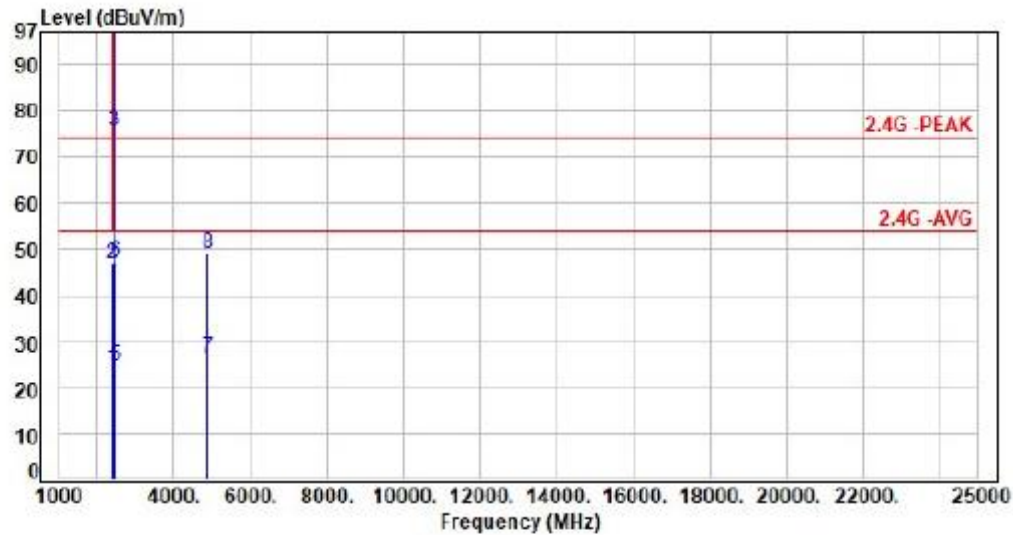




Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 3, CH39		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-31.37	55.83	24.46	54.00	-29.54	Average	216	164	P
2	2390.00	-31.37	78.33	46.96	74.00	-27.04	Peak	216	164	P
3	2441.00	-31.45	107.06	75.61	200.00	-124.39	Average	216	164	P
4	2441.00	-31.45	129.56	98.11	200.00	-101.89	Peak	216	164	P
5	2483.50	-31.51	56.21	24.70	54.00	-29.30	Average	216	164	P
6	2483.50	-31.51	78.71	47.20	74.00	-26.80	Peak	216	164	P
7	4882.00	-23.84	50.51	26.67	54.00	-27.33	Average	100	126	P
8	4882.00	-23.84	73.01	49.17	74.00	-24.83	Peak	100	126	P

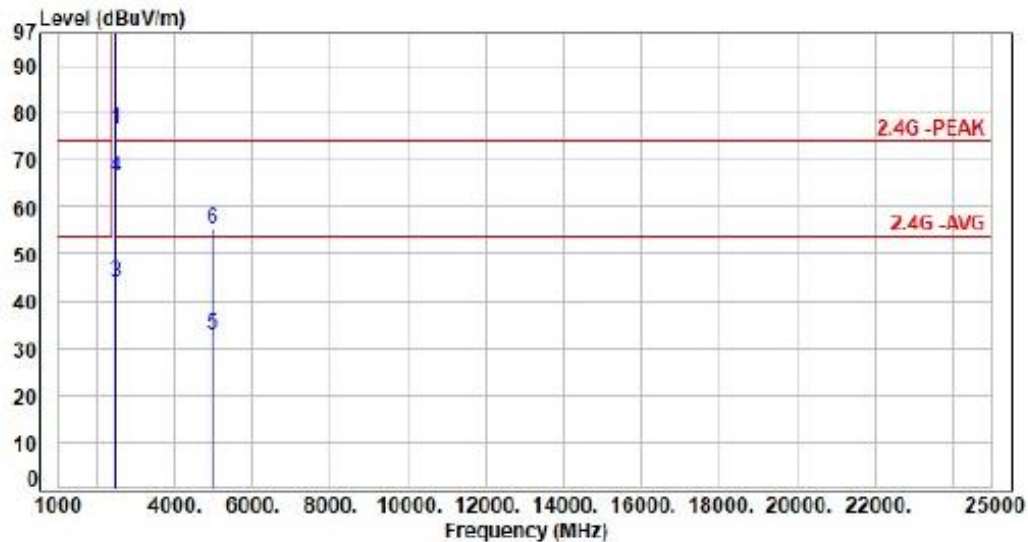
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: VERTICAL
Test Mode	: Mode 3, CH78		:



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2480.00	-31.50	108.36	76.86	200.00	-123.14	Average	100	352	P
2	2480.00	-31.50	130.86	99.36	200.00	-100.64	Peak	100	352	P
3	2483.50	-31.51	75.35	43.84	54.00	-10.16	Average	100	352	P
4	2483.50	-31.51	97.85	66.34	74.00	-7.66	Peak	100	352	P
5	4960.00	-23.60	56.56	32.96	54.00	-21.04	Average	366	209	P
6	4960.00	-23.60	79.06	55.46	74.00	-18.54	Peak	366	209	P

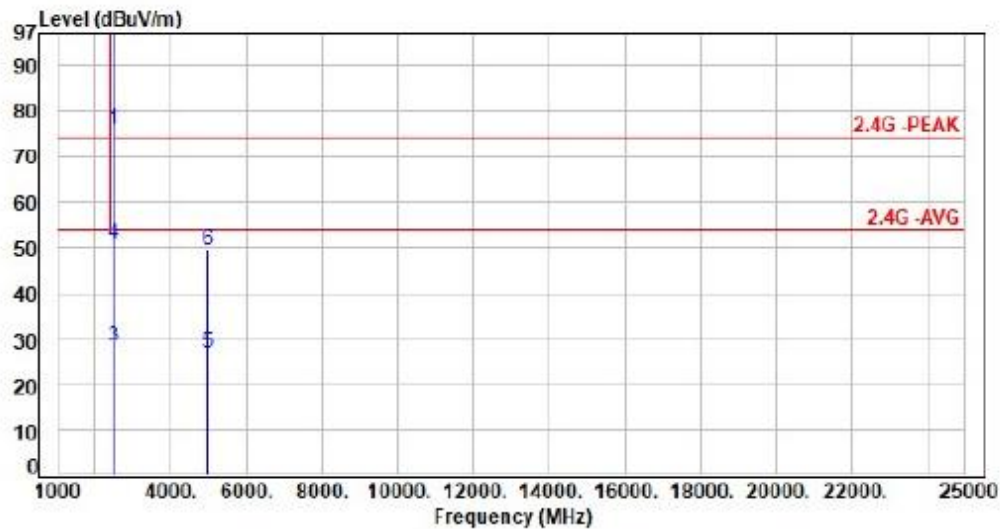
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 3, CH78		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2480.00	-31.50	107.43	75.93	200.00	-124.07	Average	230	165	P
2	2480.00	-31.50	129.93	98.43	200.00	-101.57	Peak	230	165	P
3	2483.50	-31.51	59.88	28.37	54.00	-25.63	Average	230	165	P
4	2483.50	-31.51	82.38	50.87	74.00	-23.13	Peak	230	165	P
5	4960.00	-23.60	50.59	26.99	54.00	-27.01	Average	100	127	P
6	4960.00	-23.60	73.09	49.49	74.00	-24.51	Peak	100	127	P

Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



7.7 Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.09000 – 0.11000	16.42000 – 16.42300	399.9 – 410.0	4.500 – 5.250
0.49500 – 0.505**	16.69475 – 16.69525	608.0 – 614.0	5.350 – 5.460
2.17350 – 2.19050	16.80425 – 16.80475	960.0 – 1240.0	7.250 – 7.750
4.12500 – 4.12800	25.50000 – 25.67000	1300.0 – 1427.0	8.025 – 8.500
4.17725 – 4.17775	37.50000 – 38.25000	1435.0 – 1626.5	9.000 – 9.200
4.20725 – 4.20775	73.00000 – 74.60000	1645.5 – 1646.5	9.300 – 9.500
6.21500 – 6.21800	74.80000 – 75.20000	1660.0 – 1710.0	10.600 – 12.700
6.26775 – 6.26825	108.00000 – 121.94000	1718.8 – 1722.2	13.250 – 13.400
6.31175 – 6.31225	123.00000 – 138.00000	2200.0 – 2300.0	14.470 – 14.500
8.29100 – 8.29400	149.90000 – 150.05000	2310.0 – 2390.0	15.350 – 16.200
8.36200 – 8.36600	156.52475 – 156.52525	2483.5 – 2500.0	17.700 – 21.400
8.37625 – 8.38675	156.70000 – 156.90000	2655.0 – 2900.0	22.010 – 23.120
8.41425 – 8.41475	162.01250 – 167.17000	3260.0 – 3267.0	23.600 – 24.000
12.29000 – 12.29300	167.72000 – 173.20000	3332.0 – 3339.0	31.200 – 31.800
12.51975 – 12.52025	240.00000 – 285.00000	3345.8 – 3358.0	36.430 – 36.500
12.57675 – 12.57725	322.00000 – 335.40000	3600.0 – 4400.0	Above 38.6
13.36000 – 13.41000			

** : Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz



8. Test of Conducted Spurious Emission

8.1 Test Limit

According to the methods defined in ANSI C63.10-2013 Section 7.8.8

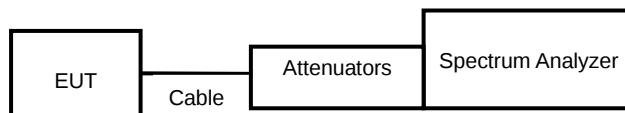
Below –30dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

8.2 Test Procedure

According to the methods defined in ANSI C63.10-2013

- The transmitter output was connected to the spectrum analyzer via a low loss cable.
- Set RBW of spectrum analyzer to 100 KHz and VBW of spectrum analyzer to 300 KHz with convenient frequency span including 100 KHz bandwidth from band edge.
- The band edges was measured and recorded.

8.3 Test Setup Layout

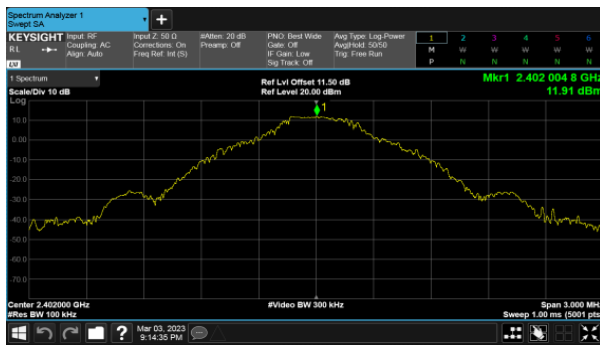


8.4 Test Result and Data

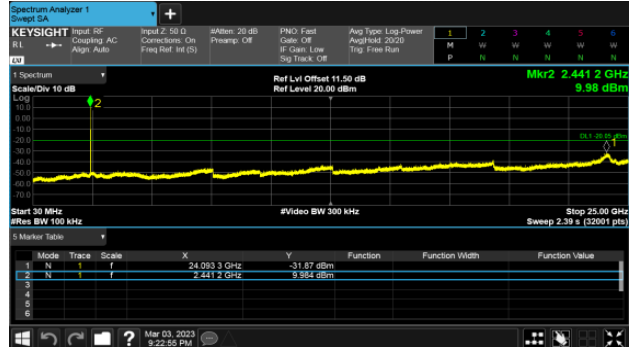
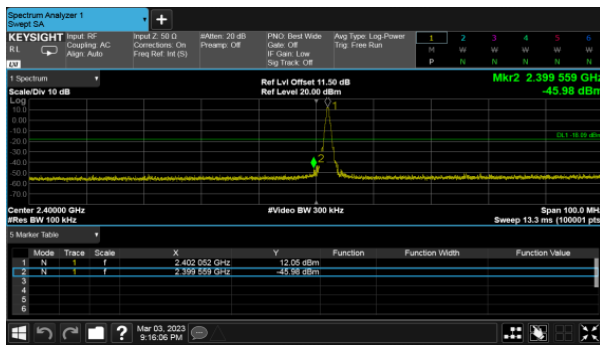
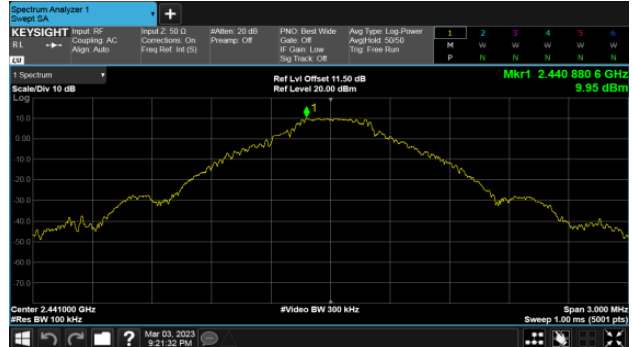
Note: Test plots refer to the following pages.



Modulation Type: GFSK (1Mbps)
Channel: 00

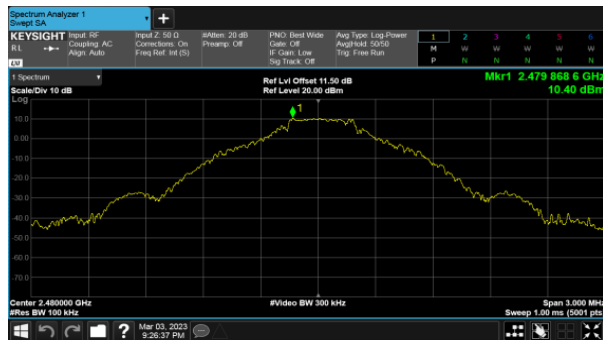


Modulation Type: GFSK (1Mbps)
Channel: 39

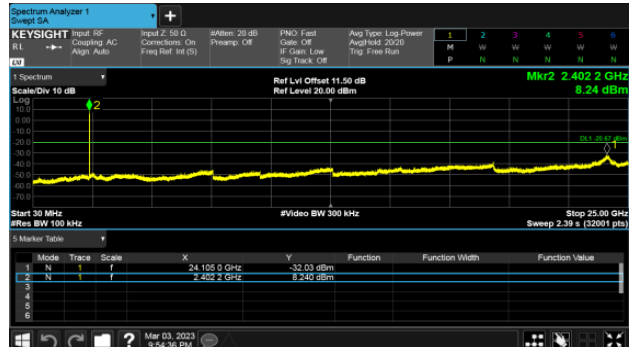
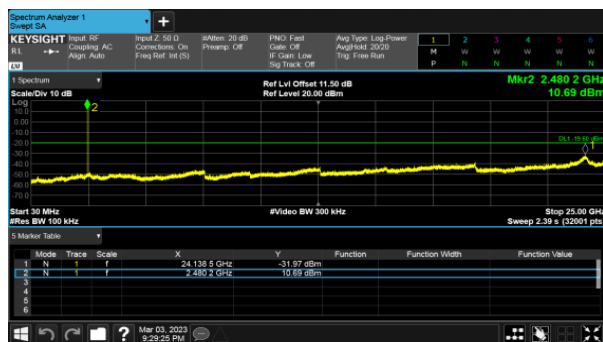
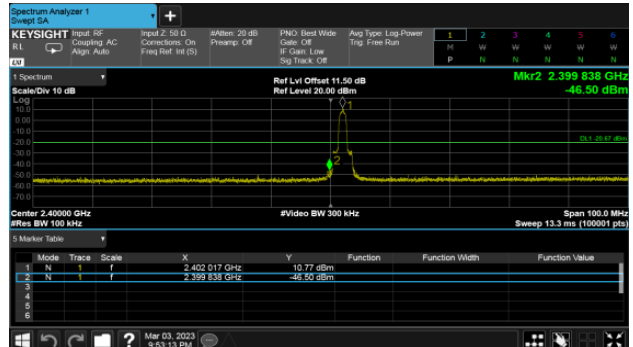
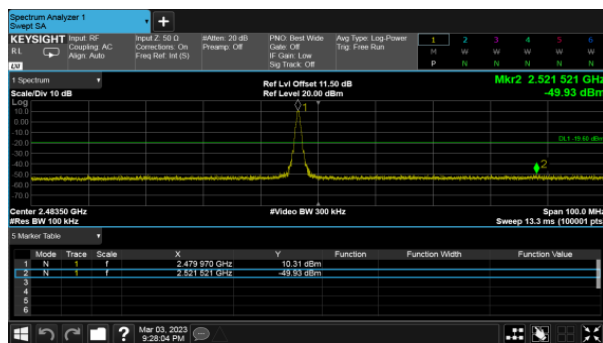
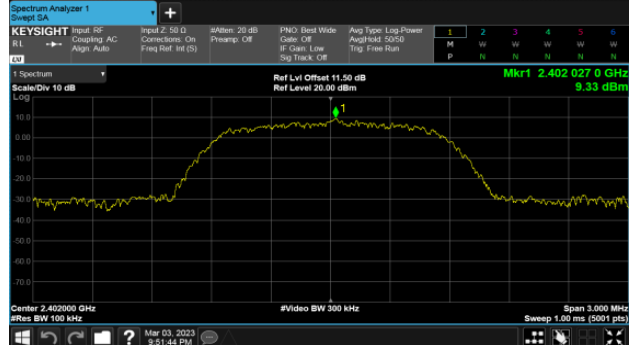




Modulation Type: GFSK (1Mbps)
Channel: 78

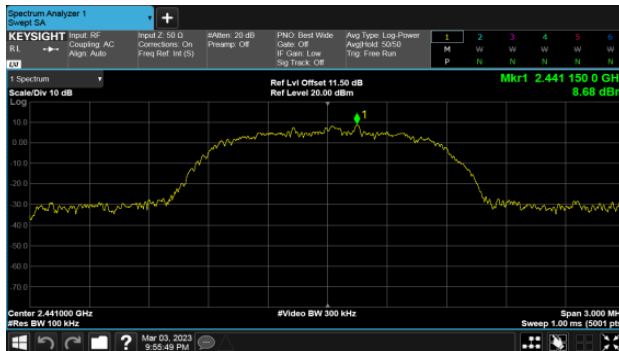


Modulation Type: $\pi/4$ -DQPSK (2Mbps)
Channel: 00

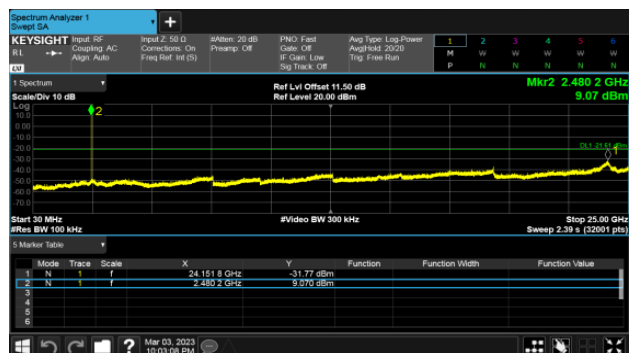
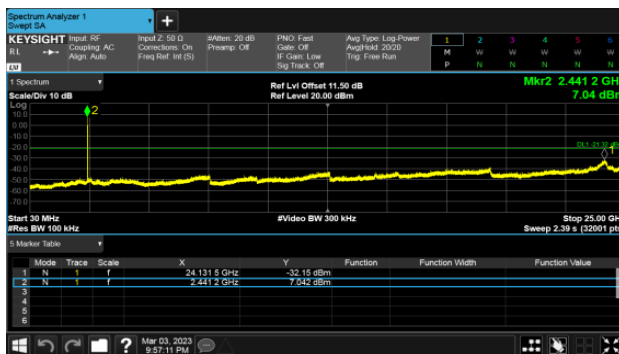
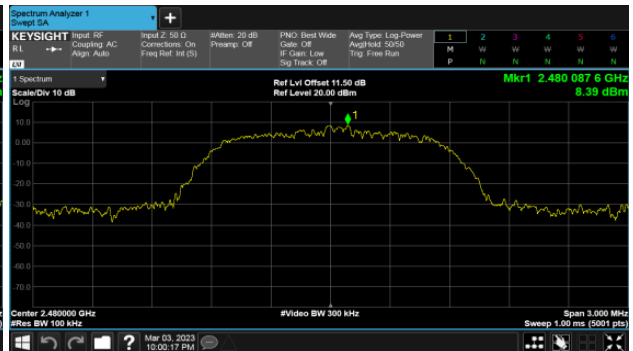




Modulation Type: $\pi/4$ -DQPSK (2Mbps)
Channel: 39

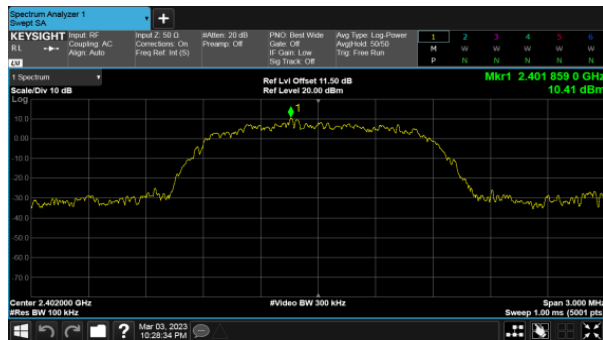


Modulation Type: $\pi/4$ -DQPSK (2Mbps)
Channel: 78

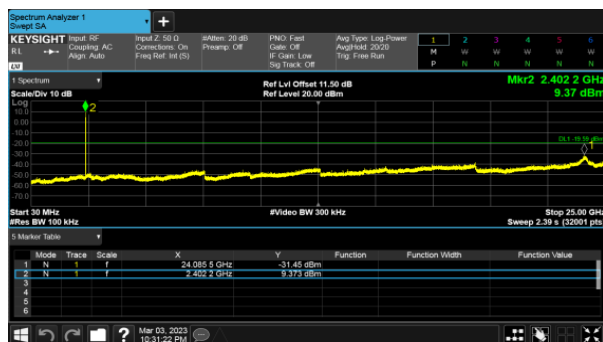
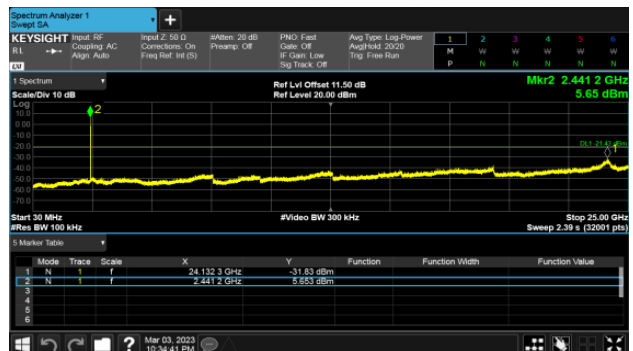
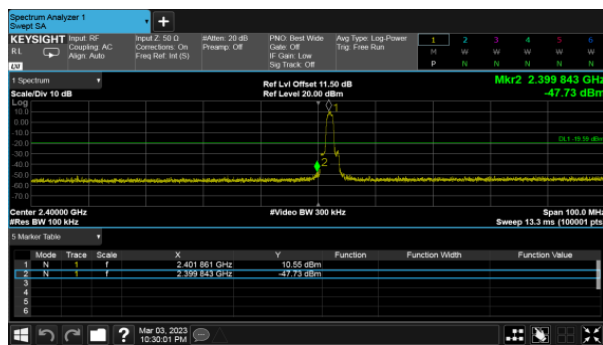
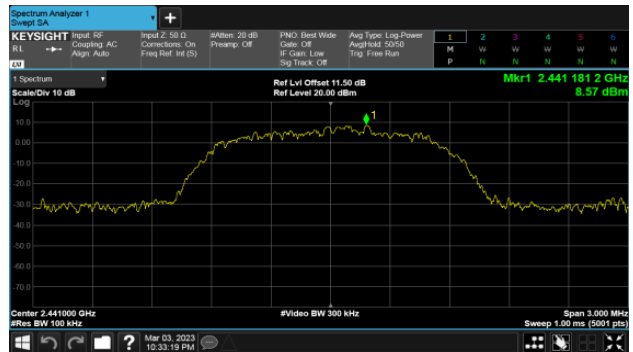




Modulation Type: 8DPSK (3Mbps)
Channel: 00

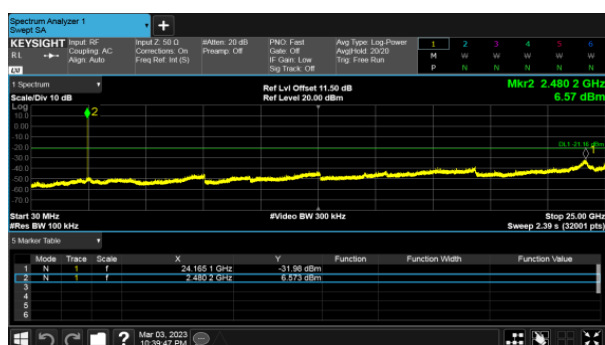
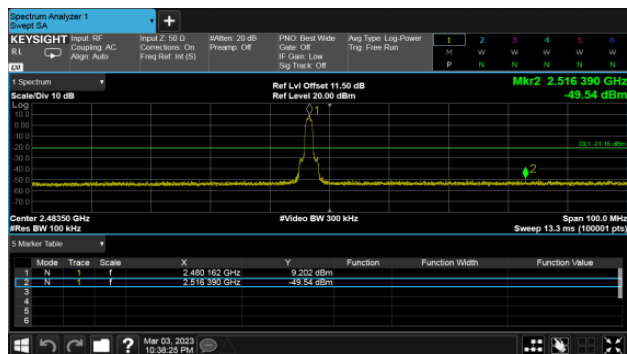
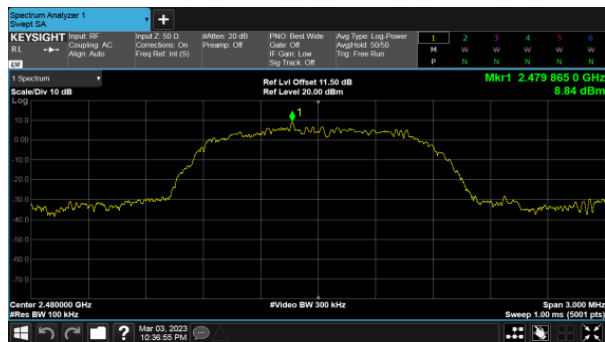


Modulation Type: 8DPSK (3Mbps)
Channel: 39



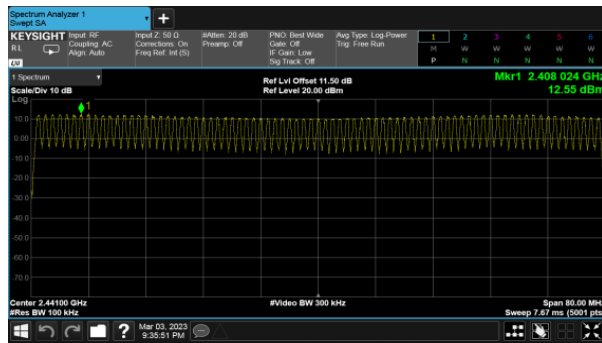


Modulation Type: 8DPSK (3Mbps)
Channel: 78

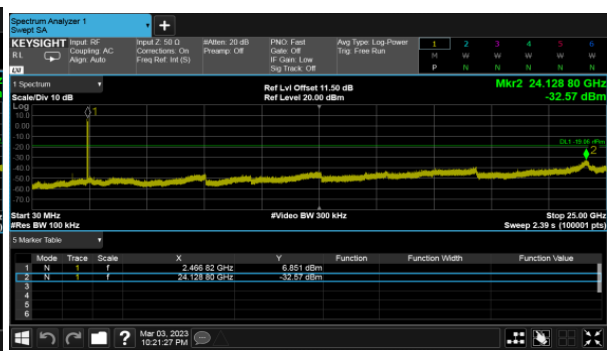
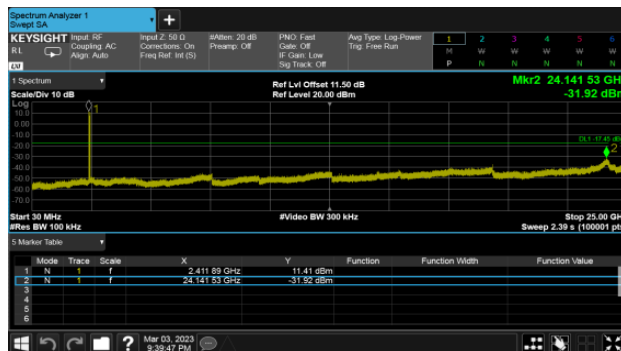
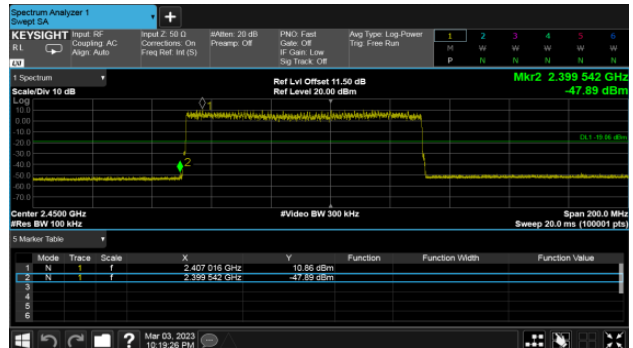
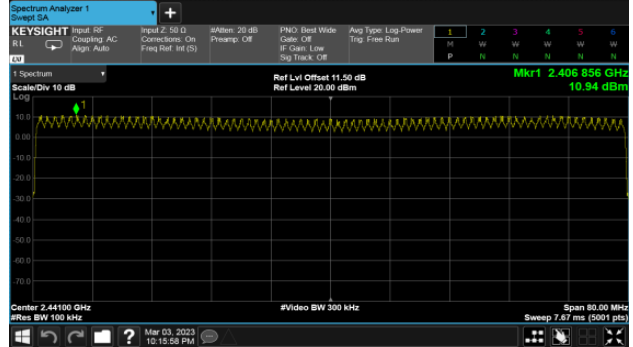




Hopping Mode: Modulation Type: GFSK

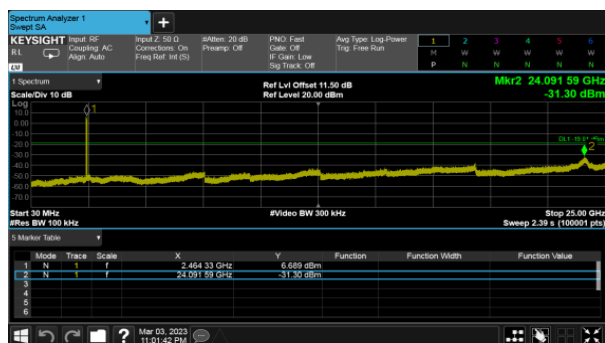
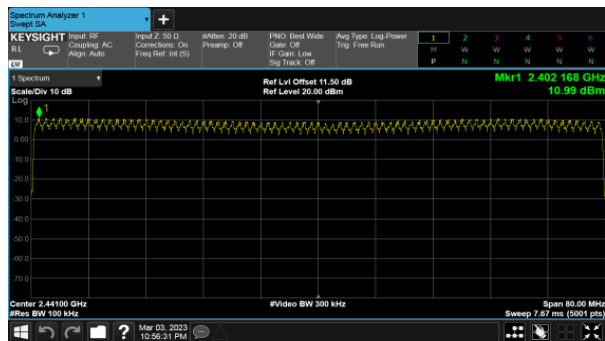


Modulation Type: $\pi/4$ -DQPSK





Modulation Type: 8DPSK





9. 20dB Bandwidth Measurement Data

9.1 Test Limit

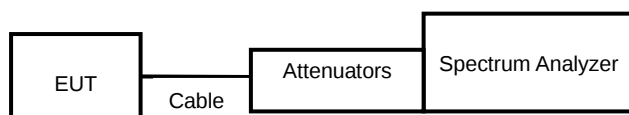
For reference data.

9.2 Test Procedures

According to the methods defined in ANSI C63.10-2013 Section 6.9

- The transmitter output was connected to the spectrum analyzer.
- Set RBW of spectrum analyzer to 1% to 5% of the 20dB Bandwidth and VBW to approximately three times RBW.
- The 20 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20 dB.

9.3 Test Setup Layout



9.4 Test Result and Data

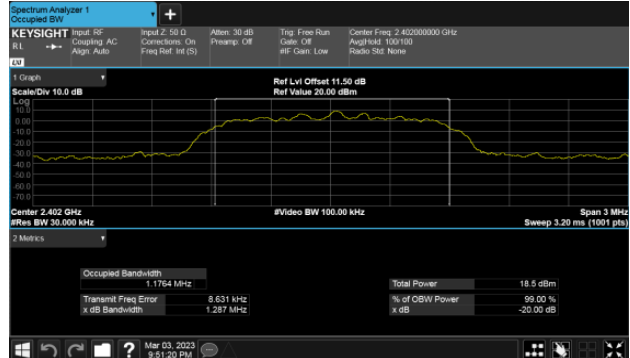
Modulation Type	Channel	Frequency (MHz)	20dB Bandwidth (MHz)	2/3 20dB Bandwidth (MHz)
GFSK	0	2402	0.998	0.665
	39	2441	1.024	0.683
	78	2480	1.013	0.675
$\pi/4$ -DQPSK	0	2402	1.287	0.858
	39	2441	1.289	0.859
	78	2480	1.287	0.858
8DPSK	0	2402	1.295	0.863
	39	2441	1.291	0.861
	78	2480	1.293	0.862



Modulation Type: GFSK (1Mbps)
Channel: 00



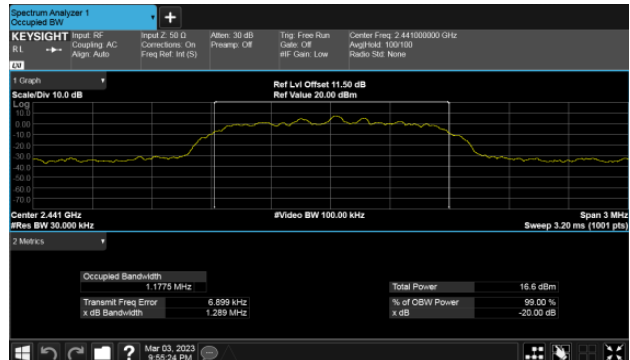
Modulation Type: $\pi/4$ -DQPSK (2Mbps)
Channel: 00



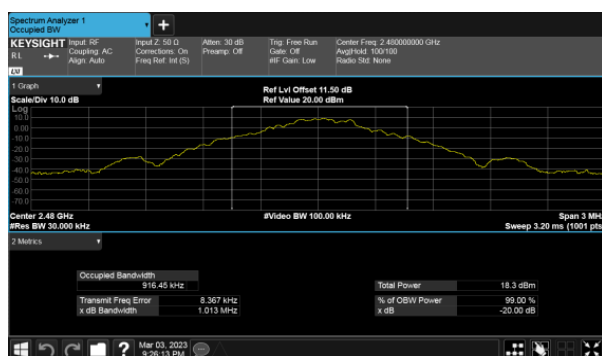
CH39



CH39



CH78



CH78





Modulation Type: 8DPSK (3Mbps)
Channel: 00



CH39



CH78





10. Carrier Frequency Separation

10.1 Test Limit

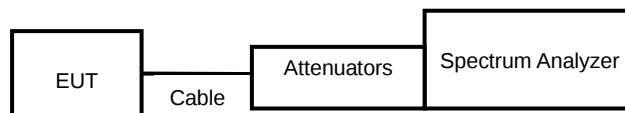
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

10.2 Test Procedures

According to the methods defined in ANSI C63.10-2013 Section 7.8.2

- The transmitter output was connected to the spectrum analyzer.
- Set RBW of spectrum analyzer to 300 KHz and VBW to 1000 KHz.
- By using the MaxHold function record the separation of two adjacent channels.
- Measure the frequency difference of these two adjacent channels.

10.3 Test Setup Layout

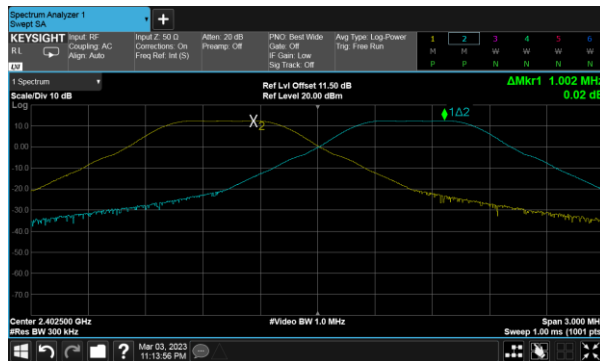


10.4 Test Result and Data

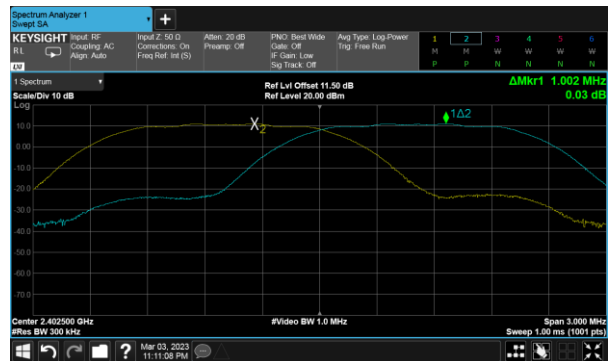
Modulation Type	Channel	Frequency (MHz)	Channel Separation (MHz)	Limit (MHz)
GFSK	0	2402	1.002	0.665
	39	2441	1.002	0.683
	78	2480	1.002	0.675
$\pi/4$ -DQPSK	0	2402	1.002	0.858
	39	2441	1.002	0.859
	78	2480	1.002	0.858
8DPSK	0	2402	1.002	0.863
	39	2441	1.002	0.861
	78	2480	1.002	0.862



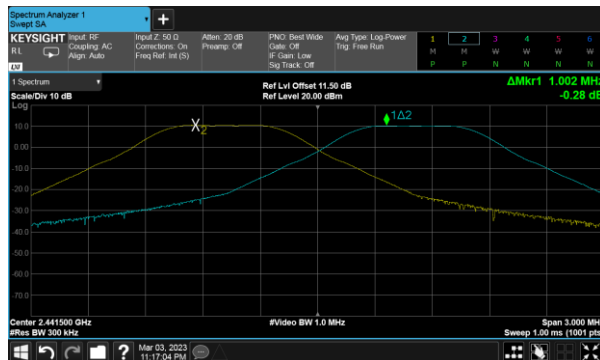
Modulation Type: GFSK (1Mbps)
Channel: 00



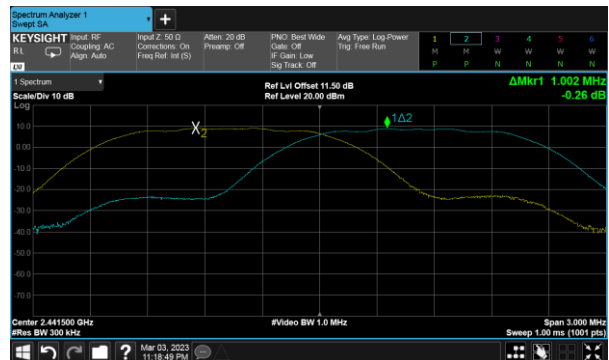
Modulation Type: $\pi/4$ -DQPSK (2Mbps)
Channel: 00



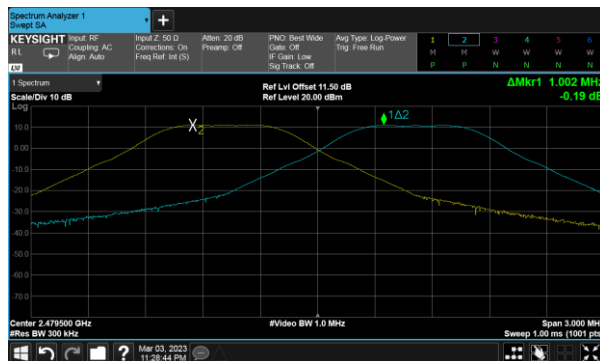
CH39



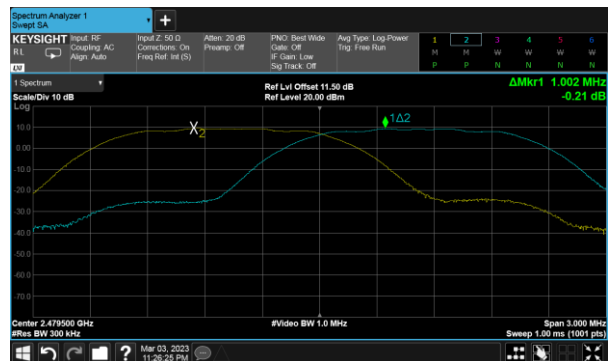
CH39



CH78

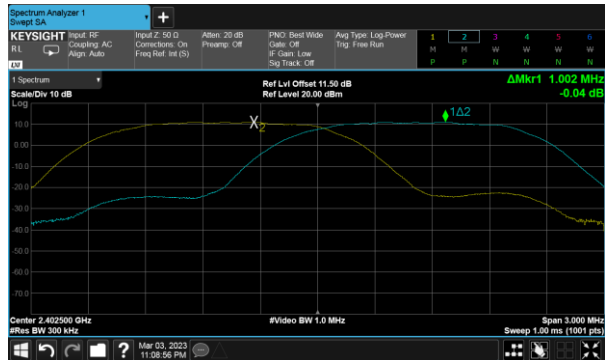


CH78

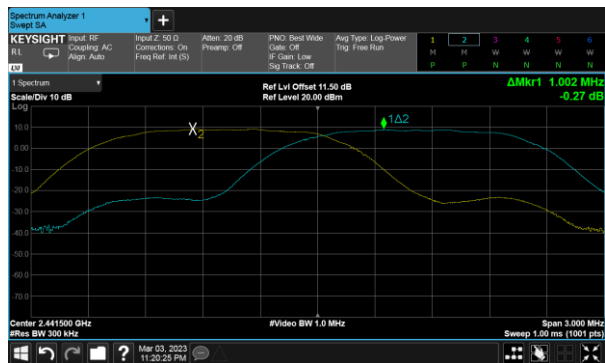




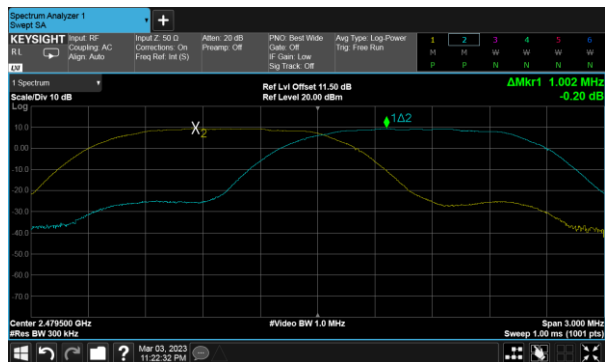
Modulation Type: 8DPSK (3Mbps)
Channel: 00



CH39



CH78





11. Dwell Time on each channel

11.1 Test Limit

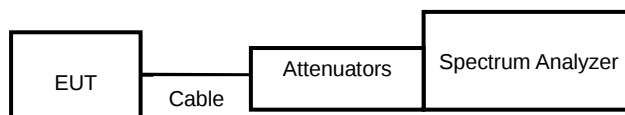
The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

11.2 Test Procedures

According to the methods defined in ANSI C63.10-2013 Section 7.8.4

1. The transmitter output was connected to the spectrum analyzer.
2. Adjust the center frequency to measure frequency, then set zero span mode.
3. Set RBW of spectrum analyzer to 300KHz and VBW to 1MHz.
4. Measure the time duration of one transmission on the measured frequency.

11.3 Test Setup Layout

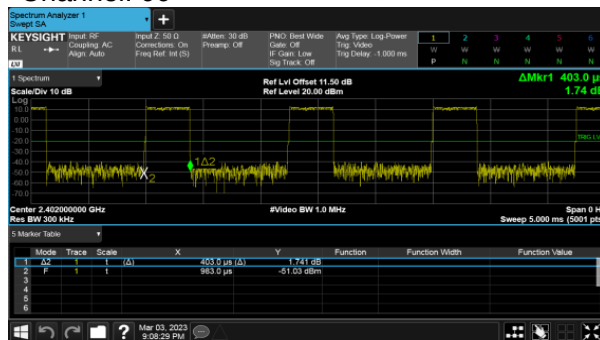
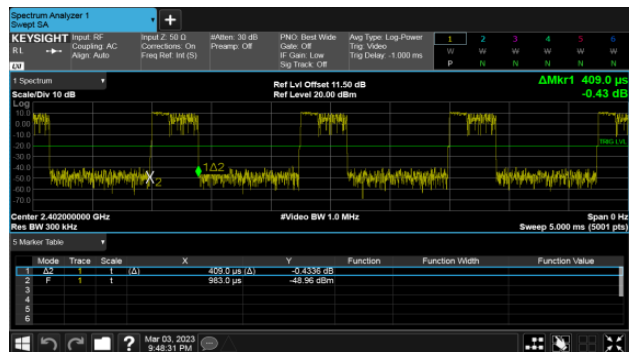
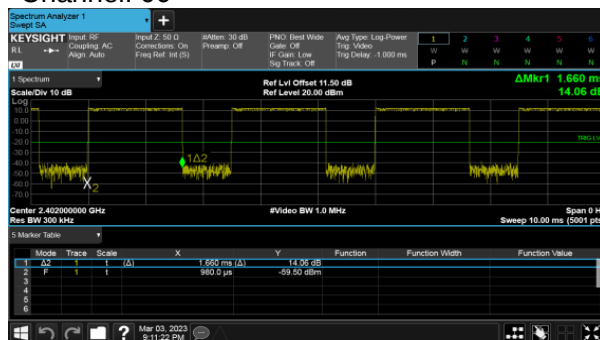
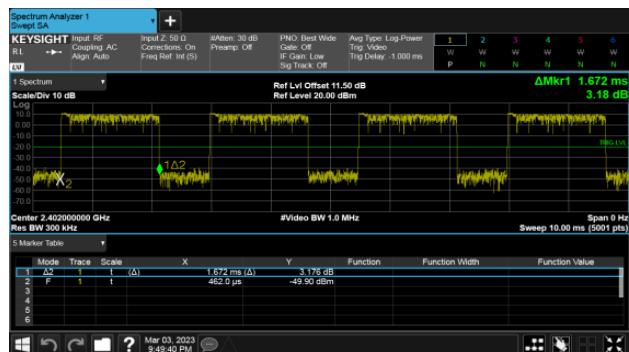
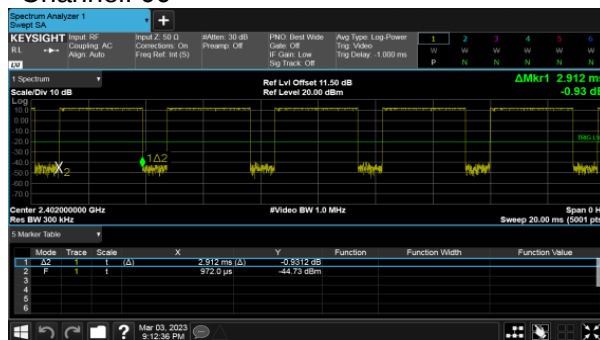
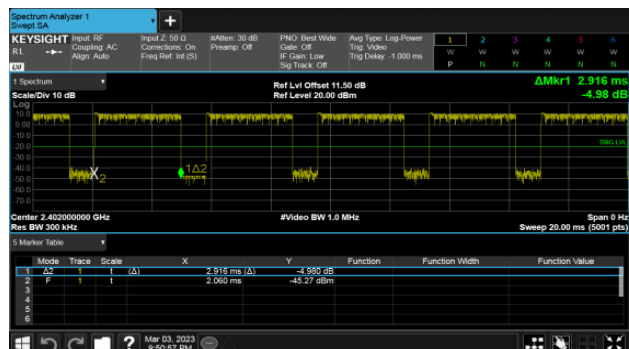




11.4 Test Result and Data

Modulation Type	Frequency (MHz)	Length of transmission time (ms)	Number of transmission in a 31.6 (79 Hopping*0.4)	Dwell Time (ms)	Limit (ms)
GFSK-DH1	2402	0.403	320.00	128.96	400
GFSK-DH3	2402	1.660	160.00	265.60	400
GFSK-DH5	2402	2.912	106.67	310.61	400
$\pi/4$ -DQPSK-DH1	2402	0.409	320.00	130.88	400
$\pi/4$ -DQPSK-DH3	2402	1.672	160.00	267.52	400
$\pi/4$ -DQPSK-DH5	2402	2.916	106.67	311.04	400
8DPSK-DH1	2402	0.408	320.00	130.56	400
8DPSK-DH3	2402	1.662	160.00	265.92	400
8DPSK-DH5	2402	2.916	106.67	311.04	400

Modulation Type	Frequency (MHz)	Length of transmission time (ms)	Number of transmission in a 8 (20 Hopping*0.4)	Dwell Time (ms)	Limit (ms)
AFH-DH1	2402-2421	0.402	160.00	64.32	400
AFH-DH3	2402-2421	1.660	80.00	132.80	400
AFH-DH5	2402-2421	2.928	53.33	156.15	400

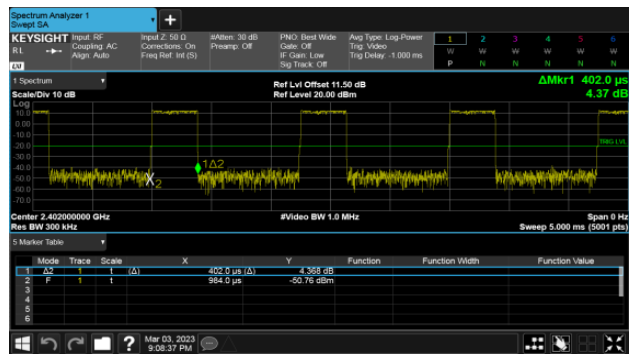
Modulation Type: GFSK-DH1
Channel: 00Modulation Type: $\pi/4$ -DQPSK-DH1
Channel: 00Modulation Type: GFSK-DH3
Channel: 00Modulation Type: $\pi/4$ -DQPSK-DH3
Channel: 00Modulation Type: GFSK-DH5
Channel: 00Modulation Type: $\pi/4$ -DQPSK-DH5
Channel: 00



Modulation Type: 8DPSK-DH1
Channel: 00



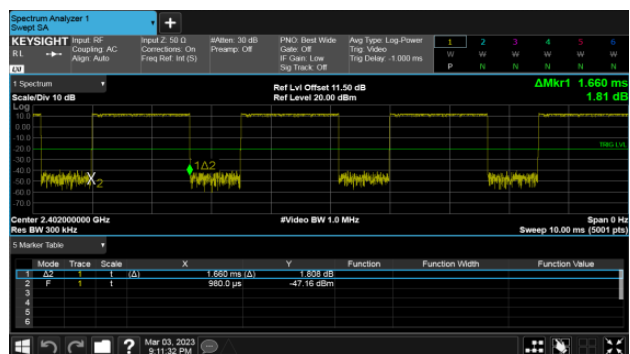
Modulation Type: AFH (DH1)



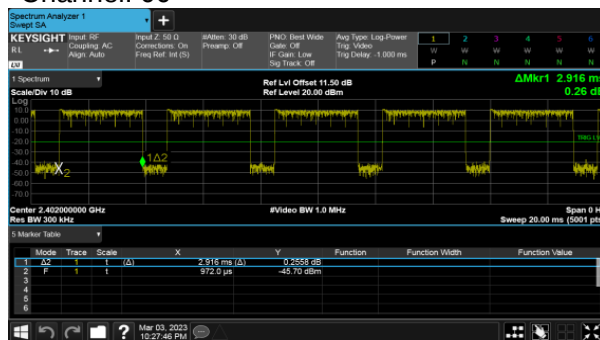
Modulation Type: 8DPSK-DH3
Channel: 00



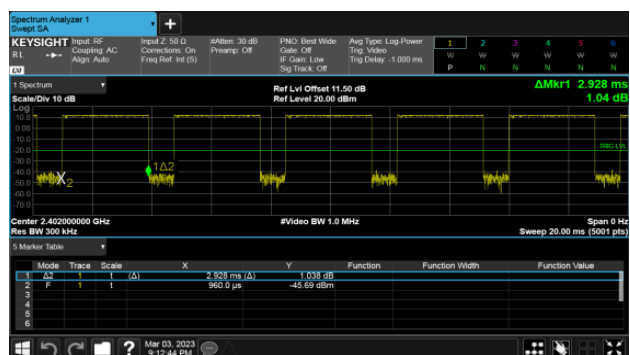
Modulation Type: AFH (DH3)



Modulation Type: 8DPSK-DH5
Channel: 00



Modulation Type: AFH (DH5)





12. Number of Hopping Channels

12.1 Test Limit

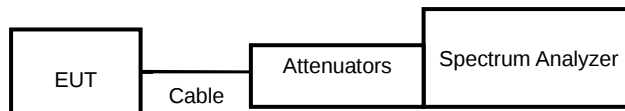
Frequency hopping systems in the 2400 ~ 2483.5 MHz band shall use at least 15 channels.

12.2 Test Procedures

According to the methods defined in ANSI C63.10-2013 Section 7.8.3

- The transmitter output was connected to the spectrum analyzer.
2. Set RBW of spectrum analyzer to 100 KHz and VBW to 300 KHz.
3. Set the MaxHold function, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been record.

12.3 Test Setup Layout

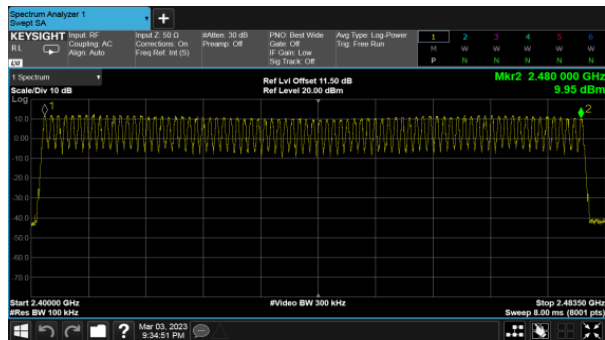


12.4 Test Result and Data

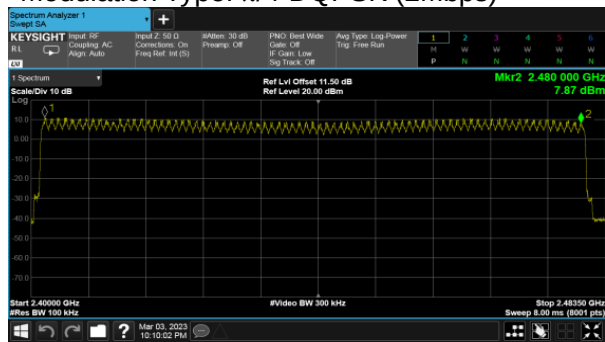
Modulation Type	Hopping Channels
GFSK	79
$\pi/4$ -DQPSK	79
8DPSK	79



Modulation Type: GFSK (1Mbps)



Modulation Type: $\pi/4$ -DQPSK (2Mbps)



Modulation Type: 8DPSK (3Mbps)

