

Appendix A

Report No.:	CISRR240109035
Product Name:	Wireless gamepad
Model No.:	Z01
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

1) Conducted Peak Output Power

Test Result

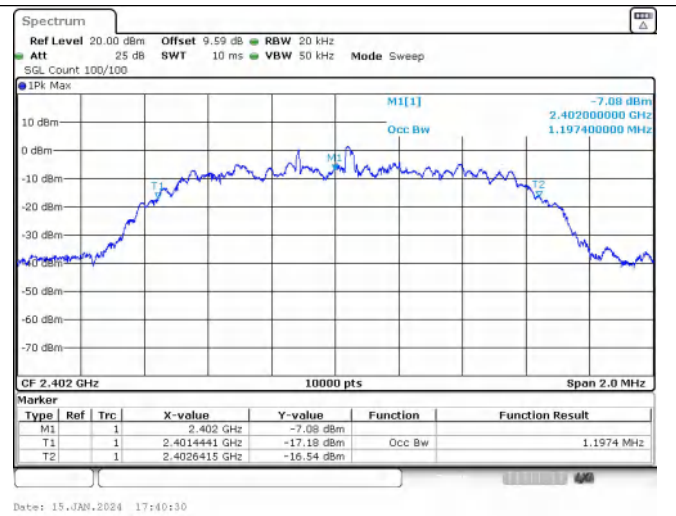
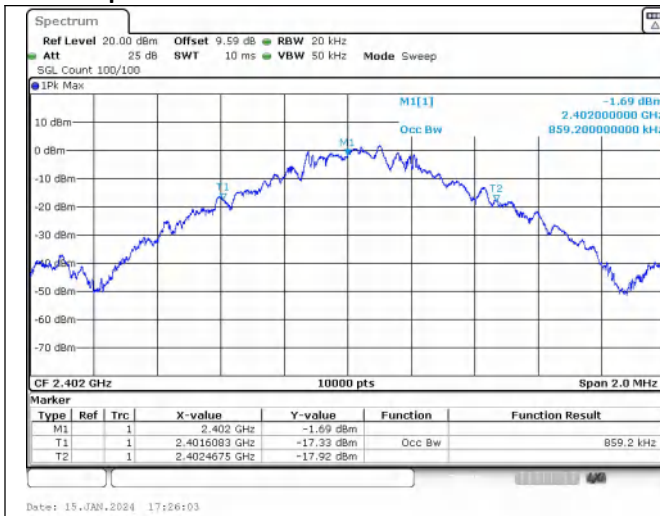
Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	5.295	3.385	30	PASS
		39	5.338	3.418		PASS
		78	4.787	3.011		PASS
$\pi/4$ DQPSK	2-DH5	0	5.886	3.878	20.97	PASS
		39	5.873	3.867		PASS
		78	5.370	3.443		PASS
8DPSK	3-DH5	0	6.134	4.106		PASS
		39	6.110	4.083		PASS
		78	5.567	3.603		PASS

2) 99% Bandwidth

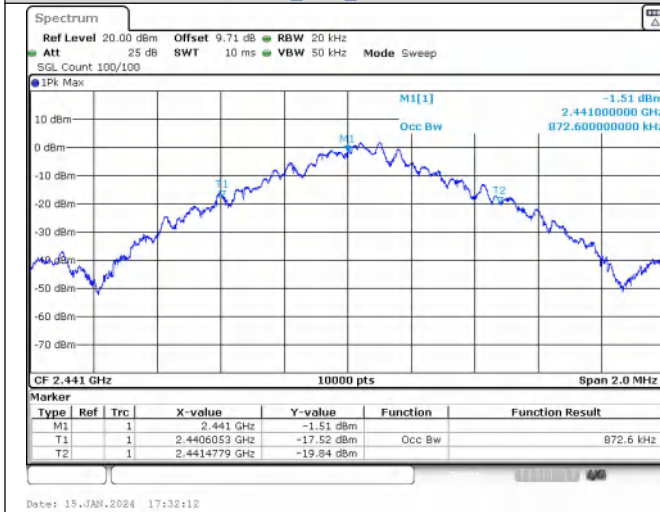
Test Result

Modulation	Channel	99% BW (MHz)
GFSK	0	0.85920
	39	0.87260
	78	0.86620
$\pi/4$ DQPSK	0	1.1970
	39	1.2110
	78	1.2120
8DPSK	0	1.2050
	39	1.2150
	78	1.2180

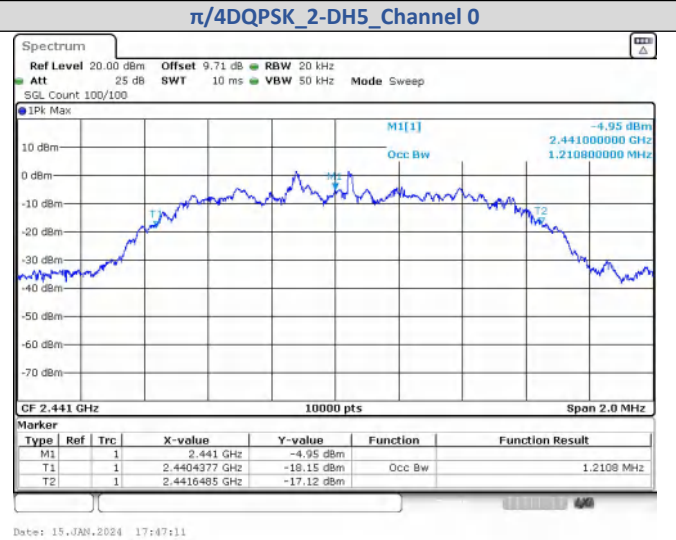
Test Graphs



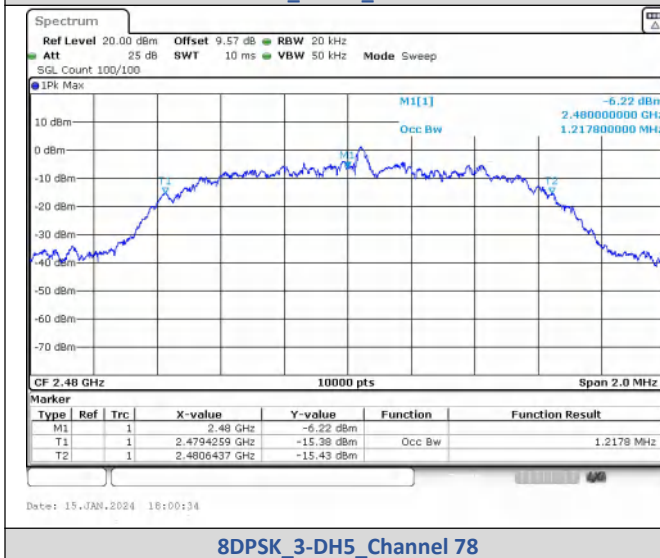
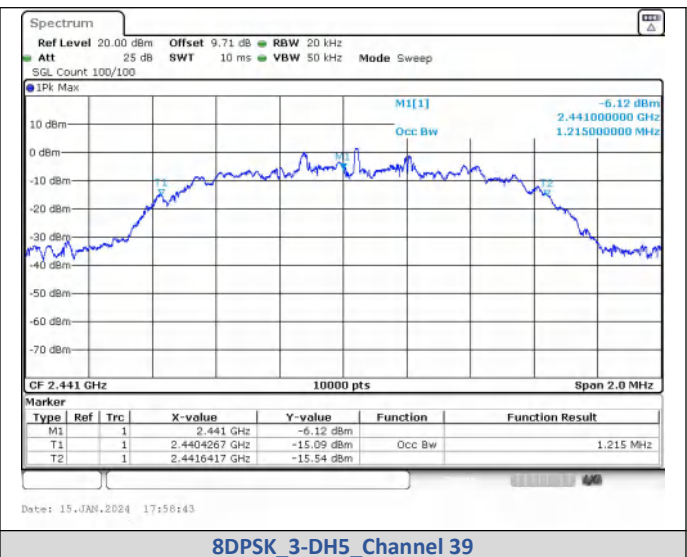
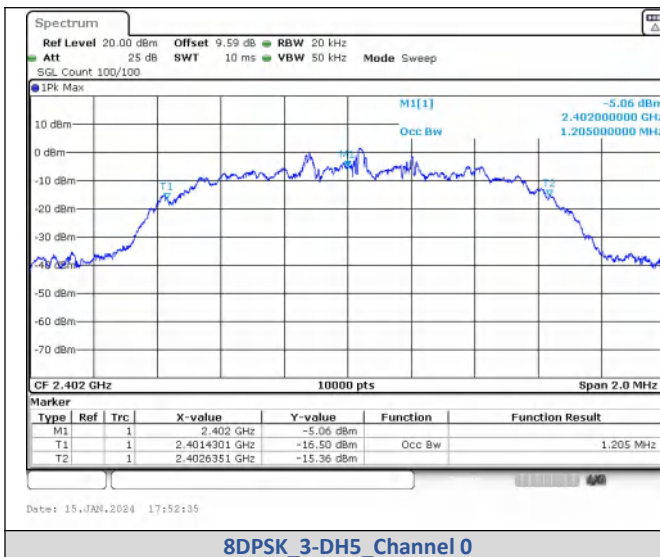
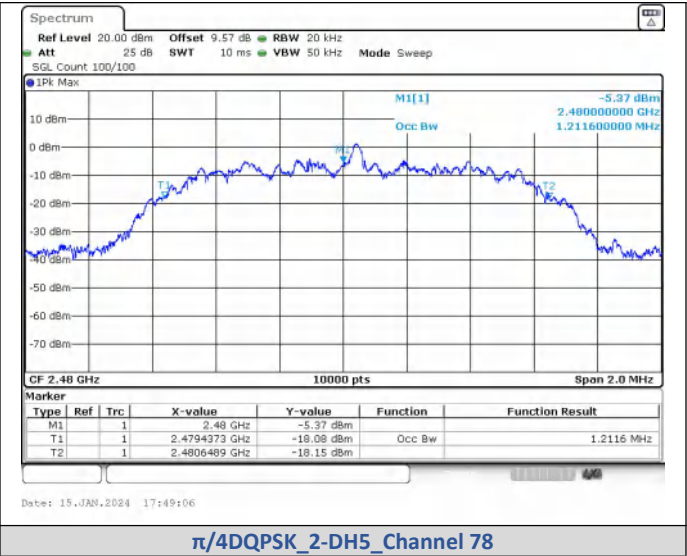
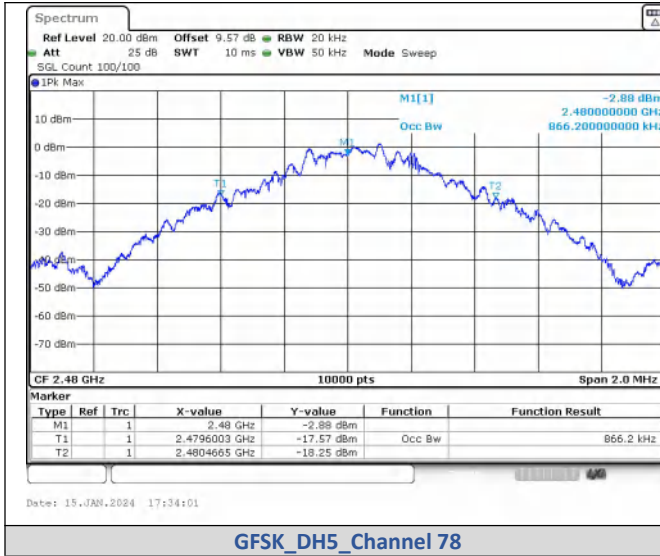
GFSK_DH5_Channel 0



GFSK_DH5_Channel 39



$\pi/4$ DQPSK_2-DH5_Channel 39



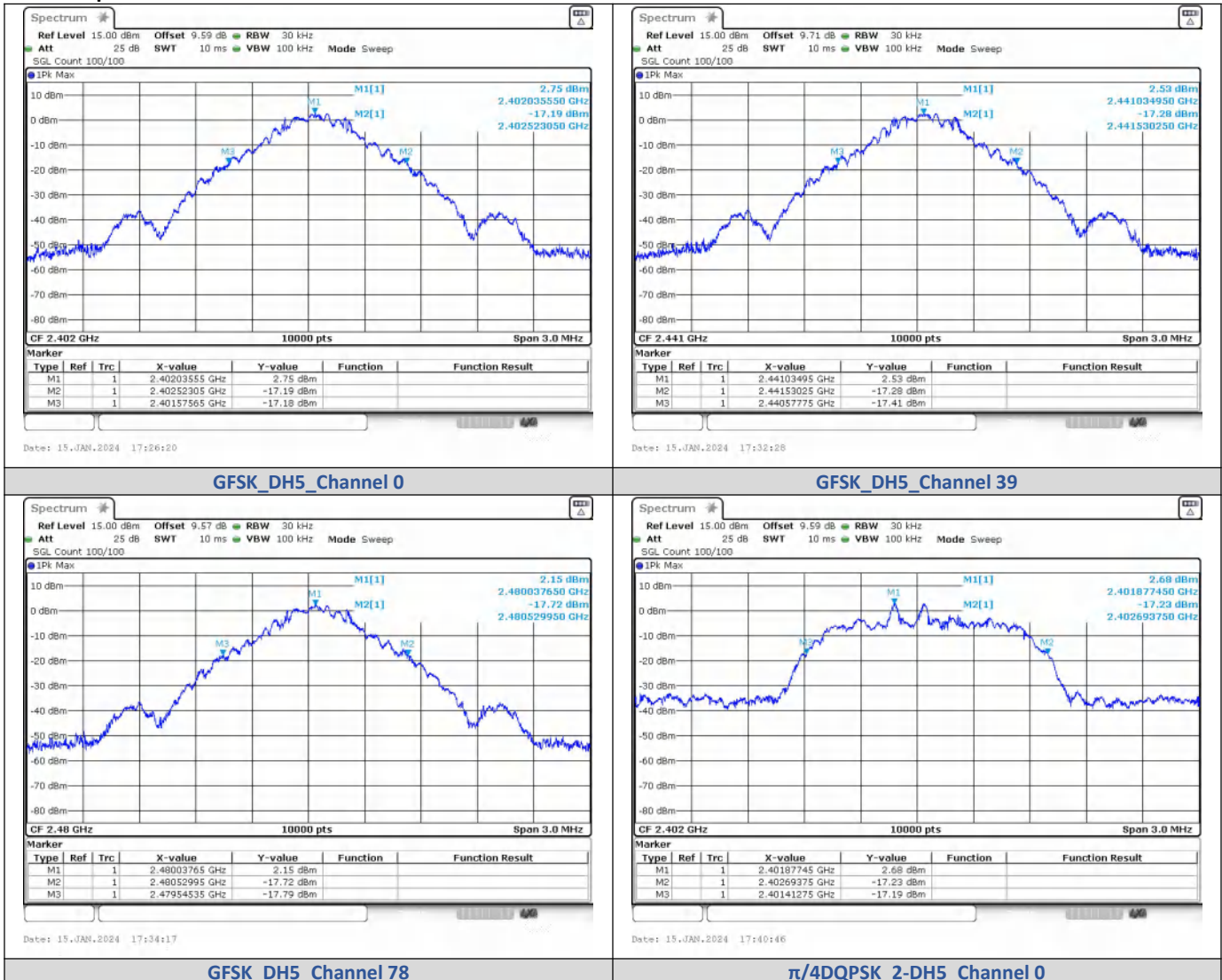
Void

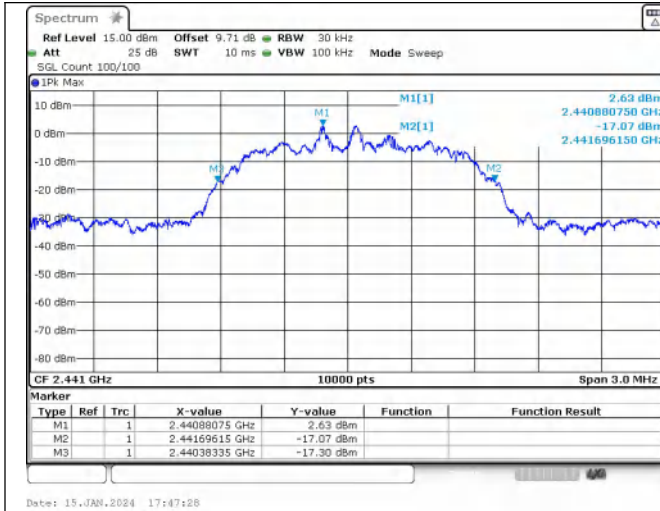
3) 20dB Bandwidth

Test Result

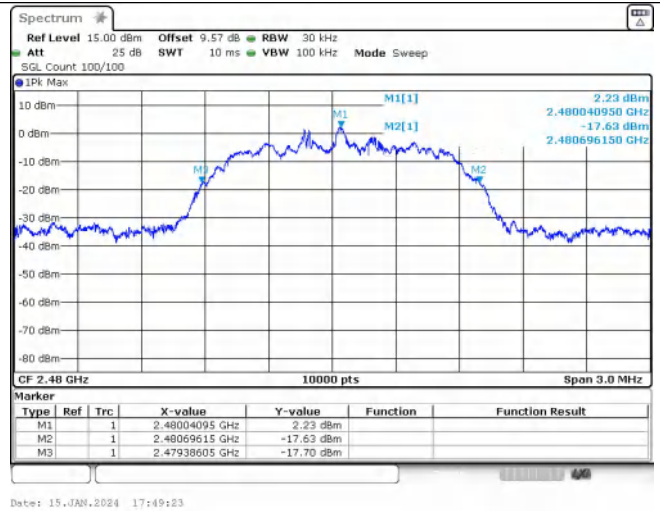
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	0.9400
	39	2441 MHz	0.9500
	78	2480 MHz	0.9800
$\pi/4$ DQPSK	0	2402 MHz	1.280
	39	2441 MHz	1.320
	78	2480 MHz	1.310
8DPSK	0	2402 MHz	1.290
	39	2441 MHz	1.300
	78	2480 MHz	1.300

Test Graphs

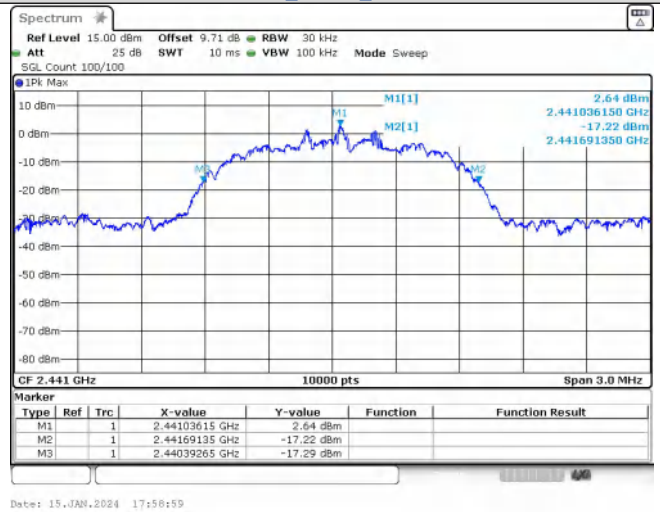
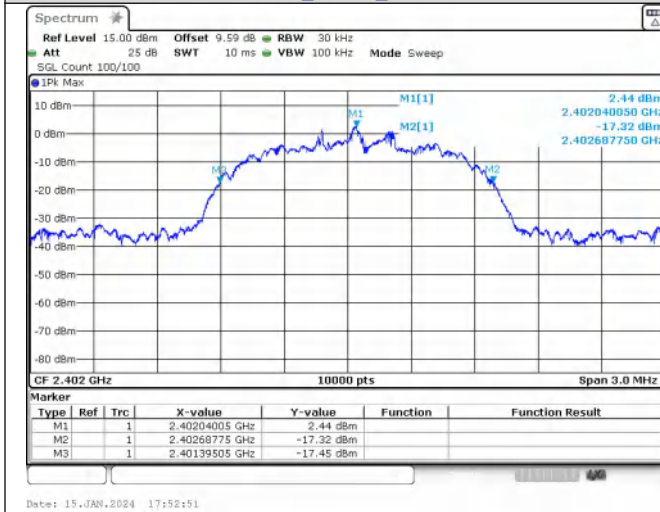




$\pi/4$ DQPSK_2-DH5_Channel 39

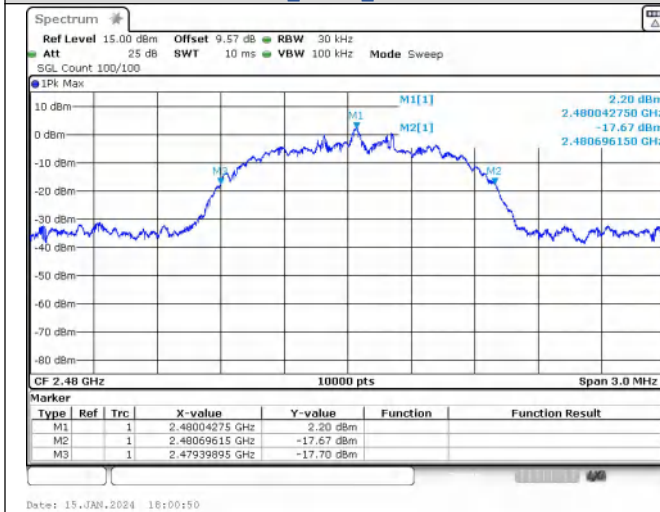


$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0

8DPSK_3-DH5_Channel 39



Void

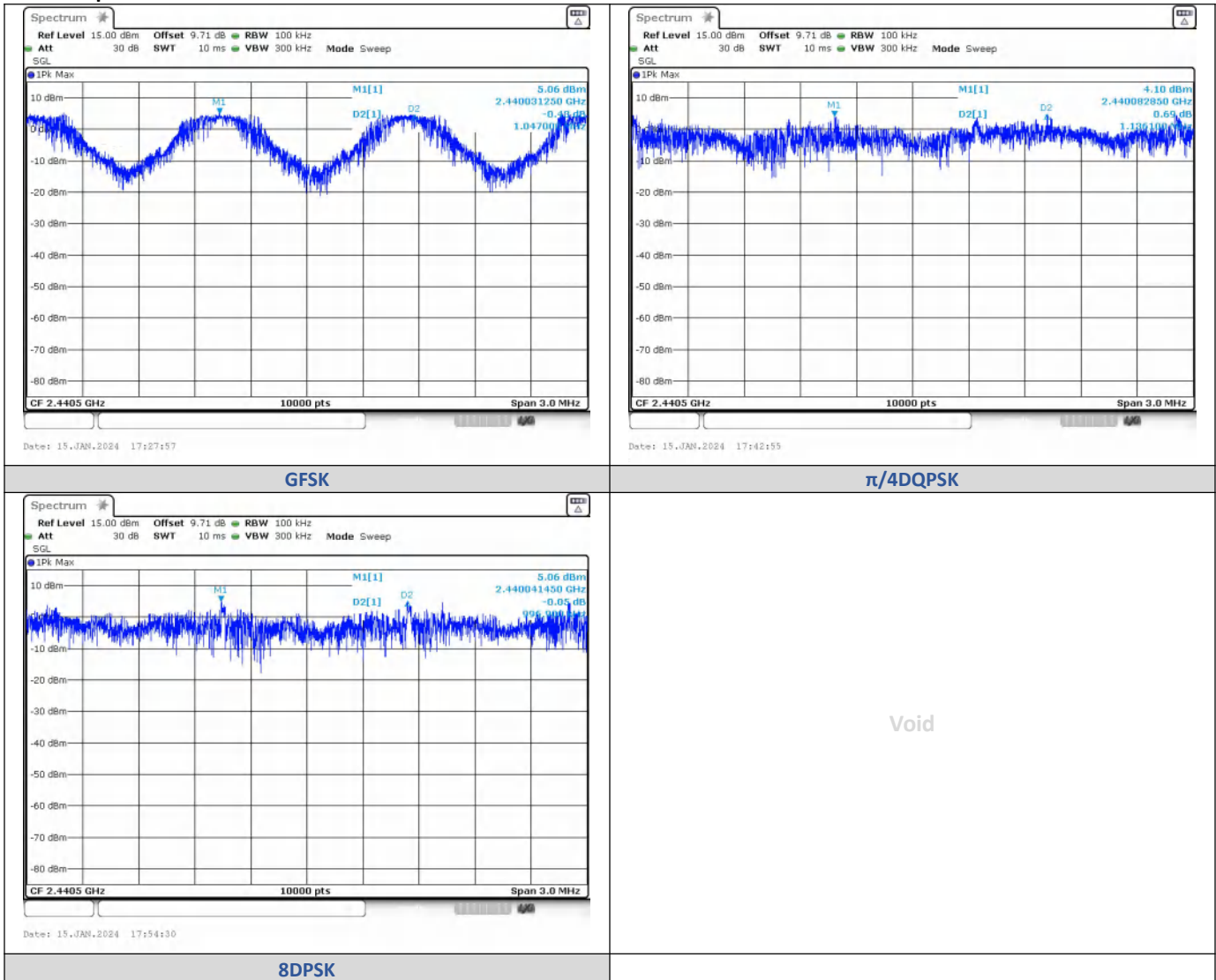
8DPSK_3-DH5_Channel 78

4) Carrier Frequencies Separation

Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2440.0312	2441.0783	1.0470	0.627	PASS
$\pi/4$ DQPSK	2-DH5	2440.0828	2441.2189	1.1361	0.853	PASS
8DPSK	3-DH5	2440.0415	2441.0383	0.9969	0.86	PASS

Test Graphs



5) Conducted Out Of Band Emission

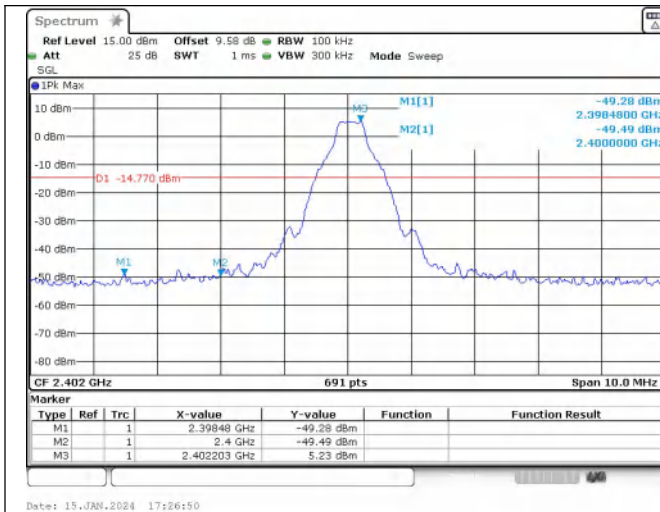
Test Result Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-49.495	-14.77	-34.725	PASS
			2398.48	-49.276	-14.77	-34.506	PASS
			7206.80	-41.065	-14.77	-26.295	PASS
		39	7323.32	-38.262	-14.84	-23.422	PASS
		78	2483.50	-52.212	-15.28	-36.932	PASS
			7439.85	-39.604	-15.28	-24.324	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-46.145	-14.81	-31.334	PASS
			9608.08	-41.378	-14.81	-26.568	PASS
		39	7323.32	-36.068	-14.81	-21.258	PASS
		78	2483.50	-51.537	-15.41	-36.127	PASS
			9920.20	-40.800	-15.41	-25.390	PASS
8DPSK	3-DH5	0	2400.00	-46.784	-15.22	-31.564	PASS
			9608.08	-41.807	-15.22	-26.587	PASS
		39	9764.55	-38.130	-14.64	-23.490	PASS
		78	2483.50	-50.785	-15.38	-35.405	PASS
			9920.20	-40.940	-15.38	-25.560	PASS

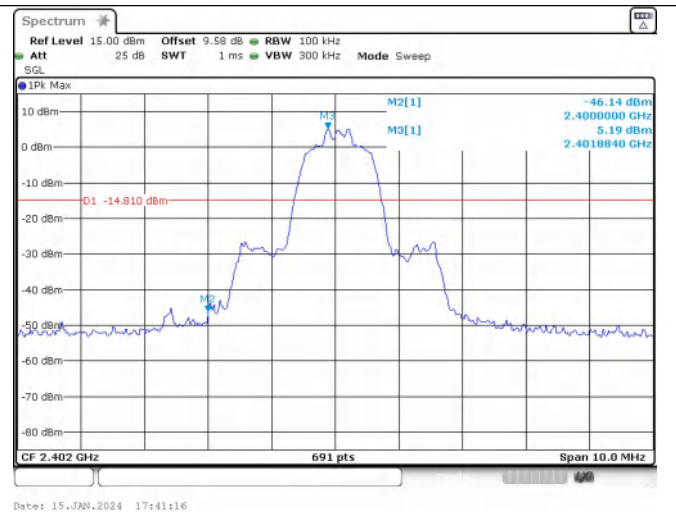
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2395.51	-49.983	-15.13	-34.853	PASS
			2400.00	-52.359	-15.13	-37.229	PASS
			2483.50	-51.891	-15.29	-36.601	PASS
			2397.13	-49.165	-15.01	-34.155	PASS
			2400.00	-50.116	-15.01	-35.106	PASS
			2483.50	-51.937	-15.92	-36.017	PASS
π /4DQPSK	2-DH5		2396.22	-49.816	-15.26	-34.556	PASS
			2400.00	-50.736	-15.26	-35.476	PASS
			2483.50	-50.202	-15.33	-34.872	PASS
			2396.70	-49.631	-14.88	-34.751	PASS
			2400.00	-51.552	-14.88	-36.672	PASS
			2483.50	-51.830	-15.95	-35.880	PASS
8DPSK	3-DH5		2396.12	-50.461	-15.74	-34.721	PASS
			2400.00	-51.694	-15.74	-35.954	PASS
			2483.50	-50.154	-15.84	-34.314	PASS
			2400.00	-49.223	-14.82	-34.403	PASS
			2483.50	-51.276	-16.59	-34.686	PASS

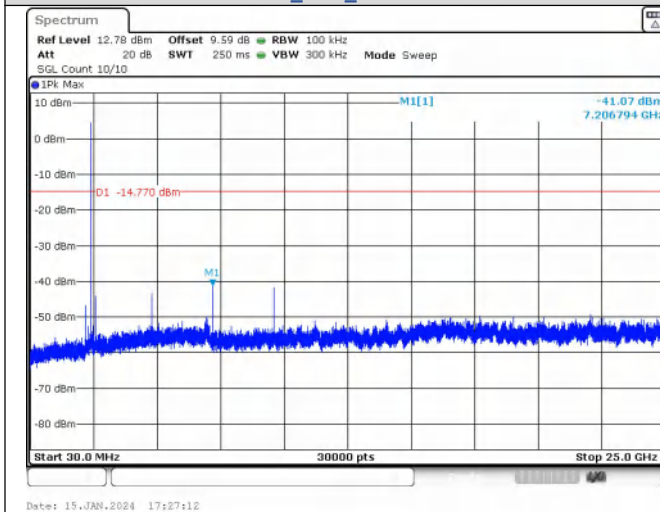
Test Graphs



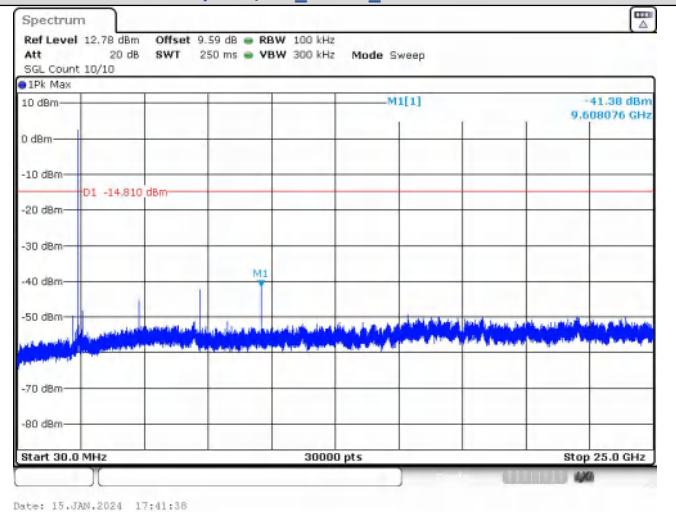
Out Of Band Emission
GFSK_DH5_Channel 0



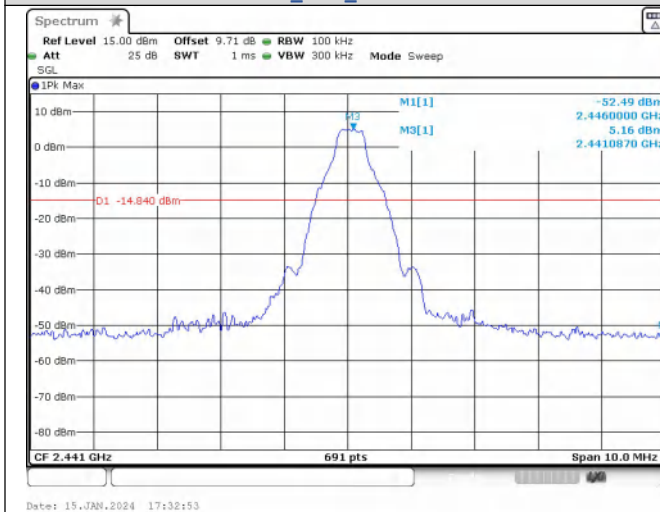
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0



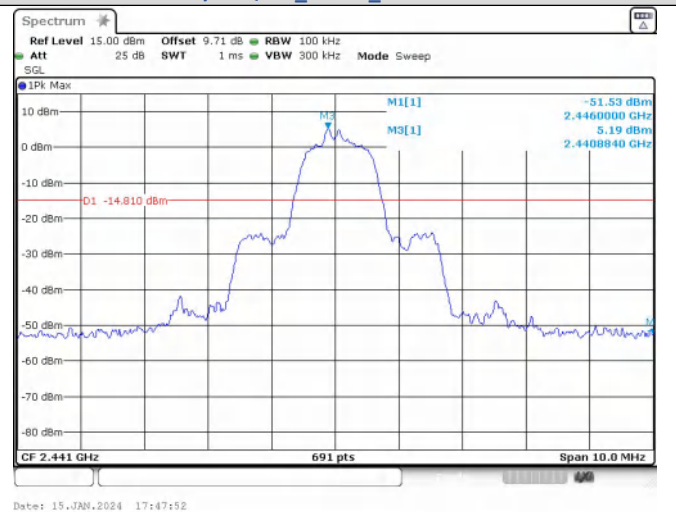
Spurious Emission
GFSK_DH5_Channel 0



Spurious Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0

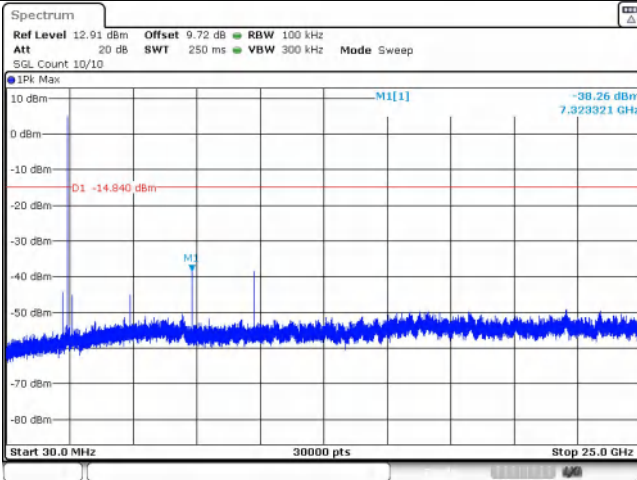


Out Of Band Emission



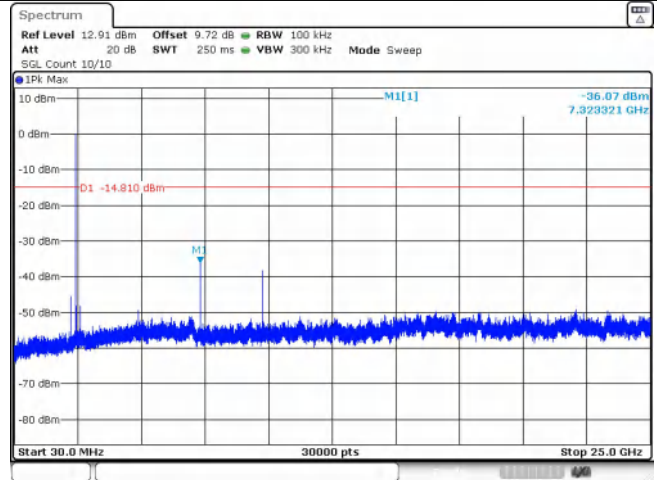
Out Of Band Emission

GFSK_DH5_Channel 39



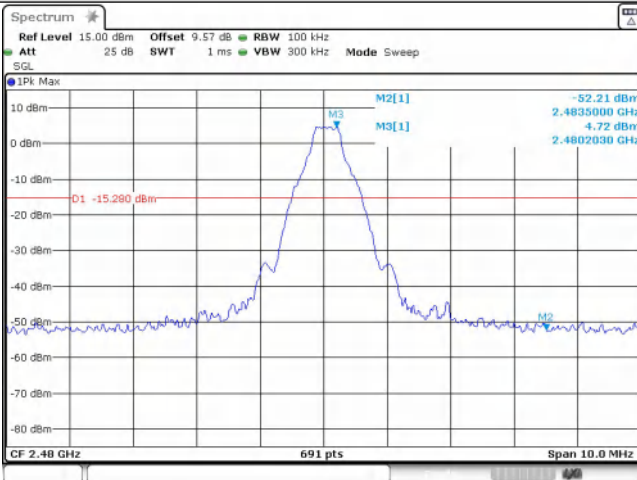
Date: 15.JAN.2024 17:33:16

$\pi/4$ QPSK_2-DH5_Channel 39



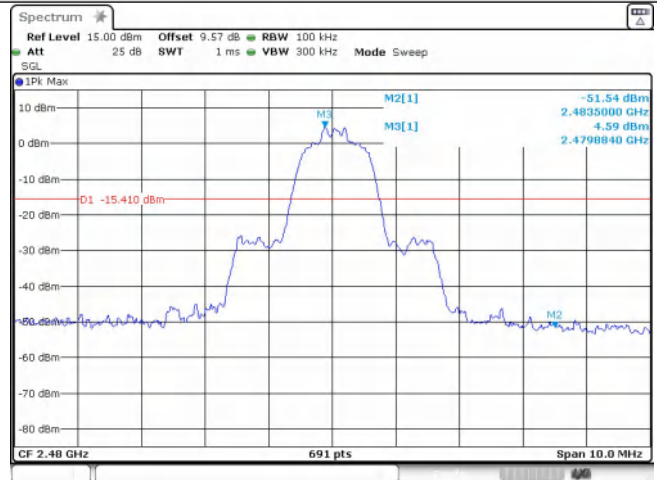
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Spurious Emissions GFSK_DH5_Channel 39



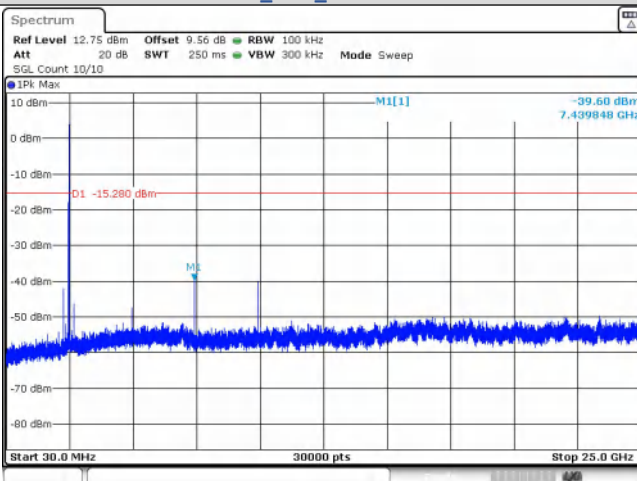
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Spurious Emissions $\pi/4$ QPSK_2-DH5_Channel 39



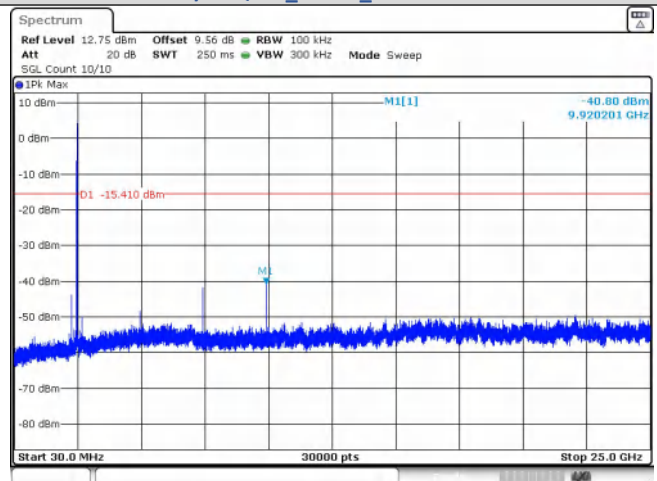
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Out Of Band Emission GFSK_DH5_Channel 78



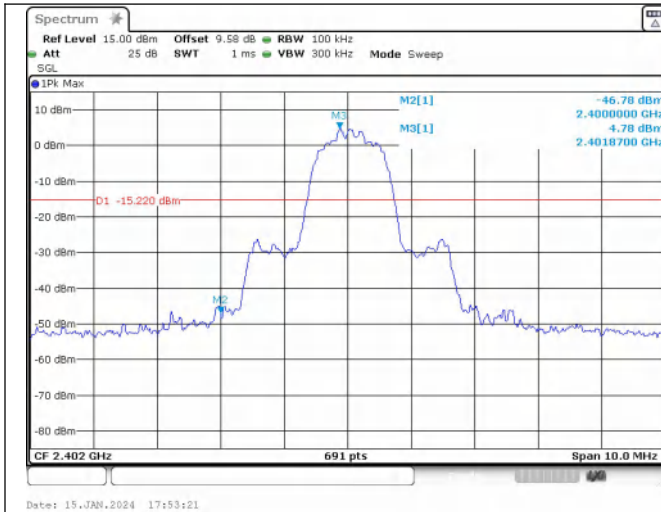
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Out Of Band Emission $\pi/4$ QPSK_2-DH5_Channel 78

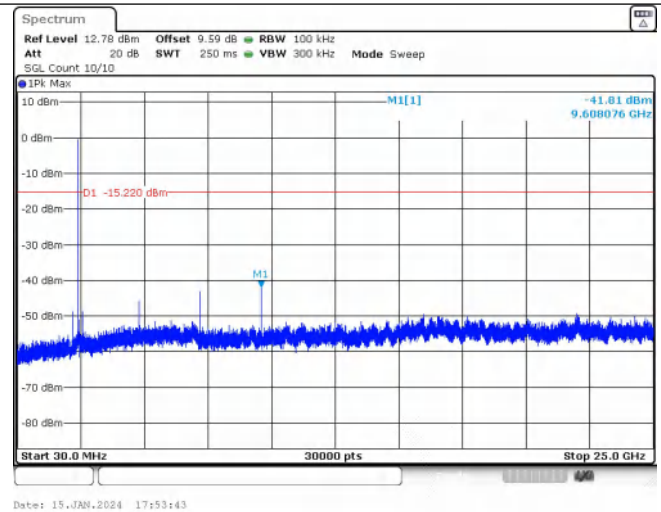


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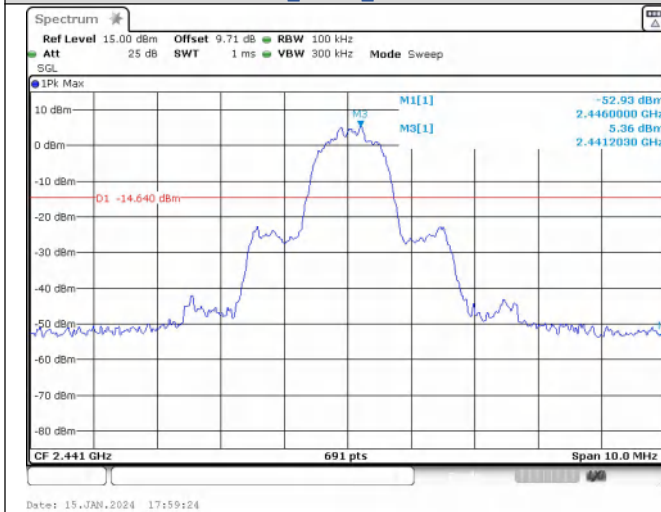
Spurious Emission
GFSK_DH5_Channel 78



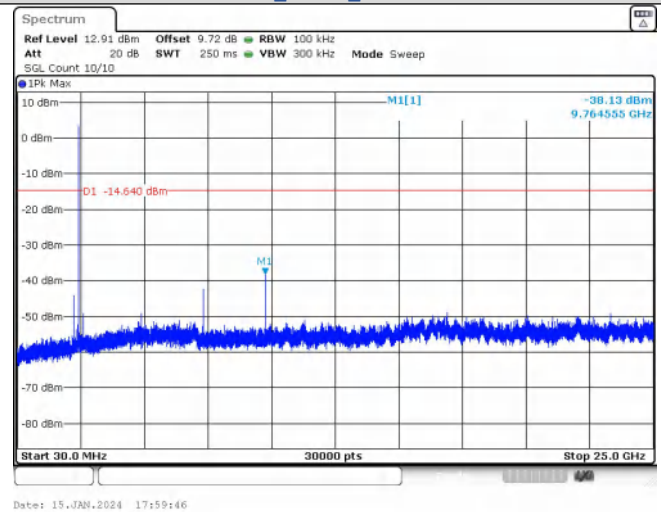
Spurious Emission
 $\pi/4$ QPSK_2-DH5_Channel 78



Out Of Band Emission
8DPSK_3-DH5_Channel 0

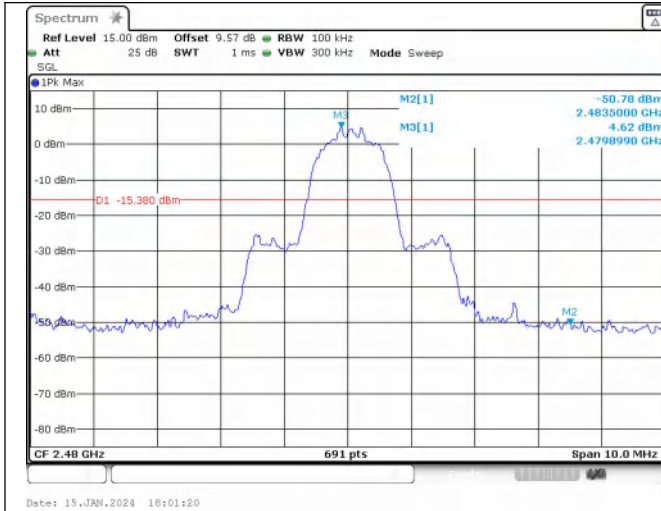


Spurious Emission
8DPSK_3-DH5_Channel 0

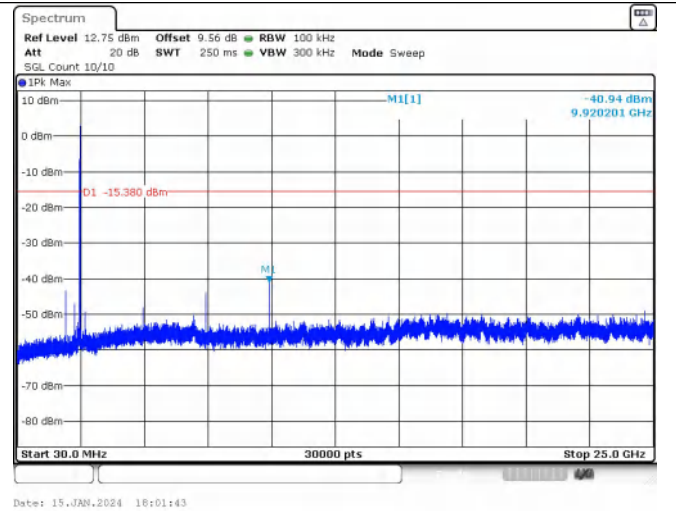


Out Of Band Emission
8DPSK_3-DH5_Channel 39

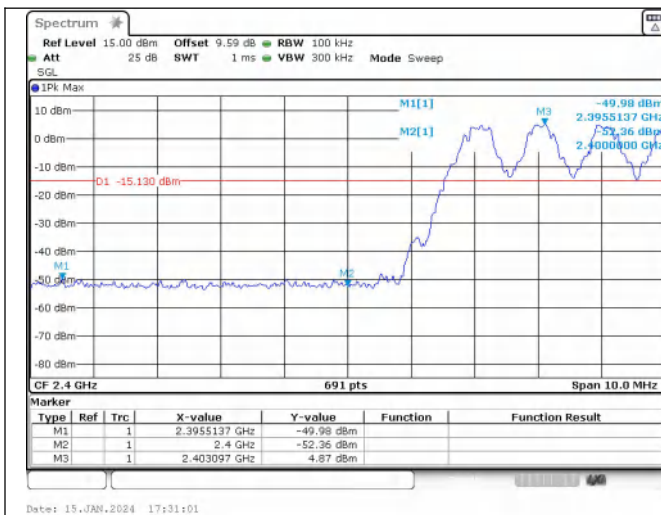
Spurious Emissions
8DPSK_3-DH5_Channel 39



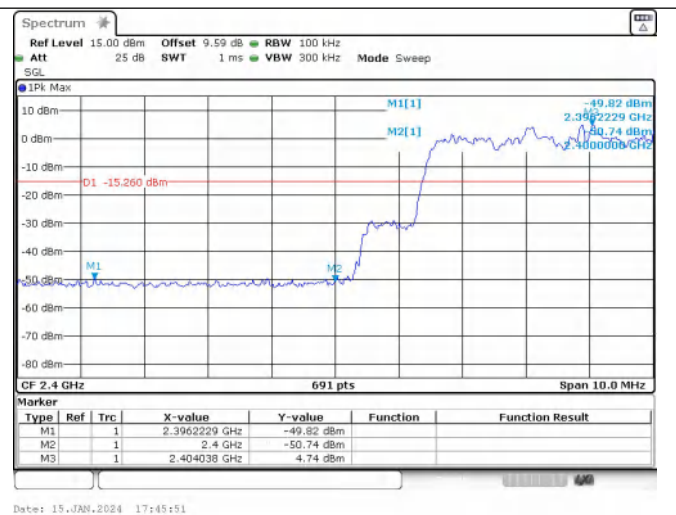
Out Of Band Emission
8DPSK_3-DH5_Channel 78



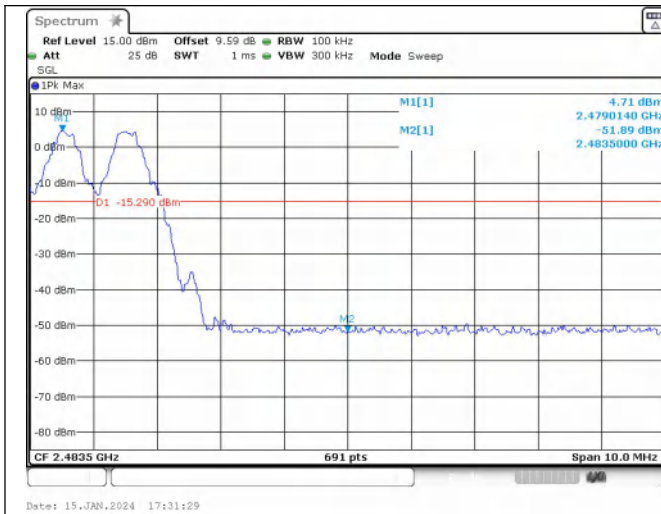
Spurious Emission
8DPSK_3-DH5_Channel 78



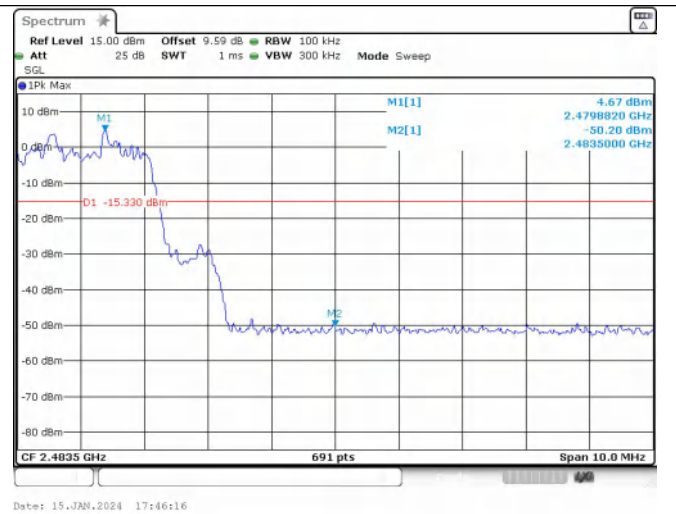
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



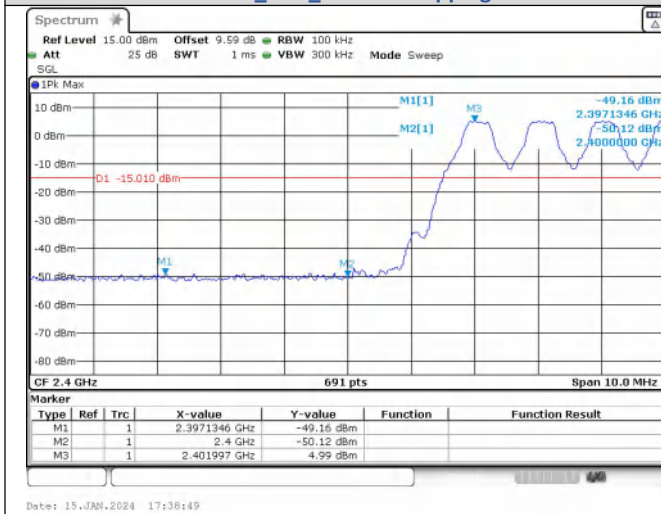
Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



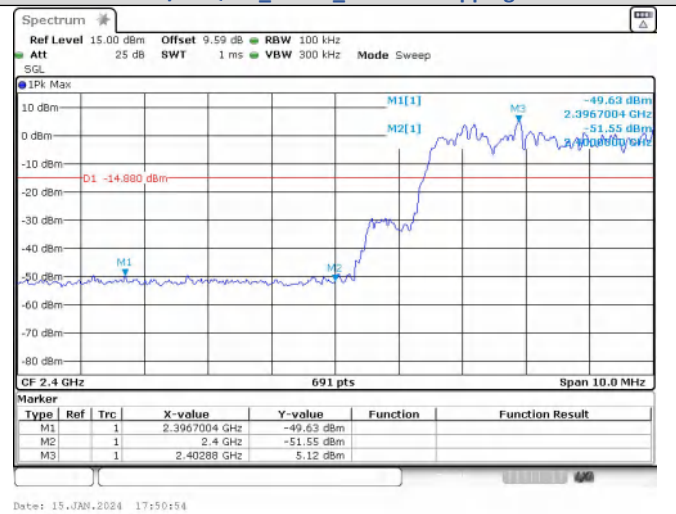
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



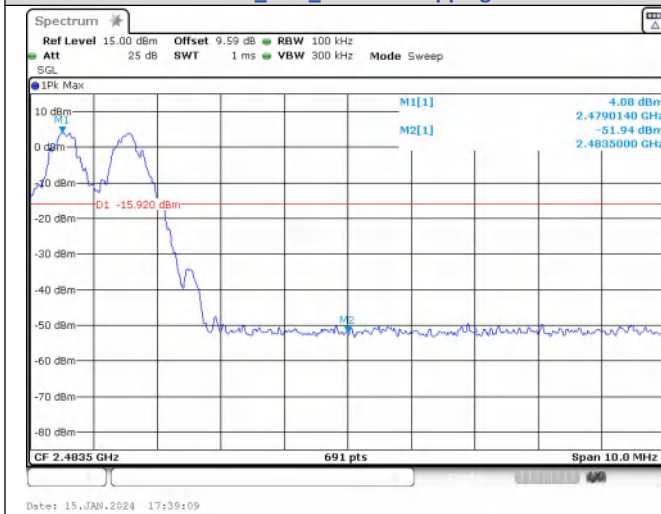
Out Of Band Emission(Right)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



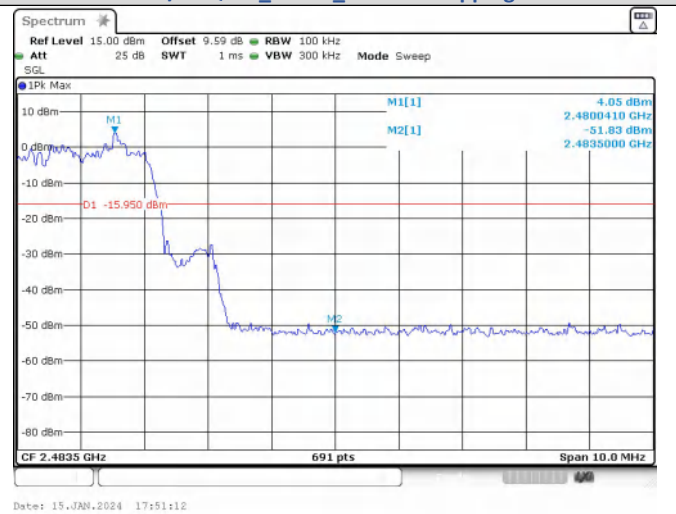
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



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

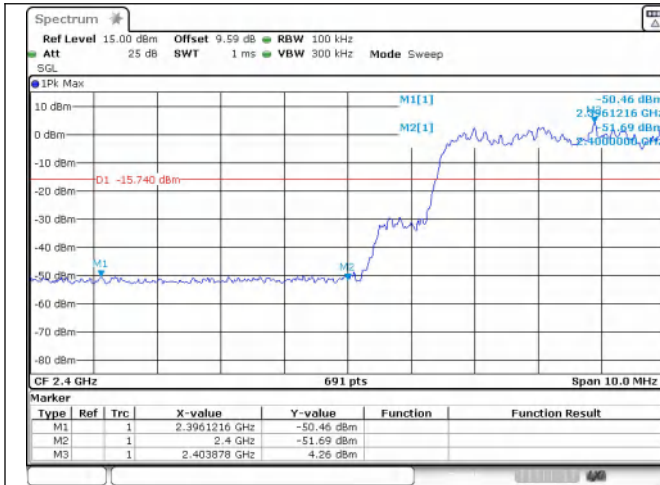


Out Of Band Emission(Right)

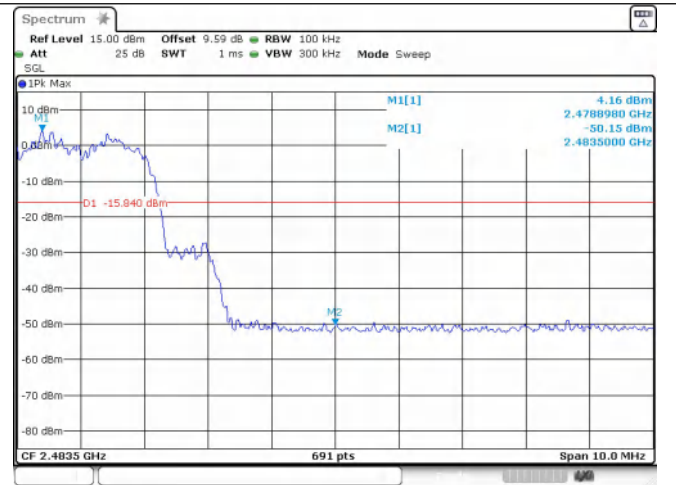


Out Of Band Emission(Right)

GFSK_DH5_Channel Hopping

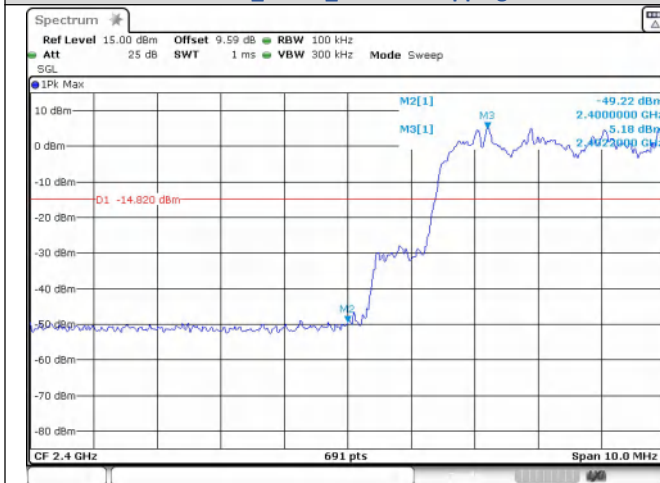
 $\pi/4$ DQPSK_2-DH5_Channel Hopping


Date: 15.JAN.2024 17:57:09

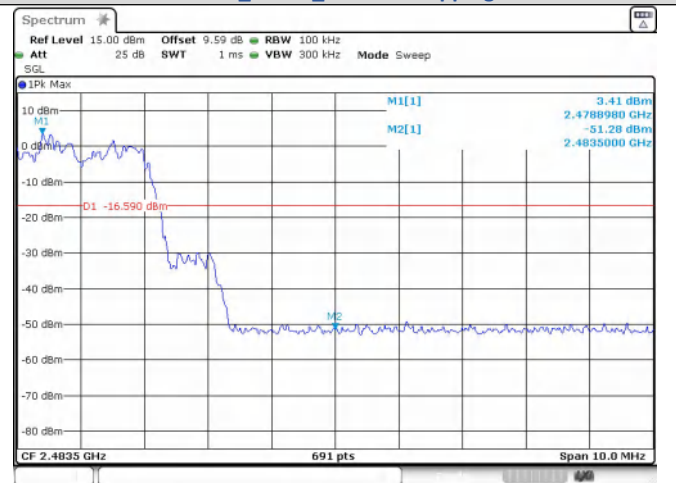


Date: 15.JAN.2024 17:57:45

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

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


Date: 15.JAN.2024 18:06:14



Date: 15.JAN.2024 18:06:36

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

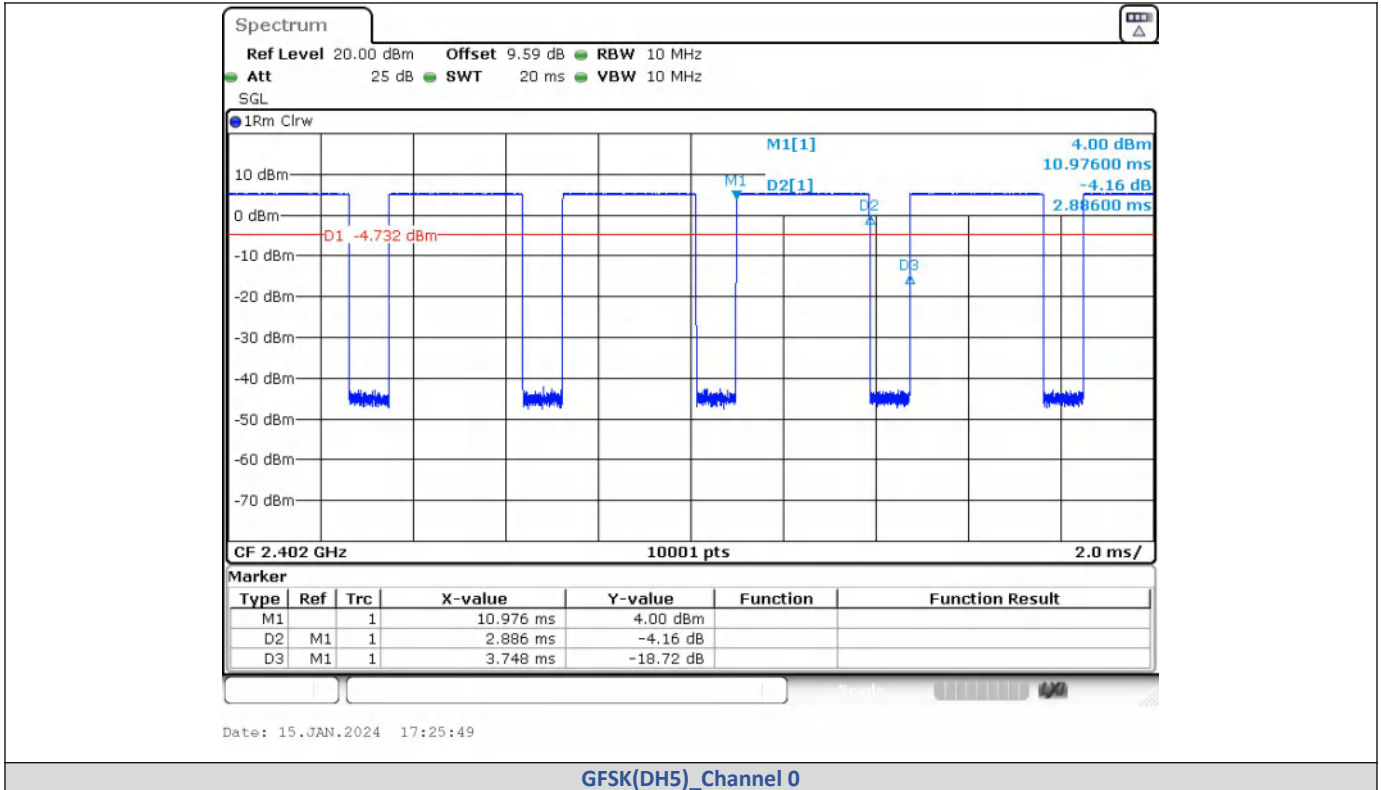
Out Of Band Emission(Right)
8DPSK_3-DH5_Channel Hopping

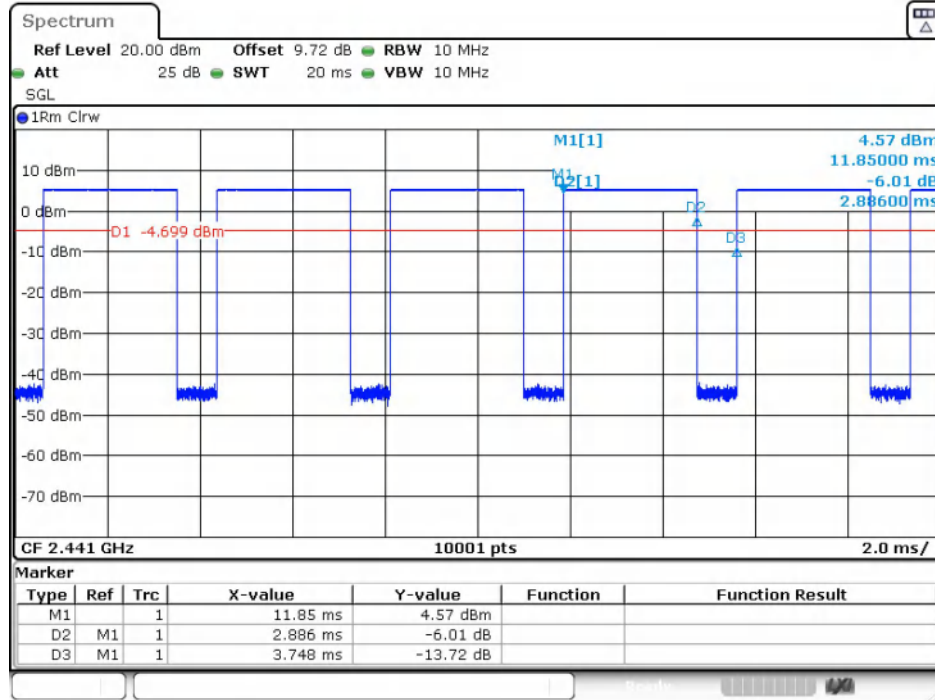
6) Duty Cycle

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	0.35
		39	2.886	3.748	77.00	0.7700	1.1351	0.35
		78	2.886	3.748	77.00	0.7700	1.1351	0.35
$\pi/4$ DQPSK	2-DH5	0	2.890	3.748	77.11	0.7711	1.1289	0.35
		39	2.890	3.748	77.11	0.7711	1.1289	0.35
		78	2.890	3.748	77.11	0.7711	1.1289	0.35
8DPSK	3-DH5	0	2.892	3.748	77.16	0.7716	1.1261	0.35
		39	2.894	3.748	77.21	0.7721	1.1233	0.35
		78	2.892	3.748	77.16	0.7716	1.1261	0.35

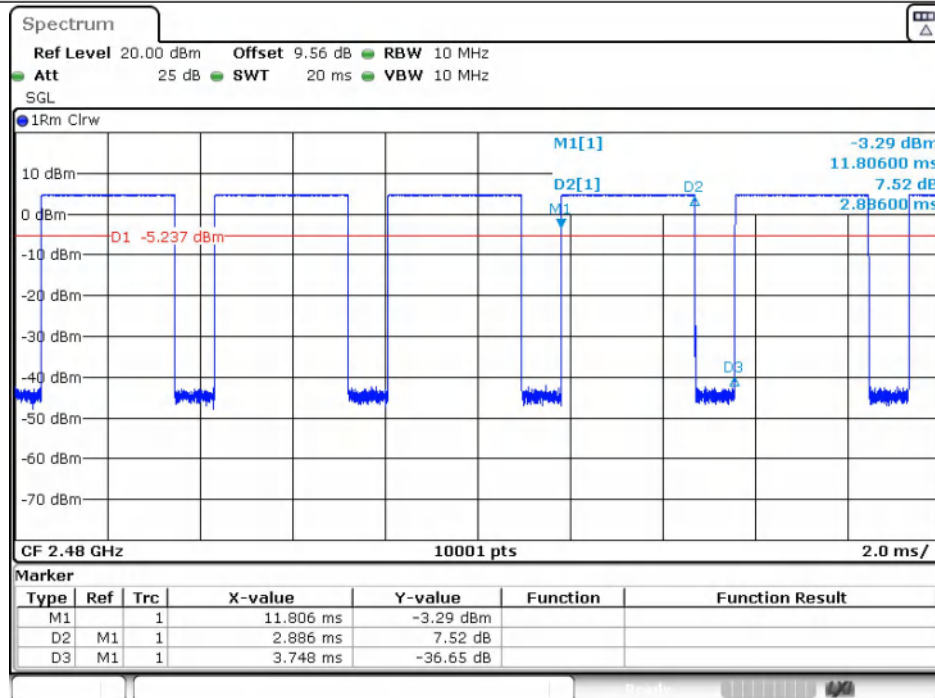
Test Graphs





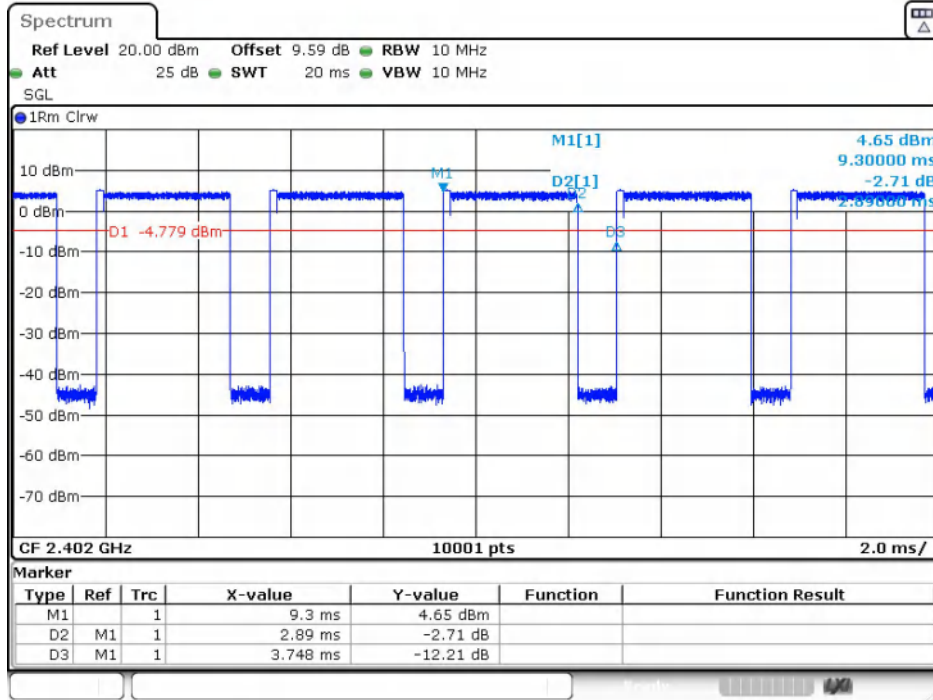
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GFSK(DH5)_Channel 39



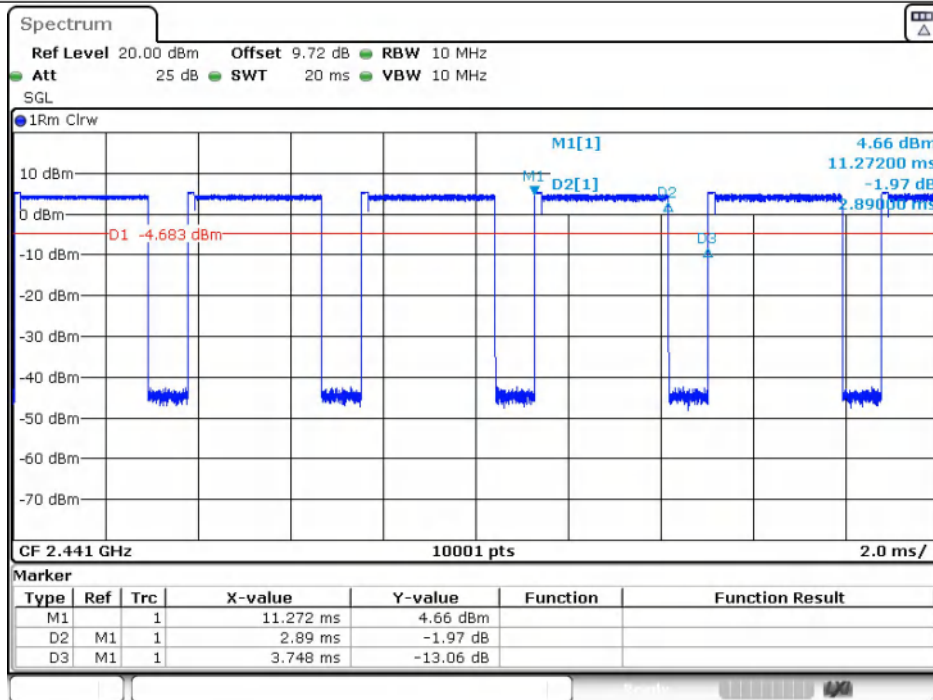
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GFSK(DH5)_Channel 78



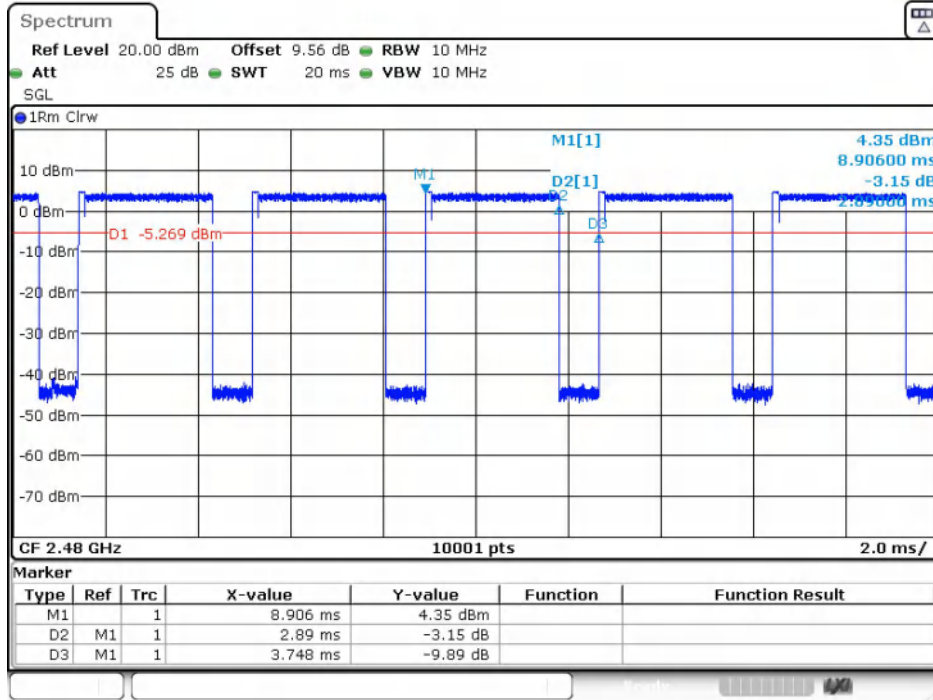
Date: 15.JAN.2024 17:40:16

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



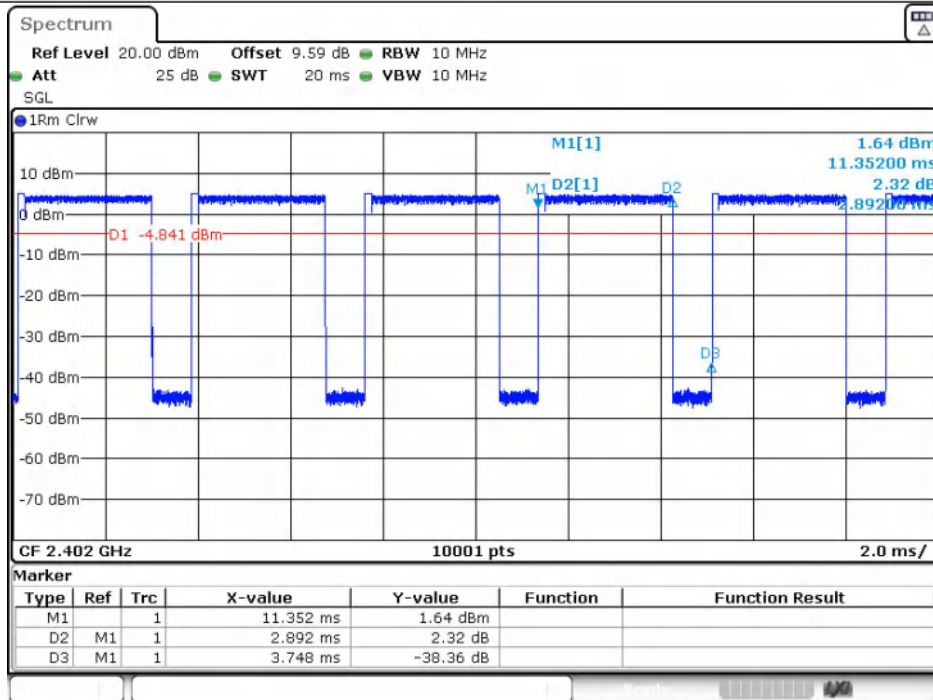
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$\pi/4$ DQPSK(2-DH5)_Channel 39



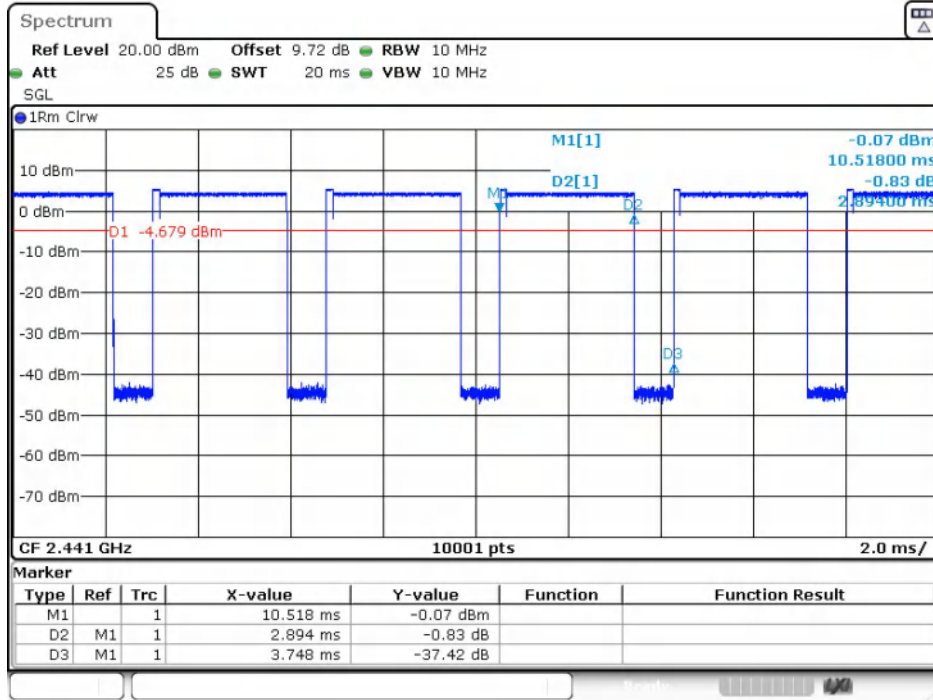
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π /4DQPSK(2-DH5)_Channel 78



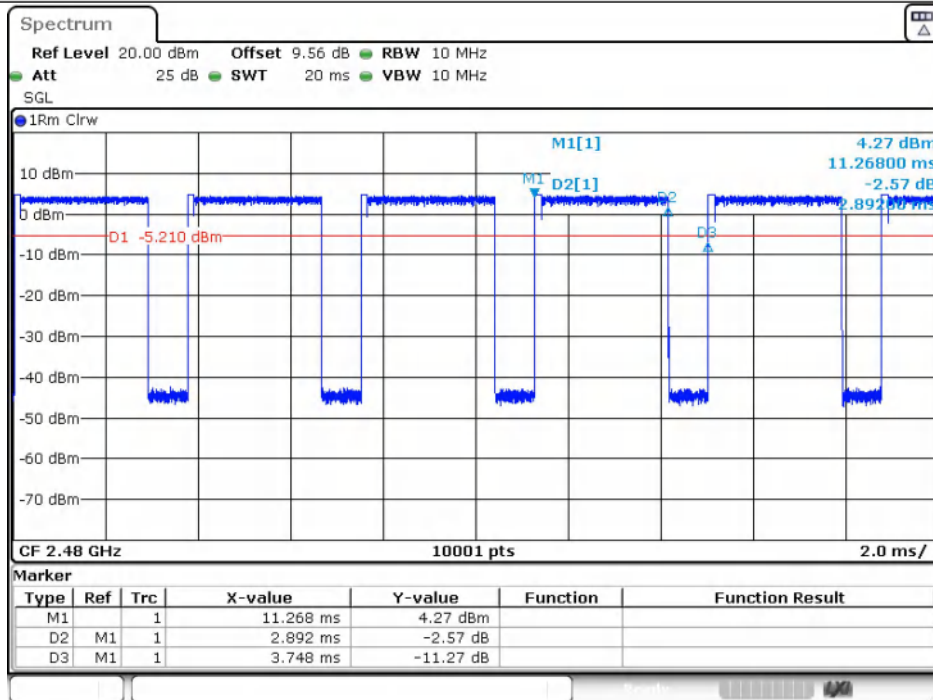
Date: 15.JAN.2024 17:52:20

8DPSK(3-DH5)_Channel 0



Date: 15.JAN.2024 17:58:29

8DPSK(3-DH5)_Channel 39



Date: 15.JAN.2024 18:00:20

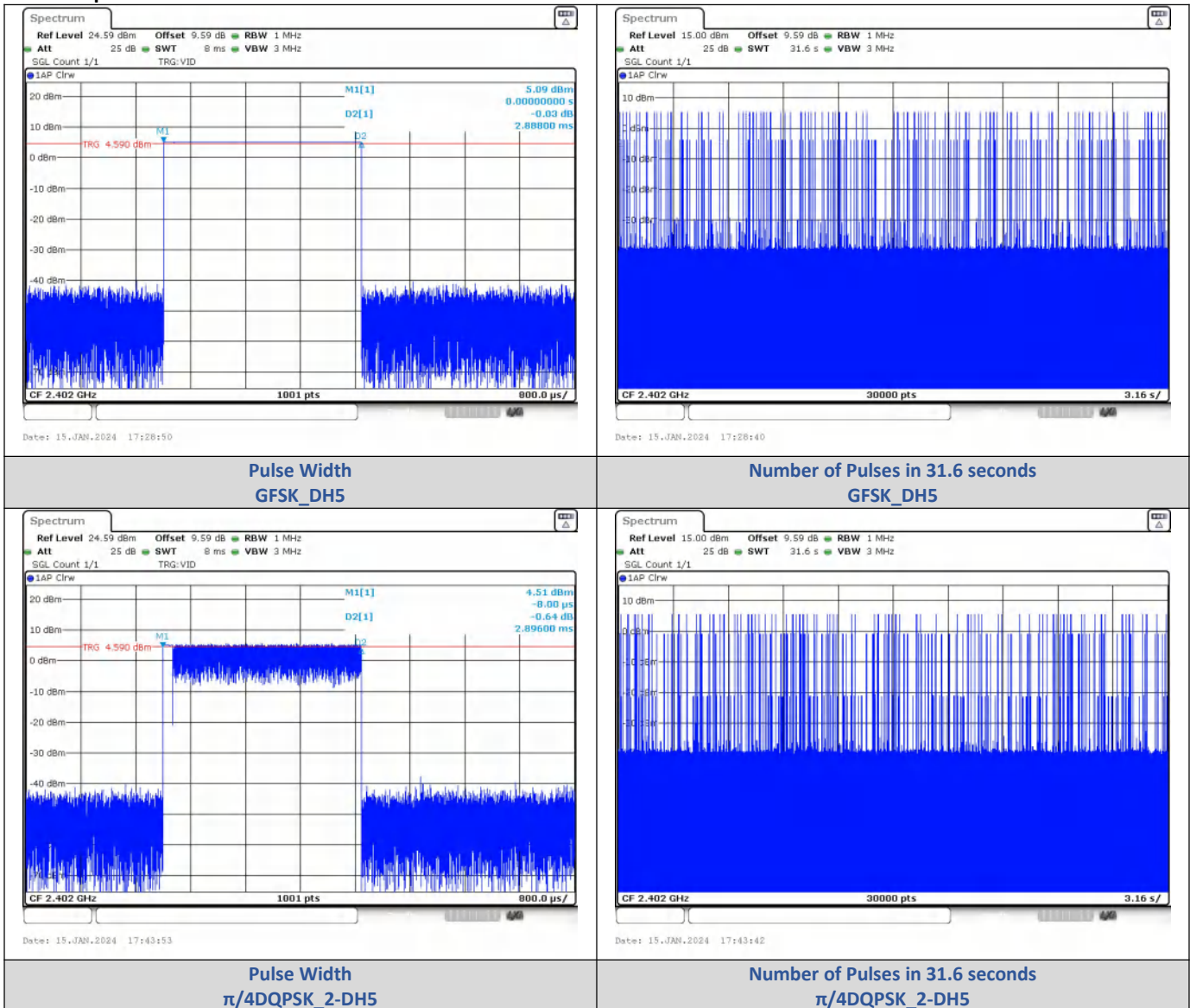
8DPSK(3-DH5)_Channel 78

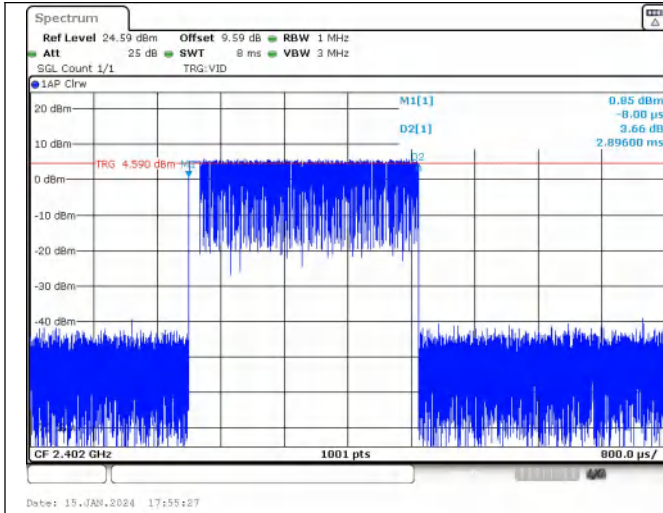
7) Dwell Time

Test Result

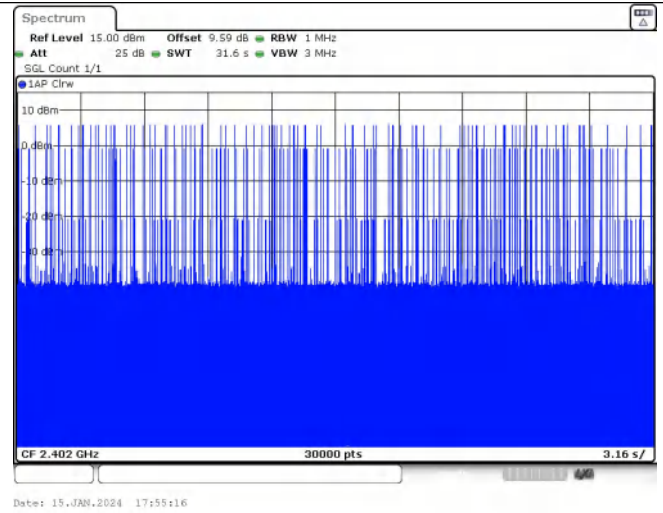
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.888	110	317.68	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.896	103	298.29		PASS
8DPSK	3-DH5		2.896	99	286.7		PASS

Test Graphs





Pulse Width
8DPSK_3-DH5



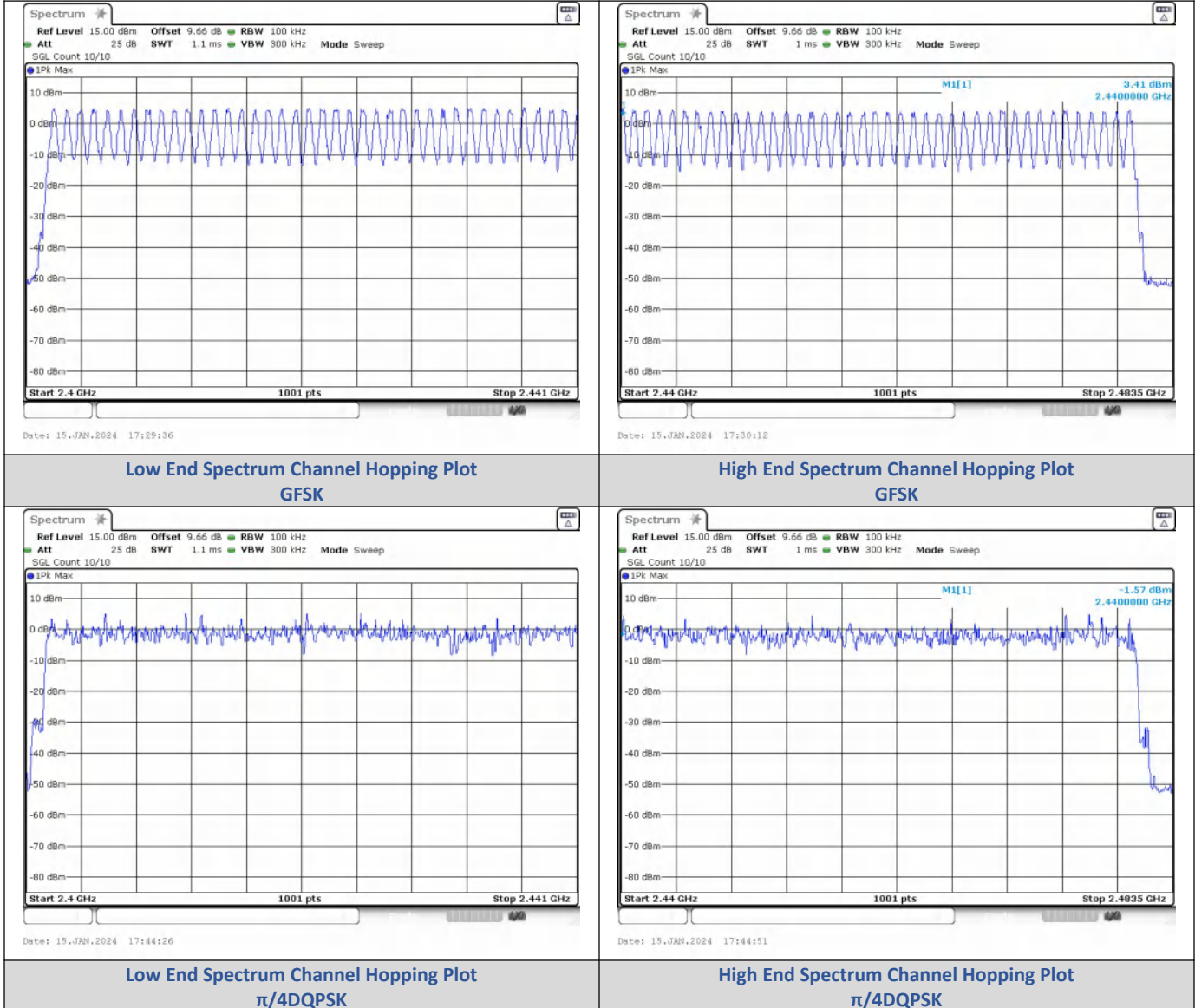
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

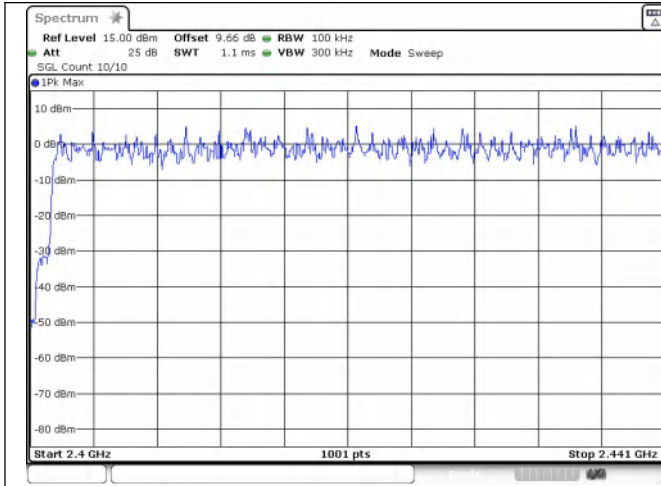
8) Number Of Hopping Channel

Test Result

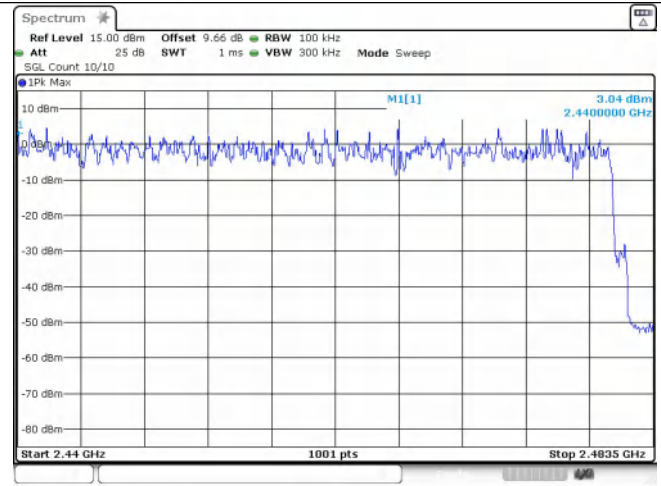
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK



High End Spectrum Channel Hopping Plot
8DPSK