

Appendix

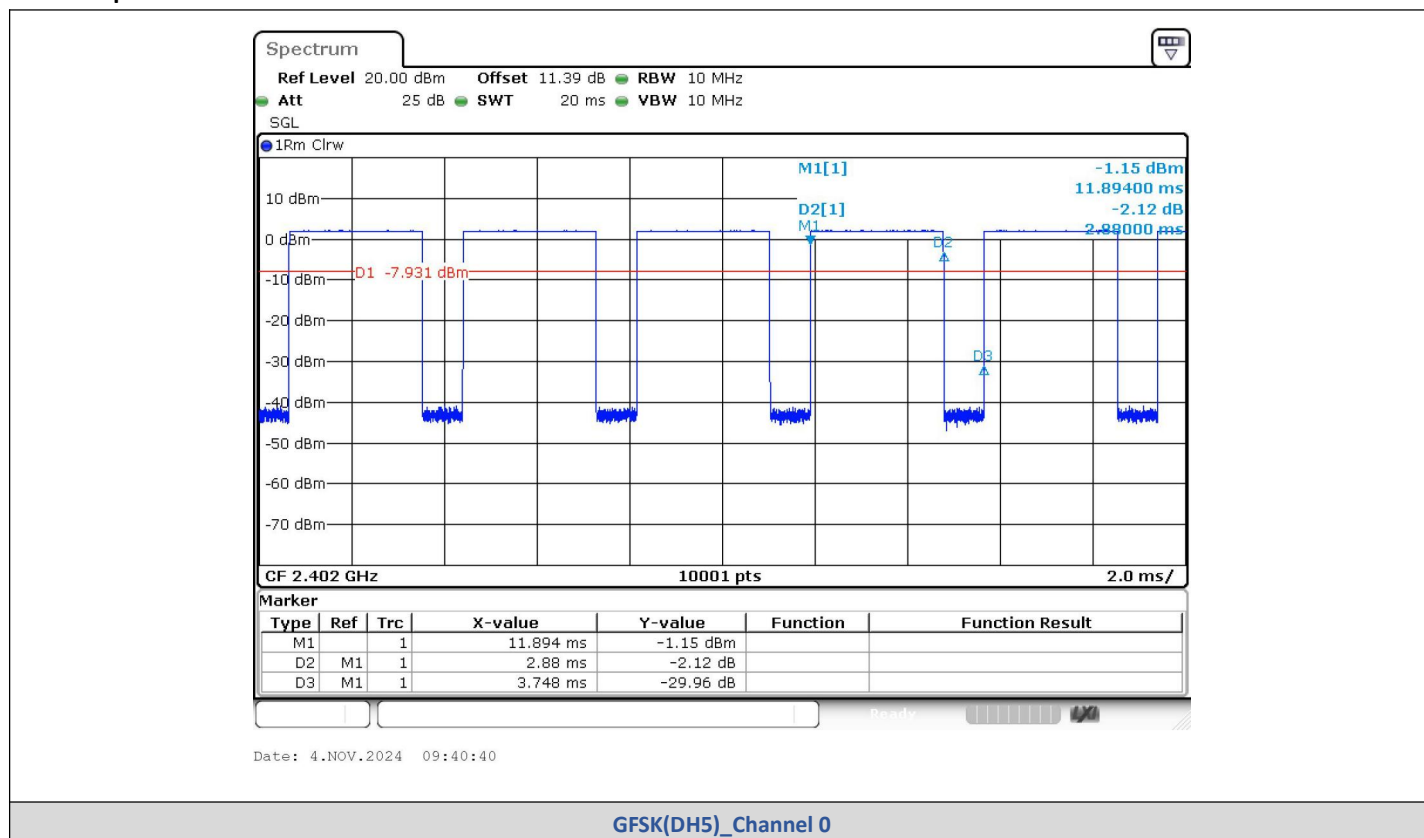
Report No.:	CISRR24110200701
FCC ID:	2BL27-AD-01
Product Name:	PORTAABLEWIRELESS SPEAKER
Model No.:	AD-01
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

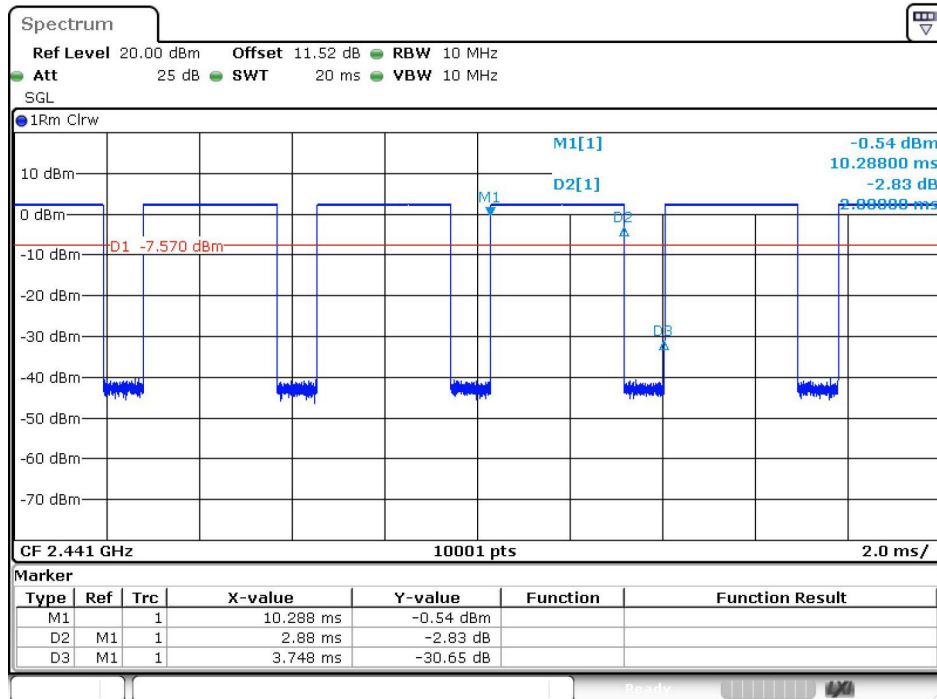
1) Duty Cycle

Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.880	3.748	76.84	0.7684	1.1441	0.3472
		39	2.880	3.748	76.84	0.7684	1.1441	0.3472
		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	2.886	3.748	77.00	0.7700	1.1351	0.3465
		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

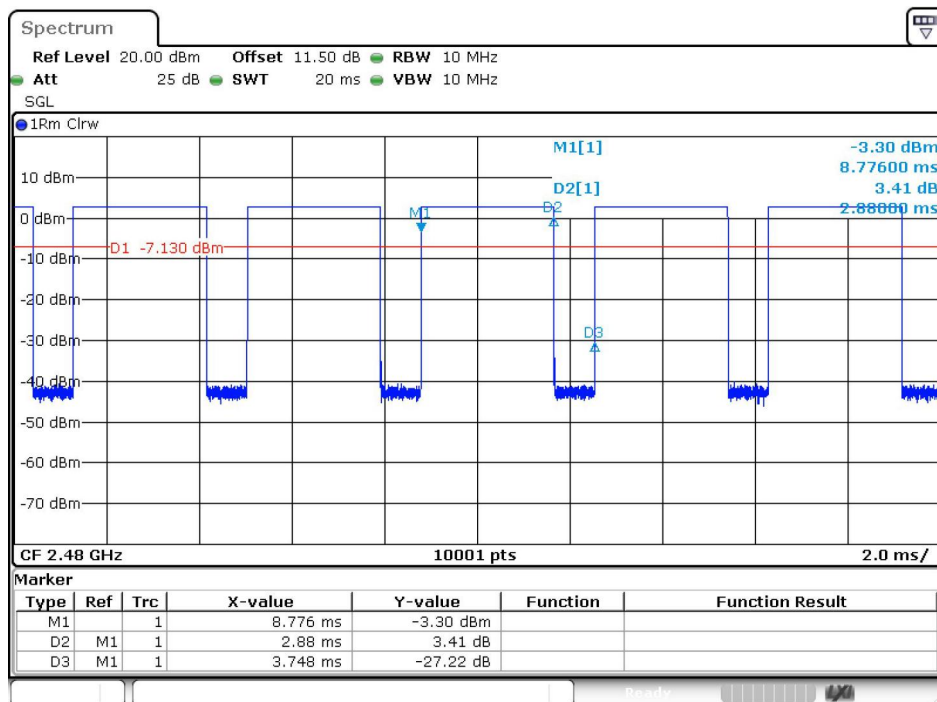
Test Graphs





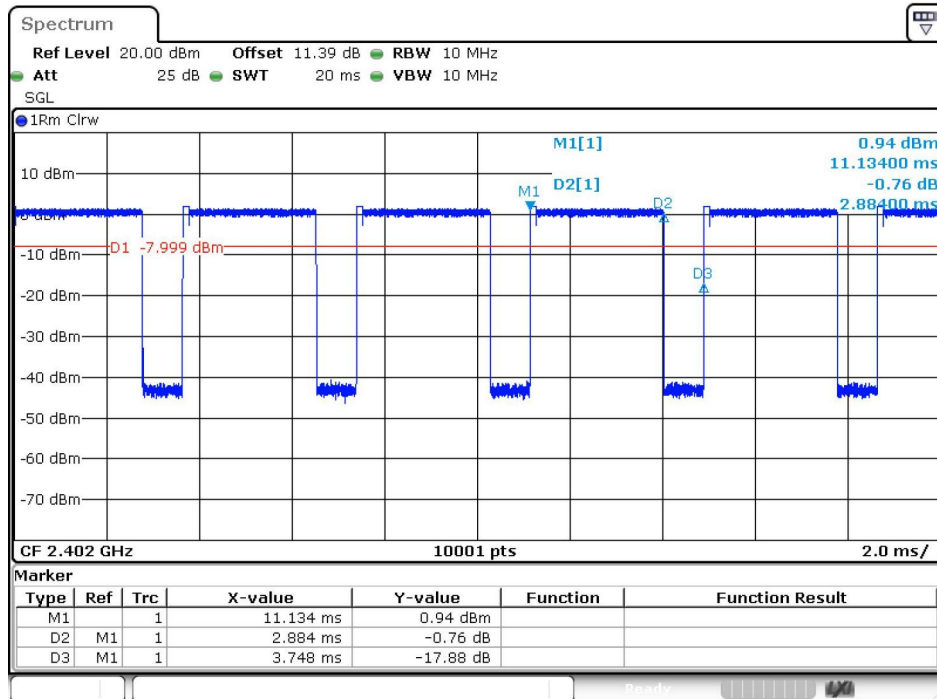
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GFSK(DH5)_Channel 39



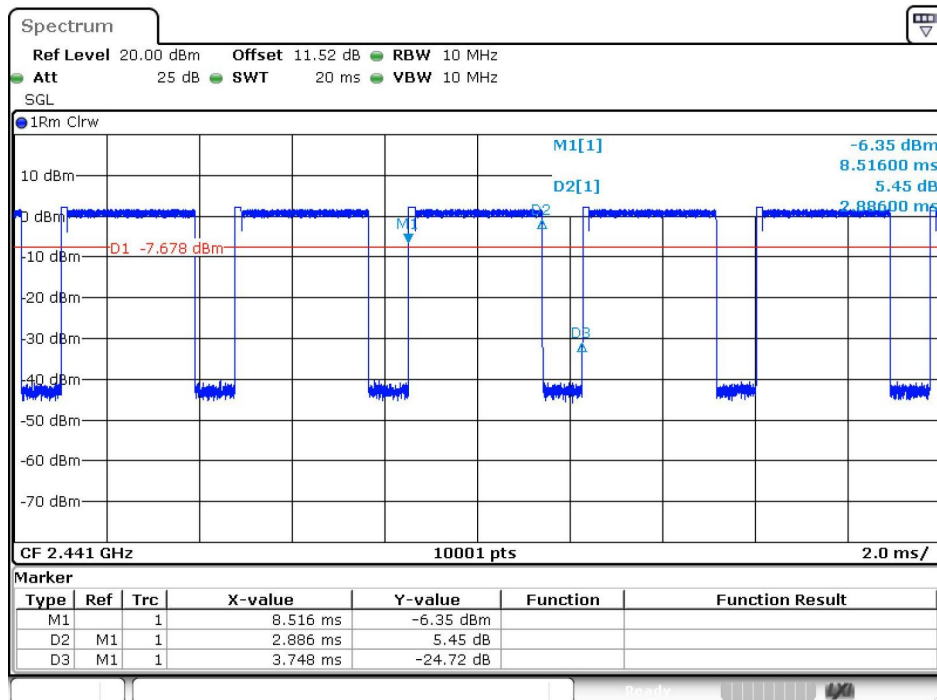
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GFSK(DH5)_Channel 78



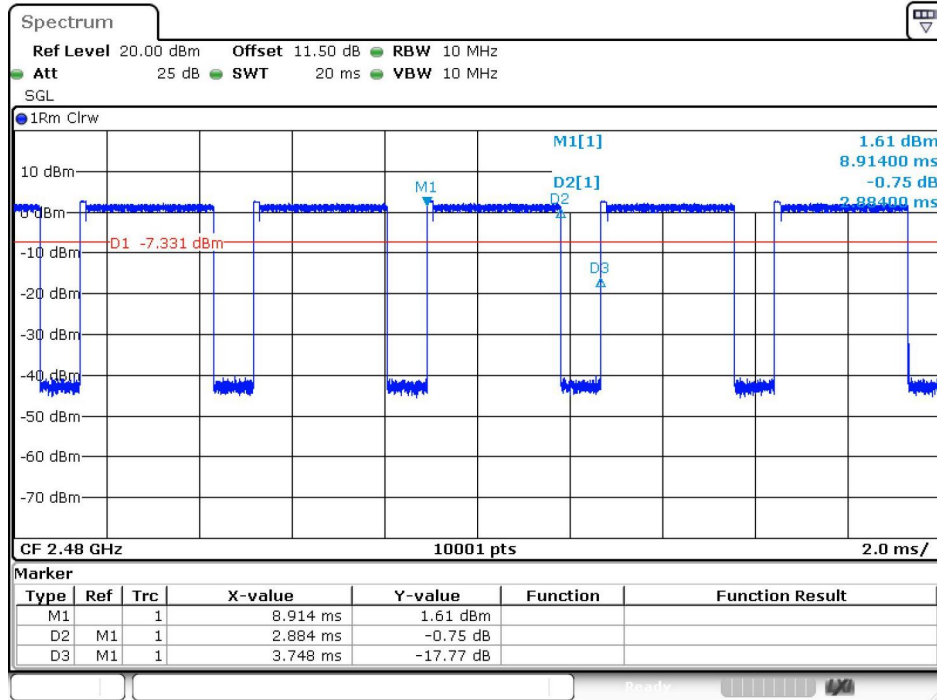
Date: 4.NOV.2024 09:50:58

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



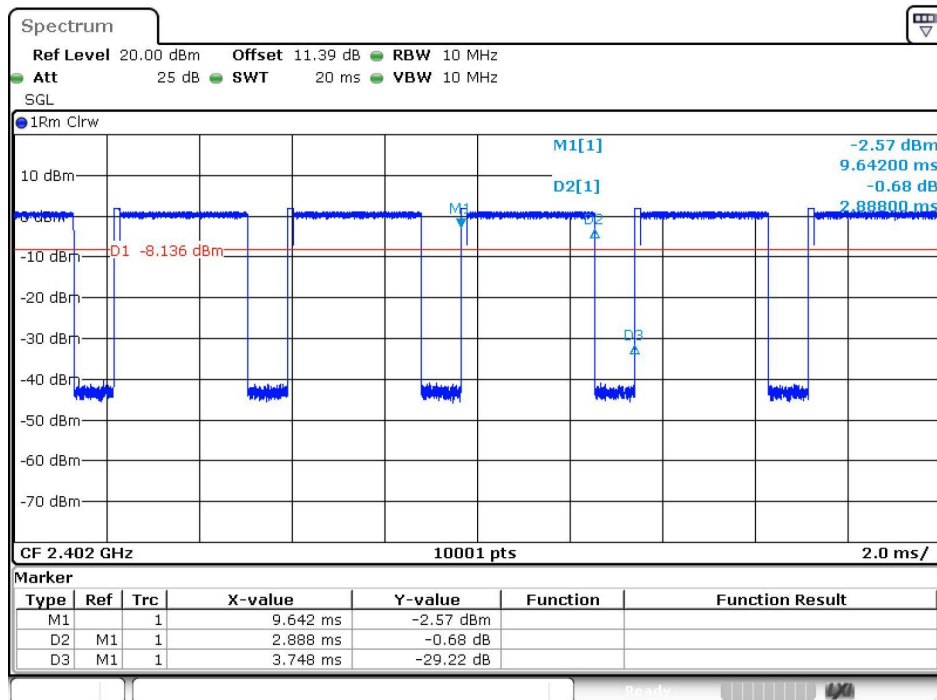
Date: 4.NOV.2024 09:57:02

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



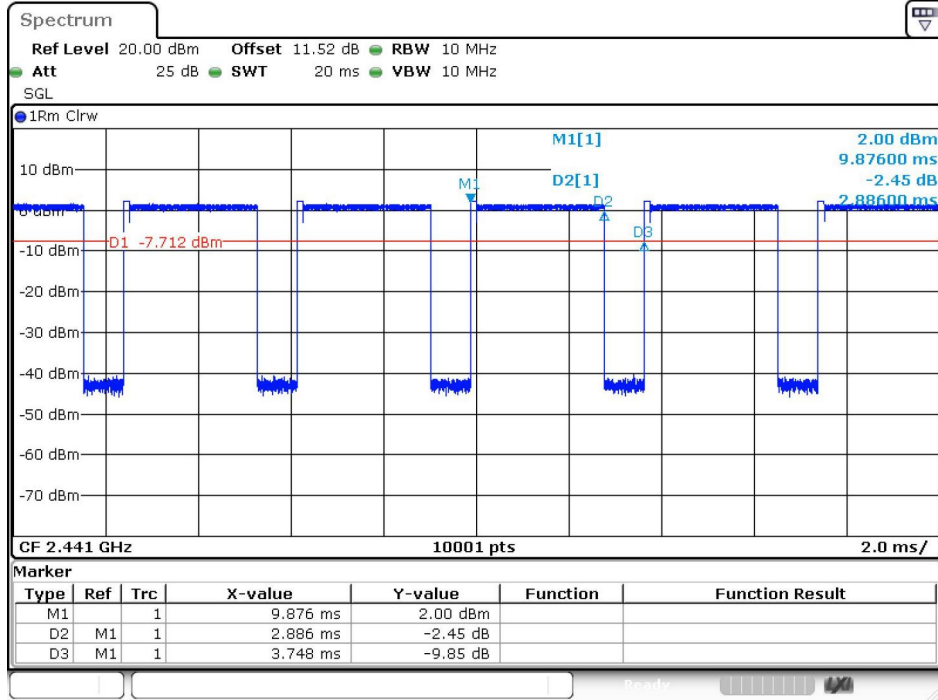
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$\pi/4$ DQPSK(2-DH5)_Channel 78



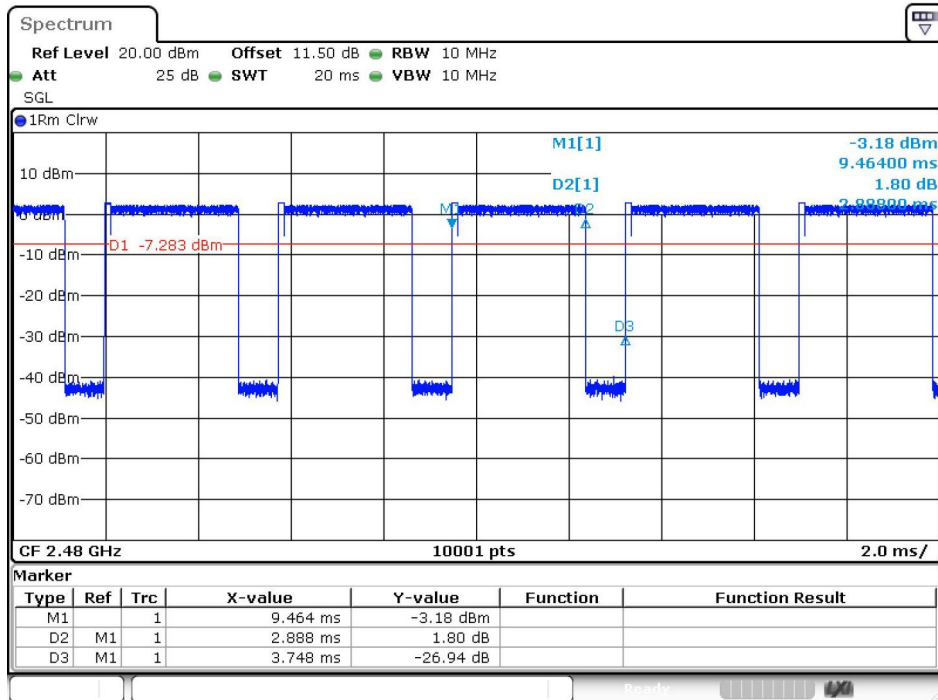
Date: 4.NOV.2024 10:01:23

8DPSK(3-DH5)_Channel 0



Date: 4.NOV.2024 10:08:38

8DPSK(3-DH5)_Channel 39



Date: 4.NOV.2024 10:10:52

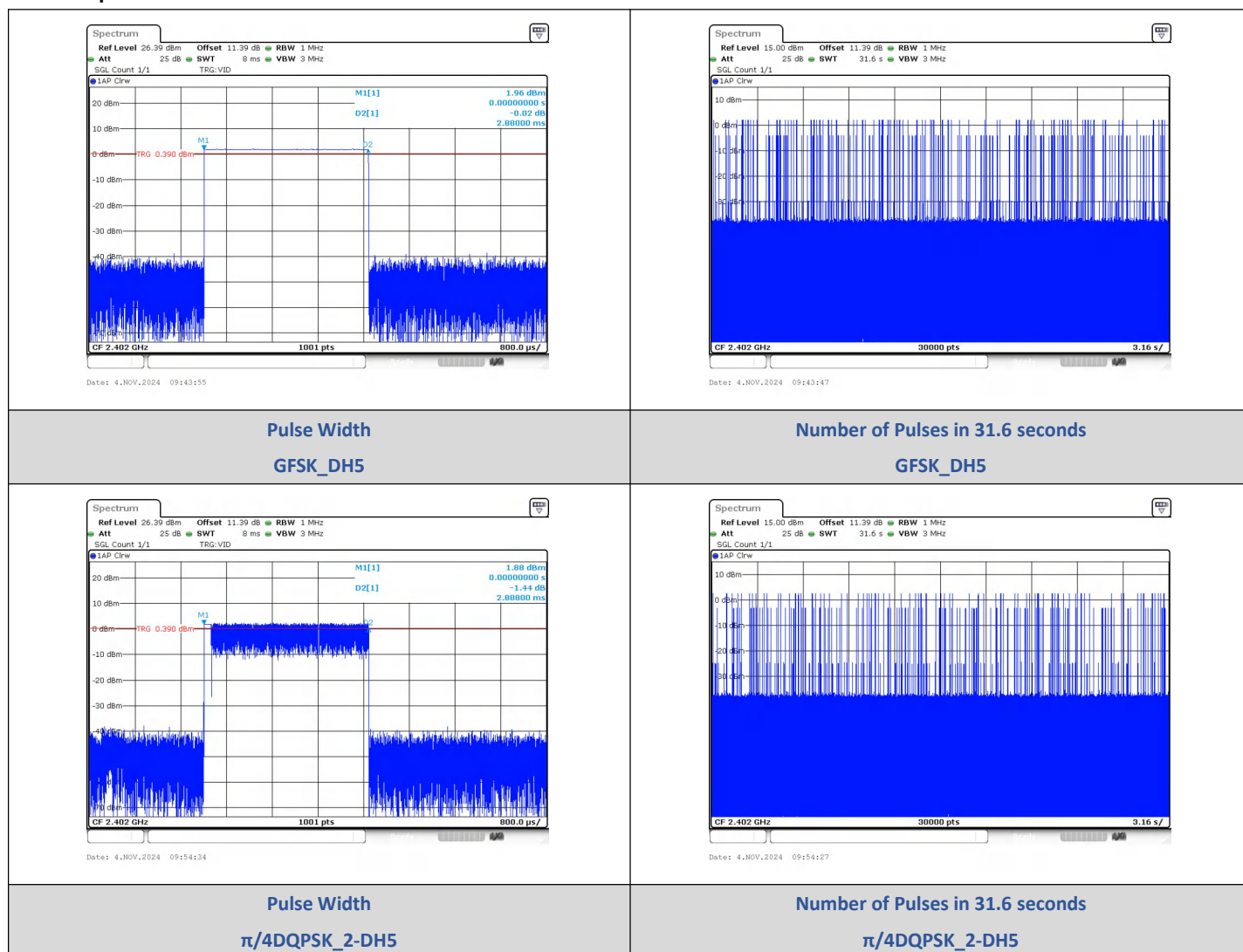
8DPSK(3-DH5)_Channel 78

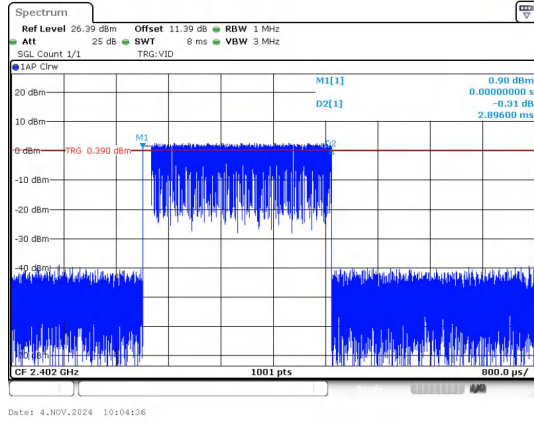
2) Dwell Time

Test Result

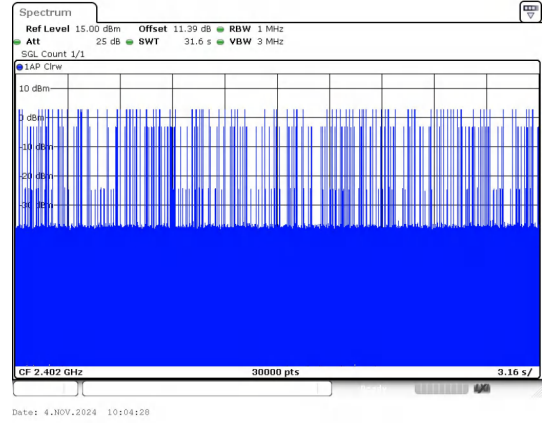
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.880	110	316.8	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.888	91	262.81		PASS
8DPSK	3-DH5		2.896	106	306.98		PASS

Test Graphs





Pulse Width
8DPSK_3-DH5



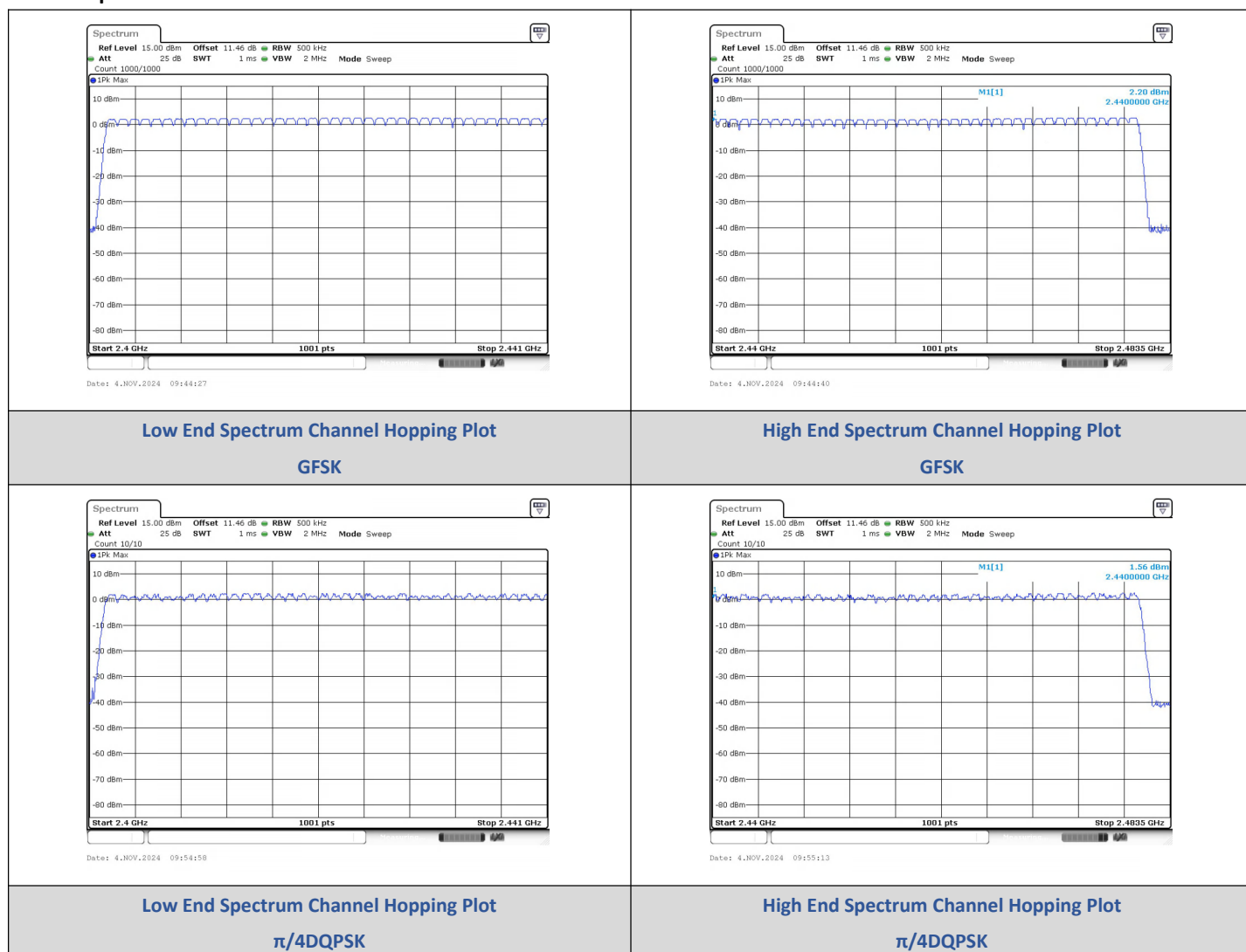
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

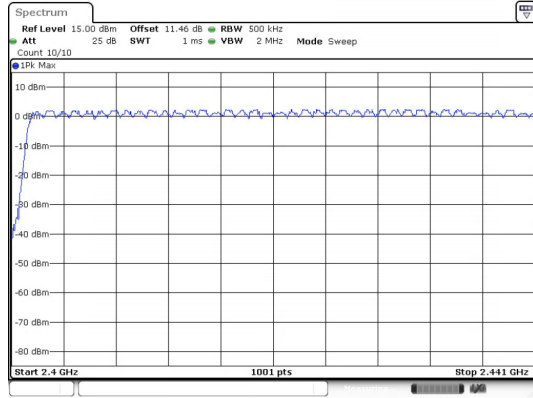
3) Number Of Hopping Channel

Test Result

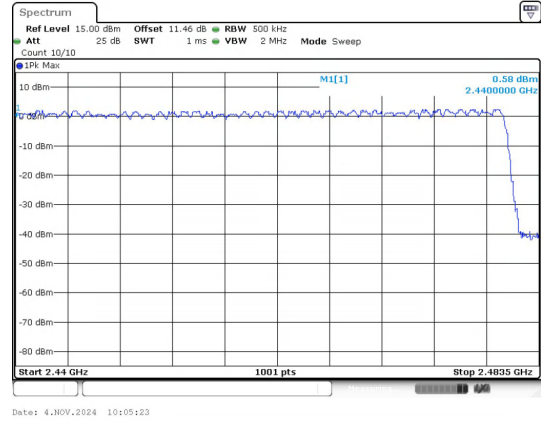
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK



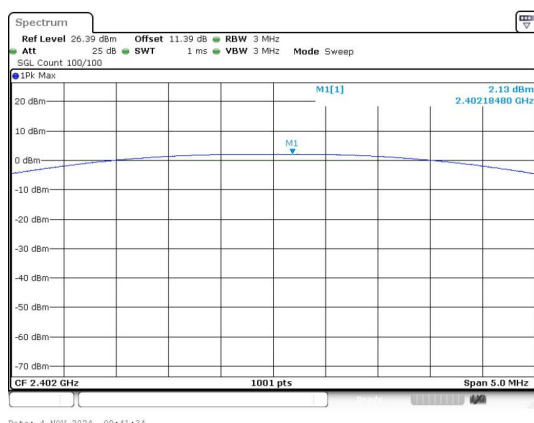
High End Spectrum Channel Hopping Plot
8DPSK

4) Conducted Peak Output Power

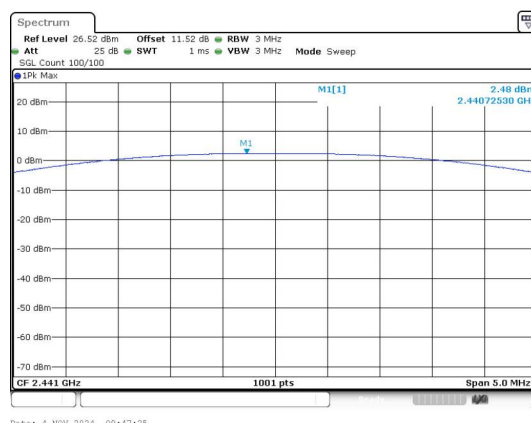
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	2.13	1.63	≤30	PASS
		39	2.48	1.77		PASS
		78	2.89	1.95		PASS
$\pi/4$ DQPSK	2-DH5	0	2.97	1.98	≤20.97	PASS
		39	3.19	2.09		PASS
		78	3.65	2.32		PASS
8DPSK	3-DH5	0	3.18	2.08		PASS
		39	3.58	2.28		PASS
		78	4.04	2.54		PASS

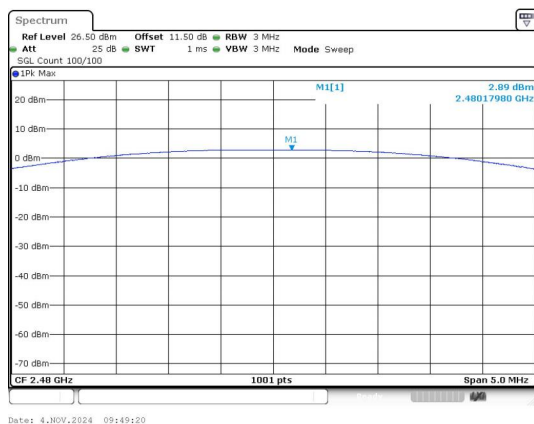
Test Graphs



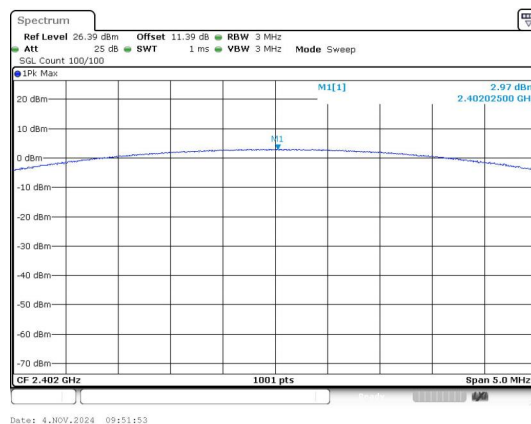
Peak Output Power
GFSK_Channel 0



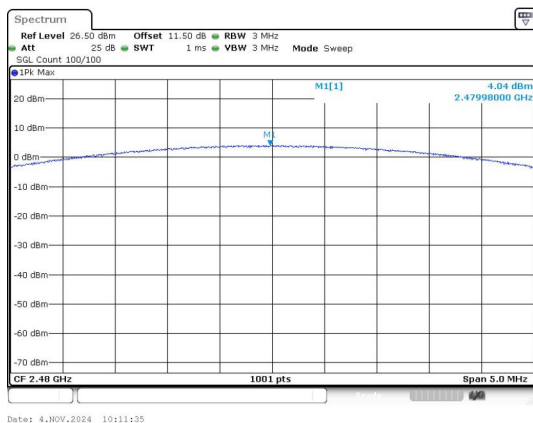
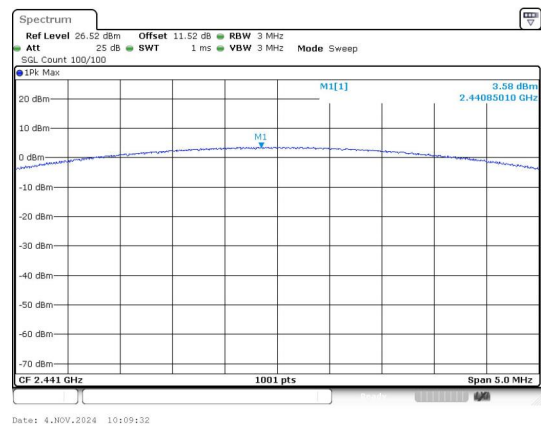
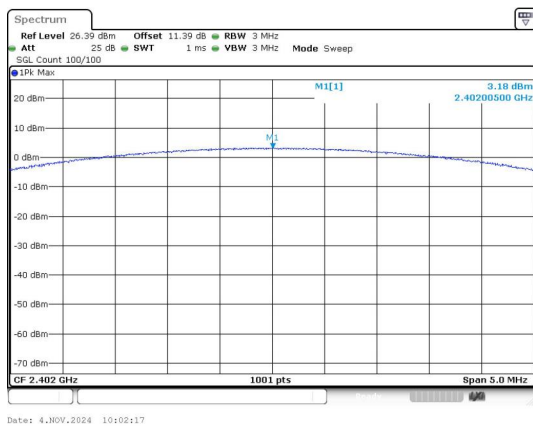
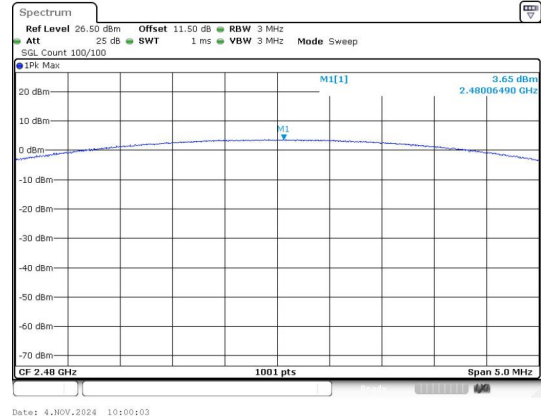
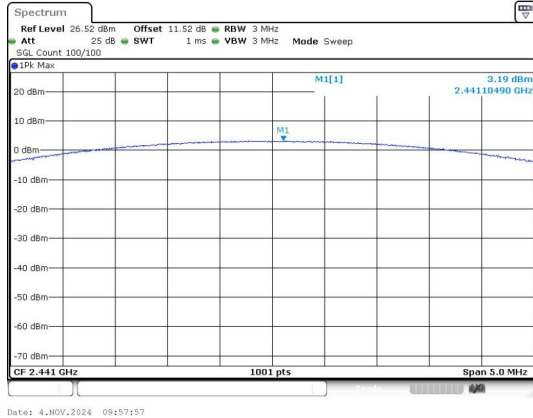
Peak Output Power
GFSK_Channel 39



Peak Output Power
GFSK_Channel 78



Peak Output Power
 $\pi/4$ DQPSK_Channel 0

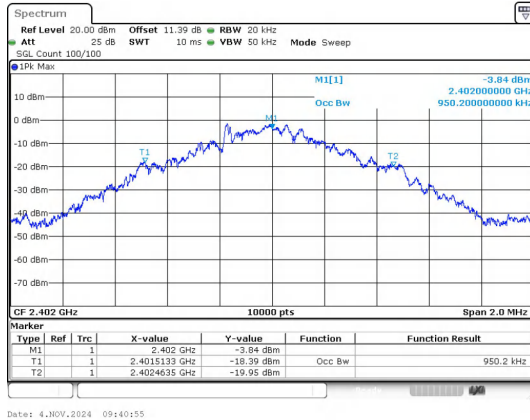


5) 99% Bandwidth

Test Result

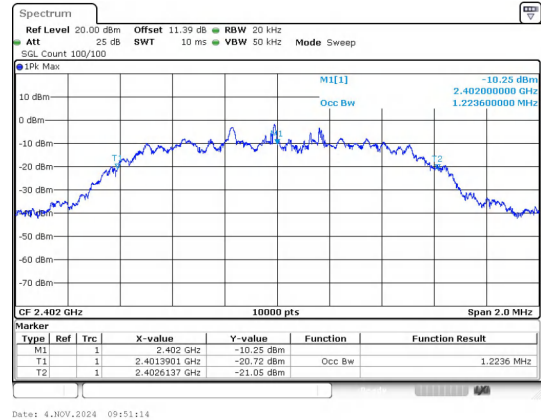
Modulation	Channel	Center Frequency (MHz)	99% BW (MHz)
GFSK	0	2402	0.95020
	39	2441	0.97160
	78	2480	0.97480
$\pi/4$ DQPSK	0	2402	1.2236
	39	2441	1.2490
	78	2480	1.2556
8DPSK	0	2402	1.2216
	39	2441	1.2238
	78	2480	1.2178

Test Graphs

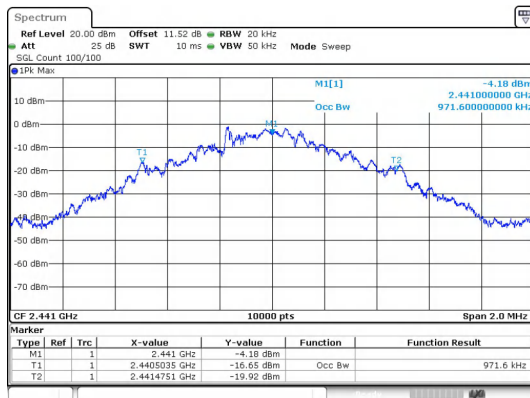


Date: 4.NOV.2024 09:40:55

GFSK_DH5_Channel 0

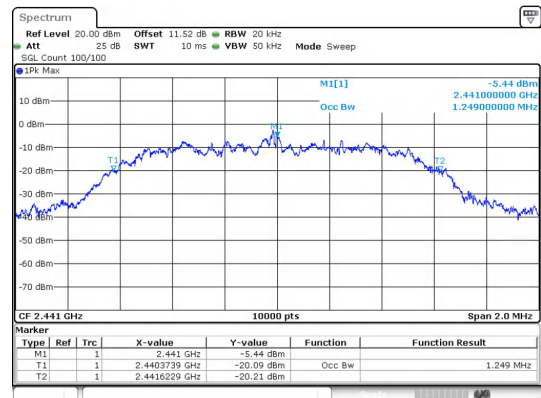


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 $\pi/4$ DQPSK_2-DH5_Channel 0


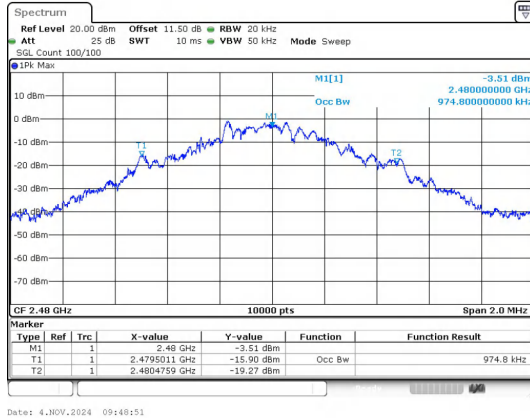
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GFSK_DH5_Channel 39

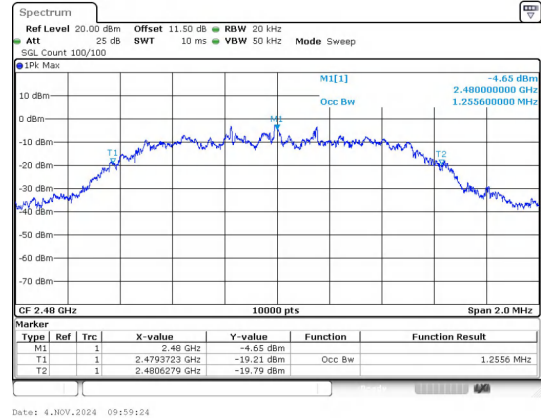


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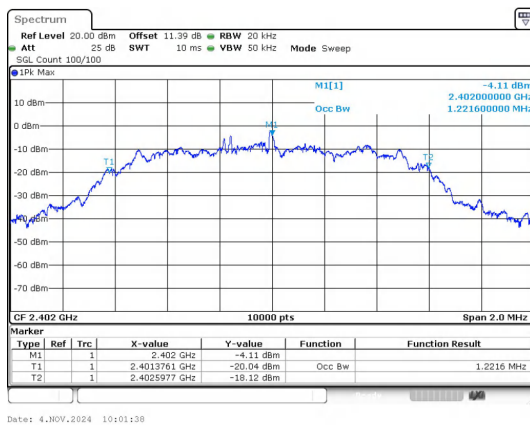
 $\pi/4$ DQPSK_2-DH5_Channel 39



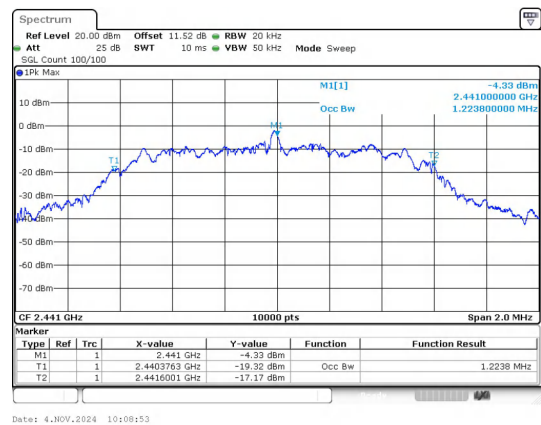
GFSK_DH5_Channel 78



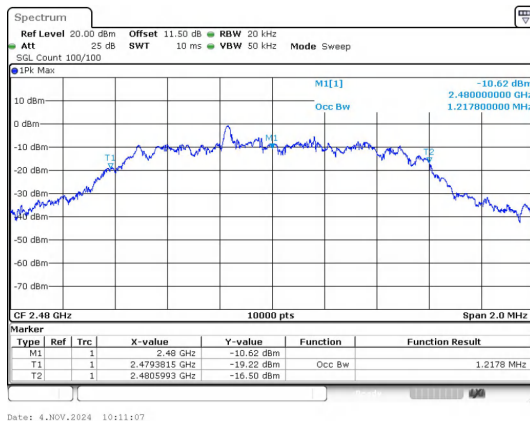
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



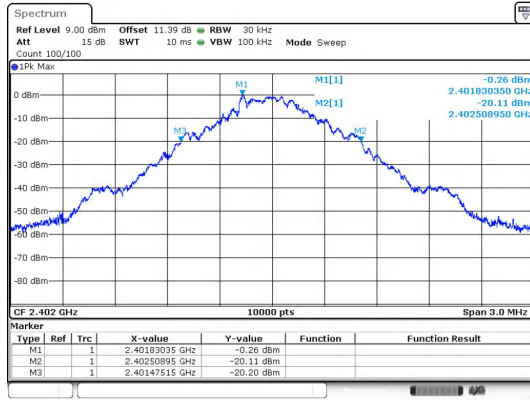
8DPSK_3-DH5_Channel 78

6) 20dB Bandwidth

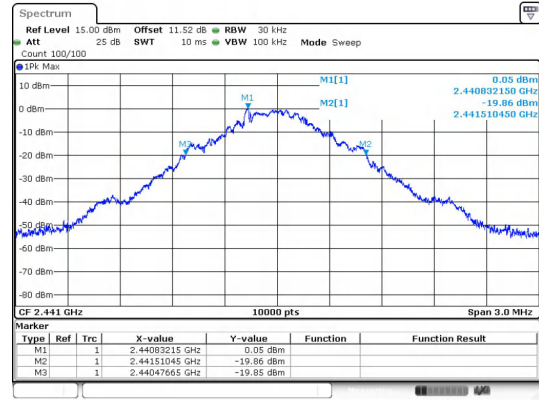
Test Result

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

Test Graphs



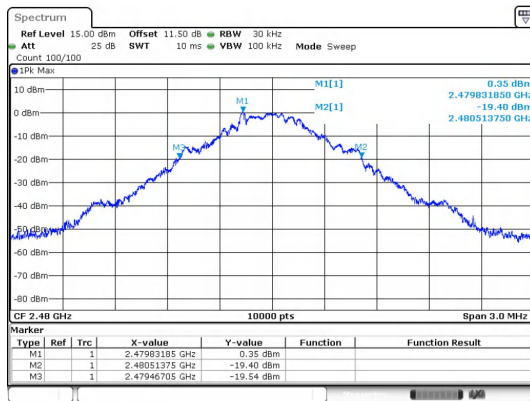
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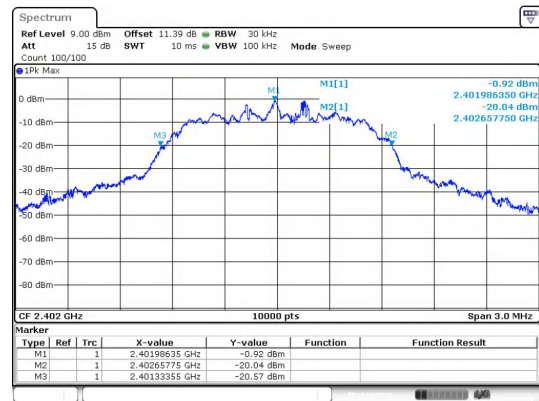
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GFSK_DH5_Channel 0

GFSK_DH5_Channel 39



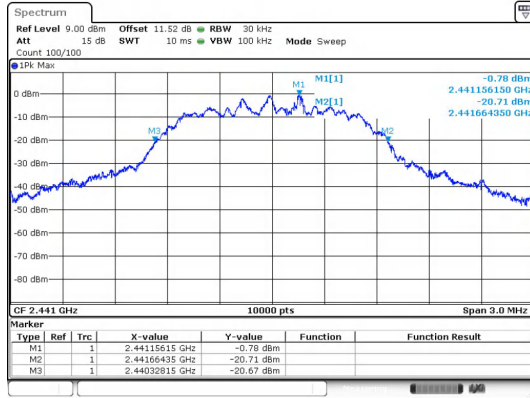
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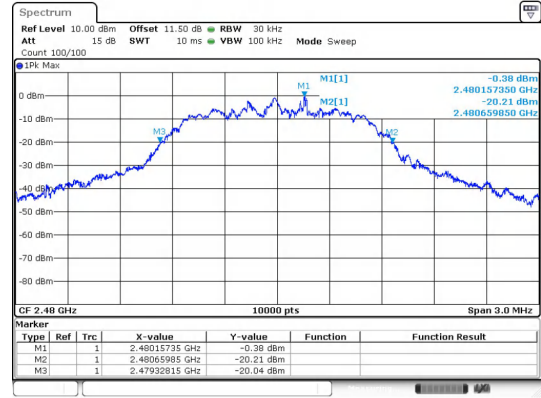
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GFSK_DH5_Channel 78

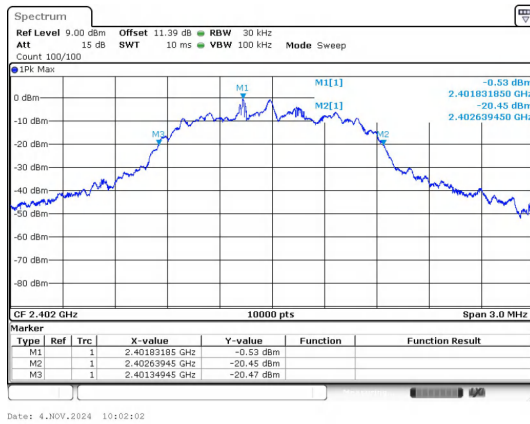
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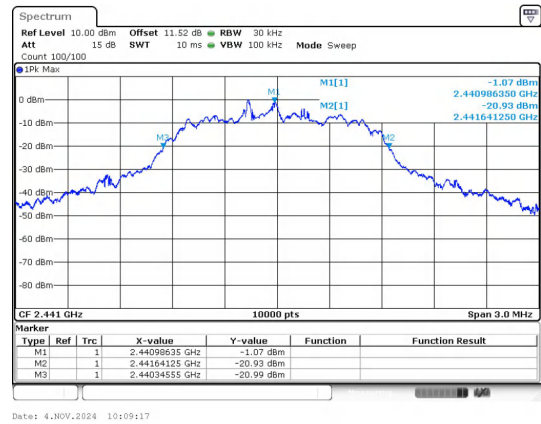
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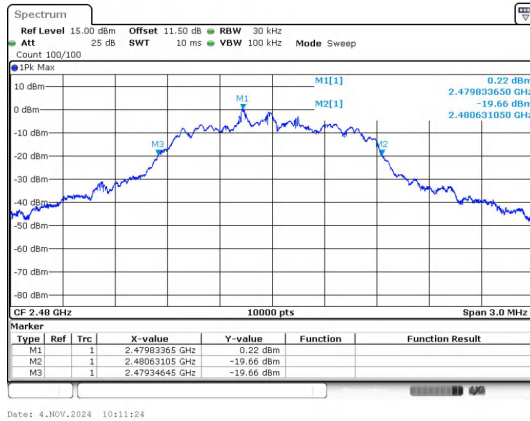
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



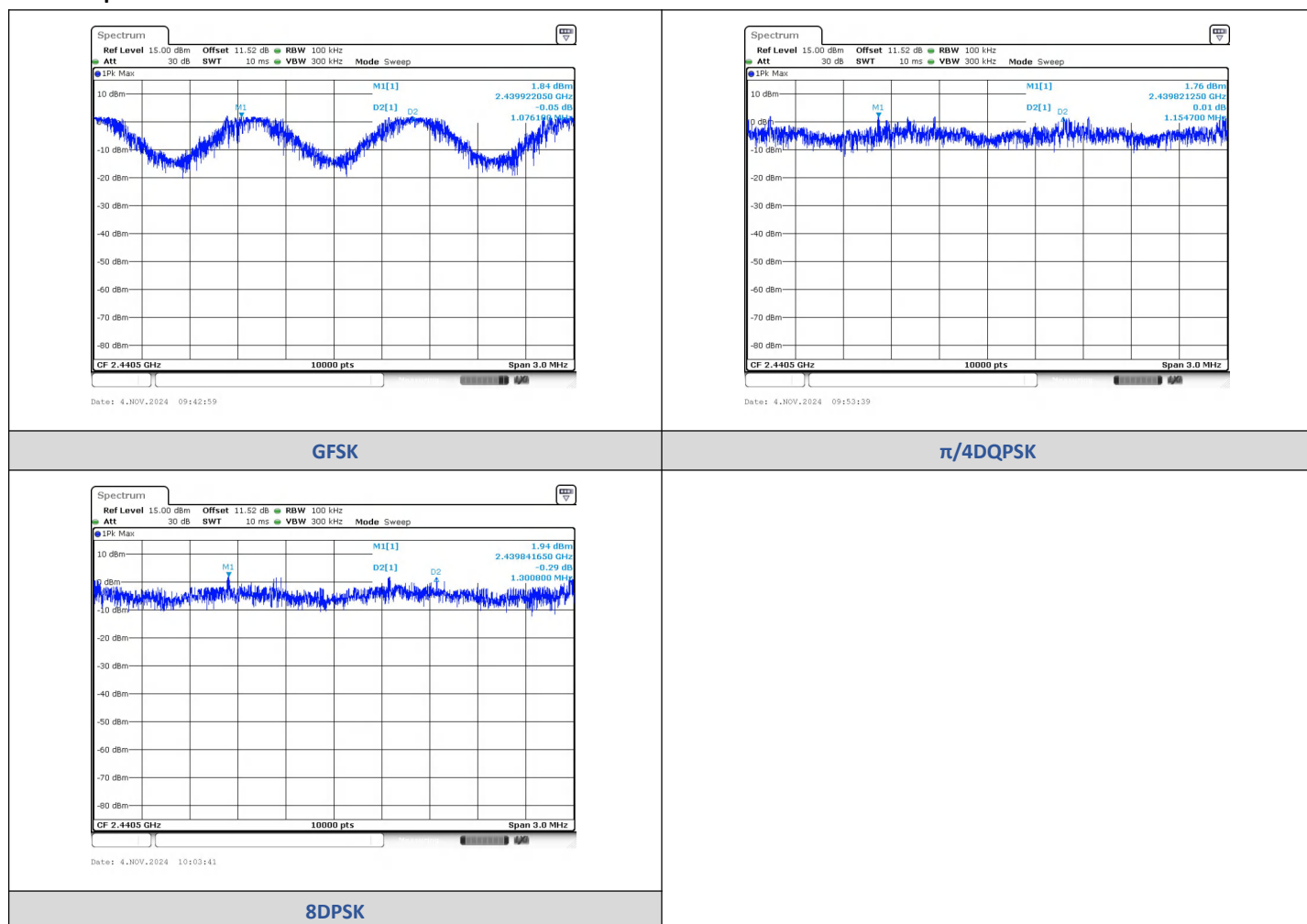
8DPSK_3-DH5_Channel 78

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	2439.9221	2440.9981	1.0761	1.04	PASS
$\pi/4$ QPSK	2-DH5	2439.8212	2440.976	1.1547	0.89	PASS
8DPSK	3-DH5	2439.8416	2441.1424	1.3008	0.86	PASS

Test Graphs



8) Conducted Out Of Band Emission

Test Result

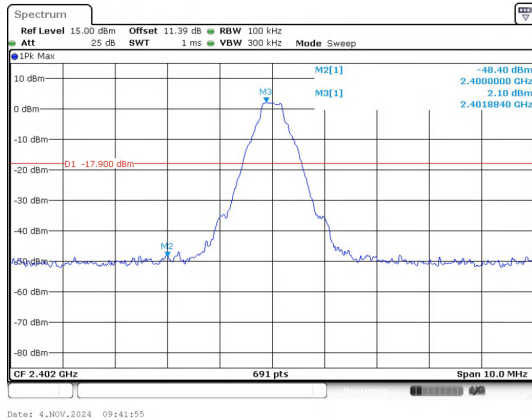
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-48.403	-17.9	-30.503	PASS
			4803.85	-41.866	-17.9	-23.966	PASS
		39	4882.09	-38.448	-17.82	-20.628	PASS
		78	2483.50	-50.064	-17.31	-32.754	PASS
			4960.33	-39.715	-17.31	-22.405	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-48.237	-18.54	-29.697	PASS
			4803.85	-42.786	-18.54	-24.246	PASS
		39	4882.09	-39.942	-18.1	-21.842	PASS
		78	2483.50	-50.694	-17.63	-33.064	PASS
			4960.33	-43.042	-17.63	-25.412	PASS
8DPSK	3-DH5	0	2400.00	-46.996	-18.37	-28.626	PASS
			4803.85	-41.421	-18.37	-23.051	PASS
		39	4882.09	-43.479	-17.93	-25.549	PASS
		78	2483.50	-50.452	-17.59	-32.862	PASS
			4960.33	-43.316	-17.59	-25.726	PASS

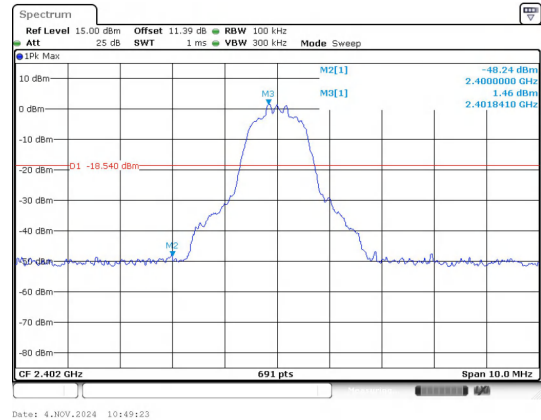
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2397.06	-45.495	-18.06	-27.435	PASS
			2400.00	-48.304	-18.06	-30.244	PASS
			2483.50	-49.865	-17.41	-32.455	PASS
$\pi/4$ DQPSK	2-DH5		2396.12	-45.959	-18.33	-27.629	PASS
			2400.00	-49.724	-18.33	-31.394	PASS
			2483.50	-50.197	-21.55	-28.647	PASS
8DPSK	3-DH5		2400.00	-45.890	-18.22	-27.670	PASS
			2483.50	-49.035	-19.35	-29.685	PASS

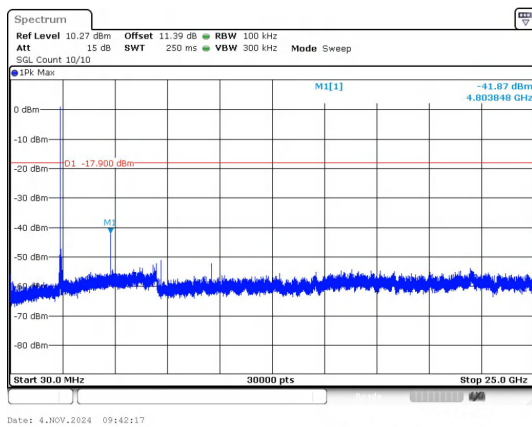
Test Graphs



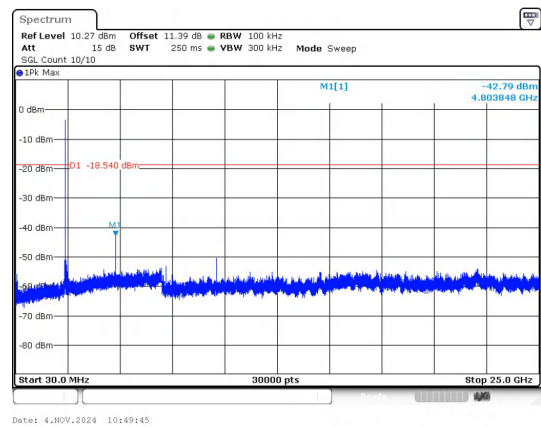
Out Of Band Emission
GFSK_DH5_Channel 0



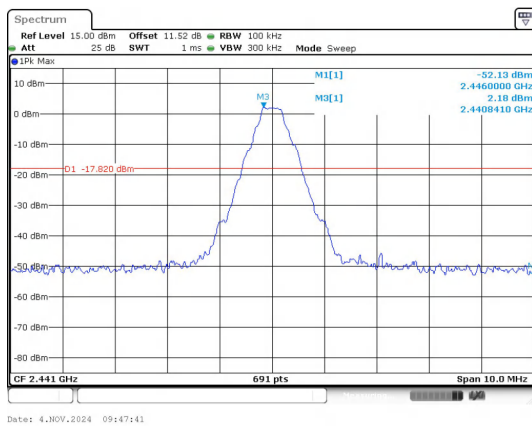
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0



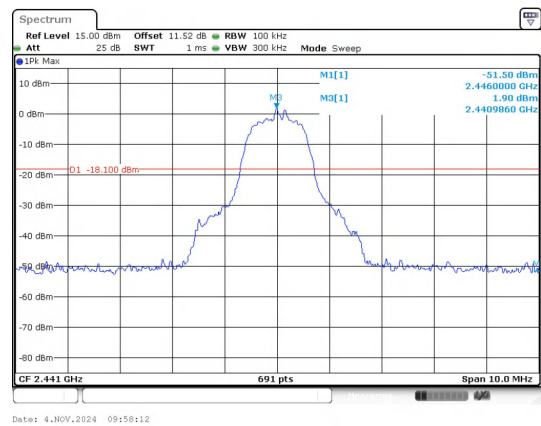
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



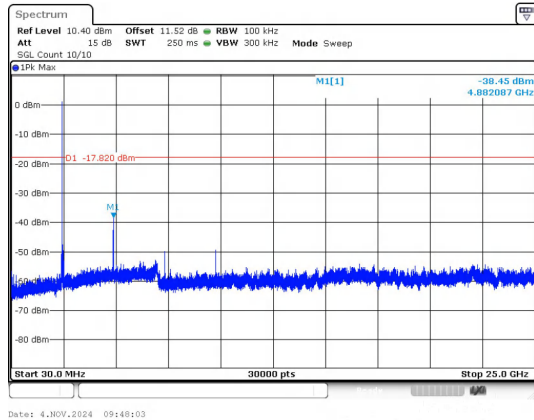
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 0



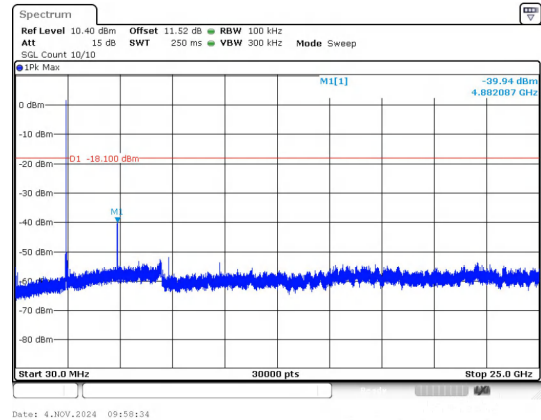
Out Of Band Emission
GFSK_DH5_Channel 39



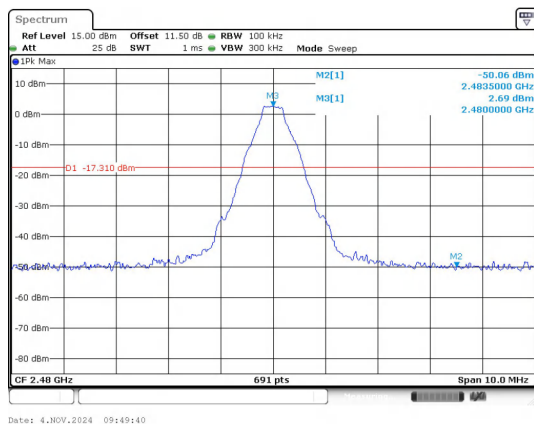
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39



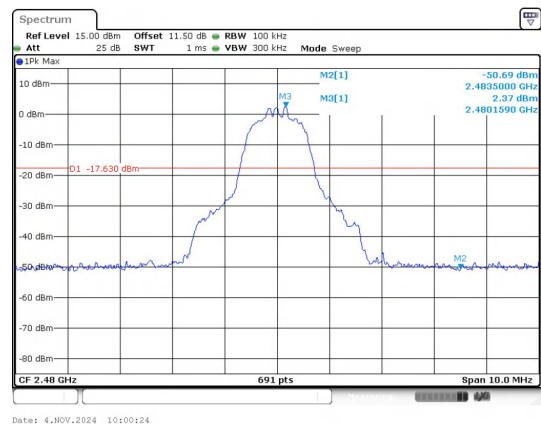
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



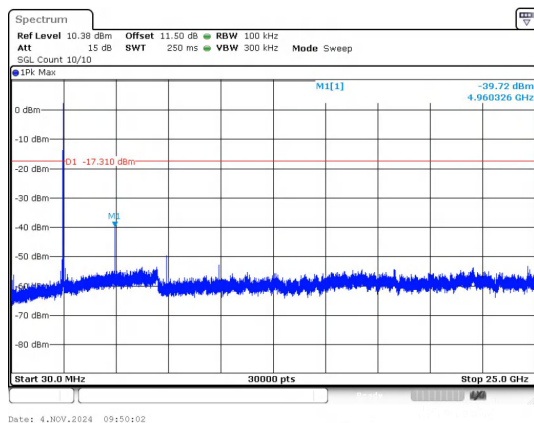
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



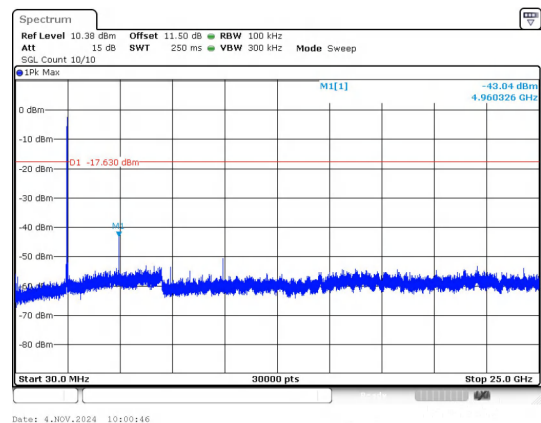
Out Of Band Emission
GFSK_DH5_Channel 78



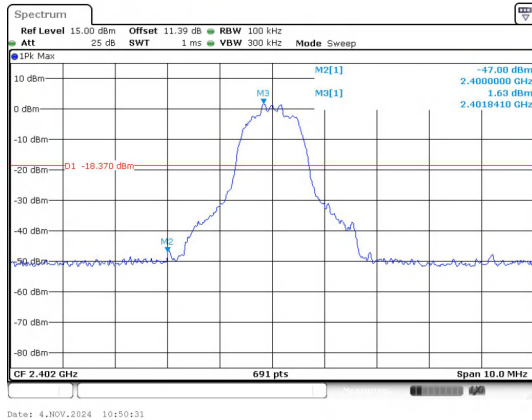
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78



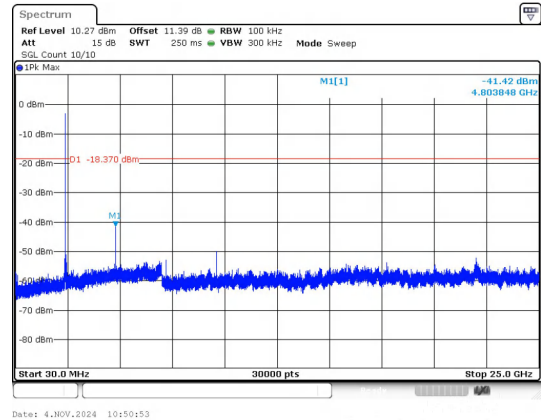
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



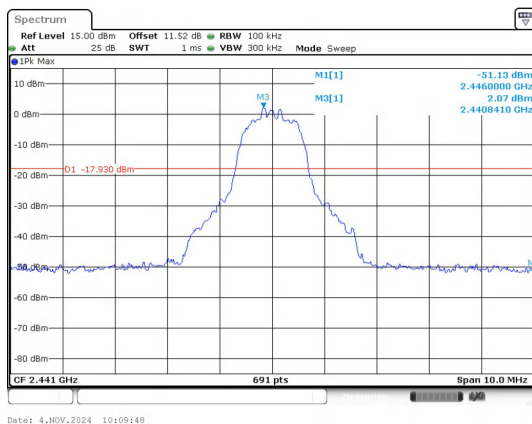
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



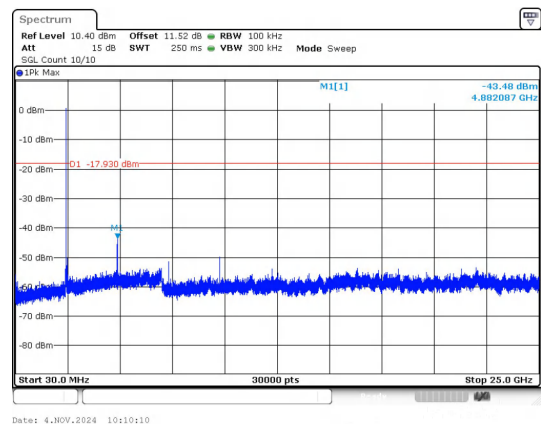
Out Of Band Emission
8DPSK_3-DH5_Channel 0



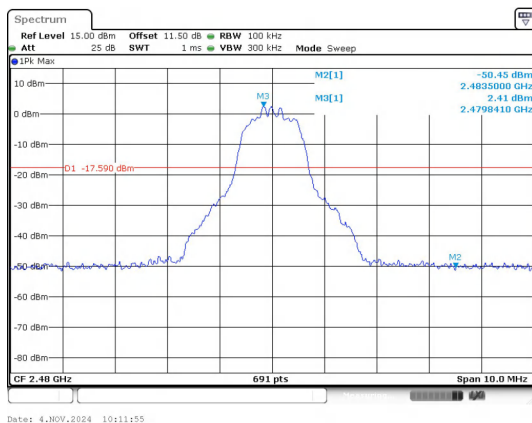
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



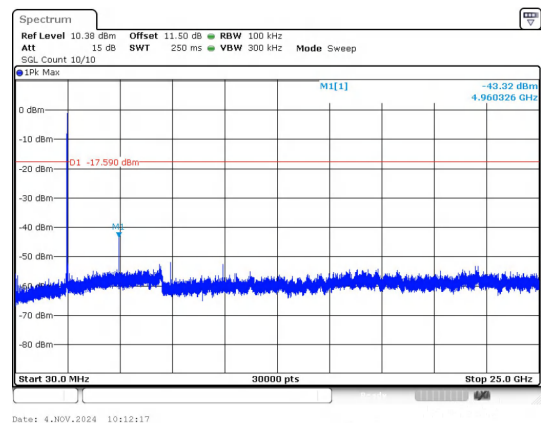
Out Of Band Emission
8DPSK_3-DH5_Channel 39



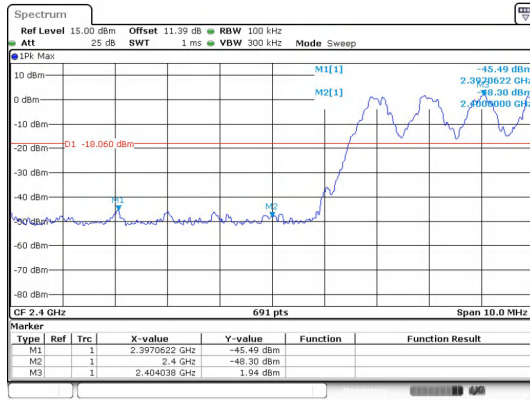
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



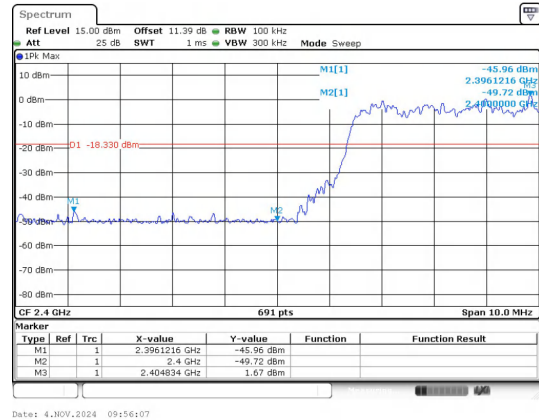
Out Of Band Emission
8DPSK_3-DH5_Channel 78



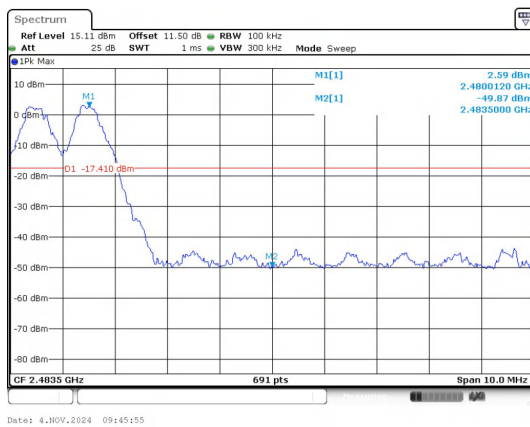
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



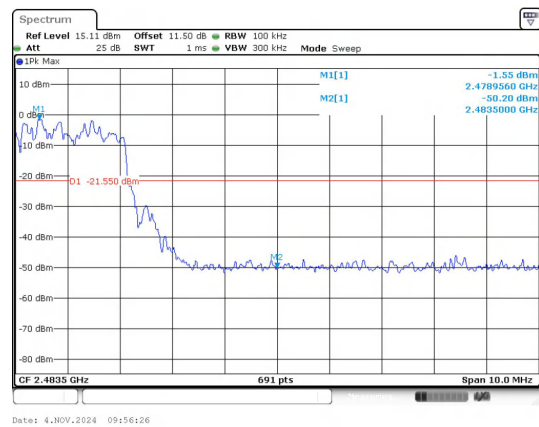
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



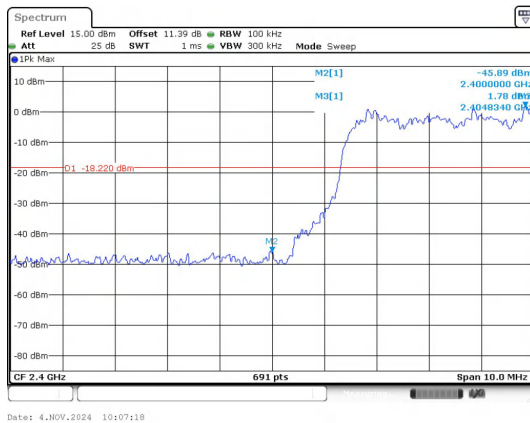
Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



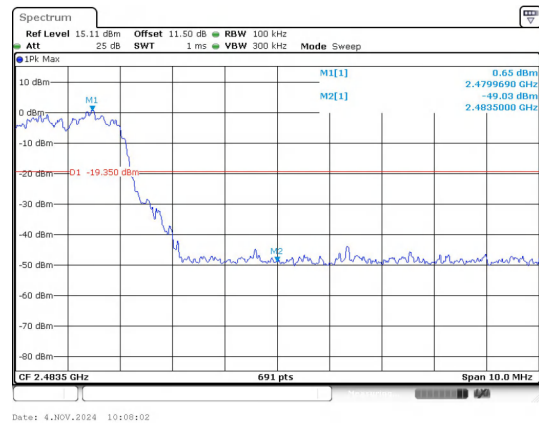
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



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