

Appendix A

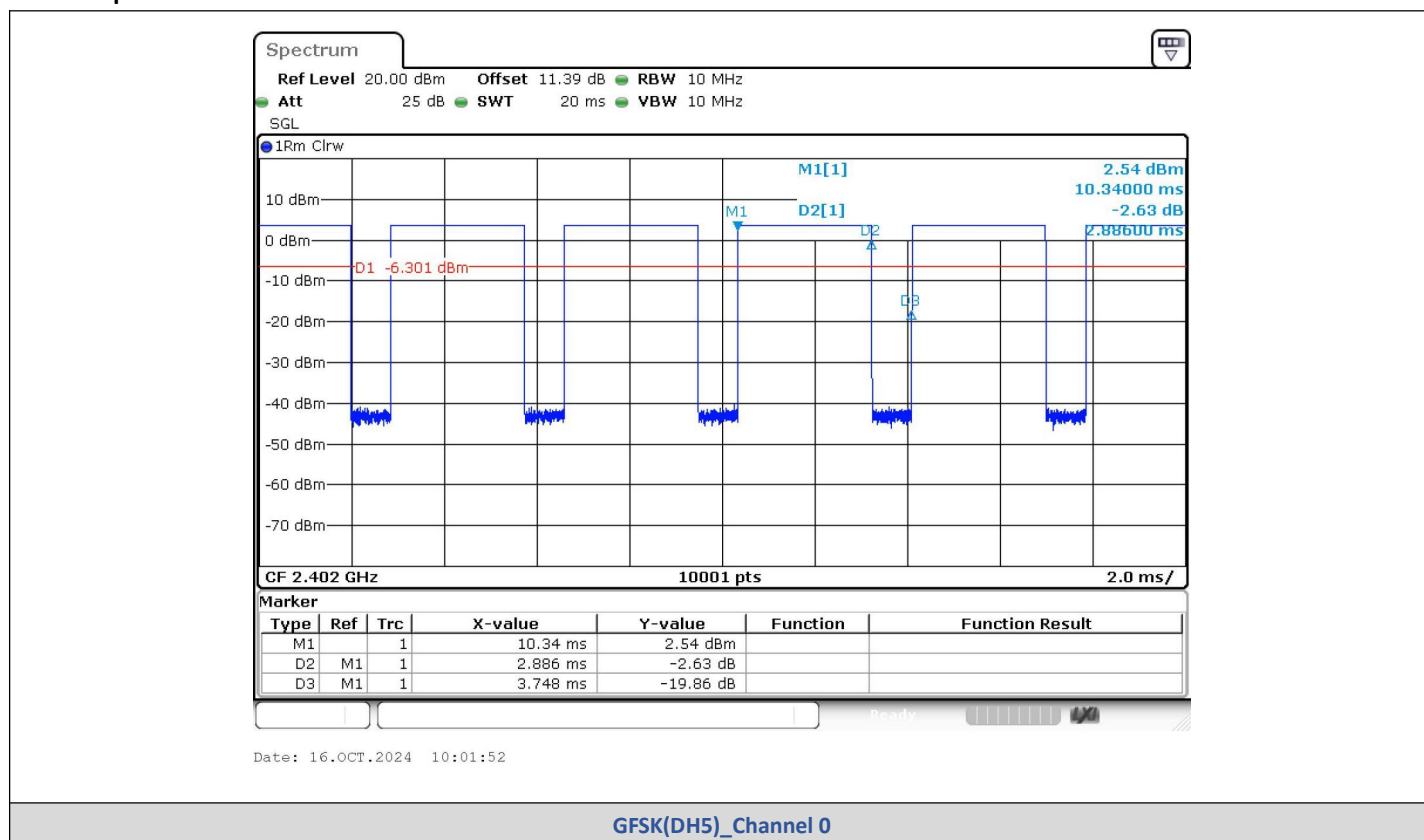
Report No.:	CISRR241012052
FCC ID:	2BLOE-TYD-ZLQ-001
Product Name:	Lander Projection Lamp
Model No.:	TYD-ZLQ-001
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

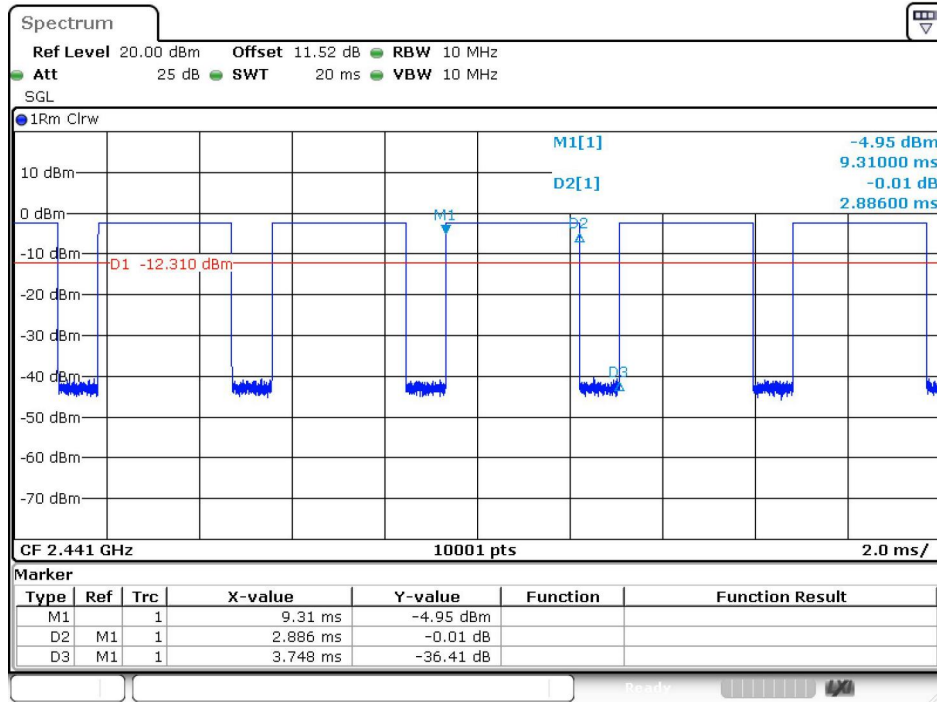
1) Duty Cycle

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	2.884	3.746	76.99	0.7699	1.1357	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	2.892	3.748	77.16	0.7716	1.1261	0.35
		78	2.894	3.748	77.21	0.7721	1.1233	0.35

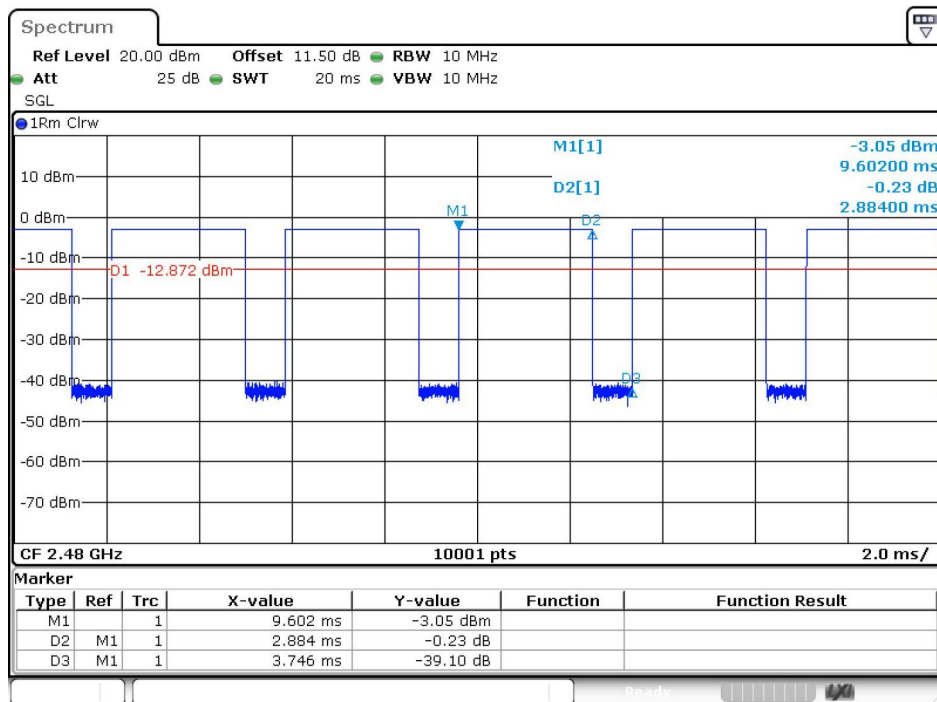
Test Graphs





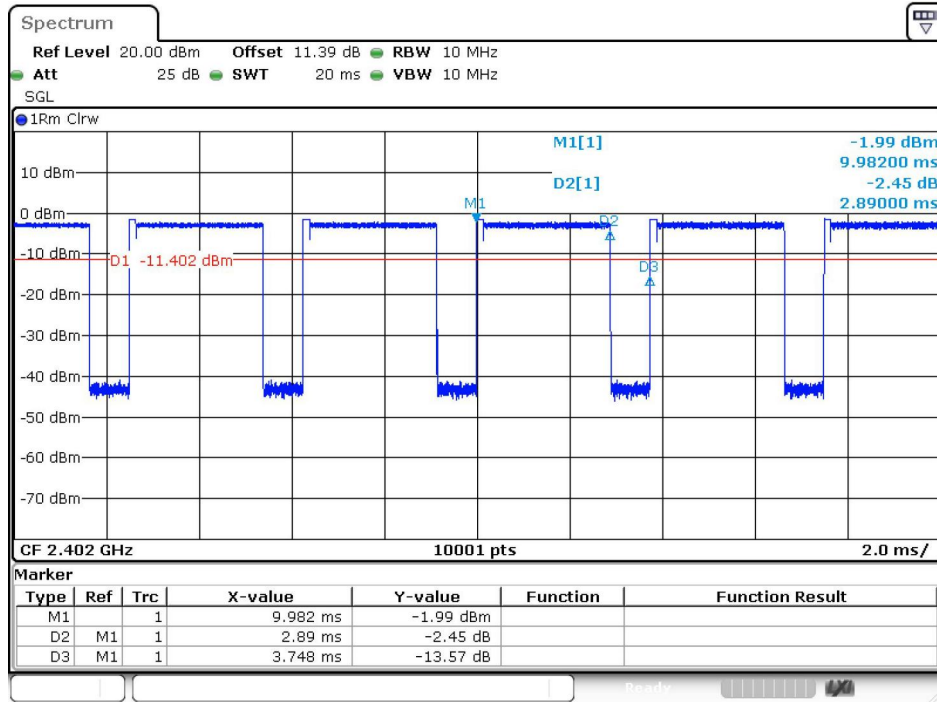
Date: 16.OCT.2024 10:12:38

GFSK(DH5)_Channel 39



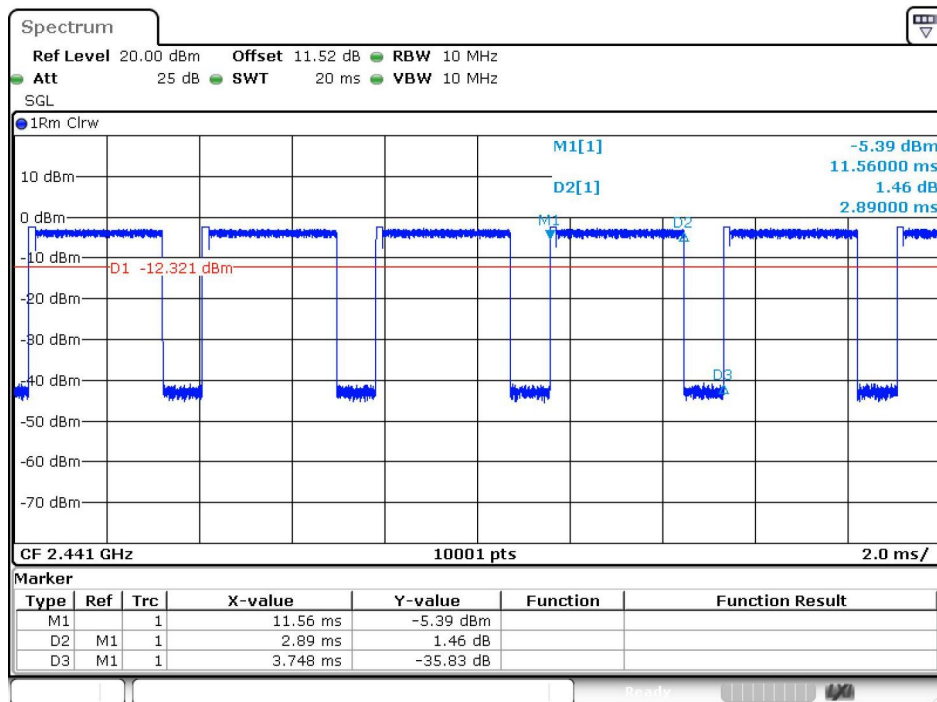
Date: 16.OCT.2024 10:15:45

GFSK(DH5)_Channel 78



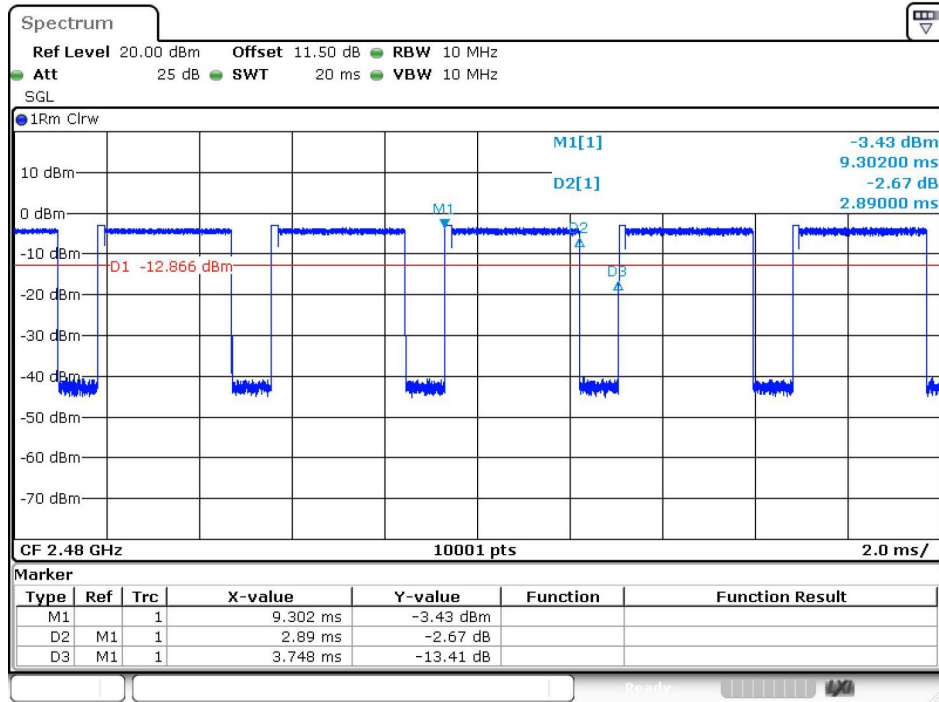
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$\pi/4$ DQPSK(2-DH5)_Channel 0



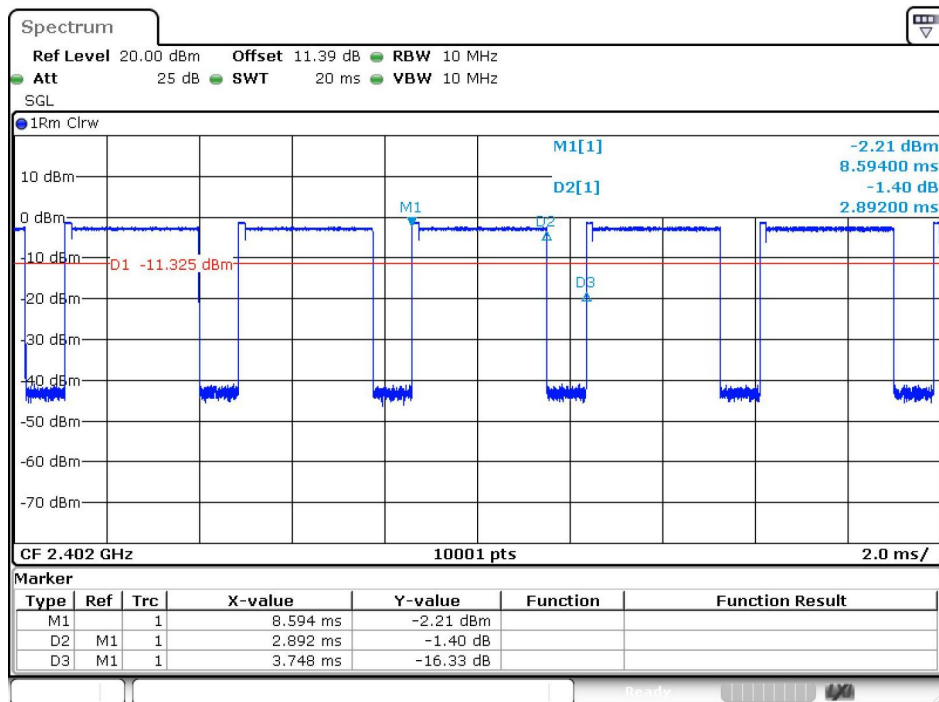
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$\pi/4$ DQPSK(2-DH5)_Channel 39



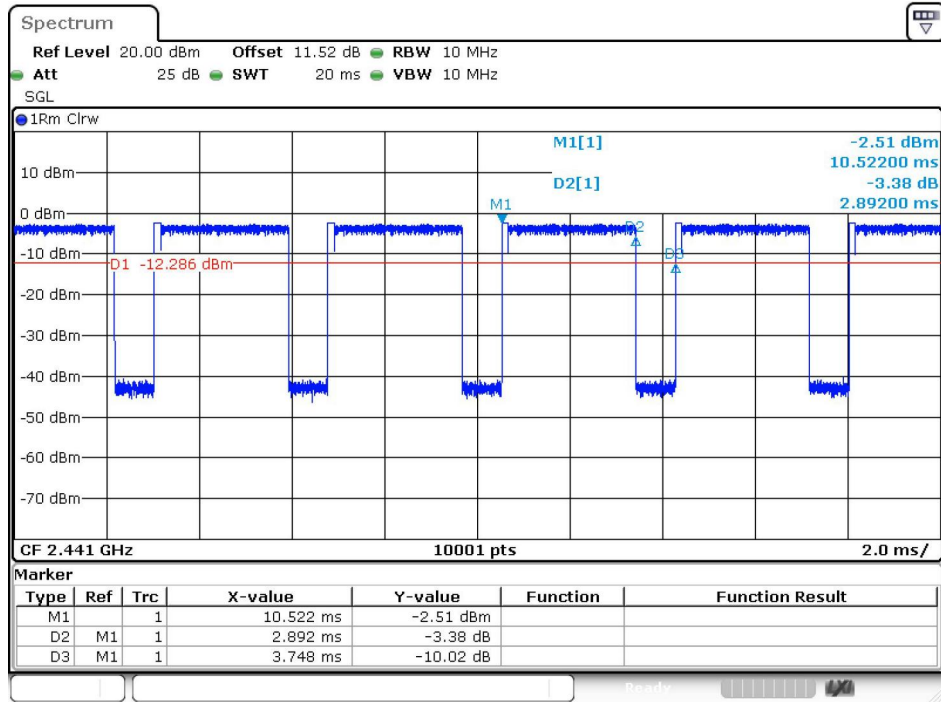
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$\pi/4$ DQPSK(2-DH5)_Channel 78



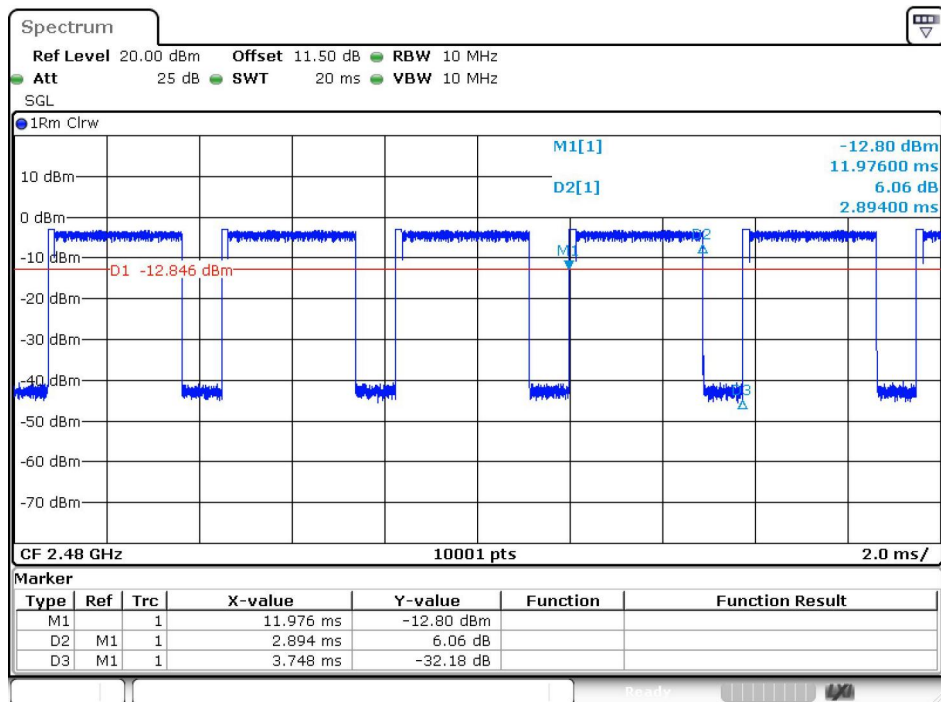
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8DPSK(3-DH5)_Channel 0



Date: 16.OCT.2024 10:40:17

8DPSK(3-DH5)_Channel 39



Date: 16.OCT.2024 10:42:36

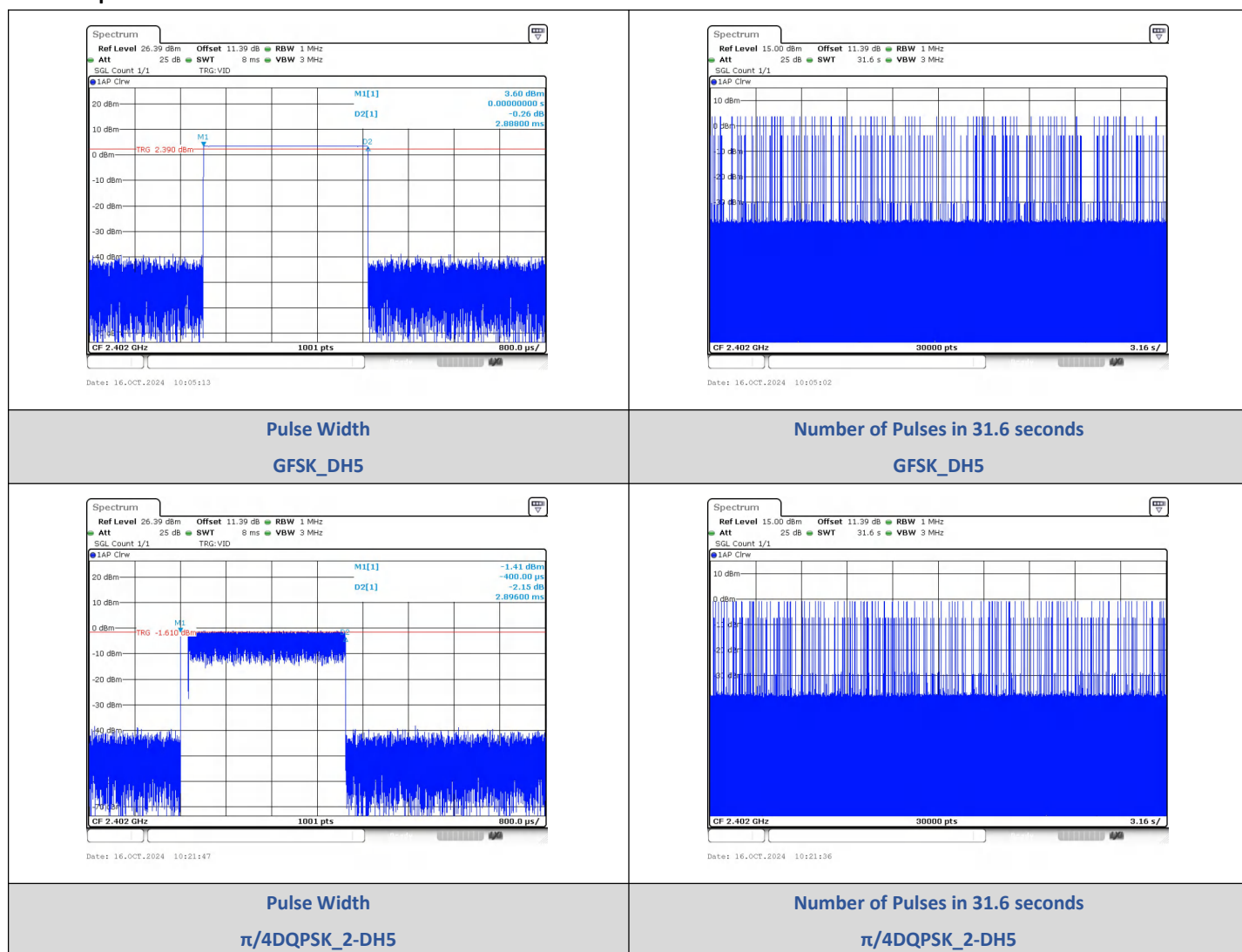
8DPSK(3-DH5)_Channel 78

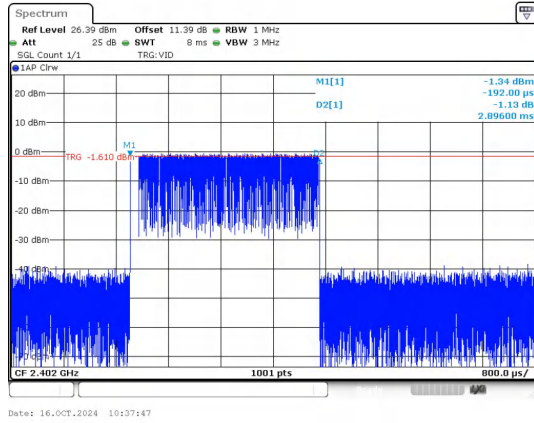
2) Dwell Time

Test Result

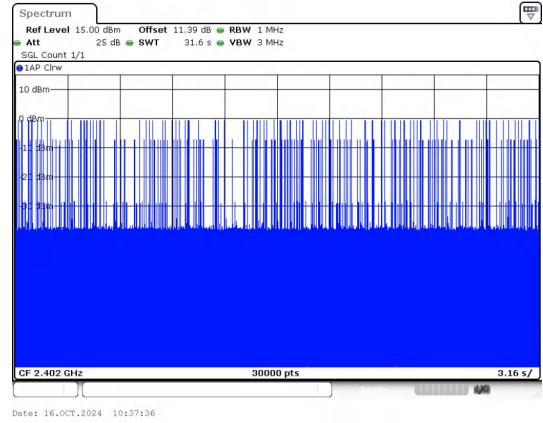
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.888	99	285.91	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.896	111	321.46		PASS
8DPSK	3-DH5		2.896	105	304.08		PASS

Test Graphs





Pulse Width
8DPSK_3-DH5



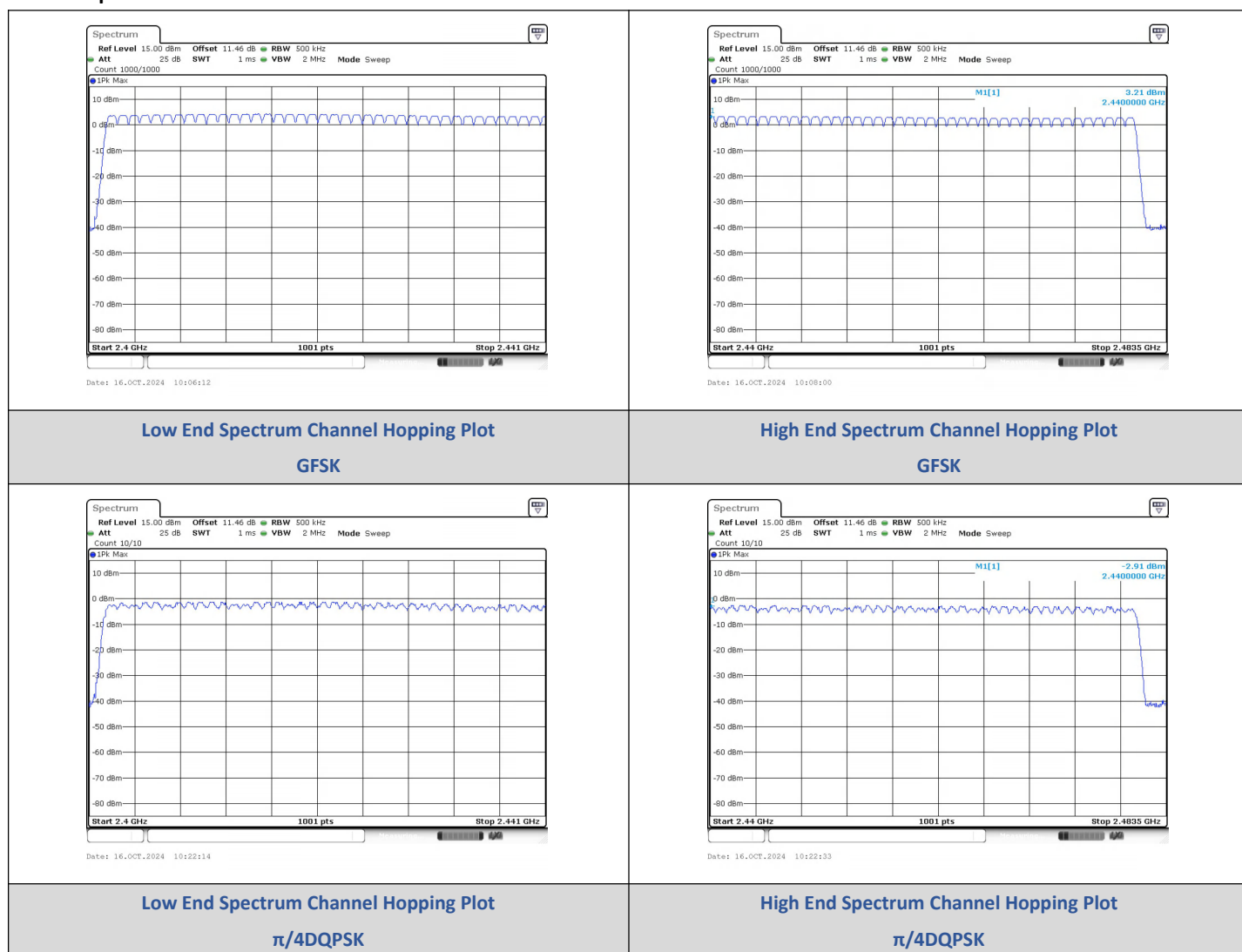
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

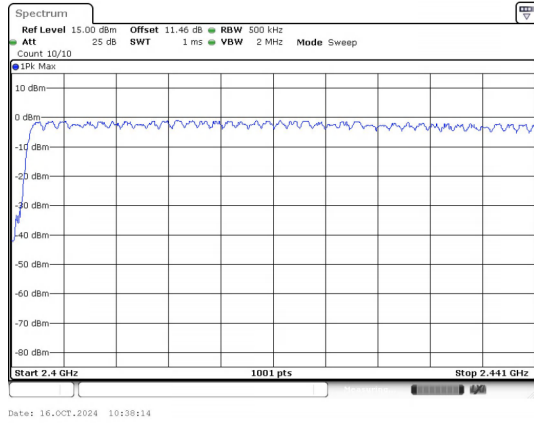
3) Number Of Hopping Channel

Test Result

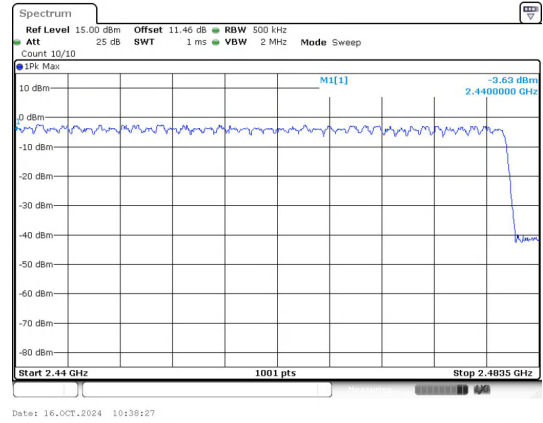
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK



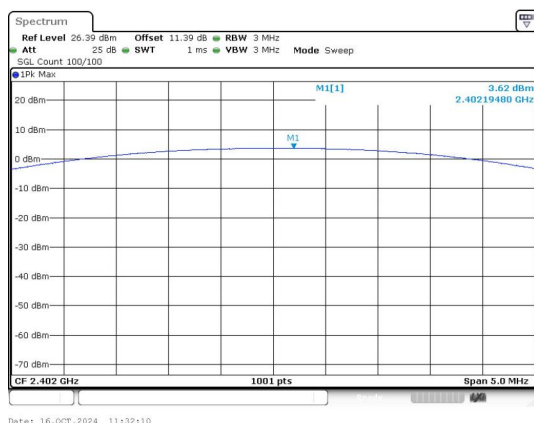
High End Spectrum Channel Hopping Plot
8DPSK

4) Conducted Peak Output Power

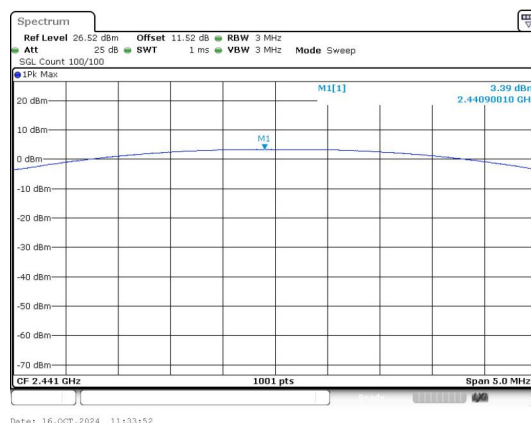
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	3.62	2.30	≤30	PASS
		39	3.39	2.19		PASS
		78	2.93	1.96		PASS
$\pi/4$ DQPSK	2-DH5	0	4.13	2.59	≤20.97	PASS
		39	4.03	2.53		PASS
		78	3.63	2.31		PASS
8DPSK	3-DH5	0	4.32	2.71		PASS
		39	4.21	2.64		PASS
		78	3.79	2.40		PASS

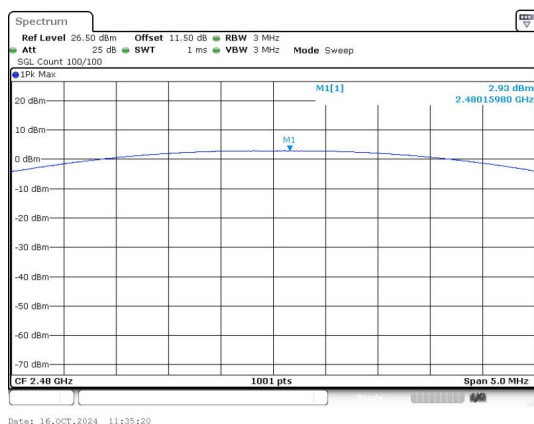
Test Graphs



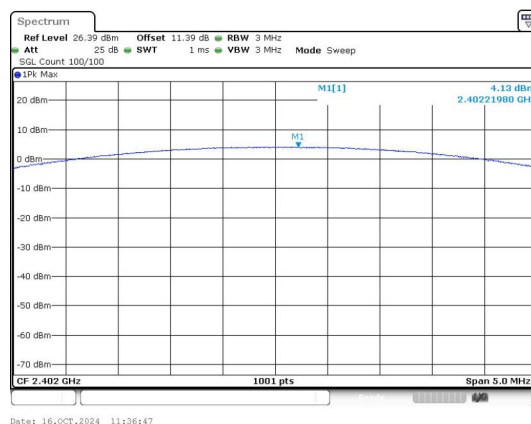
Peak Output Power
GFSK_Channel 0



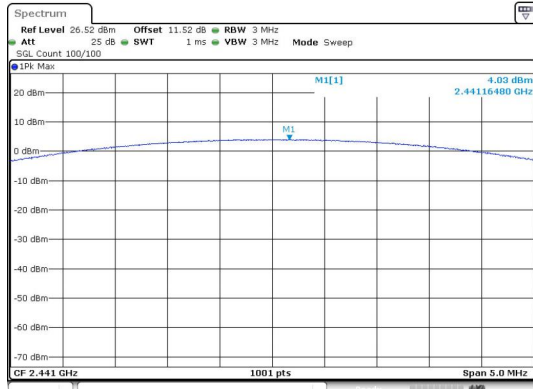
Peak Output Power
GFSK_Channel 39



Peak Output Power
GFSK_Channel 78

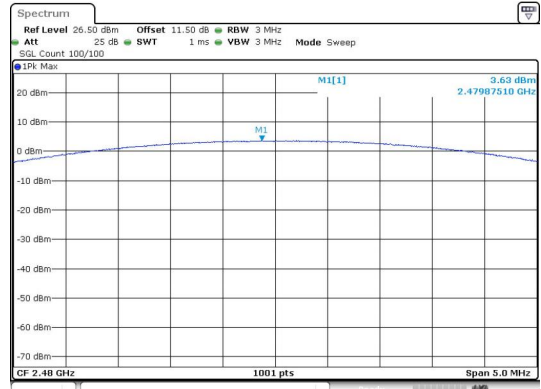


Peak Output Power
 $\pi/4$ DQPSK_Channel 0



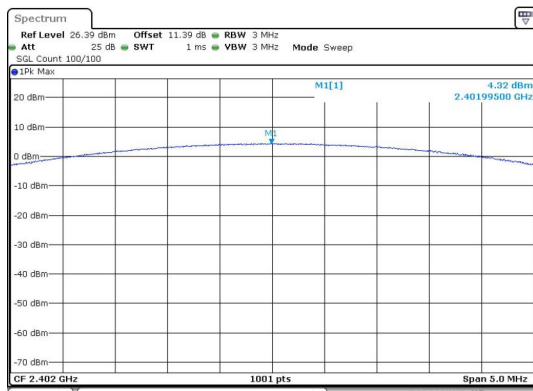
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Peak Output Power
 $\pi/4$ DQPSK_Channel 39



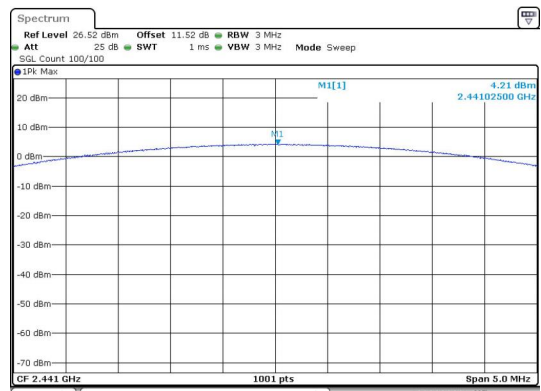
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Peak Output Power
 $\pi/4$ DQPSK_Channel 78



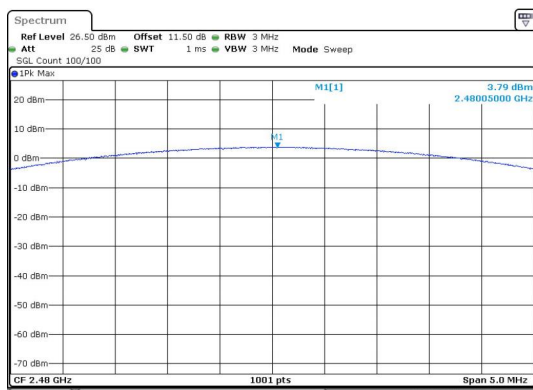
Date: 16.OCT.2024 11:43:37

Peak Output Power
8DPSK_Channel 0



Date: 16.OCT.2024 11:48:20

Peak Output Power
8DPSK_Channel 39



Date: 16.OCT.2024 11:57:56

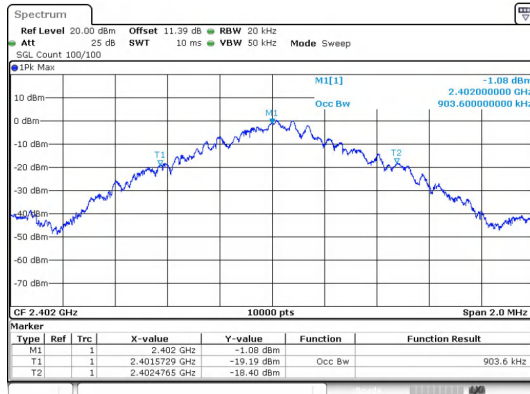
Peak Output Power
8DPSK_Channel 78

5) 99% Bandwidth

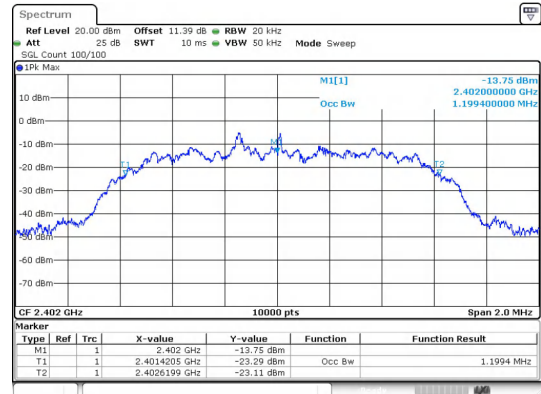
Test Result

Modulation	Channel	Center Frequency (MHz)	99% BW (MHz)
GFSK	0	2402	0.90360
	39	2441	0.89320
	78	2480	0.88960
$\pi/4$ DQPSK	0	2402	1.1994
	39	2441	1.1964
	78	2480	1.1988
8DPSK	0	2402	1.2102
	39	2441	1.2014
	78	2480	1.2088

Test Graphs

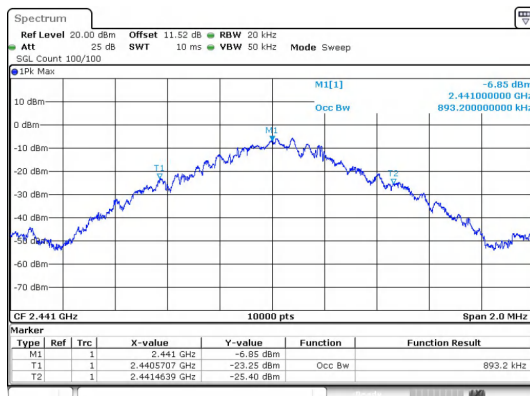


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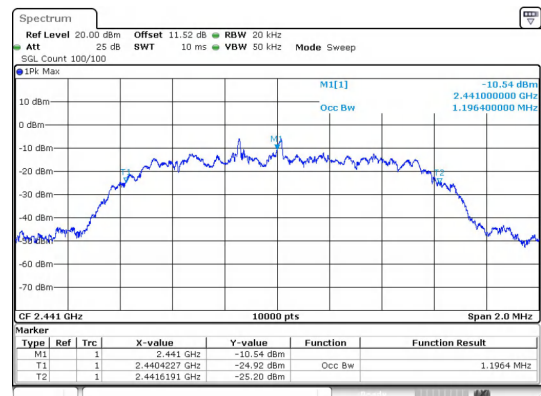


Date: 16.OCT.2024 10:11:30

GFSK_DH5_Channel 0

 $\pi/4$ DQPSK_2-DH5_Channel 0


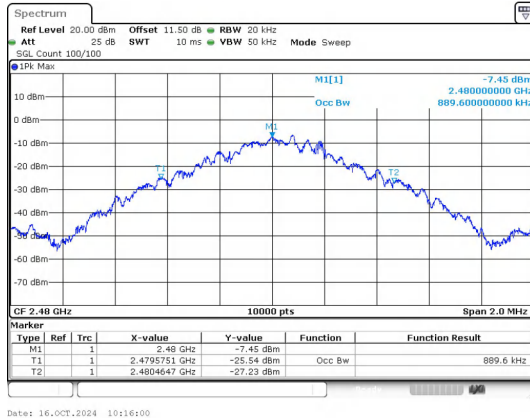
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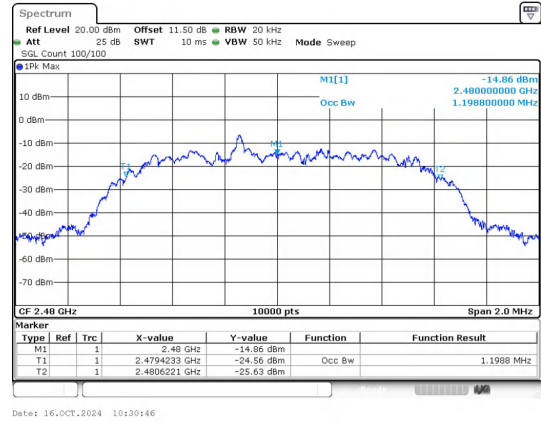
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GFSK_DH5_Channel 39

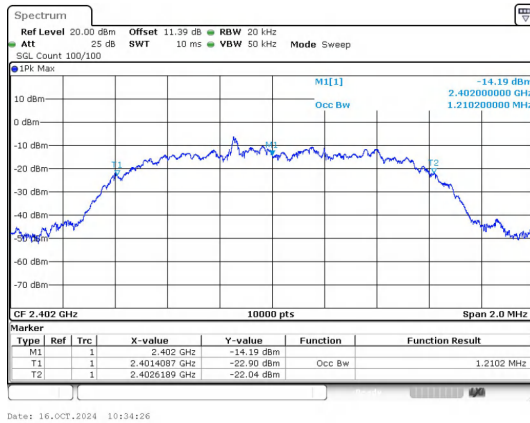
 $\pi/4$ DQPSK_2-DH5_Channel 39



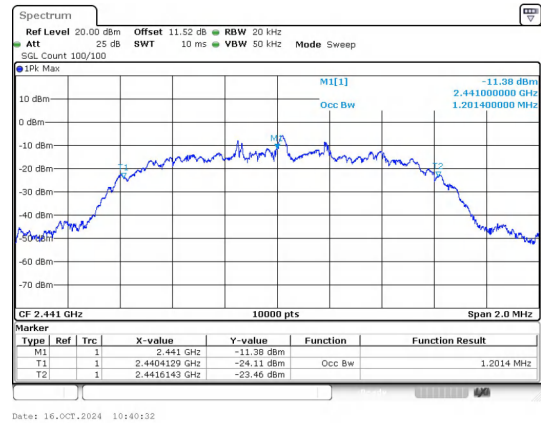
GFSK_DH5_Channel 78



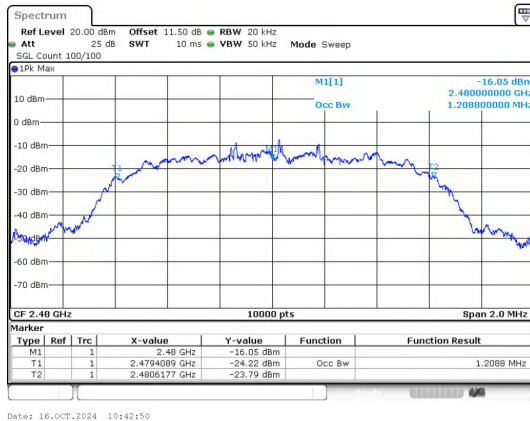
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



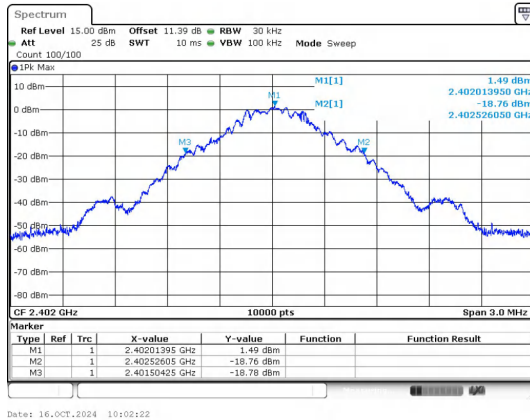
8DPSK_3-DH5_Channel 78

6) 20dB Bandwidth

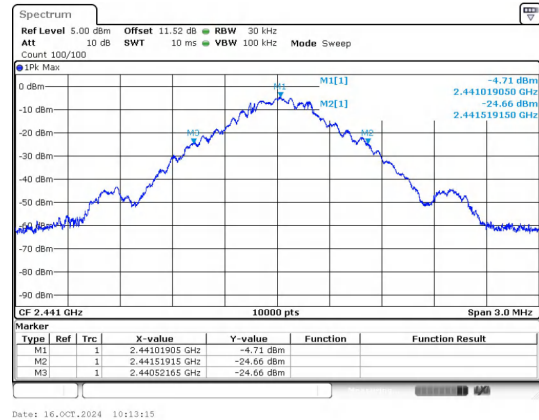
Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.030
	39	2441 MHz	1.000
	78	2480 MHz	0.9900
$\pi/4$ DQPSK	0	2402 MHz	1.310
	39	2441 MHz	1.300
	78	2480 MHz	1.280
8DPSK	0	2402 MHz	1.290
	39	2441 MHz	1.290
	78	2480 MHz	1.290

Test Graphs



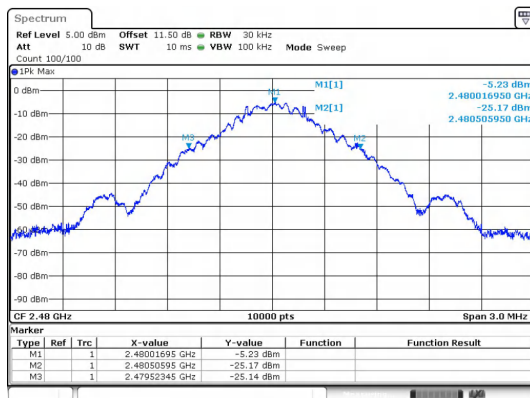
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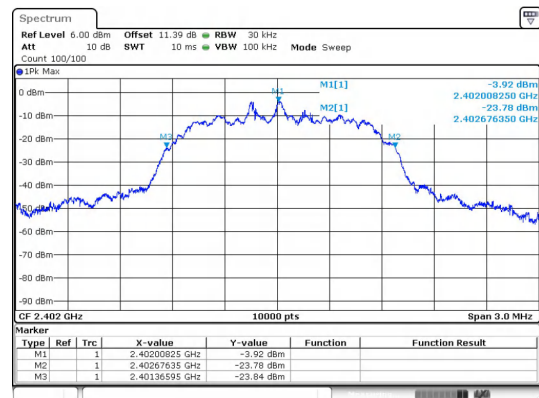
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GFSK_DH5_Channel 0

GFSK_DH5_Channel 39



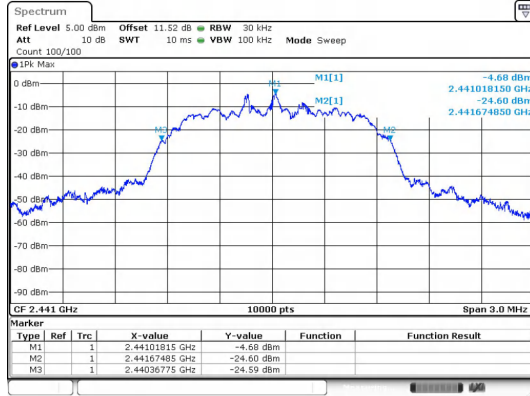
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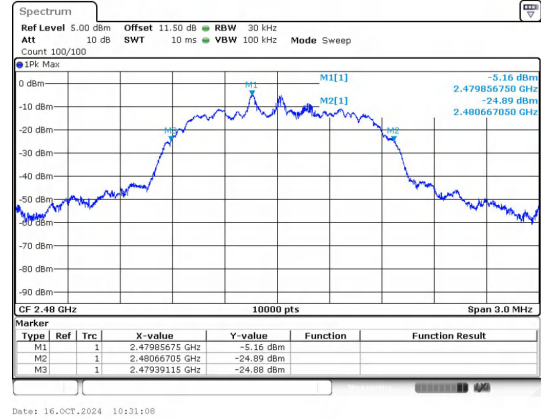
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GFSK_DH5_Channel 78

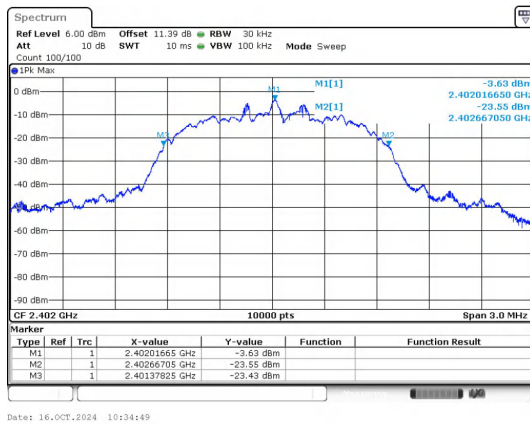
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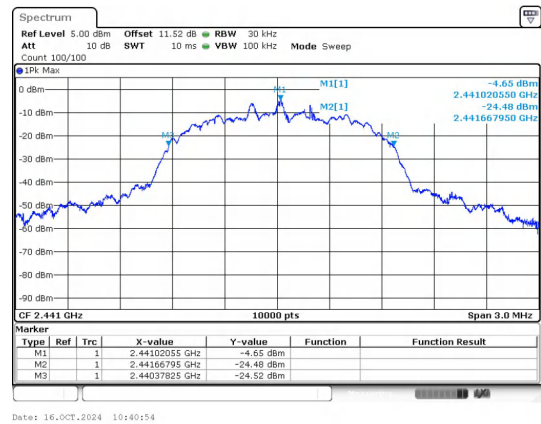
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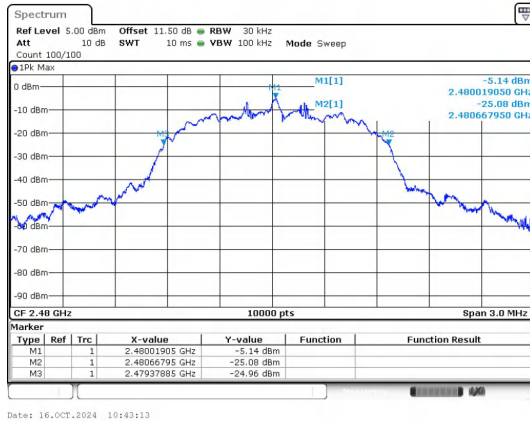
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



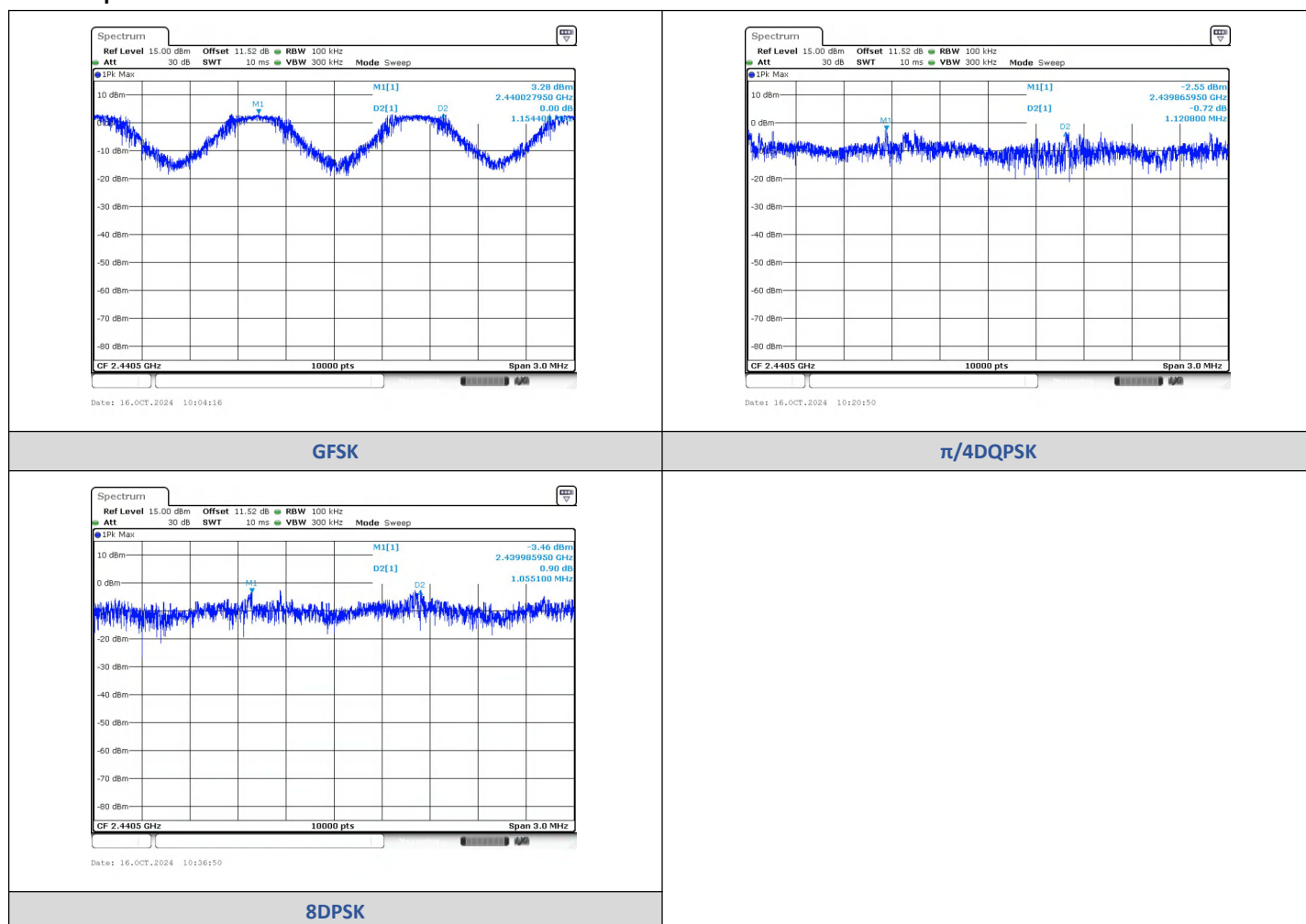
8DPSK_3-DH5_Channel 78

7) Carrier Frequencies Separation

Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2440.028	2441.1824	1.1544	1.030	PASS
$\pi/4$ DQPSK	2-DH5	2439.8659	2440.9868	1.1208	0.873	PASS
8DPSK	3-DH5	2439.9859	2441.041	1.0551	0.86	PASS

Test Graphs



8) Conducted Out Of Band Emission

Test Result

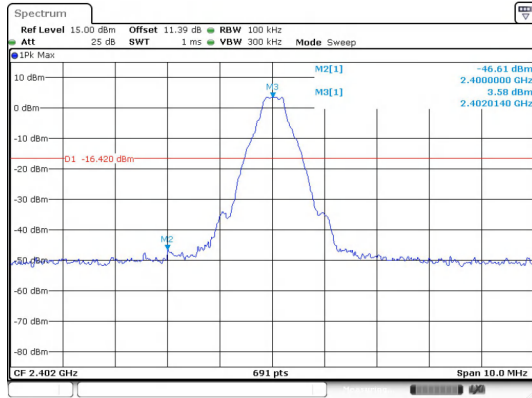
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-46.610	-16.42	-30.190	PASS
			7205.96	-39.355	-16.42	-22.935	PASS
		39	9763.72	-40.328	-16.7	-23.628	PASS
		78	2483.50	-51.130	-17.24	-33.890	PASS
			9920.20	-38.919	-17.24	-21.679	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-44.740	-16.48	-28.260	PASS
			7206.79	-41.187	-16.48	-24.707	PASS
		39	9763.72	-40.164	-16.82	-23.344	PASS
		78	2483.50	-49.865	-17.21	-32.655	PASS
			9920.20	-38.753	-17.21	-21.543	PASS
8DPSK	3-DH5	0	2400.00	-45.947	-16.54	-29.407	PASS
			7206.79	-42.726	-16.54	-26.186	PASS
		39	9763.72	-39.947	-16.76	-23.187	PASS
		78	2483.50	-49.582	-17.2	-32.382	PASS
			9920.20	-38.646	-17.2	-21.446	PASS

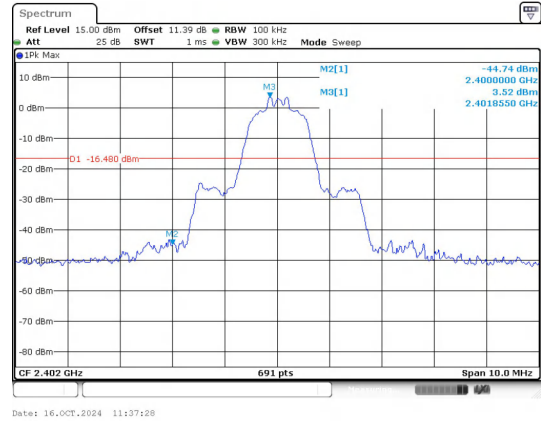
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2395.92	-48.672	-16.84	-31.832	PASS
			2400.00	-50.591	-16.84	-33.751	PASS
			2483.50	-49.365	-17.29	-32.075	PASS
$\pi/4$ DQPSK	2-DH5		2397.55	-47.786	-21.44	-26.346	PASS
			2400.00	-49.593	-21.44	-28.153	PASS
			2483.50	-49.313	-23.09	-26.223	PASS
8DPSK	3-DH5		2395.24	-48.765	-21.73	-27.035	PASS
			2400.00	-50.657	-21.73	-28.927	PASS
			2483.50	-49.753	-23.5	-26.253	PASS

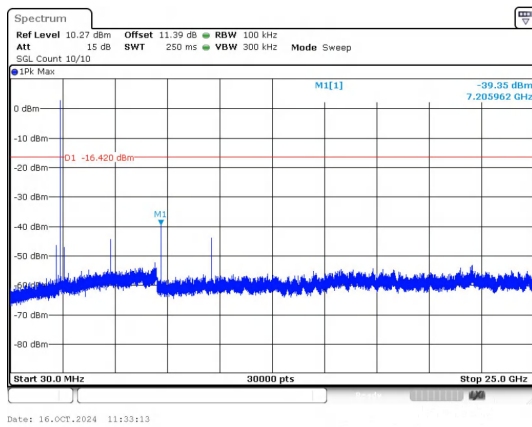
Test Graphs



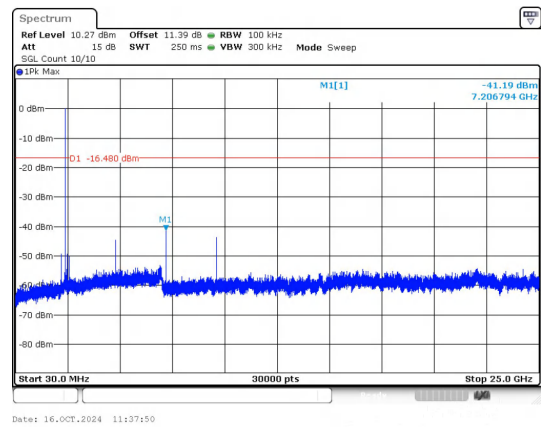
Out Of Band Emission
GFSK_DH5_Channel 0



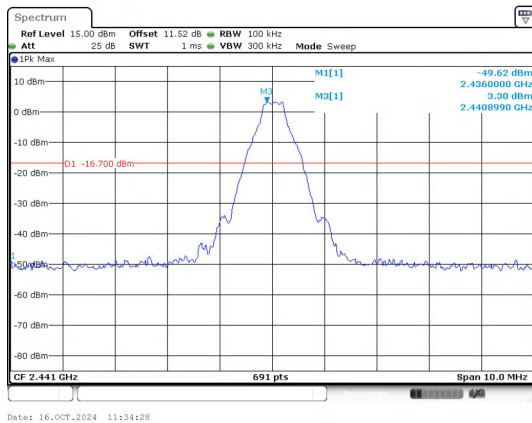
Out Of Band Emission
 $\pi/4$ QPSK_2-DH5_Channel 0



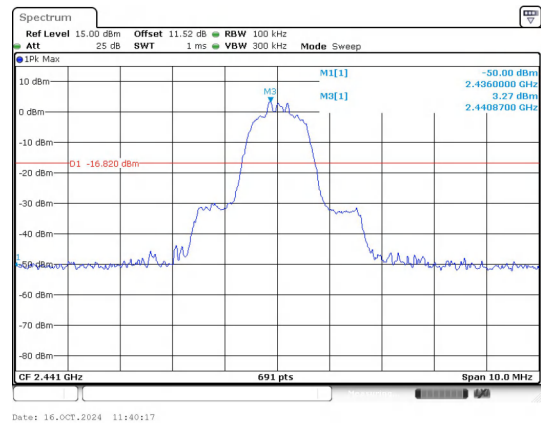
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



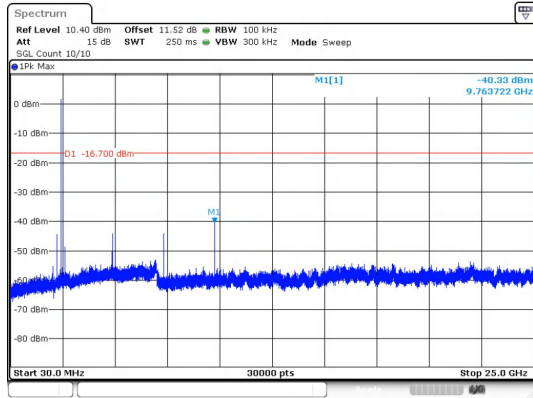
30.0 MHz - 25000.0 MHz
 $\pi/4$ QPSK_2-DH5_Channel 0



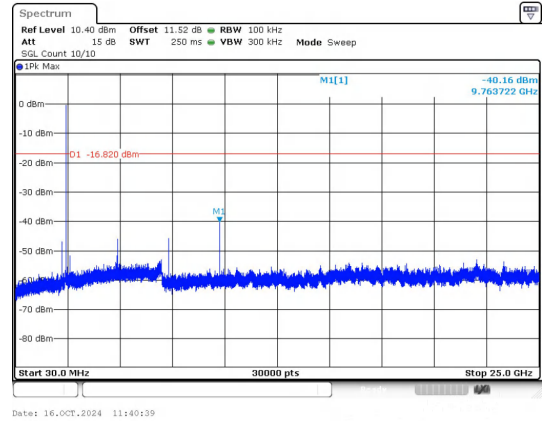
Out Of Band Emission
GFSK_DH5_Channel 39



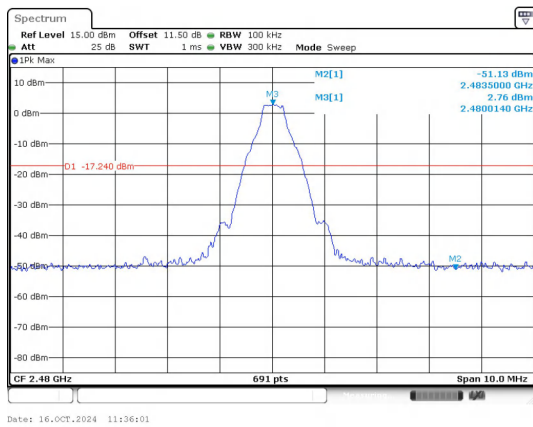
Out Of Band Emission
 $\pi/4$ QPSK_2-DH5_Channel 39



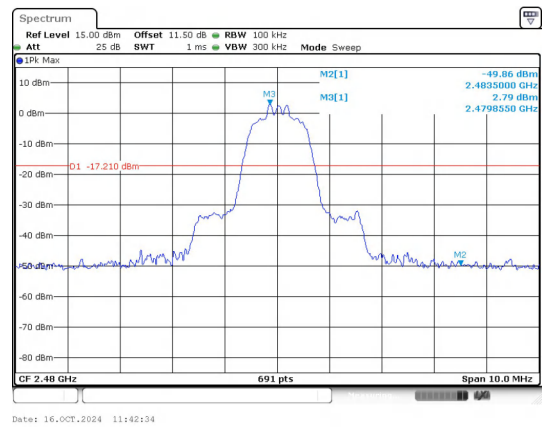
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



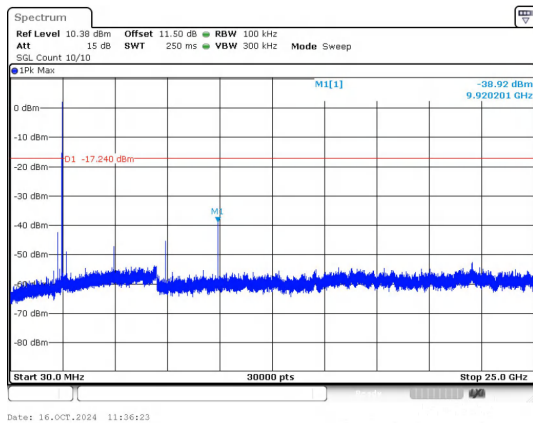
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



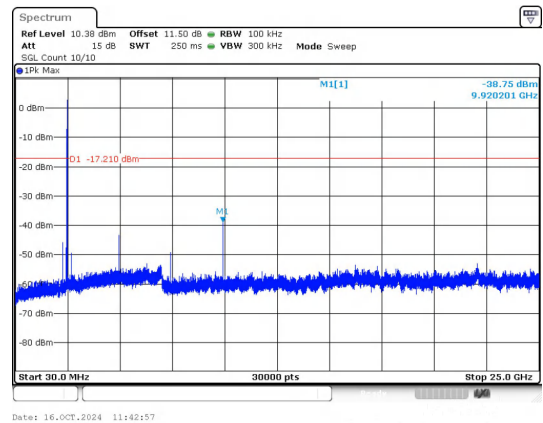
Out Of Band Emission
GFSK_DH5_Channel 78



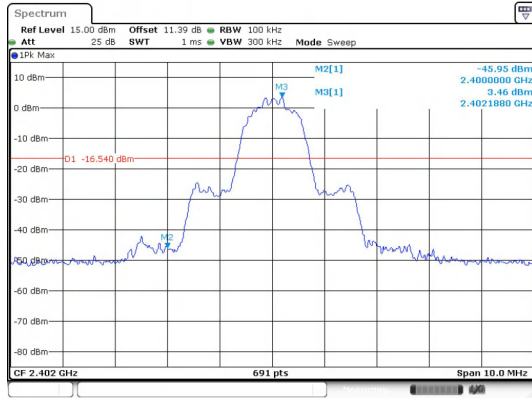
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78



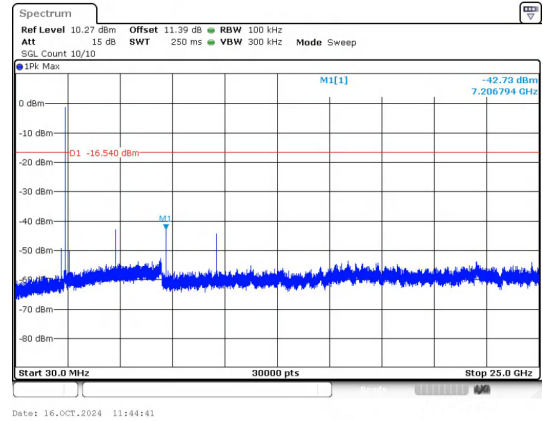
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



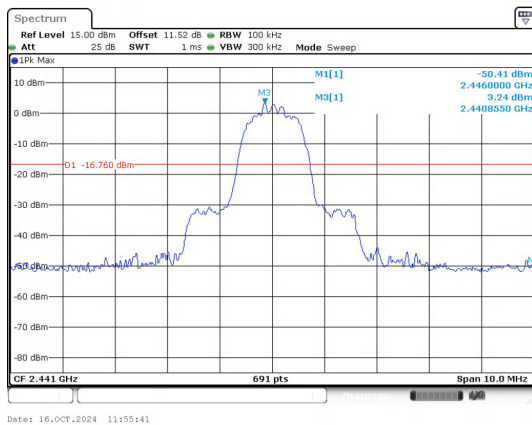
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



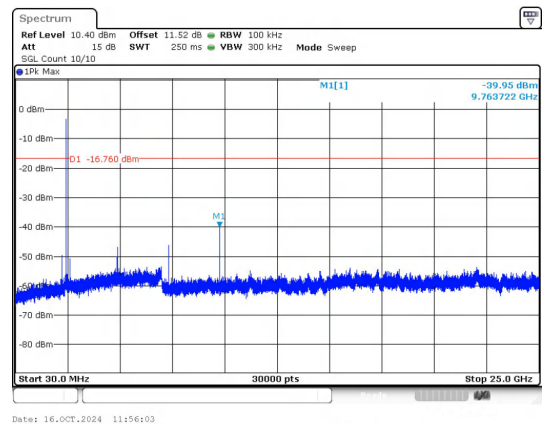
Out Of Band Emission
8DPSK_3-DH5_Channel 0



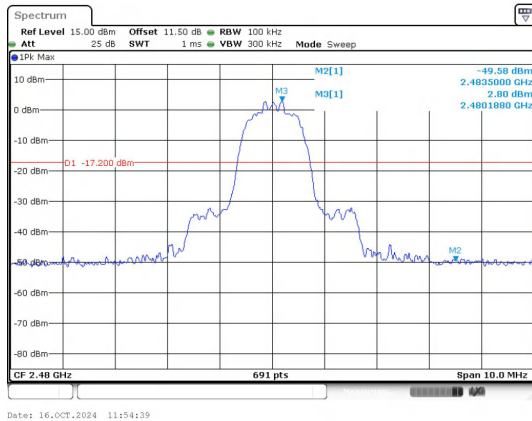
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



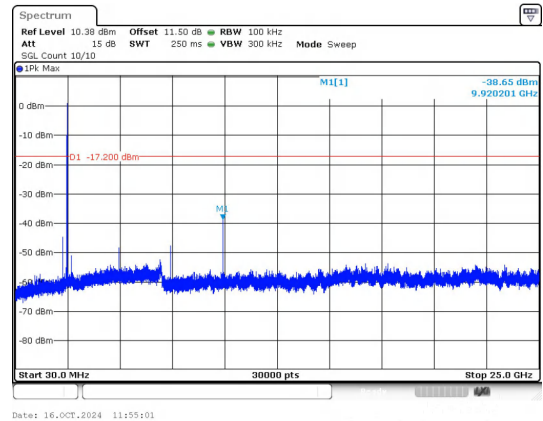
Out Of Band Emission
8DPSK_3-DH5_Channel 39



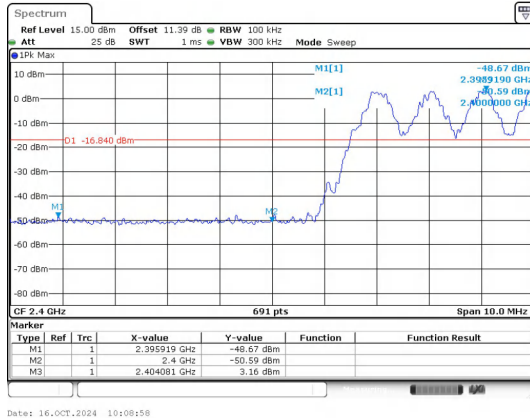
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



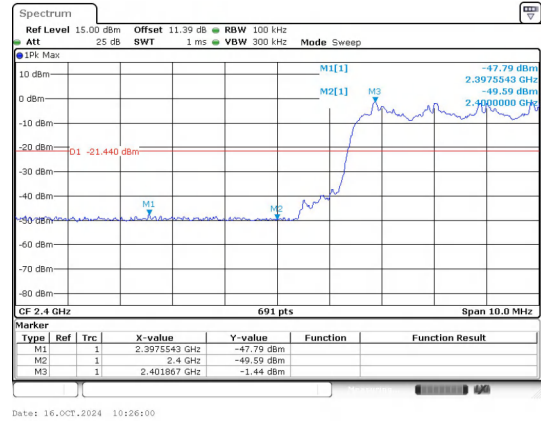
Out Of Band Emission
8DPSK_3-DH5_Channel 78



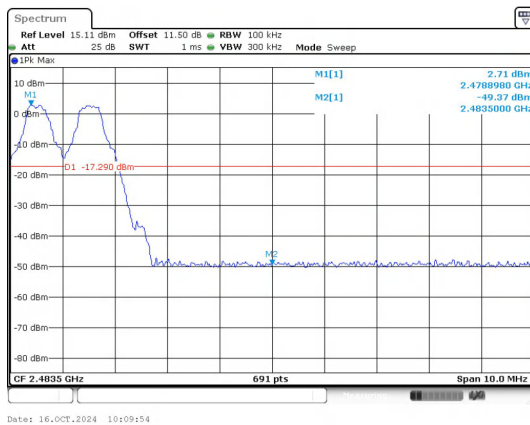
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



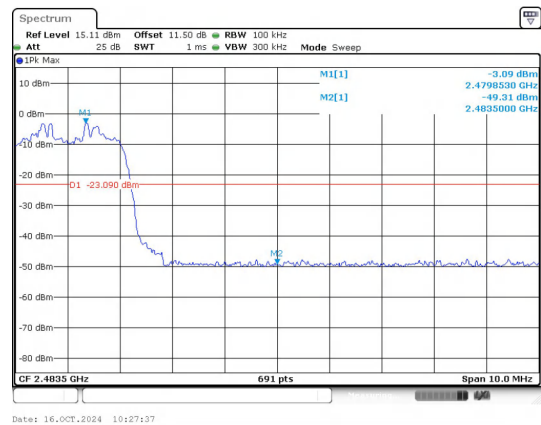
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



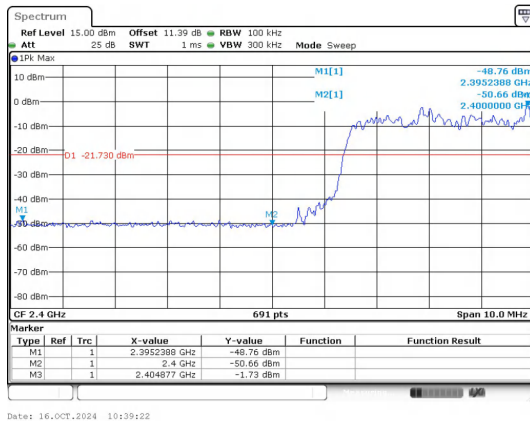
Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



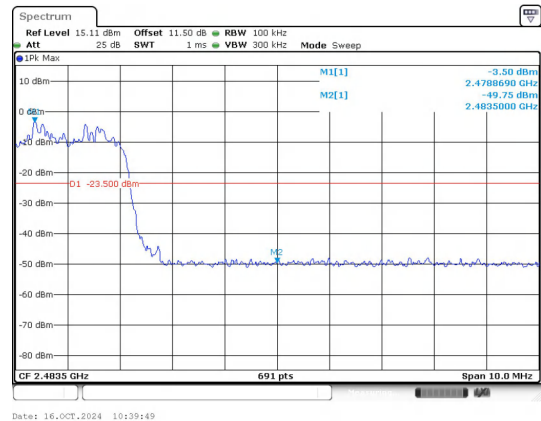
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



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