

Appendix A

Report No.:	CISRR241008001
FCC ID:	2BG5IGS-01
Product Name:	Smart Music Eyewear
Model No.:	GS-01
Test Engineer:	Mark Fu
Supervised by:	Rory Huang

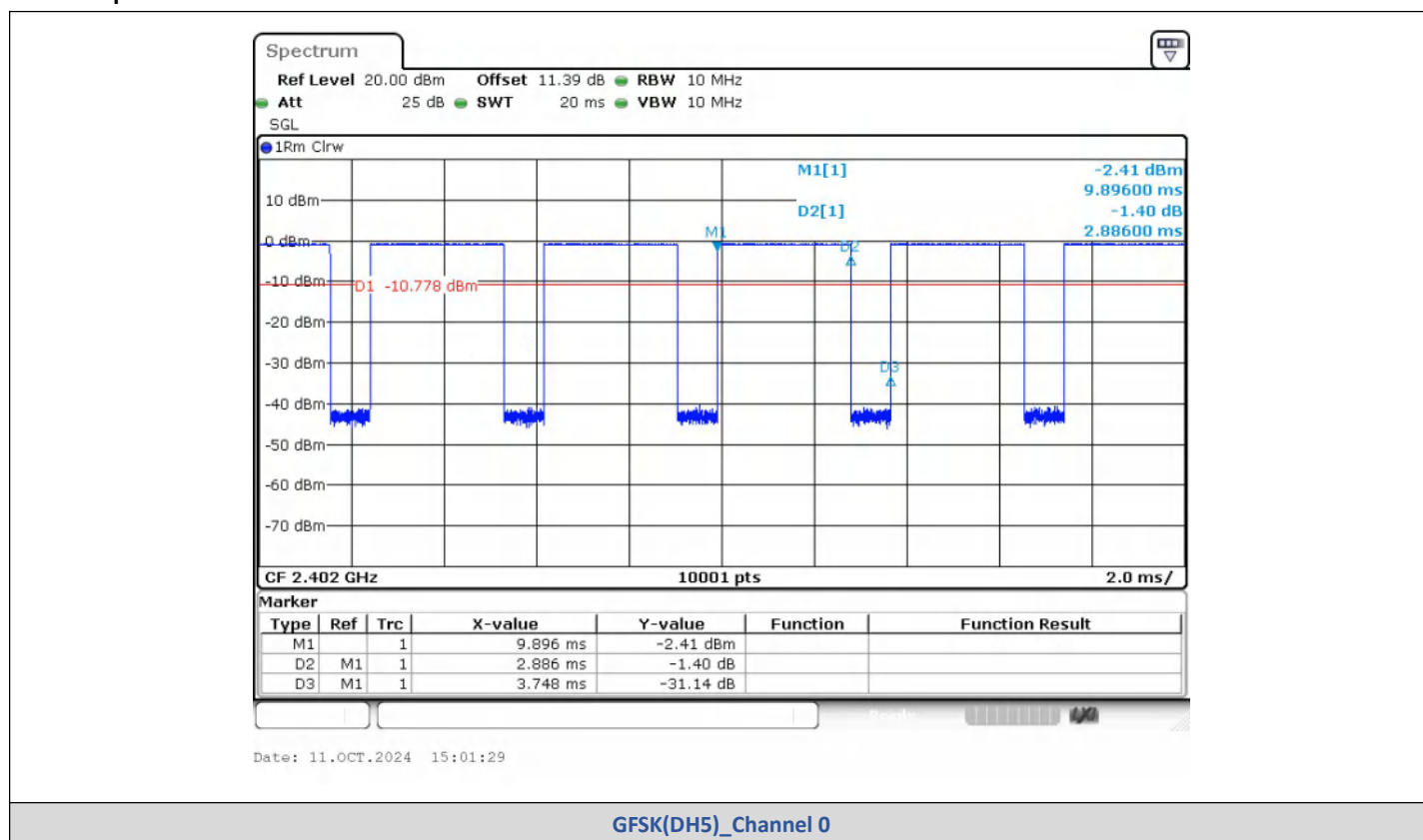
1) Duty Cycle

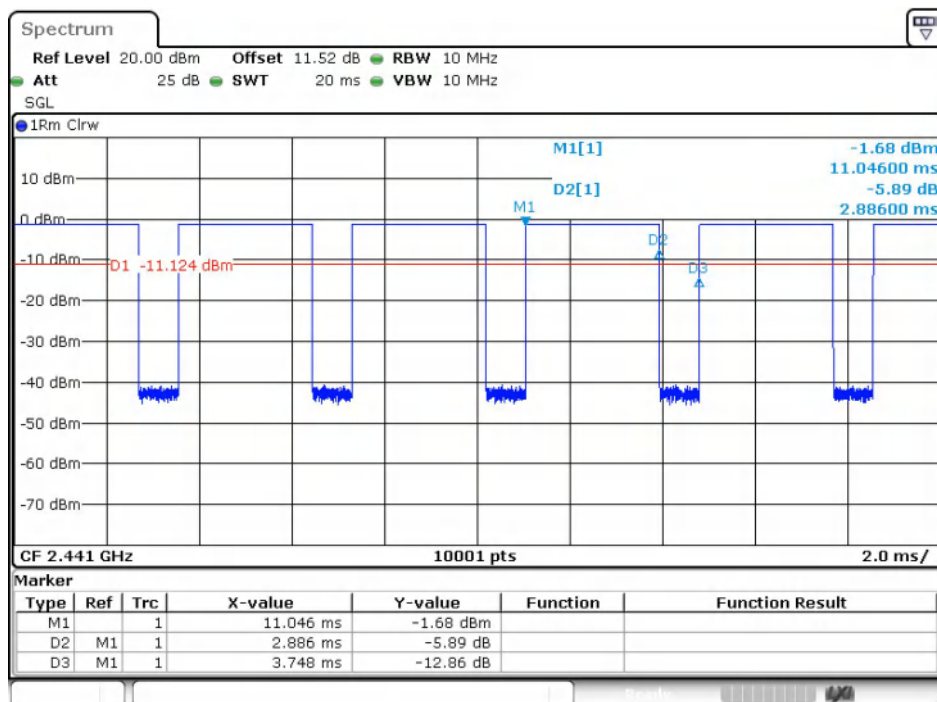
Test Result

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	0.35
		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	2.892	3.748	77.16	0.7716	1.1261	0.35
		39	2.890	3.748	77.11	0.7711	1.1289	0.35
		78	2.892	3.748	77.16	0.7716	1.1261	0.35
8DPSK	3-DH5	0	2.894	3.748	77.21	0.7721	1.1233	0.35
		39	2.894	3.748	77.21	0.7721	1.1233	0.35
		78	2.894	3.748	77.21	0.7721	1.1233	0.35

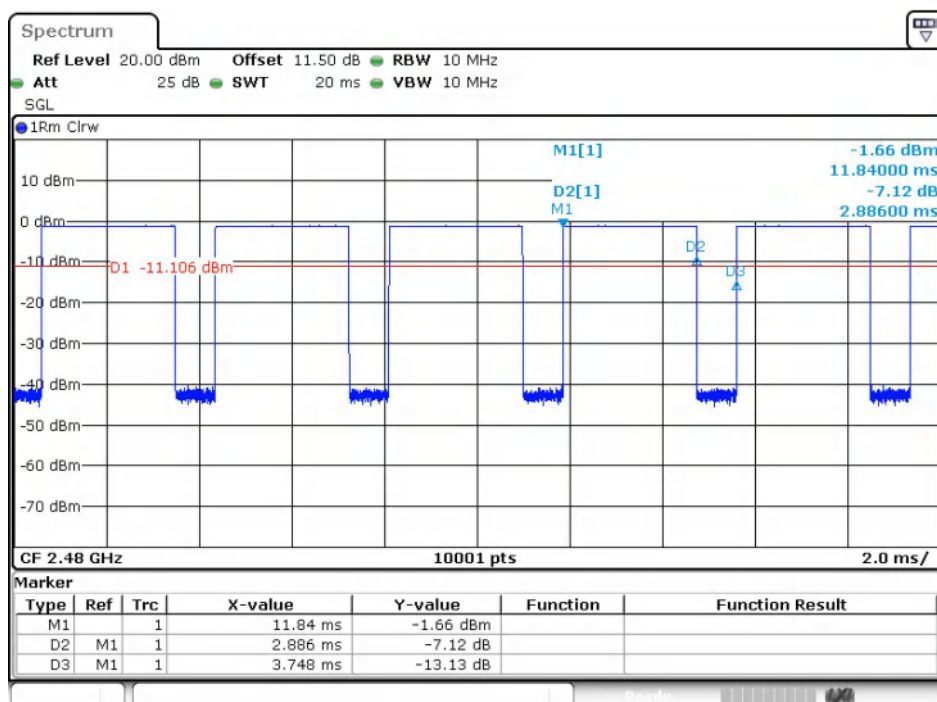
Test Graphs





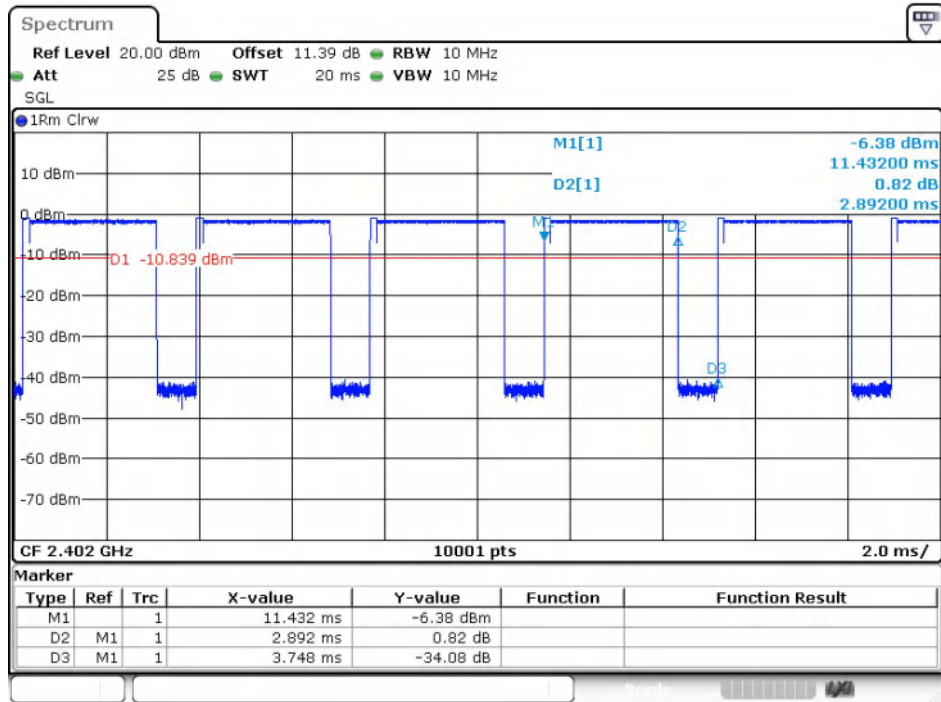
Date: 11.OCT.2024 15:16:26

GFSK(DH5)_Channel 39



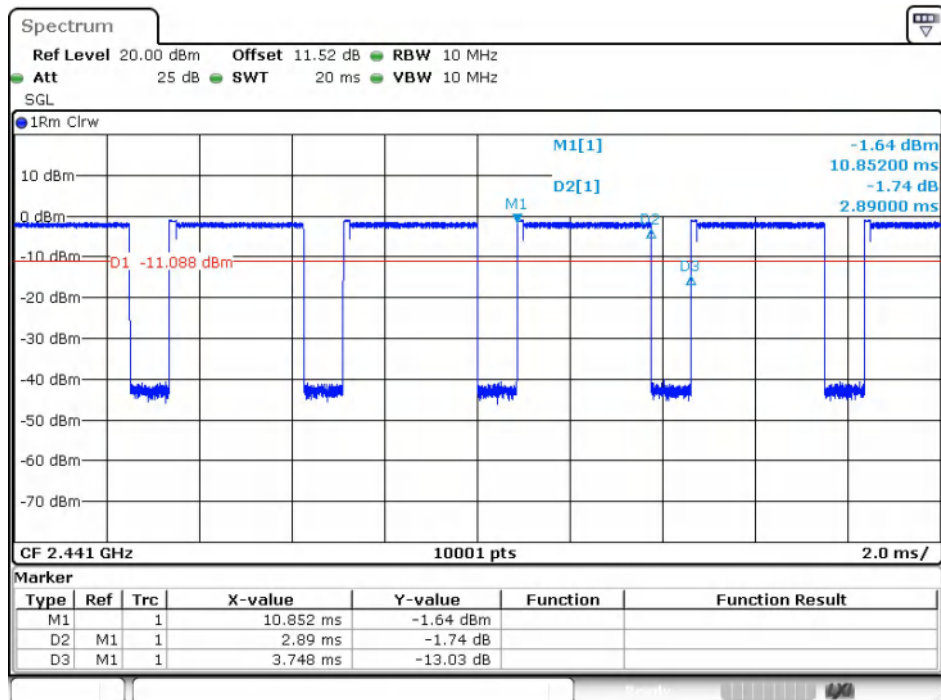
Date: 11.OCT.2024 15:18:54

GFSK(DH5)_Channel 78



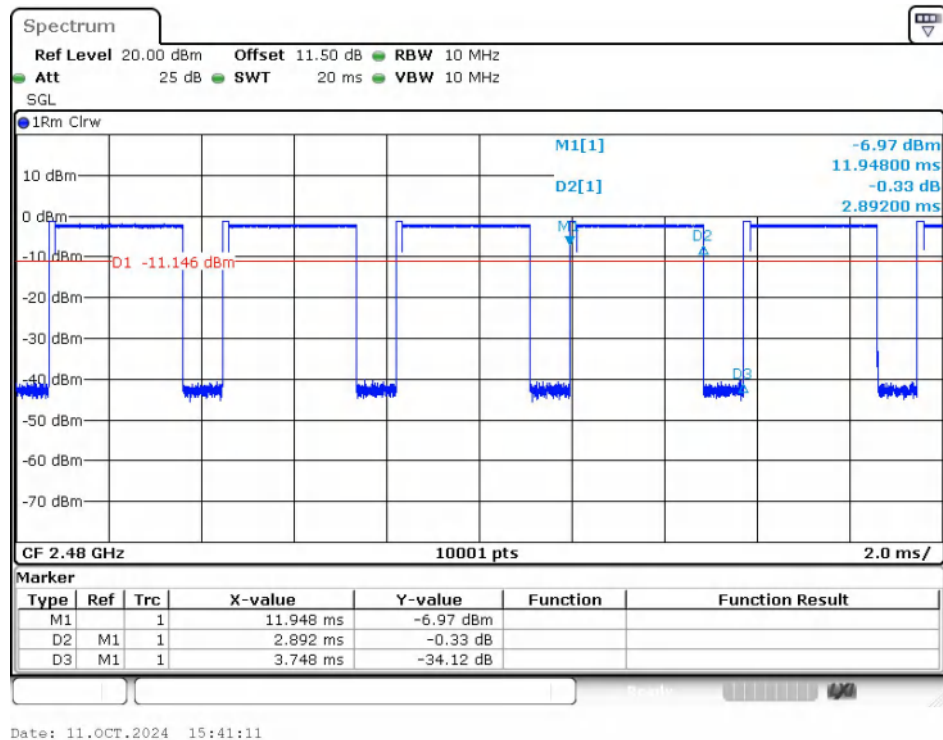
Date: 11.OCT.2024 15:21:41

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

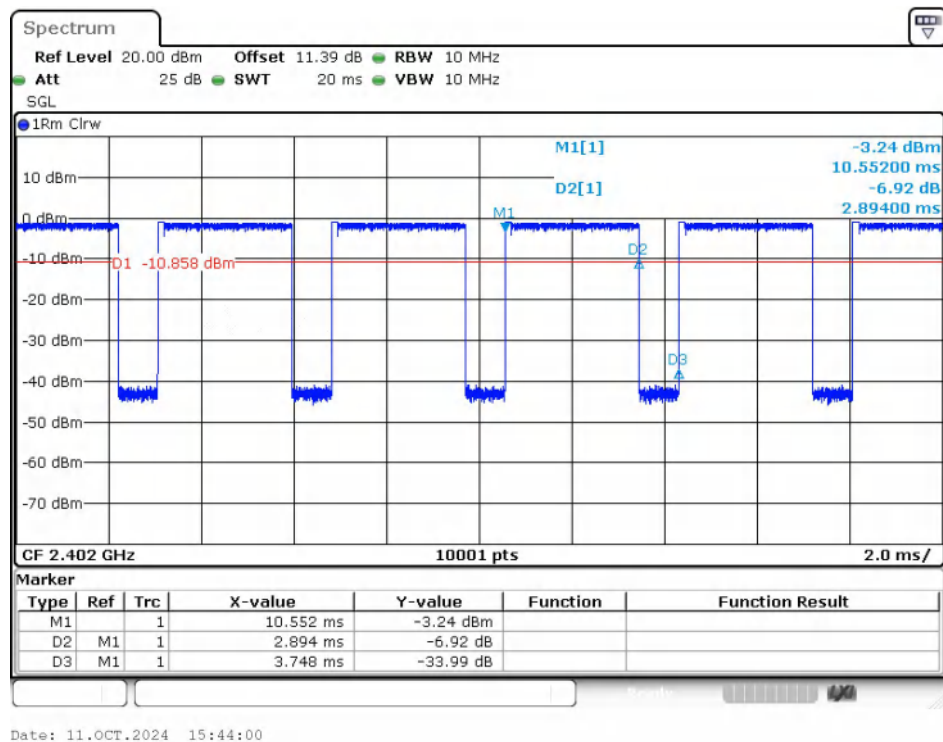


Date: 11.OCT.2024 15:31:46

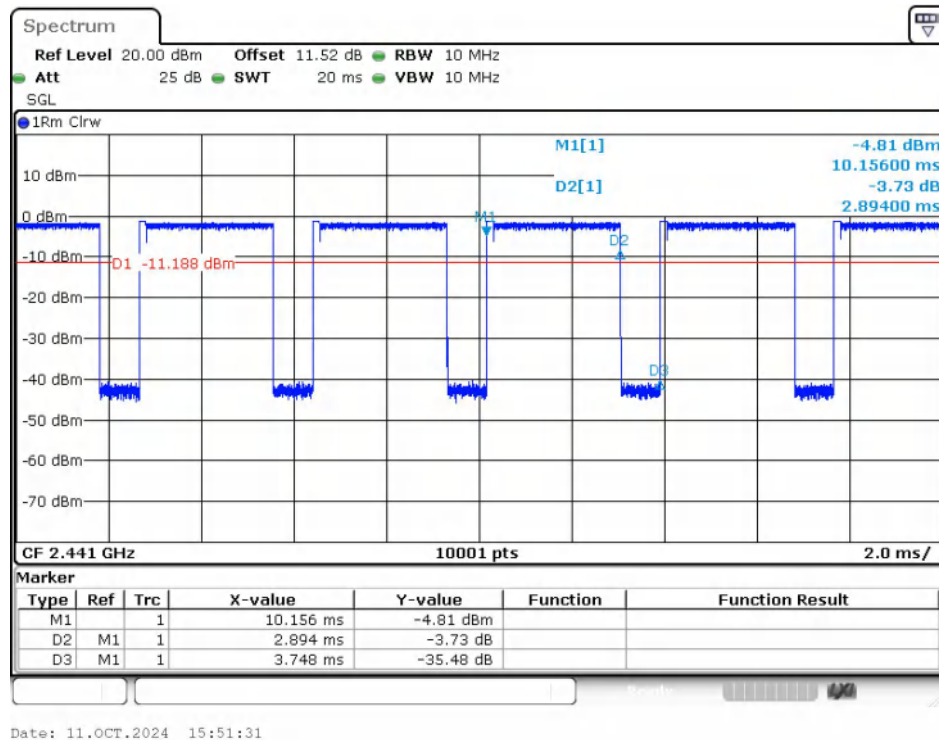
$\pi/4$ DQPSK(2-DH5)_Channel 39



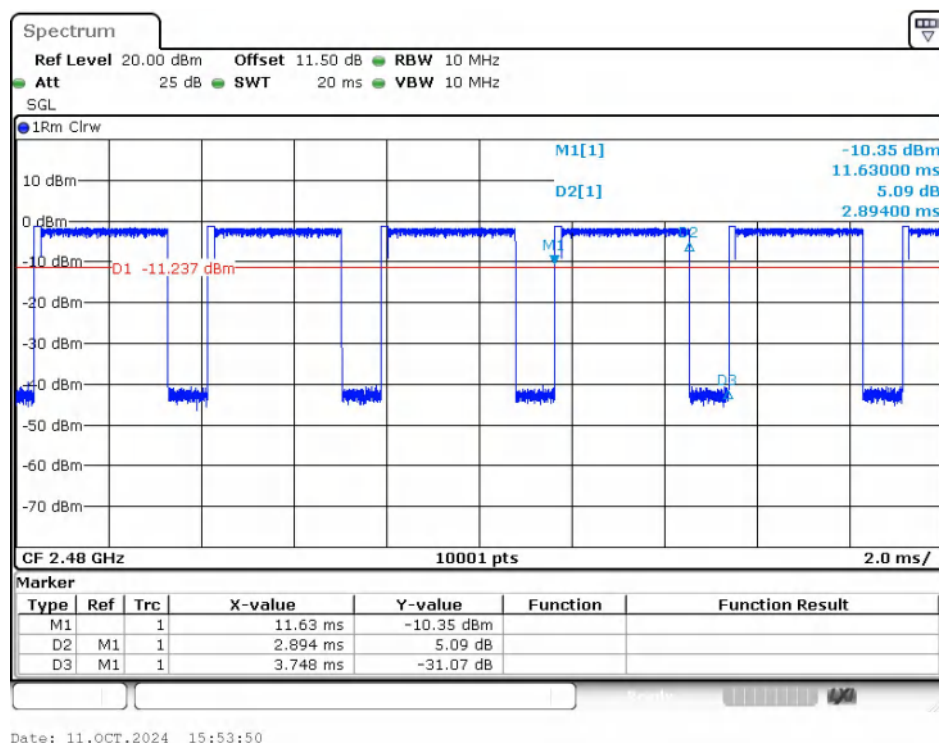
$\pi/4$ DQPSK(2-DH5)_Channel 78



8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39

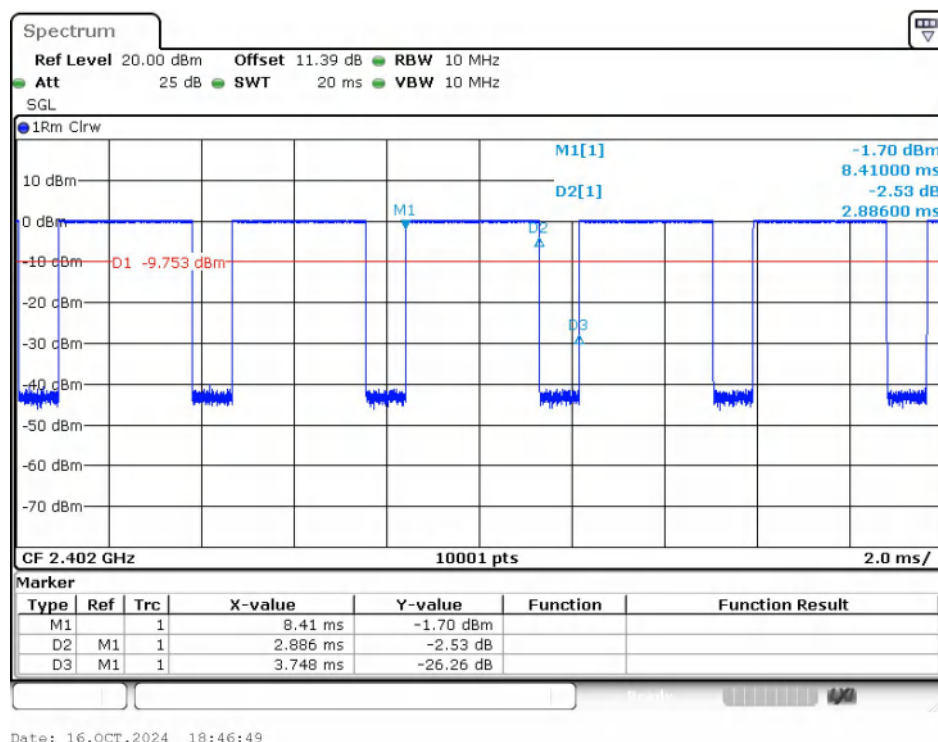


8DPSK(3-DH5)_Channel 78

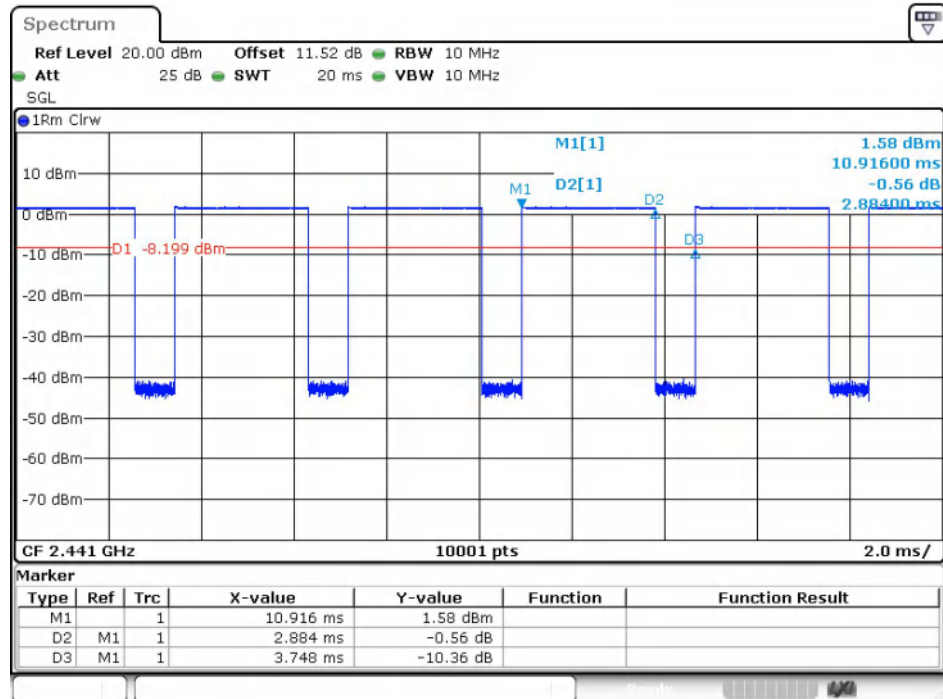
Right:

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	0.35
		39	2.884	3.748	76.95	0.7695	1.1379	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	2.892	3.748	77.16	0.7716	1.1261	0.35
8DPSK	3-DH5	0	2.894	3.748	77.21	0.7721	1.1233	0.35
		39	2.892	3.748	77.16	0.7716	1.1261	0.35
		78	2.894	3.748	77.21	0.7721	1.1233	0.35

Test Graphs

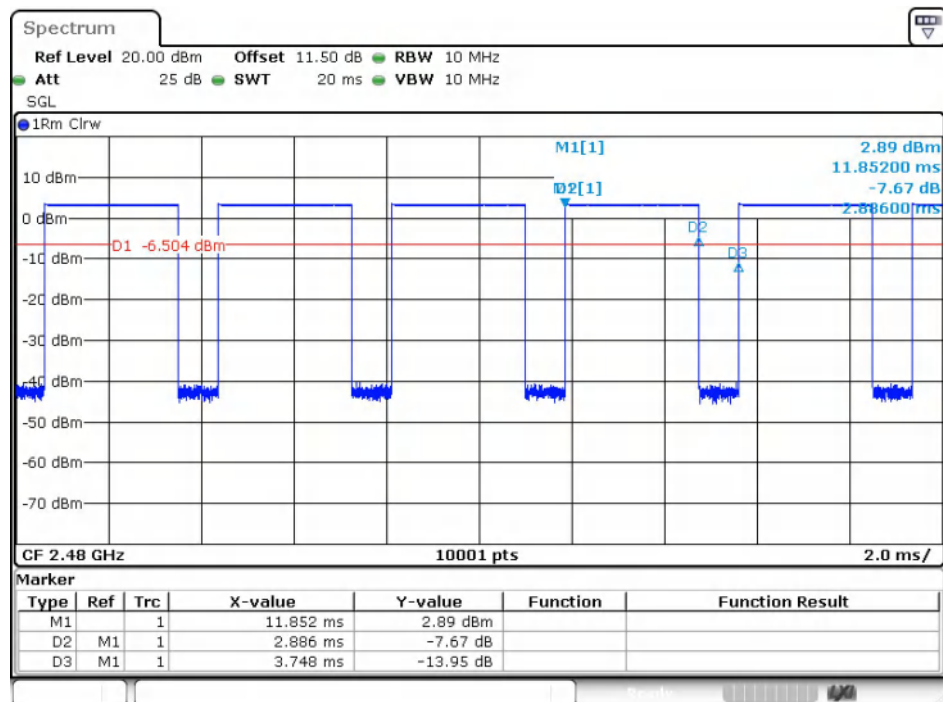


GFSK(DH5)_Channel 0



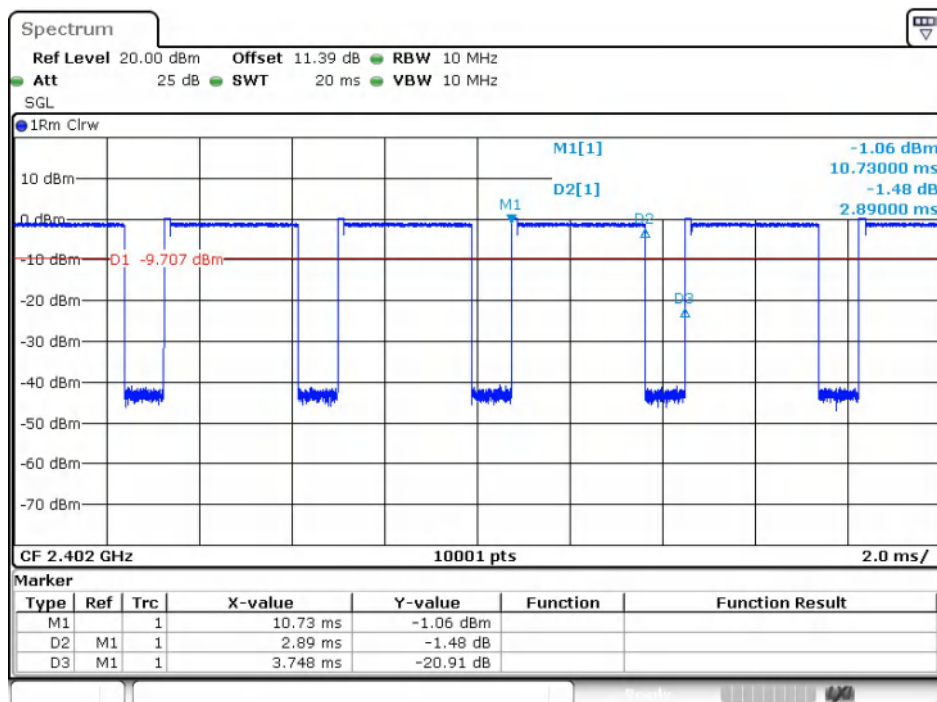
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GFSK(DH5)_Channel 39



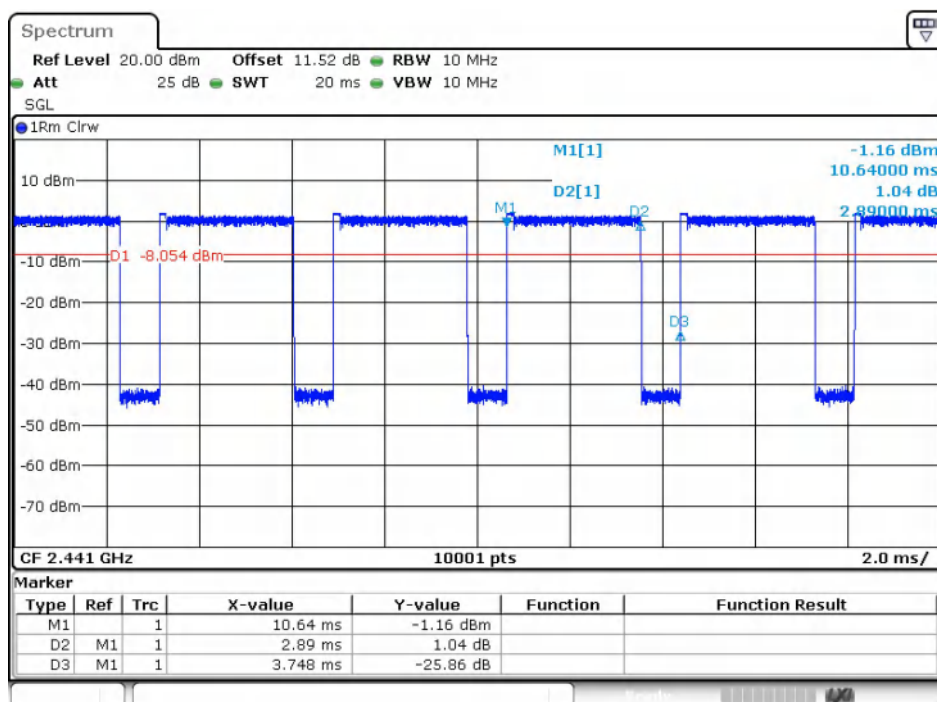
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GFSK(DH5)_Channel 78



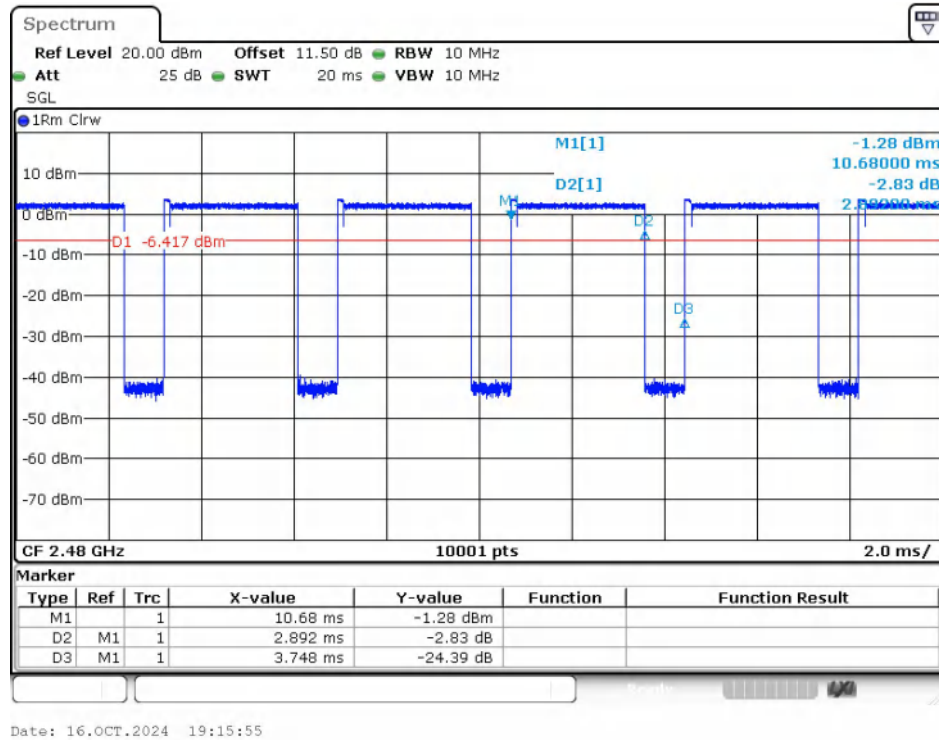
Date: 16, OCT, 2024 19:03:29

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

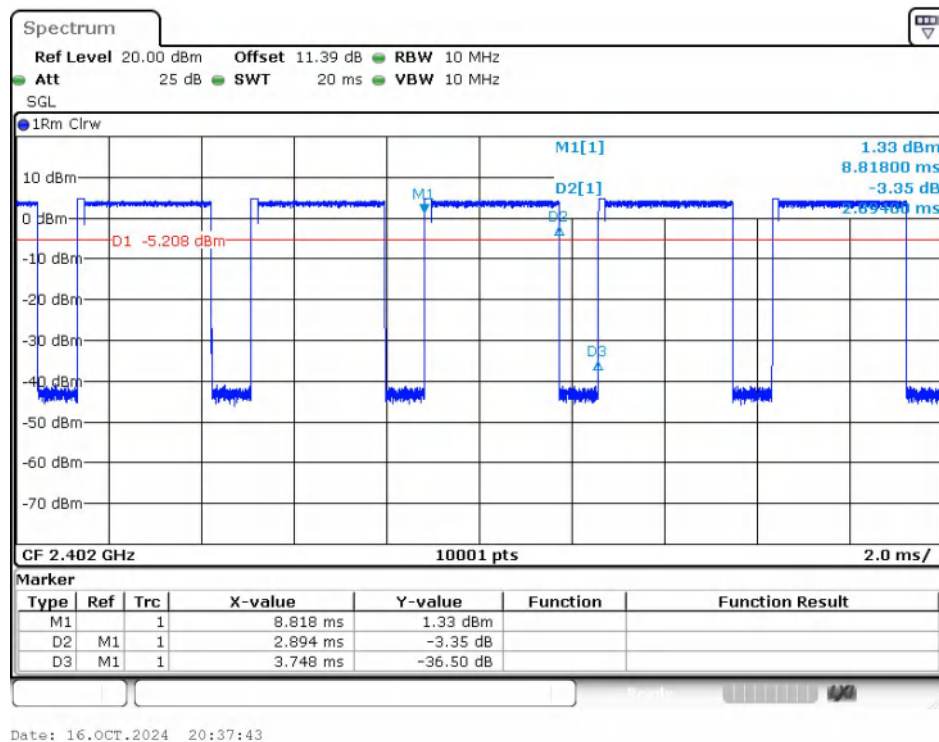


Date: 16, OCT, 2024 19:13:35

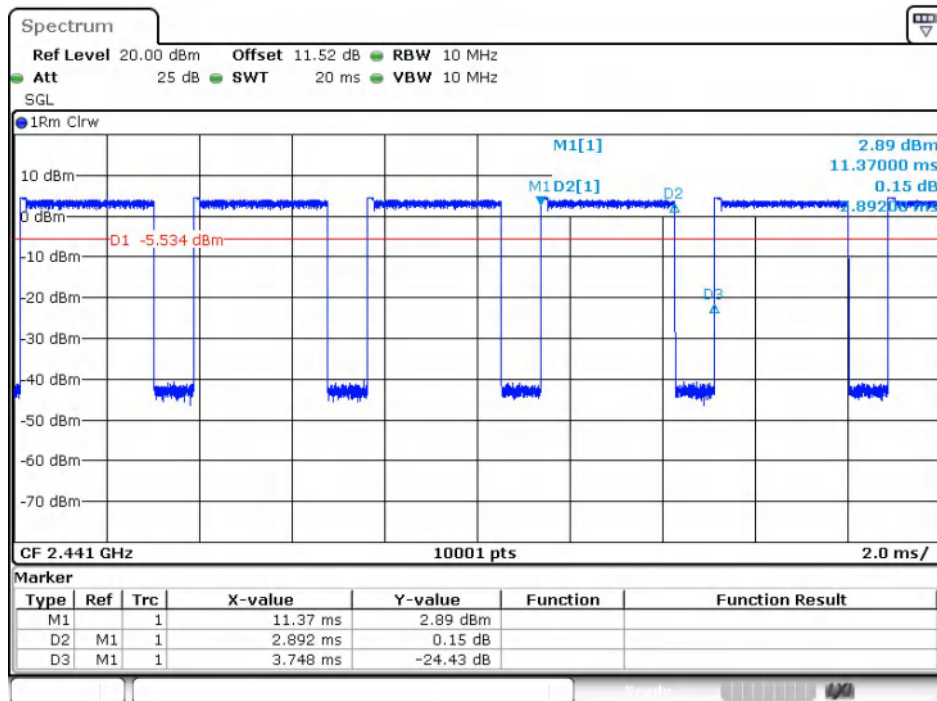
$\pi/4$ QPSK(2-DH5)_Channel 39



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

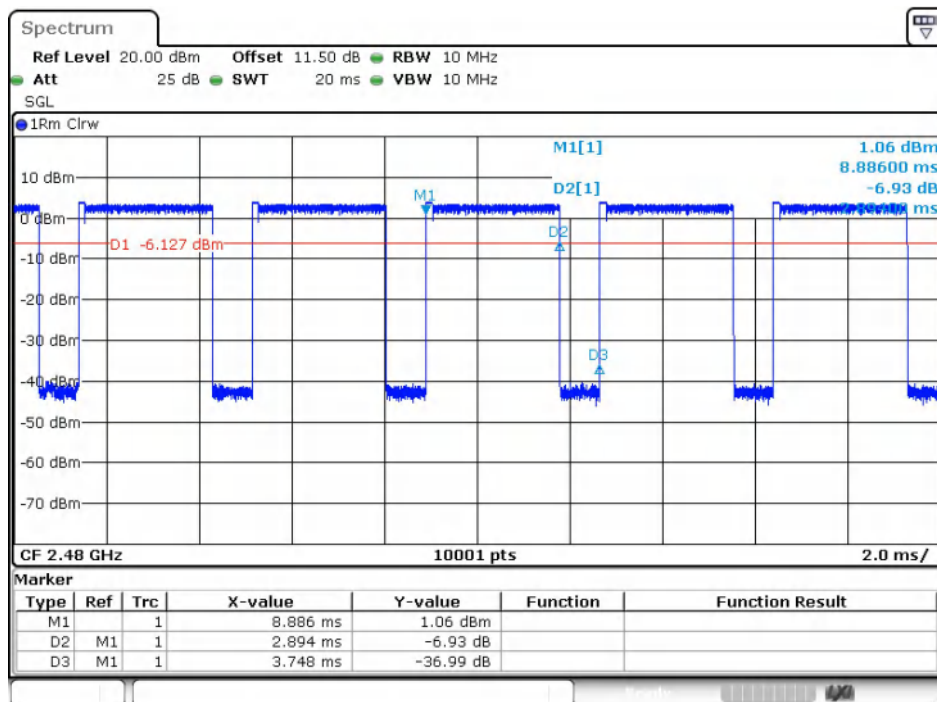


8DPSK(3-DH5)_Channel 0



Date: 16, OCT. 2024 20:41:55

8DPSK(3-DH5)_Channel 39



Date: 16, OCT. 2024 20:42:50

8DPSK(3-DH5)_Channel 78

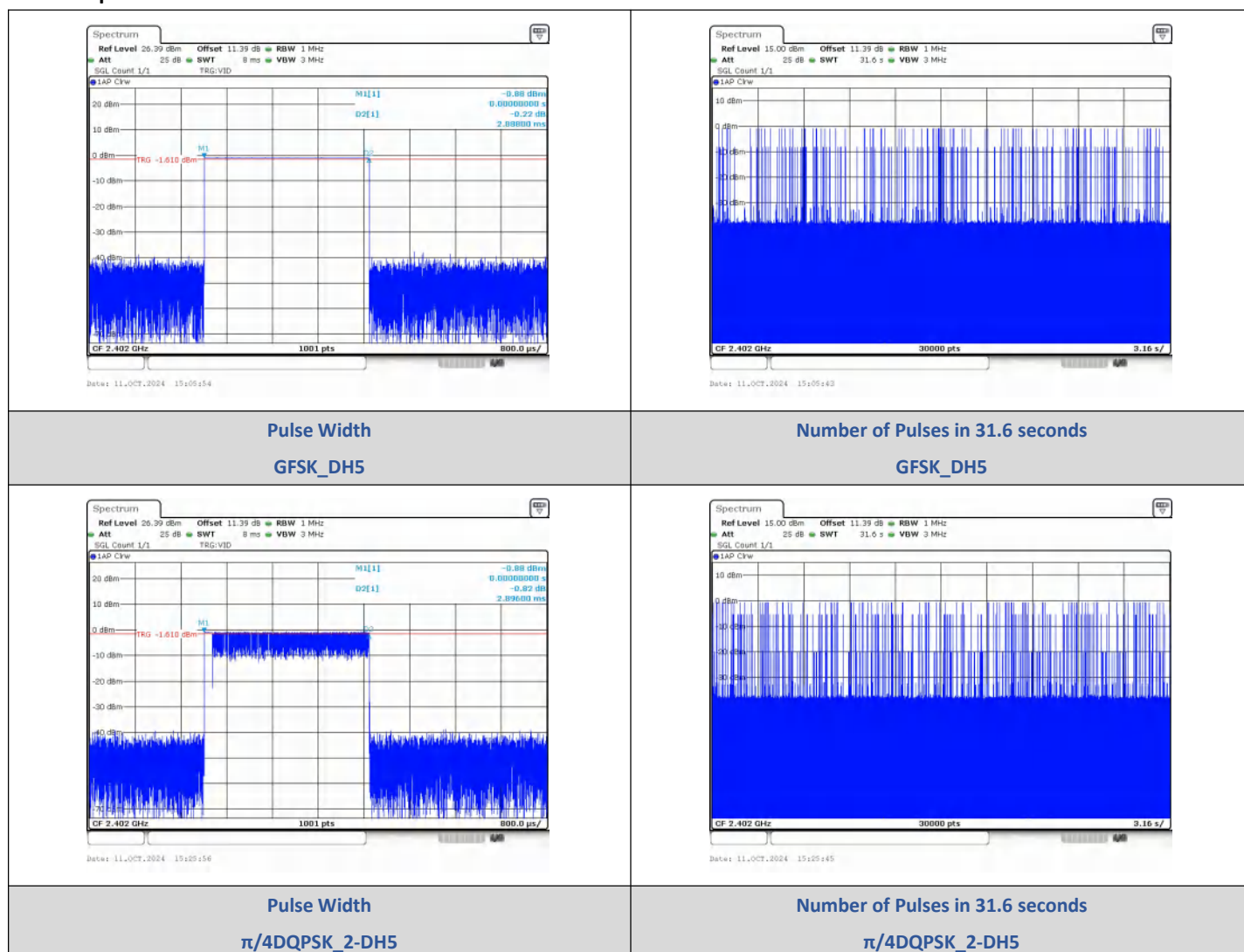
2) Dwell Time

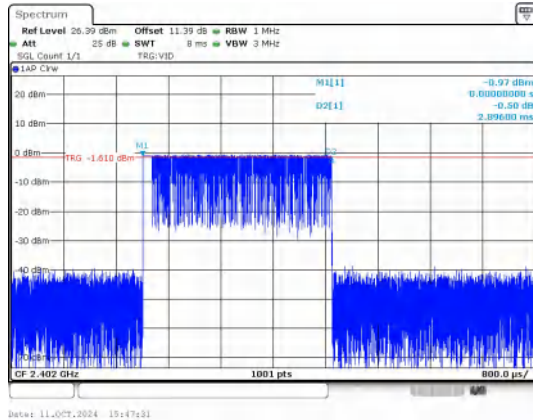
Test Result

Left:

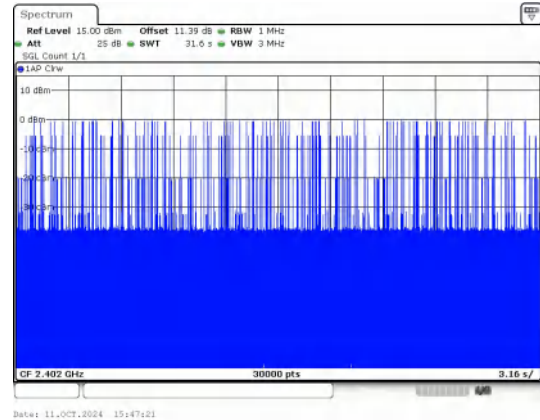
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.888	88	254.14	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.896	107	309.87		PASS
8DPSK	3-DH5		2.896	94	272.22		PASS

Test Graphs





Pulse Width
8DPSK_3-DH5

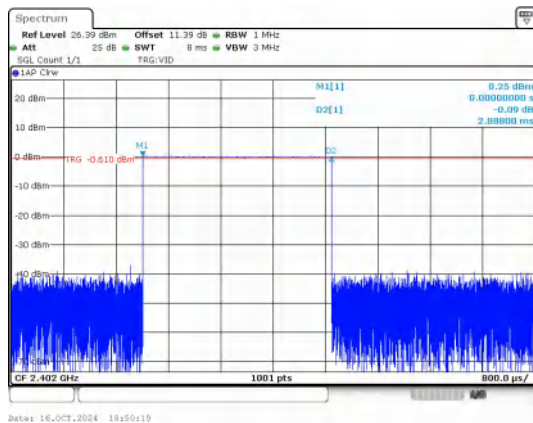


Number of Pulses in 31.6 seconds
8DPSK_3-DH5

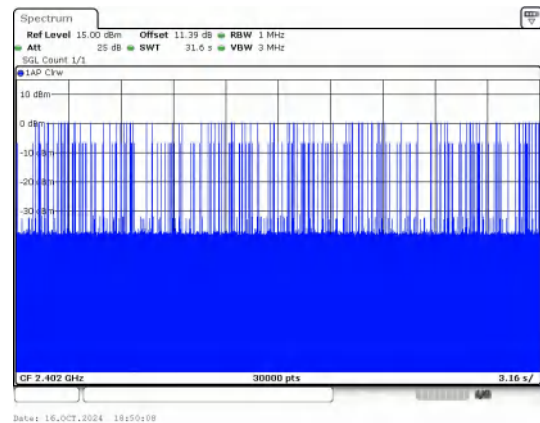
Right:

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	100	288.8	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.896	114	330.14		PASS
8DPSK	3-DH5		2.896	111	321.46		PASS

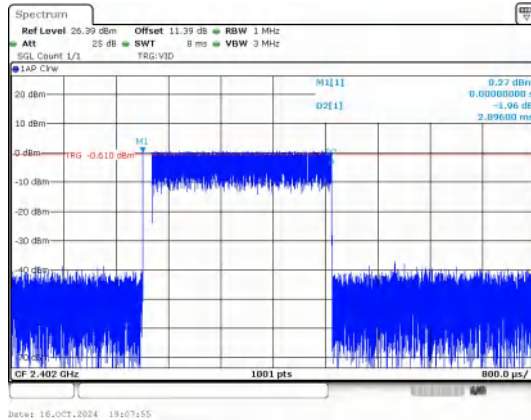
Test Graphs



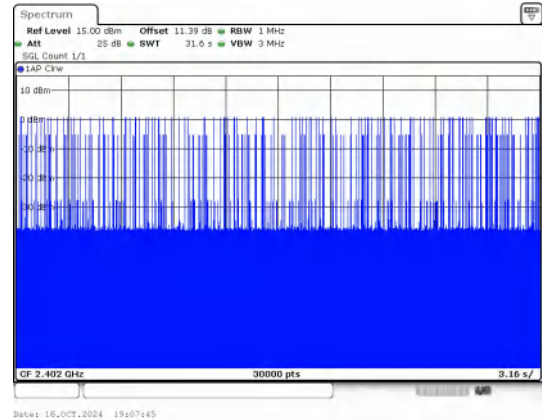
Pulse Width
GFSK_DH5



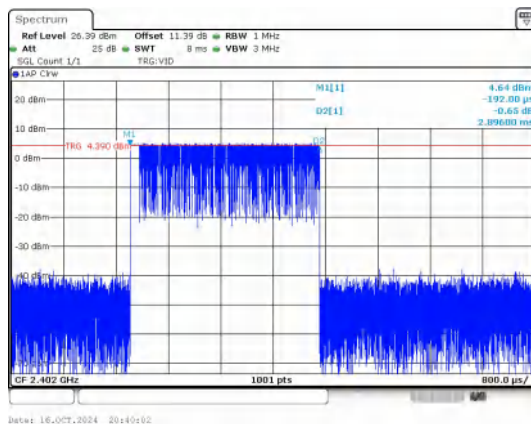
Number of Pulses in 31.6 seconds
GFSK_DH5



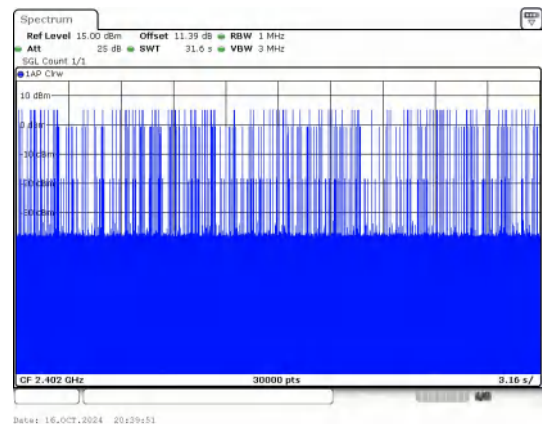
Pulse Width
 $\pi/4$ DQPSK_2-DH5



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

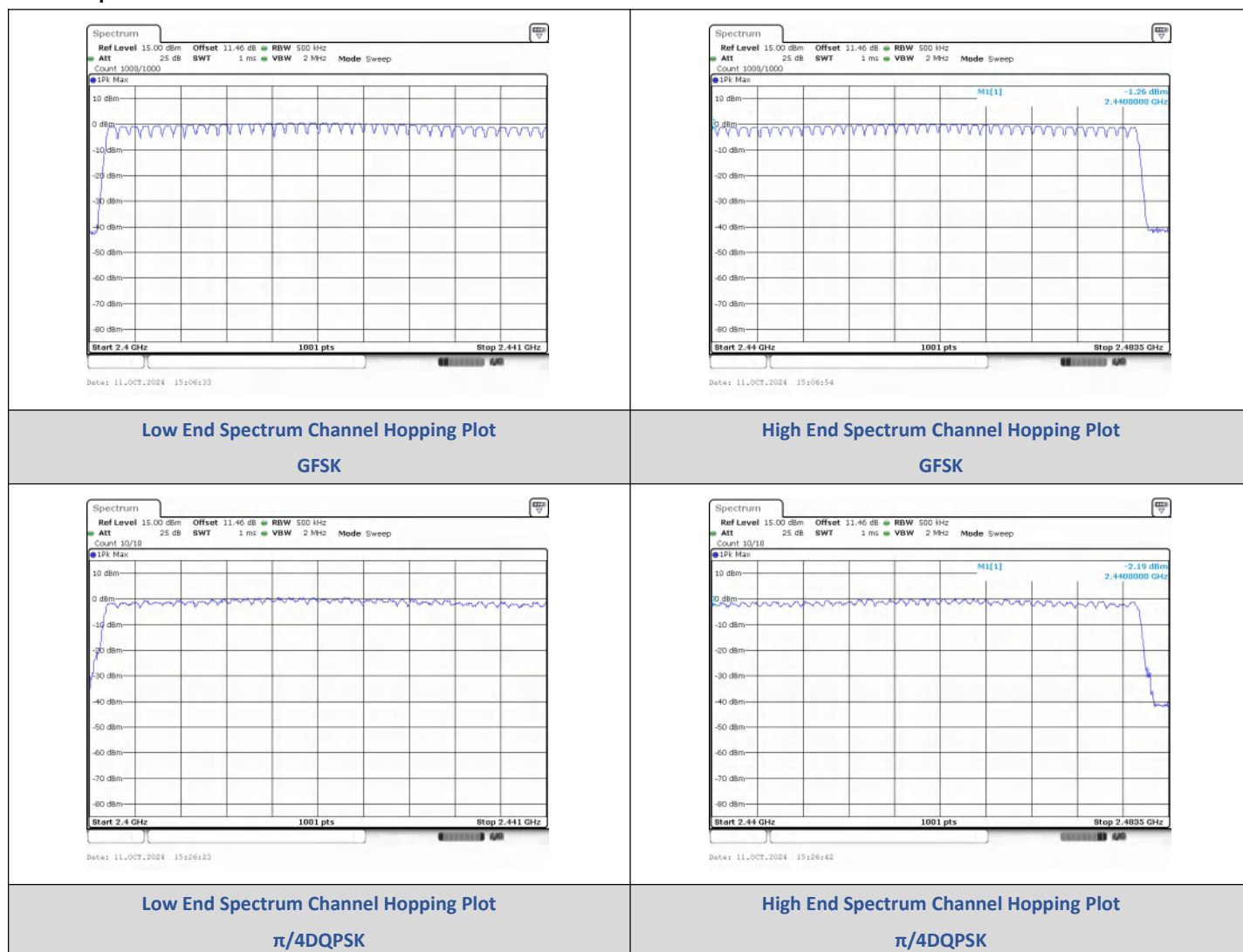
3) Number Of Hopping Channel

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





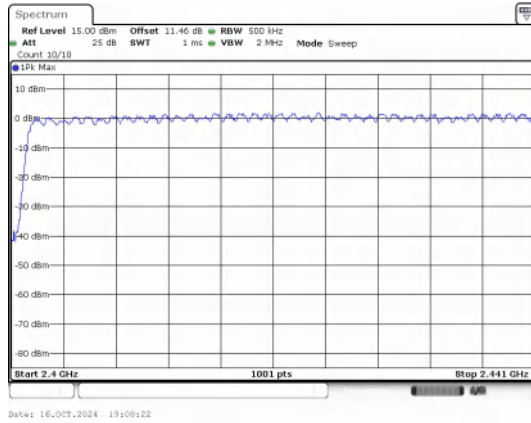
Right:

Test Result

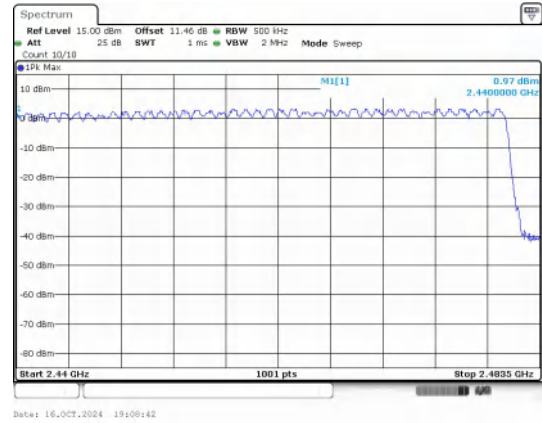
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs

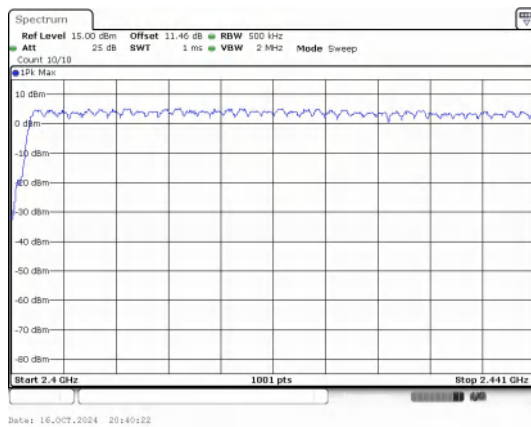




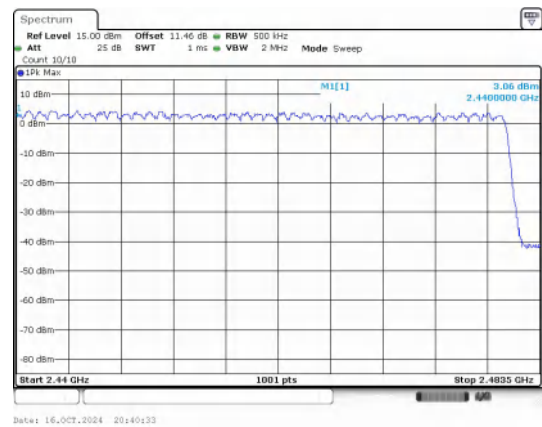
Low End Spectrum Channel Hopping Plot
 $\pi/4$ DQPSK



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

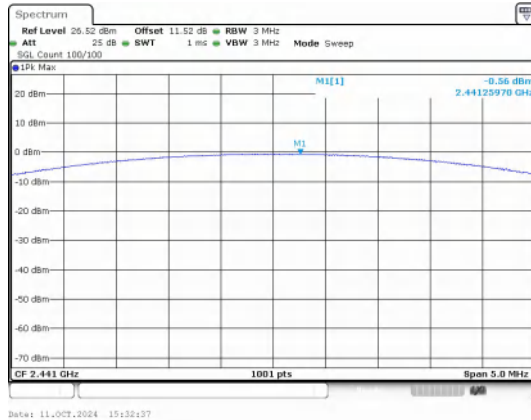
Test Result

Left:

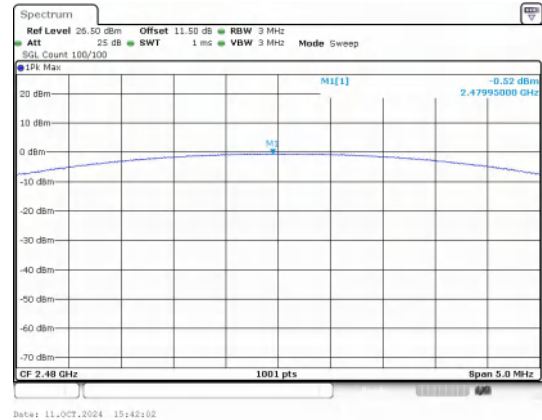
Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	-0.78	0.84	≤30	PASS
		39	-1.05	0.79		PASS
		78	-1.04	0.79		PASS
$\pi/4$ DQPSK	2-DH5	0	-0.36	0.92	≤20.97	PASS
		39	-0.56	0.88		PASS
		78	-0.52	0.89		PASS
8DPSK	3-DH5	0	-0.26	0.94		PASS
		39	-0.54	0.88		PASS
		78	-0.45	0.90		PASS

Test Graphs

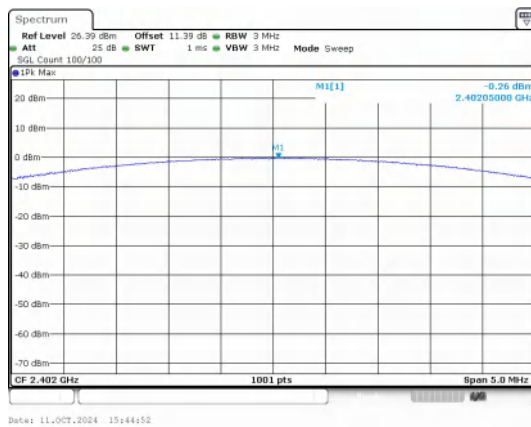




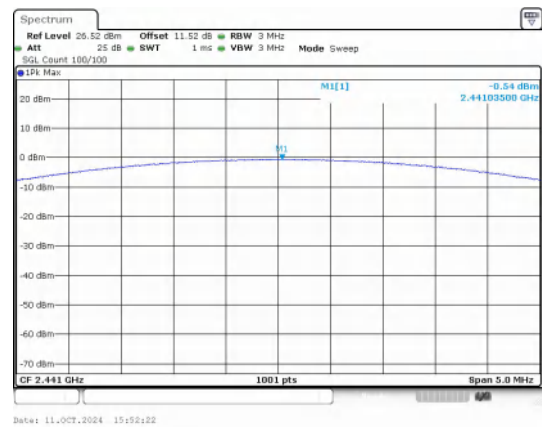
Peak Output Power
 $\pi/4$ DQPSK_Channel 39



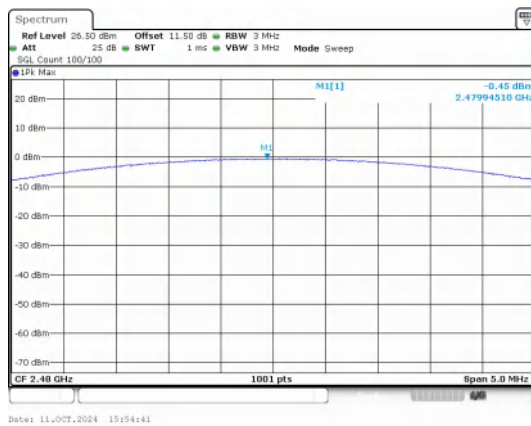
Peak Output Power
 $\pi/4$ DQPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



Peak Output Power
8DPSK_Channel 39



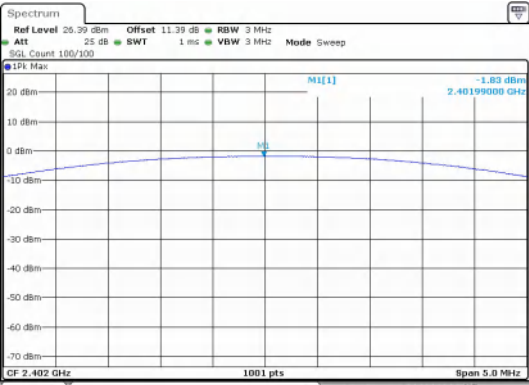
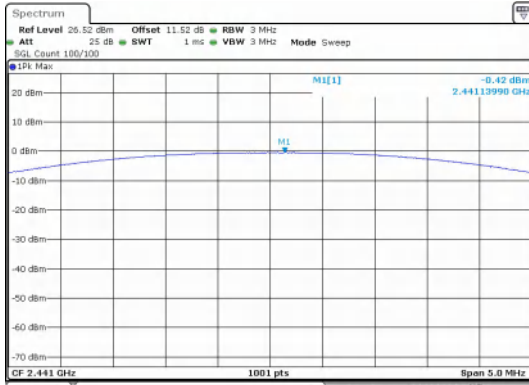
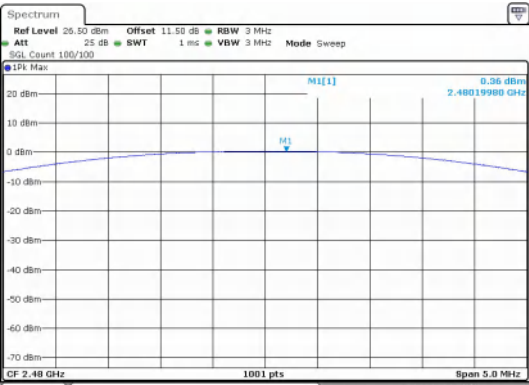
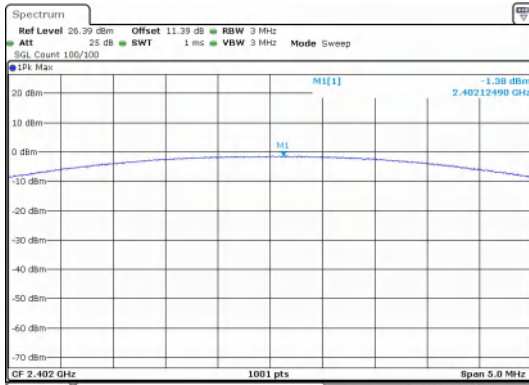
Peak Output Power
8DPSK_Channel 78

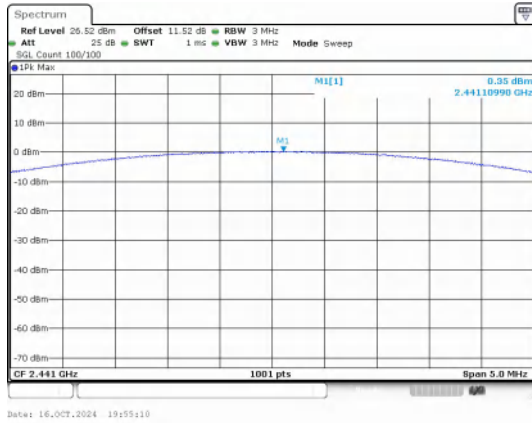
Right:

Test Result

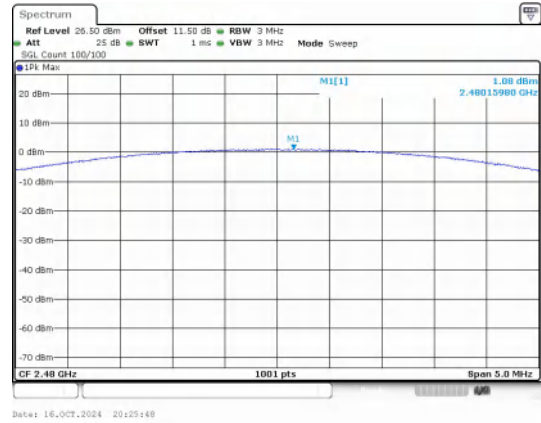
Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	-1.83	0.66	≤30	PASS
		39	-0.42	0.91		PASS
		78	0.36	1.09		PASS
$\pi/4$ DQPSK	2-DH5	0	-1.38	0.73	≤20.97	PASS
		39	0.35	1.08		PASS
		78	1.08	1.28		PASS
8DPSK	3-DH5	0	-1.21	0.76		PASS
		39	0.84	1.21		PASS
		78	-1.53	0.70		PASS

Test Graphs

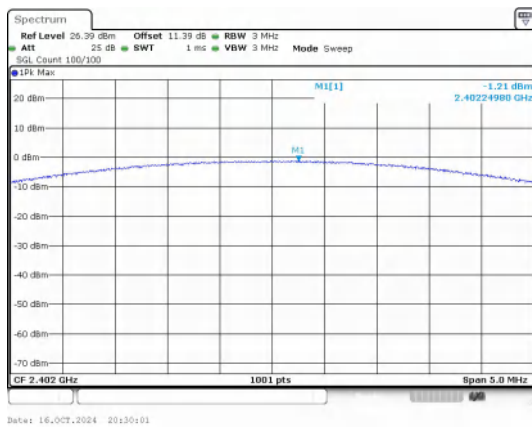
 Ref Level 26.39 dBm Offset 11.39 dB RBW 3 MHz Att 25 dB SWT 1 ms VBW 3 MHz Mode Sweep Sig. Count 100/100 M1[1] -1.83 dBm 2.40199000 GHz CF 2.402 GHz 1001 pts Span 5.0 MHz Date: 16.OCT.2024 19:46:15	 Ref Level 26.52 dBm Offset 11.52 dB RBW 3 MHz Att 25 dB SWT 1 ms VBW 3 MHz Mode Sweep Sig. Count 100/100 M1[1] -0.42 dBm 2.44119990 GHz CF 2.441 GHz 1001 pts Span 5.0 MHz Date: 16.OCT.2024 19:49:00
Peak Output Power GFSK_Channel 0	Peak Output Power GFSK_Channel 39
 Ref Level 26.50 dBm Offset 11.50 dB RBW 3 MHz Att 25 dB SWT 1 ms VBW 3 MHz Mode Sweep Sig. Count 100/100 M1[1] 0.36 dBm 2.48019980 GHz CF 2.48 GHz 1001 pts Span 5.0 MHz Date: 16.OCT.2024 20:07:25	 Ref Level 26.39 dBm Offset 11.39 dB RBW 3 MHz Att 25 dB SWT 1 ms VBW 3 MHz Mode Sweep Sig. Count 100/100 M1[1] -1.38 dBm 2.40212490 GHz CF 2.402 GHz 1001 pts Span 5.0 MHz Date: 16.OCT.2024 19:53:46
Peak Output Power GFSK_Channel 78	Peak Output Power $\pi/4$DQPSK_Channel 0



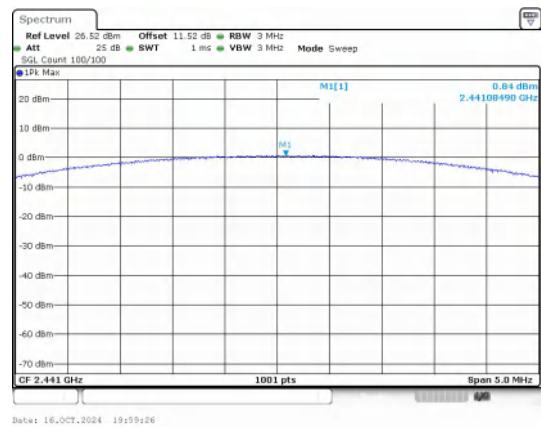
Peak Output Power
 $\pi/4$ DQPSK_Channel 39



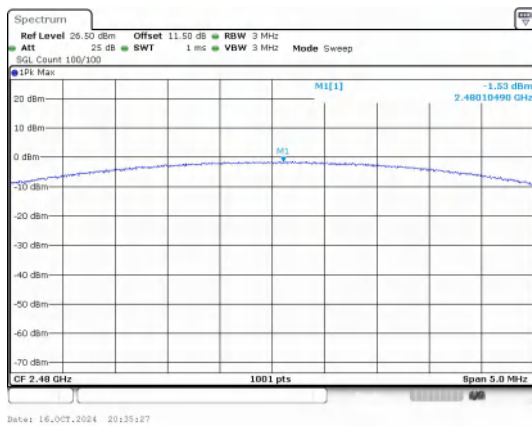
Peak Output Power
 $\pi/4$ DQPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



Peak Output Power
8DPSK_Channel 39



Peak Output Power
8DPSK_Channel 78

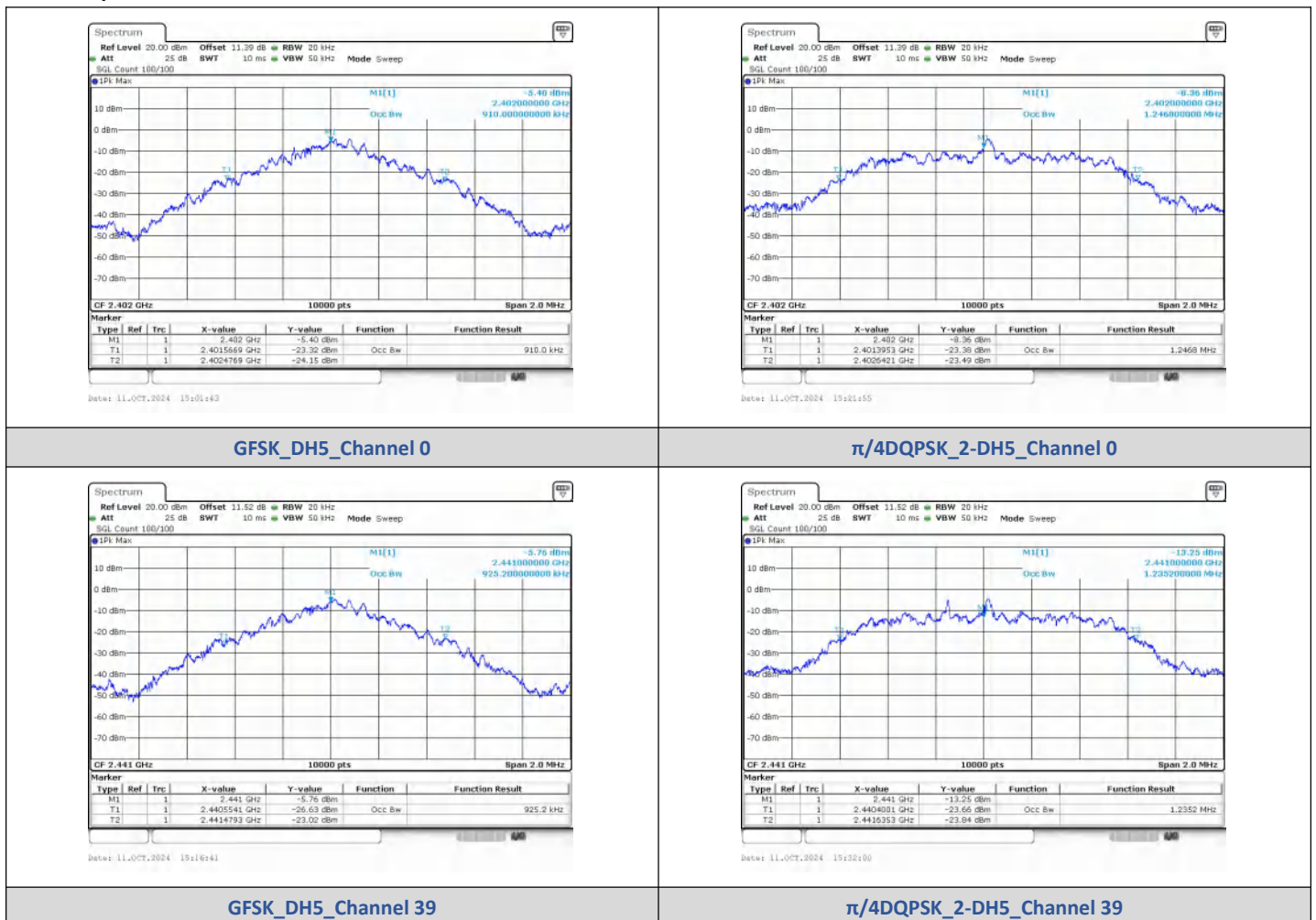
5) 99% Bandwidth

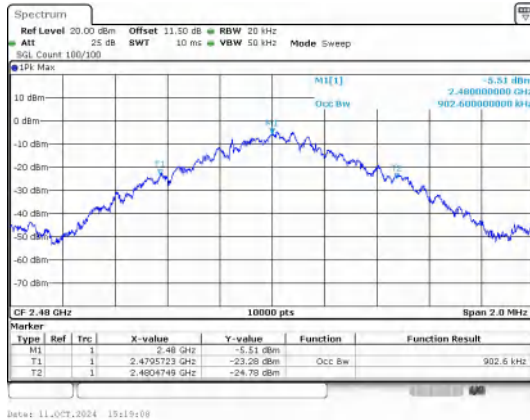
Test Result

Left:

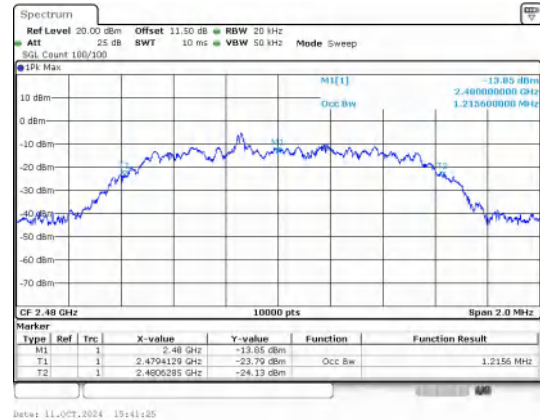
Modulation	Channel	Center Frequency (MHz)	99% BW (MHz)
GFSK	0	2402	0.91000
	39	2441	0.92520
	78	2480	0.90260
$\pi/4$ DQPSK	0	2402	1.2468
	39	2441	1.2352
	78	2480	1.2156
8DPSK	0	2402	1.2452
	39	2441	1.2398
	78	2480	1.2222

Test Graphs

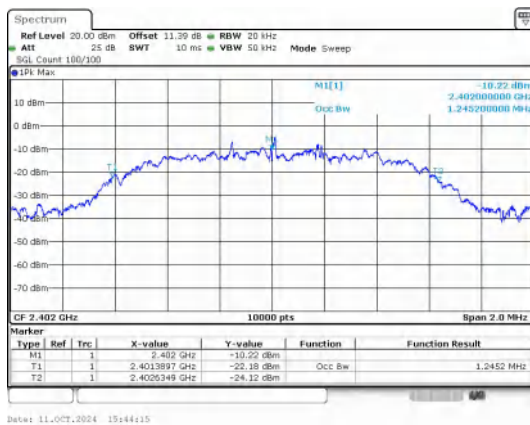




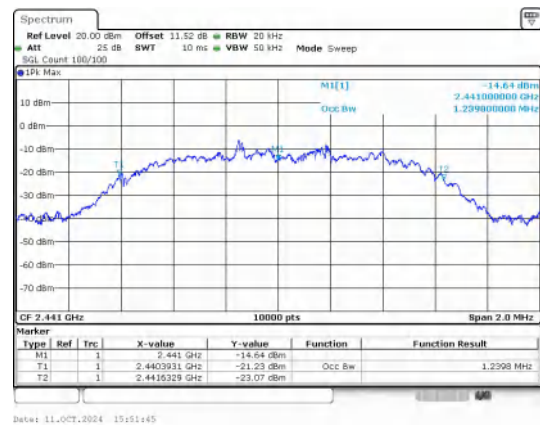
GFSK_DH5_Channel 78



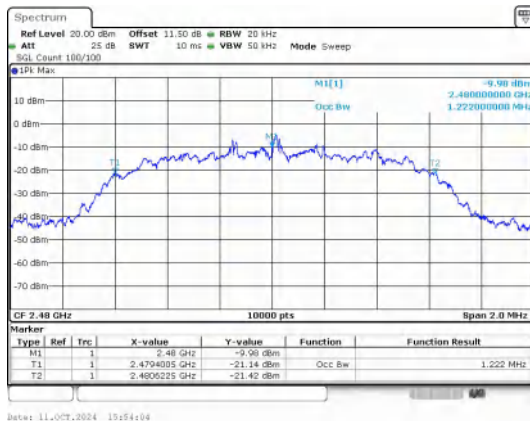
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39

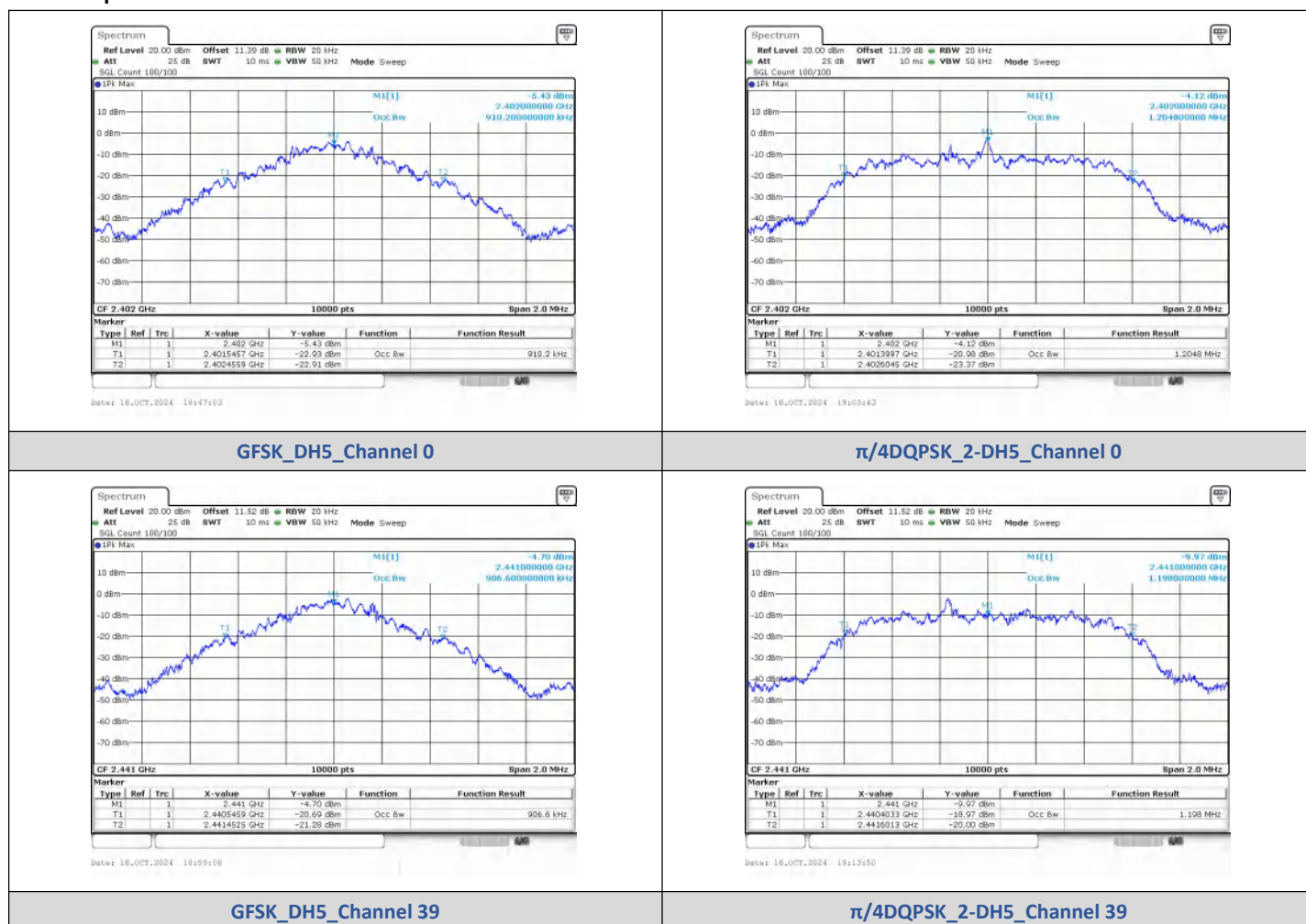


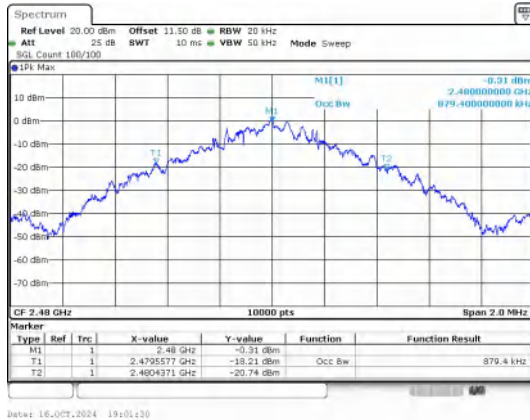
8DPSK_3-DH5_Channel 78

Right:

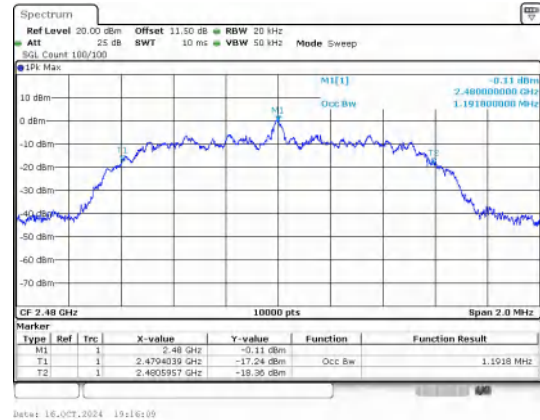
Modulation	Channel	Center Frequency (MHz)	99% BW (MHz)
GFSK	0	2402	0.91020
	39	2441	0.90660
	78	2480	0.87940
$\pi/4$ DQPSK	0	2402	1.2048
	39	2441	1.1980
	78	2480	1.1918
8DPSK	0	2402	1.2232
	39	2441	1.2178
	78	2480	1.2110

Test Graphs

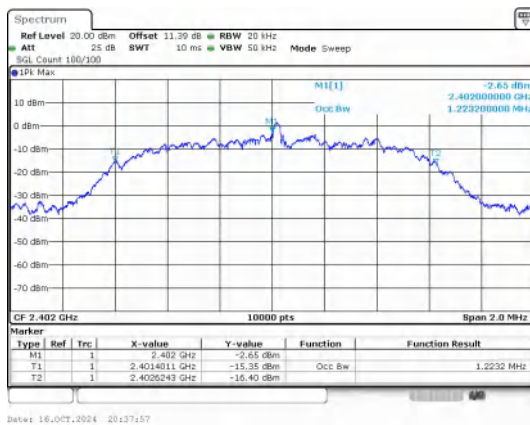




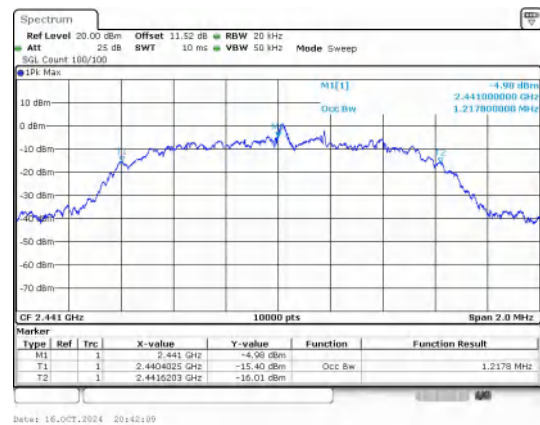
GFSK_DH5_Channel 78



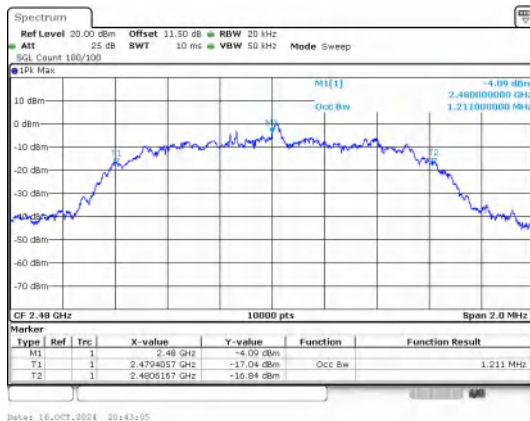
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



8DPSK_3-DH5_Channel 78

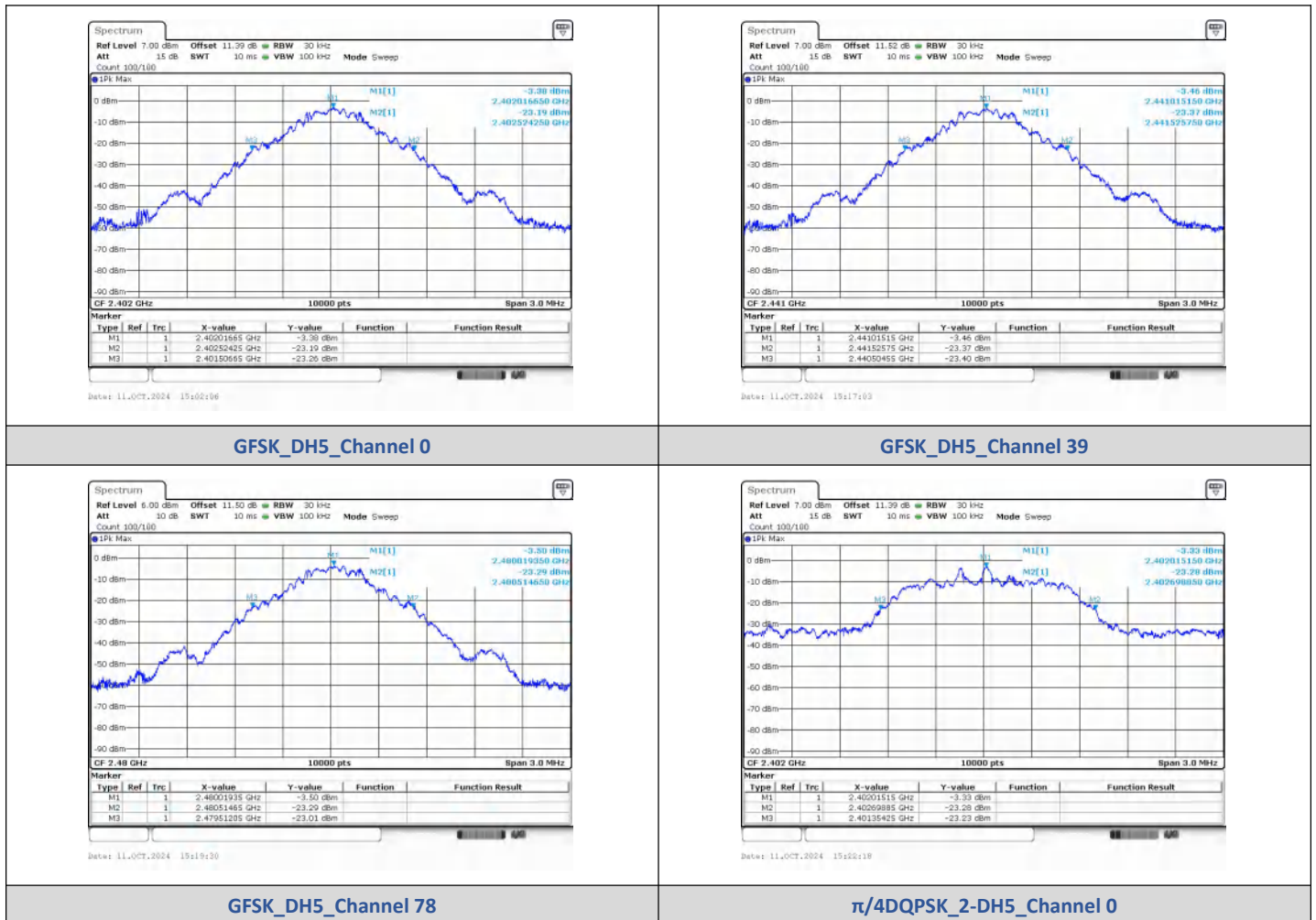
6) 20dB Bandwidth

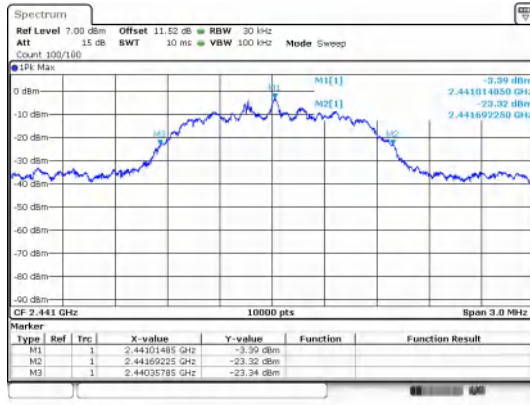
Test Result

Left:

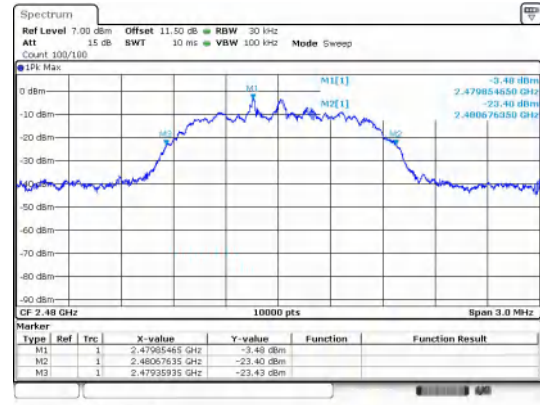
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.010
	39	2441 MHz	1.030
	78	2480 MHz	1.000
$\pi/4$ DQPSK	0	2402 MHz	1.350
	39	2441 MHz	1.330
	78	2480 MHz	1.320
8DPSK	0	2402 MHz	1.310
	39	2441 MHz	1.310
	78	2480 MHz	1.300

Test Graphs

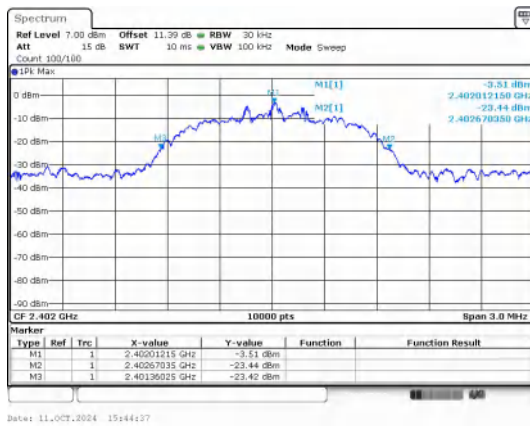




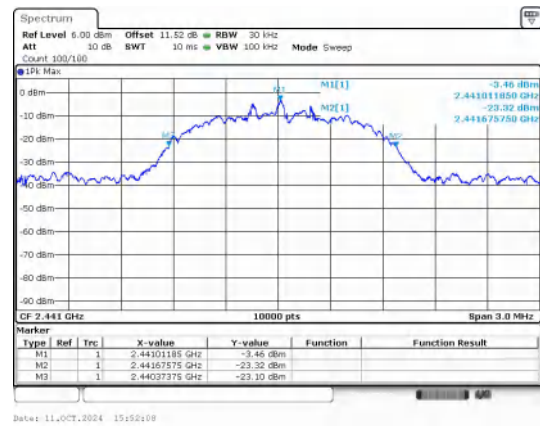
$\pi/4$ DQPSK_2-DH5_Channel 39



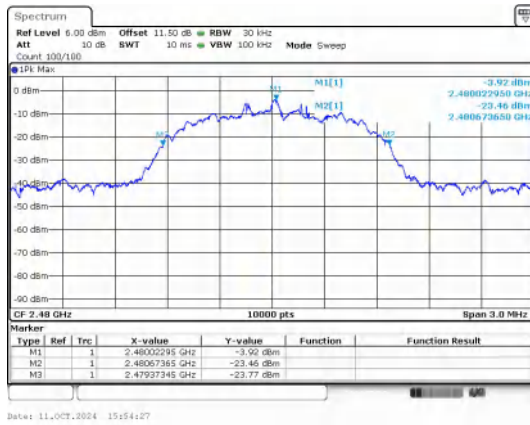
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39

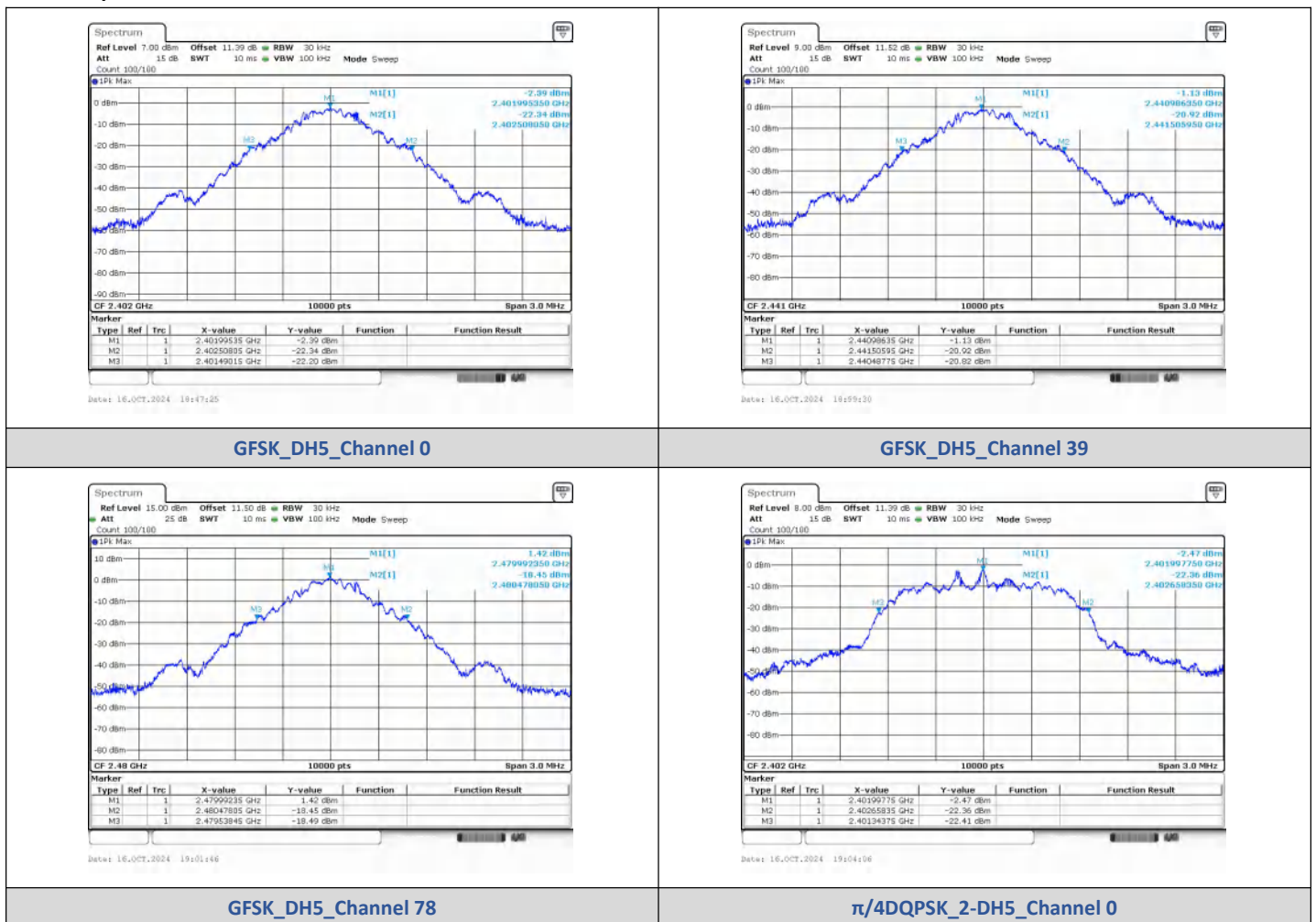


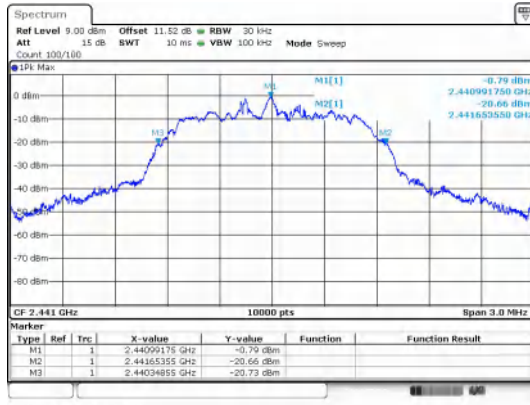
8DPSK_3-DH5_Channel 78

Right:

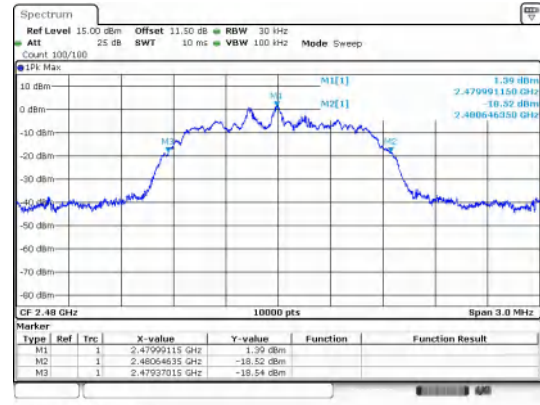
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.020
	39	2441 MHz	1.020
	78	2480 MHz	0.9400
$\pi/4$ DQPSK	0	2402 MHz	1.320
	39	2441 MHz	1.300
	78	2480 MHz	1.280
8DPSK	0	2402 MHz	1.300
	39	2441 MHz	1.310
	78	2480 MHz	1.290

Test Graphs

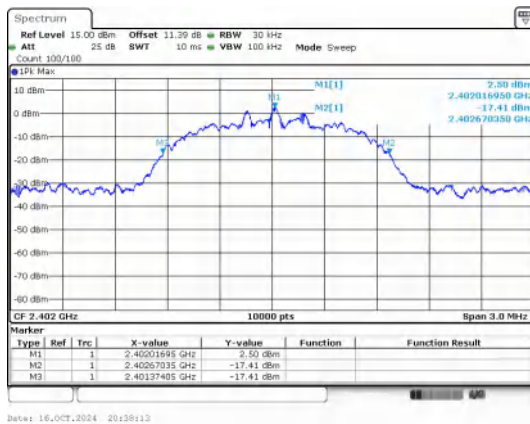




$\pi/4$ DQPSK_2-DH5_Channel 39



$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



8DPSK_3-DH5_Channel 78

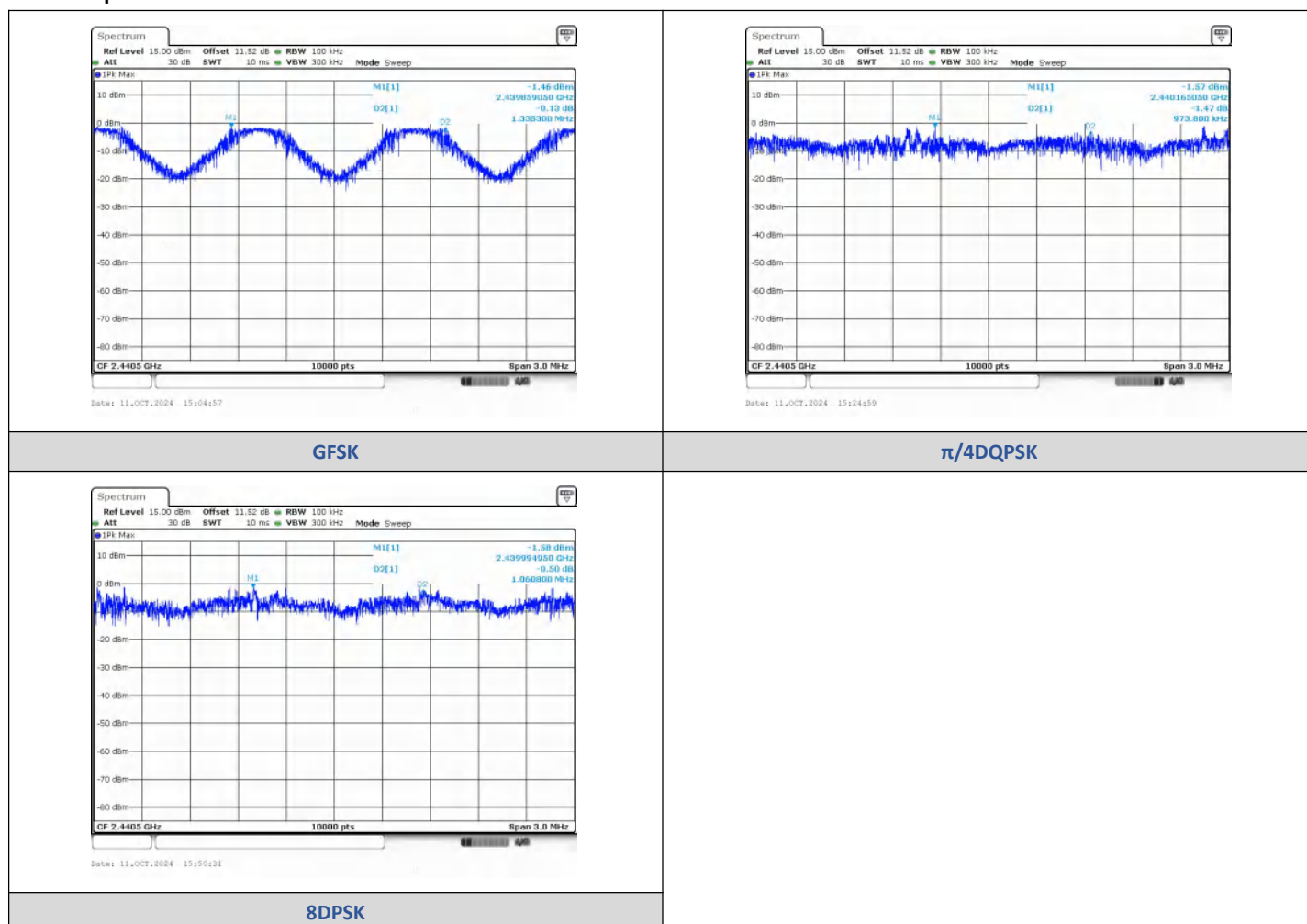
7) Carrier Frequencies Separation

Test Result

Left:

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2439.8591	2441.1944	1.3353	1.030	PASS
$\pi/4$ DQPSK	2-DH5	2440.1651	2441.1388	0.9738	0.9	PASS
8DPSK	3-DH5	2439.9949	2441.0557	1.0608	0.873	PASS

Test Graphs

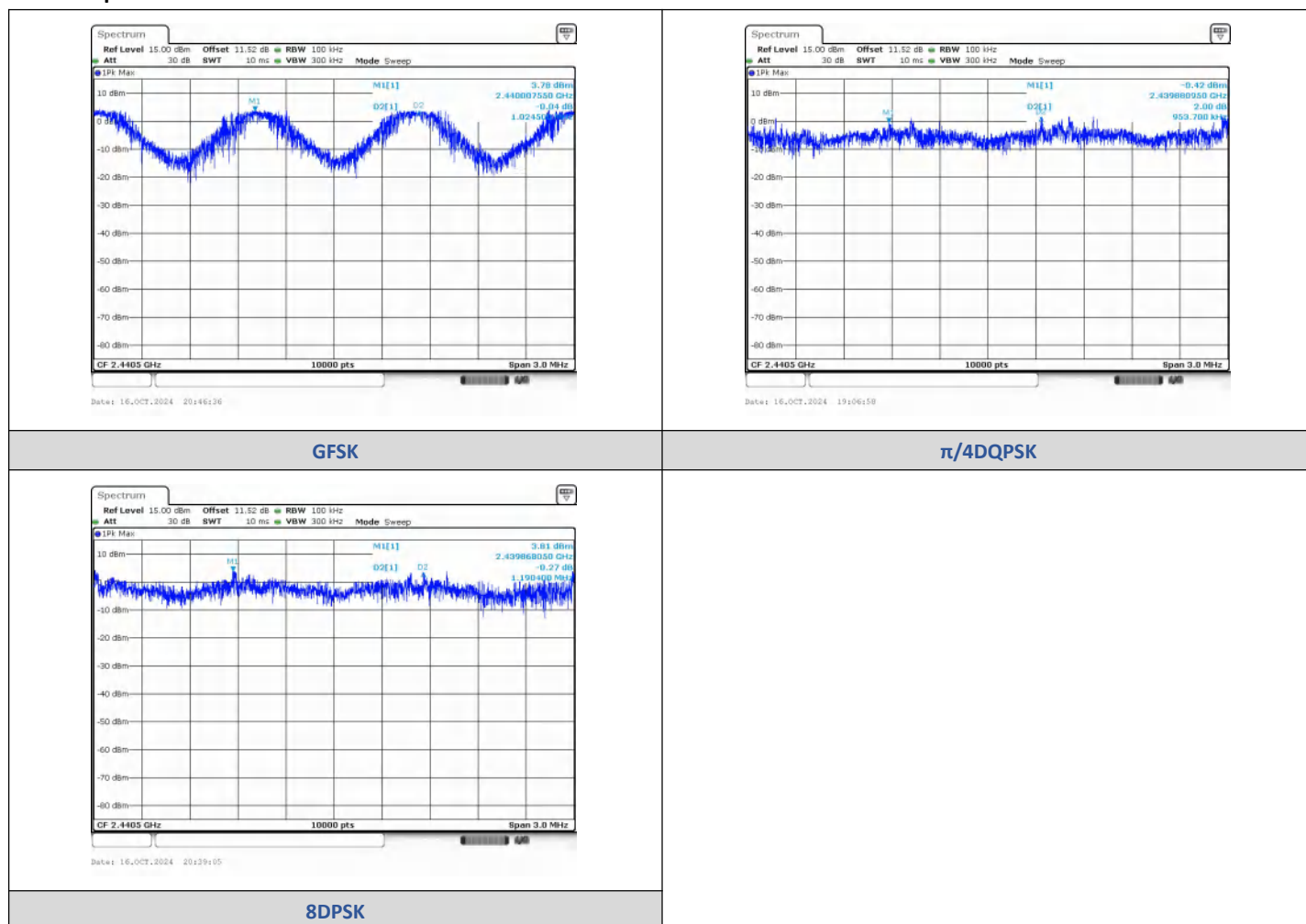


Right:

Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2440.0075	2441.032	1.0245	1.02	PASS
$\pi/4$ DQPSK	2-DH5	2439.881	2440.8346	0.9537	0.88	PASS
8DPSK	3-DH5	2439.8681	2441.0584	1.1904	0.867	PASS

Test Graphs



8) Conducted Out Of Band Emission

Test Result

Left:

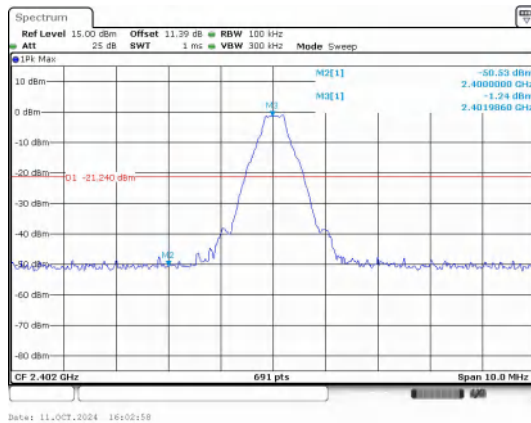
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2399.00	-48.715	-21.24	-27.475	PASS
			2400.00	-50.531	-21.24	-29.291	PASS
			7206.80	-35.924	-21.24	-14.684	PASS
		39	9763.72	-39.032	-21.13	-17.902	PASS
		78	2483.50	-49.585	-21.15	-28.435	PASS
			9920.20	-38.402	-21.15	-17.252	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-41.209	-20.89	-20.319	PASS
			7205.96	-38.442	-20.89	-17.552	PASS
		39	9763.72	-38.721	-21.17	-17.551	PASS
		78	2483.50	-50.526	-21.23	-29.296	PASS
			9920.20	-38.291	-21.23	-17.061	PASS
8DPSK	3-DH5	0	2400.00	-41.121	-20.9	-20.221	PASS
			7206.79	-32.030	-20.9	-11.130	PASS
		39	9763.72	-39.513	-21.29	-18.223	PASS
		78	2483.50	-50.745	-21.33	-29.416	PASS
			9920.20	-38.736	-21.33	-17.406	PASS

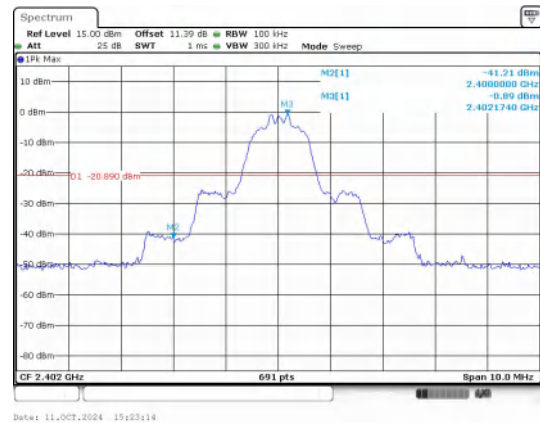
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2397.18	-48.401	-21.09	-27.311	PASS
			2400.00	-50.832	-21.09	-29.742	PASS
			2483.50	-50.778	-21.48	-29.298	PASS
π/4DQPSK	2-DH5		2400.00	-45.373	-22.76	-22.613	PASS
			2483.50	-50.577	-23.14	-27.437	PASS
8DPSK	3-DH5		2400.00	-41.729	-21.44	-20.289	PASS
			2483.50	-48.951	-21.31	-27.641	PASS

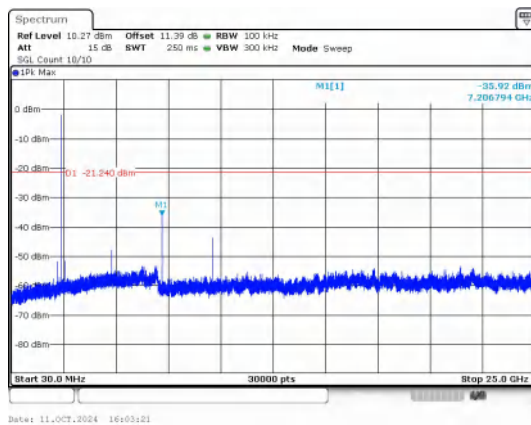
Test Graphs



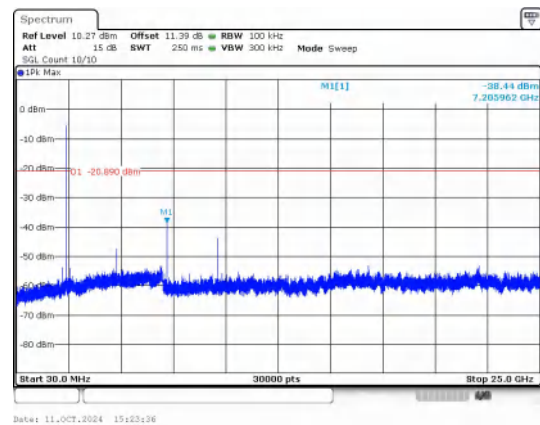
Out Of Band Emission
GFSK_DH5_Channel 0



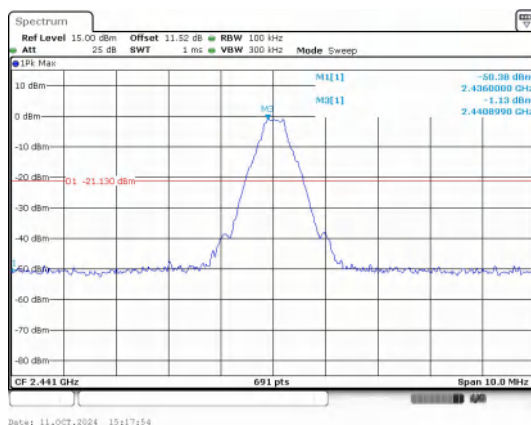
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0



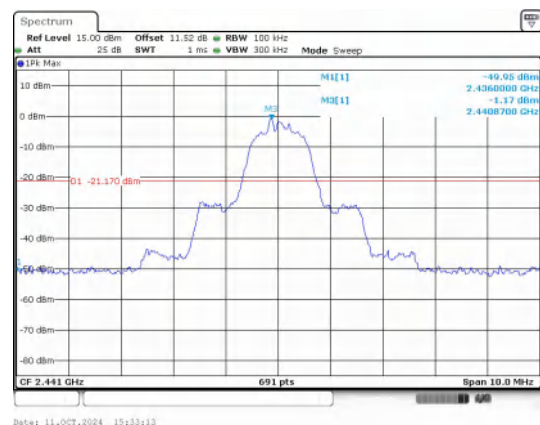
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



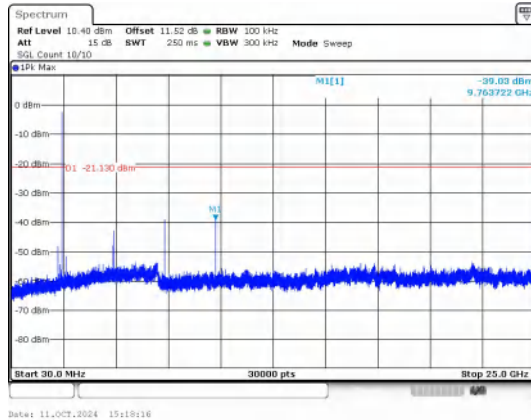
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 0



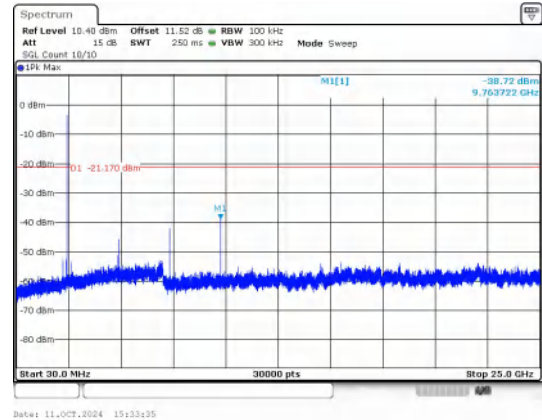
Out Of Band Emission
GFSK_DH5_Channel 39



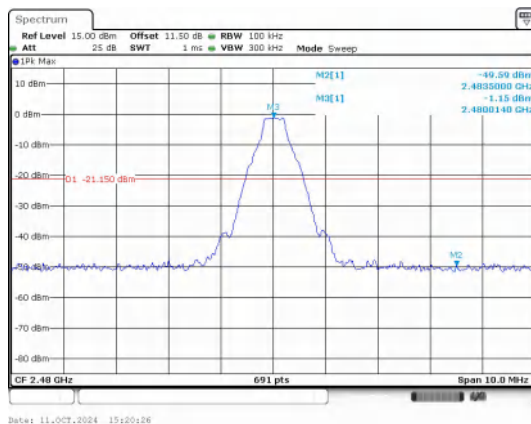
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39



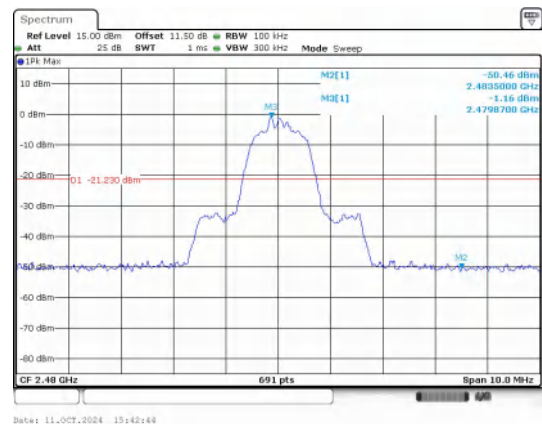
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



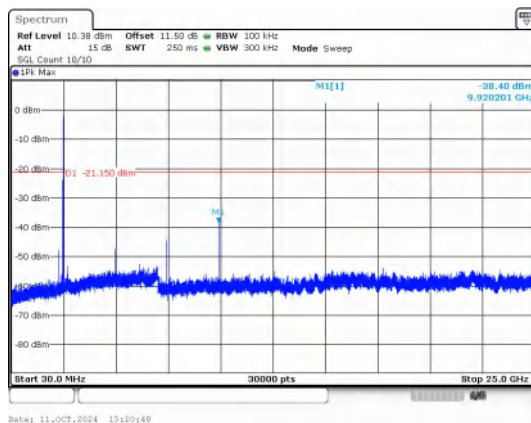
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



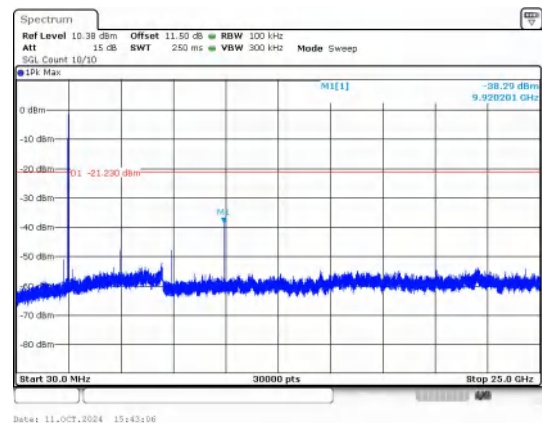
Out Of Band Emission
GFSK_DH5_Channel 78



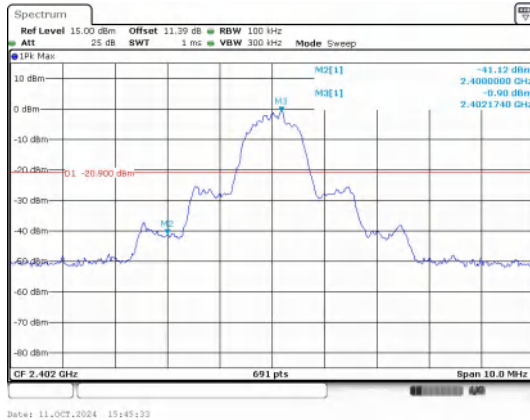
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78



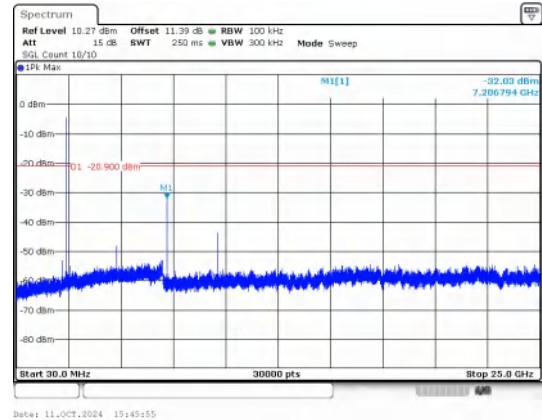
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



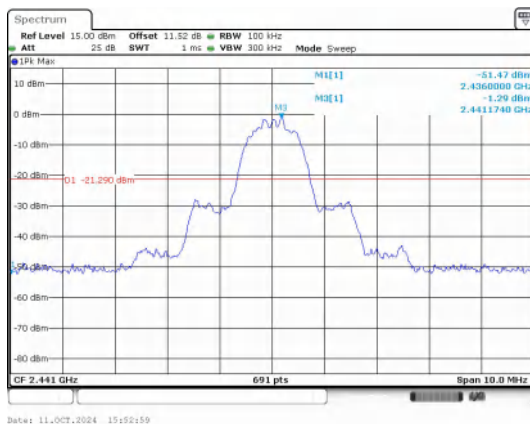
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



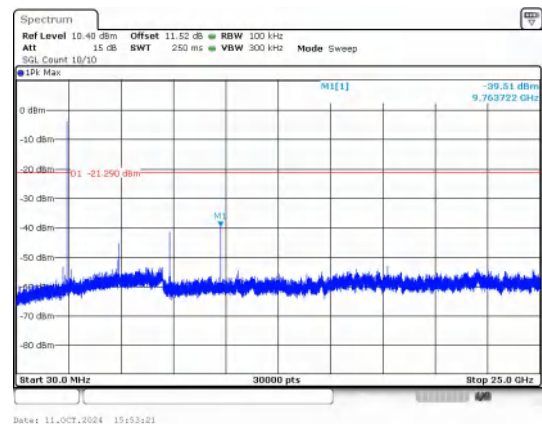
Out Of Band Emission
8DPSK_3-DH5_Channel 0



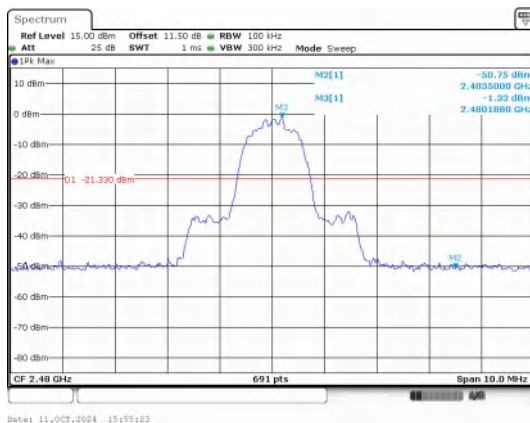
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



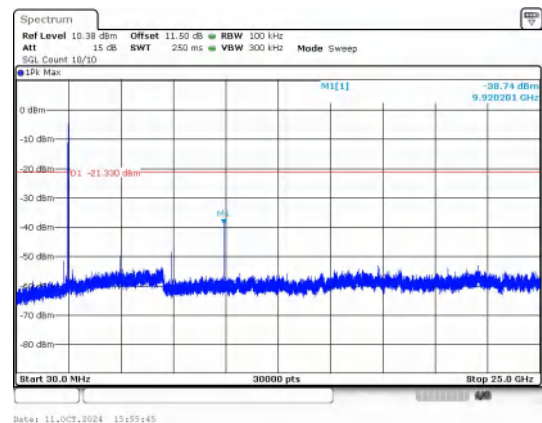
Out Of Band Emission
8DPSK_3-DH5_Channel 39



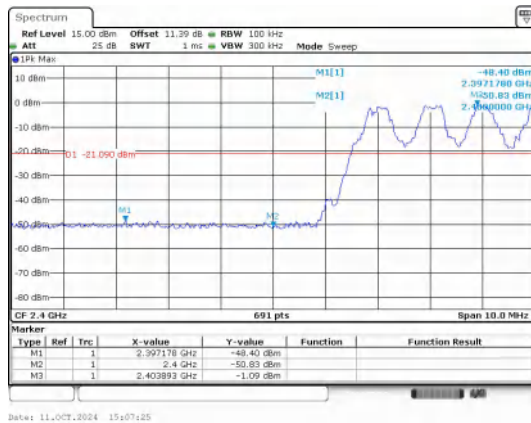
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



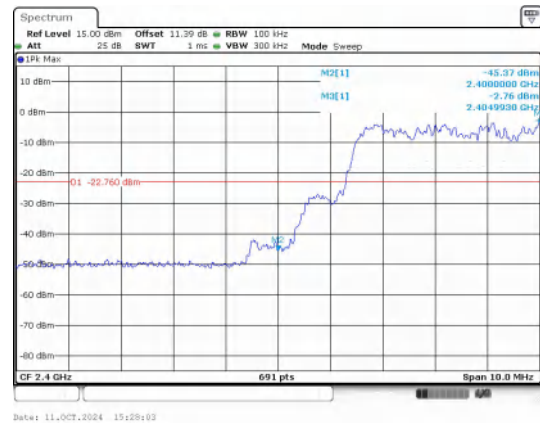
Out Of Band Emission
8DPSK_3-DH5_Channel 78



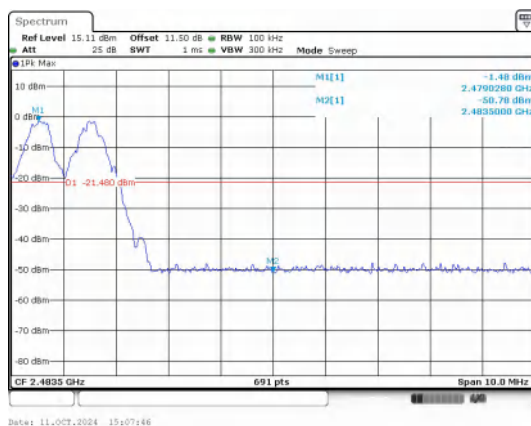
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



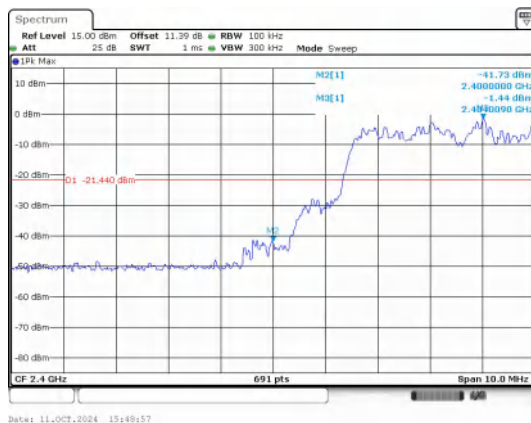
Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



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:
Test Result
Non-Hopping

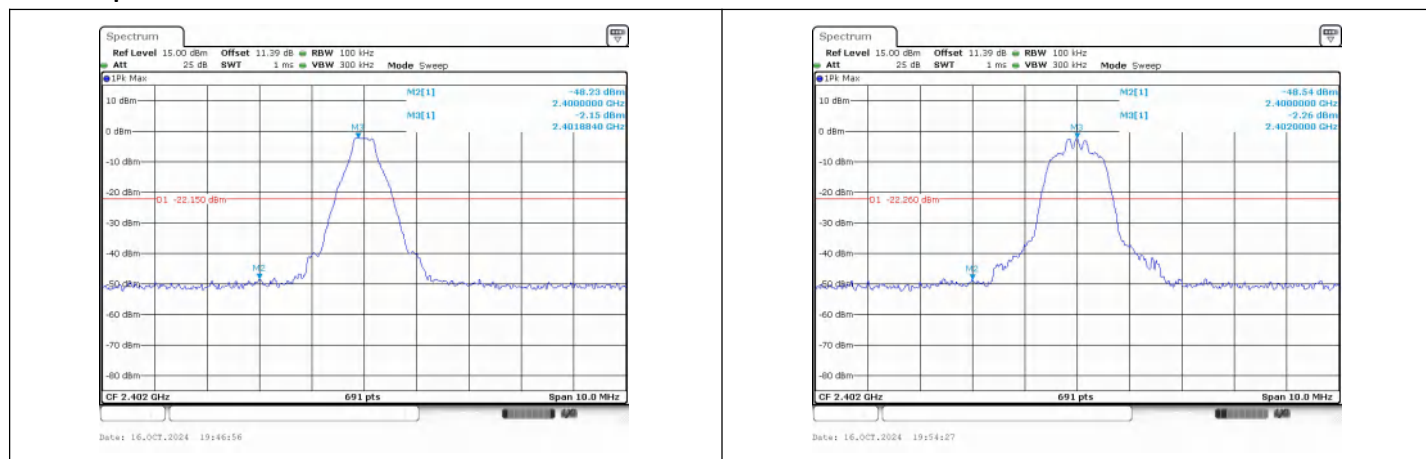
Modulation	Packet	Channel	OOB Emission	OOB Emission	Limit	Over Limit	Result
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			Frequency (MHz)	Level (dBm)	(dBm)	(dB)	
GFSK	DH5	0	2400.00	-48.323	-22.15	-26.173	PASS
			9608.08	-43.601	-22.15	-21.451	PASS
		39	9763.72	-42.789	-20.68	-22.109	PASS
		78	2483.50	-50.974	-19.94	-31.034	PASS
			9920.20	-44.569	-19.94	-24.629	PASS
π /4DQPSK	2-DH5	0	2400.00	-48.540	-22.26	-26.280	PASS
			9608.08	-43.774	-22.26	-21.514	PASS
		39	9763.72	-42.426	-20.64	-21.786	PASS
		78	2483.50	-50.364	-19.89	-30.474	PASS
			9920.20	-44.019	-19.89	-24.129	PASS
8DPSK	3-DH5	0	2400.00	-48.653	-22.03	-26.623	PASS
			7205.96	-44.584	-22.03	-22.554	PASS
		39	9763.72	-43.564	-20.18	-23.384	PASS
		78	2483.50	-50.447	-22.52	-27.927	PASS
			9920.20	-46.614	-22.52	-24.094	PASS

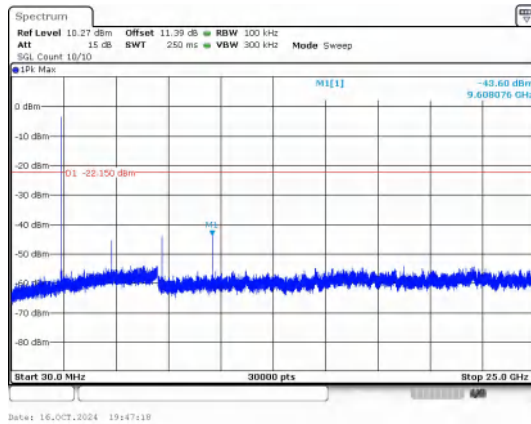
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2397.87	-47.768	-19.74	-28.028	PASS
			2400.00	-48.908	-19.74	-29.168	PASS
			2483.50	-47.563	-16.68	-30.883	PASS
π /4DQPSK	2-DH5		2397.63	-48.440	-19.85	-28.590	PASS
			2400.00	-50.187	-19.85	-30.337	PASS
			2483.50	-48.573	-16.66	-31.913	PASS
8DPSK	3-DH5		2398.49	-48.805	-15.89	-32.915	PASS
			2400.00	-50.241	-15.89	-34.351	PASS
			2483.50	-50.716	-17.51	-33.206	PASS

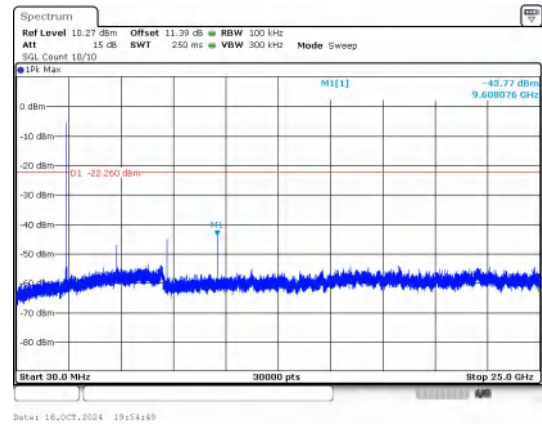
Test Graphs



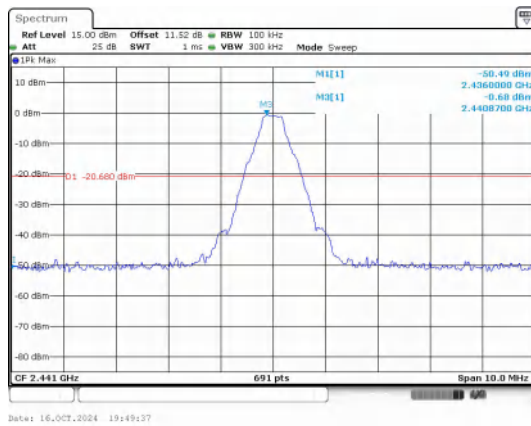
Out Of Band Emission
GFSK_DH5_Channel 0



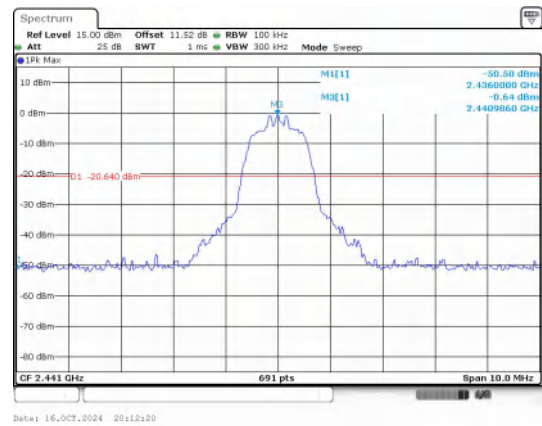
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0



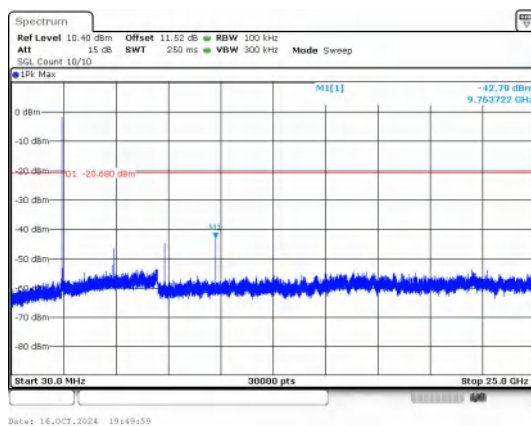
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



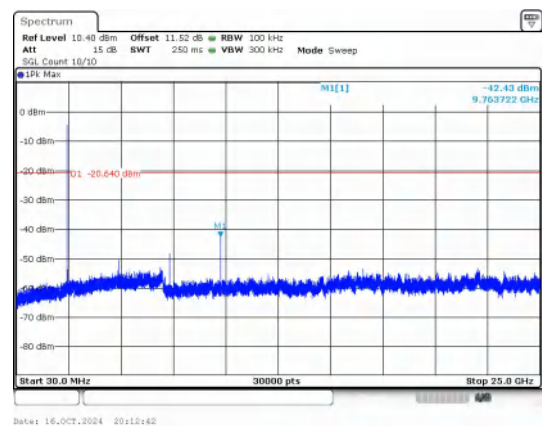
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 0



Out Of Band Emission
GFSK_DH5_Channel 39

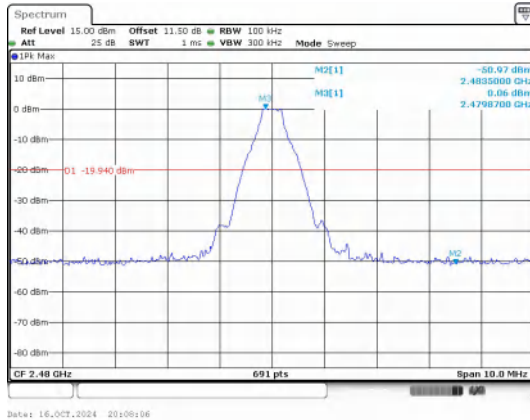


Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39

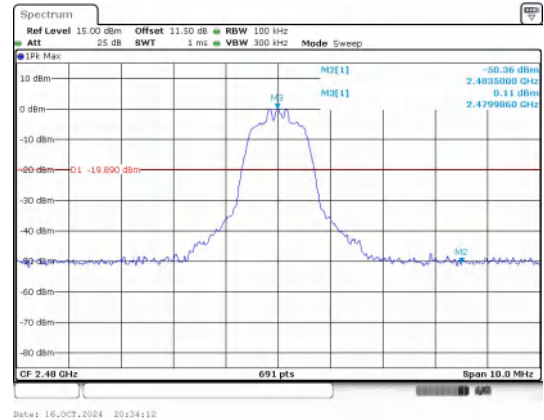


30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39

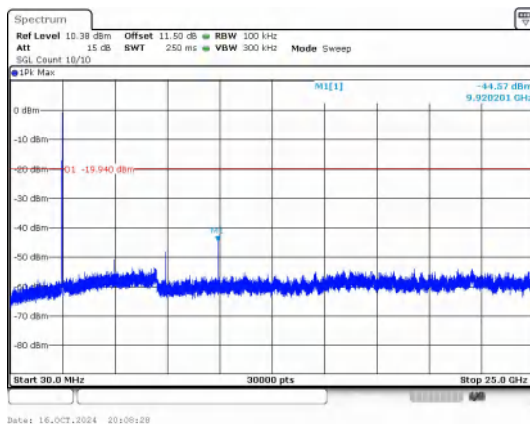
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



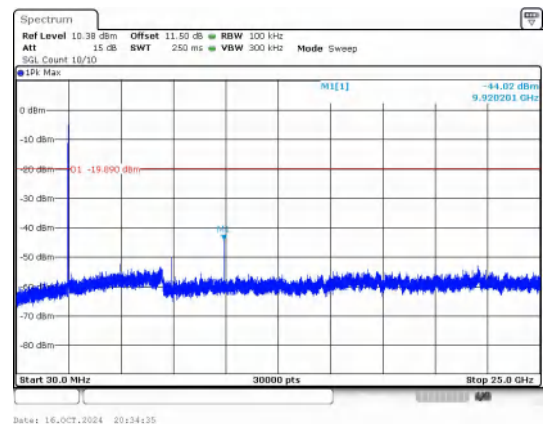
Out Of Band Emission
GFSK_DH5_Channel 78



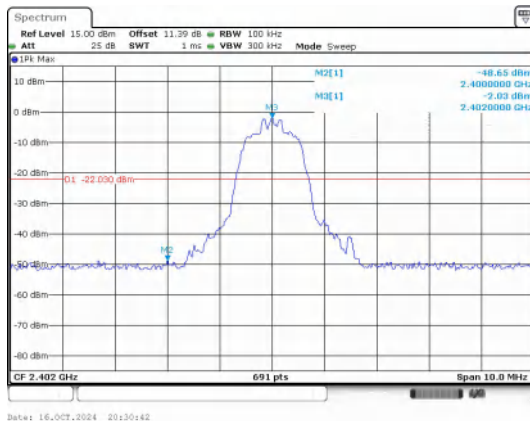
Out Of Band Emission
 $\pi/4$ QPSK_2-DH5_Channel 78



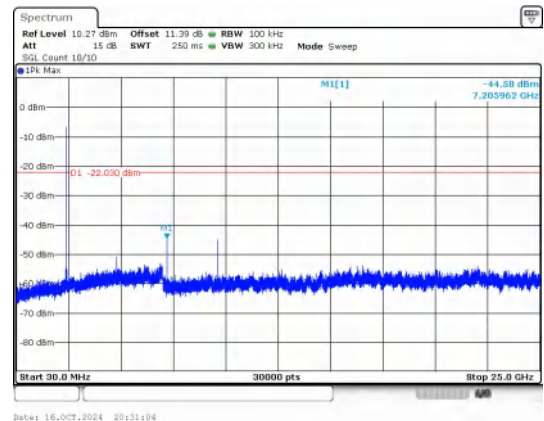
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



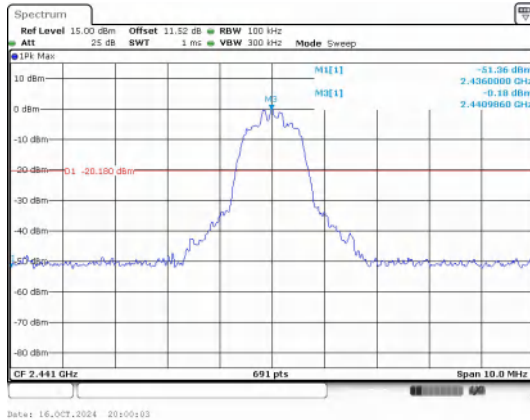
30.0 MHz - 25000.0 MHz
 $\pi/4$ QPSK_2-DH5_Channel 78



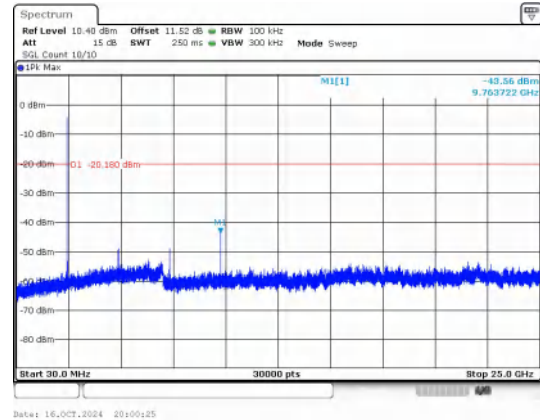
Out Of Band Emission
8DPSK_3-DH5_Channel 0



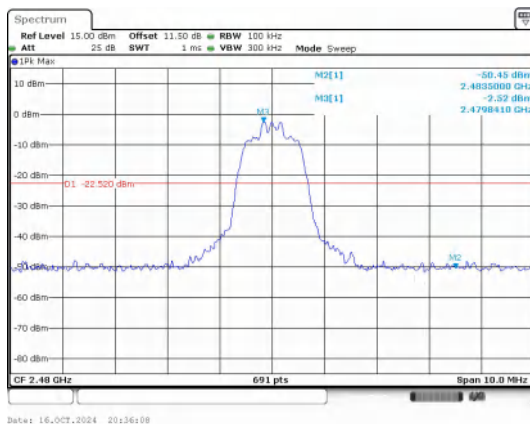
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



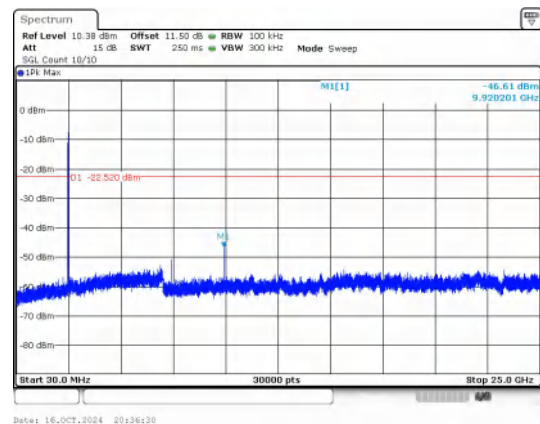
Out Of Band Emission
8DPSK_3-DH5_Channel 39



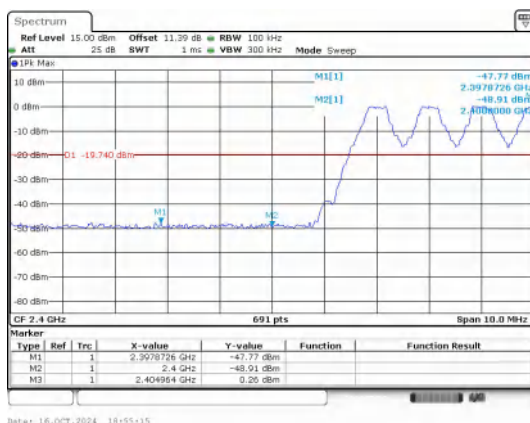
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



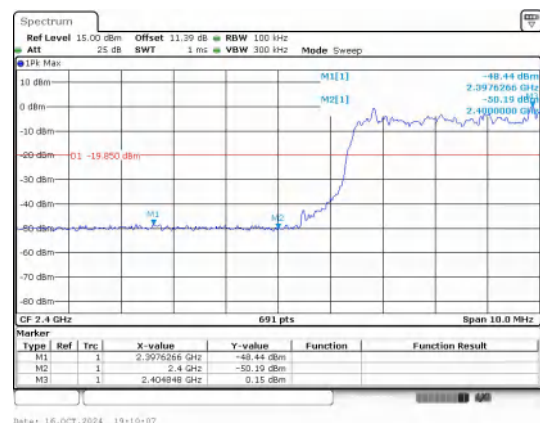
Out Of Band Emission
8DPSK_3-DH5_Channel 78



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

