Appendix A

Report No.:	CISRR24032210301
FCC ID:	2BFNA-LT3688
Product Name:	Smart Ring
Model No.:	LT3688
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

Conducted Peak Output Power

Test Result

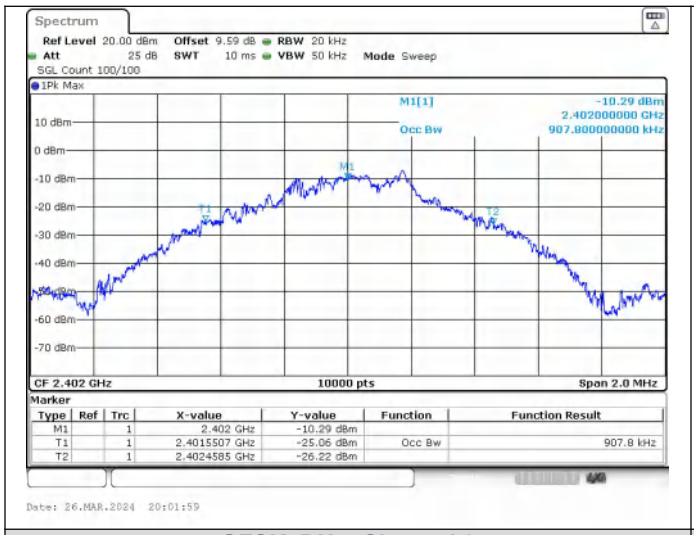
Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	3.320	2.15	30	PASS
		39	1.971	1.57		PASS
		78	2.589	1.82		PASS
π/4DQPSK	2-DH5	0	1.576	1.44	20.97	PASS
		39	2.052	1.60		PASS
		78	2.341	1.71		PASS
8DPSK	3-DH5	0	1.524	1.42		PASS
		39	2.084	1.62		PASS
		78	2.599	1.82		PASS

99% Bandwidth

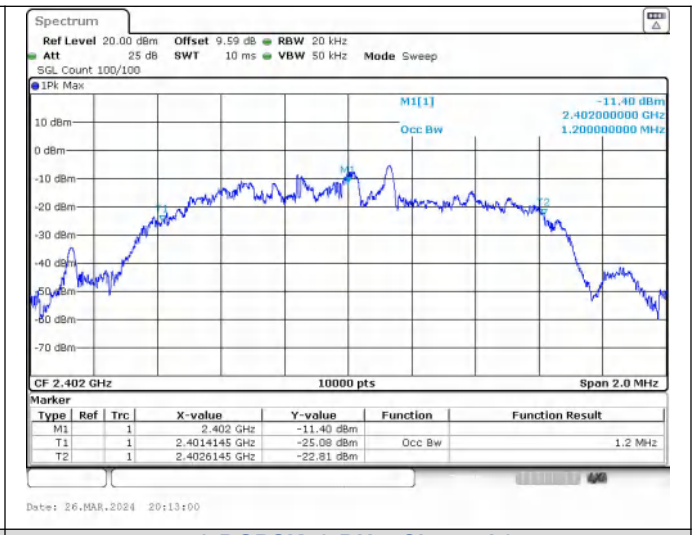
Test Result

Modulation	Channel	99% BW (MHz)
GFSK	0	0.90780
	39	0.90720
	78	0.89720
π/4DQPSK	0	1.2000
	39	1.1910
	78	1.1960
8DPSK	0	1.1980
	39	1.2070
	78	1.2100

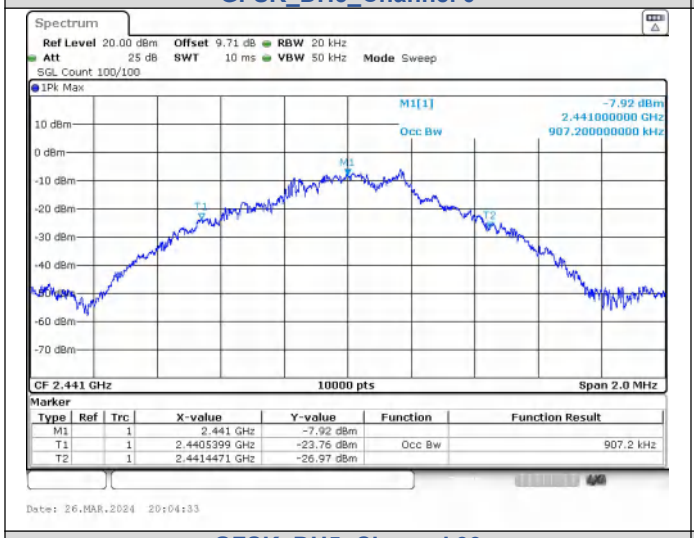
Test Graphs



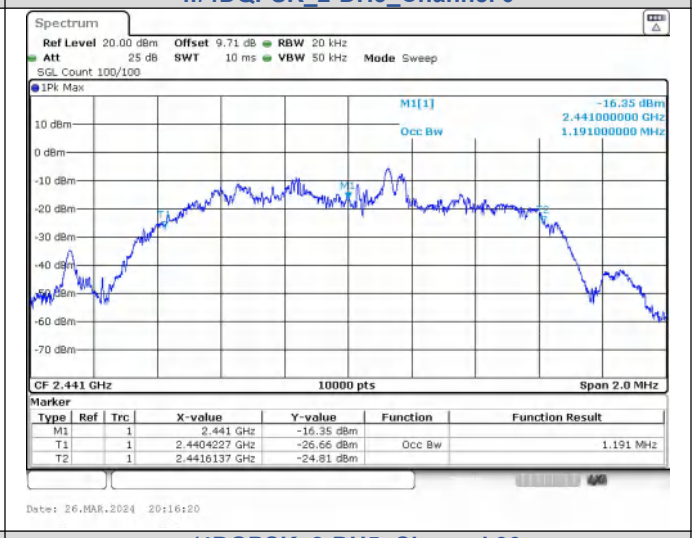
GFSK_DH5_Channel 0



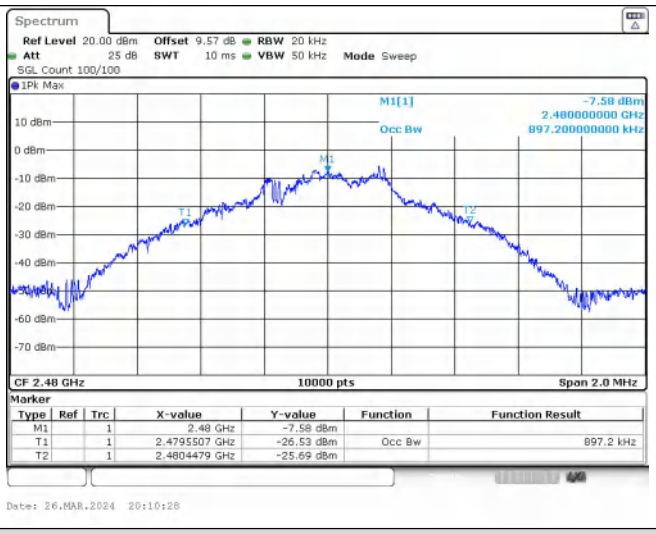
π/4DQPSK_2-DH5_Channel 0



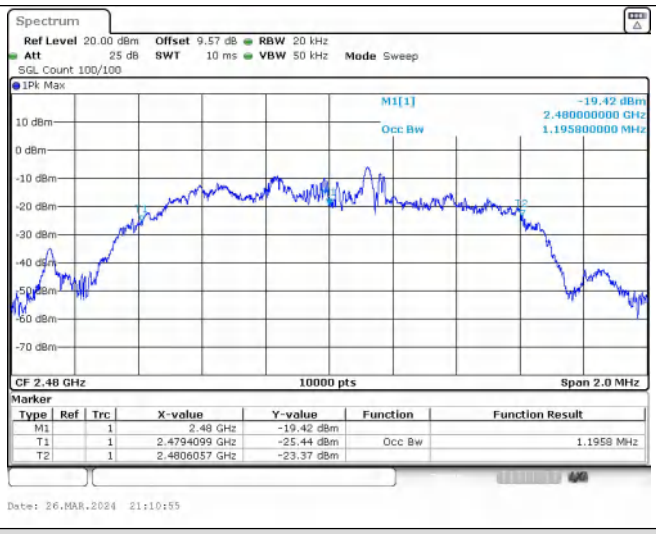
GFSK_DH5_Channel 39



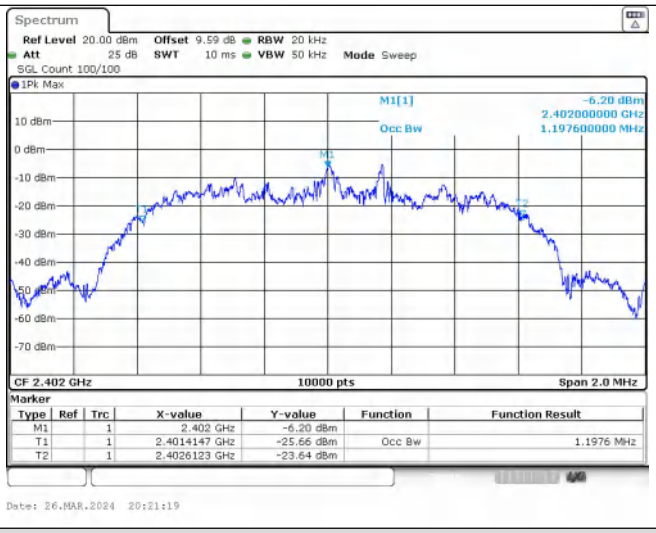
π/4DQPSK_2-DH5_Channel 39



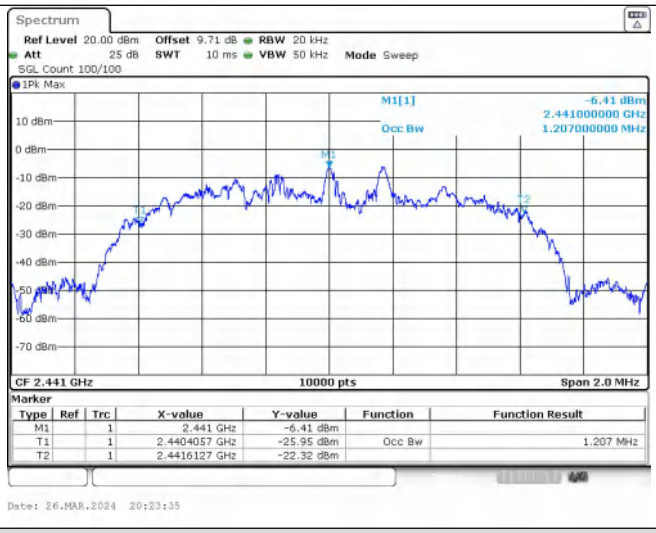
GFSK_DH5_Channel 78



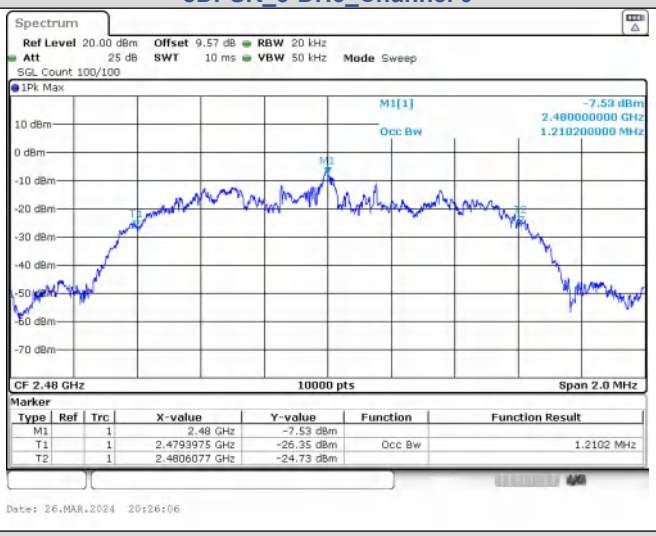
π/4DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



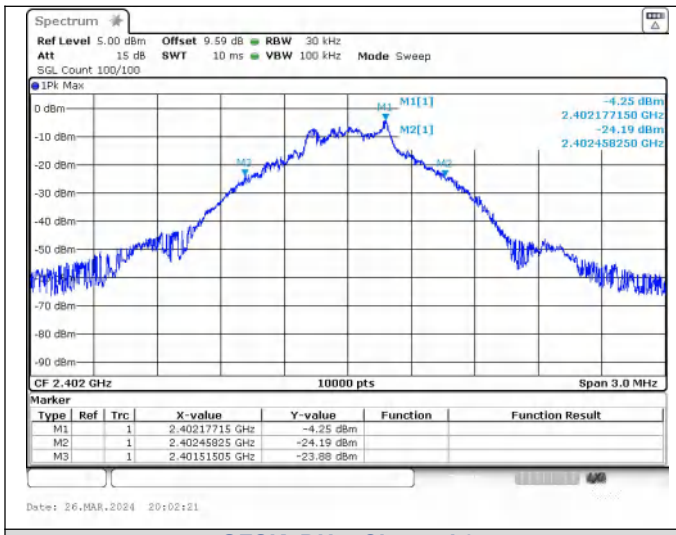
8DPSK_3-DH5_Channel 78

20dB Bandwidth

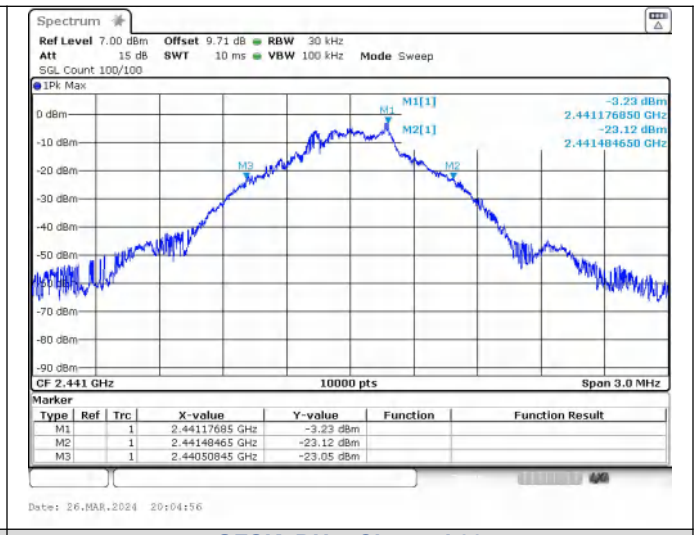
Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	0.9400
	39	2441 MHz	0.9700
	78	2480 MHz	0.9400
π/4DQPSK	0	2402 MHz	1.310
	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

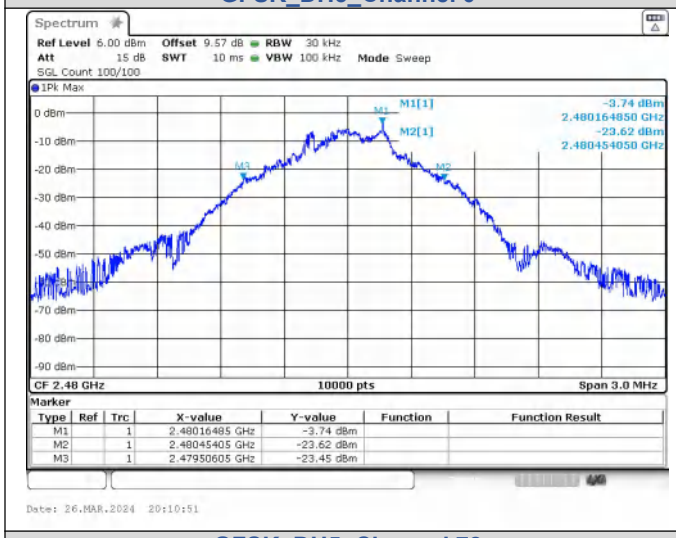
Test Graphs



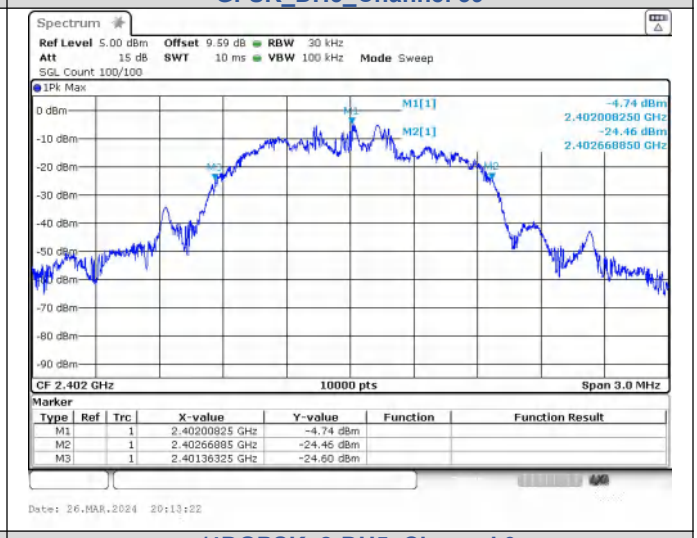
GFSK_DH5_Channel 0



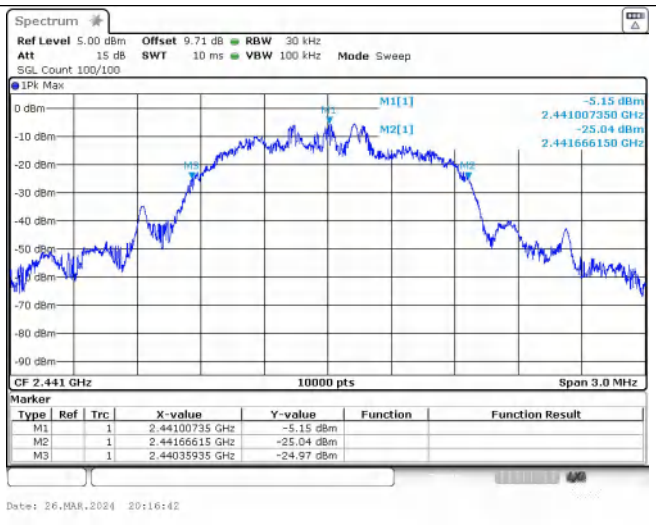
GFSK_DH5_Channel 39



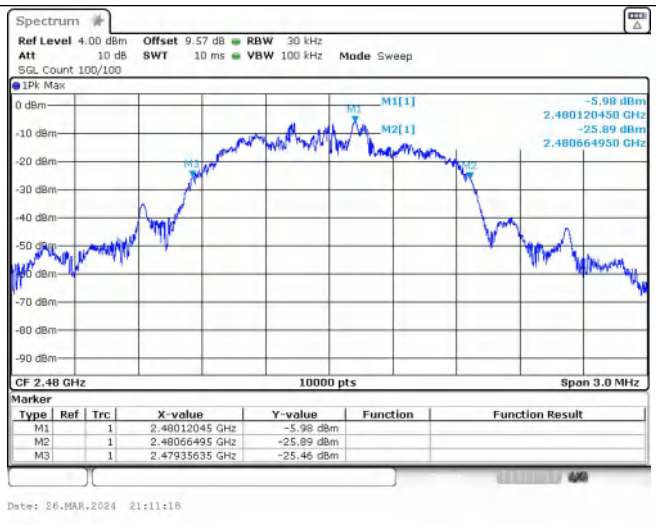
GFSK_DH5_Channel 78



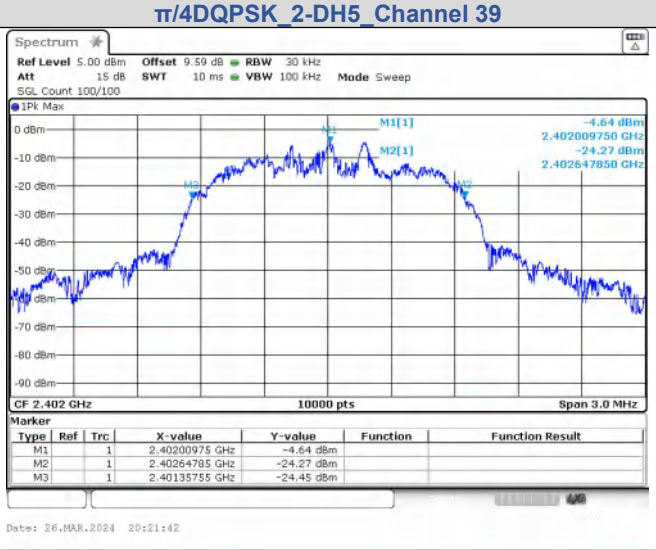
π/4DQPSK_2-DH5_Channel 0



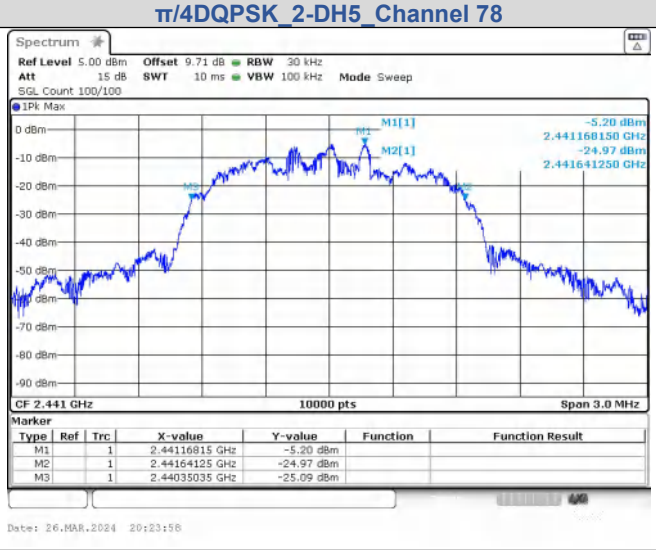
π/4DQPSK_2-DH5_Channel 39



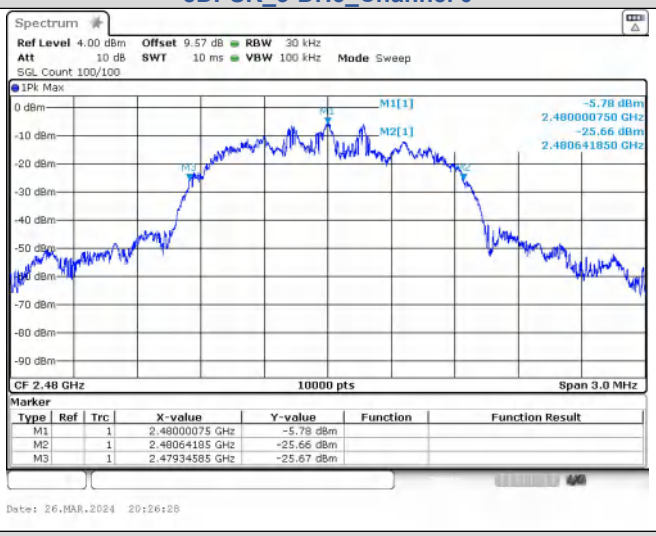
π/4DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



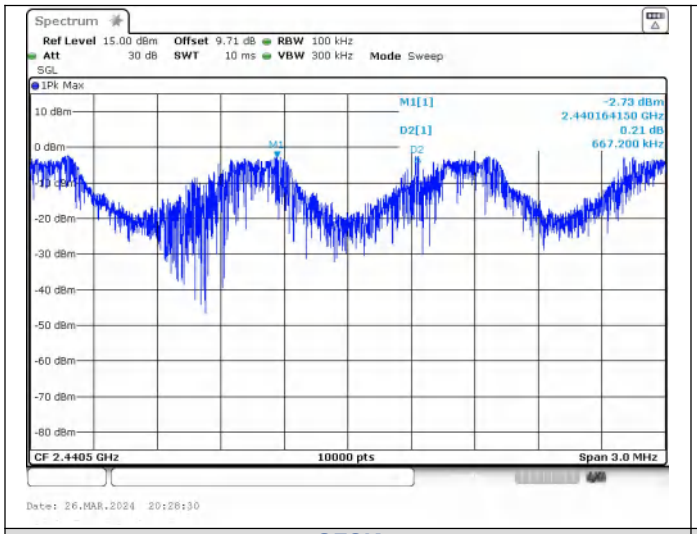
8DPSK_3-DH5_Channel 78

Carrier Frequencies Separation

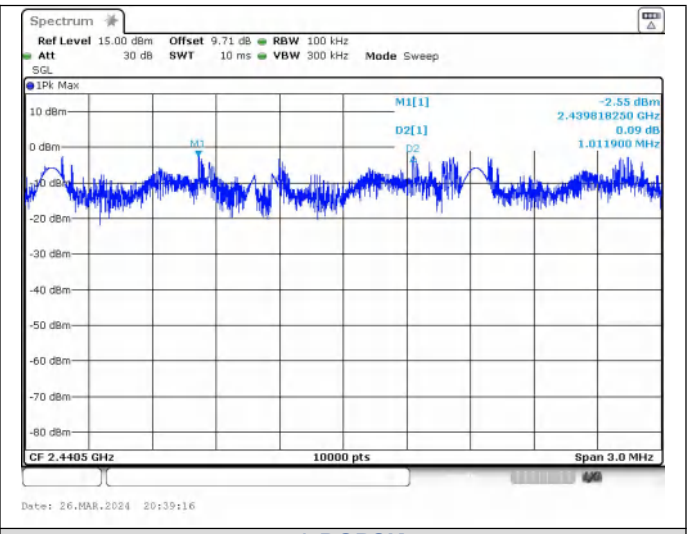
Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2440.1642	2440.8313	0.6672	0.627	PASS
π/4DQPSK	2-DH5	2439.8182	2440.8301	1.0119	0.873	PASS
8DPSK	3-DH5	2439.9958	2441.0105	1.0146	0.86	PASS

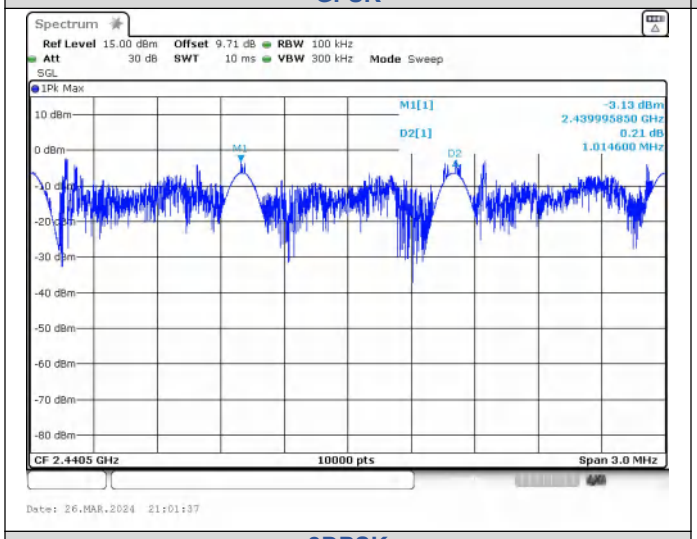
Test Graphs



GFSK



π/4DQPSK



8DPSK

Conducted Out Of Band Emission

Test Result

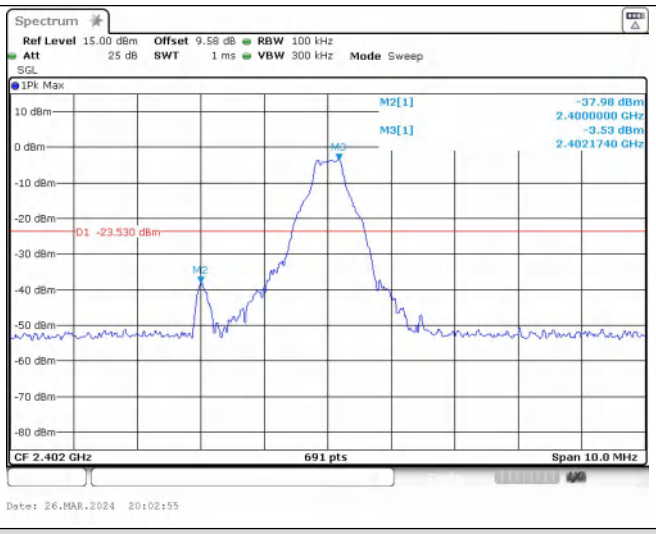
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-37.984	-23.53	-14.454	PASS
			2498.28	-48.257	-23.53	-24.727	PASS
		39	16565.5	-49.254	-33.4	-15.854	PASS
		78	2483.50	-52.337	-22.81	-29.527	PASS
			23311.6	-49.774	-22.81	-26.964	PASS
π/4DQPSK	2-DH5	0	2400.00	-37.722	-22.09	-15.632	PASS
			16327.5	-49.403	-22.09	-27.313	PASS
		39	16250.9	-49.272	-22.4	-26.872	PASS
		78	2483.50	-53.213	-22.87	-30.343	PASS
			22028.2	-48.973	-22.87	-26.103	PASS
8DPSK	3-DH5	0	2400.00	-37.392	-21.91	-15.482	PASS
			20125.4	-49.648	-21.91	-27.738	PASS
		39	18306.0	-48.929	-22.45	-26.479	PASS
		78	2483.50	-52.628	-22.95	-29.678	PASS
			17614.3	-49.260	-22.95	-26.310	PASS

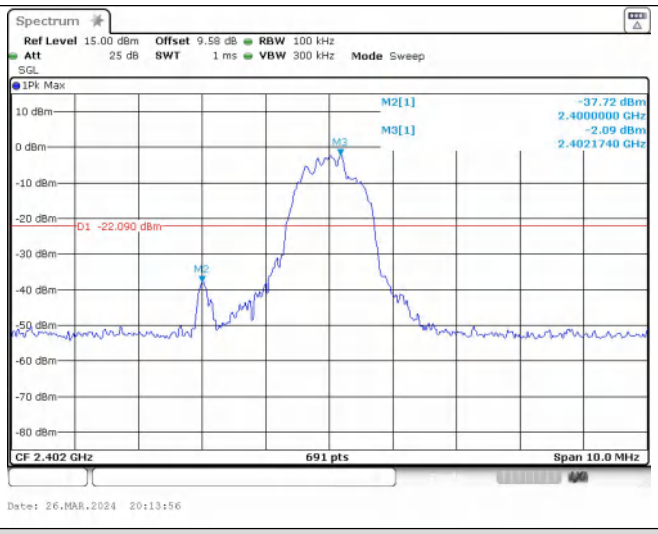
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2400.00	-38.317	-21.99	-16.327	PASS
			2483.50	-51.854	-22.86	-28.994	PASS
			2400.00	-38.390	-21.93	-16.460	PASS
			2483.50	-51.949	-23.14	-28.809	PASS
π/4DQPSK	2-DH5		2400.00	-38.705	-22.51	-16.195	PASS
			2483.50	-51.800	-25.7	-26.100	PASS
			2400.00	-39.160	-21.92	-17.240	PASS
			2483.50	-50.102	-25.24	-24.862	PASS
8DPSK	3-DH5		2400.00	-38.395	-25.33	-13.065	PASS
			2483.50	-52.194	-23.78	-28.414	PASS
			2400.00	-37.721	-21.84	-15.881	PASS
			2483.50	-51.458	-23.36	-28.098	PASS

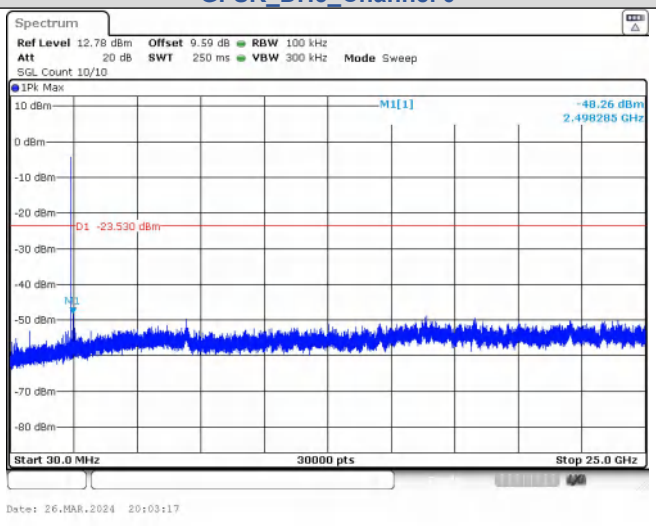
Test Graphs



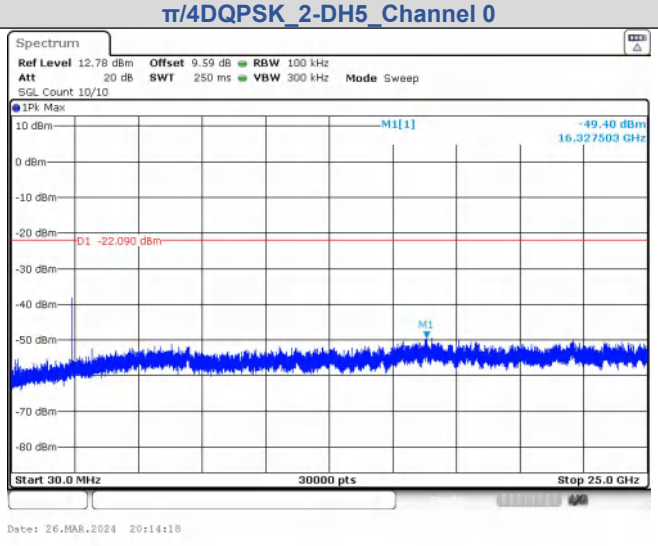
Out Of Band Emission
GFSK_DH5_Channel 0



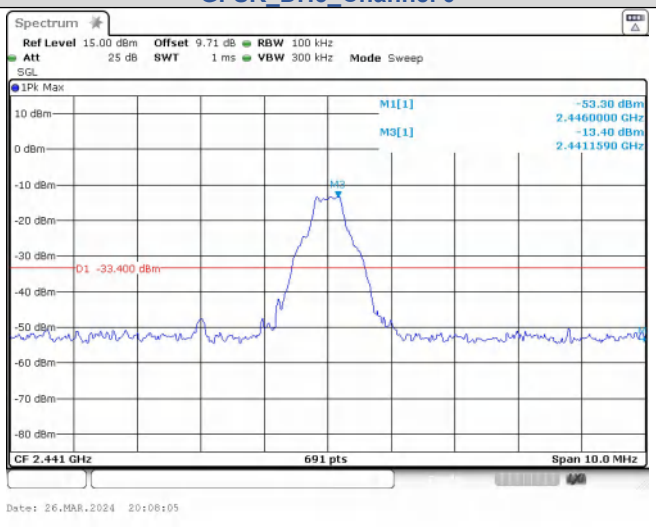
Out Of Band Emission
π/4DQPSK_2-DH5_Channel 0



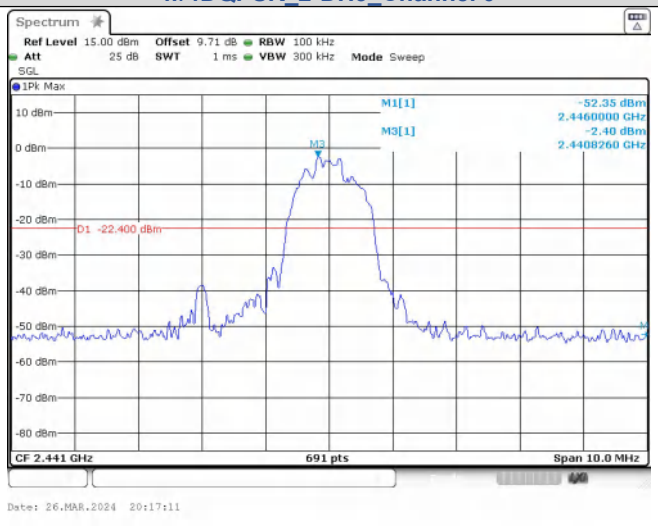
Spurious Emission
GFSK_DH5_Channel 0



Spurious Emission
π/4DQPSK_2-DH5_Channel 0

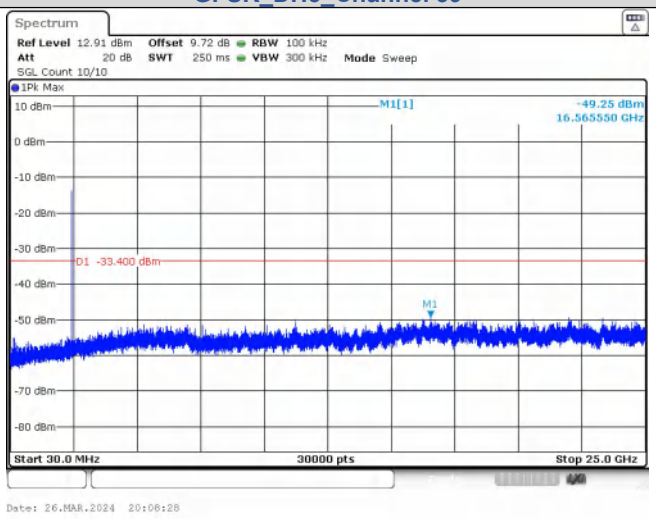


Out Of Band Emission

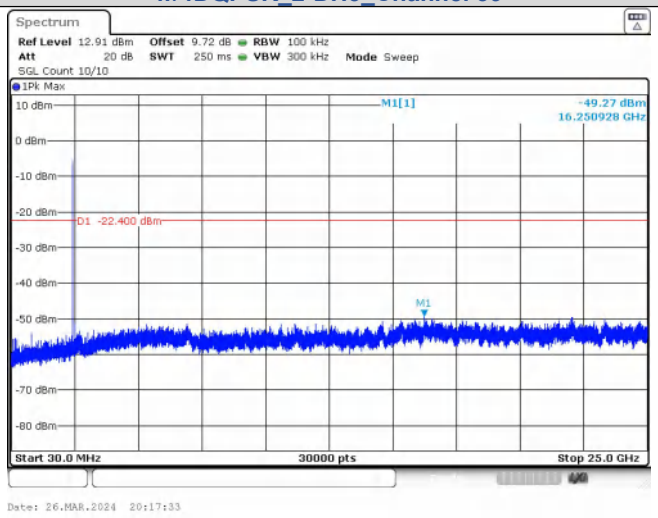


Out Of Band Emission

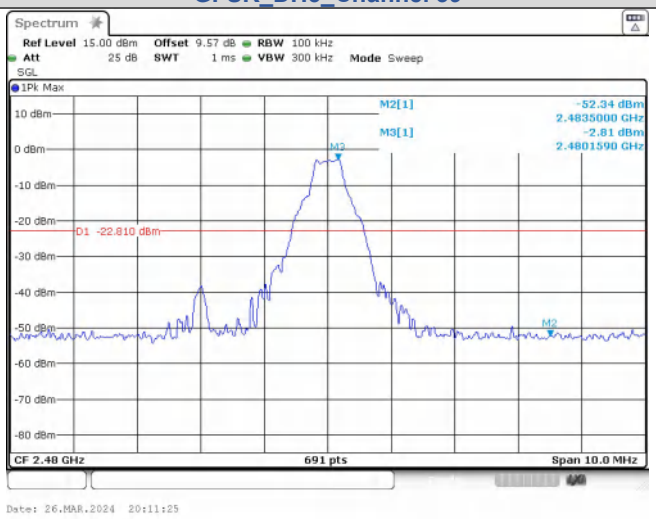
GFSK_DH5_Channel 39



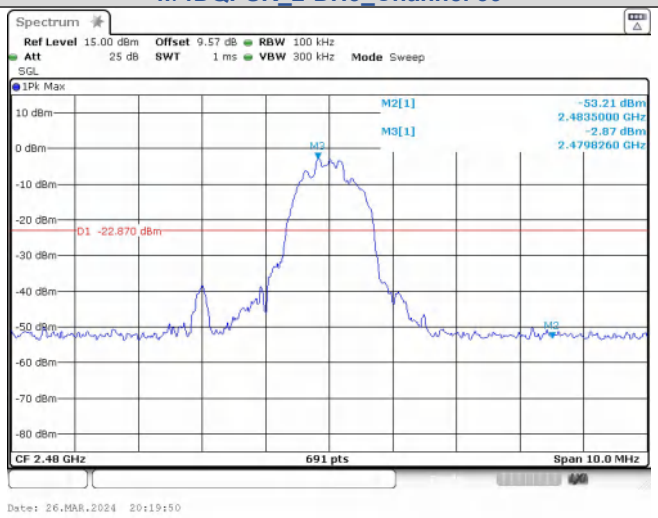
π/4DQPSK_2-DH5_Channel 39



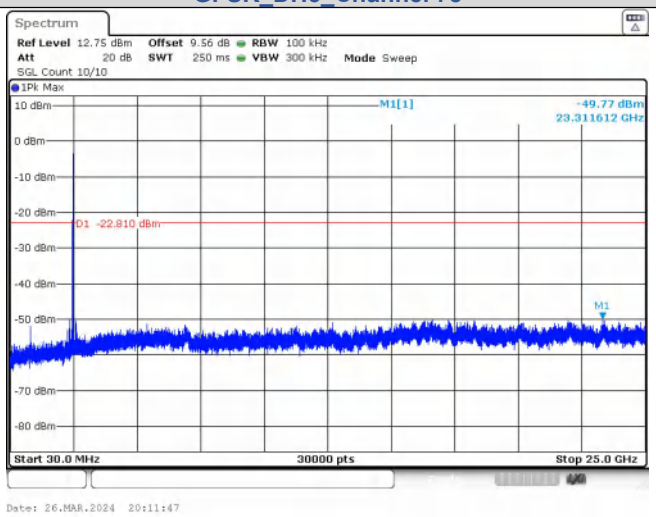
Spurious Emissions GFSK_DH5_Channel 39



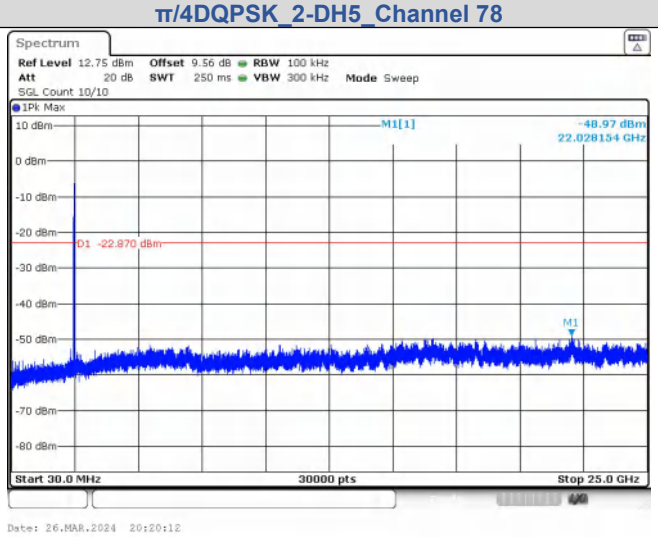
Spurious Emissions π/4DQPSK_2-DH5_Channel 39

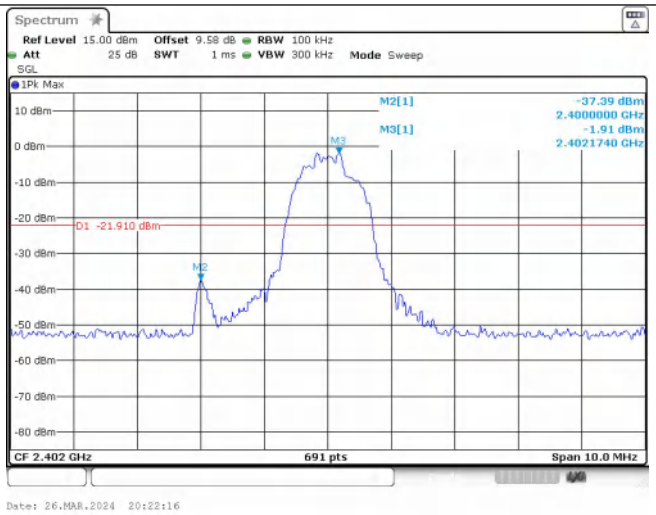
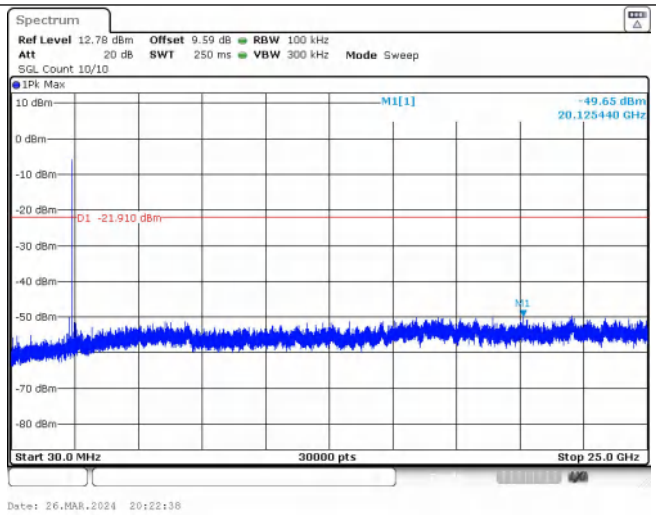
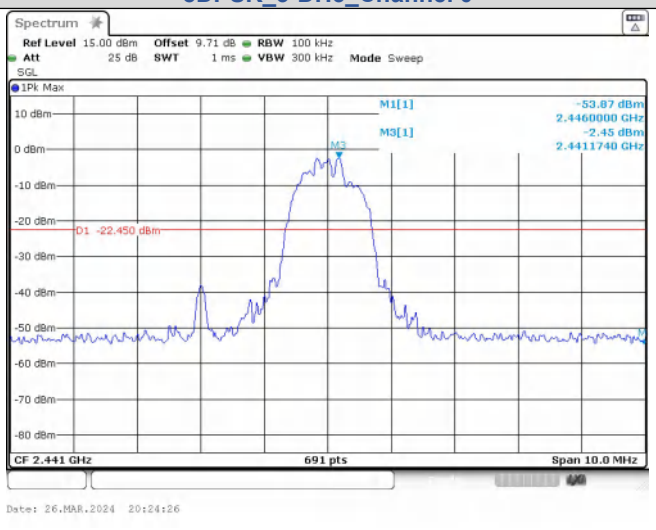
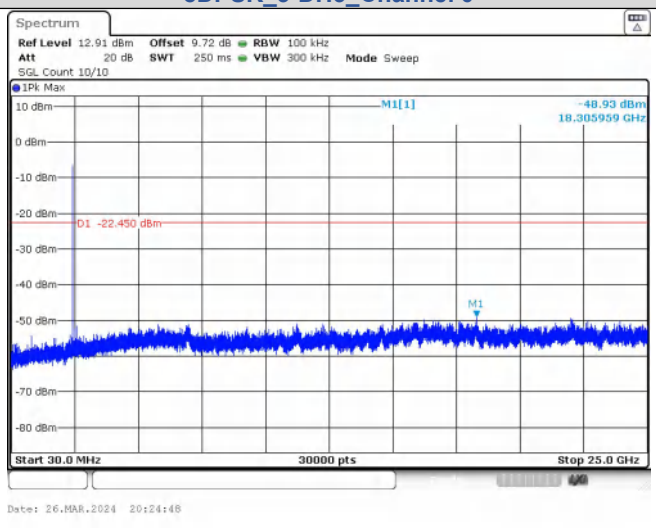


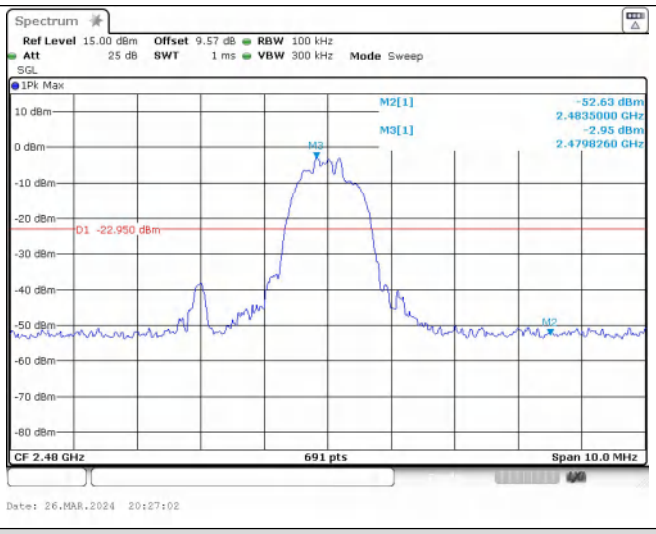
Out Of Band Emission GFSK_DH5_Channel 78



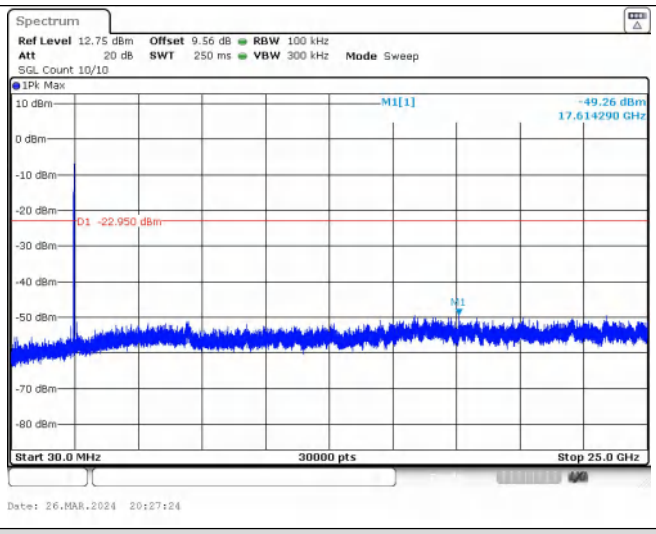
Out Of Band Emission π/4DQPSK_2-DH5_Channel 78



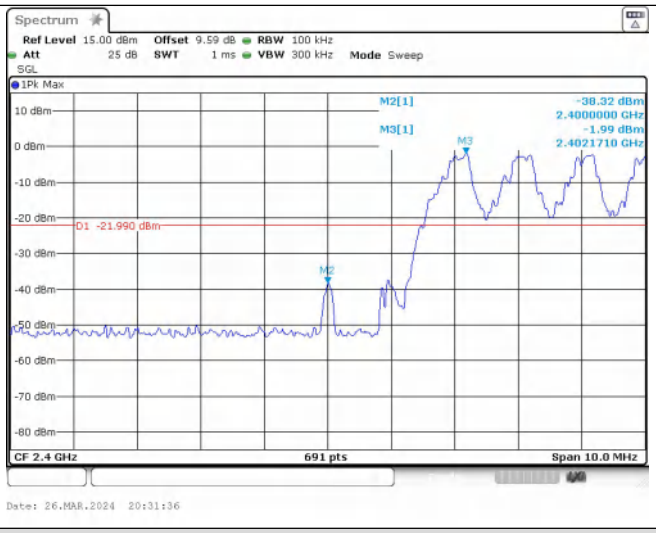
Spurious Emission GFSK_DH5_Channel 78	Spurious Emission π/4DQPSK_2-DH5_Channel 78
	
Out Of Band Emission 8DPSK_3-DH5_Channel 0	**Spurious Emission 8DPSK_3-DH5_Channel 0**
	
Out Of Band Emission 8DPSK_3-DH5_Channel 39	**Spurious Emissions 8DPSK_3-DH5_Channel 39**



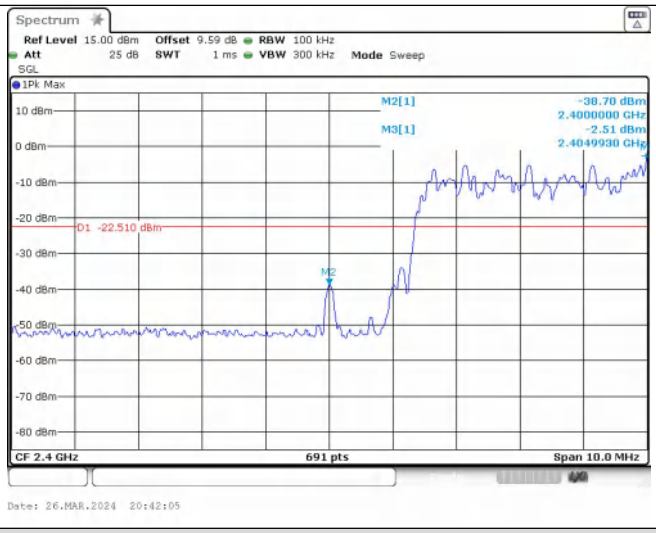
Out Of Band Emission
8DPSK_3-DH5_Channel 78



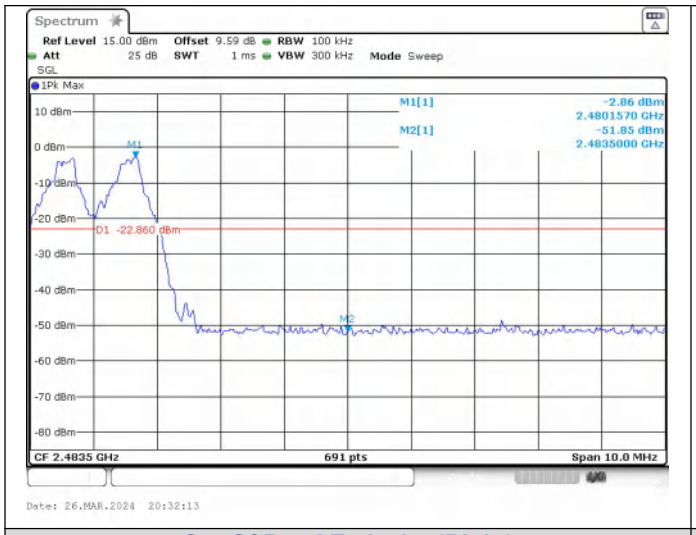
Spurious Emission
8DPSK_3-DH5_Channel 78



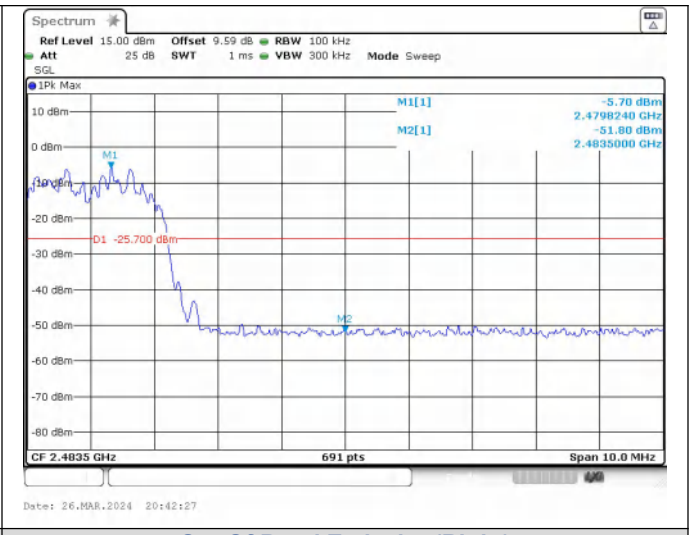
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



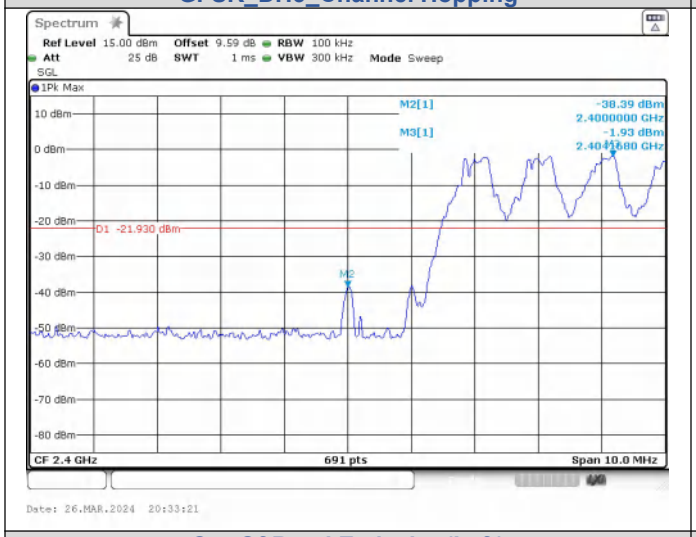
Out Of Band Emission(Left)
π/4DQPSK_2-DH5_Channel Hopping



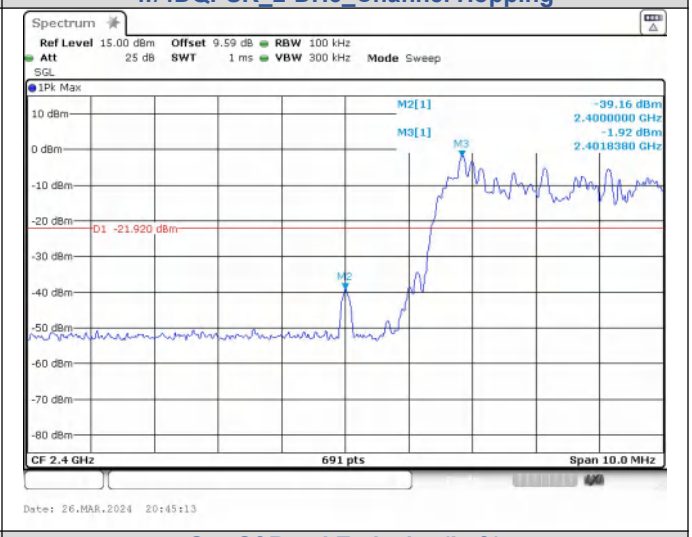
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



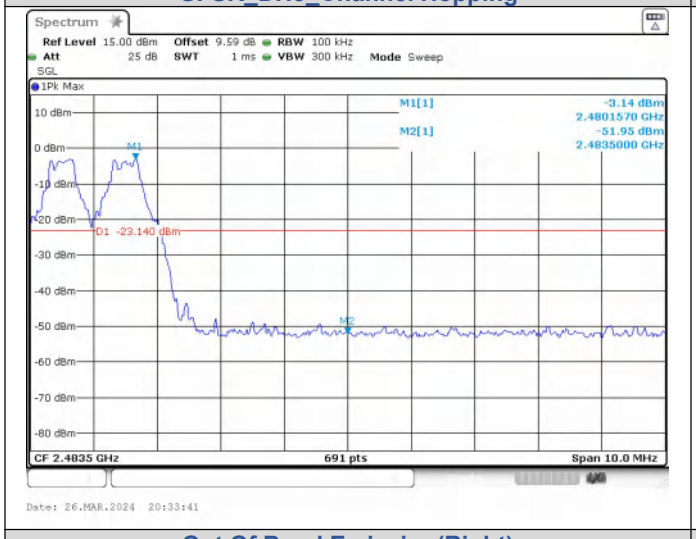
Out Of Band Emission(Right)
π/4DQPSK_2-DH5_Channel Hopping



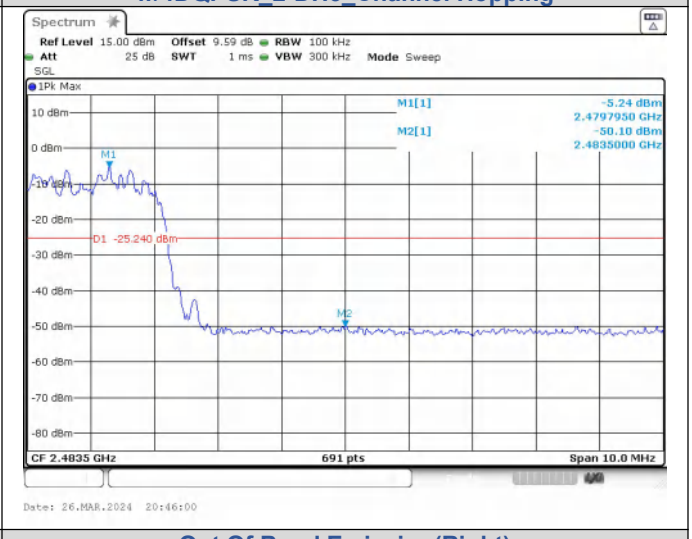
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



Out Of Band Emission(Left)
π/4DQPSK_2-DH5_Channel Hopping

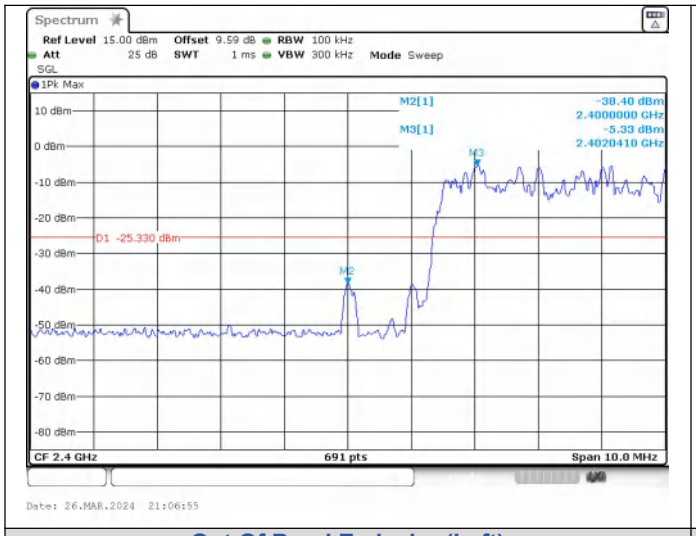


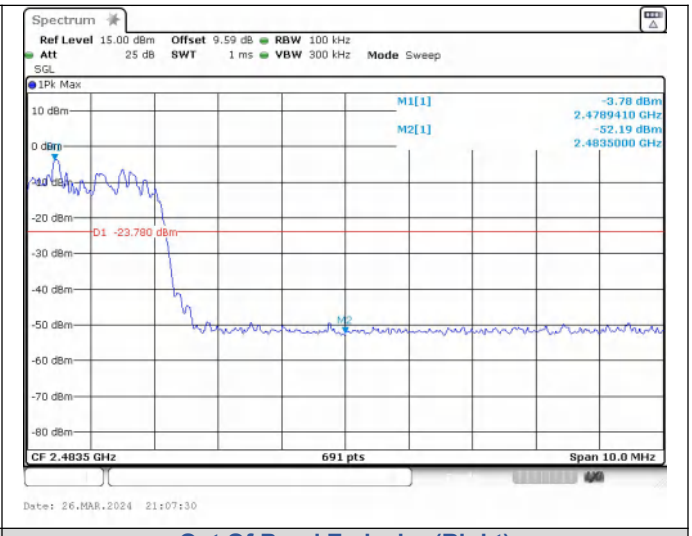
Out Of Band Emission(Right)



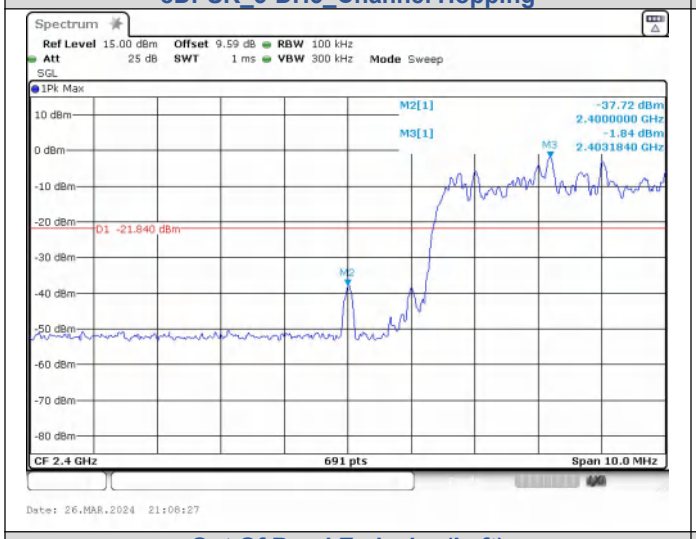
Out Of Band Emission(Right)

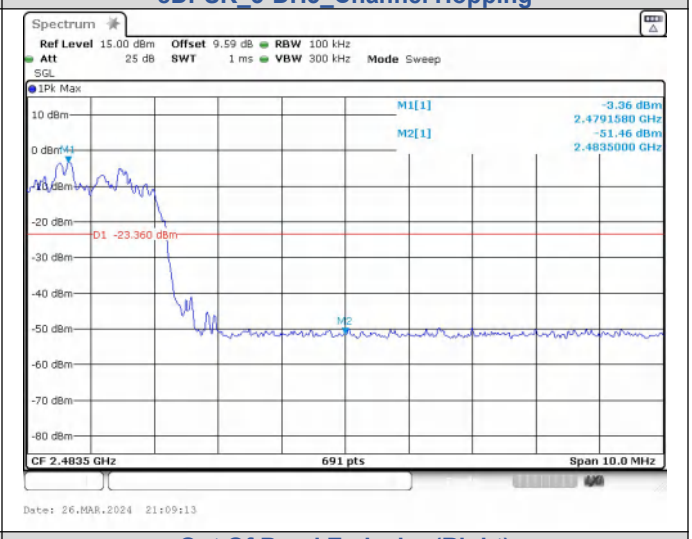
GFSK_DH5_Channel Hopping	π/4DQPSK_2-DH5_Channel Hopping





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





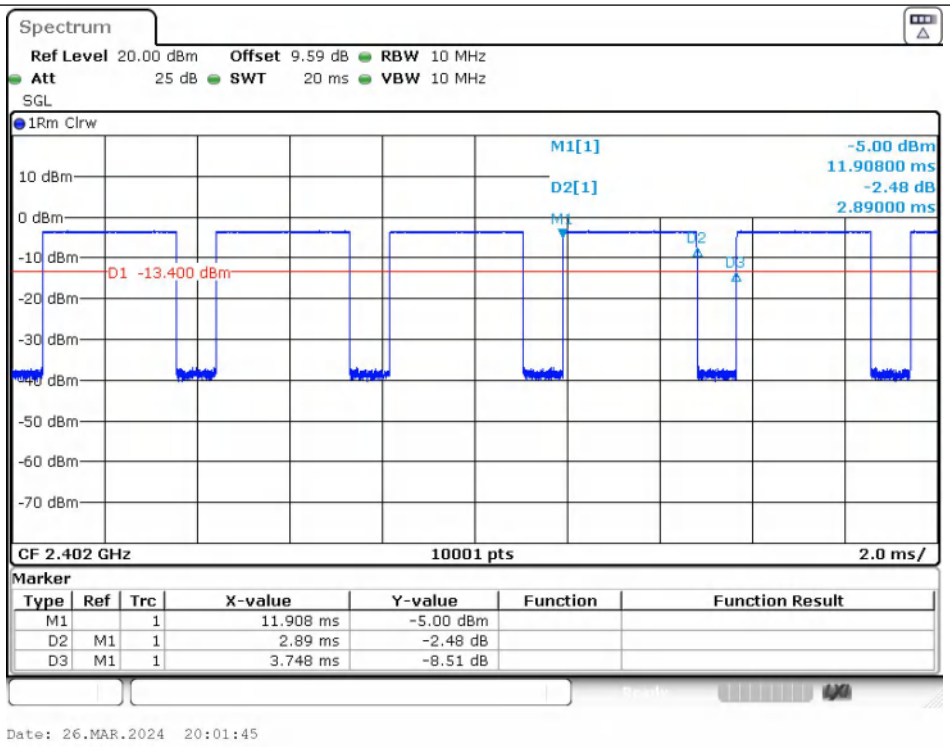
Out Of Band Emission(Left) 8DPSK_3-DH5_Channel Hopping	Out Of Band Emission(Right) 8DPSK_3-DH5_Channel Hopping

Duty Cycle

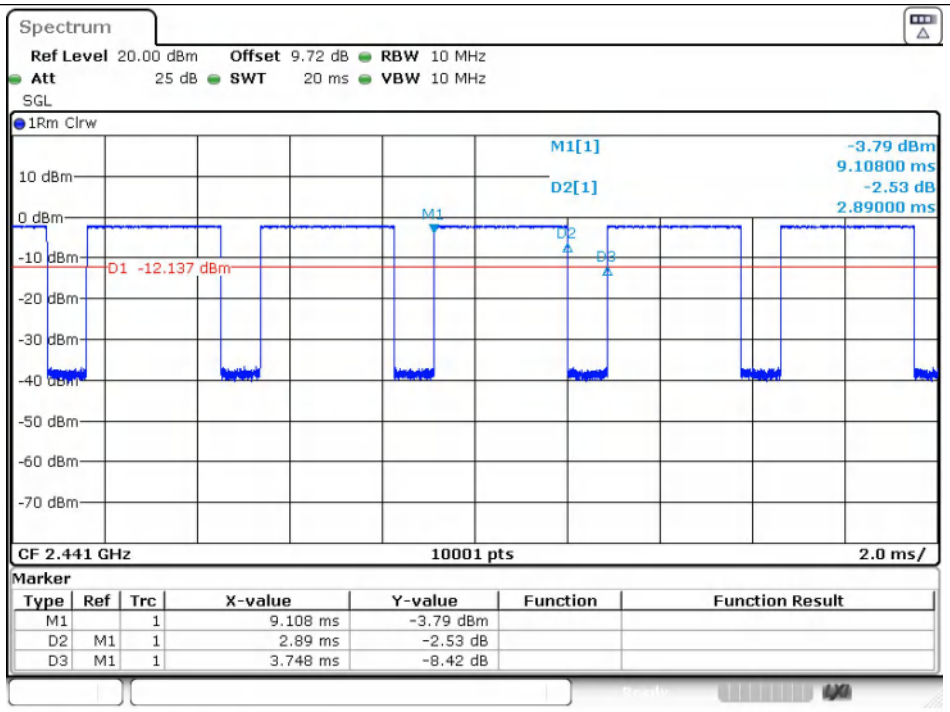
Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.890	3.748	77.11	0.7711	1.1289	0.35
		39	2.890	3.748	77.11	0.7711	1.1289	0.35
		78	2.890	3.748	77.11	0.7711	1.1289	0.35
π/4DQPSK	2-DH5	0	2.880	3.741	76.98	0.7698	1.1362	0.35
		39	2.886	3.748	77.00	0.7700	1.1351	0.35
		78	2.880	3.741	76.98	0.7698	1.1362	0.35
8DPSK	3-DH5	0	2.881	3.740	77.01	0.7701	1.1345	0.35
		39	2.881	3.740	77.01	0.7701	1.1345	0.35
		78	2.881	3.741	77.01	0.7701	1.1345	0.35

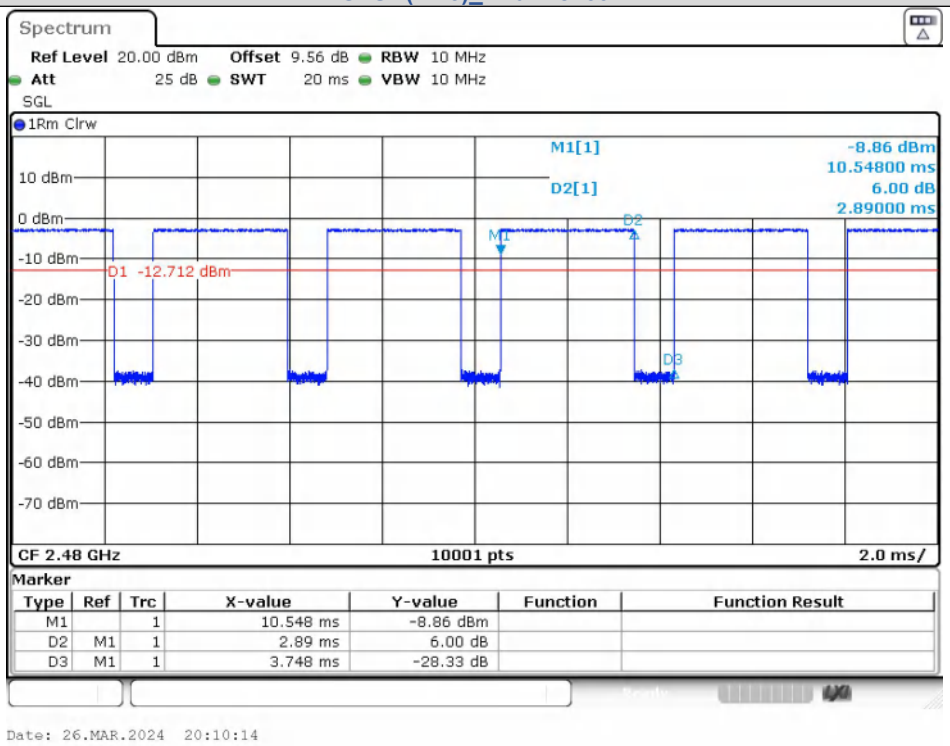
Test Graphs



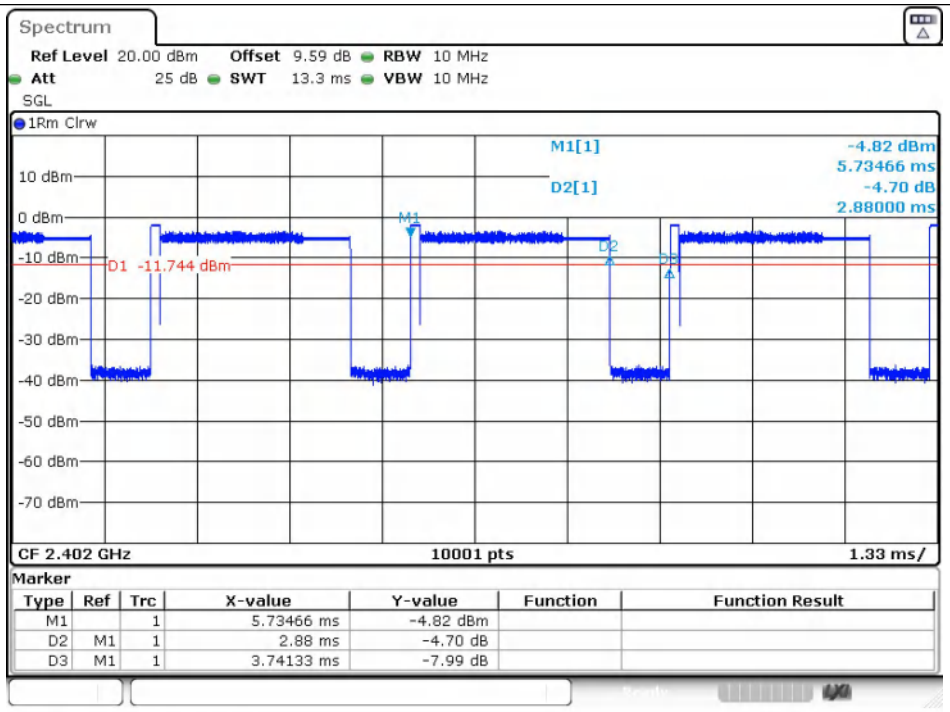
GFSK(DH5)_Channel 0



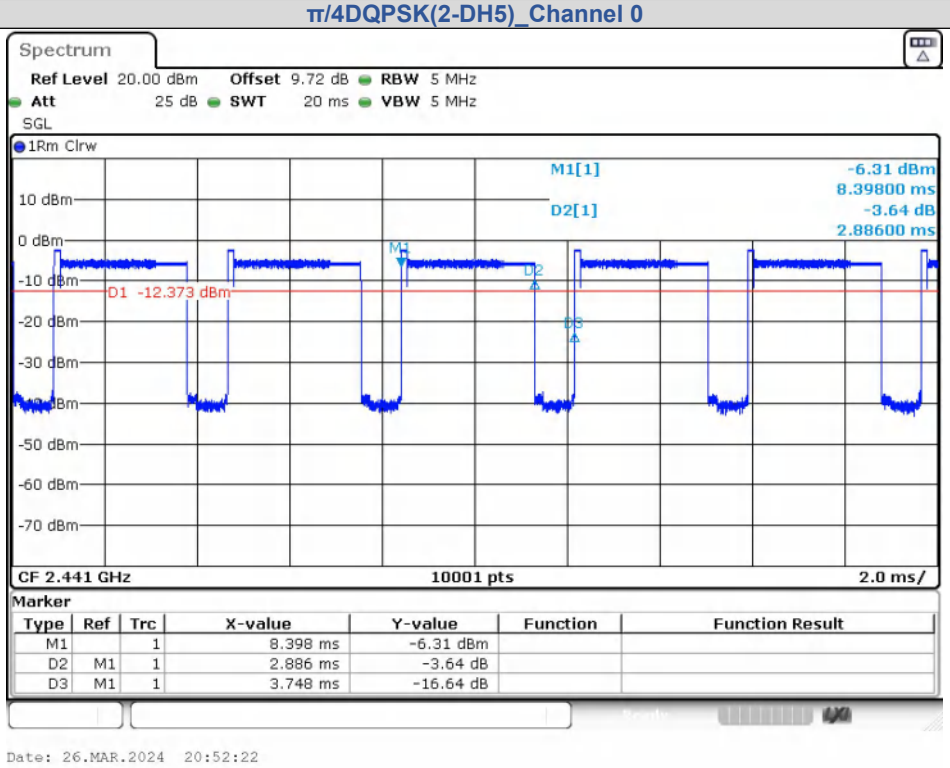
GFSK(DH5)_Channel 39



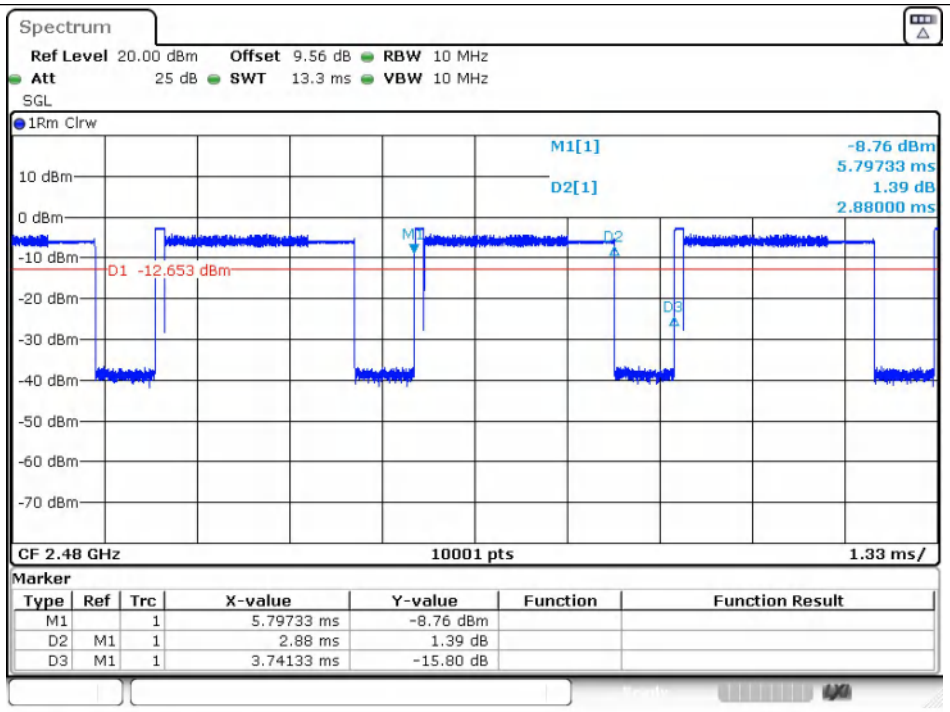
GFSK(DH5)_Channel 78



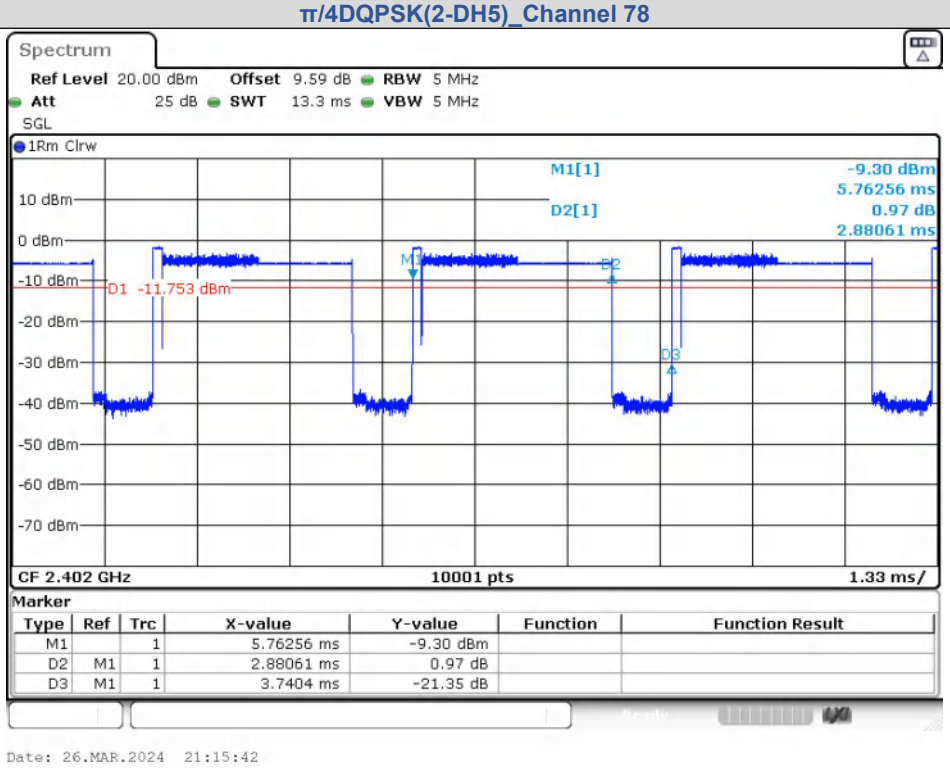
π/4DQPSK(2-DH5)_Channel 0



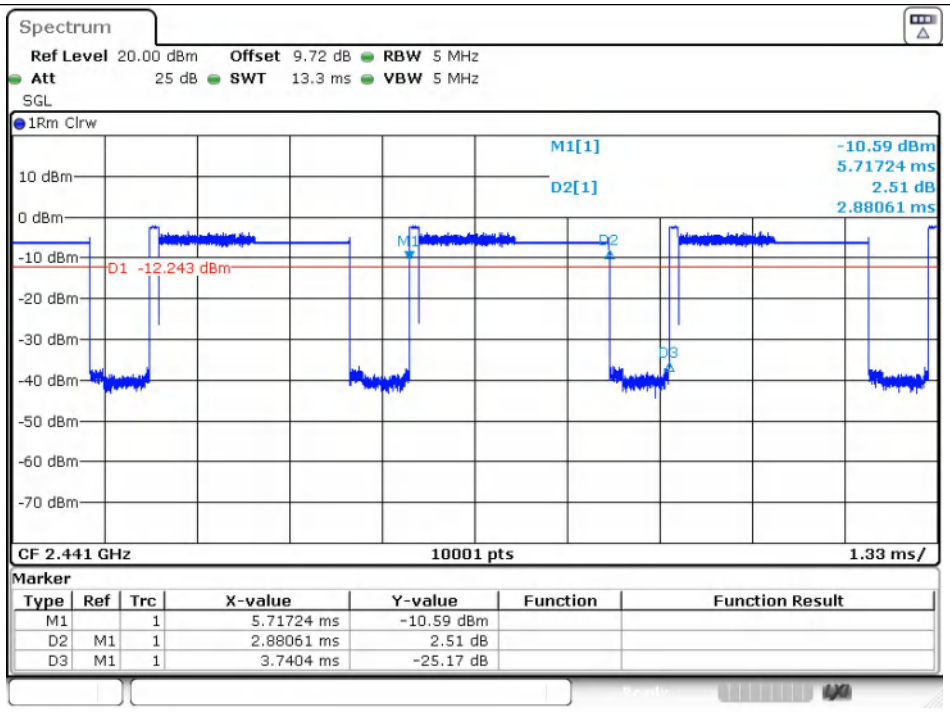
π/4DQPSK(2-DH5)_Channel 39



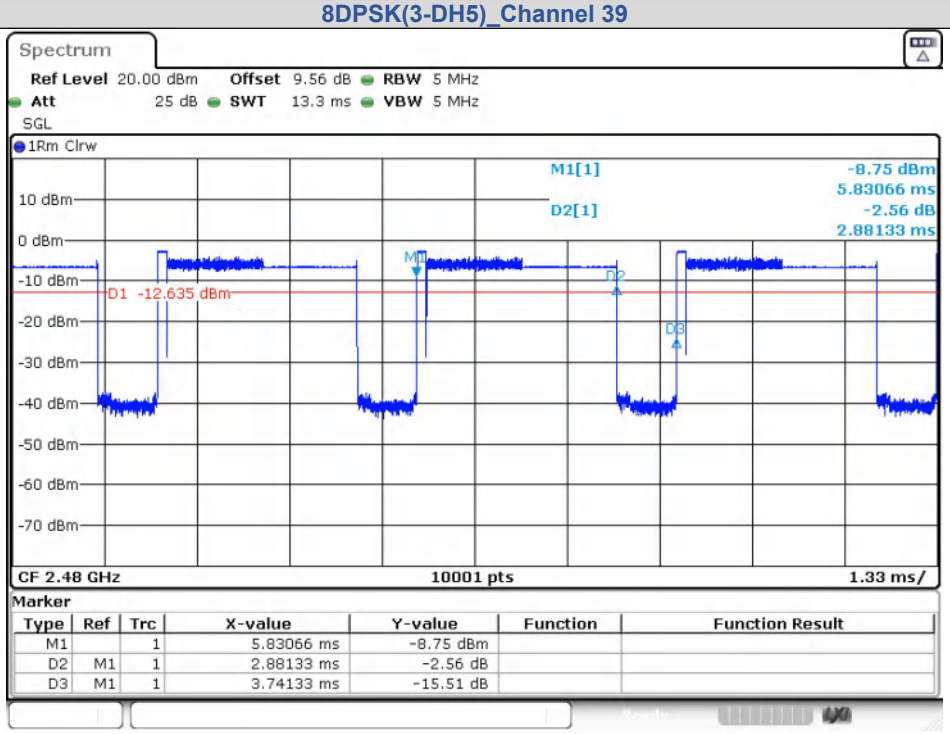
π/4DQPSK(2-DH5)_Channel 78



8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39



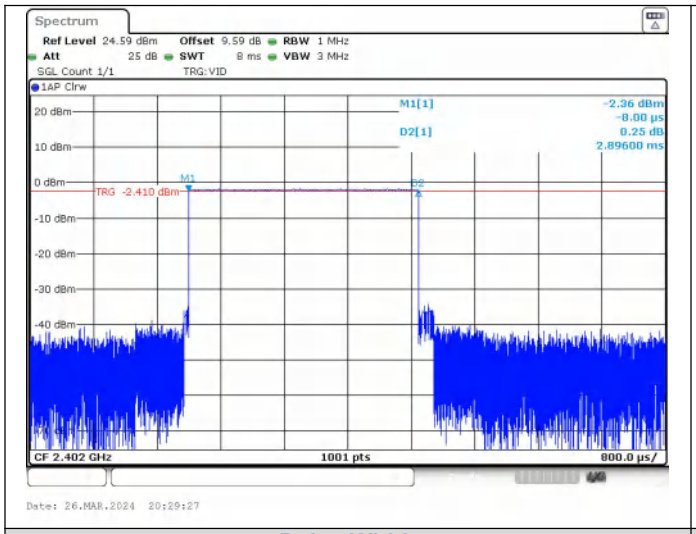
8DPSK(3-DH5)_Channel 78

Dwell Time

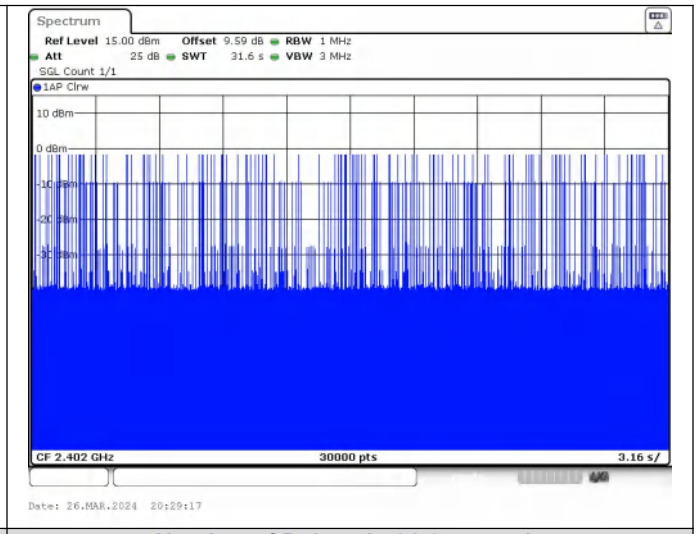
Test Result

Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.896	111	321.46	< 400	PASS
π/4DQPSK	2-DH5		2.888	117	337.9		PASS
8DPSK	3-DH5		2.888	111	320.57		PASS

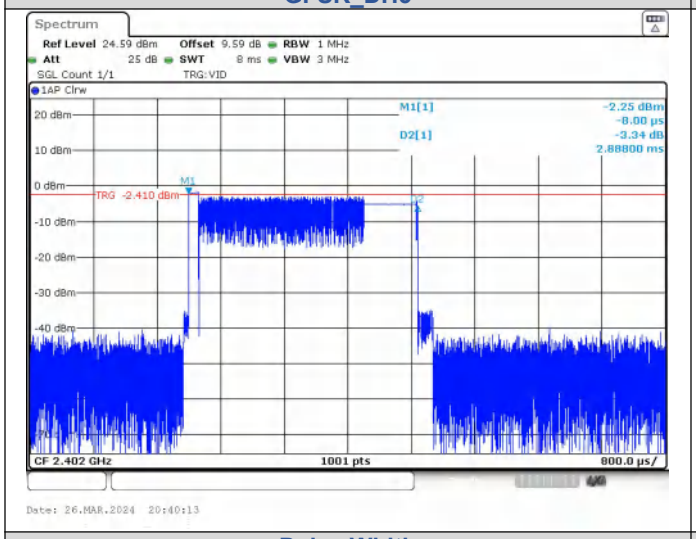
Test Graphs



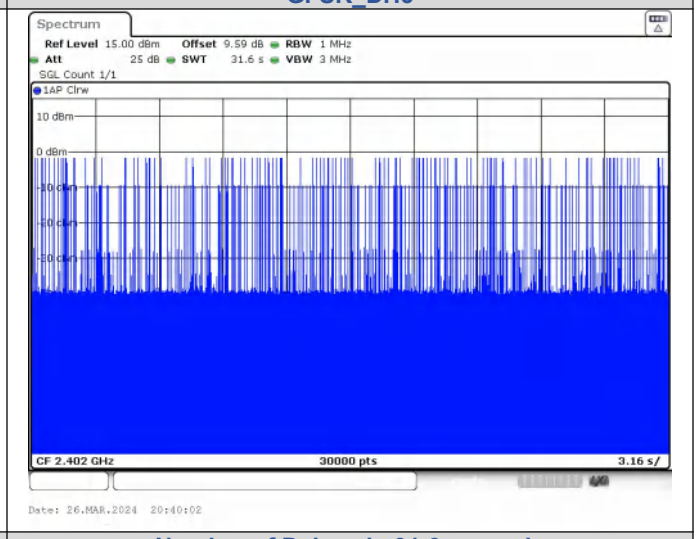
Pulse Width
GFSK_DH5



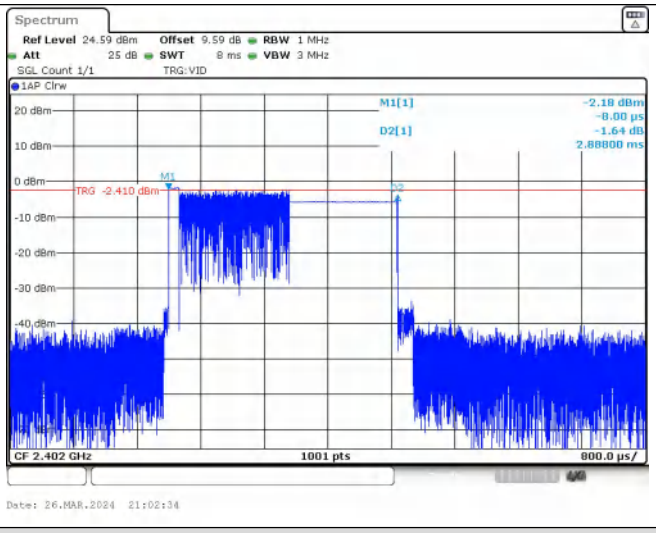
Number of Pulses in 31.6 seconds
GFSK_DH5



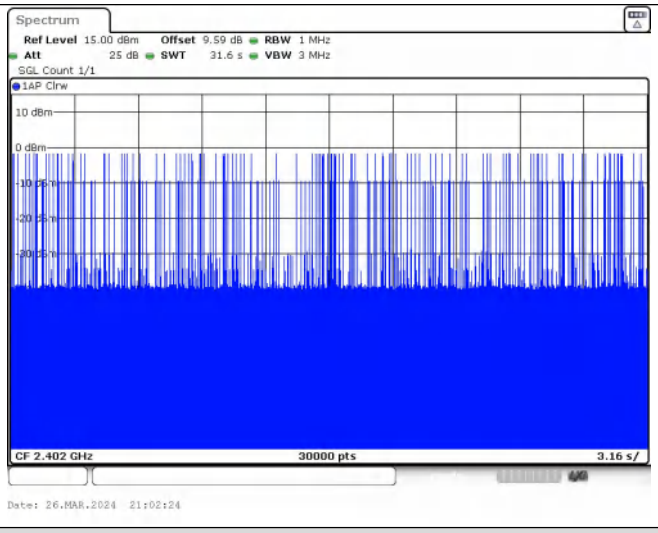
Pulse Width
π/4DQPSK_2-DH5



Number of Pulses in 31.6 seconds
π/4DQPSK_2-DH5



Pulse Width
8DPSK_3-DH5



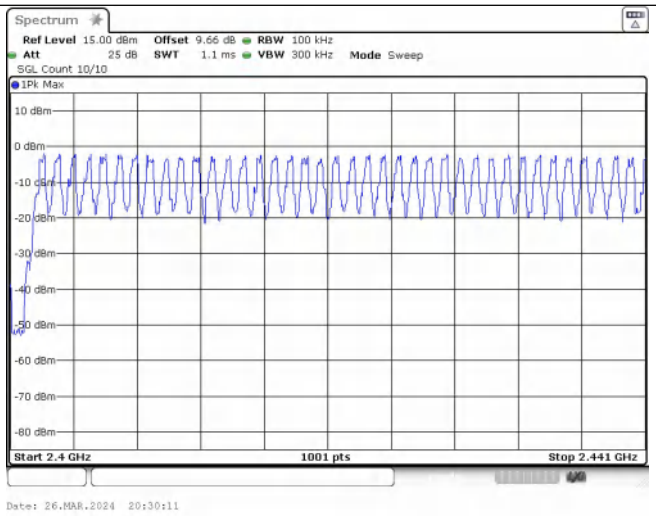
Number of Pulses in 31.6 seconds
8DPSK_3-DH5

Number Of Hopping Channel

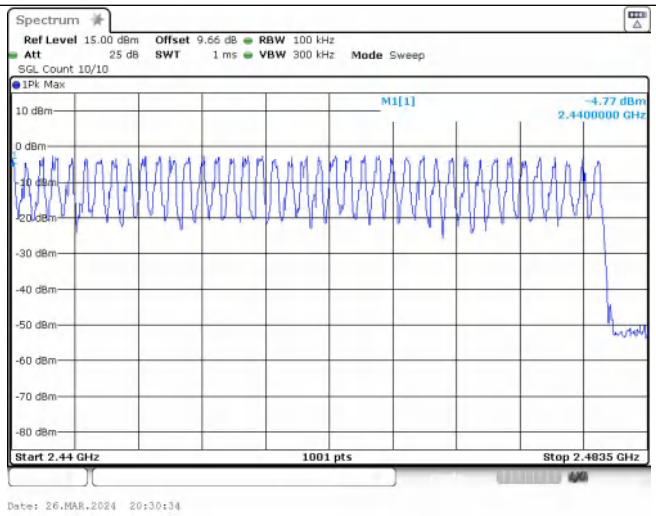
Test Result

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

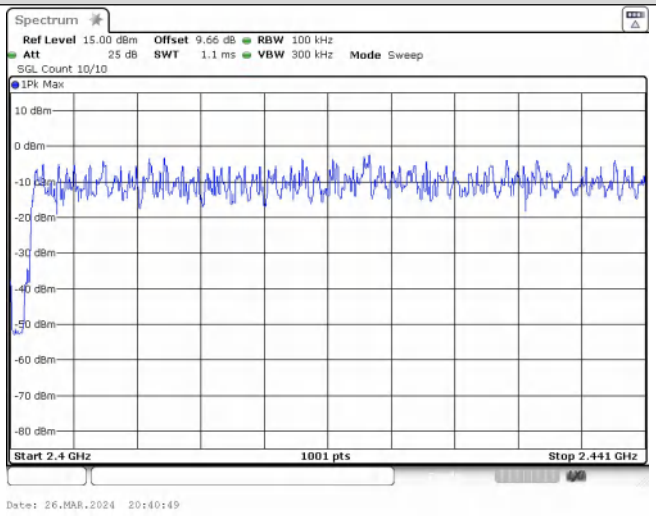
Test Graphs



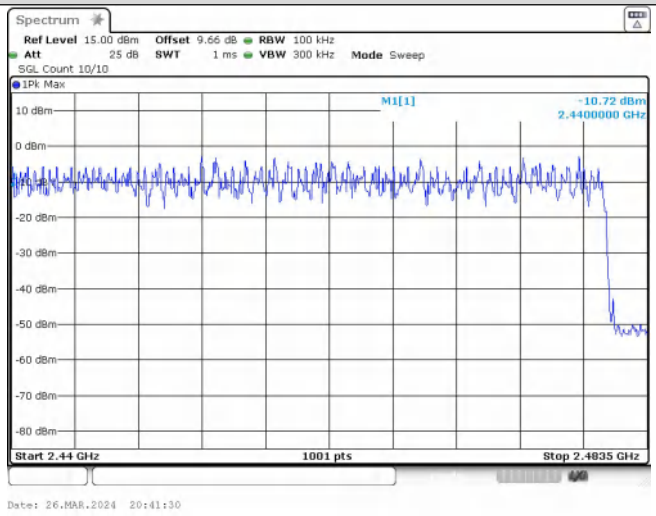
Low End Spectrum Channel Hopping Plot
GFSK



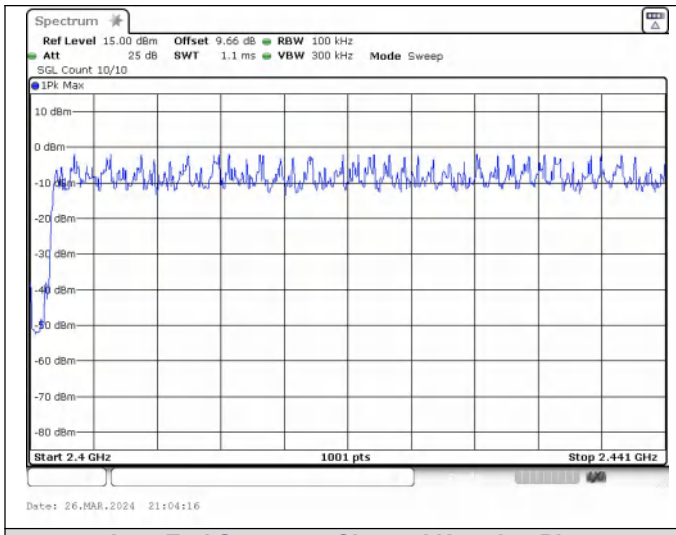
High End Spectrum Channel Hopping Plot
GFSK



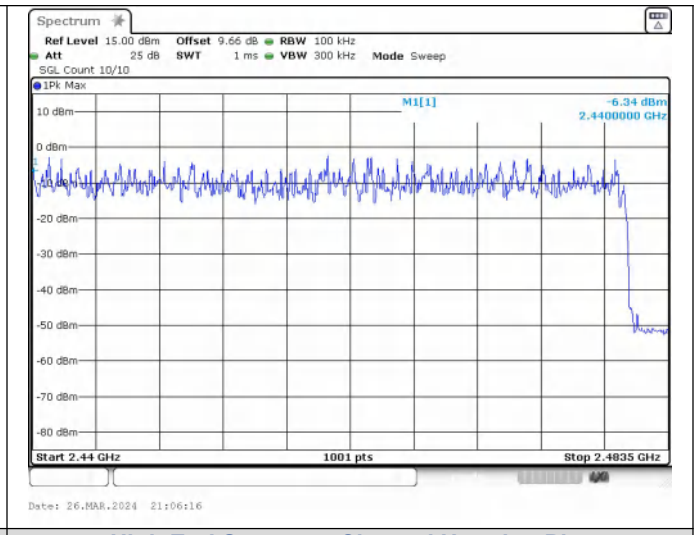
Low End Spectrum Channel Hopping Plot
π/4DQPSK



High End Spectrum Channel Hopping Plot
π/4DQPSK



Low End Spectrum Channel Hopping Plot
8DPSK



High End Spectrum Channel Hopping Plot
8DPSK