

## Appendix A

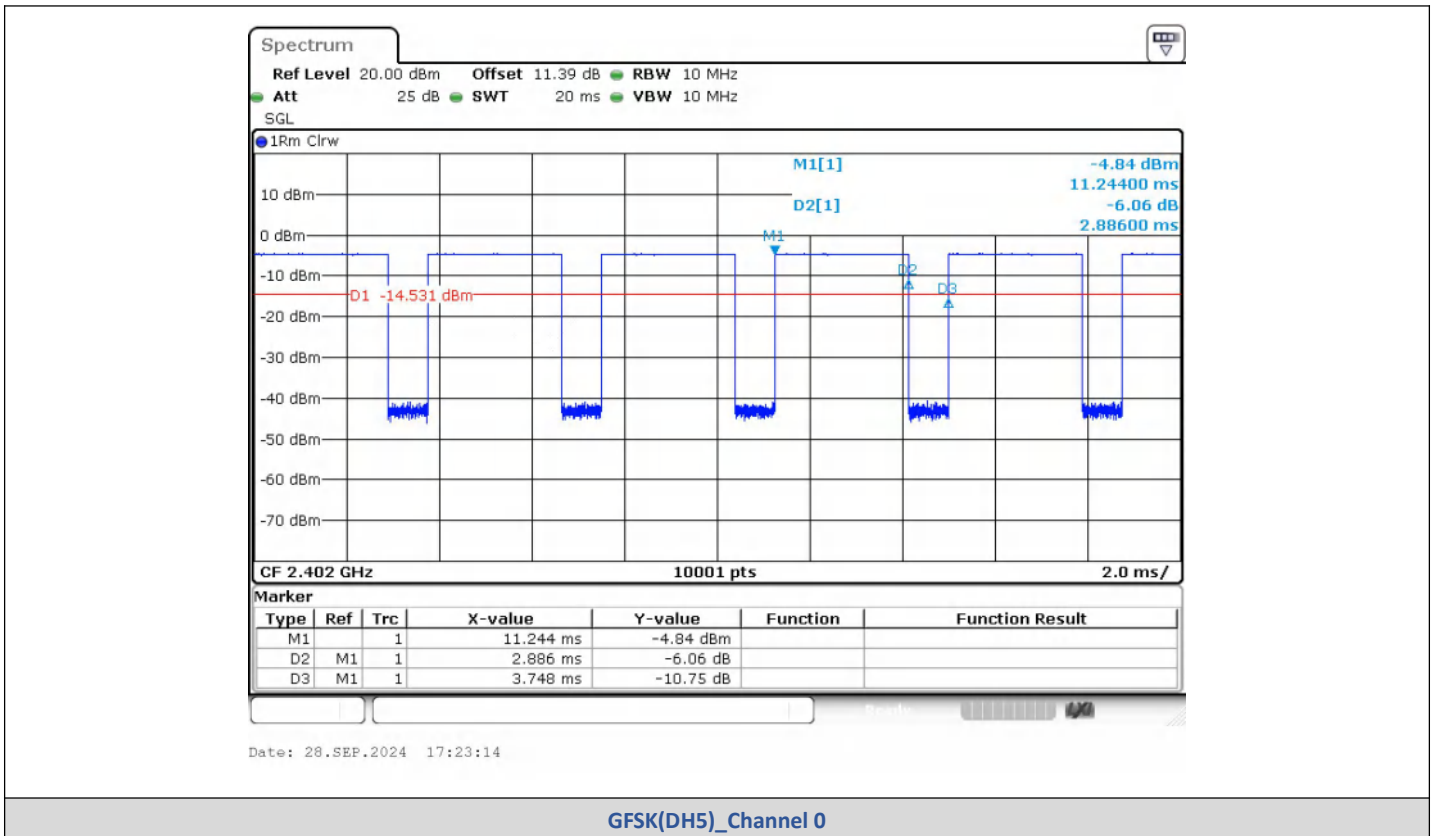
Report No.:	CISRR24091917701
FCC ID:	2BK9F-V200
Product Name:	Intelligent Microprojector
Model No.:	V200
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

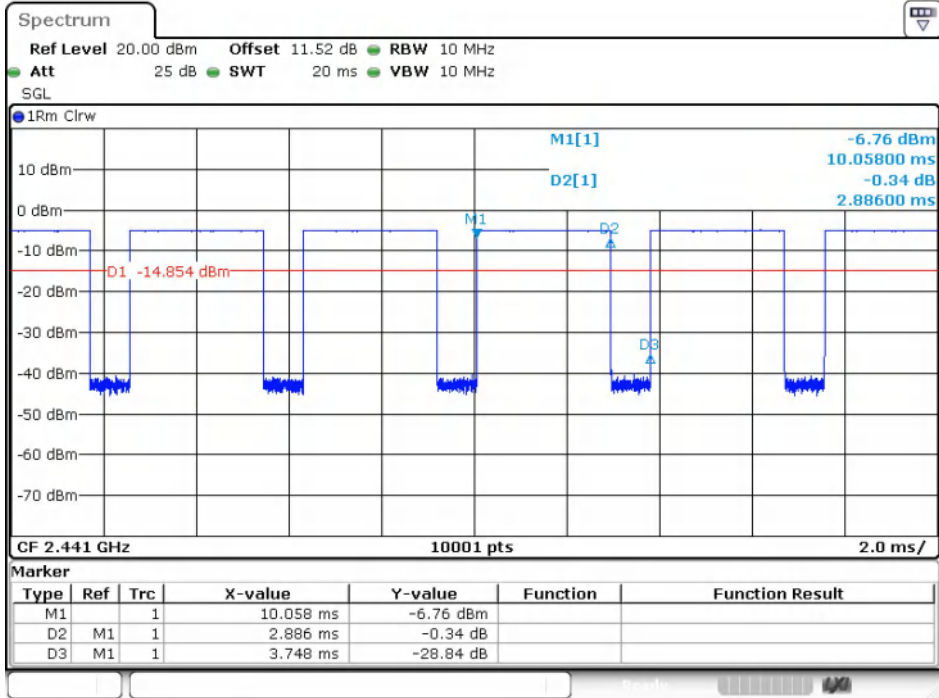
# 1) Duty Cycle

## 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	2.892	3.748	77.16	0.7716	1.1261	0.35
		39	2.892	3.748	77.16	0.7716	1.1261	0.35
		78	2.892	3.748	77.16	0.7716	1.1261	0.35
8DPSK	3-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	2.892	3.748	77.16	0.7716	1.1261	0.35

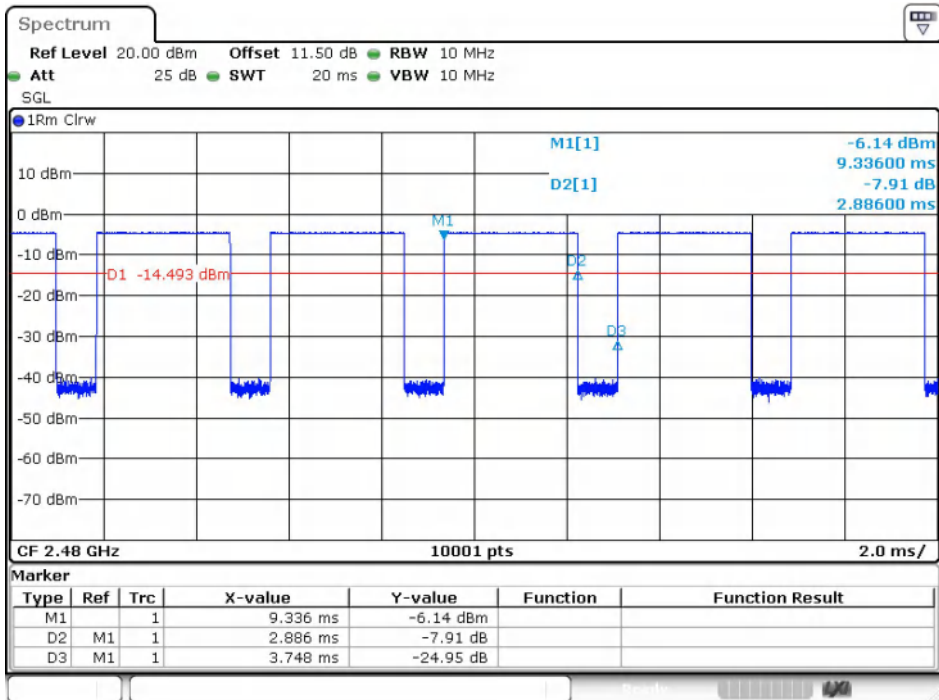
## Test Graphs





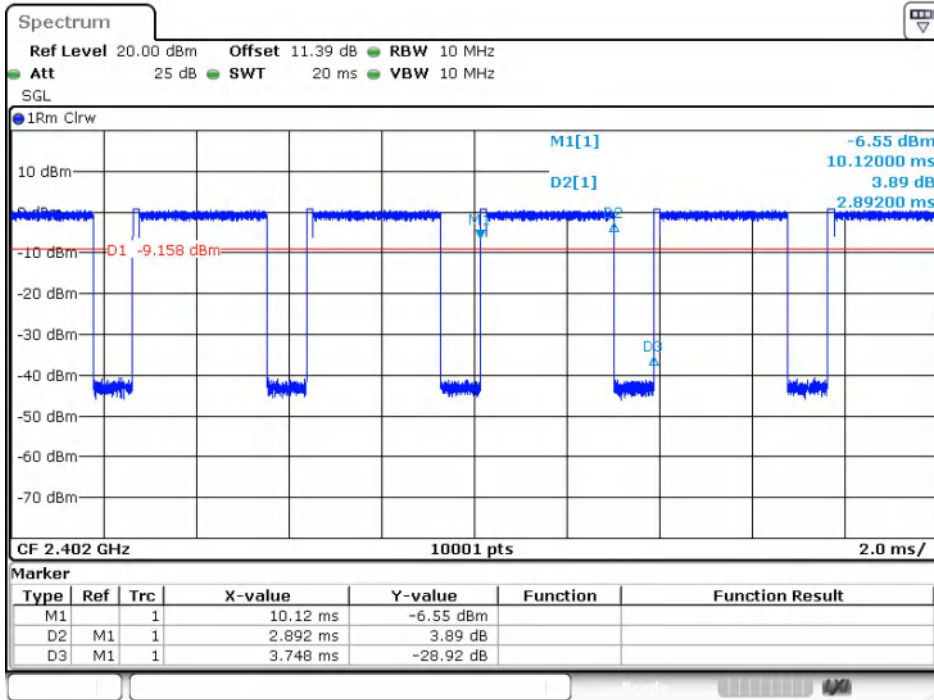
Date: 28.SEP.2024 17:30:07

GFSK(DH5)\_Channel 39



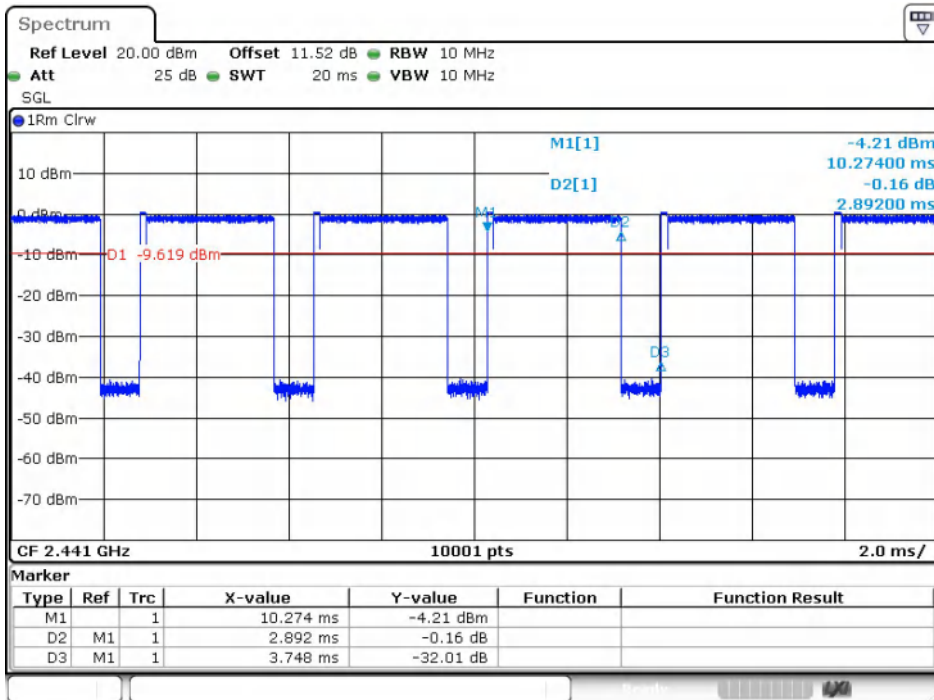
Date: 28.SEP.2024 17:32:21

GFSK(DH5)\_Channel 78



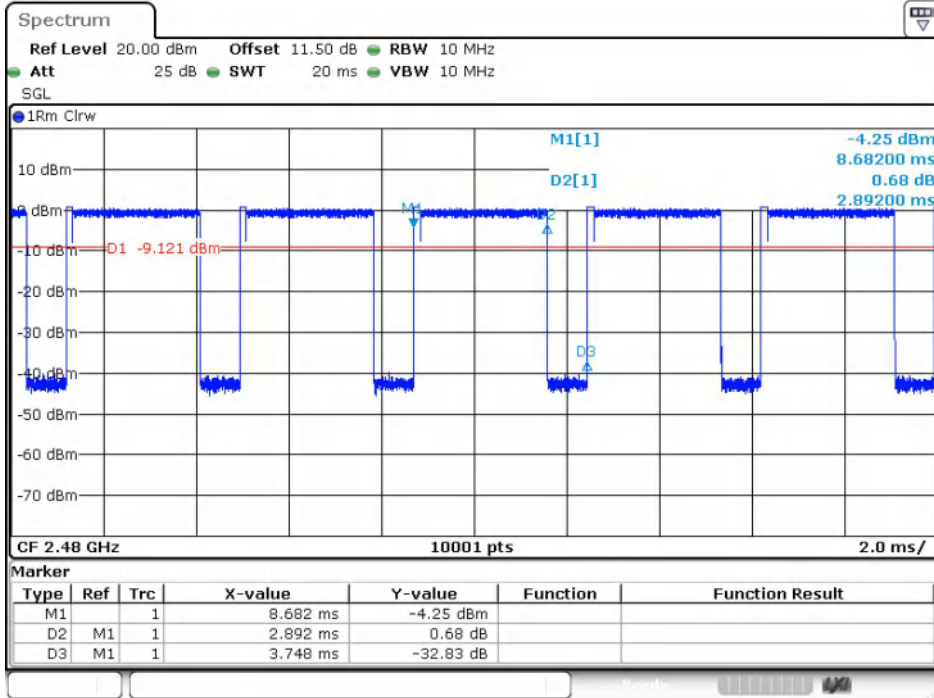
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$\pi/4$ DQPSK(2-DH5)\_Channel 0



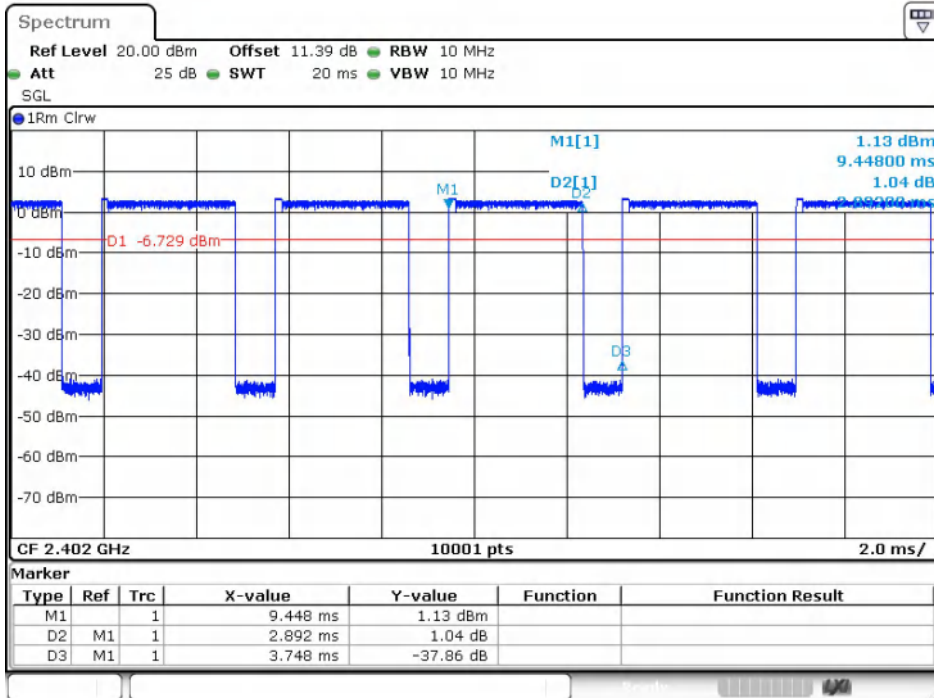
Date: 28.SEP.2024 17:48:25

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



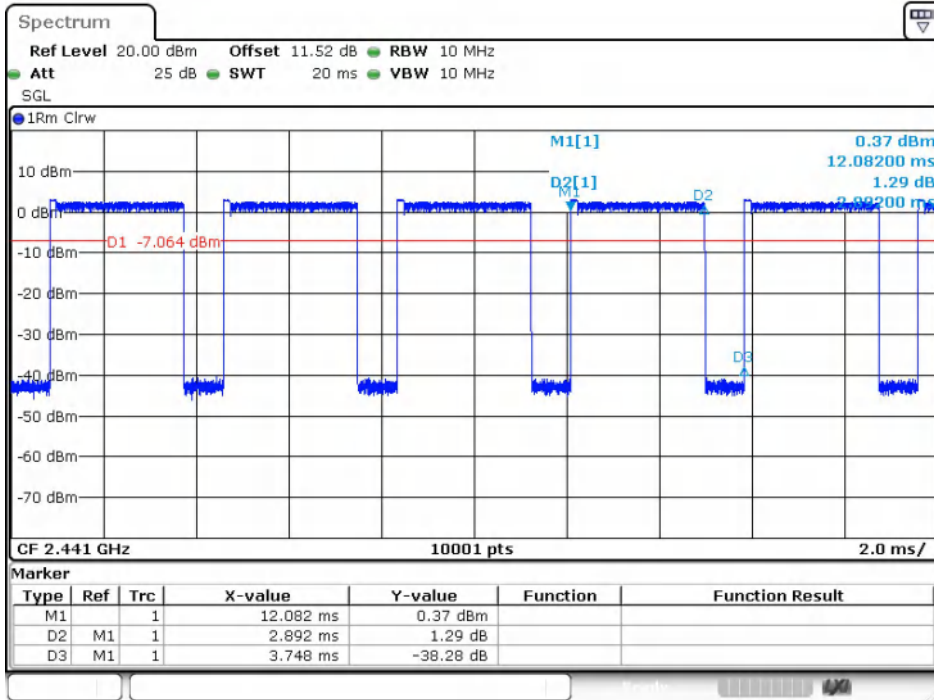
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$\pi/4$ DQPSK(2-DH5)\_Channel 78



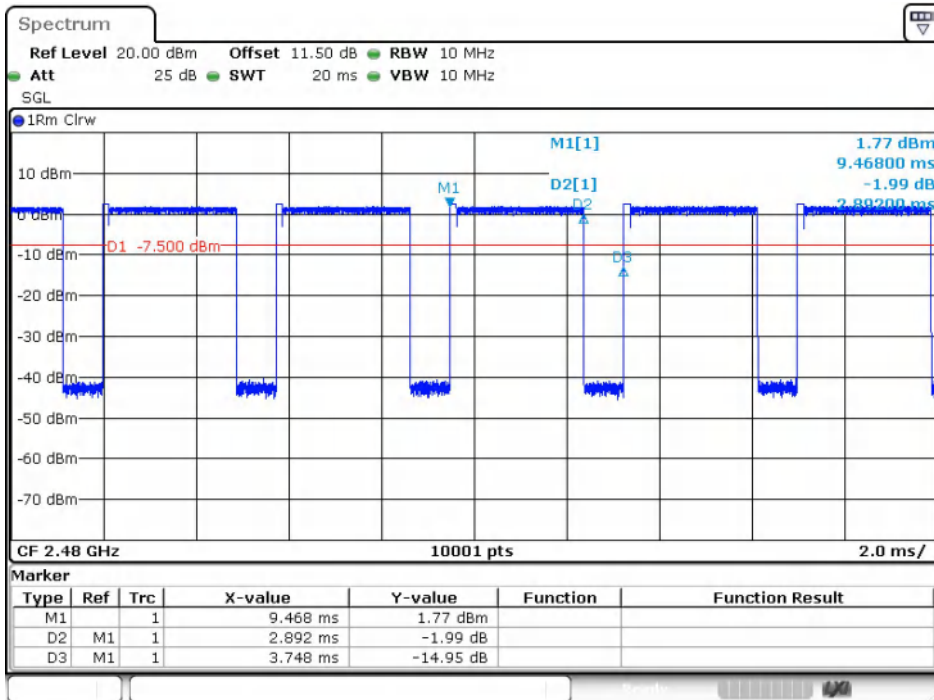
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8DPSK(3-DH5)\_Channel 0



Date: 28.SEP.2024 18:08:15

8DPSK(3-DH5)\_Channel 39



Date: 28.SEP.2024 18:09:12

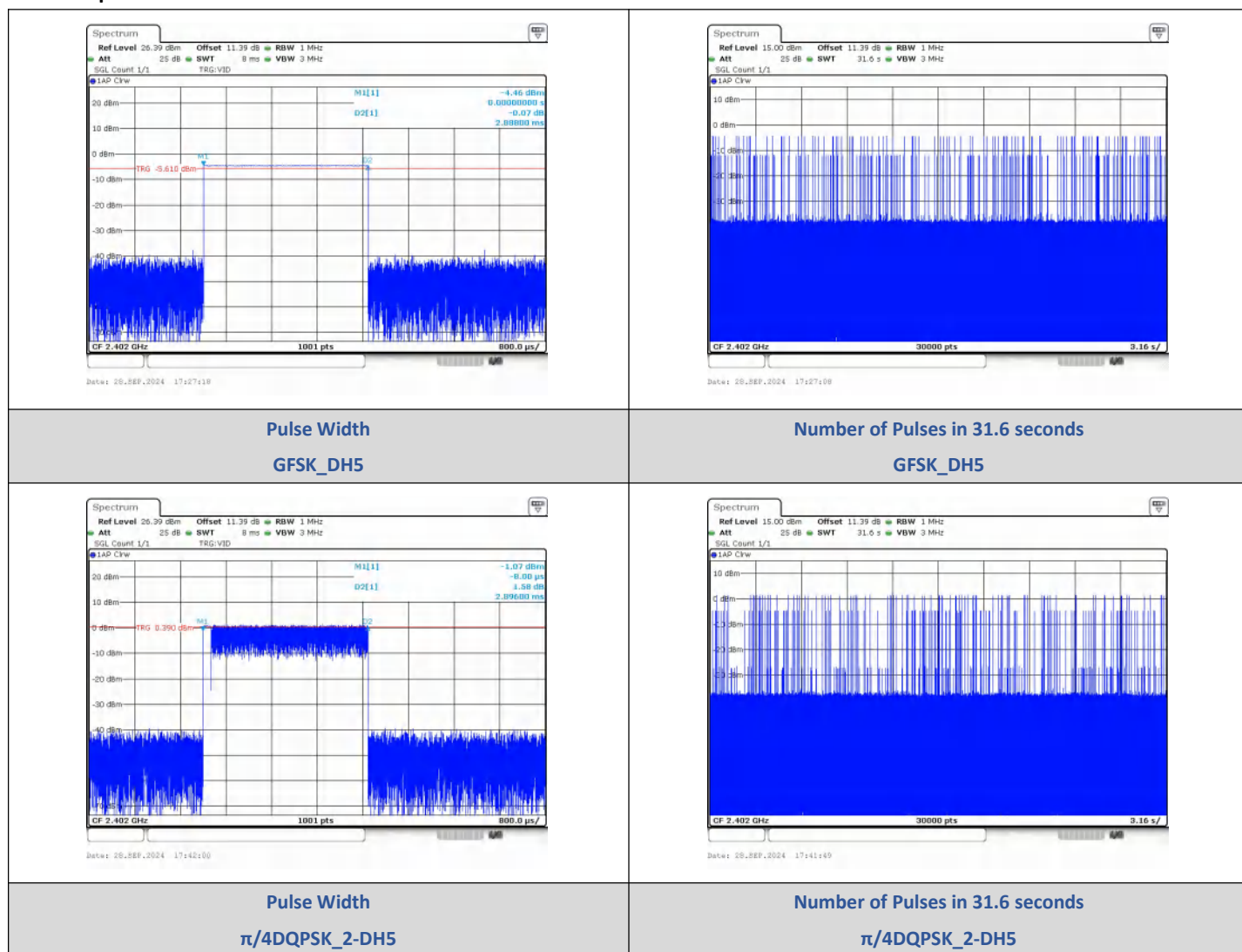
8DPSK(3-DH5)\_Channel 78

## 2) Dwell Time

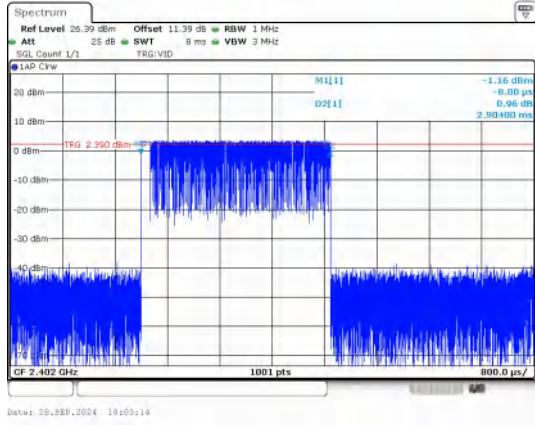
### Test Result

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	104	300.35	< 400	PASS
$\pi/4$ DQPSK	2-DH5		2.896	90	260.64		PASS
8DPSK	3-DH5		2.904	100	290.4		PASS

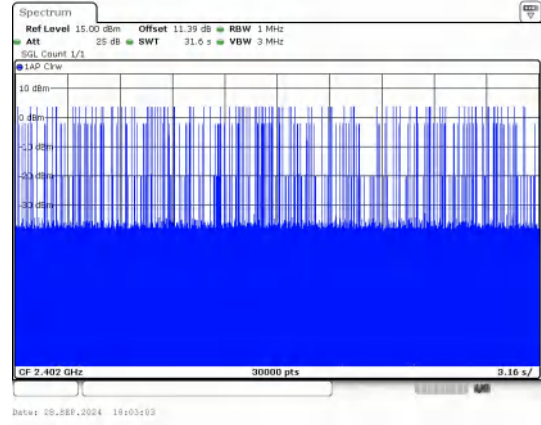
### Test Graphs







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



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

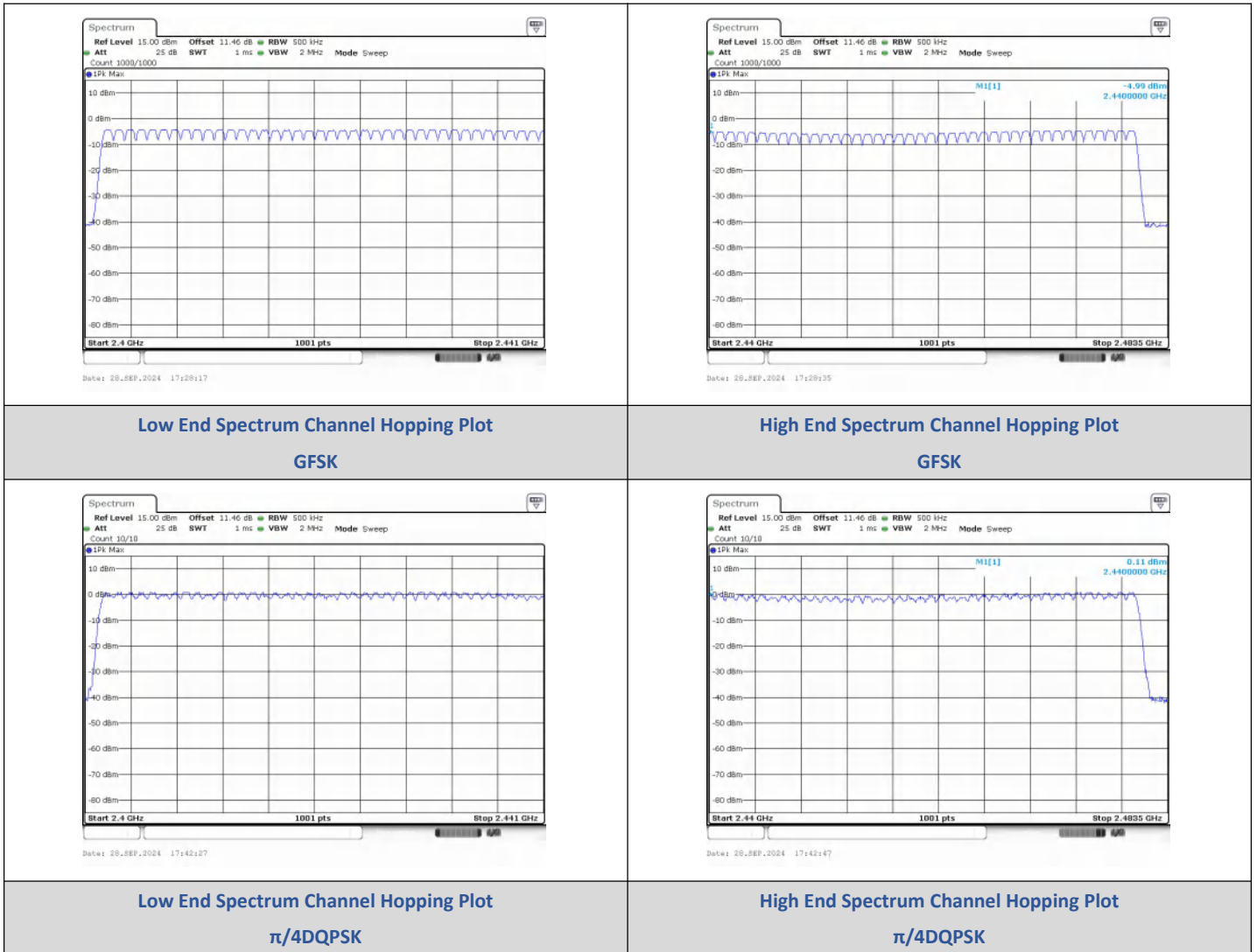


### 3) Number Of Hopping Channel

**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**

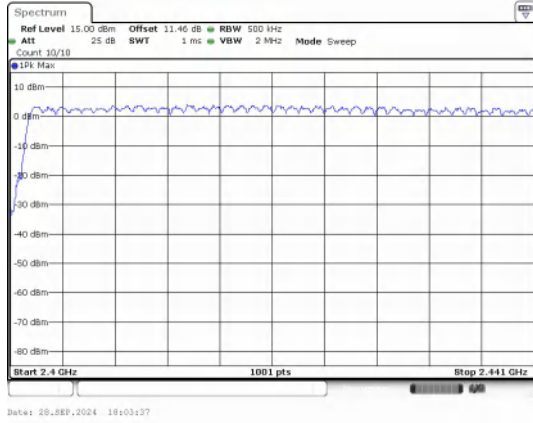


Low End Spectrum Channel Hopping Plot  
GFSK

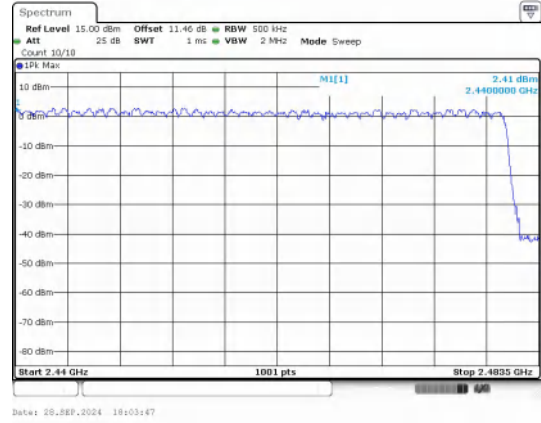
High End Spectrum Channel Hopping Plot  
GFSK

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



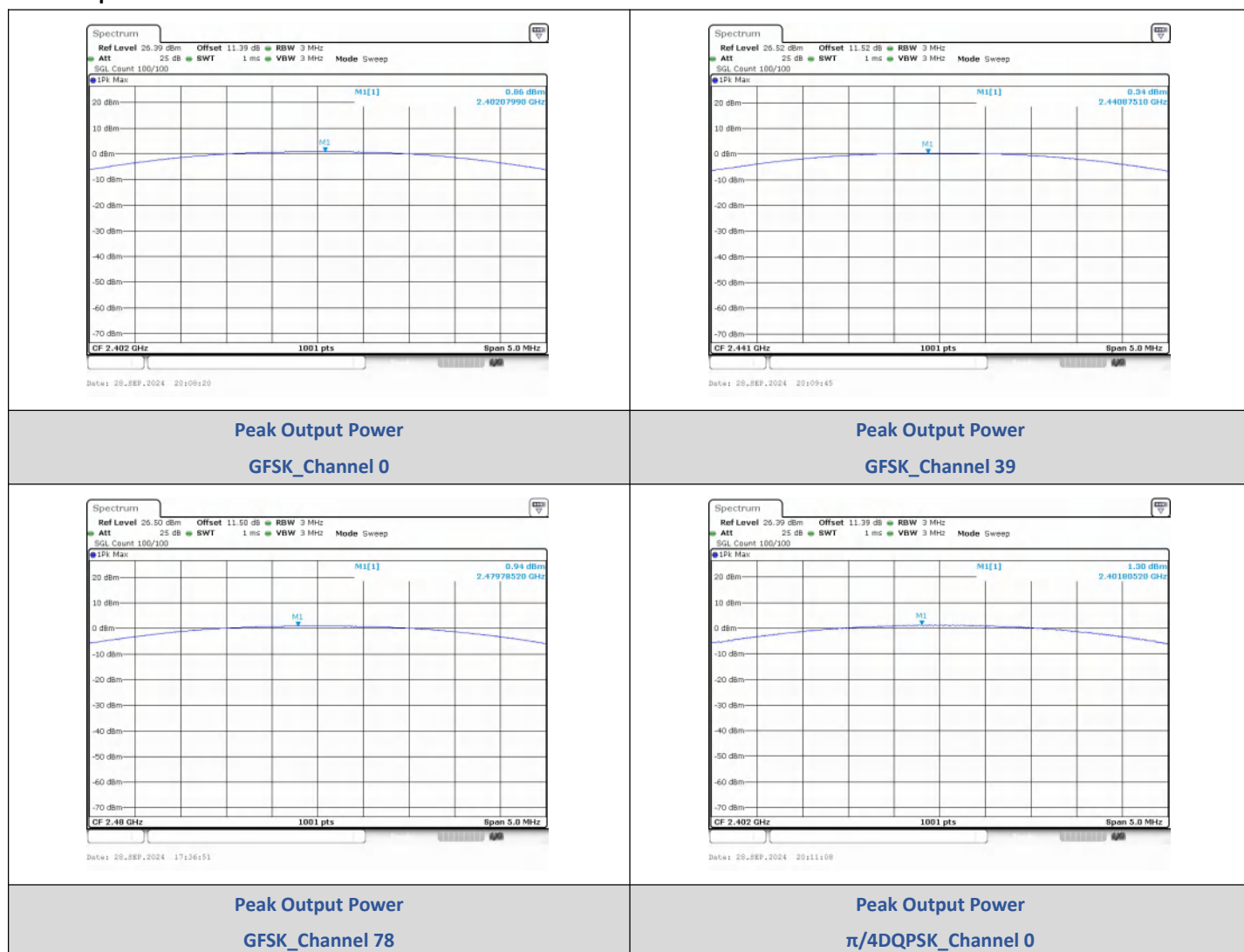
High End Spectrum Channel Hopping Plot  
8DPSK

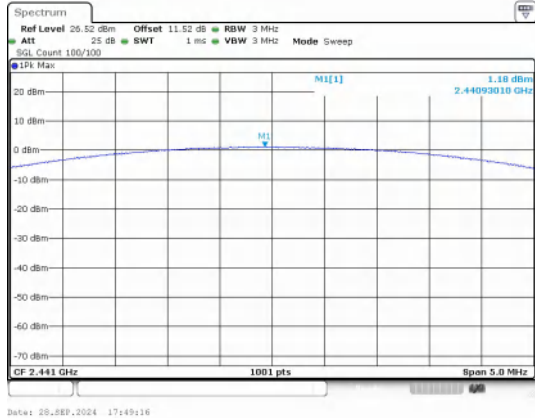
## 4) Conducted Peak Output Power

### Test Result

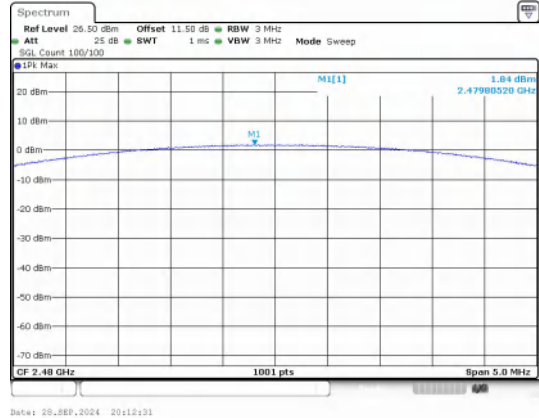
Modulation	Packet Type	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
GFSK	DH5	0	0.86	1.22	≤30	PASS
		39	0.34	1.08		PASS
		78	0.94	1.24		PASS
π/4DQPSK	2-DH5	0	1.30	1.35	≤20.97	PASS
		39	1.18	1.31		PASS
		78	1.84	1.53		PASS
8DPSK	3-DH5	0	1.59	1.44	≤20.97	PASS
		39	1.12	1.29		PASS
		78	2.13	1.63		PASS

### Test Graphs

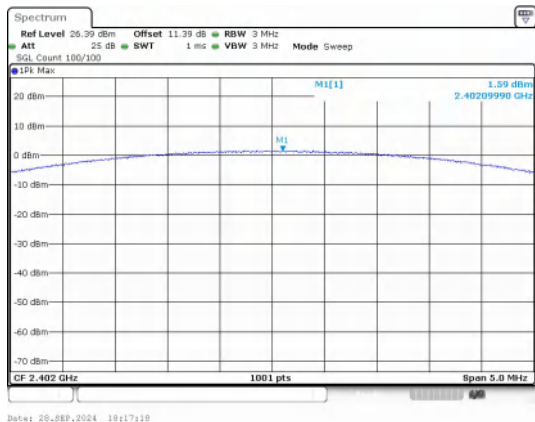




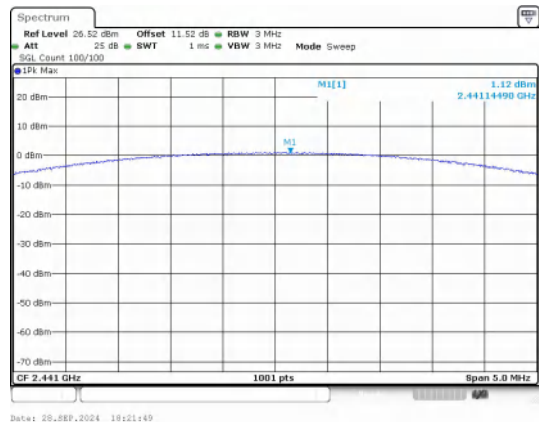
Peak Output Power  
 $\pi/4$ DQPSK\_Channel 39



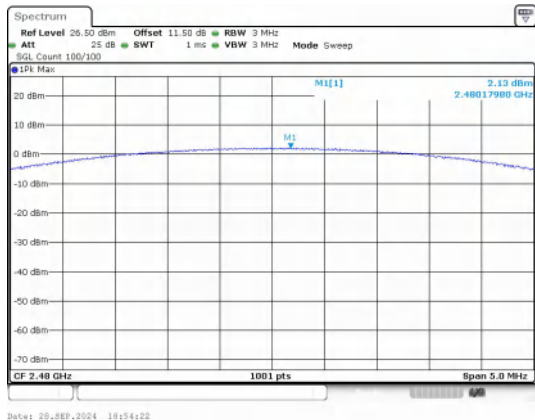
Peak Output Power  
 $\pi/4$ DQPSK\_Channel 78



Peak Output Power  
8DPSK\_Channel 0



Peak Output Power  
8DPSK\_Channel 39



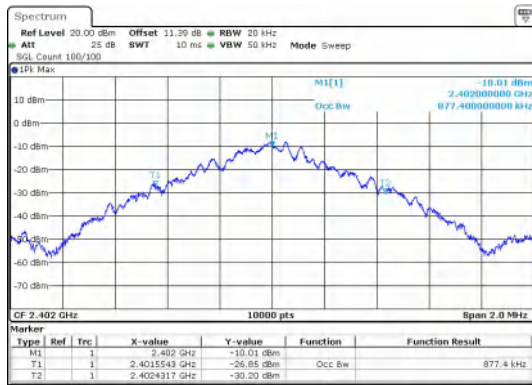
Peak Output Power  
8DPSK\_Channel 78

# 5) 99% Bandwidth

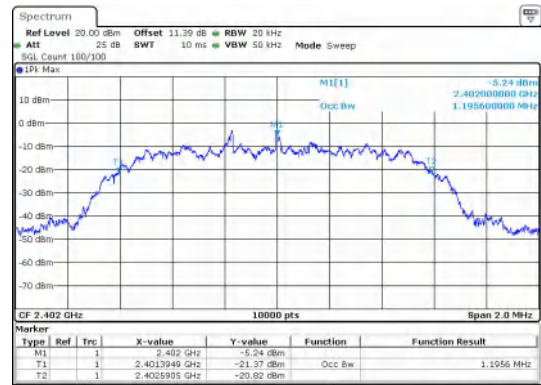
## Test Result

Modulation	Channel	Center Frequency (MHz)	99% BW (MHz)
GFSK	0	2402	0.87740
	39	2441	0.88200
	78	2480	0.88940
$\pi/4$ DQPSK	0	2402	1.1956
	39	2441	1.2150
	78	2480	1.2182
8DPSK	0	2402	1.1702
	39	2441	1.1800
	78	2480	1.1828

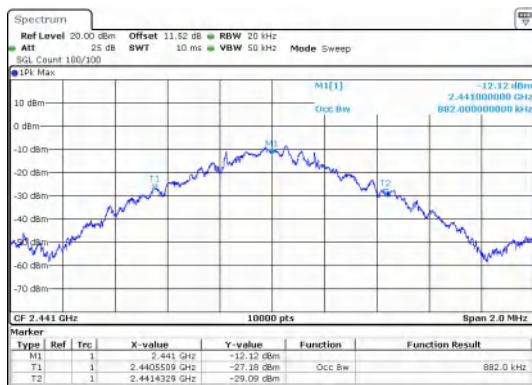
## Test Graphs



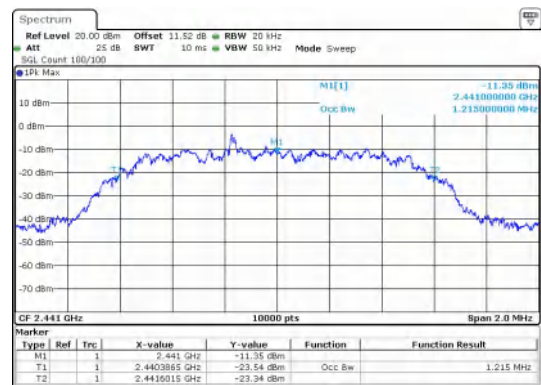
GFSK\_DH5\_Channel 0



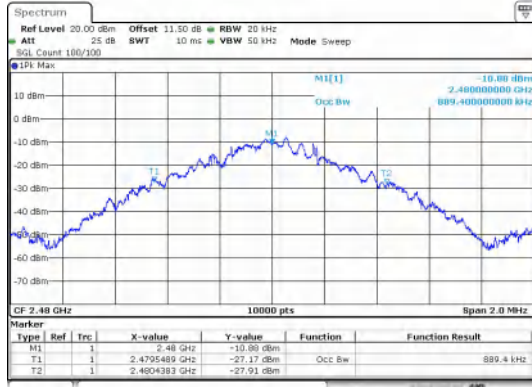
$\pi/4$ DQPSK\_2-DH5\_Channel 0



GFSK\_DH5\_Channel 39

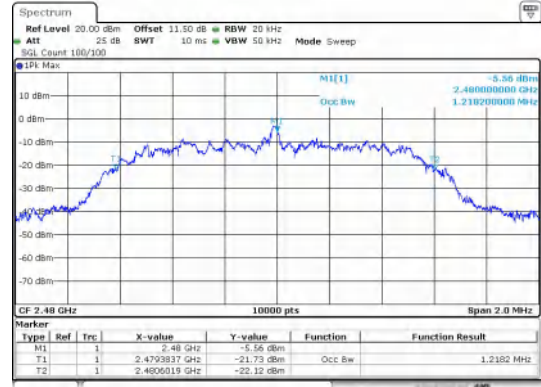


$\pi/4$ DQPSK\_2-DH5\_Channel 39



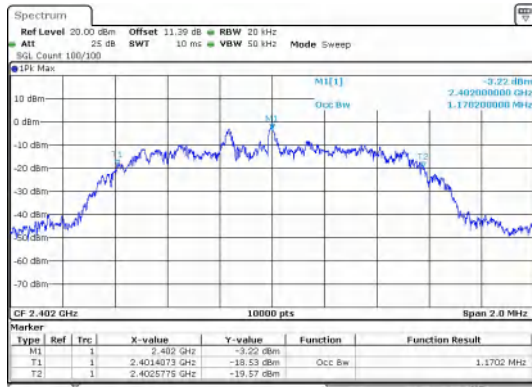
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GFSK\_DH5\_Channel 78



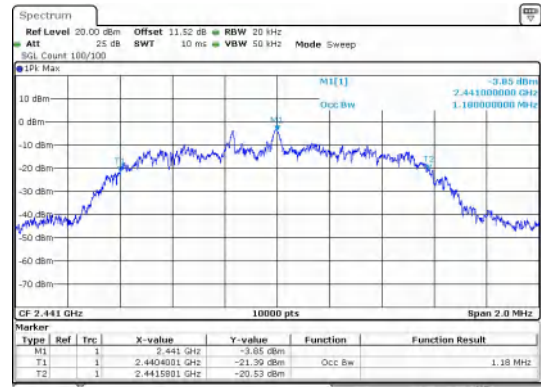
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$\pi/4$ DQPSK\_2-DH5\_Channel 78



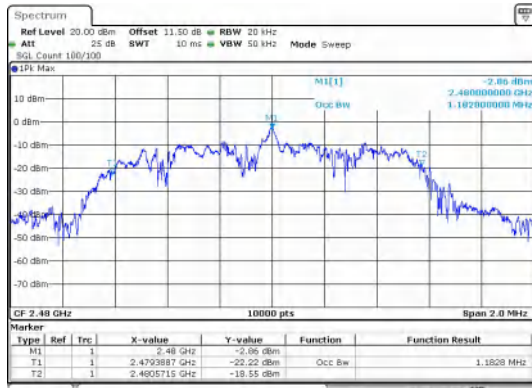
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8DPSK\_3-DH5\_Channel 0



Date: 28.SEP.2024 18:21:12

8DPSK\_3-DH5\_Channel 39



Date: 28.SEP.2024 18:53:45

8DPSK\_3-DH5\_Channel 78

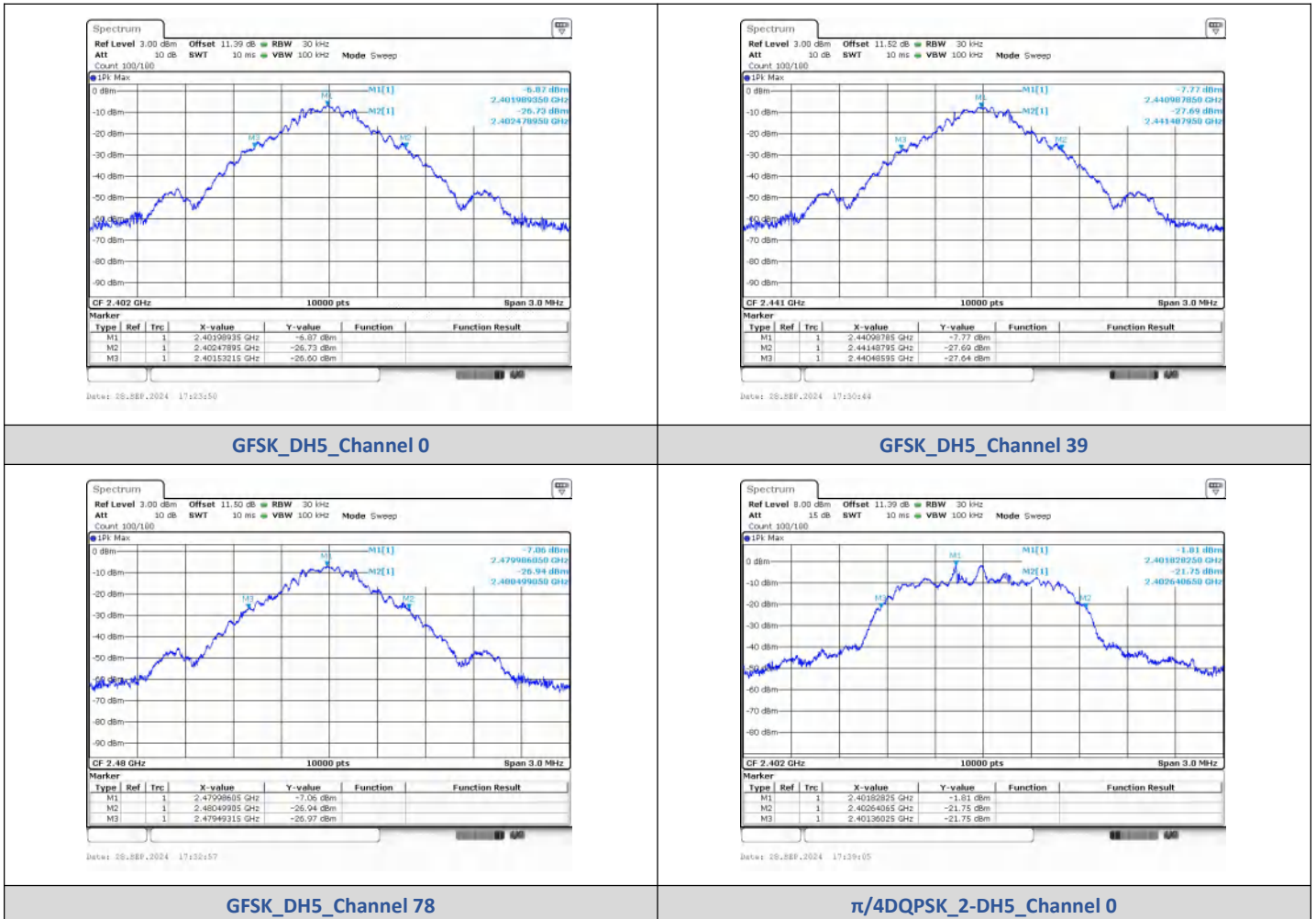


## 6) 20dB Bandwidth

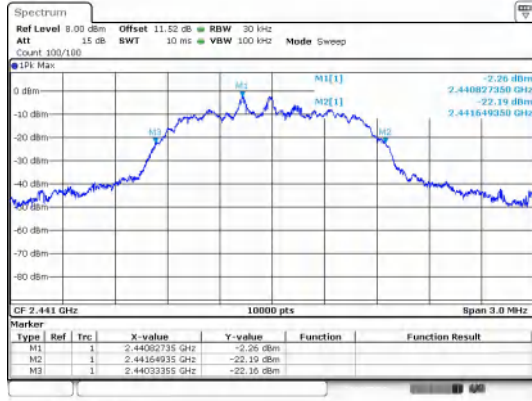
### Test Result

Modulation	Channel	Center Frequency (MHz)	20 dB Bandwidth (MHz)
GFSK	0	2402 MHz	0.9500
	39	2441 MHz	1.000
	78	2480 MHz	1.010
$\pi/4$ DQPSK	0	2402 MHz	1.280
	39	2441 MHz	1.320
	78	2480 MHz	1.320
8DPSK	0	2402 MHz	1.270
	39	2441 MHz	1.310
	78	2480 MHz	1.290

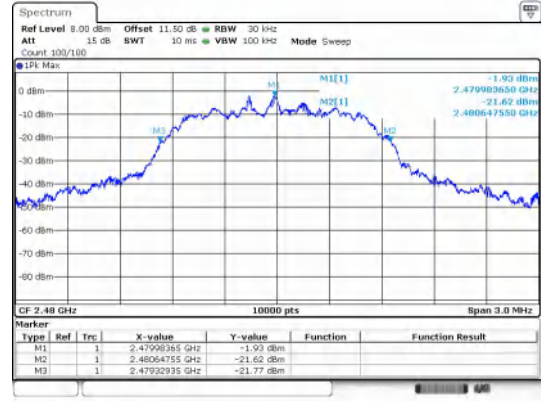
### Test Graphs



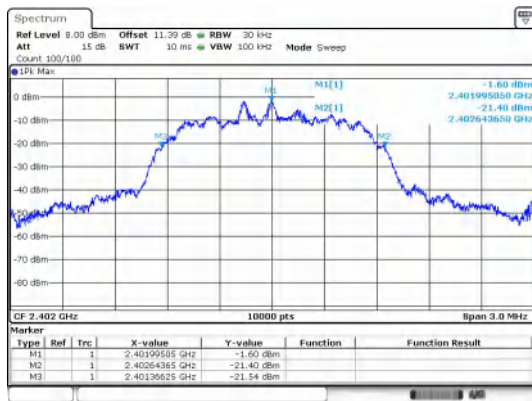




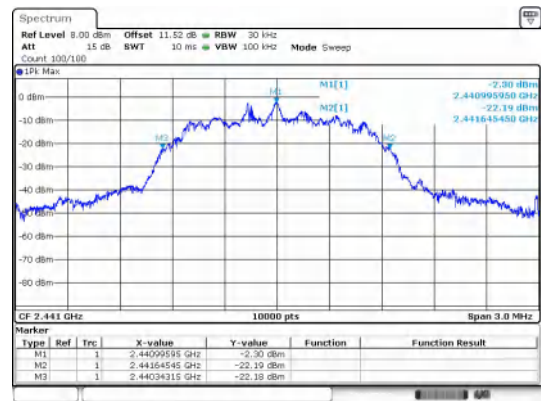
$\pi/4$ DQPSK\_2-DH5\_Channel 39



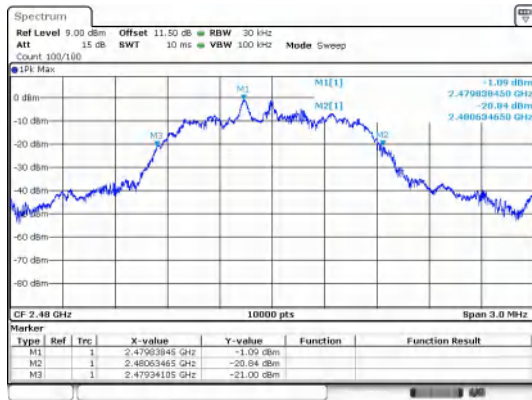
$\pi/4$ DQPSK\_2-DH5\_Channel 78



8DPSK\_3-DH5\_Channel 30



8DPSK\_3-DH5\_Channel 39



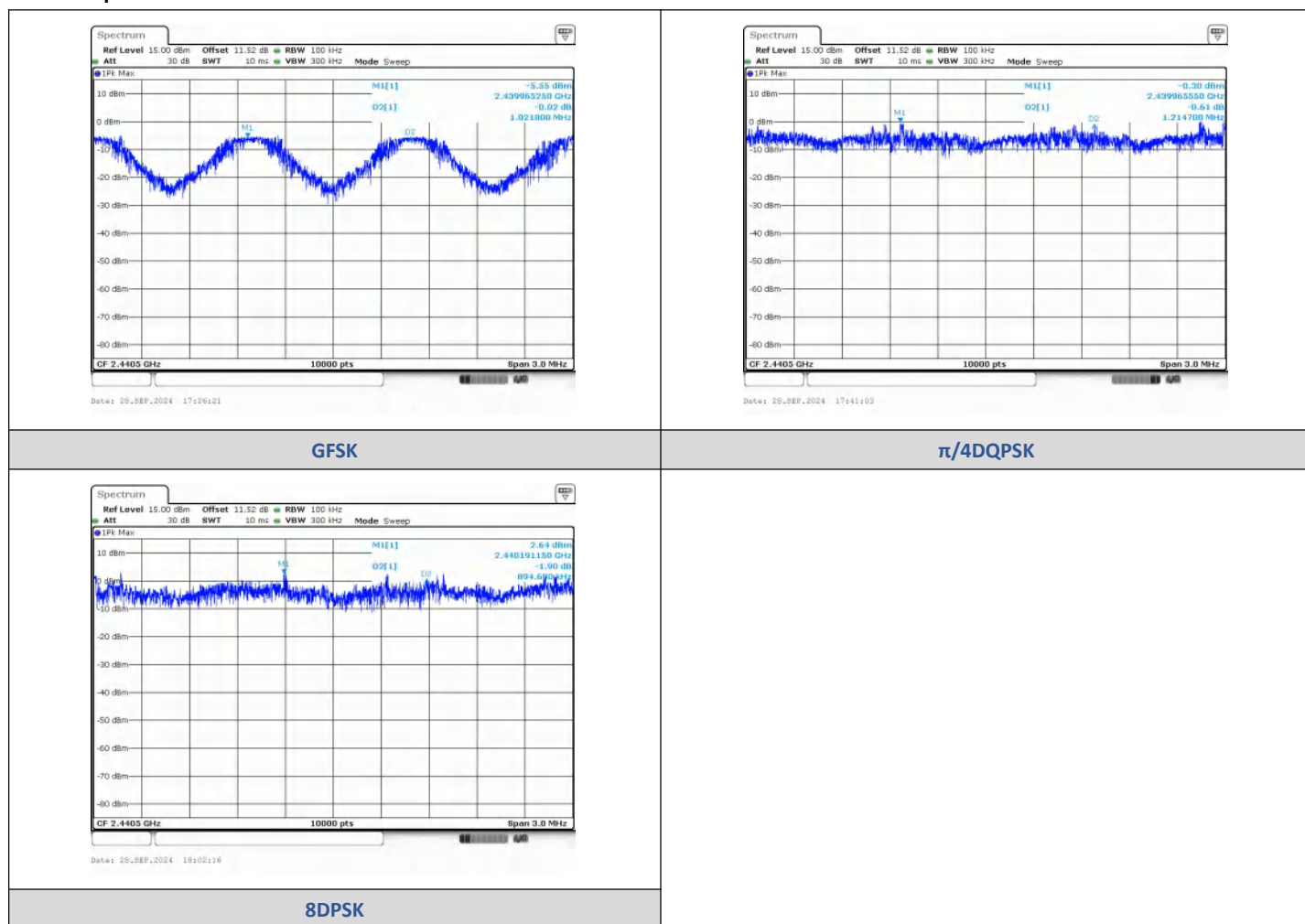
8DPSK\_3-DH5\_Channel 78

## 7) Carrier Frequencies Separation

### Test Result

Modulation	Packet	Left Center frequency (MHz)	Right Center frequency (MHz)	Hopping Frequency Separation (MHz)	Limit (MHz)	Result
GFSK	DH5	2439.9653	2440.9871	1.0218	1.010	PASS
$\pi/4$ DQPSK	2-DH5	2439.9655	2441.1802	1.2147	0.853	PASS
8DPSK	3-DH5	2440.1912	2441.0858	0.8946	0.873	PASS

### Test Graphs



## 8) Conducted Out Of Band Emission

### Test Result

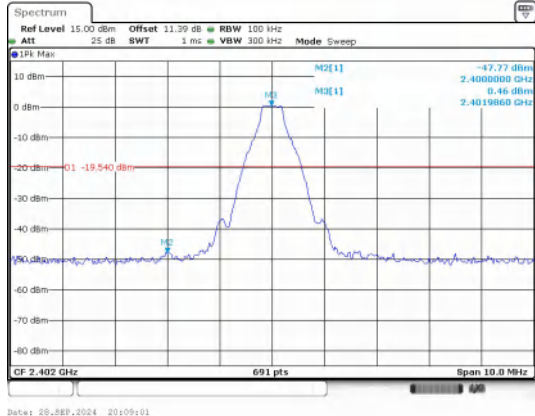
#### Non-Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	0	2400.00	-47.769	-19.54	-28.229	PASS
			9608.08	-44.763	-19.54	-25.223	PASS
		39	9763.72	-43.408	-19.82	-23.588	PASS
		78	2483.50	-50.205	-19.15	-31.055	PASS
			9920.20	-43.388	-19.15	-24.238	PASS
$\pi/4$ DQPSK	2-DH5	0	2400.00	-48.069	-19.6	-28.469	PASS
			9608.08	-44.574	-19.6	-24.974	PASS
		39	9763.72	-42.722	-19.73	-22.992	PASS
		78	2483.50	-50.021	-19.14	-30.881	PASS
			9920.20	-42.920	-19.14	-23.780	PASS
8DPSK	3-DH5	0	2400.00	-47.897	-19.37	-28.527	PASS
			9608.08	-45.226	-19.37	-25.856	PASS
		39	9763.72	-44.019	-19.77	-24.249	PASS
		78	2483.50	-49.817	-18.82	-30.997	PASS
			9920.20	-43.825	-18.82	-25.005	PASS

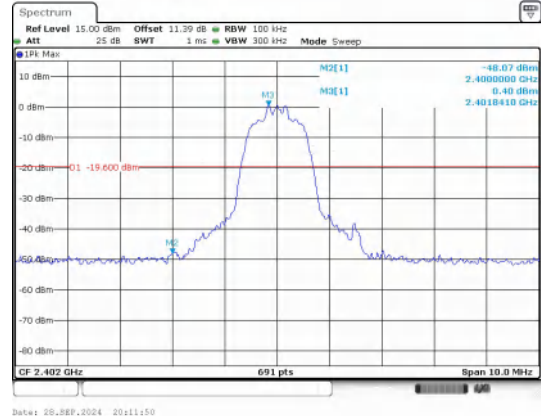
#### Hopping

Modulation	Packet	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
GFSK	DH5	Hopping	2398.71	-48.820	-24.63	-24.190	PASS
			2400.00	-51.334	-24.63	-26.704	PASS
			2483.50	-49.251	-24.71	-24.541	PASS
$\pi/4$ DQPSK	2-DH5		2398.94	-48.072	-19.24	-28.832	PASS
			2400.00	-49.475	-19.24	-30.235	PASS
			2483.50	-48.294	-19.27	-29.024	PASS
8DPSK	3-DH5		2395.79	-47.959	-18.89	-29.069	PASS
			2400.00	-50.118	-18.89	-31.228	PASS
			2483.50	-49.721	-20.59	-29.131	PASS

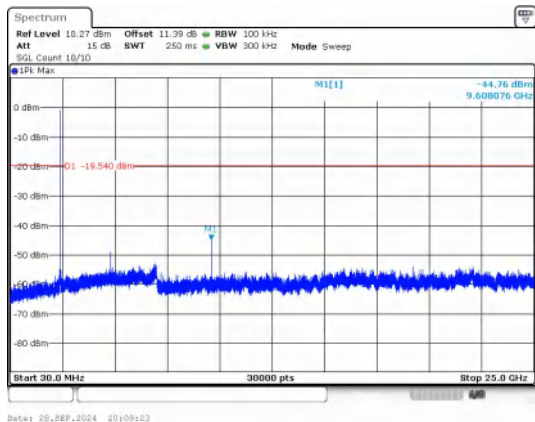
### Test Graphs



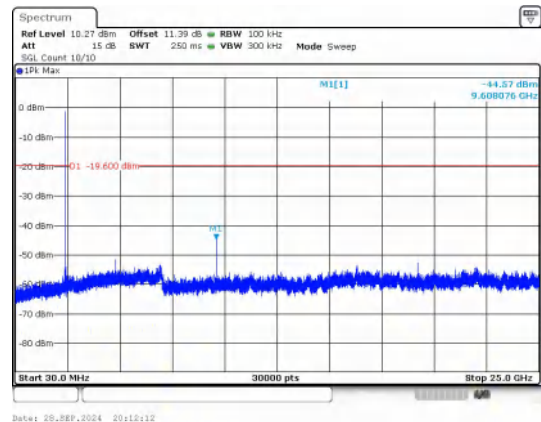
**Out Of Band Emission  
GFSK\_DH5\_Channel 0**



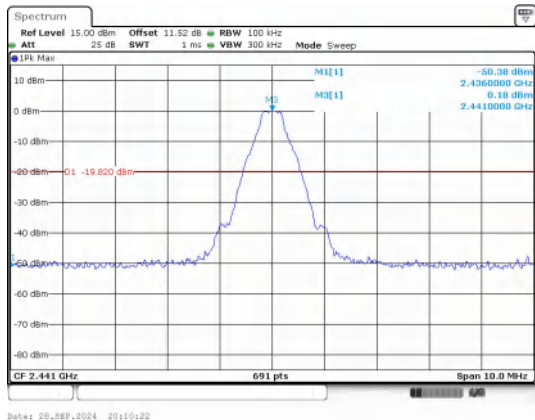
**Out Of Band Emission  
 $\pi/4$ DQPSK\_2-DH5\_Channel 0**



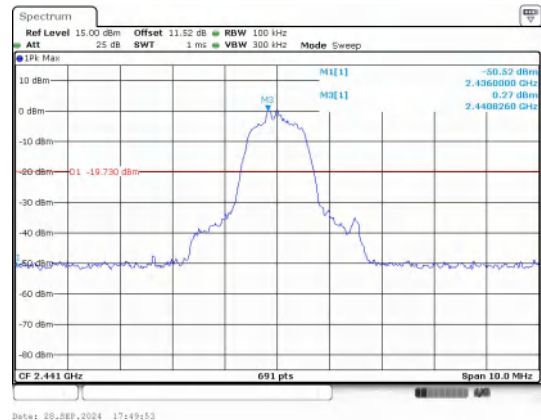
**30.0 MHz - 25000.0 MHz  
GFSK\_DH5\_Channel 0**



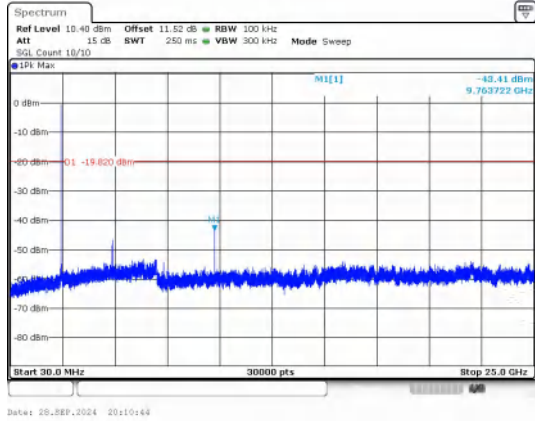
**30.0 MHz - 25000.0 MHz  
 $\pi/4$ DQPSK\_2-DH5\_Channel 0**



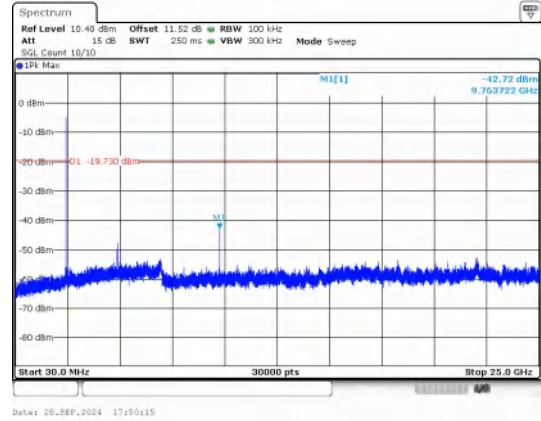
**Out Of Band Emission  
GFSK\_DH5\_Channel 39**



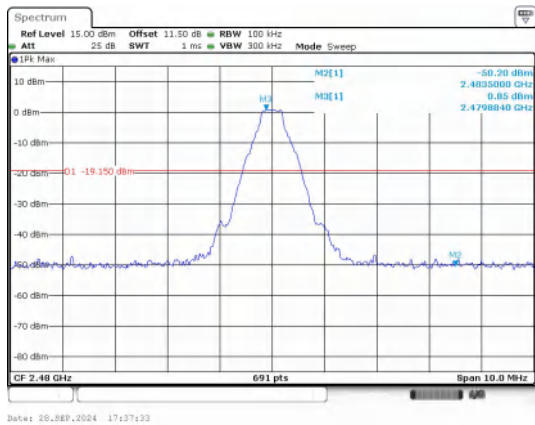
**Out Of Band Emission  
 $\pi/4$ DQPSK\_2-DH5\_Channel 39**



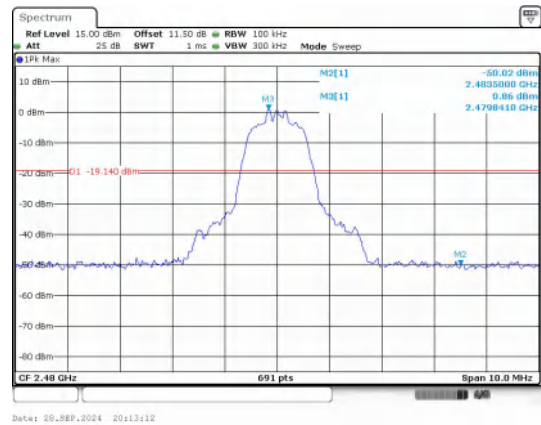
30.0 MHz - 25000.0 MHz  
GFSK\_DH5\_Channel 39



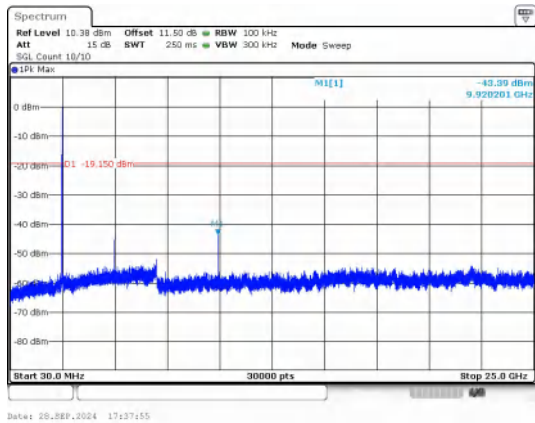
30.0 MHz - 25000.0 MHz  
 $\pi/4$ DQPSK\_2-DH5\_Channel 39



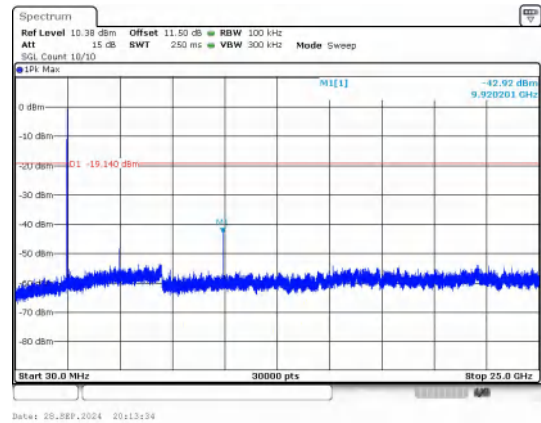
Out Of Band Emission  
GFSK\_DH5\_Channel 78



Out Of Band Emission  
 $\pi/4$ DQPSK\_2-DH5\_Channel 78

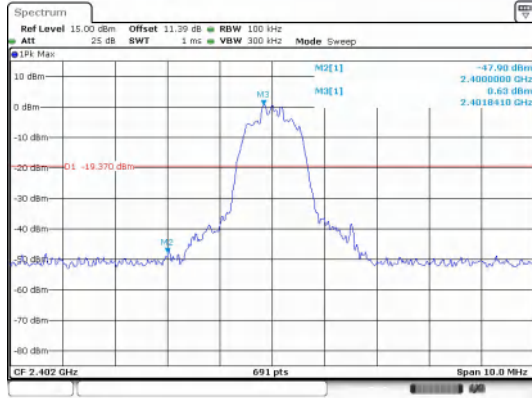


30.0 MHz - 25000.0 MHz  
GFSK\_DH5\_Channel 78



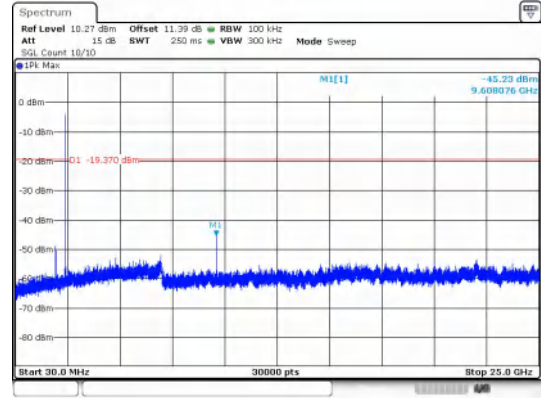
30.0 MHz - 25000.0 MHz  
 $\pi/4$ DQPSK\_2-DH5\_Channel 78





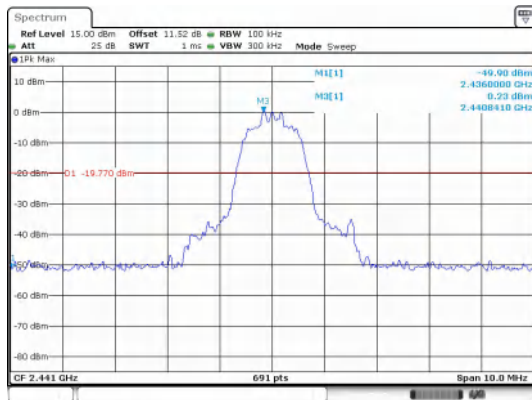
Date: 28\_SEP\_2024 18:18:00

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



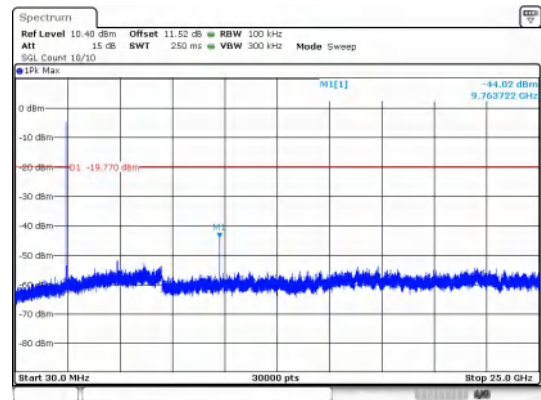
Date: 28\_SEP\_2024 18:18:22

**30.0 MHz - 25000.0 MHz**  
**8DPSK\_3-DH5\_Channel 0**



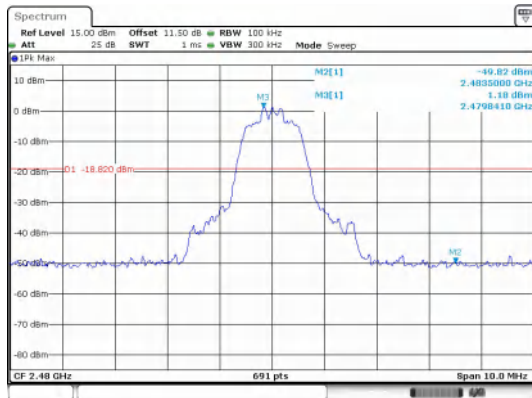
Date: 28\_SEP\_2024 18:22:25

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



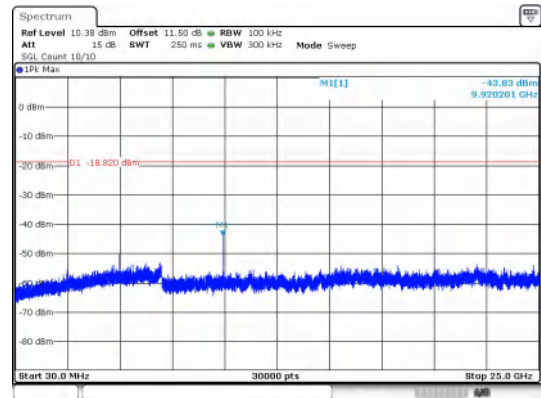
Date: 28\_SEP\_2024 18:22:47

**30.0 MHz - 25000.0 MHz**  
**8DPSK\_3-DH5\_Channel 39**



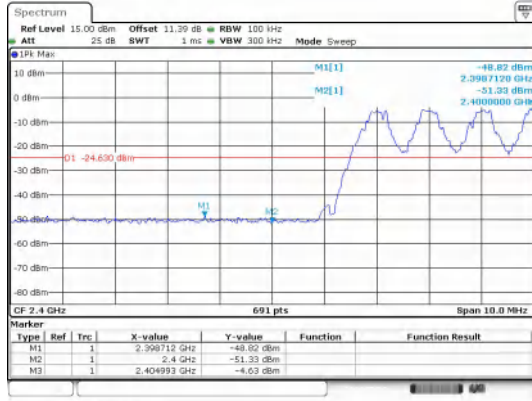
Date: 28\_SEP\_2024 18:55:03

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



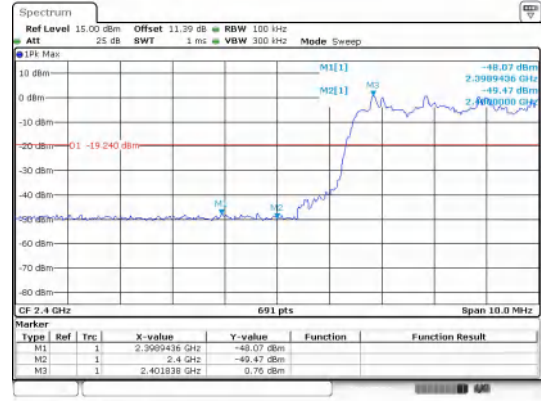
Date: 28\_SEP\_2024 18:55:25

**30.0 MHz - 25000.0 MHz**  
**8DPSK\_3-DH5\_Channel 78**



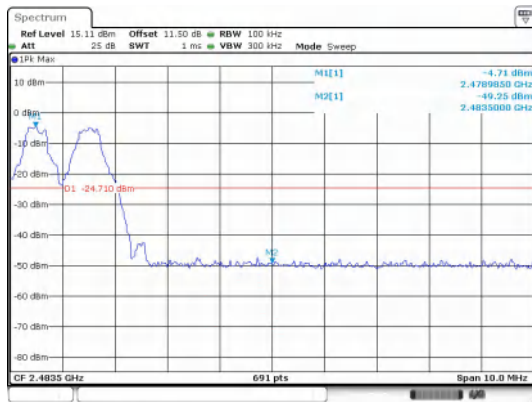
Date: 28\_SEP\_2024 17:19:13

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



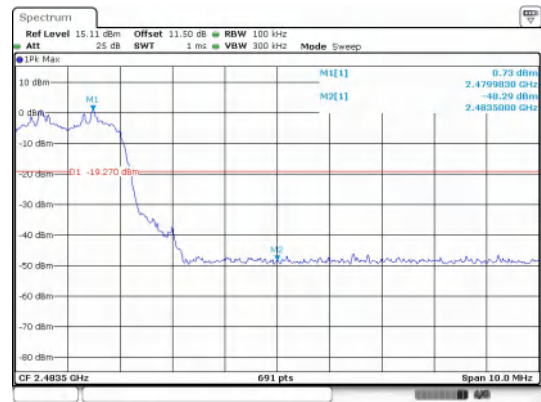
Date: 28\_SEP\_2024 17:44:51

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



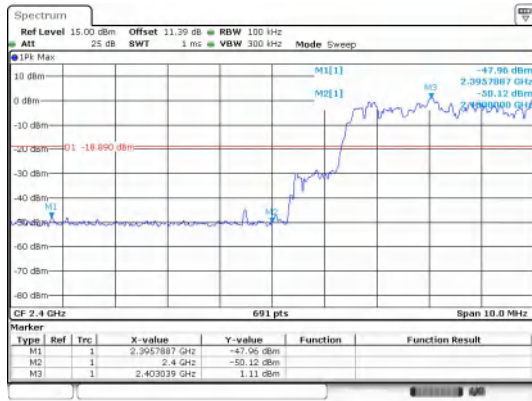
Date: 28\_SEP\_2024 17:12:38

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



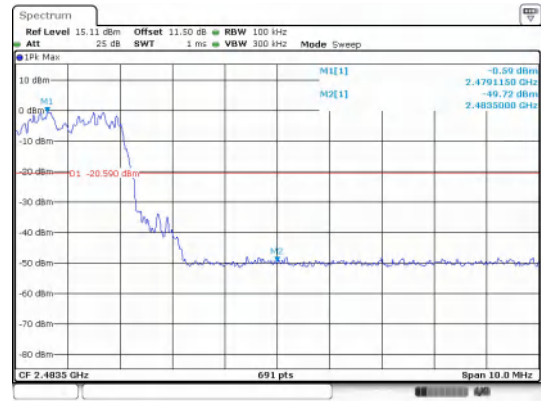
Date: 28\_SEP\_2024 17:47:55

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



Date: 28\_SEP\_2024 18:04:41

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



Date: 28\_SEP\_2024 18:04:57

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