

Appendix Report

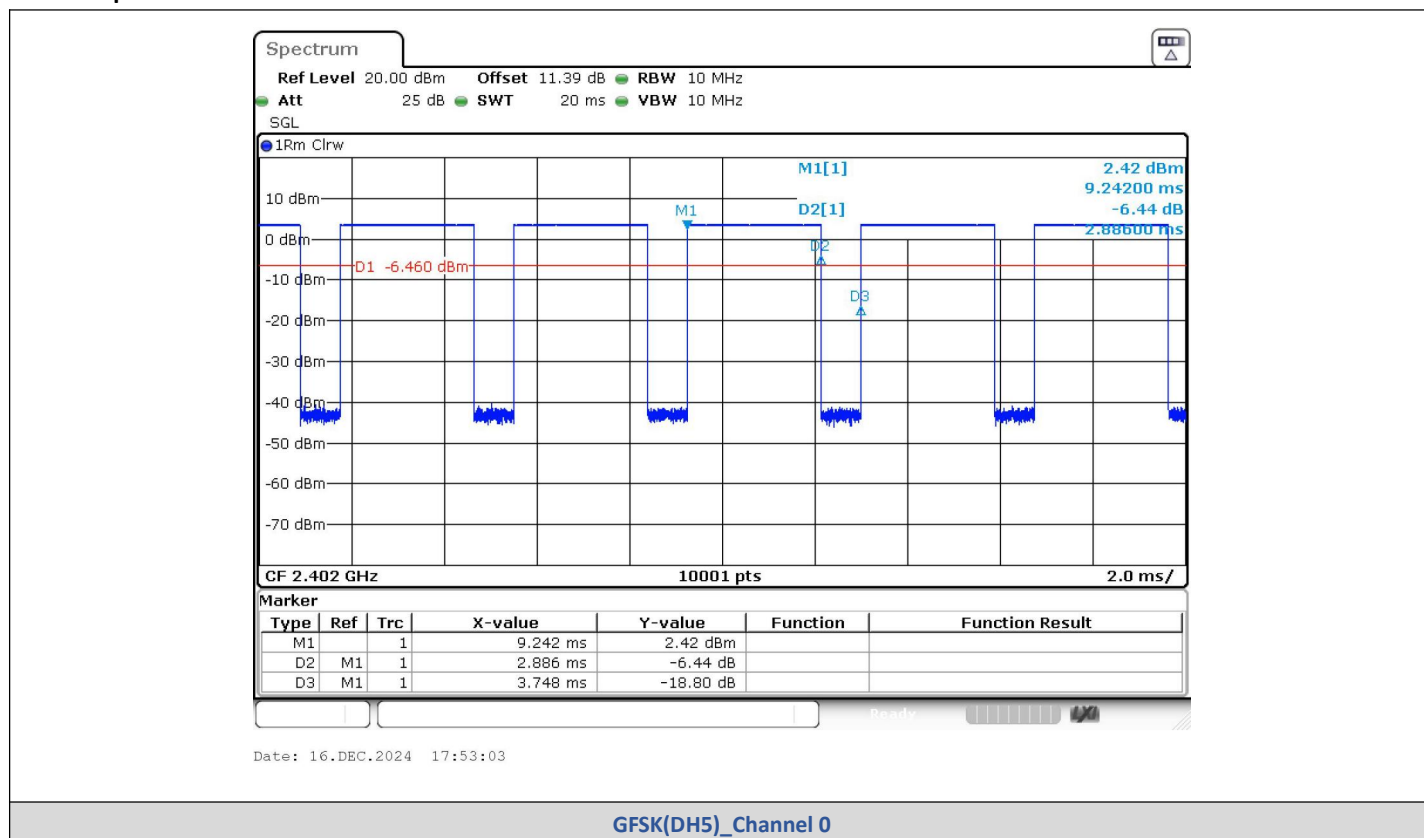
Report No.:	CISRR24121313001
Test Engineer:	Mark Fu
Supervised by:	Rory Huang

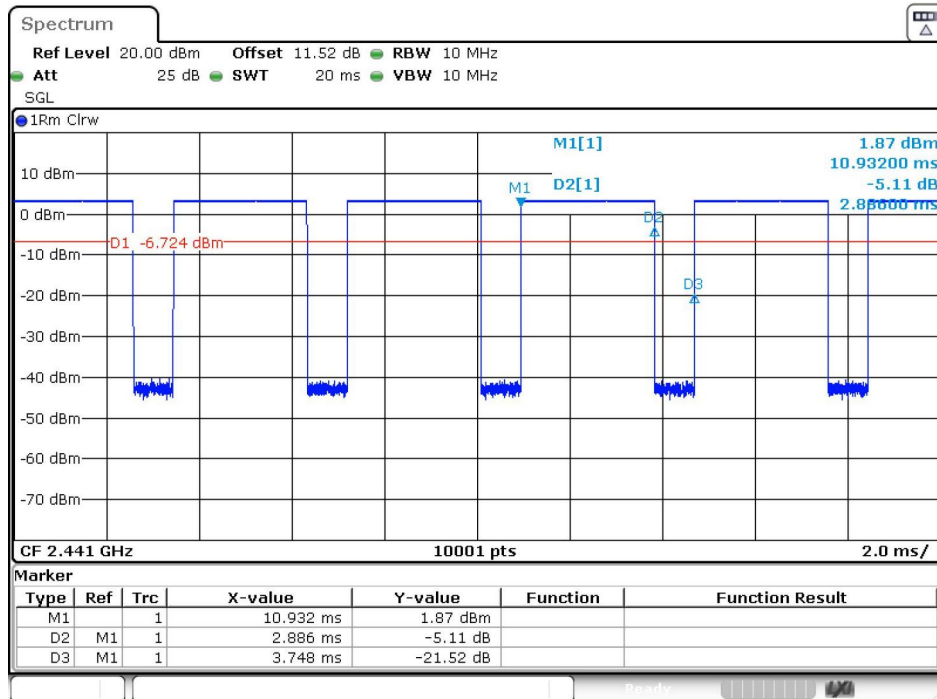
1) Duty Cycle

Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.886	3.748	77.00	0.7700	1.1351	0.3465
		39	2.886	3.748	77.00	0.7700	1.1351	0.3465
		78	2.886	3.748	77.00	0.7700	1.1351	0.3465
$\pi/4$ DQPSK	2-DH5	0	2.890	3.748	77.11	0.7711	1.1289	0.3460
		39	2.890	3.748	77.11	0.7711	1.1289	0.3460
		78	2.890	3.748	77.11	0.7711	1.1289	0.3460
8DPSK	3-DH5	0	2.892	3.748	77.16	0.7716	1.1261	0.3458
		39	2.892	3.748	77.16	0.7716	1.1261	0.3458
		78	2.892	3.748	77.16	0.7716	1.1261	0.3458

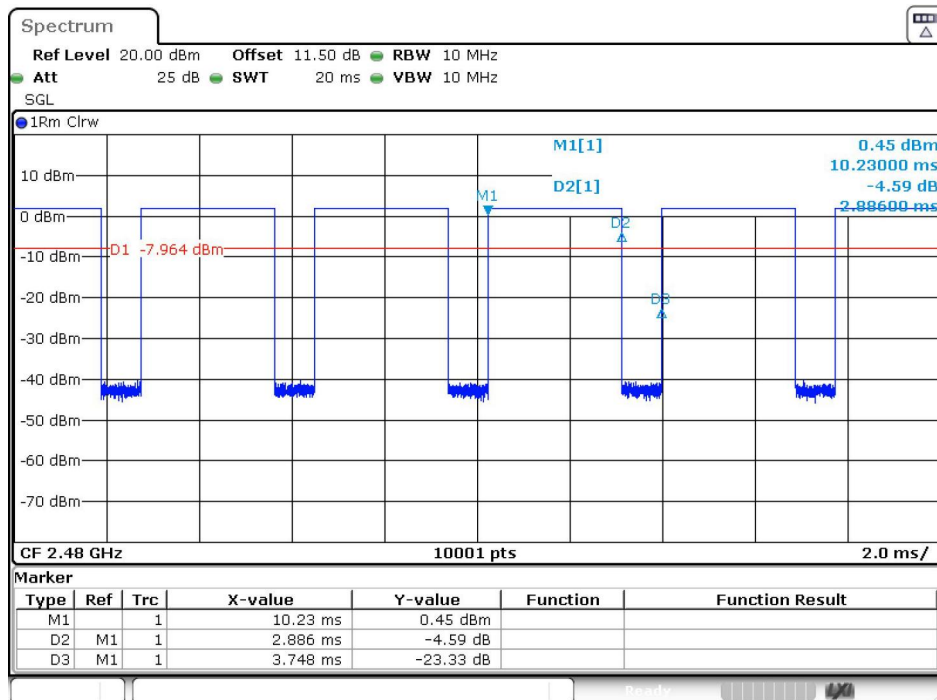
Test Graphs





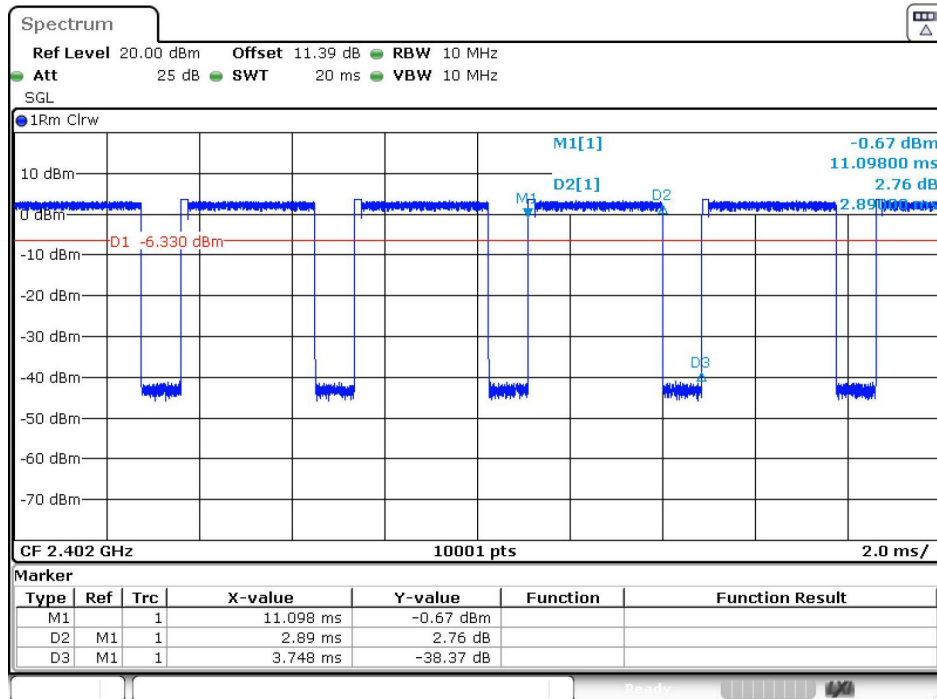
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GFSK(DH5)_Channel 39



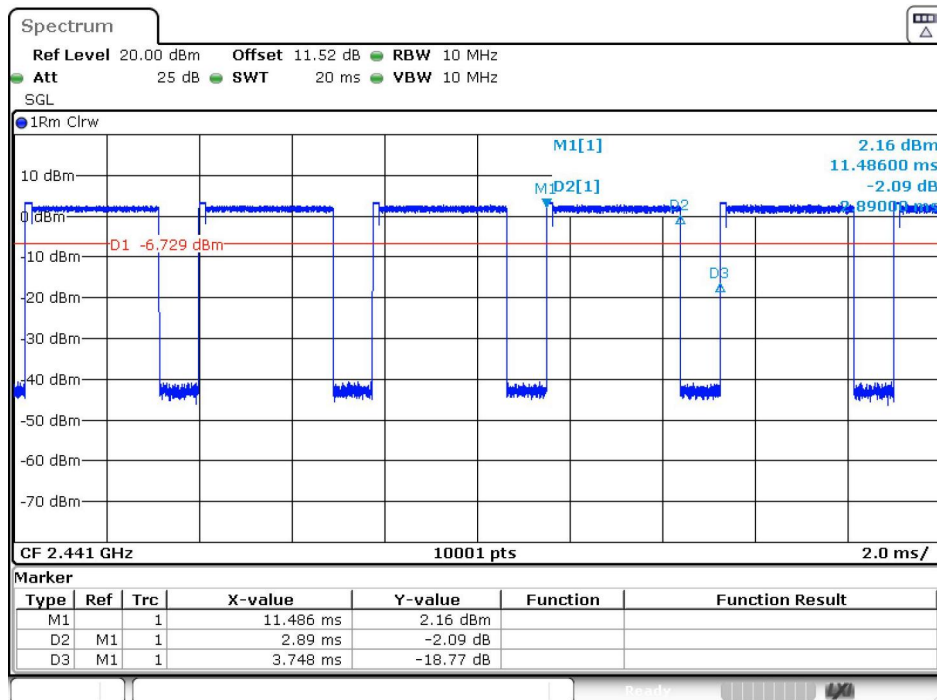
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GFSK(DH5)_Channel 78



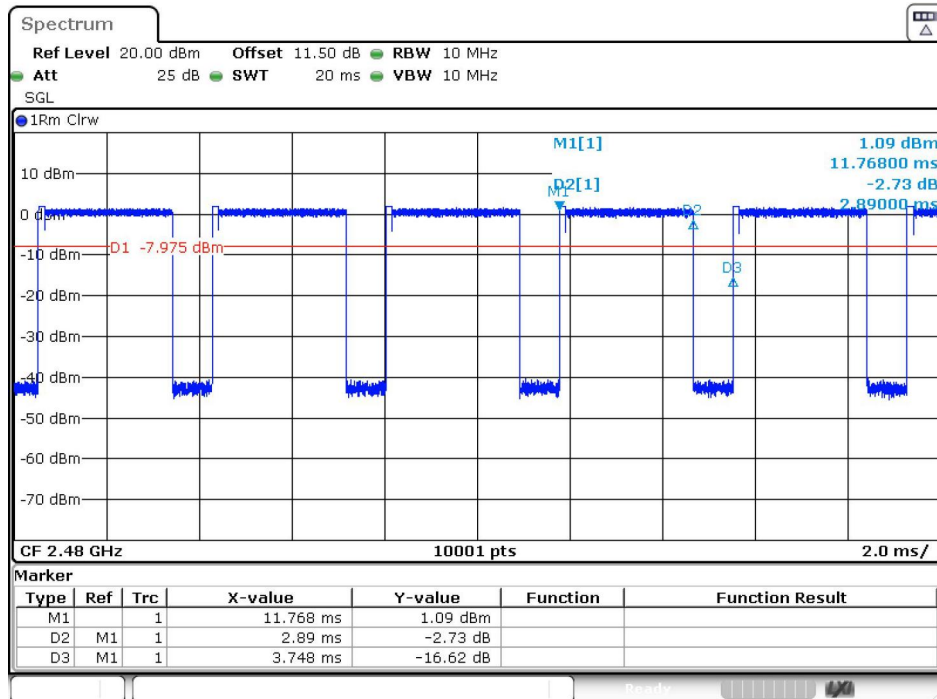
Date: 16.DEC.2024 18:19:31

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



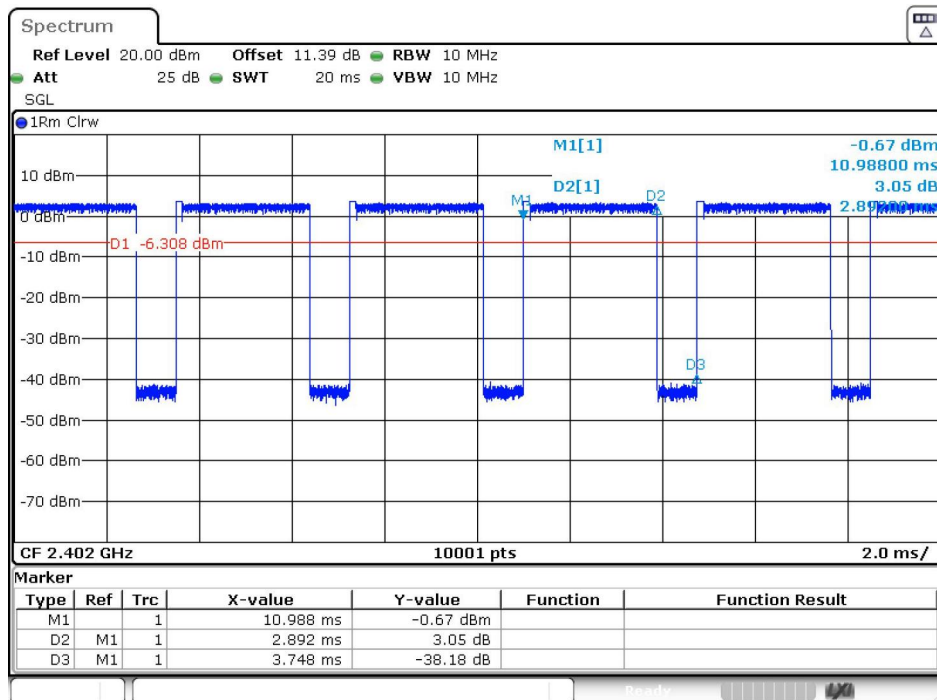
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$\pi/4$ DQPSK(2-DH5)_Channel 39



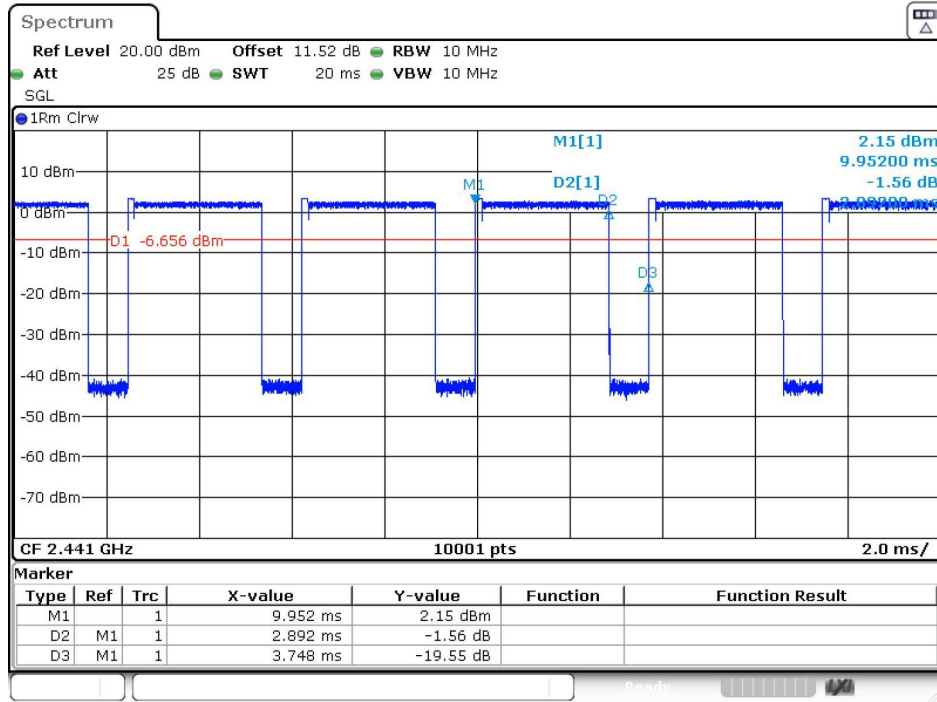
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$\pi/4$ DQPSK(2-DH5)_Channel 78



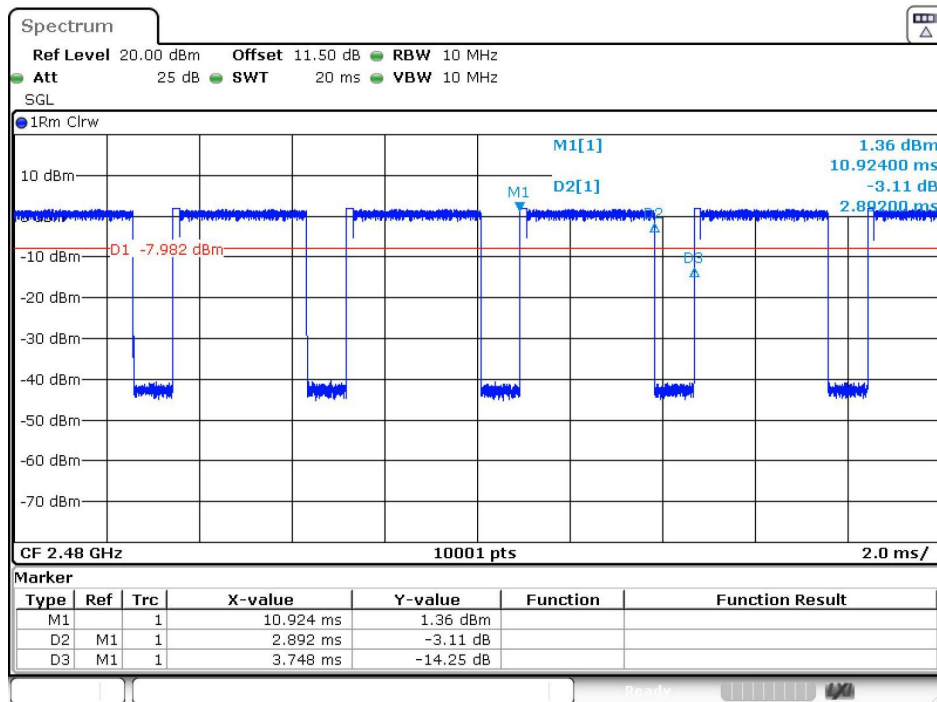
Date: 16,DEC,2024 18:35:33

8DPSK(3-DH5)_Channel 0



Date: 16.DEC.2024 18:47:21

8DPSK(3-DH5)_Channel 39



Date: 16.DEC.2024 18:49:12

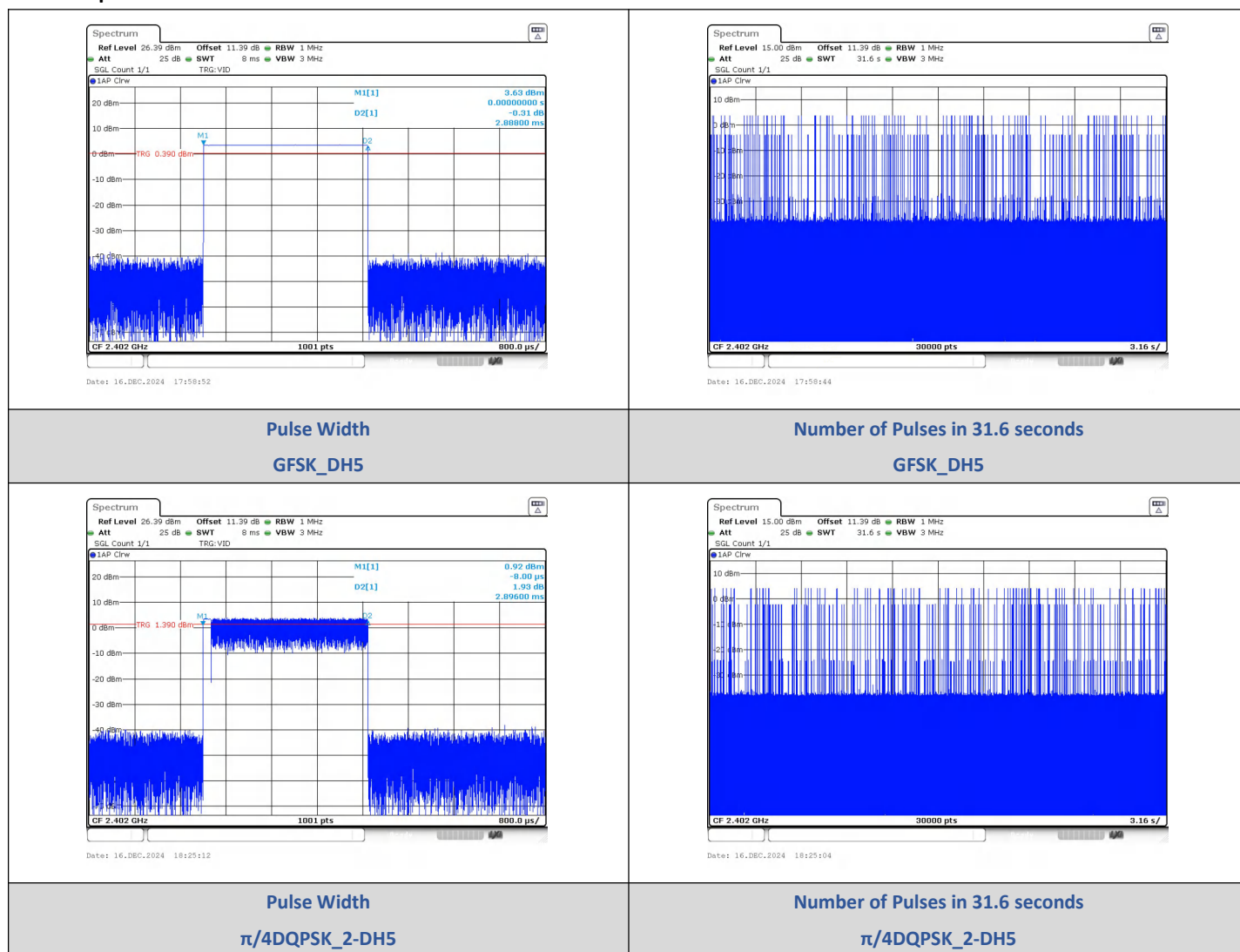
8DPSK(3-DH5)_Channel 78

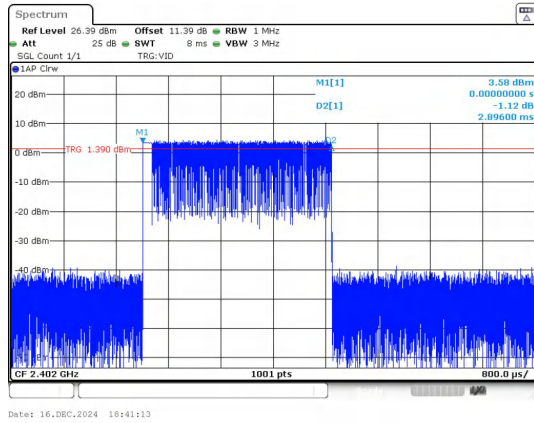
2) Dwell Time

Test Result

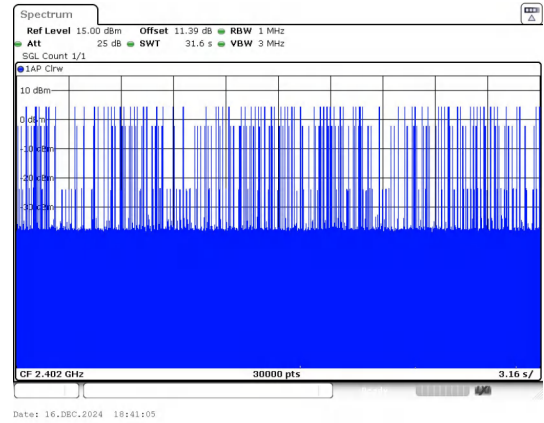
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.888	97	280.14	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.896	96	278.02		PASS
8DPSK	3-DH5		2.896	106	306.98		PASS

Test Graphs





Pulse Width
8DPSK_3-DH5



Number of Pulses in 31.6 seconds
8DPSK_3-DH5

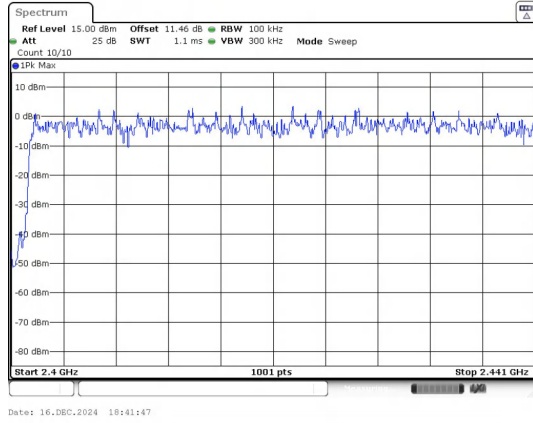
3) Number Of Hopping Channel

Test Result

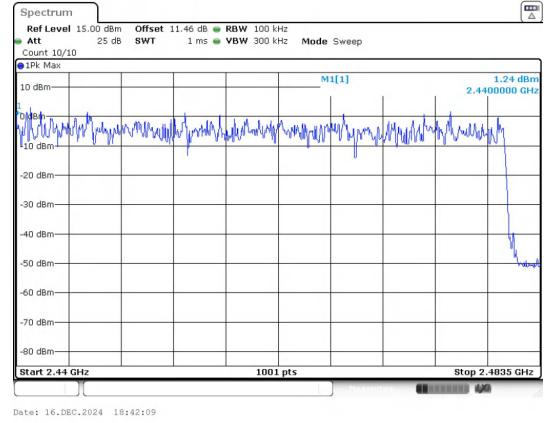
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





Low End Spectrum Channel Hopping Plot
8DPSK



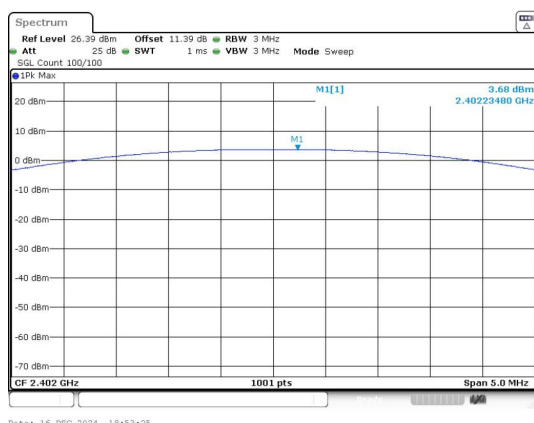
High End Spectrum Channel Hopping Plot
8DPSK

4) Conducted Output Power

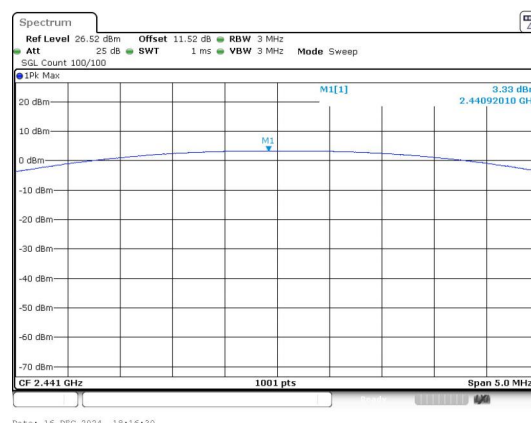
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	3.68	2.33	≤30	PASS
		39	3.33	2.15		PASS
		78	2.10	1.62		PASS
$\pi/4$ DQPSK	2-DH5	0	4.47	2.80	≤20.97	PASS
		39	4.13	2.59		PASS
		78	2.98	1.99		PASS
8DPSK	3-DH5	0	4.84	3.05		PASS
		39	4.47	2.80		PASS
		78	3.26	2.12		PASS

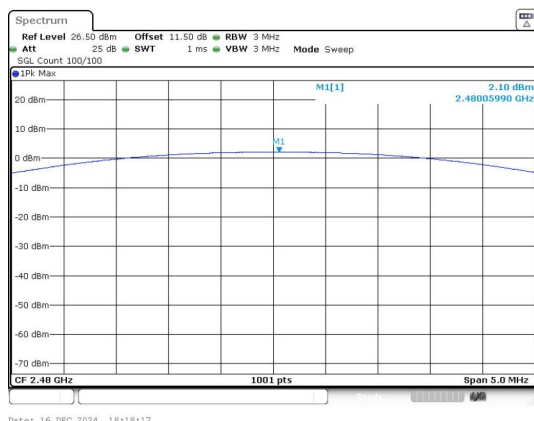
Test Graphs



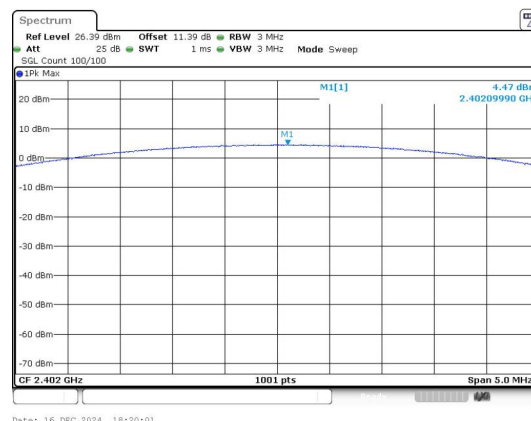
Peak Output Power
GFSK_Channel 0



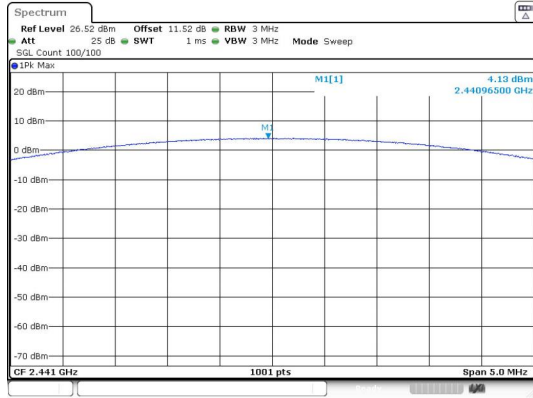
Peak Output Power
GFSK_Channel 39



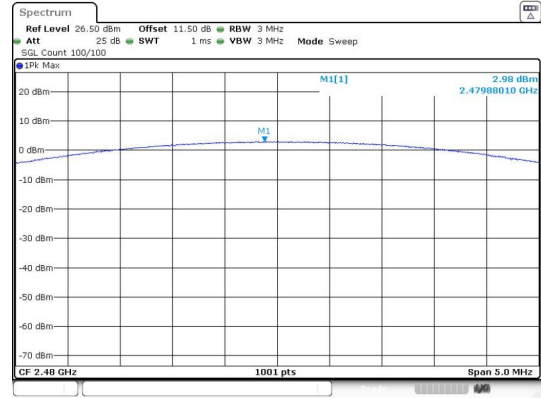
Peak Output Power
GFSK_Channel 78



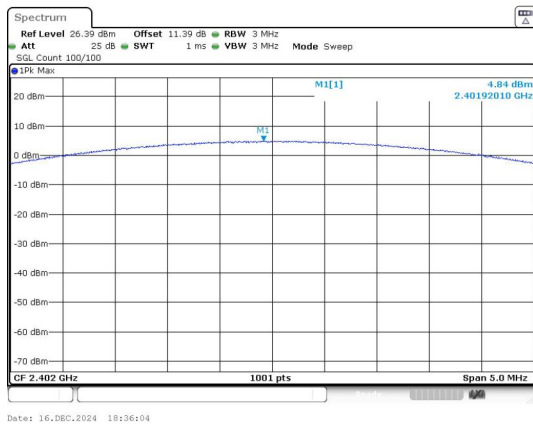
Peak Output Power
 $\pi/4$ DQPSK_Channel 0



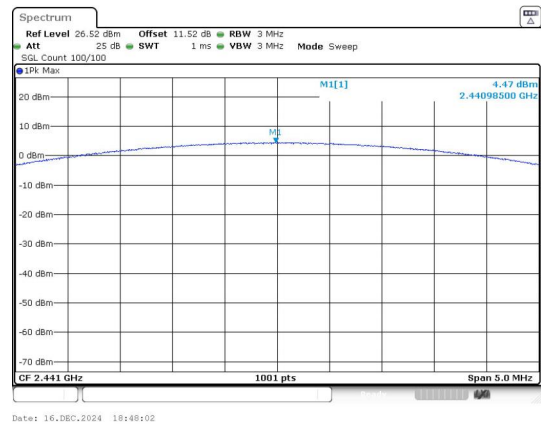
Peak Output Power
 $\pi/4$ DQPSK_Channel 39



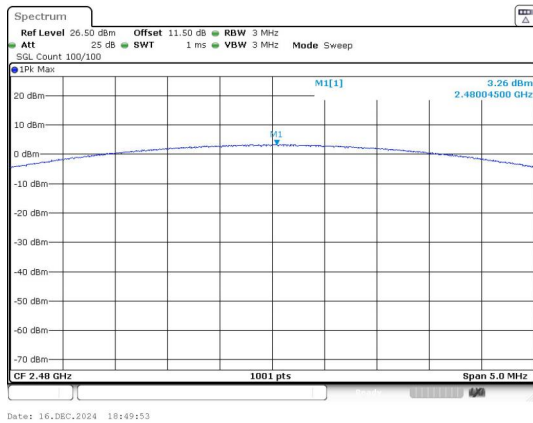
Peak Output Power
 $\pi/4$ DQPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



Peak Output Power
8DPSK_Channel 39



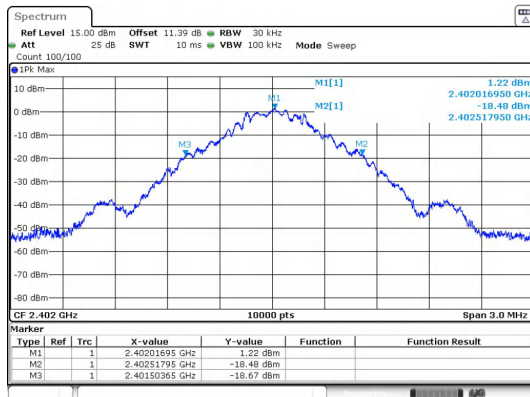
Peak Output Power
8DPSK_Channel 78

5) 20dB Bandwidth

Test Result

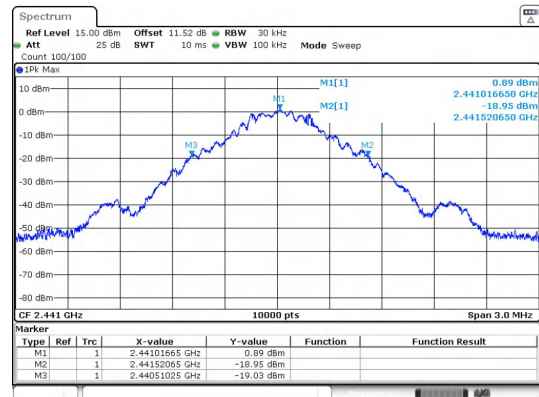
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.020
	39	2441 MHz	1.010
	78	2480 MHz	1.010
$\pi/4$ DQPSK	0	2402 MHz	1.280
	39	2441 MHz	1.310
	78	2480 MHz	1.300
8DPSK	0	2402 MHz	1.290
	39	2441 MHz	1.290
	78	2480 MHz	1.290

Test Graphs



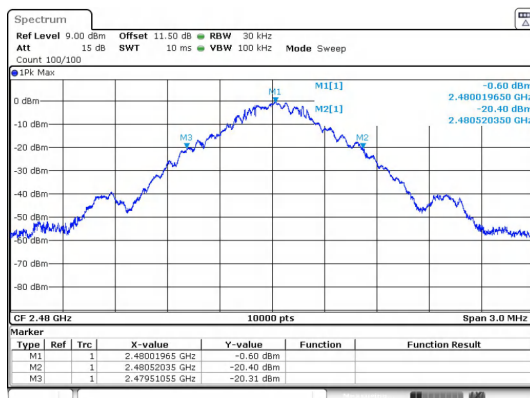
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GFSK_DH5_Channel 0



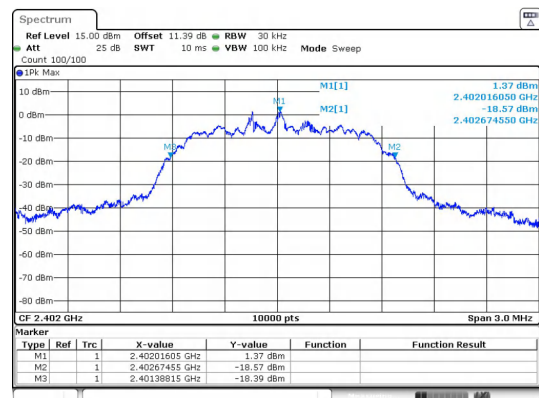
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GFSK_DH5_Channel 39



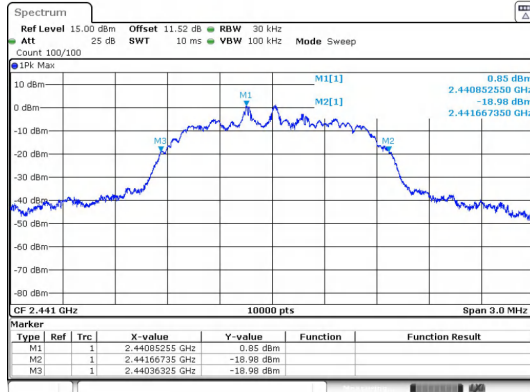
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GFSK_DH5_Channel 78

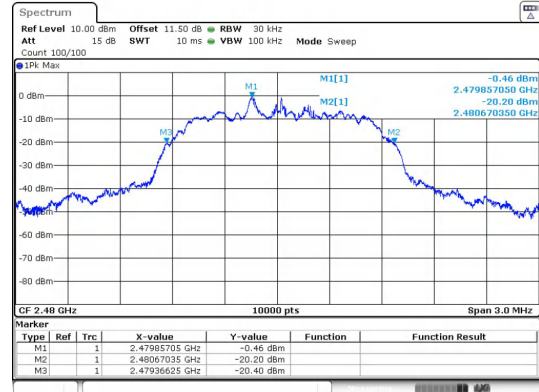


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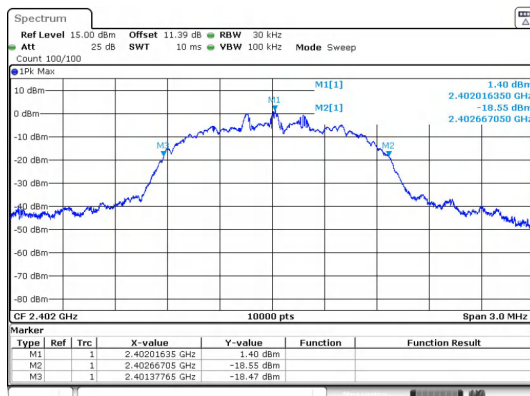
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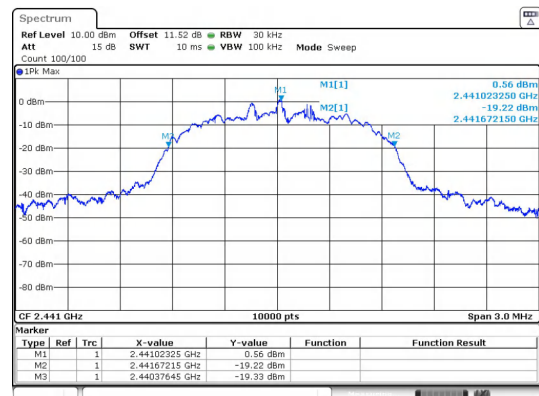
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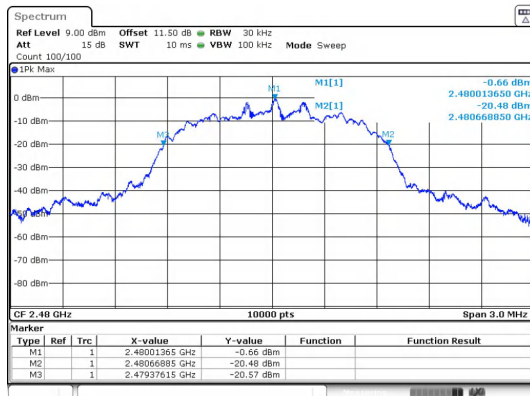
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8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



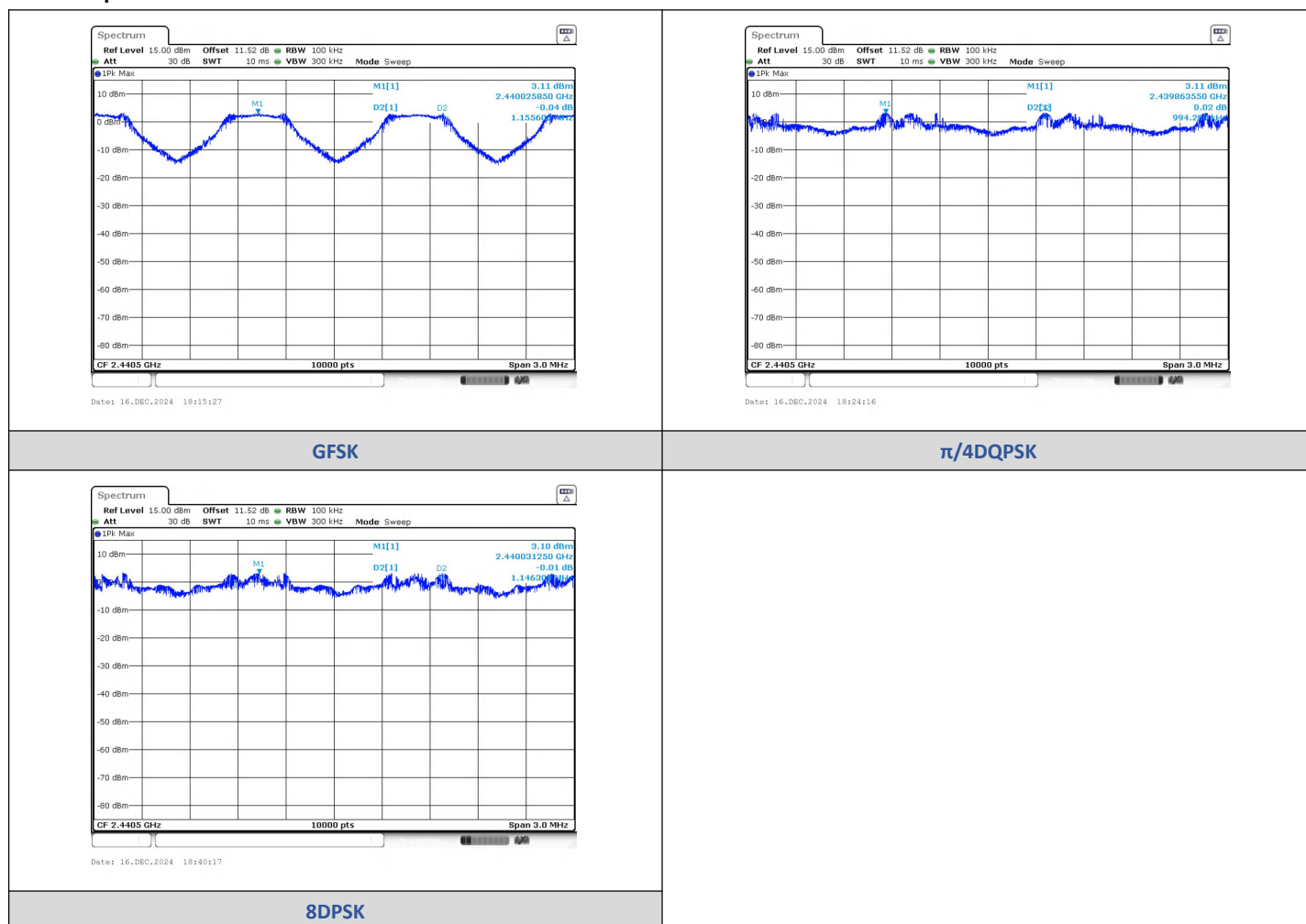
8DPSK_3-DH5_Channel 78

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	2440.0258	2441.1815	1.1556	1.03	PASS
$\pi/4$ DQPSK	2-DH5	2439.8636	2440.8578	0.9942	0.867	PASS
8DPSK	3-DH5	2440.0312	2441.1775	1.1463	0.86	PASS

Test Graphs



7) Conducted Out Of Band Emission

Test Result

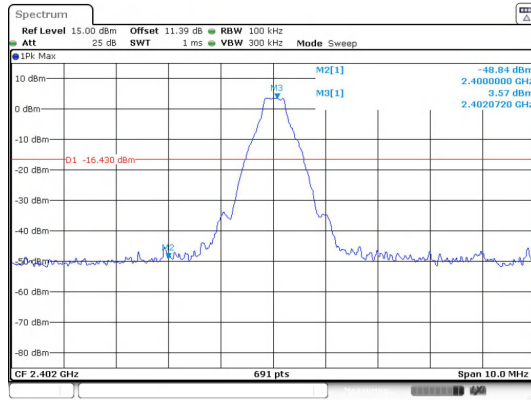
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-48.840	-16.43	-32.410	PASS
			4803.85	-45.357	-16.43	-28.927	PASS
		39	838.61	-24.566	-16.83	-7.736	PASS
		78	837.78	-37.078	-18.09	-18.988	PASS
			2483.50	-50.780	-18.09	-32.690	PASS
$\pi/4$ DQPSK	2-DH5	0	831.12	-38.740	-16.69	-22.050	PASS
			2400.00	-45.500	-16.69	-28.810	PASS
		39	9763.72	-41.009	-17.34	-23.669	PASS
		78	2483.50	-49.870	-18.06	-31.810	PASS
			9920.20	-41.229	-18.06	-23.169	PASS
8DPSK	3-DH5	0	2400.00	-46.690	-16.79	-29.900	PASS
			9608.08	-44.646	-16.79	-27.856	PASS
		39	829.46	-37.015	-16.97	-20.045	PASS
		78	837.78	-38.792	-18.13	-20.662	PASS
			2483.50	-51.120	-18.13	-32.990	PASS

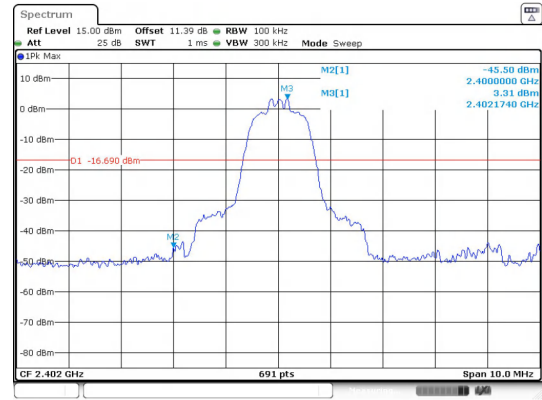
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2397.51	-47.866	-16.39	-31.476	PASS
			2400.00	-49.850	-16.39	-33.460	PASS
			2483.50	-48.260	-18.06	-30.200	PASS
$\pi/4$ DQPSK	2-DH5		2396.01	-48.098	-16.57	-31.528	PASS
			2400.00	-49.570	-16.57	-33.000	PASS
			2483.50	-49.120	-18.35	-30.770	PASS
8DPSK	3-DH5		2397.96	-48.243	-16.62	-31.623	PASS
			2400.00	-49.620	-16.62	-33.000	PASS
			2483.50	-48.730	-18.15	-30.580	PASS

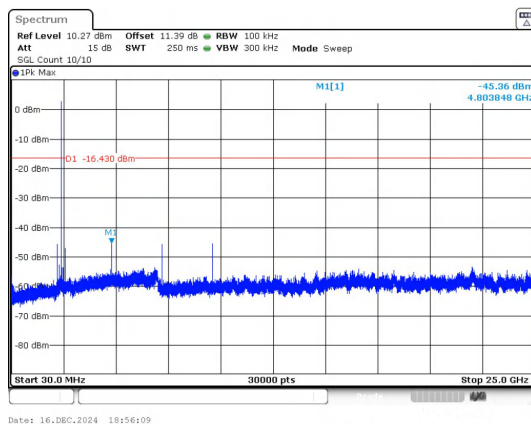
Test Graphs



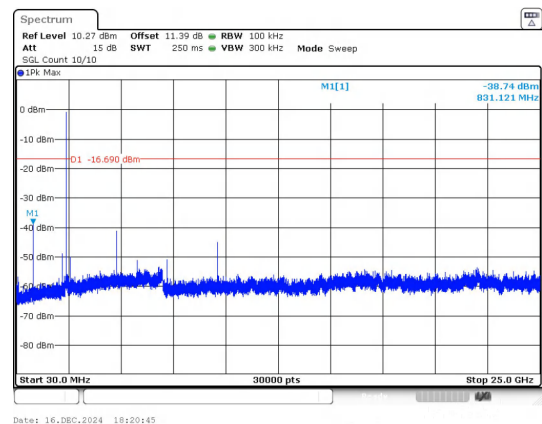
Out Of Band Emission
GFSK_DH5_Channel 0



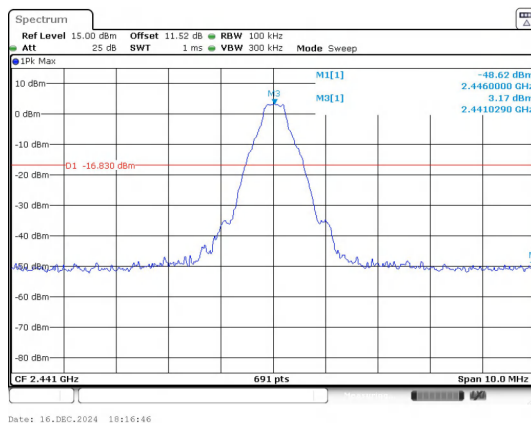
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0



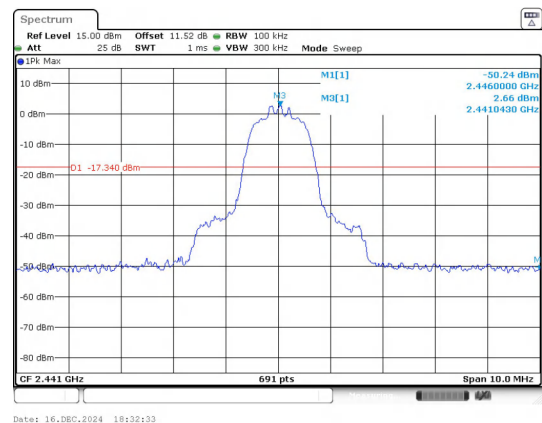
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



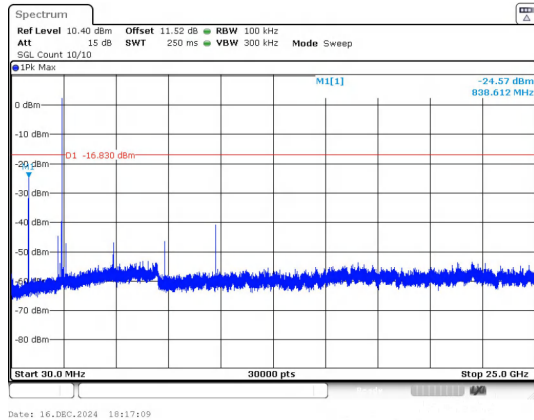
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 $\pi/4$ DQPSK_2-DH5_Channel 0



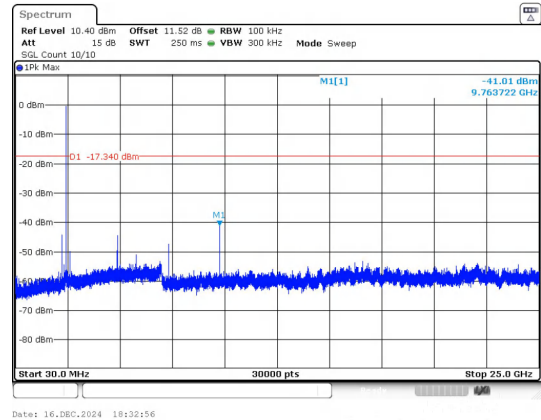
Out Of Band Emission
GFSK_DH5_Channel 39



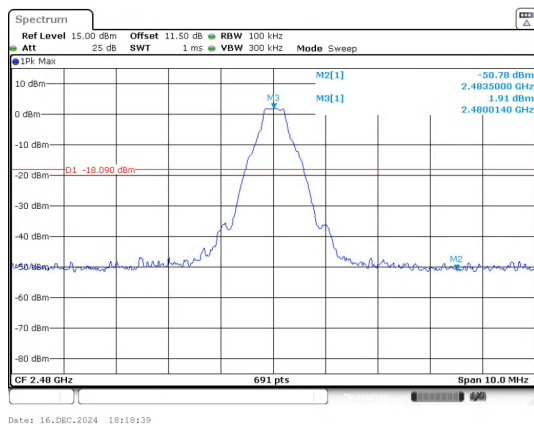
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39



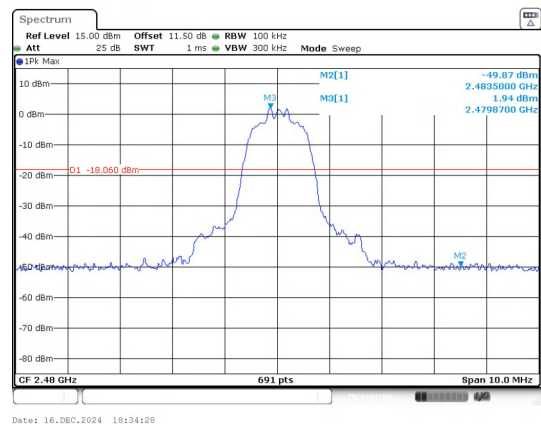
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



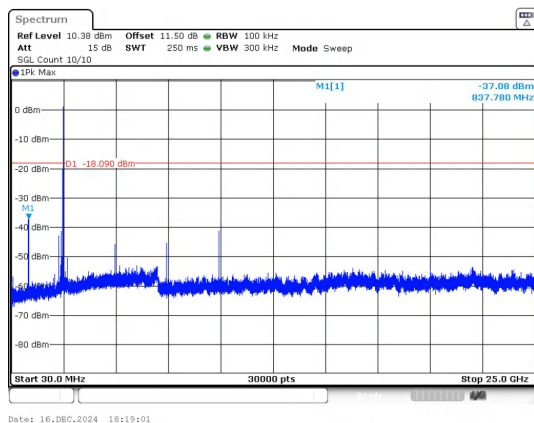
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



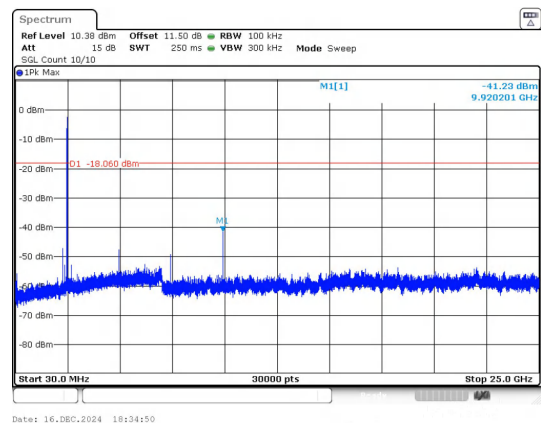
Out Of Band Emission
GFSK_DH5_Channel 78



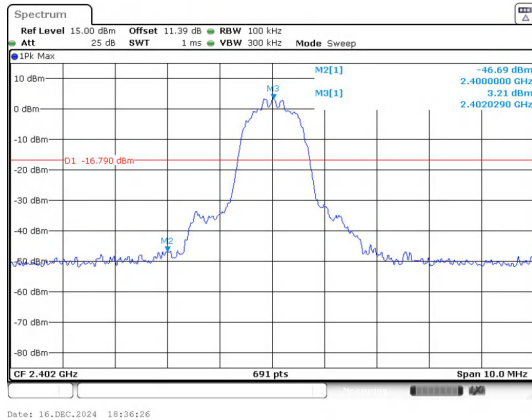
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78



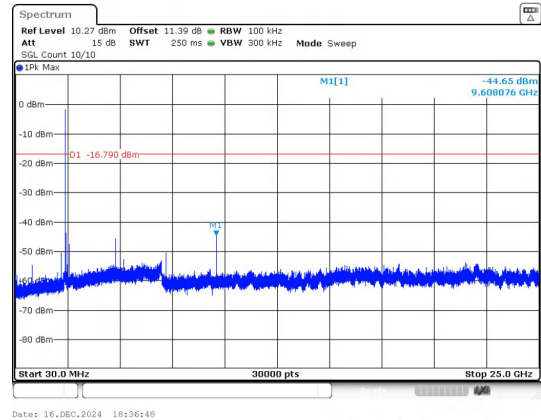
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



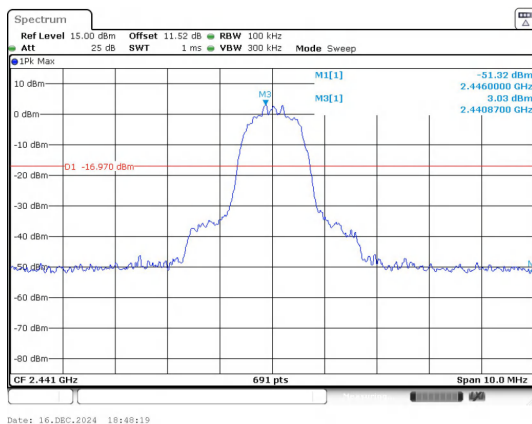
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



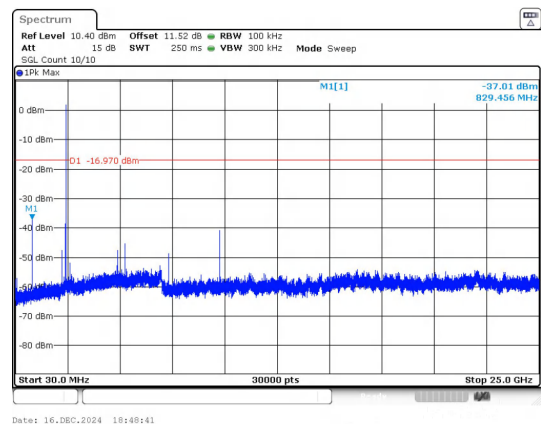
Out Of Band Emission
8DPSK_3-DH5_Channel 0



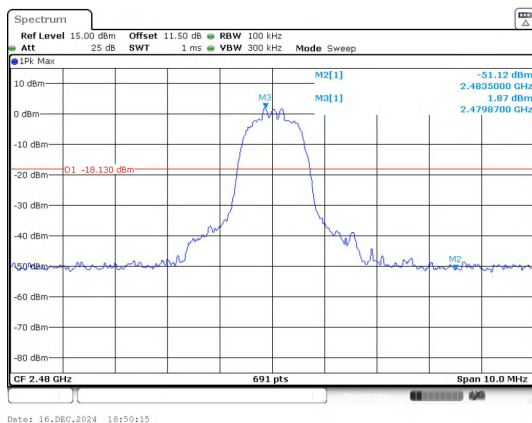
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8DPSK_3-DH5_Channel 0



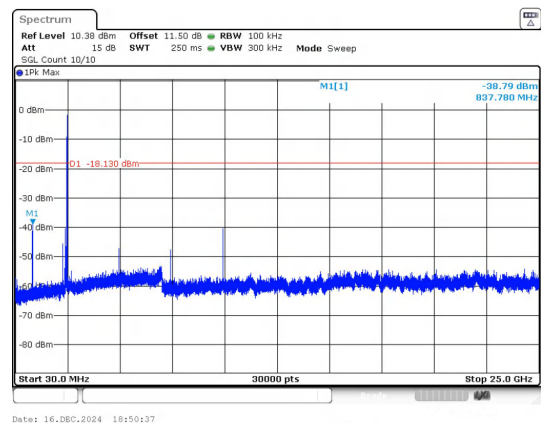
Out Of Band Emission
8DPSK_3-DH5_Channel 39



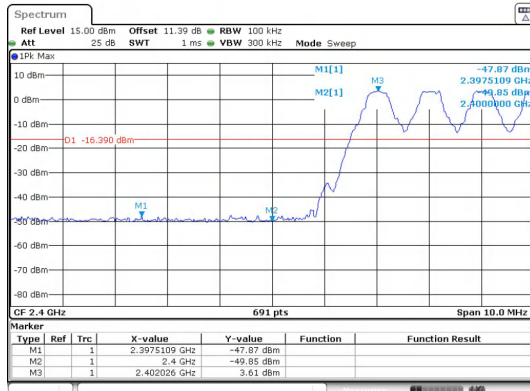
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



Out Of Band Emission
8DPSK_3-DH5_Channel 78

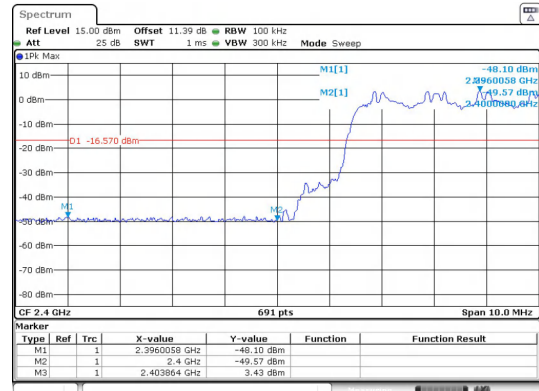


30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



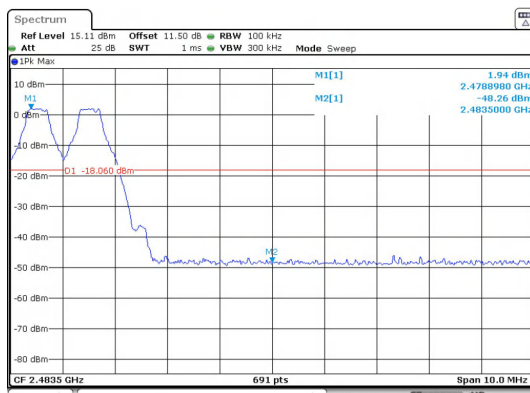
Date: 16.DEC.2024 18:03:31

Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



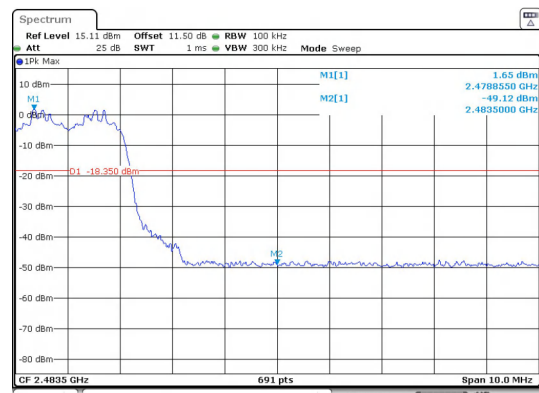
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Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



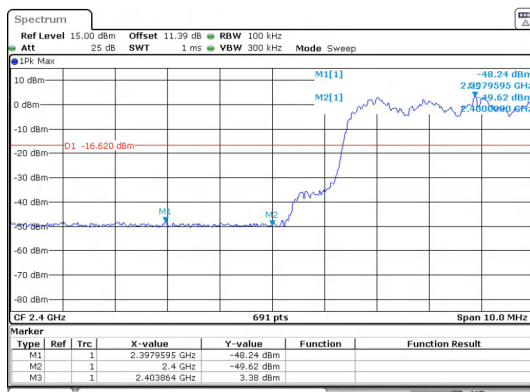
Date: 16.DEC.2024 18:11:24

Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



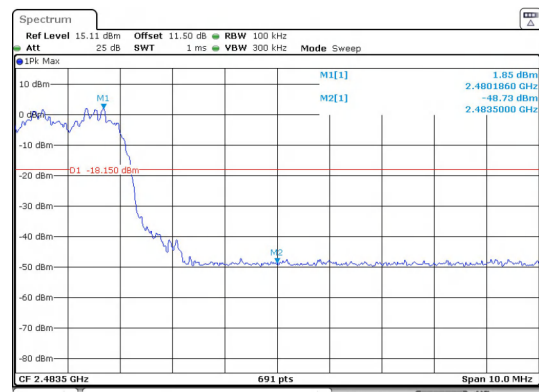
Date: 16.DEC.2024 18:31:07

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



Date: 16.DEC.2024 18:44:37

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



Date: 16.DEC.2024 18:46:47

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

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