

Appendix Report

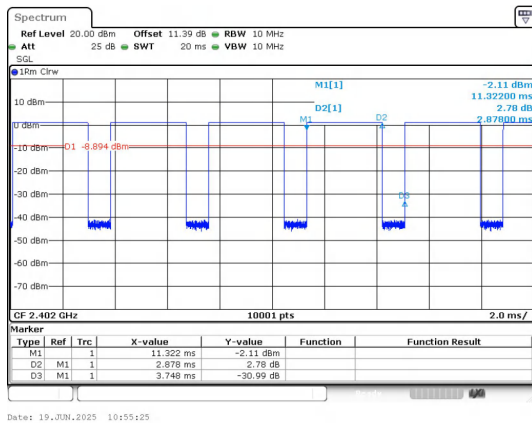
Project No.:	CISR250617190
Test Engineer:	James Wang
Supervised by:	Rory Huang

1) Duty Cycle

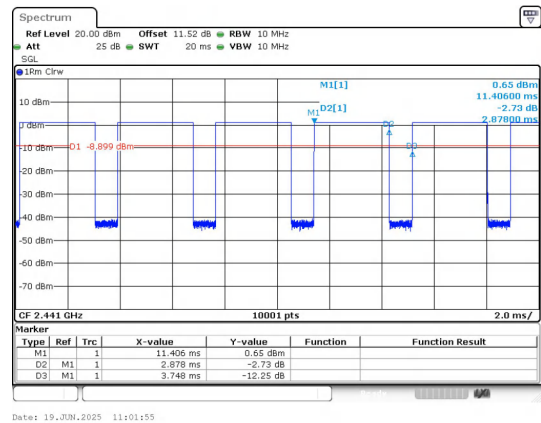
Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.878	3.748	76.79	0.7679	1.147	0.3475
		39	2.878	3.748	76.79	0.7679	1.147	0.3475
		78	2.878	3.748	76.79	0.7679	1.147	0.3475
$\pi/4$ DQPSK	2-DH5	0	2.884	3.748	76.95	0.7695	1.1379	0.3467
		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
8DPSK	3-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

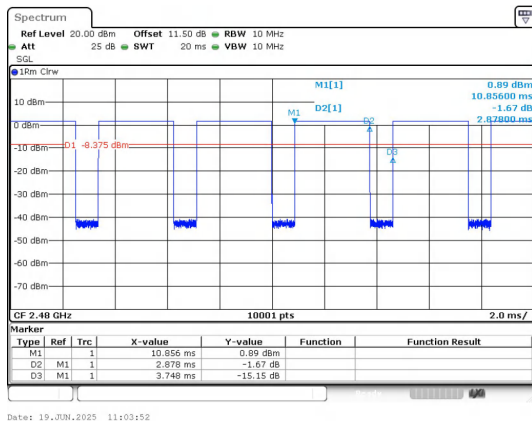
Test Graphs



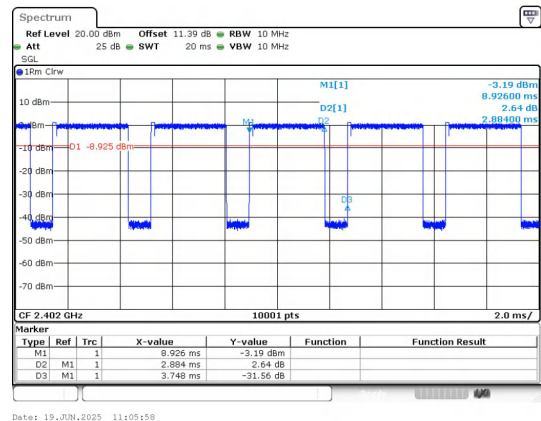
GFSK(DH5)_Channel 0

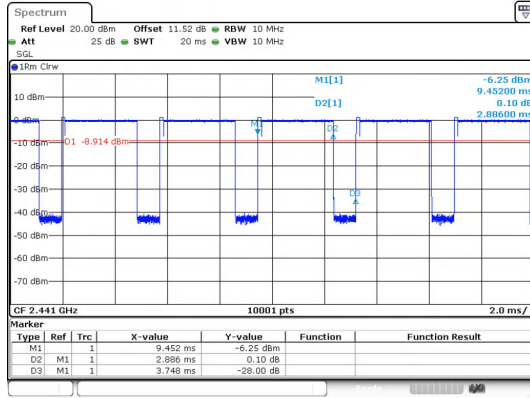


GFSK(DH5)_Channel 39

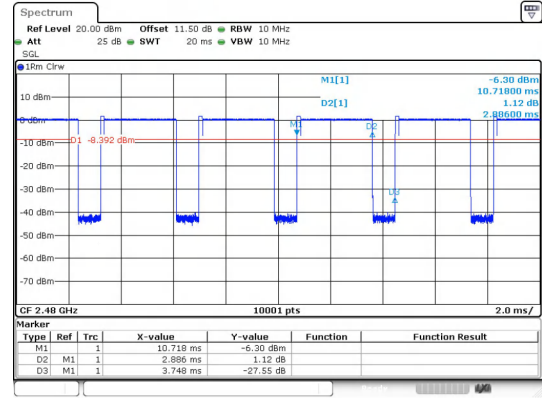


GFSK(DH5)_Channel 78

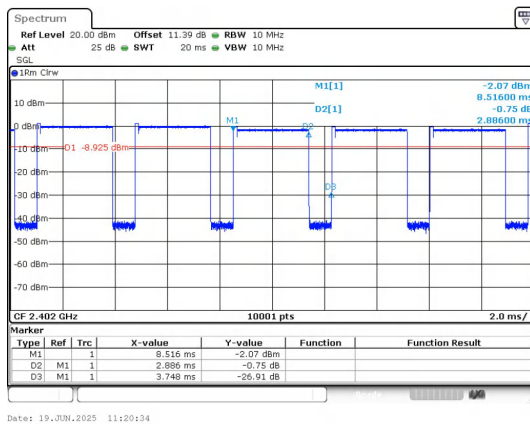

 $\pi/4$ DQPSK(2-DH5)_Channel 0



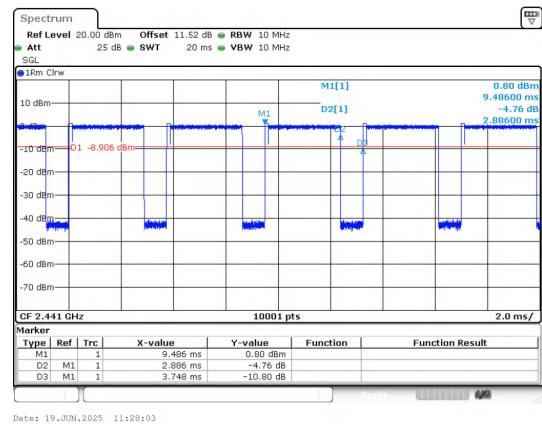
$\pi/4$ DQPSK(2-DH5)_Channel 39



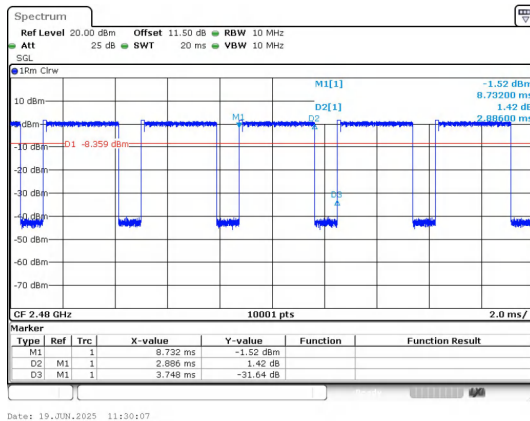
$\pi/4$ DQPSK(2-DH5)_Channel 78



8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39



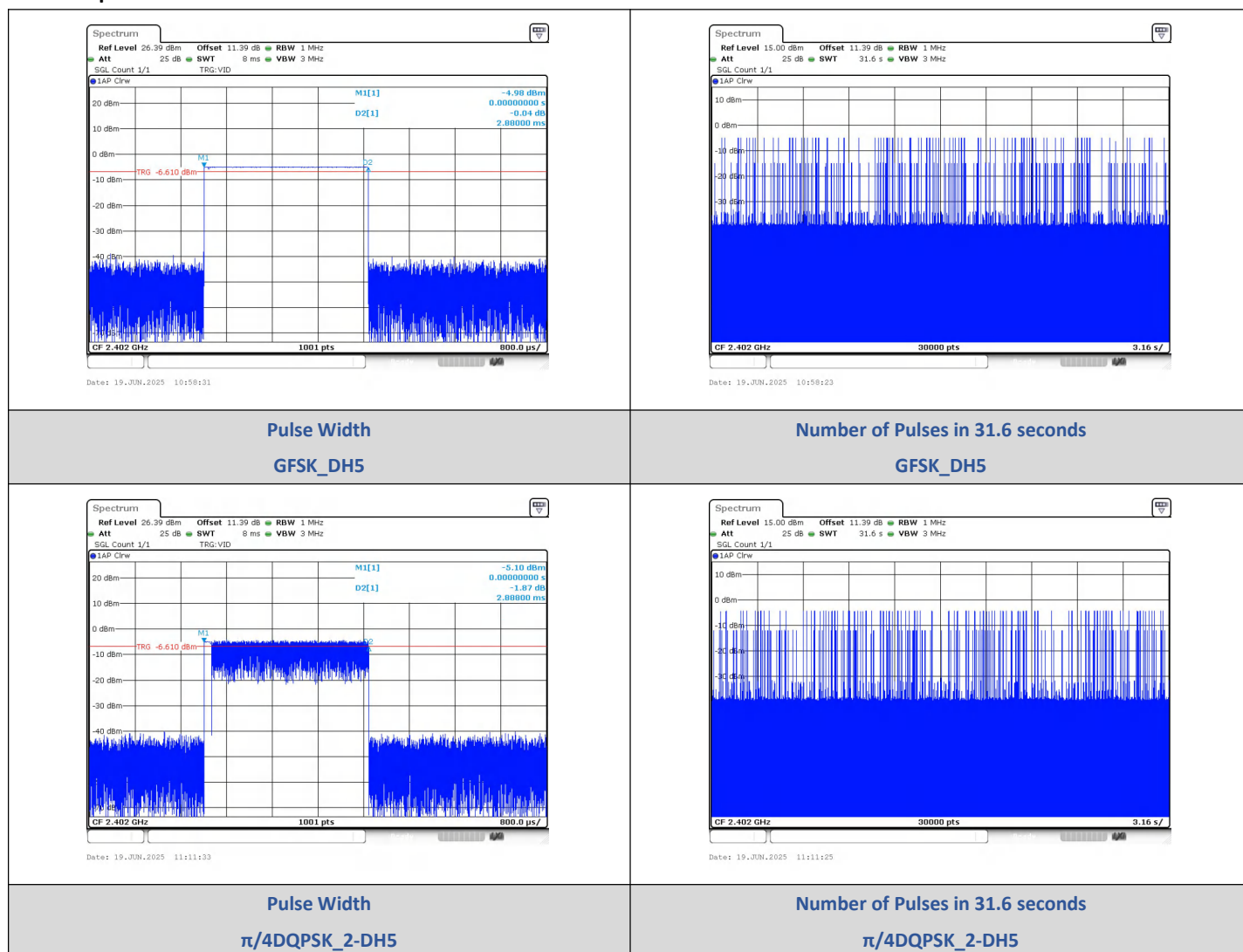
8DPSK(3-DH5)_Channel 78

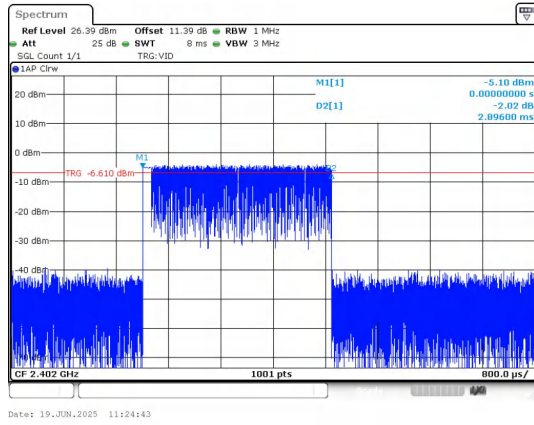
2) Dwell Time

Test Result

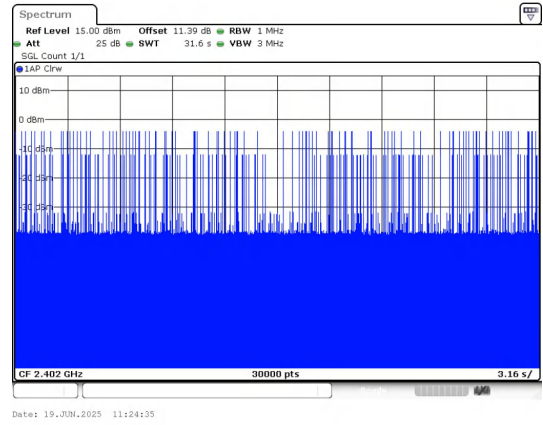
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.880	100	288.0	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.888	116	335.01		PASS
8DPSK	3-DH5		2.896	99	286.7		PASS

Test Graphs





Pulse Width
8DPSK_3-DH5



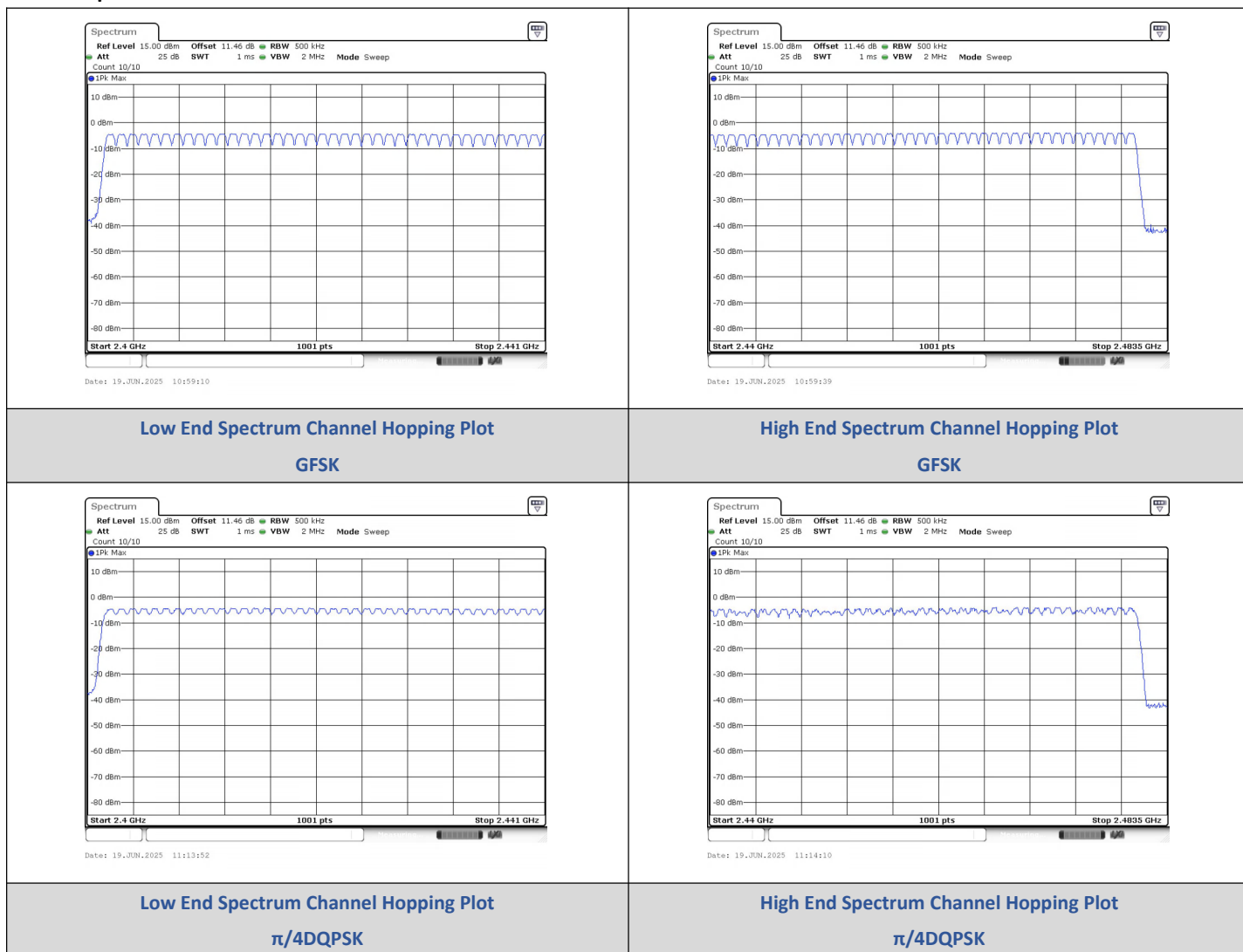
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

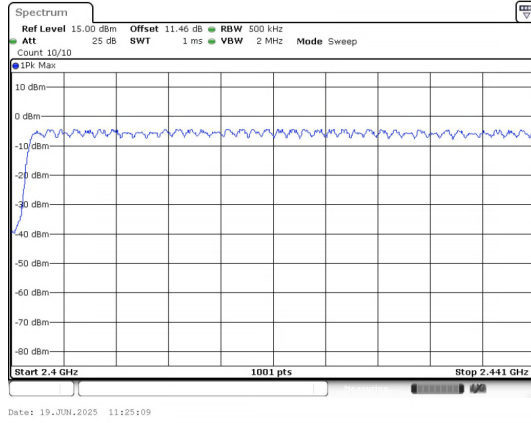
3) Number Of Hopping Channel

Test Result

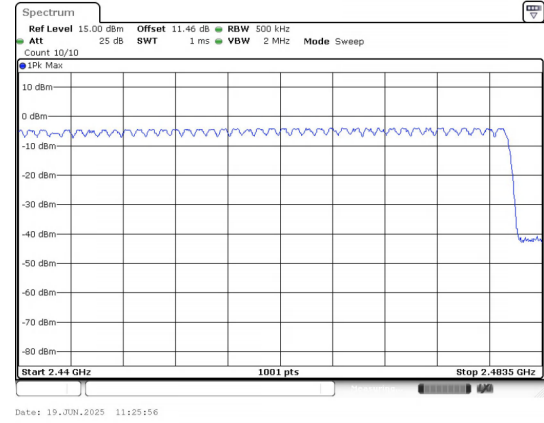
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK



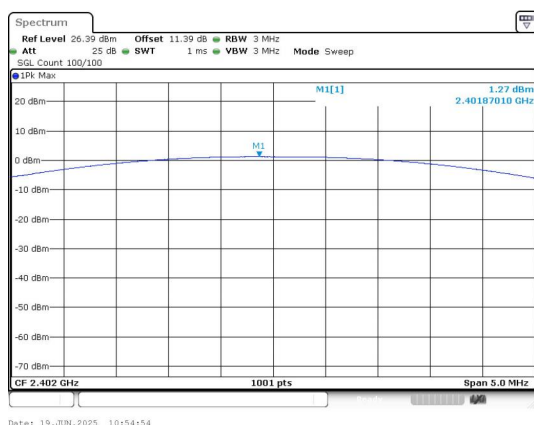
High End Spectrum Channel Hopping Plot
8DPSK

4) Conducted Output Power

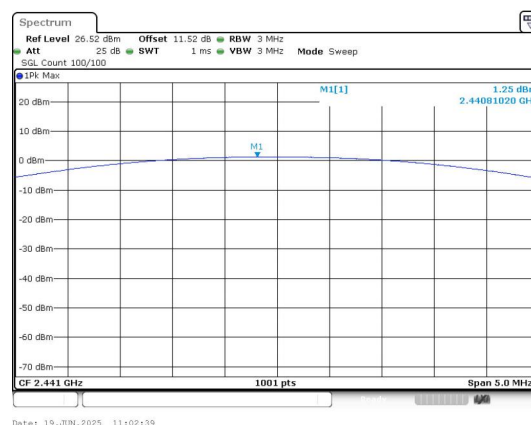
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	1.27	1.34	≤30	PASS
		39	1.25	1.33		PASS
		78	1.79	1.51		PASS
$\pi/4$ DQPSK	2-DH5	0	2.12	1.63	≤20.97	PASS
		39	2.13	1.63		PASS
		78	2.66	1.85		PASS
8DPSK	3-DH5	0	2.51	1.78		PASS
		39	2.55	1.80		PASS
		78	3.07	2.03		PASS

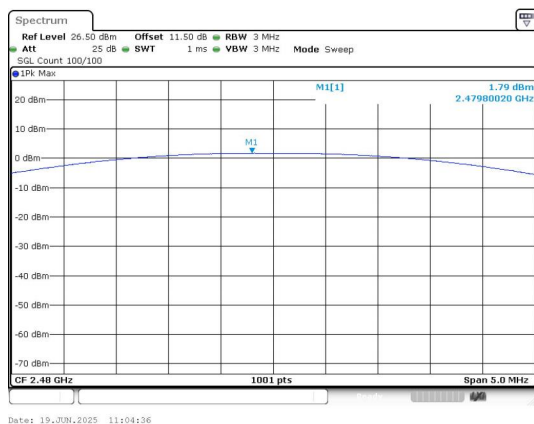
Test Graphs



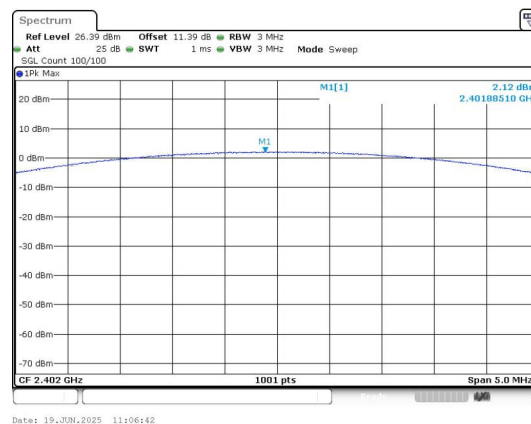
Peak Output Power
GFSK_Channel 0



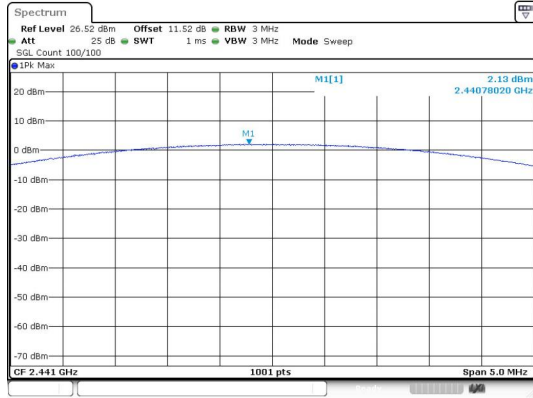
Peak Output Power
GFSK_Channel 39



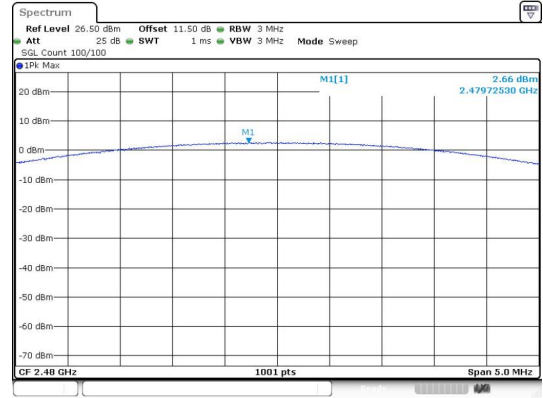
Peak Output Power
GFSK_Channel 78



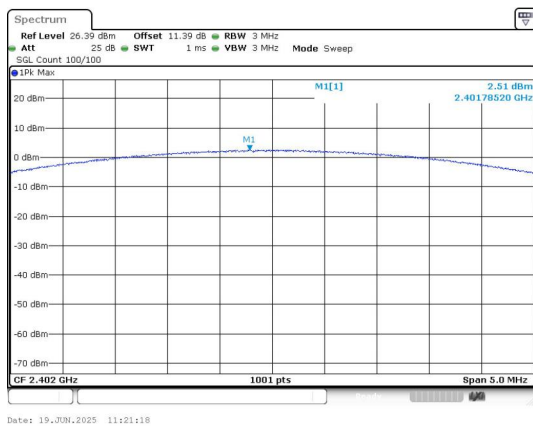
Peak Output Power
 $\pi/4$ DQPSK_Channel 0



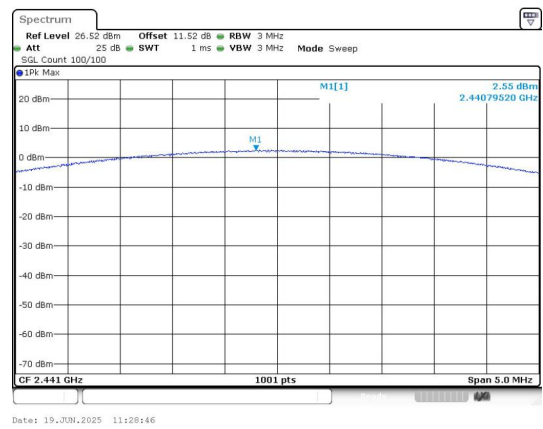
Peak Output Power
 $\pi/4$ DQPSK_Channel 39



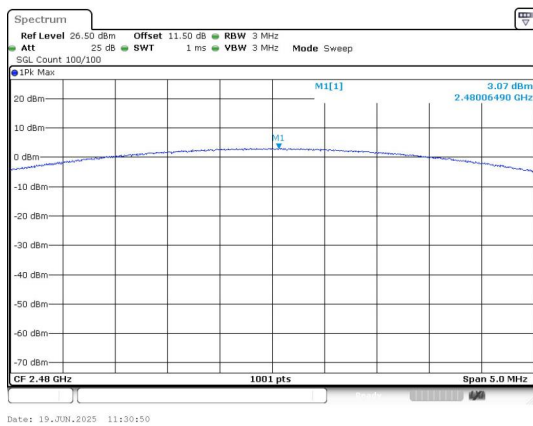
Peak Output Power
 $\pi/4$ DQPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



Peak Output Power
8DPSK_Channel 39



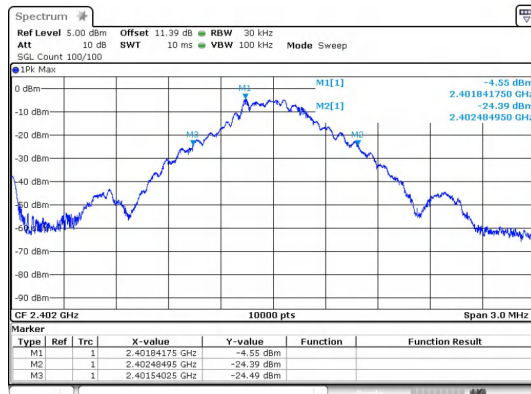
Peak Output Power
8DPSK_Channel 78

5) 20dB Bandwidth

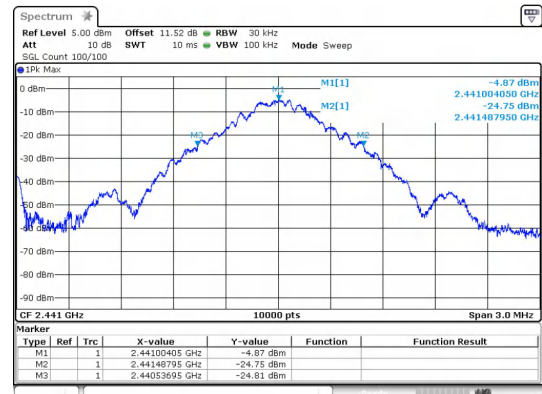
Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	0.94
	39	2441 MHz	0.94
	78	2480 MHz	0.94
$\pi/4$ DQPSK	0	2402 MHz	1.280
	39	2441 MHz	1.280
	78	2480 MHz	1.300
8DPSK	0	2402 MHz	1.290
	39	2441 MHz	1.290
	78	2480 MHz	1.290

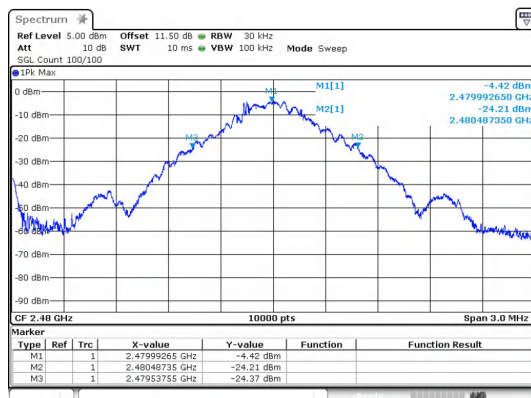
Test Graphs



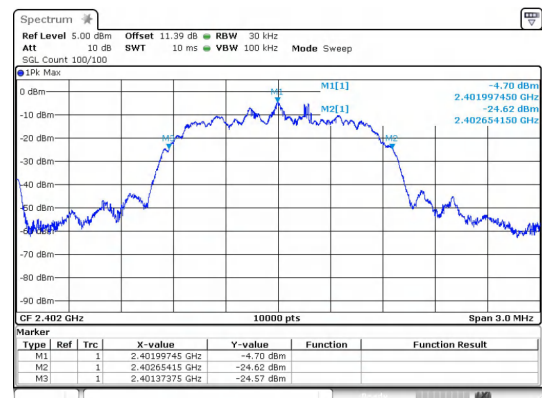
GFSK_DH5_Channel 0

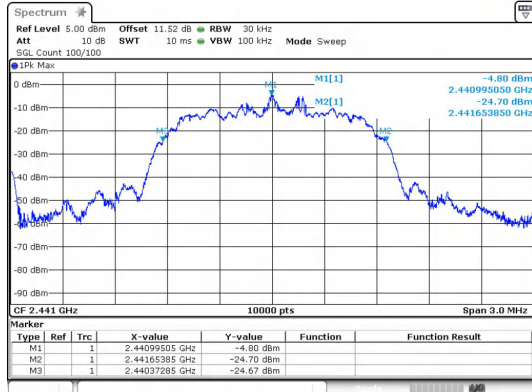


GFSK_DH5_Channel 39

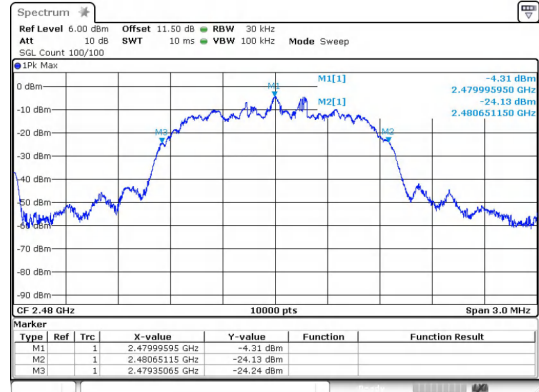


GFSK_DH5_Channel 78

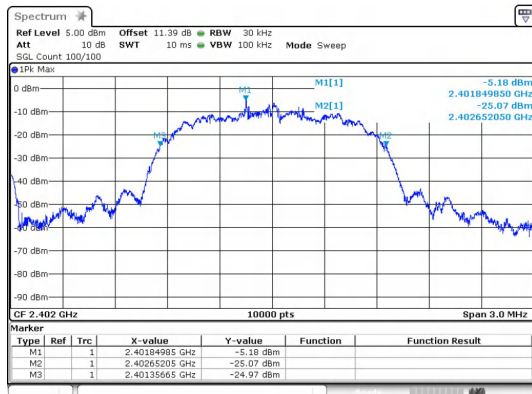

 $\pi/4$ DQPSK_2-DH5_Channel 0



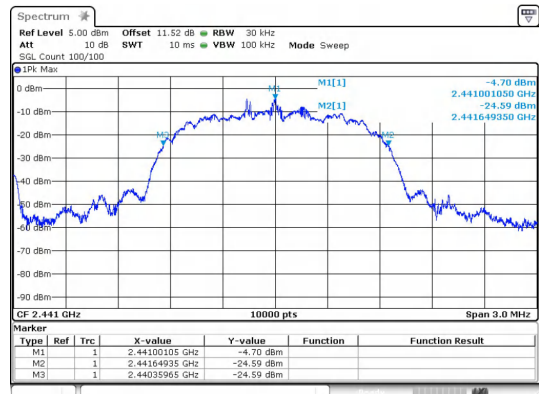
$\pi/4$ DQPSK_2-DH5_Channel 39



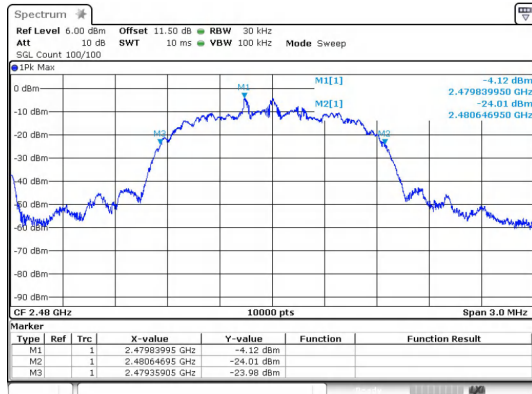
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



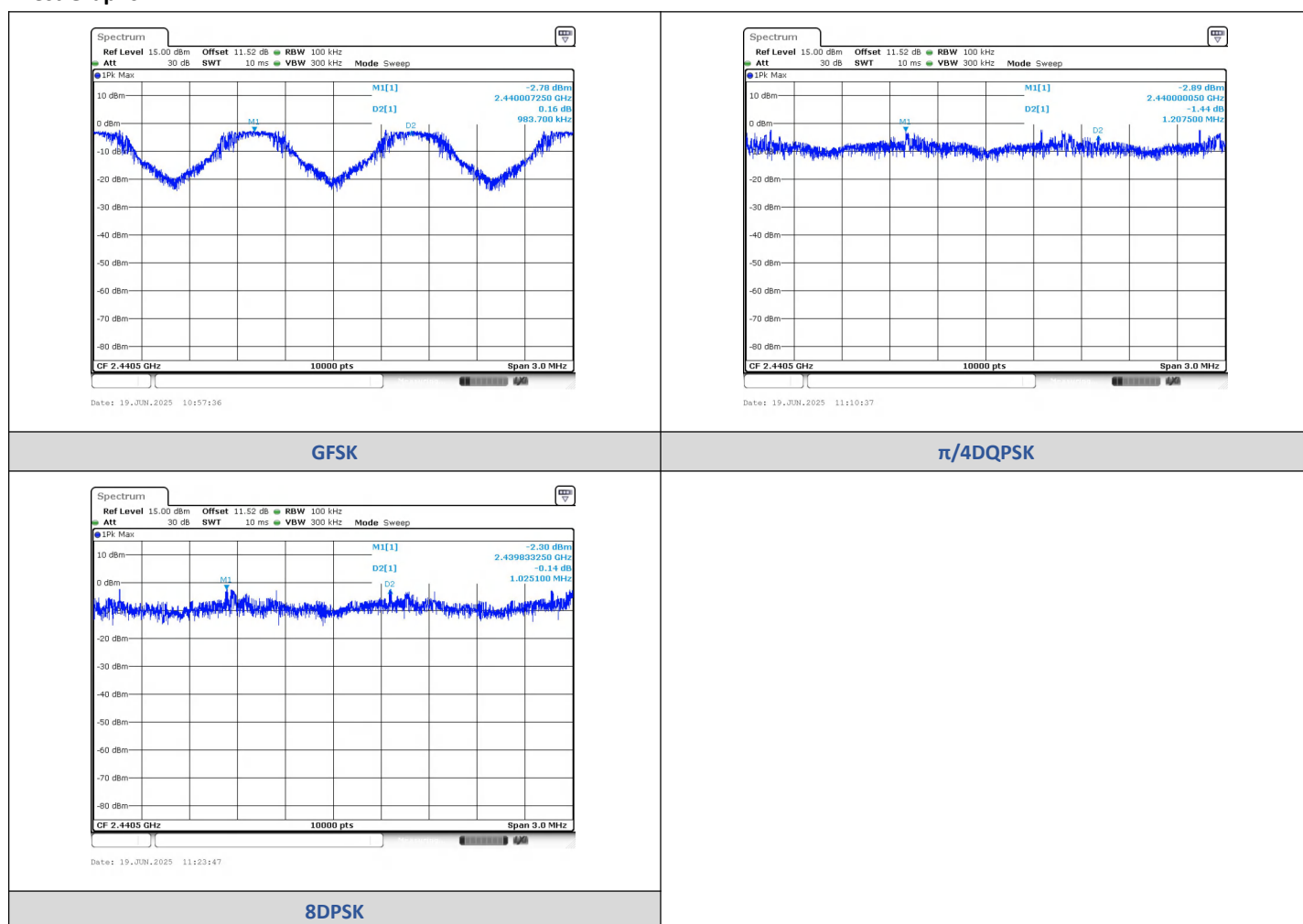
8DPSK_3-DH5_Channel 78

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	2440.0073	2440.9909	0.9837	0.94	PASS
$\pi/4$ QPSK	2-DH5	2440.0001	2441.2076	1.2075	0.853	PASS
8DPSK	3-DH5	2439.8333	2440.8583	1.0251	0.86	PASS

Test Graphs



7) Conducted Out Of Band Emission

Test Result

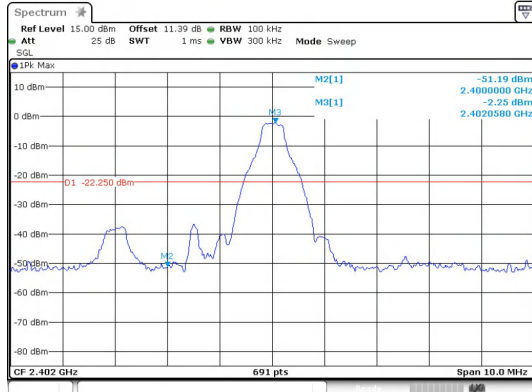
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2399.00	-37.954	-22.25	-15.704	PASS
			2400.00	-51.190	-22.25	-28.940	PASS
			9602.20	-52.721	-22.25	-30.471	PASS
		39	9757.90	-50.282	-22.17	-28.112	PASS
		78	2483.50	-47.420	-21.7	-25.720	PASS
			9914.37	-50.004	-21.7	-28.304	PASS
$\pi/4$ DQPSK	2-DH5	0	2398.83	-38.633	-22.13	-16.503	PASS
			2400.00	-50.190	-22.13	-28.060	PASS
			9602.20	-51.580	-22.13	-29.450	PASS
		39	9757.90	-50.268	-22.2	-28.068	PASS
		78	2483.50	-48.710	-21.65	-27.060	PASS
			9914.37	-50.885	-21.65	-29.235	PASS
8DPSK	3-DH5	0	96.20	-40.506	-22.8	-17.706	PASS
			2398.86	-38.778	-22.8	-15.978	PASS
			2400.00	-51.250	-22.8	-28.450	PASS
		39	96.17	-45.930	-22.22	-23.710	PASS
		78	96.17	-40.292	-21.64	-18.652	PASS
			2483.50	-47.600	-21.64	-25.960	PASS

Hopping

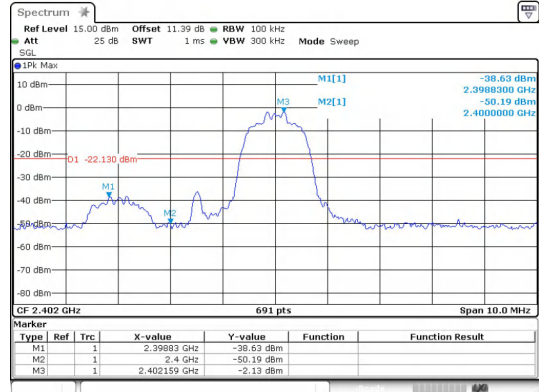
Hopping							
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2400.00	-38.770	-22.47	-16.300	PASS
			2483.50	-49.950	-21.83	-28.120	PASS
$\pi/4$ DQPSK	2-DH5		2400.00	-41.210	-22.28	-18.930	PASS
			2483.50	-48.300	-23.7	-24.600	PASS
8DPSK	3-DH5		2398.99	-41.871	-22.76	-19.111	PASS
			2400.00	-42.630	-22.76	-19.870	PASS
			2483.50	-50.810	-23.9	-26.910	PASS

Test Graphs



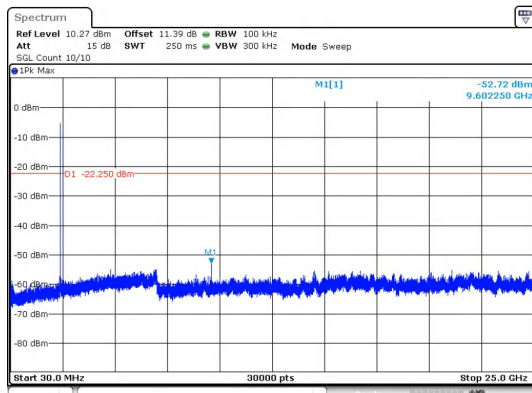
Date: 19.JUN.2025 10:56:17

Out Of Band Emission
GFSK_DH5_Channel 0



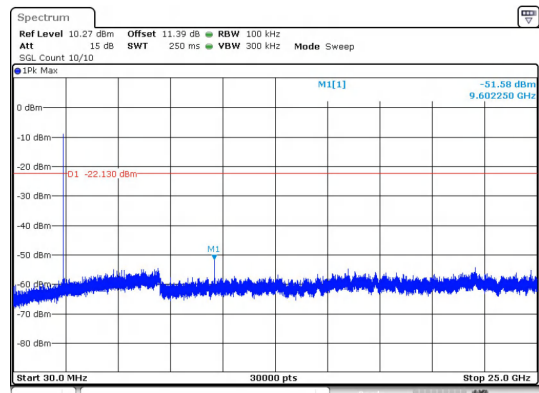
Date: 19.JUN.2025 11:07:07

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



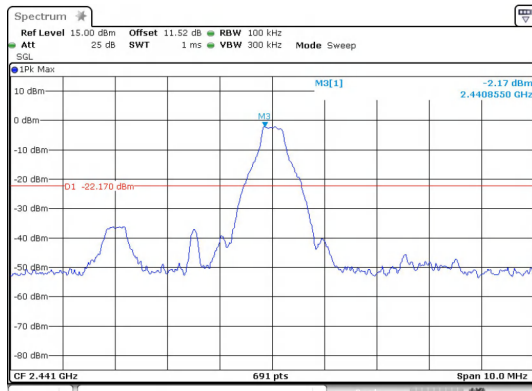
Date: 19.JUN.2025 10:56:40

30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



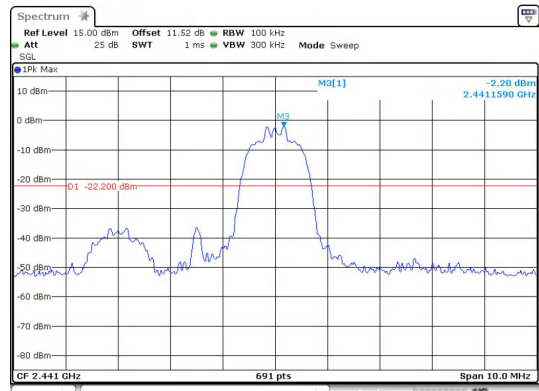
Date: 19.JUN.2025 11:07:30

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



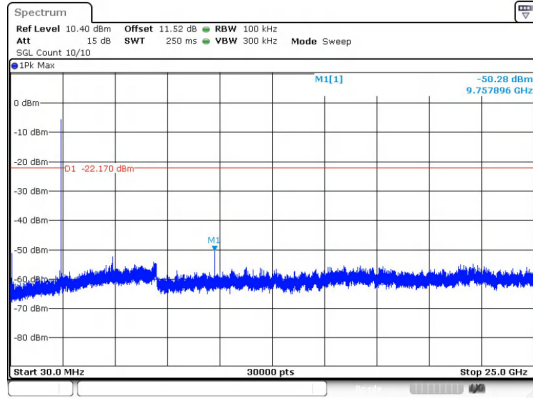
Date: 19.JUN.2025 11:02:58

Out Of Band Emission
GFSK_DH5_Channel 39

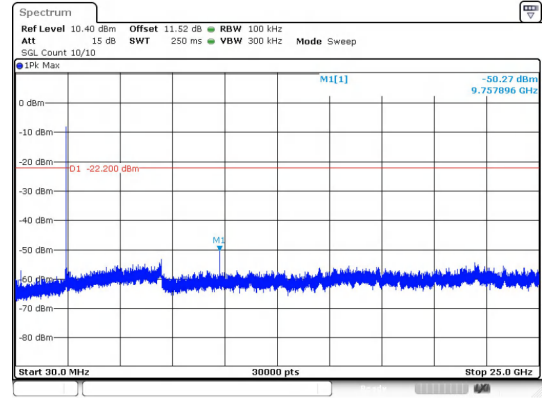


Date: 19.JUN.2025 11:17:07

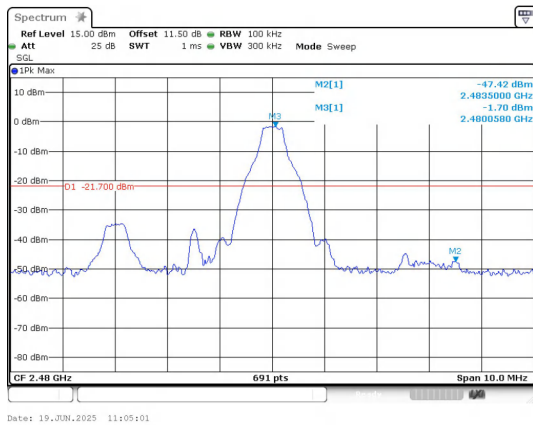
Out Of Band Emission
 $\pi/4$ QPSK_2-DH5_Channel 39



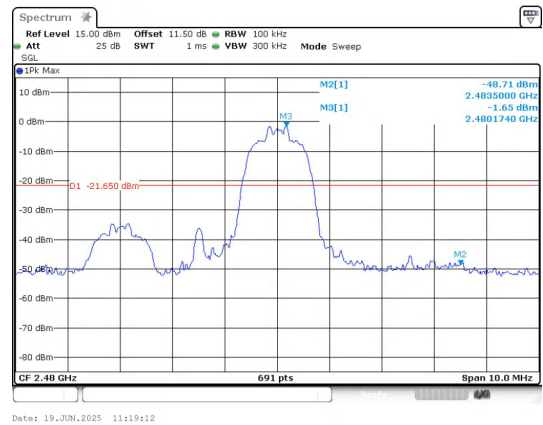
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



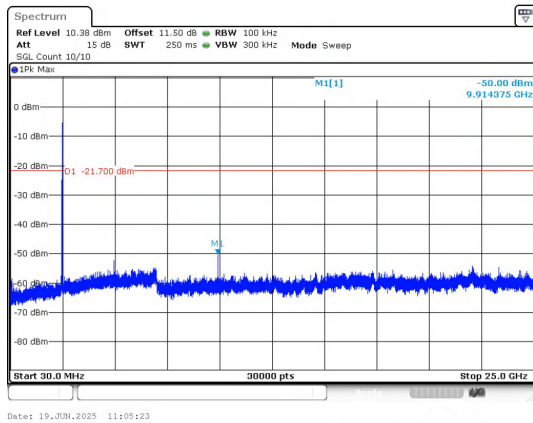
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



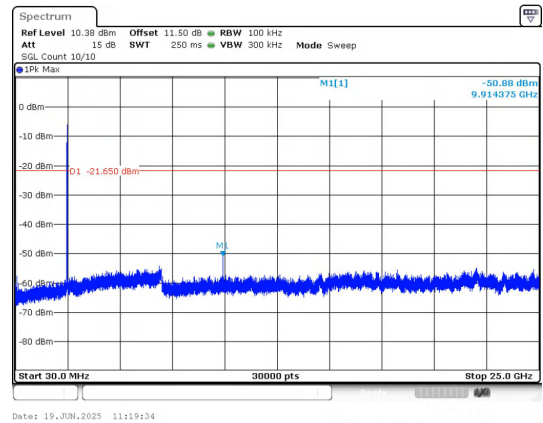
Out Of Band Emission
GFSK_DH5_Channel 78



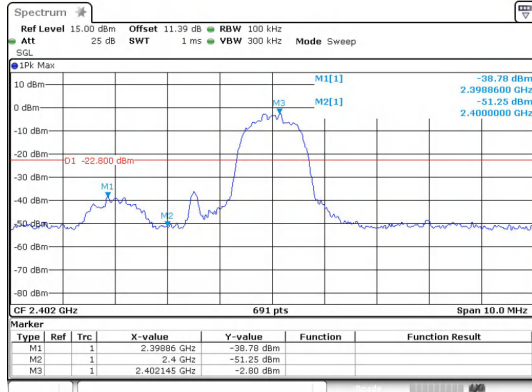
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78



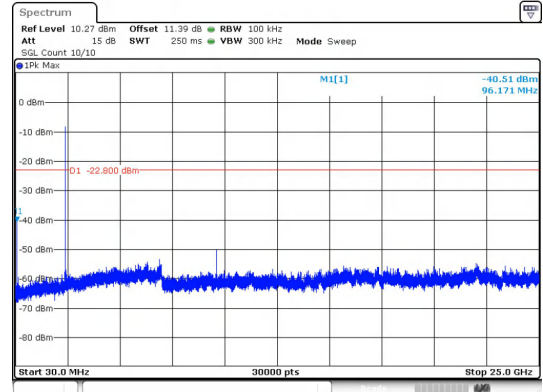
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



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



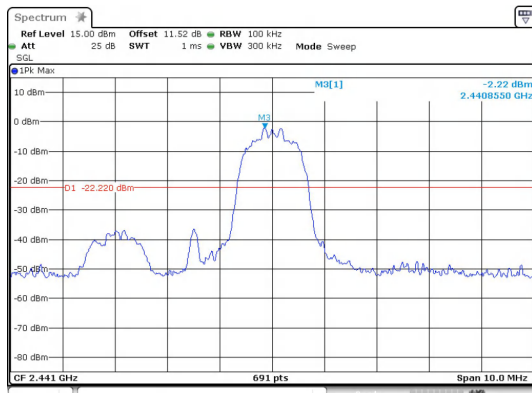
Date: 19.JUN.2025 11:21:43



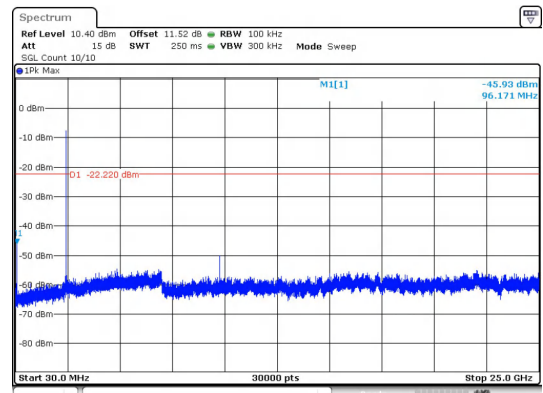
Date: 19.JUN.2025 11:22:05

Out Of Band Emission
8DPSK_3-DH5_Channel 0

30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



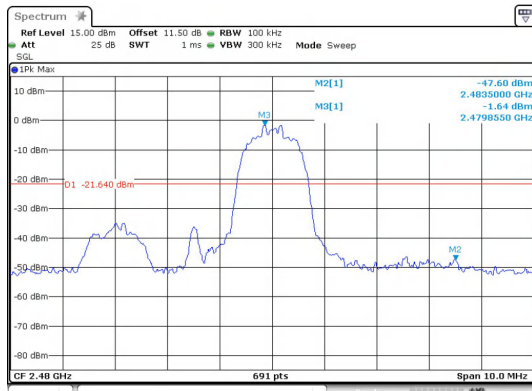
Date: 19.JUN.2025 11:29:06



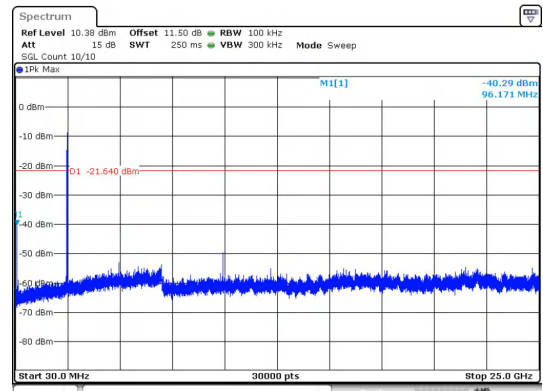
Date: 19.JUN.2025 11:29:29

Out Of Band Emission
8DPSK_3-DH5_Channel 39

30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



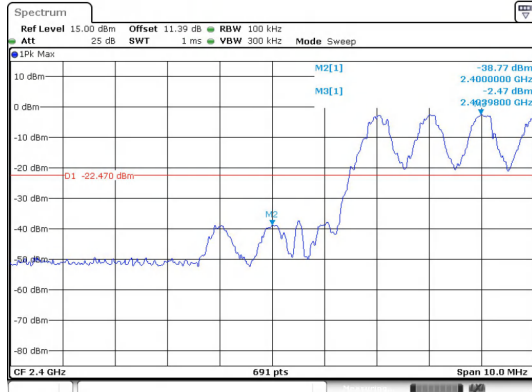
Date: 19.JUN.2025 11:31:15



Date: 19.JUN.2025 11:31:37

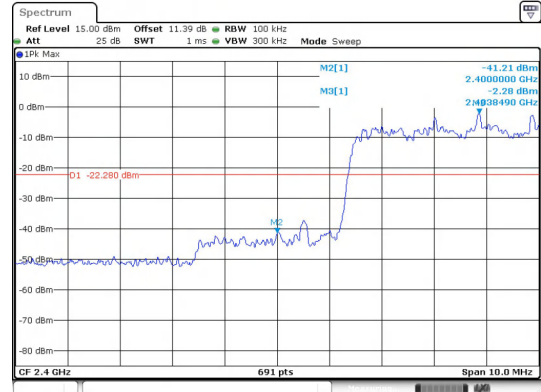
Out Of Band Emission
8DPSK_3-DH5_Channel 78

30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



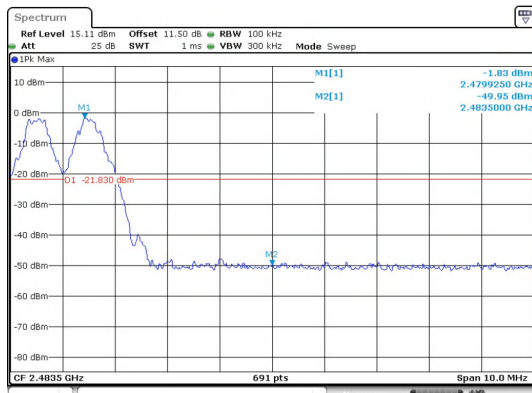
Date: 19 JUN 2025 11:00:50

Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



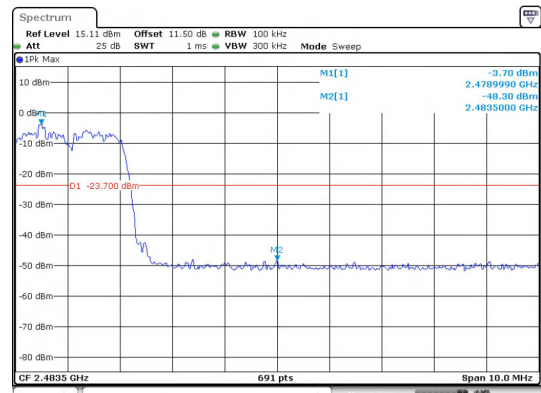
Date: 19 JUN 2025 11:15:03

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



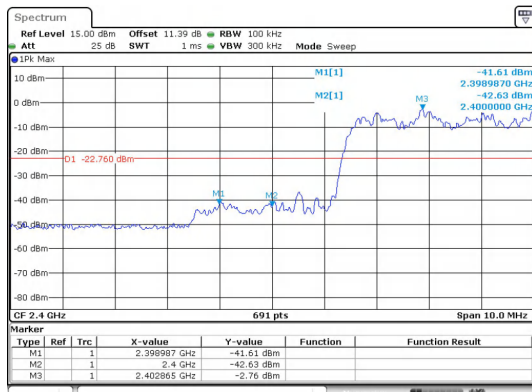
Date: 19 JUN 2025 11:01:20

Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



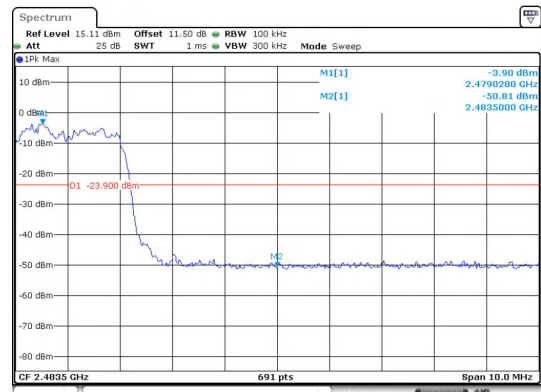
Date: 19 JUN 2025 11:15:32

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



Date: 19 JUN 2025 11:26:48

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



Date: 19 JUN 2025 11:27:32

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

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