

Appendix A

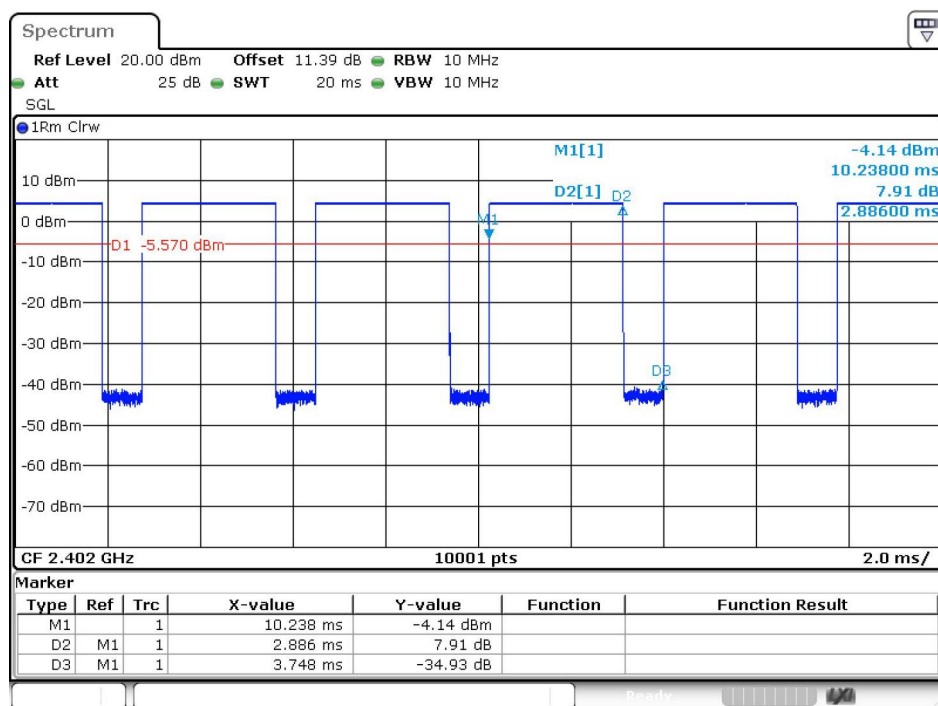
Report No.:	CISRR241009021
FCC ID:	2BLOE-TYD-SM-001
Product Name:	Jellyfish Ocean Projection Lamp
Model No.:	TYD-SM-001
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

1) Duty Cycle

Test Result

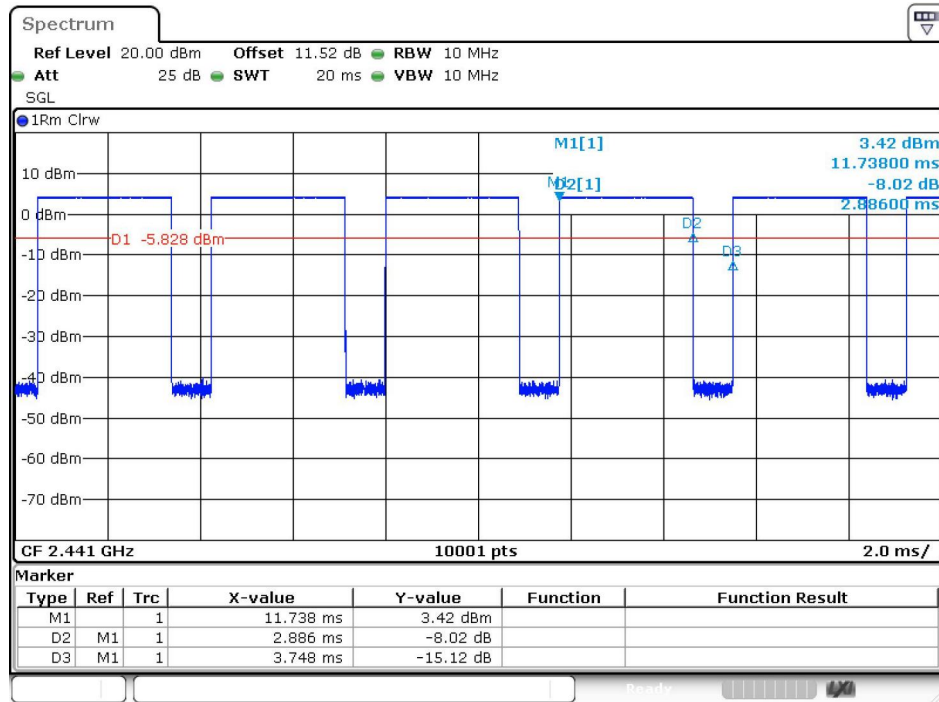
Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.886	3.748	77.00	0.7700	1.1351	0.35
		39	2.886	3.748	77.00	0.7700	1.1351	0.35
		78	2.886	3.748	77.00	0.7700	1.1351	0.35
$\pi/4$ DQPSK	2-DH5	0	2.890	3.748	77.11	0.7711	1.1289	0.35
		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



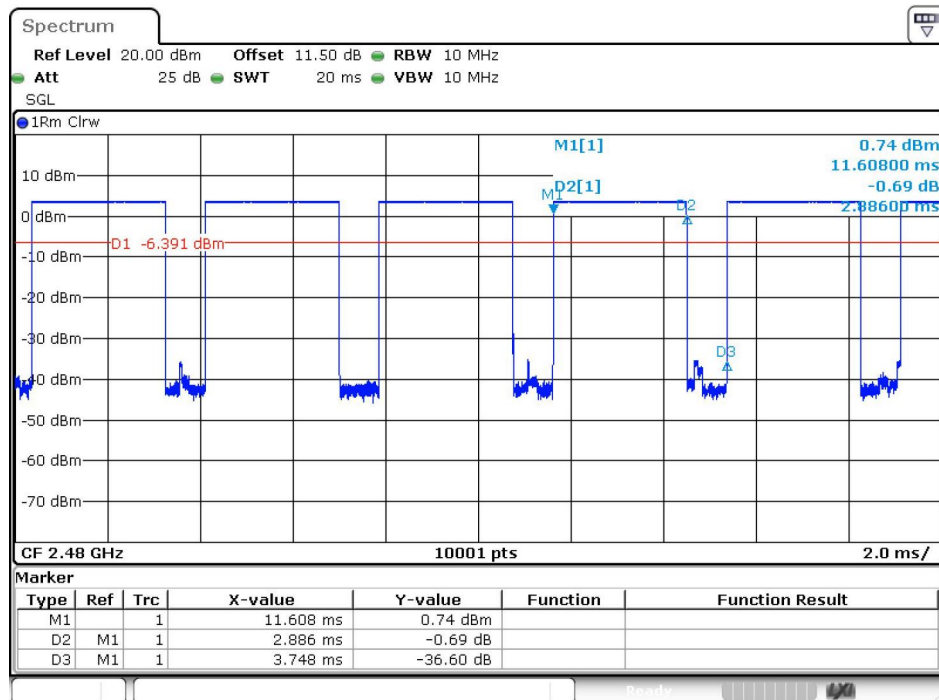
Date: 14.OCT.2024 16:21:15

GFSK(DH5)_Channel 0



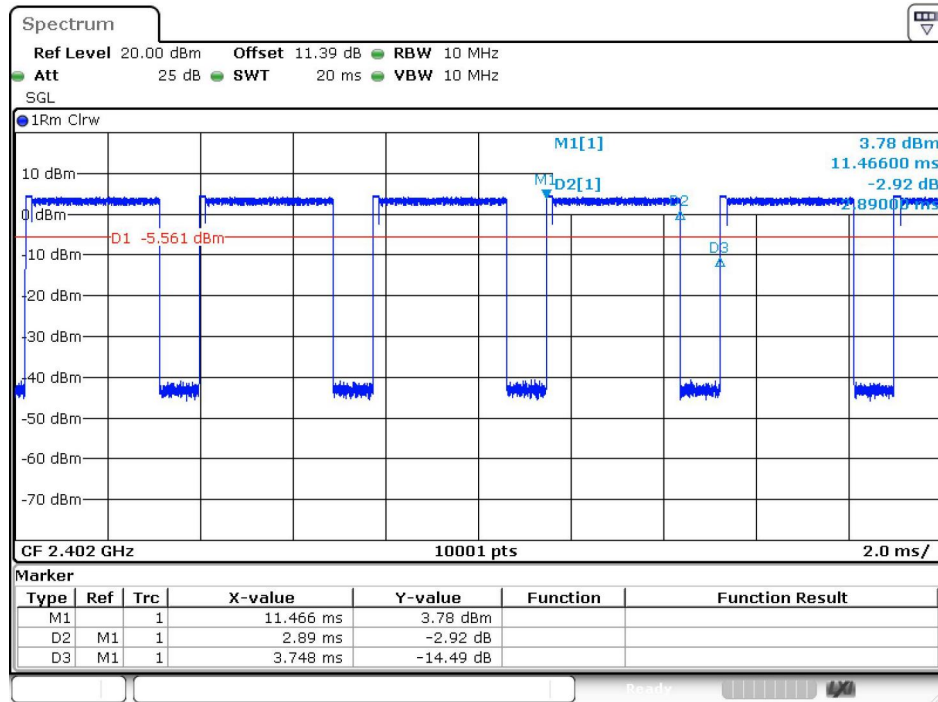
Date: 14.OCT.2024 16:27:06

GFSK(DH5)_Channel 39



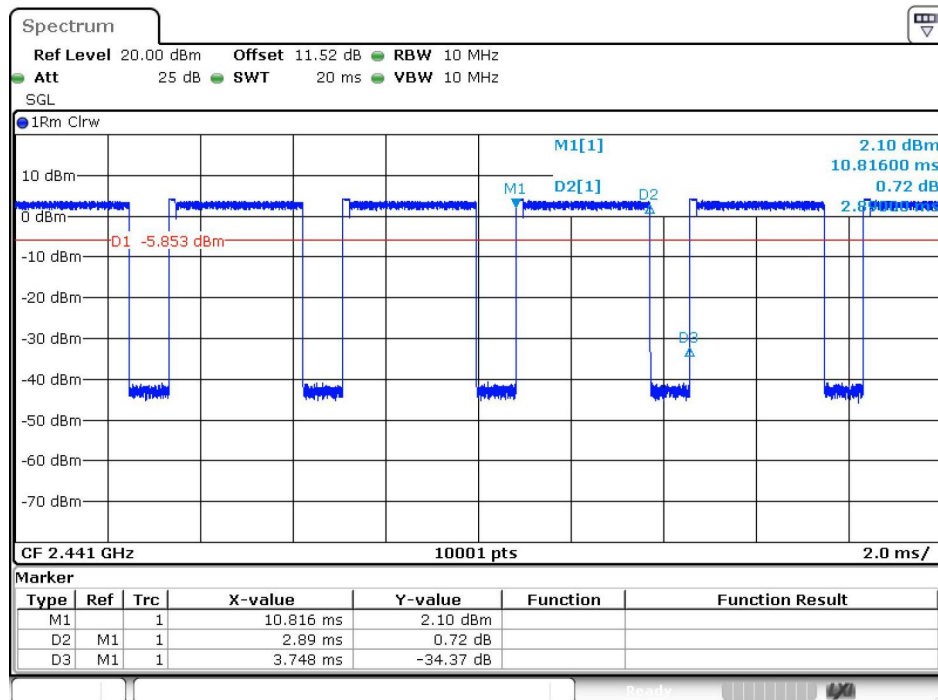
Date: 14.OCT.2024 16:31:52

GFSK(DH5)_Channel 78



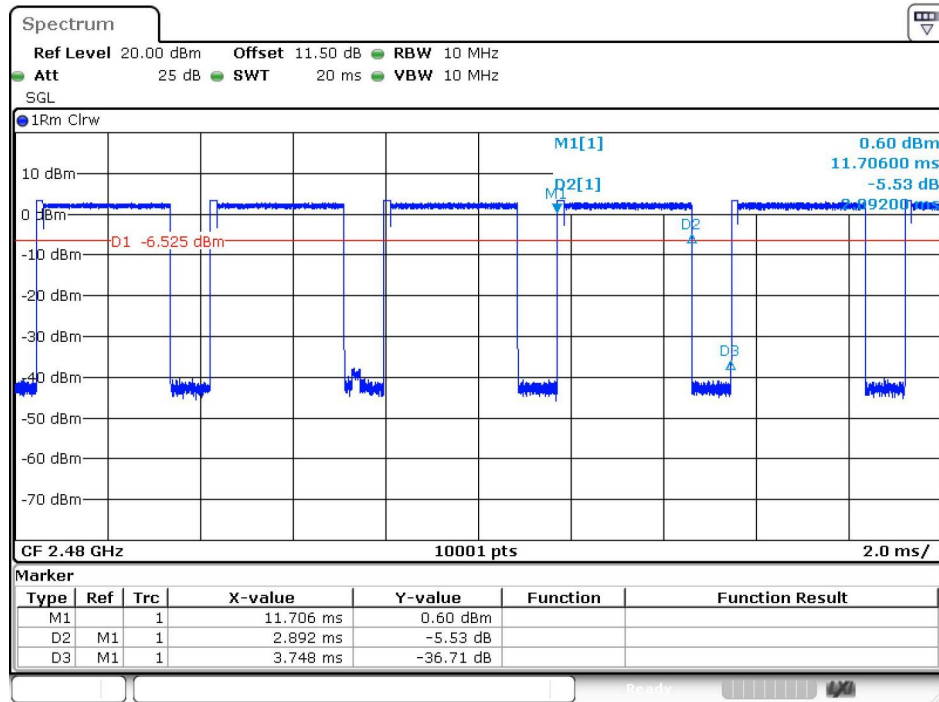
Date: 14.OCT.2024 17:15:27

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



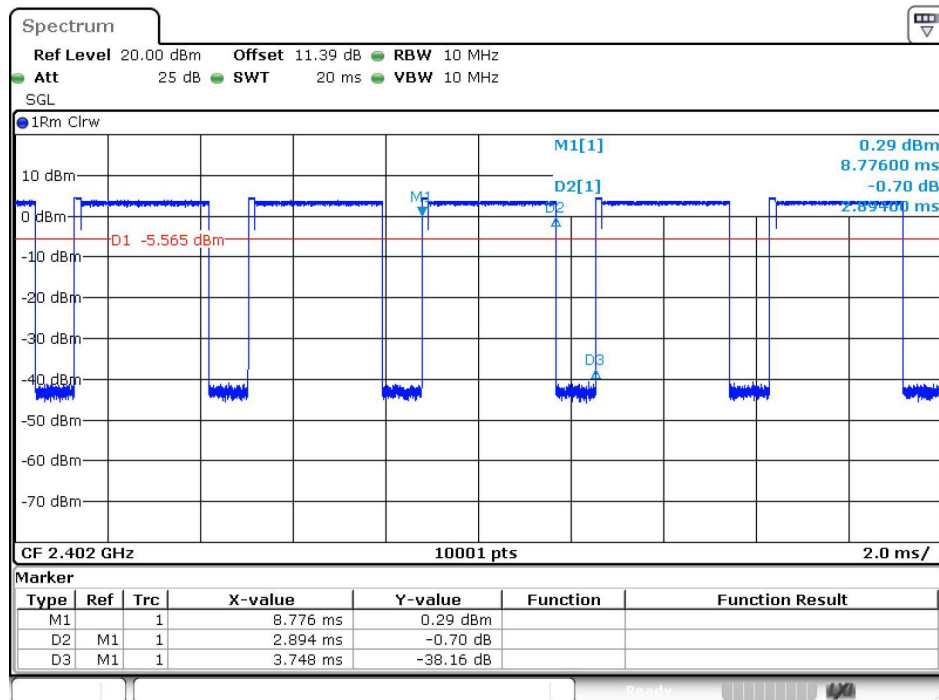
Date: 14.OCT.2024 16:43:47

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



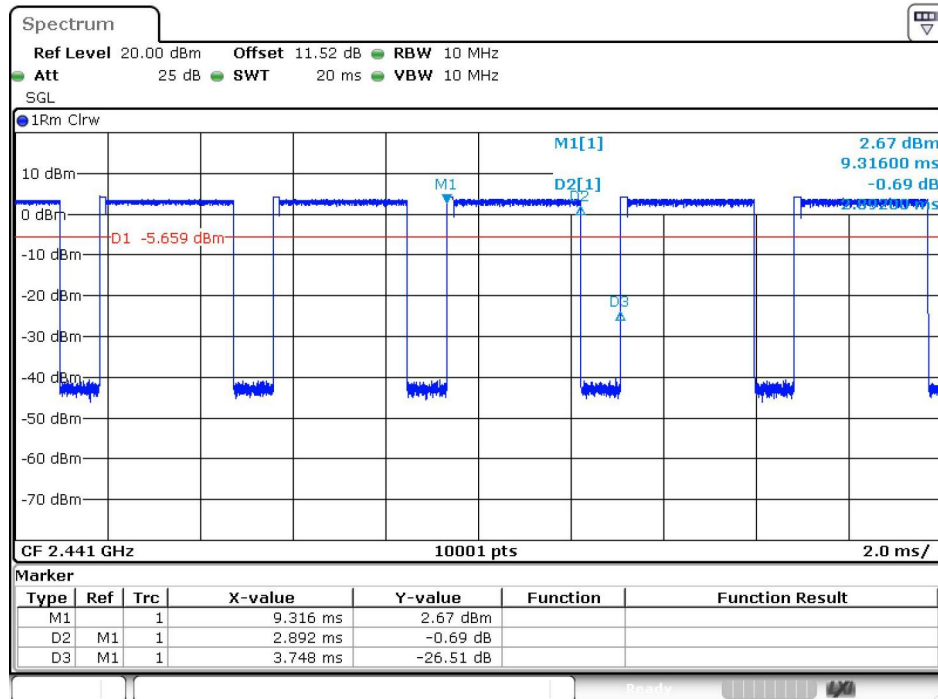
Date: 14.OCT.2024 16:46:17

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



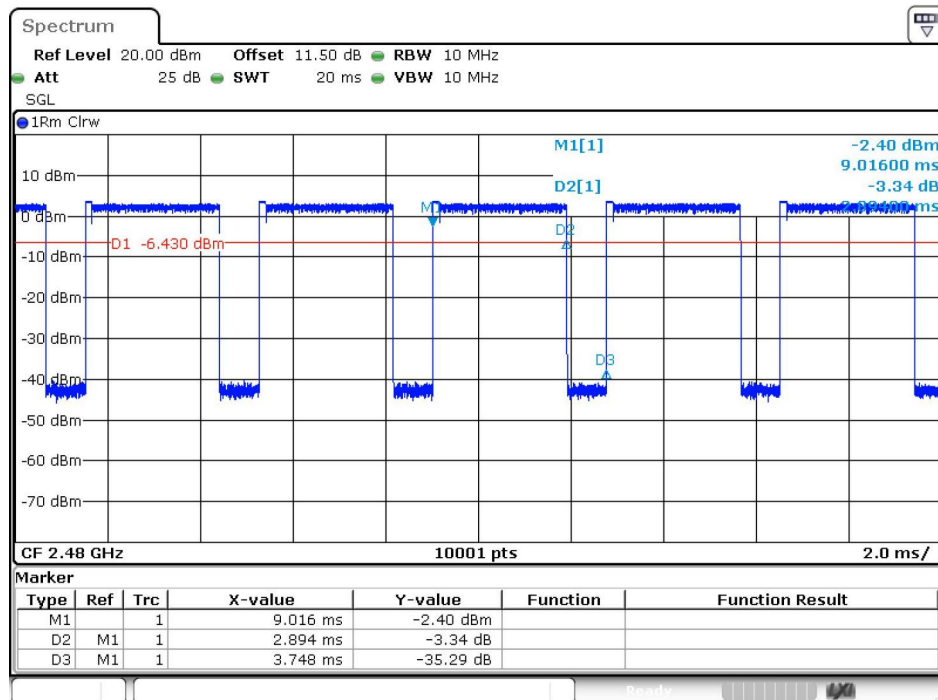
Date: 14.OCT.2024 16:48:39

8DPSK(3-DH5)_Channel 0



Date: 14.OCT.2024 17:01:49

8DPSK(3-DH5)_Channel 39



Date: 14.OCT.2024 17:05:33

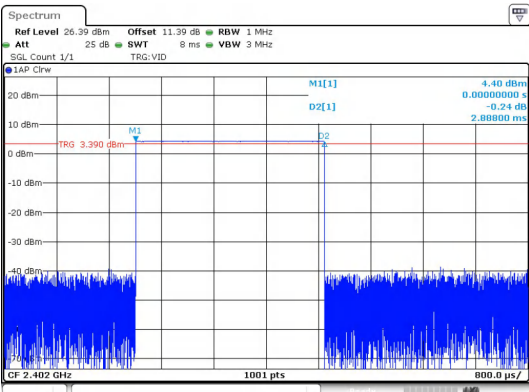
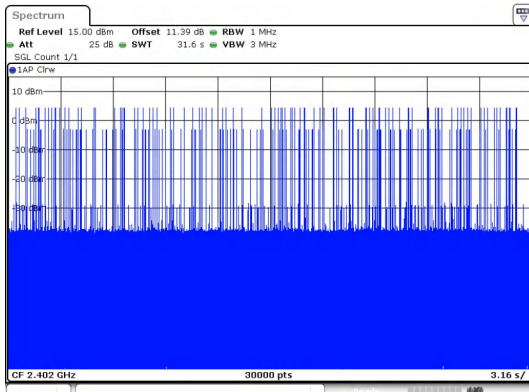
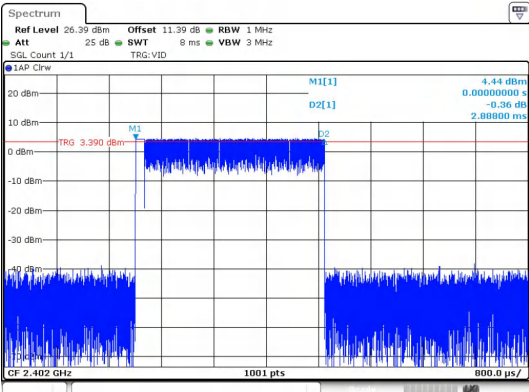
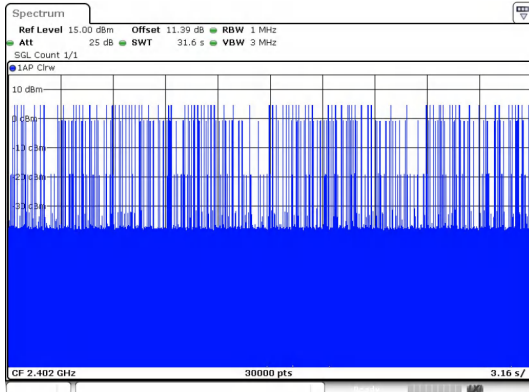
8DPSK(3-DH5)_Channel 78

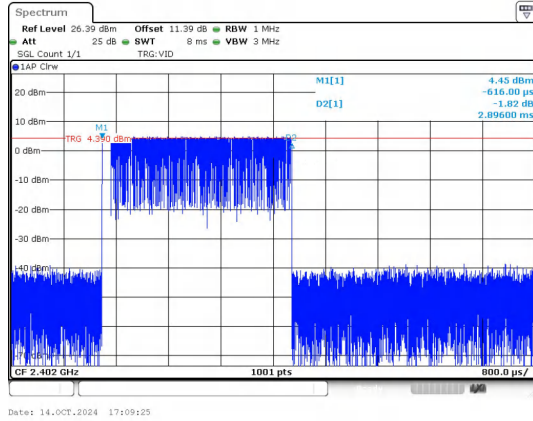
2) Dwell Time

Test Result

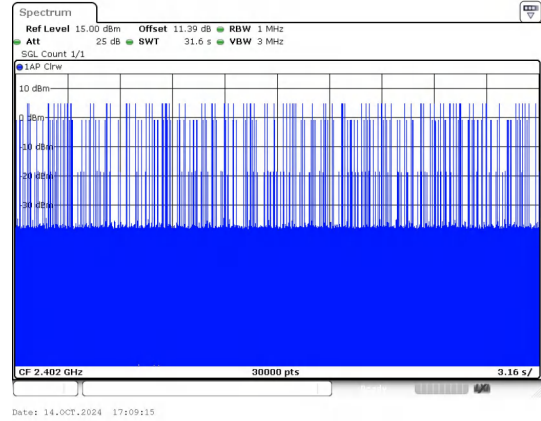
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.888	100	288.8	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.888	110	317.68		PASS
8DPSK	3-DH5		2.896	95	275.12		PASS

Test Graphs

 Date: 14.OCT.2024 16:24:46	 Date: 14.OCT.2024 16:24:35
Pulse Width GFSK_DH5	Number of Pulses in 31.6 seconds GFSK_DH5
 Date: 14.OCT.2024 17:19:45	 Date: 14.OCT.2024 17:19:34
Pulse Width $\pi/4$DQPSK_2-DH5	Number of Pulses in 31.6 seconds $\pi/4$DQPSK_2-DH5



Pulse Width
8DPSK_3-DH5



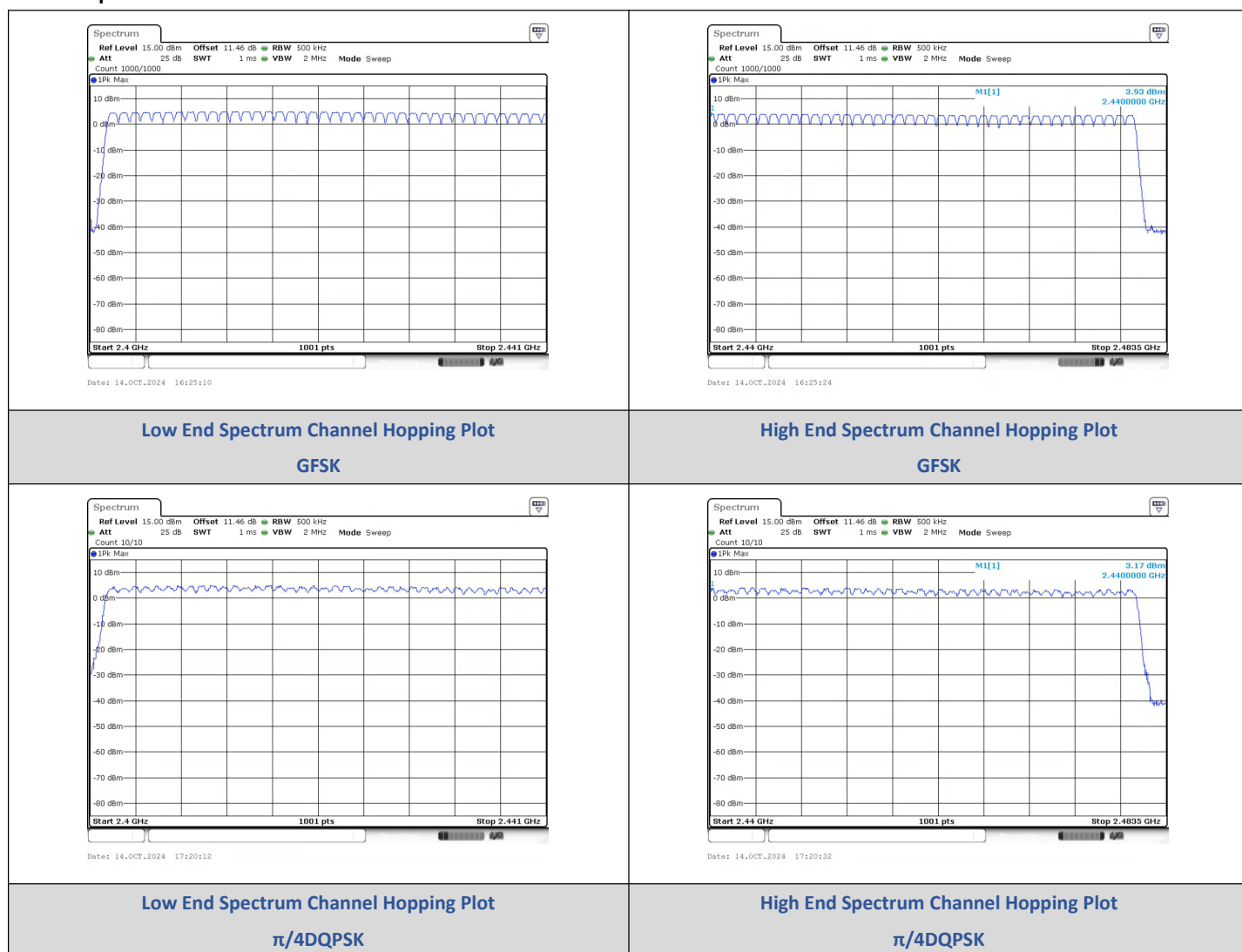
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

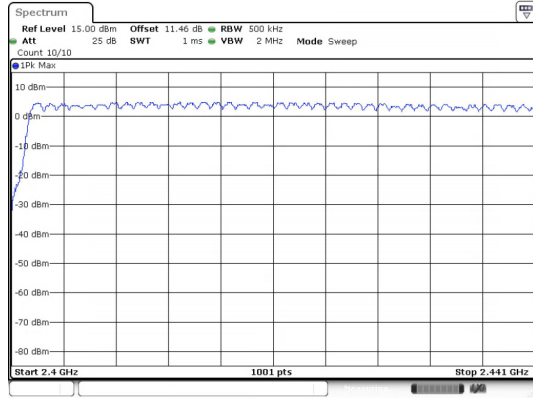
3) Number Of Hopping Channel

Test Result

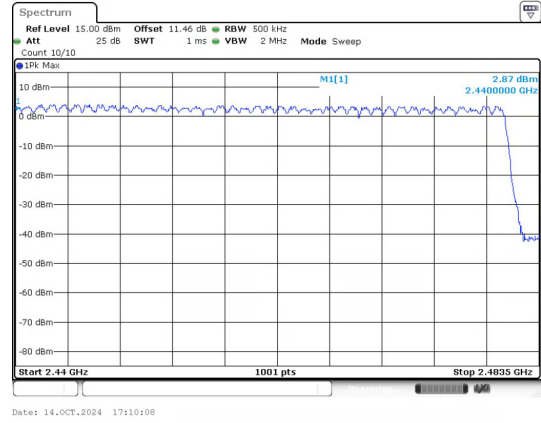
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK



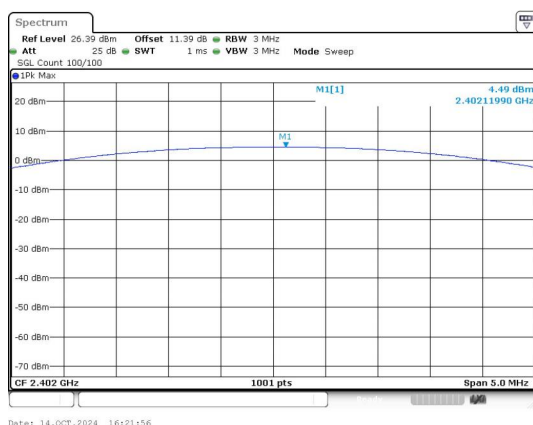
High End Spectrum Channel Hopping Plot
8DPSK

4) Conducted Peak Output Power

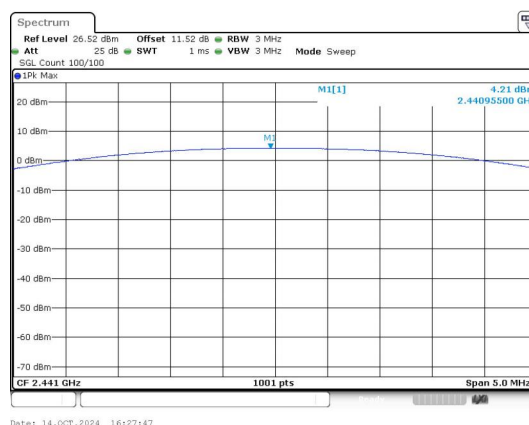
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	4.49	2.81	≤30	PASS
		39	4.21	2.64		PASS
		78	3.66	2.32		PASS
$\pi/4$ DQPSK	2-DH5	0	5.01	3.17	≤20.97	PASS
		39	4.83	3.04		PASS
		78	4.26	2.67		PASS
8DPSK	3-DH5	0	5.17	3.28		PASS
		39	4.51	2.83		PASS
		78	4.06	2.55		PASS

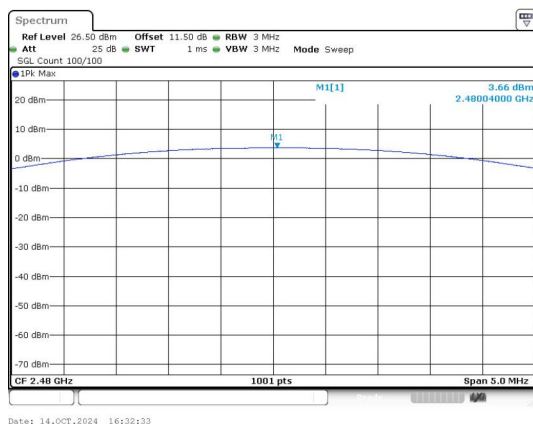
Test Graphs



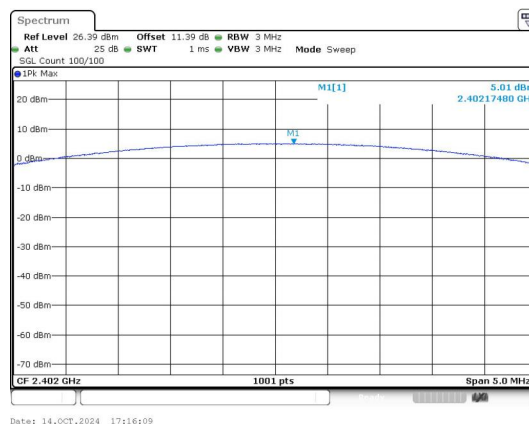
Peak Output Power
GFSK_Channel 0



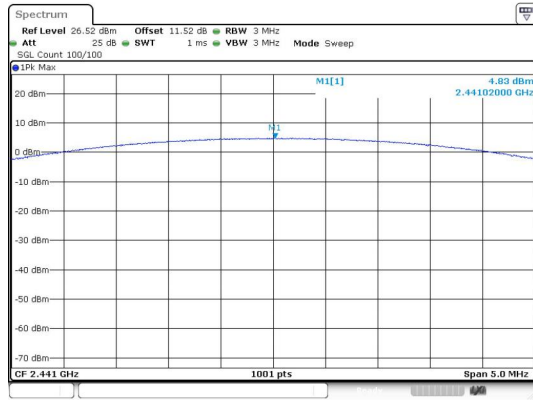
Peak Output Power
GFSK_Channel 39



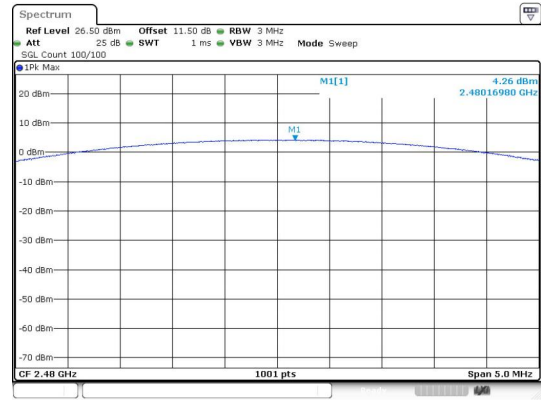
Peak Output Power
GFSK_Channel 78



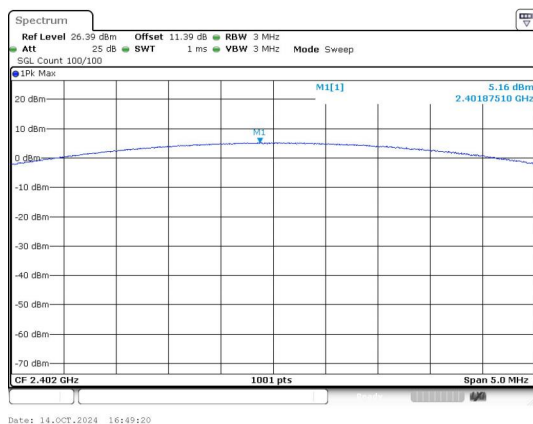
Peak Output Power
 $\pi/4$ DQPSK_Channel 0



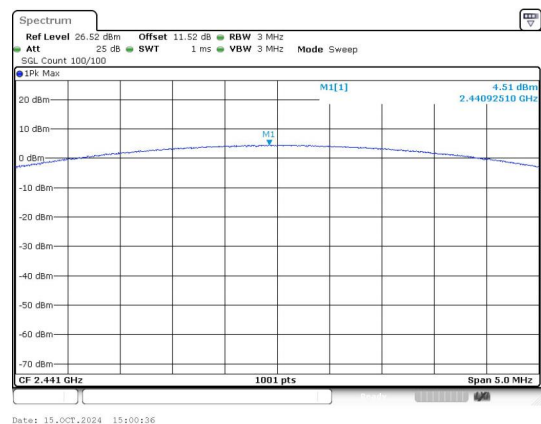
Peak Output Power
 $\pi/4$ DQPSK_Channel 39



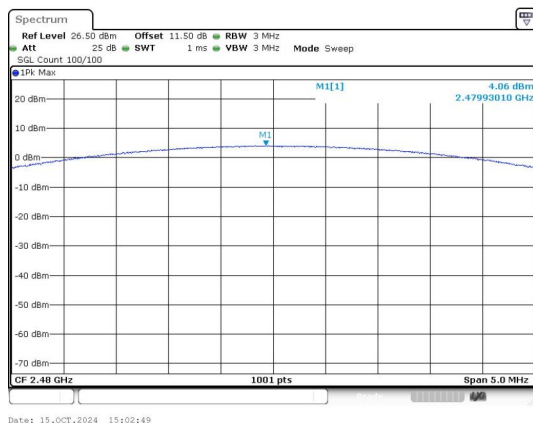
Peak Output Power
 $\pi/4$ DQPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



Peak Output Power
8DPSK_Channel 39



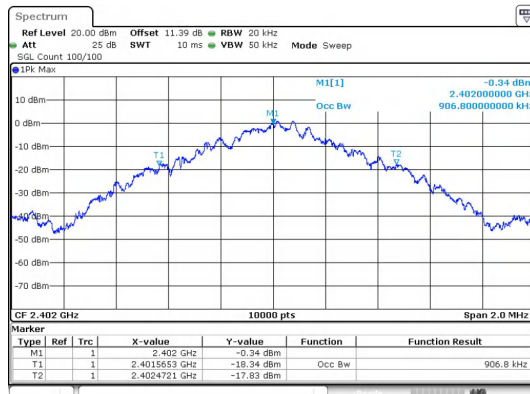
Peak Output Power
8DPSK_Channel 78

5) 99% Bandwidth

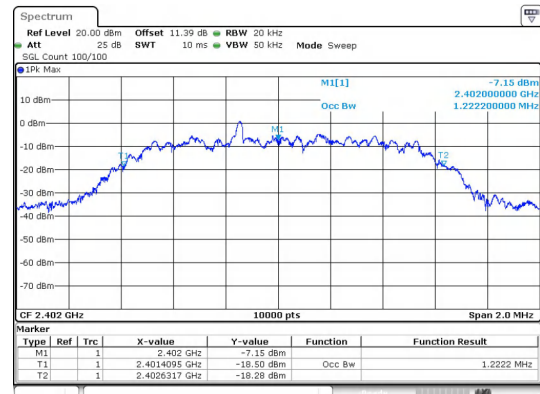
Test Result

Modulation	Channel	Center Frequency (MHz)	99% BW (MHz)
GFSK	0	2402	0.90680
	39	2441	0.89920
	78	2480	0.88280
$\pi/4$ DQPSK	0	2402	1.2220
	39	2441	1.2080
	78	2480	1.2090
8DPSK	0	2402	1.2190
	39	2441	1.2220
	78	2480	1.2140

Test Graphs

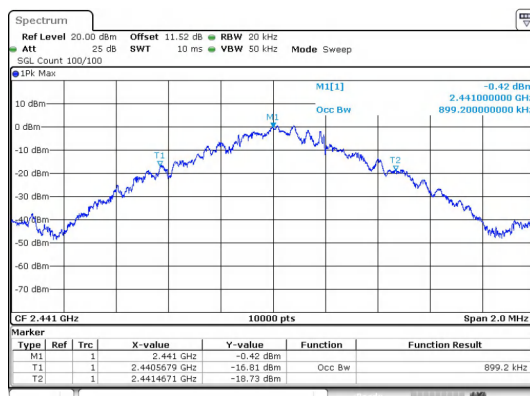


Date: 14.OCT.2024 16:21:30

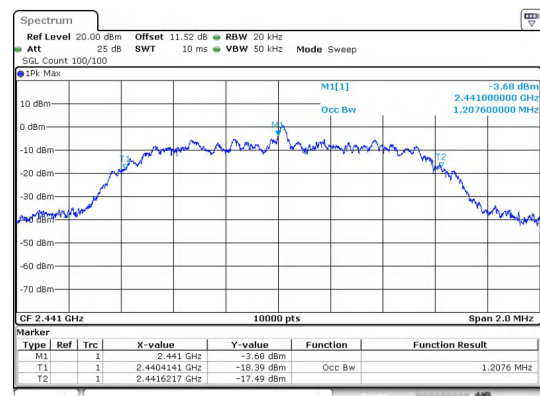


Date: 14.OCT.2024 17:15:41

GFSK_DH5_Channel 0

 $\pi/4$ DQPSK_2-DH5_Channel 0


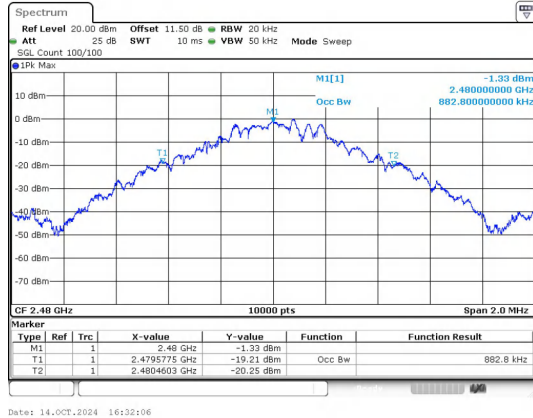
Date: 14.OCT.2024 16:27:20



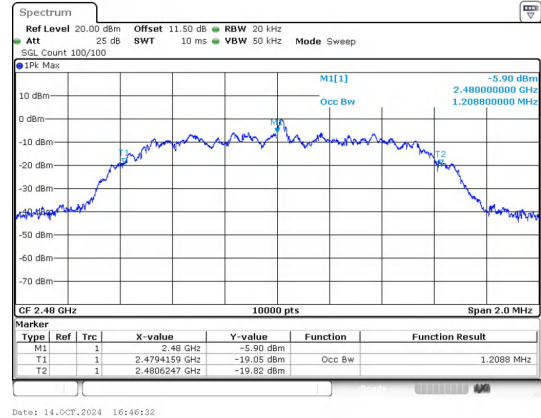
Date: 14.OCT.2024 16:44:01

GFSK_DH5_Channel 39

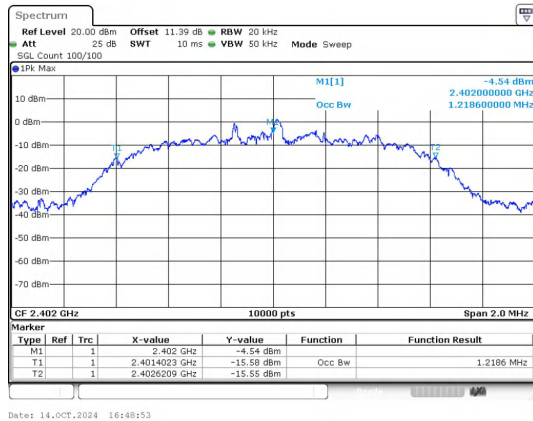
 $\pi/4$ DQPSK_2-DH5_Channel 39



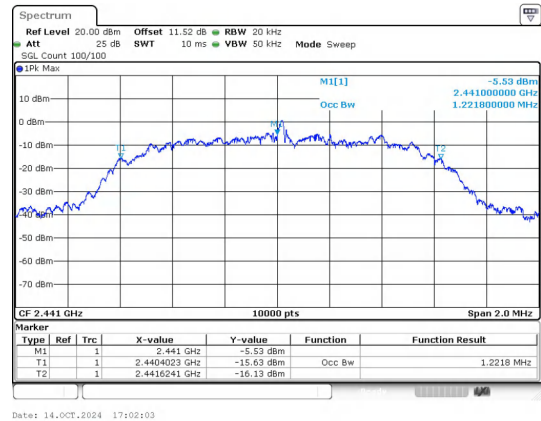
GFSK_DH5_Channel 78



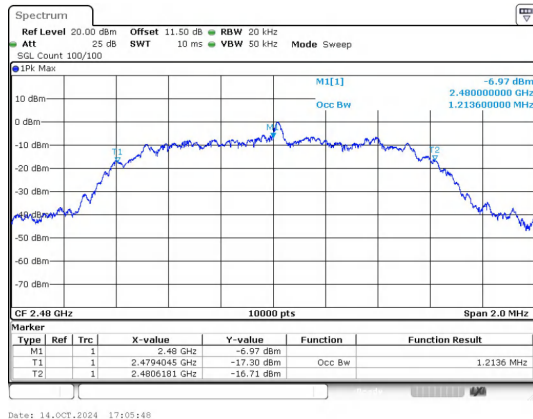
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



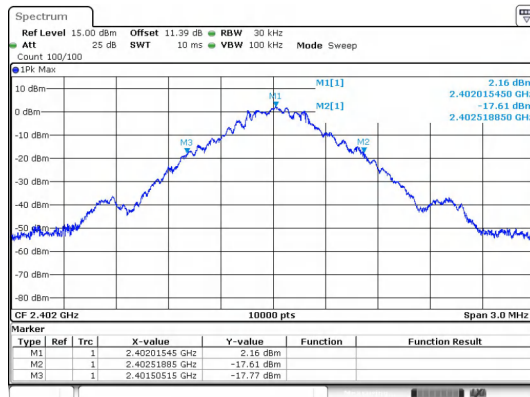
8DPSK_3-DH5_Channel 78

6) 20dB Bandwidth

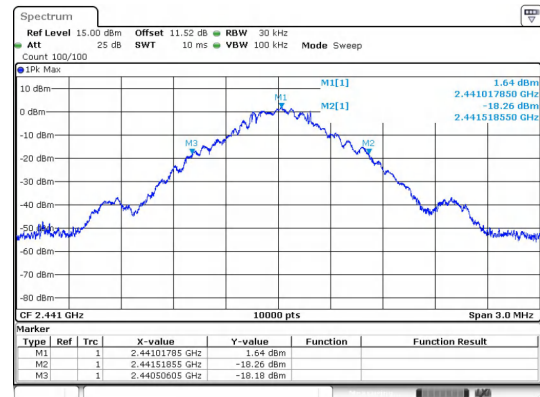
Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.010
	39	2441 MHz	1.010
	78	2480 MHz	1.000
$\pi/4$ DQPSK	0	2402 MHz	1.320
	39	2441 MHz	1.320
	78	2480 MHz	1.310
8DPSK	0	2402 MHz	1.300
	39	2441 MHz	1.290
	78	2480 MHz	1.300

Test Graphs



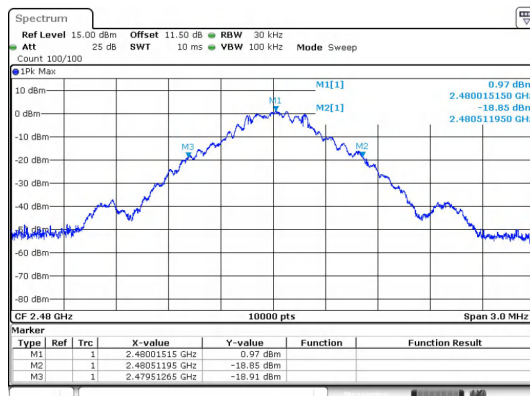
Date: 14.OCT.2024 16:21:46



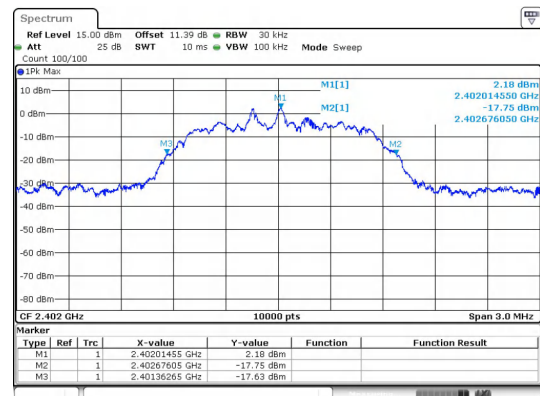
Date: 14.OCT.2024 16:27:36

GFSK_DH5_Channel 0

GFSK_DH5_Channel 39



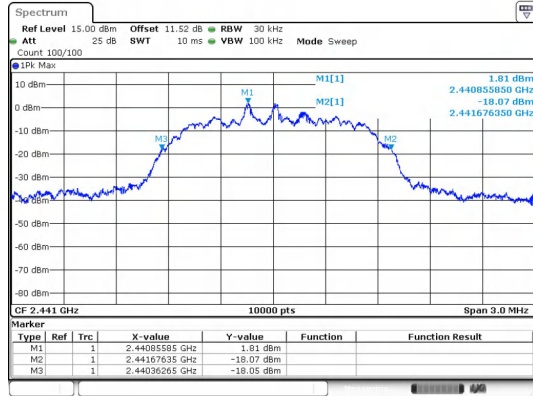
Date: 14.OCT.2024 16:32:22



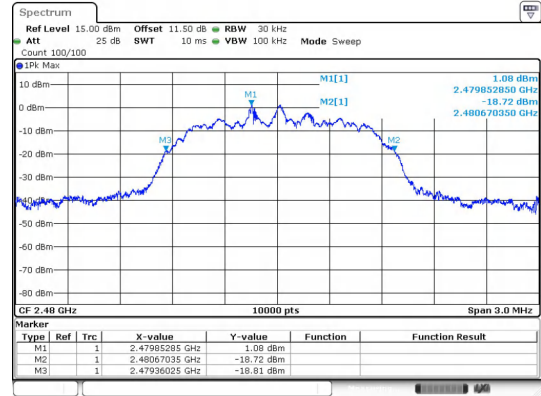
Date: 14.OCT.2024 17:21:57

GFSK_DH5_Channel 78

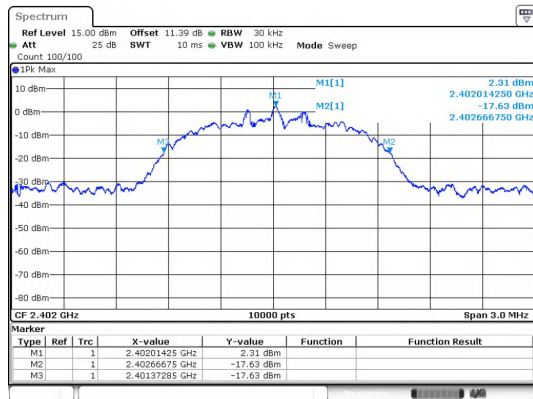
 $\pi/4$ DQPSK_2-DH5_Channel 0



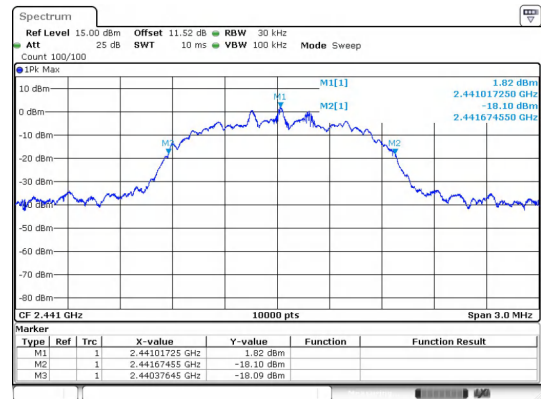
$\pi/4$ DQPSK_2-DH5_Channel 39



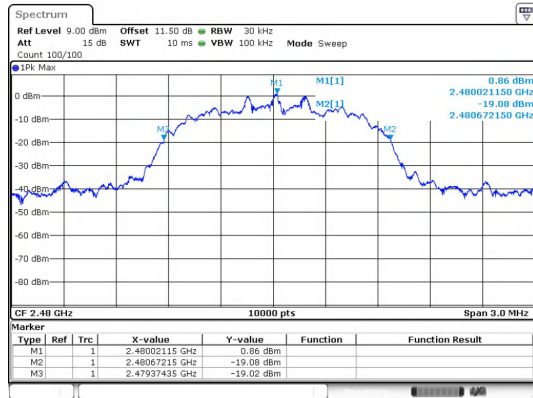
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



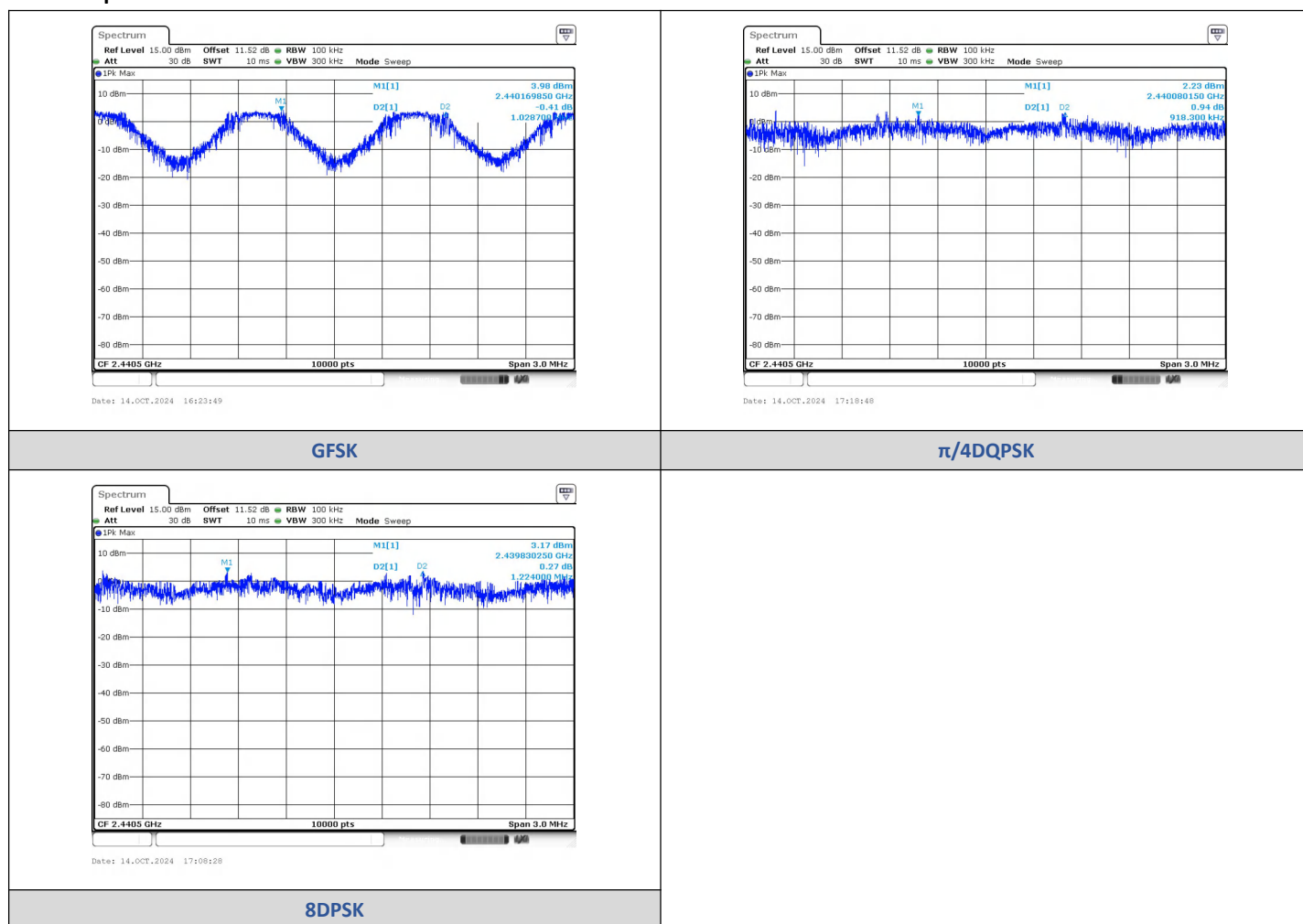
8DPSK_3-DH5_Channel 78

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	2440.1699	2441.1986	1.0287	1.01	PASS
$\pi/4$ DQPSK	2-DH5	2440.0801	2440.9985	0.9183	0.88	PASS
8DPSK	3-DH5	2439.8302	2441.0543	1.2240	0.87	PASS

Test Graphs



8) Conducted Out Of Band Emission

Test Result

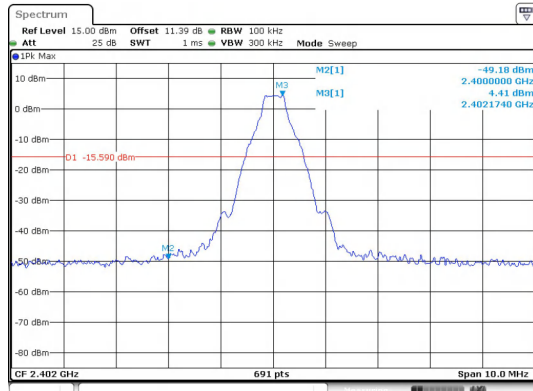
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-49.183	-15.59	-33.593	PASS
			7205.96	-38.382	-15.59	-22.792	PASS
		39	5743.55	-38.282	-15.88	-22.402	PASS
		78	2483.50	-50.125	-16.44	-33.685	PASS
			9920.20	-37.932	-16.44	-21.492	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-43.453	-15.7	-27.753	PASS
			7205.96	-38.040	-15.7	-22.340	PASS
		39	9763.72	-40.180	-15.97	-24.210	PASS
		78	2483.50	-50.293	-16.53	-33.763	PASS
			9920.20	-38.298	-16.53	-21.768	PASS
8DPSK	3-DH5	0	2400.00	-45.827	-15.57	-30.257	PASS
			7205.96	-42.855	-15.57	-27.285	PASS
		39	9763.72	-39.906	-15.94	-23.966	PASS
		78	2483.50	-49.069	-16.83	-32.239	PASS
			9920.20	-38.869	-16.83	-22.039	PASS

Hopping

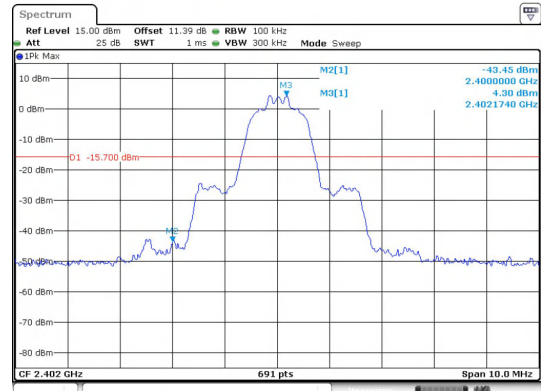
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2398.39	-47.874	-16.04	-31.834	PASS
			2400.00	-49.265	-16.04	-33.225	PASS
			2483.50	-49.887	-16.87	-33.017	PASS
$\pi/4$ DQPSK	2-DH5		2398.74	-48.031	-15.52	-32.511	PASS
			2400.00	-50.211	-15.52	-34.691	PASS
			2483.50	-48.658	-16.56	-32.099	PASS
8DPSK	3-DH5		2400.00	-47.240	-15.61	-31.630	PASS
			2483.50	-48.684	-17.95	-30.734	PASS

Test Graphs



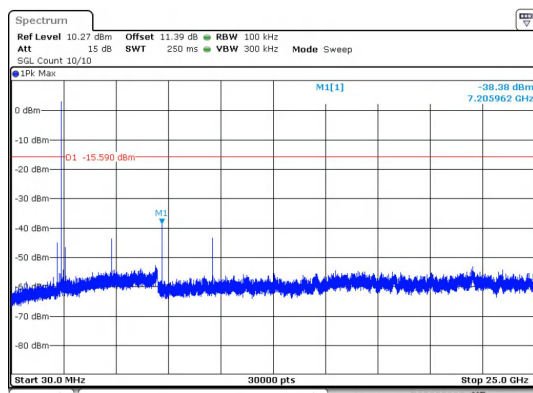
Date: 14.OCT.2024 16:22:38

Out Of Band Emission
GFSK_DH5_Channel 0



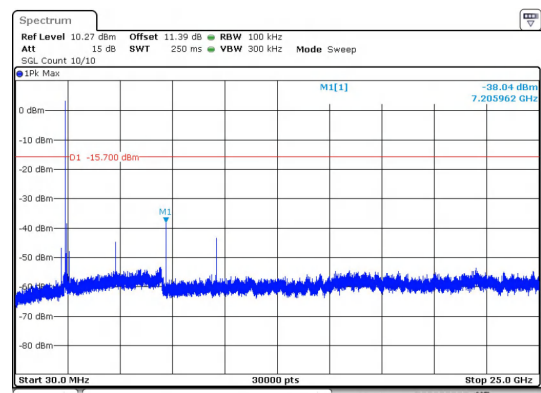
Date: 14.OCT.2024 17:16:51

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



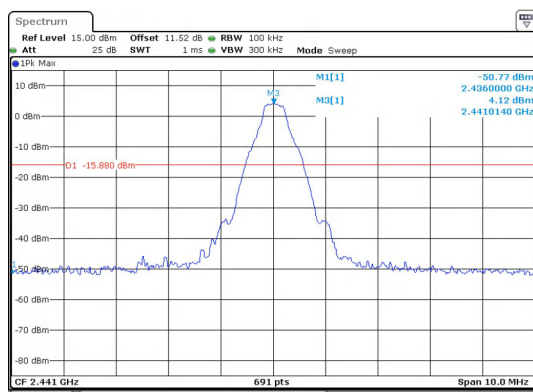
Date: 14.OCT.2024 16:23:00

30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



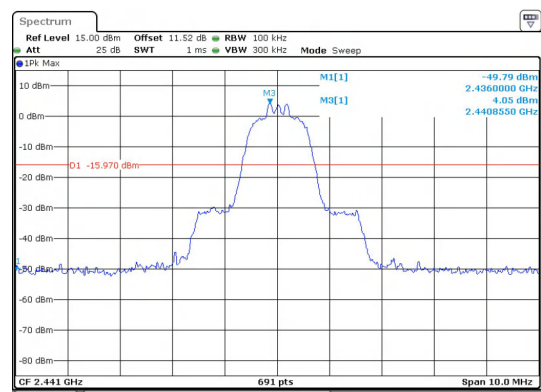
Date: 14.OCT.2024 17:17:13

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



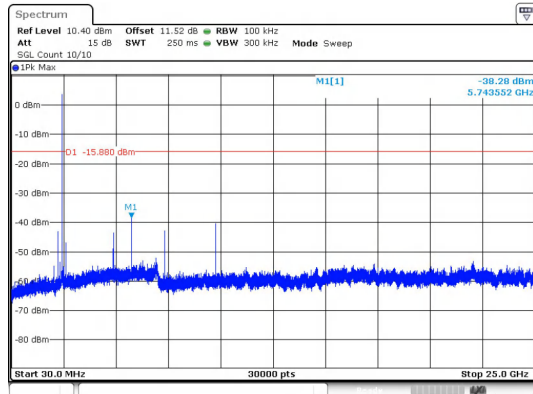
Date: 14.OCT.2024 16:28:24

Out Of Band Emission
GFSK_DH5_Channel 39



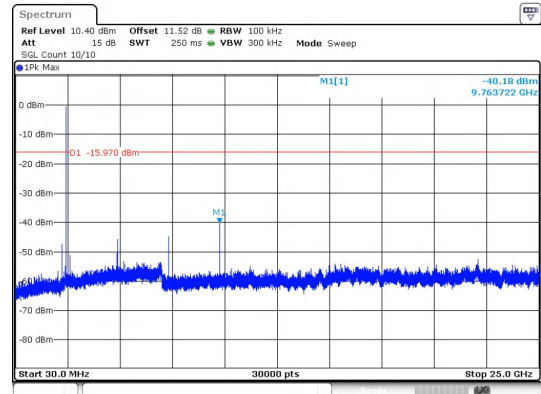
Date: 14.OCT.2024 16:45:03

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



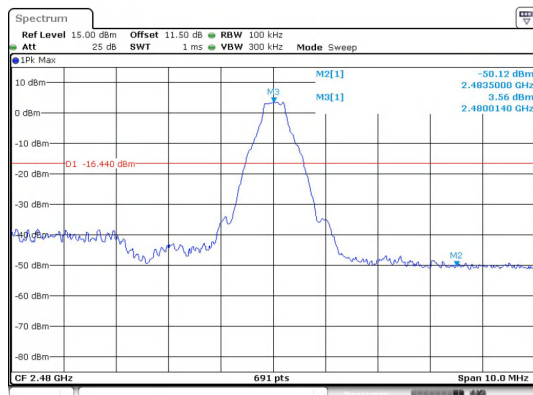
Date: 14.OCT.2024 16:28:46

30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



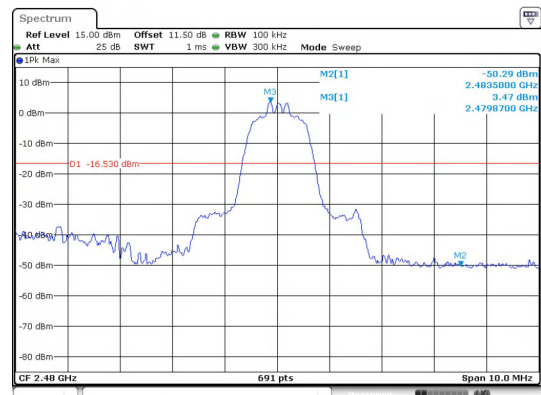
Date: 14.OCT.2024 16:45:25

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



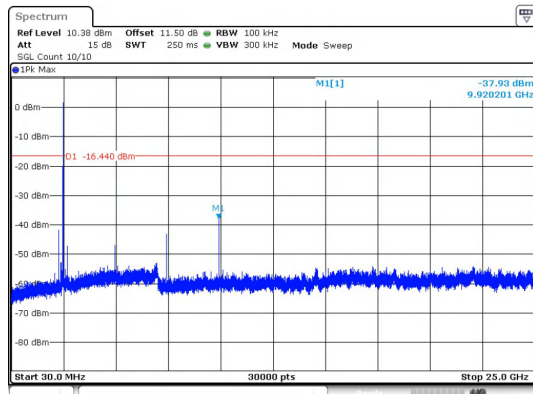
Date: 14.OCT.2024 16:33:14

Out Of Band Emission
GFSK_DH5_Channel 78



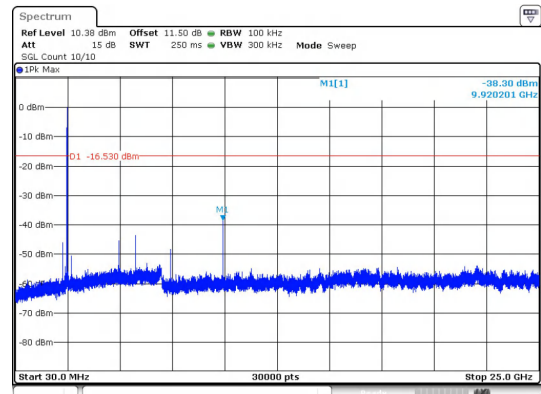
Date: 14.OCT.2024 16:47:39

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



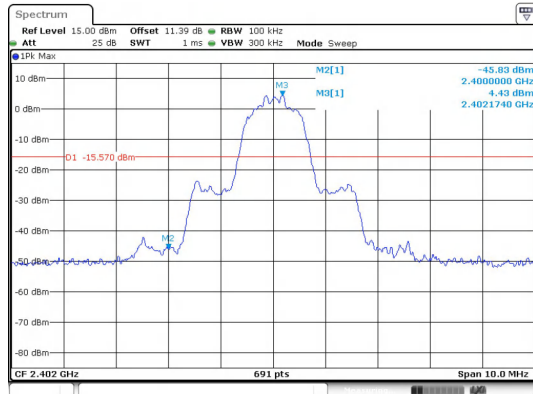
Date: 14.OCT.2024 16:33:36

30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78

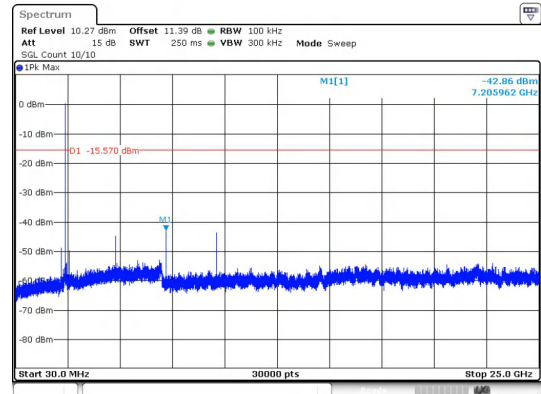


Date: 14.OCT.2024 16:48:01

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



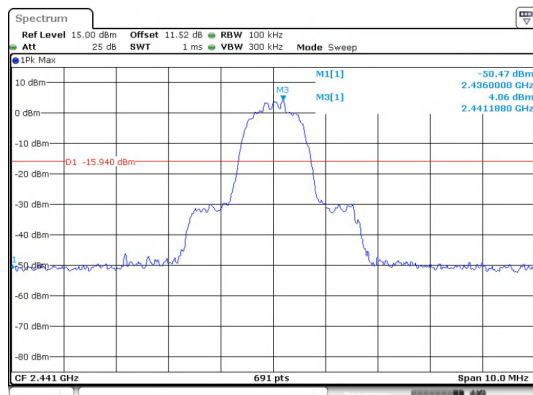
Date: 14.OCT.2024 16:50:01



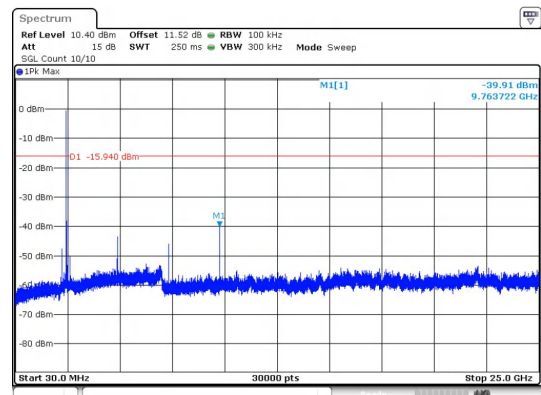
Date: 14.OCT.2024 16:50:23

Out Of Band Emission
8DPSK_3-DH5_Channel 0

30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



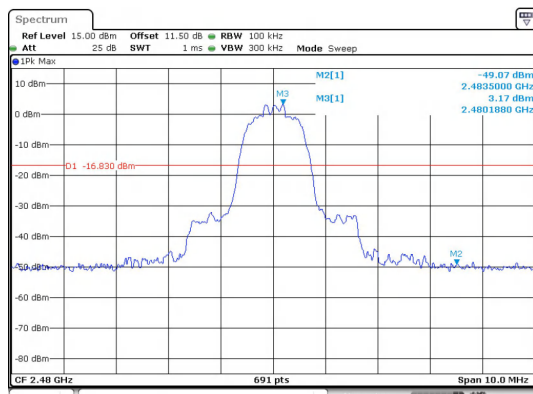
Date: 14.OCT.2024 17:03:06



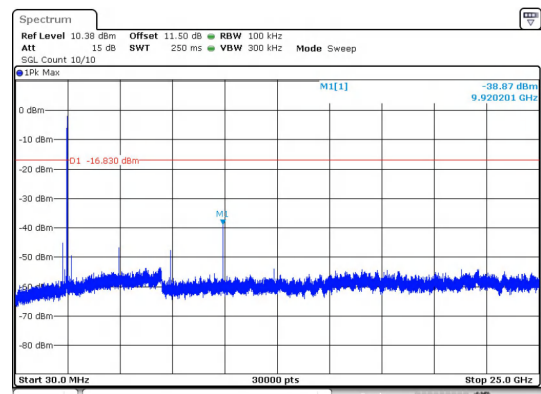
Date: 14.OCT.2024 17:03:28

Out Of Band Emission
8DPSK_3-DH5_Channel 39

30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



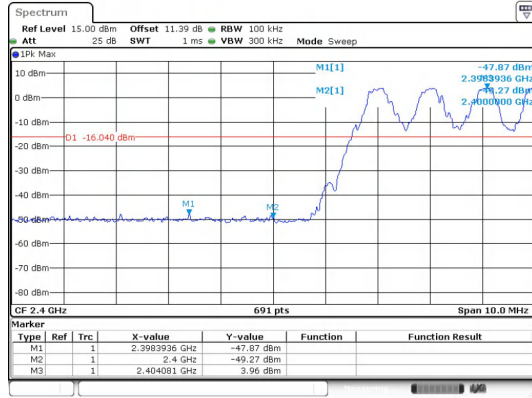
Date: 15.OCT.2024 15:29:05



Date: 15.OCT.2024 15:29:27

Out Of Band Emission
8DPSK_3-DH5_Channel 78

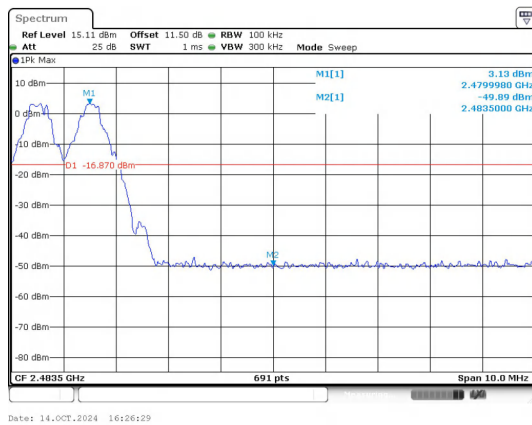
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



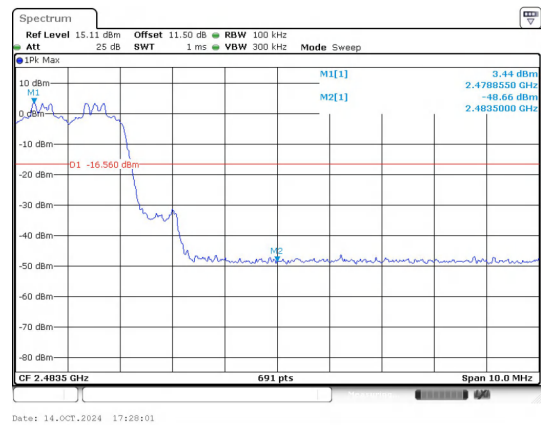
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



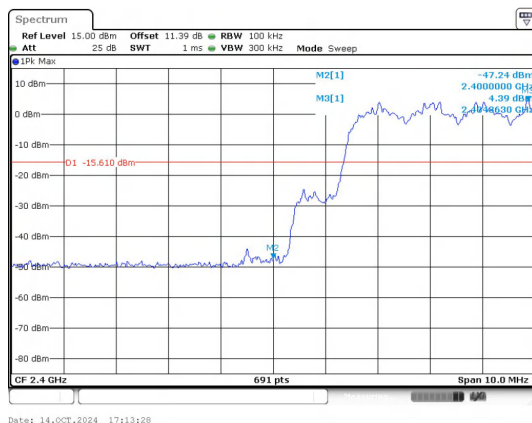
Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



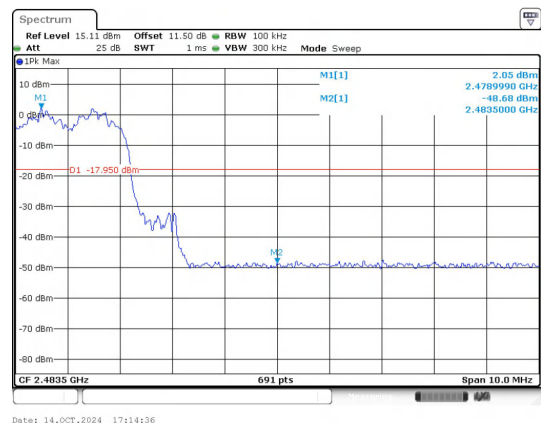
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



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