

## Appendix A

### RF Test Data for BT V4.1(BDR/EDR) (Conducted Measurement)

Product Name: Wireless stereo Bluetooth headphones

Trade Mark: FS-BT210

Test Model: N/A

#### Environmental Conditions

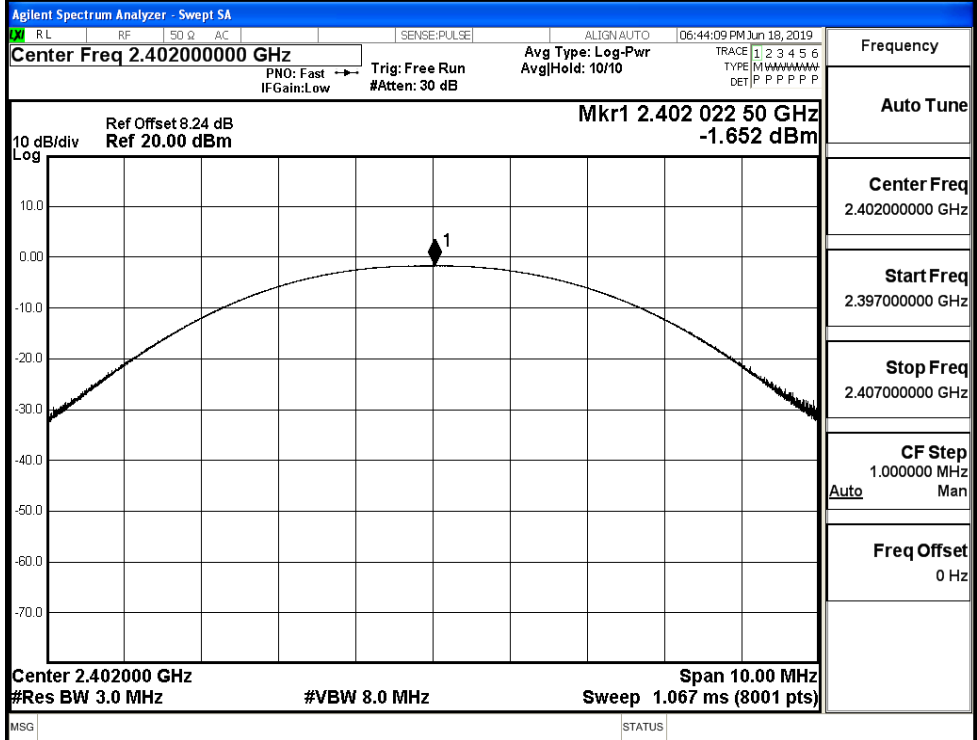
|                    |            |
|--------------------|------------|
| Temperature:       | 24.6 ° C   |
| Relative Humidity: | 53.7%      |
| ATM Pressure:      | 100.0 kPa  |
| Test Engineer:     | LI HUAN    |
| Supervised by:     | WANGCHUANG |

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

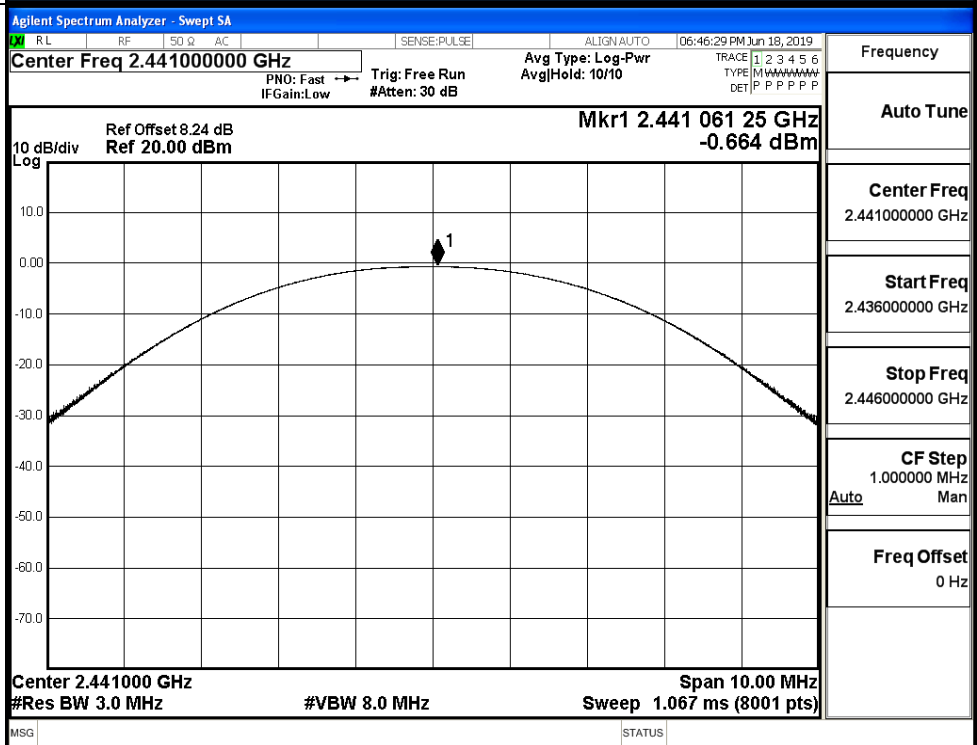
| Mode          | Channel. | Maximum Peak Output Power [dBm] | Limit [dBm] | Verdict |
|---------------|----------|---------------------------------|-------------|---------|
| GFSK          | LCH      | -1.652                          | 21          | PASS    |
|               | MCH      | -0.664                          | 21          | PASS    |
|               | HCH      | -1.619                          | 21          | PASS    |
| $\pi/4$ DQPSK | LCH      | -2.302                          | 21          | PASS    |
|               | MCH      | -1.212                          | 21          | PASS    |
|               | HCH      | -2.372                          | 21          | PASS    |
| 8DPSK         | LCH      | -0.117                          | 21          | PASS    |
|               | MCH      | -1.085                          | 21          | PASS    |
|               | HCH      | -2.182                          | 21          | PASS    |

Test Graphs

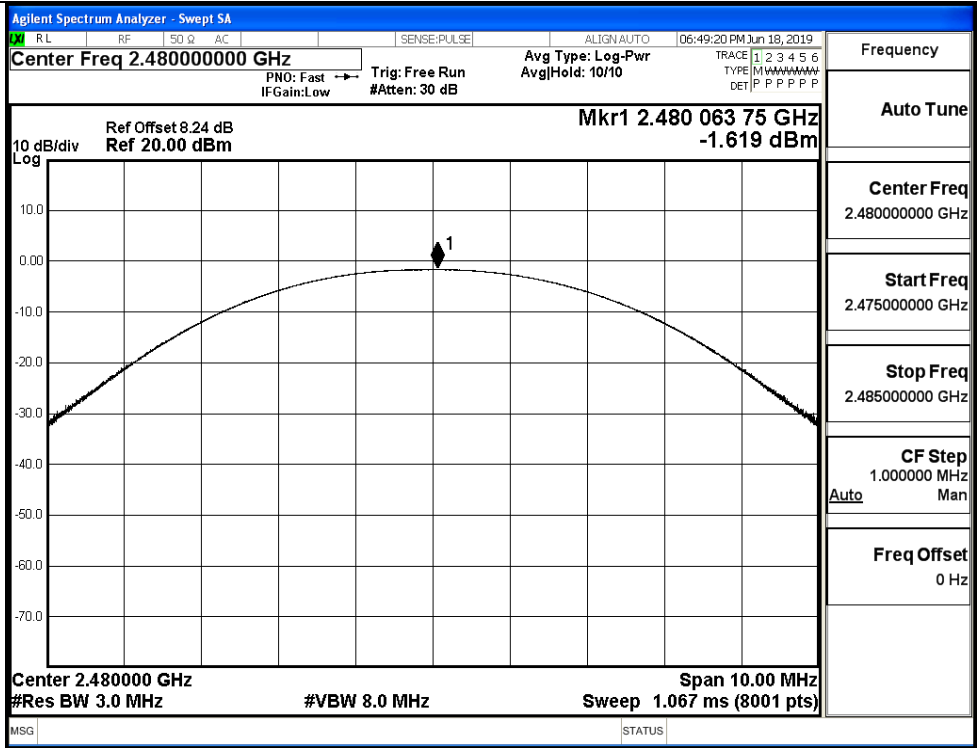
GFSK/LCH



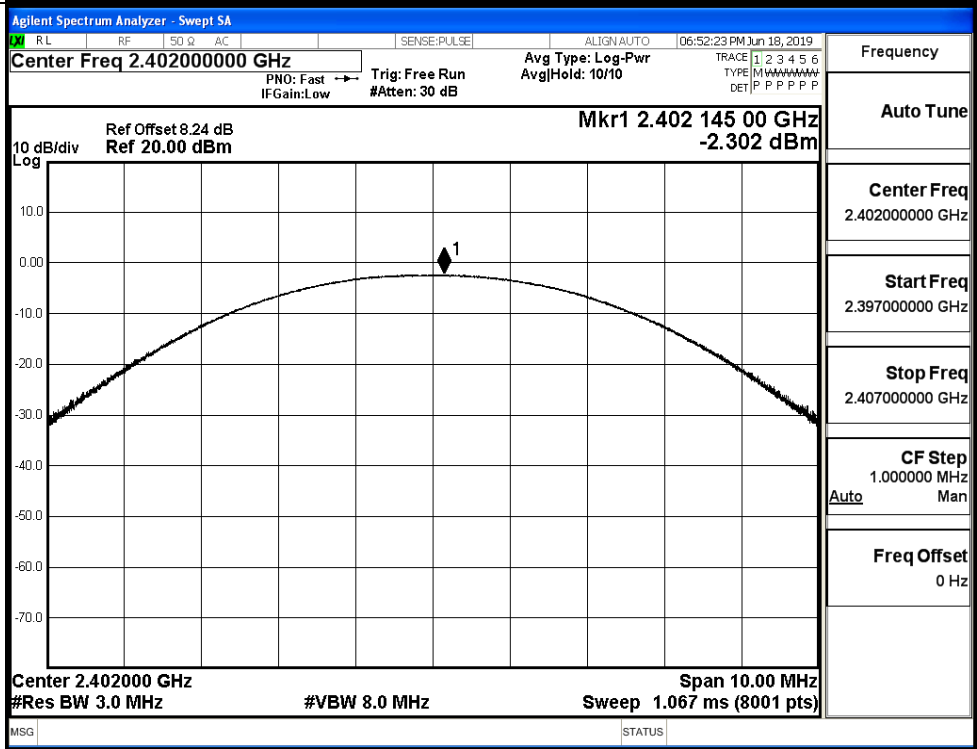
GFSK/MCH

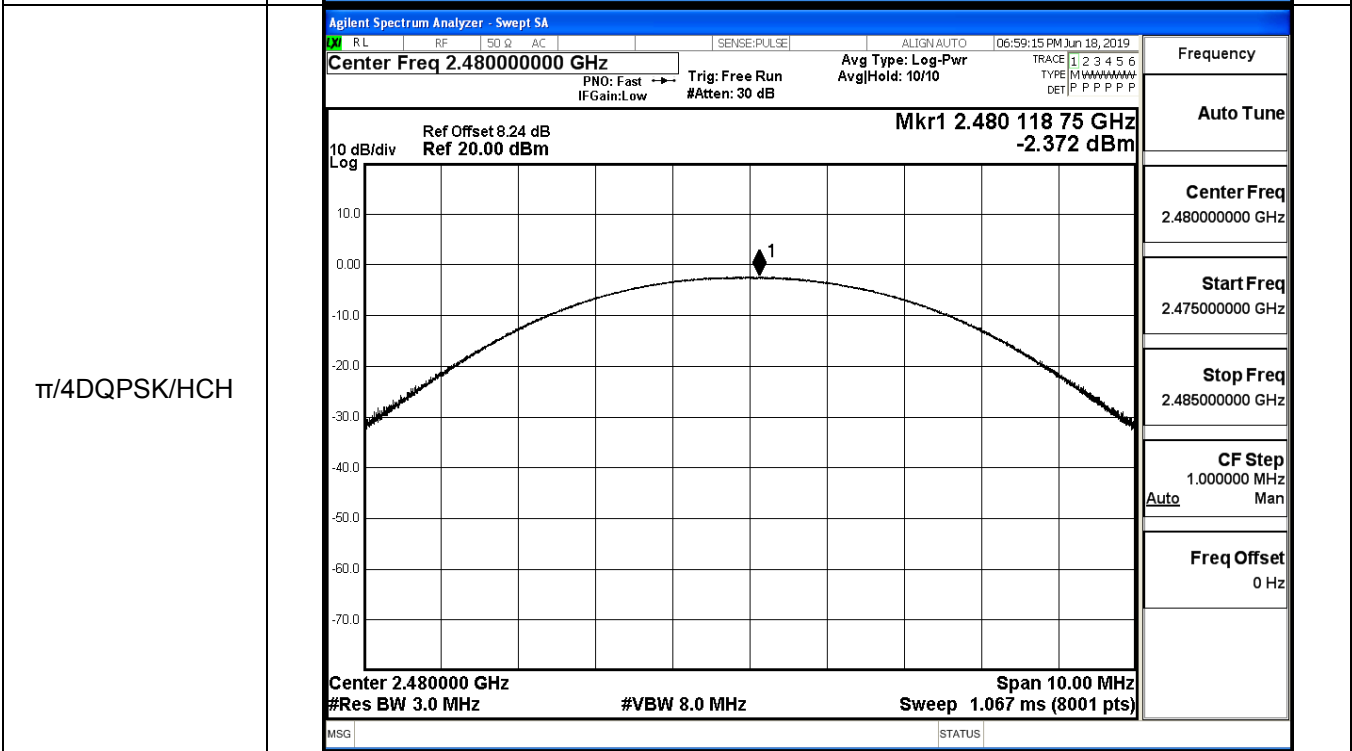
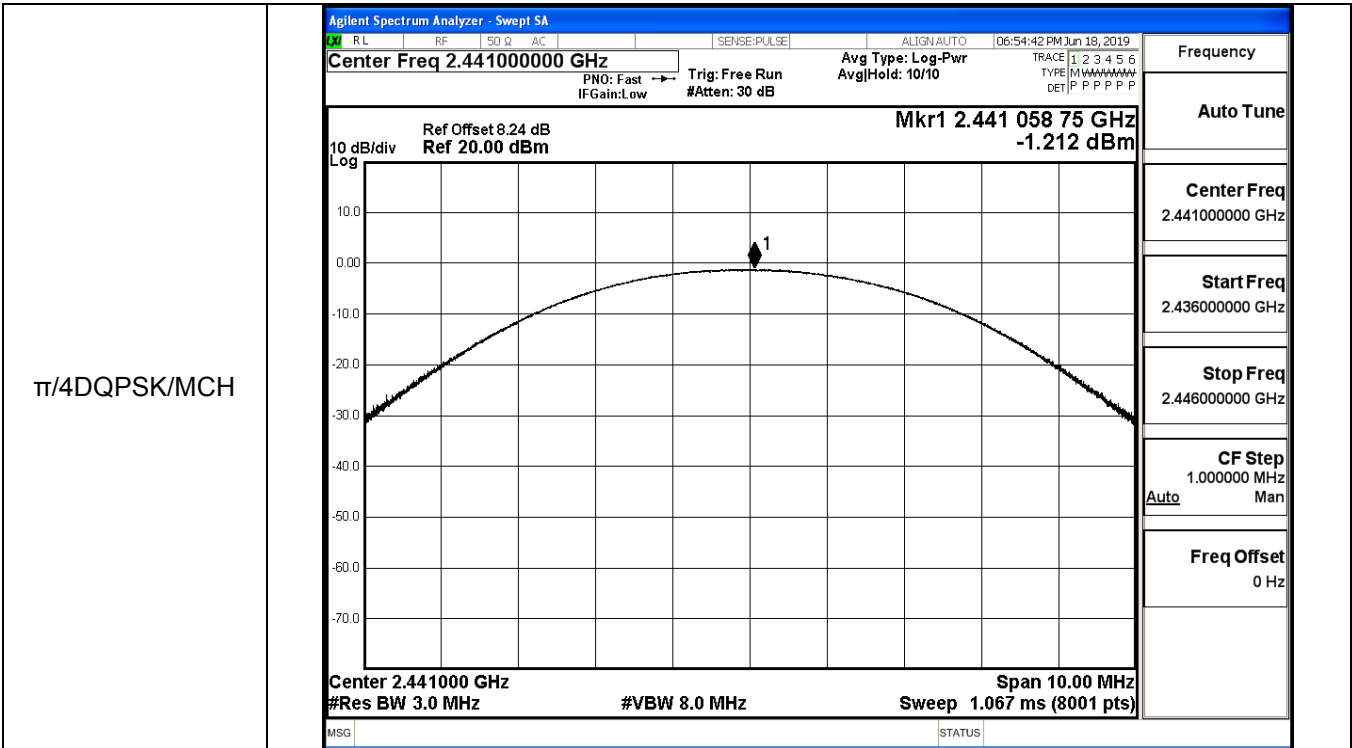


GFSK/HCH

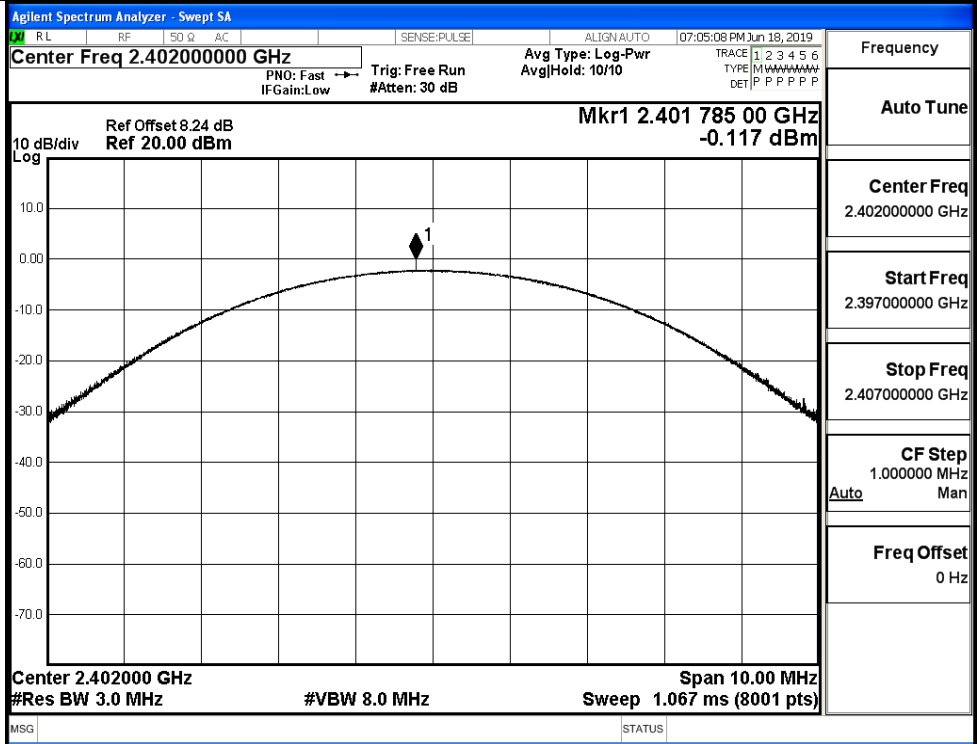


$\pi/4$ DQPSK/LCH

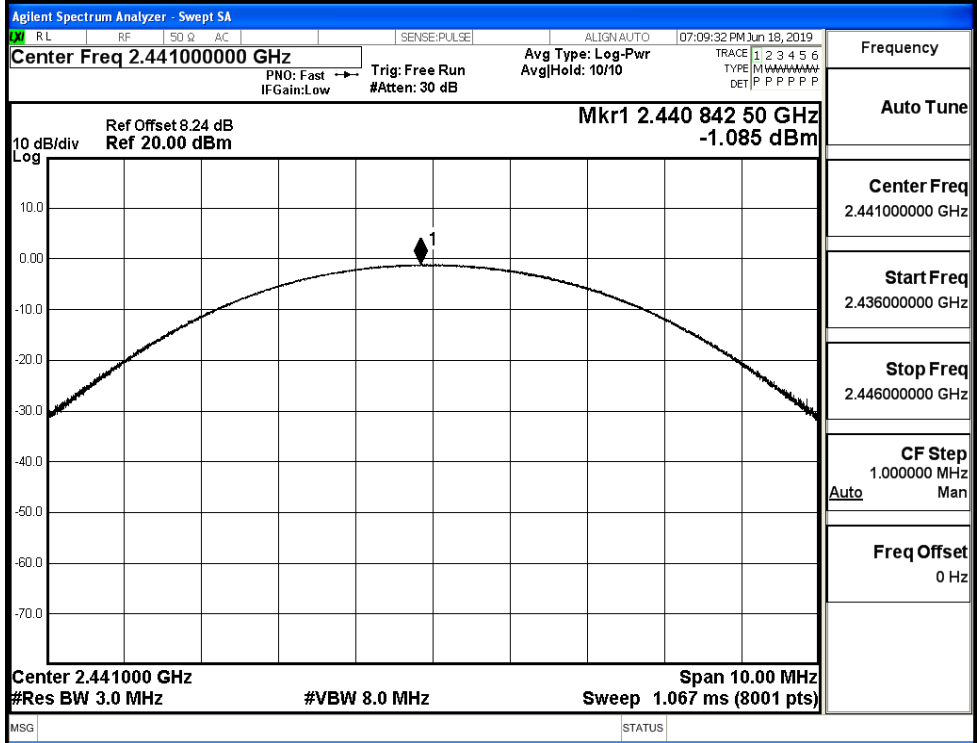




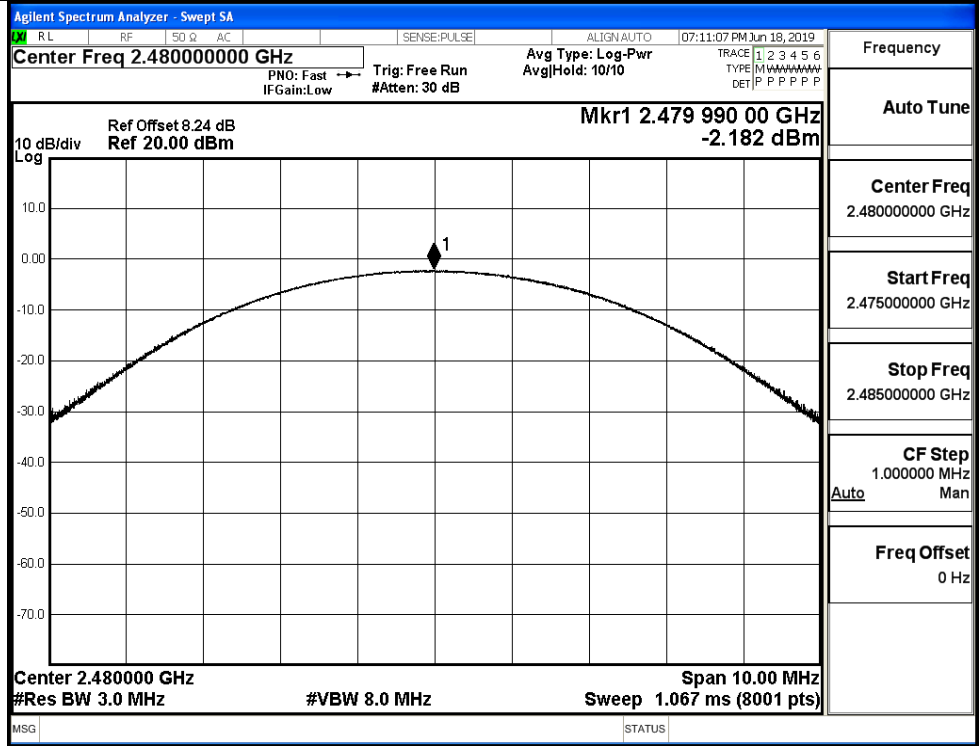
8DPSK/LCH



8DPSK/MCH

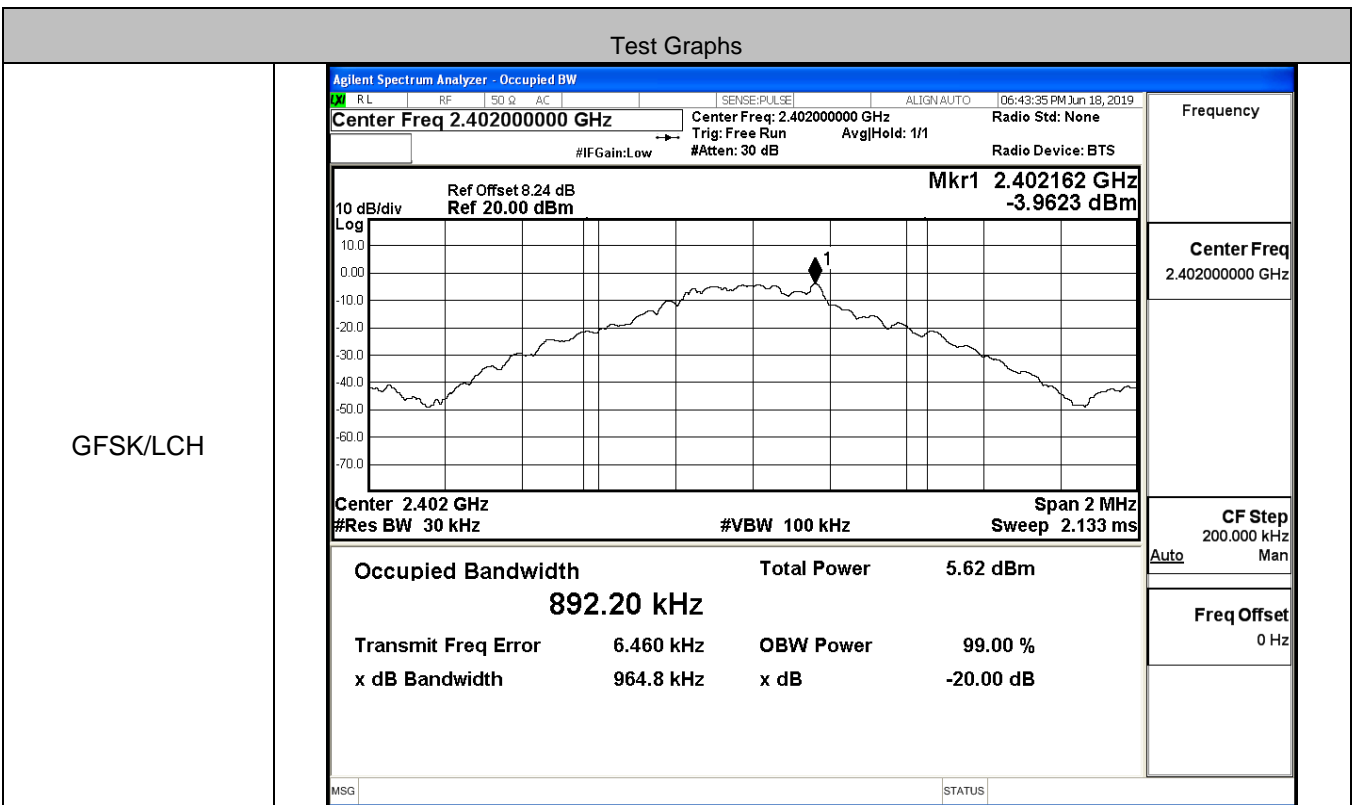


8DPSK/HCH

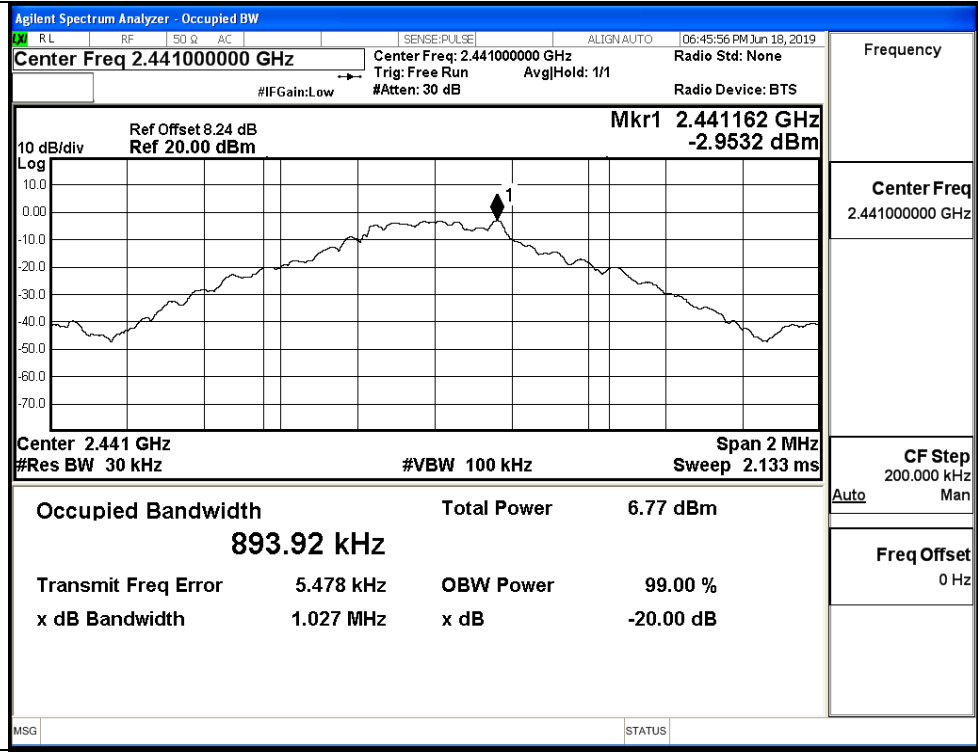


**A.2 20dB Bandwidth**

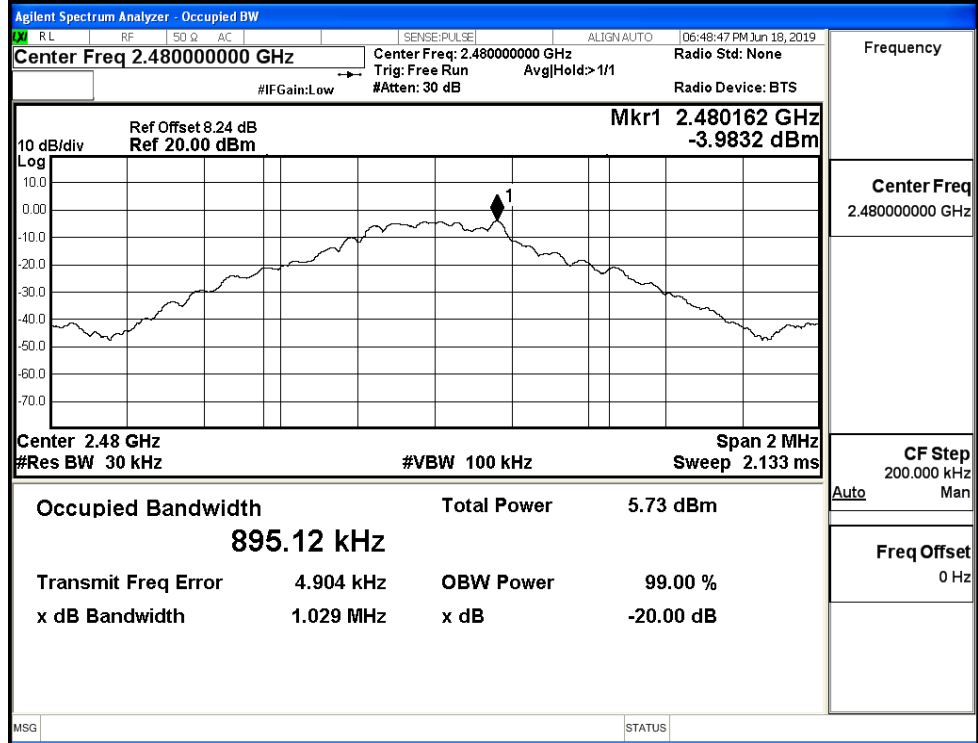
| Mode          | Channel. | 20dB Bandwidth [MHz] | Limit [MHz]   | Verdict |
|---------------|----------|----------------------|---------------|---------|
| GFSK          | LCH      | 0.9648               | Not Specified | PASS    |
|               | MCH      | 1.027                | Not Specified | PASS    |
|               | HCH      | 1.029                | Not Specified | PASS    |
| $\pi/4$ DQPSK | LCH      | 1.291                | Not Specified | PASS    |
|               | MCH      | 1.311                | Not Specified | PASS    |
|               | HCH      | 1.311                | Not Specified | PASS    |
| 8DPSK         | LCH      | 1.312                | Not Specified | PASS    |
|               | MCH      | 1.298                | Not Specified | PASS    |
|               | HCH      | 1.298                | Not Specified | PASS    |



GFSK/MCH

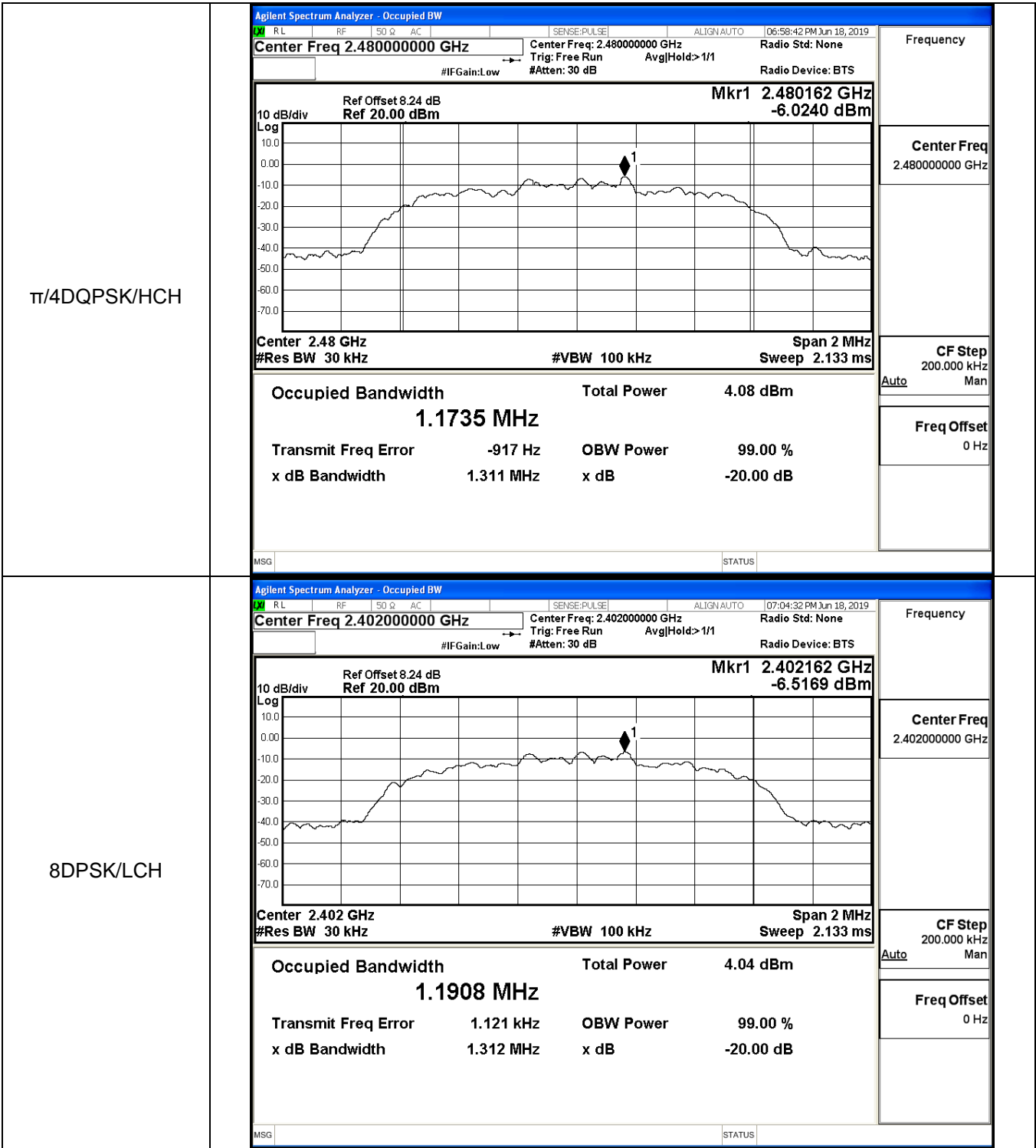


GFSK/HCH

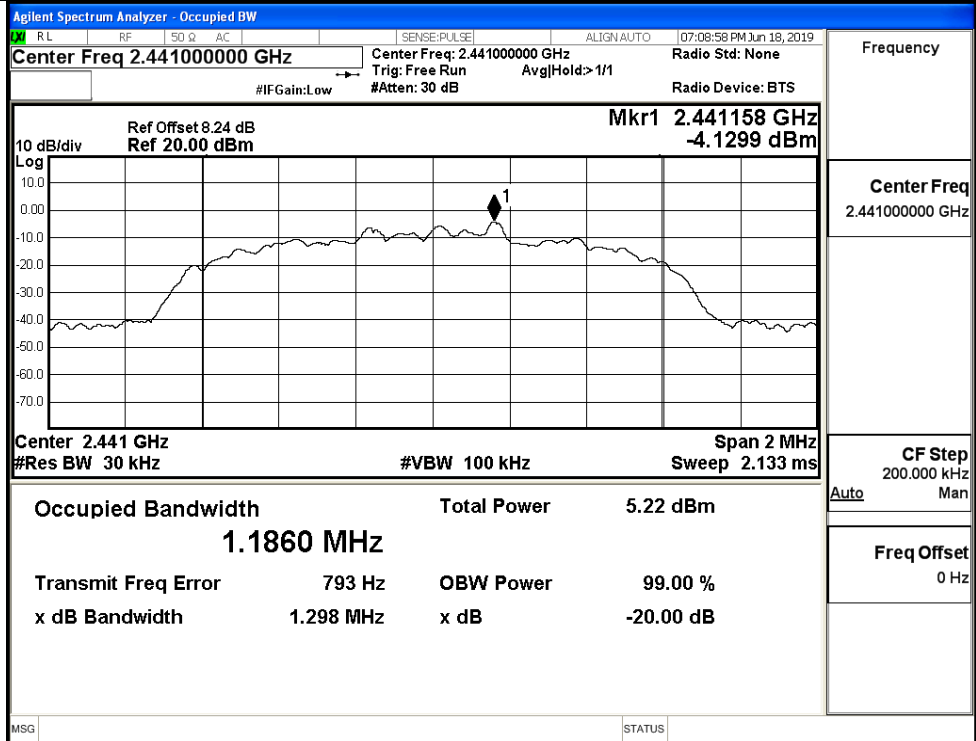




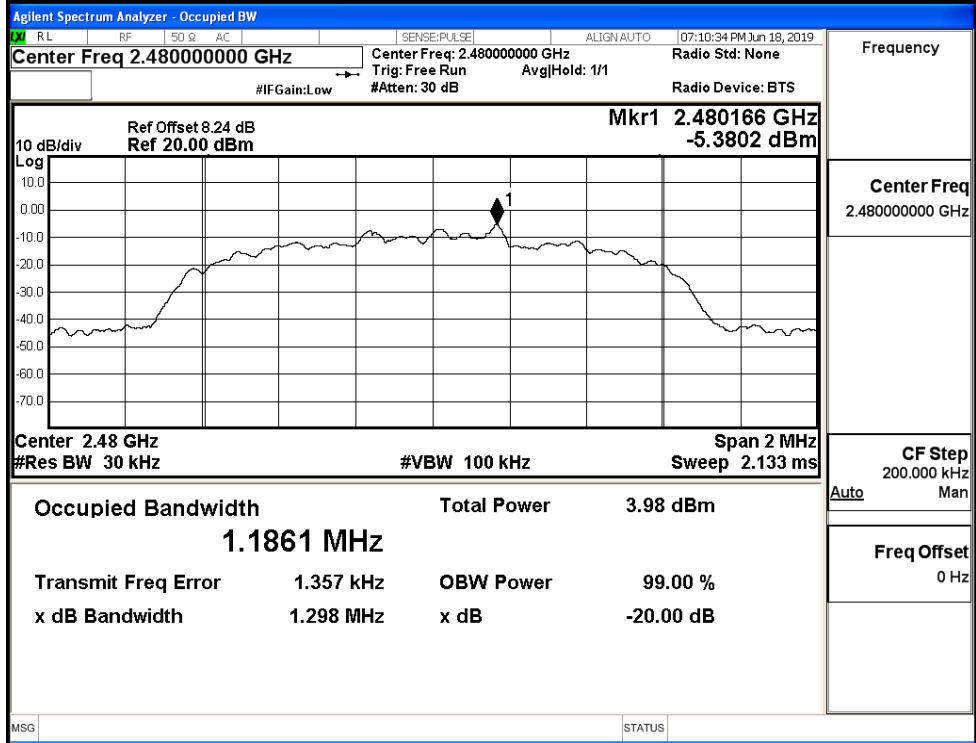
|   |   |   |
|---|---|---|
| <p style="text-align: center;">π/4DQPSK/LCH</p> | <div style="border: 1px solid black; padding: 5px;"> <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq <b>2.40200000 GHz</b>      Center Freq: 2.40200000 GHz      Radio Std: None<br/>             Trig: Free Run      Avg Hold: 1/1</p> <p>#IFGain:Low      #Atten: 30 dB      Radio Device: BTS</p> <hr/> <p>10 dB/div      Ref Offset 8.24 dB      Mkr1 <b>2.402162 GHz</b><br/>             Ref 20.00 dBm      <b>-5.7478 dBm</b></p> <p>Center <b>2.402 GHz</b>      Span <b>2 MHz</b><br/>             #Res BW <b>30 kHz</b>      #VBW <b>100 kHz</b>      Sweep <b>2.133 ms</b></p> <p><b>Occupied Bandwidth</b>      Total Power      <b>4.25 dBm</b><br/> <b>1.1767 MHz</b></p> <p>Transmit Freq Error      <b>258 Hz</b>      OBW Power      <b>99.00 %</b><br/>             x dB Bandwidth      <b>1.291 MHz</b>      x dB      <b>-20.00 dB</b></p> <p>MSG      STATUS</p> </div>        | <p>Frequency</p> <p>Center Freq<br/>2.40200000 GHz</p> <p>CF Step<br/>200.000 kHz<br/>Auto      Man</p> <p>Freq Offset<br/>0 Hz</p> |
| <p style="text-align: center;">π/4DQPSK/MCH</p> | <div style="border: 1px solid black; padding: 5px;"> <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq <b>2.44100000 GHz</b>      Center Freq: 2.44100000 GHz      Radio Std: None<br/>             Trig: Free Run      Avg Hold:&gt;1/1</p> <p>#IFGain:Low      #Atten: 30 dB      Radio Device: BTS</p> <hr/> <p>10 dB/div      Ref Offset 8.24 dB      Mkr1 <b>2.441166 GHz</b><br/>             Ref 20.00 dBm      <b>-4.9586 dBm</b></p> <p>Center <b>2.441 GHz</b>      Span <b>2 MHz</b><br/>             #Res BW <b>30 kHz</b>      #VBW <b>100 kHz</b>      Sweep <b>2.133 ms</b></p> <p><b>Occupied Bandwidth</b>      Total Power      <b>5.21 dBm</b><br/> <b>1.1753 MHz</b></p> <p>Transmit Freq Error      <b>-1.246 kHz</b>      OBW Power      <b>99.00 %</b><br/>             x dB Bandwidth      <b>1.311 MHz</b>      x dB      <b>-20.00 dB</b></p> <p>MSG      STATUS</p> </div> | <p>Frequency</p> <p>Center Freq<br/>2.44100000 GHz</p> <p>CF Step<br/>200.000 kHz<br/>Auto      Man</p> <p>Freq Offset<br/>0 Hz</p> |



8DPSK/MCH

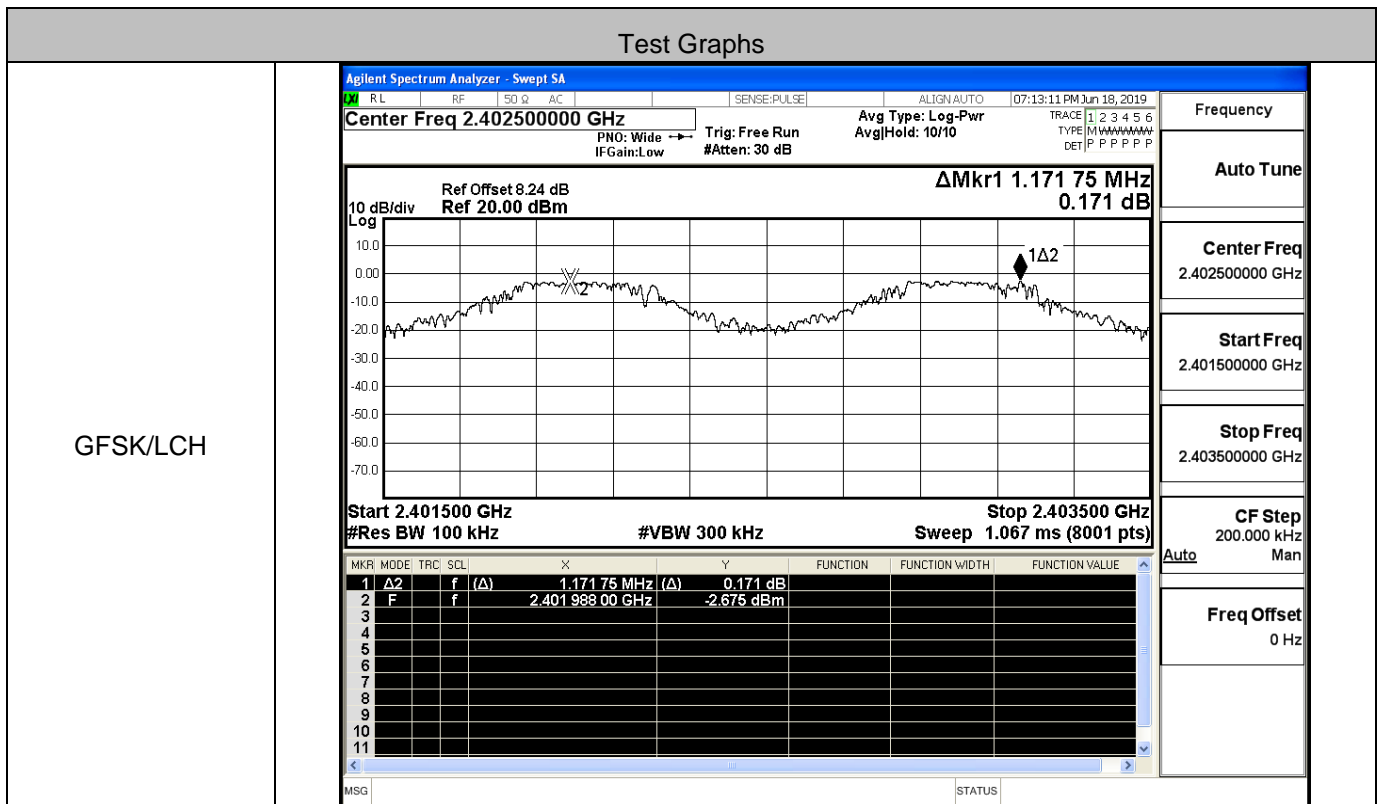


8DPSK/HCH

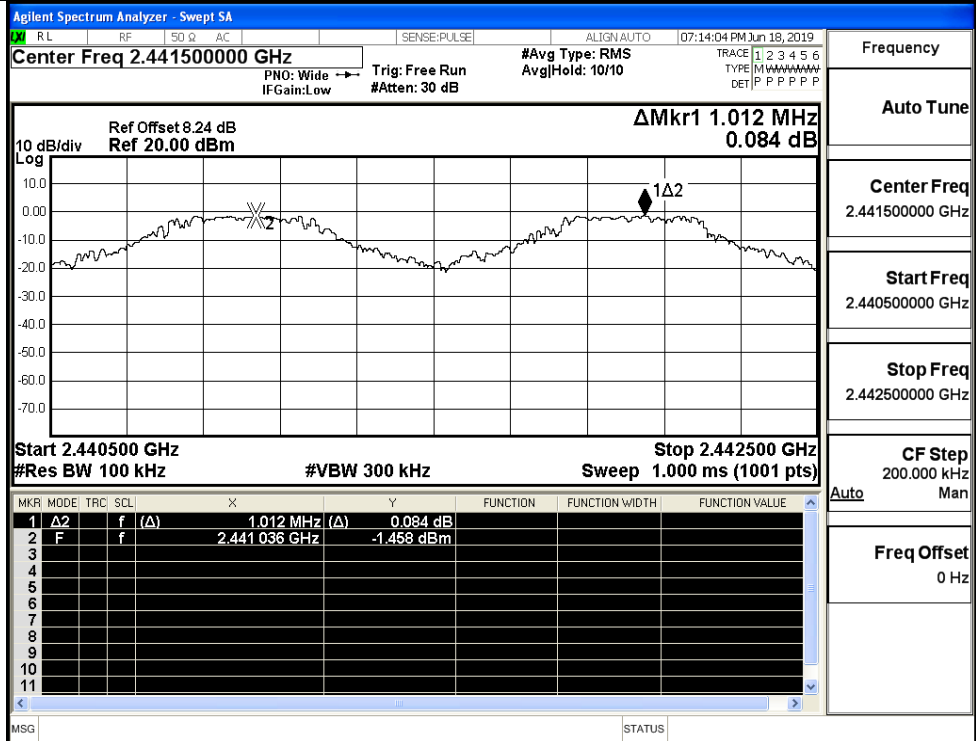


### A.3 Carrier Frequency Separation

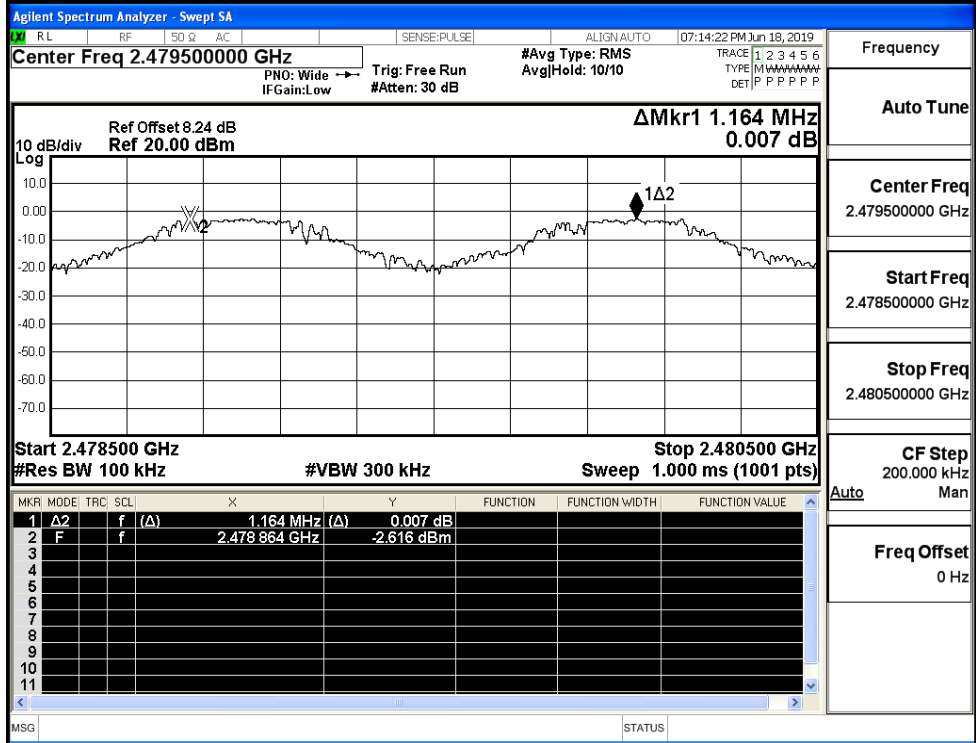
| Mode     | Channel | Carrier Frequency Separation [MHz] | Limit [MHz] | Verdict |
|----------|---------|------------------------------------|-------------|---------|
| GFSK     | LCH     | 1.172                              | 0.686       | PASS    |
|          | MCH     | 1.012                              | 0.686       | PASS    |
|          | HCH     | 1.164                              | 0.686       | PASS    |
| π/4DQPSK | LCH     | 0.980                              | 0.874       | PASS    |
|          | MCH     | 1.128                              | 0.874       | PASS    |
|          | HCH     | 1.330                              | 0.874       | PASS    |
| 8DPSK    | LCH     | 1.218                              | 0.875       | PASS    |
|          | MCH     | 1.178                              | 0.875       | PASS    |
|          | HCH     | 1.134                              | 0.875       | PASS    |



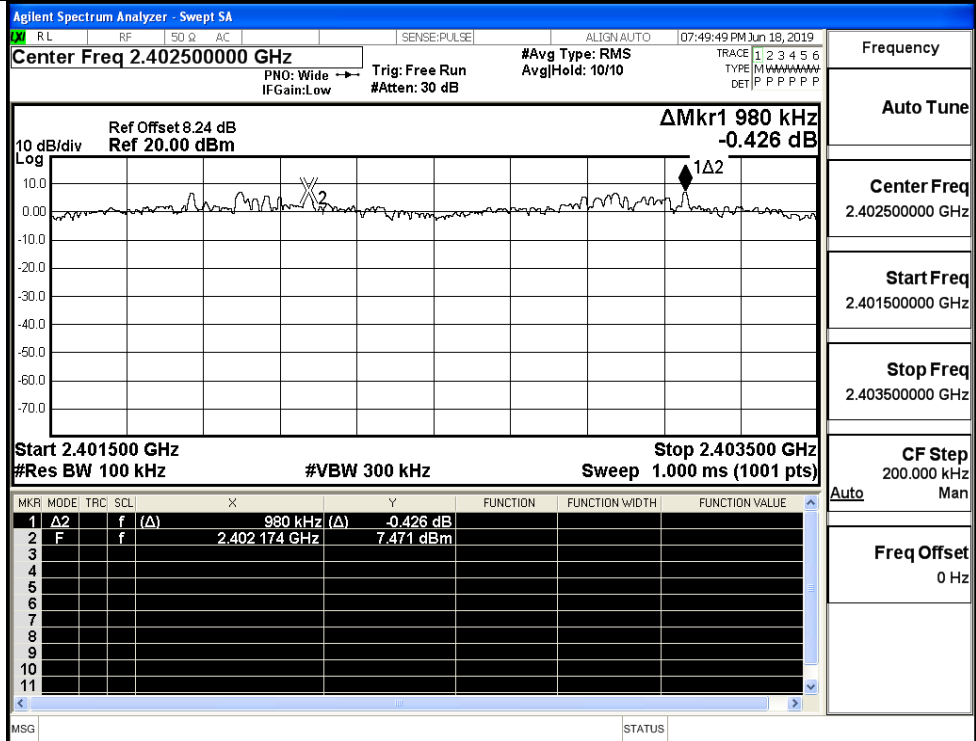
GFSK/MCH



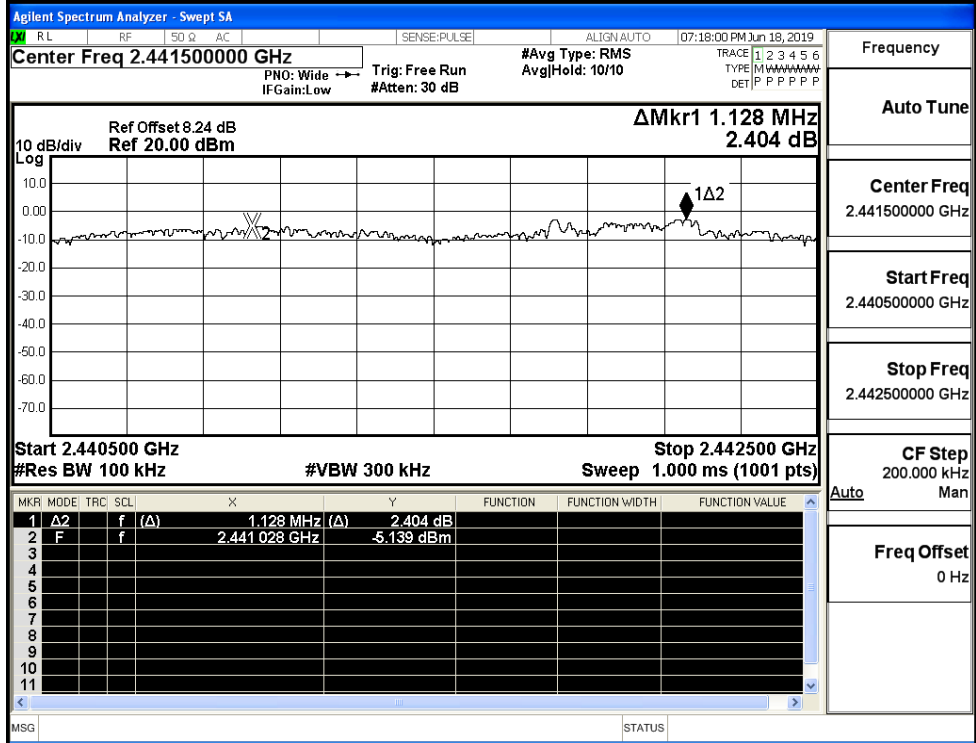
GFSK/HCH



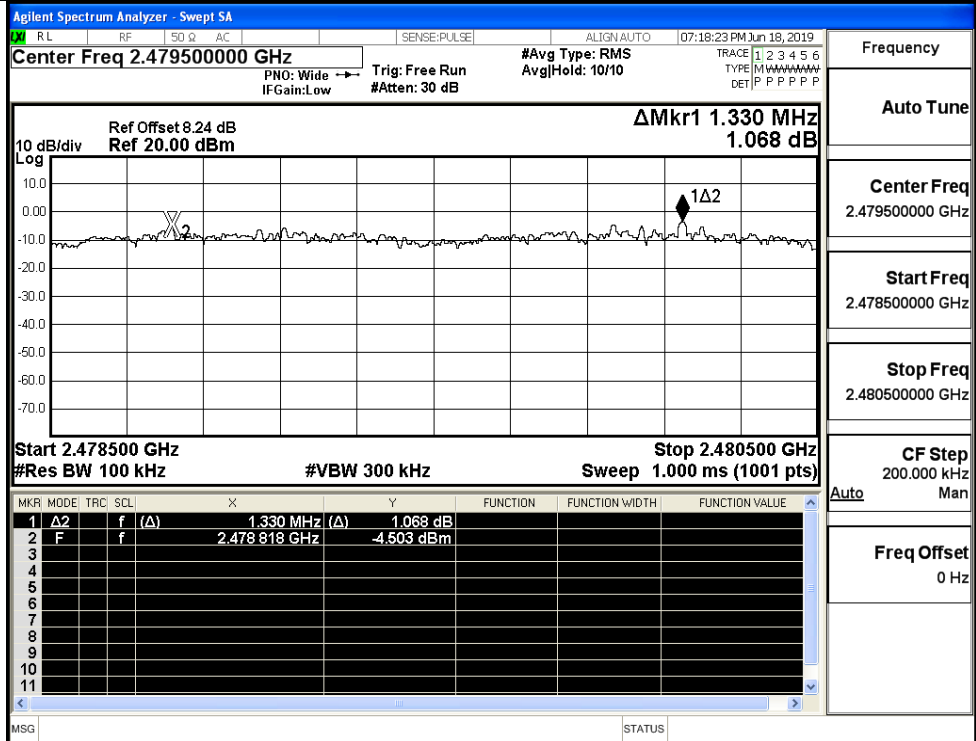
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH

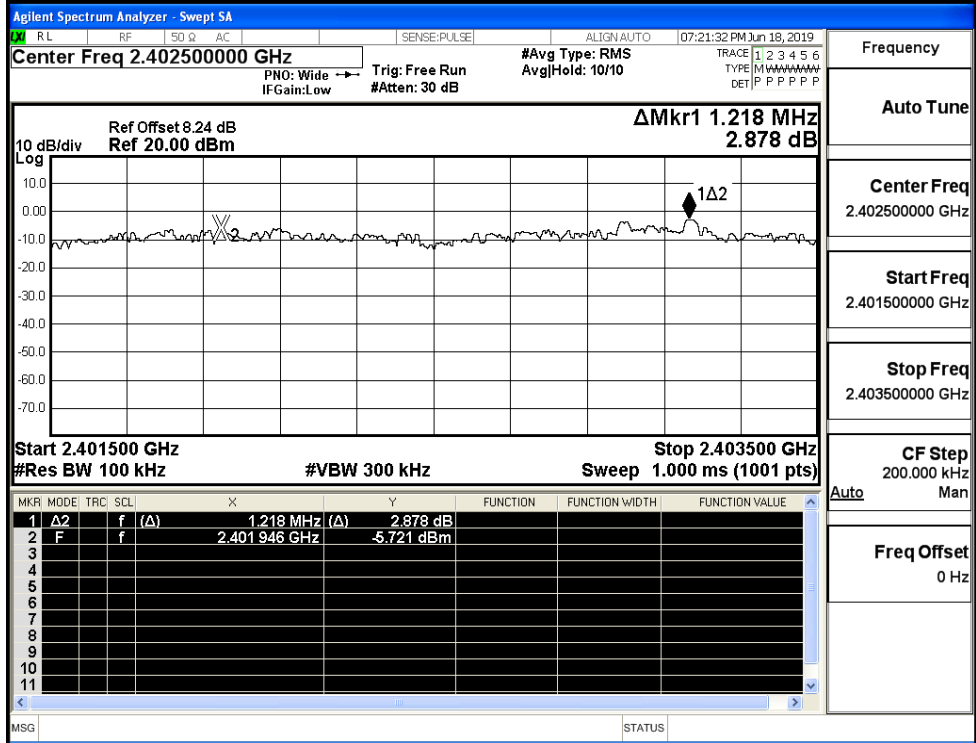


π/4DQPSK/HCH

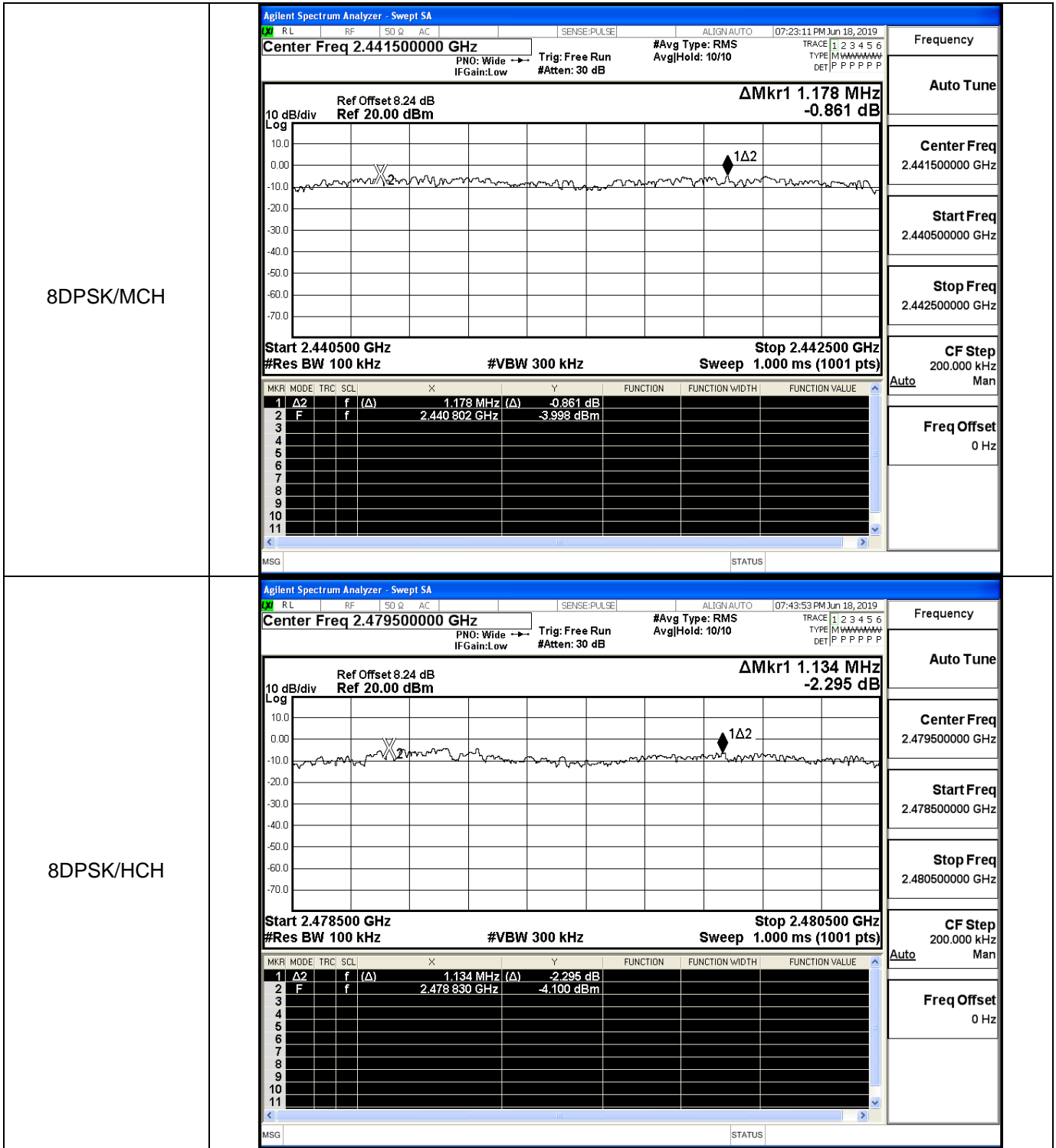


Frequency  
Auto Tune  
Center Freq  
2.479500000 GHz  
Start Freq  
2.478500000 GHz  
Stop Freq  
2.480500000 GHz  
CF Step  
200.000 kHz  
Auto  
Man  
Freq Offset  
0 Hz

8DPSK/LCH



Frequency  
Auto Tune  
Center Freq  
2.402500000 GHz  
Start Freq  
2.401500000 GHz  
Stop Freq  
2.403500000 GHz  
CF Step  
200.000 kHz  
Auto  
Man  
Freq Offset  
0 Hz



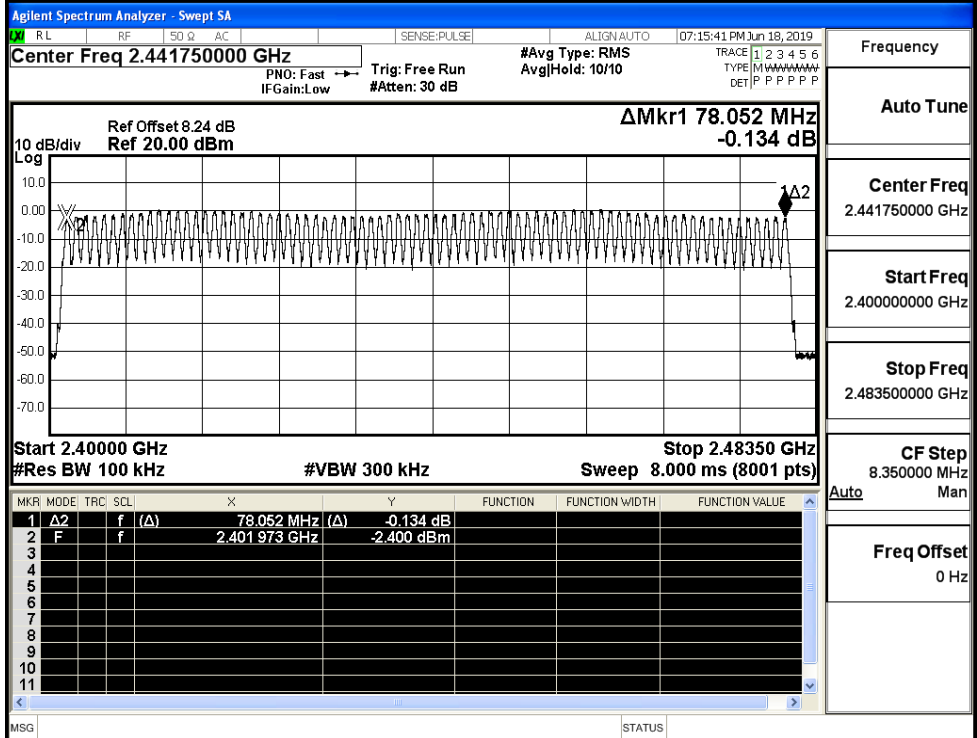
### A.4 Hopping Channel Number

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

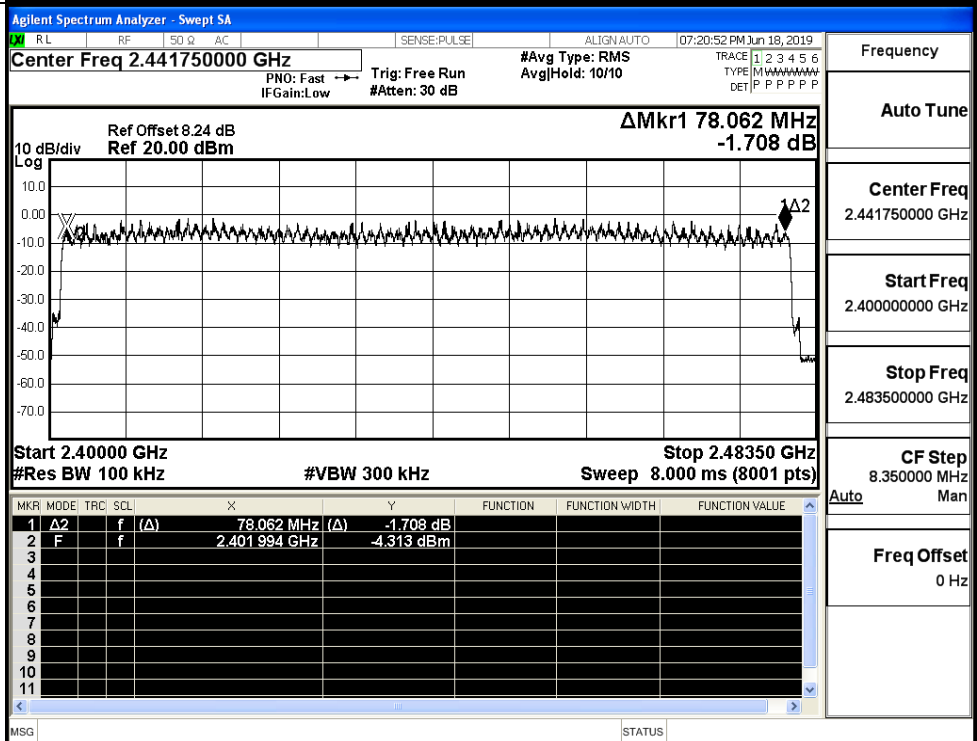


Test Graphs

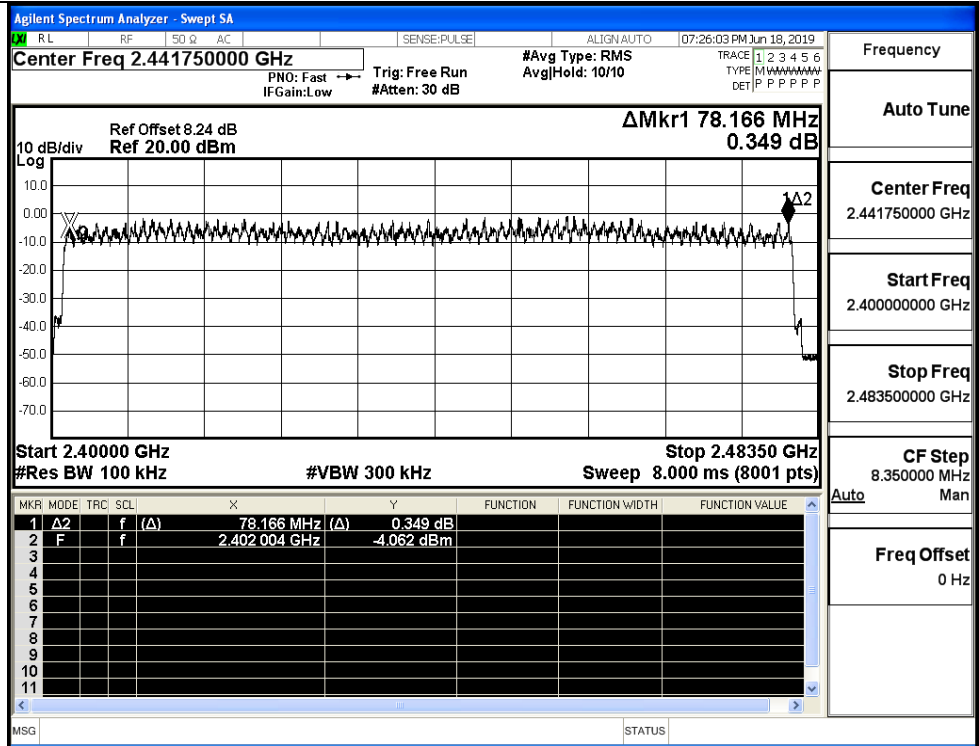
GFSK/Hop



$\pi/4$ DQPSK/Hop

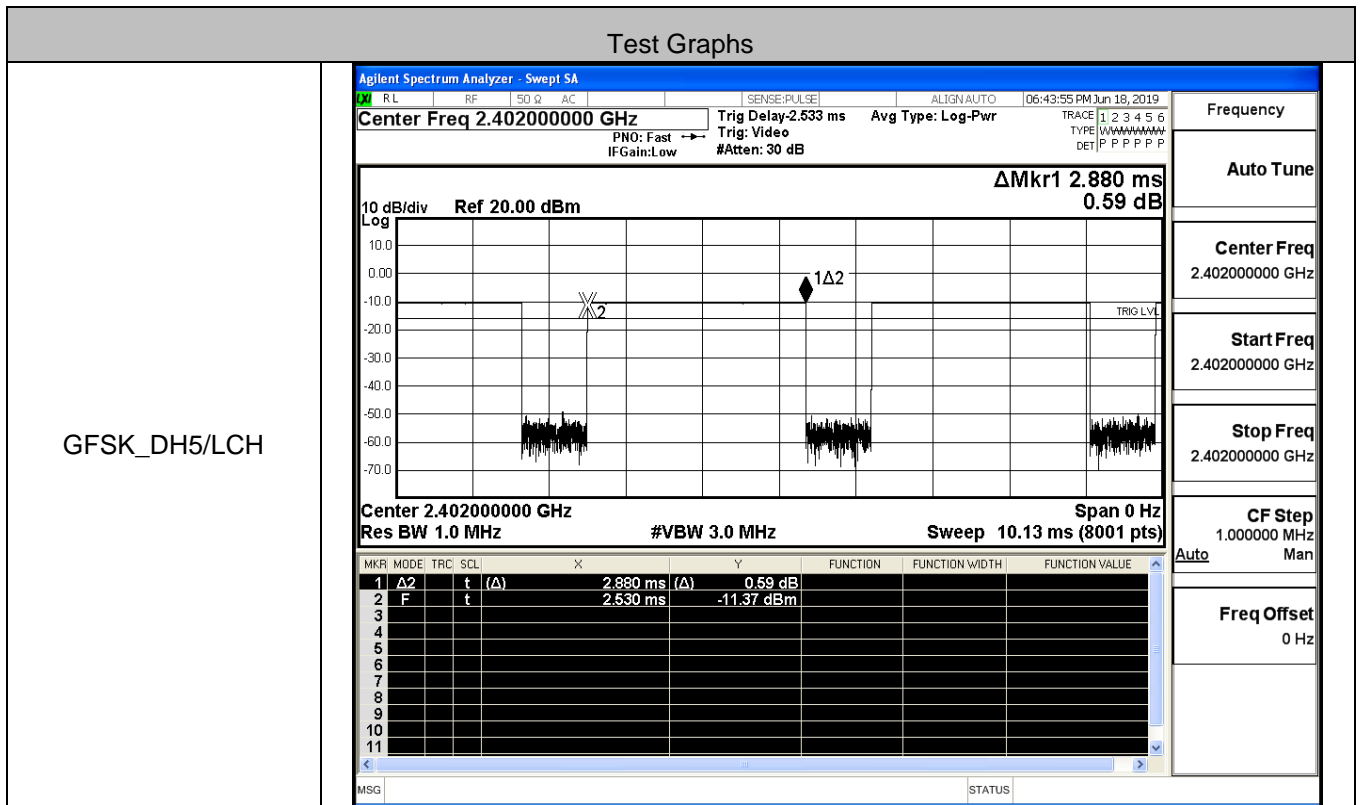


8DPSK/Hop

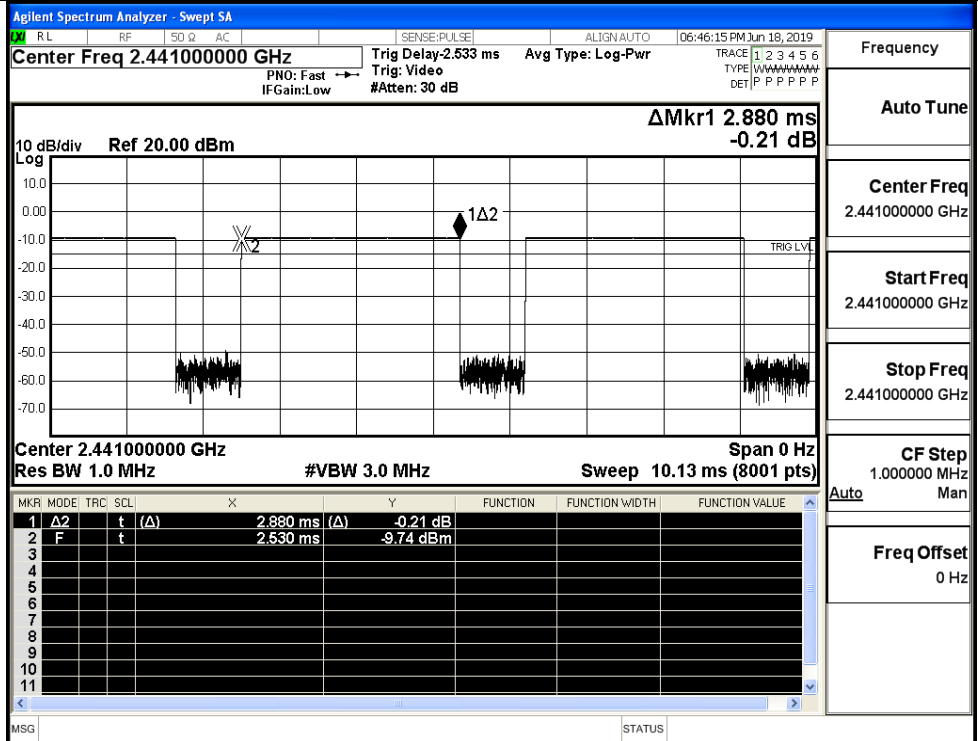


### A.5 Dwell Time

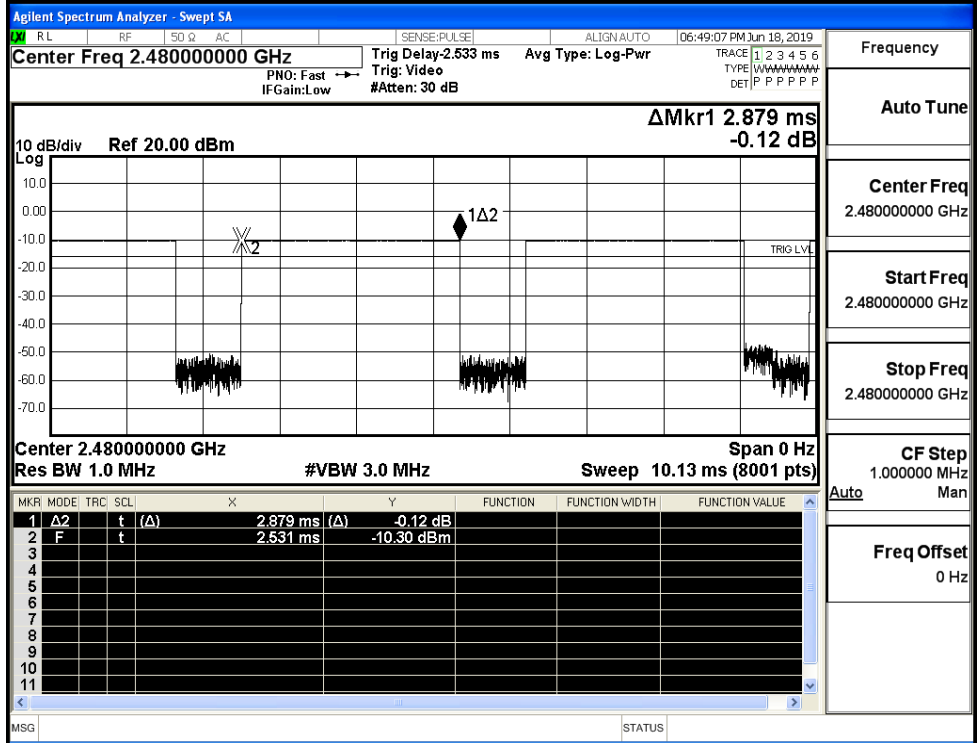
| Mode     | Packet | Channel | Burst Width [ms/hop/ch] | Total Hops[hop*ch] | Dwell Time[s] | Limit [s] | Verdict |
|----------|--------|---------|-------------------------|--------------------|---------------|-----------|---------|
| GFSK     | DH5    | LCH     | 2.88                    | 106.7              | 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    |
| π/4DQPSK | 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    |



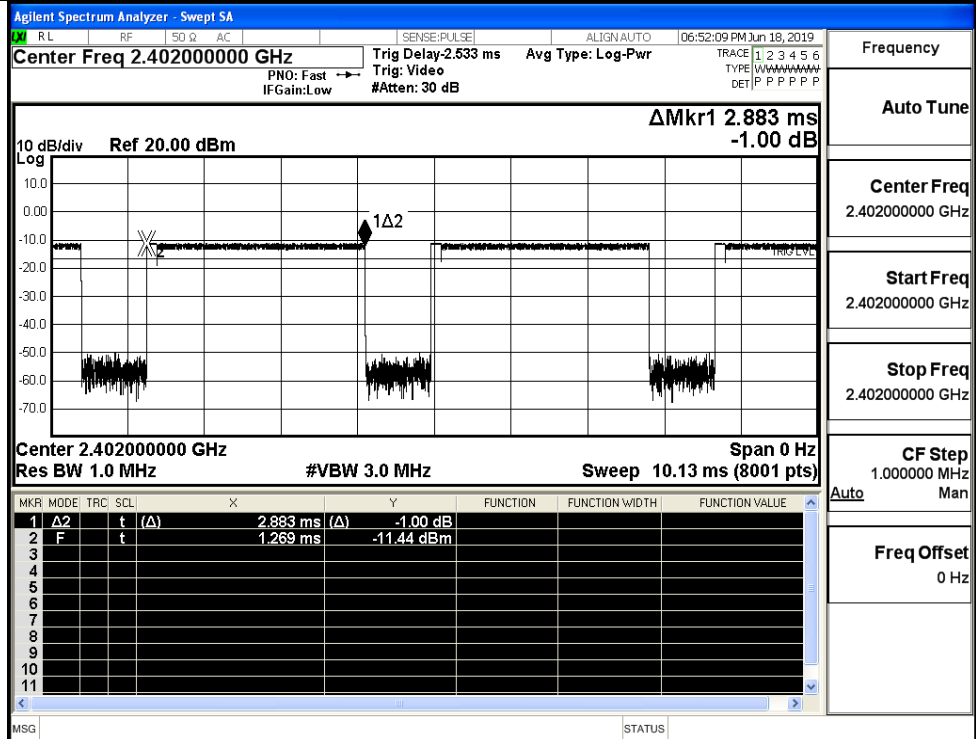
GFSK\_DH5/MCH



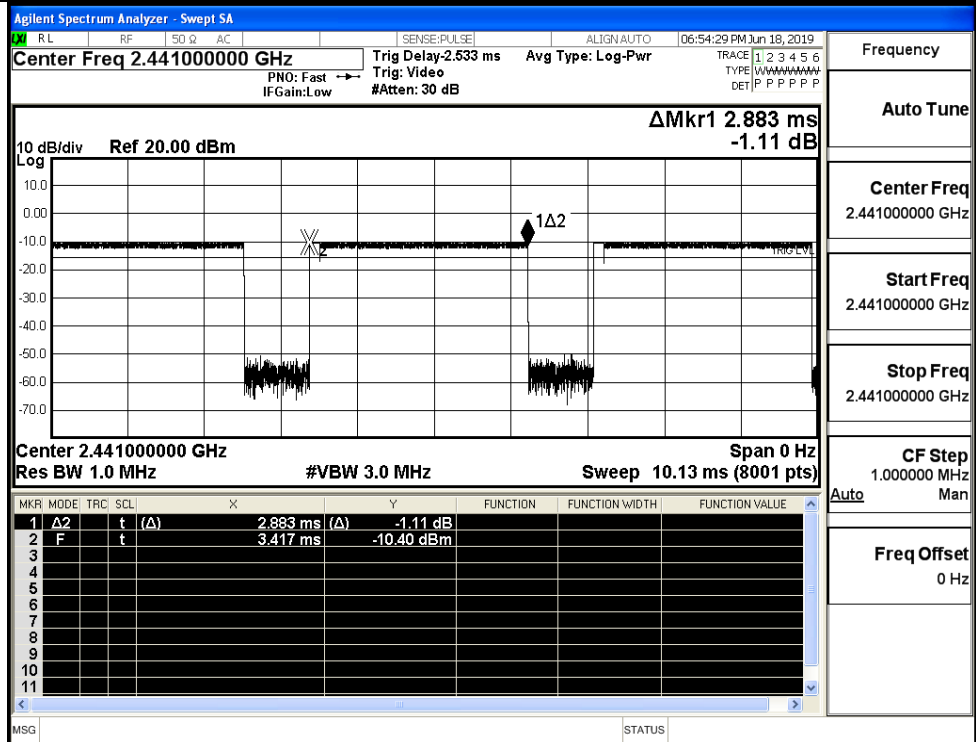
GFSK\_DH5/HCH



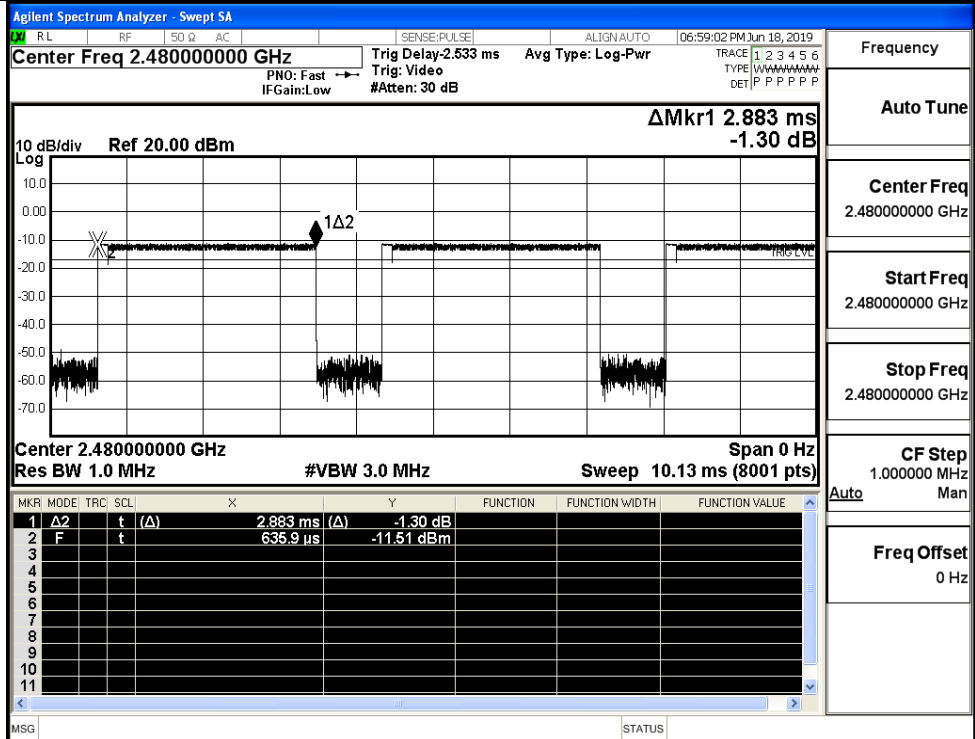
$\pi/4$ DQPSK  
\_2DH5/LCH



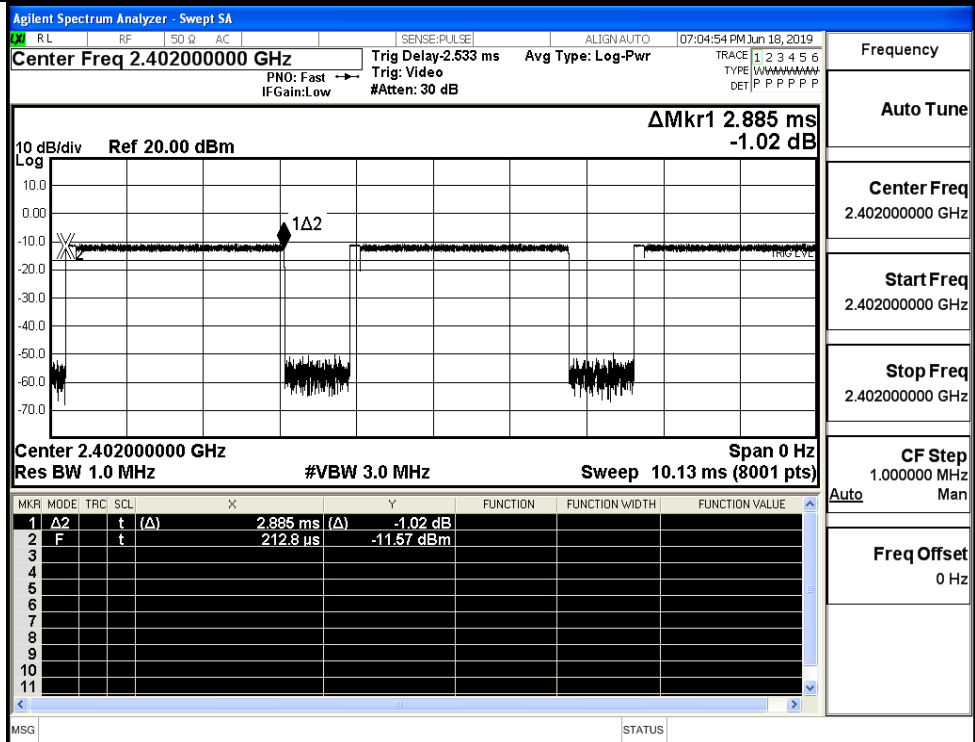
$\pi/4$ DQPSK  
\_2DH5/MCH



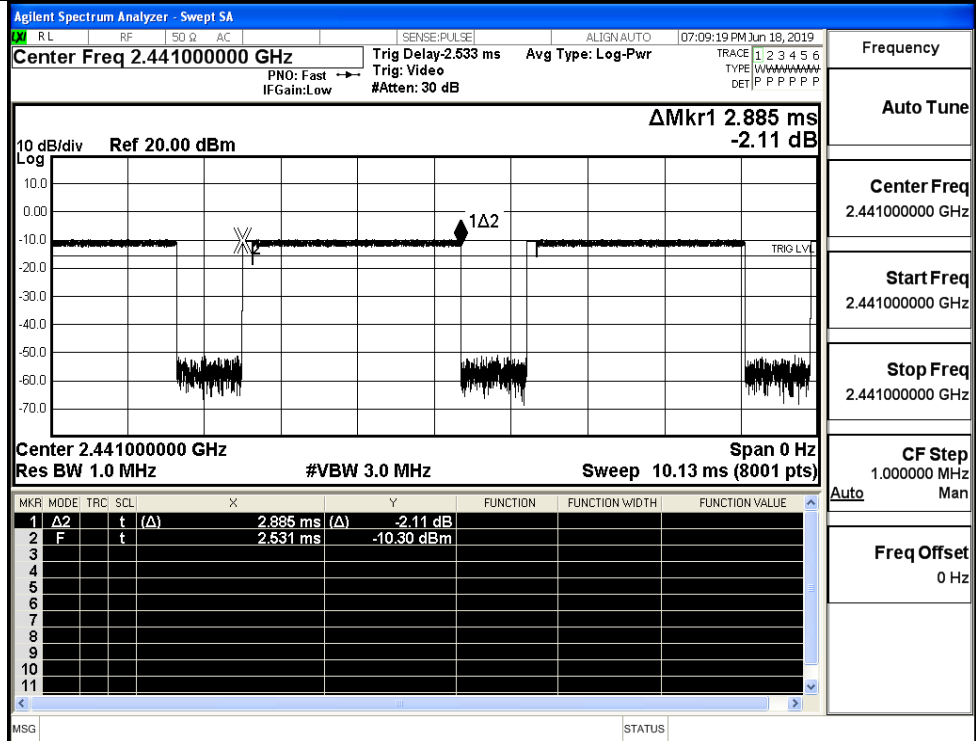
$\pi/4$ DQPSK  
\_2DH5/HCH



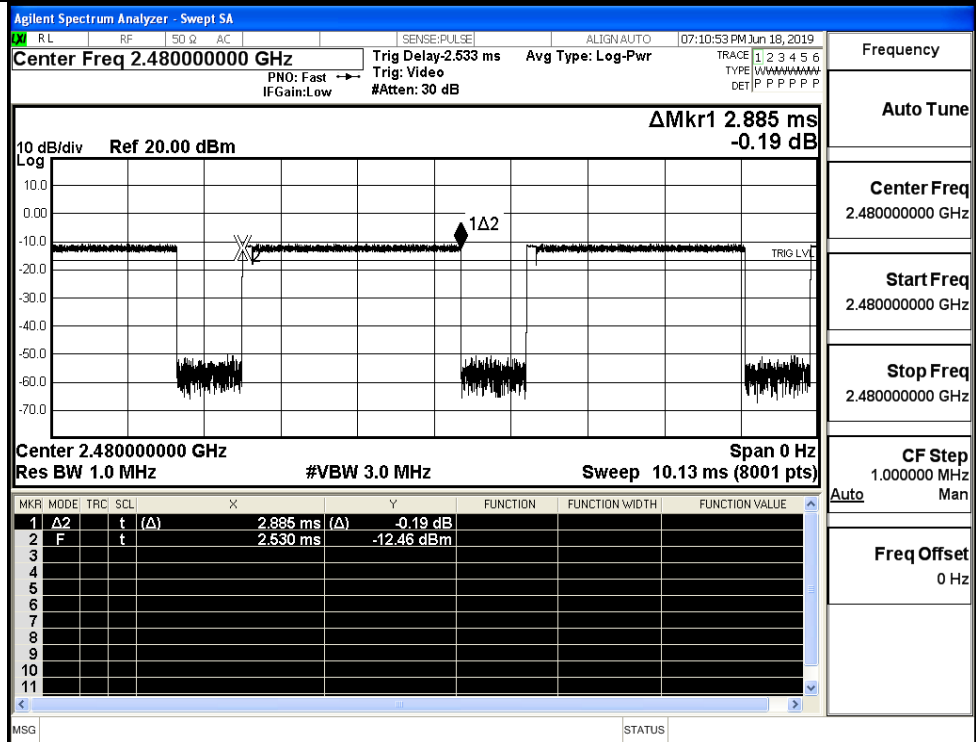
8DPSK\_3DH5/LCH



8DPSK\_3DH5/MCH



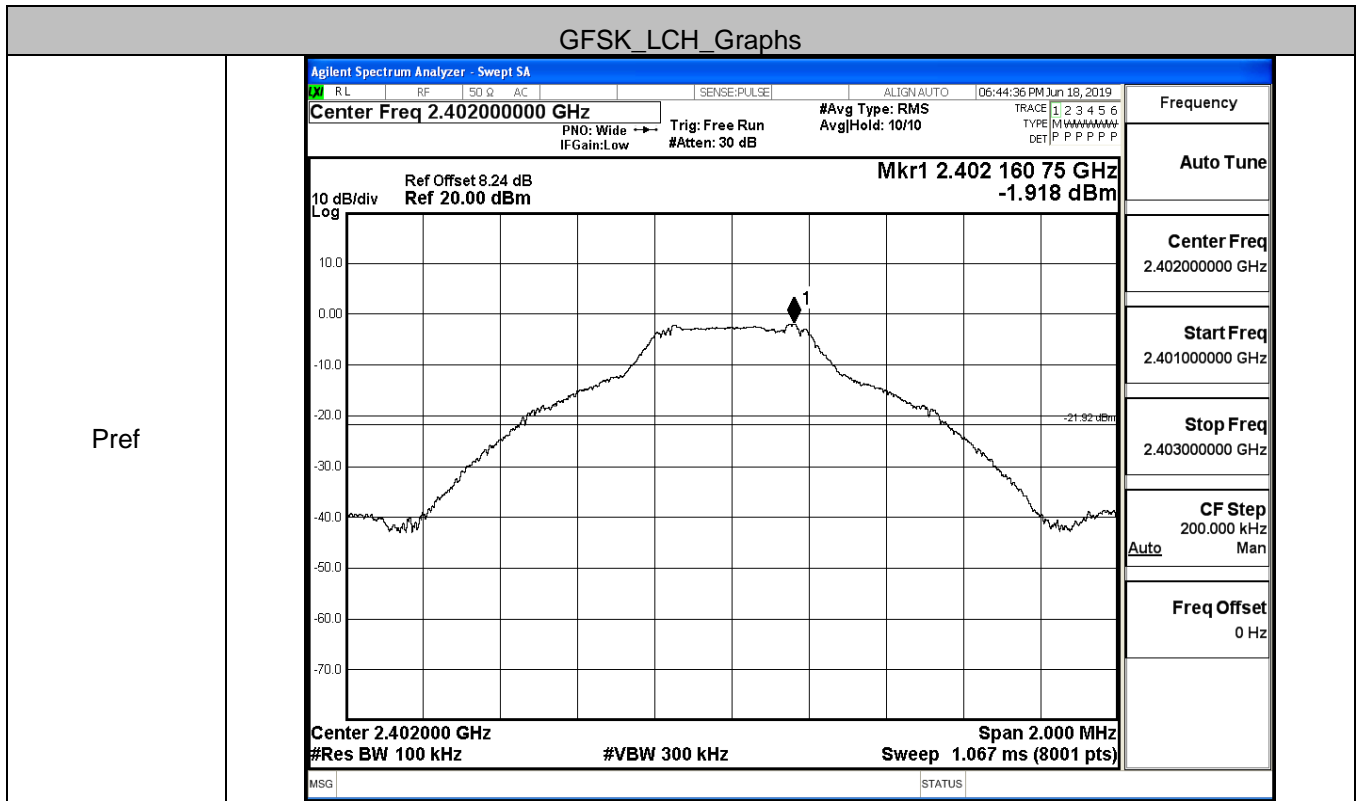
8DPSK\_3DH5/HCH



### A.6 RF Conducted Spurious Emissions

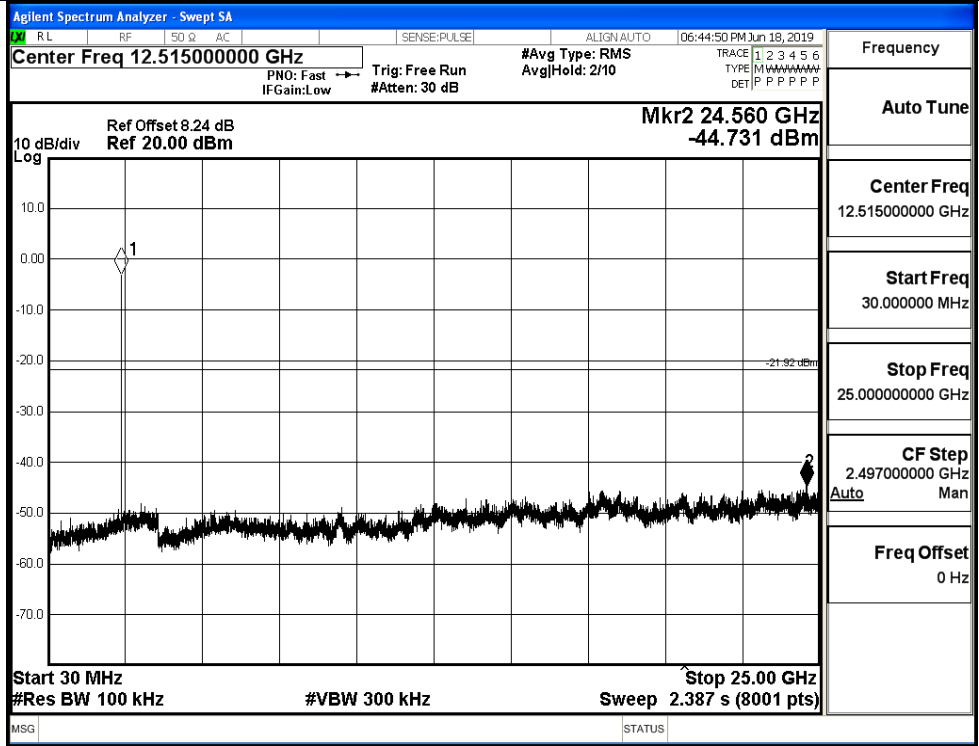
| Mode          | Channel | Pref [dBm] | Max. Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|------------|------------------|-------------|---------|
| GFSK          | LCH     | -1.918     | -44.731          | -21.918     | PASS    |
|               | MCH     | -0.988     | -44.400          | -20.988     | PASS    |
|               | HCH     | -1.879     | -44.455          | -21.879     | PASS    |
| $\pi$ /4DQPSK | LCH     | -3.132     | -44.859          | -23.132     | PASS    |
|               | MCH     | -2.175     | -44.396          | -22.175     | PASS    |
|               | HCH     | -3.46      | -43.872          | -23.460     | PASS    |
| 8DPSK         | LCH     | -3.003     | -44.878          | -23.003     | PASS    |
|               | MCH     | -1.991     | -44.672          | -21.991     | PASS    |
|               | HCH     | -3.219     | -44.271          | -23.219     | PASS    |

GFSK\_LCH\_Graphs

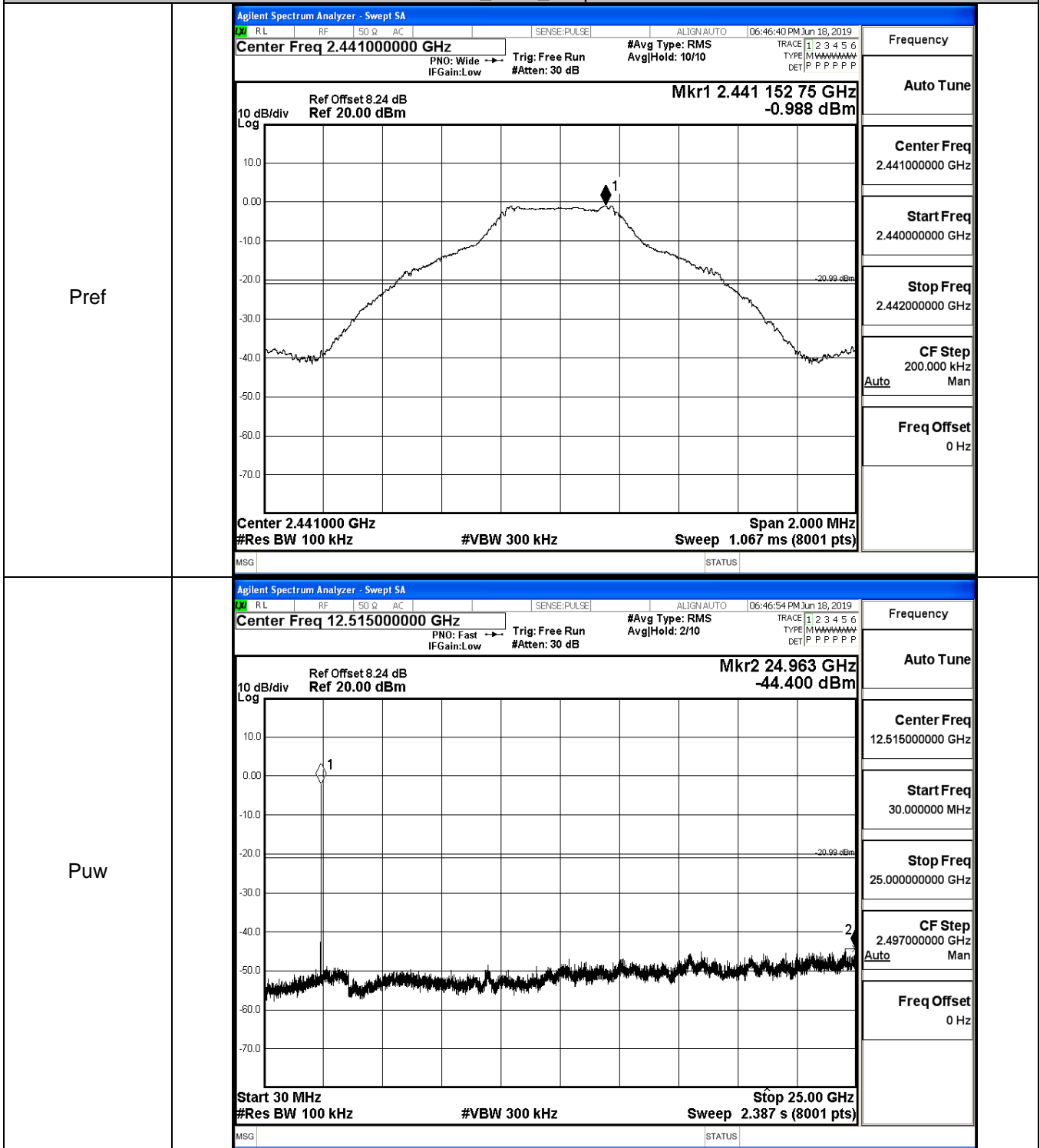




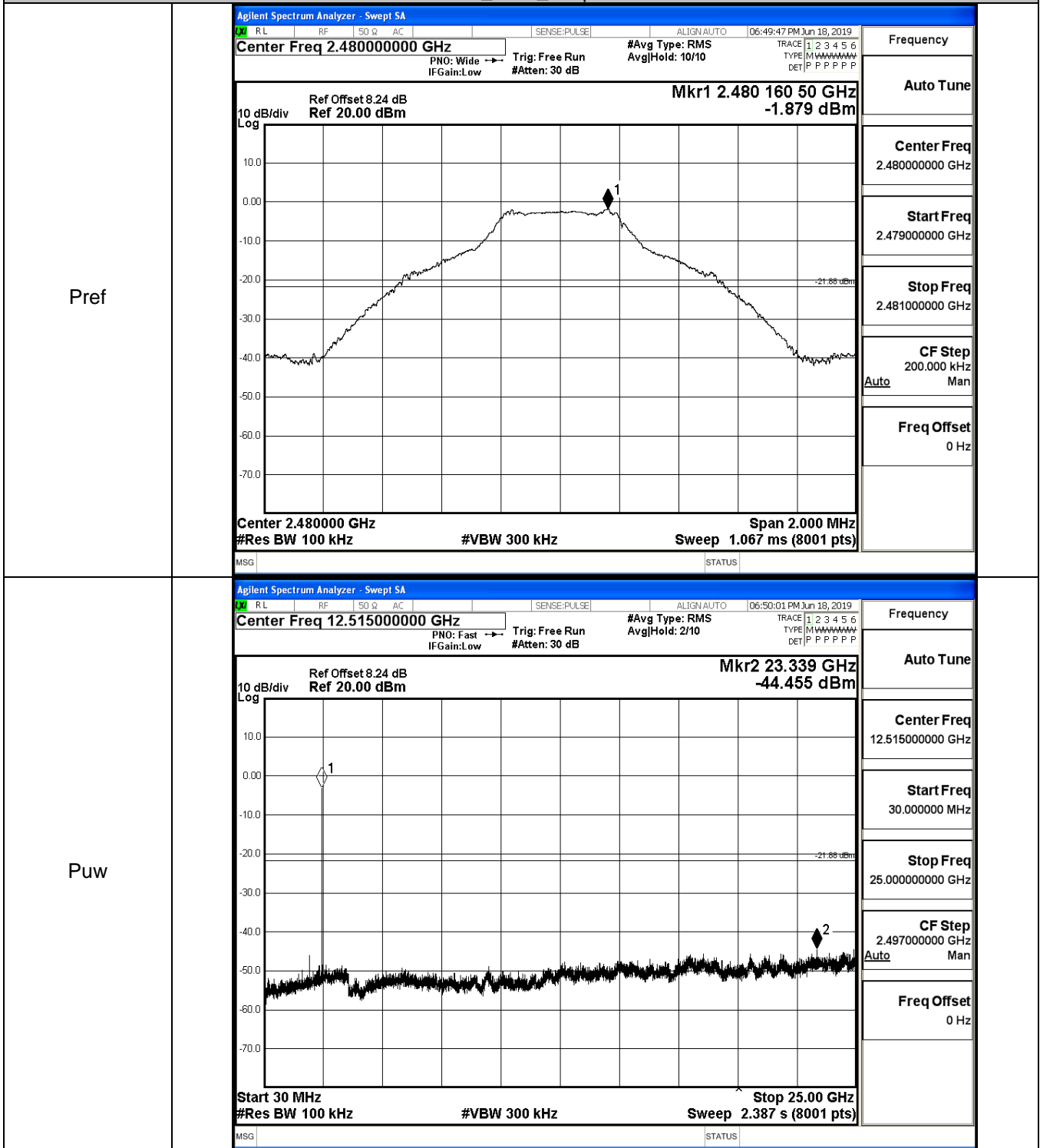
P<sub>uw</sub>



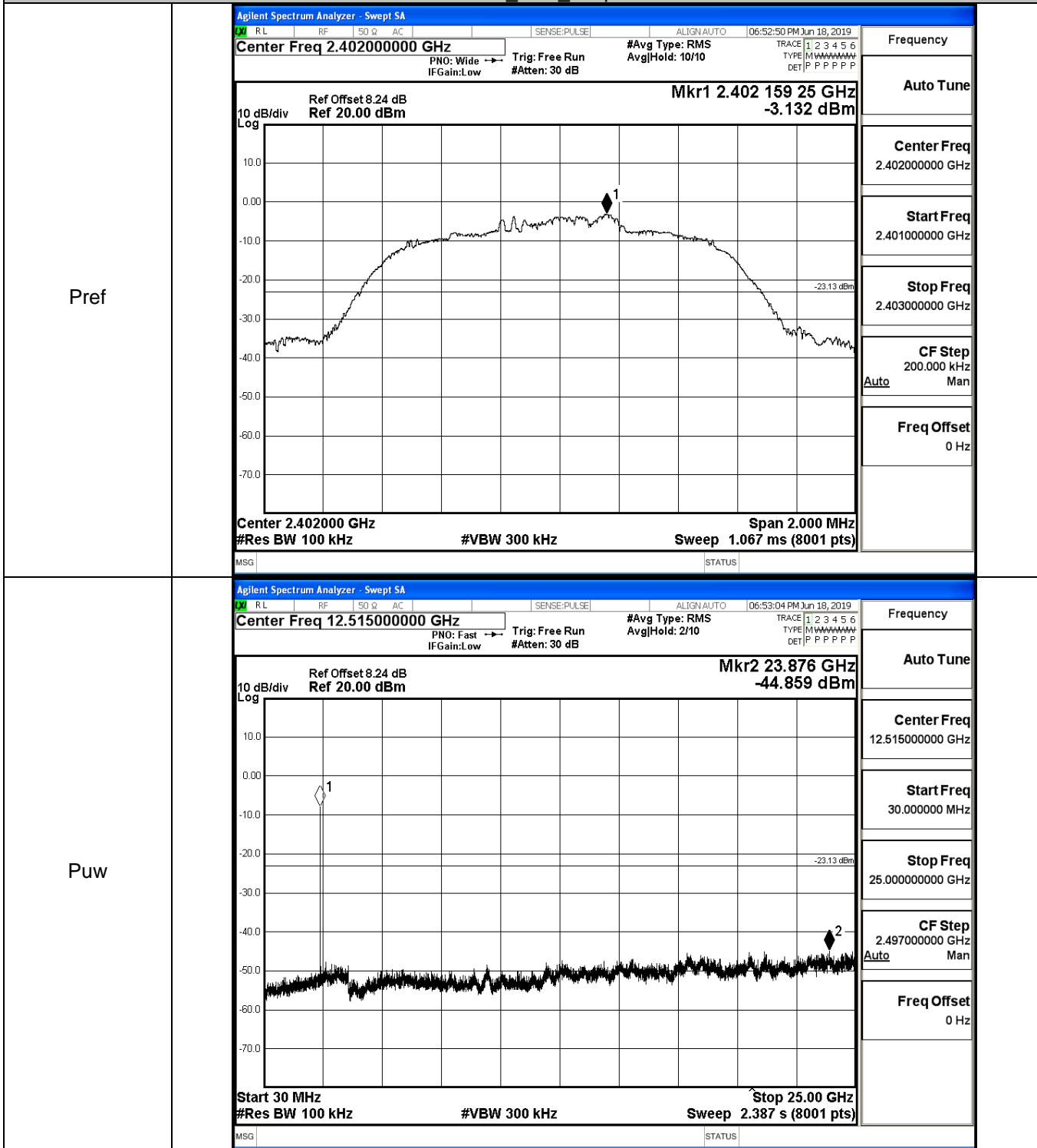
GFSK\_MCH\_Graphs



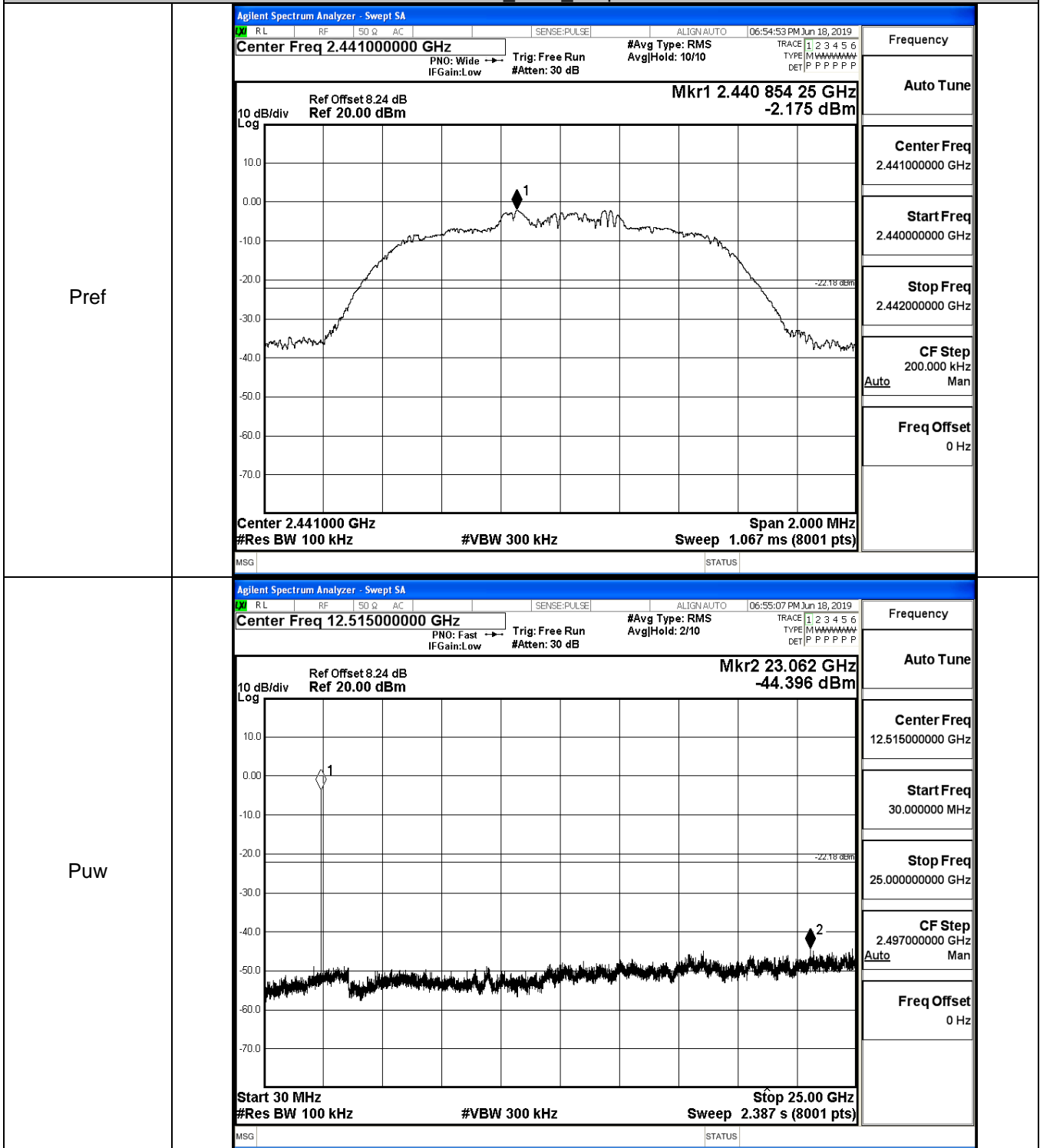
GFSK\_HCH\_Graphs



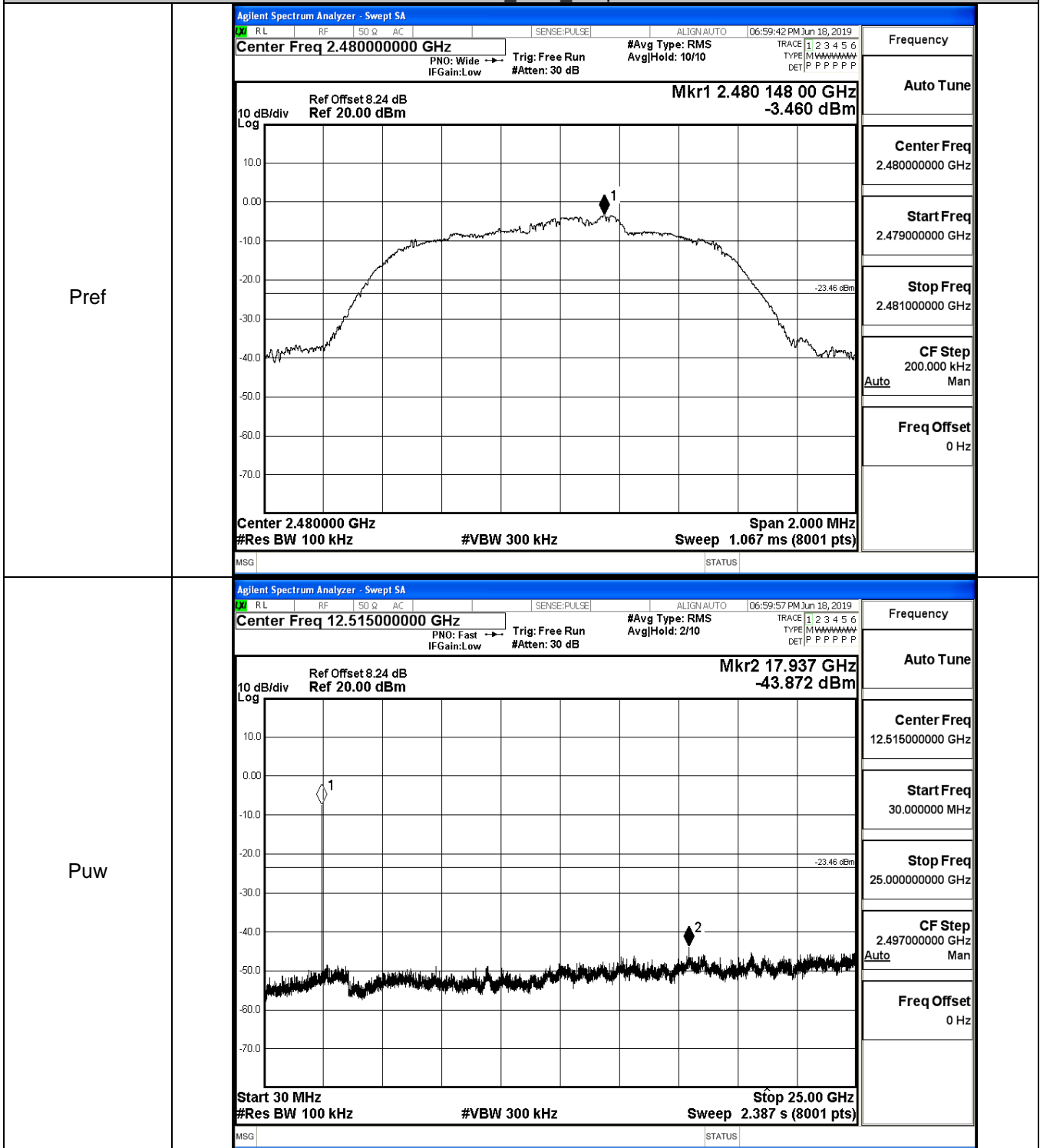
$\pi/4$ DQPSK\_LCH\_Graphs



$\pi$ /4DQPSK\_MCH\_Graphs

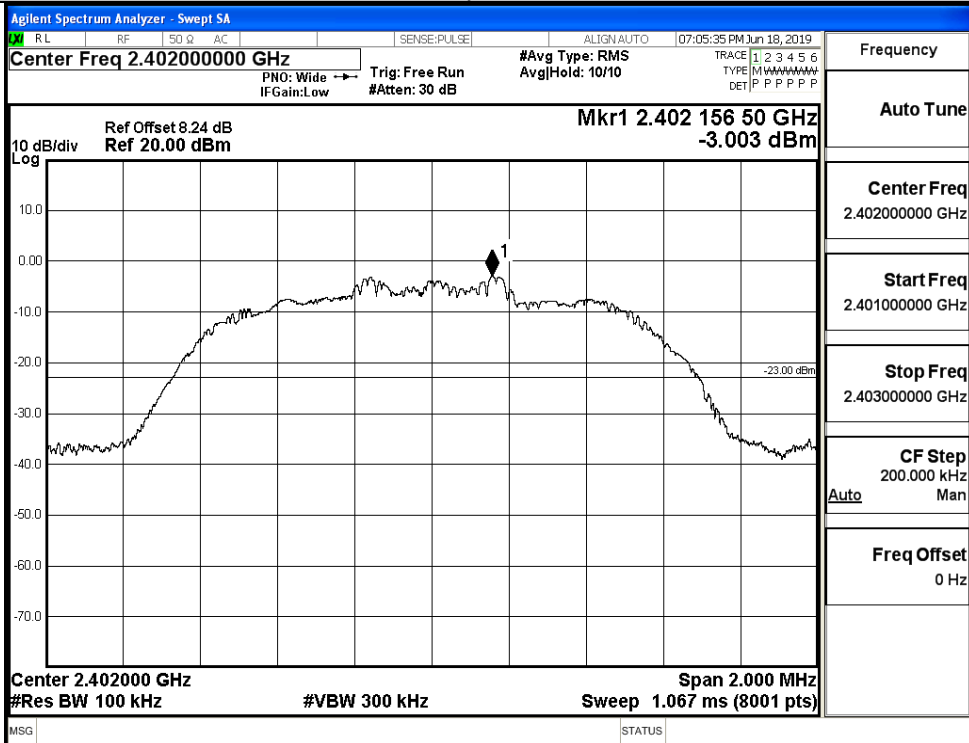


$\pi/4$ DQPSK\_HCH\_Graphs

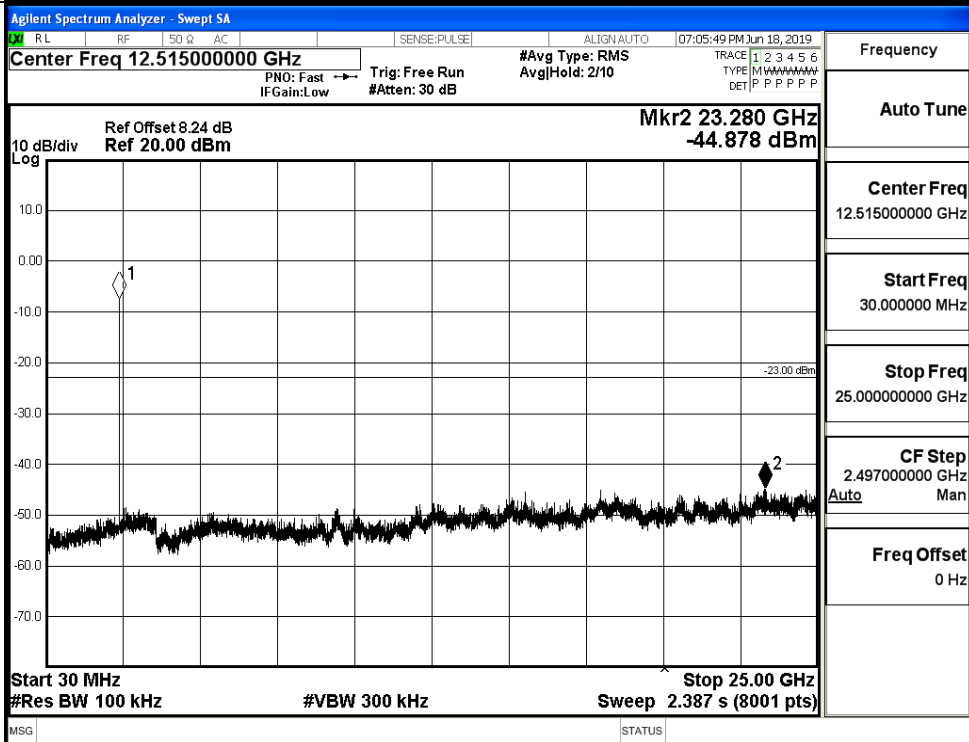


8DPSK\_LCH\_Graphs

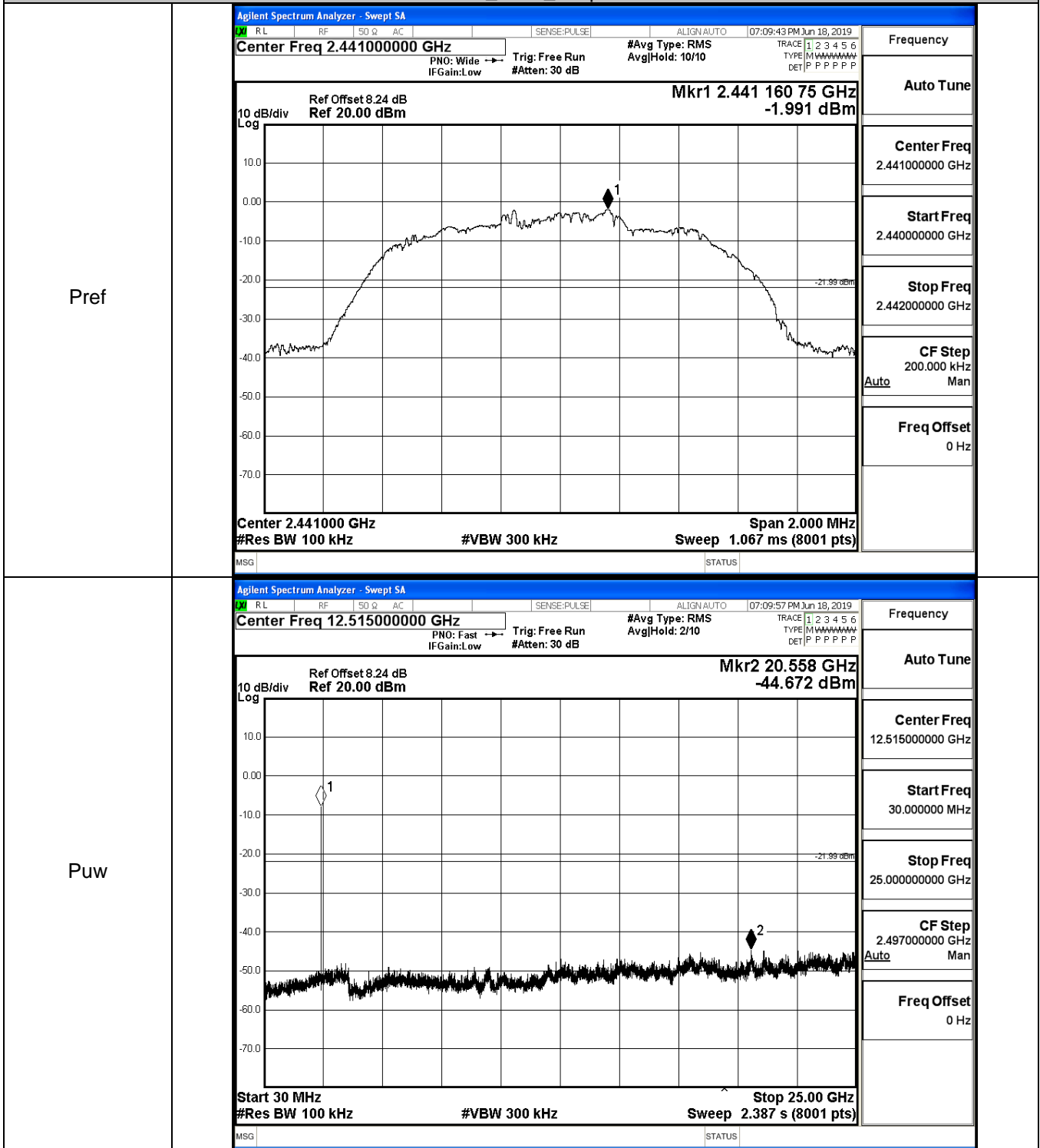
Pref



Puw



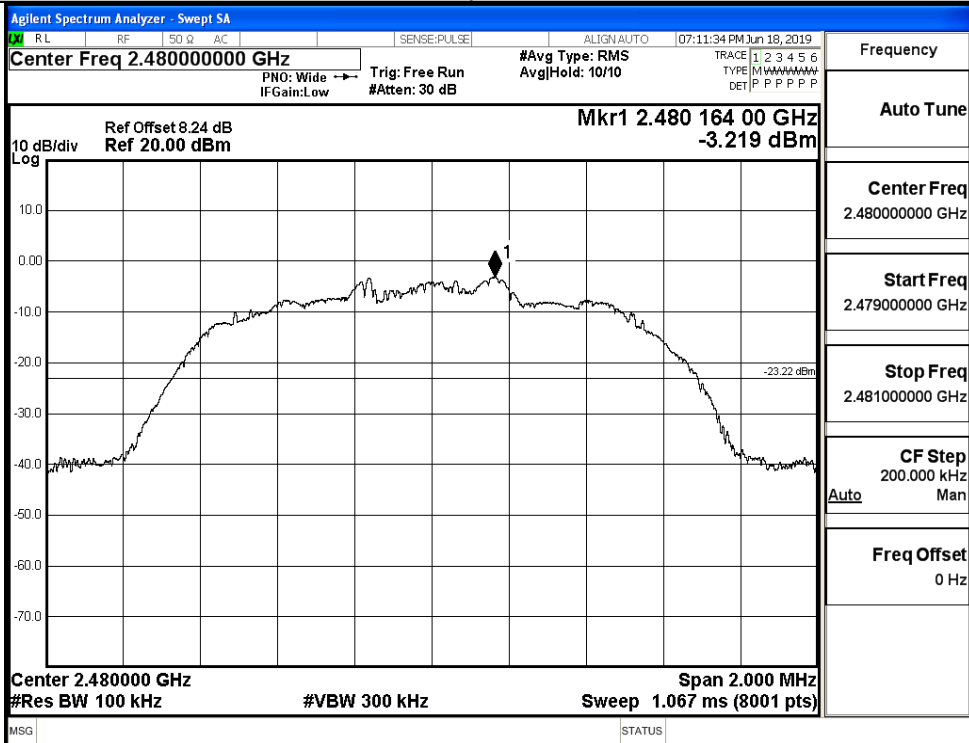
8DPSK\_MCH\_Graphs



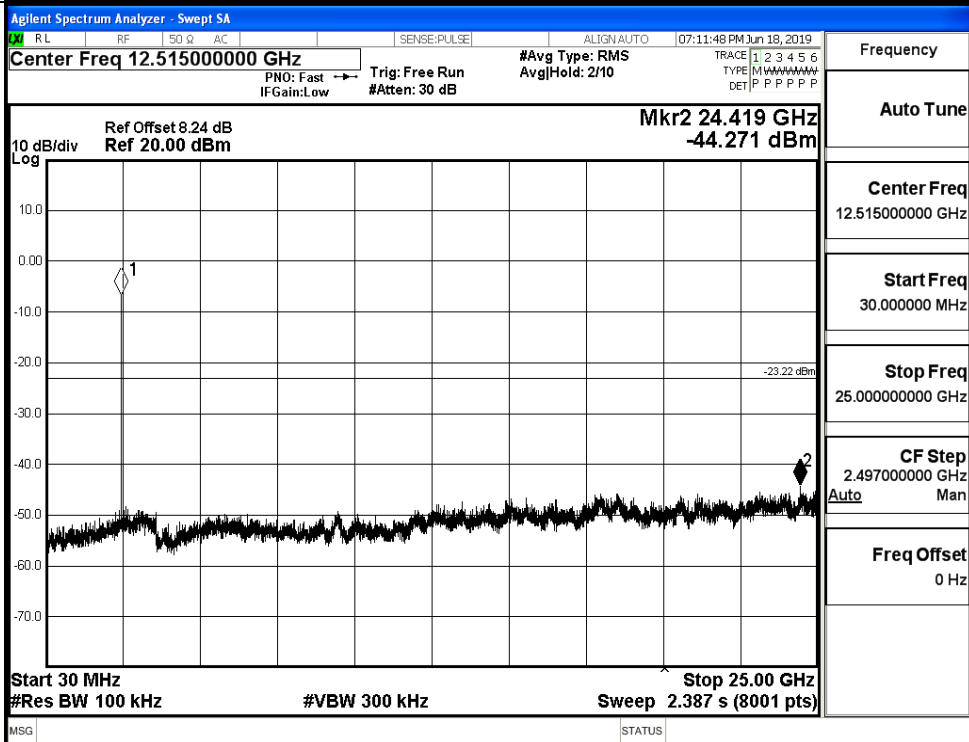


8DPSK\_HCH\_Graphs

Pref



Puw

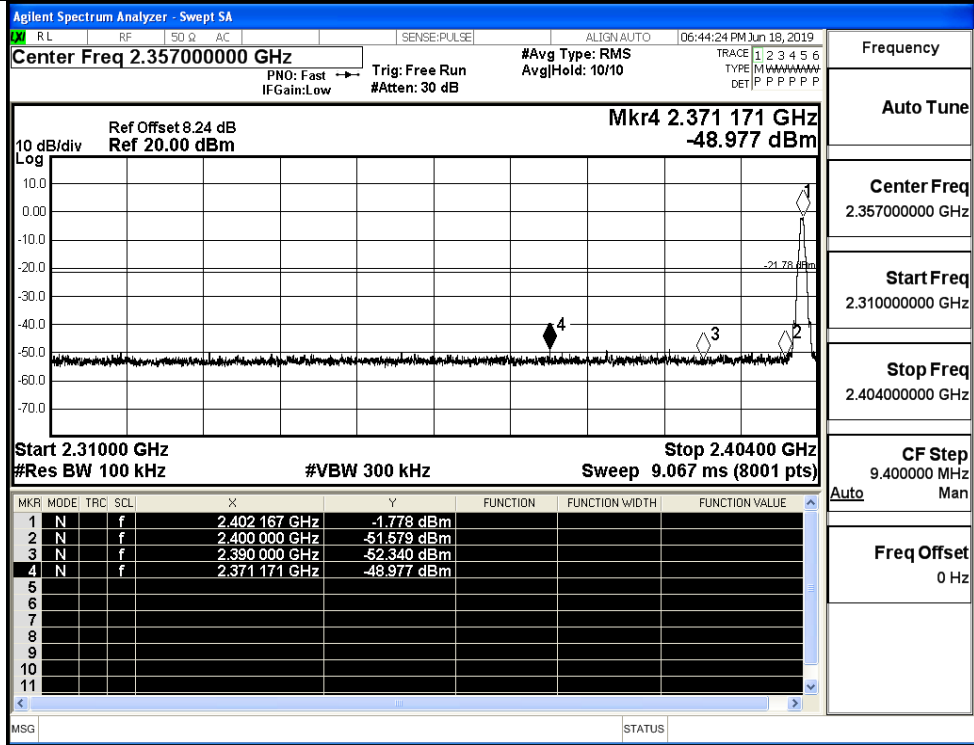


### A.7 Band-edge for RF Conducted Emissions

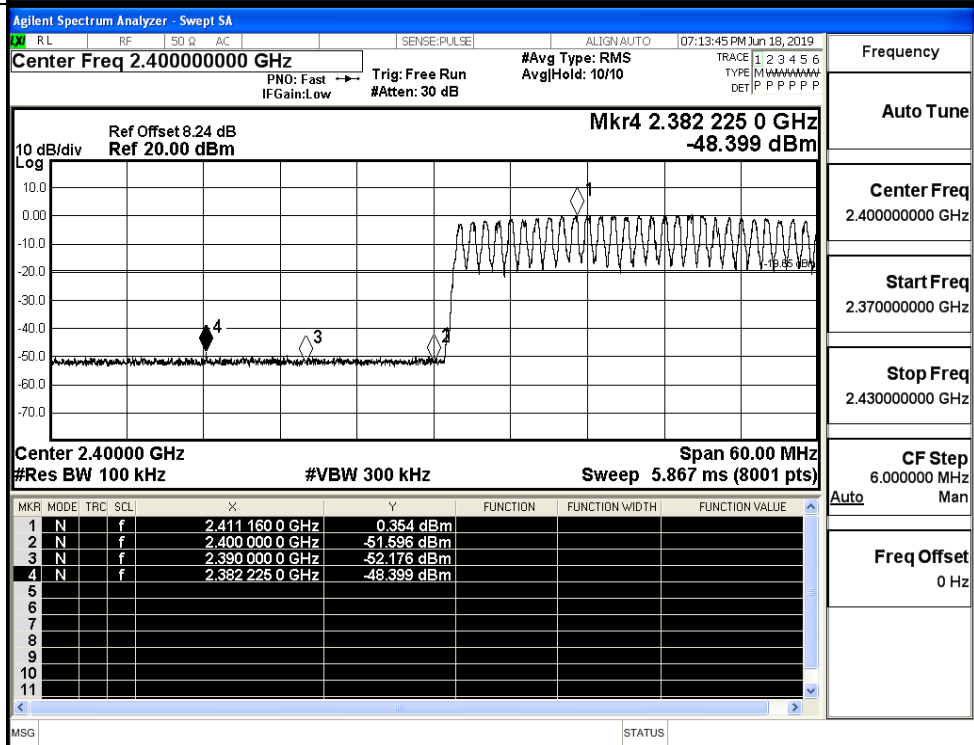
| Mode          | Channel | Carrier Frequency [MHz] | Carrier Power [dBm] | Frequency Hopping | Max Spurious Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|-------------------------|---------------------|-------------------|--------------------------|-------------|---------|
| GFSK          | LCH     | 2402                    | -1.778              | Off               | -48.977                  | -21.78      | PASS    |
|               |         |                         | 0.354               | On                | -48.399                  | -19.65      | PASS    |
|               | HCH     | 2480                    | -1.955              | Off               | -49.203                  | -21.96      | PASS    |
|               |         |                         | 0.515               | On                | -48.747                  | -19.49      | PASS    |
| $\pi/4$ DQPSK | LCH     | 2402                    | -2.966              | Off               | -49.440                  | -22.97      | PASS    |
|               |         |                         | -1.220              | On                | -48.912                  | -21.22      | PASS    |
|               | HCH     | 2480                    | -3.117              | Off               | -49.373                  | -23.12      | PASS    |
|               |         |                         | -0.811              | On                | -48.474                  | -20.81      | PASS    |
| 8DPSK         | LCH     | 2402                    | -2.939              | Off               | -50.169                  | -22.94      | PASS    |
|               |         |                         | -0.866              | On                | -48.978                  | -20.87      | PASS    |
|               | HCH     | 2480                    | -3.129              | Off               | -49.993                  | -23.13      | PASS    |
|               |         |                         | -0.766              | On                | -48.852                  | -20.77      | PASS    |

Test Graphs

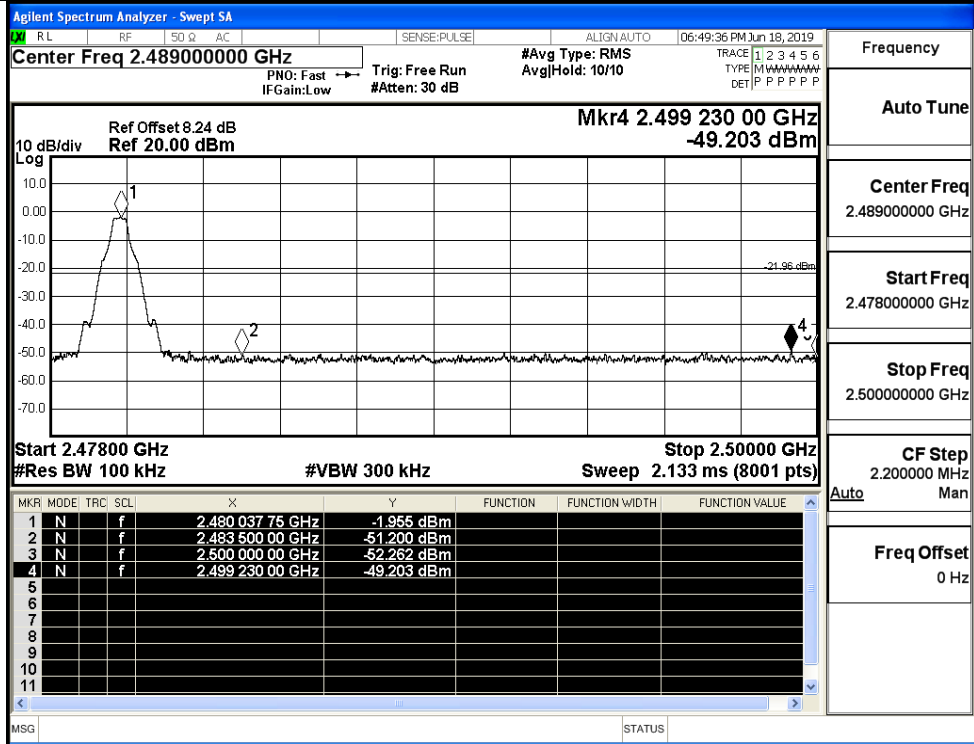
GFSK/LCH/No Hop



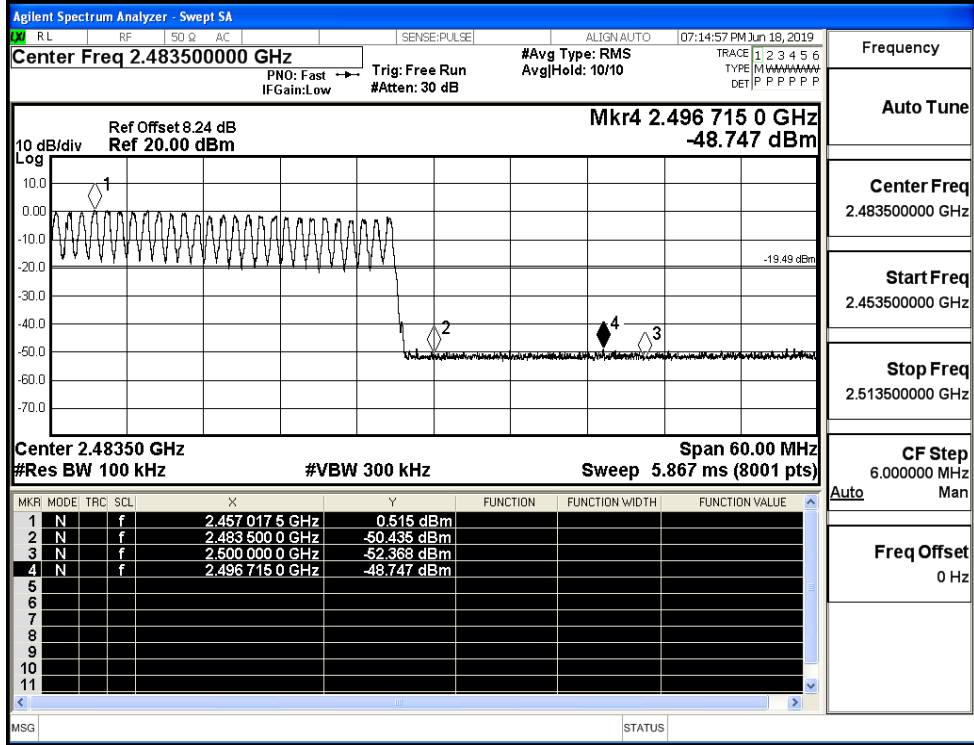
GFSK/LCH/Hop



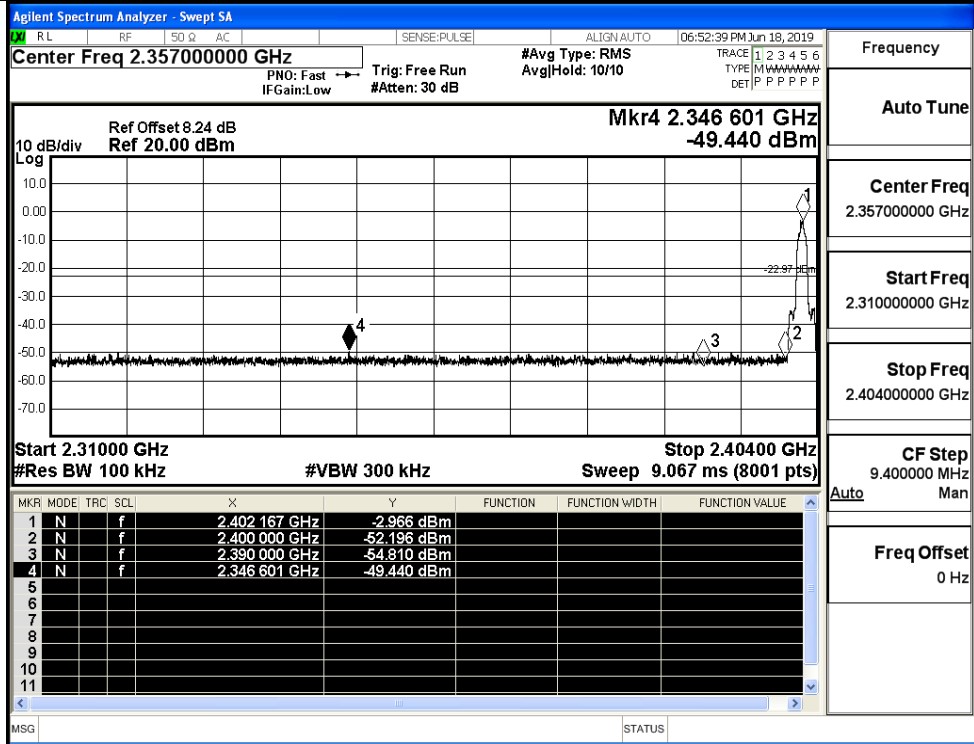
GFSK/HCH/No Hop



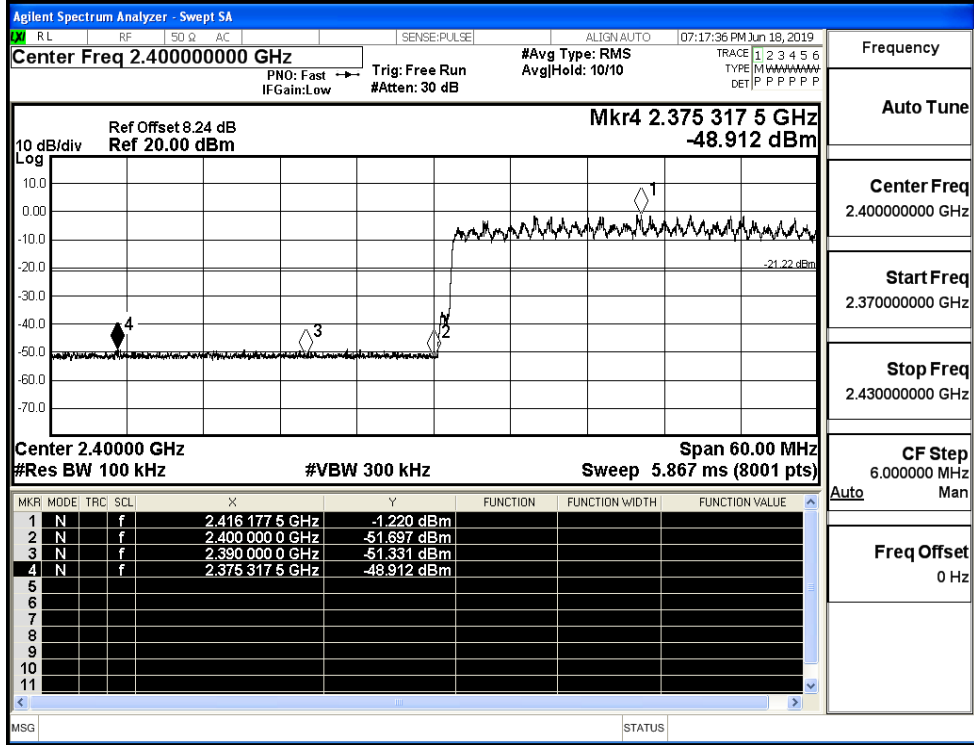
GFSK/HCH/Hop



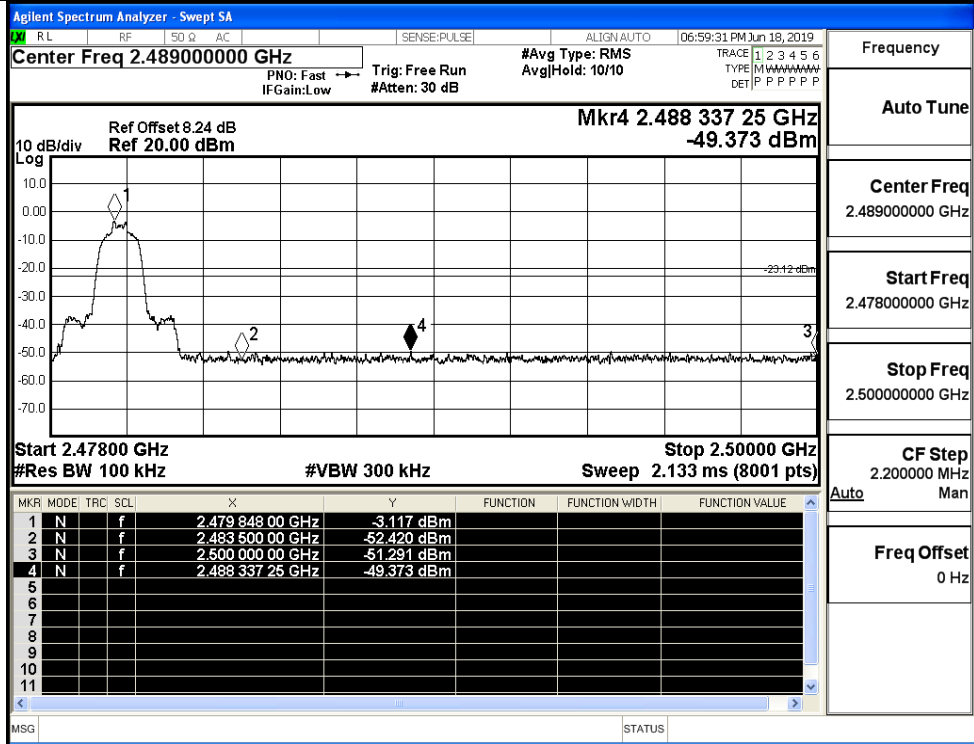
$\pi/4$ DQPSK/LCH/No  
Hop



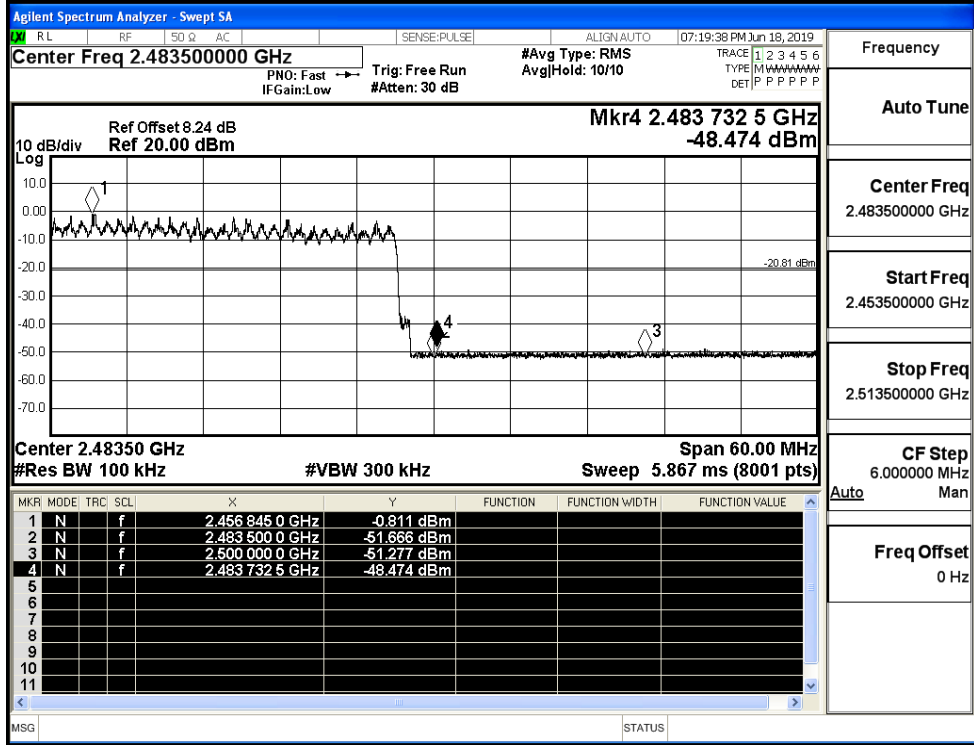
$\pi/4$ DQPSK/LCH/Hop



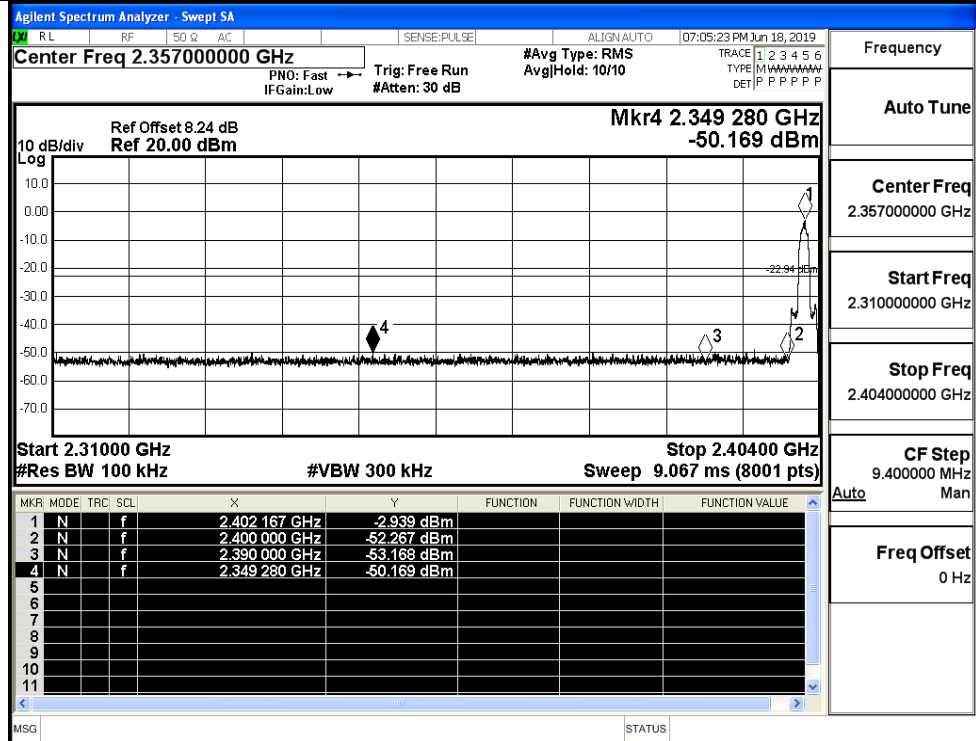
$\pi$ /4DQPSK/HCH/No  
Hop



$\pi$ /4DQPSK/HCH/Hop

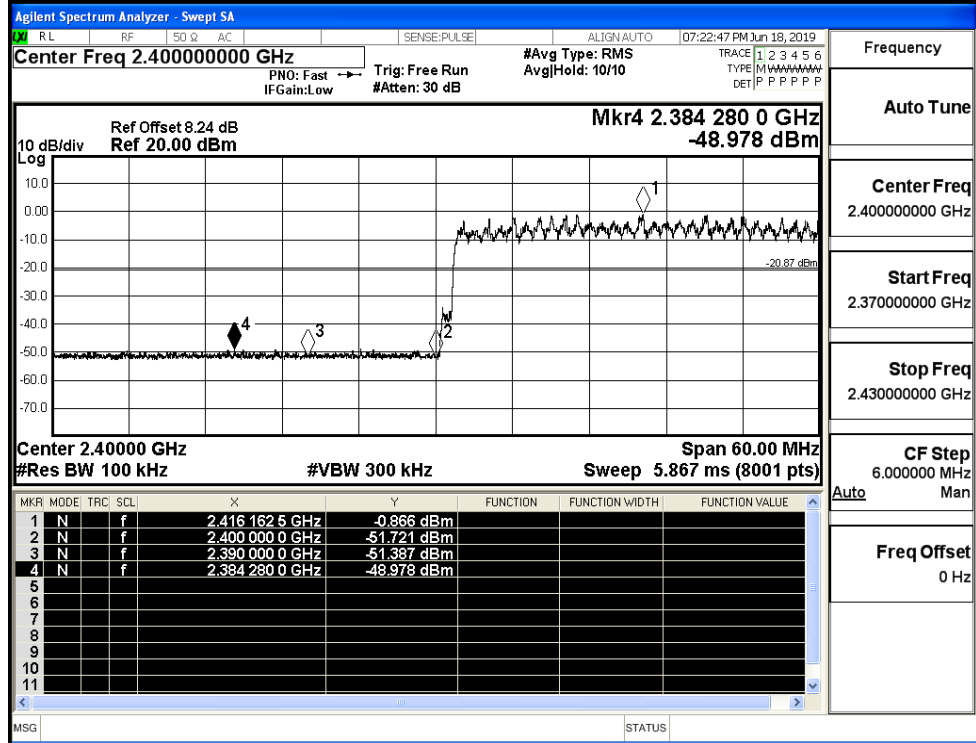


8DPSK/LCH/No Hop



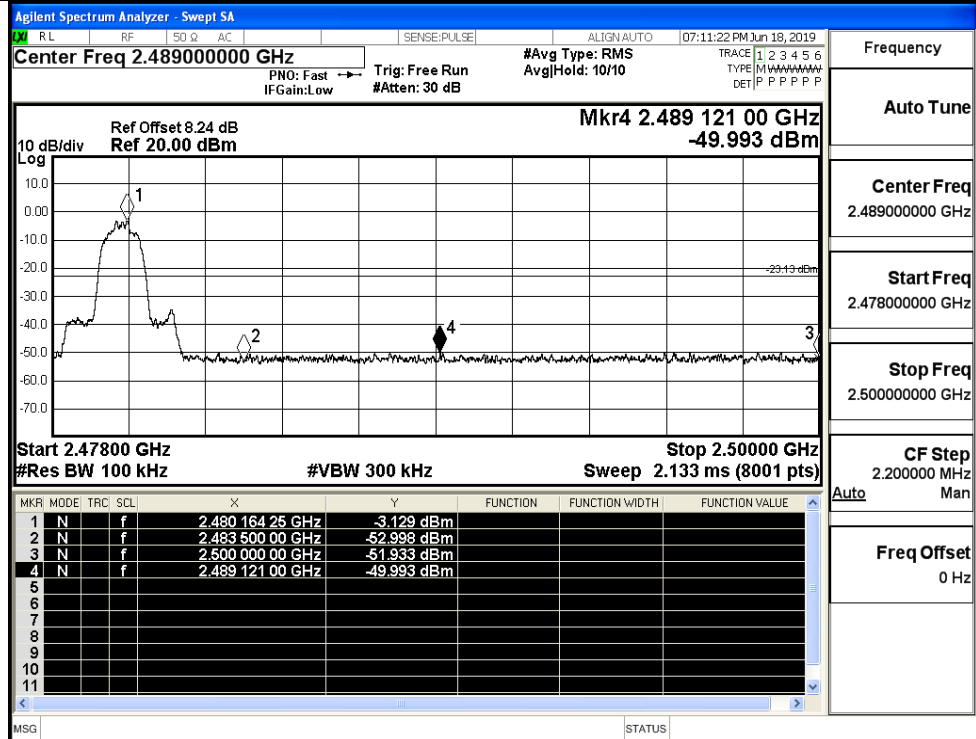
Frequency  
Auto Tune  
Center Freq  
2.357000000 GHz  
Start Freq  
2.310000000 GHz  
Stop Freq  
2.404000000 GHz  
CF Step  
9.400000 MHz  
Auto Man  
Freq Offset  
0 Hz

8DPSK/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

8DPSK/HCH/No Hop



Frequency

Auto Tune

Center Freq  
2.489000000 GHz

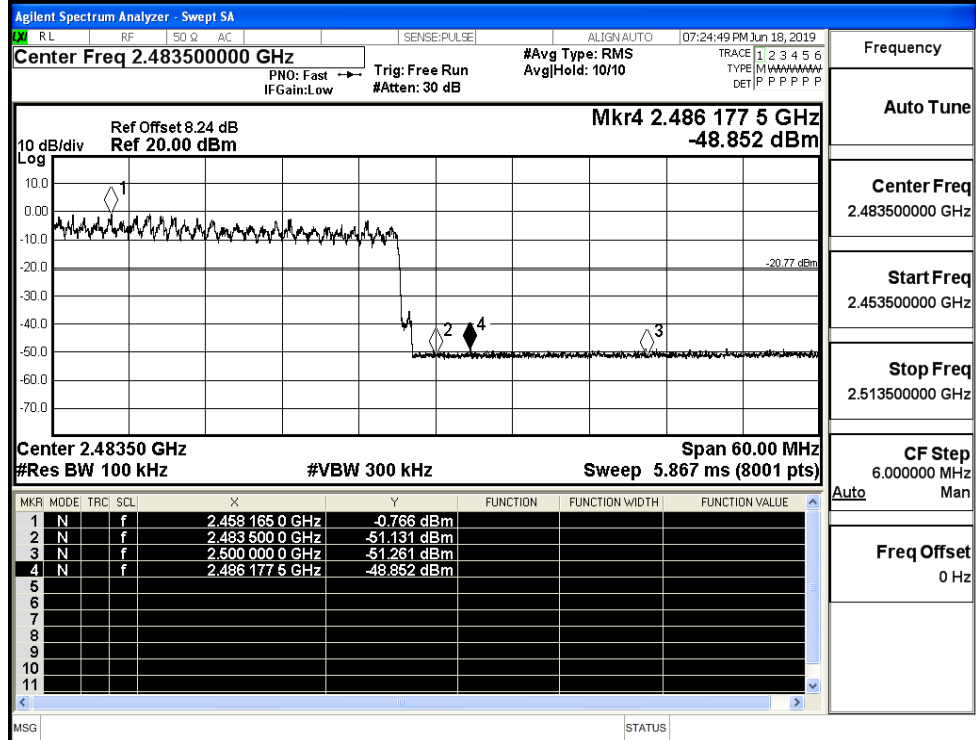
Start Freq  
2.478000000 GHz

Stop Freq  
2.500000000 GHz

CF Step  
2.200000 MHz

Freq Offset  
0 Hz

8DPSK/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

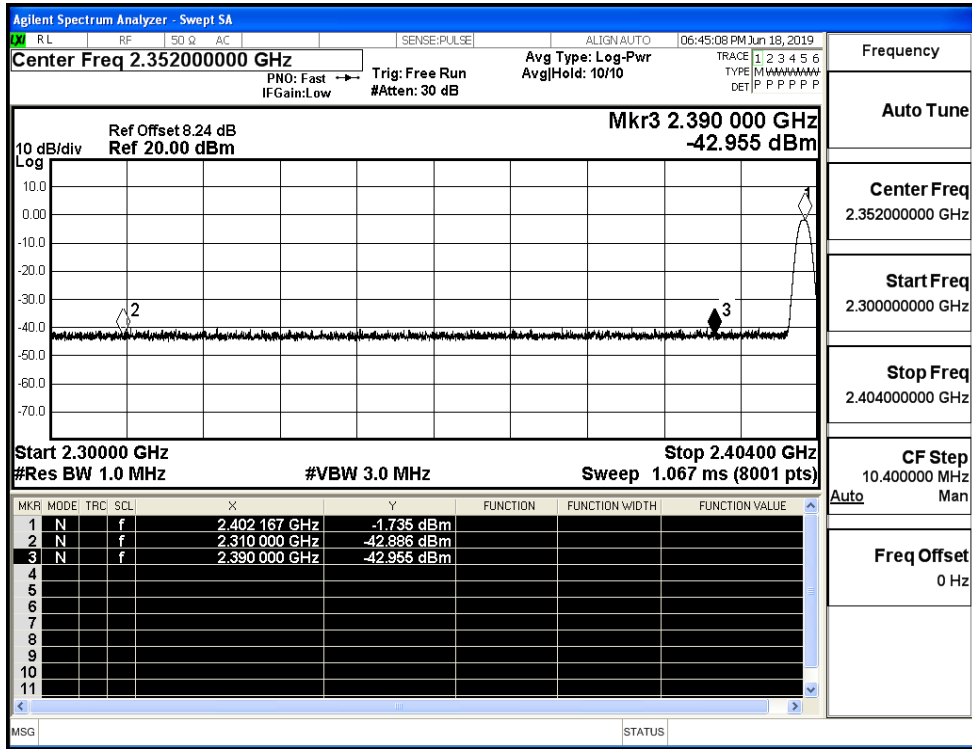
Freq Offset  
0 Hz



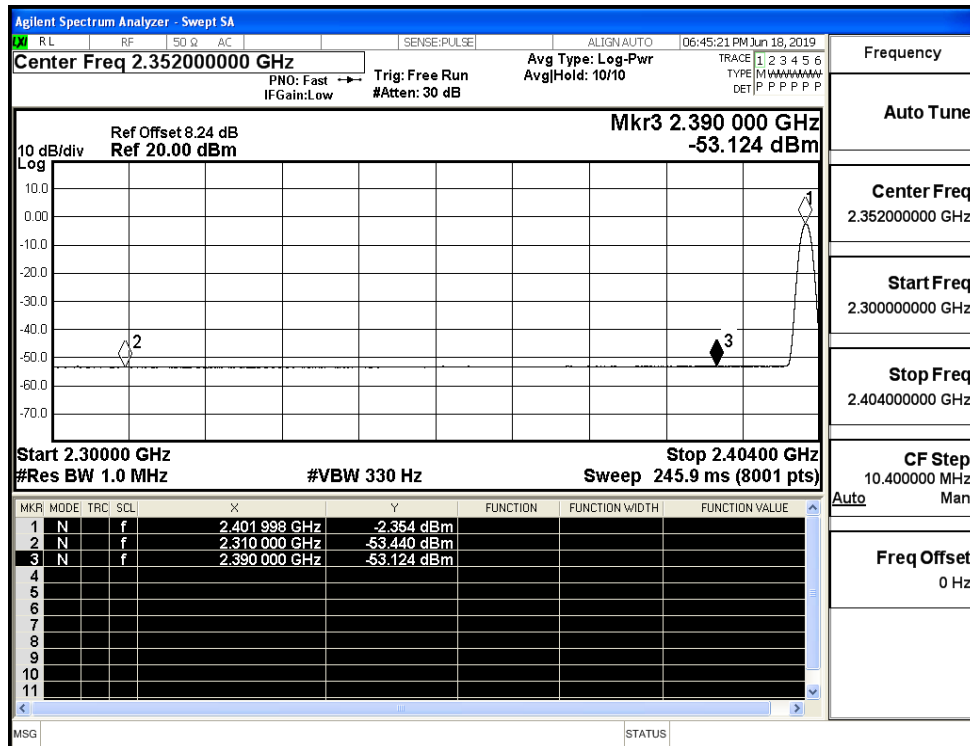
### A.8 Restrict-band band-edge measurements

| Test Mode     | Hopping | Freq.  | Power [dBm] | Gain | Ground Factor | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|---------------|---------|--------|-------------|------|---------------|------------|----------|----------------|---------|
| GFSK          | Off     | 2310.0 | -42.89      | 2.0  | 0             | 52.37      | PEAK     | 74             | PASS    |
|               | Off     | 2310.0 | -53.44      | 2.0  | 0             | 41.82      | AV       | 54             | PASS    |
|               | Off     | 2390.0 | -42.96      | 2.0  | 0             | 52.30      | PEAK     | 74             | PASS    |
|               | Off     | 2390.0 | -53.12      | 2.0  | 0             | 42.13      | AV       | 54             | PASS    |
|               | Off     | 2483.5 | -43.88      | 2.0  | 0             | 51.38      | PEAK     | 74             | PASS    |
|               | Off     | 2483.5 | -52.91      | 2.0  | 0             | 42.35      | AV       | 54             | PASS    |
|               | Off     | 2500.0 | -41.75      | 2.0  | 0             | 53.50      | PEAK     | 74             | PASS    |
|               | Off     | 2500.0 | -52.77      | 2.0  | 0             | 42.49      | AV       | 54             | PASS    |
| $\pi/4$ DQPSK | Off     | 2310.0 | -43.08      | 2.0  | 0             | 52.18      | PEAK     | 74             | PASS    |
|               | Off     | 2310.0 | -53.22      | 2.0  | 0             | 42.04      | AV       | 54             | PASS    |
|               | Off     | 2390.0 | -43.99      | 2.0  | 0             | 51.27      | PEAK     | 74             | PASS    |
|               | Off     | 2390.0 | -53.14      | 2.0  | 0             | 42.12      | AV       | 54             | PASS    |
|               | Off     | 2483.5 | -42.33      | 2.0  | 0             | 52.93      | PEAK     | 74             | PASS    |
|               | Off     | 2483.5 | -52.75      | 2.0  | 0             | 42.51      | AV       | 54             | PASS    |
|               | Off     | 2500.0 | -43.24      | 2.0  | 0             | 52.02      | PEAK     | 74             | PASS    |
|               | Off     | 2500.0 | -52.77      | 2.0  | 0             | 42.49      | AV       | 54             | PASS    |
| 8DPSK         | Off     | 2310.0 | -42.81      | 2.0  | 0             | 52.45      | PEAK     | 74             | PASS    |
|               | Off     | 2310.0 | -53.47      | 2.0  | 0             | 41.79      | AV       | 54             | PASS    |
|               | Off     | 2390.0 | -41.91      | 2.0  | 0             | 53.35      | PEAK     | 74             | PASS    |
|               | Off     | 2390.0 | -53.20      | 2.0  | 0             | 42.06      | AV       | 54             | PASS    |
|               | Off     | 2483.5 | -43.04      | 2.0  | 0             | 52.21      | PEAK     | 74             | PASS    |
|               | Off     | 2483.5 | -52.84      | 2.0  | 0             | 42.42      | AV       | 54             | PASS    |
|               | Off     | 2500.0 | -42.78      | 2.0  | 0             | 52.48      | PEAK     | 74             | PASS    |
|               | Off     | 2500.0 | -52.70      | 2.0  | 0             | 42.55      | AV       | 54             | PASS    |

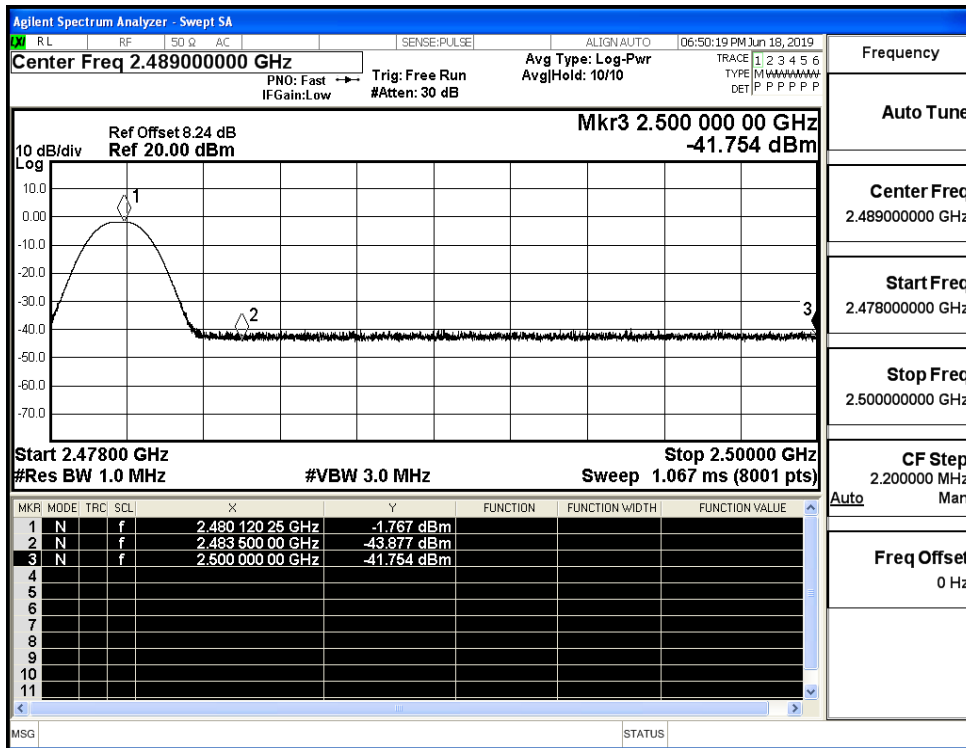
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (Low Channel)



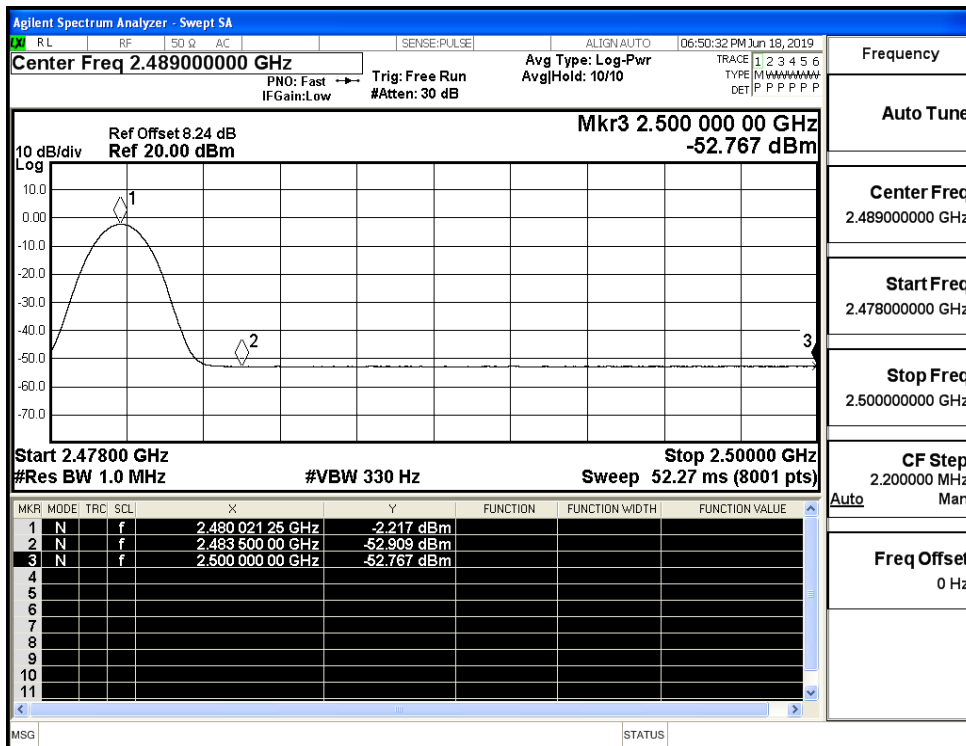
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (Low Channel)



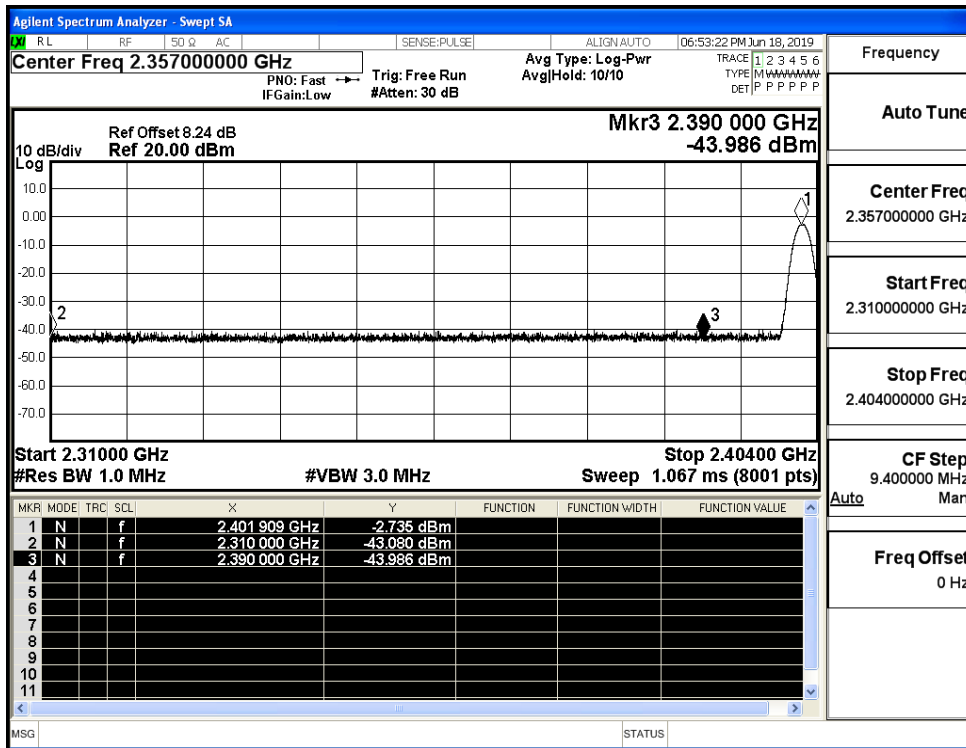
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (High Channel)



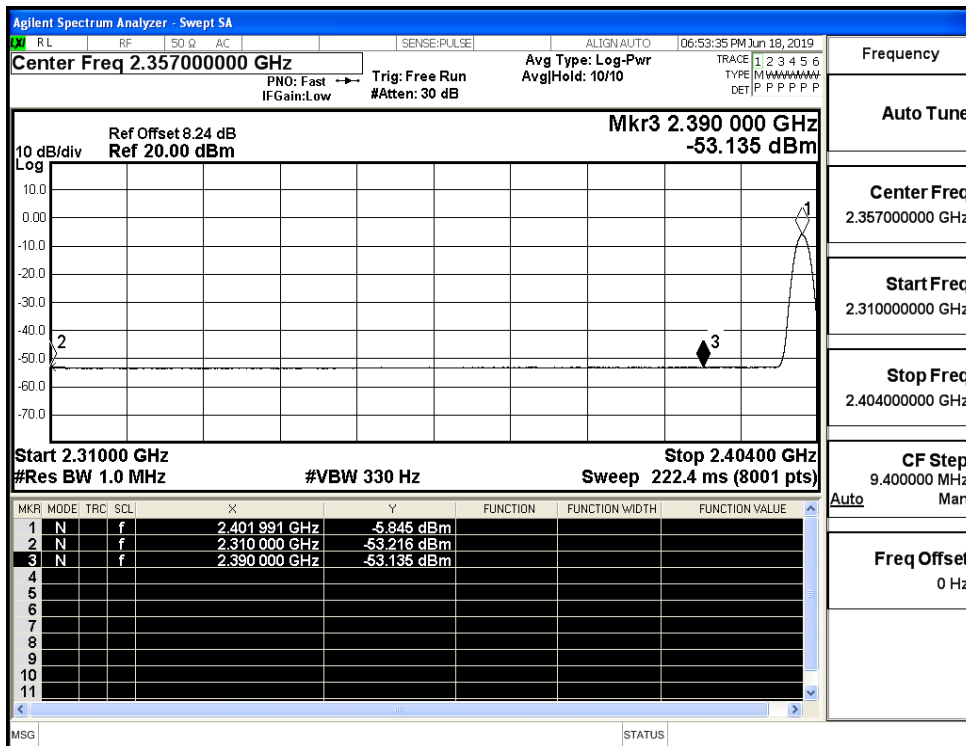
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (High Channel)



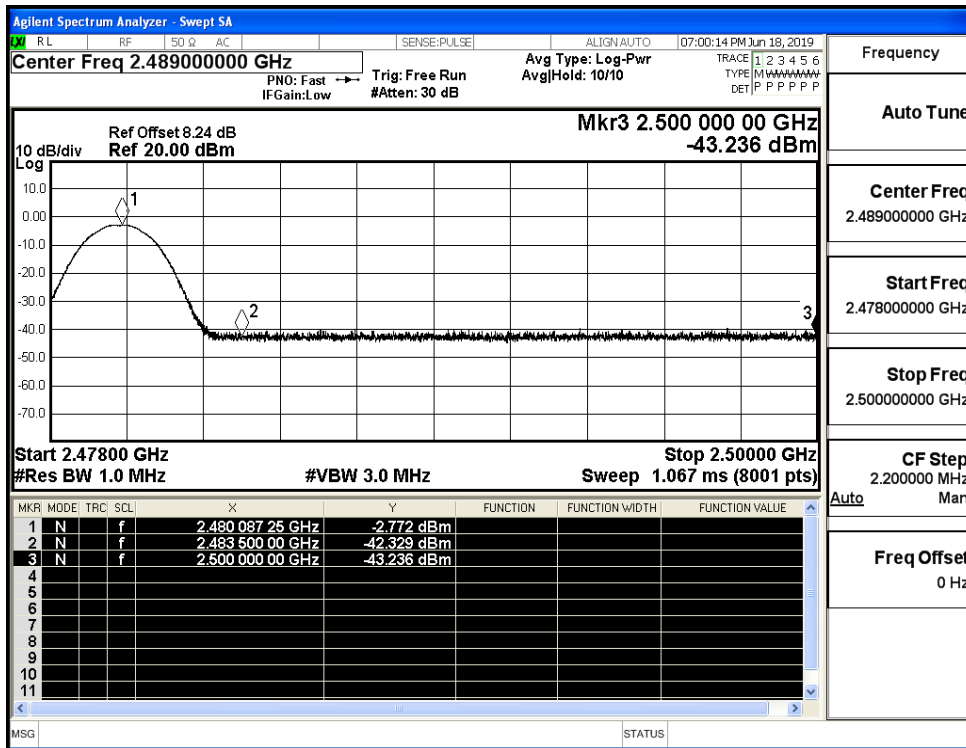
Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_PEAK (Low Channel)



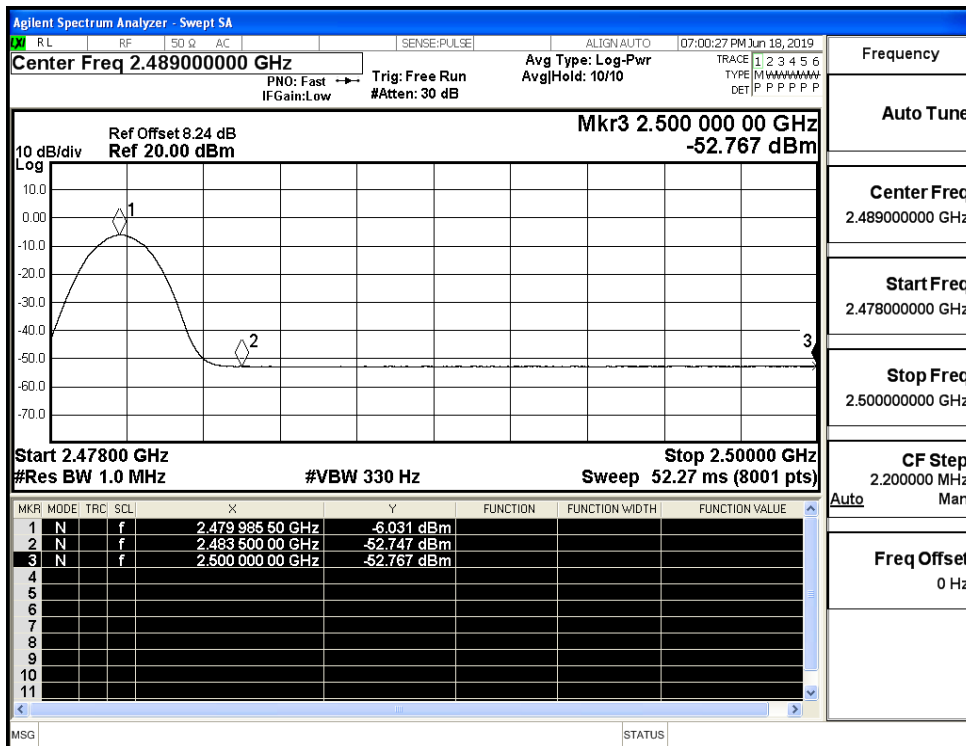
Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_Average (Low Channel)



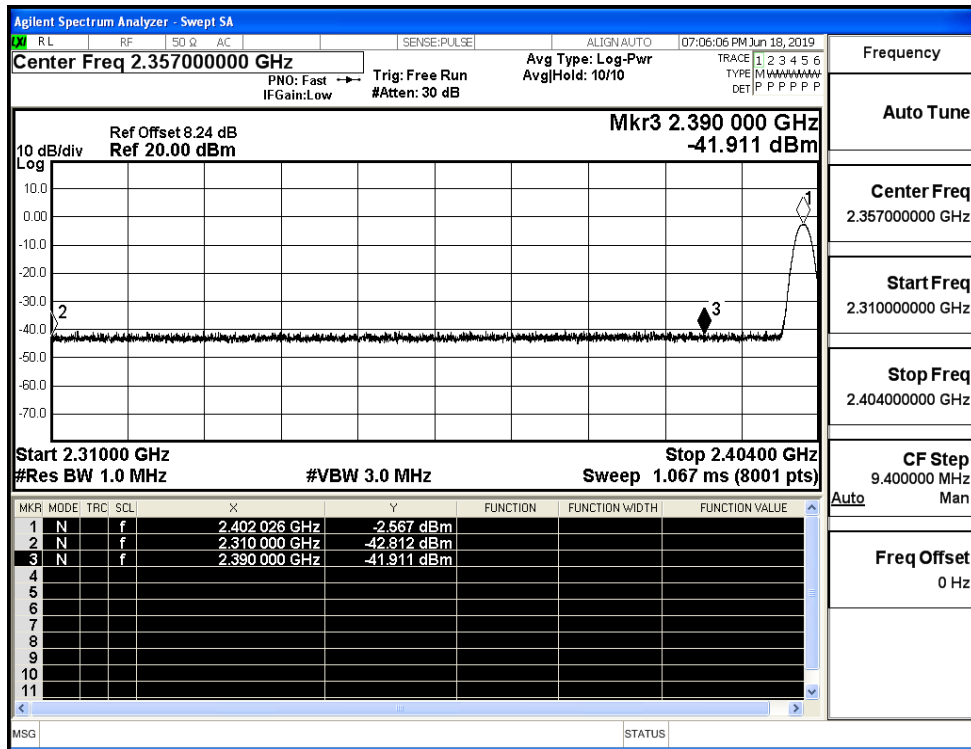
Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (High Channel)



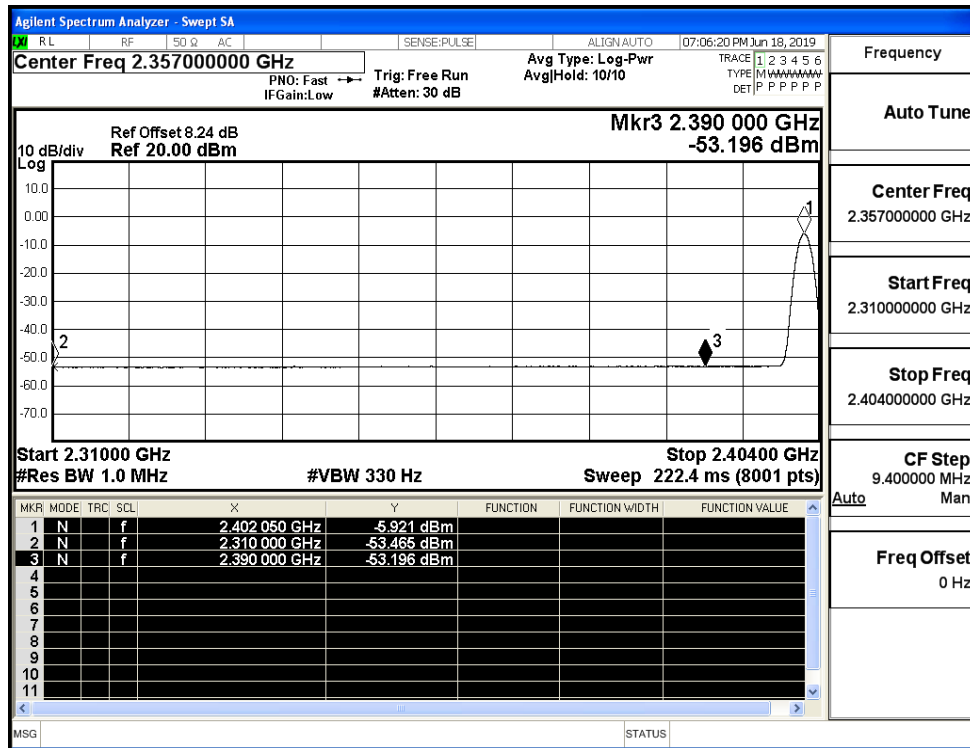
Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (High Channel)



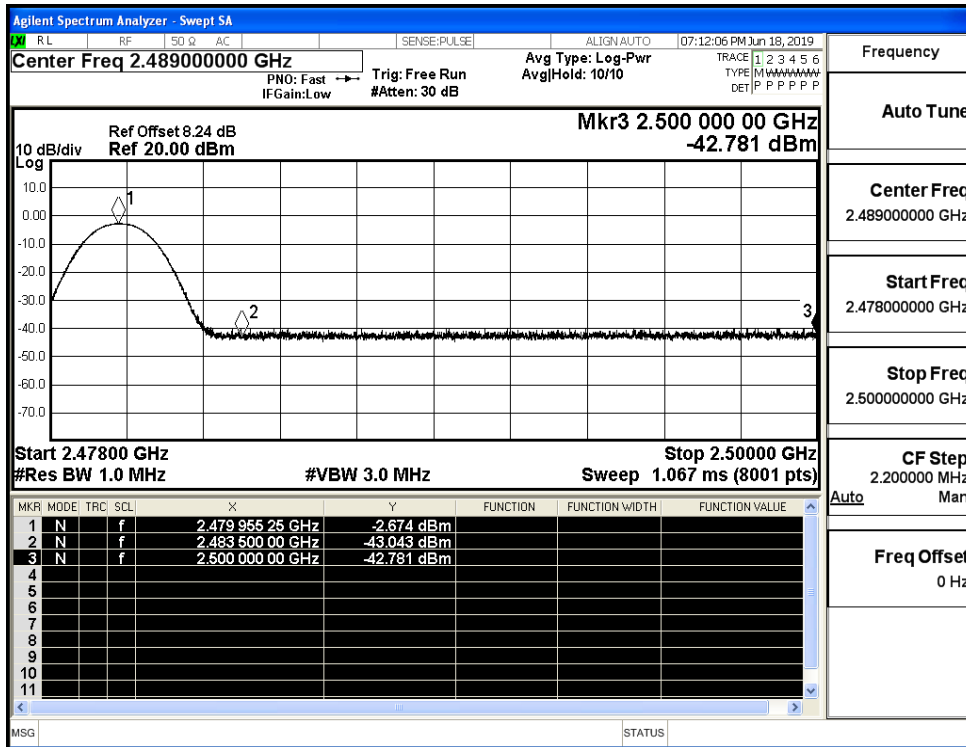
Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_PEAK (Low Channel)



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)

