

Appendix A

Report No.:	CISRR24040804401
FCC ID:	2BFWH-Z8
Product Name:	Bluetooth headset
Model No.:	Z8
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	3.439	2.208	30	PASS
		39	2.101	1.622		PASS
		78	2.559	1.803		PASS
$\pi/4$ DQPSK	2-DH5	0	3.277	2.127	20.97	PASS
		39	2.662	1.846		PASS
		78	3.141	2.061		PASS
8DPSK	3-DH5	0	3.415	2.196		PASS
		39	2.864	1.934		PASS
		78	2.840	1.923		PASS

Right

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	3.532	2.255	30	PASS
		39	2.091	1.618		PASS
		78	2.574	1.809		PASS
$\pi/4$ DQPSK	2-DH5	0	3.373	2.174	20.97	PASS
		39	2.761	1.888		PASS
		78	3.277	2.127		PASS
8DPSK	3-DH5	0	2.806	1.908		PASS
		39	2.954	1.974		PASS
		78	3.433	2.204		PASS

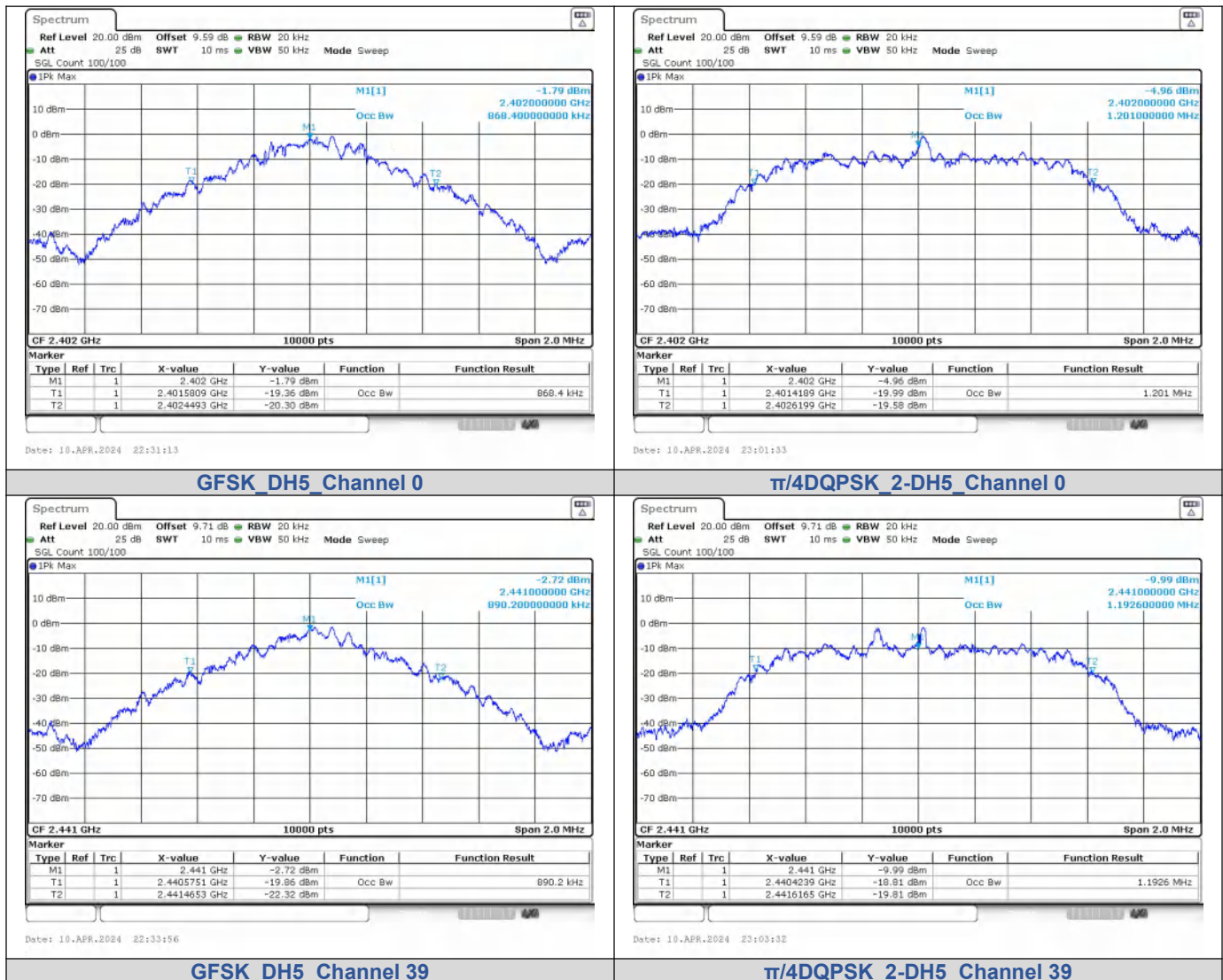
99% Bandwidth

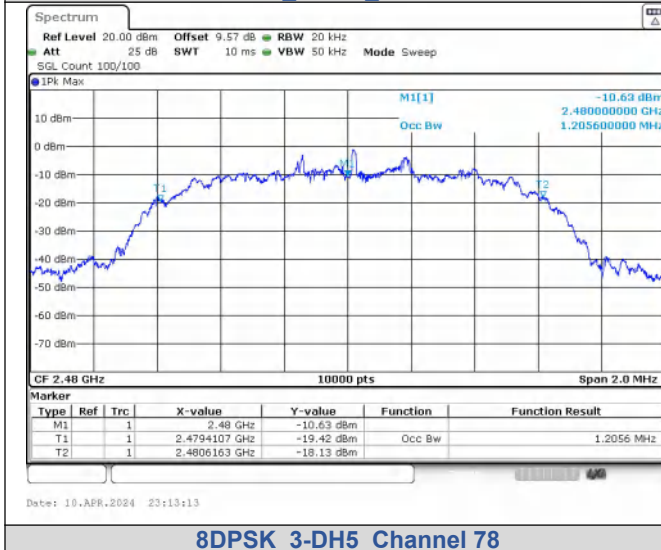
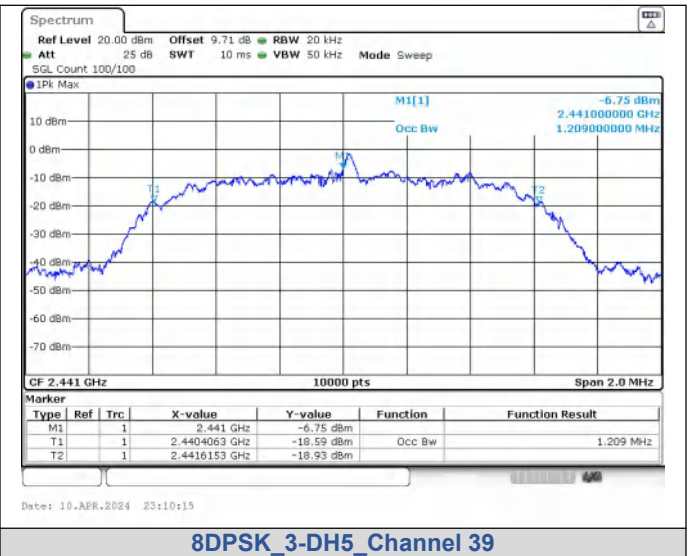
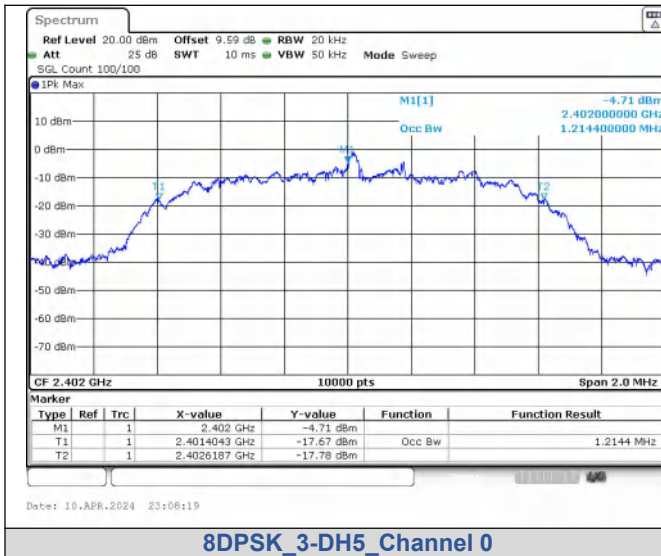
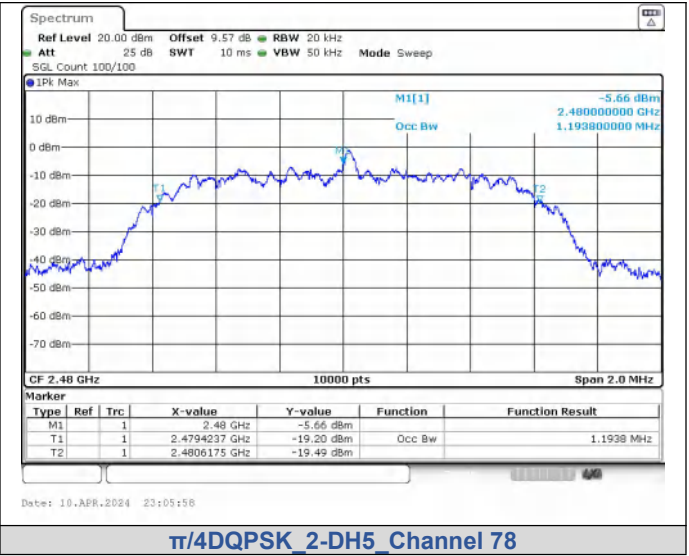
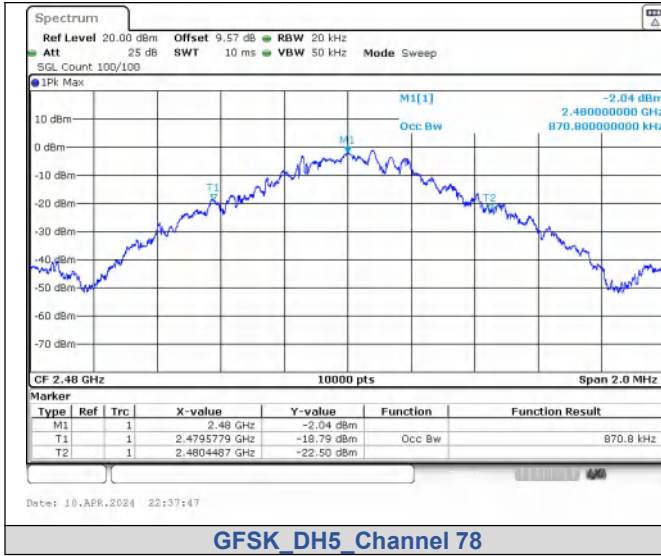
Test Result

Left

Modulation	Channel	99% BW (MHz)
GFSK	0	0.86840
	39	0.89020
	78	0.87080
$\pi/4$ DQPSK	0	1.2010
	39	1.1930
	78	1.1940
8DPSK	0	1.2140
	39	1.2090
	78	1.2060

Test Graphs



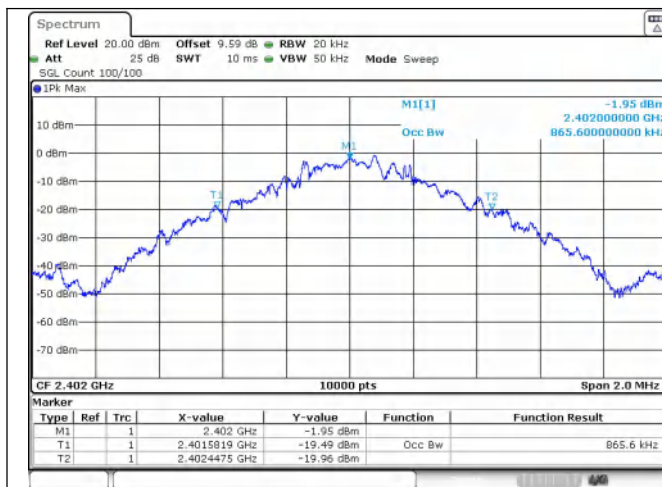


Right

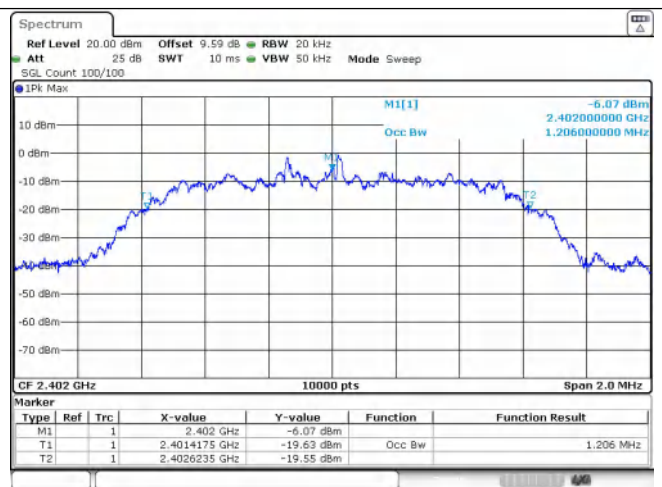
Test Result

Modulation	Channel	99% BW (MHz)
GFSK	0	0.86560
	39	0.88080
	78	0.87100
$\pi/4$ DQPSK	0	1.2060
	39	1.1930
	78	1.1890
8DPSK	0	1.2120
	39	1.2040
	78	1.2050

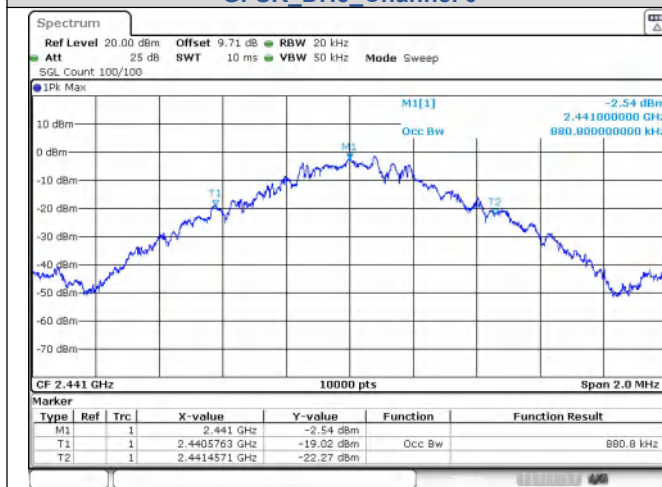
Test Graphs



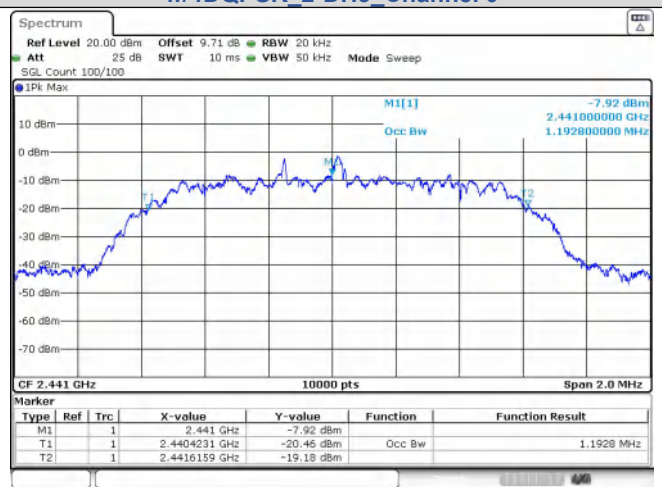
GFSK_DH5_Channel 0



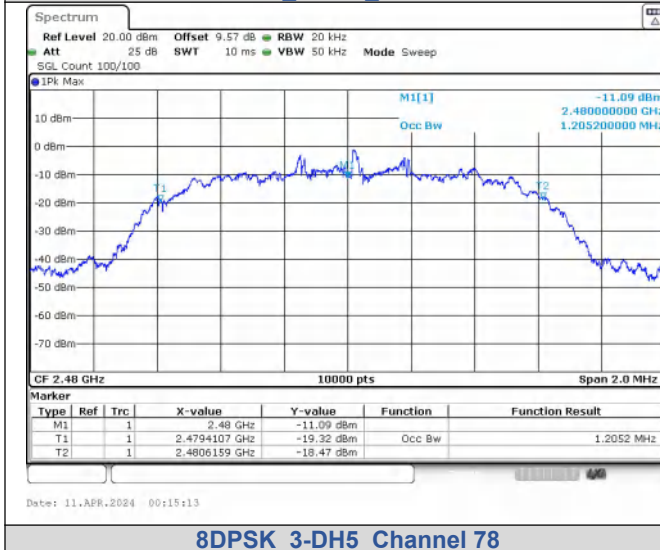
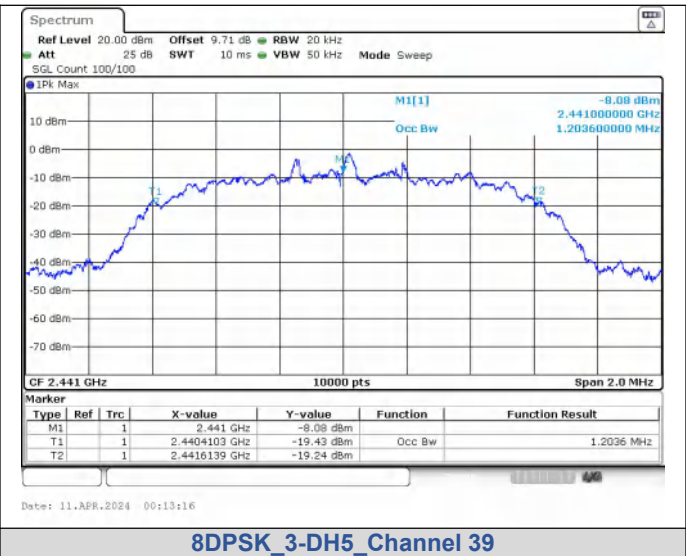
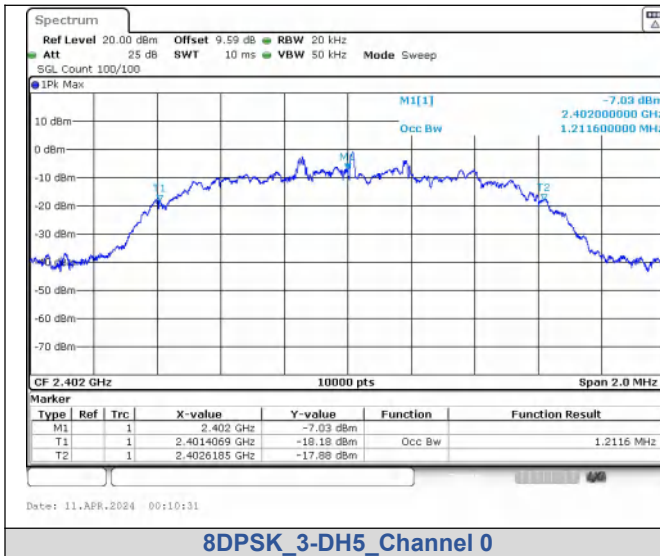
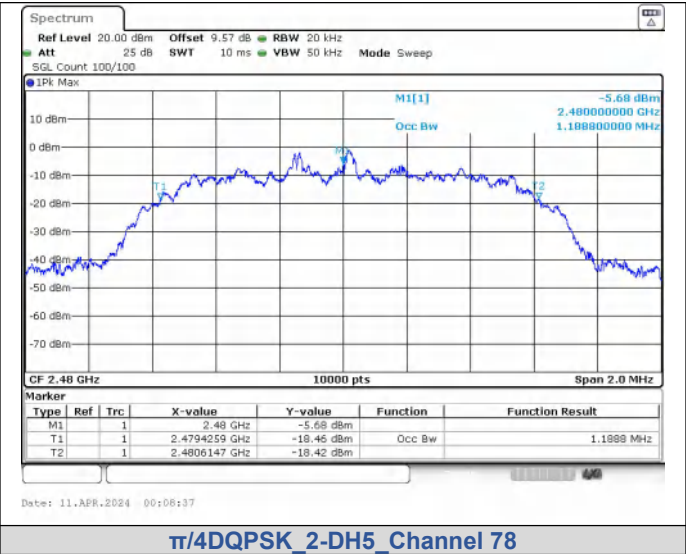
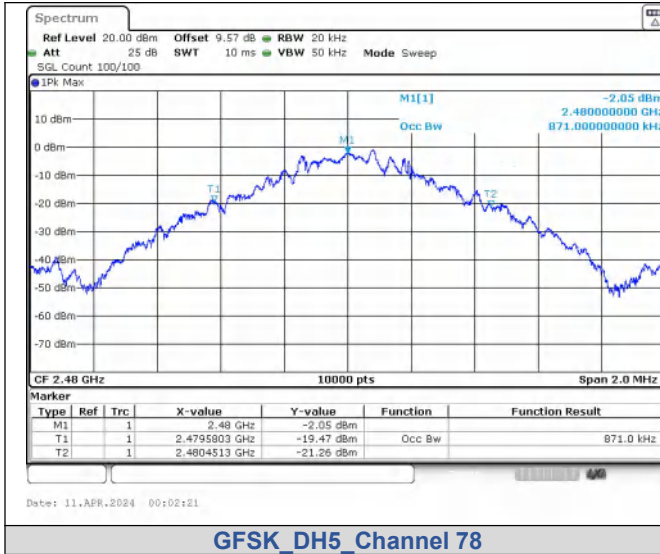
$\pi/4$ DQPSK_2-DH5_Channel 0



GFSK_DH5_Channel 39



$\pi/4$ DQPSK_2-DH5_Channel 39



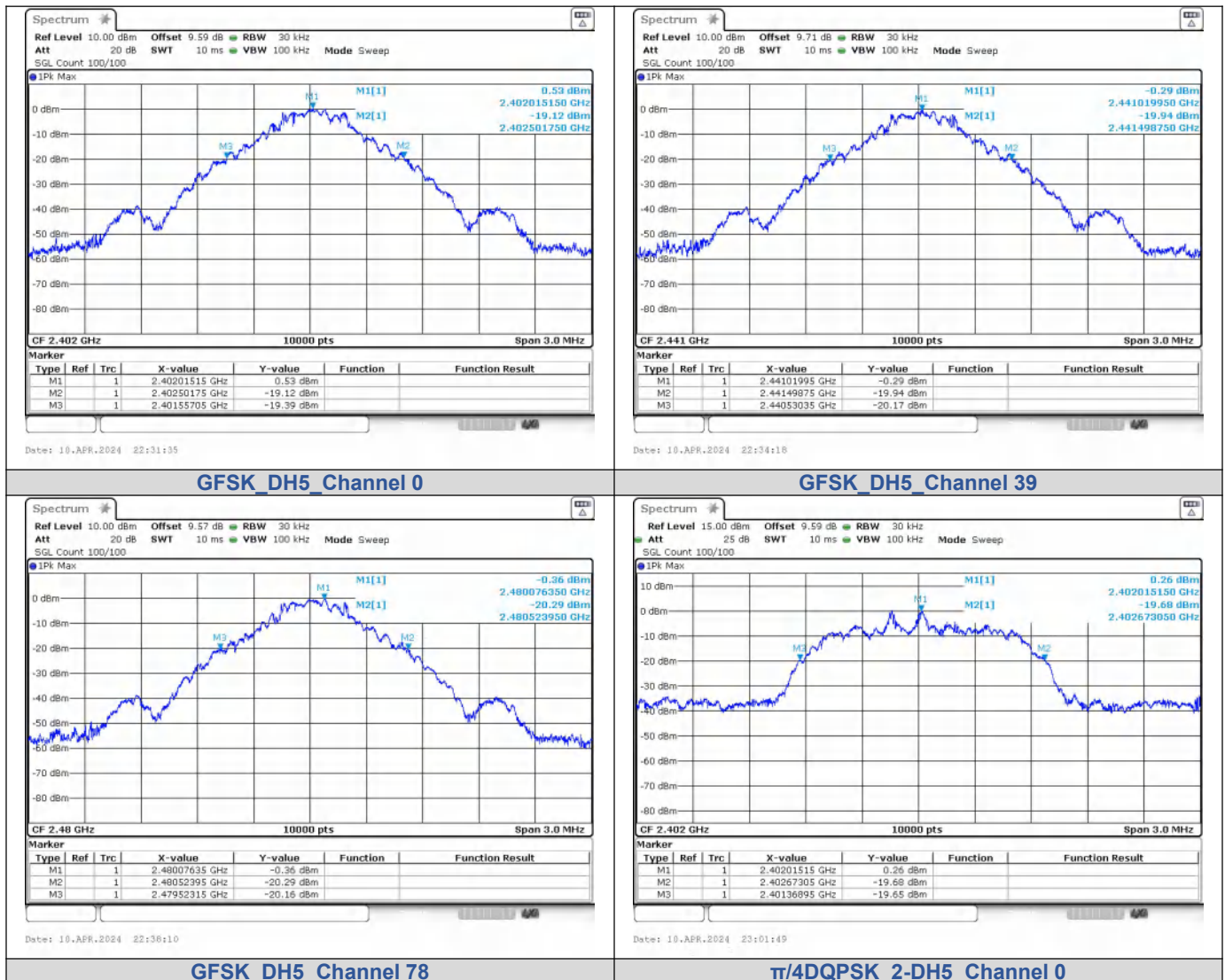
20dB Bandwidth

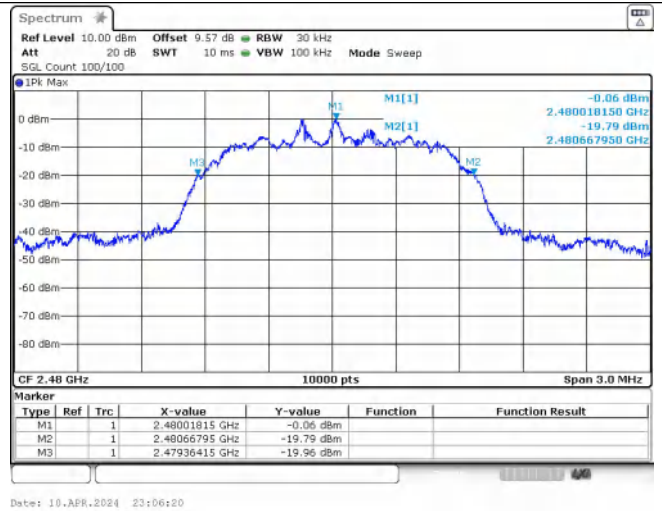
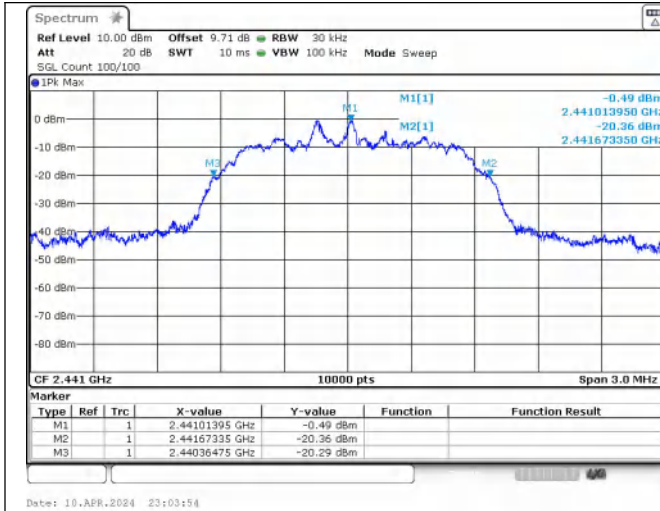
Test Result

Left

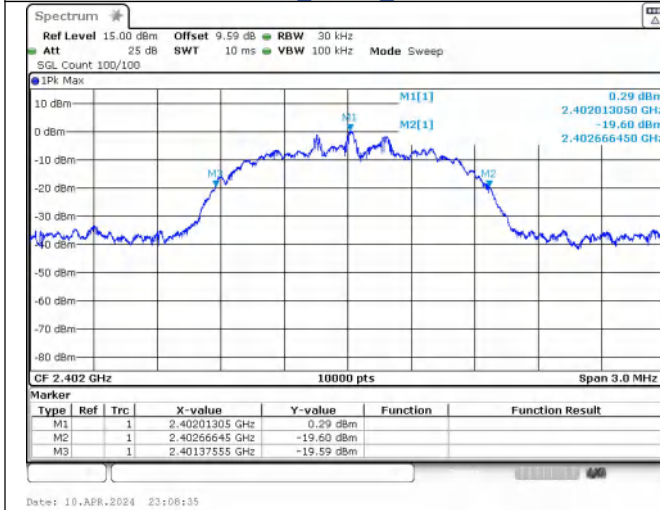
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	0.9400
	39	2441 MHz	0.9700
	78	2480 MHz	1.000
$\pi/4$ DQPSK	0	2402 MHz	1.300
	39	2441 MHz	1.310
	78	2480 MHz	1.310
8DPSK	0	2402 MHz	1.290
	39	2441 MHz	1.280
	78	2480 MHz	1.290

Test Graphs

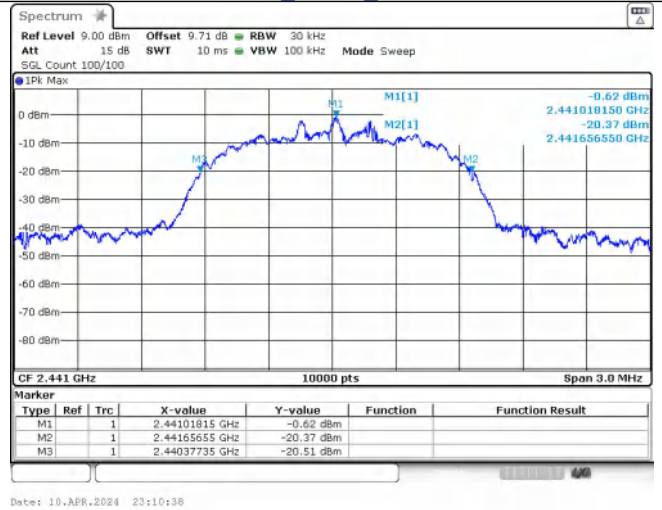




$\pi/4$ DQPSK_2-DH5_Channel 39



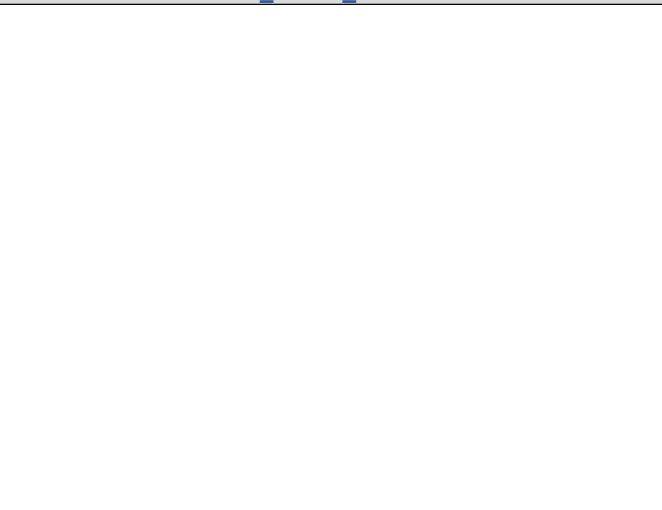
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



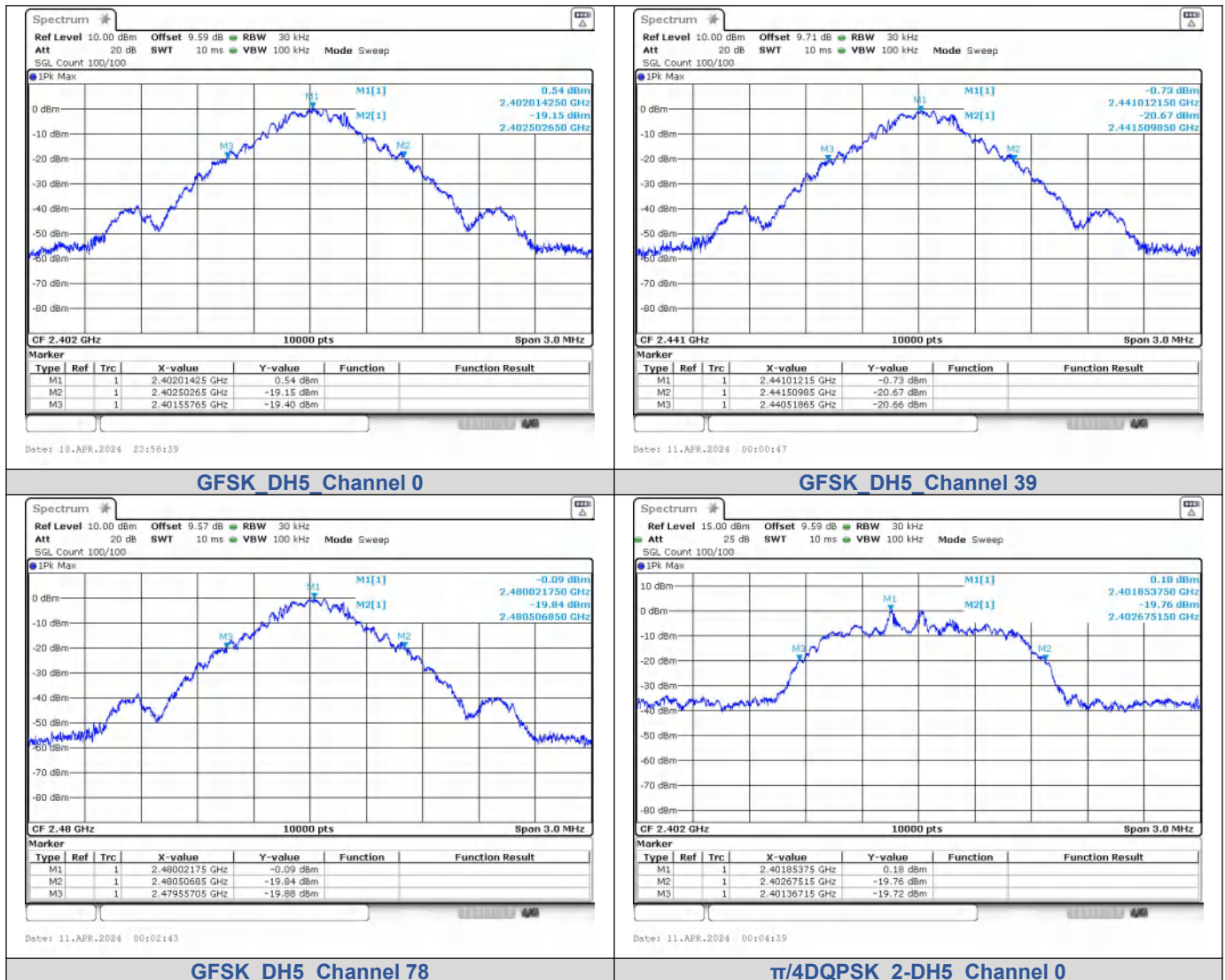
8DPSK_3-DH5_Channel 78

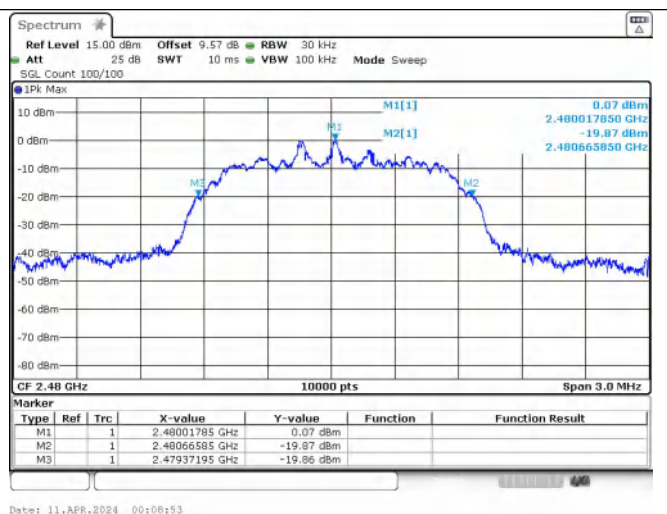
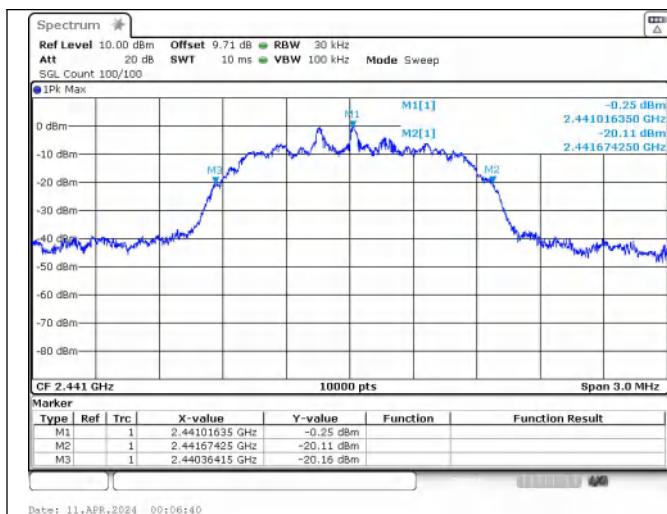
Right

Test Result

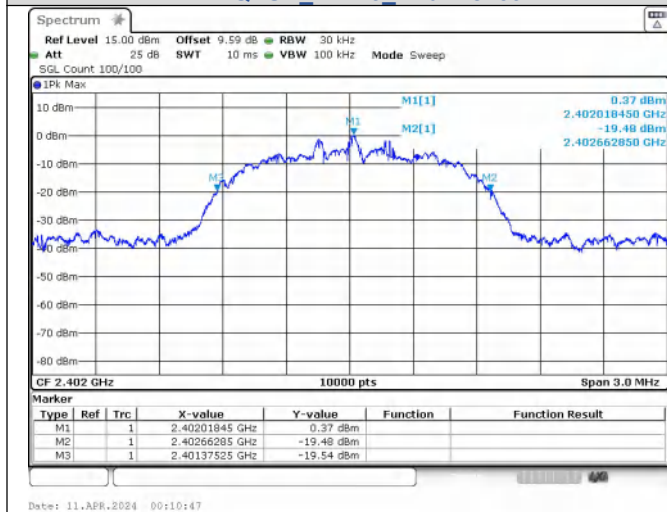
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	0.9400
	39	2441 MHz	0.9900
	78	2480 MHz	0.9500
$\pi/4$ DQPSK	0	2402 MHz	1.310
	39	2441 MHz	1.310
	78	2480 MHz	1.300
8DPSK	0	2402 MHz	1.280
	39	2441 MHz	1.290
	78	2480 MHz	1.300

Test Graphs

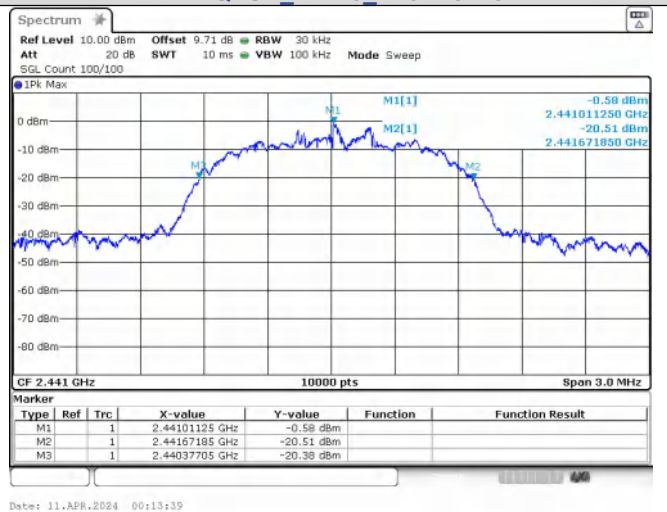




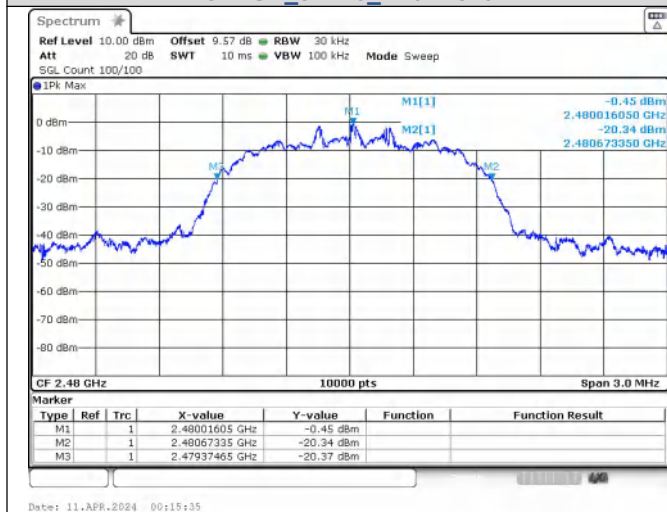
$\pi/4$ DQPSK_2-DH5_Channel 39



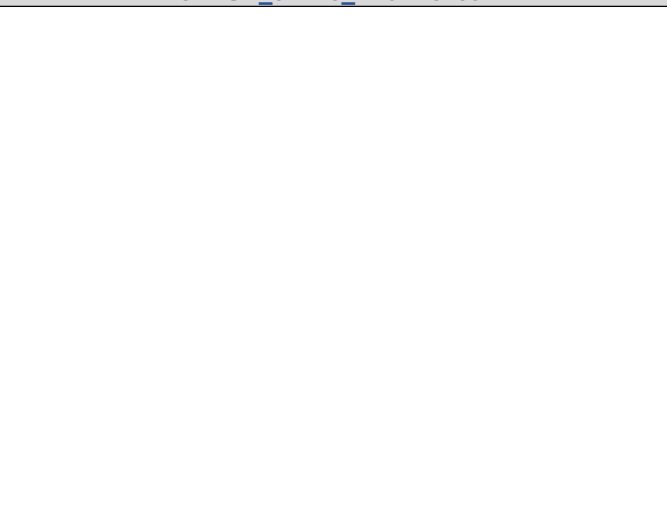
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



8DPSK_3-DH5_Channel 78

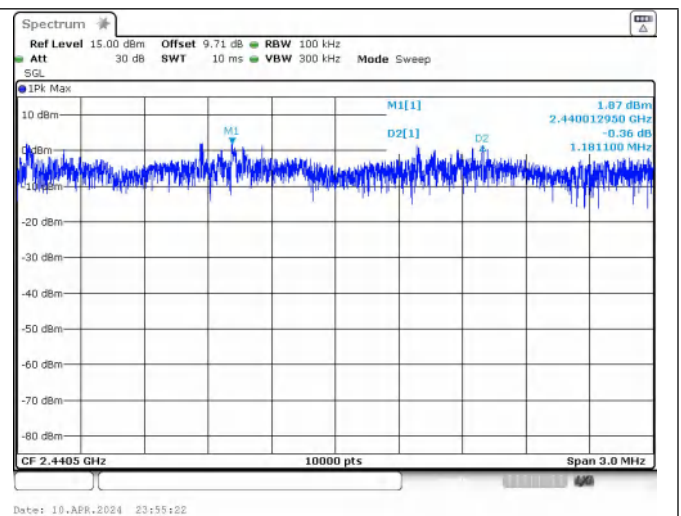
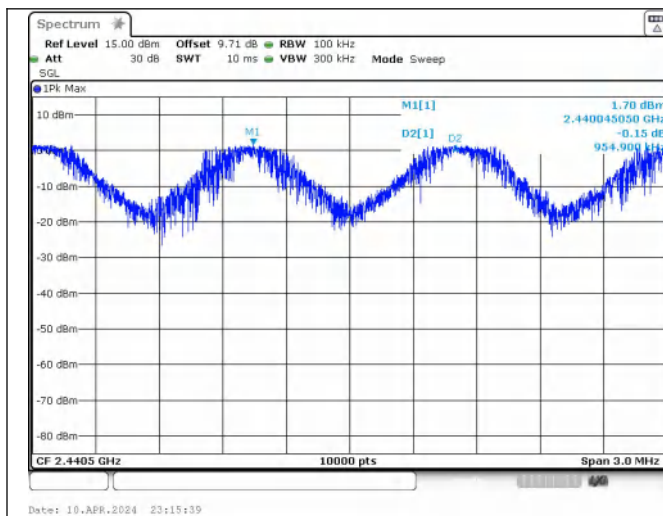
Carrier Frequencies Separation

Test Result

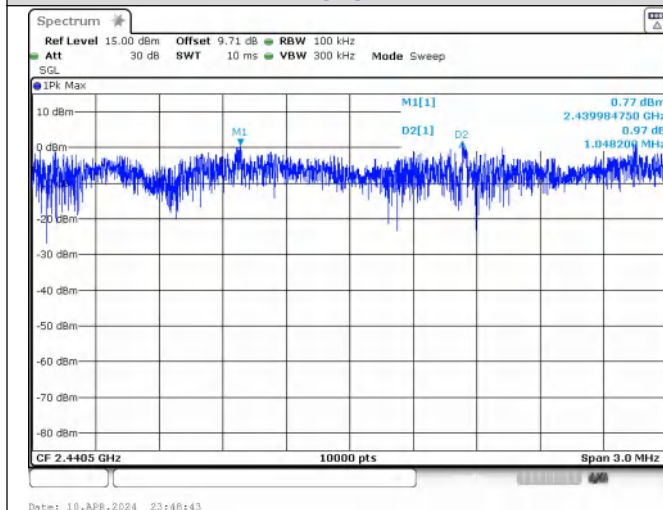
Left

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2440.0451	2440.9999	0.9549	0.627	PASS
$\pi/4$ DQPSK	2-DH5	2440.0129	2441.1941	1.1811	0.867	PASS
8DPSK	3-DH5	2439.9848	2441.0329	1.0482	0.86	PASS

Test Graphs



GFSK



8DPSK

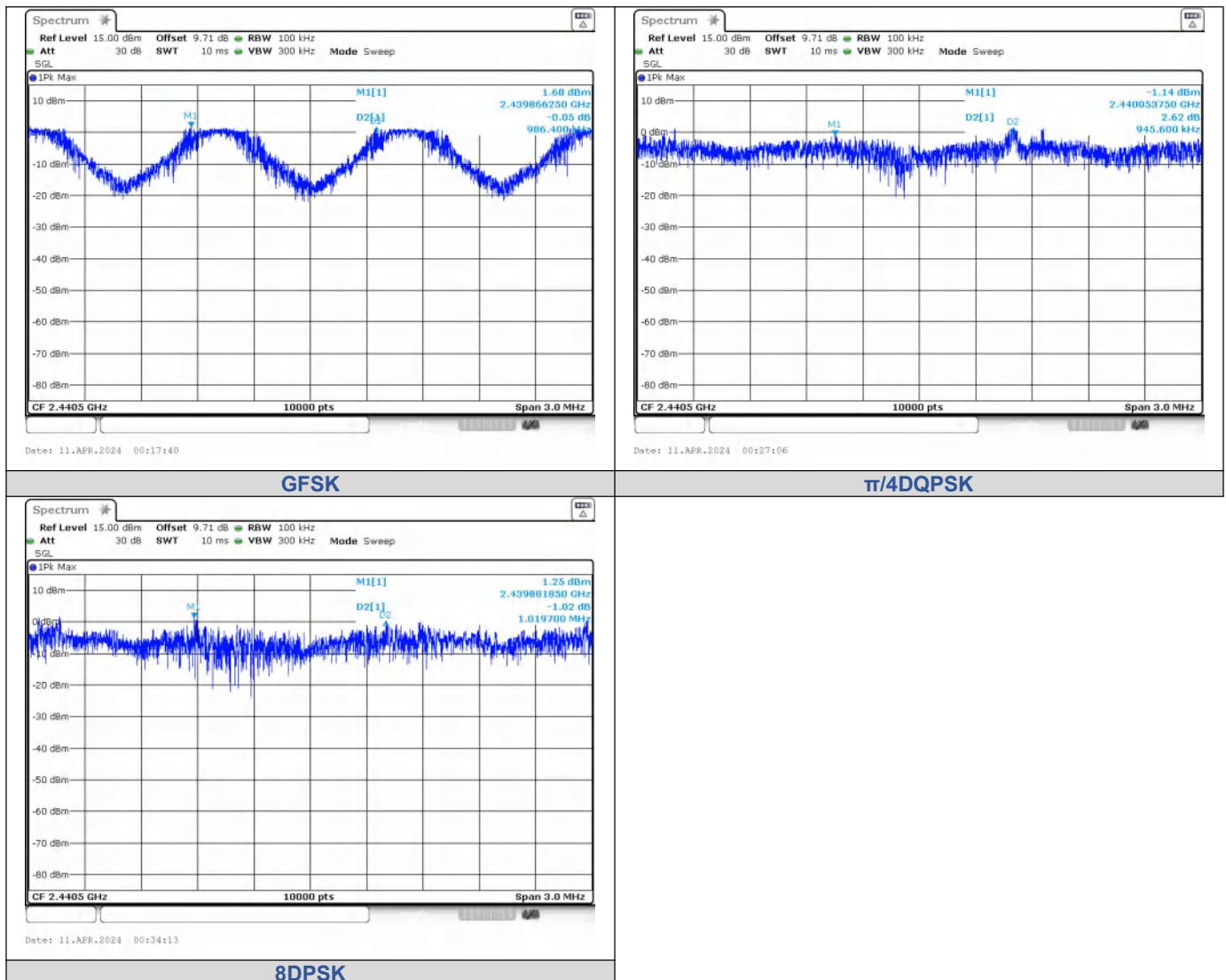
$\pi/4$ DQPSK

Right

Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2439.8663	2440.8526	0.9864	0.627	PASS
$\pi/4$ DQPSK	2-DH5	2440.0538	2440.9994	0.9456	0.873	PASS
8DPSK	3-DH5	2439.8819	2440.9016	1.0197	0.853	PASS

Test Graphs



Conducted Out Of Band Emission

Test Result

Left

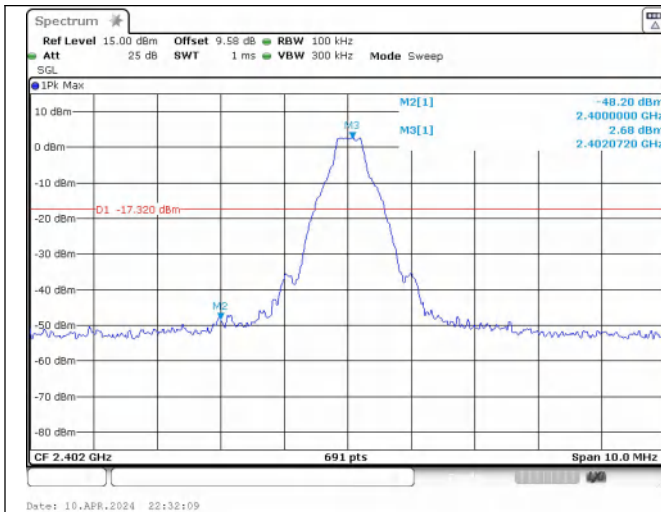
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-48.197	-17.32	-30.877	PASS
			7205.96	-36.962	-17.32	-19.642	PASS
		39	9763.72	-40.117	-18.13	-21.987	PASS
		78	2483.50	-51.854	-17.62	-34.234	PASS
			9920.20	-40.187	-17.62	-22.567	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-49.074	-17.64	-31.434	PASS
			9608.08	-39.906	-17.64	-22.266	PASS
		39	9763.72	-39.902	-18.38	-21.522	PASS
		78	2483.50	-52.694	-17.77	-34.924	PASS
			9920.20	-40.552	-17.77	-22.782	PASS
8DPSK	3-DH5	0	2400.00	-48.697	-17.49	-31.207	PASS
			9608.08	-39.518	-17.49	-22.028	PASS
		39	9763.72	-39.616	-18.28	-21.336	PASS
		78	2483.50	-52.064	-17.77	-34.294	PASS
			9920.20	-40.401	-17.77	-22.631	PASS

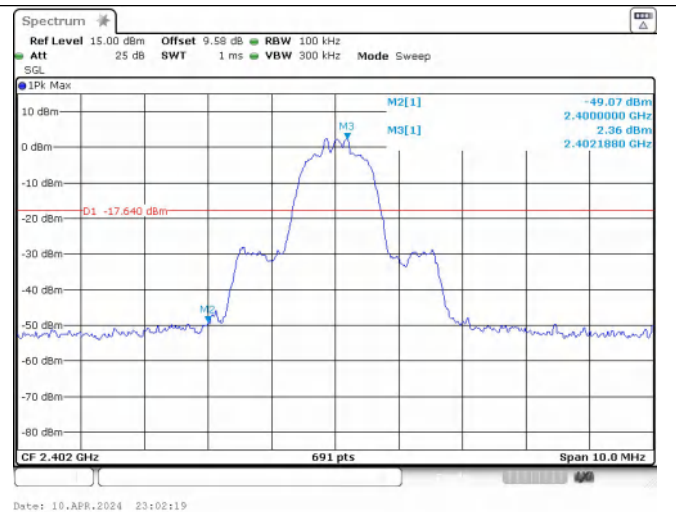
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2398.22	-49.761	-17.33	-32.431	PASS
			2400.00	-52.413	-17.33	-35.083	PASS
			2483.50	-52.831	-17.85	-34.981	PASS
			2398.47	-49.787	-17.3	-32.487	PASS
			2400.00	-52.357	-17.3	-35.057	PASS
			2483.50	-50.673	-17.63	-33.043	PASS
π/4DQPSK	2-DH5		2396.82	-49.445	-17.35	-32.095	PASS
			2400.00	-49.807	-17.35	-32.457	PASS
			2483.50	-51.034	-18.26	-32.774	PASS
			2396.64	-50.605	-18.3	-32.305	PASS
			2400.00	-52.601	-18.3	-34.301	PASS
			2483.50	-50.505	-18.27	-32.235	PASS
8DPSK	3-DH5		2395.41	-50.785	-17.75	-33.035	PASS
			2400.00	-52.854	-17.75	-35.104	PASS
			2483.50	-52.400	-20.21	-32.190	PASS
			2398.99	-50.255	-17.36	-32.895	PASS
			2400.00	-51.508	-17.36	-34.148	PASS
			2483.50	-52.836	-20.94	-31.896	PASS

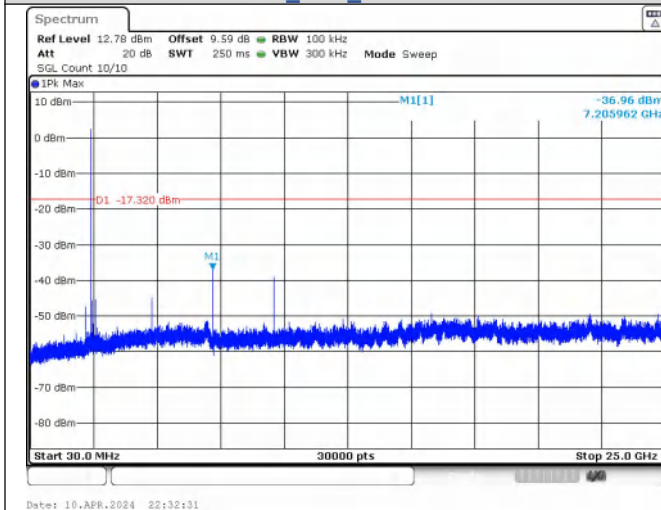
Test Graphs



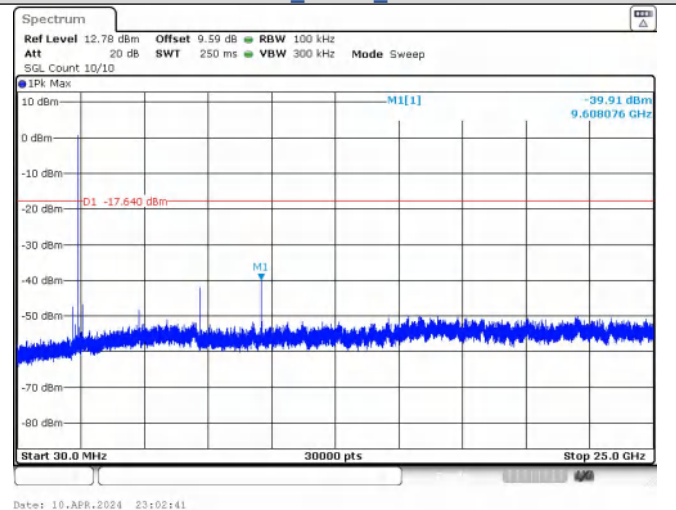
**Out Of Band Emission
GFSK_DH5_Channel 0**



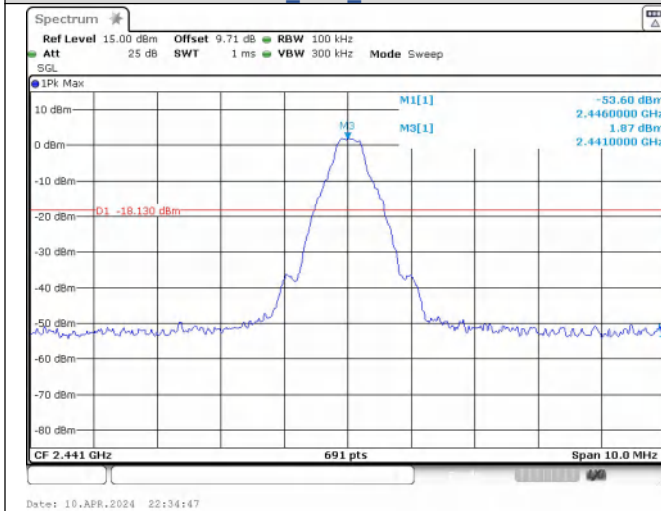
**Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0**



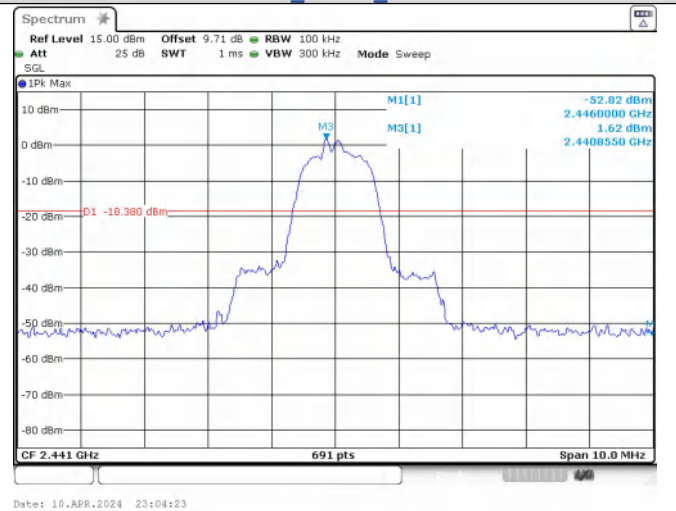
**Spurious Emission
GFSK_DH5_Channel 0**



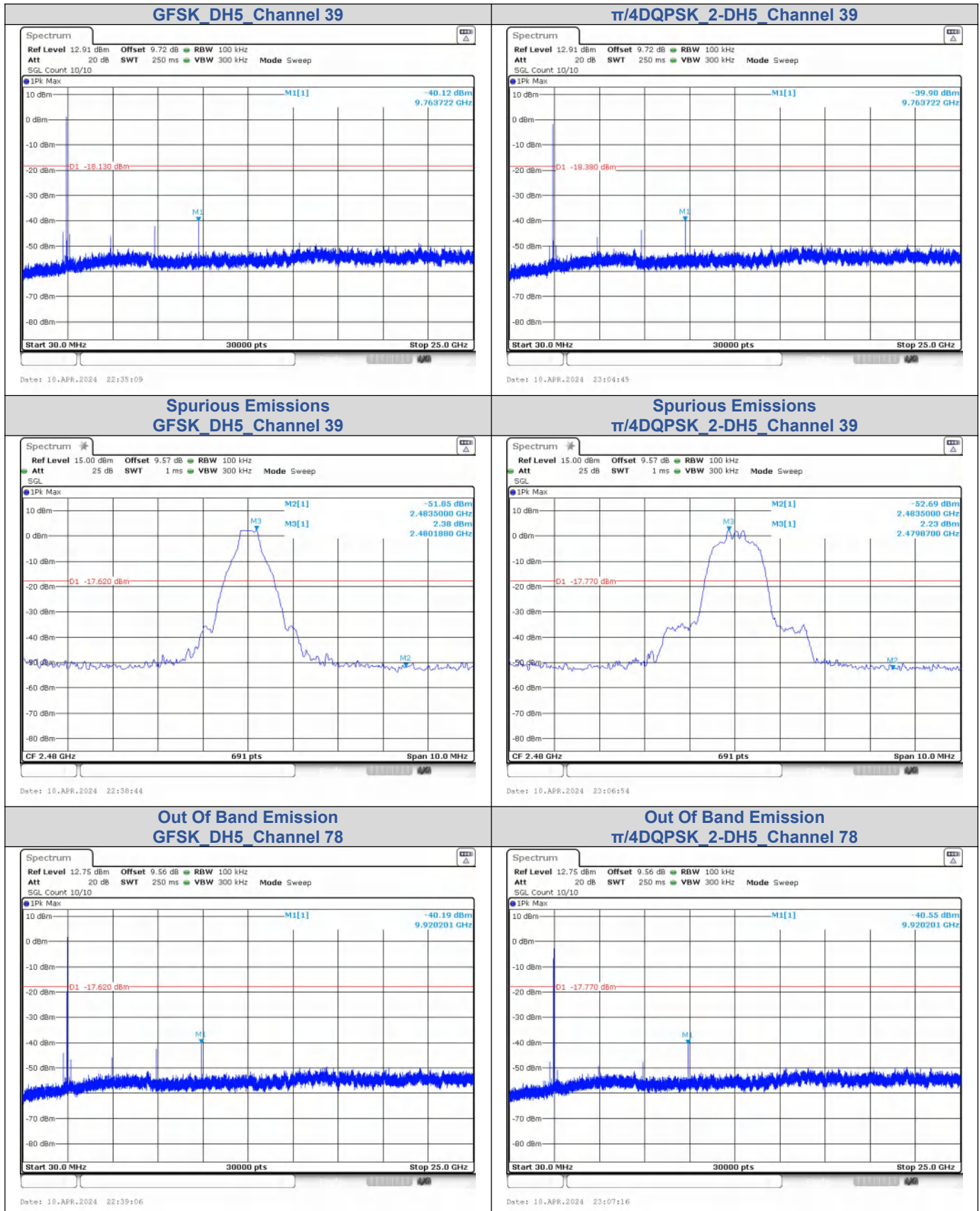
**Spurious Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0**



Out Of Band Emission

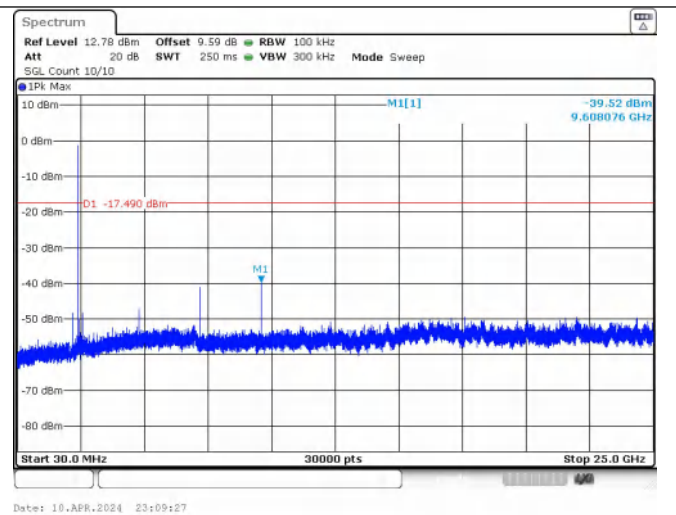
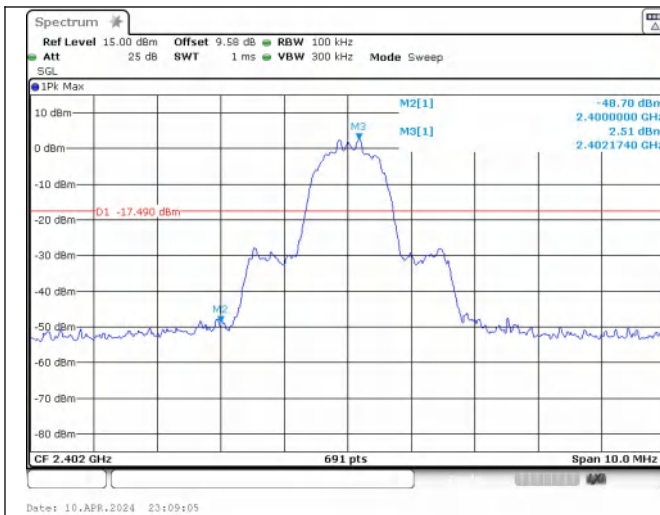


Out Of Band Emission



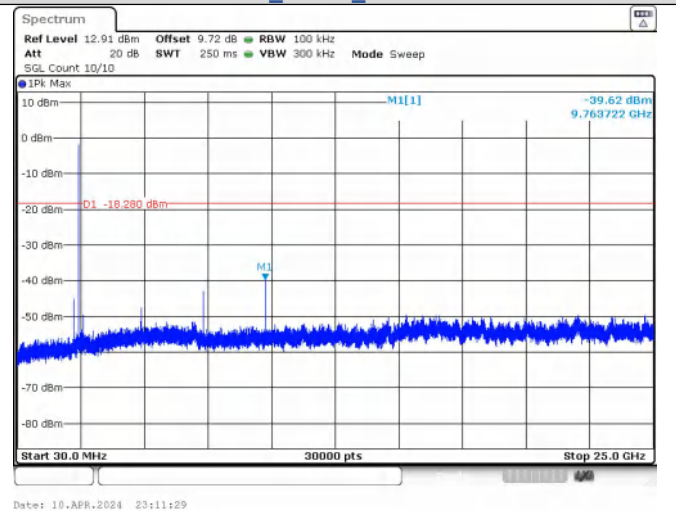
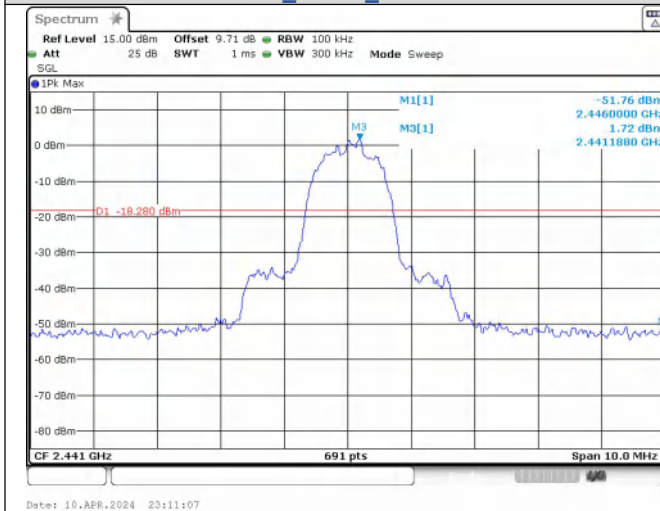
Spurious Emission GFSK_DH5_Channel 78

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



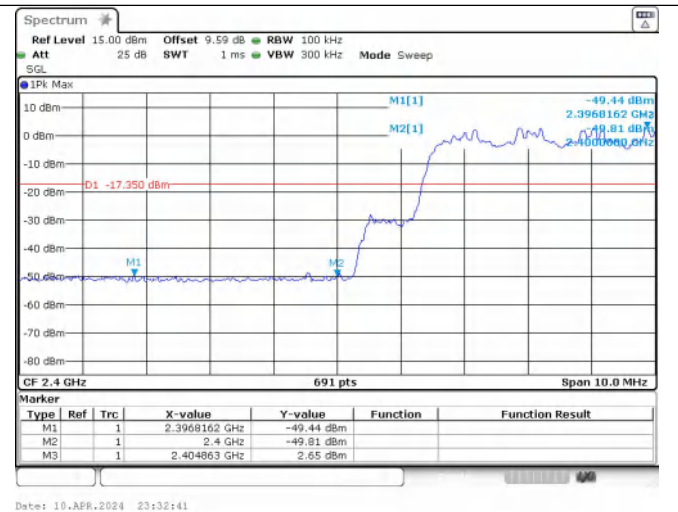
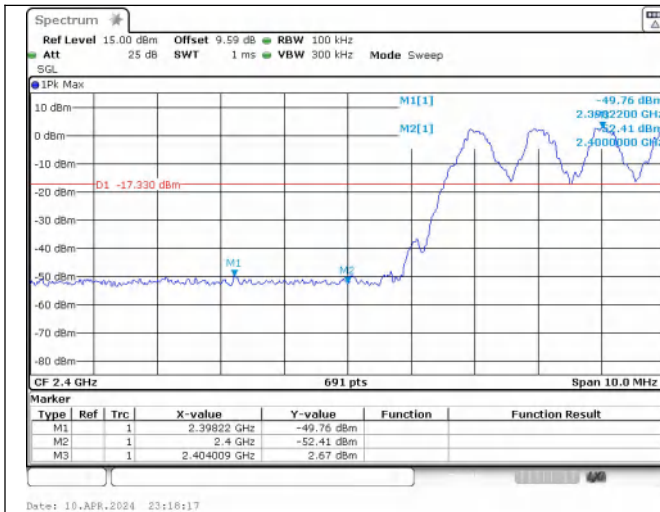
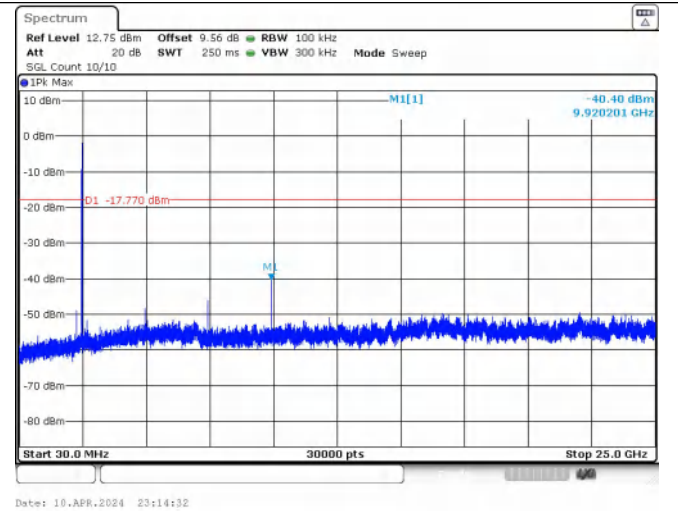
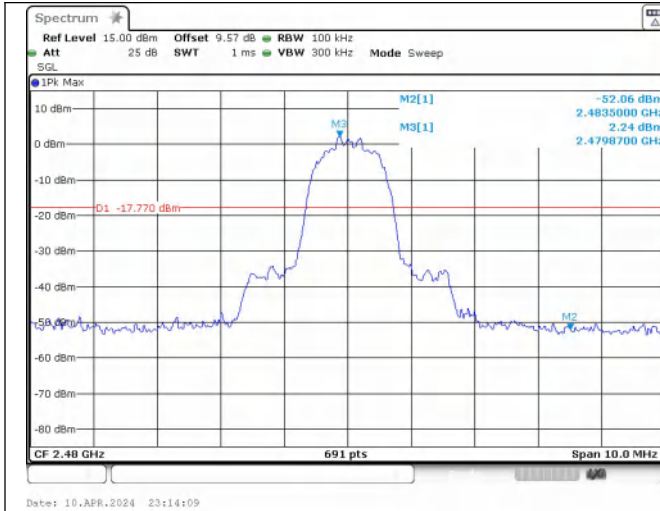
Out Of Band Emission 8DPSK_3-DH5_Channel 0

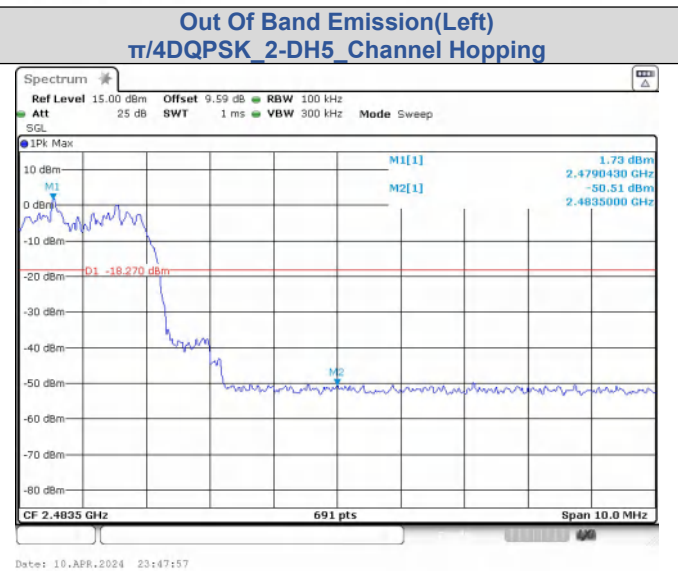
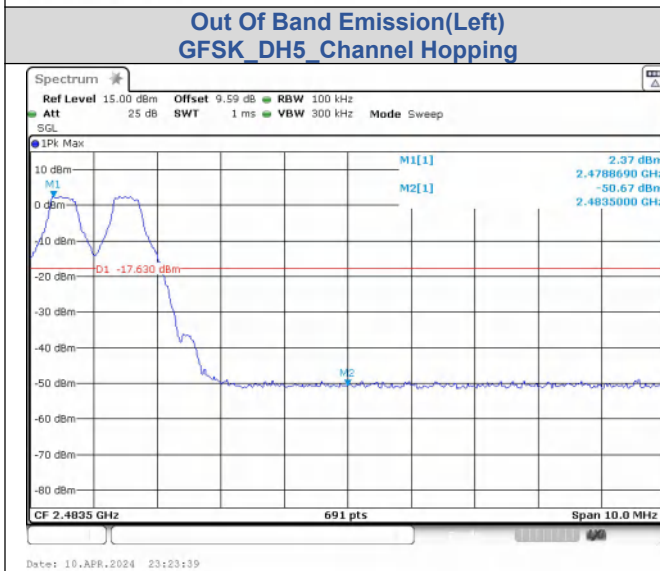
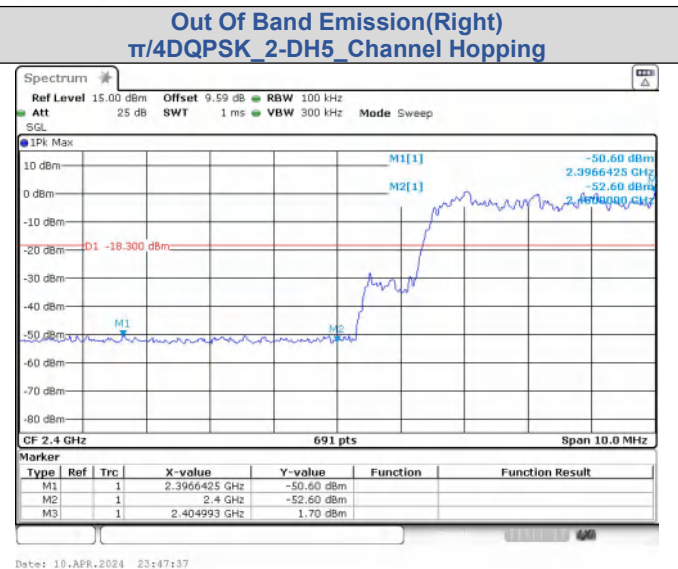
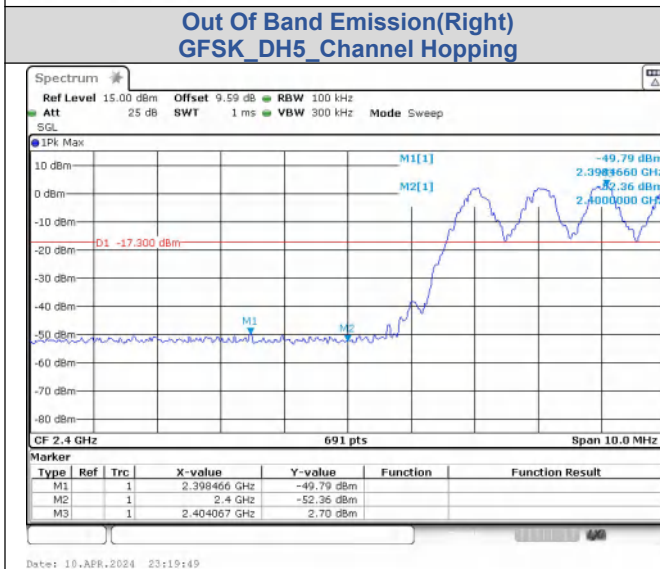
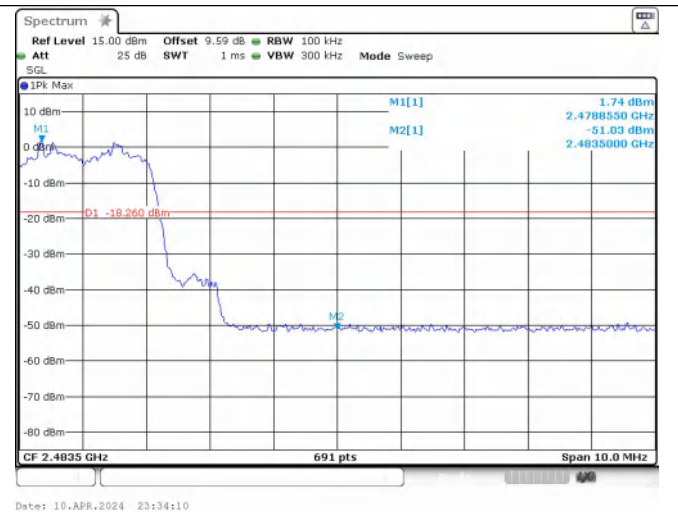
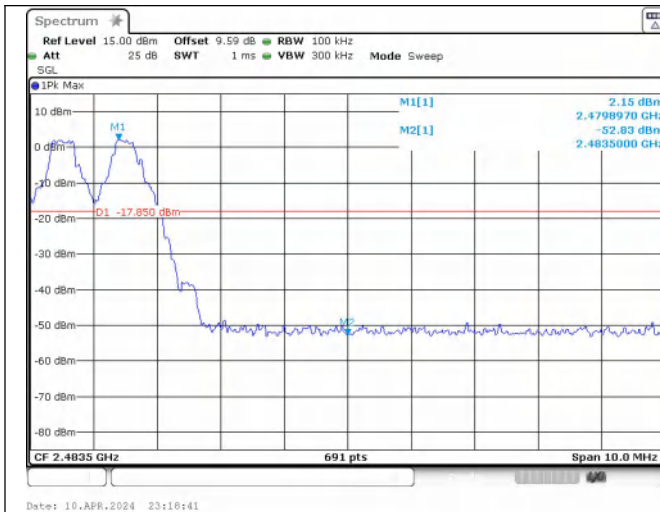
Spurious Emission 8DPSK_3-DH5_Channel 0



Out Of Band Emission 8DPSK_3-DH5_Channel 39

Spurious Emissions 8DPSK_3-DH5_Channel 39

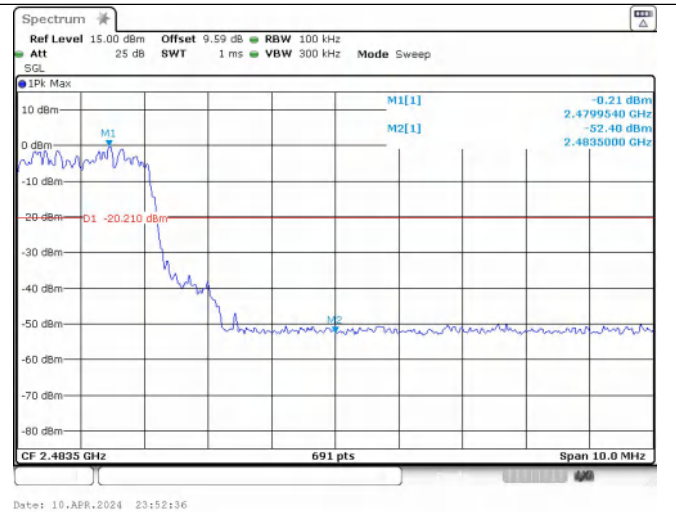
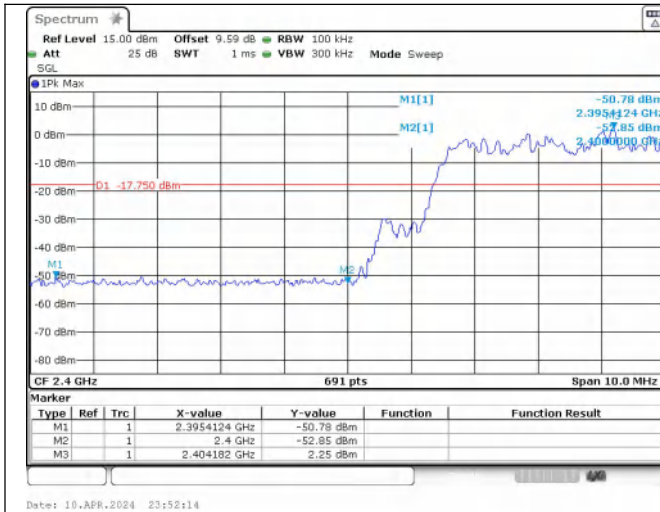


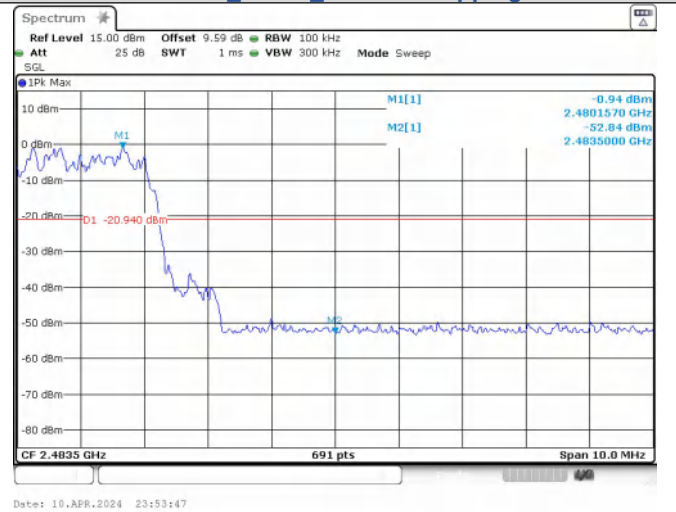
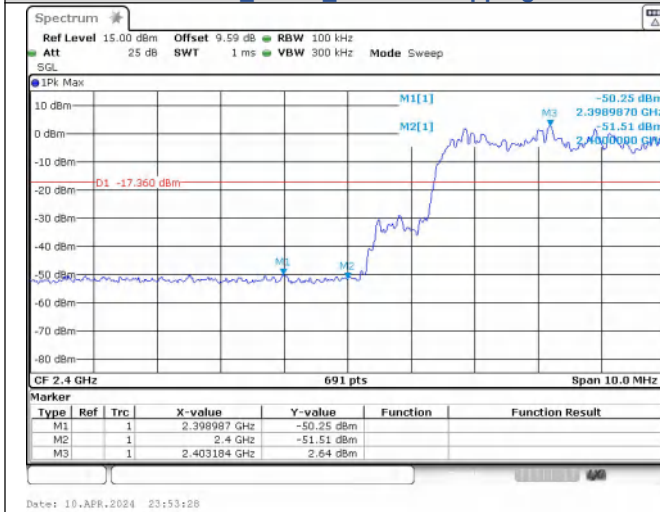


Out Of Band Emission(Right)

Out Of Band Emission(Right)

GFSK_DH5_Channel Hopping

 $\pi/4$ DQPSK_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

Right

Test Result

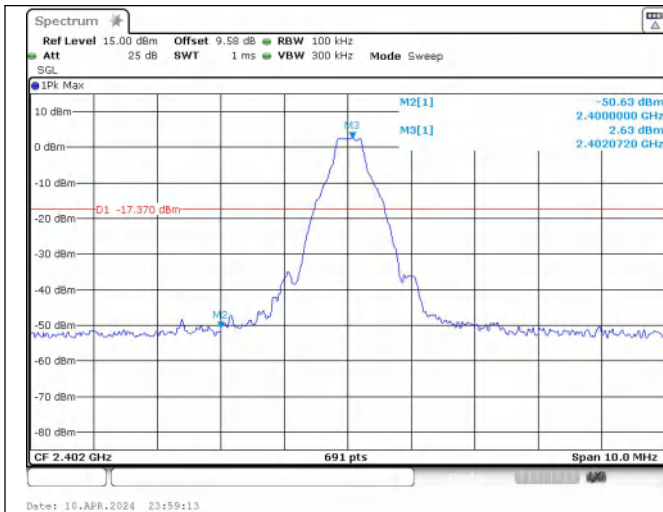
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-50.626	-17.37	-33.256	PASS
			7206.79	-39.086	-17.37	-21.716	PASS
		39	9763.72	-40.096	-18.19	-21.906	PASS
			2483.50	-52.386	-17.57	-34.816	PASS
			9920.20	-40.568	-17.57	-22.998	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-48.439	-17.49	-30.949	PASS
			7205.96	-39.044	-17.49	-21.554	PASS
		39	9763.72	-39.365	-18.09	-21.275	PASS
			2483.50	-52.244	-17.61	-34.634	PASS
			9920.20	-40.150	-17.61	-22.540	PASS
8DPSK	3-DH5	0	2400.00	-49.081	-17.4	-31.681	PASS
			9608.08	-39.587	-17.4	-22.187	PASS
		39	9763.72	-40.053	-18.25	-21.803	PASS
			2483.50	-52.732	-17.71	-35.022	PASS
			9920.20	-40.090	-17.71	-22.380	PASS

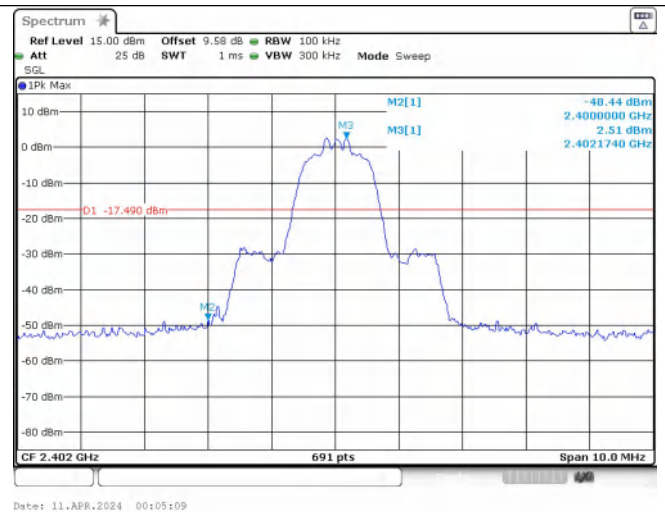
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2395.09	-50.168	-17.45	-32.718	PASS
			2400.00	-50.375	-17.45	-32.925	PASS
			2483.50	-50.746	-17.77	-32.976	PASS
			2396.93	-50.230	-17.47	-32.760	PASS
			2400.00	-52.053	-17.47	-34.583	PASS
			2483.50	-51.740	-17.8	-33.940	PASS
π/4DQPSK	2-DH5		2398.77	-50.157	-18.3	-31.857	PASS
			2400.00	-52.388	-18.3	-34.088	PASS
			2483.50	-52.184	-18.87	-33.314	PASS
			2395.79	-50.559	-19.17	-31.389	PASS
			2400.00	-51.517	-19.17	-32.347	PASS
			2483.50	-52.819	-17.55	-35.269	PASS
8DPSK	3-DH5		2397.48	-49.674	-17.88	-31.794	PASS
			2400.00	-52.093	-17.88	-34.213	PASS
			2483.50	-51.594	-20.03	-31.564	PASS
			2395.37	-50.886	-17.68	-33.206	PASS
			2400.00	-51.765	-17.68	-34.085	PASS
			2483.50	-52.367	-18.47	-33.897	PASS

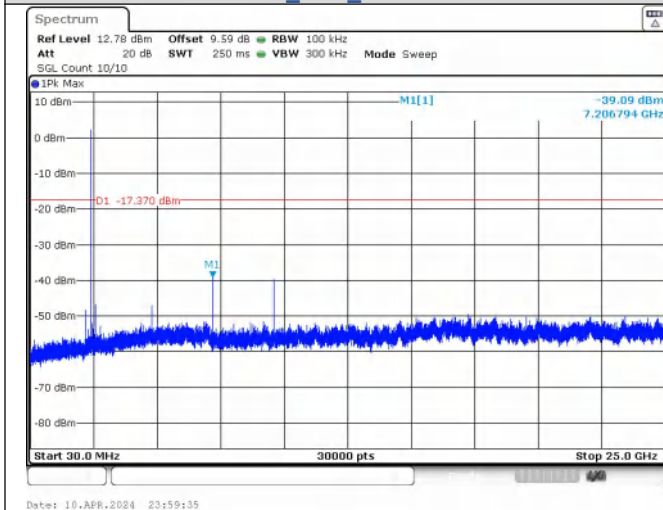
Test Graphs



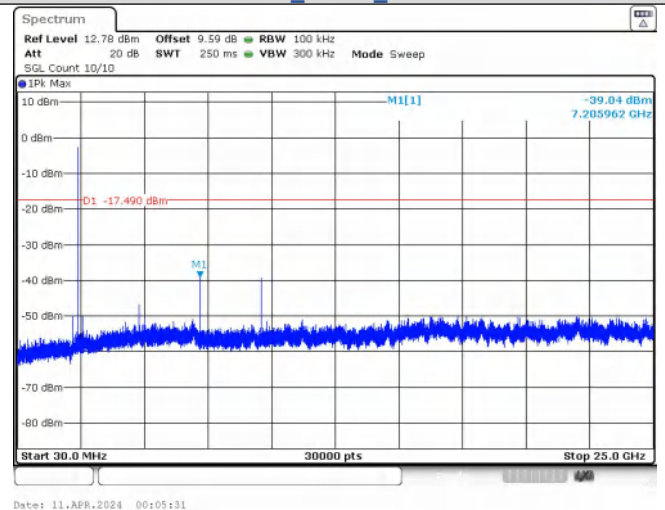
**Out Of Band Emission
GFSK_DH5_Channel 0**



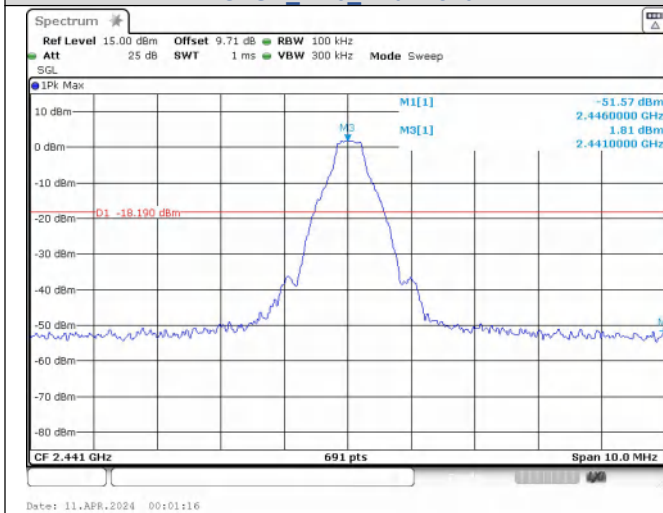
**Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0**



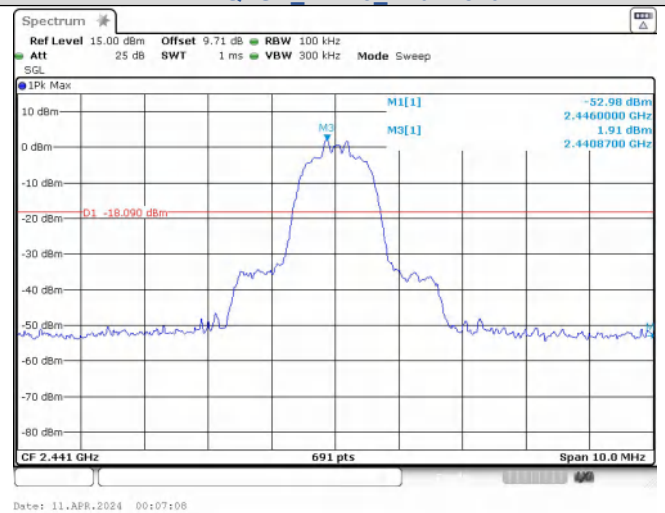
**Spurious Emission
GFSK_DH5_Channel 0**



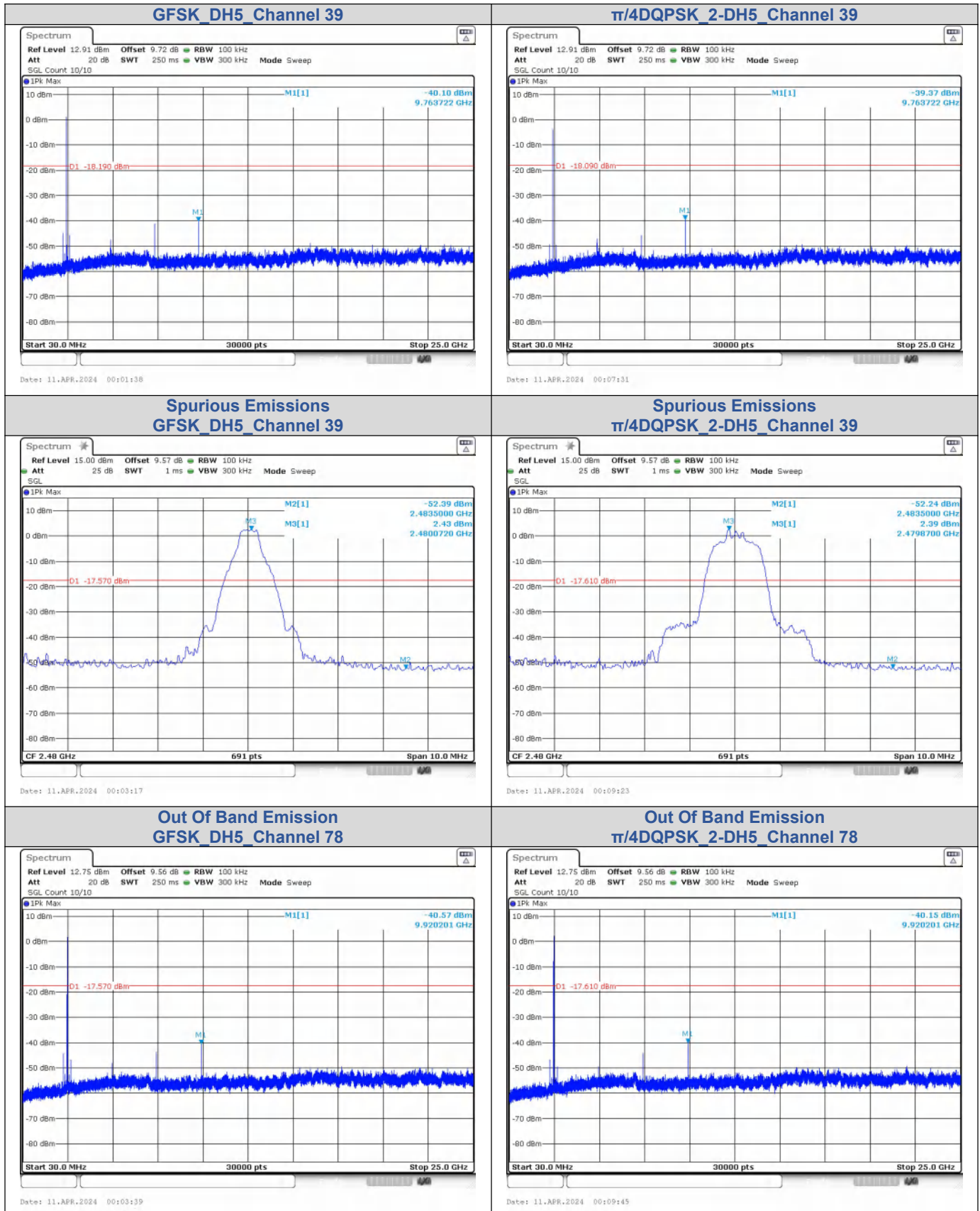
**Spurious Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0**



Out Of Band Emission

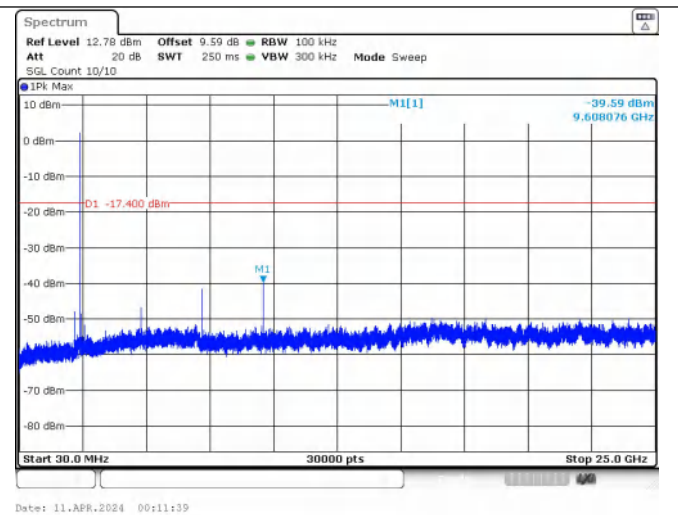
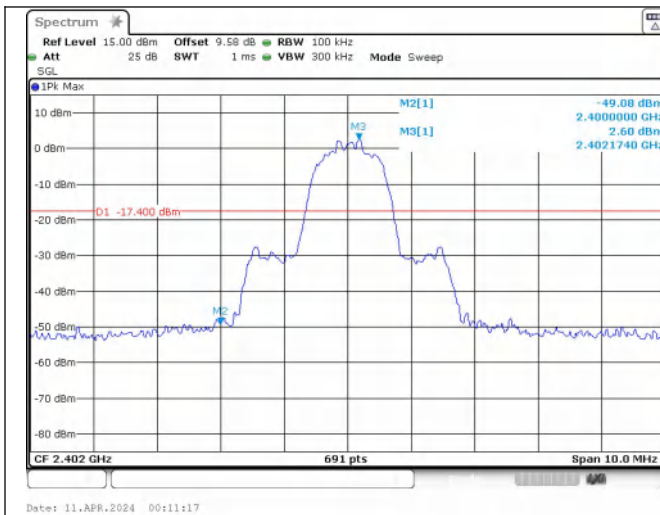


Out Of Band Emission



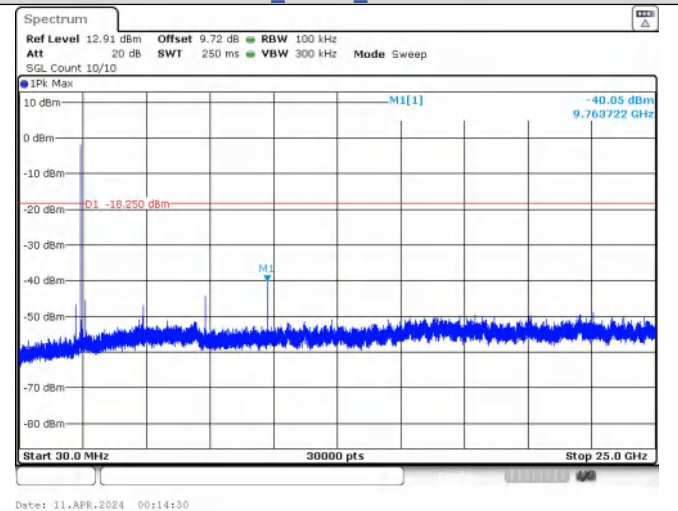
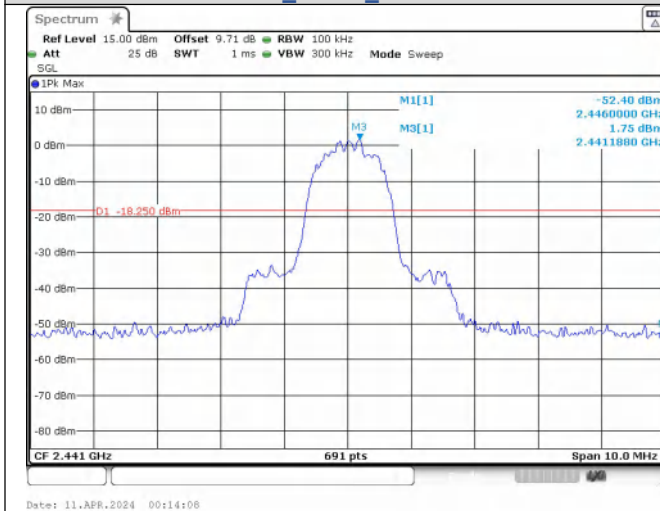
Spurious Emission GFSK_DH5_Channel 78

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



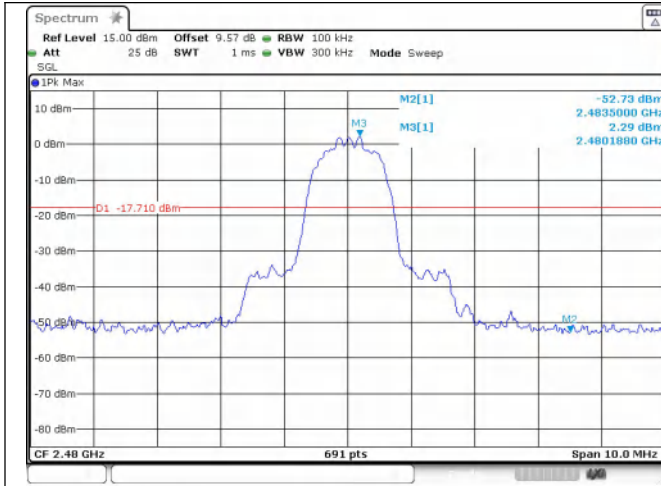
Out Of Band Emission 8DPSK_3-DH5_Channel 0

Spurious Emission 8DPSK_3-DH5_Channel 0



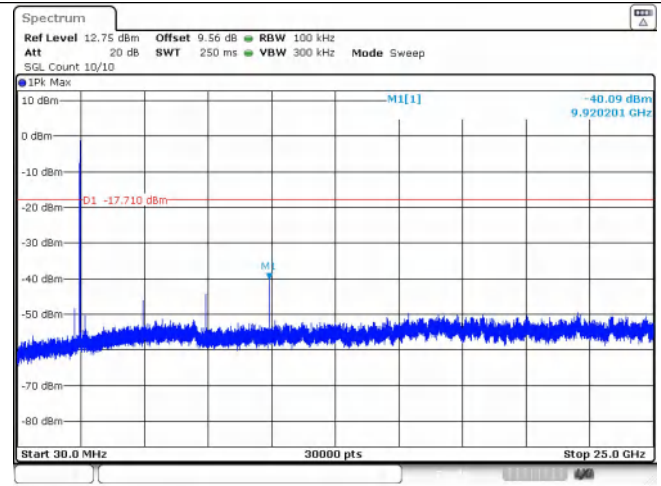
Out Of Band Emission 8DPSK_3-DH5_Channel 39

Spurious Emissions 8DPSK_3-DH5_Channel 39



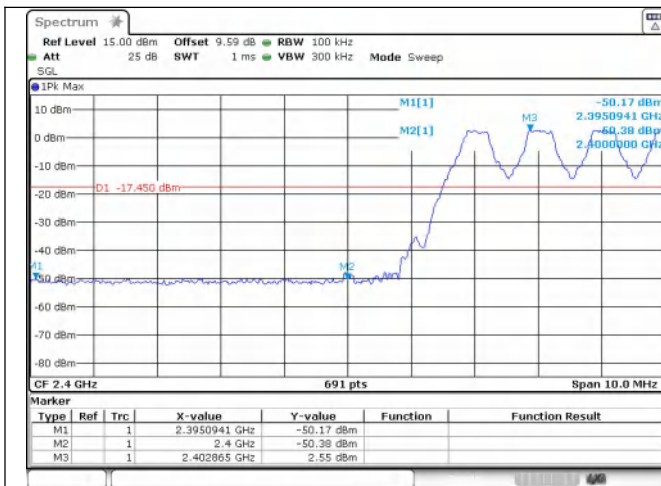
Date: 11.APR.2024 00:16:09

**Out Of Band Emission
8DPSK_3-DH5_Channel 78**



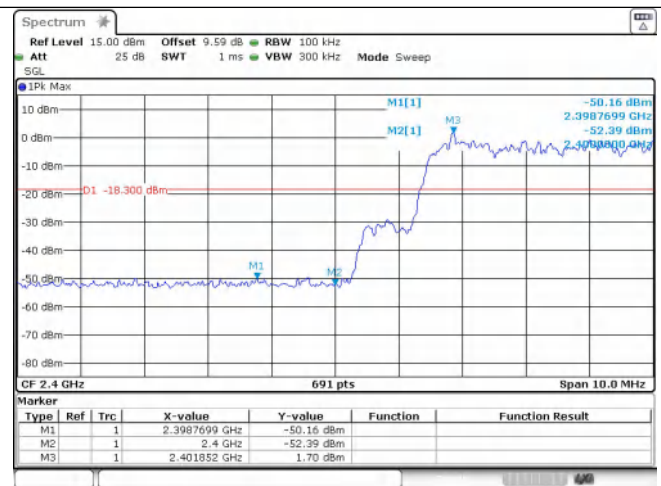
Date: 11.APR.2024 00:16:31

**Spurious Emission
8DPSK_3-DH5_Channel 78**



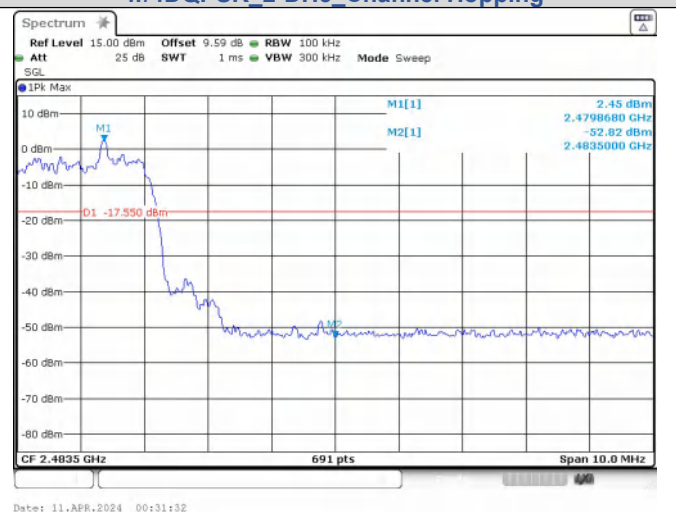
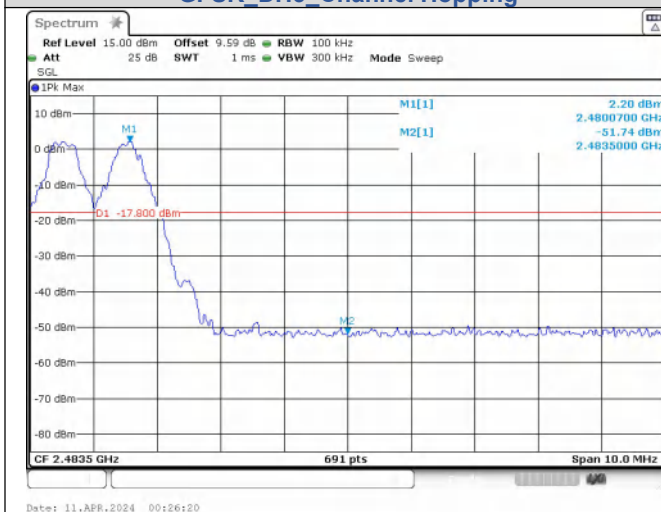
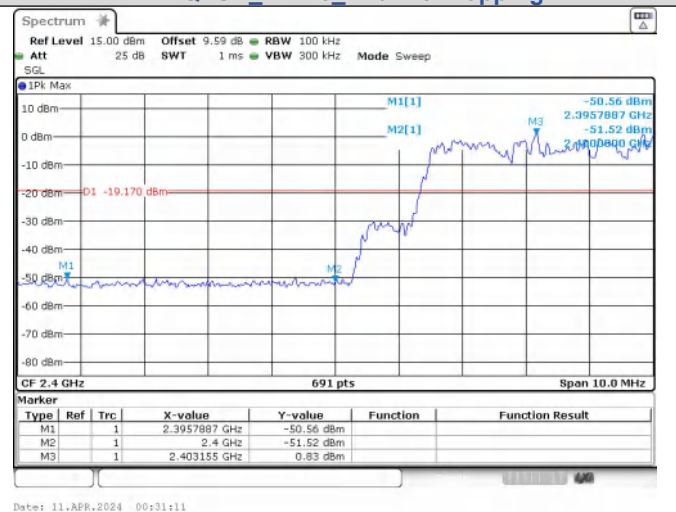
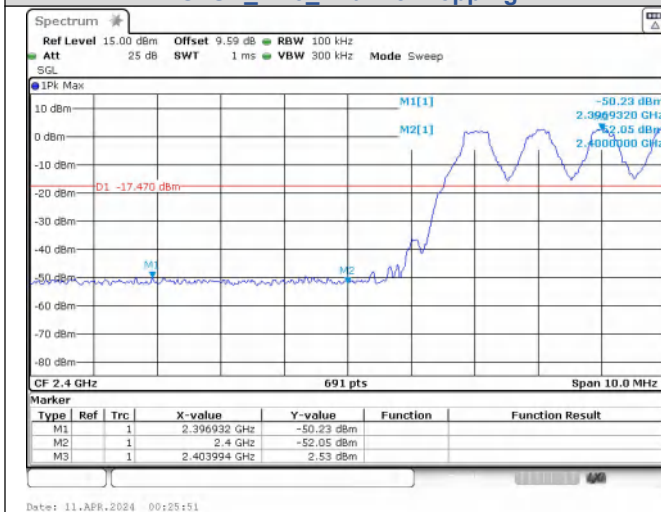
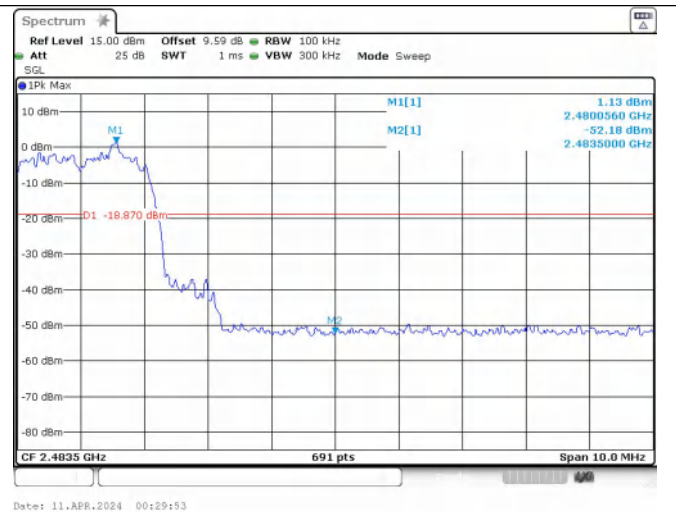
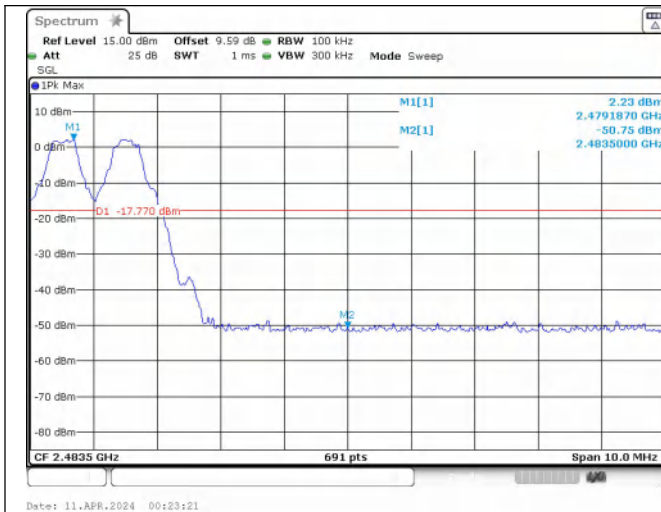
Date: 11.APR.2024 00:21:59

**Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping**



Date: 11.APR.2024 00:29:31

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

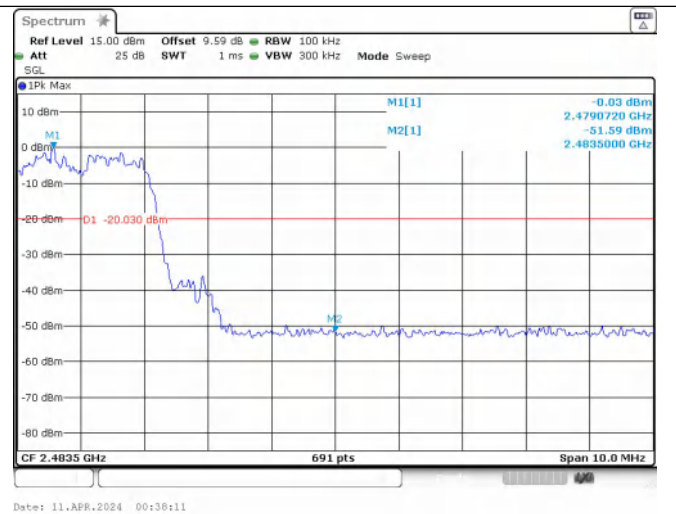
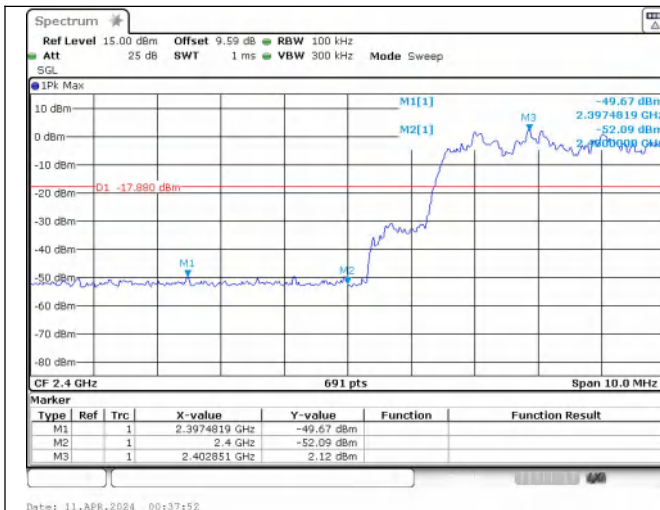


Out Of Band Emission(Right)

Out Of Band Emission(Right)

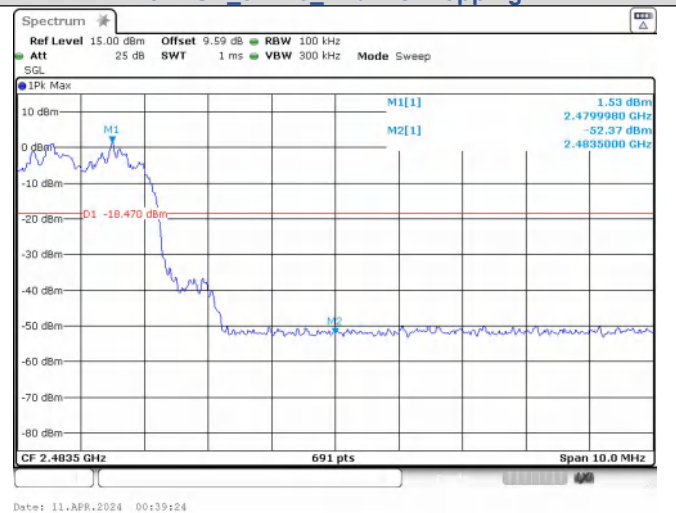
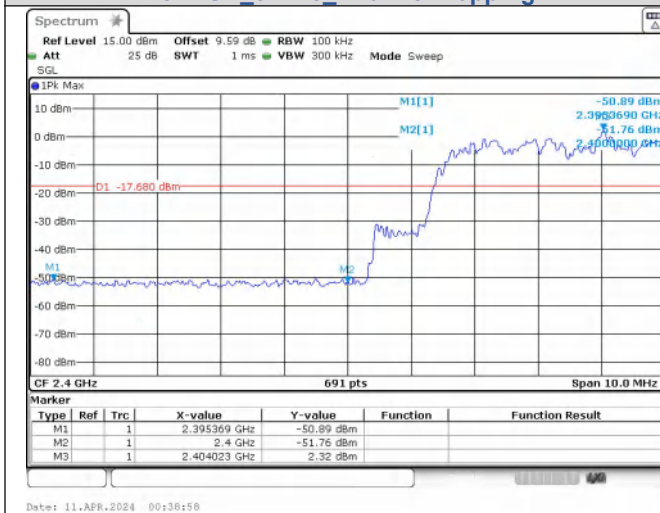
GFSK_DH5_Channel Hopping

$\pi/4$ DQPSK_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

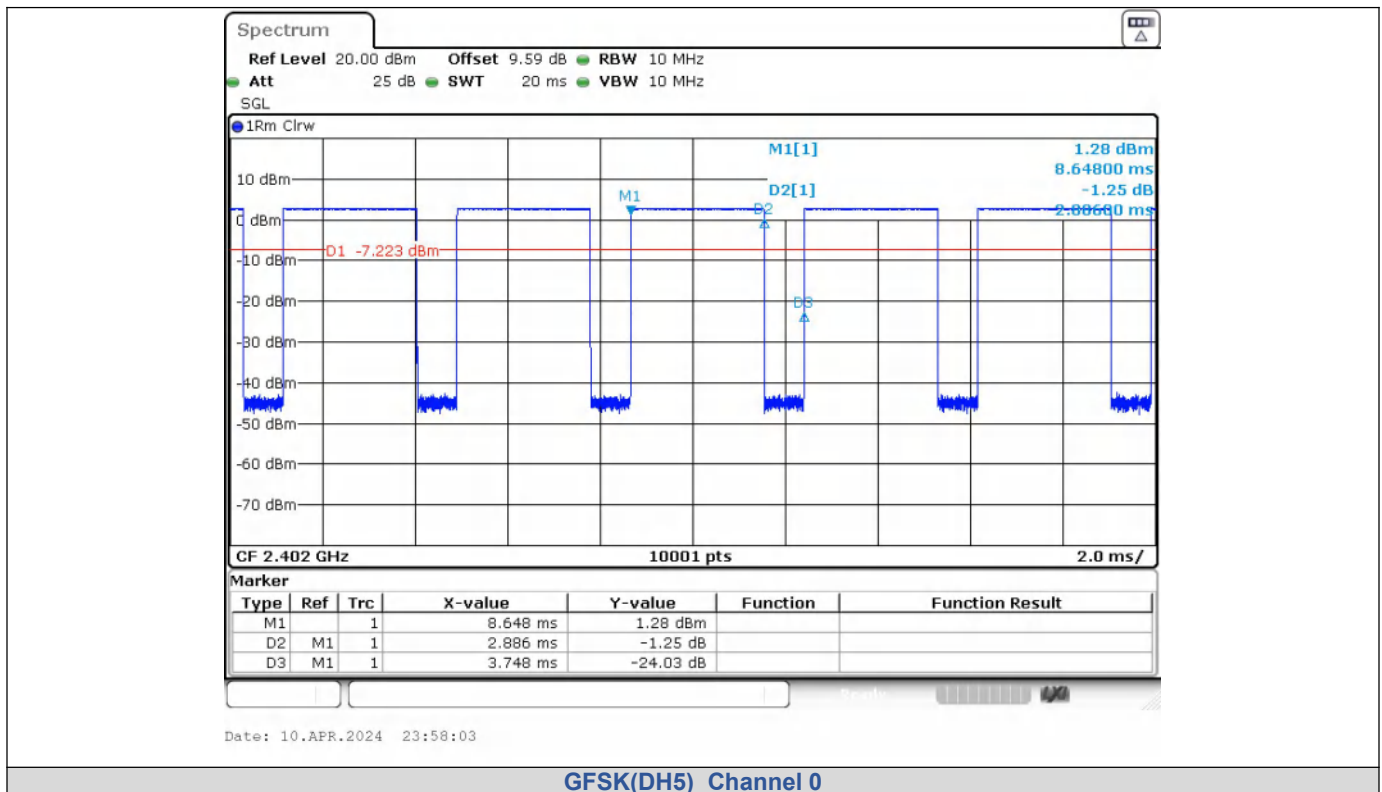
Duty Cycle

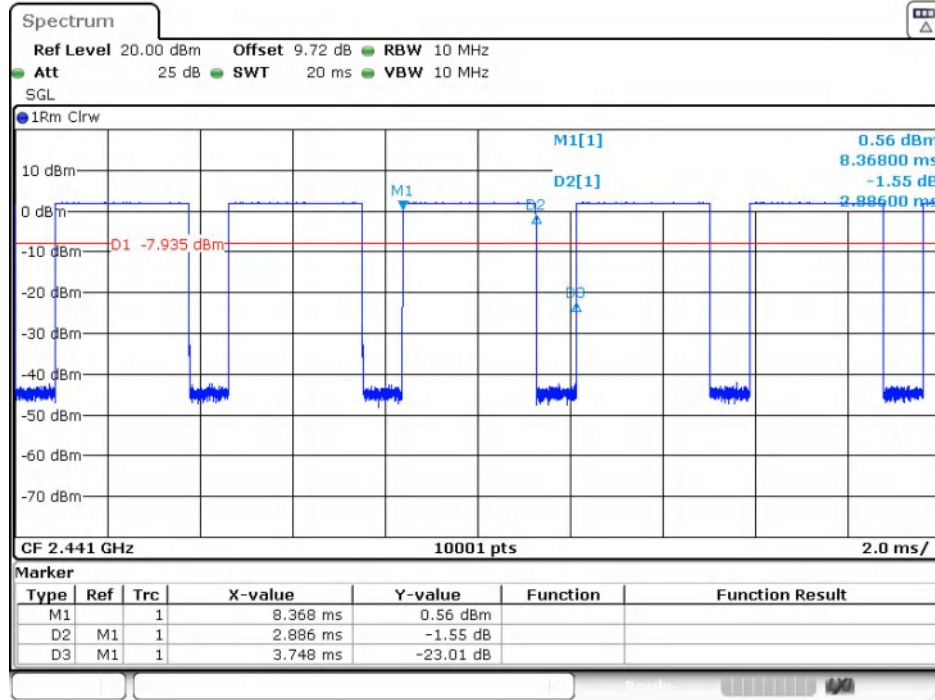
Left

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	2.888	3.748	77.05	0.7705	1.1323	0.35
$\pi/4$ DQPSK	2-DH5	0	2.892	3.748	77.16	0.7716	1.1261	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
8DPSK	3-DH5	0	2.894	3.748	77.21	0.7721	1.1233	0.35
		39	2.892	3.748	77.16	0.7716	1.1261	0.35
		78	2.894	3.748	77.21	0.7721	1.1233	0.35

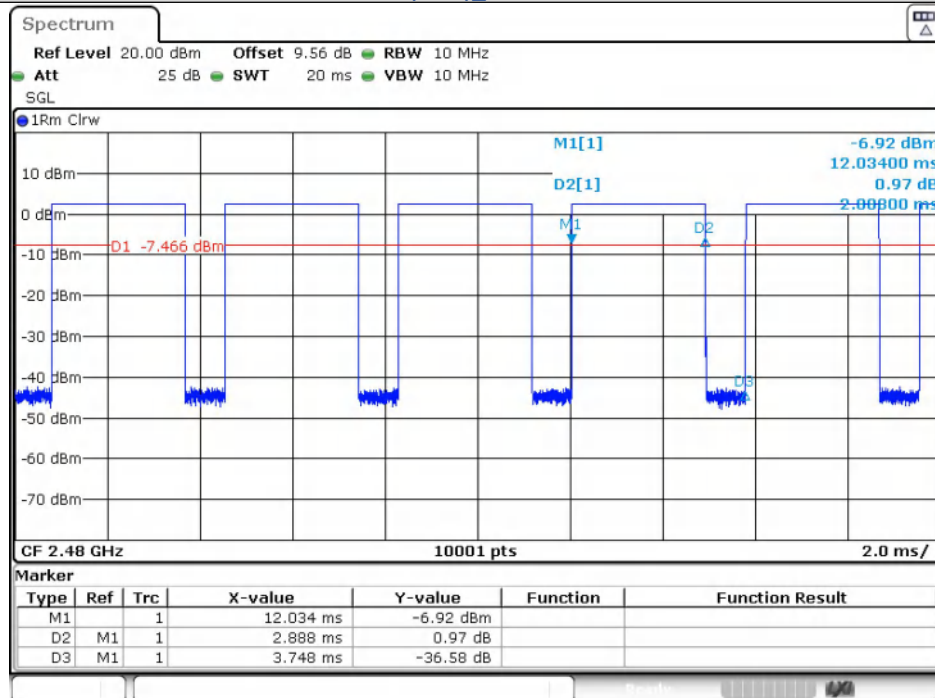
Test Graphs





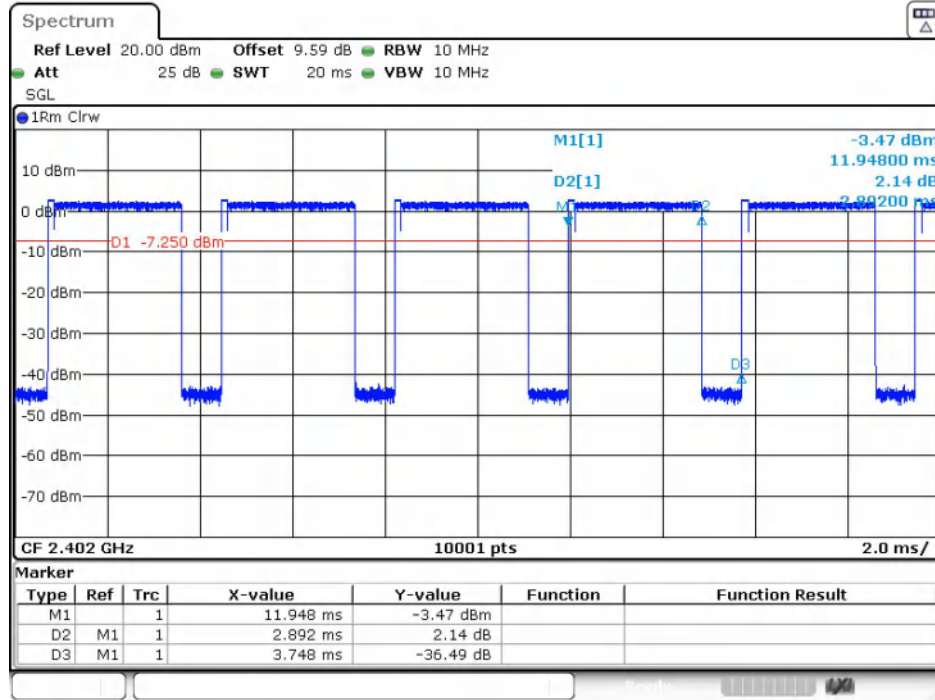
Date: 11.APR.2024 00:00:11

GFSK(DH5)_Channel 39



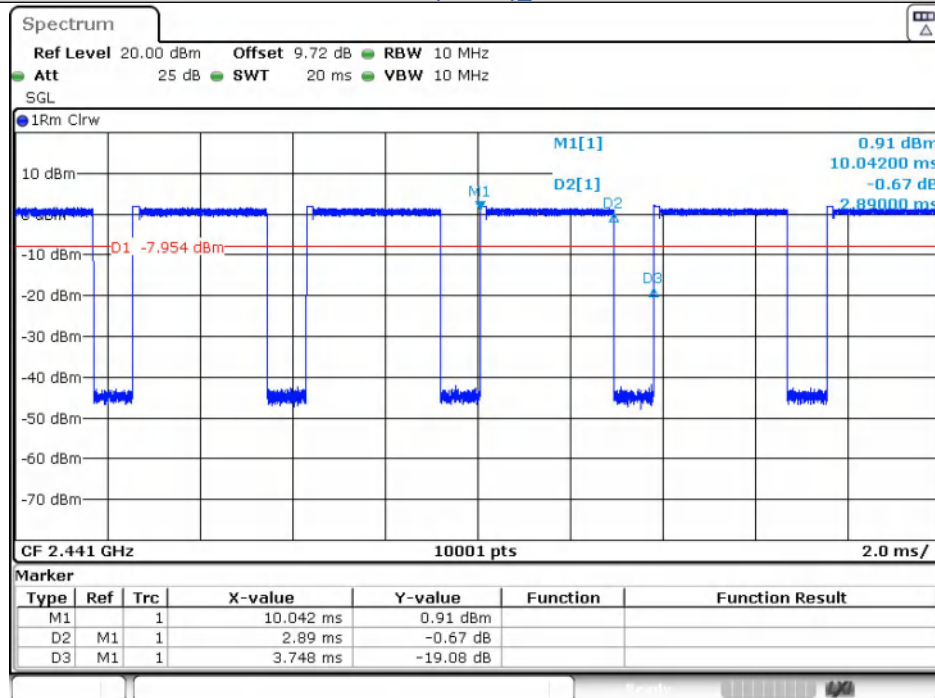
Date: 11.APR.2024 00:02:07

GFSK(DH5)_Channel 78



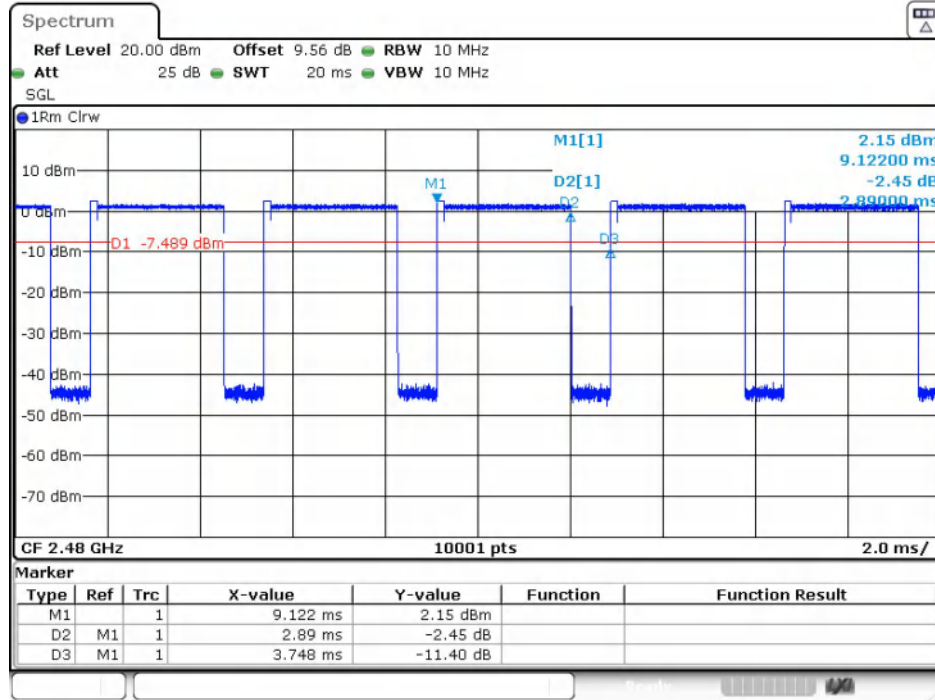
Date: 11.APR.2024 00:04:09

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



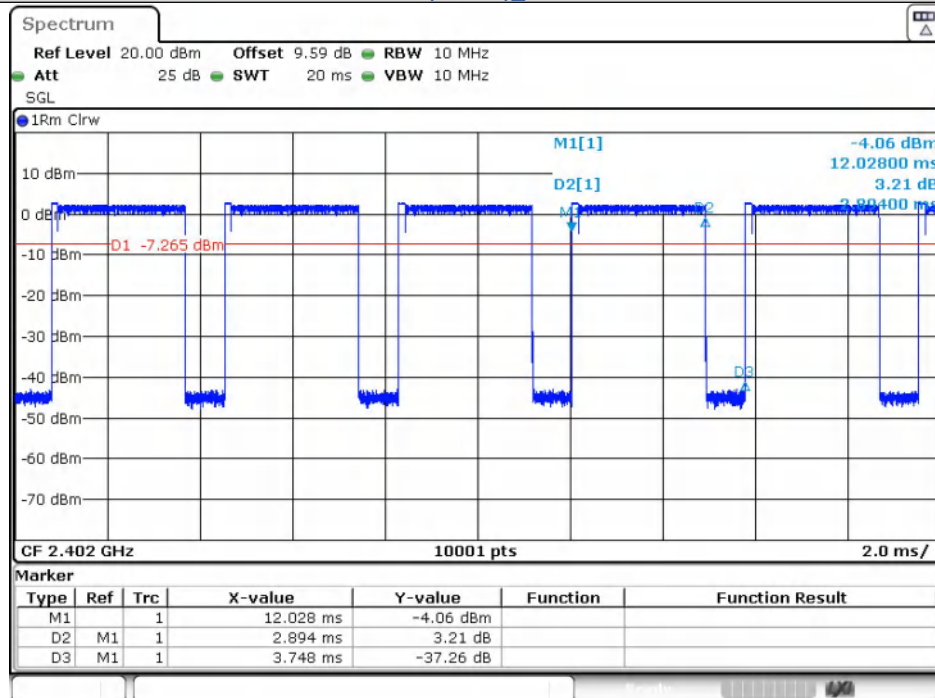
Date: 11.APR.2024 00:06:03

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



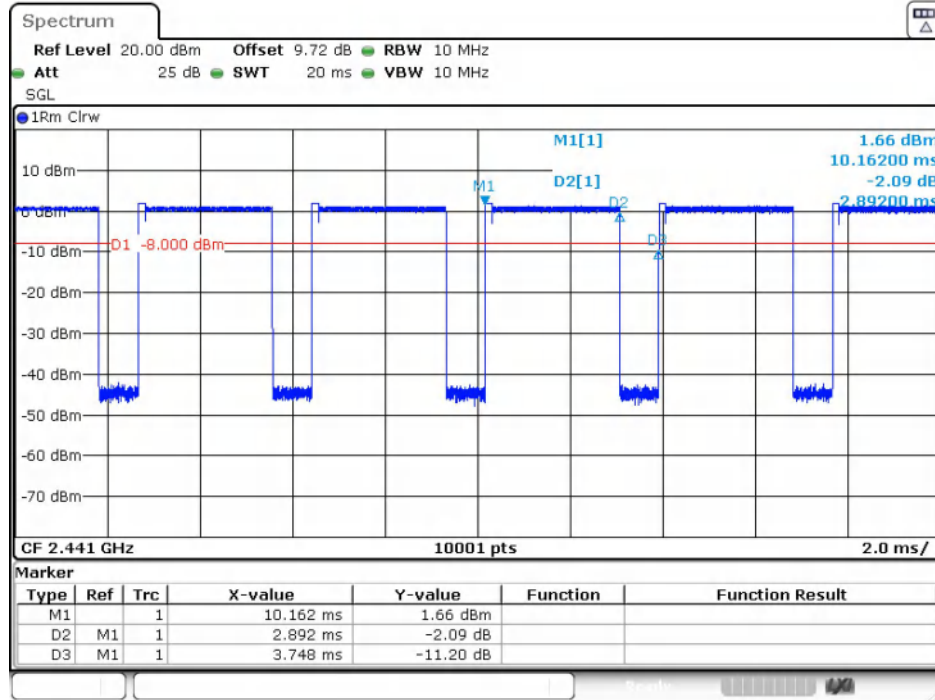
Date: 11.APR.2024 00:08:23

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



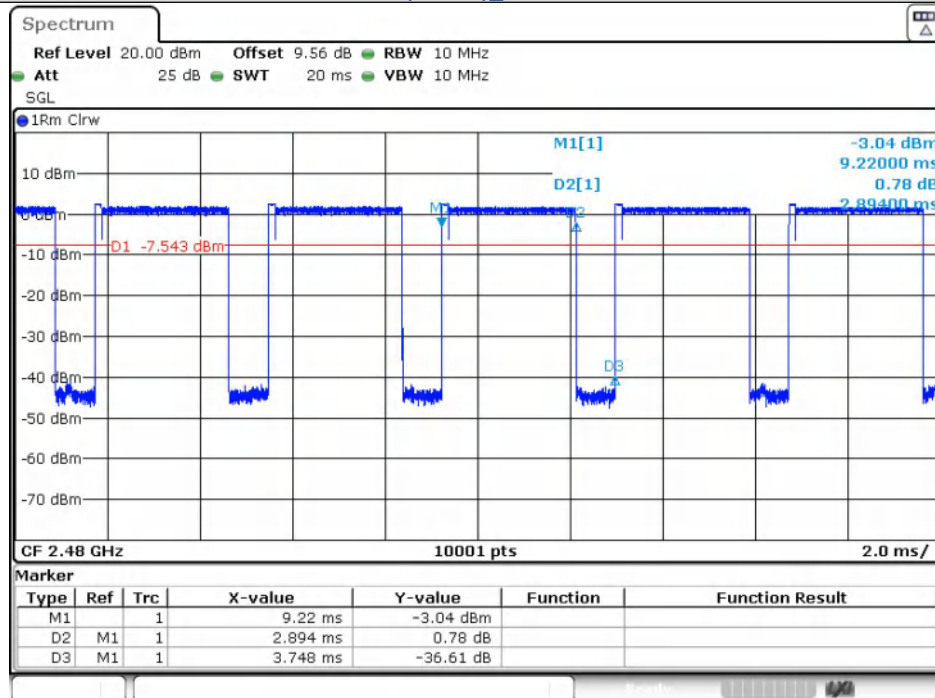
Date: 11.APR.2024 00:10:17

8DPSK(3-DH5)_Channel 0



Date: 11.APR.2024 00:13:02

8DPSK(3-DH5)_Channel 39



Date: 11.APR.2024 00:14:58

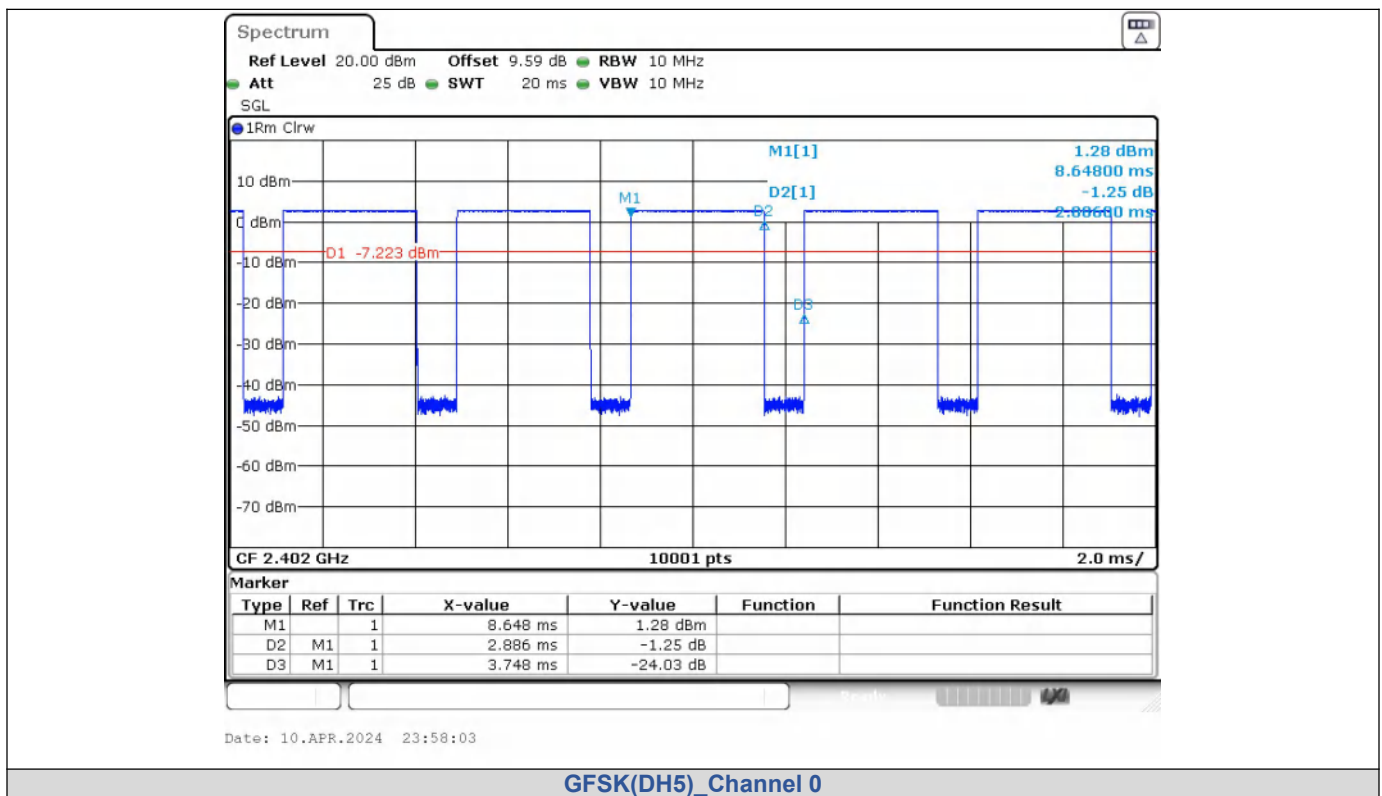
8DPSK(3-DH5)_Channel 78

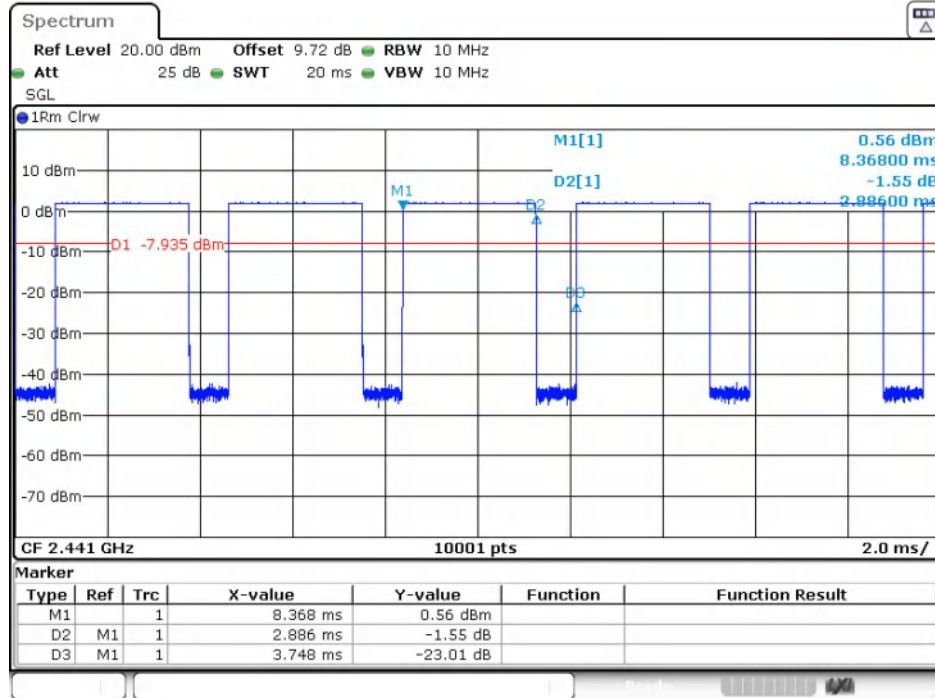
Right

Test Result

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.886	3.748	77.00	0.7700	1.1351	0.35
		39	2.886	3.748	77.00	0.7700	1.1351	0.35
		78	2.888	3.748	77.05	0.7705	1.1323	0.35
$\pi/4$ DQPSK	2-DH5	0	2.892	3.748	77.16	0.7716	1.1261	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
8DPSK	3-DH5	0	2.894	3.748	77.21	0.7721	1.1233	0.35
		39	2.892	3.748	77.16	0.7716	1.1261	0.35
		78	2.894	3.748	77.21	0.7721	1.1233	0.35

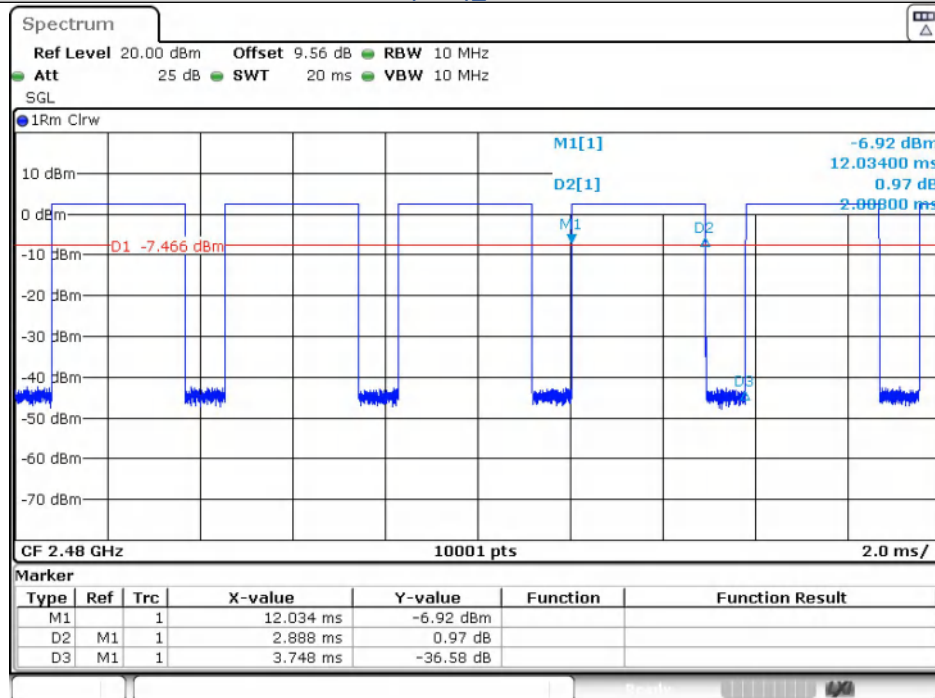
Test Graphs





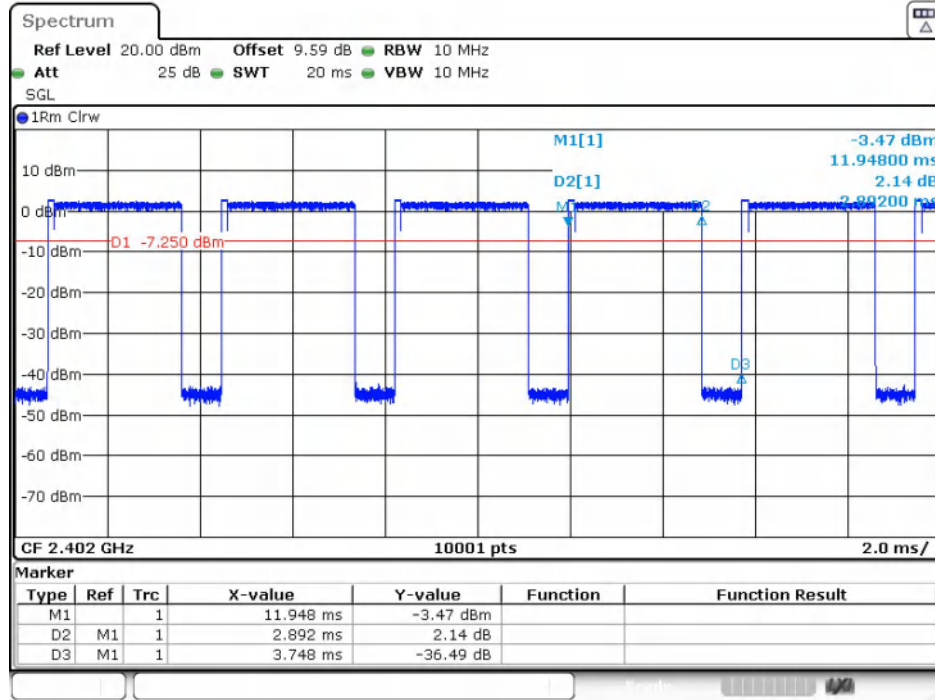
Date: 11.APR.2024 00:00:11

GFSK(DH5)_Channel 39



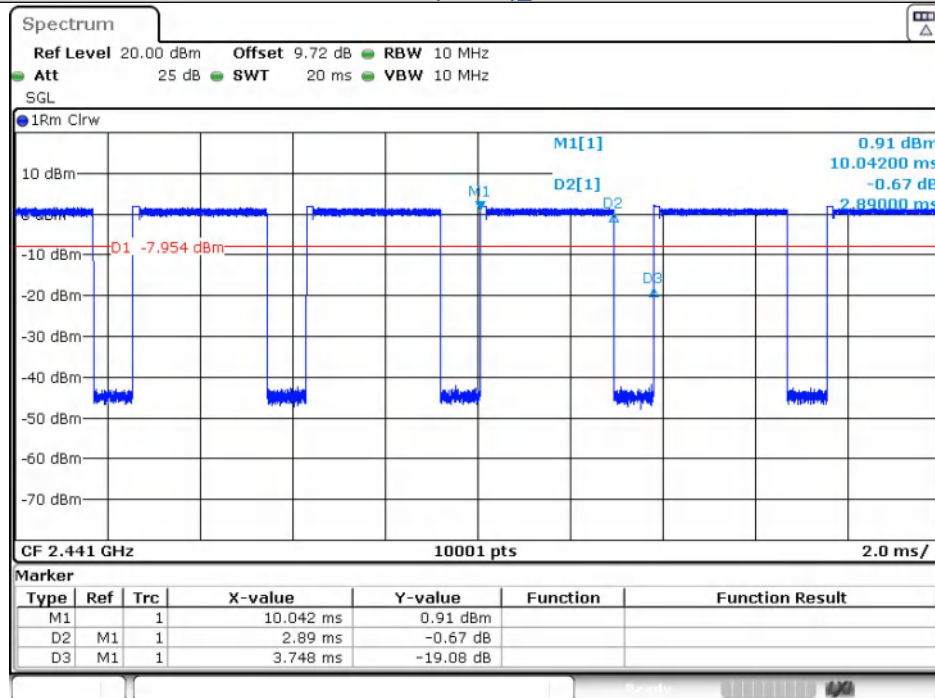
Date: 11.APR.2024 00:02:07

GFSK(DH5)_Channel 78



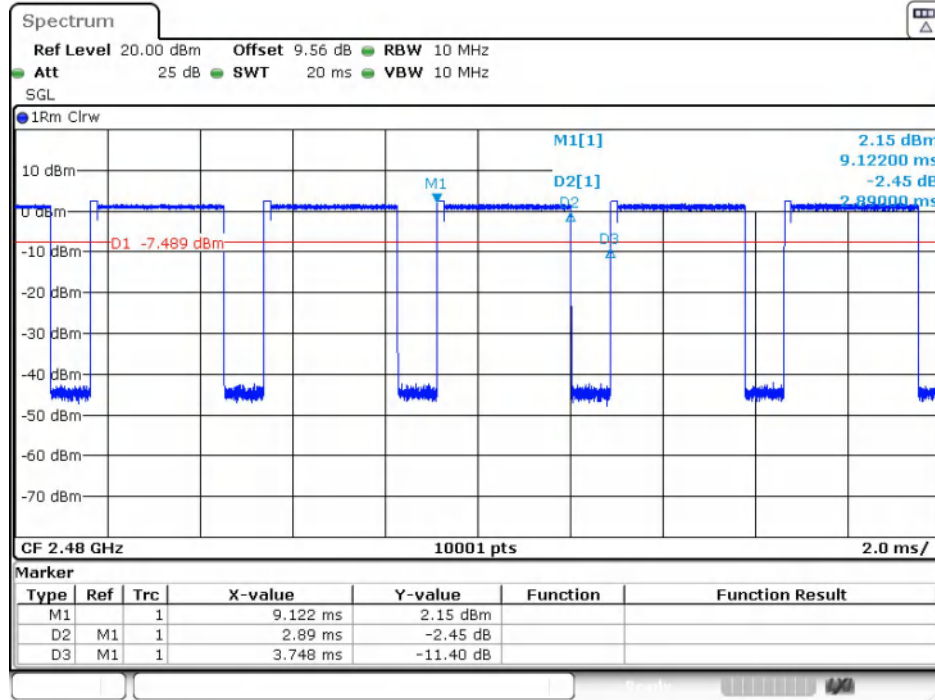
Date: 11.APR.2024 00:04:09

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



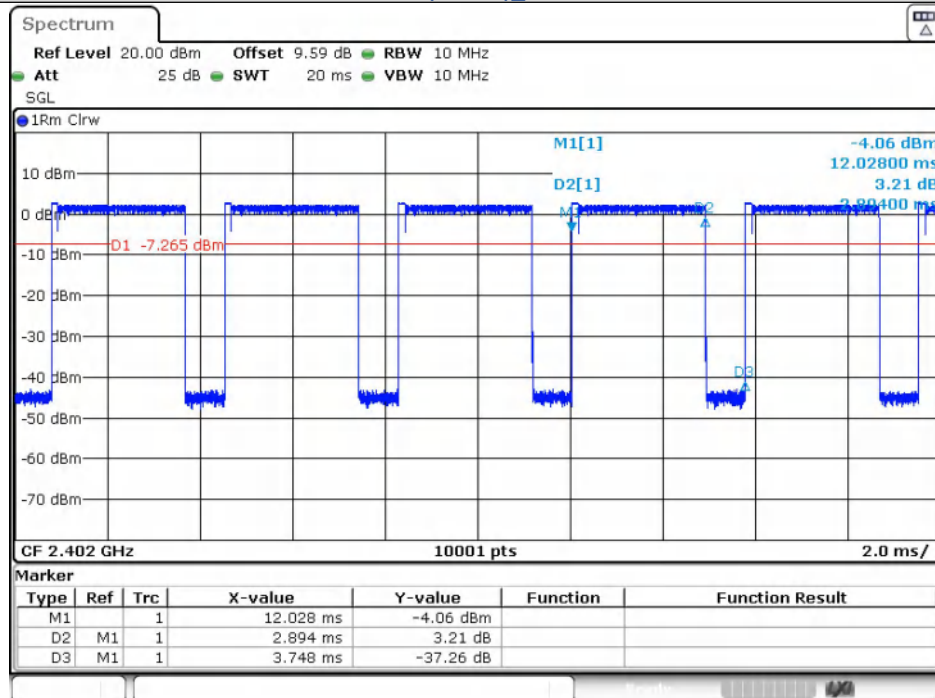
Date: 11.APR.2024 00:06:03

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



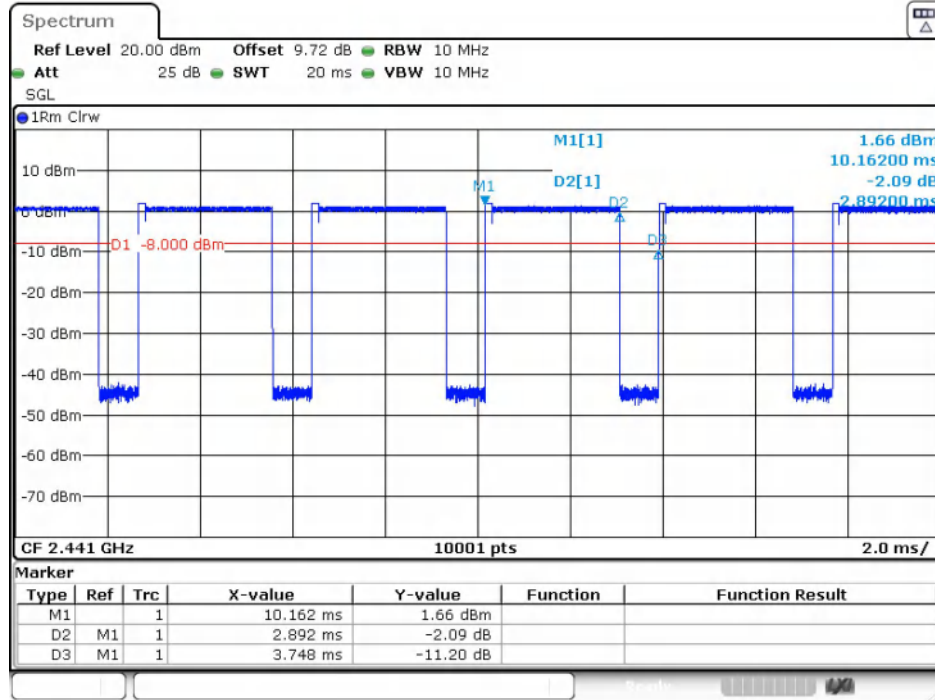
Date: 11.APR.2024 00:08:23

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



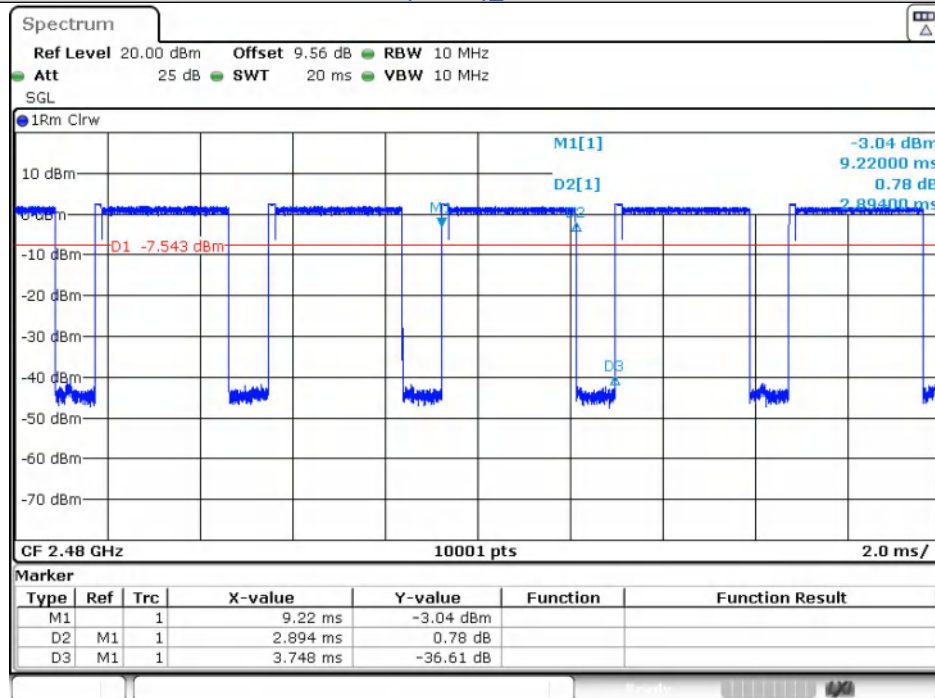
Date: 11.APR.2024 00:10:17

8DPSK(3-DH5)_Channel 0



Date: 11.APR.2024 00:13:02

8DPSK(3-DH5)_Channel 39



Date: 11.APR.2024 00:14:58

8DPSK(3-DH5)_Channel 78

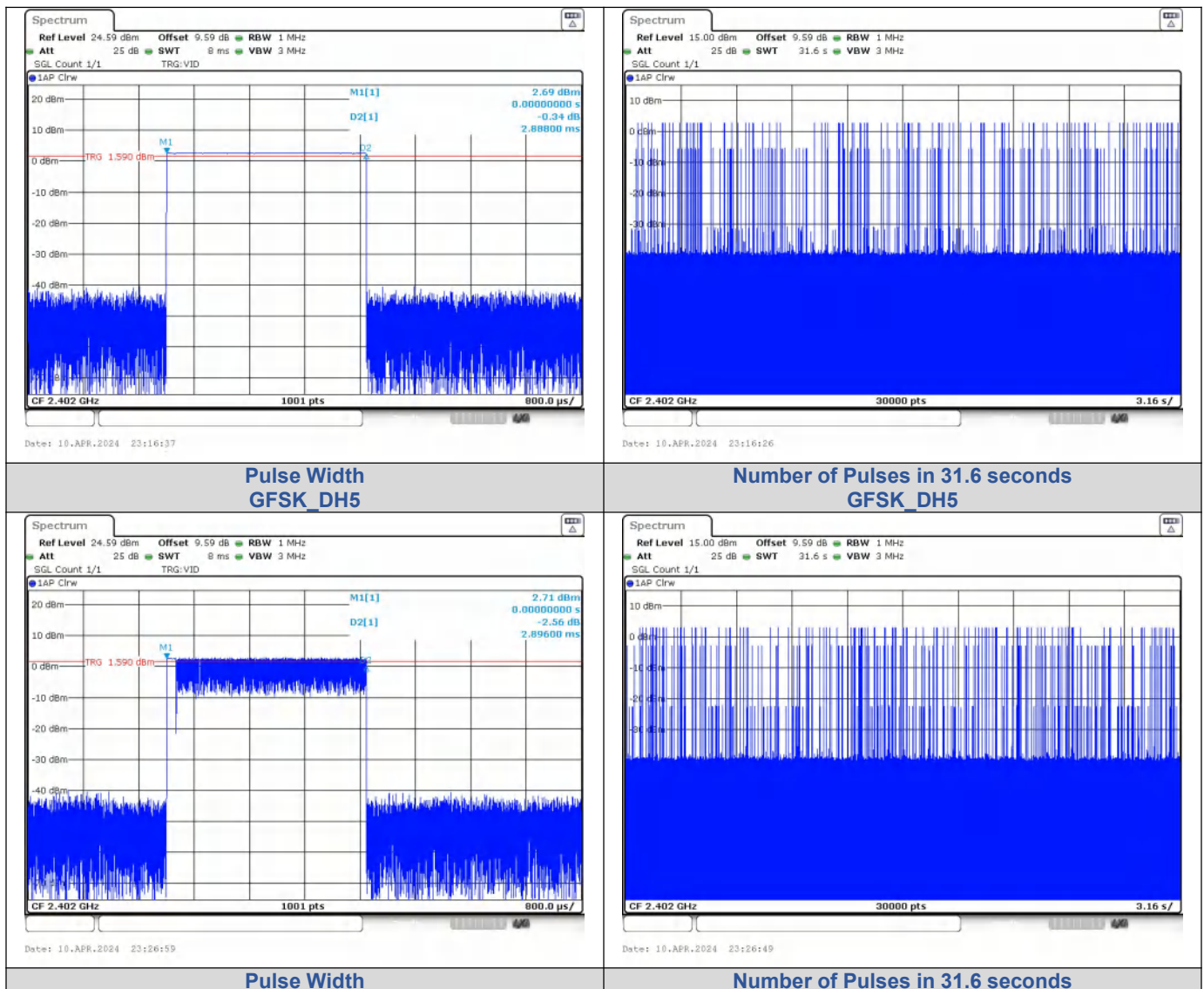
Dwell Time

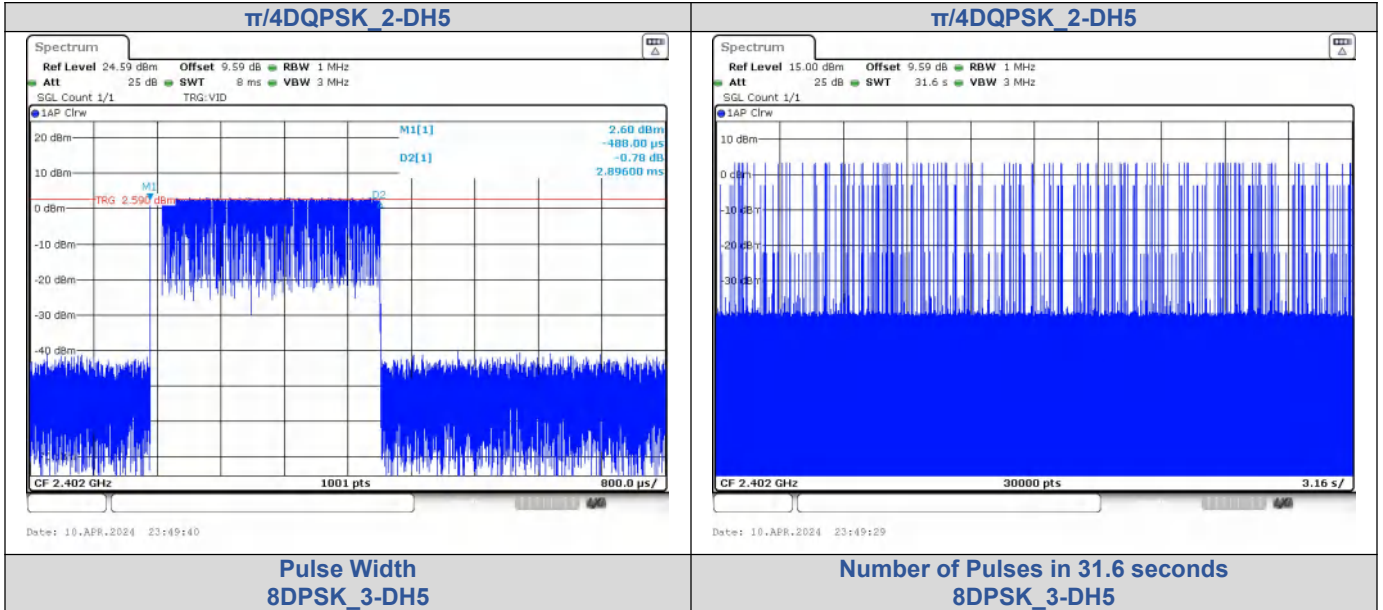
Left

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	108	311.9	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.896	117	338.83		PASS
8DPSK	3-DH5		2.896	113	327.25		PASS

Test Graphs



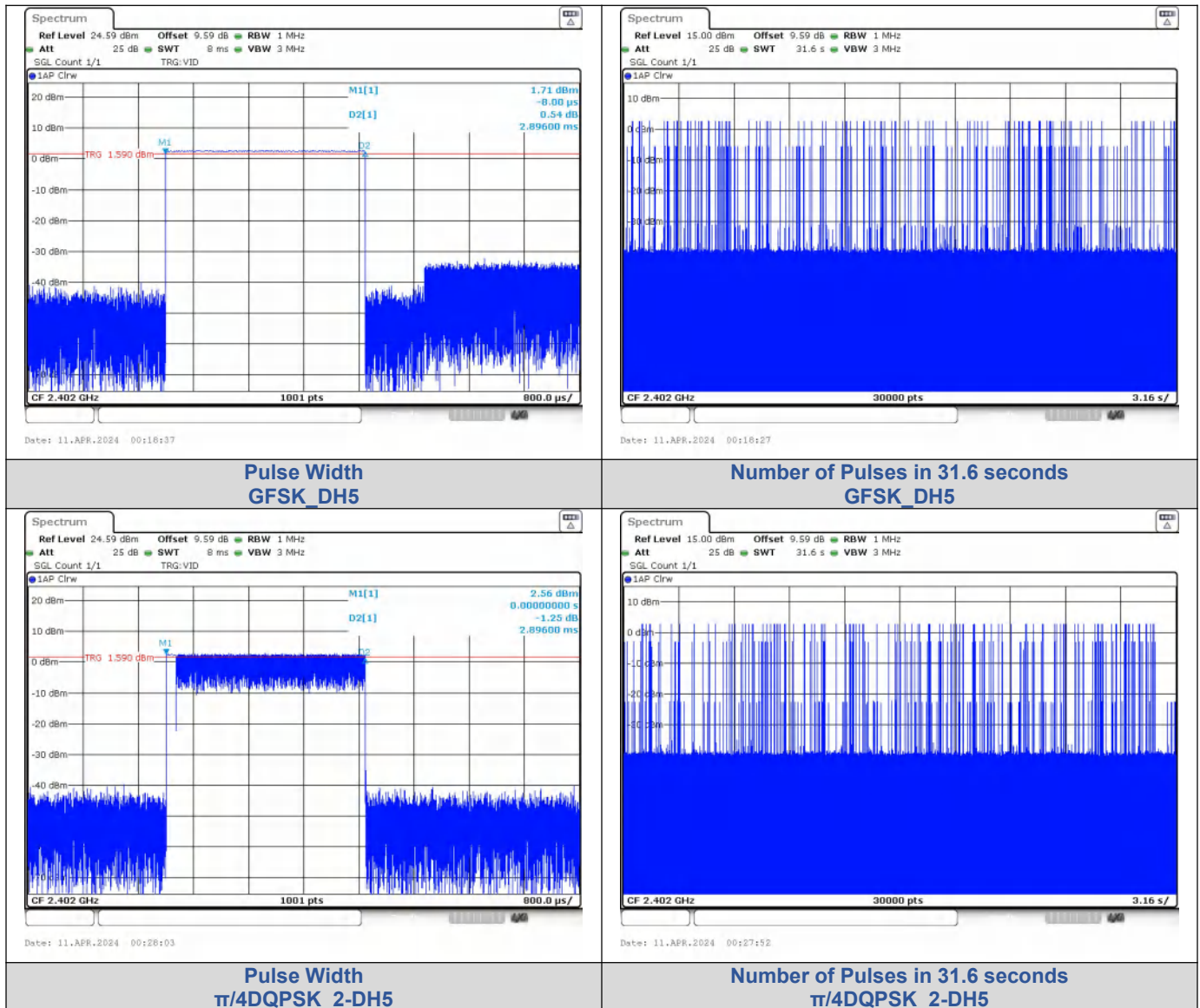


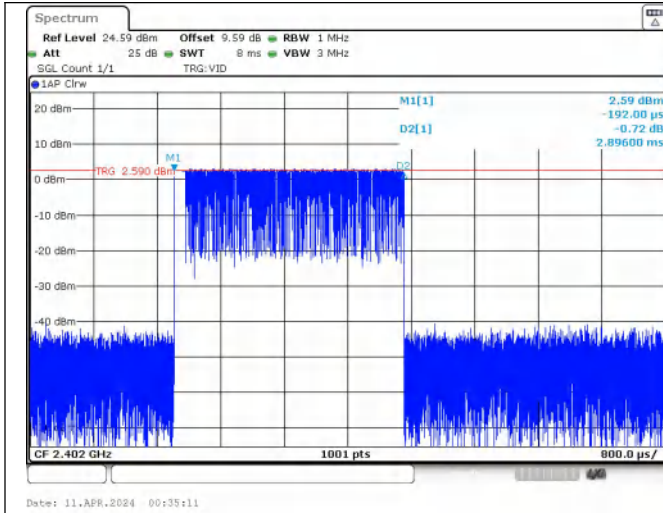
Right

Test Result

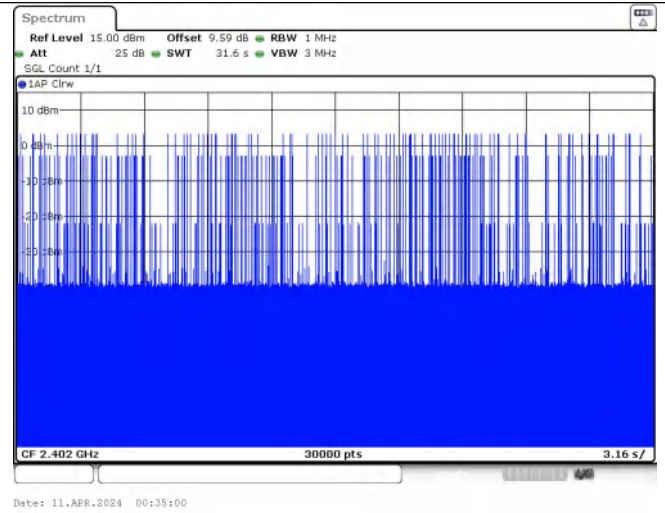
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.896	108	312.77	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.896	103	298.29		PASS
8DPSK	3-DH5		2.896	102	295.39		PASS

Test Graphs





Pulse Width
8DPSK_3-DH5



Number of Pulses in 31.6 seconds
8DPSK_3-DH5

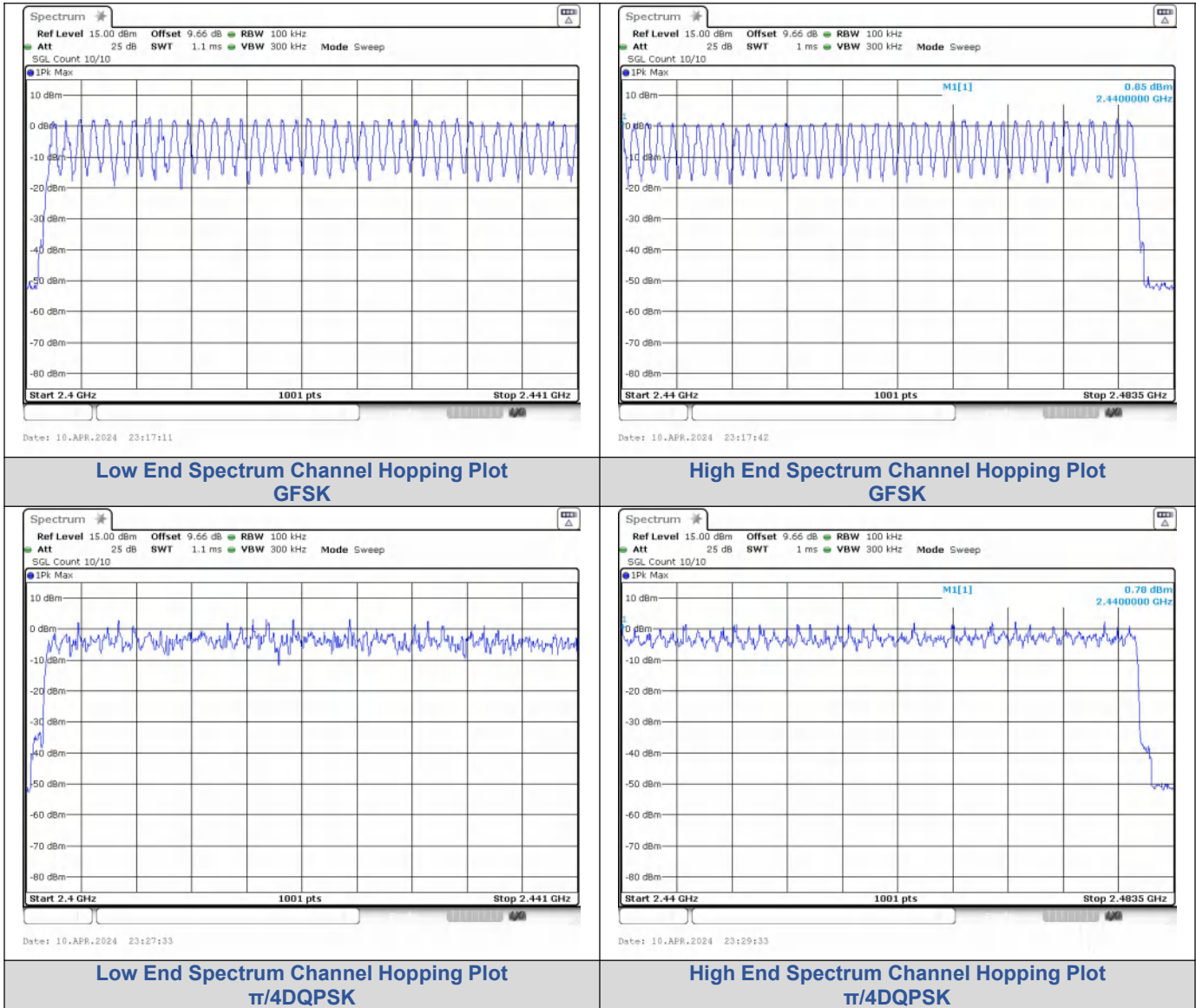
Number Of Hopping Channel

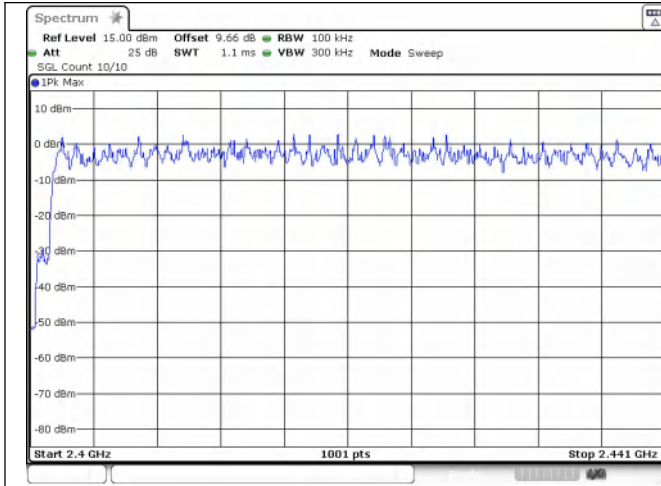
Left

Test Result

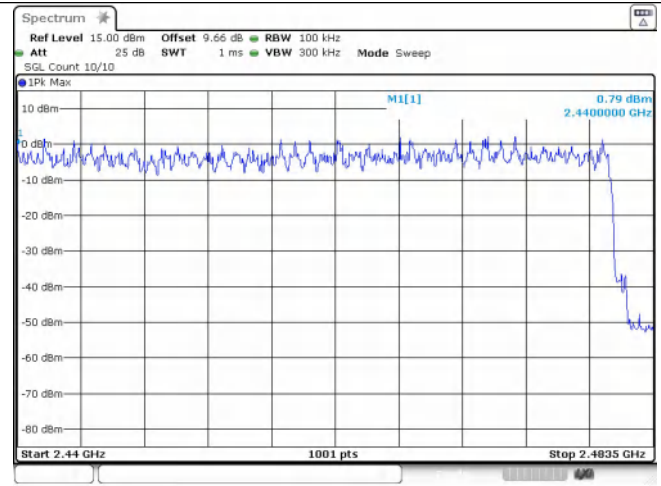
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





**Low End Spectrum Channel Hopping Plot
8DPSK**

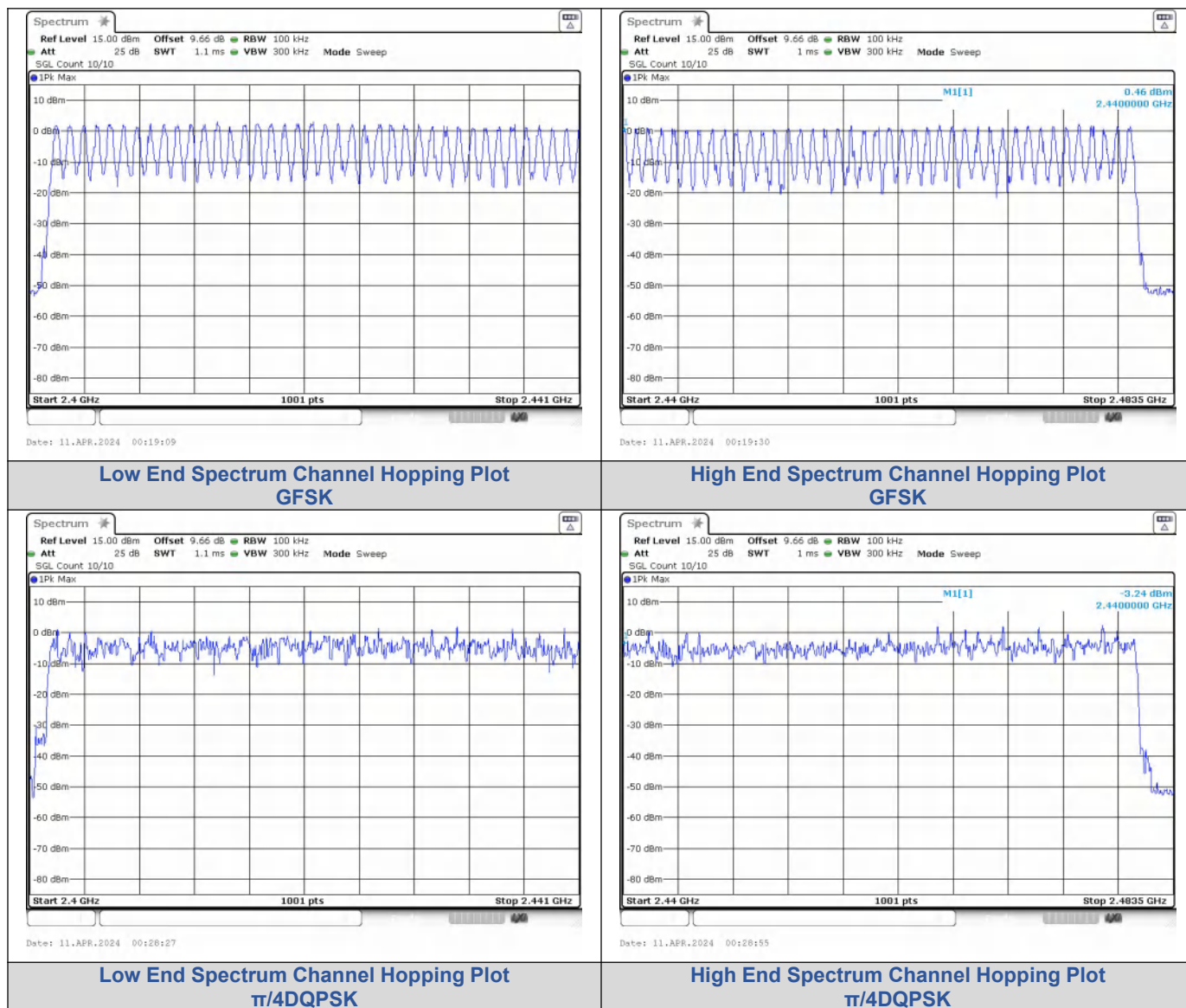


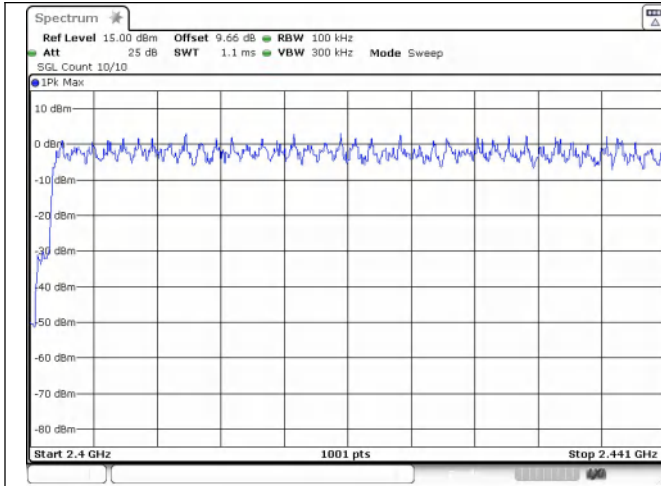
**High End Spectrum Channel Hopping Plot
8DPSK**

Right Test Result

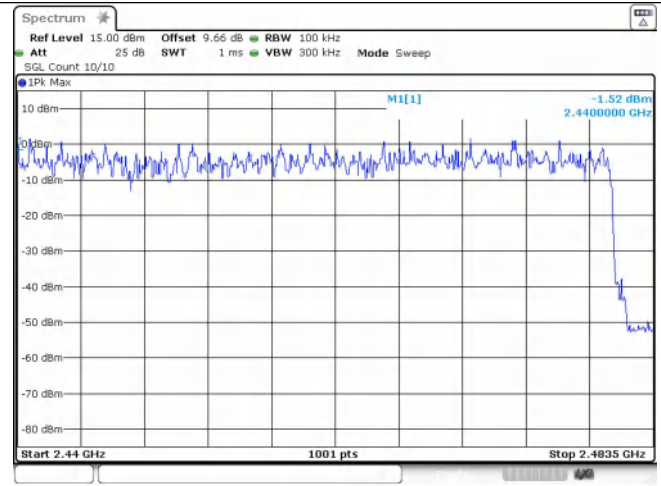
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs





**Low End Spectrum Channel Hopping Plot
8DPSK**



**High End Spectrum Channel Hopping Plot
8DPSK**