

## Appendix A

Report No.:	CISRR240109036
FCC ID:	2BEN6-K801
Product Name:	Wireless Keyboard
Model No.:	K801
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

## 1) Conducted Peak Output Power

### Test Result

Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	5.295	3.385	30	PASS
		39	5.338	3.418		PASS
		78	4.787	3.011		PASS
$\pi/4$ DQPSK	2-DH5	0	5.886	3.878	20.97	PASS
		39	5.873	3.867		PASS
		78	5.370	3.443		PASS
8DPSK	3-DH5	0	6.134	4.106		PASS
		39	6.110	4.083		PASS
		78	5.567	3.603		PASS

## 2) 99% Bandwidth

### Test Result

Modulation	Channel	99% BW (MHz)
GFSK	0	0.85920
	39	0.87260
	78	0.86620
$\pi/4$ DQPSK	0	1.1970
	39	1.2110
	78	1.2120
8DPSK	0	1.2050
	39	1.2150
	78	1.2180

### Test Graphs

**GFSK\_DH5\_Channel 0**

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		2.402 GHz	-1.69 dBm		
T1	1		2.4016083 GHz	-17.33 dBm	Occ Bw	859.2 kHz
T2	1		2.4024675 GHz	-17.92 dBm		

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**$\pi/4$ DQPSK\_2-DH5\_Channel 0**

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		2.402 GHz	-7.08 dBm		
T1	1		2.4014441 GHz	-17.18 dBm	Occ Bw	1.1974 MHz
T2	1		2.4026415 GHz	-16.54 dBm		

Date: 15.JAN.2024 17:40:30

**GFSK\_DH5\_Channel 39**

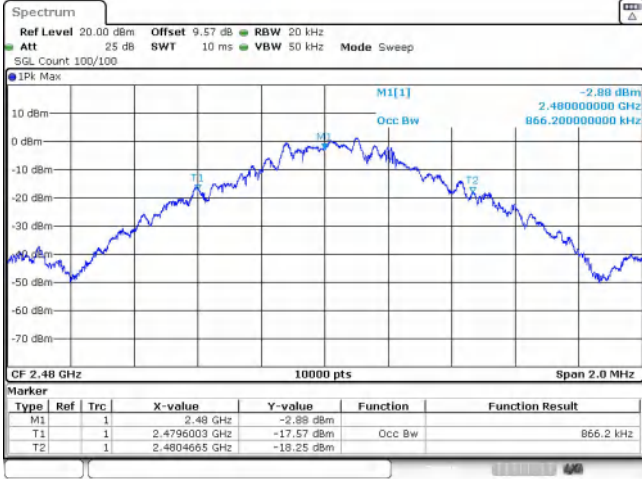
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		2.441 GHz	-1.51 dBm		
T1	1		2.4406053 GHz	-17.52 dBm	Occ Bw	872.6 kHz
T2	1		2.4414779 GHz	-19.84 dBm		

Date: 15.JAN.2024 17:32:12

**$\pi/4$ DQPSK\_2-DH5\_Channel 39**

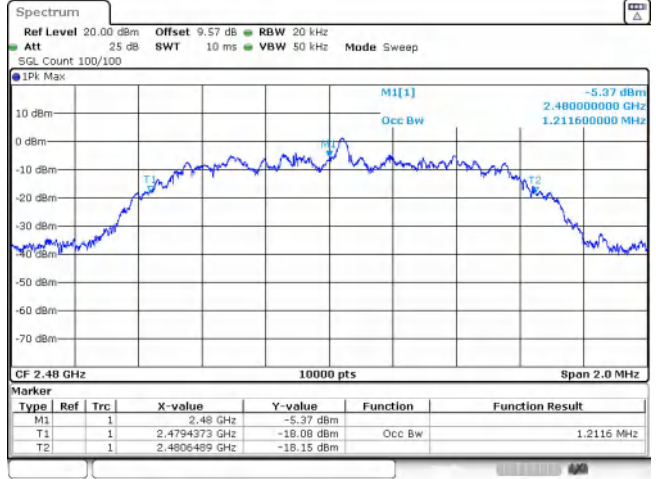
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		2.441 GHz	-4.95 dBm		
T1	1		2.4404377 GHz	-18.15 dBm	Occ Bw	1.2108 MHz
T2	1		2.4416485 GHz	-17.12 dBm		

Date: 15.JAN.2024 17:47:11



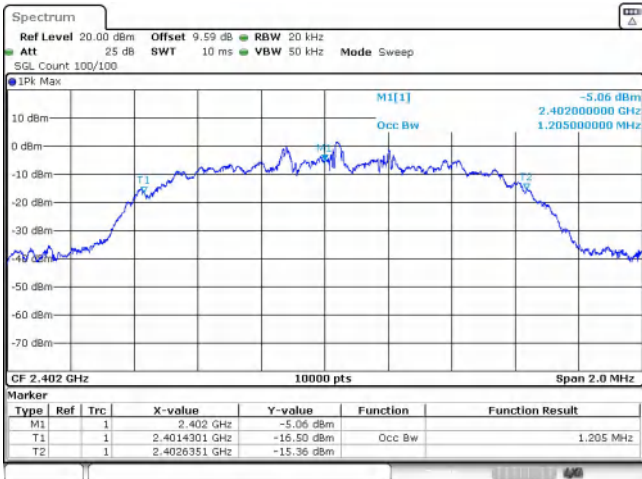
Date: 15.JAN.2024 17:34:01

GFSK\_DH5\_Channel 78



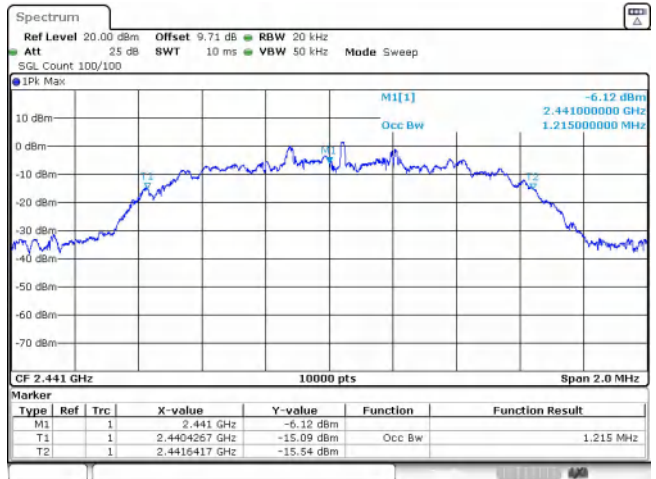
Date: 15.JAN.2024 17:49:06

$\pi/4$ DQPSK\_2-DH5\_Channel 78



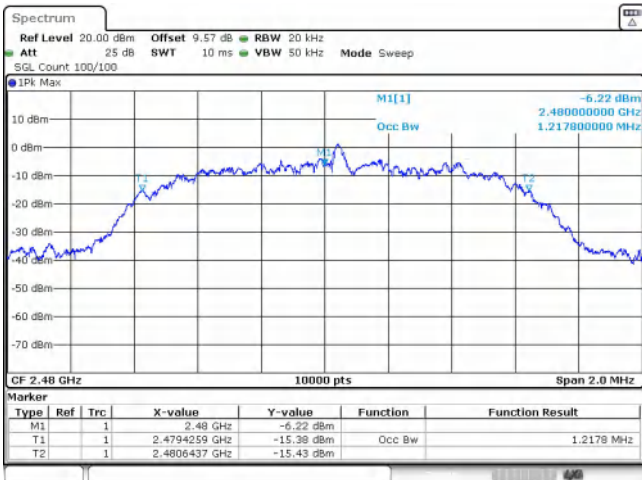
Date: 15.JAN.2024 17:52:35

8DPSK\_3-DH5\_Channel 0



Date: 15.JAN.2024 17:56:43

8DPSK\_3-DH5\_Channel 39



Date: 15.JAN.2024 18:00:34

8DPSK\_3-DH5\_Channel 78

Void

### 3) 20dB Bandwidth

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	0.9800
$\pi/4$ DQPSK	0	2402 MHz	1.280
	39	2441 MHz	1.320
	78	2480 MHz	1.310
8DPSK	0	2402 MHz	1.290
	39	2441 MHz	1.300
	78	2480 MHz	1.300

Test Graphs

**GFSK\_DH5\_Channel 0**

**GFSK\_DH5\_Channel 39**

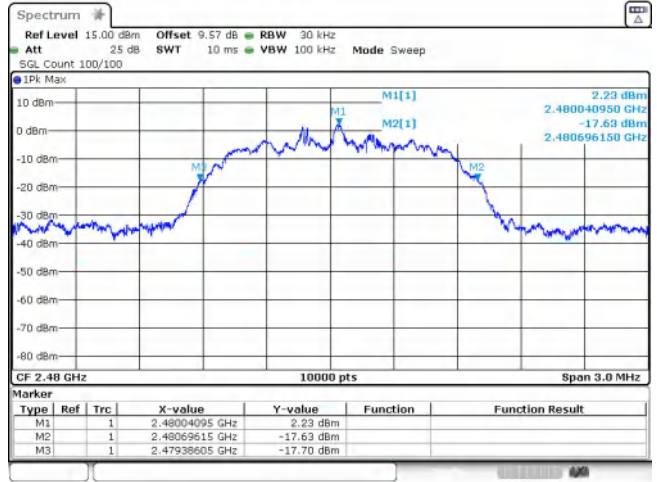
**GFSK\_DH5\_Channel 78**

**$\pi/4$ DQPSK\_2-DH5\_Channel 0**



Date: 15.JAN.2024 17:47:28

$\pi$ /4DQPSK\_2-DH5\_Channel 39



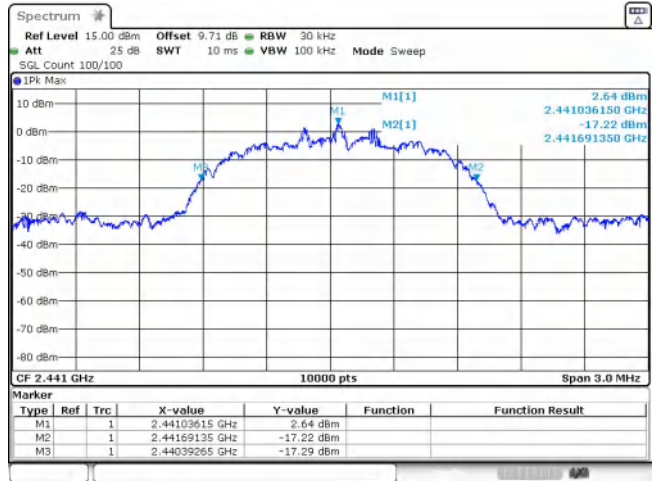
Date: 15.JAN.2024 17:49:23

$\pi$ /4DQPSK\_2-DH5\_Channel 78



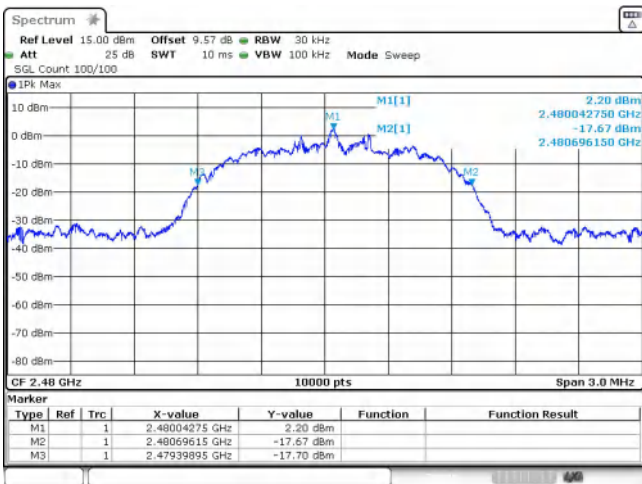
Date: 15.JAN.2024 17:52:51

8DPSK\_3-DH5\_Channel 0



Date: 15.JAN.2024 17:58:59

8DPSK\_3-DH5\_Channel 39



Date: 15.JAN.2024 18:00:50

8DPSK\_3-DH5\_Channel 78

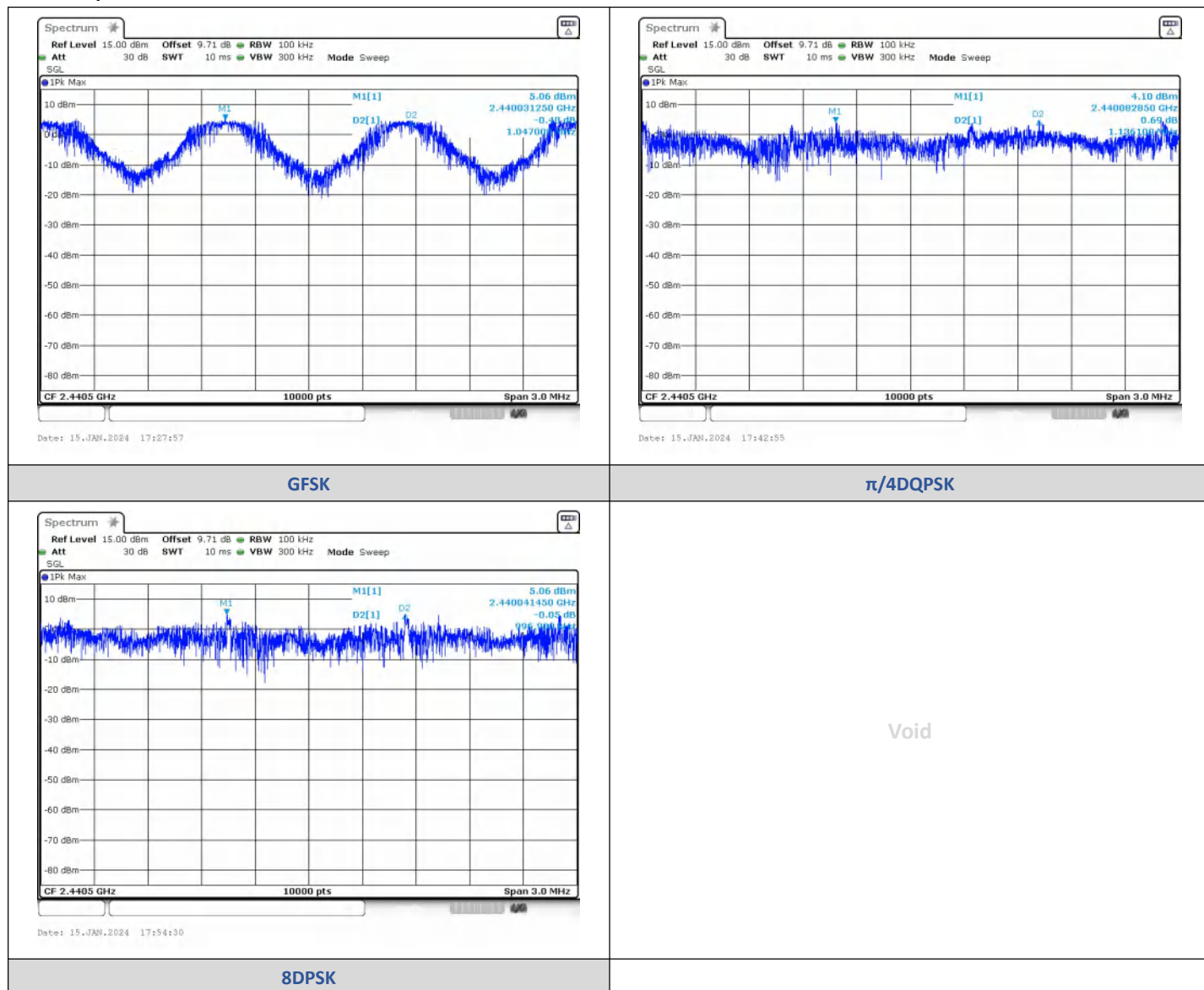
Void

## 4) Carrier Frequencies Separation

### Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2440.0312	2441.0783	1.0470	0.627	PASS
$\pi/4$ DQPSK	2-DH5	2440.0828	2441.2189	1.1361	0.853	PASS
8DPSK	3-DH5	2440.0415	2441.0383	0.9969	0.86	PASS

### Test Graphs



## 5) Conducted Out Of Band Emission

### Test Result

#### Non-Hopping

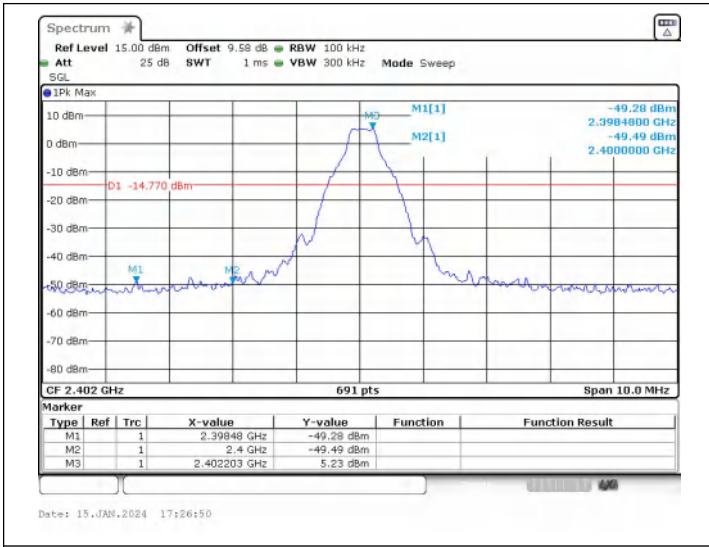
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	
GFSK	DH5	0	2400.00	-49.495	-14.77	-34.725	PASS	
			2398.48	-49.276	-14.77	-34.506	PASS	
			7206.80	-41.065	-14.77	-26.295	PASS	
		39	7323.32	-38.262	-14.84	-23.422	PASS	
			78	2483.50	-52.212	-15.28	-36.932	PASS
				7439.85	-39.604	-15.28	-24.324	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-46.145	-14.81	-31.334	PASS	
			9608.08	-41.378	-14.81	-26.568	PASS	
		39	7323.32	-36.068	-14.81	-21.258	PASS	
		78	2483.50	-51.537	-15.41	-36.127	PASS	
			9920.20	-40.800	-15.41	-25.390	PASS	
		8DPSK	3-DH5	0	2400.00	-46.784	-15.22	-31.564
9608.08	-41.807				-15.22	-26.587	PASS	
39	9764.55			-38.130	-14.64	-23.490	PASS	
78	2483.50			-50.785	-15.38	-35.405	PASS	
	9920.20			-40.940	-15.38	-25.560	PASS	

#### Hopping

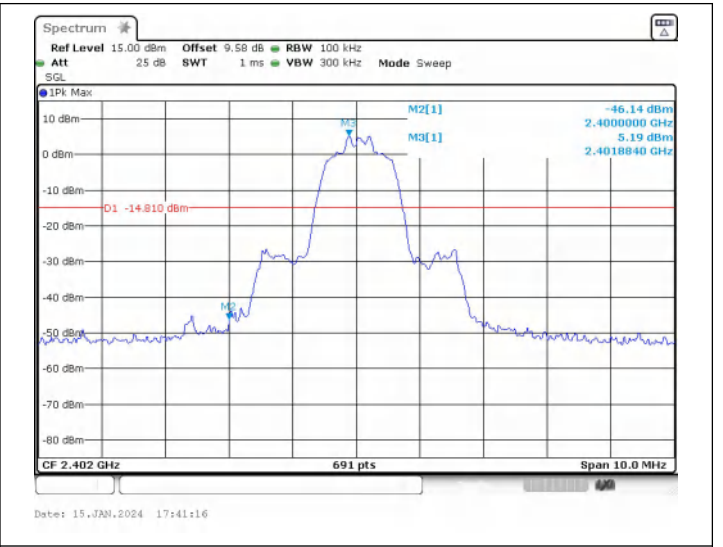
Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2395.51	-49.983	-15.13	-34.853	PASS
			2400.00	-52.359	-15.13	-37.229	PASS
			2483.50	-51.891	-15.29	-36.601	PASS
			2397.13	-49.165	-15.01	-34.155	PASS
			2400.00	-50.116	-15.01	-35.106	PASS
			2483.50	-51.937	-15.92	-36.017	PASS
$\pi/4$ DQPSK	2-DH5		2396.22	-49.816	-15.26	-34.556	PASS
			2400.00	-50.736	-15.26	-35.476	PASS
			2483.50	-50.202	-15.33	-34.872	PASS
			2396.70	-49.631	-14.88	-34.751	PASS
			2400.00	-51.552	-14.88	-36.672	PASS
			2483.50	-51.830	-15.95	-35.880	PASS
8DPSK	3-DH5	2396.12	-50.461	-15.74	-34.721	PASS	
		2400.00	-51.694	-15.74	-35.954	PASS	
		2483.50	-50.154	-15.84	-34.314	PASS	
		2400.00	-49.223	-14.82	-34.403	PASS	
		2483.50	-51.276	-16.59	-34.686	PASS	



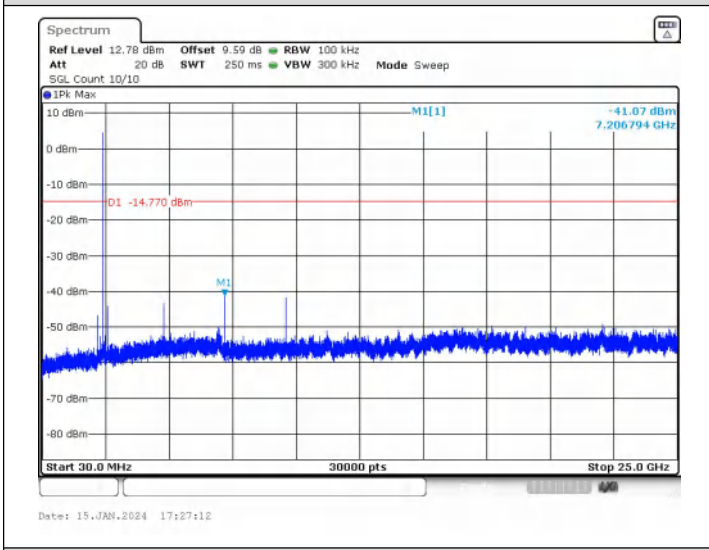
Test Graphs



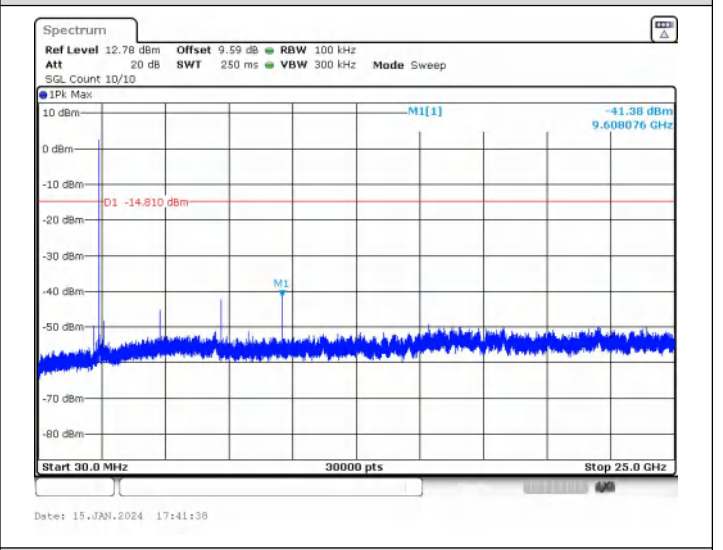
Out Of Band Emission  
GFSK\_DH5\_Channel 0



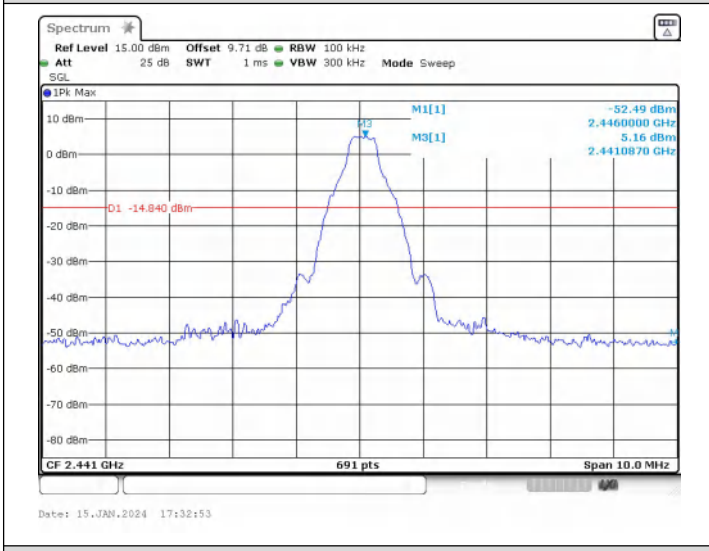
Out Of Band Emission  
 $\pi/4$ DQPSK\_2-DH5\_Channel 0



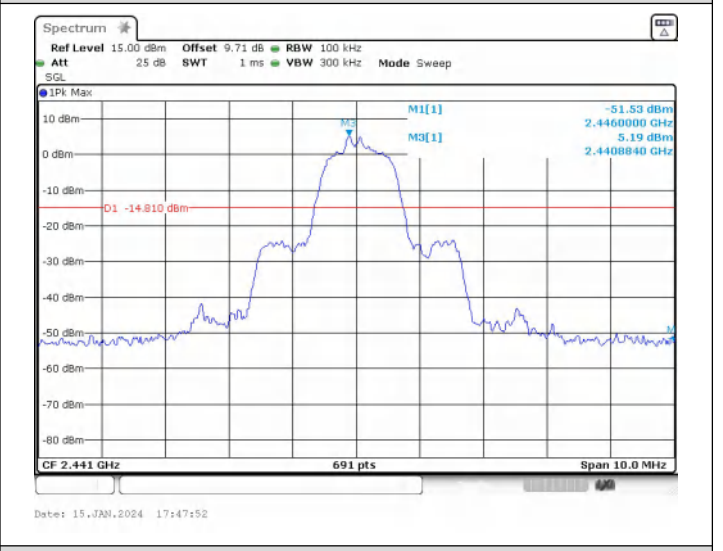
Spurious Emission  
GFSK\_DH5\_Channel 0



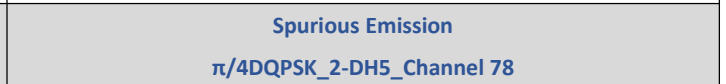
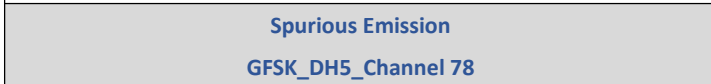
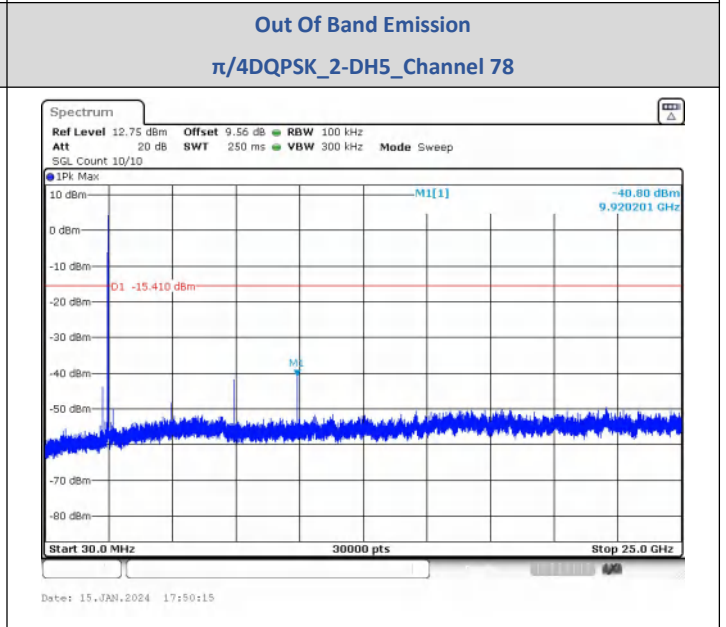
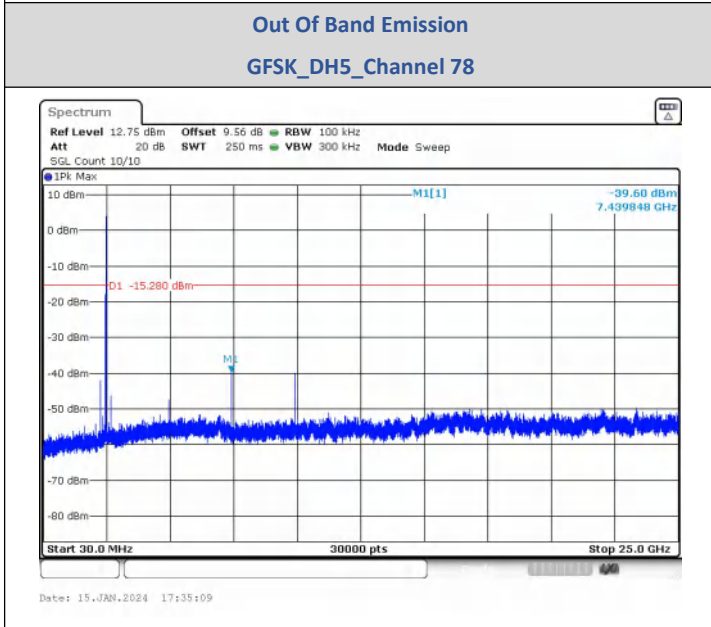
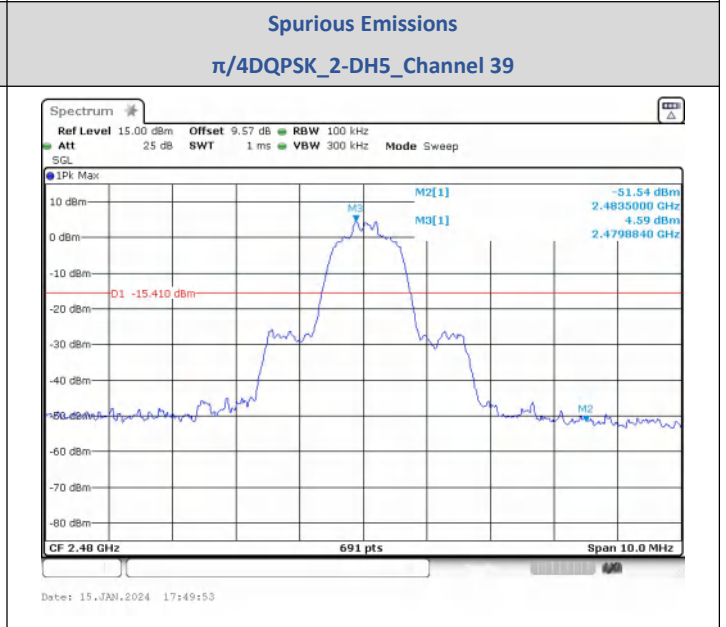
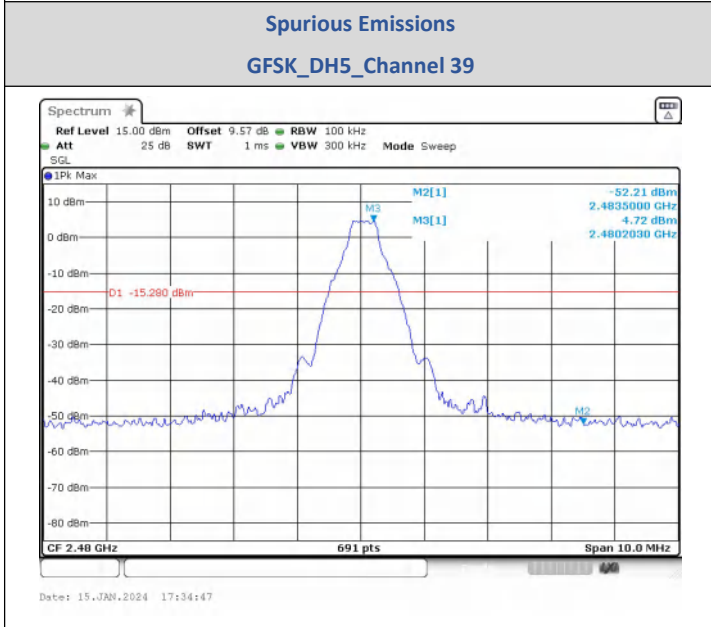
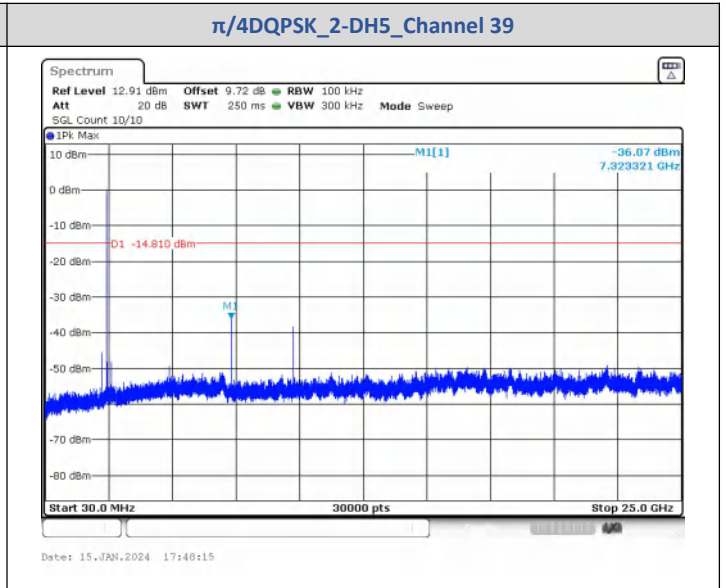
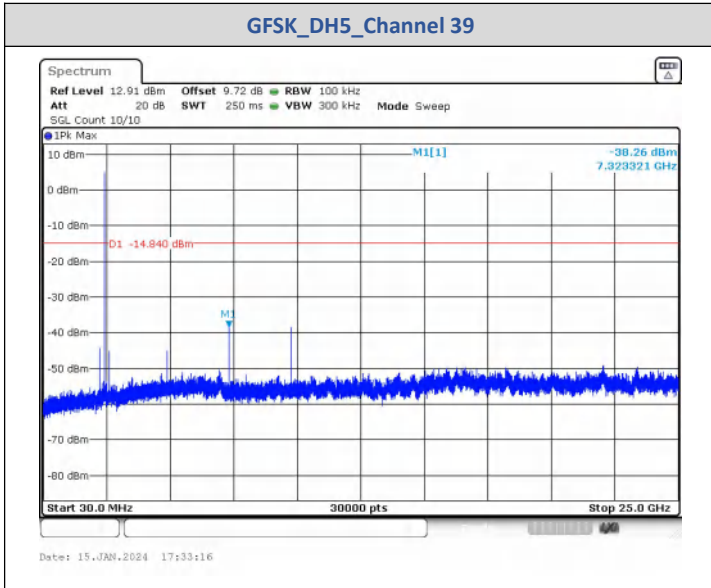
Spurious Emission  
 $\pi/4$ DQPSK\_2-DH5\_Channel 0

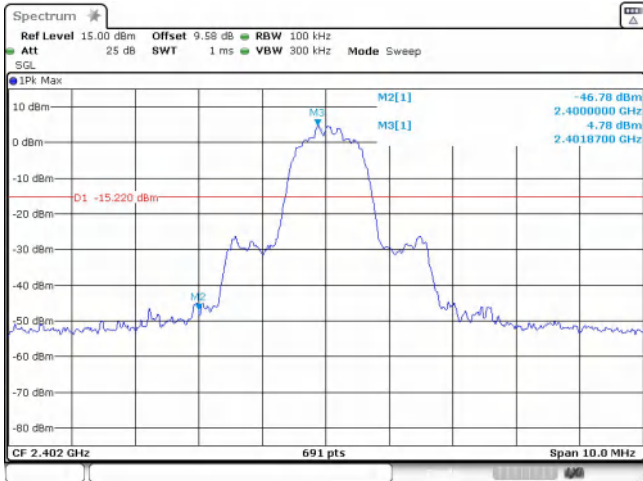


Out Of Band Emission



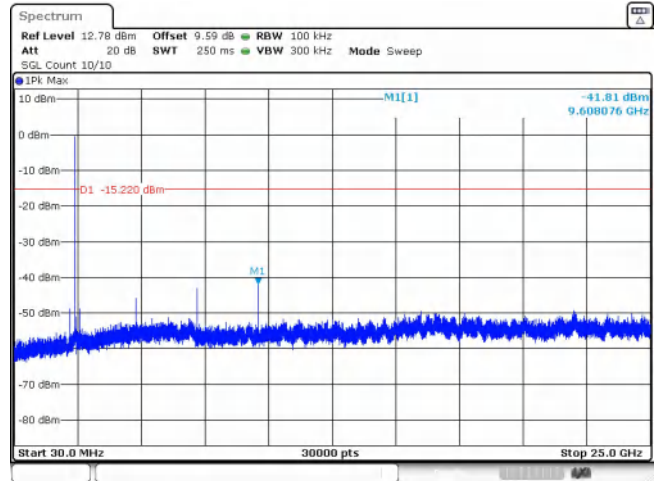
Out Of Band Emission





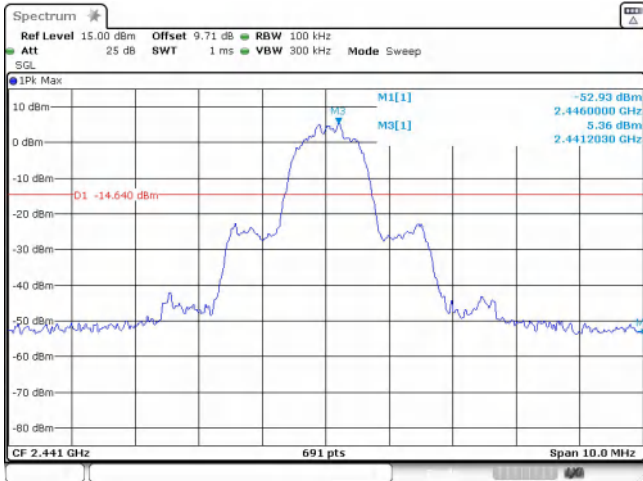
Date: 15, JAN, 2024 17:53:21

**Out Of Band Emission**  
**8DPSK\_3-DH5\_Channel 0**



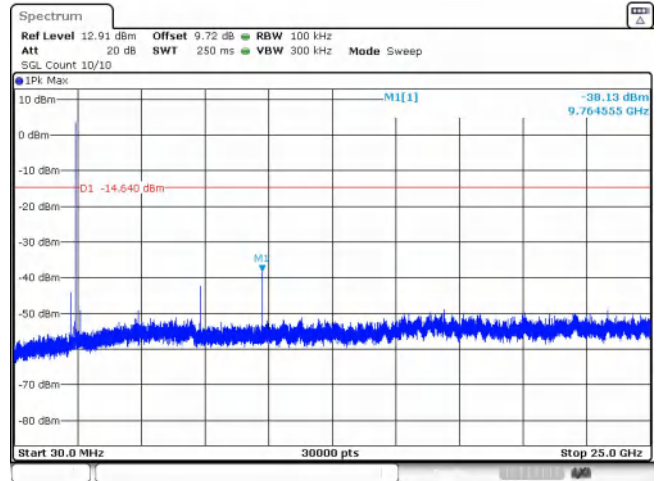
Date: 15, JAN, 2024 17:53:43

**Spurious Emission**  
**8DPSK\_3-DH5\_Channel 0**



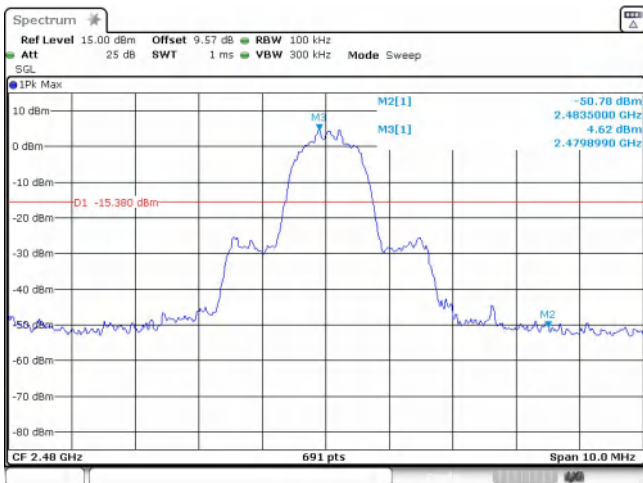
Date: 15, JAN, 2024 17:59:24

**Out Of Band Emission**  
**8DPSK\_3-DH5\_Channel 39**



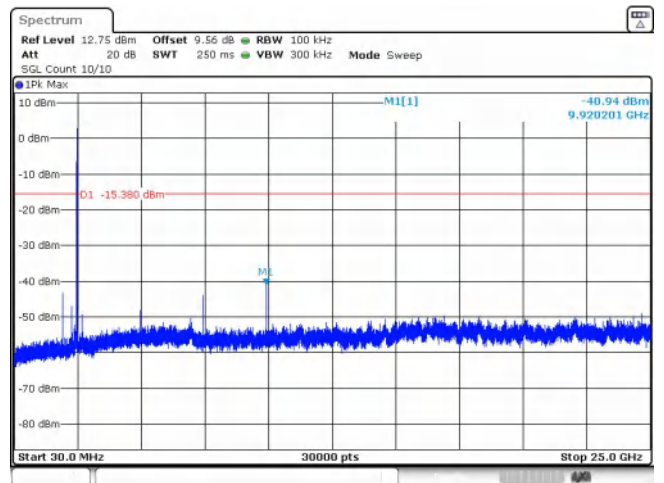
Date: 15, JAN, 2024 17:59:46

**Spurious Emissions**  
**8DPSK\_3-DH5\_Channel 39**



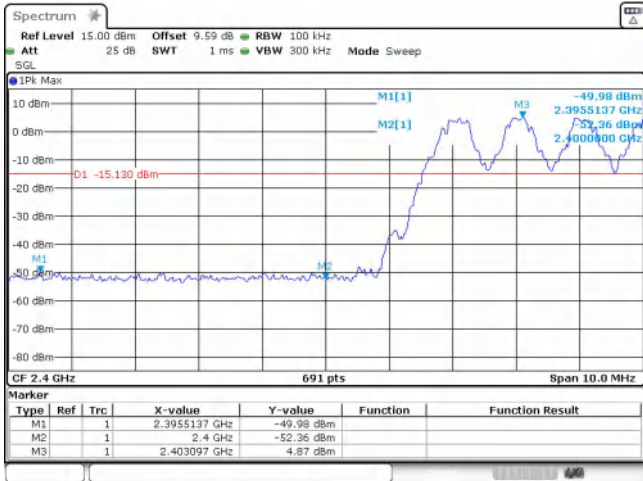
Date: 15, JAN, 2024 18:01:20

**Out Of Band Emission**  
**8DPSK\_3-DH5\_Channel 78**



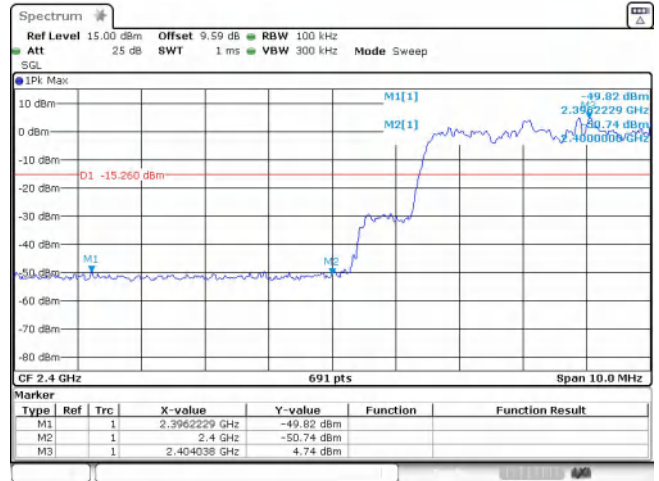
Date: 15, JAN, 2024 18:01:43

**Spurious Emission**  
**8DPSK\_3-DH5\_Channel 78**



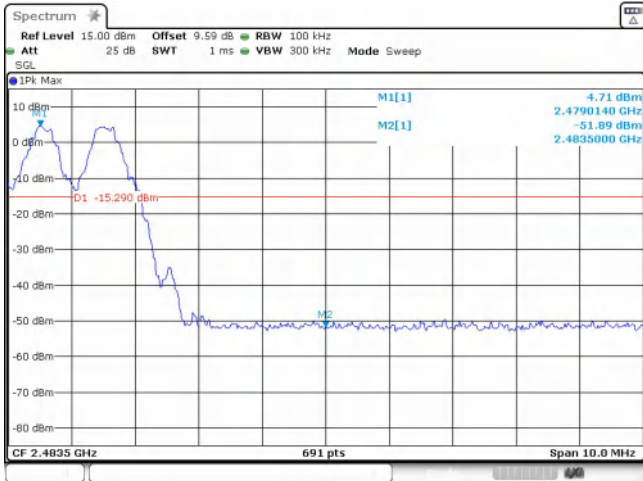
Date: 15, JAN, 2024 17:31:01

Out Of Band Emission(Left)  
GFSK\_DH5\_Channel Hopping



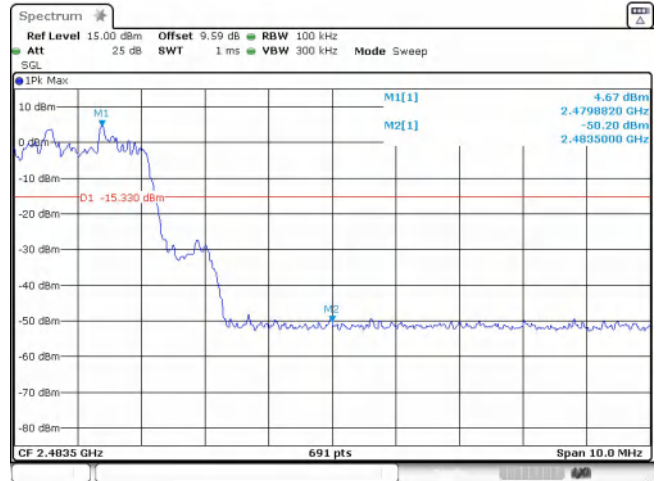
Date: 15, JAN, 2024 17:45:51

Out Of Band Emission(Left)  
 $\pi/4$ DQPSK\_2-DH5\_Channel Hopping



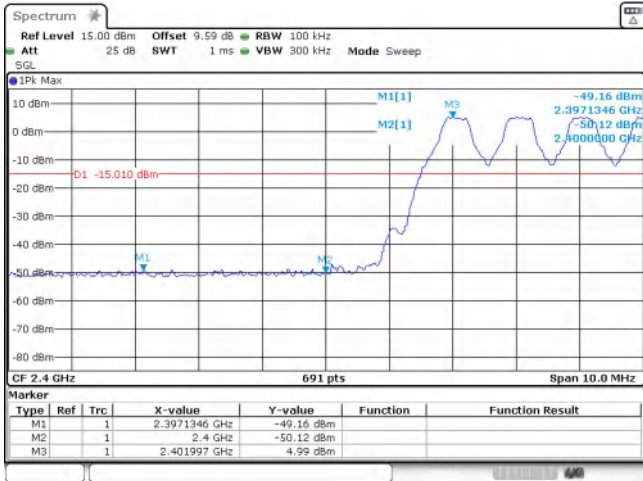
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Out Of Band Emission(Right)  
GFSK\_DH5\_Channel Hopping



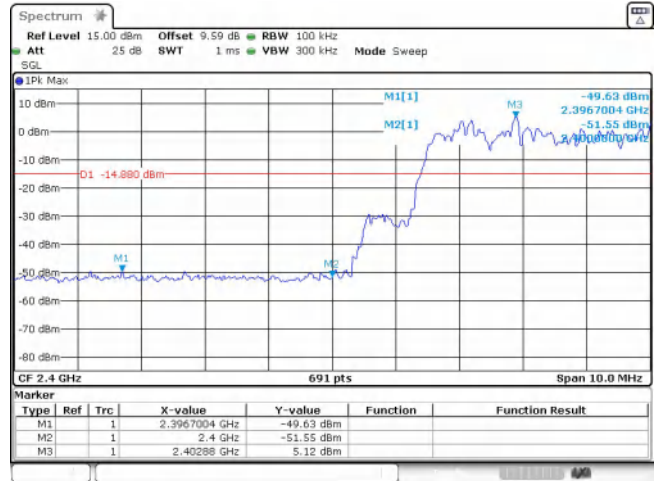
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Out Of Band Emission(Right)  
 $\pi/4$ DQPSK\_2-DH5\_Channel Hopping



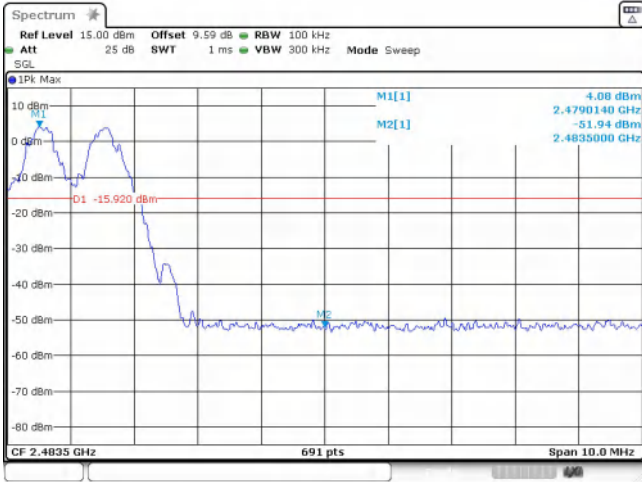
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Out Of Band Emission(Left)  
GFSK\_DH5\_Channel Hopping



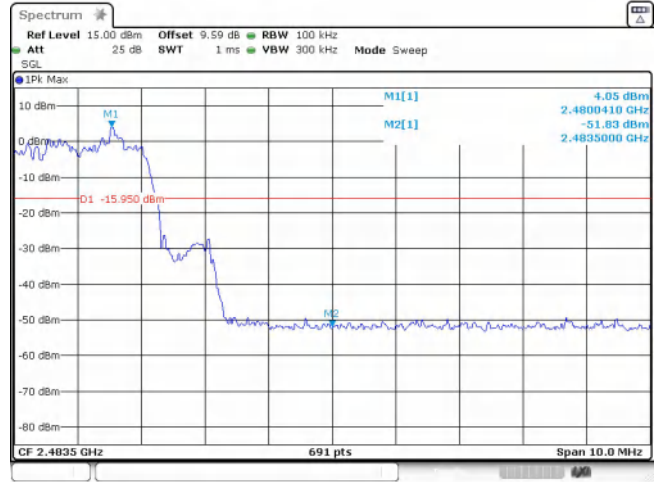
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Out Of Band Emission(Left)  
 $\pi/4$ DQPSK\_2-DH5\_Channel Hopping



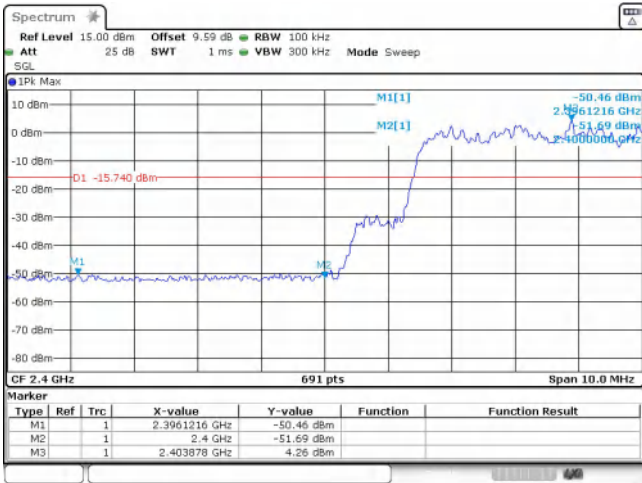
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Out Of Band Emission(Right)  
GFSK\_DH5\_Channel Hopping



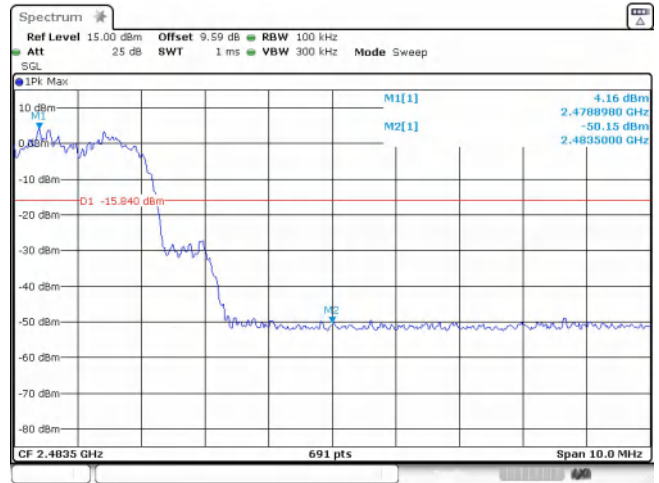
Date: 15.JAN.2024 17:51:12

Out Of Band Emission(Right)  
 $\pi/4$ DQPSK\_2-DH5\_Channel Hopping



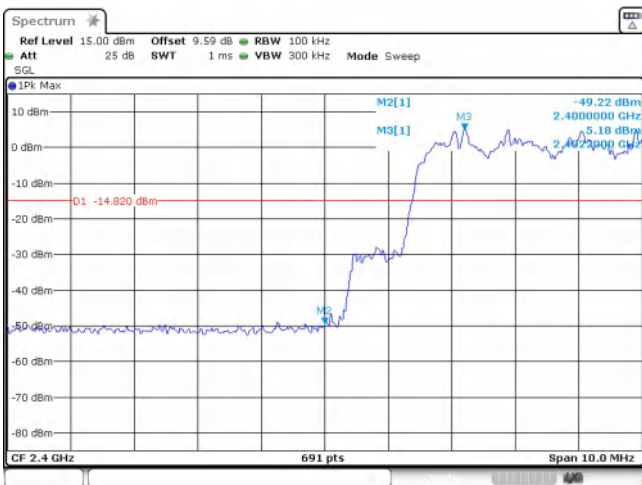
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Out Of Band Emission(Left)  
8DPSK\_3-DH5\_Channel Hopping



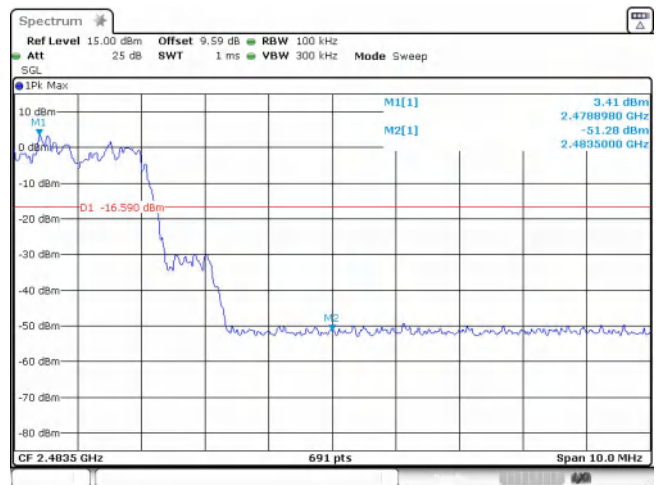
Date: 15.JAN.2024 17:57:45

Out Of Band Emission(Right)  
8DPSK\_3-DH5\_Channel Hopping



Date: 15.JAN.2024 18:06:14

Out Of Band Emission(Left)  
8DPSK\_3-DH5\_Channel Hopping



Date: 15.JAN.2024 18:06:36

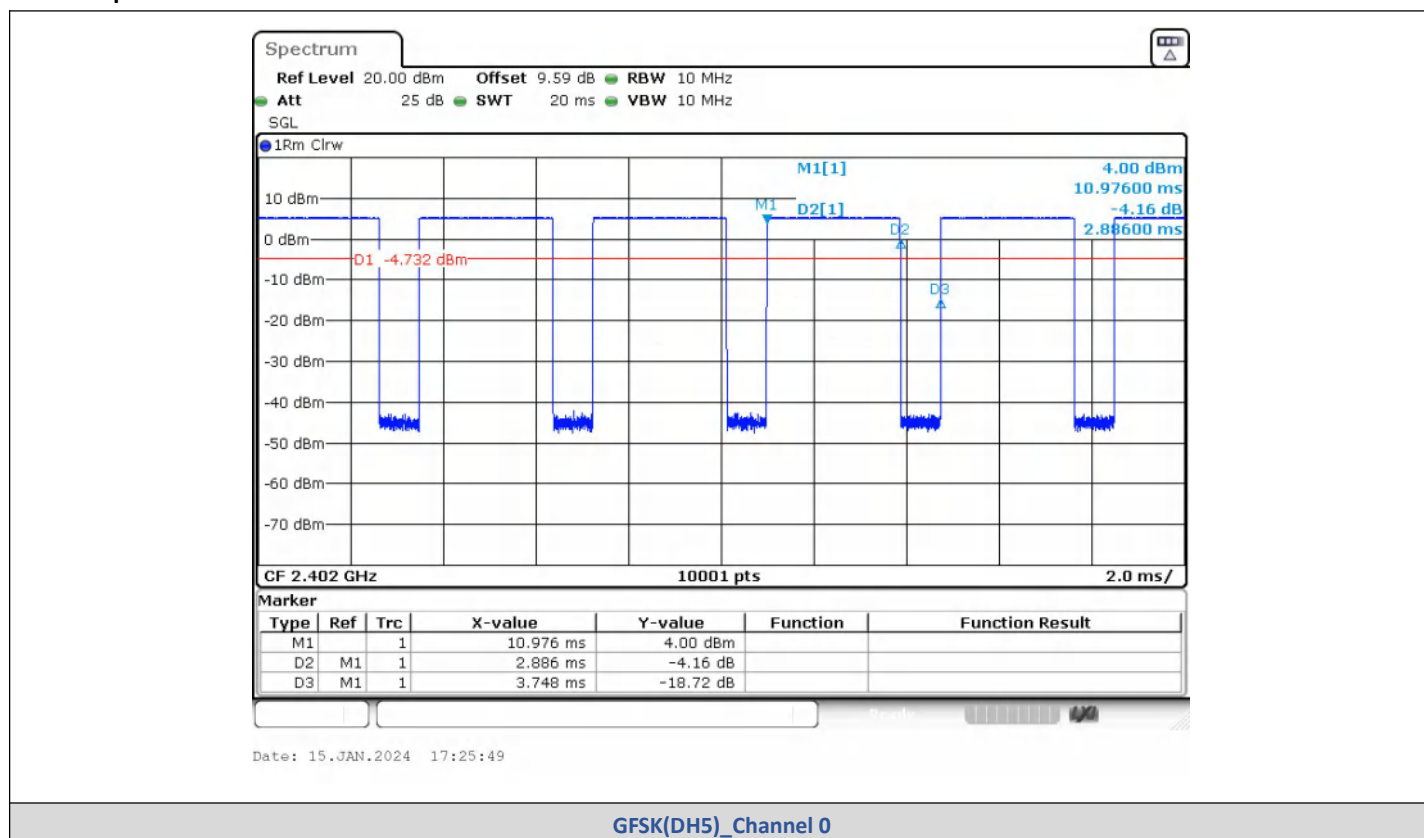
Out Of Band Emission(Right)  
8DPSK\_3-DH5\_Channel Hopping

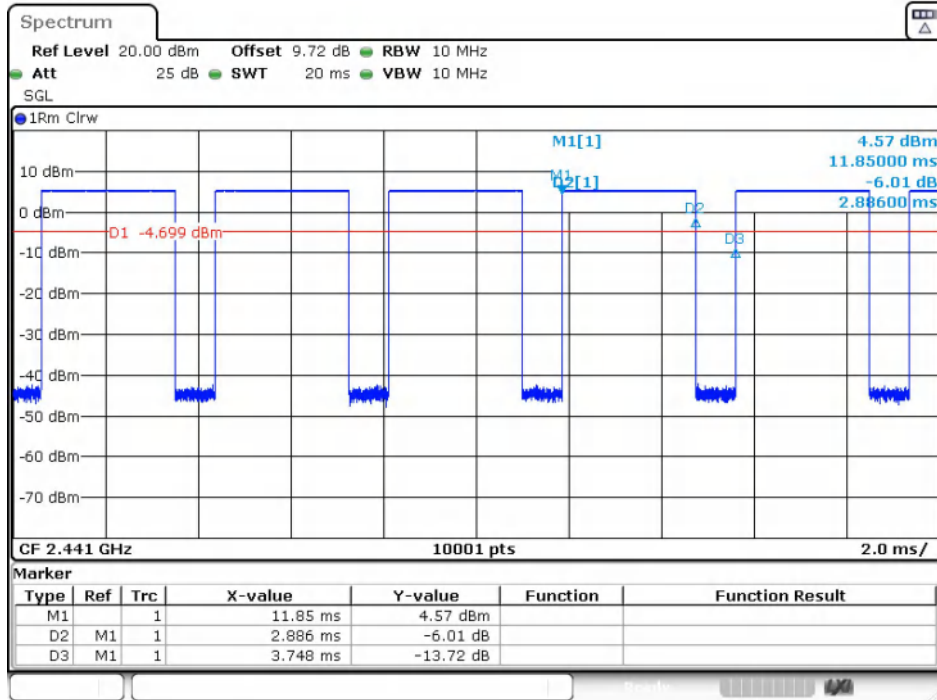
## 6) Duty Cycle

### Test Result

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

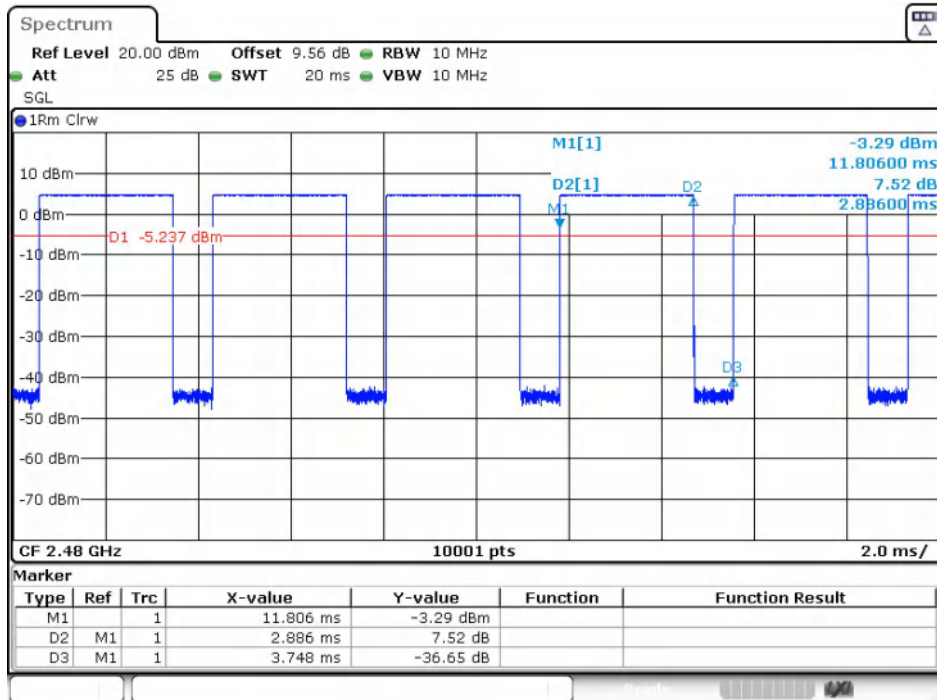
### Test Graphs





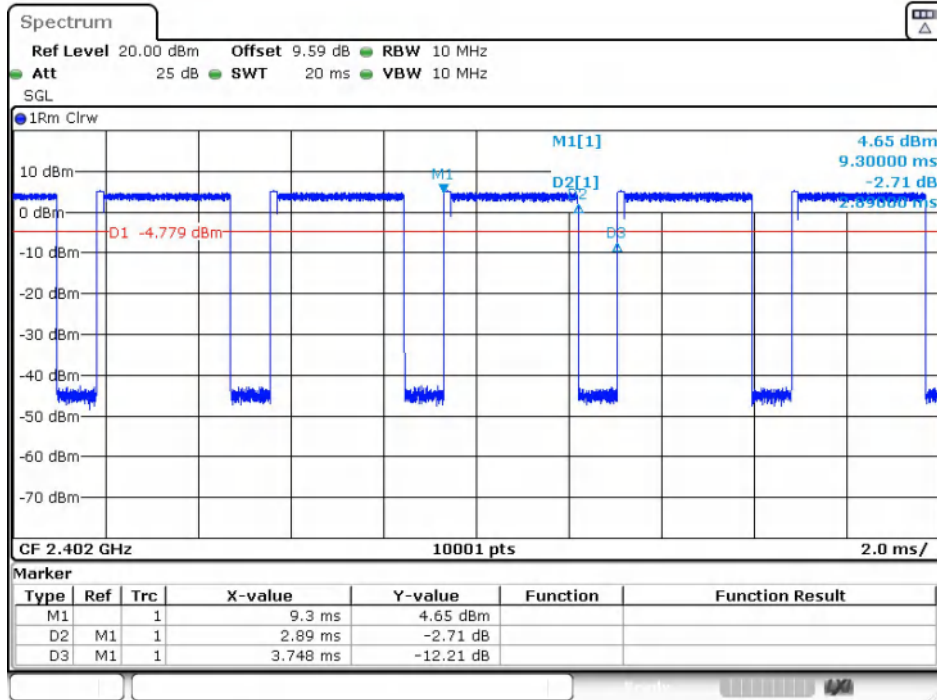
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GFSK(DH5)\_Channel 39



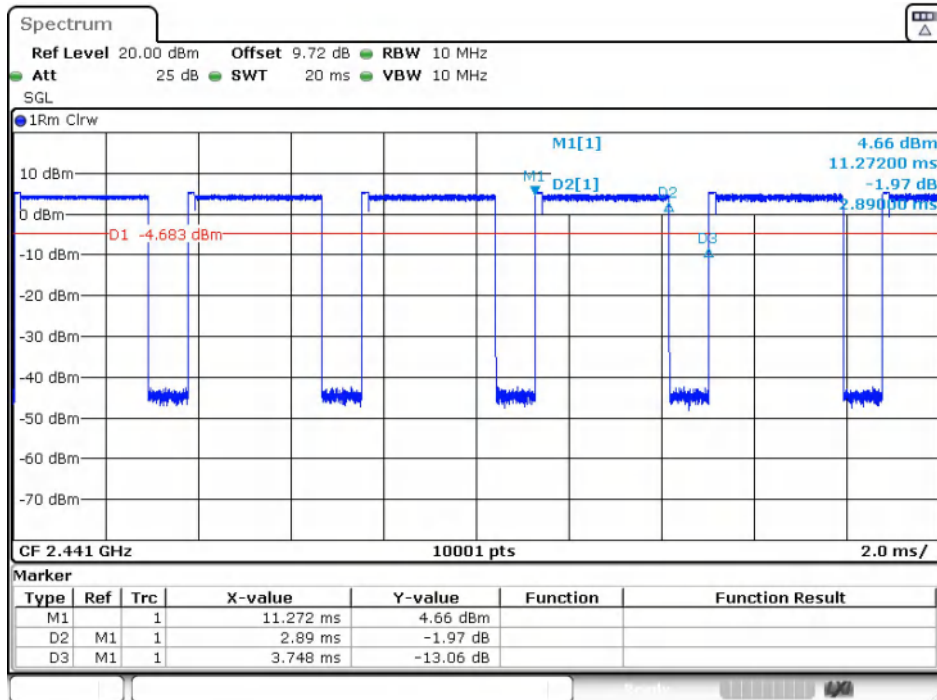
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GFSK(DH5)\_Channel 78



Date: 15.JAN.2024 17:40:16

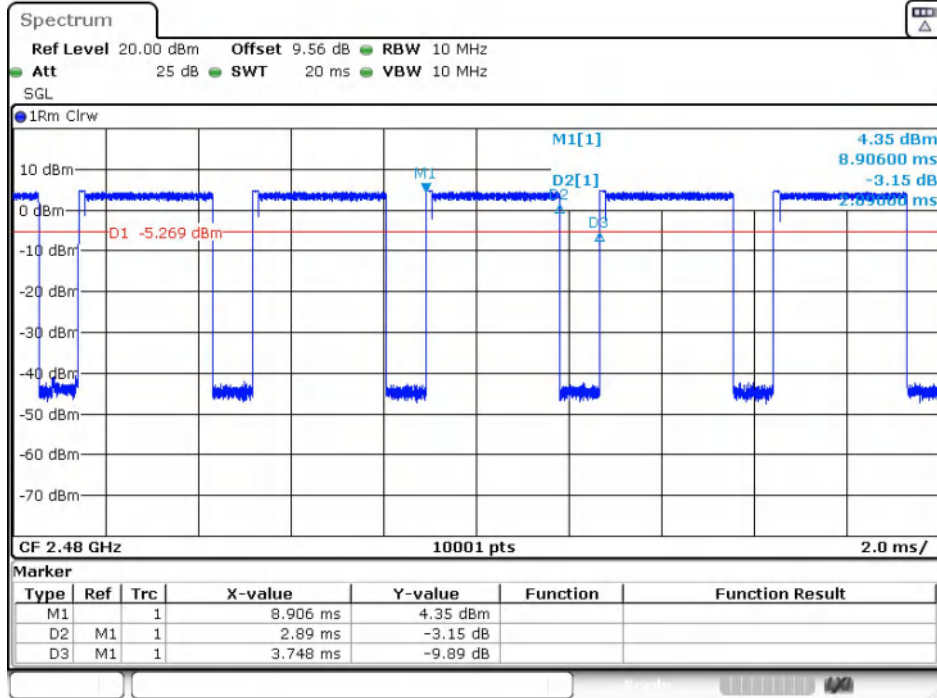
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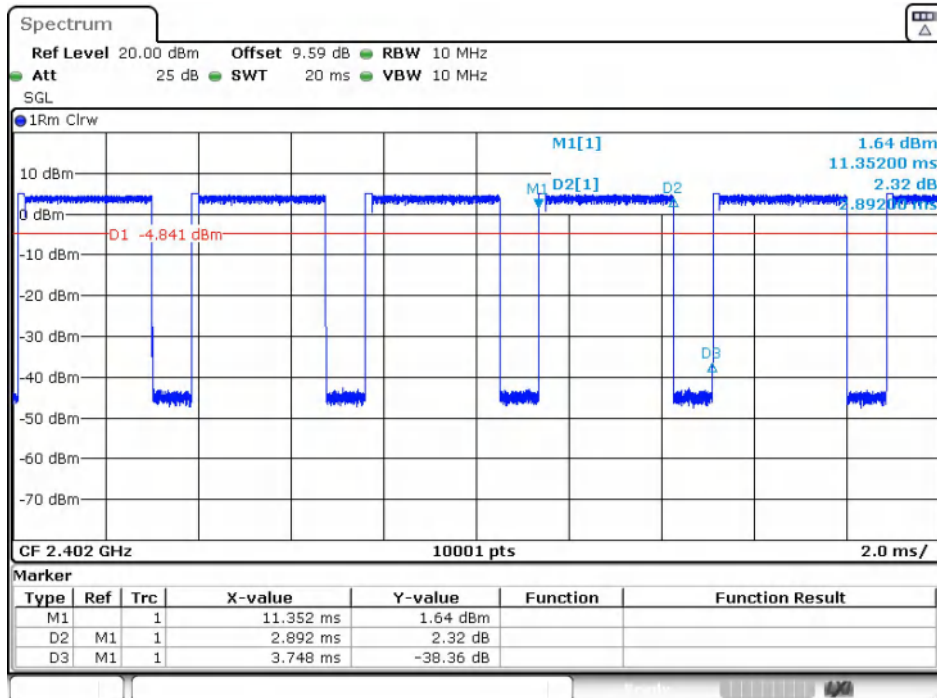
$\pi/4$ DQPSK(2-DH5)\_Channel 39





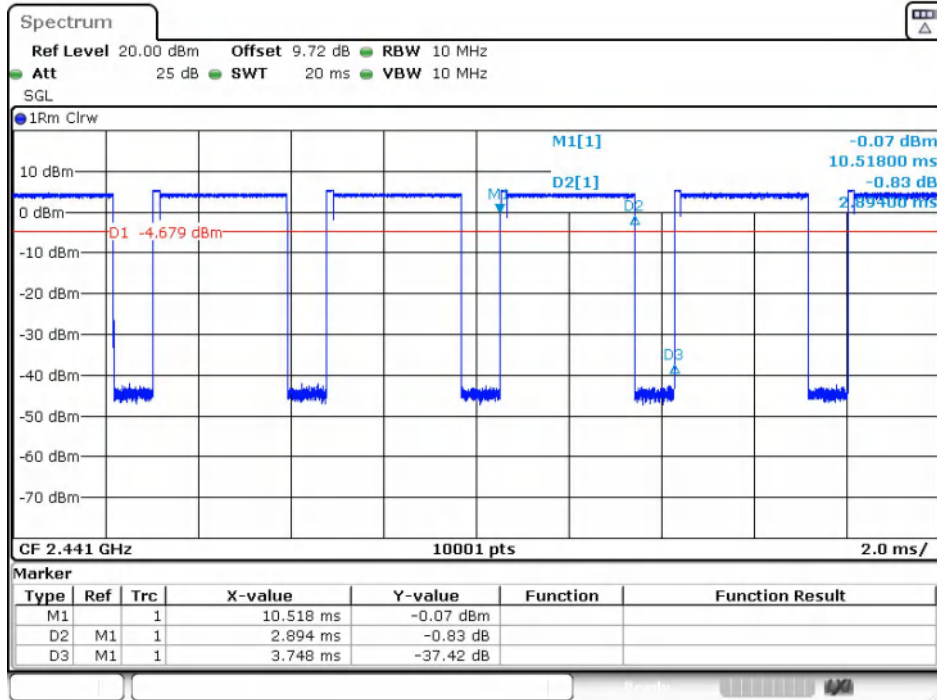
Date: 15.JAN.2024 17:48:52

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



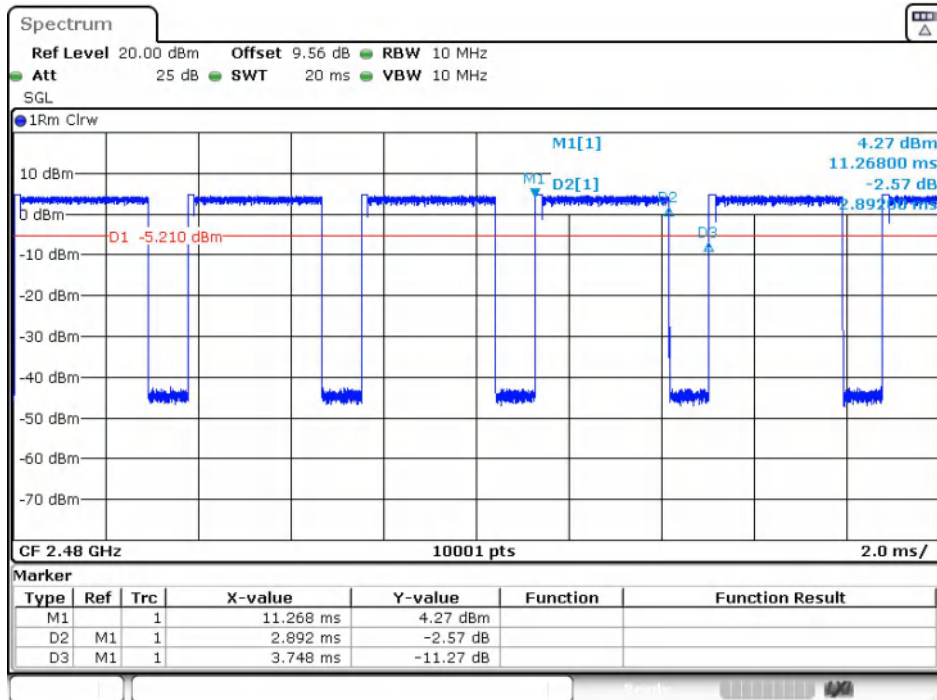
Date: 15.JAN.2024 17:52:20

8DPSK(3-DH5)\_Channel 0



Date: 15.JAN.2024 17:58:29

8DPSK(3-DH5)\_Channel 39



Date: 15.JAN.2024 18:00:20

8DPSK(3-DH5)\_Channel 78

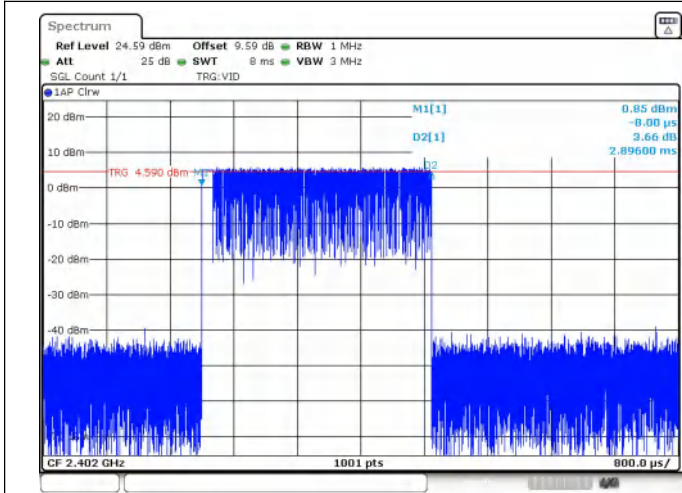
# 7) Dwell Time

## Test Result

Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH5	CHO (2402MHz)	2.888	110	317.68	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.896	103	298.29		PASS
8DPSK	3-DH5		2.896	99	286.7		PASS

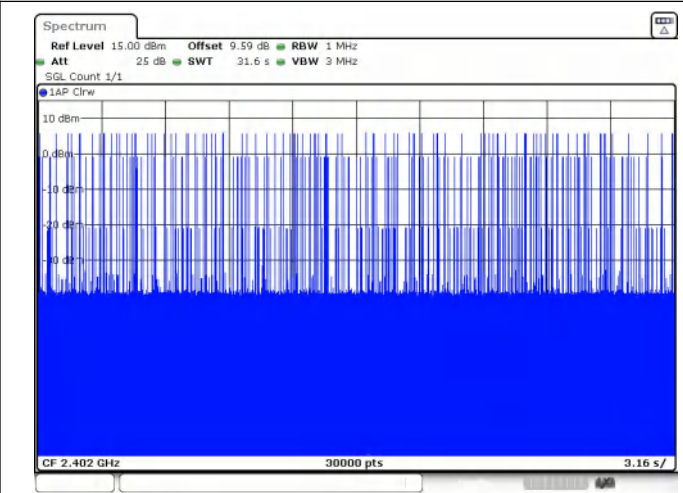
## Test Graphs

<p>Date: 15.JAN.2024 17:28:50</p>	<p>Date: 15.JAN.2024 17:28:40</p>
<p><b>Pulse Width</b> <b>GFSK_DH5</b></p>	<p><b>Number of Pulses in 31.6 seconds</b> <b>GFSK_DH5</b></p>
<p>Date: 15.JAN.2024 17:43:53</p>	<p>Date: 15.JAN.2024 17:43:42</p>
<p><b>Pulse Width</b> <b><math>\pi/4</math>DQPSK_2-DH5</b></p>	<p><b>Number of Pulses in 31.6 seconds</b> <b><math>\pi/4</math>DQPSK_2-DH5</b></p>



Date: 15.JAN.2024 17:55:27

**Pulse Width**  
**8DPSK\_3-DH5**



Date: 15.JAN.2024 17:55:16

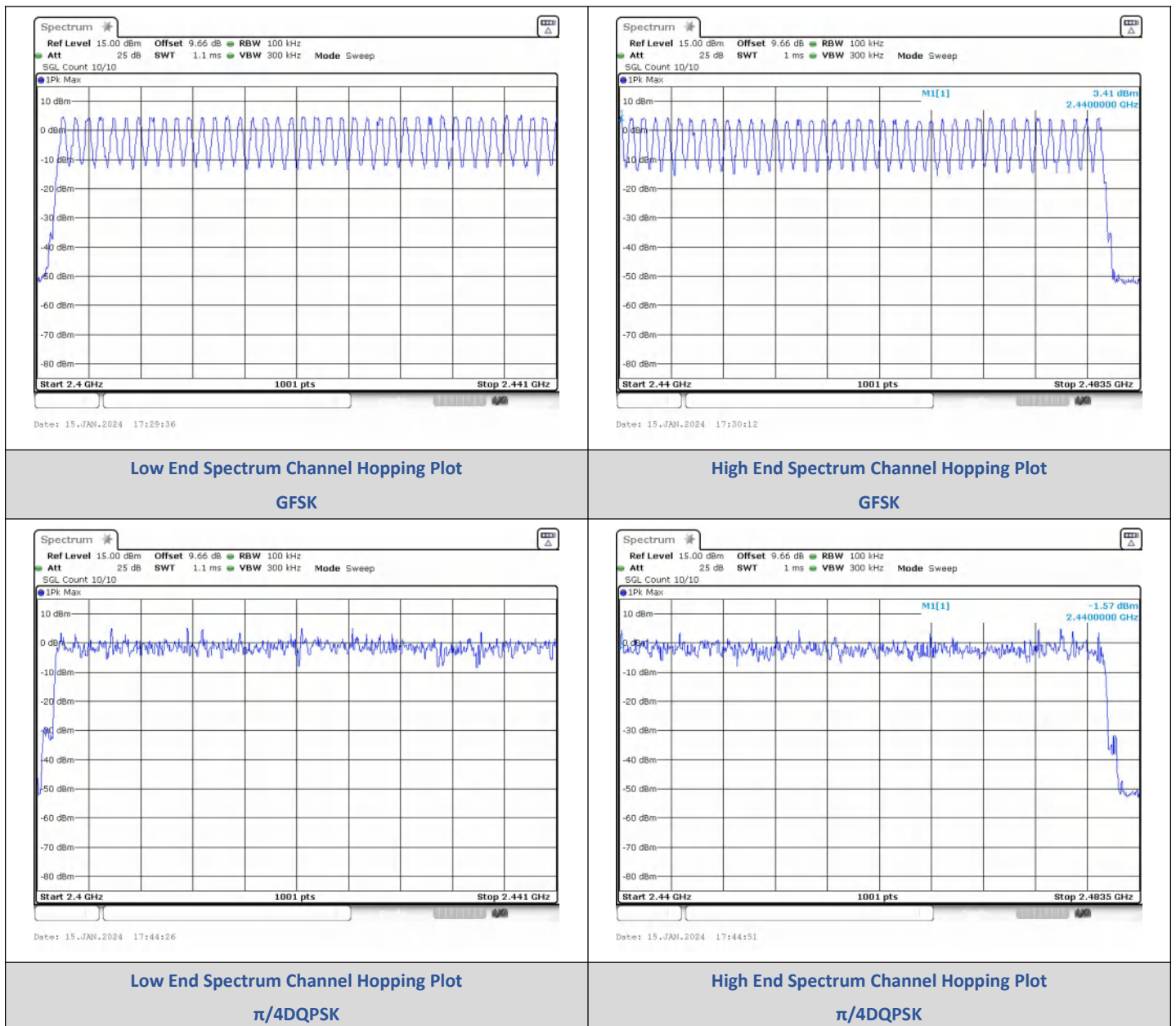
**Number of Pulses in 31.6 seconds**  
**8DPSK\_3-DH5**

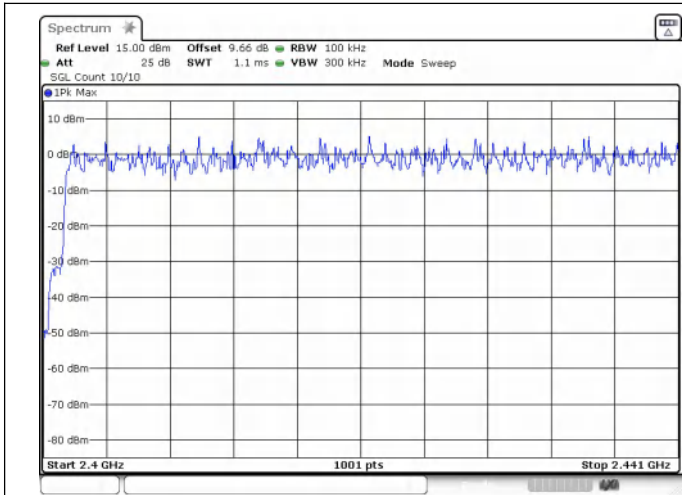
# 8) Number Of Hopping Channel

## Test Result

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

## Test Graphs

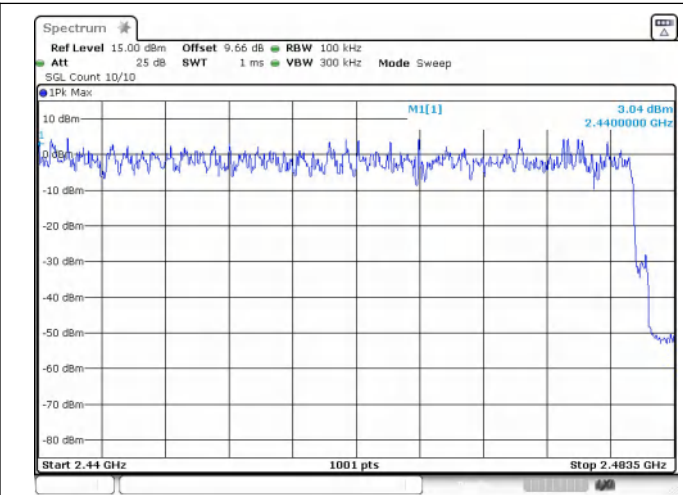




Date: 15.JAN.2024 17:56:03

Low End Spectrum Channel Hopping Plot

8DPSK



Date: 15.JAN.2024 17:56:35

High End Spectrum Channel Hopping Plot

8DPSK