

## Appendix A

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

Product Name: sofa sound

Test Model: HYK-658

#### Environmental Conditions

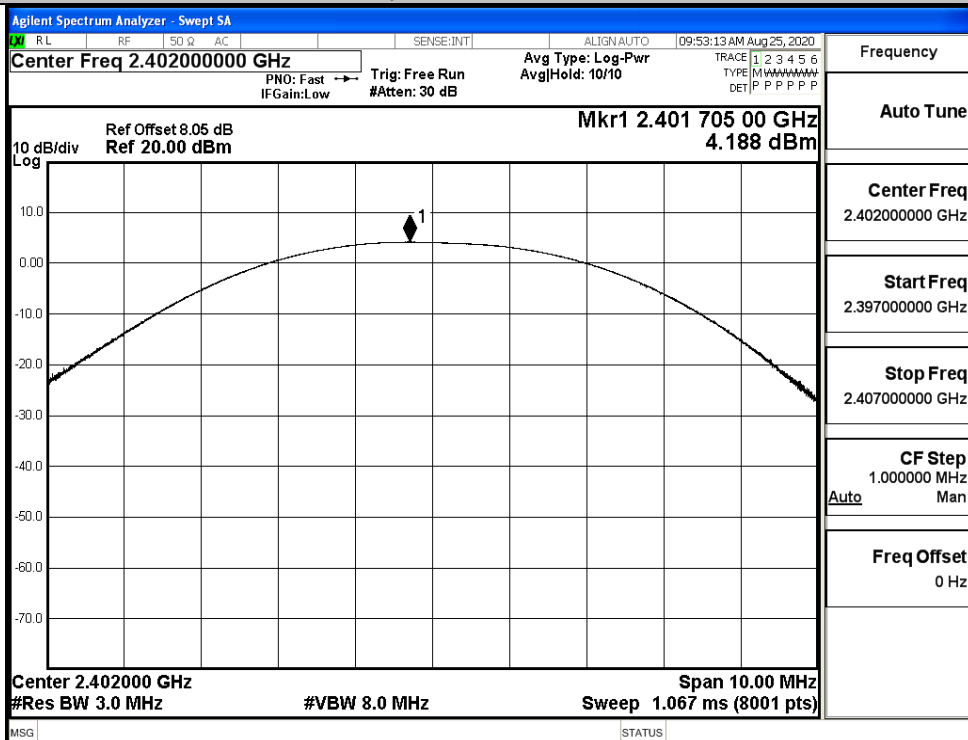
|                    |           |
|--------------------|-----------|
| Temperature:       | 24.5° C   |
| Relative Humidity: | 53.9%     |
| ATM Pressure:      | 100.0 kPa |
| Test Engineer:     | Jam Zheng |
| Supervised by:     | Li Huan   |

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

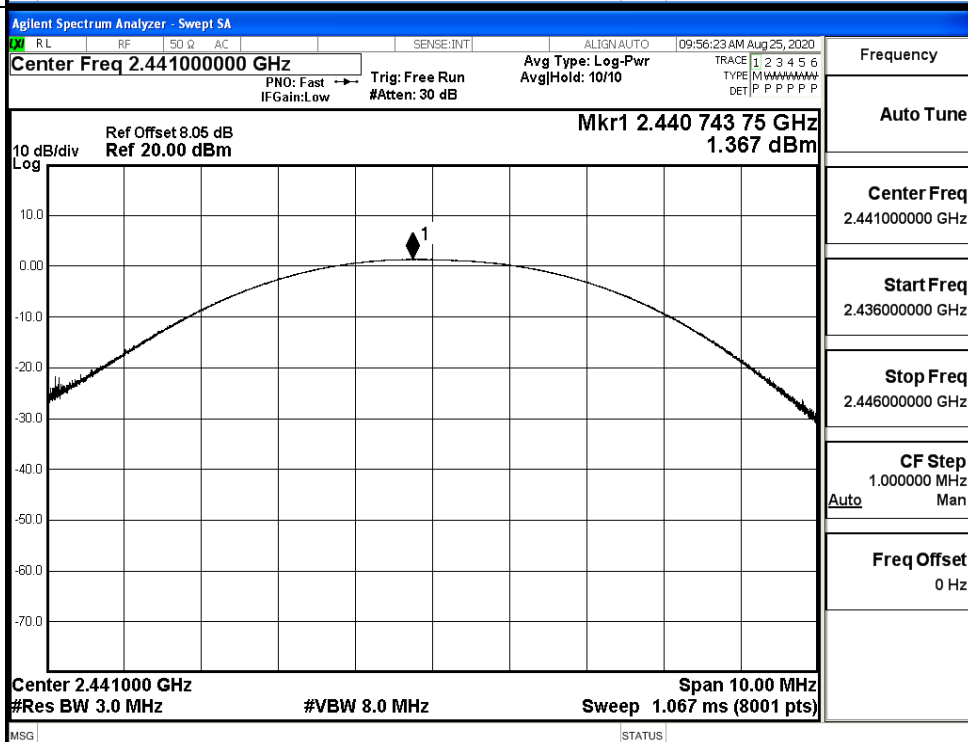
| Mode          | Channel. | Maximum Peak Output Power [dBm] | Limit [dBm] | Verdict |
|---------------|----------|---------------------------------|-------------|---------|
| GFSK          | LCH      | 4.188                           | 21          | PASS    |
|               | MCH      | 1.367                           | 21          | PASS    |
|               | HCH      | 1.142                           | 21          | PASS    |
| $\pi/4$ DQPSK | LCH      | 4.387                           | 21          | PASS    |
|               | MCH      | 2.227                           | 21          | PASS    |
|               | HCH      | 1.971                           | 21          | PASS    |

## Test Graphs

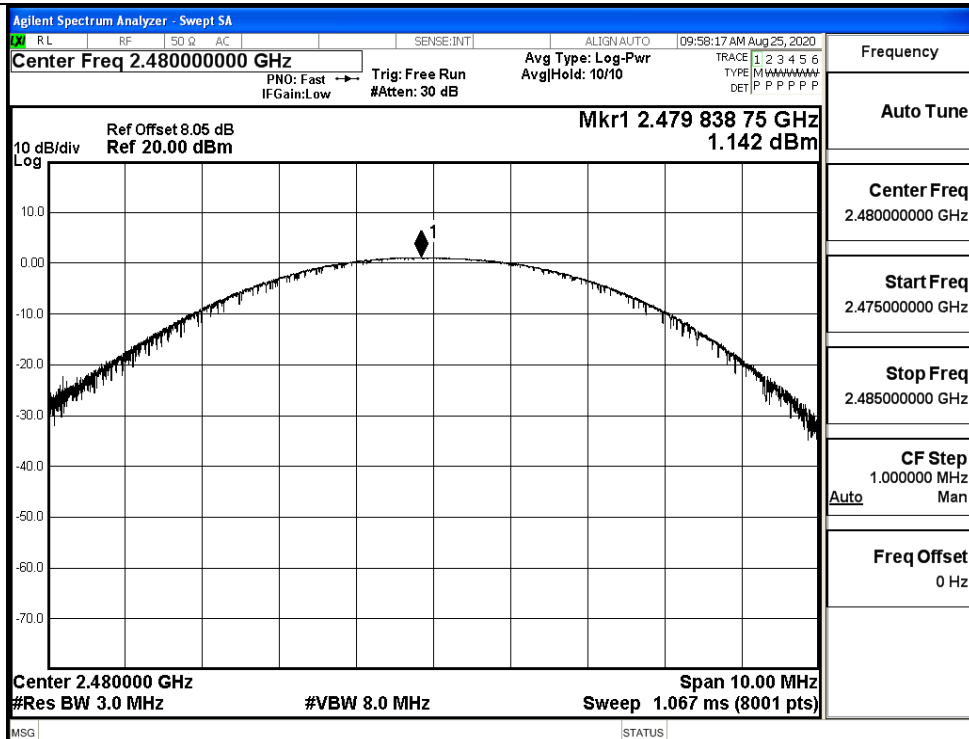
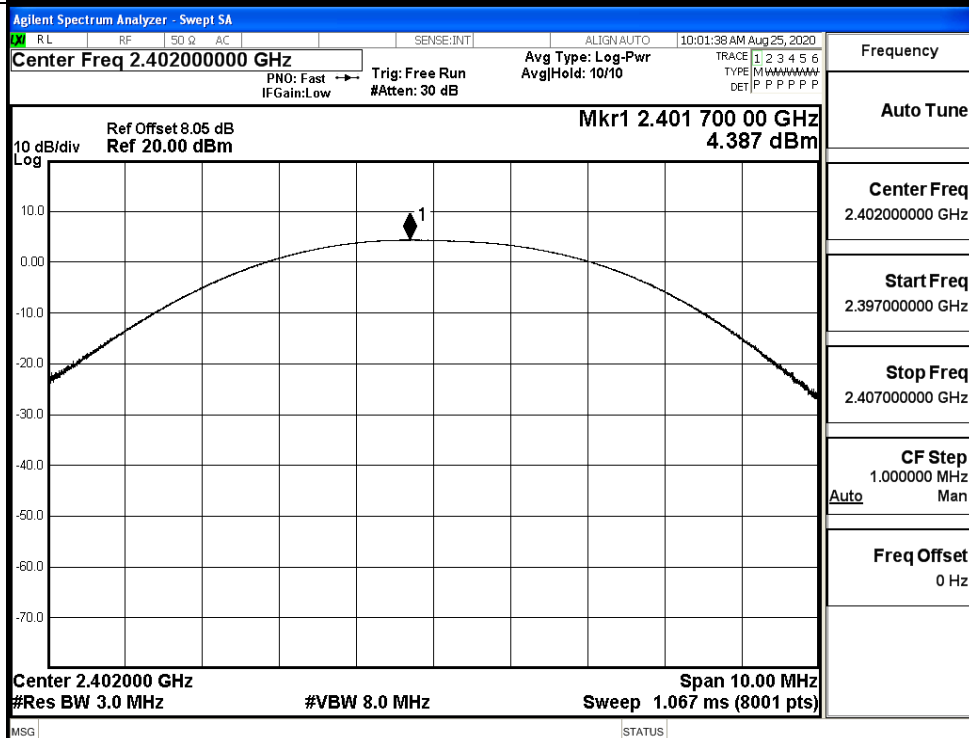
GFSK/LCH

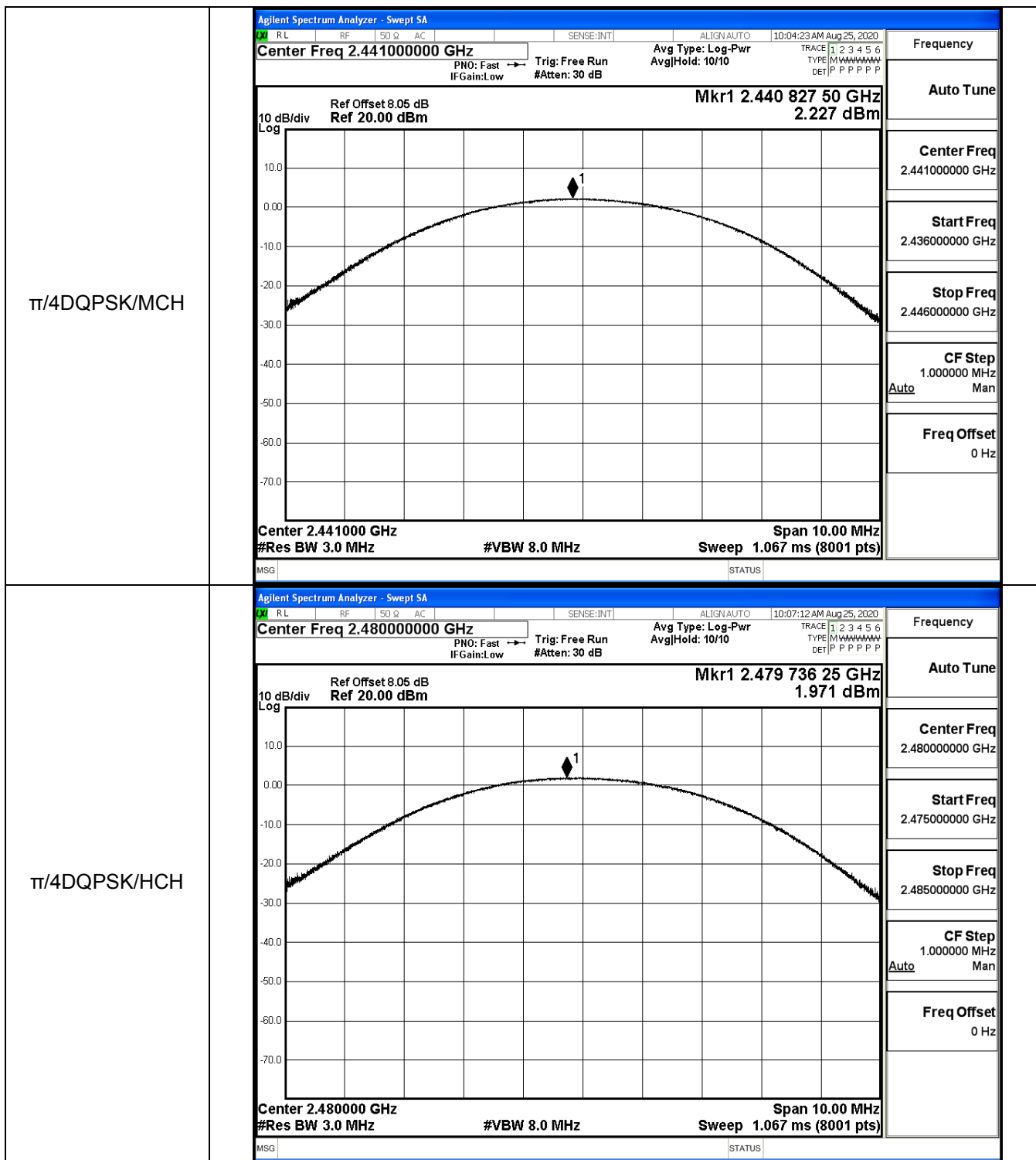


GFSK/MCH



GFSK/HCH

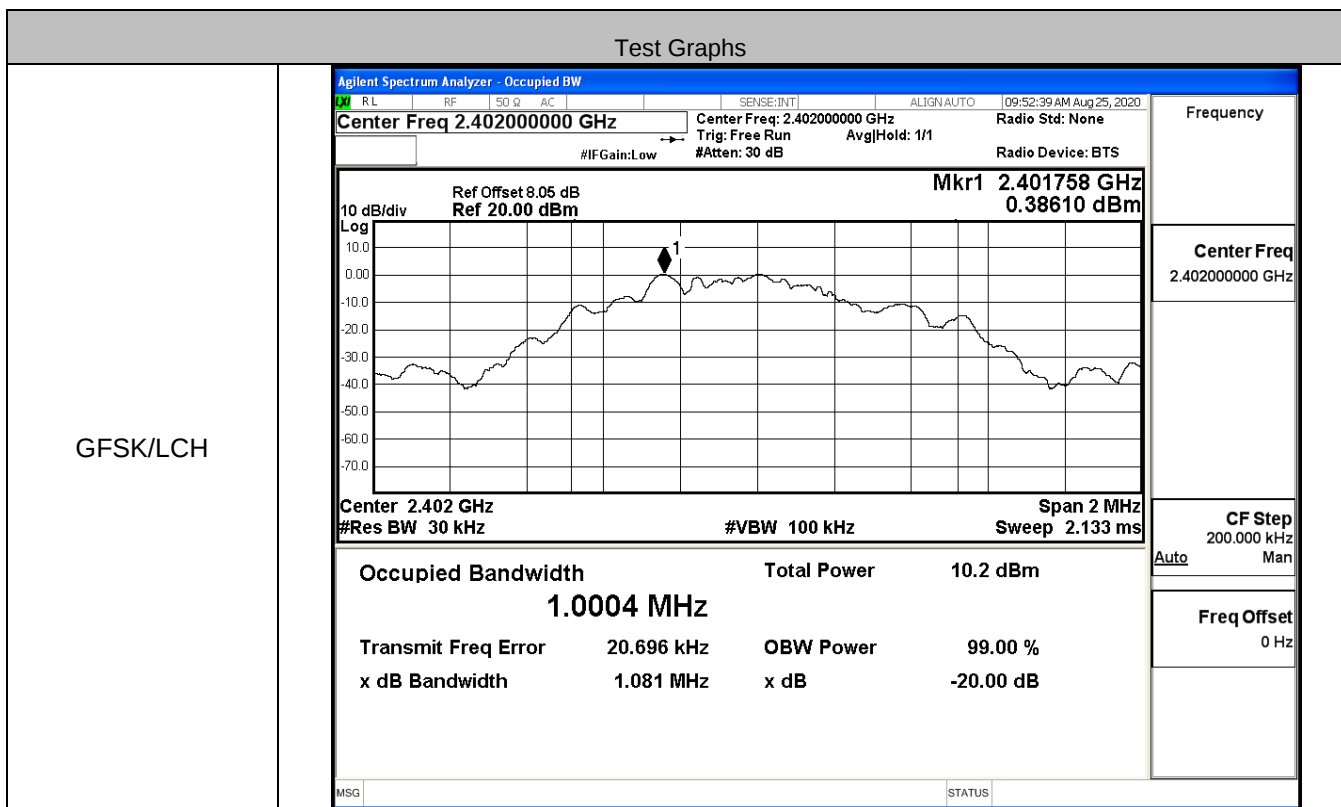
 $\pi/4$ DQPSK/LCH



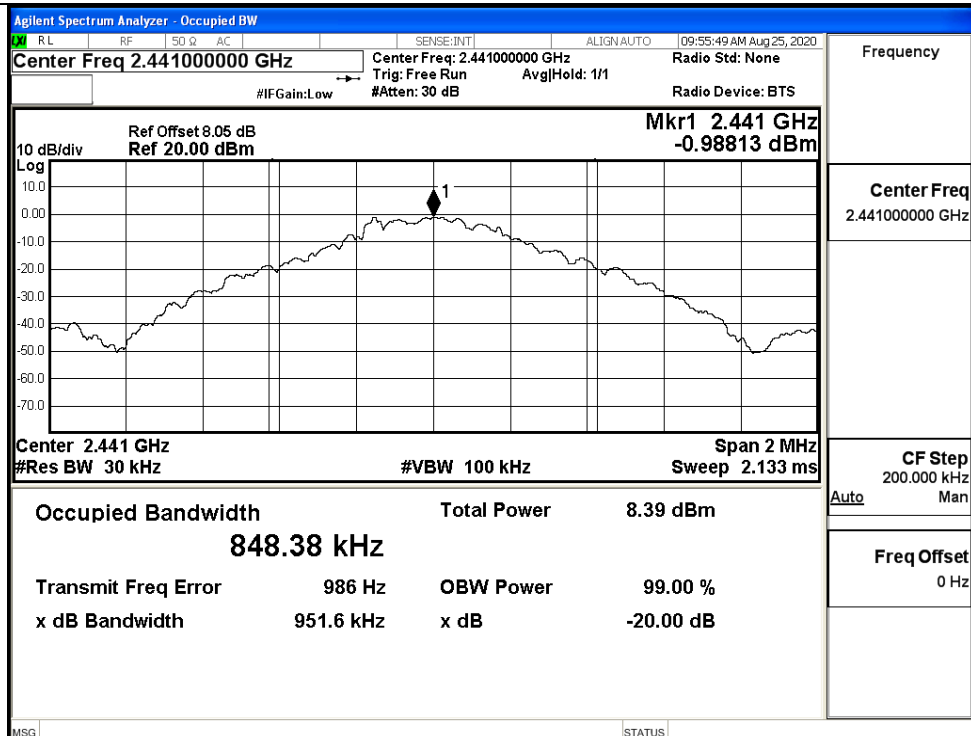
## A.2 20dB Bandwidth

| Mode          | Channel. | 20dB Bandwidth [MHz] | Limit [MHz]   | Verdict |
|---------------|----------|----------------------|---------------|---------|
| GFSK          | LCH      | 1.081                | Not Specified | PASS    |
|               | MCH      | 0.9516               | Not Specified | PASS    |
|               | HCH      | 0.9526               | Not Specified | PASS    |
| $\pi/4$ DQPSK | LCH      | 1.081                | Not Specified | PASS    |
|               | MCH      | 1.317                | Not Specified | PASS    |
|               | HCH      | 1.319                | Not Specified | PASS    |

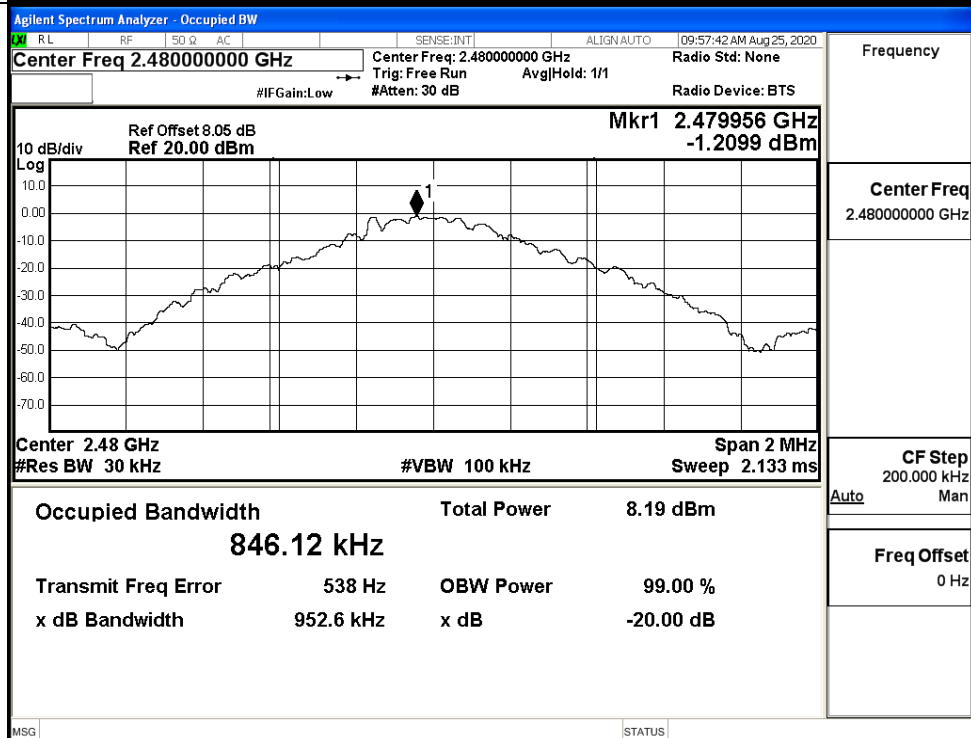
Test Graphs

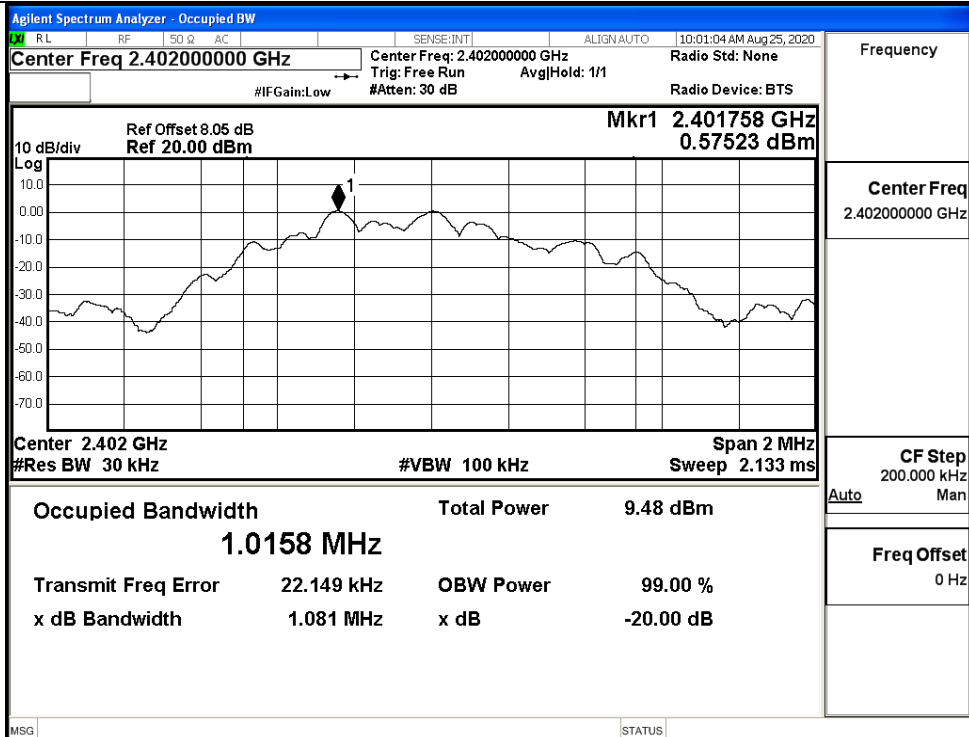


GFSK/MCH



GFSK/HCH

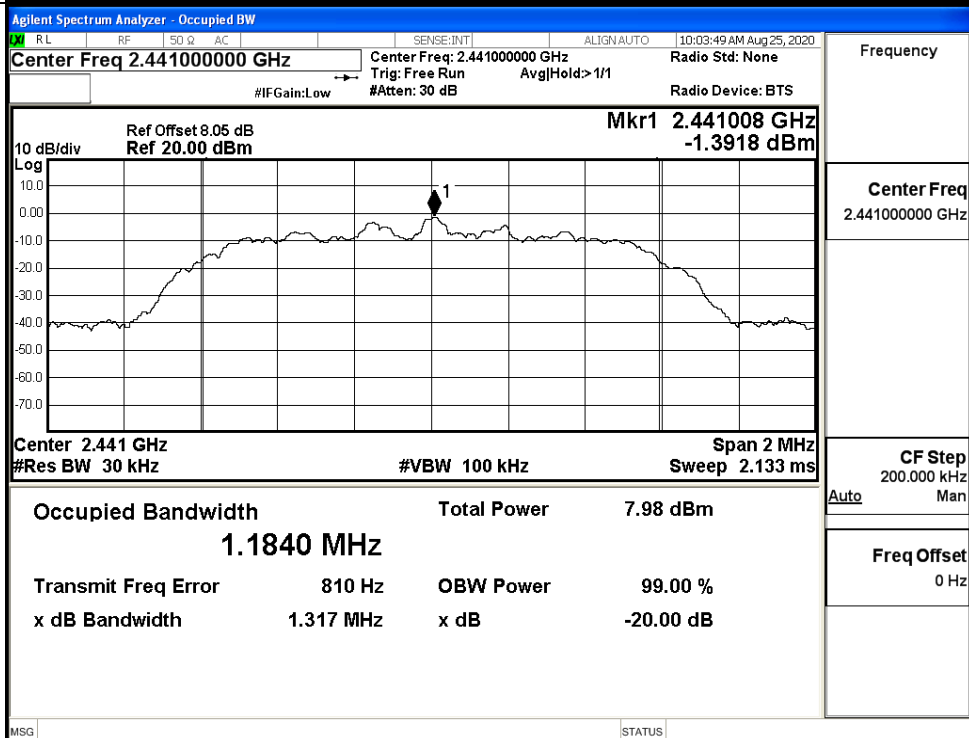


$\pi/4$ DQPSK/LCH

Frequency

Center Freq  
2.40200000 GHzCF Step  
200.000 kHz  
Man

Auto

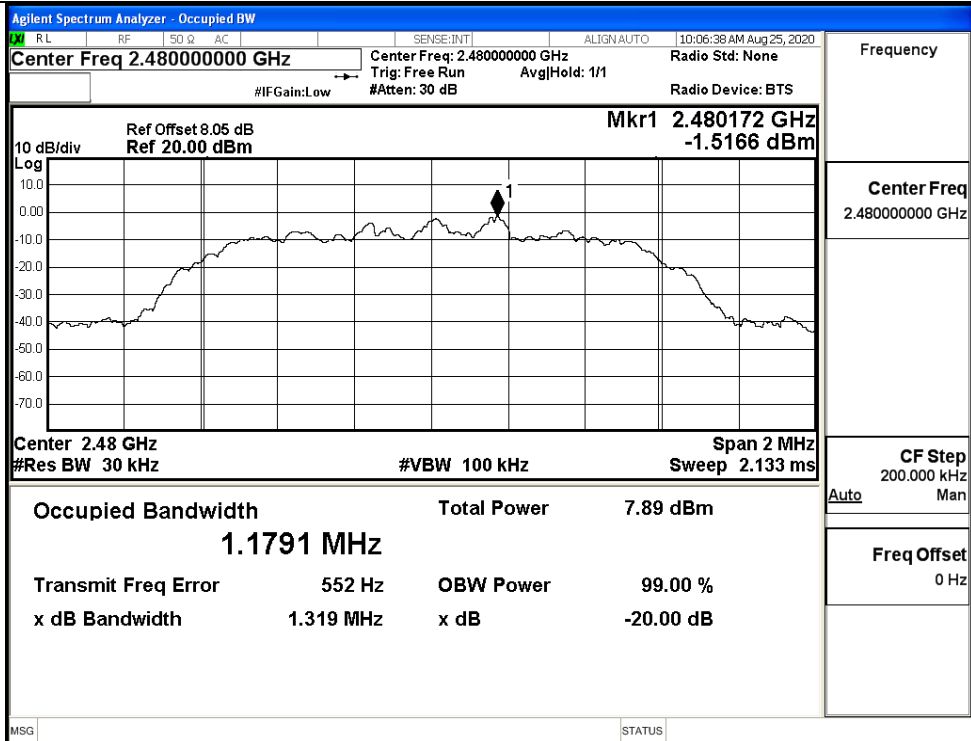
Freq Offset  
0 Hz $\pi/4$ DQPSK/MCH

Frequency

Center Freq  
2.44100000 GHzCF Step  
200.000 kHz  
Man

Auto

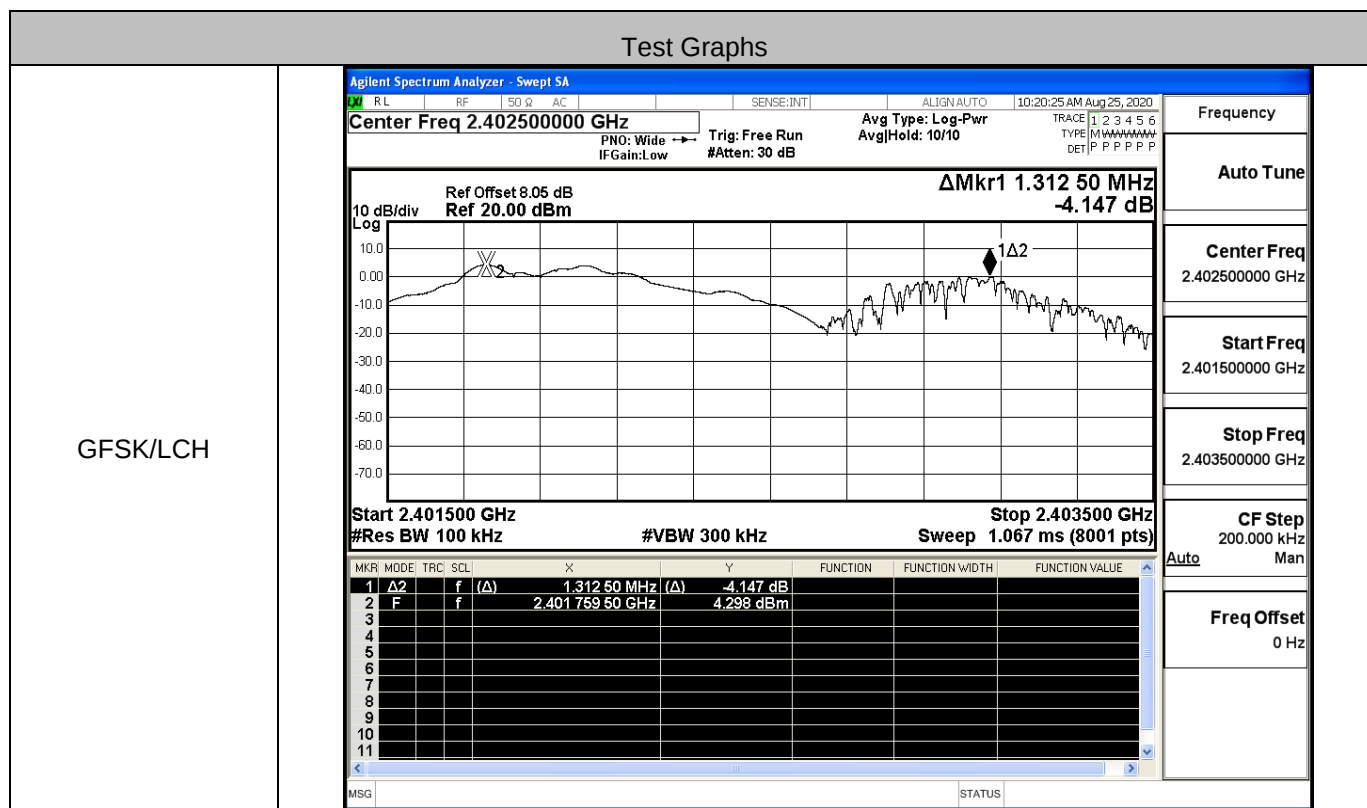
Freq Offset  
0 Hz

$\pi/4$ DQPSK/HCH

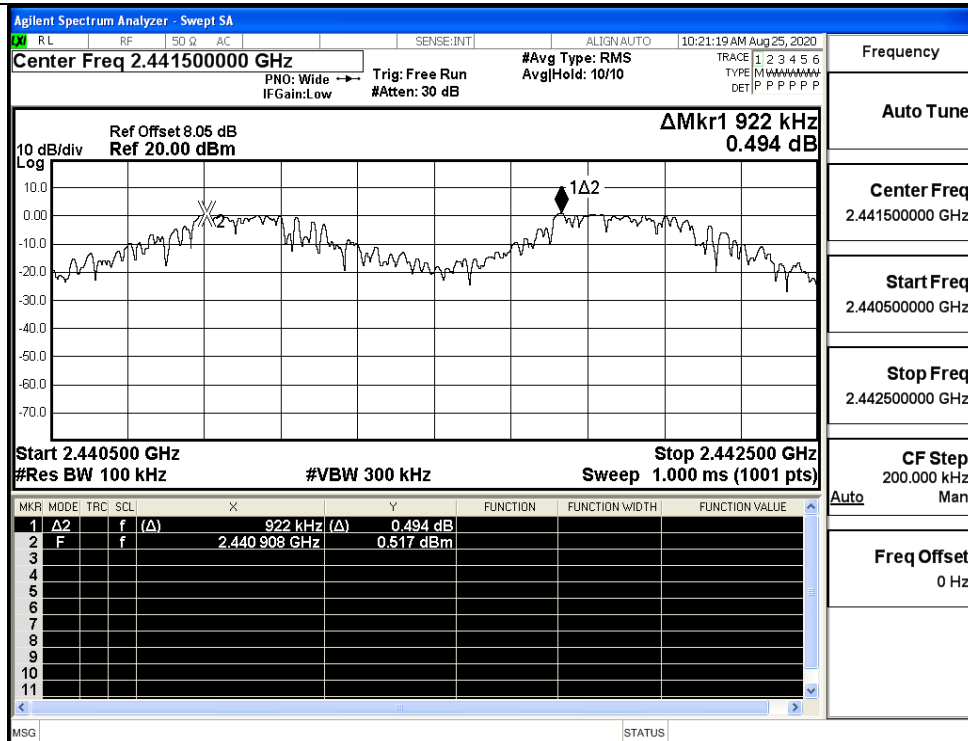
## A.3 Carrier Frequency Separation

| Mode          | Channel. | Carrier Frequency Separation [MHz] | Limit [MHz] | Verdict |
|---------------|----------|------------------------------------|-------------|---------|
| GFSK          | LCH      | 1.313                              | 0.721       | PASS    |
|               | MCH      | 0.922                              | 0.721       | PASS    |
|               | HCH      | 1.054                              | 0.721       | PASS    |
| $\pi$ /4DQPSK | LCH      | 1.254                              | 0.879       | PASS    |
|               | MCH      | 1.268                              | 0.879       | PASS    |
|               | HCH      | 1.222                              | 0.879       | PASS    |

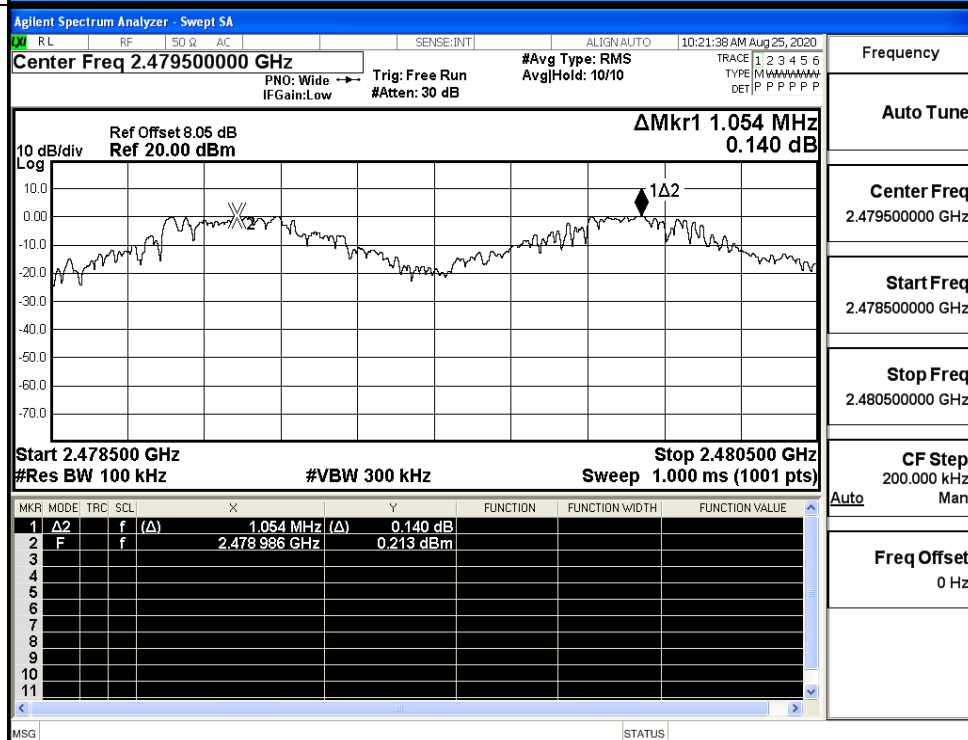
Test Graphs

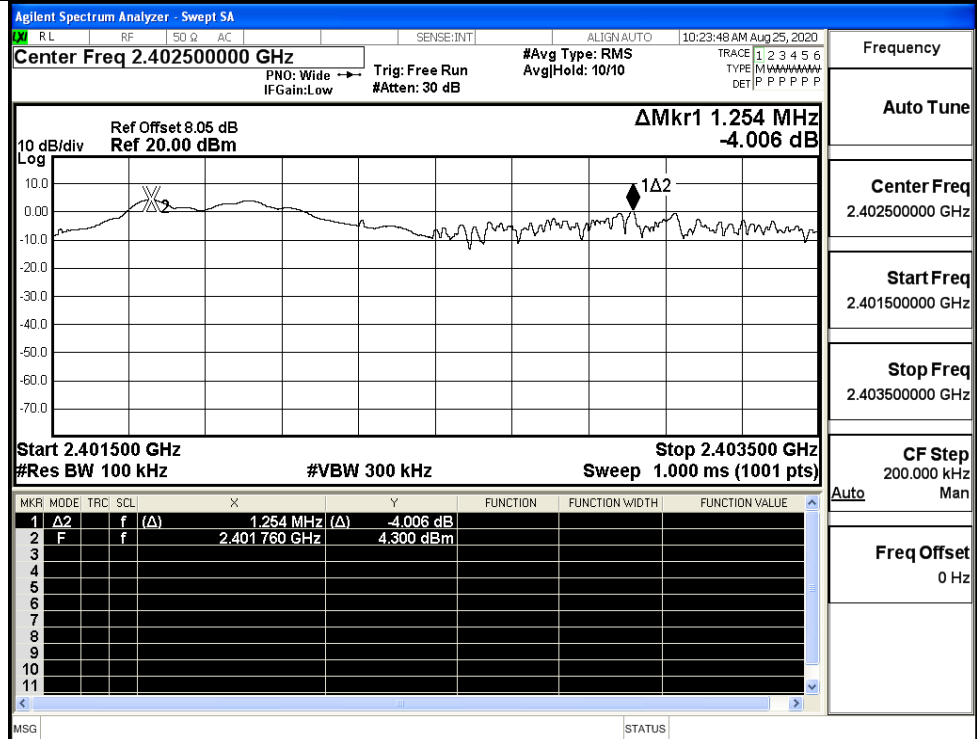
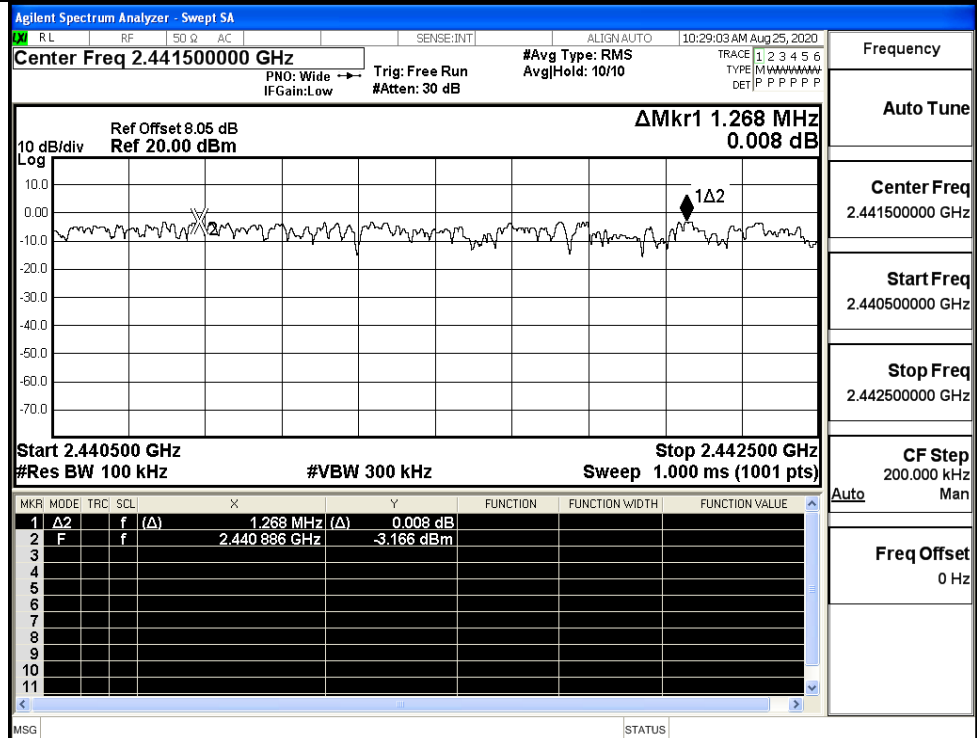


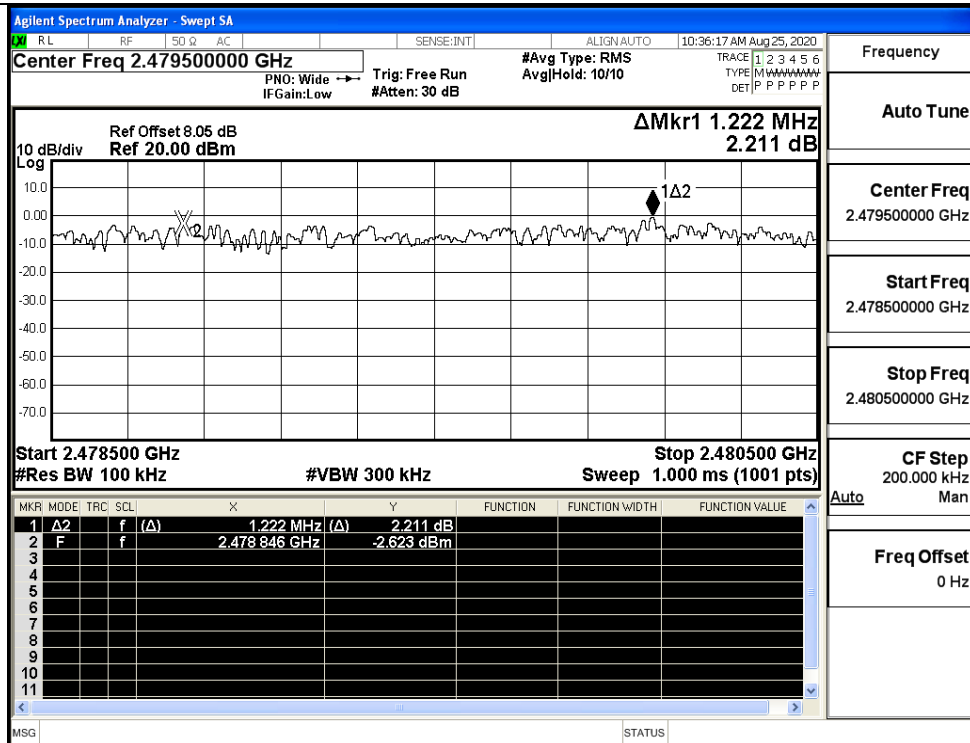
GFSK/MCH



GFSK/HCH



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

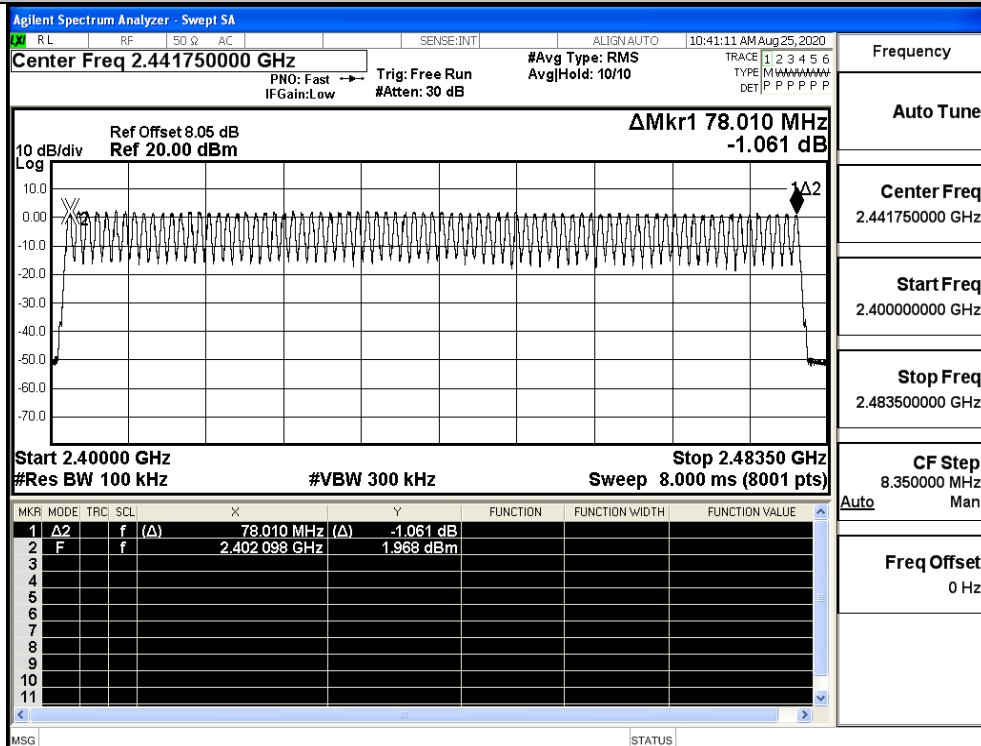
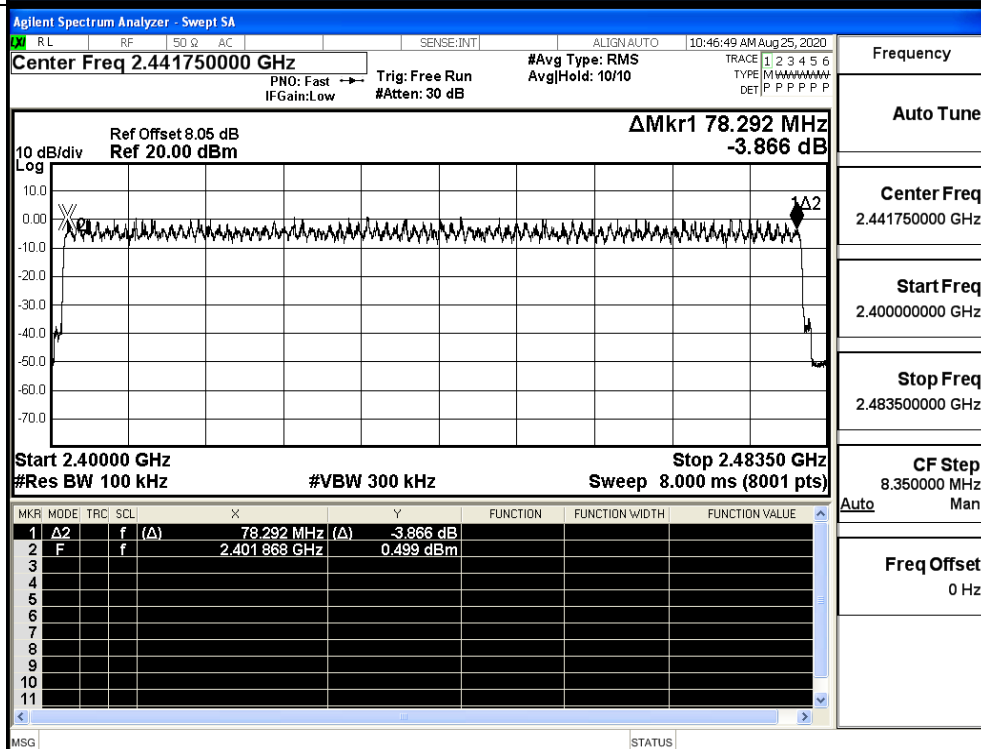
$\pi/4$ DQPSK/HCH

## A.4 Hopping Channel Number

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

### Test Graphs

GFSK/Hop

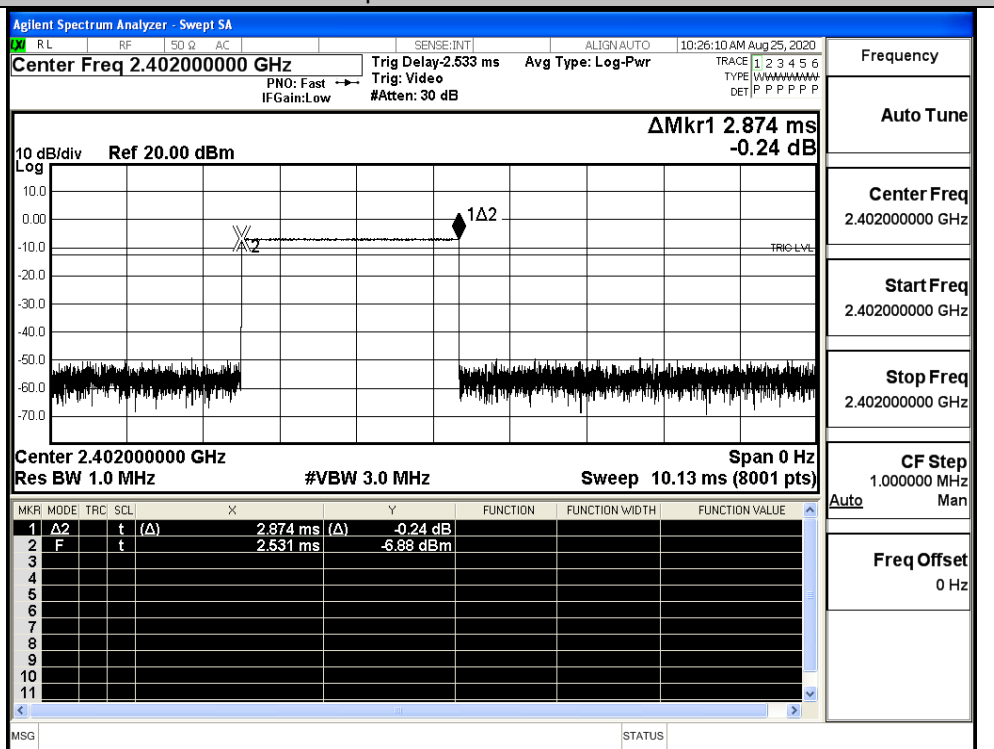
 $\pi/4$ DQPSK/Hop

## A.5 Dwell Time

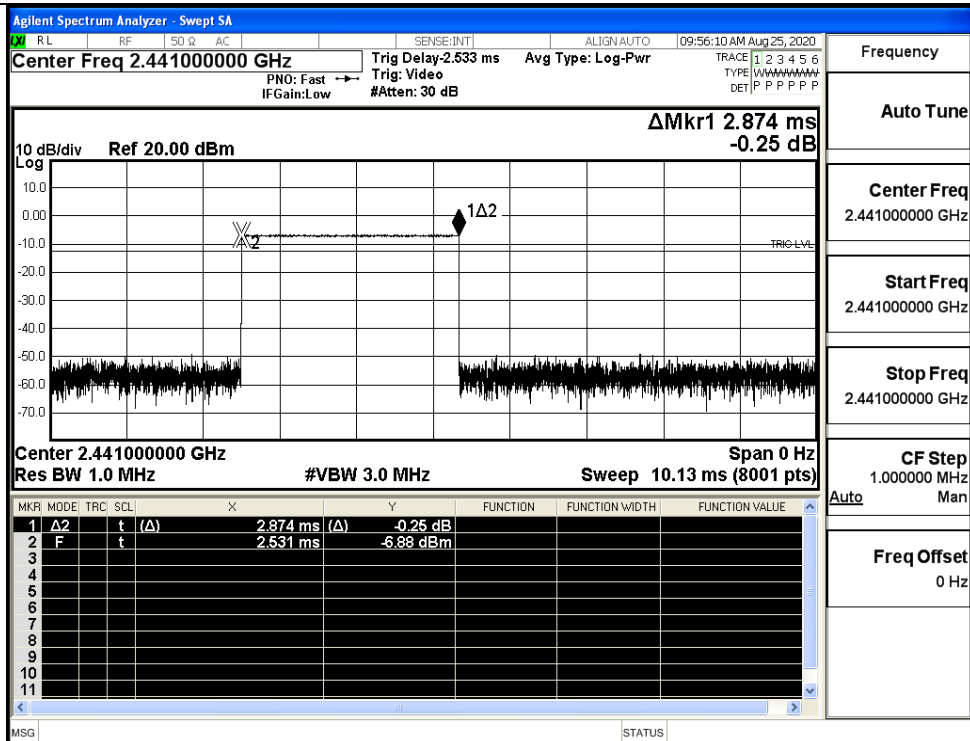
| Mode          | Packet | Channel | Burst Width<br>[ms/hop/ch] | Total<br>Hops[hop*ch] | Dwell Time[s] | Limit [s] | Verdict |
|---------------|--------|---------|----------------------------|-----------------------|---------------|-----------|---------|
| GFSK          | DH5    | LCH     | 2.874                      | 106.7                 | 0.307         | 0.4       | PASS    |
|               | DH5    | MCH     | 2.874                      | 106.7                 | 0.307         | 0.4       | PASS    |
|               | DH5    | HCH     | 2.874                      | 106.7                 | 0.307         | 0.4       | PASS    |
| $\pi/4$ DQPSK | 2DH5   | LCH     | 2.880                      | 106.7                 | 0.307         | 0.4       | PASS    |
|               | 2DH5   | MCH     | 2.880                      | 106.7                 | 0.307         | 0.4       | PASS    |
|               | 2DH5   | HCH     | 2.880                      | 106.7                 | 0.307         | 0.4       | PASS    |

## Test Graphs

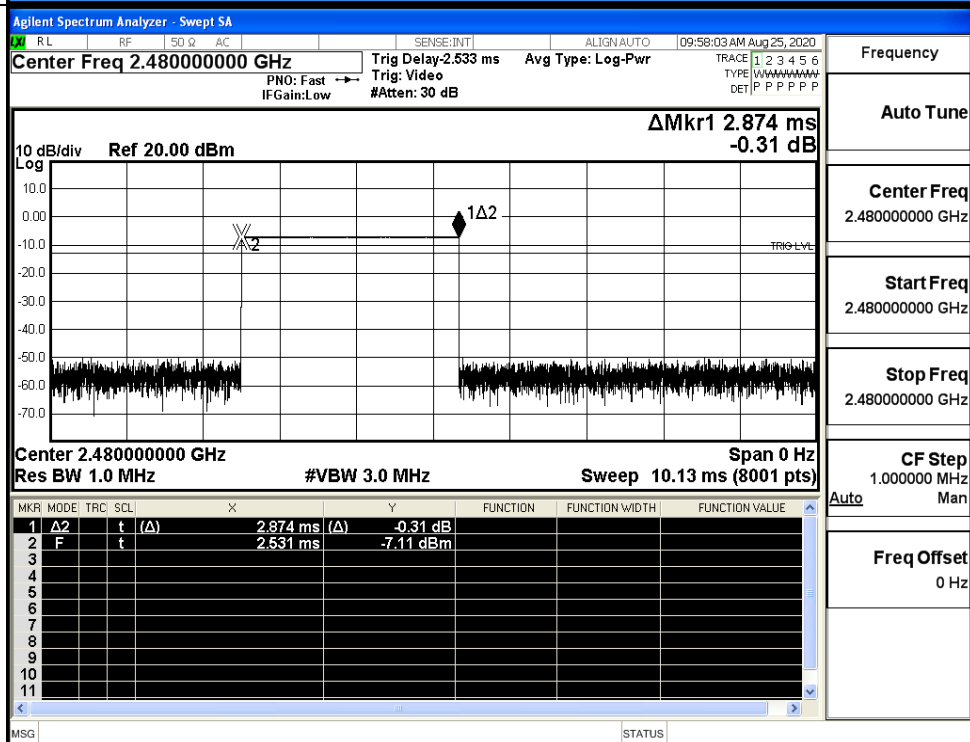
GFSK\_DH5/LCH



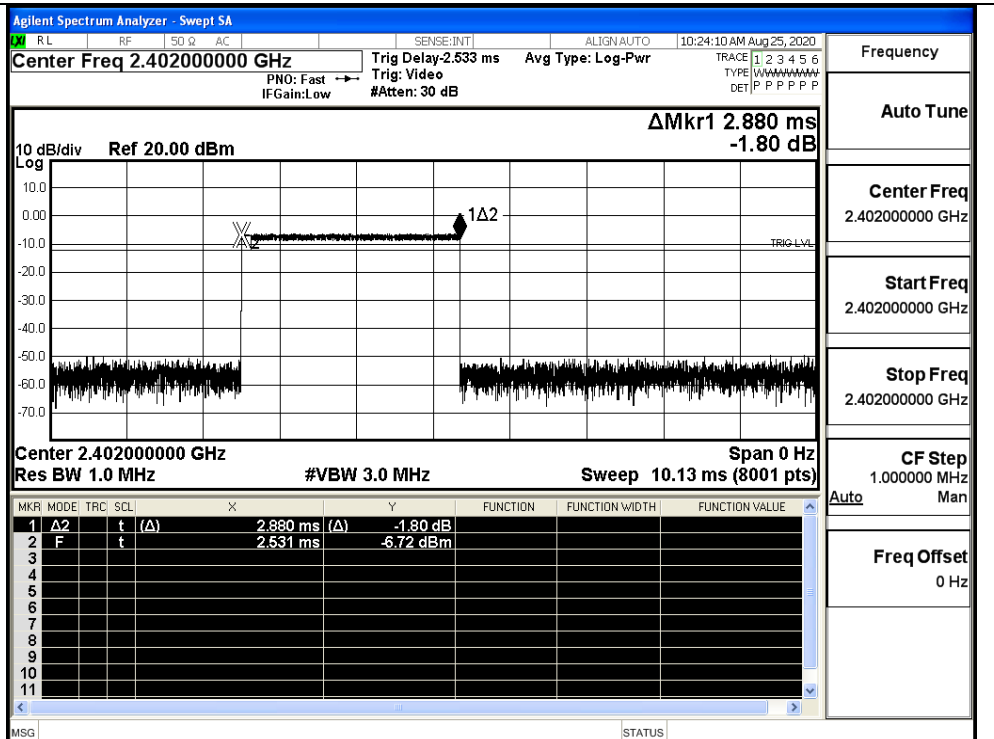
GFSK\_DH5/MCH



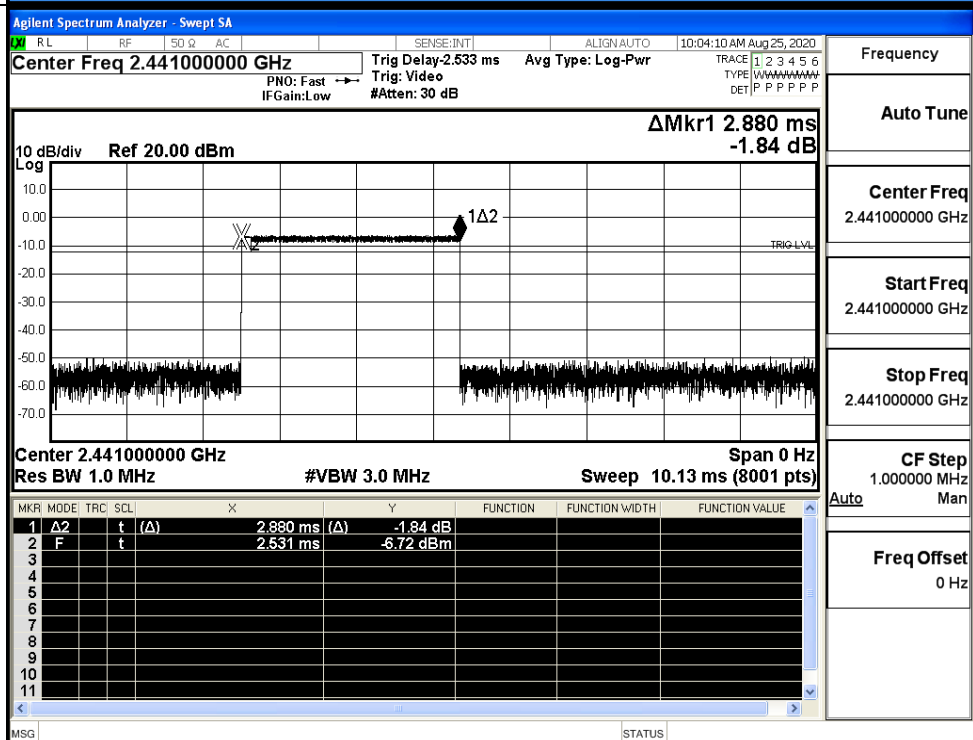
GFSK\_DH5/HCH



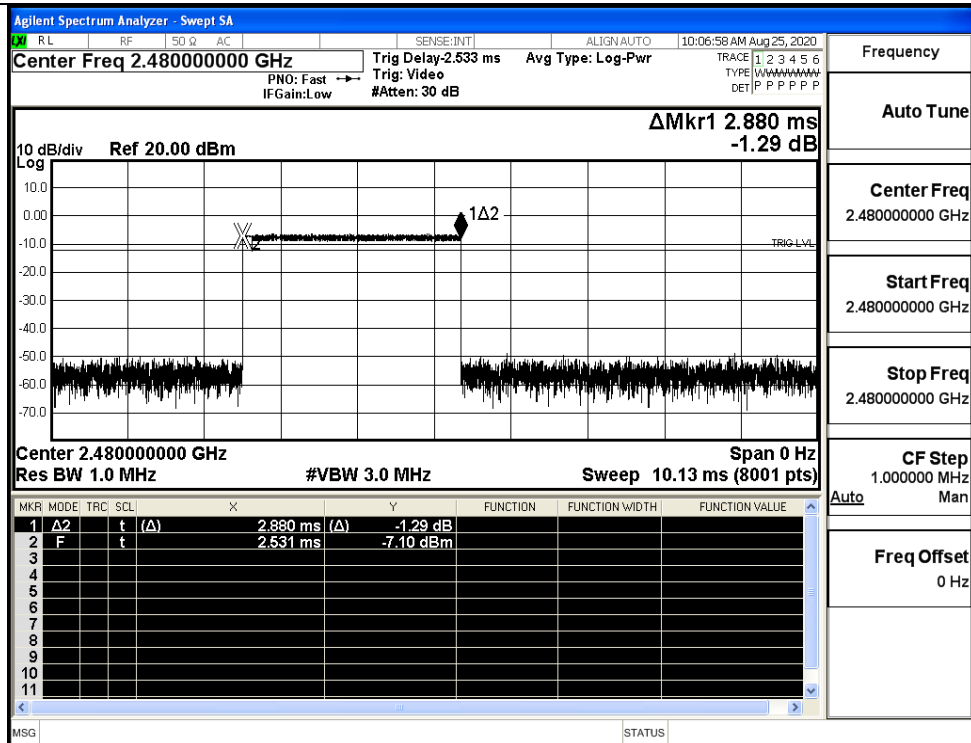
$\pi/4$ DQPSK  
\_2DH5/LCH



$\pi/4$ DQPSK  
\_2DH5/MCH



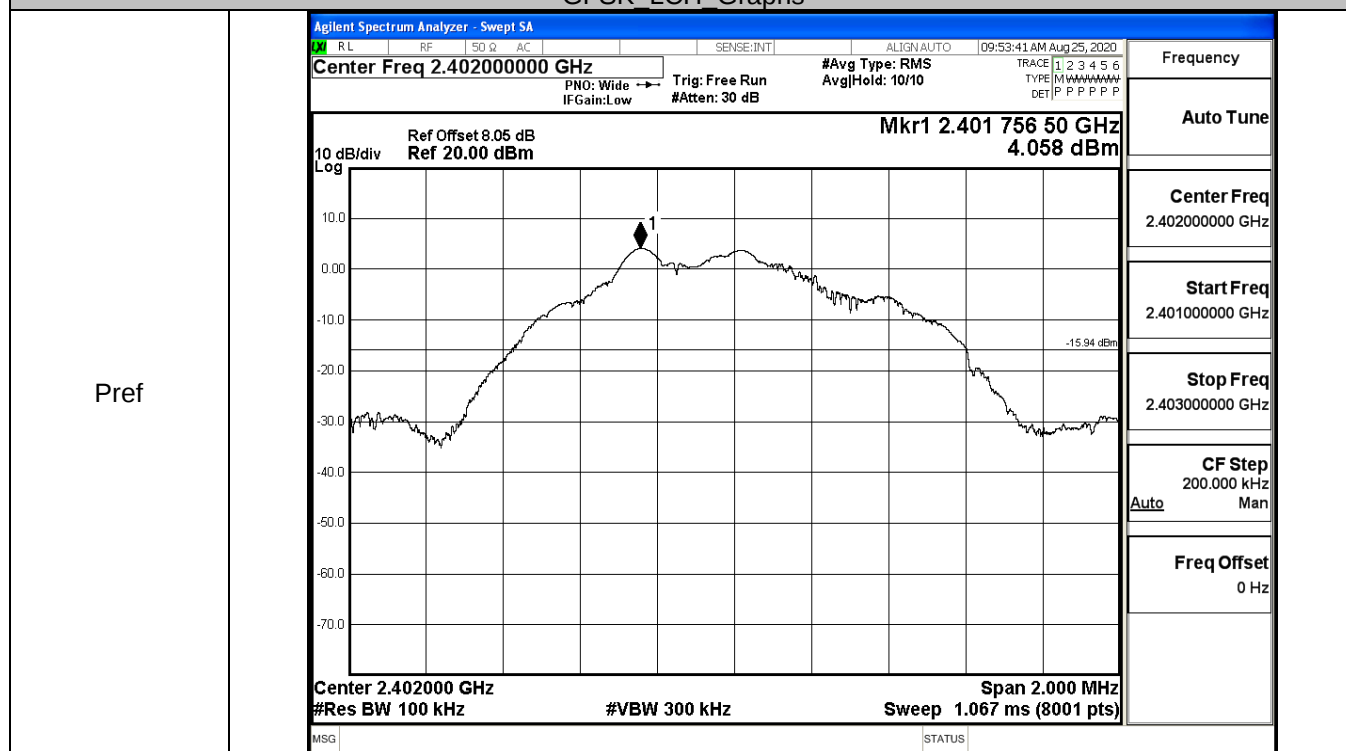
π/4DQPSK  
\_2DH5/HCH



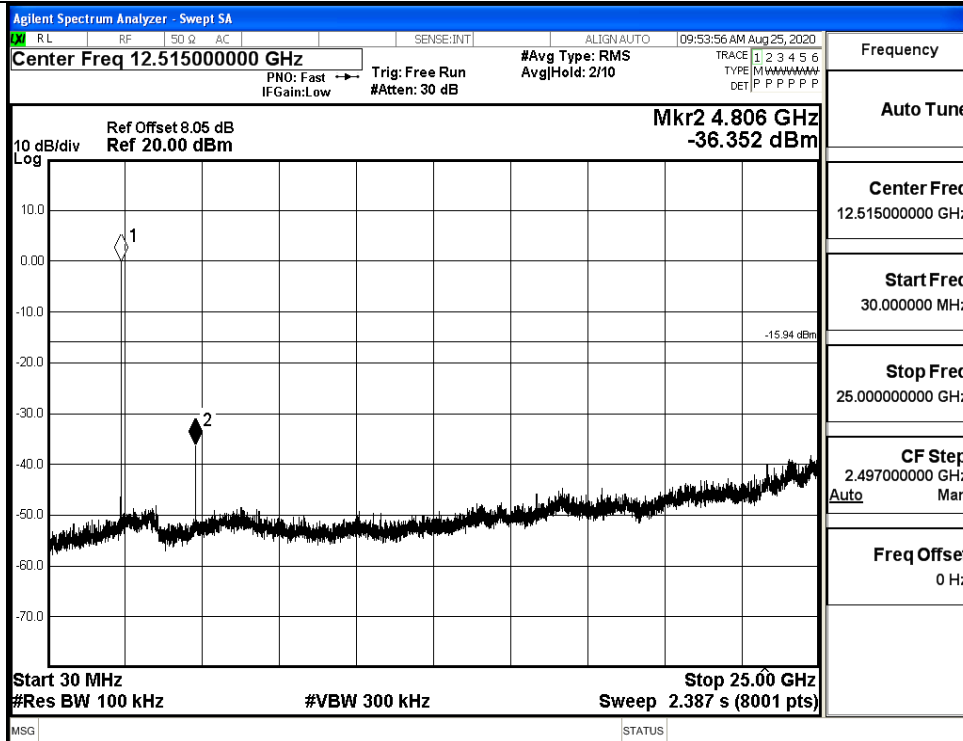
## A.6 RF Conducted Spurious Emissions

| Mode          | Channel | Pref [dBm] | Max. Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|------------|------------------|-------------|---------|
| GFSK          | LCH     | 4.058      | -36.352          | -15.942     | PASS    |
|               | MCH     | 0.809      | -38.991          | -19.191     | PASS    |
|               | HCH     | 0.835      | -37.738          | -19.165     | PASS    |
| $\pi/4$ DQPSK | LCH     | 4.284      | -34.749          | -15.716     | PASS    |
|               | MCH     | 1.242      | -38.144          | -18.758     | PASS    |
|               | HCH     | 1.106      | -38.636          | -18.894     | PASS    |

GFSK LCH Graphs

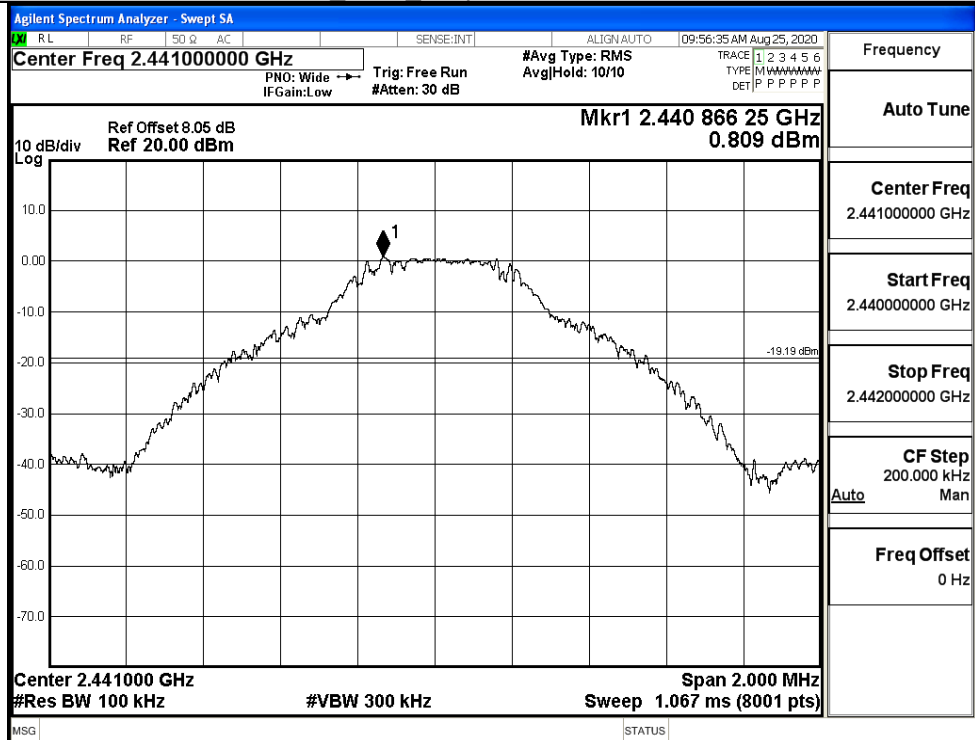


Puw

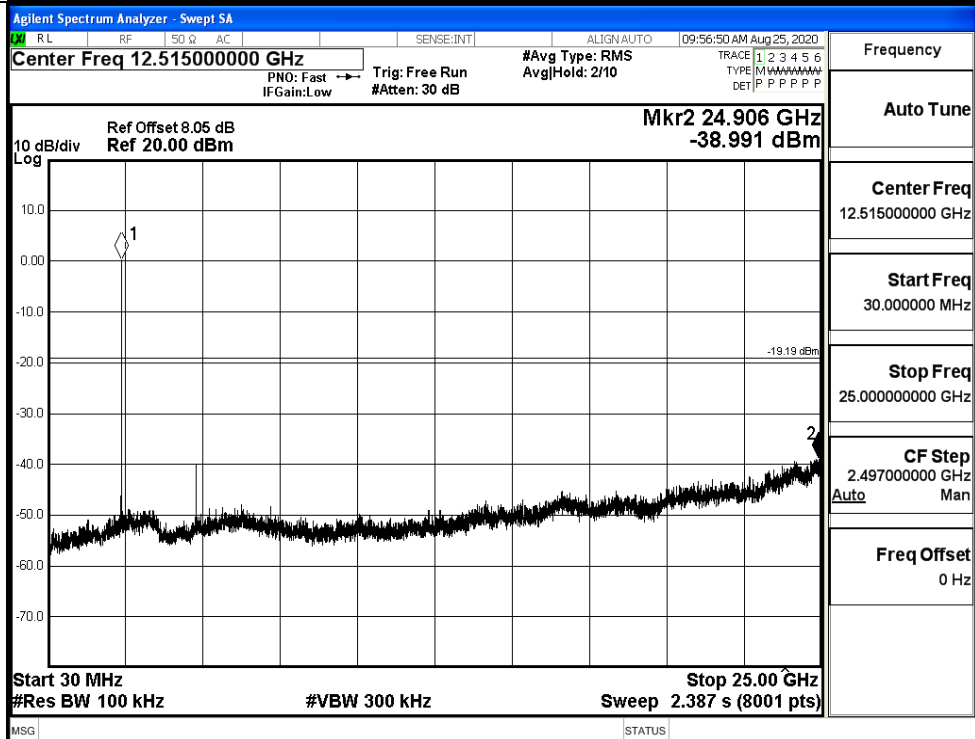


## GFSK\_MCH\_Graphs

Pref

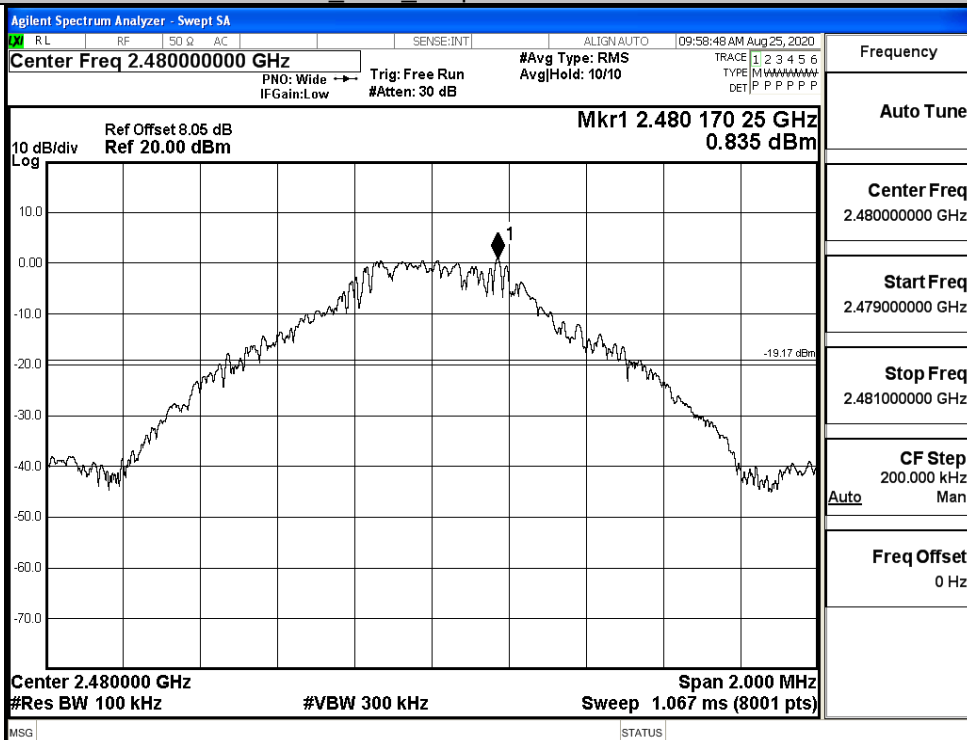


Puw

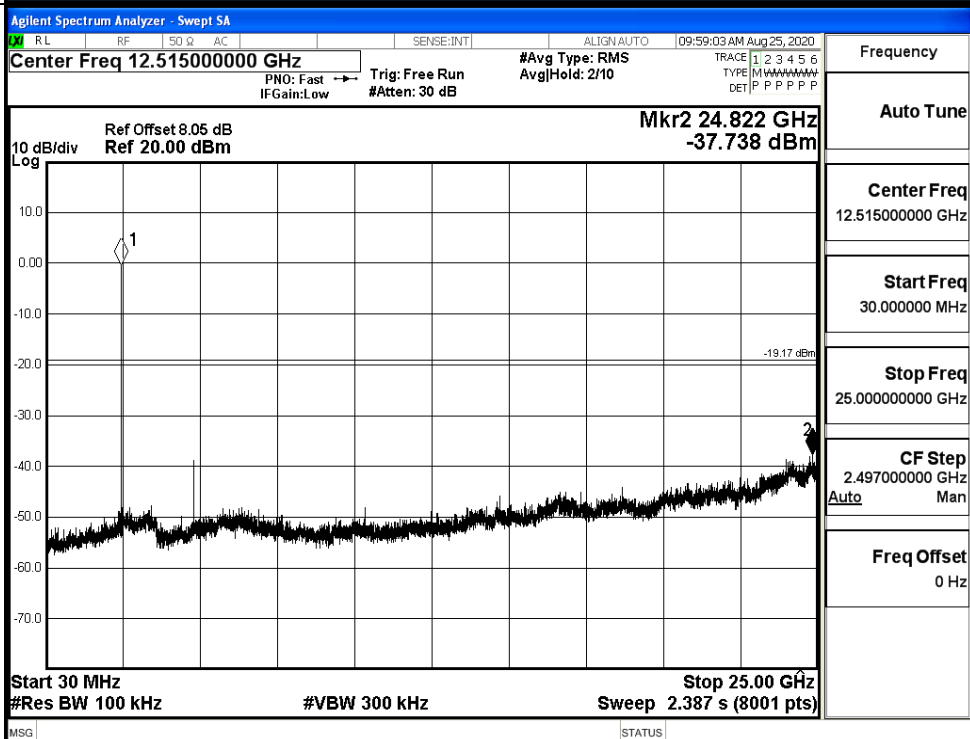


## GFSK HCH Graphs

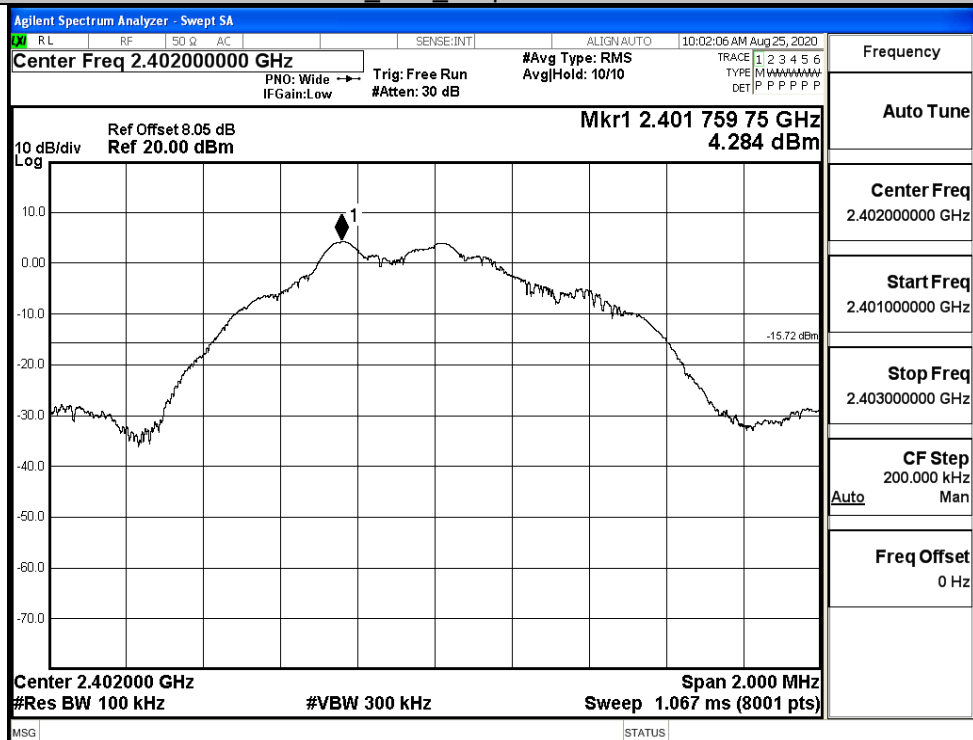
Pref



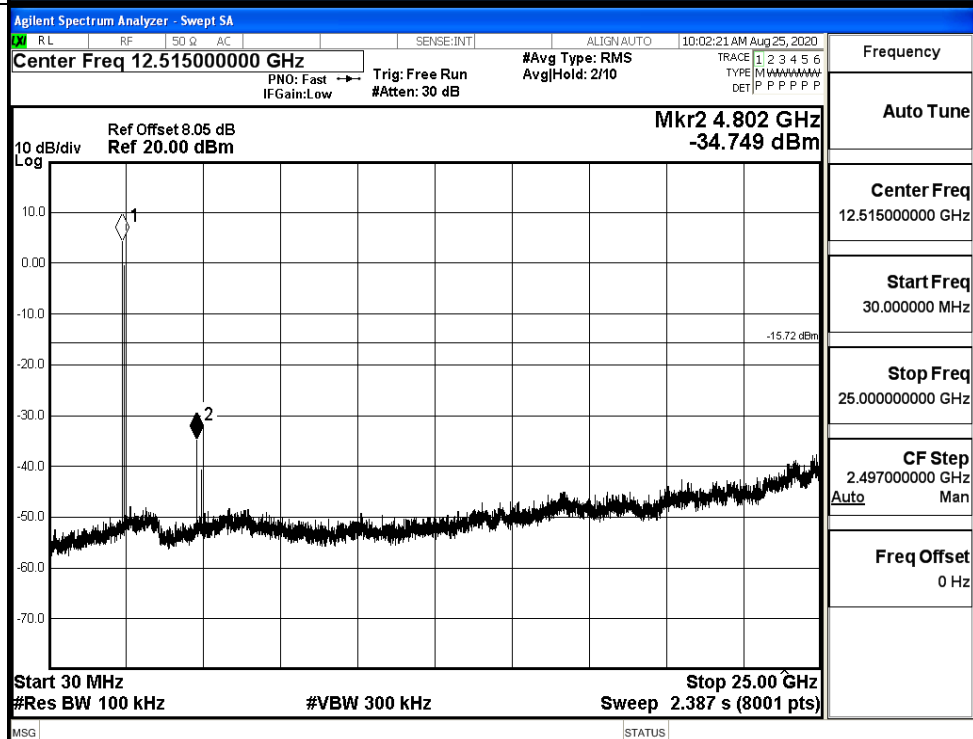
Puw



Pref

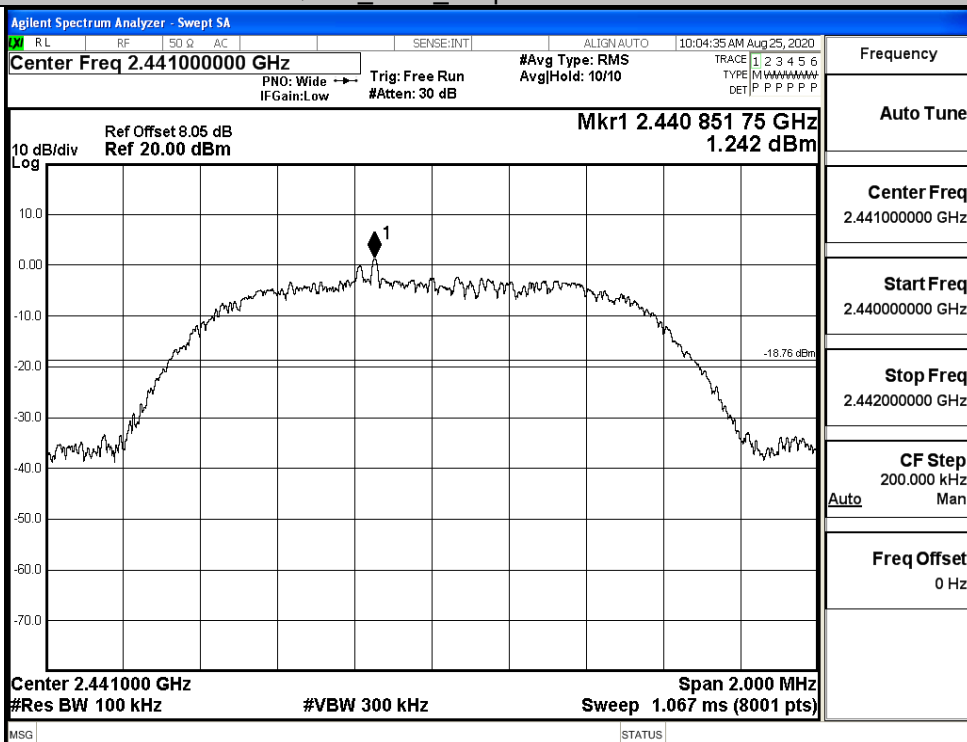


Puw

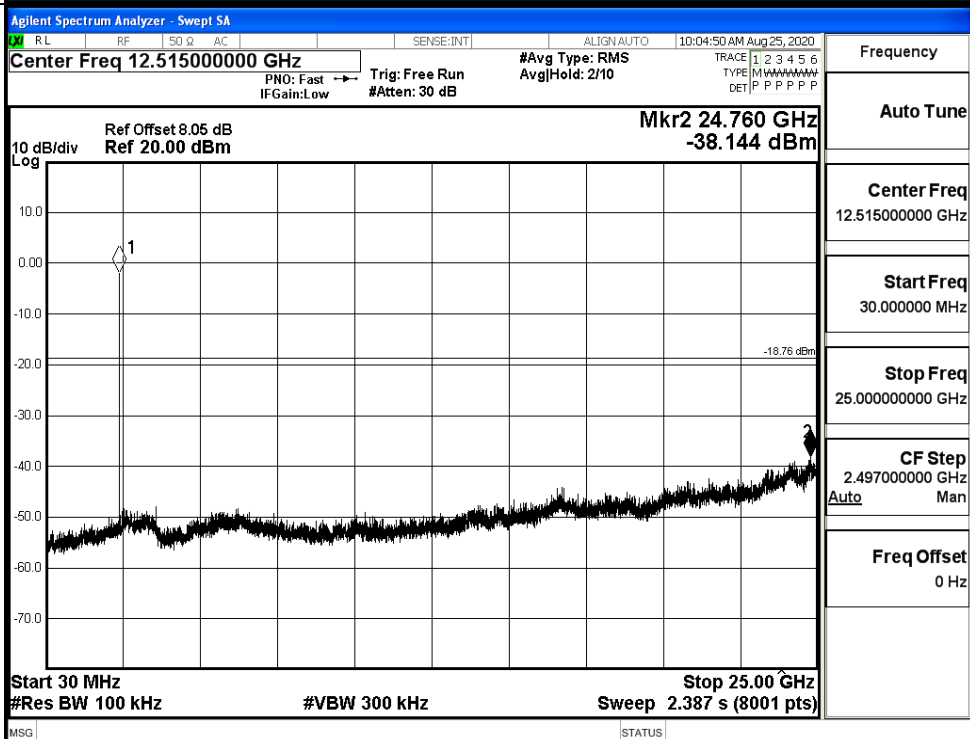


$\pi$ /4DQPSK\_MCH\_Graphs

Pref

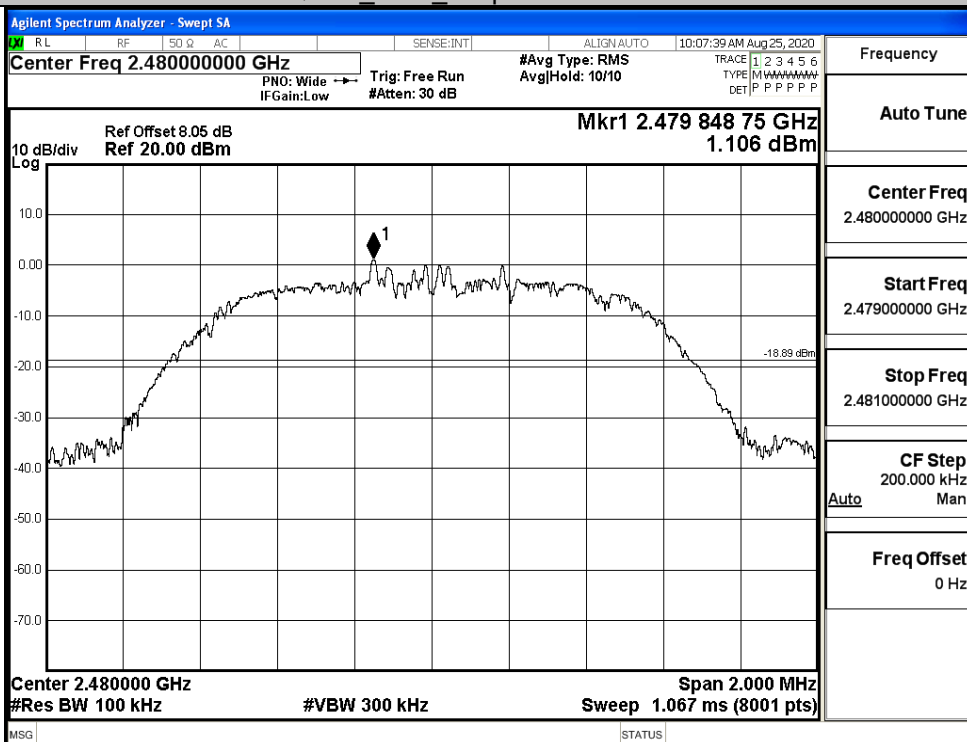


Puw

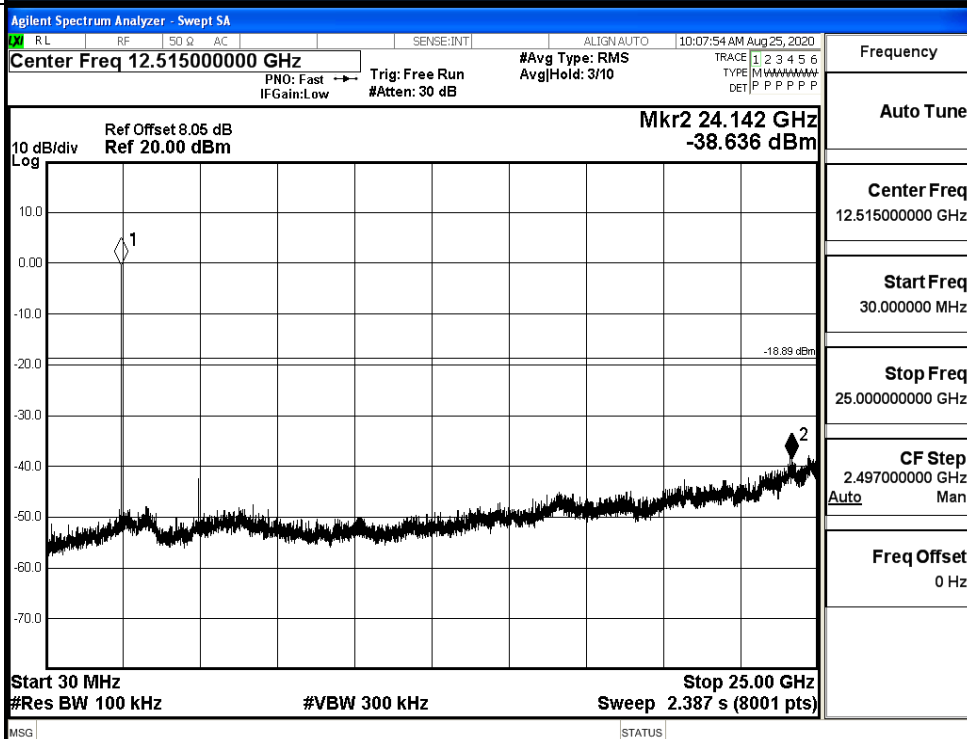


$\pi$ /4DQPSK\_HCH\_Graphs

Pref



Puw

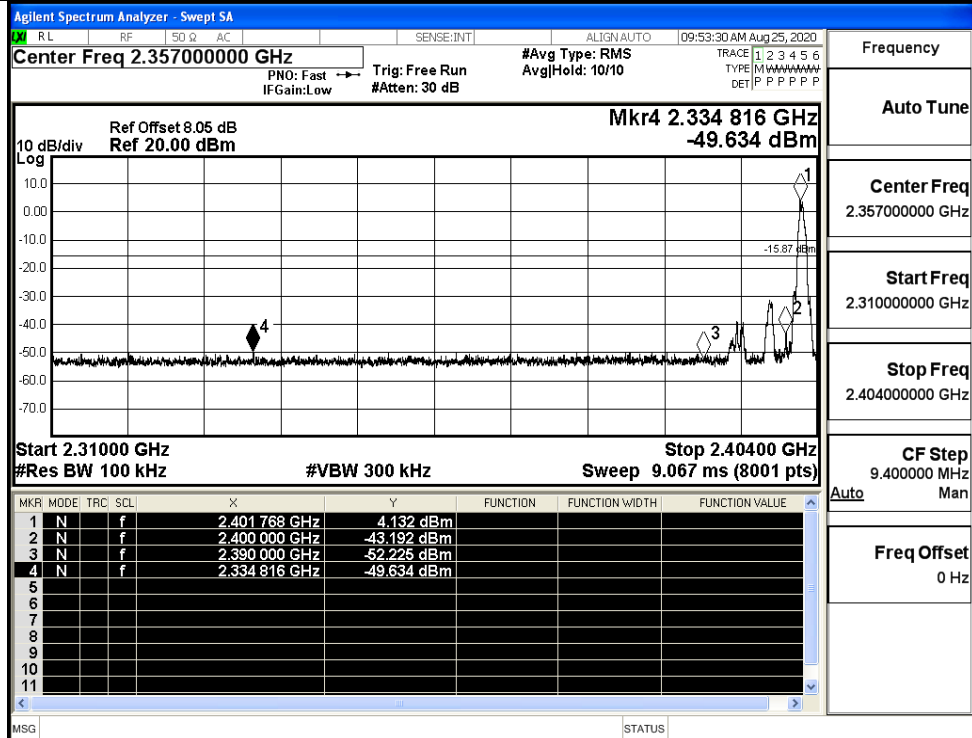


## A.7 Band-edge for RF Conducted Emissions

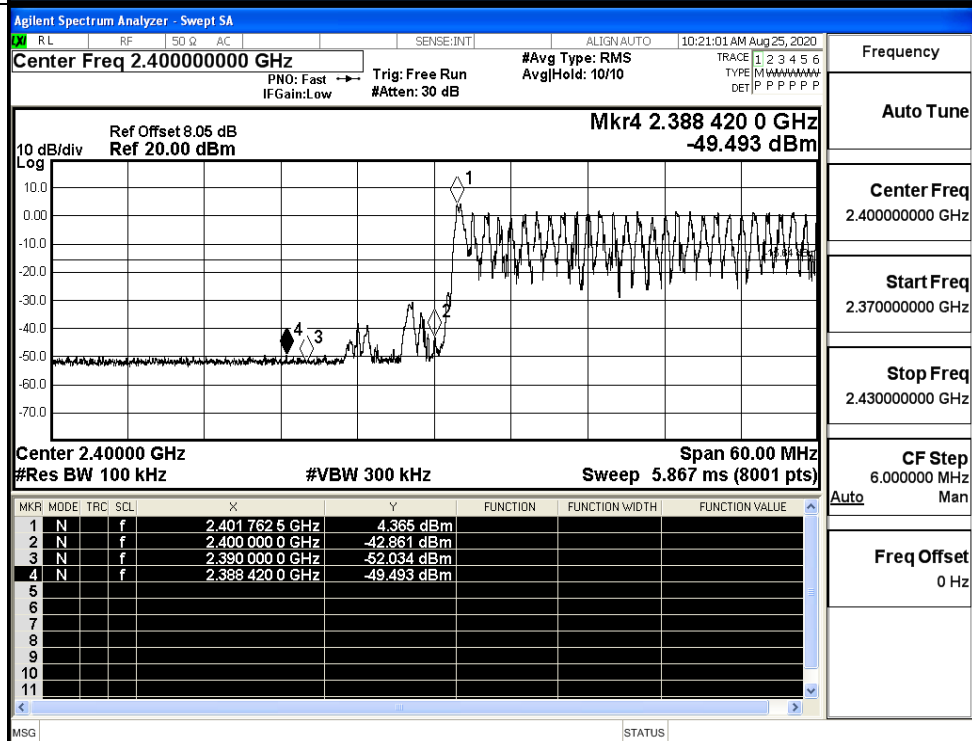
| Mode          | Channel | Carrier Frequency [MHz] | Carrier Power [dBm] | Frequency Hopping | Max Spurious Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|-------------------------|---------------------|-------------------|--------------------------|-------------|---------|
| GFSK          | LCH     | 2402                    | 4.132               | Off               | -49.634                  | -15.87      | PASS    |
|               |         |                         | 4.365               | On                | -49.493                  | -15.64      | PASS    |
|               | HCH     | 2480                    | 0.769               | Off               | -44.666                  | -19.23      | PASS    |
|               |         |                         | 1.444               | On                | -48.439                  | -18.56      | PASS    |
| $\pi/4$ DQPSK | LCH     | 2402                    | 4.300               | Off               | -49.525                  | -15.7       | PASS    |
|               |         |                         | 4.358               | On                | -49.041                  | -15.64      | PASS    |
|               | HCH     | 2480                    | -0.325              | Off               | -48.922                  | -20.33      | PASS    |
|               |         |                         | 1.250               | On                | -49.076                  | -18.75      | PASS    |

## Test Graphs

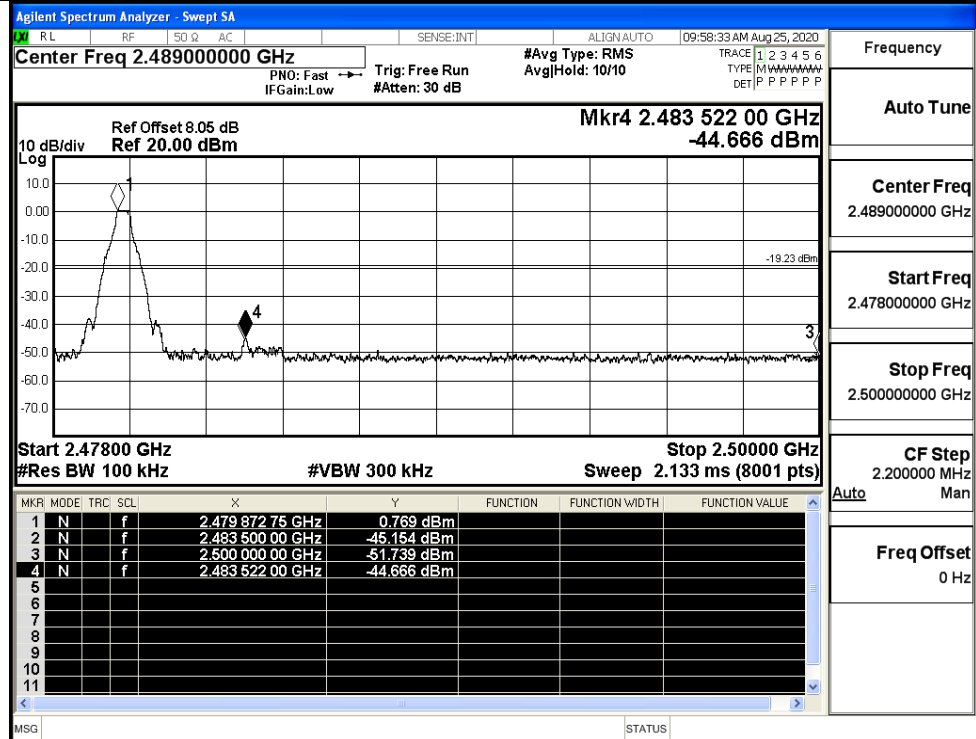
GFSK/LCH/No Hop



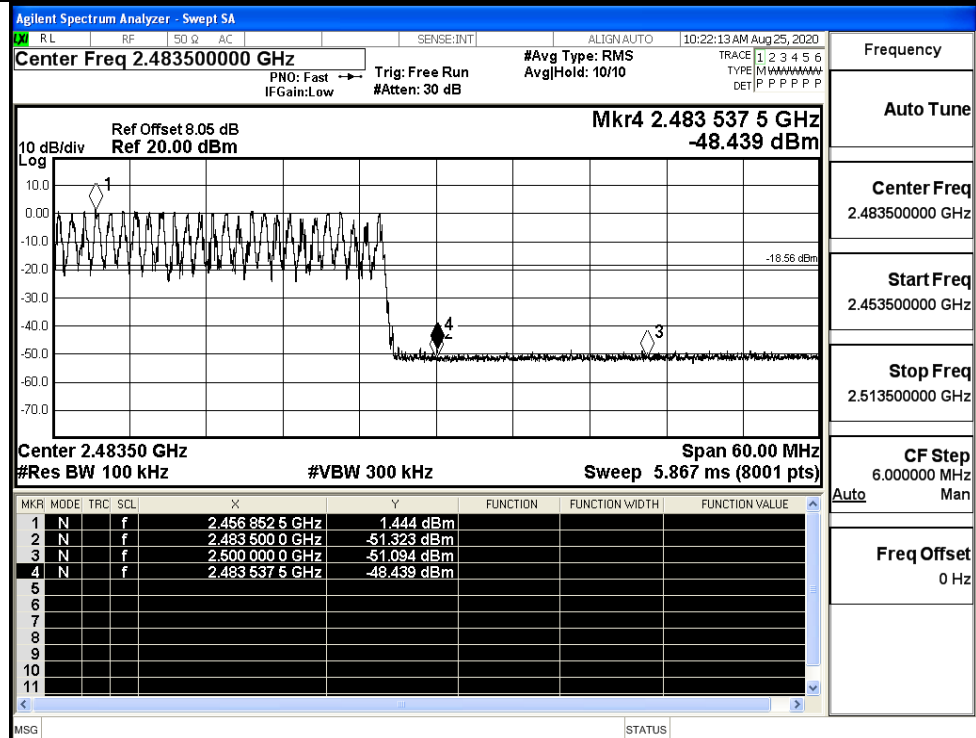
GFSK/LCH/Hop



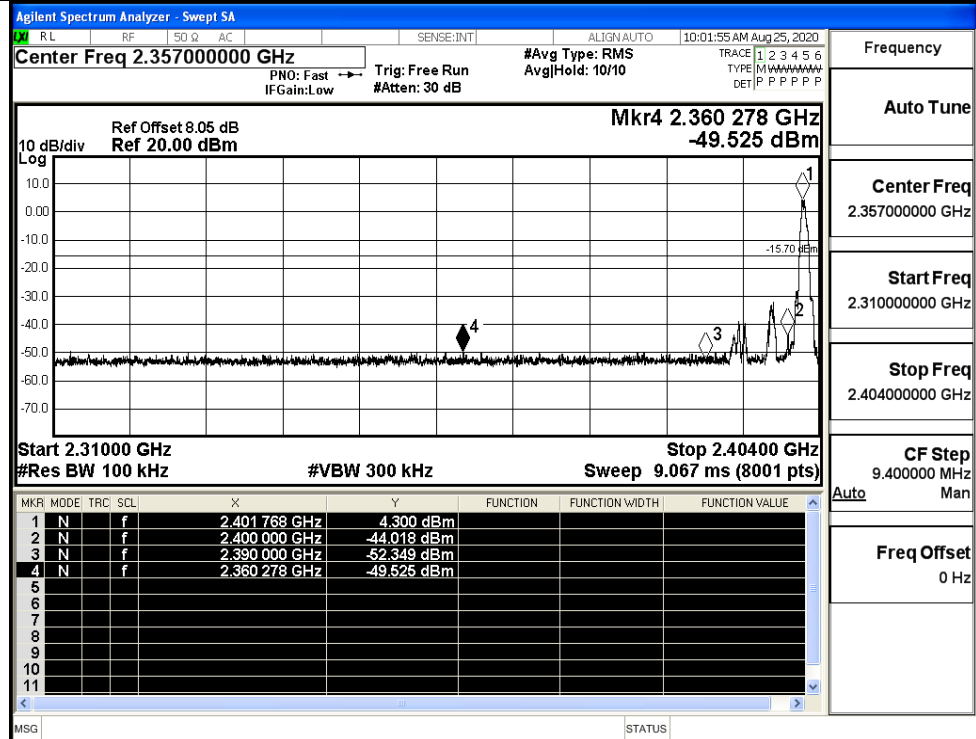
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq  
2.357000000 GHz

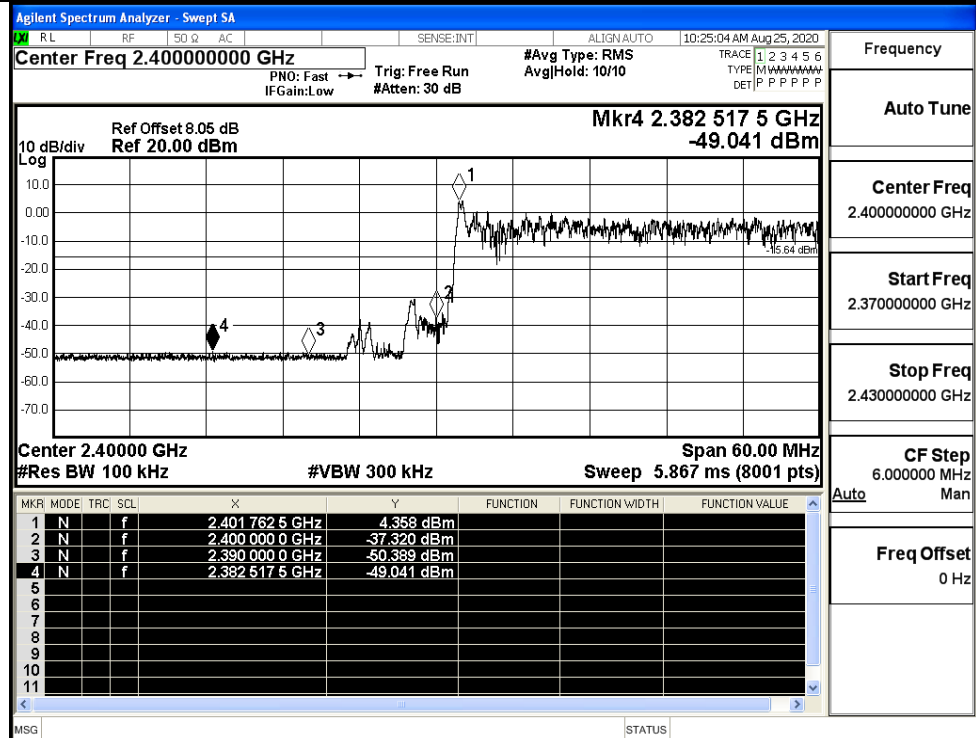
Start Freq  
2.310000000 GHz

Stop Freq  
2.404000000 GHz

CF Step  
9.400000 MHz  
Auto Man

Freq Offset  
0 Hz

$\pi/4$ DQPSK/LCH/Hop



Frequency

Auto Tune

Center Freq  
2.400000000 GHz

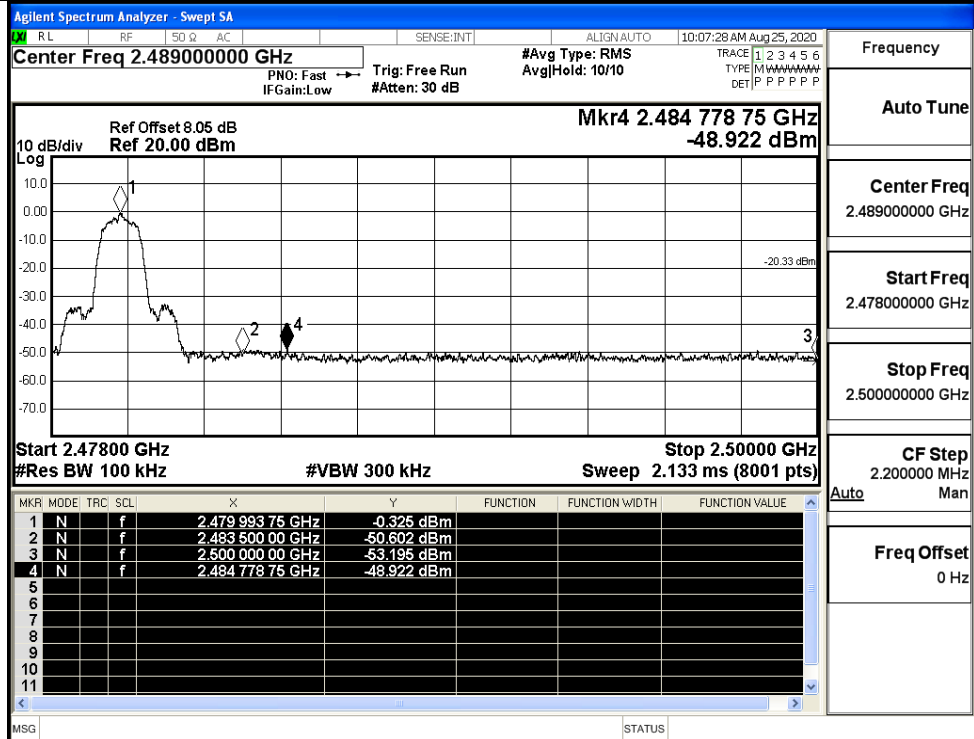
Start Freq  
2.370000000 GHz

Stop Freq  
2.430000000 GHz

CF Step  
6.000000 MHz  
Auto Man

Freq Offset  
0 Hz

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



Frequency

Auto Tune

Center Freq  
2.489000000 GHz

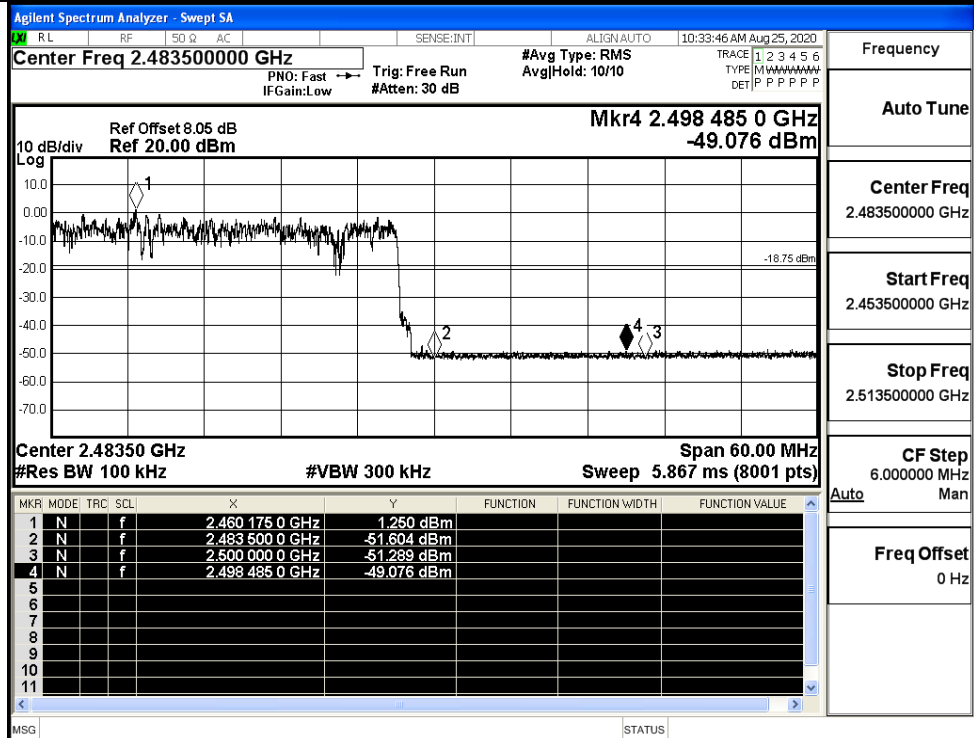
Start Freq  
2.478000000 GHz

Stop Freq  
2.500000000 GHz

CF Step  
2.200000 MHz  
Auto Man

Freq Offset  
0 Hz

$\pi/4$ DQPSK/HCH/Hop



Frequency

Auto Tune

Center Freq  
2.483500000 GHz

Start Freq  
2.453500000 GHz

Stop Freq  
2.513500000 GHz

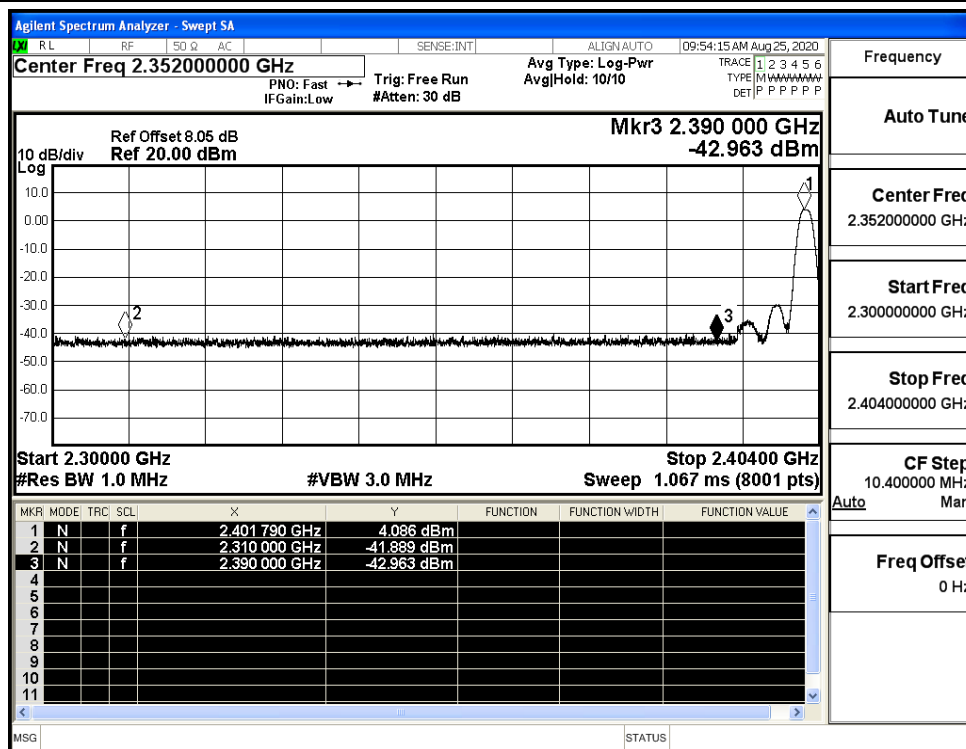
CF Step  
6.000000 MHz  
Auto Man

Freq Offset  
0 Hz

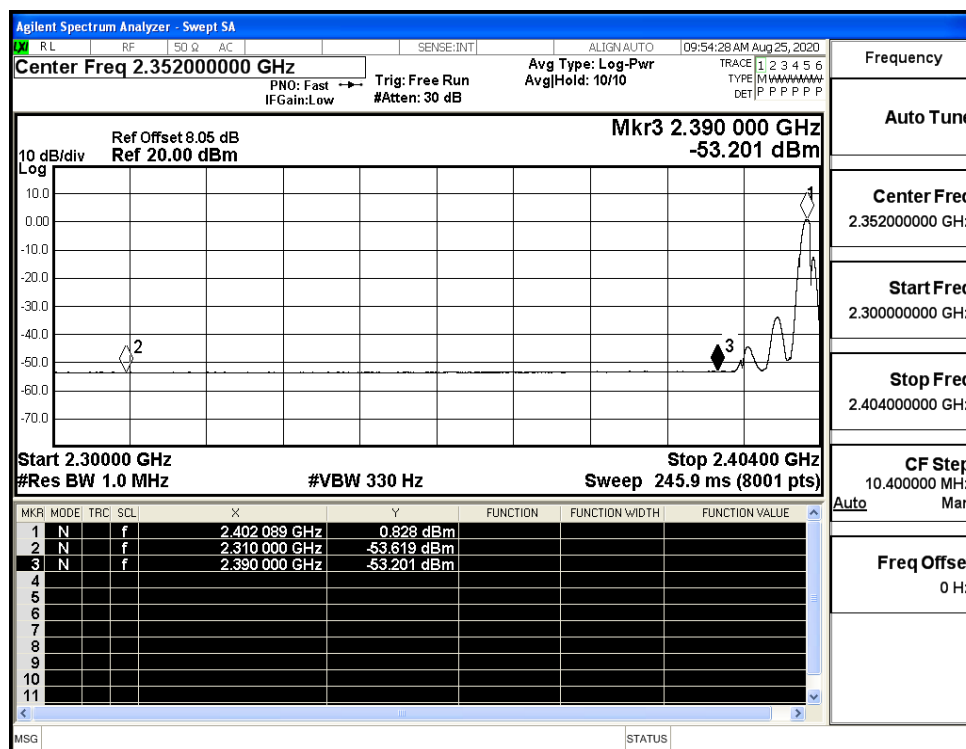
## A.8 Restrict-band band-edge measurements

| Test Mode     | Hopping | Freq.  | Power [dBm] | Gain | Ground Factor | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|---------------|---------|--------|-------------|------|---------------|------------|----------|----------------|---------|
| GFSK          | Off     | 2310.0 | -41.89      | 2.0  | 0             | 55.34      | PEAK     | 74             | PASS    |
|               | Off     | 2310.0 | -53.62      | 2.0  | 0             | 43.61      | AV       | 54             | PASS    |
|               | Off     | 2390.0 | -42.96      | 2.0  | 0             | 54.27      | PEAK     | 74             | PASS    |
|               | Off     | 2390.0 | -53.20      | 2.0  | 0             | 44.03      | AV       | 54             | PASS    |
|               | Off     | 2483.5 | -37.54      | 2.0  | 0             | 59.69      | PEAK     | 74             | PASS    |
|               | Off     | 2483.5 | -48.56      | 2.0  | 0             | 48.67      | AV       | 54             | PASS    |
|               | Off     | 2500.0 | -42.72      | 2.0  | 0             | 54.51      | PEAK     | 74             | PASS    |
|               | Off     | 2500.0 | -52.31      | 2.0  | 0             | 44.92      | AV       | 54             | PASS    |
| $\pi/4$ DQPSK | Off     | 2310.0 | -43.32      | 2.0  | 0             | 53.91      | PEAK     | 74             | PASS    |
|               | Off     | 2310.0 | -53.15      | 2.0  | 0             | 44.11      | AV       | 54             | PASS    |
|               | Off     | 2390.0 | -43.21      | 2.0  | 0             | 54.02      | PEAK     | 74             | PASS    |
|               | Off     | 2390.0 | -52.86      | 2.0  | 0             | 44.37      | AV       | 54             | PASS    |
|               | Off     | 2483.5 | -40.02      | 2.0  | 0             | 57.21      | PEAK     | 74             | PASS    |
|               | Off     | 2483.5 | -49.83      | 2.0  | 0             | 47.40      | AV       | 54             | PASS    |
|               | Off     | 2500.0 | -42.31      | 2.0  | 0             | 54.92      | PEAK     | 74             | PASS    |
|               | Off     | 2500.0 | -52.38      | 2.0  | 0             | 44.85      | AV       | 54             | PASS    |

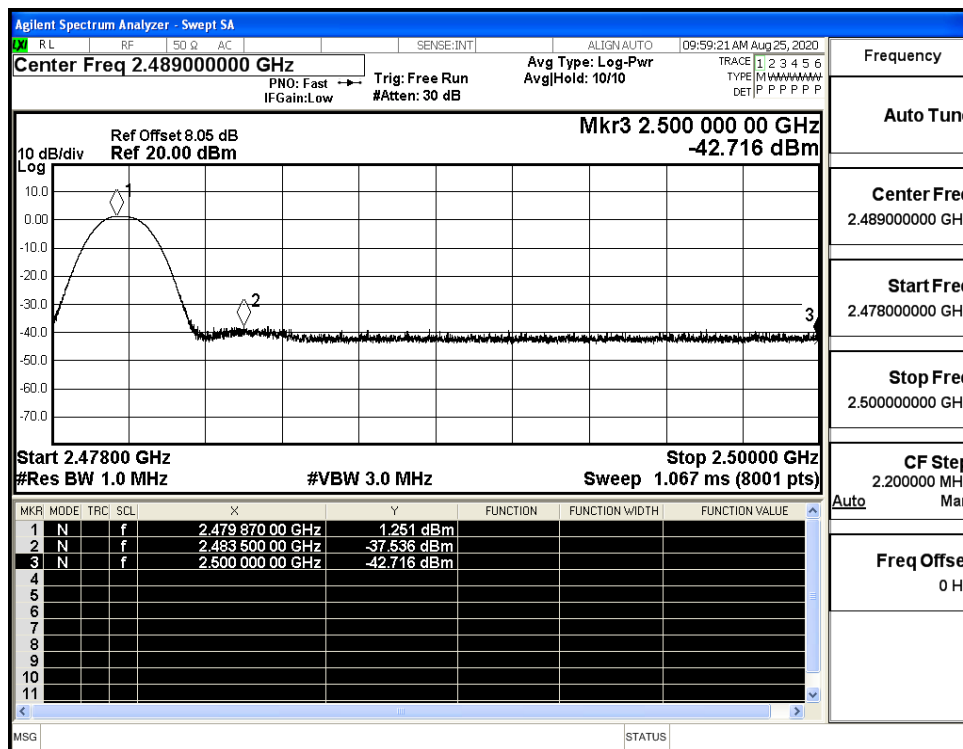
## Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (Low Channel)



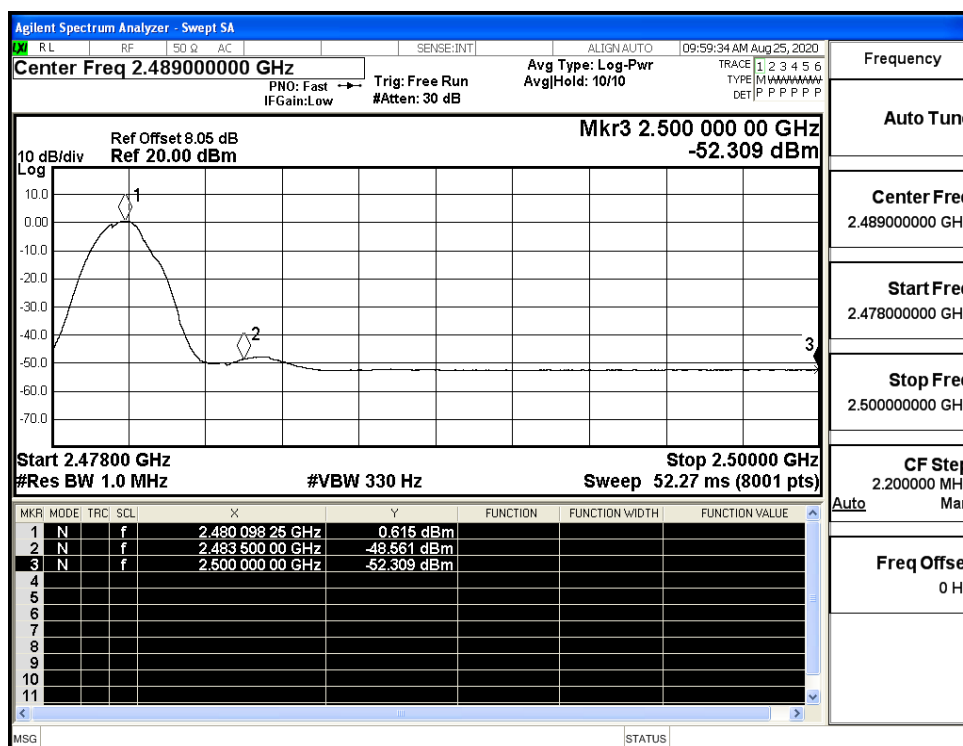
## Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (Low Channel)



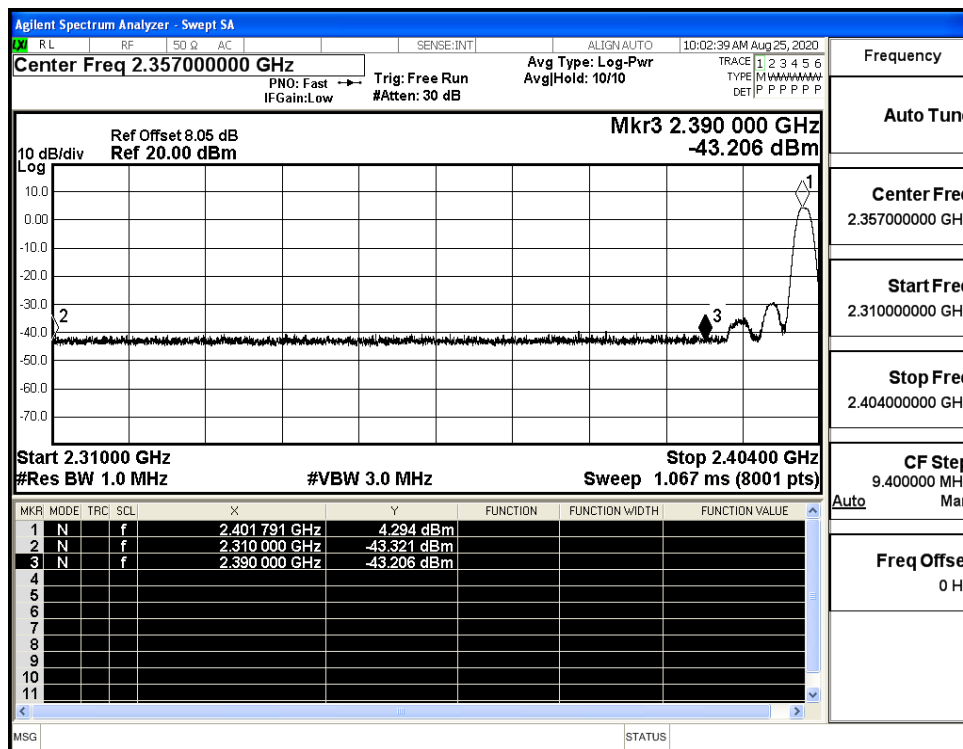
## Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (High Channel)



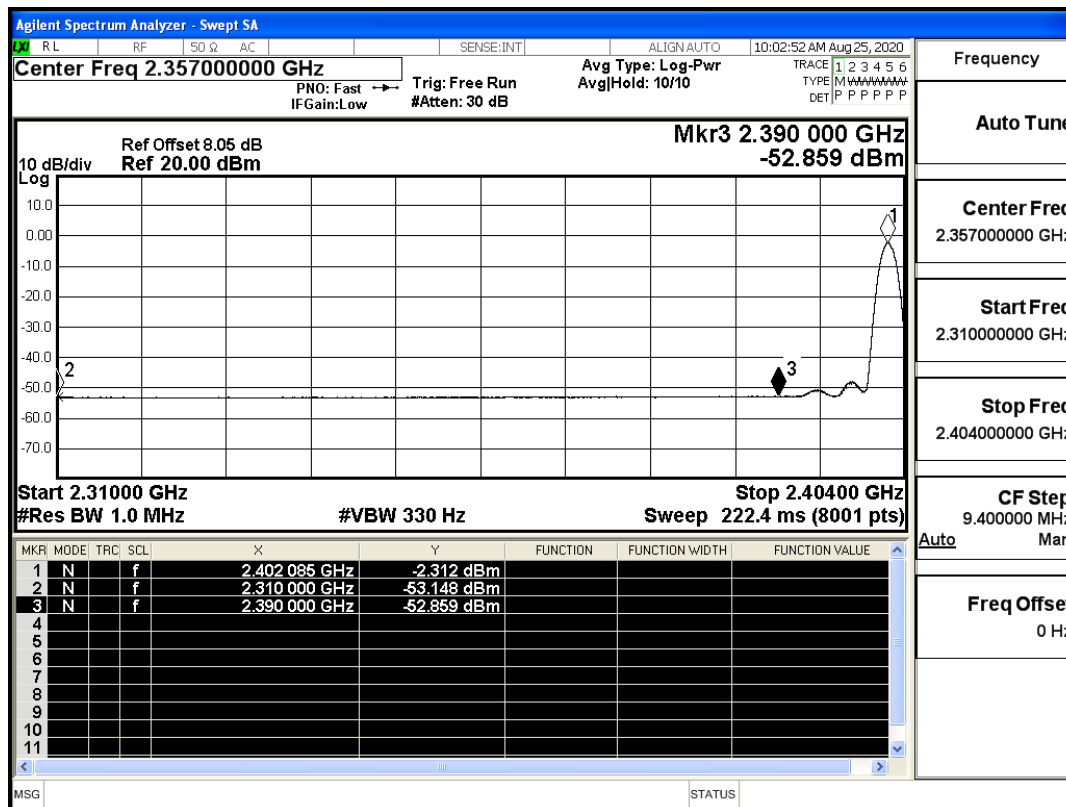
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (High Channel)

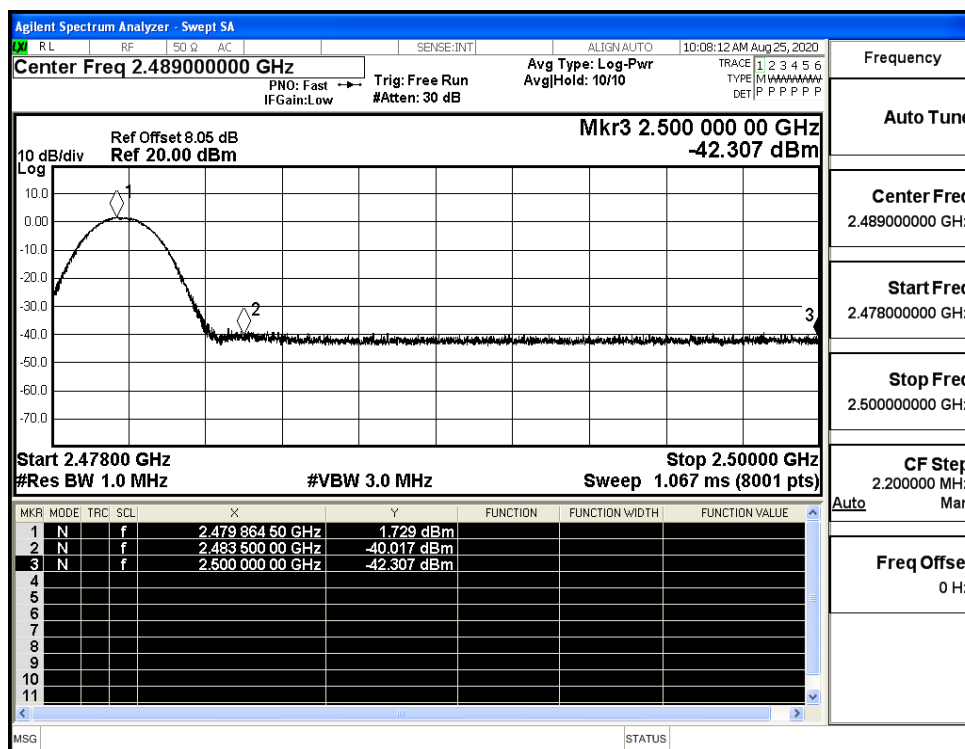


Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (Low Channel)



## Restrict-band band-edge measurements\_Hopping Off\_π/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)