

Appendix

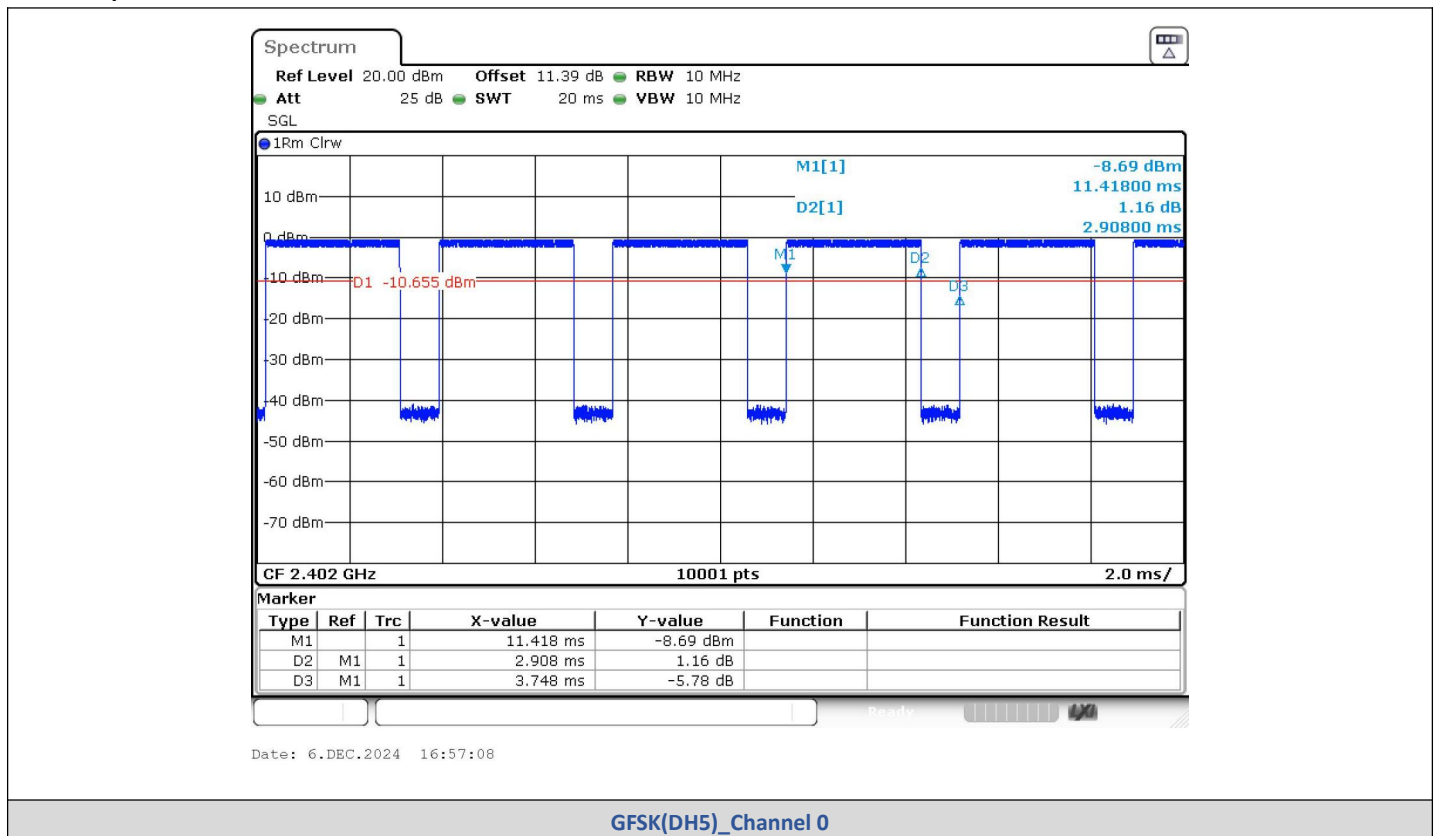
Report No.:	CISRR24112517704
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

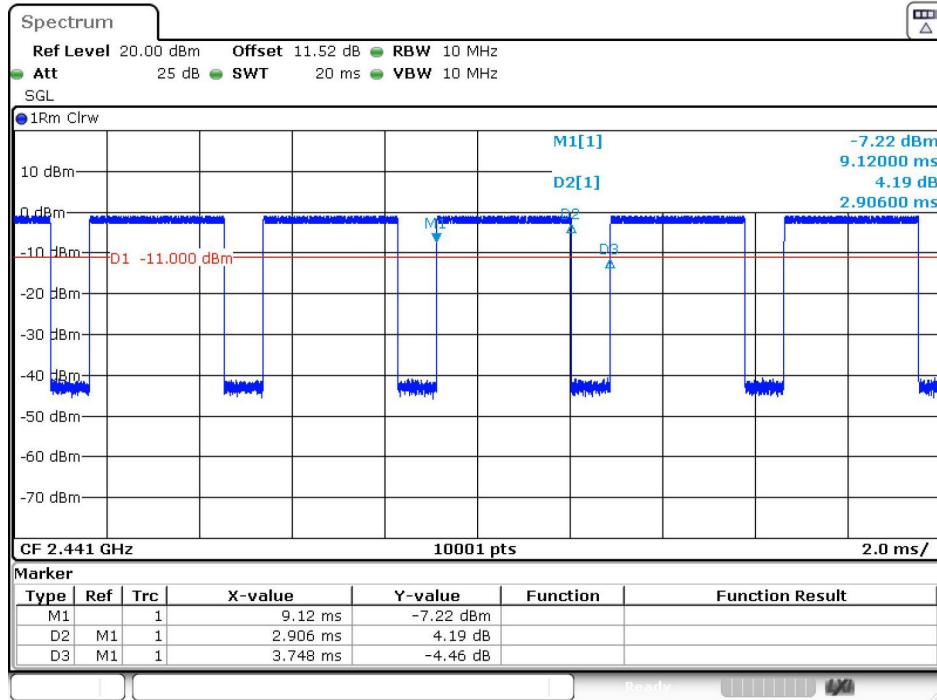
1) Duty Cycle

Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.908	3.748	77.59	0.7759	1.1019	0.3439
		39	2.906	3.748	77.53	0.7753	1.1053	0.3441
		78	2.908	3.748	77.59	0.7759	1.1019	0.3439
$\pi/4$ DQPSK	2-DH5	0	2.914	3.748	77.75	0.7775	1.093	0.3432
		39	2.912	3.748	77.69	0.7769	1.0963	0.3434
		78	2.912	3.748	77.69	0.7769	1.0963	0.3434
8DPSK	3-DH5	0	2.916	3.748	77.80	0.7780	1.0902	0.3429
		39	2.916	3.748	77.80	0.7780	1.0902	0.3429
		78	2.916	3.748	77.80	0.7780	1.0902	0.3429

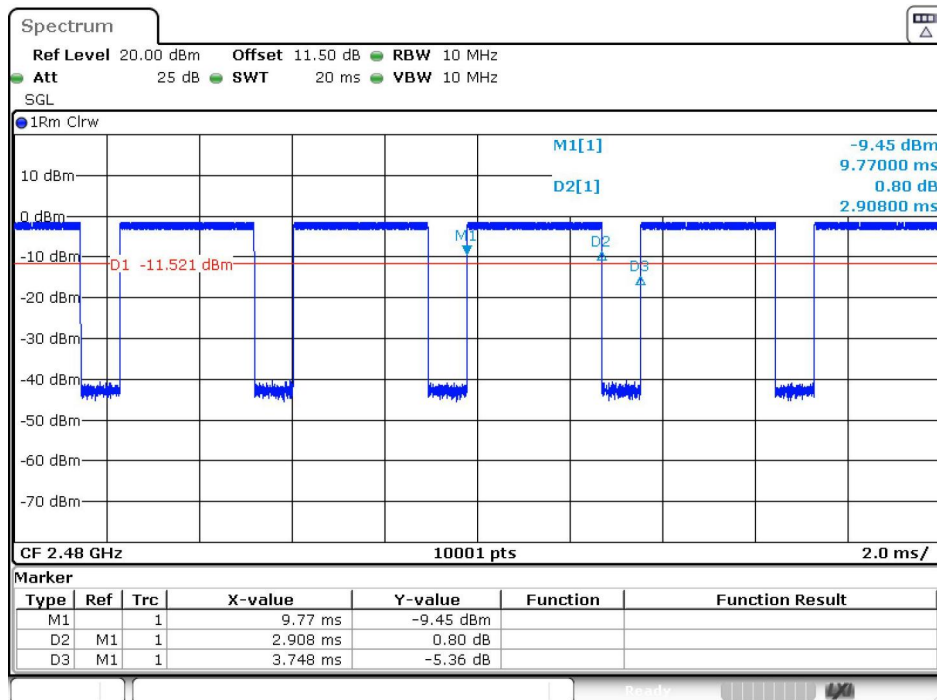
Test Graphs





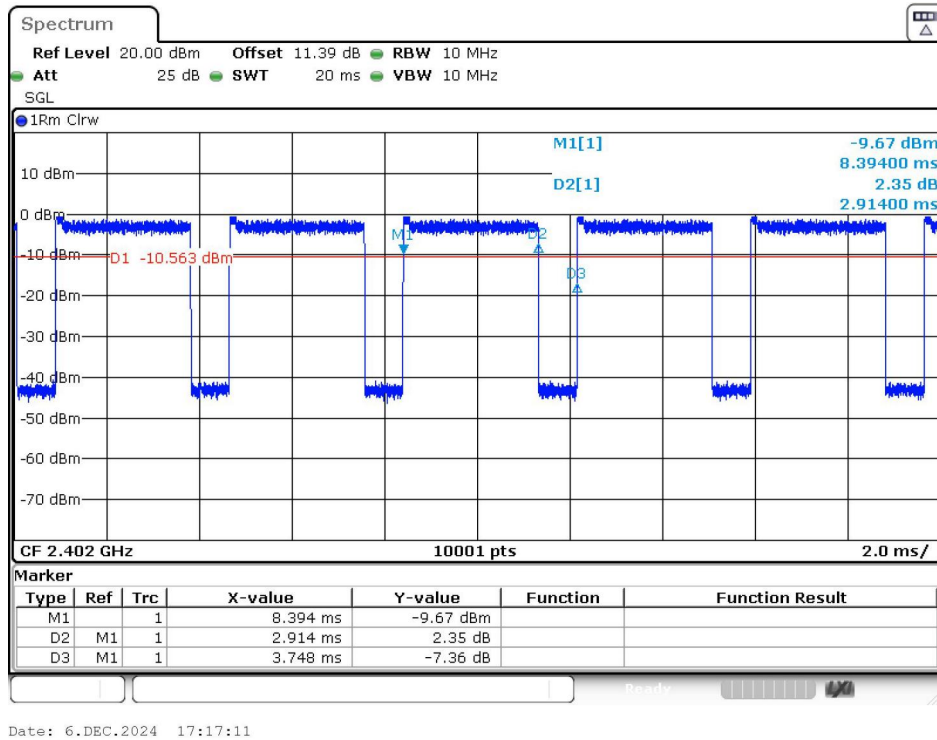
Date: 6.DEC.2024 17:05:37

GFSK(DH5)_Channel 39

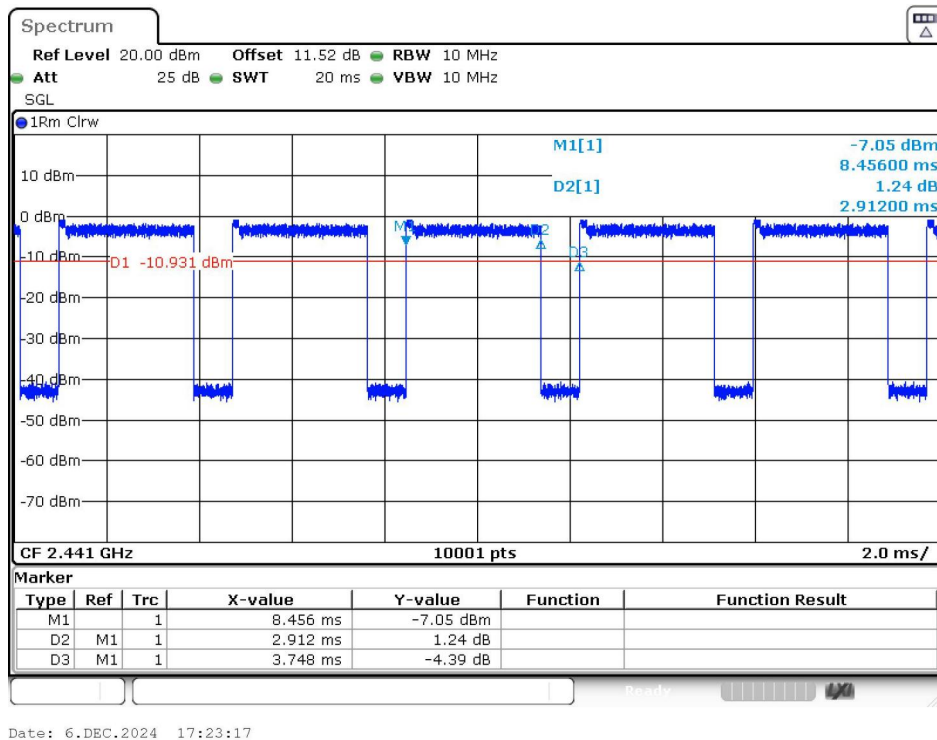


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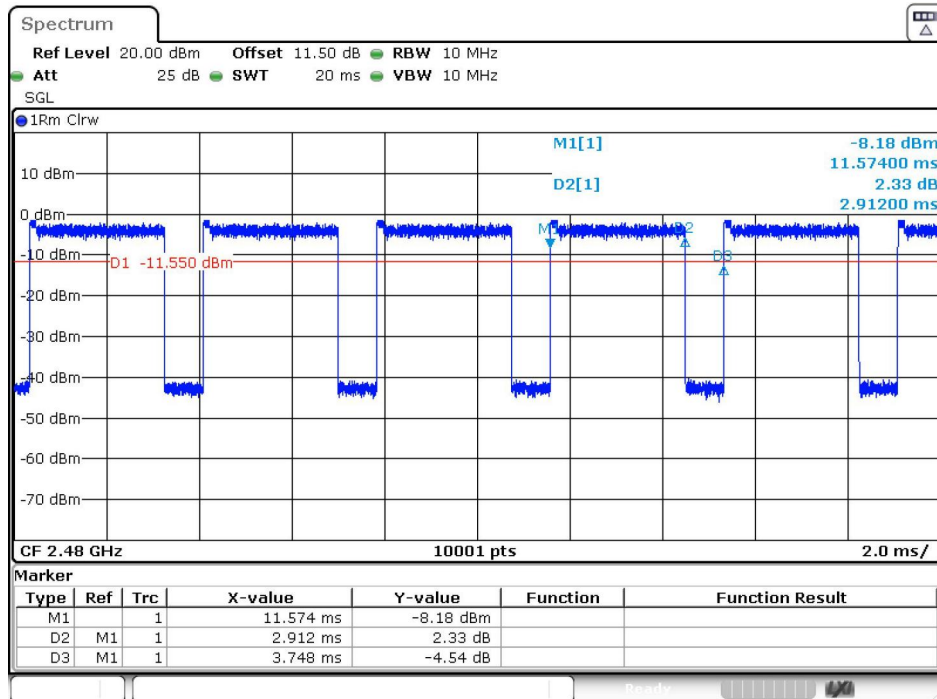
GFSK(DH5)_Channel 78



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

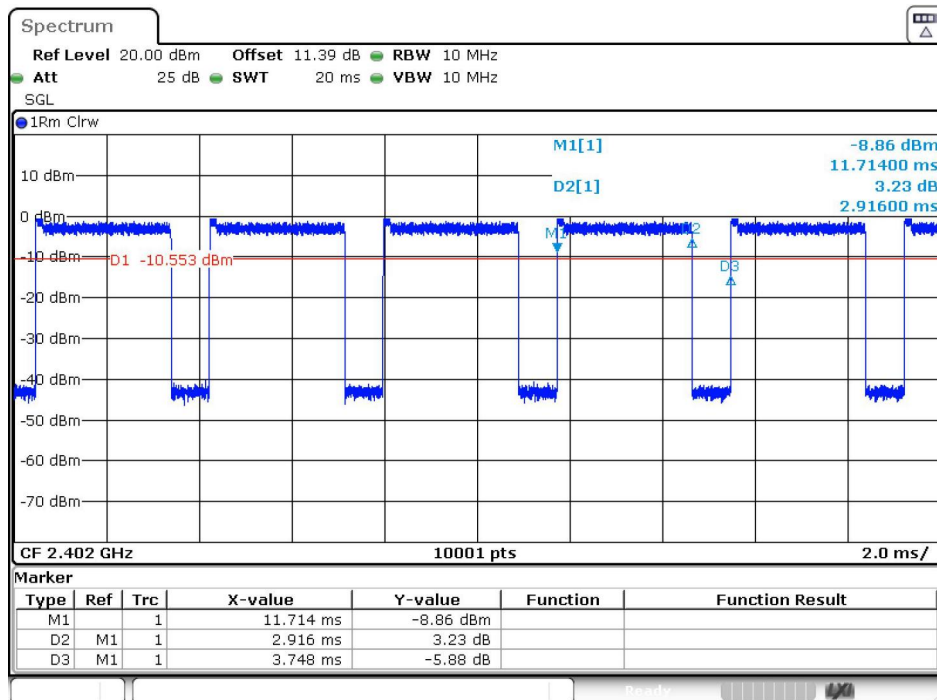


$\pi/4$ DQPSK(2-DH5)_Channel 39



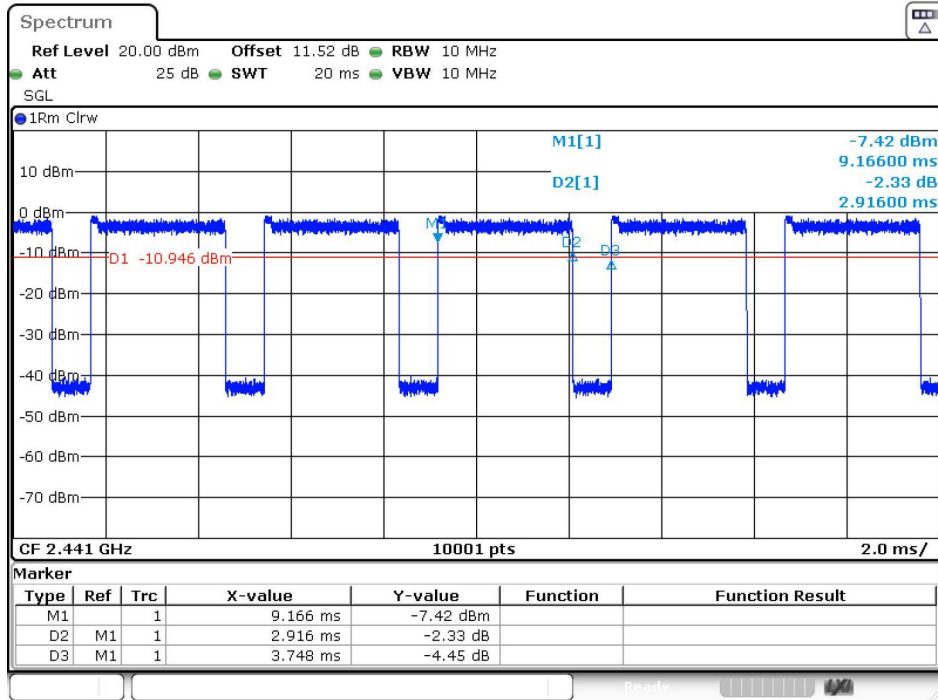
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$\pi/4$ DQPSK(2-DH5)_Channel 78



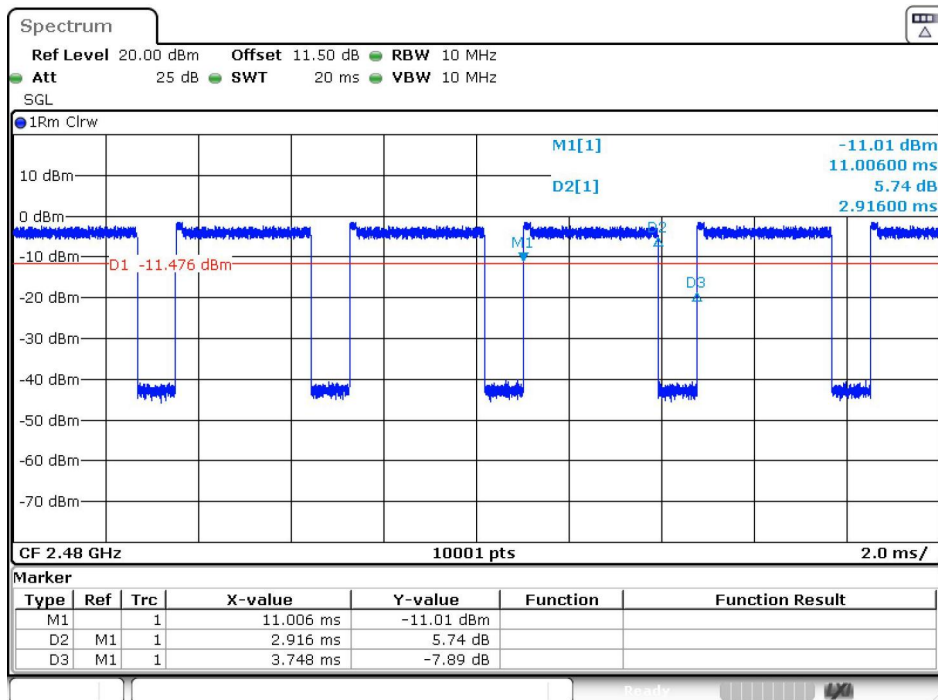
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8DPSK(3-DH5)_Channel 0



Date: 6.DEC.2024 17:34:49

8DPSK(3-DH5)_Channel 39



Date: 6.DEC.2024 17:36:50

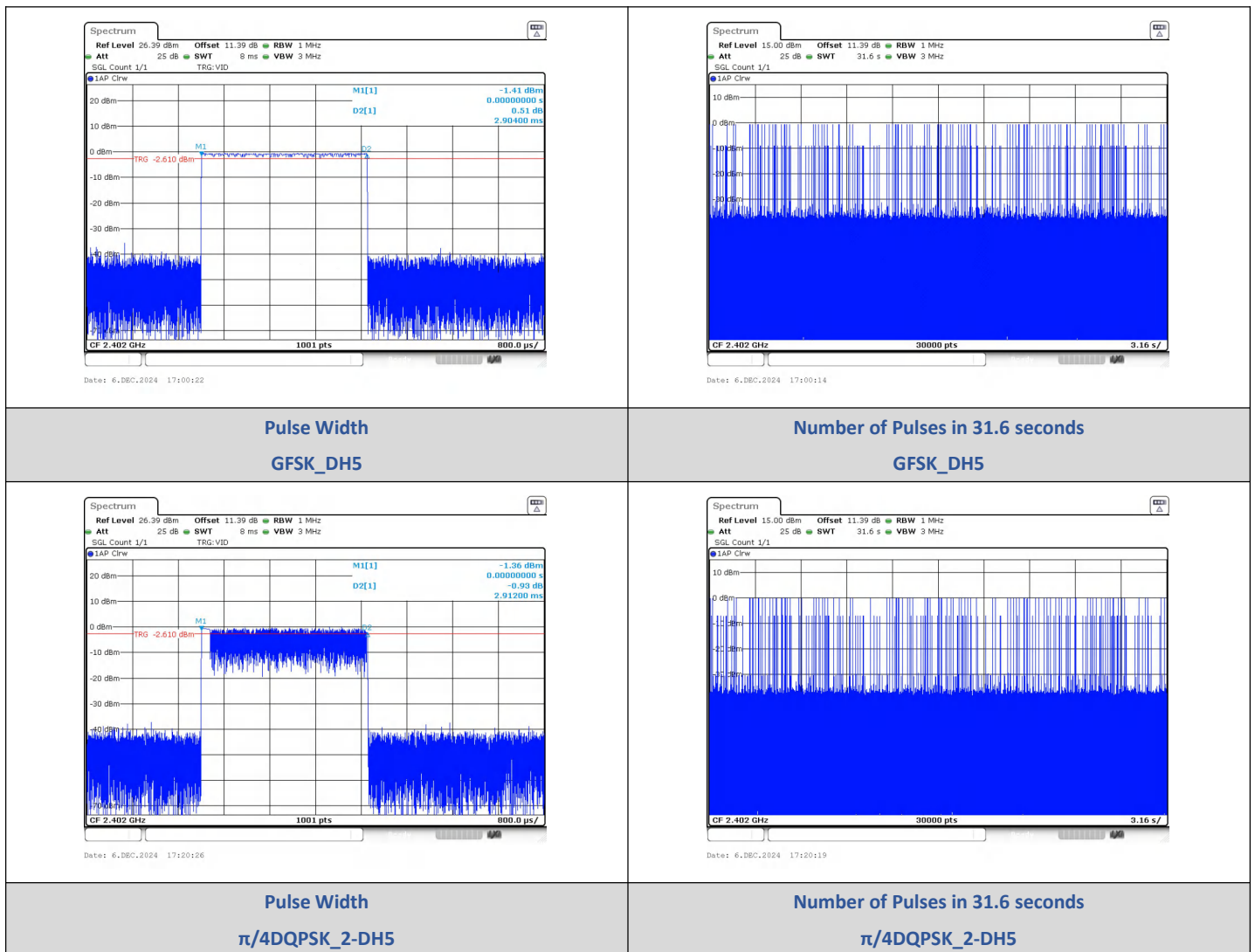
8DPSK(3-DH5)_Channel 78

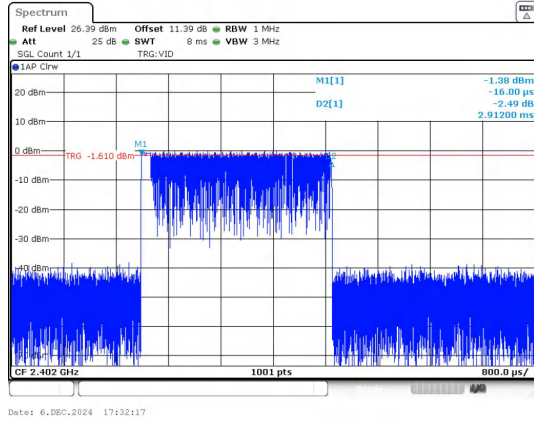
2) Dwell Time

Test Result

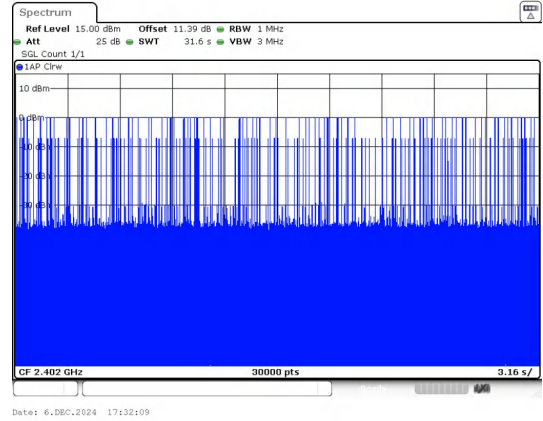
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.904	105	304.92	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.912	104	302.85		PASS
8DPSK	3-DH5		2.912	106	308.67		PASS

Test Graphs





Pulse Width
8DPSK_3-DH5



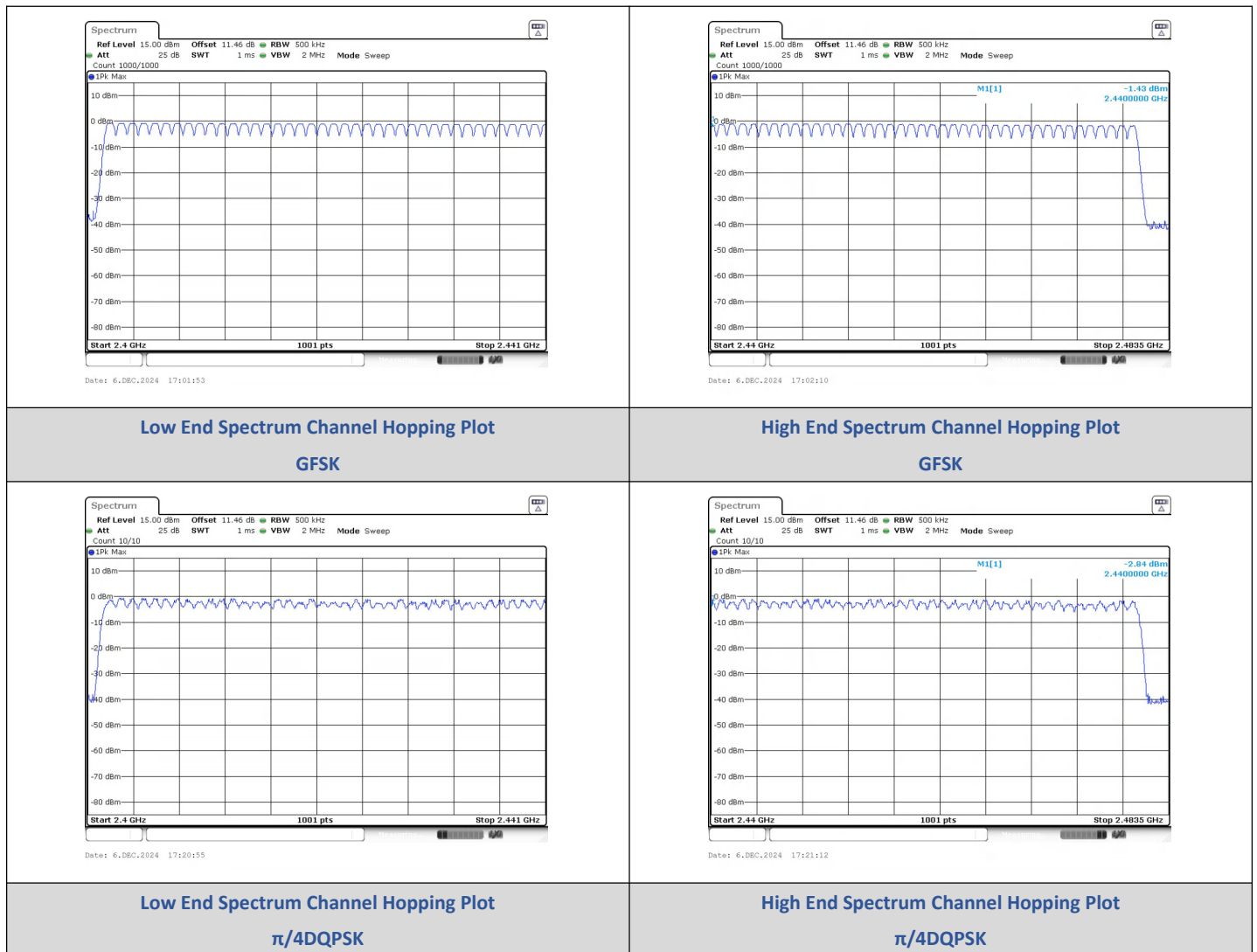
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

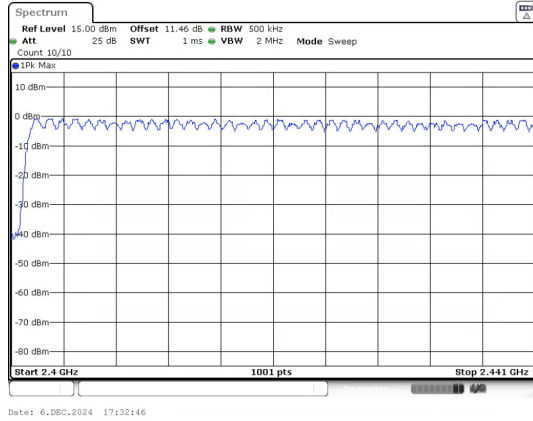
3) Number Of Hopping Channel

Test Result

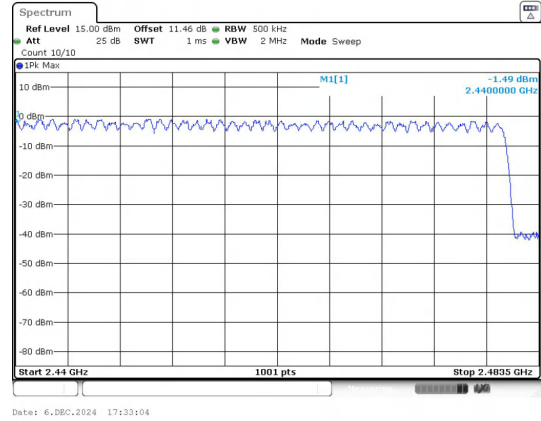
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK



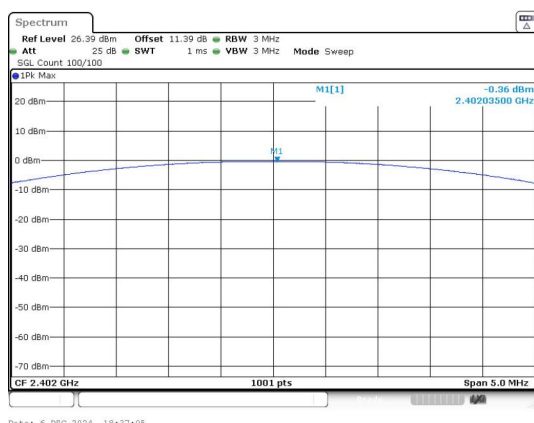
High End Spectrum Channel Hopping Plot
8DPSK

4) Conducted Peak Output Power

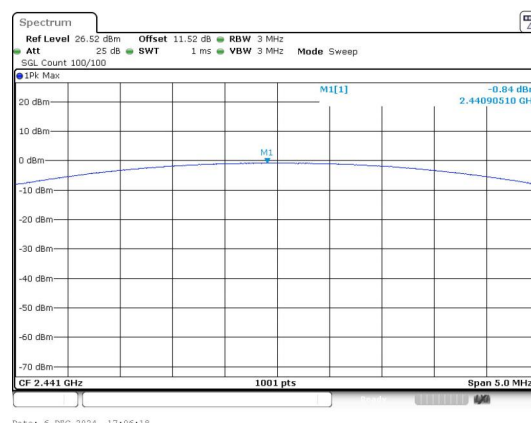
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	-0.36	0.92	≤30	PASS
		39	-0.84	0.82		PASS
		78	-1.35	0.73		PASS
$\pi/4$ DQPSK	2-DH5	0	0.26	1.06	≤20.97	PASS
		39	-0.05	0.99		PASS
		78	-0.61	0.87		PASS
8DPSK	3-DH5	0	0.73	1.18		PASS
		39	0.26	1.06		PASS
		78	-0.28	0.94		PASS

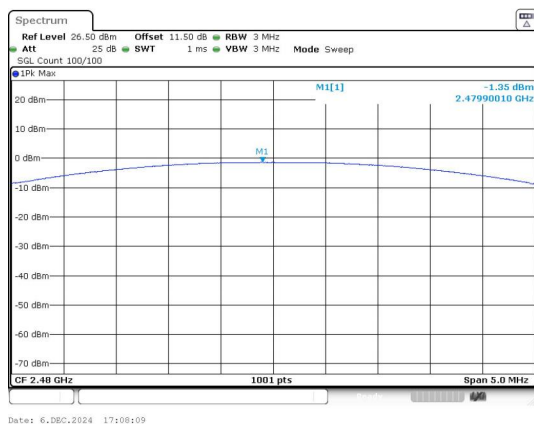
Test Graphs



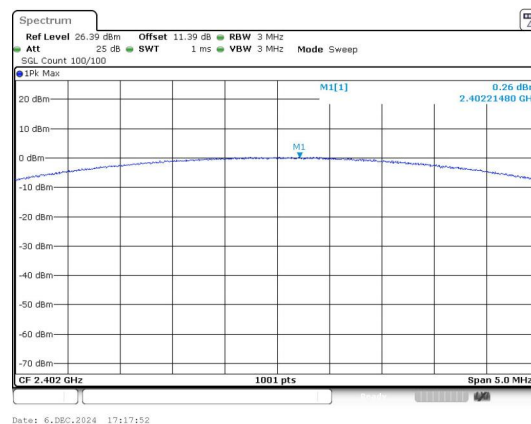
Peak Output Power
GFSK_Channel 0



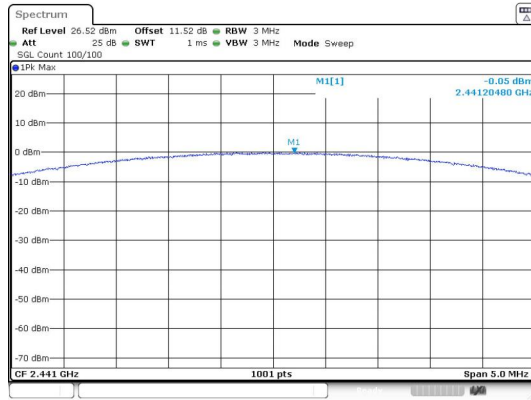
Peak Output Power
GFSK_Channel 39



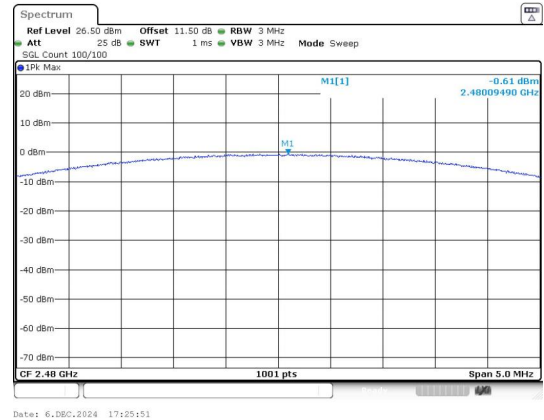
Peak Output Power
GFSK_Channel 78



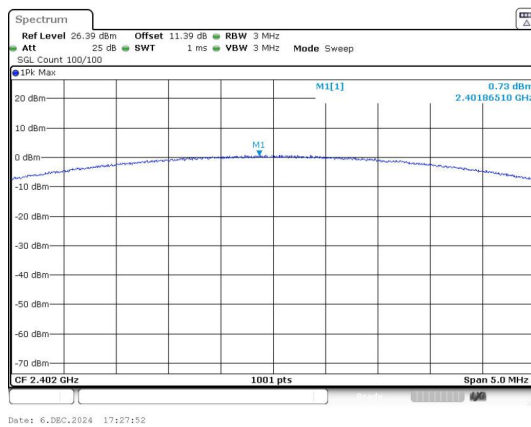
Peak Output Power
 $\pi/4$ DQPSK_Channel 0



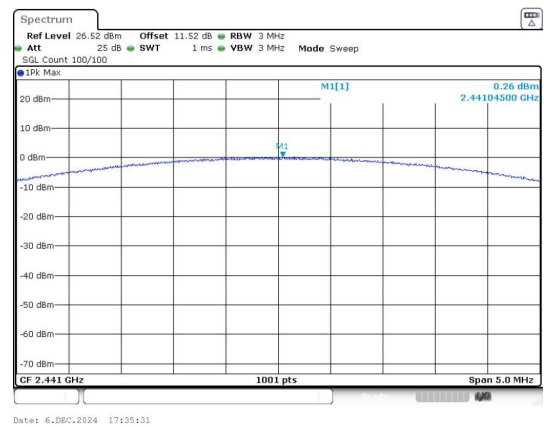
Peak Output Power
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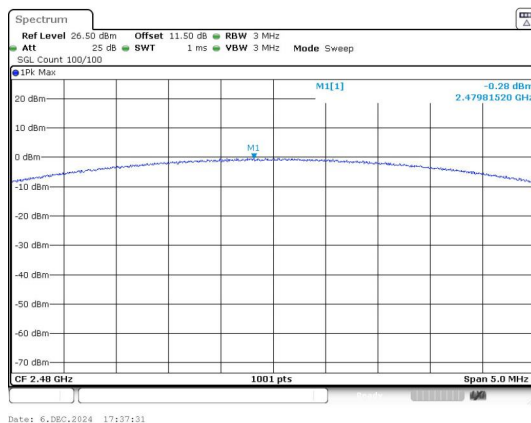
Peak Output Power
 $\pi/4$ DQPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



Peak Output Power
8DPSK_Channel 39



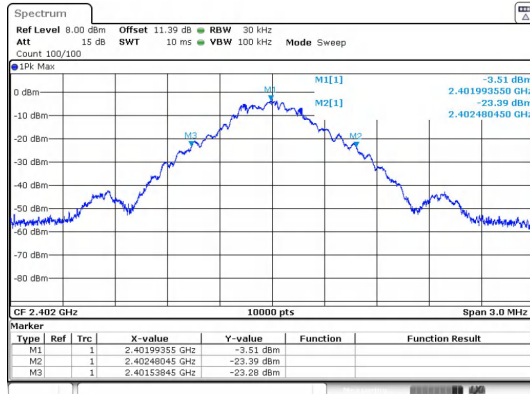
Peak Output Power
8DPSK_Channel 78

5) 20dB Bandwidth

Test Result

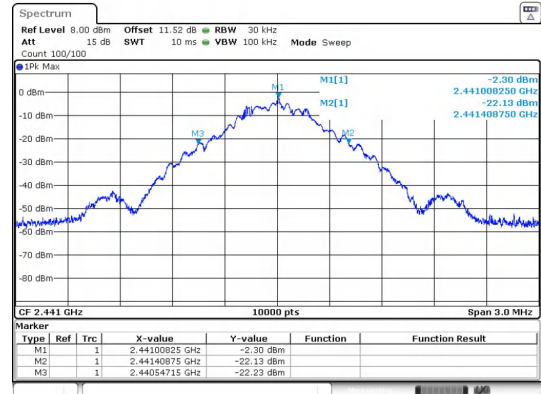
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	0.9400
	39	2441 MHz	0.8600
	78	2480 MHz	0.8600
$\pi/4$ DQPSK	0	2402 MHz	1.200
	39	2441 MHz	1.200
	78	2480 MHz	1.210
8DPSK	0	2402 MHz	1.250
	39	2441 MHz	1.240
	78	2480 MHz	1.240

Test Graphs



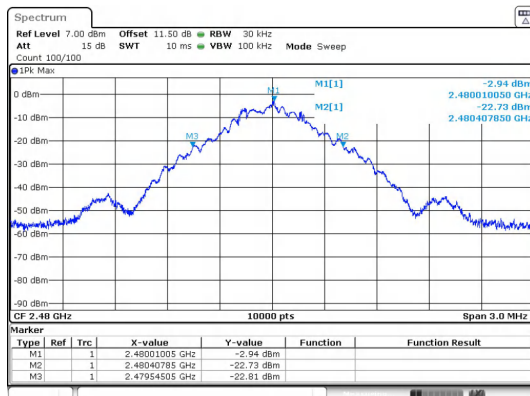
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GFSK_DH5_Channel 0



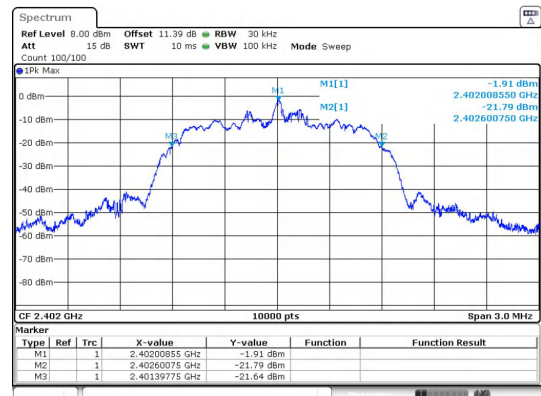
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GFSK_DH5_Channel 39



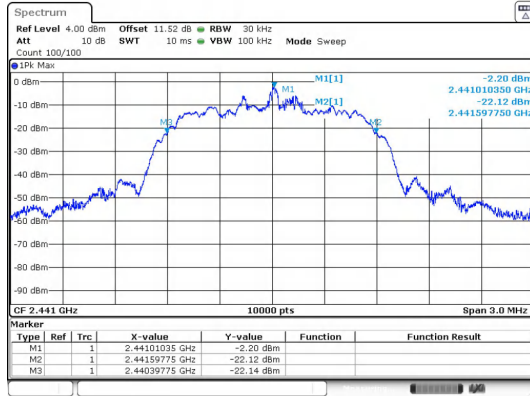
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GFSK_DH5_Channel 78

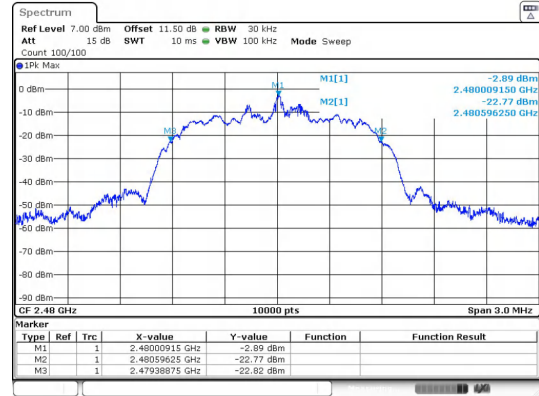


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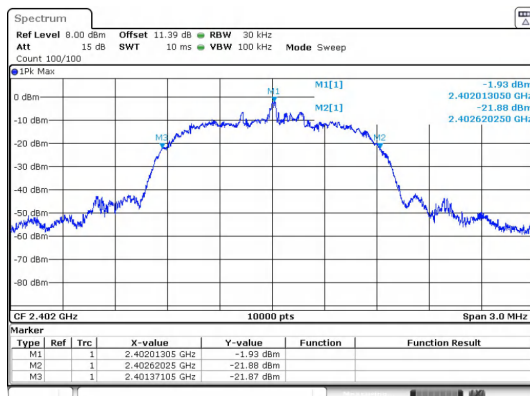
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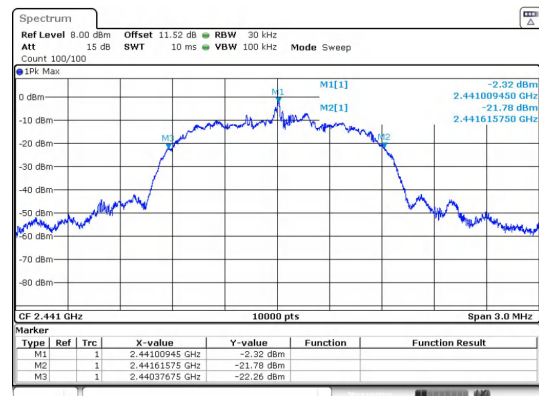
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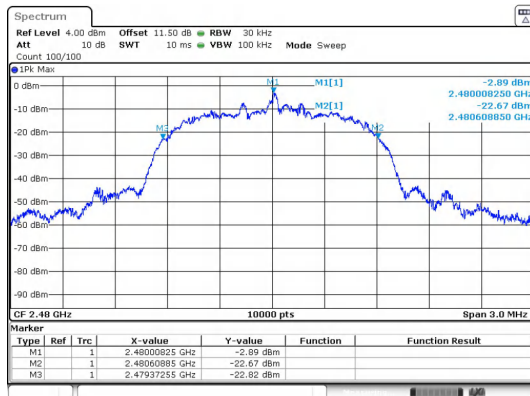
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



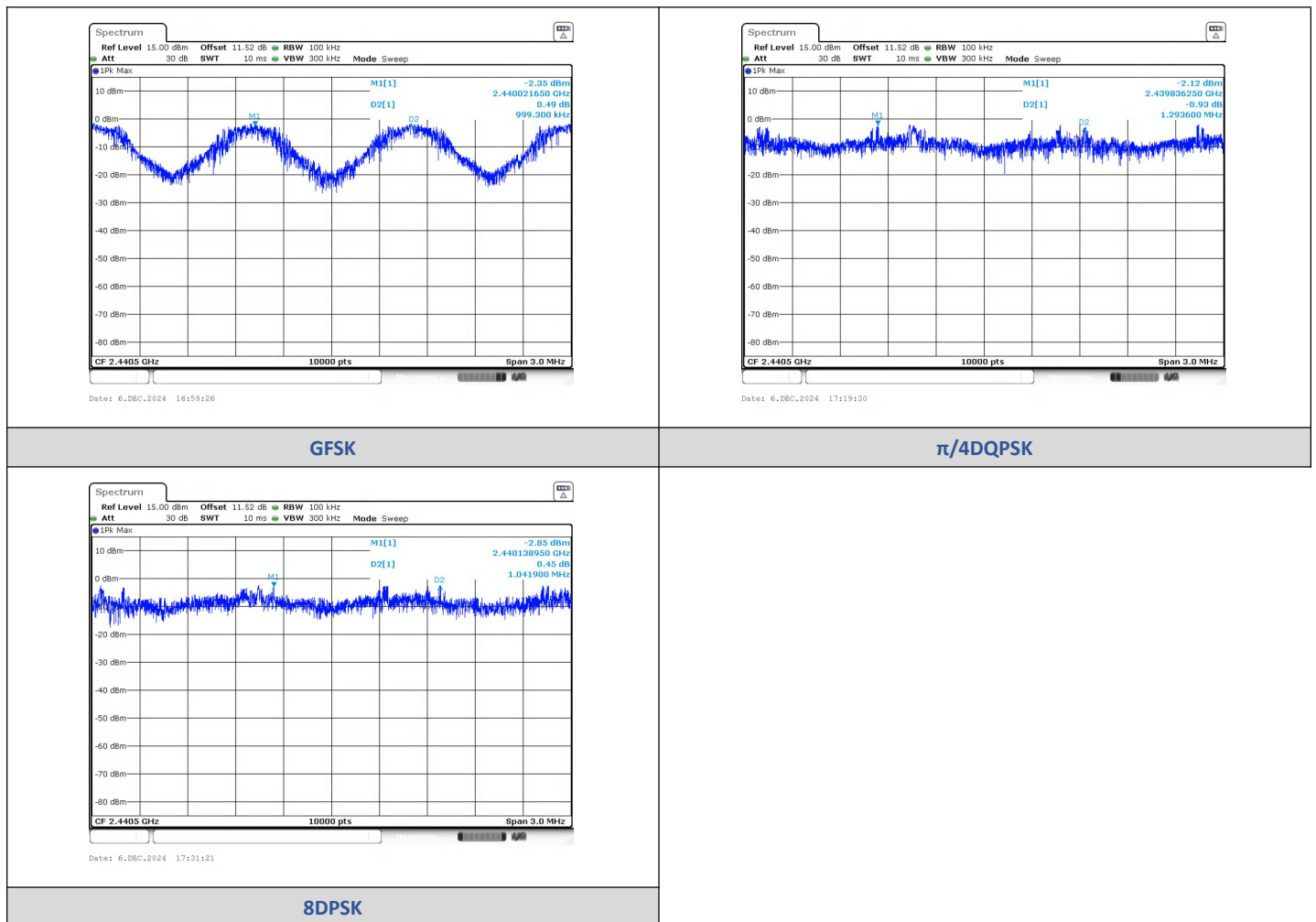
8DPSK_3-DH5_Channel 78

6) Carrier Frequencies Separation

Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2440.0217	2441.021	0.9993	0.94	PASS
$\pi/4$ QPSK	2-DH5	2439.8362	2441.1298	1.2936	0.8	PASS
8DPSK	3-DH5	2440.139	2441.1809	1.0419	0.833	PASS

Test Graphs



7) Conducted Out Of Band Emission

Test Result

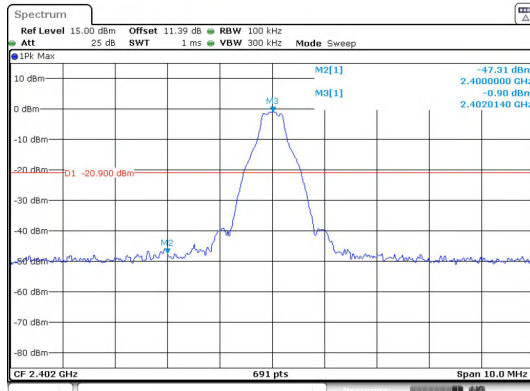
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-47.310	-20.9	-26.410	PASS
			9608.08	-48.224	-20.9	-27.324	PASS
		39	2519.09	-49.748	-21.39	-28.358	PASS
		78	2483.50	-49.550	-21.89	-27.660	PASS
			2558.21	-50.488	-21.89	-28.598	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-47.260	-21.19	-26.070	PASS
			4803.85	-46.696	-21.19	-25.506	PASS
		39	9763.72	-50.358	-21.51	-28.848	PASS
		78	2483.50	-48.820	-22.1	-26.720	PASS
			6914.65	-51.703	-22.1	-29.603	PASS
8DPSK	3-DH5	0	2400.00	-47.720	-21.02	-26.700	PASS
			9608.08	-48.054	-21.02	-27.034	PASS
		39	9763.72	-49.828	-21.44	-28.388	PASS
		78	2483.50	-50.270	-21.93	-28.340	PASS
			6184.69	-52.976	-21.93	-31.046	PASS

Hopping

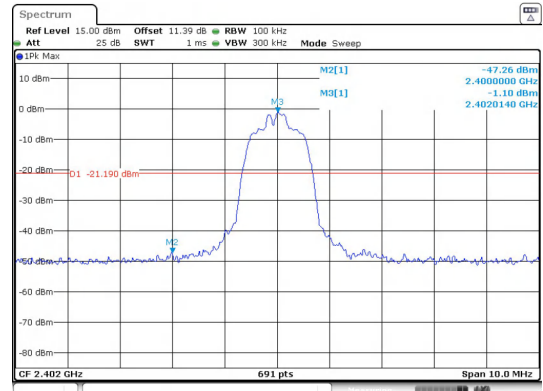
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2395.89	-46.408	-21.31	-25.098	PASS
			2400.00	-47.360	-21.31	-26.050	PASS
			2483.50	-47.730	-21.97	-25.760	PASS
$\pi/4$ DQPSK	2-DH5		2395.34	-47.690	-21.32	-26.370	PASS
			2400.00	-49.600	-21.32	-28.280	PASS
			2483.50	-50.550	-25.89	-24.660	PASS
8DPSK	3-DH5		2396.77	-47.829	-23.64	-24.189	PASS
			2400.00	-49.300	-23.64	-25.660	PASS
			2483.50	-49.630	-23.62	-26.010	PASS

Test Graphs



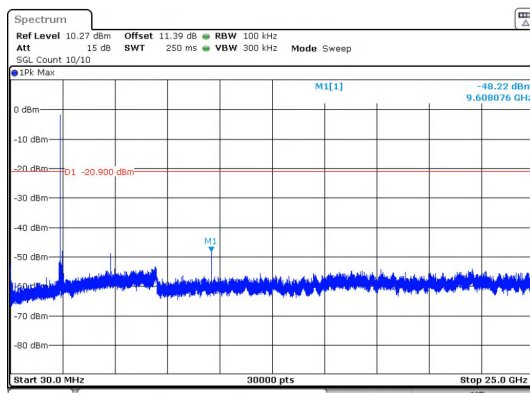
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Out Of Band Emission
GFSK_DH5_Channel 0



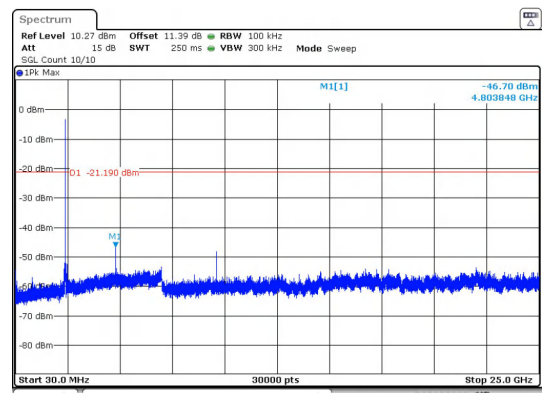
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Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0



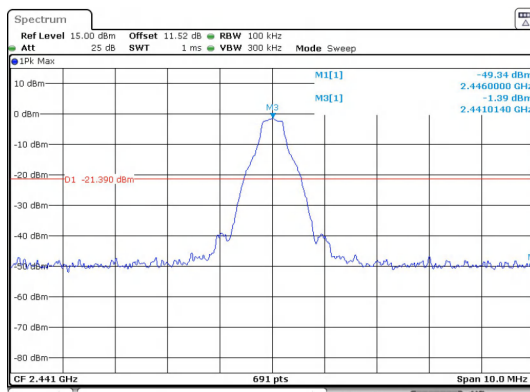
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30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



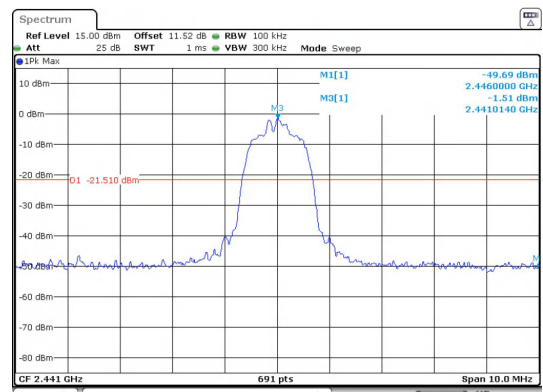
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30.0 MHz - 25000.0 MHz
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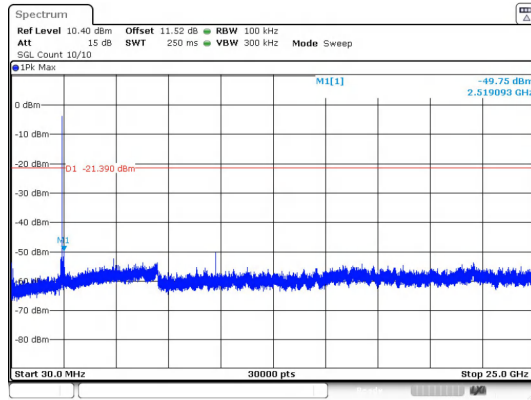
Date: 6.DEC.2024 17:06:35

Out Of Band Emission
GFSK_DH5_Channel 39

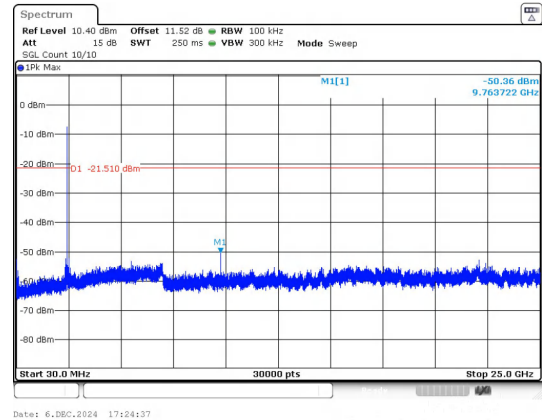


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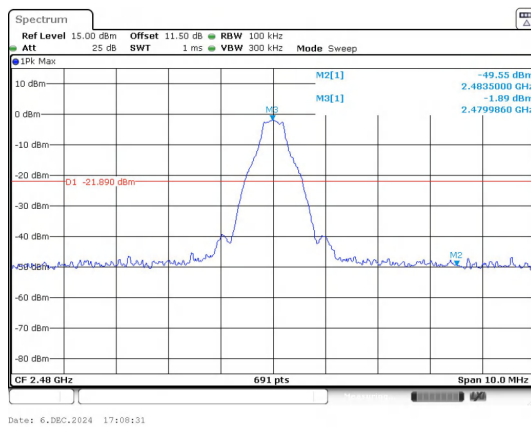
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39



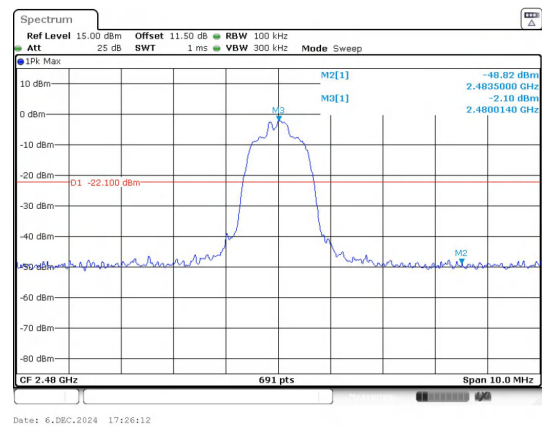
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



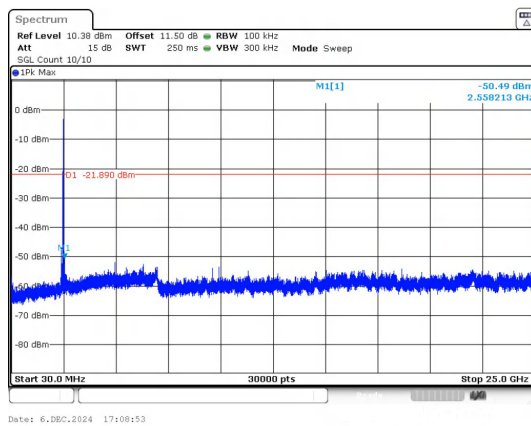
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



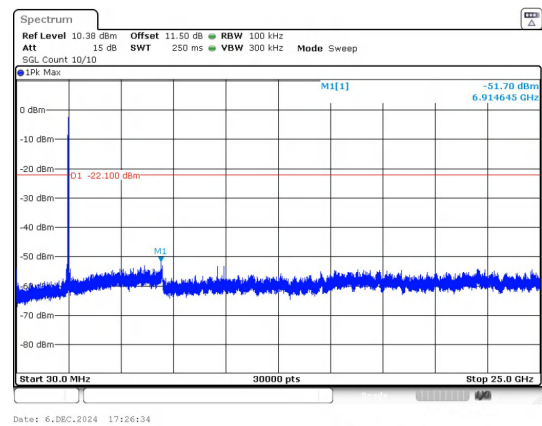
Out Of Band Emission
GFSK_DH5_Channel 78



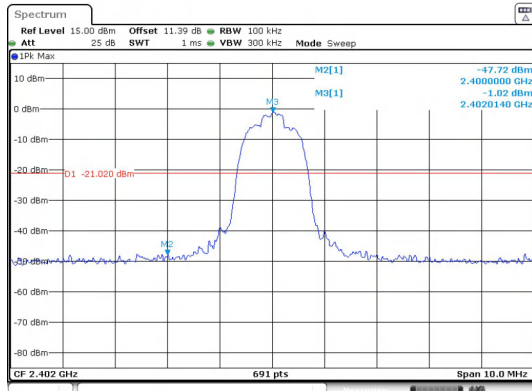
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78



30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78

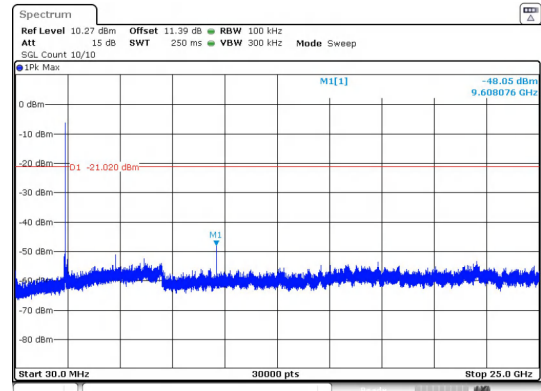


30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



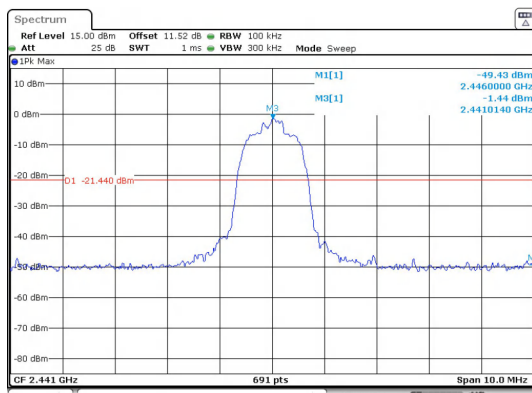
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Out Of Band Emission
8DPSK_3-DH5_Channel 0



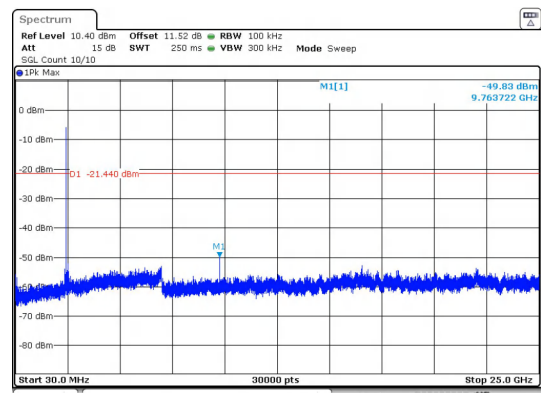
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30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



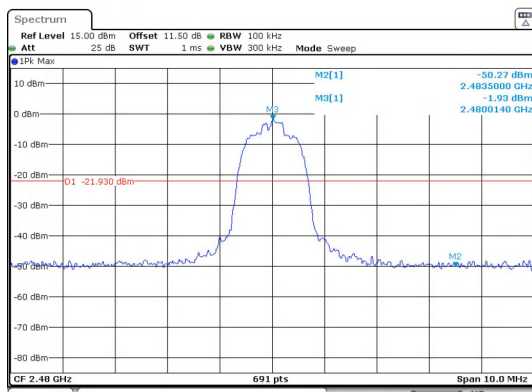
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Out Of Band Emission
8DPSK_3-DH5_Channel 39



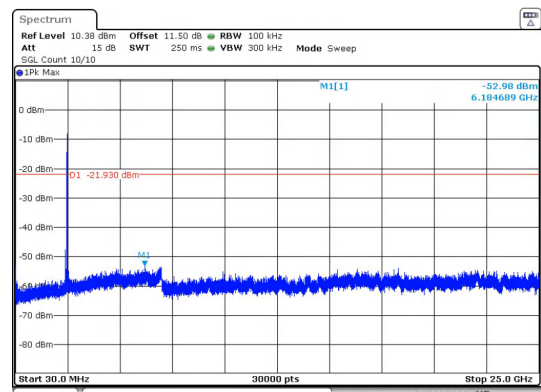
Date: 6.DEC.2024 17:36:09

30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



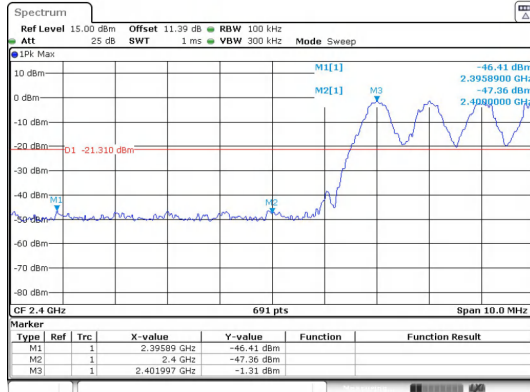
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Out Of Band Emission
8DPSK_3-DH5_Channel 78



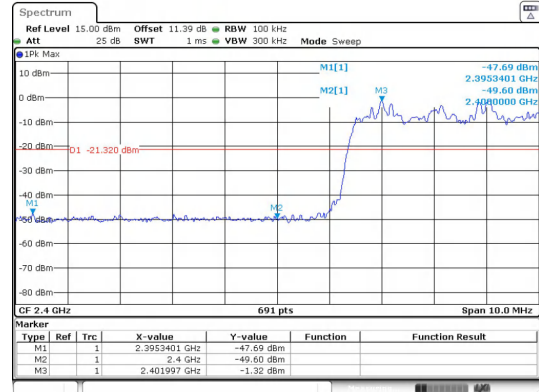
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30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



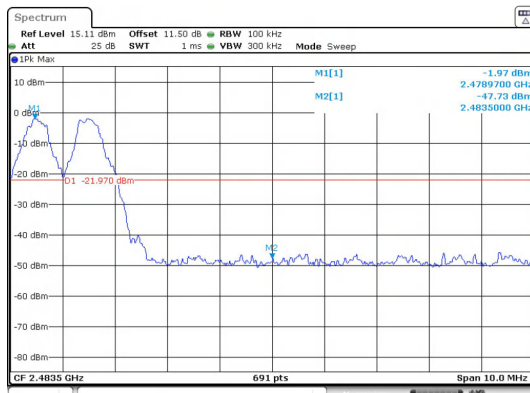
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Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



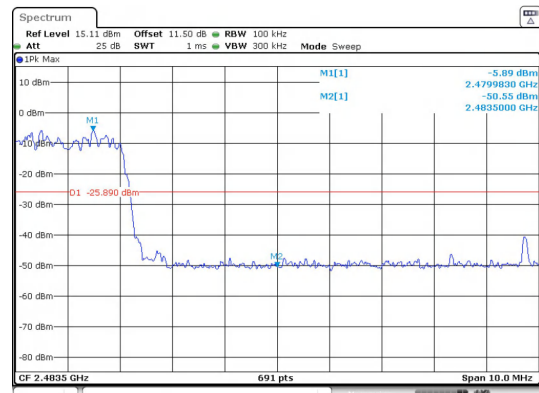
Date: 6.DEC.2024 17:21:56

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



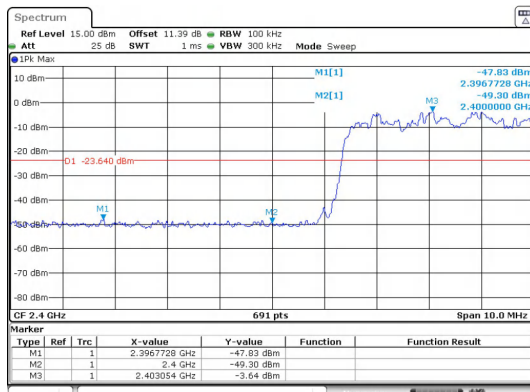
Date: 6.DEC.2024 17:03:53

Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



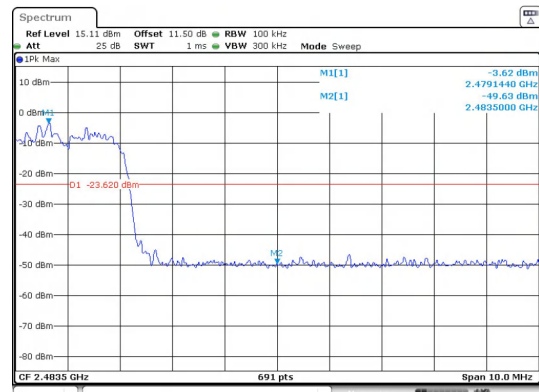
Date: 6.DEC.2024 17:22:16

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



Date: 6.DEC.2024 17:33:53

Out Of Band Emission(Left)
8DPSK_3-DH5_Channel Hopping



Date: 6.DEC.2024 17:34:14

Out Of Band Emission(Right)
8DPSK_3-DH5_Channel Hopping

-----End of the report-----