

Appendix

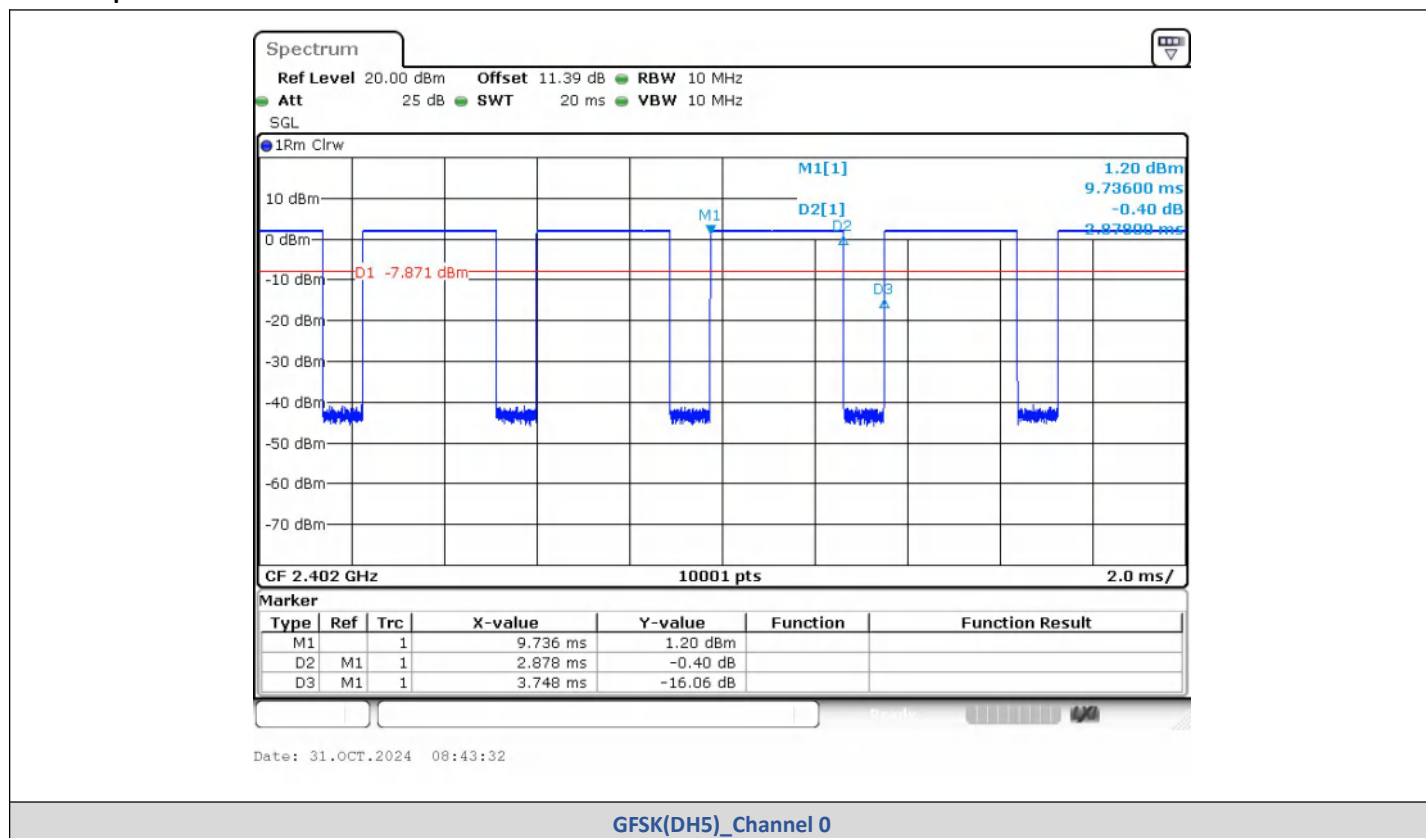
Report No.:	CISRR24101911001
FCC ID:	2BLQZ-Q11
Product Name:	Smart Earphone Watch
Model No.:	Q11
Test Engineer:	Mark Fu
Supervised by:	Rory Huang

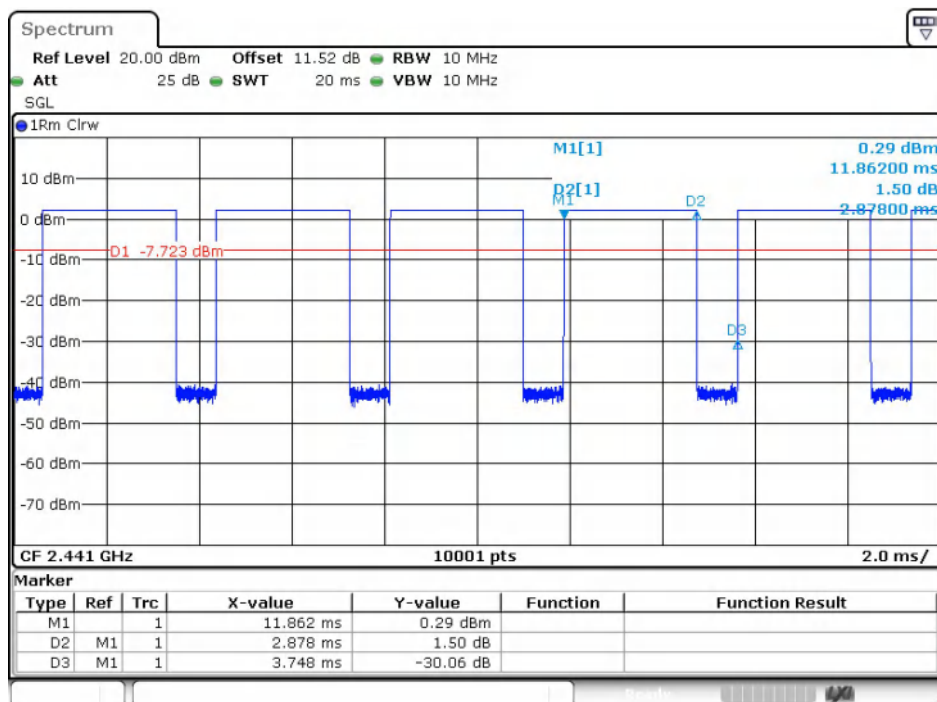
1) Duty Cycle

Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.878	3.748	76.79	0.7679	1.147	0.3475
		39	2.878	3.748	76.79	0.7679	1.147	0.3475
		78	2.880	3.748	76.84	0.7684	1.1441	0.3472
$\pi/4$ DQPSK	2-DH5	0	2.884	3.748	76.95	0.7695	1.1379	0.3467
		39	2.884	3.748	76.95	0.7695	1.1379	0.3467
		78	2.884	3.748	76.95	0.7695	1.1379	0.3467
8DPSK	3-DH5	0	2.888	3.748	77.05	0.7705	1.1323	0.3463
		39	2.886	3.748	77.00	0.7700	1.1351	0.3465
		78	2.888	3.748	77.05	0.7705	1.1323	0.3463

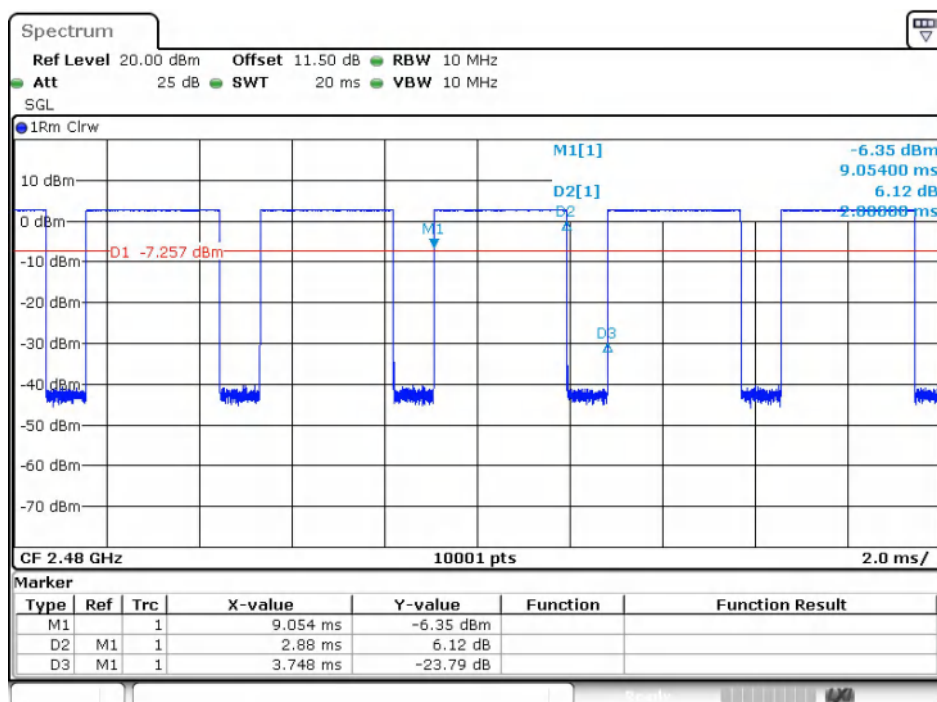
Test Graphs





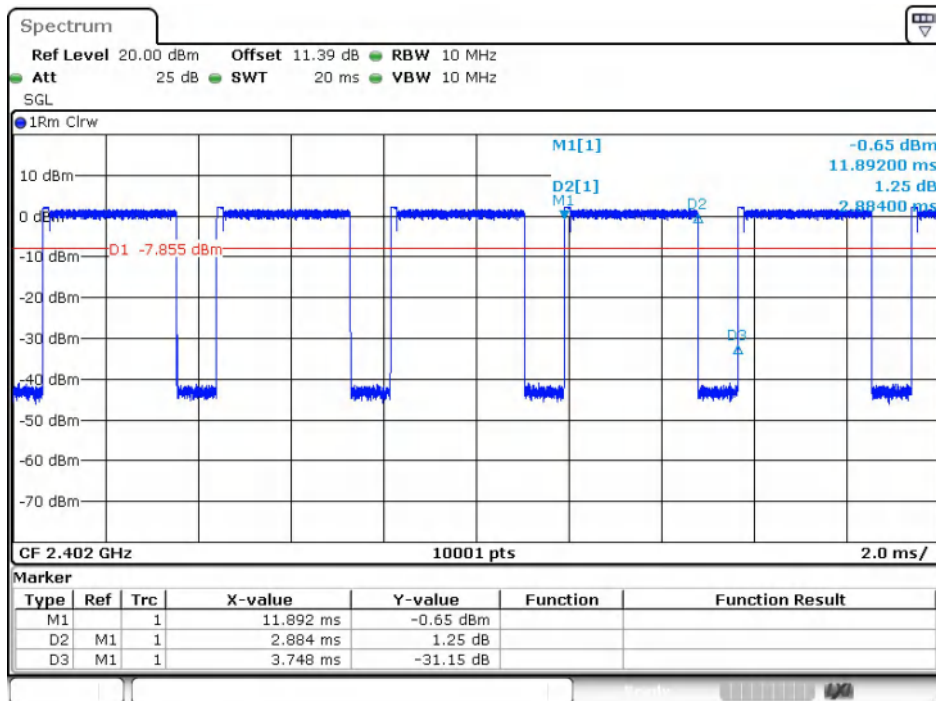
Date: 31.OCT.2024 08:55:03

GFSK(DH5)_Channel 39



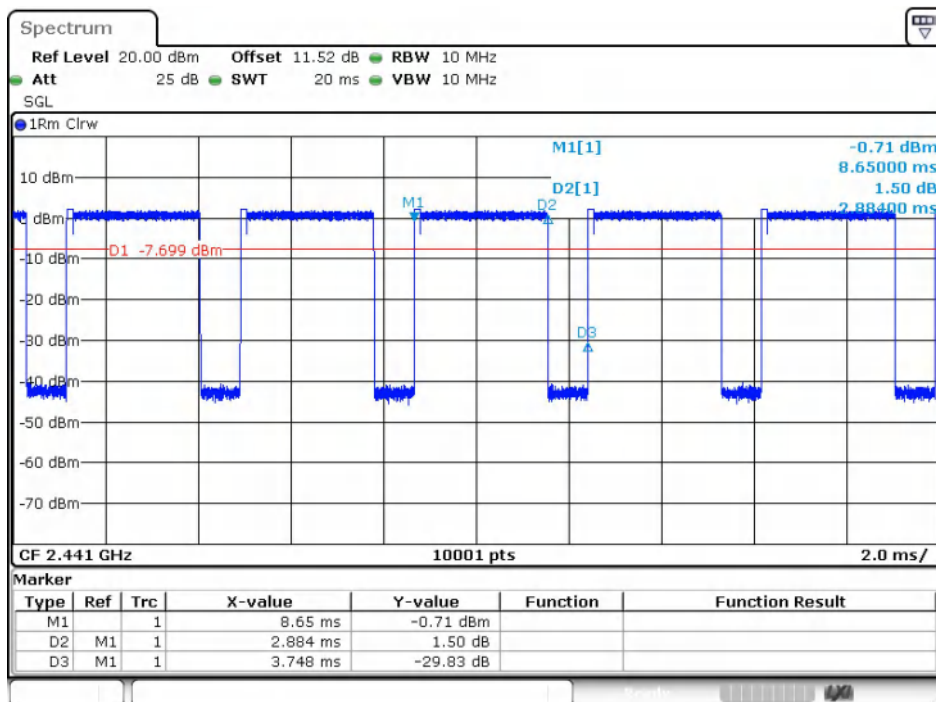
Date: 31.OCT.2024 09:00:37

GFSK(DH5)_Channel 78



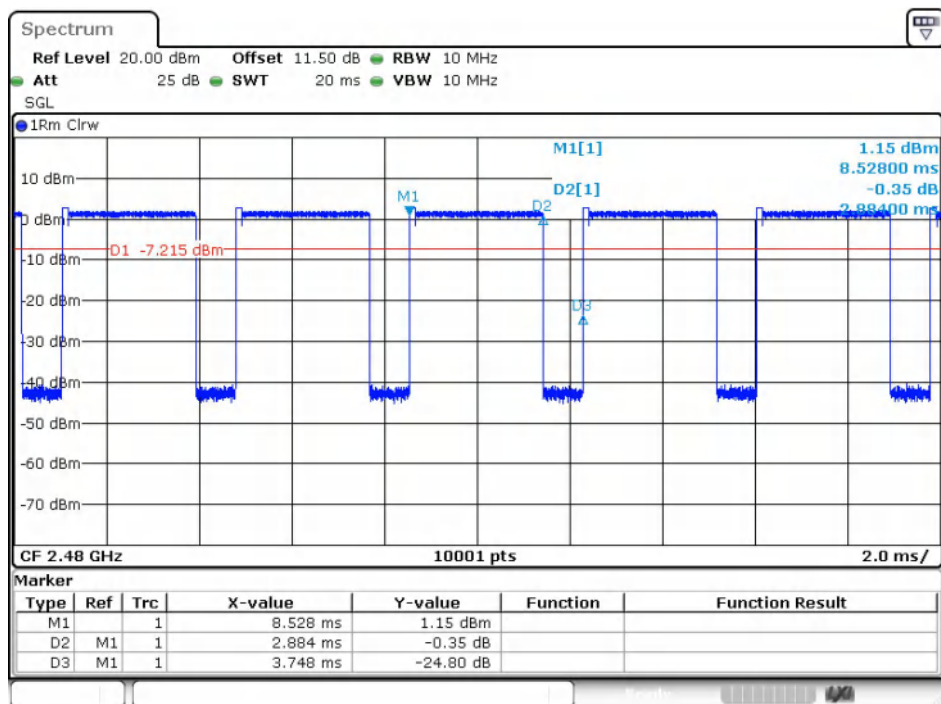
Date: 31.OCT.2024 09:03:00

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



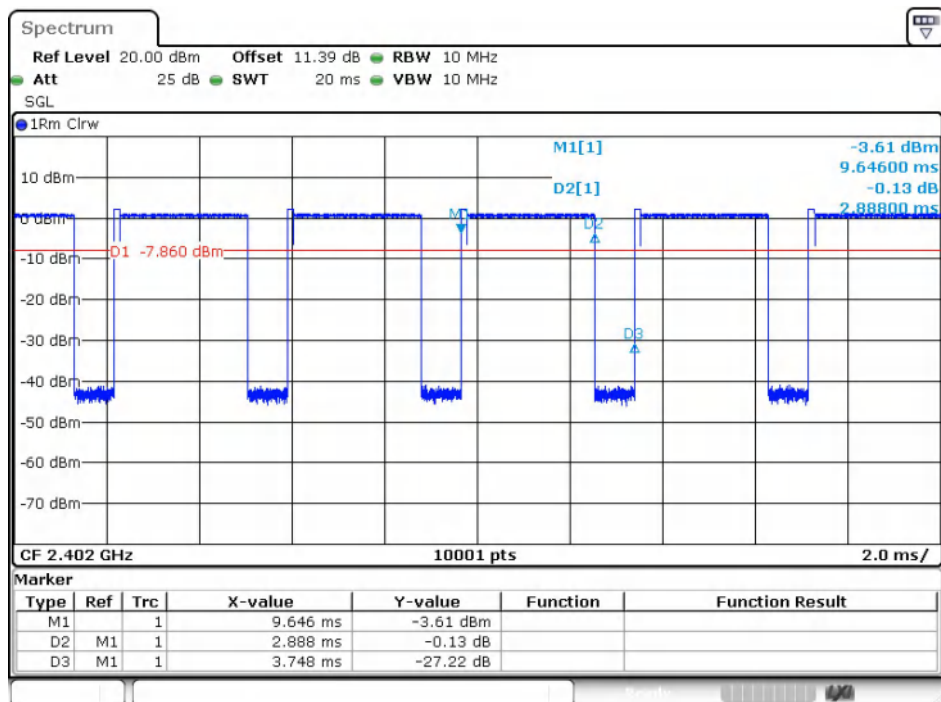
Date: 31.OCT.2024 09:12:22

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



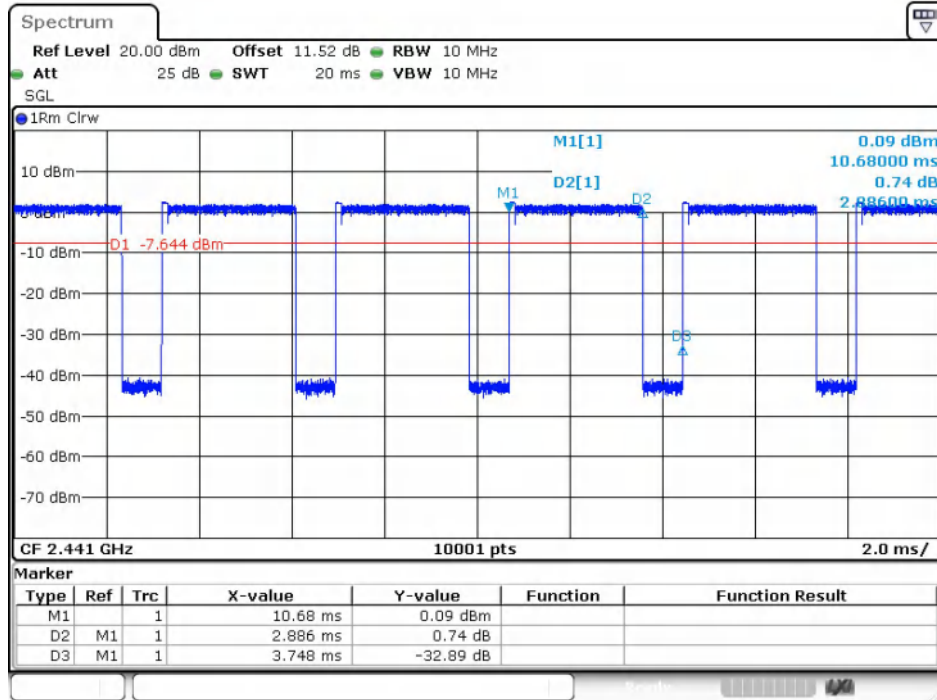
Date: 31.OCT.2024 09:15:05

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



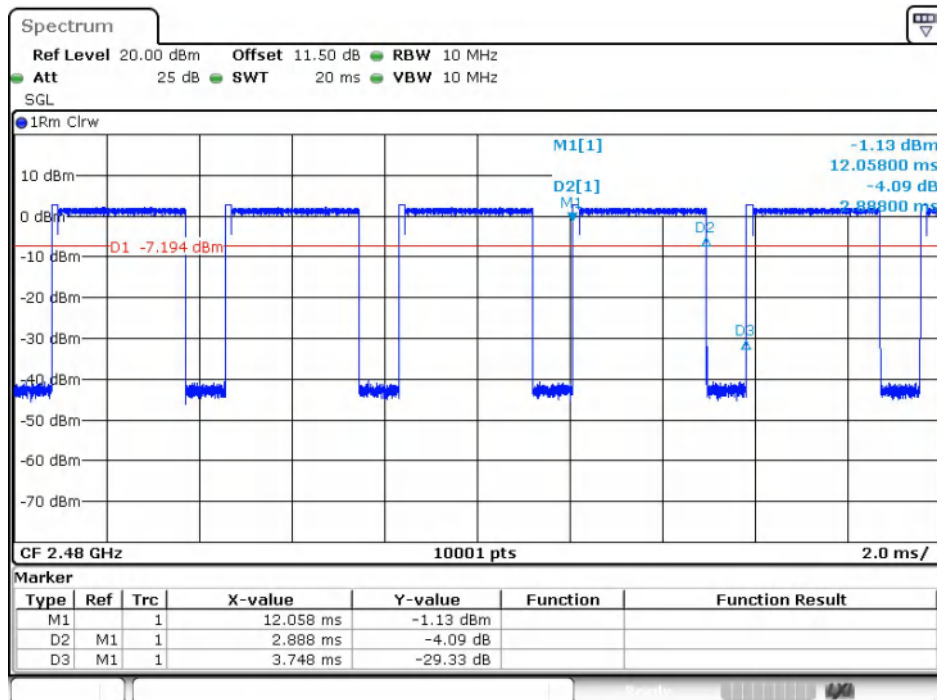
Date: 31.OCT.2024 09:17:25

8DPSK(3-DH5)_Channel 0



Date: 31.OCT.2024 09:25:23

8DPSK(3-DH5)_Channel 39



Date: 31.OCT.2024 09:28:37

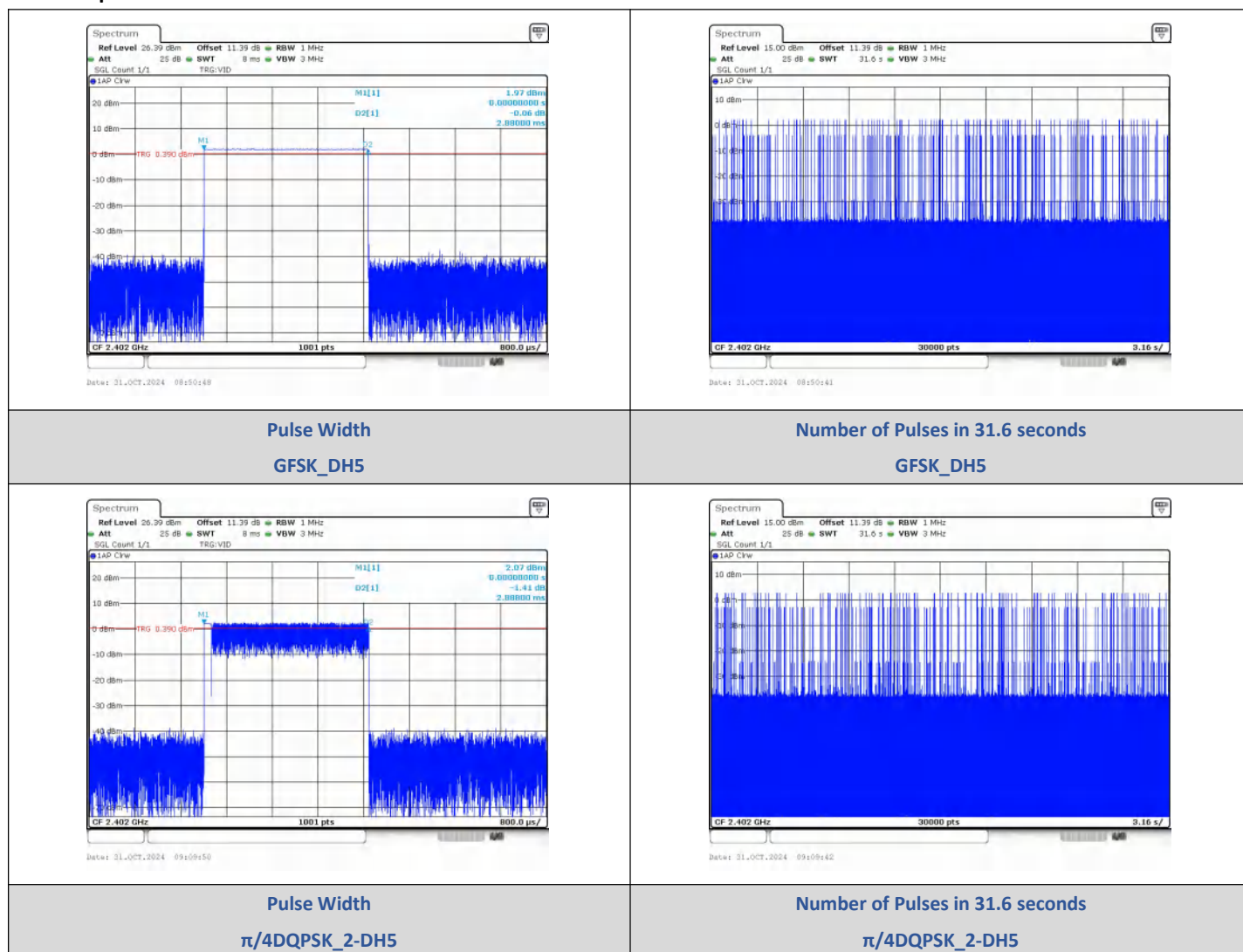
8DPSK(3-DH5)_Channel 78

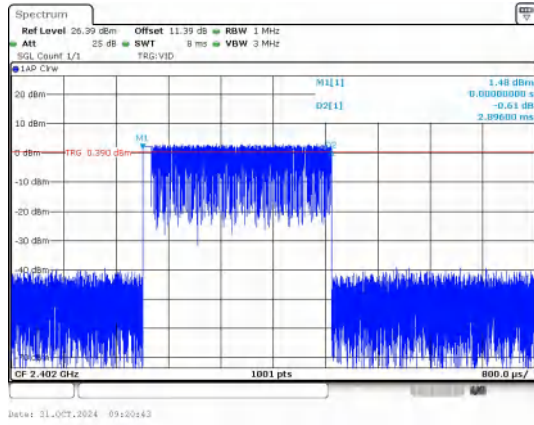
2) Dwell Time

Test Result

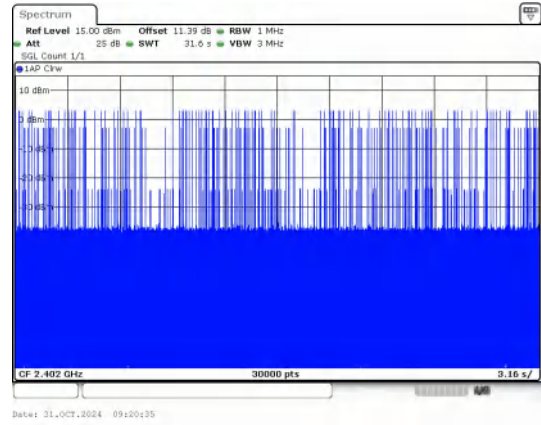
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.880	107	308.16	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.888	103	297.46		PASS
8DPSK	3-DH5		2.896	110	318.56		PASS

Test Graphs





Pulse Width
8DPSK_3-DH5



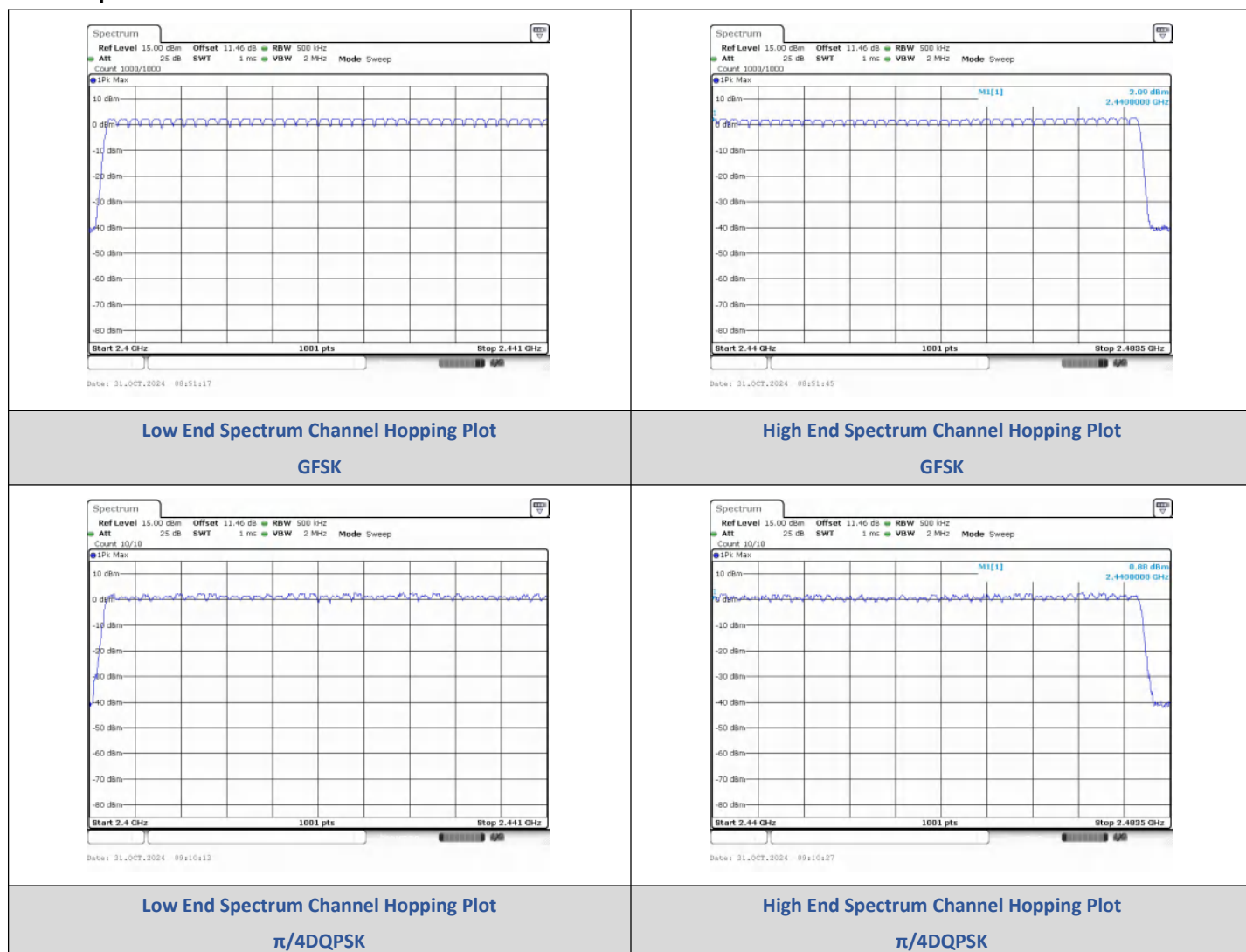
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

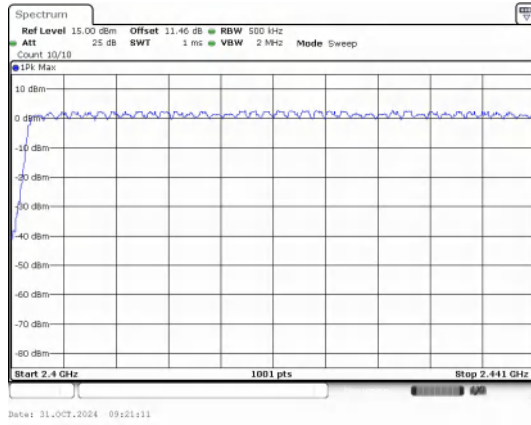
3) Number Of Hopping Channel

Test Result

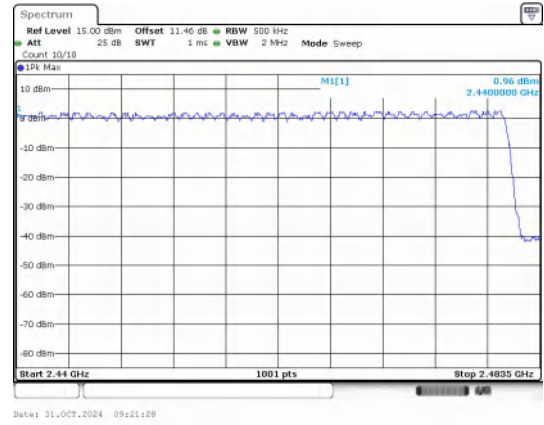
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK



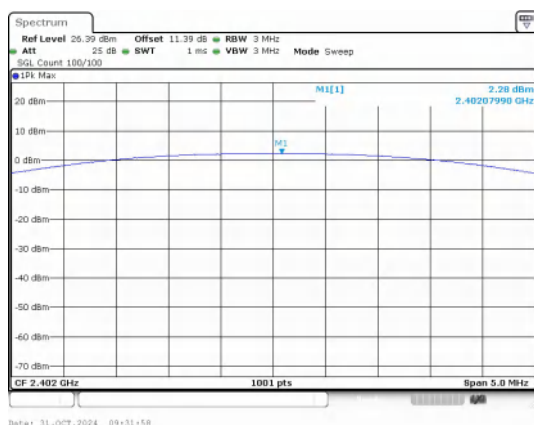
High End Spectrum Channel Hopping Plot
8DPSK

4) Conducted Peak Output Power

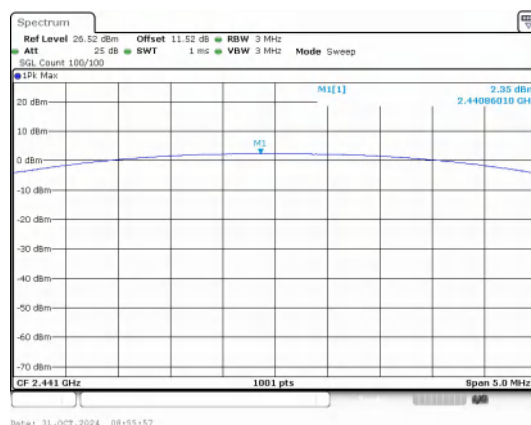
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	2.28	1.69	≤30	PASS
		39	2.35	1.72		PASS
		78	2.80	1.91		PASS
$\pi/4$ DQPSK	2-DH5	0	3.09	2.04	≤20.97	PASS
		39	3.26	2.12		PASS
		78	3.64	2.31		PASS
8DPSK	3-DH5	0	3.58	2.28		PASS
		39	3.69	2.34		PASS
		78	4.10	2.57		PASS

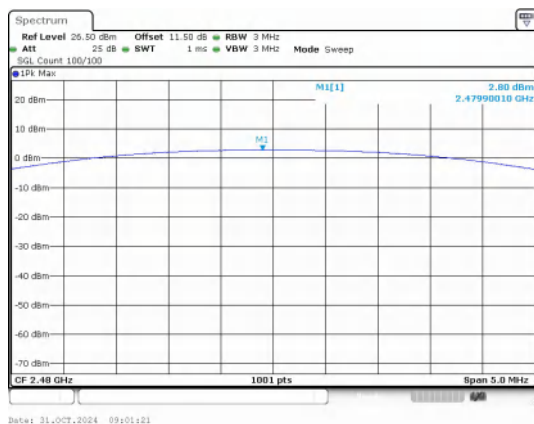
Test Graphs



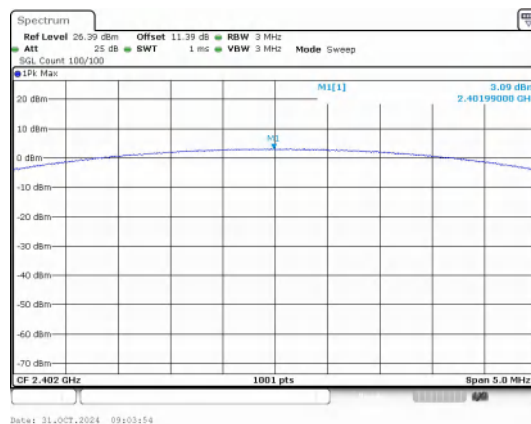
Peak Output Power
GFSK_Channel 0



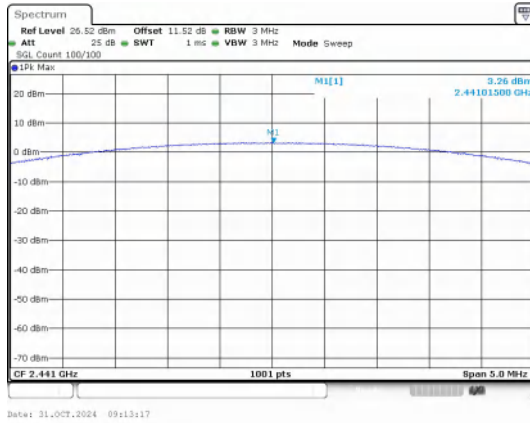
Peak Output Power
GFSK_Channel 39



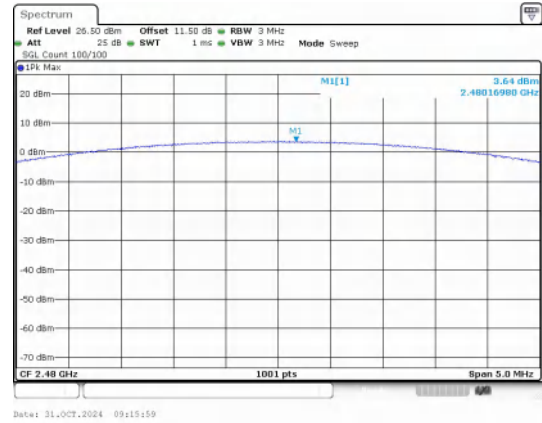
Peak Output Power
GFSK_Channel 78



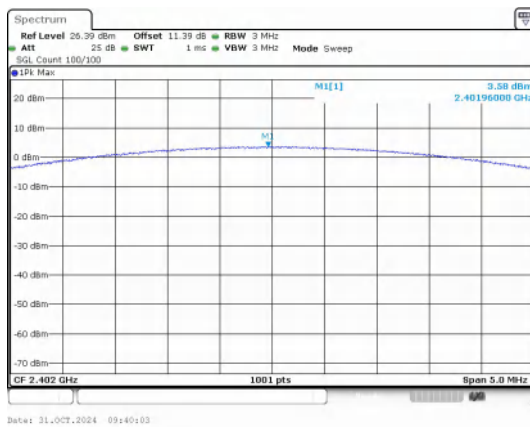
Peak Output Power
 $\pi/4$ DQPSK_Channel 0



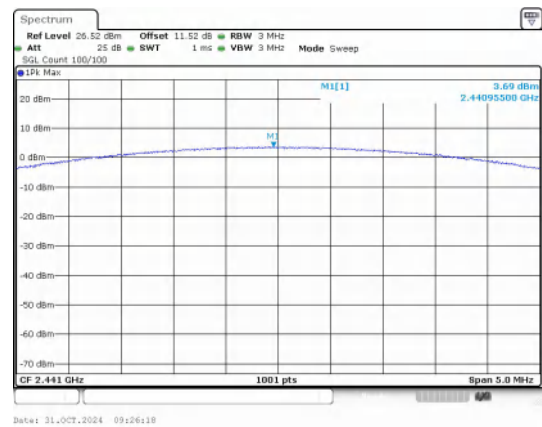
Peak Output Power
 $\pi/4$ DQPSK_Channel 39



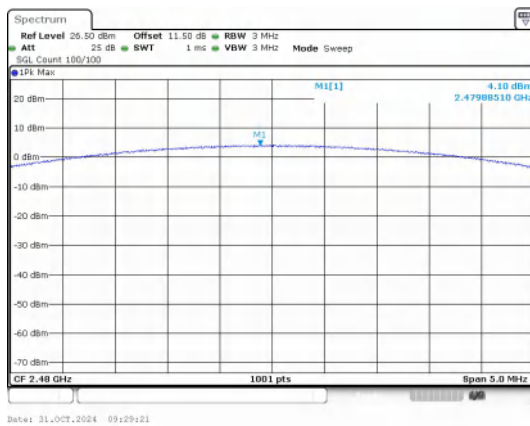
Peak Output Power
 $\pi/4$ DQPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



Peak Output Power
8DPSK_Channel 39



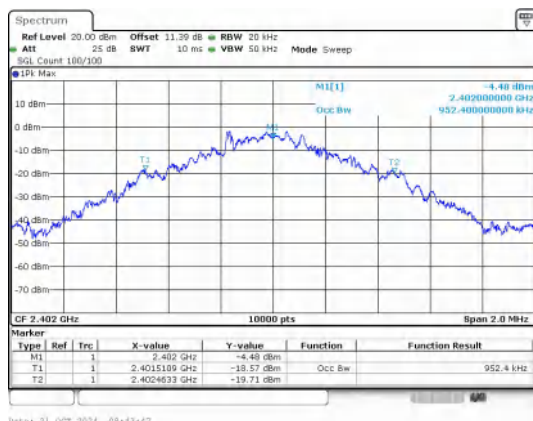
Peak Output Power
8DPSK_Channel 78

5) 99% Bandwidth

Test Result

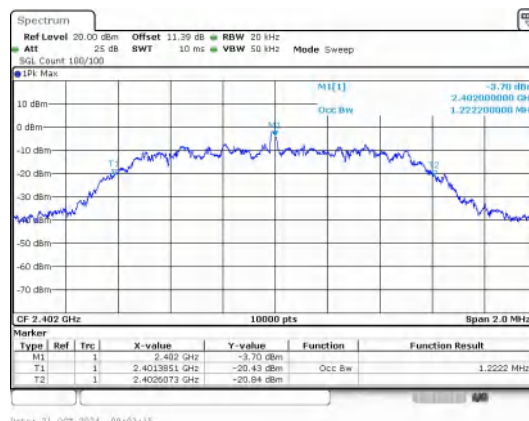
Modulation	Channel	Center Frequency (MHz)	99% BW (MHz)
GFSK	0	2402	0.95240
	39	2441	0.96720
	78	2480	0.97320
$\pi/4$ DQPSK	0	2402	1.2222
	39	2441	1.2366
	78	2480	1.2372
8DPSK	0	2402	1.2222
	39	2441	1.2172
	78	2480	1.2180

Test Graphs

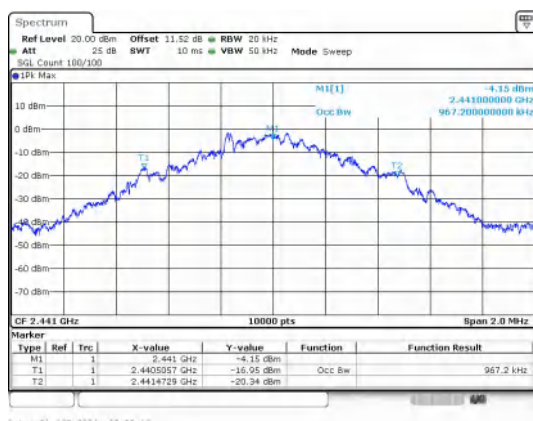


Date: 31-OCT-2024 09:43:47

GFSK_DH5_Channel 0

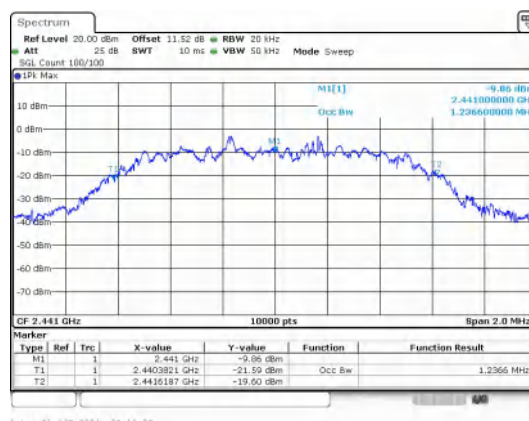


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 $\pi/4$ DQPSK_2-DH5_Channel 0


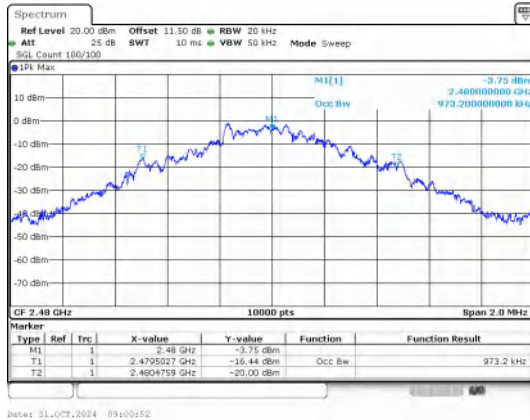
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GFSK_DH5_Channel 39

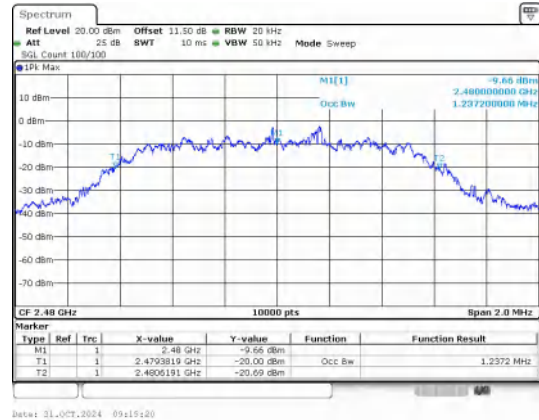


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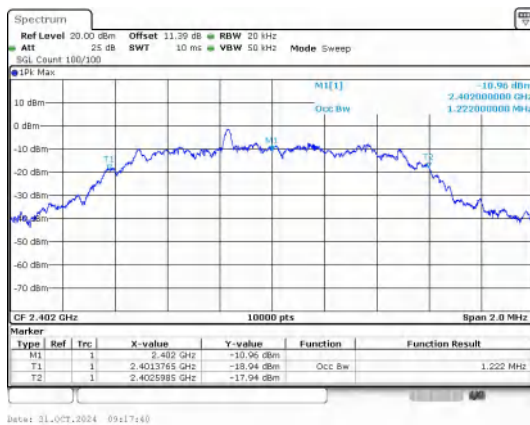
 $\pi/4$ DQPSK_2-DH5_Channel 39



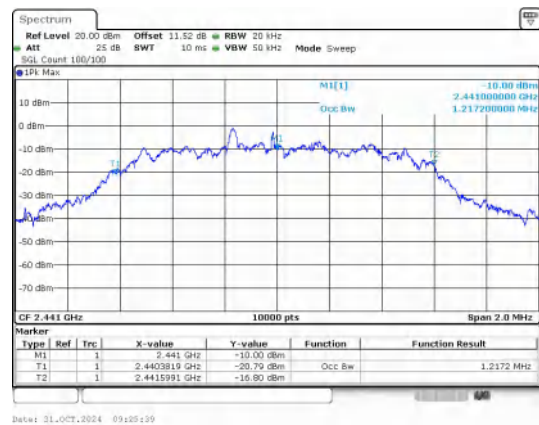
GFSK_DH5_Channel 78



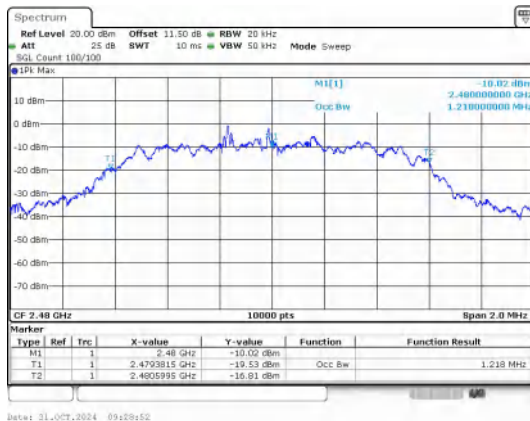
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



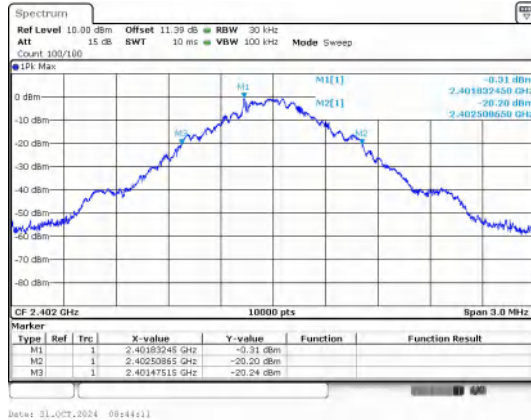
8DPSK_3-DH5_Channel 78

6) 20dB Bandwidth

Test Result

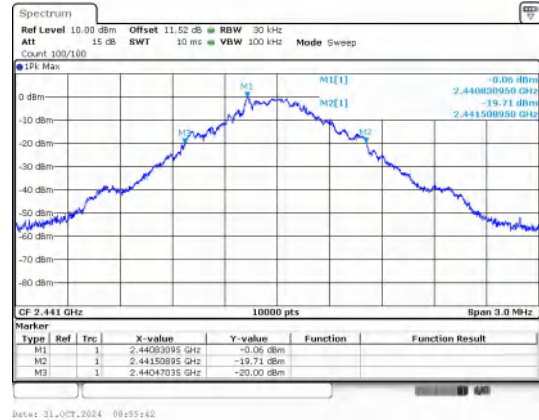
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.030
	39	2441 MHz	1.040
	78	2480 MHz	1.040
$\pi/4$ DQPSK	0	2402 MHz	1.330
	39	2441 MHz	1.330
	78	2480 MHz	1.350
8DPSK	0	2402 MHz	1.290
	39	2441 MHz	1.290
	78	2480 MHz	1.280

Test Graphs



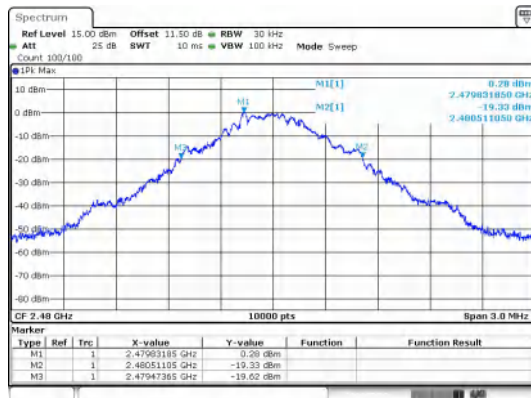
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GFSK_DH5_Channel 0



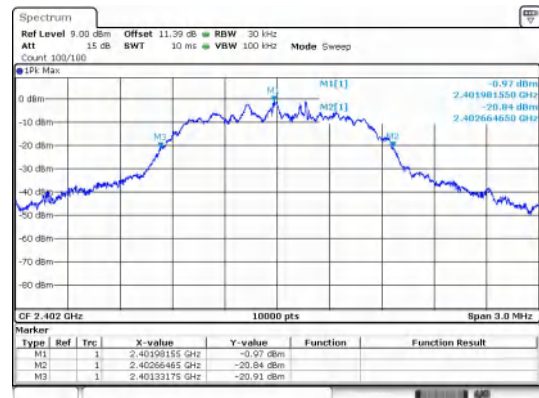
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GFSK_DH5_Channel 39



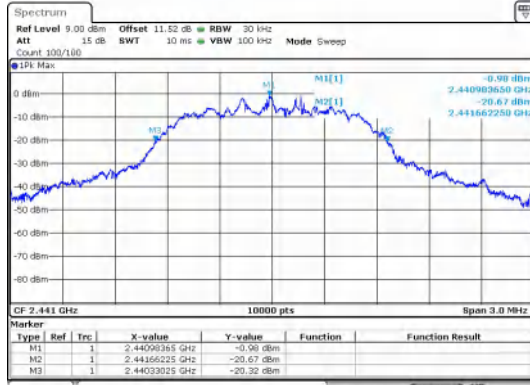
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GFSK_DH5_Channel 78

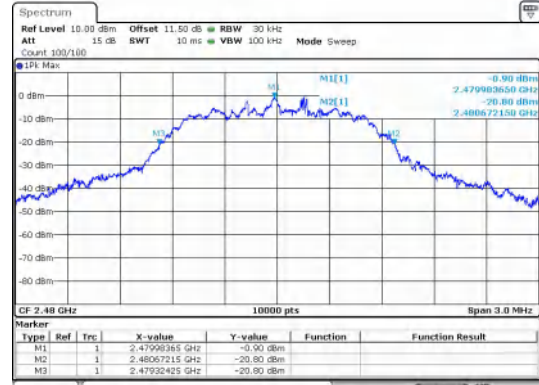


Date: 31.OCT.2024 09:53:39

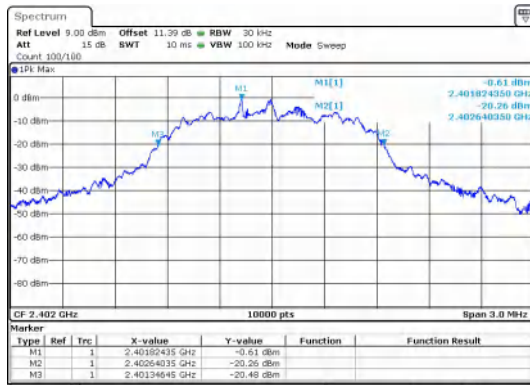
 $\pi/4$ DQPSK_2-DH5_Channel 0



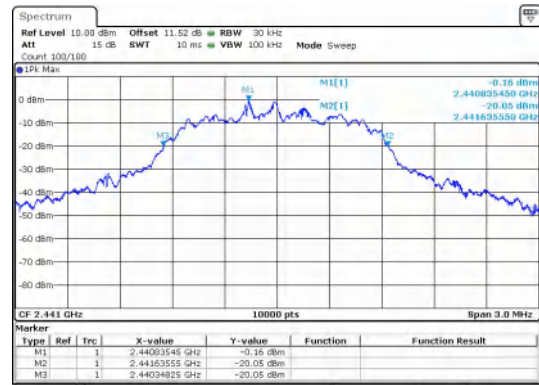
$\pi/4$ DQPSK_2-DH5_Channel 39



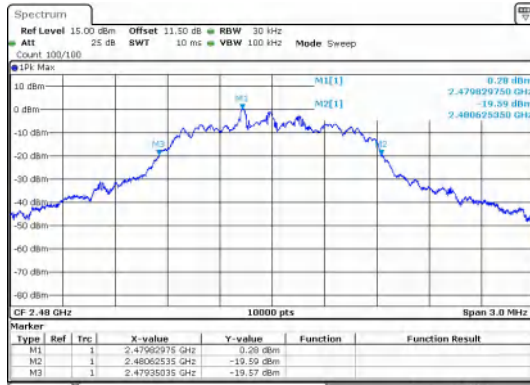
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



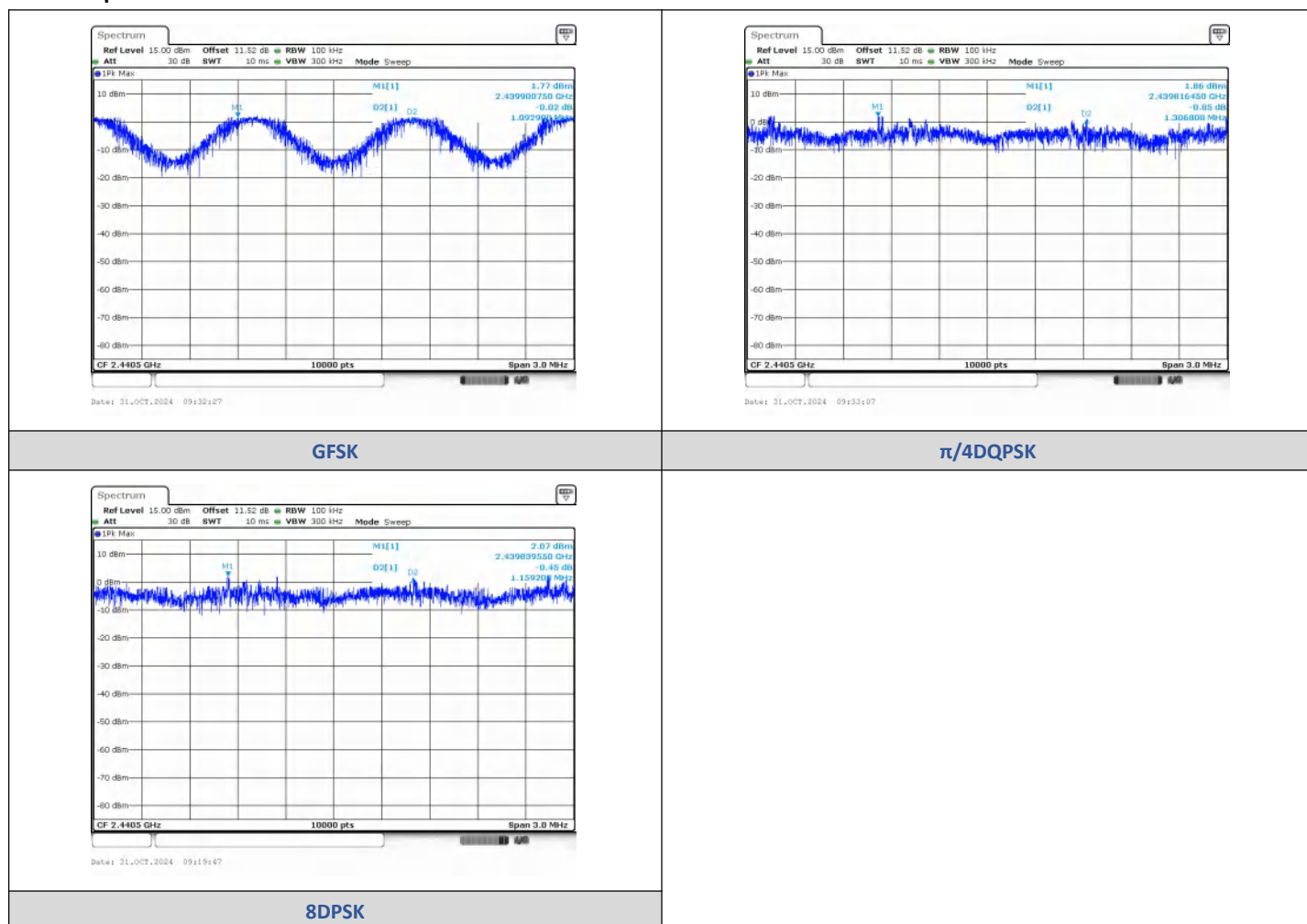
8DPSK_3-DH5_Channel 78

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	2439.9007	2440.9936	1.0929	1.04	PASS
$\pi/4$ DQPSK	2-DH5	2439.8164	2441.1233	1.3068	0.887	PASS
8DPSK	3-DH5	2439.8396	2440.9988	1.1592	0.86	PASS

Test Graphs



8) Conducted Out Of Band Emission

Test Result

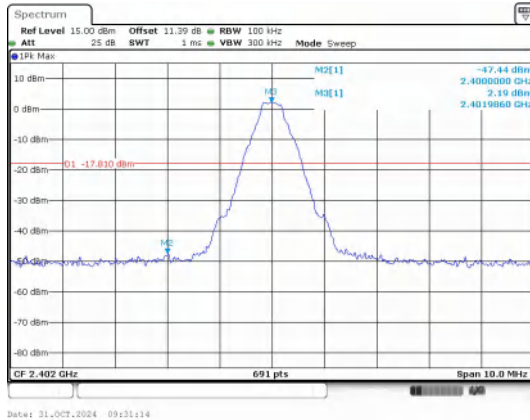
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-47.439	-17.81	-29.629	PASS
			4803.85	-42.419	-17.81	-24.609	PASS
		39	4882.09	-41.759	-17.72	-24.039	PASS
		78	2483.50	-49.532	-17.32	-32.212	PASS
			4960.33	-38.559	-17.32	-21.239	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-48.332	-18.08	-30.252	PASS
			4803.85	-42.299	-18.08	-24.219	PASS
		39	4882.09	-44.033	-17.82	-26.213	PASS
		78	2483.50	-49.617	-17.5	-32.117	PASS
			4960.33	-39.661	-17.5	-22.161	PASS
8DPSK	3-DH5	0	2400.00	-48.571	-17.91	-30.661	PASS
			4803.85	-42.668	-17.91	-24.758	PASS
		39	4882.09	-45.208	-17.84	-27.368	PASS
		78	2483.50	-50.355	-17.5	-32.855	PASS
			4960.33	-40.103	-17.5	-22.603	PASS

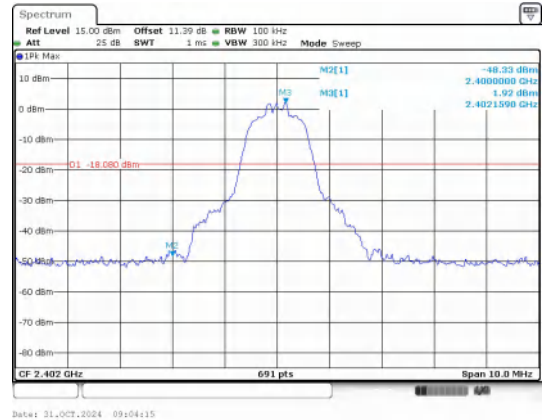
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2397.06	-44.107	-18.07	-26.037	PASS
			2400.00	-46.059	-18.07	-27.989	PASS
			2483.50	-49.868	-18.11	-31.758	PASS
$\pi/4$ DQPSK	2-DH5		2397.13	-46.682	-18.11	-28.572	PASS
			2400.00	-49.136	-18.11	-31.026	PASS
			2483.50	-47.486	-21.06	-26.426	PASS
8DPSK	3-DH5		2398.99	-45.061	-17.99	-27.071	PASS
			2400.00	-45.761	-17.99	-27.771	PASS
			2483.50	-49.035	-20.26	-28.775	PASS

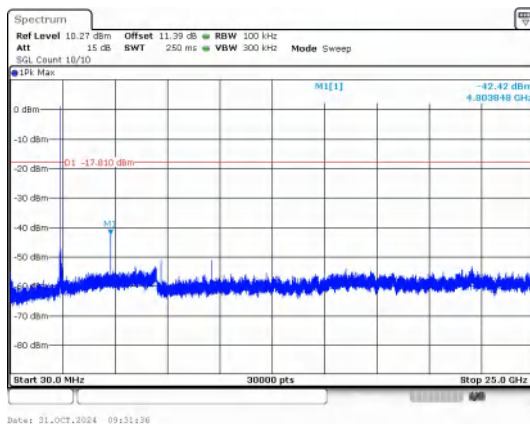
Test Graphs



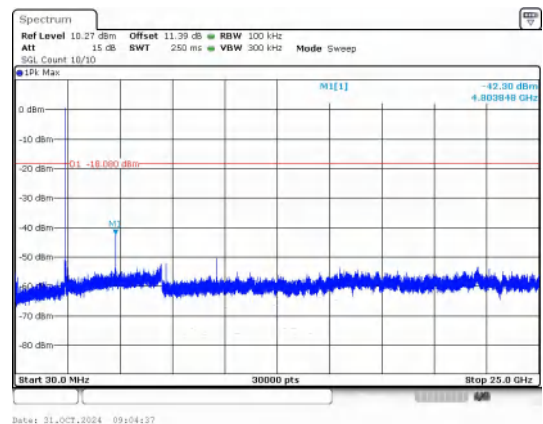
Out Of Band Emission
GFSK_DH5_Channel 0



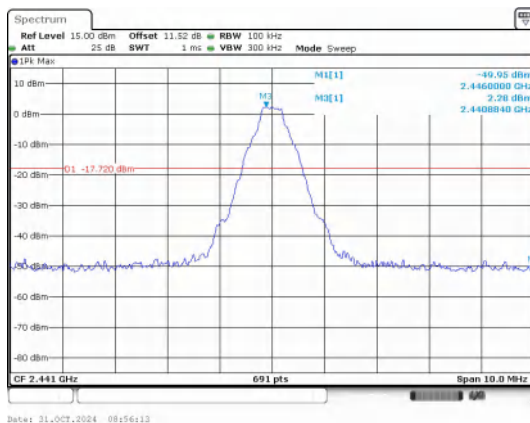
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0



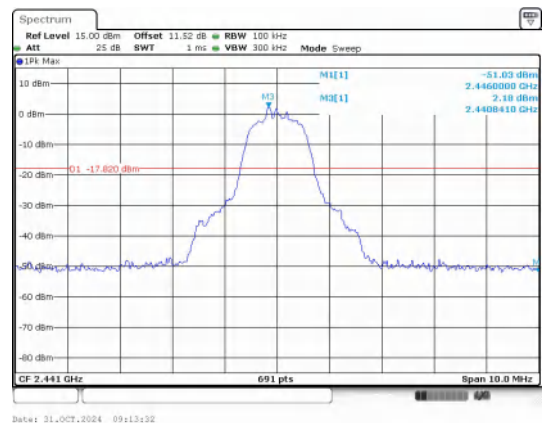
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



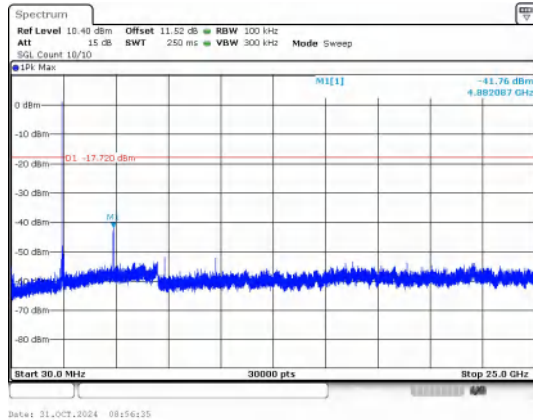
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 0



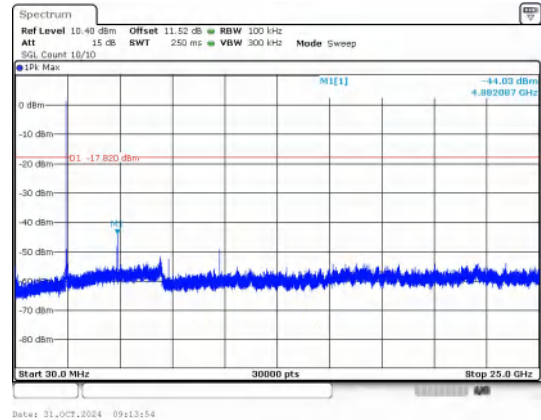
Out Of Band Emission
GFSK_DH5_Channel 39



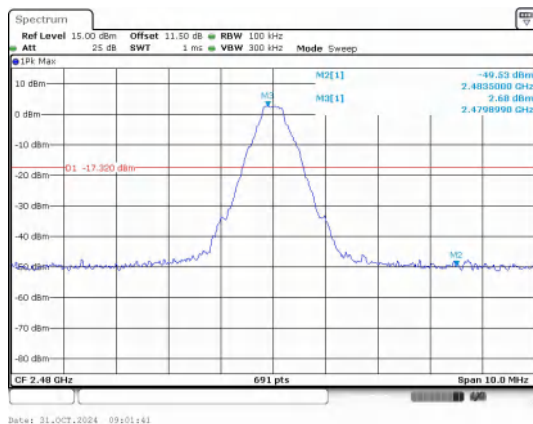
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39



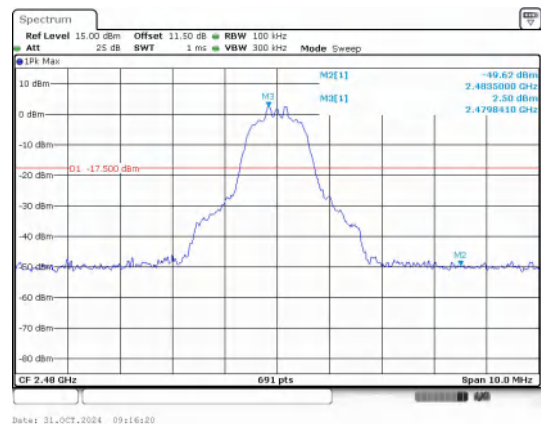
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



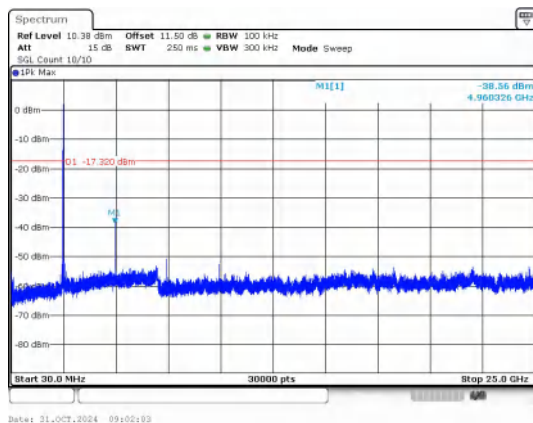
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



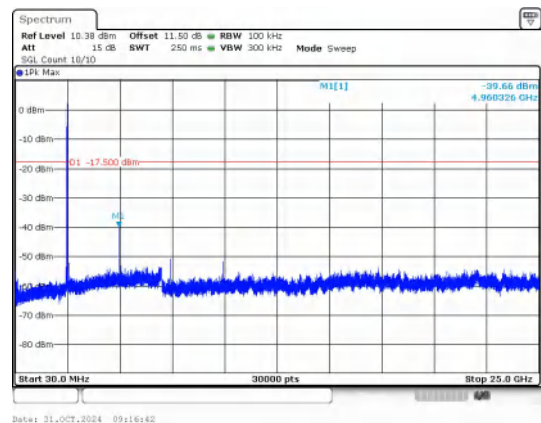
Out Of Band Emission
GFSK_DH5_Channel 78



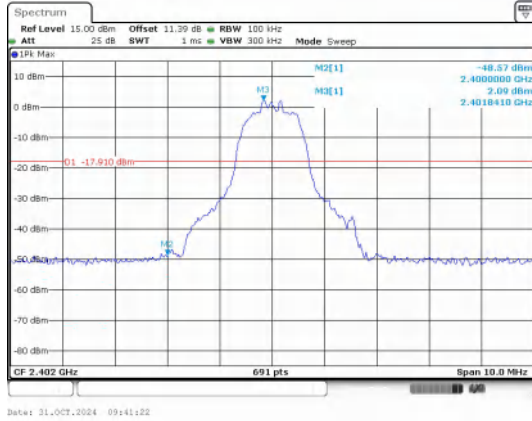
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78



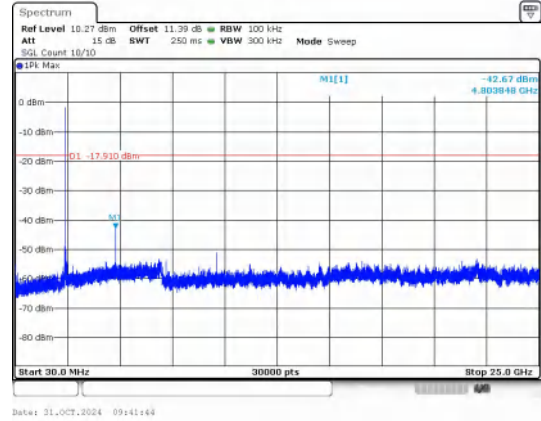
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



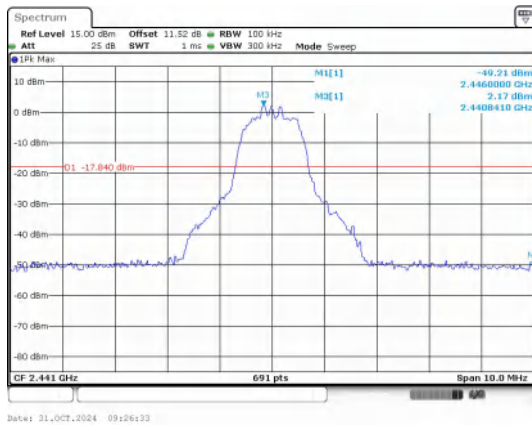
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



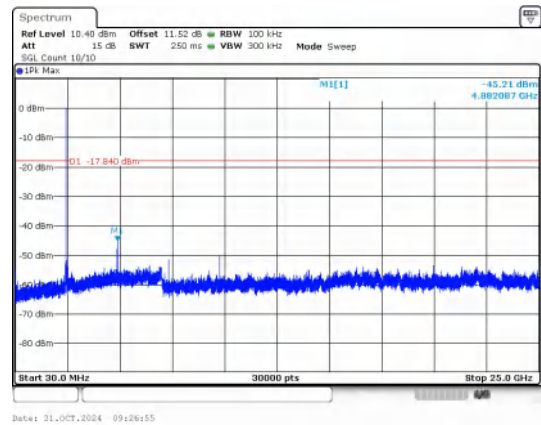
Out Of Band Emission
8DPSK_3-DH5_Channel 0



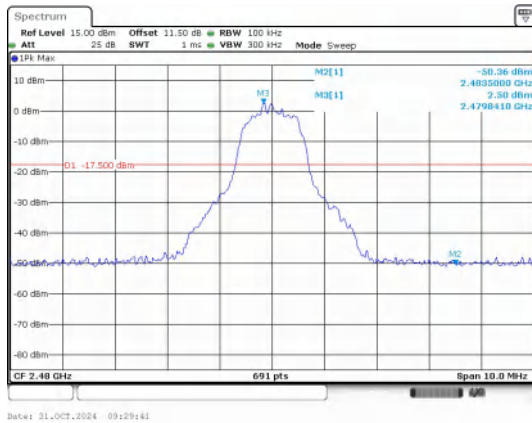
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



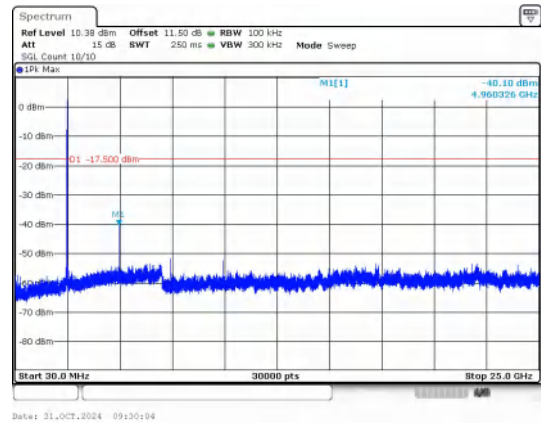
Out Of Band Emission
8DPSK_3-DH5_Channel 39



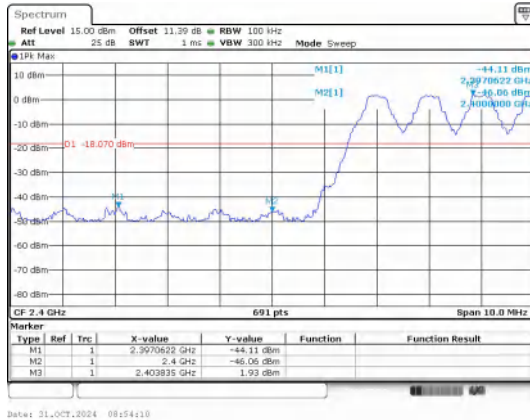
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



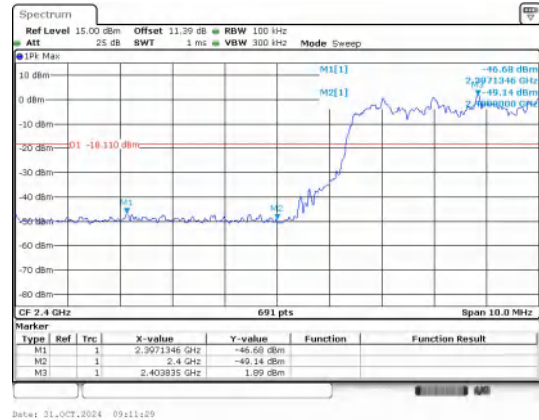
Out Of Band Emission
8DPSK_3-DH5_Channel 78



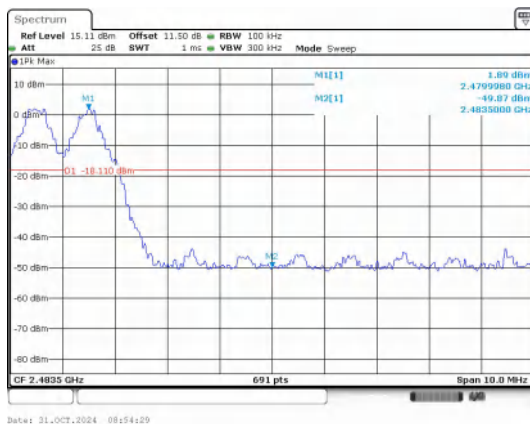
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



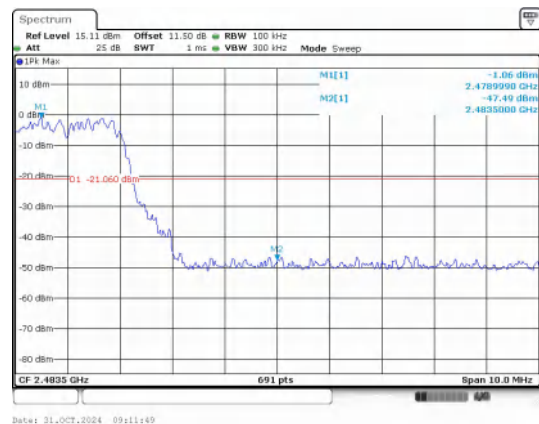
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



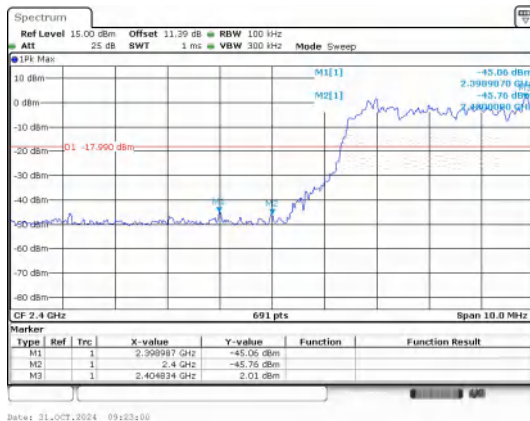
Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



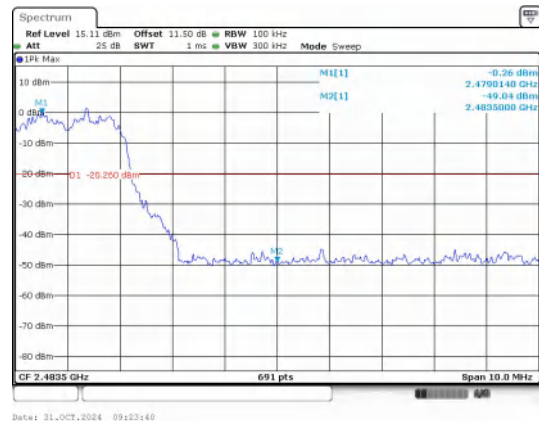
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



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