

## Appendix A

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

Product Name: IPTV  
Trade Mark: Formuler  
Test Model: GTV

#### Environmental Conditions

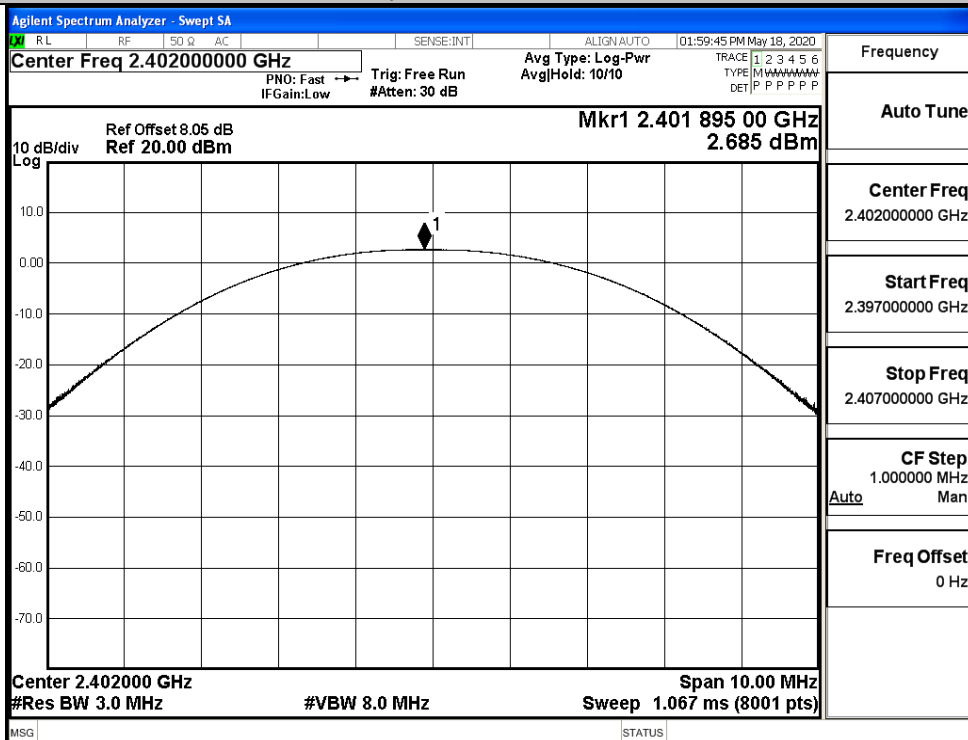
|                    |           |
|--------------------|-----------|
| Temperature:       | 25.1 ° C  |
| Relative Humidity: | 53.8%     |
| ATM Pressure:      | 100.0 kPa |
| Test Engineer:     | David.Luo |
| Supervised by:     | Li Huan   |

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

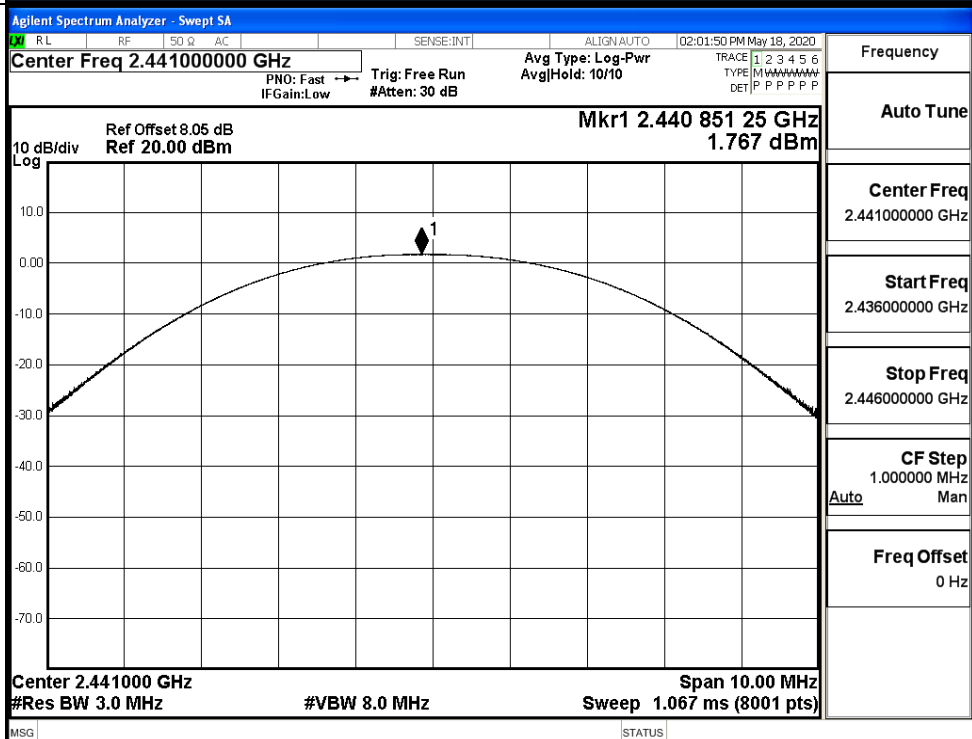
| Mode          | Channel. | Maximum Peak Output Power [dBm] | Limit [dBm] | Verdict |
|---------------|----------|---------------------------------|-------------|---------|
| GFSK          | LCH      | 2.685                           | 21          | PASS    |
|               | MCH      | 1.767                           | 21          | PASS    |
|               | HCH      | 0.457                           | 21          | PASS    |
| $\pi/4$ DQPSK | LCH      | 1.081                           | 21          | PASS    |
|               | MCH      | 0.100                           | 21          | PASS    |
|               | HCH      | -1.268                          | 21          | PASS    |
| 8DPSK         | LCH      | 1.531                           | 21          | PASS    |
|               | MCH      | 0.624                           | 21          | PASS    |
|               | HCH      | -0.705                          | 21          | PASS    |

## Test Graphs

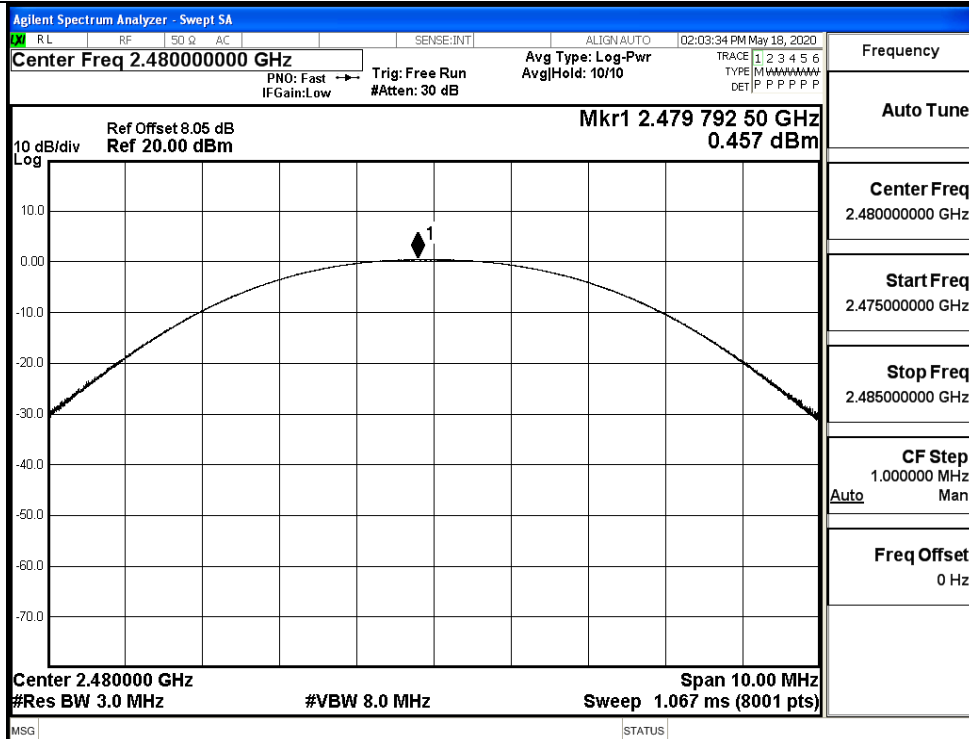
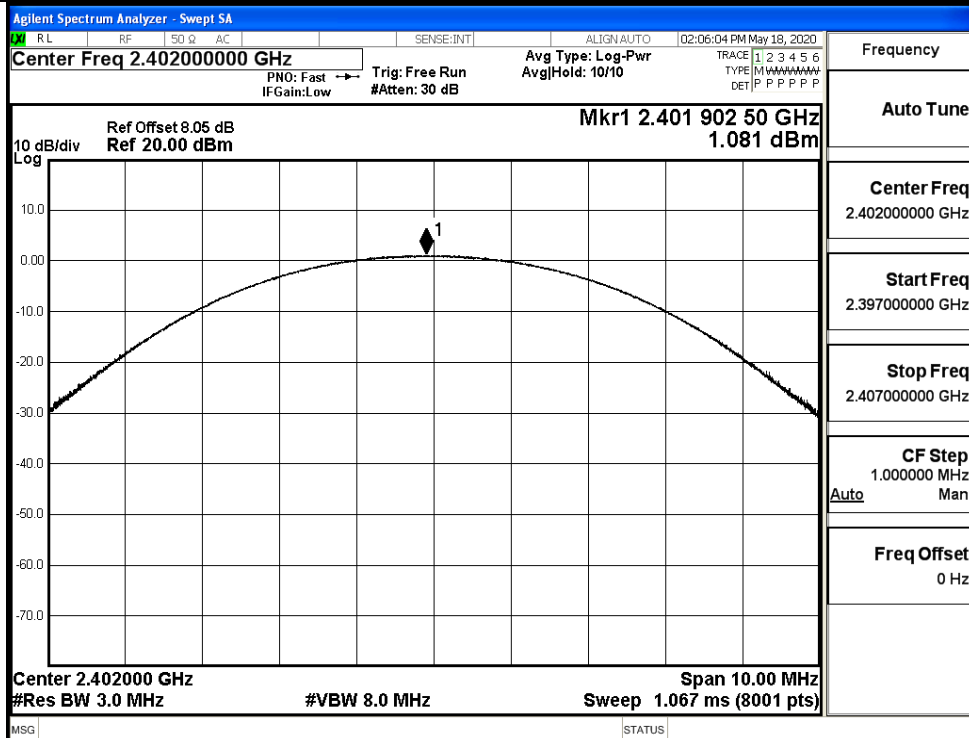
GFSK/LCH

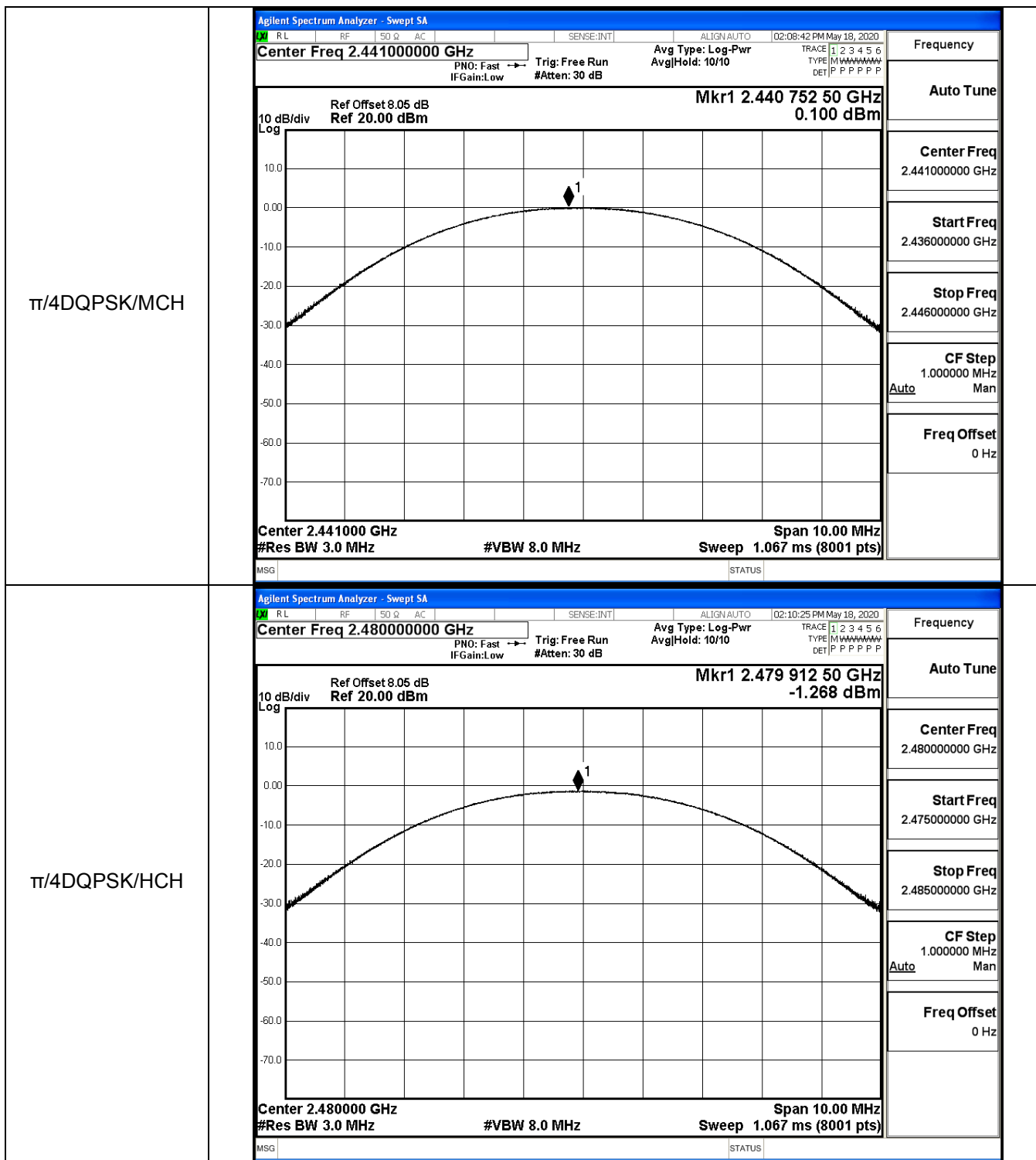


GFSK/MCH

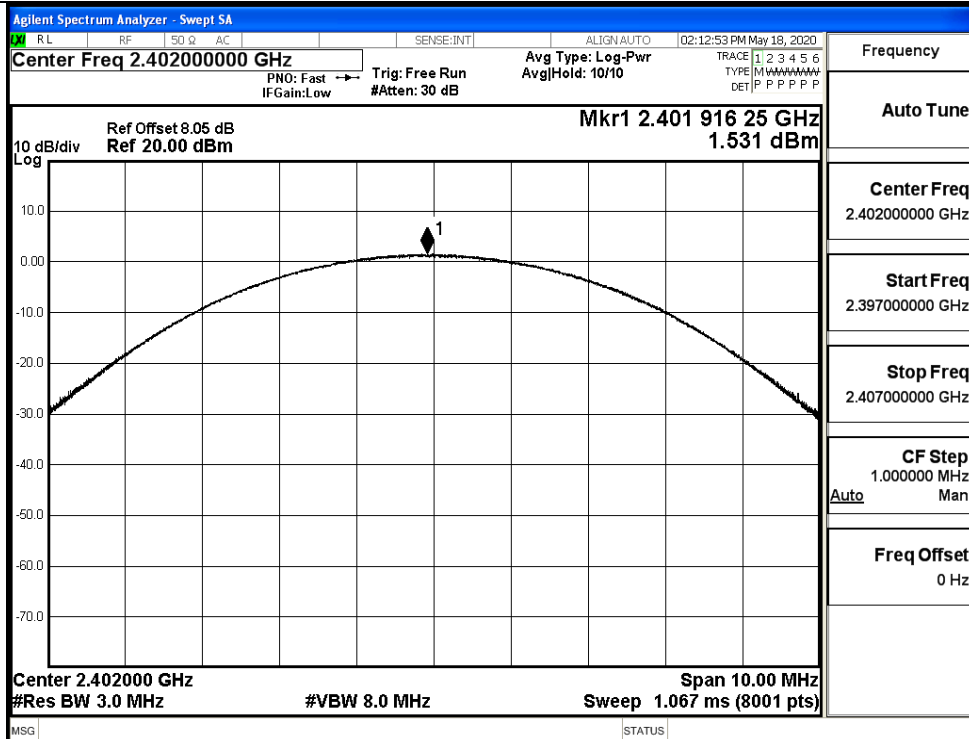


GFSK/HCH

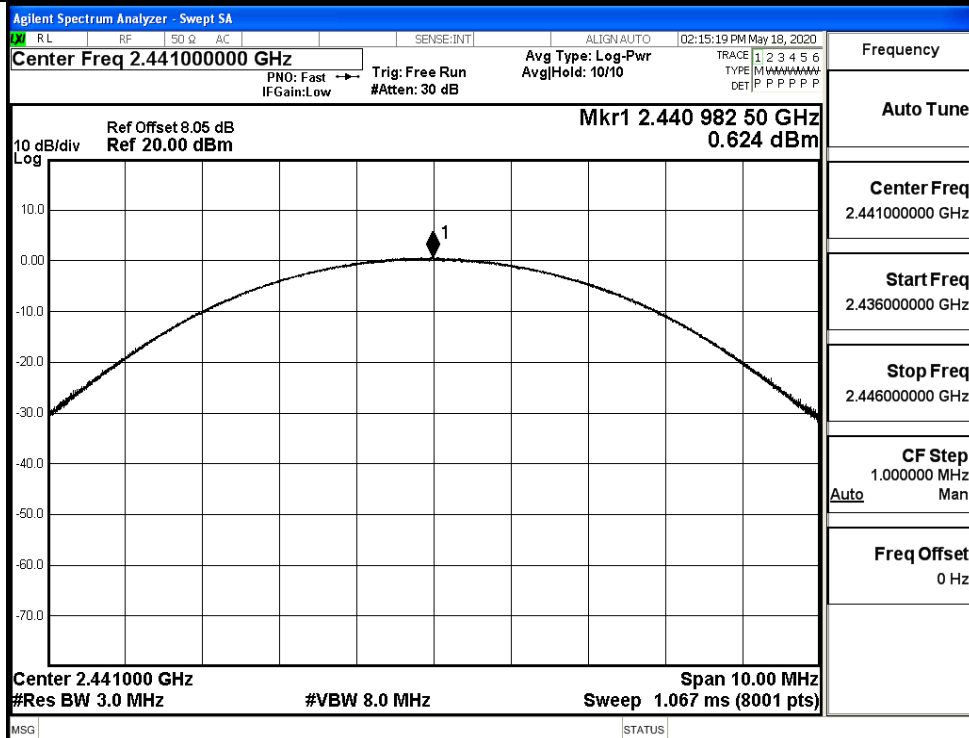
 $\pi$ /4DQPSK/LCH



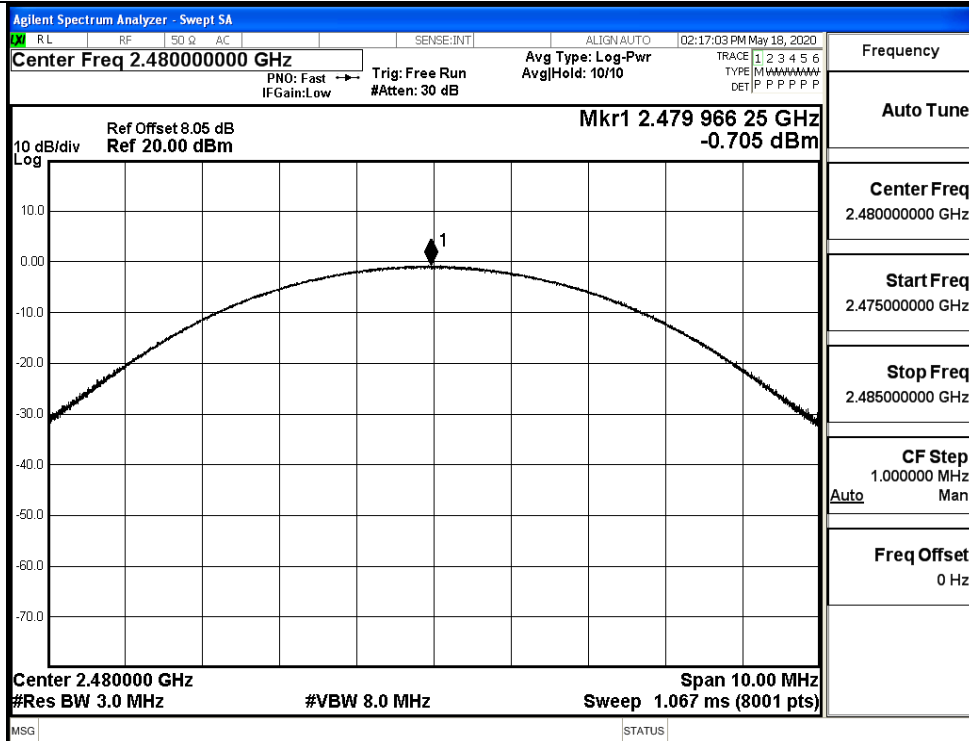
8DPSK/LCH



8DPSK/MCH



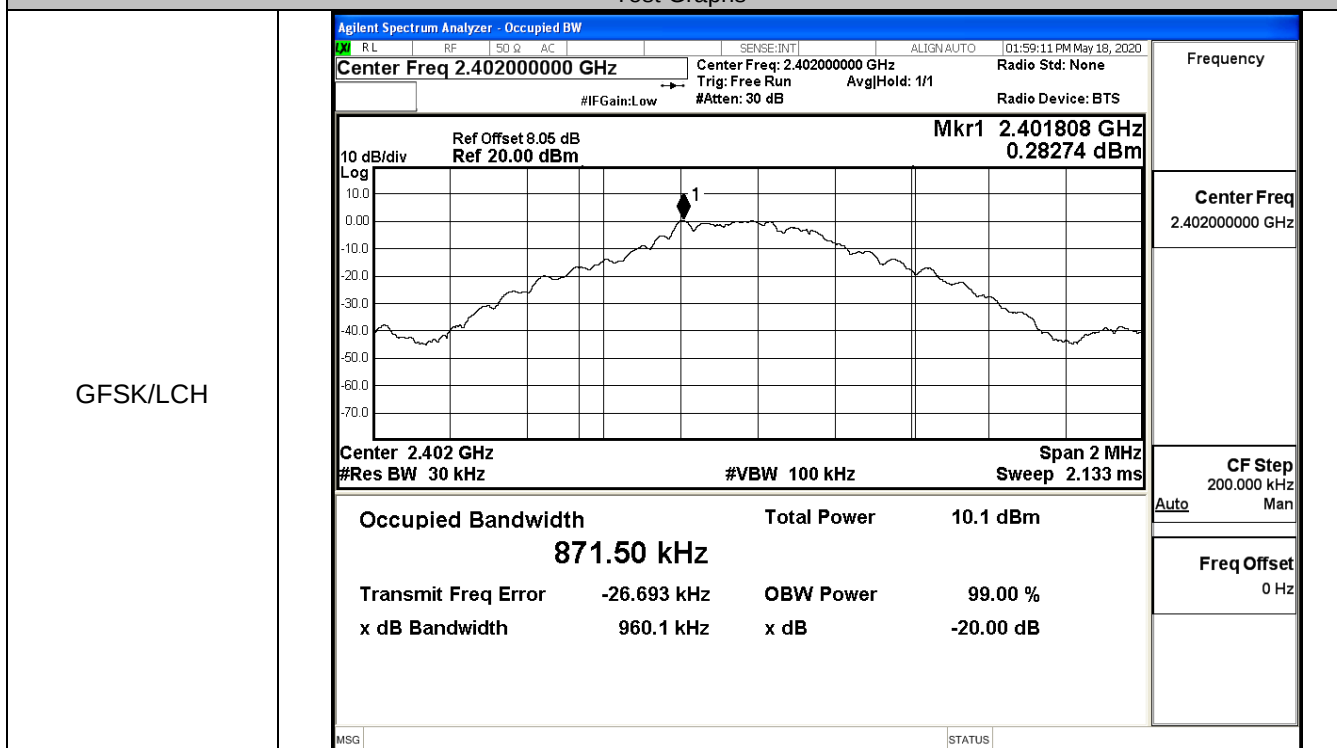
8DPSK/HCH



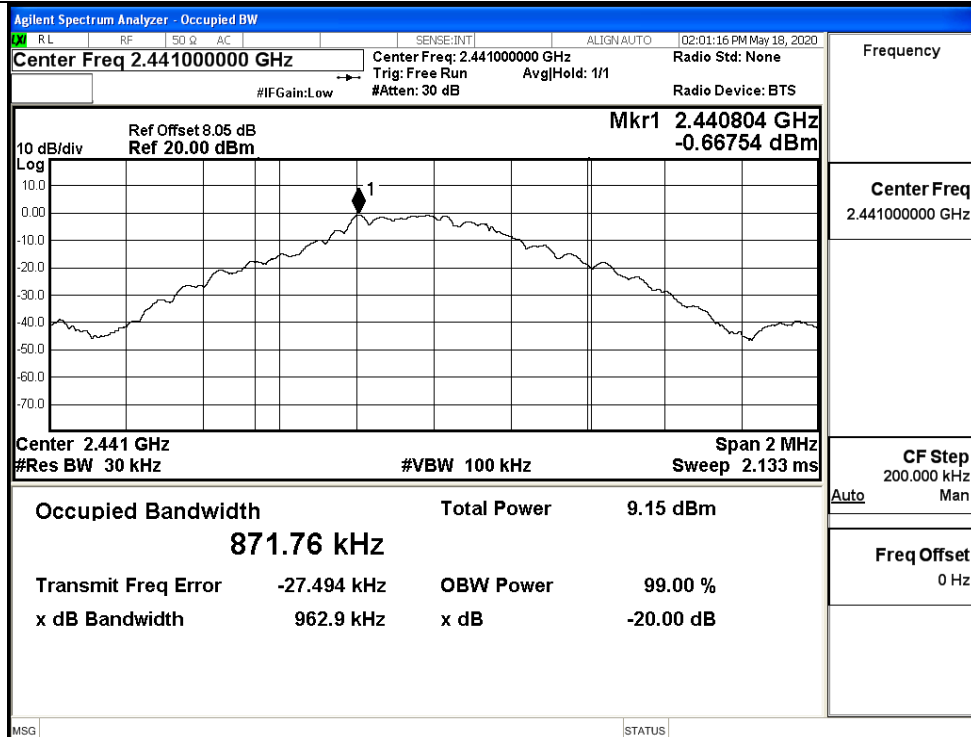
## A.2 20dB Bandwidth

| Mode          | Channel. | 20dB Bandwidth [MHz] | Limit [MHz]   | Verdict |
|---------------|----------|----------------------|---------------|---------|
| GFSK          | LCH      | 0.9601               | Not Specified | PASS    |
|               | MCH      | 0.9629               | Not Specified | PASS    |
|               | HCH      | 0.9633               | Not Specified | PASS    |
| $\pi/4$ DQPSK | LCH      | 1.282                | Not Specified | PASS    |
|               | MCH      | 1.283                | Not Specified | PASS    |
|               | HCH      | 1.282                | Not Specified | PASS    |
| 8DPSK         | LCH      | 1.302                | Not Specified | PASS    |
|               | MCH      | 1.302                | Not Specified | PASS    |
|               | HCH      | 1.302                | Not Specified | PASS    |

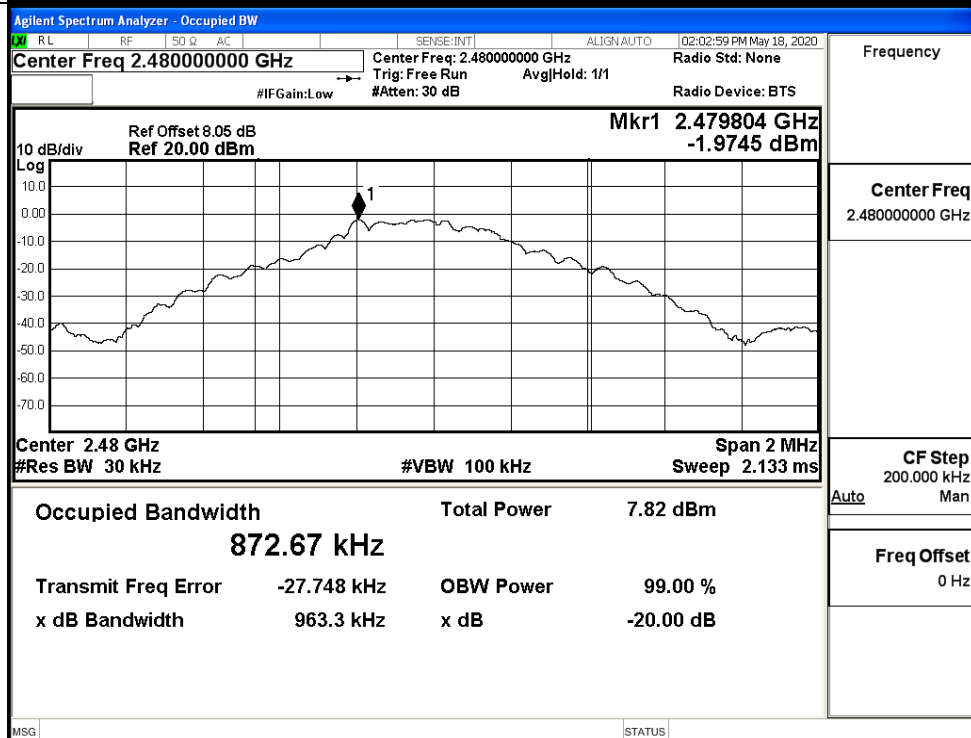
Test Graphs

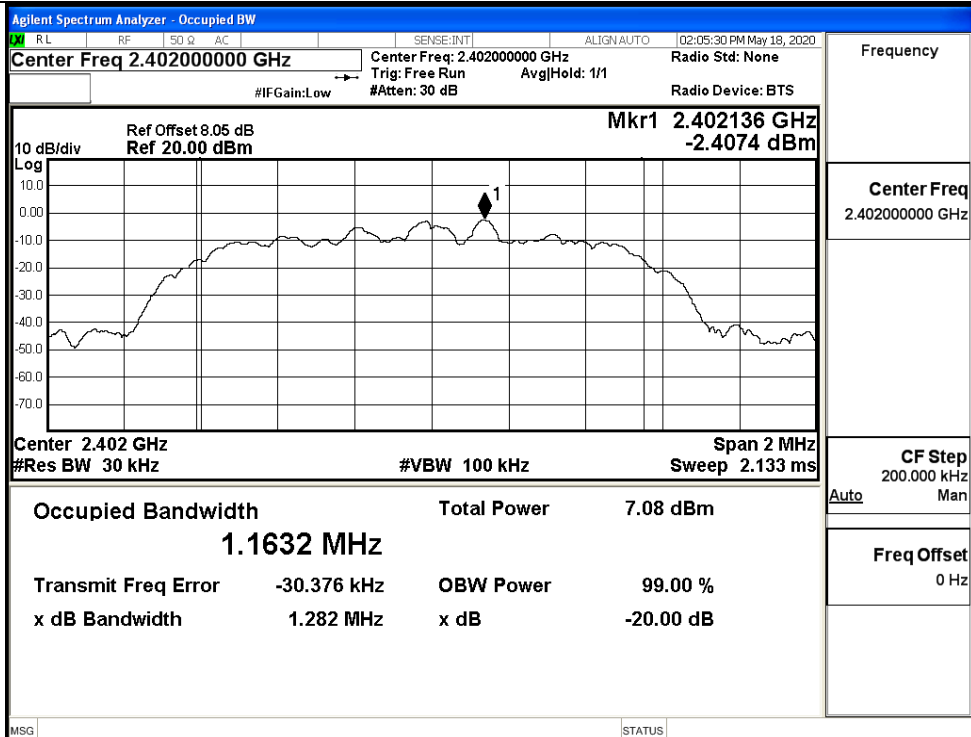
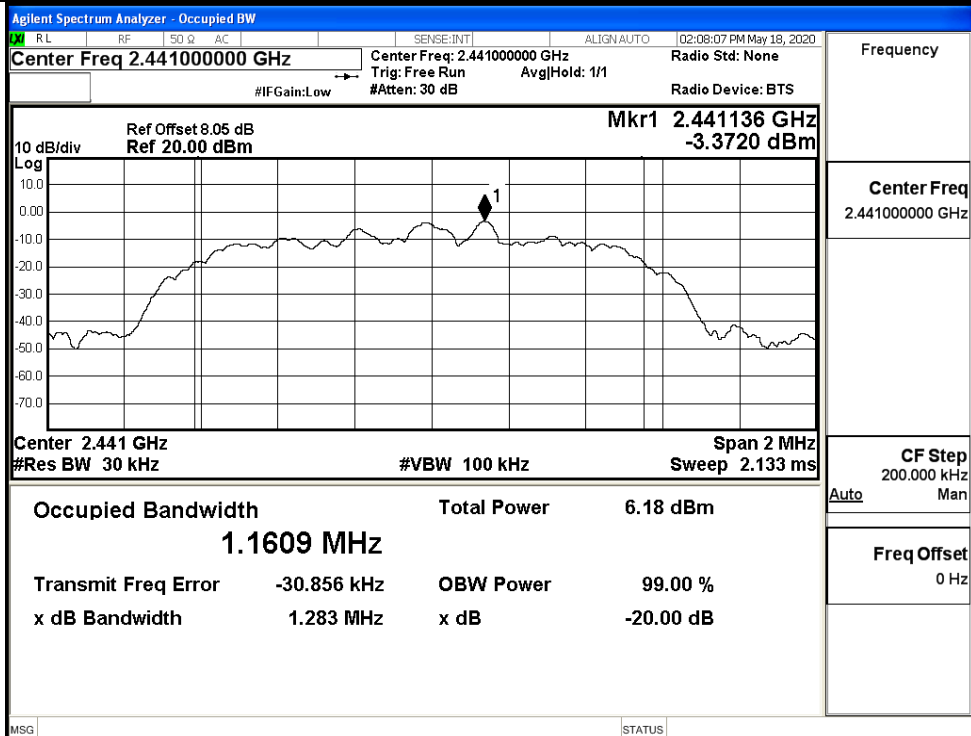


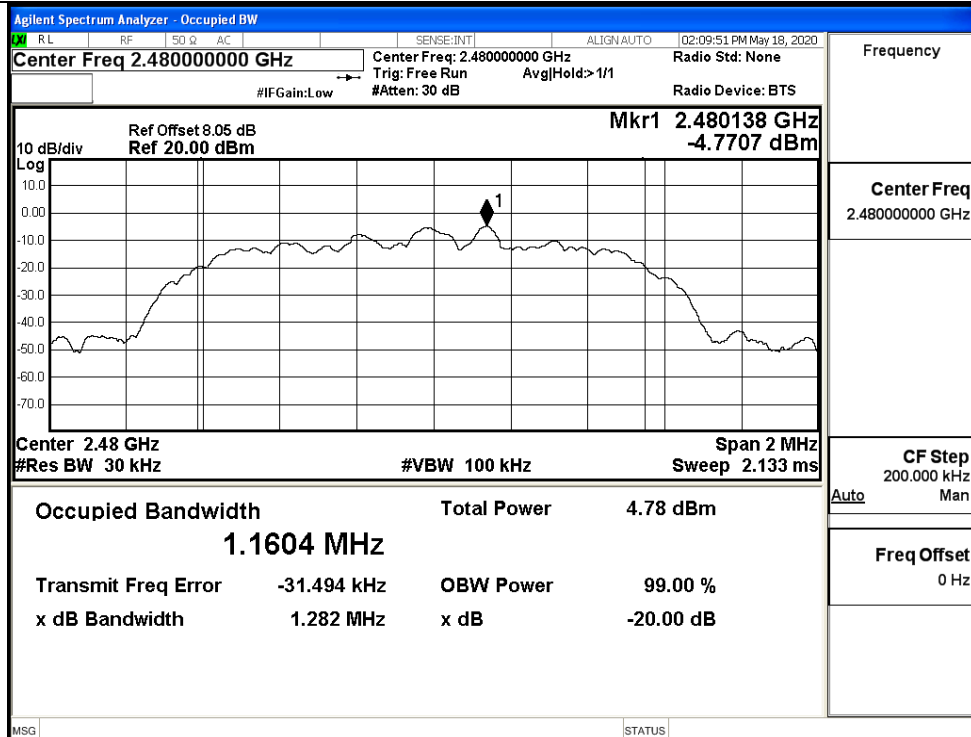
GFSK/MCH



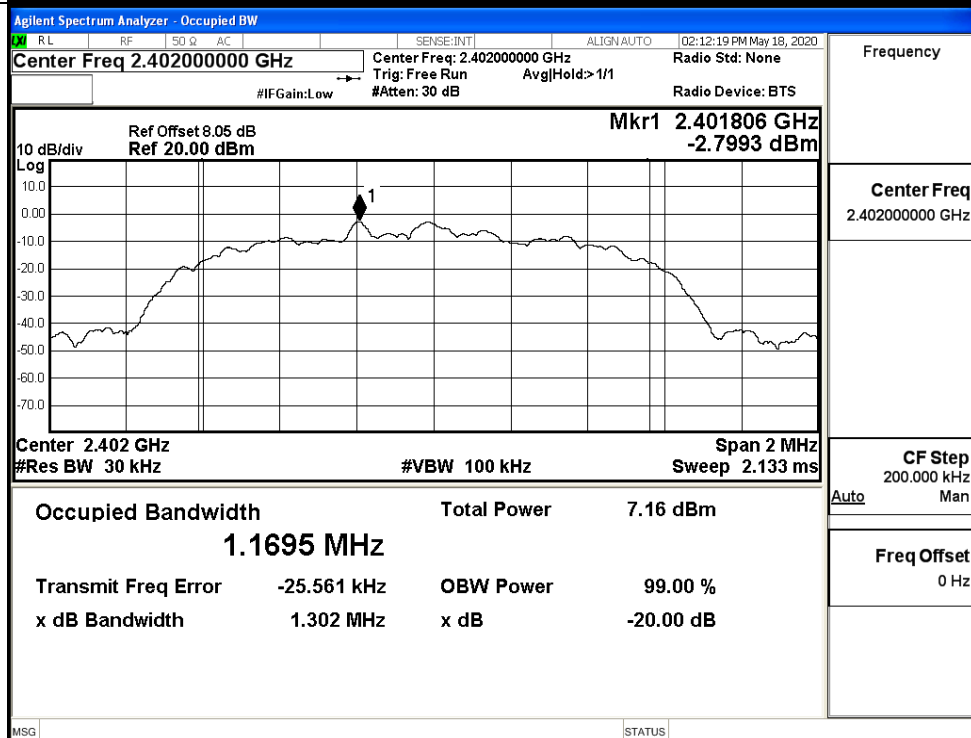
GFSK/HCH



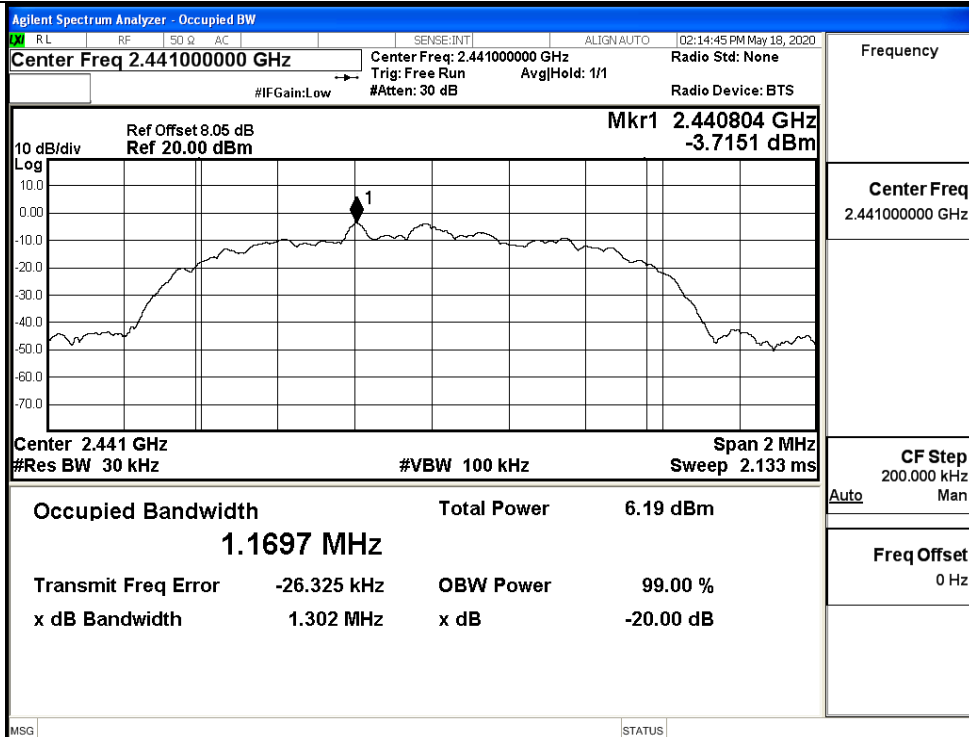
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

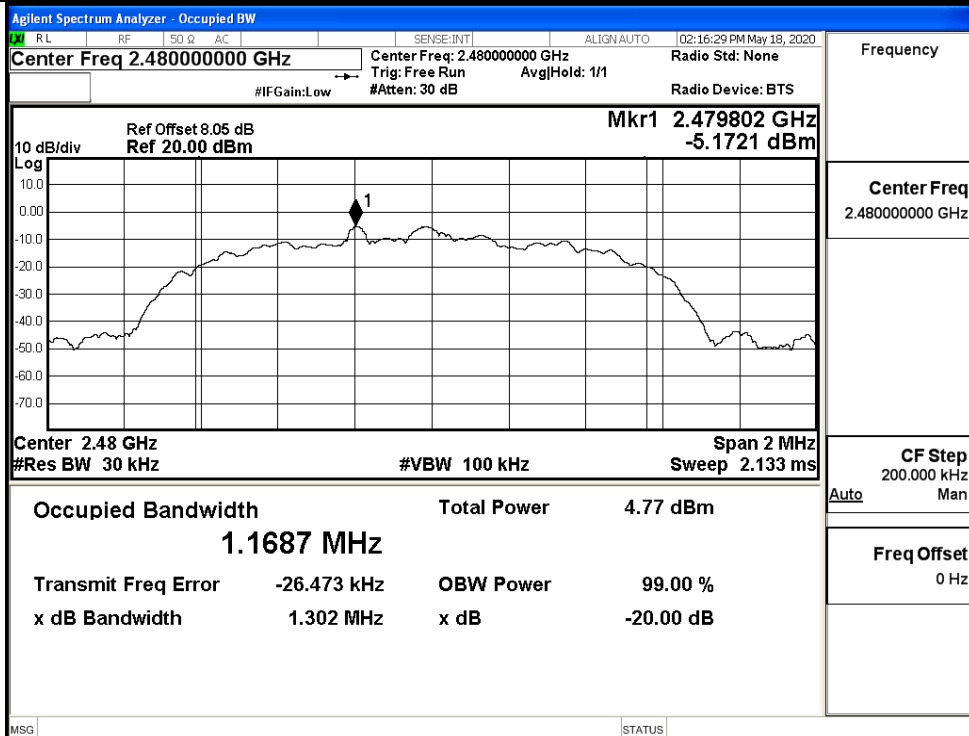
8DPSK/LCH



8DPSK/MCH



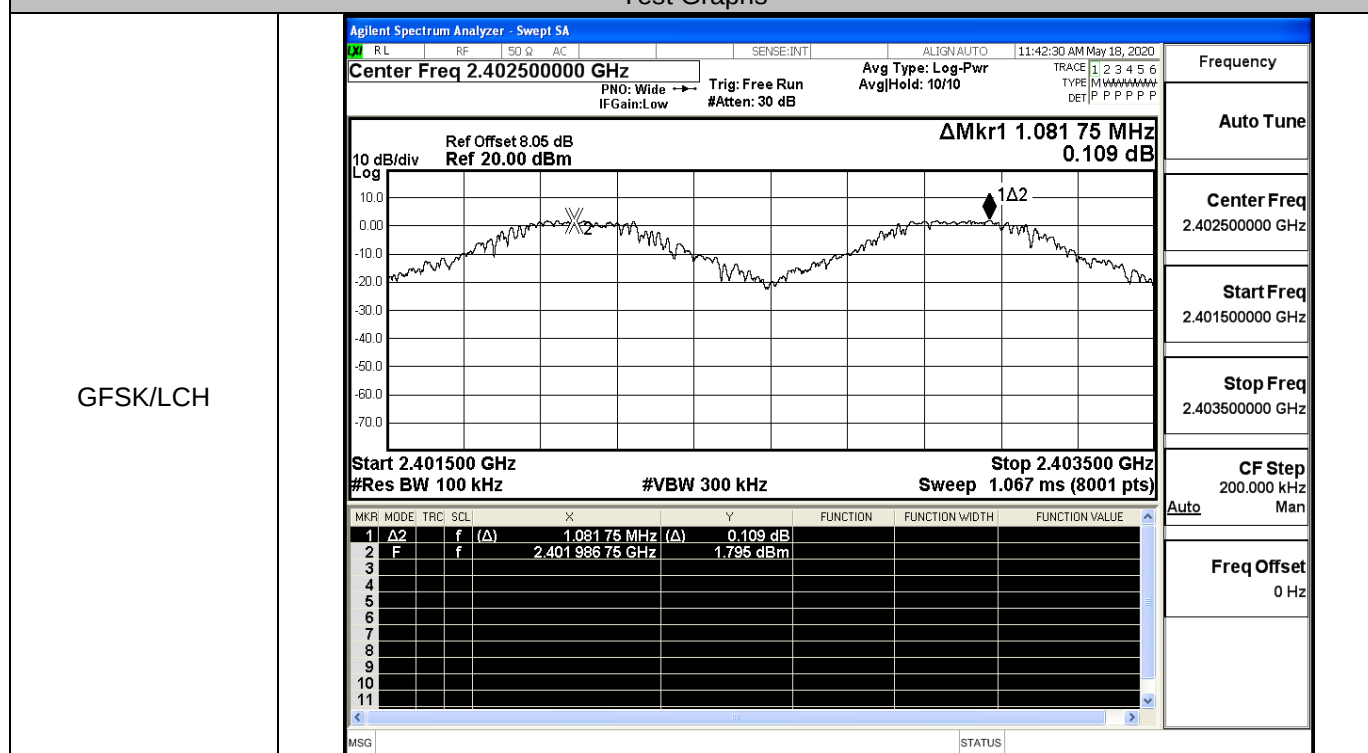
8DPSK/HCH



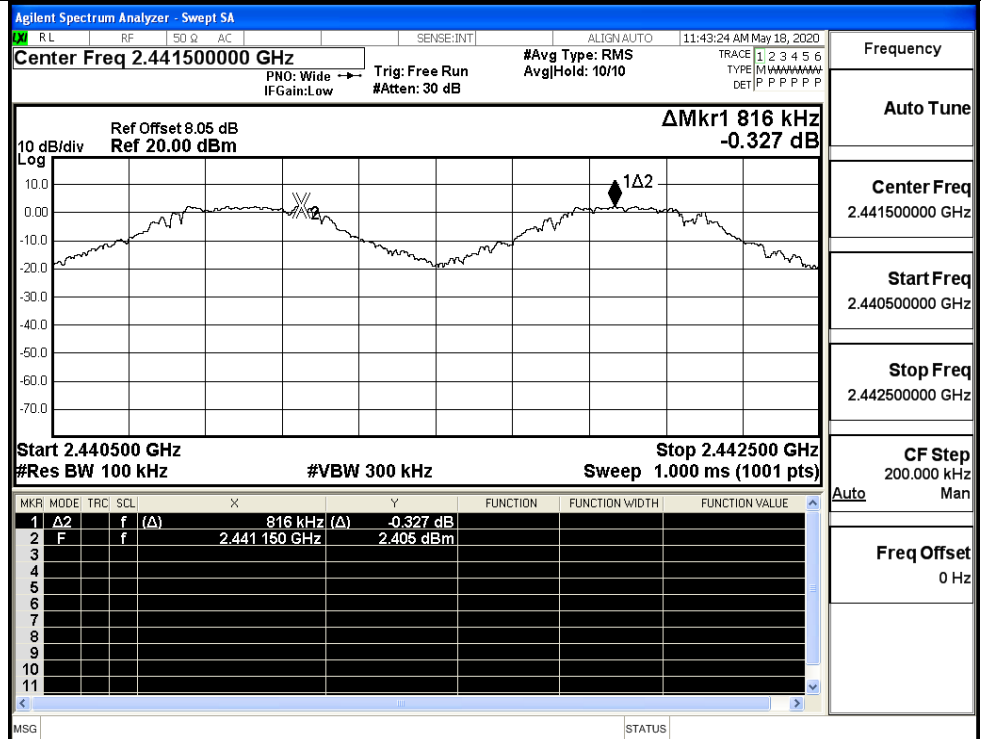
### A.3 Carrier Frequency Separation

| Mode          | Channel. | Carrier Frequency Separation [MHz] | Limit [MHz] | Verdict |
|---------------|----------|------------------------------------|-------------|---------|
| GFSK          | LCH      | 1.082                              | 0.567       | PASS    |
|               | MCH      | 0.816                              | 0.567       | PASS    |
|               | HCH      | 0.822                              | 0.567       | PASS    |
| $\pi/4$ DQPSK | LCH      | 0.890                              | 0.849       | PASS    |
|               | MCH      | 1.308                              | 0.849       | PASS    |
|               | HCH      | 1.058                              | 0.849       | PASS    |
| 8DPSK         | LCH      | 1.036                              | 0.845       | PASS    |
|               | MCH      | 1.270                              | 0.845       | PASS    |
|               | HCH      | 0.924                              | 0.845       | PASS    |

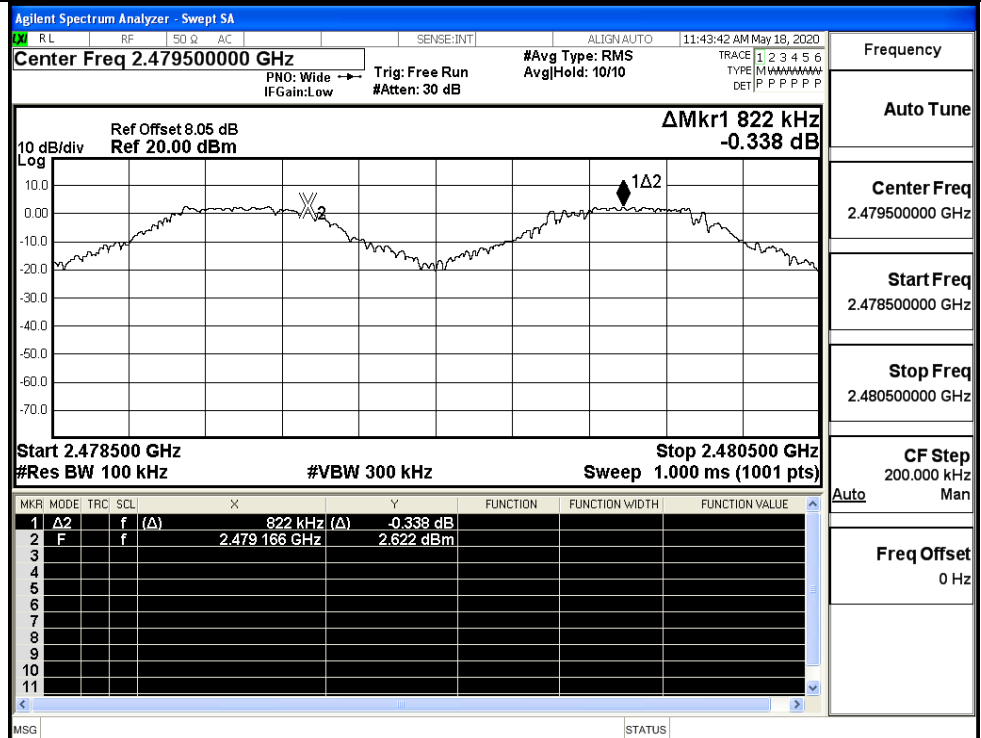
#### Test Graphs

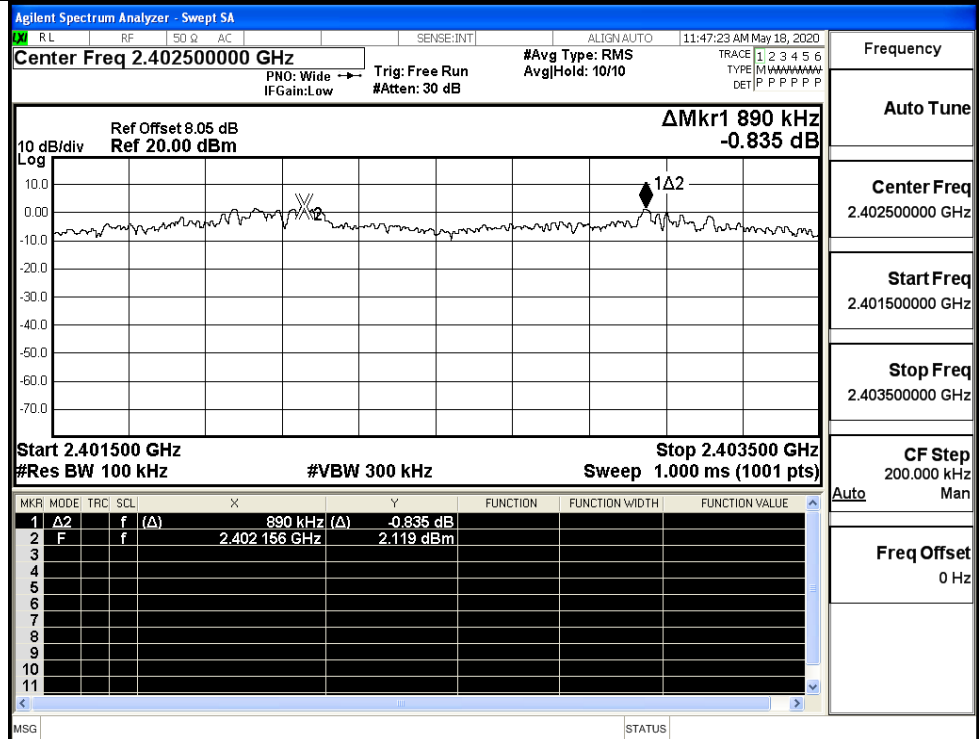
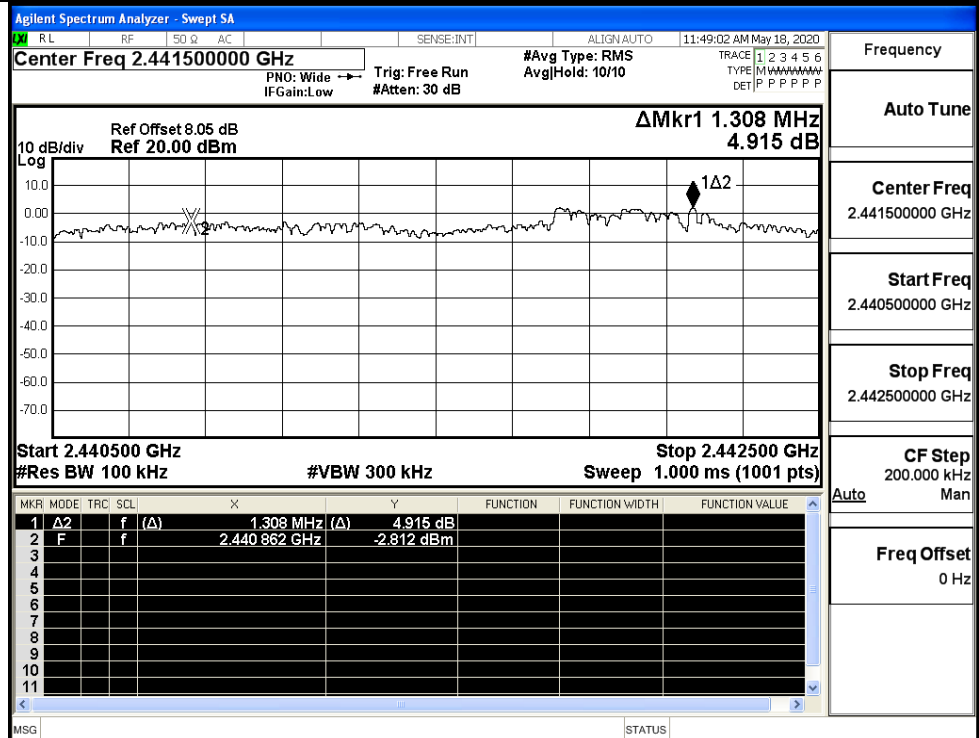


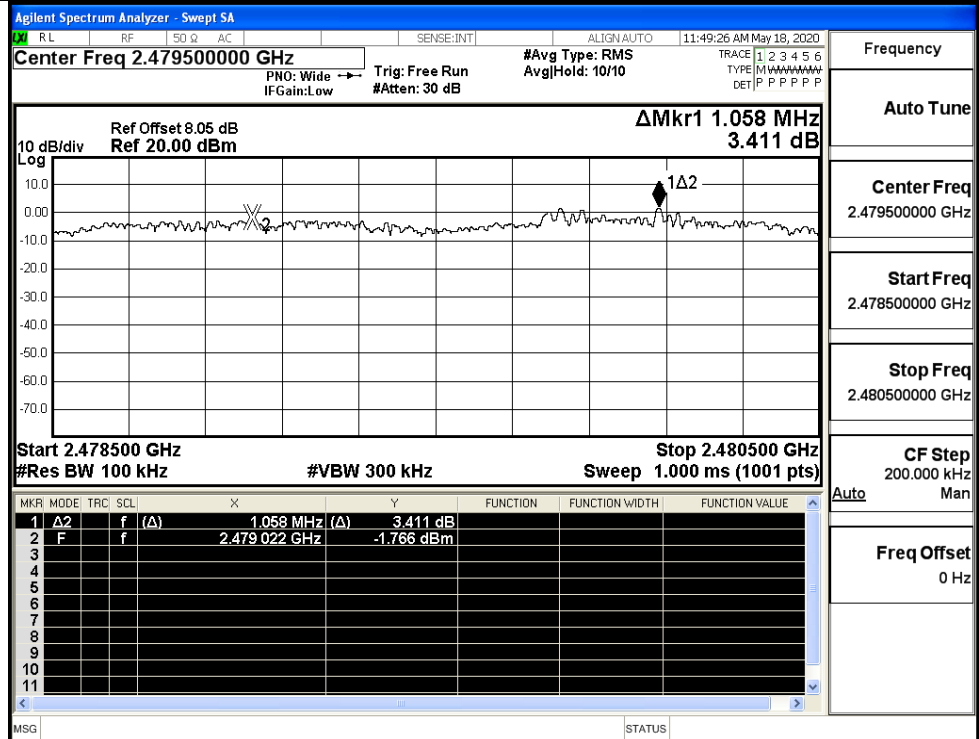
GFSK/MCH



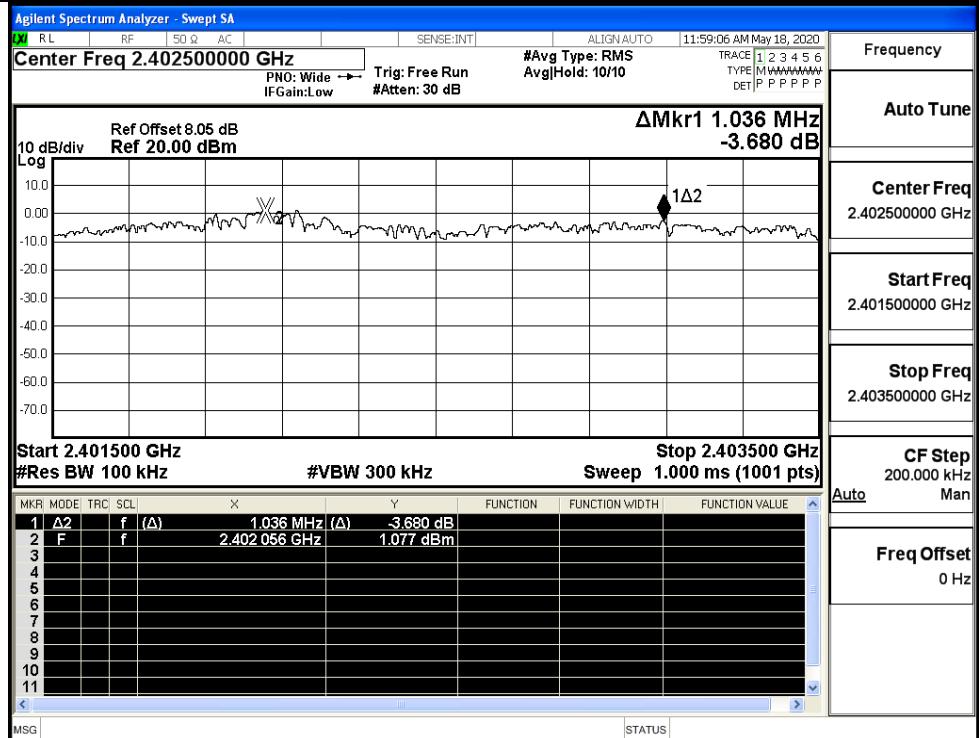
GFSK/HCH



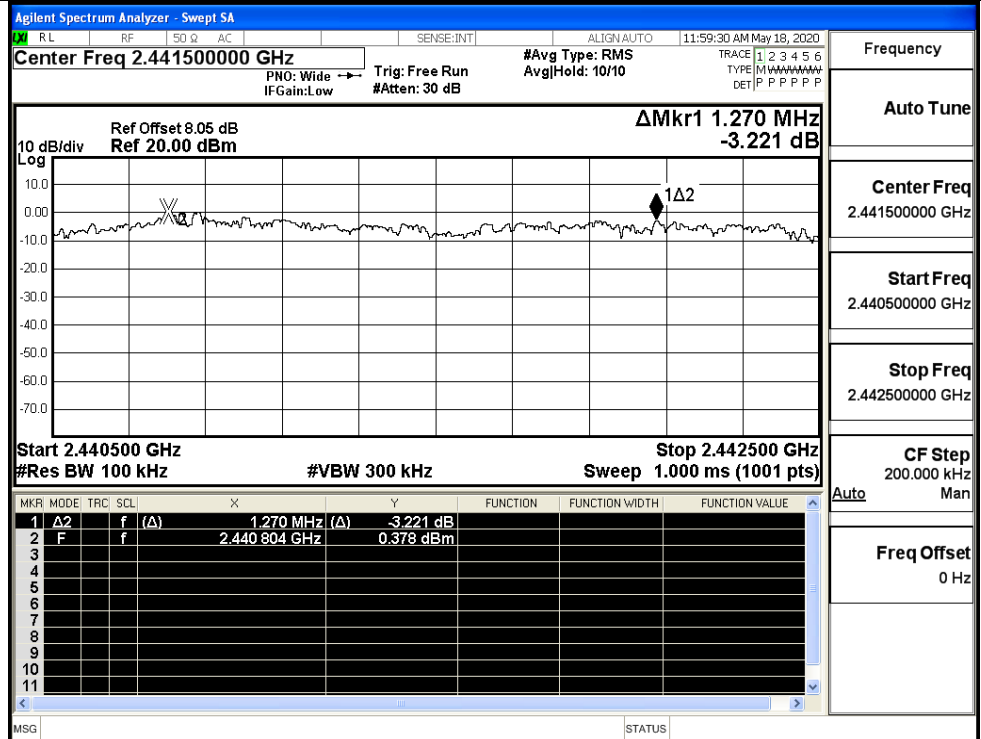
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

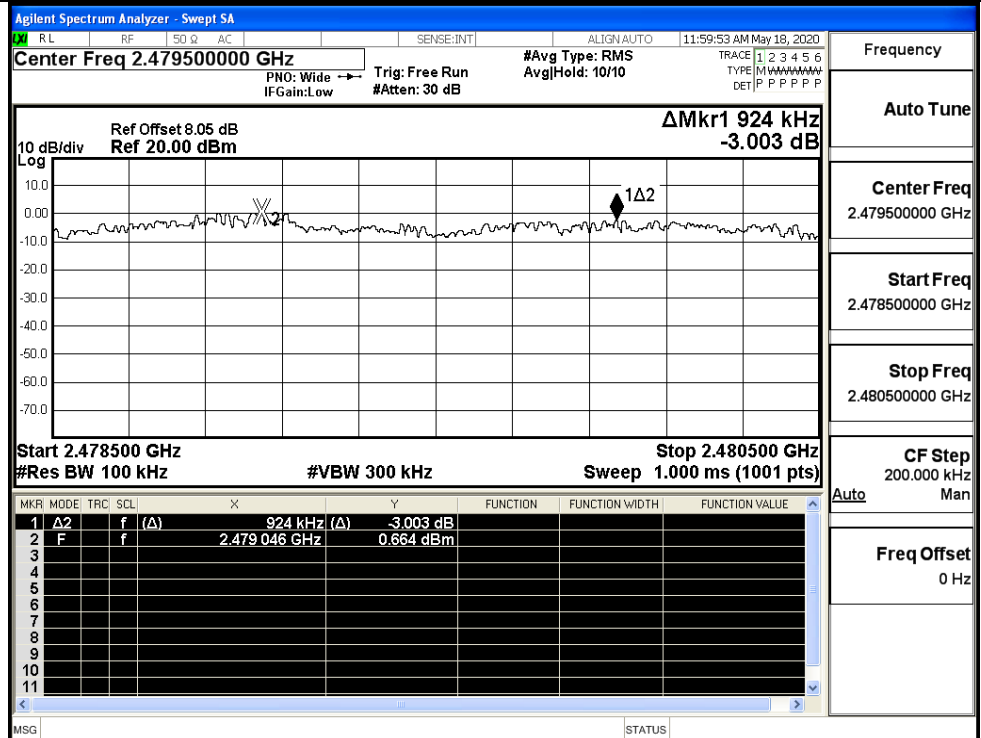
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

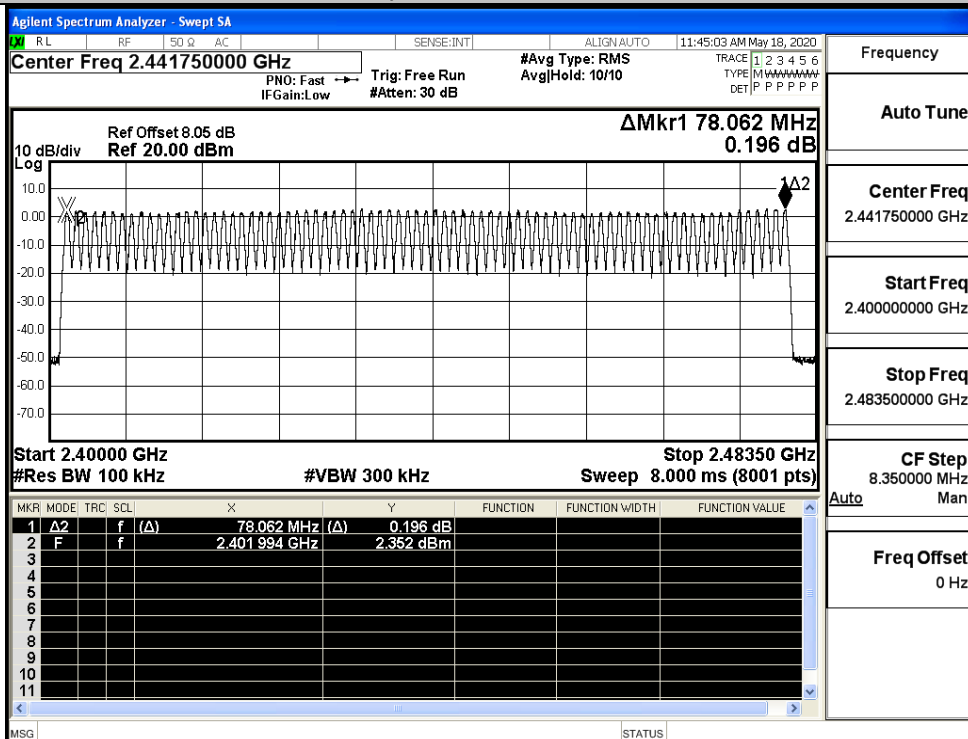


## A.4 Hopping Channel Number

| 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    |

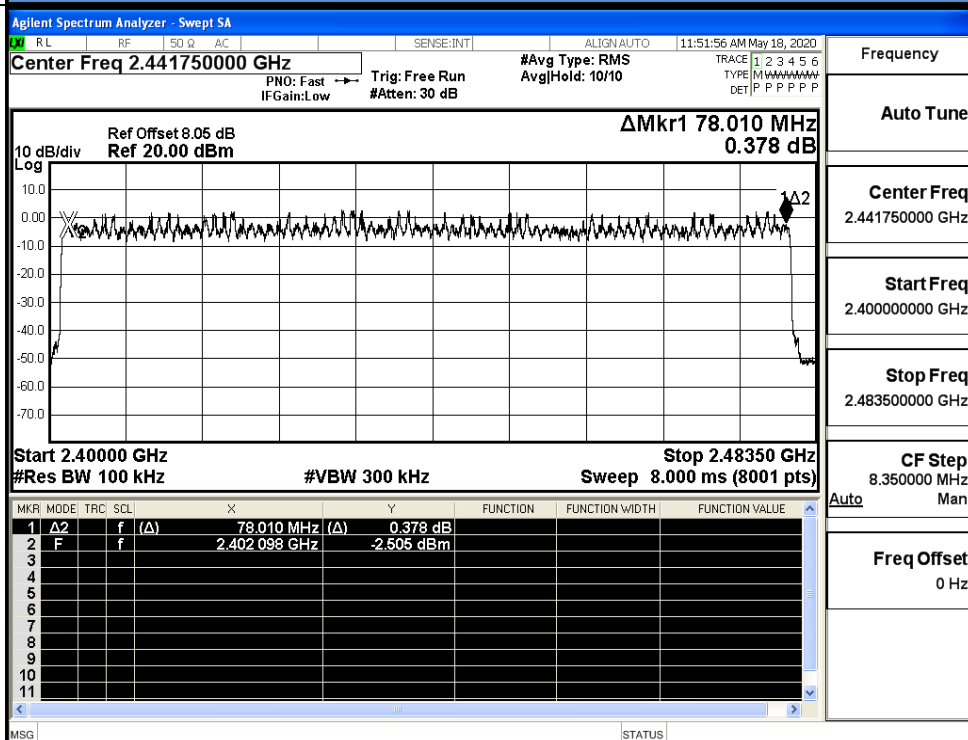
## Test Graphs

GFSK/Hop



Frequency

Auto Tune

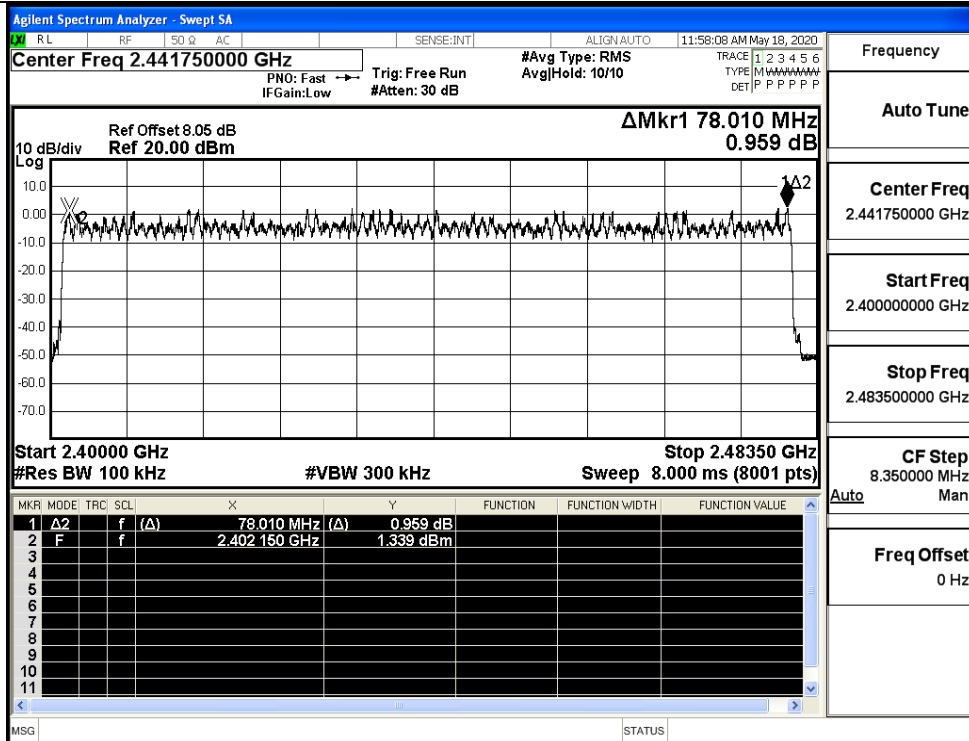
Center Freq  
2.441750000 GHzStart Freq  
2.400000000 GHzStop Freq  
2.483500000 GHzCF Step  
8.350000 MHz  
ManFreq Offset  
0 Hz $\pi/4$ DQPSK/Hop

Frequency

Auto Tune

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

8DPSK/Hop

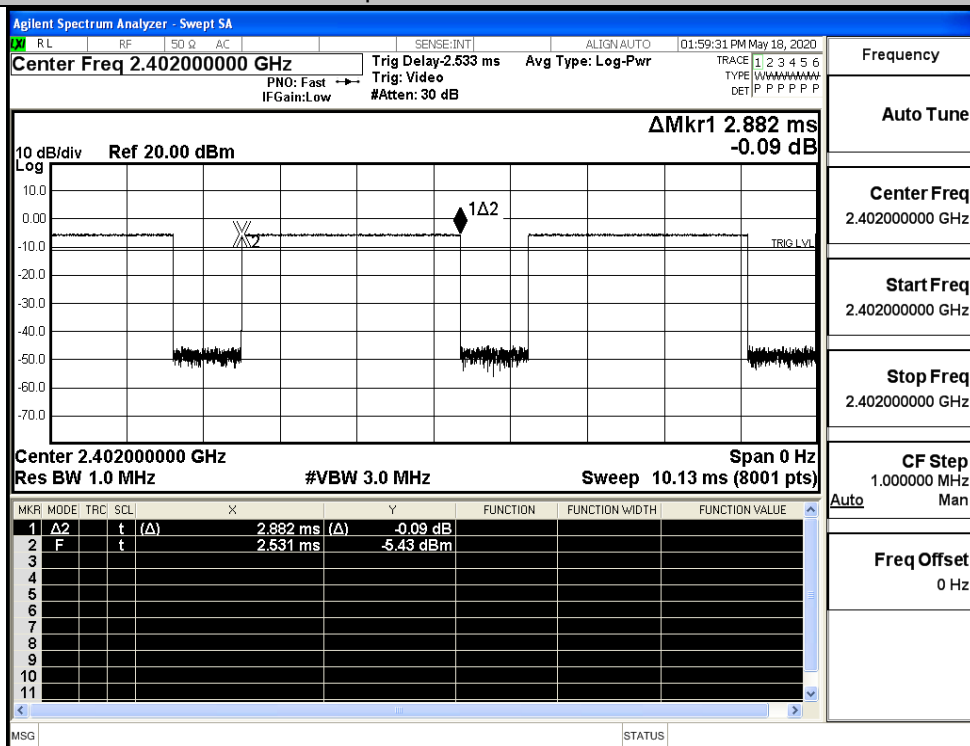


## A.5 Dwell Time

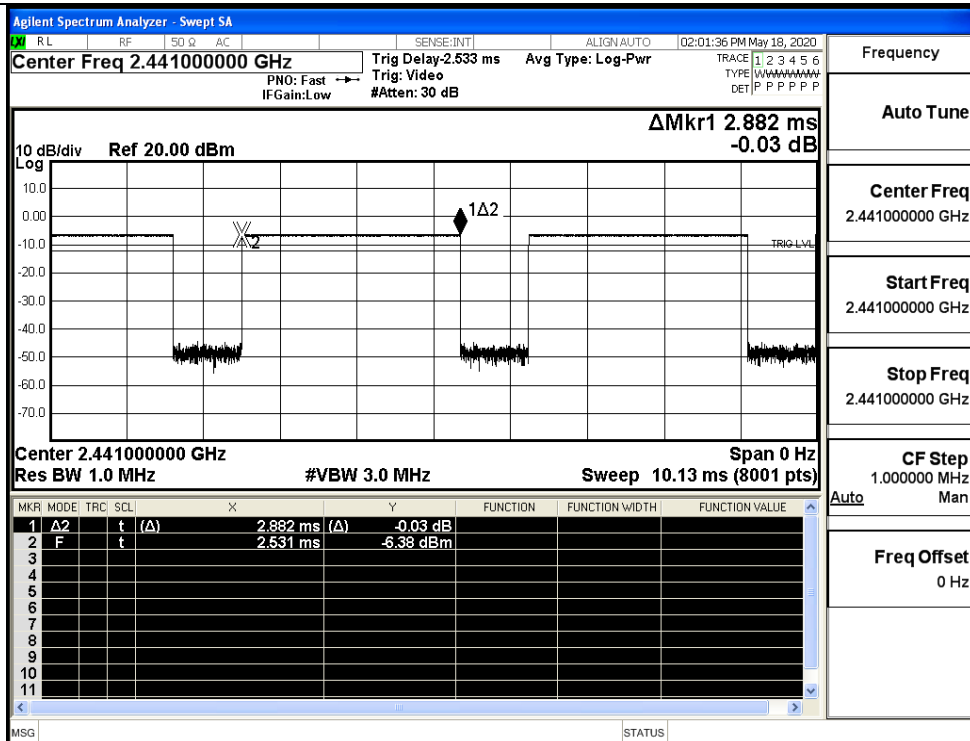
| Mode          | Packet | Channel | Burst Width<br>[ms/hop/ch] | Total<br>Hops[hop*ch] | Dwell Time[s] | Limit [s] | Verdict |
|---------------|--------|---------|----------------------------|-----------------------|---------------|-----------|---------|
| GFSK          | DH5    | LCH     | 2.88                       | 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                 | 0.308         | 0.4       | PASS    |
|               | 2DH5   | MCH     | 2.88                       | 106.7                 | 0.308         | 0.4       | PASS    |
|               | 2DH5   | HCH     | 2.88                       | 106.7                 | 0.308         | 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    |

## Test Graphs

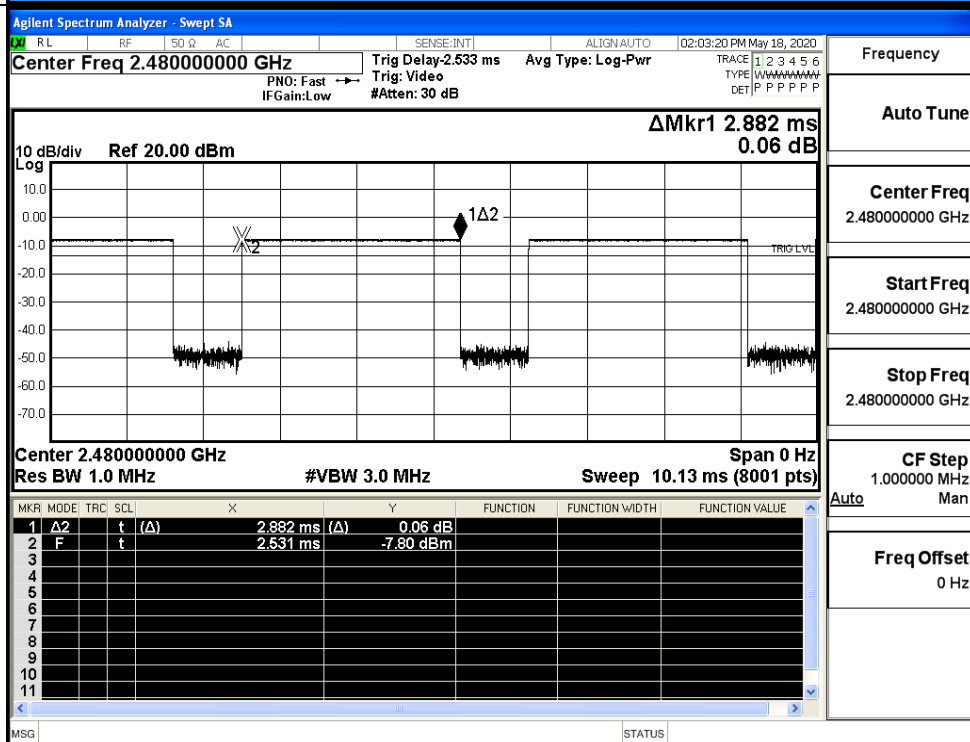
GFSK\_DH5/LCH



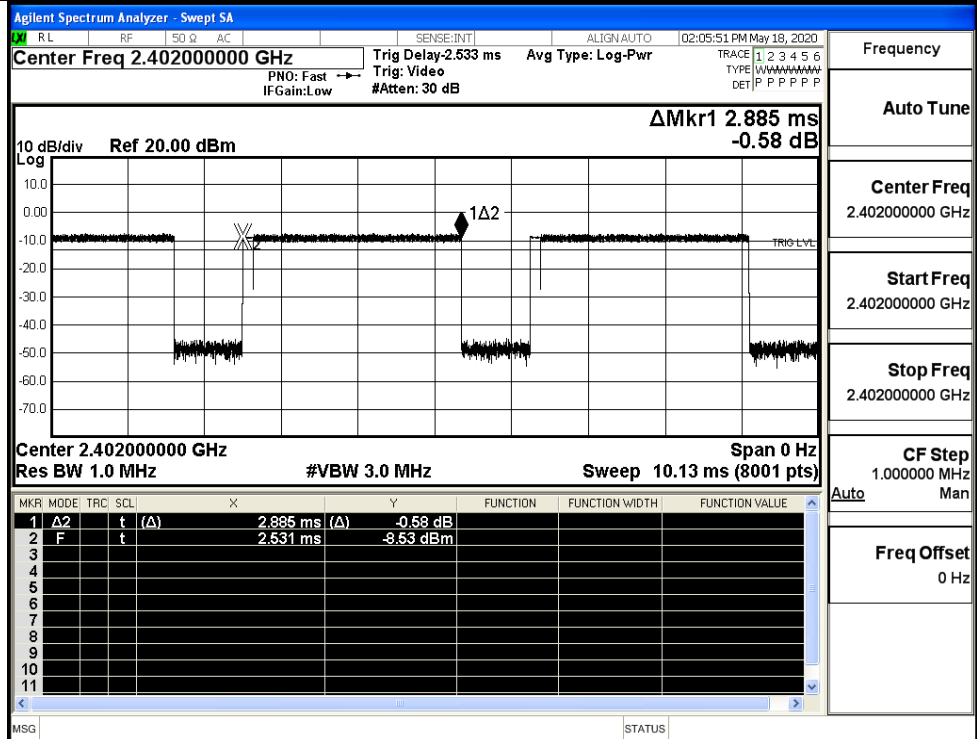
GFSK\_DH5/MCH



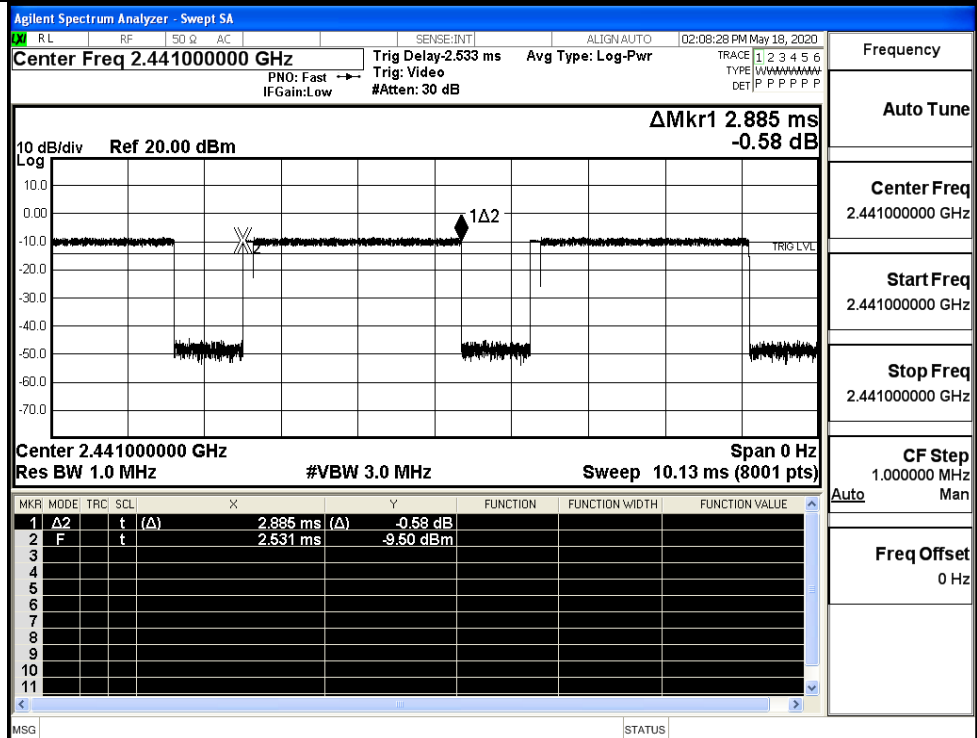
GFSK\_DH5/HCH



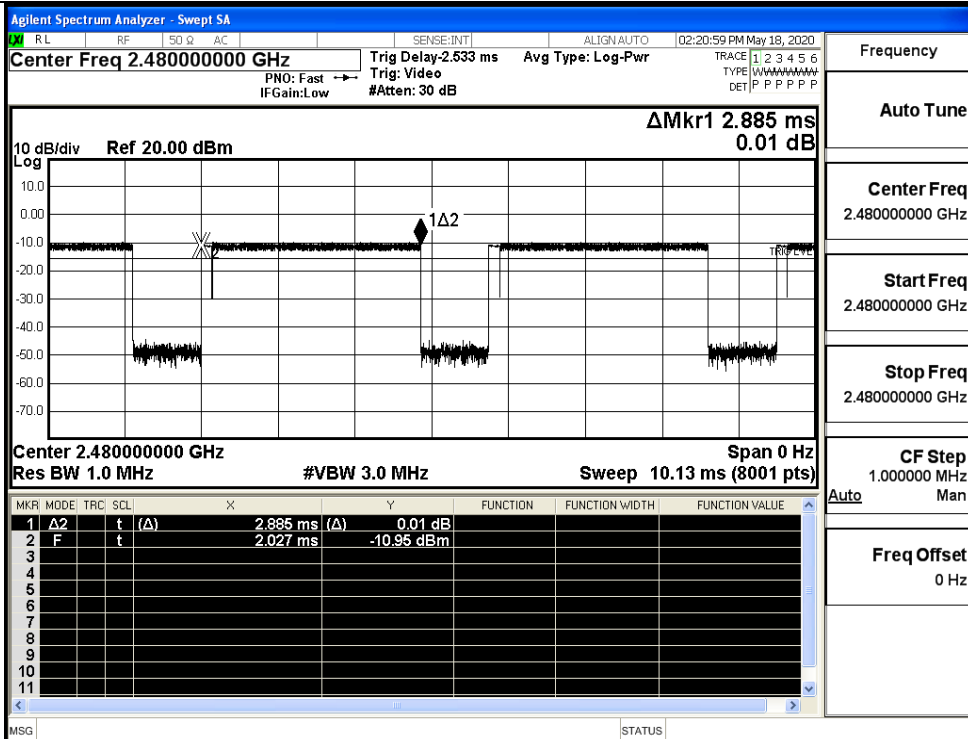
$\pi/4$ DQPSK  
\_2DH5/LCH



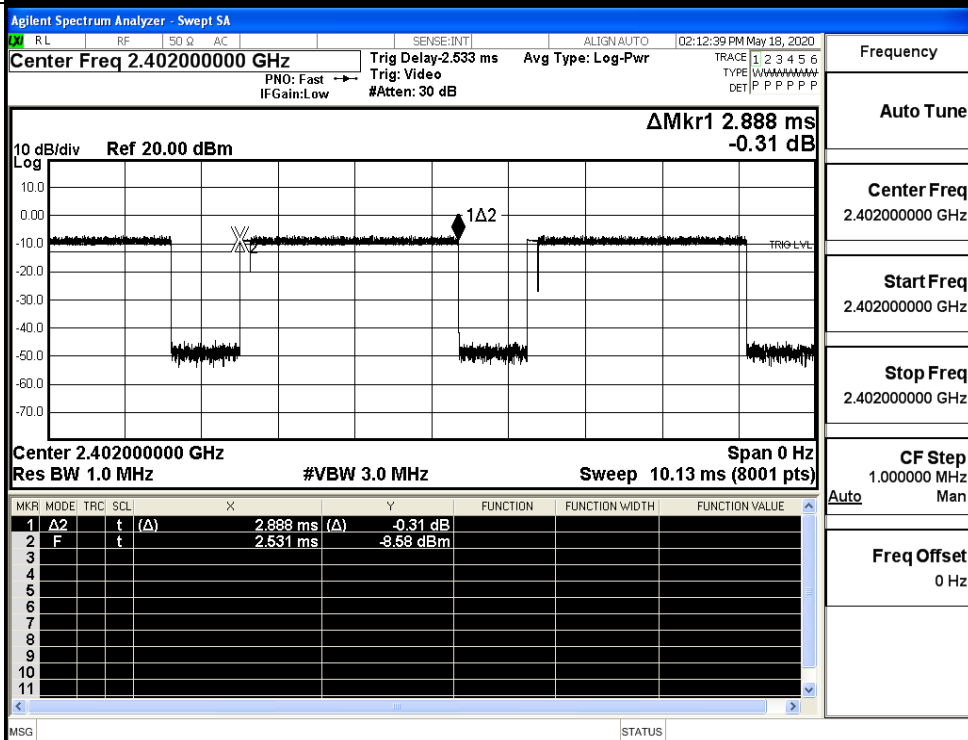
$\pi/4$ DQPSK  
\_2DH5/MCH



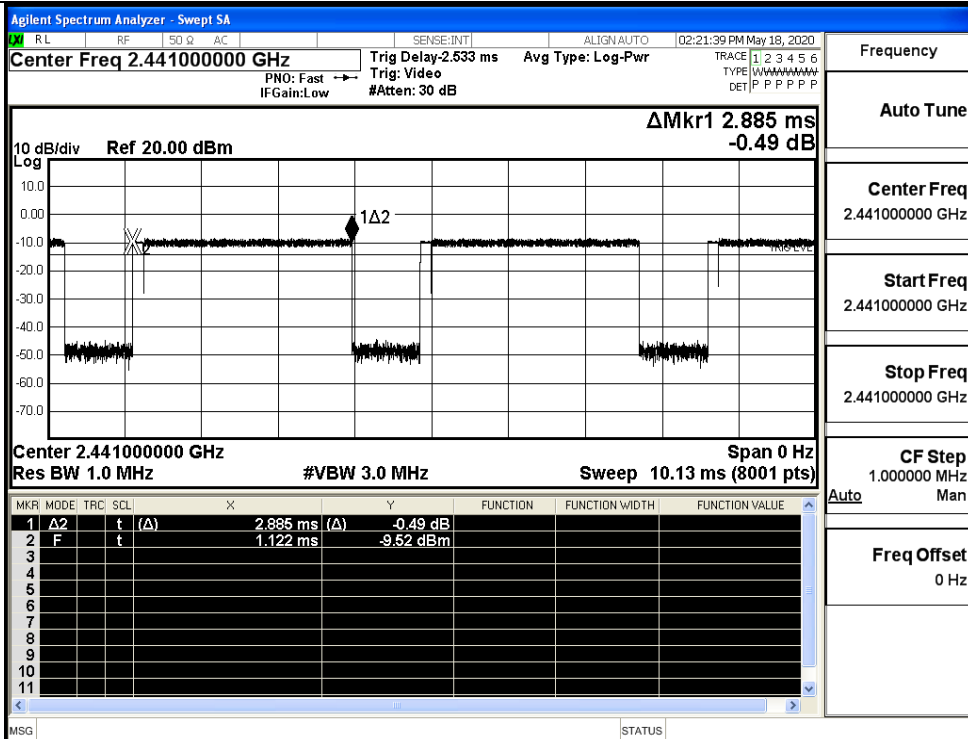
$\pi/4$ DQPSK  
\_2DH5/HCH



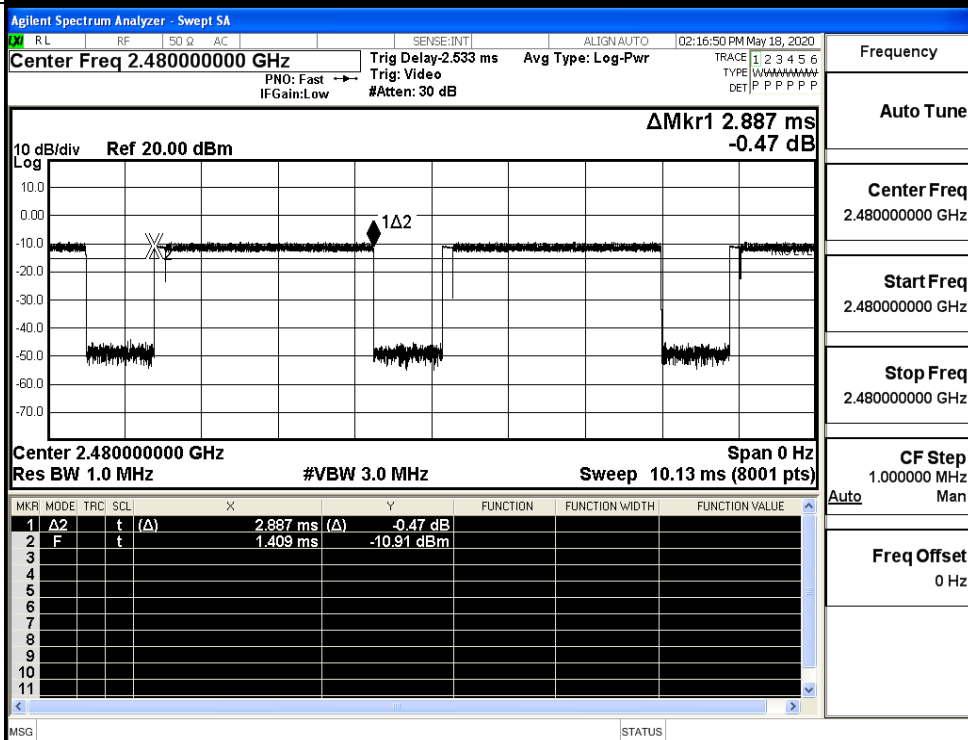
8DPSK \_3DH5/LCH



8DPSK\_3DH5/MCH



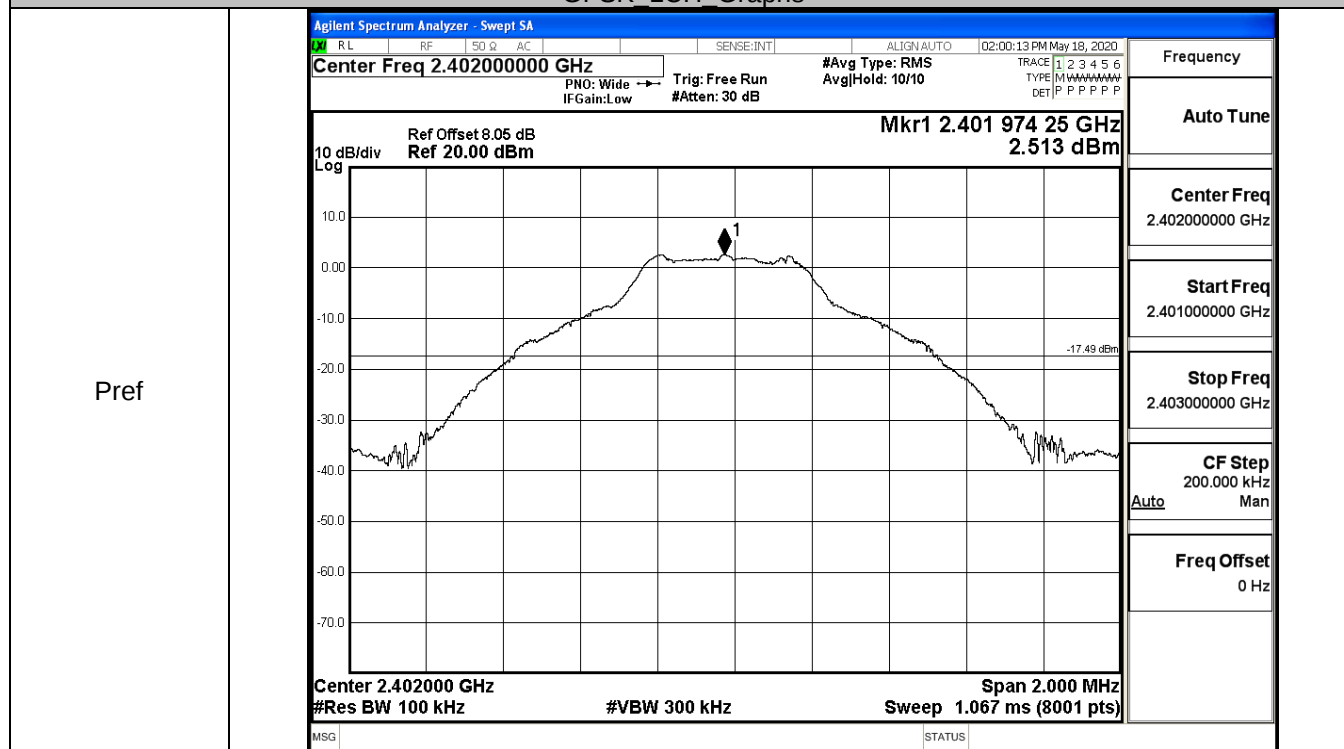
8DPSK\_3DH5/HCH



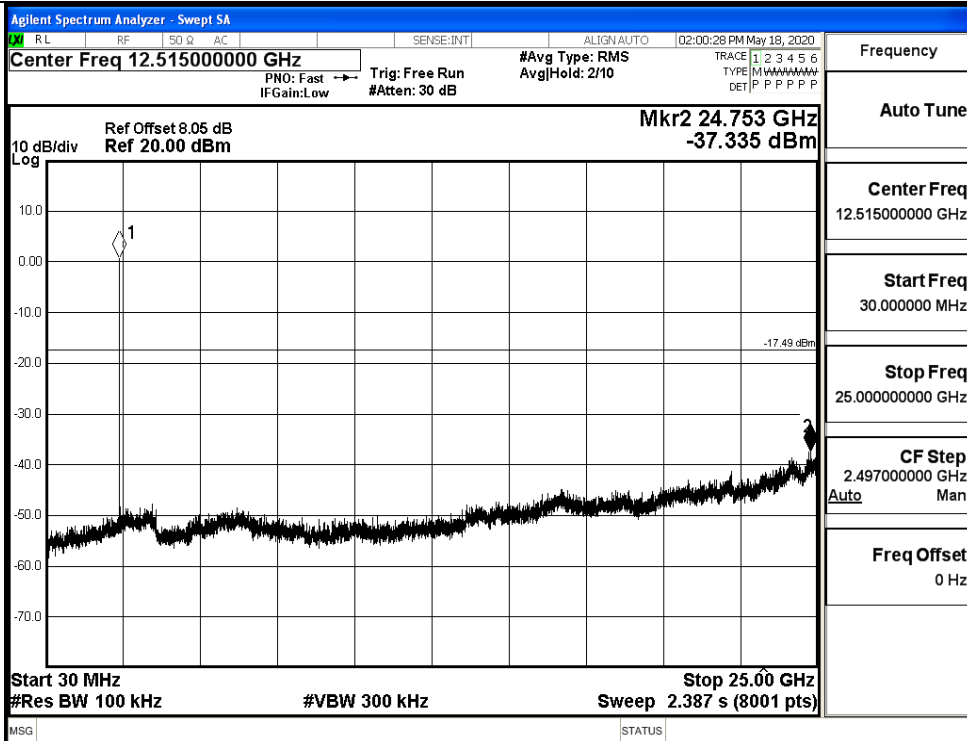
## A.6 RF Conducted Spurious Emissions

| Mode          | Channel | Pref [dBm] | Max. Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|------------|------------------|-------------|---------|
| GFSK          | LCH     | 2.513      | -37.335          | -17.487     | PASS    |
|               | MCH     | 1.558      | -38.204          | -18.442     | PASS    |
|               | HCH     | 0.238      | -37.862          | -19.762     | PASS    |
| $\pi/4$ DQPSK | LCH     | -0.527     | -37.457          | -20.527     | PASS    |
|               | MCH     | -1.549     | -38.006          | -21.549     | PASS    |
|               | HCH     | -3.143     | -38.343          | -23.143     | PASS    |
| 8DPSK         | LCH     | -0.508     | -37.609          | -20.508     | PASS    |
|               | MCH     | -1.509     | -37.825          | -21.509     | PASS    |
|               | HCH     | -2.973     | -38.008          | -22.973     | PASS    |

GFSK LCH Graphs

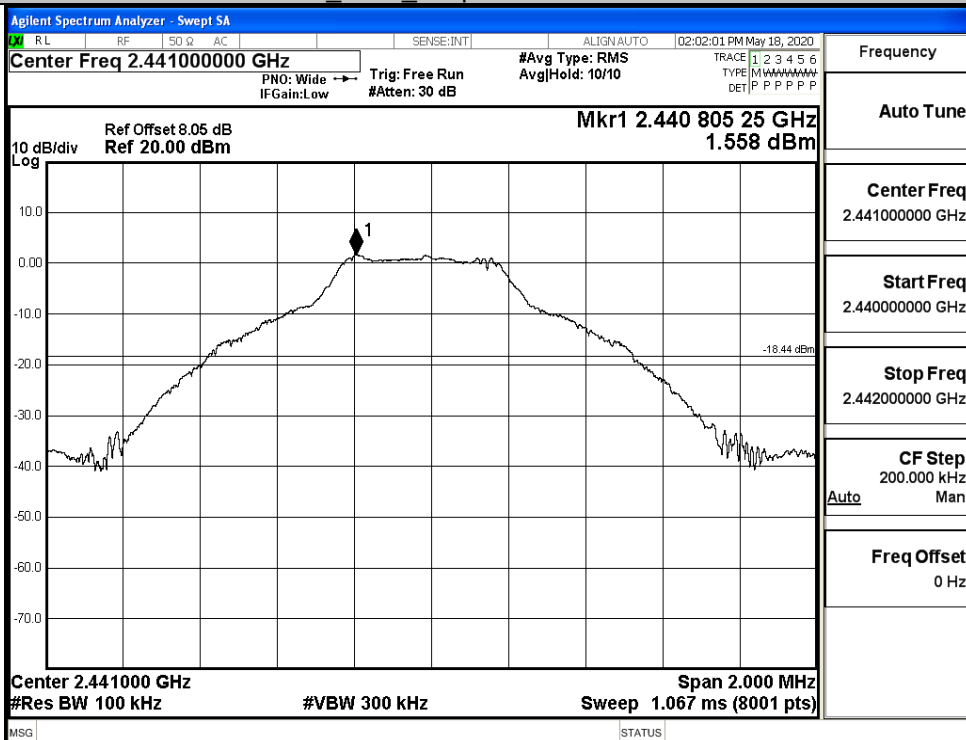


Puw

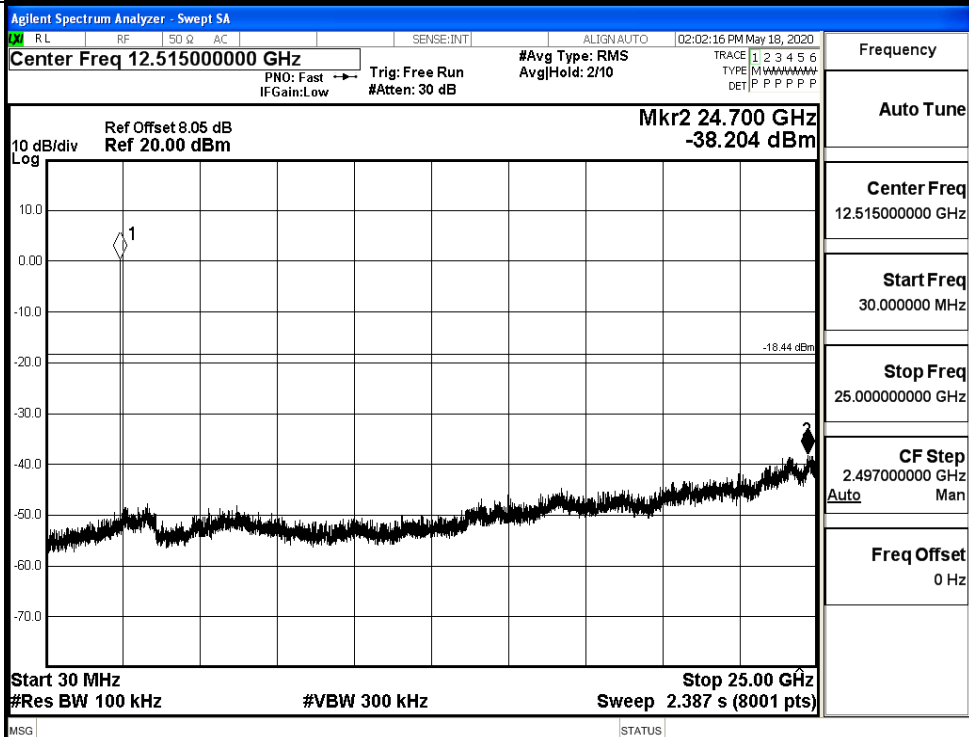


## GFSK\_MCH\_Graphs

Pref

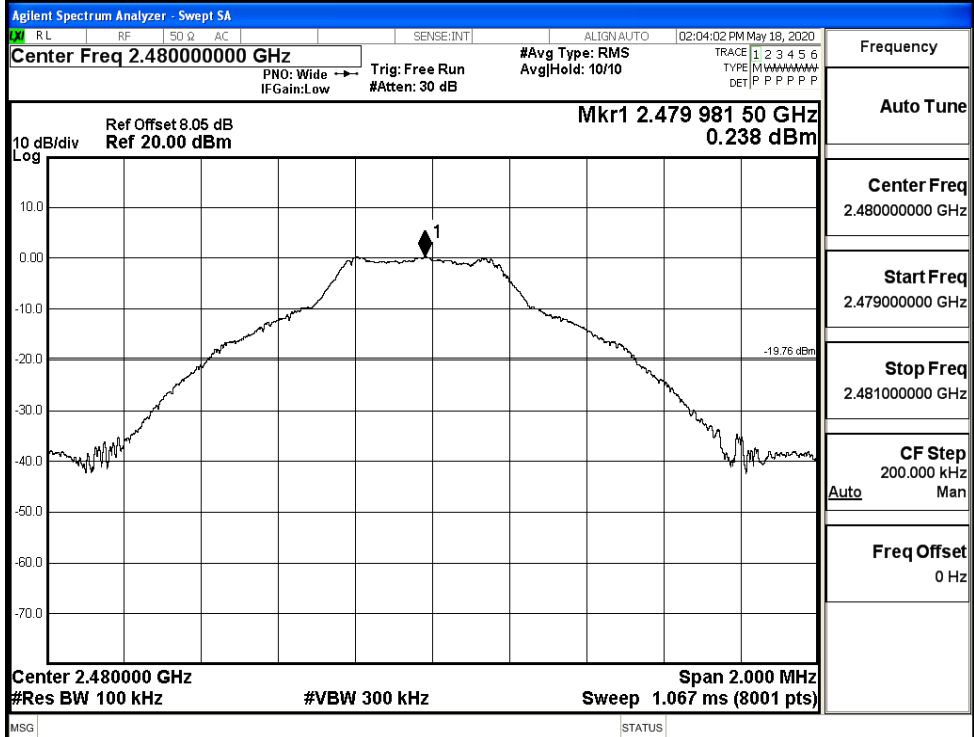


Puw

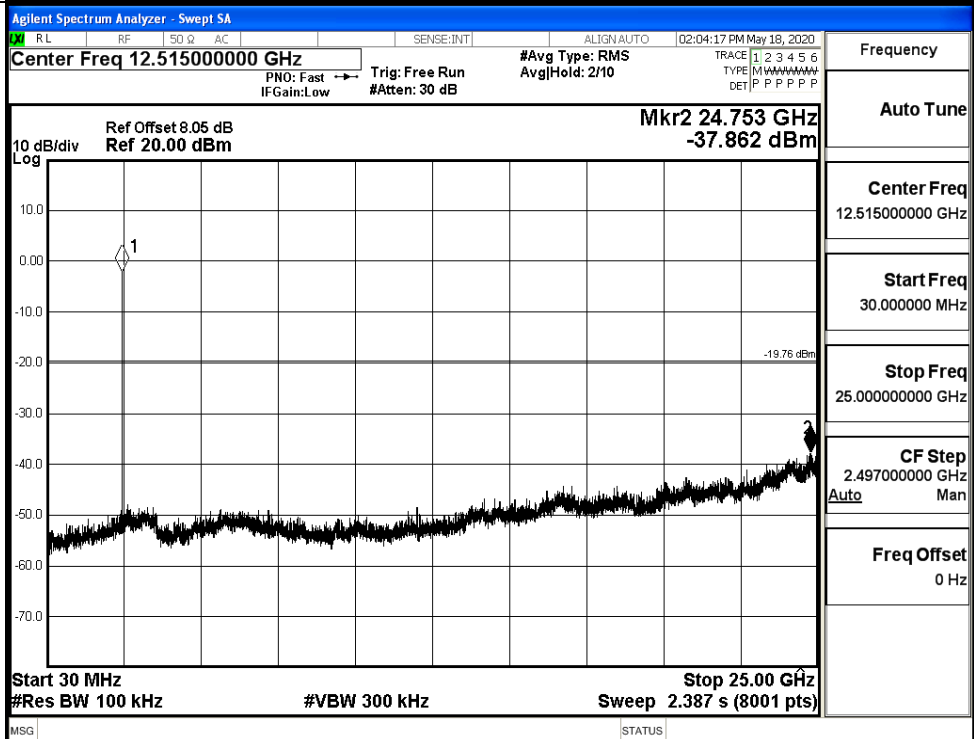


## GFSK HCH\_Graphs

Pref

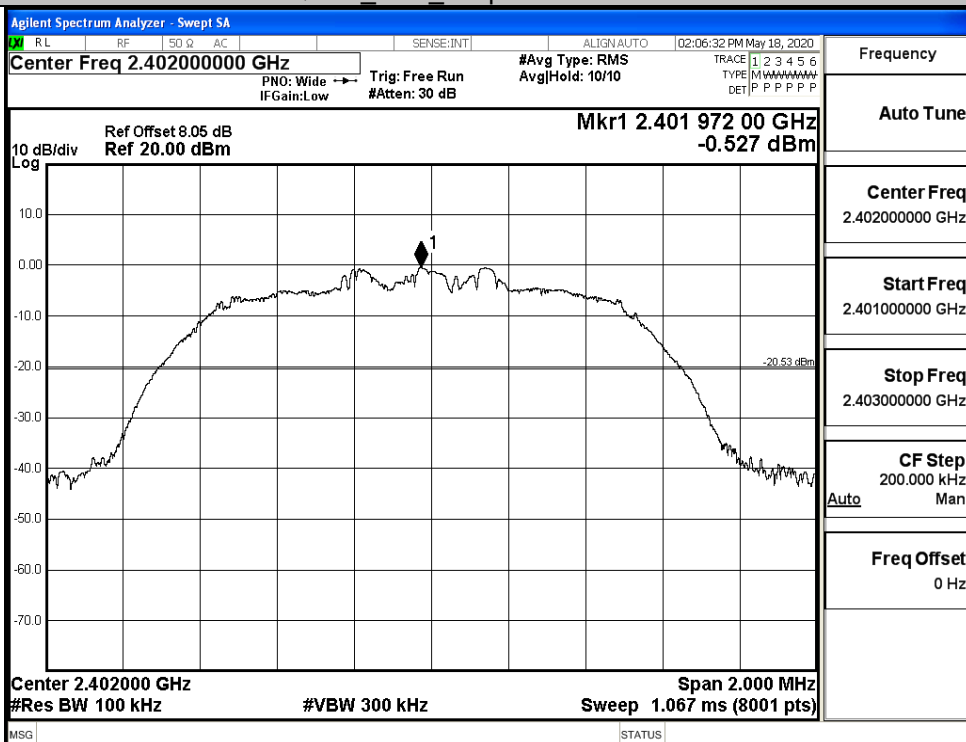


Puw

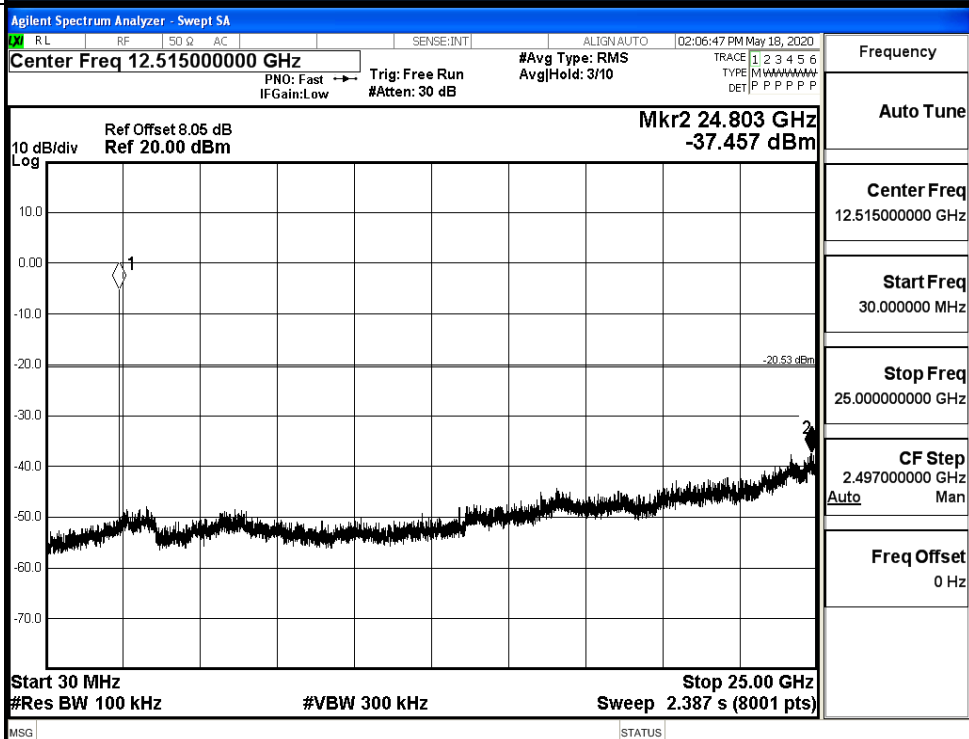


$\pi/4$ DQPSK\_LCH\_Graphs

Pref

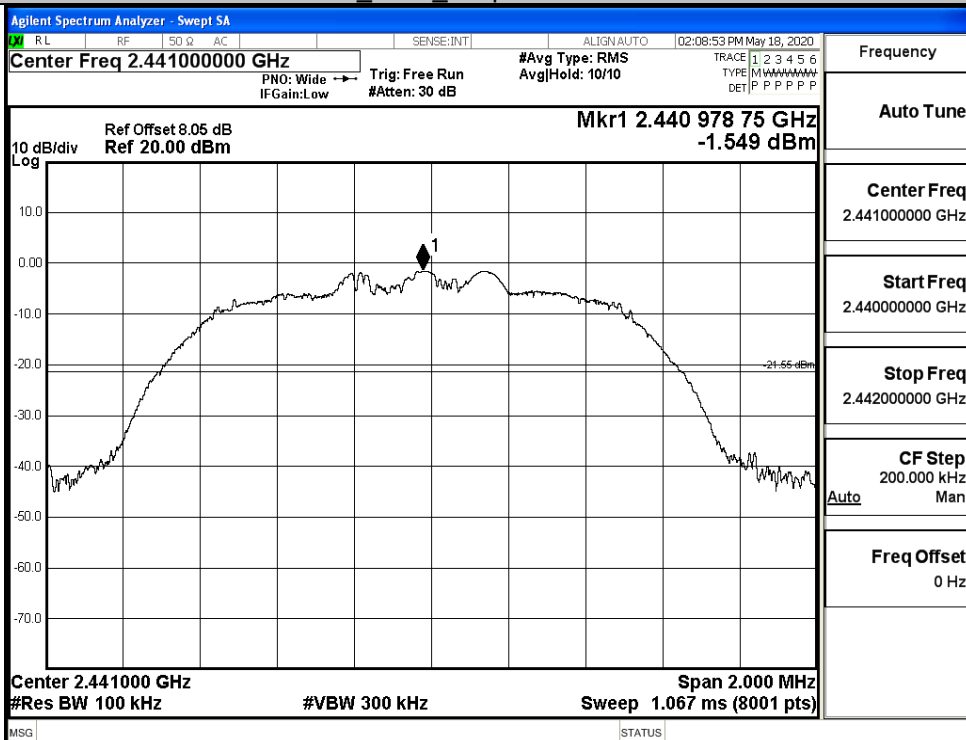


Puw

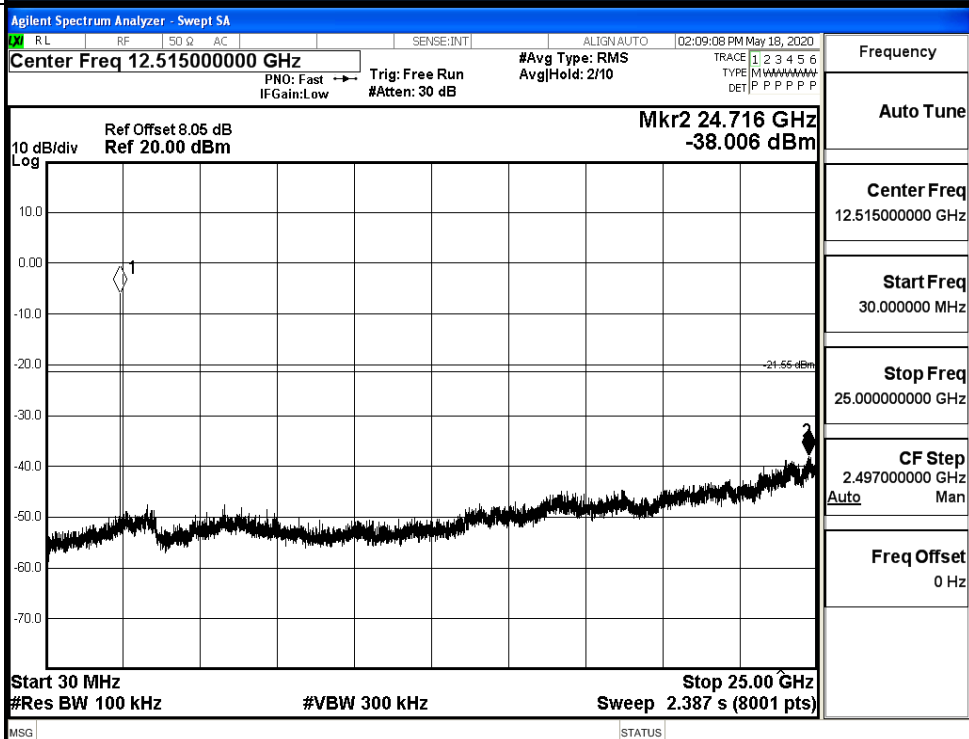


$\pi$ /4DQPSK\_MCH\_Graphs

Pref

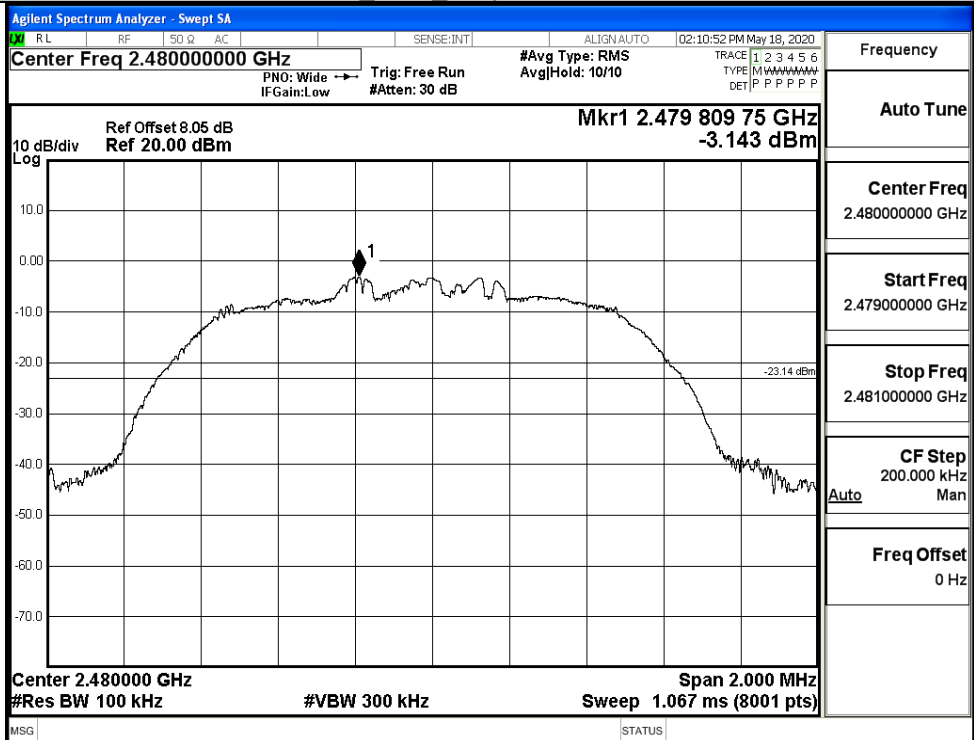


Puw

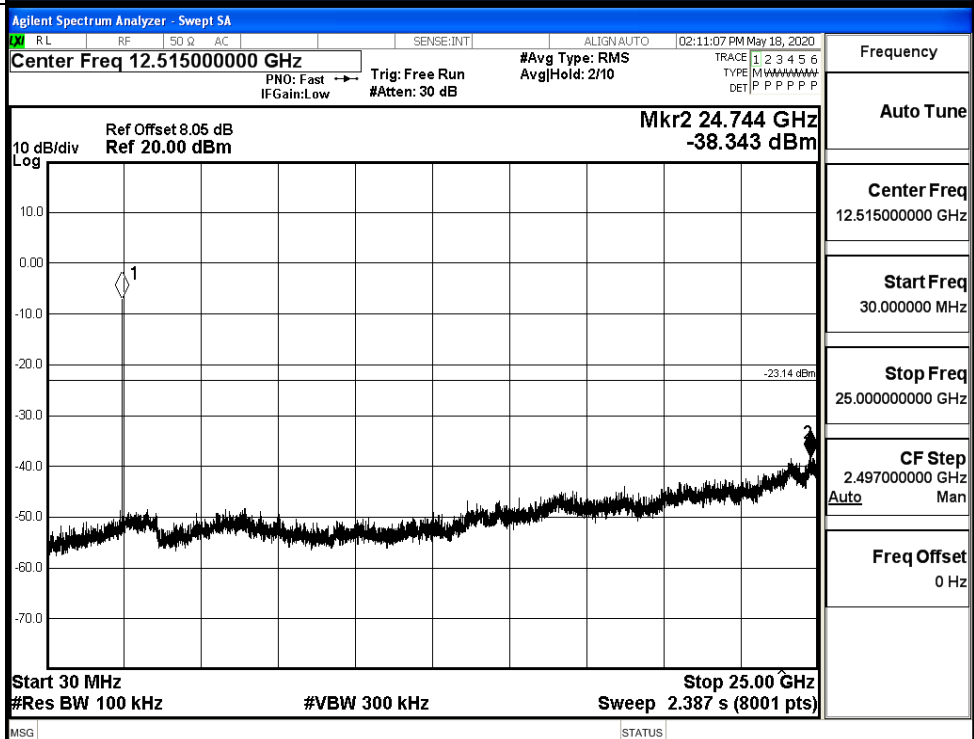


$\pi/4$ DQPSK\_HCH\_Graphs

Pref

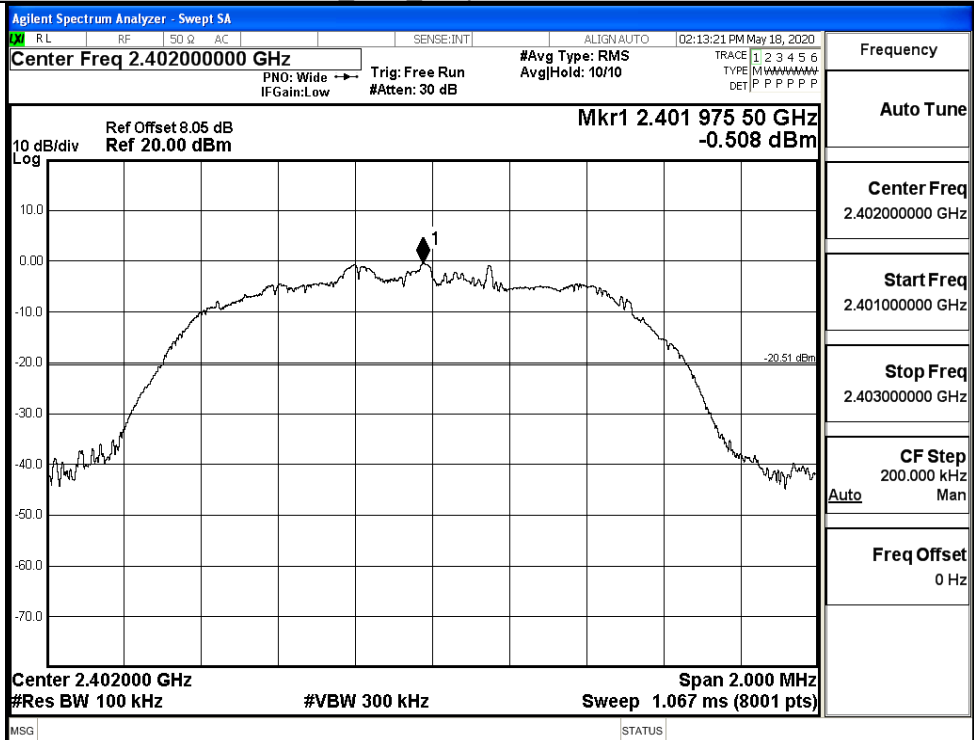


Puw



## 8DPSK\_LCH\_Graphs

Pref

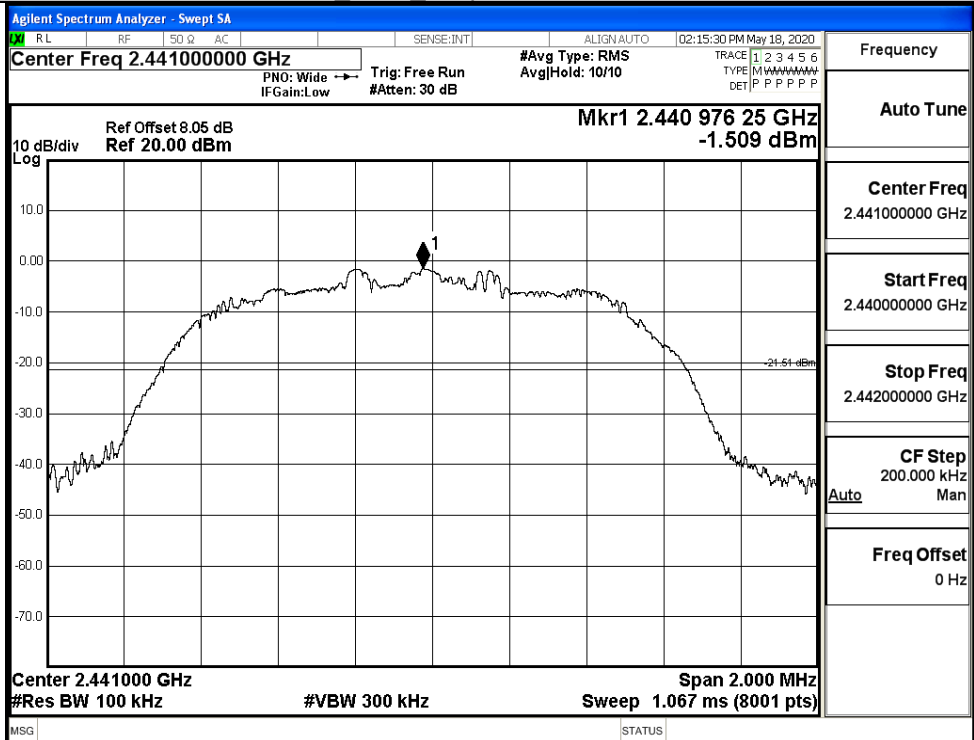


Puw

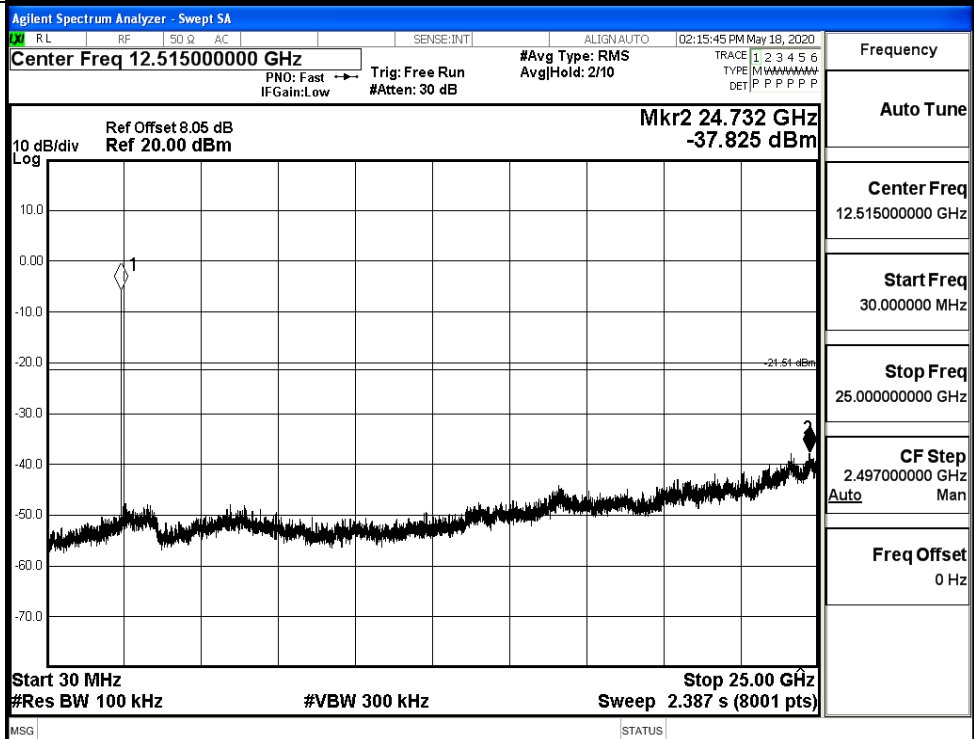


## 8DPSK\_MCH\_Graphs

Pref

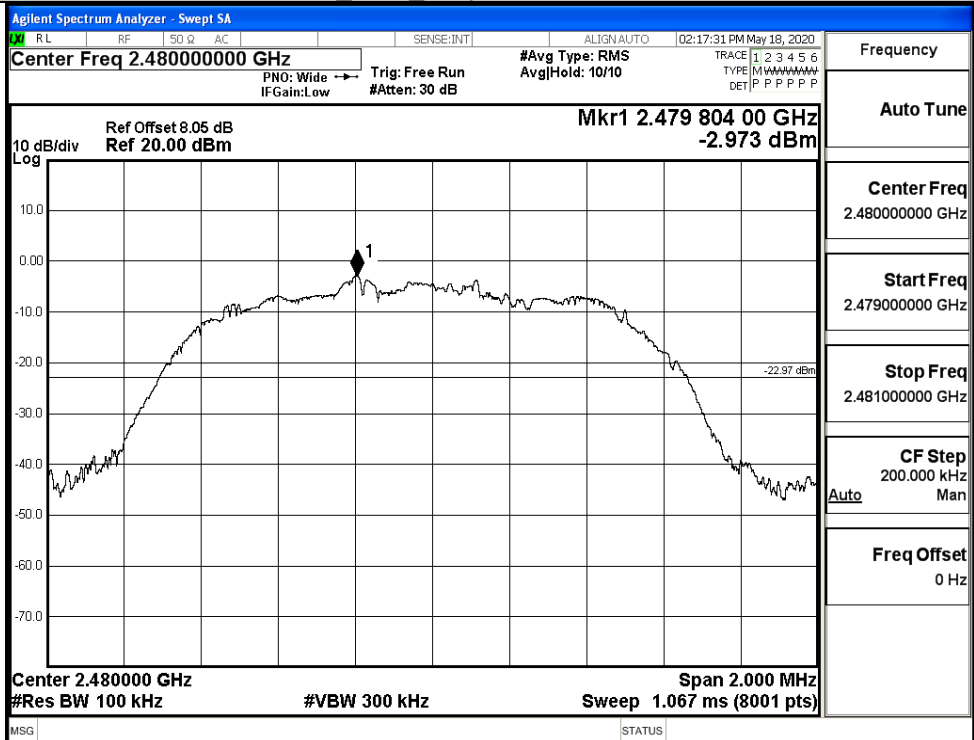


Puw

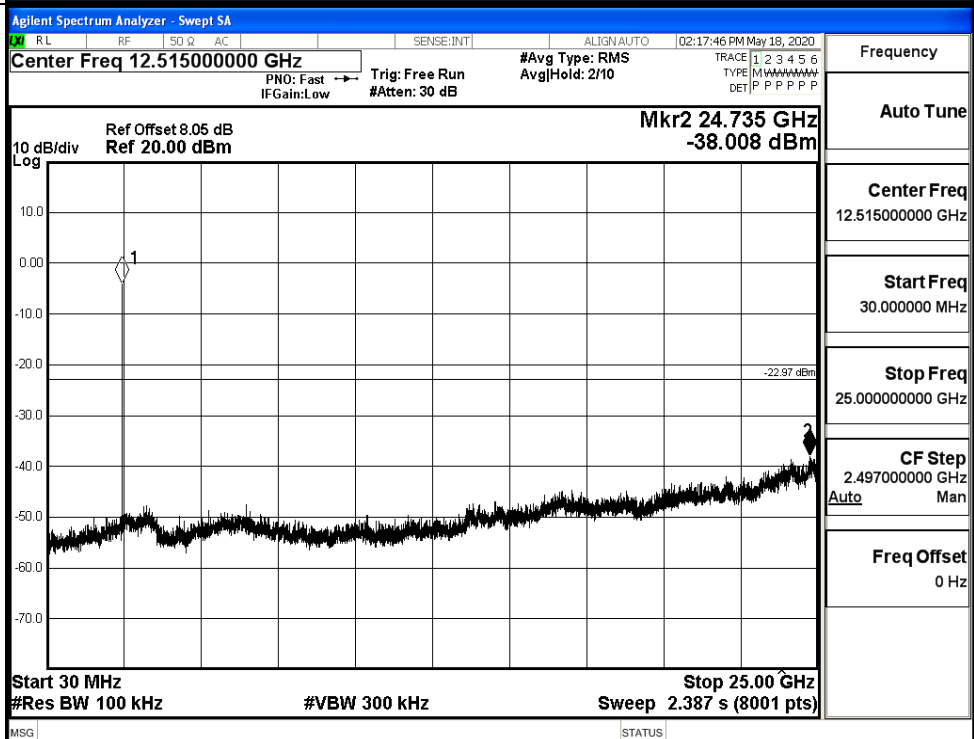


## 8DPSK\_HCH\_Graphs

Pref



Puw

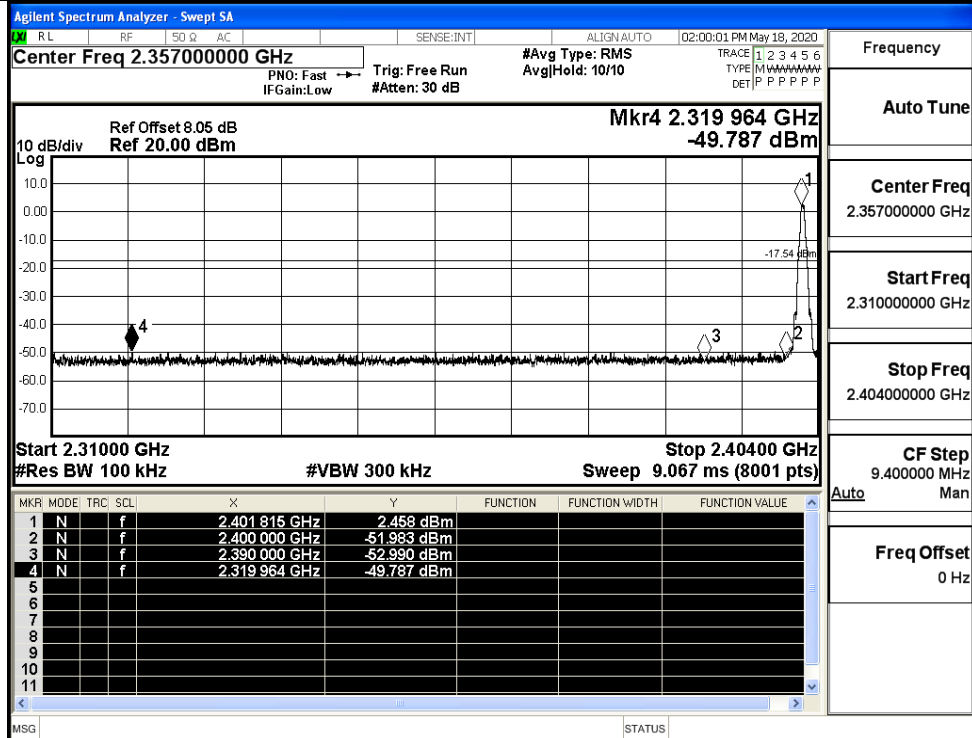


## A.7 Band-edge for RF Conducted Emissions

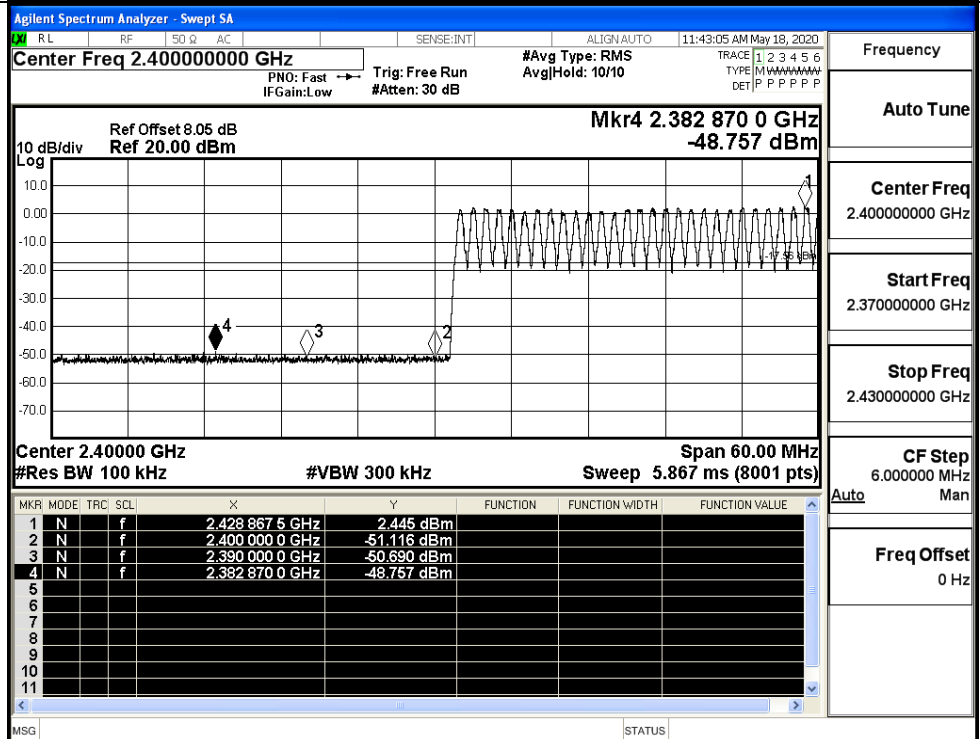
| Mode          | Channel | Carrier Frequency [MHz] | Carrier Power [dBm] | Frequency Hopping | Max Spurious Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|-------------------------|---------------------|-------------------|--------------------------|-------------|---------|
| GFSK          | LCH     | 2402                    | 2.458               | Off               | -49.787                  | -17.54      | PASS    |
|               |         |                         | 2.445               | On                | -48.757                  | -17.56      | PASS    |
|               | HCH     | 2480                    | 0.418               | Off               | -48.754                  | -19.58      | PASS    |
|               |         |                         | 2.657               | On                | -48.606                  | -17.34      | PASS    |
| $\pi/4$ DQPSK | LCH     | 2402                    | -0.671              | Off               | -49.512                  | -20.67      | PASS    |
|               |         |                         | 2.374               | On                | -48.861                  | -17.63      | PASS    |
|               | HCH     | 2480                    | -2.748              | Off               | -48.734                  | -22.75      | PASS    |
|               |         |                         | 2.530               | On                | -48.626                  | -17.47      | PASS    |
| 8DPSK         | LCH     | 2402                    | -0.598              | Off               | -49.442                  | -20.6       | PASS    |
|               |         |                         | 1.738               | On                | -49.151                  | -18.26      | PASS    |
|               | HCH     | 2480                    | -2.786              | Off               | -49.010                  | -22.79      | PASS    |
|               |         |                         | 1.940               | On                | -48.670                  | -18.06      | PASS    |

## Test Graphs

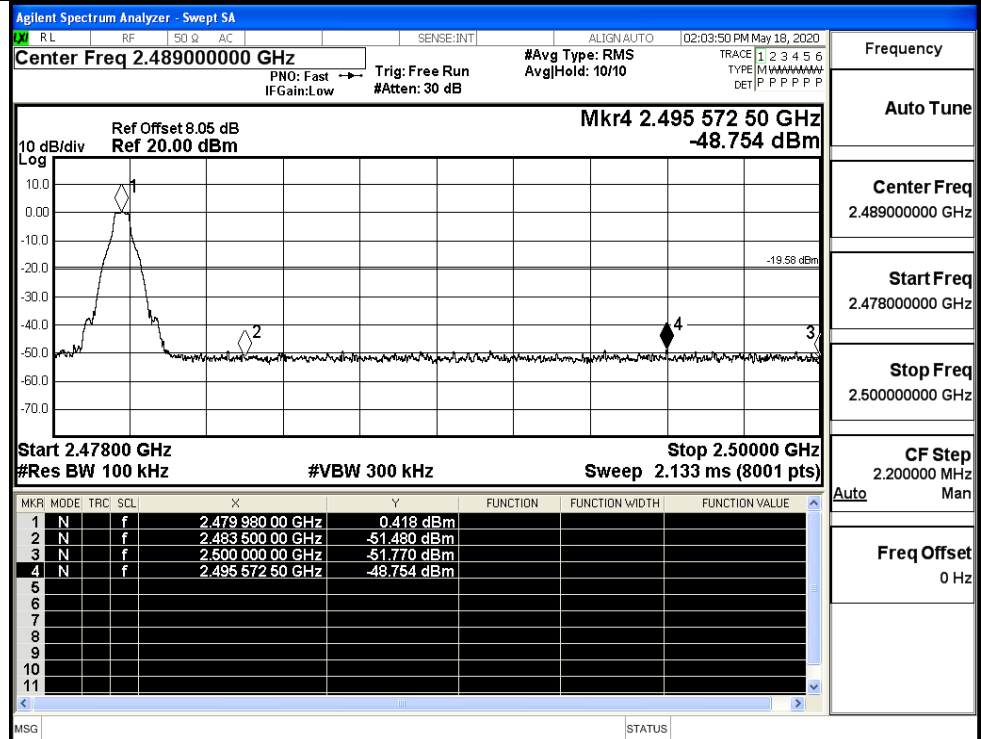
GFSK/LCH/No Hop



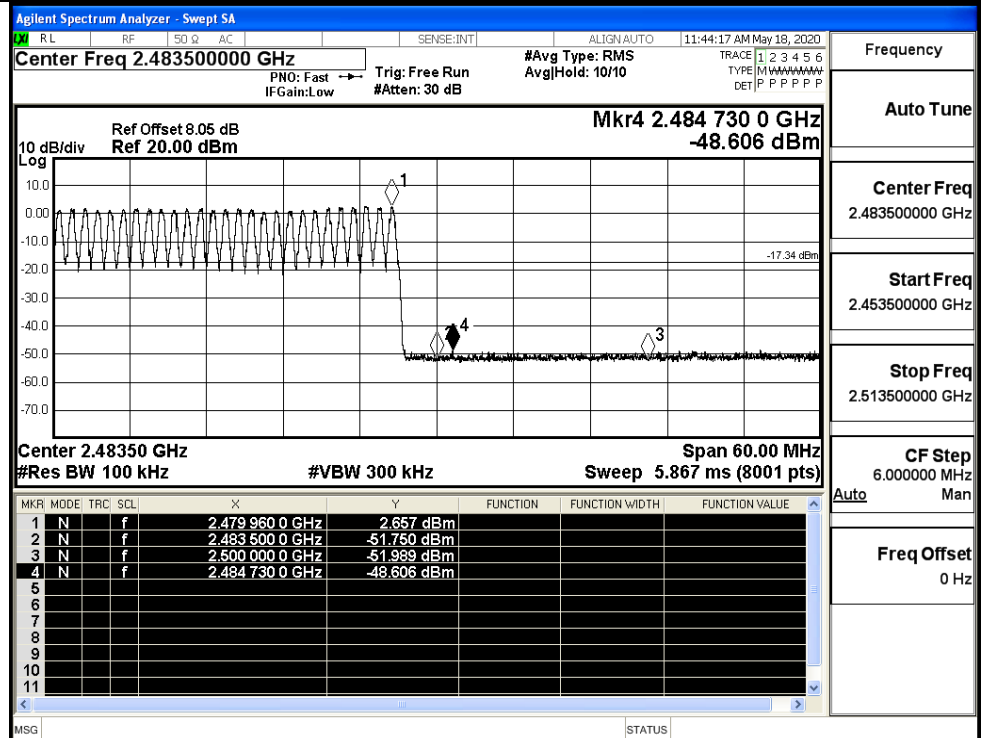
GFSK/LCH/Hop



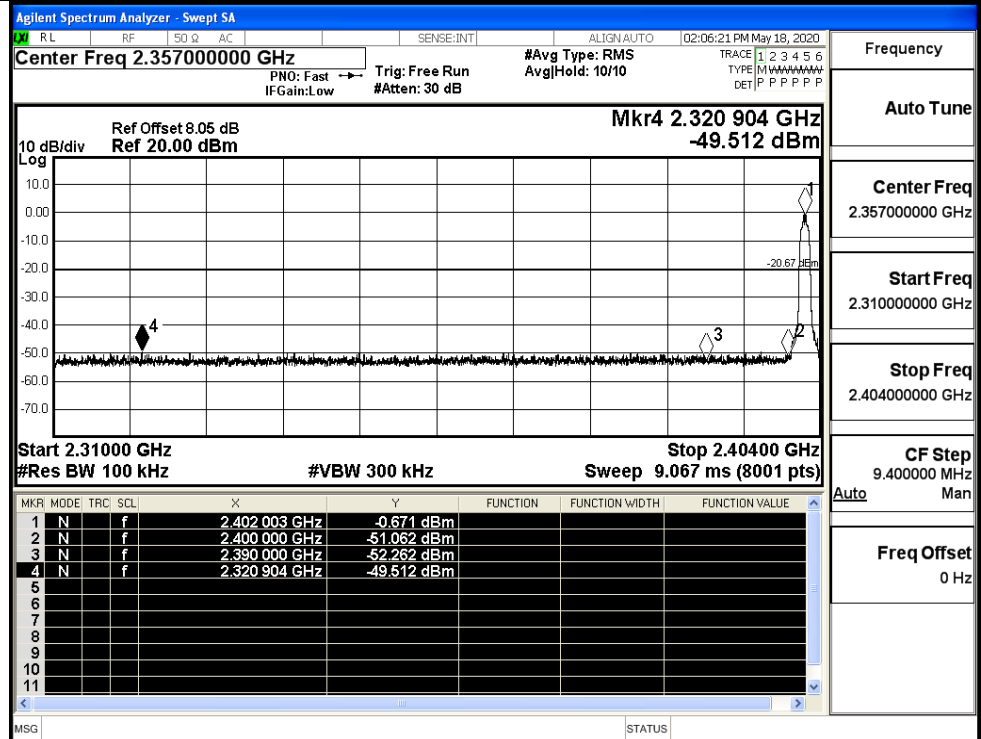
GFSK/HCH/No Hop



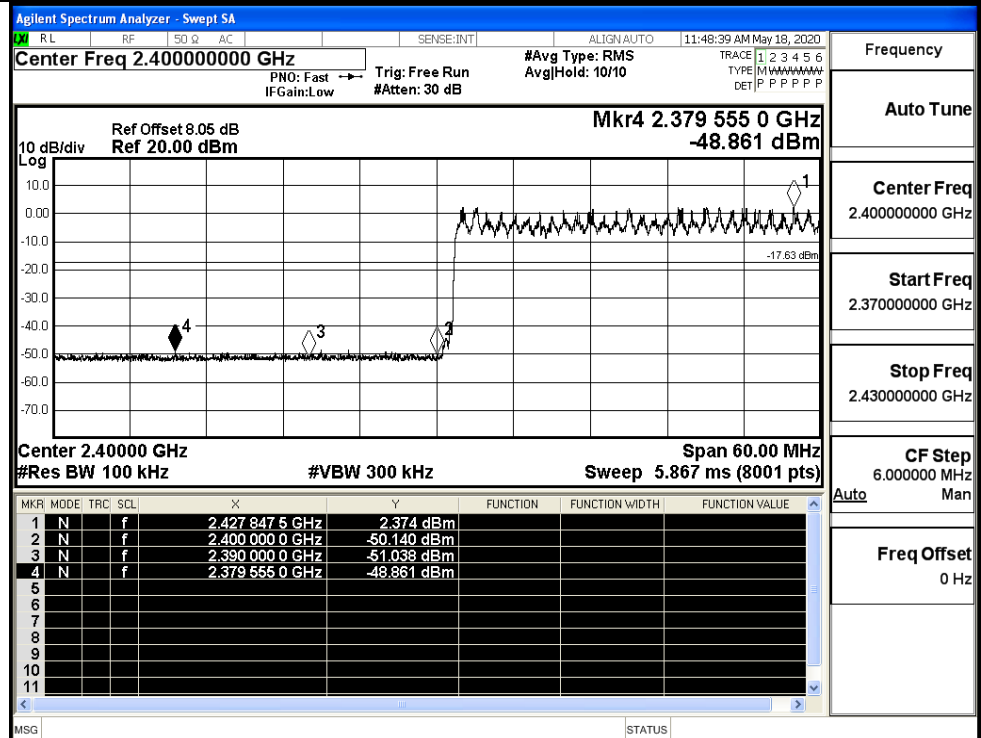
GFSK/HCH/Hop



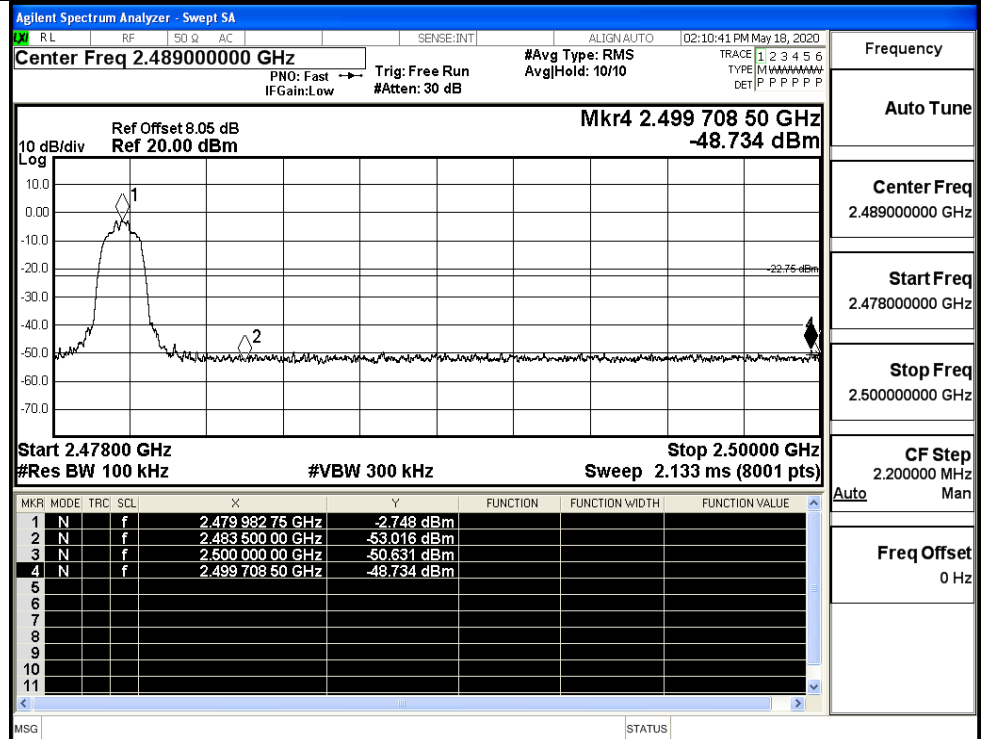
$\pi/4$ DQPSK/LCH/No  
Hop



$\pi/4$ 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

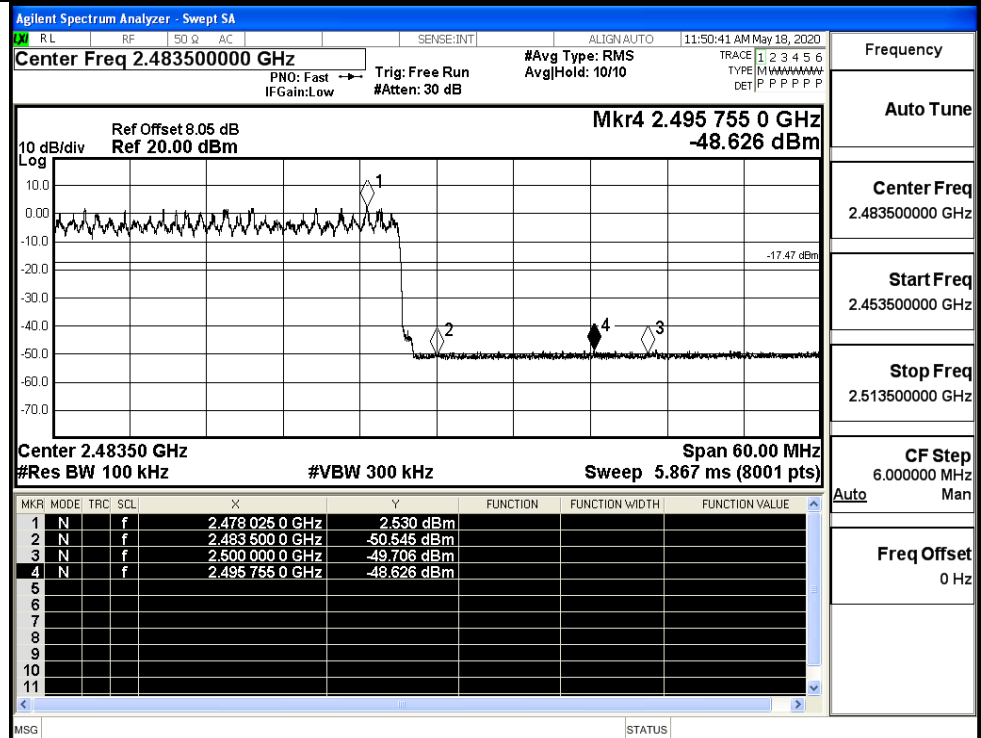
2.200000 MHz

Auto

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

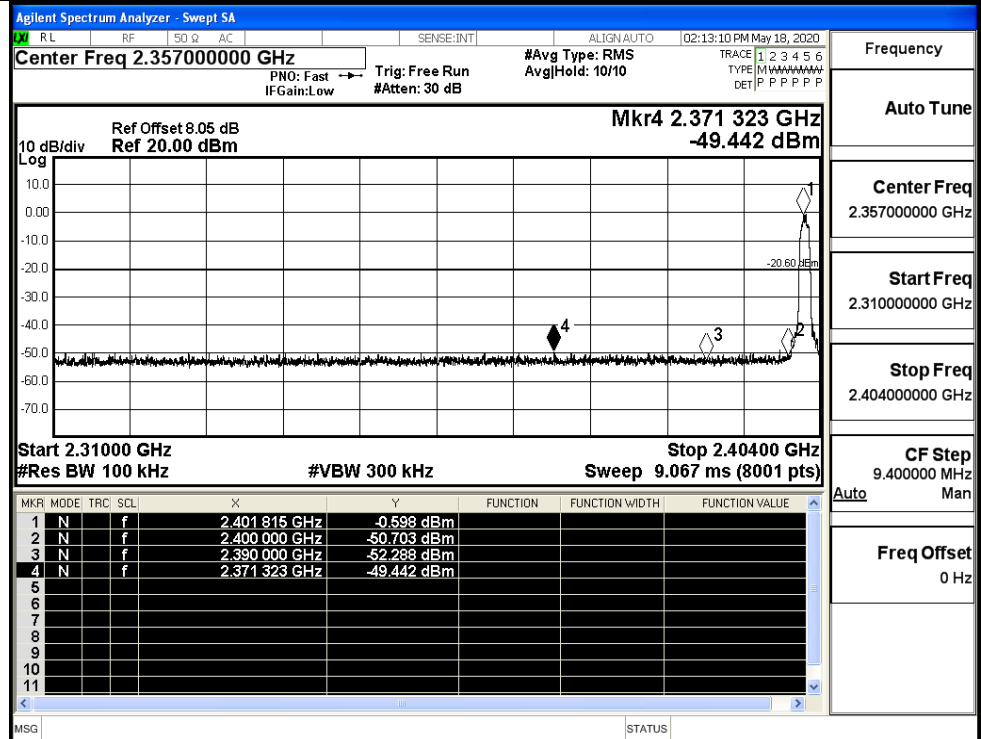
6.000000 MHz

Auto

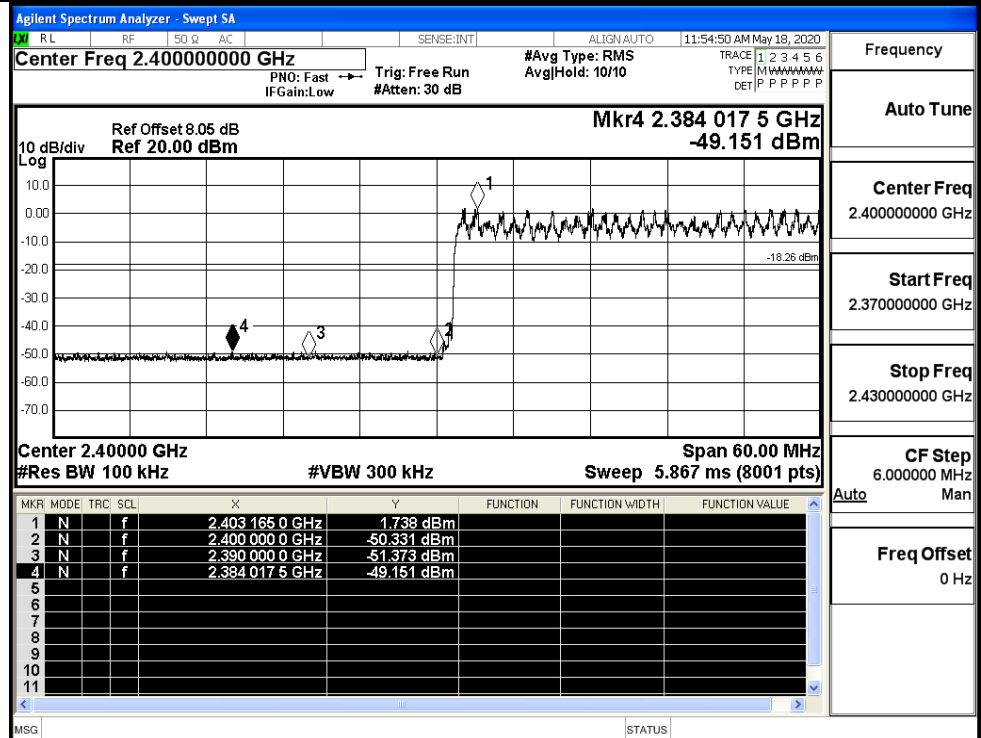
Freq Offset

0 Hz

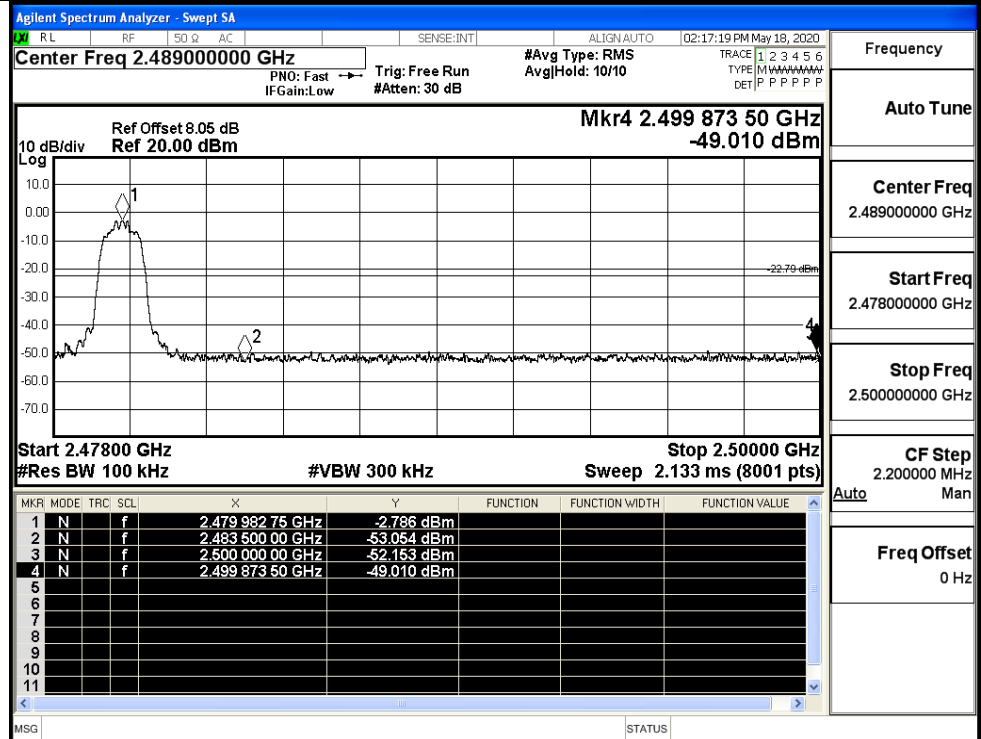
8DPSK/LCH/No Hop



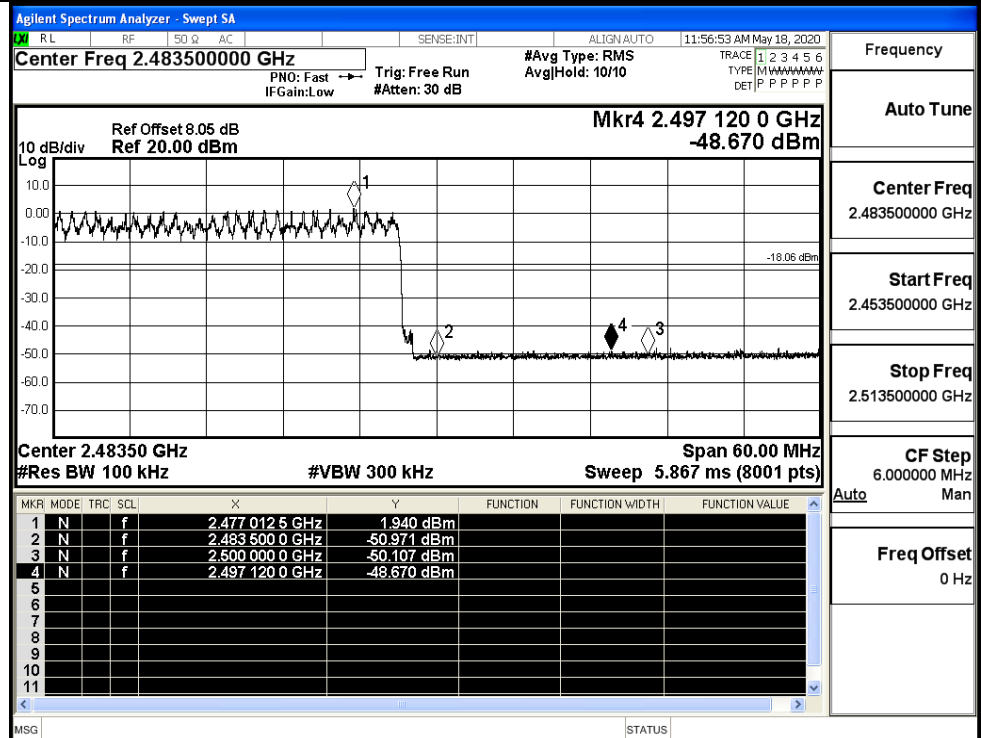
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



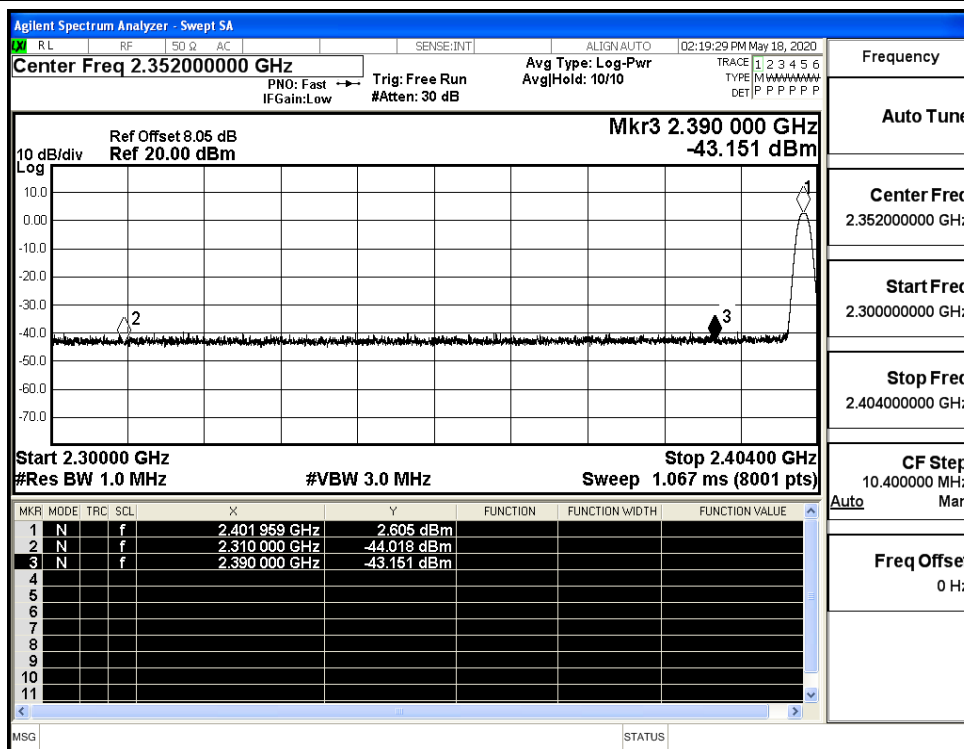
8DPSK/HCH/Hop



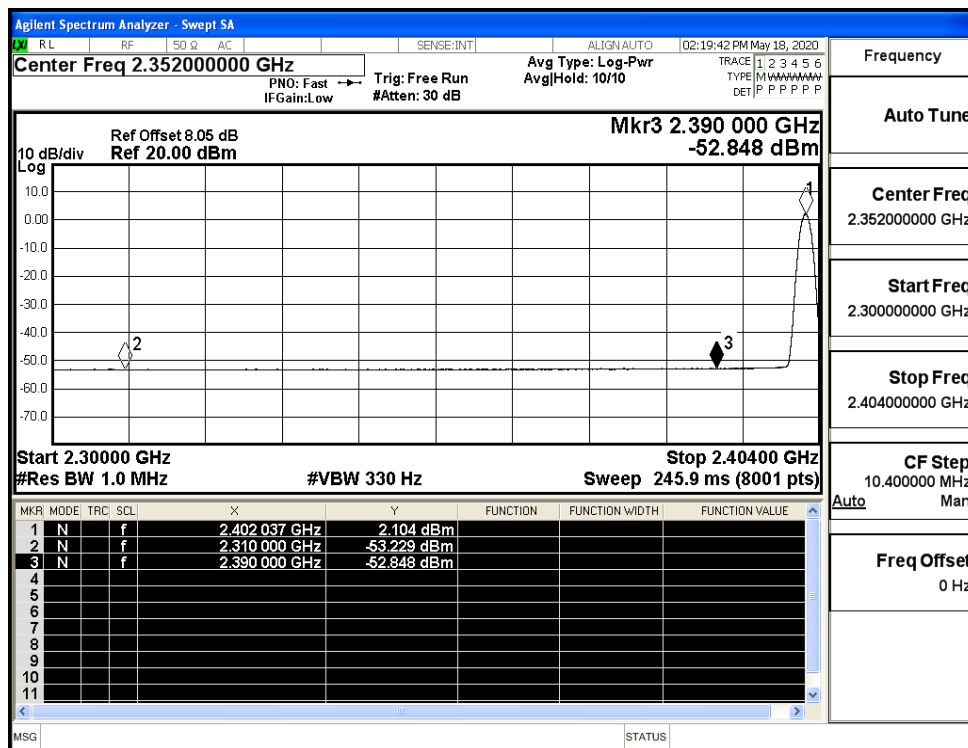
## A.8 Restrict-band band-edge measurements

| Test Mode     | Hopping | Freq.  | Power [dBm] | Gain | Ground Factor | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|---------------|---------|--------|-------------|------|---------------|------------|----------|----------------|---------|
| GFSK          | Off     | 2310.0 | -44.02      | 2.0  | 0             | 53.24      | PEAK     | 74             | PASS    |
|               | Off     | 2310.0 | -53.23      | 2.0  | 0             | 44.03      | AV       | 54             | PASS    |
|               | Off     | 2390.0 | -43.15      | 2.0  | 0             | 54.11      | PEAK     | 74             | PASS    |
|               | Off     | 2390.0 | -52.85      | 2.0  | 0             | 44.41      | AV       | 54             | PASS    |
|               | Off     | 2483.5 | -43.01      | 2.0  | 0             | 54.25      | PEAK     | 74             | PASS    |
|               | Off     | 2483.5 | -52.30      | 2.0  | 0             | 44.96      | AV       | 54             | PASS    |
|               | Off     | 2500.0 | -41.86      | 2.0  | 0             | 55.40      | PEAK     | 74             | PASS    |
|               | Off     | 2500.0 | -52.18      | 2.0  | 0             | 45.07      | AV       | 54             | PASS    |
| $\pi/4$ DQPSK | Off     | 2310.0 | -43.93      | 2.0  | 0             | 53.33      | PEAK     | 74             | PASS    |
|               | Off     | 2310.0 | -53.24      | 2.0  | 0             | 44.02      | AV       | 54             | PASS    |
|               | Off     | 2390.0 | -42.74      | 2.0  | 0             | 54.52      | PEAK     | 74             | PASS    |
|               | Off     | 2390.0 | -52.92      | 2.0  | 0             | 44.34      | AV       | 54             | PASS    |
|               | Off     | 2483.5 | -40.60      | 2.0  | 0             | 56.66      | PEAK     | 74             | PASS    |
|               | Off     | 2483.5 | -52.41      | 2.0  | 0             | 44.85      | AV       | 54             | PASS    |
|               | Off     | 2500.0 | -42.43      | 2.0  | 0             | 54.83      | PEAK     | 74             | PASS    |
|               | Off     | 2500.0 | -52.31      | 2.0  | 0             | 44.95      | AV       | 54             | PASS    |
| 8DPSK         | Off     | 2310.0 | -42.93      | 2.0  | 0             | 54.33      | PEAK     | 74             | PASS    |
|               | Off     | 2310.0 | -53.26      | 2.0  | 0             | 44.00      | AV       | 54             | PASS    |
|               | Off     | 2390.0 | -42.01      | 2.0  | 0             | 55.25      | PEAK     | 74             | PASS    |
|               | Off     | 2390.0 | -52.86      | 2.0  | 0             | 44.39      | AV       | 54             | PASS    |
|               | Off     | 2483.5 | -42.34      | 2.0  | 0             | 54.92      | PEAK     | 74             | PASS    |
|               | Off     | 2483.5 | -52.45      | 2.0  | 0             | 44.81      | AV       | 54             | PASS    |
|               | Off     | 2500.0 | -41.54      | 2.0  | 0             | 55.72      | PEAK     | 74             | PASS    |
|               | Off     | 2500.0 | -52.30      | 2.0  | 0             | 44.96      | AV       | 54             | PASS    |

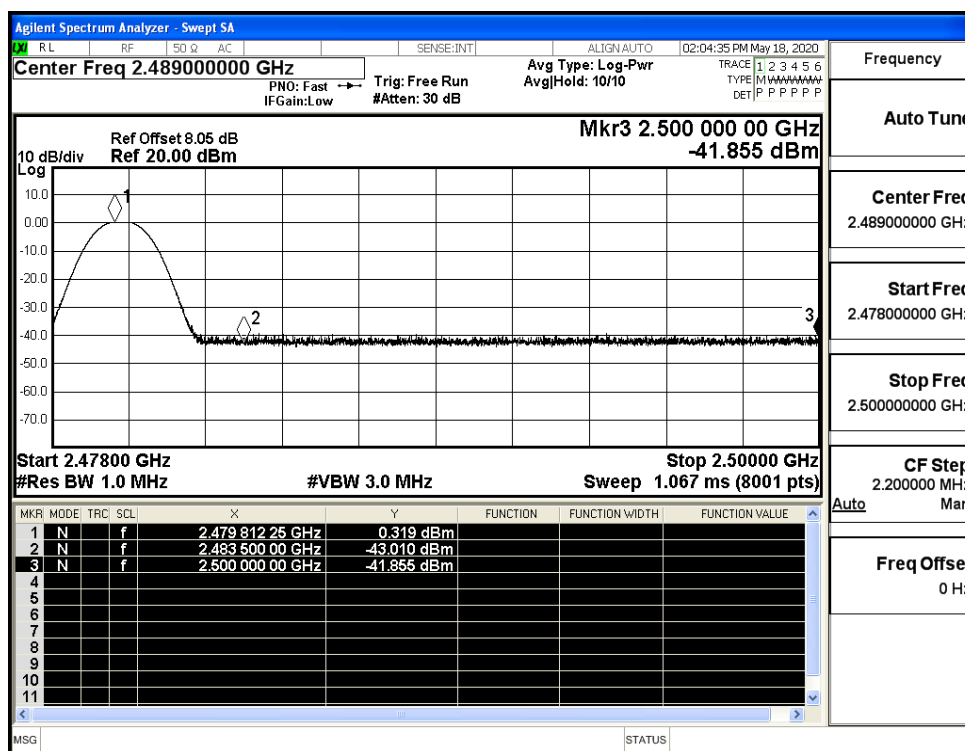
## Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (Low Channel)



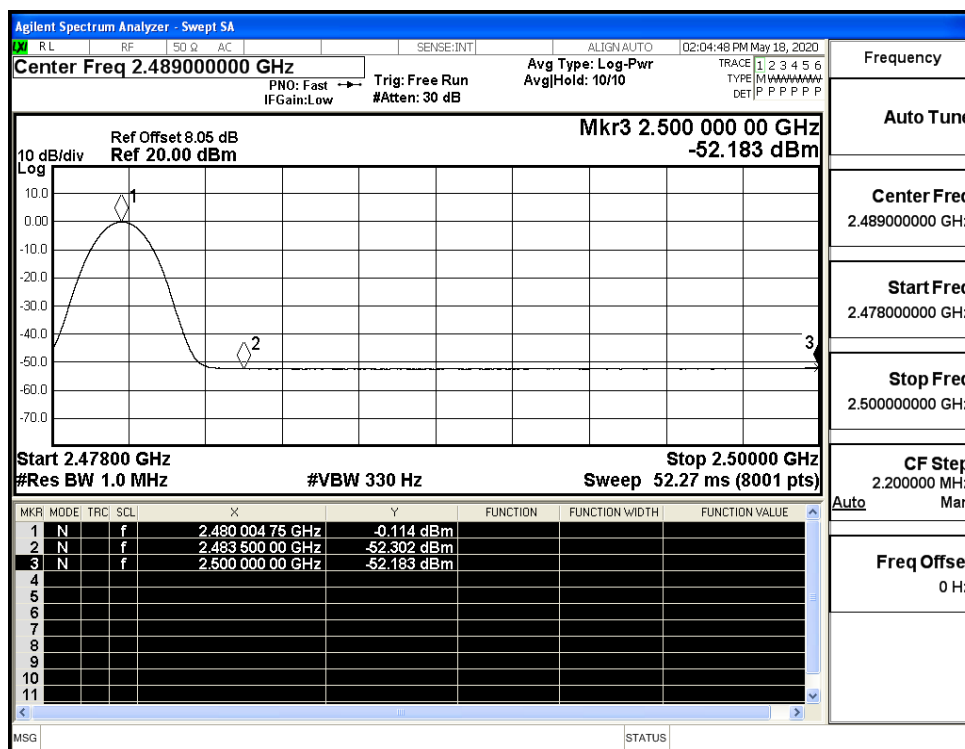
## Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (Low Channel)

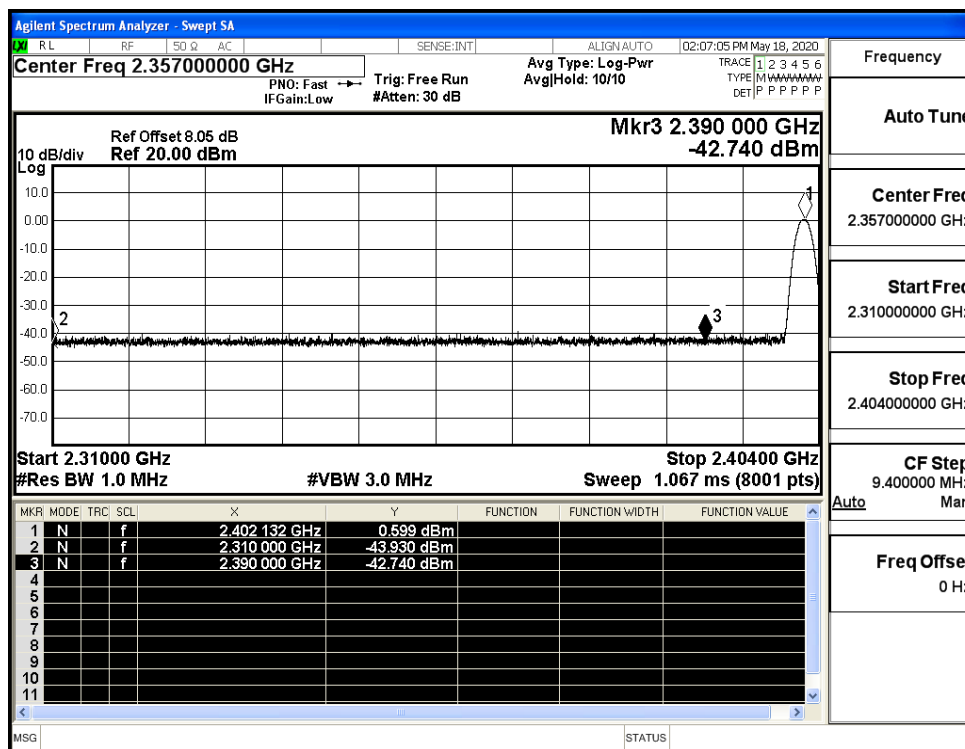
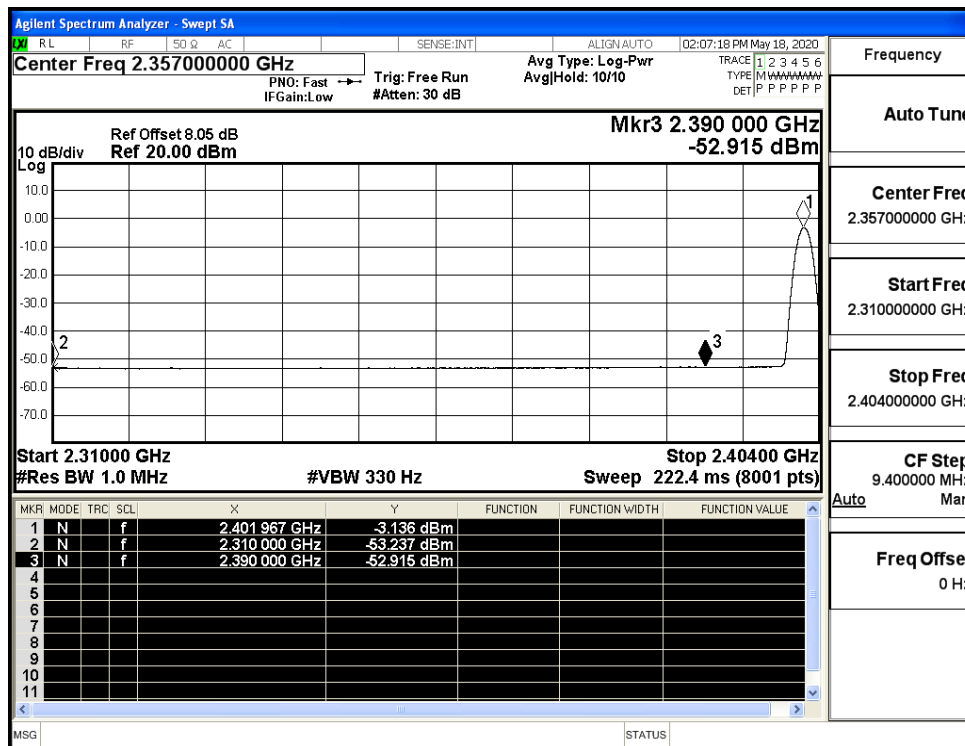


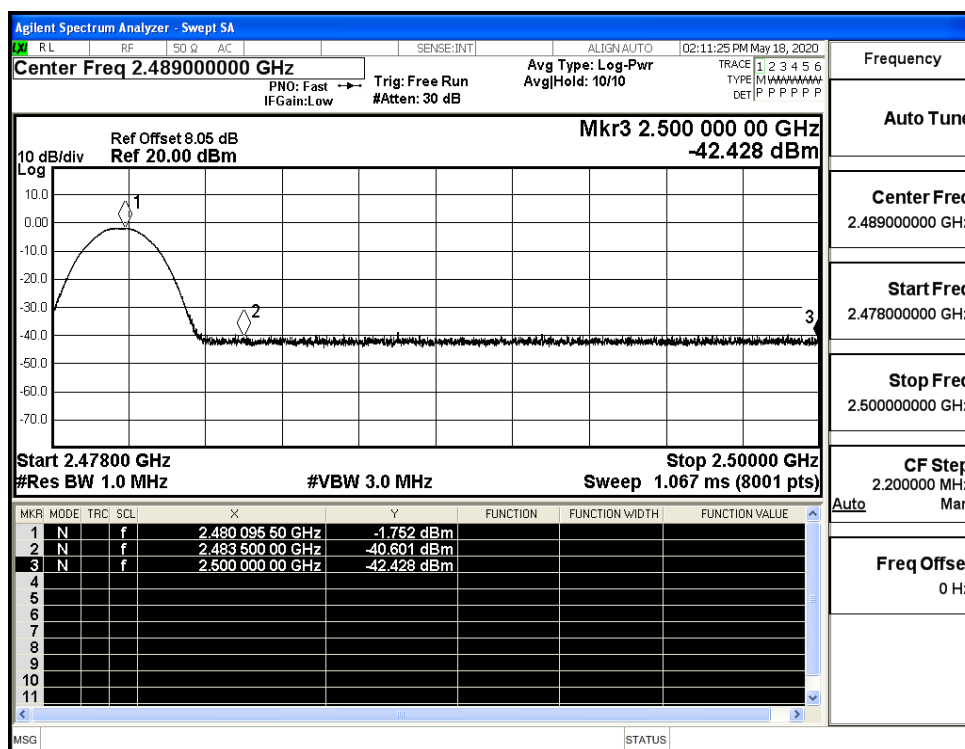
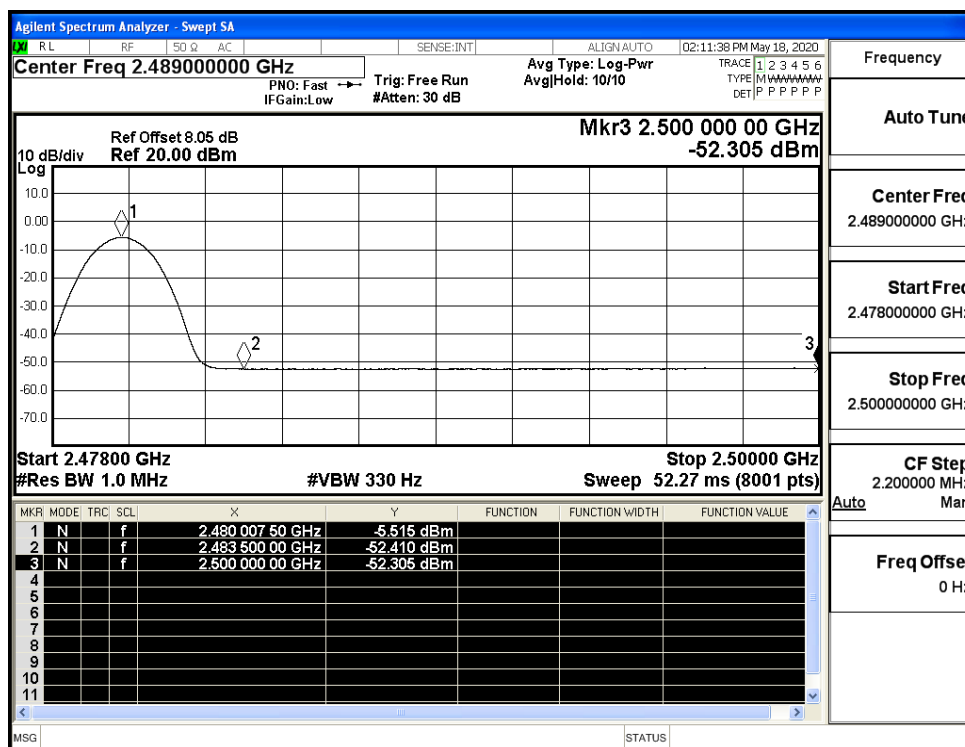
## Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (High Channel)



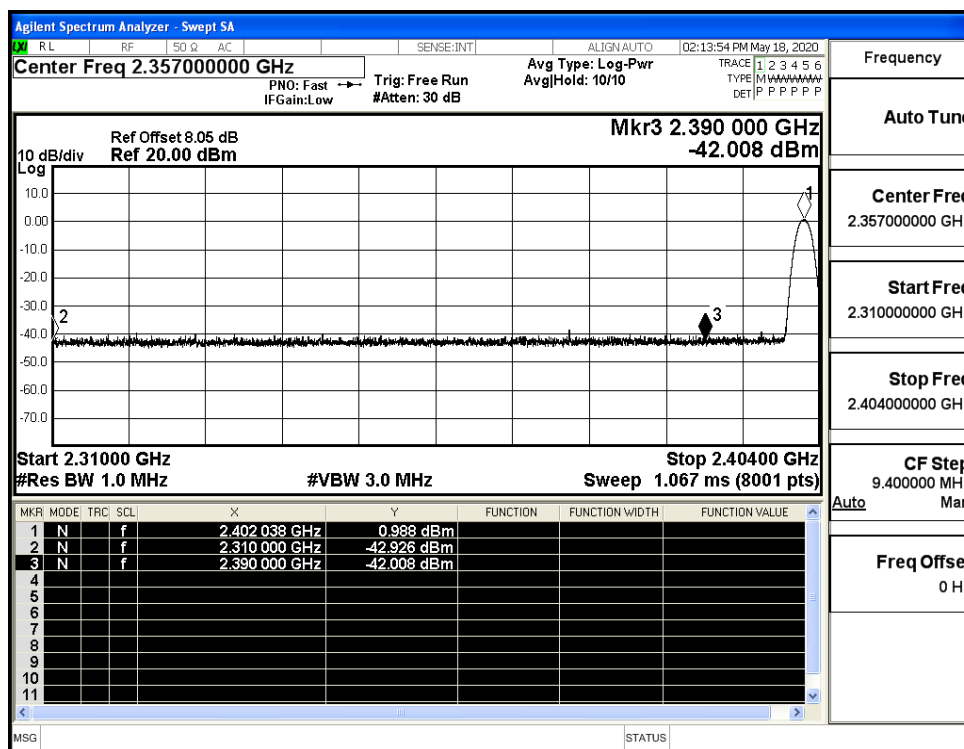
## Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (High Channel)



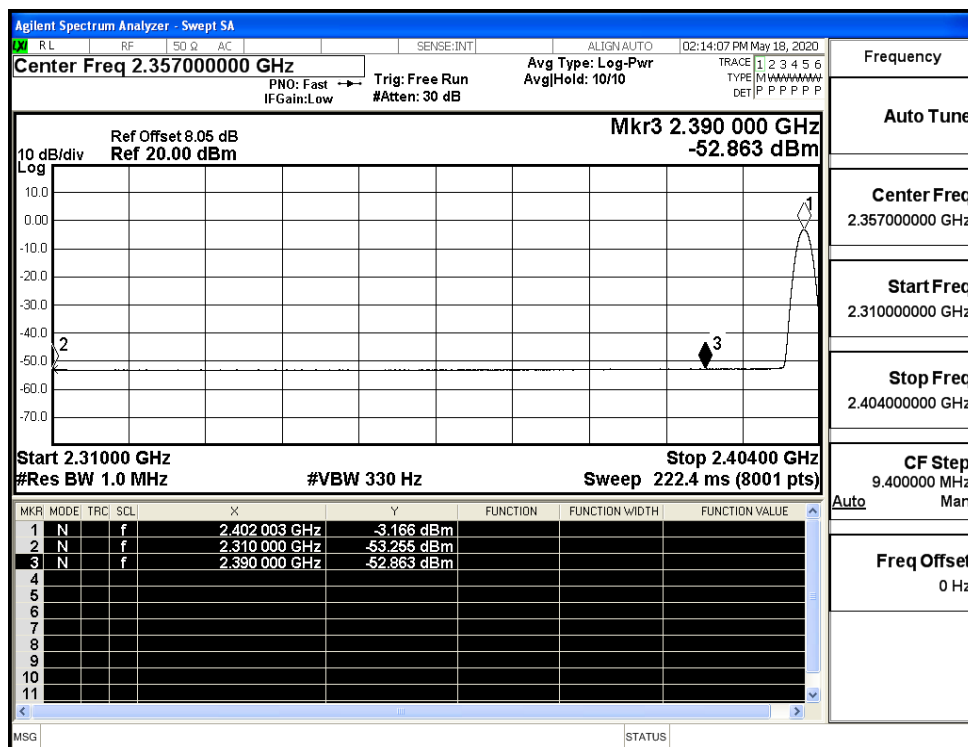
Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_PEAK (Low Channel)Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_Average (Low Channel)

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

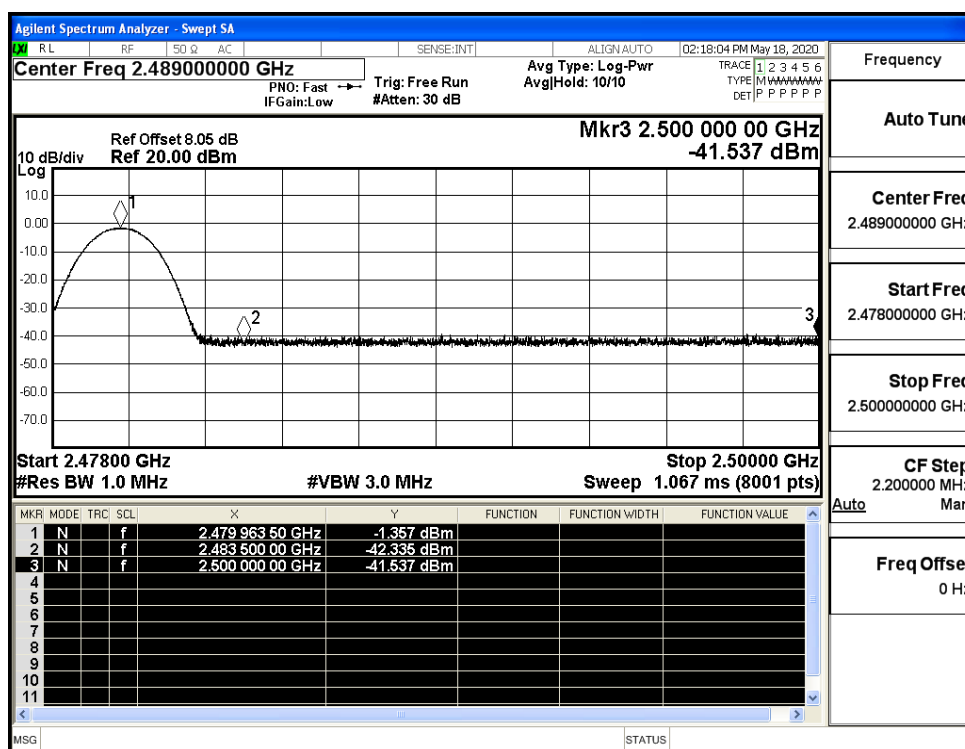
## Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_PEAK (Low Channel)



## 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)

