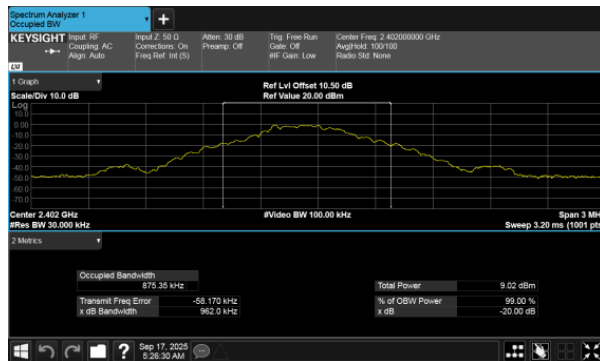




Modulation Type: GFSK
Channel: 00



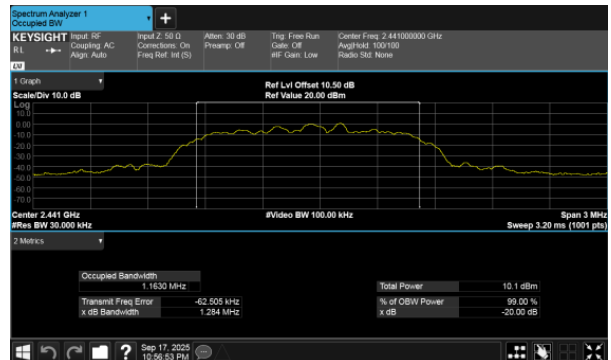
Modulation Type: $\pi/4$ -DQPSK
Channel: 00



CH39



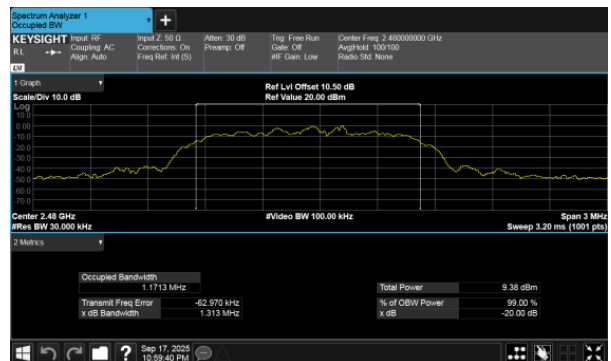
CH39



CH78



CH78

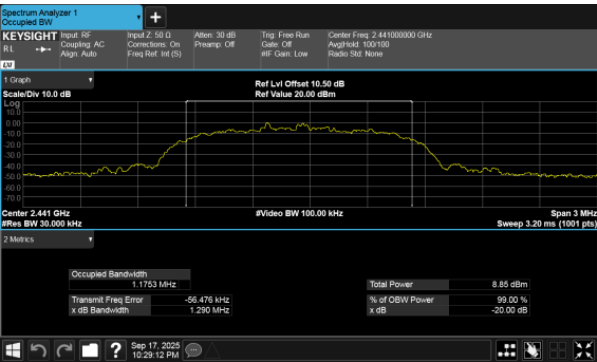




Modulation Type: 8DPSK
Channel: 00



CH39



CH78





10. Carrier Frequency Separation

10.1 Test Limit

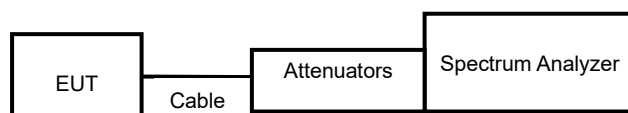
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that 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 C63.10-2020+Cor.1-2023 and ANSI C63.10a-2024 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

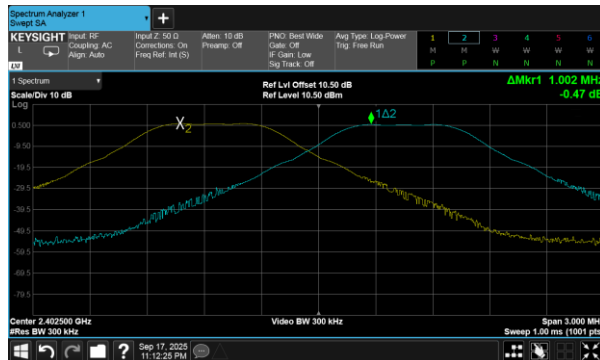


10.4 Test Result and Data

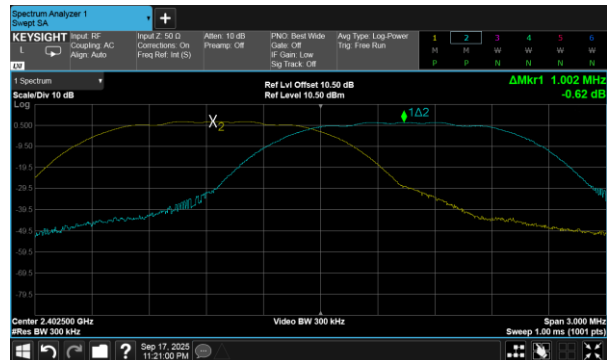
Modulation Type	Channel	Frequency (MHz)	Channel Separation (MHz)	Limit (MHz)
GFSK	0	2402	1002.000	0.641
	39	2441	1002.000	0.643
	78	2480	1002.000	0.631
$\pi/4$ -DQPSK	0	2402	1002.000	0.834
	39	2441	1002.000	0.856
	78	2480	1002.000	0.875
8DPSK	0	2402	1002.000	0.867
	39	2441	1002.000	0.860
	78	2480	1002.000	0.861



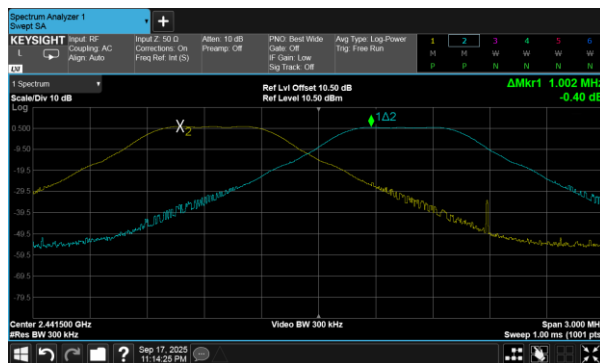
Modulation Type: GFSK
Channel: 00



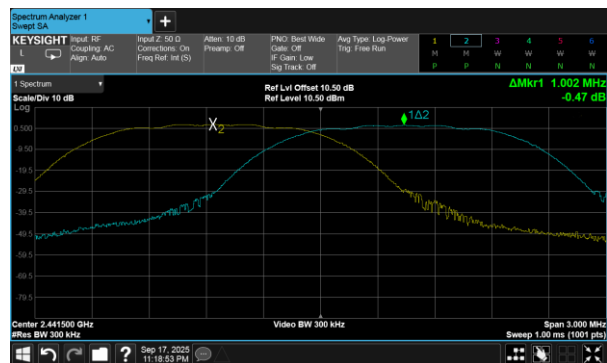
Modulation Type: $\pi/4$ -DQPSK
Channel: 00



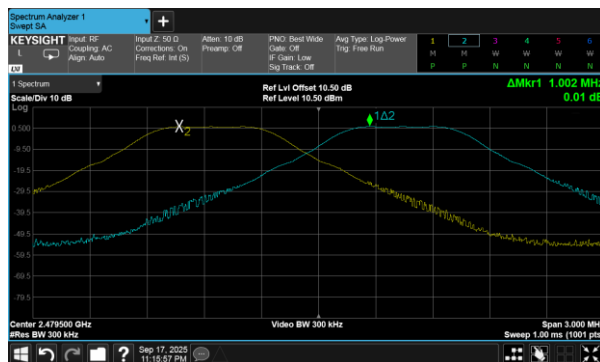
CH39



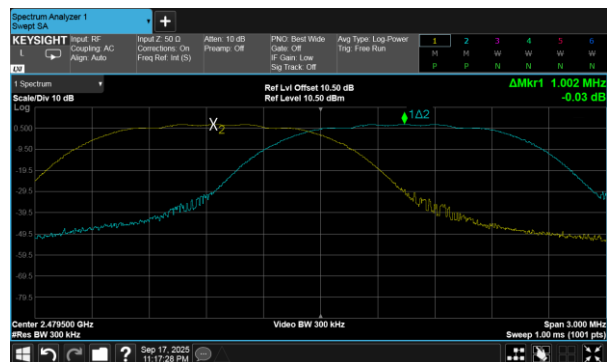
CH39



CH78

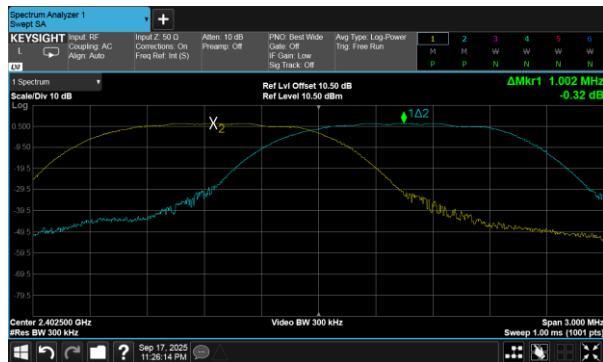


CH78

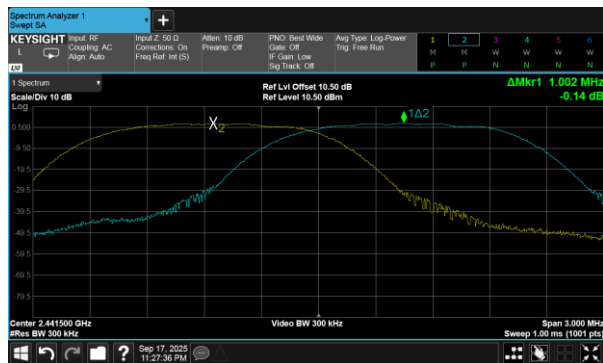




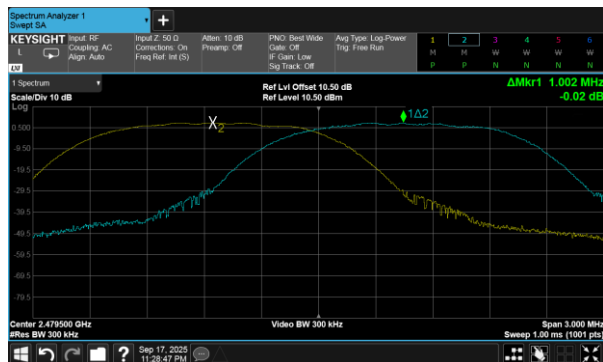
CH39



CH39



CH78





11. Dwell Time on each channel

11.1 Test Limit

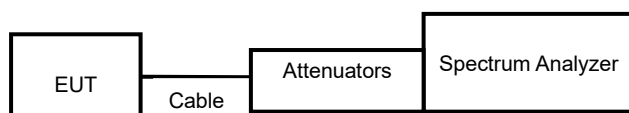
The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

11.2 Test Procedures

According to the methods defined in ANSI C63.10-2020 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



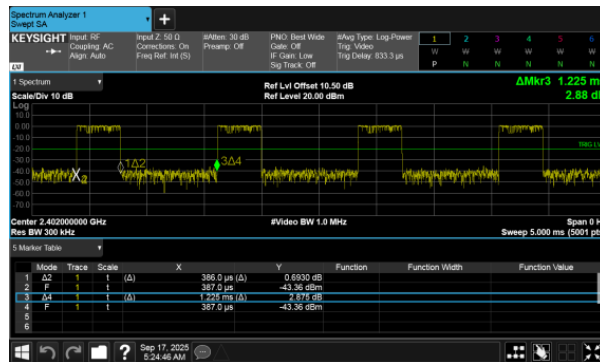
11.4 Test Result and Data

Channel	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	0.386	320.00	123.52	400
GFSK-DH3	2402	1.644	160.00	263.04	400
GFSK-DH5	2402	2.896	106.67	308.91	400
$\pi/4$ -DQPSK-DH1	2402	0.396	320.00	126.72	400
$\pi/4$ -DQPSK-DH3	2402	1.648	160.00	263.68	400
$\pi/4$ -DQPSK-DH5	2402	2.898	106.67	309.12	400
8DPSK-DH1	2402	0.394	320.00	126.08	400
8DPSK-DH3	2402	1.647	160.00	263.52	400
8DPSK-DH5	2402	2.898	106.67	309.12	400

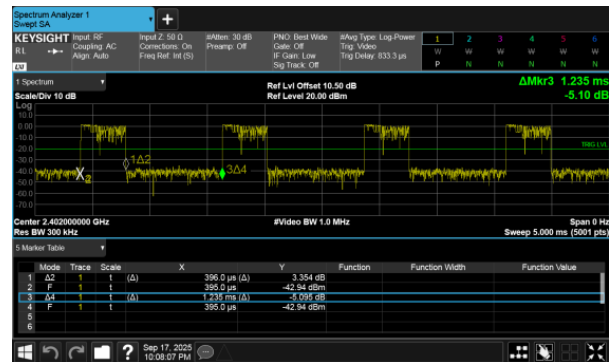
Channel	Frequency (MHz)	Length of transmission time (ms)	Number of transmission in a 8 (20 Hopping*0.4)	Dwell Time (ms)	Limit (ms)
AFH-DH1	2402-2421	0.386	160.00	61.76	400
AFH-DH3	2402-2421	1.645	80.00	131.60	400
AFH-DH5	2402-2421	2.894	53.33	154.34	400



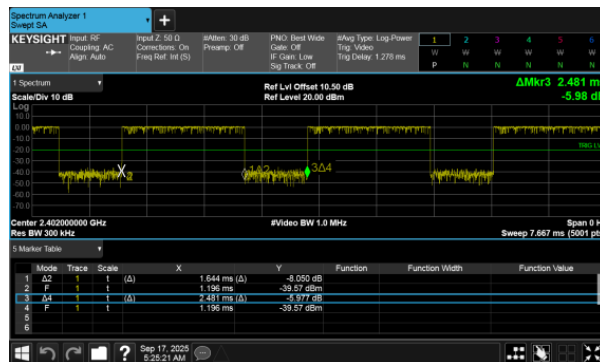
Modulation Type: GFSK-DH1
Channel: 00



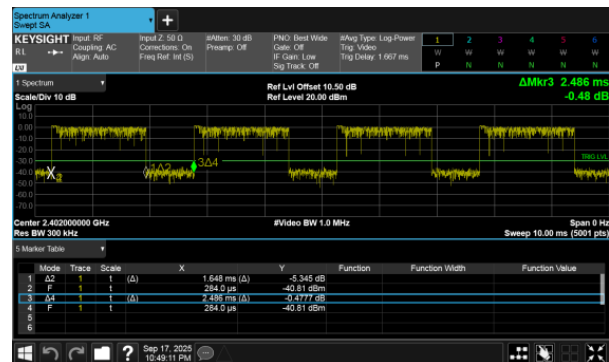
Modulation Type: $\pi/4$ -DQPSK-DH1
Channel: 00



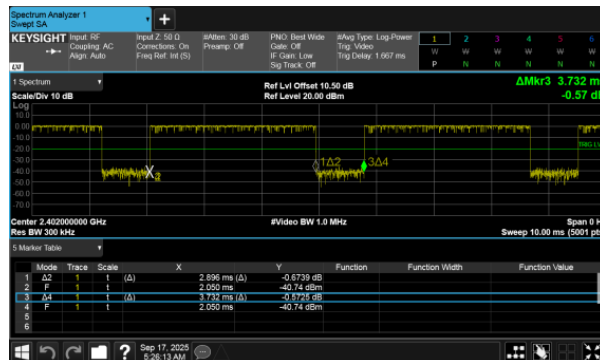
Modulation Type: GFSK-DH3
Channel: 00



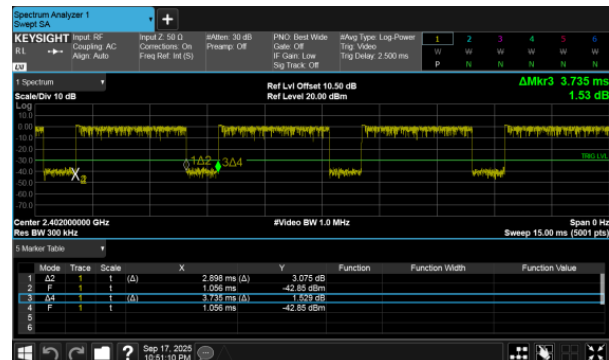
Modulation Type: $\pi/4$ -DQPSK-DH3
Channel: 00



Modulation Type: GFSK-DH5
Channel: 00

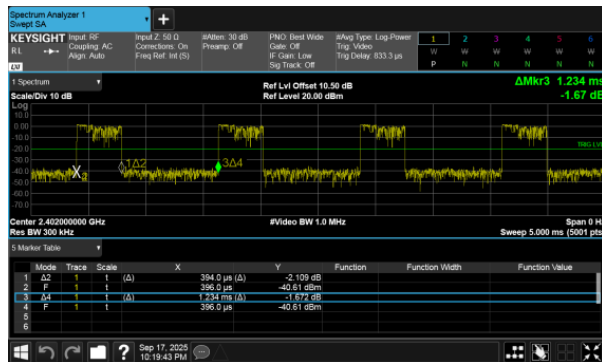


Modulation Type: $\pi/4$ -DQPSK-DH5
Channel: 00

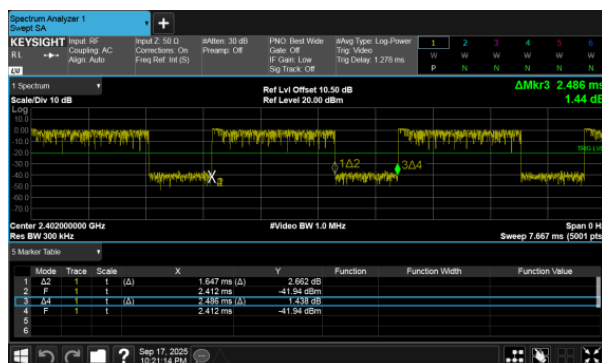




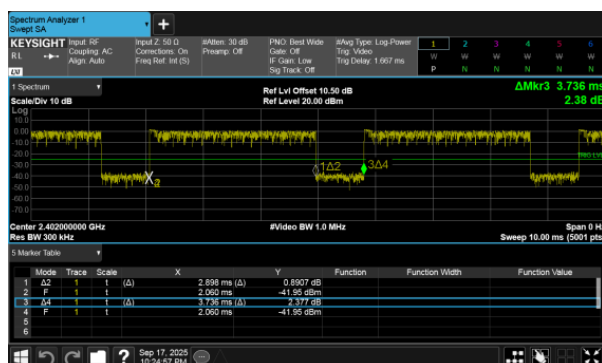
Modulation Type: 8DPSK-DH1
Channel: 00



Modulation Type: 8DPSK-DH3
Channel: 00



Modulation Type: 8DPSK-DH5
Channel: 00

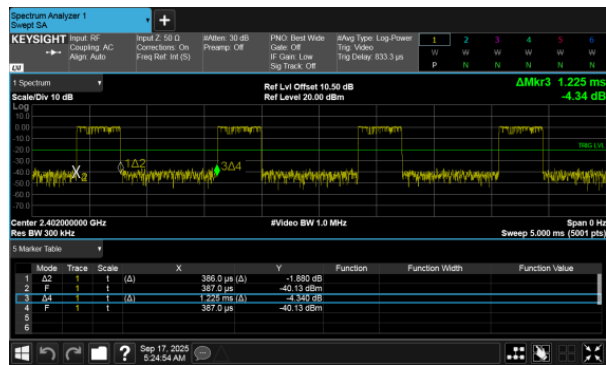




AFH Mode

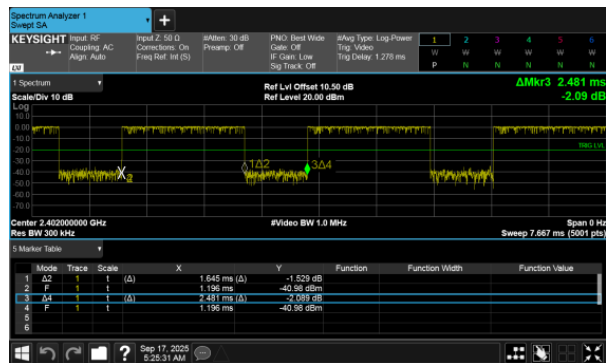
Modulation Type: DH1

Channel: 00



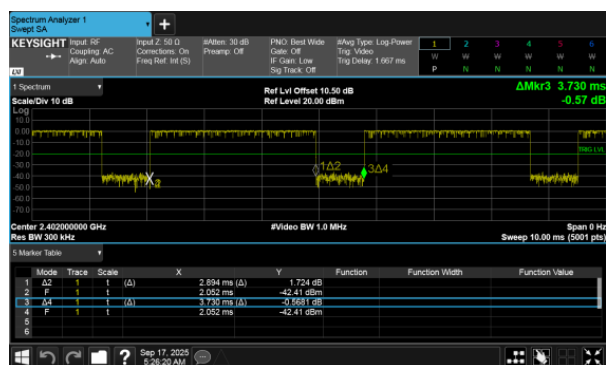
Modulation Type: DH3

Channel: 00



Modulation Type: DH5

Channel: 00





12. Number of Hopping Channels

12.1 Test Limit

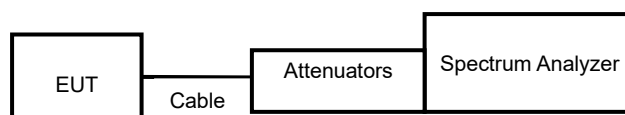
Frequency hopping systems in the 2400 ~ 2483.5 MHz band shall use at least 15 channels.

12.2 Test Procedures

According to the methods defined in ANSI C63.10-2020+Cor.1-2023 and ANSI C63.10a-2024 Section 7.8.3

- a. The transmitter output was connected to the spectrum analyzer.
- b. 2. Set RBW of spectrum analyzer to 100 KHz and VBW to 300 KHz.
- c. 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

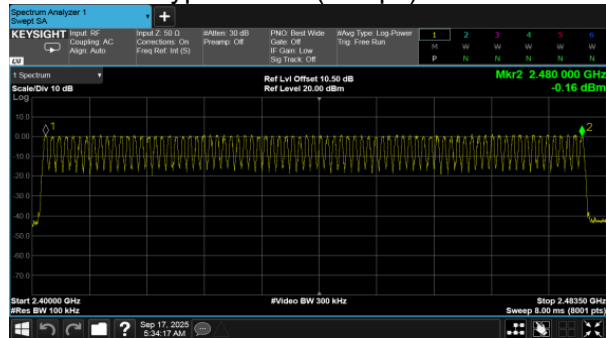


12.4 Test Result and Data

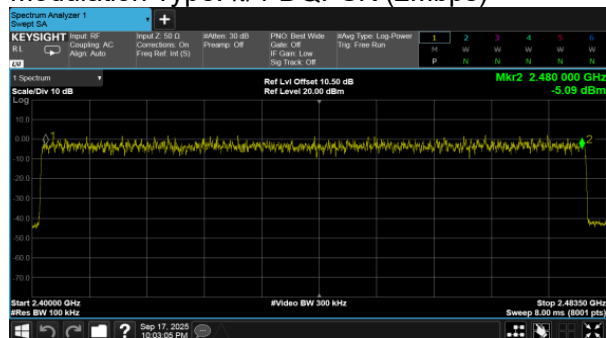
Modulation Type	Hopping Channels
GFSK	79
$\pi/4$ -DQPSK	79
8DPSK	79



Modulation Type: GFSK (1Mbps)



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



Modulation Type: 8DPSK (3Mbps)





13. Maximum Average Output Power

13.1 Test Limit

The Maximum Average Output Power Measurement is 30dBm.

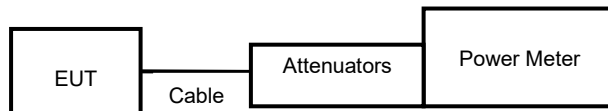
13.2 Test Procedures

According to the methods defined in ANSI C63.10-2020 Section 7.8.5

The antenna port(RF output)of the EUT was connected to the input(RF input)of a power meter.

Power was read directly from the meter and cable loss connection was added to the reading to obtain power at the EUT antenna terminal. The EUT Output Power was set to maximum to produce the worse case test result.

13.3 Test Setup Layout



**13.4 Test Result and Data**

Modulation Type	Setting	Channel	Frequency (MHz)	AV Output Power (dBm)	AV Output Power (mW)
GFSK	Default	0	2402	2.18	1.652
	Default	39	2441	1.89	1.545
	Default	78	2480	1.85	1.531
$\pi/4$ -DQPSK	Default	0	2402	1.35	1.365
	Default	39	2441	1.39	1.377
	Default	78	2480	1.25	1.334
8DPSK	Default	0	2402	1.82	1.521
	Default	39	2441	1.44	1.393
	Default	78	2480	1.36	1.368

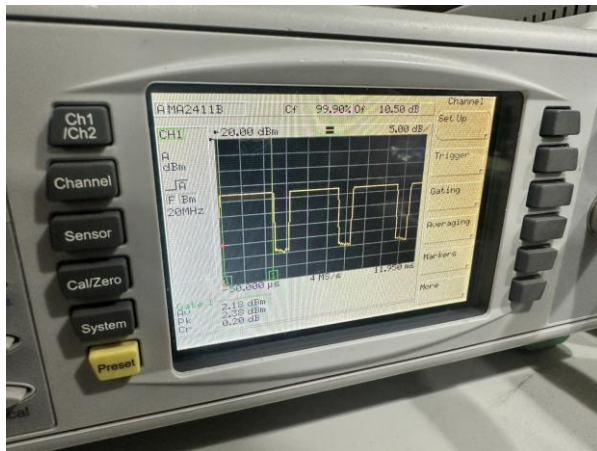
AFH Mode

Modulation Type	Setting	Channel	Frequency (MHz)	AV Output Power (dBm)	AV Output Power (mW)
GFSK	Default	0-19	2402-2421	2.03	1.596
$\pi/4$ -DQPSK	Default	0-19	2402-2421	1.32	1.355
8DPSK	Default	0-19	2402-2421	1.63	1.455

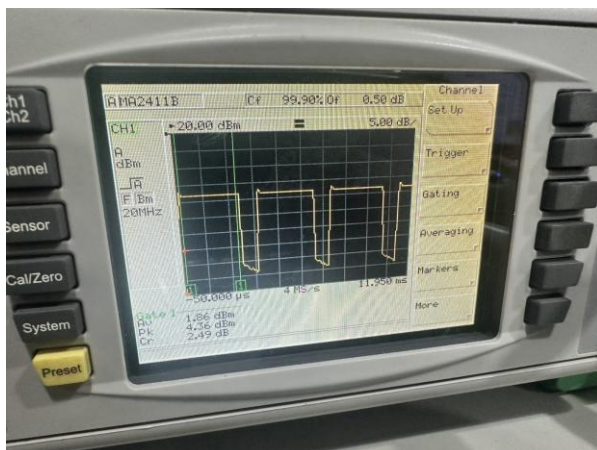


Gate setup plot:

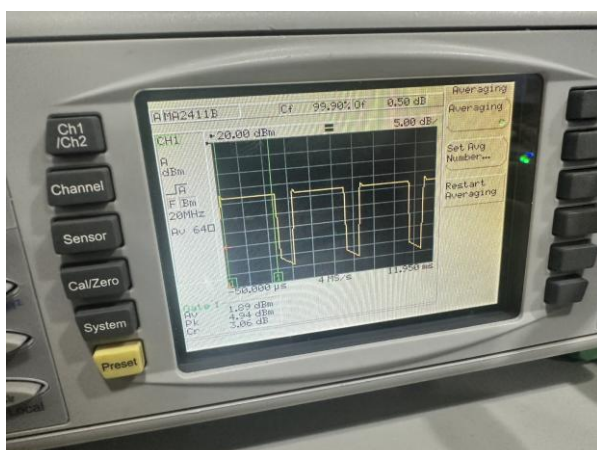
Modulation Type: GFSK



Modulation Type: $\pi/4$ -DQPSK



Modulation Type: 8DPSK



-----THE END OF REPORT-----