

Appendix A

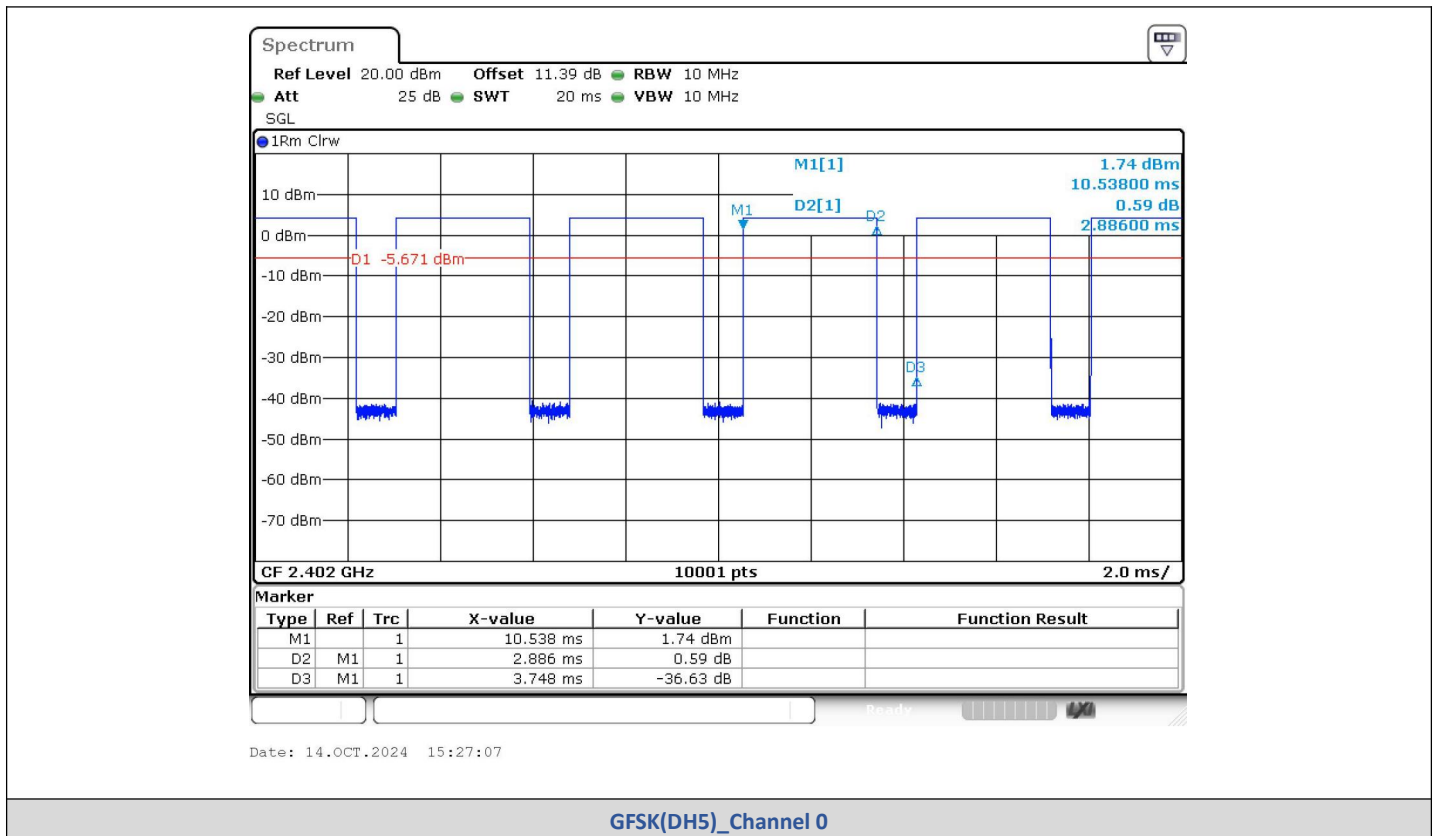
Report No.:	CISRR241009020
FCC ID:	2BLOE-TYD-BZY-001
Product Name:	Octopus Ocean Projection Lamp
Model No.:	TYD-BZY-001
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

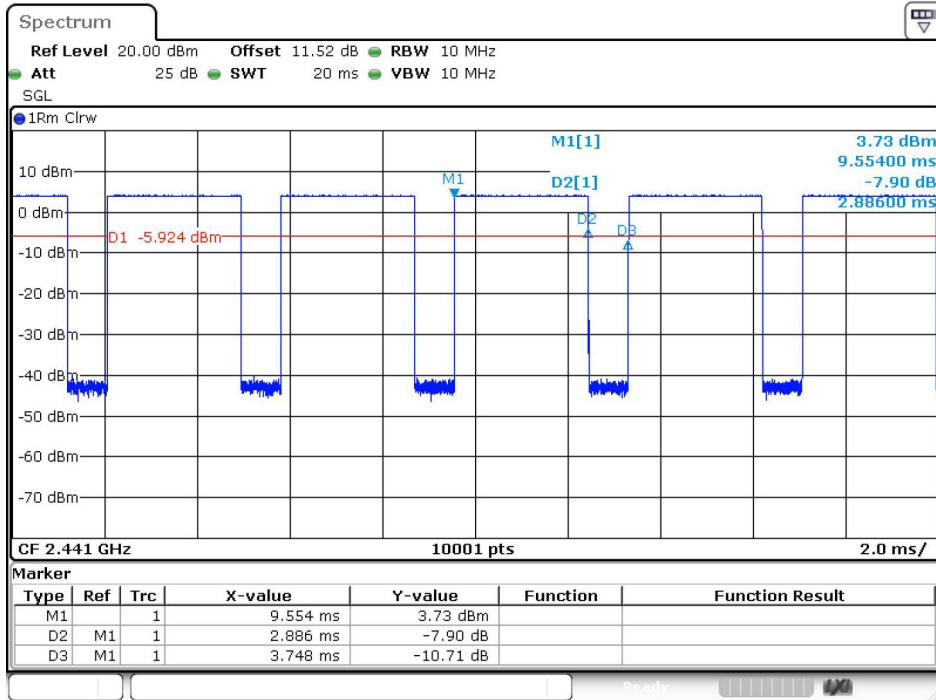
1) Duty Cycle

Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.886	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	2.890	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

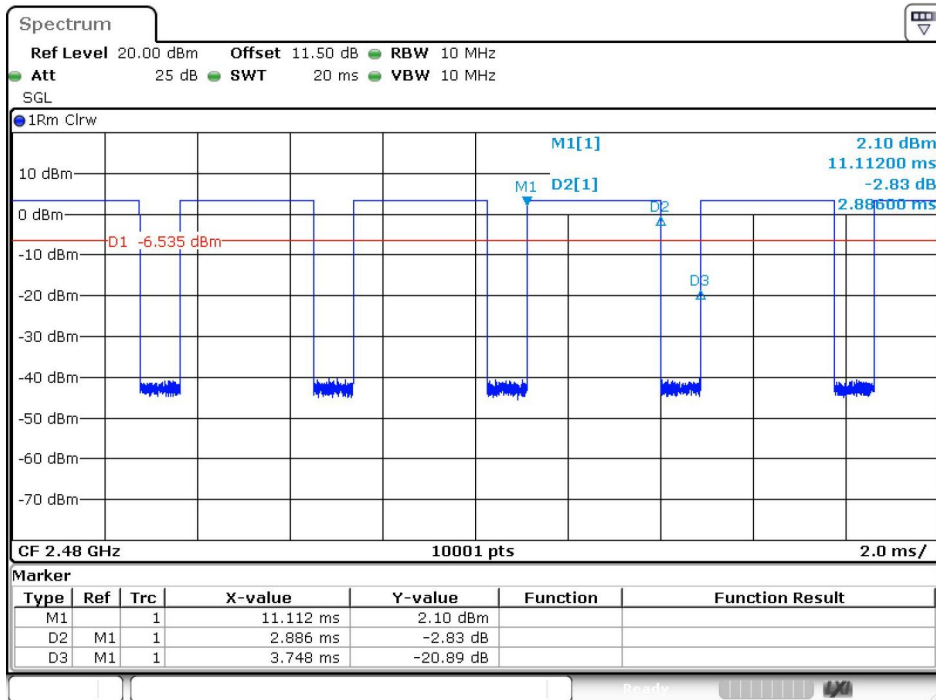
Test Graphs





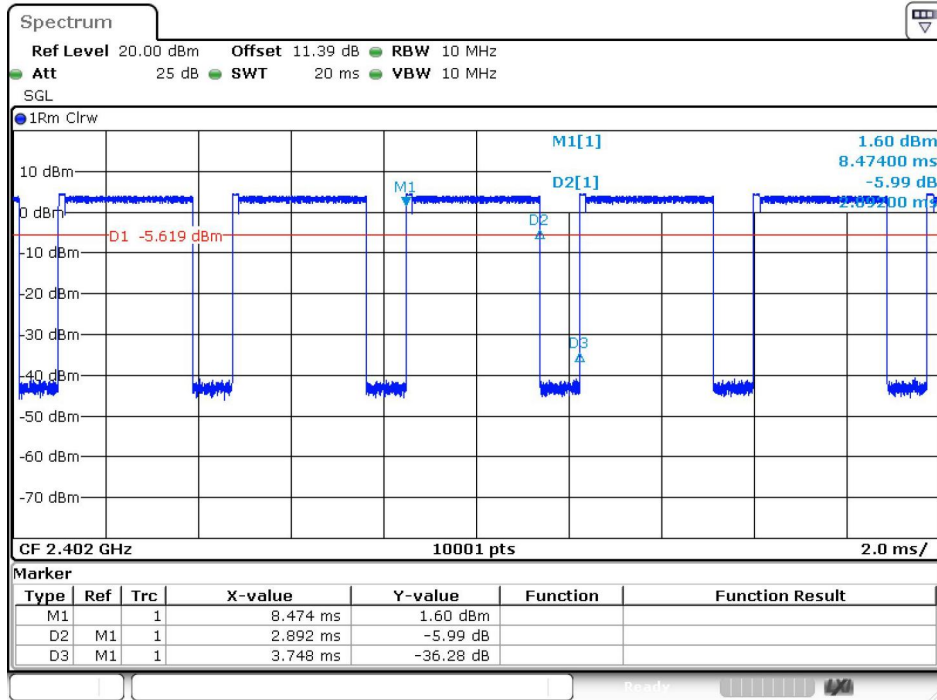
Date: 14.OCT.2024 15:37:15

GFSK(DH5)_Channel 39



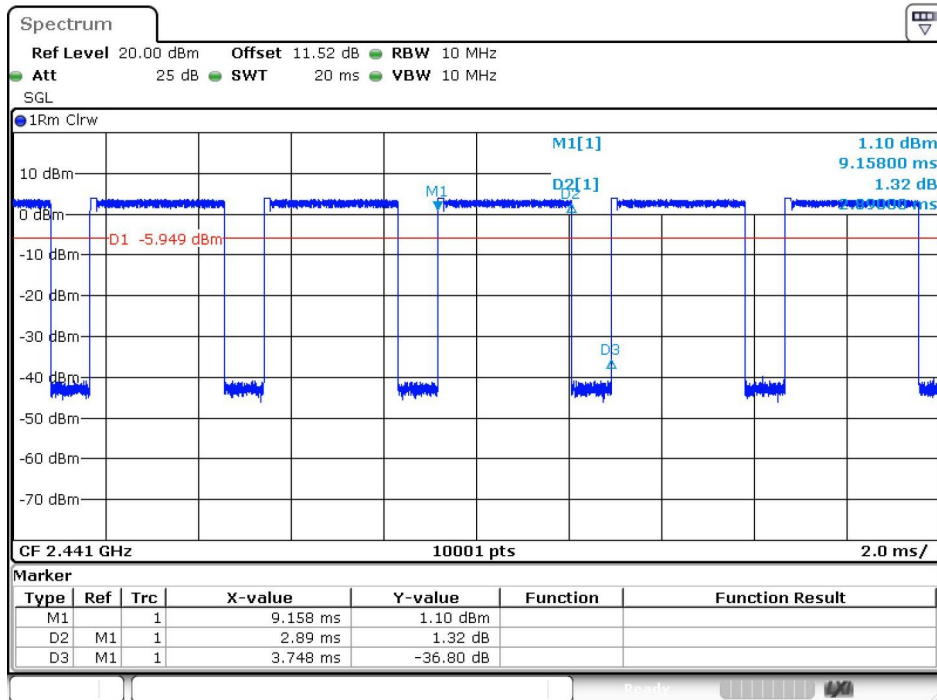
Date: 14.OCT.2024 15:39:52

GFSK(DH5)_Channel 78



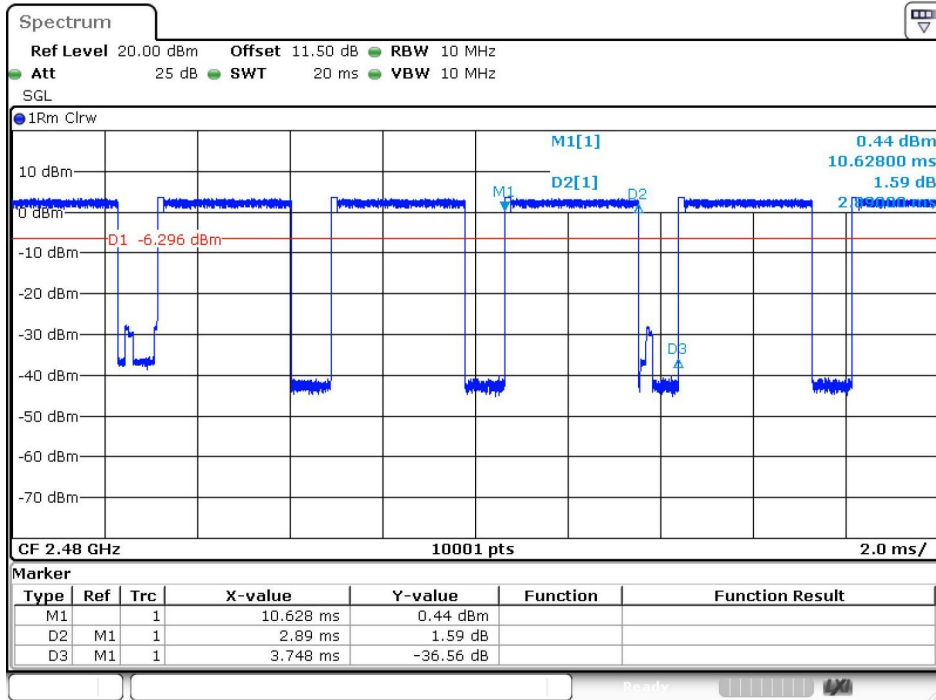
Date: 14.OCT.2024 15:42:31

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



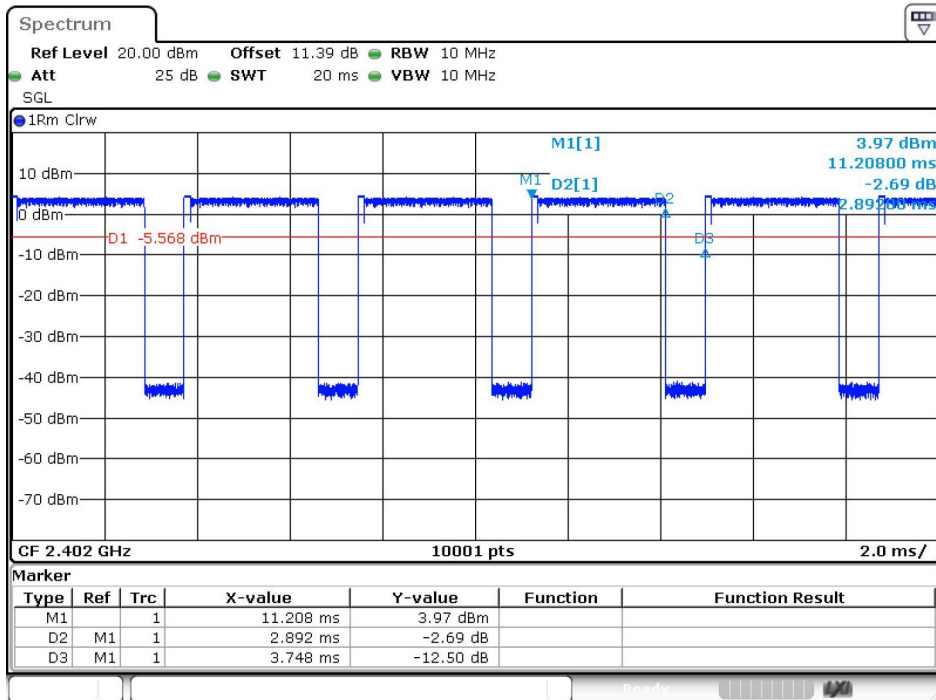
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$\pi/4$ DQPSK(2-DH5)_Channel 39



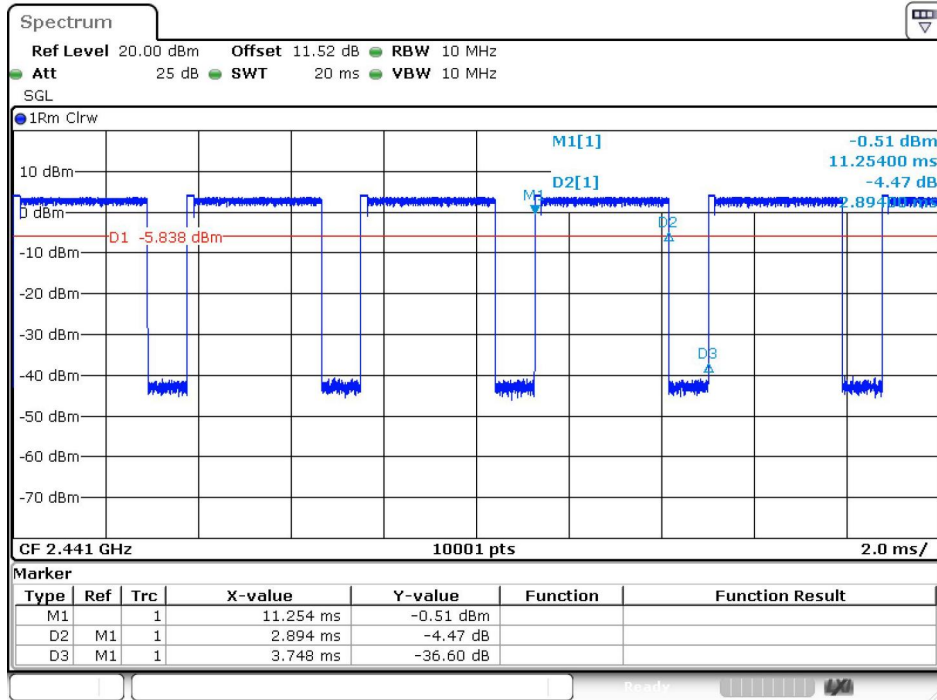
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$\pi/4$ DQPSK(2-DH5)_Channel 78



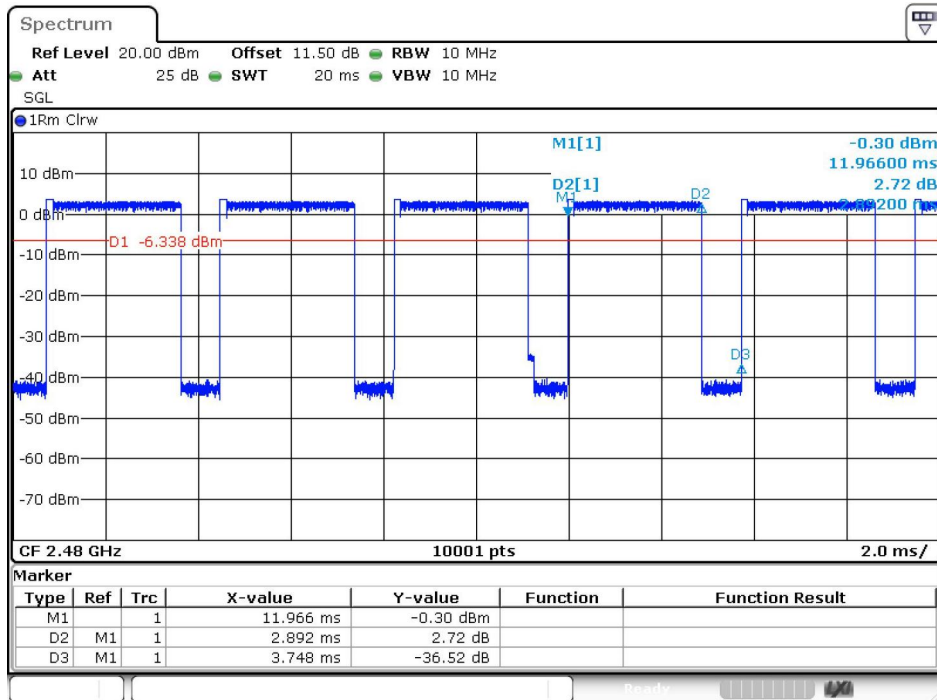
Date: 14.OCT.2024 15:59:17

8DPSK(3-DH5)_Channel 0



Date: 14.OCT.2024 16:06:35

8DPSK(3-DH5)_Channel 39



Date: 14.OCT.2024 16:08:53

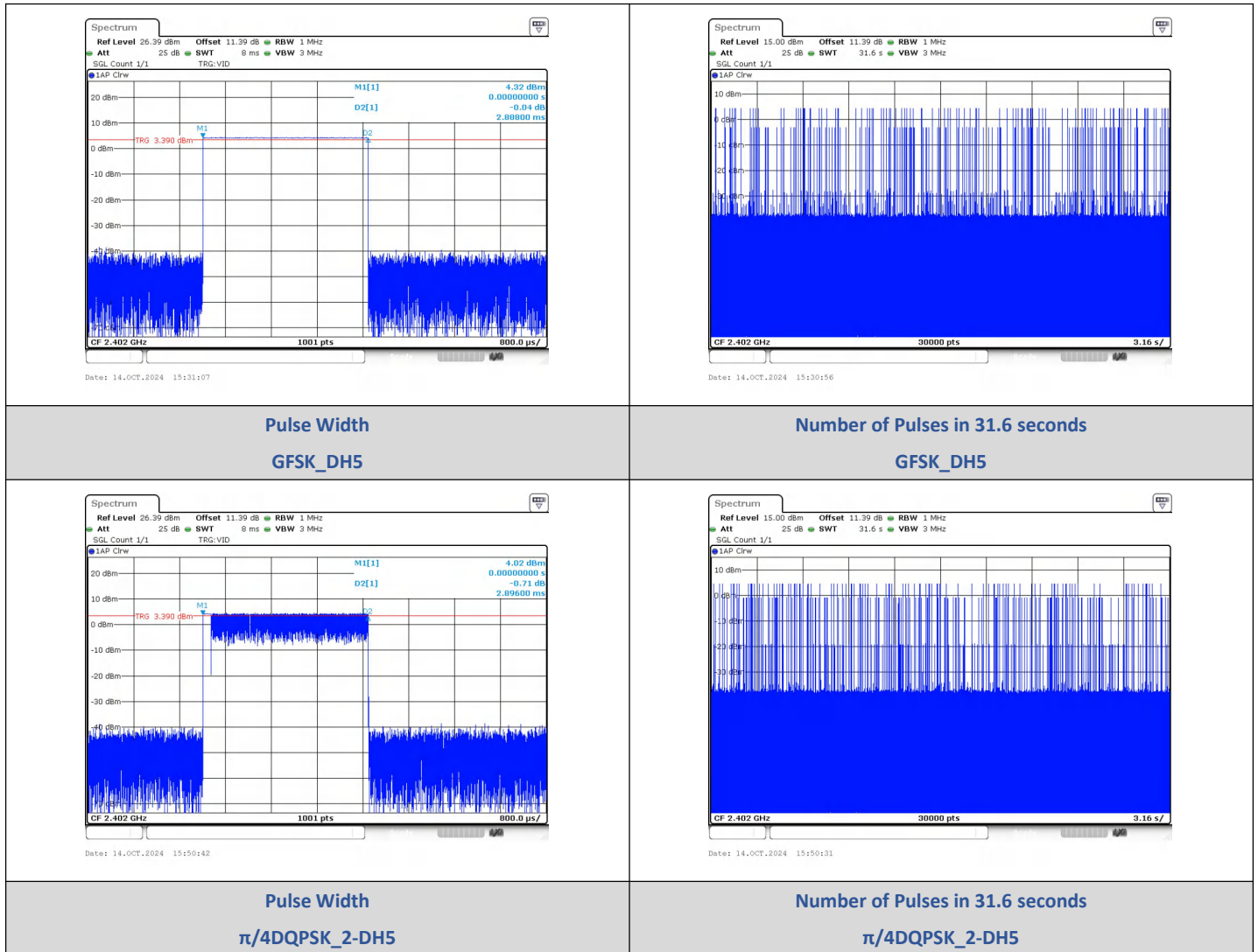
8DPSK(3-DH5)_Channel 78

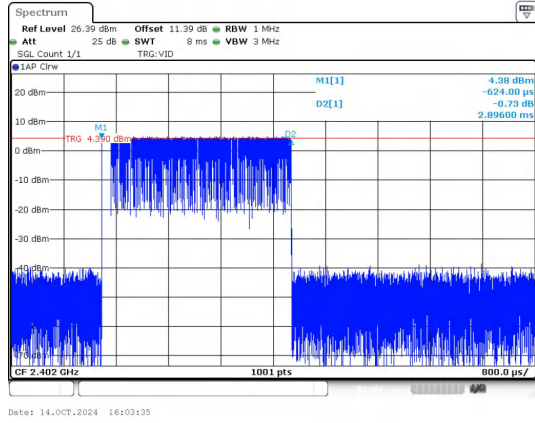
2) Dwell Time

Test Result

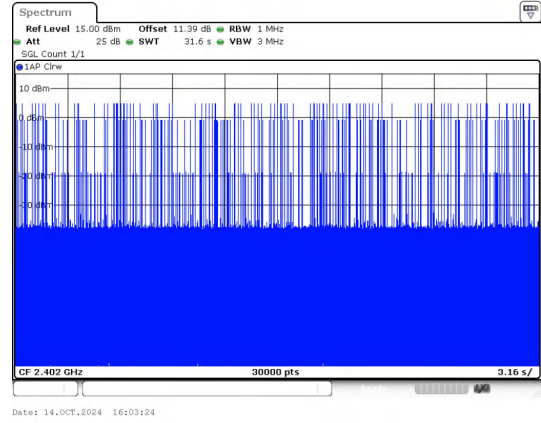
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CHO (2402MHz)	2.888	103	297.46	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.896	106	306.98		PASS
8DPSK	3-DH5		2.896	101	292.5		PASS

Test Graphs





Pulse Width
8DPSK_3-DH5



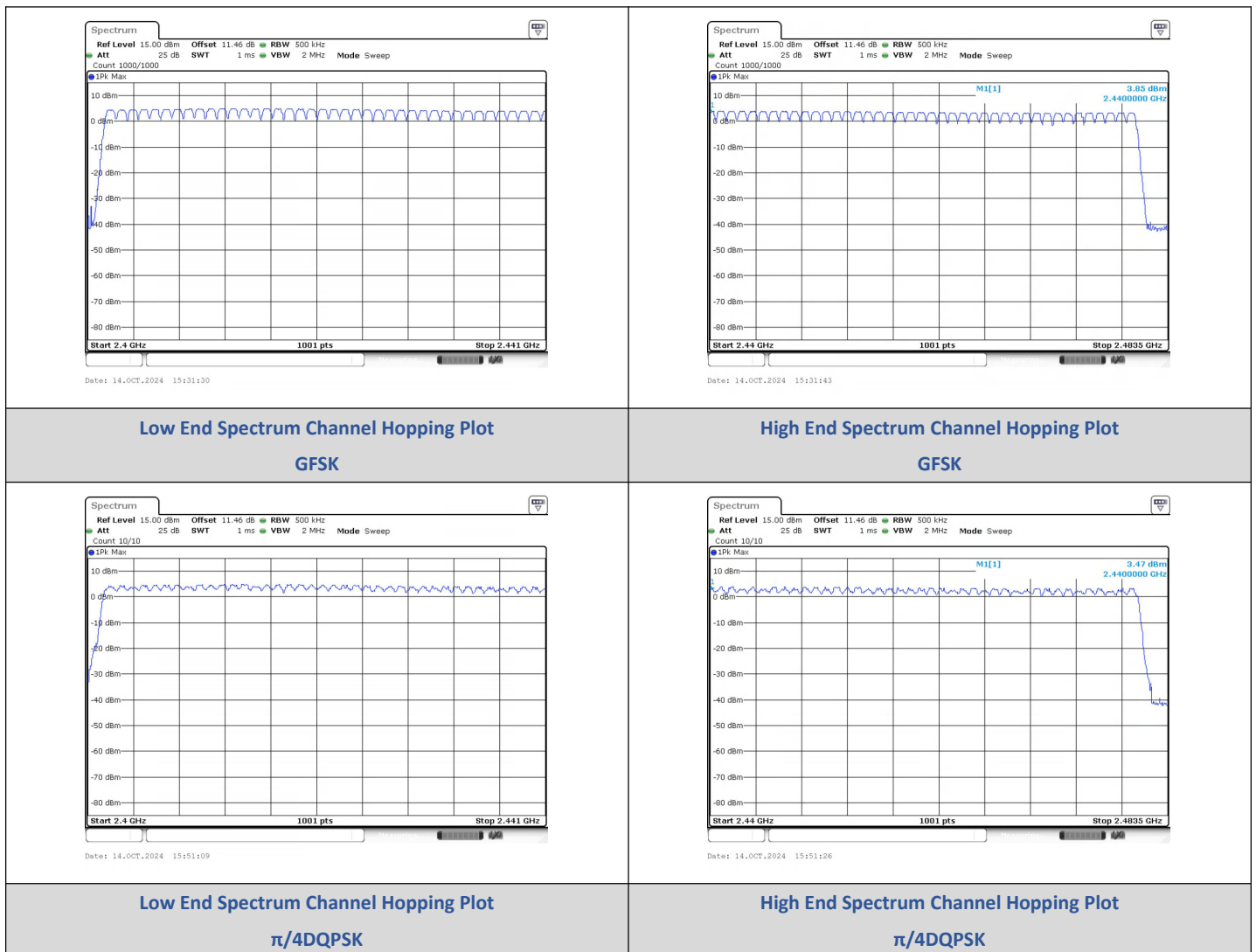
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

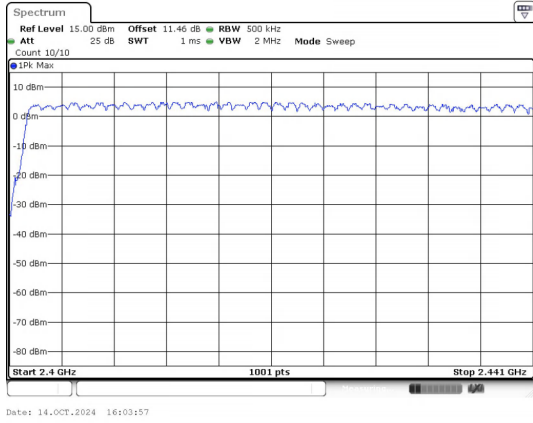
3) Number Of Hopping Channel

Test Result

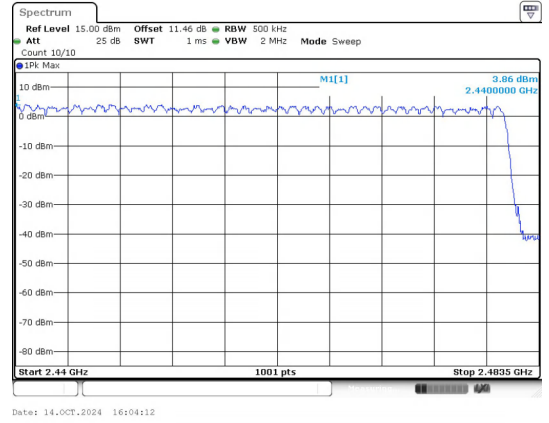
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK



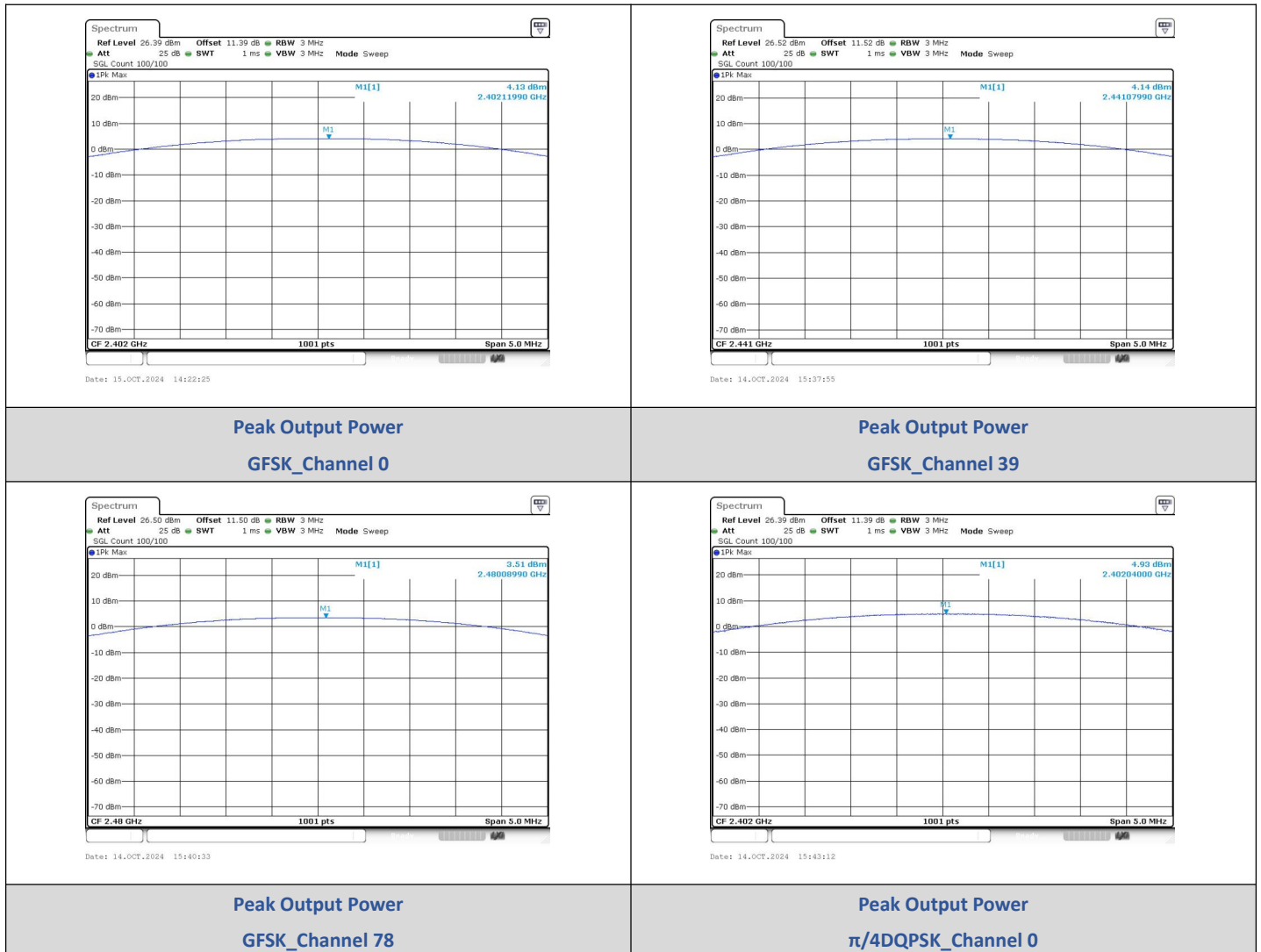
High End Spectrum Channel Hopping Plot
8DPSK

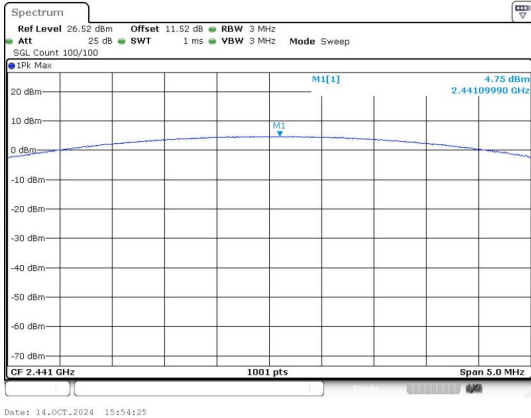
4) Conducted Peak Output Power

Test Result

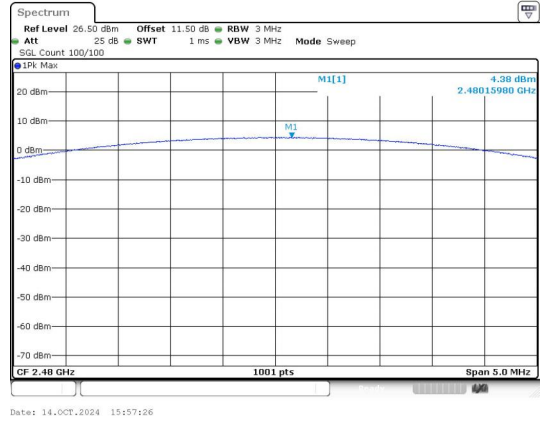
Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	4.13	2.59	≤30	PASS
		39	4.14	2.59		PASS
		78	3.51	2.24		PASS
π/4DQPSK	2-DH5	0	4.93	3.11	≤20.97	PASS
		39	4.75	2.98		PASS
		78	4.38	2.74		PASS
8DPSK	3-DH5	0	5.19	3.30		PASS
		39	4.31	2.70		PASS
		78	3.85	2.43		PASS

Test Graphs

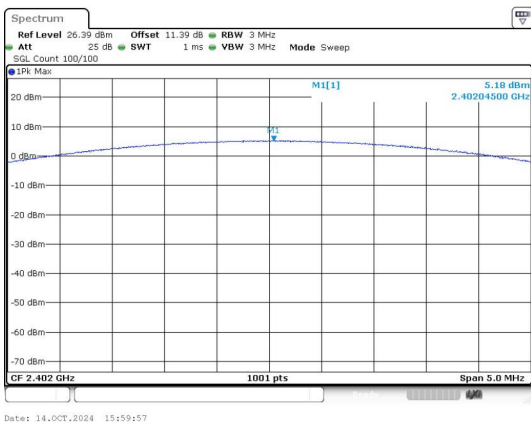




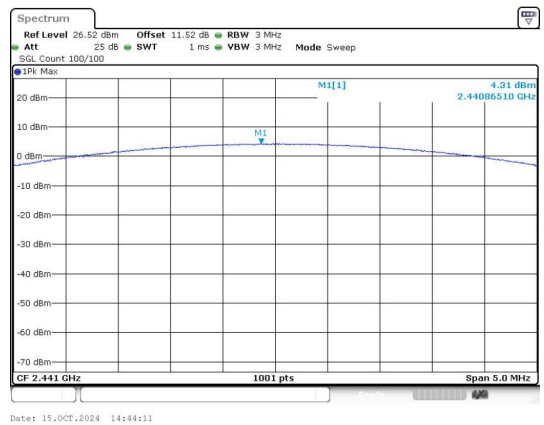
Peak Output Power
 $\pi/4$ DQPSK_Channel 39



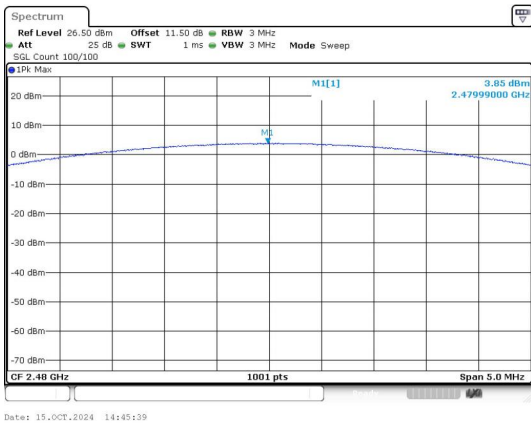
Peak Output Power
 $\pi/4$ DQPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



Peak Output Power
8DPSK_Channel 39



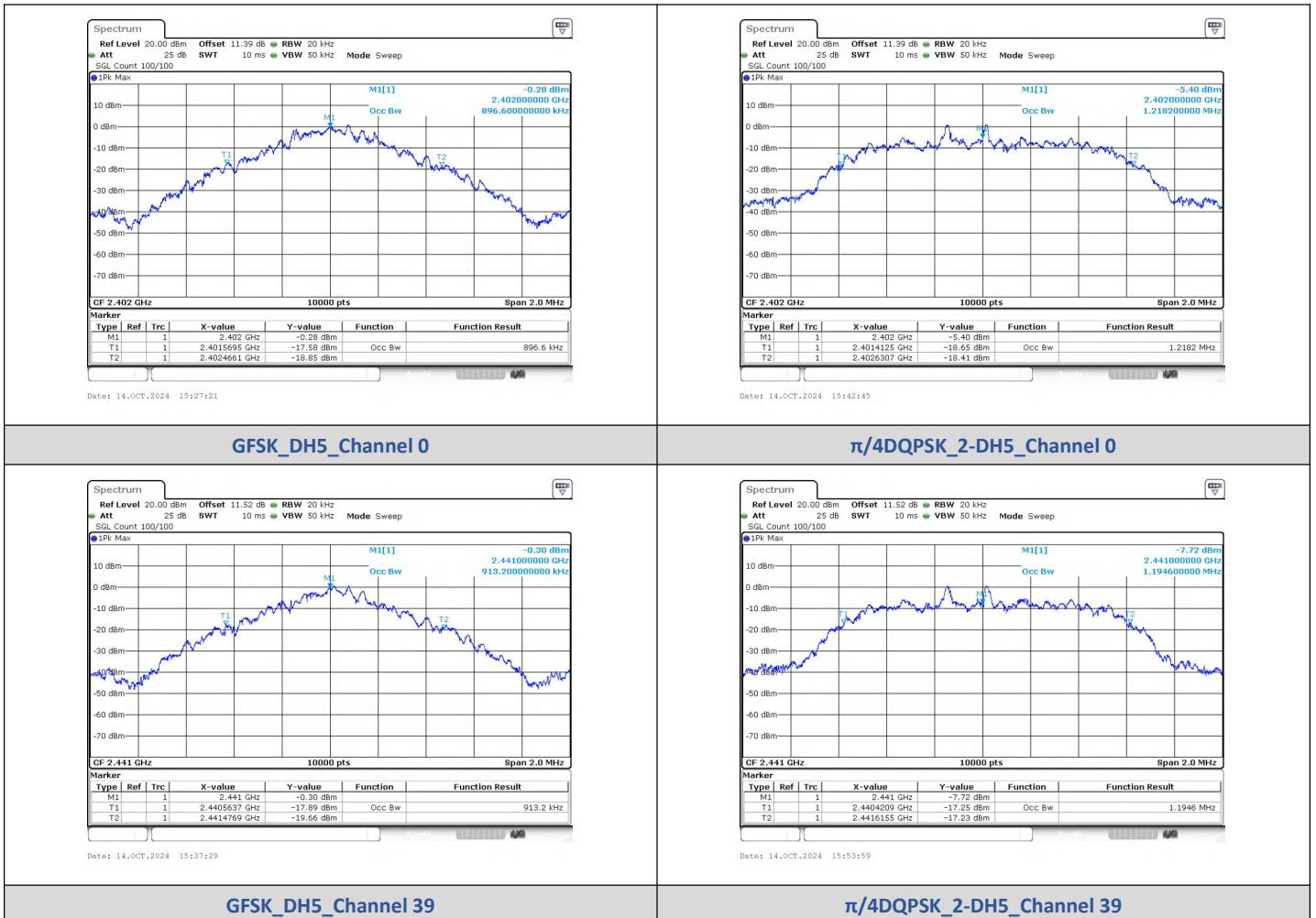
Peak Output Power
8DPSK_Channel 78

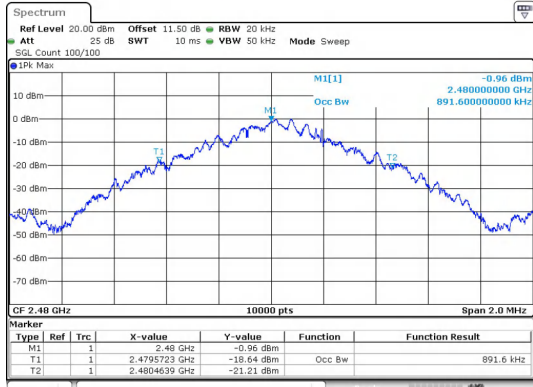
5) 99% Bandwidth

Test Result

Modulation	Channel	Center Frequency (MHz)	99% BW (MHz)
GFSK	0	2402	0.89660
	39	2441	0.91320
	78	2480	0.89160
$\pi/4$ DQPSK	0	2402	1.2180
	39	2441	1.1950
	78	2480	1.2070
8DPSK	0	2402	1.2290
	39	2441	1.2210
	78	2480	1.2080

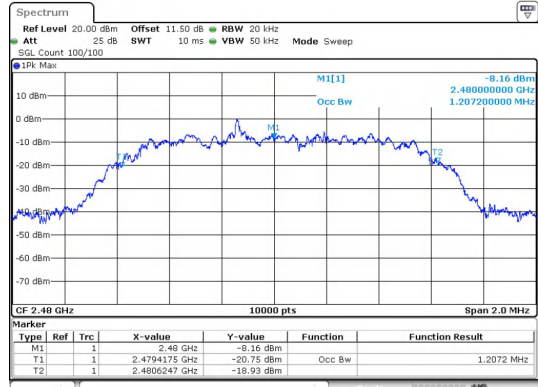
Test Graphs





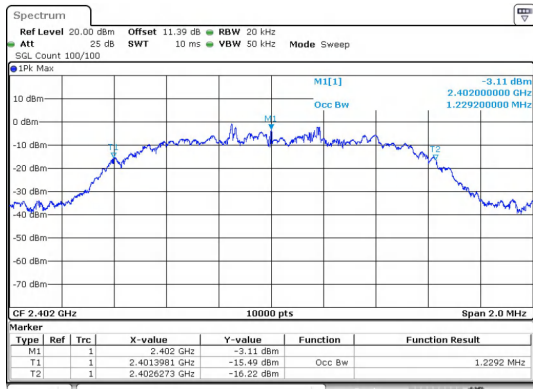
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GFSK_DH5_Channel 78



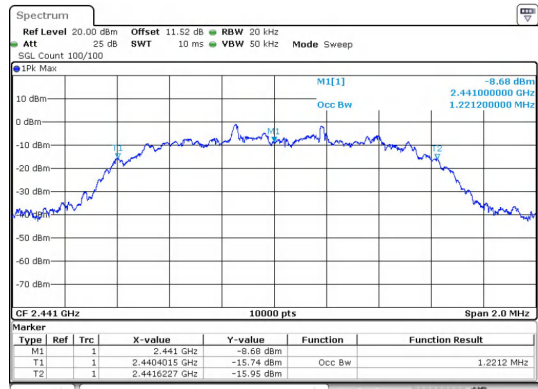
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$\pi/4$ DQPSK_2-DH5_Channel 78



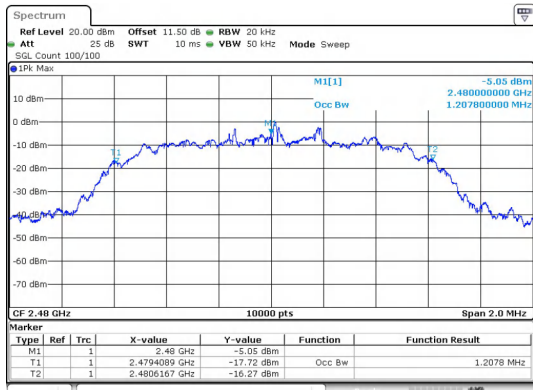
Date: 14.OCT.2024 15:59:31

8DPSK_3-DH5_Channel 0



Date: 14.OCT.2024 16:06:49

8DPSK_3-DH5_Channel 39



Date: 14.OCT.2024 16:09:08

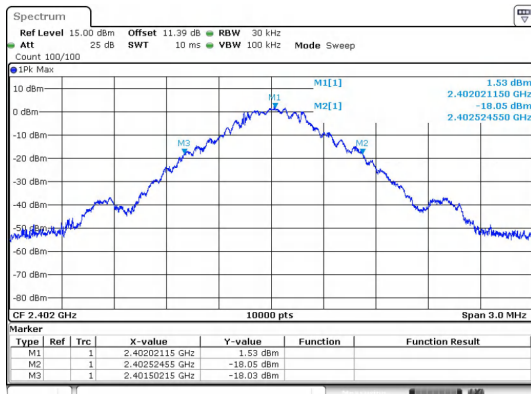
8DPSK_3-DH5_Channel 78

6) 20dB Bandwidth

Test Result

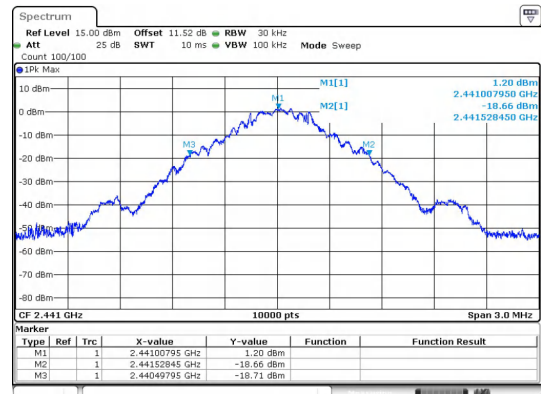
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.020
	39	2441 MHz	1.030
	78	2480 MHz	1.000
$\pi/4$ DQPSK	0	2402 MHz	1.310
	39	2441 MHz	1.310
	78	2480 MHz	1.320
8DPSK	0	2402 MHz	1.300
	39	2441 MHz	1.300
	78	2480 MHz	1.290

Test Graphs



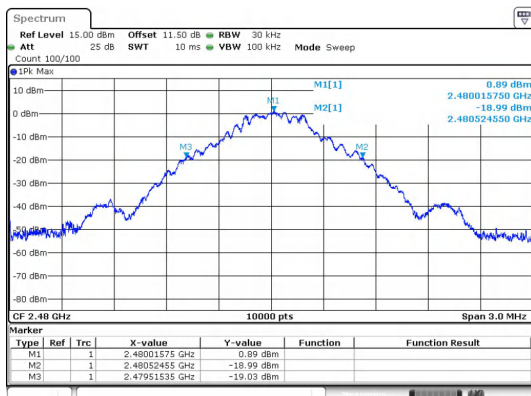
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GFSK_DH5_Channel 0



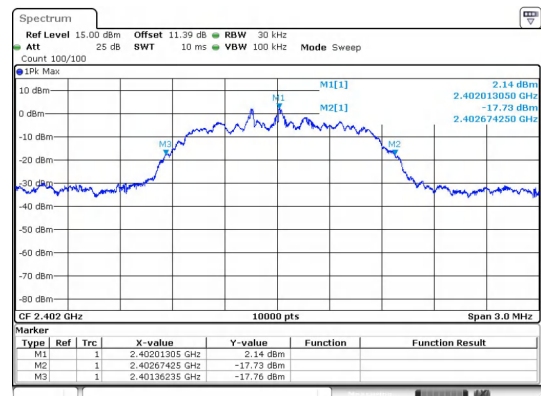
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GFSK_DH5_Channel 39



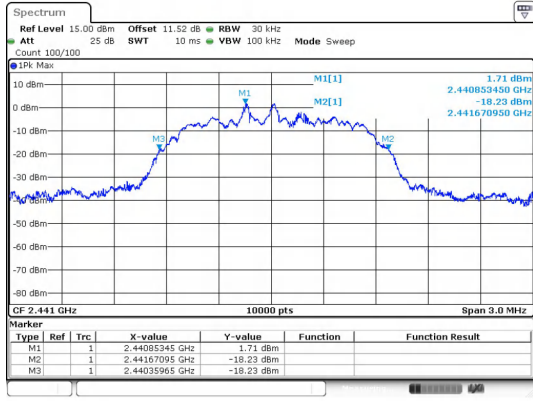
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GFSK_DH5_Channel 78



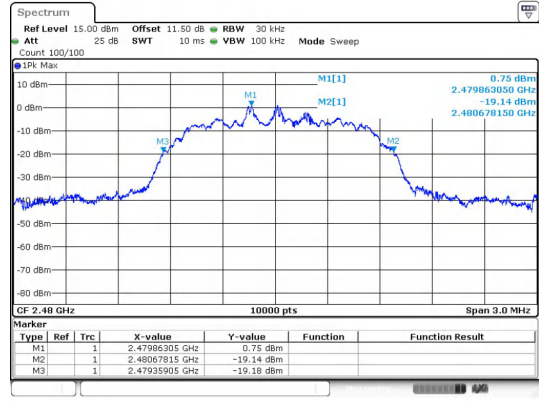
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$\pi/4$ DQPSK_2-DH5_Channel 0



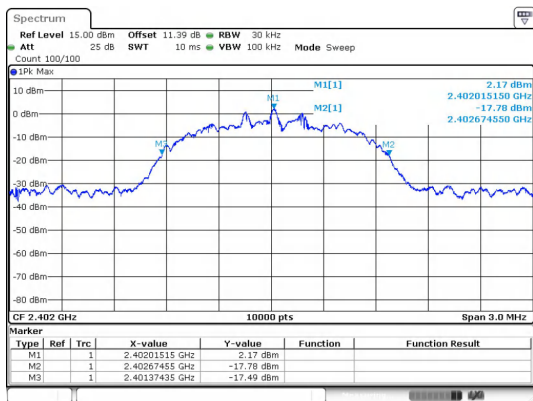
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$\pi/4$ DQPSK_2-DH5_Channel 39



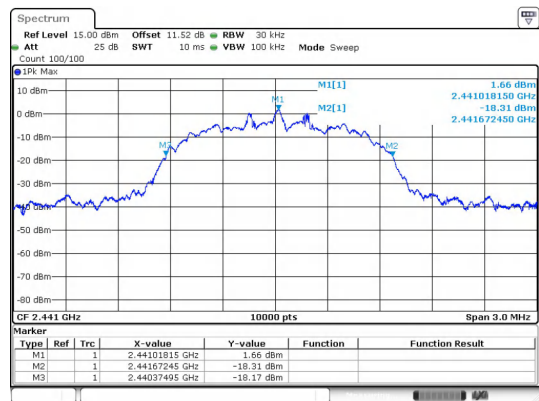
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$\pi/4$ DQPSK_2-DH5_Channel 78



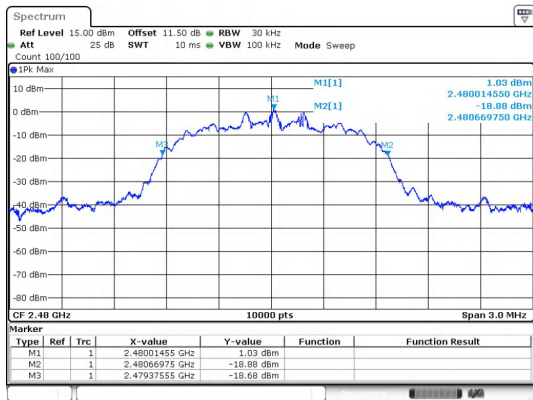
Date: 14.OCT.2024 15:59:47

8DPSK_3-DH5_Channel 30



Date: 14.OCT.2024 16:07:05

8DPSK_3-DH5_Channel 39



Date: 14.OCT.2024 16:09:24

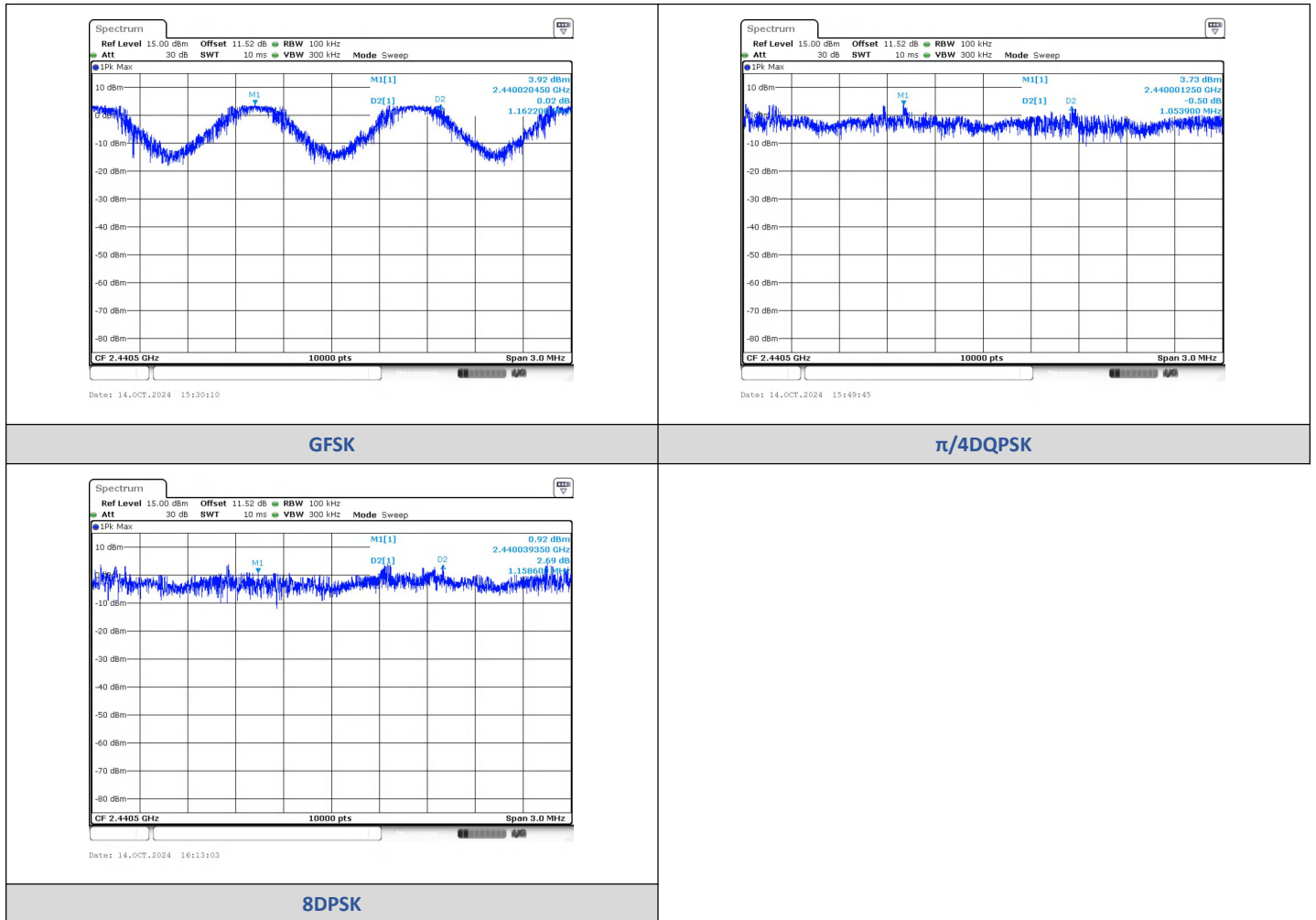
8DPSK_3-DH5_Channel 78

7) Carrier Frequencies Separation

Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2440.0204	2441.1827	1.1622	1.03	PASS
$\pi/4$ DQPSK	2-DH5	2440.0012	2441.0552	1.0539	0.88	PASS
8DPSK	3-DH5	2440.0394	2441.198	1.1586	0.87	PASS

Test Graphs



8) Conducted Out Of Band Emission

Test Result

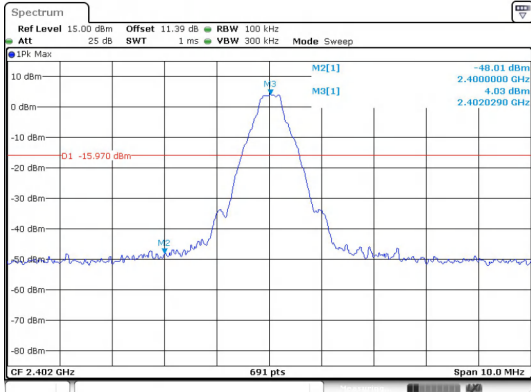
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-48.011	-15.97	-32.041	PASS
			7205.96	-36.849	-15.97	-20.879	PASS
		39	9763.72	-40.505	-15.96	-24.545	PASS
		78	2483.50	-49.962	-16.6	-33.362	PASS
			9920.20	-38.120	-16.6	-21.520	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-43.332	-15.74	-27.592	PASS
			7205.96	-41.374	-15.74	-25.634	PASS
		39	9763.72	-39.980	-16.13	-23.850	PASS
		78	2483.50	-50.855	-16.45	-34.405	PASS
			9920.20	-38.279	-16.45	-21.829	PASS
8DPSK	3-DH5	0	2400.00	-45.977	-15.63	-30.347	PASS
			9608.08	-43.081	-15.63	-27.451	PASS
		39	9763.72	-41.012	-16.63	-24.382	PASS
		78	2483.50	-49.710	-17.13	-32.580	PASS
			9920.20	-39.078	-17.13	-21.948	PASS

Hopping

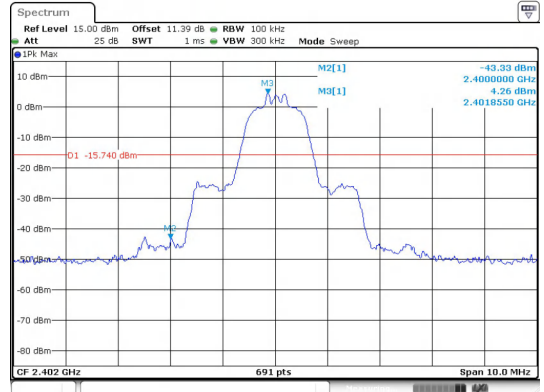
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2395.83	-47.343	-15.69	-31.653	PASS
			2400.00	-49.255	-15.69	-33.565	PASS
			2483.50	-49.563	-16.7	-32.863	PASS
$\pi/4$ DQPSK	2-DH5		2398.78	-48.326	-15.59	-32.736	PASS
			2400.00	-48.818	-15.59	-33.228	PASS
			2483.50	-49.548	-17.13	-32.418	PASS
8DPSK	3-DH5		2397.37	-48.355	-15.52	-32.835	PASS
			2400.00	-49.302	-15.52	-33.782	PASS
			2483.50	-47.246	-17.83	-29.416	PASS

Test Graphs



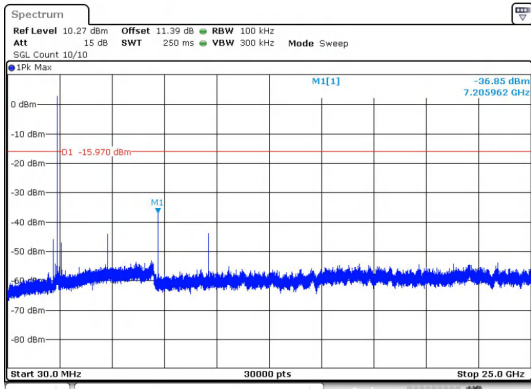
Date: 15.OCT.2024 14:23:07

**Out Of Band Emission
GFSK_DH5_Channel 0**



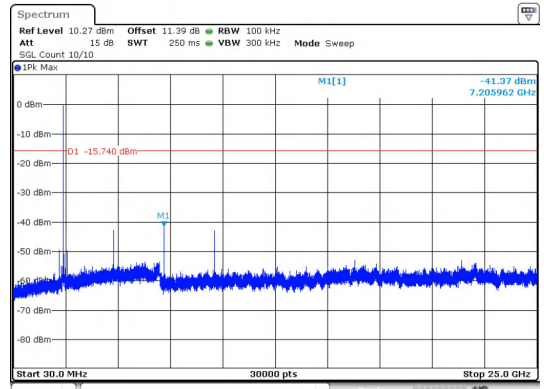
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**Out Of Band Emission
π/4DQPSK_2-DH5_Channel 0**



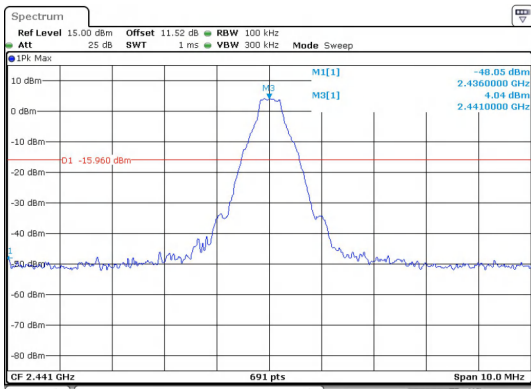
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**30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0**



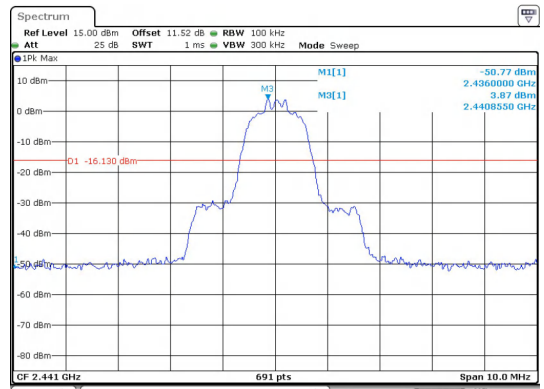
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**30.0 MHz - 25000.0 MHz
π/4DQPSK_2-DH5_Channel 0**



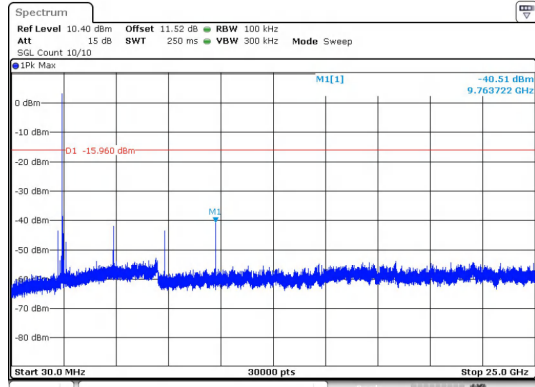
Date: 14.OCT.2024 15:38:32

**Out Of Band Emission
GFSK_DH5_Channel 39**



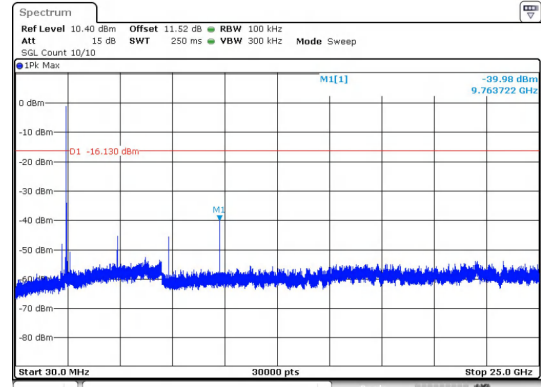
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**Out Of Band Emission
π/4DQPSK_2-DH5_Channel 39**



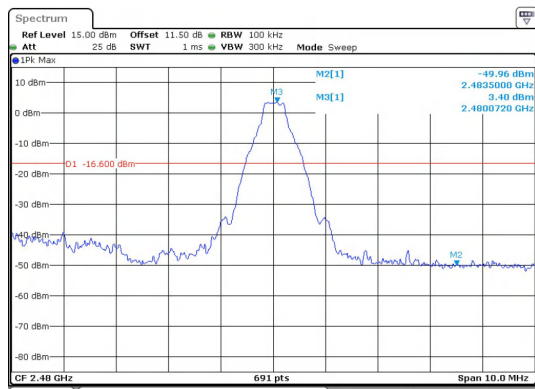
Date: 14.OCT.2024 15:38:54

30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



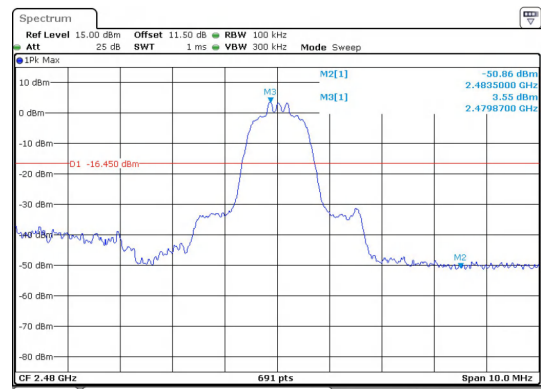
Date: 14.OCT.2024 15:55:24

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



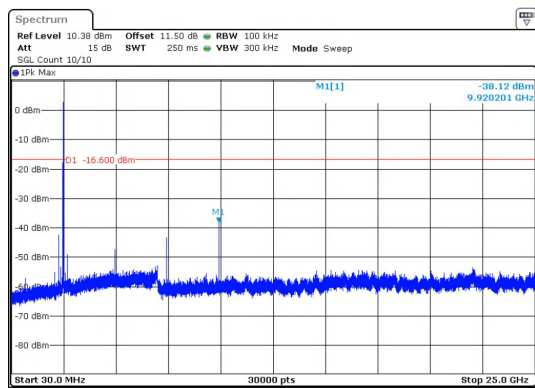
Date: 14.OCT.2024 15:41:15

Out Of Band Emission
GFSK_DH5_Channel 78



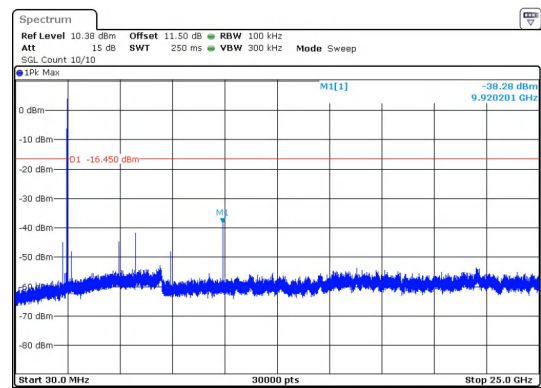
Date: 14.OCT.2024 15:58:07

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



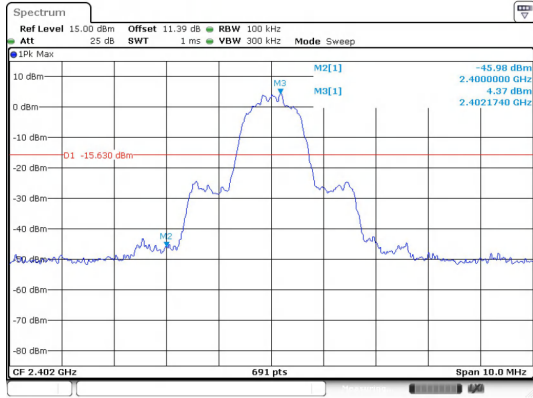
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30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78

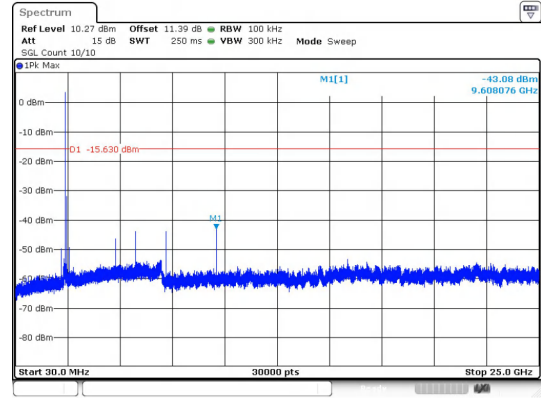


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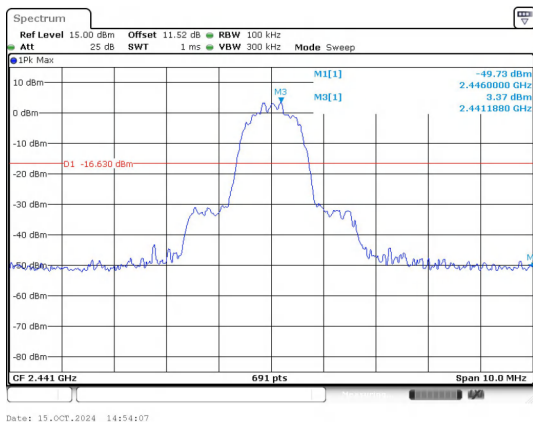
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



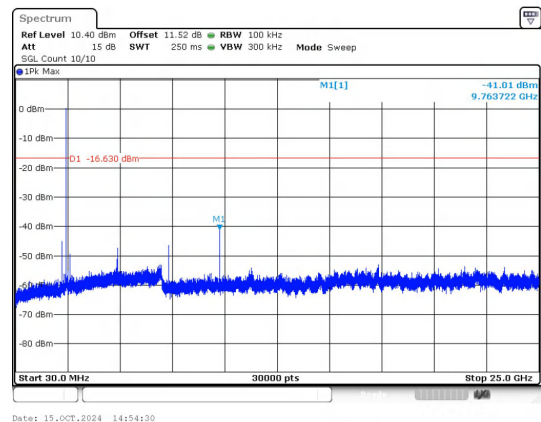
Out Of Band Emission
8DPSK_3-DH5_Channel 0



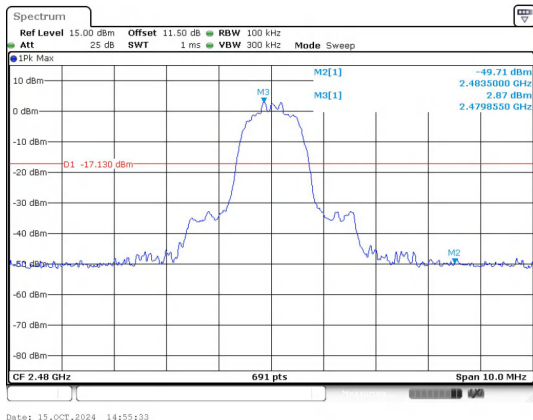
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



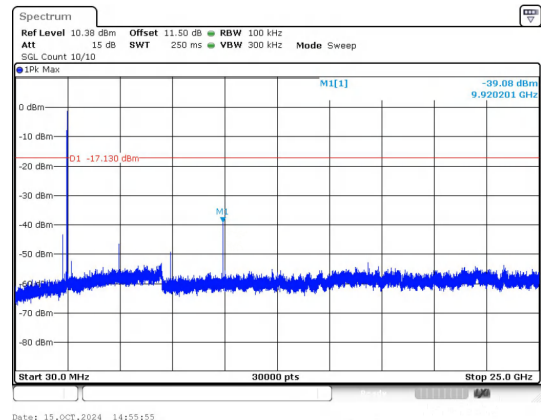
Out Of Band Emission
8DPSK_3-DH5_Channel 39



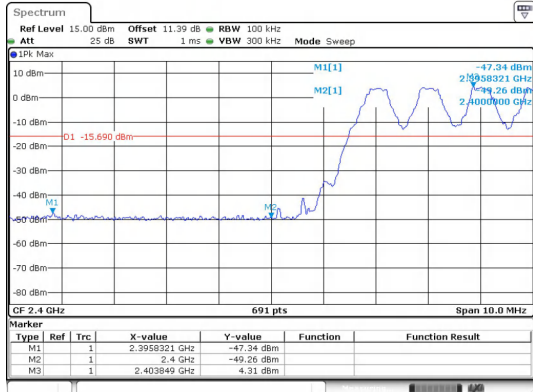
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



Out Of Band Emission
8DPSK_3-DH5_Channel 78

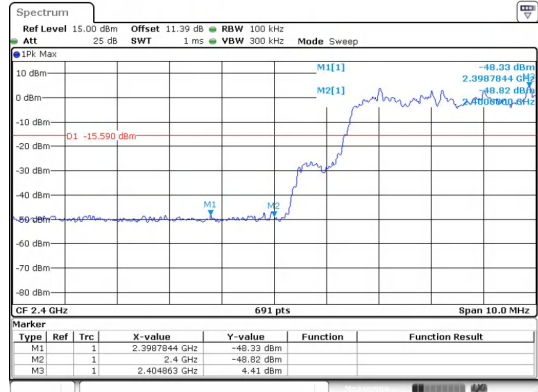


30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



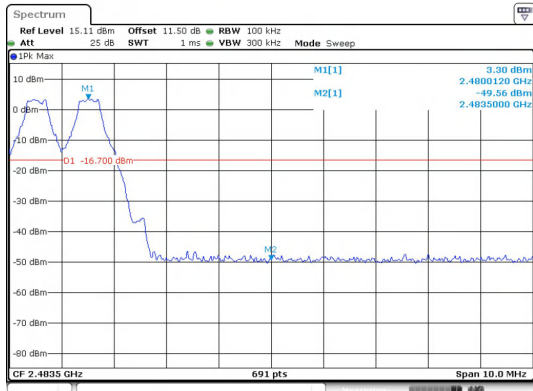
Date: 14.OCT.2024 15:33:26

Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



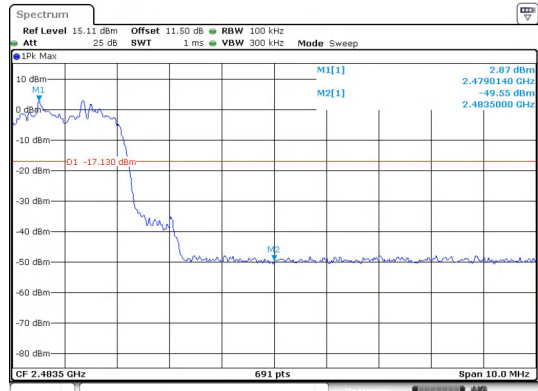
Date: 14.OCT.2024 15:52:25

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



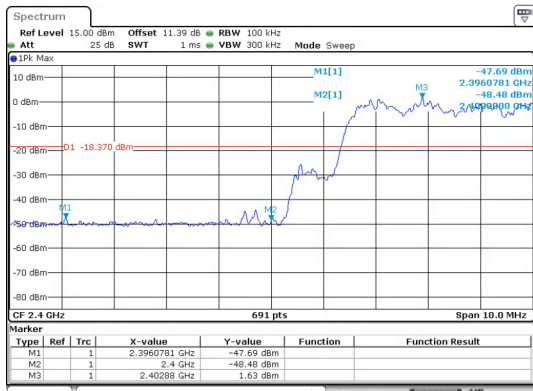
Date: 14.OCT.2024 15:34:26

Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



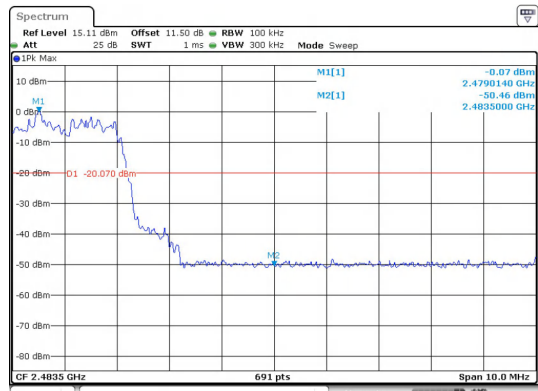
Date: 14.OCT.2024 15:53:07

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



Date: 14.OCT.2024 15:03:09

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



Date: 14.OCT.2024 15:03:32

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