

Appendix A

Report No.:	CISRR240926260
FCC ID:	2BGU9-YW11
Product Name:	wireless headphone
Model No.:	YW11
Test Engineer:	Mark Fu
Supervised by:	Rory Huang

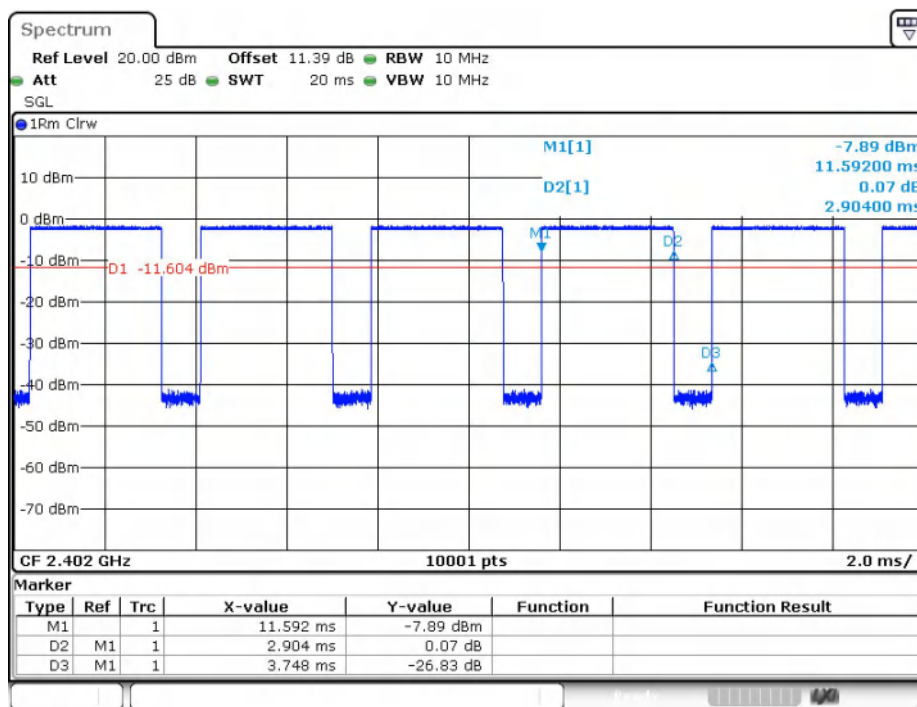
1) Duty Cycle

Test Result

Left:

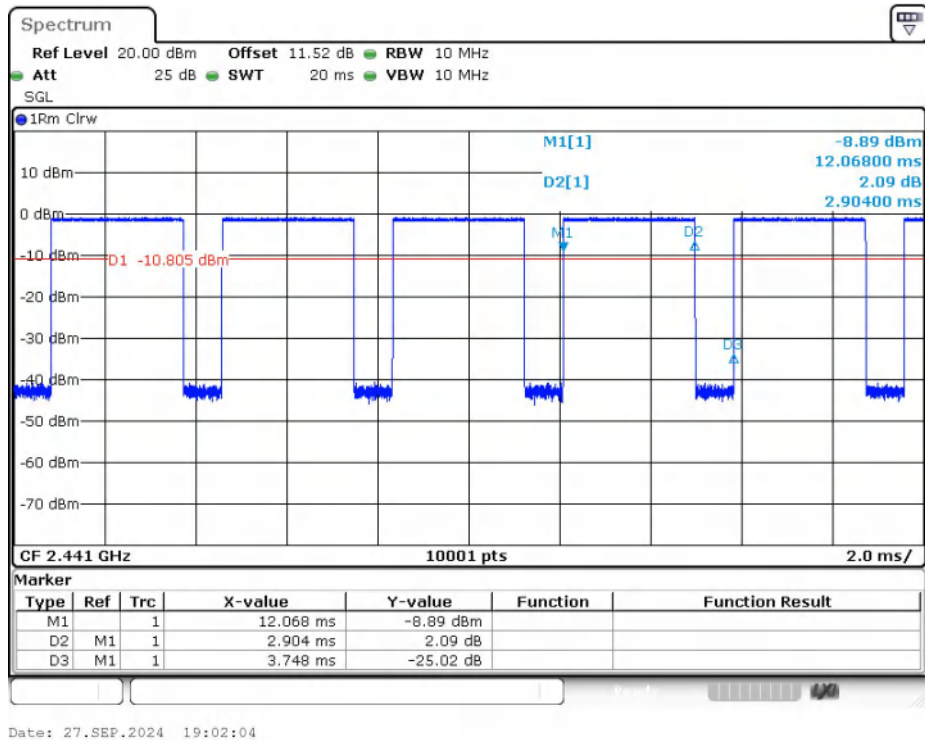
Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.904	3.748	77.48	0.7748	1.1081	0.34
		39	2.904	3.748	77.48	0.7748	1.1081	0.34
		78	2.902	3.748	77.43	0.7743	1.1109	0.34
$\pi/4$ DQPSK	2-DH5	0	2.910	3.748	77.64	0.7764	1.0991	0.34
		39	2.910	3.748	77.64	0.7764	1.0991	0.34
		78	2.908	3.748	77.59	0.7759	1.1019	0.34
8DPSK	3-DH5	0	2.910	3.748	77.64	0.7764	1.0991	0.34
		39	2.910	3.748	77.64	0.7764	1.0991	0.34
		78	2.912	3.748	77.69	0.7769	1.0963	0.34

Test Graphs

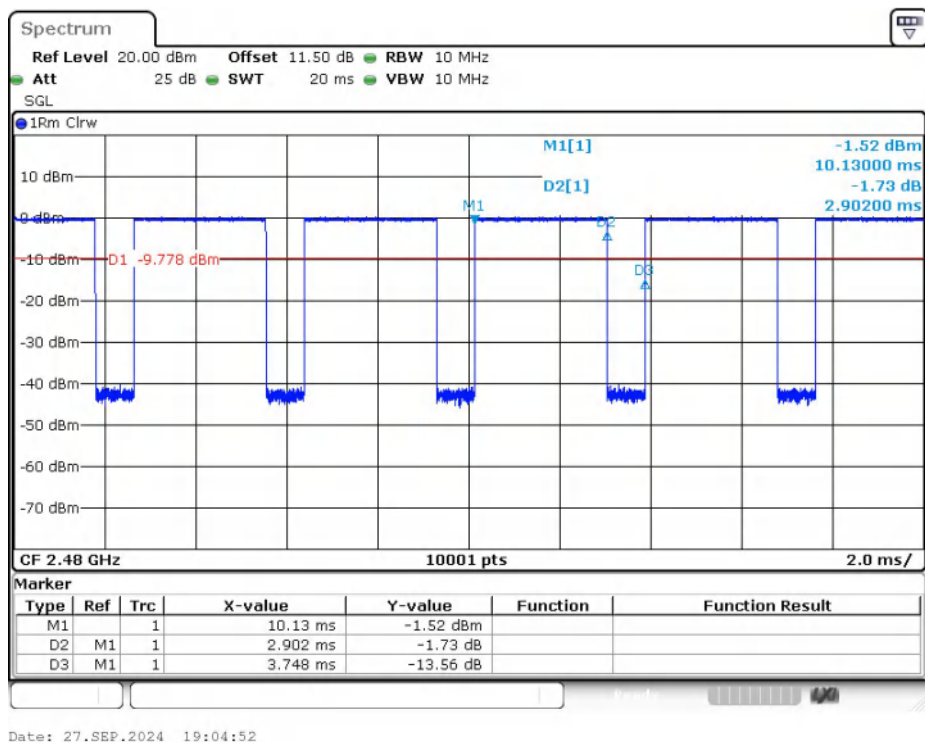


Date: 27.SEP.2024 18:54:15

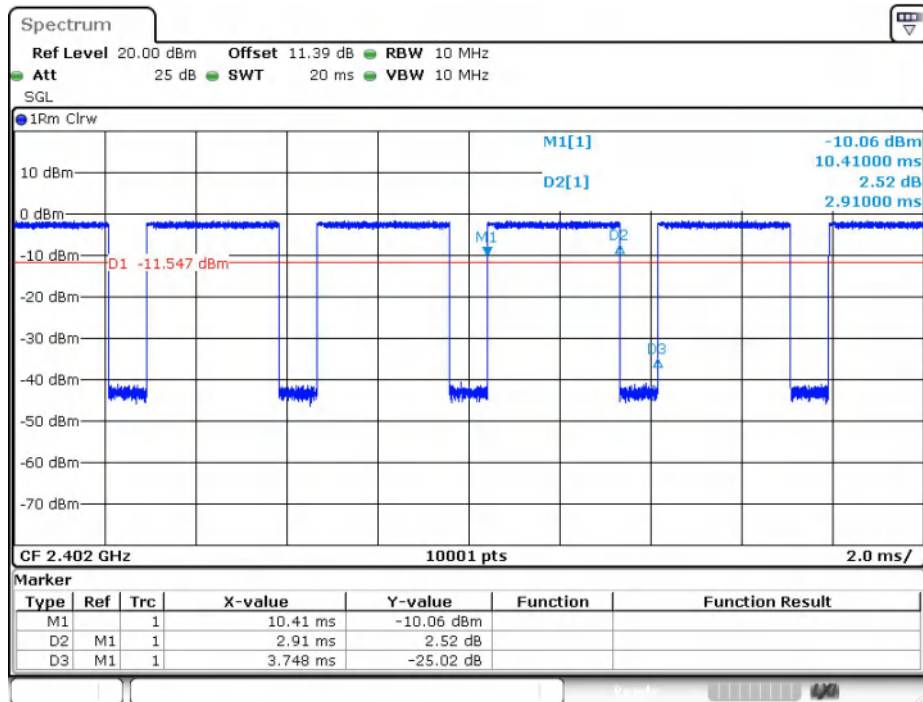
GFSK(DH5)_Channel 0



GFSK(DH5)_Channel 39

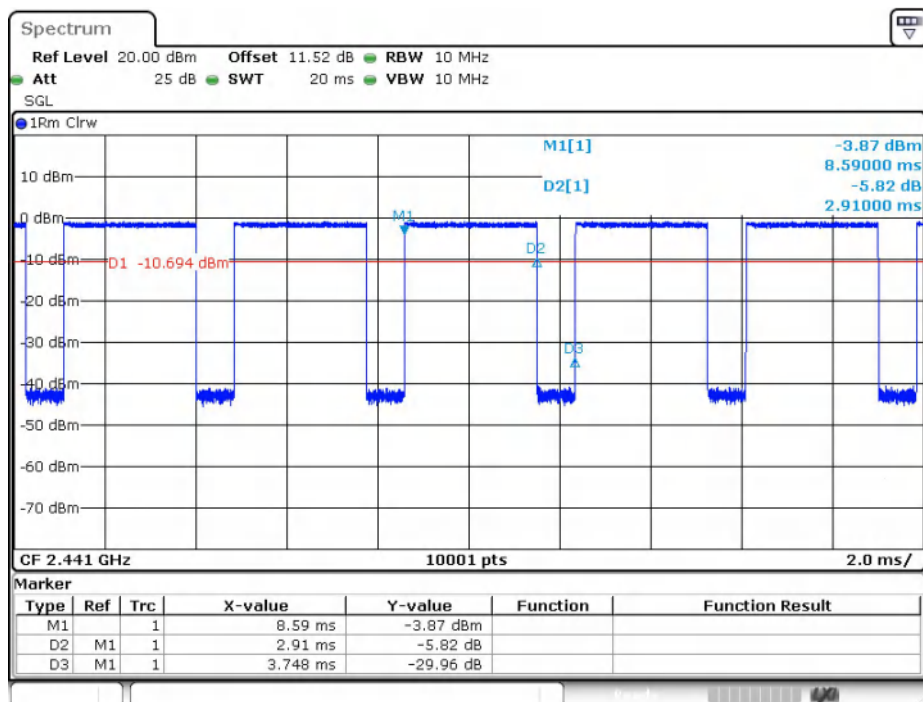


GFSK(DH5)_Channel 78



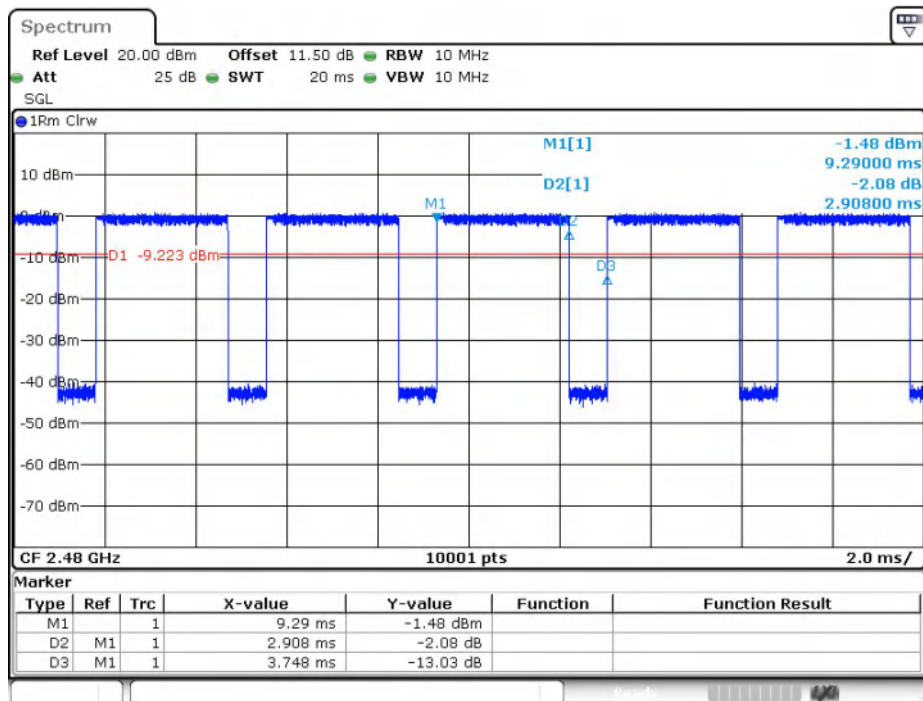
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$\pi/4$ QPSK(2-DH5)_Channel 0



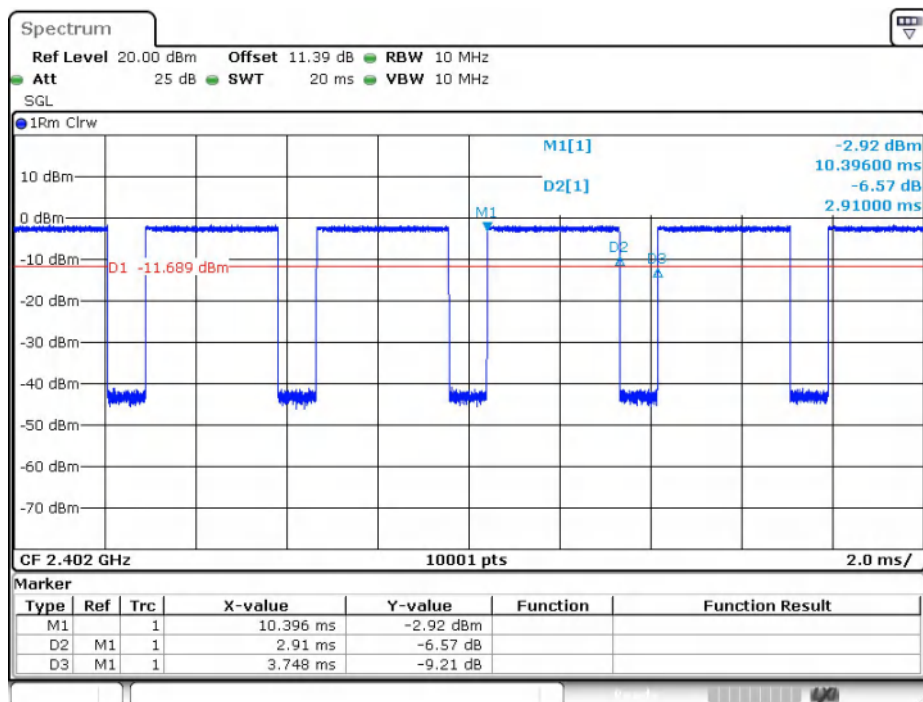
Date: 27.SEP.2024 19:17:03

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



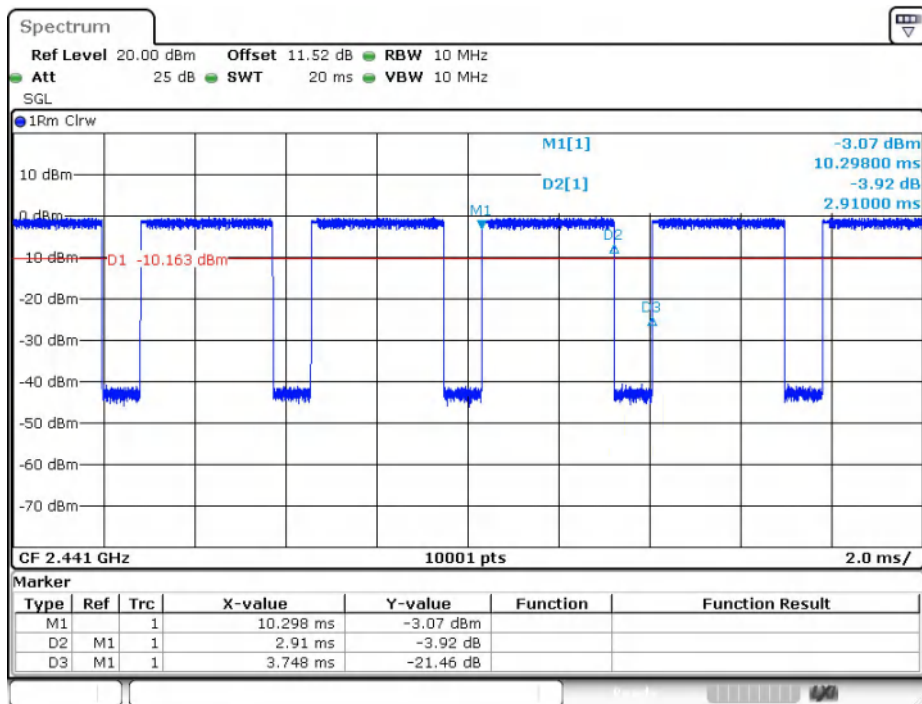
Date: 27.SEP.2024 19:19:44

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



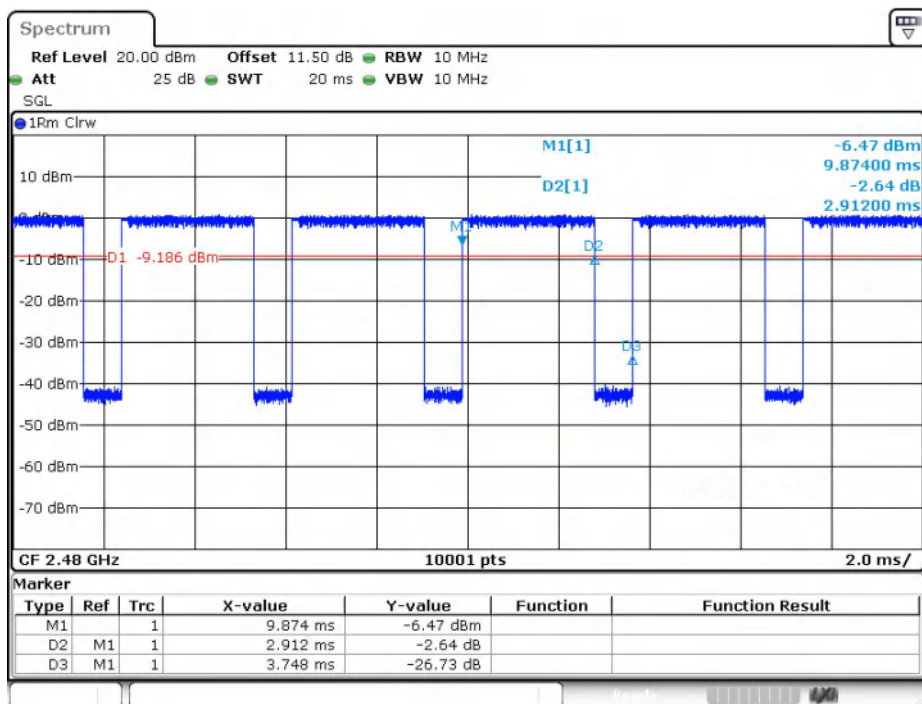
Date: 27.SEP.2024 19:22:25

8DPSK(3-DH5)_Channel 0



Date: 27.SEP.2024 19:30:42

8DPSK(3-DH5)_Channel 39



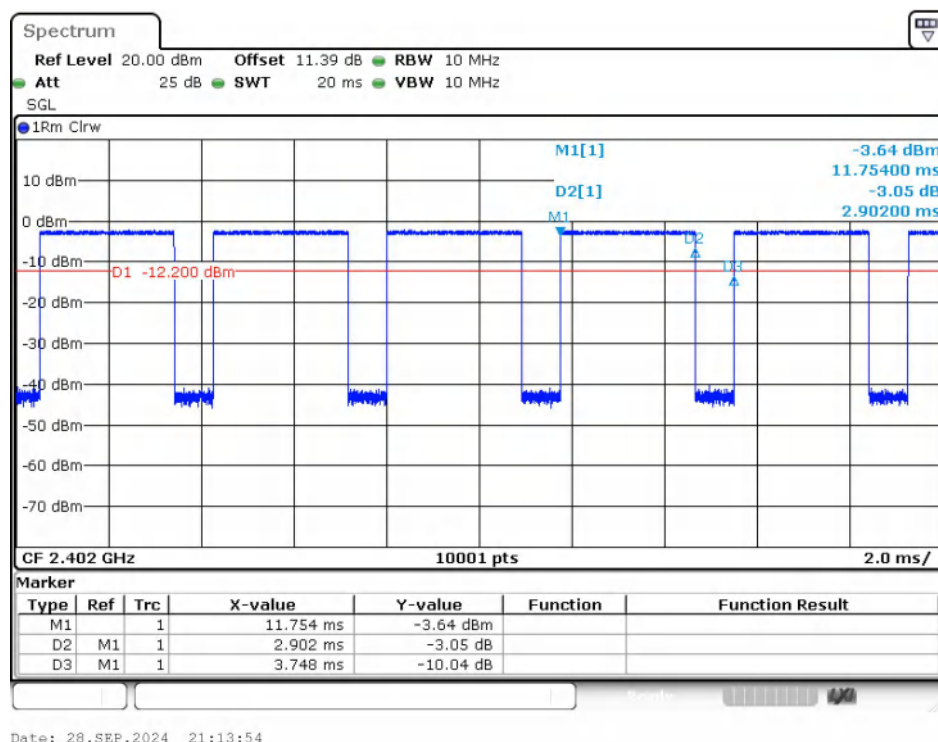
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8DPSK(3-DH5)_Channel 78

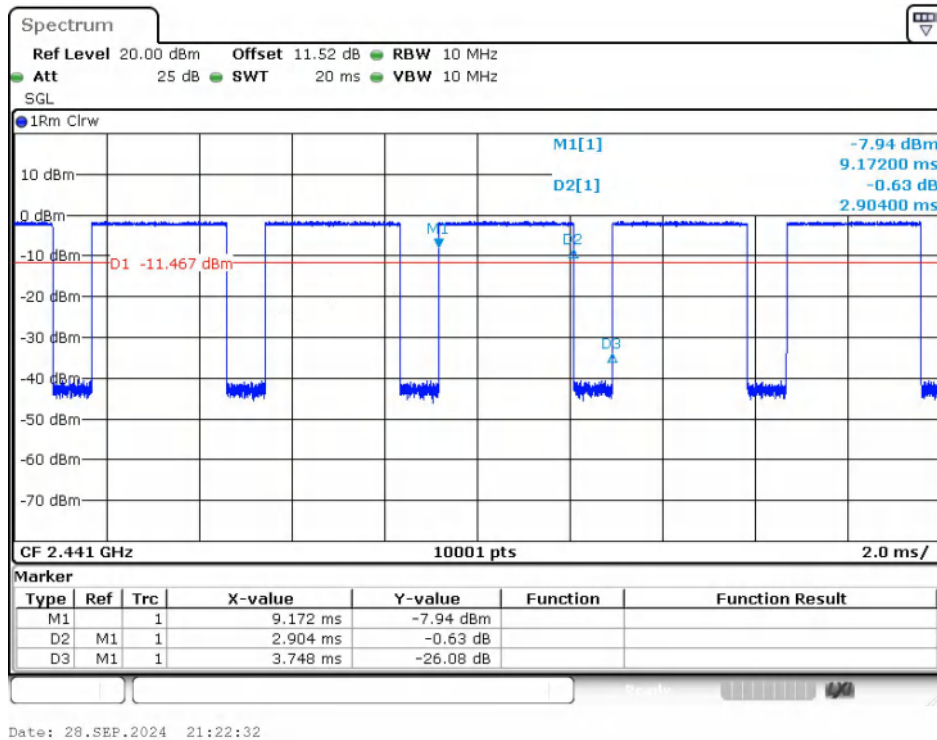
Right:

Modulation	Packets	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
GFSK	DH5	0	2.902	3.748	77.43	0.7743	1.1109	0.34
		39	2.904	3.748	77.48	0.7748	1.1081	0.34
		78	2.904	3.748	77.48	0.7748	1.1081	0.34
$\pi/4$ DQPSK	2-DH5	0	2.910	3.748	77.64	0.7764	1.0991	0.34
		39	2.908	3.748	77.59	0.7759	1.1019	0.34
		78	2.908	3.748	77.59	0.7759	1.1019	0.34
8DPSK	3-DH5	0	2.910	3.748	77.64	0.7764	1.0991	0.34
		39	2.910	3.748	77.64	0.7764	1.0991	0.34
		78	2.910	3.748	77.64	0.7764	1.0991	0.34

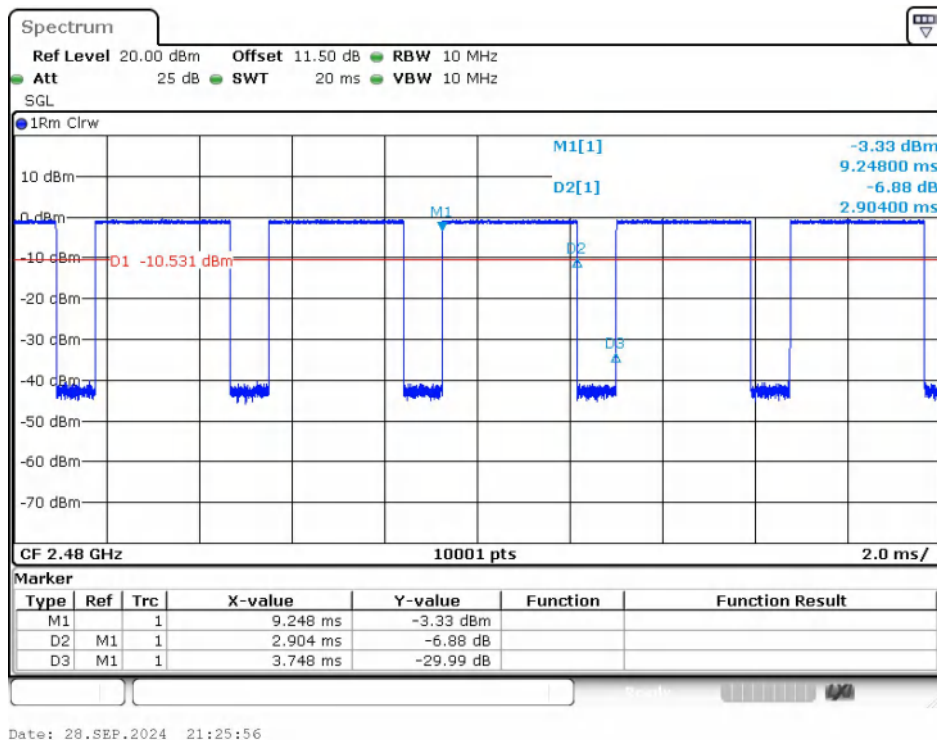
Test Graphs



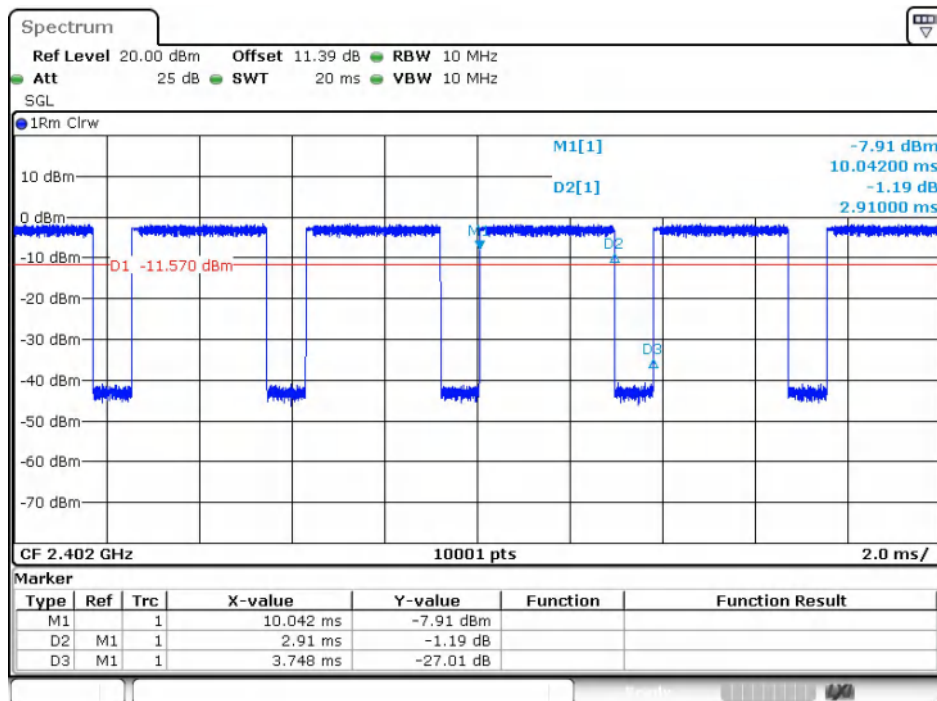
GFSK(DH5)_Channel 0



GFSK(DH5)_Channel 39

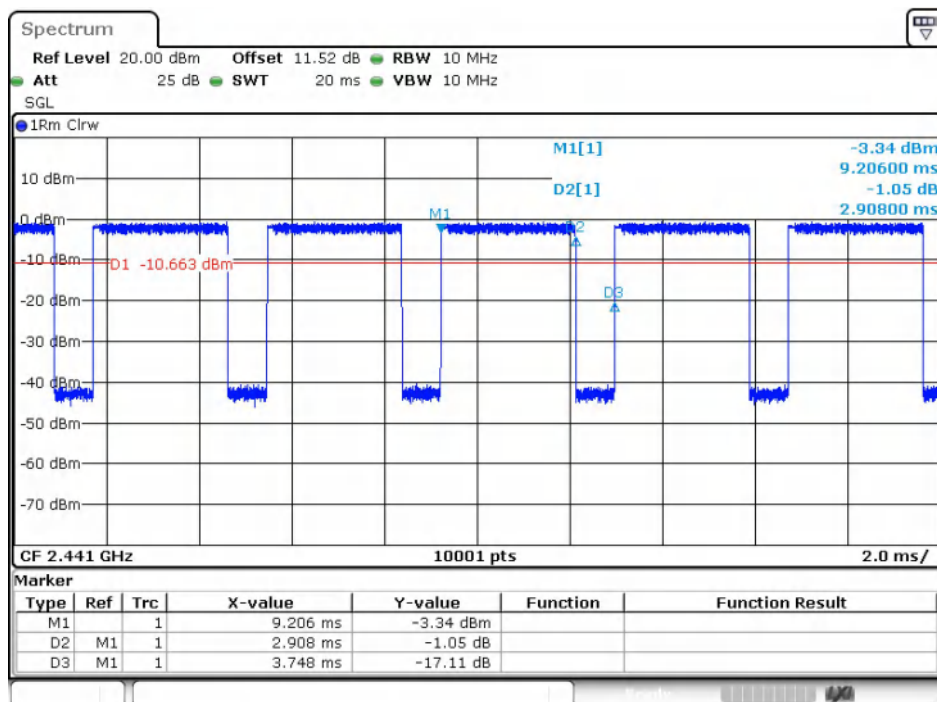


GFSK(DH5)_Channel 78



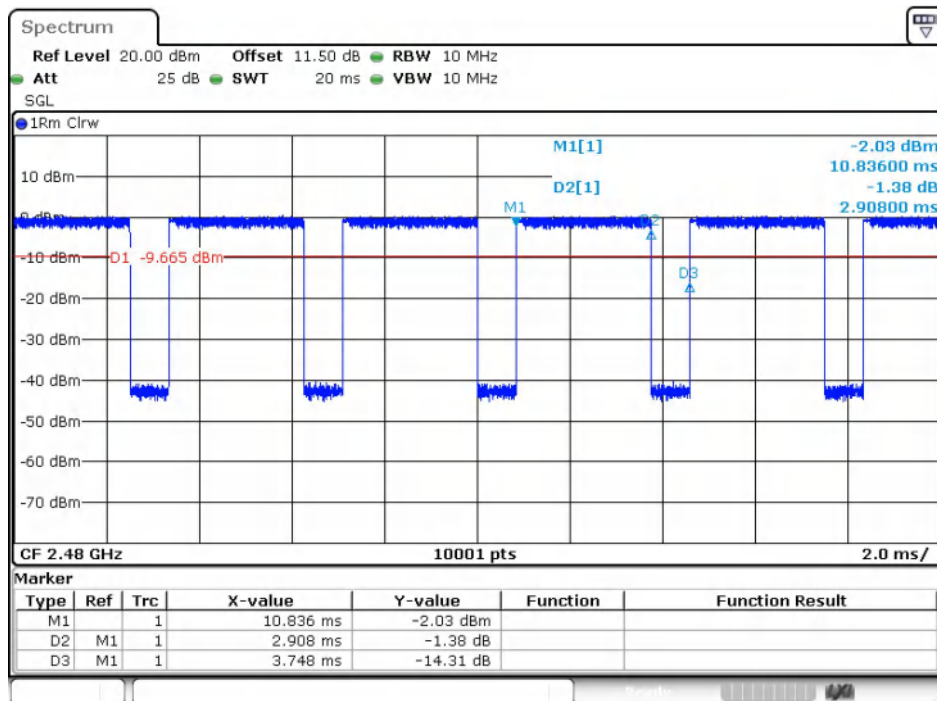
Date: 28.SEP.2024 21:28:22

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



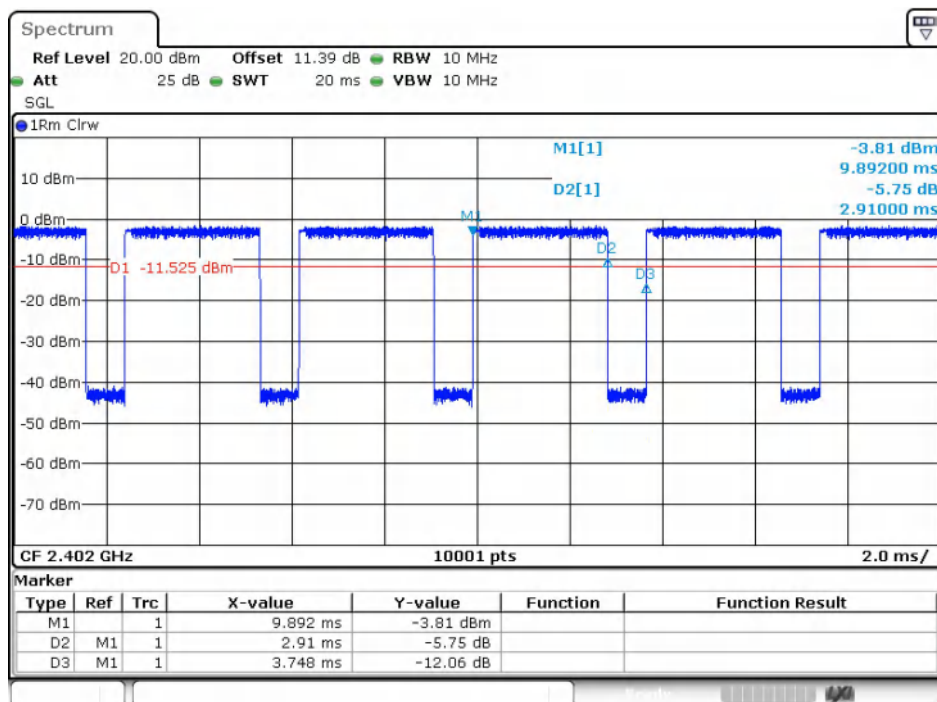
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$\pi/4$ DQPSK(2-DH5)_Channel 39



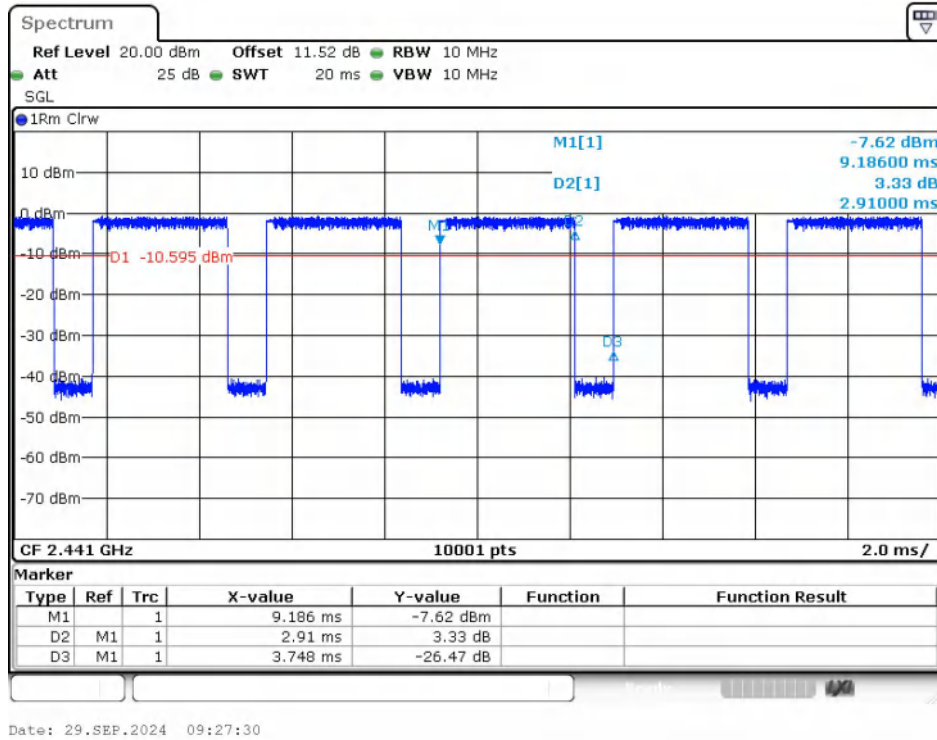
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$\pi/4$ DQPSK(2-DH5)_Channel 78

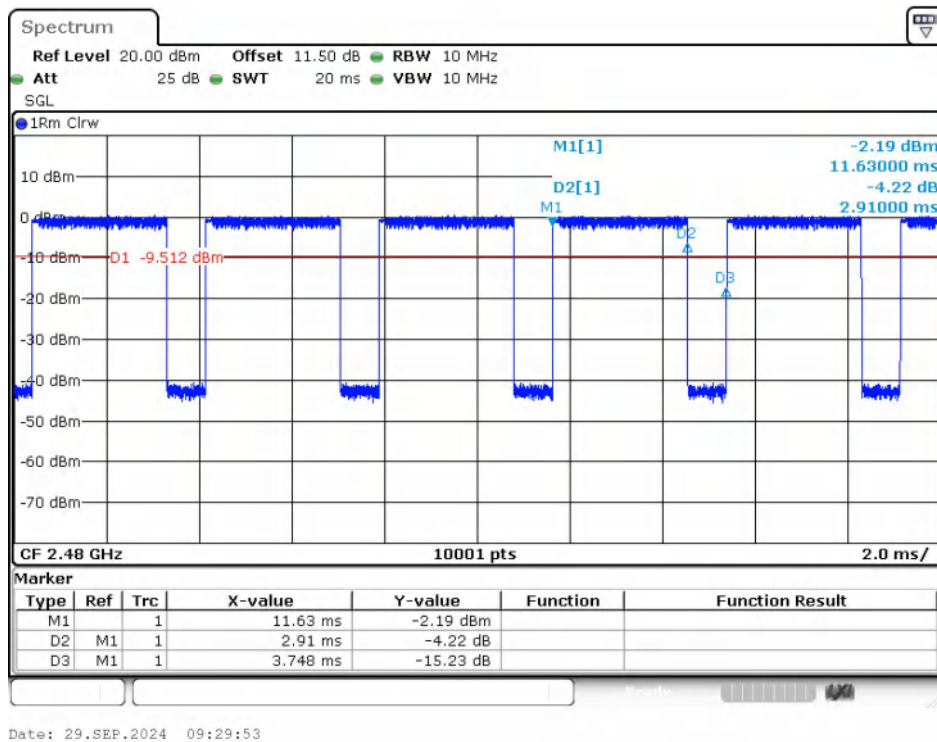


Date: 29.SEP.2024 09:20:19

8DPSK(3-DH5)_Channel 0



8DPSK(3-DH5)_Channel 39



8DPSK(3-DH5)_Channel 78

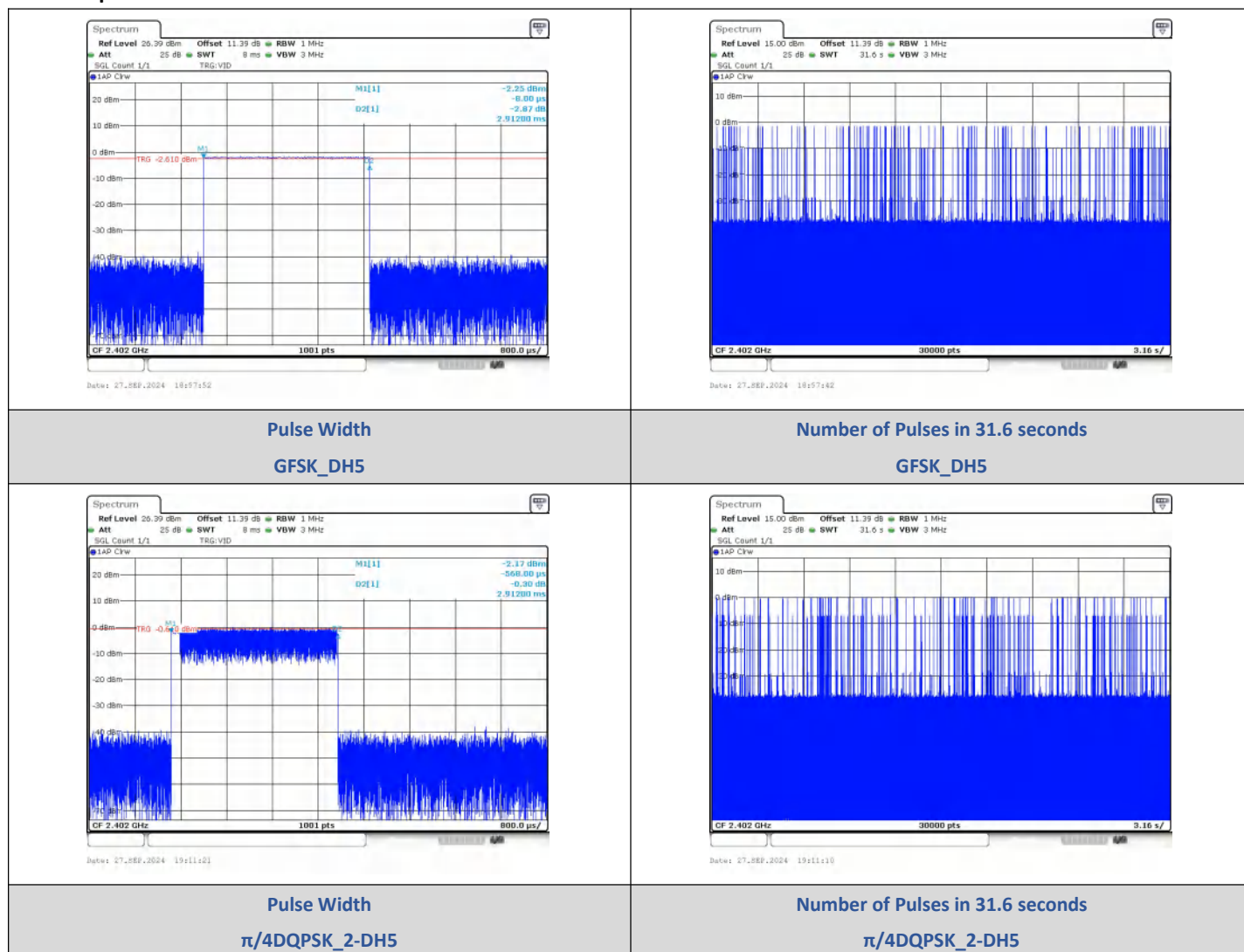
2) Dwell Time

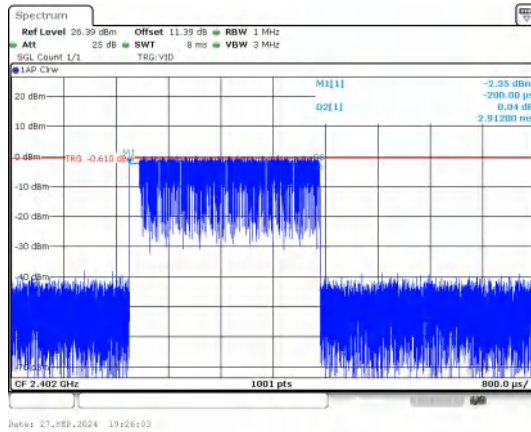
Test Result

Left:

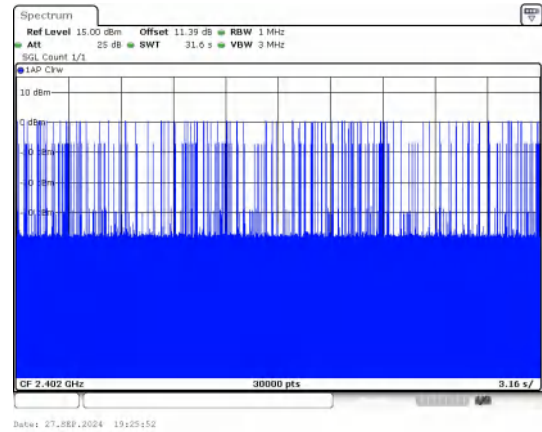
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.912	105	305.76	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.912	101	294.11		PASS
8DPSK	3-DH5		2.912	105	305.76		PASS

Test Graphs





Pulse Width
8DPSK_3-DH5

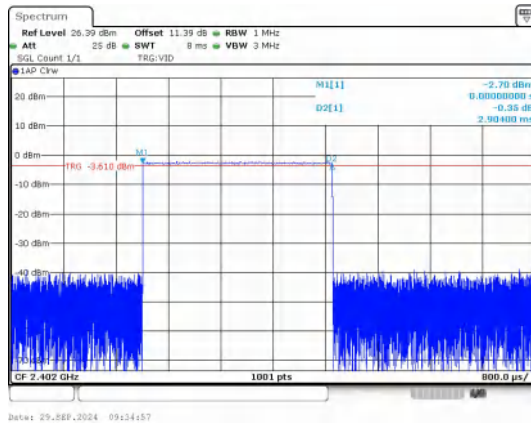


Number of Pulses in 31.6 seconds
8DPSK_3-DH5

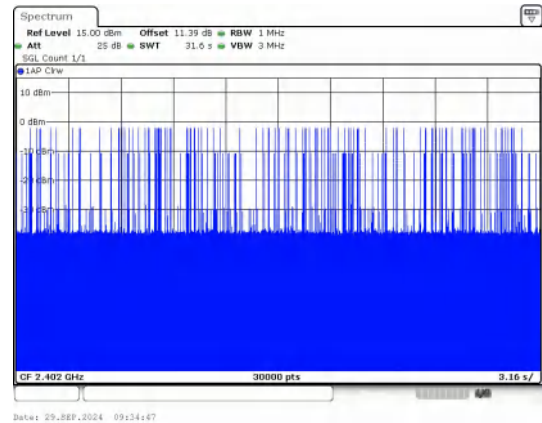
Right:

Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CH0 (2402MHz)	2.904	106	307.82	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.912	104	302.85		PASS
8DPSK	3-DH5		2.912	114	331.97		PASS

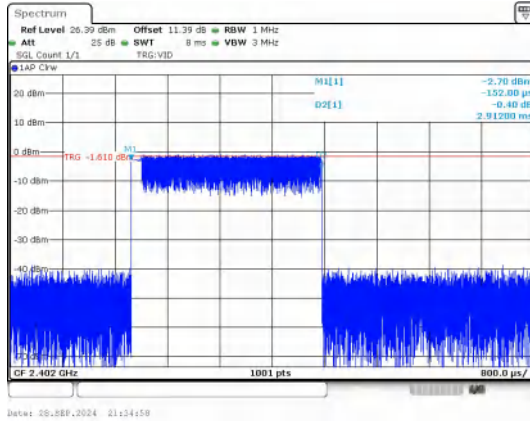
Test Graphs



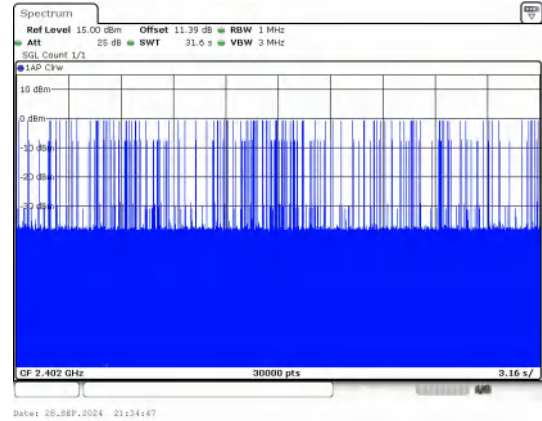
Pulse Width
GFSK_DH5



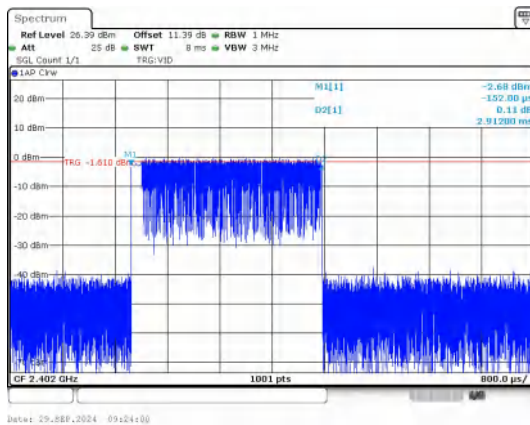
Number of Pulses in 31.6 seconds
GFSK_DH5



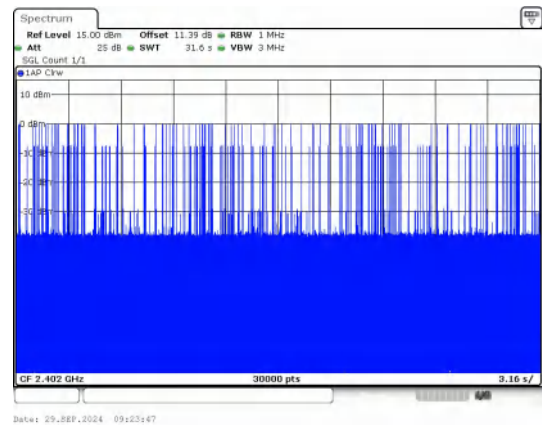
Pulse Width
 $\pi/4$ QPSK_2-DH5



Number of Pulses in 31.6 seconds
 $\pi/4$ QPSK_2-DH5



Pulse Width
8DPSK_3-DH5



Number of Pulses in 31.6 seconds
8DPSK_3-DH5

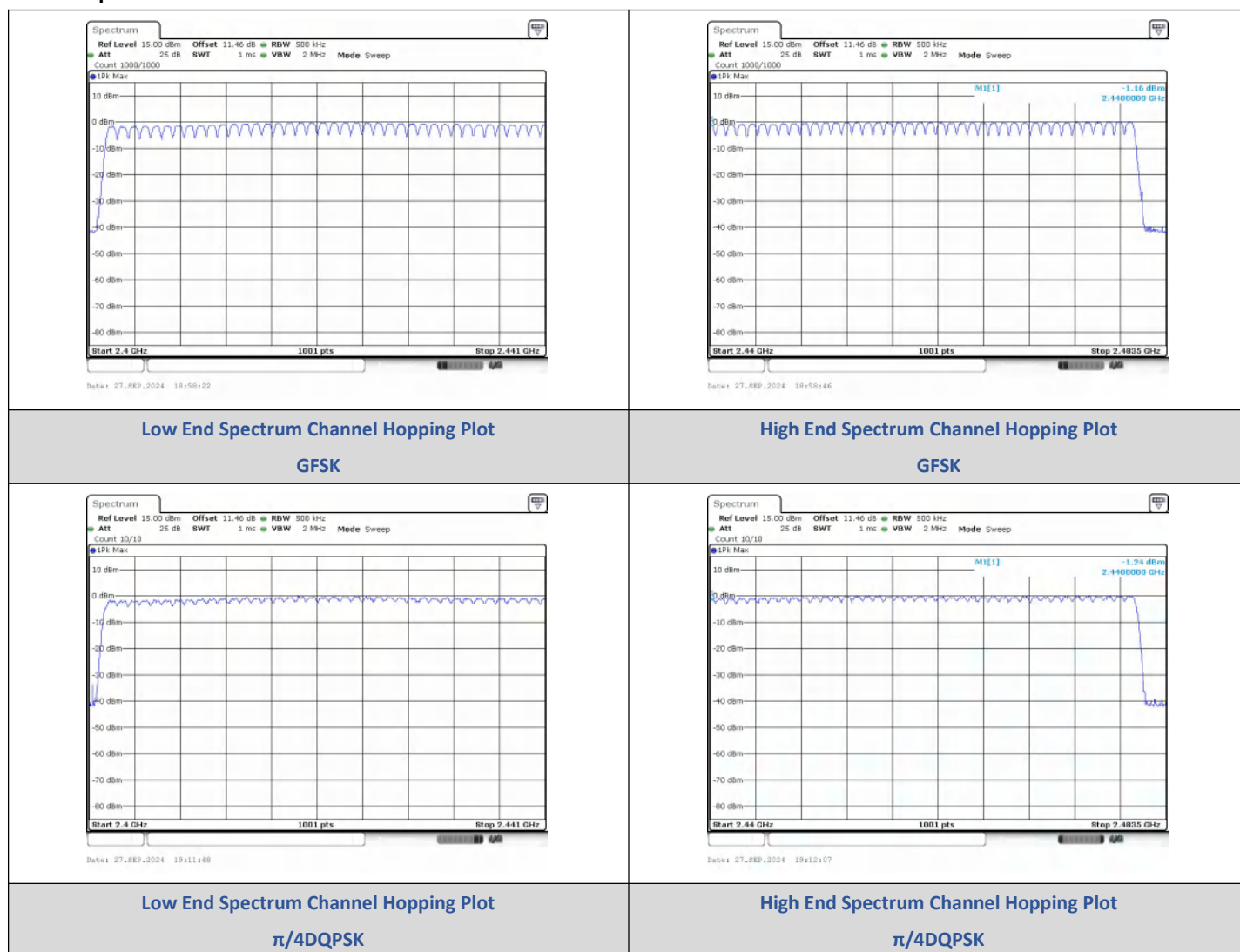
3) Number Of Hopping Channel

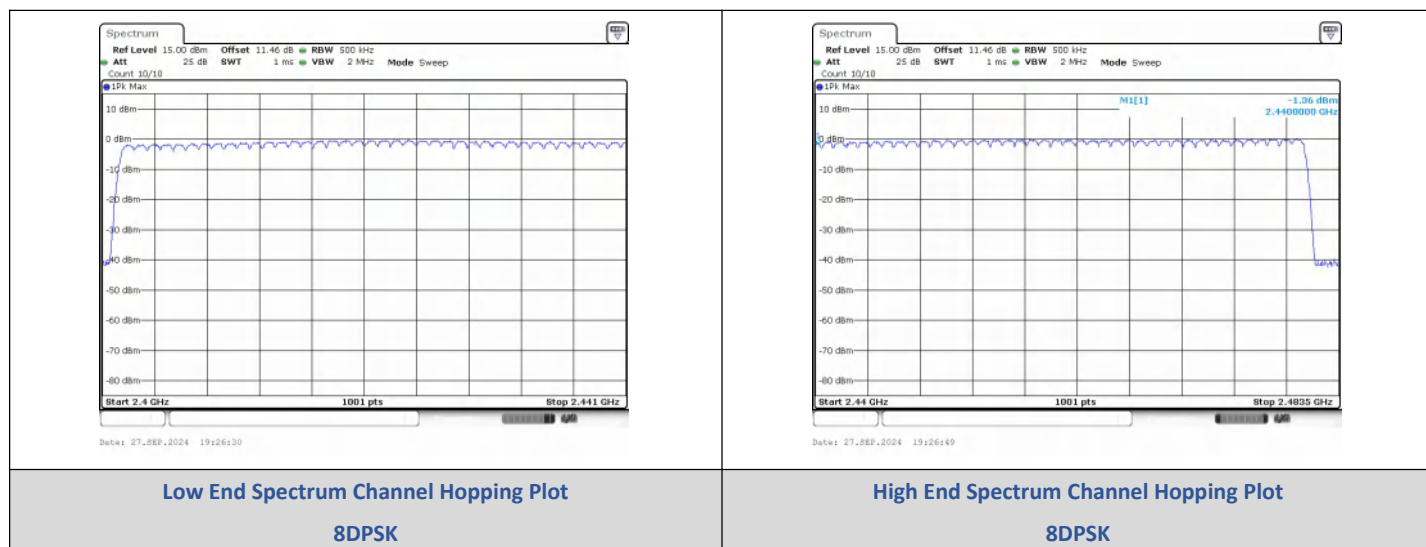
Test Result

Left:

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



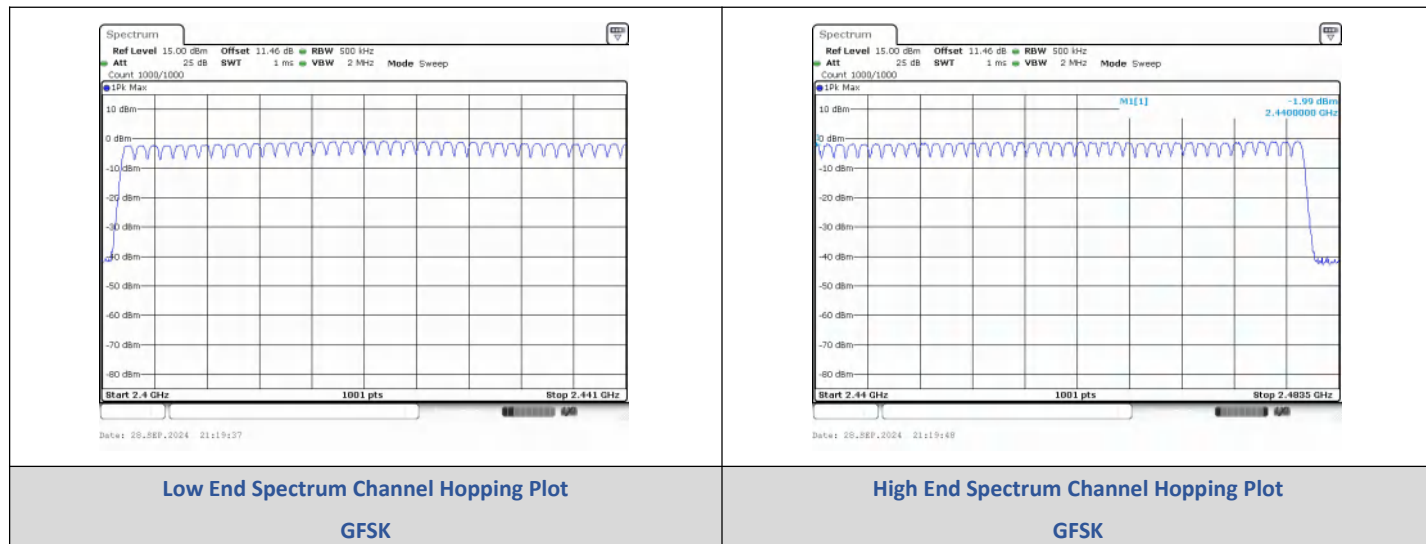


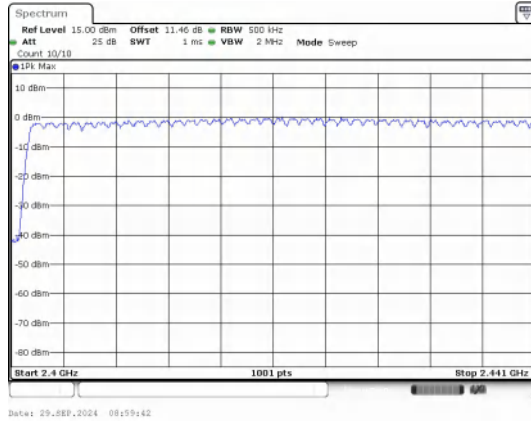
Right:

Test Result

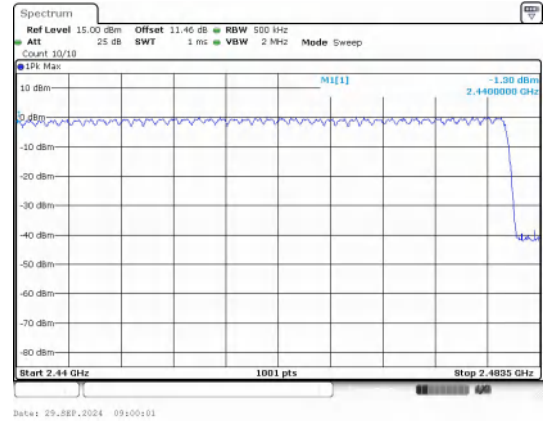
Modulation	Packet	Number of Hopping Channel	Limit	Result
GFSK	DH5	79	15	PASS
$\pi/4$ DQPSK	2-DH5	79	15	PASS
8DPSK	3-DH5	79	15	PASS

Test Graphs

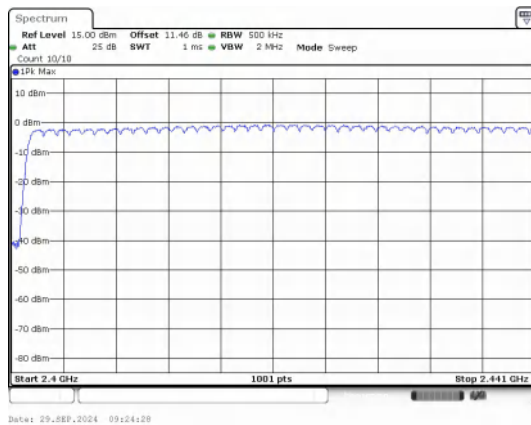




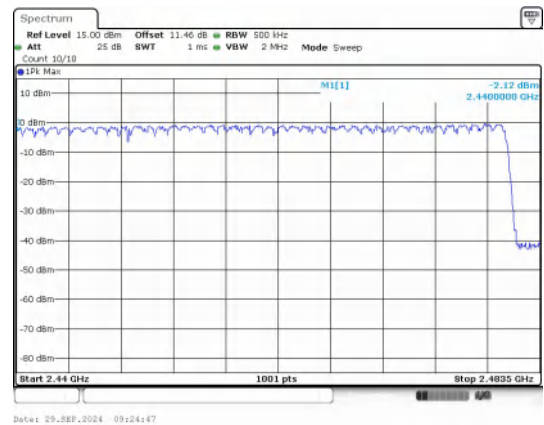
Low End Spectrum Channel Hopping Plot
 $\pi/4$ DQPSK



High End Spectrum Channel Hopping Plot
 $\pi/4$ DQPSK



Low End Spectrum Channel Hopping Plot
8DPSK



High End Spectrum Channel Hopping Plot
8DPSK

4) Conducted Peak Output Power

Test Result

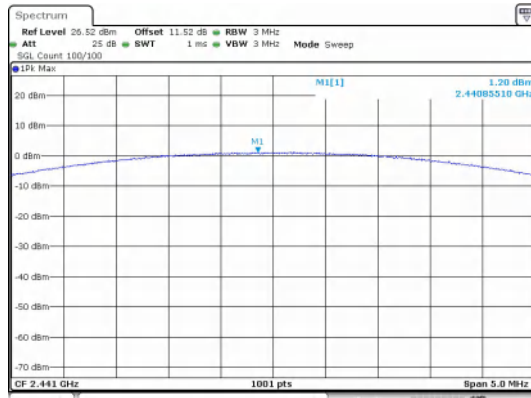
Left:

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	-1.50	0.71	≤30	PASS
		39	-0.72	0.85		PASS
		78	0.27	1.06		PASS
$\pi/4$ DQPSK	2-DH5	0	0.42	1.10	≤20.97	PASS
		39	1.20	1.32		PASS
		78	2.32	1.71		PASS
8DPSK	3-DH5	0	0.90	1.23		PASS
		39	1.73	1.49		PASS
		78	2.96	1.98		PASS

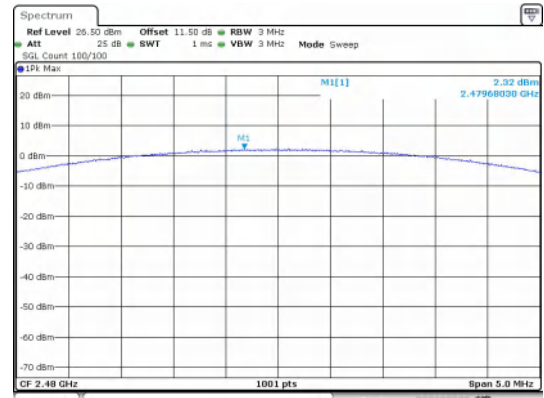
Test Graphs



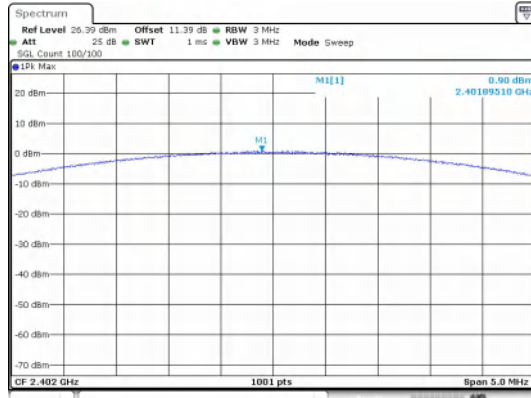
GFSK_Channel 78



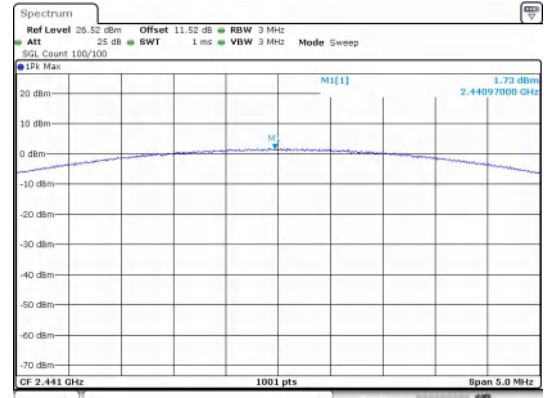
π /4DQPSK_Channel 0



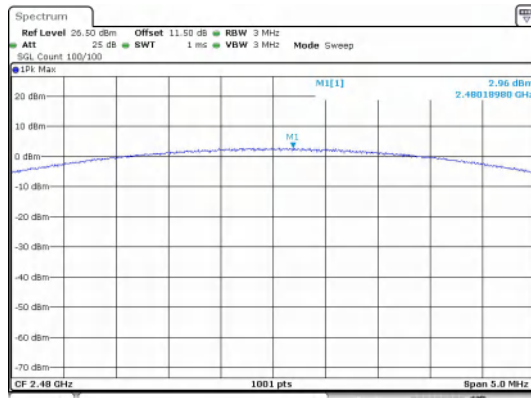
Peak Output Power
 π /4DQPSK_Channel 39



Peak Output Power
 π /4DQPSK_Channel 78



Peak Output Power
8DPSK_Channel 0



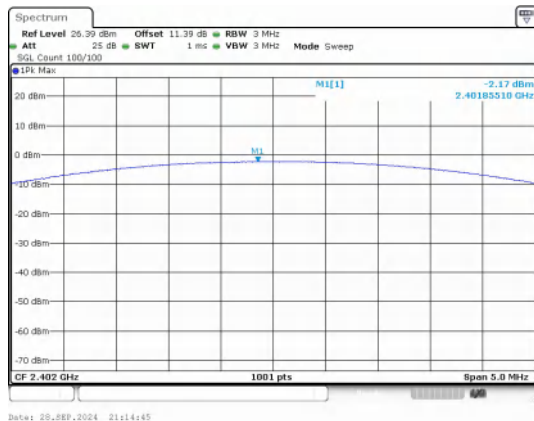
Peak Output Power
8DPSK_Channel 39

Peak Output Power
8DPSK_Channel 78

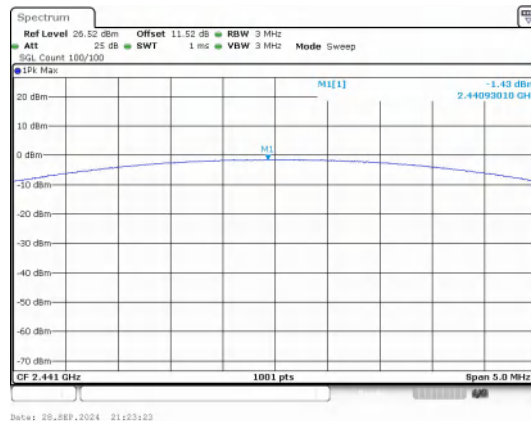
Right:

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	-2.17	0.61	≤30	PASS
		39	-1.43	0.72		PASS
		78	-0.49	0.89		PASS
$\pi/4$ DQPSK	2-DH5	0	-0.03	0.99	≤20.97	PASS
		39	0.92	1.24		PASS
		78	2.02	1.59		PASS
8DPSK	3-DH5	0	0.41	1.10		PASS
		39	1.21	1.32		PASS
		78	2.17	1.65		PASS

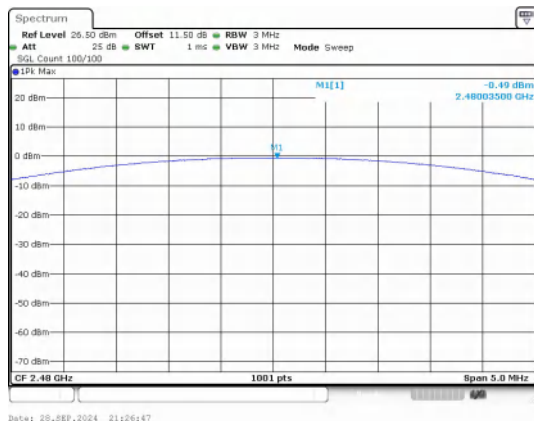
Test Graphs



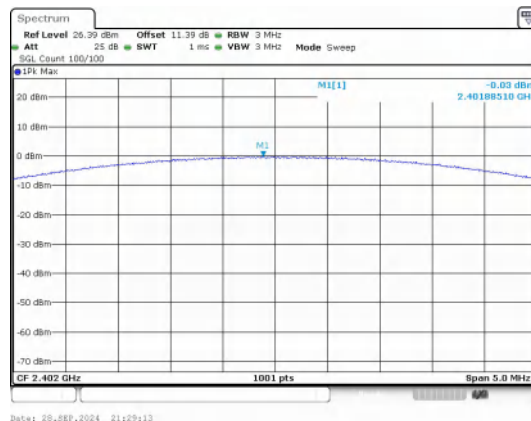
Peak Output Power
GFSK_Channel 0



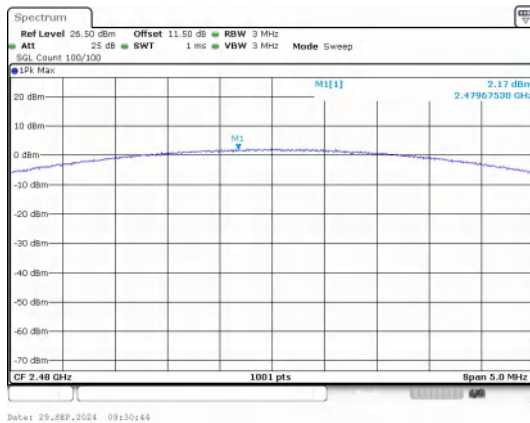
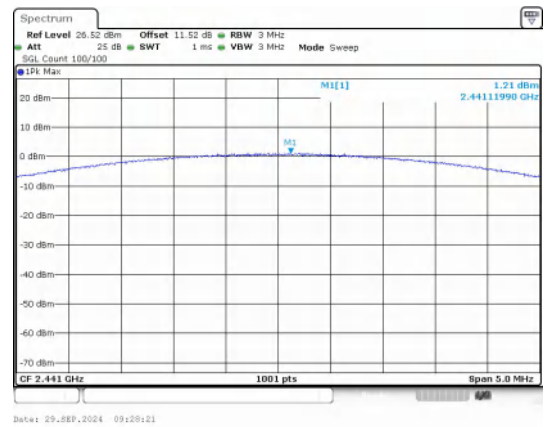
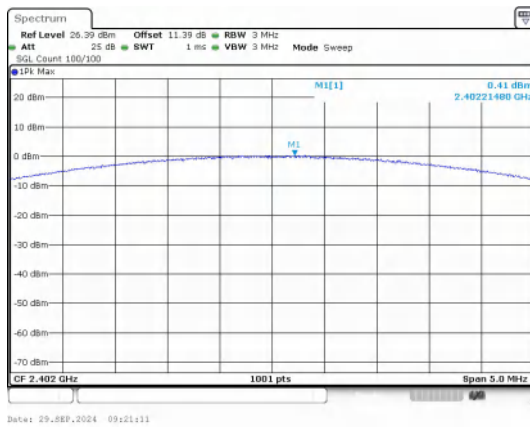
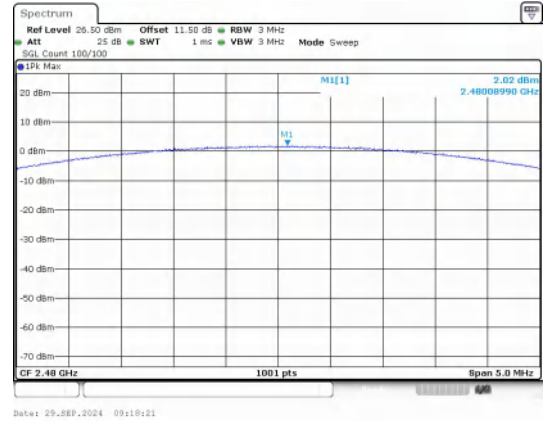
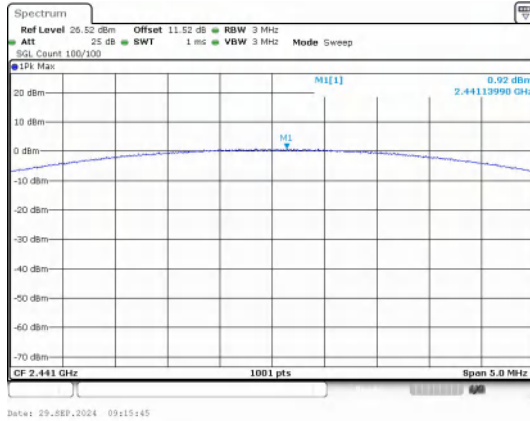
Peak Output Power
GFSK_Channel 39



Peak Output Power
GFSK_Channel 78



Peak Output Power
 $\pi/4$ DQPSK_Channel 0



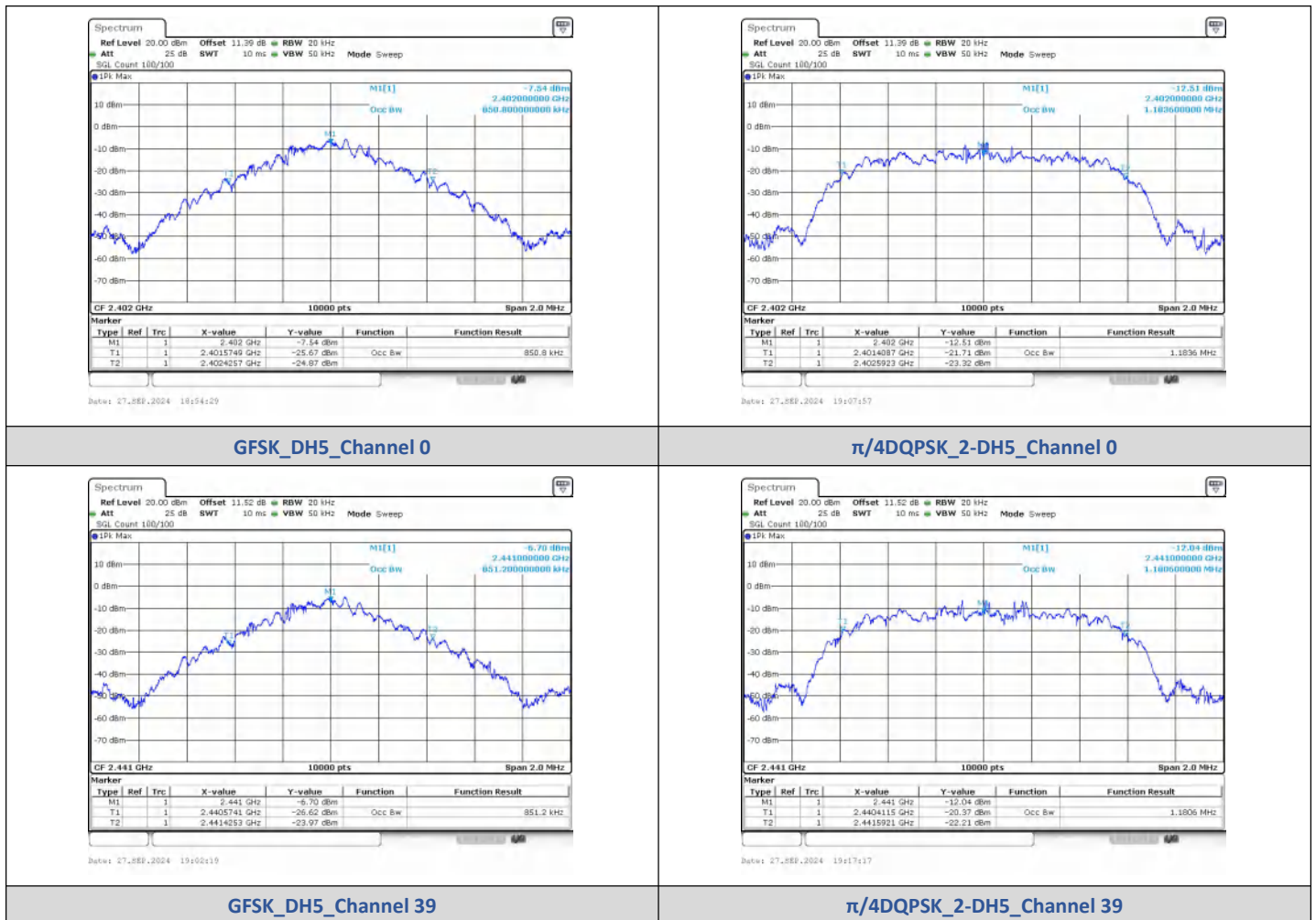
5) 99% Bandwidth

Test Result

Left:

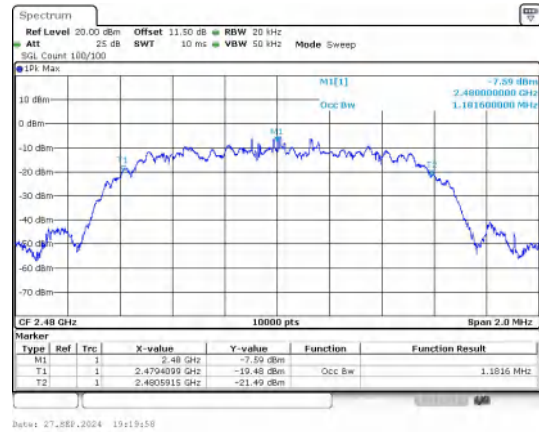
Modulation	Channel	Center Frequency (MHz)	99% BW (MHz)
GFSK	0	2402	0.85080
	39	2441	0.85120
	78	2480	0.85180
$\pi/4$ DQPSK	0	2402	1.1836
	39	2441	1.1806
	78	2480	1.1816
8DPSK	0	2402	1.1820
	39	2441	1.1780
	78	2480	1.1860

Test Graphs

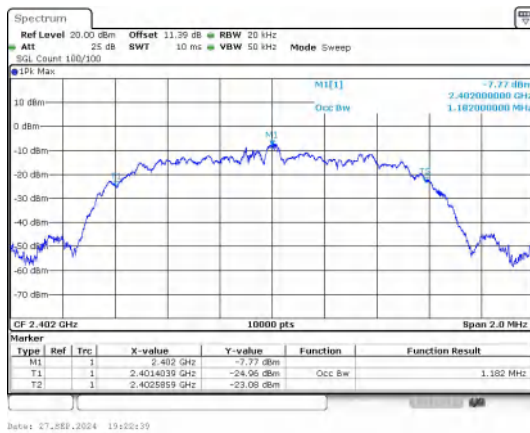




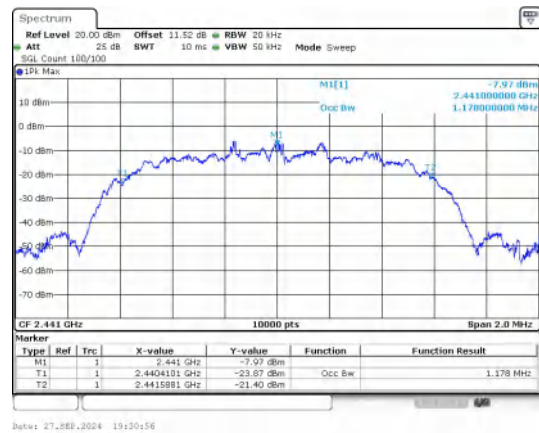
GFSK_DH5_Channel 78



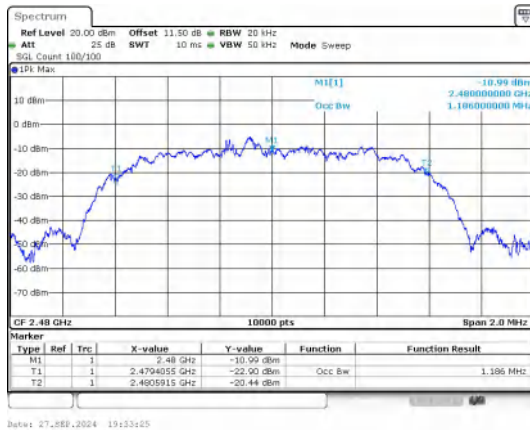
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



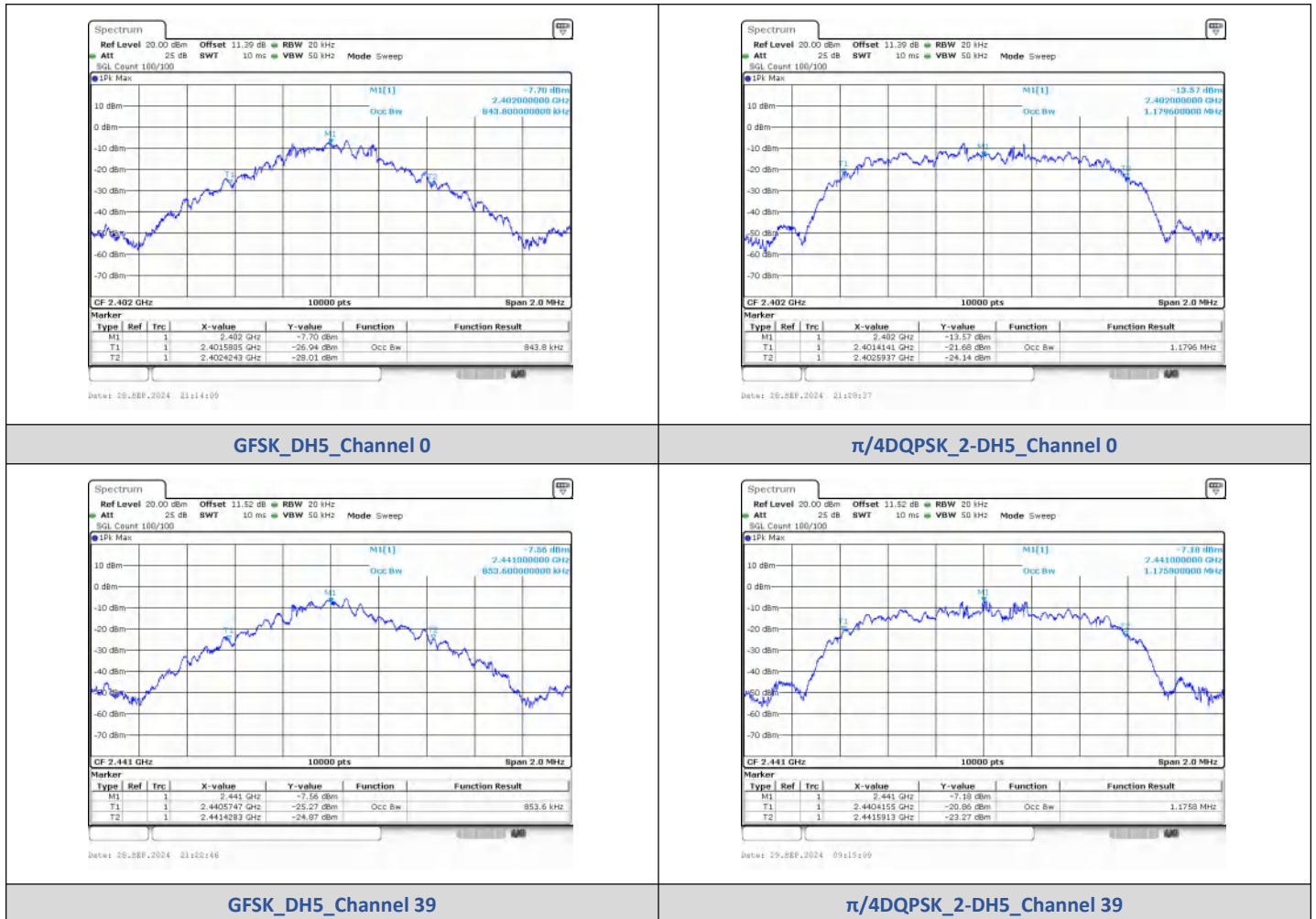
8DPSK_3-DH5_Channel 78

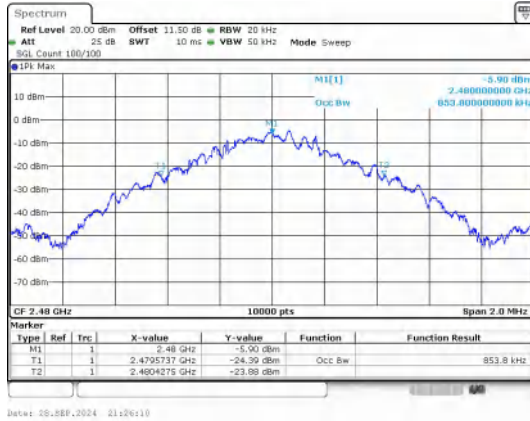
Right:

Test Result

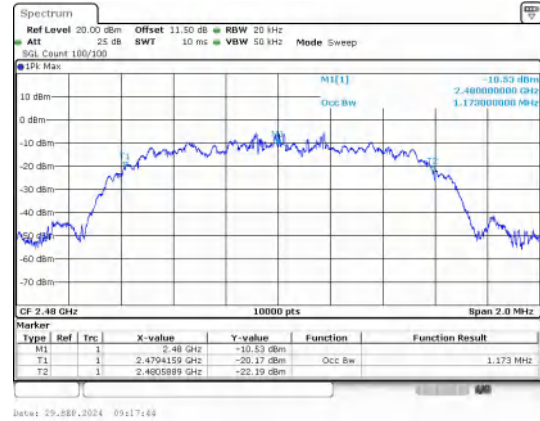
Modulation	Channel	Center Frequency (MHz)	99% BW (MHz)
GFSK	0	2402	0.84380
	39	2441	0.85360
	78	2480	0.85380
$\pi/4$ DQPSK	0	2402	1.1796
	39	2441	1.1758
	78	2480	1.1730
8DPSK	0	2402	1.1726
	39	2441	1.1802
	78	2480	1.1838

Test Graphs

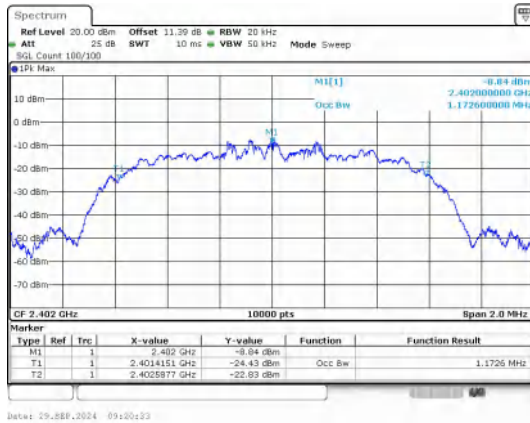




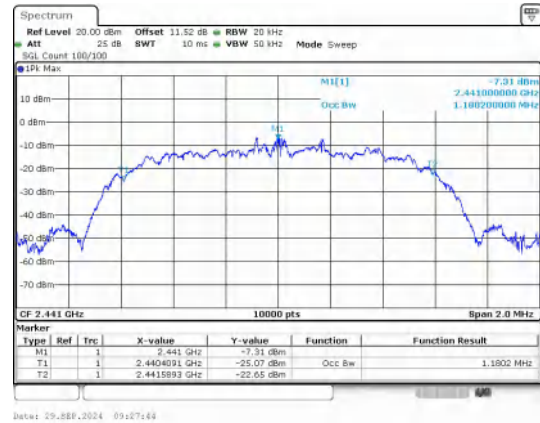
GFSK_DH5_Channel 78



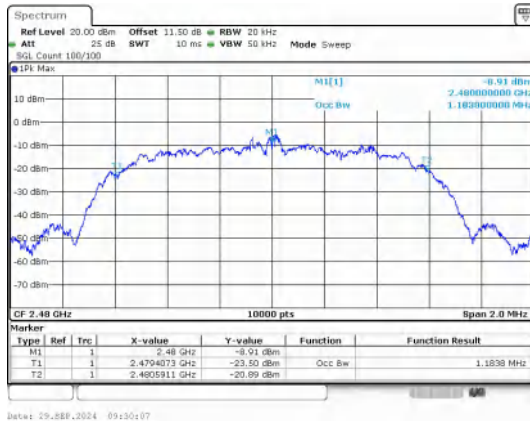
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



8DPSK_3-DH5_Channel 78

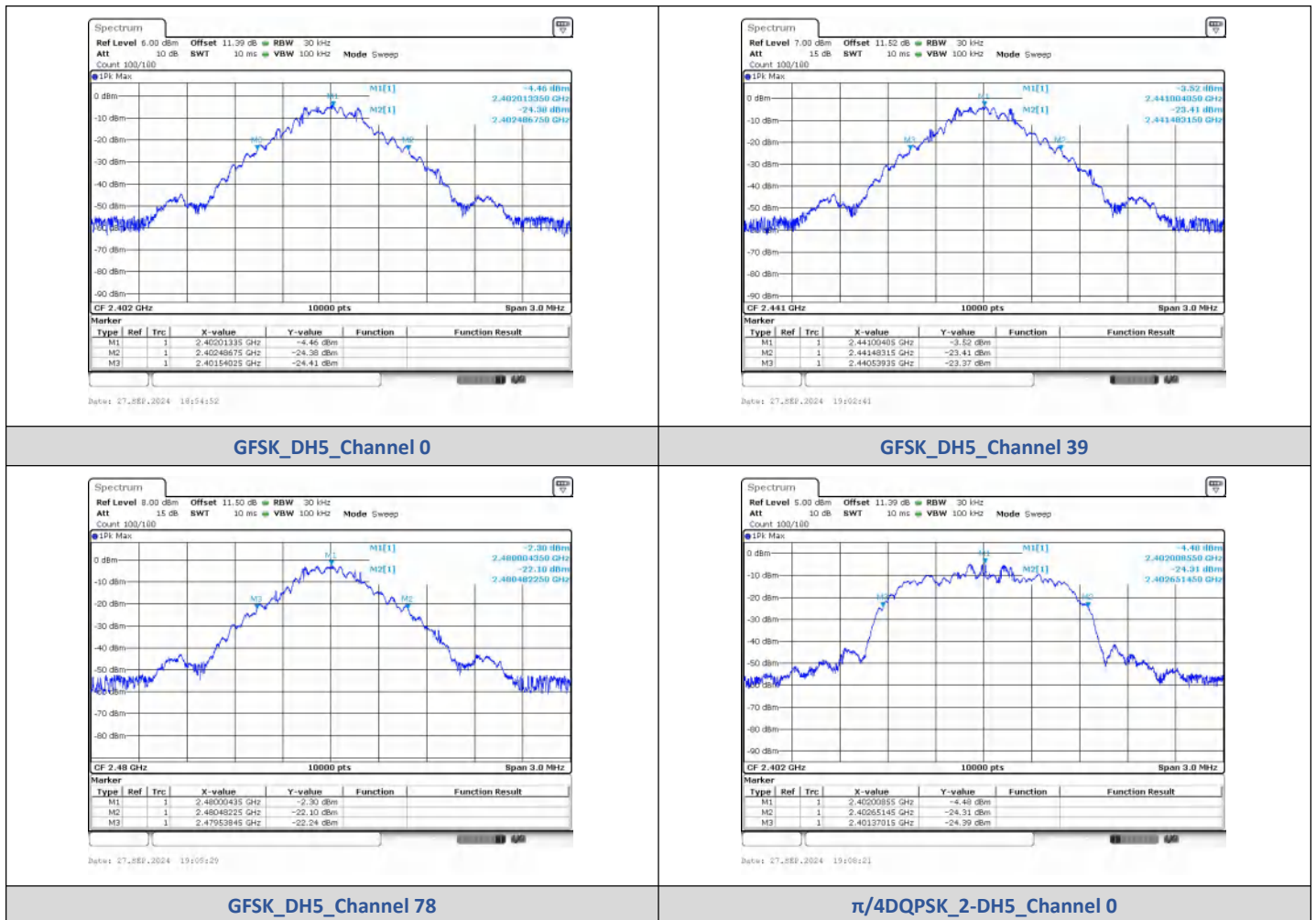
6) 20dB Bandwidth

Test Result

Left:

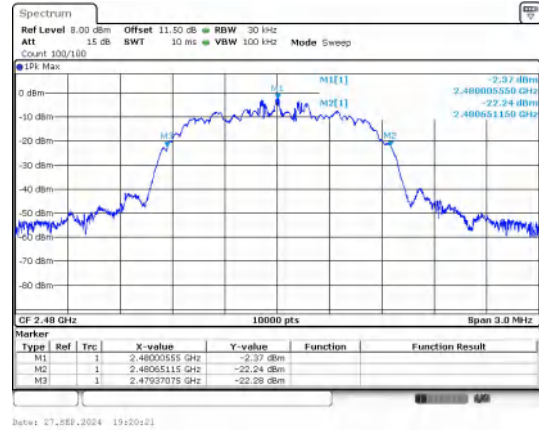
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	0.9500
	39	2441 MHz	0.9400
	78	2480 MHz	0.9400
$\pi/4$ QPSK	0	2402 MHz	1.280
	39	2441 MHz	1.280
	78	2480 MHz	1.280
8DPSK	0	2402 MHz	1.280
	39	2441 MHz	1.290
	78	2480 MHz	1.290

Test Graphs

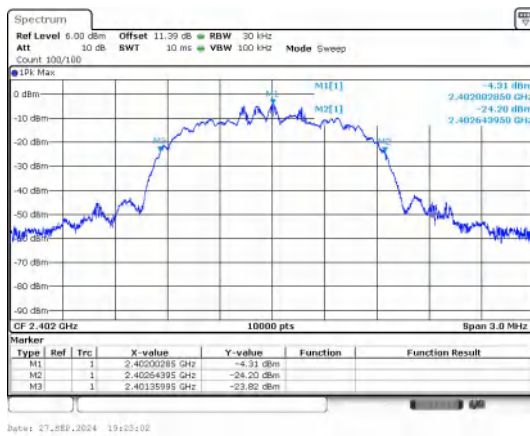




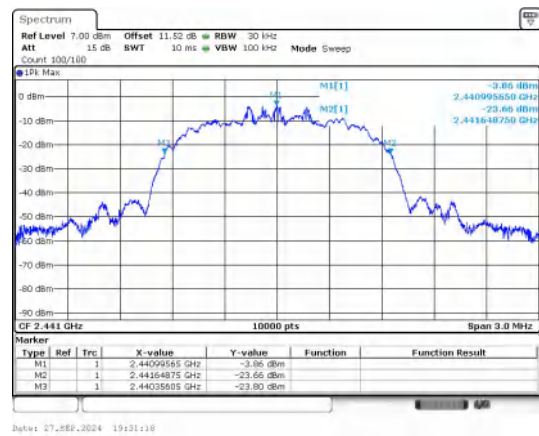
$\pi/4$ DQPSK_2-DH5_Channel 39



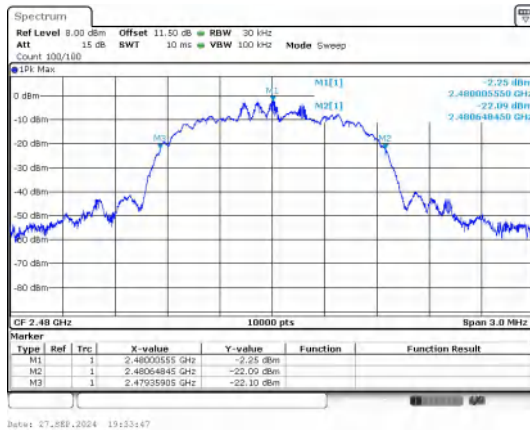
$\pi/4$ DQPSK_2-DH5_Channel 78



8DPSK_3-DH5_Channel 0



8DPSK_3-DH5_Channel 39



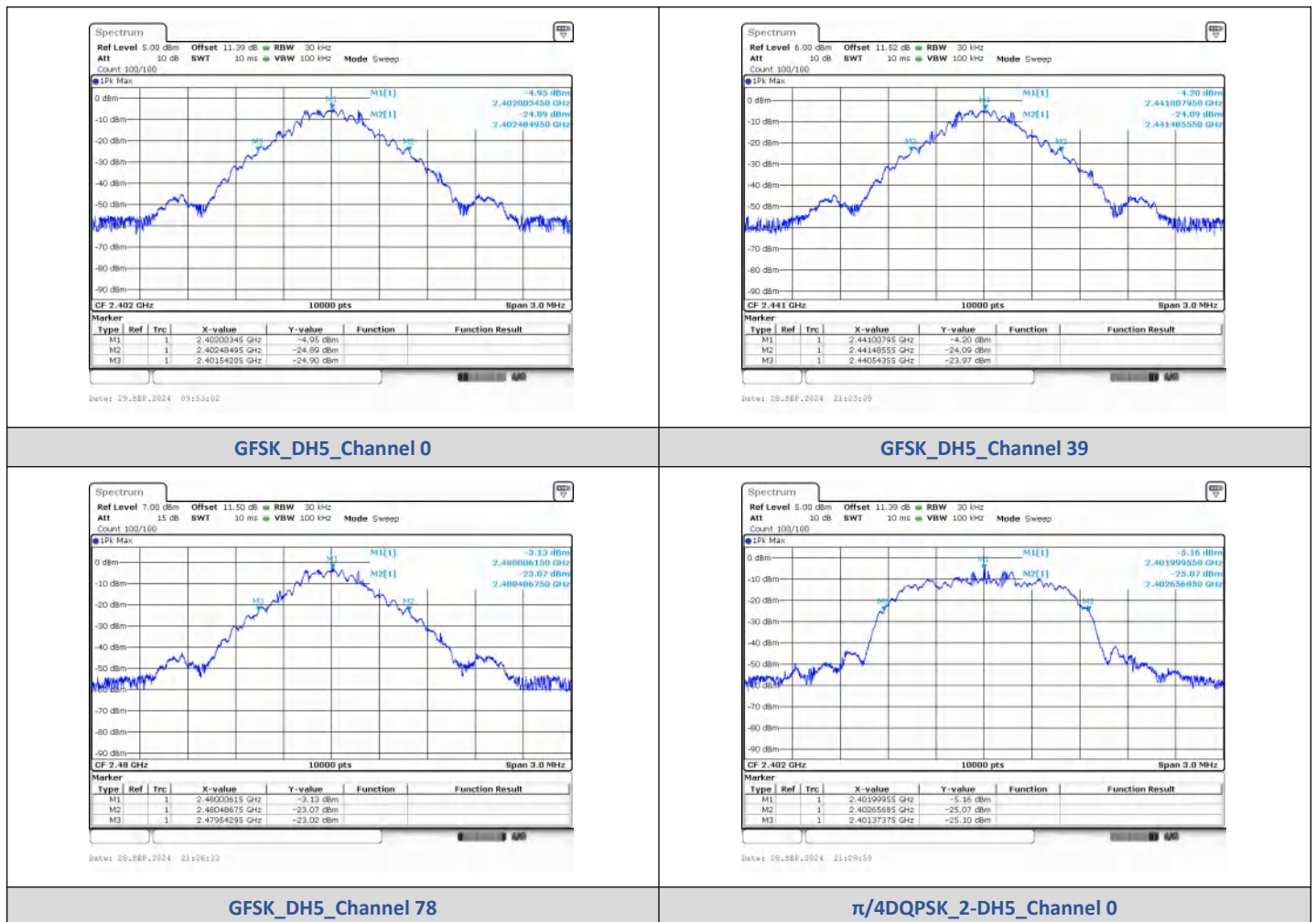
8DPSK_3-DH5_Channel 78

Right:

Test Result

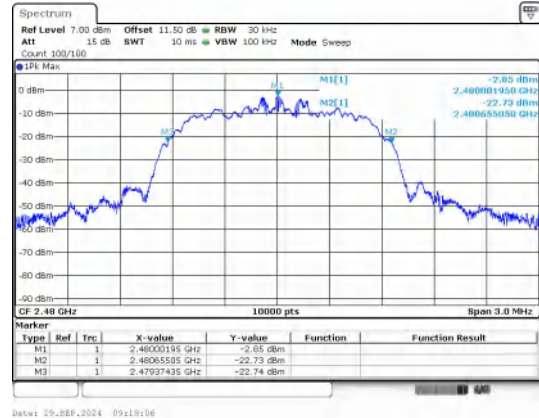
Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	0.9400
	39	2441 MHz	0.9500
	78	2480 MHz	0.9500
$\pi/4$ DQPSK	0	2402 MHz	1.290
	39	2441 MHz	1.290
	78	2480 MHz	1.290
8DPSK	0	2402 MHz	1.290
	39	2441 MHz	1.290
	78	2480 MHz	1.290

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

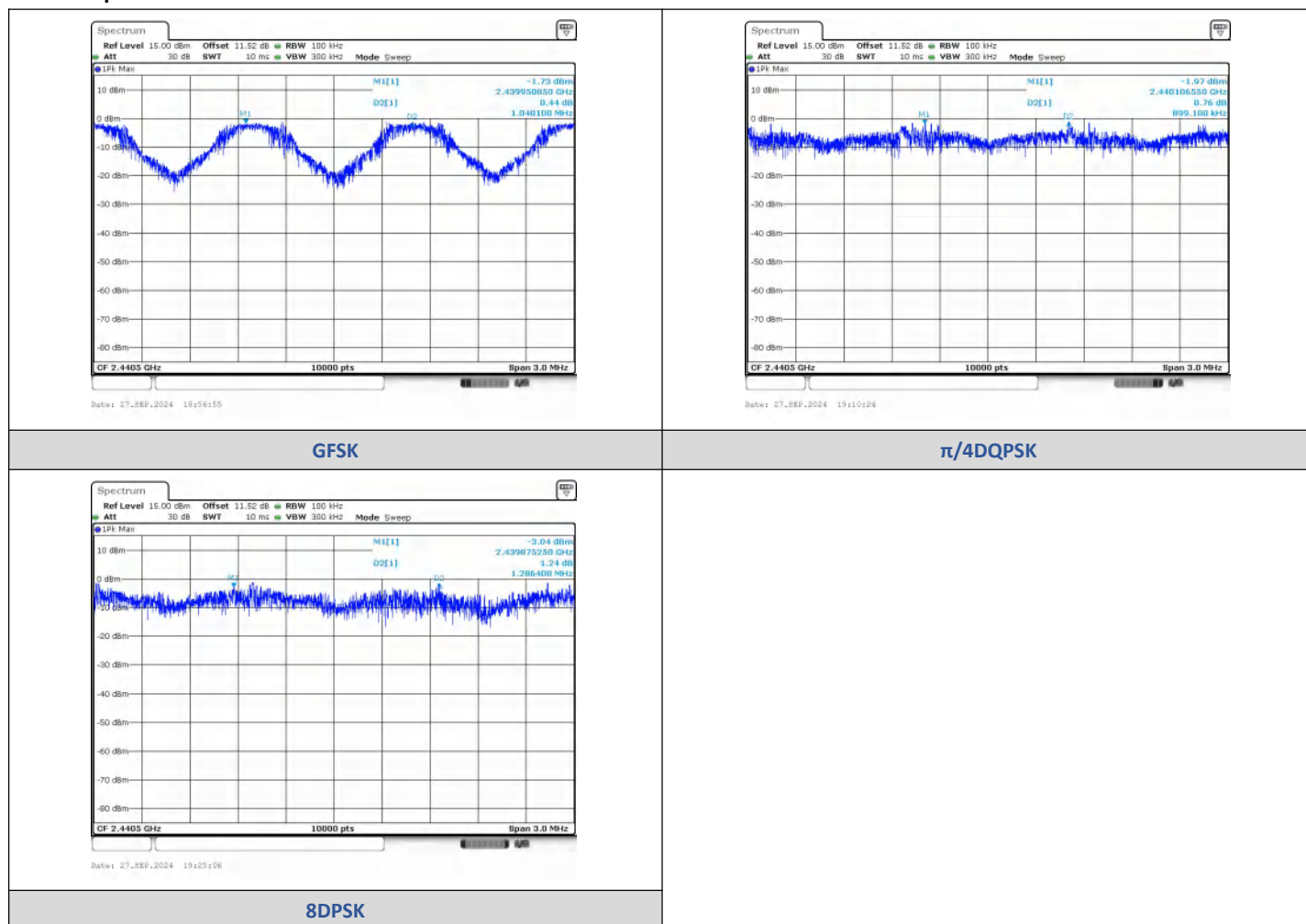
7) Carrier Frequencies Separation

Test Result

Left:

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2439.9509	2440.9909	1.0401	0.950	PASS
$\pi/4$ DQPSK	2-DH5	2440.1065	2441.0057	0.8991	0.853	PASS
8DPSK	3-DH5	2439.8753	2441.1617	1.2864	0.853	PASS

Test Graphs

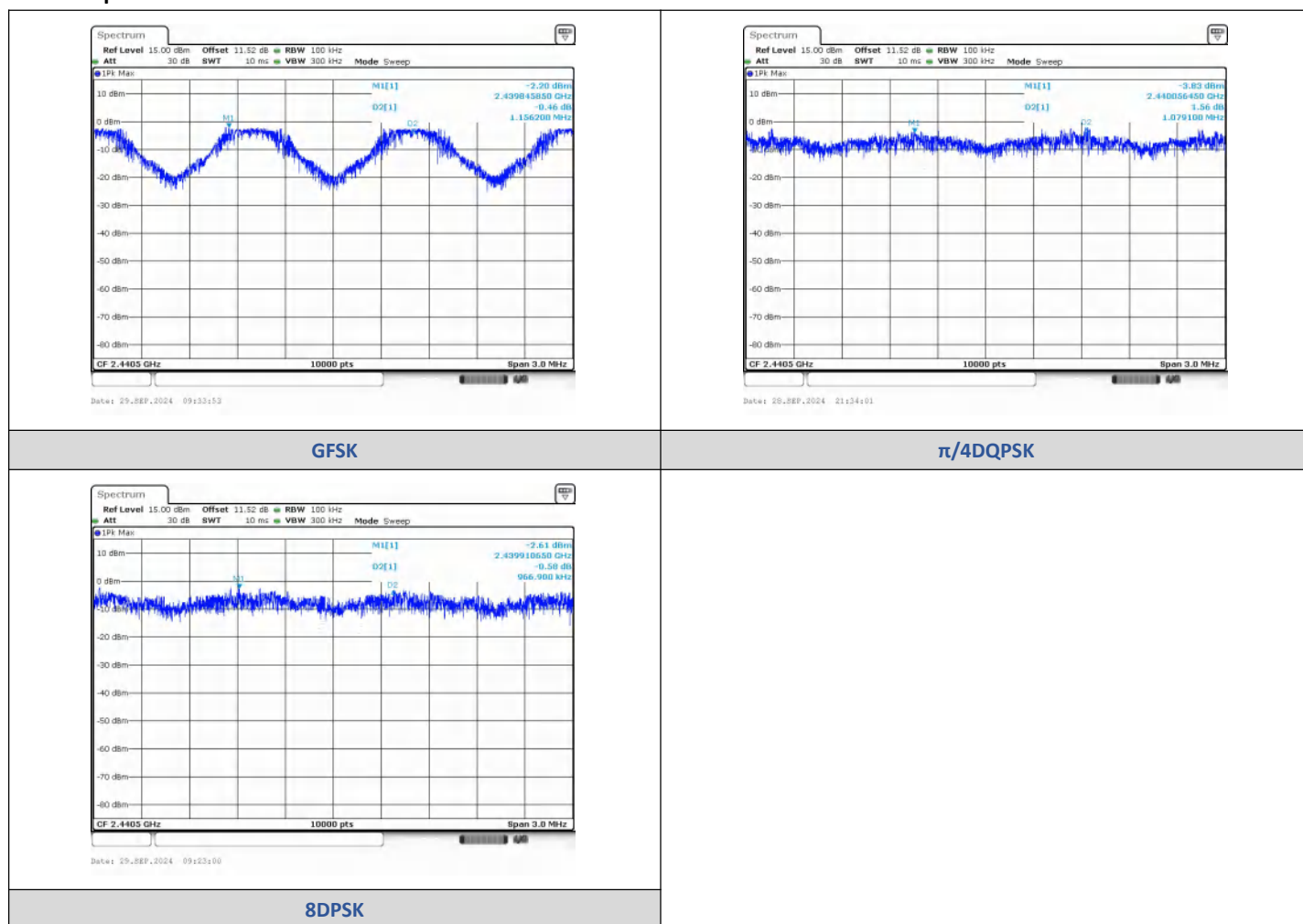


Right:

Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2439.8459	2441.0021	1.1562	0.95	PASS
$\pi/4$ DQPSK	2-DH5	2440.0565	2441.1355	1.0791	0.86	PASS
8DPSK	3-DH5	2439.9106	2440.8776	0.9669	0.86	PASS

Test Graphs



8) Conducted Out Of Band Emission

Test Result

Left:

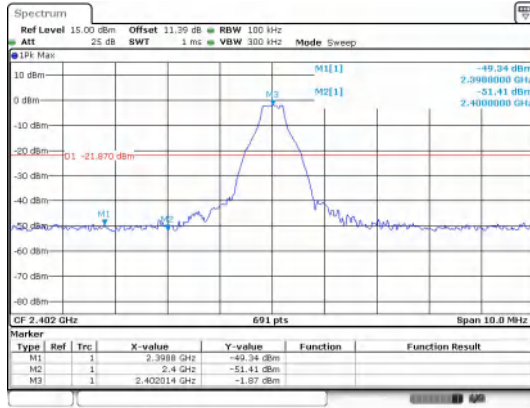
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2398.80	-49.342	-21.87	-27.472	PASS
			2400.00	-51.407	-21.87	-29.537	PASS
			4803.80	-49.486	-21.87	-27.616	PASS
		39	4882.09	-49.780	-21.35	-28.430	PASS
		78	2483.50	-50.133	-20.03	-30.103	PASS
			4959.49	-51.966	-20.03	-31.936	PASS
$\pi/4$ DQPSK	2-DH5	0	2397.95	-49.256	-22.0	-27.256	PASS
			2400.00	-50.084	-22.0	-28.084	PASS
			4803.80	-51.579	-22.0	-29.579	PASS
		39	4882.09	-49.823	-21.07	-28.753	PASS
		78	2483.50	-50.217	-20.29	-29.927	PASS
			6913.81	-53.011	-20.29	-32.721	PASS
8DPSK	3-DH5	0	2398.66	-48.557	-22.05	-26.507	PASS
			2400.00	-50.735	-22.05	-28.685	PASS
			4803.80	-53.159	-22.05	-31.109	PASS
		39	4882.09	-50.595	-21.19	-29.405	PASS
		78	2483.50	-51.161	-19.72	-31.441	PASS
			4959.49	-51.164	-19.72	-31.444	PASS

Hopping

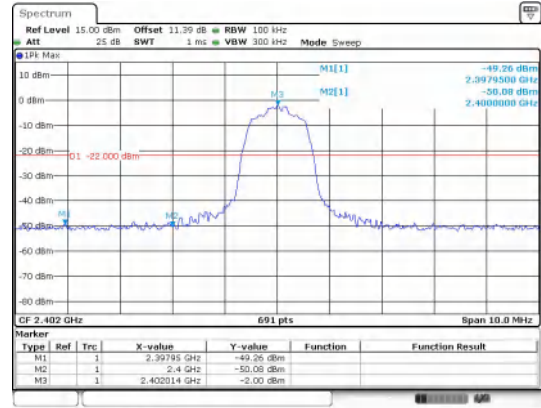
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2396.11	-48.261	-22.12	-26.141	PASS
			2400.00	-50.628	-22.12	-28.508	PASS
			2483.50	-50.285	-20.05	-30.235	PASS
$\pi/4$ DQPSK	2-DH5		2397.64	-48.175	-23.1	-25.075	PASS
			2400.00	-50.705	-23.1	-27.605	PASS
			2483.50	-50.308	-20.15	-30.158	PASS
8DPSK	3-DH5		2396.35	-48.214	-21.99	-26.224	PASS
			2400.00	-49.559	-21.99	-27.569	PASS
			2483.50	-50.000	-20.15	-29.850	PASS

Test Graphs



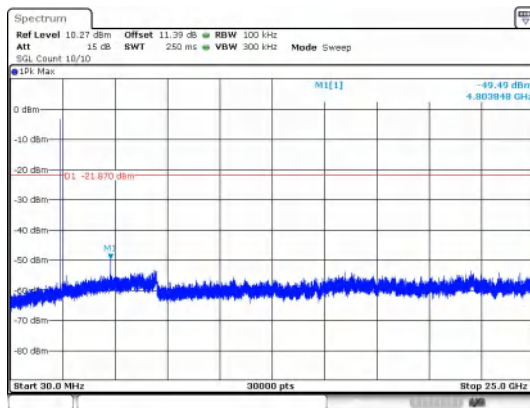
Date: 27_SEP_2024 18:59:47

Out Of Band Emission
GFSK_DH5_Channel 0



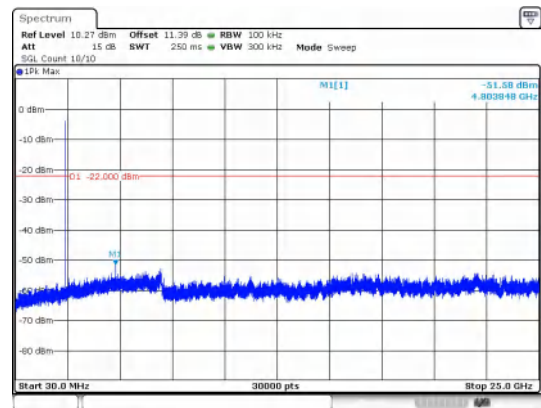
Date: 27_SEP_2024 19:09:17

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



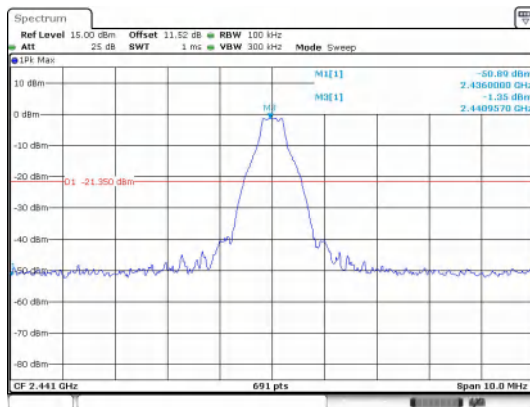
Date: 27_SEP_2024 18:56:09

30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



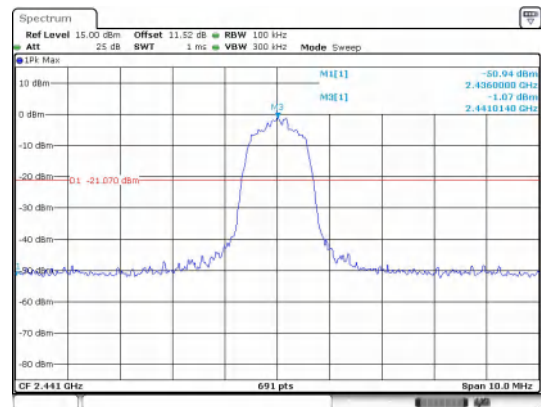
Date: 27_SEP_2024 19:09:29

30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 0



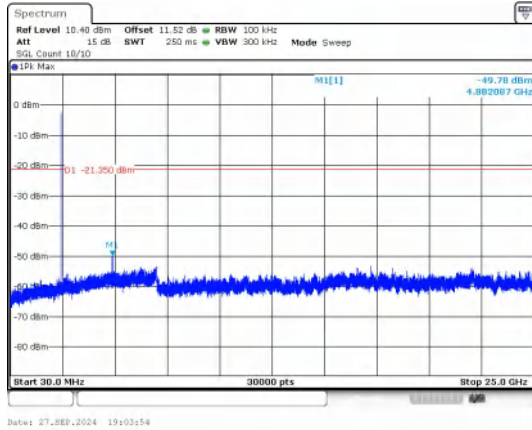
Date: 27_SEP_2024 19:03:32

Out Of Band Emission
GFSK_DH5_Channel 39

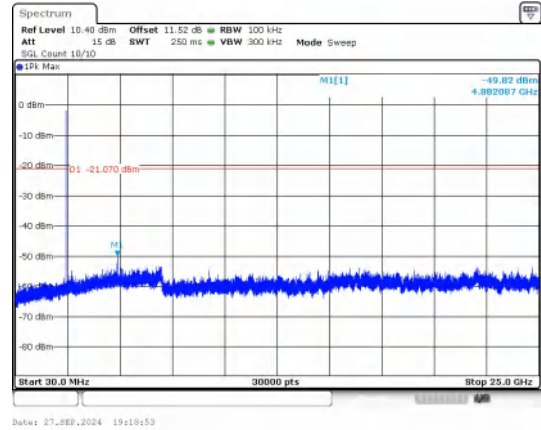


Date: 27_SEP_2024 19:18:31

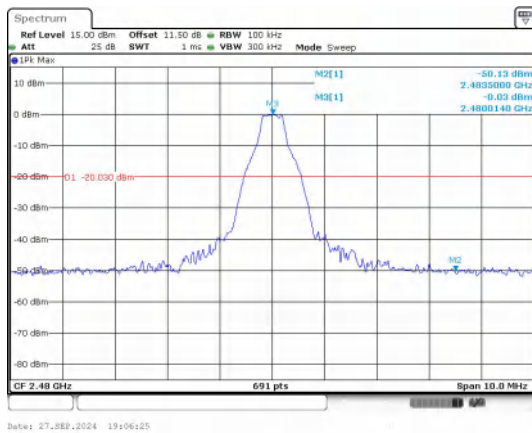
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39



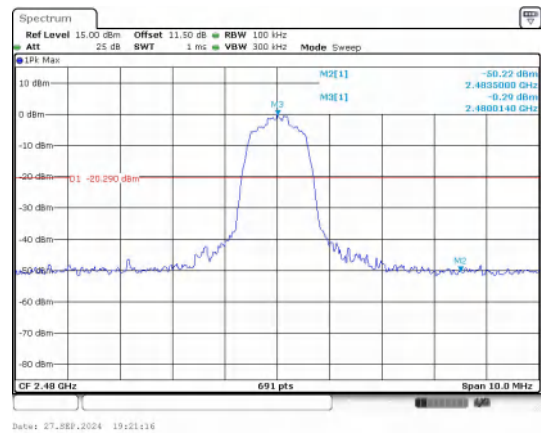
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



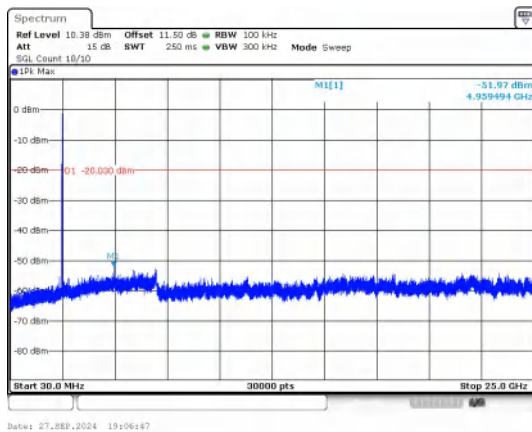
30.0 MHz - 25000.0 MHz
 $\pi/4$ QPSK_2-DH5_Channel 39



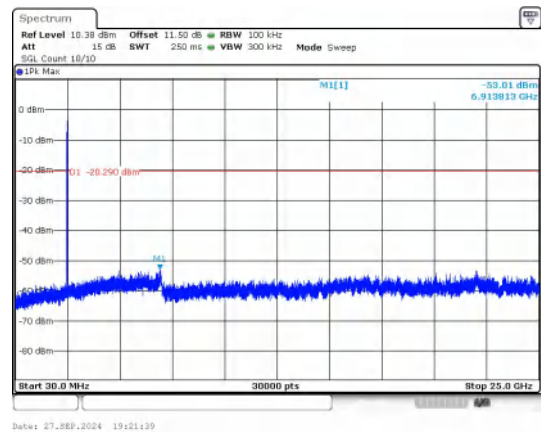
Out Of Band Emission
GFSK_DH5_Channel 78



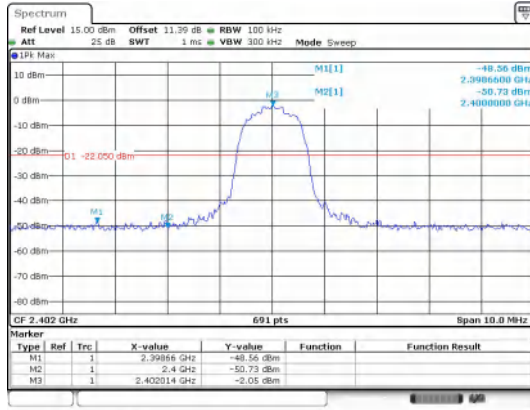
Out Of Band Emission
 $\pi/4$ QPSK_2-DH5_Channel 78



30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78

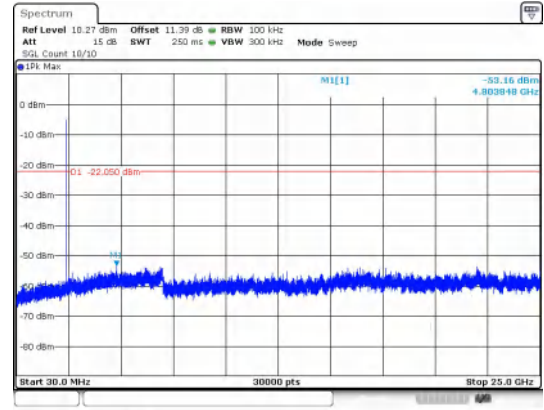


30.0 MHz - 25000.0 MHz
 $\pi/4$ QPSK_2-DH5_Channel 78



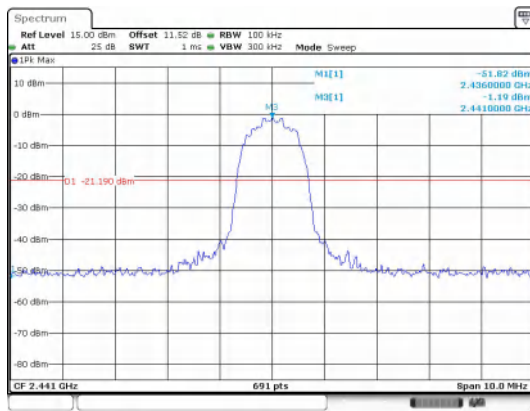
Date: 27.SEP.2024 19:13:57

Out Of Band Emission
8DPSK_3-DH5_Channel 0



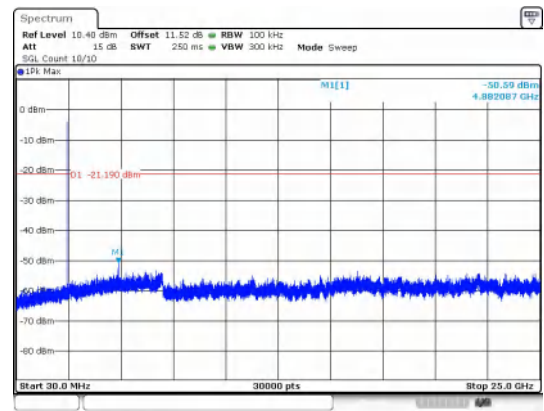
Date: 27.SEP.2024 19:14:20

30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



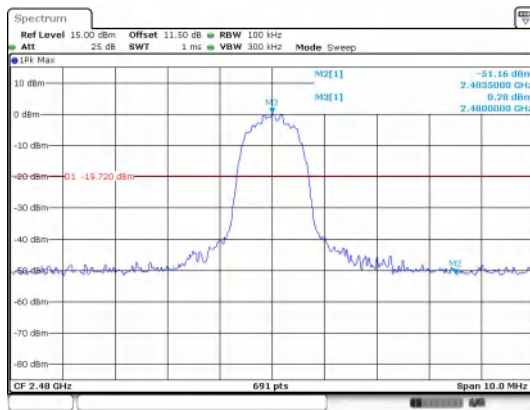
Date: 27.SEP.2024 19:13:09

Out Of Band Emission
8DPSK_3-DH5_Channel 39



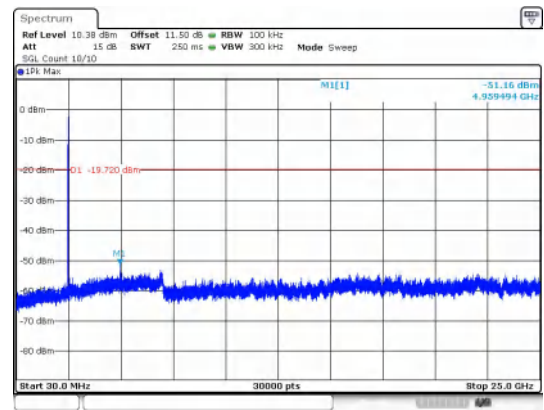
Date: 27.SEP.2024 19:13:31

30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



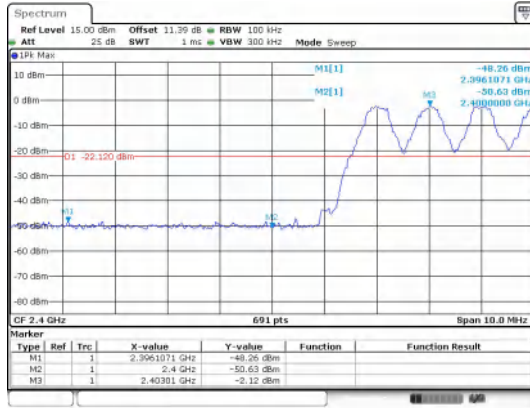
Date: 27.SEP.2024 19:14:43

Out Of Band Emission
8DPSK_3-DH5_Channel 78

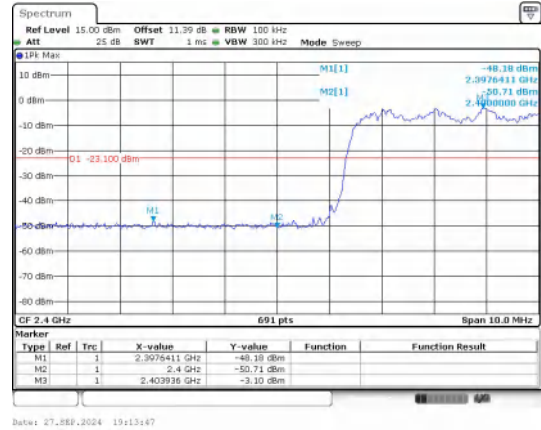


Date: 27.SEP.2024 19:15:05

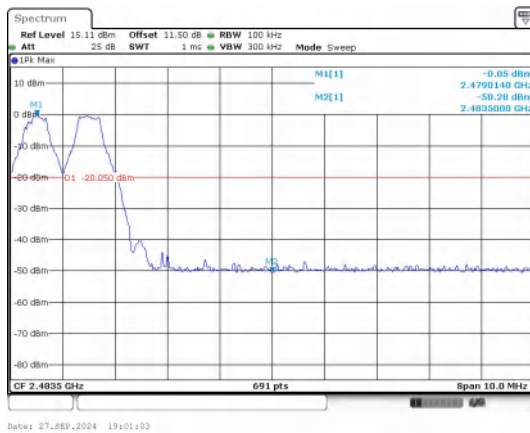
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



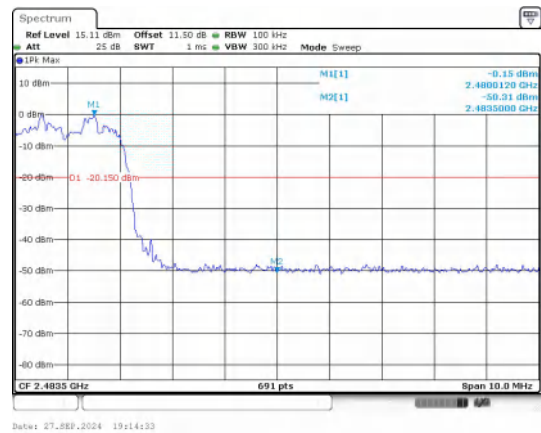
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



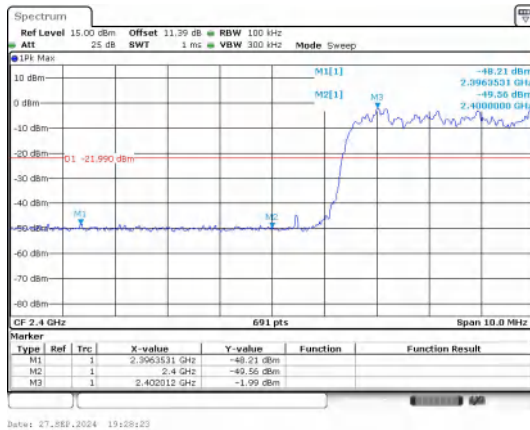
Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



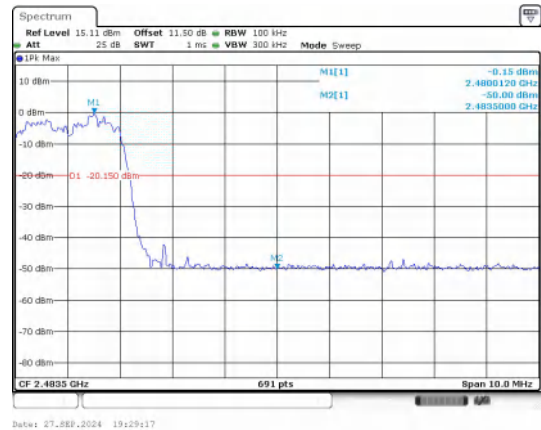
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



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



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



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

Right:

Test Result

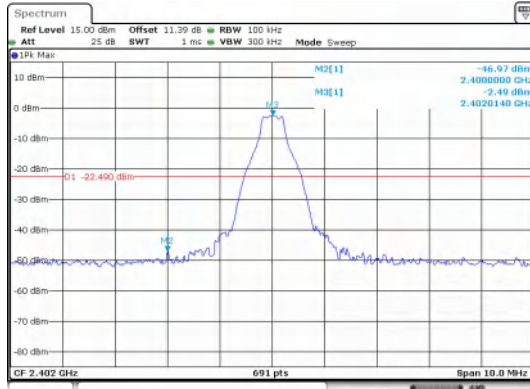
Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-46.973	-22.49	-24.483	PASS
			4804.68	-49.793	-22.49	-27.303	PASS
		39	4882.09	-49.541	-21.74	-27.801	PASS
		78	2483.50	-49.748	-20.89	-28.858	PASS
			4959.49	-51.295	-20.89	-30.405	PASS
$\pi/4$ DQPSK	2-DH5	0	2397.59	-49.478	-22.5	-26.978	PASS
			2400.00	-49.883	-22.5	-27.383	PASS
			4804.70	-49.733	-22.5	-27.233	PASS
		39	4882.09	-48.413	-21.59	-26.823	PASS
		78	2483.50	-50.391	-20.42	-29.971	PASS
			4960.33	-51.042	-20.42	-30.622	PASS
8DPSK	3-DH5	0	2398.41	-48.397	-22.6	-25.797	PASS
			2400.00	-51.040	-22.6	-28.440	PASS
			4803.80	-52.382	-22.6	-29.782	PASS
		39	4882.09	-49.921	-21.55	-28.371	PASS
		78	2483.50	-50.448	-20.53	-29.918	PASS
			4959.49	-52.800	-20.53	-32.270	PASS

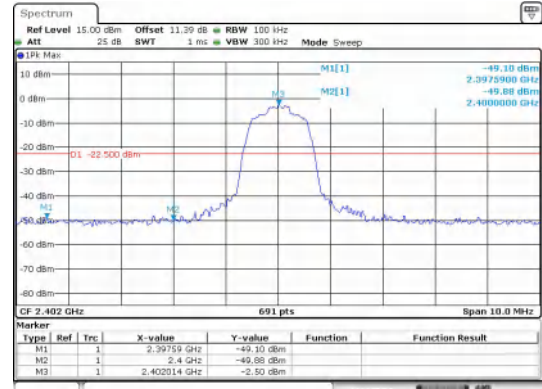
Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2398.22	-47.129	-22.54	-24.589	PASS
			2400.00	-48.921	-22.54	-26.381	PASS
			2483.50	-50.444	-21.42	-29.024	PASS
$\pi/4$ DQPSK	2-DH5		2398.36	-48.986	-22.39	-26.596	PASS
			2400.00	-50.846	-22.39	-28.456	PASS
			2483.50	-48.167	-20.38	-27.787	PASS
8DPSK	3-DH5		2398.22	-49.035	-22.59	-26.445	PASS
			2400.00	-50.514	-22.59	-27.924	PASS
			2483.50	-49.712	-20.89	-28.822	PASS

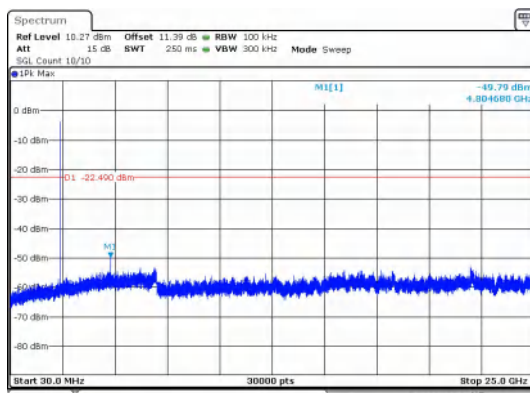
Test Graphs



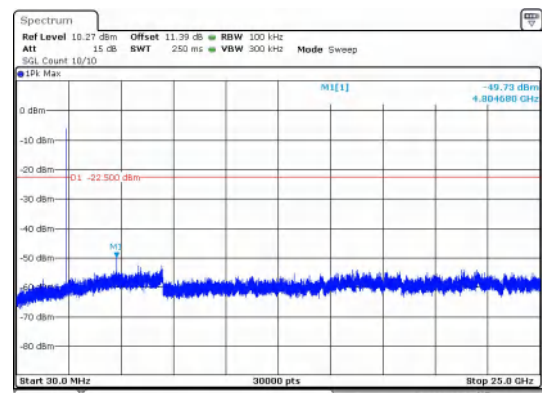
Out Of Band Emission
GFSK_DH5_Channel 0



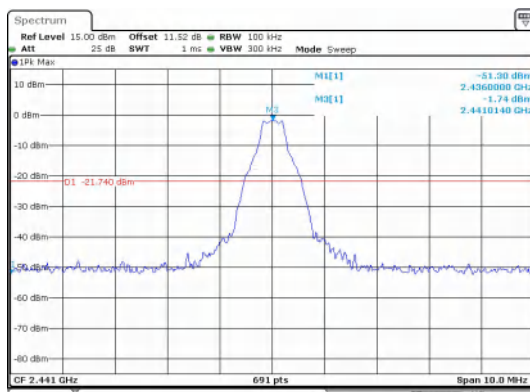
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 0



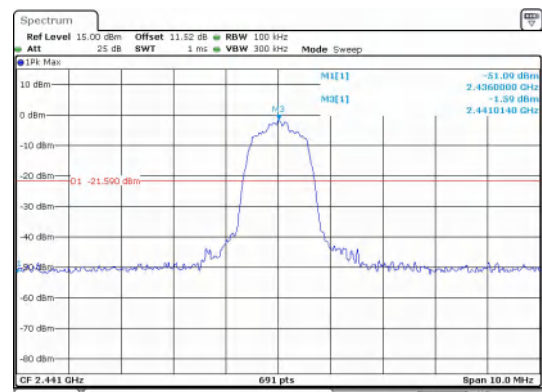
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 0



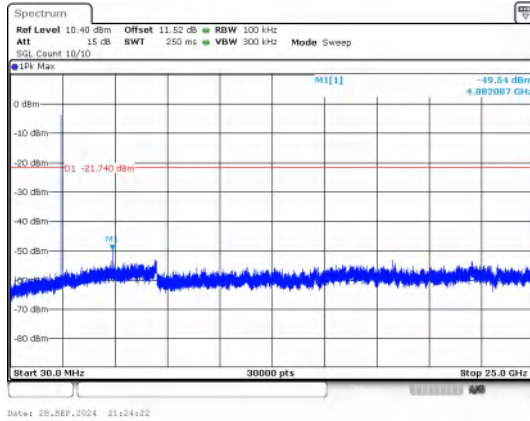
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 0



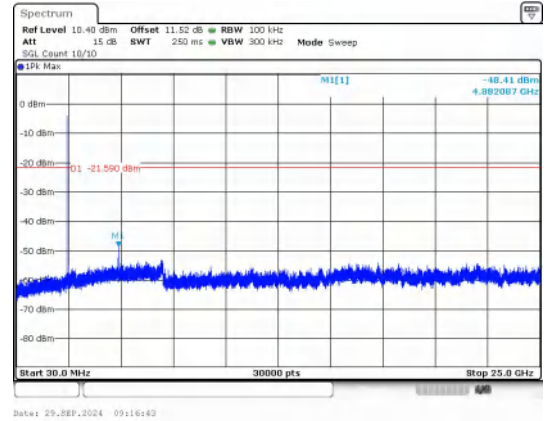
Out Of Band Emission
GFSK_DH5_Channel 39



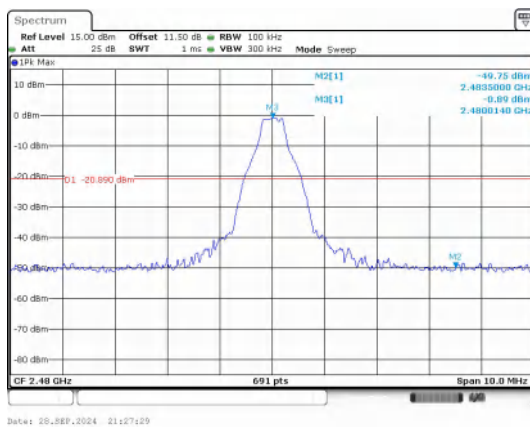
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 39



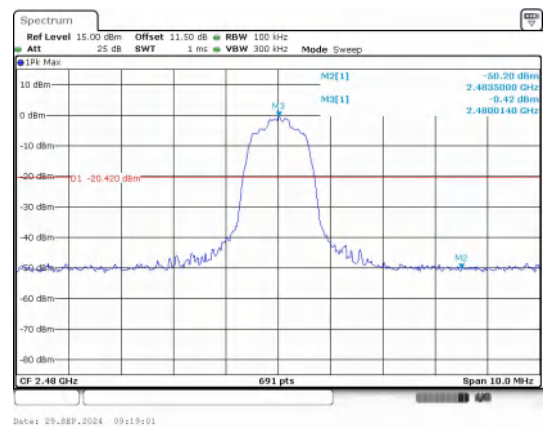
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 39



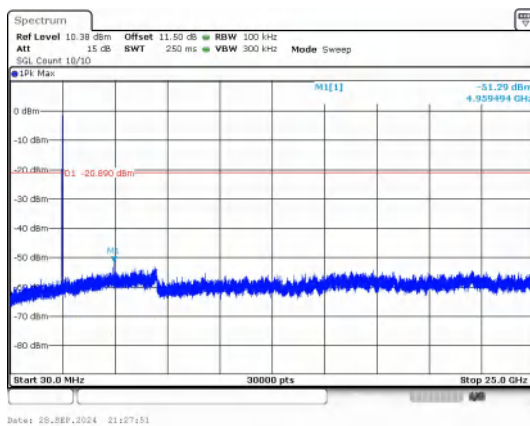
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 39



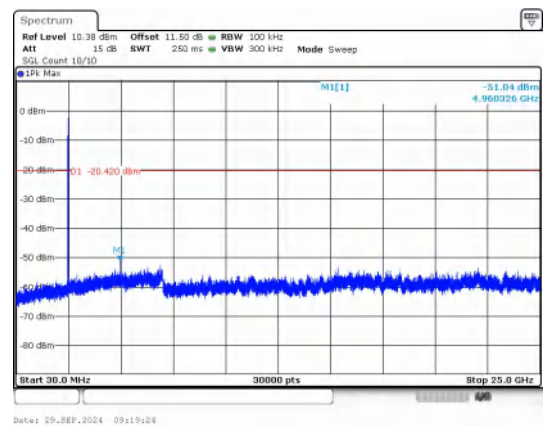
Out Of Band Emission
GFSK_DH5_Channel 78



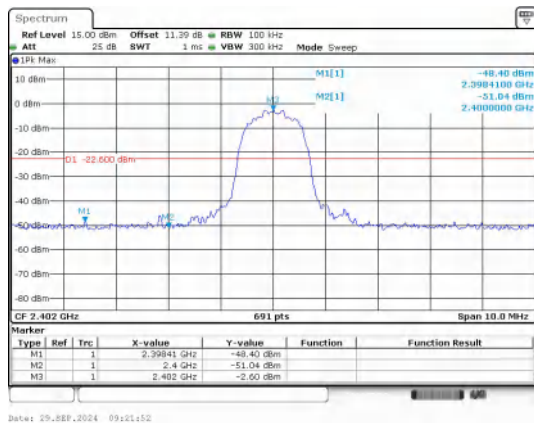
Out Of Band Emission
 $\pi/4$ DQPSK_2-DH5_Channel 78



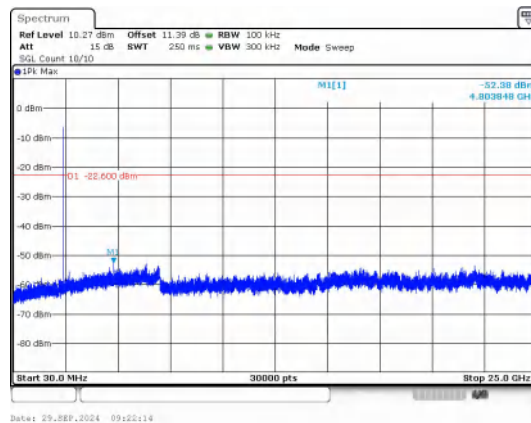
30.0 MHz - 25000.0 MHz
GFSK_DH5_Channel 78



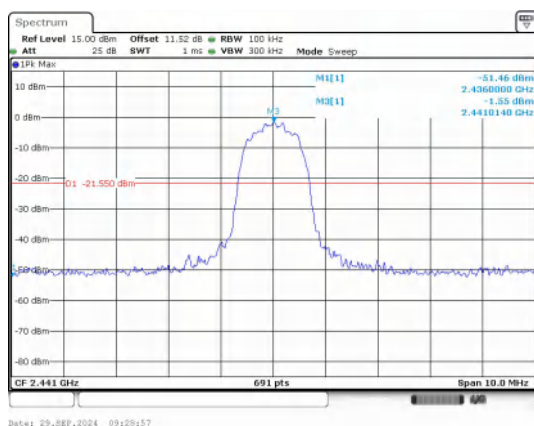
30.0 MHz - 25000.0 MHz
 $\pi/4$ DQPSK_2-DH5_Channel 78



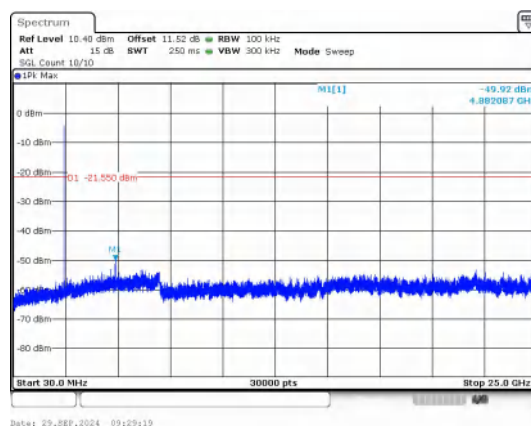
Out Of Band Emission
8DPSK_3-DH5_Channel 0



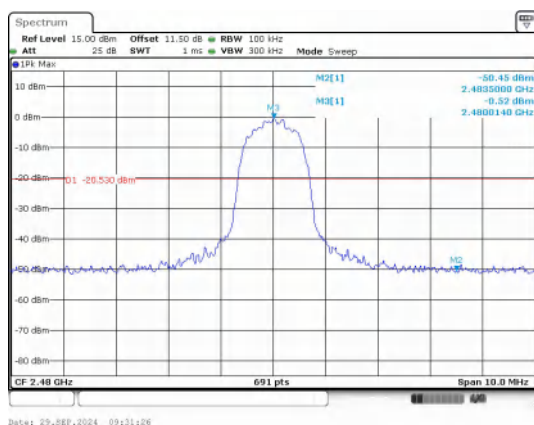
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 0



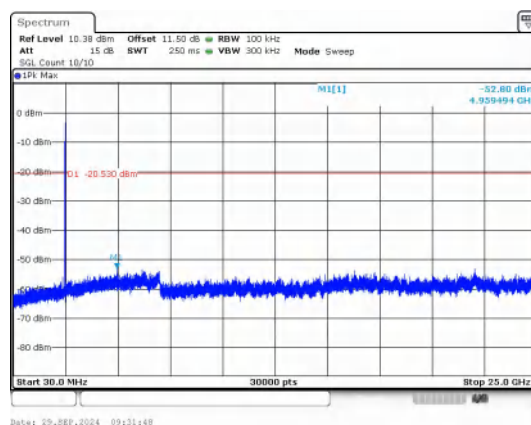
Out Of Band Emission
8DPSK_3-DH5_Channel 39



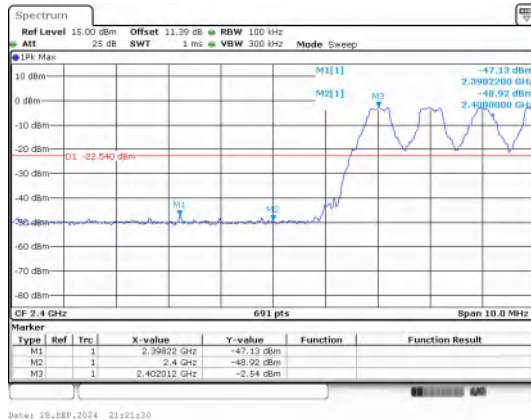
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 39



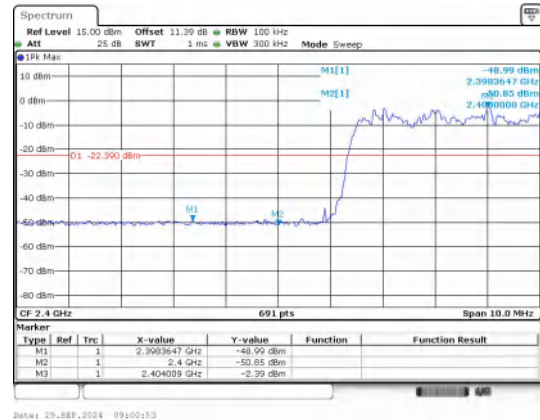
Out Of Band Emission
8DPSK_3-DH5_Channel 78



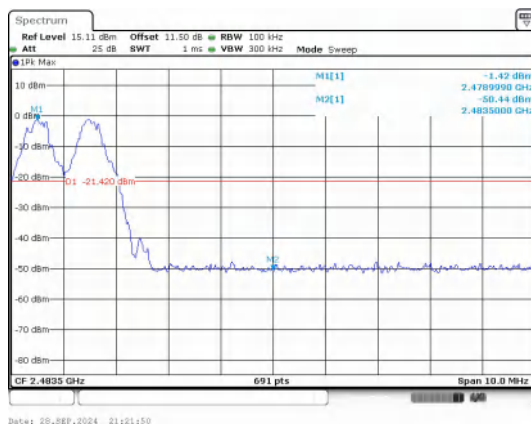
30.0 MHz - 25000.0 MHz
8DPSK_3-DH5_Channel 78



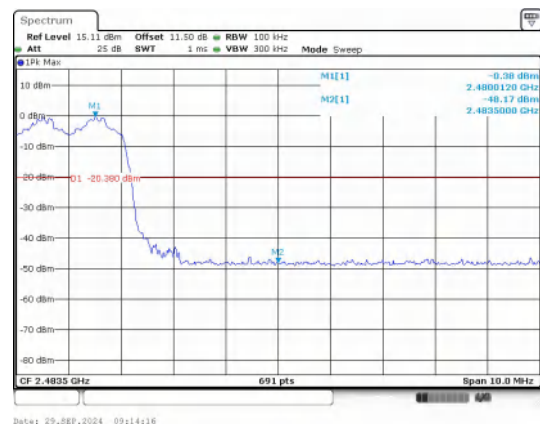
Out Of Band Emission(Left)
GFSK_DH5_Channel Hopping



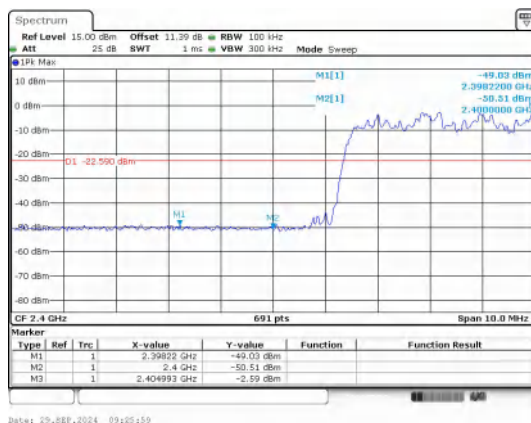
Out Of Band Emission(Left)
 $\pi/4$ DQPSK_2-DH5_Channel Hopping



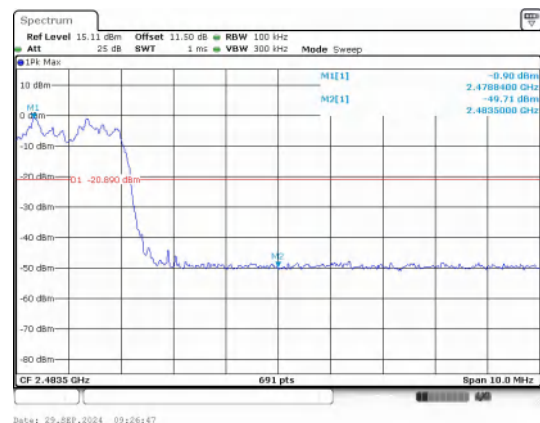
Out Of Band Emission(Right)
GFSK_DH5_Channel Hopping



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



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



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