

## Appendix B

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

Product Name: Wireless Bluetooth Headset

Trade Mark: N/A

Test Model: X9

#### Environmental Conditions

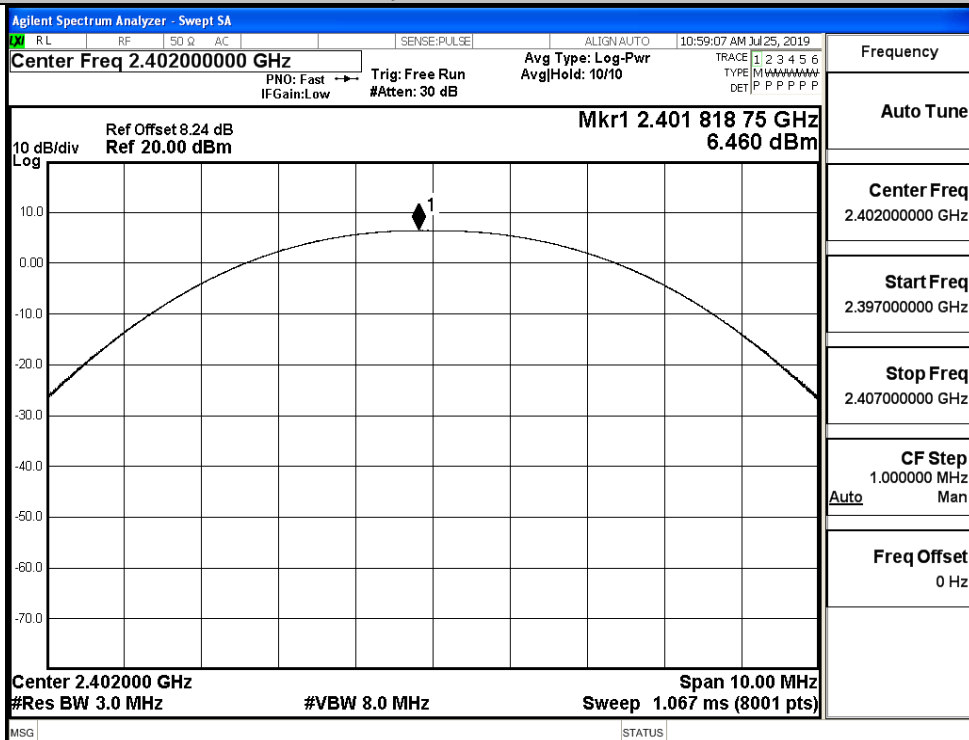
|                    |             |
|--------------------|-------------|
| Temperature:       | 25 .1° C    |
| Relative Humidity: | 53.6%       |
| ATM Pressure:      | 100.0 kPa   |
| Test Engineer:     | JK ZHOU     |
| Supervised by:     | Wang.Chuang |

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

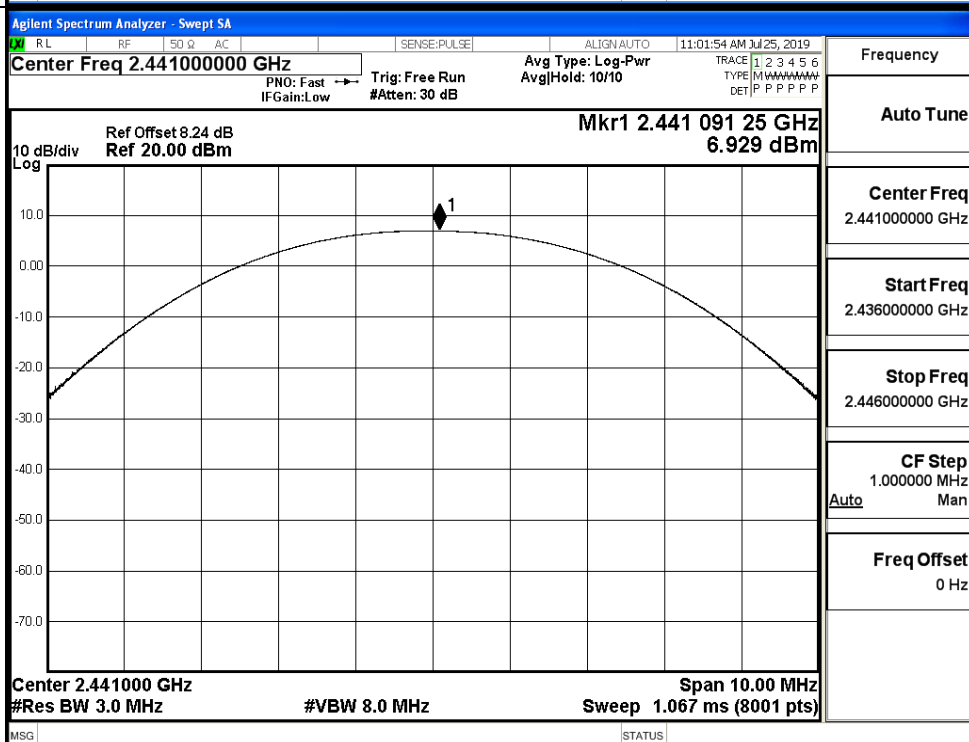
| Mode          | Channel. | Maximum Peak Output Power [dBm] | Limit [dBm] | Verdict |
|---------------|----------|---------------------------------|-------------|---------|
| GFSK          | LCH      | 6.460                           | 21          | PASS    |
|               | MCH      | 6.929                           | 21          | PASS    |
|               | HCH      | 5.989                           | 21          | PASS    |
| $\pi/4$ DQPSK | LCH      | 5.740                           | 21          | PASS    |
|               | MCH      | 6.229                           | 21          | PASS    |
|               | HCH      | 5.271                           | 21          | PASS    |
| 8DPSK         | LCH      | 5.820                           | 21          | PASS    |
|               | MCH      | 6.344                           | 21          | PASS    |
|               | HCH      | 5.396                           | 21          | PASS    |

# Test Graphs

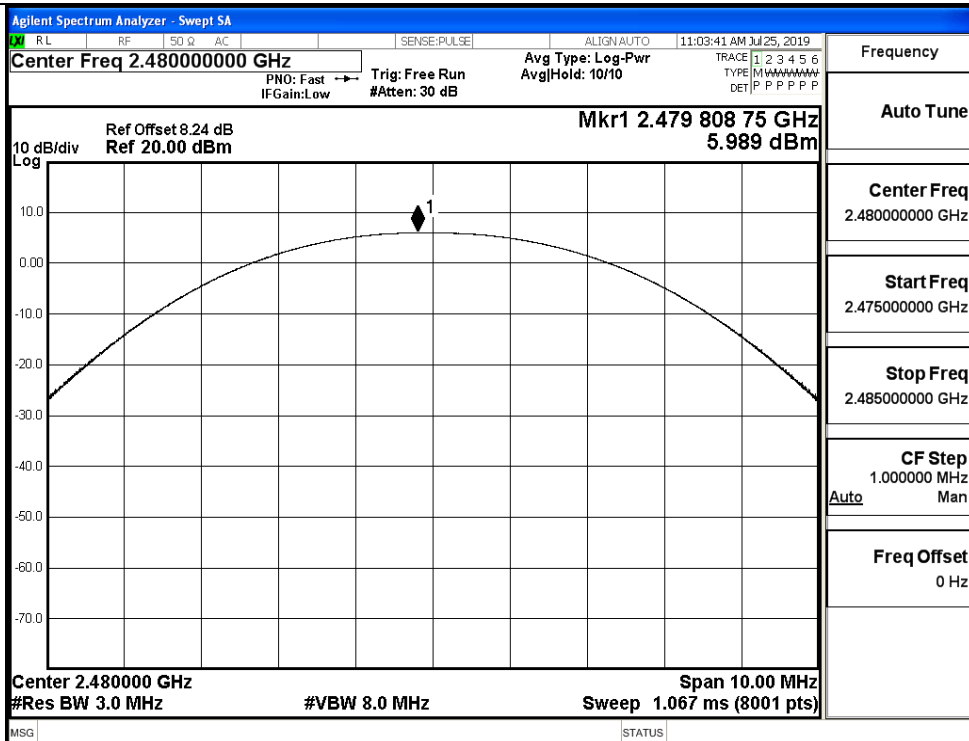
GFSK/LCH



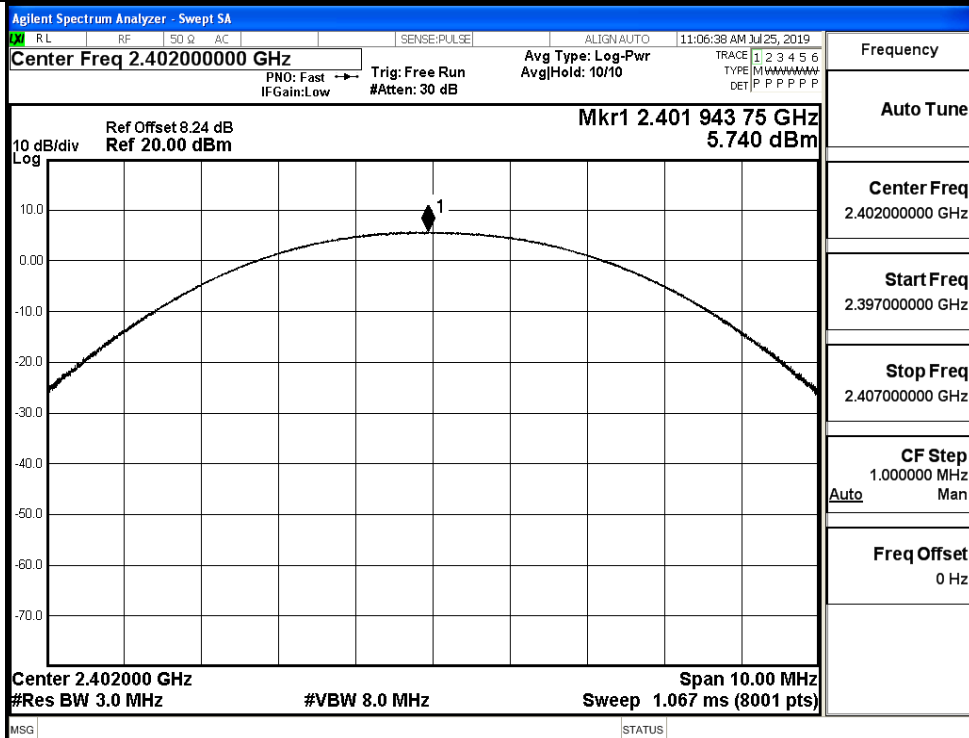
GFSK/MCH

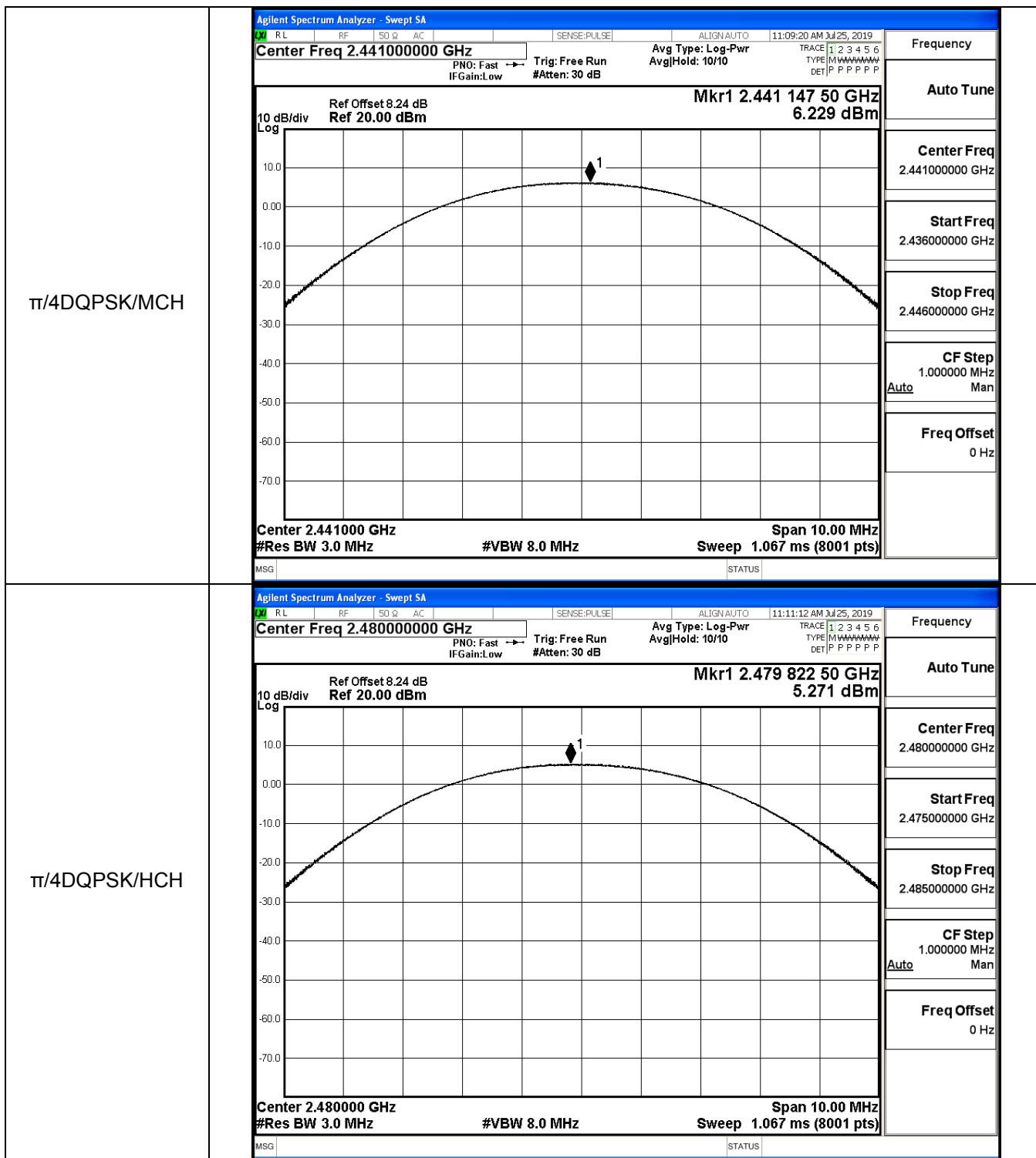


GFSK/HCH

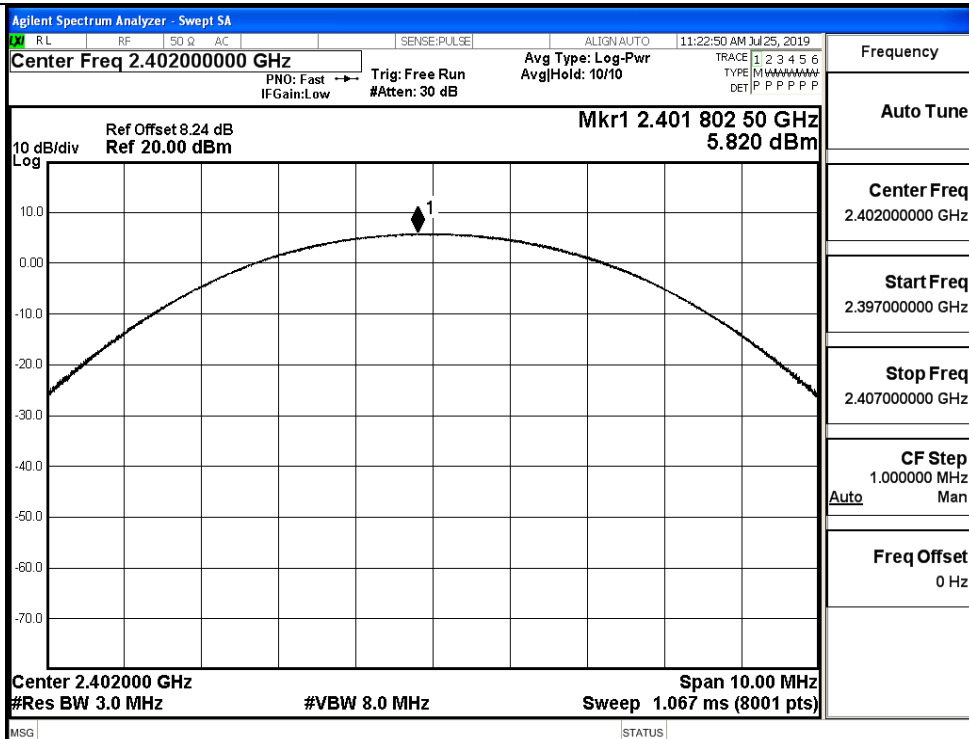


$\pi/4$ DQPSK/LCH

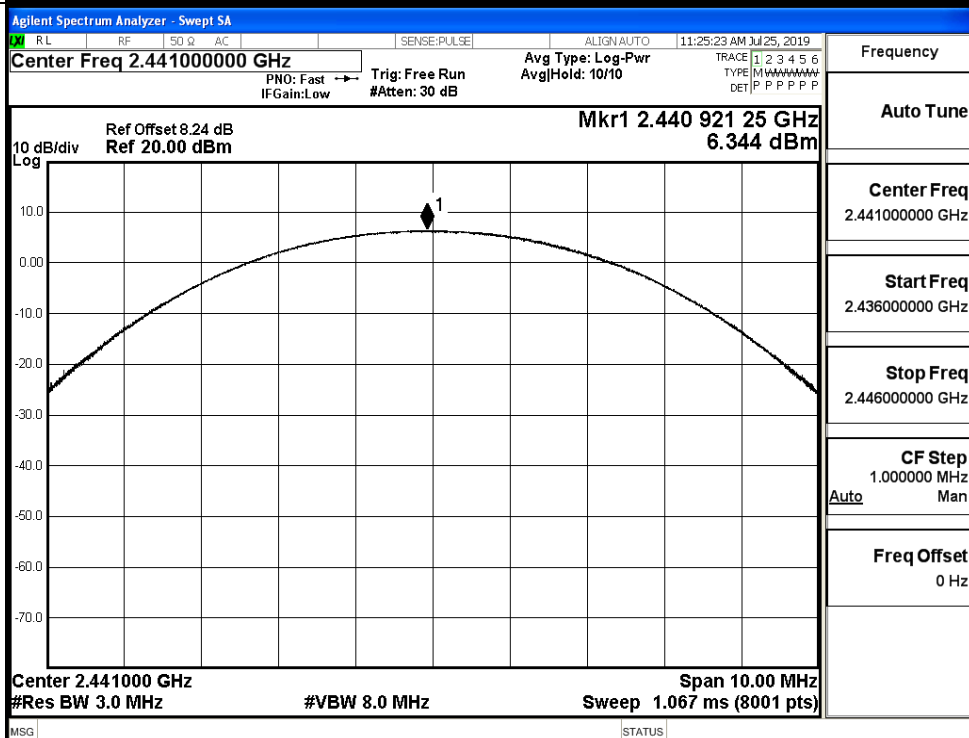




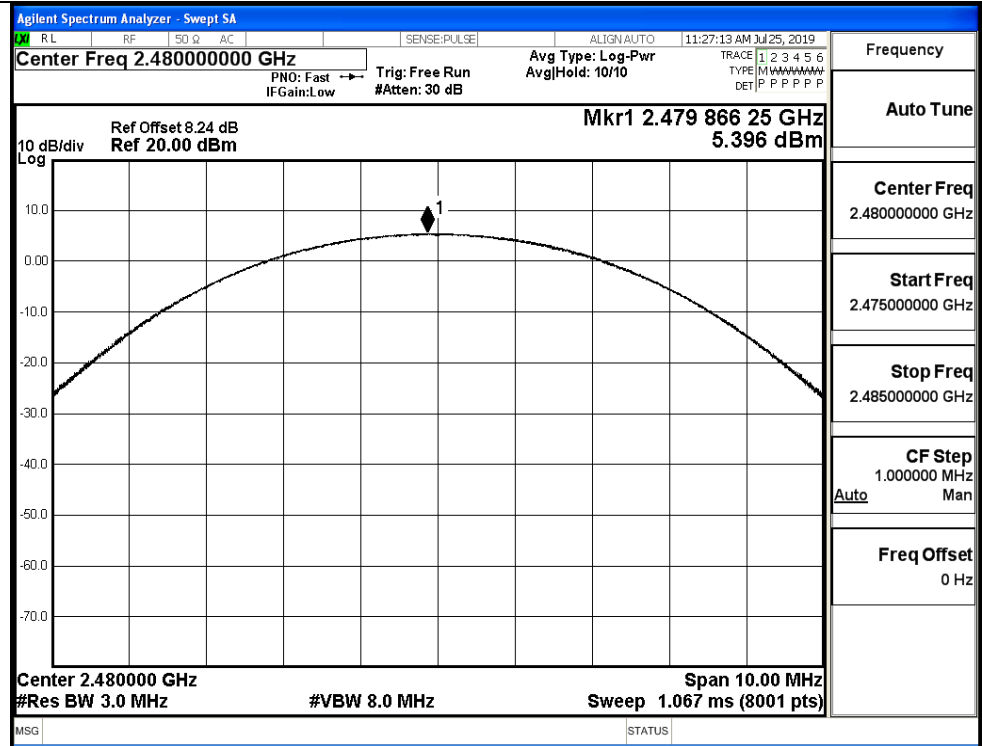
8DPSK/LCH



8DPSK/MCH



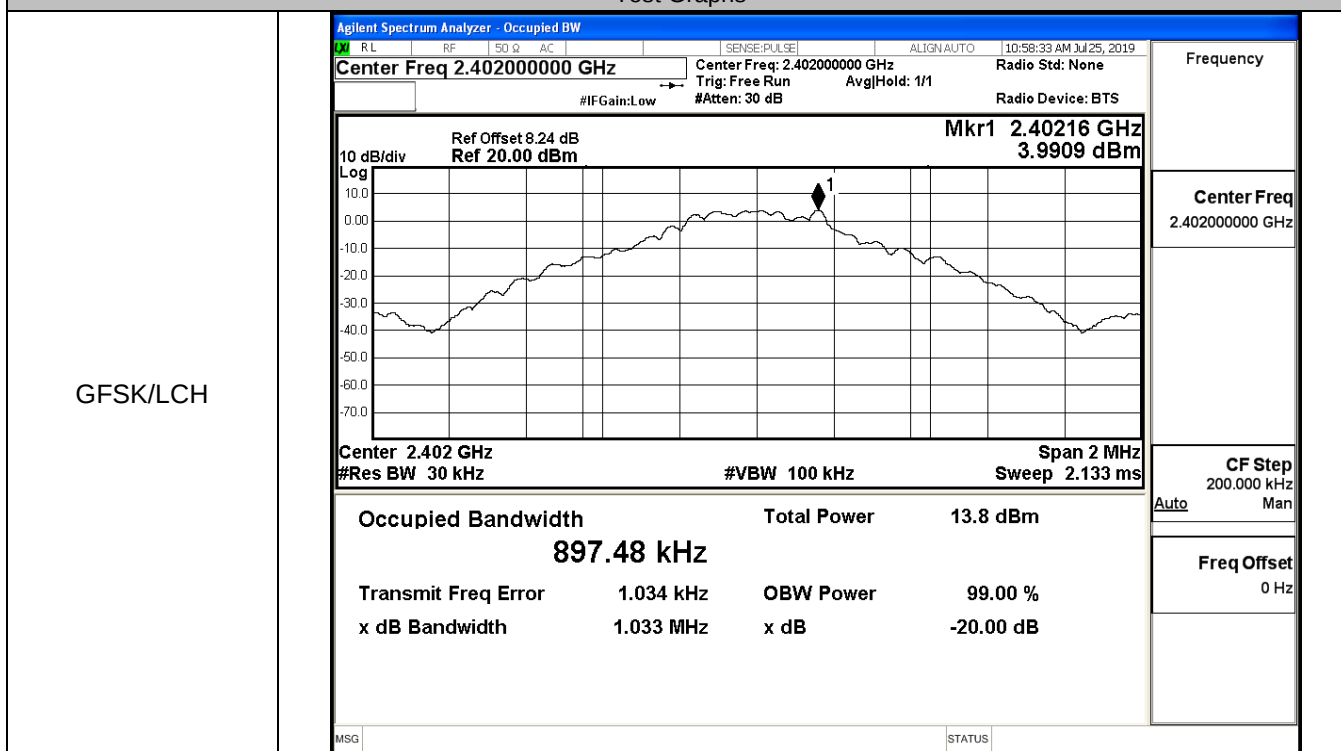
8DPSK/HCH



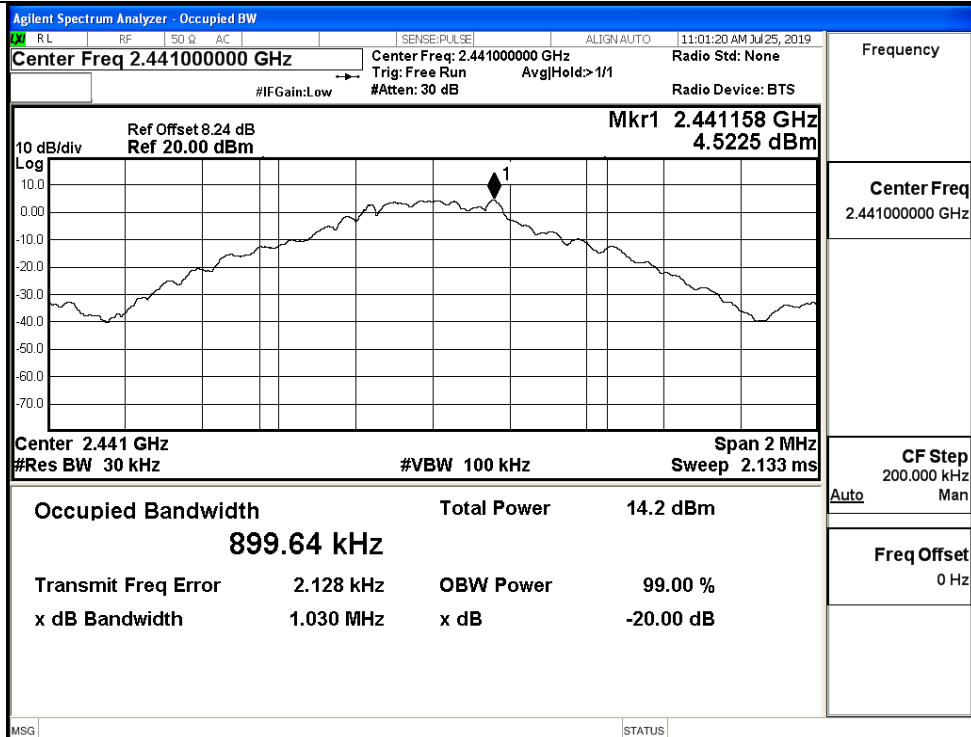
## A.2 20dB Bandwidth

| Mode          | Channel. | 20dB Bandwidth [MHz] | Limit [MHz]   | Verdict |
|---------------|----------|----------------------|---------------|---------|
| GFSK          | LCH      | 1.033                | Not Specified | PASS    |
|               | MCH      | 1.030                | Not Specified | PASS    |
|               | HCH      | 1.031                | Not Specified | PASS    |
| $\pi/4$ DQPSK | LCH      | 1.291                | Not Specified | PASS    |
|               | MCH      | 1.290                | Not Specified | PASS    |
|               | HCH      | 1.290                | Not Specified | PASS    |
| 8DPSK         | LCH      | 1.292                | Not Specified | PASS    |
|               | MCH      | 1.302                | Not Specified | PASS    |
|               | HCH      | 1.298                | Not Specified | PASS    |

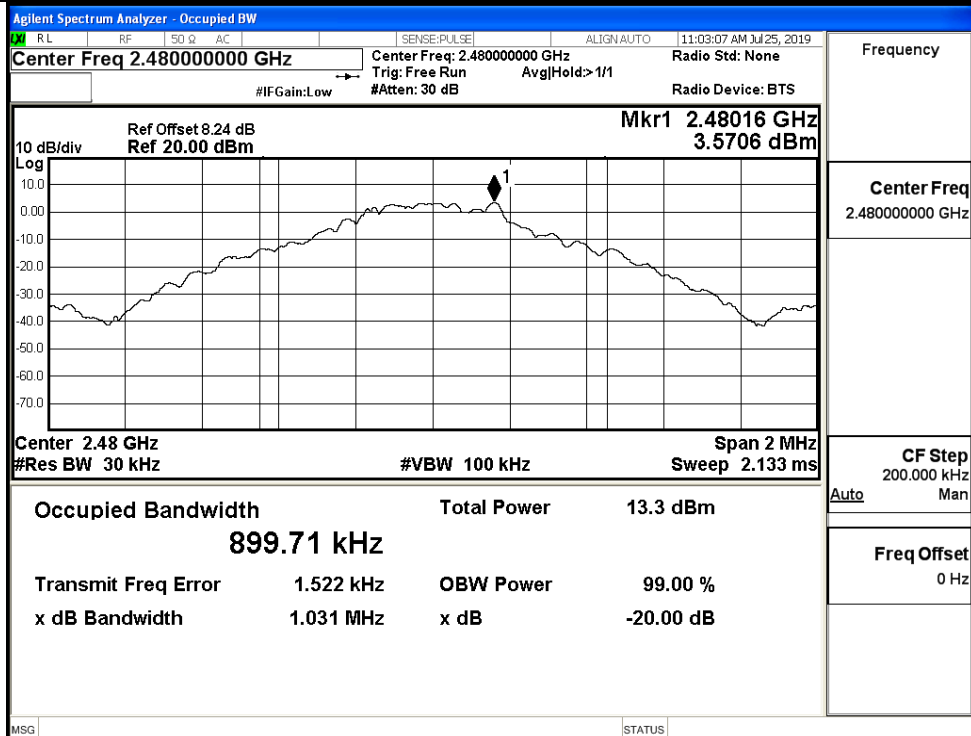
Test Graphs



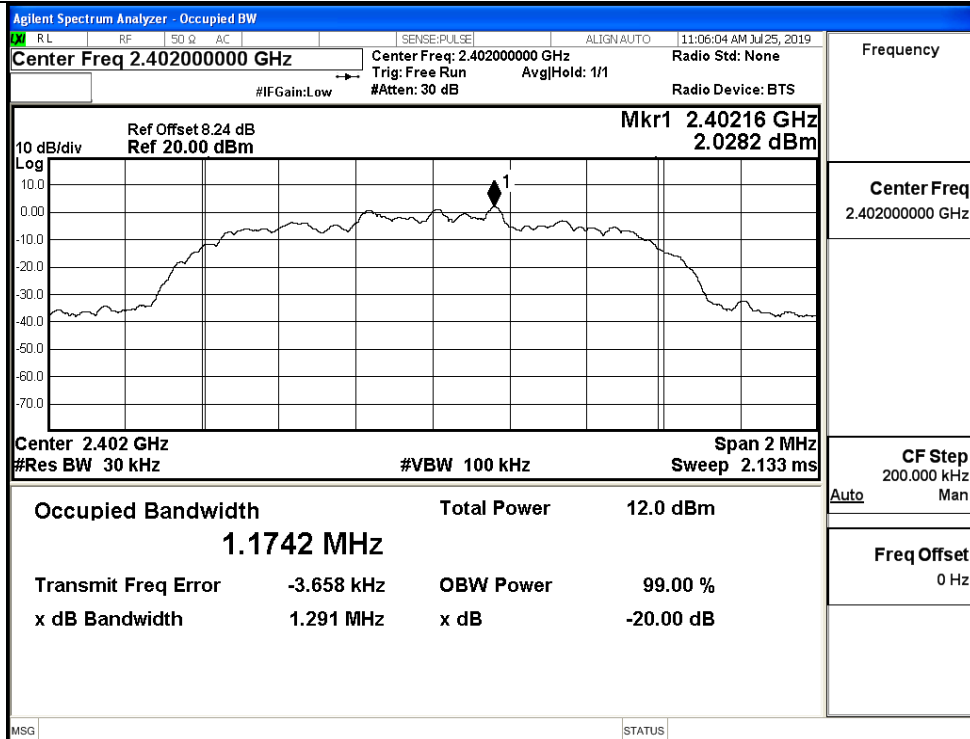
GFSK/MCH



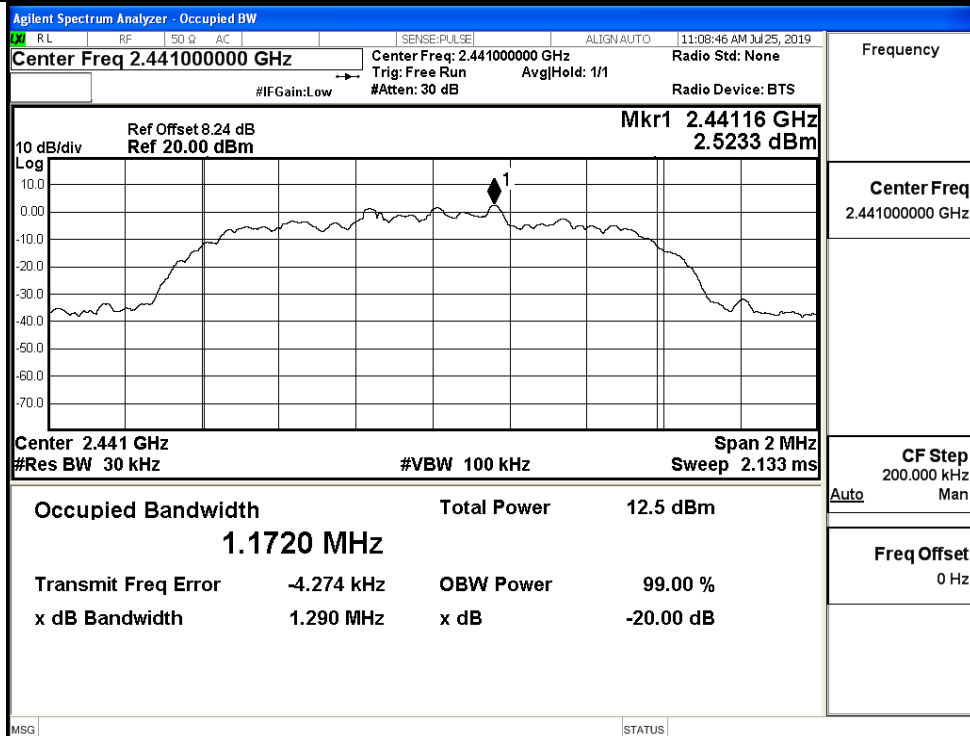
GFSK/HCH

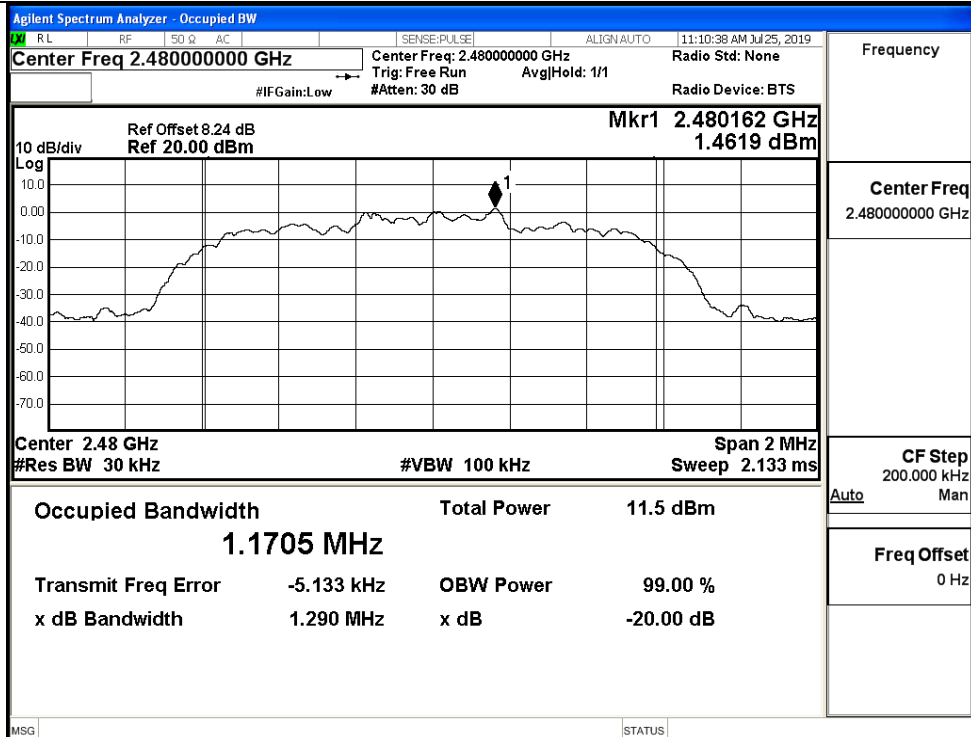


$\pi/4$ DQPSK/LCH

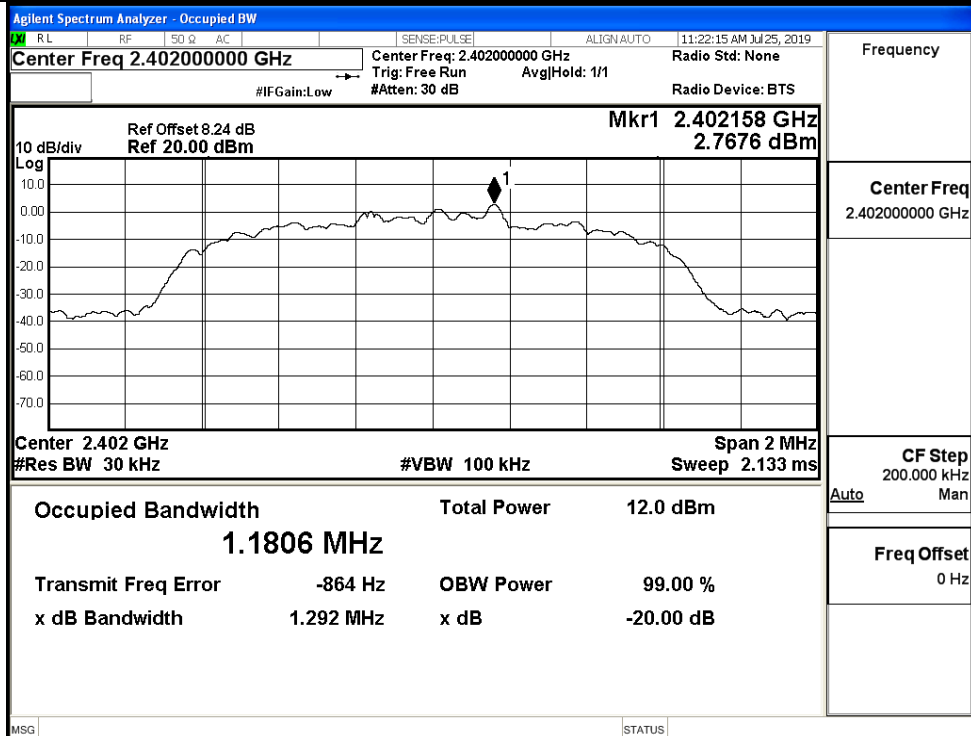


$\pi/4$ DQPSK/MCH

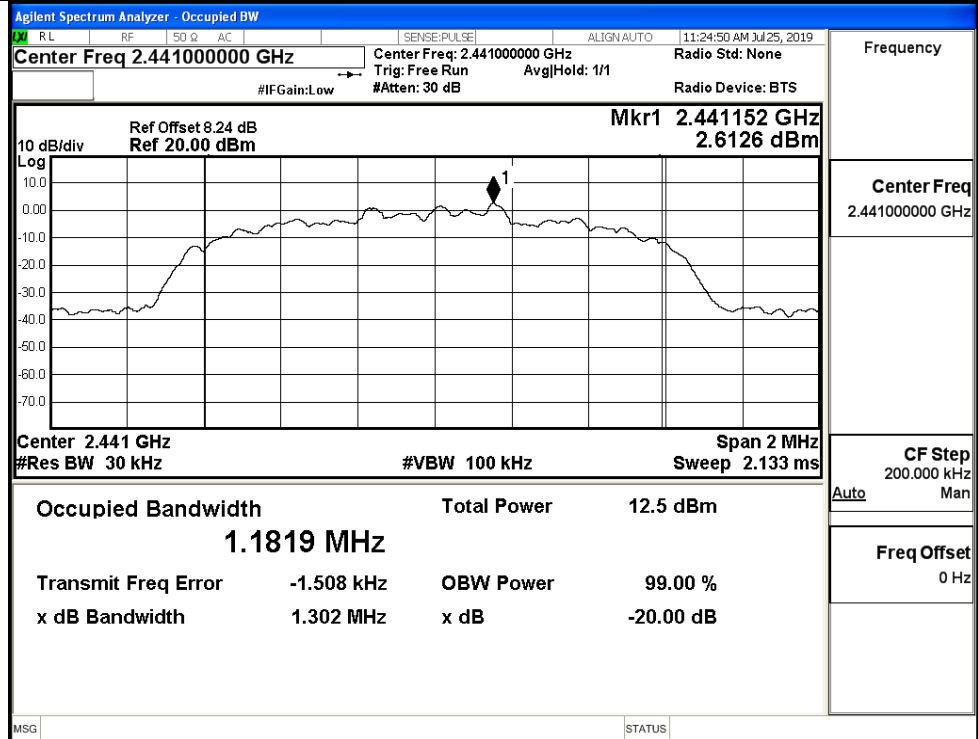


$\pi/4$ DQPSK/HCH

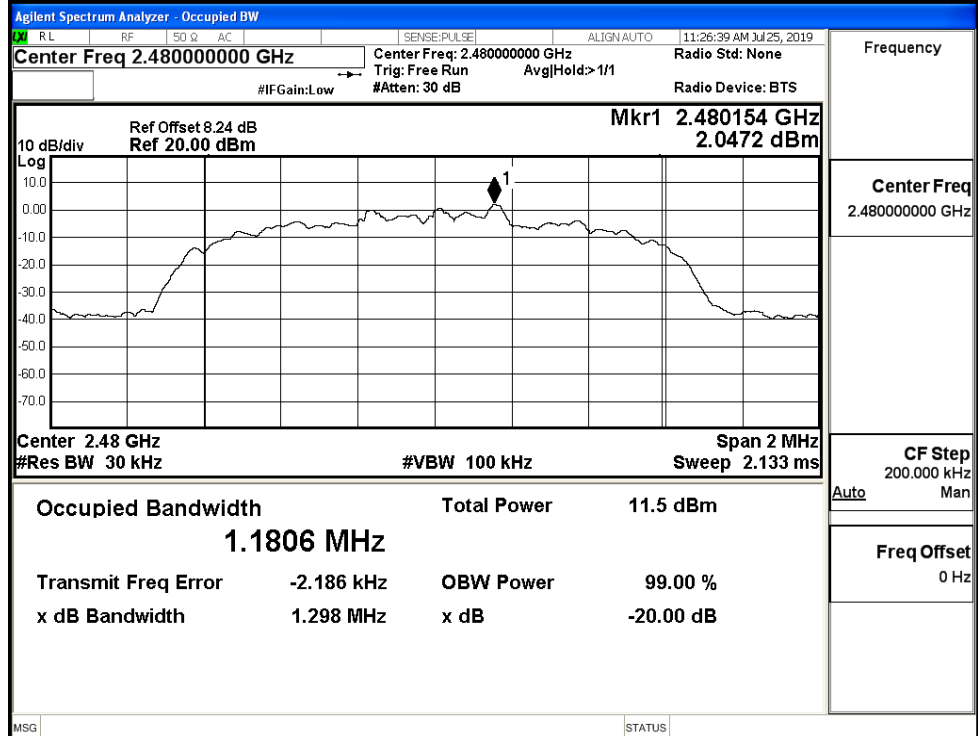
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

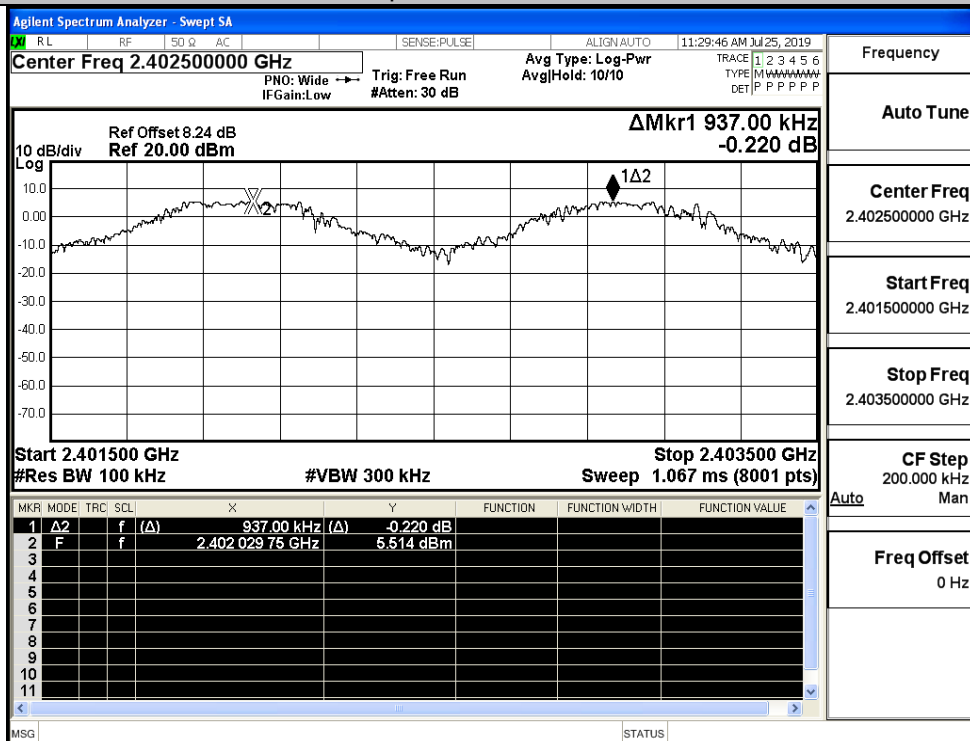


## A.3 Carrier Frequency Separation

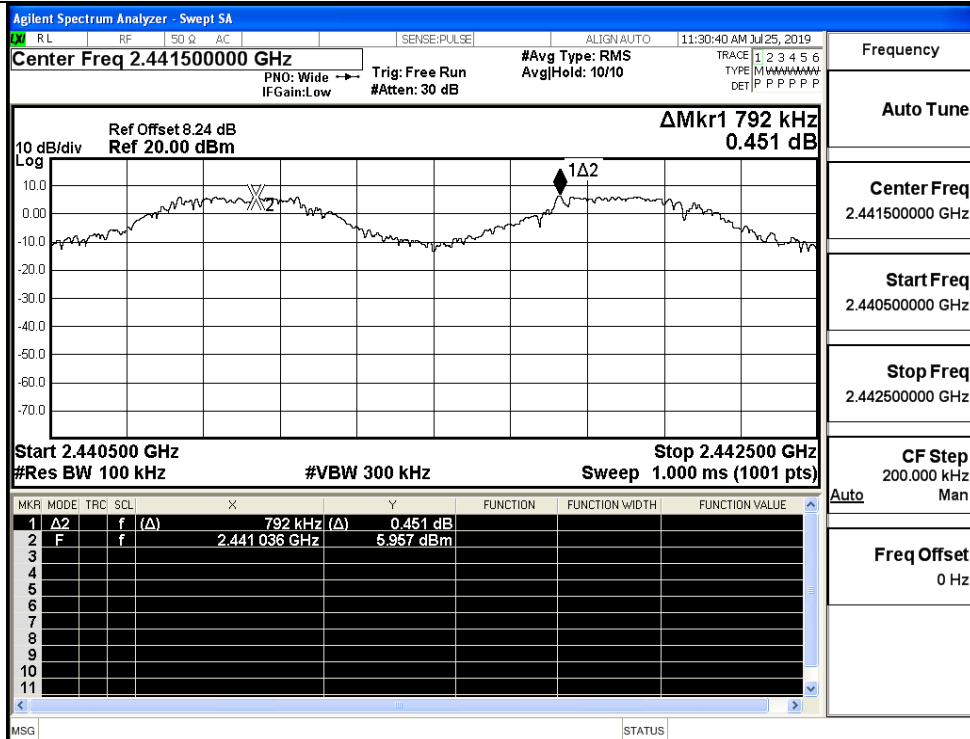
| Mode          | Channel. | Carrier Frequency Separation [MHz] | Limit [MHz] | Verdict |
|---------------|----------|------------------------------------|-------------|---------|
| GFSK          | LCH      | 0.937                              | 0.689       | PASS    |
|               | MCH      | 0.792                              | 0.689       | PASS    |
|               | HCH      | 1.098                              | 0.689       | PASS    |
| $\pi/4$ DQPSK | LCH      | 1.058                              | 0.861       | PASS    |
|               | MCH      | 1.294                              | 0.861       | PASS    |
|               | HCH      | 1.144                              | 0.861       | PASS    |
| 8DPSK         | LCH      | 1.314                              | 0.868       | PASS    |
|               | MCH      | 1.016                              | 0.868       | PASS    |
|               | HCH      | 0.954                              | 0.868       | PASS    |

## Test Graphs

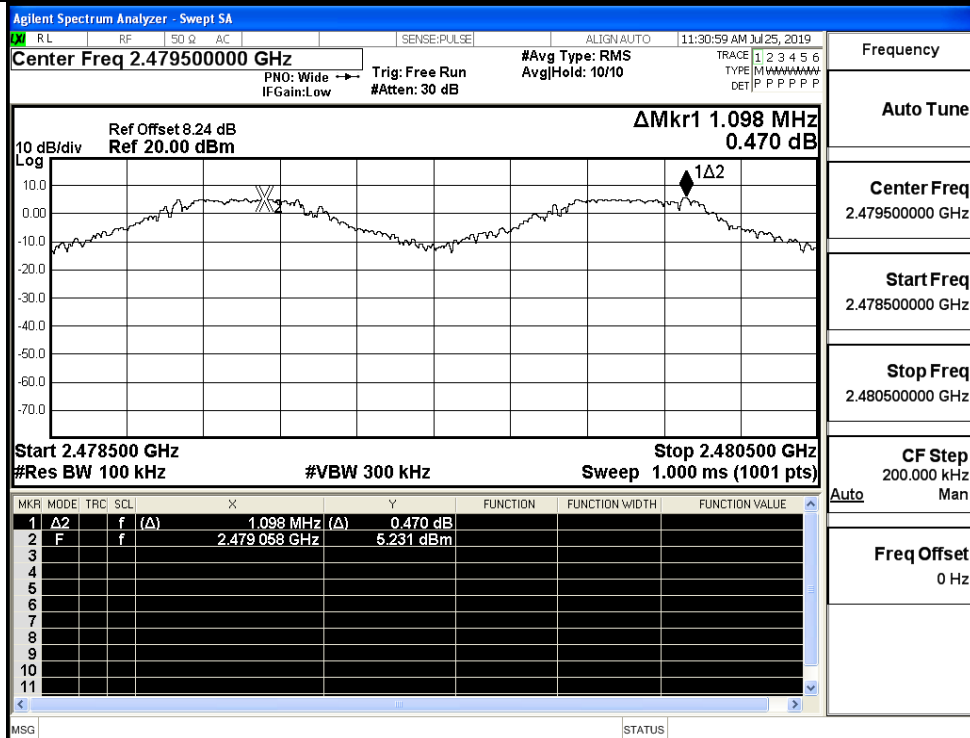
GFSK/LCH



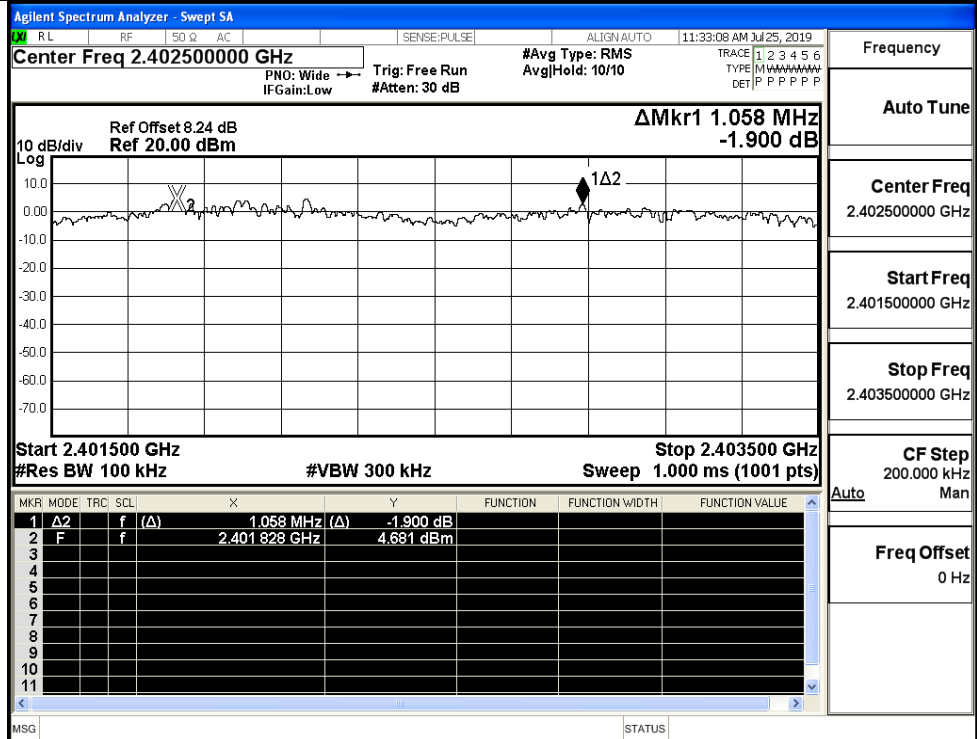
GFSK/MCH



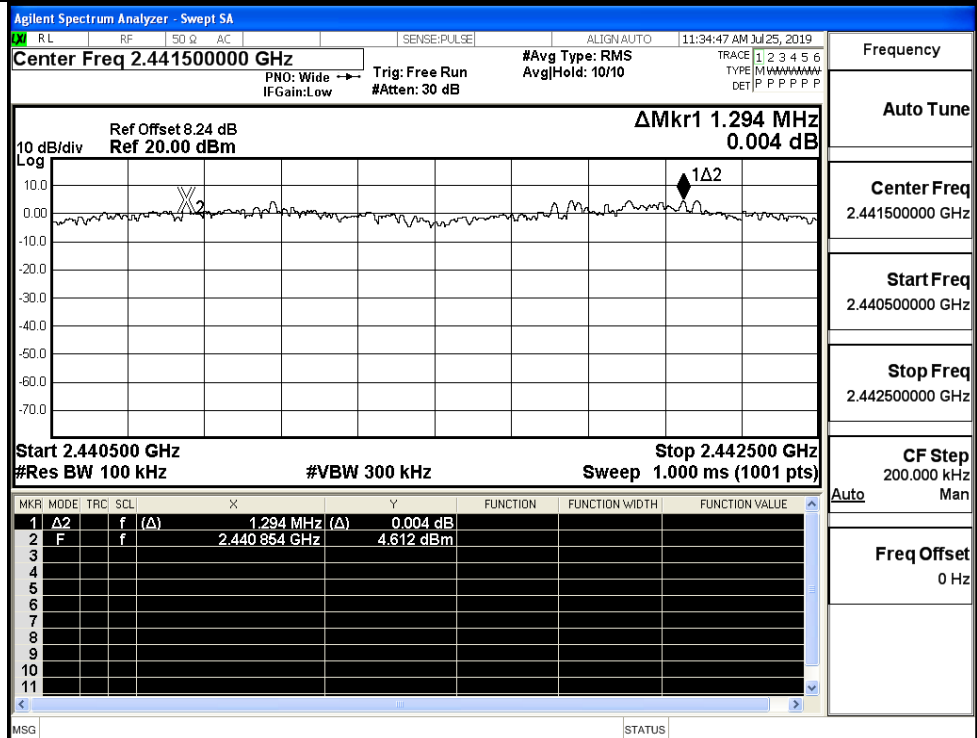
GFSK/HCH

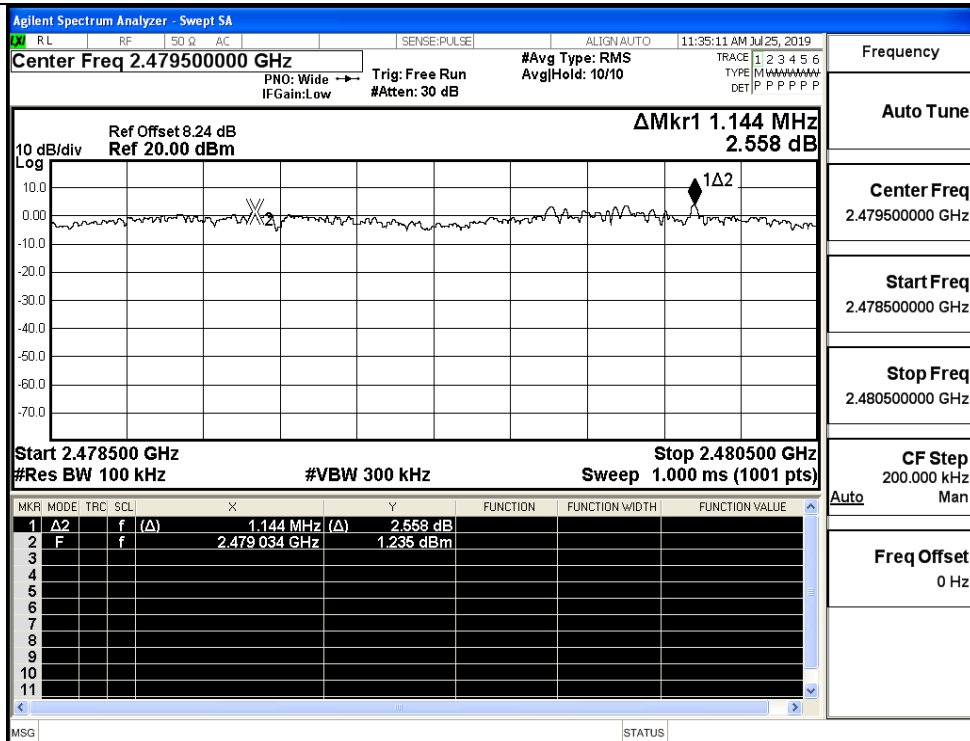


$\pi/4$ DQPSK/LCH

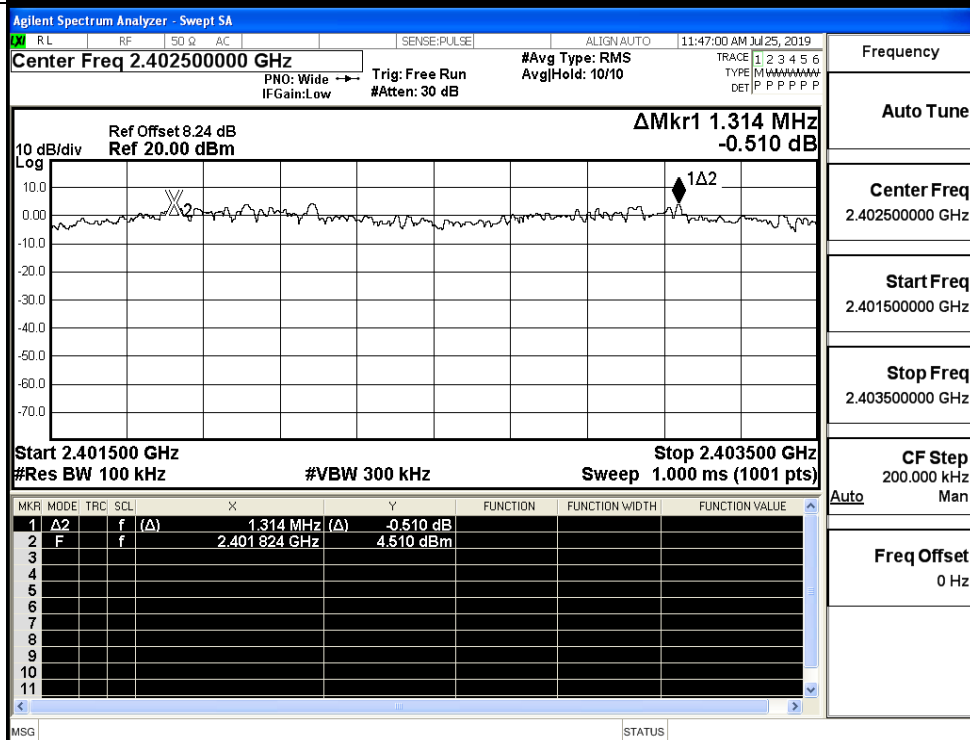


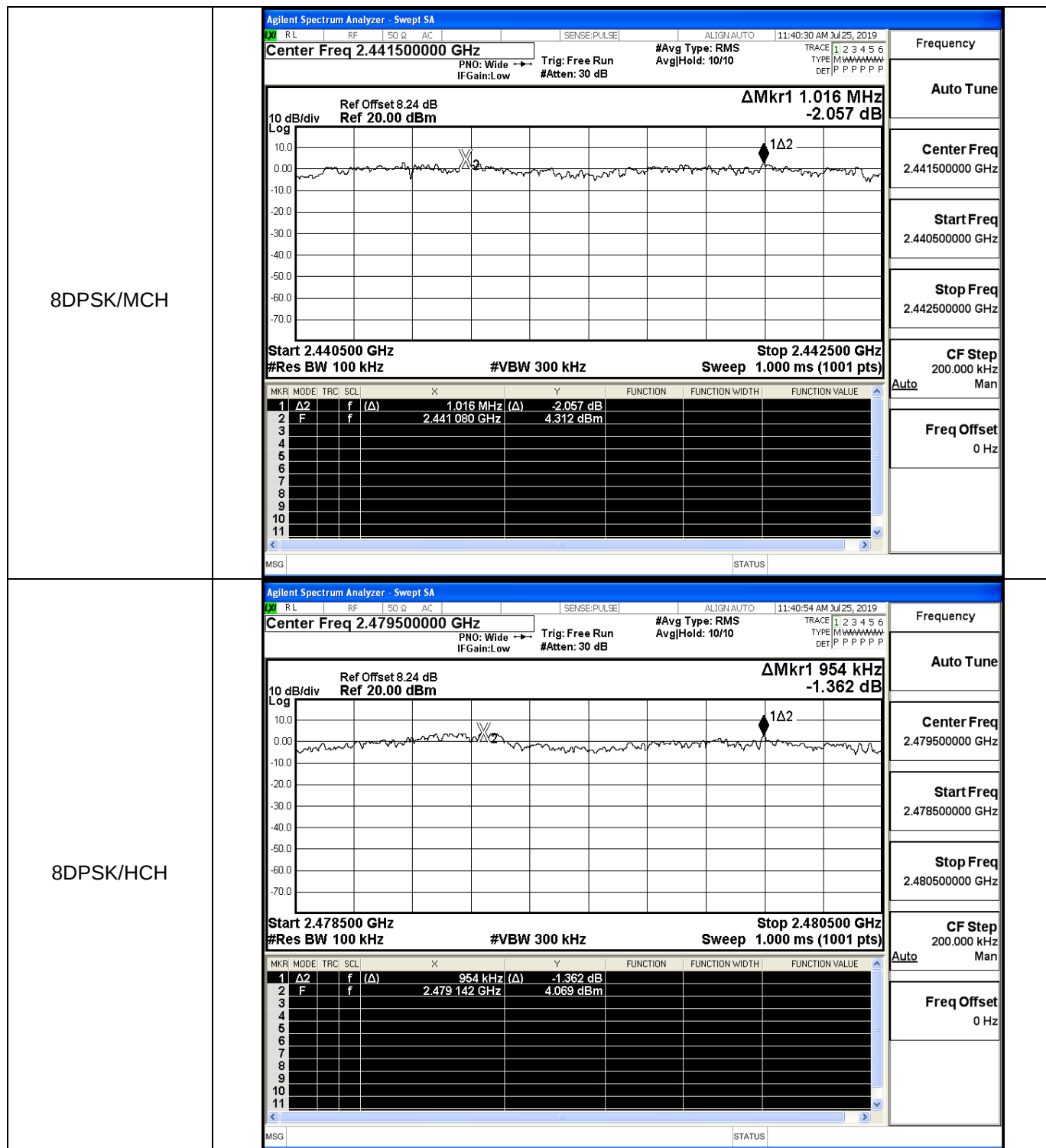
$\pi/4$ DQPSK/MCH



$\pi/4$ DQPSK/HCH

8DPSK/LCH



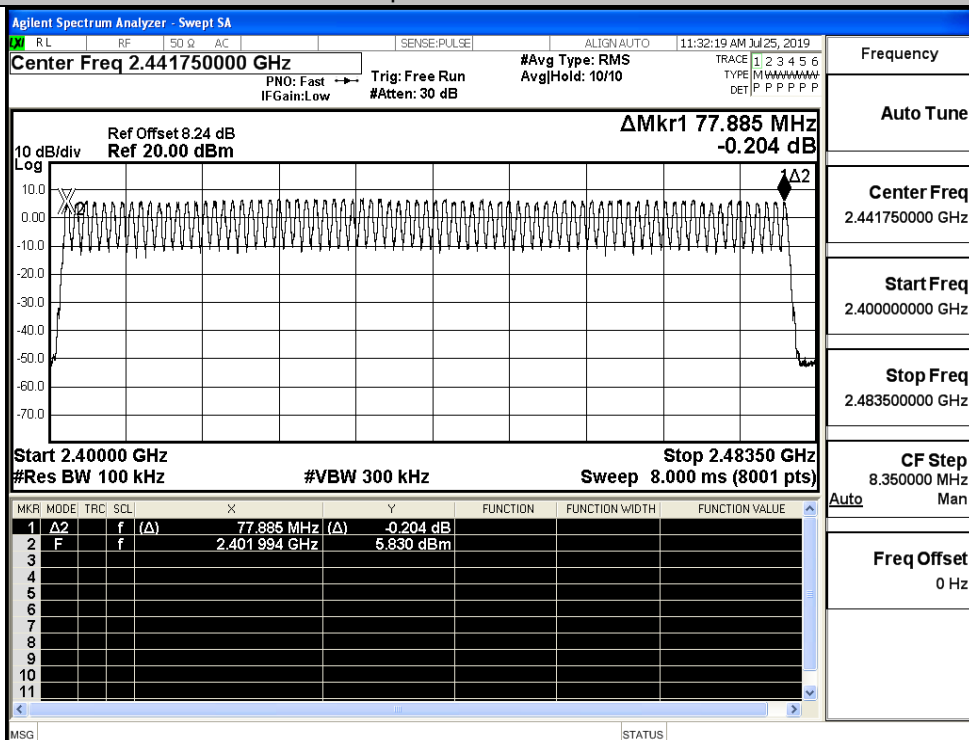
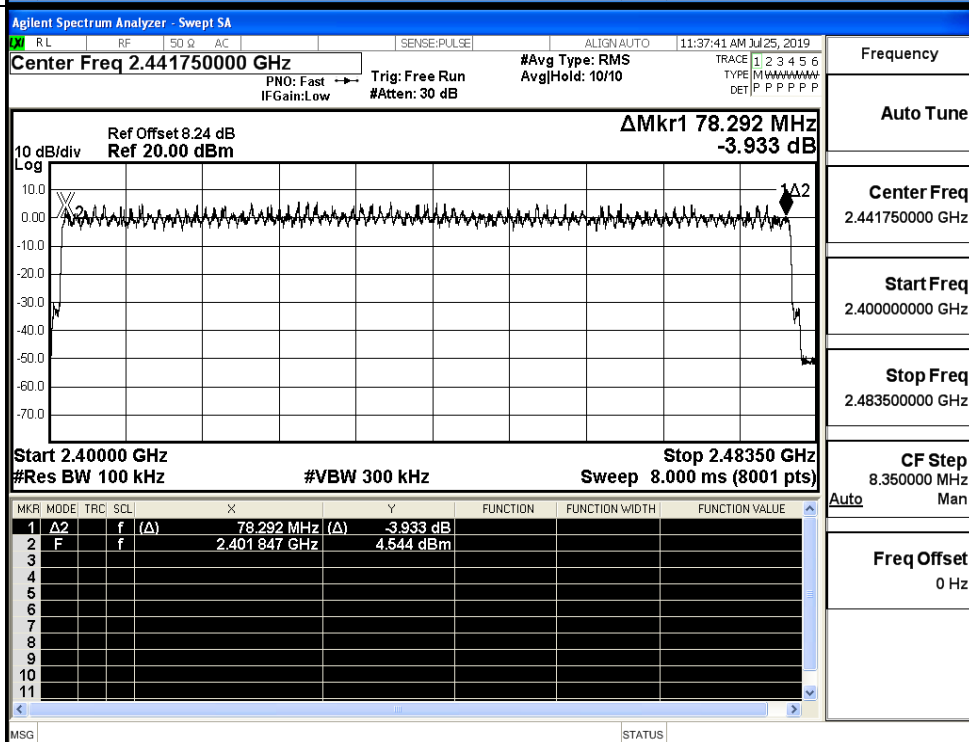


#### A.4 Hopping Channel Number

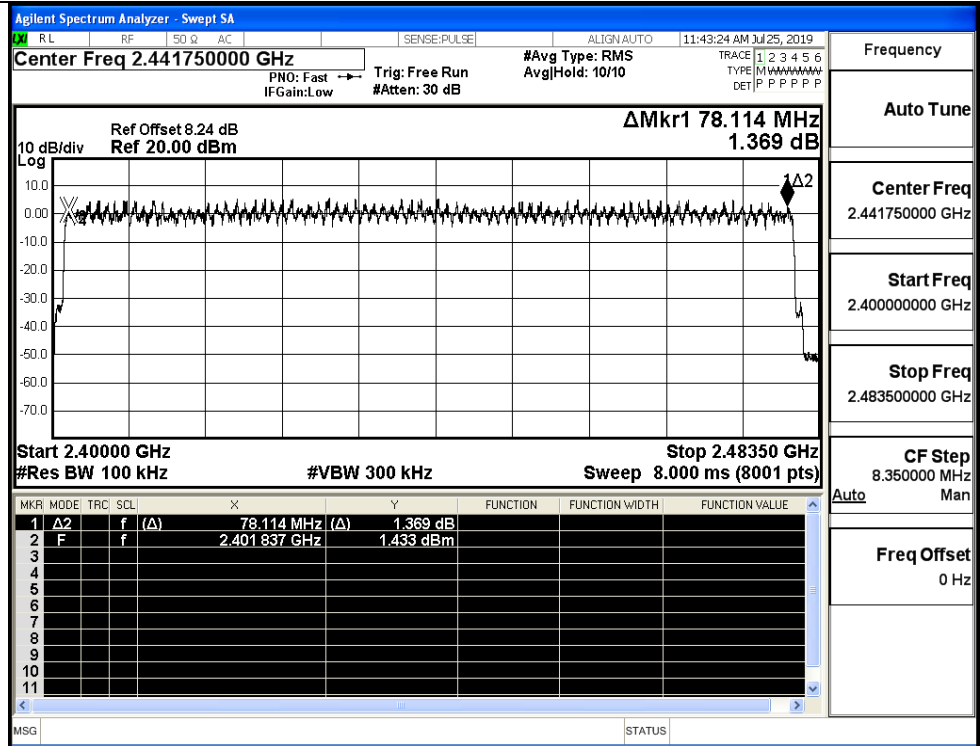
| Mode          | Channel. | Number of Hopping Channel [N] | Limit [N] | Verdict |
|---------------|----------|-------------------------------|-----------|---------|
| GFSK          | Hop      | 79                            | >=15      | PASS    |
| $\pi/4$ DQPSK | Hop      | 79                    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

## Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

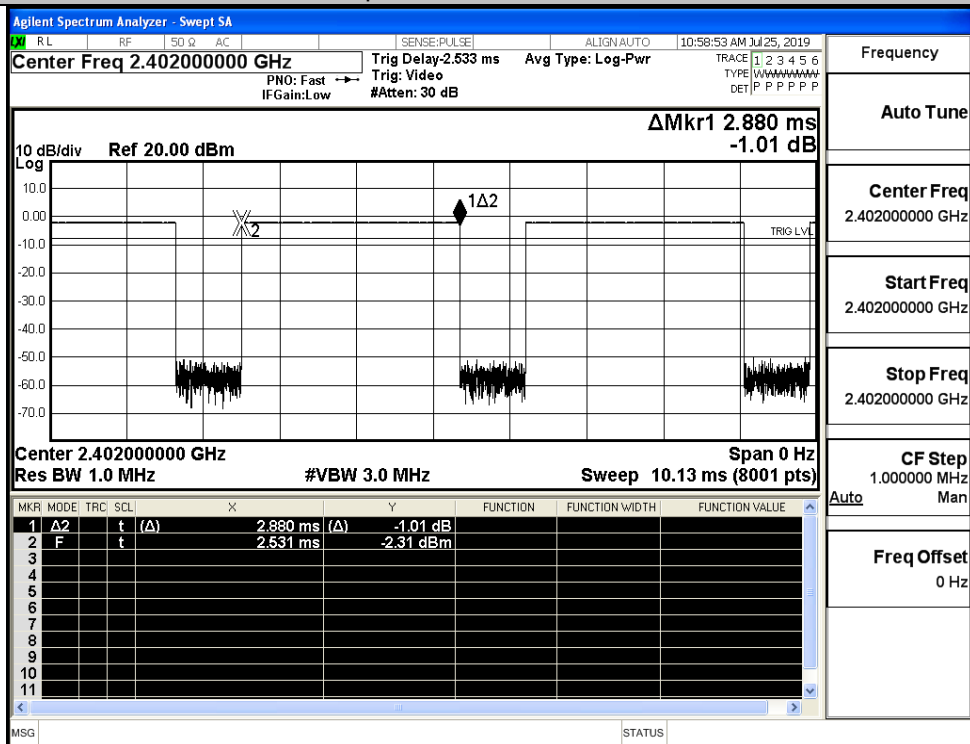


## A.5 Dwell Time

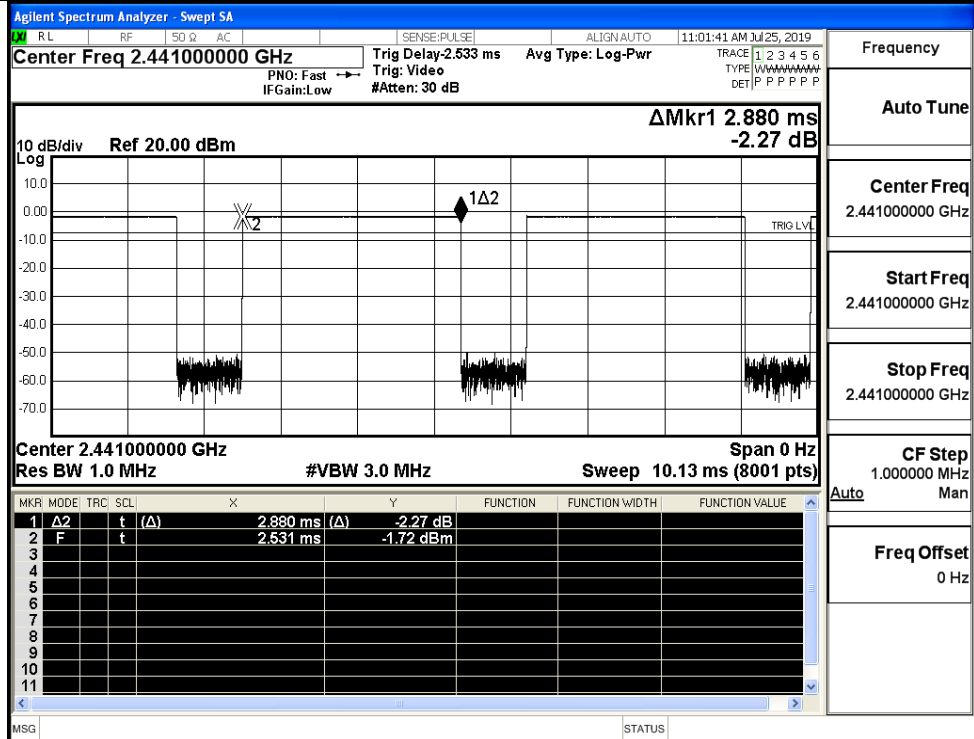
| Mode          | Packet | Channel | Burst Width<br>[ms/hop/ch] | Total<br>Hops[hop*ch] | Dwell Time[s] | Limit [s] | Verdict |
|---------------|--------|---------|----------------------------|-----------------------|---------------|-----------|---------|
| GFSK          | DH5    | LCH     | 2.88                       | 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                 | 0.307         | 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    |

Test Graphs

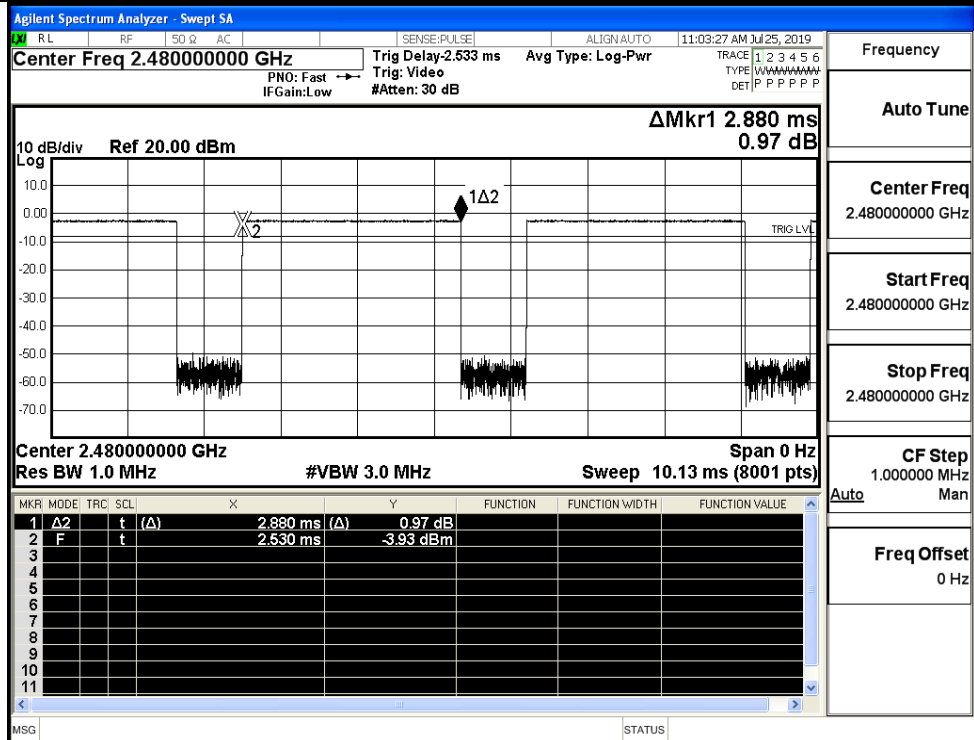
GFSK\_DH5/LCH



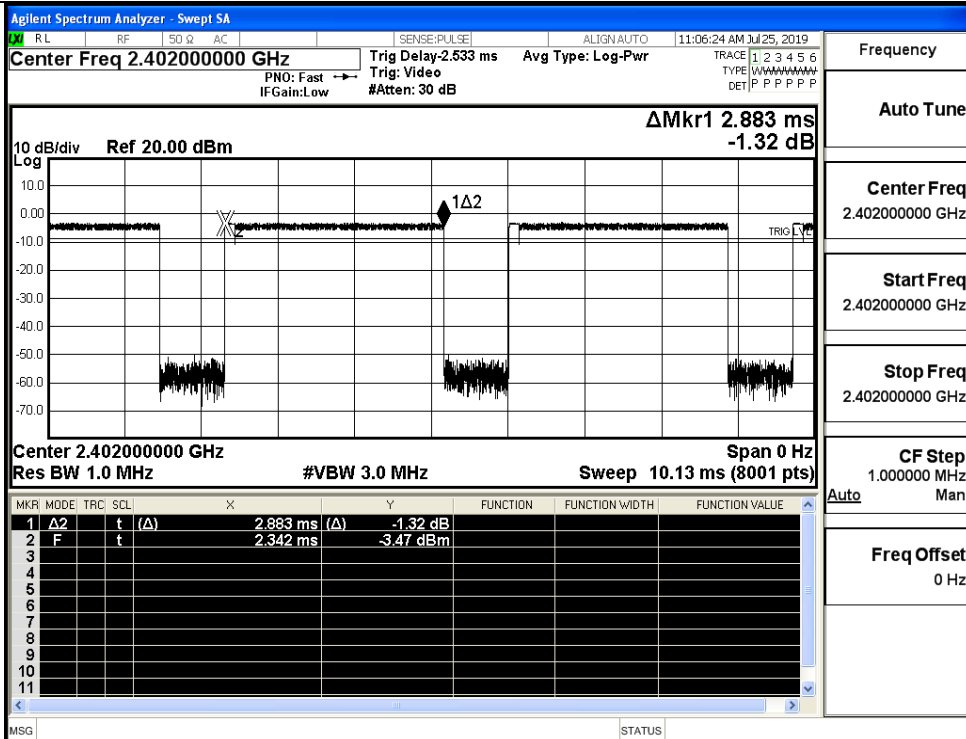
GFSK\_DH5/MCH



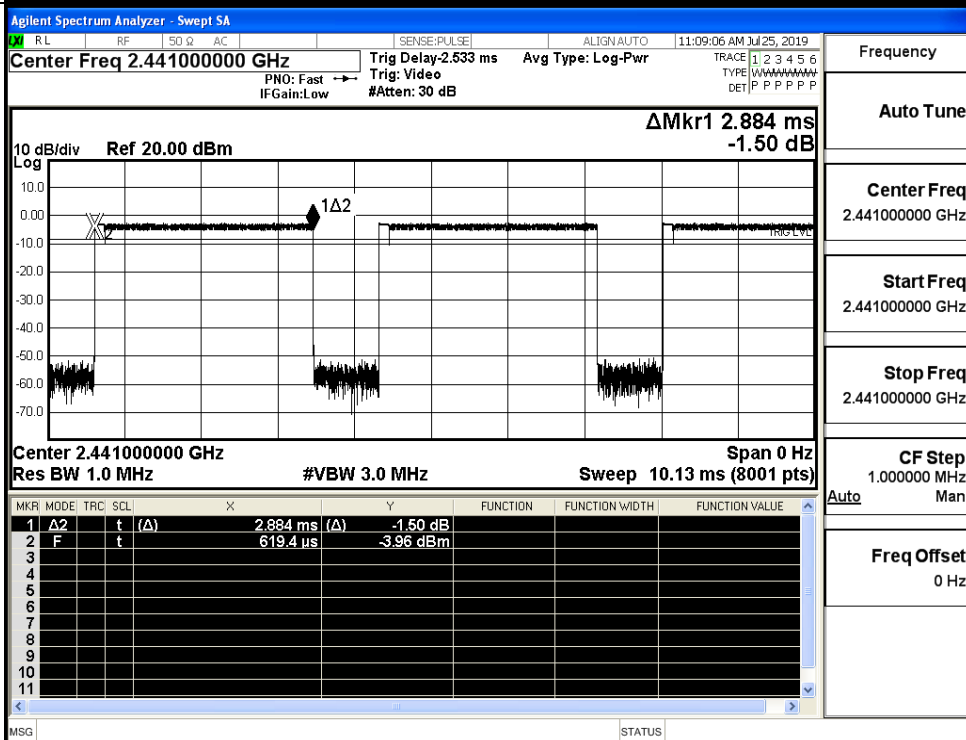
GFSK\_DH5/HCH



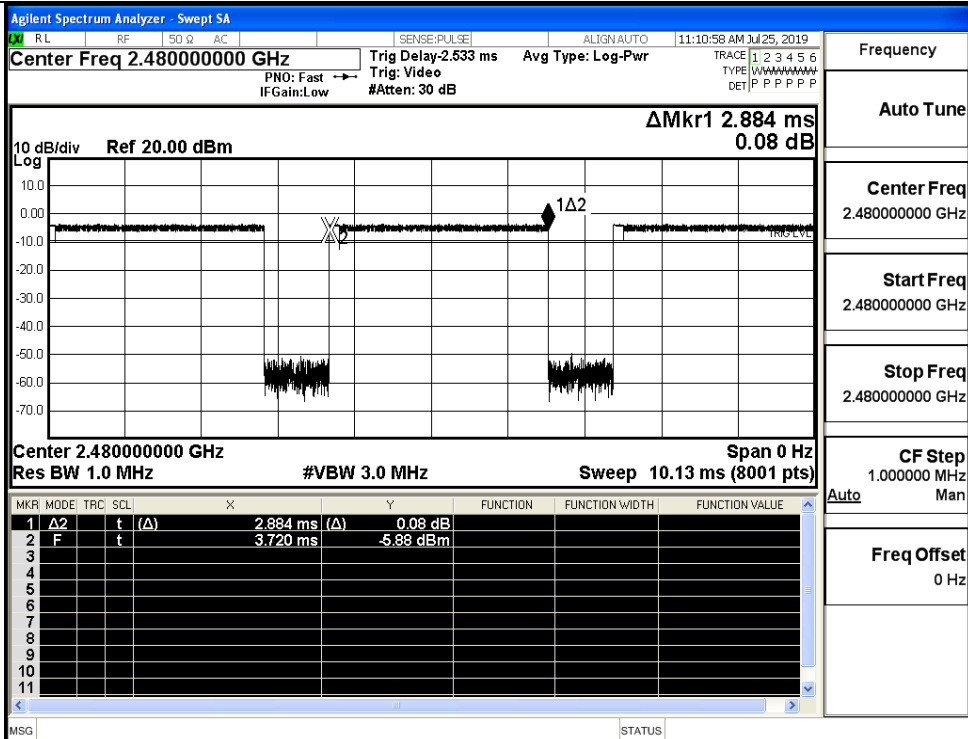
$\pi/4$ DQPSK  
\_2DH5/LCH



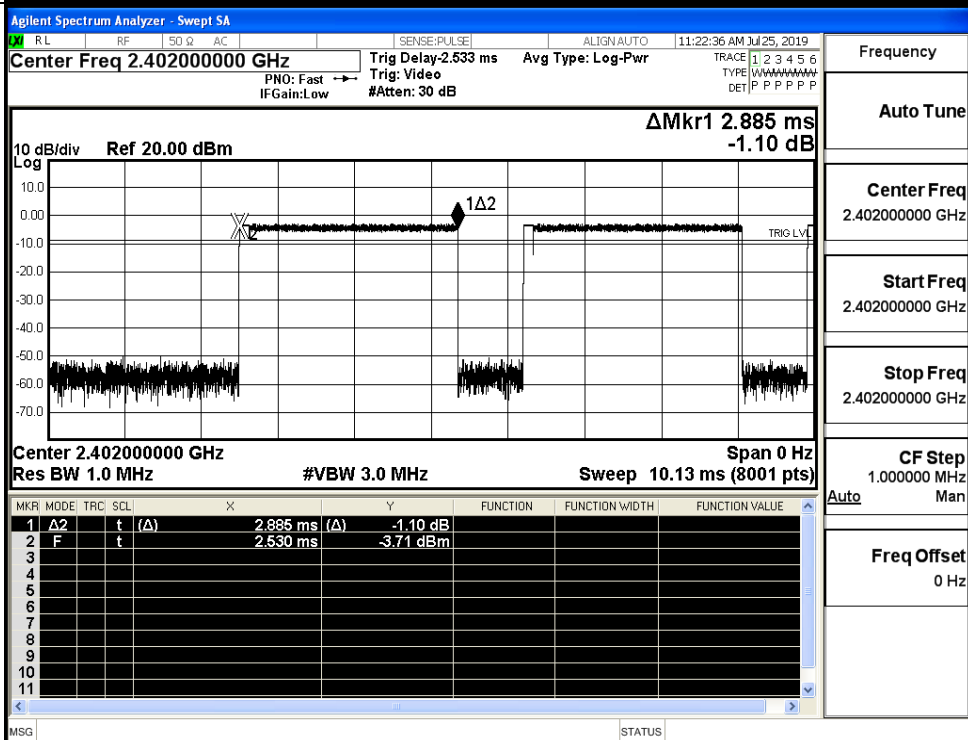
$\pi/4$ DQPSK  
\_2DH5/MCH



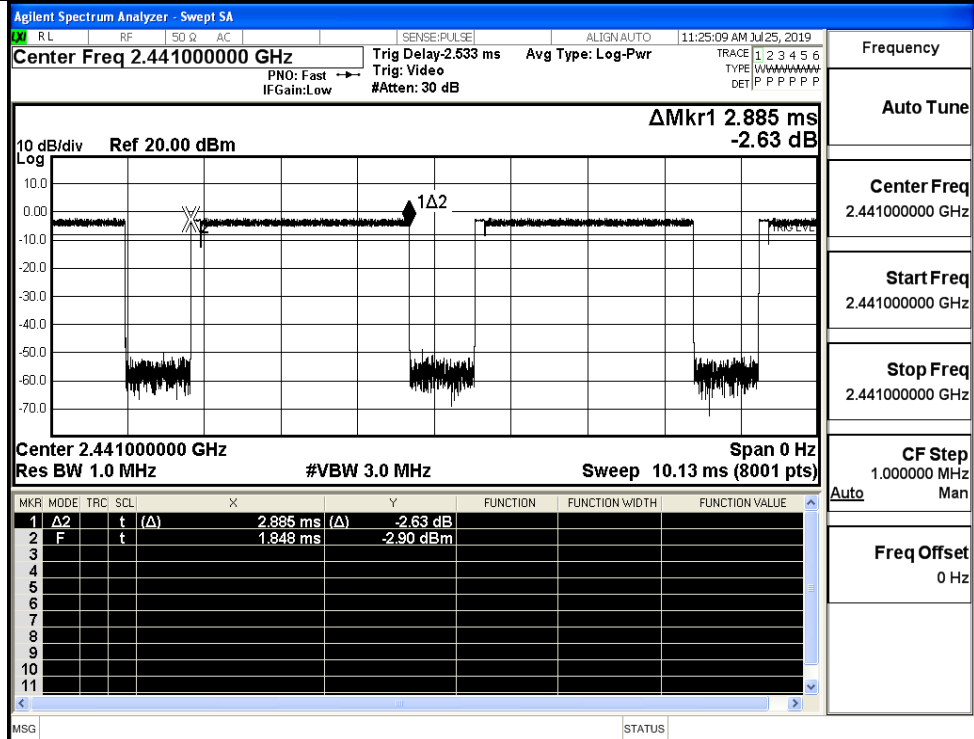
$\pi/4$ DQPSK  
\_2DH5/HCH



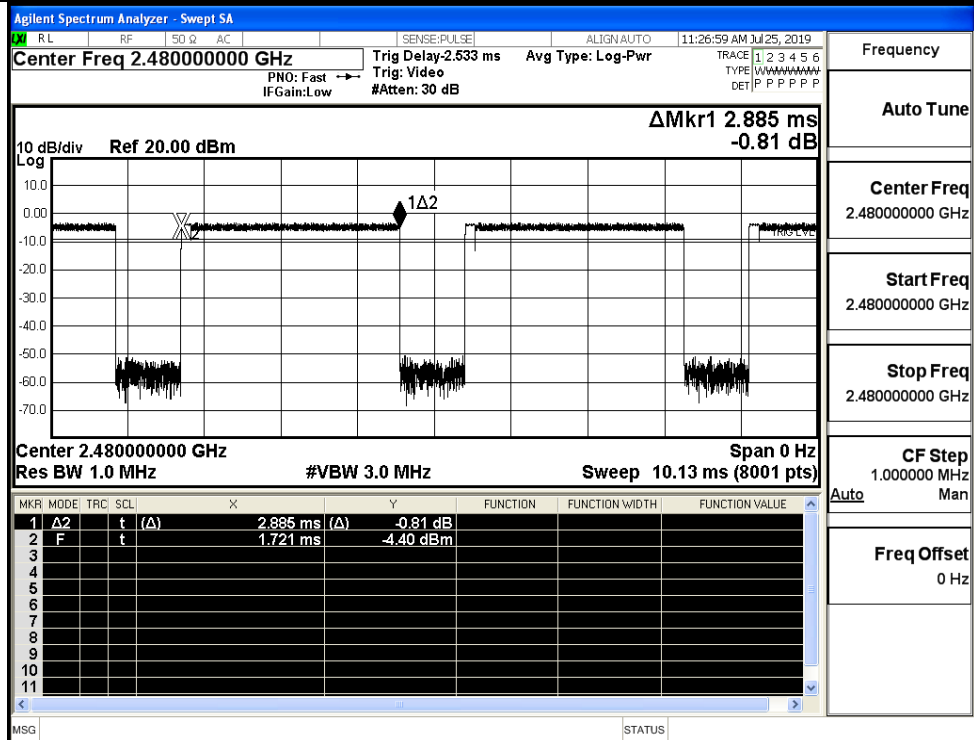
8DPSK\_3DH5/LCH



8DPSK\_3DH5/MCH



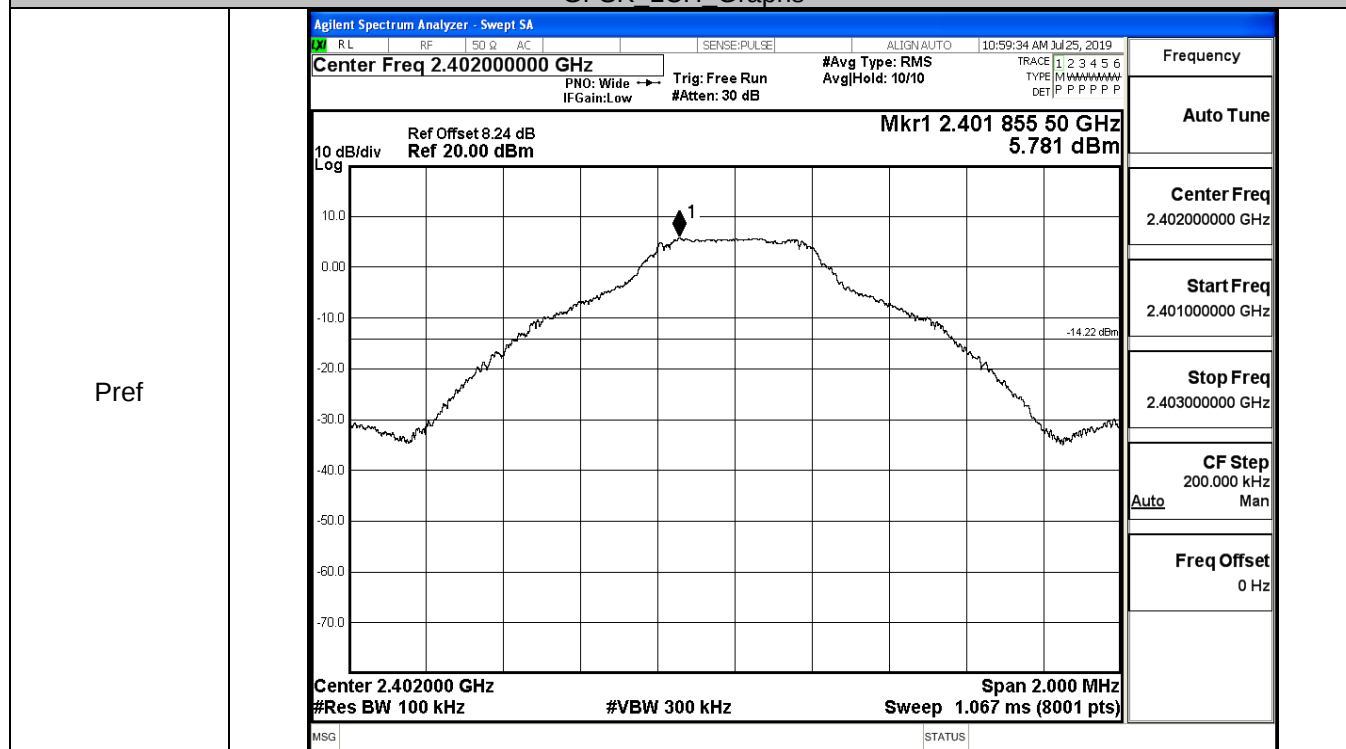
8DPSK\_3DH5/HCH

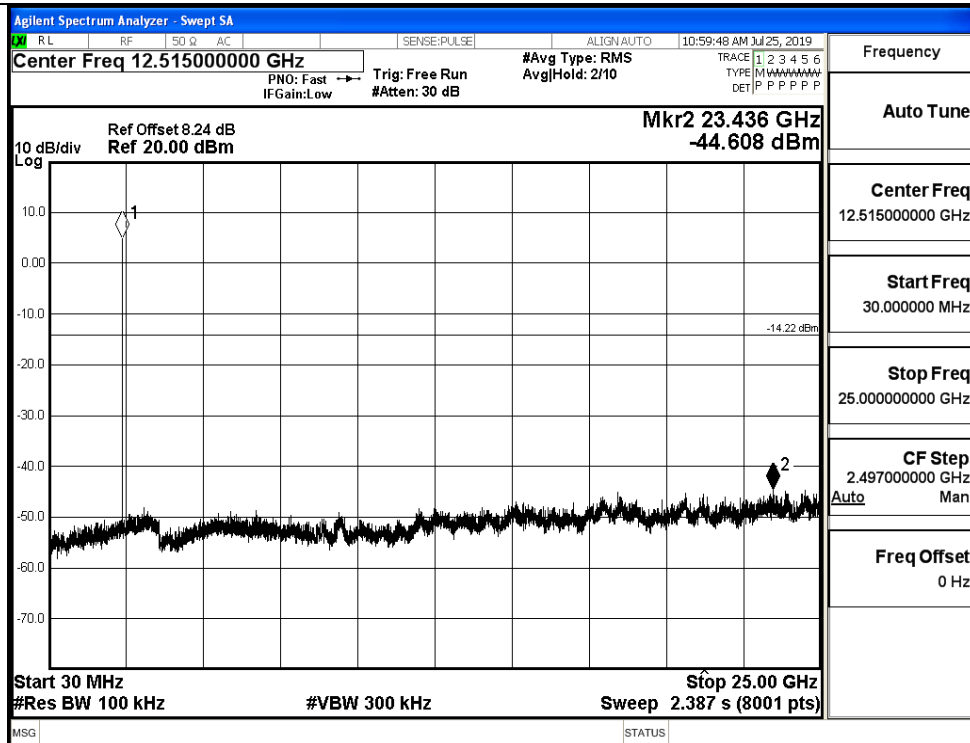


## A.6 RF Conducted Spurious Emissions

| Mode          | Channel | Pref [dBm] | Max. Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|------------|------------------|-------------|---------|
| GFSK          | LCH     | 5.781      | -44.608          | -14.219     | PASS    |
|               | MCH     | 6.59       | -45.022          | -13.410     | PASS    |
|               | HCH     | 5.627      | -44.180          | -14.373     | PASS    |
| $\pi/4$ DQPSK | LCH     | 4.678      | -44.199          | -15.322     | PASS    |
|               | MCH     | 5.18       | -44.633          | -14.820     | PASS    |
|               | HCH     | 4.266      | -44.924          | -15.734     | PASS    |
| 8DPSK         | LCH     | 4.819      | -44.425          | -15.181     | PASS    |
|               | MCH     | 5.156      | -44.818          | -14.844     | PASS    |
|               | HCH     | 3.672      | -43.753          | -16.328     | PASS    |

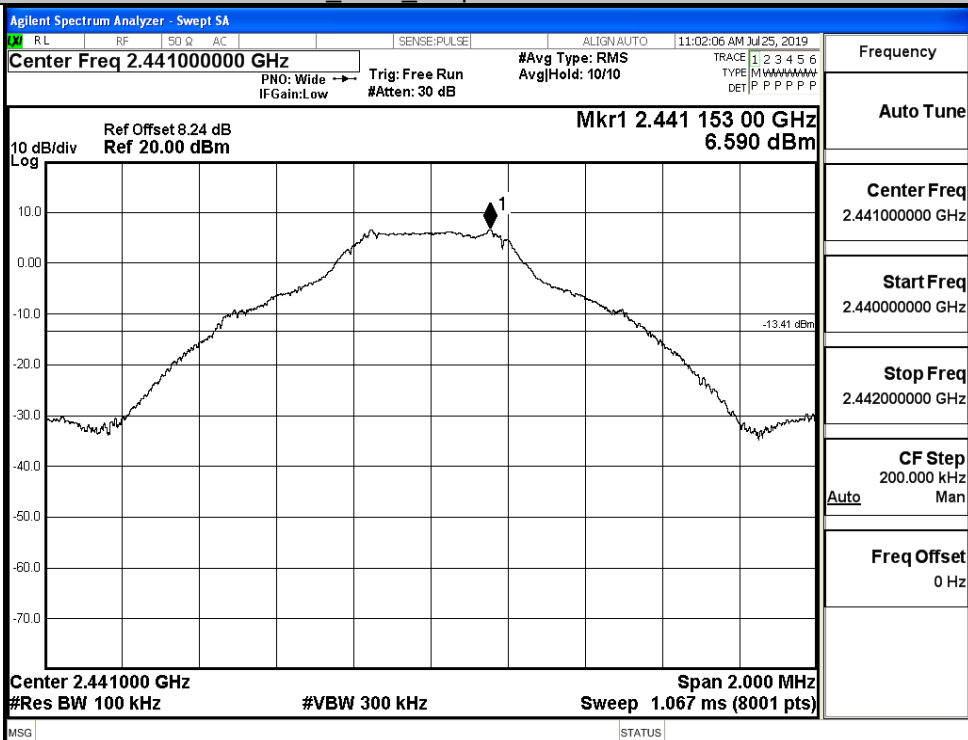
GFSK LCH Graphs



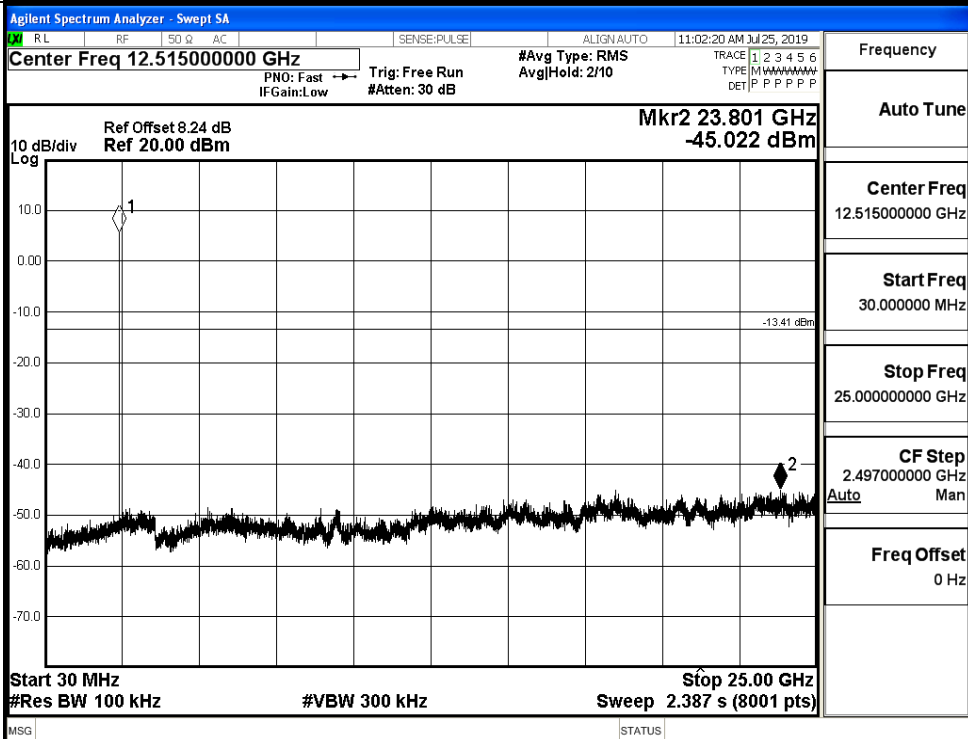


# GFSK\_MCH\_Graphs

Pref

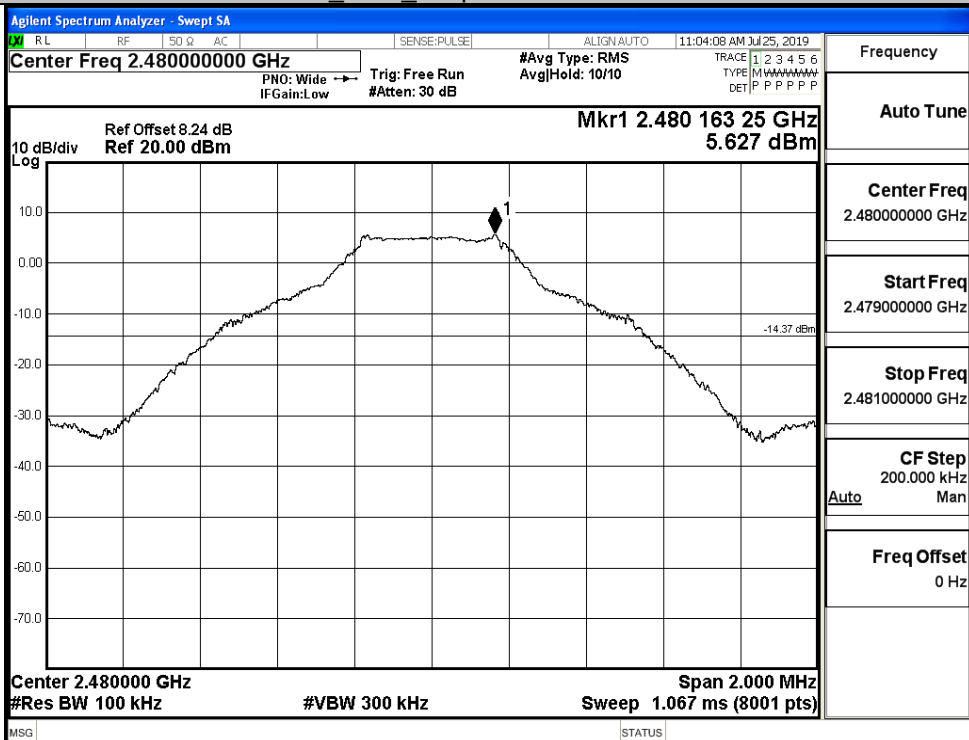


Puw

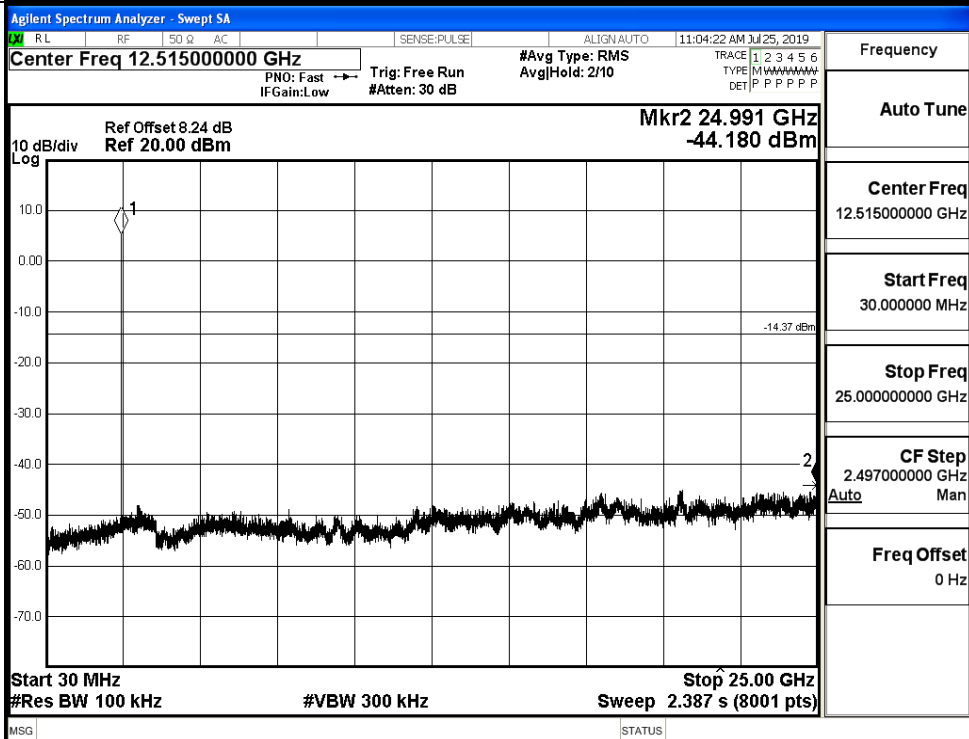


# GFSK\_HCH\_Graphs

Pref

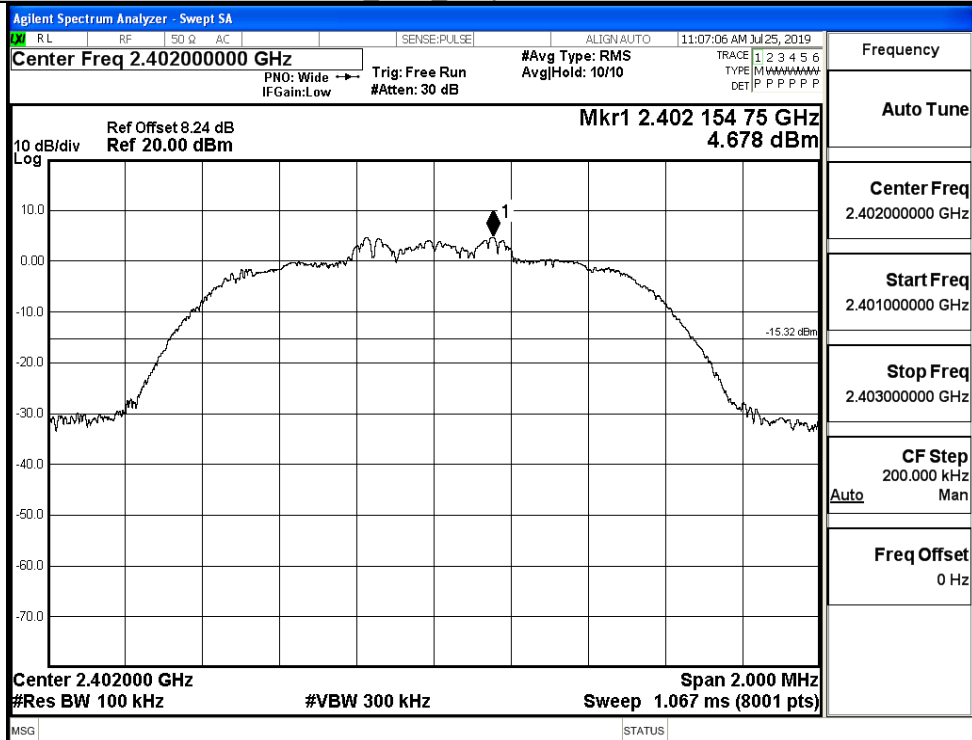


Puw

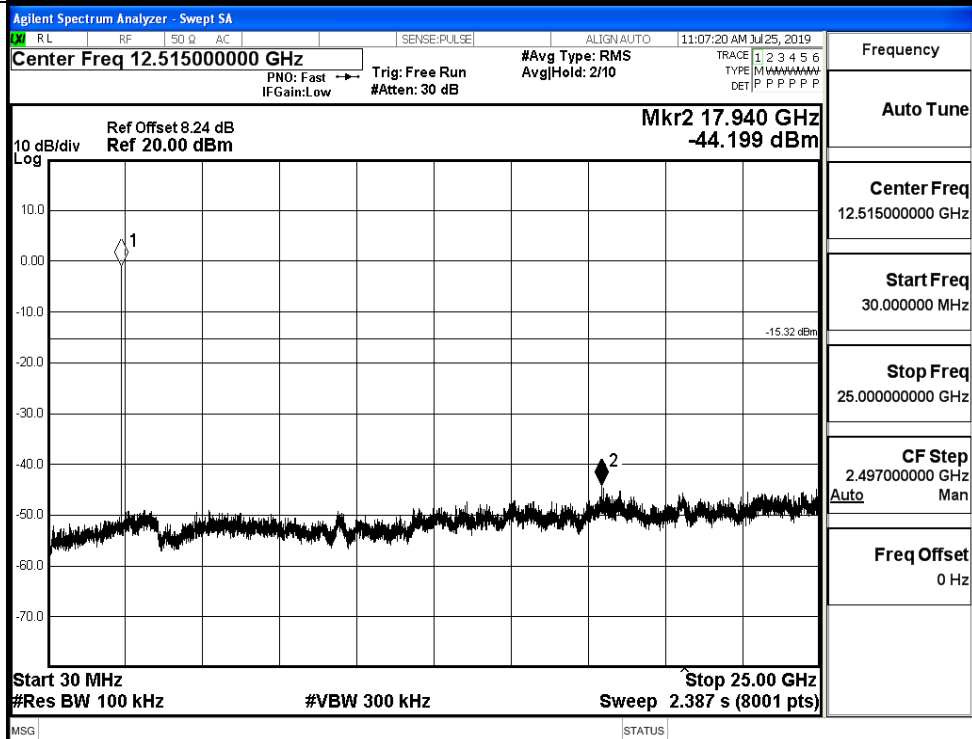


$\pi/4$ DQPSK\_LCH\_Graphs

Pref

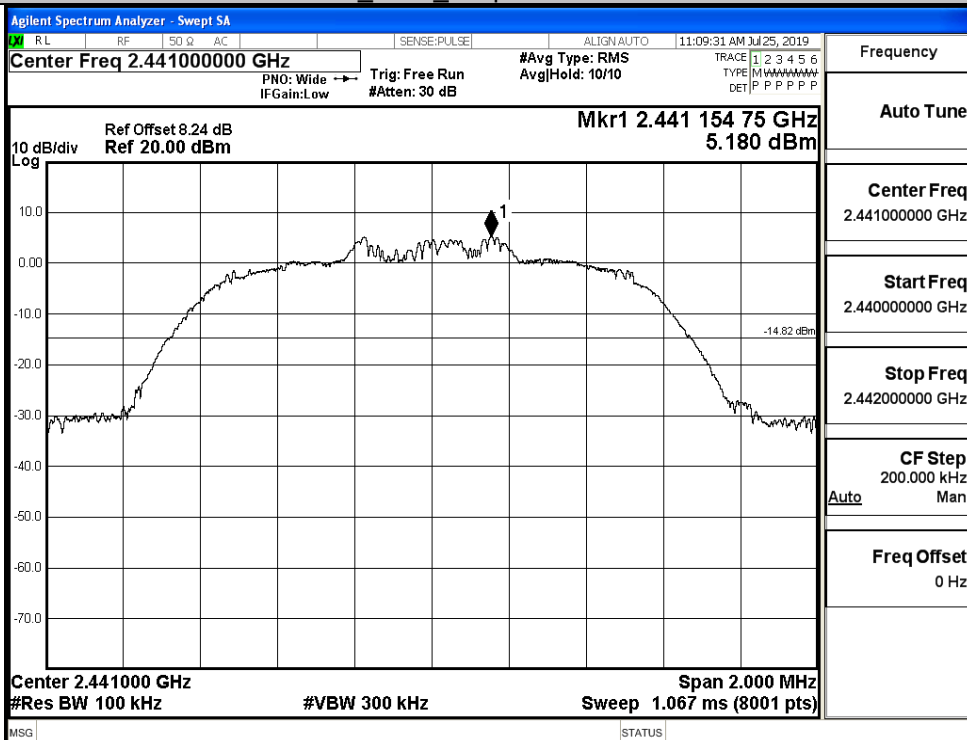


Puw

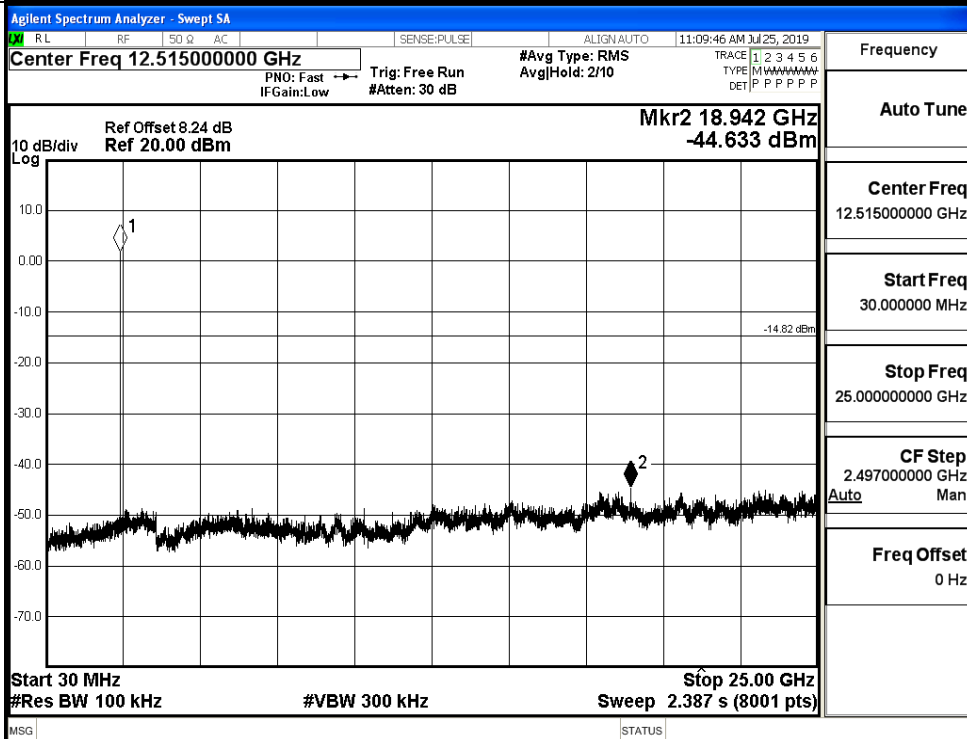


$\pi$ /4DQPSK\_MCH\_Graphs

Pref

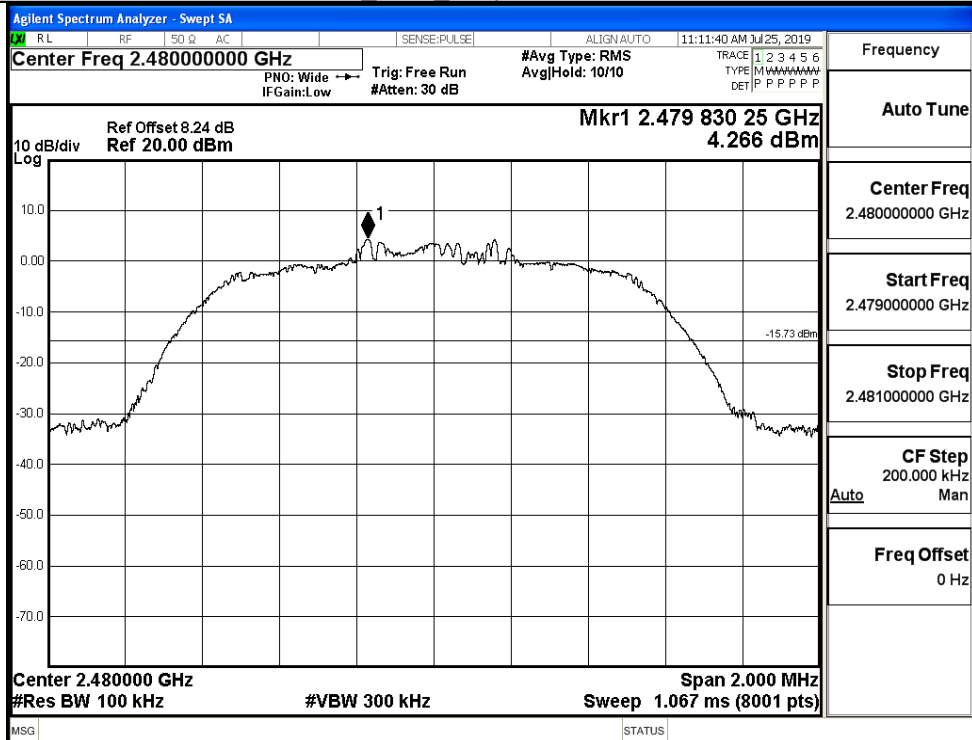


Puw

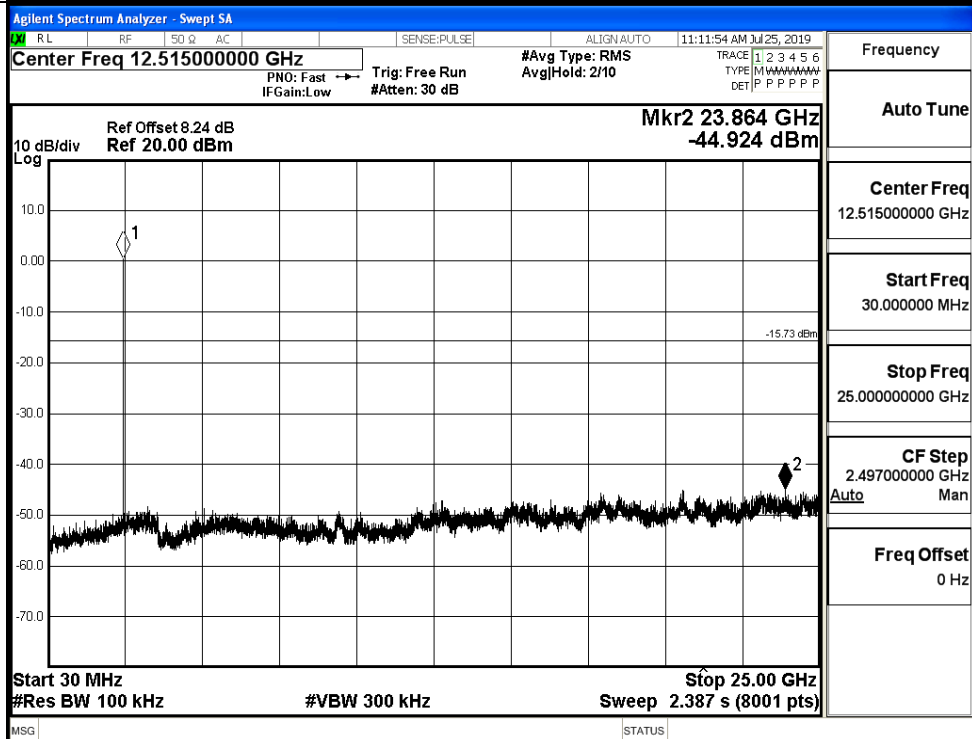


$\pi/4$ DQPSK\_HCH\_Graphs

Pref

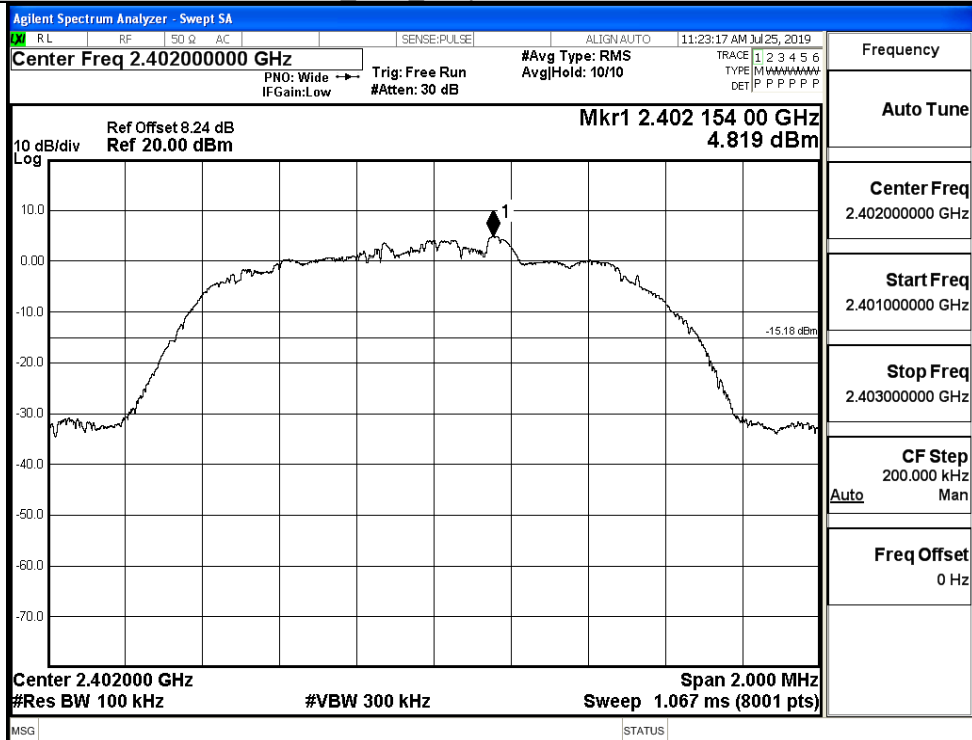


Puw

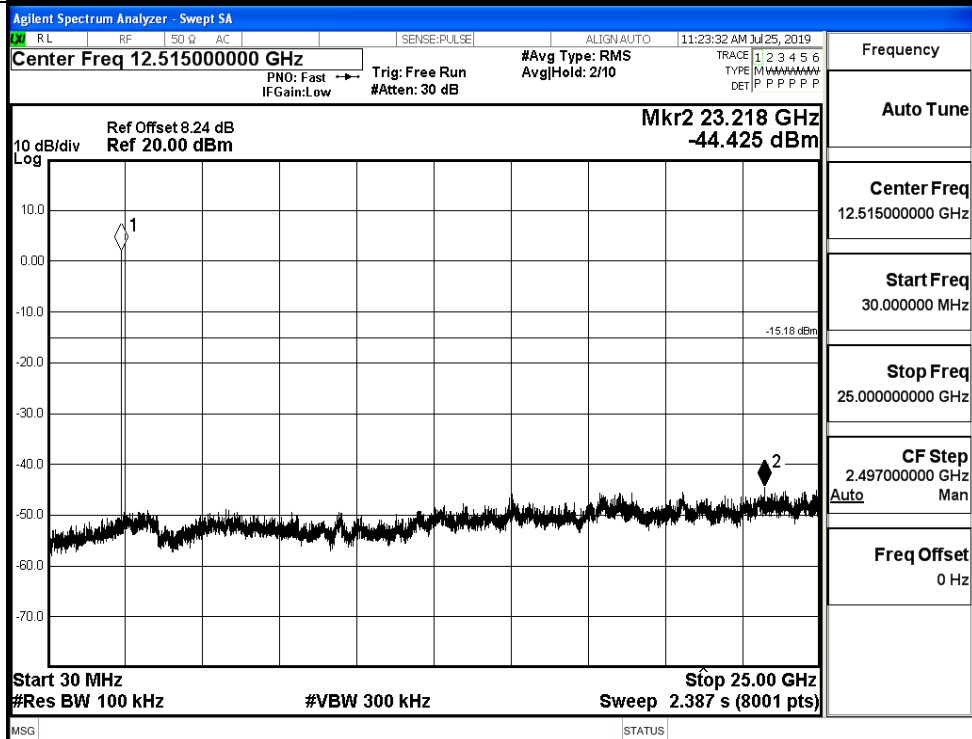


# 8DPSK\_LCH\_Graphs

Pref

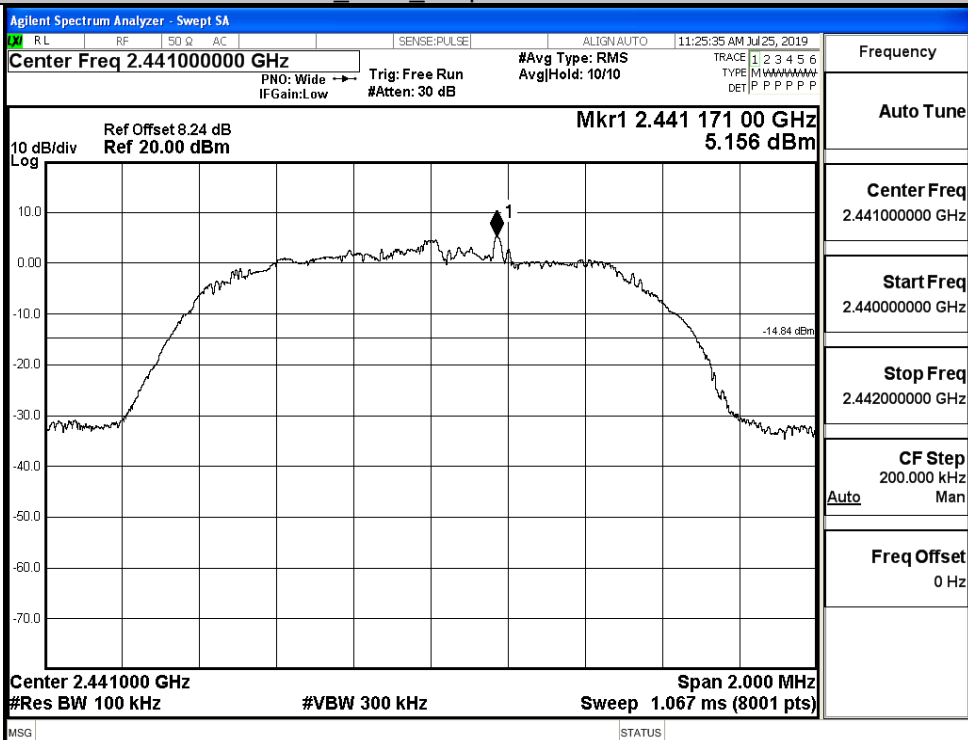


Puw

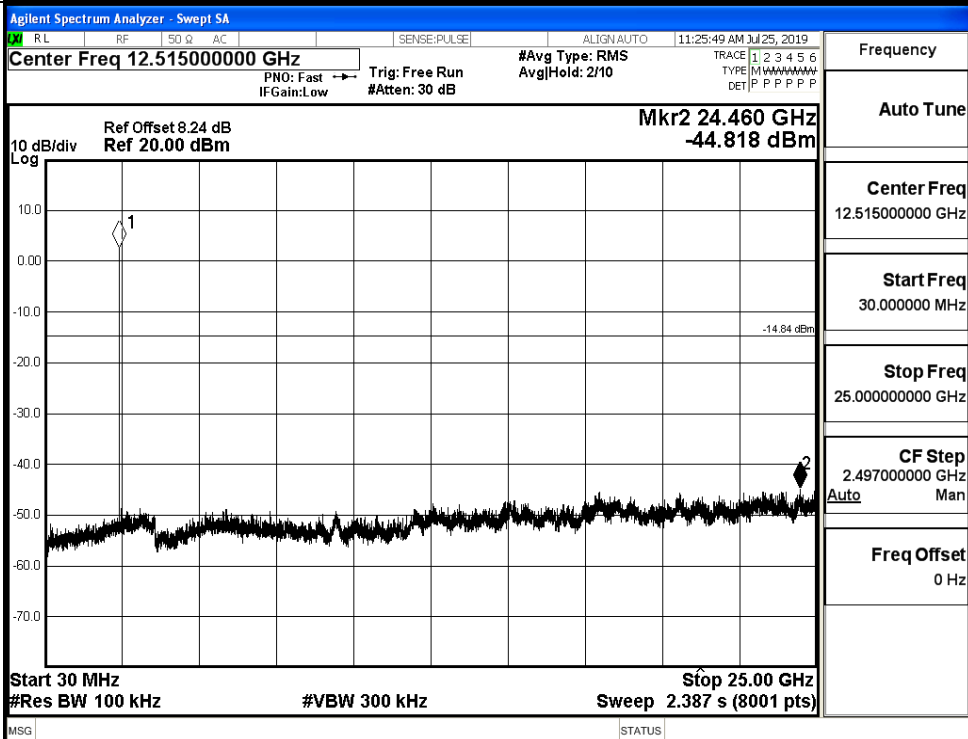


# 8DPSK\_MCH\_Graphs

Pref

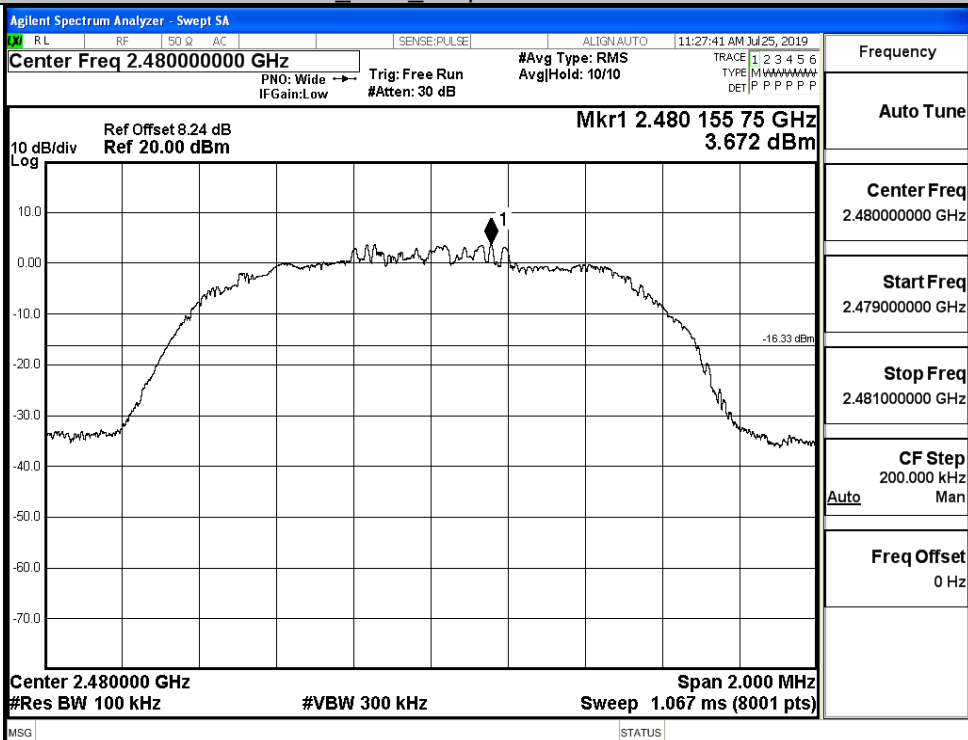


Puw

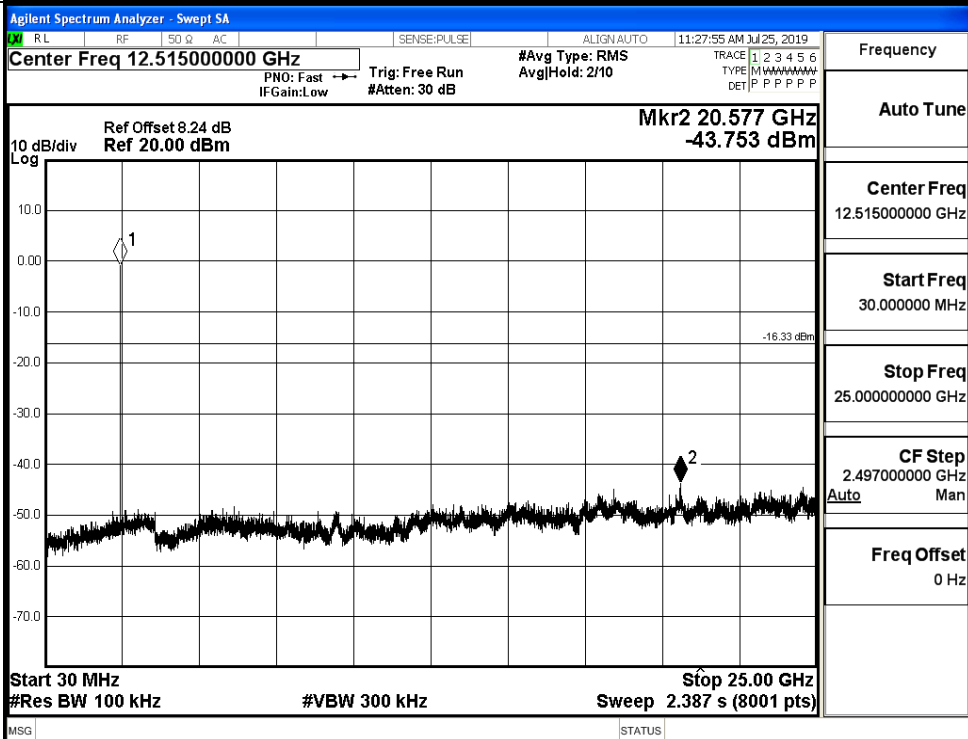


# 8DPSK\_HCH\_Graphs

Pref



Puw

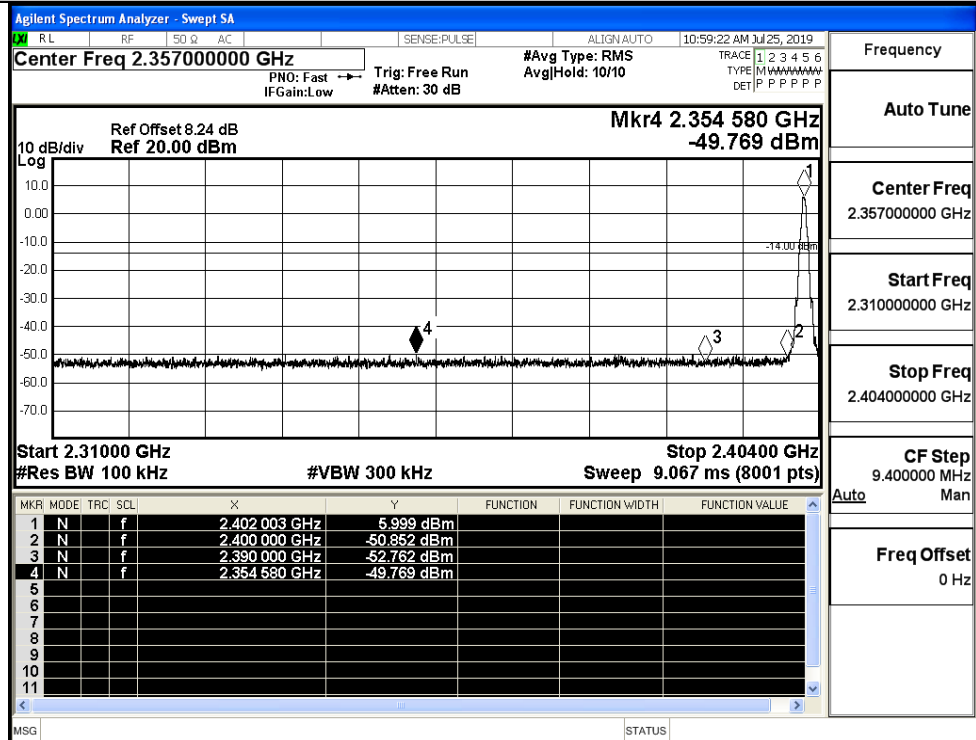


## A.7 Band-edge for RF Conducted Emissions

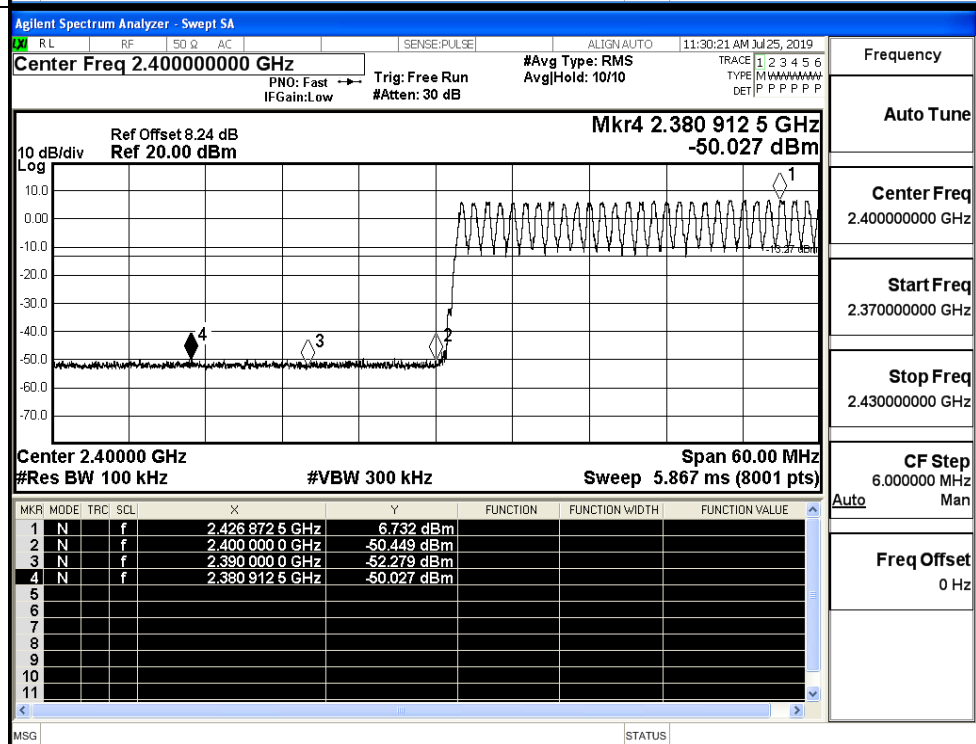
| Mode          | Channel | Carrier Frequency [MHz] | Carrier Power [dBm] | Frequency Hopping | Max Spurious Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|-------------------------|---------------------|-------------------|--------------------------|-------------|---------|
| GFSK          | LCH     | 2402                    | 5.999               | Off               | -49.769                  | -14         | PASS    |
|               |         |                         | 6.732               | On                | -50.027                  | -13.27      | PASS    |
|               | HCH     | 2480                    | 5.616               | Off               | -50.073                  | -14.38      | PASS    |
|               |         |                         | 6.369               | On                | -49.260                  | -13.63      | PASS    |
| $\pi/4$ DQPSK | LCH     | 2402                    | 4.842               | Off               | -49.813                  | -15.16      | PASS    |
|               |         |                         | 5.267               | On                | -49.012                  | -14.73      | PASS    |
|               | HCH     | 2480                    | 4.347               | Off               | -49.309                  | -15.65      | PASS    |
|               |         |                         | 5.024               | On                | -49.360                  | -14.98      | PASS    |
| 8DPSK         | LCH     | 2402                    | 4.856               | Off               | -49.744                  | -15.14      | PASS    |
|               |         |                         | 5.558               | On                | -48.503                  | -14.44      | PASS    |
|               | HCH     | 2480                    | 4.347               | Off               | -49.879                  | -15.65      | PASS    |
|               |         |                         | 5.078               | On                | -48.803                  | -14.92      | PASS    |

# Test Graphs

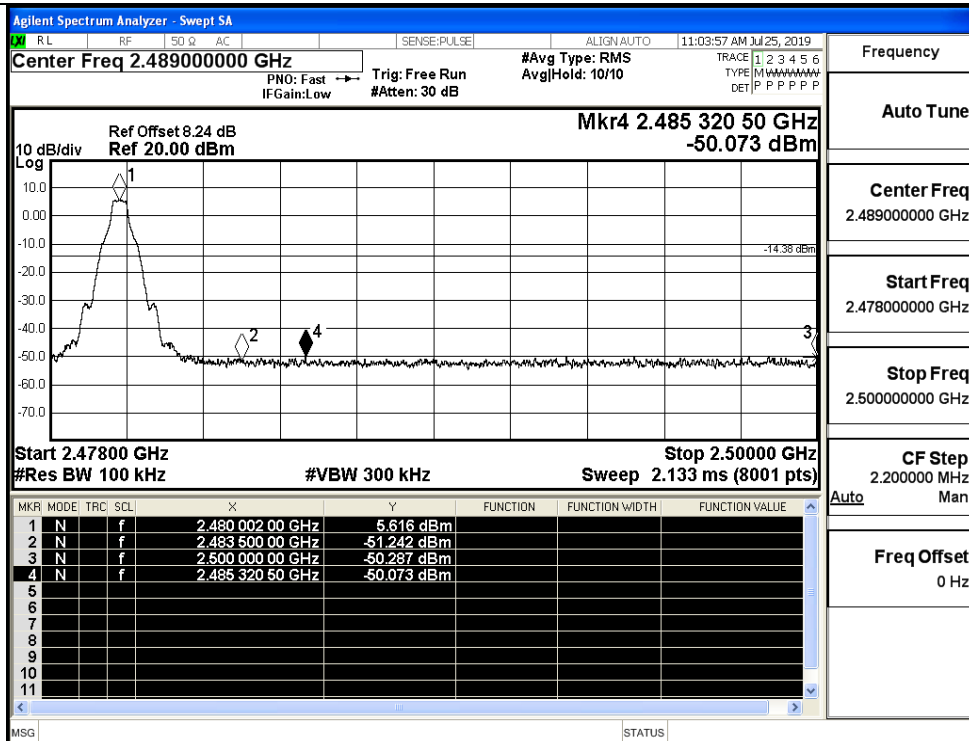
GFSK/LCH/No Hop



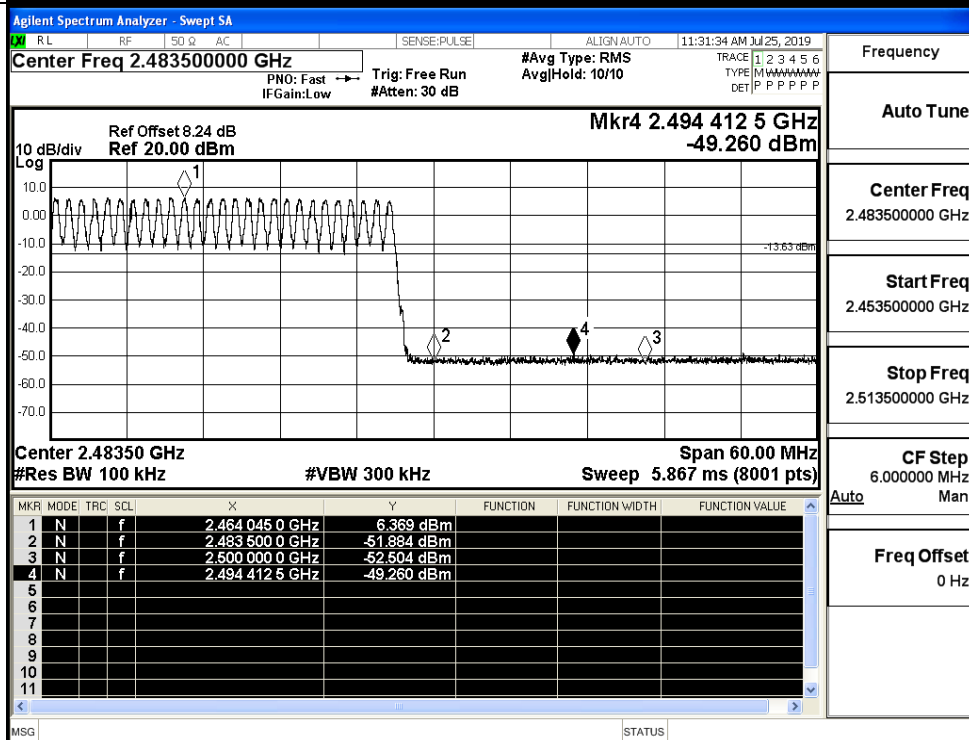
GFSK/LCH/Hop



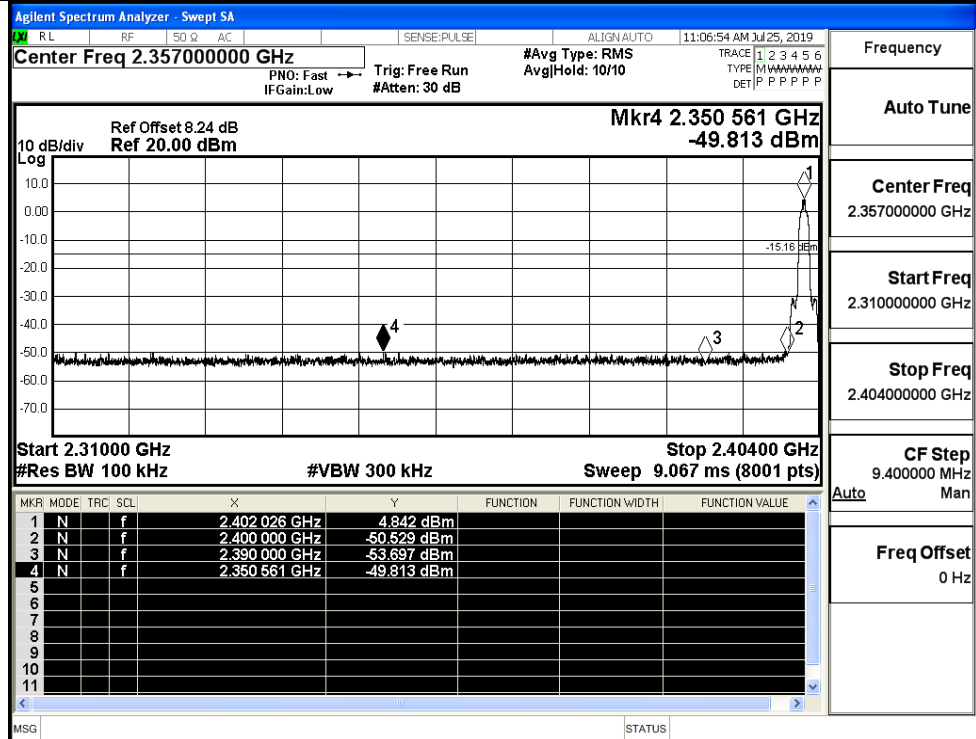
GFSK/HCH/No Hop



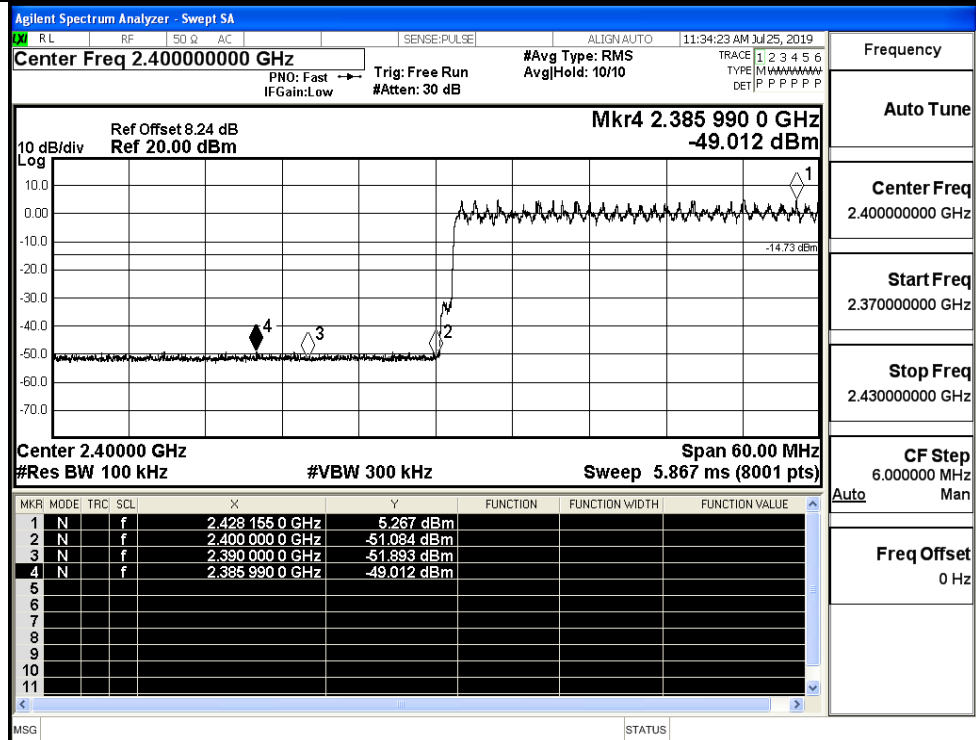
GFSK/HCH/Hop



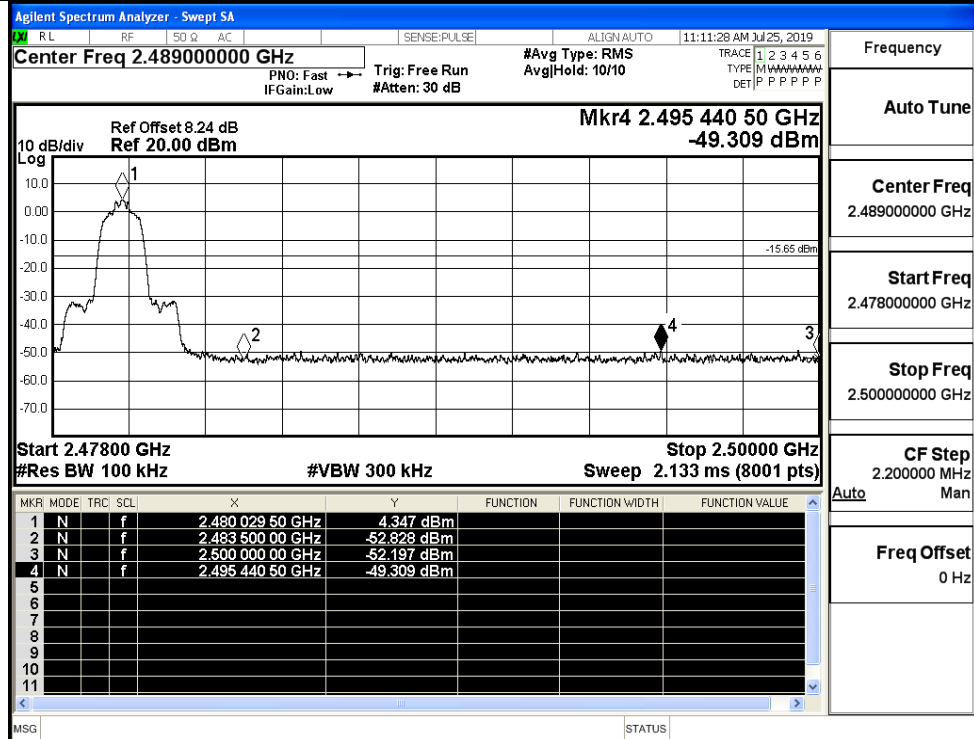
$\pi/4$ DQPSK/LCH/No  
Hop



$\pi/4$ DQPSK/LCH/Hop



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



Frequency

Auto Tune

Center Freq  
2.489000000 GHz

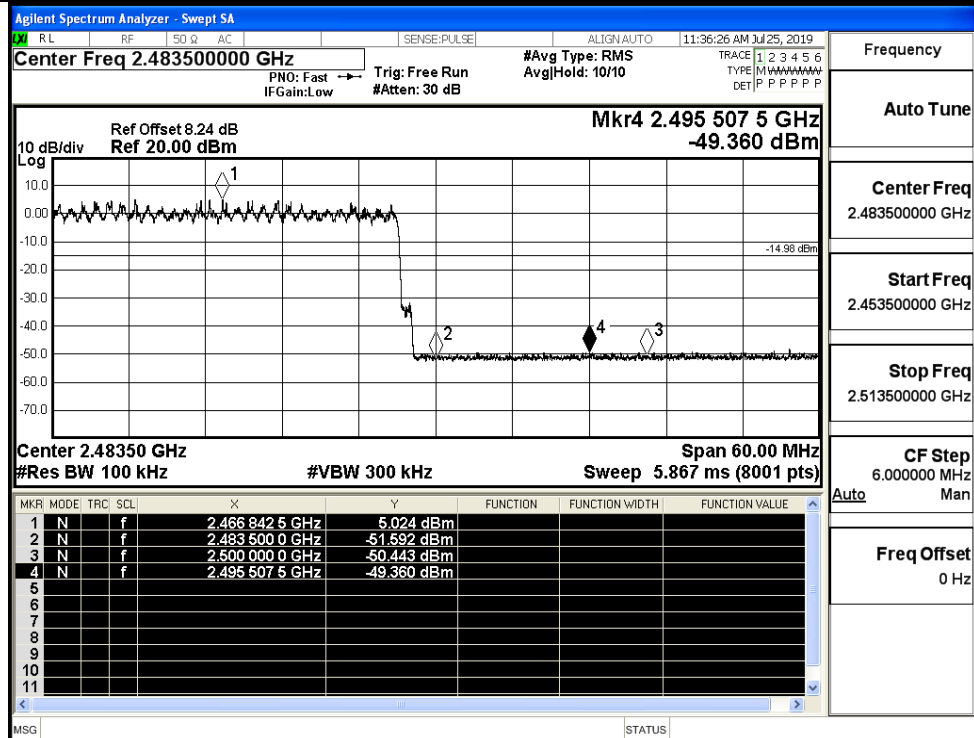
Start Freq  
2.478000000 GHz

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

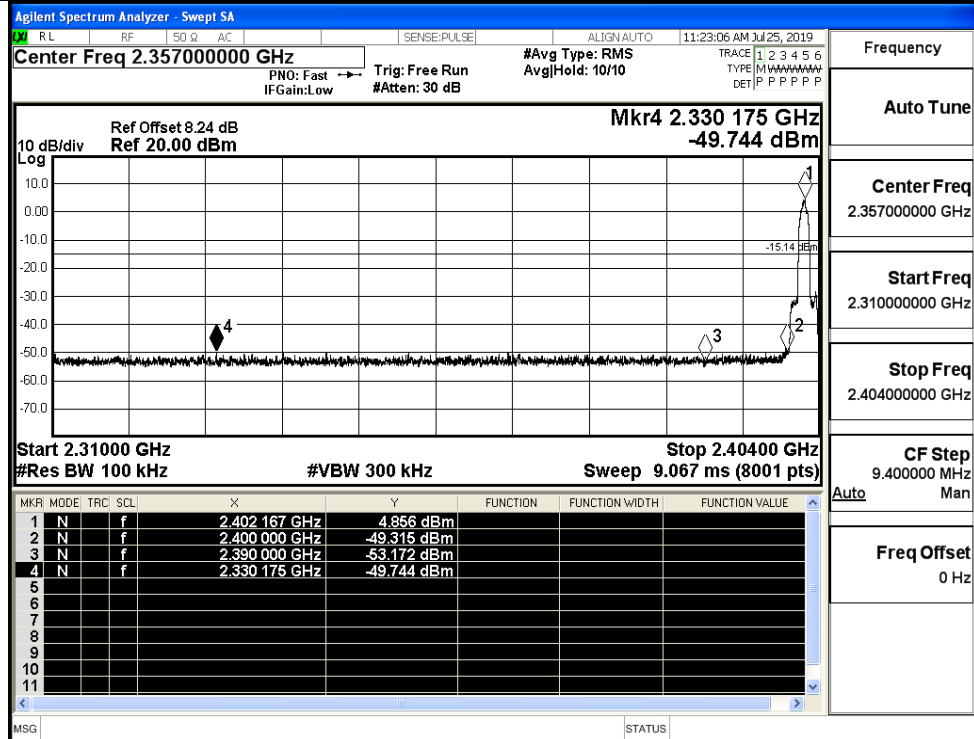
Start Freq  
2.453500000 GHz

Stop Freq  
2.513500000 GHz

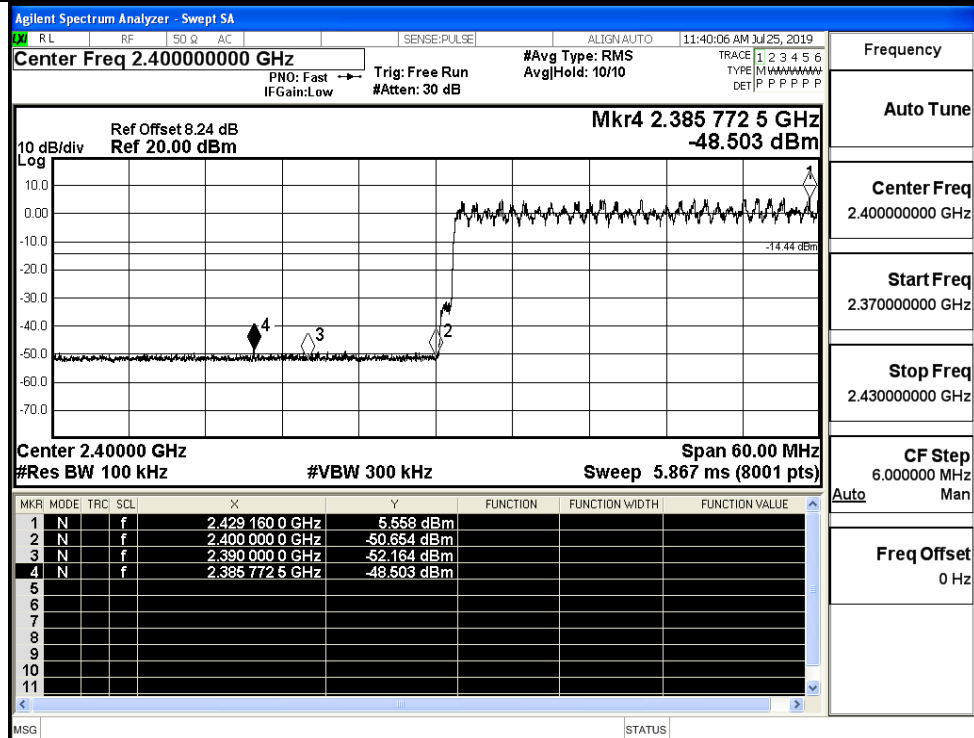
CF Step  
6.000000 MHz  
Auto Man

Freq Offset  
0 Hz

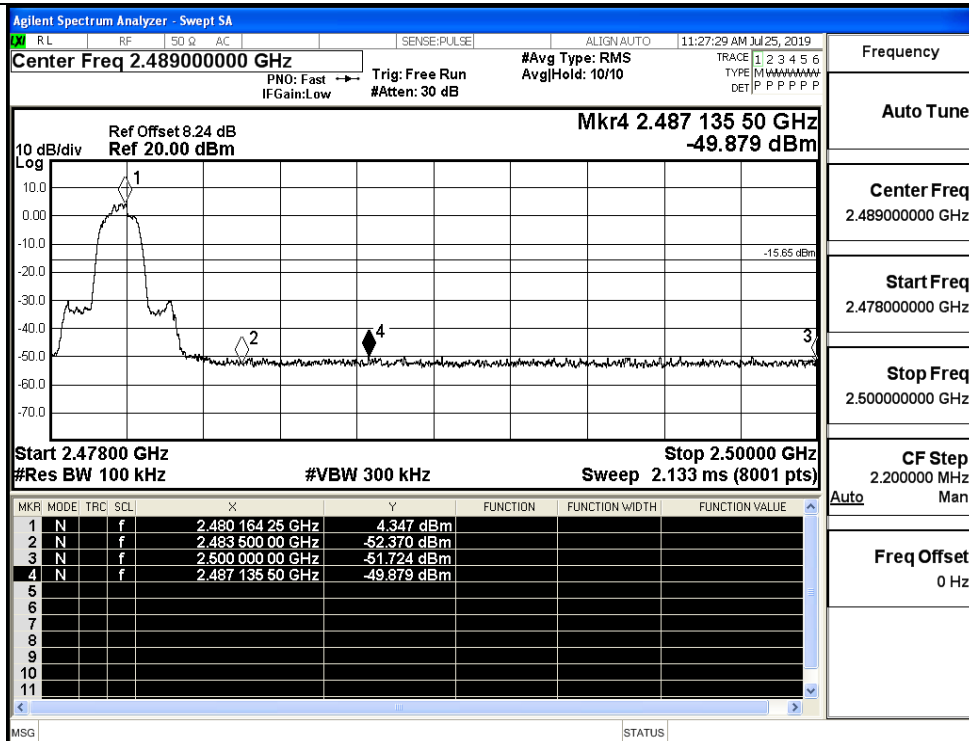
8DPSK/LCH/No Hop



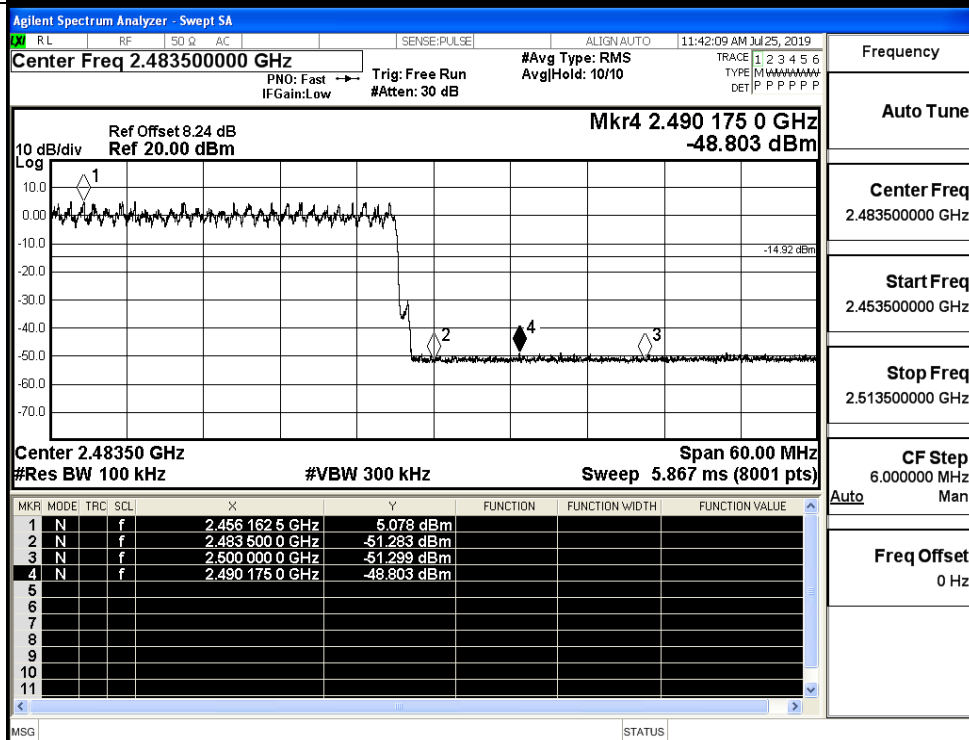
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



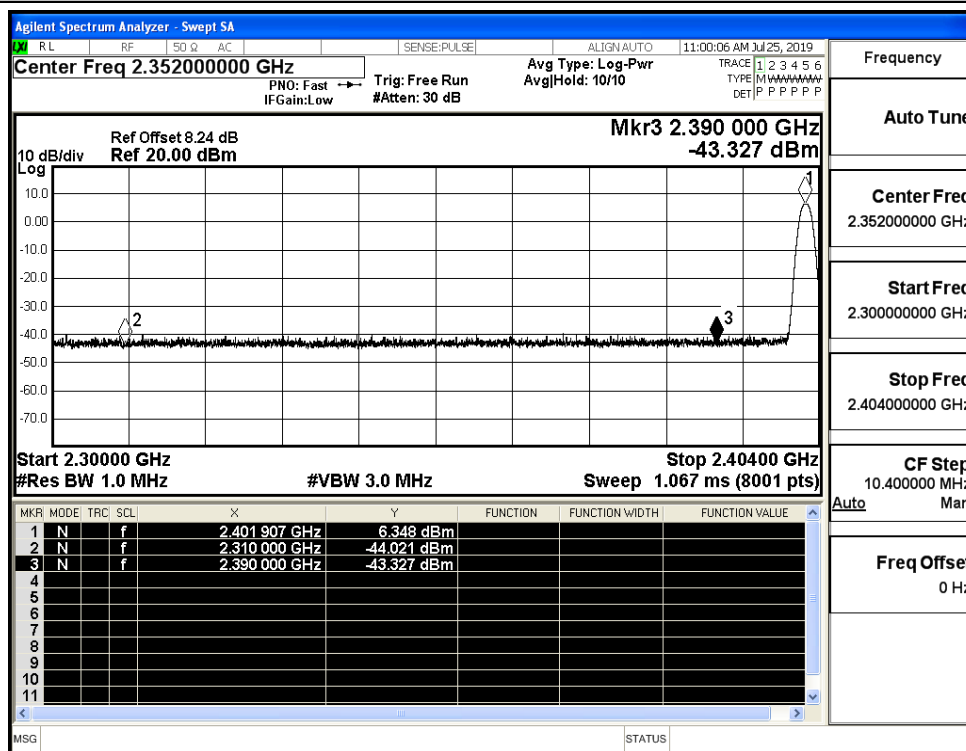
8DPSK/HCH/Hop



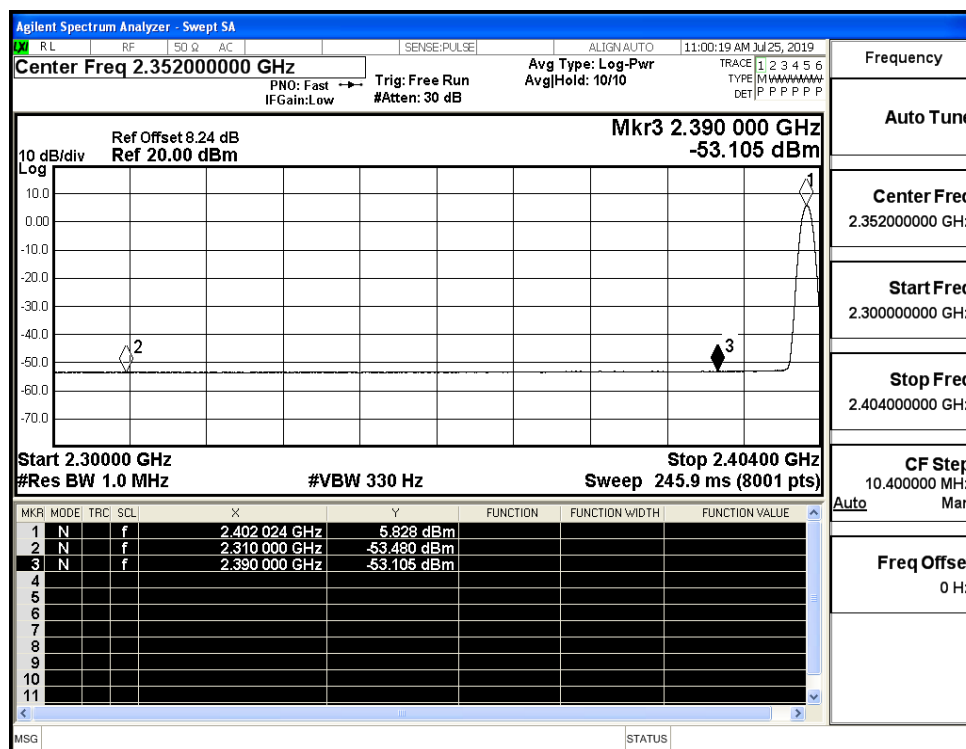
**A.8 Restrict-band band-edge measurements**

| Test Mode     | Hopping | Freq.  | Power [dBm] | Gain | Ground Factor | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|---------------|---------|--------|-------------|------|---------------|------------|----------|----------------|---------|
| GFSK          | Off     | 2310.0 | -44.02      | 2.0  | 0             | 51.24      | PEAK     | 74             | PASS    |
|               | Off     | 2310.0 | -53.48      | 2.0  | 0             | 41.78      | AV       | 54             | PASS    |
|               | Off     | 2390.0 | -43.33      | 2.0  | 0             | 51.93      | PEAK     | 74             | PASS    |
|               | Off     | 2390.0 | -53.11      | 2.0  | 0             | 42.15      | AV       | 54             | PASS    |
|               | Off     | 2483.5 | -43.22      | 2.0  | 0             | 52.04      | PEAK     | 74             | PASS    |
|               | Off     | 2483.5 | -52.71      | 2.0  | 0             | 42.55      | AV       | 54             | PASS    |
|               | Off     | 2500.0 | -42.88      | 2.0  | 0             | 52.37      | PEAK     | 74             | PASS    |
|               | Off     | 2500.0 | -52.81      | 2.0  | 0             | 42.44      | AV       | 54             | PASS    |
| $\pi/4$ DQPSK | Off     | 2310.0 | -43.05      | 2.0  | 0             | 52.21      | PEAK     | 74             | PASS    |
|               | Off     | 2310.0 | -53.49      | 2.0  | 0             | 41.77      | AV       | 54             | PASS    |
|               | Off     | 2390.0 | -41.50      | 2.0  | 0             | 53.76      | PEAK     | 74             | PASS    |
|               | Off     | 2390.0 | -53.23      | 2.0  | 0             | 42.02      | AV       | 54             | PASS    |
|               | Off     | 2483.5 | -42.90      | 2.0  | 0             | 52.35      | PEAK     | 74             | PASS    |
|               | Off     | 2483.5 | -52.61      | 2.0  | 0             | 42.65      | AV       | 54             | PASS    |
|               | Off     | 2500.0 | -43.40      | 2.0  | 0             | 51.86      | PEAK     | 74             | PASS    |
|               | Off     | 2500.0 | -52.84      | 2.0  | 0             | 42.42      | AV       | 54             | PASS    |
| 8DPSK         | Off     | 2310.0 | -43.24      | 2.0  | 0             | 52.01      | PEAK     | 74             | PASS    |
|               | Off     | 2310.0 | -53.44      | 2.0  | 0             | 41.81      | AV       | 54             | PASS    |
|               | Off     | 2390.0 | -43.08      | 2.0  | 0             | 52.18      | PEAK     | 74             | PASS    |
|               | Off     | 2390.0 | -53.11      | 2.0  | 0             | 42.15      | AV       | 54             | PASS    |
|               | Off     | 2483.5 | -42.50      | 2.0  | 0             | 52.76      | PEAK     | 74             | PASS    |
|               | Off     | 2483.5 | -52.57      | 2.0  | 0             | 42.69      | AV       | 54             | PASS    |
|               | Off     | 2500.0 | -42.21      | 2.0  | 0             | 53.04      | PEAK     | 74             | PASS    |
|               | Off     | 2500.0 | -52.83      | 2.0  | 0             | 42.43      | AV       | 54             | PASS    |

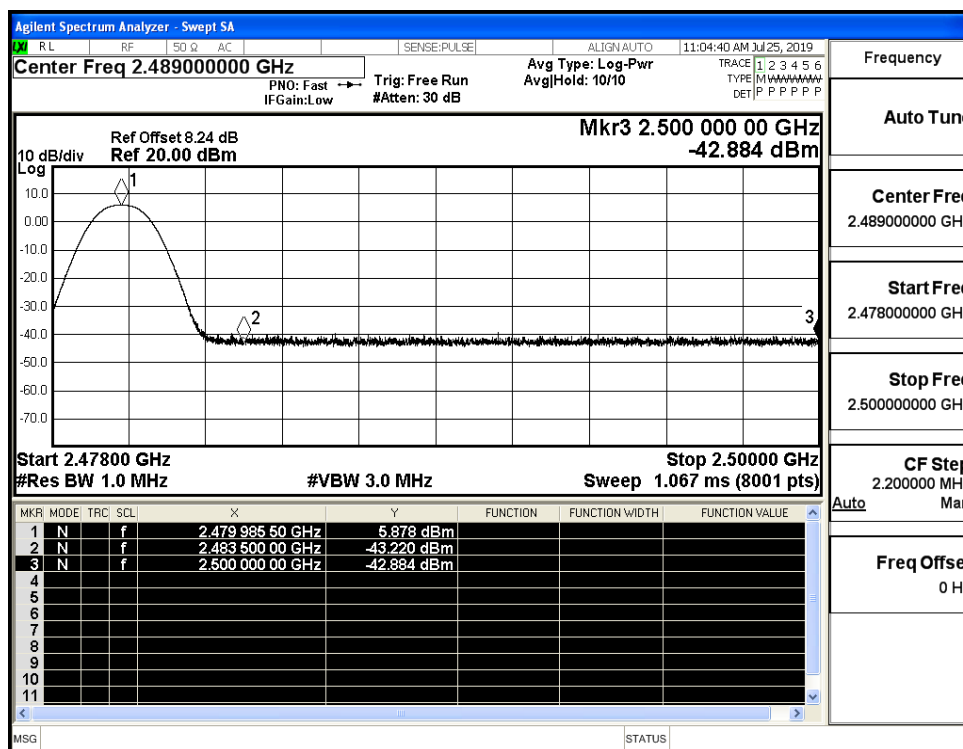
# Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (Low Channel)



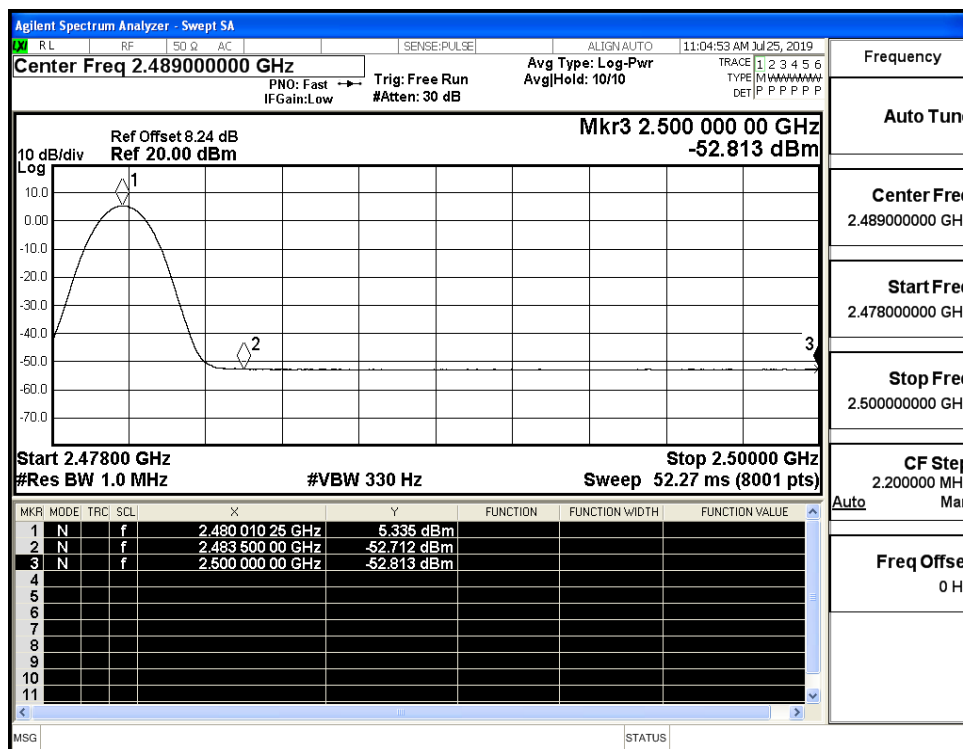
# Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (Low Channel)

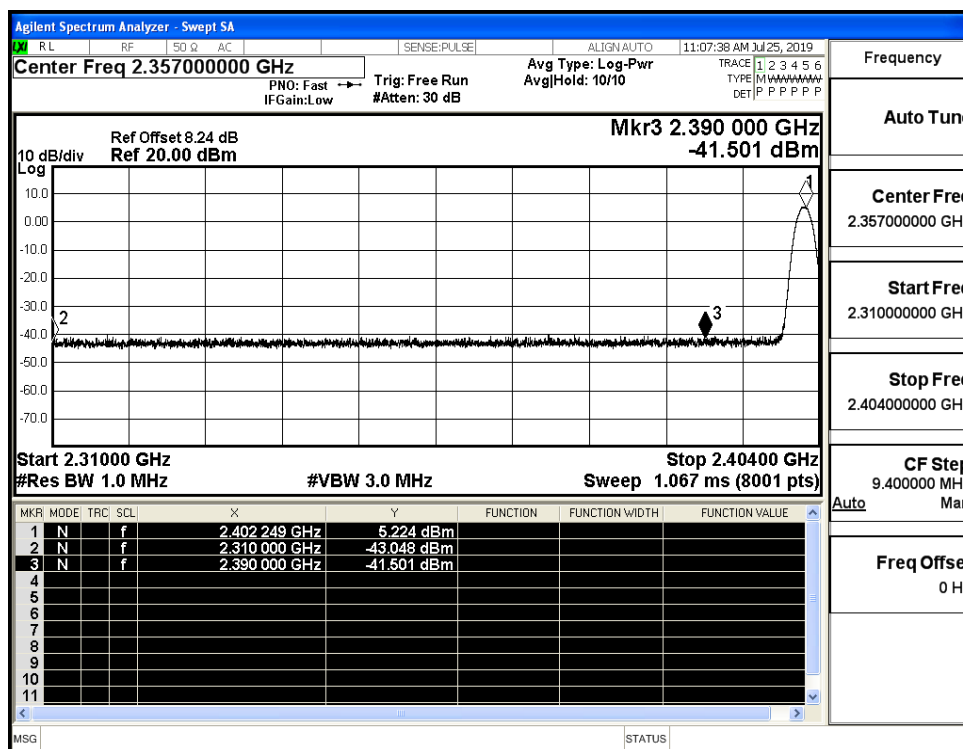
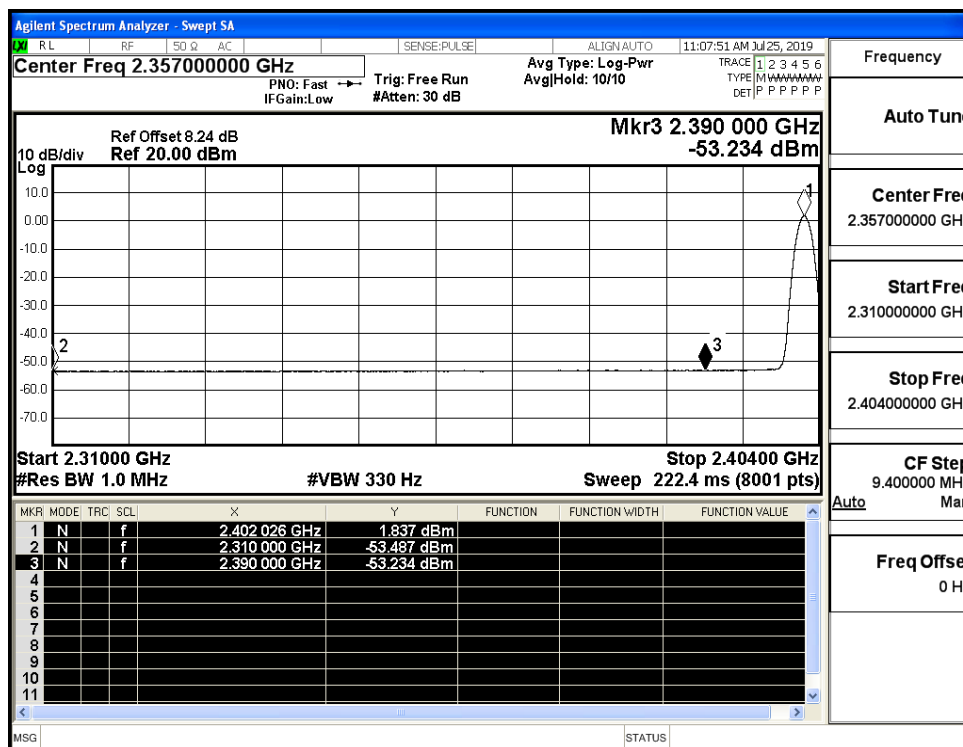


Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (High Channel)

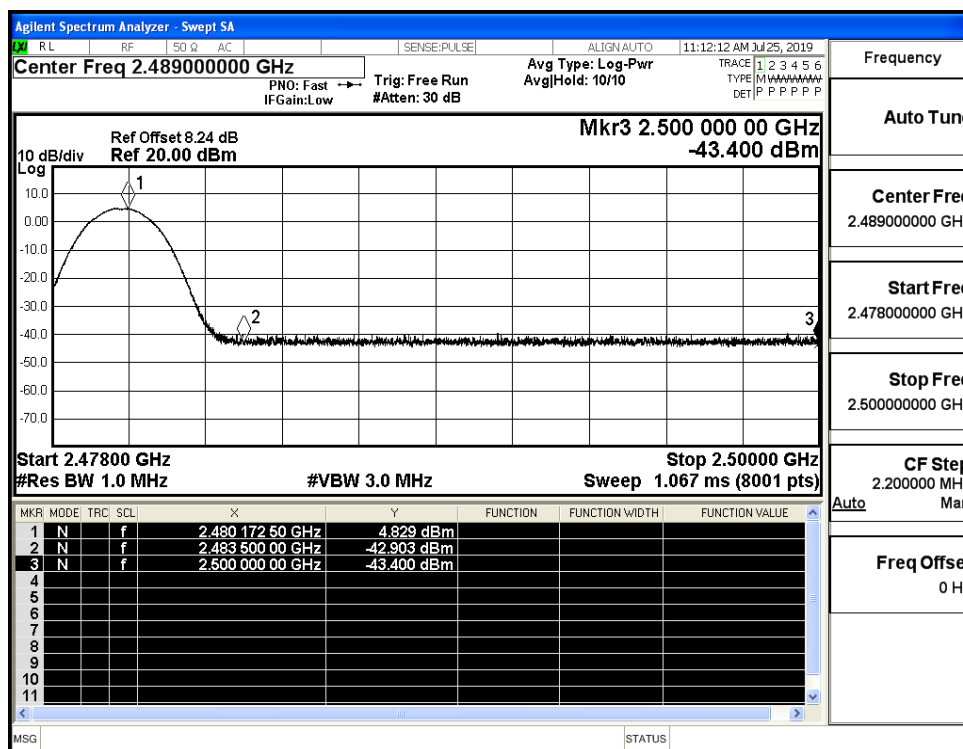


Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (High Channel)

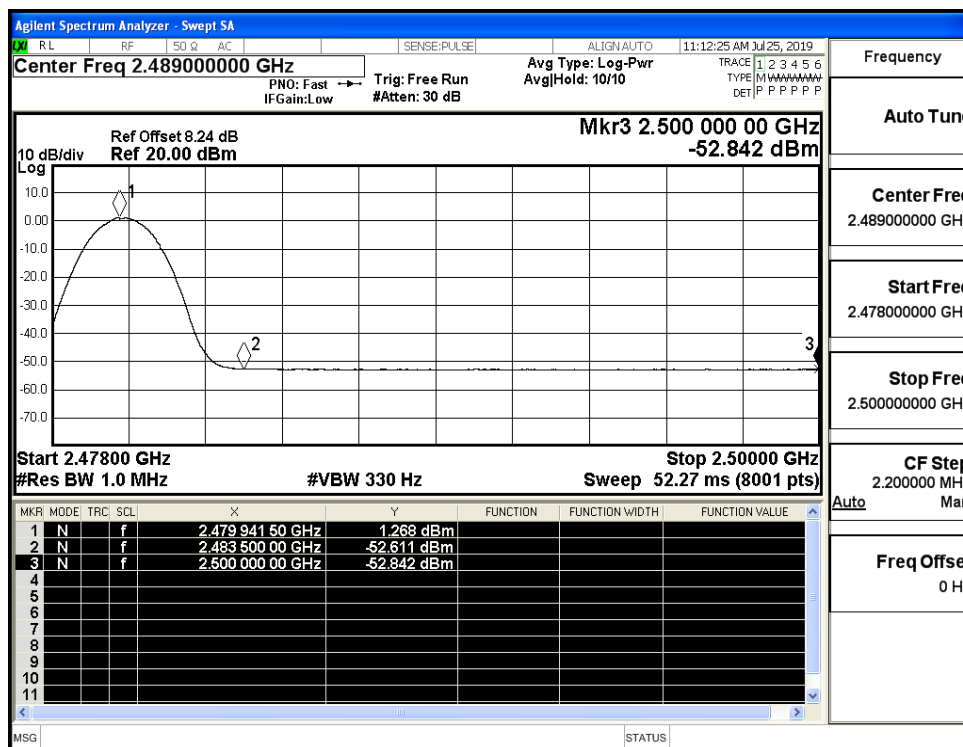


Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_PEAK (Low Channel)Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_Average (Low Channel)

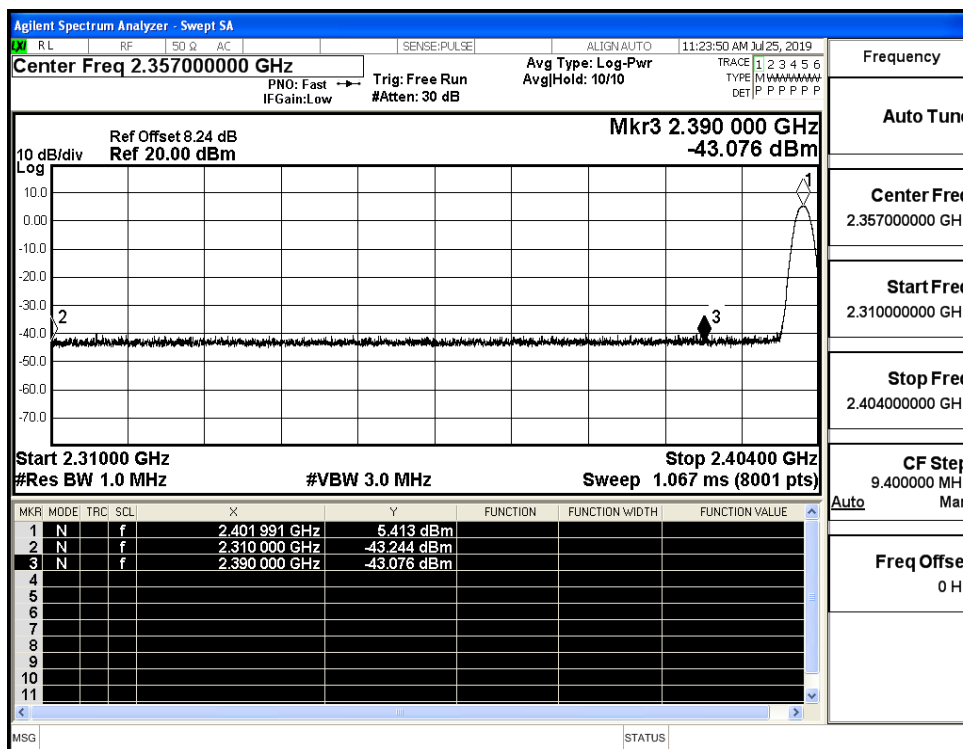
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (High Channel)



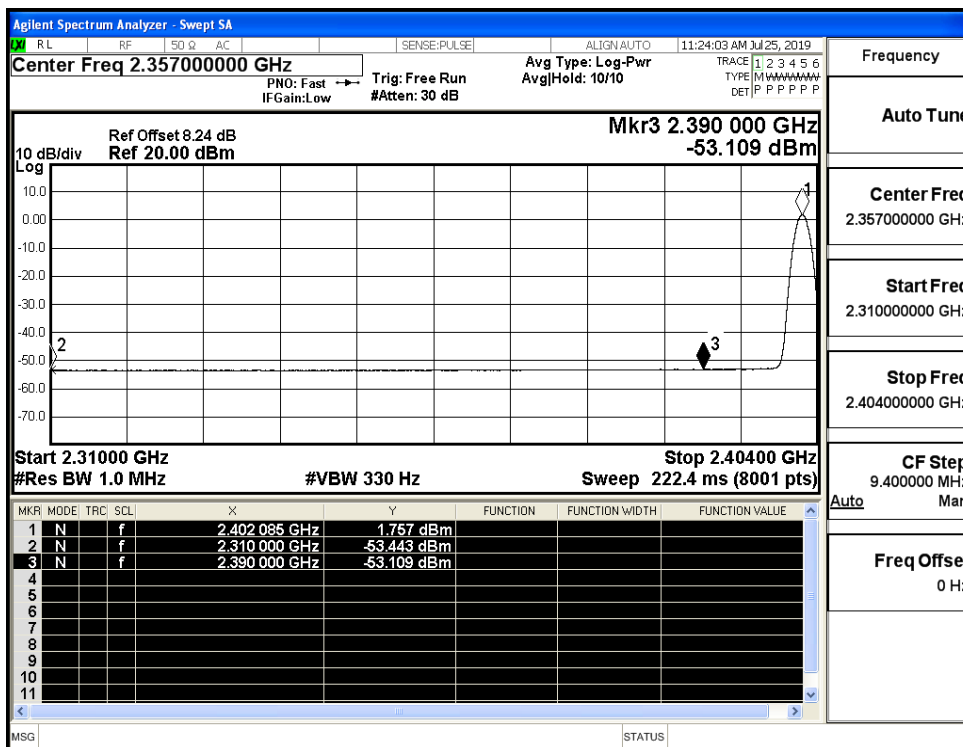
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (High Channel)



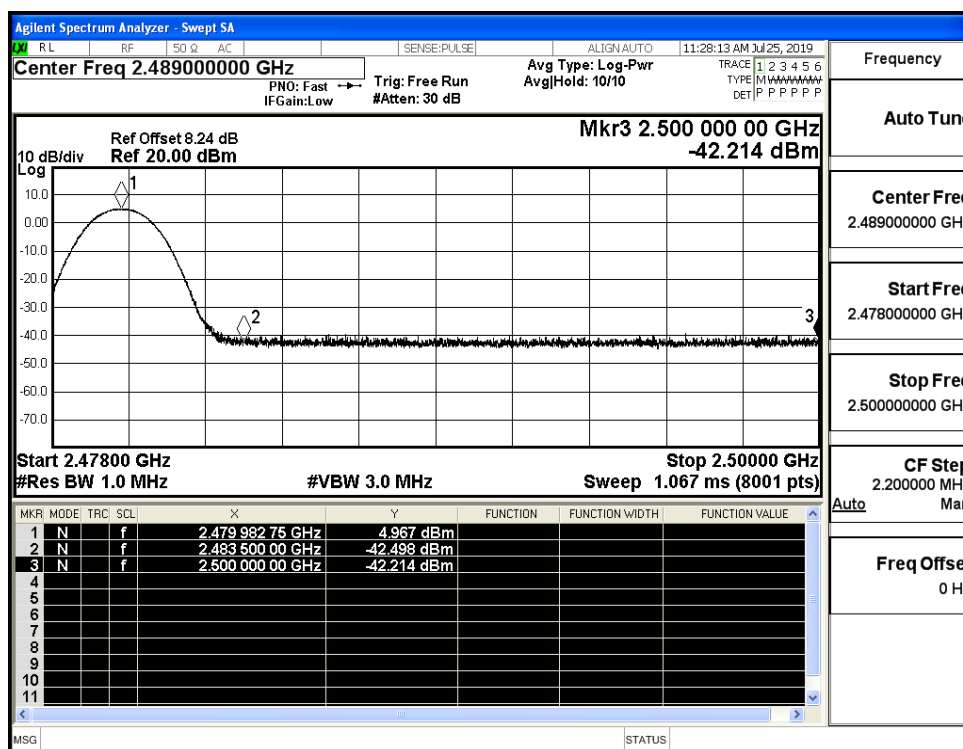
Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_PEAK (Low Channel)



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)

