Power	AC 120V/60Hz	Pol/Phase	HORIZONTAL
Test Mode	8DPSK, CH00		


```
            Frequency  Factor   Reading   Level    Limit    Margin  Detector  P/F
     No.      (MHz)    (dB/m)    (dBuV)  (dBuV/m) (dBuV/m)    (dB)
    ------------------------------------------------------------------------------
      1      2390.00    5.65     42.84    48.49    74.00    -25.51   Peak      P
      2      2390.00    5.65     30.24    35.89    54.00    -18.11   Average   P
    ------------------------------------------------------------------------------
    Note: Level=Reading+Factor
          Margin=Level-Limit
          Factor=Antenna Factor + cable loss - Amplifier Factor
```

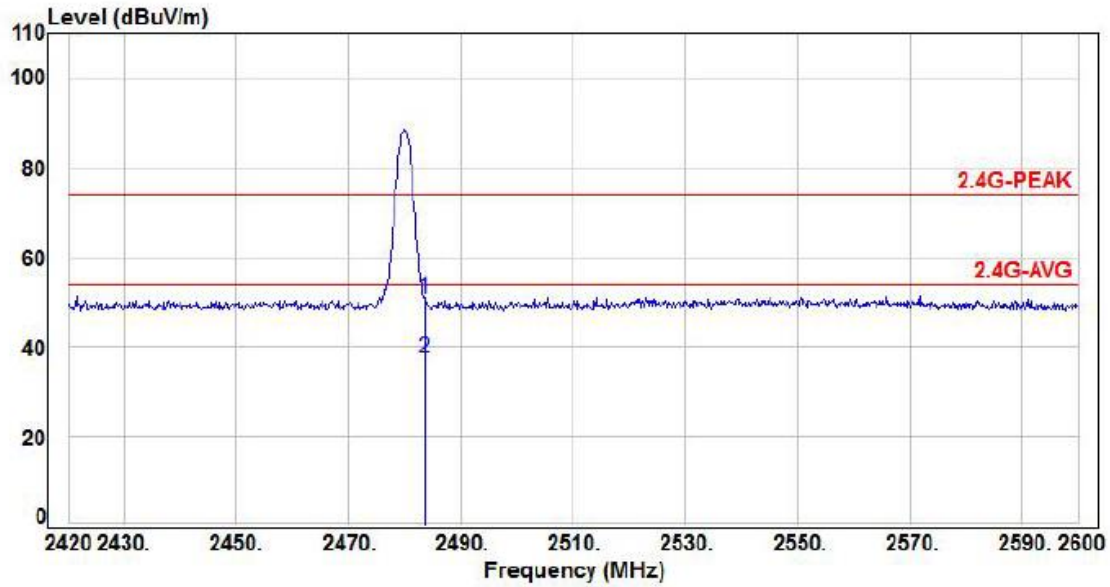| Power	AC 120V/60Hz	Pol/Phase	VERTICAL
Test Mode	8DPSK, CH78		
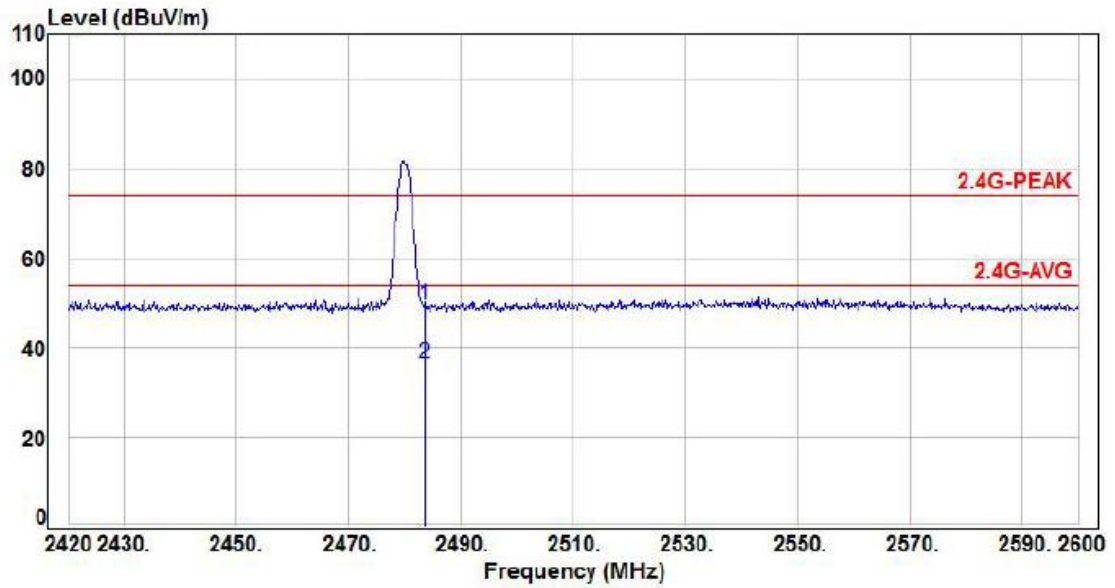

```
        Frequency  Factor   Reading    Level     Limit    Margin  Detector   P/F
  No.     (MHz)    (dB/m)    (dBuV)   (dBuV/m)   (dBuV/m)   (dB)
  ----------------------------------------------------------------------------------
   1     2483.50    6.02     43.51     49.53      74.00    -24.47   Peak       P
   2     2483.50    6.02     30.39     36.41      54.00    -17.59   Average    P
  ----------------------------------------------------------------------------------
Note: Level=Reading+Factor
      Margin-Level-Limit
      Factor=Antenna Factor + cable loss - Amplifier Factor
```

Power	AC 120V/60Hz	Pol/Phase	HORIZONTAL
Test Mode	8DPSK, CH78		


```
      Frequency  Factor   Reading    Level    Limit    Margin  Detector   P/F
No.    (MHz)    (dB/m)    (dBuV)   (dBuV/m)  (dBuV/m)   (dB)
-----------------------------------------------------------------------------
 1   2483.50     6.02     44.78     50.80     74.00    -23.20    Peak       P
 2   2483.50     6.02     31.52     37.54     54.00    -16.46    Average    P
-----------------------------------------------------------------------------
Note: Level=Reading+Factor
      Margin-Level-Limit
      Factor=Antenna Factor + cable loss - Amplifier Factor
```

7. Test of Conducted Spurious Emission

7.1 Test Limit

Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

7.2 Test Procedure

    a. The transmitter output was connected to the spectrum analyzer via a low loss cable.

    b. 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.

    c. The band edges was measured and recorded.

7.3 Test Setup Layout

```
+-------+          +-------------+  +-------------------+
|  EUT  |----------| Attenuators |  | Spectrum Analyzer |
+-------+  Cable   +-------------+  +-------------------+
```
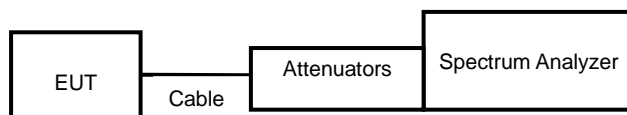
7.4 Test Result and Data

Note: Test plots refer to the following pages.

Single test

Modulation Standard: GFSK (1Mbps)
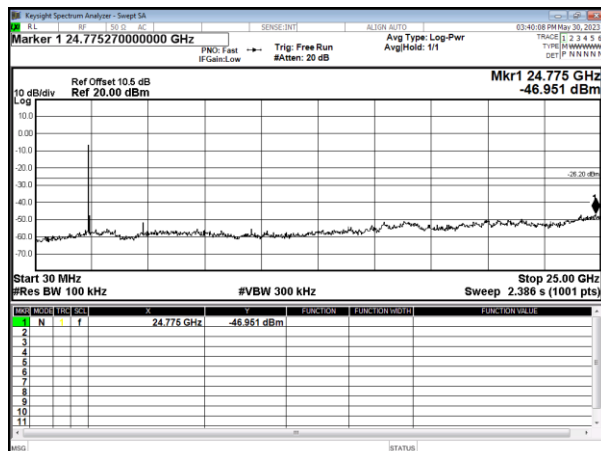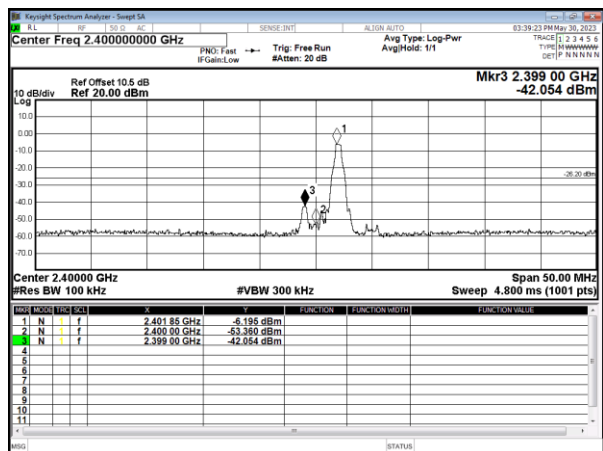
Channel: 00

Modulation Standard: GFSK (1Mbps)
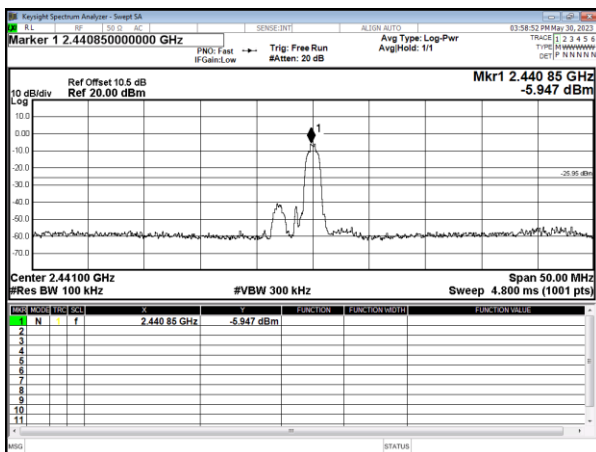
Channel: 39
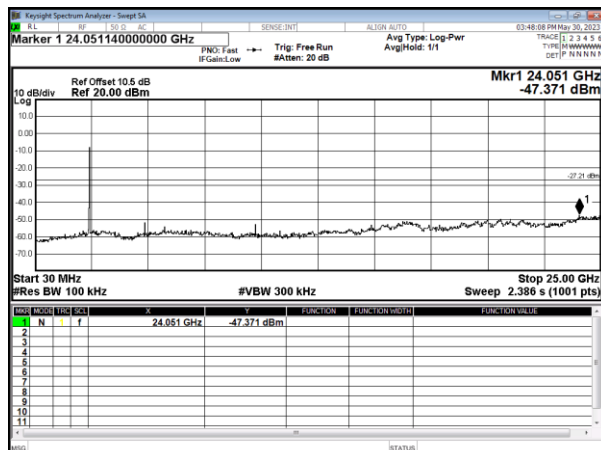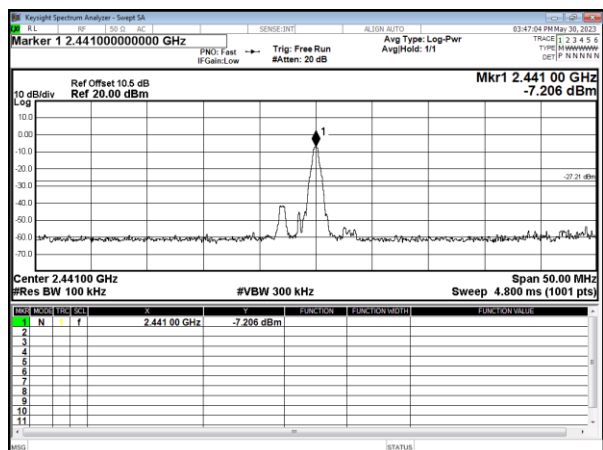
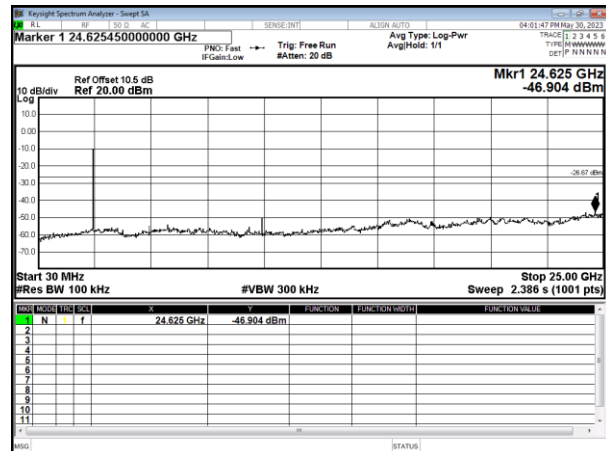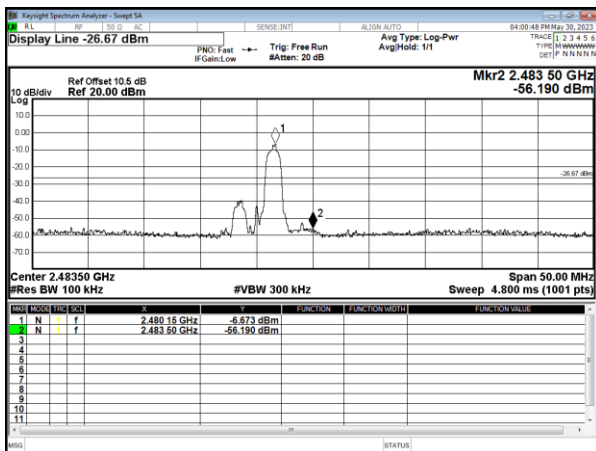Modulation Standard: GFSK (1Mbps)

Channel: 78
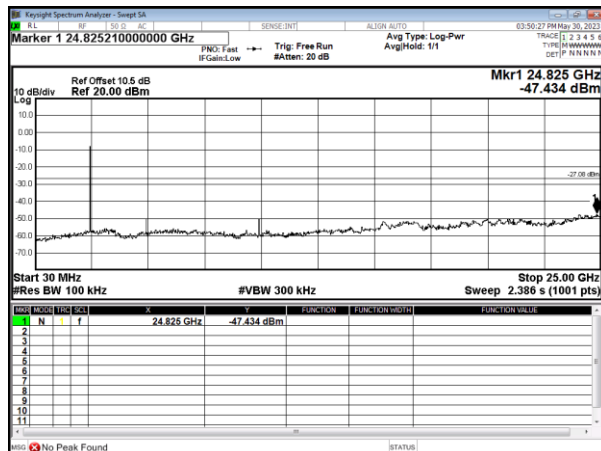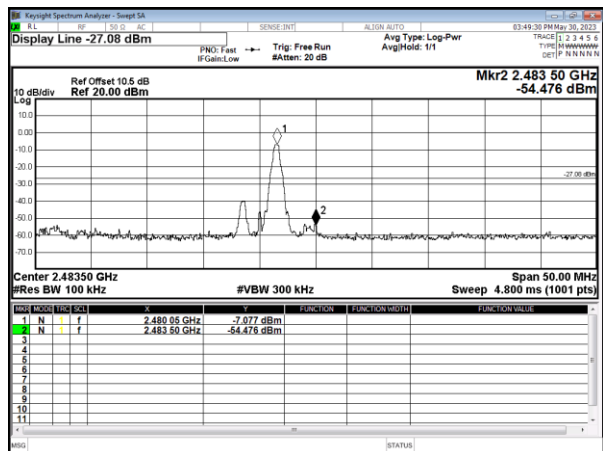
Modulation Standard: π/4 DQPSK (2Mbps)
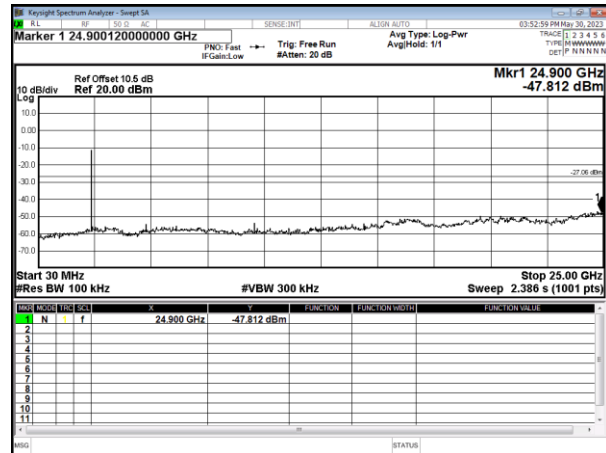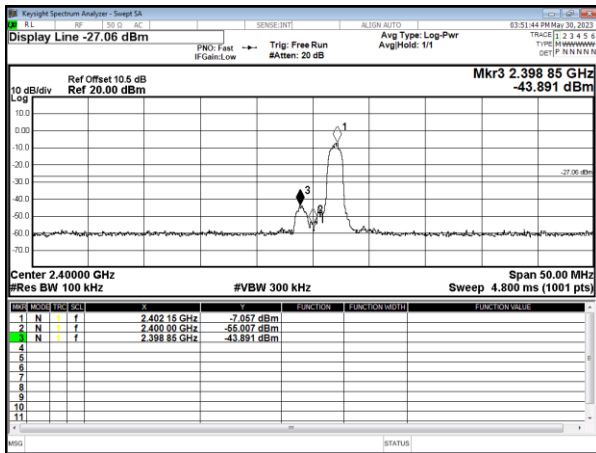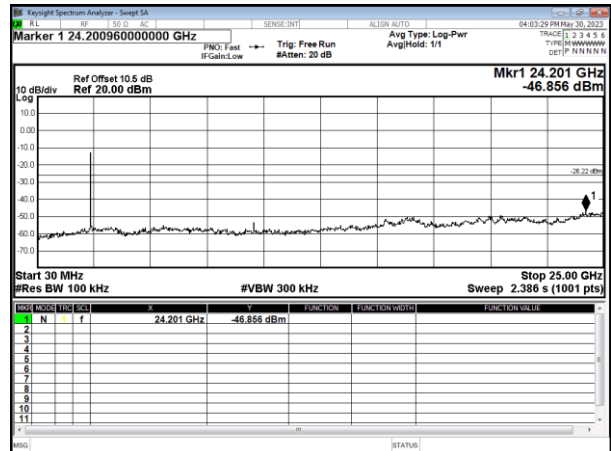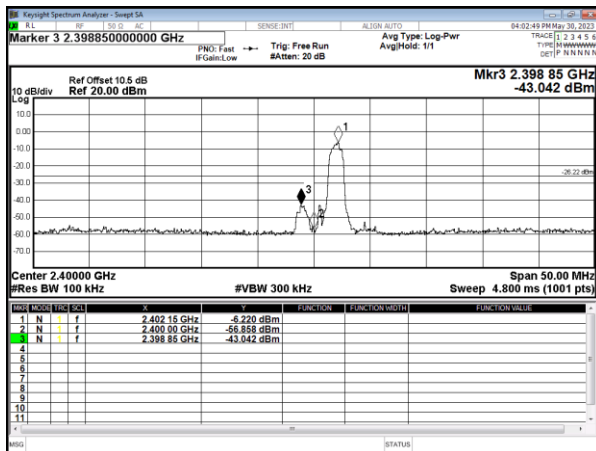
Channel: 00

Modulation Standard: π/4 DQPSK (2Mbps)

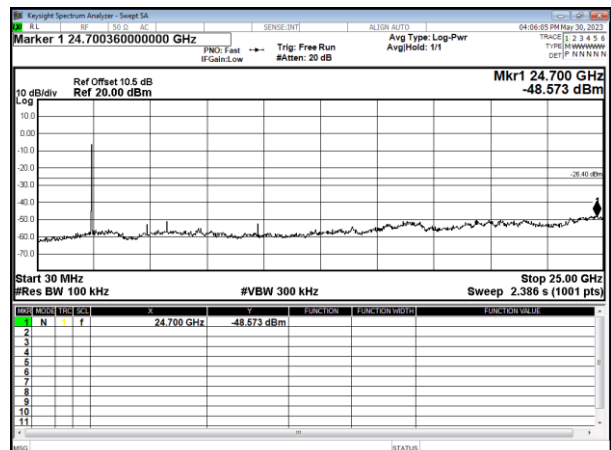Channel: 39
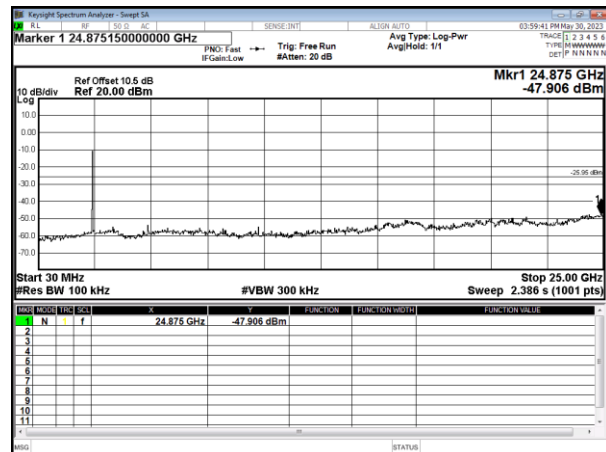
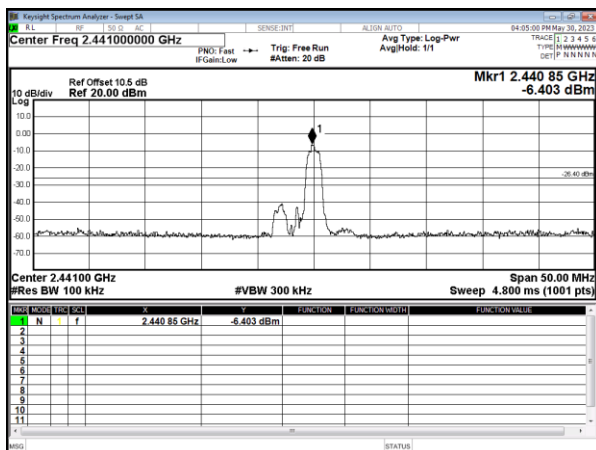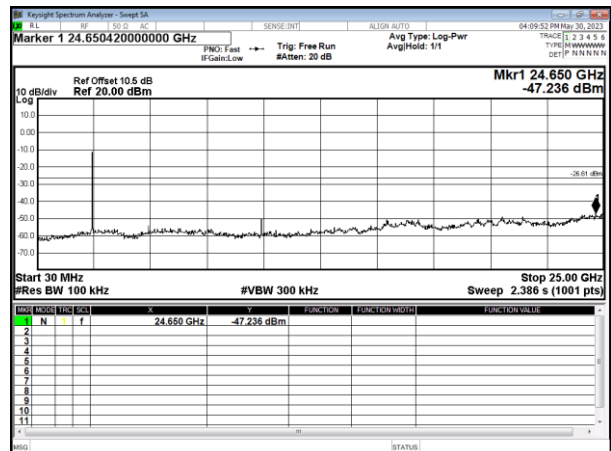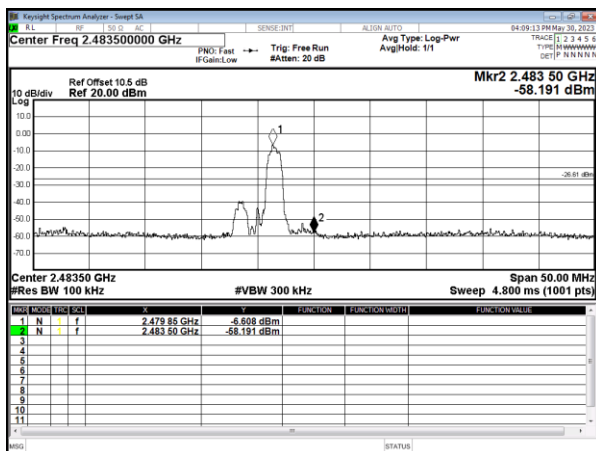Modulation Standard: π/4 DQPSK (2Mbps)

Channel: 78

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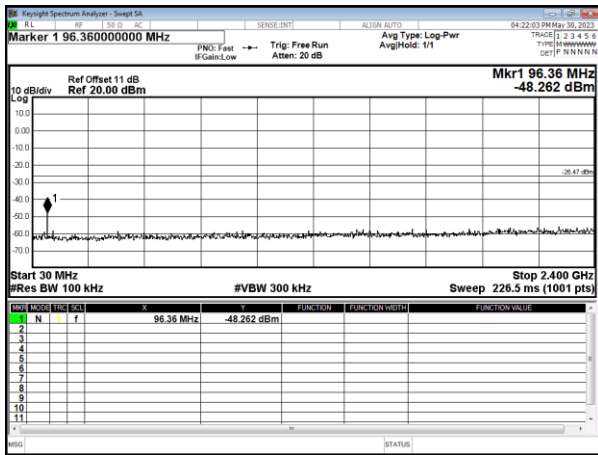

Modulation Standard: 8DPSK (3Mbps)

Channel: 39
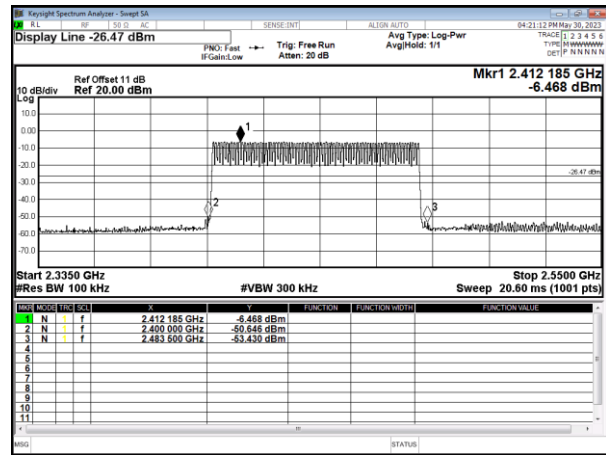

Modulation Standard: 8DPSK (3Mbps)
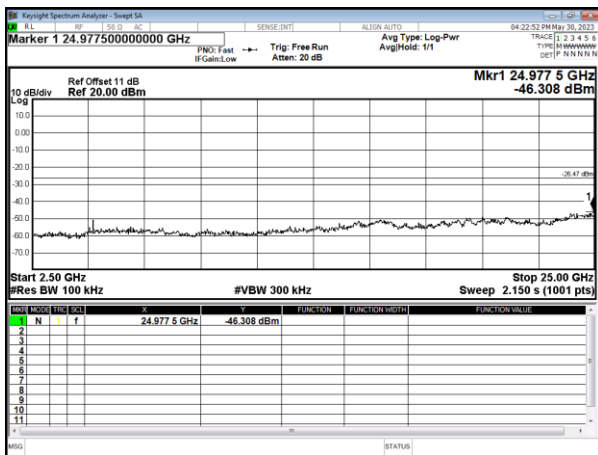Channel: 78

Hopping test

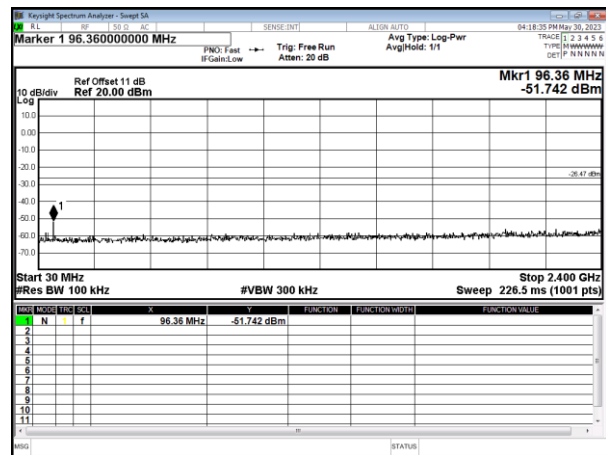Modulation Standard: GFSK (1Mbps)
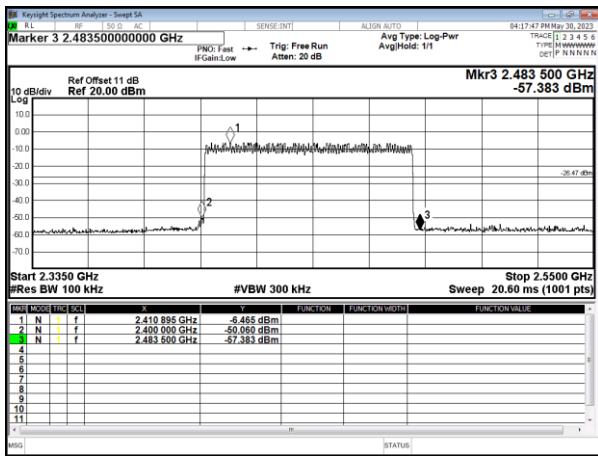

Modulation Standard: GFSK (1Mbps)
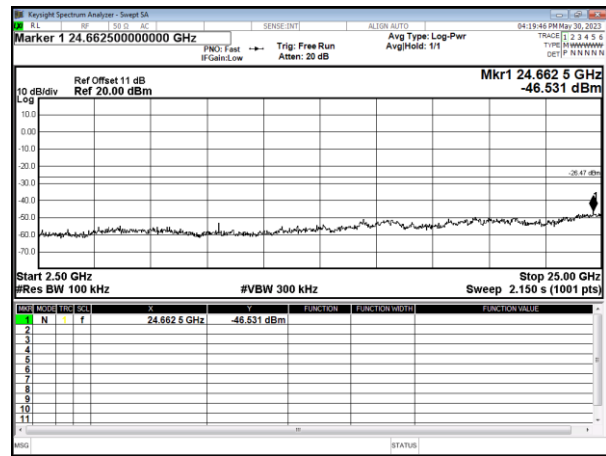

Modulation Standard: GFSK (1Mbps)

Modulation Standard: π/4 DQPSK (2Mbps)

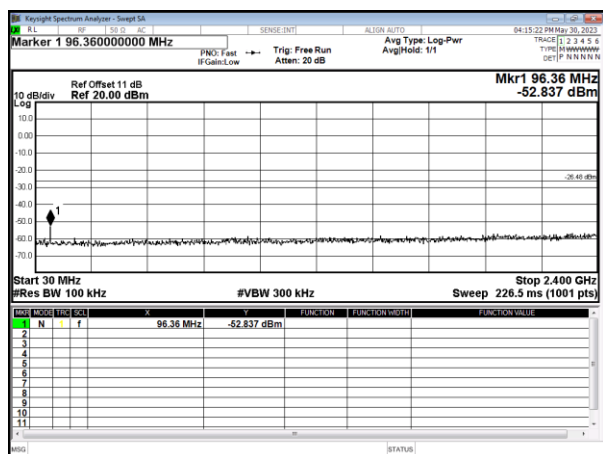Modulation Standard: π/4 DQPSK (2Mbps)
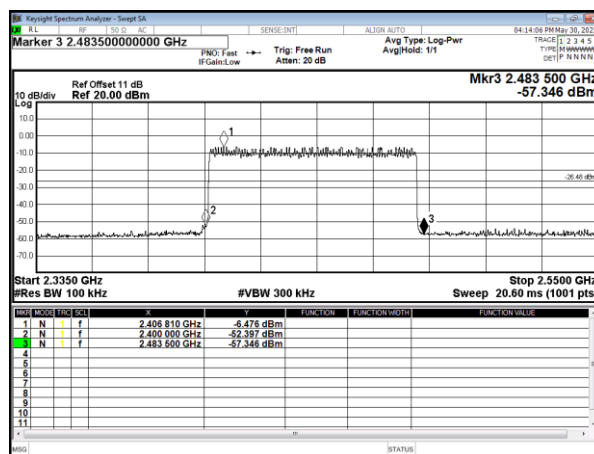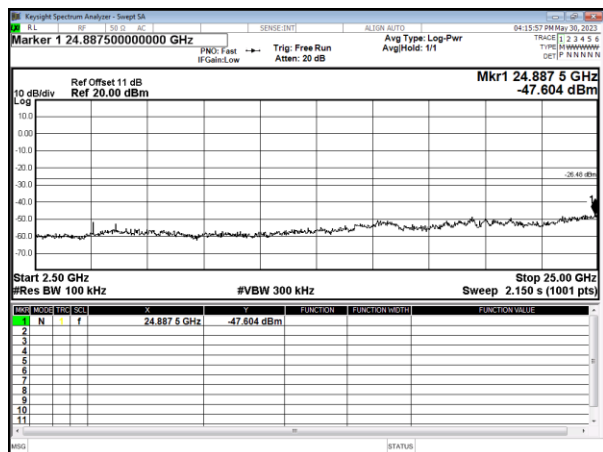

Modulation Standard: π/4 DQPSK (2Mbps)

Modulation Standard: 8DPSK (3Mbps)

Modulation Standard: 8DPSK (3Mbps)

Modulation Standard: 8DPSK (3Mbps)

8. 20dB Bandwidth Measurement Data

8.1 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 than125 mW.

8.2 Test Procedures

a. The transmitter output was connected to the spectrum analyzer.
b. Set RBW of spectrum analyzer to 30 KHz and VBW to 100 KHz.
c. The 20 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20 dB.

8.3 Test Setup Layout
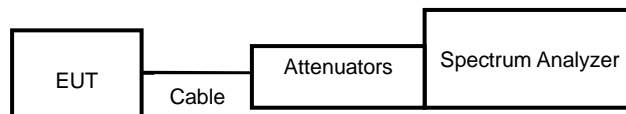
8.4 Test Result and Data

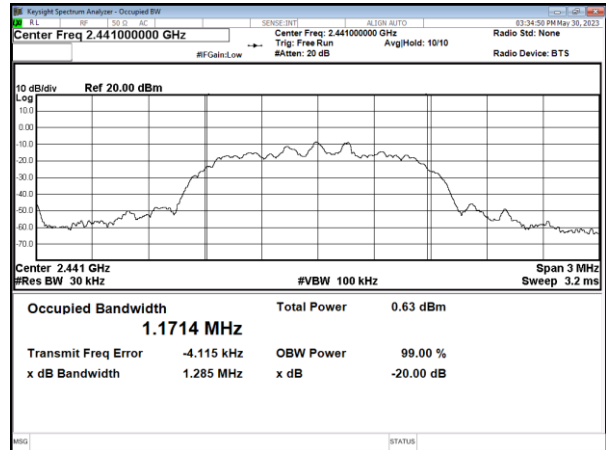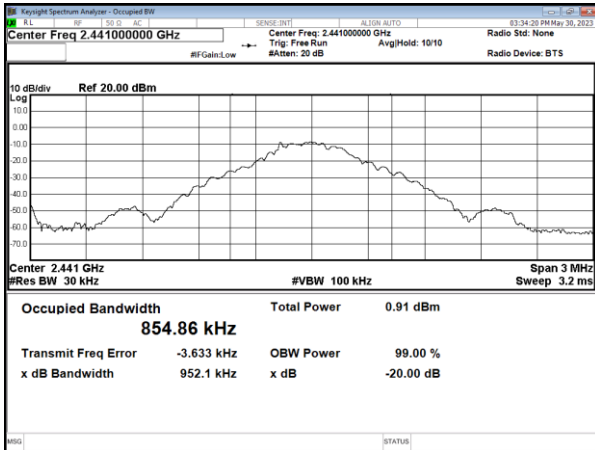| Modulation Type	Channel	Frequency (MHz)	20dB Bandwidth (MHz)	2/3 20dB Bandwidth(MHz)
GFSK (1Mbps)	00	2402	0.953	0.635
	39	2441	0.952	0.635
	78	2480	0.954	0.636
π/4-DQPSK (2Mbps)	00	2402	1.283	0.855
	39	2441	1.285	0.857
	78	2480	1.285	0.857
8DPSK (3Mbps)	00	2402	1.297	0.865
	39	2441	1.297	0.865
	78	2480	1.297	0.865
Note	2/3*20dB Bandwidth=20dB Bandwidth x 2/3			

Modulation Type: GFSK (1Mbps)
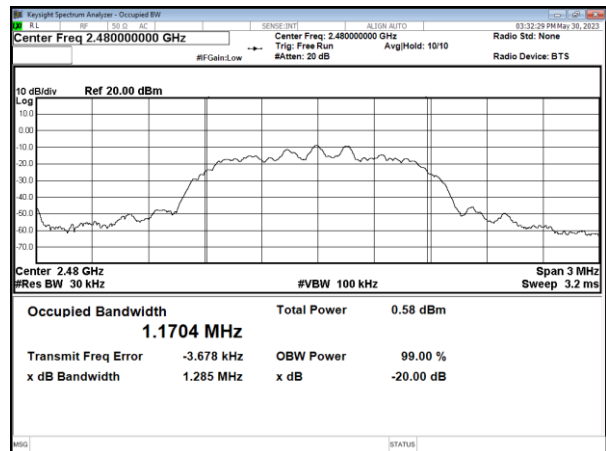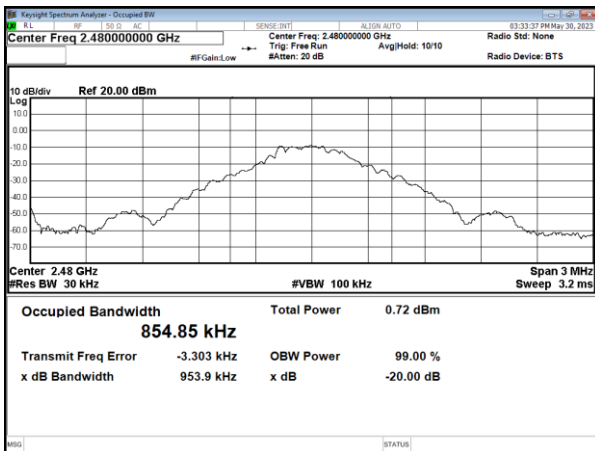Channel: 00

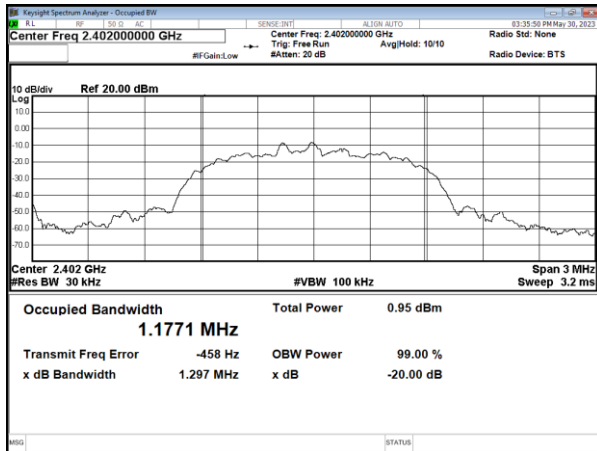Modulation Type: π/4-DQPSK (2Mbps)
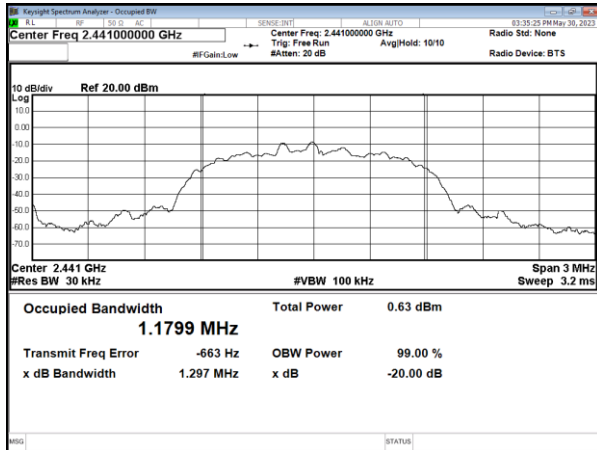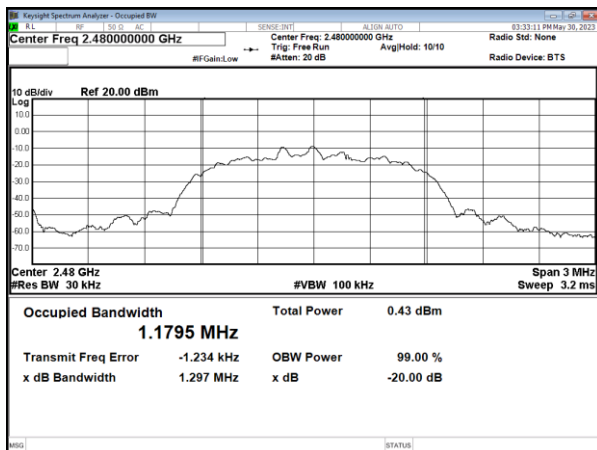Channel: 00
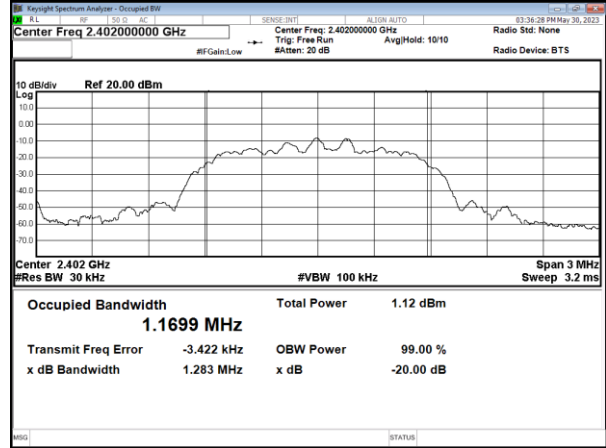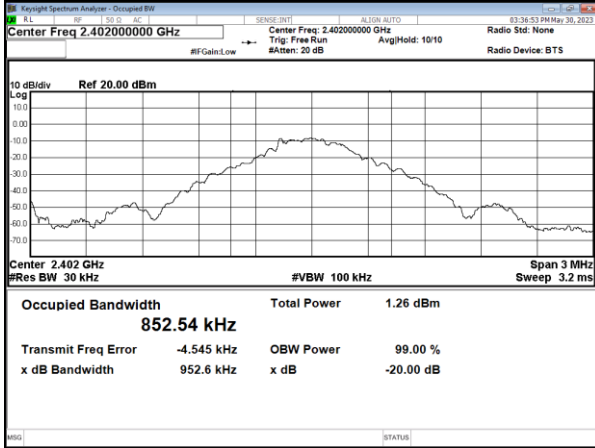
CH39

CH39

CH78

CH78

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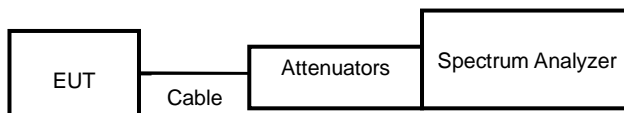Channel: 00

CH39

CH78

9. Frequencies Separation

9.1 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.

9.2 Test Procedures

a. The transmitter output was connected to the spectrum analyzer.

b. Set RBW of spectrum analyzer to 30 KHz and VBW to 100 KHz.

c. By using the MaxHold function record the separation of two adjacent channels.

d. Measure the frequency difference of these two adjacent channels.
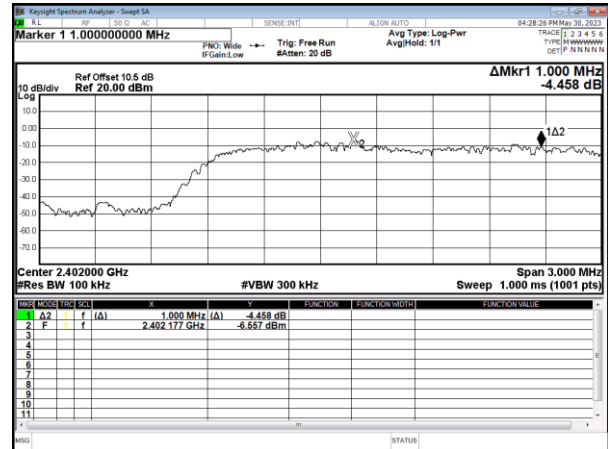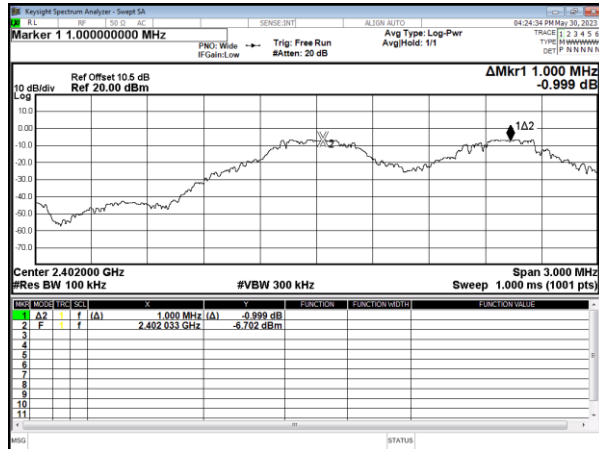
9.3 Test Setup Layout

9.4 Test Result and Data

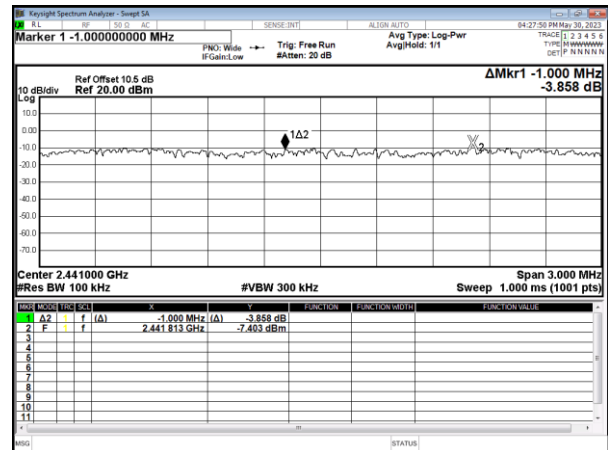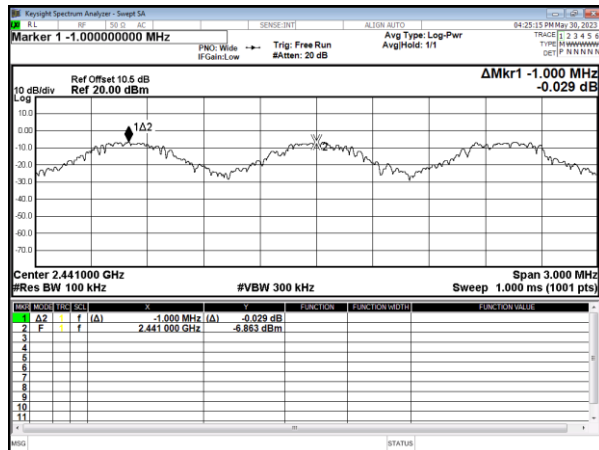| Modulation Type	Channel	Channel Separation (MHz)	Limit (MHz)
GFSK	00	1.000	0.635
	39	1.000	0.635
	78	1.000	0.636
π/4-DQPSK	00	1.000	0.855
	39	1.000	0.857
	78	1.000	0.857
8DPSK	00	1.000	0.865
	39	1.000	0.865
	78	1.000	0.865

Modulation Type: GFSK (1Mbps)
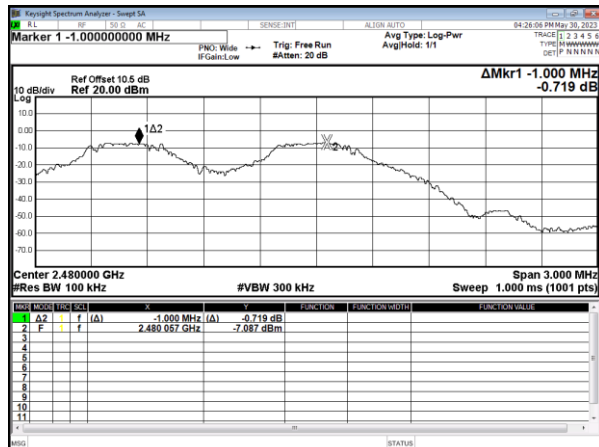Channel: 00

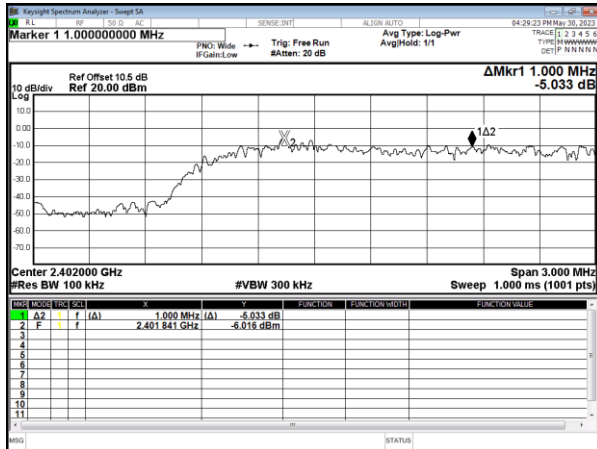Modulation Type: π/4-DQPSK (2Mbps)
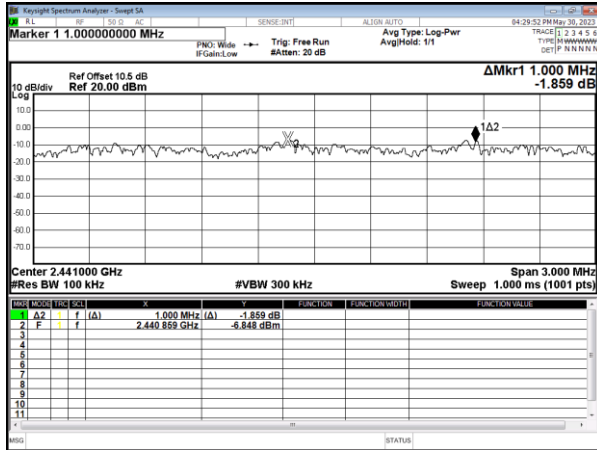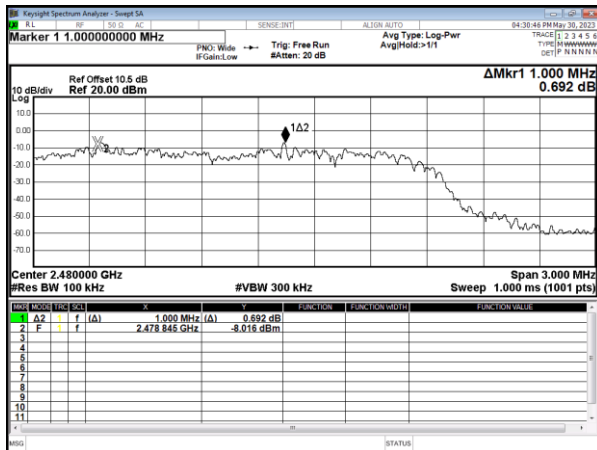Channel: 00
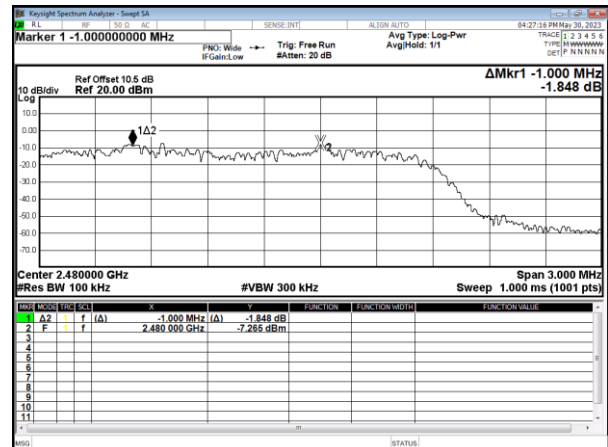
CH39

CH39

CH78

CH78

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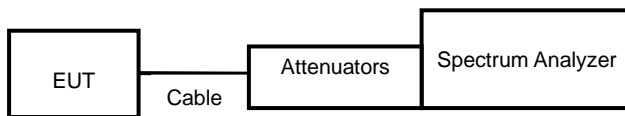Channel: 00

CH39

CH78

10. Dwell Time on each channel

10.1 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.

10.2 Test Procedures

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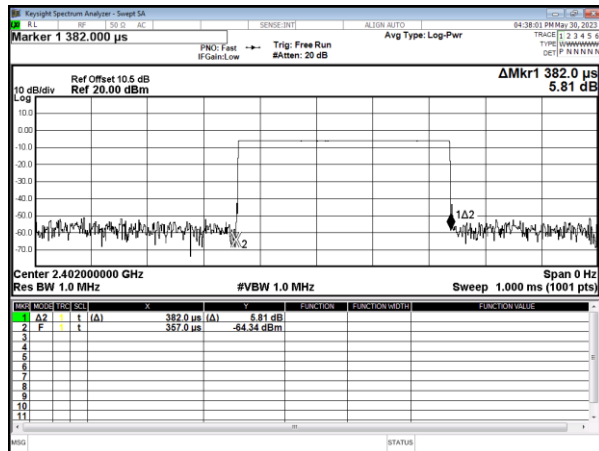
10.3 Test Setup Layout

10.4 Test Result and Data

Test Period = 0.4 (second/ channel) x 79 Channel = 31.6 sec

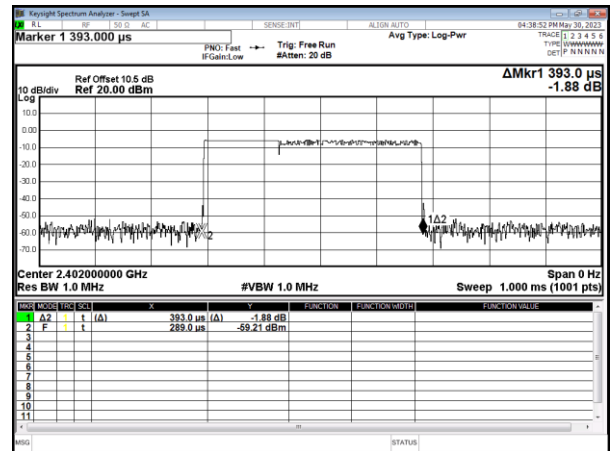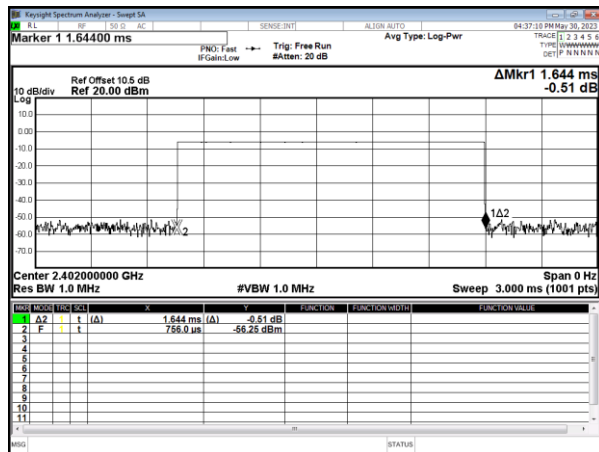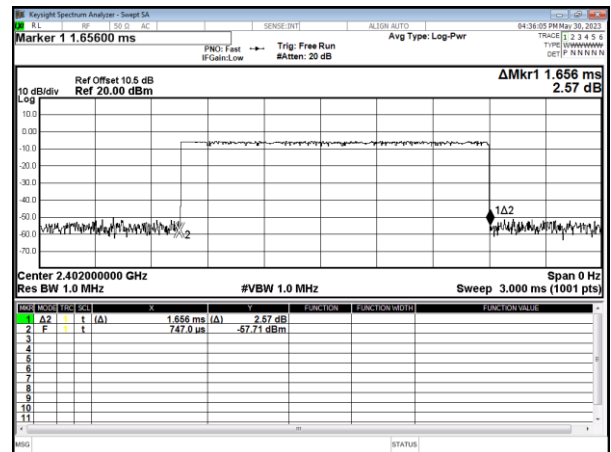| Modulation Type	Frequency (MHz)	Length of transmission time (ms)	Number of transmission in a 31.6 (79 Hopping*0.4)	Dwell Time (ms)	Limit (ms)
GFSK (DH1)	2402	0.382	320.00	122.24	400
GFSK (DH3)	2402	1.644	160.00	263.04	400
GFSK (DH5)	2402	2.895	106.67	308.80	400
π/4-DQPSK (DH1)	2402	0.393	320.00	125.76	400
π/4-DQPSK (DH3)	2402	1.656	160.00	264.96	400
π/4-DQPSK (DH5)	2402	2.905	106.67	309.87	400
8DPSK (DH1)	2402	0.393	320.00	125.76	400
8DPSK (DH3)	2402	1.650	160.00	264.00	400
8DPSK (DH5)	2402	2.910	106.67	310.40	400

Modulation Type: GFSK (1Mbps)
DH1

Modulation Type: π/4-DQPSK (2Mbps)
DH1

DH3

DH3

DH5
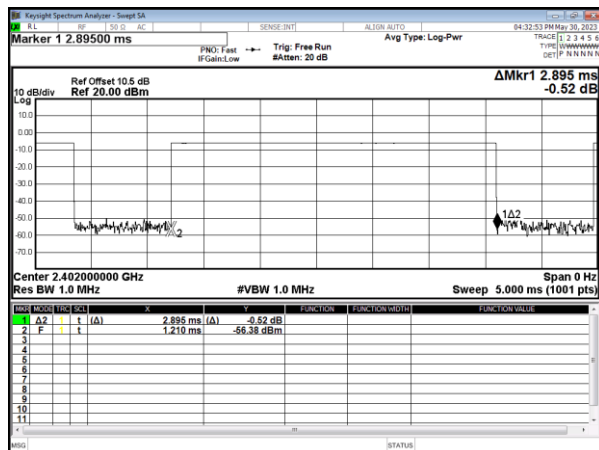
DH5

Modulation Type: 8DPSK (3Mbps)
DH1

DH3
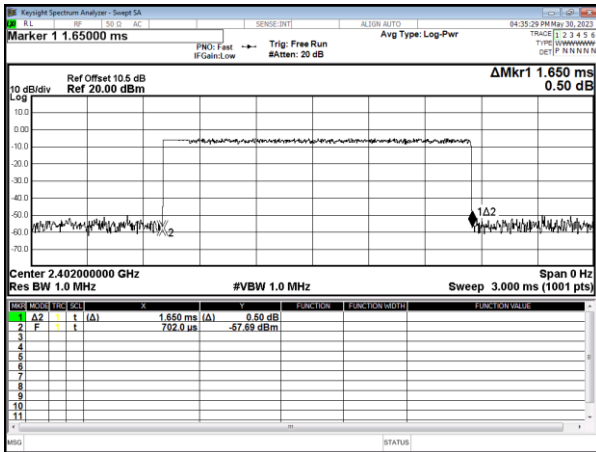
DH5
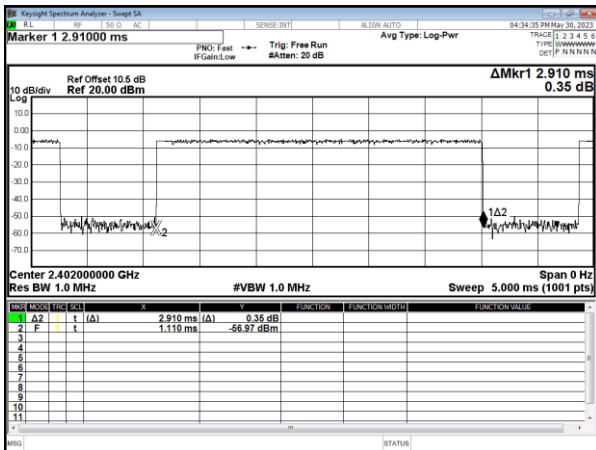
Test Period = 0.4 (second/ channel) x 20 Channel = 8 sec

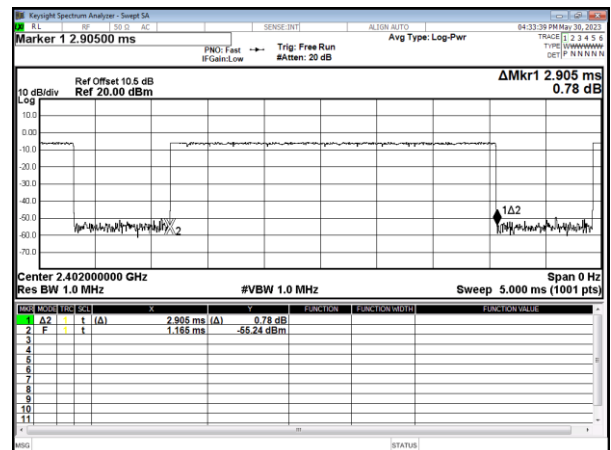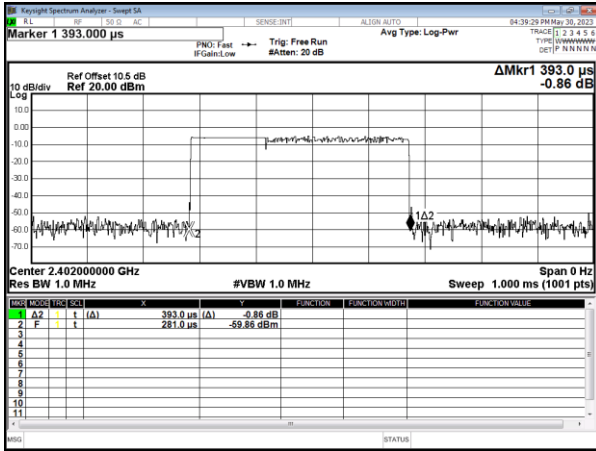| Modulation Type	Frequency (MHz)	Length of transmission time (ms)	Number of transmission in a 8 (20 Hopping*0.4)	Dwell Time (ms)	Limit (ms)
AFH (DH1)	2402-2421	0.395	160	63.20	400
AFH (DH3)	2402-2421	1.656	80	132.48	400
AFH (DH5)	2402-2421	2.910	53.33	155.19	400

Modulation Type: AFH (DH1)	Modulation Type: AFH (DH3)

Modulation Type: AFH (DH5)	
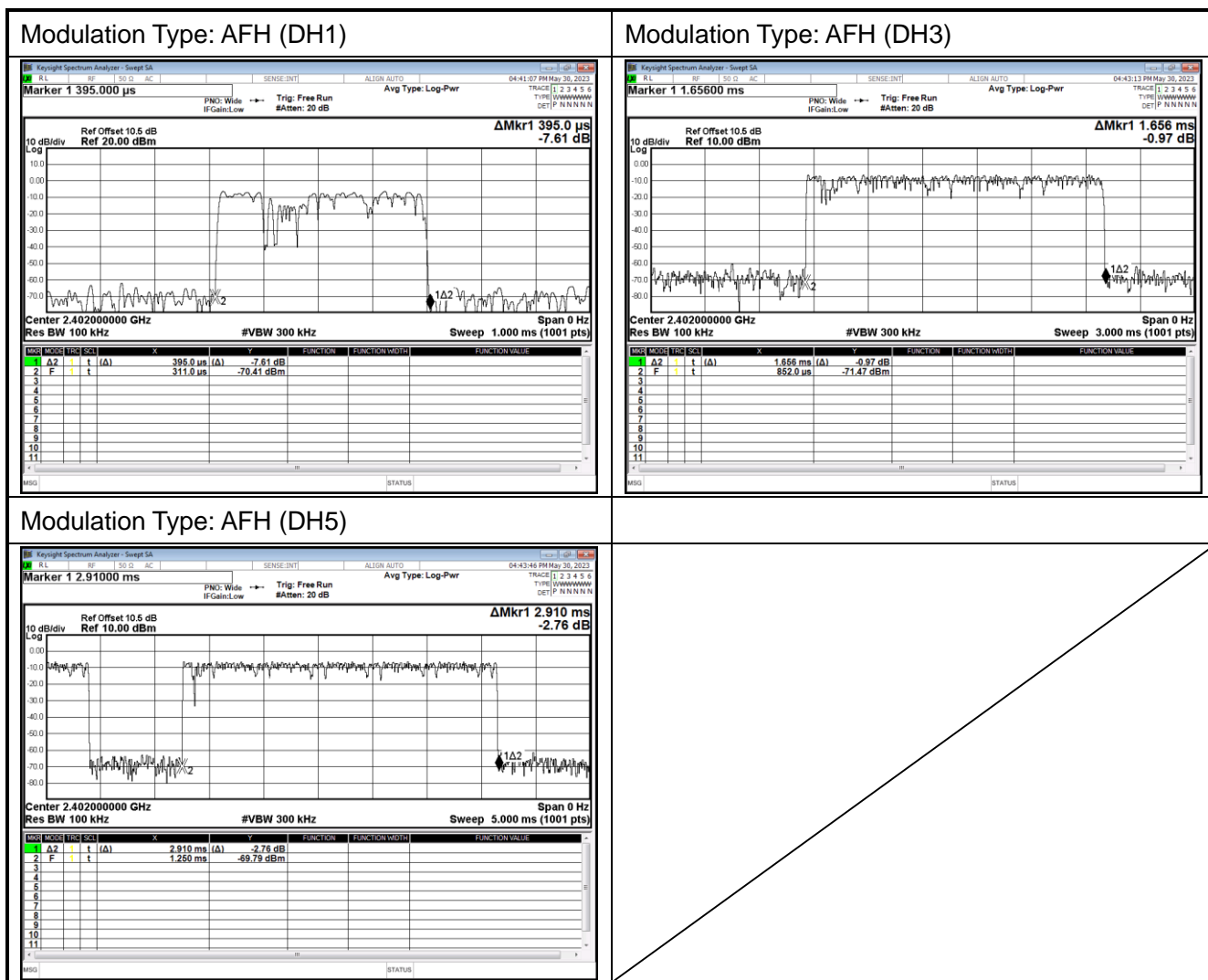
11. Number of Hopping Channels

11.1 Test Limit

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

11.2 Test Procedures

a. The transmitter output was connected to the spectrum analyzer.

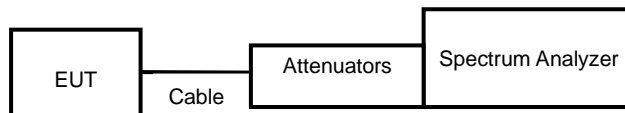b. Set RBW of spectrum analyzer to 300 KHz and VBW to 300 KHz.

c. 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.

11.3 Test Setup Layout

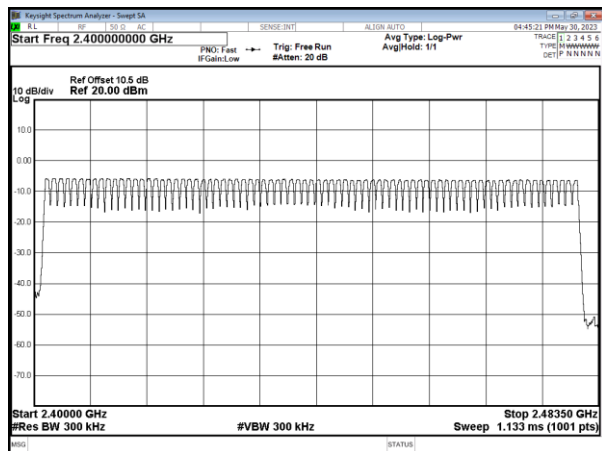## 11.4 Test Result and Data
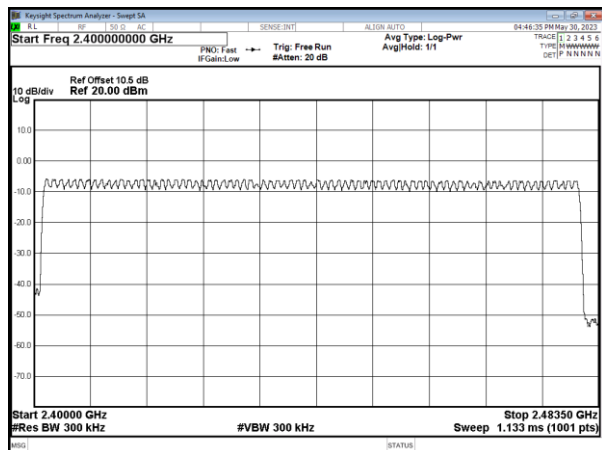
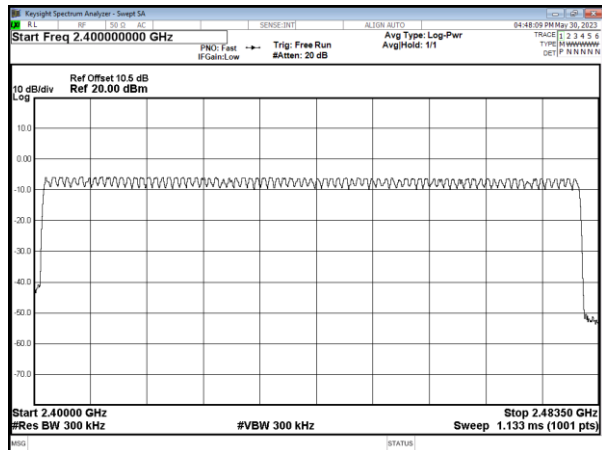| Modulation Type	Number of hopping channels
GFSK	79
π/4-DQPSK	79
8DPSK	79

Modulation Standard: GFSK (1Mbps)

Modulation Standard: π/4-DQPSK (2Mbps)

Modulation Standard: 8DPSK (3Mbps)

12. Maximum Peak Output Power

12.1 Test Limit

The Maximum Peak Output Power Measurement is 21dBm.

12.2 Test Procedures

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.

12.3 Test Setup Layout
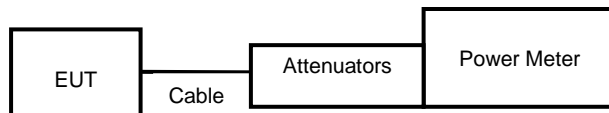
12.4 Test Result and Data

Modulation Type	Channel	Frequency (MHz)	Peak Power Output (dBm)	Peak Power Output (mW)
GFSK (1Mbps)	00	2402	-6.092	0.246
	39	2441	-6.350	0.232
	78	2480	-6.631	0.217
π/4-DQPSK (2Mbps)	00	2402	-5.127	0.307
	39	2441	-5.462	0.284
	78	2480	-5.594	0.276
8DPSK (3Mbps)	00	2402	-4.910	0.323
	39	2441	-5.044	0.313
	78	2480	-5.356	0.291

---------------------- **End of the report** ----------------------