

Appendix A

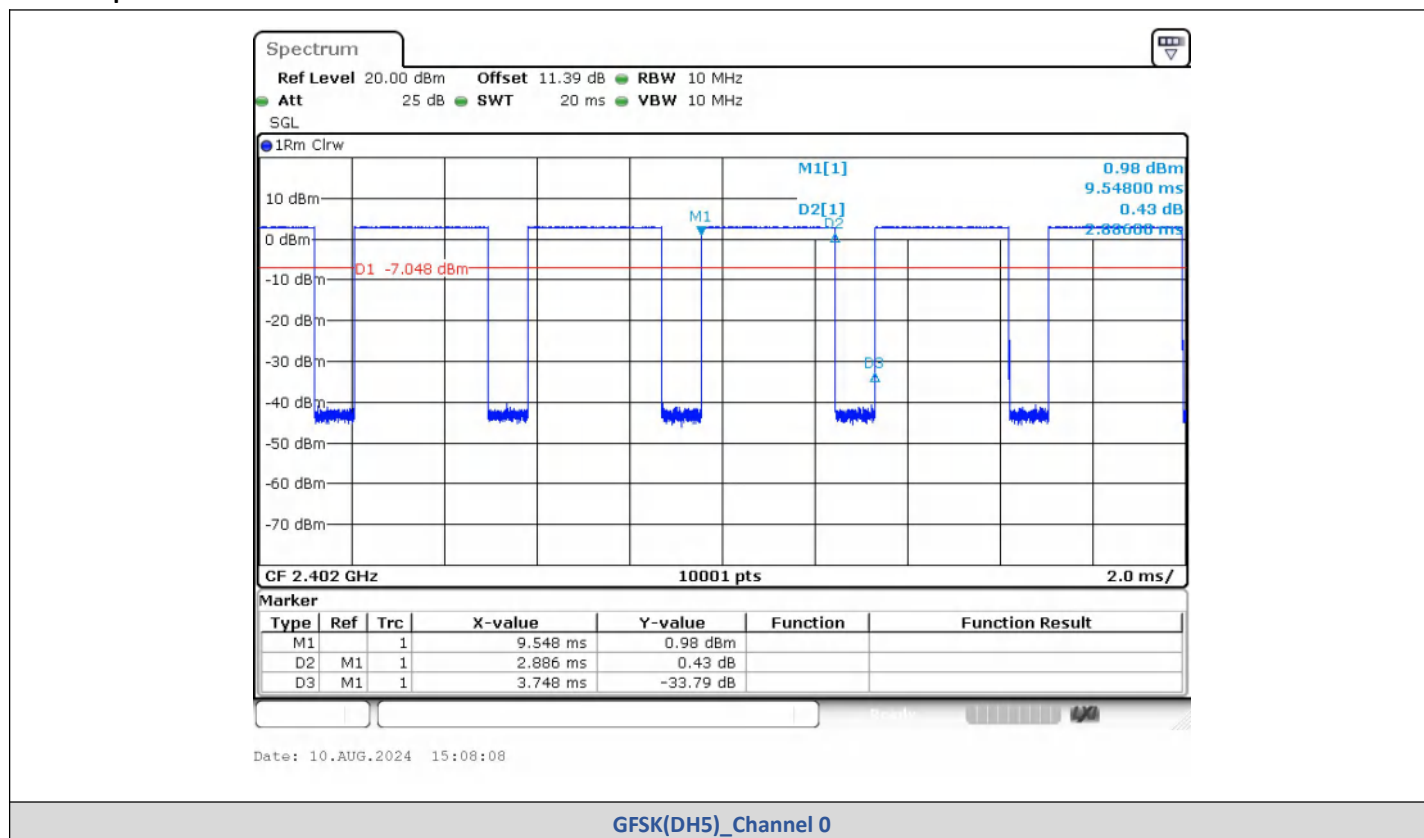
Report No.:	CISRR24080906301
FCC ID:	2A4KD-K25
Product Name:	Helmet headset
Model No.:	K25
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

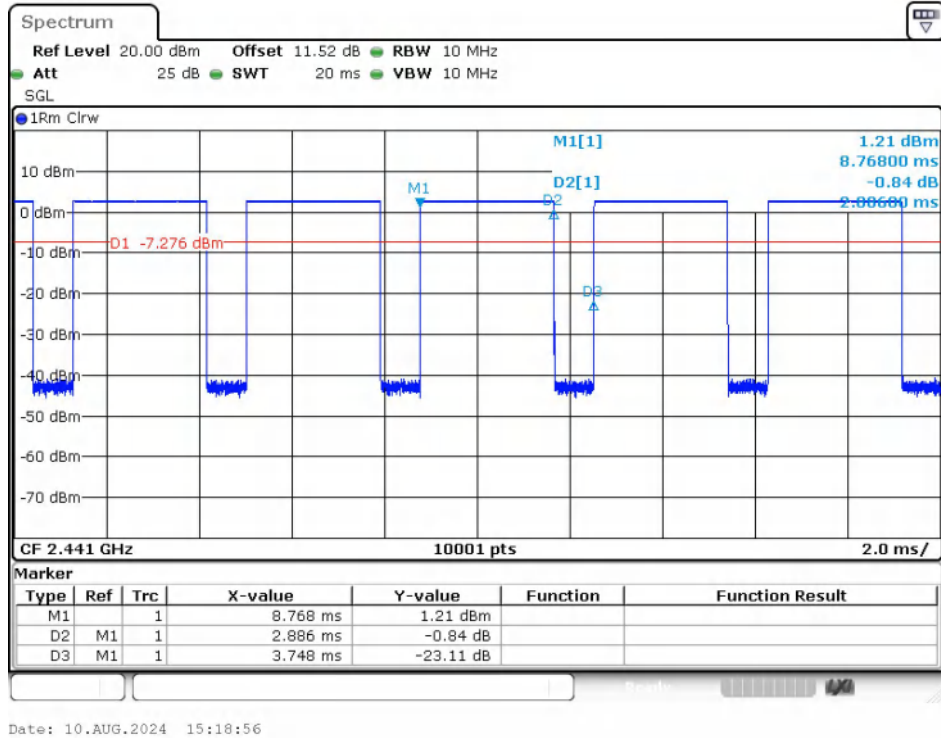
1) Duty Cycle

Test Result

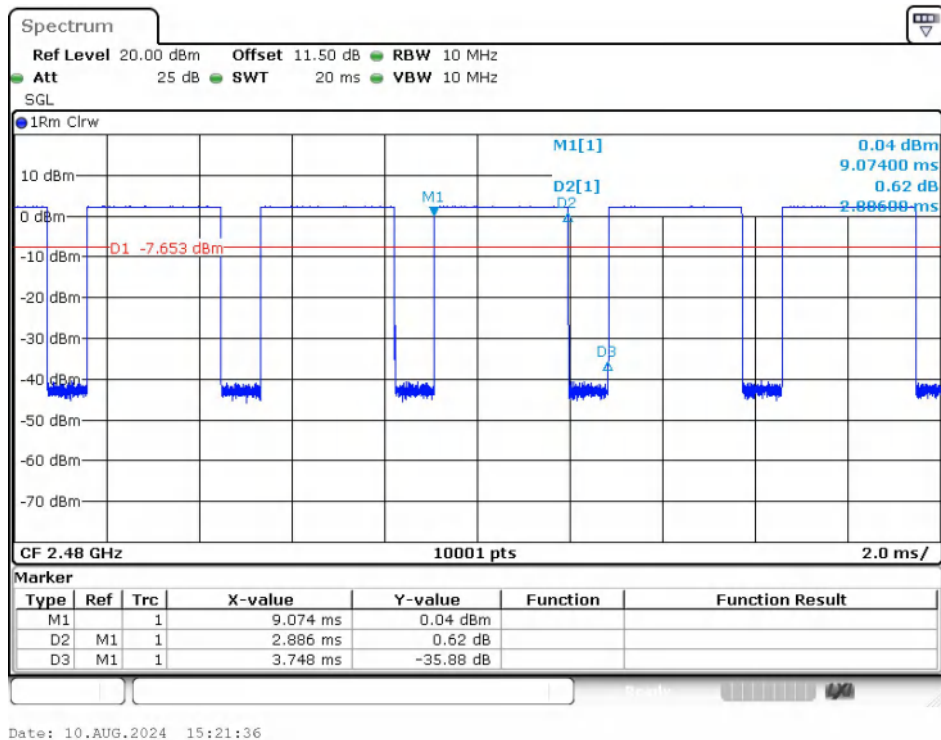
Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.886	3.748	77.00	0.7700	1.1351	0.35
		39	2.886	3.748	77.00	0.7700	1.1351	0.35
		78	2.886	3.748	77.00	0.7700	1.1351	0.35
$\pi/4$ DQPSK	2-DH5	0	2.892	3.748	77.16	0.7716	1.1261	0.35
		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	1.639	2.493	65.72	0.6572	1.823	0.61
		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

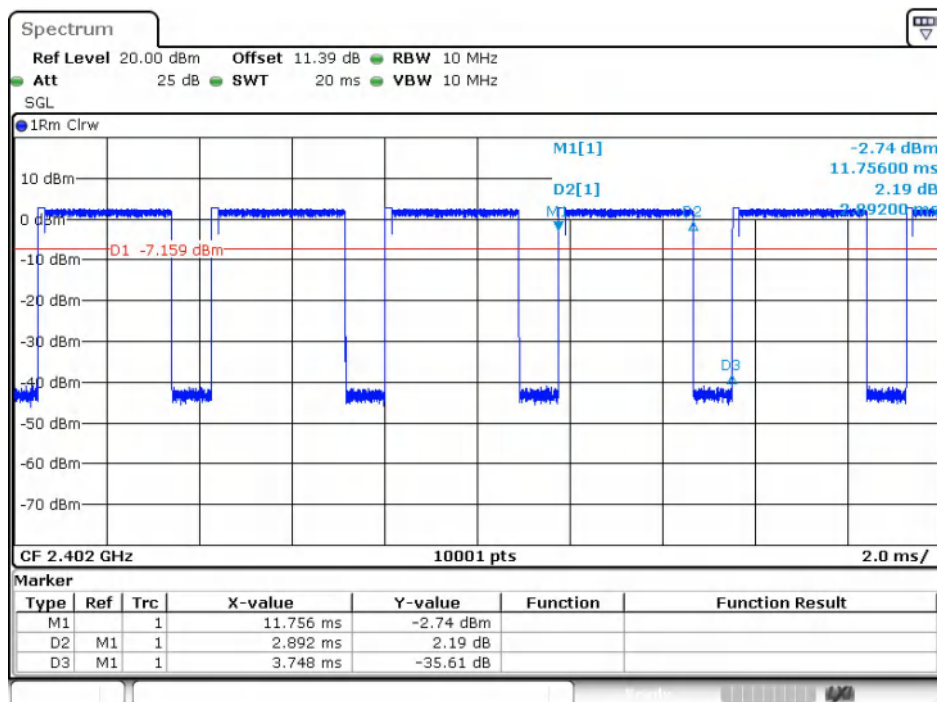




GFSK(DH5)_Channel 39

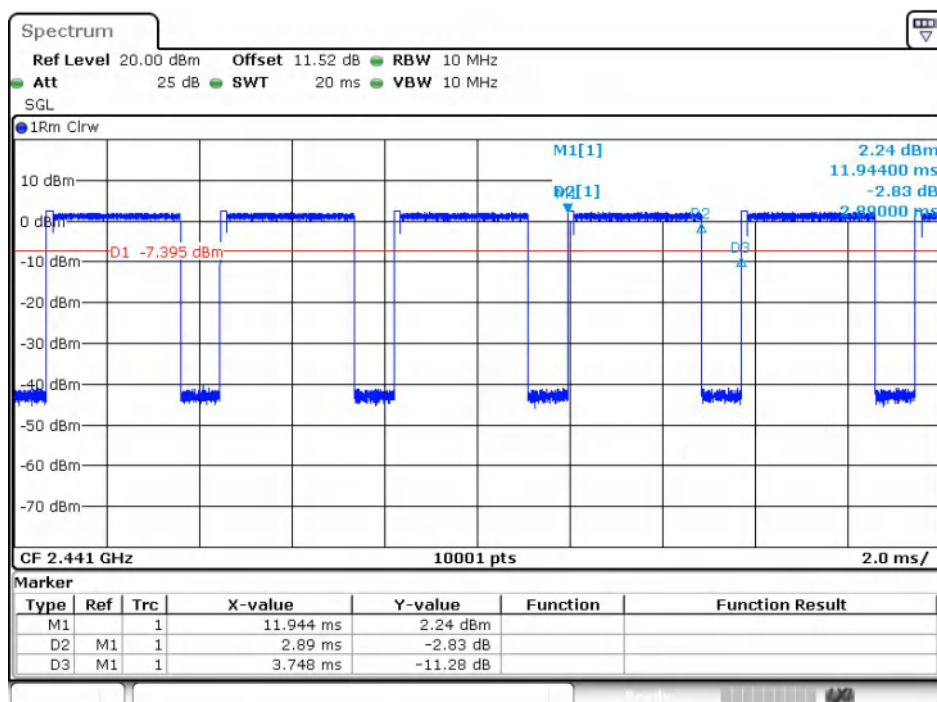


GFSK(DH5)_Channel 78



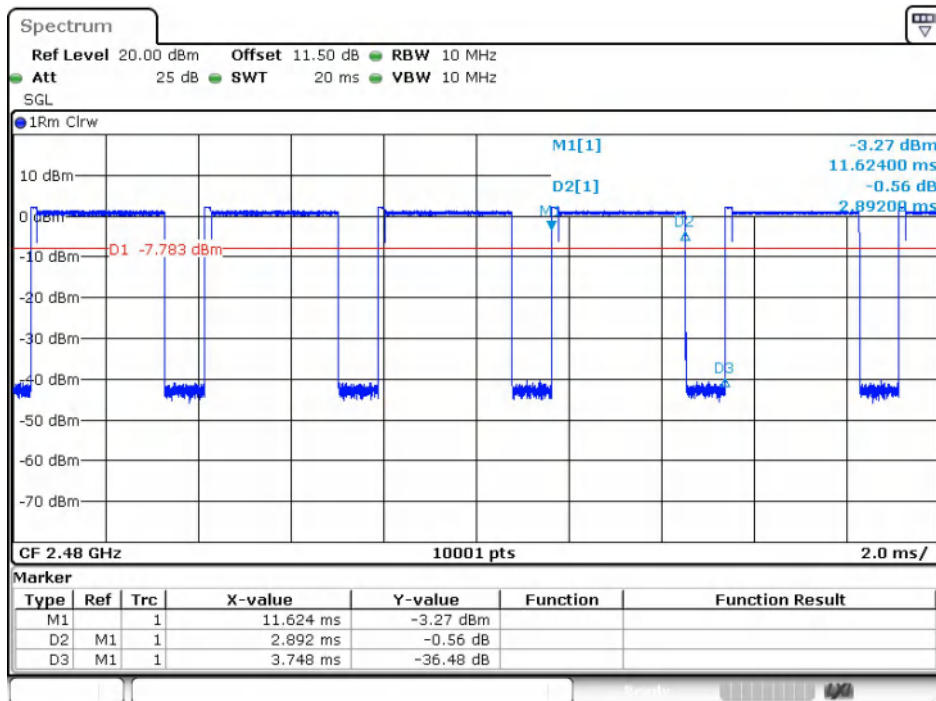
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$\pi/4$ DQPSK(2-DH5)_Channel 0



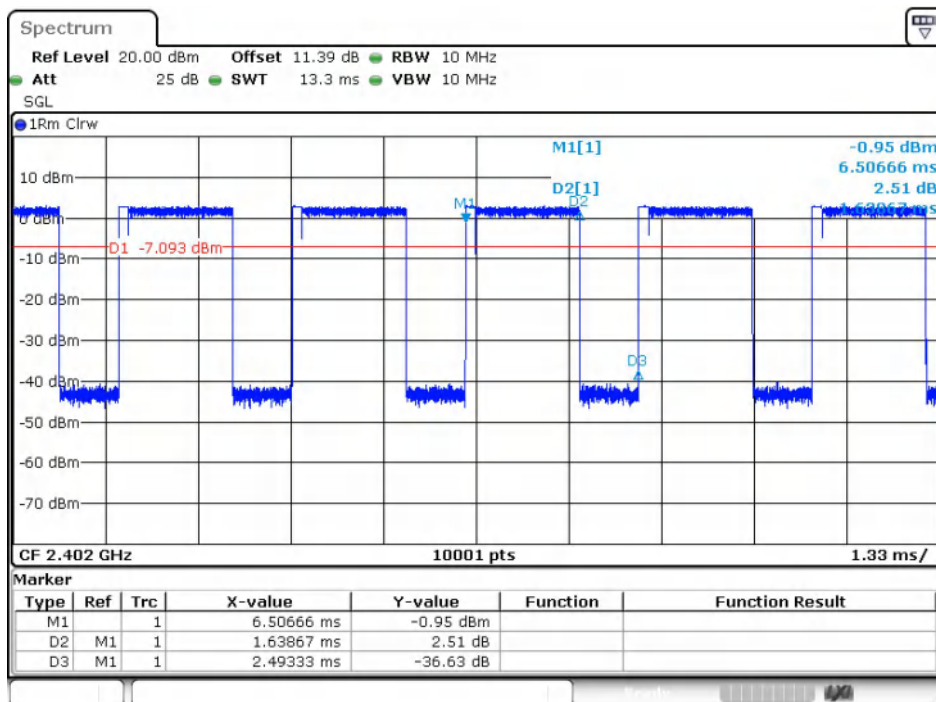
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$\pi/4$ DQPSK(2-DH5)_Channel 39



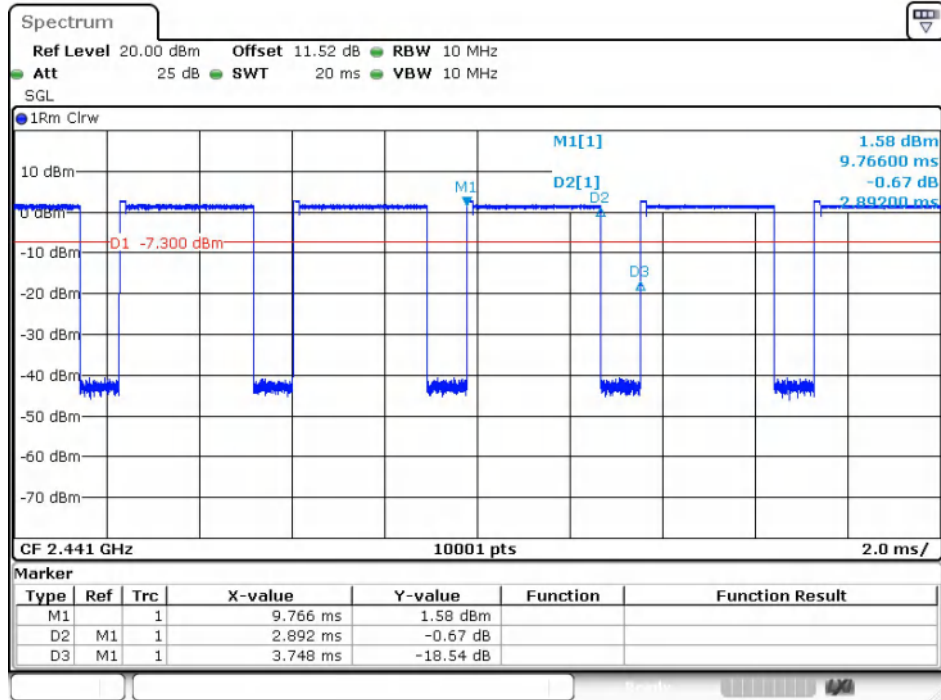
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$\pi/4$ DQPSK(2-DH5)_Channel 78



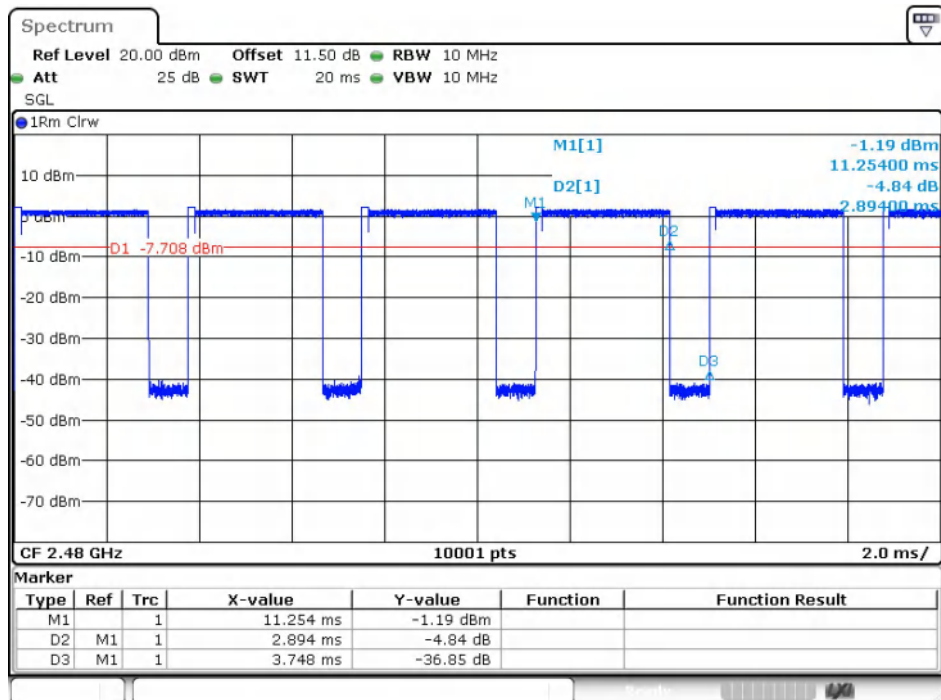
Date: 10.AUG.2024 15:51:57

8DPSK(3-DH5)_Channel 0



Date: 10.AUG.2024 15:58:51

8DPSK(3-DH5)_Channel 39



Date: 10.AUG.2024 16:01:02

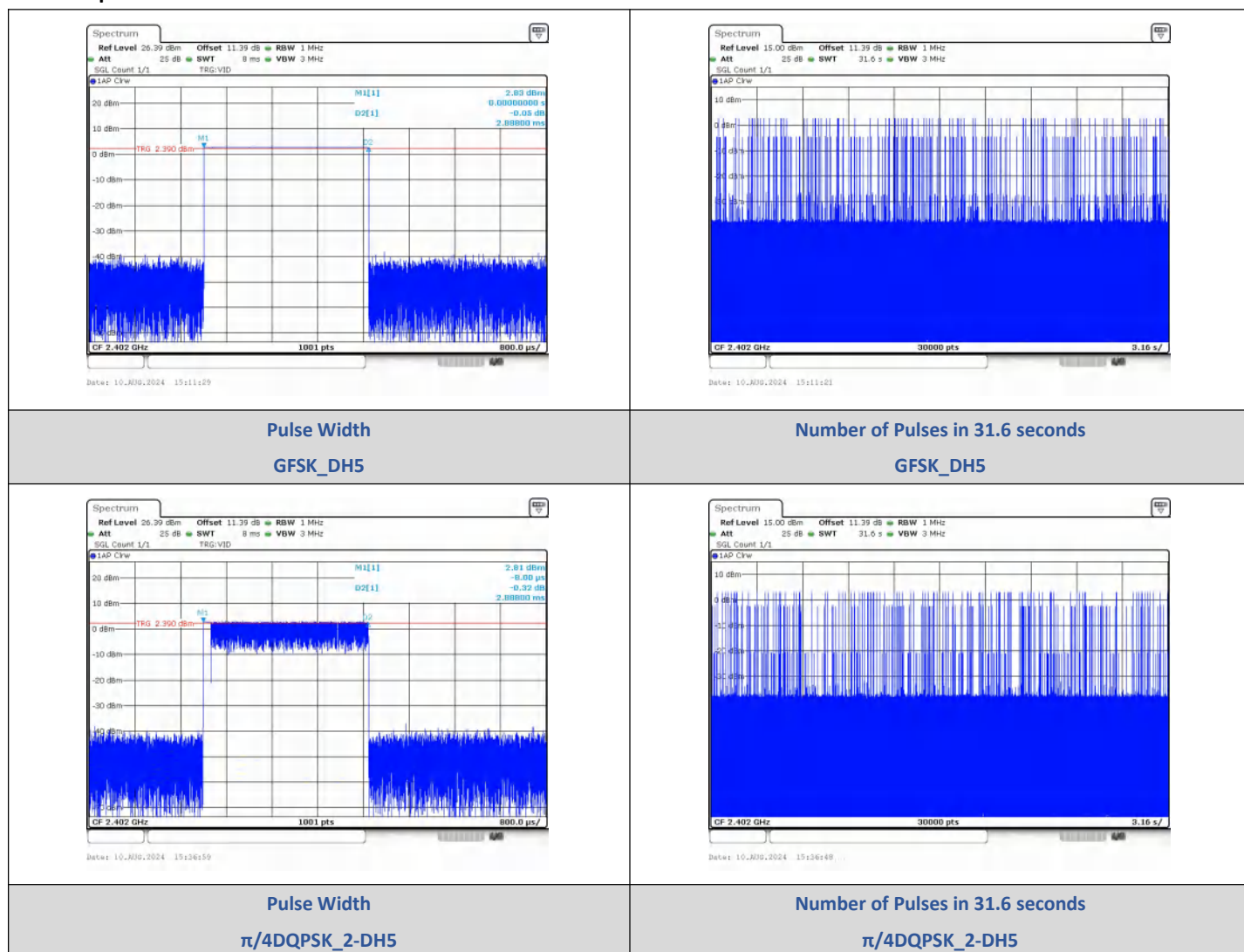
8DPSK(3-DH5)_Channel 78

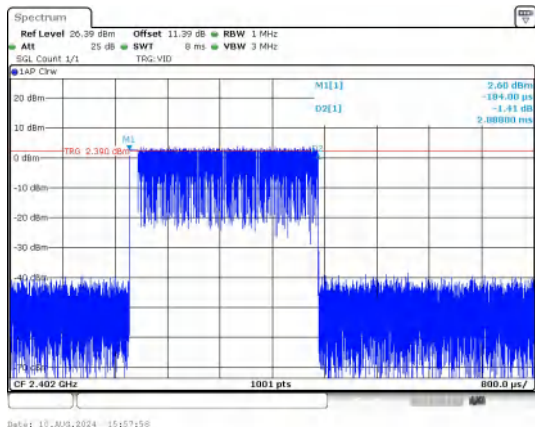
2) Dwell Time

Test Result

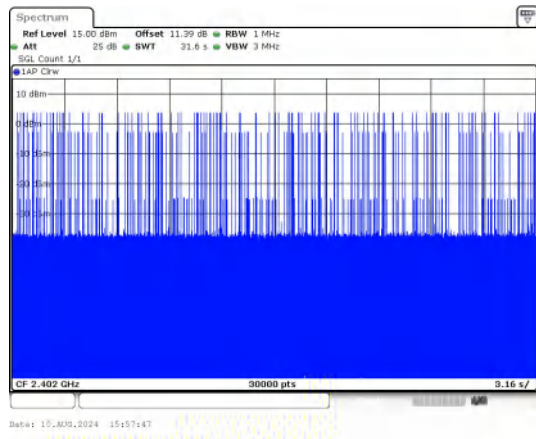
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.888	93	268.58	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.888	105	303.24		PASS
8DPSK	3-DH5		2.888	112	323.46		PASS

Test Graphs





Pulse Width
8DPSK_3-DH5



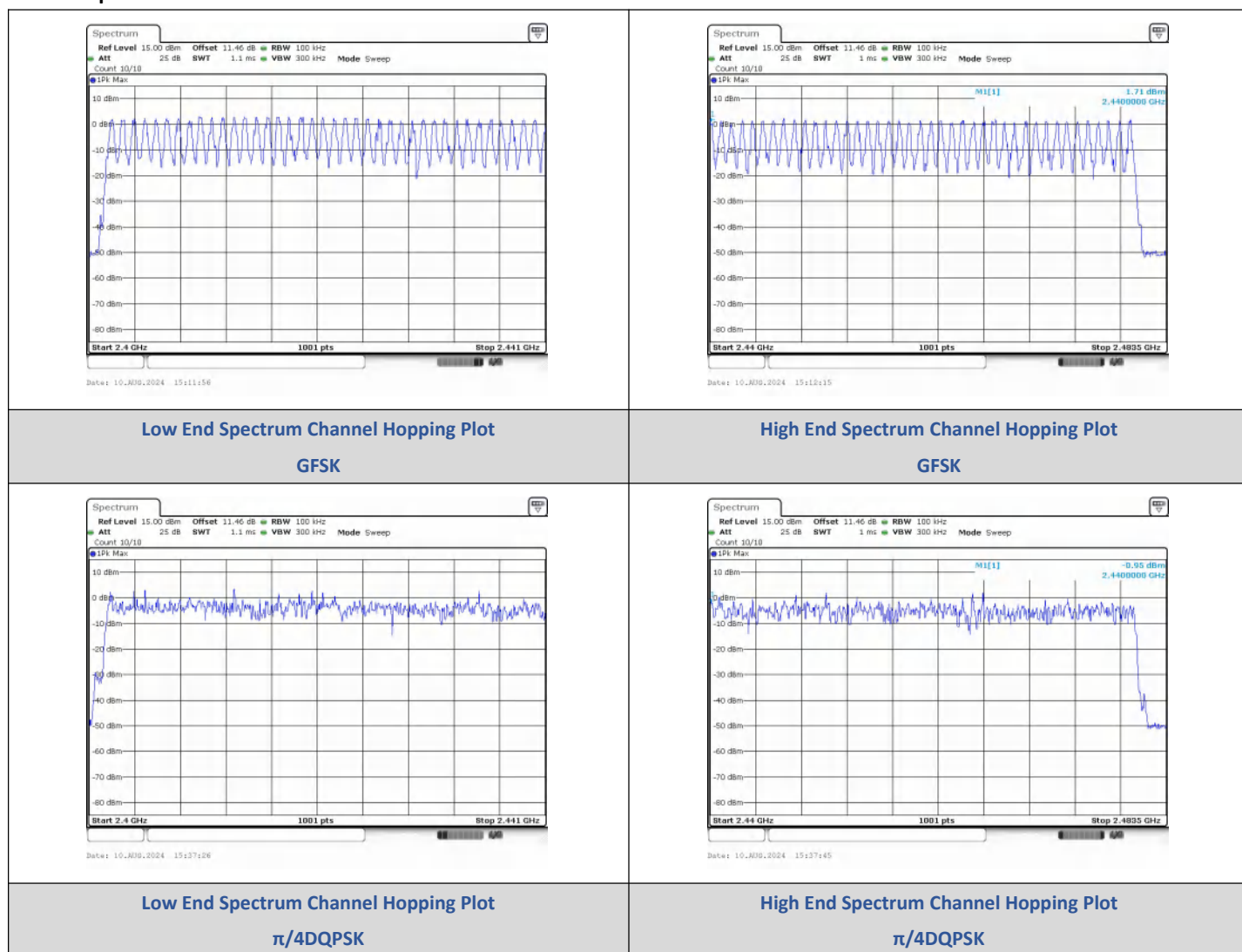
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

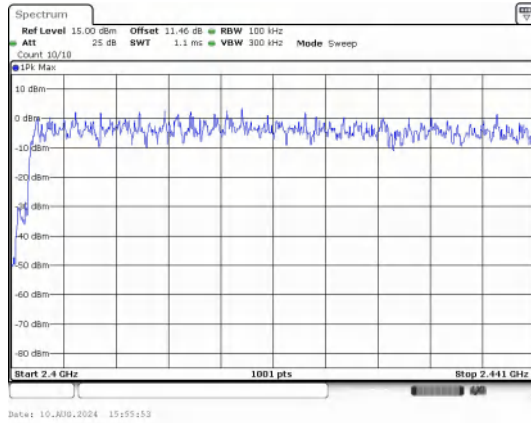
3) Number Of Hopping Channel

Test Result

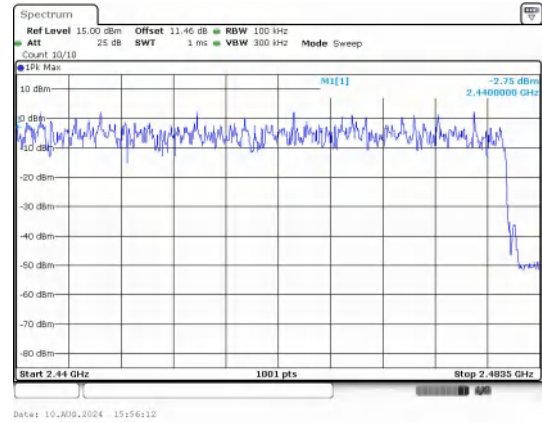
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK



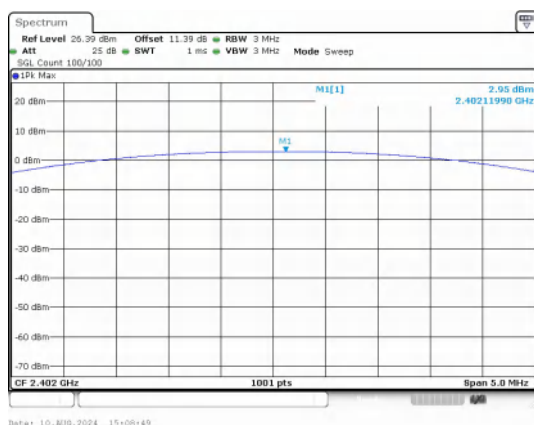
High End Spectrum Channel Hopping Plot
8DPSK

4) Conducted Peak Output Power

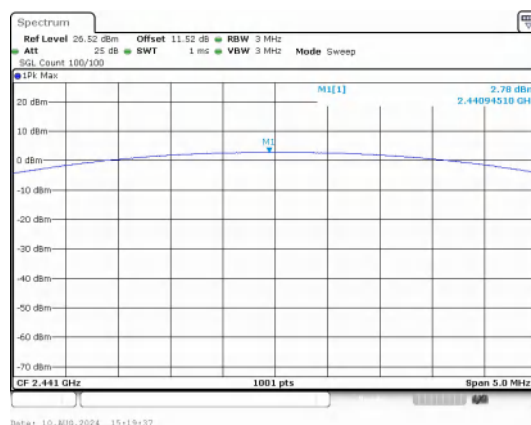
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	2.95	1.97	≤30	PASS
		39	2.78	1.90		PASS
		78	2.41	1.74		PASS
$\pi/4$ DQPSK	2-DH5	0	3.41	2.19	≤20.97	PASS
		39	3.34	2.16		PASS
		78	2.97	1.98		PASS
8DPSK	3-DH5	0	3.70	2.34		PASS
		39	3.63	2.31		PASS
		78	3.22	2.10		PASS

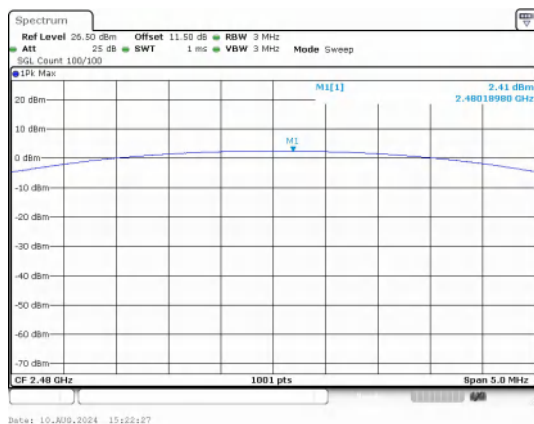
Test Graphs



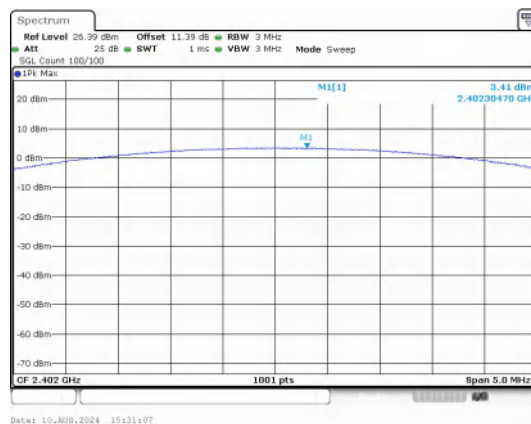
Peak Output Power
GFSK_Channel 0



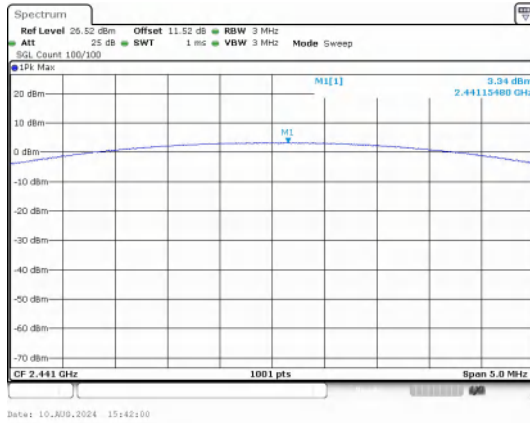
Peak Output Power
GFSK_Channel 39



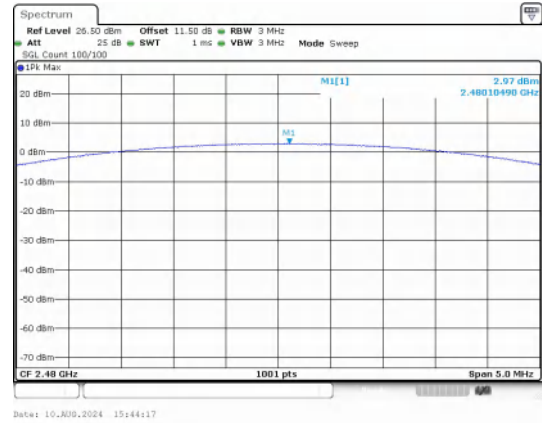
Peak Output Power
GFSK_Channel 78



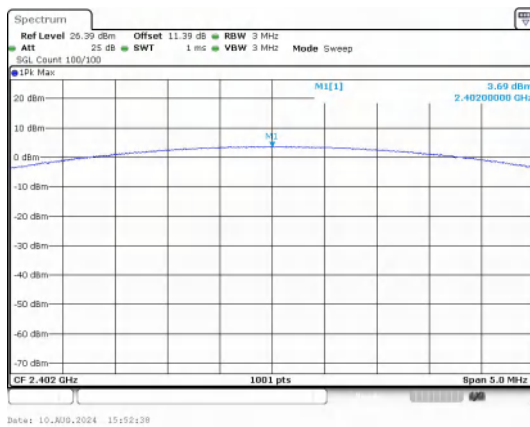
Peak Output Power
 $\pi/4$ DQPSK_Channel 0



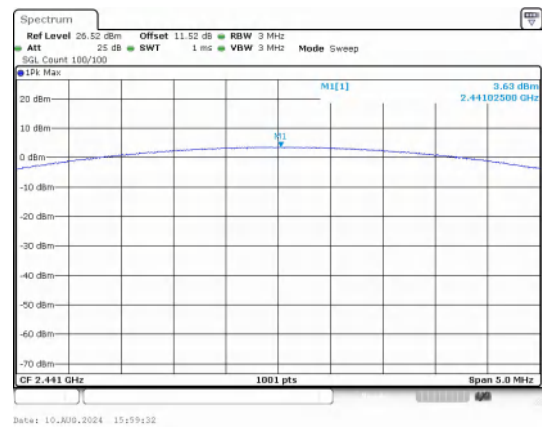
Peak Output Power
 $\pi/4$ DQPSK_Channel 39



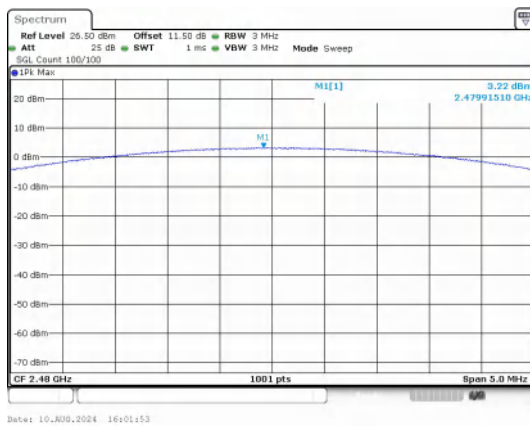
Peak Output Power
 $\pi/4$ DQPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



Peak Output Power
8DPSK_Channel 39



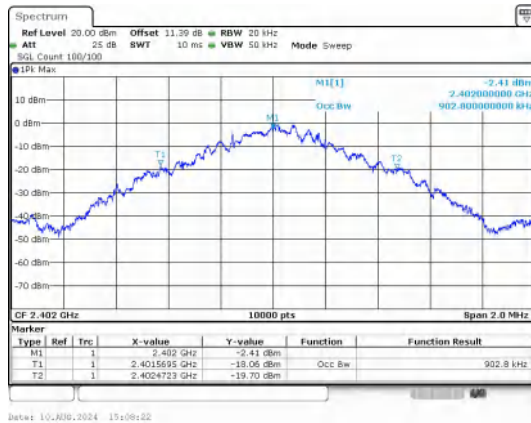
Peak Output Power
8DPSK_Channel 78

5) 99% Bandwidth

Test Result

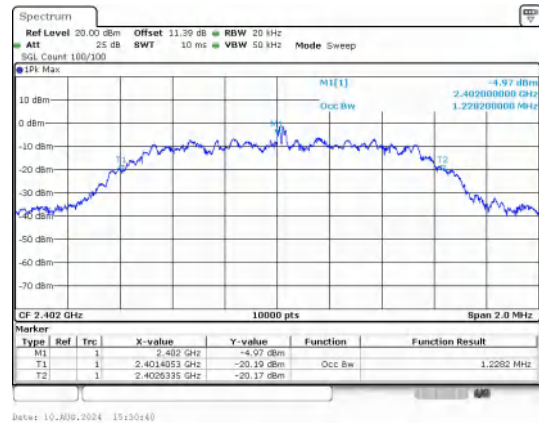
Modulation	Channel	Center Frequency (MHz)	99% BW (MHz)
GFSK	0	2402	0.9028
	39	2441	0.9130
	78	2480	0.9014
$\pi/4$ DQPSK	0	2402	1.2282
	39	2441	1.2020
	78	2480	1.2080
8DPSK	0	2402	1.2124
	39	2441	1.2144
	78	2480	1.2132

Test Graphs

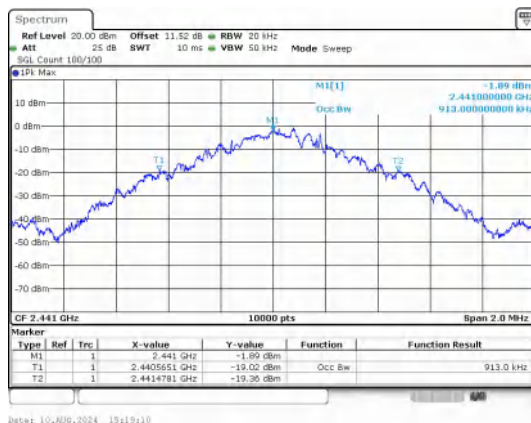


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GFSK_DH5_Channel 0

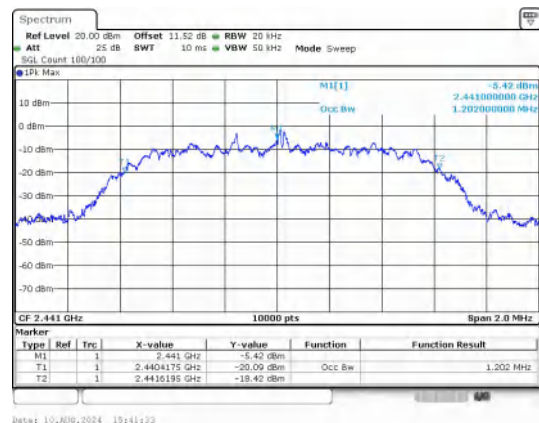


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 $\pi/4$ DQPSK_2-DH5_Channel 0


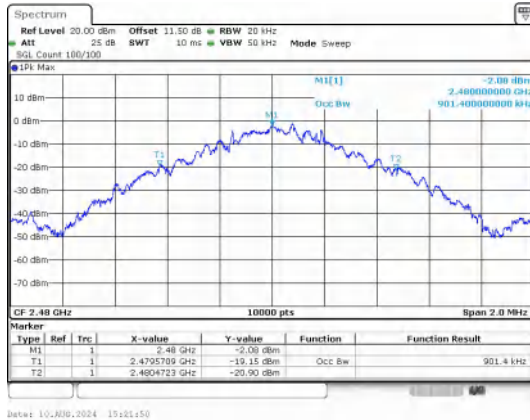
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GFSK_DH5_Channel 39

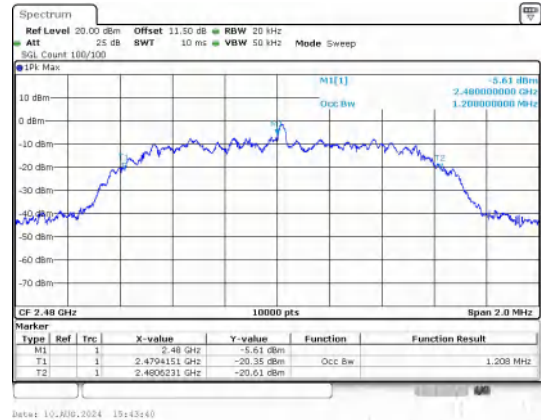


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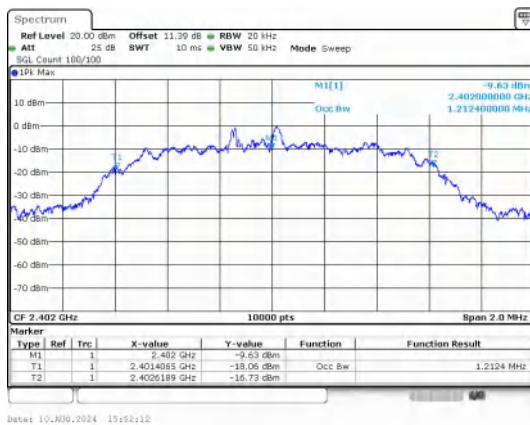
 $\pi/4$ DQPSK_2-DH5_Channel 39



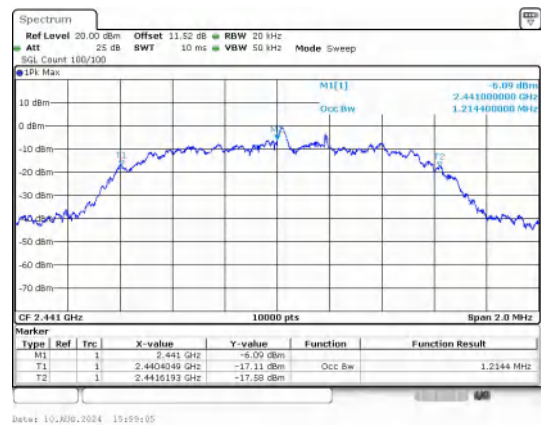
GFSK_DH5_Channel 78



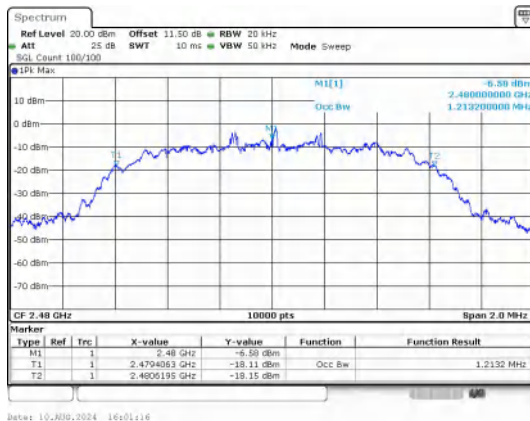
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



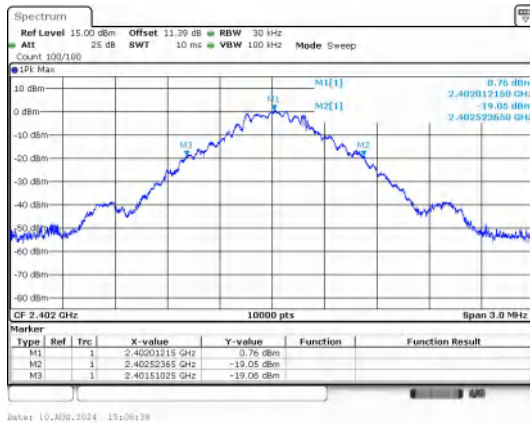
8DPSK_3-DH5_Channel 78

6) 20dB Bandwidth

Test Result

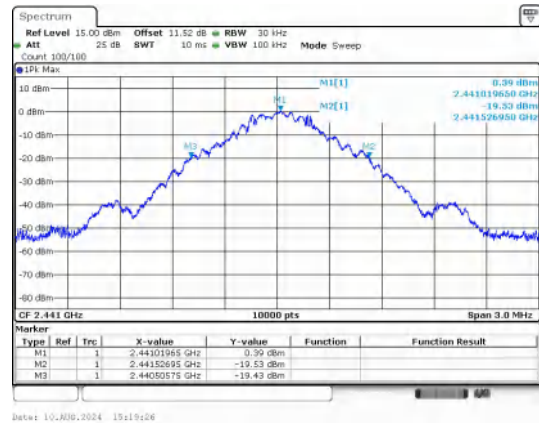
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.010
	39	2441 MHz	1.020
	78	2480 MHz	1.020
$\pi/4$ DQPSK	0	2402 MHz	1.320
	39	2441 MHz	1.320
	78	2480 MHz	1.320
8DPSK	0	2402 MHz	1.300
	39	2441 MHz	1.290
	78	2480 MHz	1.290

Test Graphs



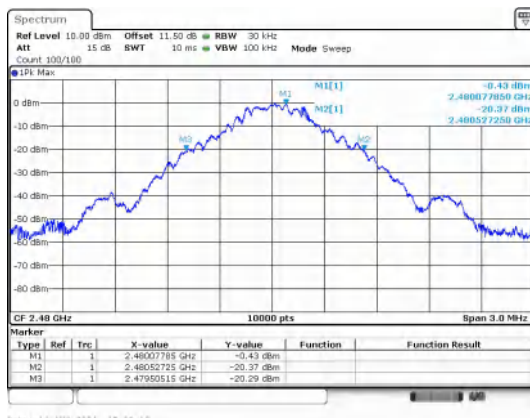
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GFSK_DH5_Channel 0



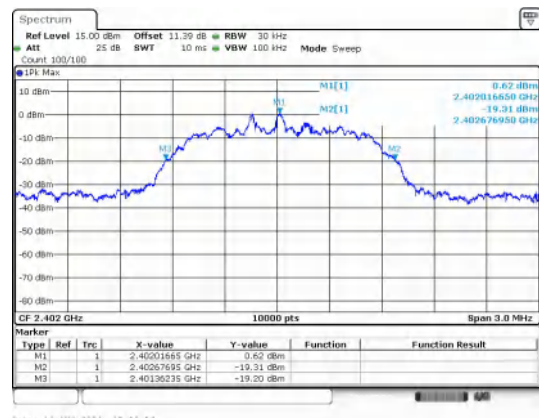
Date: 10/30/2024 15:10:26

GFSK_DH5_Channel 39



Date: 10/30/2024 15:10:12

GFSK_DH5_Channel 78

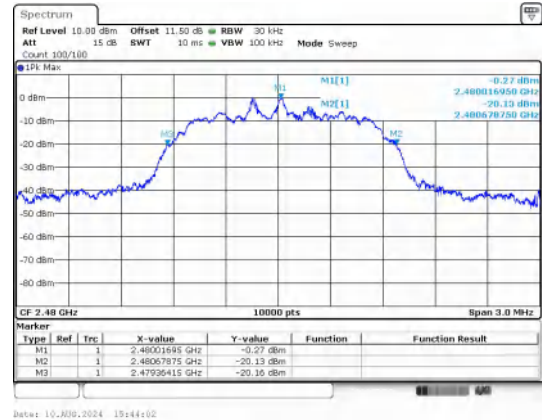


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 $\pi/4$ DQPSK_2-DH5_Channel 0



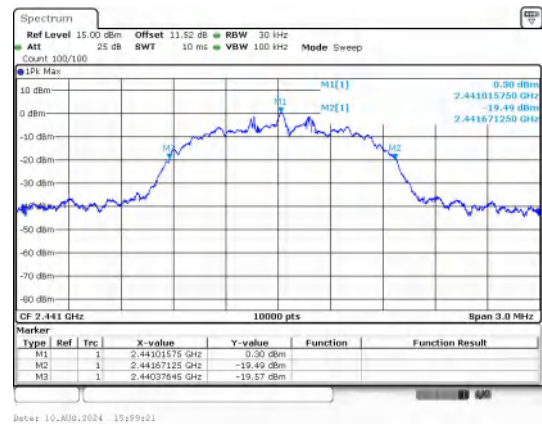
$\pi/4$ DQPSK_2-DH5_Channel 39



$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



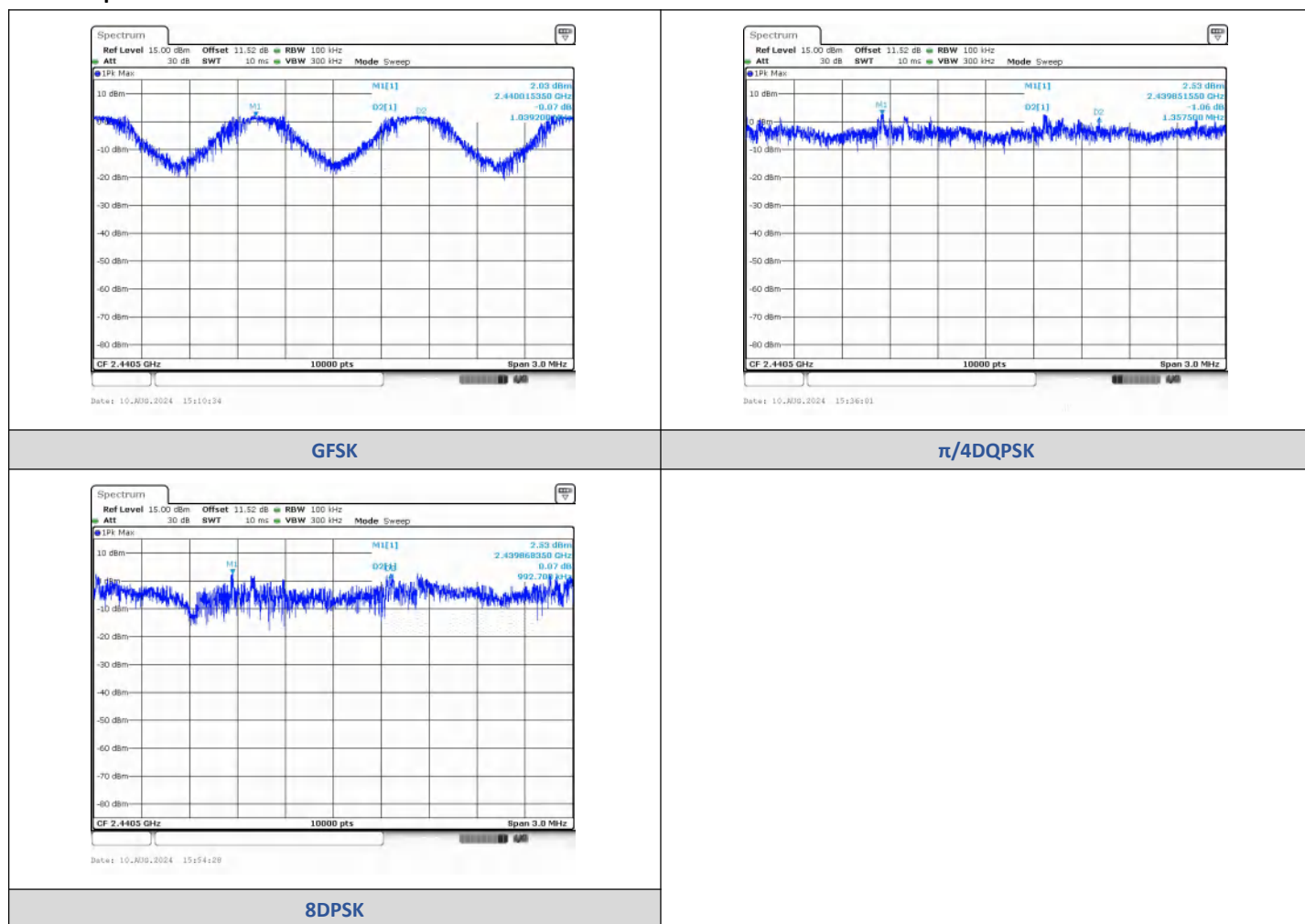
8DPSK_3-DH5_Channel 78

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	2440.0154	2441.0545	1.0392	1.02	PASS
$\pi/4$ DQPSK	2-DH5	2439.8515	2441.209	1.3575	0.88	PASS
8DPSK	3-DH5	2439.8684	2440.861	0.9927	0.867	PASS

Test Graphs



8) Conducted Out Of Band Emission

Test Result

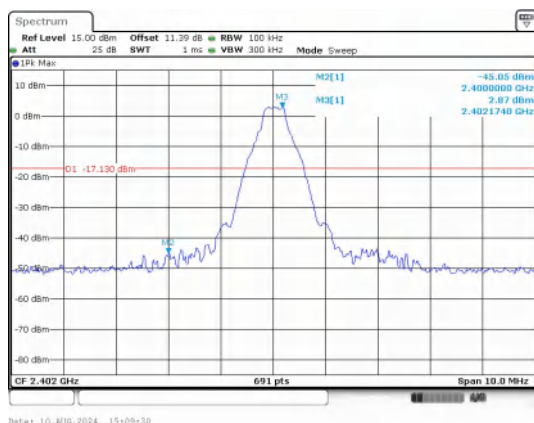
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-45.05	-17.13	-27.916	PASS
			7205.96	-39.10	-17.13	-21.969	PASS
		39	9764.55	-39.70	-17.33	-22.360	PASS
		78	2483.50	-50.98	-17.74	-33.240	PASS
			9920.20	-39.19	-17.74	-21.447	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-47.05	-17.27	-29.781	PASS
			4803.85	-42.71	-17.27	-25.439	PASS
		39	9763.72	-40.03	-17.46	-22.571	PASS
		78	2483.50	-49.93	-17.9	-32.033	PASS
			9920.20	-38.90	-17.9	-20.998	PASS
8DPSK	3-DH5	0	2400.00	-47.18	-17.34	-29.841	PASS
			7205.96	-42.36	-17.34	-25.019	PASS
		39	9763.72	-40.45	-17.46	-22.986	PASS
		78	2483.50	-51.52	-17.82	-33.700	PASS
			9920.20	-39.16	-17.82	-21.337	PASS

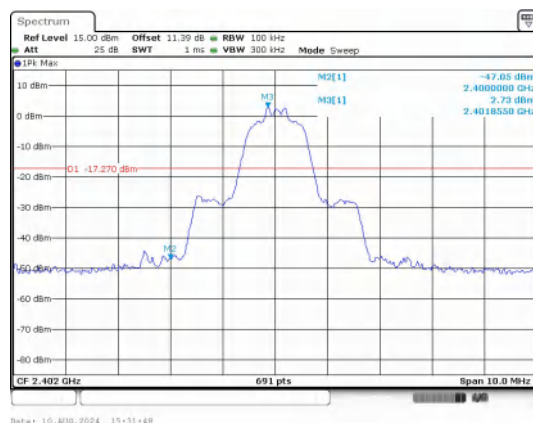
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5		2397.09	-47.99	-17.06	-30.932	PASS
			2400.00	-50.67	-17.06	-33.610	PASS
			2483.50	-49.40	-17.96	-31.441	PASS
π/4DQPSK	2-DH5		2400.00	-47.01	-17.9	-29.106	PASS
			2483.50	-49.57	-17.93	-31.640	PASS
8DPSK	3-DH5		2398.80	-47.29	-17.37	-29.917	PASS
			2400.00	-49.62	-17.37	-32.253	PASS
			2483.50	-49.09	-18.12	-30.971	PASS

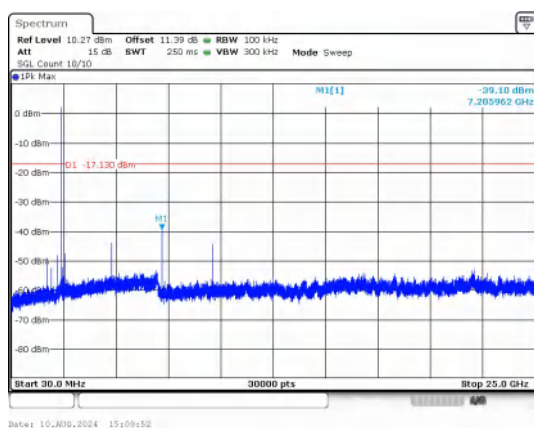
Test Graphs



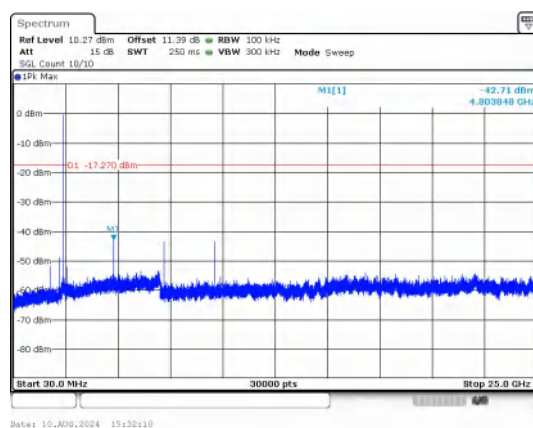
Out Of Band Emission
GFSK_DH5_Channel 0



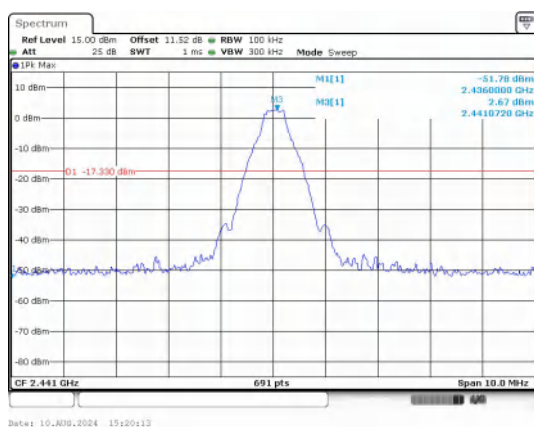
Out Of Band Emission
 $\pi/4$ QPSK_2-DH5_Channel 0



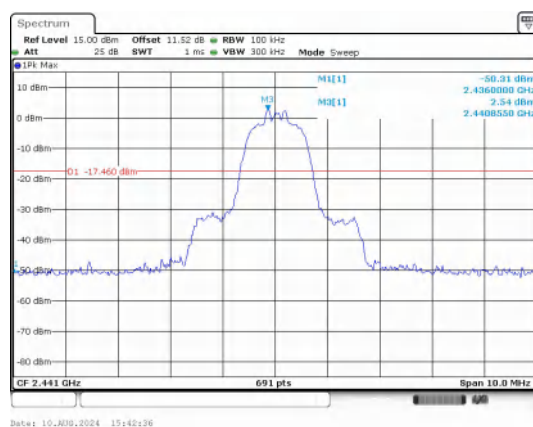
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



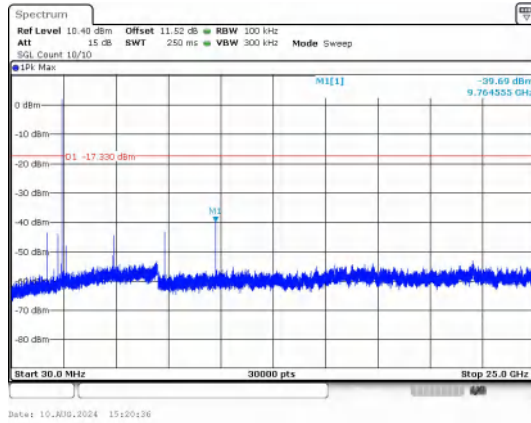
30.0 MHz - 25000.0 MHz
 $\pi/4$ QPSK_2-DH5_Channel 0



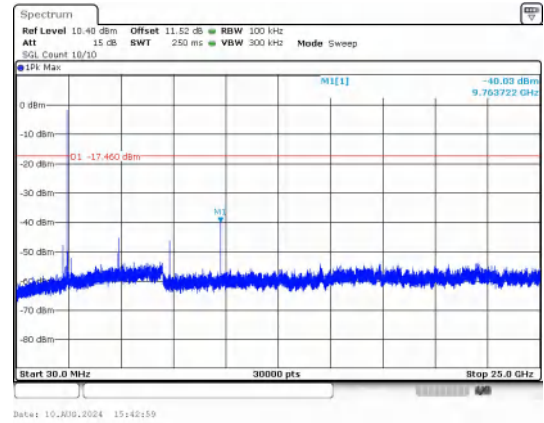
Out Of Band Emission
GFSK_DH5_Channel 39



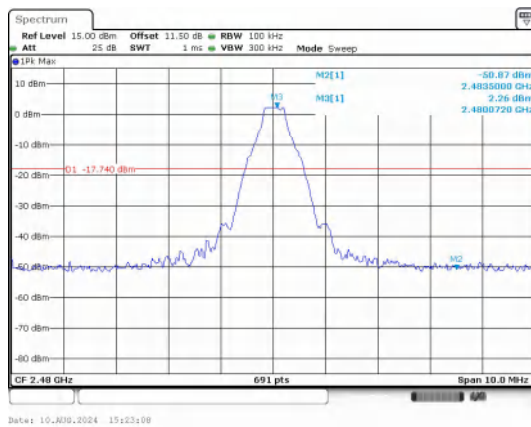
Out Of Band Emission
 $\pi/4$ QPSK_2-DH5_Channel 39



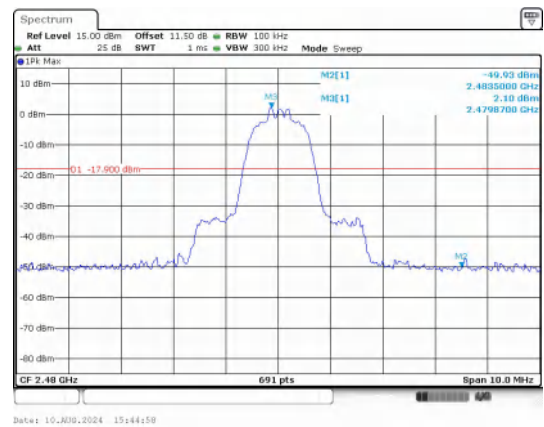
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



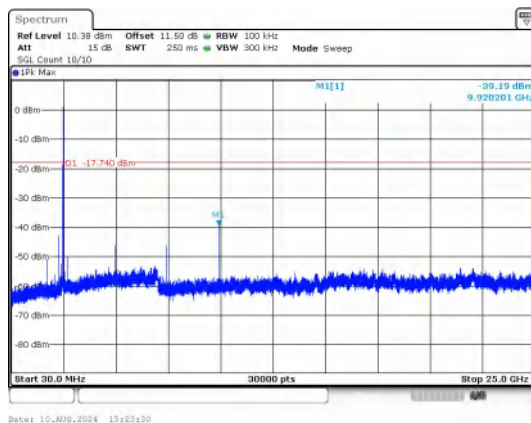
30.0 MHz - 25000.0 MHz
 $\pi/4$ QPSK_2-DH5_Channel 39



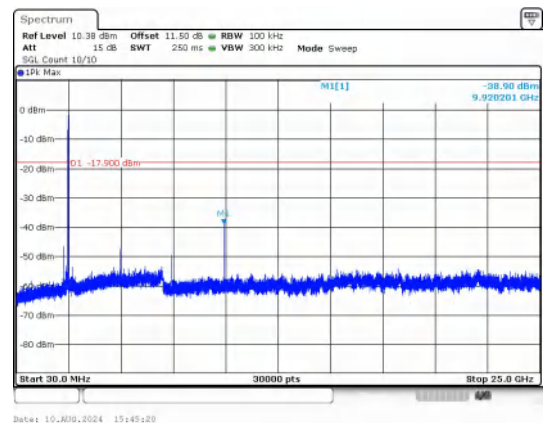
Out Of Band Emission
GFSK_DH5_Channel 78



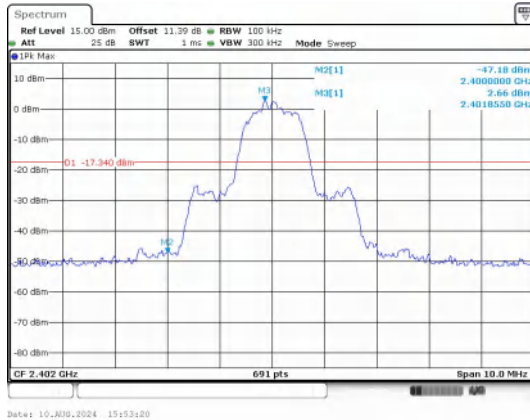
Out Of Band Emission
 $\pi/4$ QPSK_2-DH5_Channel 78



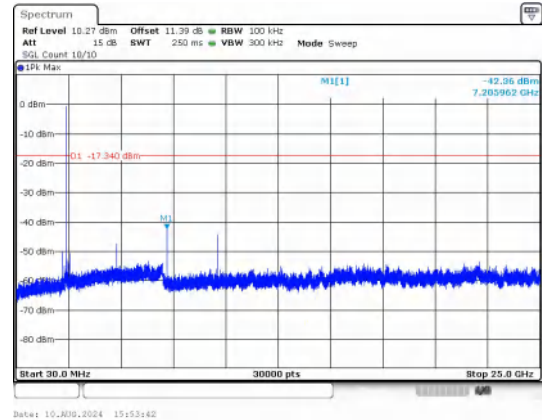
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



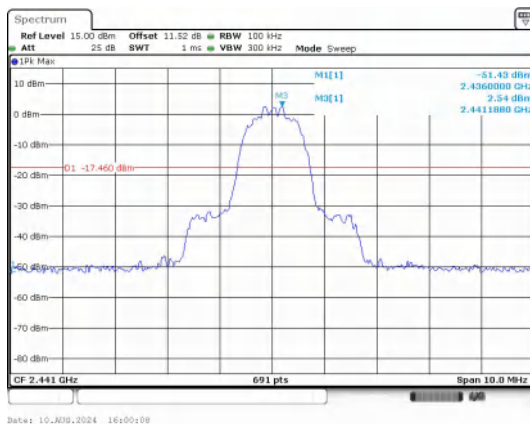
30.0 MHz - 25000.0 MHz
 $\pi/4$ QPSK_2-DH5_Channel 78



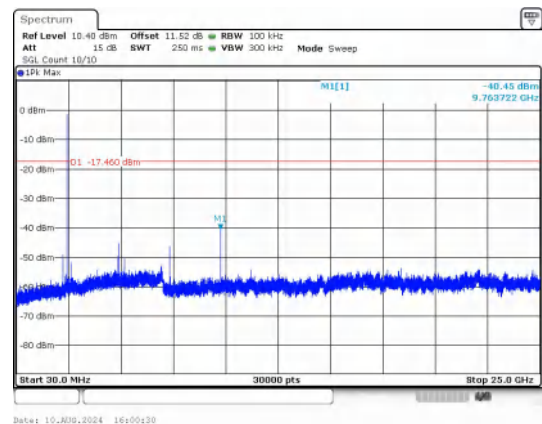
Out Of Band Emission
8DPSK_3-DH5_Channel 0



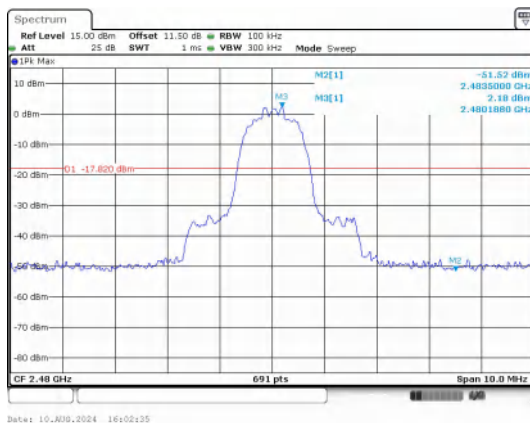
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



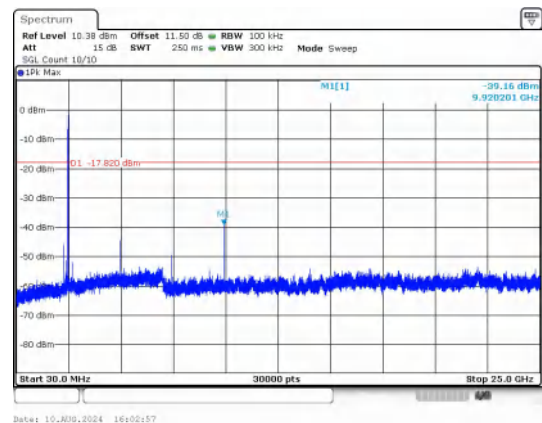
Out Of Band Emission
8DPSK_3-DH5_Channel 39



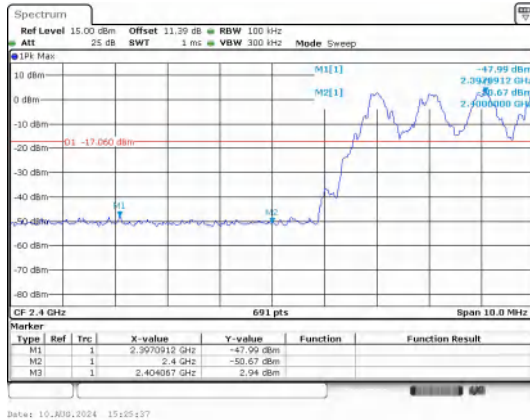
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



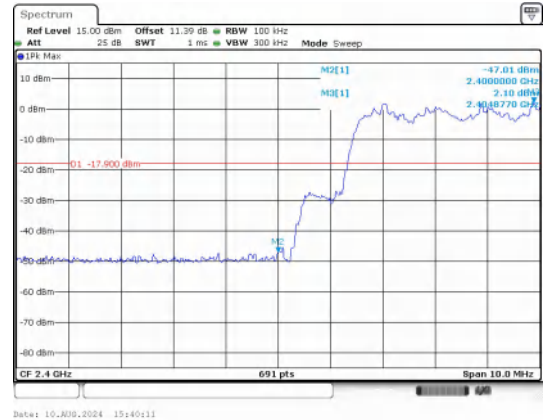
Out Of Band Emission
8DPSK_3-DH5_Channel 78



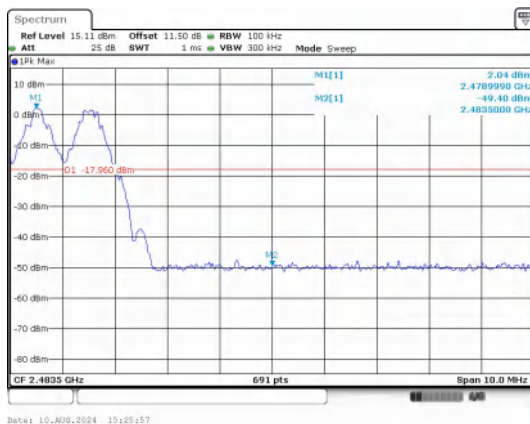
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



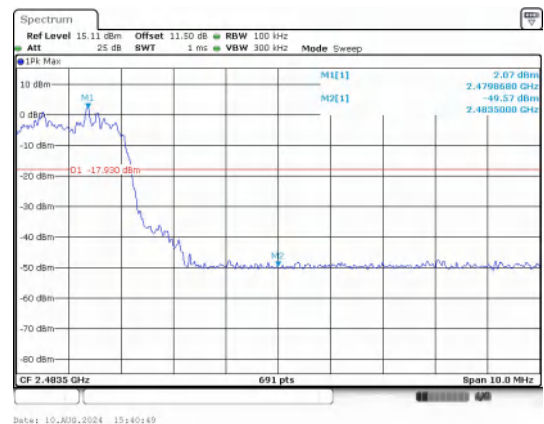
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



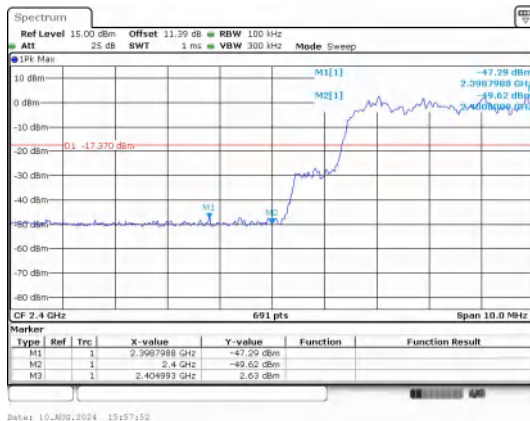
Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



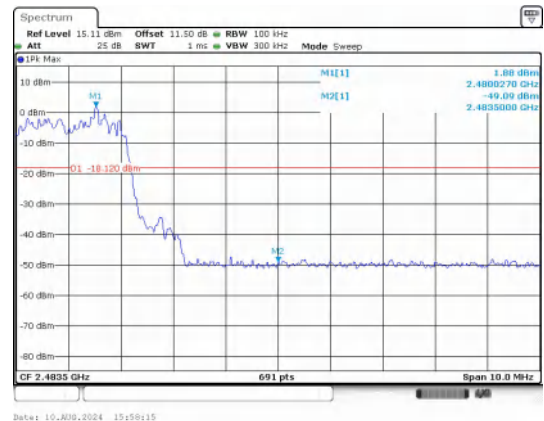
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



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