

Appendix A

Report No.:	CISRR24041811401
FCC ID:	2BFYP-HBL100
Product Name:	Karaoke Machine
Model No.:	HBL100
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

Conducted Peak Output Power

Test Result

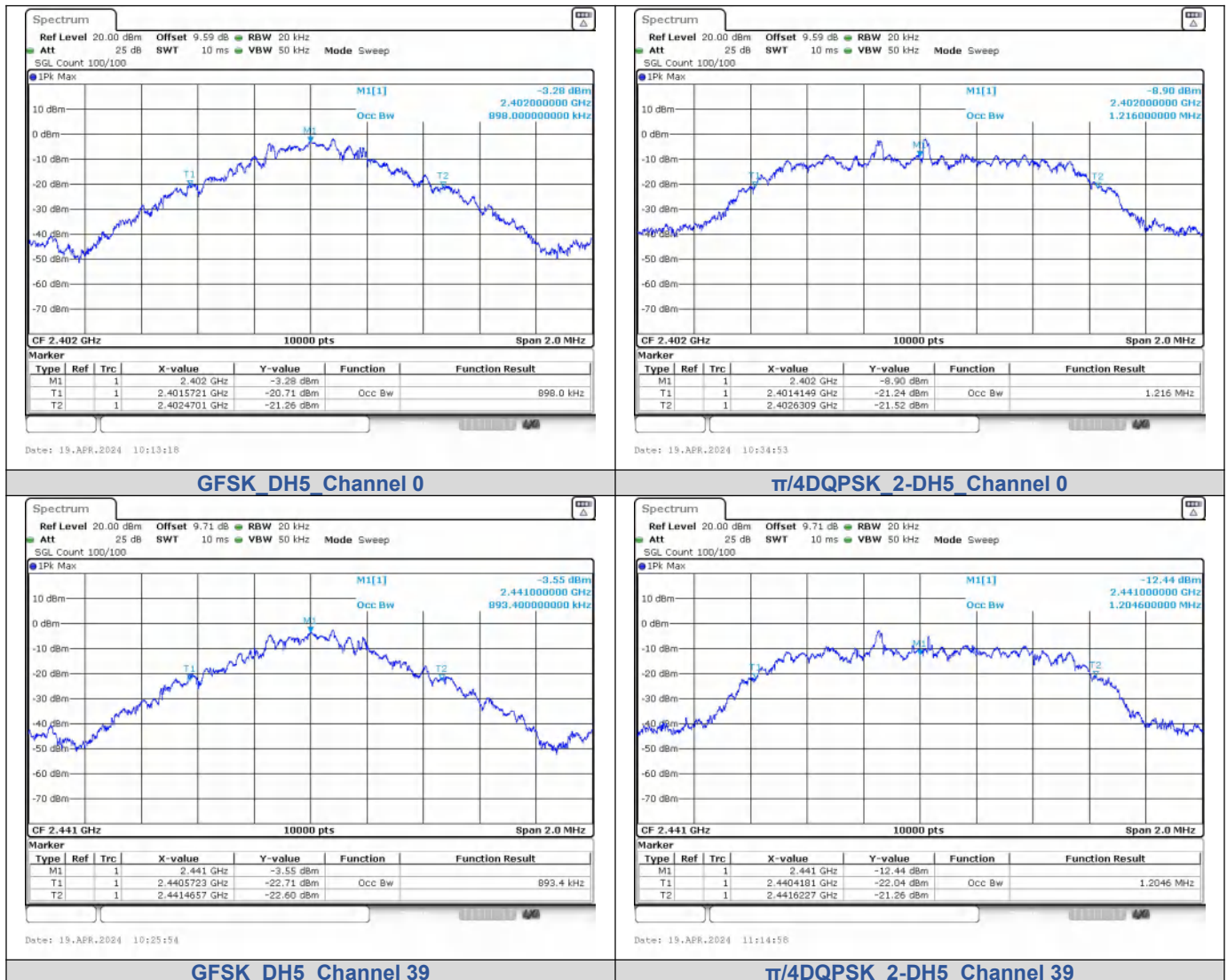
Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	1.668	1.468	30	PASS
		39	0.947	1.244		PASS
		78	0.993	1.257		PASS
$\pi/4$ DQPSK	2-DH5	0	2.029	1.595	20.97	PASS
		39	1.543	1.427		PASS
		78	1.645	1.460		PASS

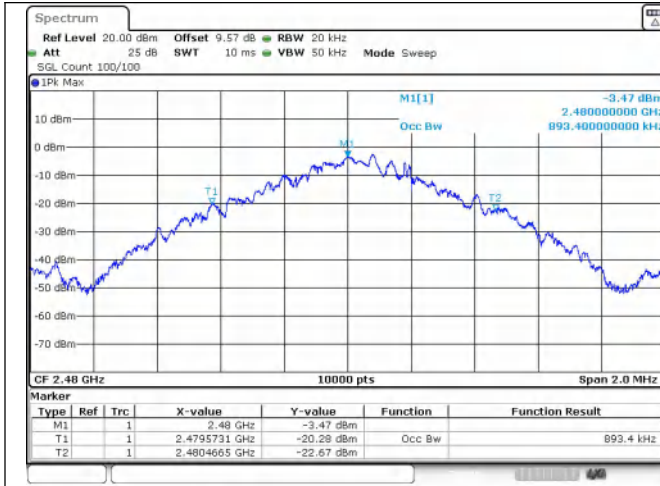
99% Bandwidth

Test Result

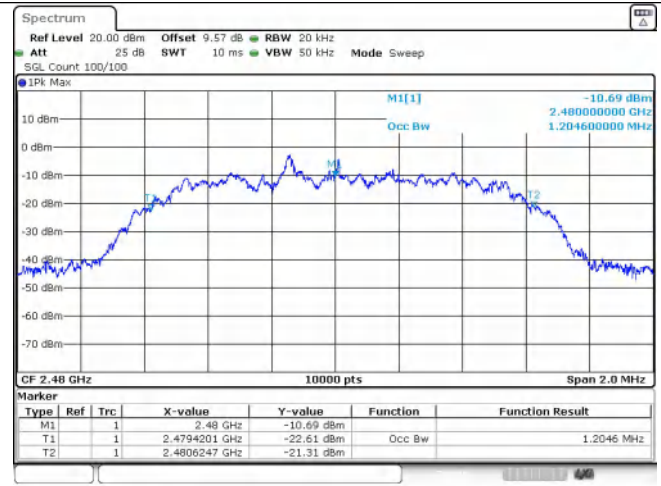
Modulation	Channel	99% BW (MHz)
GFSK	0	0.89800
	39	0.89340
	78	0.89340
$\pi/4$ DQPSK	0	1.2160
	39	1.2050
	78	1.2050

Test Graphs





GFSK_DH5_Channel 78



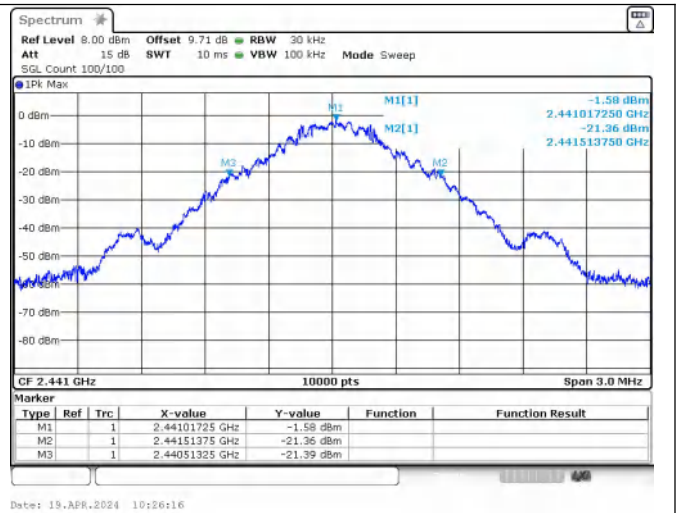
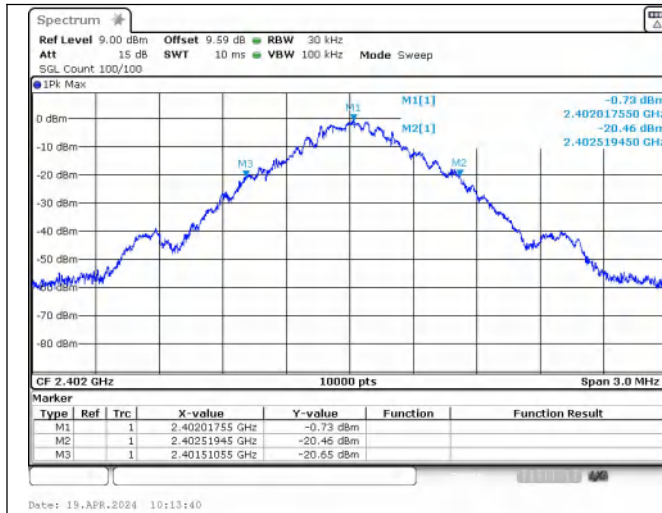
$\pi/4$ DQPSK_2-DH5_Channel 78

20dB Bandwidth

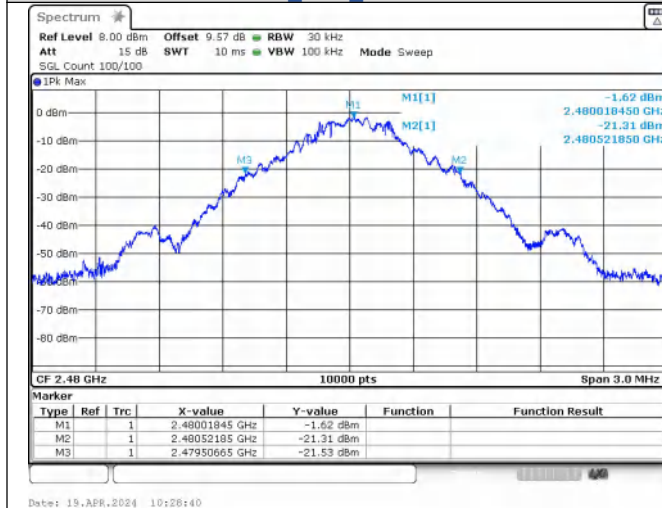
Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	1.010
	39	2441 MHz	1.000
	78	2480 MHz	1.010
$\pi/4$ DQPSK	0	2402 MHz	1.320
	39	2441 MHz	1.320
	78	2480 MHz	1.320

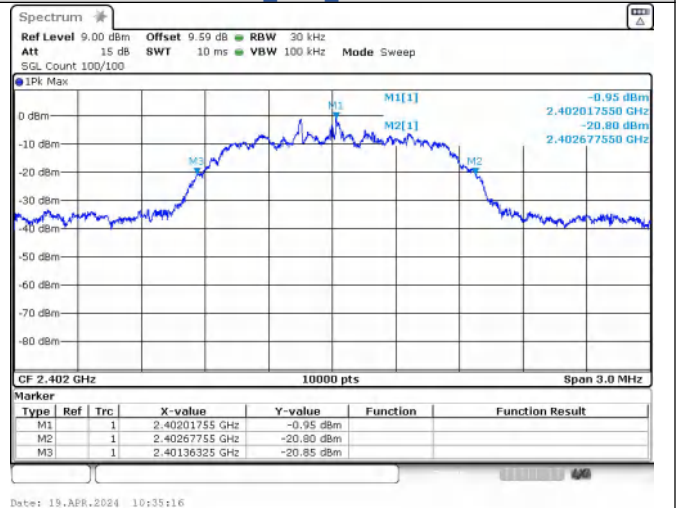
Test Graphs



GFSK_DH5_Channel 0

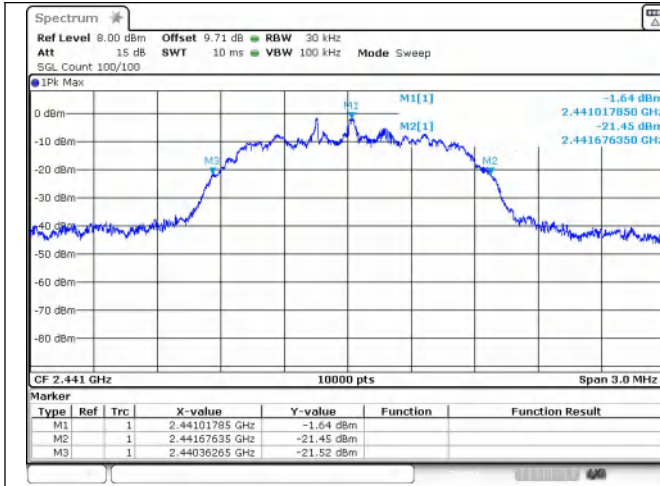


GFSK_DH5_Channel 39

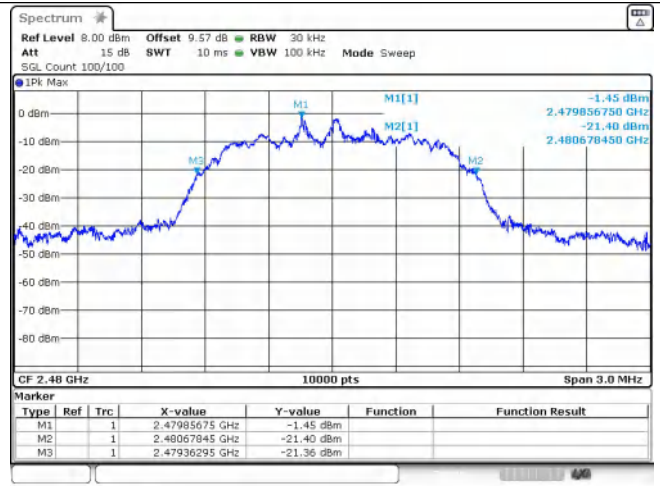


GFSK_DH5_Channel 78

$\pi/4$ DQPSK_2-DH5_Channel 0



$\pi/4$ DQPSK_2-DH5_Channel 39



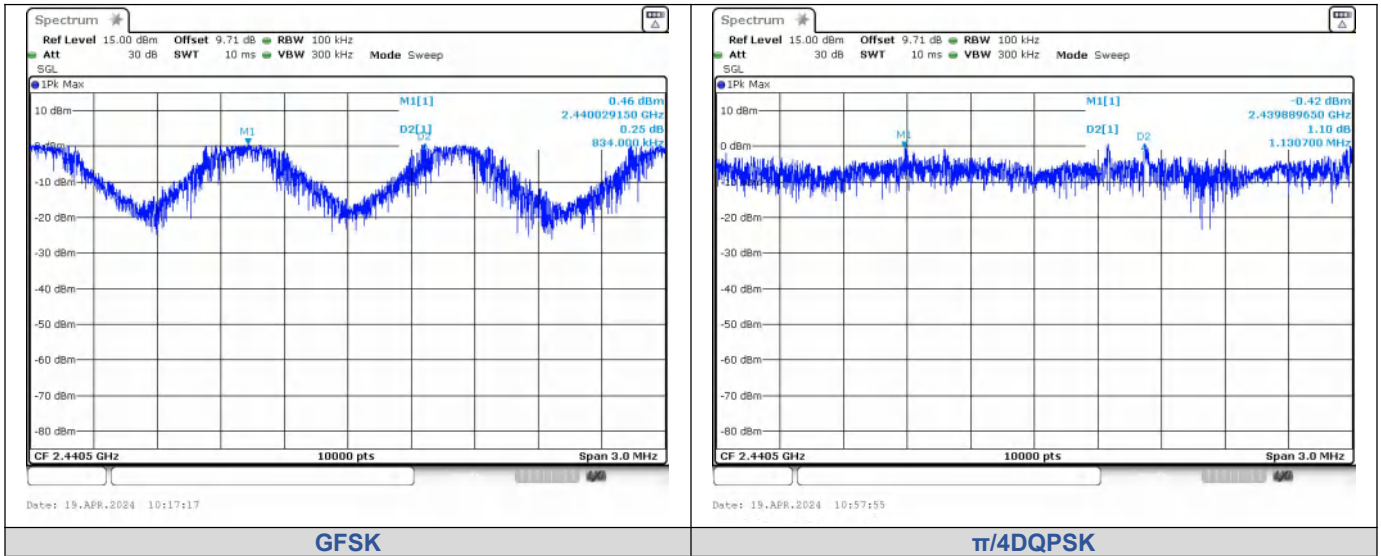
$\pi/4$ DQPSK_2-DH5_Channel 78

Carrier Frequencies Separation

Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2440.0291	2440.8632	0.8340	0.673	PASS
$\pi/4$ DQPSK	2-DH5	2439.8897	2441.0203	1.1307	0.88	PASS

Test Graphs



Conducted Out Of Band Emission

Test Result

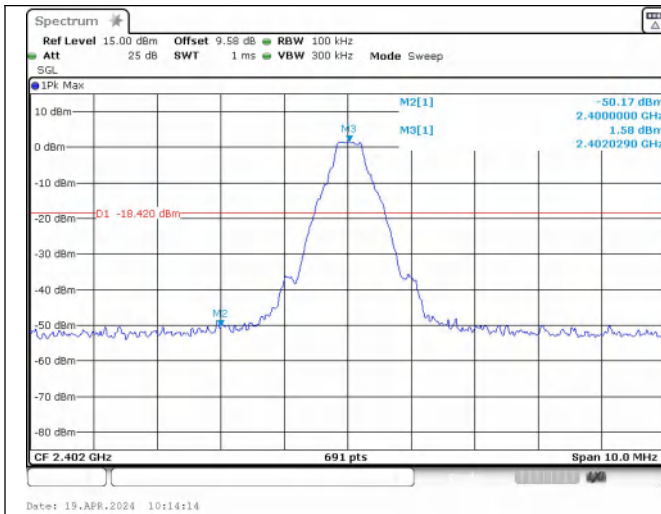
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-50.166	-18.42	-31.746	PASS
			7205.96	-39.965	-18.42	-21.545	PASS
		39	2596.50	-34.532	-19.2	-15.332	PASS
		78	2483.50	-53.061	-19.16	-33.901	PASS
			9920.20	-41.069	-19.16	-21.909	PASS
π /4DQPSK	2-DH5	0	2400.00	-49.309	-18.68	-30.629	PASS
			2616.48	-39.194	-18.68	-20.514	PASS
		39	9763.72	-41.588	-19.55	-22.038	PASS
		78	2483.50	-52.006	-19.14	-32.866	PASS
			9920.20	-40.575	-19.14	-21.435	PASS

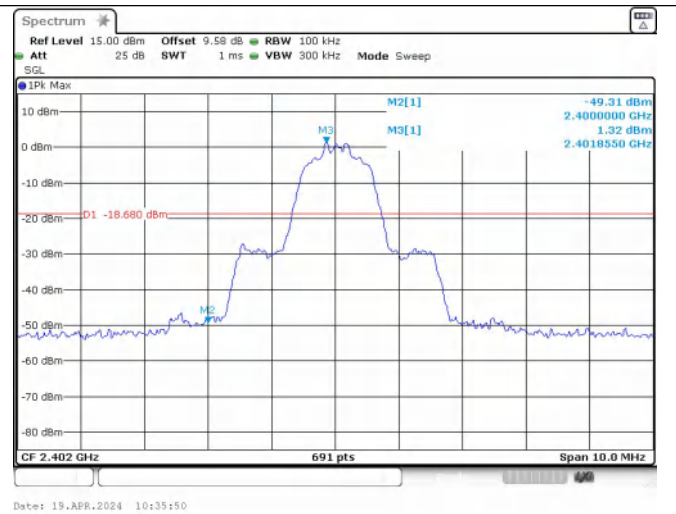
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2397.26	-49.656	-18.43	-31.226	PASS
			2400.00	-51.081	-18.43	-32.651	PASS
			2483.50	-51.482	-19.12	-32.362	PASS
			2397.68	-50.013	-18.37	-31.643	PASS
			2400.00	-50.242	-18.37	-31.872	PASS
			2483.50	-50.637	-19.12	-31.517	PASS
π/4DQPSK	2-DH5		2395.88	-50.167	-20.38	-29.787	PASS
			2400.00	-50.186	-20.38	-29.806	PASS
			2483.50	-50.671	-19.21	-31.461	PASS
			2398.26	-49.597	-18.57	-31.027	PASS
			2400.00	-51.251	-18.57	-32.681	PASS
			2483.50	-52.135	-19.29	-32.845	PASS

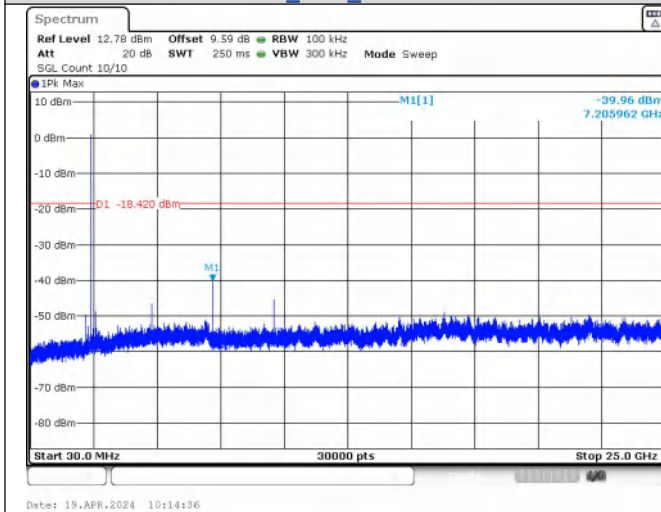
Test Graphs



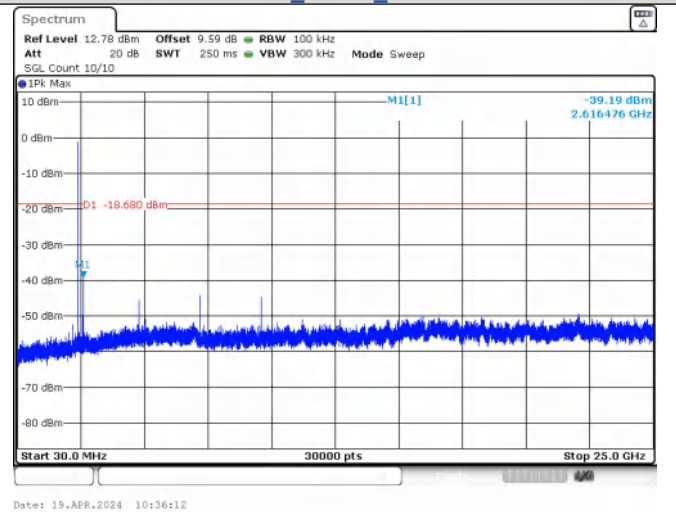
**Out Of Band Emission
GFSK_DH5_Channel 0**



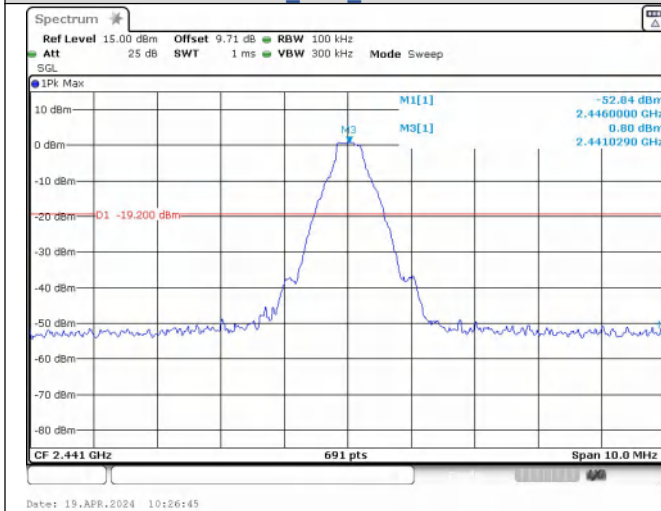
**Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0**



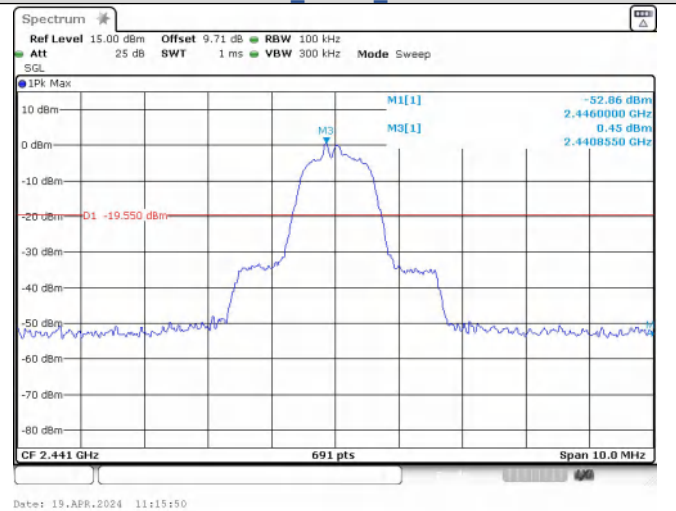
**Spurious Emission
GFSK_DH5_Channel 0**



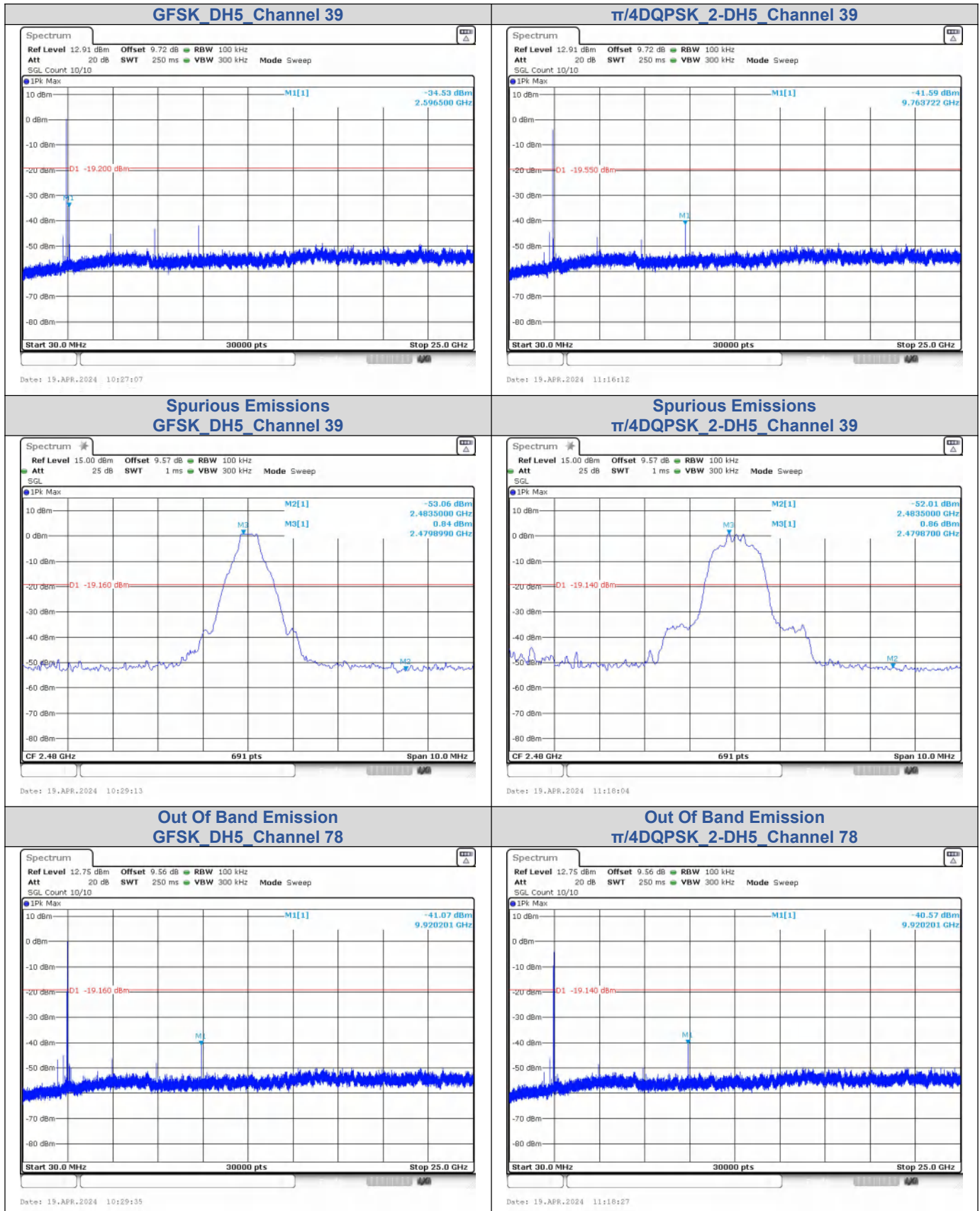
**Spurious Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0**



Out Of Band Emission

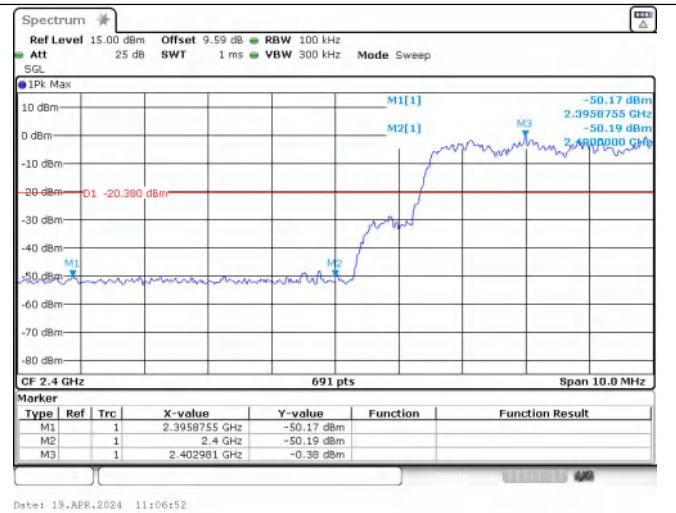
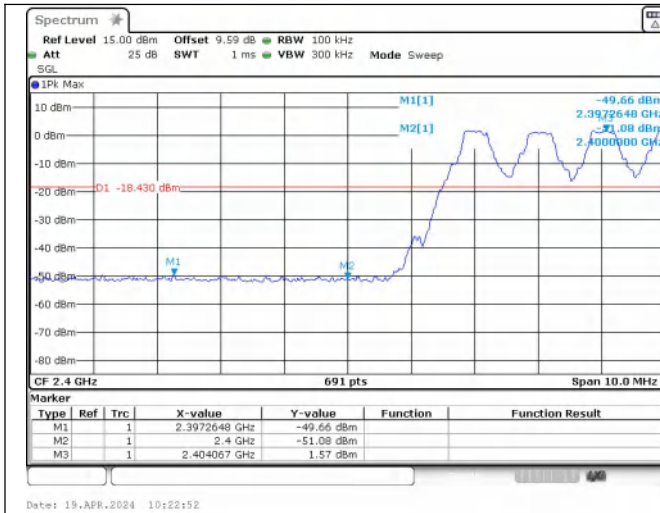


Out Of Band Emission



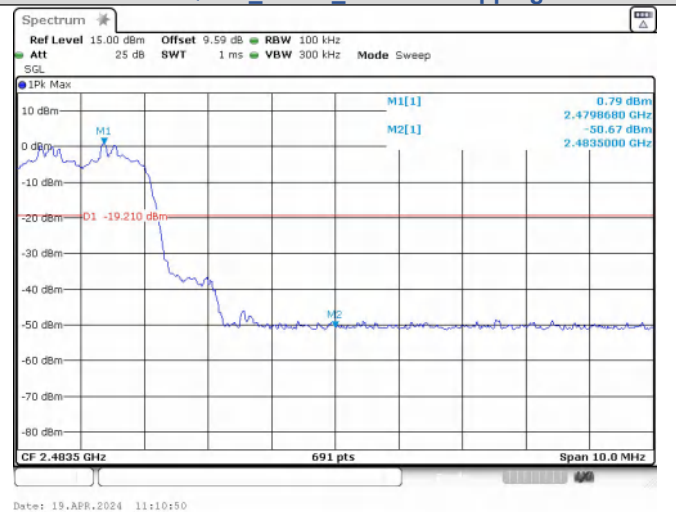
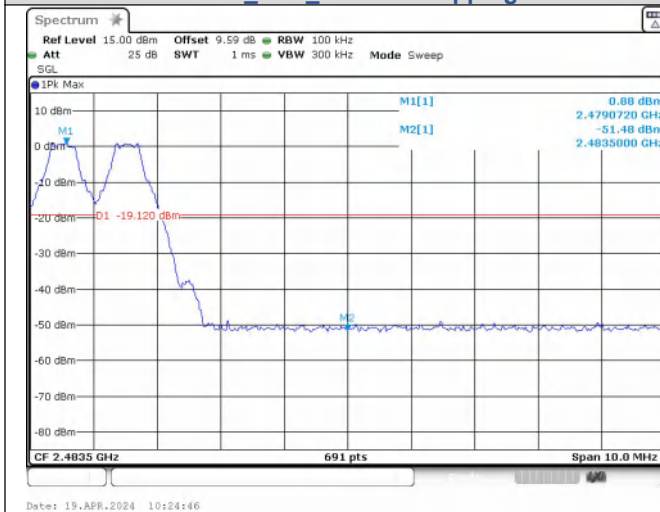
Spurious Emission GFSK_DH5_Channel 78

Spurious Emission $\pi/4$ DQPSK_2-DH5_Channel 78



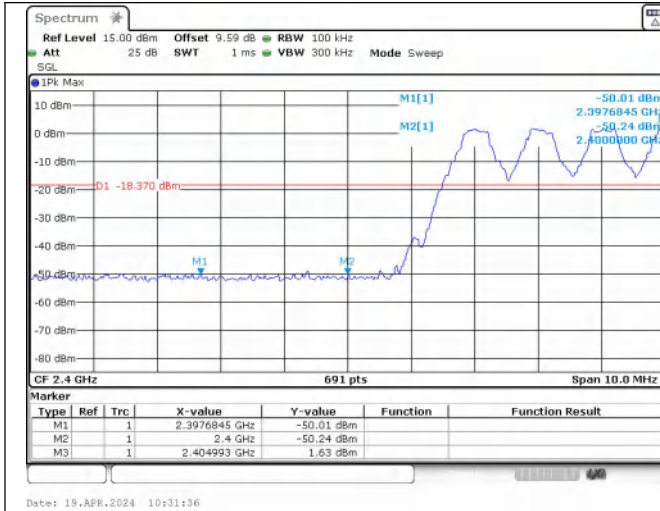
Out Of Band Emission(Left) GFSK_DH5_Channel Hopping

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

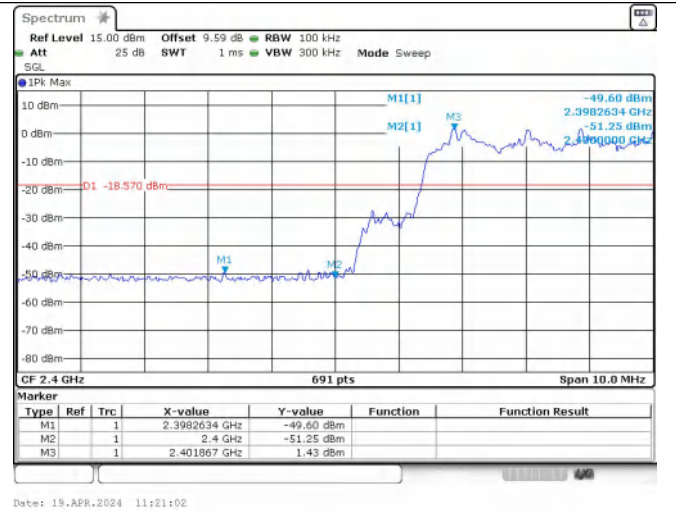


Out Of Band Emission(Right) GFSK_DH5_Channel Hopping

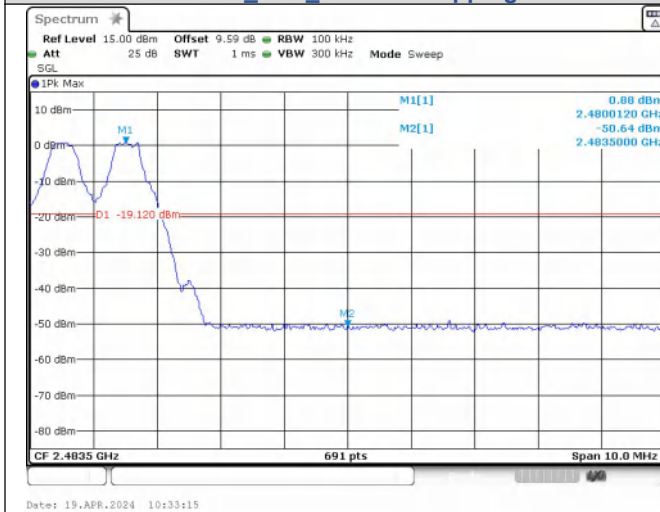
Out Of Band Emission(Right) $\pi/4$ DQPSK_2-DH5_Channel Hopping



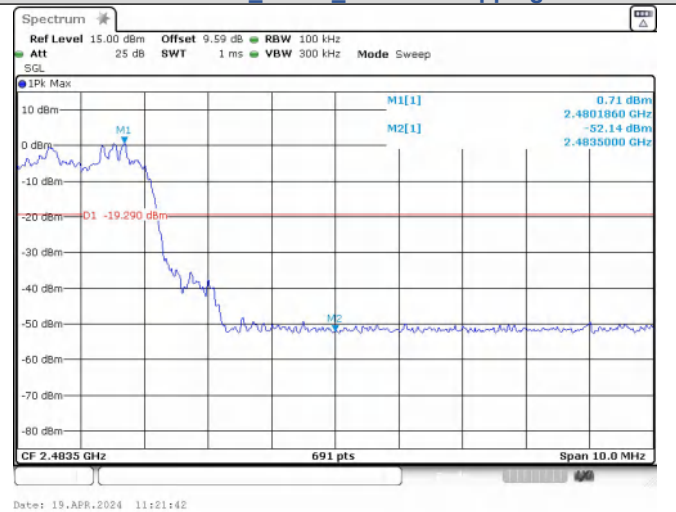
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



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



Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



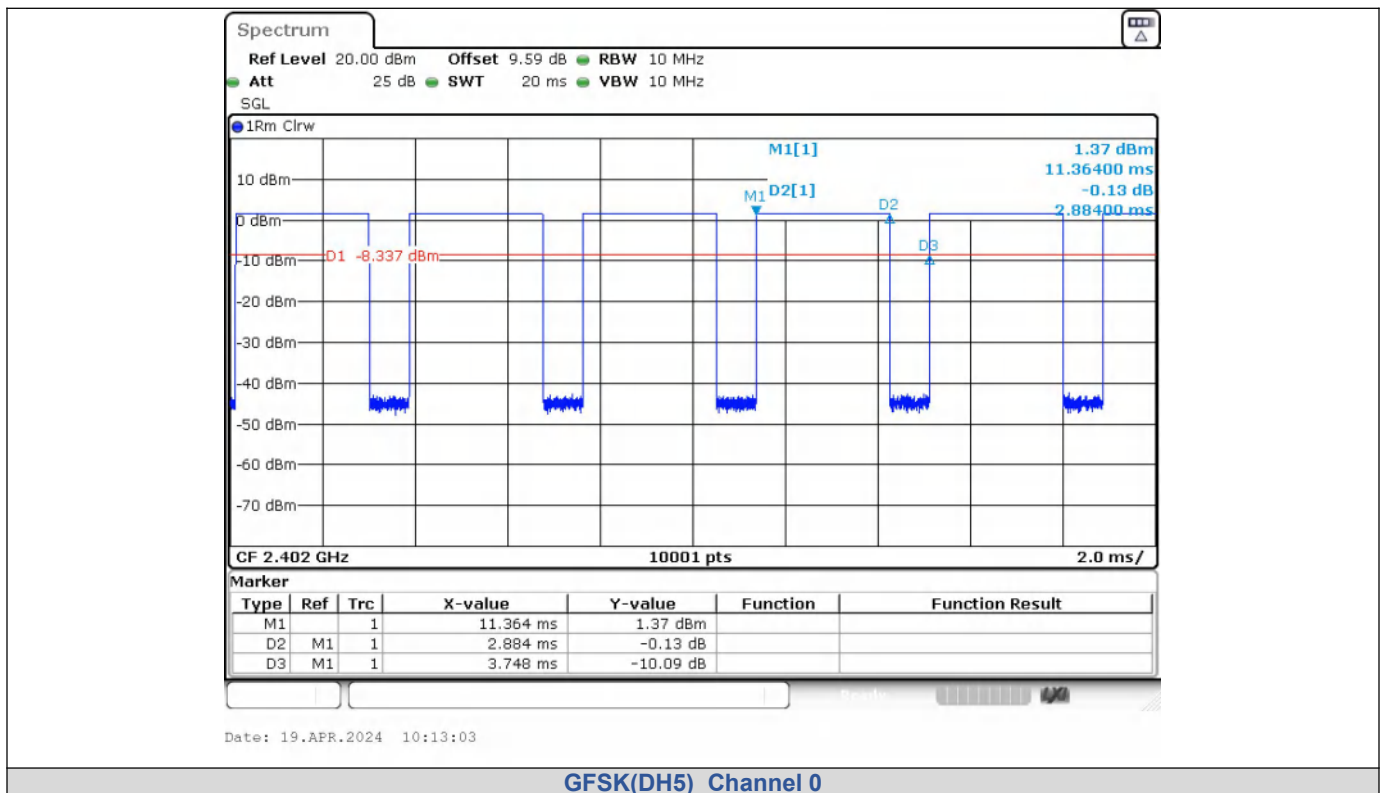
Out Of Band Emission(Right)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping

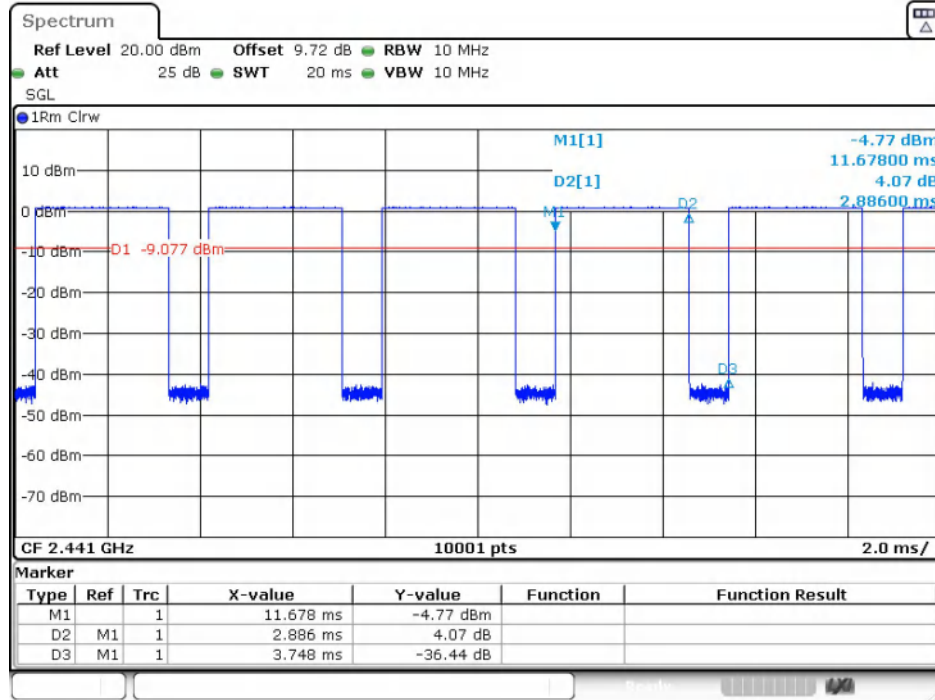
Duty Cycle

Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.884	3.748	76.95	0.7695	1.1379	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
$\pi/4$ DQPSK	2-DH5	0	2.892	3.748	77.16	0.7716	1.1261	0.35
		39	2.892	3.748	77.16	0.7716	1.1261	0.35
		78	2.890	3.748	77.11	0.7711	1.1289	0.35

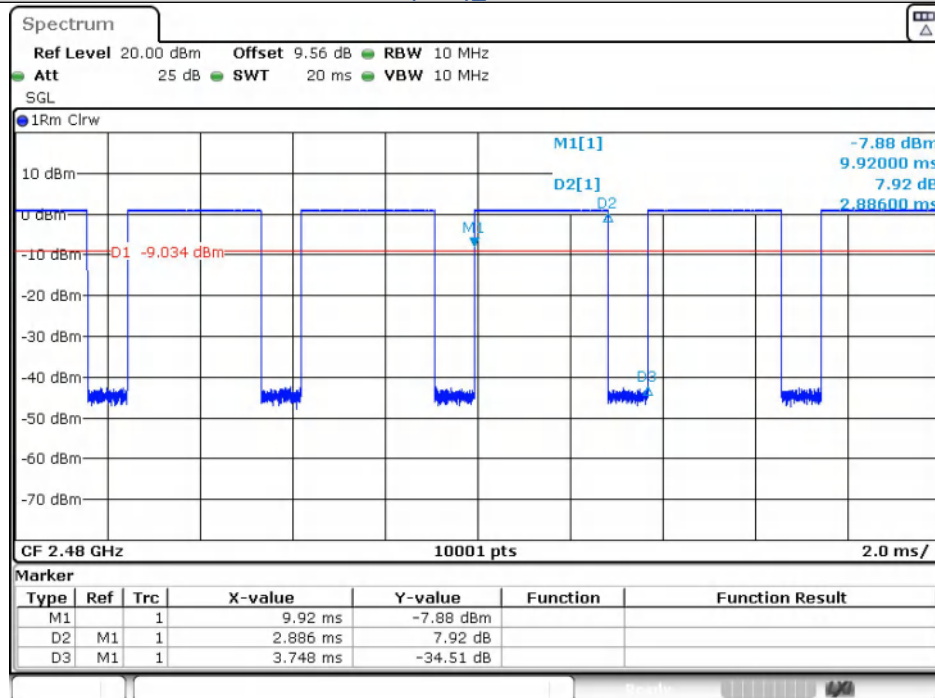
Test Graphs





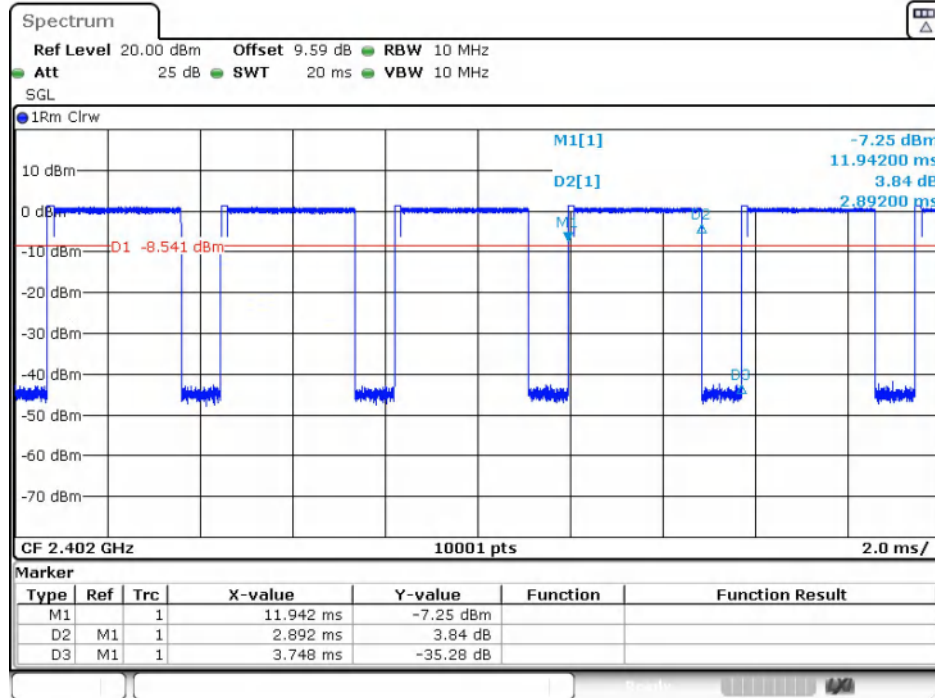
Date: 19.APR.2024 10:25:40

GFSK(DH5)_Channel 39



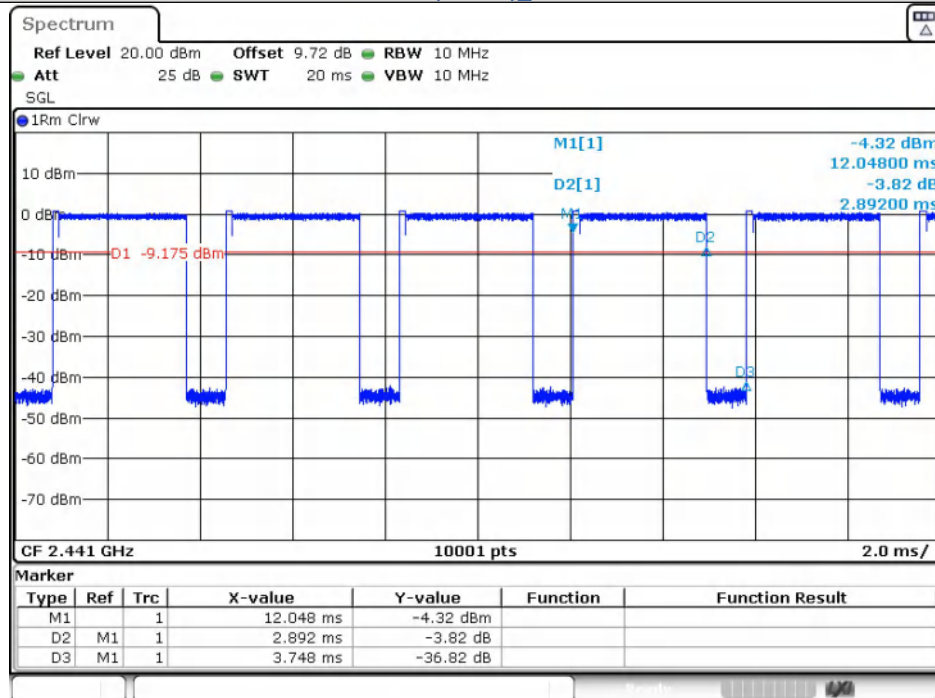
Date: 19.APR.2024 10:28:03

GFSK(DH5)_Channel 78



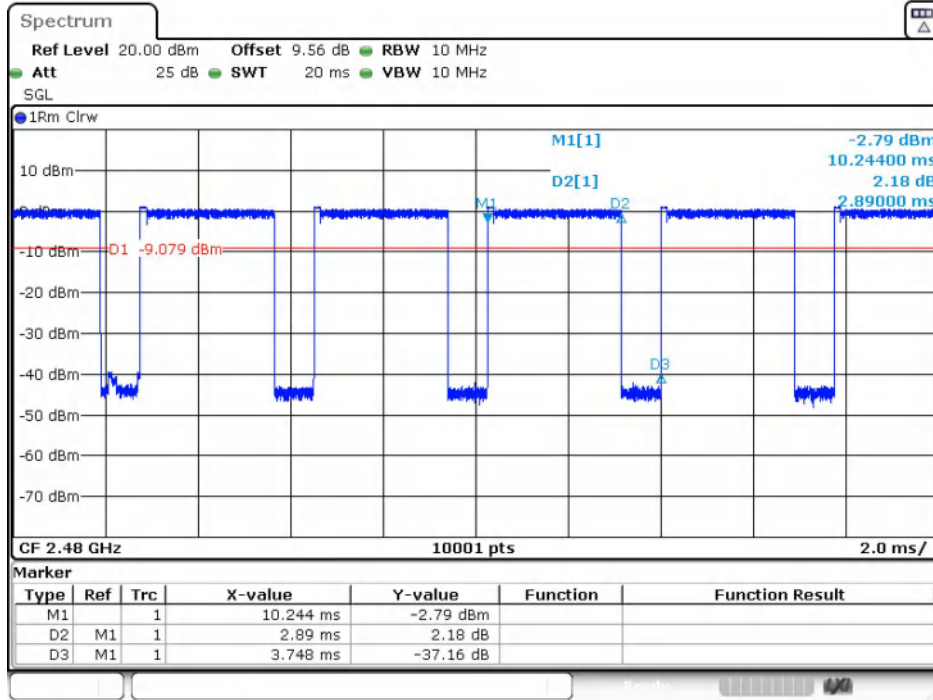
Date: 19.APR.2024 10:34:39

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



Date: 19.APR.2024 11:14:44

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



Date: 19.APR.2024 11:16:54

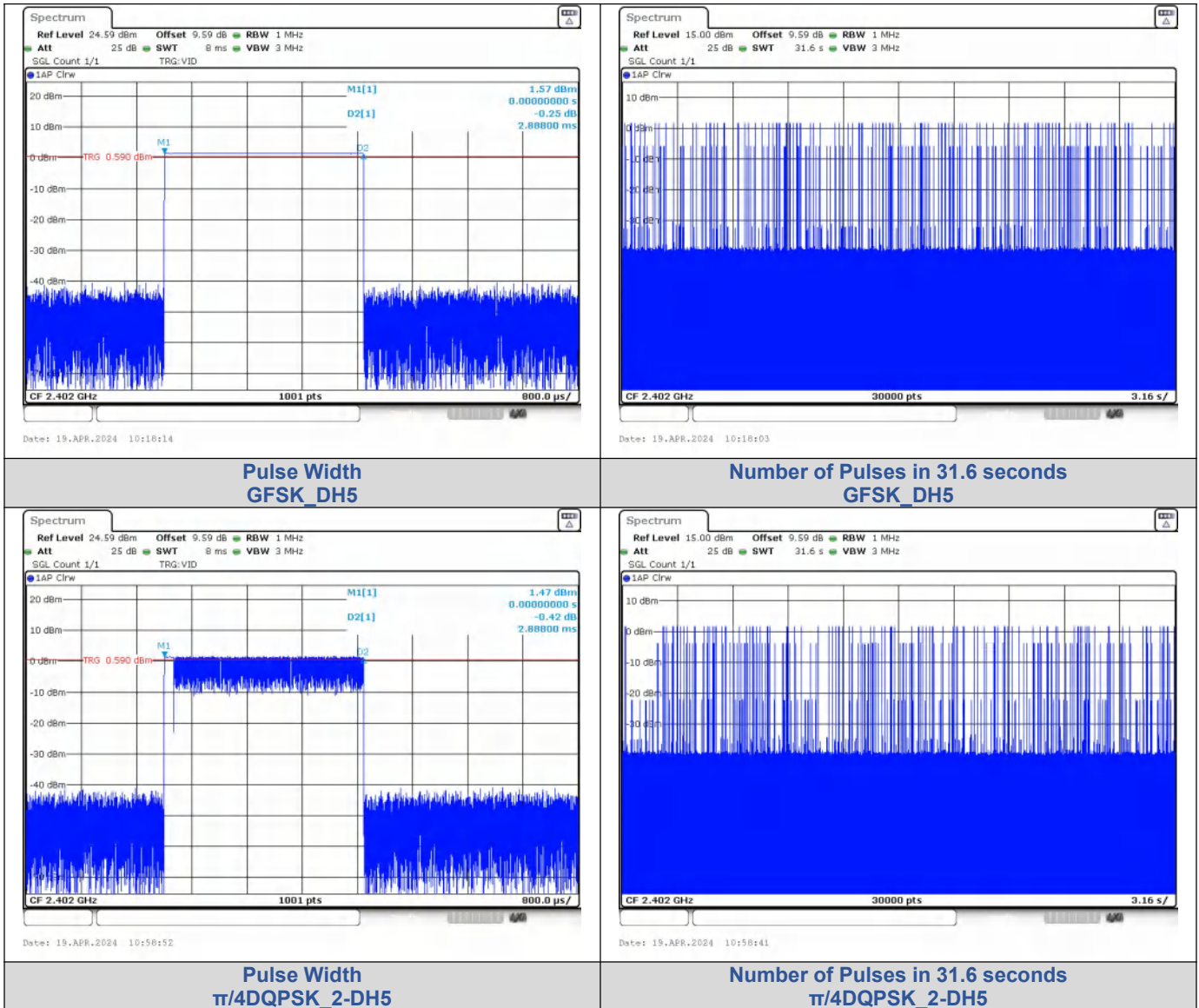
$\pi/4$ DQPSK(2-DH5)_Channel 78

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)	2.888	117	337.9	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.888	107	309.02		PASS

Test Graphs



Number Of Hopping Channel

Test Result

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

Test Graphs

