

Appendix A

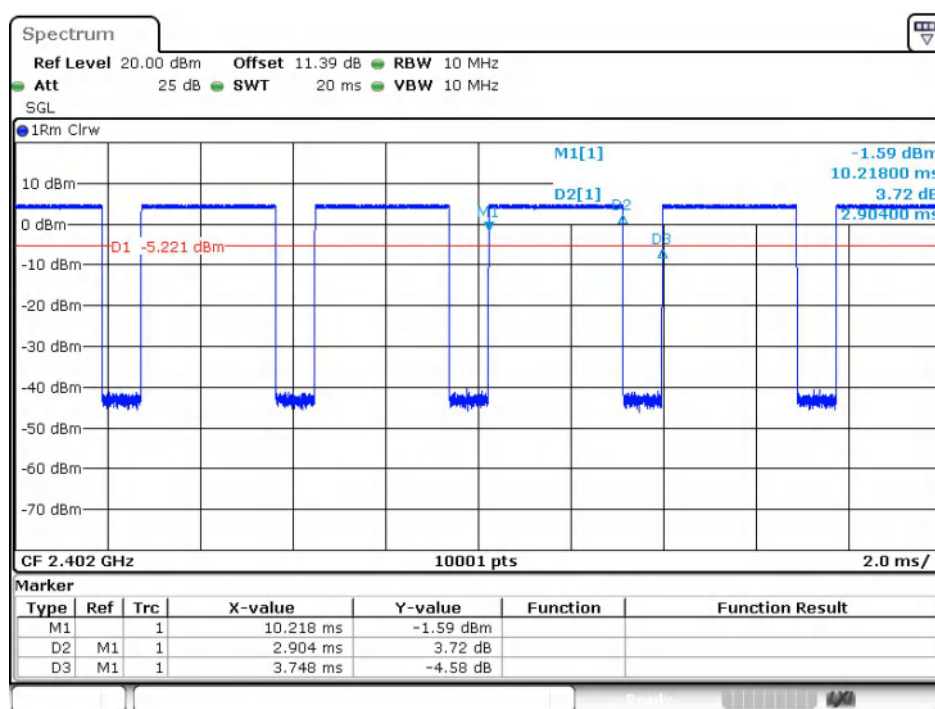
Report No.:	CISRR241012047
FCC ID:	2BFNQM25
Product Name:	TWS wireless Bluetooth headset
Model No.:	M25
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

1) Duty Cycle

Test Result

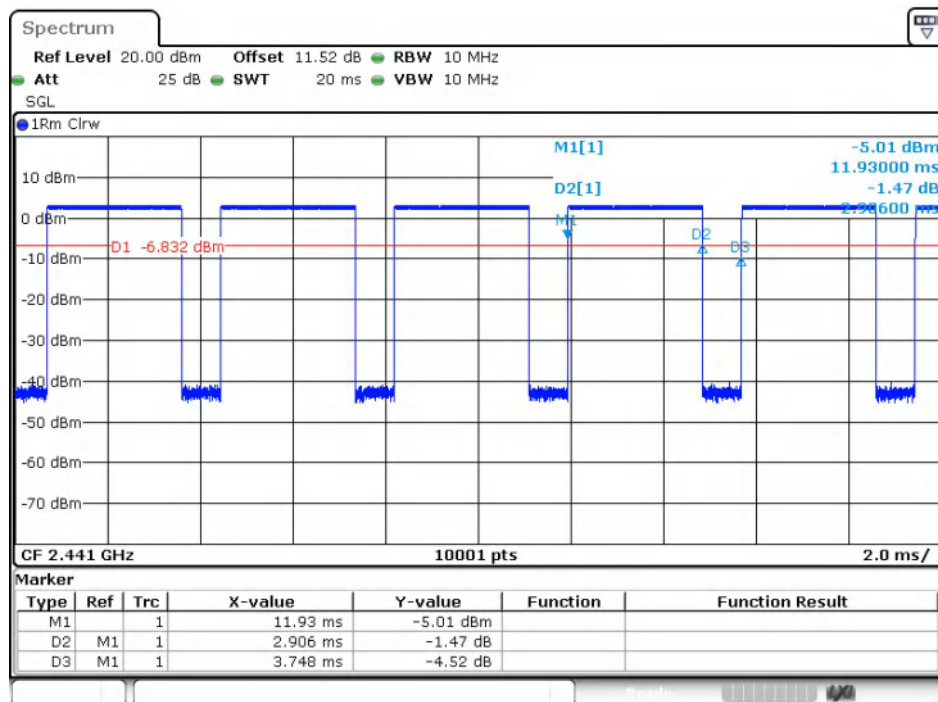
Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.904	3.748	77.48	0.7748	1.1081	0.34
		39	2.906	3.748	77.53	0.7753	1.1053	0.34
		78	2.904	3.748	77.48	0.7748	1.1081	0.34
$\pi/4$ DQPSK	2-DH5	0	2.910	3.748	77.64	0.7764	1.0991	0.34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

Test Graphs



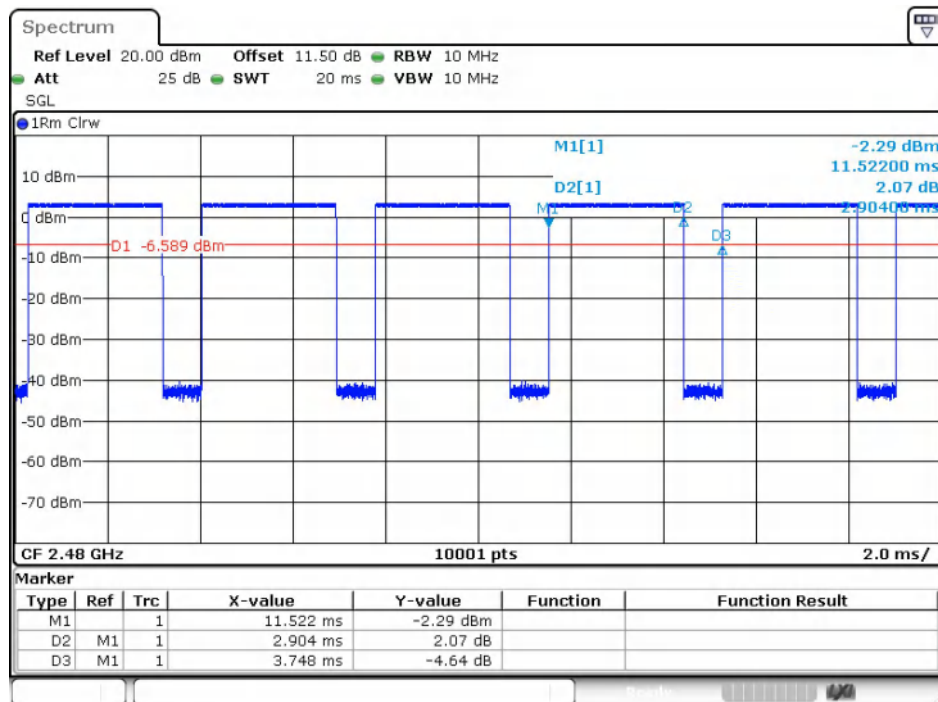
Date: 17.OCT.2024 09:17:20

GFSK(DH5)_Channel 0



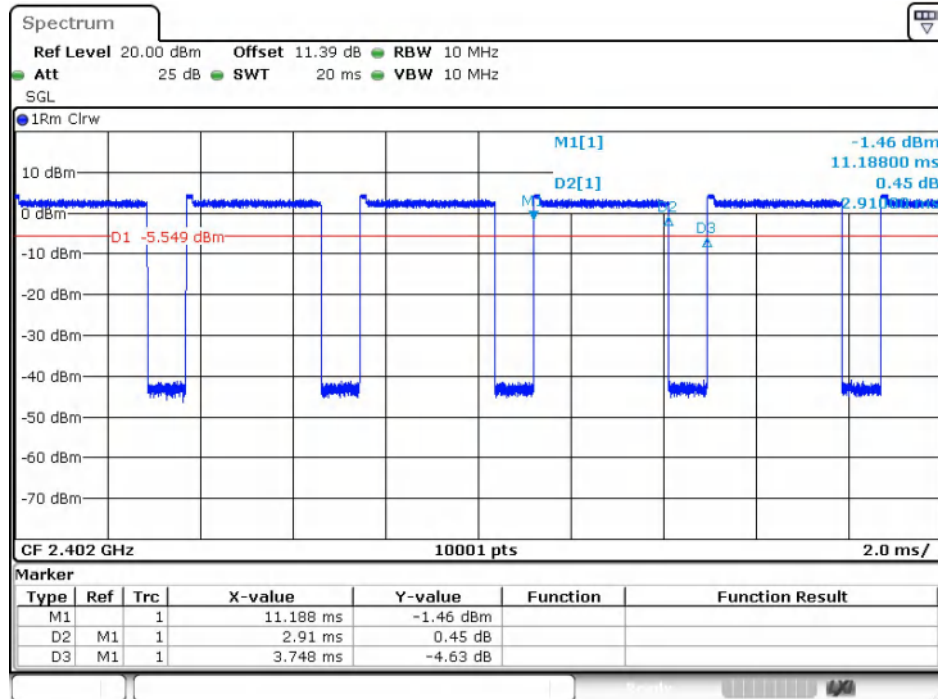
Date: 17.OCT.2024 09:25:14

GFSK(DH5)_Channel 39



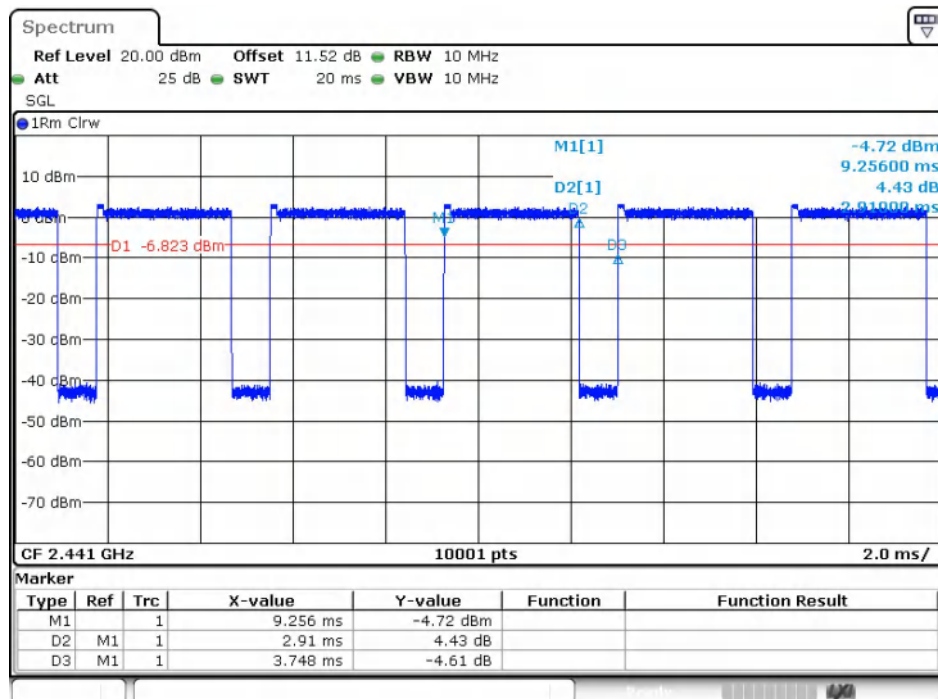
Date: 17.OCT.2024 09:27:28

GFSK(DH5)_Channel 78



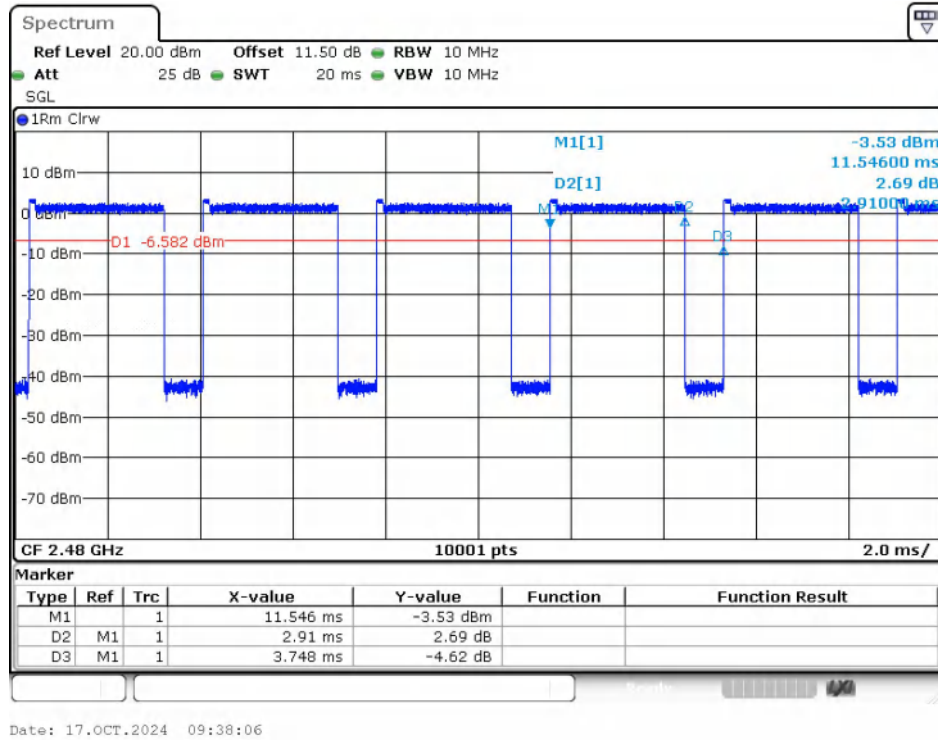
Date: 17.OCT.2024 09:29:53

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

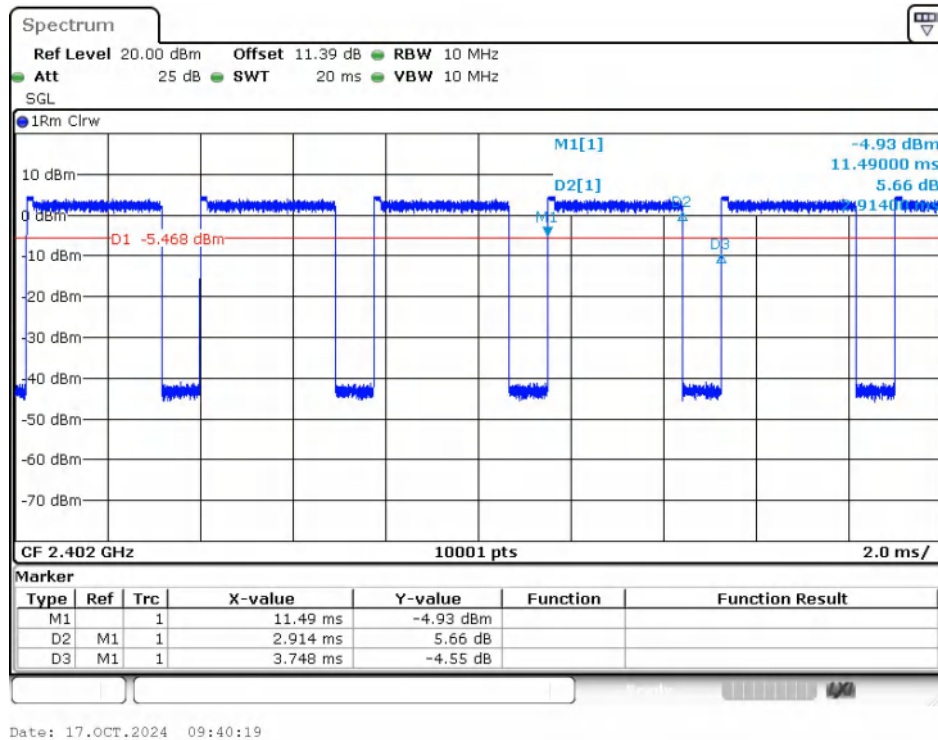


Date: 17.OCT.2024 09:35:42

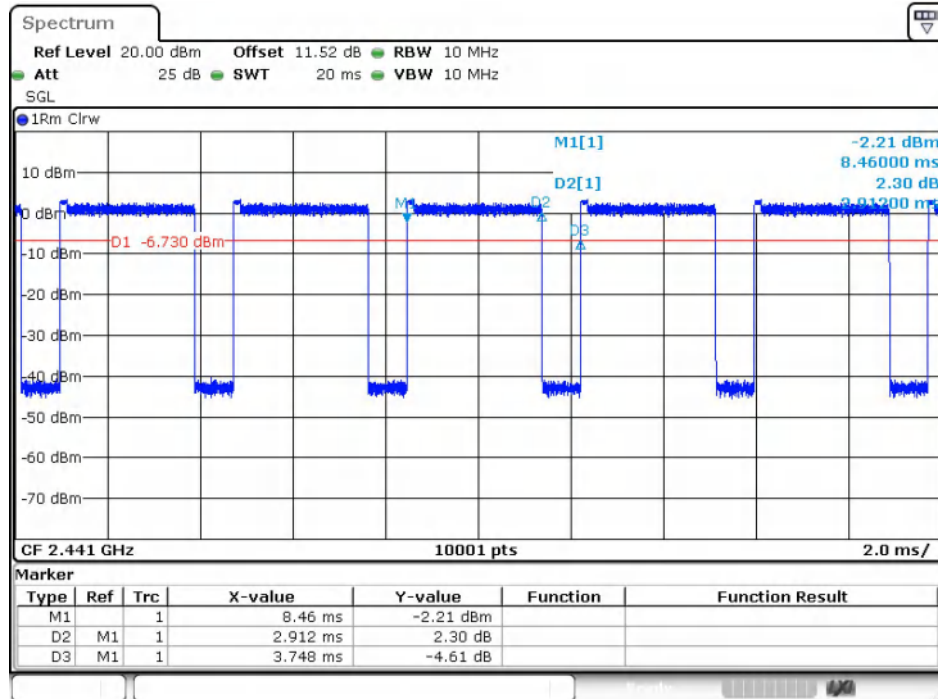
$\pi/4$ DQPSK(2-DH5)_Channel 39



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

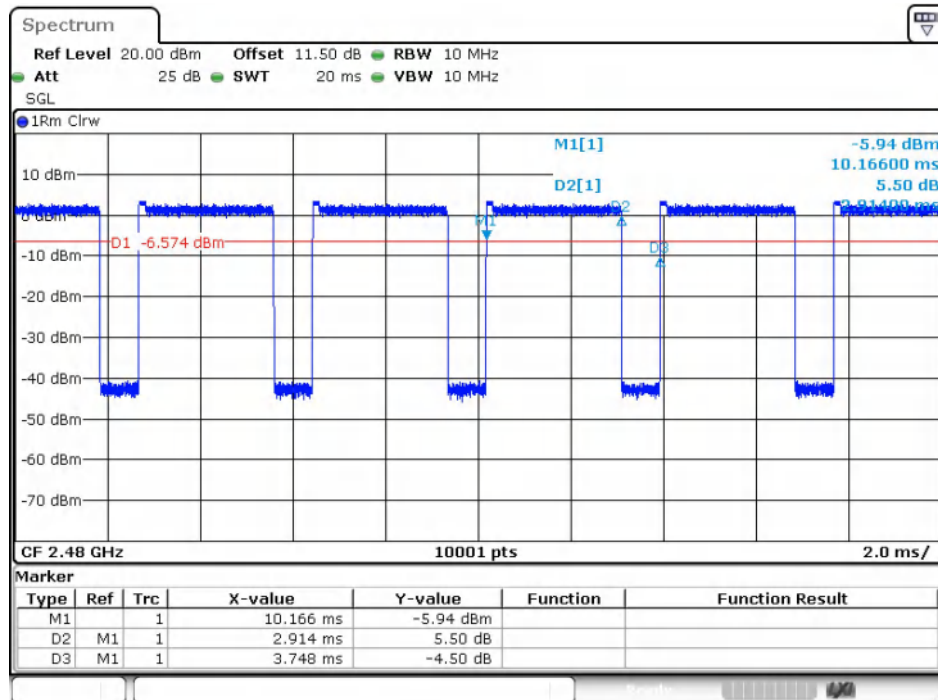


8DPSK(3-DH5)_Channel 0



Date: 17.OCT.2024 09:46:00

8DPSK(3-DH5)_Channel 39



Date: 17.OCT.2024 09:48:06

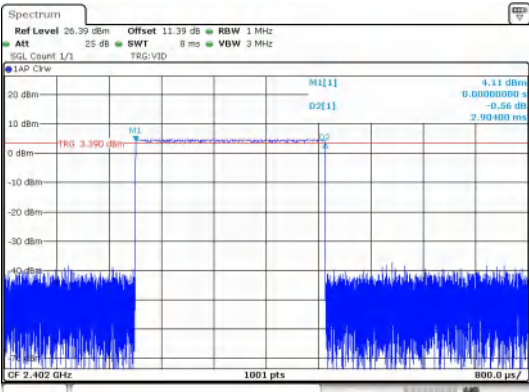
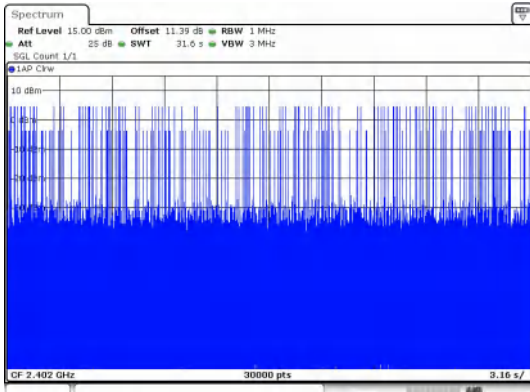
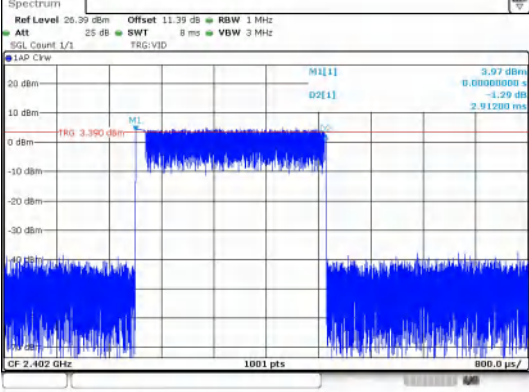
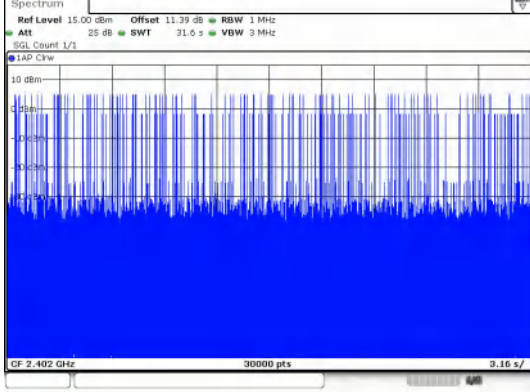
8DPSK(3-DH5)_Channel 78

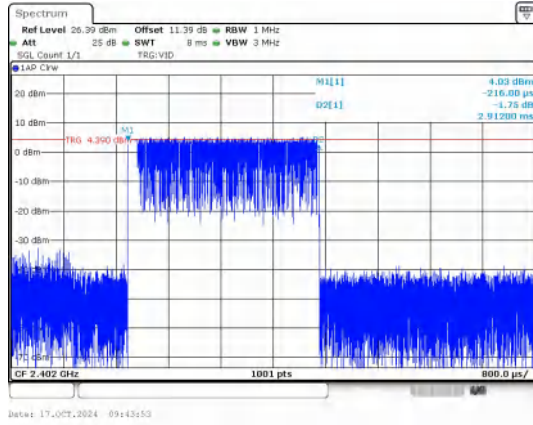
2) Dwell Time

Test Result

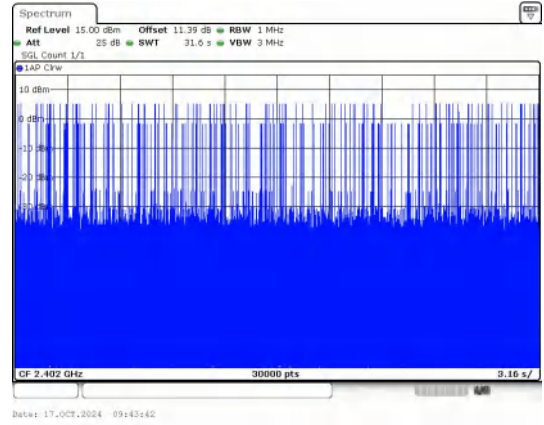
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.904	109	316.54	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.912	106	308.67		PASS
8DPSK	3-DH5		2.912	104	302.85		PASS

Test Graphs

 Date: 17_OCT_2024 09:20:41	 Date: 17_OCT_2024 09:20:30
Pulse Width GFSK_DH5	Number of Pulses in 31.6 seconds GFSK_DH5
 Date: 17_OCT_2024 10:05:28	 Date: 17_OCT_2024 10:05:12
Pulse Width $\pi/4$DQPSK_2-DH5	Number of Pulses in 31.6 seconds $\pi/4$DQPSK_2-DH5



Pulse Width
8DPSK_3-DH5



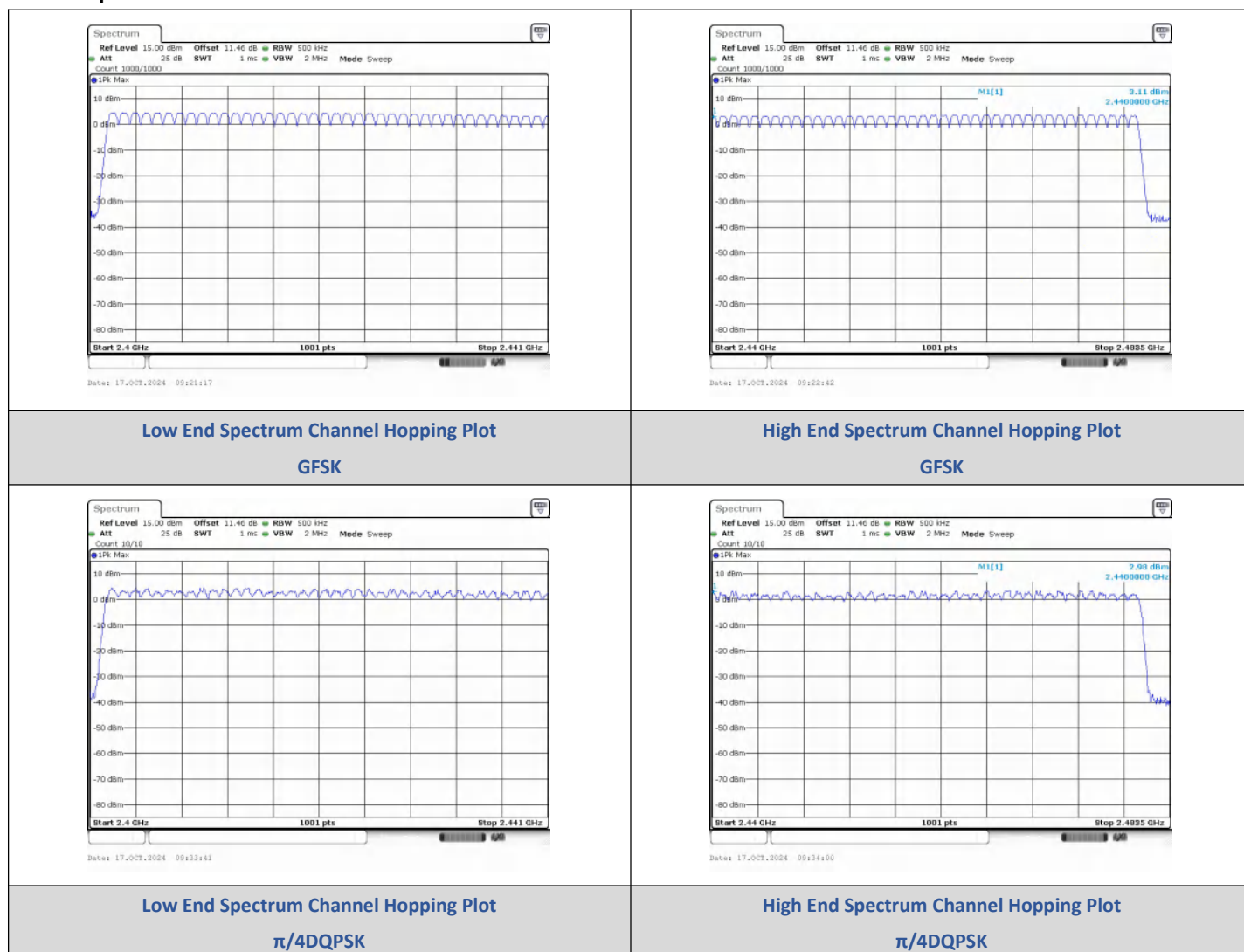
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

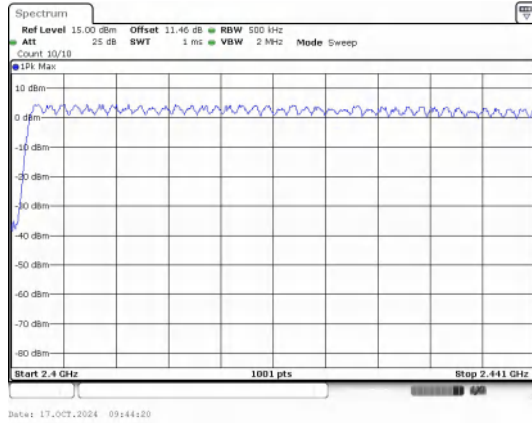
3) Number Of Hopping Channel

Test Result

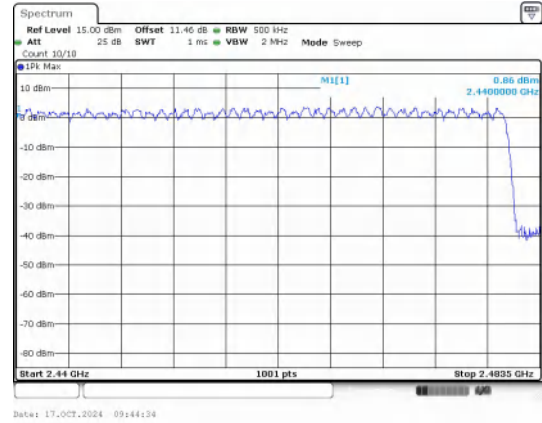
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK



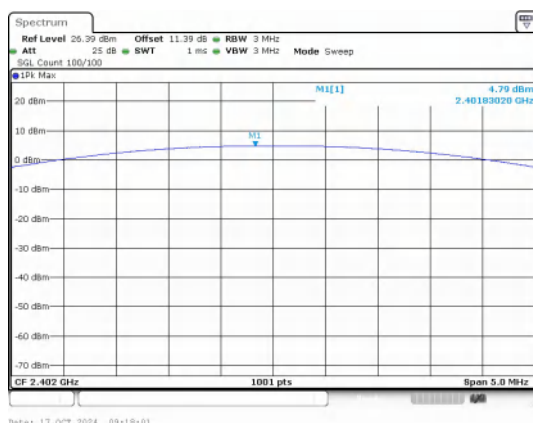
High End Spectrum Channel Hopping Plot
8DPSK

4) Conducted Peak Output Power

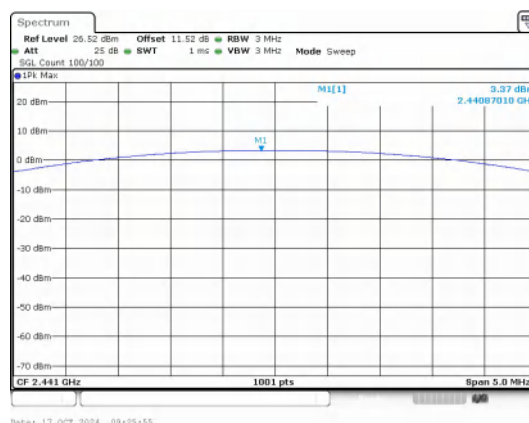
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	4.79	3.01	≤30	PASS
		39	3.37	2.17		PASS
		78	3.59	2.29		PASS
$\pi/4$ DQPSK	2-DH5	0	5.38	3.45	≤20.97	PASS
		39	4.13	2.59		PASS
		78	4.38	2.74		PASS
8DPSK	3-DH5	0	5.68	3.70		PASS
		39	4.46	2.79		PASS
		78	4.66	2.92		PASS

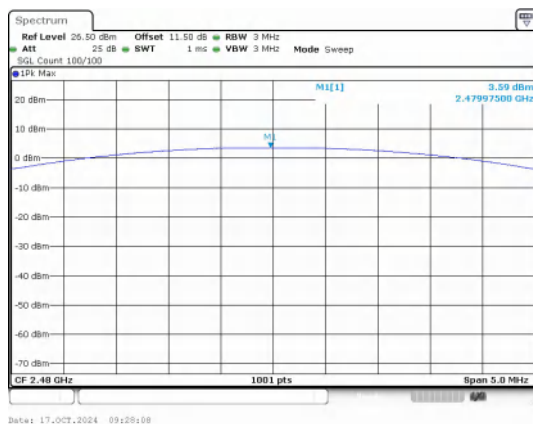
Test Graphs



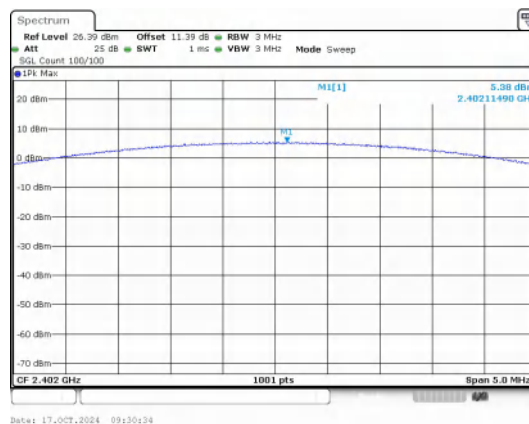
Peak Output Power
GFSK_Channel 0



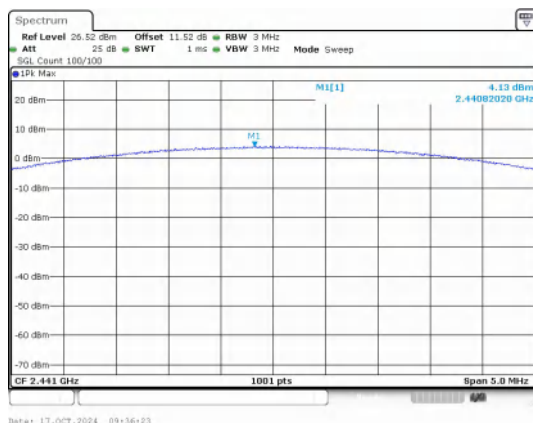
Peak Output Power
GFSK_Channel 39



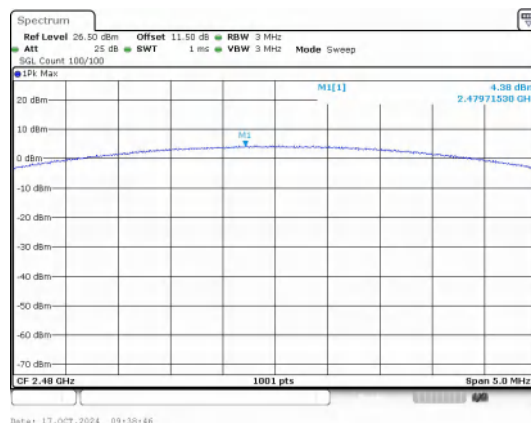
Peak Output Power
GFSK_Channel 78



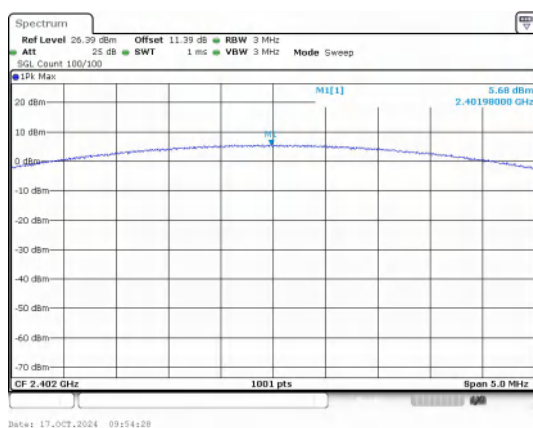
Peak Output Power
 $\pi/4$ DQPSK_Channel 0



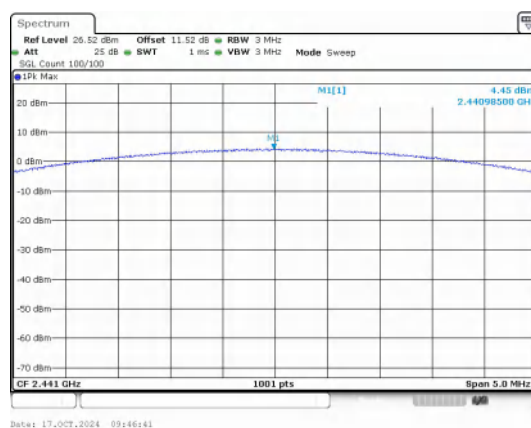
Peak Output Power
 $\pi/4$ DQPSK_Channel 39



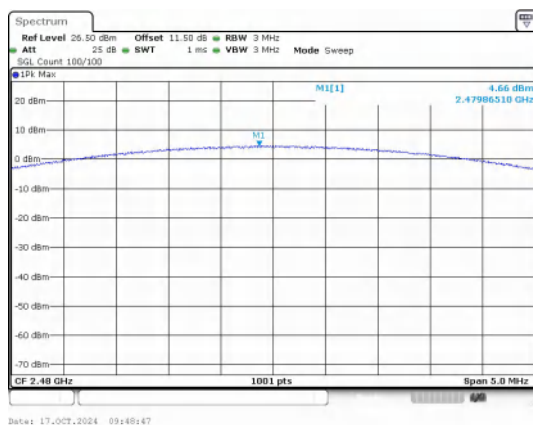
Peak Output Power
 $\pi/4$ DQPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



Peak Output Power
8DPSK_Channel 39



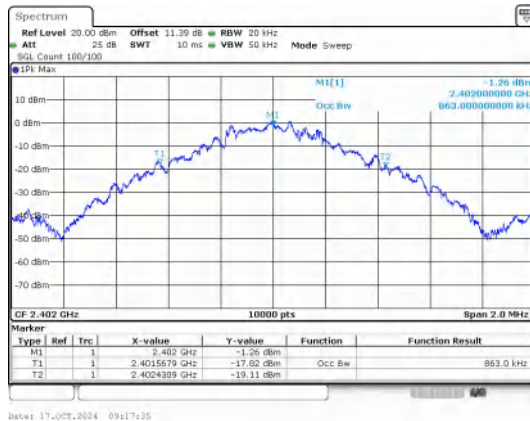
Peak Output Power
8DPSK_Channel 78

5) 99% Bandwidth

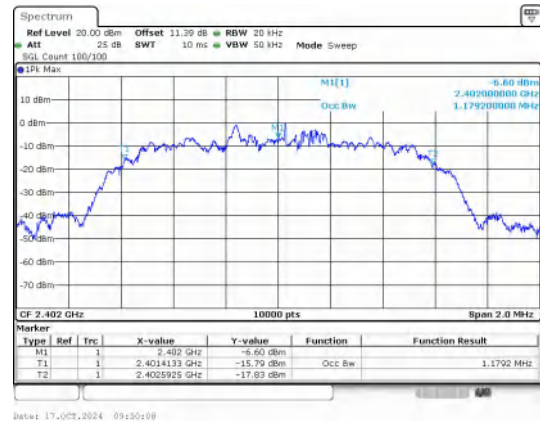
Test Result

Modulation	Channel	Center Frequency (MHz)	99% BW (MHz)
GFSK	0	2402	0.86300
	39	2441	0.85540
	78	2480	0.86220
$\pi/4$ DQPSK	0	2402	1.1792
	39	2441	1.1702
	78	2480	1.1808
8DPSK	0	2402	1.1916
	39	2441	1.1932
	78	2480	1.1864

Test Graphs

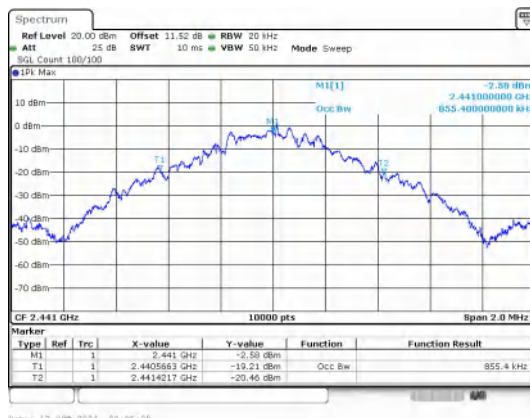


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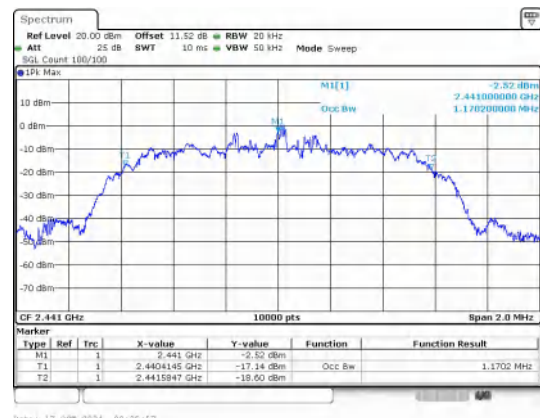


Date: 17_OCT, 2024 09:18:08

GFSK_DH5_Channel 0

 $\pi/4$ DQPSK_2-DH5_Channel 0


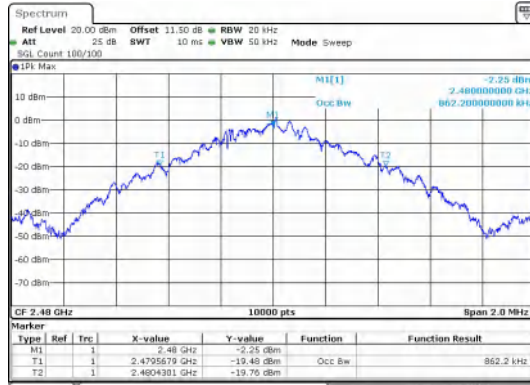
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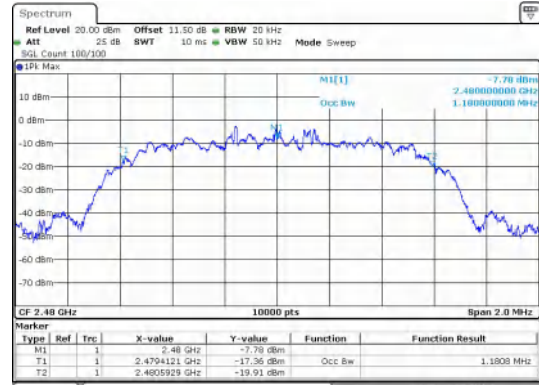
GFSK_DH5_Channel 39

 $\pi/4$ DQPSK_2-DH5_Channel 39



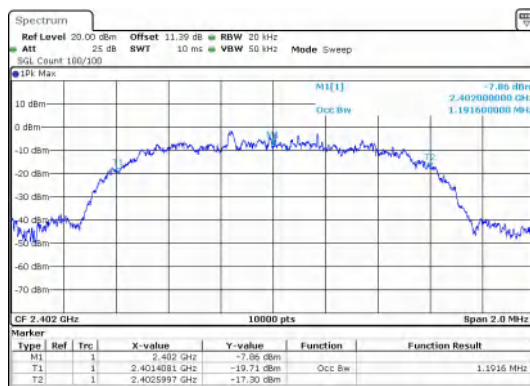
Date: 17_OCT_2024 09:17:42

GFSK_DH5_Channel 78



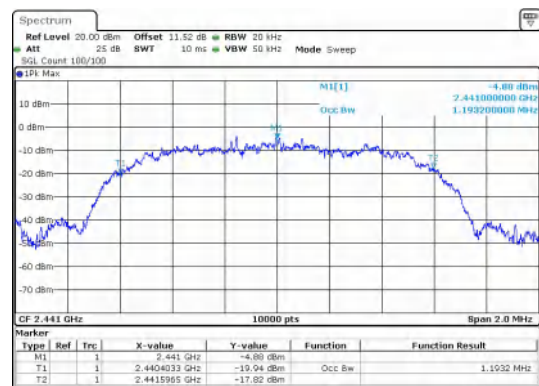
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$\pi/4$ DQPSK_2-DH5_Channel 78



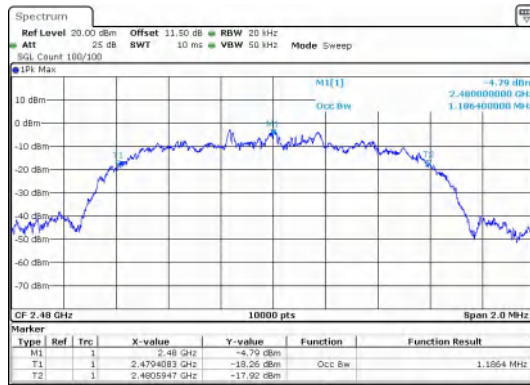
Date: 17_OCT_2024 09:18:23

8DPSK_3-DH5_Channel 0



Date: 17_OCT_2024 09:18:14

8DPSK_3-DH5_Channel 39



Date: 17_OCT_2024 09:18:20

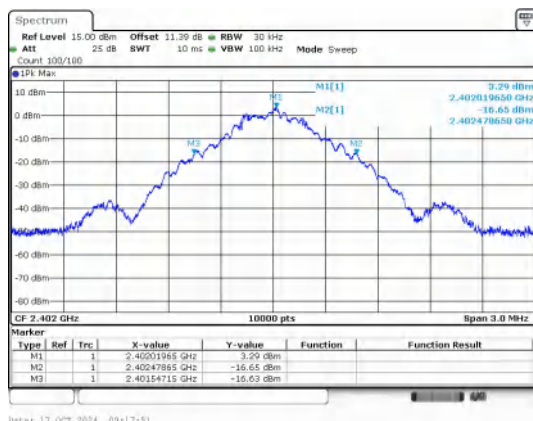
8DPSK_3-DH5_Channel 78

6) 20dB Bandwidth

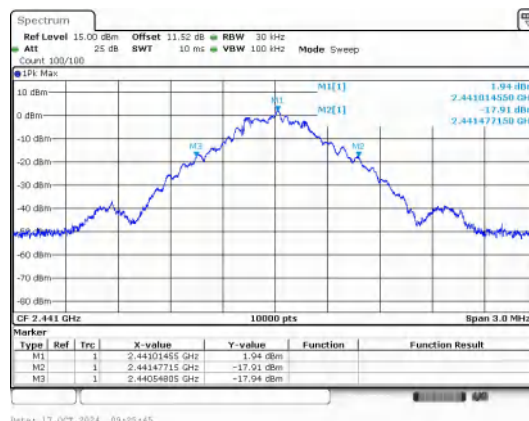
Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	0.9300
	39	2441 MHz	0.9300
	78	2480 MHz	0.9300
$\pi/4$ DQPSK	0	2402 MHz	1.220
	39	2441 MHz	1.230
	78	2480 MHz	1.220
8DPSK	0	2402 MHz	1.250
	39	2441 MHz	1.240
	78	2480 MHz	1.250

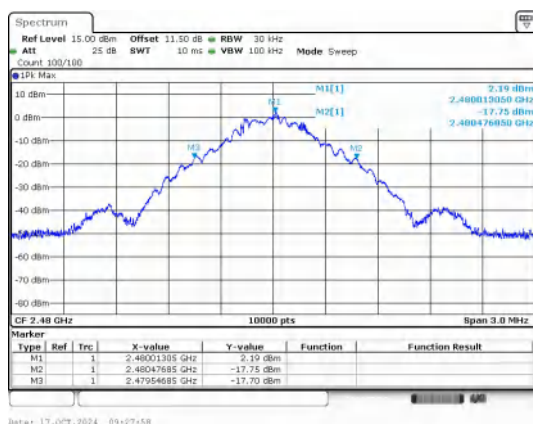
Test Graphs



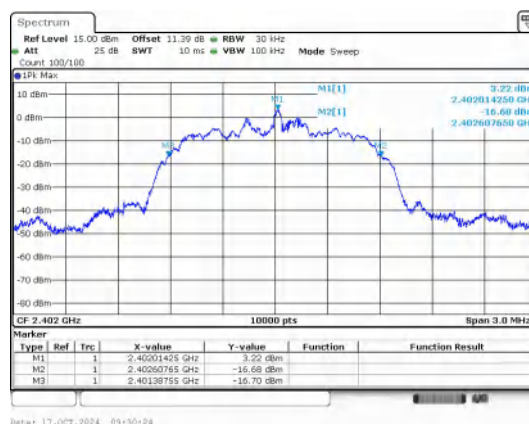
GFSK_DH5_Channel 0



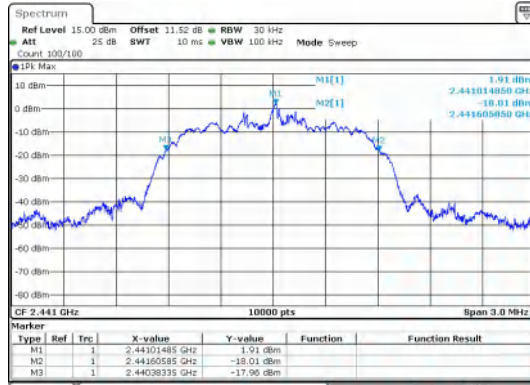
GFSK_DH5_Channel 39



GFSK_DH5_Channel 78

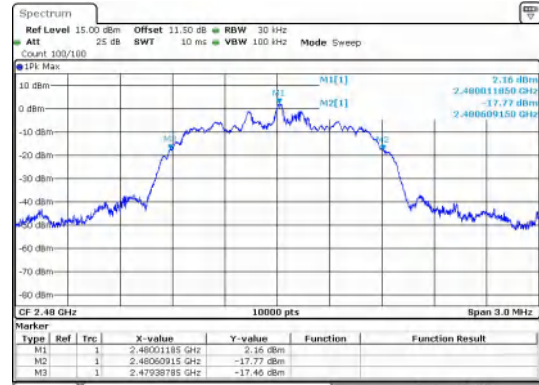


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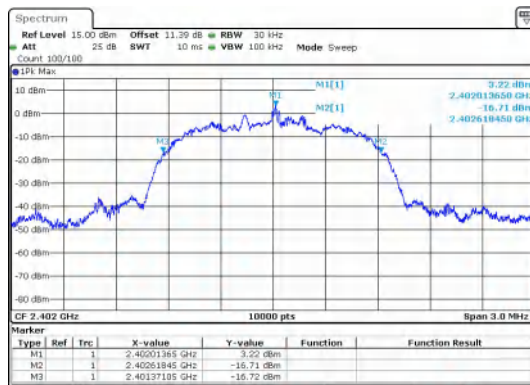
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$\pi/4$ DQPSK_2-DH5_Channel 39



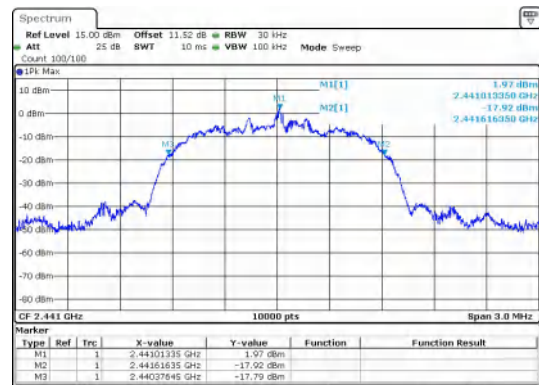
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$\pi/4$ DQPSK_2-DH5_Channel 78



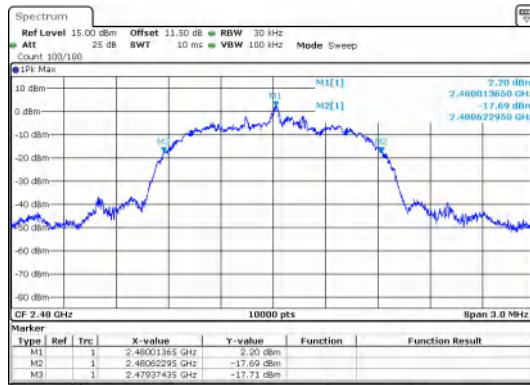
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8DPSK_3-DH5_Channel 0



Date: 17_OCT_2024 09:14:10

8DPSK_3-DH5_Channel 39



Date: 17_OCT_2024 09:14:16

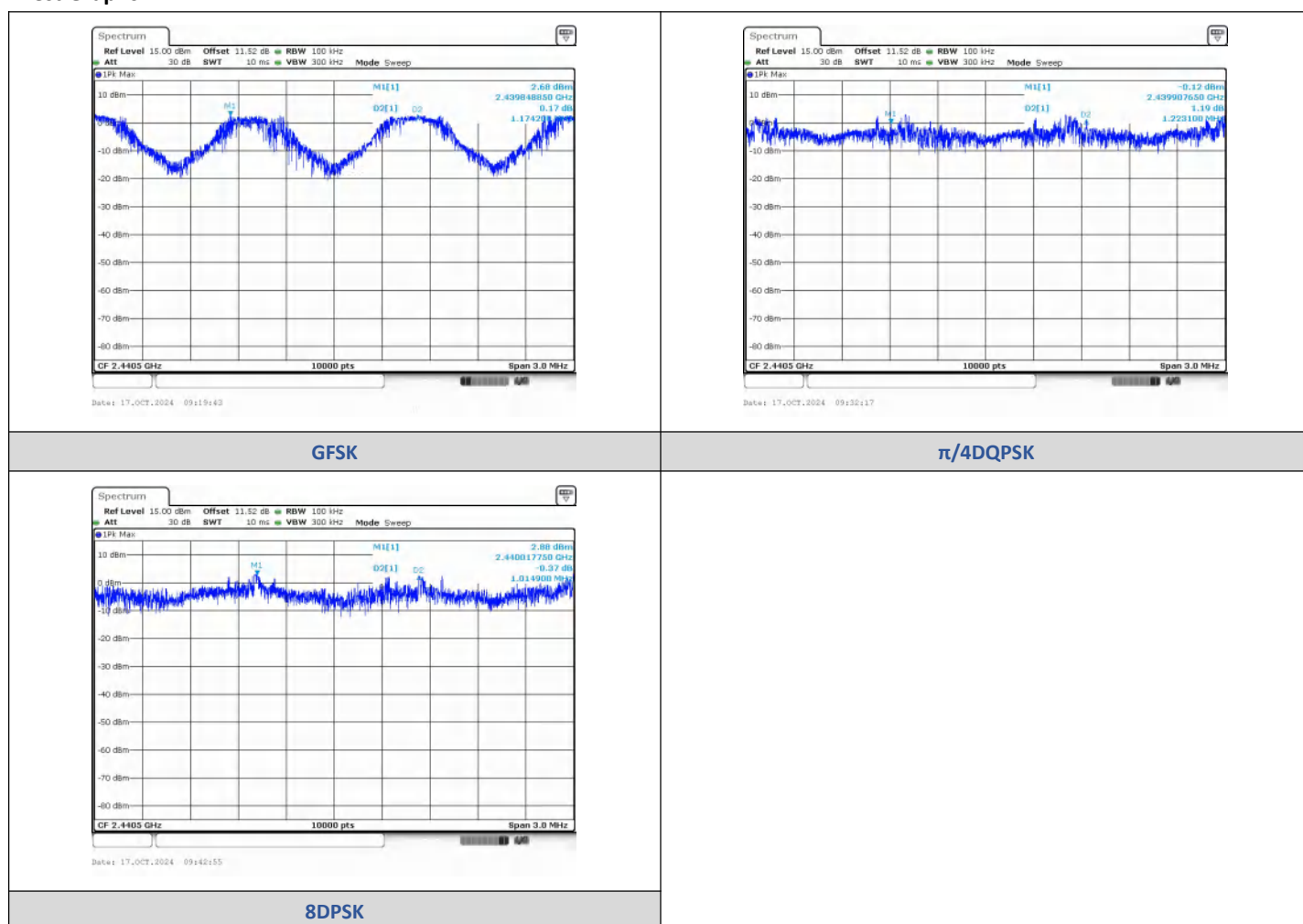
8DPSK_3-DH5_Channel 78

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	2439.8488	2441.023	1.1742	0.93	PASS
$\pi/4$ DQPSK	2-DH5	2439.9077	2441.1307	1.2231	0.82	PASS
8DPSK	3-DH5	2440.0177	2441.0327	1.0149	0.83	PASS

Test Graphs



8) Conducted Out Of Band Emission

Test Result

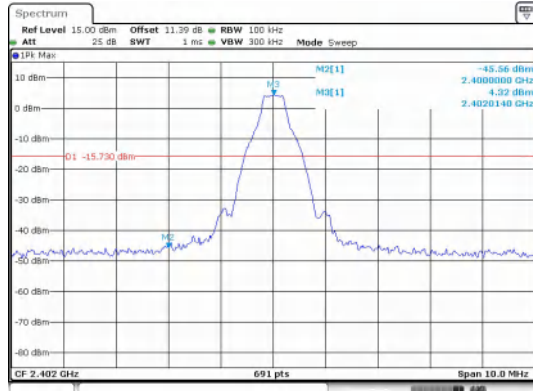
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-45.557	-15.73	-29.827	PASS
			4804.68	-37.502	-15.73	-21.772	PASS
		39	4882.09	-37.682	-17.06	-20.622	PASS
		78	2483.50	-47.940	-16.79	-31.150	PASS
			4959.49	-39.225	-16.79	-22.435	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-43.666	-15.73	-27.936	PASS
			4803.85	-42.284	-15.73	-26.554	PASS
		39	4882.09	-43.067	-17.08	-25.987	PASS
		78	2483.50	-47.650	-16.79	-30.860	PASS
			4960.33	-38.647	-16.79	-21.857	PASS
8DPSK	3-DH5	0	2400.00	-44.960	-15.91	-29.050	PASS
			4803.85	-35.912	-15.91	-20.002	PASS
		39	4882.09	-43.463	-17.05	-26.413	PASS
		78	2483.50	-48.173	-16.76	-31.413	PASS
			4960.33	-45.924	-16.76	-29.164	PASS

Hopping

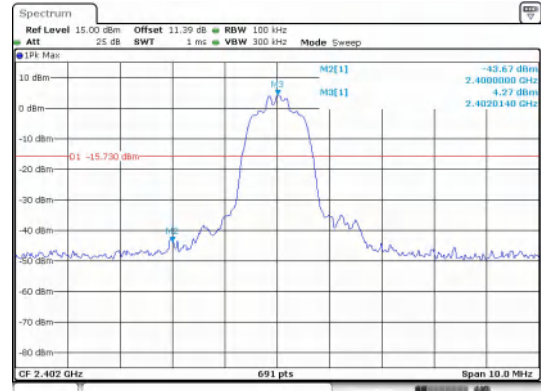
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2400.00	-43.275	-15.7	-27.575	PASS
			2483.50	-47.739	-16.73	-31.009	PASS
π/4DQPSK	2-DH5		2395.02	-43.706	-16.28	-27.426	PASS
			2400.00	-44.791	-16.28	-28.511	PASS
			2483.50	-49.673	-18.33	-31.343	PASS
8DPSK	3-DH5		2398.89	-45.158	-15.77	-29.388	PASS
			2400.00	-47.876	-15.77	-32.106	PASS
			2483.50	-49.366	-20.45	-28.916	PASS

Test Graphs



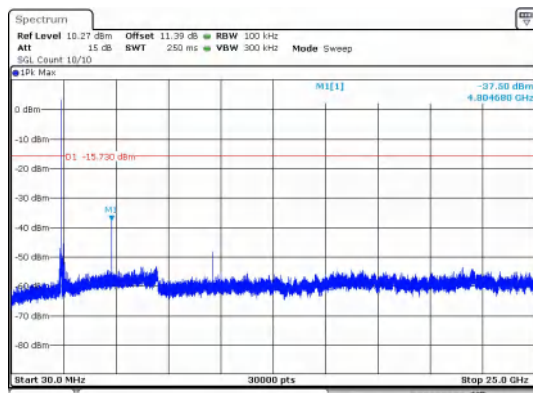
Date: 17_OCT_2024 09:18:42

Out Of Band Emission
GFSK_DH5_Channel 0



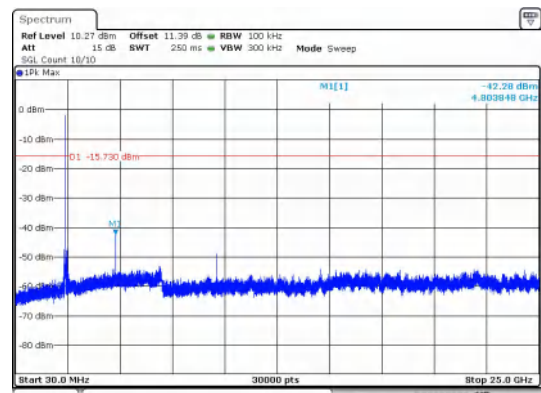
Date: 17_OCT_2024 09:18:15

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



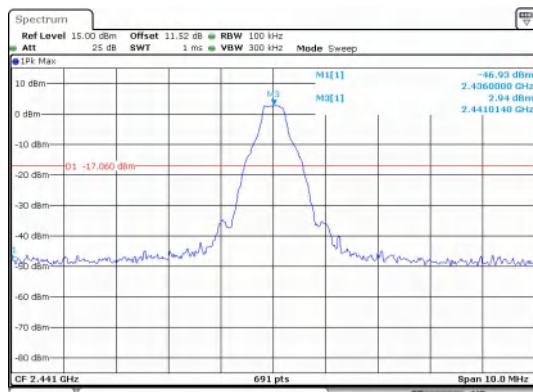
Date: 17_OCT_2024 09:19:05

30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



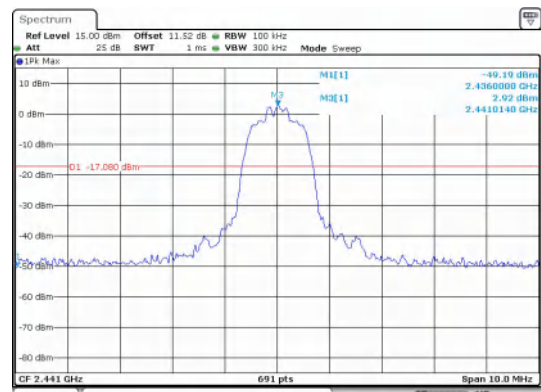
Date: 17_OCT_2024 09:18:37

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



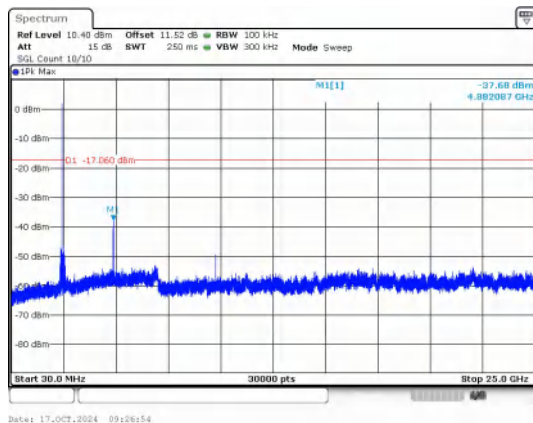
Date: 17_OCT_2024 09:19:31

Out Of Band Emission
GFSK_DH5_Channel 39

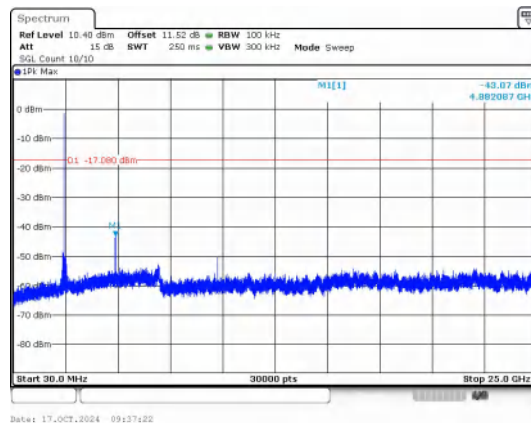


Date: 17_OCT_2024 09:17:00

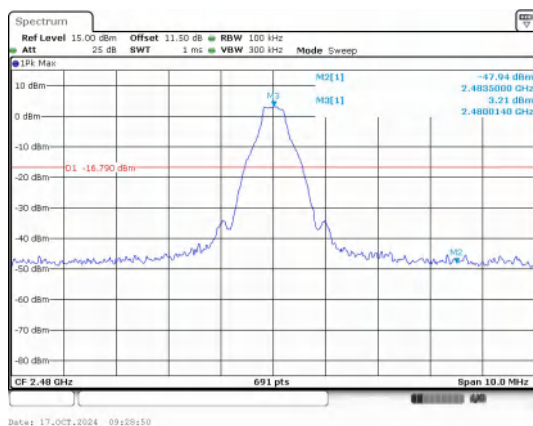
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39



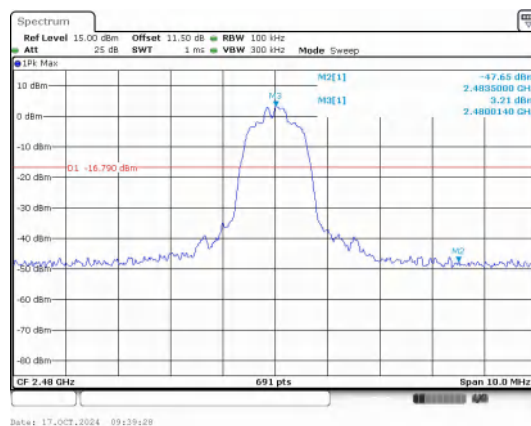
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



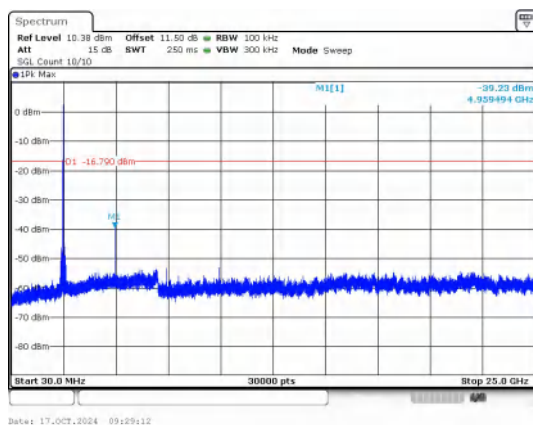
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



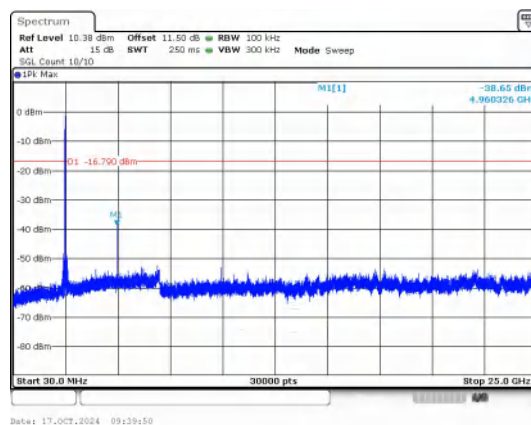
Out Of Band Emission
GFSK_DH5_Channel 78



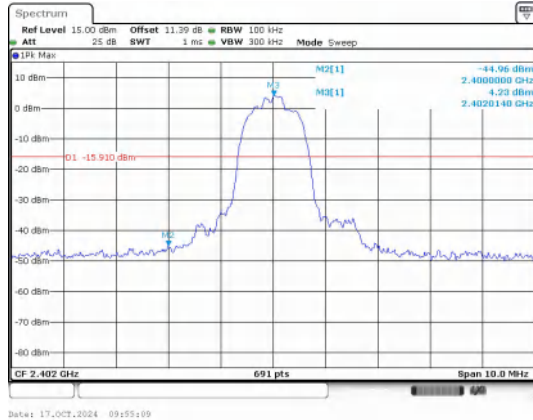
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78



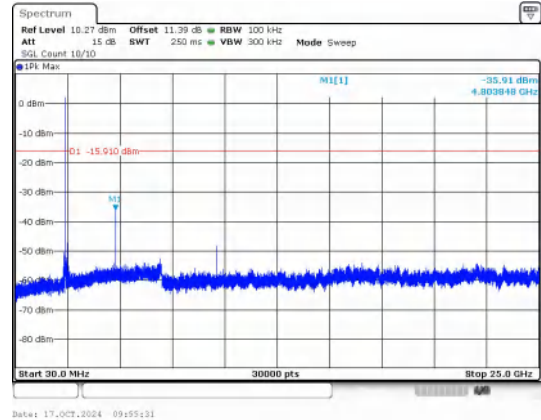
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



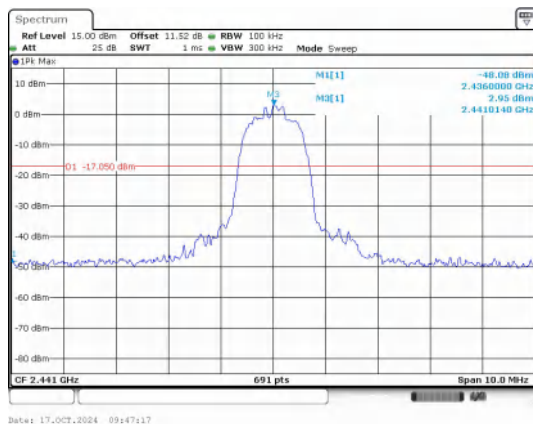
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



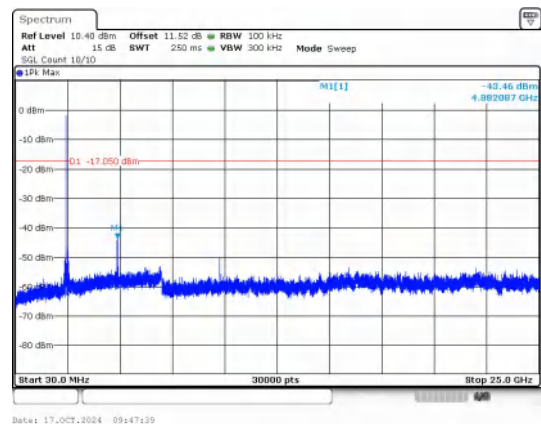
Out Of Band Emission
8DPSK_3-DH5_Channel 0



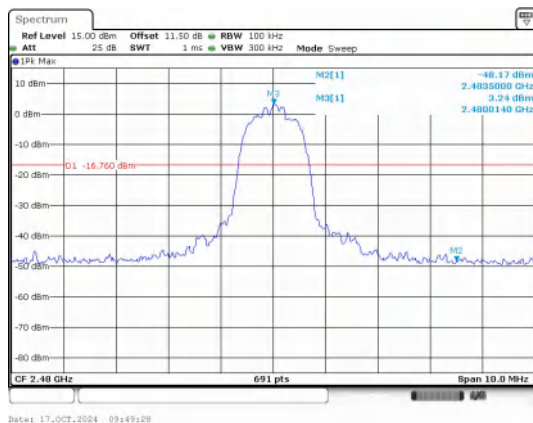
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



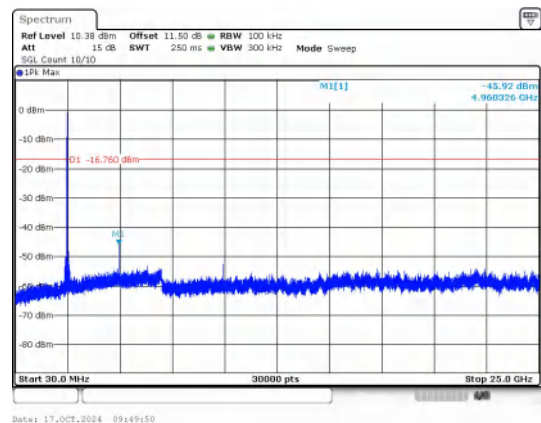
Out Of Band Emission
8DPSK_3-DH5_Channel 39



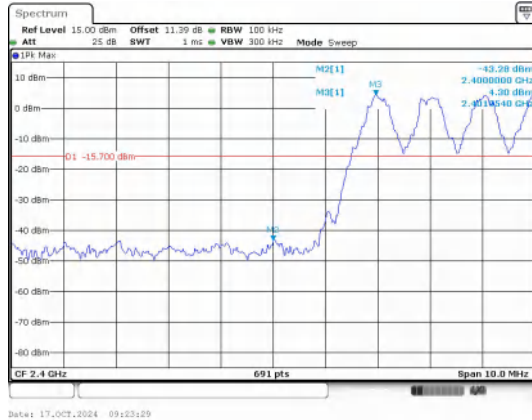
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



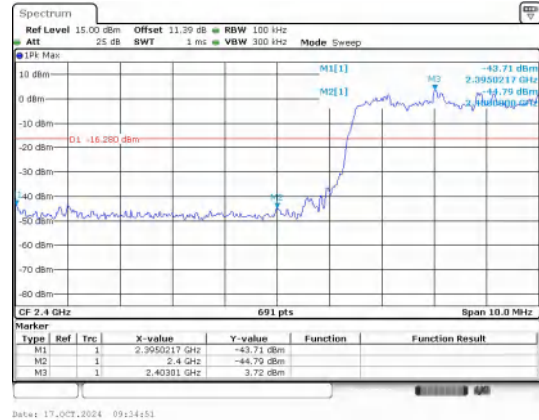
Out Of Band Emission
8DPSK_3-DH5_Channel 78



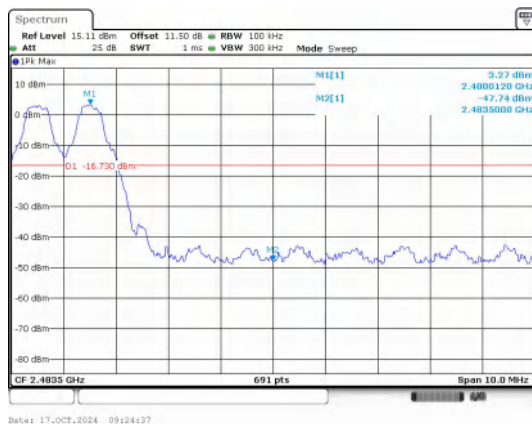
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



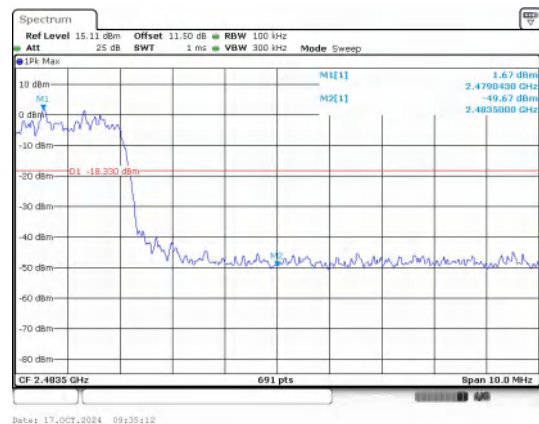
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



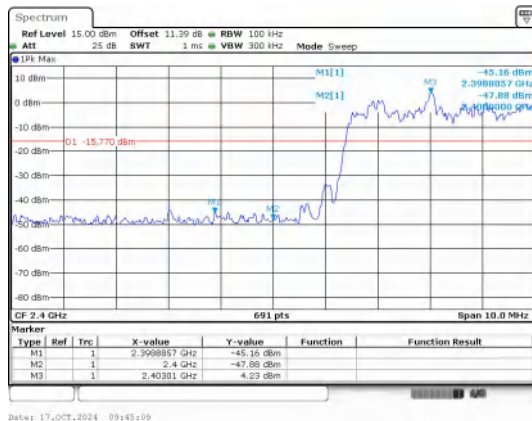
Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



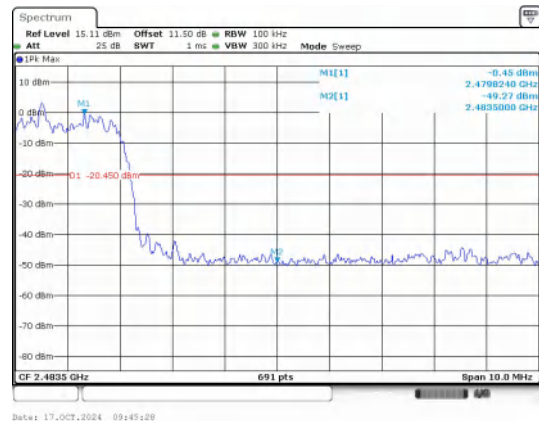
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



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