

## Appendix A

### RF Test Data for BT V4.2(BDR/EDR) (Conducted Measurement)

Product Name: BT Speaker

Trade Mark: REDWIND

Test Model: T5

#### Environmental Conditions

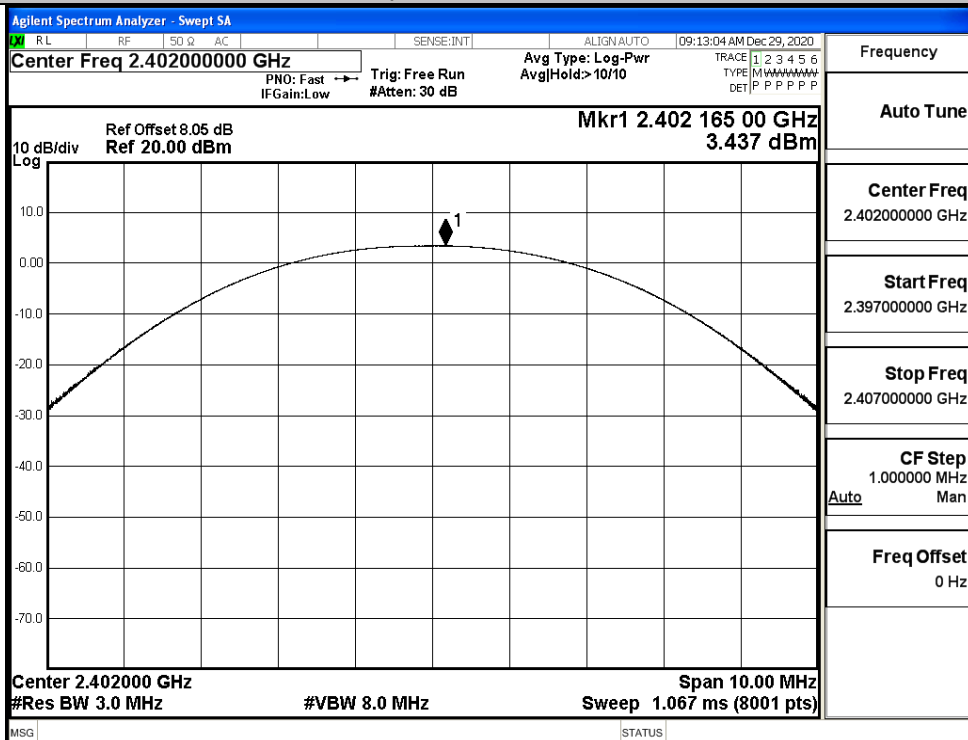
|                    |           |
|--------------------|-----------|
| Temperature:       | 23.7 ° C  |
| Relative Humidity: | 53.1%     |
| ATM Pressure:      | 100.0 kPa |
| Test Engineer:     | Ben Jin   |
| Supervised by:     | Li Huan   |

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

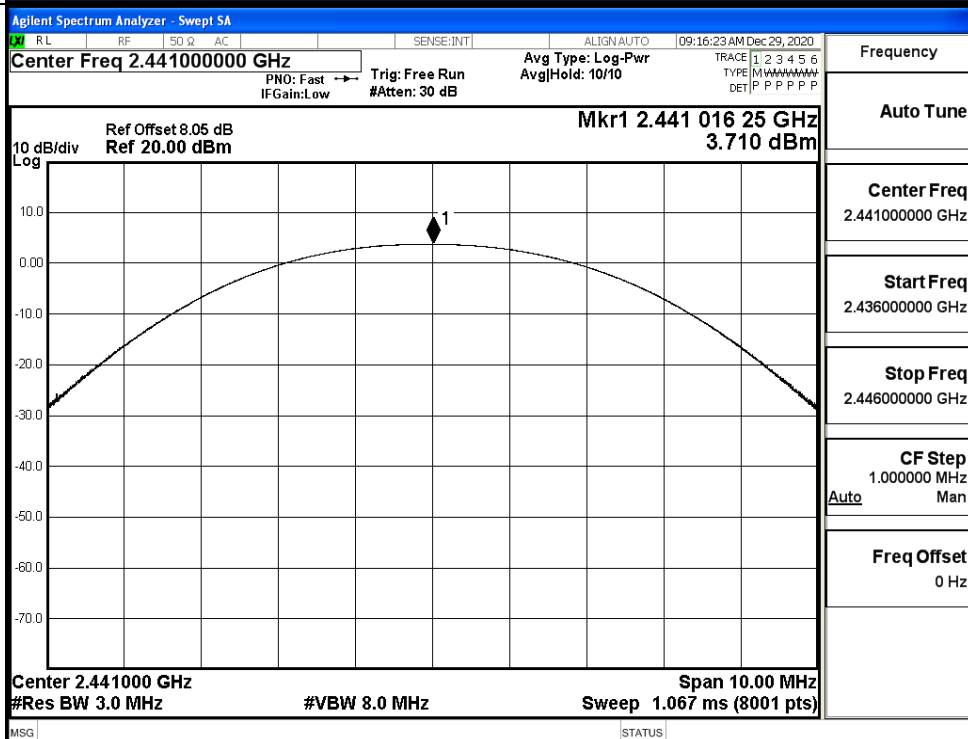
| Mode          | Channel. | Maximum Peak Output Power [dBm] | Limit [dBm] | Verdict |
|---------------|----------|---------------------------------|-------------|---------|
| GFSK          | LCH      | 3.437                           | 30          | PASS    |
|               | MCH      | 3.710                           | 30          | PASS    |
|               | HCH      | 1.797                           | 30          | PASS    |
| $\pi/4$ DQPSK | LCH      | 1.591                           | 21          | PASS    |
|               | MCH      | 2.862                           | 21          | PASS    |
|               | HCH      | 1.021                           | 21          | PASS    |
| 8DPSK         | LCH      | 1.750                           | 21          | PASS    |
|               | MCH      | 3.041                           | 21          | PASS    |
|               | HCH      | 1.163                           | 21          | PASS    |

## Test Graphs

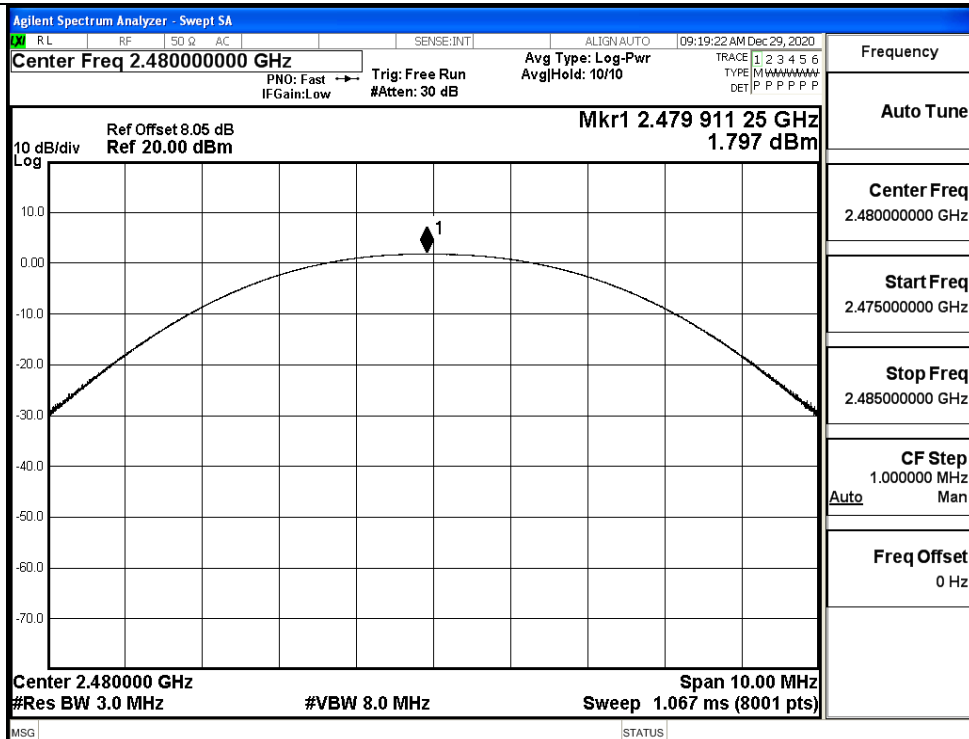
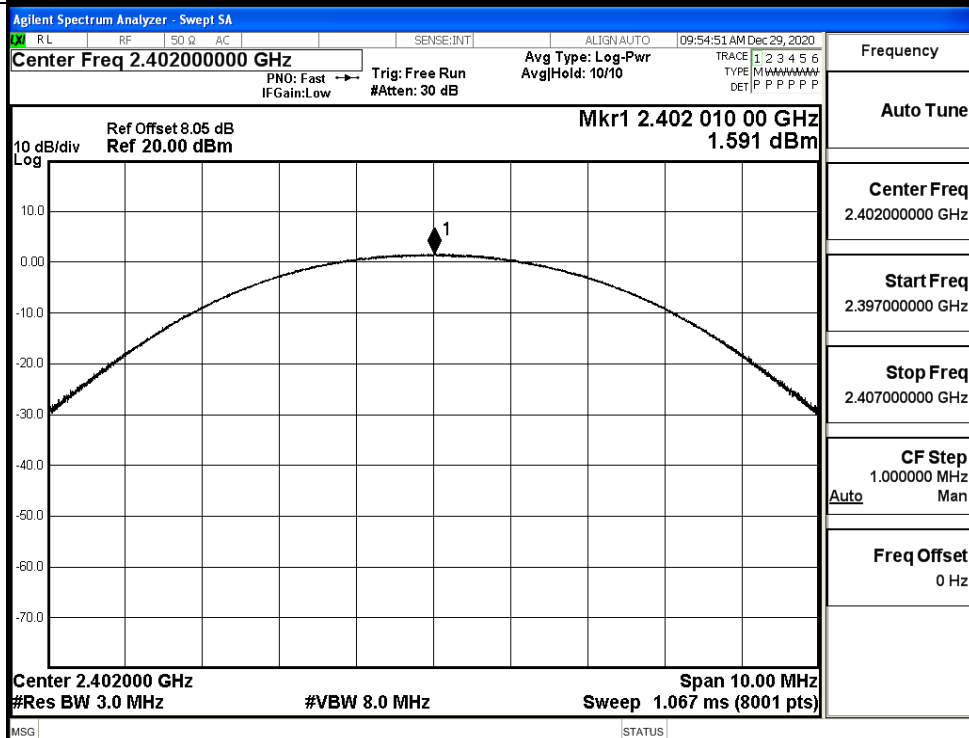
GFSK/LCH

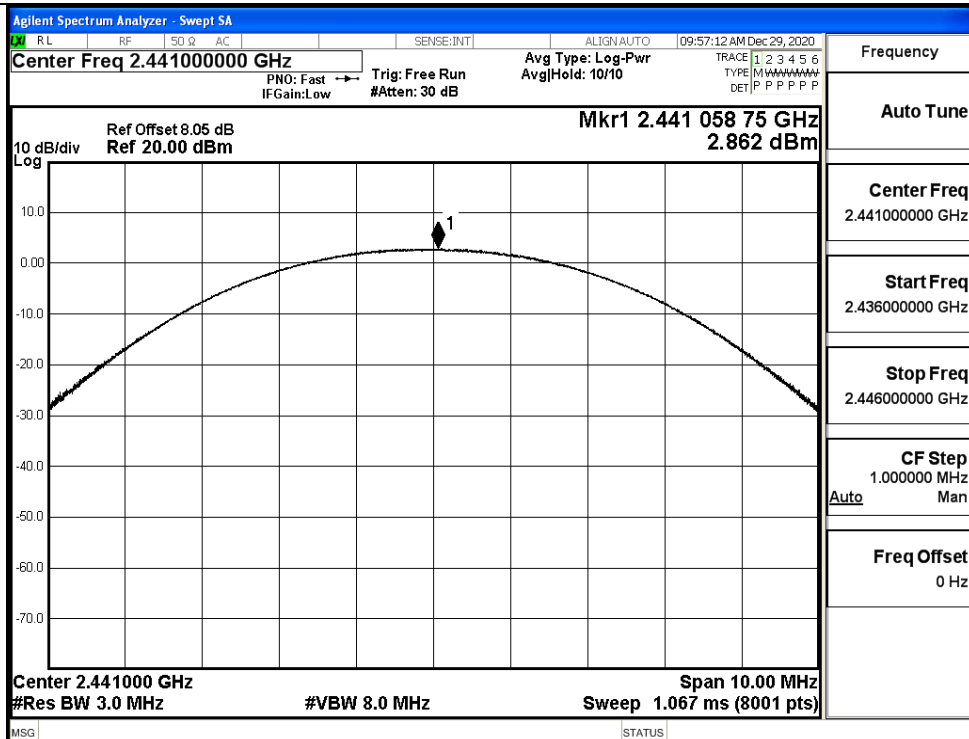
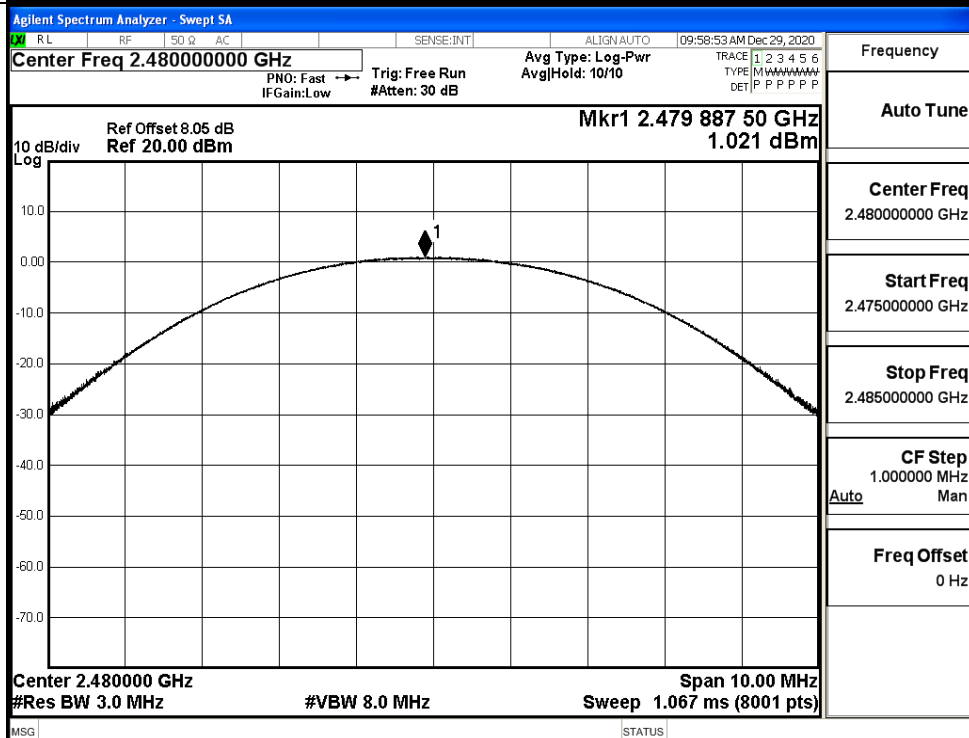


GFSK/MCH

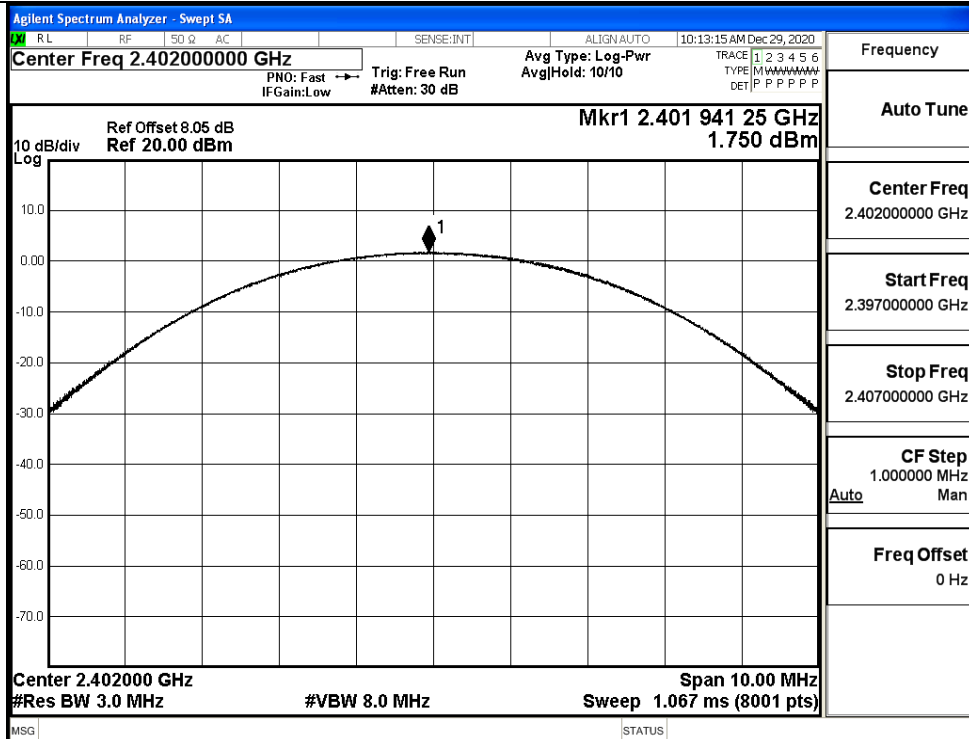


GFSK/HCH

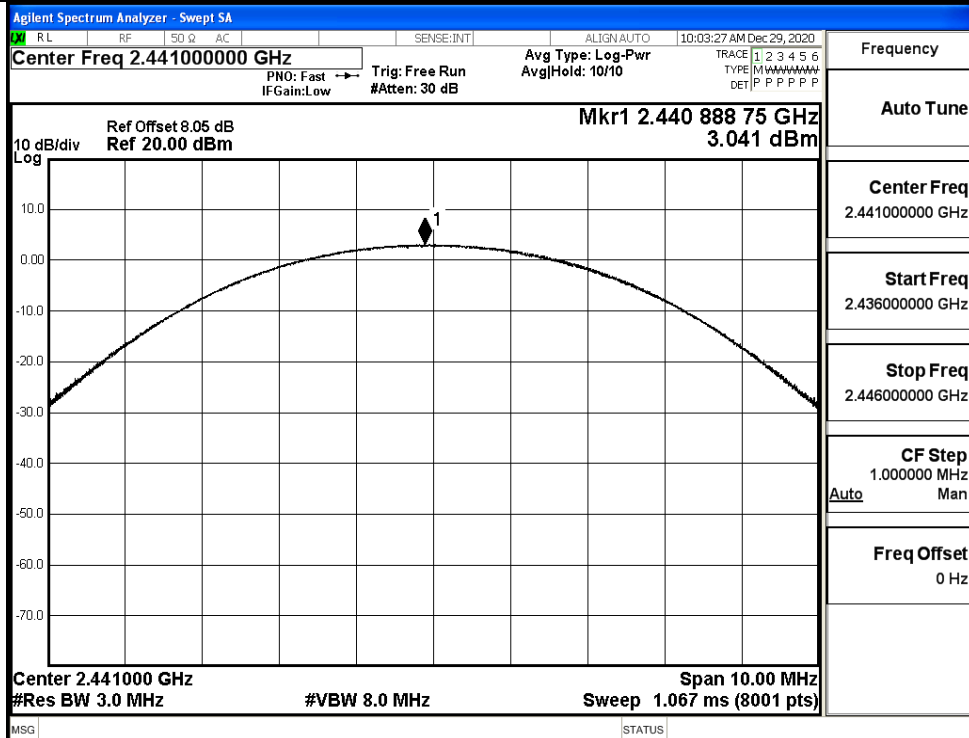
 $\pi$ /4DQPSK/LCH

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

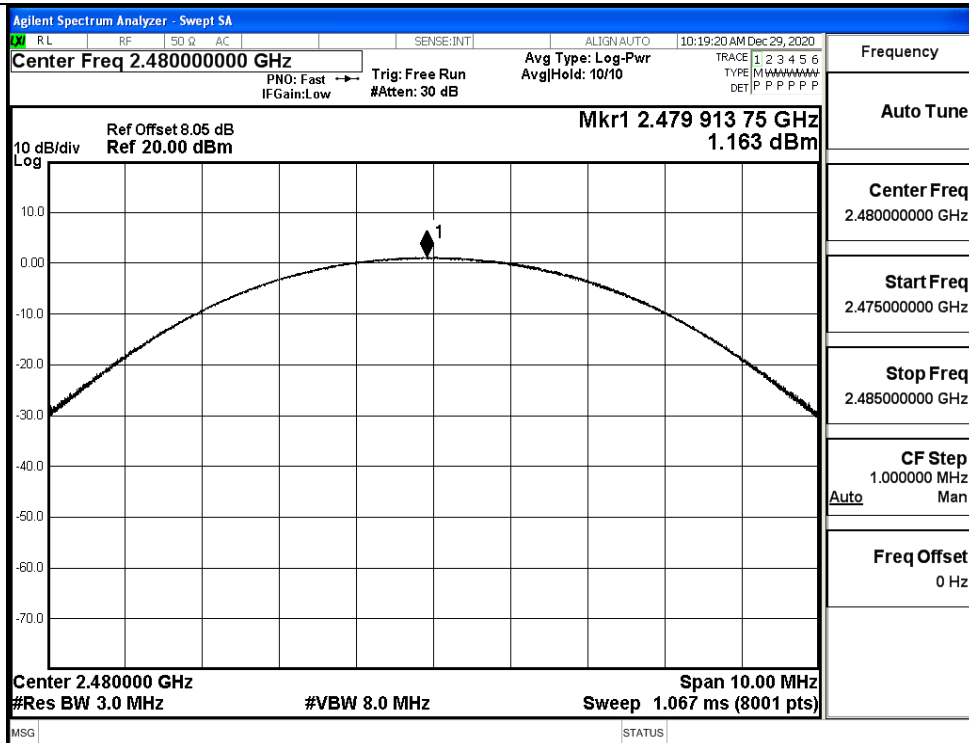
8DPSK/LCH



8DPSK/MCH



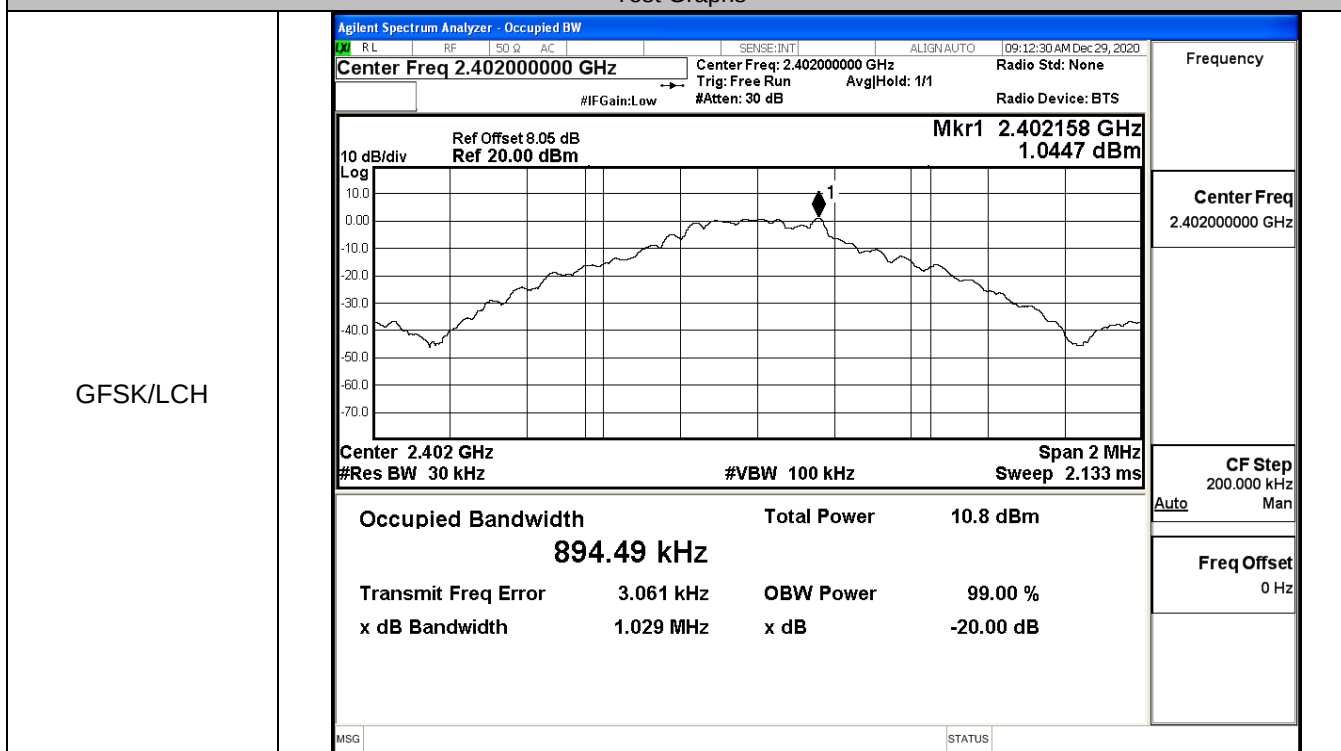
8DPSK/HCH



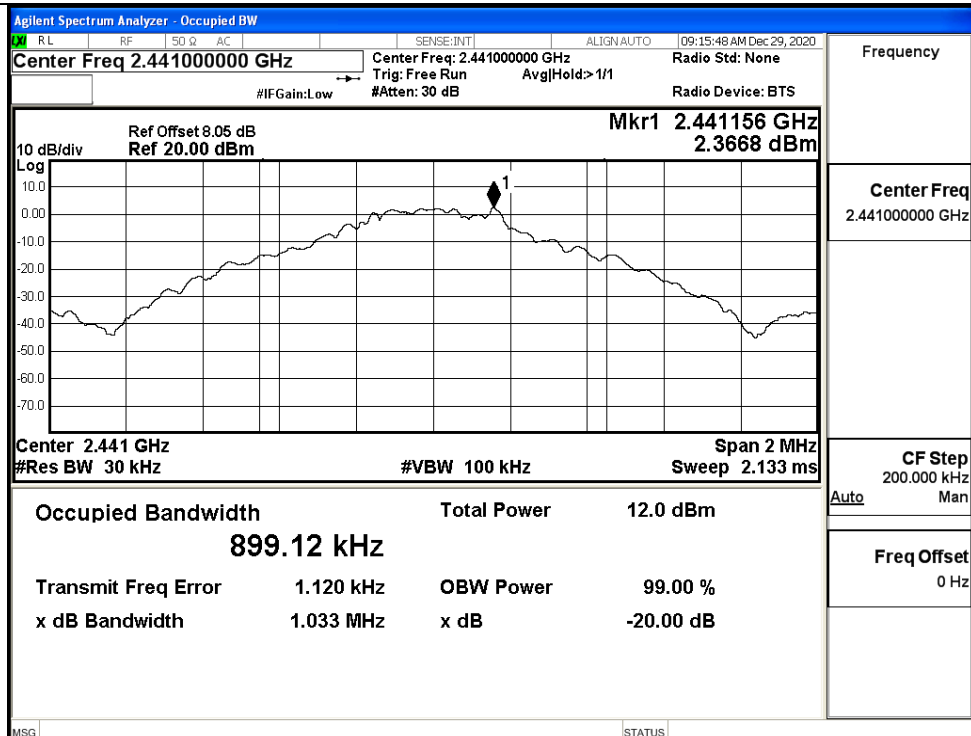
## A.2 20dB Bandwidth

| Mode          | Channel. | 20dB Bandwidth [MHz] | Limit [MHz]   | Verdict |
|---------------|----------|----------------------|---------------|---------|
| GFSK          | LCH      | 1.029                | Not Specified | PASS    |
|               | MCH      | 1.033                | Not Specified | PASS    |
|               | HCH      | 1.032                | Not Specified | PASS    |
| $\pi/4$ DQPSK | LCH      | 1.289                | Not Specified | PASS    |
|               | MCH      | 1.289                | Not Specified | PASS    |
|               | HCH      | 1.288                | Not Specified | PASS    |
| 8DPSK         | LCH      | 1.294                | Not Specified | PASS    |
|               | MCH      | 1.295                | Not Specified | PASS    |
|               | HCH      | 1.295                | Not Specified | PASS    |

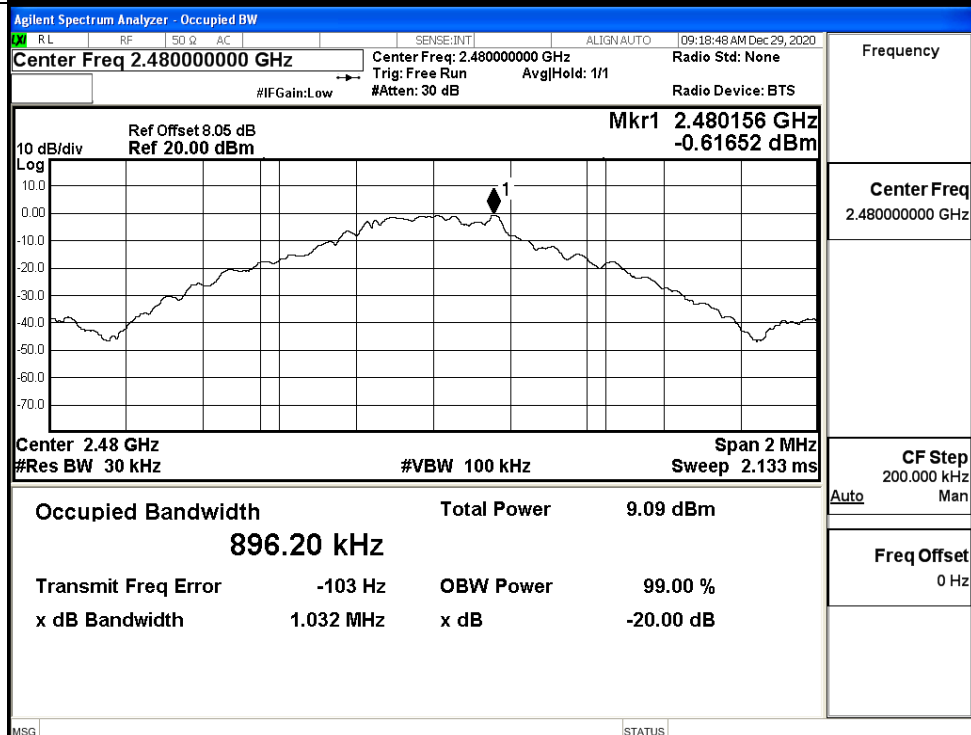
Test Graphs

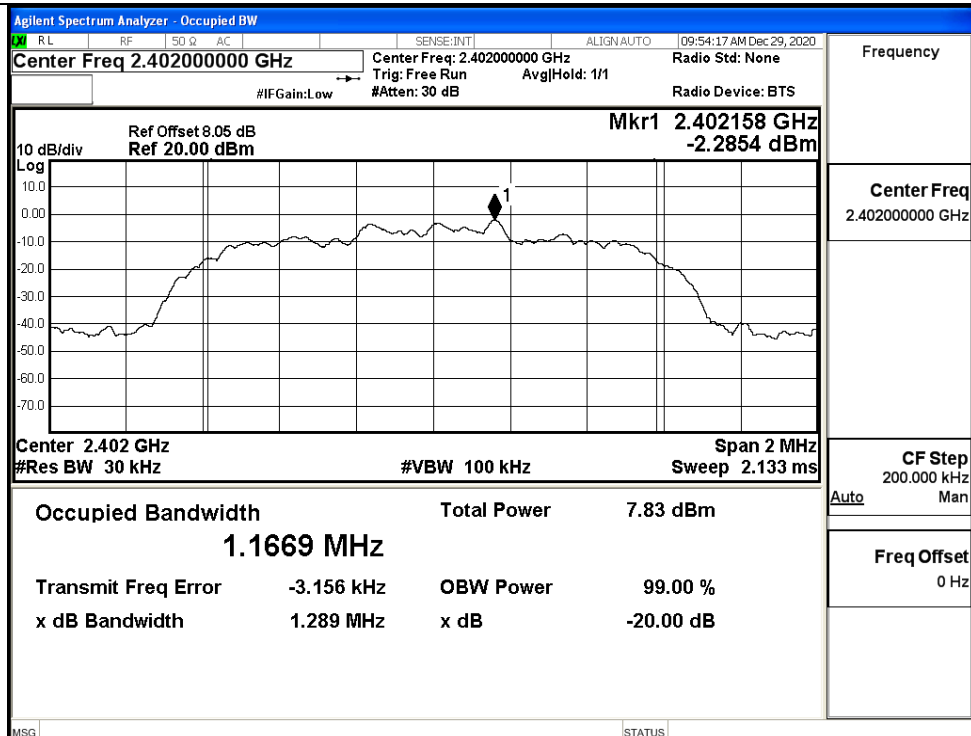
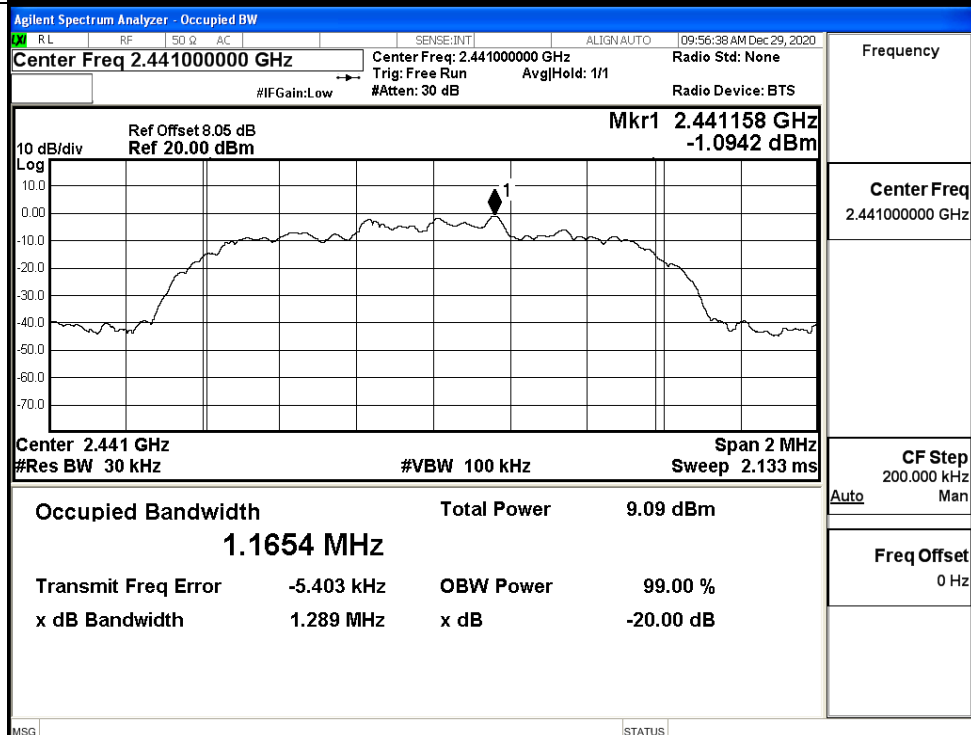


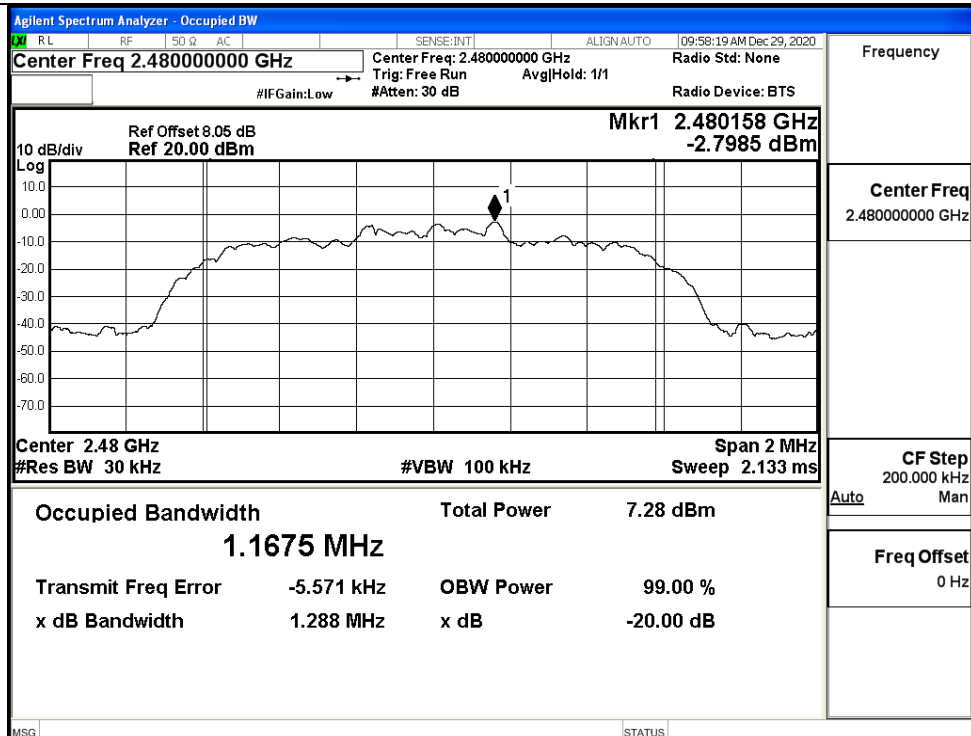
GFSK/MCH



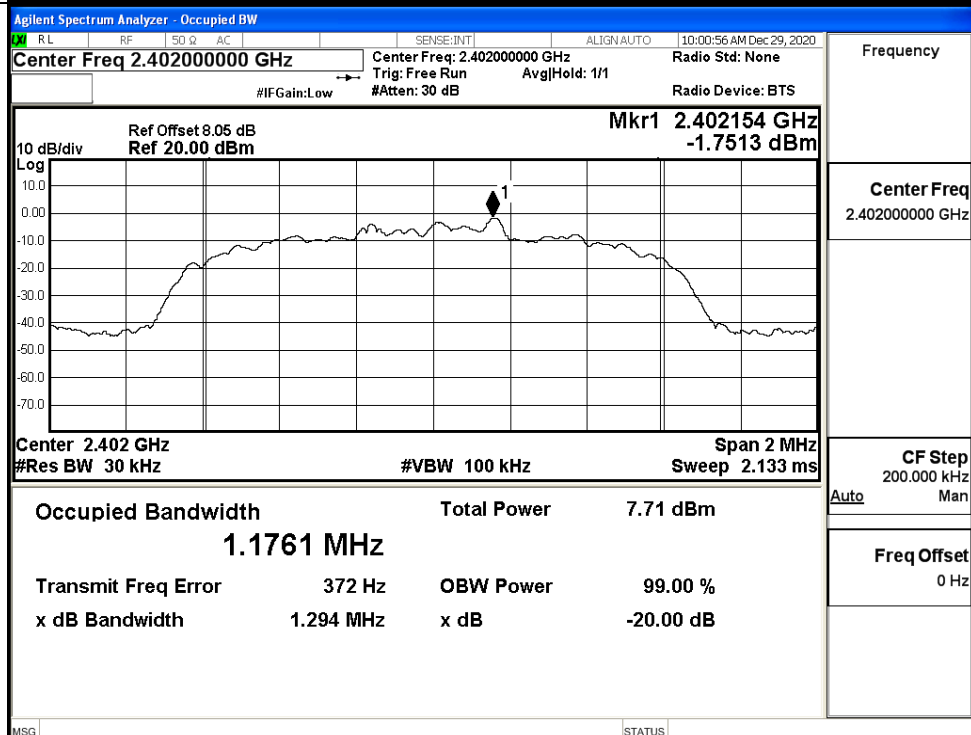
GFSK/HCH



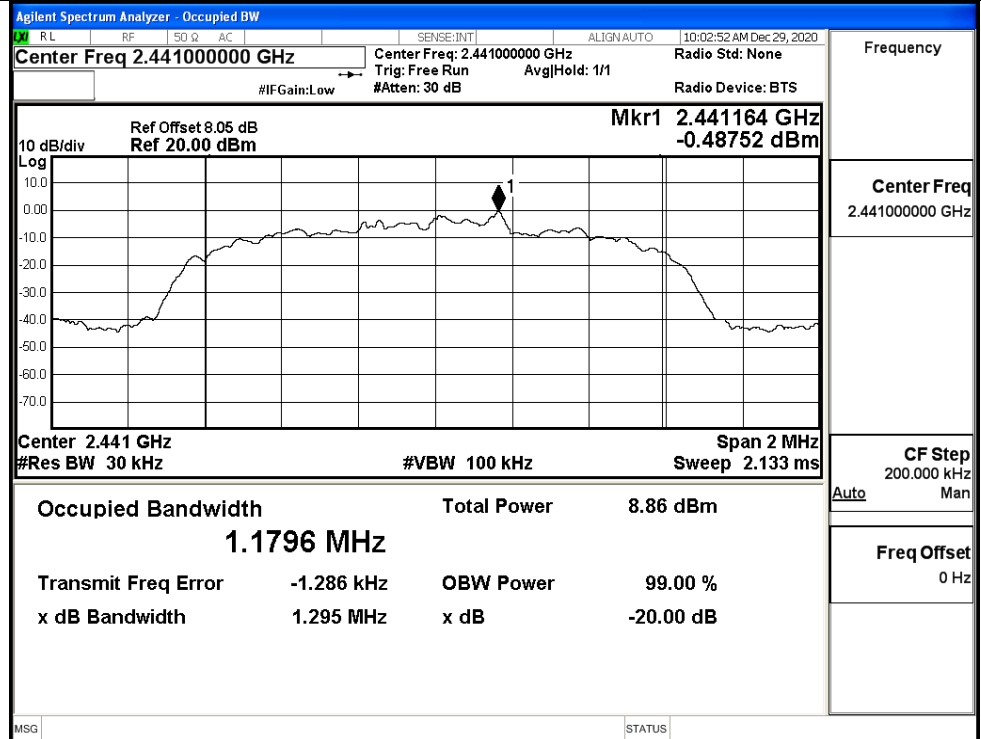
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

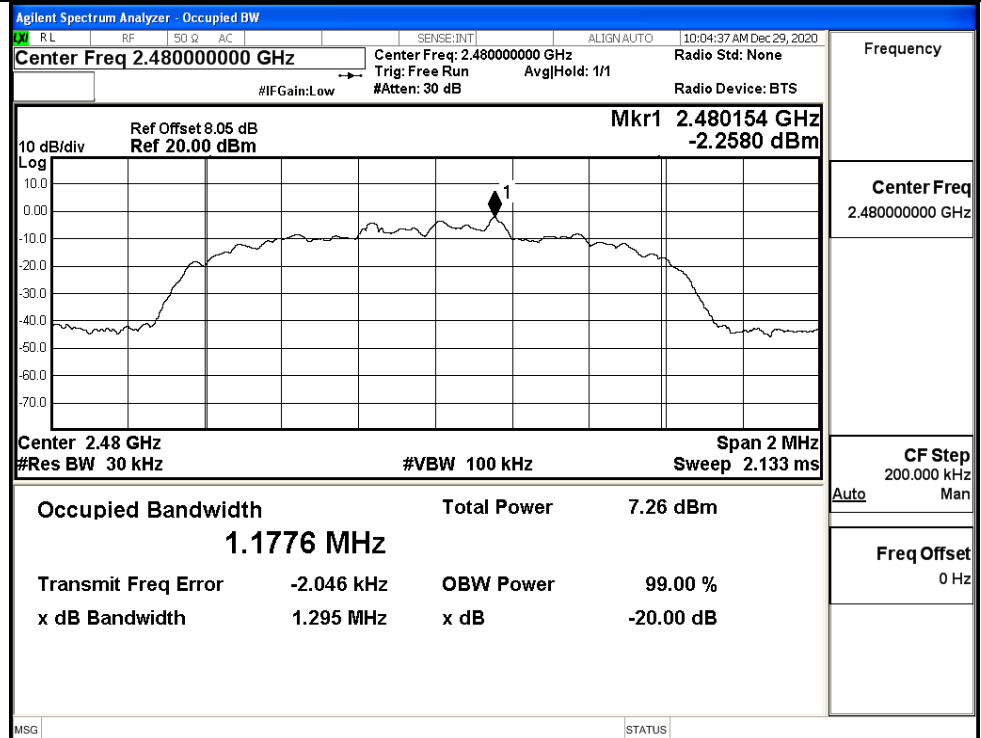
8DPSK/LCH



8DPSK/MCH



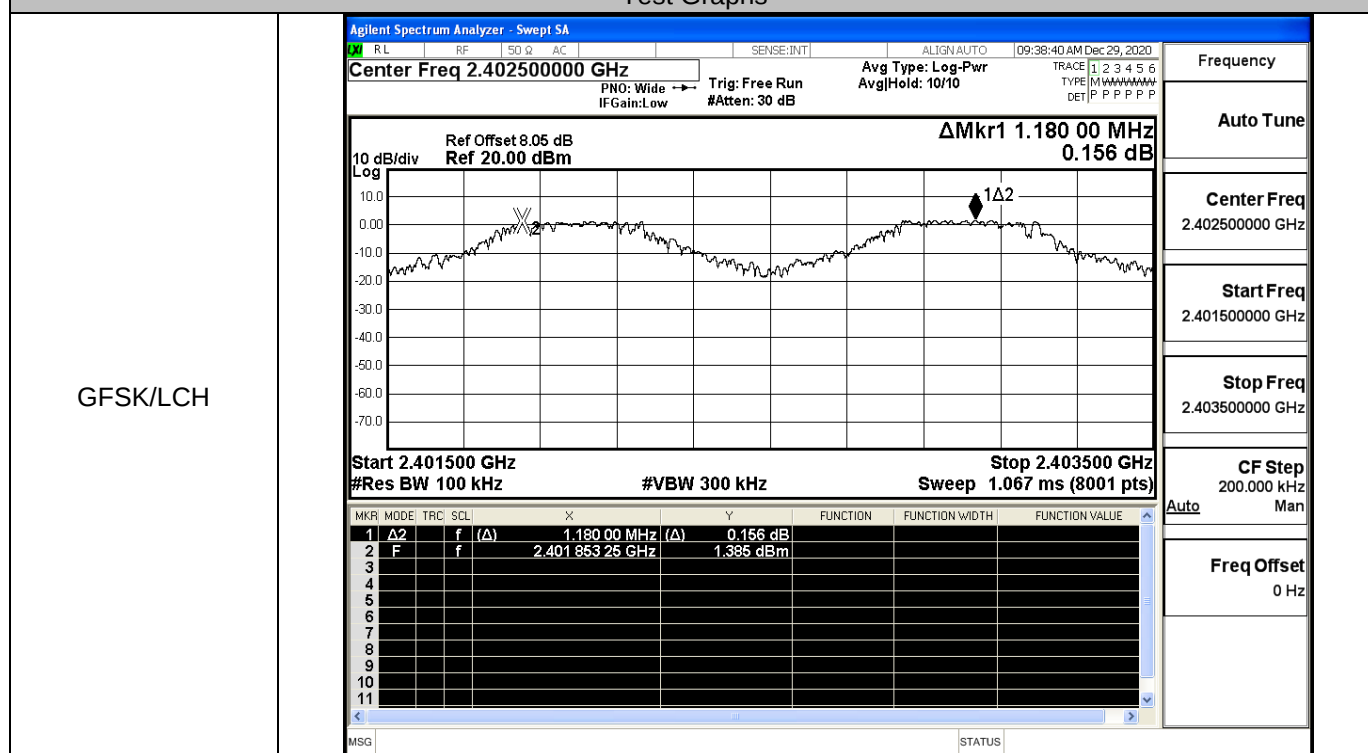
8DPSK/HCH



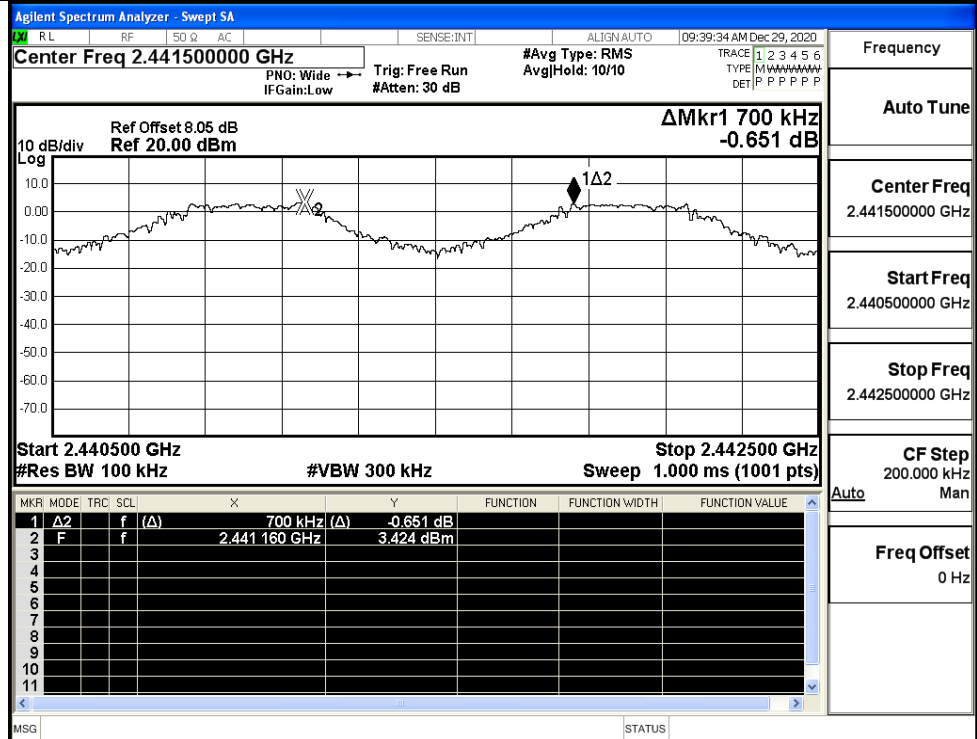
### A.3 Carrier Frequency Separation

| Mode          | Channel. | Carrier Frequency Separation [MHz] | Limit [MHz] | Verdict |
|---------------|----------|------------------------------------|-------------|---------|
| GFSK          | LCH      | 1.180                              | 0.689       | PASS    |
|               | MCH      | 0.700                              | 0.689       | PASS    |
|               | HCH      | 0.872                              | 0.689       | PASS    |
| $\pi/4$ DQPSK | LCH      | 1.142                              | 0.691       | PASS    |
|               | MCH      | 0.900                              | 0.691       | PASS    |
|               | HCH      | 1.124                              | 0.691       | PASS    |
| 8DPSK         | LCH      | 1.102                              | 0.690       | PASS    |
|               | MCH      | 0.868                              | 0.690       | PASS    |
|               | HCH      | 0.708                              | 0.690       | PASS    |

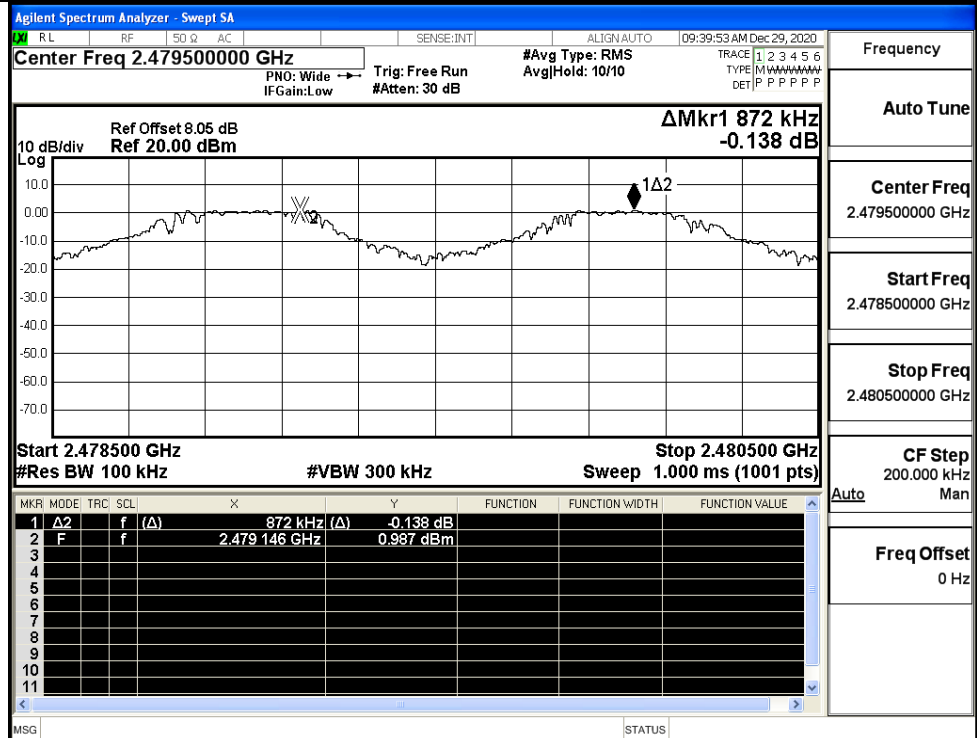
#### Test Graphs

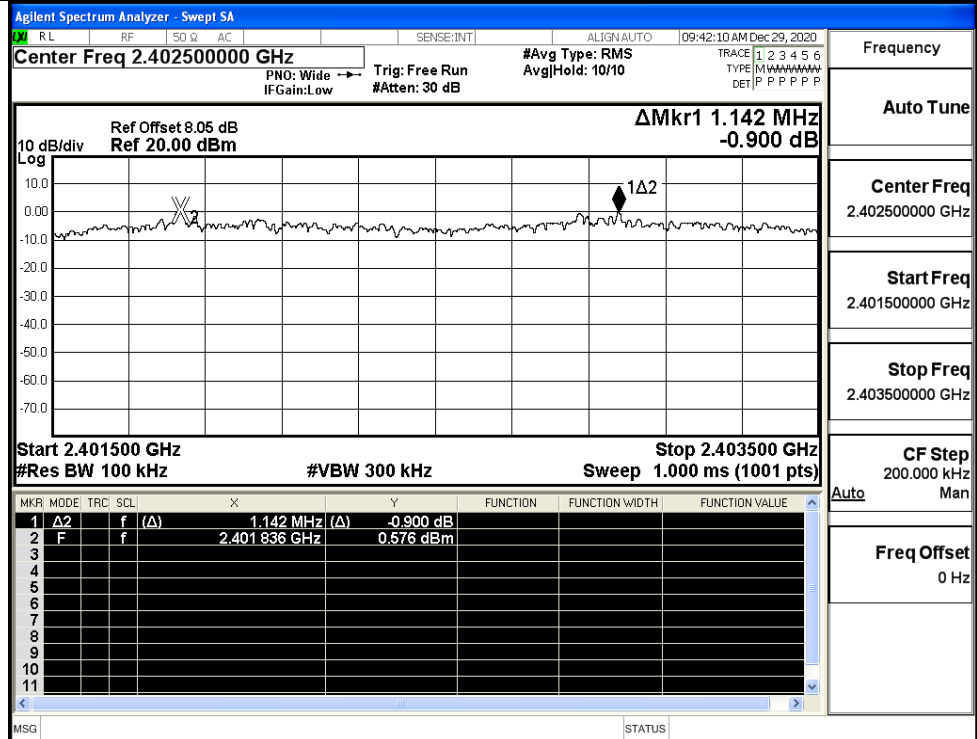
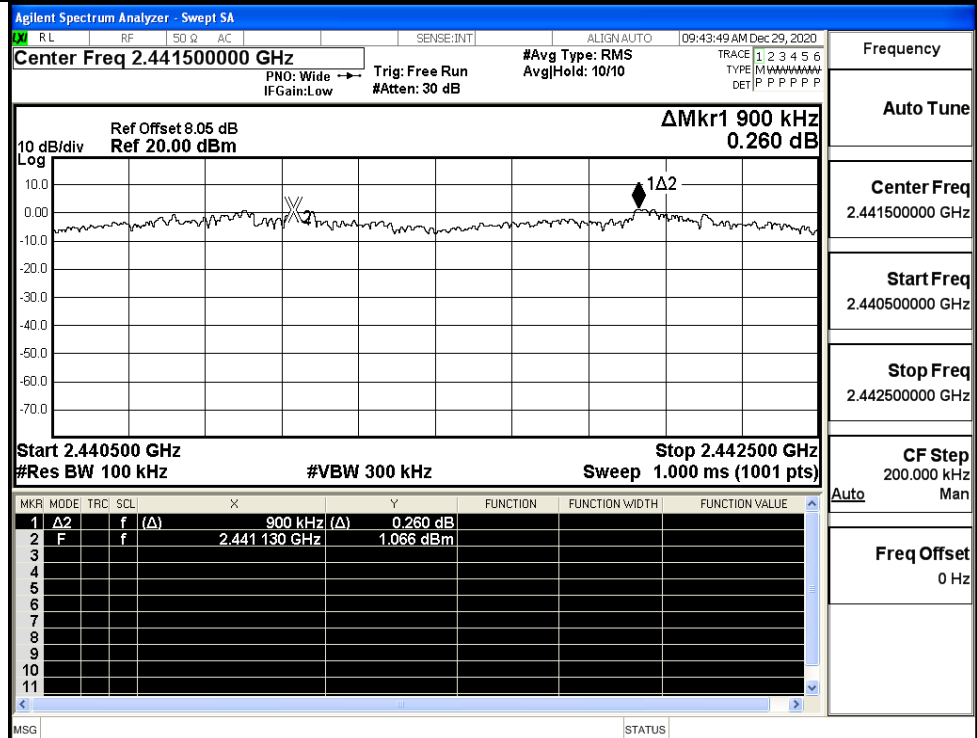


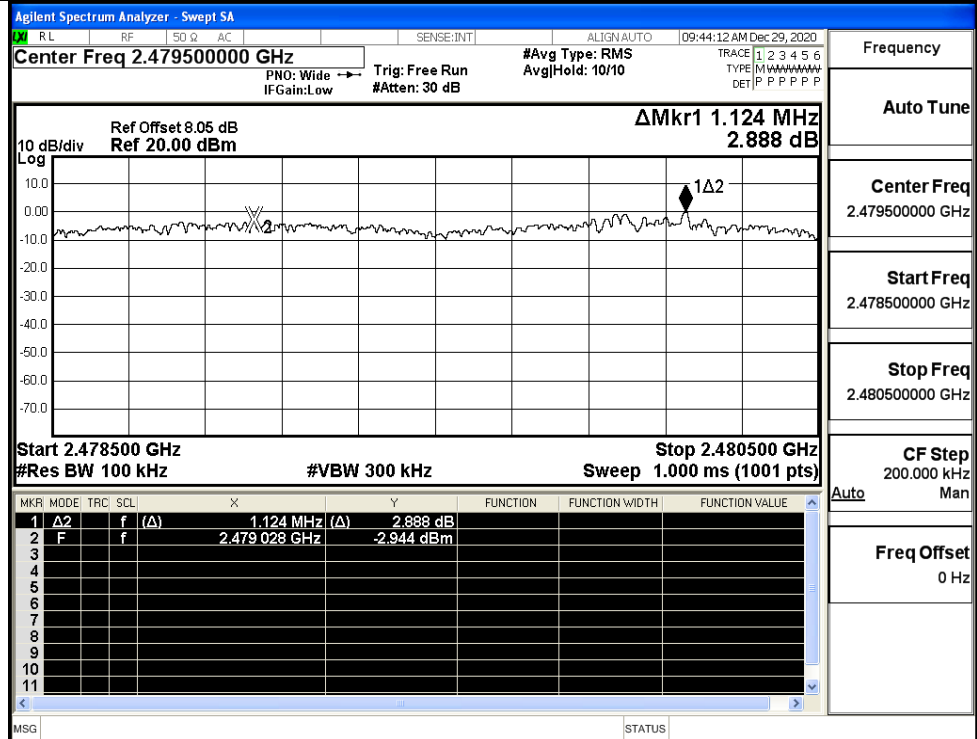
GFSK/MCH



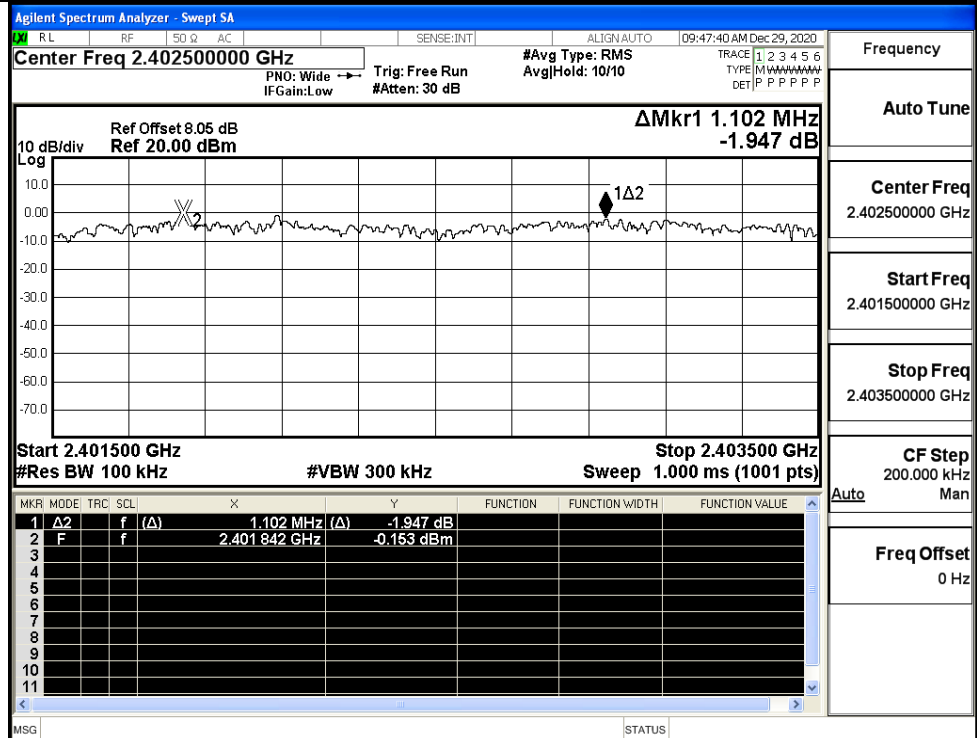
GFSK/HCH



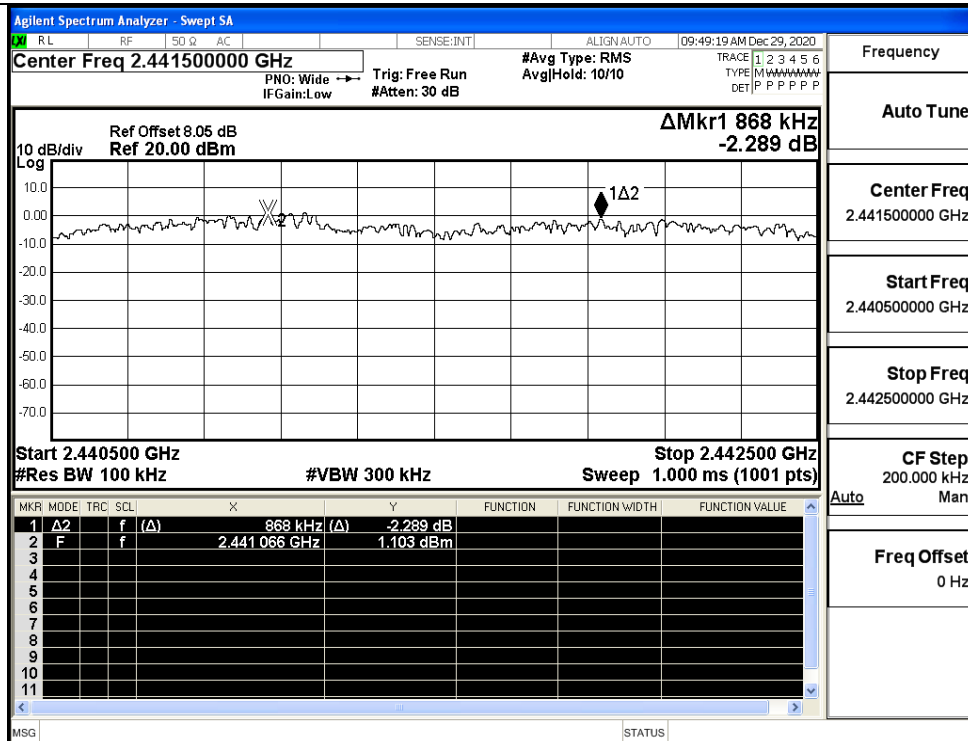
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

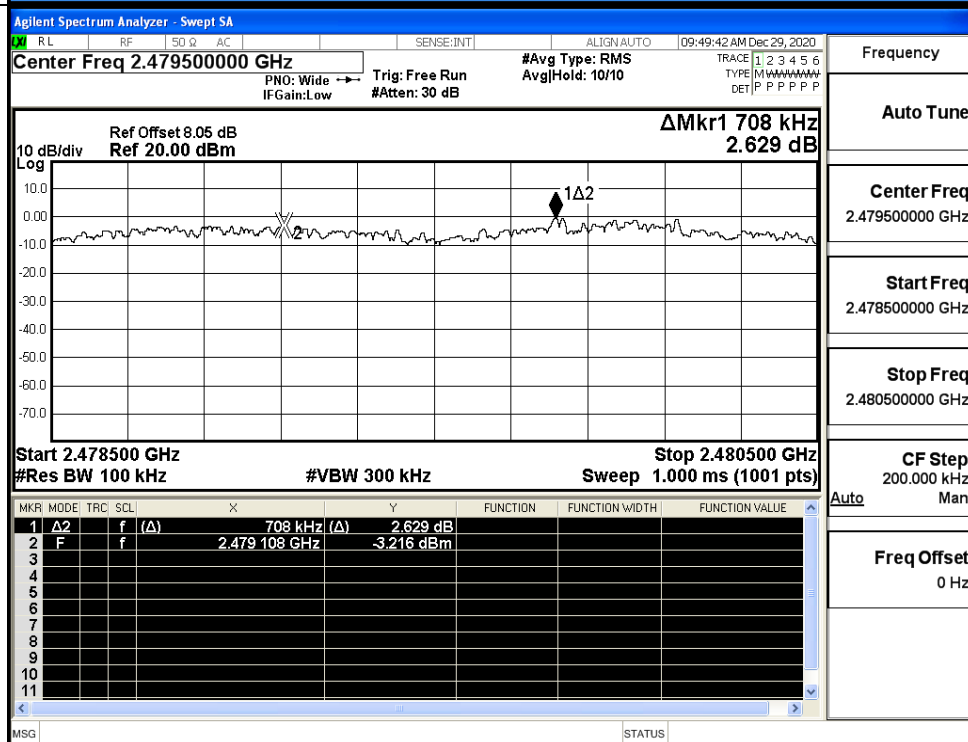
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

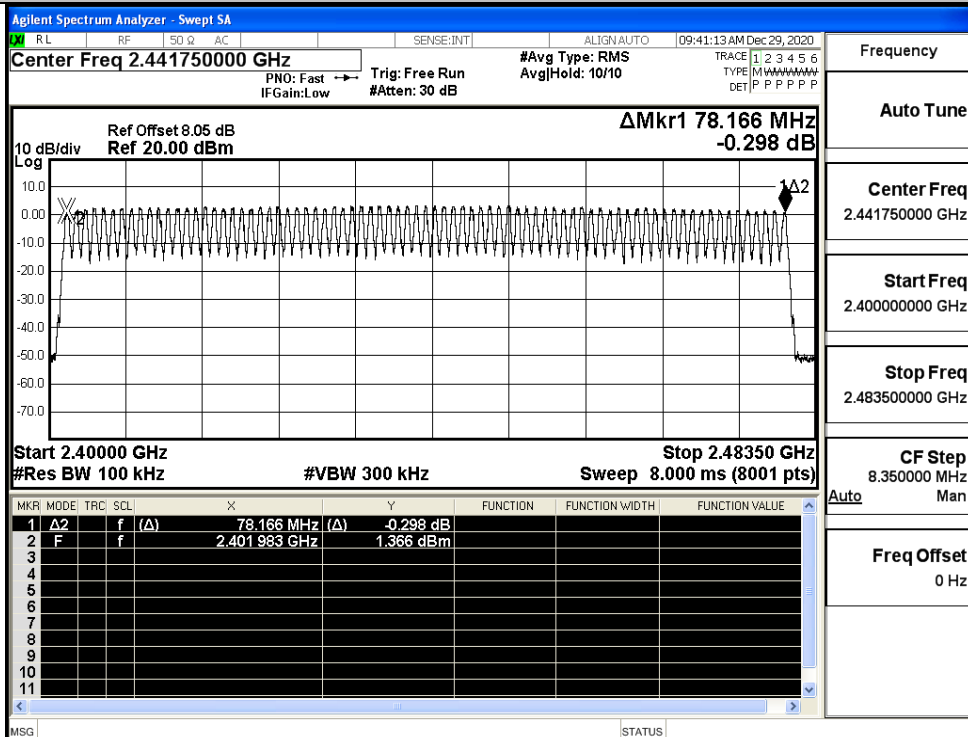
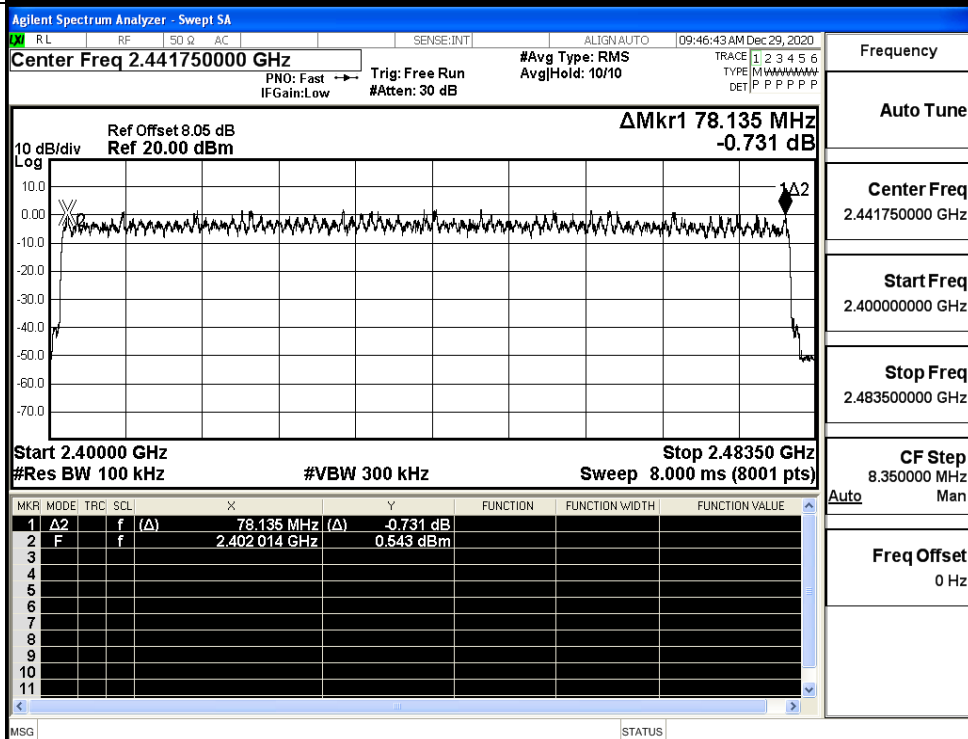


#### A.4 Hopping Channel Number

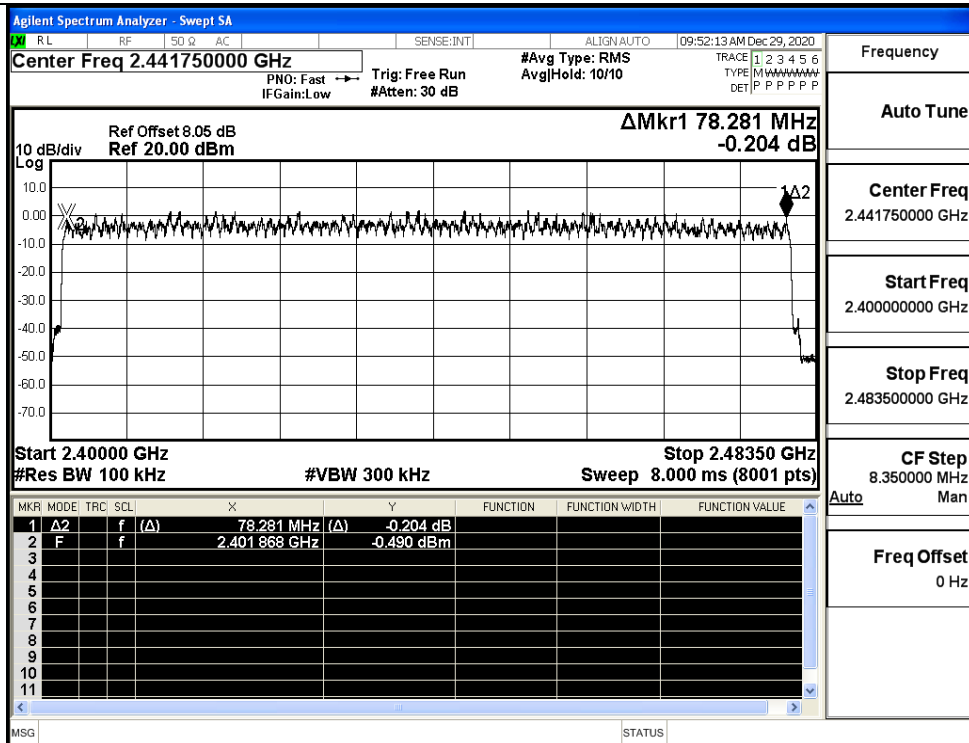
| Mode          | Channel. | Number of Hopping Channel [N] | Limit [N] | Verdict |
|---------------|----------|-------------------------------|-----------|---------|
| GFSK          | Hop      | 79                            | >=15      | PASS    |
| $\pi/4$ DQPSK | Hop      | 79                    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

## Test Graphs

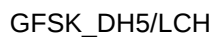
GFSK/Hop

 $\pi/4$ DQPSK/Hop

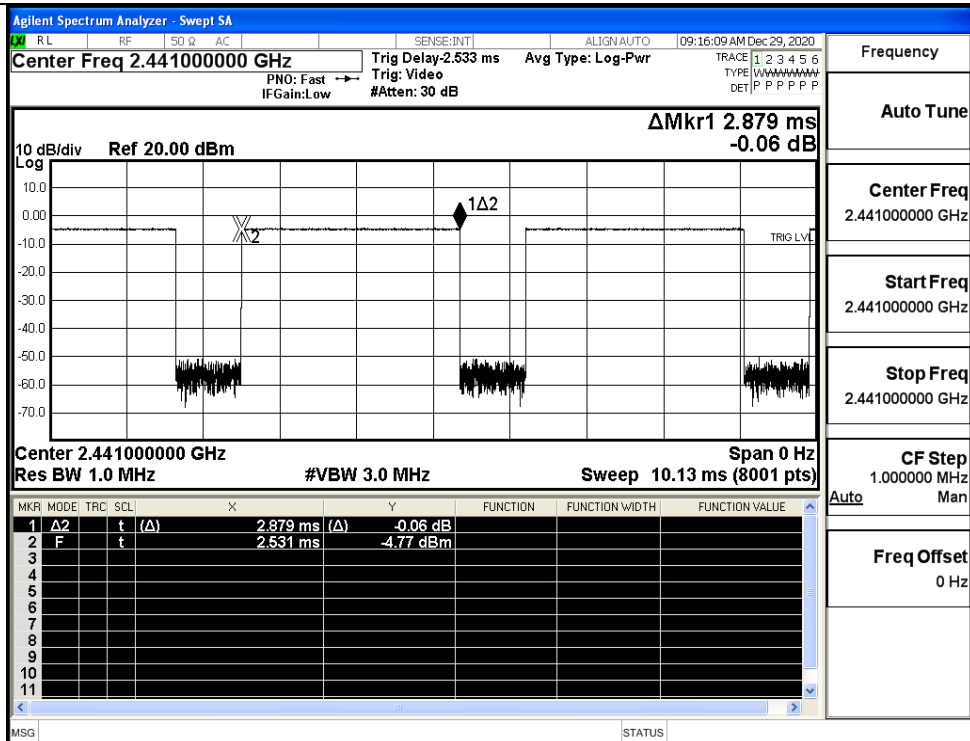
8DPSK/Hop



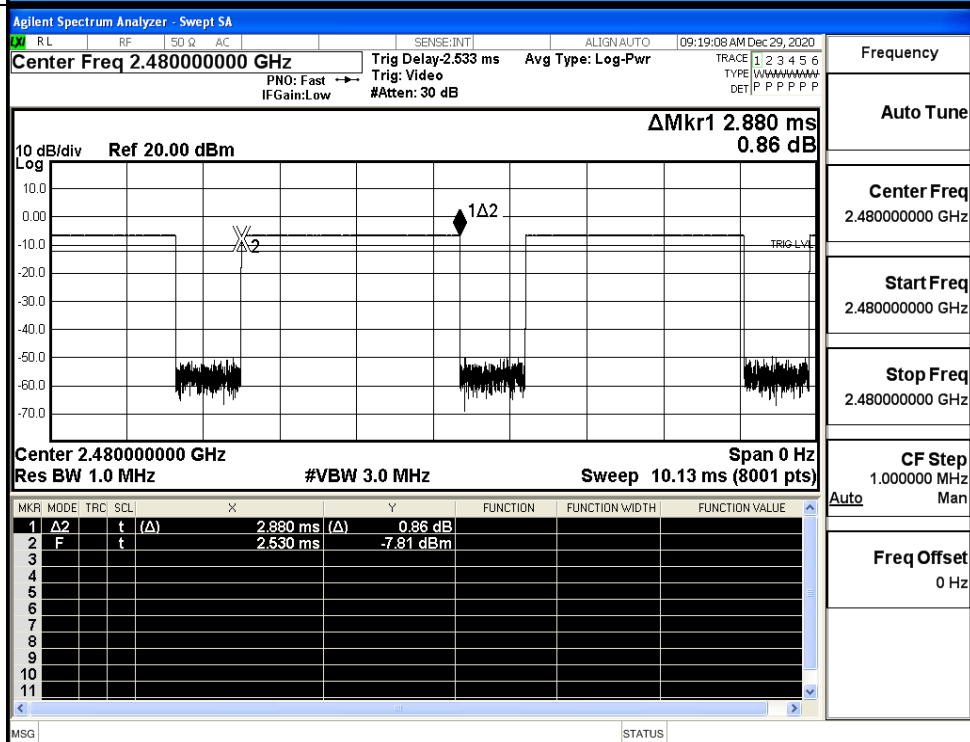
| Mode          | Packet | Channel | Burst Width<br>[ms/hop/ch] | Total<br>Hops[hop*ch] | Dwell Time[s] | Limit [s] | Verdict |
|---------------|--------|---------|----------------------------|-----------------------|---------------|-----------|---------|
| GFSK          | DH5    | LCH     | 2.88                       | 106.7                 | 0.307         | 0.4       | PASS    |
|               | DH5    | MCH     | 2.88                       | 106.7                 | 0.307         | 0.4       | PASS    |
|               | DH5    | HCH     | 2.88                       | 106.7                 | 0.307         | 0.4       | PASS    |
| $\pi/4$ DQPSK | 2DH5   | LCH     | 2.88                       | 106.7                 | 0.307         | 0.4       | PASS    |
|               | 2DH5   | MCH     | 2.88                       | 106.7                 | 0.307         | 0.4       | PASS    |
|               | 2DH5   | HCH     | 2.88                       | 106.7                 | 0.307         | 0.4       | PASS    |
| 8DPSK         | 3DH5   | LCH     | 2.88                       | 106.7                 | 0.308         | 0.4       | PASS    |
|               | 3DH5   | MCH     | 2.88                       | 106.7                 | 0.308         | 0.4       | PASS    |
|               | 3DH5   | HCH     | 2.88                       | 106.7                 | 0.308         | 0.4       | PASS    |



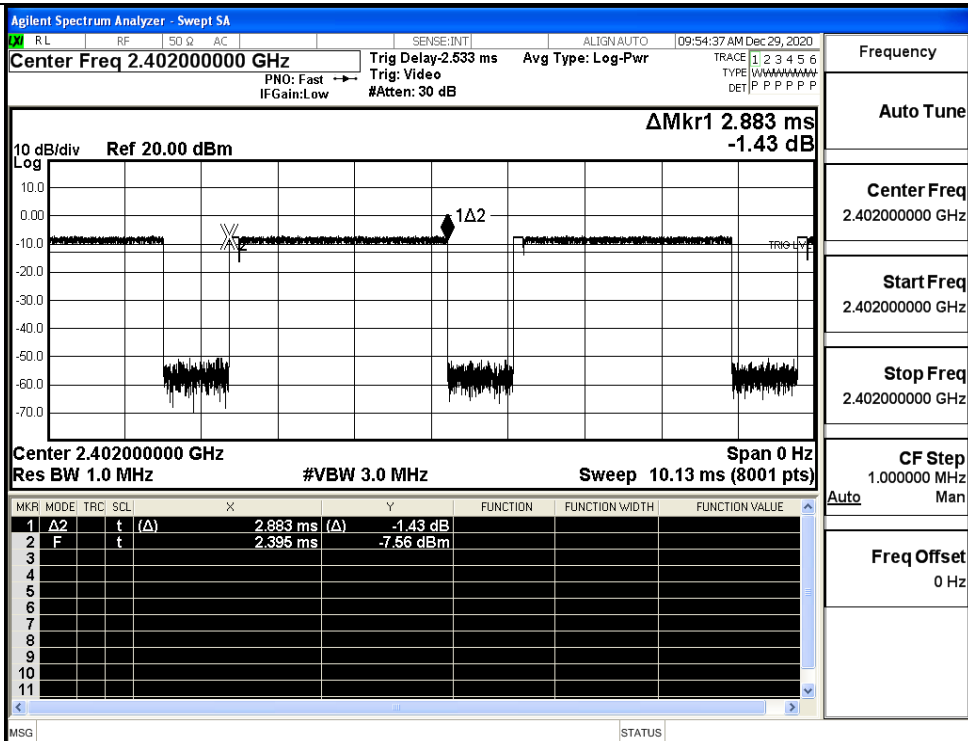
GFSK\_DH5/MCH



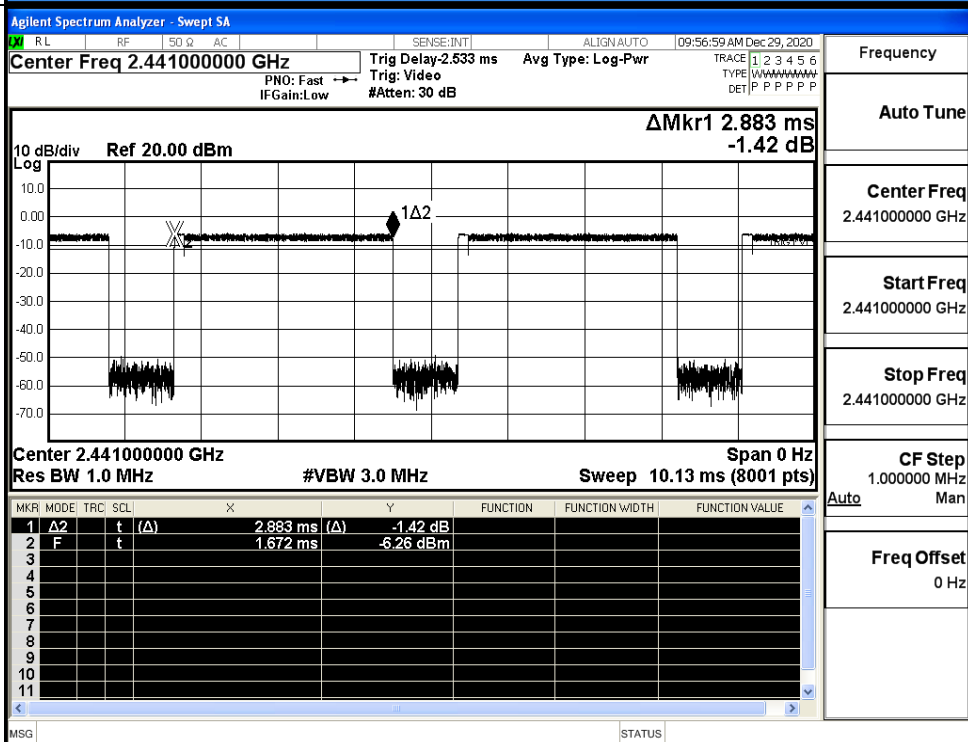
GFSK\_DH5/HCH



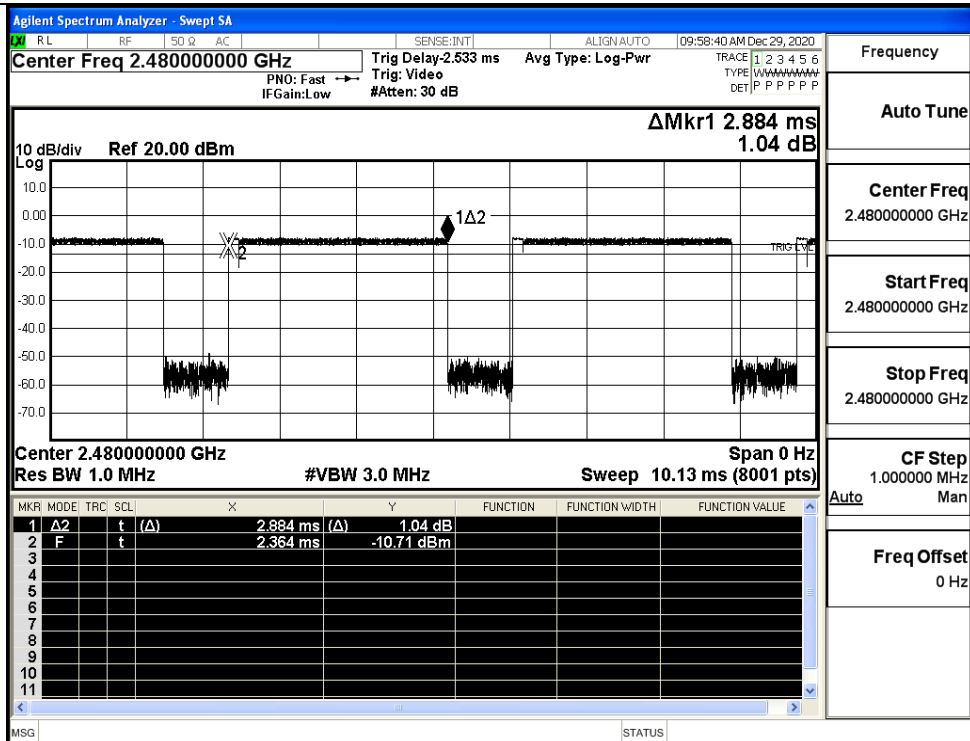
$\pi/4$ DQPSK  
\_2DH5/LCH



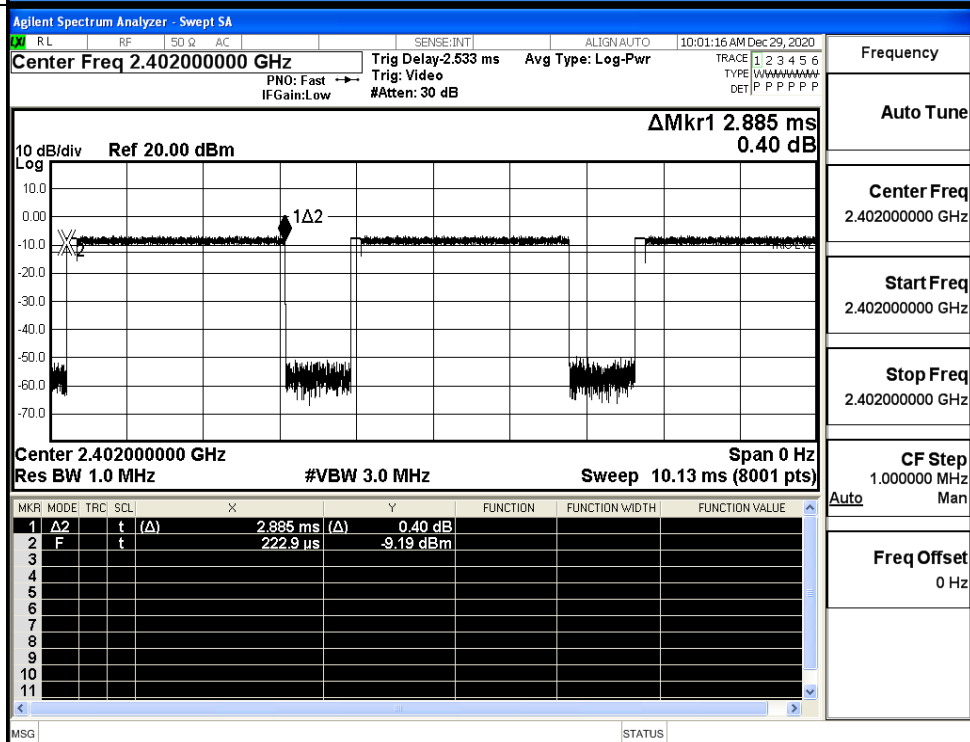
$\pi/4$ DQPSK  
\_2DH5/MCH



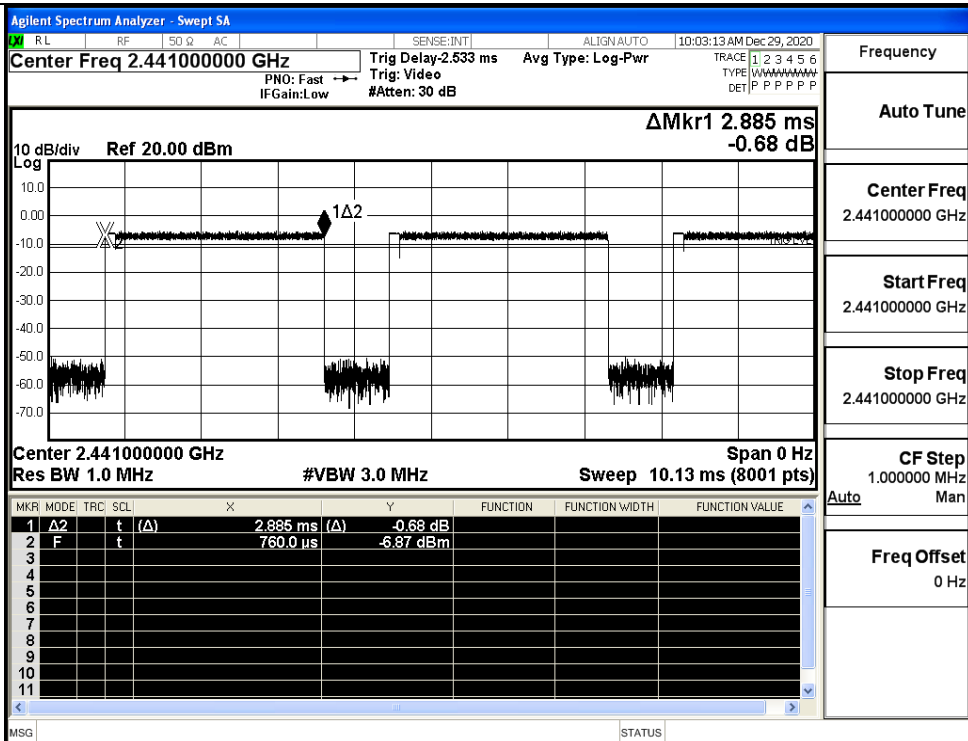
$\pi/4$ DQPSK  
\_2DH5/HCH



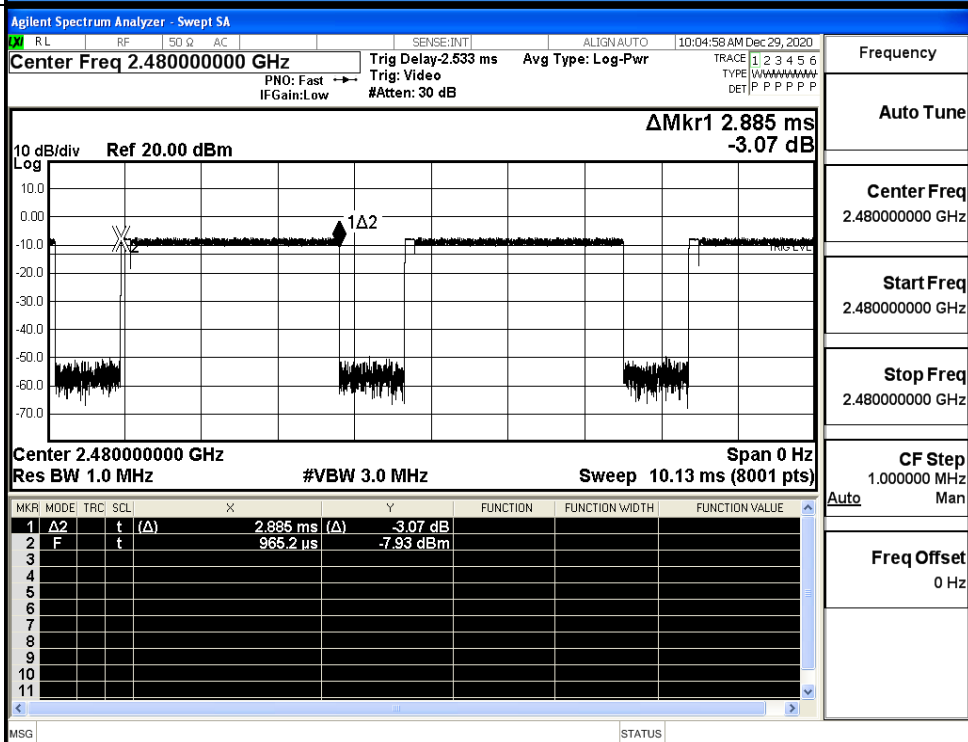
8DPSK \_3DH5/LCH



8DPSK\_3DH5/MCH



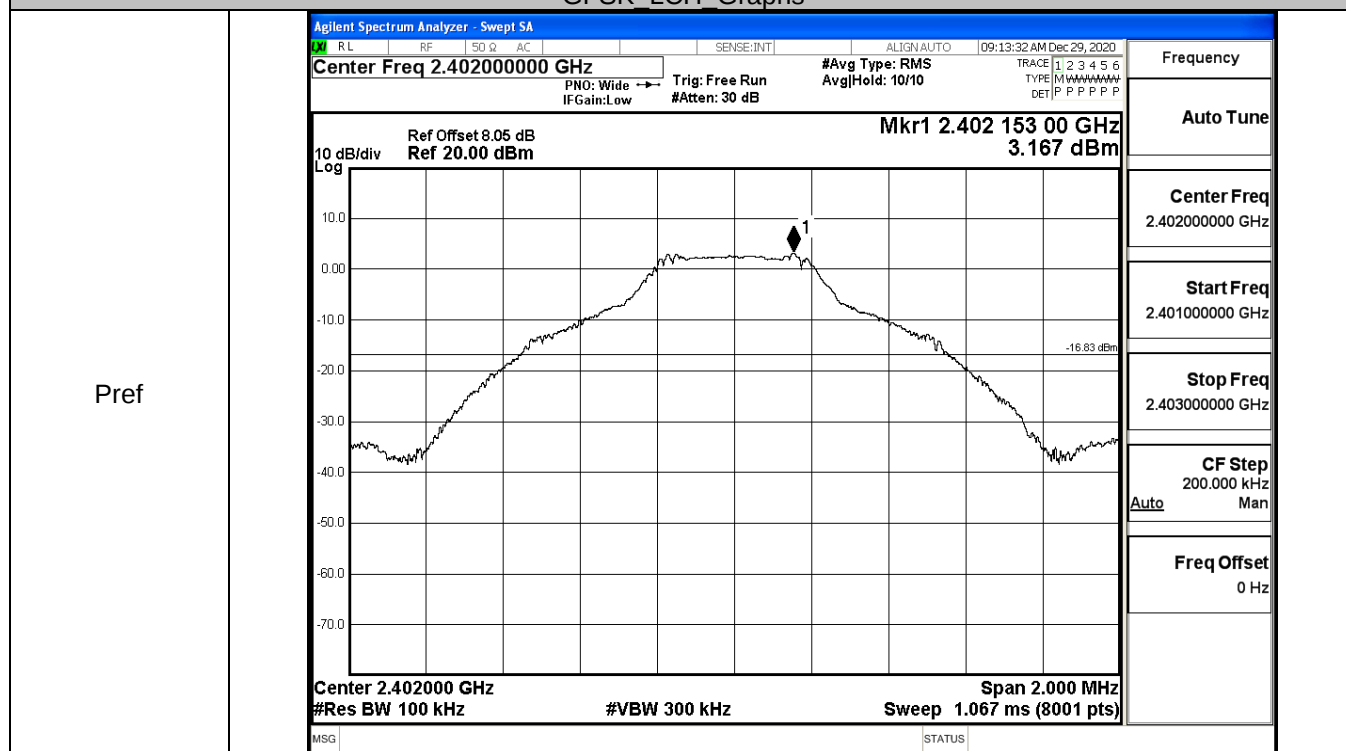
8DPSK\_3DH5/HCH



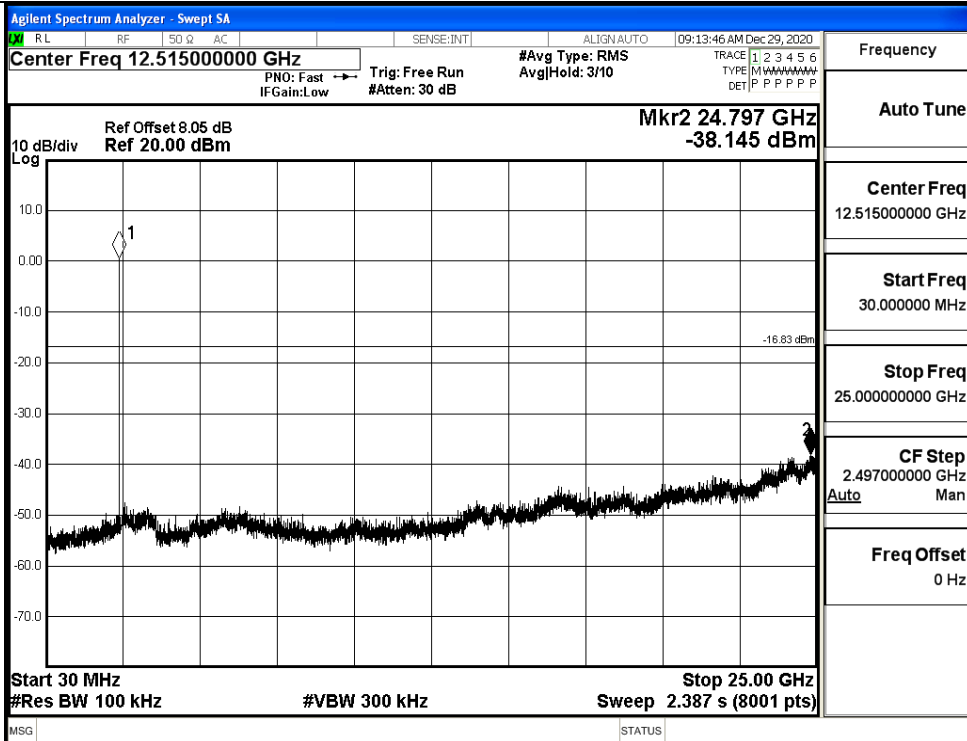
## A.6 RF Conducted Spurious Emissions

| Mode          | Channel | Pref [dBm] | Max. Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|------------|------------------|-------------|---------|
| GFSK          | LCH     | 3.167      | -38.145          | -16.833     | PASS    |
|               | MCH     | 2.935      | -37.319          | -17.065     | PASS    |
|               | HCH     | 1.476      | -37.193          | -18.524     | PASS    |
| $\pi/4$ DQPSK | LCH     | 0.457      | -37.548          | -19.543     | PASS    |
|               | MCH     | 1.626      | -37.878          | -18.374     | PASS    |
|               | HCH     | -0.066     | -37.520          | -20.066     | PASS    |
| 8DPSK         | LCH     | 0.393      | -38.224          | -19.607     | PASS    |
|               | MCH     | 1.828      | -37.158          | -18.172     | PASS    |
|               | HCH     | 0.228      | -38.358          | -19.772     | PASS    |

GFSK LCH Graphs

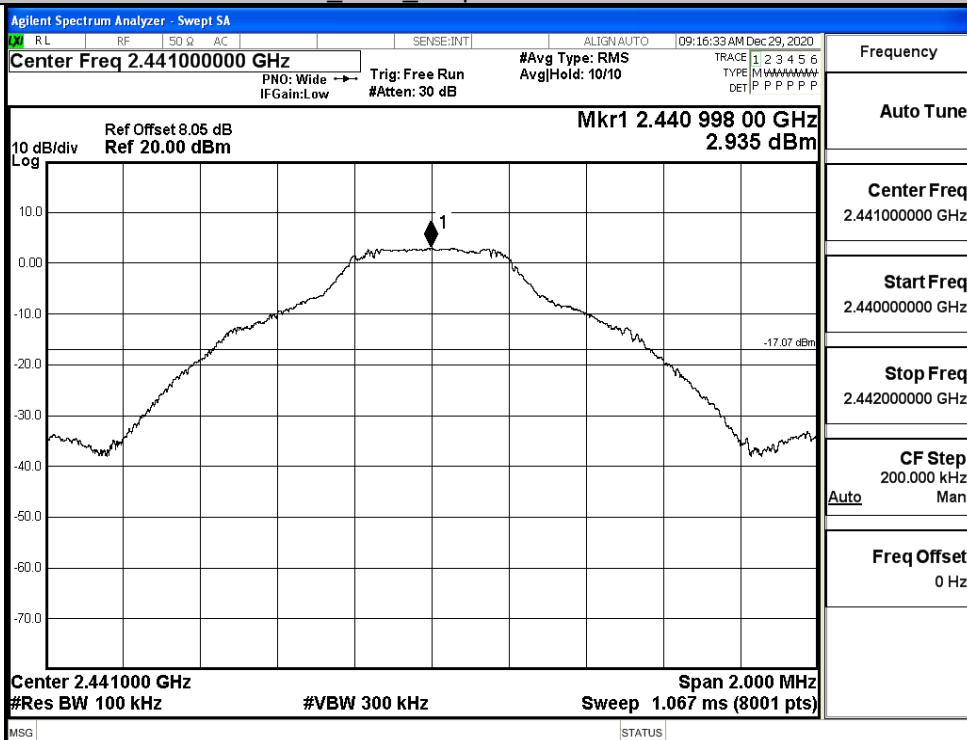


Puw

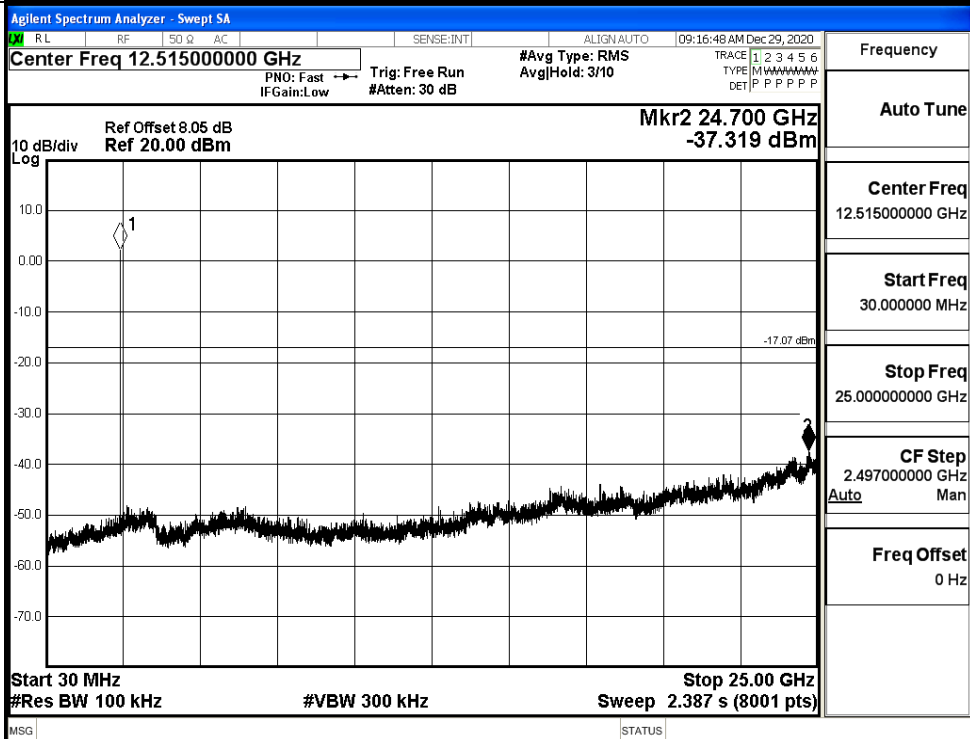


## GFSK\_MCH\_Graphs

Pref

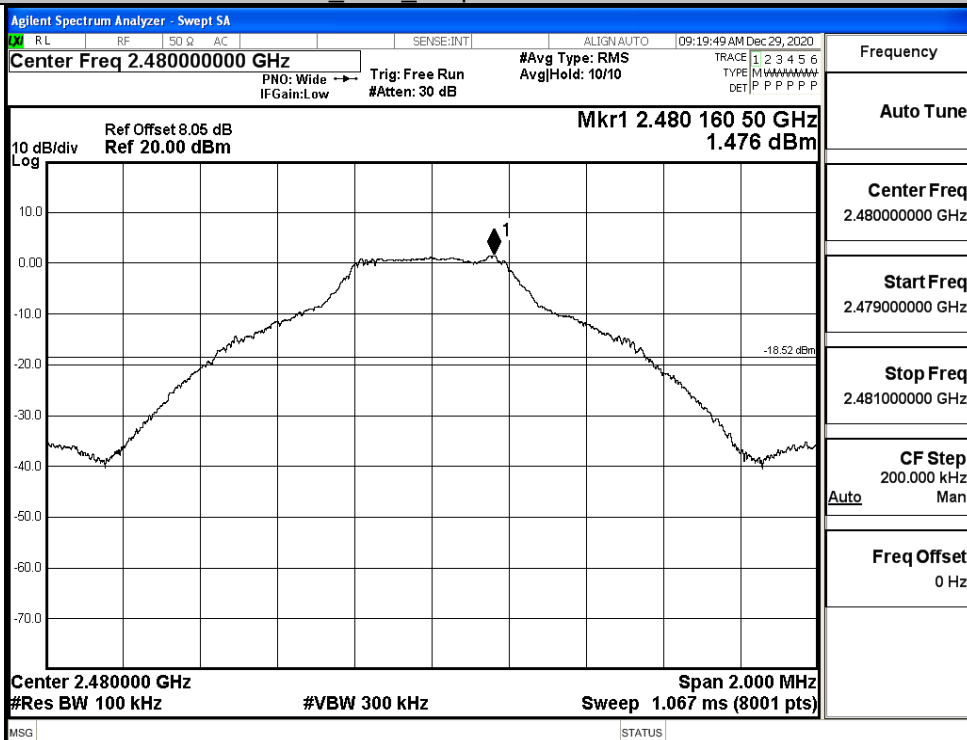


Puw

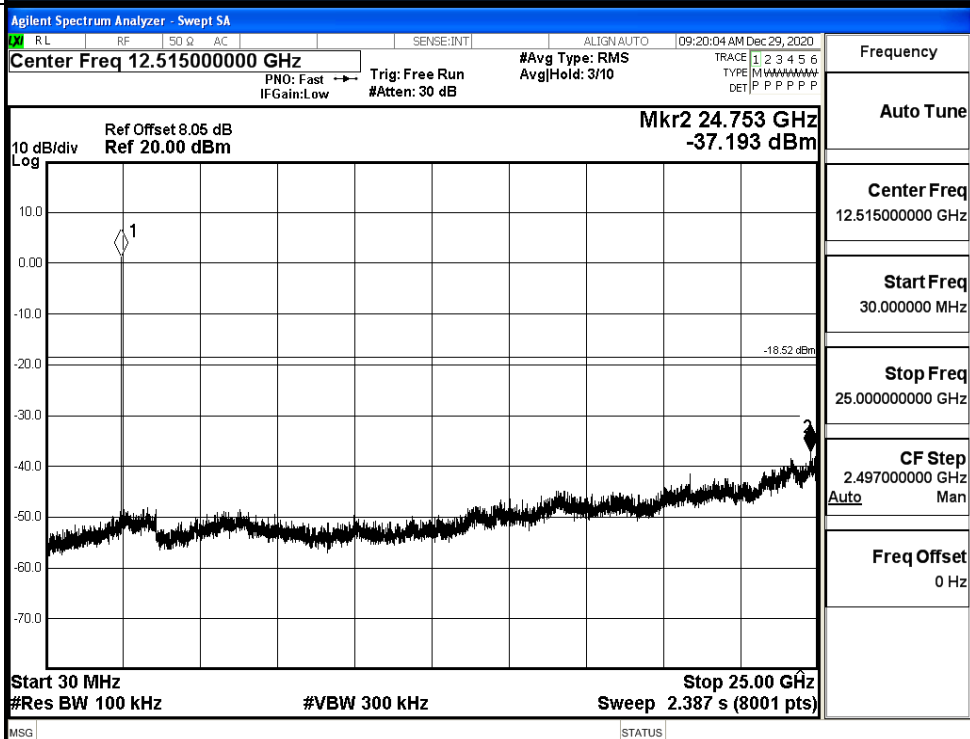


## GFSK HCH\_Graphs

Pref

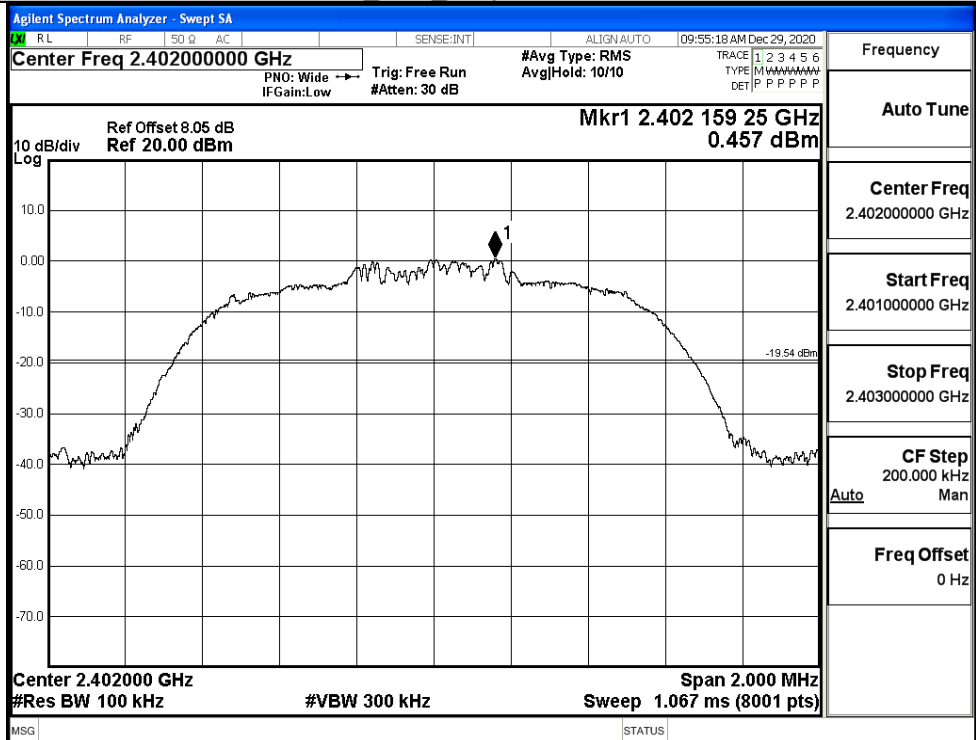


Puw

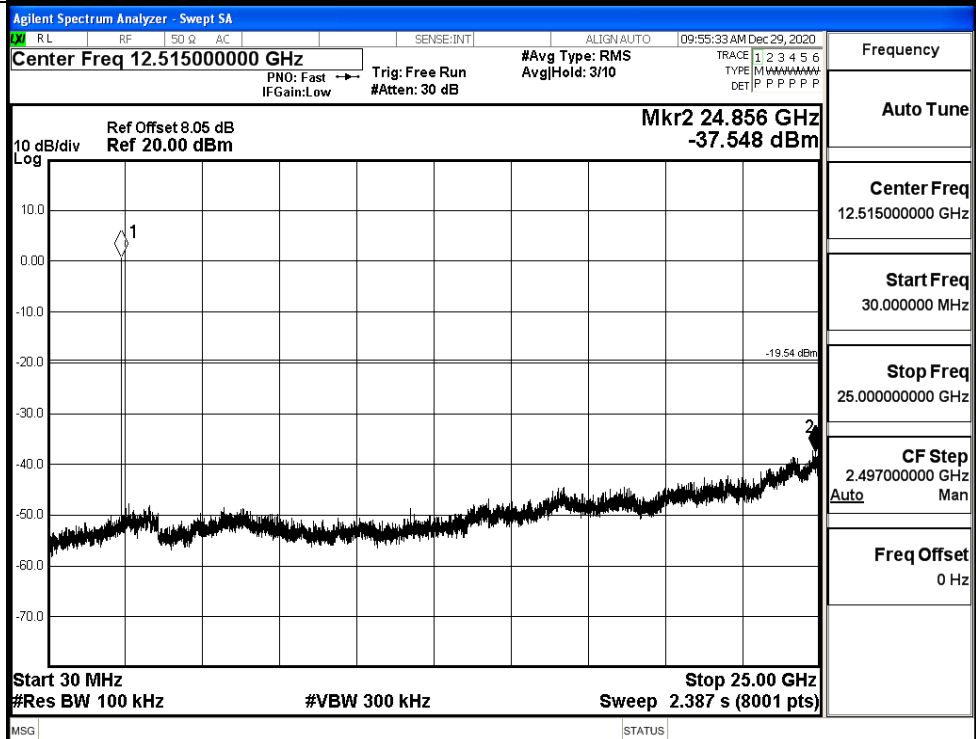


$\pi$ /4DQPSK\_LCH\_Graphs

Pref

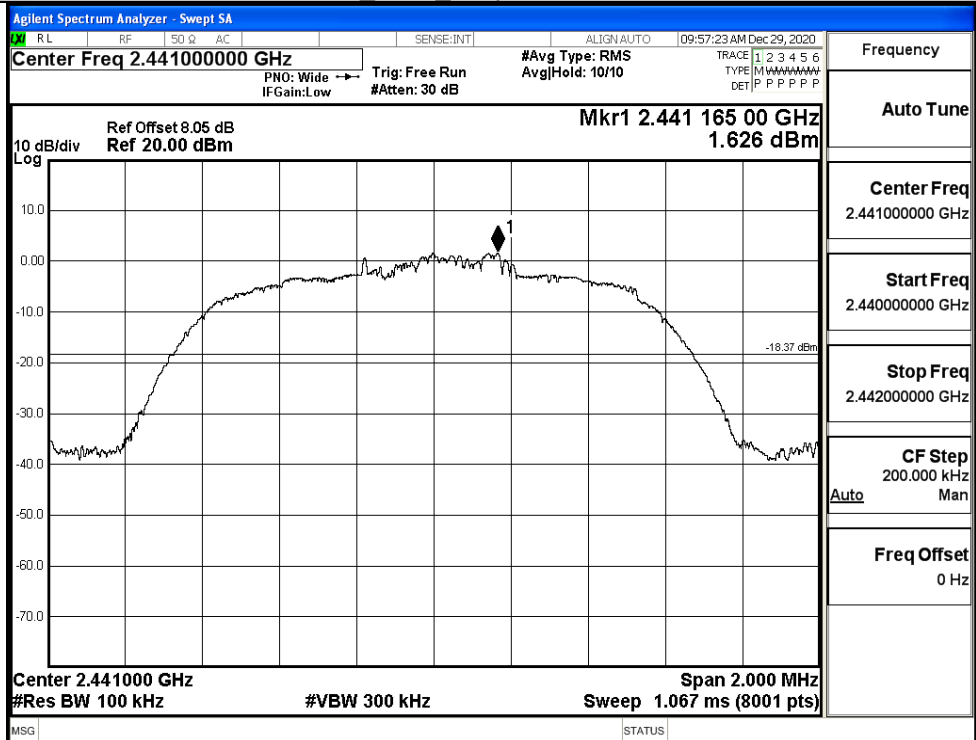


Puw

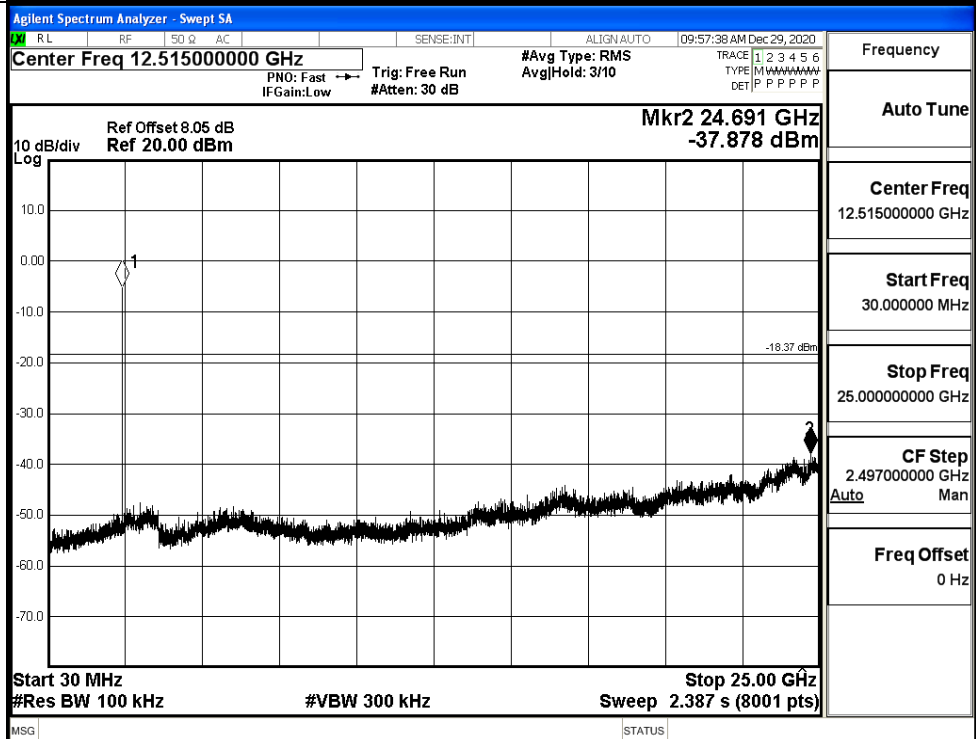


$\pi$ /4DQPSK\_MCH\_Graphs

Pref

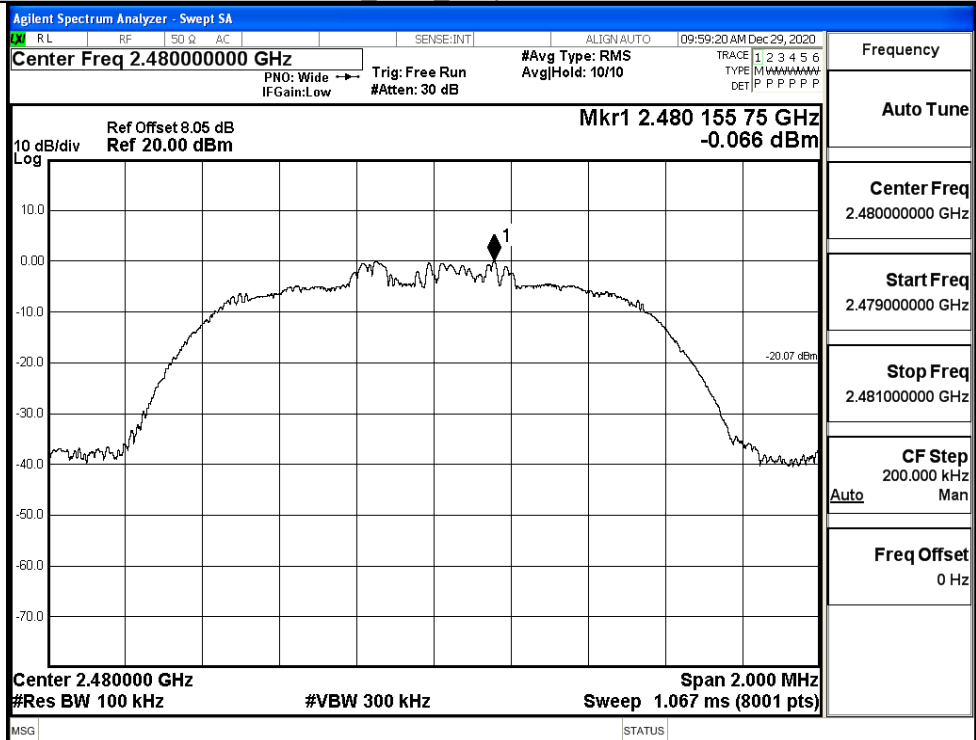


Puw

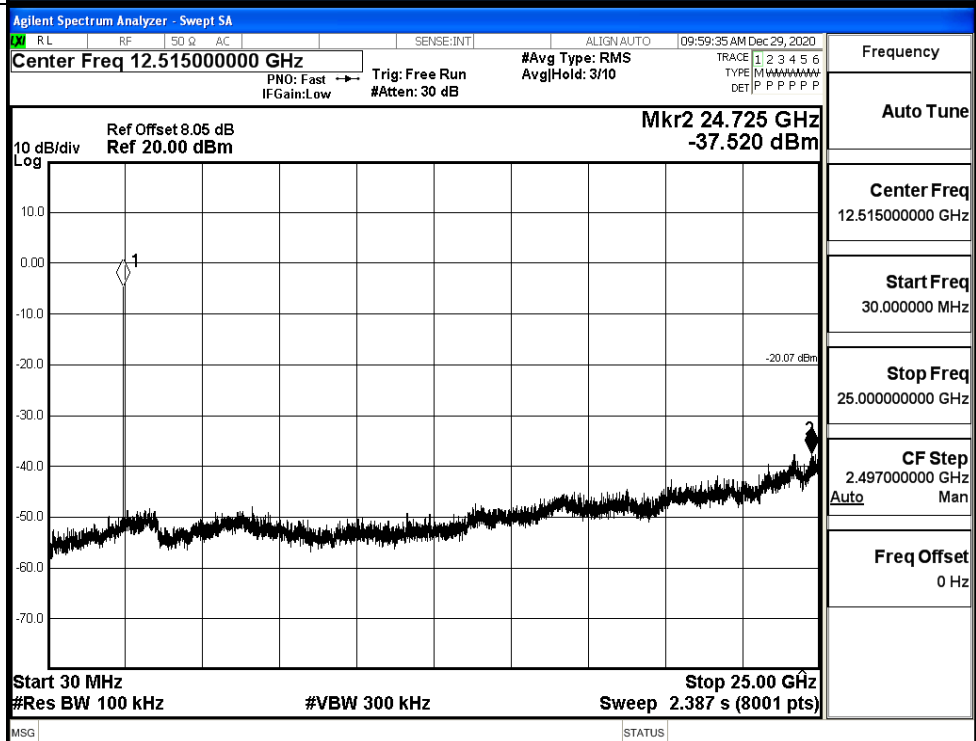


$\pi$ /4DQPSK\_HCH\_Graphs

Pref

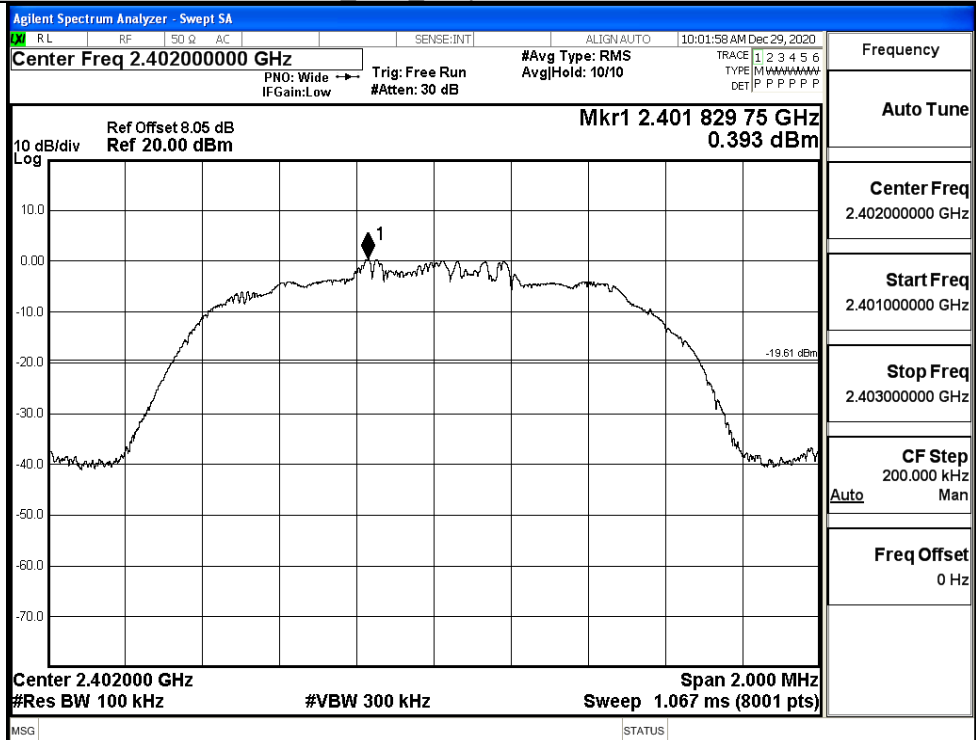


Puw

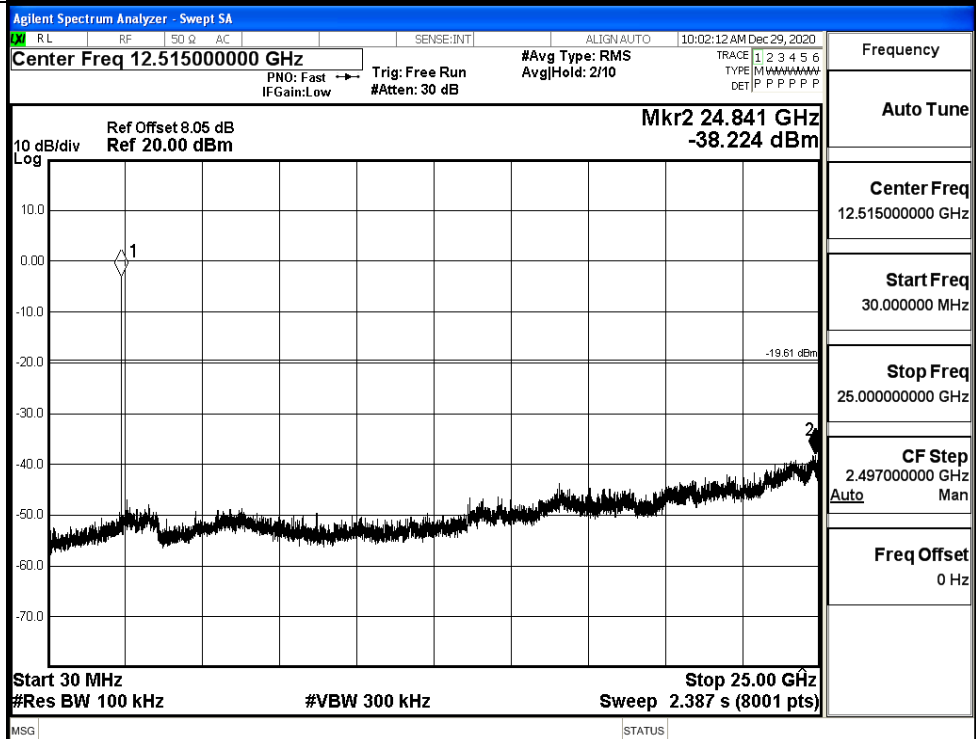


## 8DPSK\_LCH\_Graphs

Pref

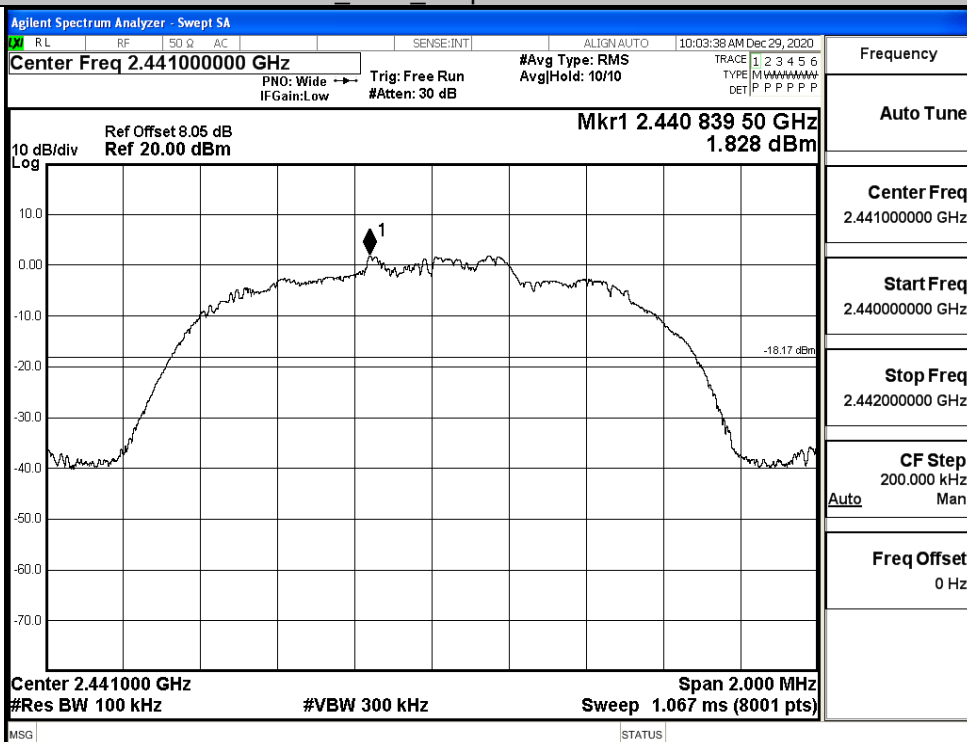


Puw

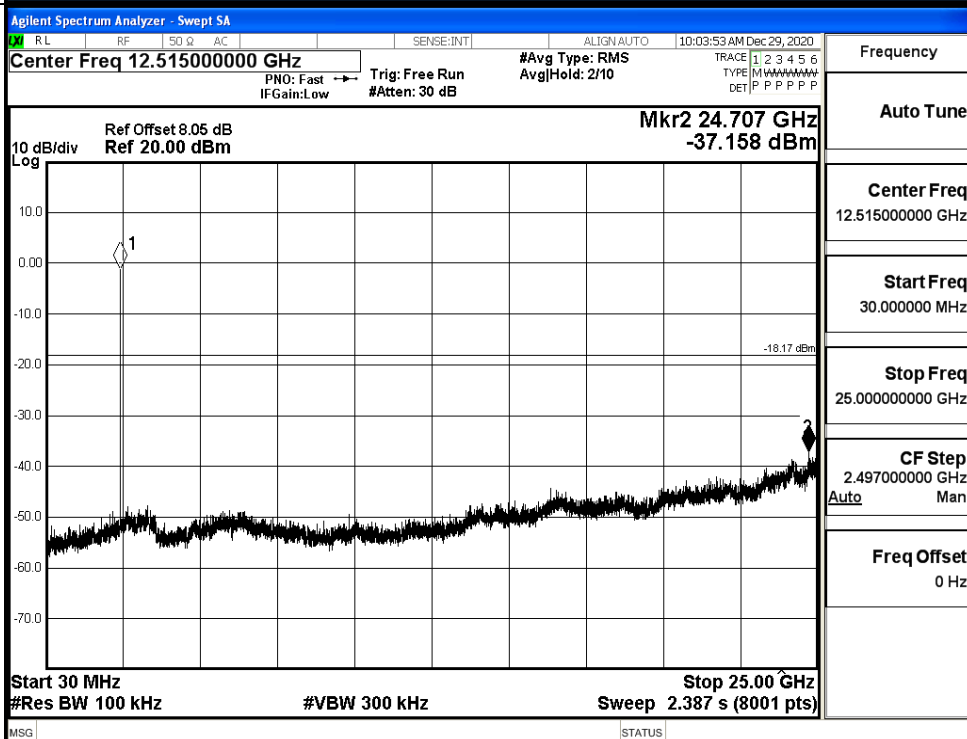


## 8DPSK\_MCH\_Graphs

Pref

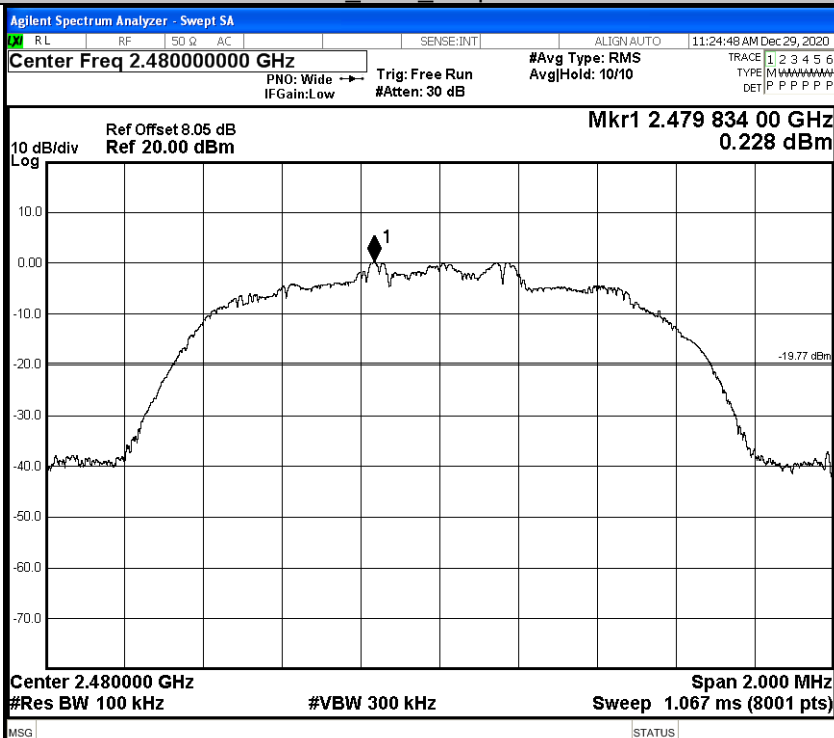


Puw



## 8DPSK\_HCH\_Graphs

Pref

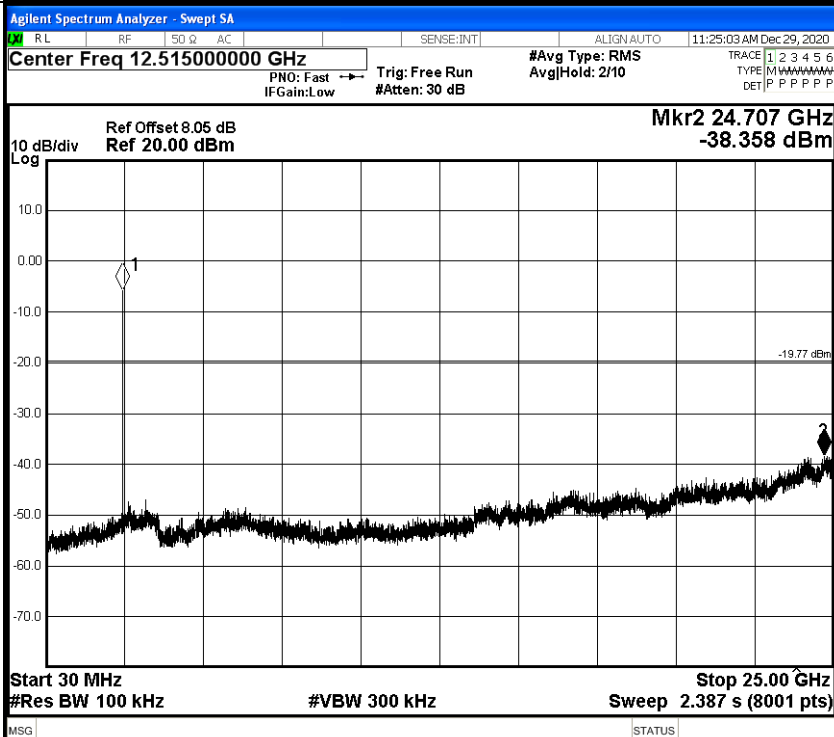


Frequency

Auto Tune

Center Freq  
2.480000000 GHzStart Freq  
2.479000000 GHzStop Freq  
2.481000000 GHzCF Step  
200.000 kHz  
Auto ManFreq Offset  
0 Hz

Puw



Frequency

Auto Tune

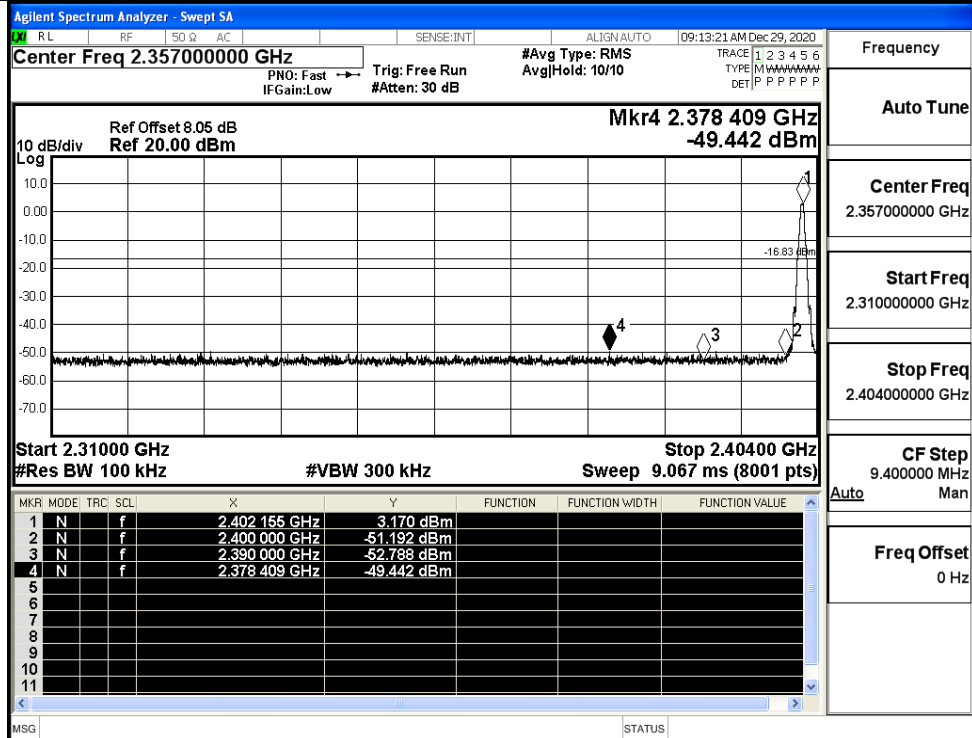
Center Freq  
12.515000000 GHzStart Freq  
30.000000 MHzStop Freq  
25.000000000 GHzCF Step  
2.497000000 GHz  
Auto ManFreq Offset  
0 Hz

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

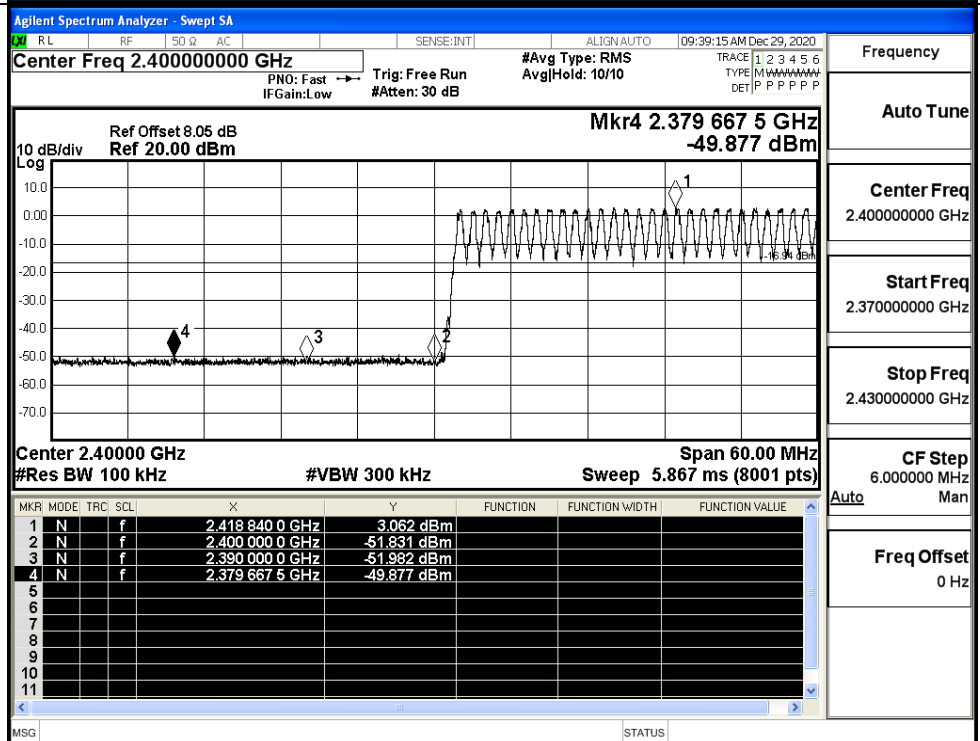
| Mode          | Channel | Carrier Frequency [MHz] | Carrier Power [dBm] | Frequency Hopping | Max Spurious Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|-------------------------|---------------------|-------------------|--------------------------|-------------|---------|
| GFSK          | LCH     | 2402                    | 3.170               | Off               | -49.442                  | -16.83      | PASS    |
|               |         |                         | 3.062               | On                | -49.877                  | -16.94      | PASS    |
|               | HCH     | 2480                    | 1.501               | Off               | -49.036                  | -18.5       | PASS    |
|               |         |                         | 2.880               | On                | -48.916                  | -17.12      | PASS    |
| $\pi/4$ DQPSK | LCH     | 2402                    | 0.278               | Off               | -49.763                  | -19.72      | PASS    |
|               |         |                         | 1.813               | On                | -49.012                  | -18.19      | PASS    |
|               | HCH     | 2480                    | 0.065               | Off               | -49.678                  | -19.94      | PASS    |
|               |         |                         | 1.170               | On                | -48.064                  | -18.83      | PASS    |
| 8DPSK         | LCH     | 2402                    | 0.785               | Off               | -49.929                  | -19.22      | PASS    |
|               |         |                         | 1.528               | On                | -49.558                  | -18.47      | PASS    |
|               | HCH     | 2480                    | 1.667               | Off               | -49.622                  | -18.33      | PASS    |
|               |         |                         | 1.193               | On                | -48.973                  | -18.81      | PASS    |

## Test Graphs

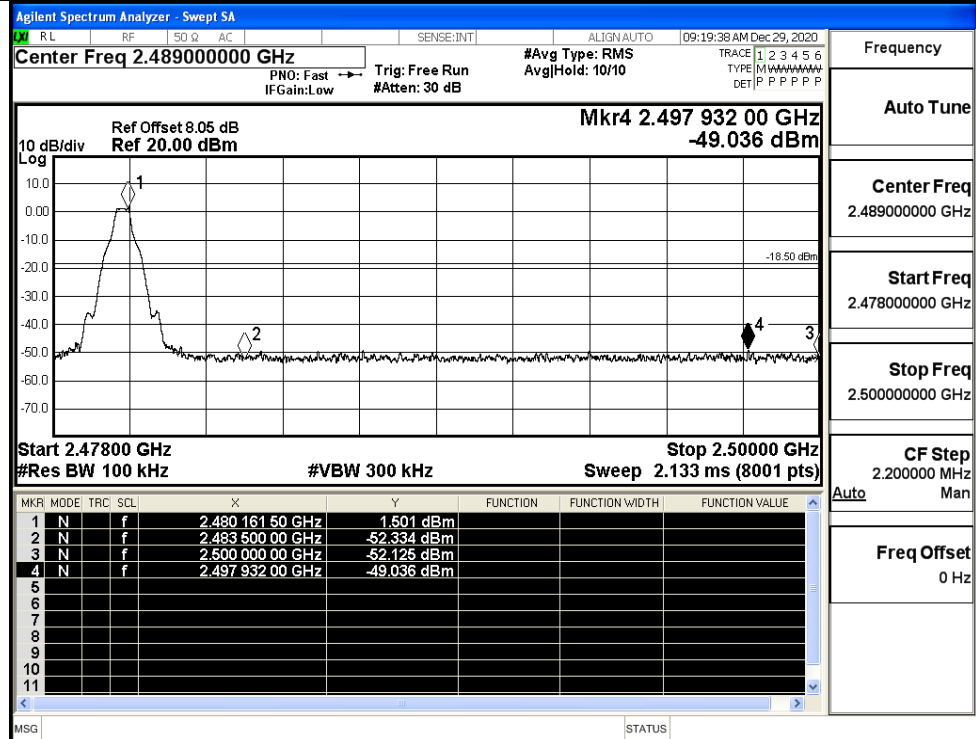
GFSK/LCH/No Hop



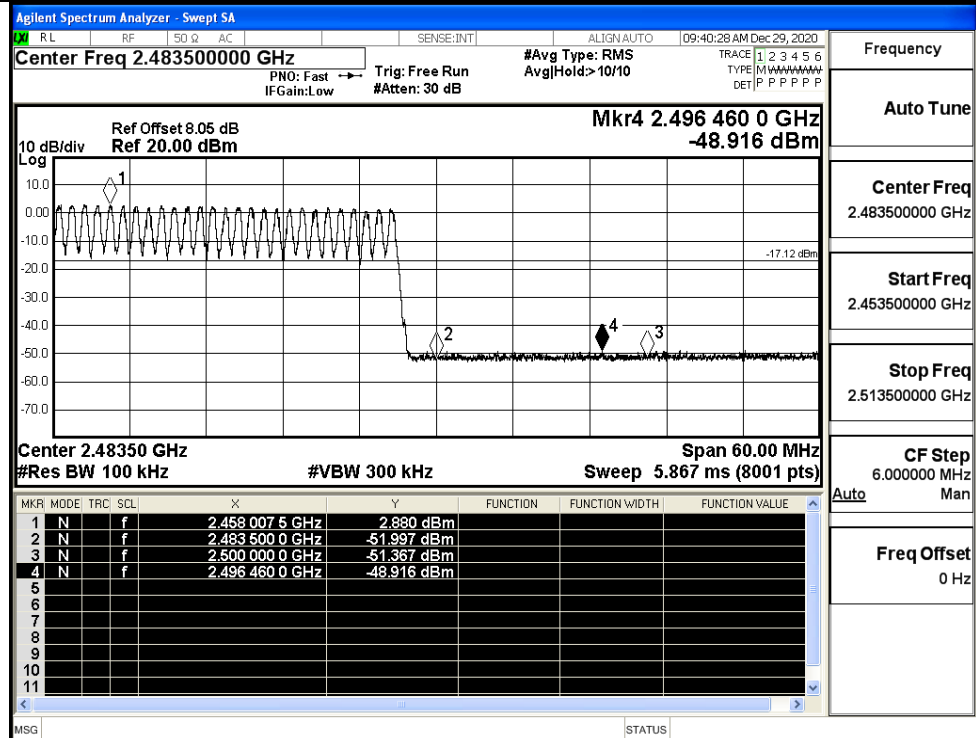
GFSK/LCH/Hop



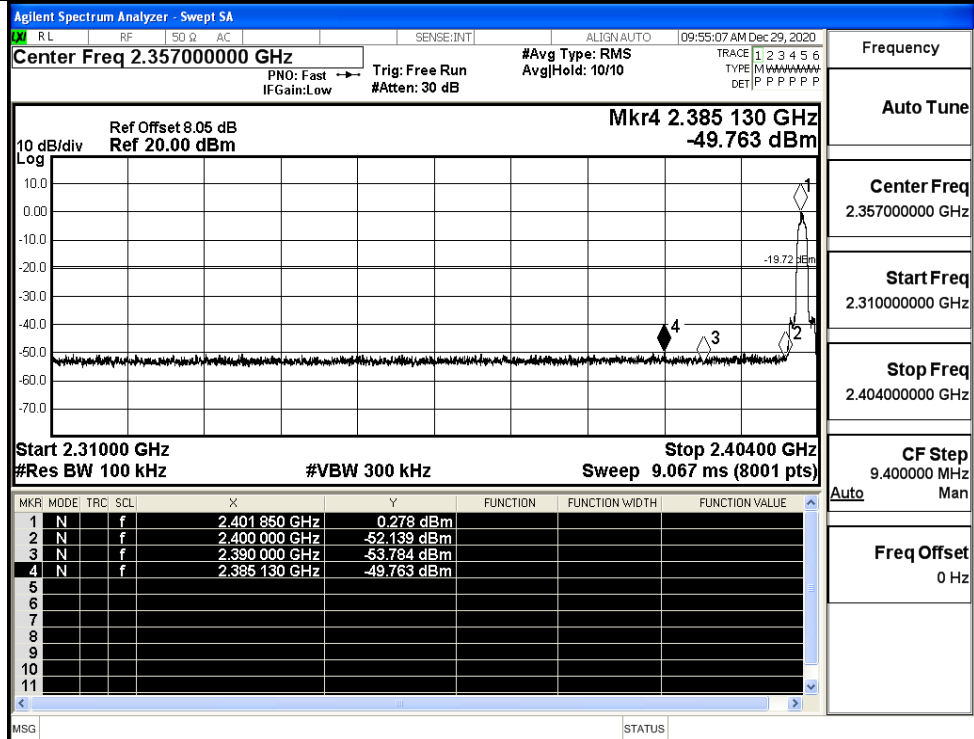
GFSK/HCH/No Hop



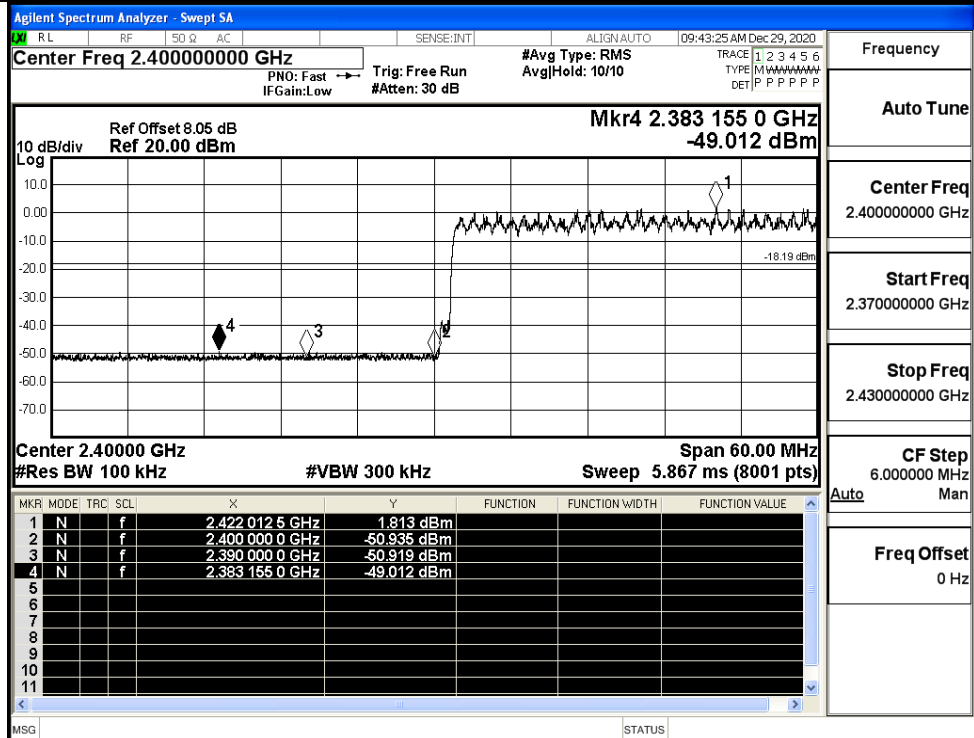
GFSK/HCH/Hop



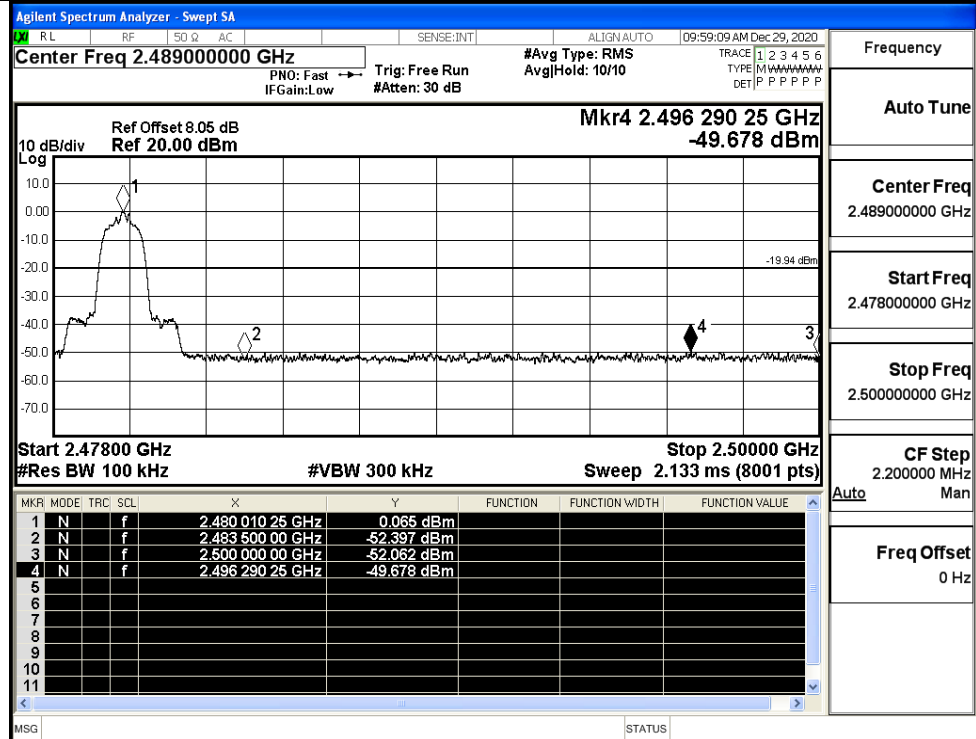
$\pi/4$ DQPSK/LCH/No  
Hop



$\pi/4$ DQPSK/LCH/Hop



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



Frequency

Auto Tune

Center Freq  
2.489000000 GHz

Start Freq  
2.478000000 GHz

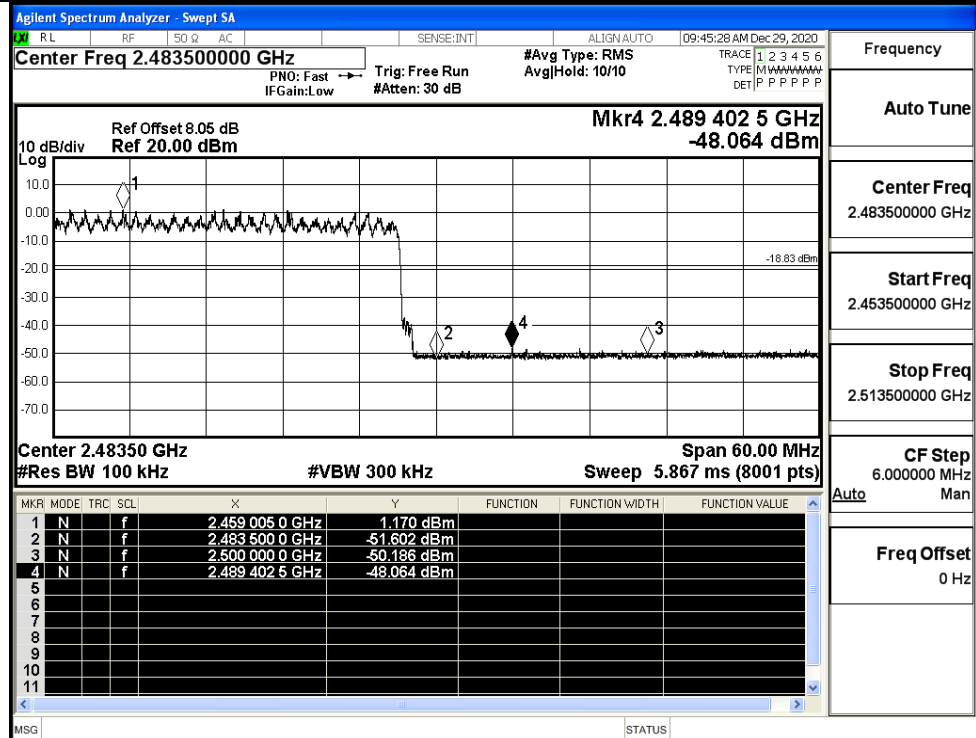
Stop Freq  
2.500000000 GHz

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

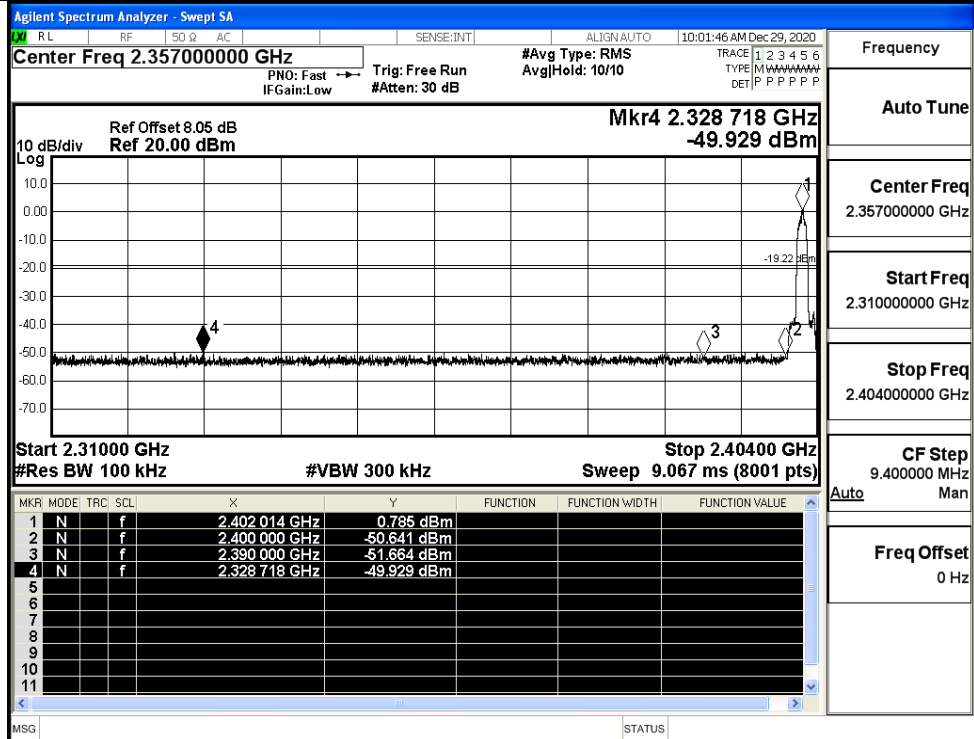
Stop Freq  
2.513500000 GHz

CF Step  
6.000000 MHz

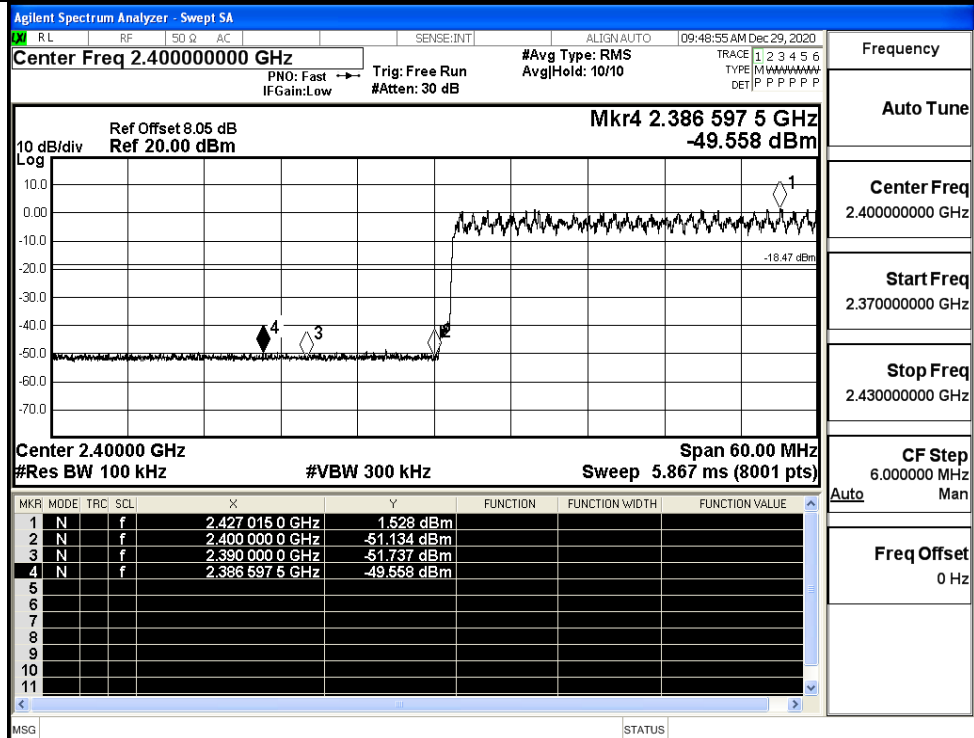
Auto Man

Freq Offset  
0 Hz

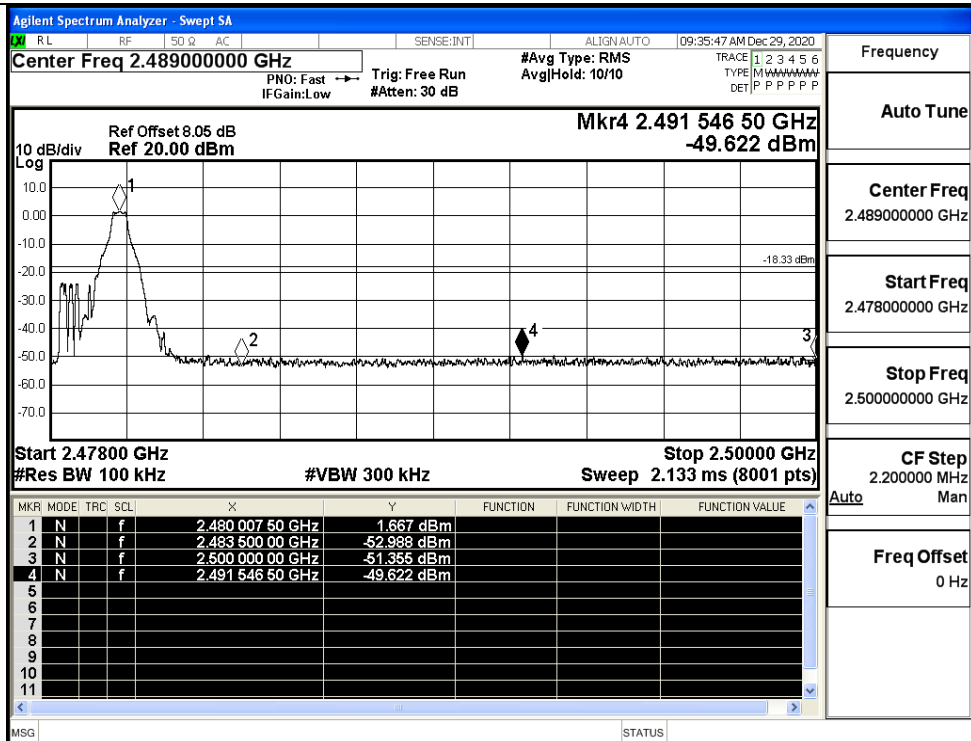
8DPSK/LCH/No Hop



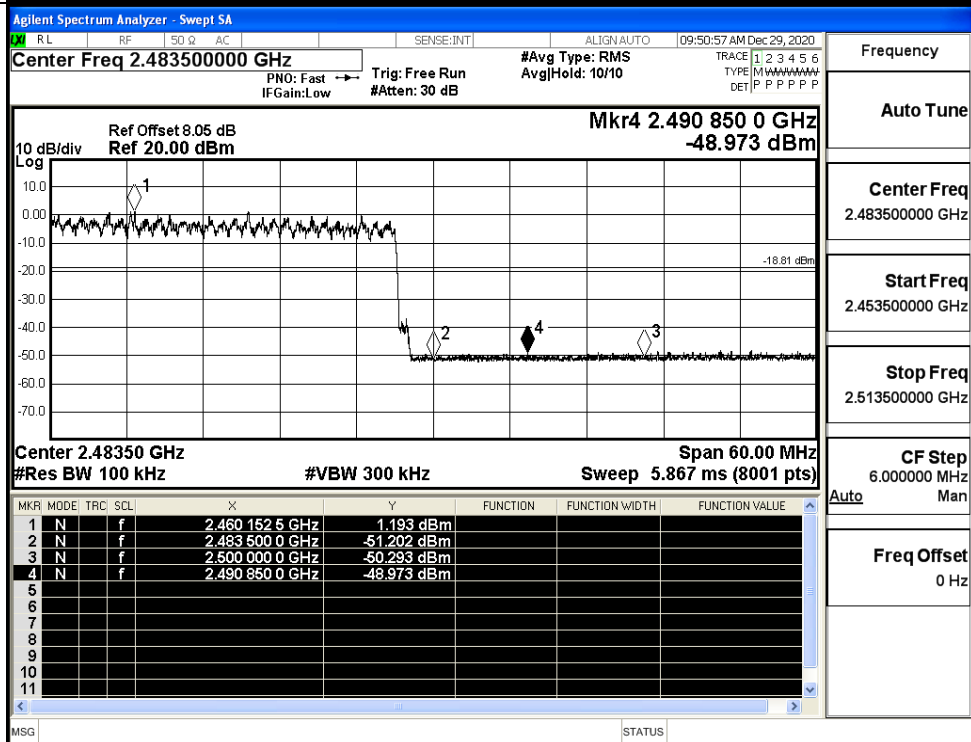
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



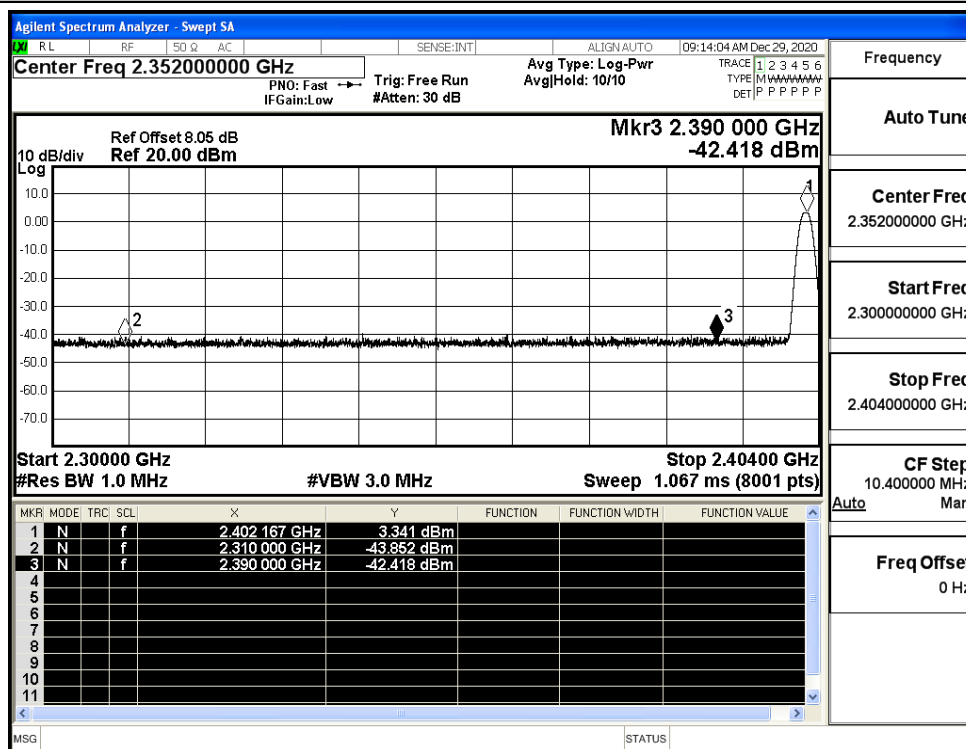
8DPSK/HCH/Hop



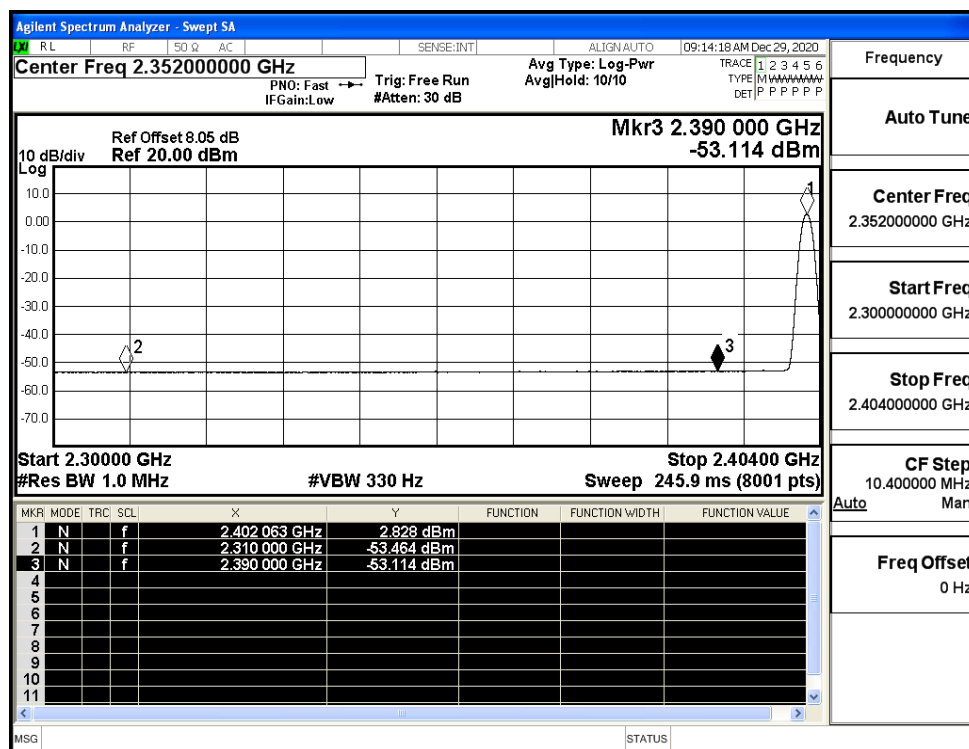
## A.8 Restrict-band band-edge measurements

| Test Mode     | Hopping | Freq.  | Power [dBm] | Gain | Ground Factor | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|---------------|---------|--------|-------------|------|---------------|------------|----------|----------------|---------|
| GFSK          | Off     | 2310.0 | -43.85      | 2.0  | 0             | 53.41      | PEAK     | 74             | PASS    |
|               | Off     | 2310.0 | -53.46      | 2.0  | 0             | 43.8       | AV       | 54             | PASS    |
|               | Off     | 2390.0 | -42.42      | 2.0  | 0             | 54.84      | PEAK     | 74             | PASS    |
|               | Off     | 2390.0 | -53.11      | 2.0  | 0             | 44.15      | AV       | 54             | PASS    |
|               | Off     | 2483.5 | -42.47      | 2.0  | 0             | 54.79      | PEAK     | 74             | PASS    |
|               | Off     | 2483.5 | -52.43      | 2.0  | 0             | 44.83      | AV       | 54             | PASS    |
|               | Off     | 2500.0 | -42.05      | 2.0  | 0             | 55.21      | PEAK     | 74             | PASS    |
|               | Off     | 2500.0 | -52.37      | 2.0  | 0             | 44.89      | AV       | 54             | PASS    |
| $\pi/4$ DQPSK | Off     | 2310.0 | -43.01      | 2.0  | 0             | 54.25      | PEAK     | 74             | PASS    |
|               | Off     | 2310.0 | -53.40      | 2.0  | 0             | 43.86      | AV       | 54             | PASS    |
|               | Off     | 2390.0 | -42.45      | 2.0  | 0             | 54.81      | PEAK     | 74             | PASS    |
|               | Off     | 2390.0 | -53.14      | 2.0  | 0             | 44.12      | AV       | 54             | PASS    |
|               | Off     | 2483.5 | -41.73      | 2.0  | 0             | 55.53      | PEAK     | 74             | PASS    |
|               | Off     | 2483.5 | -52.52      | 2.0  | 0             | 44.74      | AV       | 54             | PASS    |
|               | Off     | 2500.0 | -42.32      | 2.0  | 0             | 54.94      | PEAK     | 74             | PASS    |
|               | Off     | 2500.0 | -52.39      | 2.0  | 0             | 44.87      | AV       | 54             | PASS    |
| 8DPSK         | Off     | 2310.0 | -42.95      | 2.0  | 0             | 54.31      | PEAK     | 74             | PASS    |
|               | Off     | 2310.0 | -53.56      | 2.0  | 0             | 43.70      | AV       | 54             | PASS    |
|               | Off     | 2390.0 | -43.50      | 2.0  | 0             | 53.76      | PEAK     | 74             | PASS    |
|               | Off     | 2390.0 | -53.05      | 2.0  | 0             | 44.21      | AV       | 54             | PASS    |
|               | Off     | 2483.5 | -42.39      | 2.0  | 0             | 54.87      | PEAK     | 74             | PASS    |
|               | Off     | 2483.5 | -52.58      | 2.0  | 0             | 44.68      | AV       | 54             | PASS    |
|               | Off     | 2500.0 | -41.34      | 2.0  | 0             | 55.92      | PEAK     | 74             | PASS    |
|               | Off     | 2500.0 | -52.45      | 2.0  | 0             | 44.81      | AV       | 54             | PASS    |

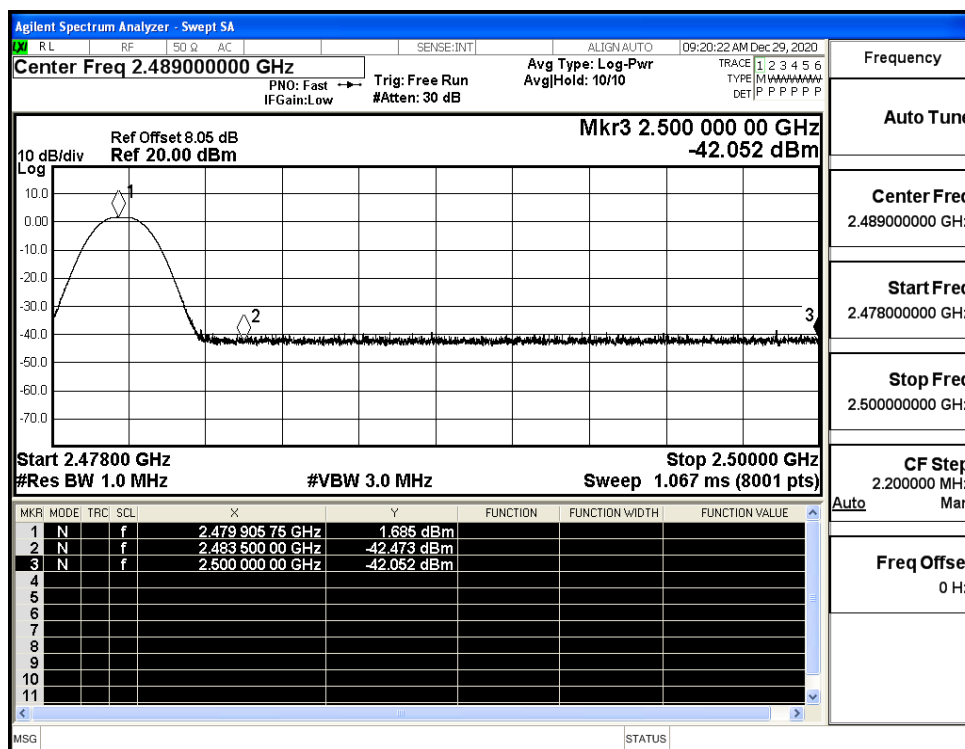
## Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (Low Channel)



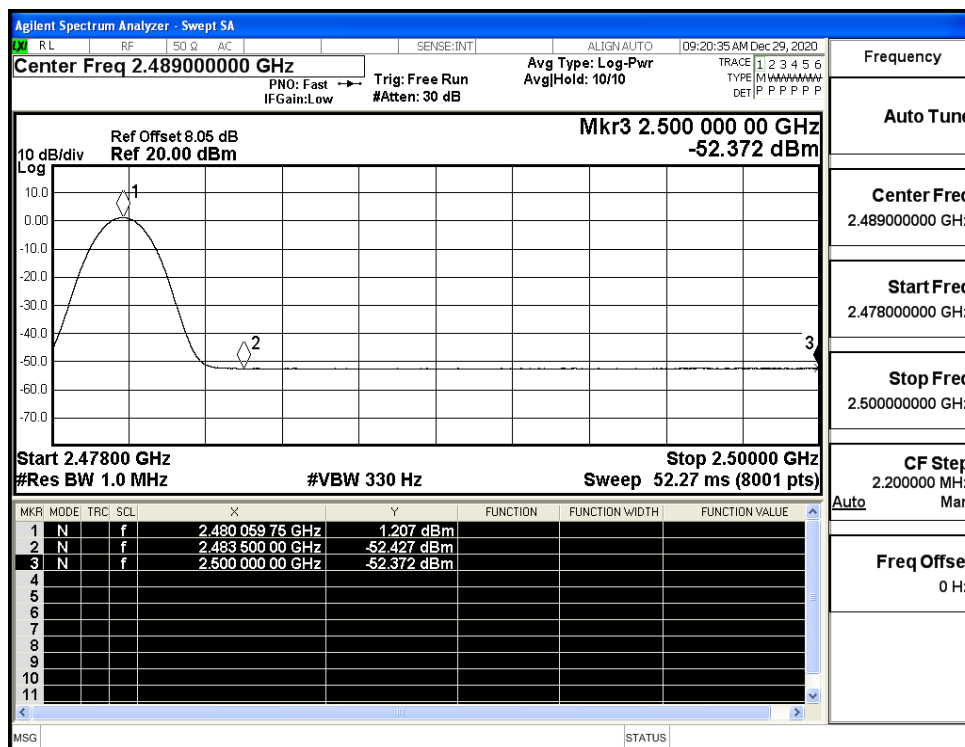
## Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (Low Channel)

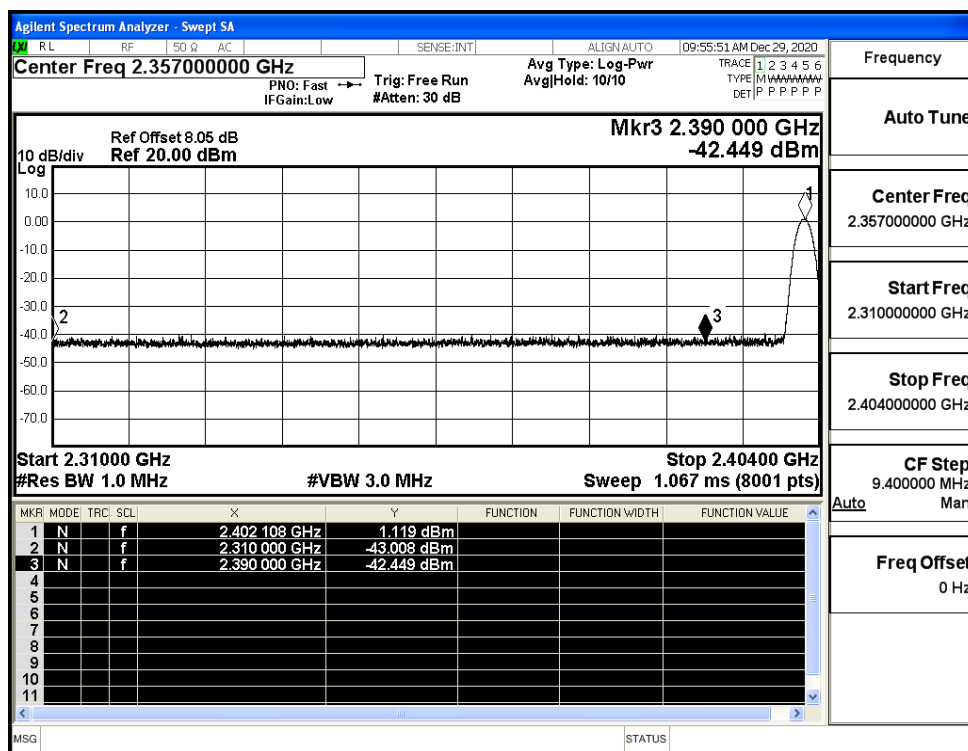
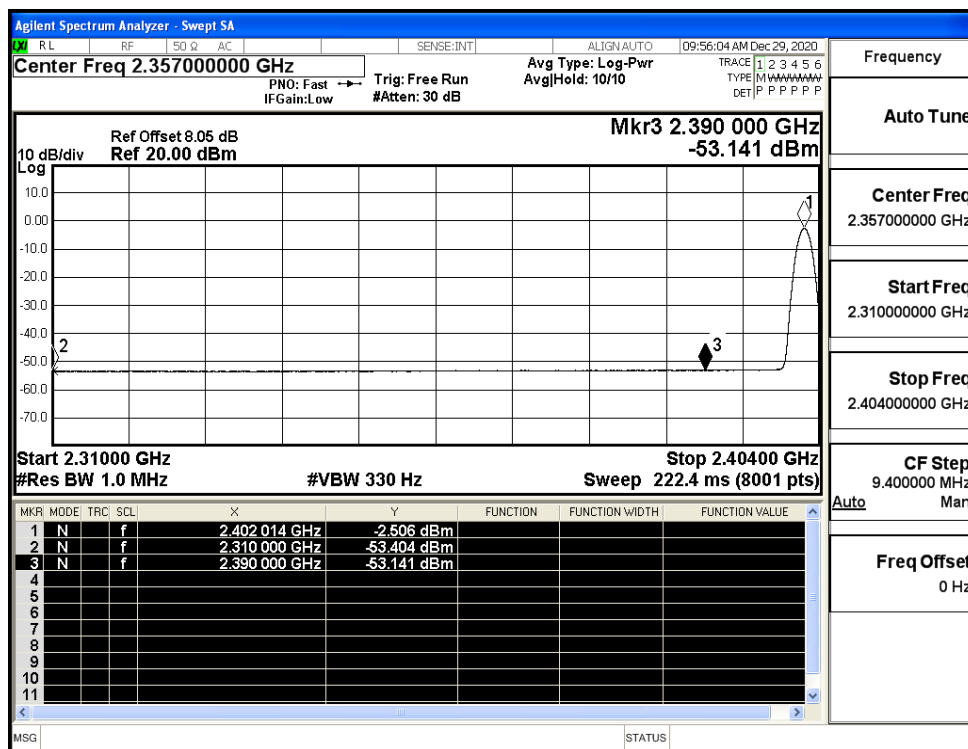


## Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (High Channel)

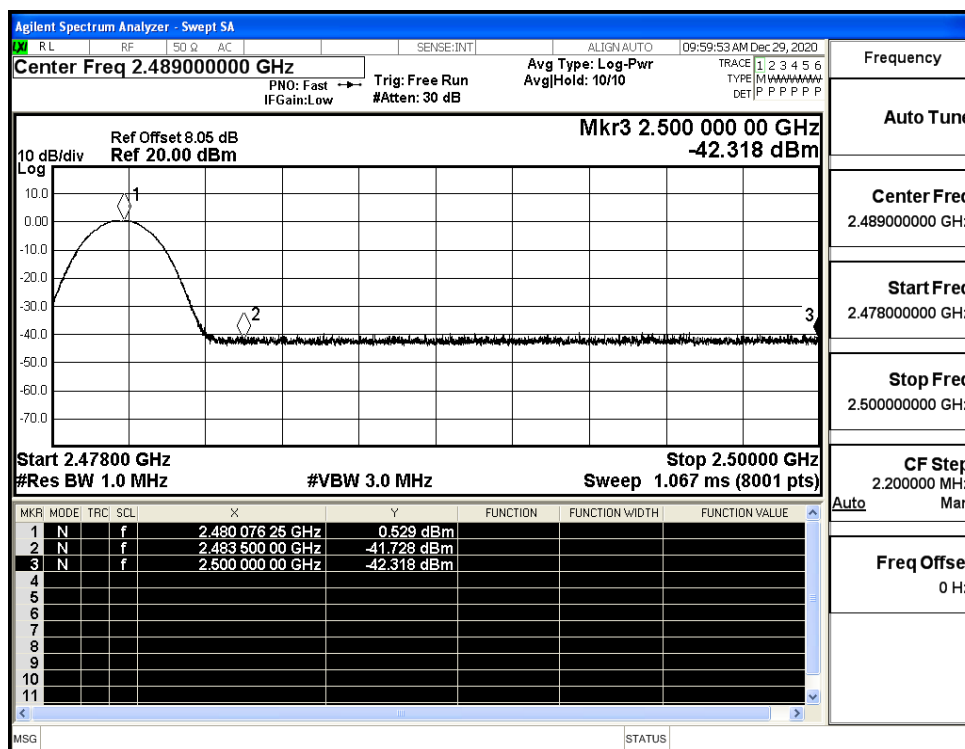


## Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (High Channel)

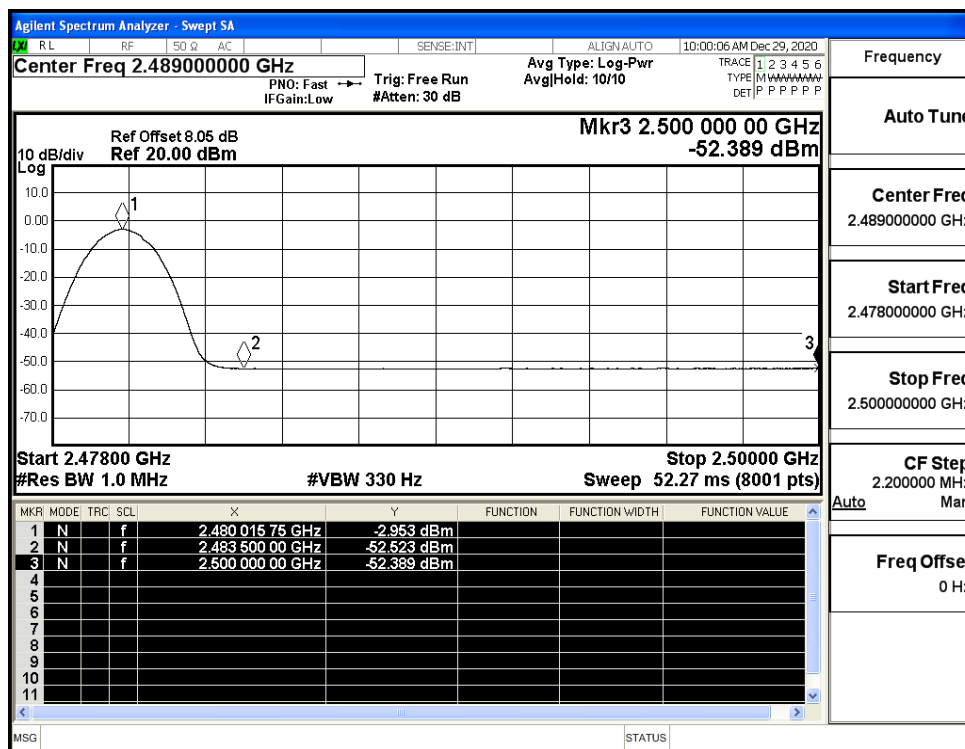


Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_PEAK (Low Channel)Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_Average (Low Channel)

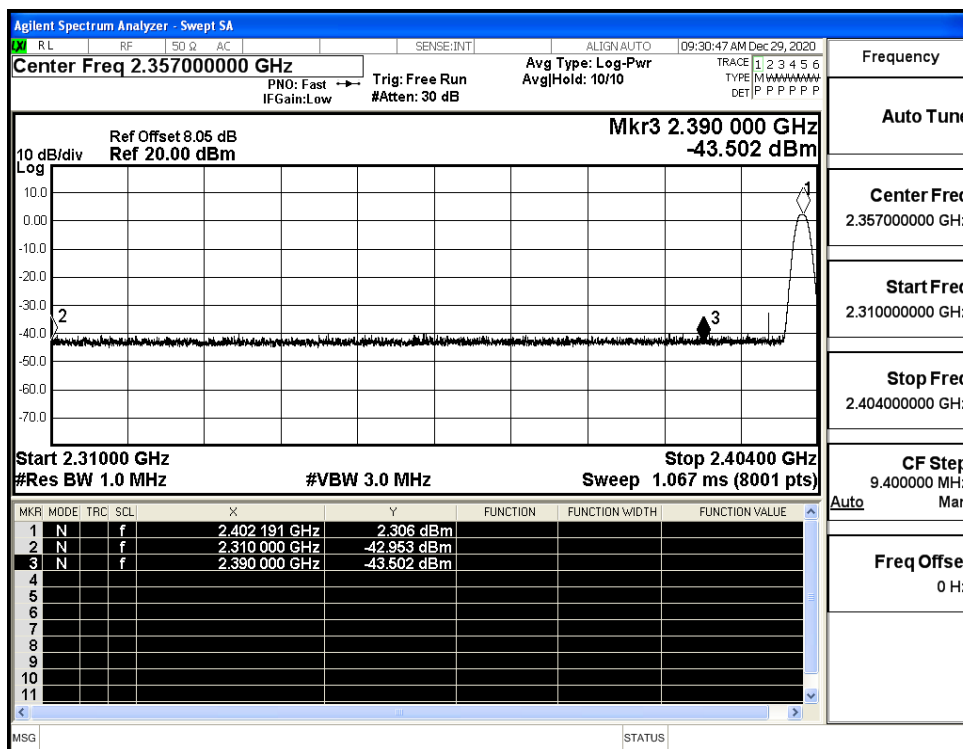
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (High Channel)



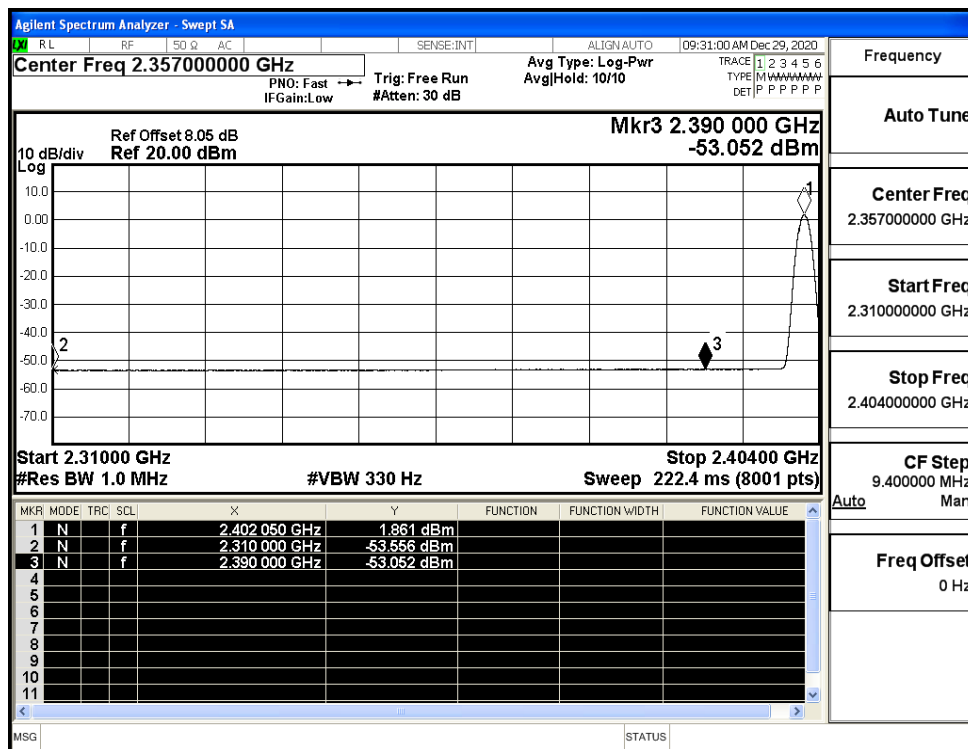
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (High Channel)



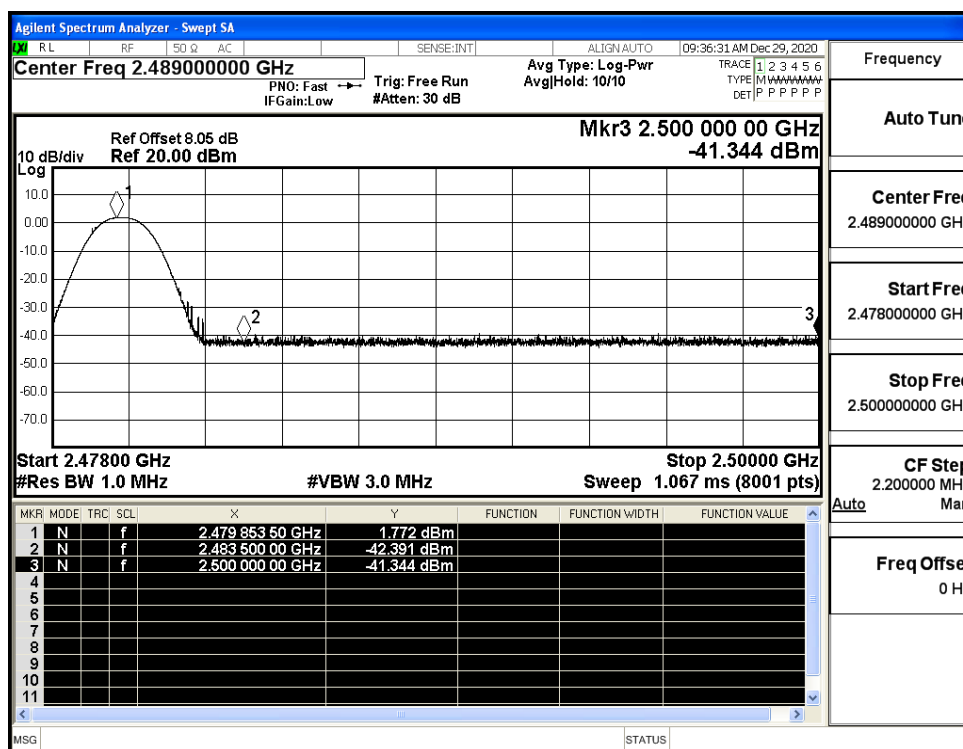
## Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_PEAK (Low Channel)



## 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)

