

## Appendix A

### RF Test Data for BT V5.0(BDR/EDR) (Conducted Measurement)

Product Name: PORTABLE PARTY SPEAKER

Trade Mark: DS18

Test Model: TLV6

#### Environmental Conditions

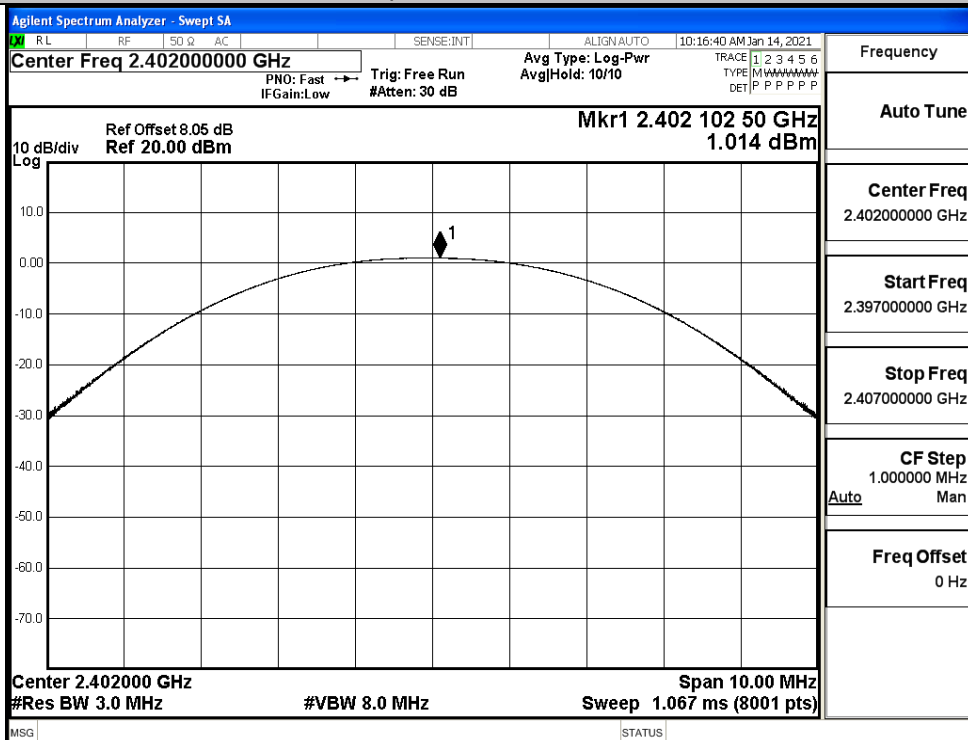
|                    |           |
|--------------------|-----------|
| Temperature:       | 22.3° C   |
| Relative Humidity: | 53.4%     |
| ATM Pressure:      | 100.0 kPa |
| Test Engineer:     | Ben Jin   |
| Supervised by:     | Li Huan   |

#### A.1 Maximum Conducted Peak Output Power

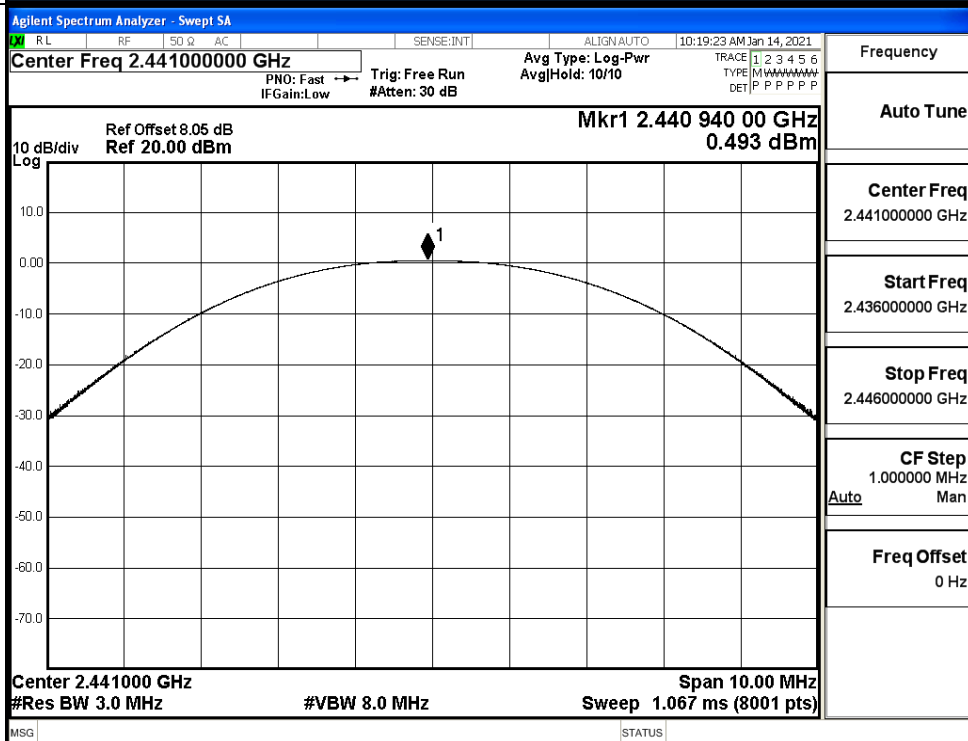
| Mode          | Channel. | Maximum Peak Output Power [dBm] | Limit [dBm] | Verdict |
|---------------|----------|---------------------------------|-------------|---------|
| GFSK          | LCH      | 1.014                           | 21          | PASS    |
|               | MCH      | 0.493                           | 21          | PASS    |
|               | HCH      | -0.032                          | 21          | PASS    |
| $\pi/4$ DQPSK | LCH      | 1.004                           | 21          | PASS    |
|               | MCH      | 0.503                           | 21          | PASS    |
|               | HCH      | -0.073                          | 21          | PASS    |
| 8DPSK         | LCH      | 1.056                           | 21          | PASS    |
|               | MCH      | 0.486                           | 21          | PASS    |
|               | HCH      | -0.066                          | 21          | PASS    |

## Test Graphs

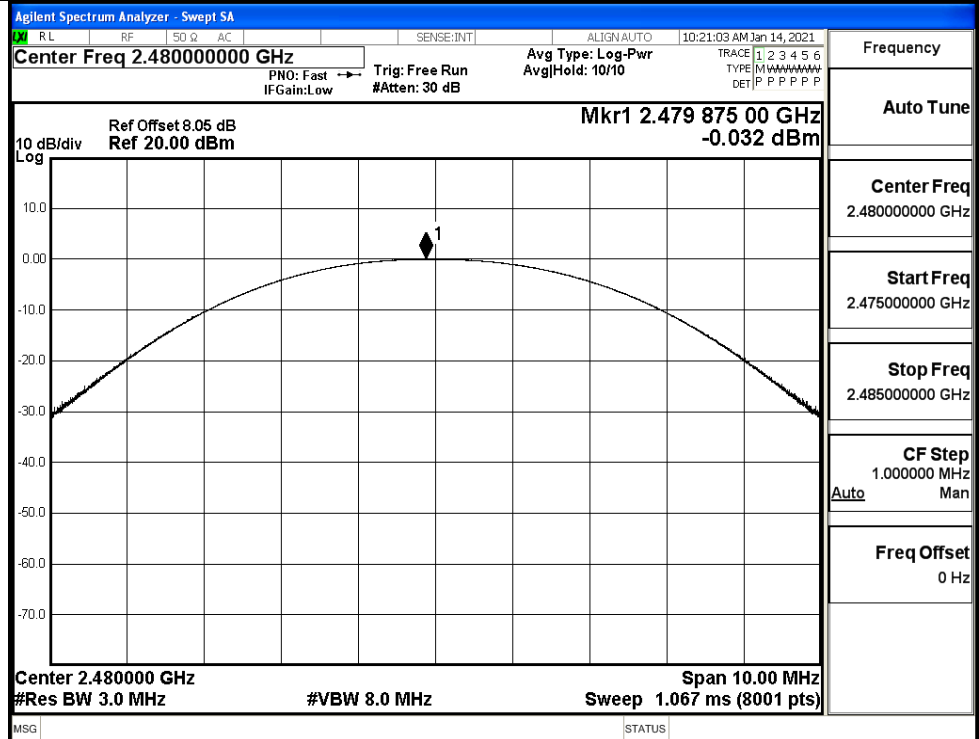
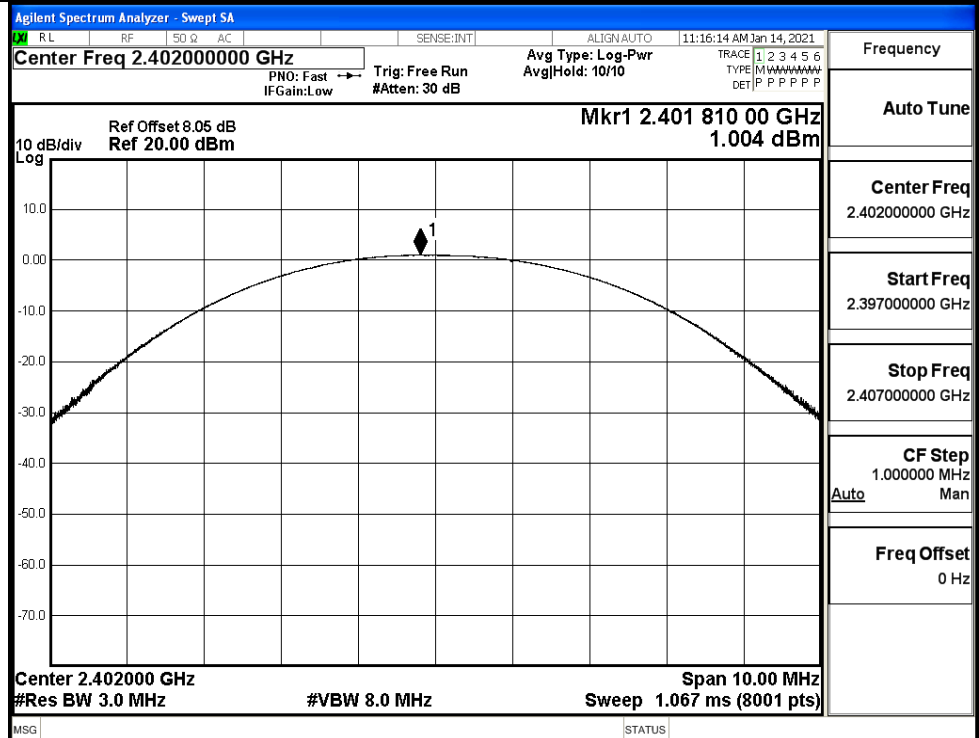
GFSK/LCH

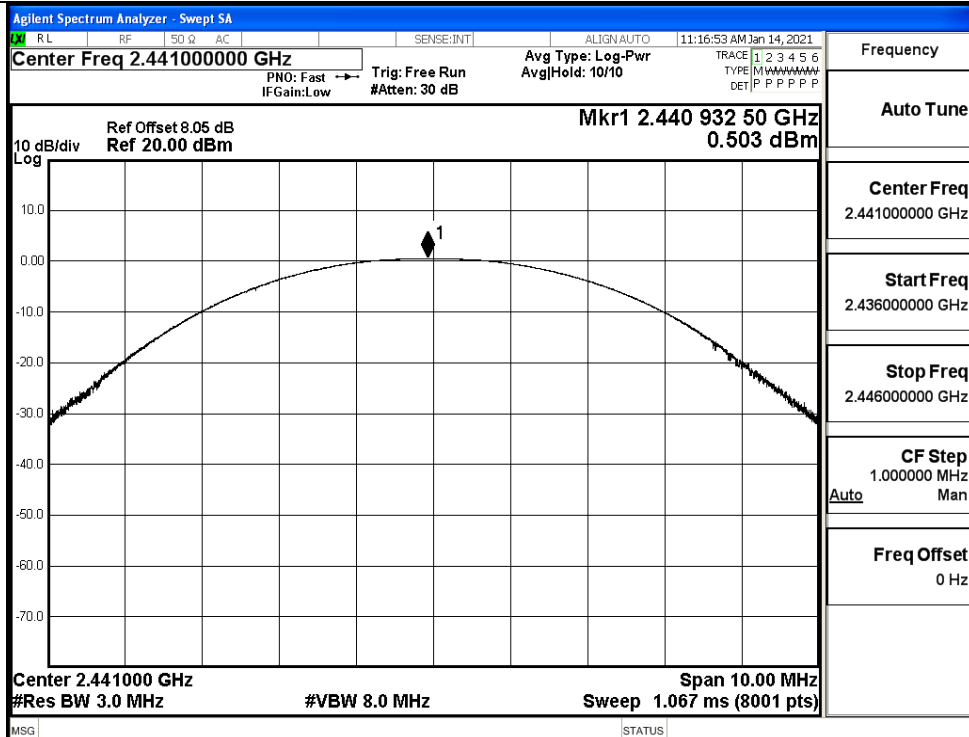
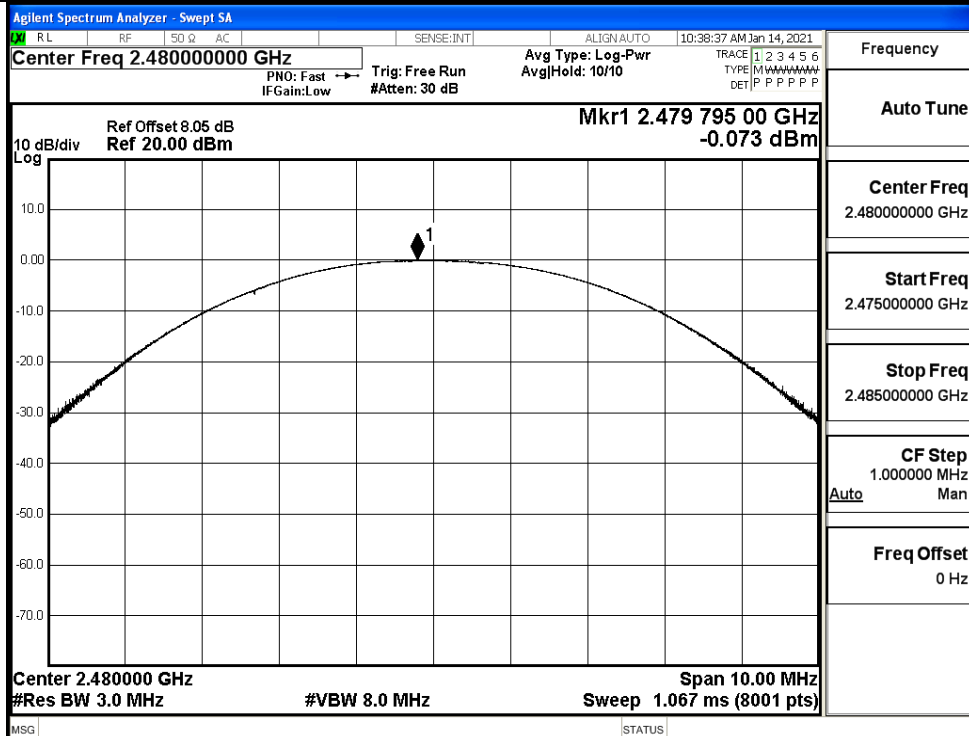


GFSK/MCH

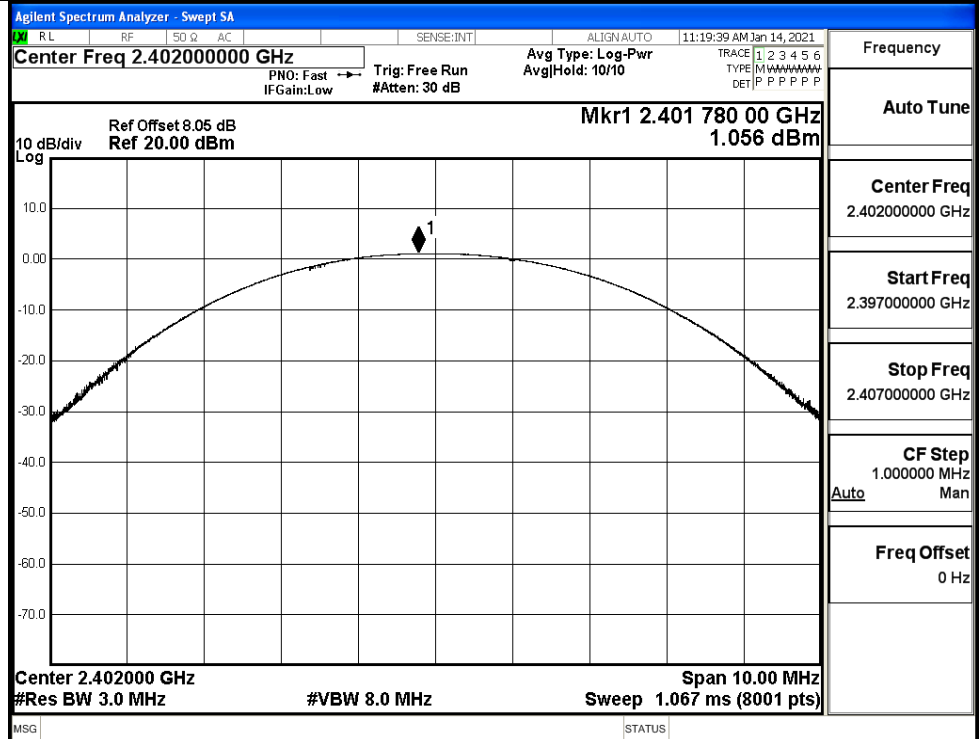


GFSK/HCH

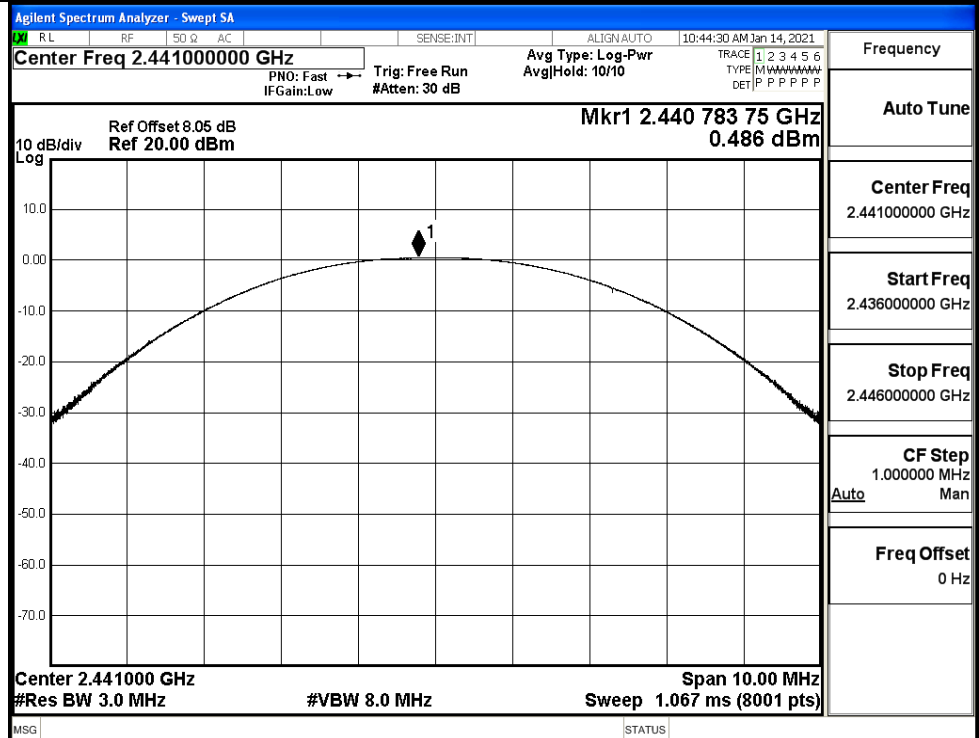
 $\pi/4$ DQPSK/LCH

$\pi/4$ DQPSK/MCH $\pi/4$ DQPSK/HCH

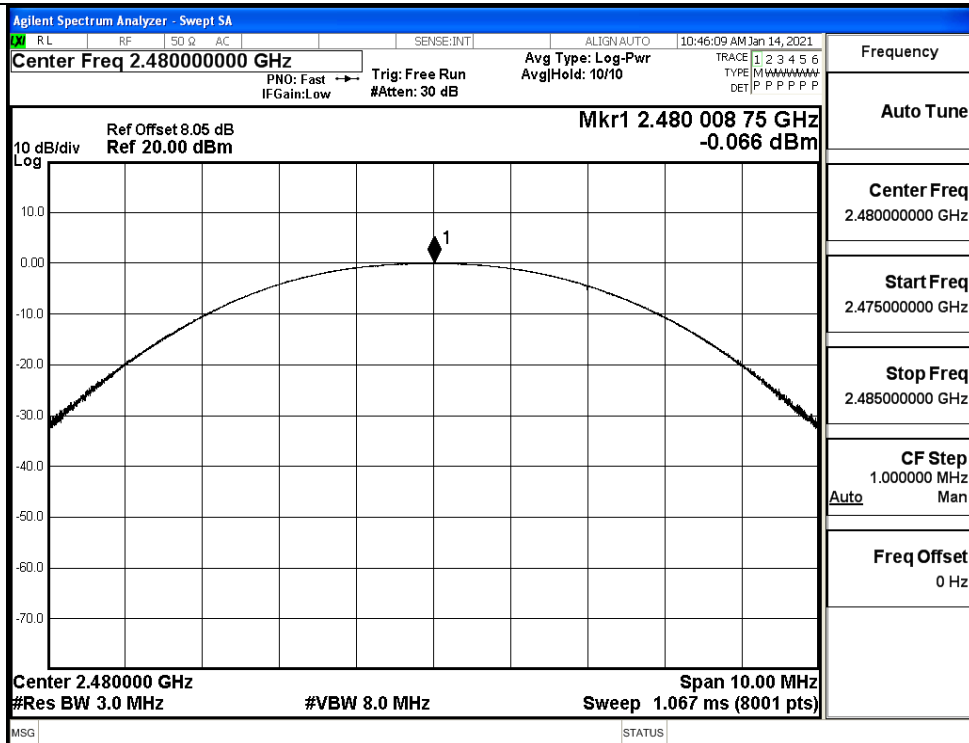
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

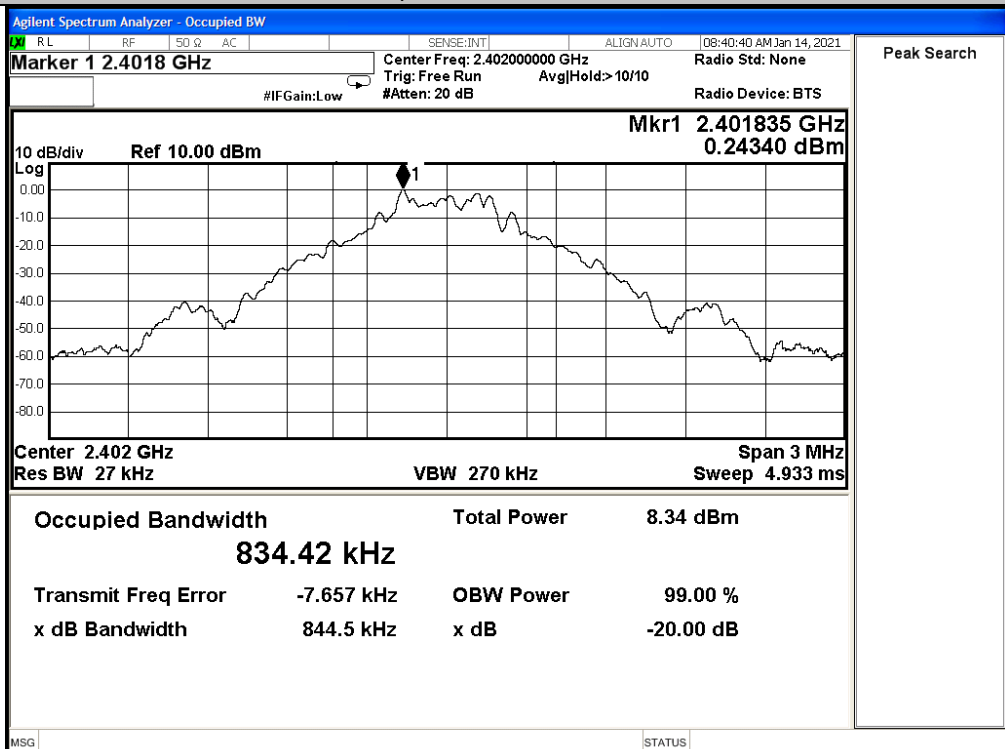


## A.2 20dB Bandwidth

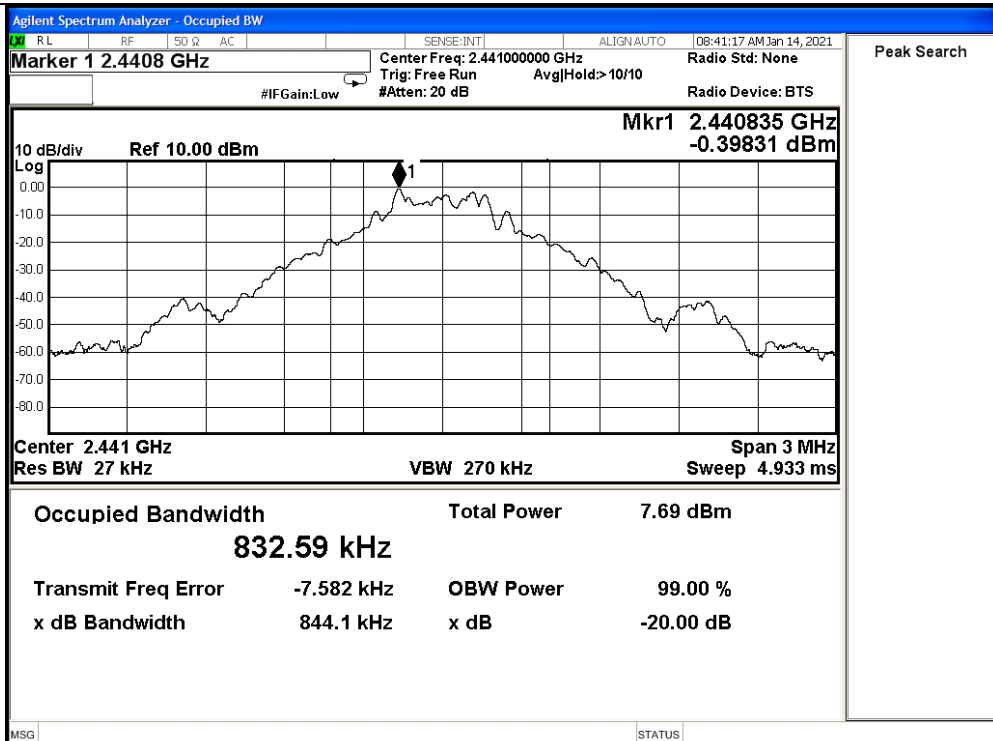
| Mode          | Channel. | 20dB Bandwidth [MHz] | Limit [MHz]   | Verdict |
|---------------|----------|----------------------|---------------|---------|
| GFSK          | LCH      | 0.8445               | Not Specified | PASS    |
|               | MCH      | 0.8441               | Not Specified | PASS    |
|               | HCH      | 0.8450               | Not Specified | PASS    |
| $\pi/4$ DQPSK | LCH      | 1.2020               | Not Specified | PASS    |
|               | MCH      | 1.2010               | Not Specified | PASS    |
|               | HCH      | 1.2030               | Not Specified | PASS    |
| 8DPSK         | LCH      | 1.2740               | Not Specified | PASS    |
|               | MCH      | 1.2750               | Not Specified | PASS    |
|               | HCH      | 1.2760               | Not Specified | PASS    |

## Test Graphs

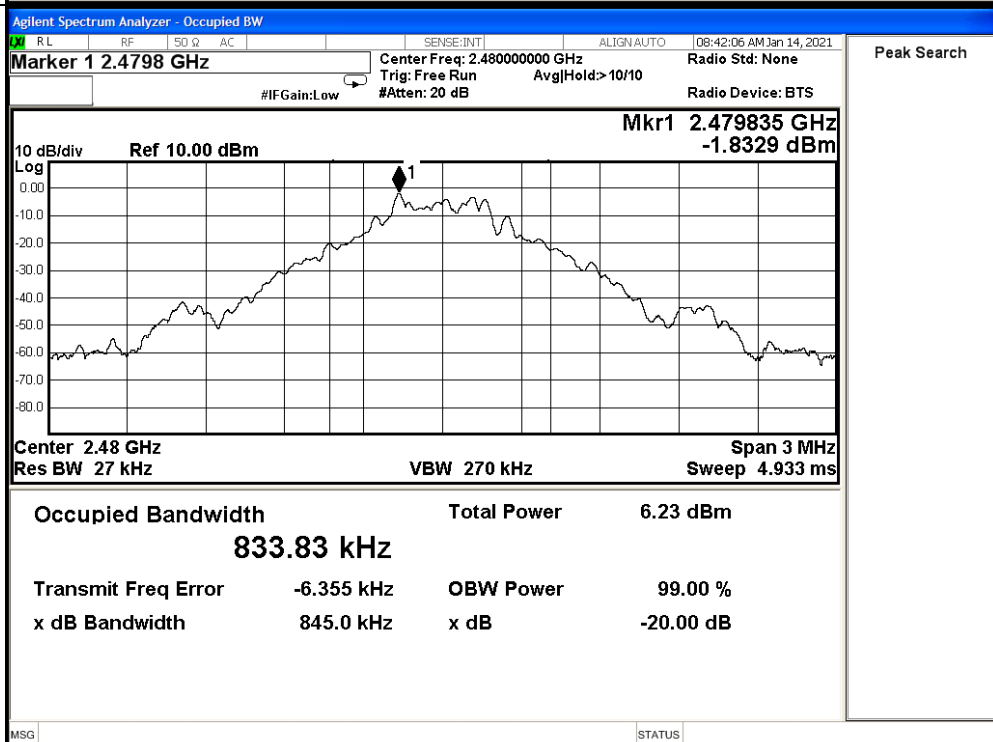
GFSK/LCH



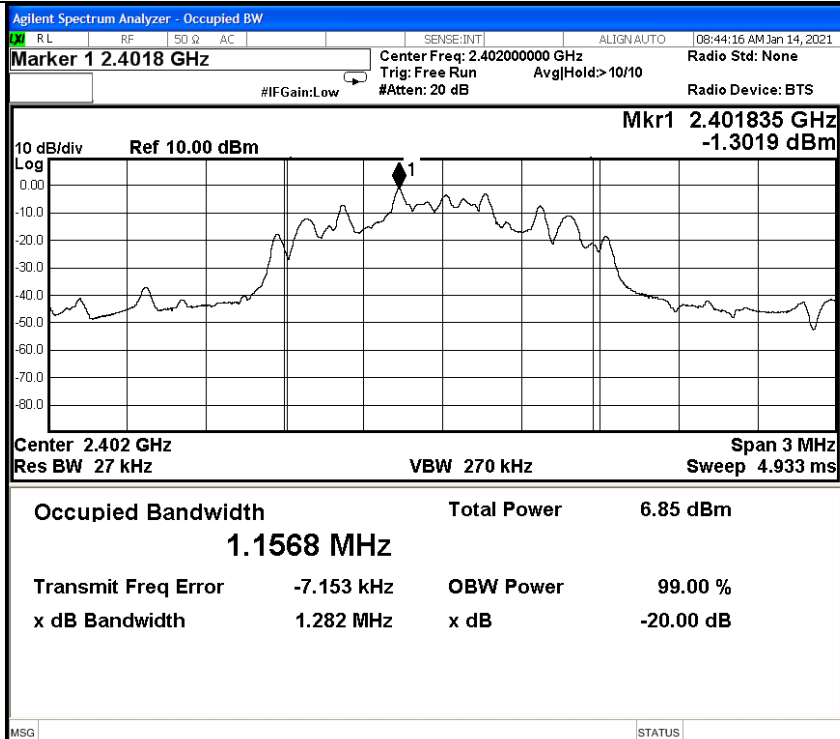
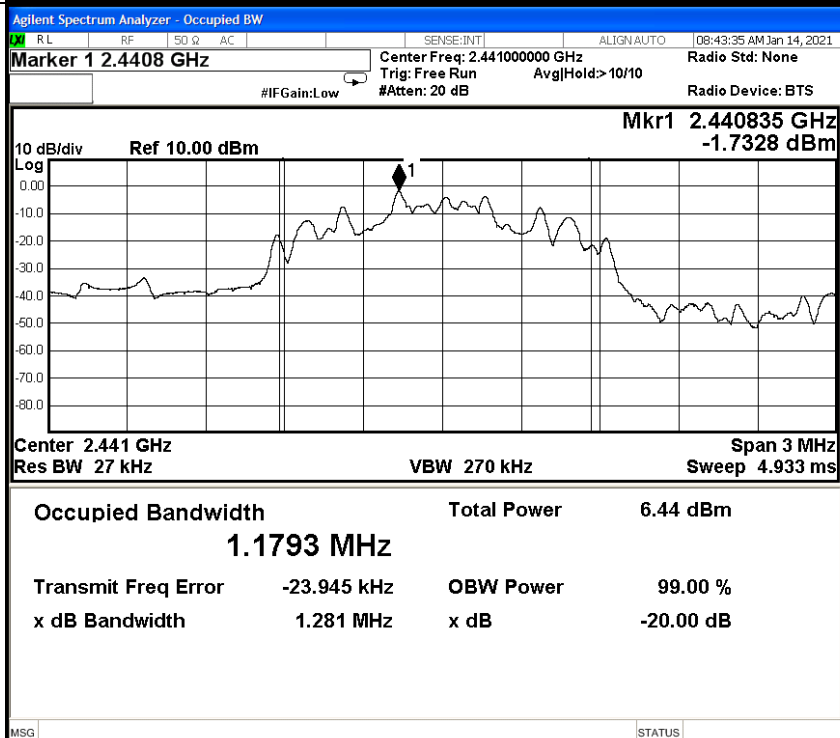
GFSK/MCH

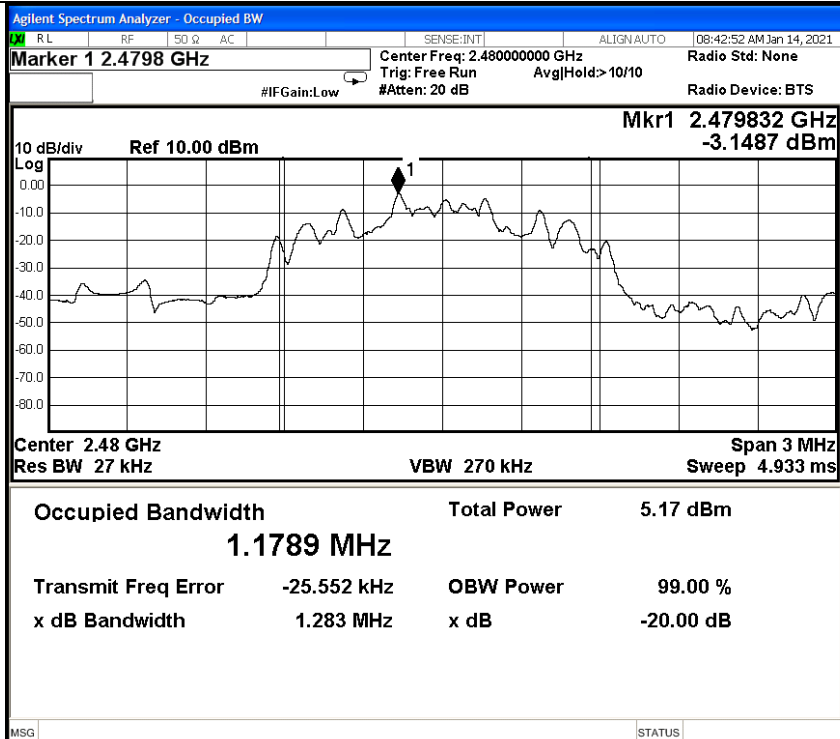


GFSK/HCH

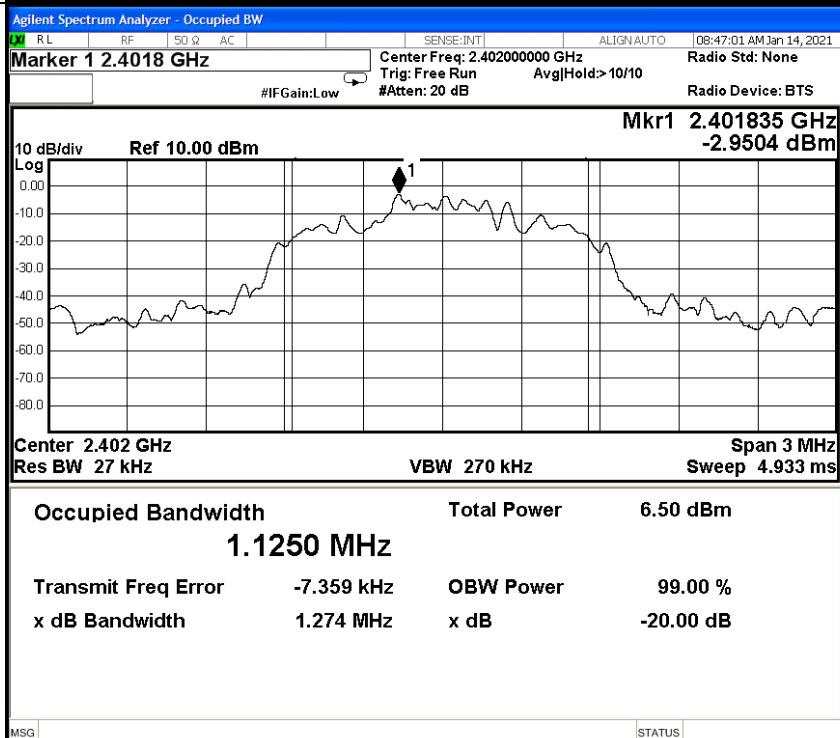




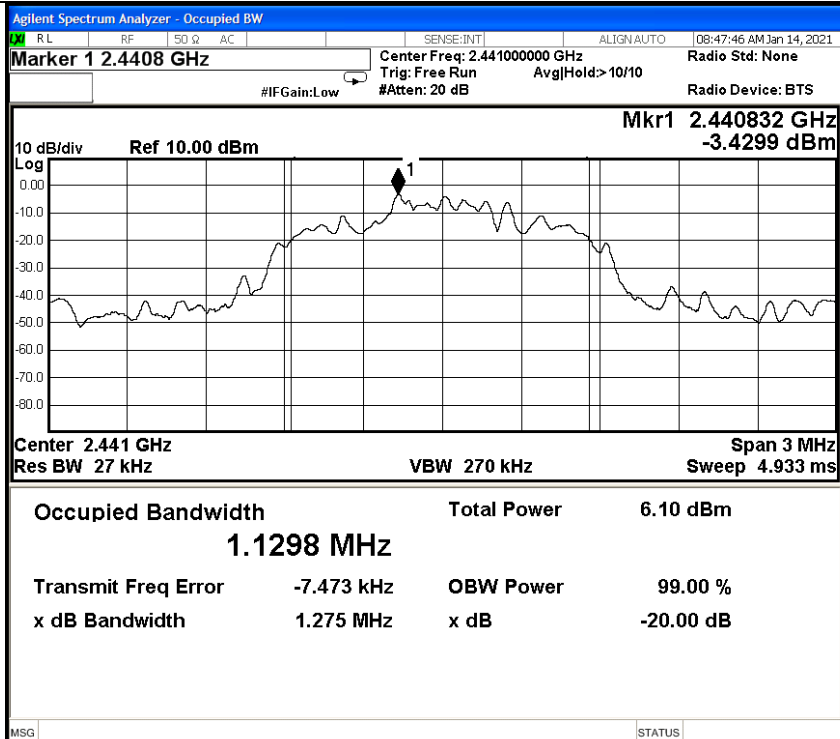
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

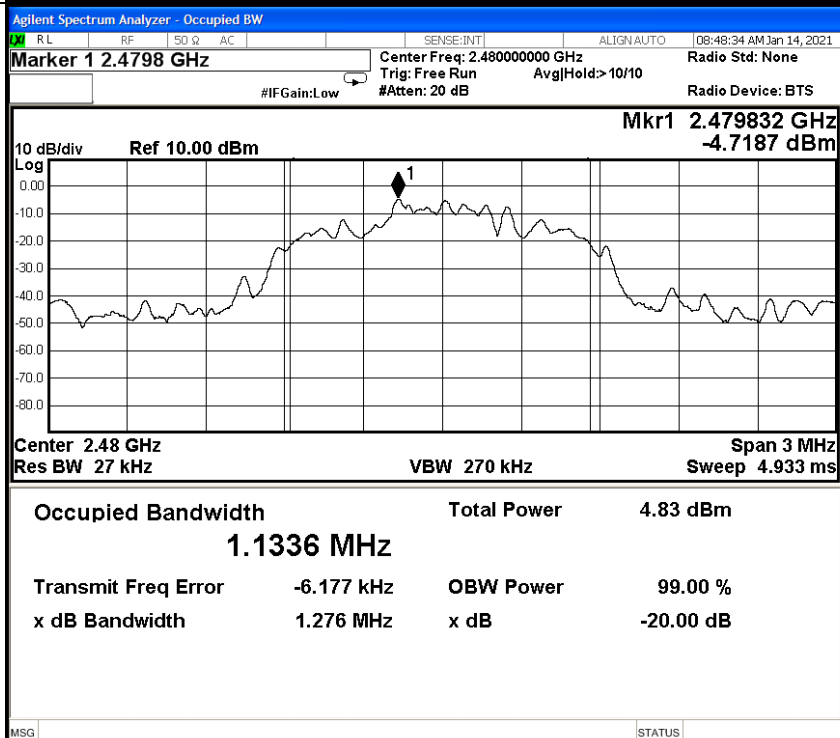
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH



| Mode          | Channel. | Carrier Frequency Separation [MHz] | Limit [MHz] | Verdict |
|---------------|----------|------------------------------------|-------------|---------|
| GFSK          | LCH      | 0.999                              | 0.563       | PASS    |
|               | MCH      | 0.984                              | 0.563       | PASS    |
|               | HCH      | 1.029                              | 0.563       | PASS    |
| $\pi/4$ DQPSK | LCH      | 0.993                              | 0.801       | PASS    |
|               | MCH      | 0.996                              | 0.801       | PASS    |
|               | HCH      | 0.988                              | 0.802       | PASS    |
| 8DPSK         | LCH      | 1.009                              | 0.849       | PASS    |
|               | MCH      | 0.994                              | 0.850       | PASS    |
|               | HCH      | 1.016                              | 0.851       | PASS    |

**Test Graphs**

**Agilent Spectrum Analyzer - Swept SA**

R L RF 50 Ω AC SENSE:INT ALIGN:AUTO 08:58:40 AM Jan 14, 2021

**Marker 2 2.401836011200 GHz** Avg Type: RMS  
PNO: Wide IF Gain: Low Trig: Free Run Atten: 20 dB AvgHold>100/100

TRACE 1 2 3 4 5 6 TYPE M W W W W W W W DET A N N N N N N

**Mkr2 2.401 836 01 GHz 2.399 dBm**

10 dB/div Ref 10.00 dBm

Log

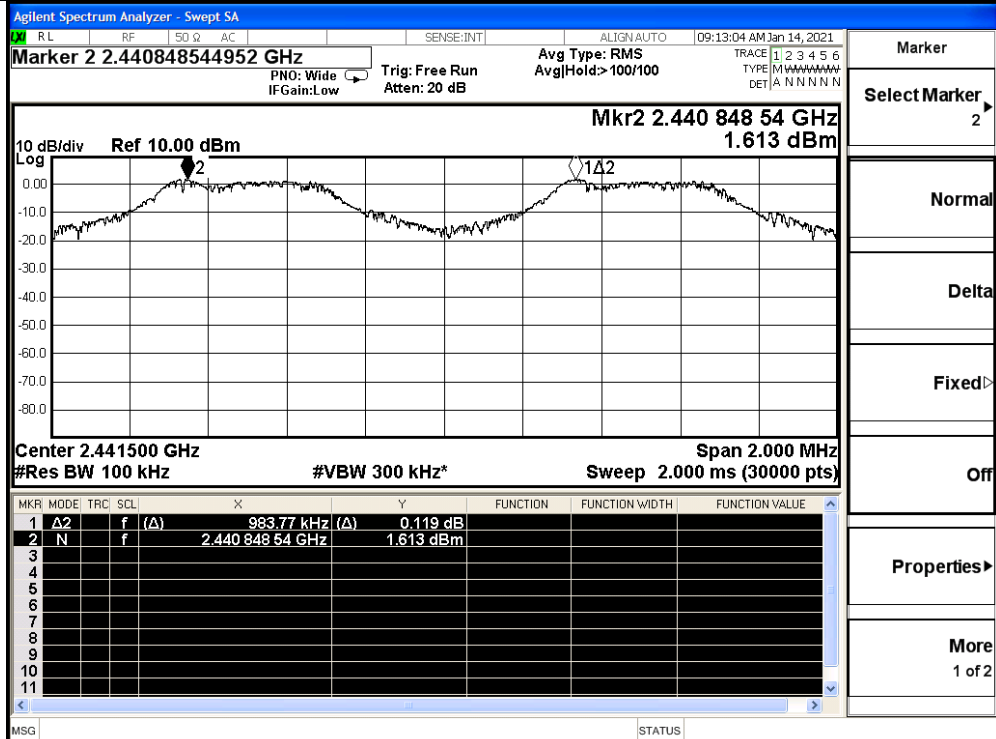
Center 2.402500 GHz Span 2.000 MHz  
#Res BW 100 kHz #VBW 300 kHz\* Sweep 2.000 ms (30000 pts)

| MKR | MODE | TRC | SCL | X                | Y            | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE |
|-----|------|-----|-----|------------------|--------------|----------|----------------|----------------|
| 1   | Δ2   | f   | (Δ) | 998.83 kHz       | (Δ) 0.039 dB |          |                |                |
| 2   | N    | f   |     | 2.401 836 01 GHz | 2.399 dBm    |          |                |                |
| 3   |      |     |     |                  |              |          |                |                |
| 4   |      |     |     |                  |              |          |                |                |
| 5   |      |     |     |                  |              |          |                |                |
| 6   |      |     |     |                  |              |          |                |                |
| 7   |      |     |     |                  |              |          |                |                |
| 8   |      |     |     |                  |              |          |                |                |
| 9   |      |     |     |                  |              |          |                |                |
| 10  |      |     |     |                  |              |          |                |                |
| 11  |      |     |     |                  |              |          |                |                |

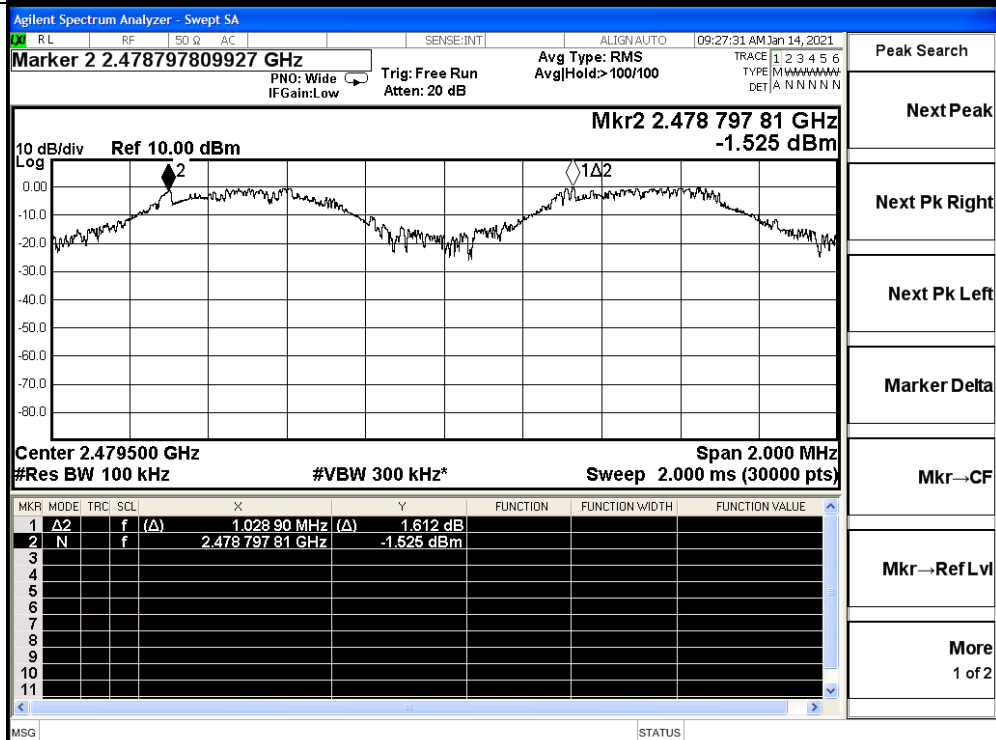
MSG STATUS

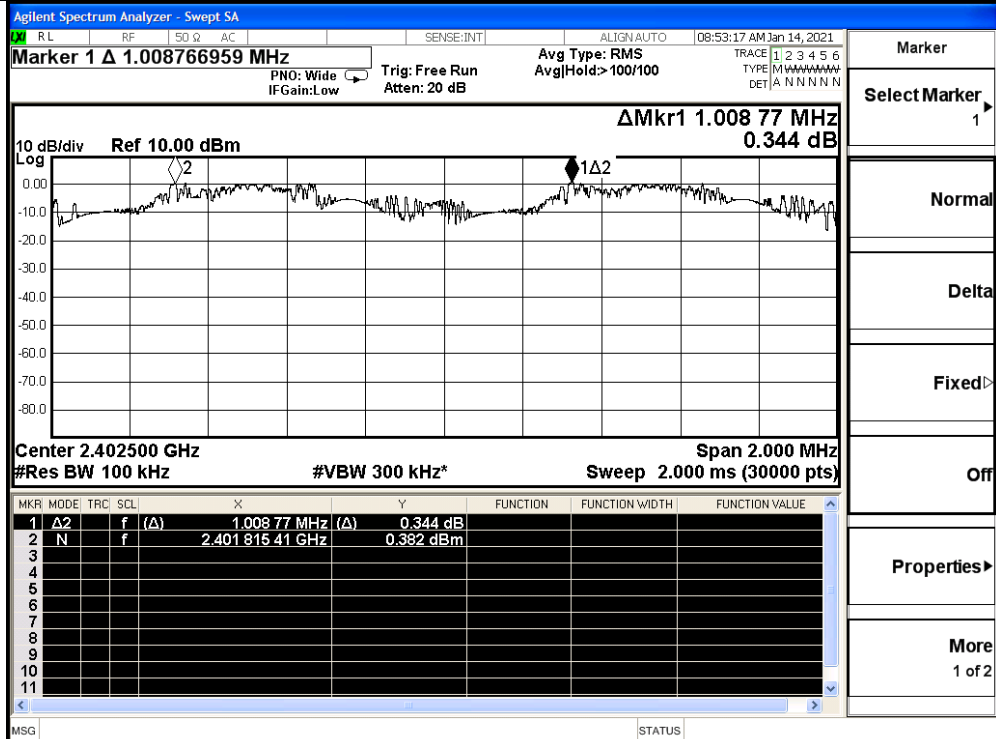
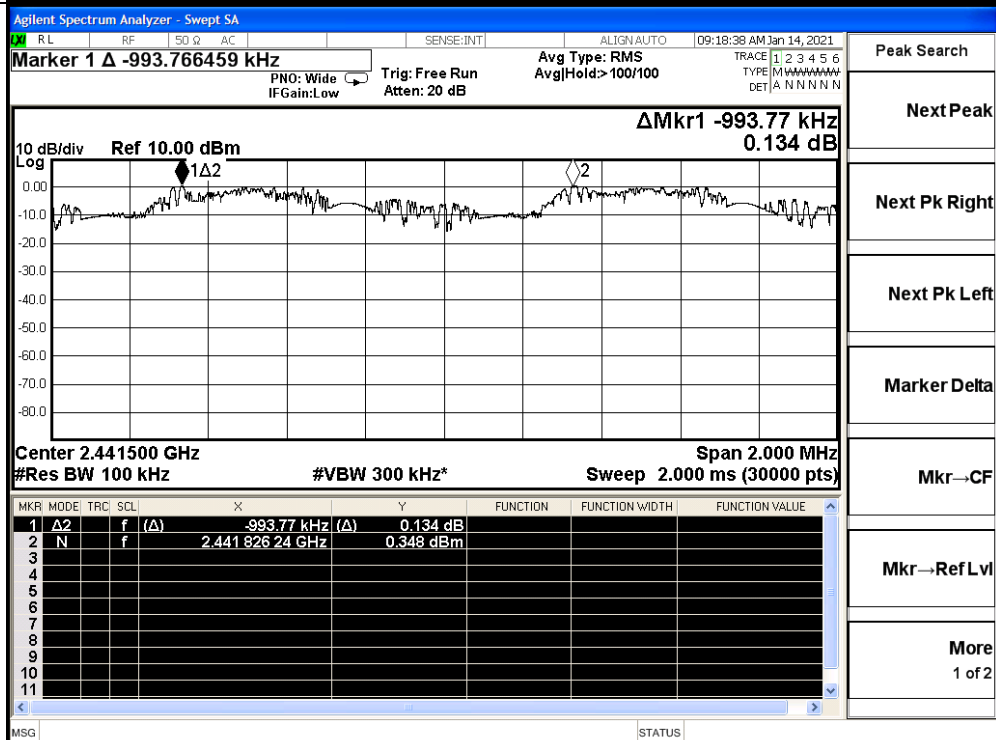
Peak Search  
Next Peak  
Next Pk Right  
Next Pk Left  
Marker Delta  
Mkr→CF  
Mkr→RefLvl  
More  
1 of 2

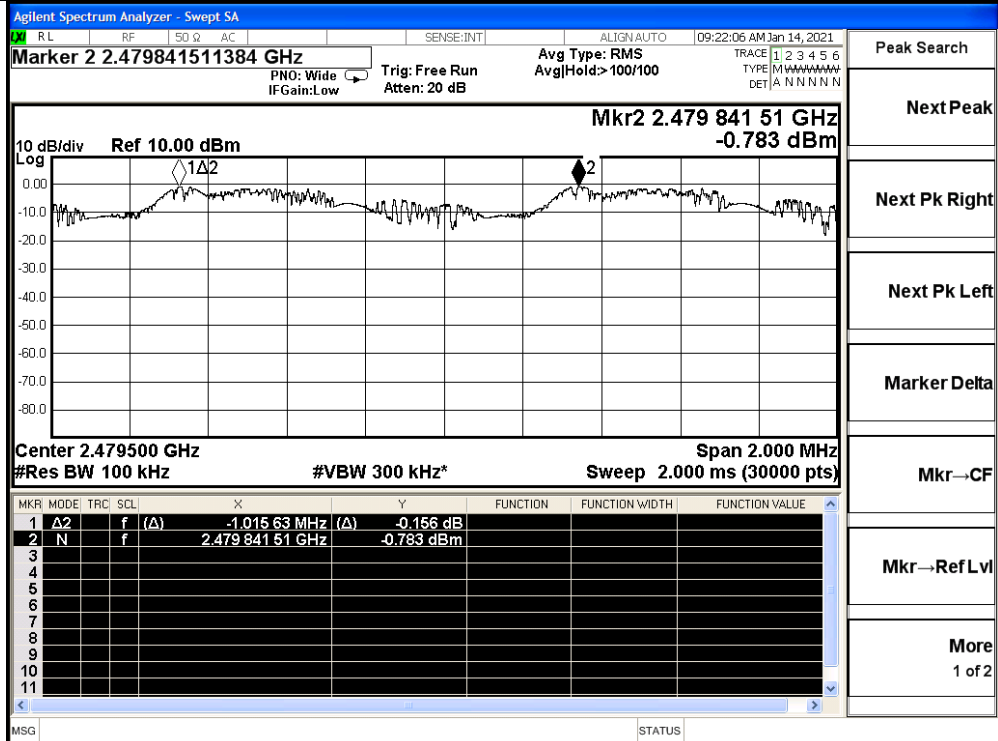
GFSK/MCH



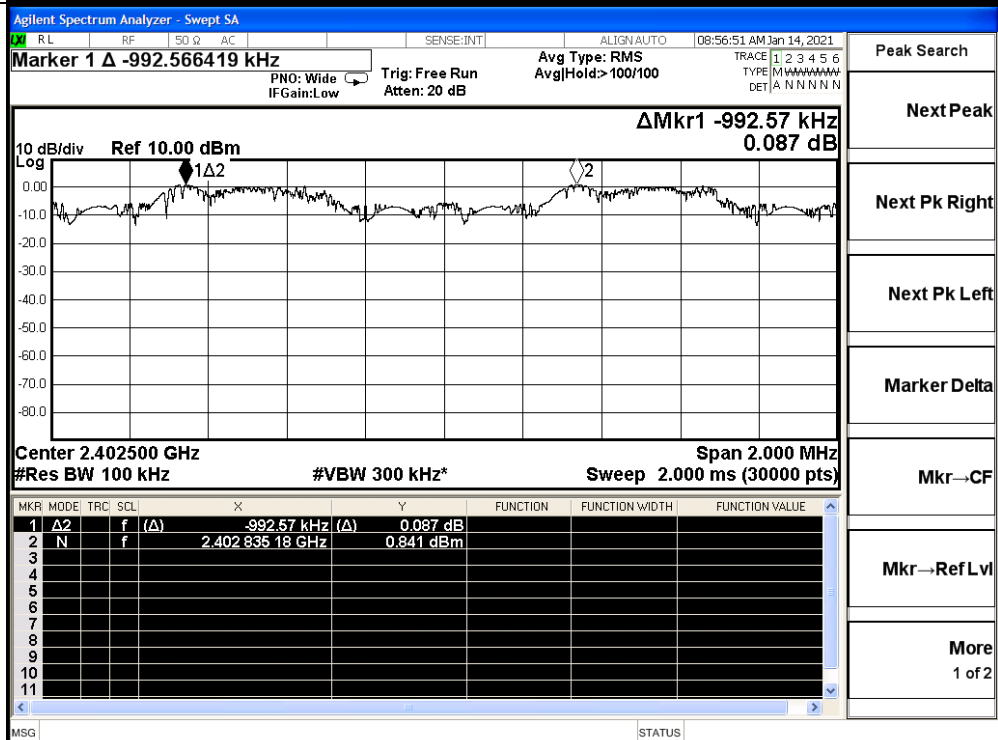
GFSK/HCH



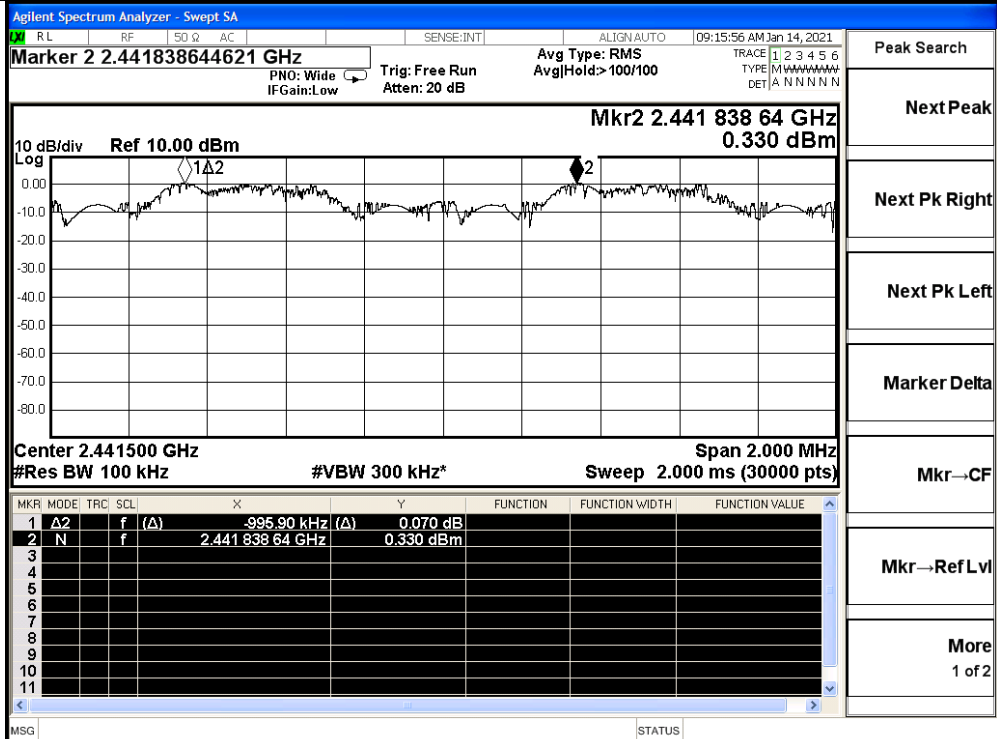
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

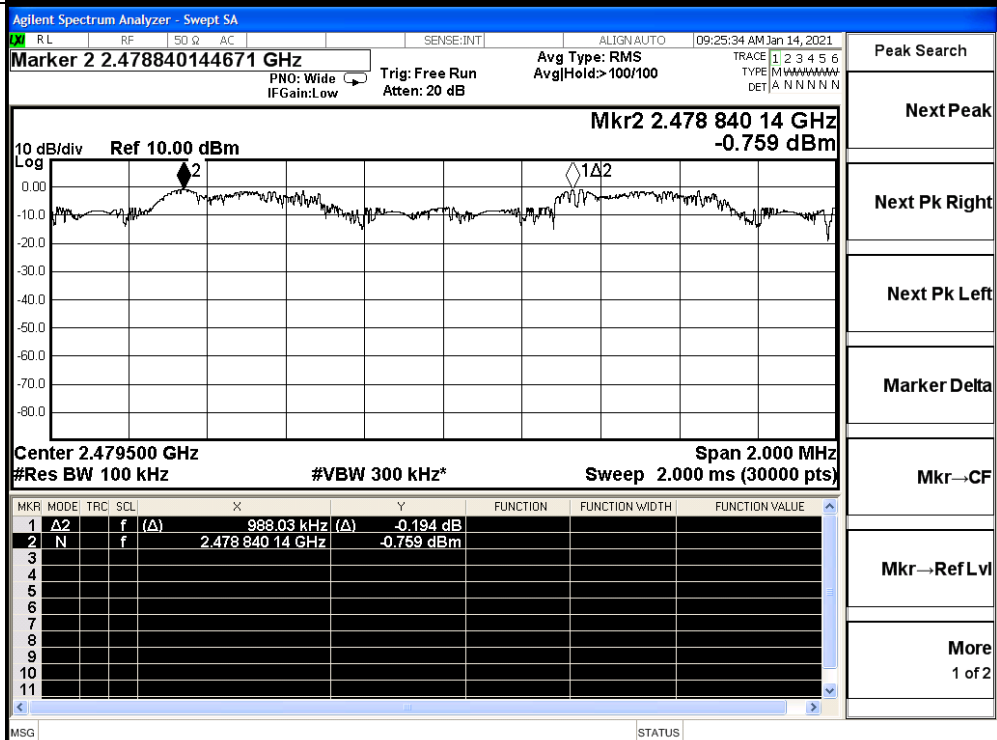
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH



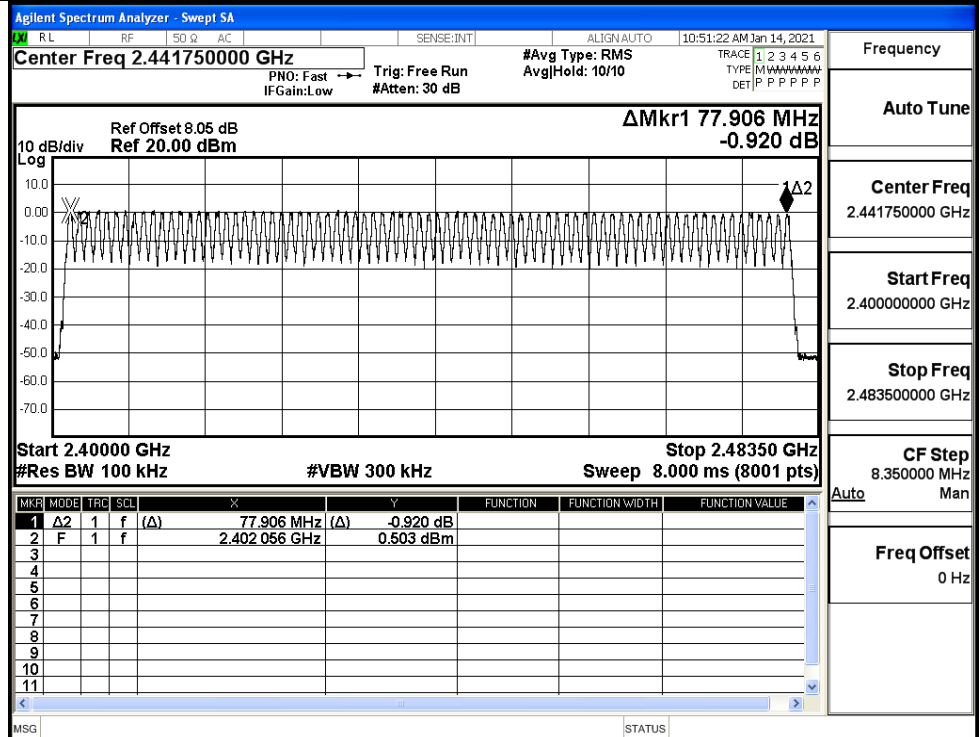


## A.4 Hopping Channel Number

| Mode          | Channel. | Number of Hopping Channel [N] | Limit [N] | Verdict |
|---------------|----------|-------------------------------|-----------|---------|
| GFSK          | Hop      | 79                            | $\geq 15$ | PASS    |
| $\pi/4$ DQPSK | Hop      | 79                            | $\geq 15$ | PASS    |
| 8DPSK         | Hop      | 79                            | $\geq 15$ | PASS    |

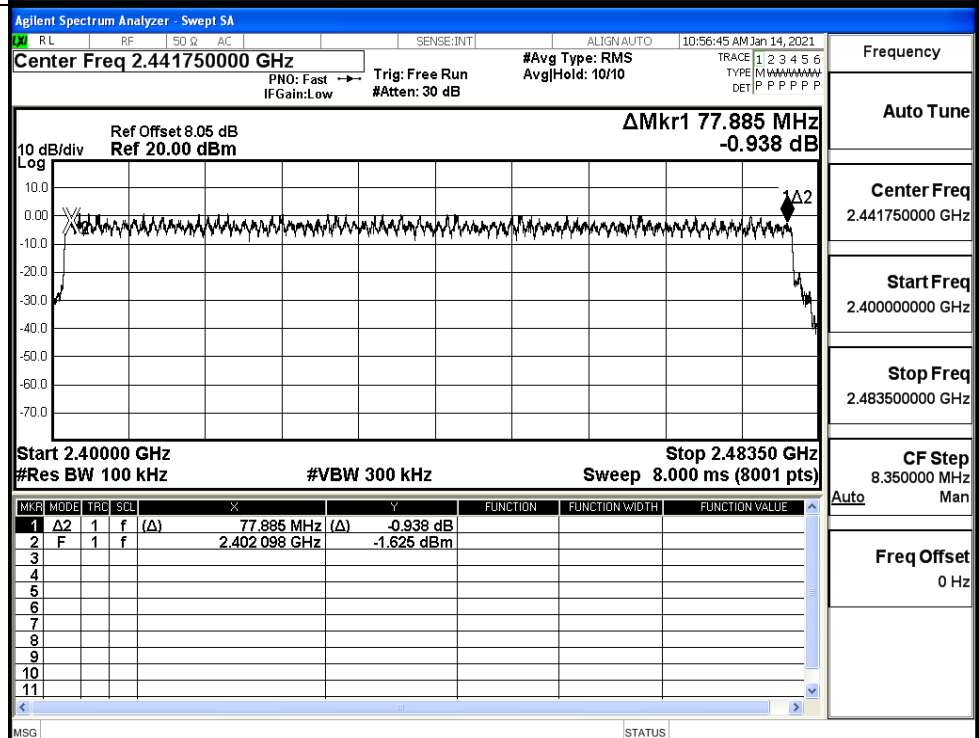
### Test Graphs

GFSK/Hop



Frequency

Auto Tune

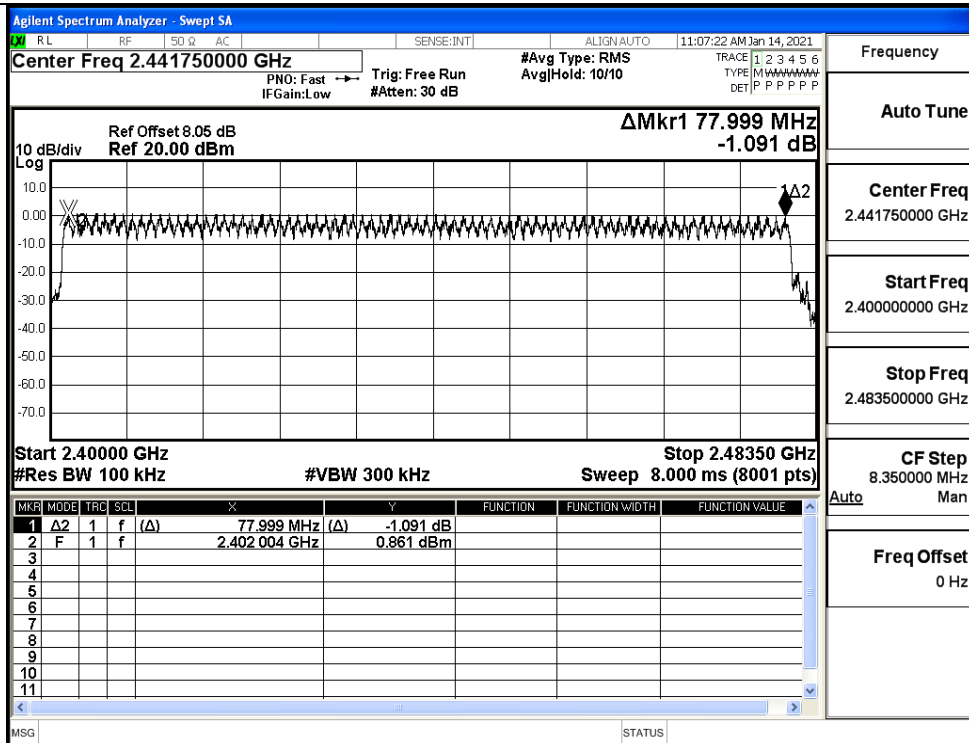
Center Freq  
2.441750000 GHzStart Freq  
2.400000000 GHzStop Freq  
2.483500000 GHzCF Step  
8.350000 MHz  
Auto ManFreq Offset  
0 Hz $\pi/4$ DQPSK/Hop

Frequency

Auto Tune

Center Freq  
2.441750000 GHzStart Freq  
2.400000000 GHzStop Freq  
2.483500000 GHzCF Step  
8.350000 MHz  
Auto ManFreq Offset  
0 Hz

8DPSK/Hop

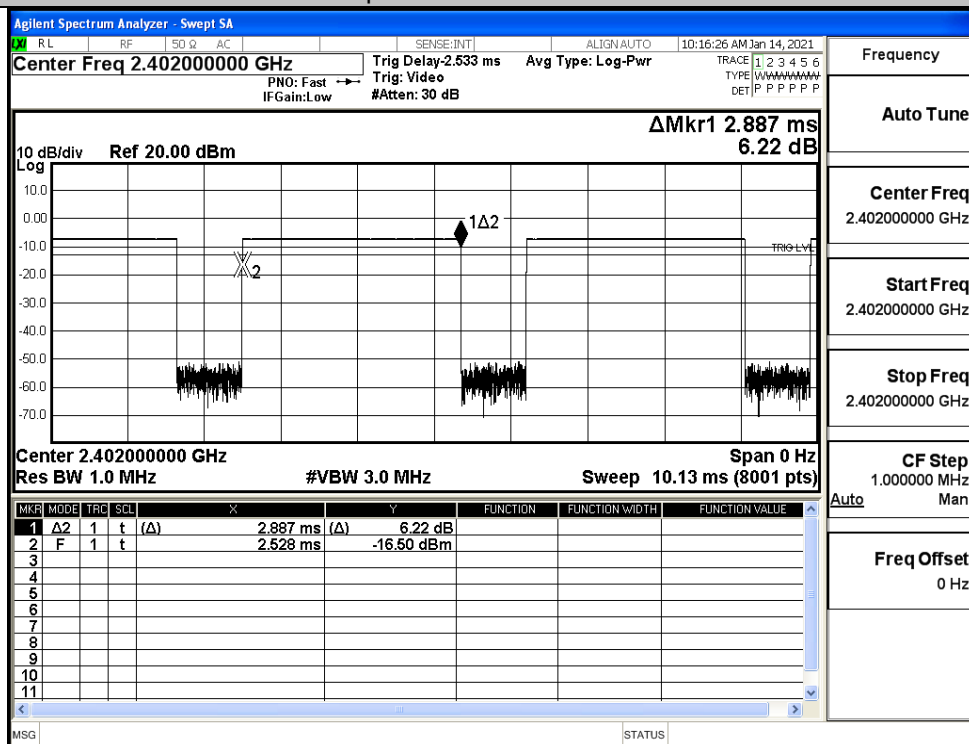


## A.5 Dwell Time

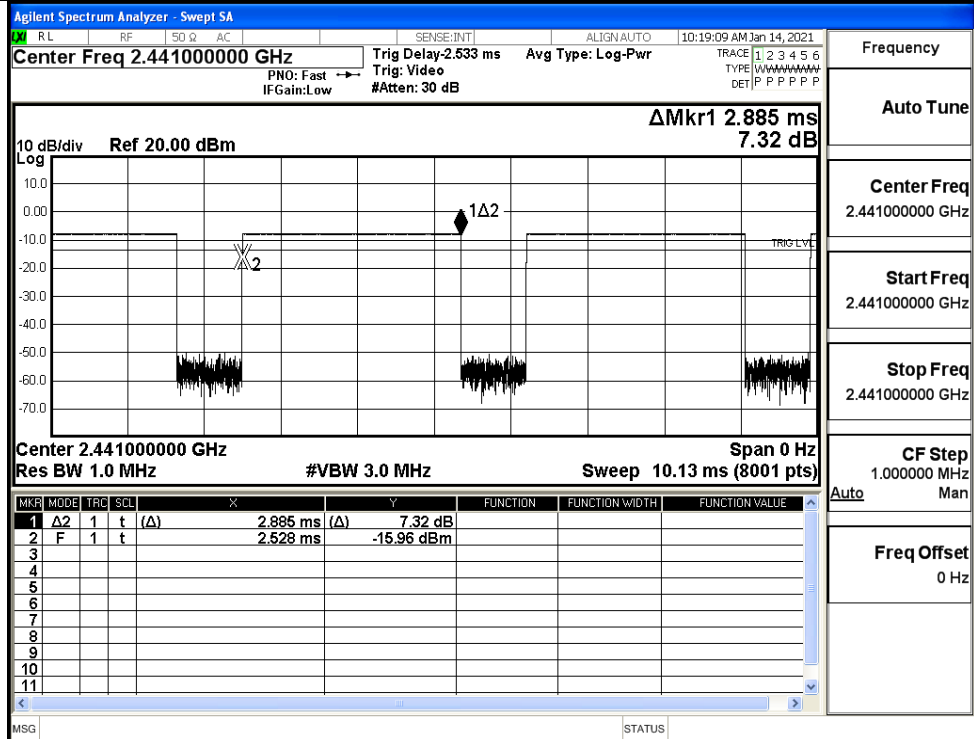
| Mode          | Packet | Channel | Burst Width<br>[ms/hop/ch] | Total<br>Hops[hop*ch] | Dwell Time[s] | Limit [s] | Verdict |
|---------------|--------|---------|----------------------------|-----------------------|---------------|-----------|---------|
| GFSK          | DH5    | LCH     | 2.89                       | 106.7                 | 0.308         | 0.4       | PASS    |
|               | DH5    | MCH     | 2.89                       | 106.7                 | 0.308         | 0.4       | PASS    |
|               | DH5    | HCH     | 2.89                       | 106.7                 | 0.308         | 0.4       | PASS    |
| $\pi/4$ DQPSK | 2DH5   | LCH     | 2.89                       | 106.7                 | 0.307         | 0.4       | PASS    |
|               | 2DH5   | MCH     | 2.89                       | 106.7                 | 0.307         | 0.4       | PASS    |
|               | 2DH5   | HCH     | 2.89                       | 106.7                 | 0.307         | 0.4       | PASS    |
| 8DPSK         | 3DH5   | LCH     | 2.89                       | 106.7                 | 0.089         | 0.4       | PASS    |
|               | 3DH5   | MCH     | 2.89                       | 106.7                 | 0.308         | 0.4       | PASS    |
|               | 3DH5   | HCH     | 2.89                       | 106.7                 | 0.308         | 0.4       | PASS    |

### Test Graphs

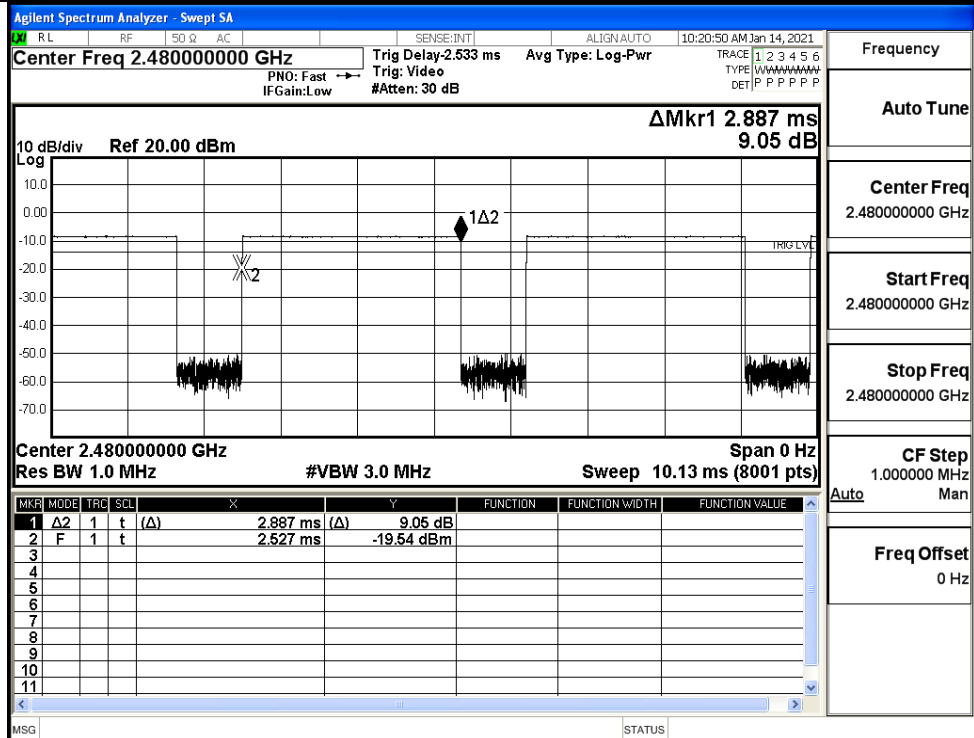
GFSK\_DH5/LCH



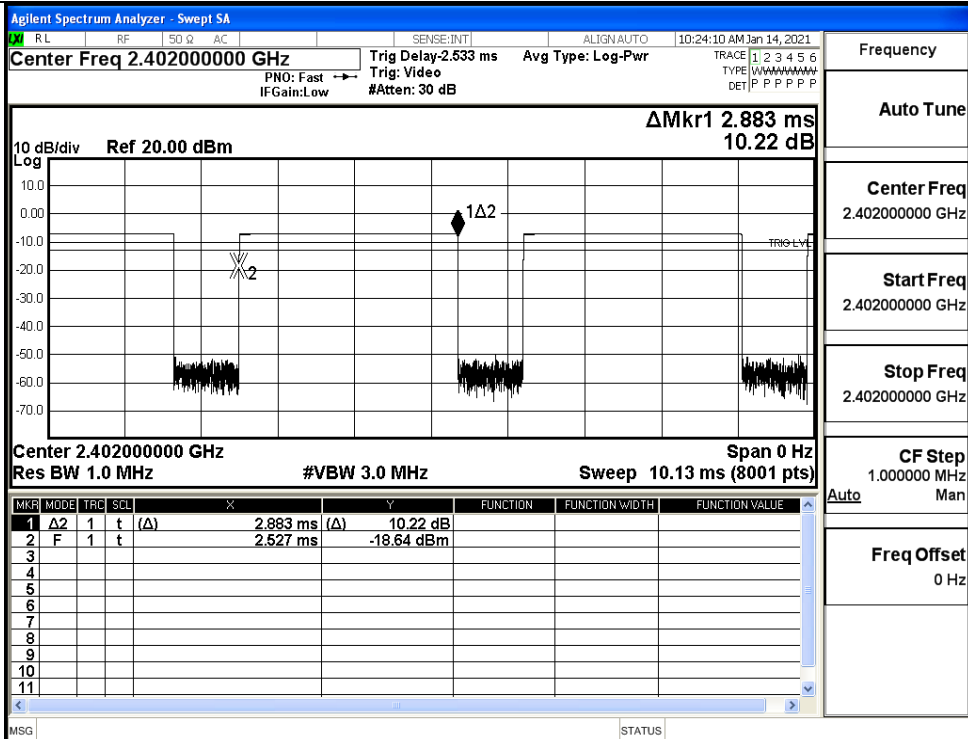
GFSK\_DH5/MCH



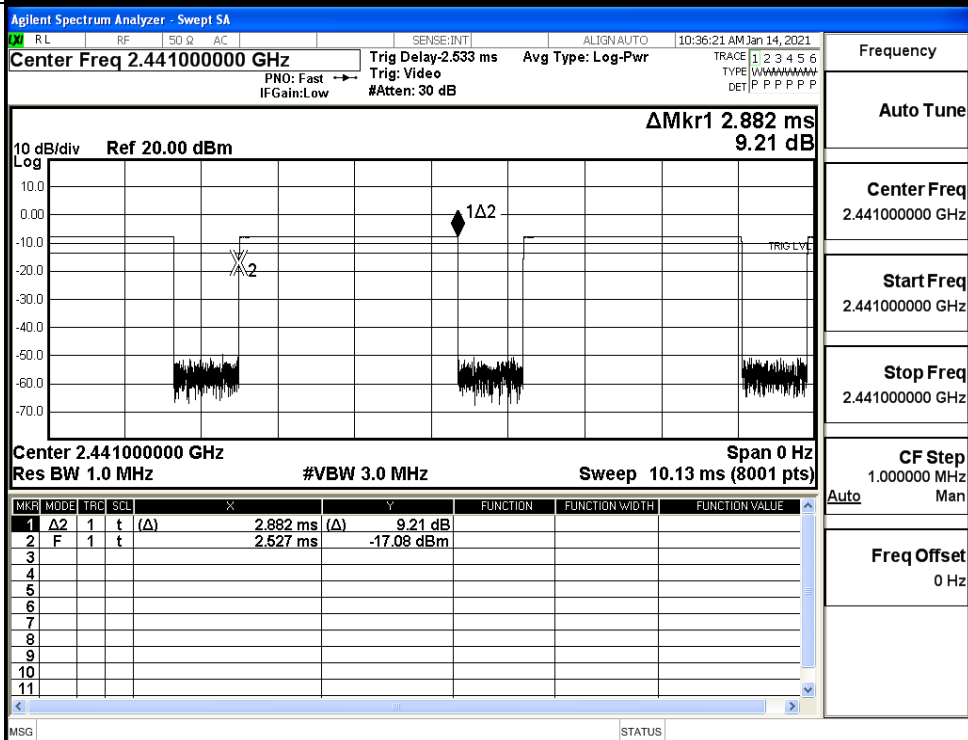
GFSK\_DH5/HCH



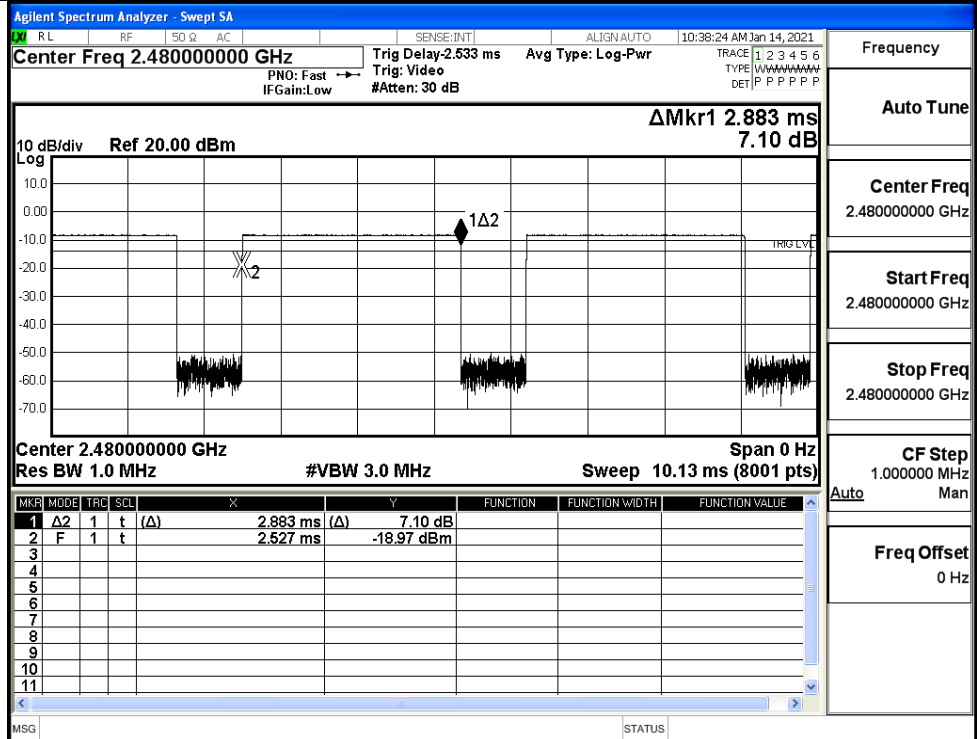
$\pi/4$ DQPSK  
\_2DH5/LCH



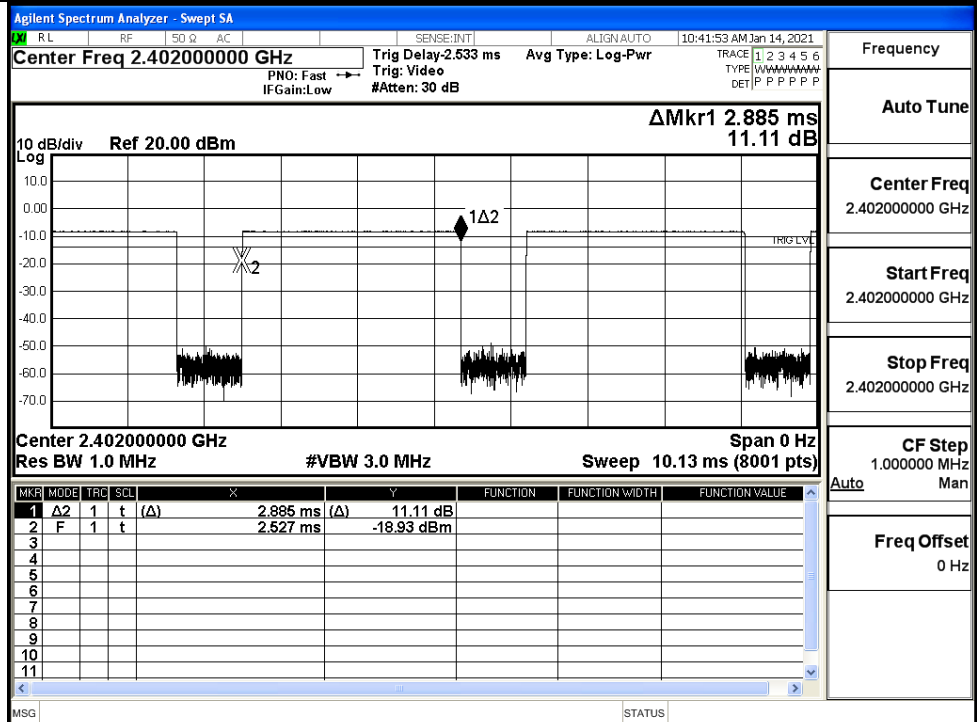
$\pi/4$ DQPSK  
\_2DH5/MCH



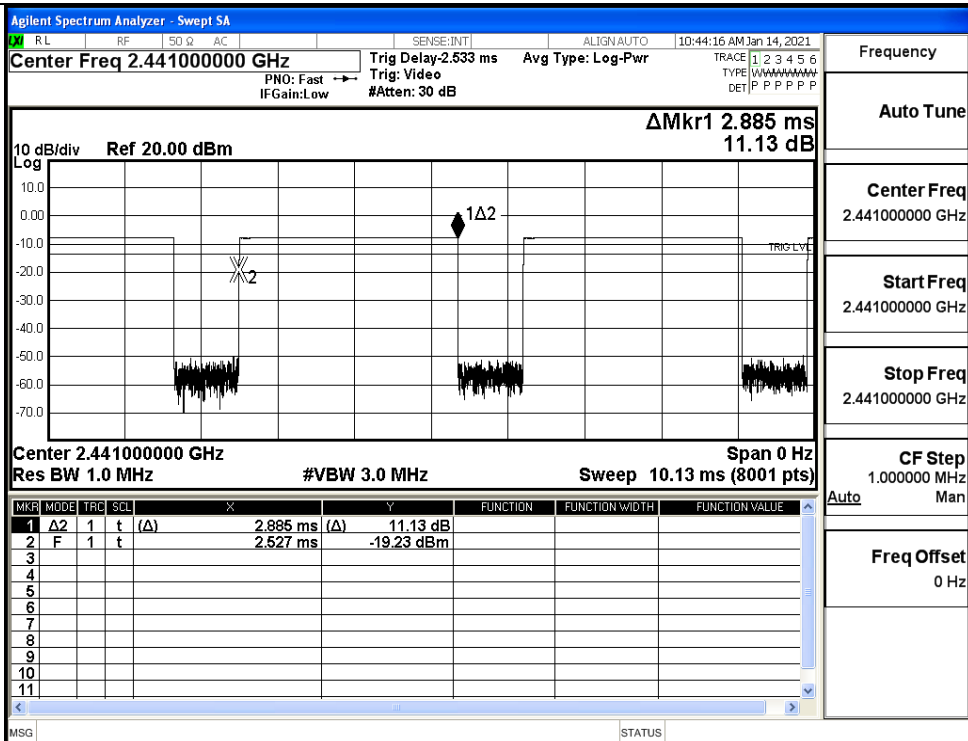
$\pi/4$ DQPSK  
\_2DH5/HCH



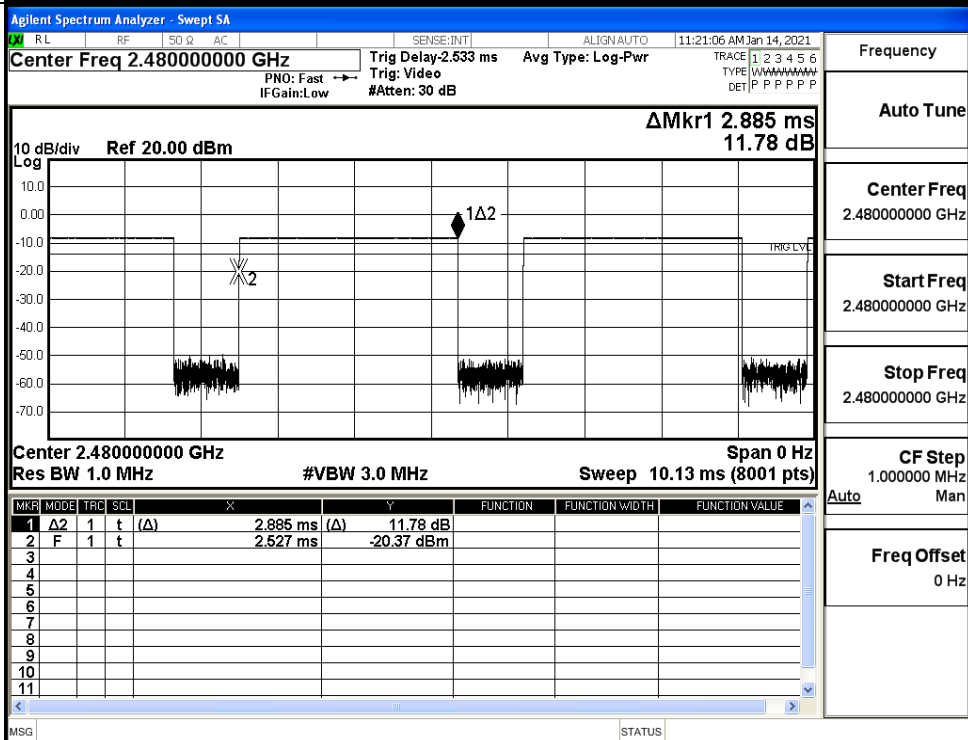
8DPSK\_3DH5/LCH



8DPSK\_3DH5/MCH



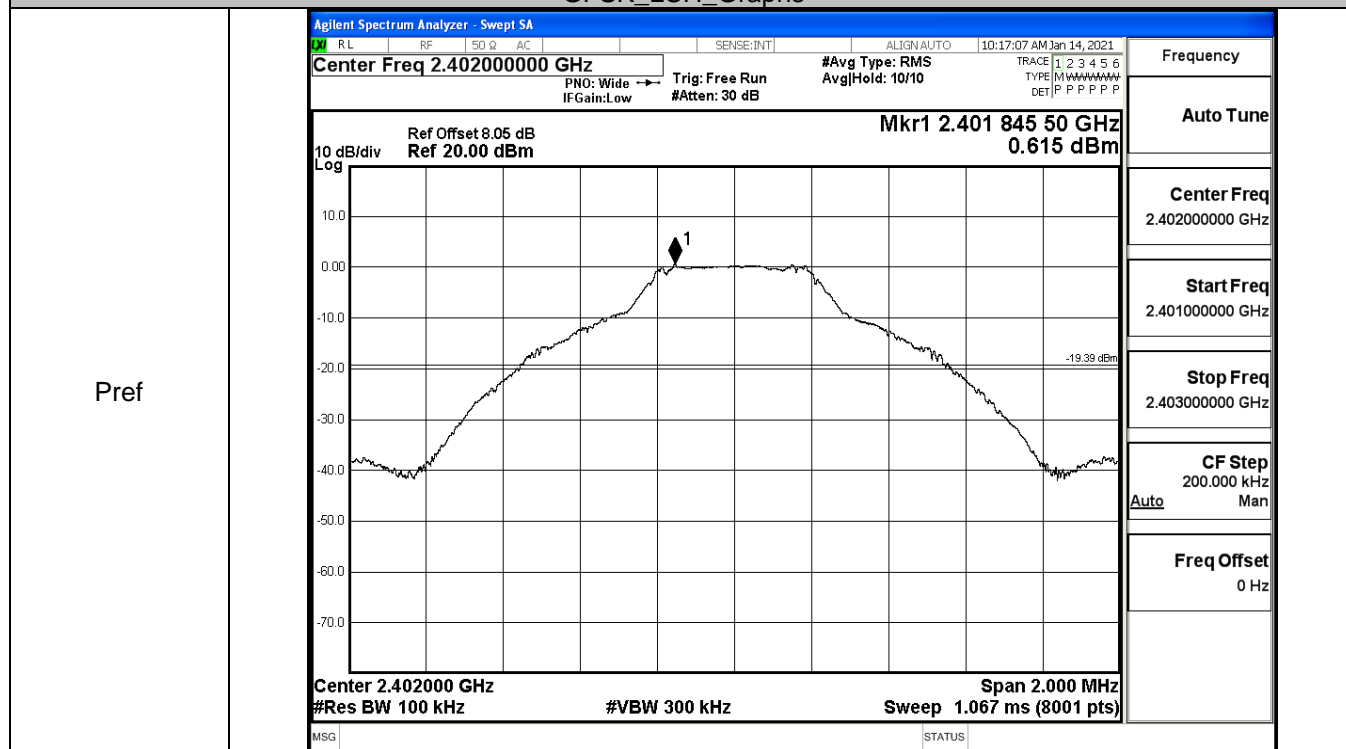
8DPSK\_3DH5/HCH



## A.6 RF Conducted Spurious Emissions

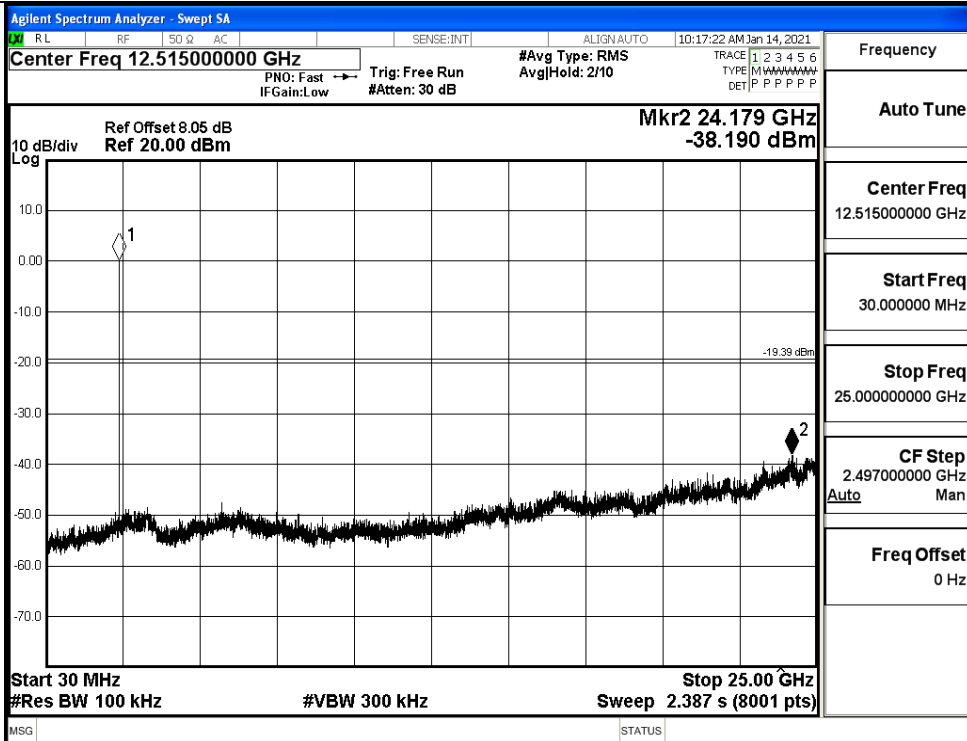
| Mode          | Channel | Pref [dBm] | Max. Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|------------|------------------|-------------|---------|
| GFSK          | LCH     | 0.615      | -38.190          | -19.385     | PASS    |
|               | MCH     | 0.326      | -36.615          | -19.674     | PASS    |
|               | HCH     | -0.398     | -37.864          | -20.398     | PASS    |
| $\pi/4$ DQPSK | LCH     | 0.896      | -37.812          | -19.104     | PASS    |
|               | MCH     | 0.296      | -38.084          | -19.704     | PASS    |
|               | HCH     | -0.217     | -36.872          | -20.217     | PASS    |
| 8DPSK         | LCH     | 0.953      | -38.595          | -19.047     | PASS    |
|               | MCH     | 0.378      | -37.863          | -19.622     | PASS    |
|               | HCH     | -0.187     | -37.923          | -20.187     | PASS    |

GFSK\_LCH\_Graphs



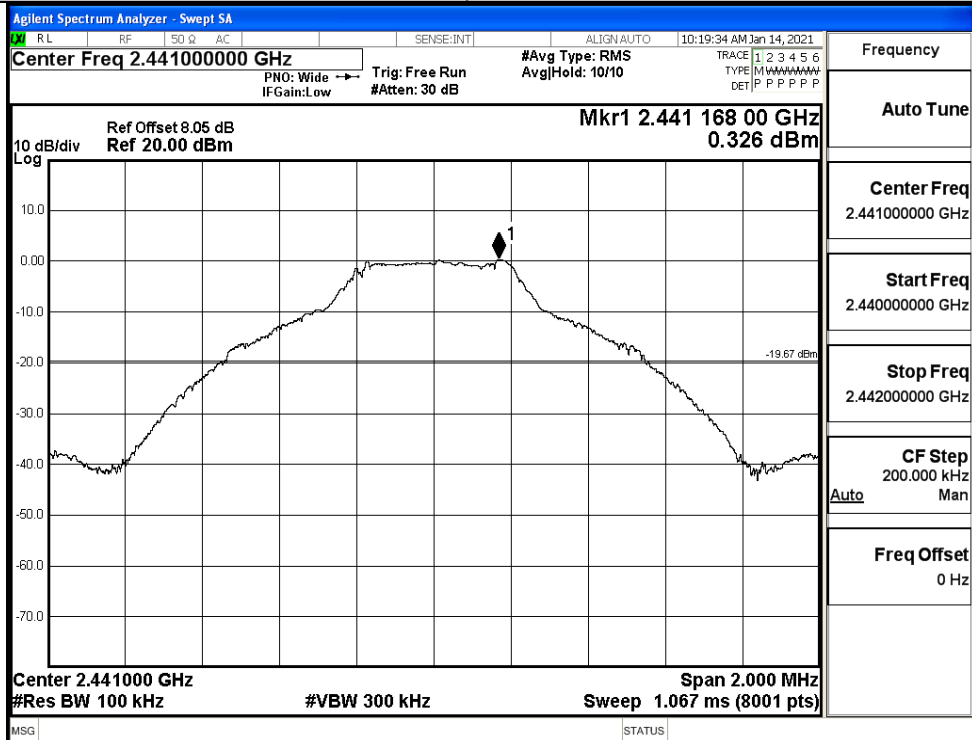


Puw

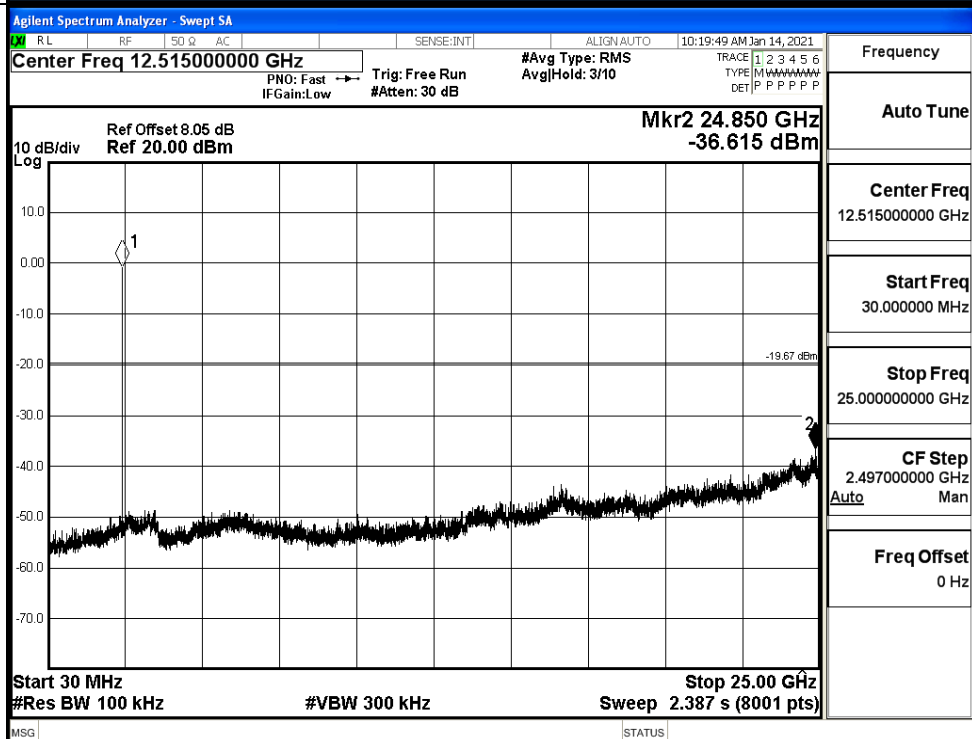


## GFSK\_MCH\_Graphs

Pref

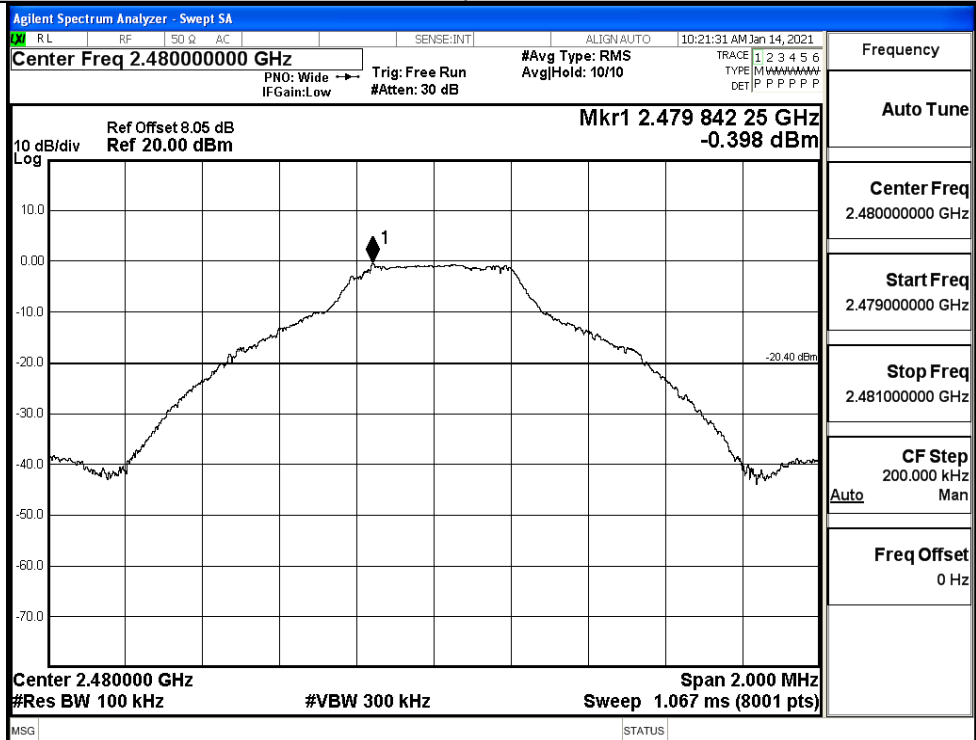


Puw

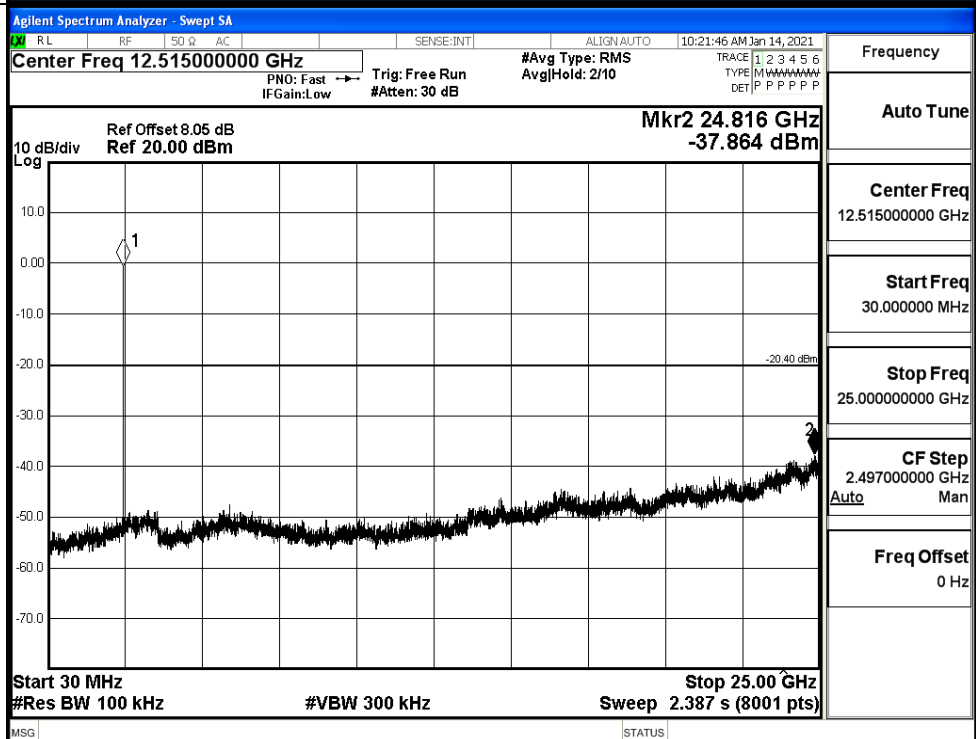


## GFSK\_HCH\_Graphs

Pref

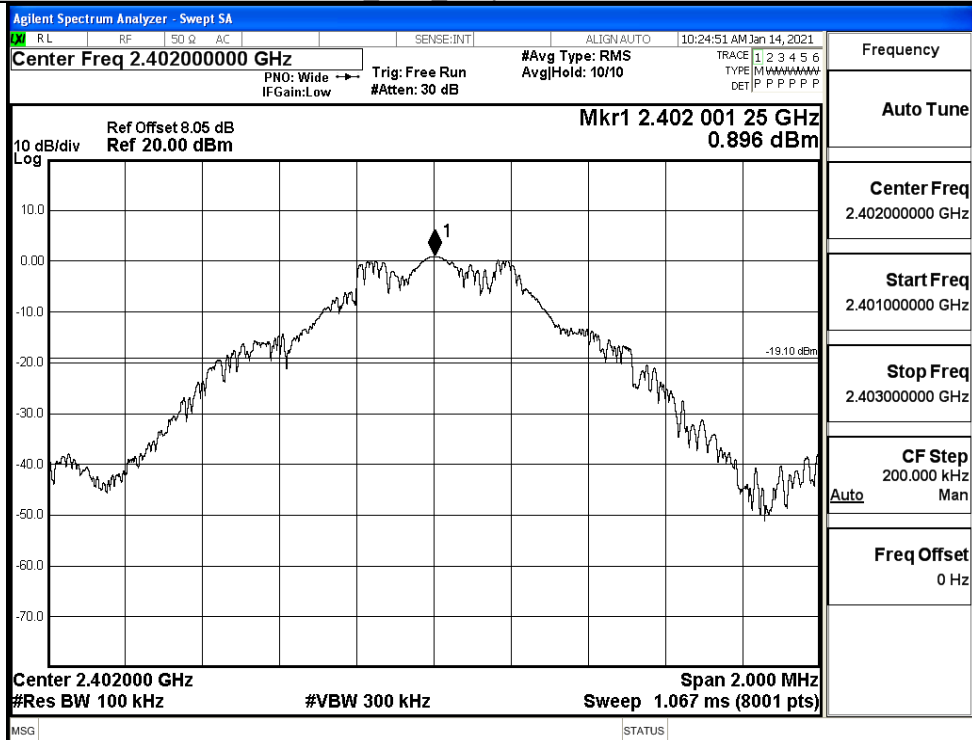


Puw

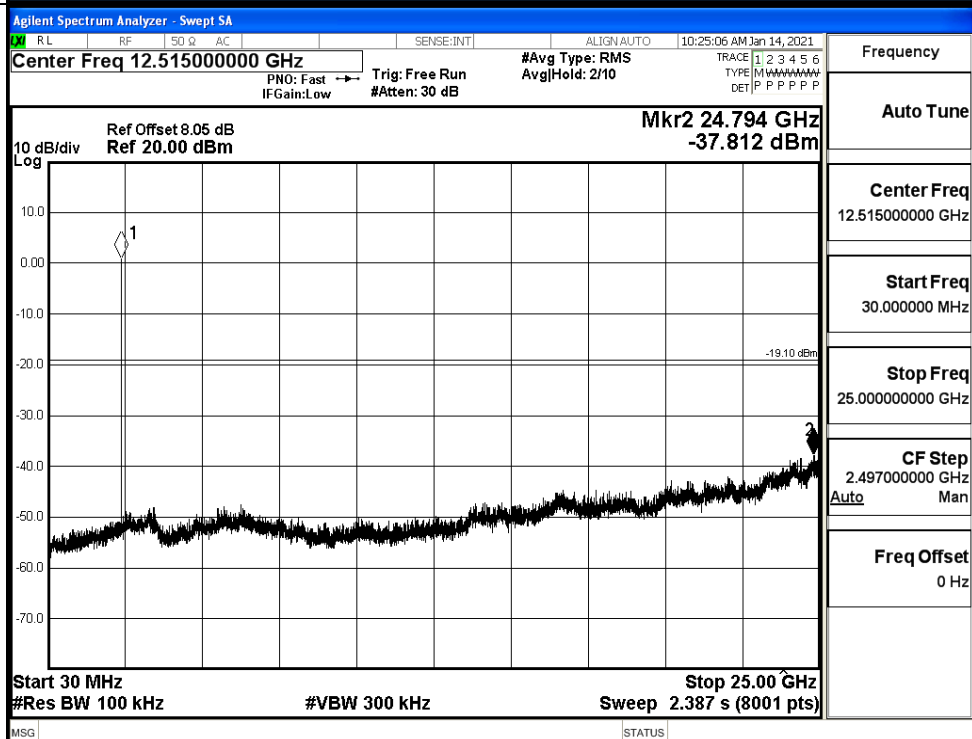


$\pi/4$ DQPSK\_LCH\_Graphs

Pref

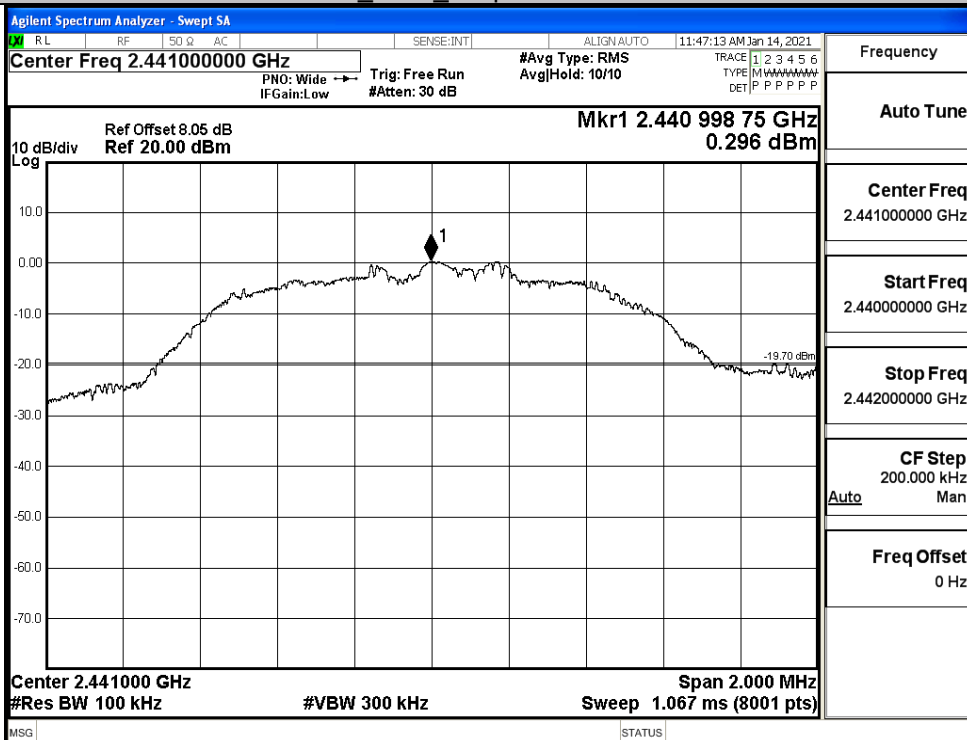


Puw

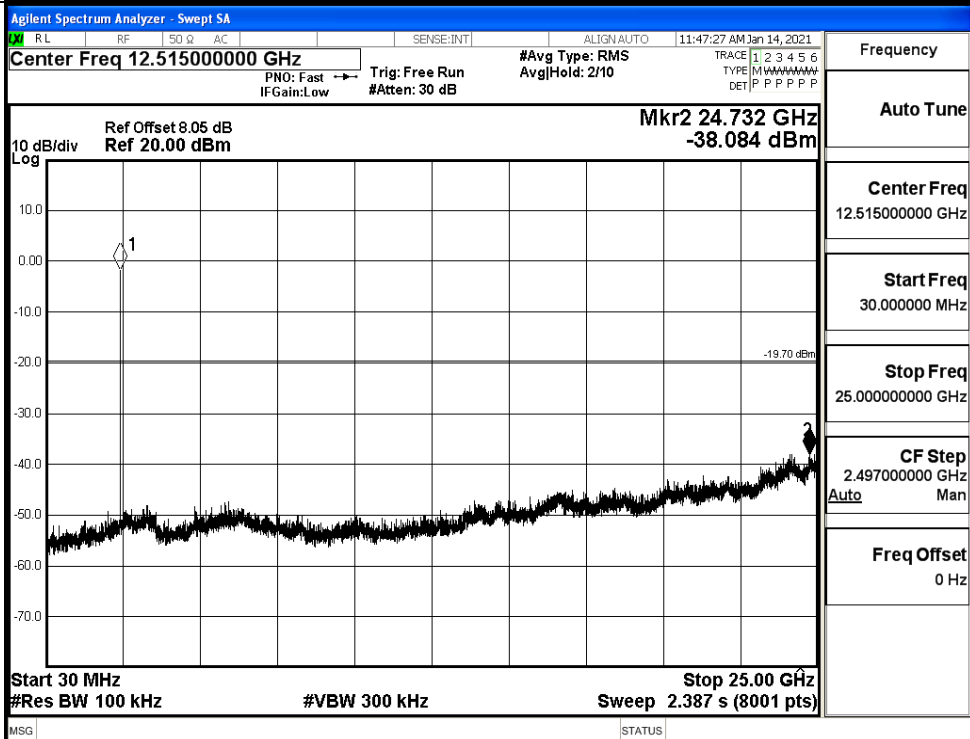


$\pi$ /4DQPSK\_MCH\_Graphs

Pref

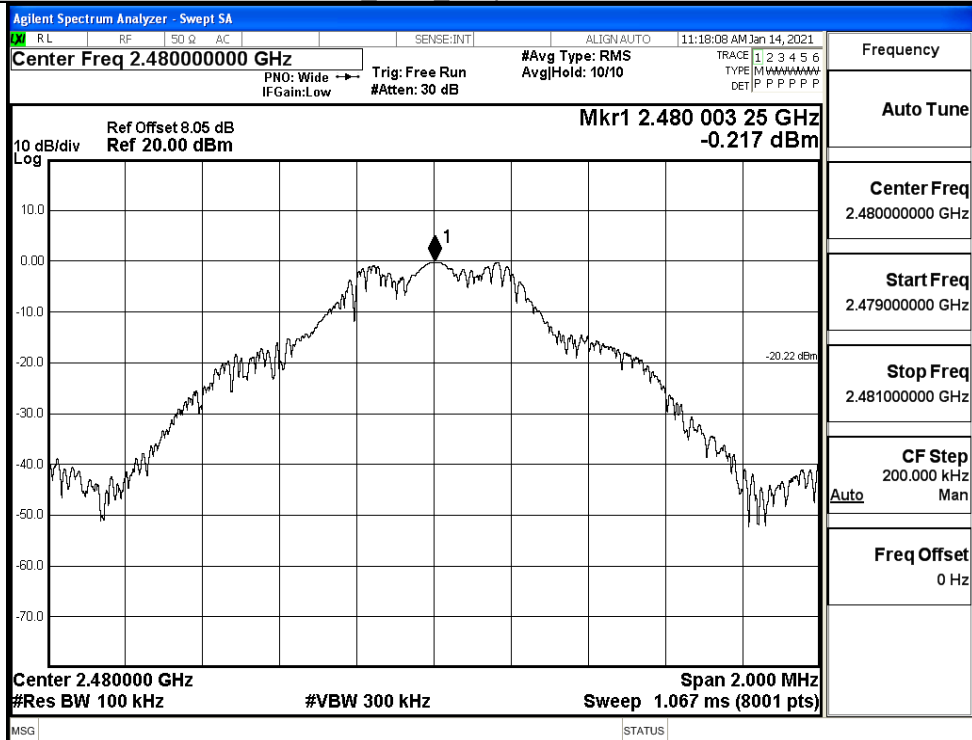


Puw

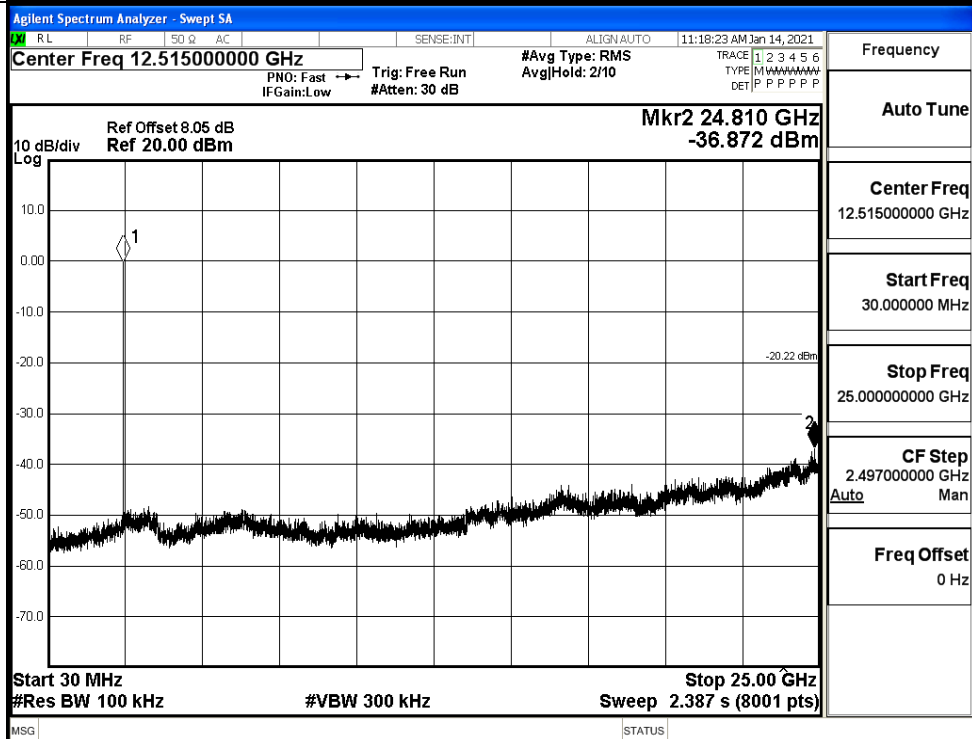


$\pi/4$ DQPSK\_HCH\_Graphs

Pref

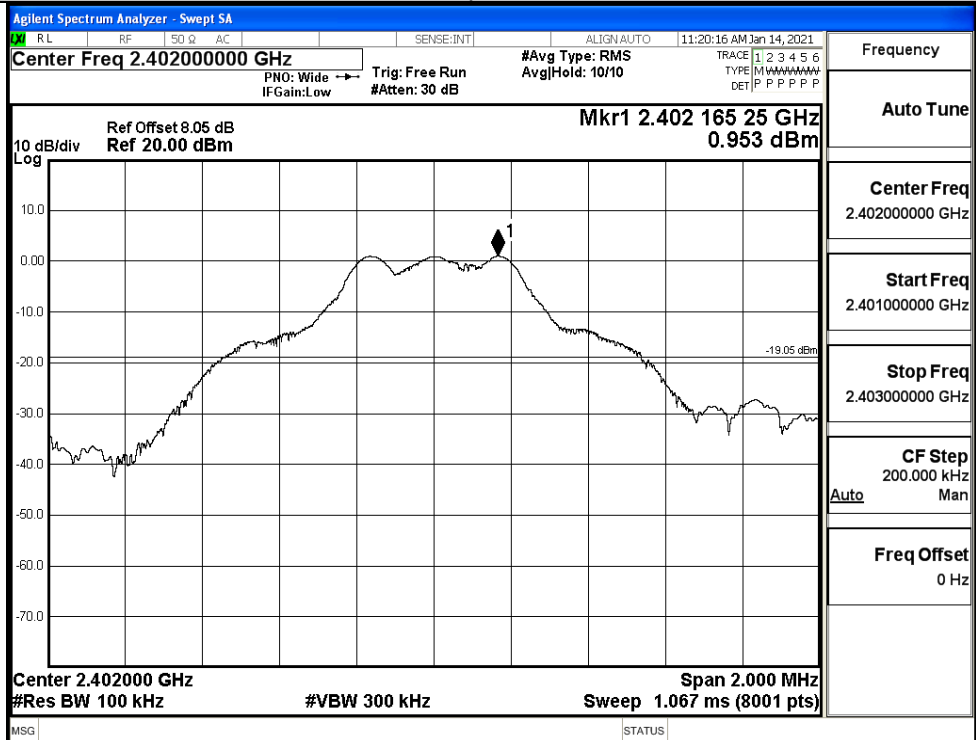


Puw

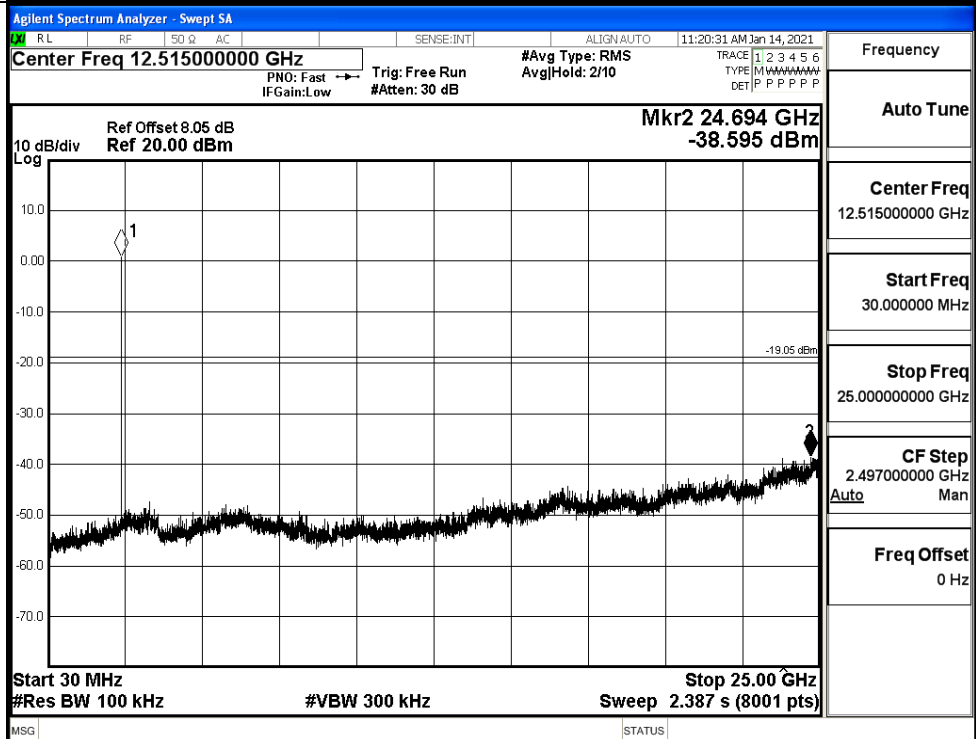


## 8DPSK\_LCH\_Graphs

Pref

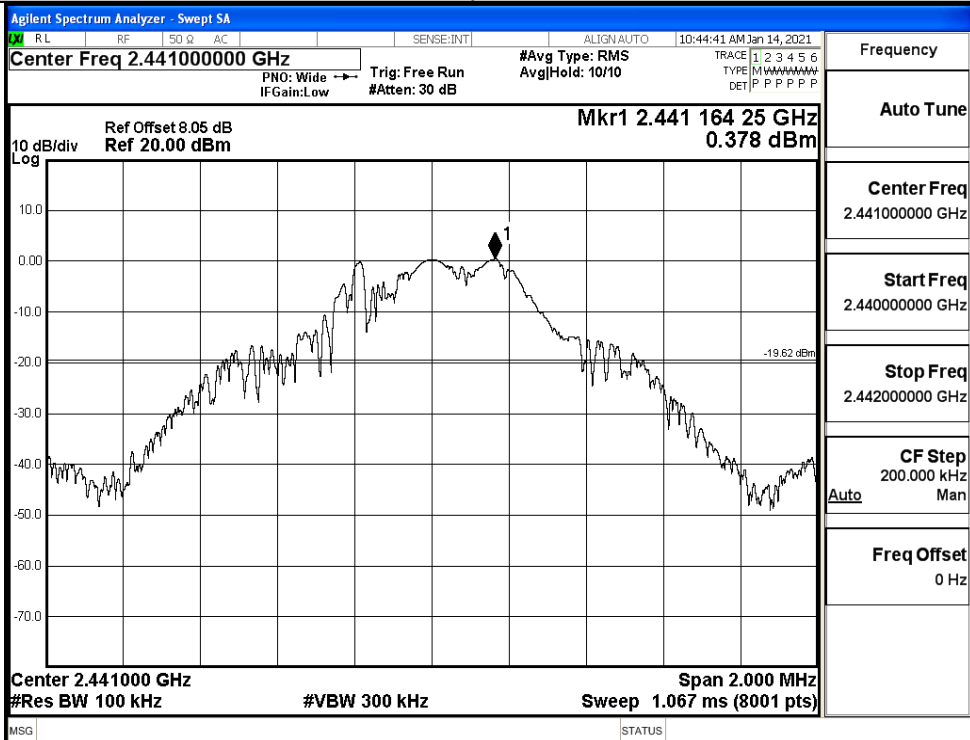


Puw

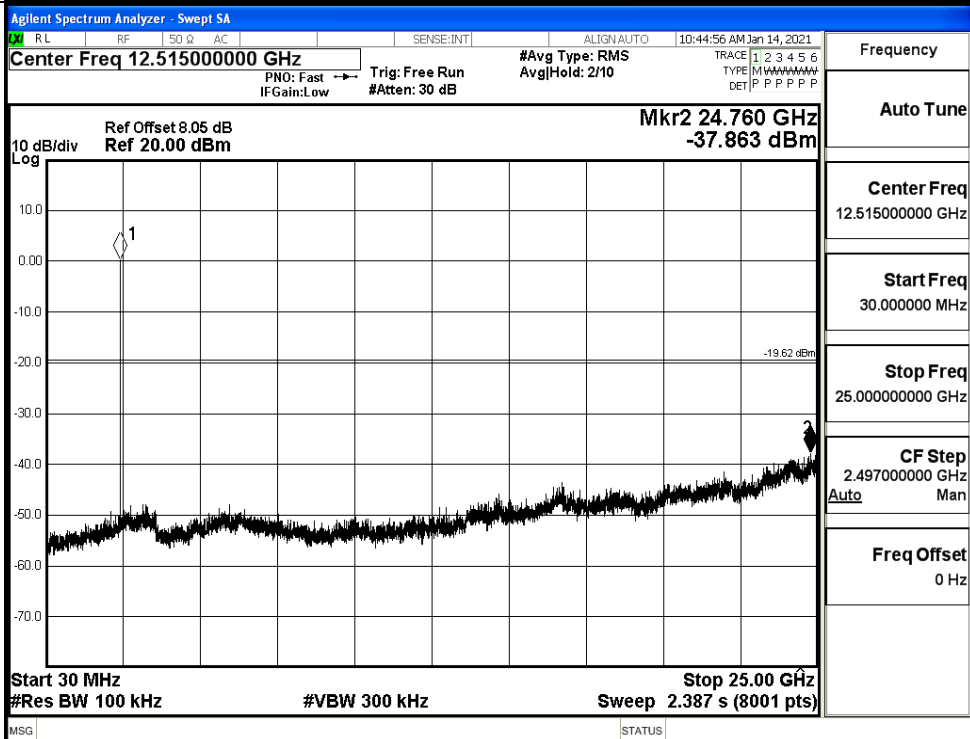


## 8DPSK\_MCH\_Graphs

Pref



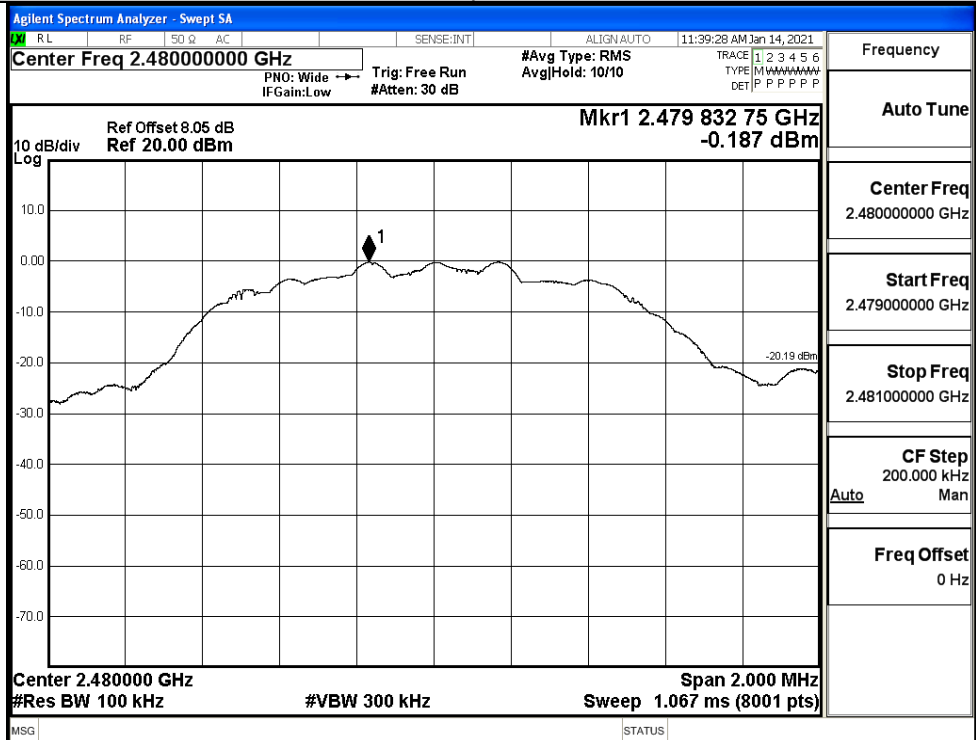
Puw



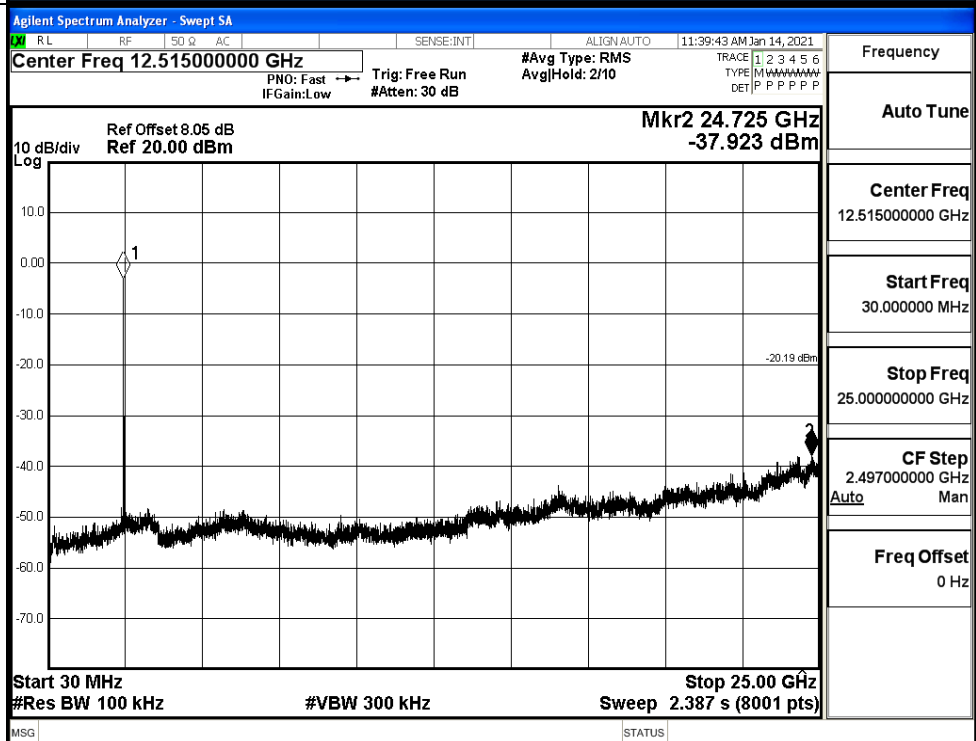


## 8DPSK\_HCH\_Graphs

Pref



Puw

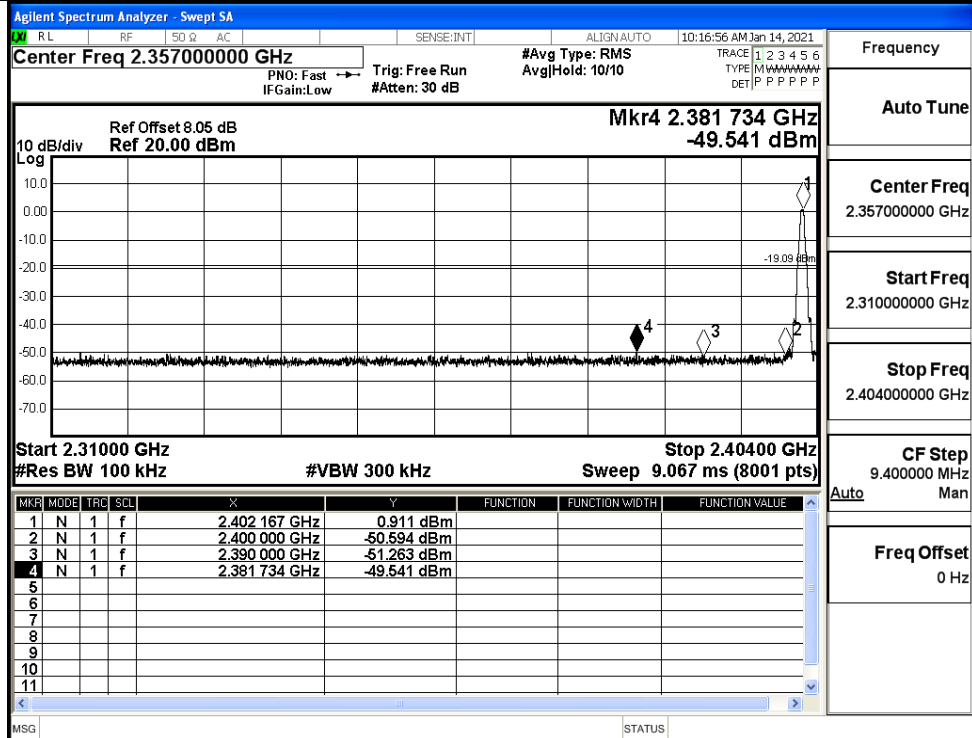


## A.7 Band-edge for RF Conducted Emissions

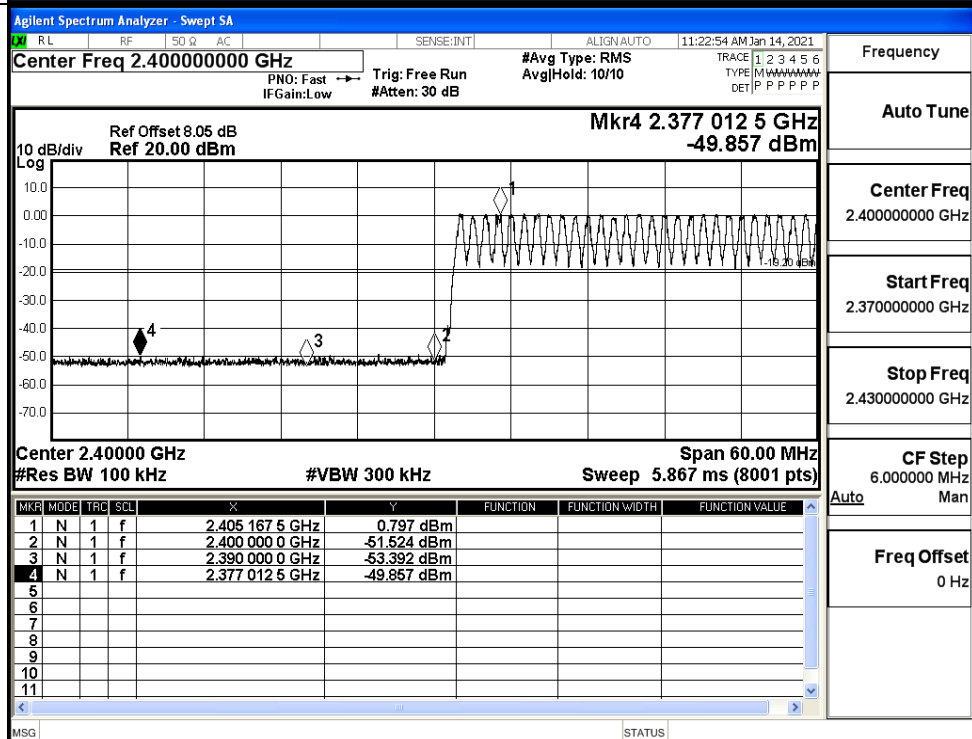
| Mode          | Channel | Carrier Frequency [MHz] | Carrier Power [dBm] | Frequency Hopping | Max Spurious Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|-------------------------|---------------------|-------------------|--------------------------|-------------|---------|
| GFSK          | LCH     | 2402                    | 0.911               | Off               | -49.541                  | -19.09      | PASS    |
|               |         |                         | 0.797               | On                | -49.857                  | -19.2       | PASS    |
|               | HCH     | 2480                    | -0.085              | Off               | -49.328                  | -20.09      | PASS    |
|               |         |                         | 0.274               | On                | -48.901                  | -19.73      | PASS    |
| $\pi/4$ DQPSK | LCH     | 2402                    | 0.912               | Off               | -50.240                  | -19.09      | PASS    |
|               |         |                         | 0.606               | On                | -49.074                  | -19.39      | PASS    |
|               | HCH     | 2480                    | -0.155              | Off               | -49.924                  | -20.16      | PASS    |
|               |         |                         | 0.200               | On                | -38.778                  | -19.8       | PASS    |
| 8DPSK         | LCH     | 2402                    | 0.971               | Off               | -49.966                  | -19.03      | PASS    |
|               |         |                         | 0.910               | On                | -49.679                  | -19.09      | PASS    |
|               | HCH     | 2480                    | -0.062              | Off               | -49.046                  | -20.06      | PASS    |
|               |         |                         | 0.200               | On                | -34.372                  | -19.8       | PASS    |

## Test Graphs

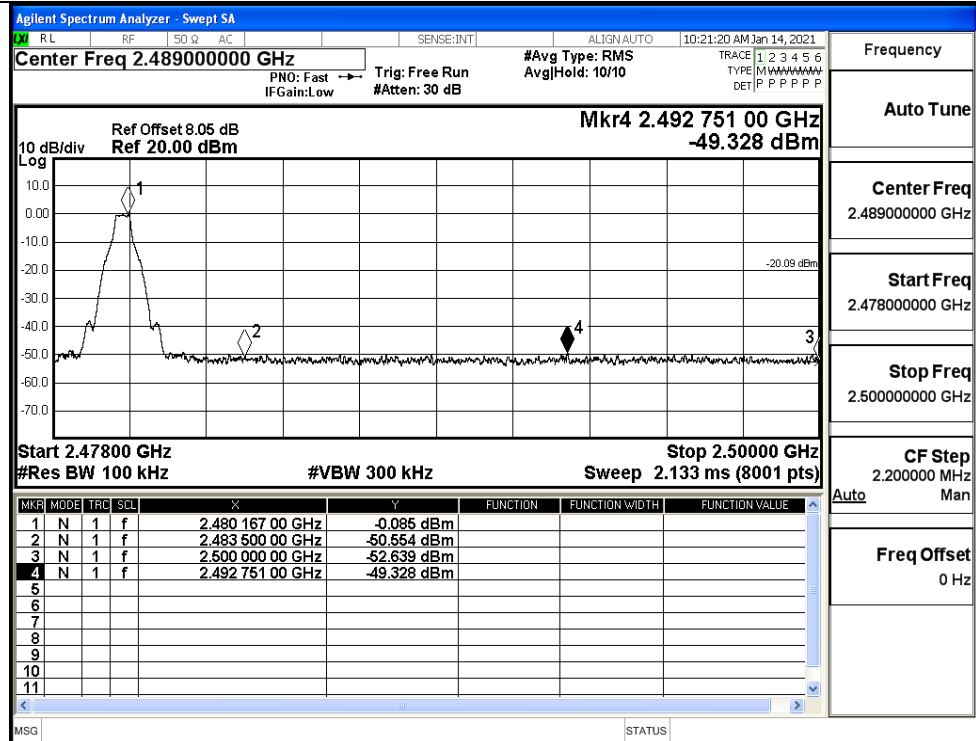
GFSK/LCH/No Hop



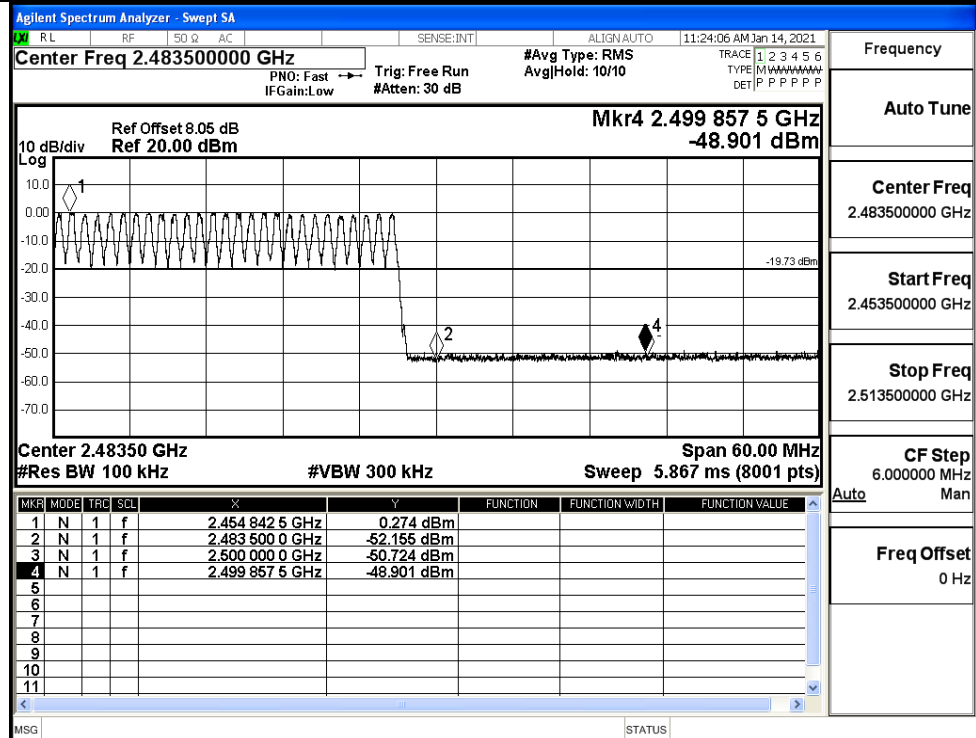
GFSK/LCH/Hop



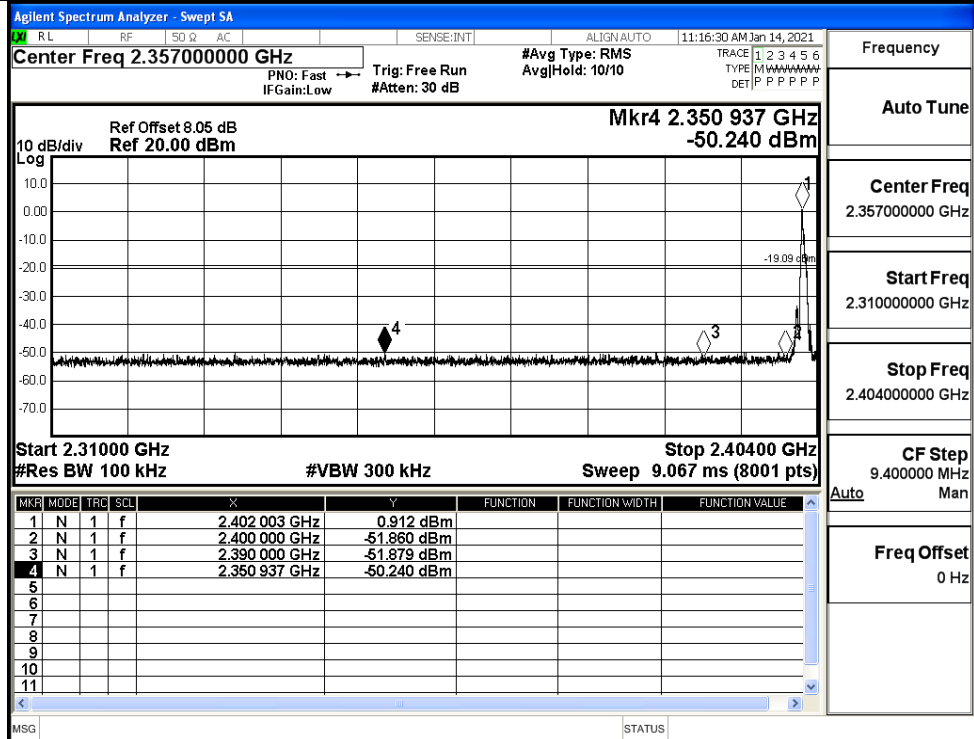
GFSK/HCH/No Hop



GFSK/HCH/Hop



$\pi/4$ DQPSK/LCH/No  
Hop



Frequency

Auto Tune

Center Freq  
2.357000000 GHz

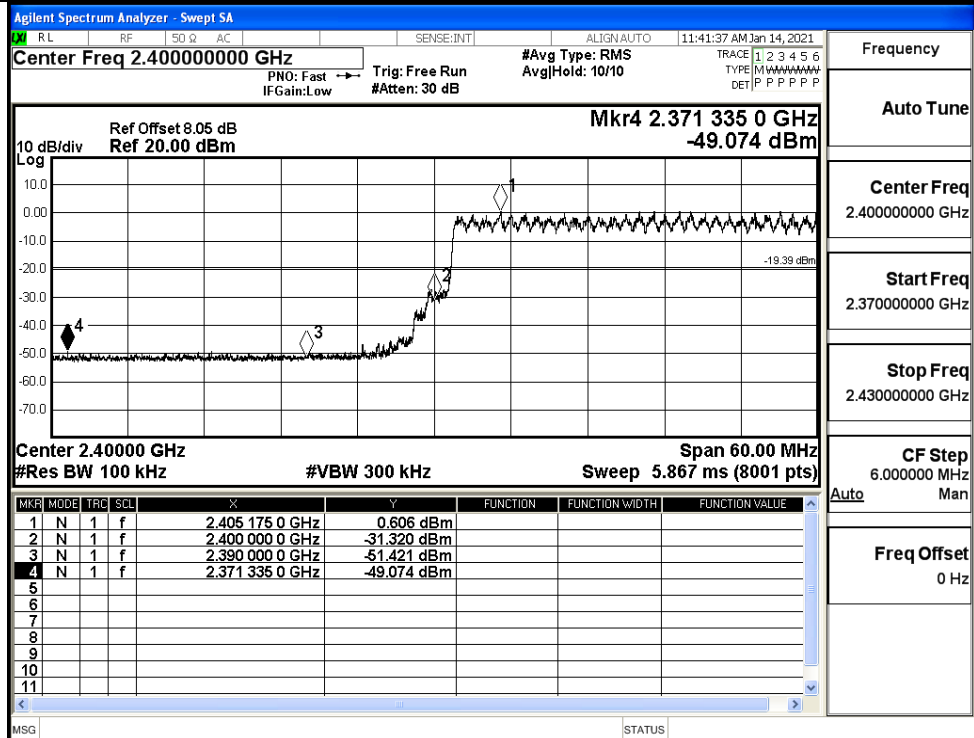
Start Freq  
2.310000000 GHz

Stop Freq  
2.404000000 GHz

CF Step  
9.400000 MHz  
Auto Man

Freq Offset  
0 Hz

$\pi/4$ DQPSK/LCH/Hop



Frequency

Auto Tune

Center Freq  
2.400000000 GHz

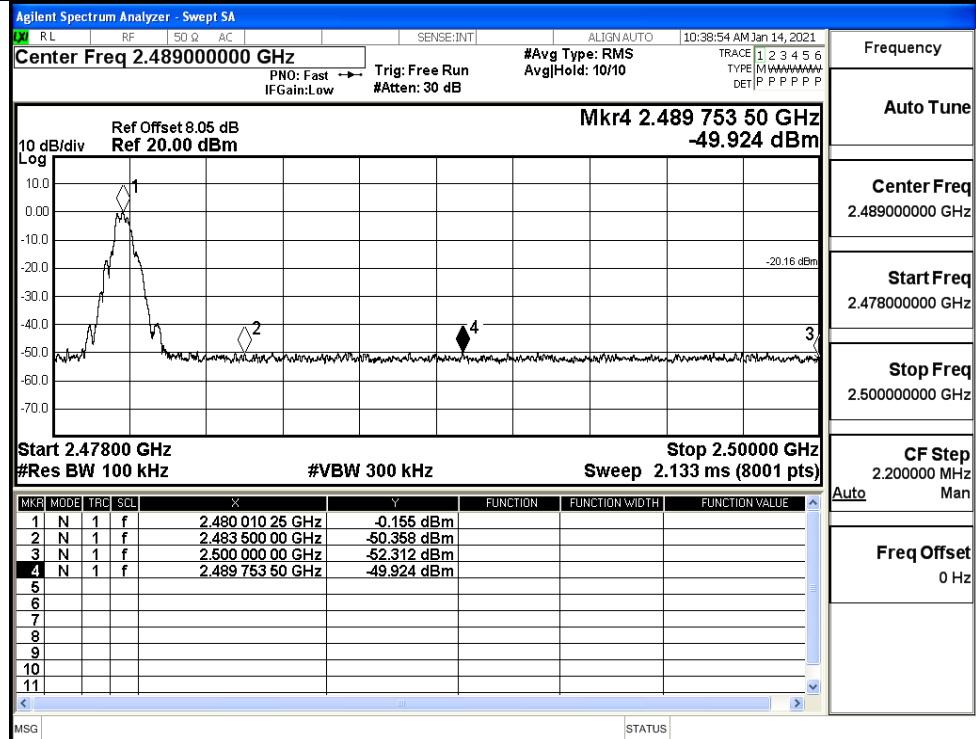
Start Freq  
2.370000000 GHz

Stop Freq  
2.430000000 GHz

CF Step  
6.000000 MHz  
Auto Man

Freq Offset  
0 Hz

$\pi/4$ DQPSK/HCH/No  
Hop



Frequency

Auto Tune

Center Freq  
2.489000000 GHz

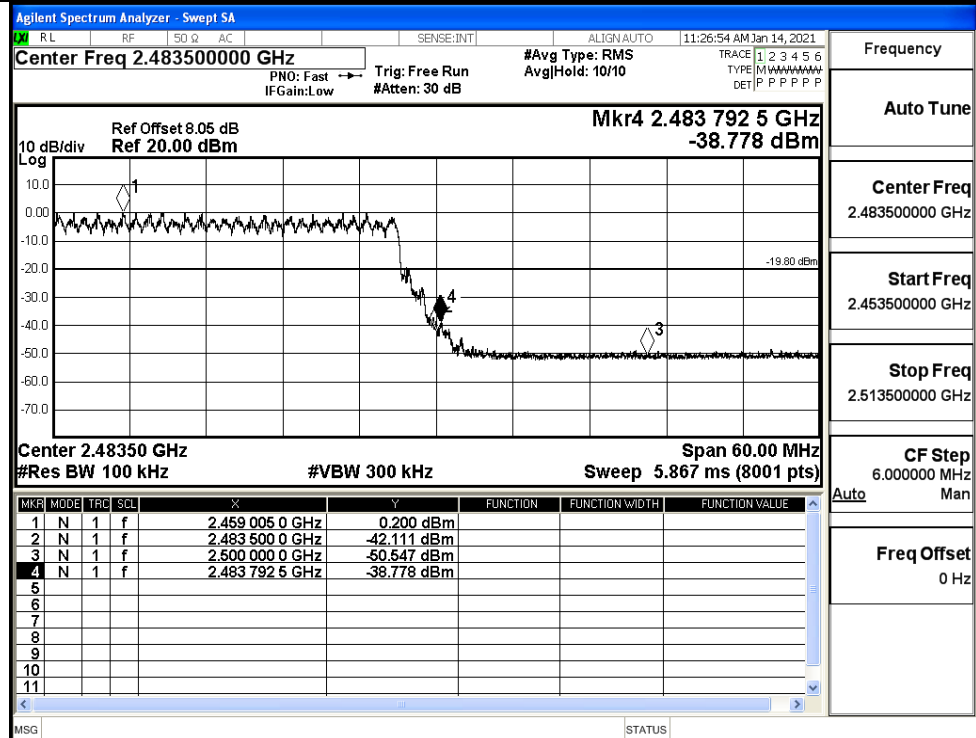
Start Freq  
2.478000000 GHz

Stop Freq  
2.500000000 GHz

CF Step  
2.200000 MHz  
Auto Man

Freq Offset  
0 Hz

$\pi/4$ DQPSK/HCH/Hop



Frequency

Auto Tune

Center Freq  
2.483500000 GHz

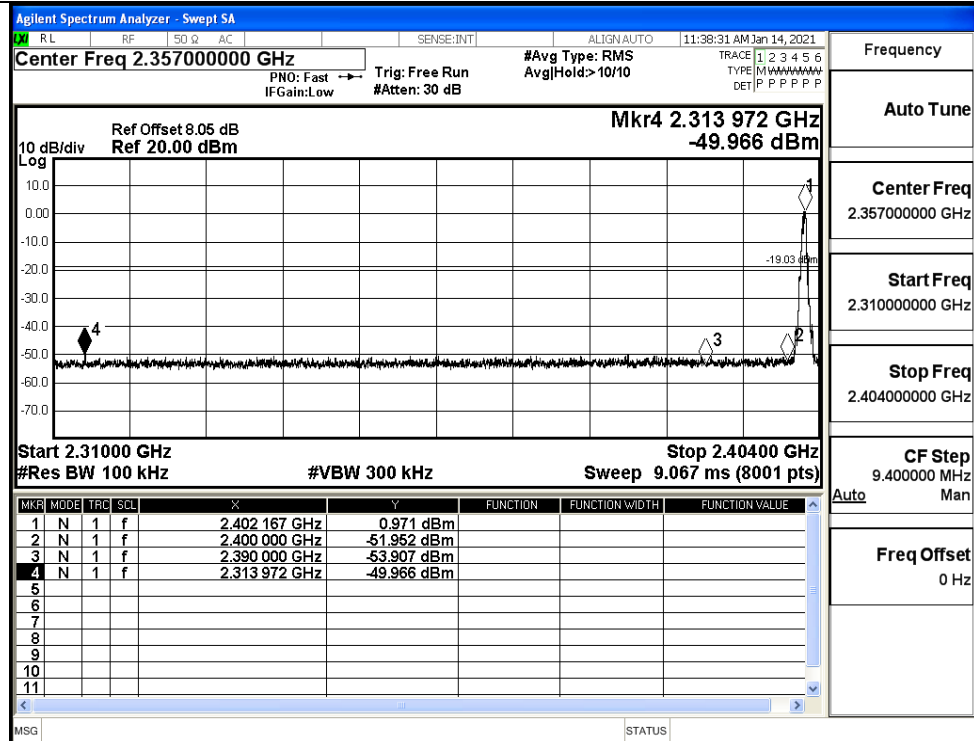
Start Freq  
2.453500000 GHz

Stop Freq  
2.513500000 GHz

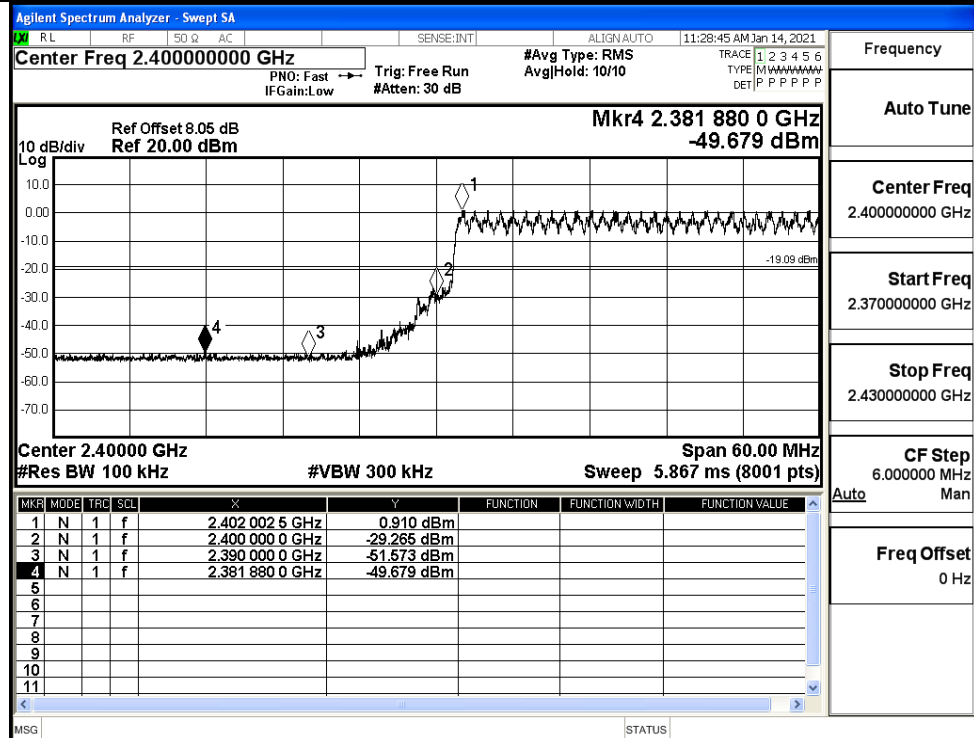
CF Step  
6.000000 MHz  
Auto Man

Freq Offset  
0 Hz

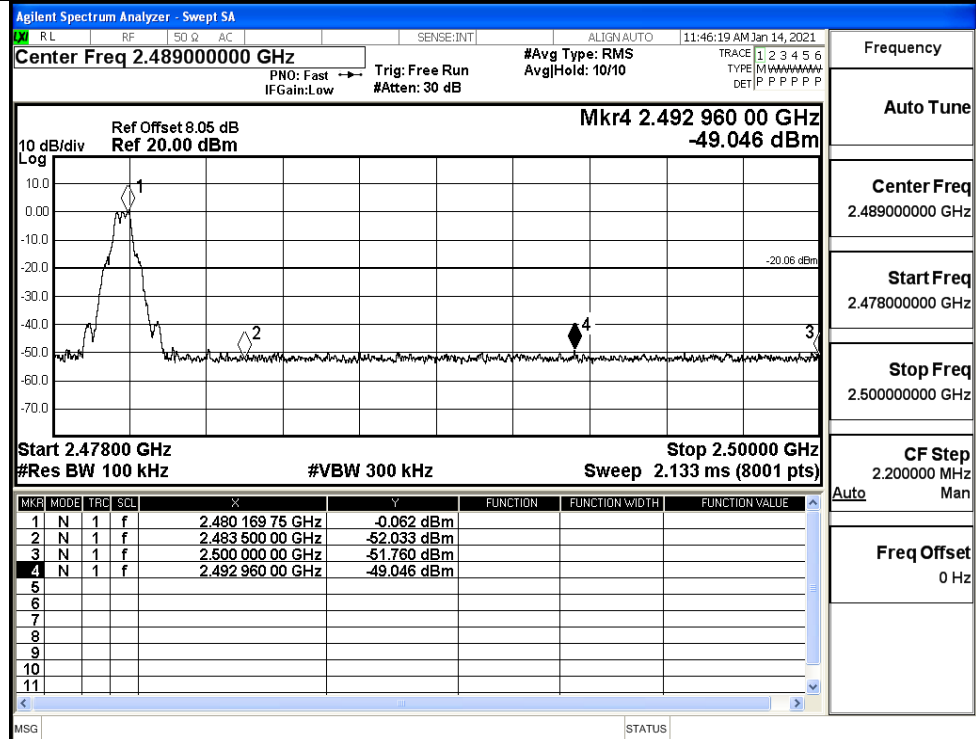
8DPSK/LCH/No Hop



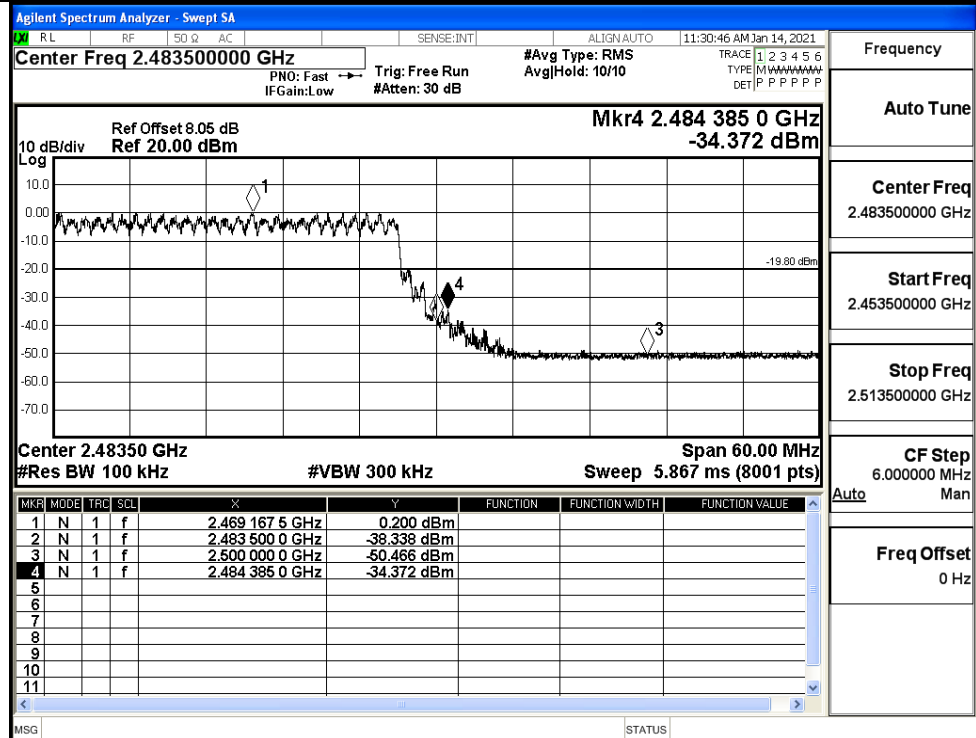
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



8DPSK/HCH/Hop

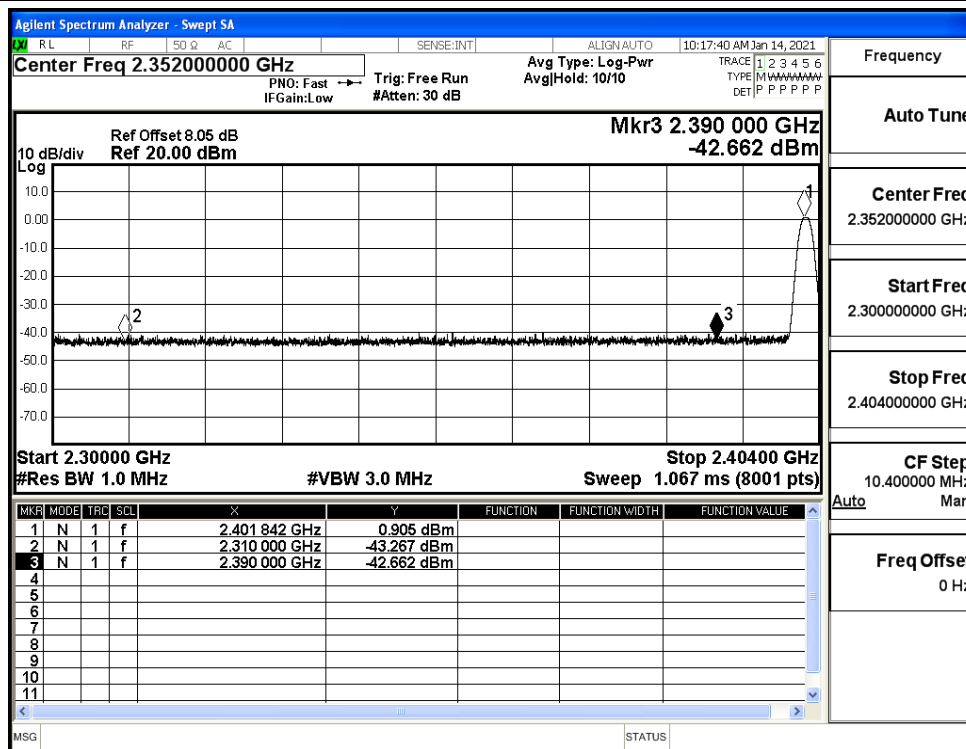




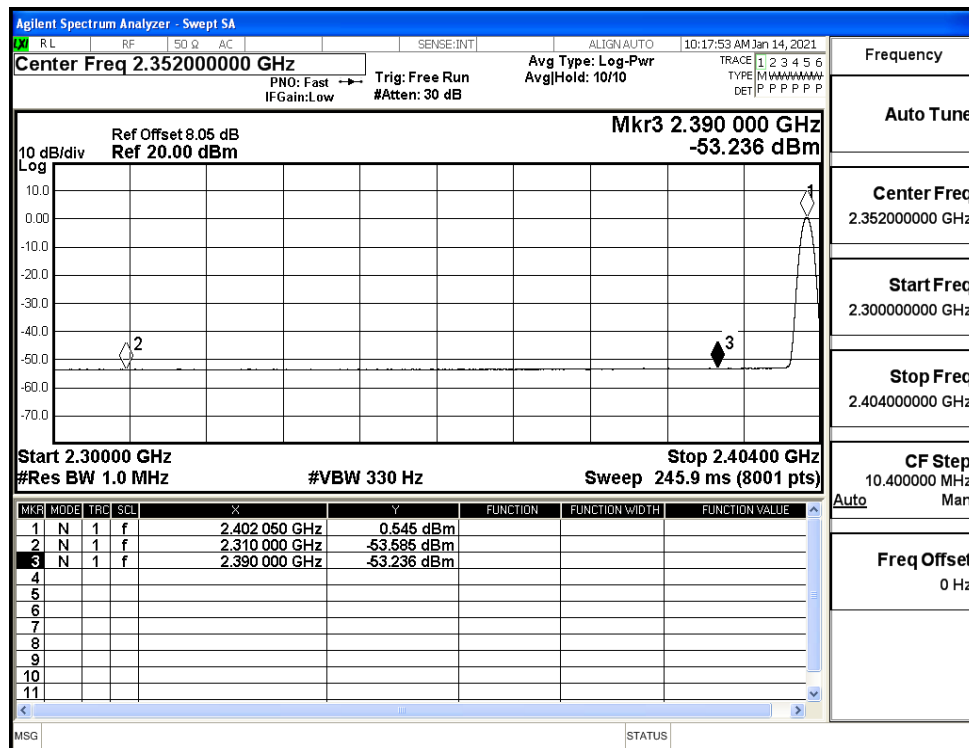
## A.8 Restrict-band band-edge measurements

| Test Mode     | Hopping | Freq.  | Power [dBm] | Gain | Ground Factor | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|---------------|---------|--------|-------------|------|---------------|------------|----------|----------------|---------|
| GFSK          | Off     | 2310.0 | -43.27      | 2.0  | 0             | 51.99      | PEAK     | 74             | PASS    |
|               | Off     | 2310.0 | -53.59      | 2.0  | 0             | 41.67      | AV       | 54             | PASS    |
|               | Off     | 2390.0 | -42.66      | 2.0  | 0             | 52.60      | PEAK     | 74             | PASS    |
|               | Off     | 2390.0 | -53.24      | 2.0  | 0             | 42.02      | AV       | 54             | PASS    |
|               | Off     | 2483.5 | -42.48      | 2.0  | 0             | 52.77      | PEAK     | 74             | PASS    |
|               | Off     | 2483.5 | -52.66      | 2.0  | 0             | 42.59      | AV       | 54             | PASS    |
|               | Off     | 2500.0 | -42.61      | 2.0  | 0             | 52.65      | PEAK     | 74             | PASS    |
|               | Off     | 2500.0 | -52.62      | 2.0  | 0             | 42.64      | AV       | 54             | PASS    |
| $\pi/4$ DQPSK | Off     | 2310.0 | -43.34      | 2.0  | 0             | 51.92      | PEAK     | 74             | PASS    |
|               | Off     | 2310.0 | -53.57      | 2.0  | 0             | 41.69      | AV       | 54             | PASS    |
|               | Off     | 2390.0 | -44.24      | 2.0  | 0             | 51.02      | PEAK     | 74             | PASS    |
|               | Off     | 2390.0 | -53.24      | 2.0  | 0             | 42.02      | AV       | 54             | PASS    |
|               | Off     | 2483.5 | -42.39      | 2.0  | 0             | 52.87      | PEAK     | 74             | PASS    |
|               | Off     | 2483.5 | -52.68      | 2.0  | 0             | 42.57      | AV       | 54             | PASS    |
|               | Off     | 2500.0 | -43.43      | 2.0  | 0             | 51.83      | PEAK     | 74             | PASS    |
|               | Off     | 2500.0 | -52.63      | 2.0  | 0             | 42.63      | AV       | 54             | PASS    |
| 8DPSK         | Off     | 2310.0 | -42.91      | 2.0  | 0             | 52.34      | PEAK     | 74             | PASS    |
|               | Off     | 2310.0 | -53.64      | 2.0  | 0             | 41.62      | AV       | 54             | PASS    |
|               | Off     | 2390.0 | -43.24      | 2.0  | 0             | 52.02      | PEAK     | 74             | PASS    |
|               | Off     | 2390.0 | -53.20      | 2.0  | 0             | 42.06      | AV       | 54             | PASS    |
|               | Off     | 2483.5 | -40.58      | 2.0  | 0             | 54.68      | PEAK     | 74             | PASS    |
|               | Off     | 2483.5 | -52.71      | 2.0  | 0             | 42.55      | AV       | 54             | PASS    |
|               | Off     | 2500.0 | -42.46      | 2.0  | 0             | 52.80      | PEAK     | 74             | PASS    |
|               | Off     | 2500.0 | -52.58      | 2.0  | 0             | 42.68      | AV       | 54             | PASS    |

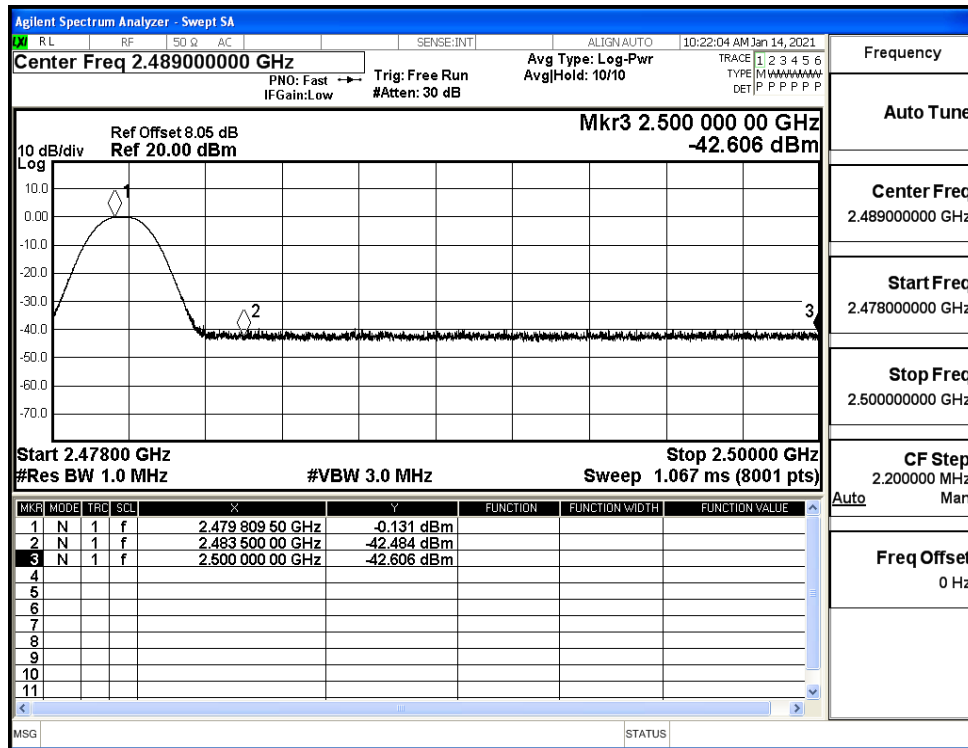
## Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (Low Channel)



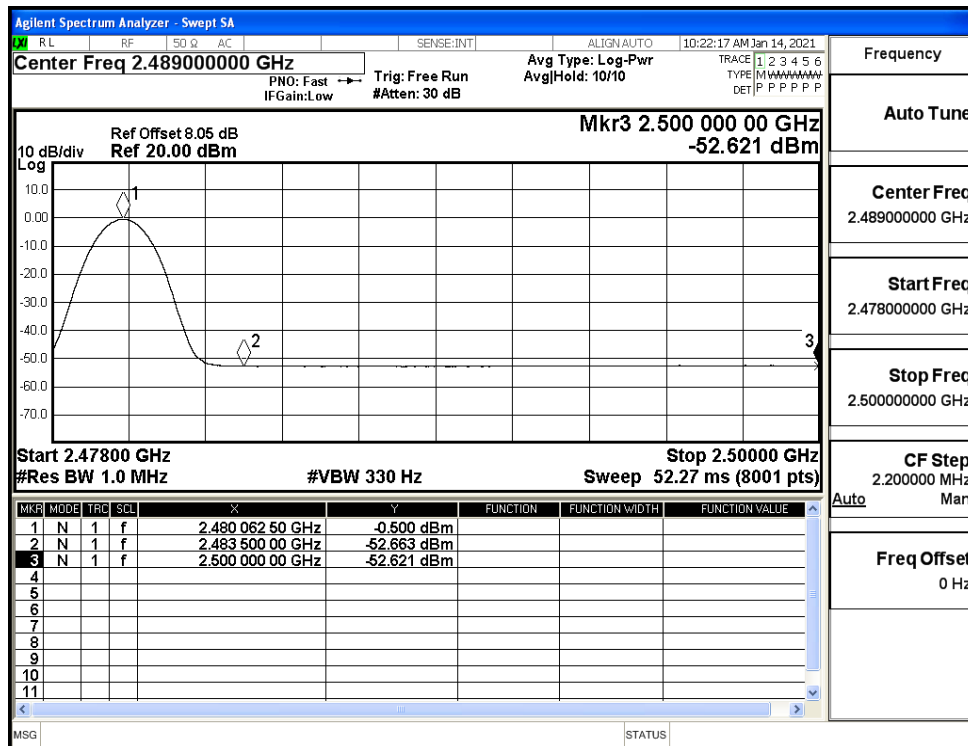
## Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (Low Channel)

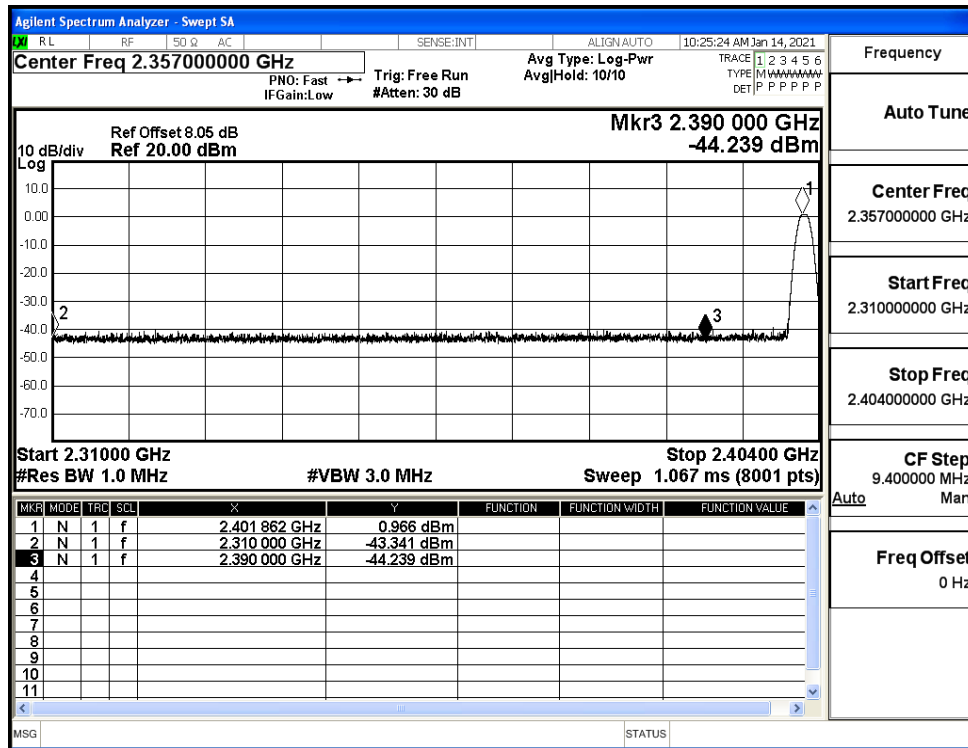
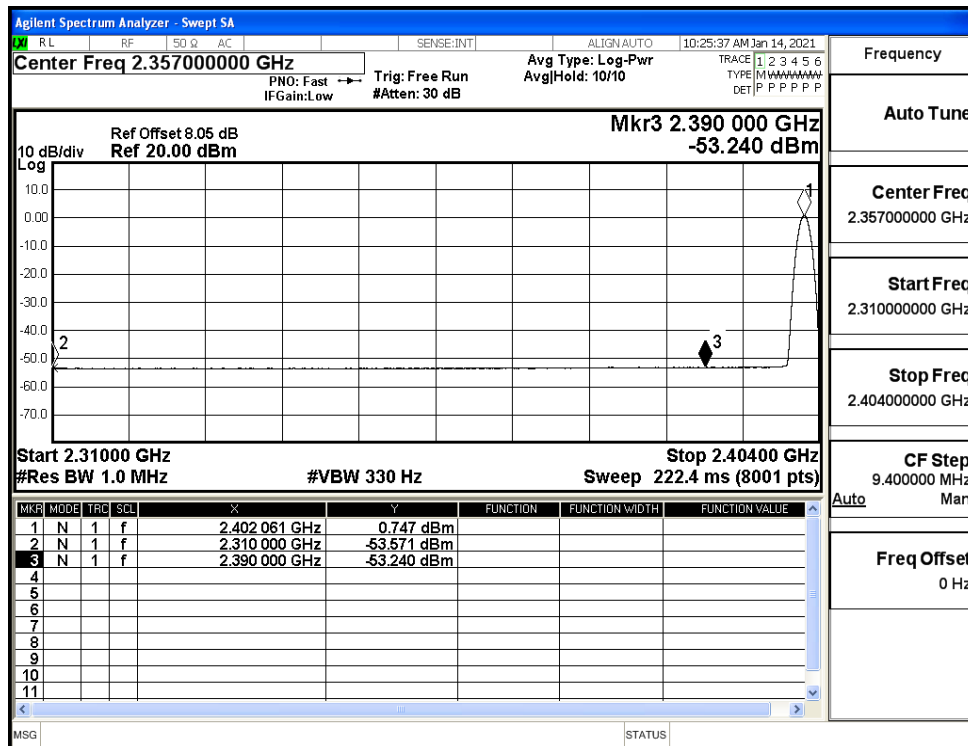


## Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_PEAK (High Channel)

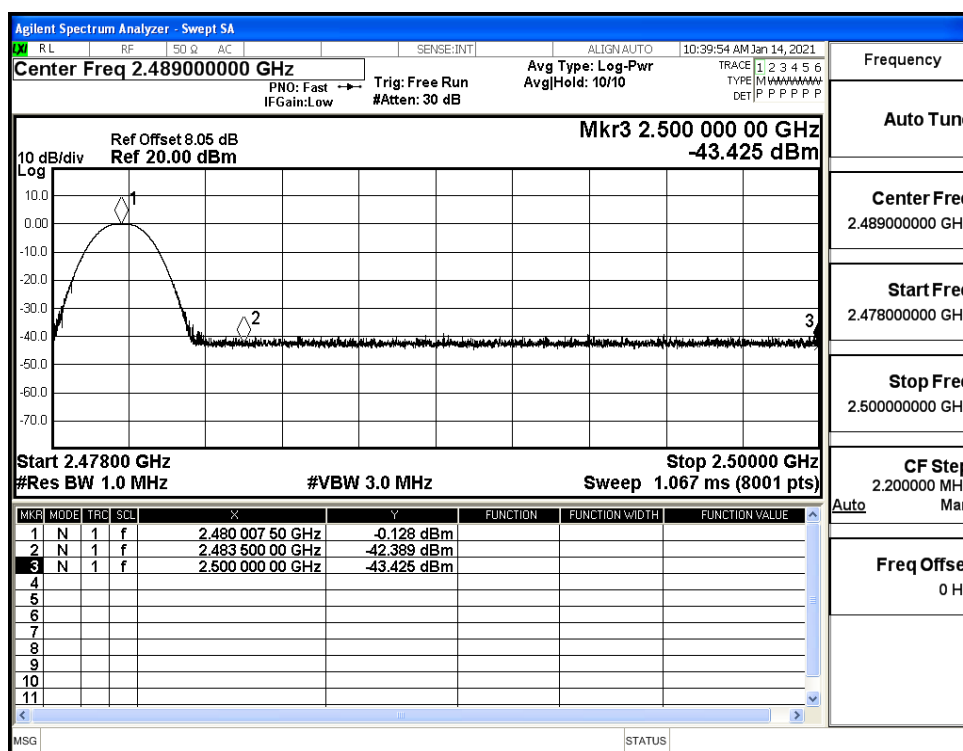


## Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_Average (High Channel)

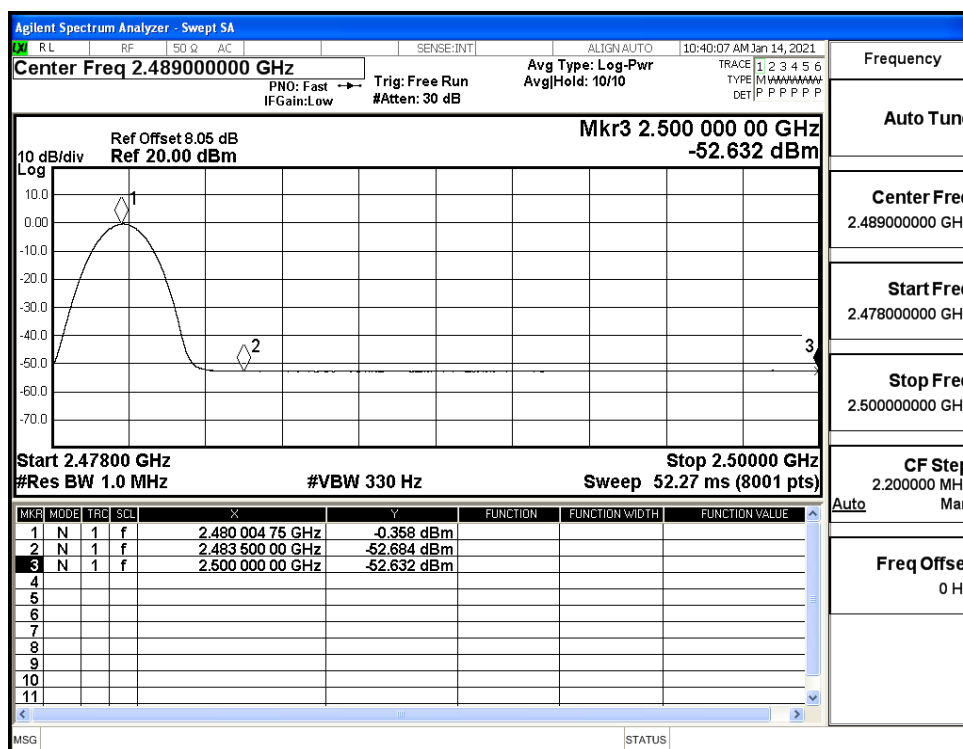


Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_PEAK (Low Channel)Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_Average (Low Channel)

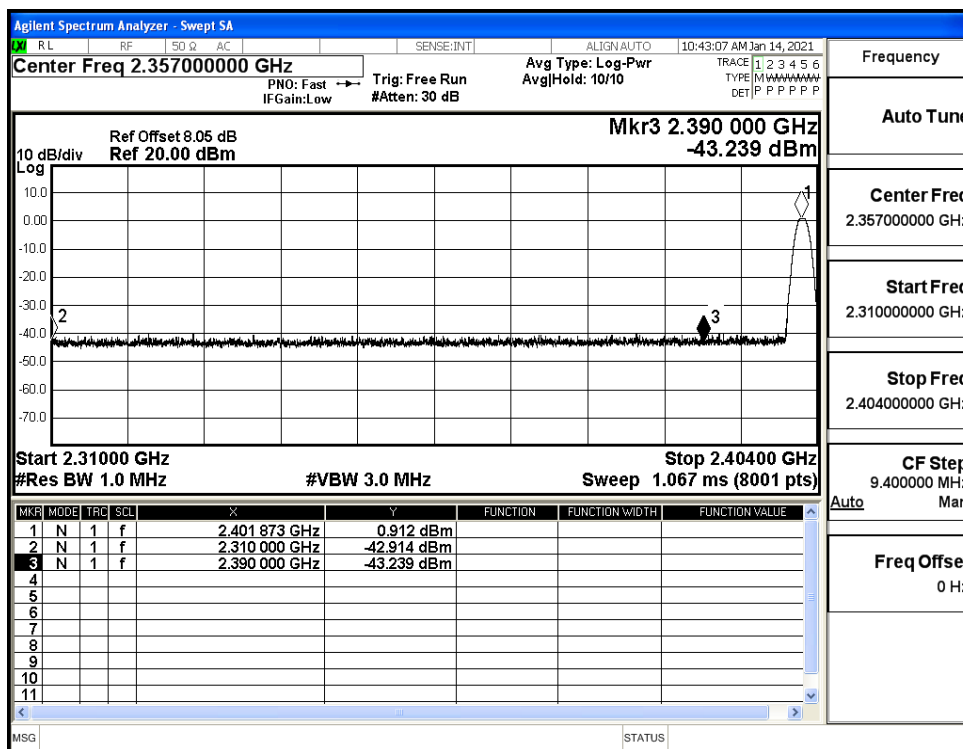
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (High Channel)



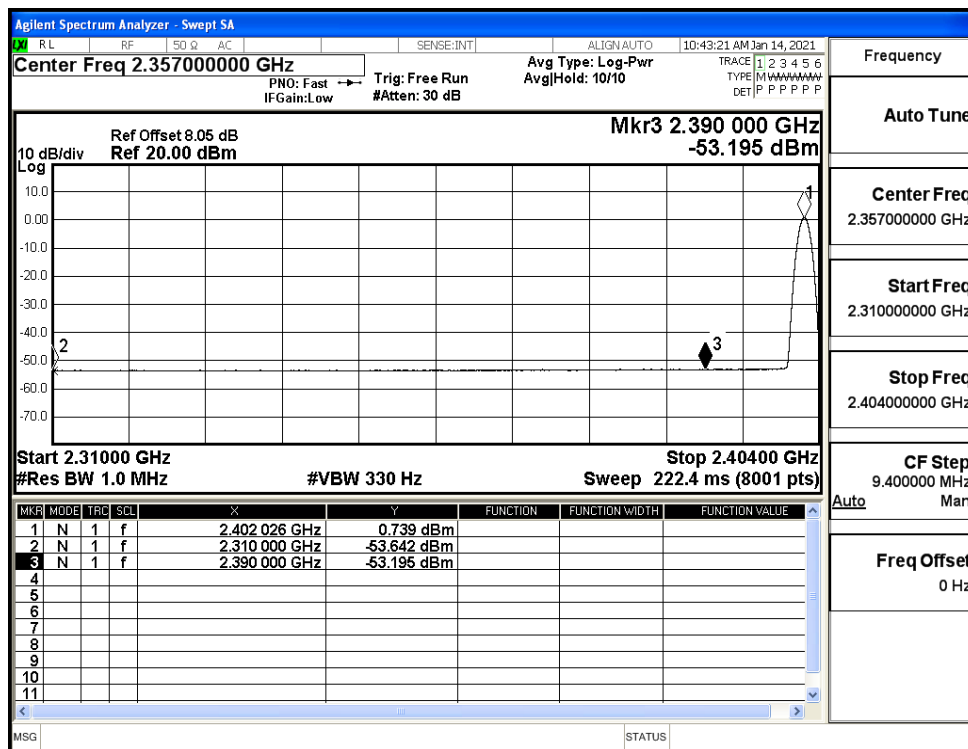
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (High Channel)



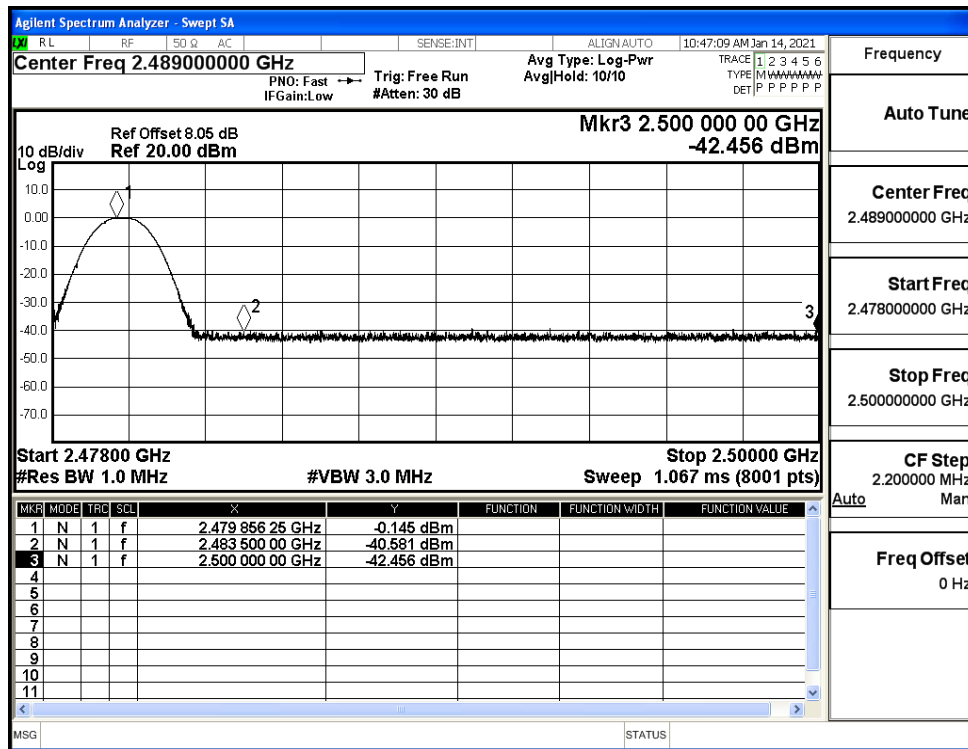
## Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_PEAK (Low Channel)



## Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_Average (Low Channel)



## Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_PEAK (High Channel)



## Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_Average (High Channel)

