

## Appendix A

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

Product Name: LED Wireless Speaker

Trade Mark: N/A

Test Model: XO-9742-2

#### Environmental Conditions

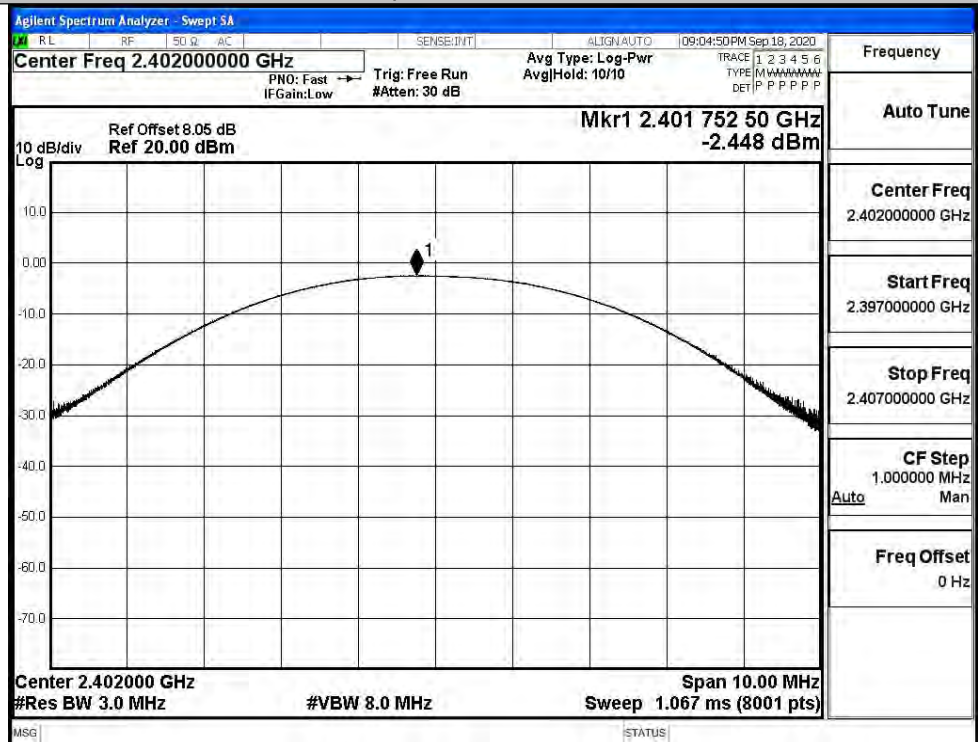
|                    |           |
|--------------------|-----------|
| Temperature:       | 24.6° C   |
| Relative Humidity: | 54.1%     |
| ATM Pressure:      | 100.0 kPa |
| Test Engineer:     | Jay Li    |
| Supervised by:     | Li Huan   |

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

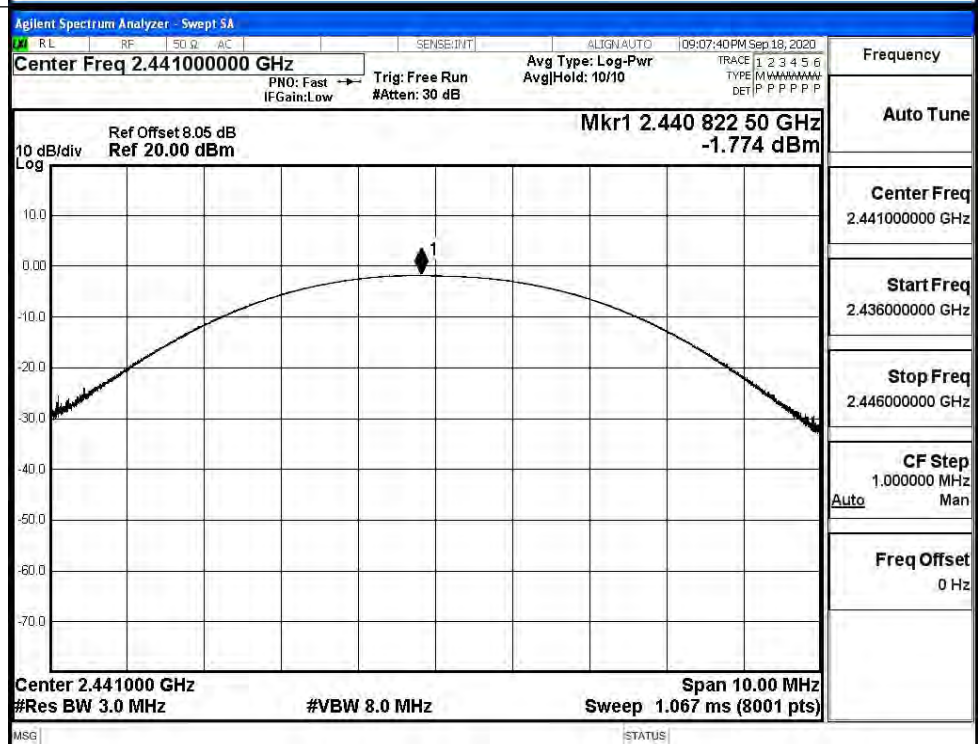
| Mode          | Channel. | Maximum Peak Output Power [dBm] | Limit [dBm] | Verdict |
|---------------|----------|---------------------------------|-------------|---------|
| GFSK          | LCH      | -2.448                          | 21          | PASS    |
|               | MCH      | -1.774                          | 21          | PASS    |
|               | HCH      | -1.526                          | 21          | PASS    |
| $\pi/4$ DQPSK | LCH      | 1.917                           | 21          | PASS    |
|               | MCH      | 0.581                           | 21          | PASS    |
|               | HCH      | -0.867                          | 21          | PASS    |

## Test Graphs

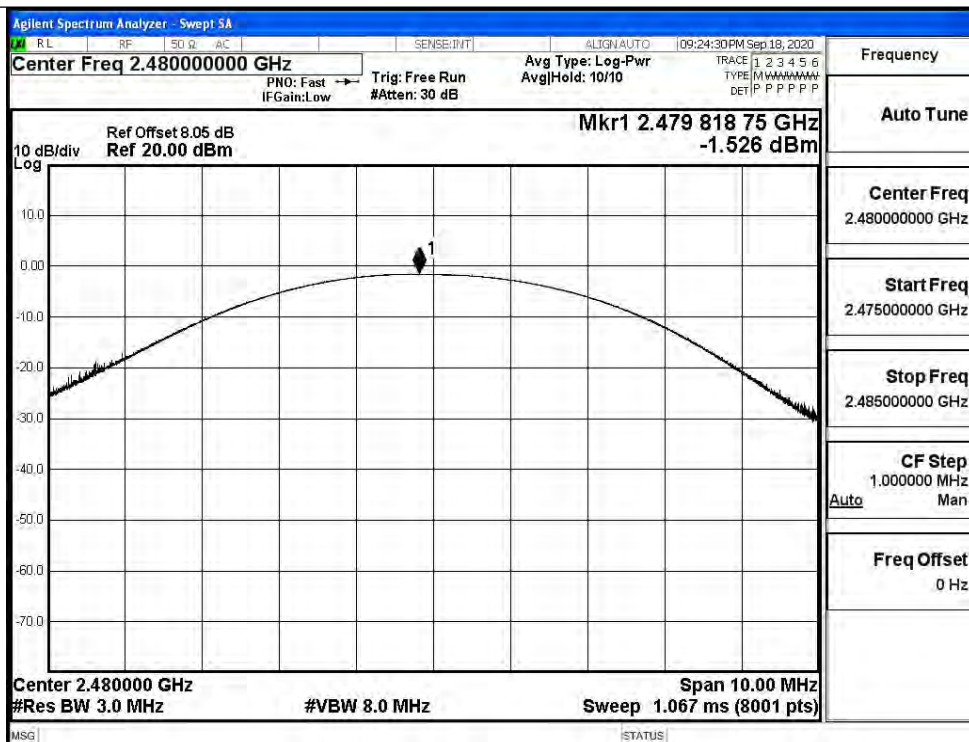
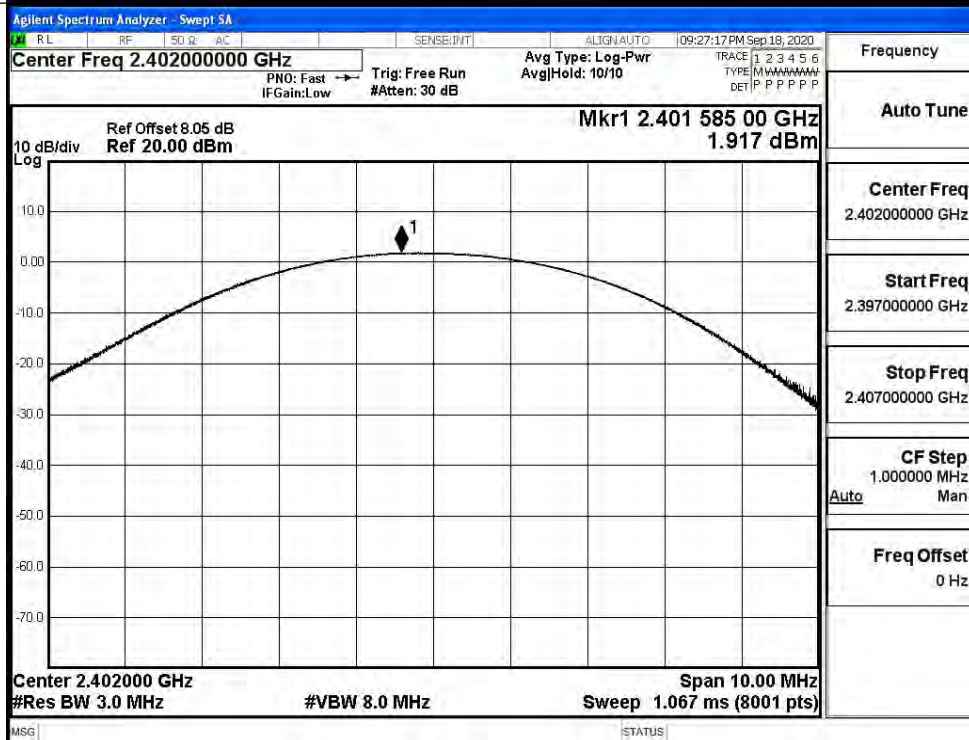
GFSK/LCH

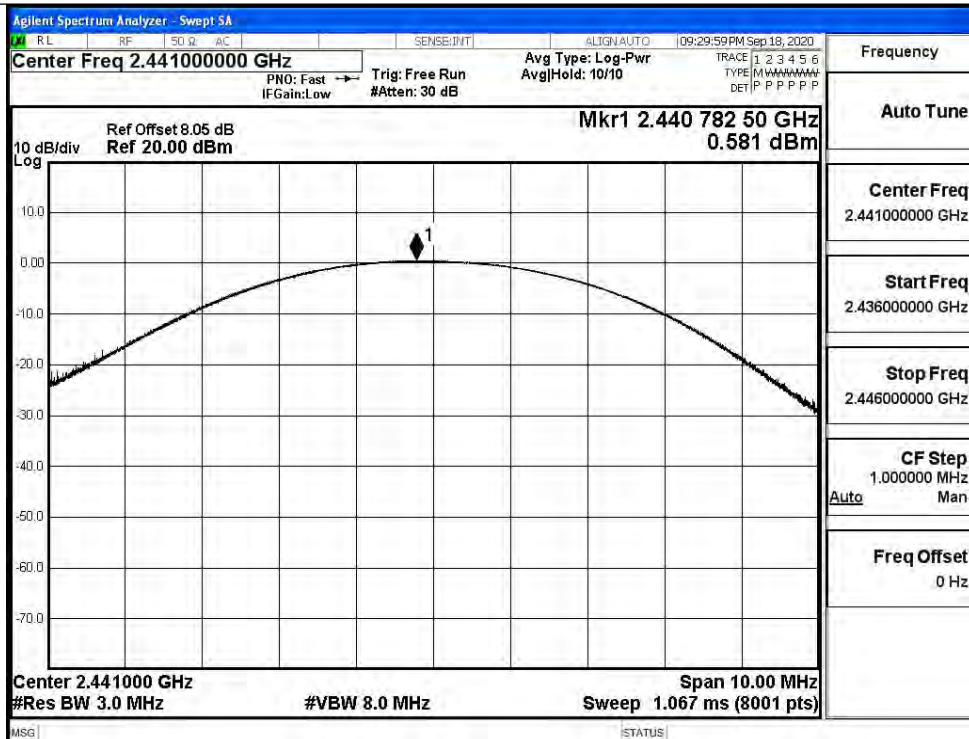
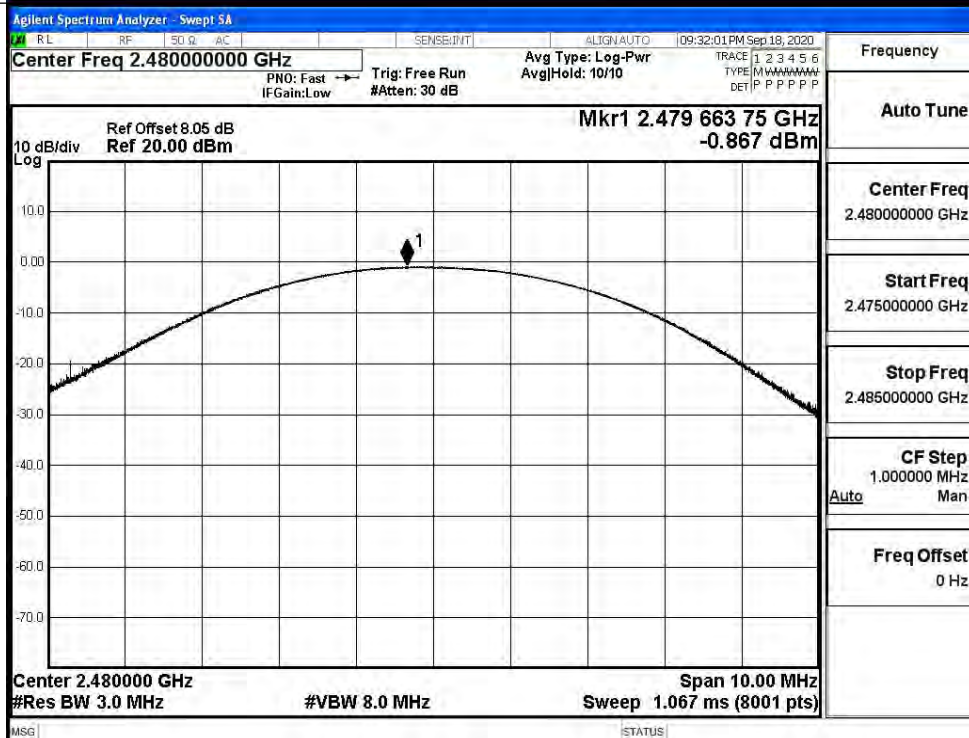


GFSK/MCH



GFSK/HCH

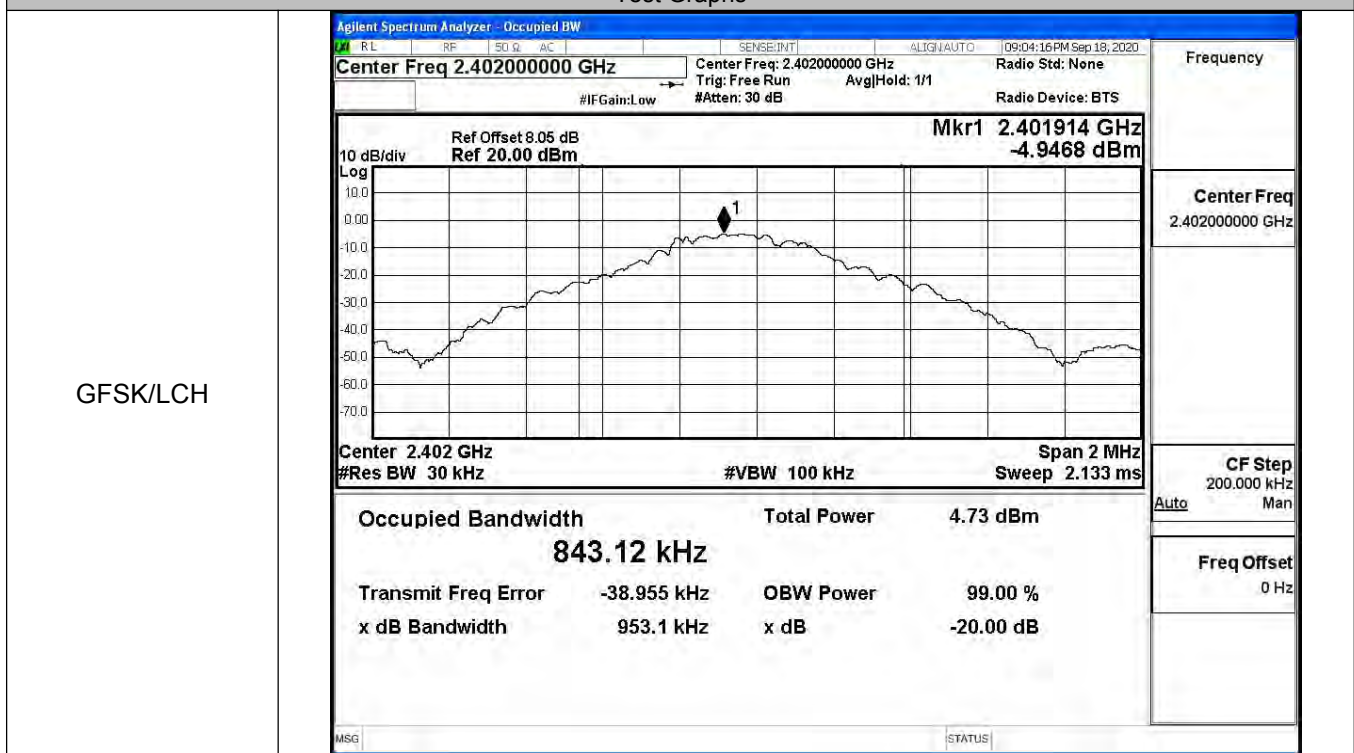
 $\pi$ /4DQPSK/LCH

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

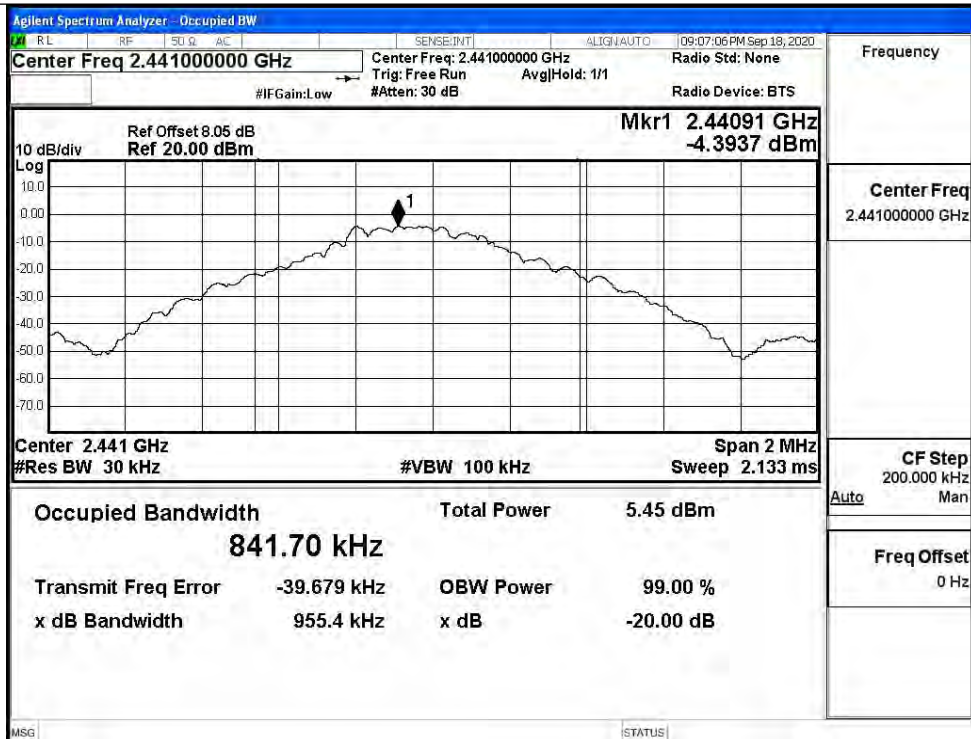
## A.2 20dB Bandwidth

| Mode          | Channel. | 20dB Bandwidth [MHz] | Limit [MHz]   | Verdict |
|---------------|----------|----------------------|---------------|---------|
| GFSK          | LCH      | 0.9531               | Not Specified | PASS    |
|               | MCH      | 0.9554               | Not Specified | PASS    |
|               | HCH      | 0.9532               | Not Specified | PASS    |
| $\pi/4$ DQPSK | LCH      | 1.315                | Not Specified | PASS    |
|               | MCH      | 1.316                | Not Specified | PASS    |
|               | HCH      | 1.314                | Not Specified | PASS    |

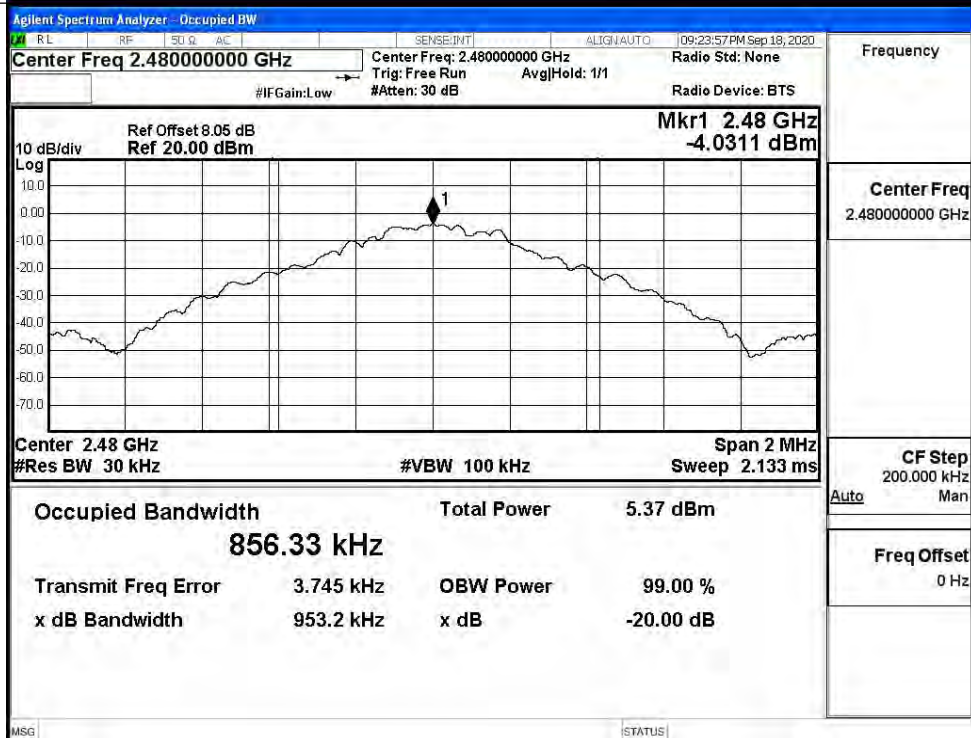
Test Graphs

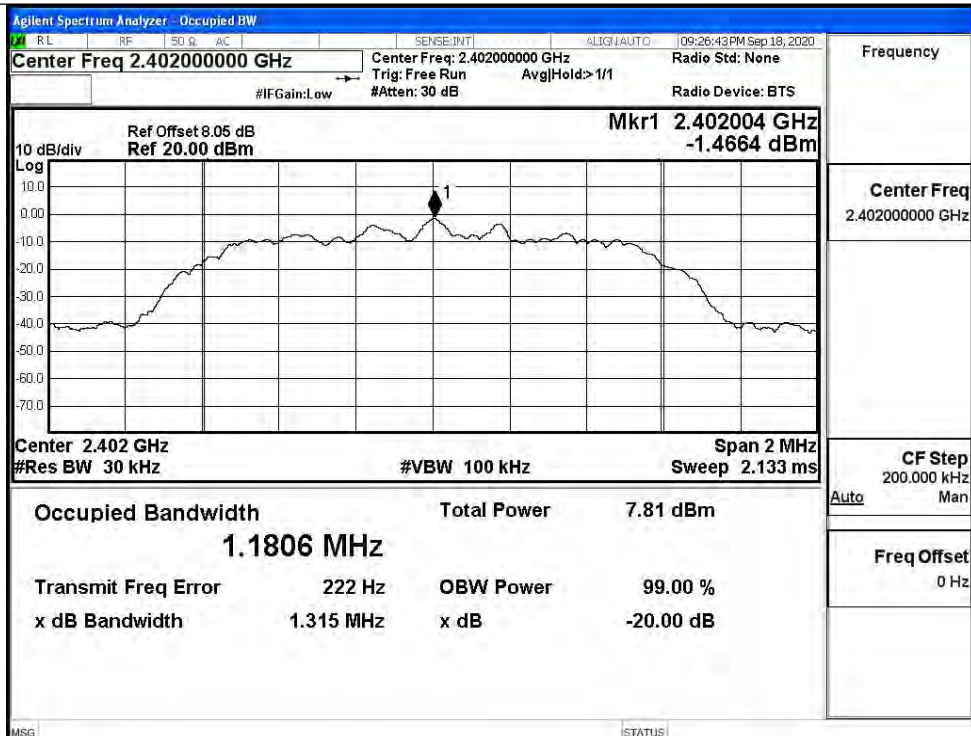
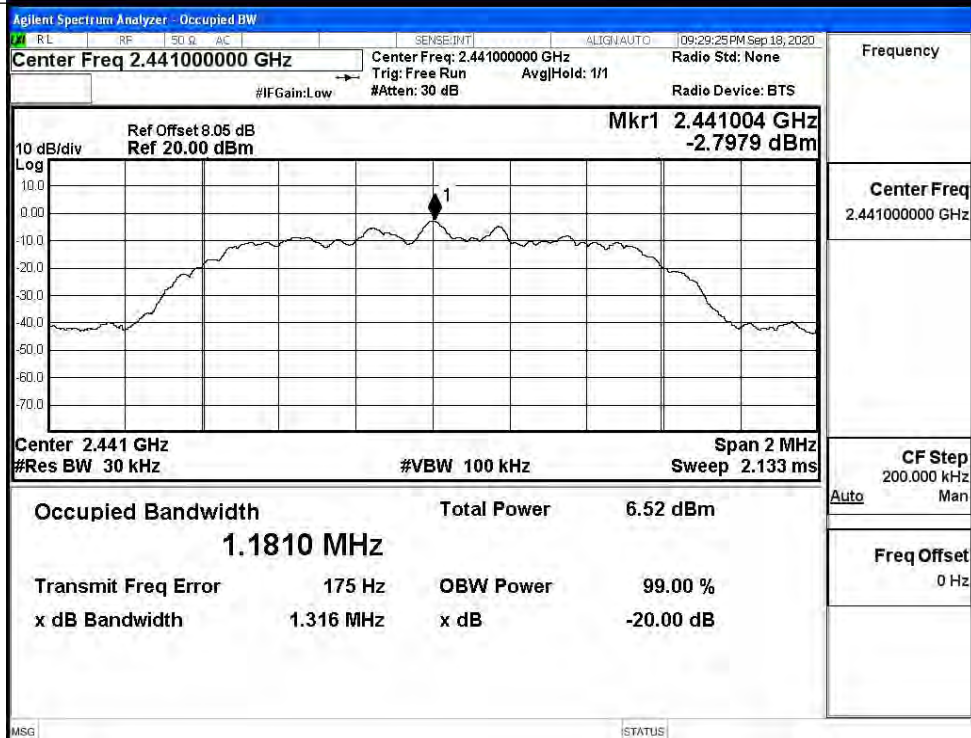


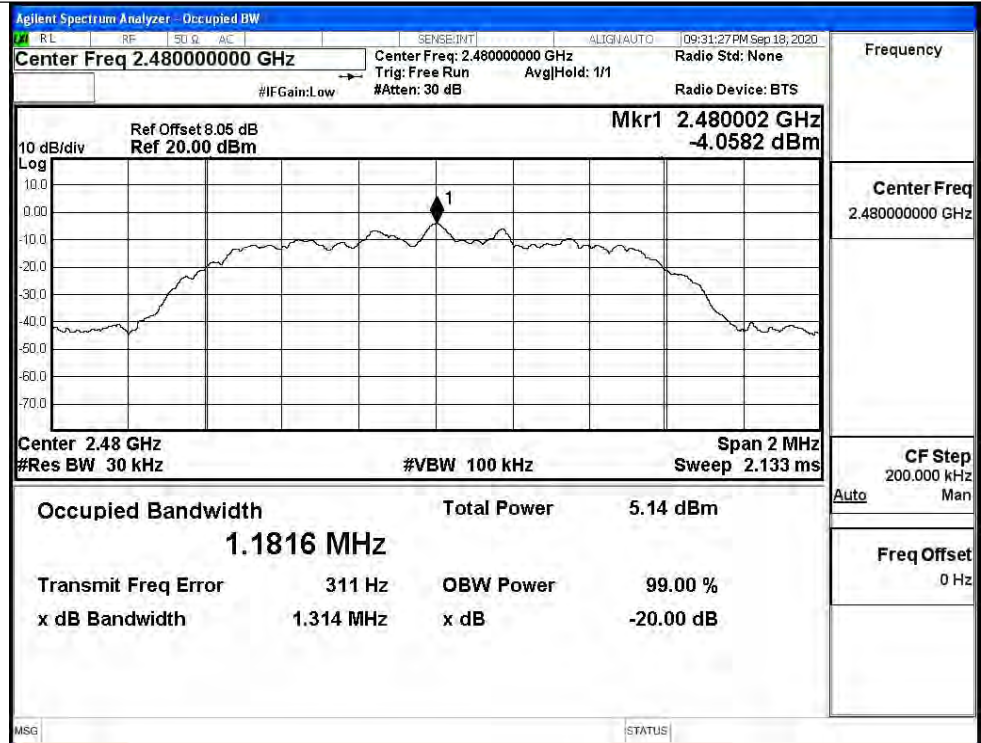
GFSK/MCH



GFSK/HCH



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

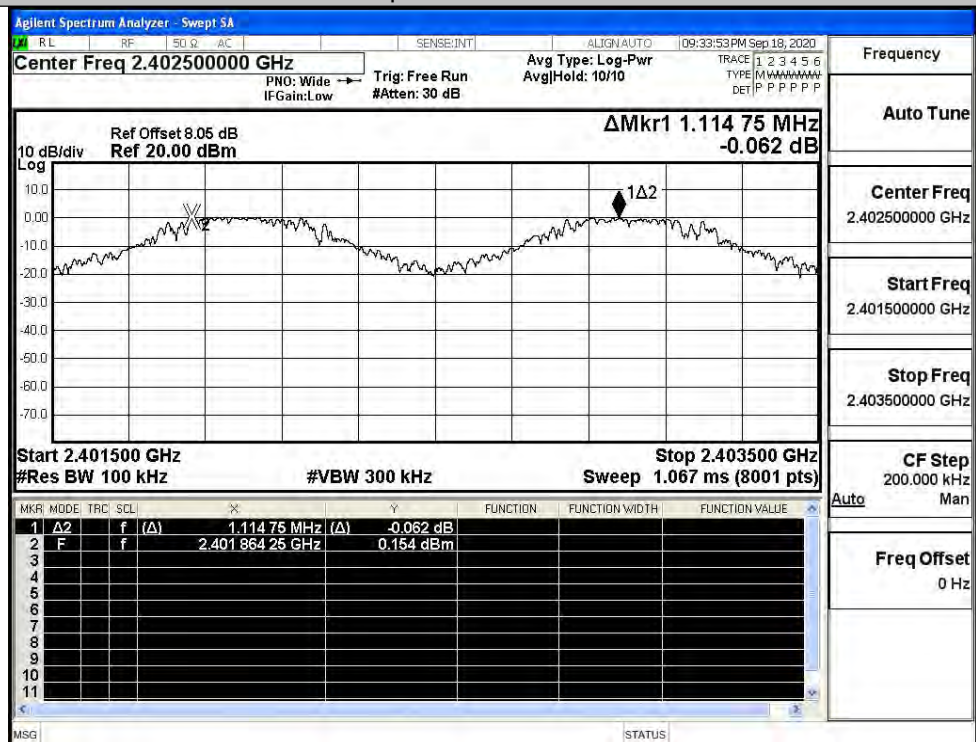
$\pi/4$ DQPSK/HCH

### A.3 Carrier Frequency Separation

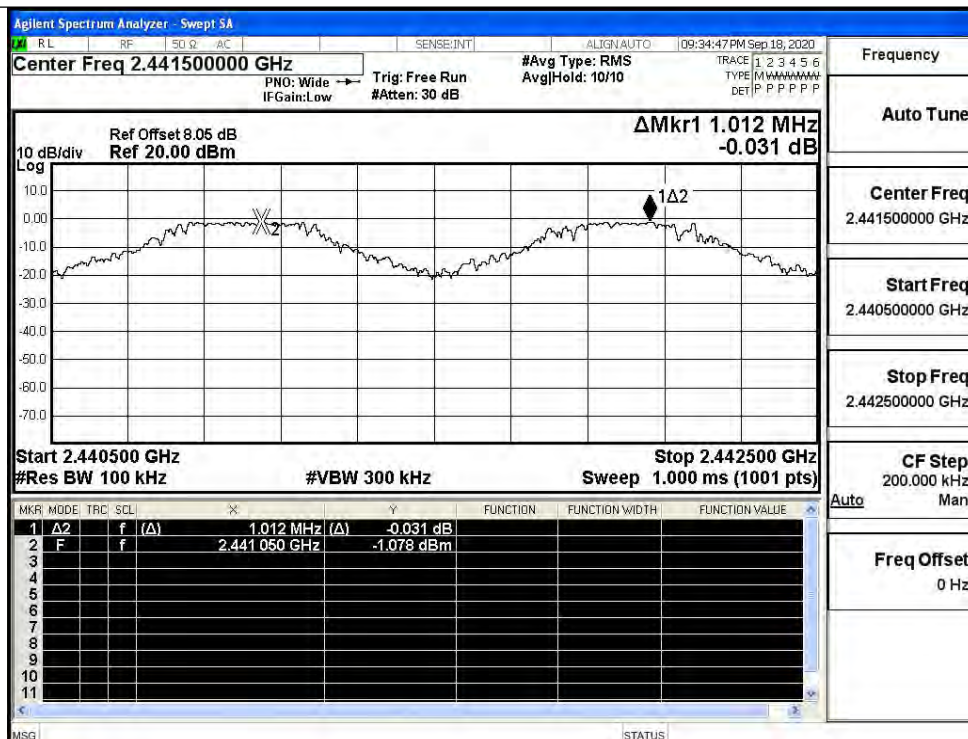
| Mode          | Channel. | Carrier Frequency Separation [MHz] | Limit [MHz] | Verdict |
|---------------|----------|------------------------------------|-------------|---------|
| GFSK          | LCH      | 1.115                              | 0.635       | PASS    |
|               | MCH      | 1.012                              | 0.637       | PASS    |
|               | HCH      | 1.048                              | 0.636       | PASS    |
| $\pi/4$ DQPSK | LCH      | 1.242                              | 0.877       | PASS    |
|               | MCH      | 0.958                              | 0.877       | PASS    |
|               | HCH      | 1.190                              | 0.876       | PASS    |

Test Graphs

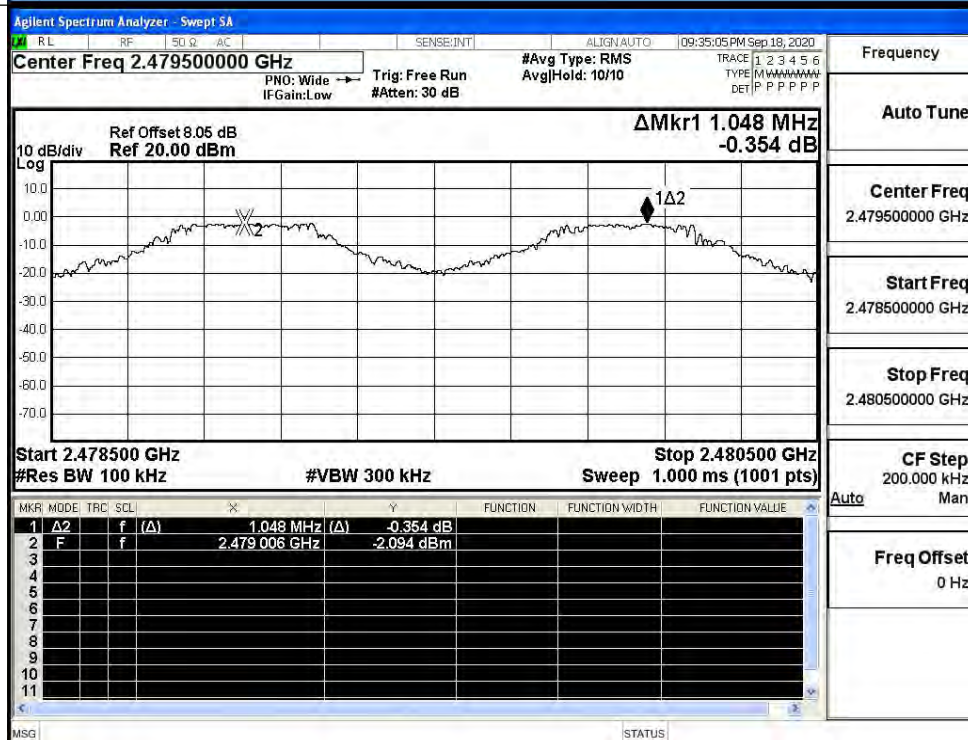
GFSK/LCH

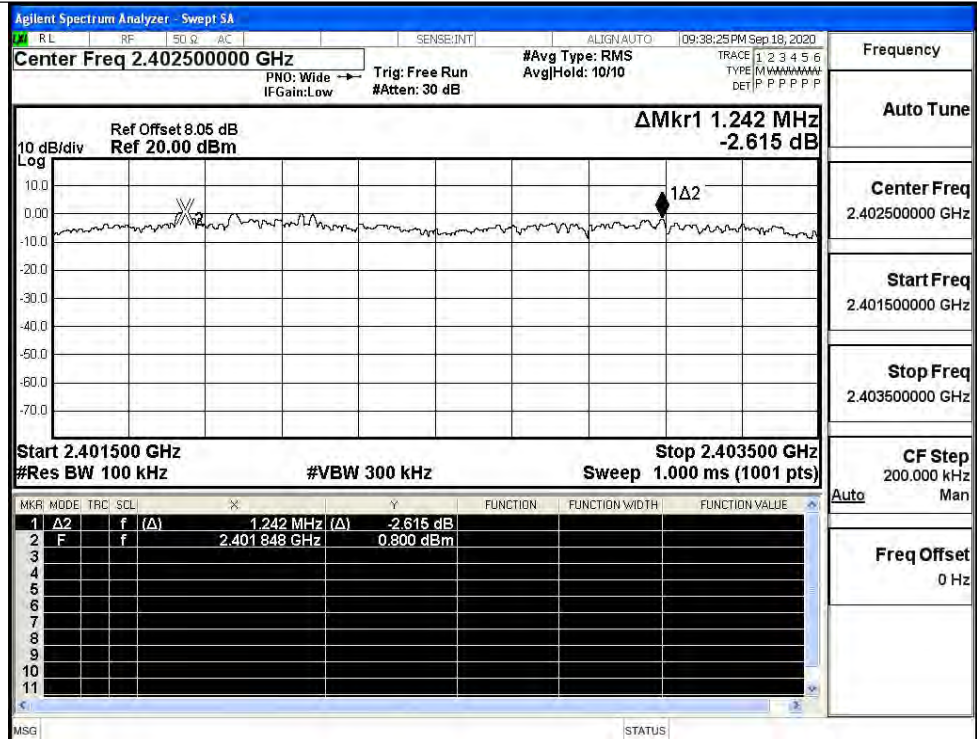
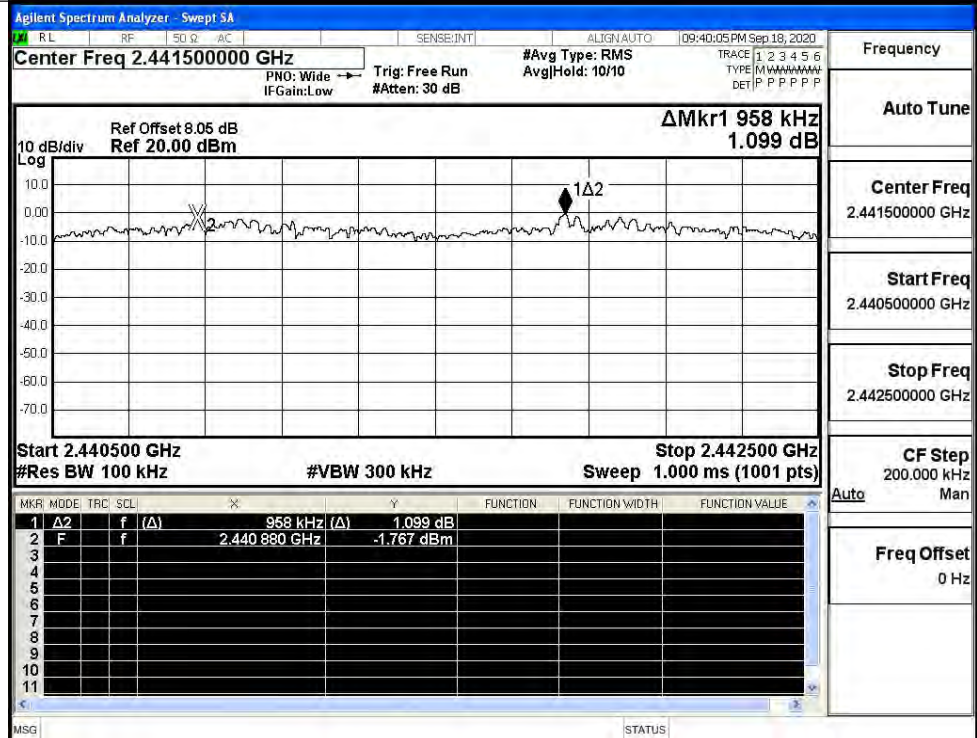


GFSK/MCH

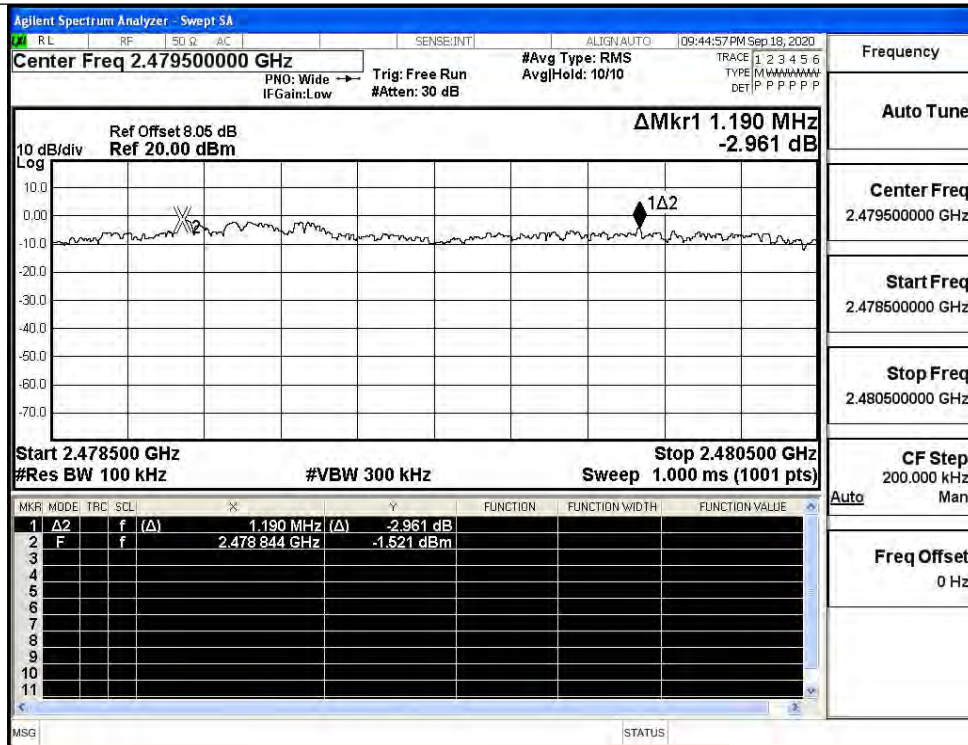


GFSK/HCH



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

$\pi/4$ DQPSK/HCH

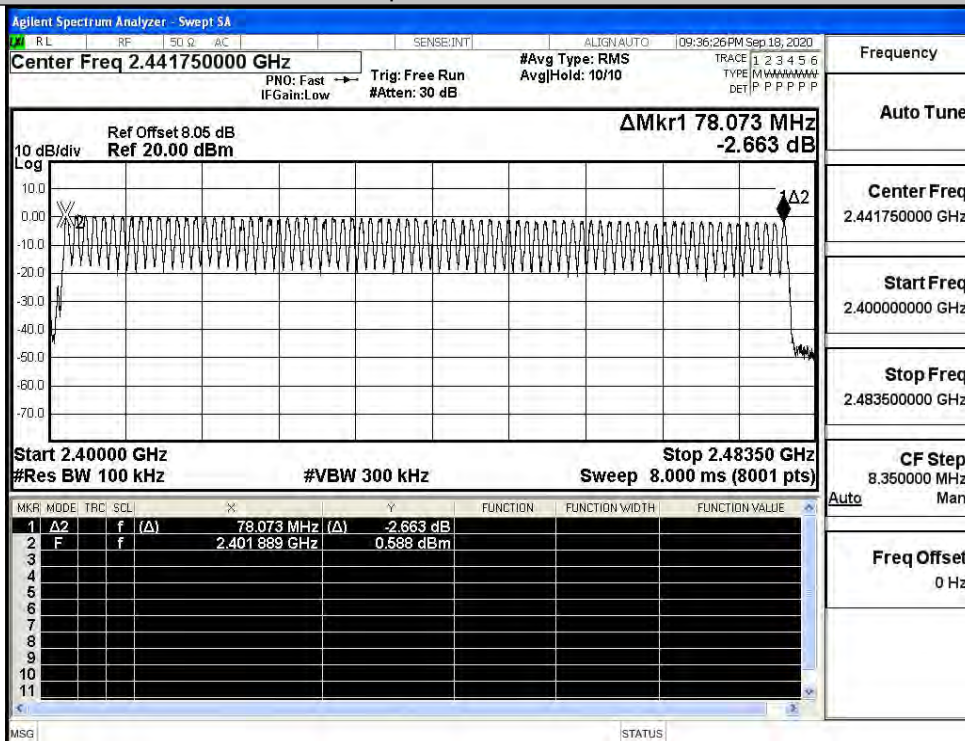
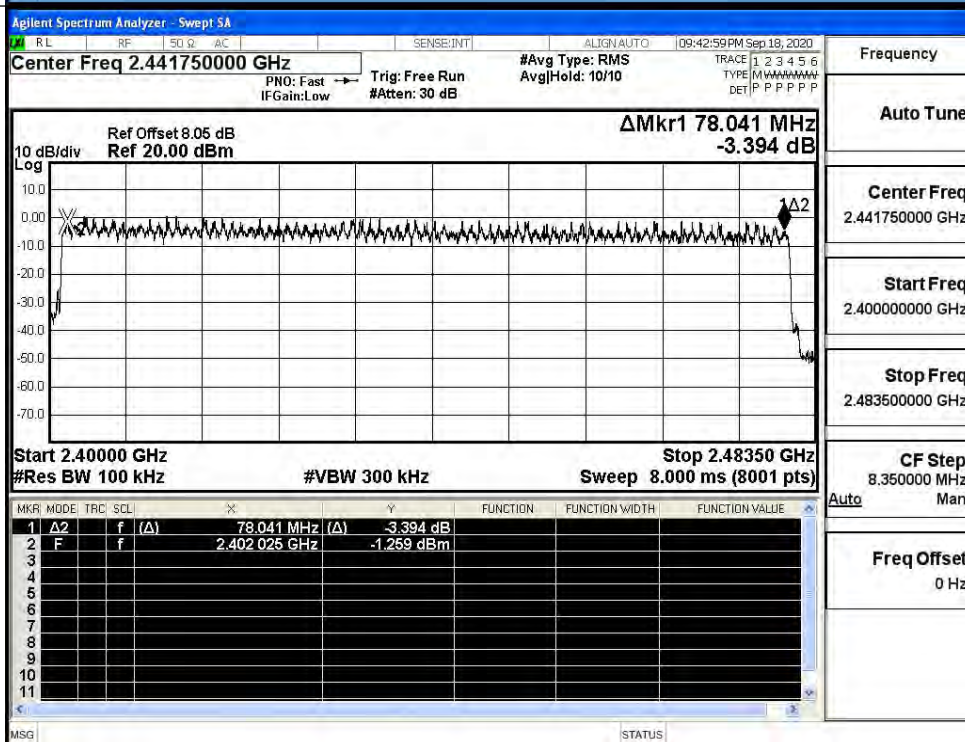


## A.4 Hopping Channel Number

| 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

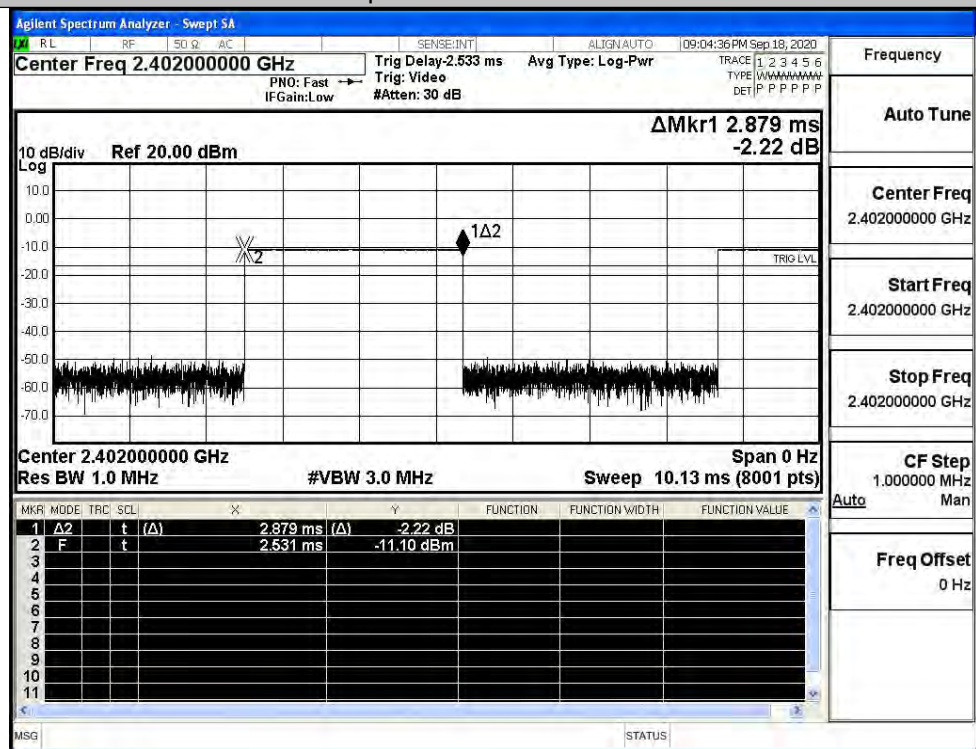
 $\pi/4$ DQPSK/Hop

## A.5 Dwell Time

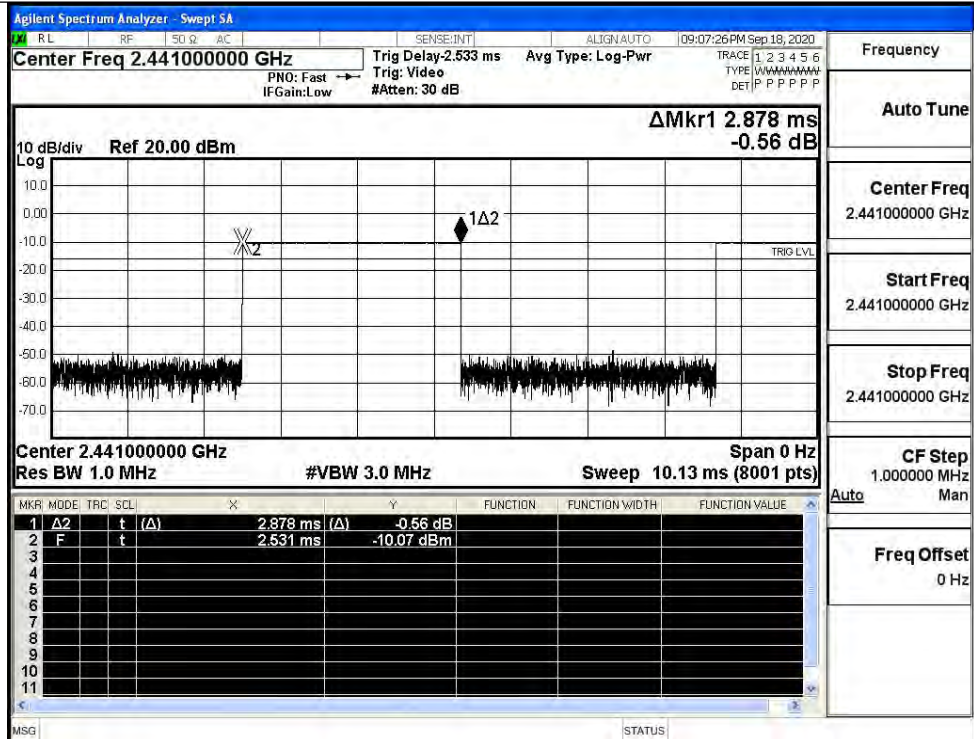
| Mode          | Packet | Channel | Burst Width<br>[ms/hop/ch] | Total<br>Hops[hop*ch] | Dwell Time[s] | Limit [s] | Verdict |
|---------------|--------|---------|----------------------------|-----------------------|---------------|-----------|---------|
| GFSK          | DH5    | LCH     | 2.88   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

## Test Graphs

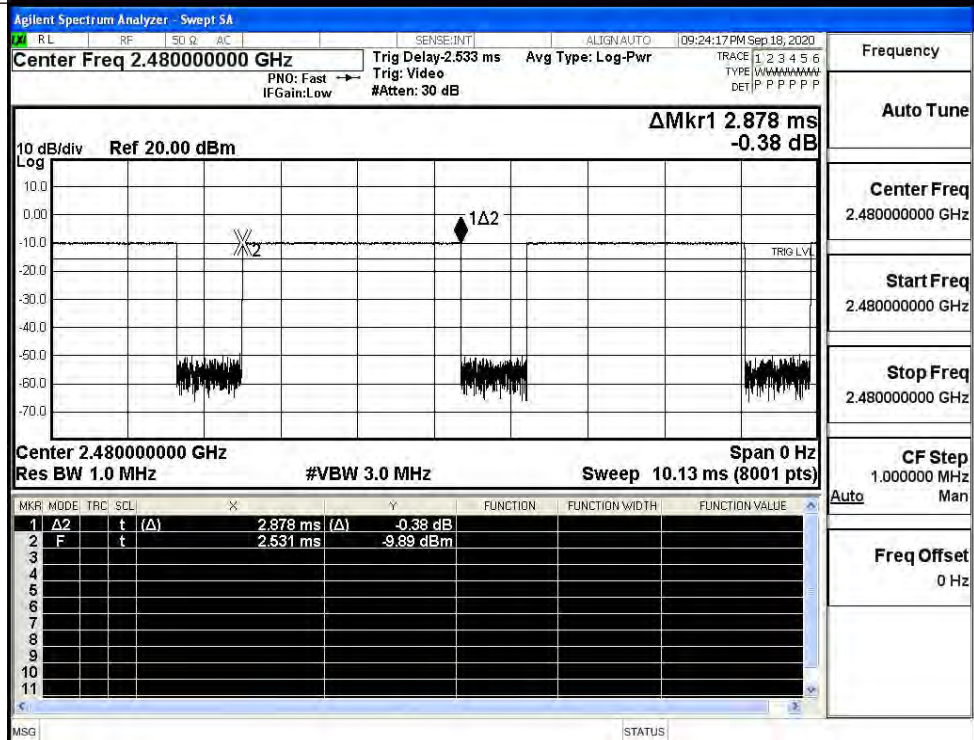
GFSK\_DH5/LCH



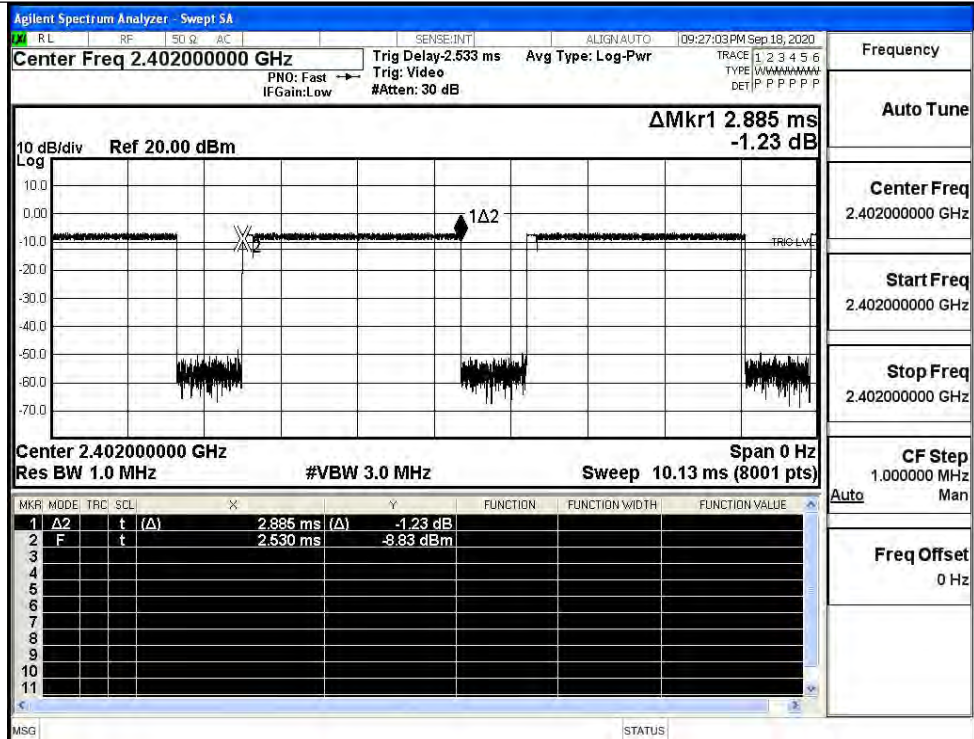
GFSK\_DH5/MCH



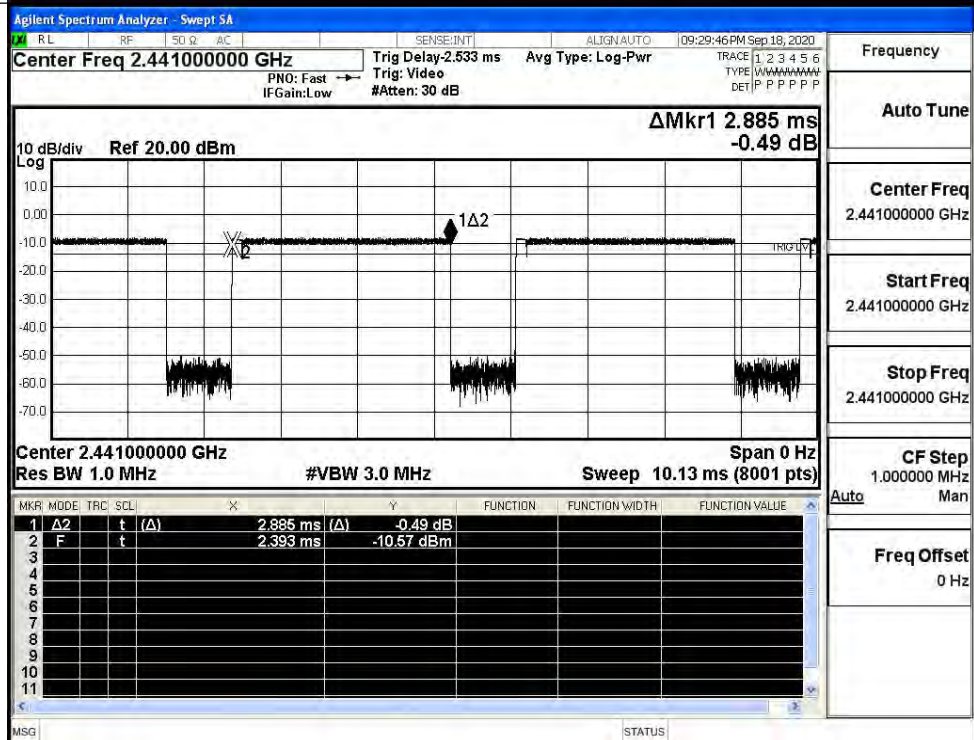
GFSK\_DH5/HCH



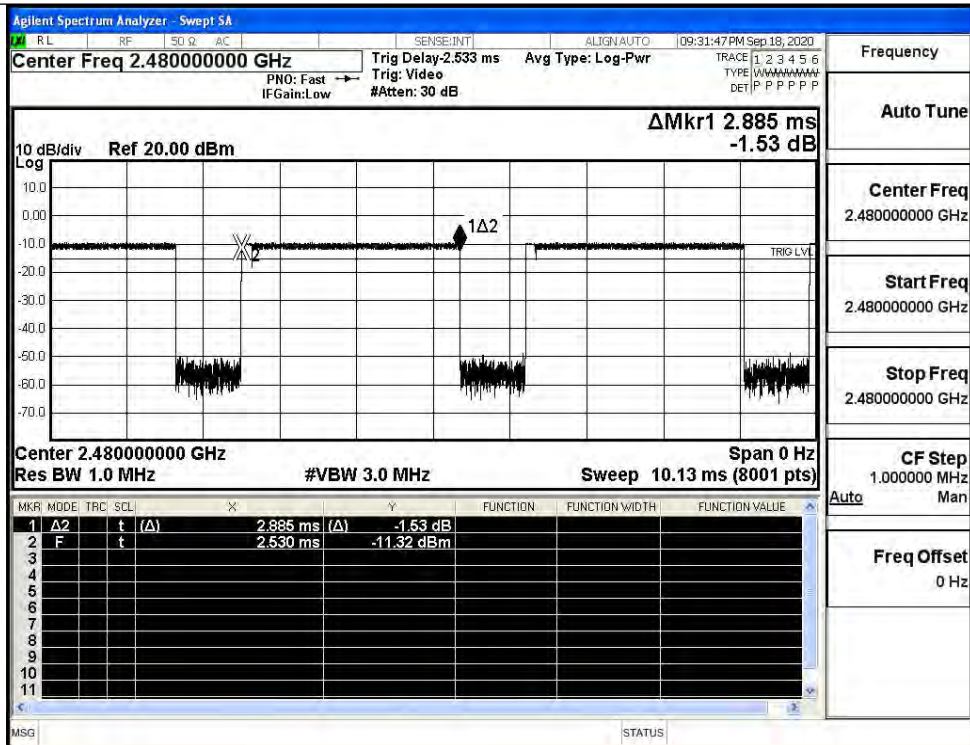
$\pi/4$ DQPSK  
\_2DH5/LCH



$\pi/4$ DQPSK  
\_2DH5/MCH



$\pi/4$ DQPSK  
\_2DH5/HCH

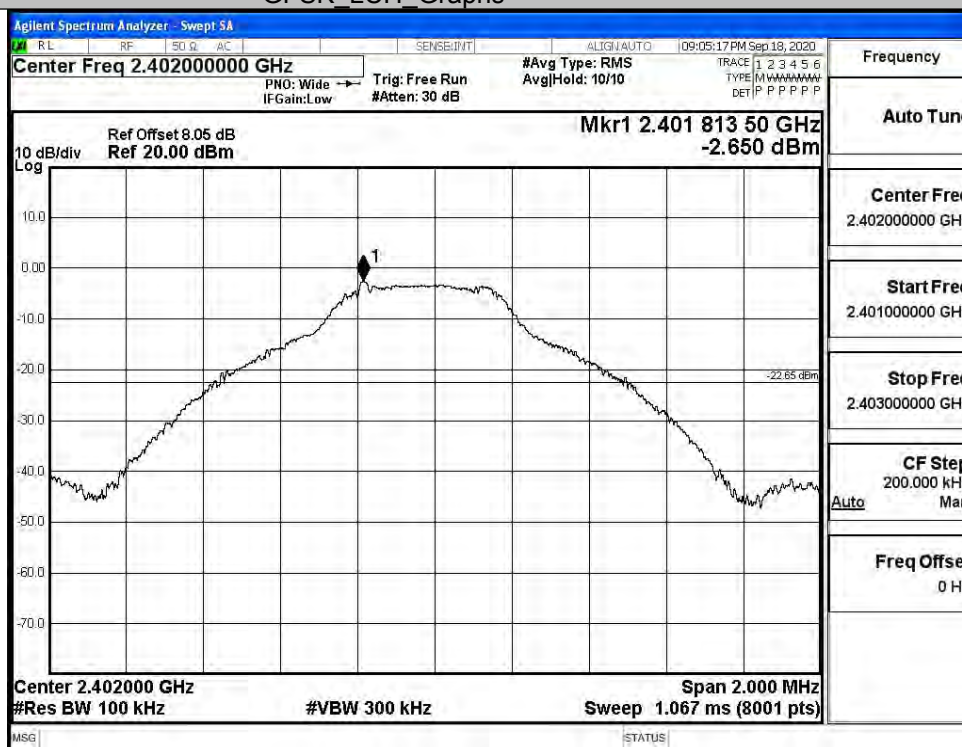


## A.6 RF Conducted Spurious Emissions

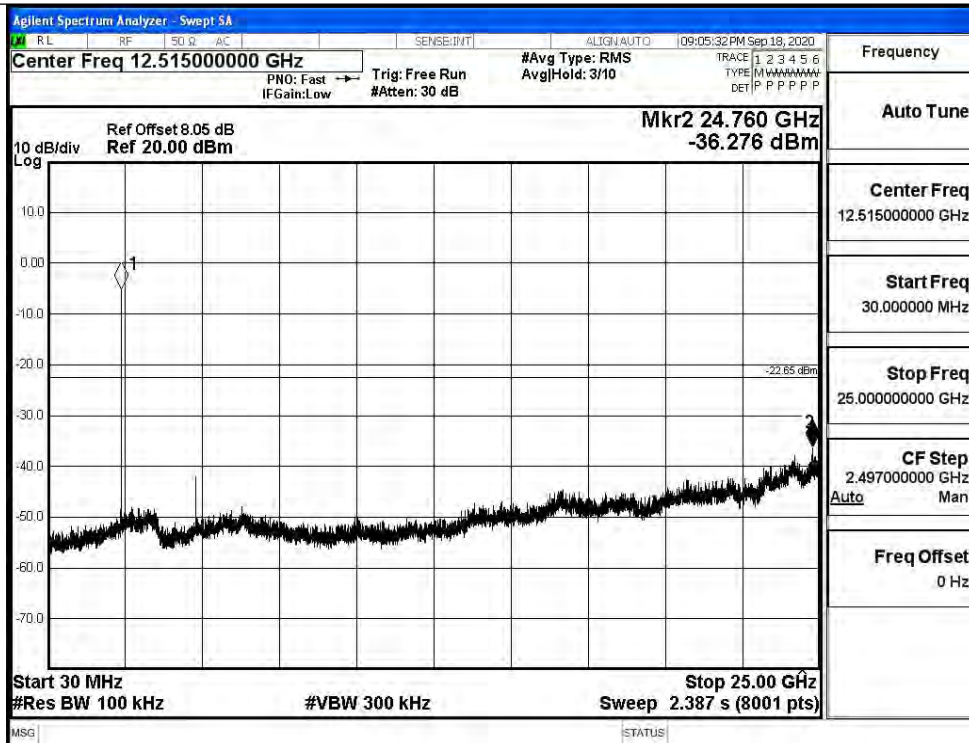
| Mode          | Channel | Pref [dBm] | Max. Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|------------|------------------|-------------|---------|
| GFSK          | LCH     | -2.65      | -36.276          | -22.650     | PASS    |
|               | MCH     | -2.086     | -37.448          | -22.086     | PASS    |
|               | HCH     | -2.311     | -37.408          | -22.311     | PASS    |
| $\pi$ /4DQPSK | LCH     | 0.729      | -38.032          | -19.271     | PASS    |
|               | MCH     | -0.872     | -38.009          | -20.872     | PASS    |
|               | HCH     | -2.084     | -37.994          | -22.084     | PASS    |

GFSK\_LCH\_Graphs

Pref

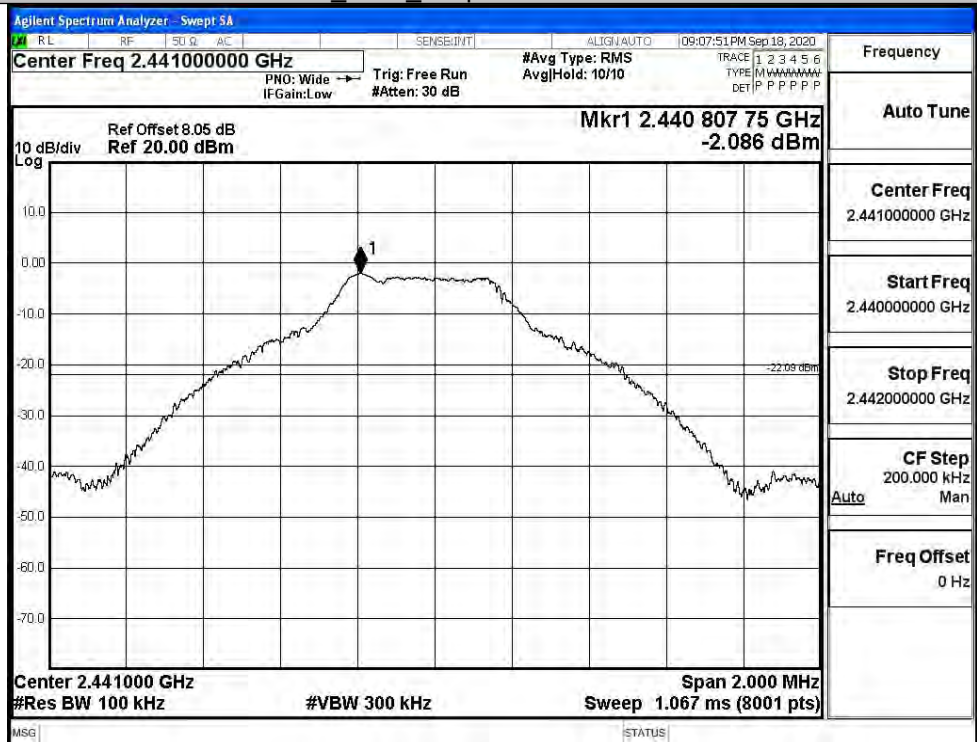


Puw

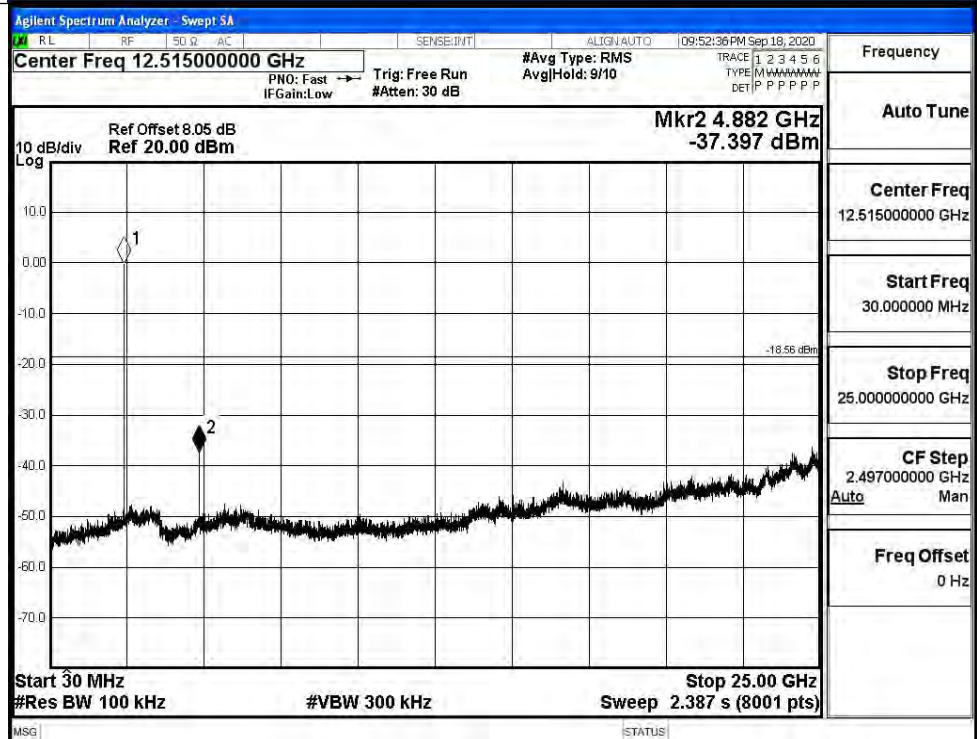


## GFSK\_MCH\_Graphs

Pref

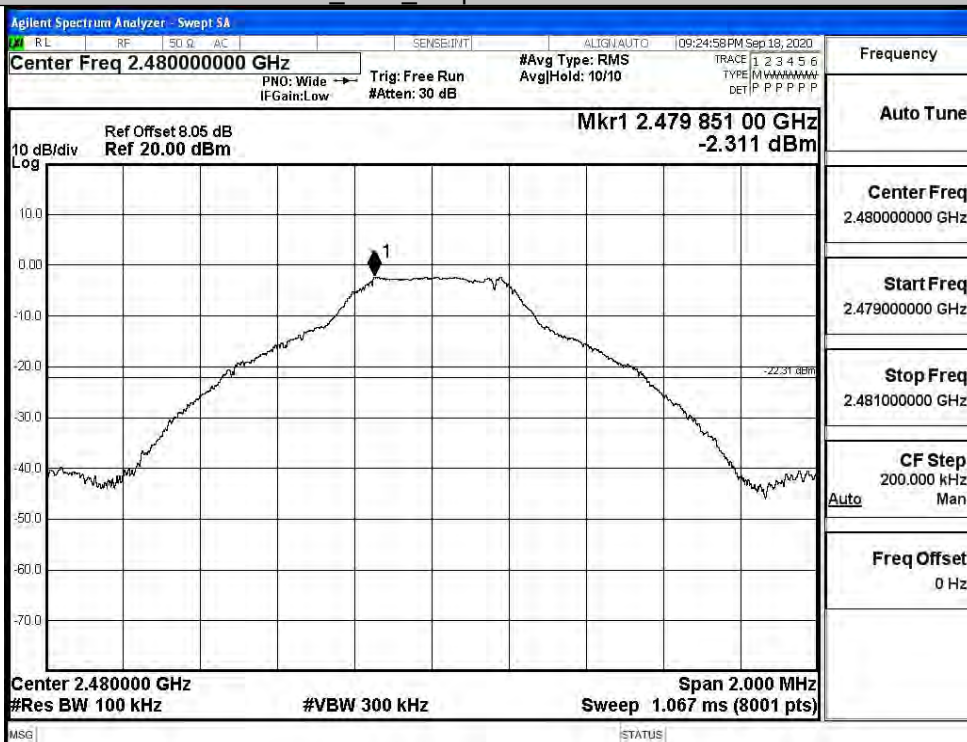


Puw

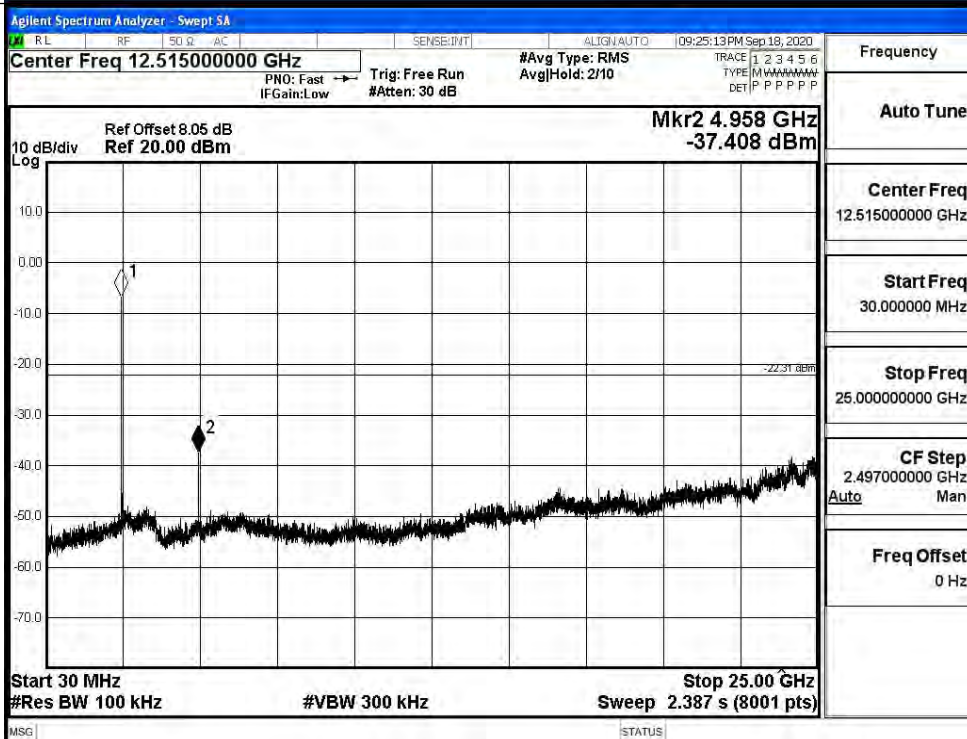


## GFSK\_HCH\_Graphs

Pref

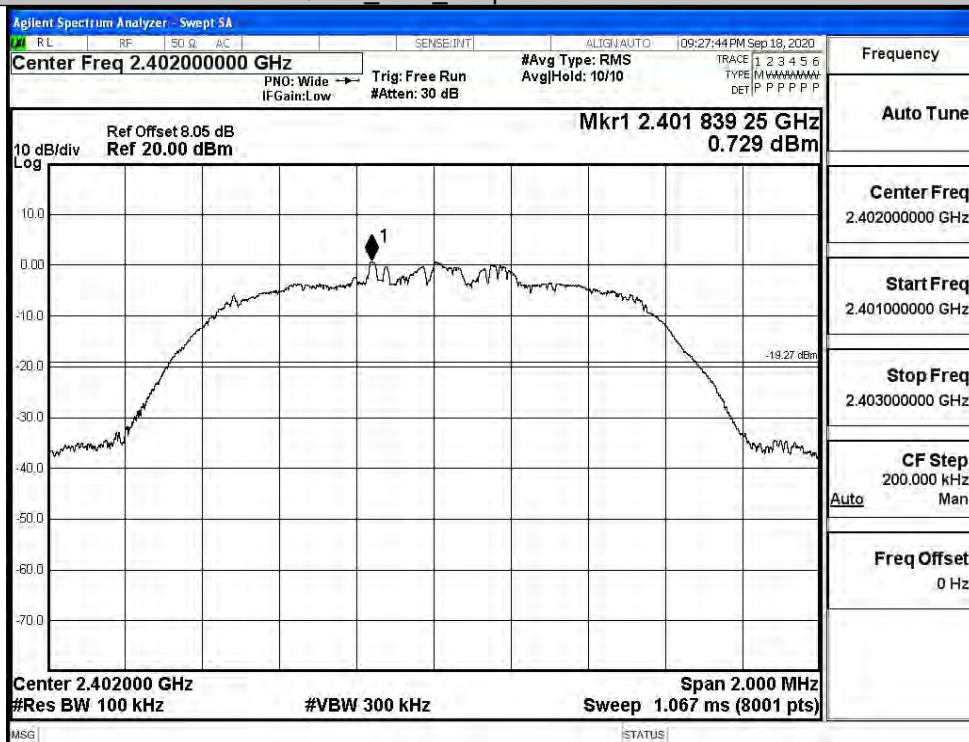


Puw

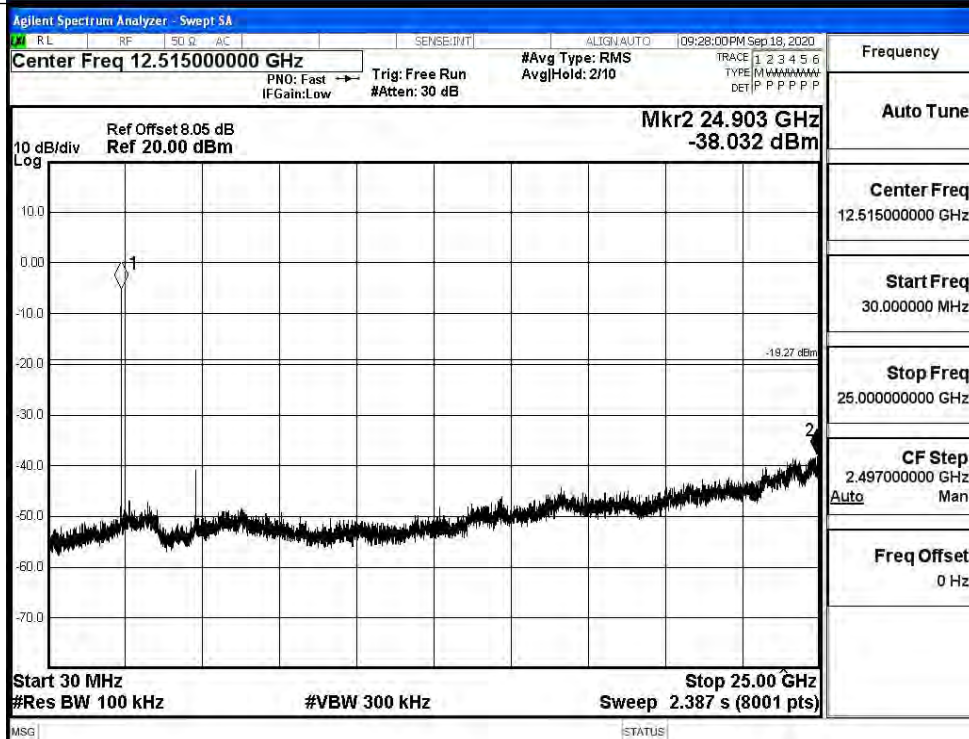


$\pi/4$ DQPSK\_LCH\_Graphs

Pref

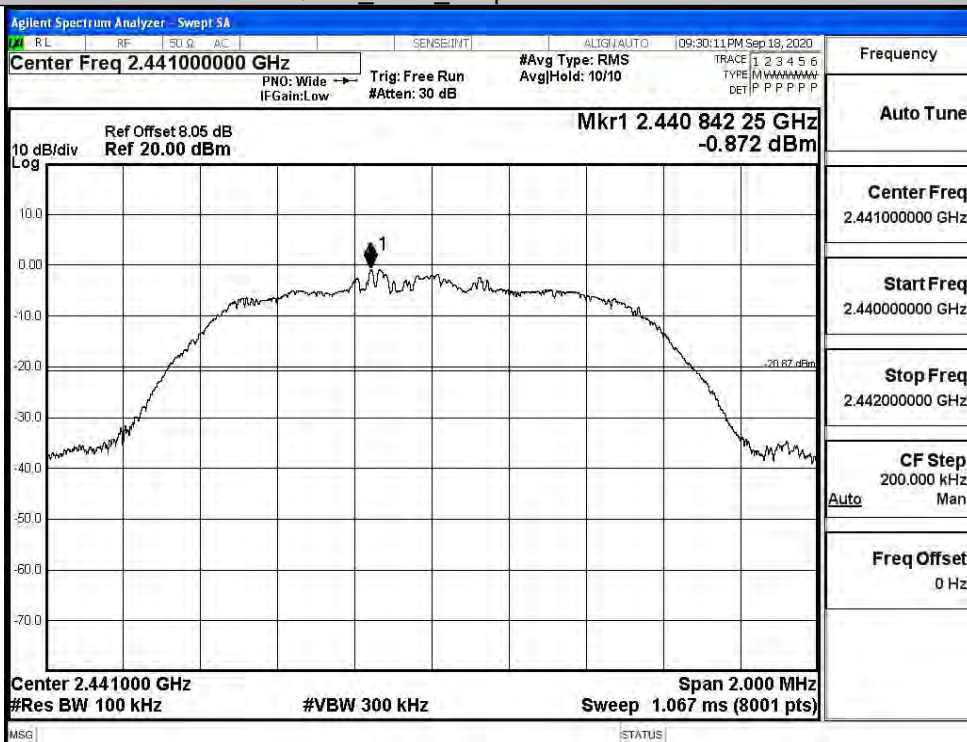


Puw

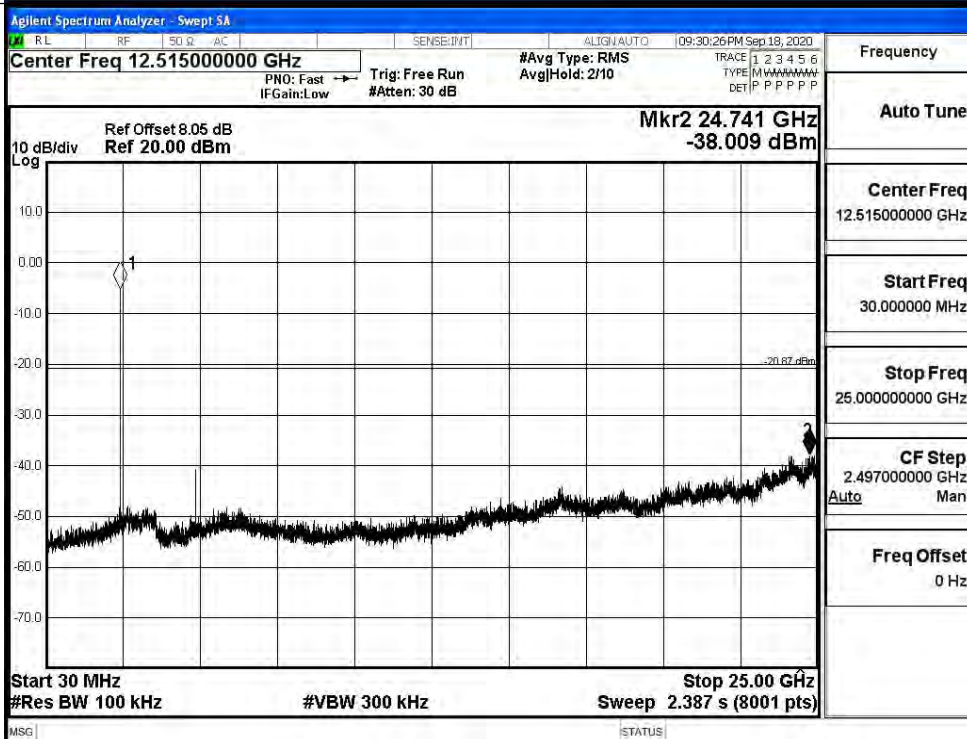


$\pi$ /4DQPSK\_MCH\_Graphs

Pref

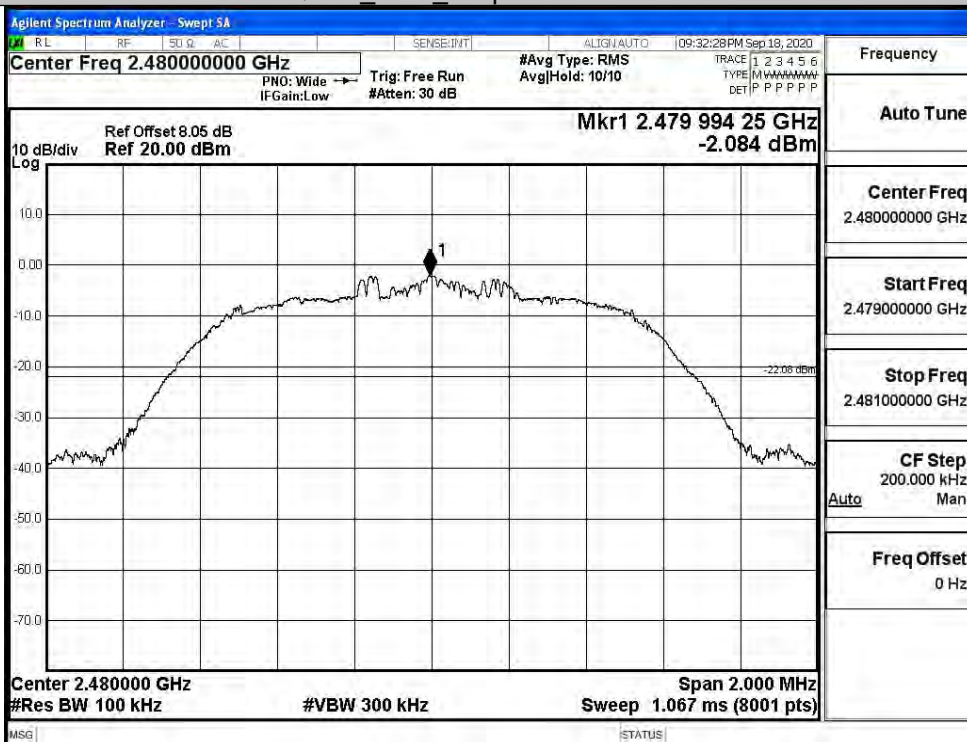


Puw

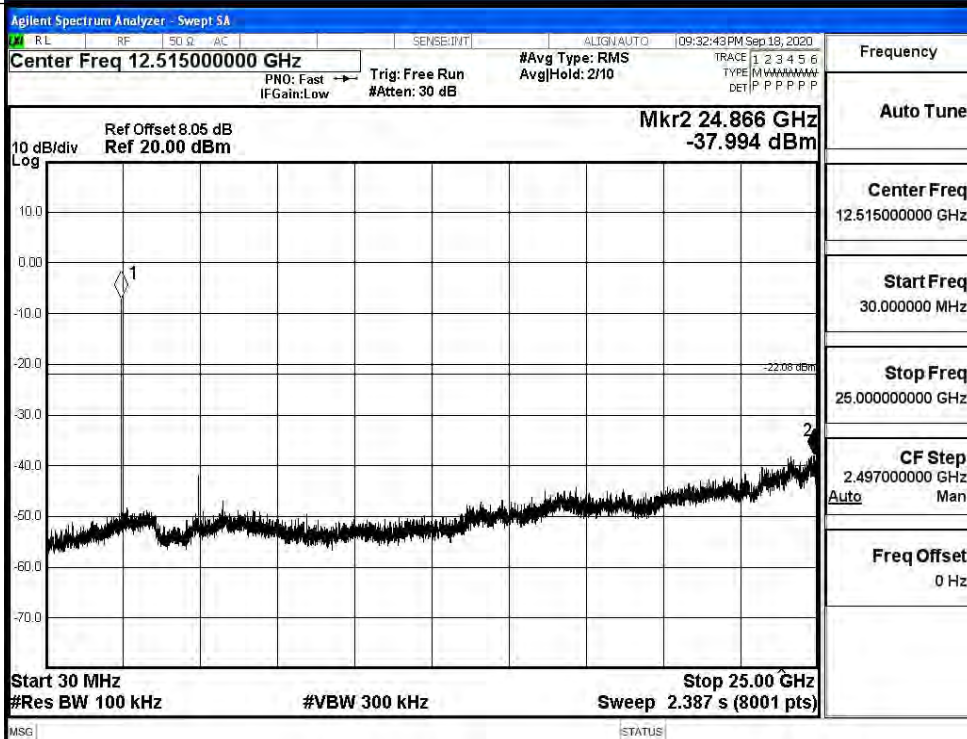


$\pi$ /4DQPSK\_HCH\_Graphs

Pref



Puw

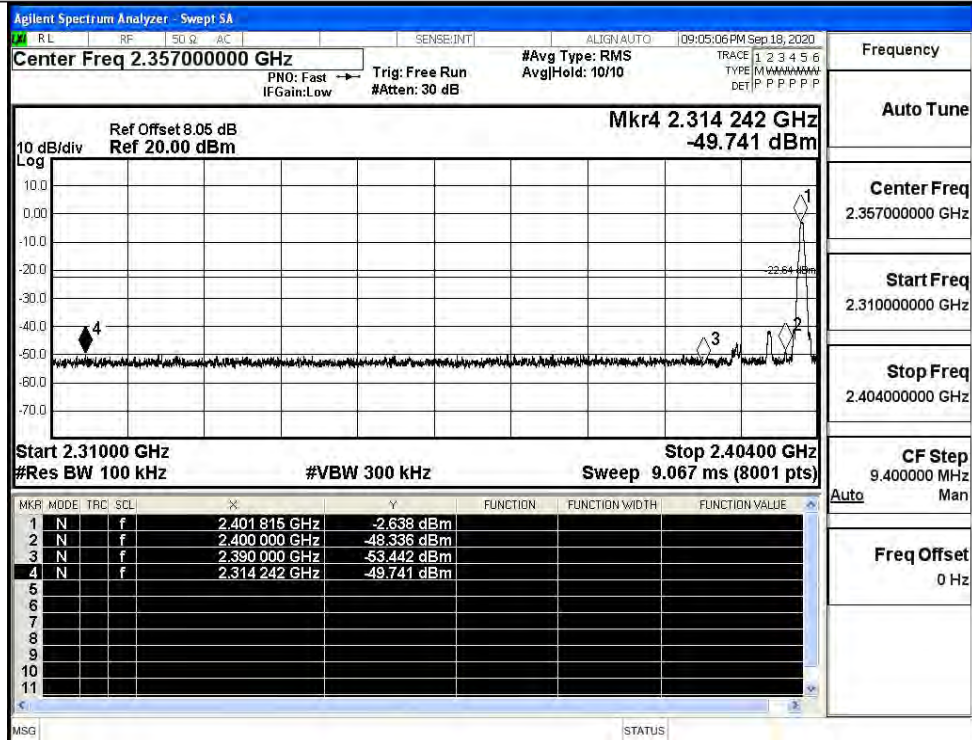


**A.7 Band-edge for RF Conducted Emissions**

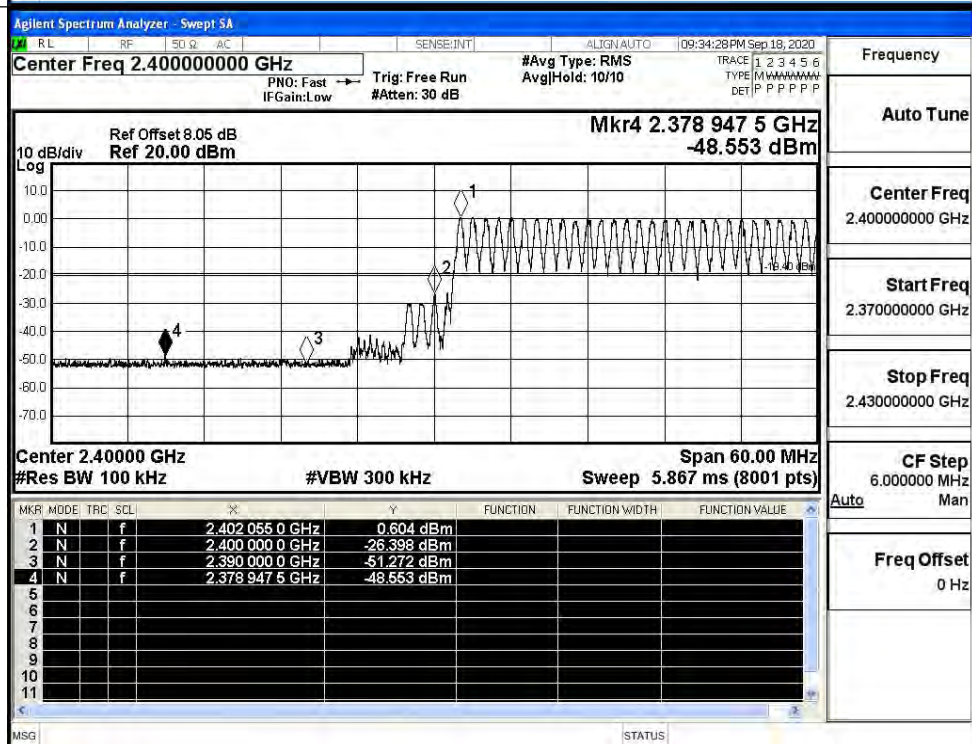
| Mode          | Channel | Carrier Frequency [MHz] | Carrier Power [dBm] | Frequency Hopping | Max Spurious Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|-------------------------|---------------------|-------------------|--------------------------|-------------|---------|
| GFSK          | LCH     | 2402                    | -2.638              | Off               | -49.741                  | -22.64      | PASS    |
|               |         |                         | 0.604               | On                | -48.553                  | -19.4       | PASS    |
|               | HCH     | 2480                    | -2.029              | Off               | -43.978                  | -22.03      | PASS    |
|               |         |                         | -1.169              | On                | -44.863                  | -21.17      | PASS    |
| $\pi/4$ DQPSK | LCH     | 2402                    | 0.151               | Off               | -49.215                  | -19.85      | PASS    |
|               |         |                         | 0.654               | On                | -48.007                  | -19.35      | PASS    |
|               | HCH     | 2480                    | -1.778              | Off               | -45.504                  | -21.78      | PASS    |
|               |         |                         | -1.029              | On                | -46.755                  | -21.03      | PASS    |

## Test Graphs

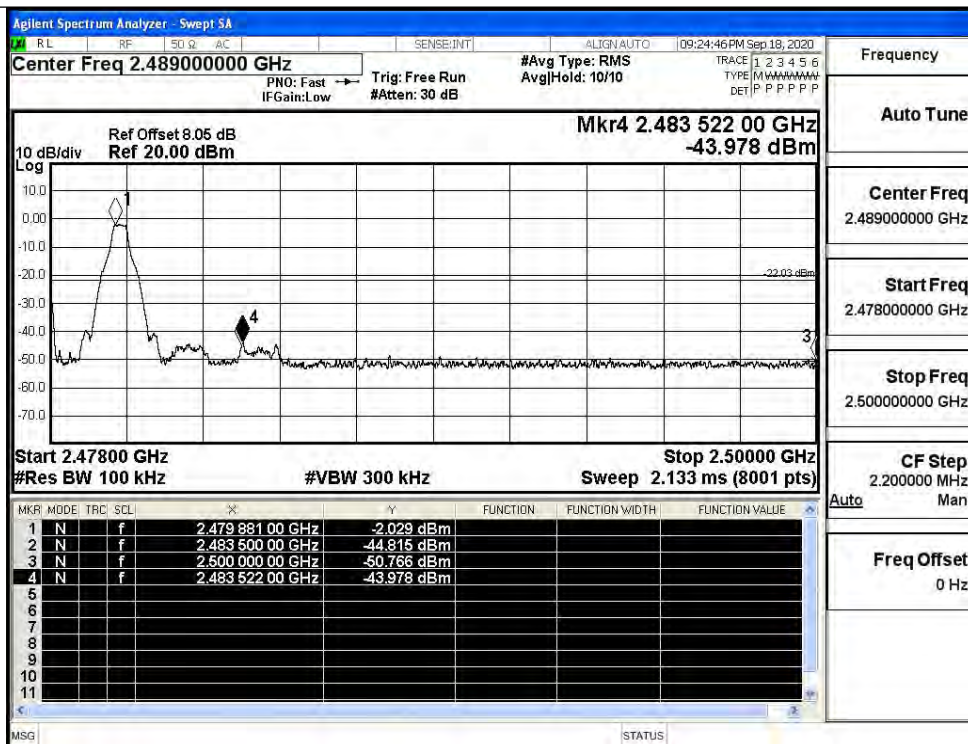
GFSK/LCH/No Hop



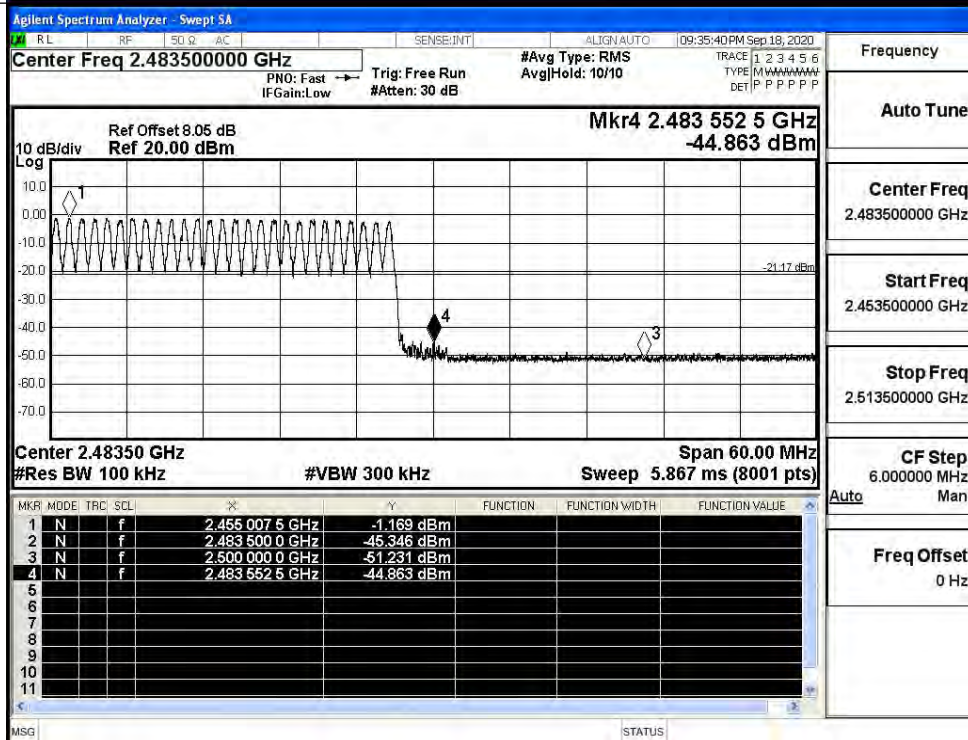
GFSK/LCH/Hop



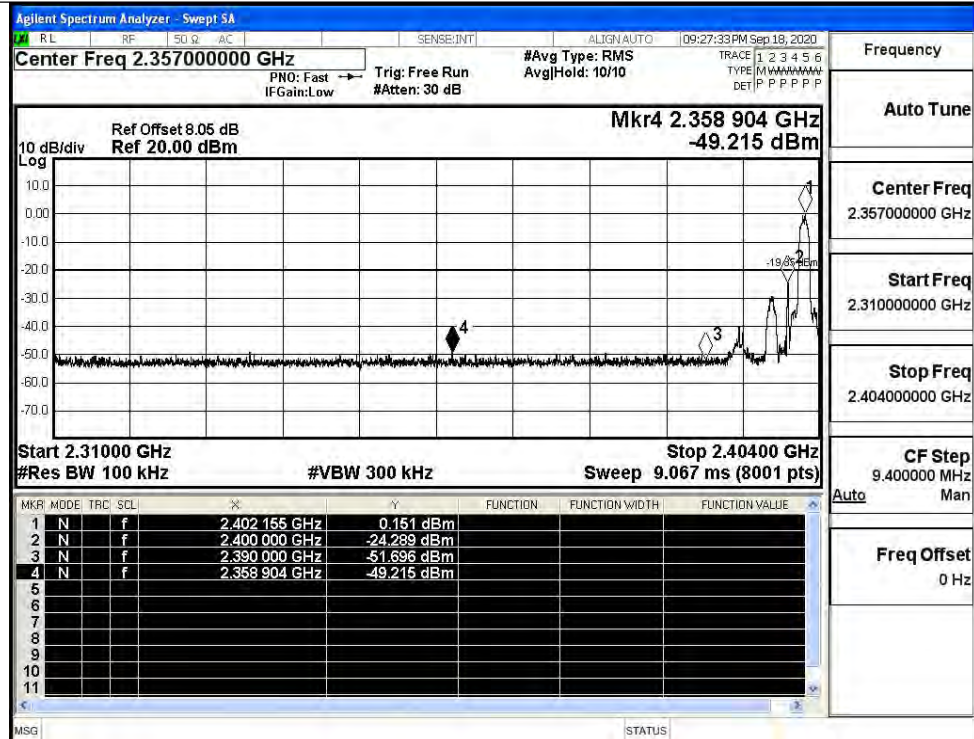
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq  
2.357000000 GHz

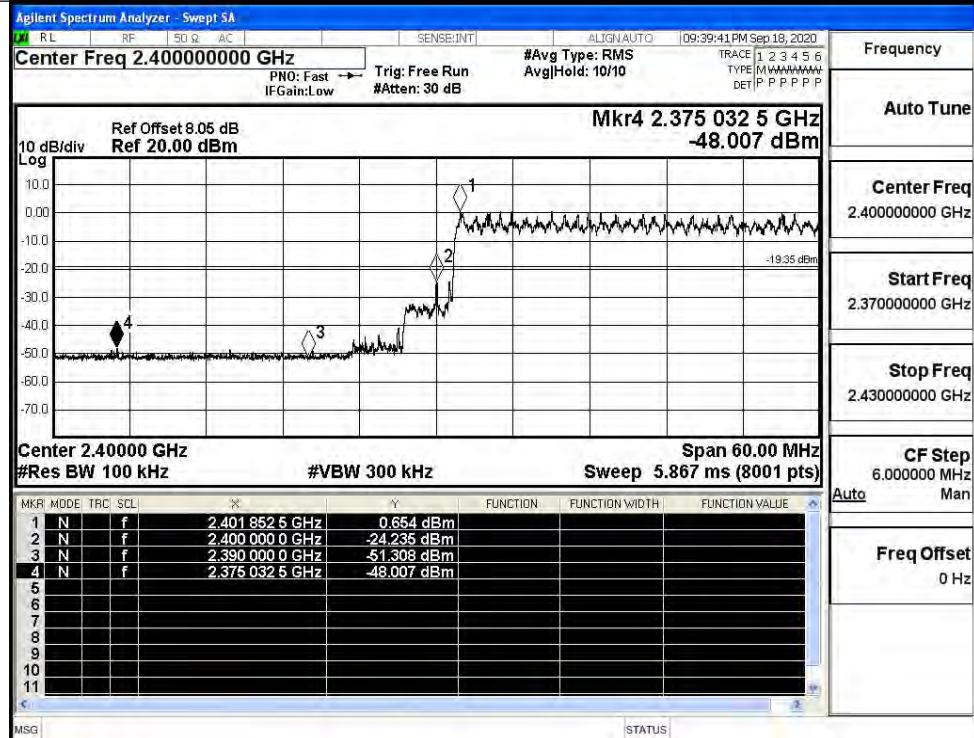
Start Freq  
2.310000000 GHz

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

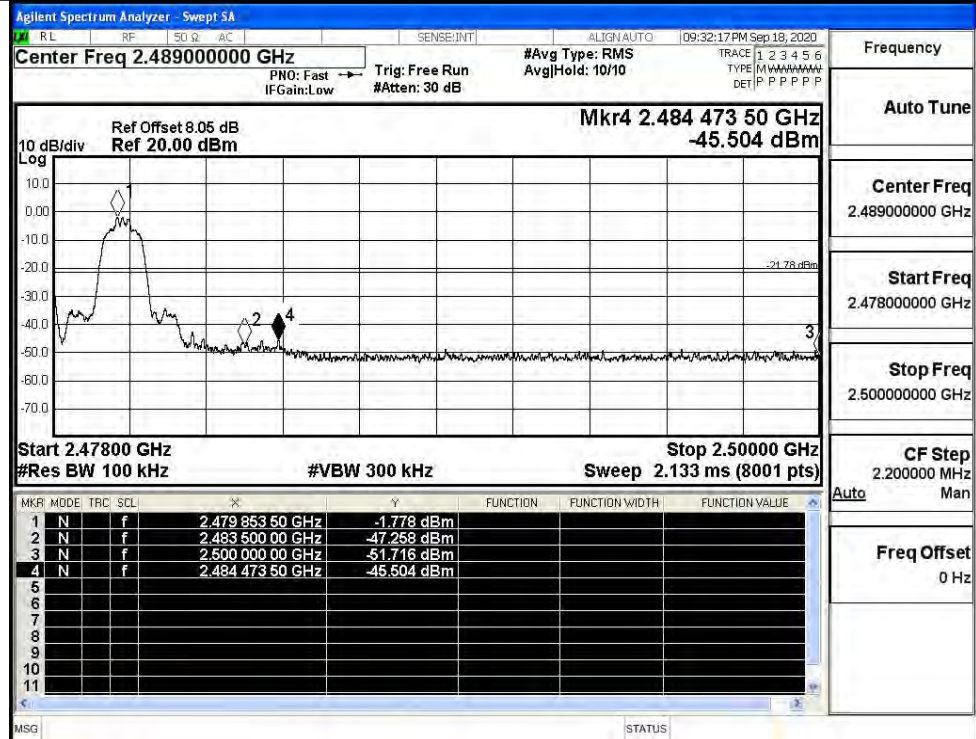
Start Freq  
2.370000000 GHz

Stop Freq  
2.430000000 GHz

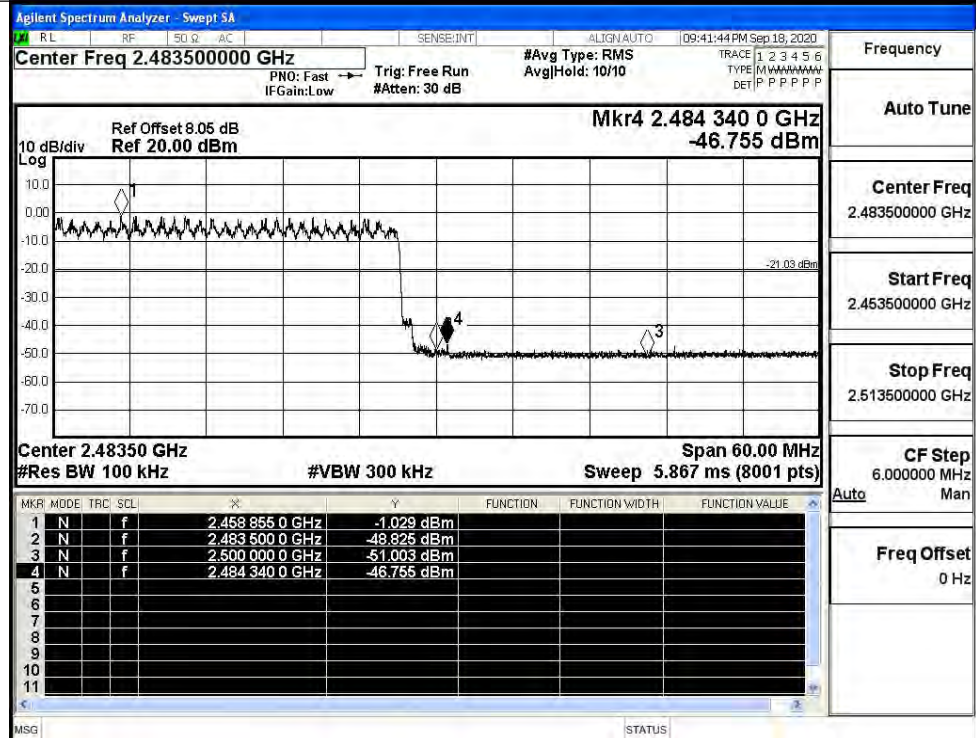
CF Step  
6.000000 MHz  
Auto Man

Freq Offset  
0 Hz

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



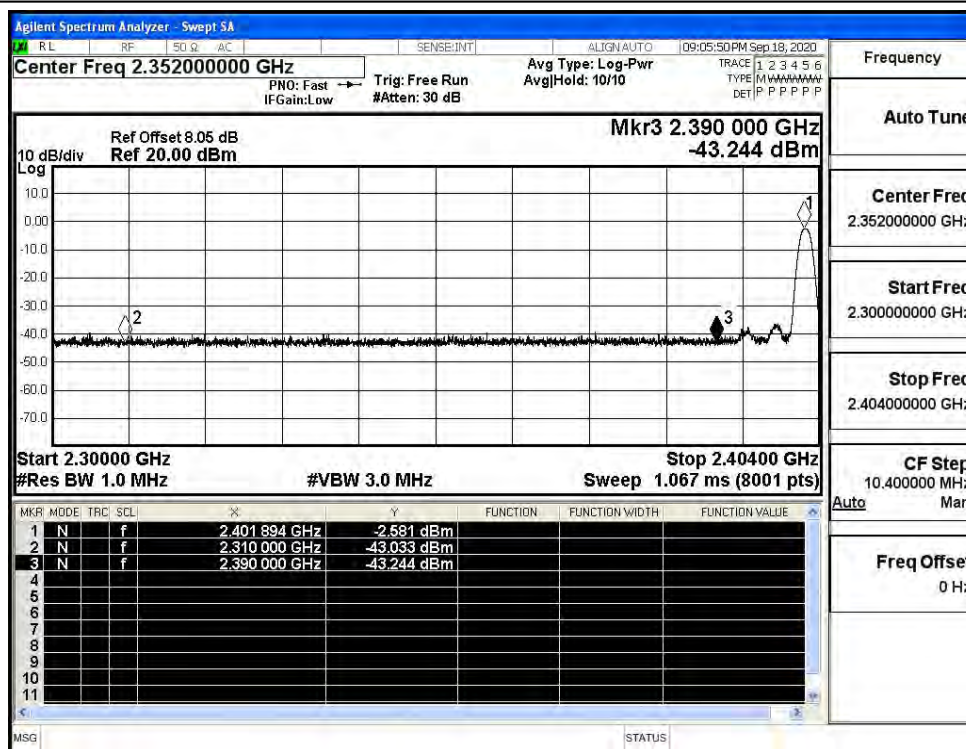
$\pi/4$ DQPSK/HCH/Hop



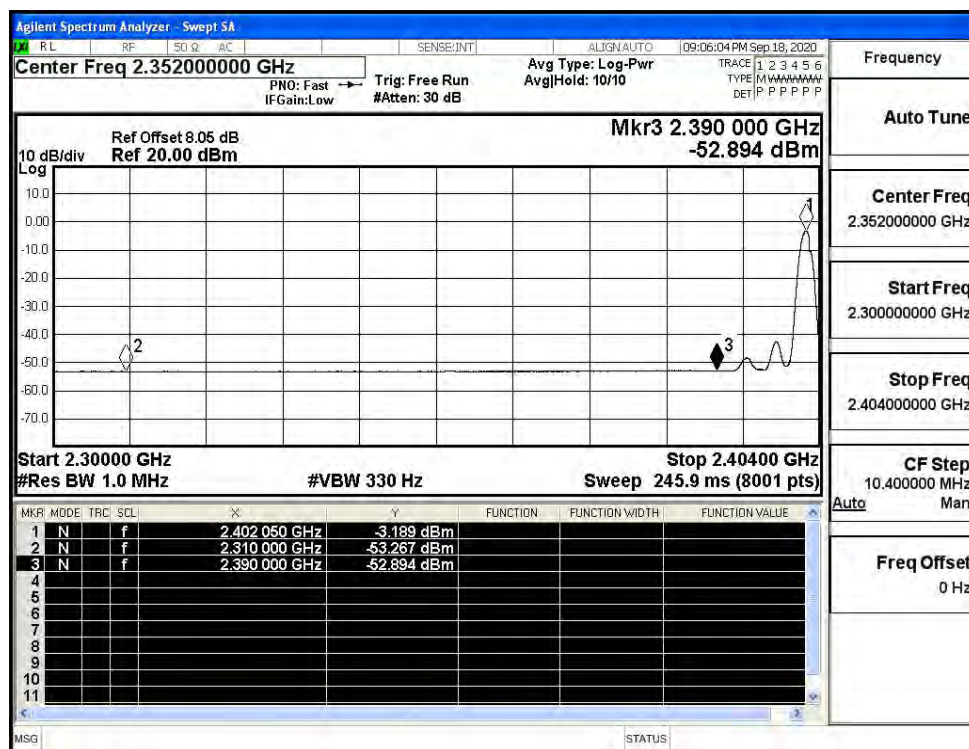
**A.8 Restrict-band band-edge measurements**

| Test Mode     | Hopping | Freq.  | Power [dBm] | Gain | Ground Factor | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|---------------|---------|--------|-------------|------|---------------|------------|----------|----------------|---------|
| GFSK          | Off     | 2310.0 | -43.03      | 2.0  | 0             | 54.20      | PEAK     | 74             | PASS    |
|               | Off     | 2310.0 | -53.27      | 2.0  | 0             | 43.96      | AV       | 54             | PASS    |
|               | Off     | 2390.0 | -43.24      | 2.0  | 0             | 53.99      | PEAK     | 74             | PASS    |
|               | Off     | 2390.0 | -52.89      | 2.0  | 0             | 44.34      | AV       | 54             | PASS    |
|               | Off     | 2483.5 | -39.07      | 2.0  | 0             | 58.16      | PEAK     | 74             | PASS    |
|               | Off     | 2483.5 | -47.81      | 2.0  | 0             | 49.42      | AV       | 54             | PASS    |
|               | Off     | 2500.0 | -42.60      | 2.0  | 0             | 54.63      | PEAK     | 74             | PASS    |
|               | Off     | 2500.0 | -52.11      | 2.0  | 0             | 45.12      | AV       | 54             | PASS    |
| $\pi/4$ DQPSK | Off     | 2310.0 | -44.14      | 2.0  | 0             | 53.09      | PEAK     | 74             | PASS    |
|               | Off     | 2310.0 | -53.24      | 2.0  | 0             | 43.99      | AV       | 54             | PASS    |
|               | Off     | 2390.0 | -42.14      | 2.0  | 0             | 55.09      | PEAK     | 74             | PASS    |
|               | Off     | 2390.0 | -52.85      | 2.0  | 0             | 44.38      | AV       | 54             | PASS    |
|               | Off     | 2483.5 | -39.55      | 2.0  | 0             | 57.68      | PEAK     | 74             | PASS    |
|               | Off     | 2483.5 | -49.13      | 2.0  | 0             | 48.10      | AV       | 54             | PASS    |
|               | Off     | 2500.0 | -41.28      | 2.0  | 0             | 55.95      | PEAK     | 74             | PASS    |
|               | Off     | 2500.0 | -52.16      | 2.0  | 0             | 45.07      | AV       | 54             | PASS    |

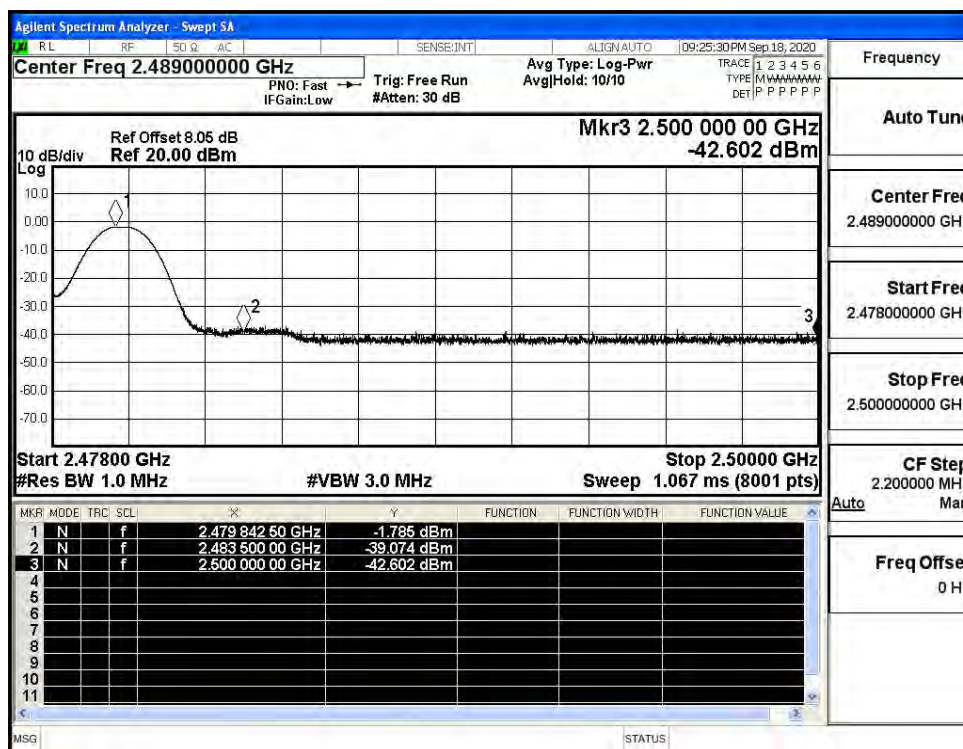
## Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (Low Channel)



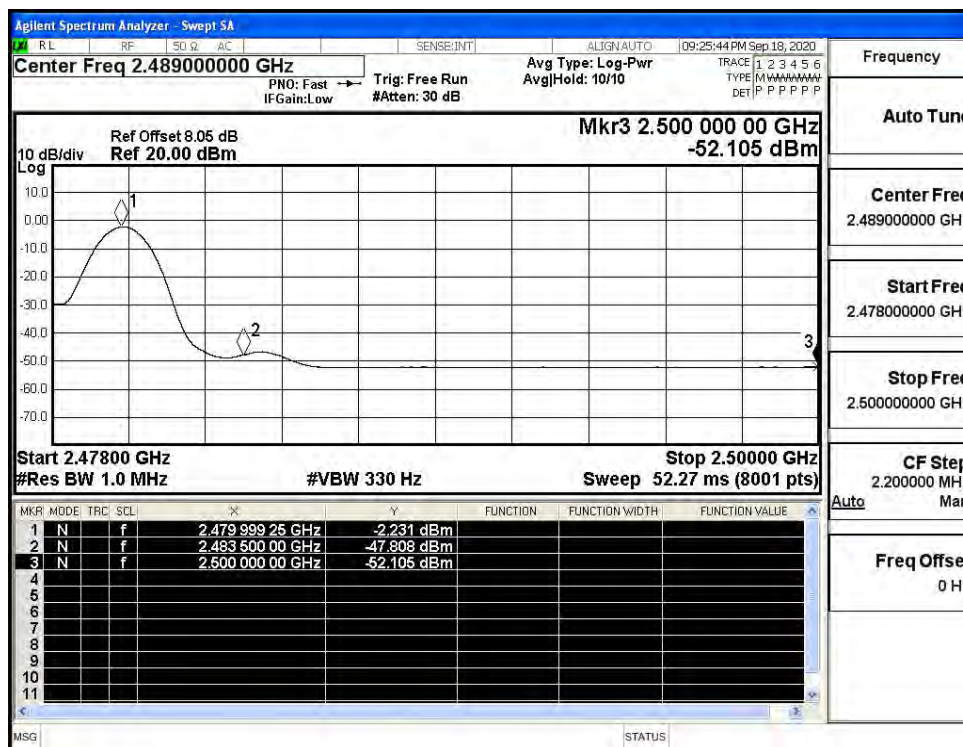
## Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (Low Channel)

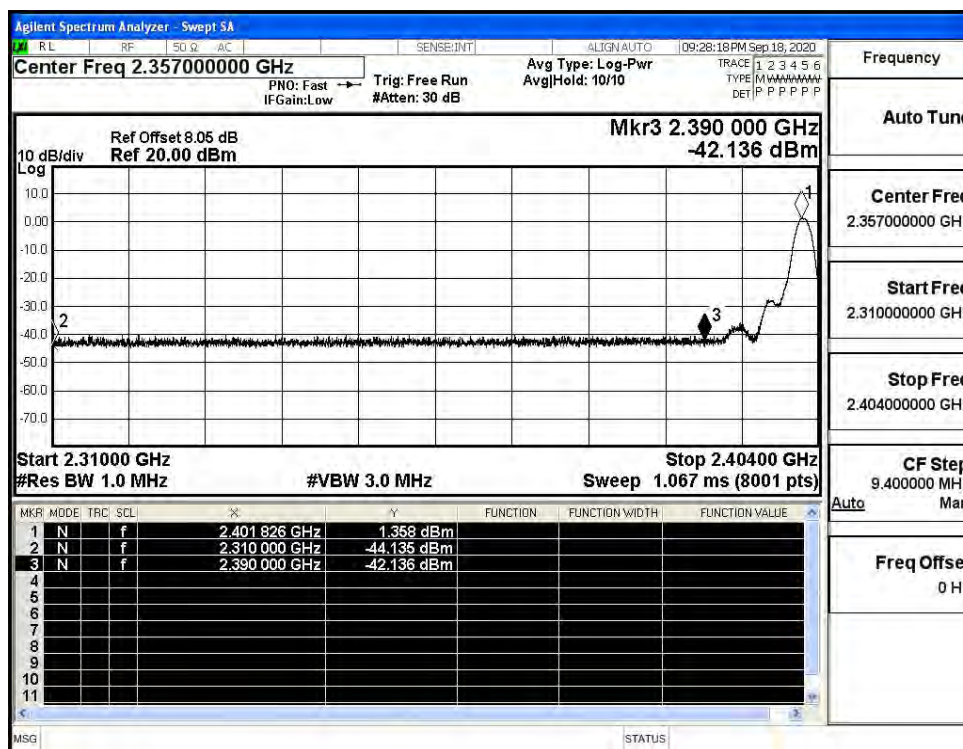
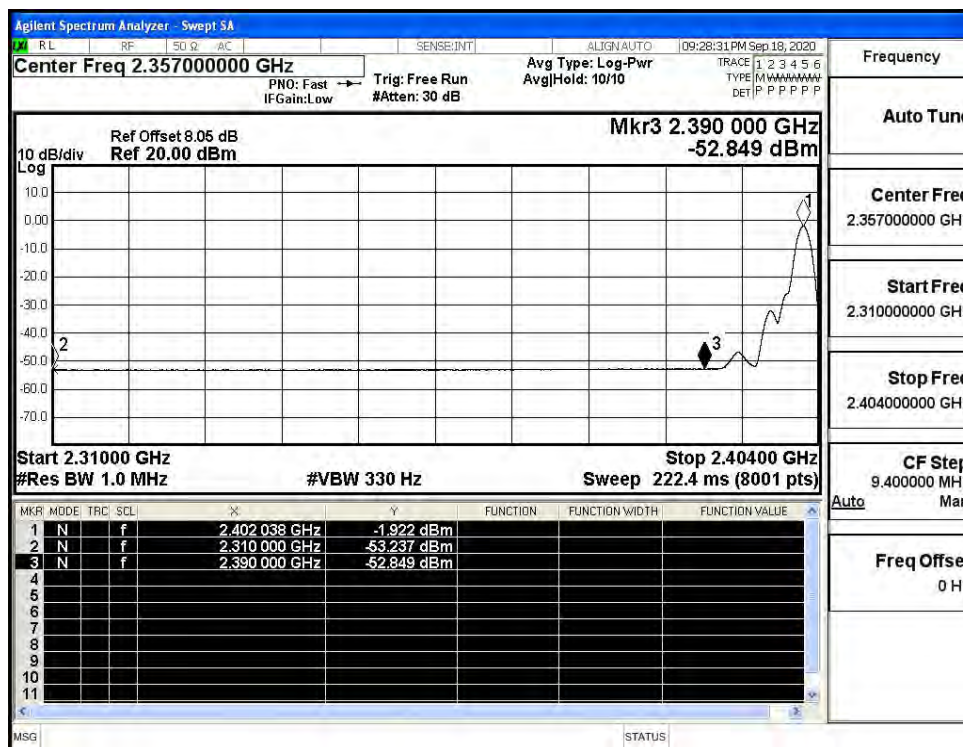


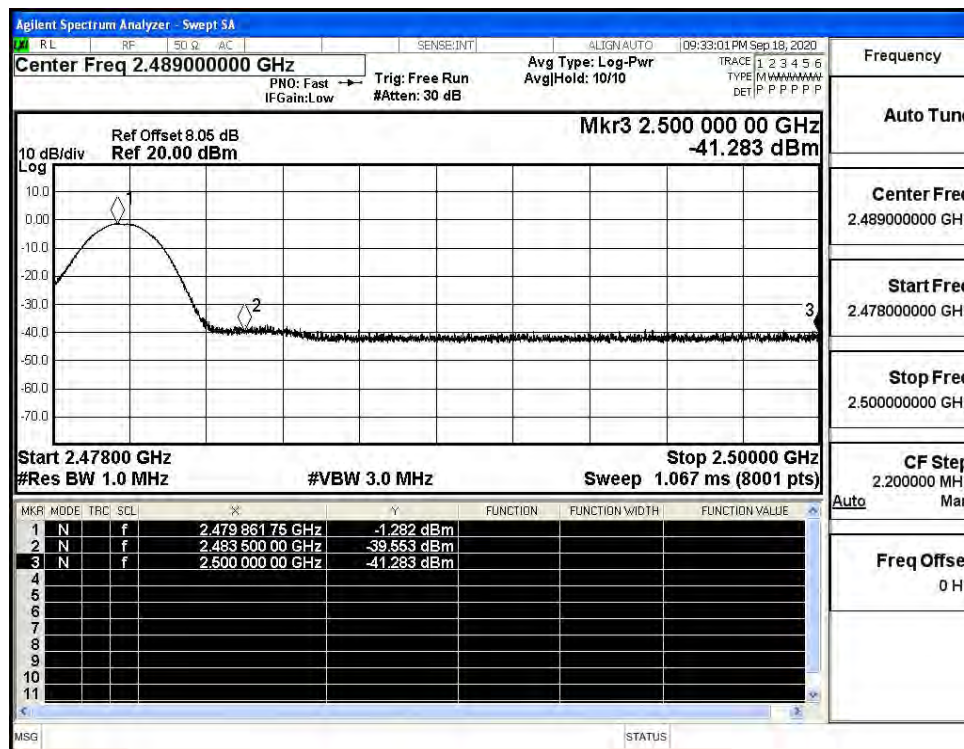
## Restrict-band band-edge measurements\_Hopping Off\_ GFSK\_PEAK (High Channel)



## 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)