Appendix A

Report No.:	CISRR24082720001
FCC ID:	2BGWM-DUPODS-S200
Product Name:	Xiaodu Smart open earphones
Model No.:	DuPods S200
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

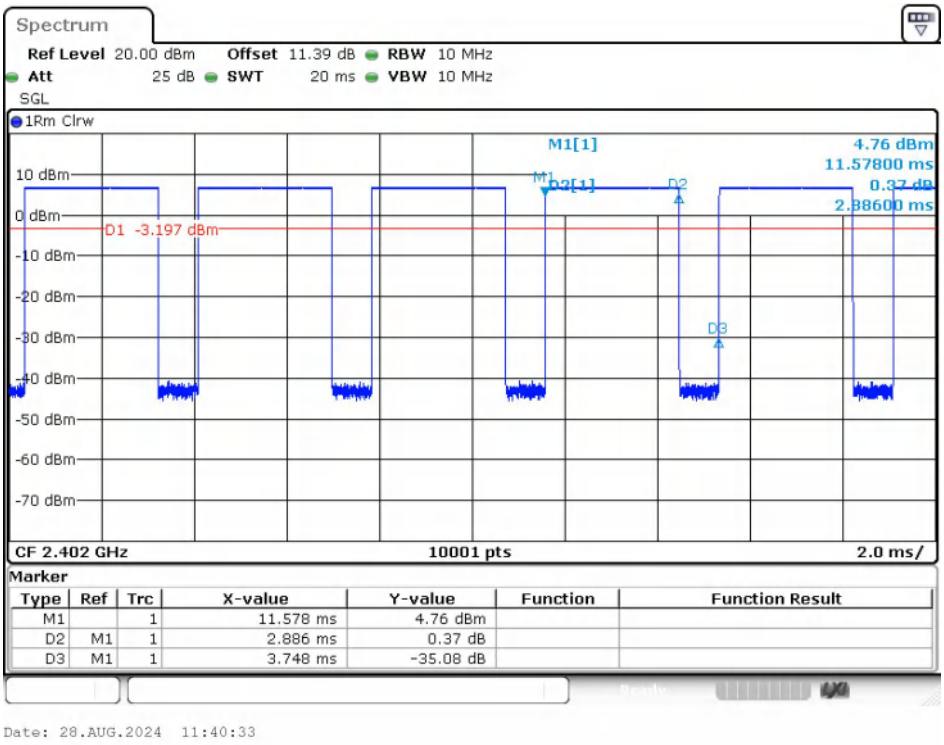
1) Duty Cycle

Right:

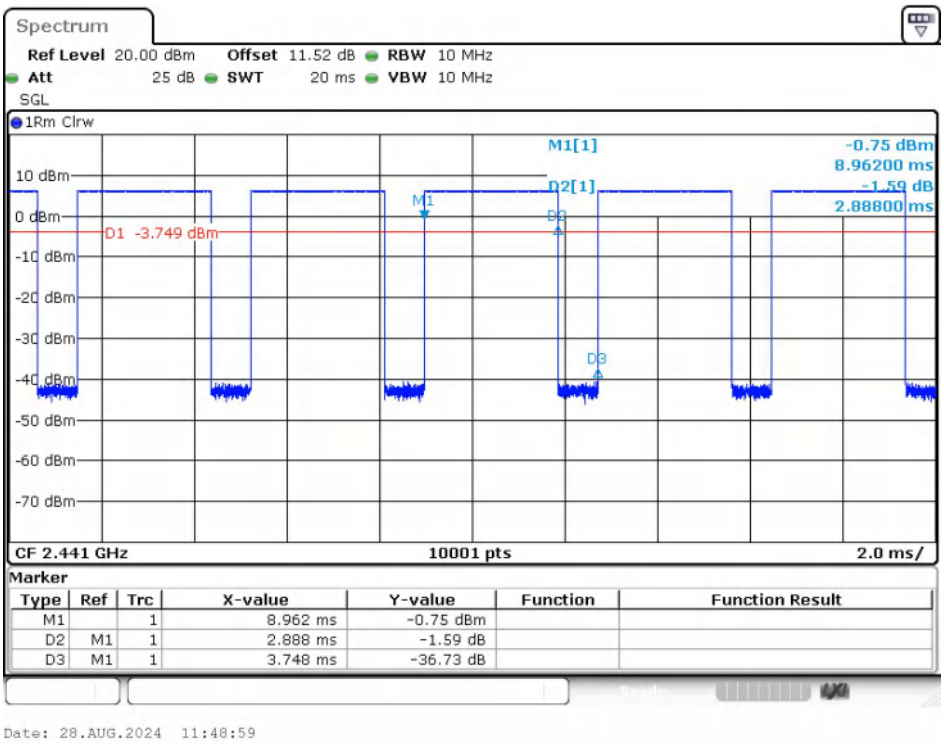
Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.886	3.748	77.00	0.7700	1.1351	0.35
		39	2.888	3.748	77.05	0.7705	1.1323	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

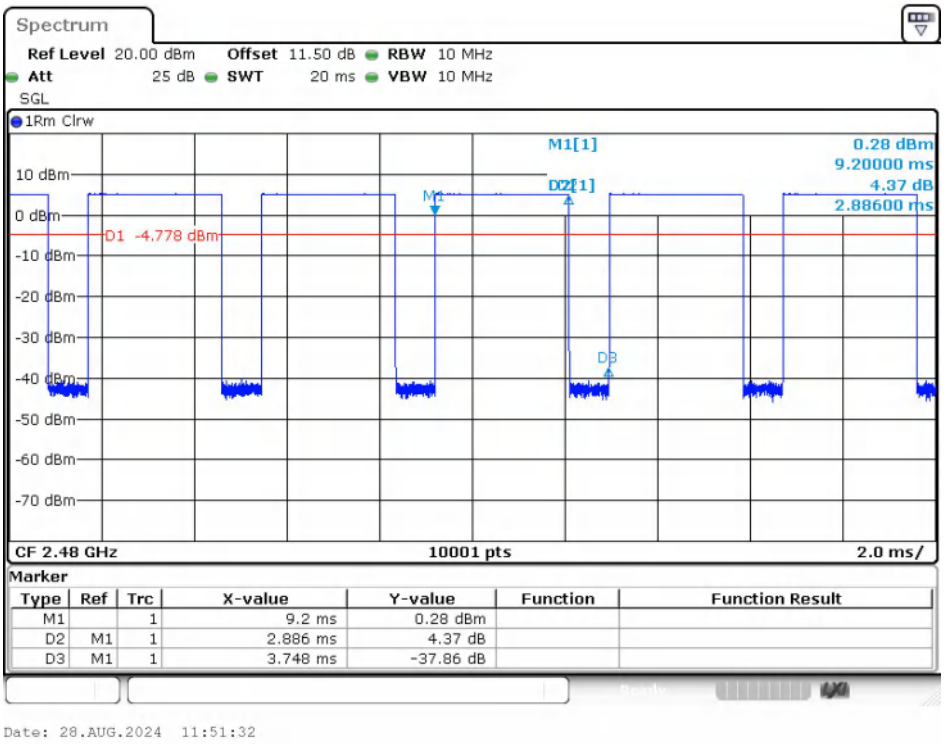
Test Graphs



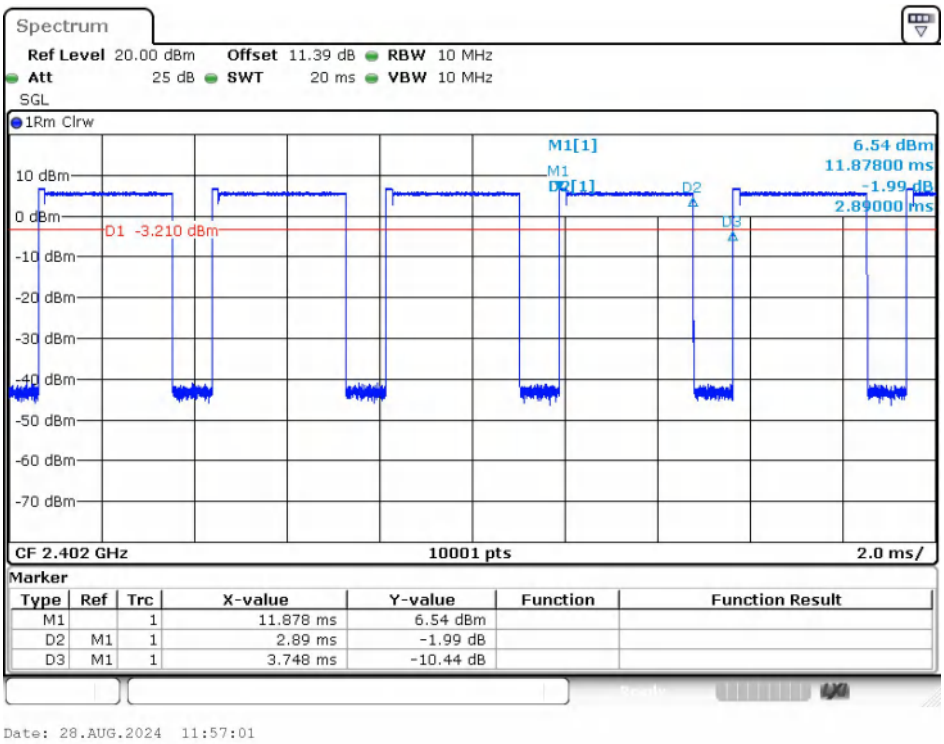
GFSK(DH5)_Channel 0



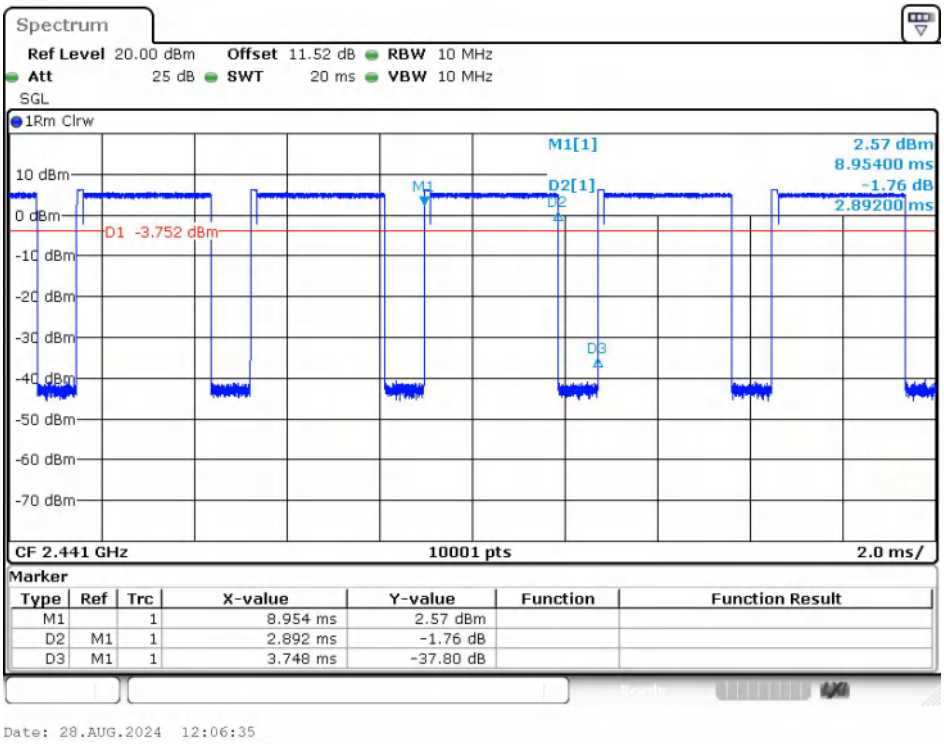
GFSK(DH5)_Channel 39



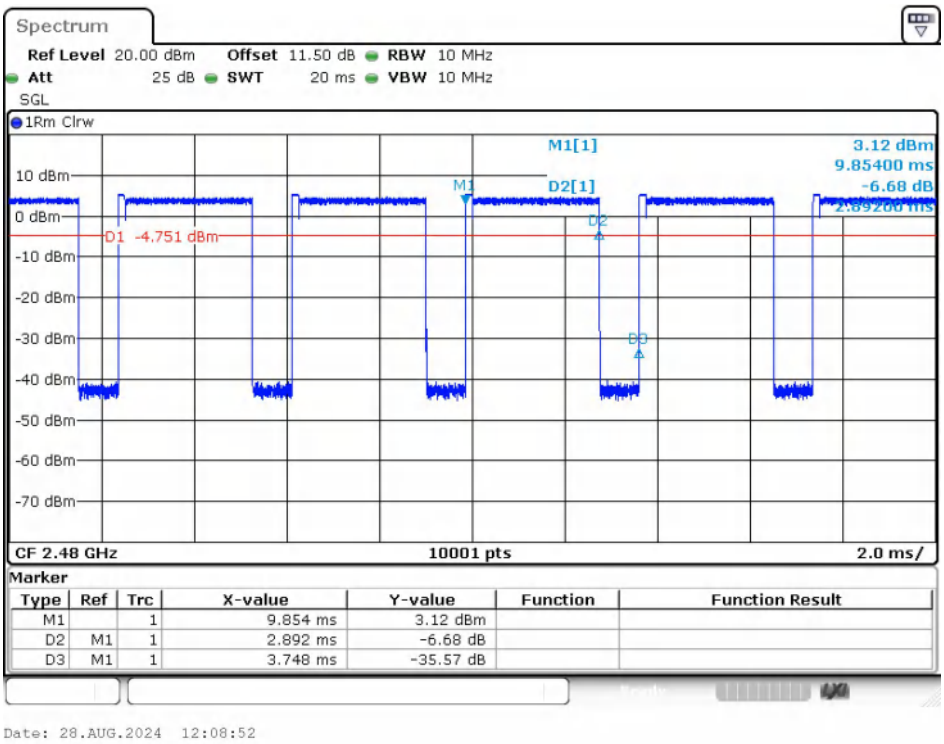
GFSK(DH5)_Channel 78



π/4DQPSK(2-DH5)_Channel 0



π/4DQPSK(2-DH5)_Channel 39



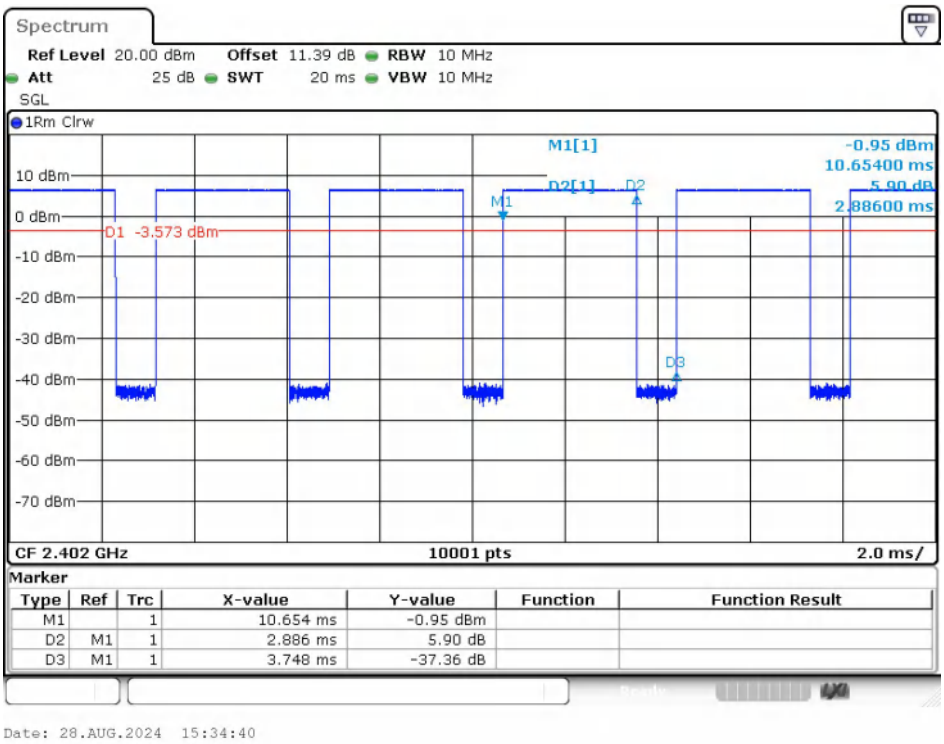
π/4DQPSK(2-DH5)_Channel 78

Left:

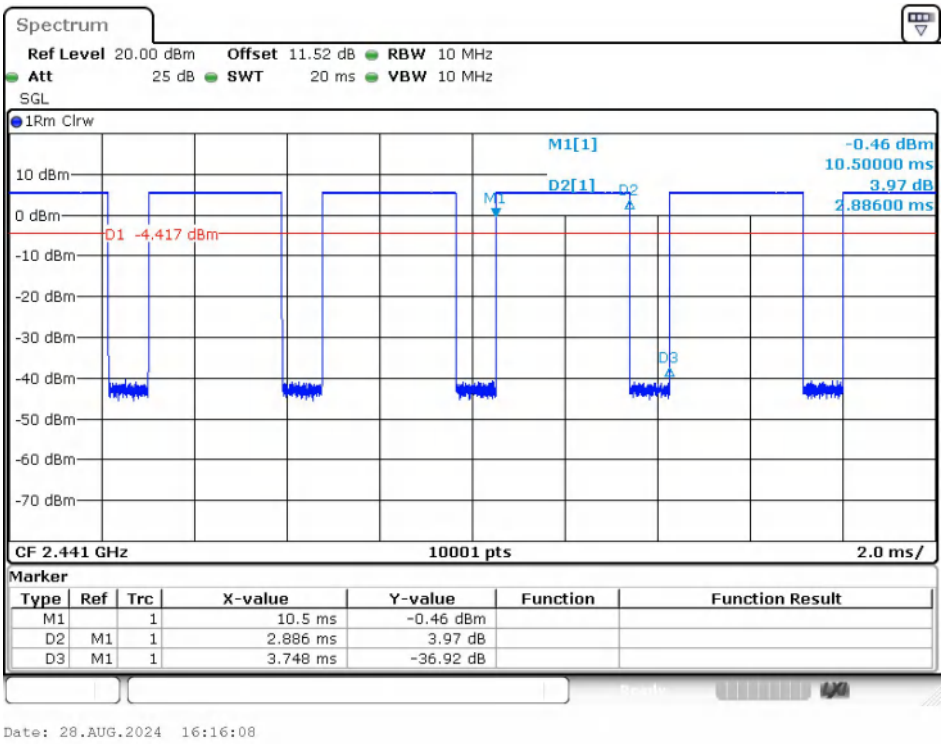
Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.886	3.748	77.00	0.7700	1.1351	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	2.890	3.748	77.11	0.7711	1.1289	0.35
		78	2.890	3.748	77.11	0.7711	1.1289	0.35

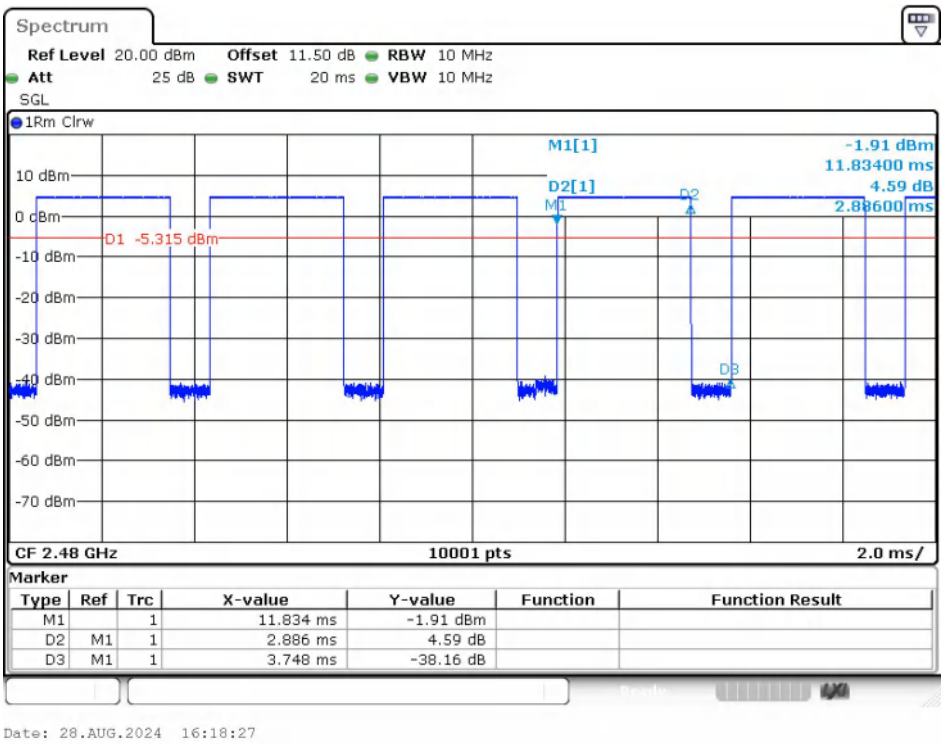
Test Graphs



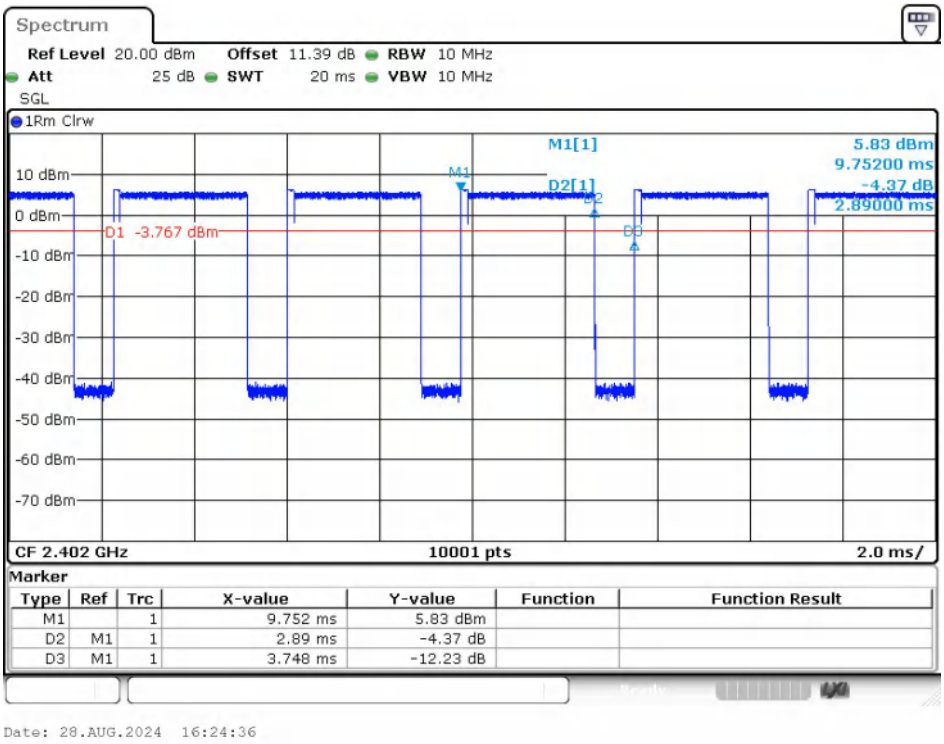
GFSK(DH5)_Channel 0



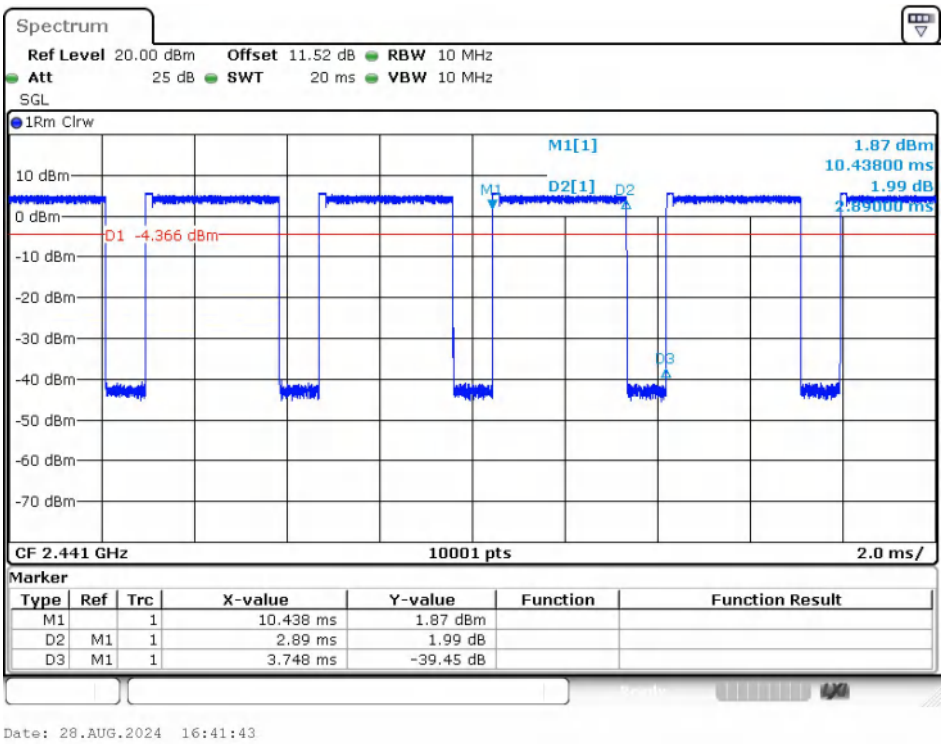
GFSK(DH5)_Channel 39



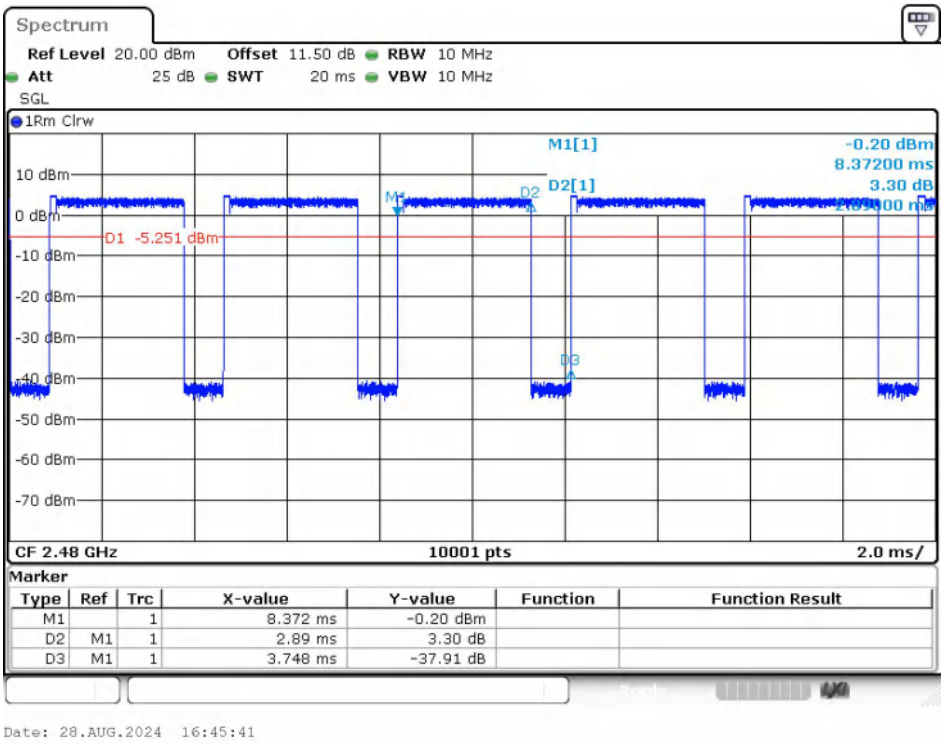
GFSK(DH5)_Channel 78



π/4DQPSK(2-DH5)_Channel 0



π/4DQPSK(2-DH5)_Channel 39



π/4DQPSK(2-DH5)_Channel 78

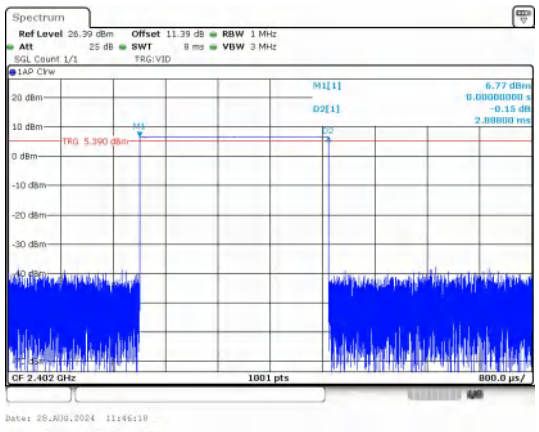
2) Dwell Time

Right:

Test Result

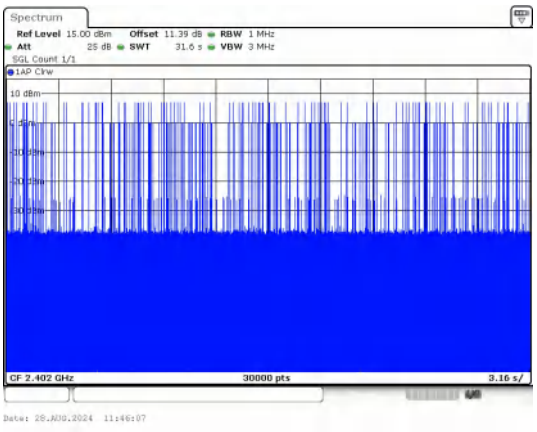
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.888	97	280.14	< 400	PASS
π/4DQPSK	2-DH5		2.896	112	324.35		PASS

Test Graphs



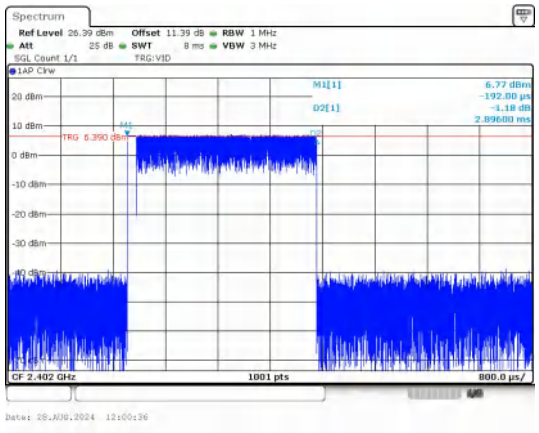
Pulse Width

GFSK_DH5



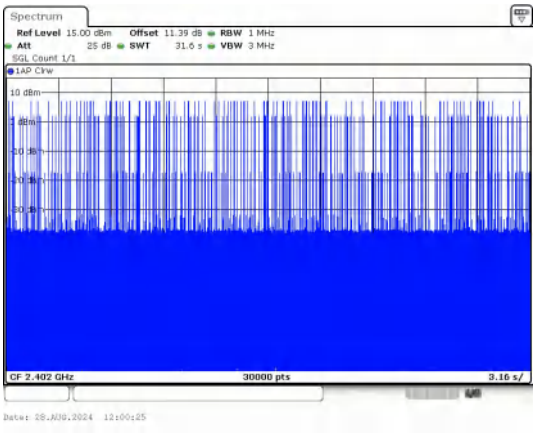
Number of Pulses in 31.6 seconds

GFSK_DH5



Pulse Width

π/4DQPSK_2-DH5



Number of Pulses in 31.6 seconds

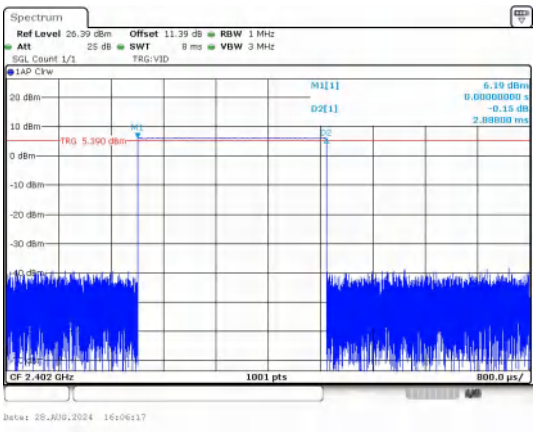
π/4DQPSK_2-DH5

Letf:

Test Result

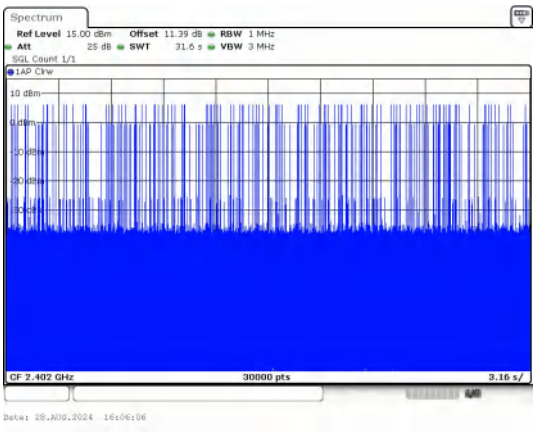
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.888	110	317.68	< 400	PASS
π/4DQPSK	2-DH5		2.896	115	333.04		PASS

Test Graphs



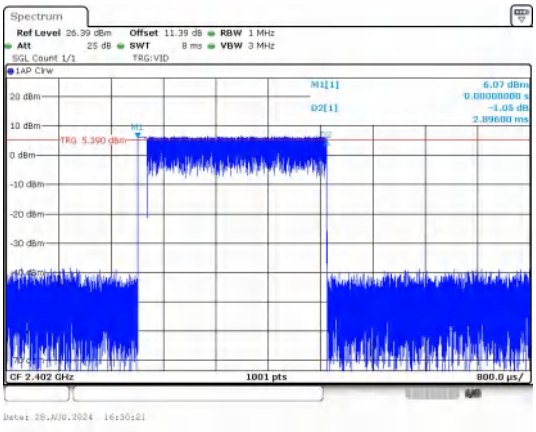
Pulse Width

GFSK_DH5



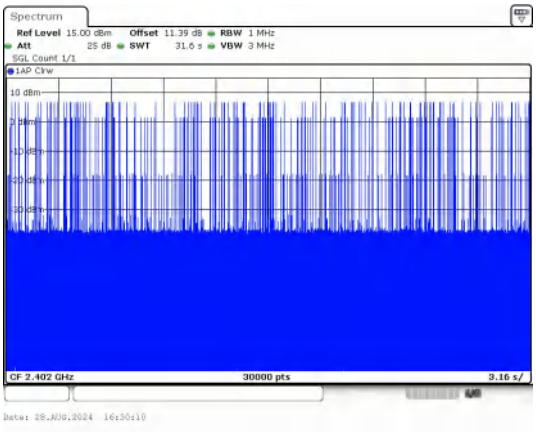
Number of Pulses in 31.6 seconds

GFSK_DH5



Pulse Width

π/4DQPSK_2-DH5



Number of Pulses in 31.6 seconds

π/4DQPSK_2-DH5

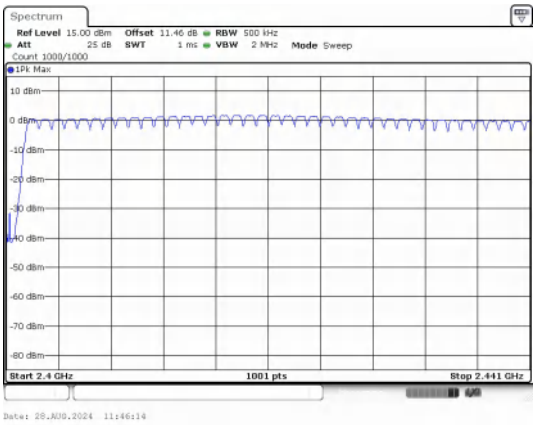
3) Number Of Hopping Channel

Test Result

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

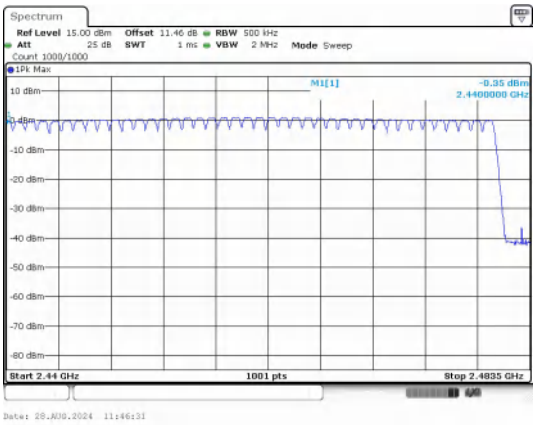
Right:

Test Graphs



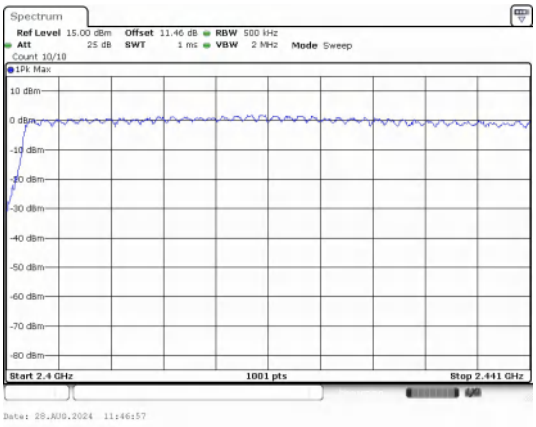
Low End Spectrum Channel Hopping Plot

GFSK



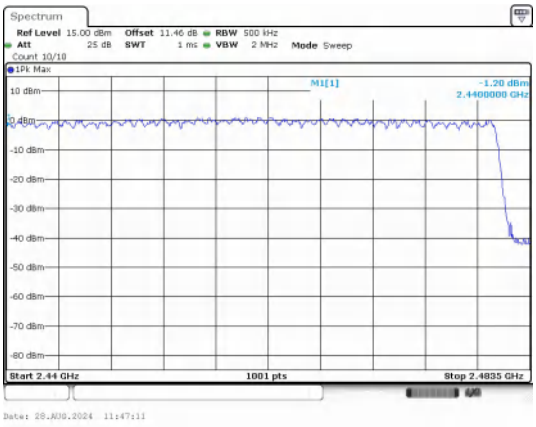
High End Spectrum Channel Hopping Plot

GFSK



Low End Spectrum Channel Hopping Plot

π/4DQPSK



High End Spectrum Channel Hopping Plot

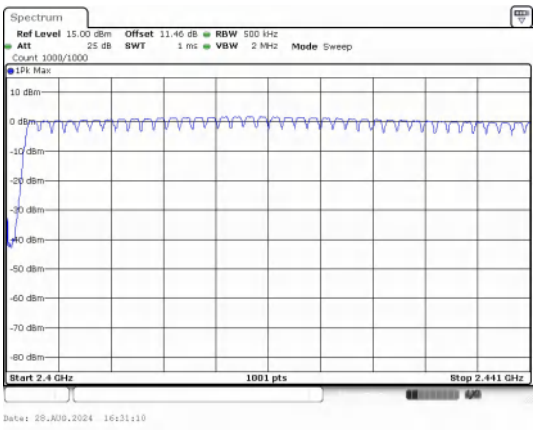
π/4DQPSK

Left:

Test Result

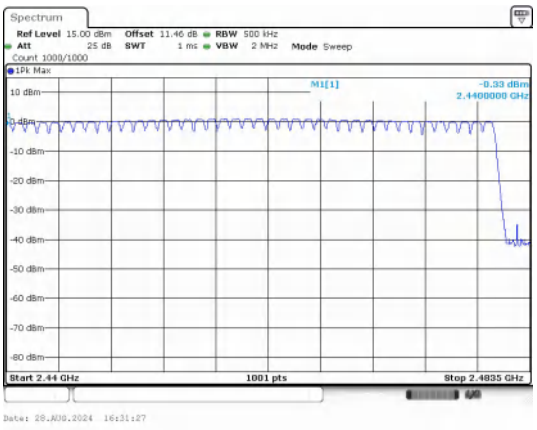
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
π/4DQPSK	2-DH5	79	15	PASS

Test Graphs



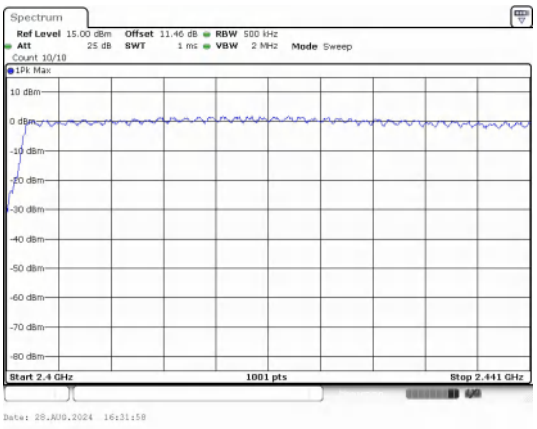
Low End Spectrum Channel Hopping Plot

GFSK



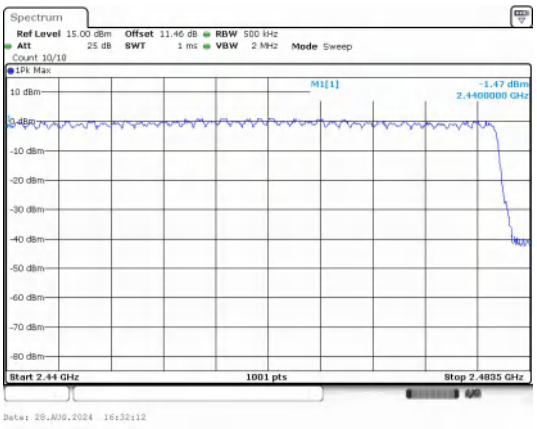
High End Spectrum Channel Hopping Plot

GFSK



Low End Spectrum Channel Hopping Plot

π/4DQPSK



High End Spectrum Channel Hopping Plot

π/4DQPSK

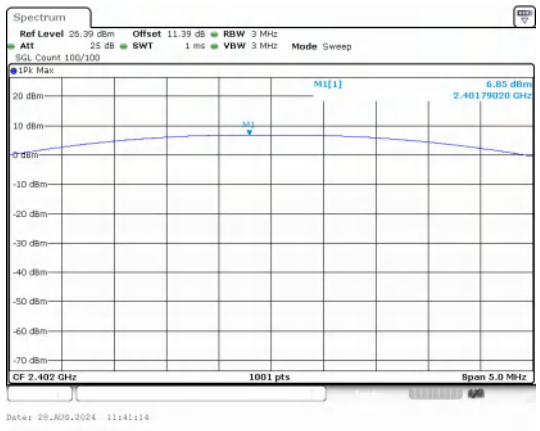
4) Conducted Peak Output Power

Right:

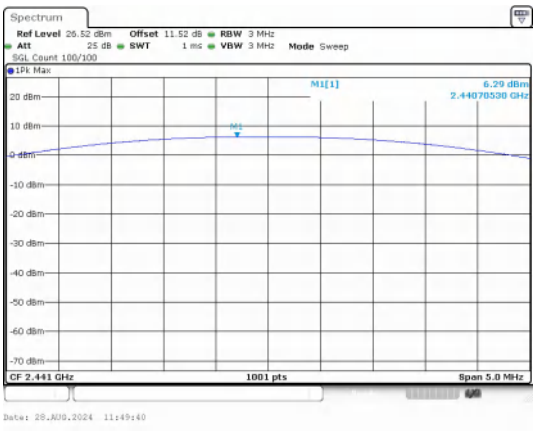
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	6.85	4.84	≤30	PASS
		39	6.29	4.25		PASS
		78	5.27	3.37		PASS
π/4DQPSK	2-DH5	0	7.42	5.53	≤20.97	PASS
		39	6.93	4.93		PASS
		78	6.00	3.98		PASS

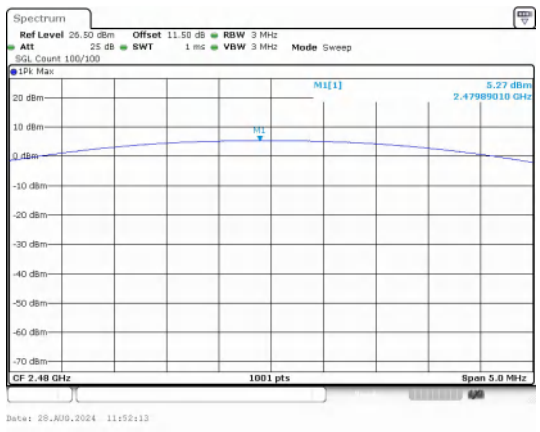
Test Graphs



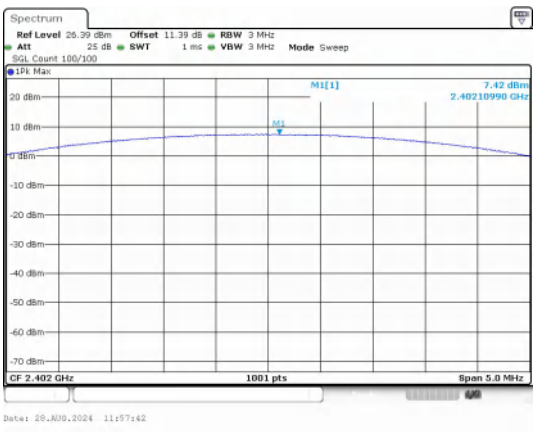
Peak Output Power
GFSK_Channel 0



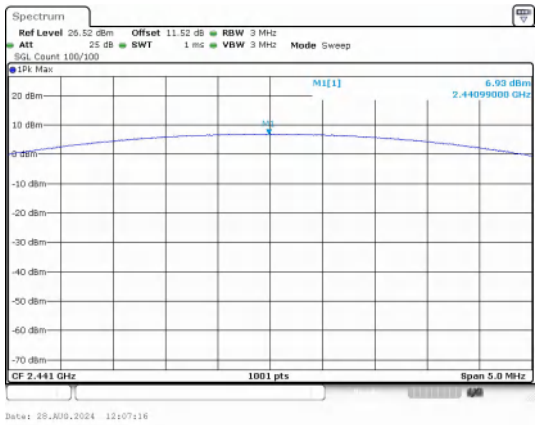
Peak Output Power
GFSK_Channel 39



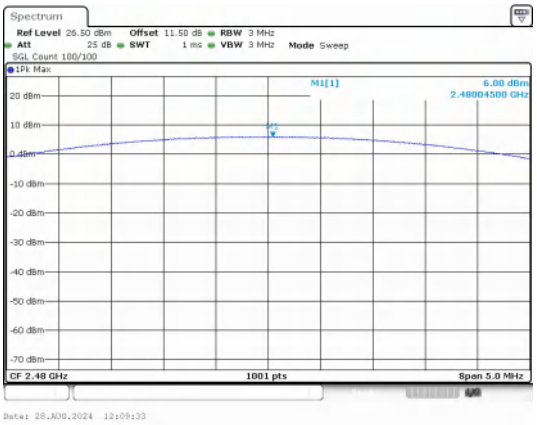
Peak Output Power
GFSK_Channel 78



Peak Output Power
π/4DQPSK_Channel 0



Peak Output Power
π/4DQPSK_Channel 39



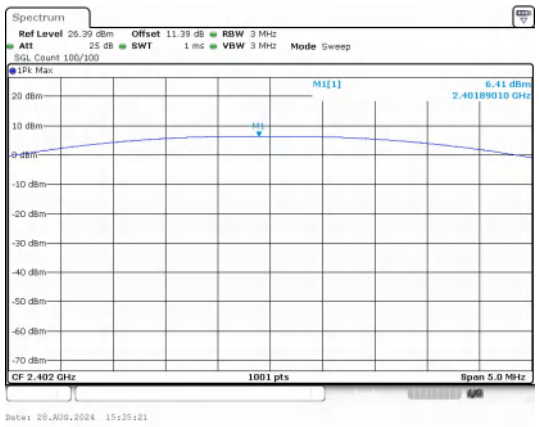
Peak Output Power
π/4DQPSK_Channel 78

Left:

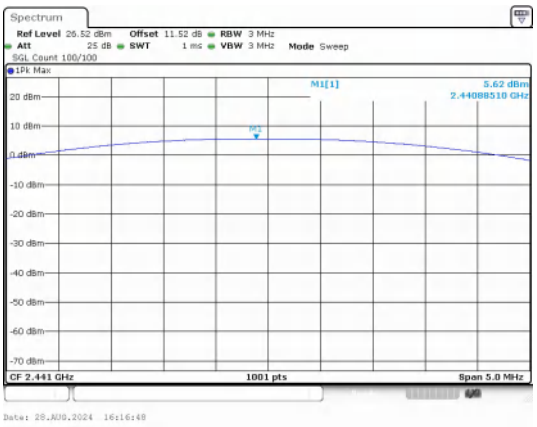
Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	6.41	4.37	≤30	PASS
		39	5.62	3.65		PASS
		78	4.73	2.97		PASS
π/4DQPSK	2-DH5	0	6.88	4.87	≤20.97	PASS
		39	6.34	4.31		PASS
		78	5.53	3.58		PASS

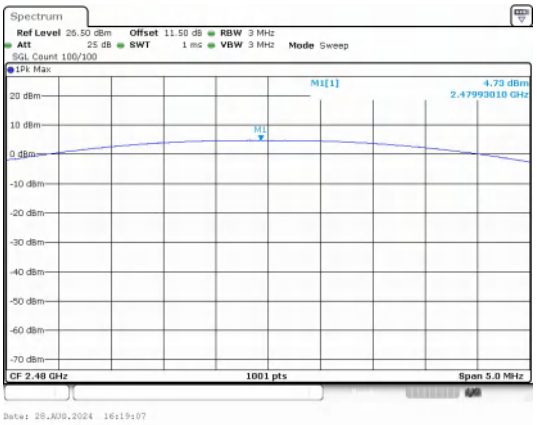
Test Graphs



Peak Output Power
GFSK_Channel 0

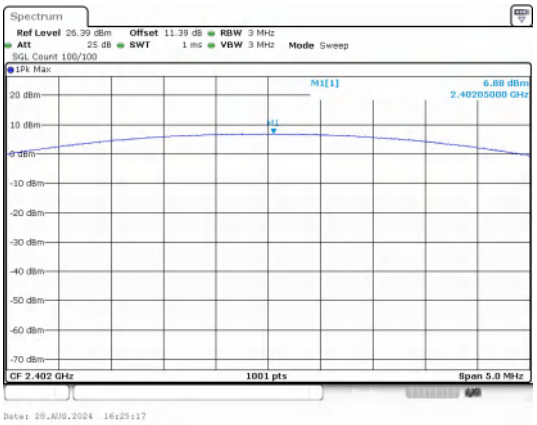


Peak Output Power
GFSK_Channel 39



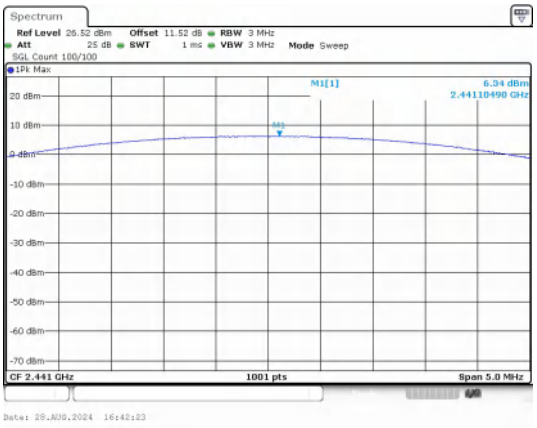
Peak Output Power

GFSK_Channel 78



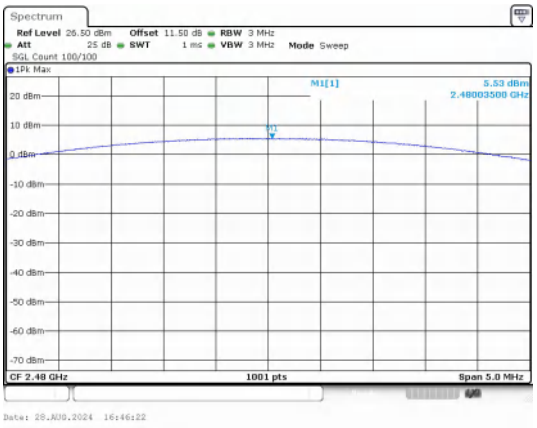
Peak Output Power

π/4DQPSK_Channel 0



Peak Output Power

π/4DQPSK_Channel 39



Peak Output Power

π/4DQPSK_Channel 78

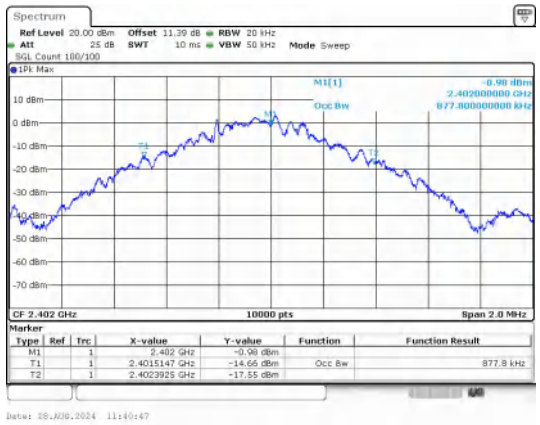
5) 99% Bandwidth

Right:

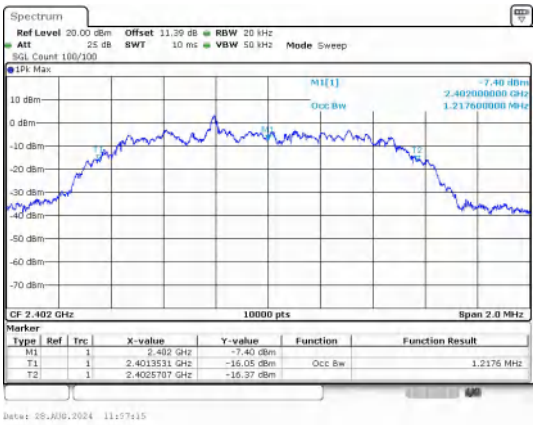
Test Result

Modulation	Channel	Center Frequency (MHz)	99% BW (MHz)
GFSK	0	2402	0.87780
	39	2441	0.88940
	78	2480	0.88320
π/4DQPSK	0	2402	1.2176
	39	2441	1.1936
	78	2480	1.1890

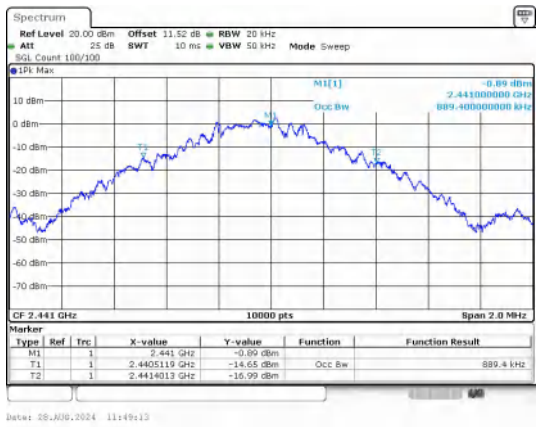
Test Graphs



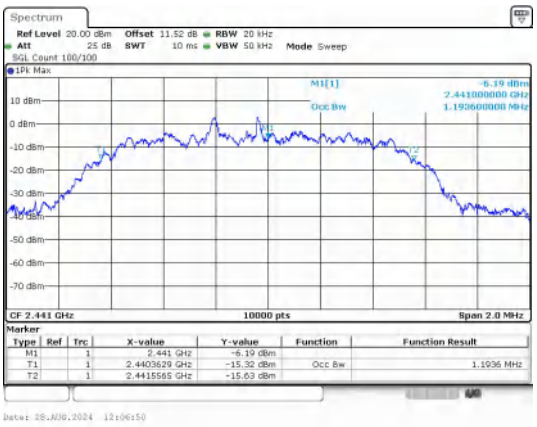
GFSK_DH5_Channel 0



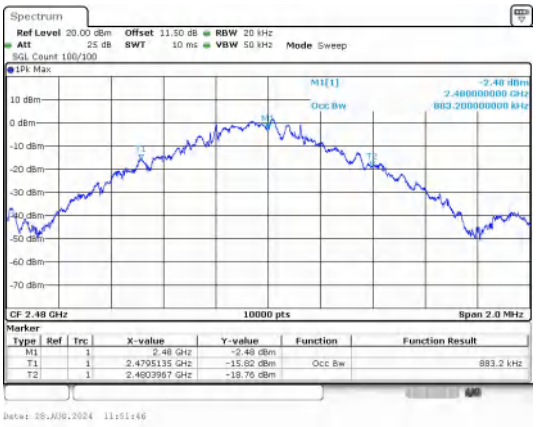
π/4DQPSK_2-DH5_Channel 0



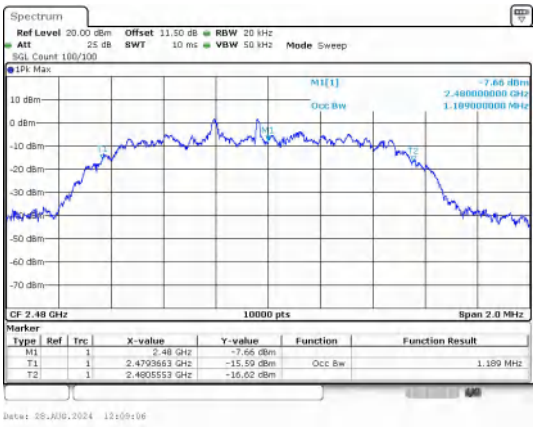
GFSK_DH5_Channel 39



π/4DQPSK_2-DH5_Channel 39



GFSK_DH5_Channel 78



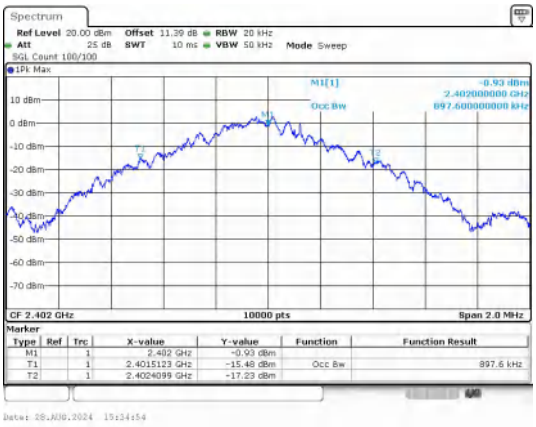
π/4DQPSK_2-DH5_Channel 78

Left:

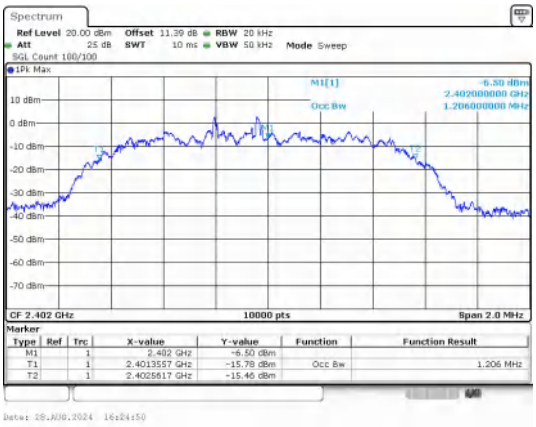
Test Result

Modulation	Channel	Center Frequency (MHz)	99% BW (MHz)
GFSK	0	2402	0.89760
	39	2441	0.89600
	78	2480	0.86980
π/4DQPSK	0	2402	1.2060
	39	2441	1.2062
	78	2480	1.1988

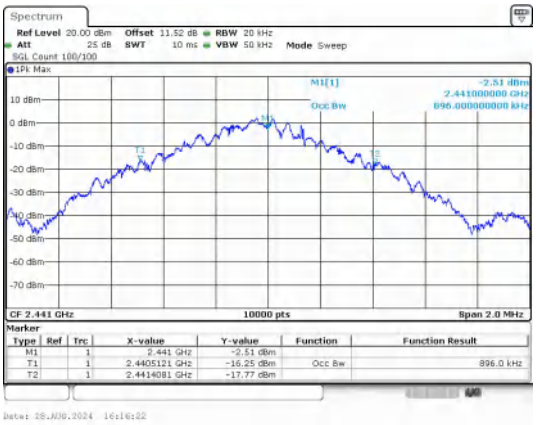
Test Graphs



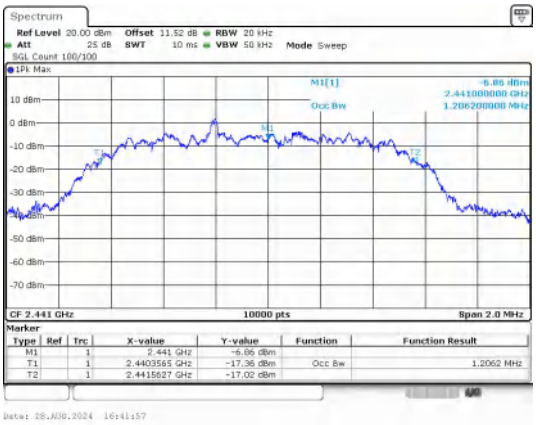
GFSK_DH5_Channel 0



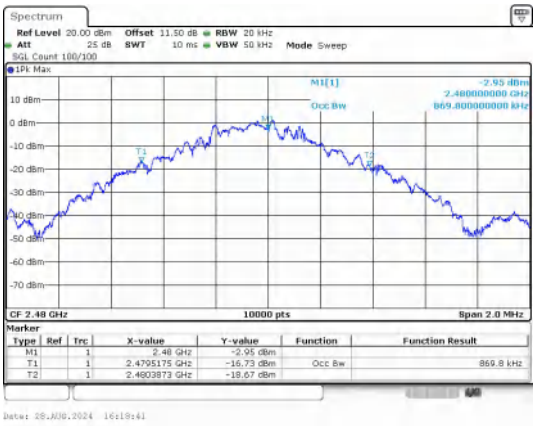
π/4DQPSK_2-DH5_Channel 0



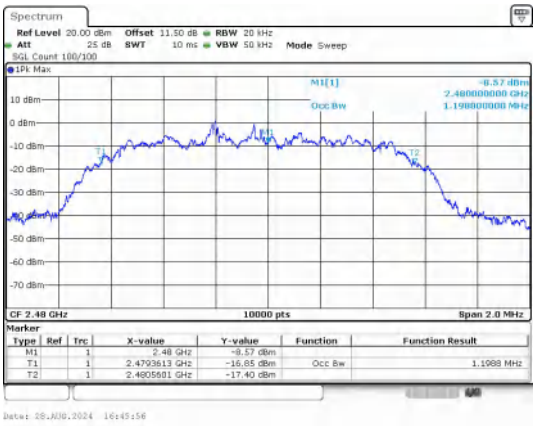
GFSK_DH5_Channel 39



π/4DQPSK_2-DH5_Channel 39



GFSK_DH5_Channel 78



π/4DQPSK_2-DH5_Channel 78

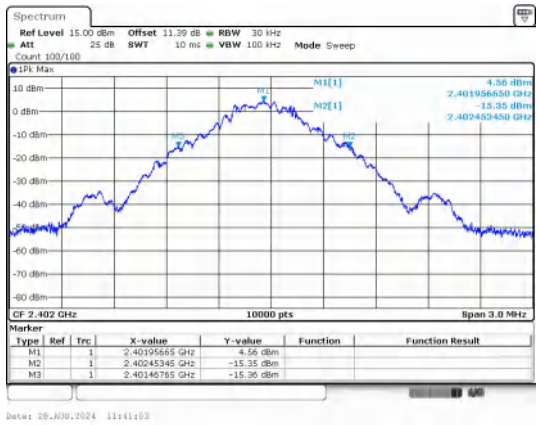
6) 20dB Bandwidth

Right:

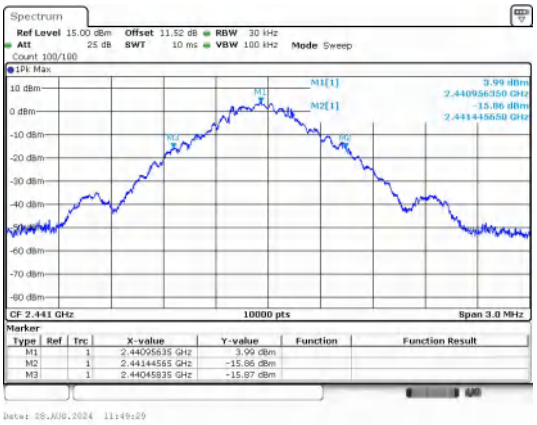
Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	0.9800
	39	2441 MHz	0.9900
	78	2480 MHz	0.9900
π/4DQPSK	0	2402 MHz	1.310
	39	2441 MHz	1.300
	78	2480 MHz	1.300

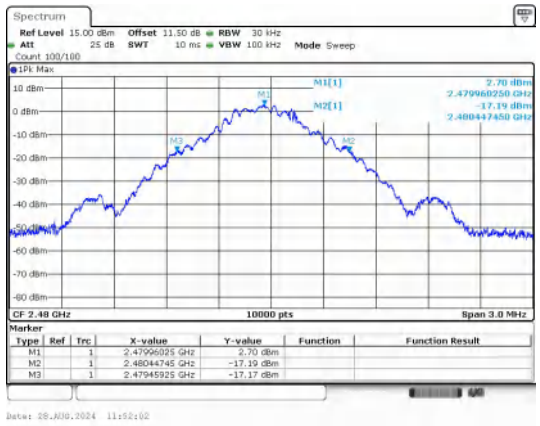
Test Graphs



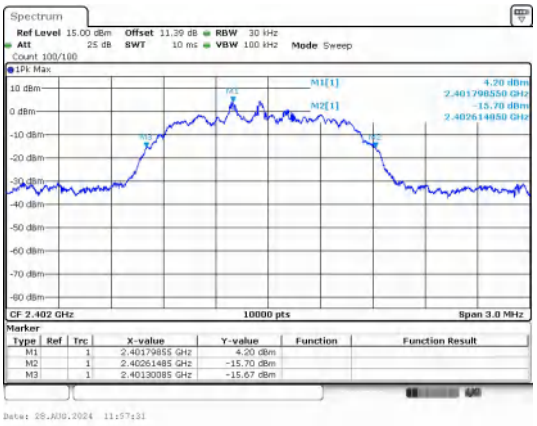
GFSK_DH5_Channel 0



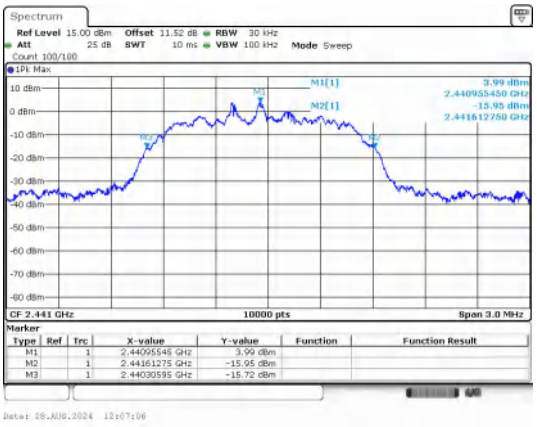
GFSK_DH5_Channel 39



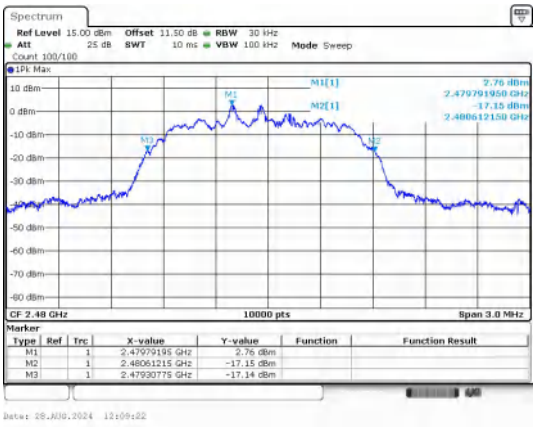
GFSK_DH5_Channel 78



π/4DQPSK_2-DH5_Channel 0



π/4DQPSK_2-DH5_Channel 39



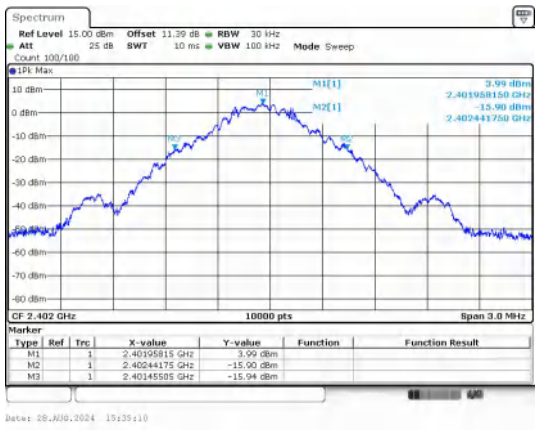
π/4DQPSK_2-DH5_Channel 78

Left:

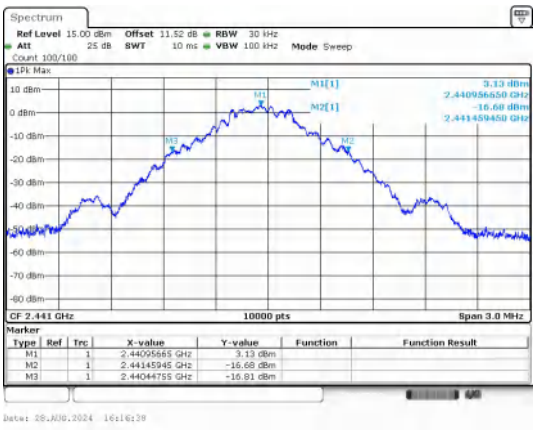
Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	0.9800
	39	2441 MHz	1.010
	78	2480 MHz	0.9900
π/4DQPSK	0	2402 MHz	1.310
	39	2441 MHz	1.310
	78	2480 MHz	1.300

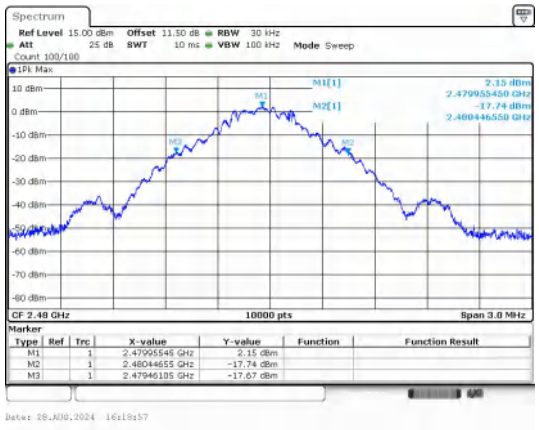
Test Graphs



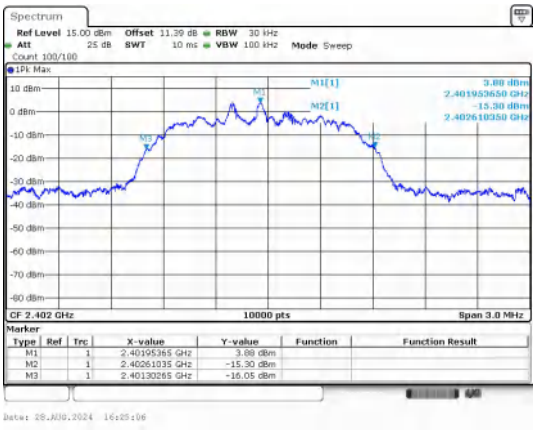
GFSK_DH5_Channel 0



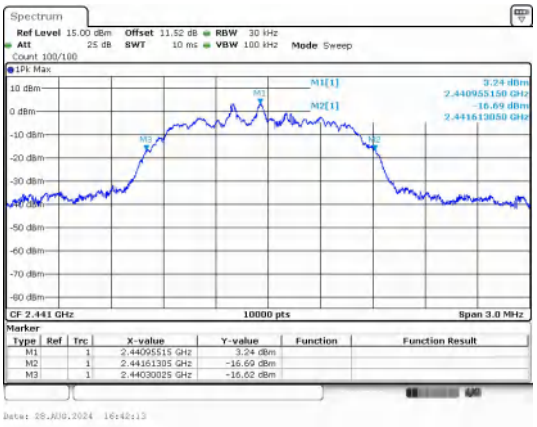
GFSK_DH5_Channel 39



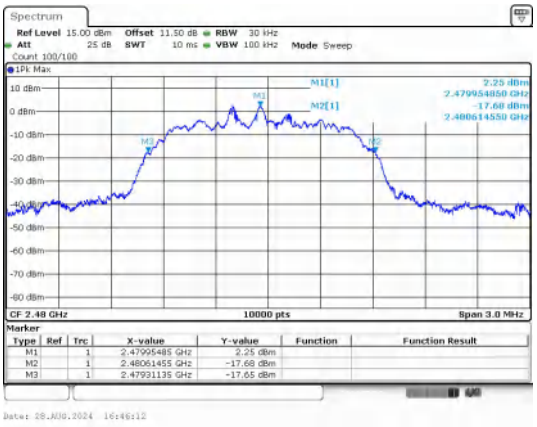
GFSK_DH5_Channel 78



π/4DQPSK_2-DH5_Channel 0



π/4DQPSK_2-DH5_Channel 39



π/4DQPSK_2-DH5_Channel 78

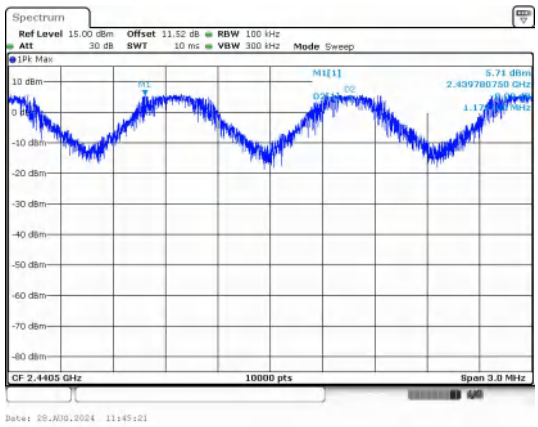
7) Carrier Frequencies Separation

Right:

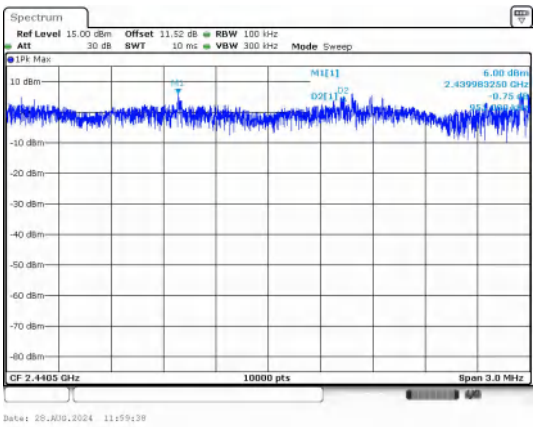
Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2439.7807	2440.9588	1.1781	0.9900	PASS
π/4DQPSK	2-DH5	2439.9833	2440.9342	0.9510	0.873	PASS

Test Graphs



GFSK



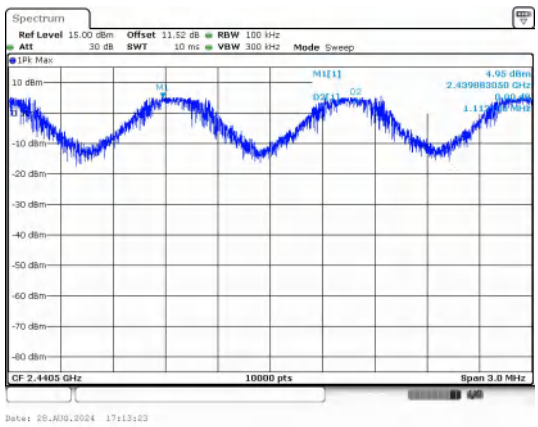
π/4DQPSK

Left:

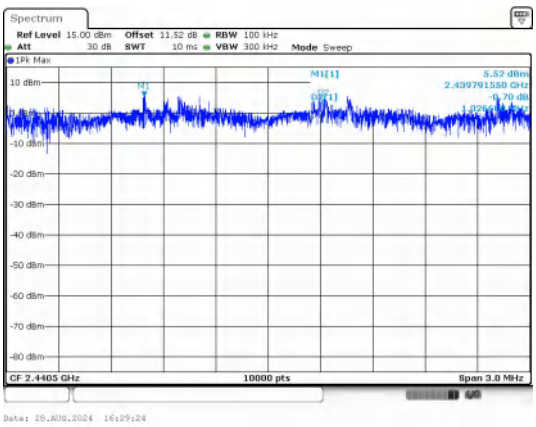
Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2439.883	2440.9952	1.1121	1.010	PASS
π/4DQPSK	2-DH5	2439.7915	2440.8182	1.0266	0.873	PASS

Test Graphs



GFSK



π/4DQPSK

8) Conducted Out Of Band Emission

Right:

Test Result

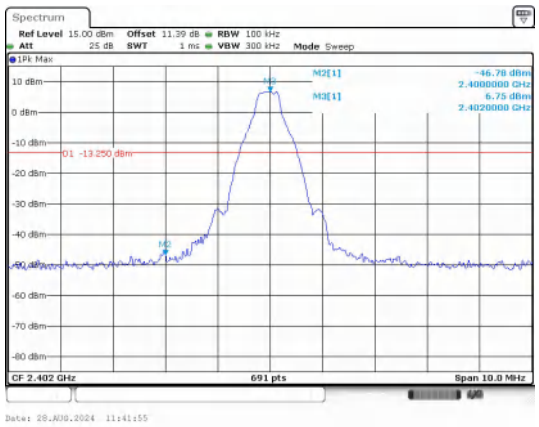
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-46.778	-13.25	-33.528	PASS
			7205.96	-35.655	-13.25	-22.405	PASS
		39	2248.58	-41.873	-13.84	-28.033	PASS
		78	2287.70	-41.055	-14.87	-26.185	PASS
			2483.50	-50.909	-14.87	-36.039	PASS
π/4DQPSK	2-DH5	0	2400.00	-45.060	-13.26	-31.800	PASS
			7205.96	-40.319	-13.26	-27.059	PASS
		39	7322.49	-44.083	-13.82	-30.263	PASS
		78	2287.70	-40.670	-14.84	-25.830	PASS
			2483.50	-49.987	-14.84	-35.147	PASS

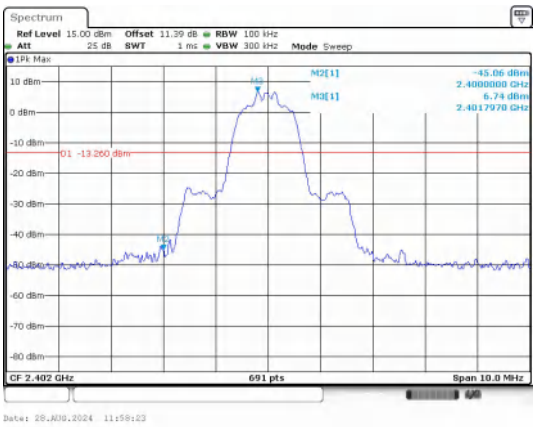
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2395.63	-48.098	-13.64	-34.458	PASS
			2400.00	-50.547	-13.64	-36.907	PASS
			2483.50	-49.831	-15.02	-34.811	PASS
π/4DQPSK	2-DH5		2400.00	-46.758	-13.31	-33.448	PASS
			2483.50	-48.870	-14.85	-34.020	PASS

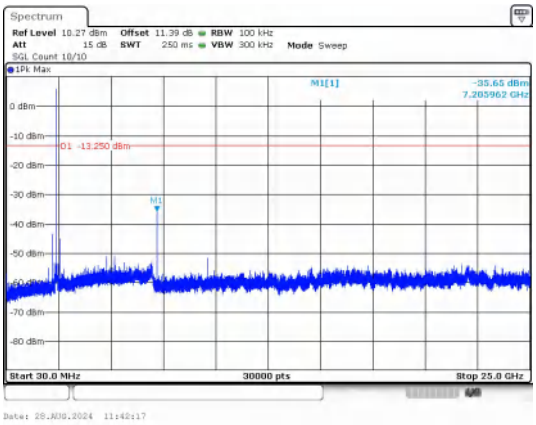
Test Graphs



Out Of Band Emission
GFSK_DH5_Channel 0

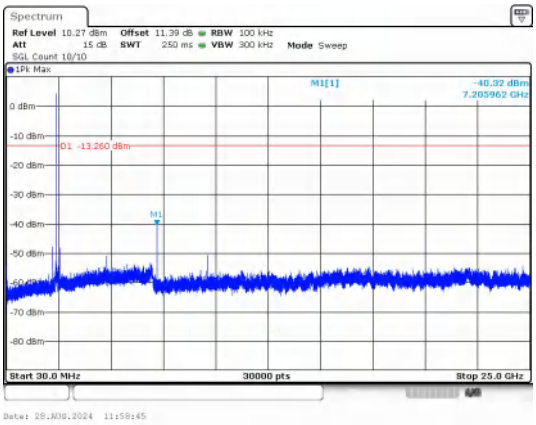


Out Of Band Emission
π/4DQPSK_2-DH5_Channel 0



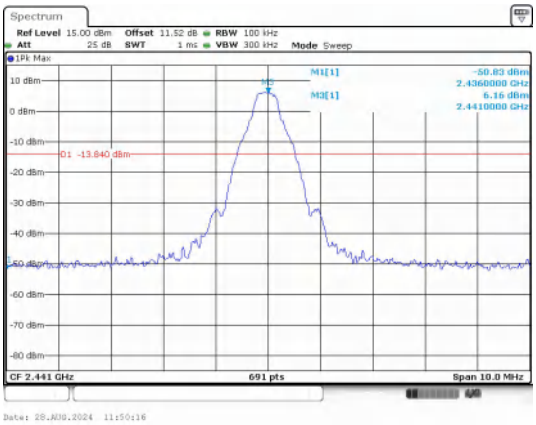
30.0 MHz - 25000.0 MHz

GFSK_DH5_Channel 0



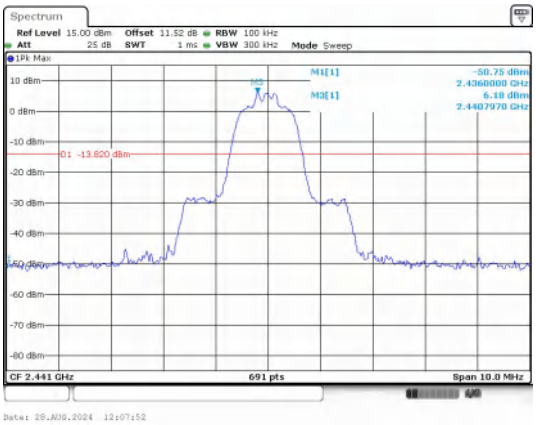
30.0 MHz - 25000.0 MHz

π/4DQPSK_2-DH5_Channel 0



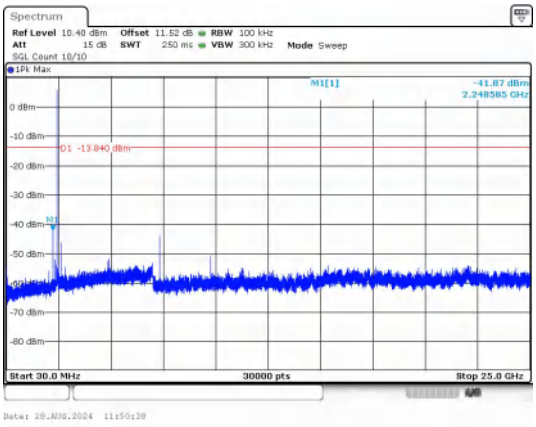
Out Of Band Emission

GFSK_DH5_Channel 39



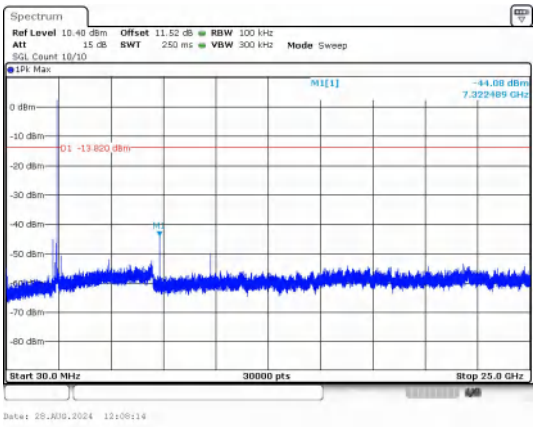
Out Of Band Emission

π/4DQPSK_2-DH5_Channel 39



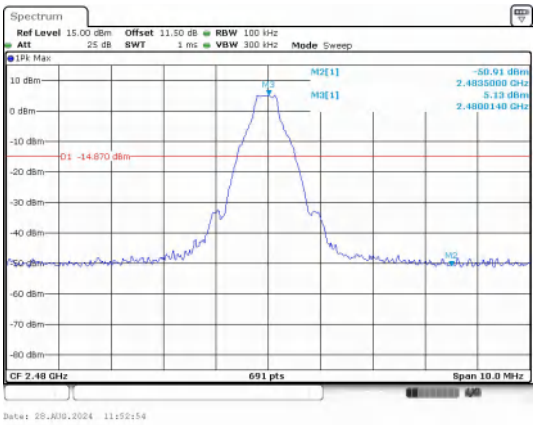
30.0 MHz - 25000.0 MHz

GFSK_DH5_Channel 39



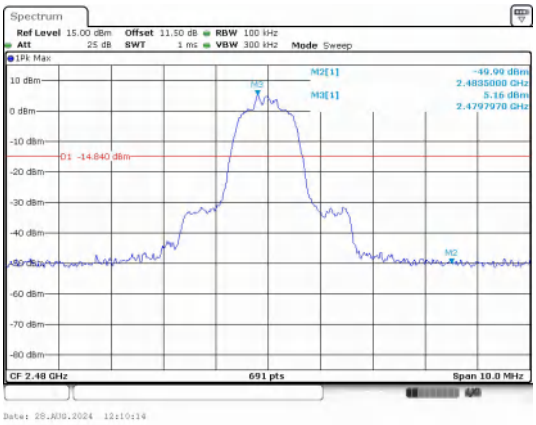
30.0 MHz - 25000.0 MHz

π/4DQPSK_2-DH5_Channel 39



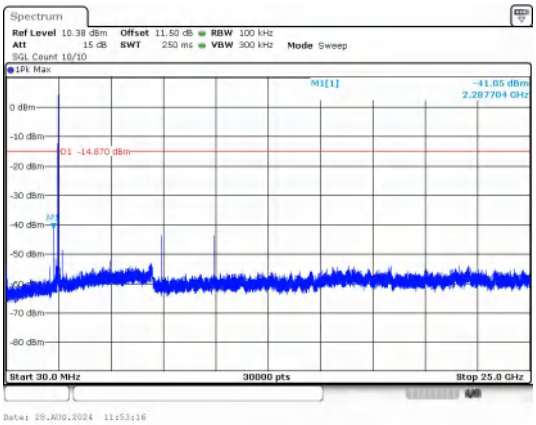
Out Of Band Emission

GFSK_DH5_Channel 78



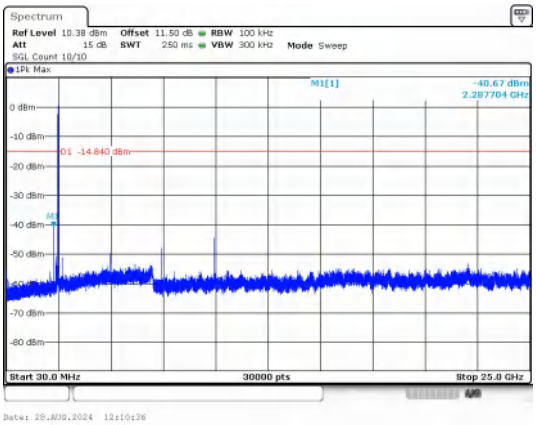
Out Of Band Emission

π/4DQPSK_2-DH5_Channel 78



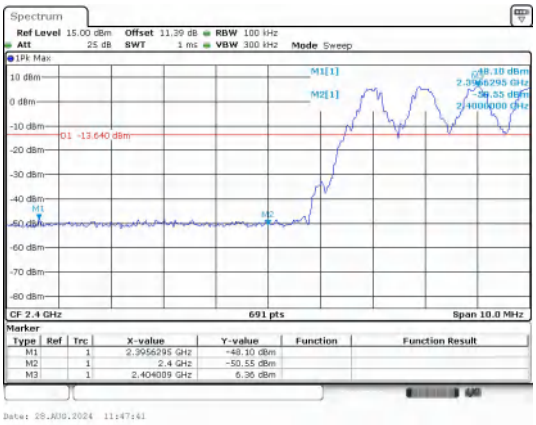
30.0 MHz - 25000.0 MHz

GFSK_DH5_Channel 78



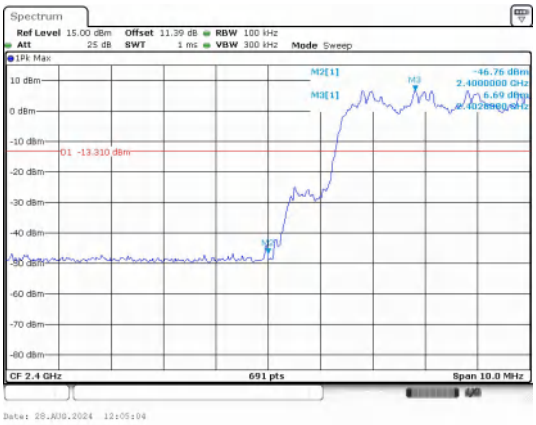
30.0 MHz - 25000.0 MHz

π/4DQPSK_2-DH5_Channel 78



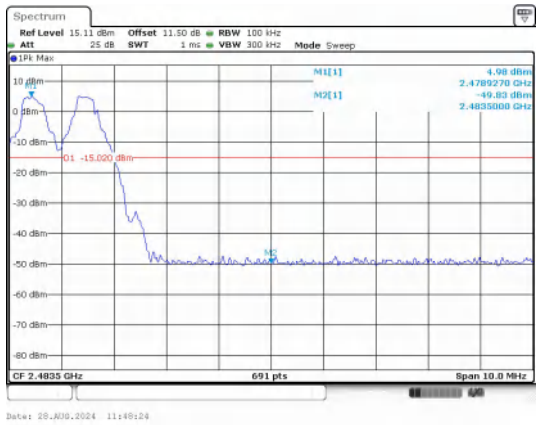
Out Of Band Emission(Left)

GFSK_DH5_Channel Hopping

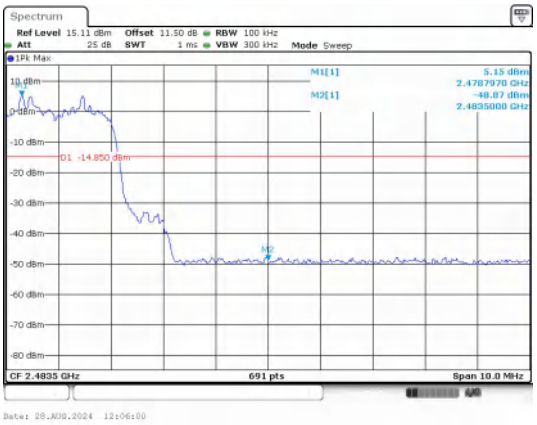


Out Of Band Emission(Left)

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

Left:

Test Result

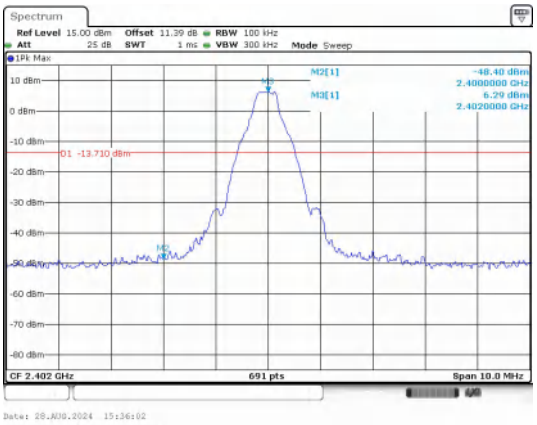
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-48.402	-13.71	-34.692	PASS
			7206.79	-37.865	-13.71	-24.155	PASS
		39	2249.42	-42.089	-14.49	-27.599	PASS
		78	2287.70	-40.124	-15.44	-24.684	PASS
			2483.50	-50.300	-15.44	-34.860	PASS
π/4DQPSK	2-DH5	0	2400.00	-45.377	-13.86	-31.517	PASS
			7205.96	-41.862	-13.86	-28.002	PASS
		39	2248.58	-43.922	-14.39	-29.532	PASS
		78	2483.50	-49.701	-15.36	-34.341	PASS
			9920.20	-46.203	-15.36	-30.843	PASS

Hopping

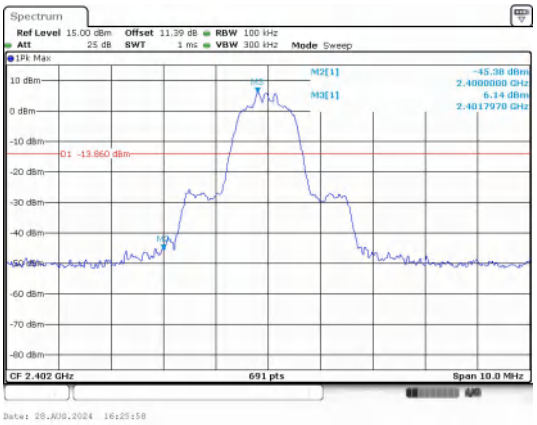
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2396.53	-48.177	-14.2	-33.977	PASS
			2400.00	-49.324	-14.2	-35.124	PASS
			2483.50	-50.088	-15.8	-34.288	PASS
π/4DQPSK	2-DH5		2396.82	-47.588	-13.89	-33.698	PASS
			2400.00	-50.375	-13.89	-36.485	PASS
			2483.50	-48.728	-15.34	-33.388	PASS

Test Graphs



Out Of Band Emission

GFSK_DH5_Channel 0



Out Of Band Emission

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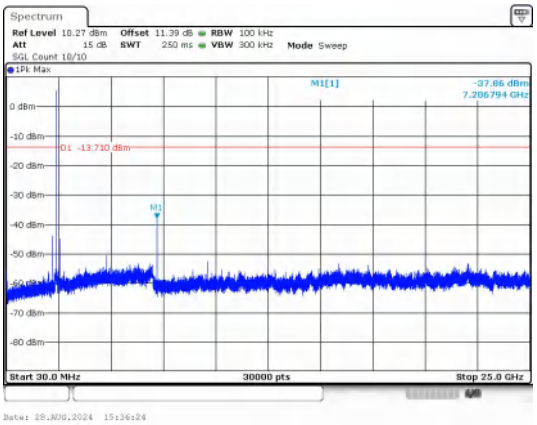
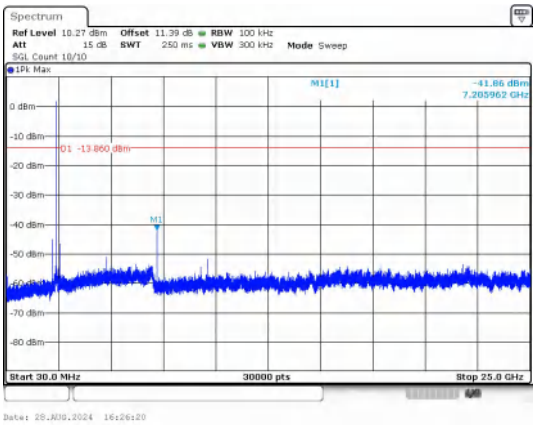


30.0 MHz - 25000.0 MHz

GFSK_DH5_Channel 0



30.0 MHz - 25000.0 MHz

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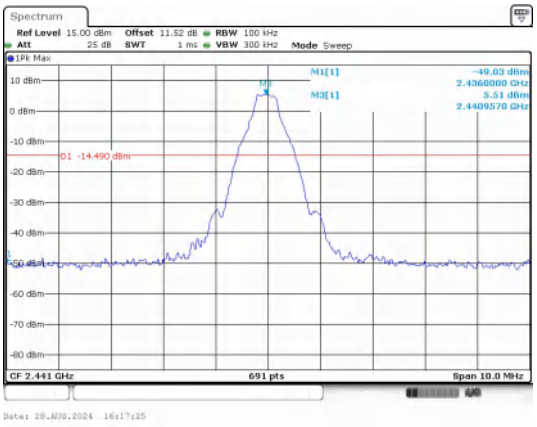
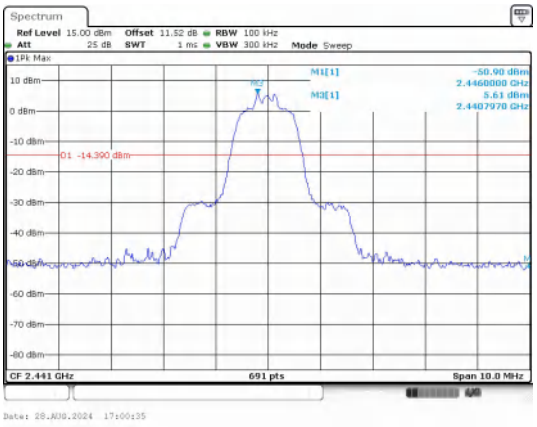


Out Of Band Emission

GFSK_DH5_Channel 39



Out Of Band Emission

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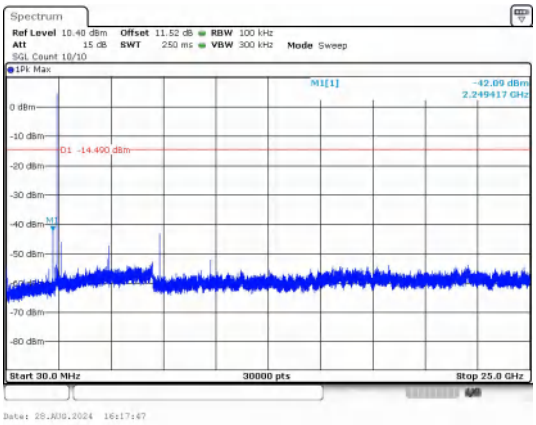
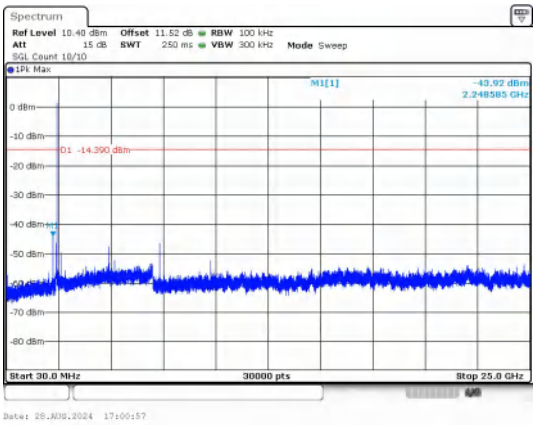


30.0 MHz - 25000.0 MHz

GFSK_DH5_Channel 39



30.0 MHz - 25000.0 MHz

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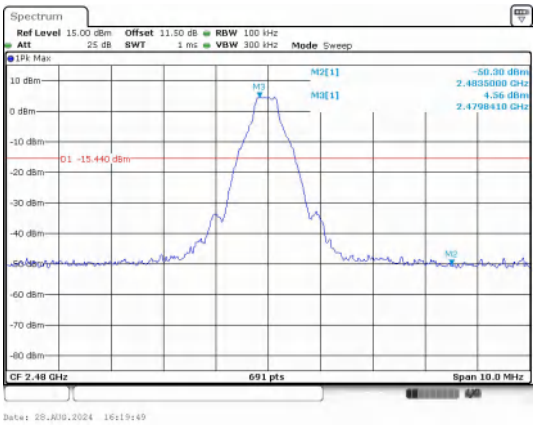
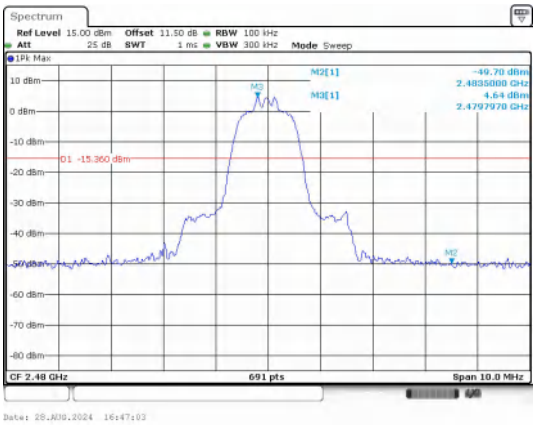


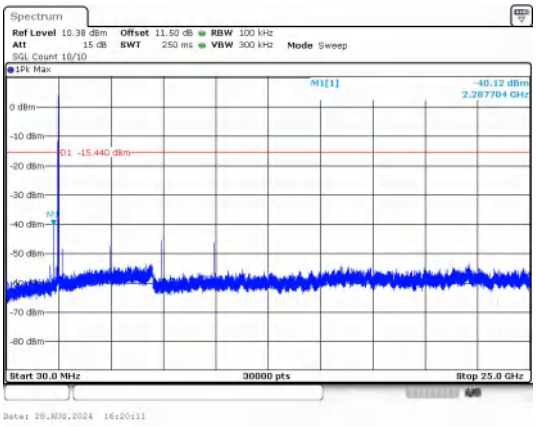
Out Of Band Emission

GFSK_DH5_Channel 78



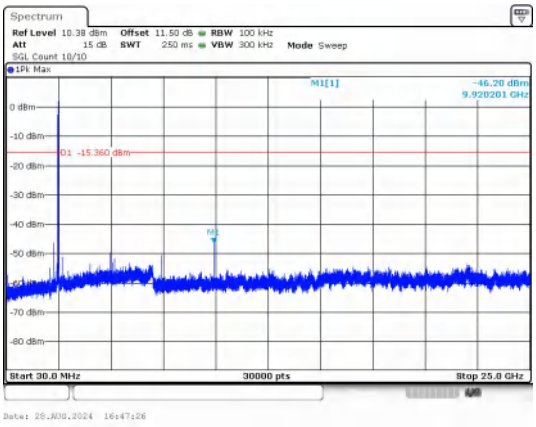
Out Of Band Emission

π/4DQPSK_2-DH5_Channel 78



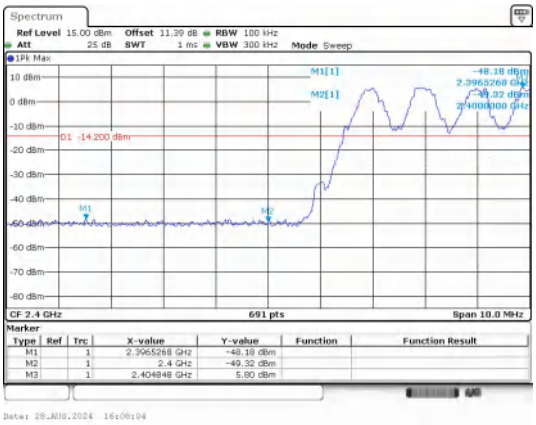
30.0 MHz - 25000.0 MHz

GFSK_DH5_Channel 78



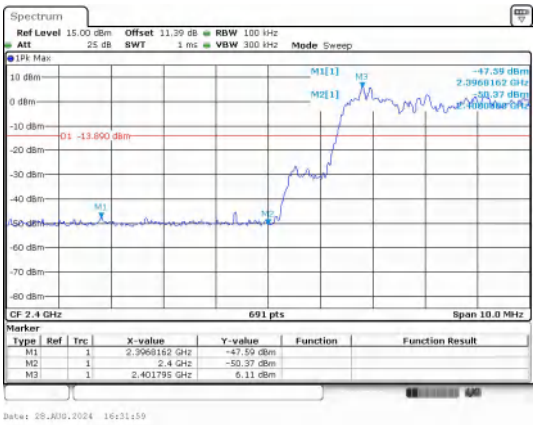
30.0 MHz - 25000.0 MHz

π/4DQPSK_2-DH5_Channel 78



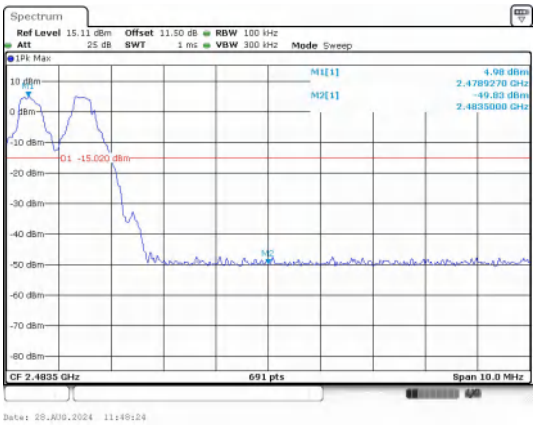
Out Of Band Emission(Left)

GFSK_DH5_Channel Hopping



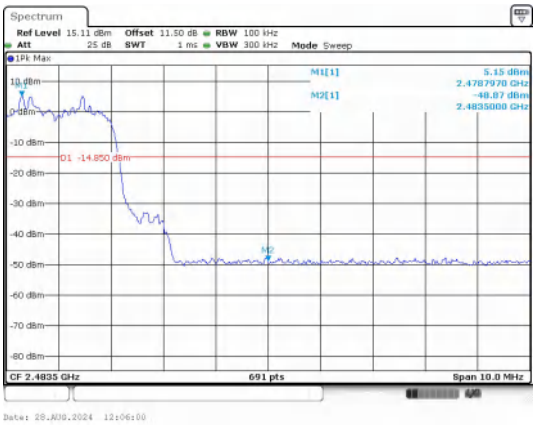
Out Of Band Emission(Left)

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