

Appendix A

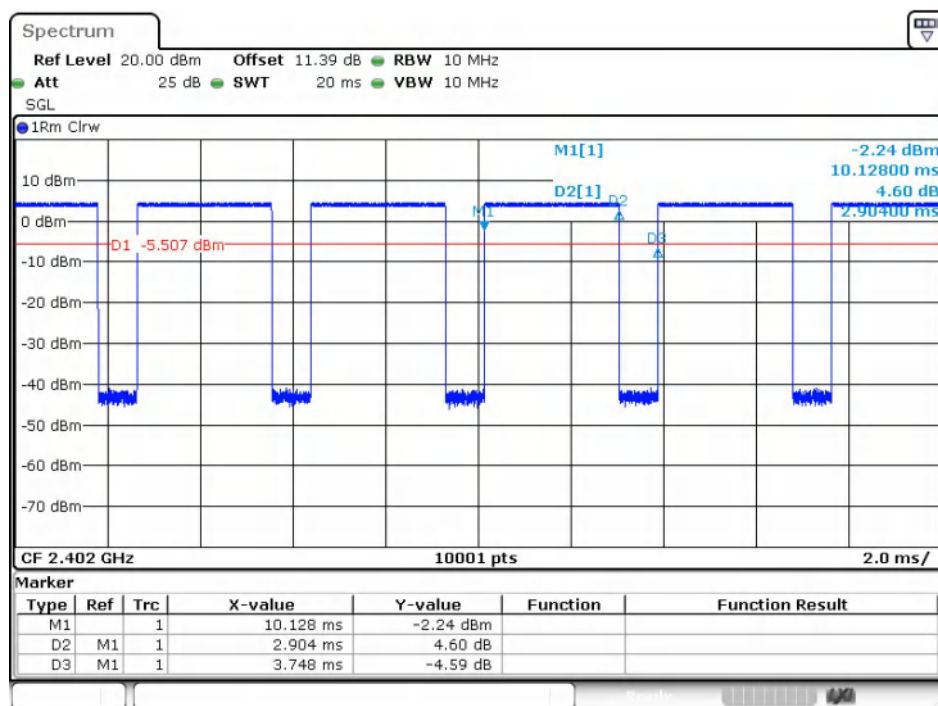
Report No.:	CISRR241012048
FCC ID:	2BFNQM41
Product Name:	TWS wireless Bluetooth headset
Model No.:	M41
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

1) Duty Cycle

Test Result

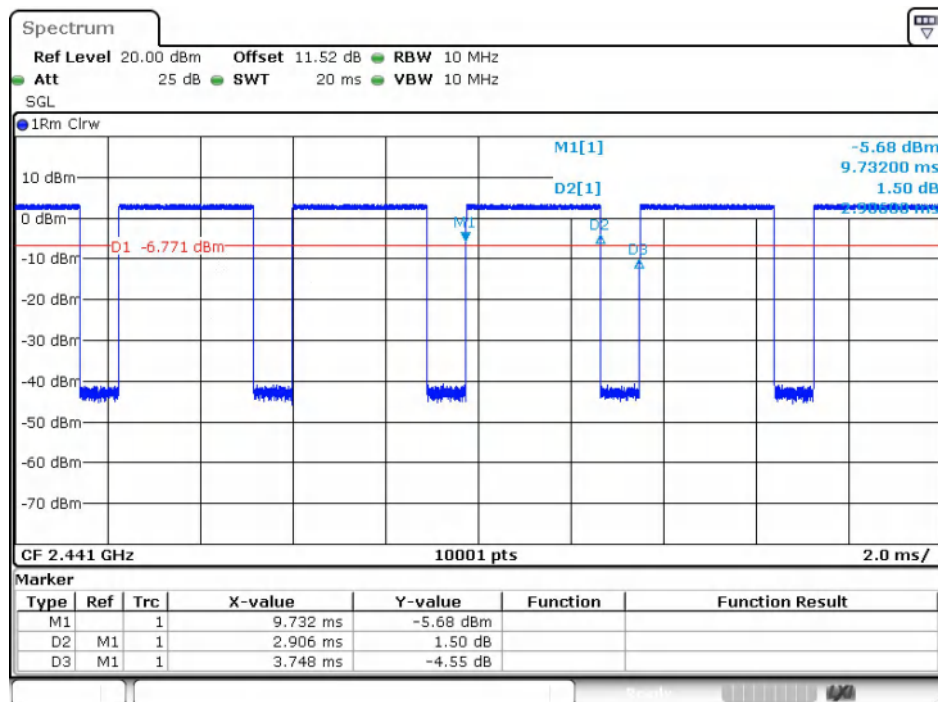
Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.904	3.748	77.48	0.7748	1.1081	0.34
		39	2.906	3.748	77.53	0.7753	1.1053	0.34
		78	2.906	3.748	77.53	0.7753	1.1053	0.34
$\pi/4$ DQPSK	2-DH5	0	2.912	3.748	77.69	0.7769	1.0963	0.34
		39	2.910	3.748	77.64	0.7764	1.0991	0.34
		78	2.910	3.748	77.64	0.7764	1.0991	0.34
8DPSK	3-DH5	0	2.914	3.748	77.75	0.7775	1.093	0.34
		39	2.912	3.748	77.69	0.7769	1.0963	0.34
		78	2.912	3.748	77.69	0.7769	1.0963	0.34

Test Graphs



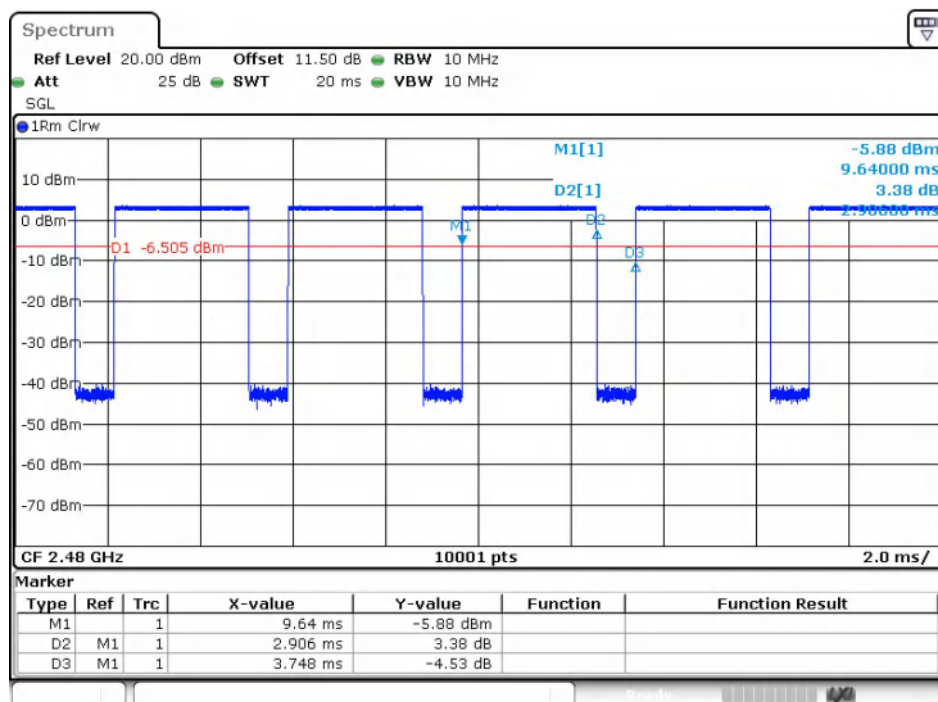
Date: 17.OCT.2024 11:06:21

GFSK(DH5)_Channel 0



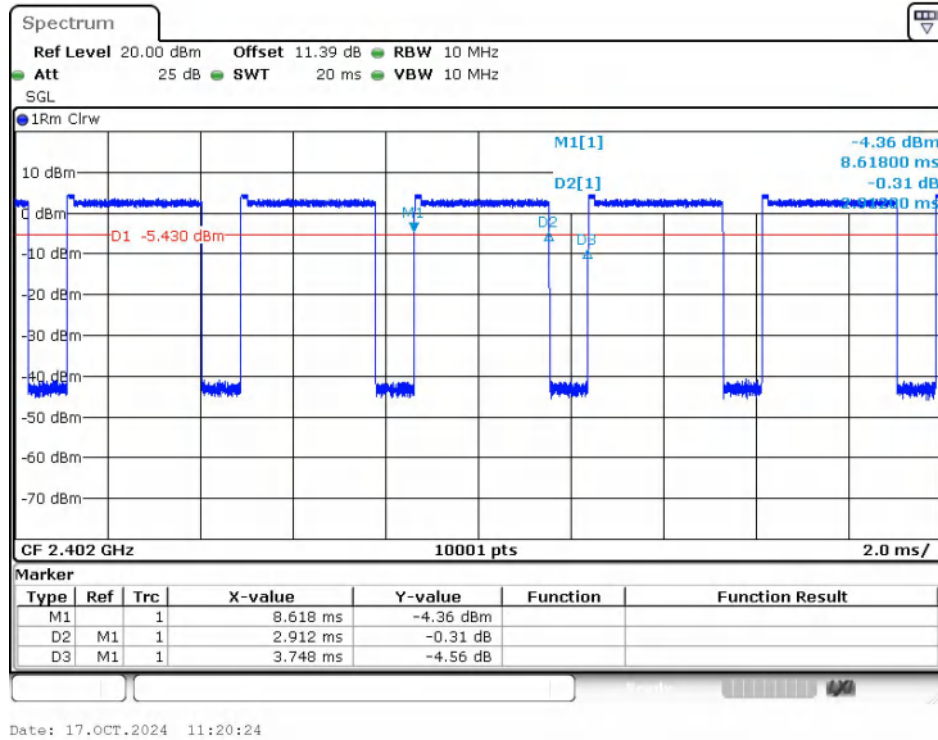
Date: 17.OCT.2024 11:14:06

GFSK(DH5)_Channel 39

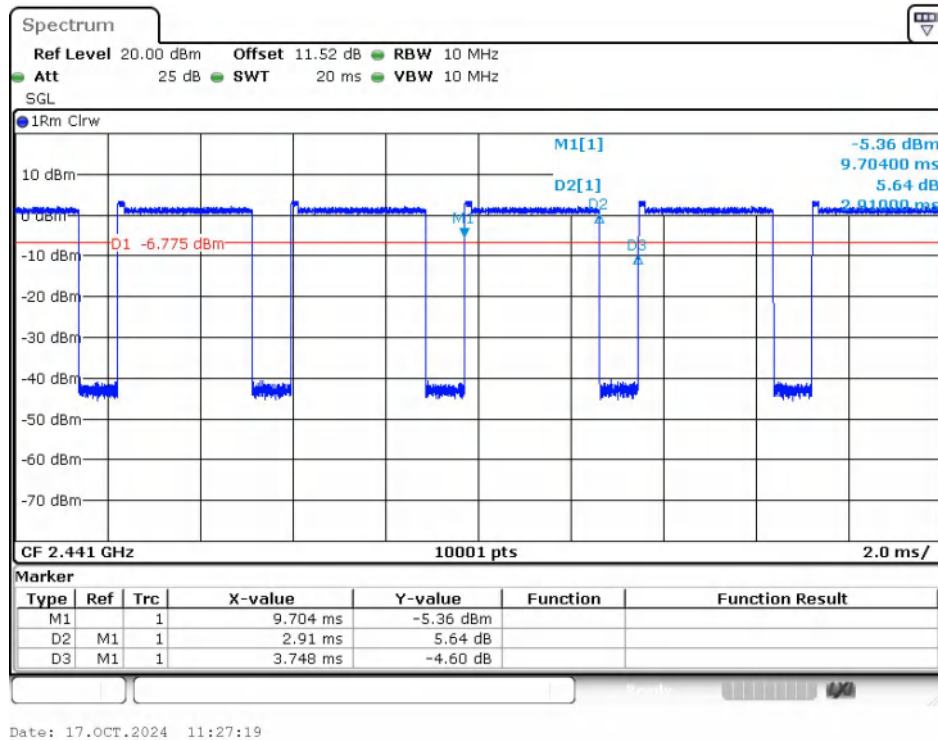


Date: 17.OCT.2024 11:16:59

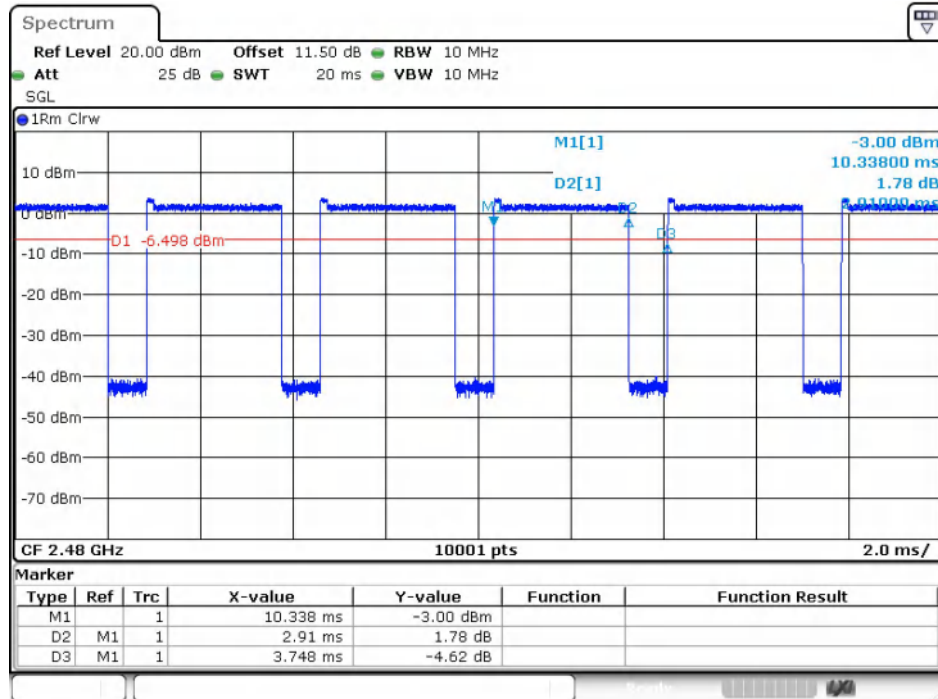
GFSK(DH5)_Channel 78



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

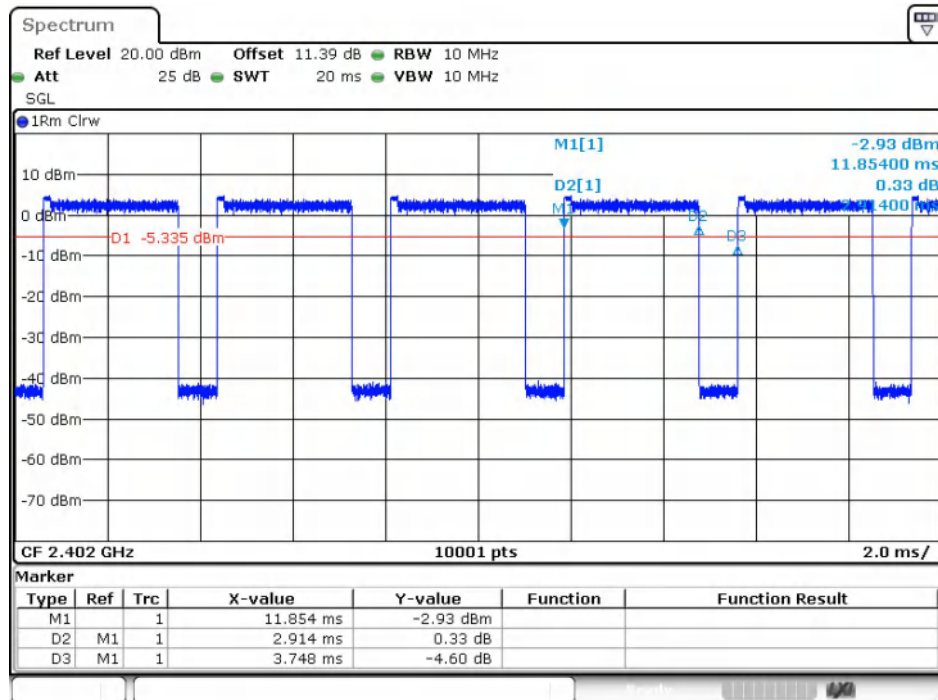


$\pi/4$ DQPSK(2-DH5)_Channel 39



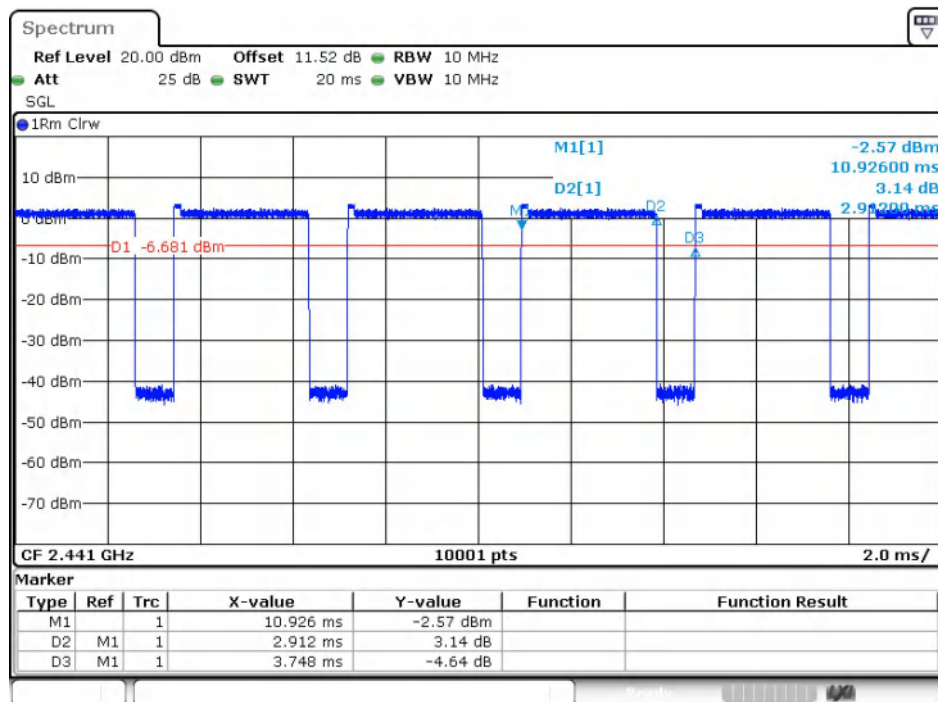
Date: 17.OCT.2024 11:29:27

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



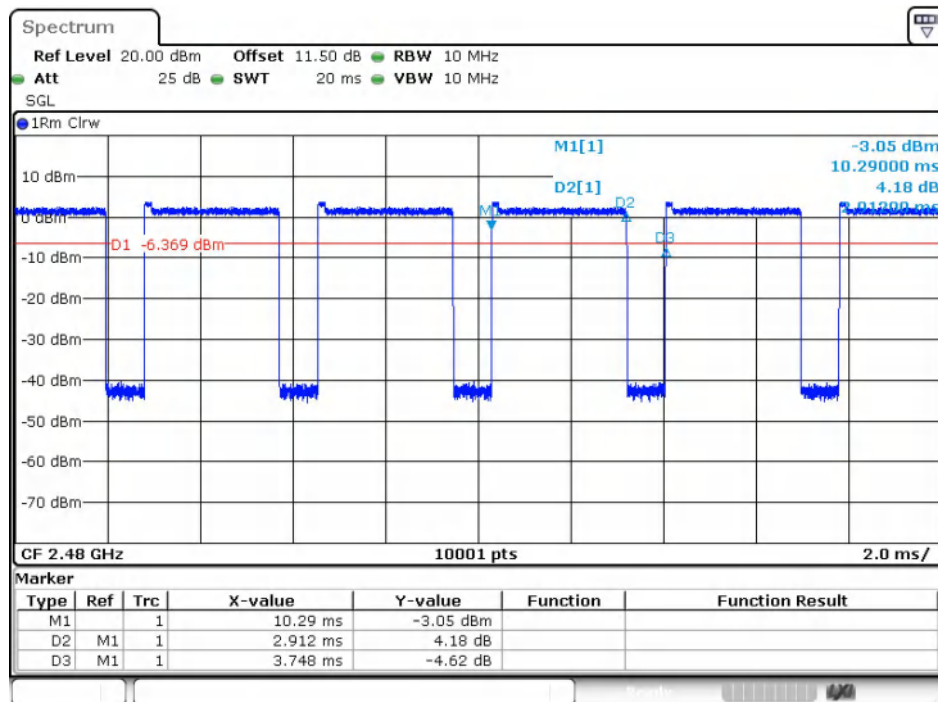
Date: 17.OCT.2024 11:32:39

8DPSK(3-DH5)_Channel 0



Date: 17.OCT.2024 11:40:47

8DPSK(3-DH5)_Channel 39



Date: 17.OCT.2024 11:43:02

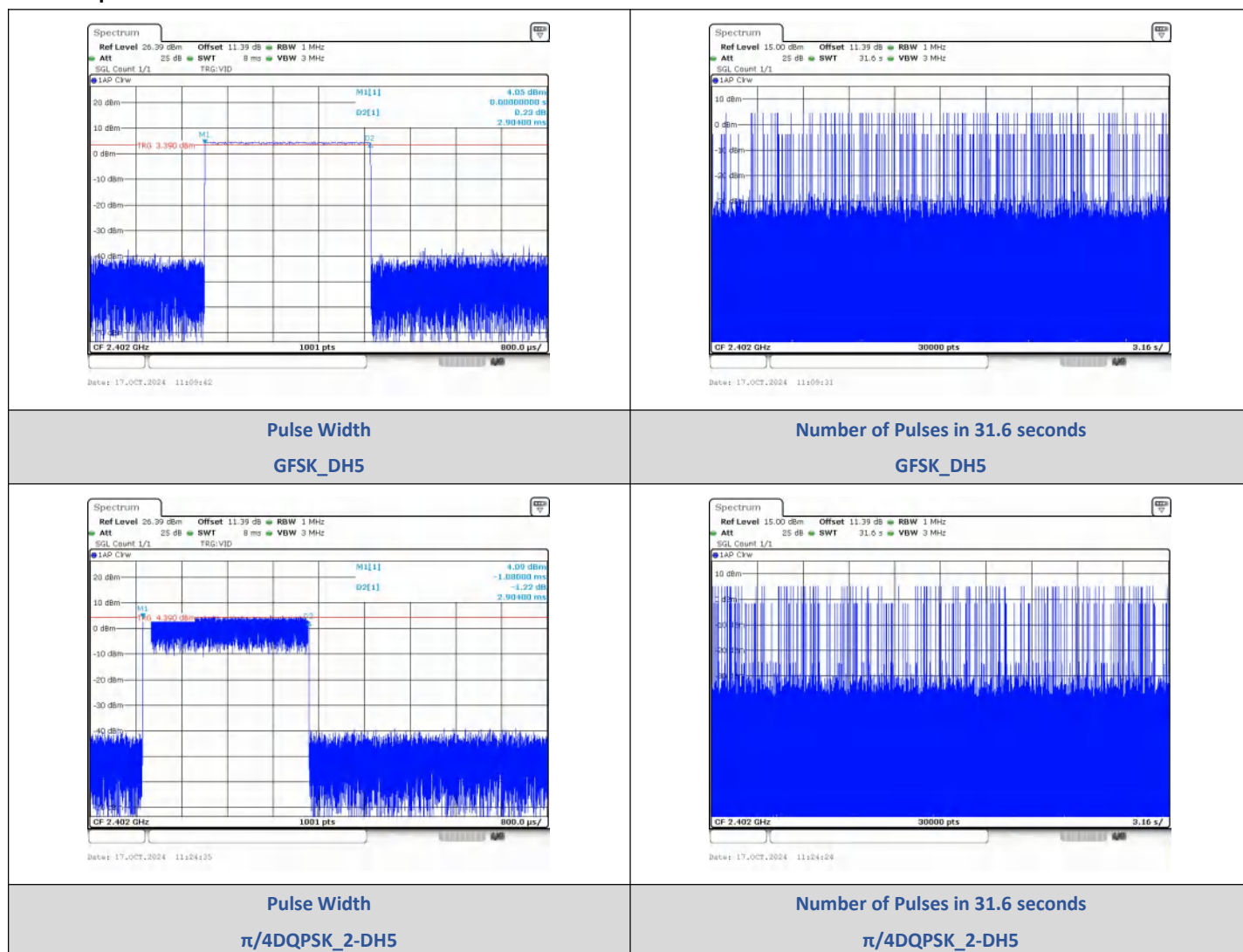
8DPSK(3-DH5)_Channel 78

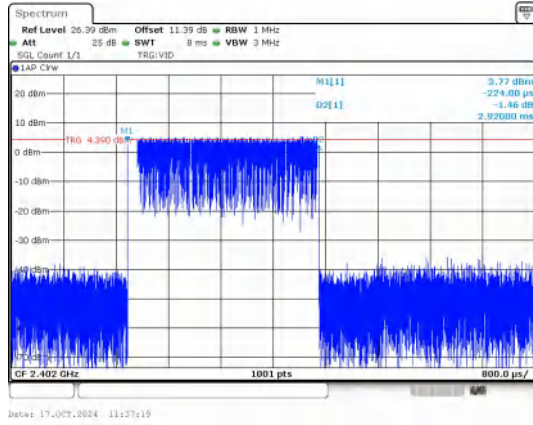
2) Dwell Time

Test Result

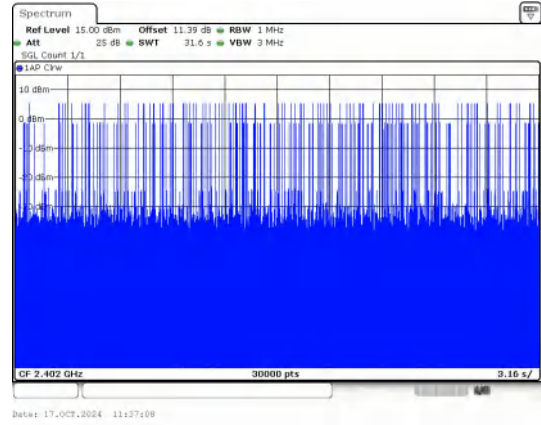
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.904	103	299.11	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.904	111	322.34		PASS
8DPSK	3-DH5		2.920	103	300.76		PASS

Test Graphs





Pulse Width
8DPSK_3-DH5



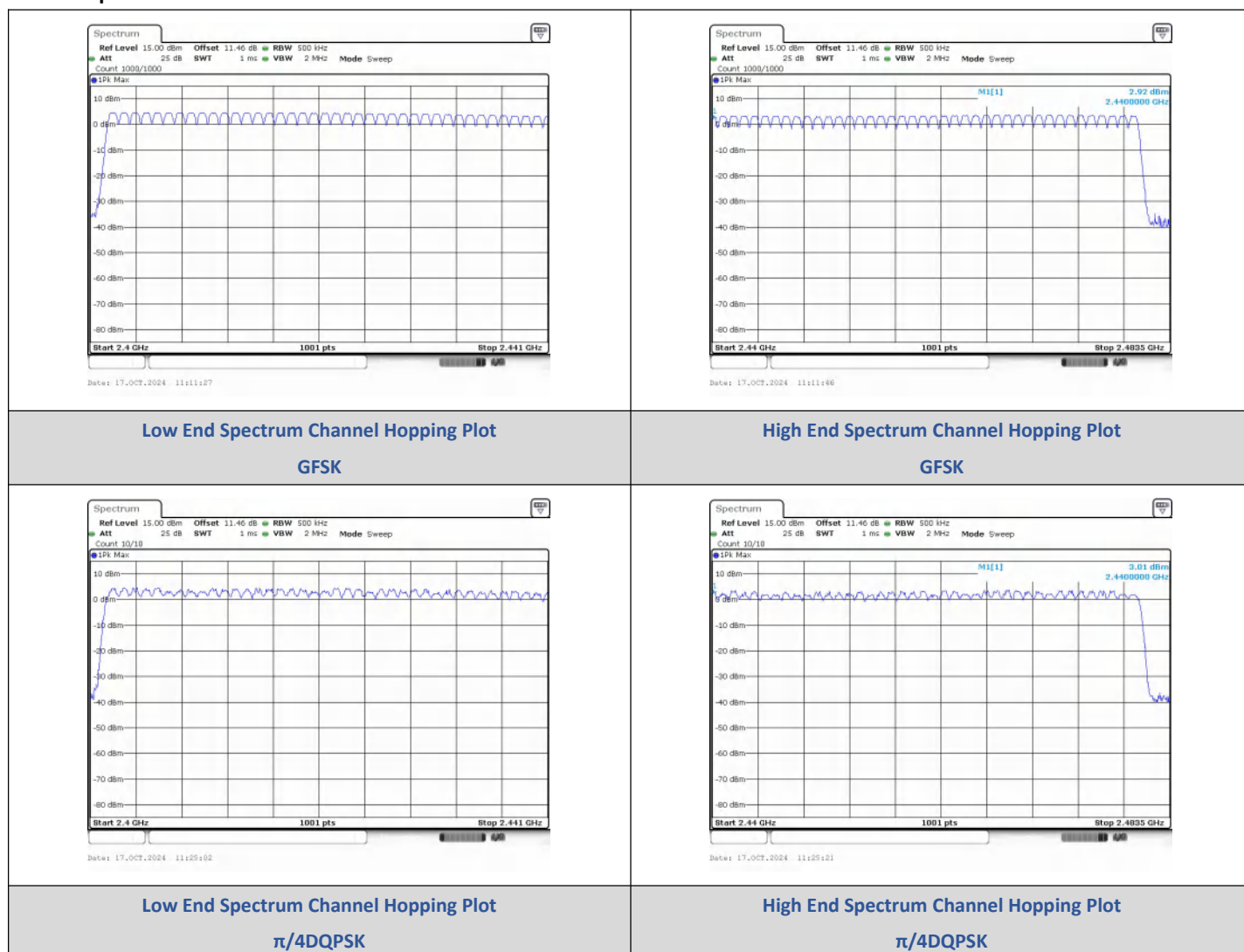
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

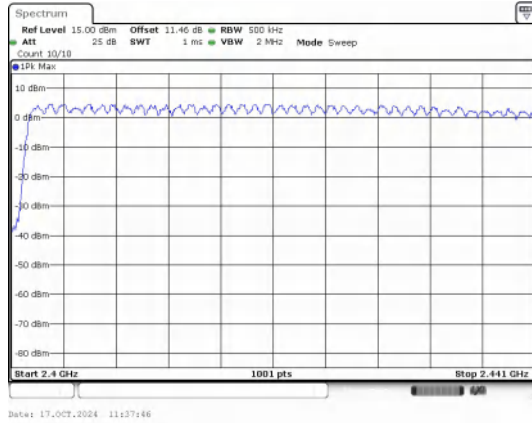
3) Number Of Hopping Channel

Test Result

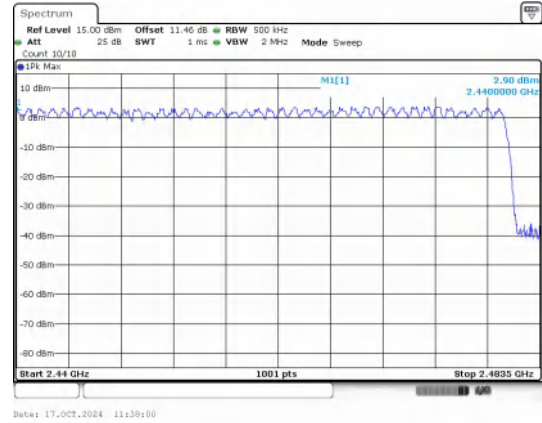
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK



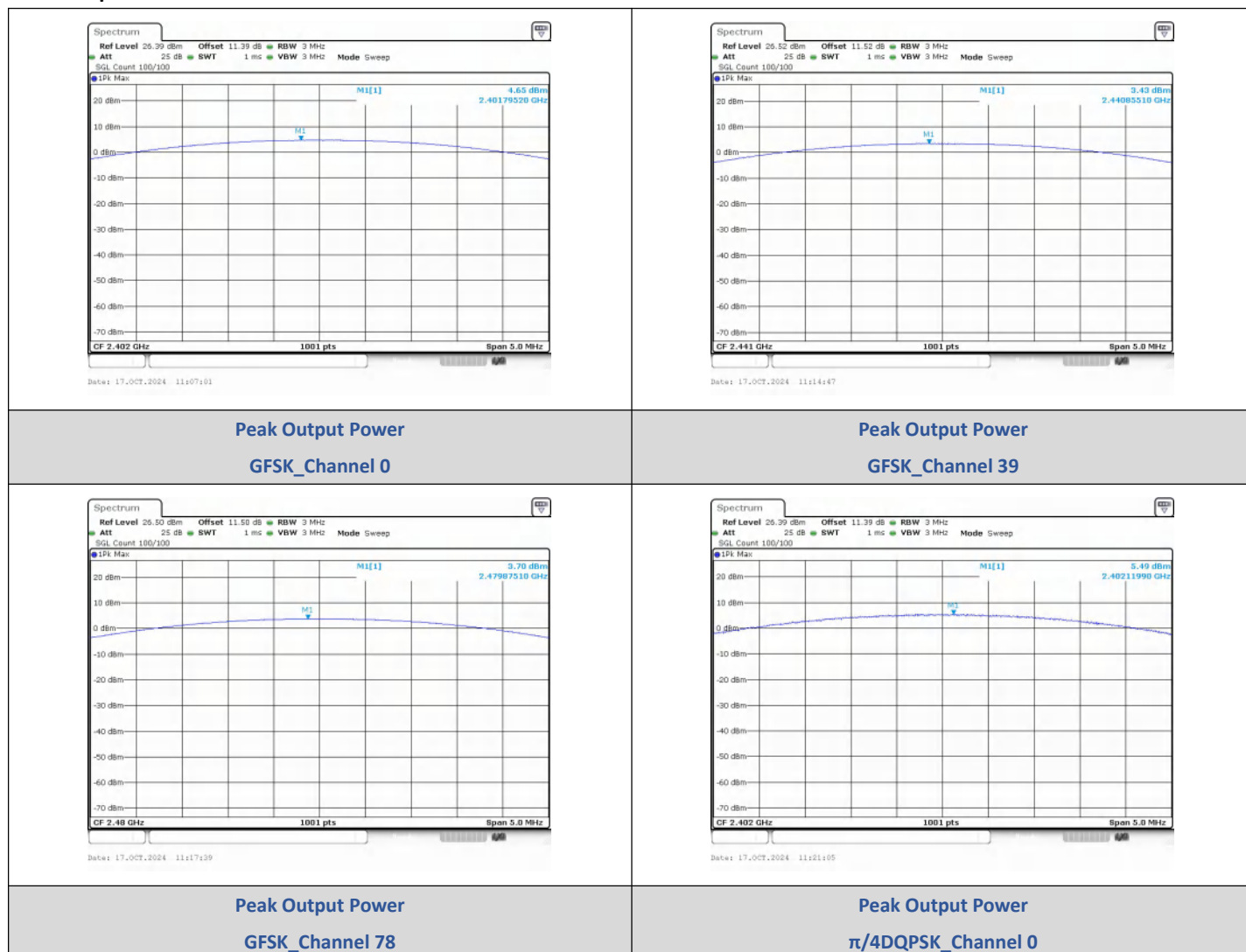
High End Spectrum Channel Hopping Plot
8DPSK

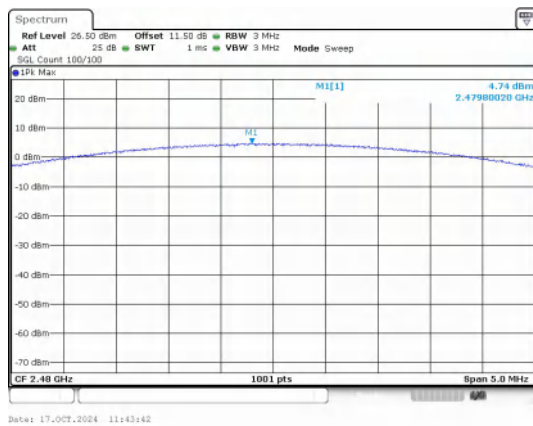
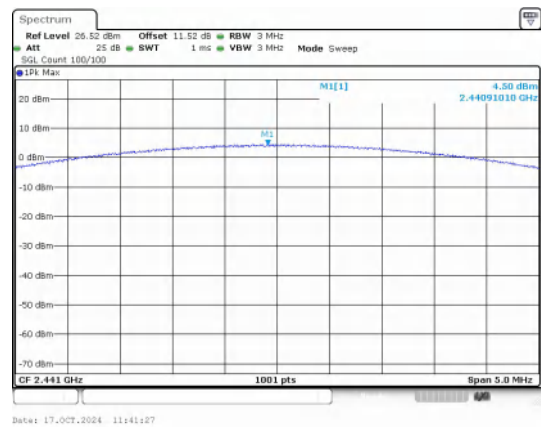
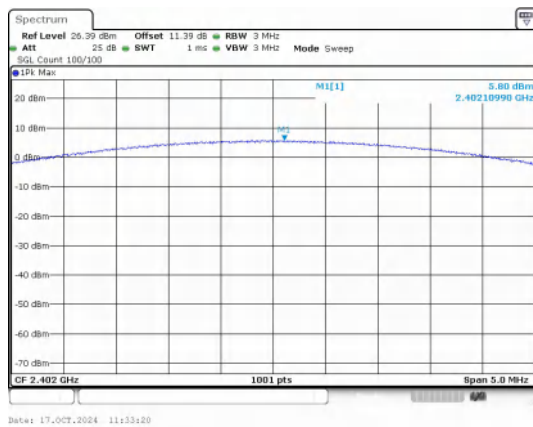
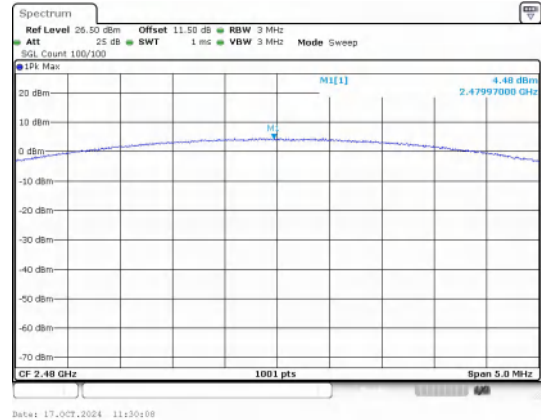
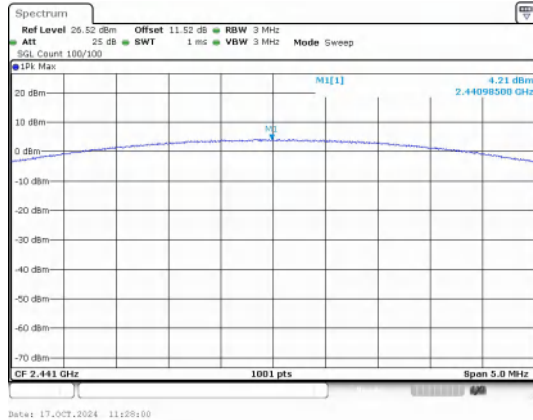
4) Conducted Peak Output Power

Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	4.65	2.92	≤30	PASS
		39	3.43	2.20		PASS
		78	3.70	2.34		PASS
$\pi/4$ DQPSK	2-DH5	0	5.49	3.54	≤20.97	PASS
		39	4.21	2.64		PASS
		78	4.48	2.80		PASS
8DPSK	3-DH5	0	5.80	3.80		PASS
		39	4.50	2.82		PASS
		78	4.74	2.98		PASS

Test Graphs





5) 99% Bandwidth

Test Result

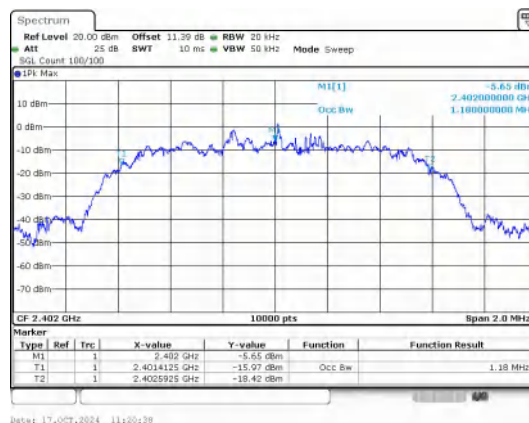
Modulation	Channel	Center Frequency (MHz)	99% BW (MHz)
GFSK	0	2402	0.86260
	39	2441	0.86720
	78	2480	0.85980
$\pi/4$ DQPSK	0	2402	1.1800
	39	2441	1.1716
	78	2480	1.1810
8DPSK	0	2402	1.1822
	39	2441	1.1736
	78	2480	1.1762

Test Graphs

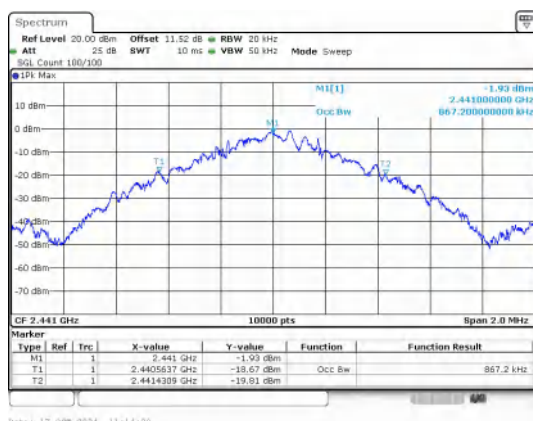


Date: 17_OCT_2024 11:10:35

GFSK_DH5_Channel 0

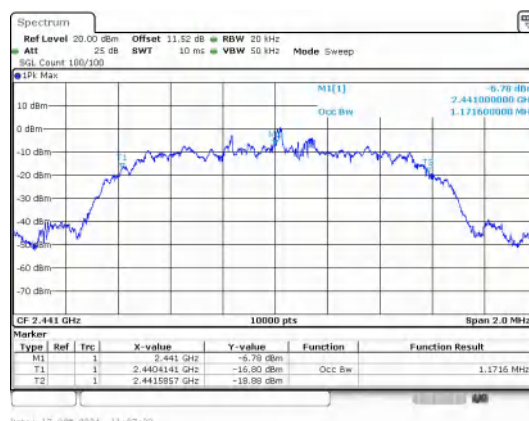


Date: 17_OCT_2024 11:10:38

 $\pi/4$ DQPSK_2-DH5_Channel 0


Date: 17_OCT_2024 11:14:20

GFSK_DH5_Channel 39

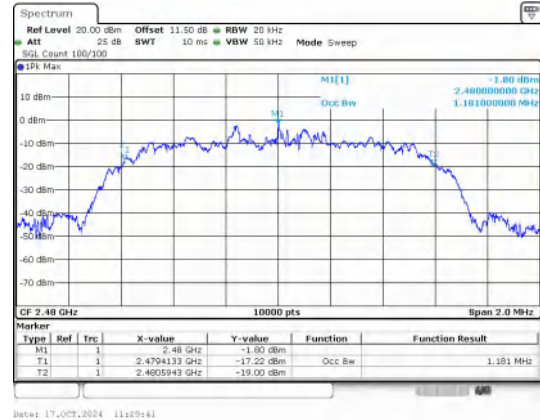


Date: 17_OCT_2024 11:17:33

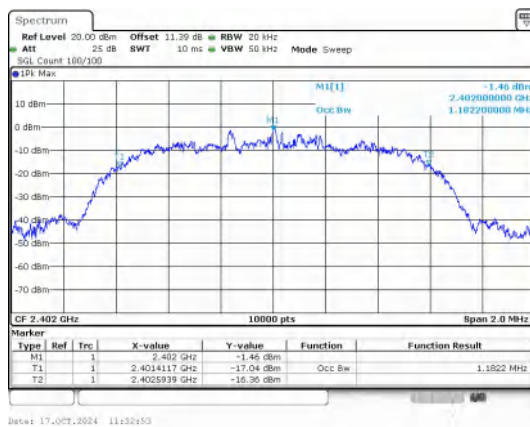
 $\pi/4$ DQPSK_2-DH5_Channel 39



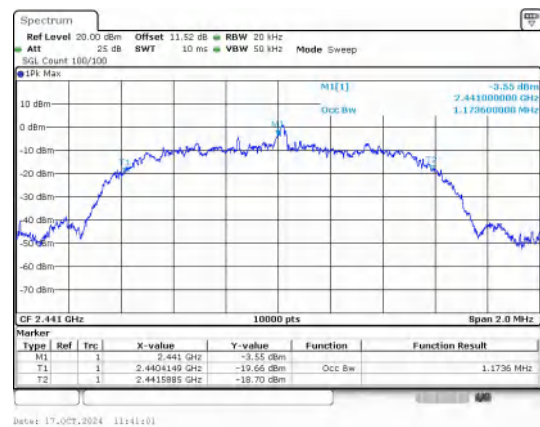
GFSK_DH5_Channel 78



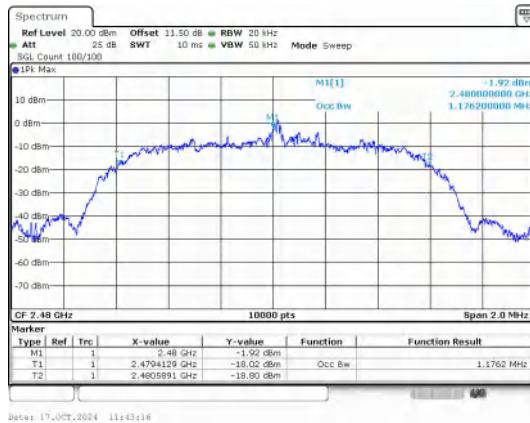
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



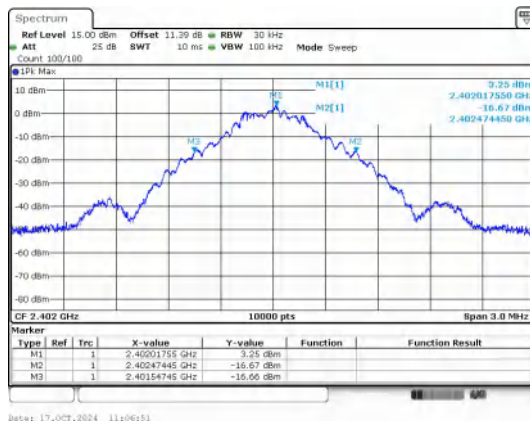
8DPSK_3-DH5_Channel 78

6) 20dB Bandwidth

Test Result

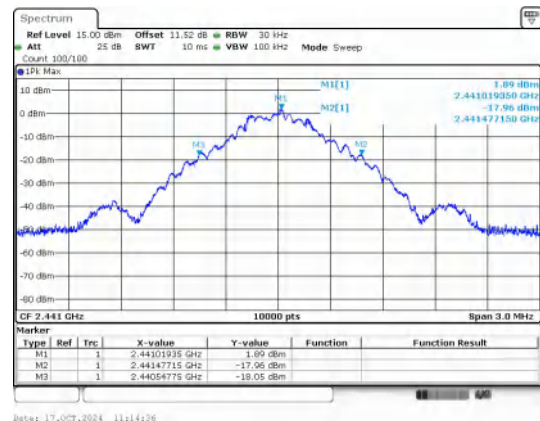
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	0.9200
	39	2441 MHz	0.9300
	78	2480 MHz	0.9200
$\pi/4$ DQPSK	0	2402 MHz	1.230
	39	2441 MHz	1.210
	78	2480 MHz	1.230
8DPSK	0	2402 MHz	1.250
	39	2441 MHz	1.260
	78	2480 MHz	1.250

Test Graphs



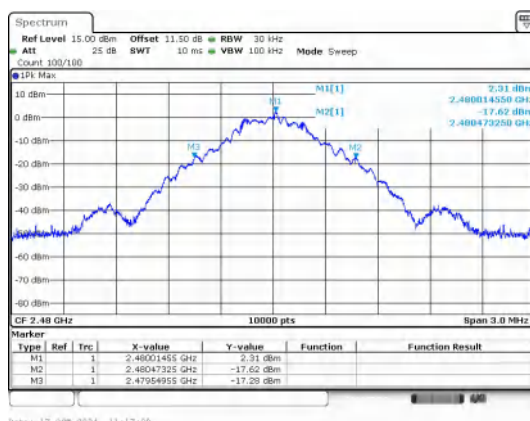
Date: 17_OCT_2024 11:10:51

GFSK_DH5_Channel 0



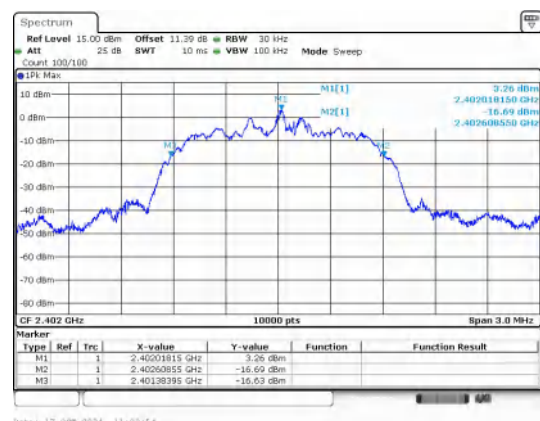
Date: 17_OCT_2024 11:14:36

GFSK_DH5_Channel 39



Date: 17_OCT_2024 11:17:29

GFSK_DH5_Channel 78

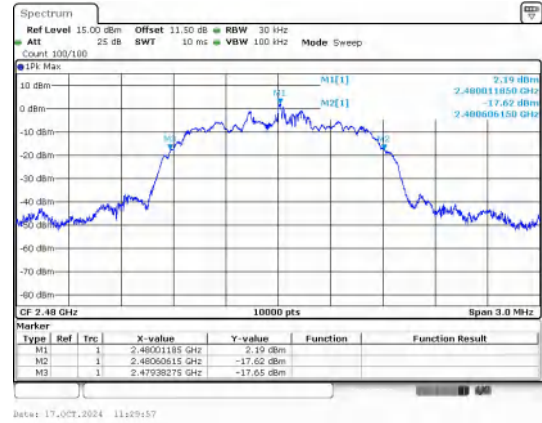


Date: 17_OCT_2024 11:20:54

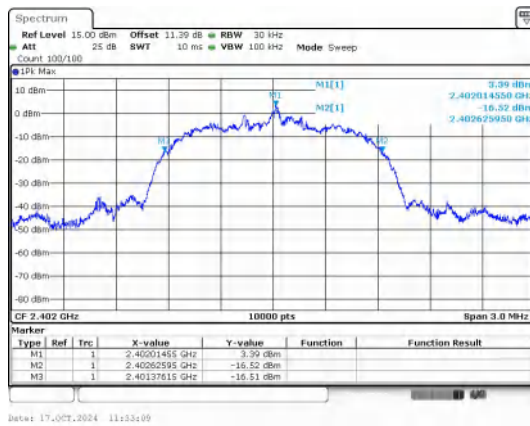
$\pi/4$ DQPSK_2-DH5_Channel 0



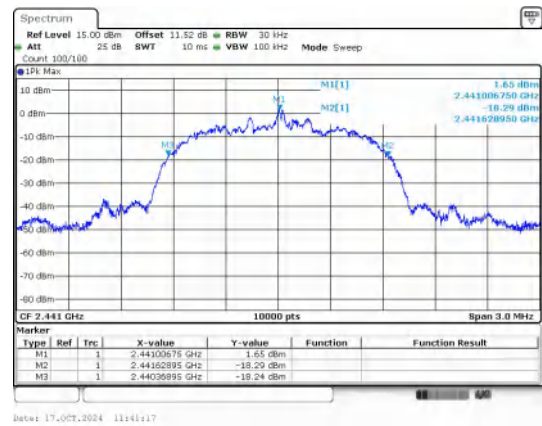
$\pi/4$ DQPSK_2-DH5_Channel 39



$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



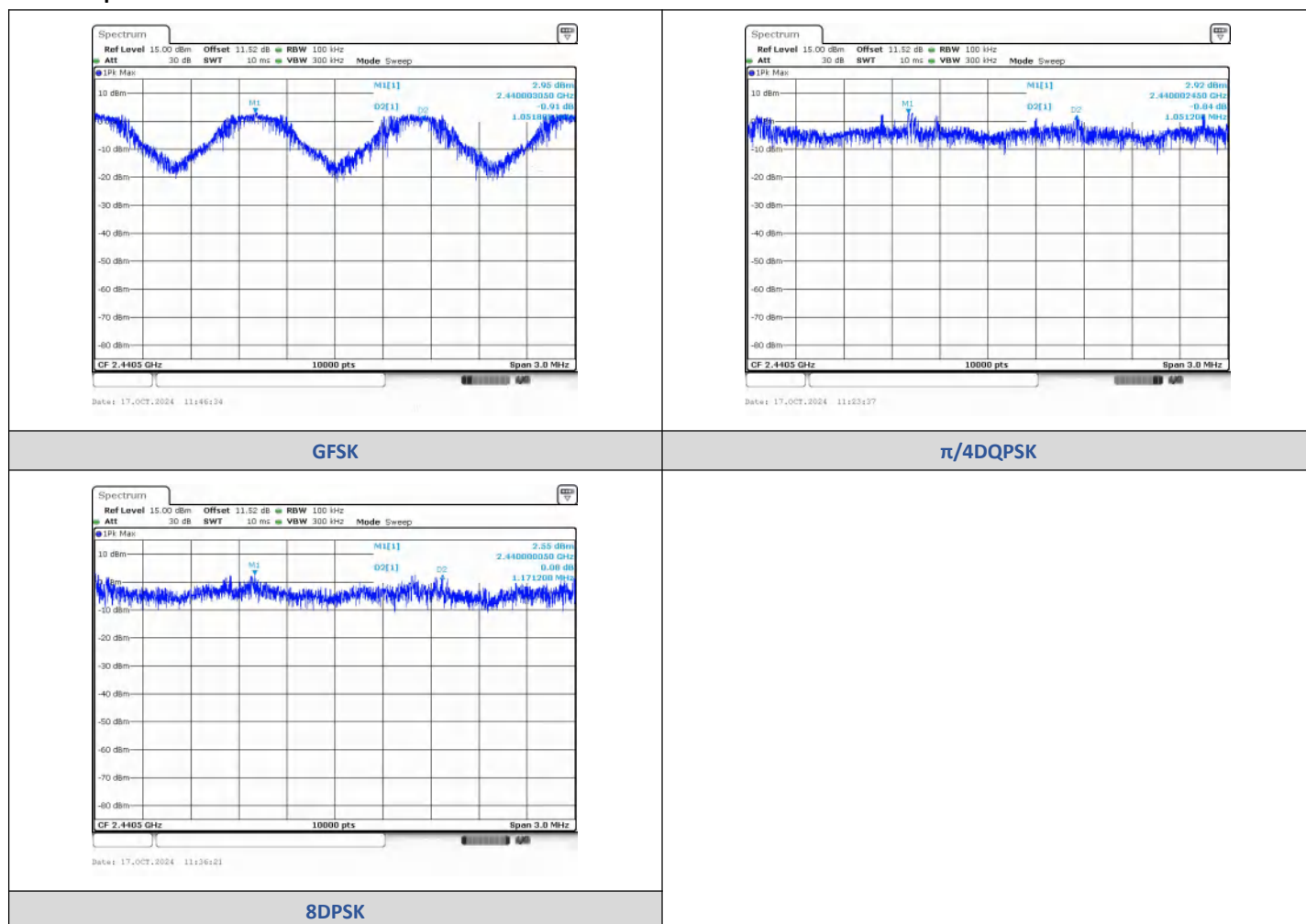
8DPSK_3-DH5_Channel 78

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	2440.003	2441.0548	1.0518	0.93	PASS
$\pi/4$ DQPSK	2-DH5	2440.0024	2441.0536	1.0512	0.82	PASS
8DPSK	3-DH5	2440.0001	2441.1712	1.1712	0.84	PASS

Test Graphs



8) Conducted Out Of Band Emission

Test Result

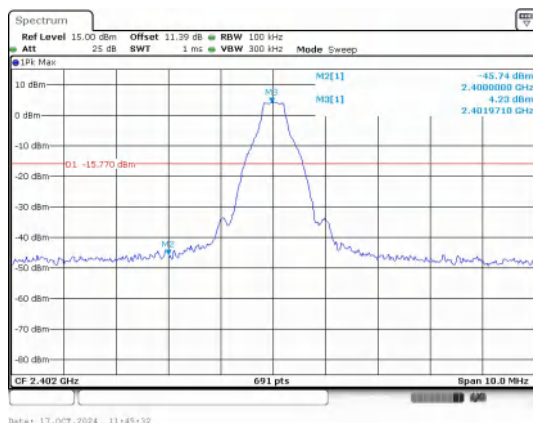
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-45.742	-15.77	-29.972	PASS
			4803.85	-37.622	-15.77	-21.852	PASS
		39	4882.09	-36.991	-17.01	-19.981	PASS
		78	2483.50	-47.530	-16.68	-30.850	PASS
			4960.33	-40.884	-16.68	-24.204	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-46.135	-15.64	-30.495	PASS
			4803.85	-41.259	-15.64	-25.619	PASS
		39	4882.09	-42.529	-17.33	-25.199	PASS
		78	2483.50	-48.514	-16.66	-31.854	PASS
			4960.33	-46.682	-16.66	-30.022	PASS
8DPSK	3-DH5	0	2400.00	-45.468	-15.66	-29.808	PASS
			4804.68	-41.648	-15.66	-25.988	PASS
		39	4882.09	-36.707	-16.95	-19.757	PASS
		78	2483.50	-48.092	-16.65	-31.442	PASS
			4960.33	-44.360	-16.65	-27.710	PASS

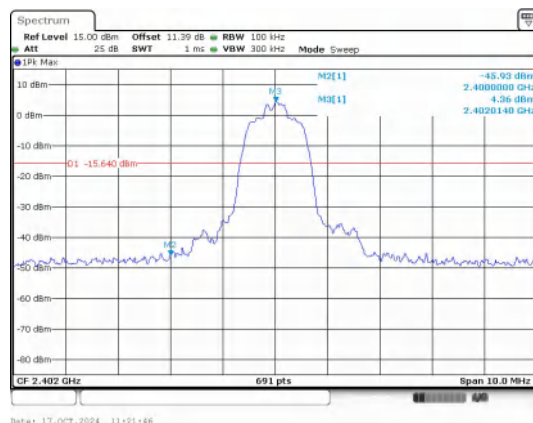
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2396.99	-44.384	-16.28	-28.104	PASS
			2400.00	-44.427	-16.28	-28.147	PASS
			2483.50	-47.481	-17.13	-30.351	PASS
$\pi/4$ DQPSK	2-DH5		2396.60	-45.969	-17.55	-28.419	PASS
			2400.00	-47.826	-17.55	-30.276	PASS
			2483.50	-49.856	-20.22	-29.636	PASS
8DPSK	3-DH5		2398.02	-44.695	-16.03	-28.665	PASS
			2400.00	-46.880	-16.03	-30.849	PASS
			2483.50	-48.520	-18.3	-30.220	PASS

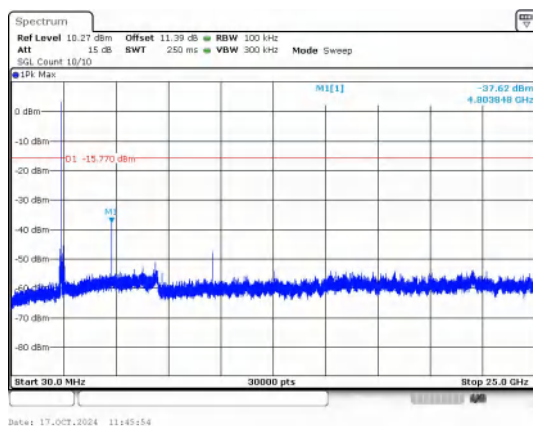
Test Graphs



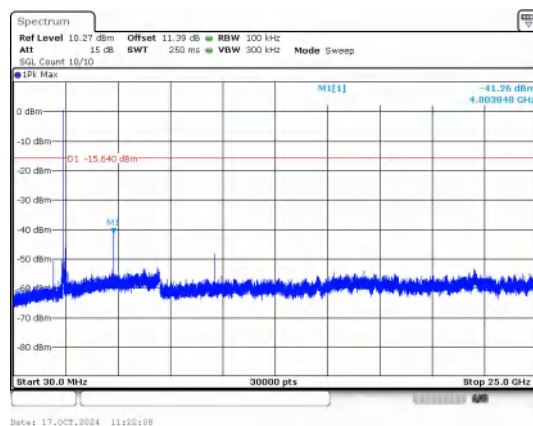
Out Of Band Emission
GFSK_DH5_Channel 0



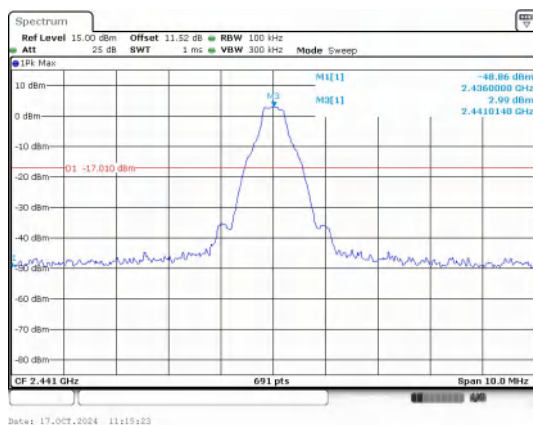
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0



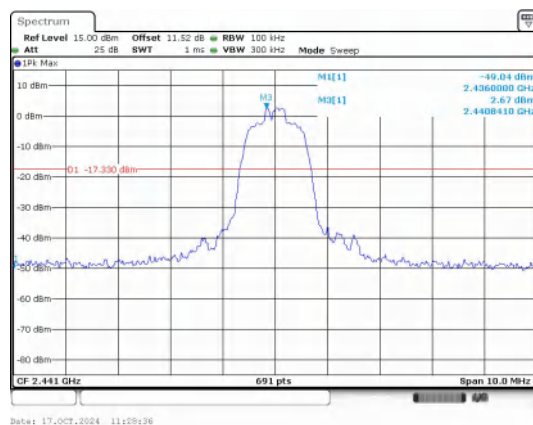
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



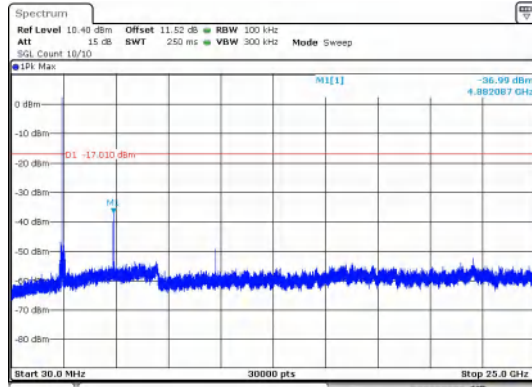
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 0



Out Of Band Emission
GFSK_DH5_Channel 39

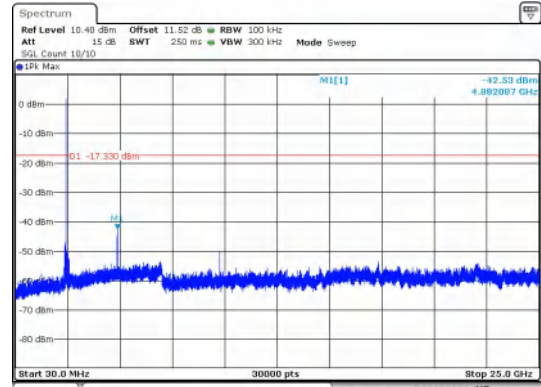


Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39



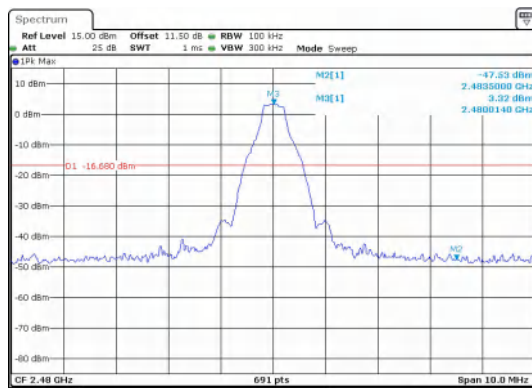
Date: 17_OCT_2024 11:15:45

30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



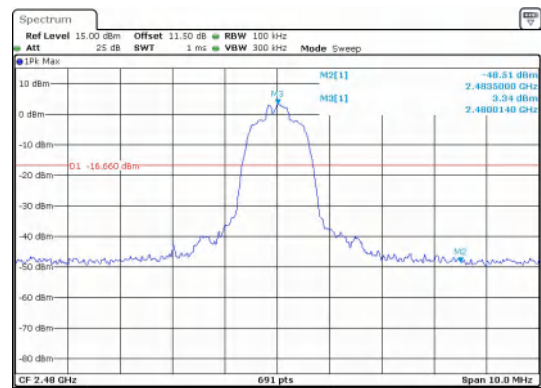
Date: 17_OCT_2024 11:28:58

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



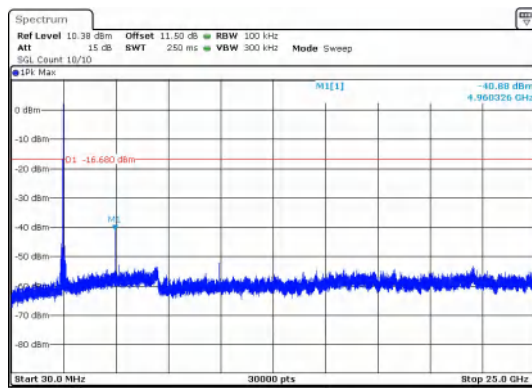
Date: 17_OCT_2024 11:18:21

Out Of Band Emission
GFSK_DH5_Channel 78



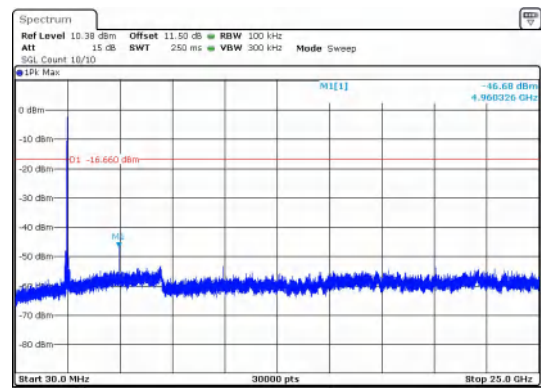
Date: 17_OCT_2024 11:30:58

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



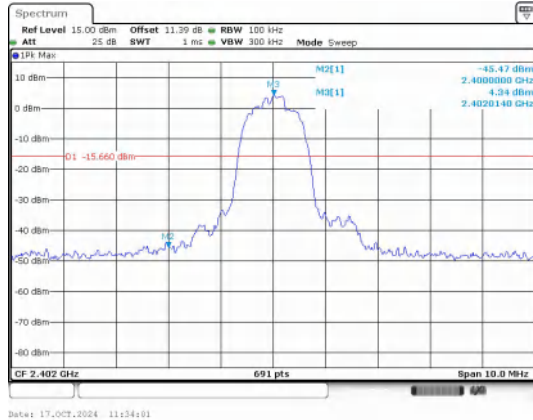
Date: 17_OCT_2024 11:18:43

30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78

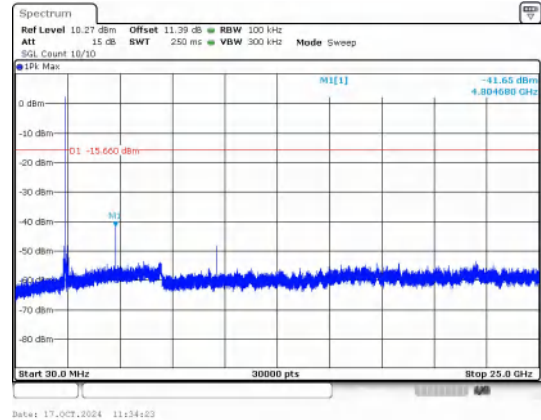


Date: 17_OCT_2024 11:31:12

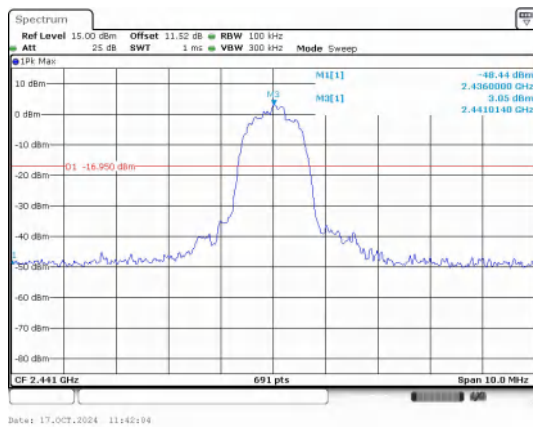
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



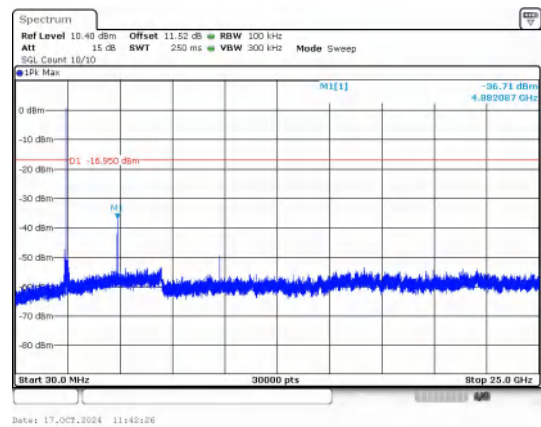
Out Of Band Emission
8DPSK_3-DH5_Channel 0



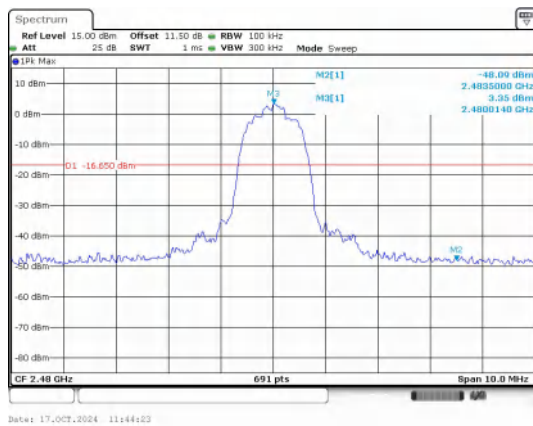
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



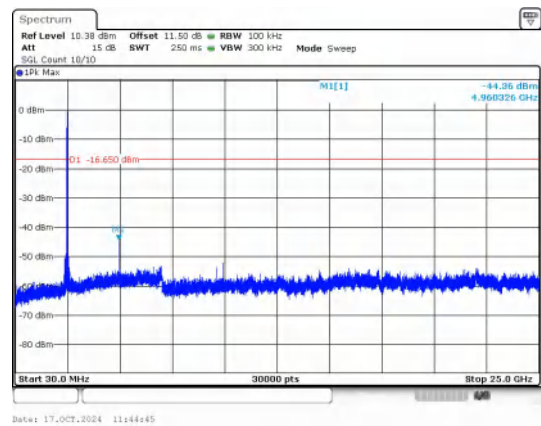
Out Of Band Emission
8DPSK_3-DH5_Channel 39



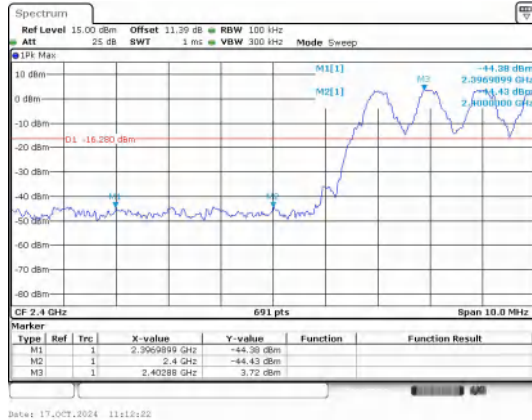
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



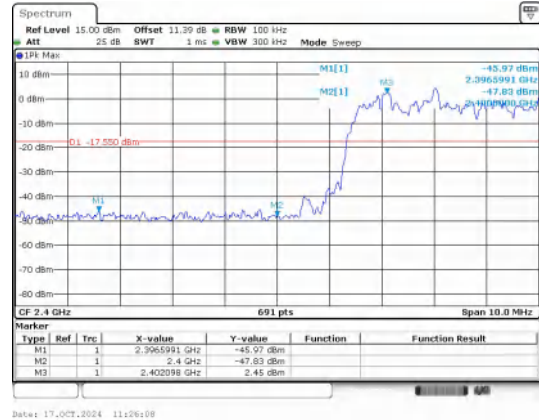
Out Of Band Emission
8DPSK_3-DH5_Channel 78



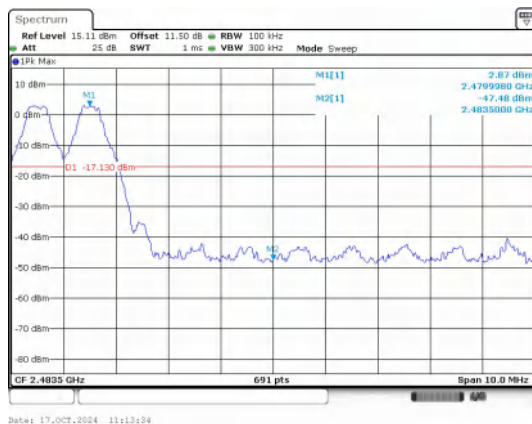
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



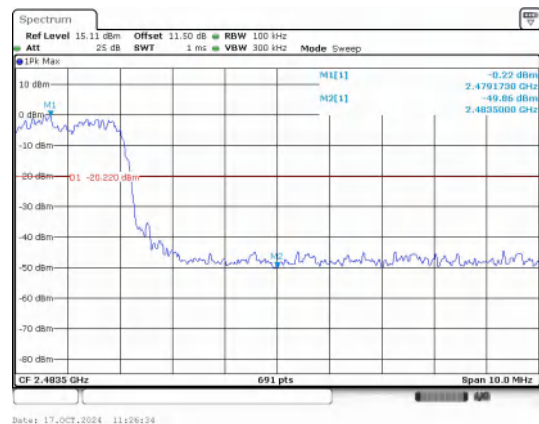
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



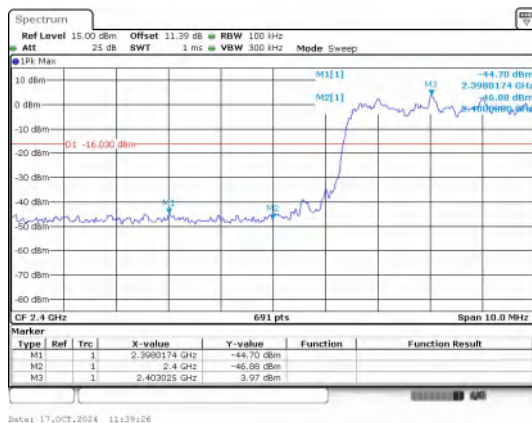
Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



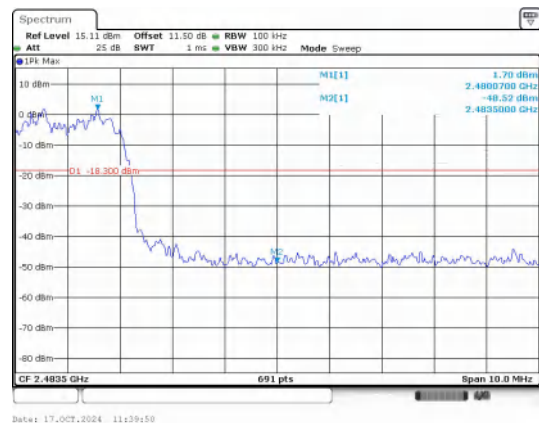
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



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