Appendix A

Report No.:	CISRR240531211
FCC ID:	2BGLV-P1
Product Name:	Bluetooth earphones
Model No.:	P1
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

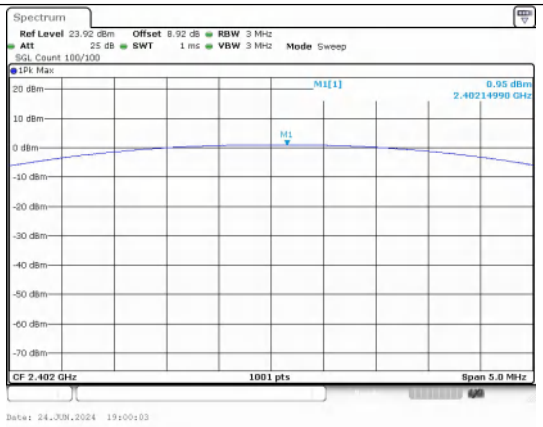
Conducted Peak Output Power

Test Result

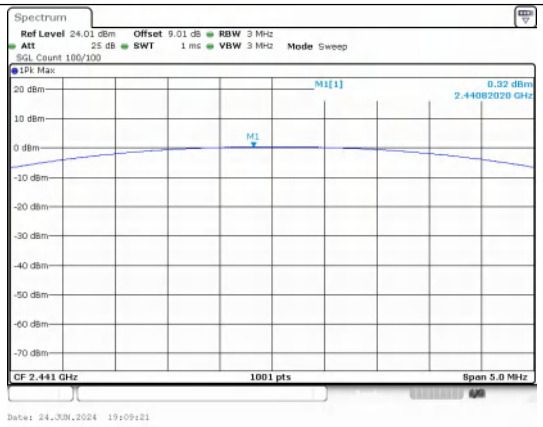
Left

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	0.95	1.24	30	PASS
		39	0.32	1.08		PASS
		78	0.40	1.10		PASS
π/4DQPSK	2-DH5	0	1.48	1.41	20.97	PASS
		39	0.81	1.21		PASS
		78	0.94	1.24		PASS

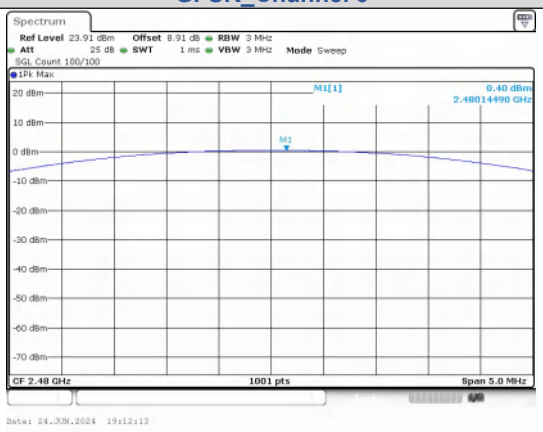
Test Graphs



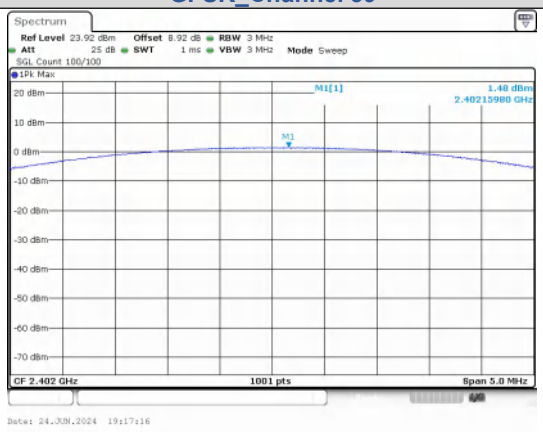
Peak Output Power
GFSK_Channel 0



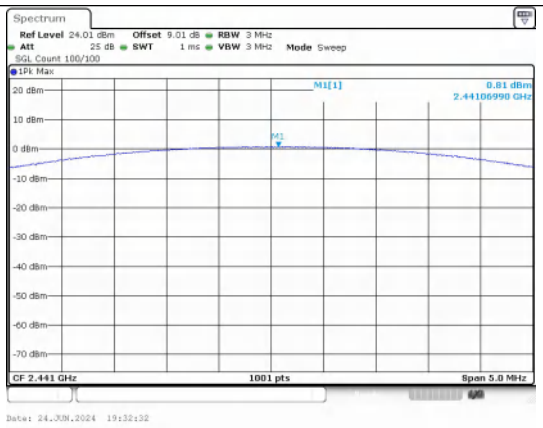
Peak Output Power
GFSK_Channel 39



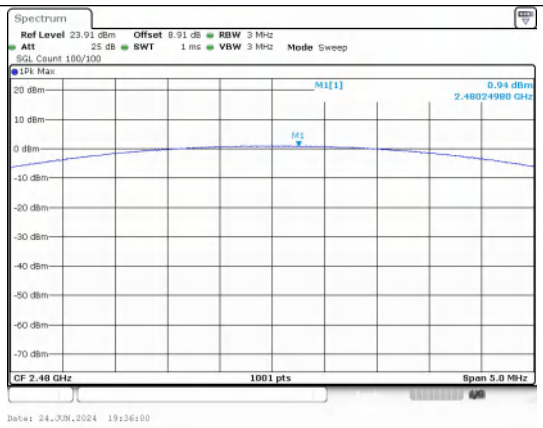
Peak Output Power
GFSK_Channel 78



Peak Output Power
π/4DQPSK_Channel 0



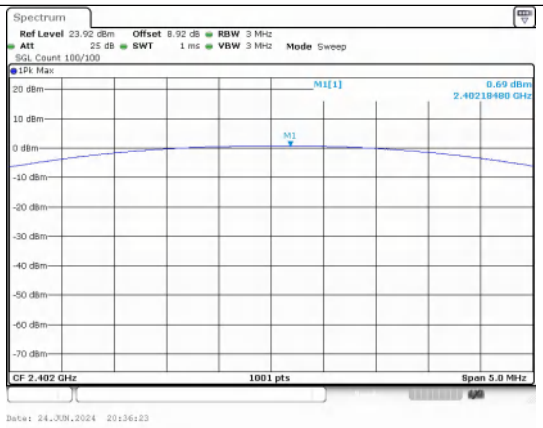
Peak Output Power
π/4DQPSK_Channel 39



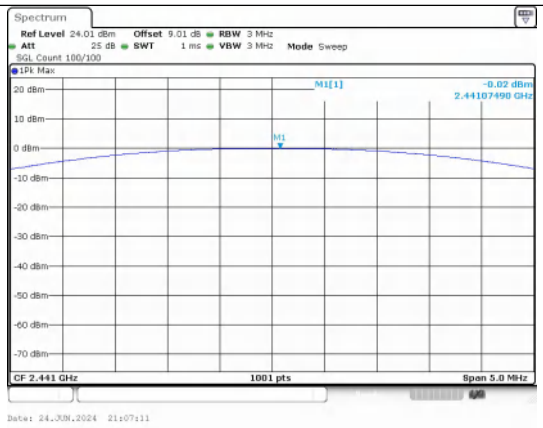
Peak Output Power
π/4DQPSK_Channel 78

Right

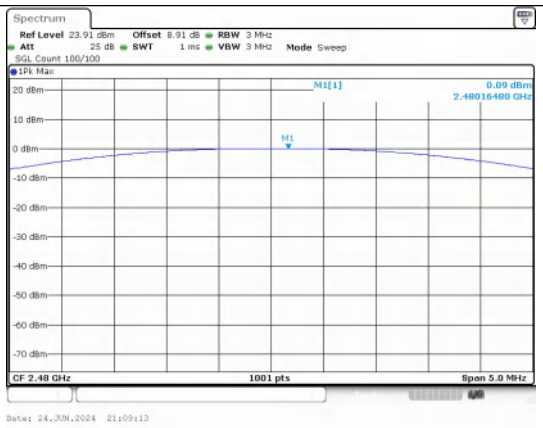
Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	0.69	1.17	30	PASS
		39	-0.02	1.00		PASS
		78	0.09	1.02		PASS
π/4DQPSK	2-DH5	0	1.17	1.31	20.97	PASS
		39	0.58	1.14		PASS
		78	0.70	1.17		PASS



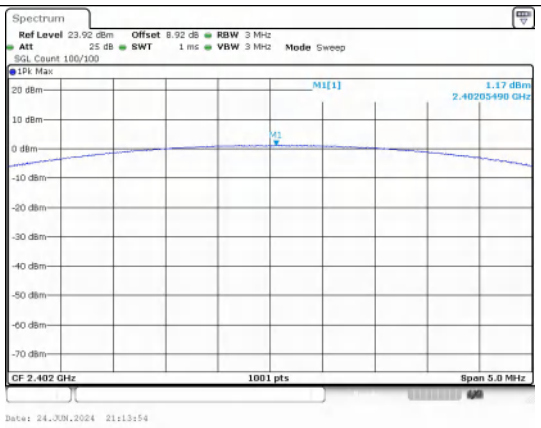
Peak Output Power
GFSK_Channel 0



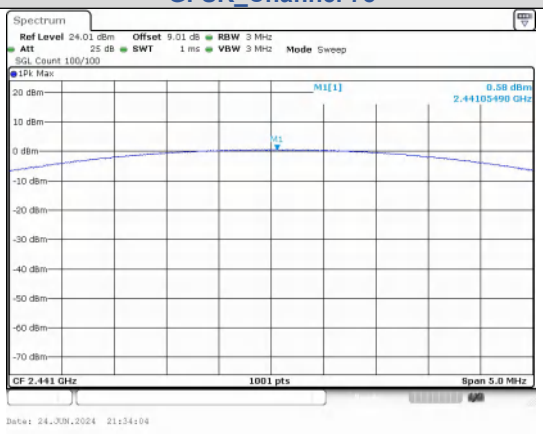
Peak Output Power
GFSK_Channel 39



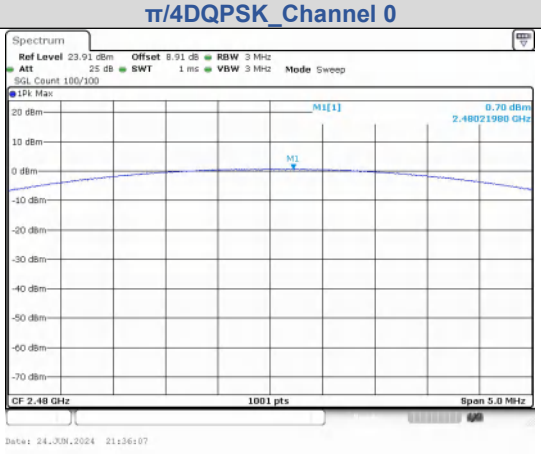
Peak Output Power
GFSK_Channel 78



Peak Output Power
π/4DQPSK_Channel 0



Peak Output Power
π/4DQPSK_Channel 39



Peak Output Power
π/4DQPSK_Channel 78

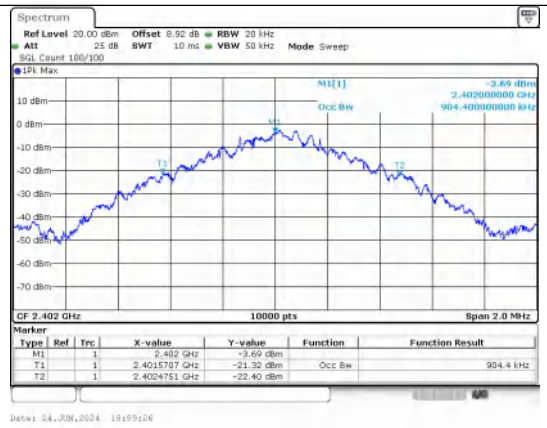
99% Bandwidth

Test Result

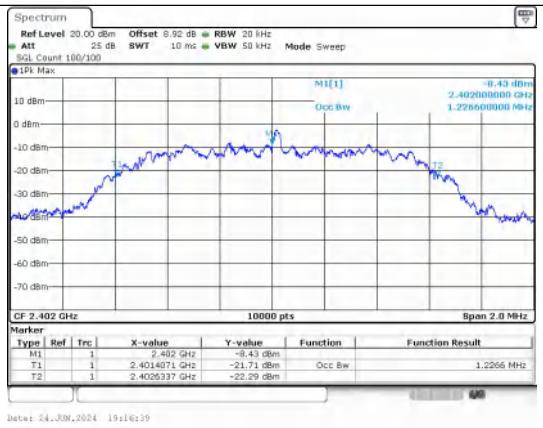
Left

Modulation	Channel	Center Frequency (MHz)	99% BW (MHz)
GFSK	0	2402	0.9044
	39	2441	0.8988
	78	2480	0.8858
π/4DQPSK	0	2402	1.2266
	39	2441	1.2036
	78	2480	1.1998

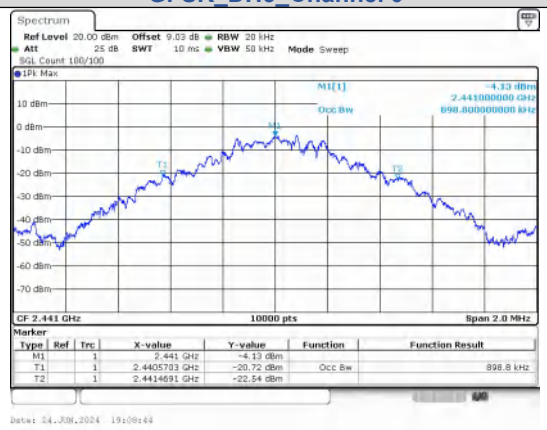
Test Graphs



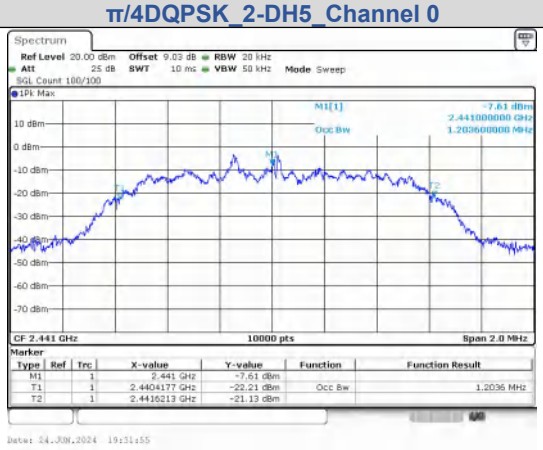
GFSK_DH5_Channel 0



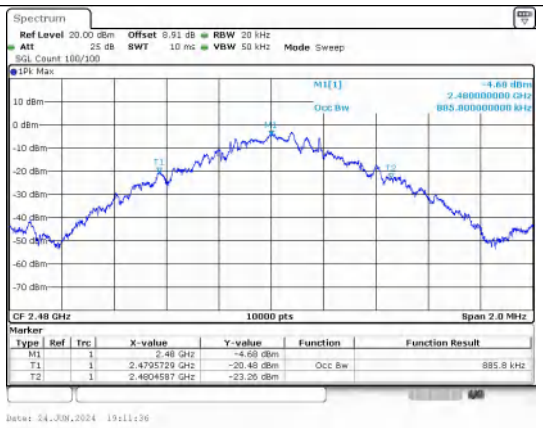
π/4DQPSK_2-DH5_Channel 0



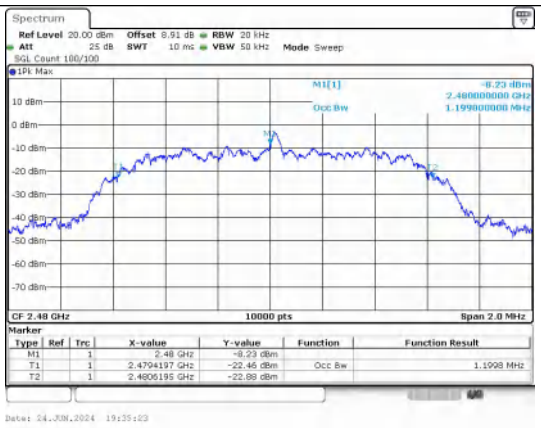
GFSK_DH5_Channel 39



π/4DQPSK_2-DH5_Channel 39



GFSK_DH5_Channel 78



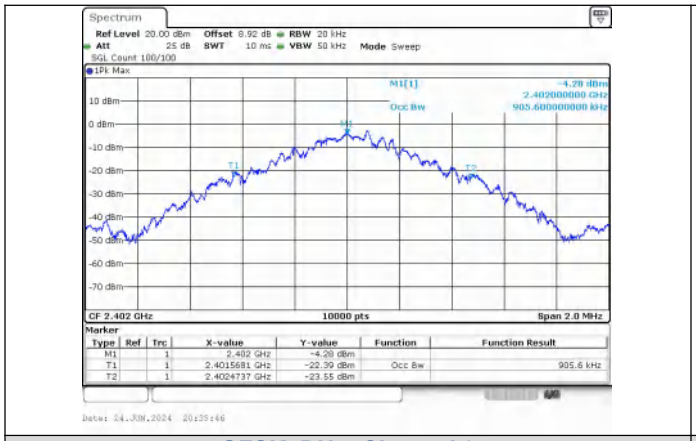
π/4DQPSK_2-DH5_Channel 78

Right

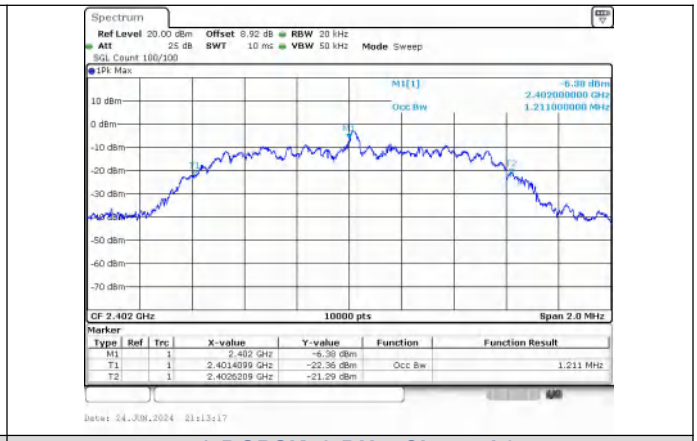
Test Result

Modulation	Channel	Center Frequency (MHz)	99% BW (MHz)
GFSK	0	2402	0.9056
	39	2441	0.8946
	78	2480	0.8858
π/4DQPSK	0	2402	1.2110
	39	2441	1.2018
	78	2480	1.1970

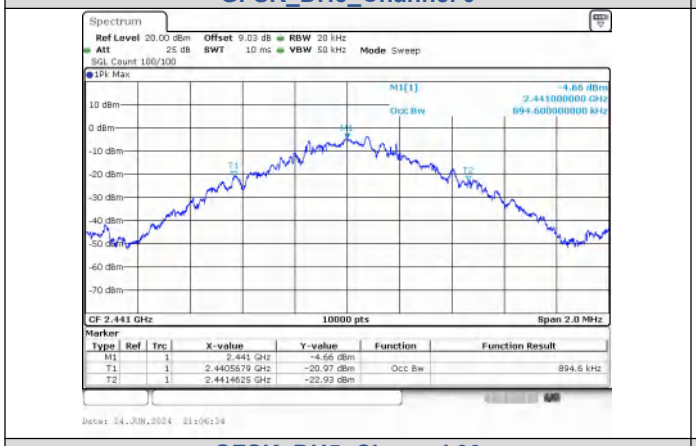
Test Graphs



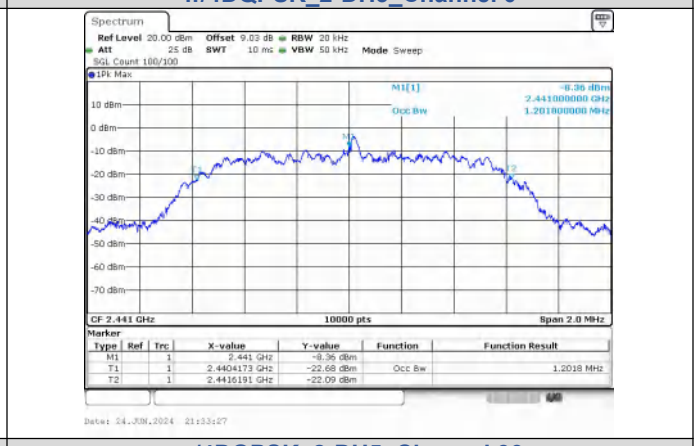
GFSK_DH5_Channel 0



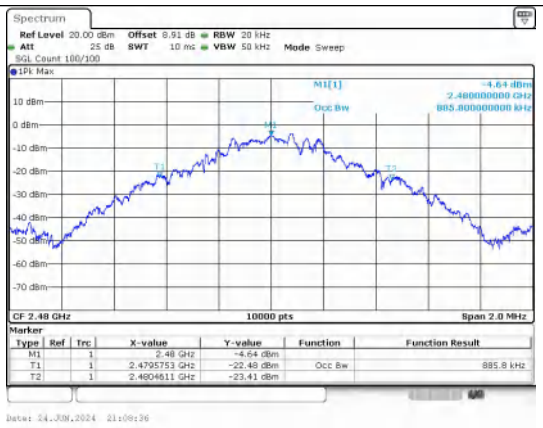
π/4DQPSK_2-DH5_Channel 0



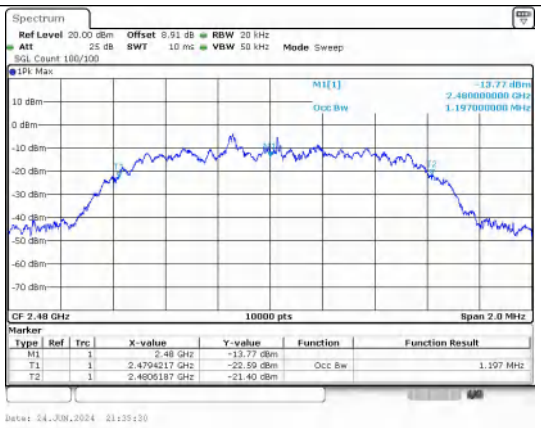
GFSK_DH5_Channel 39



π/4DQPSK_2-DH5_Channel 39



GFSK_DH5_Channel 78



π/4DQPSK_2-DH5_Channel 78

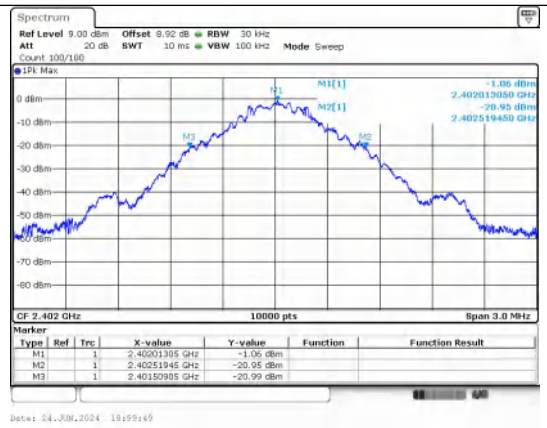
20dB Bandwidth

Test Result

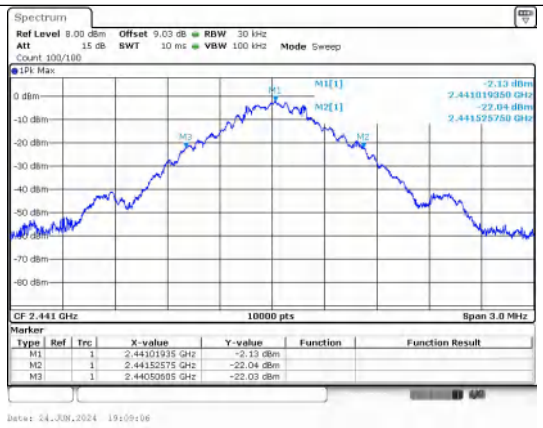
Left

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.010
	39	2441 MHz	1.020
	78	2480 MHz	1.010
π/4DQPSK	0	2402 MHz	1.310
	39	2441 MHz	1.310
	78	2480 MHz	1.310

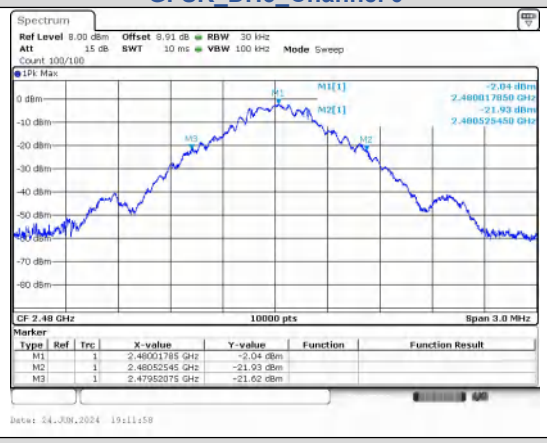
Test Graphs



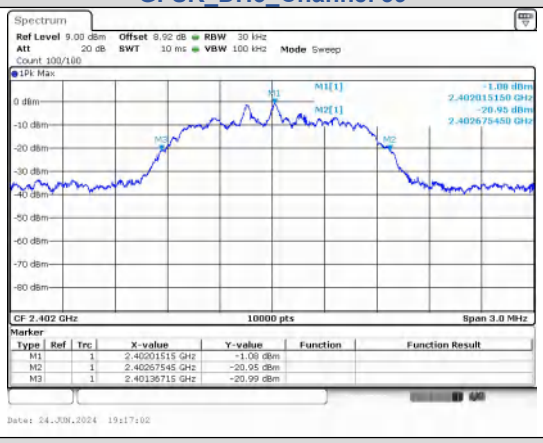
GFSK_DH5_Channel 0



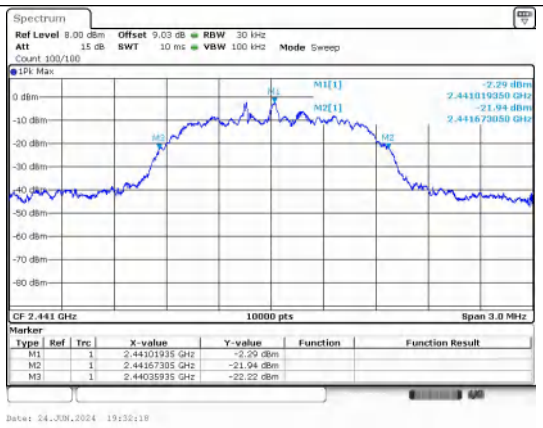
GFSK_DH5_Channel 39



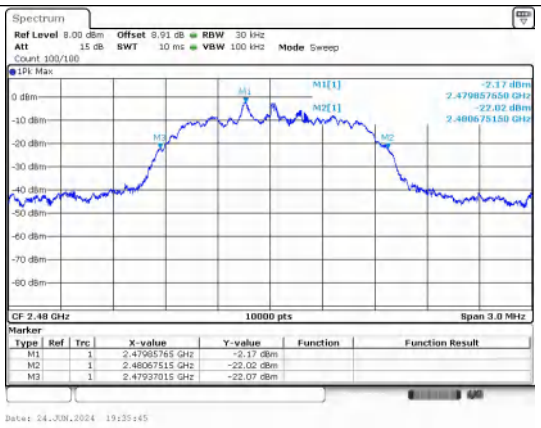
GFSK_DH5_Channel 78



π/4DQPSK_2-DH5_Channel 0



π/4DQPSK_2-DH5_Channel 39



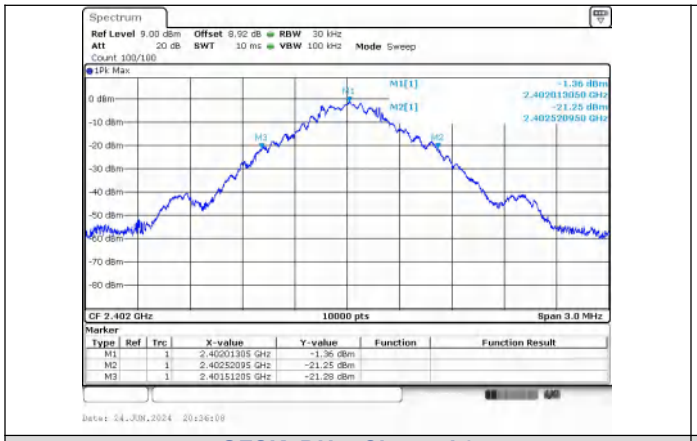
π/4DQPSK_2-DH5_Channel 78

Right

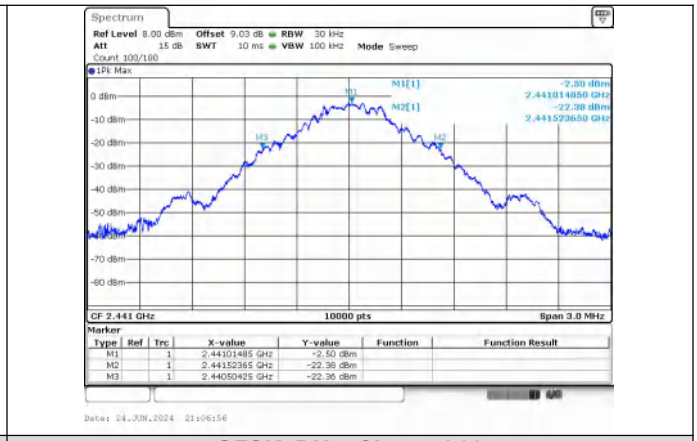
Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.010
	39	2441 MHz	1.020
	78	2480 MHz	1.010
π/4DQPSK	0	2402 MHz	1.320
	39	2441 MHz	1.310
	78	2480 MHz	1.310

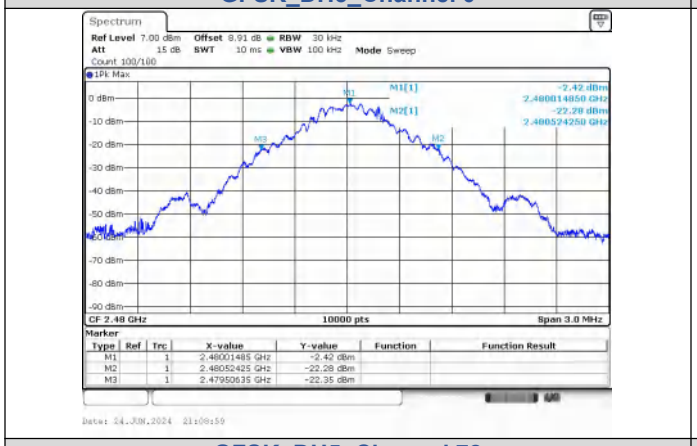
Test Graphs



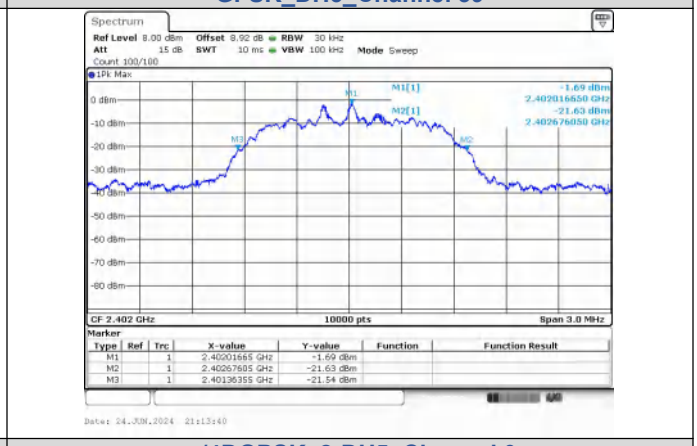
GFSK_DH5_Channel 0



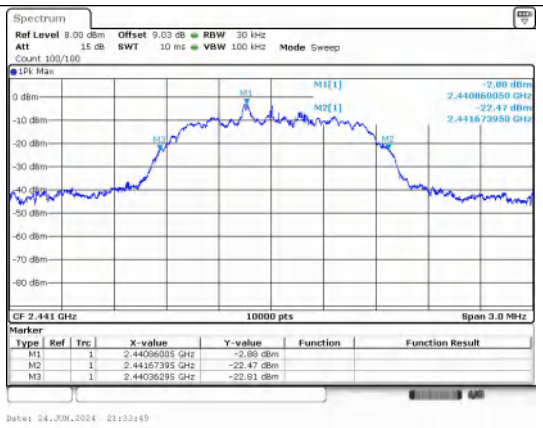
GFSK_DH5_Channel 39



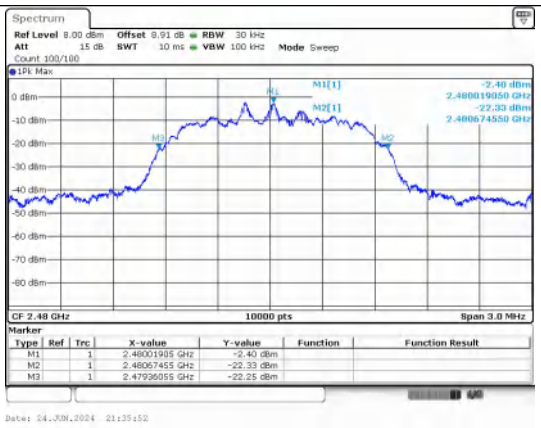
GFSK_DH5_Channel 78



π/4DQPSK_2-DH5_Channel 0



π/4DQPSK_2-DH5_Channel 39



π/4DQPSK_2-DH5_Channel 78

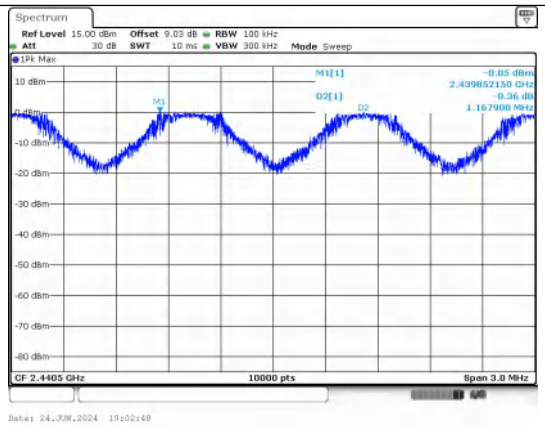
Carrier Frequencies Separation

Test Result

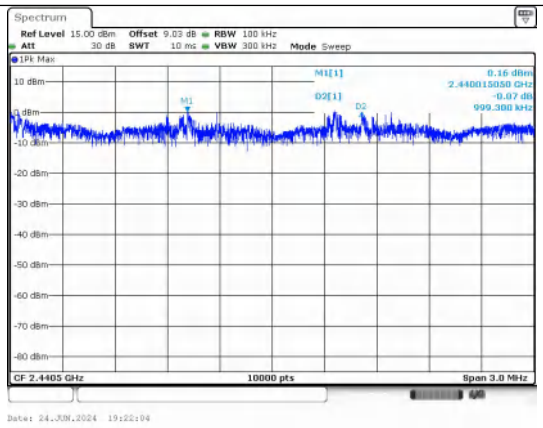
Left

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2439.8522	2441.0201	1.1679	1.020	PASS
π/4DQPSK	2-DH5	2440.015	2441.0143	0.9993	0.873	PASS

Test Graphs



GFSK



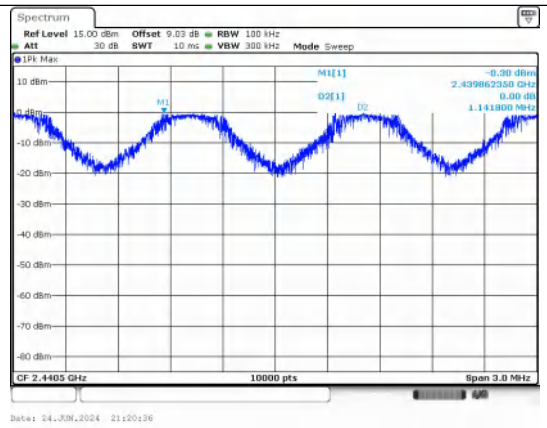
π/4DQPSK

Right

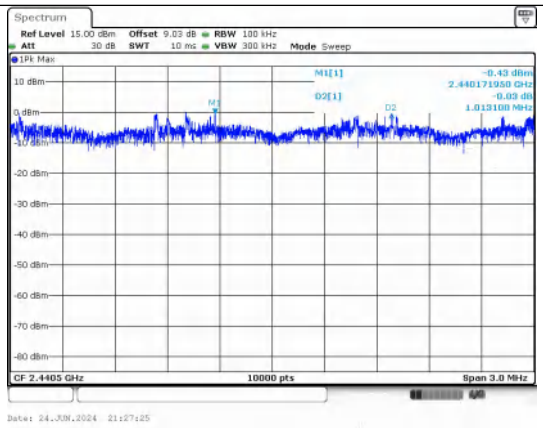
Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2439.8623	2441.0042	1.1418	1.02	PASS
π/4DQPSK	2-DH5	2440.1719	2441.1851	1.0131	0.88	PASS

Test Graphs



GFSK



π/4DQPSK

Conducted Out Of Band Emission

Test Result

Left

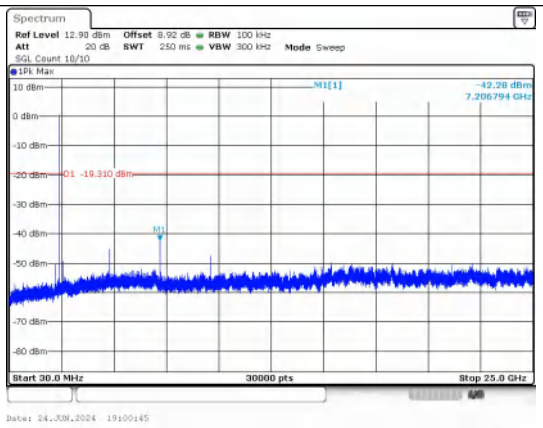
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2398.38	-51.605	-19.31	-32.295	PASS
			2400.00	-51.687	-19.31	-32.377	PASS
			7206.80	-42.284	-19.31	-22.974	PASS
		39	9763.72	-43.266	-19.79	-23.476	PASS
		78	2483.50	-51.617	-19.69	-31.927	PASS
			9920.20	-40.990	-19.69	-21.300	PASS
π/4DQPSK	2-DH5	0	2400.00	-47.050	-19.23	-27.820	PASS
			7205.96	-45.394	-19.23	-26.164	PASS
		39	9764.55	-42.335	-19.96	-22.375	PASS
		78	2483.50	-52.394	-19.87	-32.524	PASS
			9920.20	-40.858	-19.87	-20.988	PASS

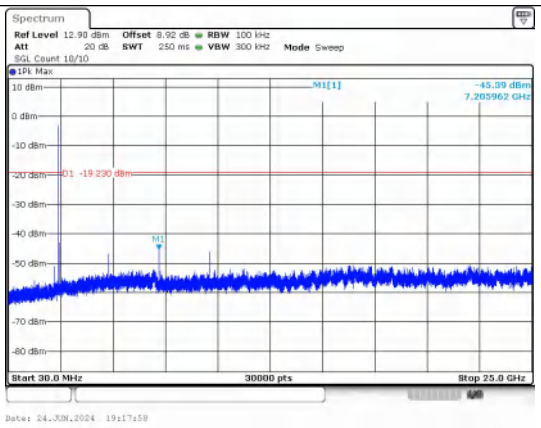
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2396.98	-50.587	-19.14	-31.447	PASS
			2400.00	-52.162	-19.14	-33.022	PASS
			2483.50	-52.042	-19.73	-32.312	PASS
			2397.45	-49.837	-19.01	-30.827	PASS
			2400.00	-52.507	-19.01	-33.497	PASS
			2483.50	-52.927	-19.99	-32.937	PASS
π/4DQPSK	2-DH5		2397.41	-50.413	-19.38	-31.033	PASS
			2400.00	-51.318	-19.38	-31.938	PASS
			2483.50	-52.765	-21.52	-31.245	PASS
			2398.68	-50.873	-19.36	-31.513	PASS
			2400.00	-52.170	-19.36	-32.810	PASS
			2483.50	-52.340	-19.83	-32.510	PASS

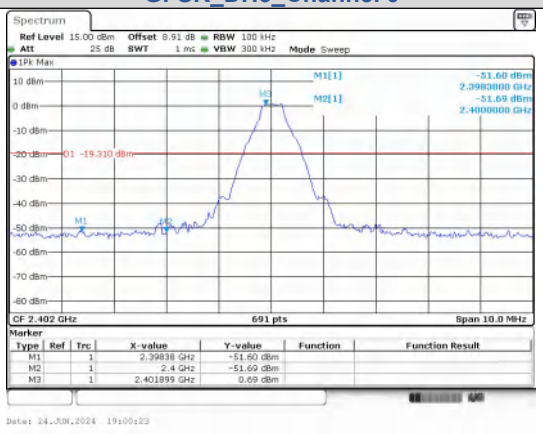
Test Graphs



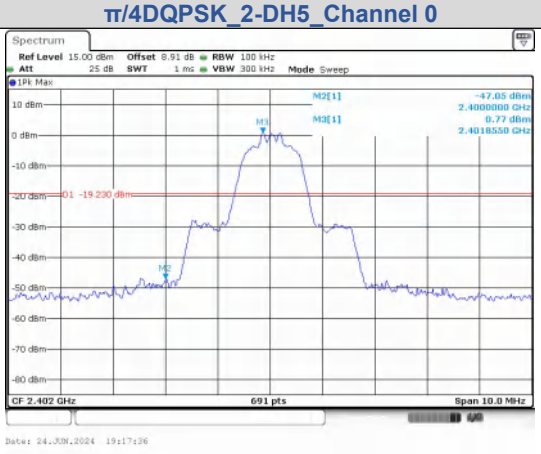
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



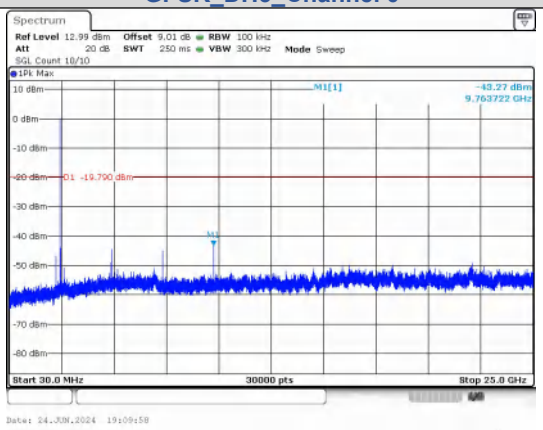
30.0 MHz - 25000.0 MHz
π/4DQPSK_2-DH5_Channel 0



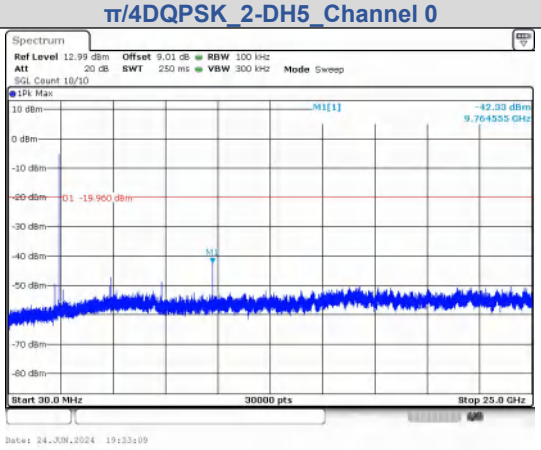
Out Of Band Emission
GFSK_DH5_Channel 0



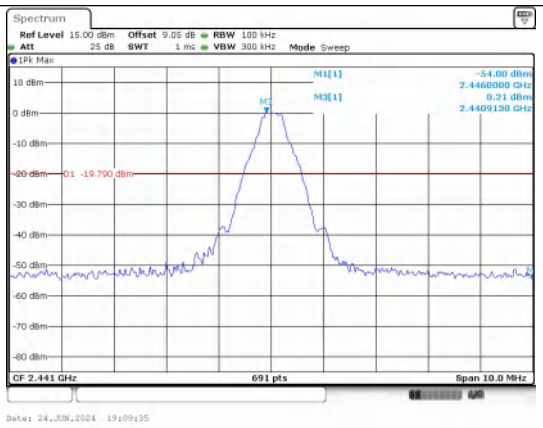
Out Of Band Emission
π/4DQPSK_2-DH5_Channel 0



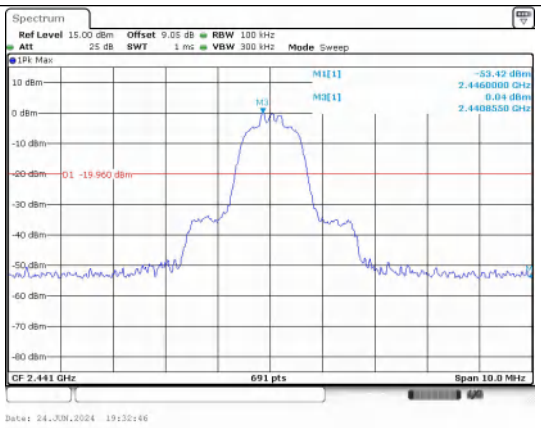
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



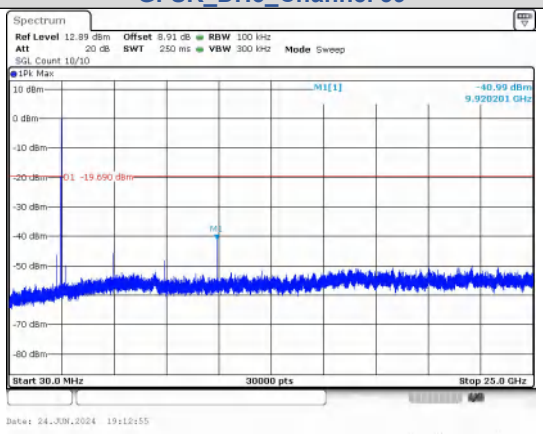
30.0 MHz - 25000.0 MHz
π/4DQPSK_2-DH5_Channel 39



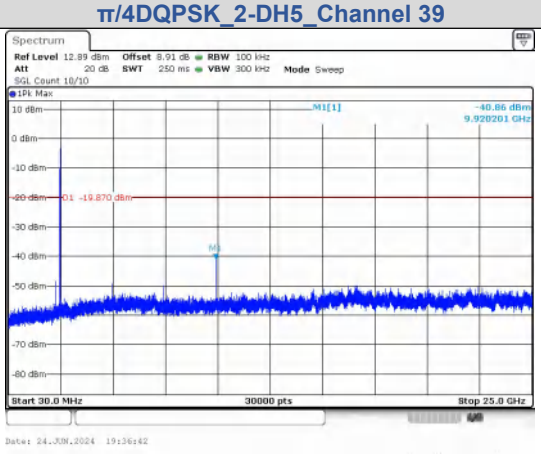
Out Of Band Emission
GFSK_DH5_Channel 39



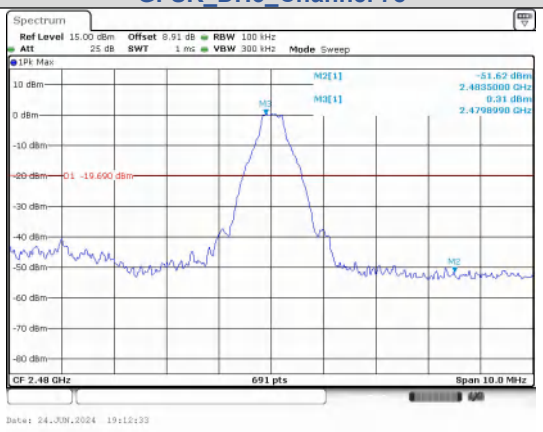
Out Of Band Emission
π/4DQPSK_2-DH5_Channel 39



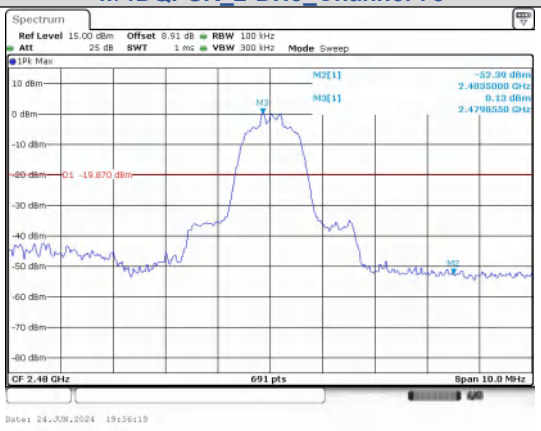
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



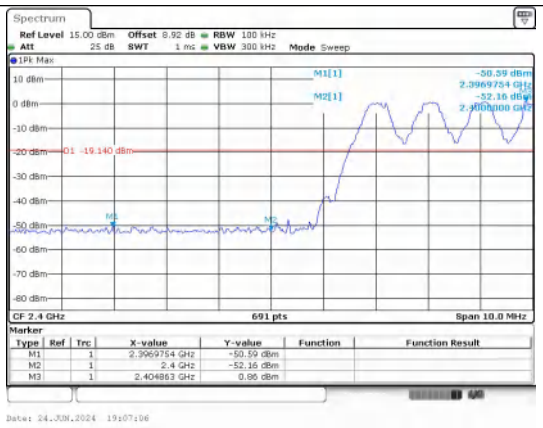
30.0 MHz - 25000.0 MHz
π/4DQPSK_2-DH5_Channel 78



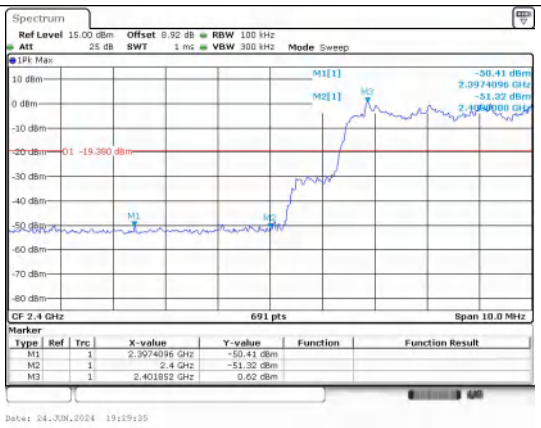
Out Of Band Emission
GFSK_DH5_Channel 78



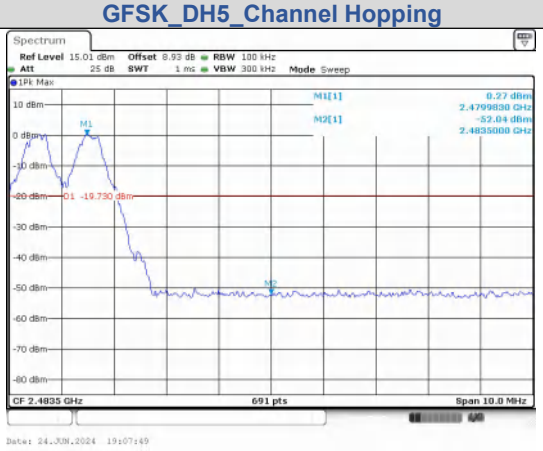
Out Of Band Emission
π/4DQPSK_2-DH5_Channel 78



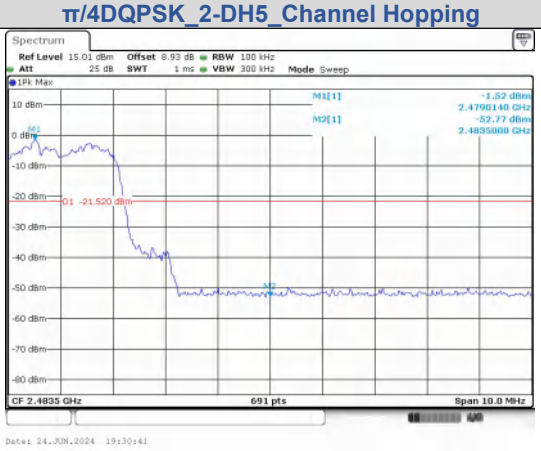
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



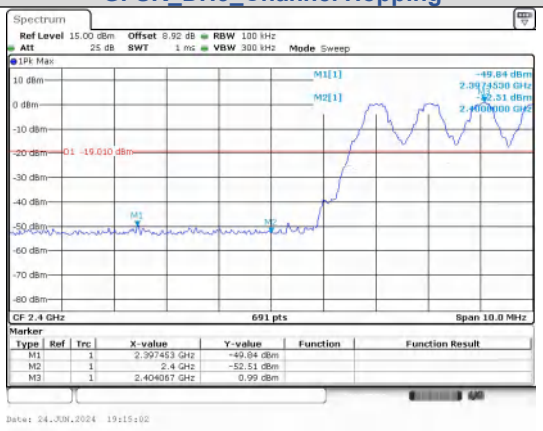
Out Of Band Emission(Left)
π/4DQPSK_2-DH5_Channel Hopping



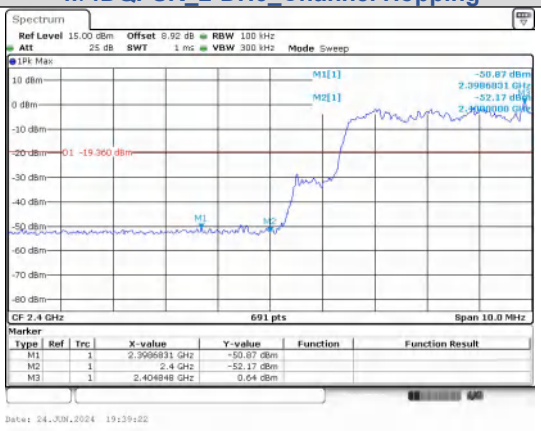
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



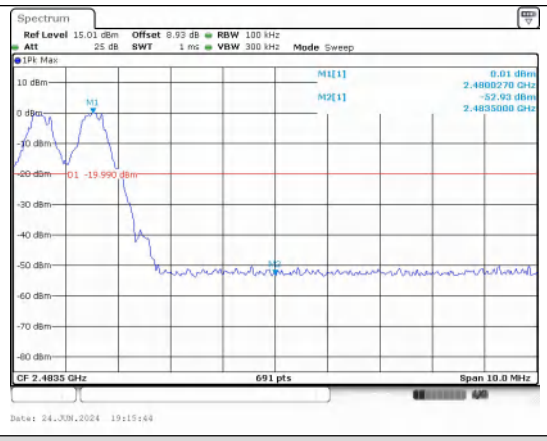
Out Of Band Emission(Right)
π/4DQPSK_2-DH5_Channel Hopping



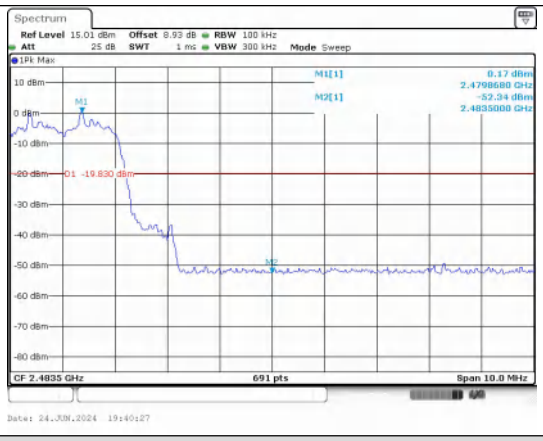
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



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



Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



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

Right

Test Result

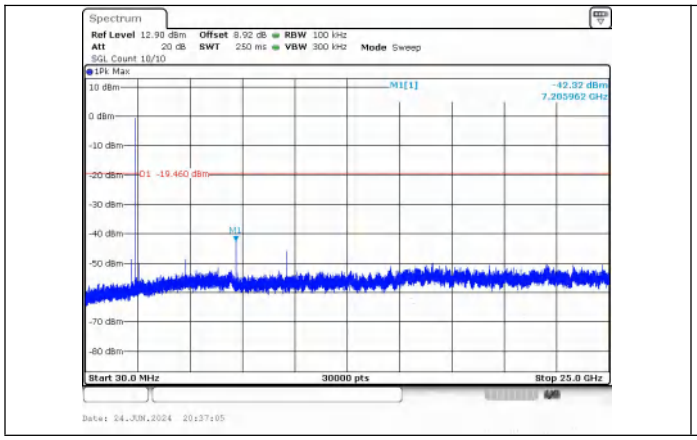
Non-Hopping

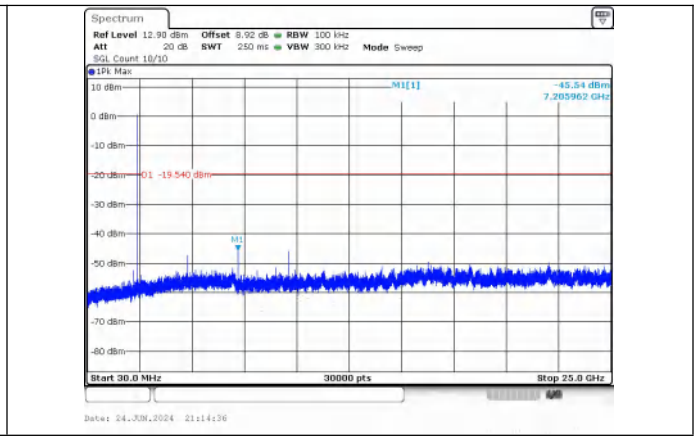
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-49.317	-19.46	-29.857	PASS
			7205.96	-42.318	-19.46	-22.858	PASS
		39	9763.72	-42.372	-20.19	-22.182	PASS
		78	2483.50	-50.717	-20.07	-30.647	PASS
			9920.20	-41.627	-20.07	-21.557	PASS
π/4DQPSK	2-DH5	0	2400.00	-48.922	-19.54	-29.382	PASS
			7205.96	-45.544	-19.54	-26.004	PASS
		39	9763.72	-43.220	-20.22	-23.000	PASS
		78	2483.50	-52.075	-20.06	-32.015	PASS
			9920.20	-41.067	-20.06	-21.007	PASS

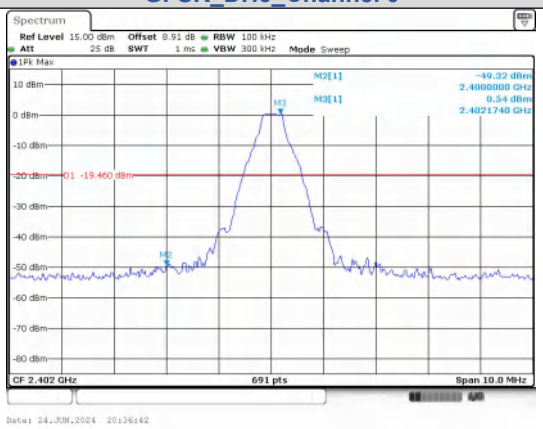
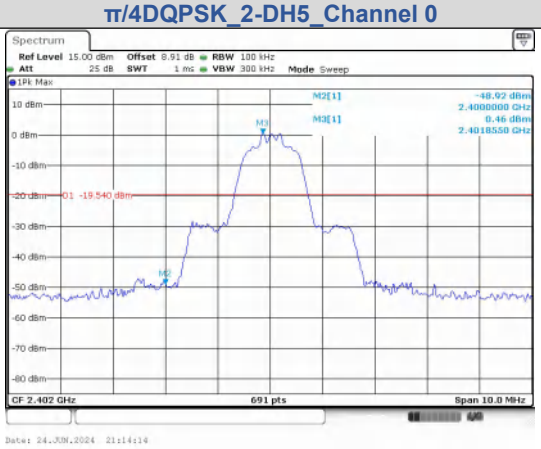
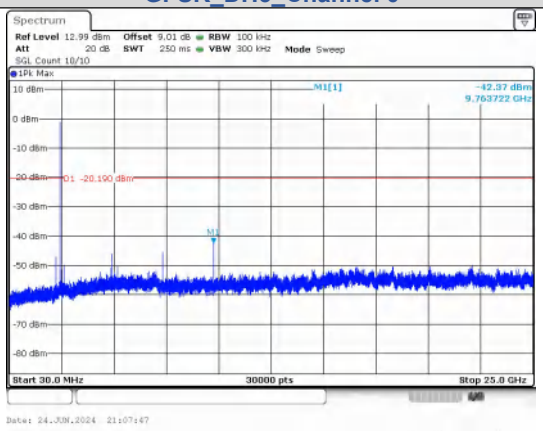
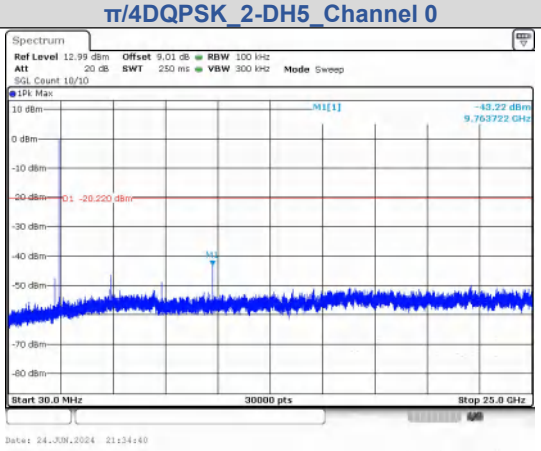
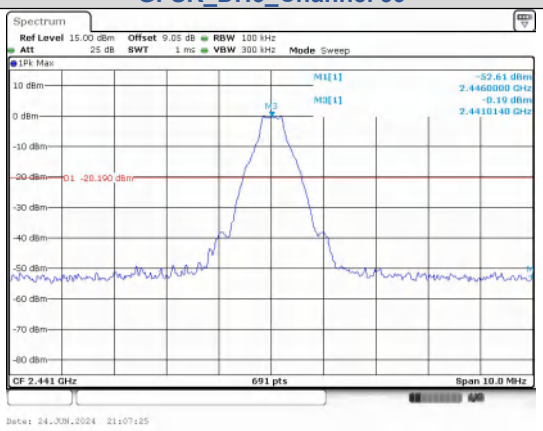
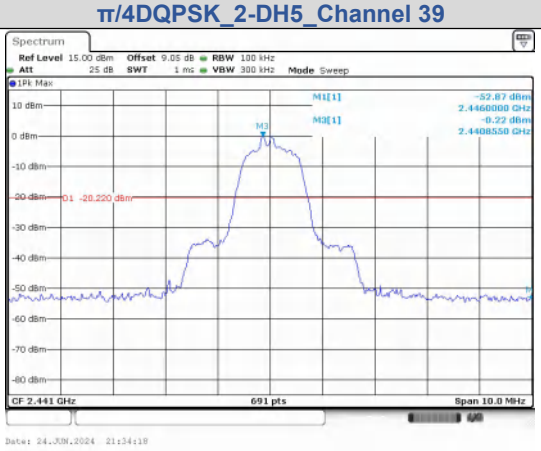
Hopping

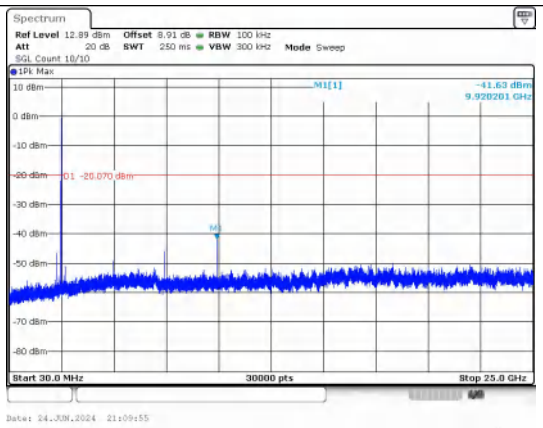
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2398.97	-50.879	-19.56	-31.319	PASS
			2400.00	-52.004	-19.56	-32.444	PASS
			2483.50	-51.990	-20.15	-31.840	PASS
			2395.53	-50.675	-19.33	-31.345	PASS
			2400.00	-52.804	-19.33	-33.474	PASS
			2483.50	-51.370	-20.18	-31.190	PASS
π/4DQPSK	2-DH5		2397.19	-50.651	-19.4	-31.251	PASS
			2400.00	-51.422	-19.4	-32.022	PASS
			2483.50	-52.034	-20.18	-31.854	PASS
			2400.00	-46.627	-19.31	-27.317	PASS
			2483.50	-51.242	-20.11	-31.132	PASS

Test Graphs

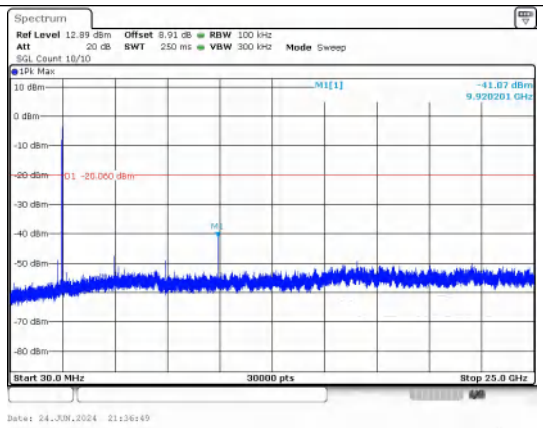




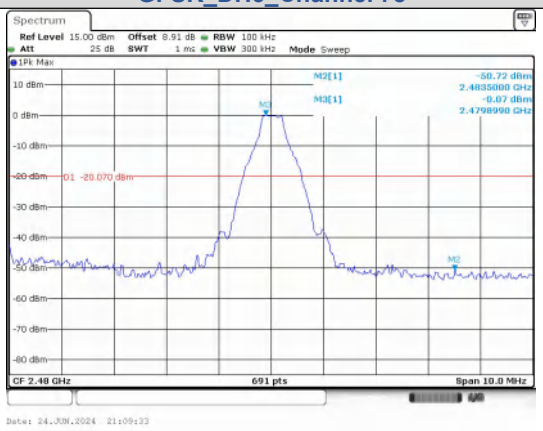
30.0 MHz - 25000.0 MHz GFSK_DH5_Channel 0	30.0 MHz - 25000.0 MHz π/4DQPSK_2-DH5_Channel 0
	
Out Of Band Emission GFSK_DH5_Channel 0	Out Of Band Emission π/4DQPSK_2-DH5_Channel 0
	
30.0 MHz - 25000.0 MHz GFSK_DH5_Channel 39	30.0 MHz - 25000.0 MHz π/4DQPSK_2-DH5_Channel 39
	
Out Of Band Emission GFSK_DH5_Channel 39	Out Of Band Emission π/4DQPSK_2-DH5_Channel 39



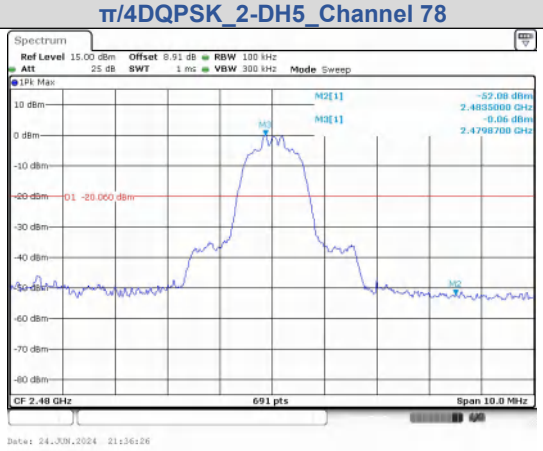
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



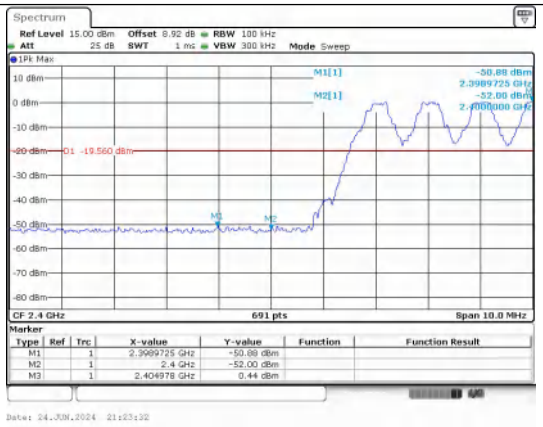
30.0 MHz - 25000.0 MHz
π/4DQPSK_2-DH5_Channel 78



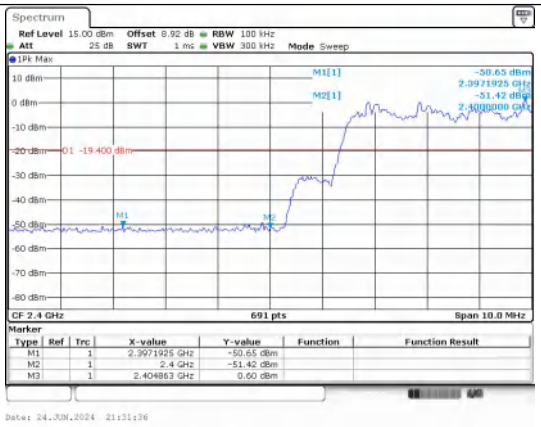
Out Of Band Emission
GFSK_DH5_Channel 78



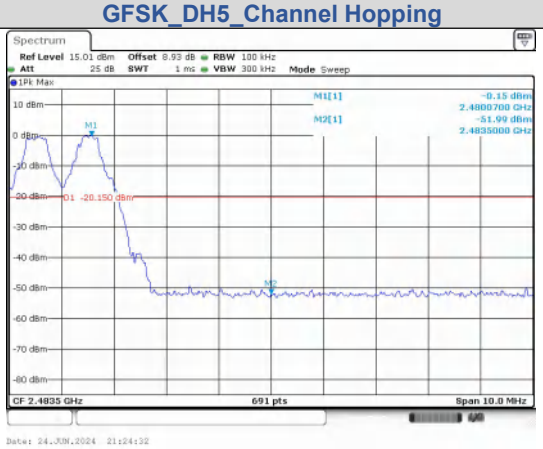
Out Of Band Emission
π/4DQPSK_2-DH5_Channel 78



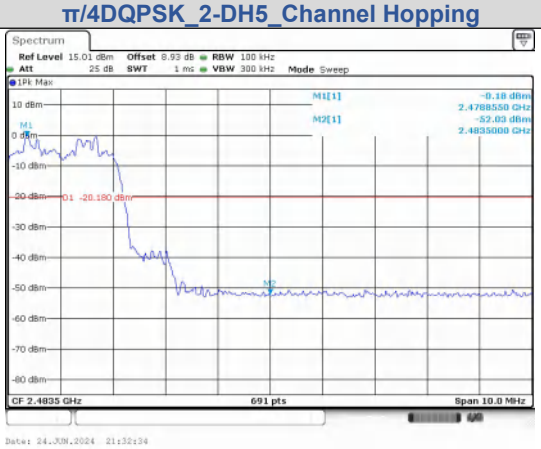
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



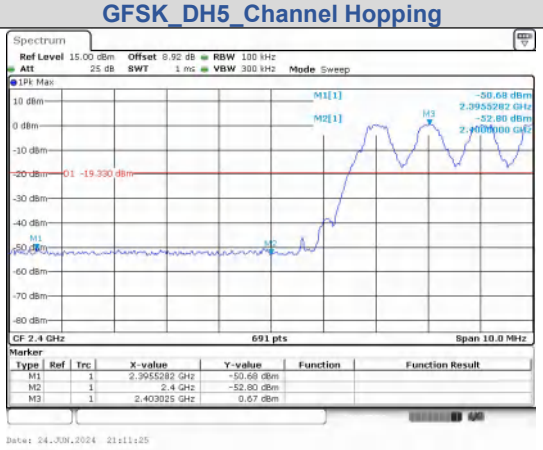
Out Of Band Emission(Left)
π/4DQPSK_2-DH5_Channel Hopping



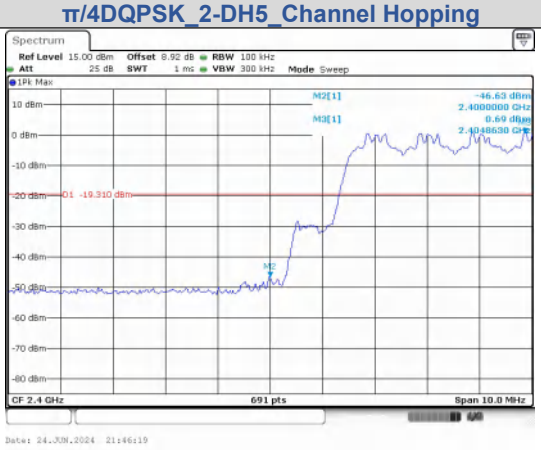
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



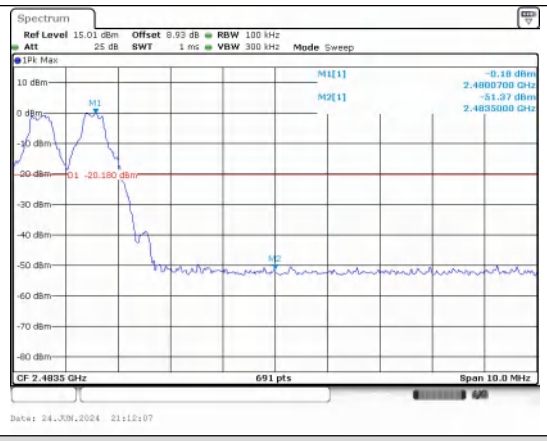
Out Of Band Emission(Right)
π/4DQPSK_2-DH5_Channel Hopping



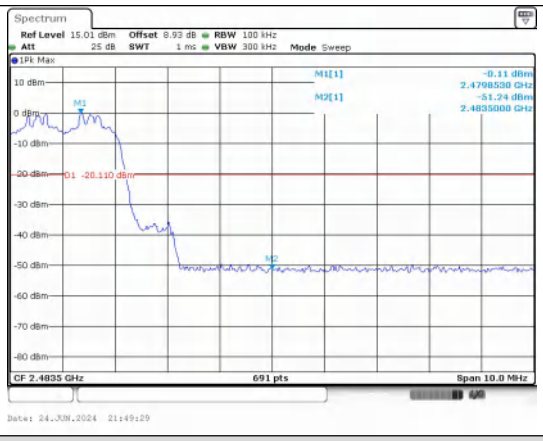
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



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



Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



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

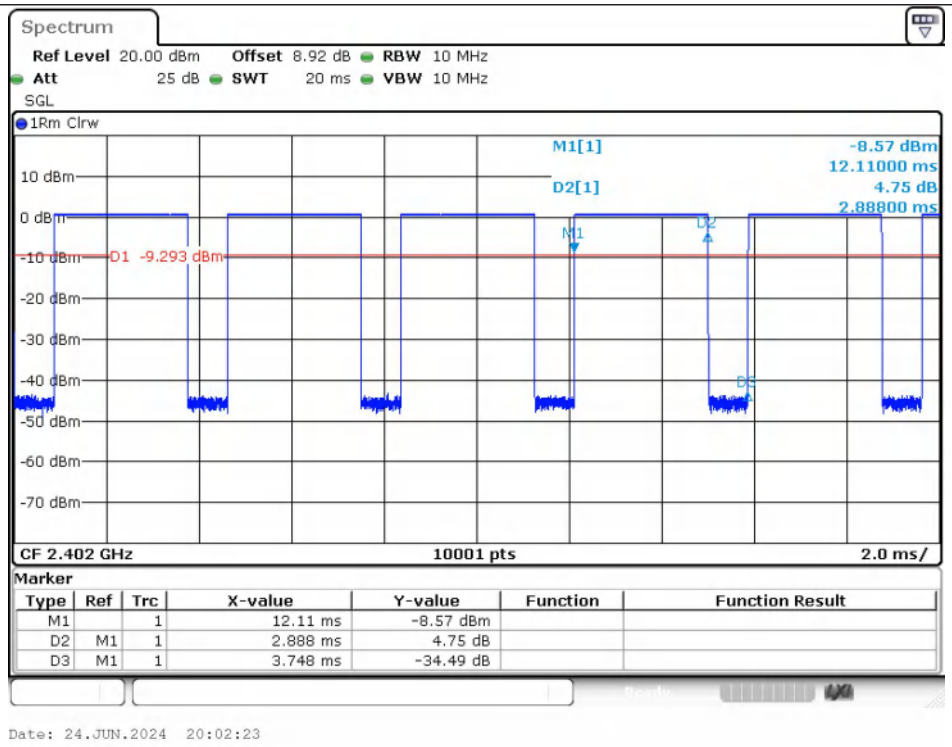
Duty Cycle

Left

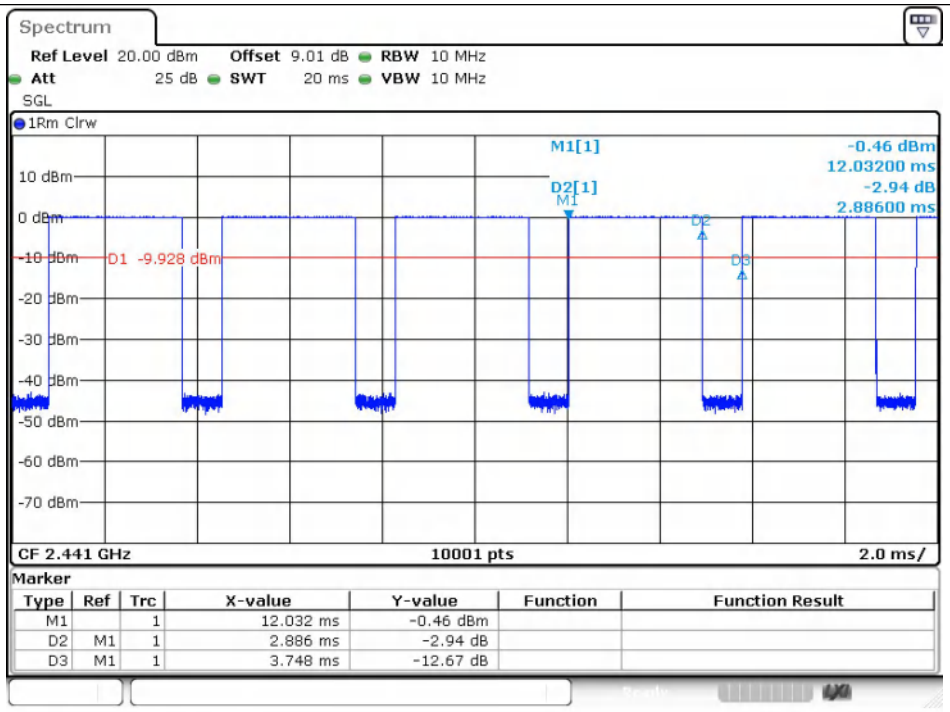
Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.888	3.748	77.05	0.7705	1.1323	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
π/4DQPSK	2-DH5	0	2.890	3.748	77.11	0.7711	1.1289	0.35
		39	2.892	3.748	77.16	0.7716	1.1261	0.35
		78	2.892	3.748	77.16	0.7716	1.1261	0.35

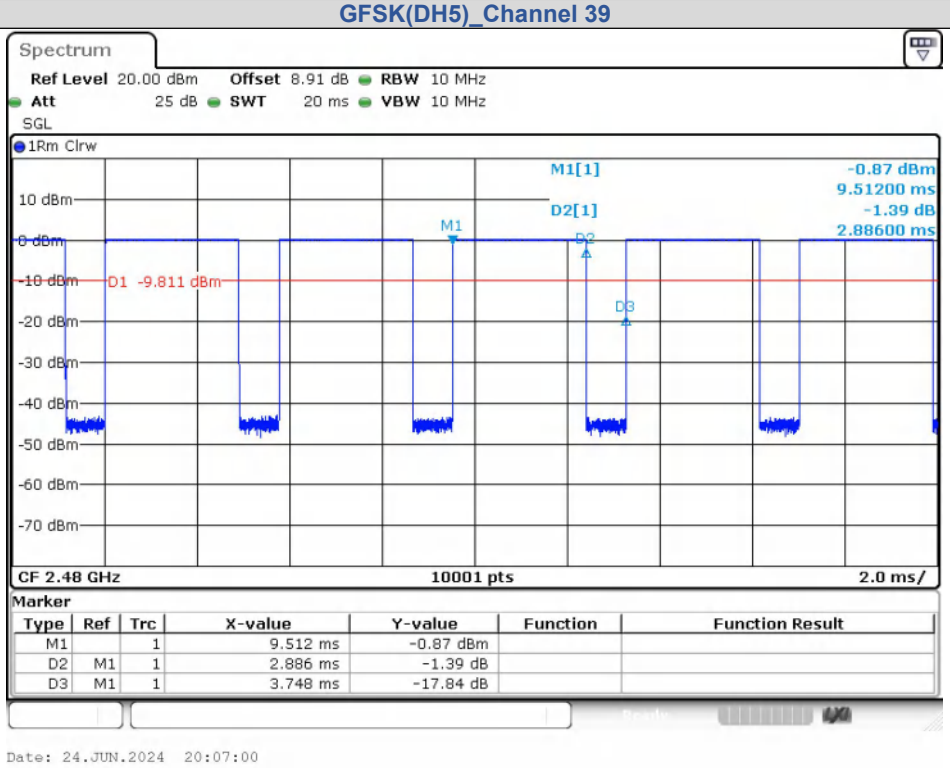
Test Graphs



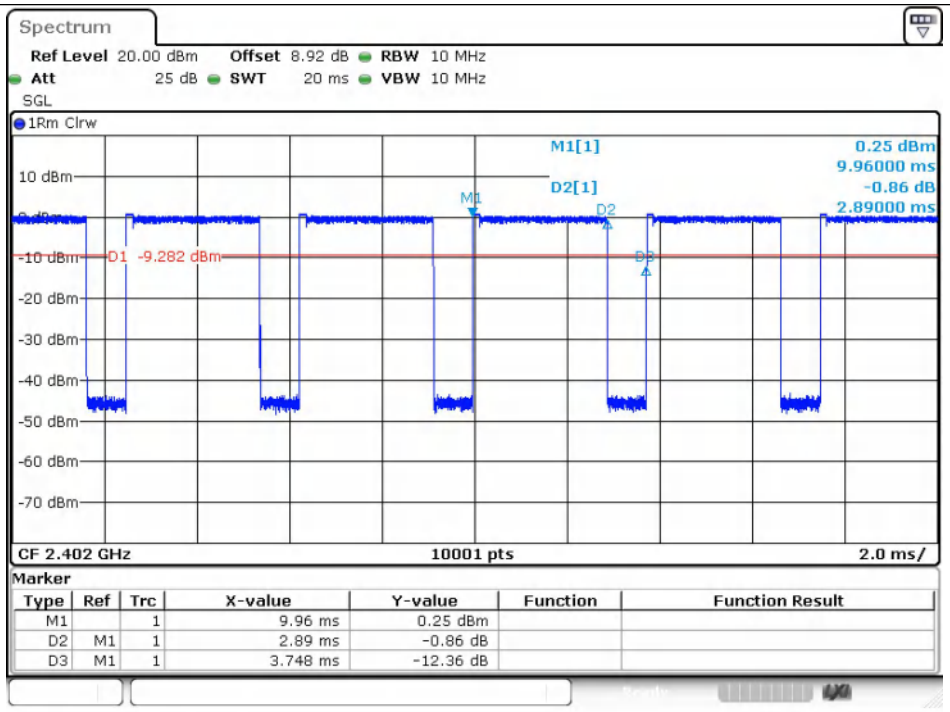
GFSK(DH5)_Channel 0



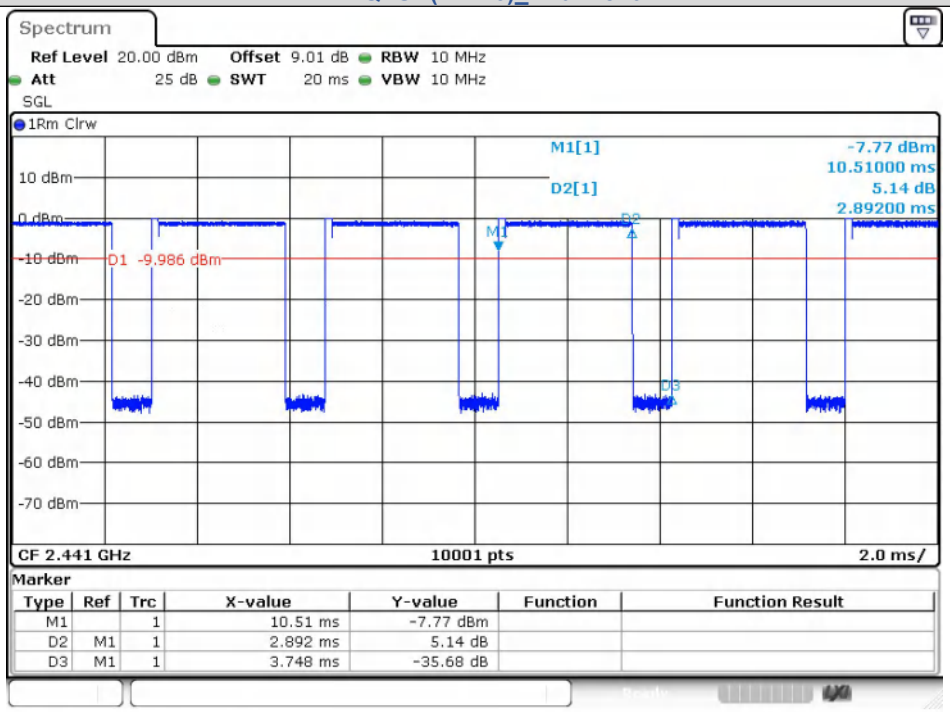
GFSK(DH5)_Channel 39



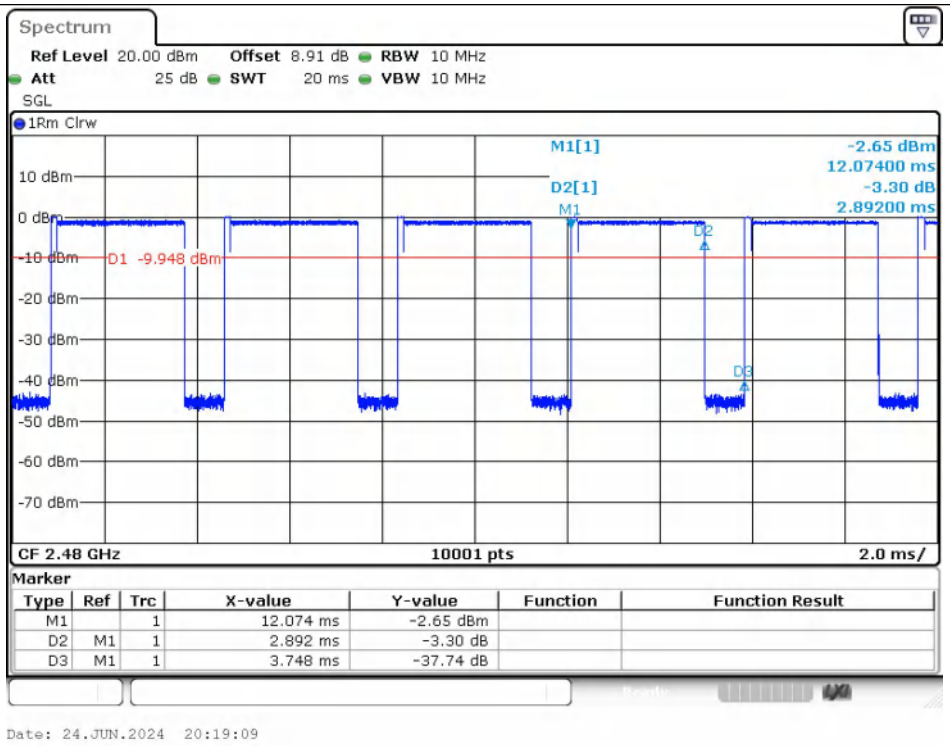
GFSK(DH5)_Channel 78



π/4DQPSK(2-DH5)_Channel 0



π/4DQPSK(2-DH5)_Channel 39



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	12.074 ms	-2.65 dBm		
D2	M1	1	2.892 ms	-3.30 dB		
D3	M1	1	3.748 ms	-37.74 dB		

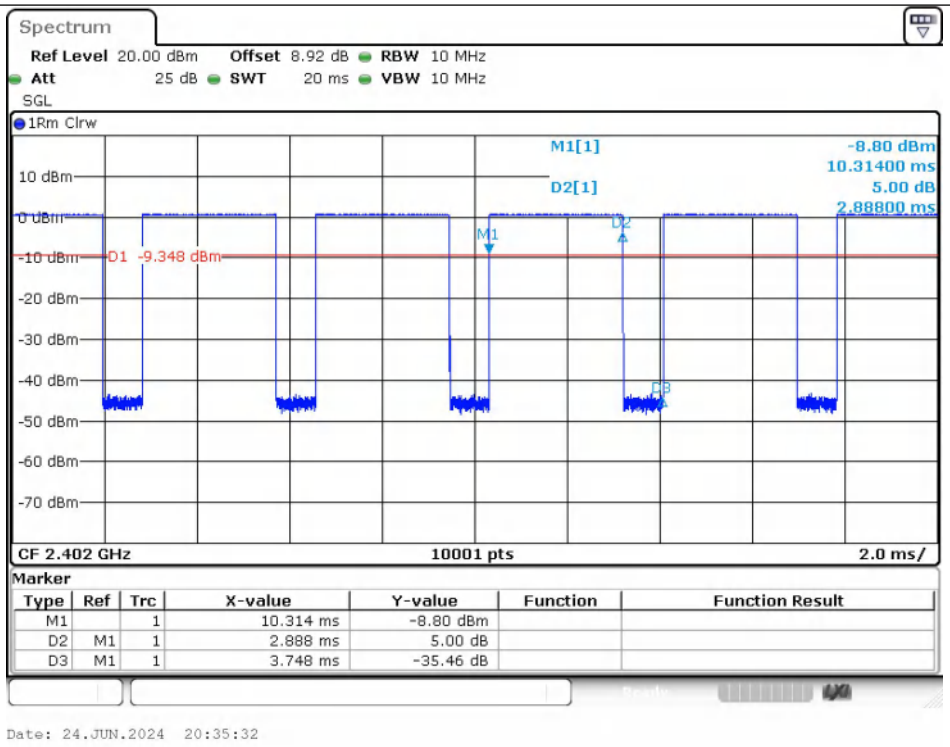
π/4DQPSK(2-DH5)_Channel 78

Right

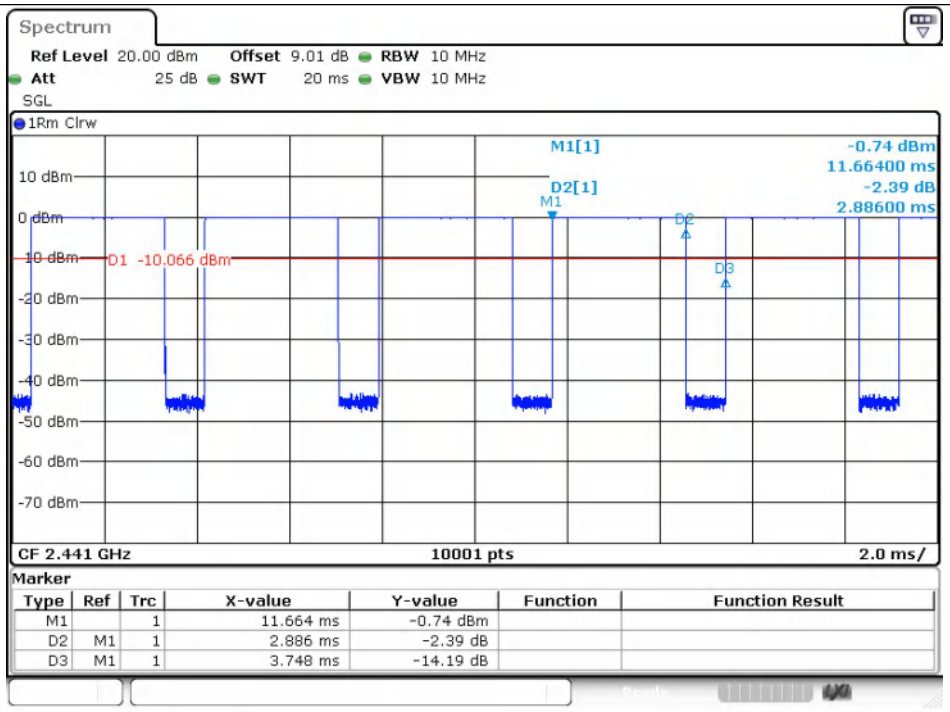
Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.888	3.748	77.05	0.7705	1.1323	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
π/4DQPSK	2-DH5	0	2.890	3.748	77.11	0.7711	1.1289	0.35
		39	2.892	3.748	77.16	0.7716	1.1261	0.35
		78	2.892	3.748	77.16	0.7716	1.1261	0.35

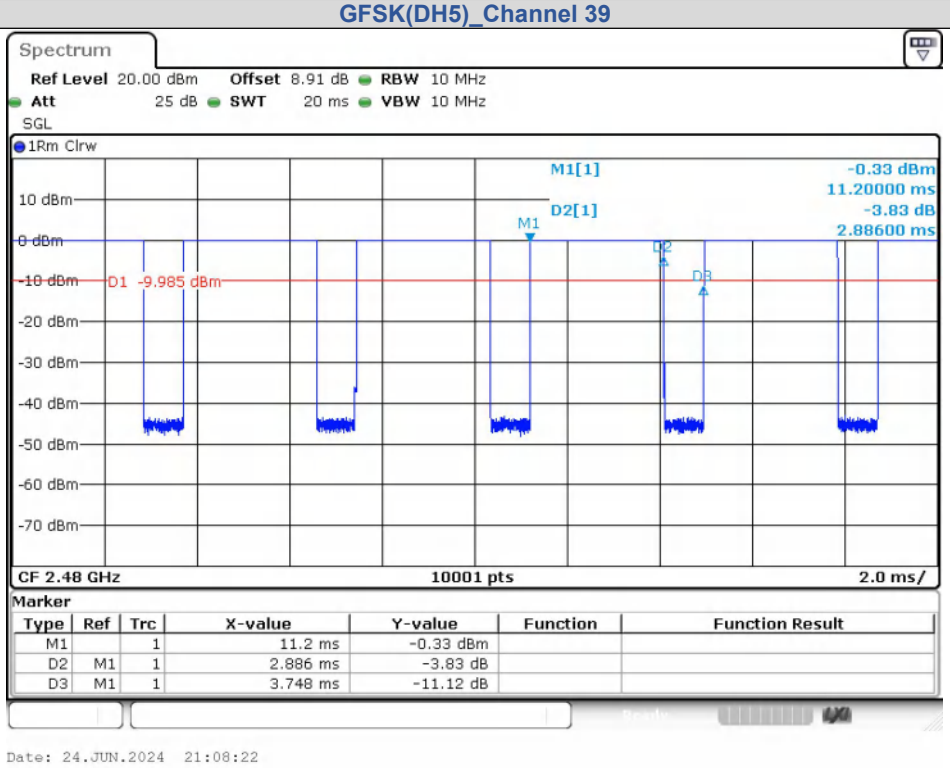
Test Graphs



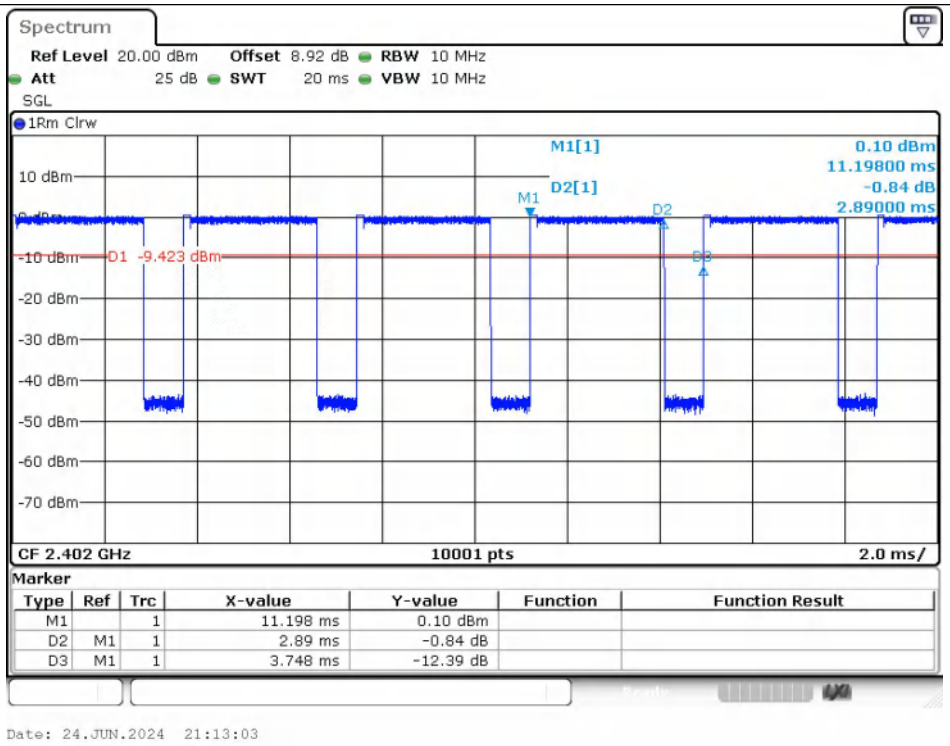
GFSK(DH5)_Channel 0



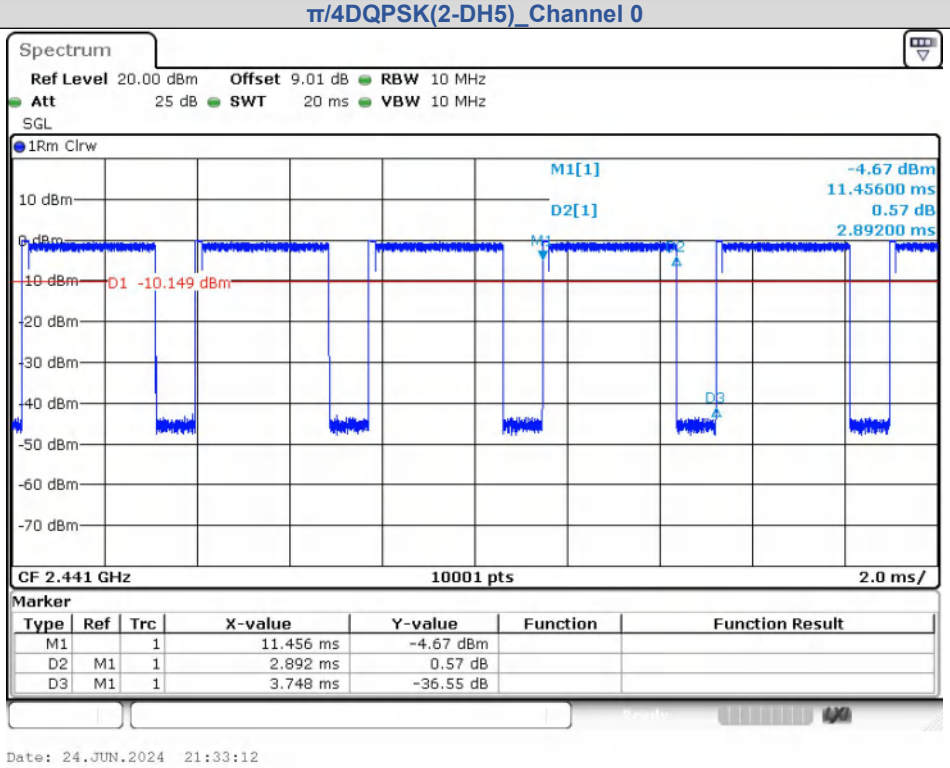
GFSK(DH5)_Channel 39



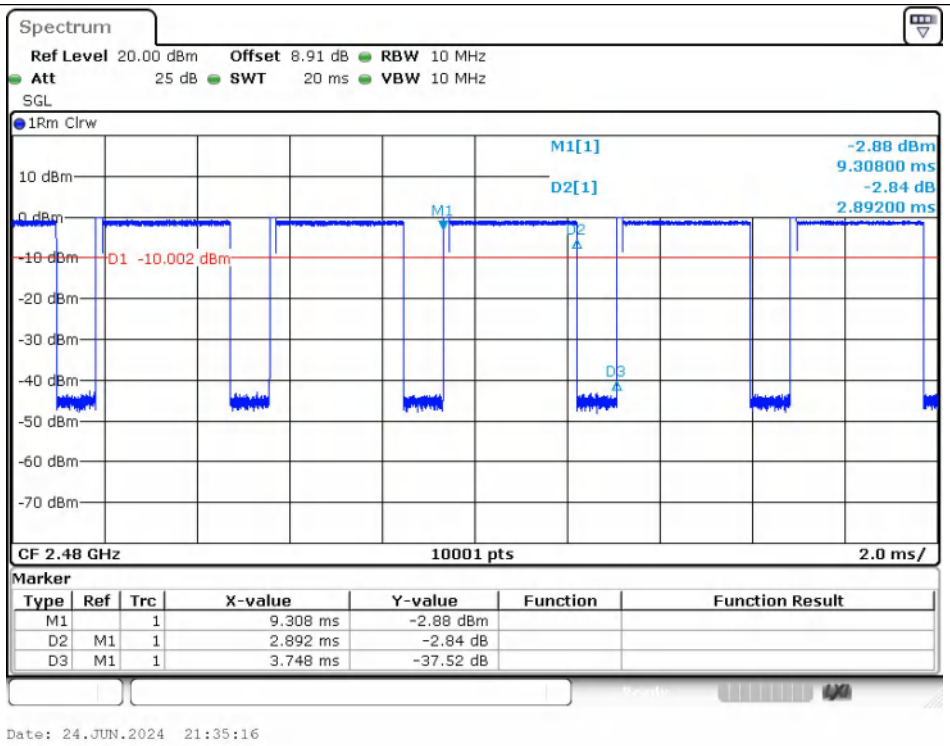
GFSK(DH5)_Channel 78



π/4DQPSK(2-DH5)_Channel 0



π/4DQPSK(2-DH5)_Channel 39



π/4DQPSK(2-DH5)_Channel 78

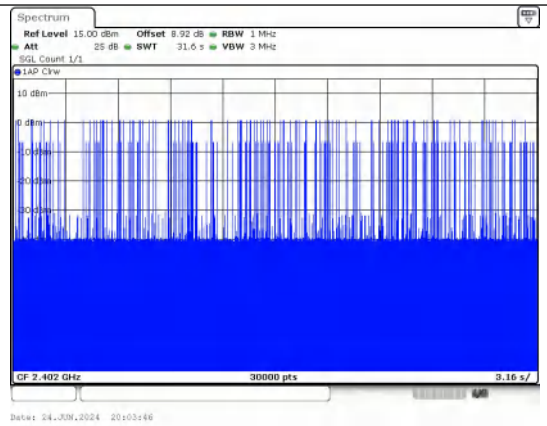
Dwell Time

Left

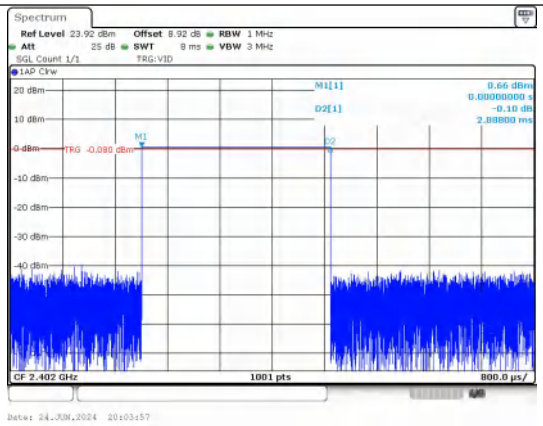
Test Result

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	103	297.46	< 400	PASS
π/4DQPSK	2-DH5		2.896	101	292.5		PASS

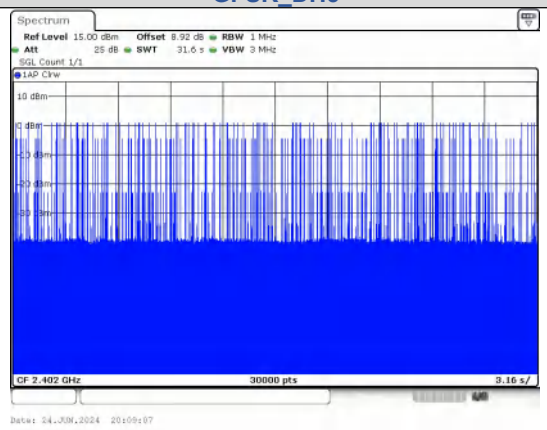
Test Graphs



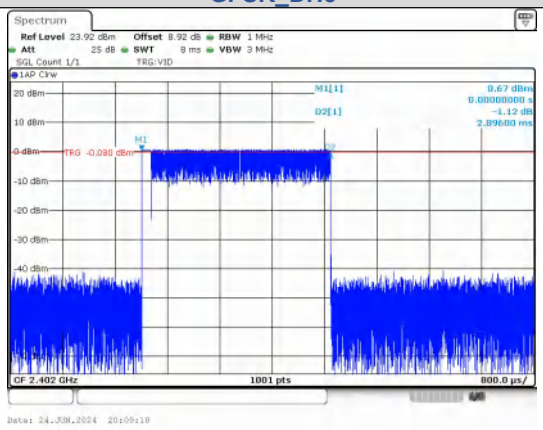
Number of Pulses in 31.6 seconds
GFSK_DH5



Pulse Width
GFSK_DH5



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



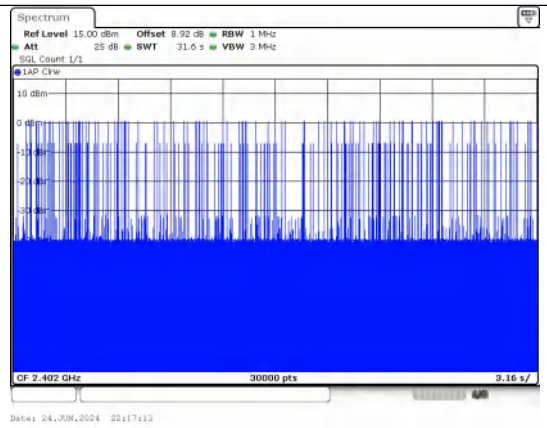
Pulse Width
π/4DQPSK_2-DH5

Right

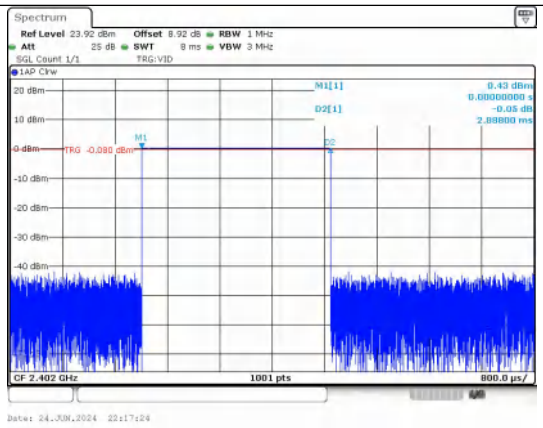
Test Result

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	103	297.46	< 400	PASS
π/4DQPSK	2-DH5		2.896	105	304.08		PASS

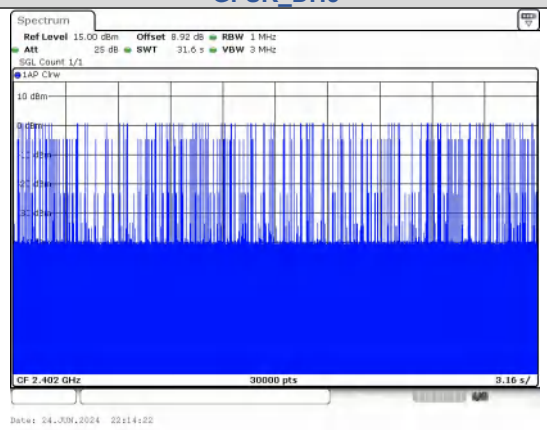
Test Graphs



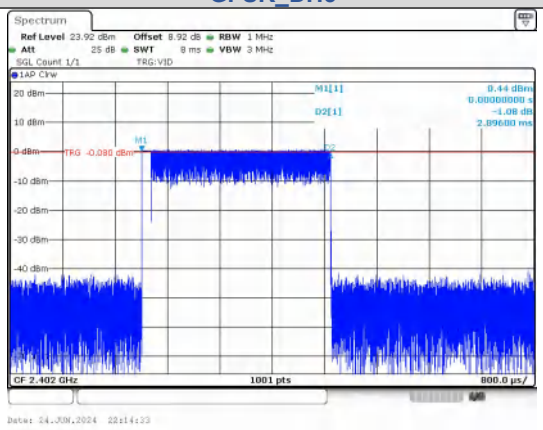
Number of Pulses in 31.6 seconds
GFSK_DH5



Pulse Width
GFSK_DH5



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



Pulse Width
π/4DQPSK_2-DH5

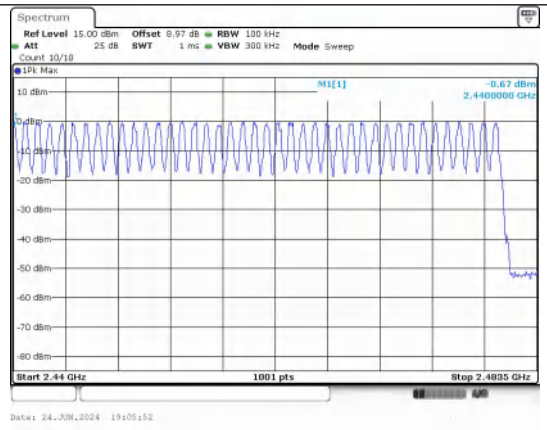
Number Of Hopping Channel

Left

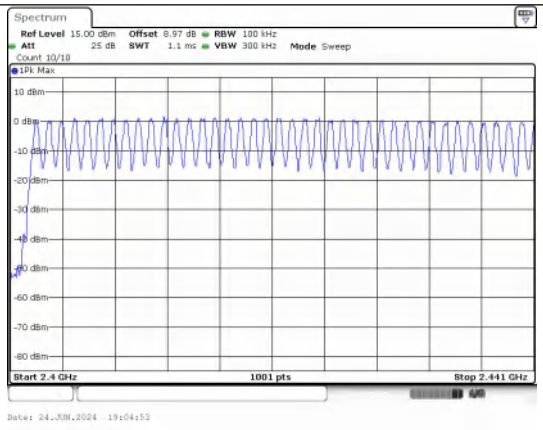
Test Result

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

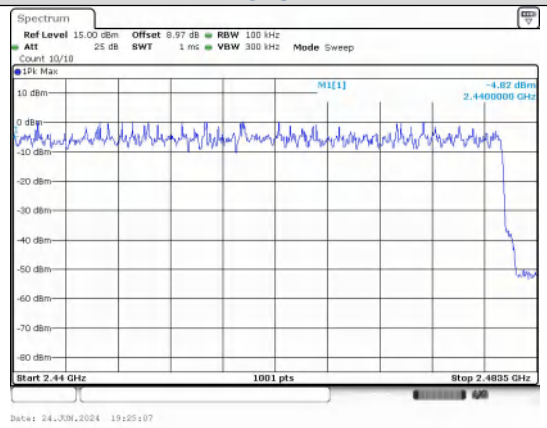
Test Graphs



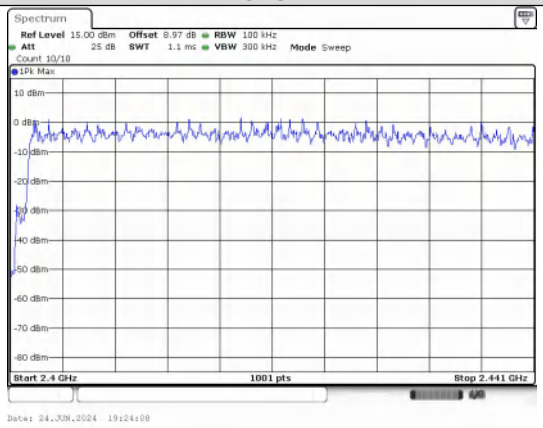
High End Spectrum Channel Hopping Plot
GFSK



Low End Spectrum Channel Hopping Plot
GFSK



High End Spectrum Channel Hopping Plot
π/4DQPSK



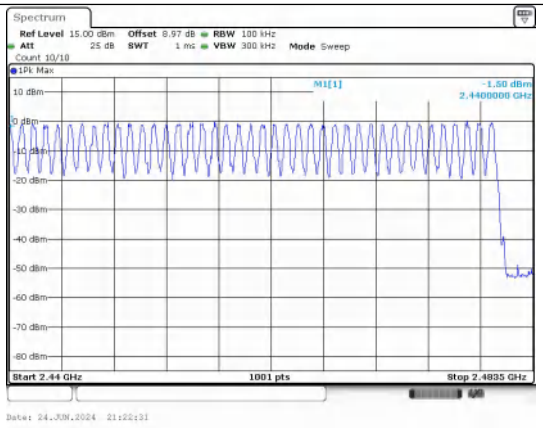
Low End Spectrum Channel Hopping Plot
π/4DQPSK

Right

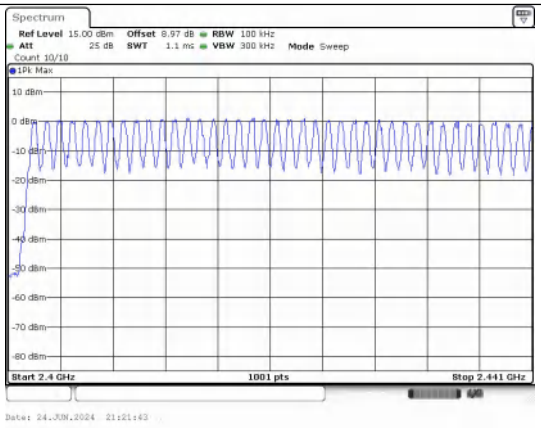
Test Result

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

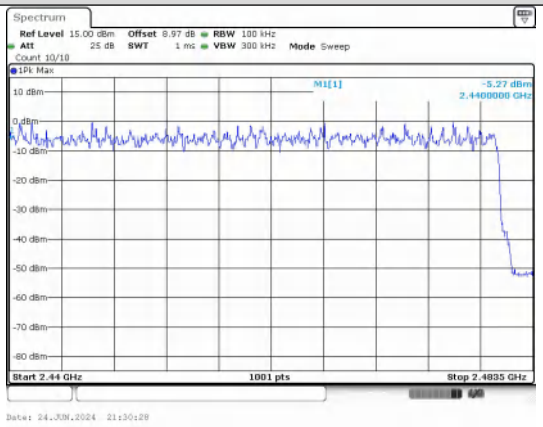
Test Graphs



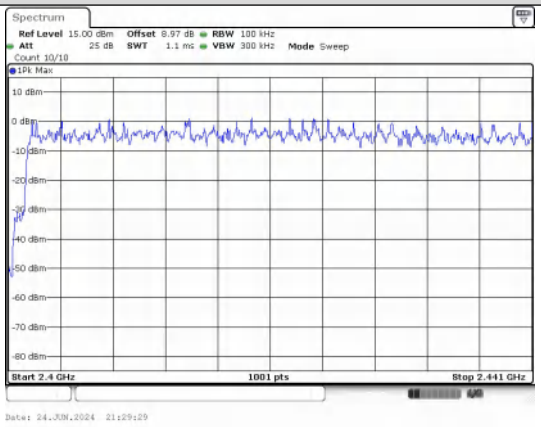
High End Spectrum Channel Hopping Plot
GFSK



Low End Spectrum Channel Hopping Plot
GFSK



High End Spectrum Channel Hopping Plot
π/4DQPSK



Low End Spectrum Channel Hopping Plot
π/4DQPSK