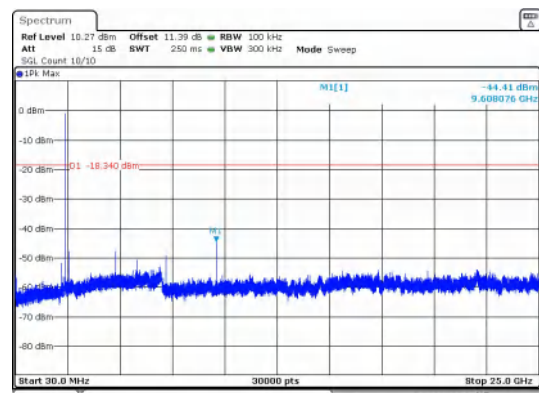
Date: 1.APR.2025 17:24:04

Out Of Band Emission
 $\pi/4$ QPSK_2-DH5_Channel 0



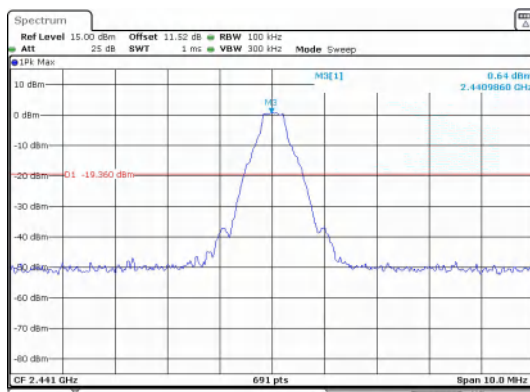
Date: 1.APR.2025 16:57:23

30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



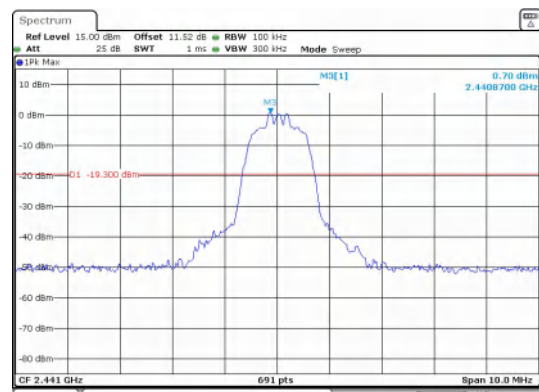
Date: 1.APR.2025 17:24:06

30.0 MHz - 25000.0 MHz
 $\pi/4$ QPSK_2-DH5_Channel 0



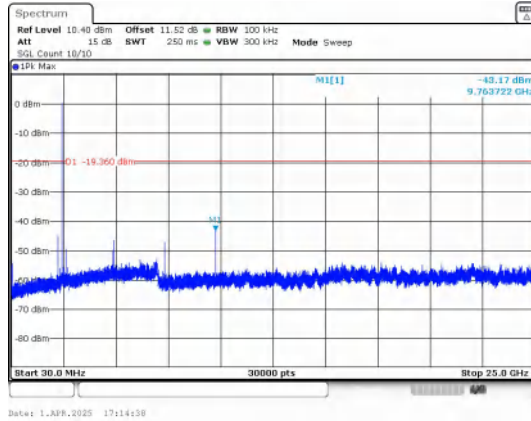
Date: 1.APR.2025 17:14:16

Out Of Band Emission
GFSK_DH5_Channel 39

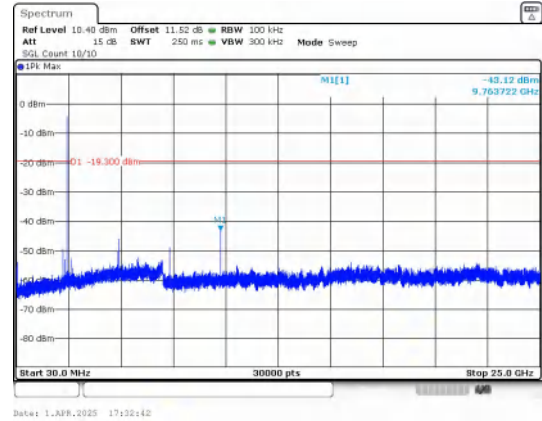


Date: 1.APR.2025 17:32:20

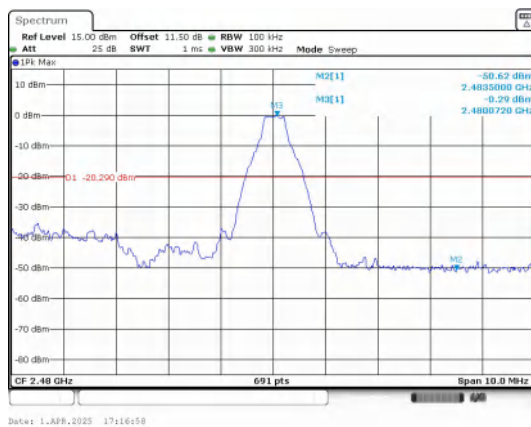
Out Of Band Emission
 $\pi/4$ QPSK_2-DH5_Channel 39



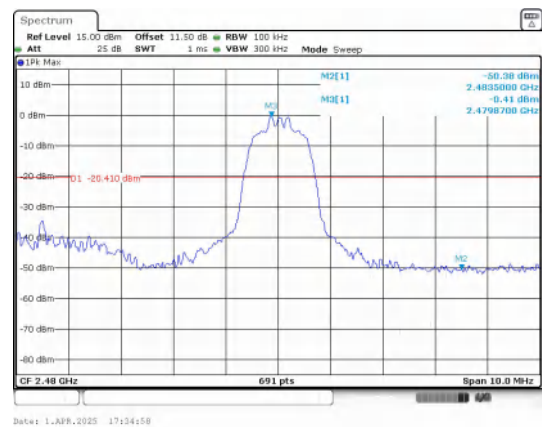
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



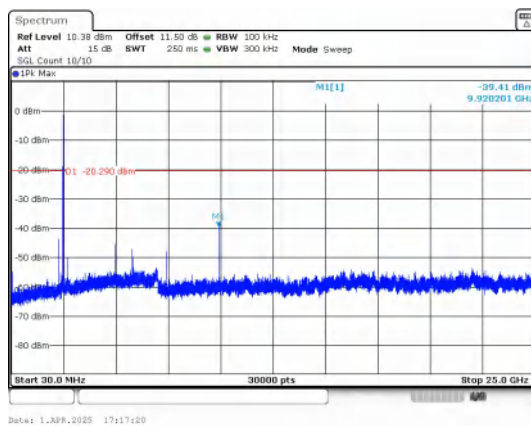
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



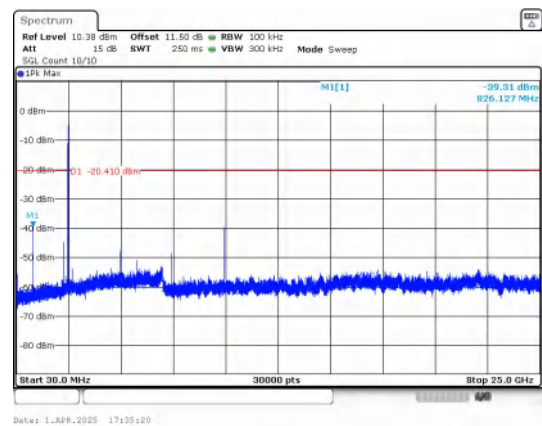
Out Of Band Emission
GFSK_DH5_Channel 78



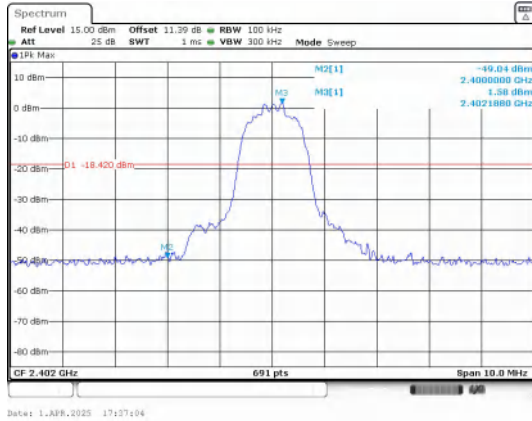
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78



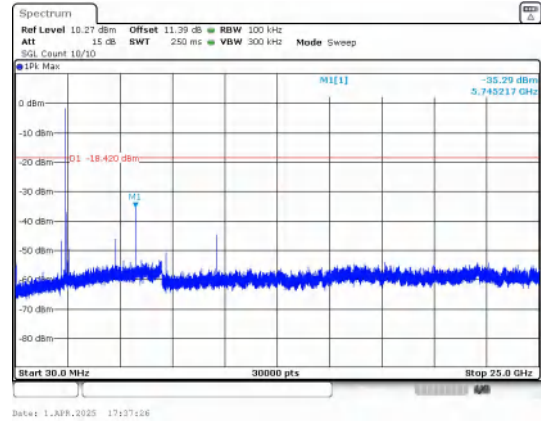
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



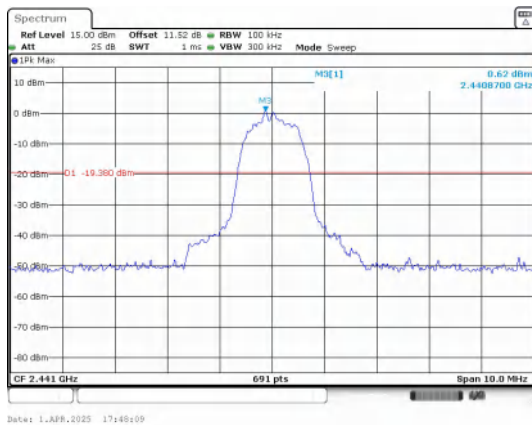
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



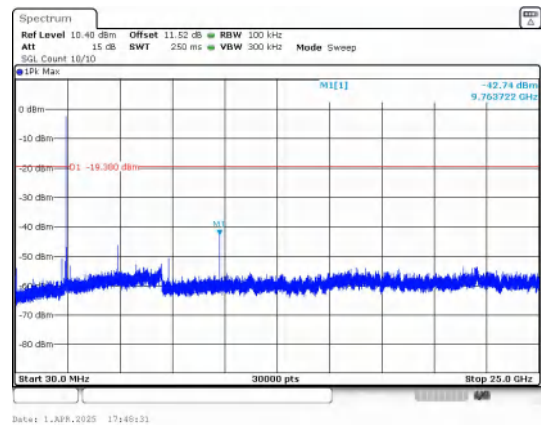
Out Of Band Emission
8DPSK_3-DH5_Channel 0



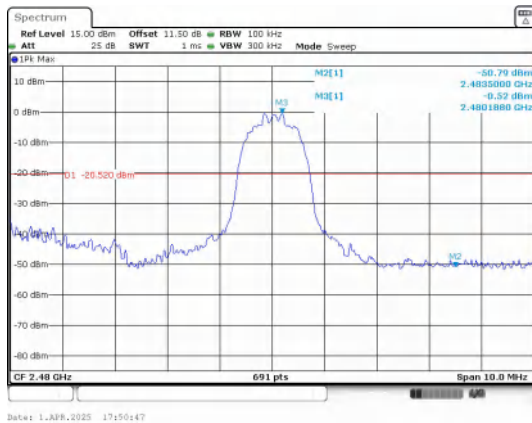
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



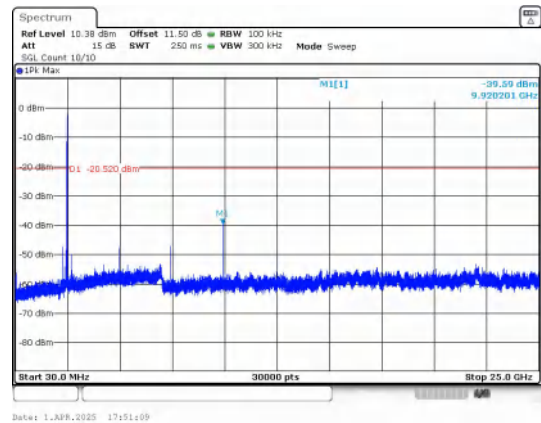
Out Of Band Emission
8DPSK_3-DH5_Channel 39



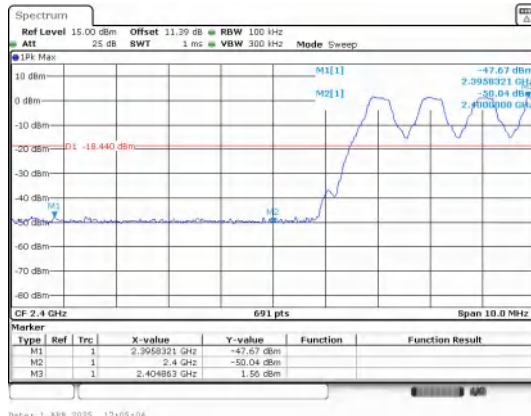
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



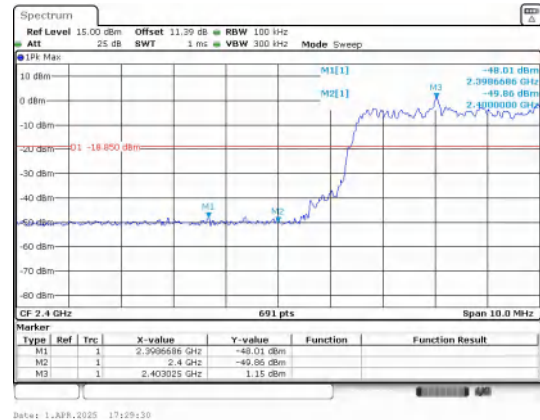
Out Of Band Emission
8DPSK_3-DH5_Channel 78



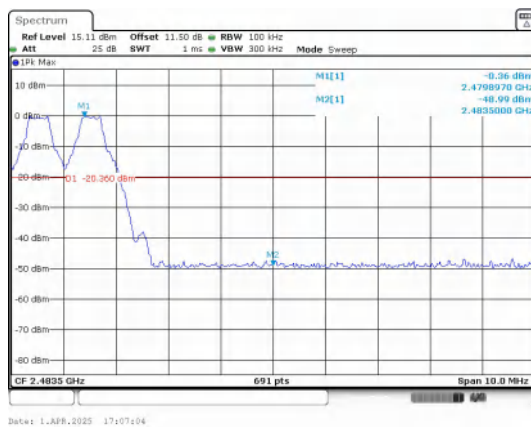
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



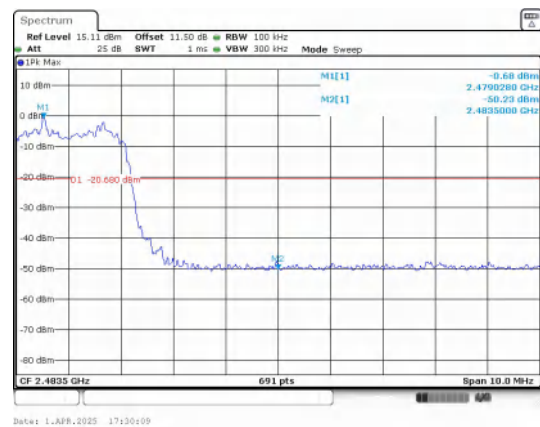
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



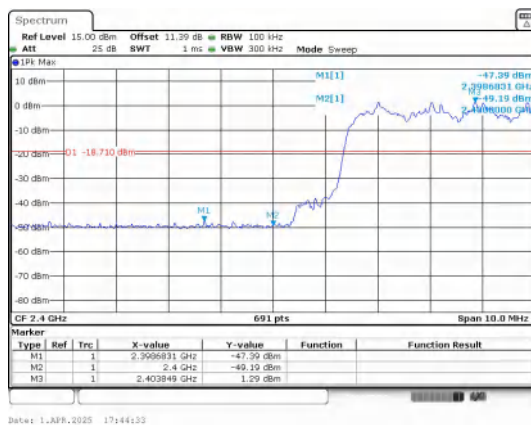
Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



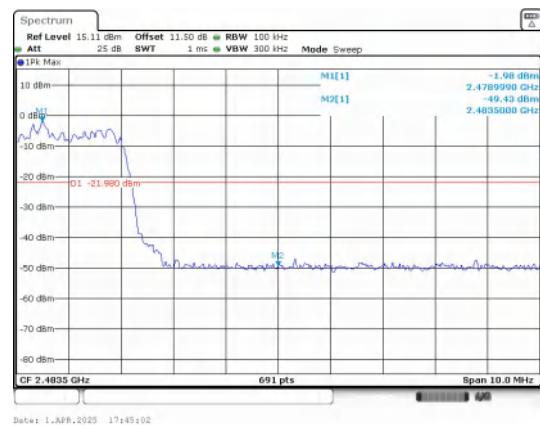
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



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-----