

## Appendix A

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

Product Name: Diagnosis System

Trade Mark: XTOOL

Test Model: H6 Elite

#### Environmental Conditions

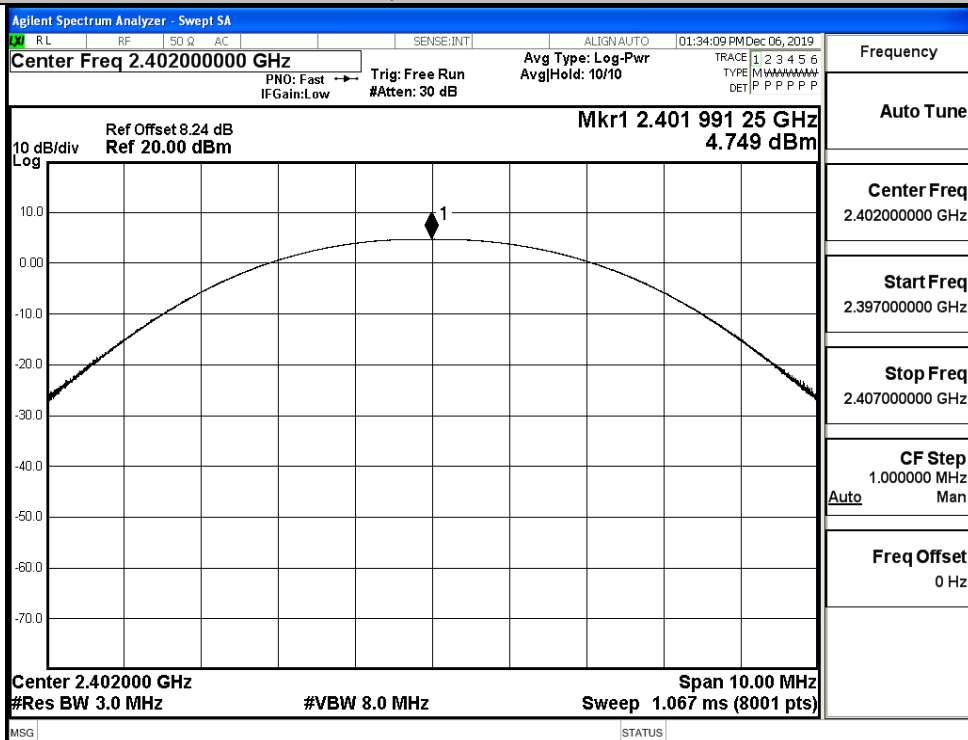
|                    |           |
|--------------------|-----------|
| Temperature:       | 24.6 ° C  |
| Relative Humidity: | 52.8%     |
| ATM Pressure:      | 100.0 kPa |
| Test Engineer:     | Scout Wu  |
| Supervised by:     | TOM LIU   |

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

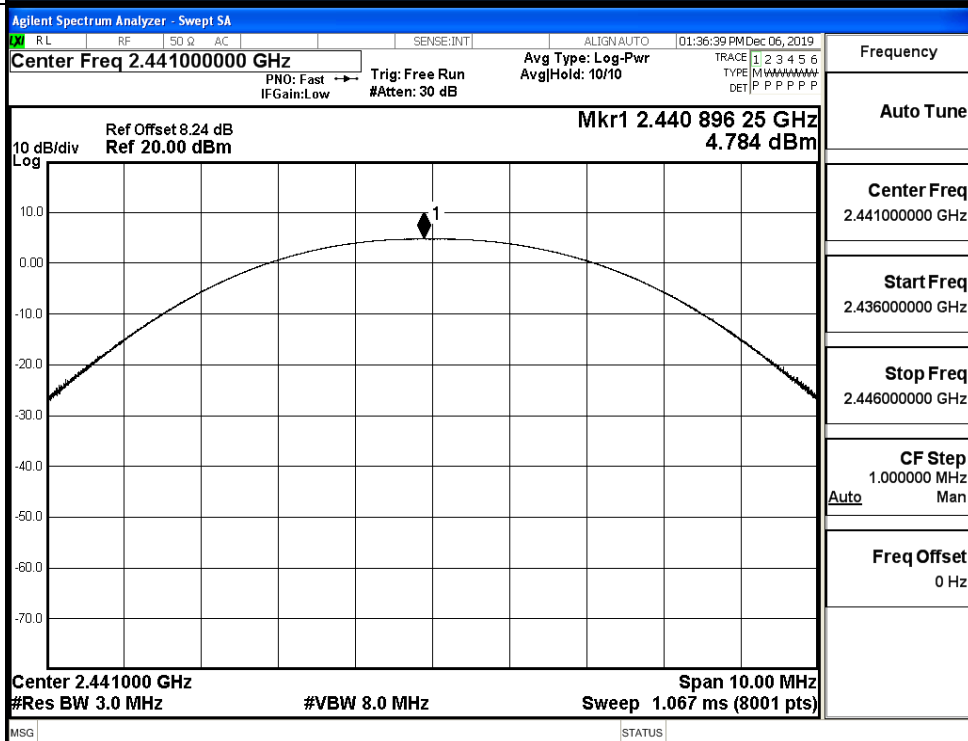
| Mode          | Channel. | Maximum Peak Output Power [dBm] | Limit [dBm] | Verdict |
|---------------|----------|---------------------------------|-------------|---------|
| GFSK          | LCH      | 4.749                           | 21          | PASS    |
|               | MCH      | 4.784                           | 21          | PASS    |
|               | HCH      | 1.070                           | 21          | PASS    |
| $\pi/4$ DQPSK | LCH      | 1.227                           | 21          | PASS    |
|               | MCH      | 1.153                           | 21          | PASS    |
|               | HCH      | 0.683                           | 21          | PASS    |
| 8DPSK         | LCH      | 1.607                           | 21          | PASS    |
|               | MCH      | 1.445                           | 21          | PASS    |
|               | HCH      | 1.023                           | 21          | PASS    |

## Test Graphs

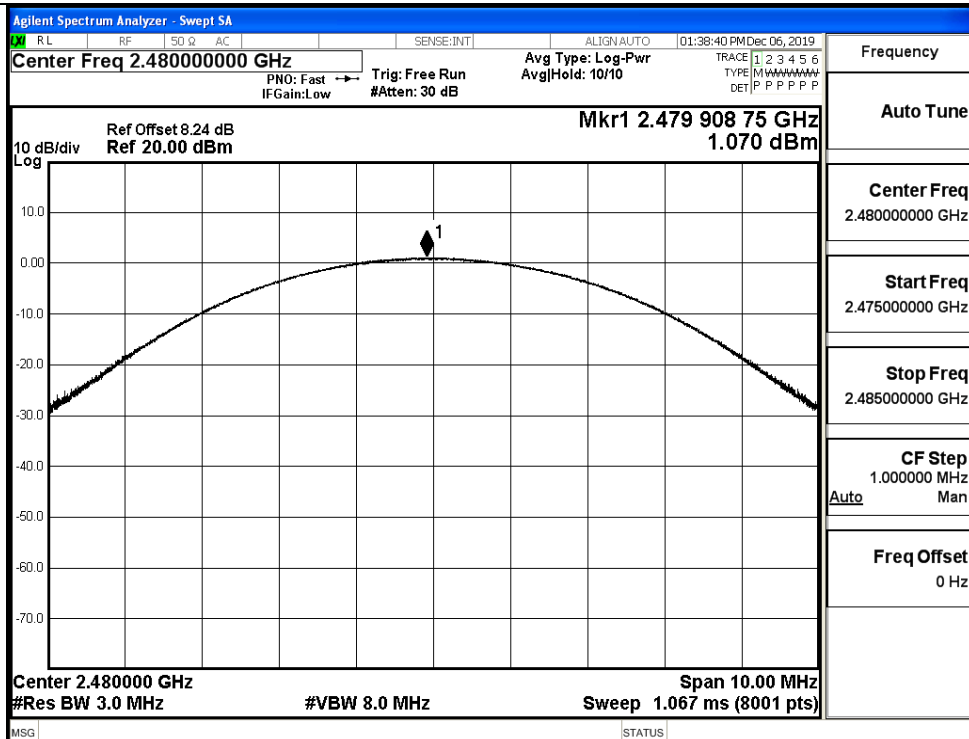
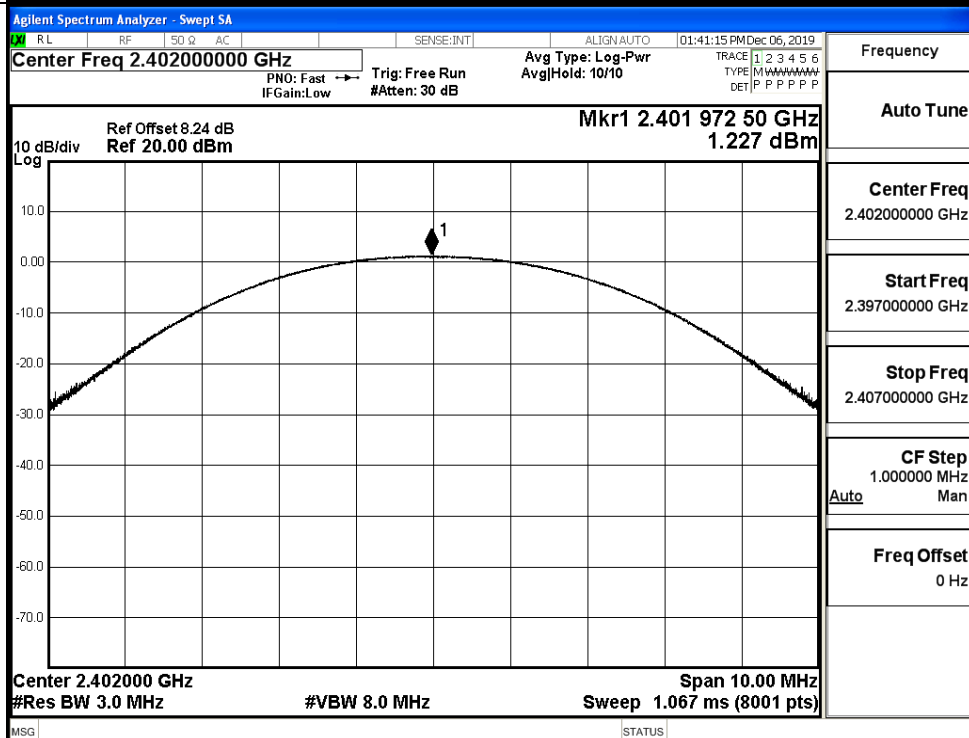
GFSK/LCH

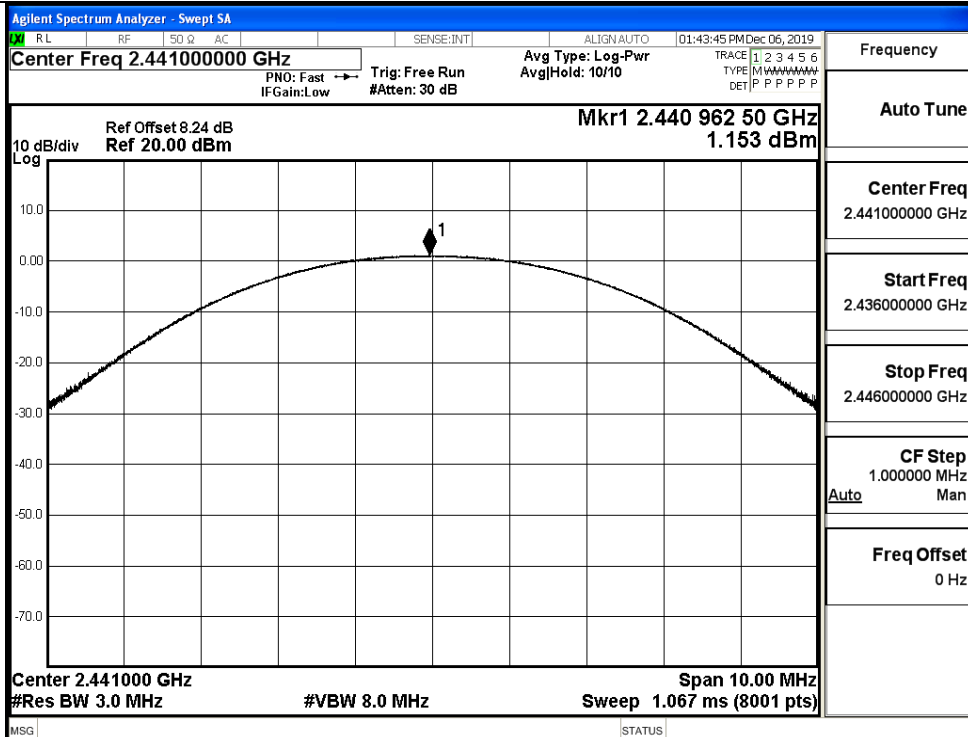
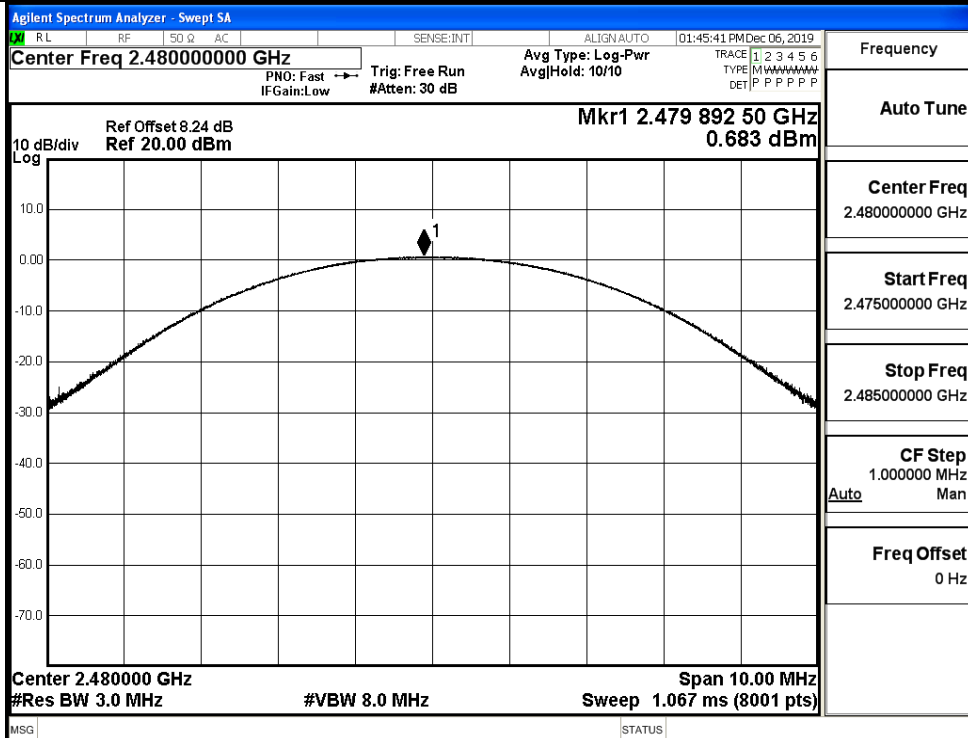


GFSK/MCH

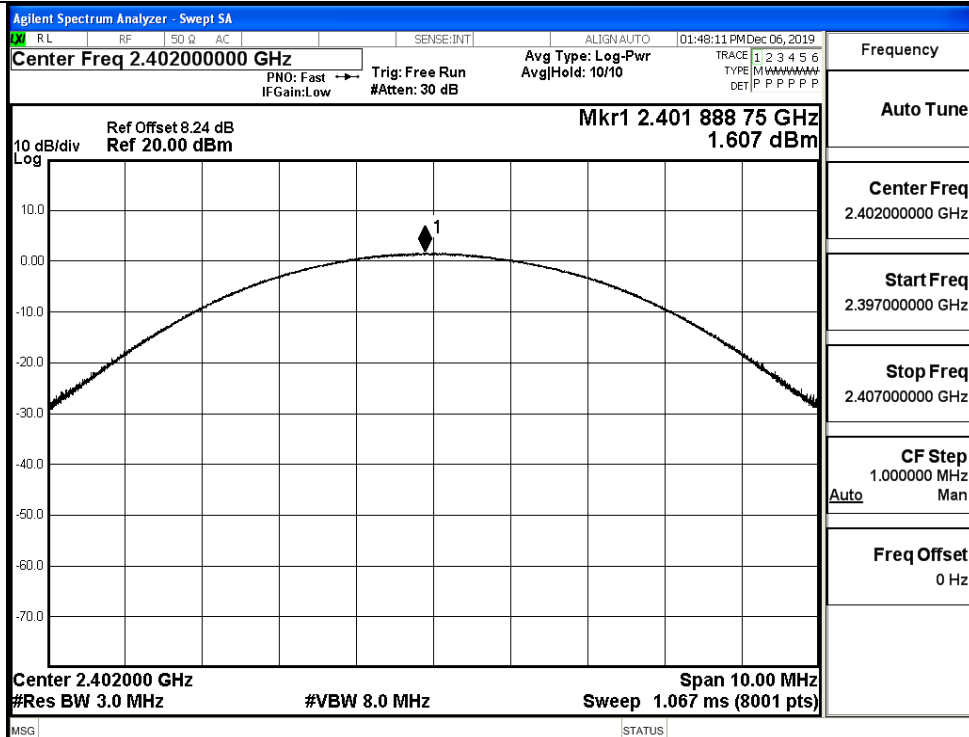


GFSK/HCH

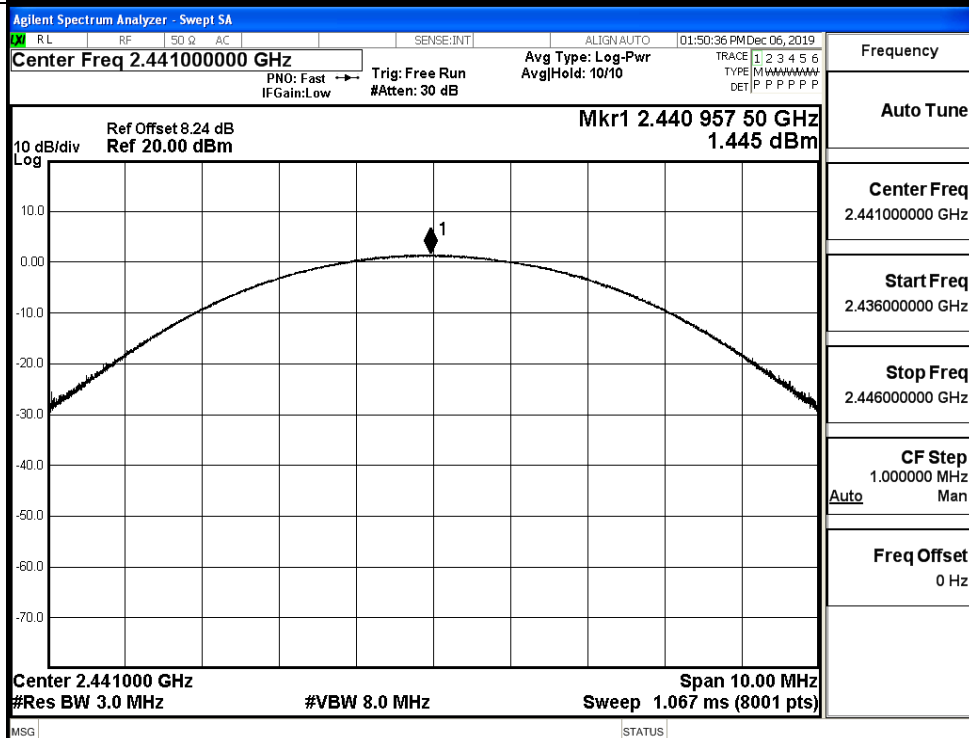
 $\pi$ /4DQPSK/LCH

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

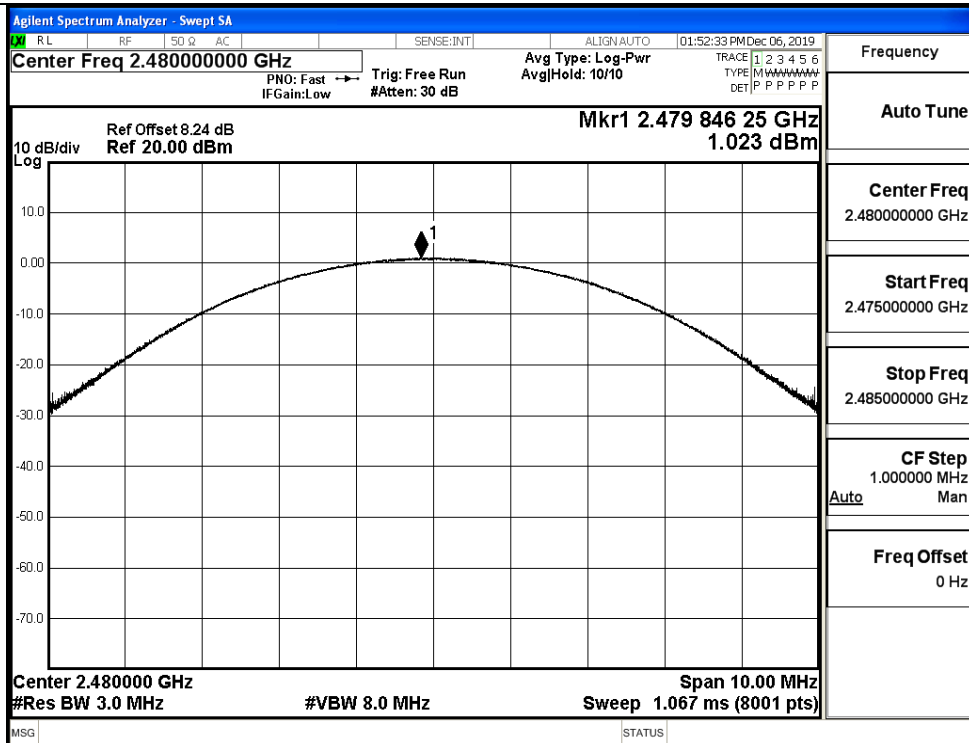
8DPSK/LCH



8DPSK/MCH



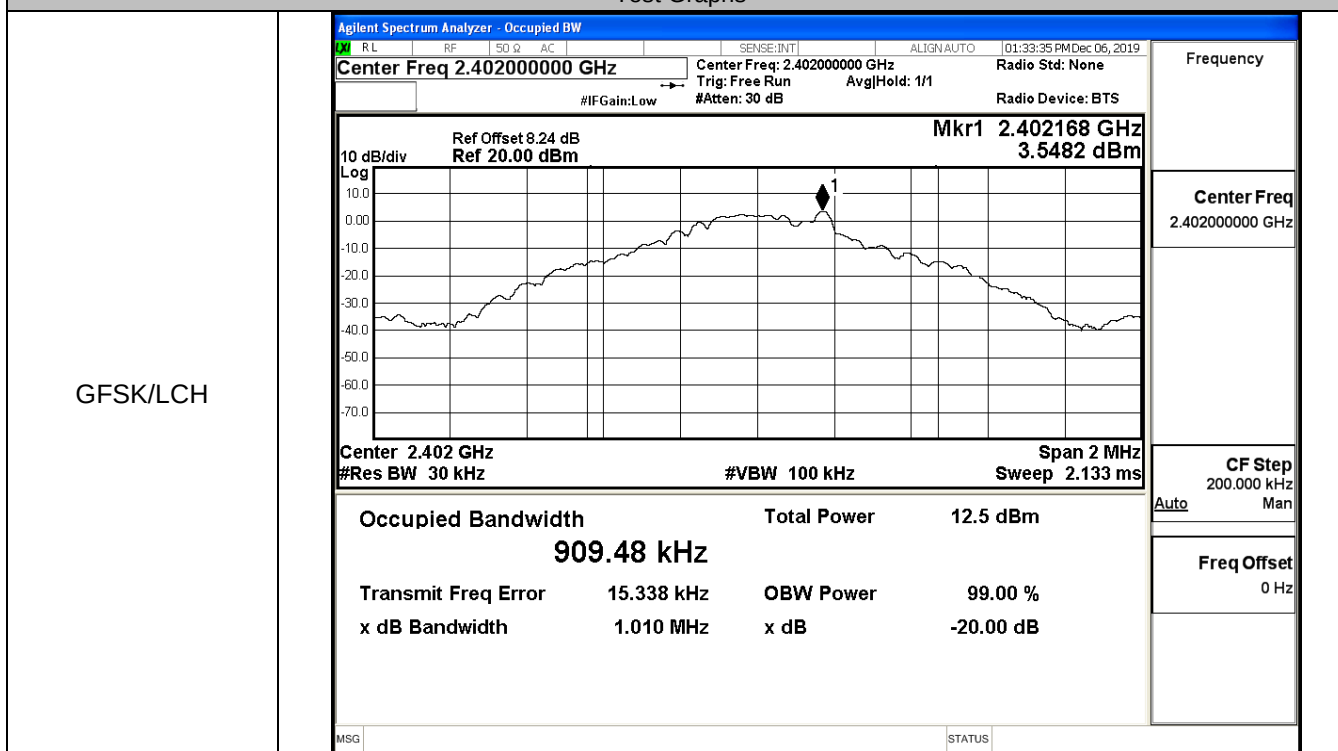
8DPSK/HCH



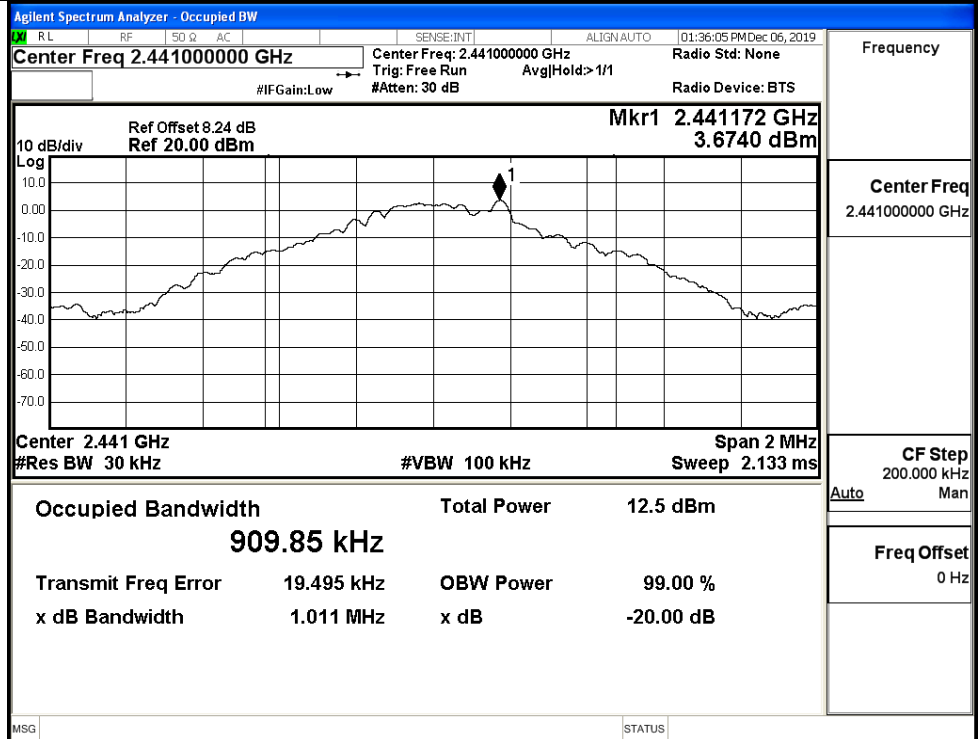
## A.2 20dB Bandwidth

| Mode          | Channel. | 20dB Bandwidth [MHz] | Limit [MHz]   | Verdict |
|---------------|----------|----------------------|---------------|---------|
| GFSK          | LCH      | 1.010                | Not Specified | PASS    |
|               | MCH      | 1.011                | Not Specified | PASS    |
|               | HCH      | 1.317                | Not Specified | PASS    |
| $\pi/4$ DQPSK | LCH      | 1.357                | Not Specified | PASS    |
|               | MCH      | 1.361                | Not Specified | PASS    |
|               | HCH      | 1.359                | Not Specified | PASS    |
| 8DPSK         | LCH      | 1.316                | Not Specified | PASS    |
|               | MCH      | 1.317                | Not Specified | PASS    |
|               | HCH      | 1.316                | Not Specified | PASS    |

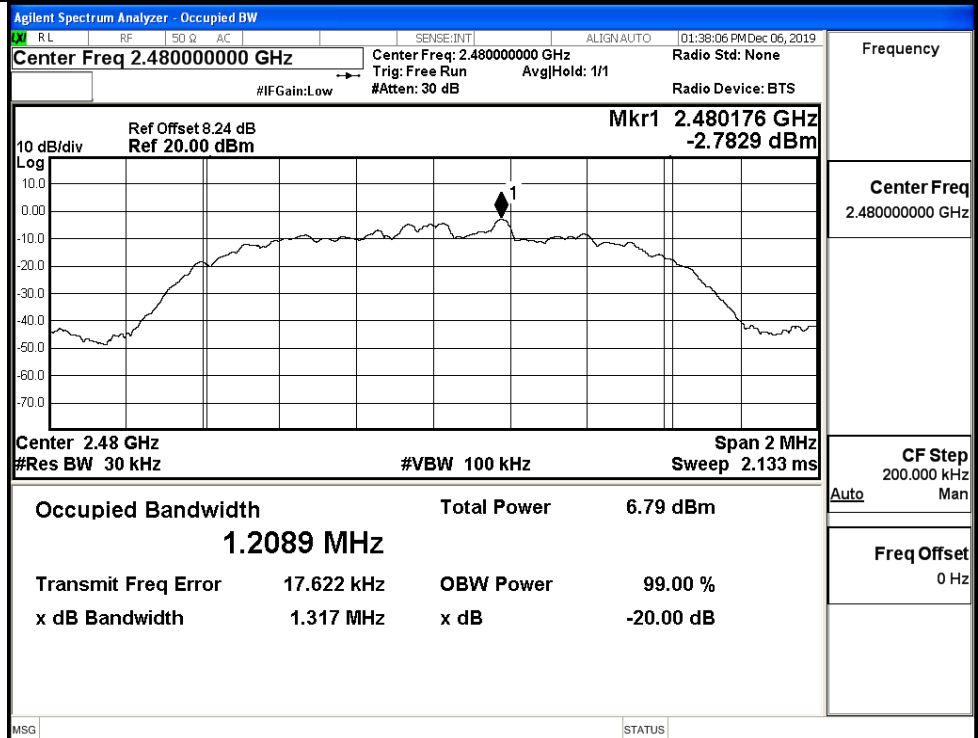
Test Graphs

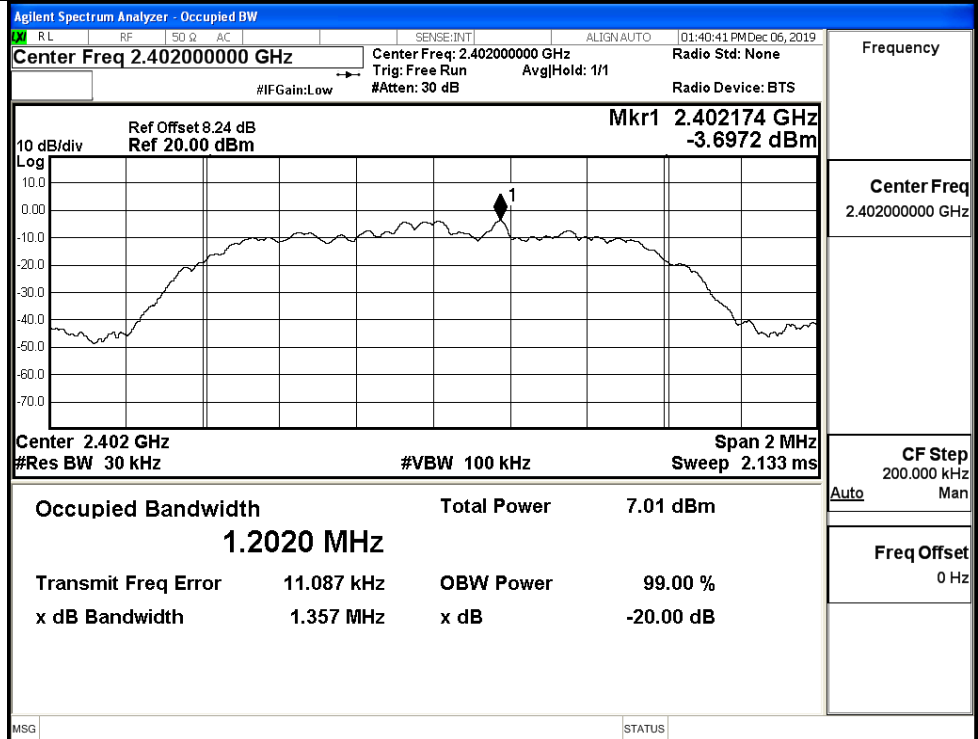
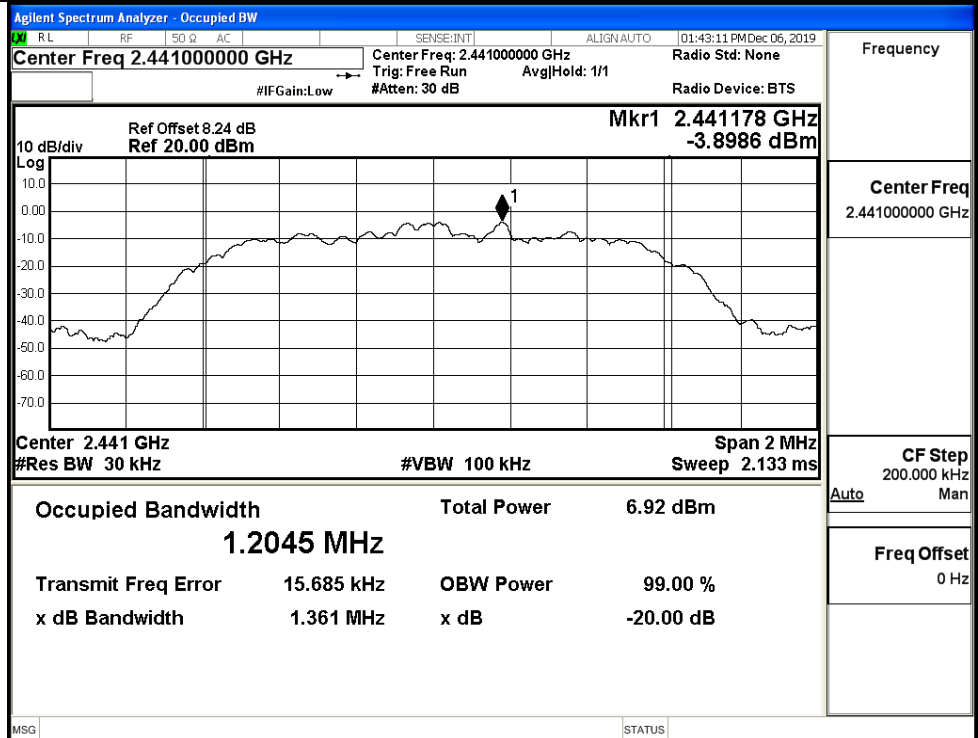


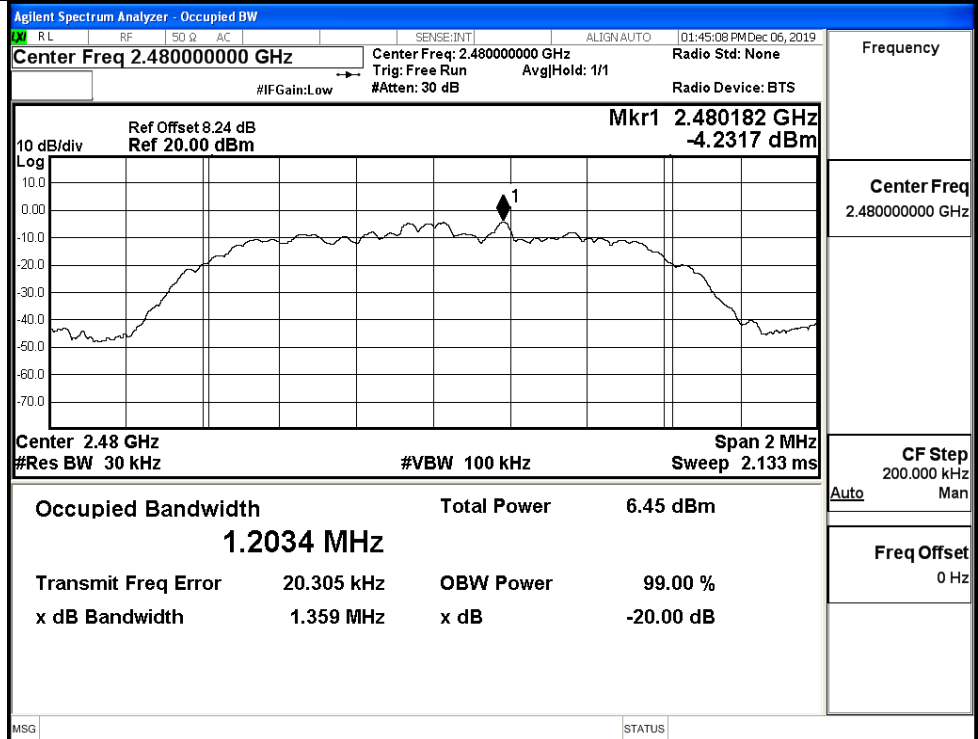
GFSK/MCH



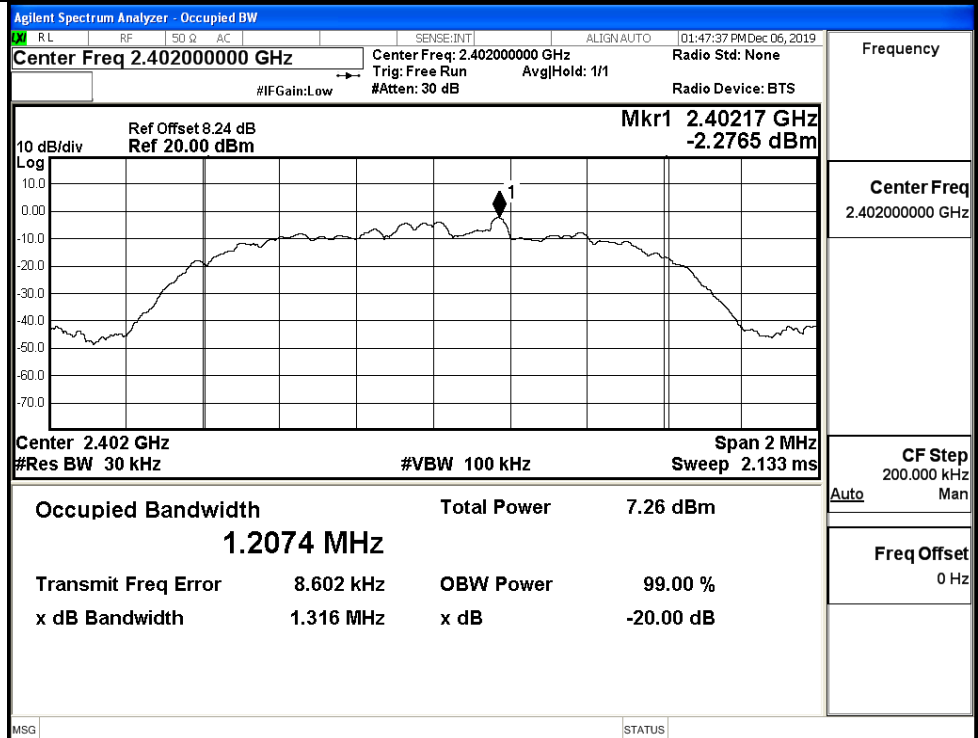
GFSK/HCH



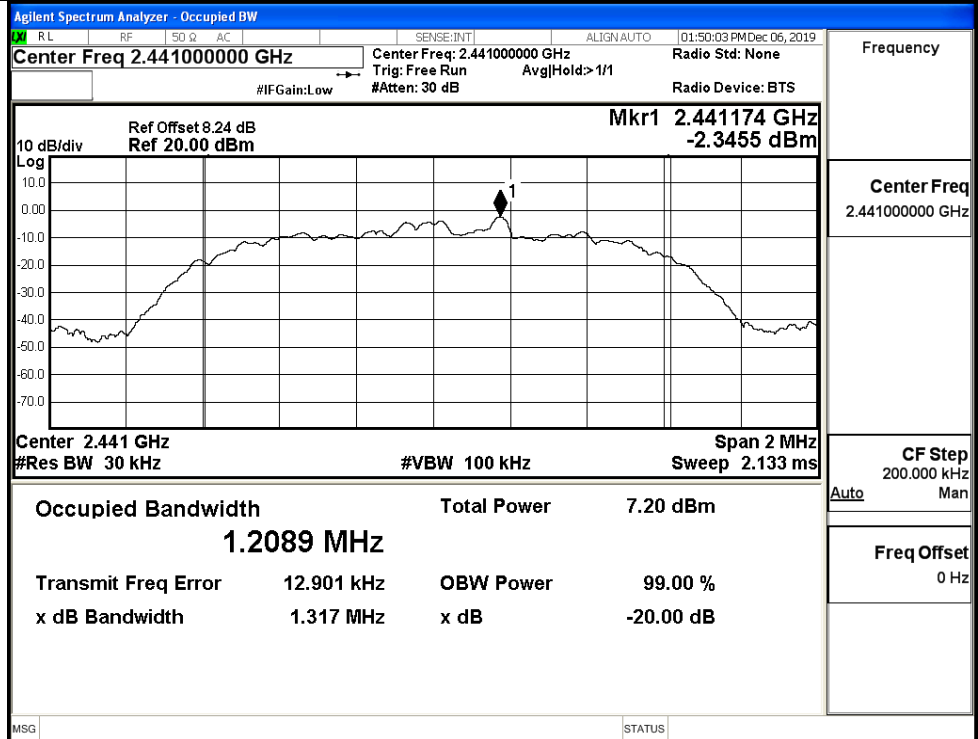
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

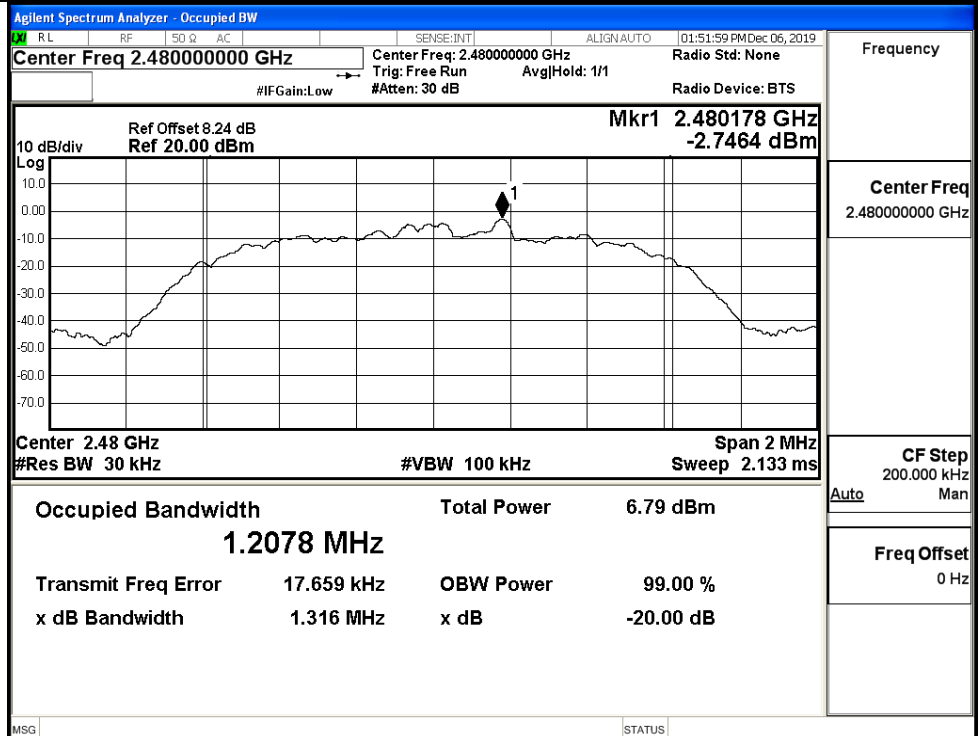
8DPSK/LCH



8DPSK/MCH



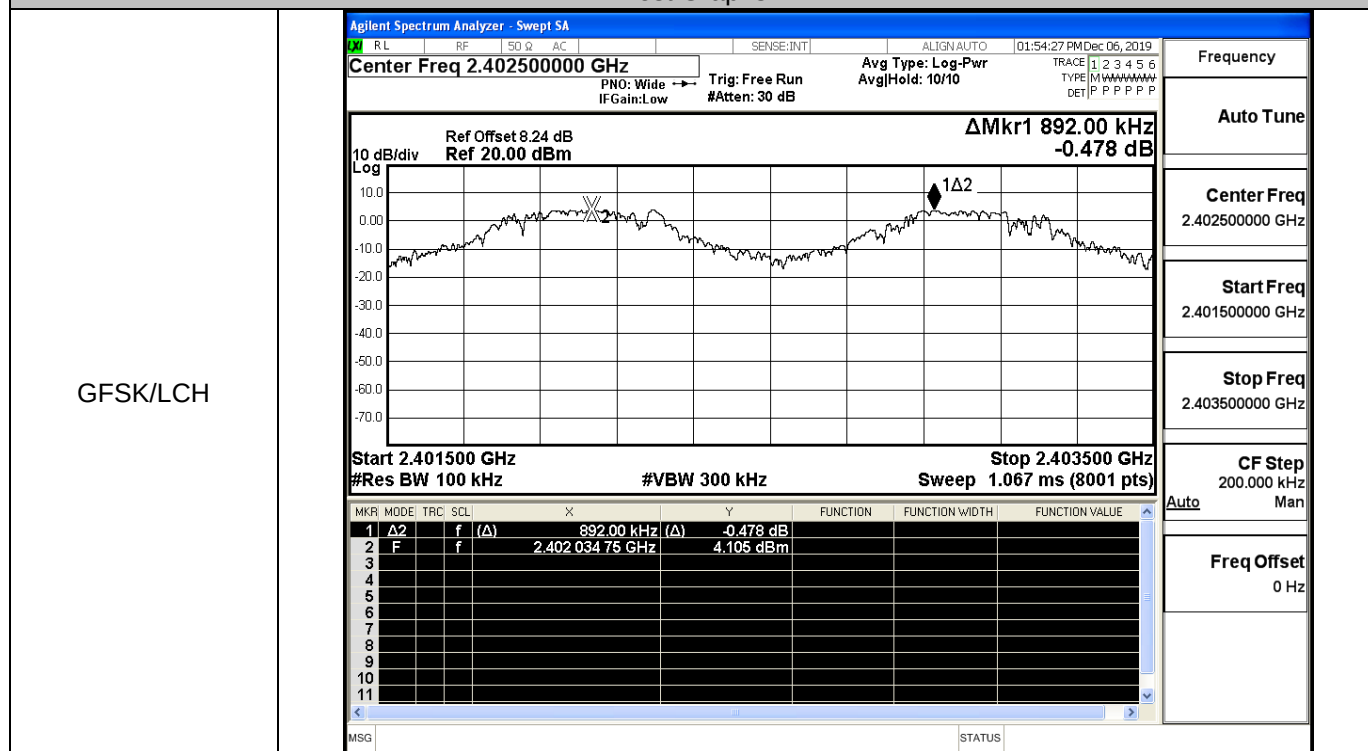
8DPSK/HCH



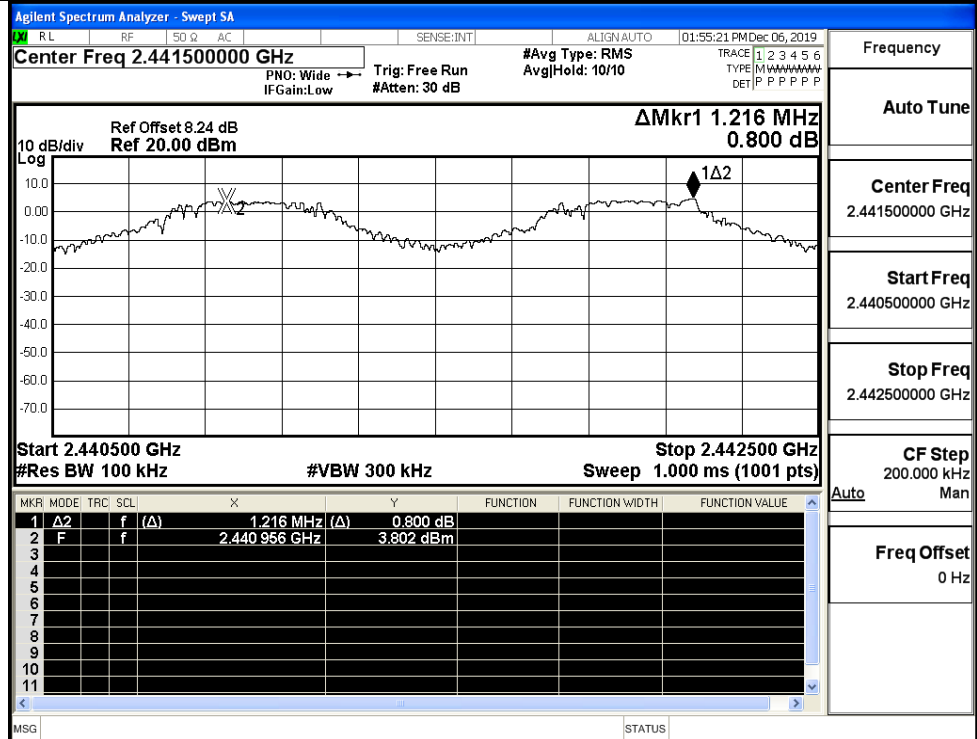
### A.3 Carrier Frequency Separation

| Mode          | Channel. | Carrier Frequency Separation [MHz] | Limit [MHz] | Verdict |
|---------------|----------|------------------------------------|-------------|---------|
| GFSK          | LCH      | 0.892                              | 0.878       | PASS    |
|               | MCH      | 1.216                              | 0.878       | PASS    |
|               | HCH      | 0.926                              | 0.878       | PASS    |
| $\pi/4$ DQPSK | LCH      | 1.090                              | 0.907       | PASS    |
|               | MCH      | 1.010                              | 0.907       | PASS    |
|               | HCH      | 0.996                              | 0.907       | PASS    |
| 8DPSK         | LCH      | 1.064                              | 0.878       | PASS    |
|               | MCH      | 0.974                              | 0.878       | PASS    |
|               | HCH      | 1.254                              | 0.878       | PASS    |

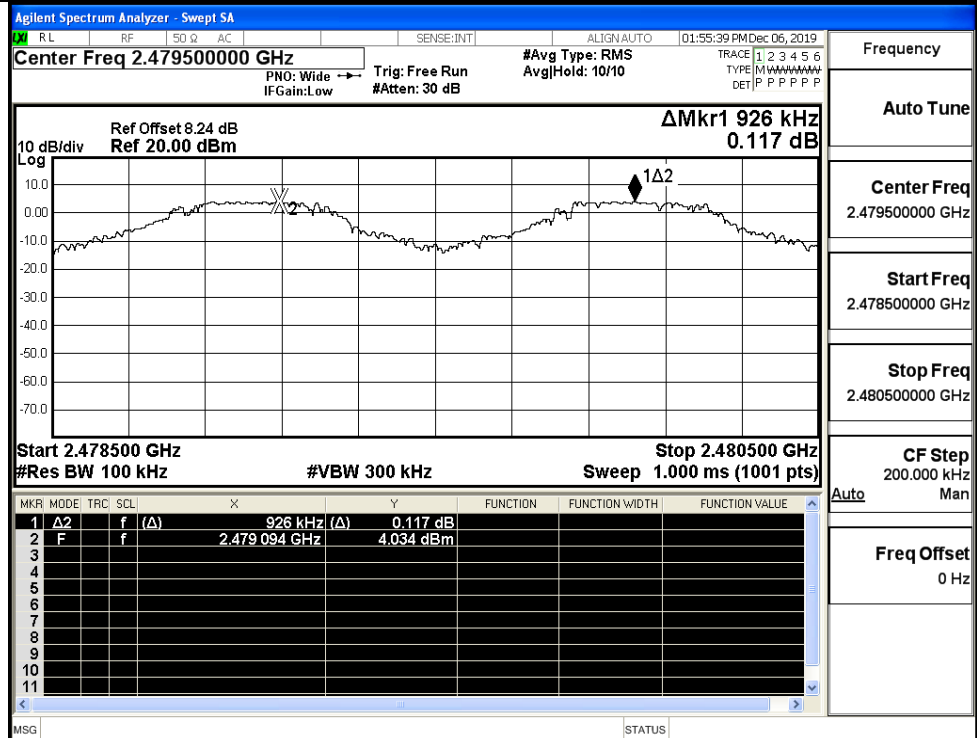
#### Test Graphs

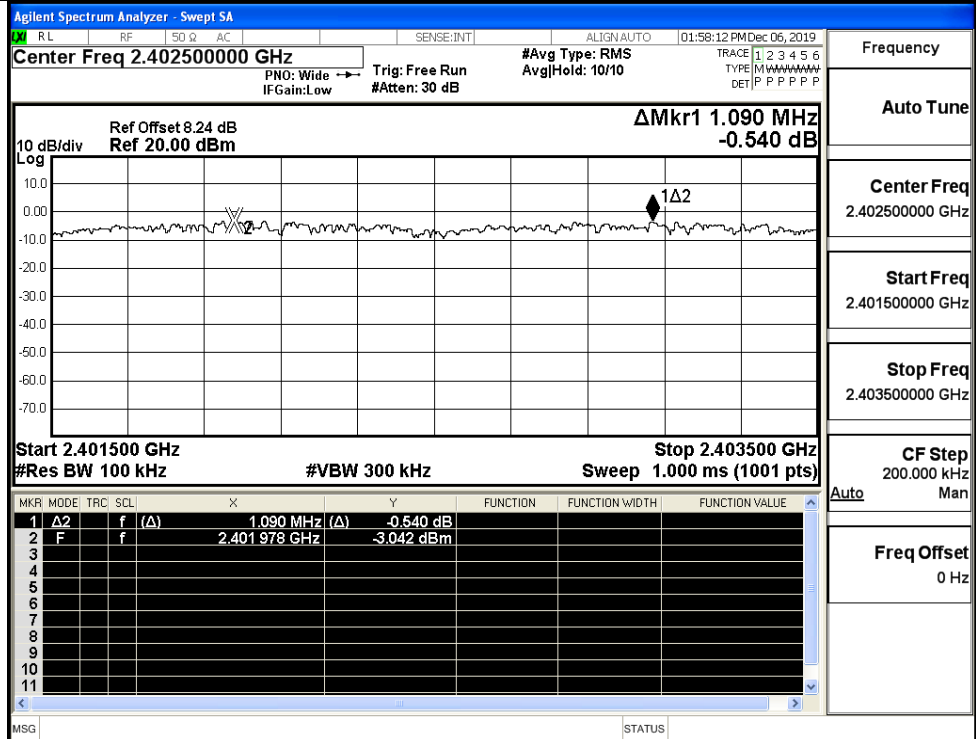
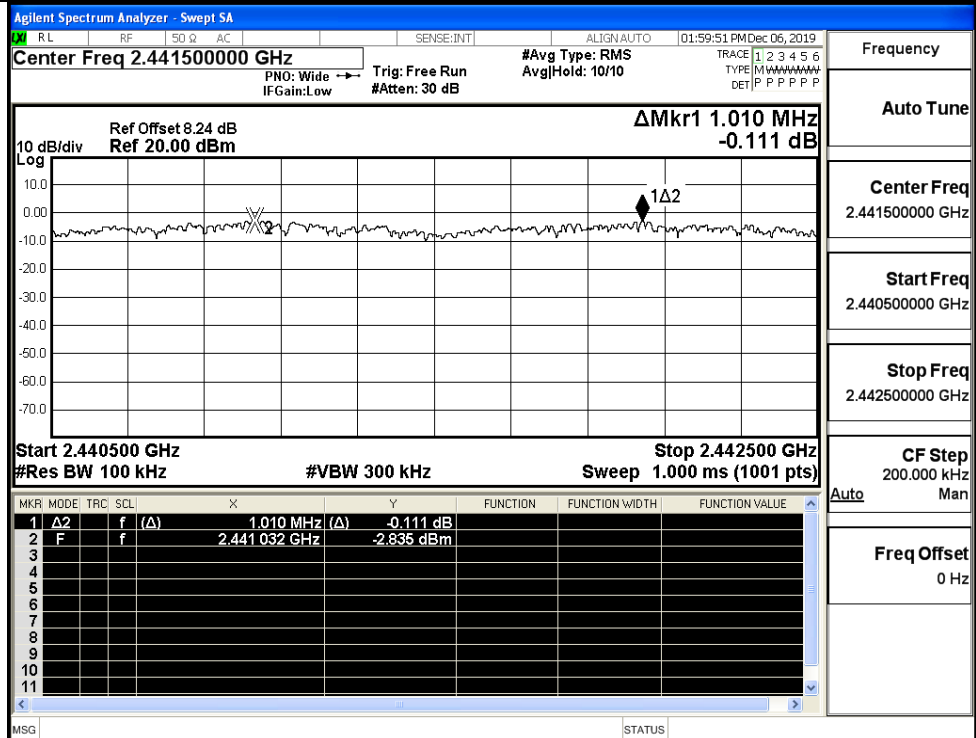


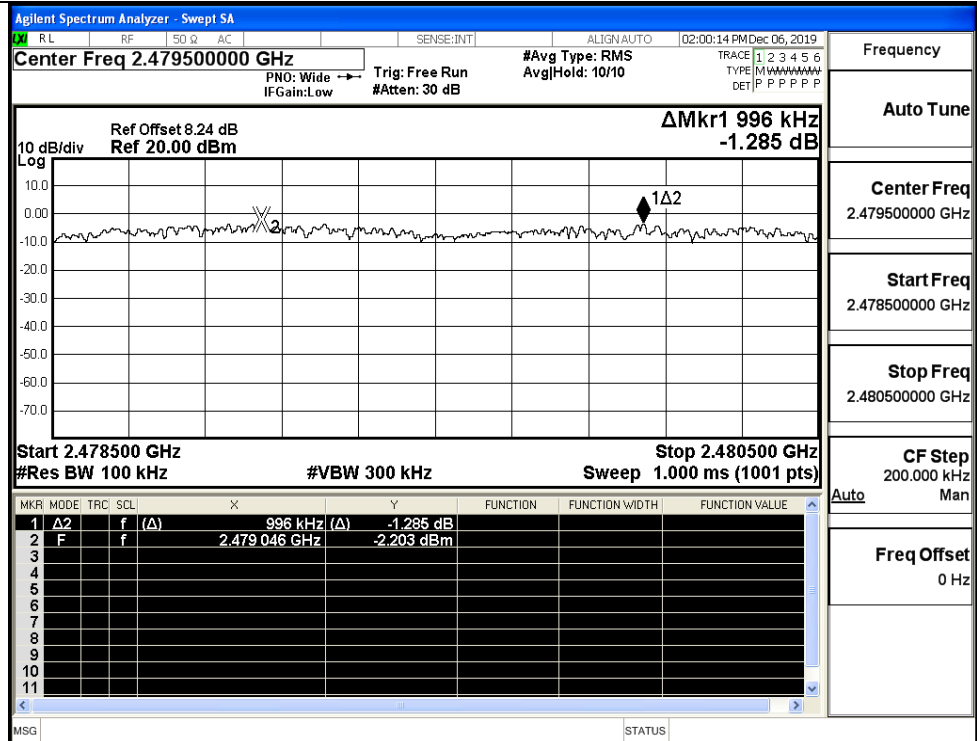
GFSK/MCH



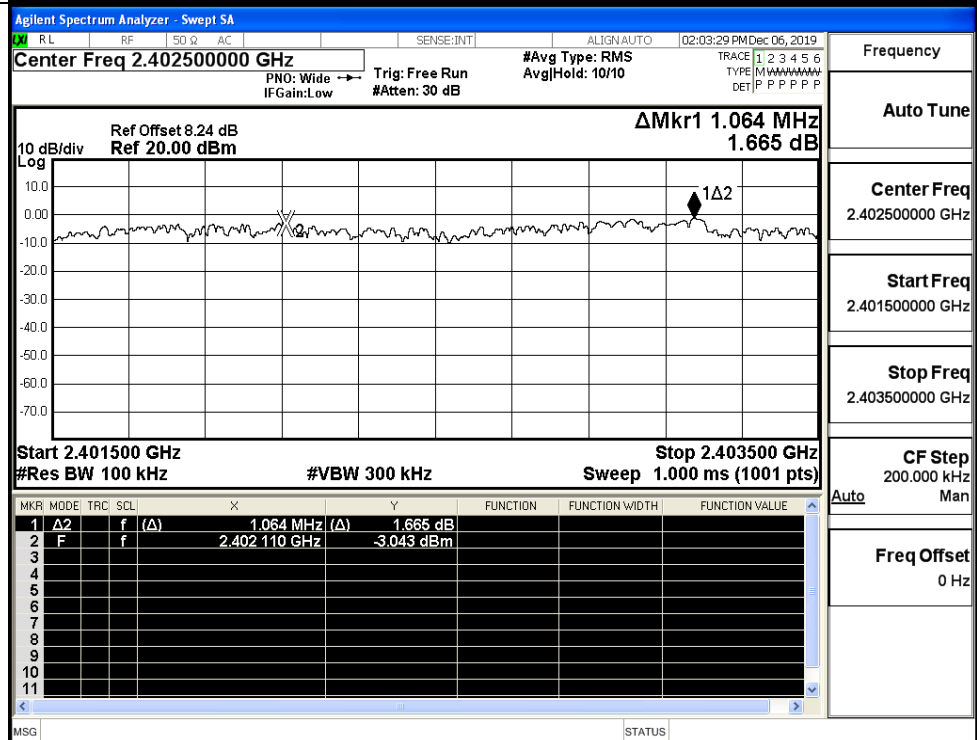
GFSK/HCH



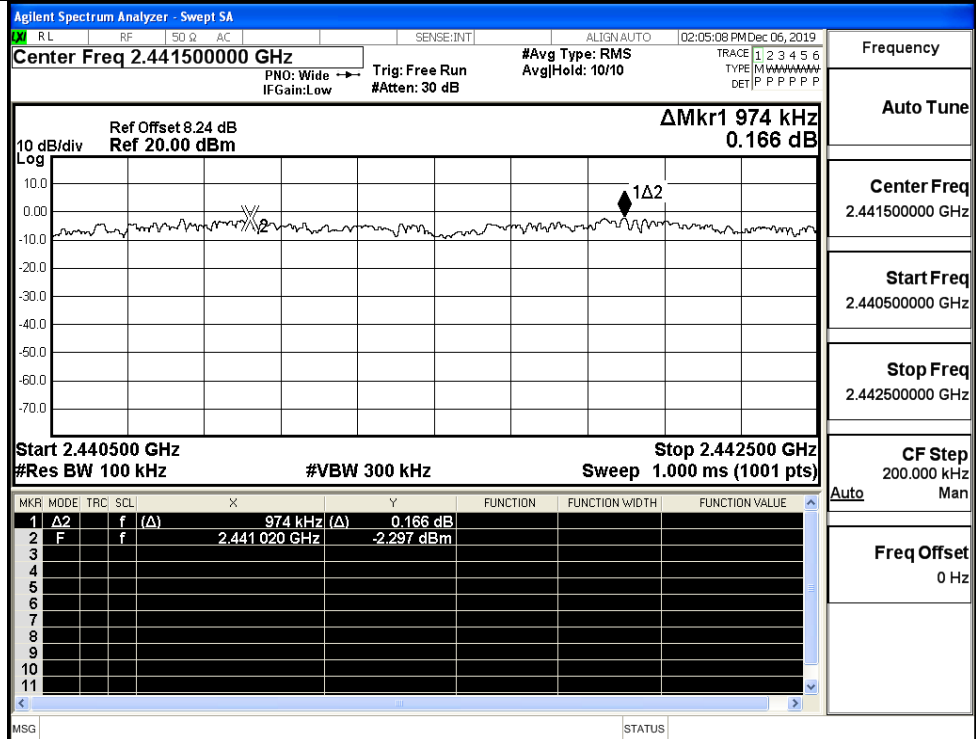
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

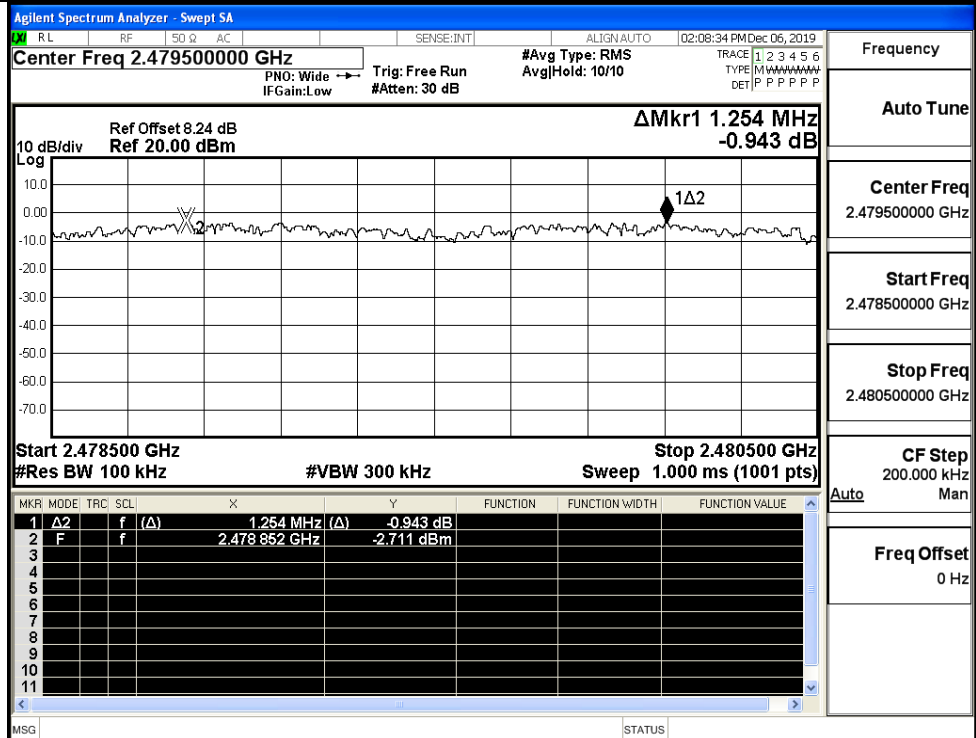
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

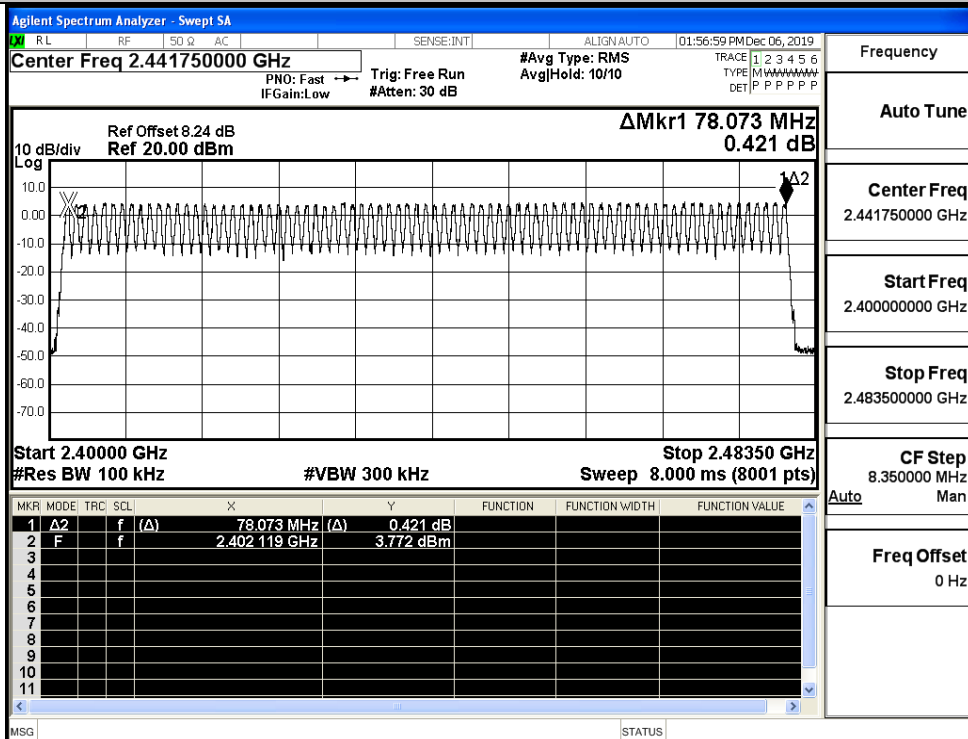
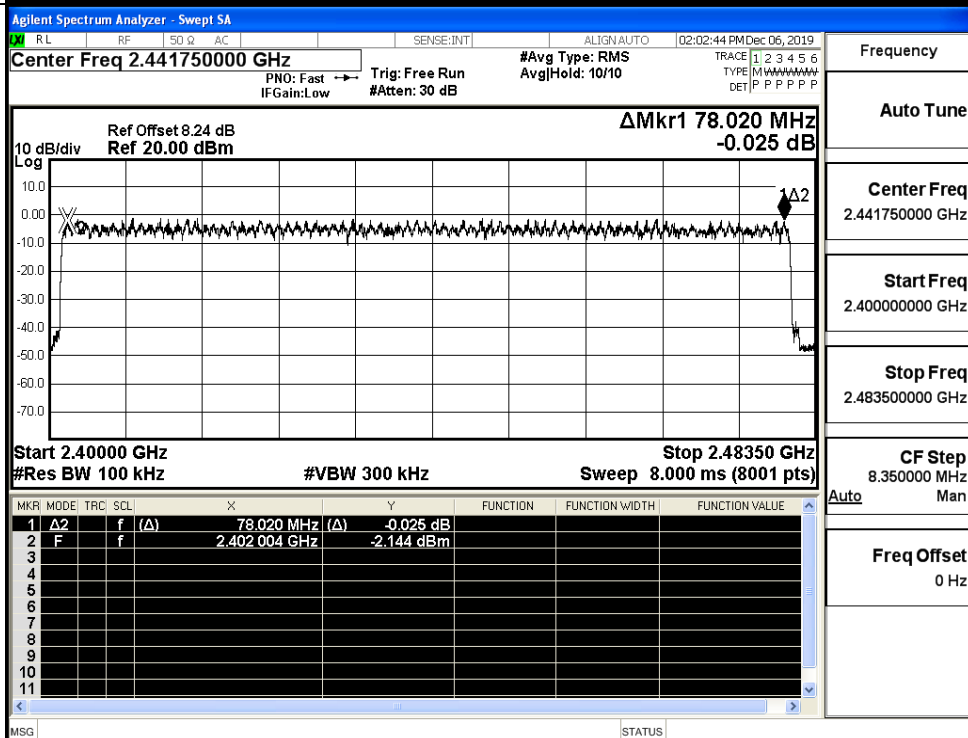


## A.4 Hopping Channel Number

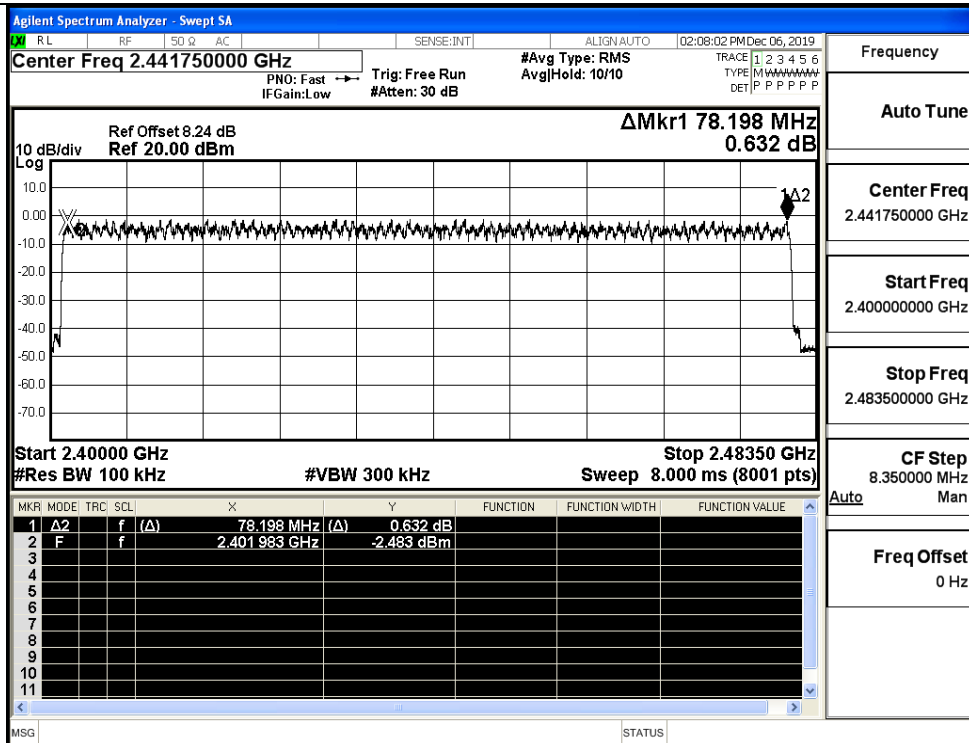
| Mode          | Channel. | Number of Hopping Channel [N] | Limit [N] | Verdict |
|---------------|----------|-------------------------------|-----------|---------|
| GFSK          | Hop      | 79                            | $\geq 15$ | PASS    |
| $\pi/4$ DQPSK | Hop      | 79                    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

### Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

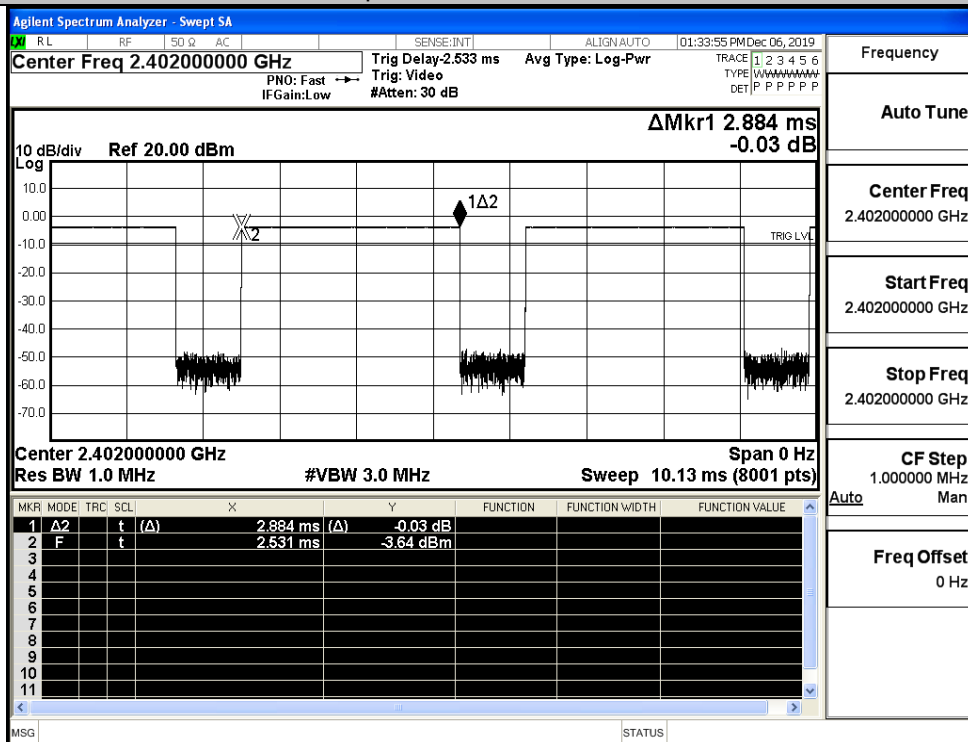


## A.5 Dwell Time

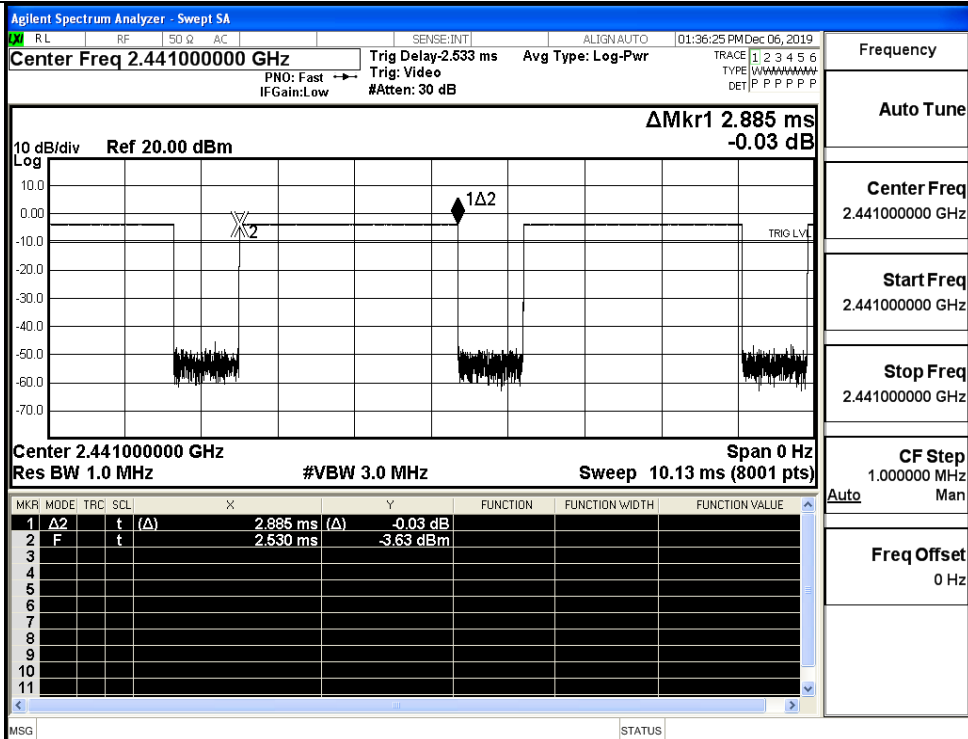
| Mode          | Packet | Channel | Burst Width<br>[ms/hop/ch] | Total<br>Hops[hop*ch] | Dwell Time[s] | Limit [s] | Verdict |
|---------------|--------|---------|----------------------------|-----------------------|---------------|-----------|---------|
| GFSK          | DH5    | LCH     | 2.88                       | 106.7                 | 0.307         | 0.4       | PASS    |
|               | DH5    | MCH     | 2.89                       | 106.7                 | 0.308         | 0.4       | PASS    |
|               | DH5    | HCH     | 2.89                       | 106.7                 | 0.308         | 0.4       | PASS    |
| $\pi/4$ DQPSK | 2DH5   | LCH     | 2.88                       | 106.7                 | 0.308         | 0.4       | PASS    |
|               | 2DH5   | MCH     | 2.89                       | 106.7                 | 0.308         | 0.4       | PASS    |
|               | 2DH5   | HCH     | 2.89                       | 106.7                 | 0.308         | 0.4       | PASS    |
| 8DPSK         | 3DH5   | LCH     | 2.88                       | 106.7                 | 0.308         | 0.4       | PASS    |
|               | 3DH5   | MCH     | 2.89                       | 106.7                 | 0.308         | 0.4       | PASS    |
|               | 3DH5   | HCH     | 2.89                       | 106.7                 | 0.308         | 0.4       | PASS    |

### Test Graphs

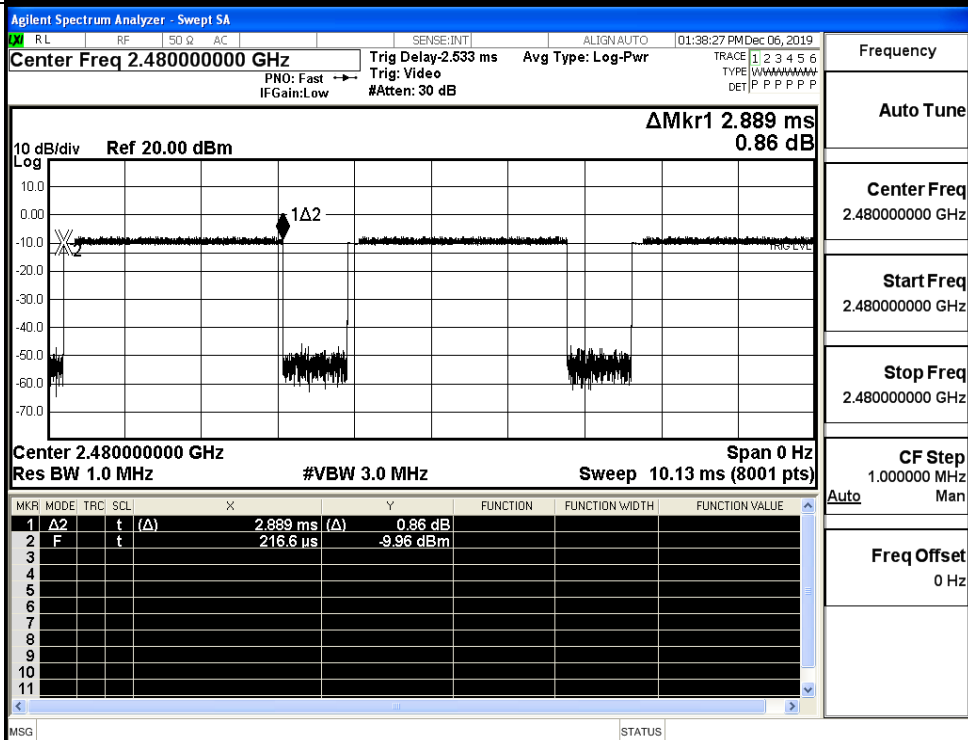
GFSK\_DH5/LCH



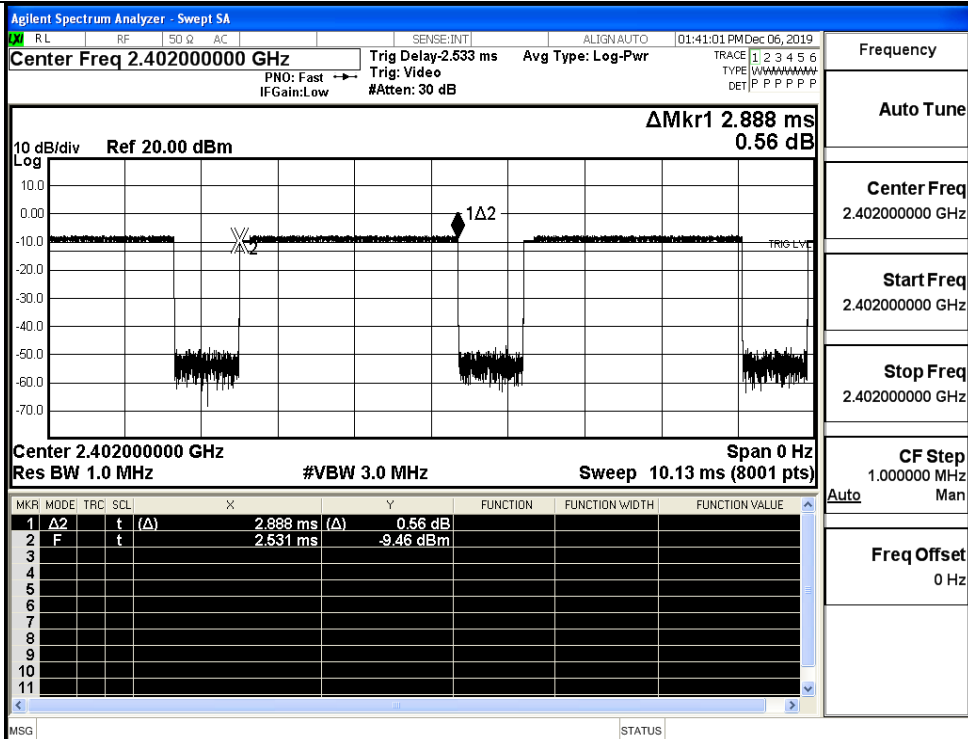
GFSK\_DH5/MCH



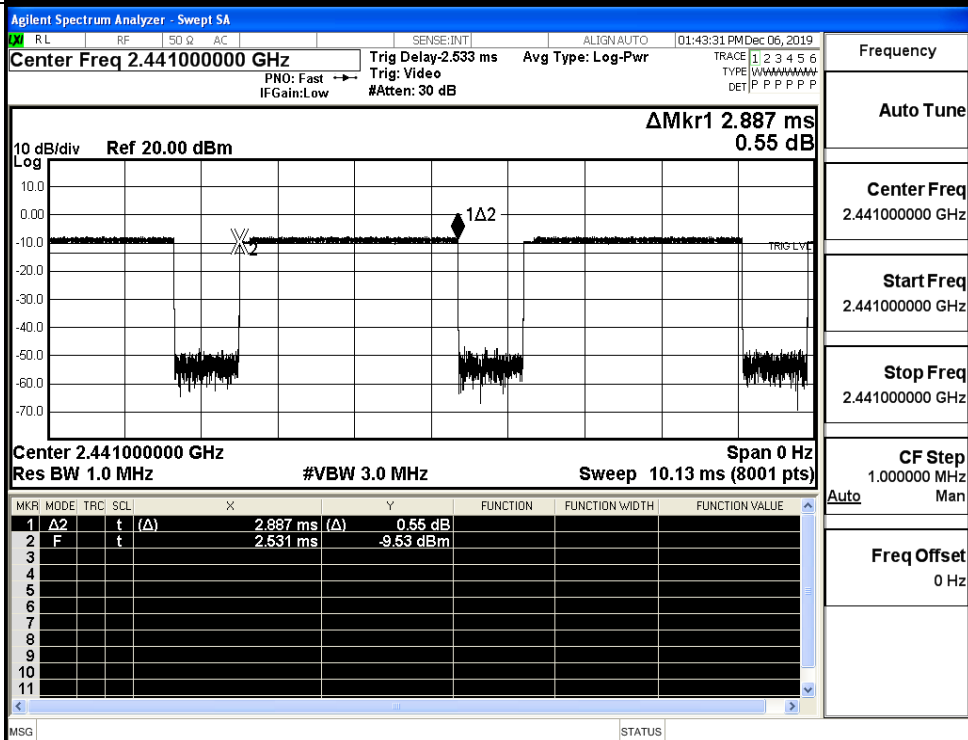
GFSK\_DH5/HCH



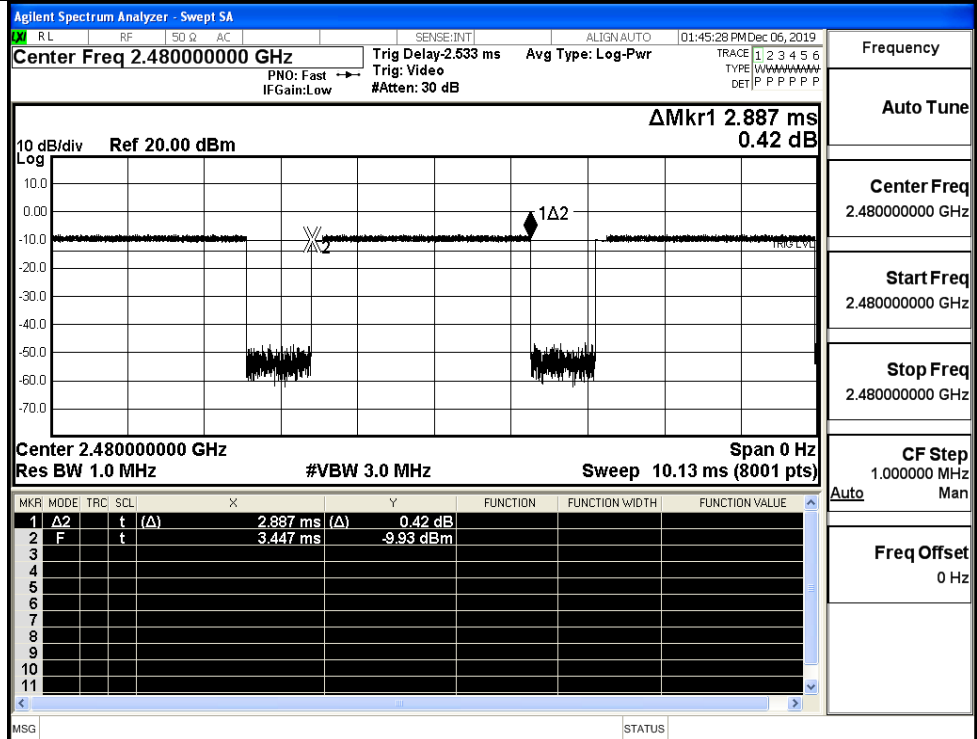
$\pi/4$ DQPSK  
\_2DH5/LCH



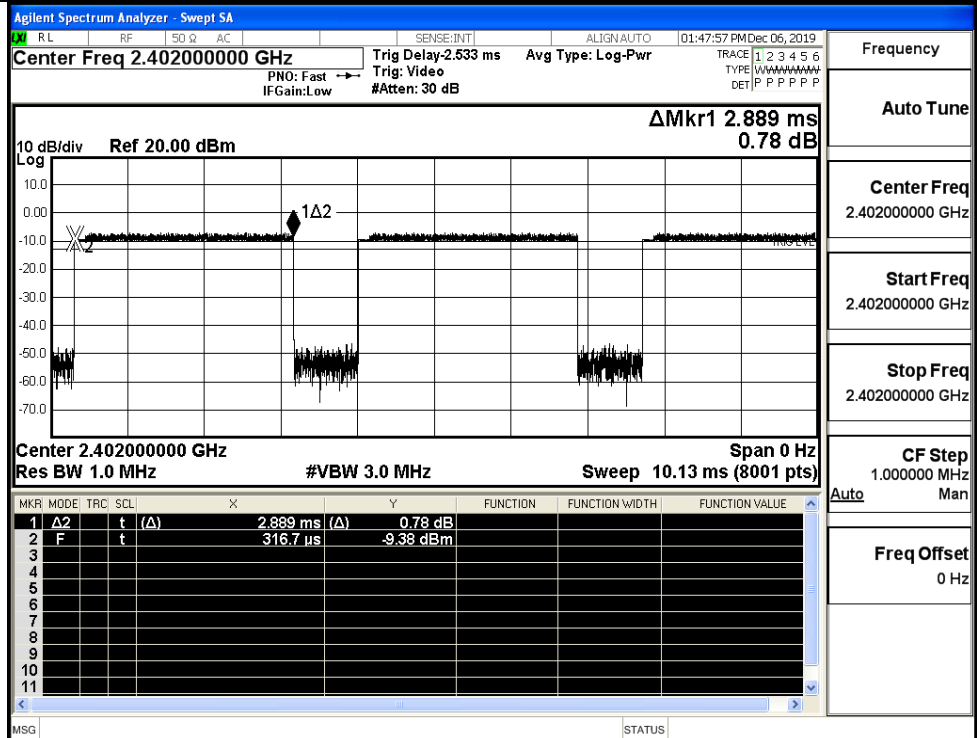
$\pi/4$ DQPSK  
\_2DH5/MCH



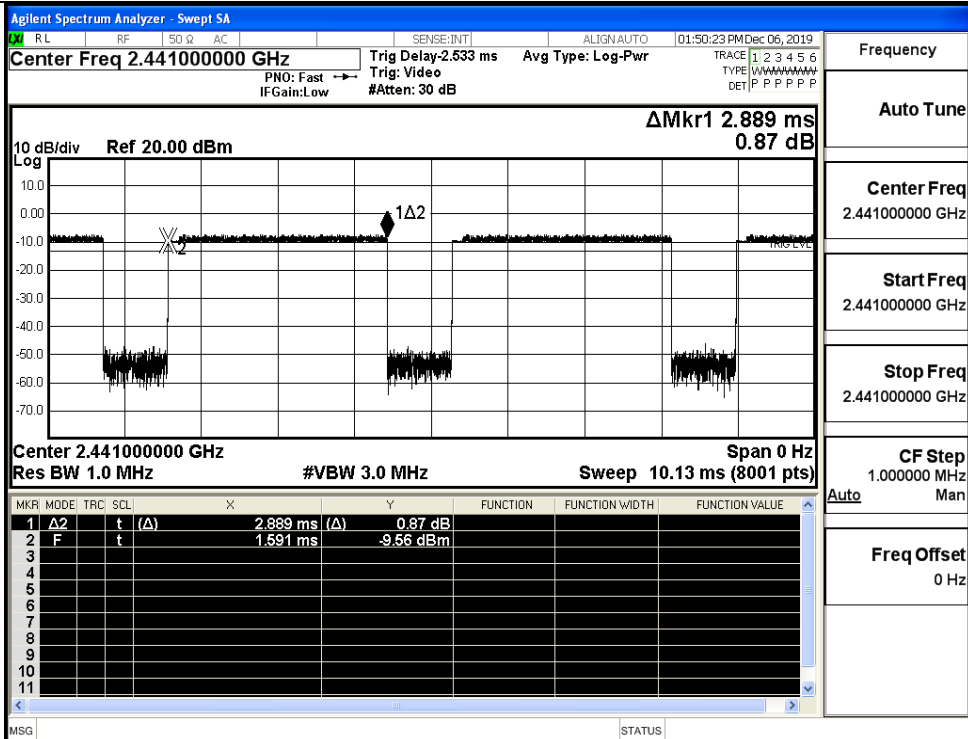
$\pi/4$ DQPSK  
\_2DH5/HCH



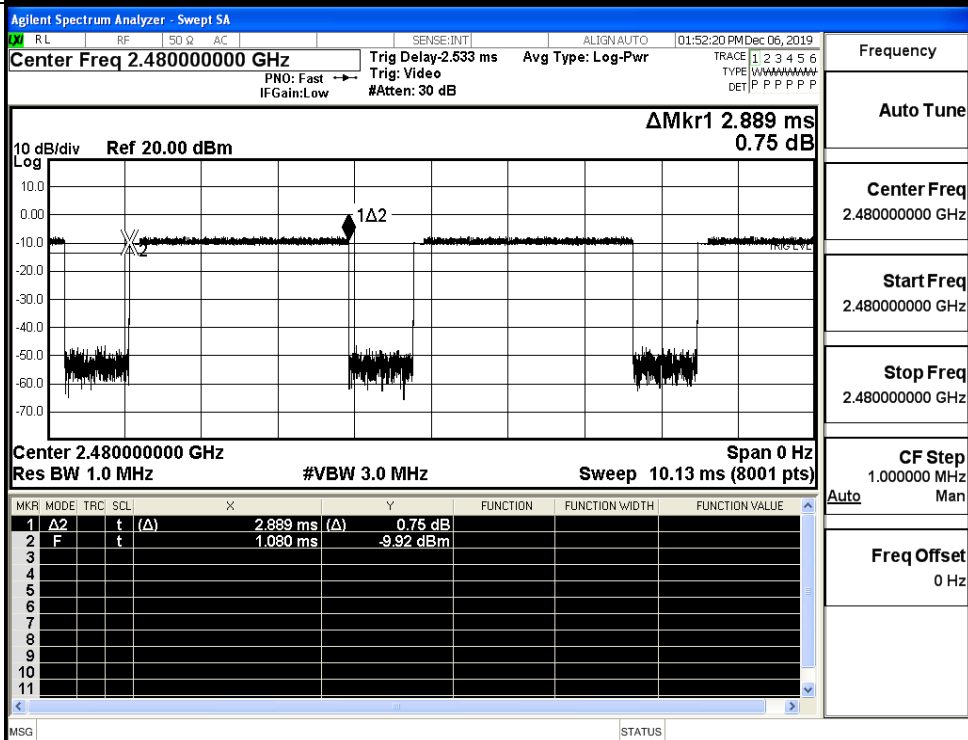
8DPSK \_3DH5/LCH



8DPSK\_3DH5/MCH



8DPSK\_3DH5/HCH

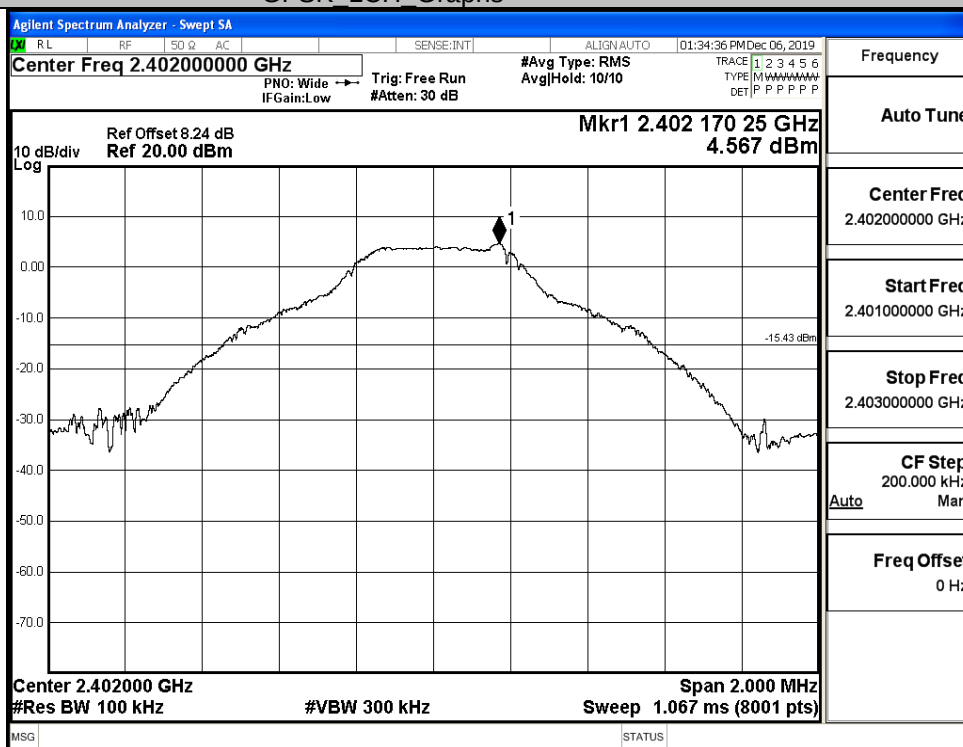


## A.6 RF Conducted Spurious Emissions

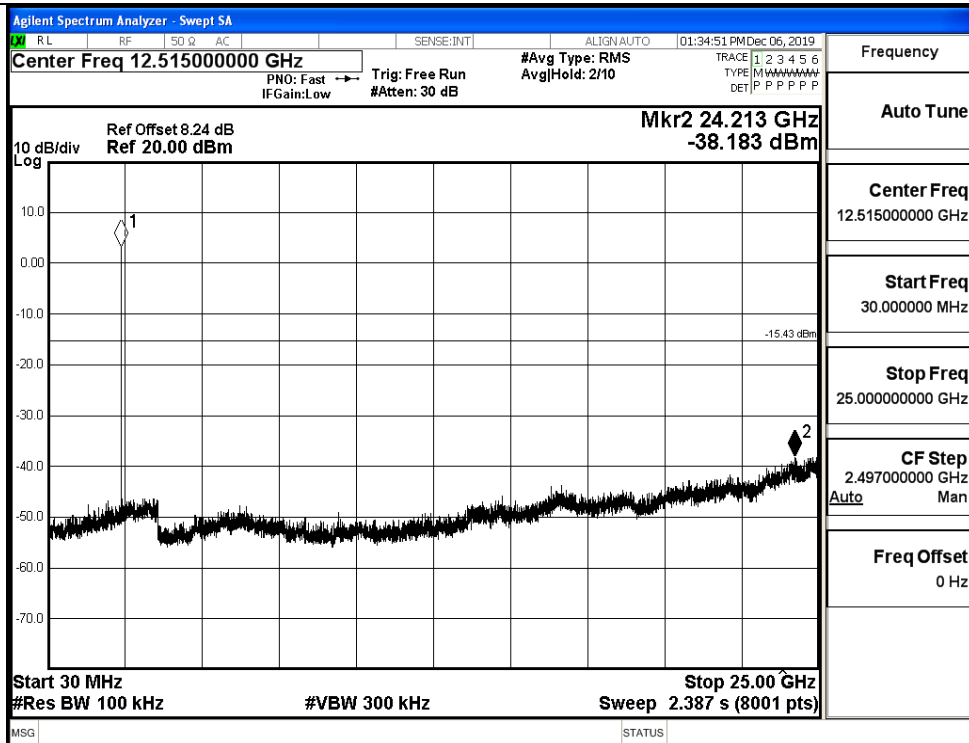
| Mode          | Channel | Pref [dBm] | Max. Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|------------|------------------|-------------|---------|
| GFSK          | LCH     | 4.567      | -38.183          | -15.433     | PASS    |
|               | MCH     | 4.66       | -37.320          | -15.340     | PASS    |
|               | HCH     | -1.782     | -37.331          | -21.782     | PASS    |
| $\pi/4$ DQPSK | LCH     | -1.459     | -37.490          | -21.459     | PASS    |
|               | MCH     | -1.599     | -36.827          | -21.599     | PASS    |
|               | HCH     | -2.466     | -36.211          | -22.466     | PASS    |
| 8DPSK         | LCH     | -1.29      | -37.446          | -21.290     | PASS    |
|               | MCH     | -1.401     | -37.601          | -21.401     | PASS    |
|               | HCH     | -1.826     | -37.786          | -21.826     | PASS    |

GFSK LCH Graphs

Pref

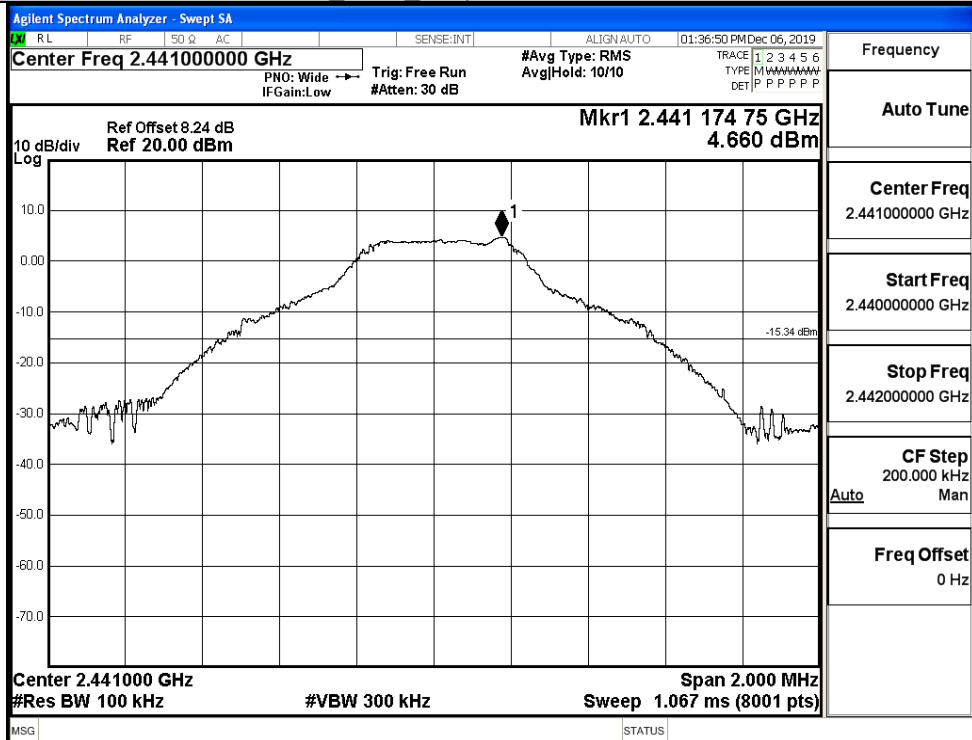


Puw

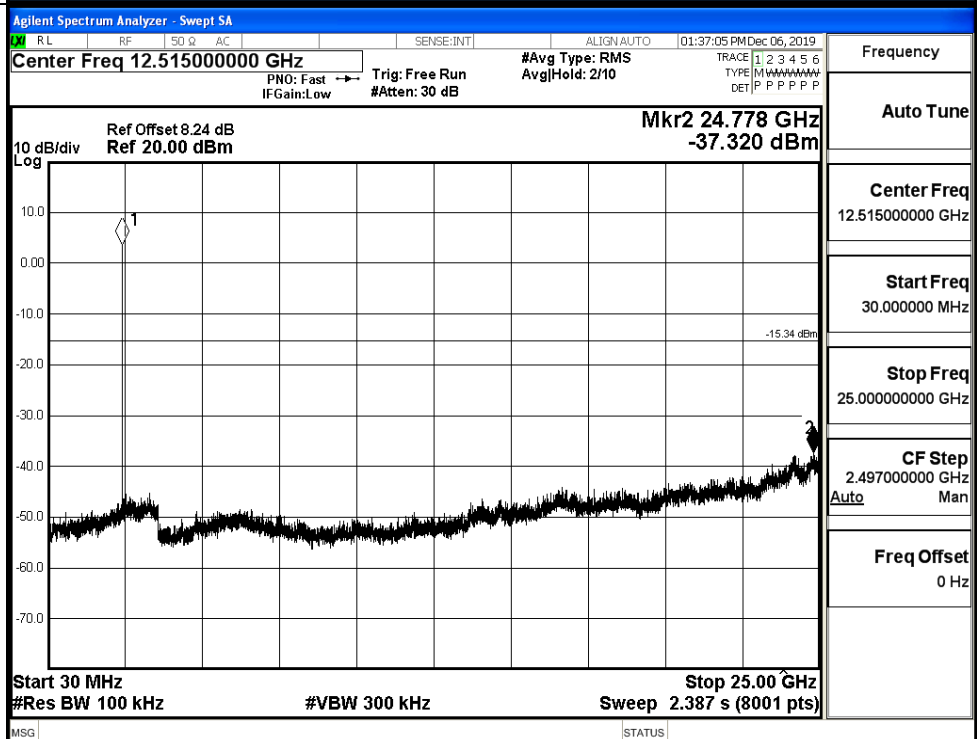


## GFSK\_MCH\_Graphs

Pref

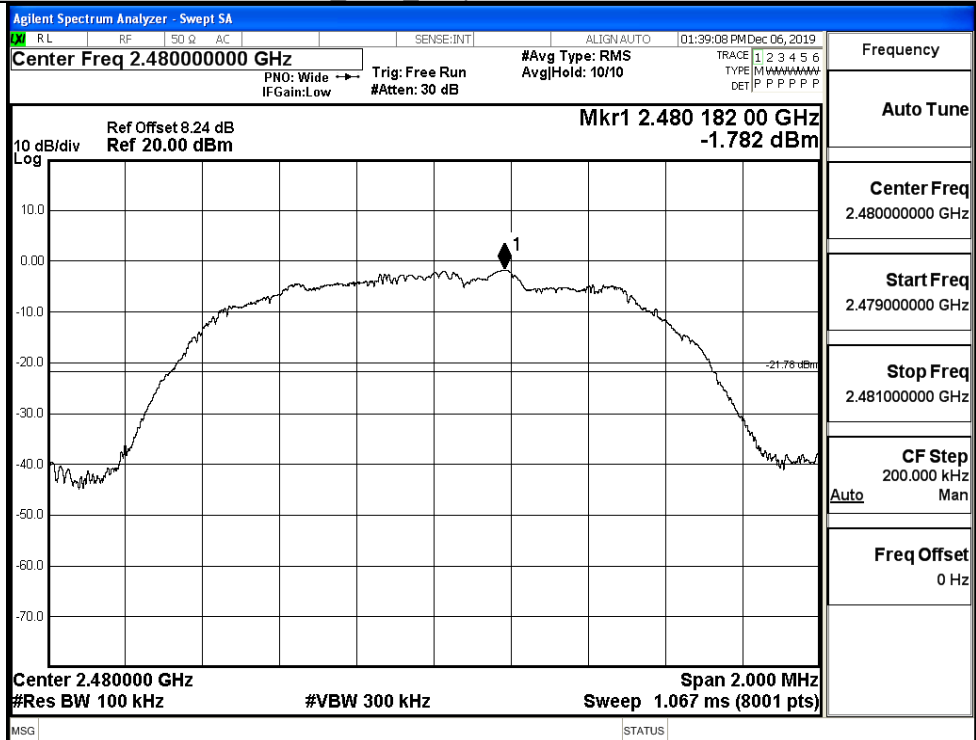


Puw

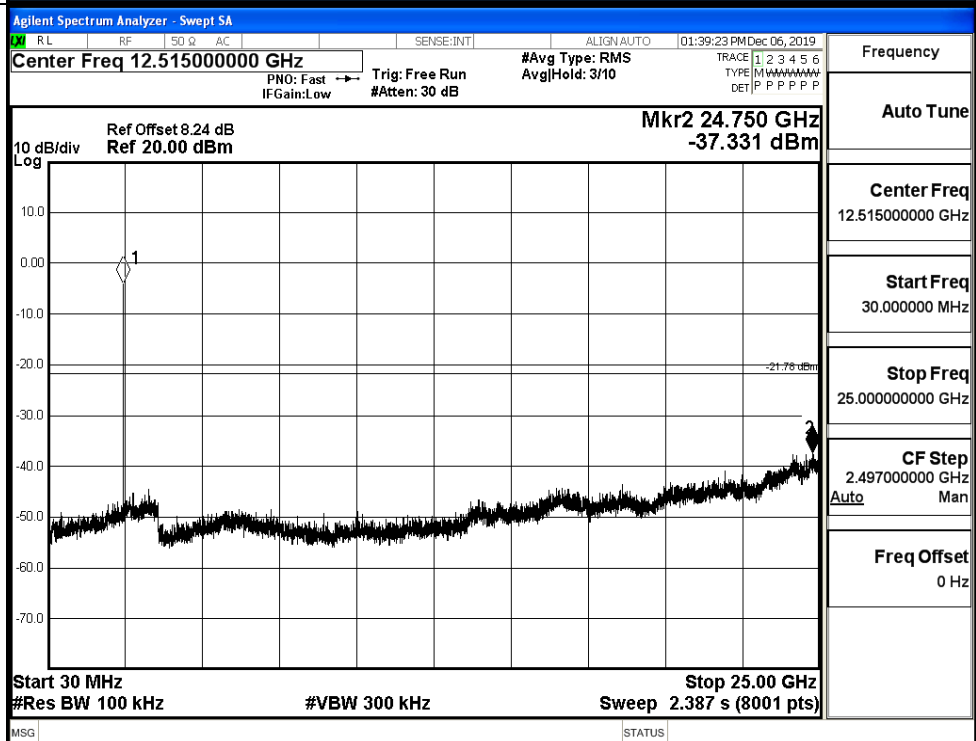


## GFSK HCH Graphs

Pref

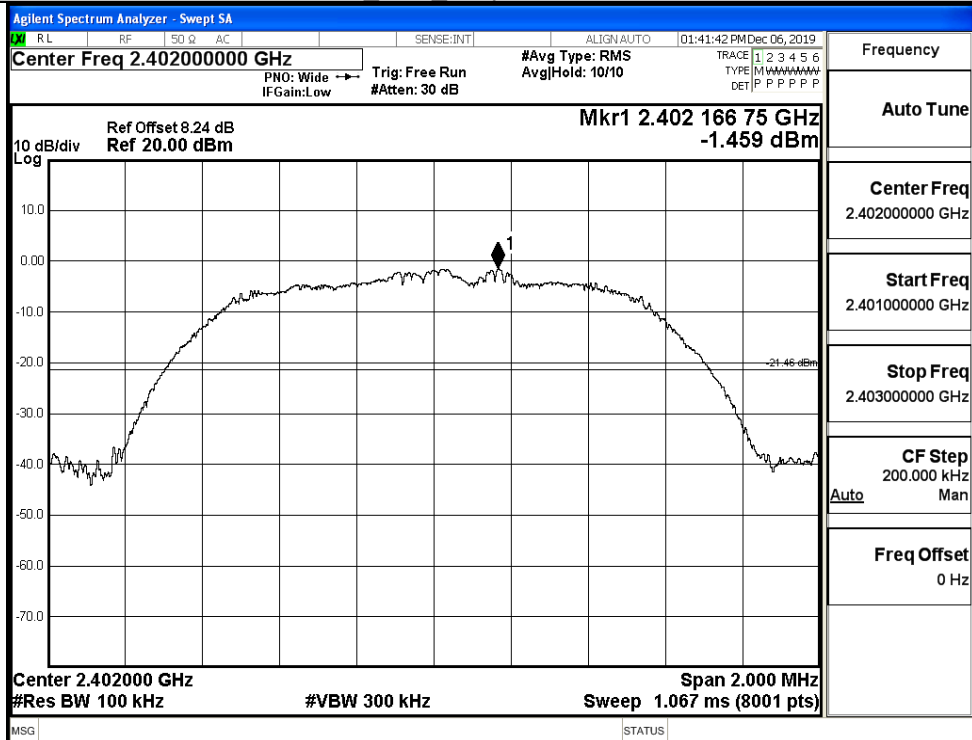


Puw

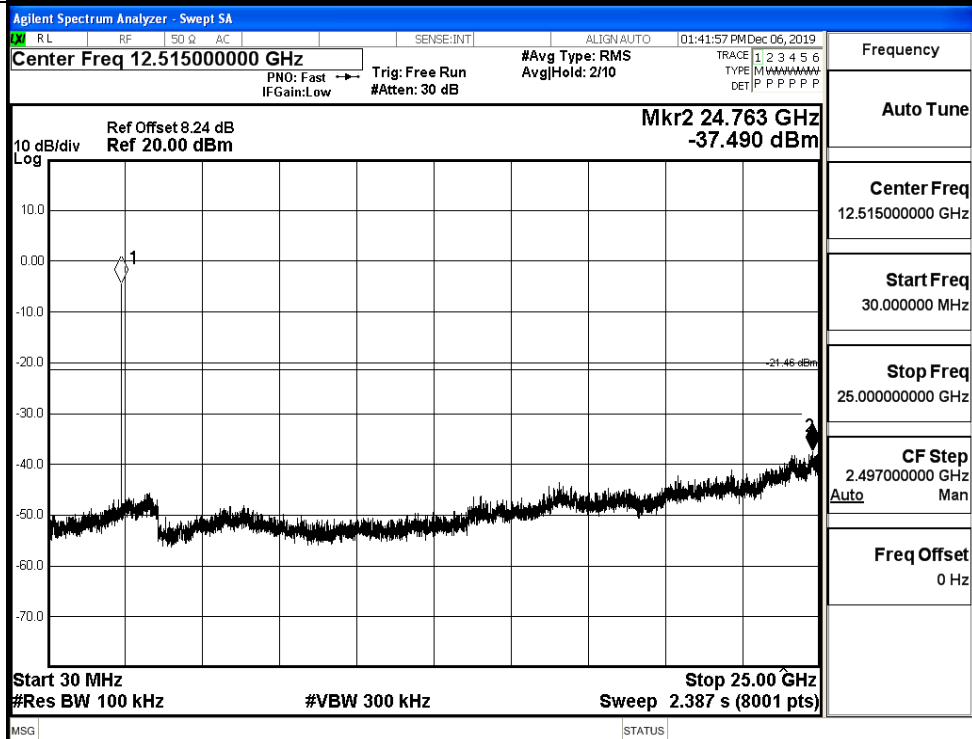


$\pi/4$ DQPSK\_LCH\_Graphs

Pref

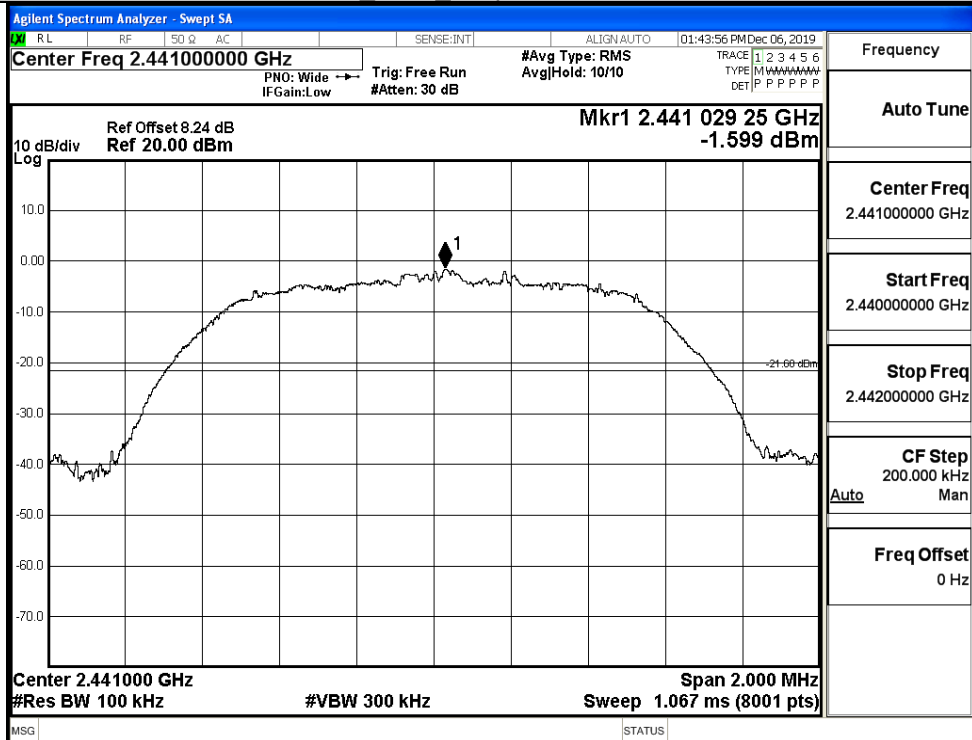


Puw

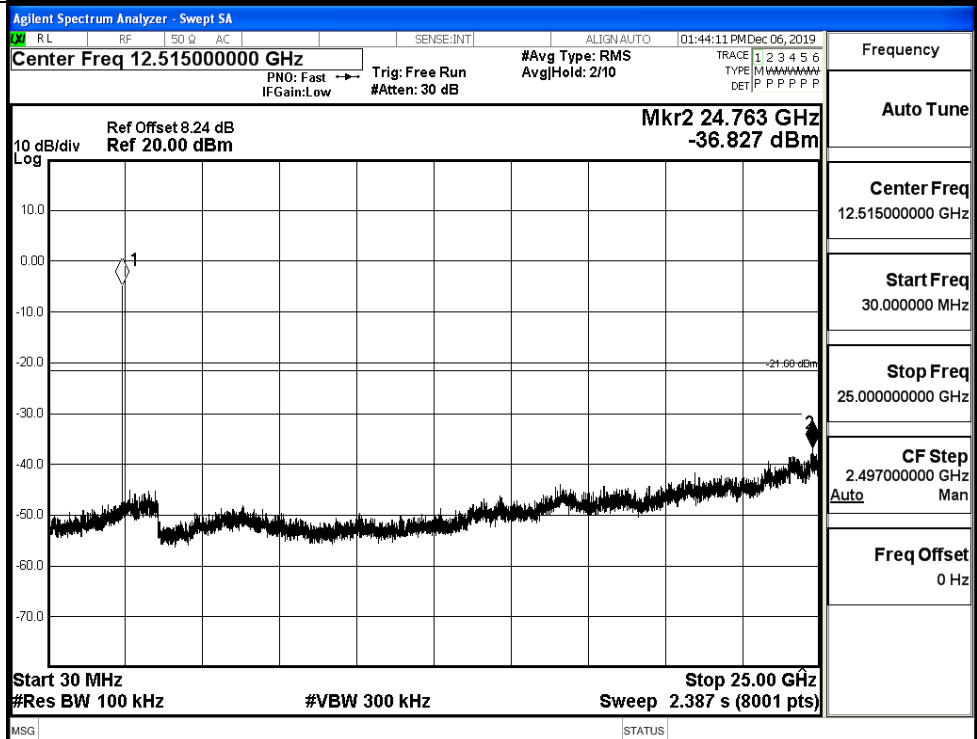


$\pi/4$ DQPSK\_MCH\_Graphs

Pref

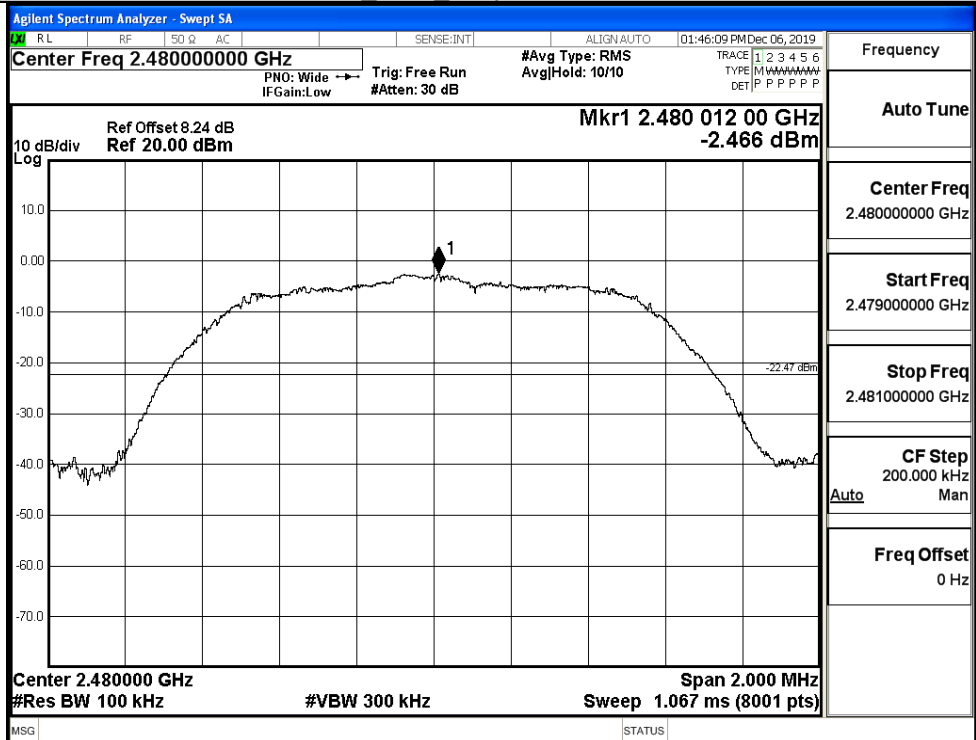


Puw

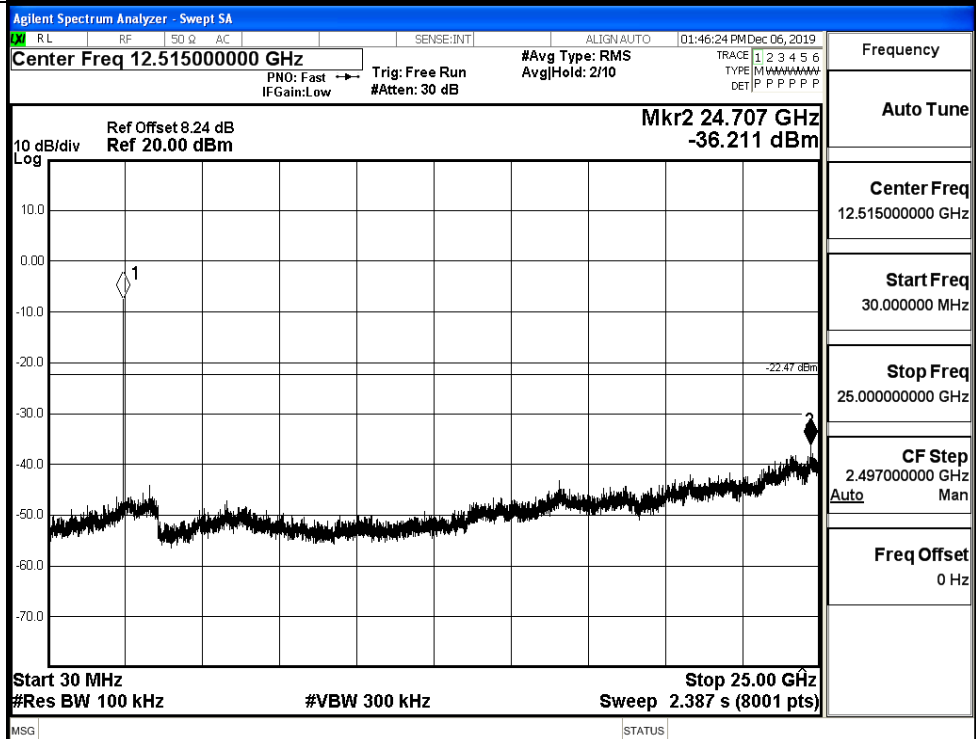


$\pi/4$ DQPSK\_HCH\_Graphs

Pref

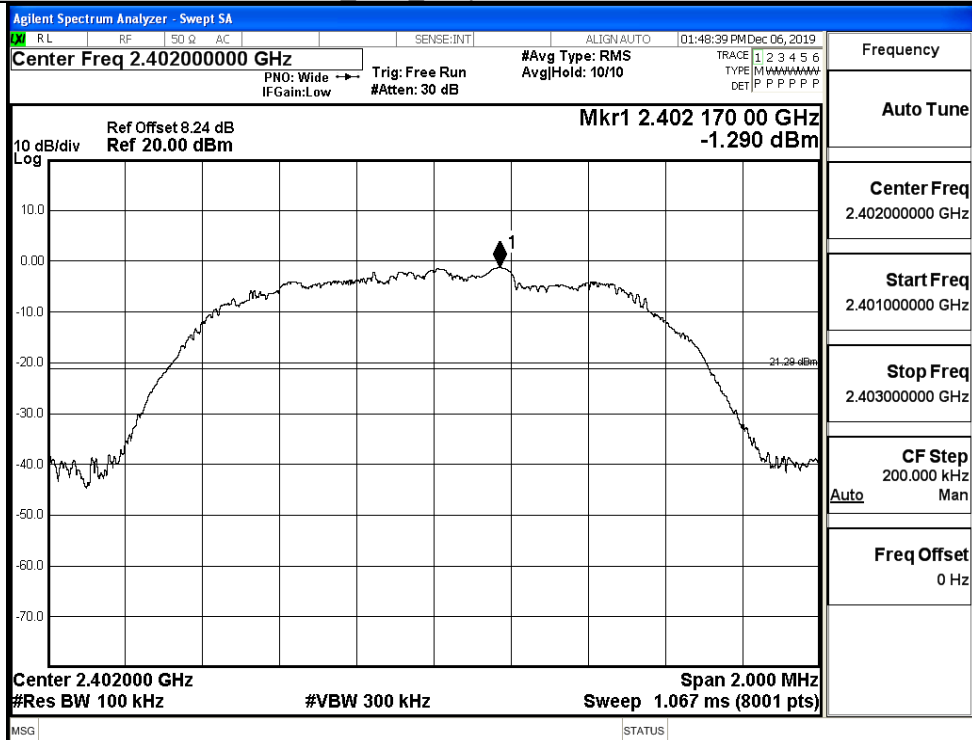


Puw

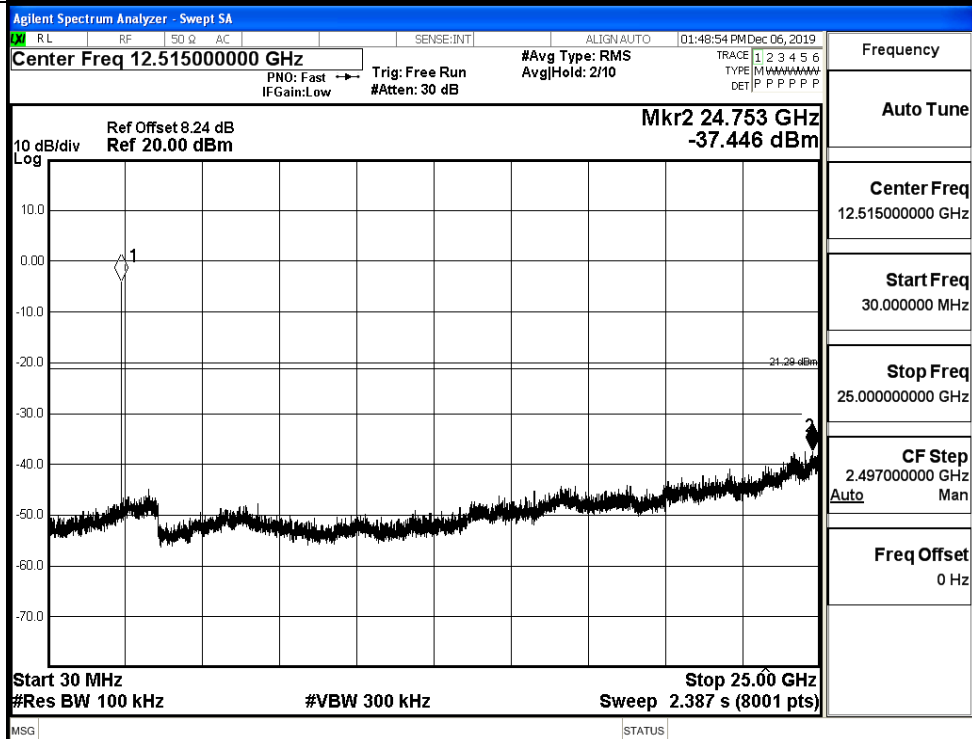


## 8DPSK\_LCH\_Graphs

Pref

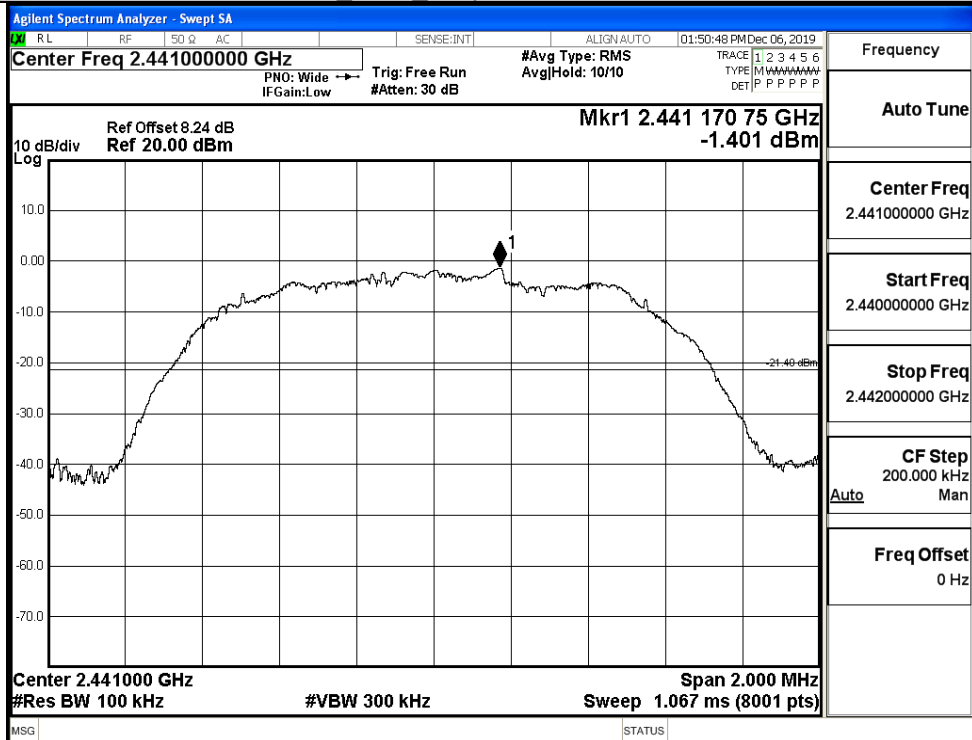


Puw

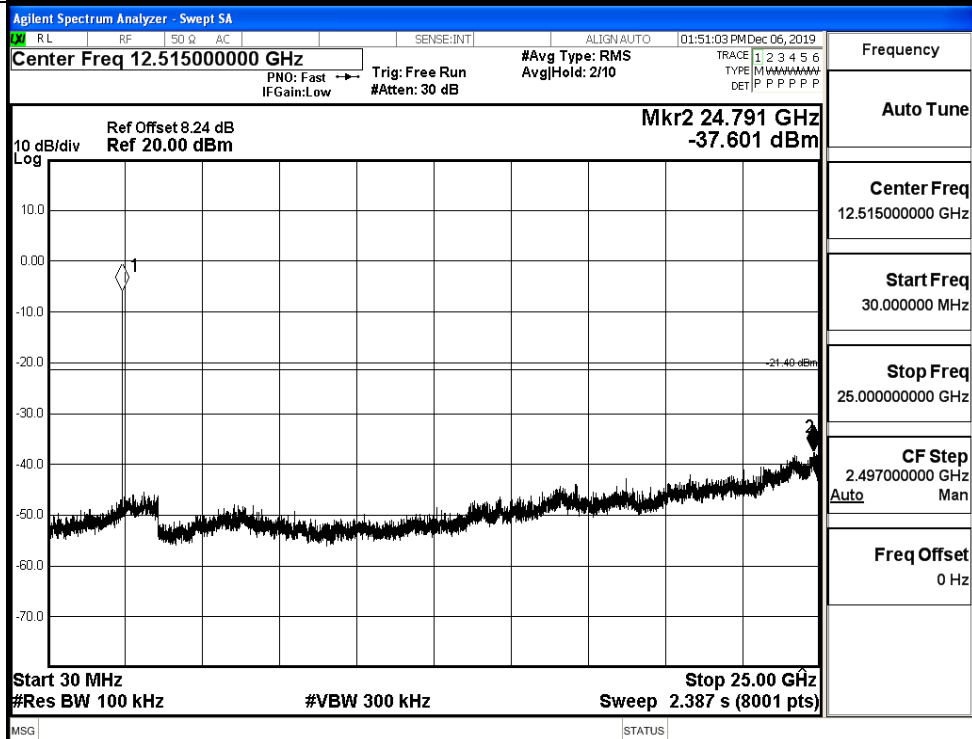


## 8DPSK\_MCH\_Graphs

Pref

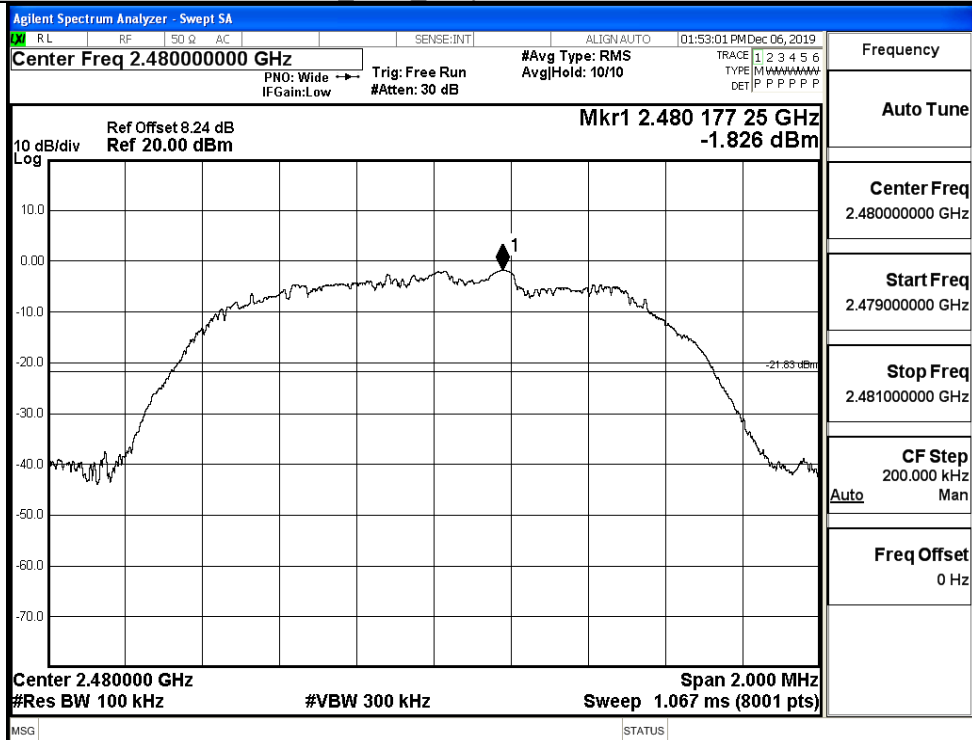


Puw

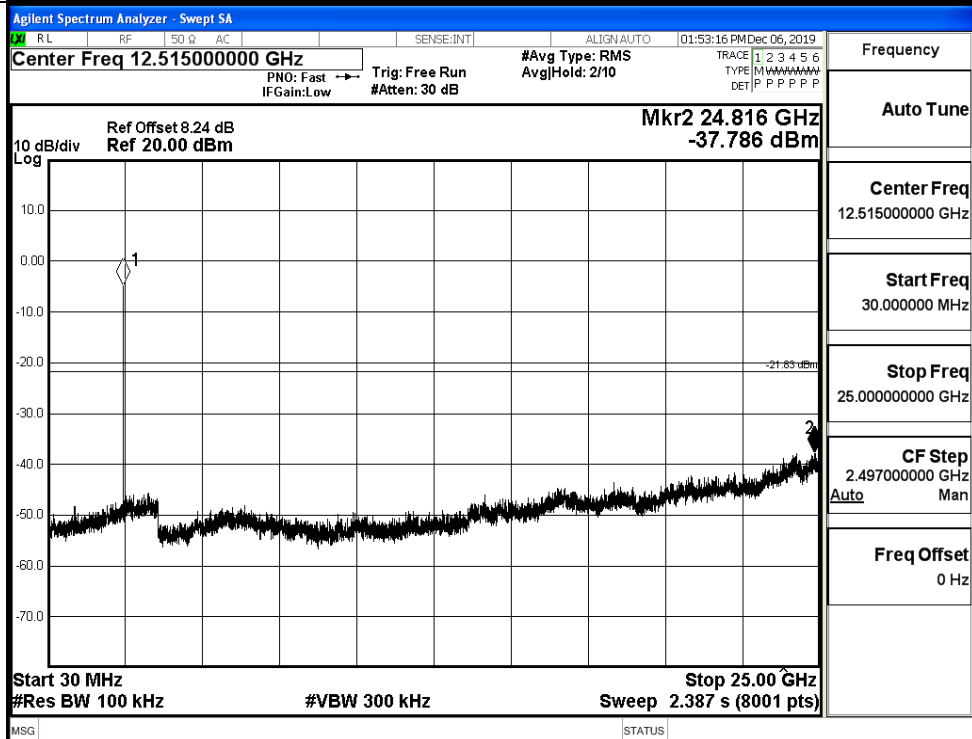


## 8DPSK\_HCH\_Graphs

Pref



Puw

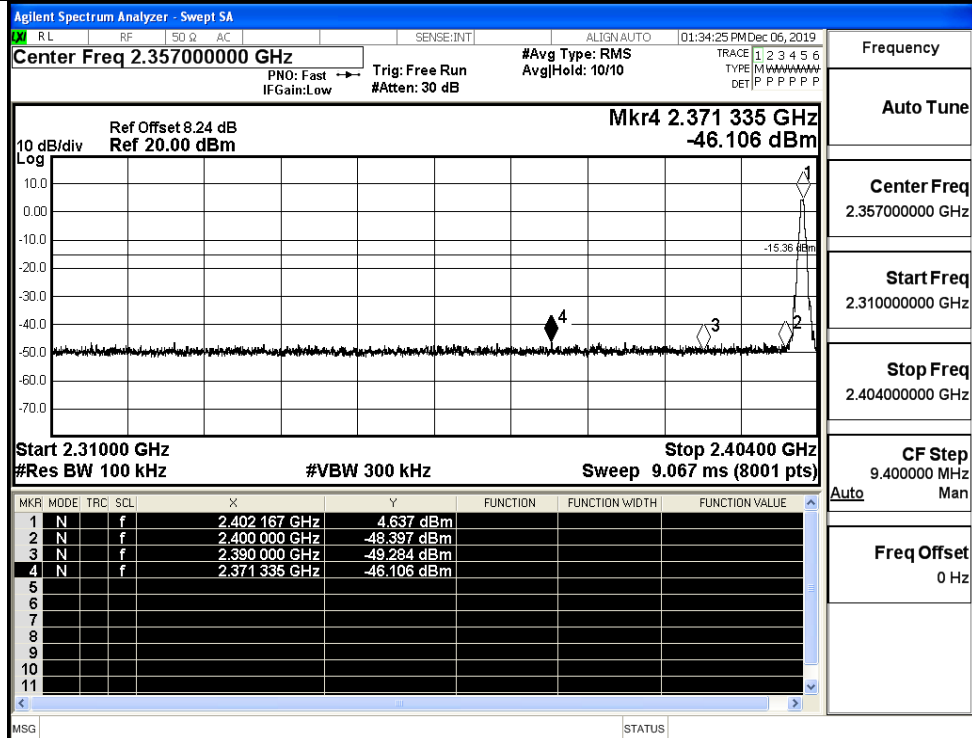


## A.7 Band-edge for RF Conducted Emissions

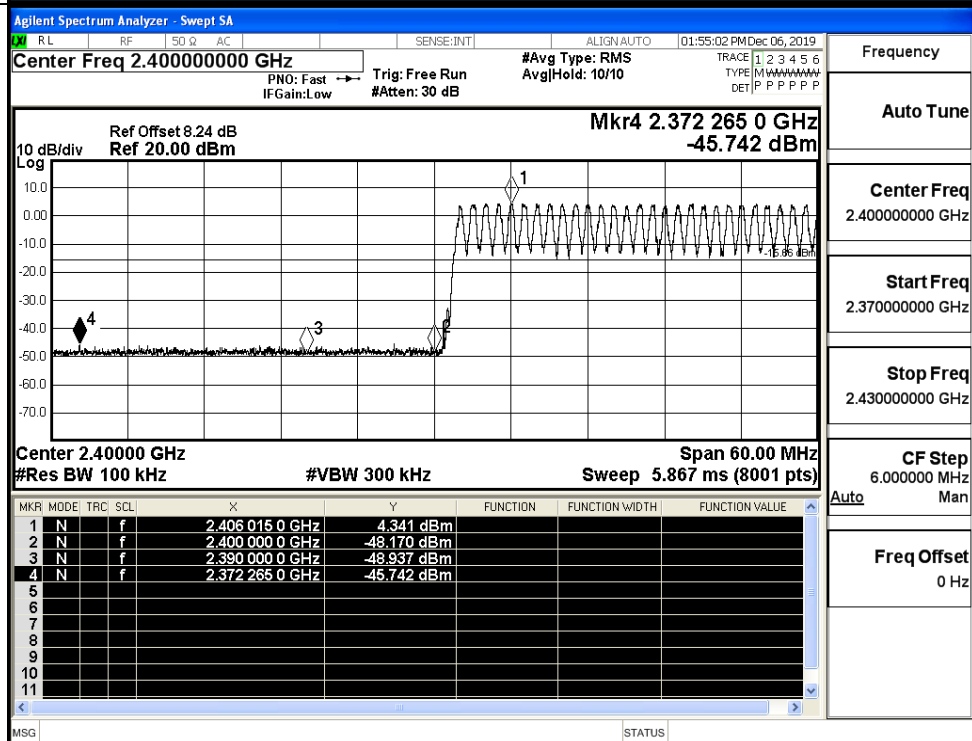
| Mode          | Channel | Carrier Frequency [MHz] | Carrier Power [dBm] | Frequency Hopping | Max Spurious Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|-------------------------|---------------------|-------------------|--------------------------|-------------|---------|
| GFSK          | LCH     | 2402                    | 4.637               | Off               | -46.106                  | -15.36      | PASS    |
|               |         |                         | 4.341               | On                | -45.742                  | -15.66      | PASS    |
|               | HCH     | 2480                    | -1.648              | Off               | -45.650                  | -21.65      | PASS    |
|               |         |                         | 4.632               | On                | -45.641                  | -15.37      | PASS    |
| $\pi/4$ DQPSK | LCH     | 2402                    | -1.681              | Off               | -46.074                  | -21.68      | PASS    |
|               |         |                         | -1.275              | On                | -45.265                  | -21.28      | PASS    |
|               | HCH     | 2480                    | -1.795              | Off               | -45.960                  | -21.8       | PASS    |
|               |         |                         | -1.634              | On                | -45.227                  | -21.63      | PASS    |
| 8DPSK         | LCH     | 2402                    | -1.315              | Off               | -46.211                  | -21.32      | PASS    |
|               |         |                         | -1.300              | On                | -44.640                  | -21.3       | PASS    |
|               | HCH     | 2480                    | -2.016              | Off               | -46.124                  | -22.02      | PASS    |
|               |         |                         | -1.390              | On                | -45.028                  | -21.39      | PASS    |

## Test Graphs

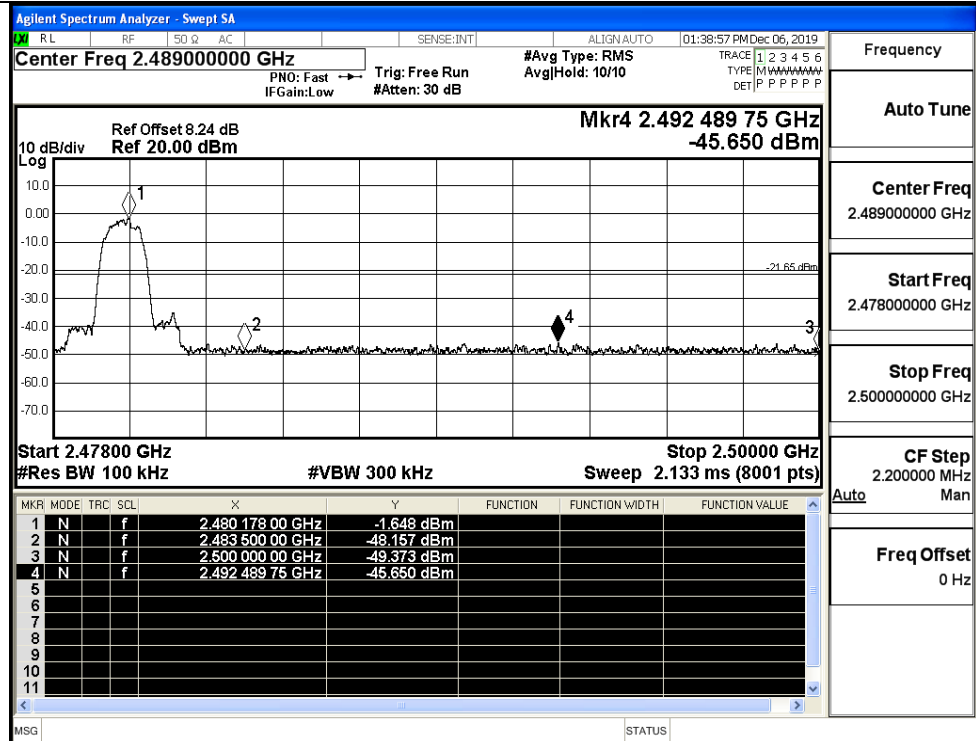
GFSK/LCH/No Hop



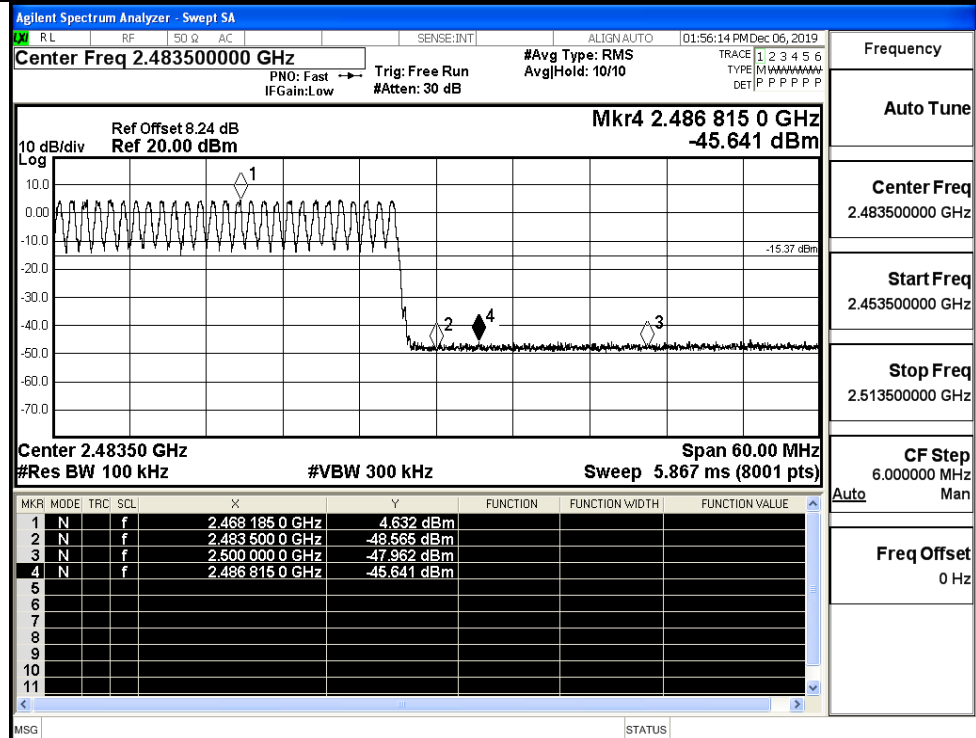
GFSK/LCH/Hop



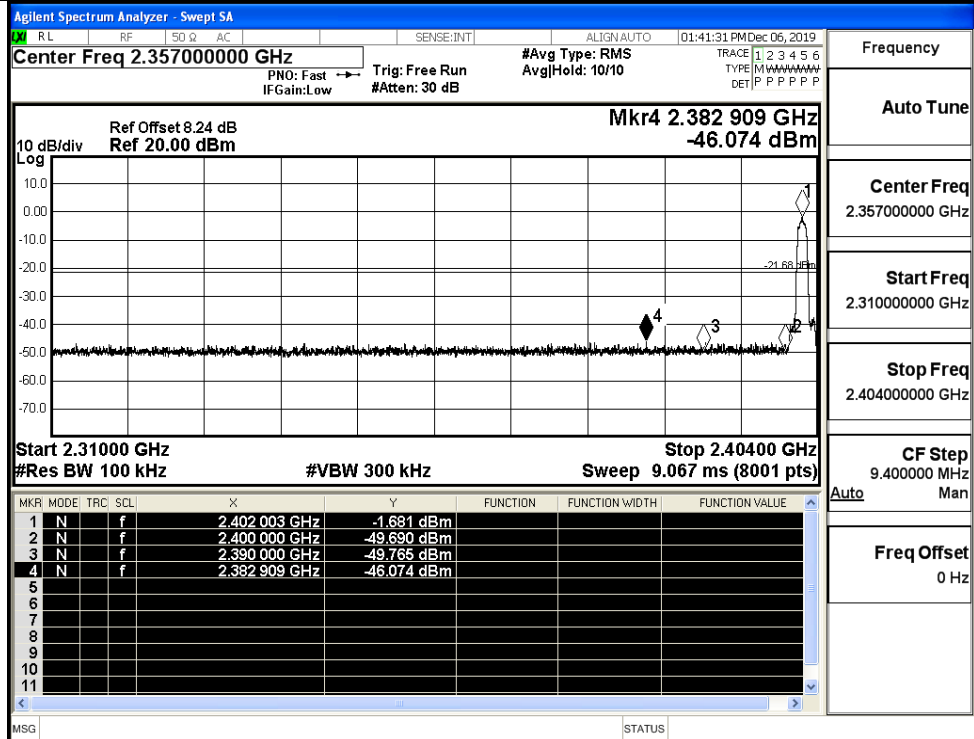
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq  
2.357000000 GHz

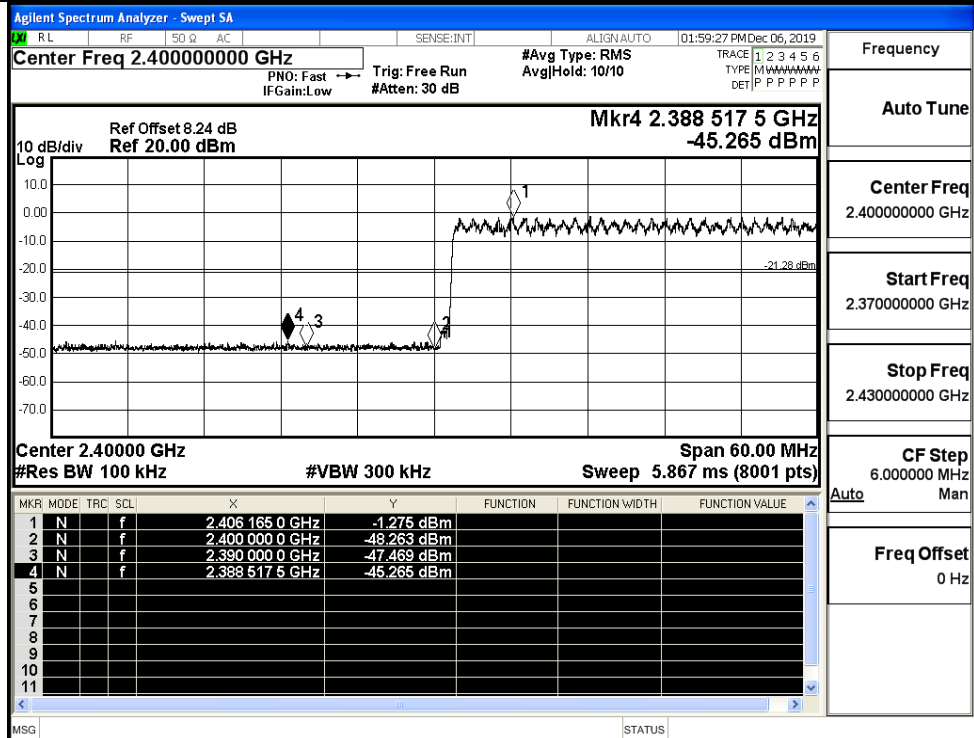
Start Freq  
2.310000000 GHz

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

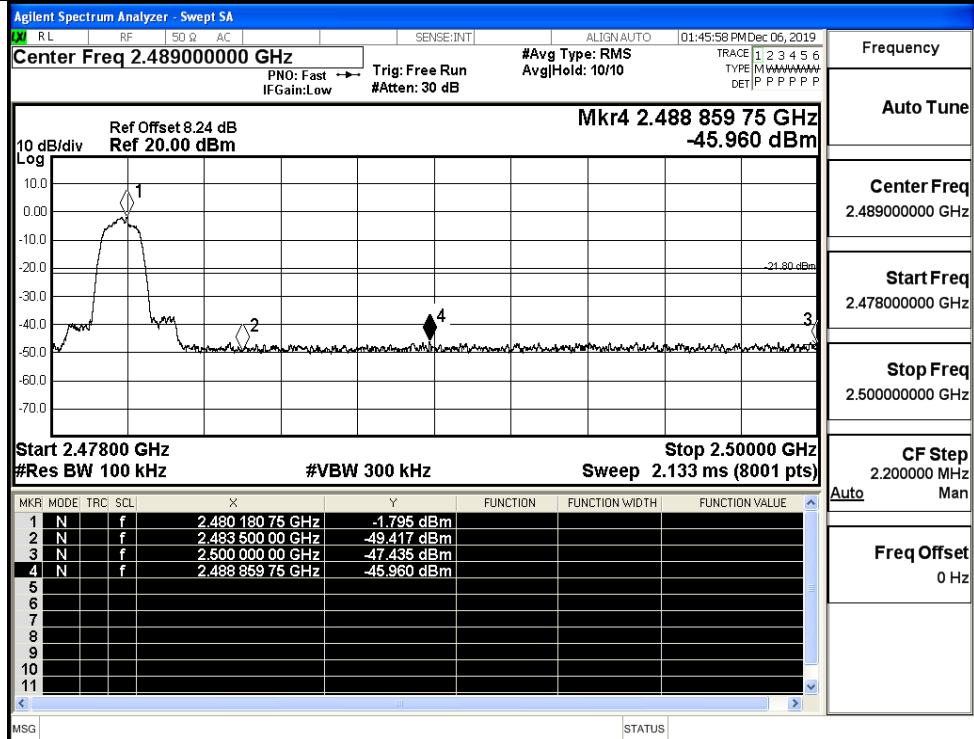
Start Freq  
2.370000000 GHz

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

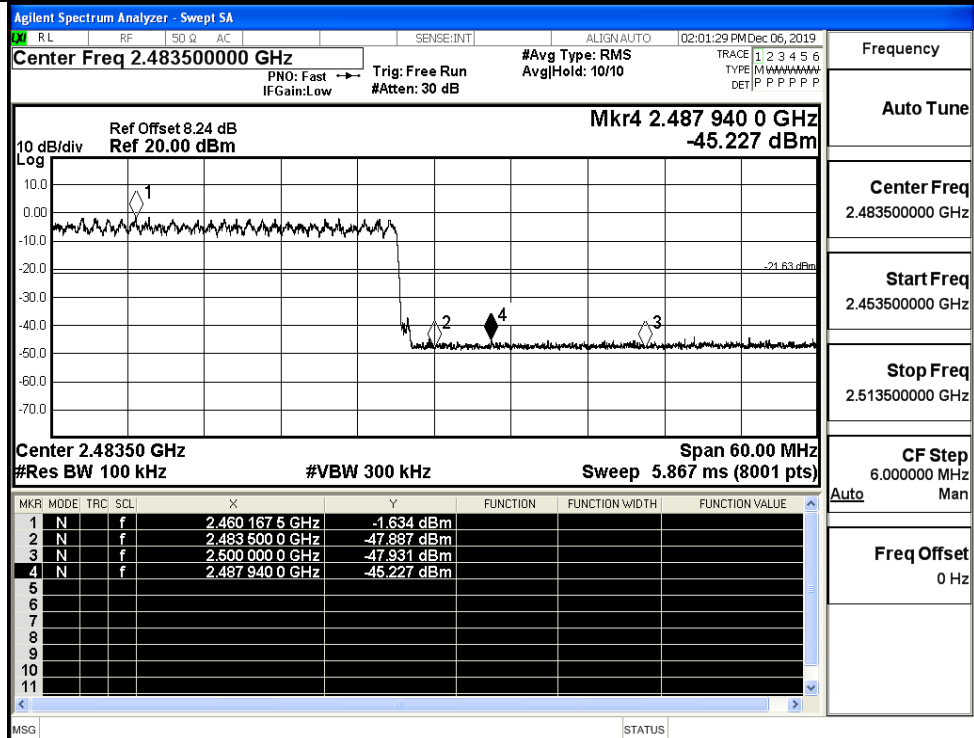
Start Freq  
2.478000000 GHz

Stop Freq  
2.500000000 GHz

CF Step  
2.200000 MHz

Freq Offset  
0 Hz

$\pi/4$ DQPSK/HCH/Hop



Frequency

Auto Tune

Center Freq  
2.483500000 GHz

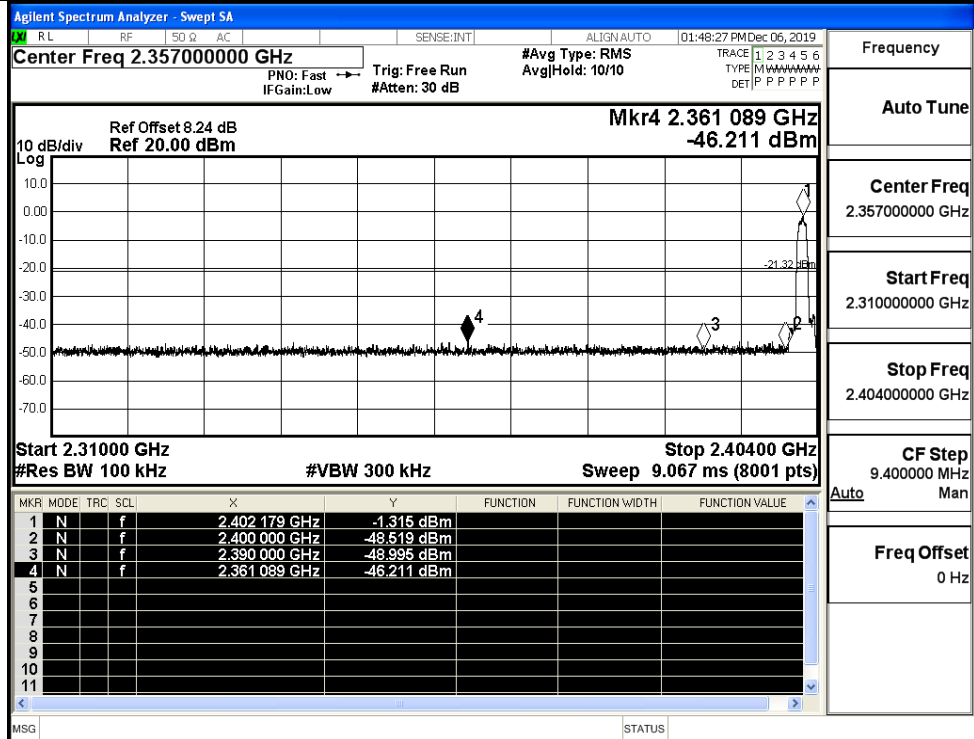
Start Freq  
2.453500000 GHz

Stop Freq  
2.513500000 GHz

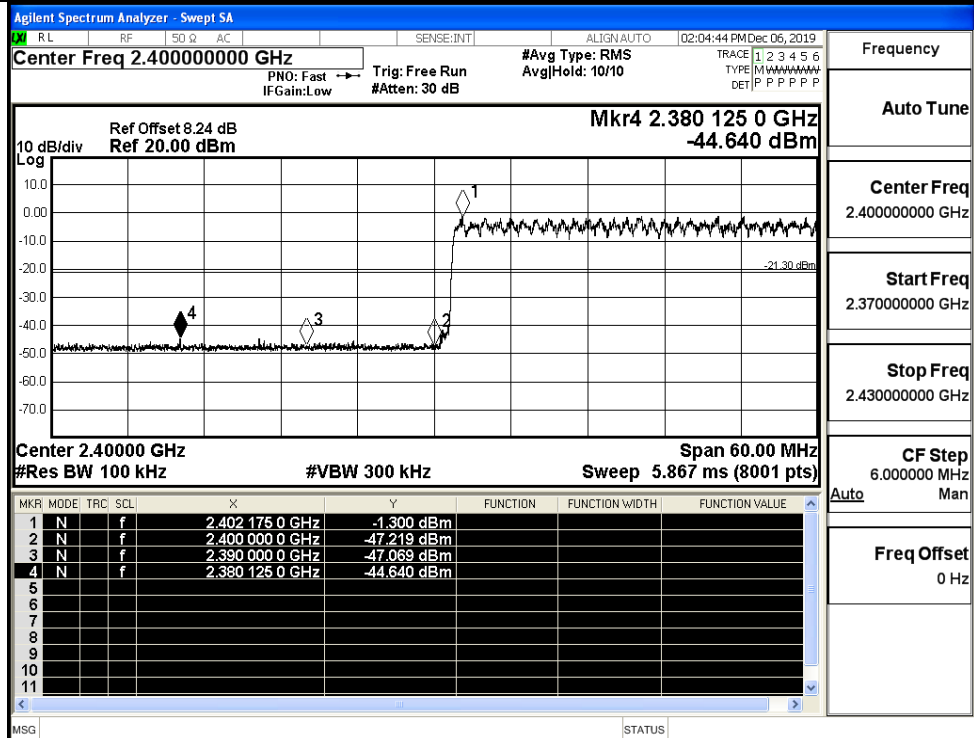
CF Step  
6.000000 MHz

Freq Offset  
0 Hz

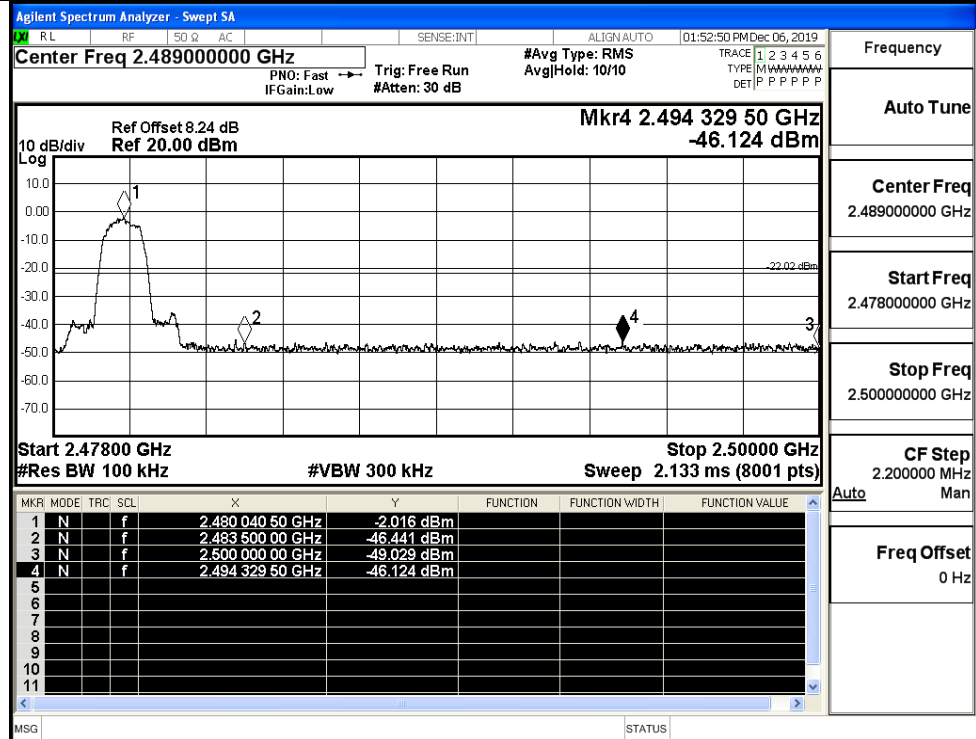
8DPSK/LCH/No Hop



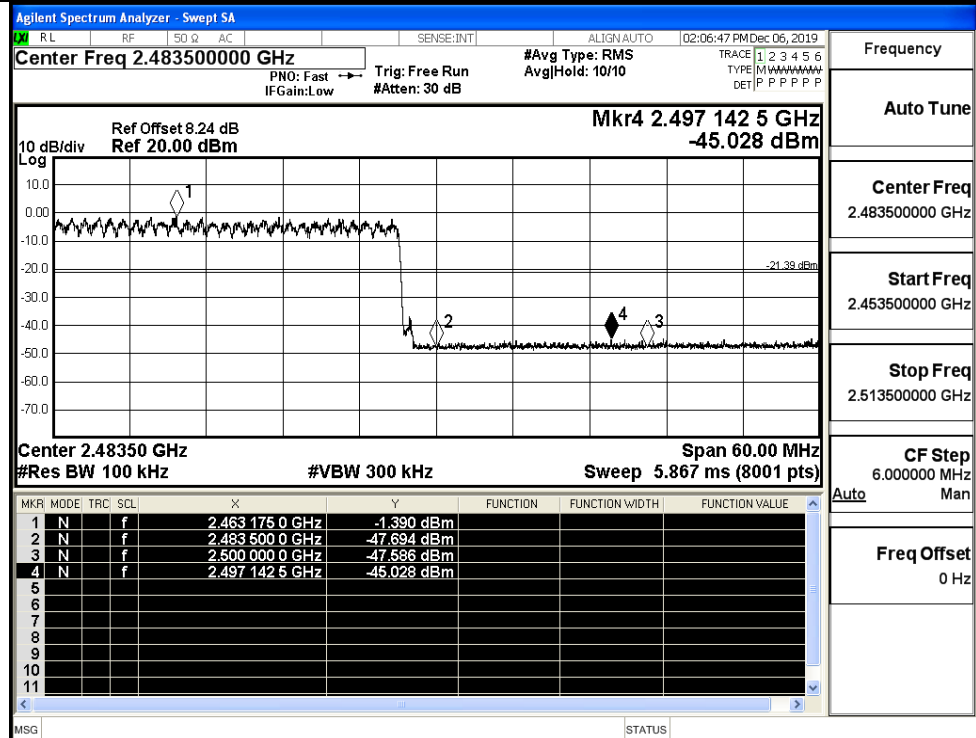
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



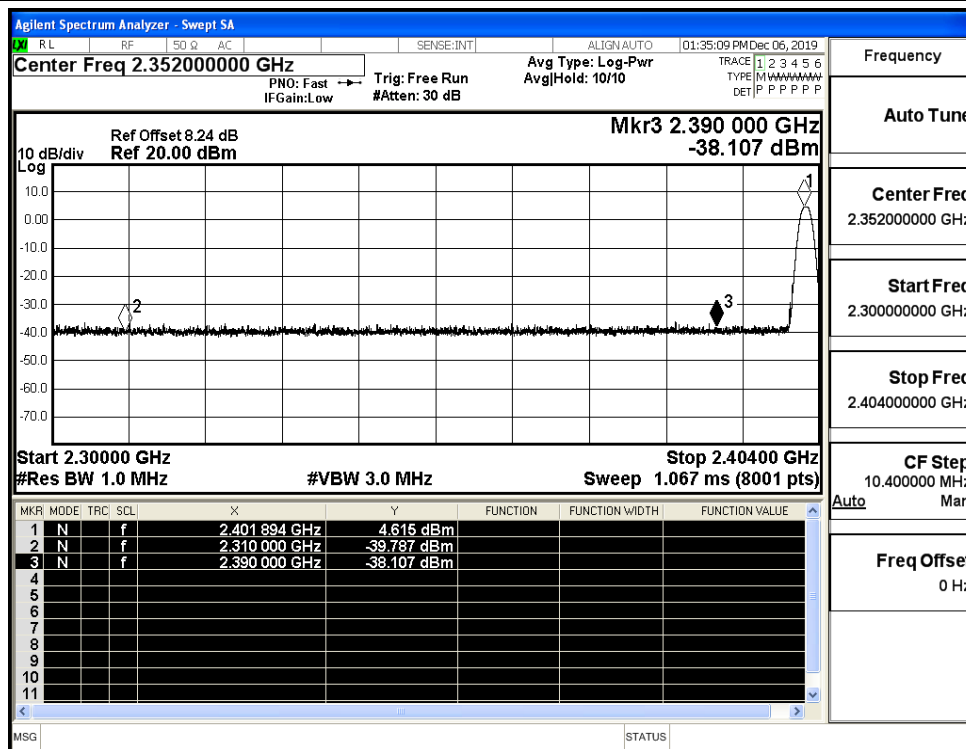
8DPSK/HCH/Hop



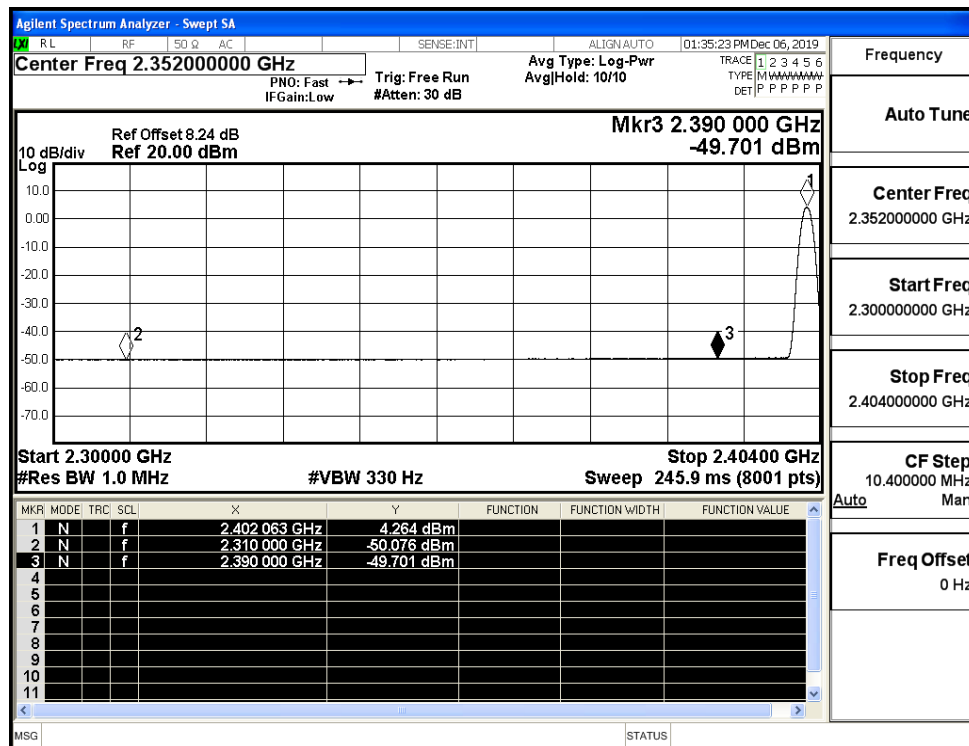
## A.8 Restrict-band band-edge measurements

| Test Mode     | Hopping | Freq.  | Power [dBm] | Gain | Ground Factor | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|---------------|---------|--------|-------------|------|---------------|------------|----------|----------------|---------|
| GFSK          | Off     | 2310.0 | -39.79      | 2.0  | 0             | 55.47      | PEAK     | 74             | PASS    |
|               | Off     | 2310.0 | -50.08      | 2.0  | 0             | 45.18      | AV       | 54             | PASS    |
|               | Off     | 2390.0 | -38.11      | 2.0  | 0             | 57.15      | PEAK     | 74             | PASS    |
|               | Off     | 2390.0 | -49.70      | 2.0  | 0             | 45.56      | AV       | 54             | PASS    |
|               | Off     | 2483.5 | -38.72      | 2.0  | 0             | 56.54      | PEAK     | 74             | PASS    |
|               | Off     | 2483.5 | -49.16      | 2.0  | 0             | 46.10      | AV       | 54             | PASS    |
|               | Off     | 2500.0 | -38.45      | 2.0  | 0             | 56.81      | PEAK     | 74             | PASS    |
|               | Off     | 2500.0 | -48.94      | 2.0  | 0             | 46.32      | AV       | 54             | PASS    |
| $\pi/4$ DQPSK | Off     | 2310.0 | -40.60      | 2.0  | 0             | 54.66      | PEAK     | 74             | PASS    |
|               | Off     | 2310.0 | -49.98      | 2.0  | 0             | 45.28      | AV       | 54             | PASS    |
|               | Off     | 2390.0 | -40.12      | 2.0  | 0             | 55.14      | PEAK     | 74             | PASS    |
|               | Off     | 2390.0 | -49.68      | 2.0  | 0             | 45.57      | AV       | 54             | PASS    |
|               | Off     | 2483.5 | -39.35      | 2.0  | 0             | 55.91      | PEAK     | 74             | PASS    |
|               | Off     | 2483.5 | -49.15      | 2.0  | 0             | 46.11      | AV       | 54             | PASS    |
|               | Off     | 2500.0 | -40.00      | 2.0  | 0             | 55.25      | PEAK     | 74             | PASS    |
|               | Off     | 2500.0 | -48.96      | 2.0  | 0             | 46.30      | AV       | 54             | PASS    |
| 8DPSK         | Off     | 2310.0 | -37.86      | 2.0  | 0             | 57.39      | PEAK     | 74             | PASS    |
|               | Off     | 2310.0 | -49.88      | 2.0  | 0             | 45.38      | AV       | 54             | PASS    |
|               | Off     | 2390.0 | -38.19      | 2.0  | 0             | 57.07      | PEAK     | 74             | PASS    |
|               | Off     | 2390.0 | -49.49      | 2.0  | 0             | 45.77      | AV       | 54             | PASS    |
|               | Off     | 2483.5 | -39.31      | 2.0  | 0             | 55.95      | PEAK     | 74             | PASS    |
|               | Off     | 2483.5 | -49.16      | 2.0  | 0             | 46.10      | AV       | 54             | PASS    |
|               | Off     | 2500.0 | -38.13      | 2.0  | 0             | 57.13      | PEAK     | 74             | PASS    |
|               | Off     | 2500.0 | -49.07      | 2.0  | 0             | 46.19      | AV       | 54             | PASS    |

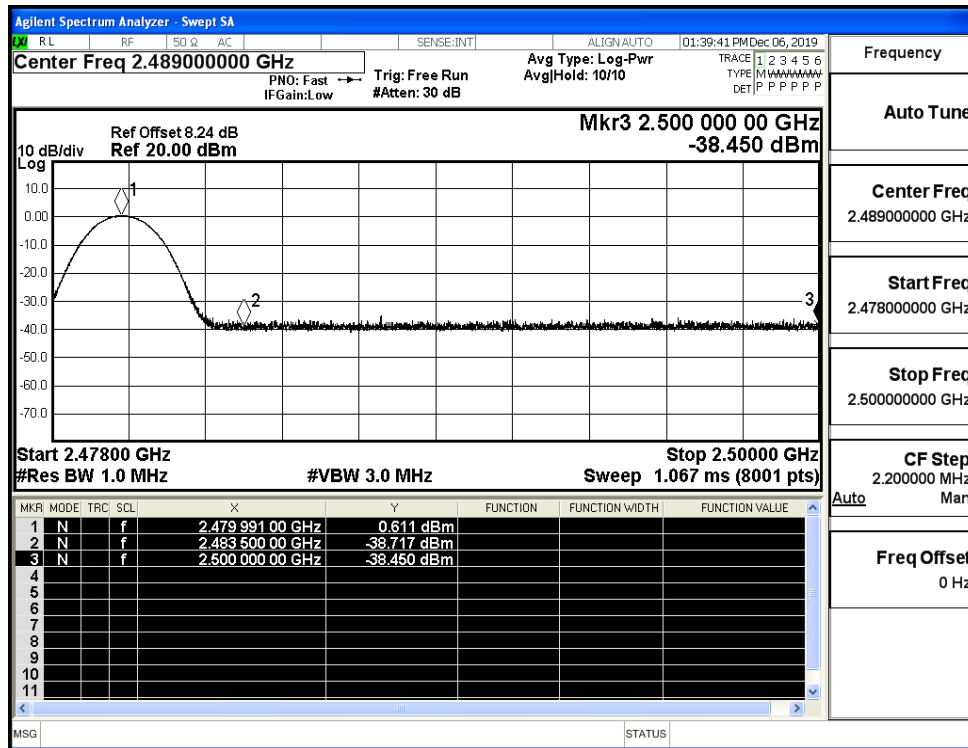
## Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (Low Channel)



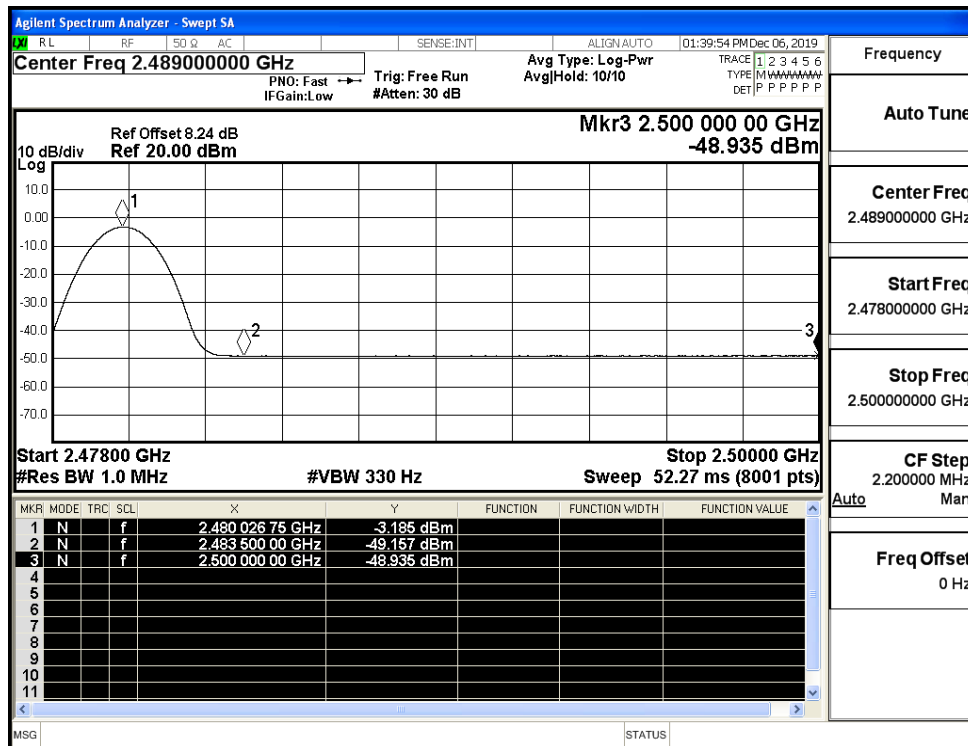
## Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (Low Channel)

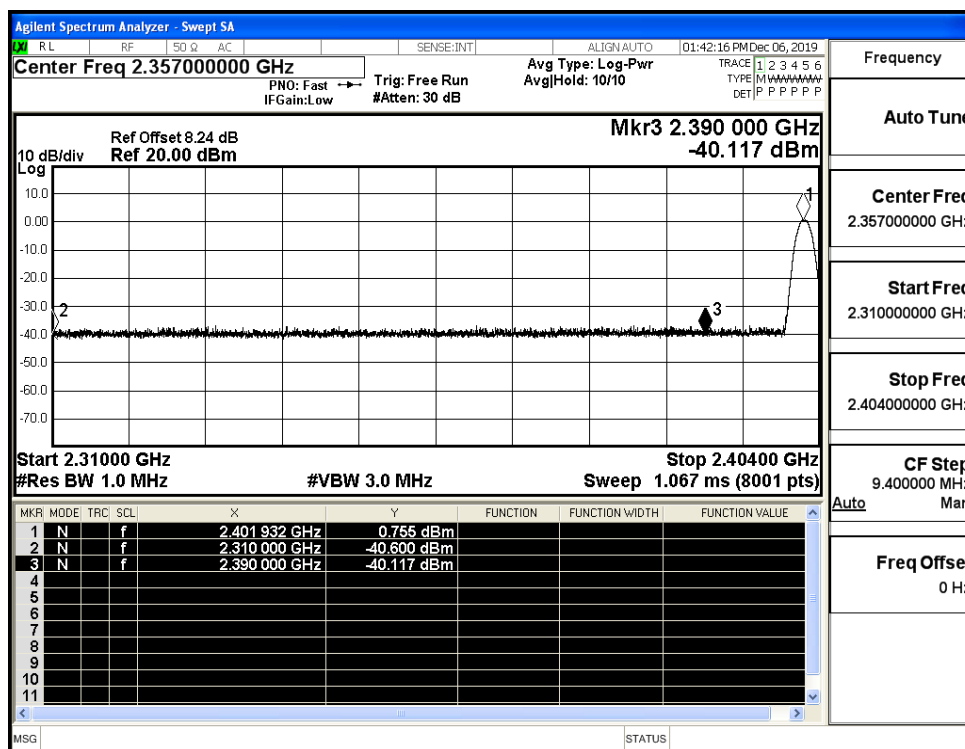
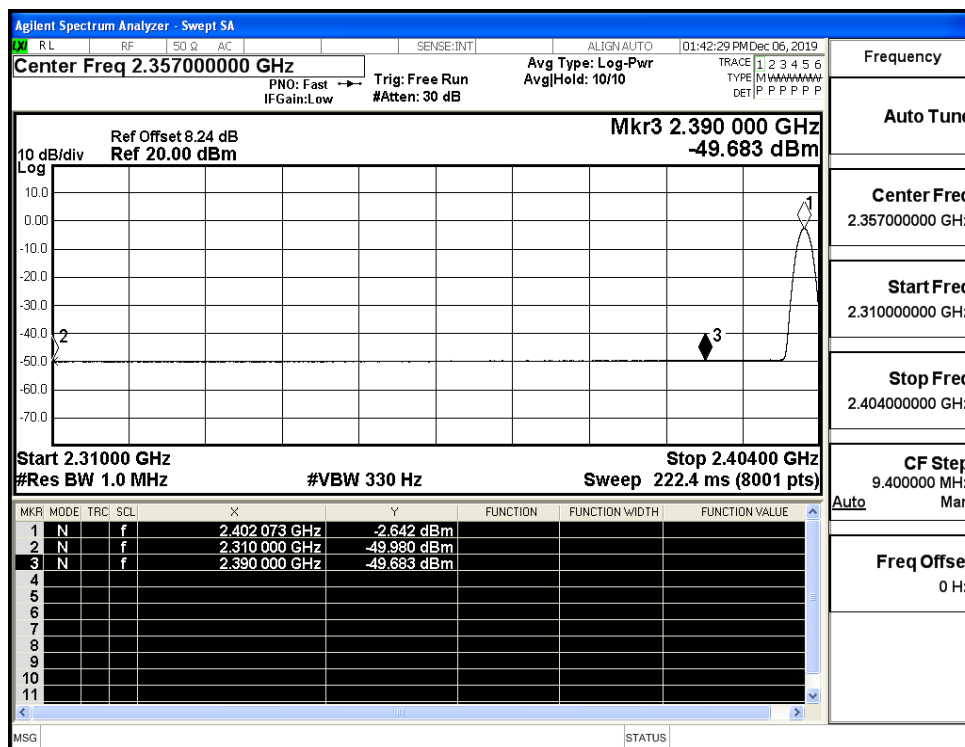


## Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (High Channel)

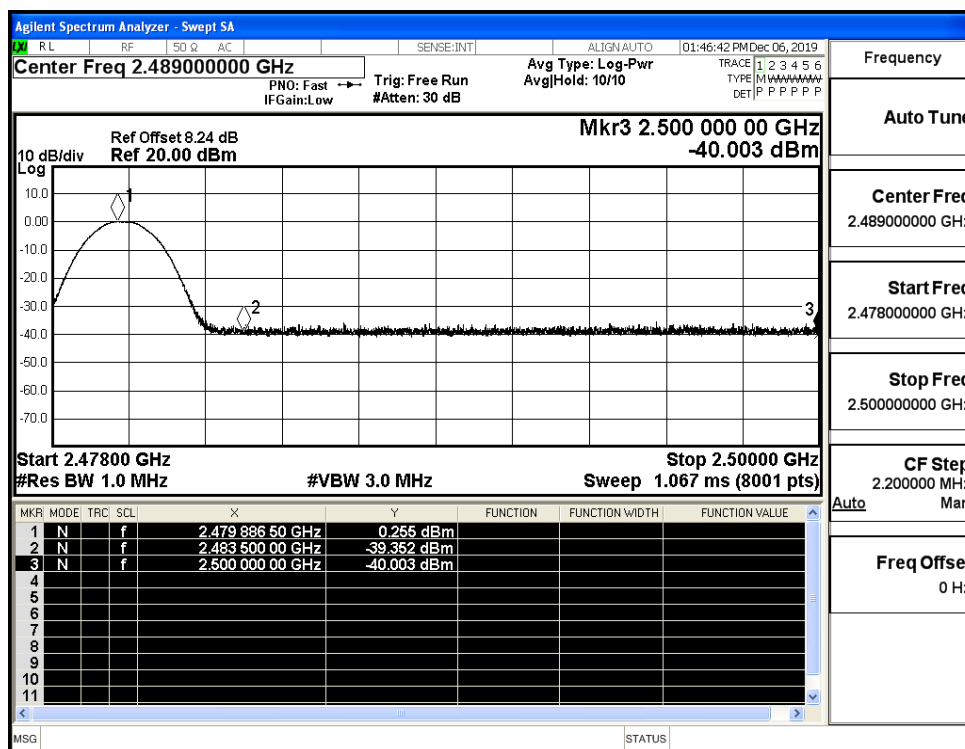


## Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (High Channel)

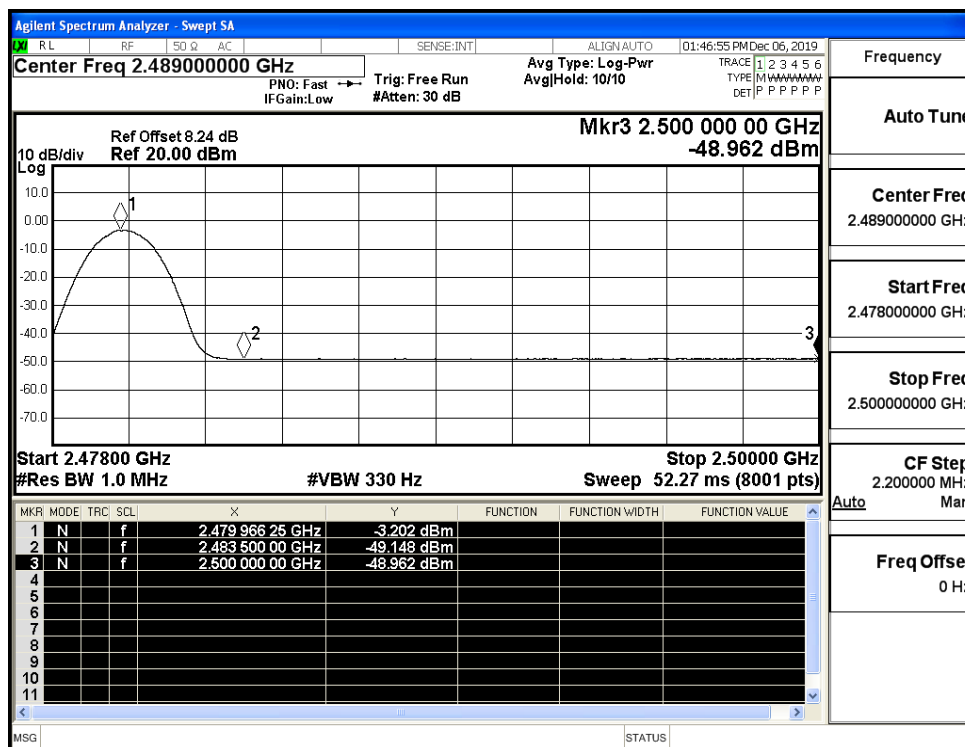


Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_PEAK (Low Channel)Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_Average (Low Channel)

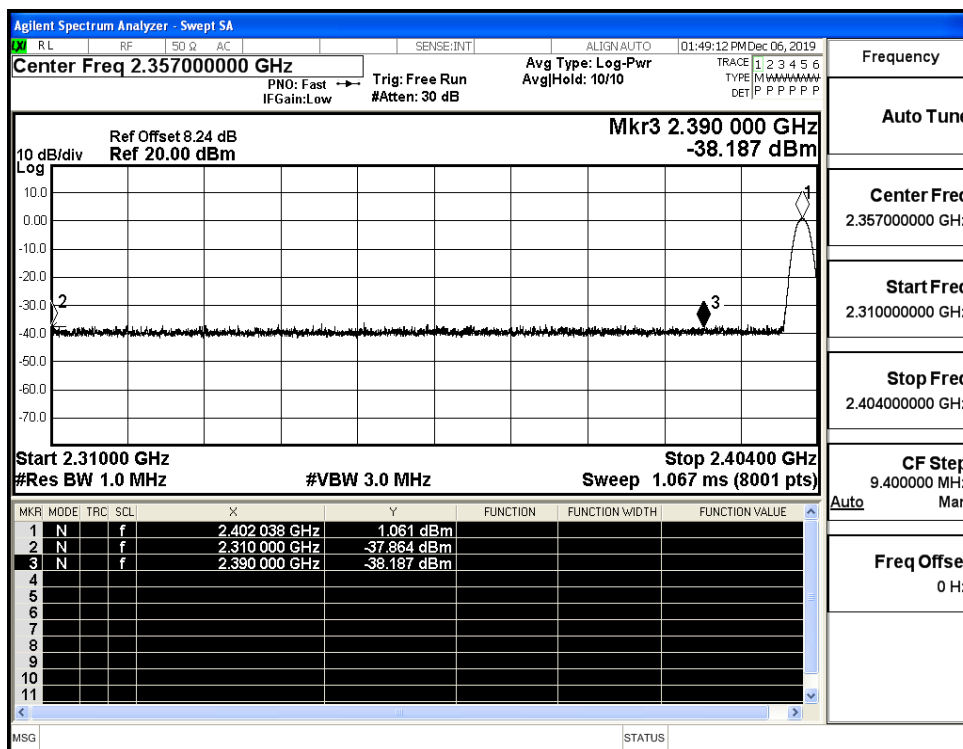
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (High Channel)



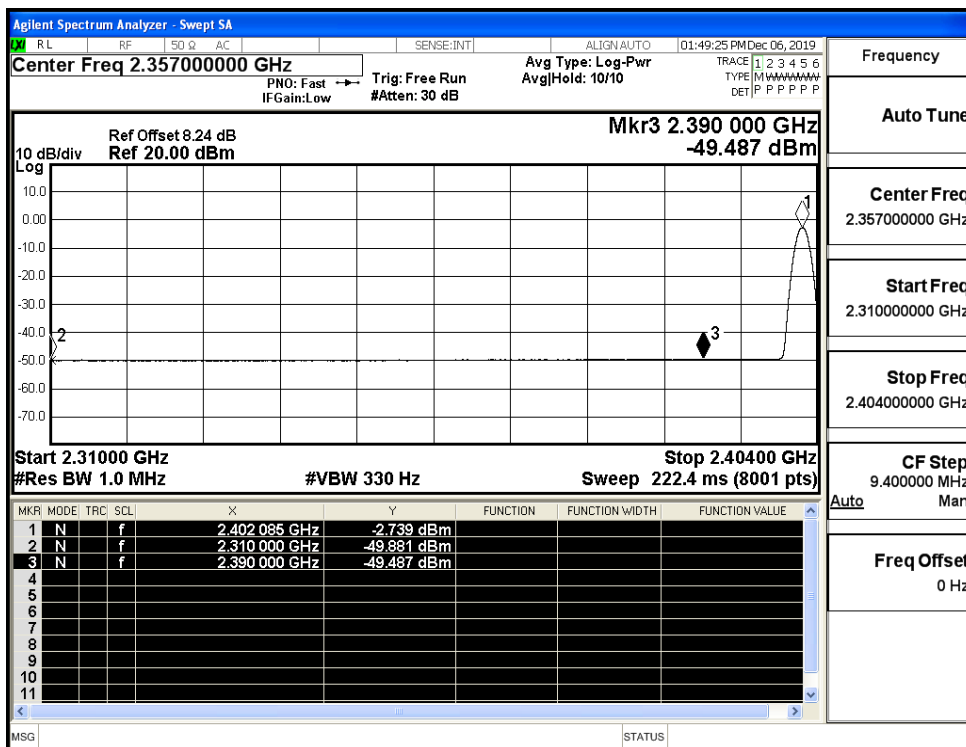
## Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (High Channel)



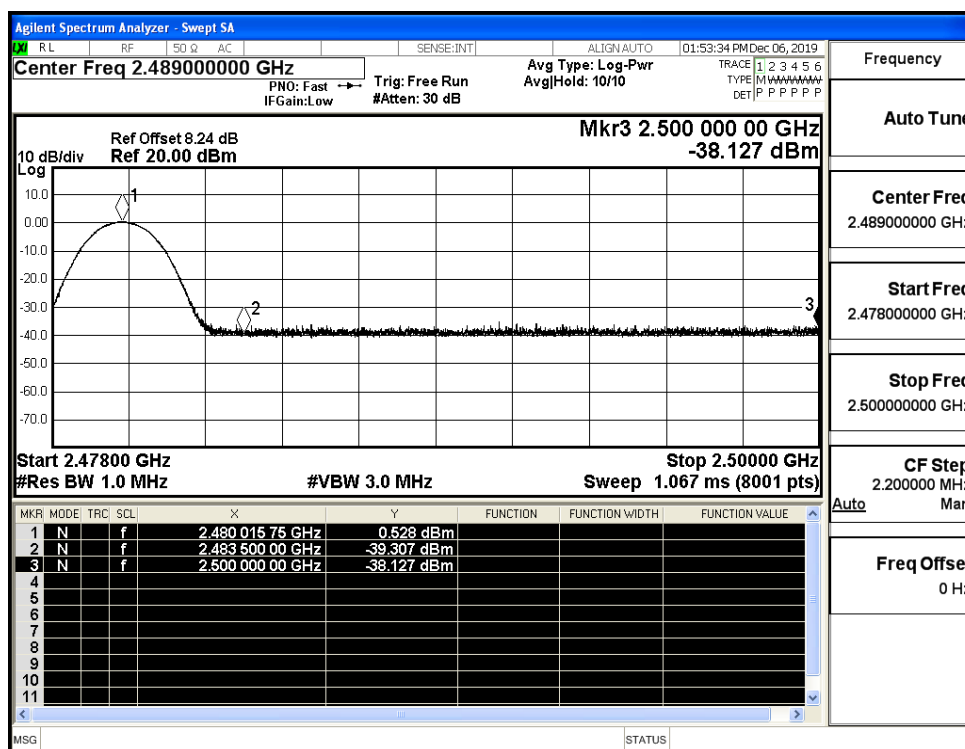
## Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_PEAK (Low Channel)



## 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)

