

**Appendix A**  
**RF Test Data for BT(BDR/EDR) (Conducted Measurement)**

**Product Name: Bluetooth Earphones**

**Trade Mark: Altec Lansing**

**Test Model: MZX890L**

**FCC ID: 2AL9B-MZX890L**

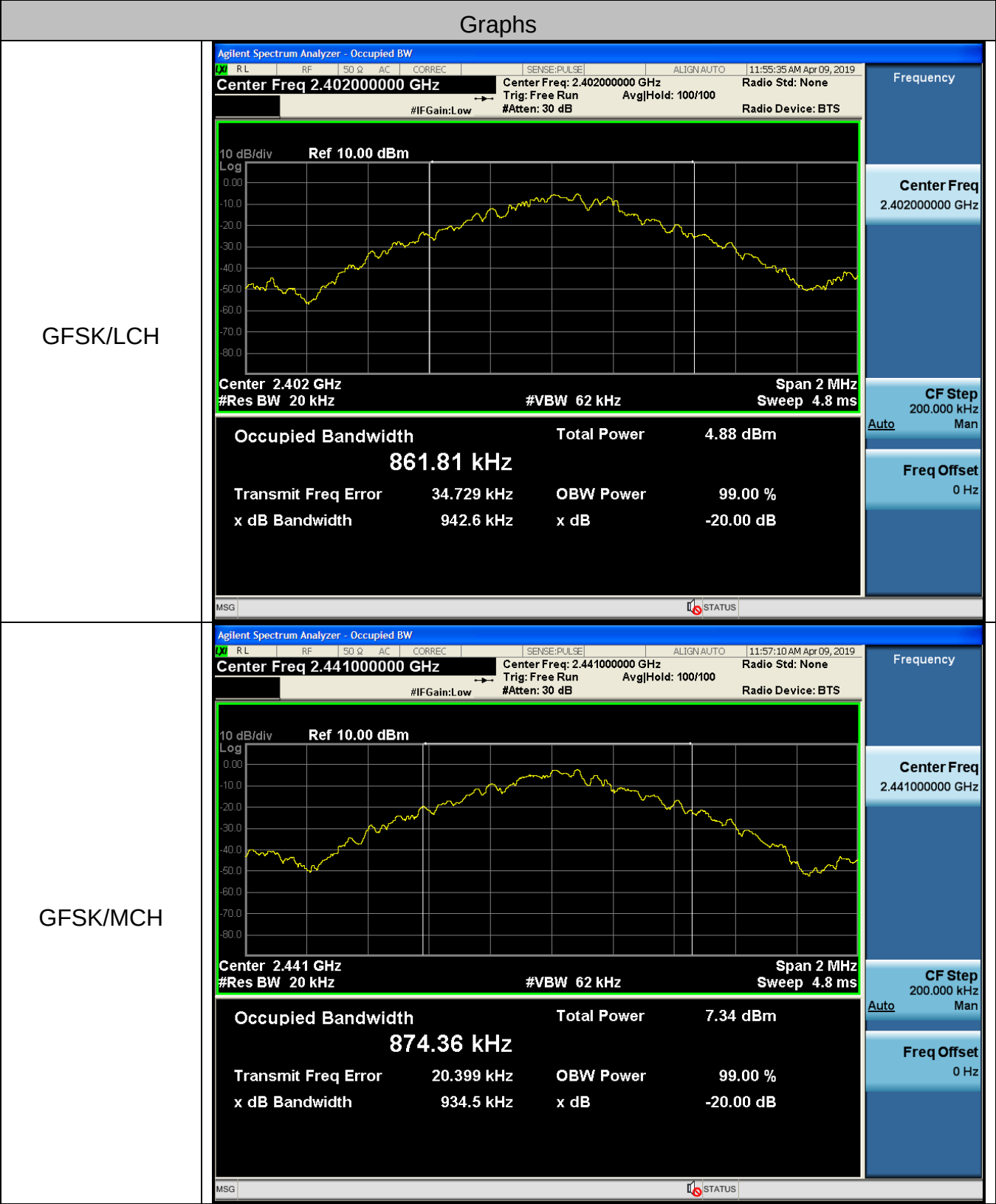
**Environmental Conditions**

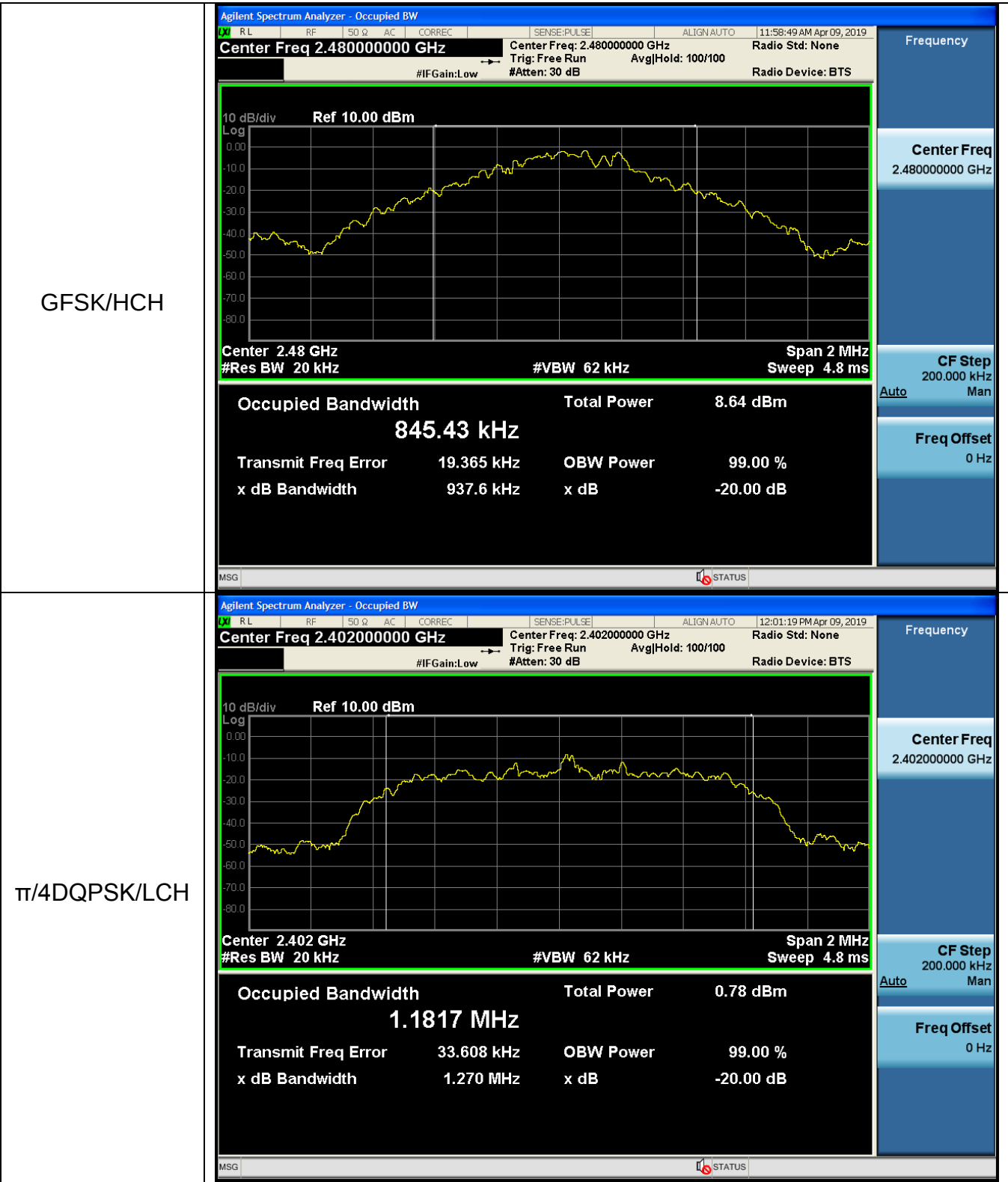
|                    |           |
|--------------------|-----------|
| Temperature:       | 25.5℃     |
| Relative Humidity: | 55%       |
| ATM Pressure:      | 100.0 kPa |
| Test Engineer:     | Gary Qian |
| Supervised by:     | Eden Hu   |

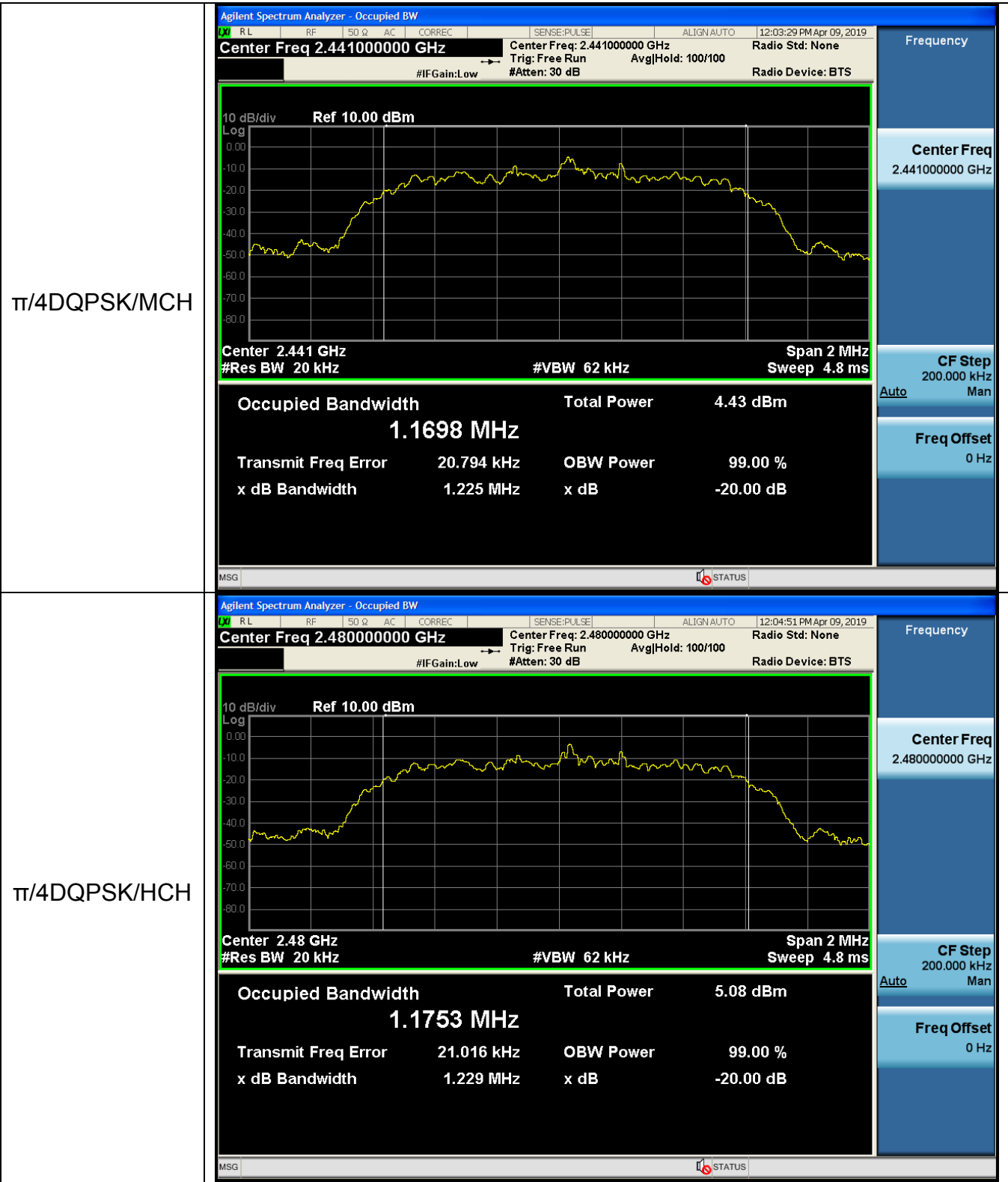
**A.1 20 dB Bandwidth**

| Mode          | Channel. | 20dB Bandwidth [MHz] | Limit(MHz)    | Verdict |
|---------------|----------|----------------------|---------------|---------|
| GFSK          | LCH      | 0.943                | Not Specified | PASS    |
| GFSK          | MCH      | 0.934                | Not Specified | PASS    |
| GFSK          | HCH      | 0.938                | Not Specified | PASS    |
| $\pi/4$ DQPSK | LCH      | 1.270                | Not Specified | PASS    |
| $\pi/4$ DQPSK | MCH      | 1.225                | Not Specified | PASS    |
| $\pi/4$ DQPSK | HCH      | 1.229                | Not Specified | PASS    |

Test Graph



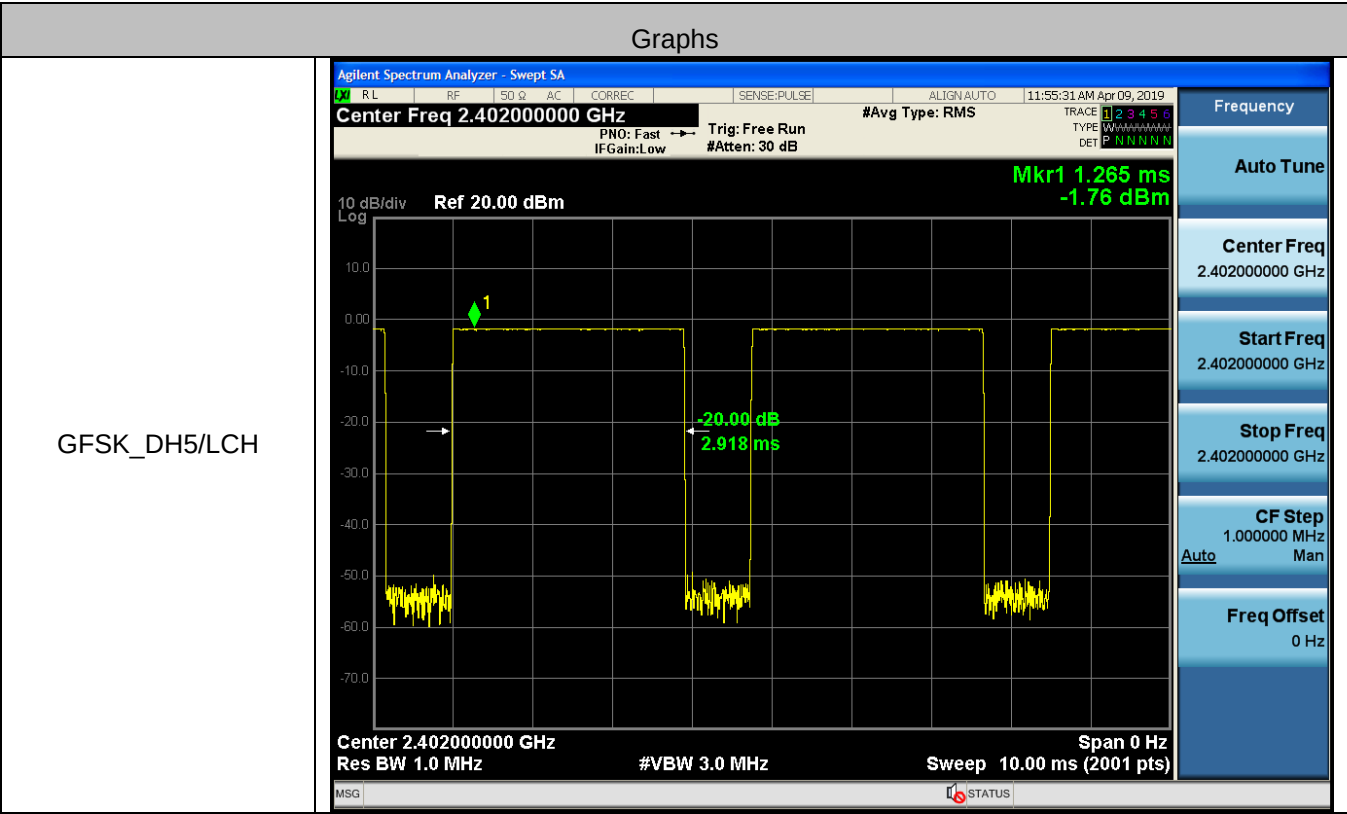


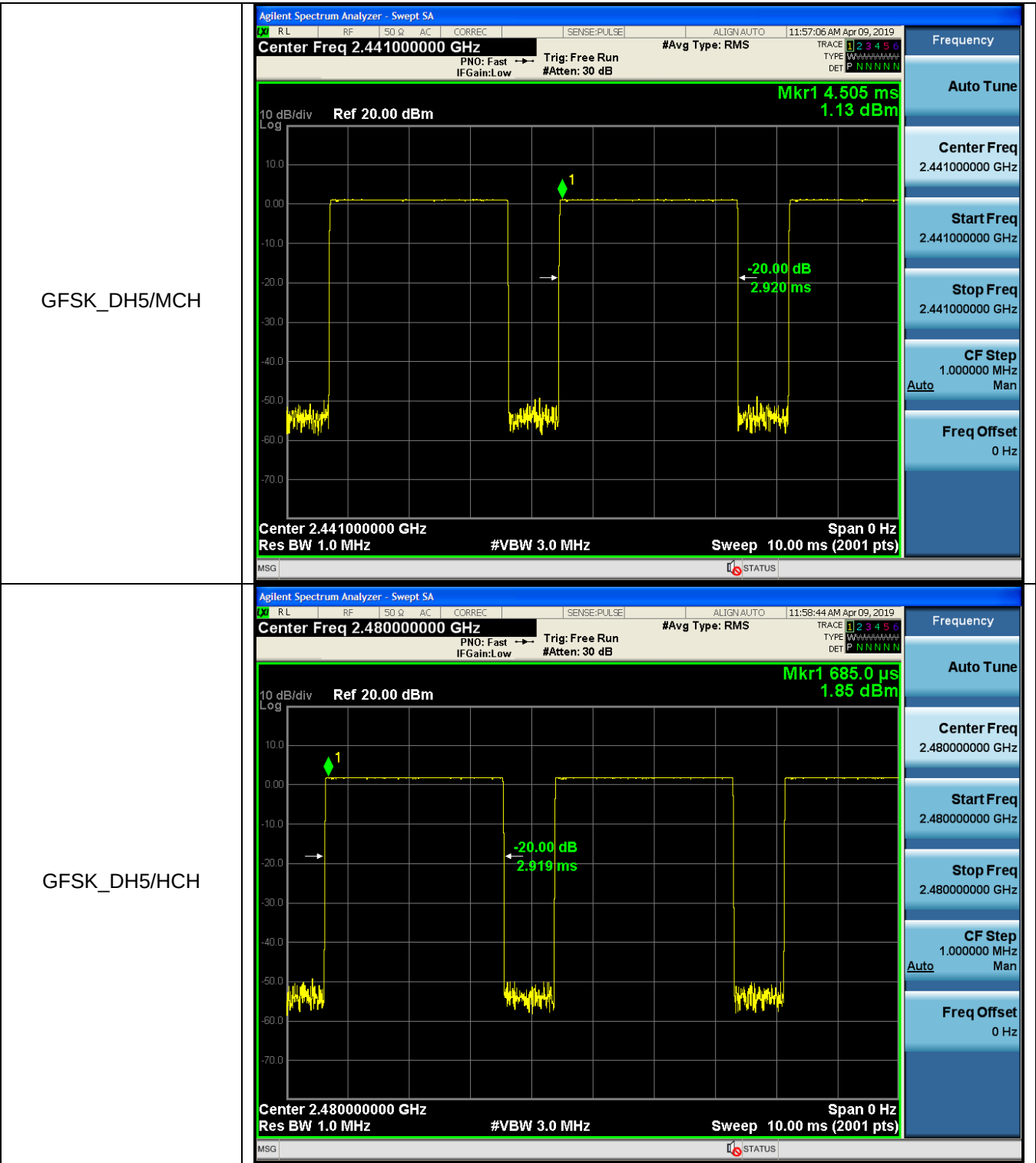


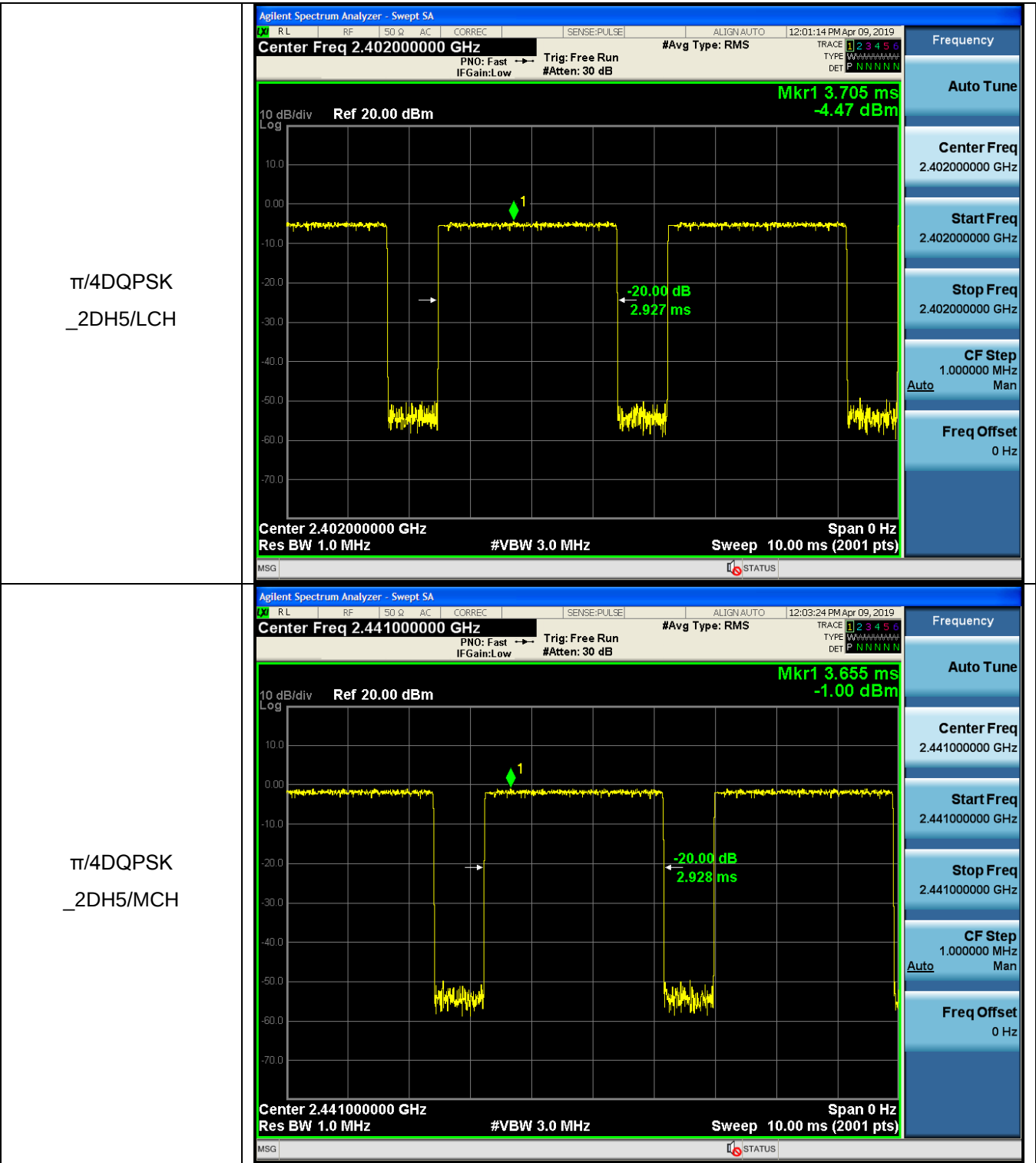
A.2 Dwell Time

| Mode          | Packet | Channel | Burst Width<br>[s/hop/ch] | Total<br>Hops[hop*ch] | Dwell<br>Time[s] | Limit [s] | Verdict |
|---------------|--------|---------|---------------------------|-----------------------|------------------|-----------|---------|
| GFSK          | DH5    | LCH     | 0.002918                  | 106.7                 | 0.311401         | 0.4       | PASS    |
| GFSK          | DH5    | MCH     | 0.002920                  | 106.7                 | 0.311563         | 0.4       | PASS    |
| GFSK          | DH5    | HCH     | 0.002919                  | 106.7                 | 0.311430         | 0.4       | PASS    |
| $\pi/4$ DQPSK | 2DH5   | LCH     | 0.002927                  | 106.7                 | 0.312309         | 0.4       | PASS    |
| $\pi/4$ DQPSK | 2DH5   | MCH     | 0.002928                  | 106.7                 | 0.312368         | 0.4       | PASS    |
| $\pi/4$ DQPSK | 2DH5   | HCH     | 0.002927                  | 106.7                 | 0.312320         | 0.4       | PASS    |

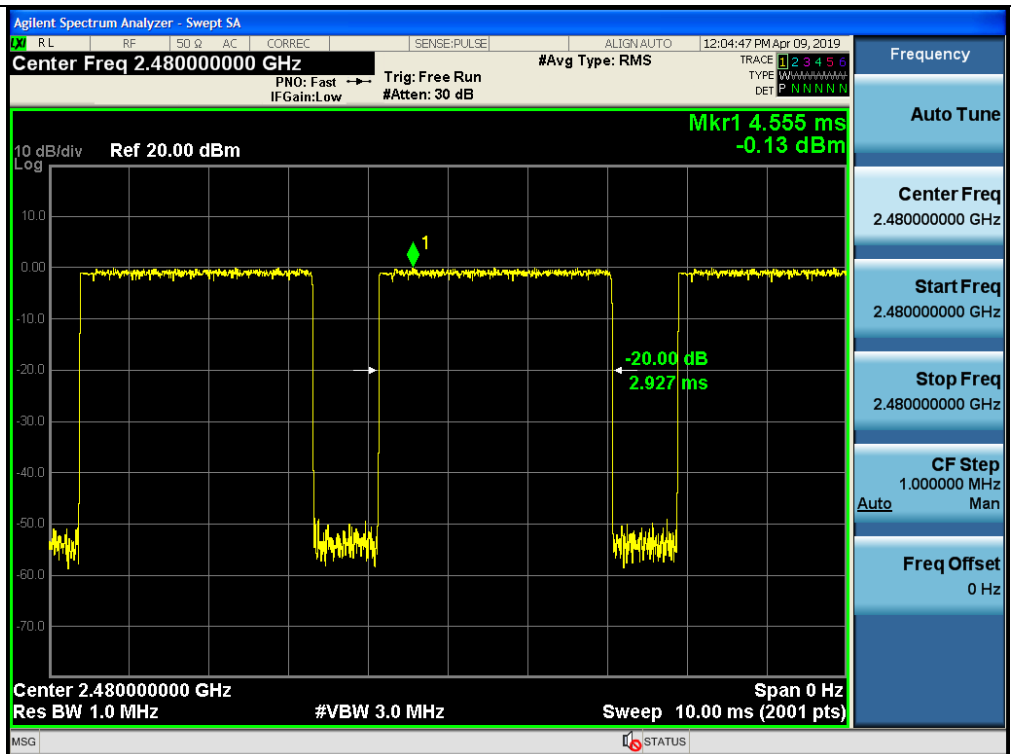
Test Graph







π/4DQPSK  
\_2DH5/HCH

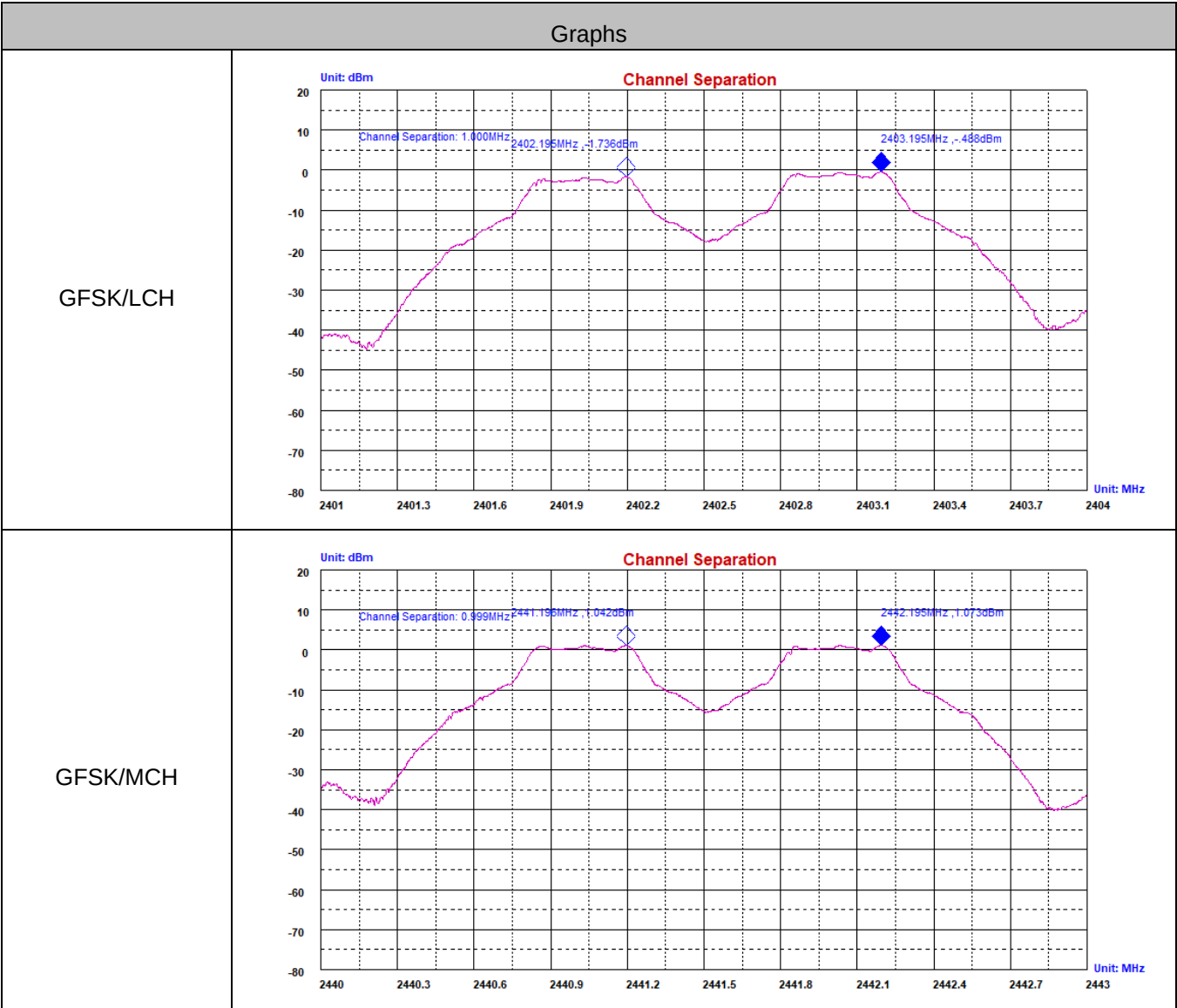


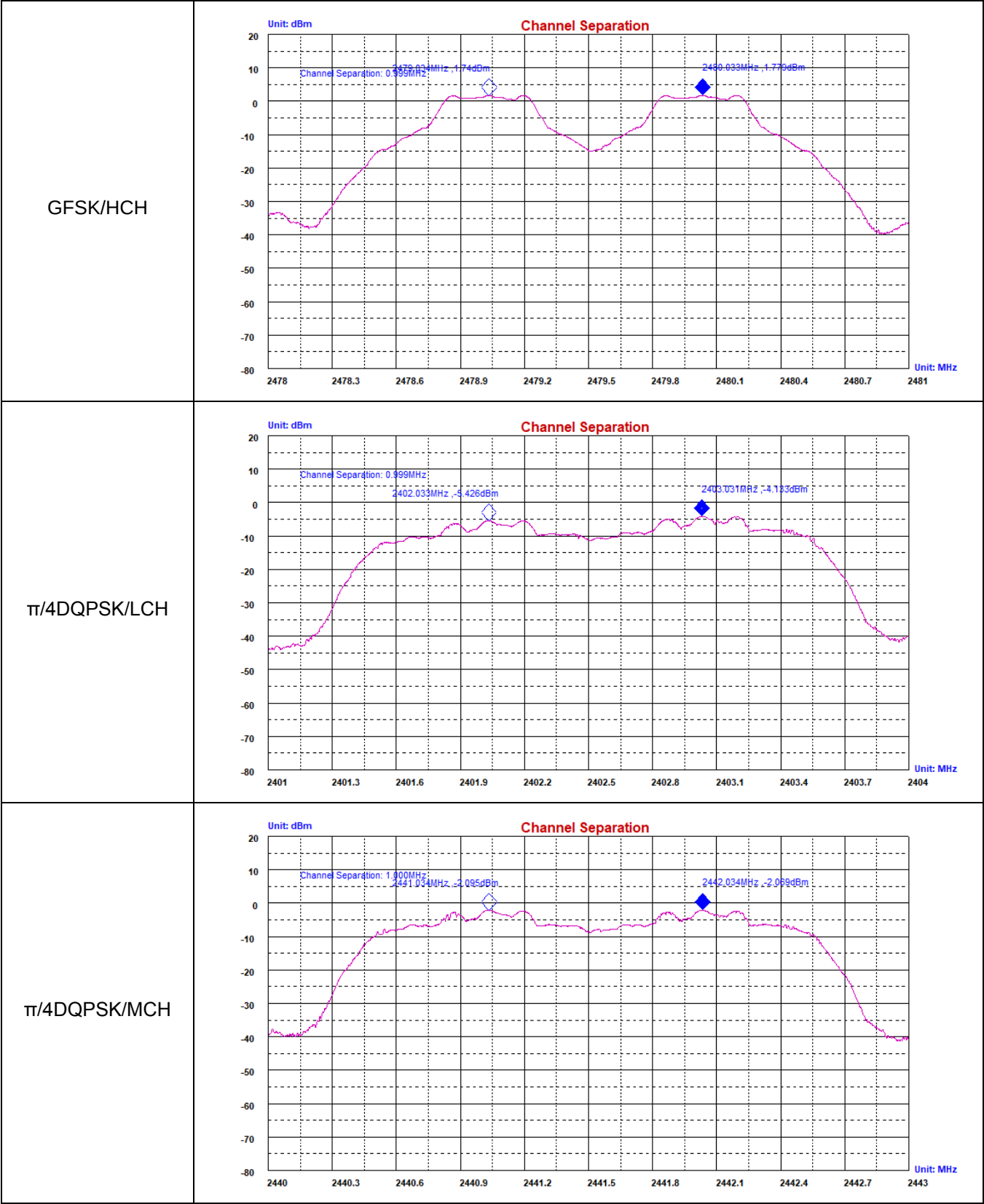


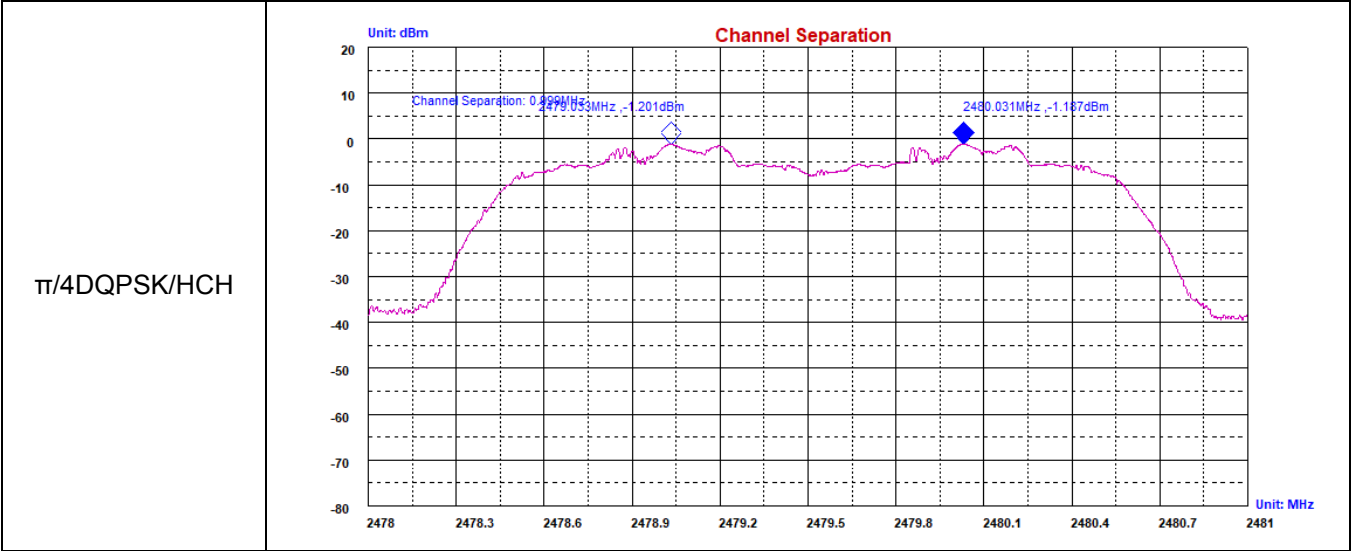
A.3 Carrier Frequency Separation

| Mode          | Channel. | Carrier Frequency Separation<br>[MHz] | Limit<br>[MHz] | Verdict |
|---------------|----------|---------------------------------------|----------------|---------|
| GFSK          | LCH      | 1.000                                 | 0.629          | PASS    |
| GFSK          | MCH      | 0.999                                 | 0.623          | PASS    |
| GFSK          | HCH      | 0.999                                 | 0.625          | PASS    |
| $\pi$ /4DQPSK | LCH      | 0.999                                 | 0.847          | PASS    |
| $\pi$ /4DQPSK | MCH      | 1.000                                 | 0.817          | PASS    |
| $\pi$ /4DQPSK | HCH      | 0.999                                 | 0.819          | PASS    |

Test Graph



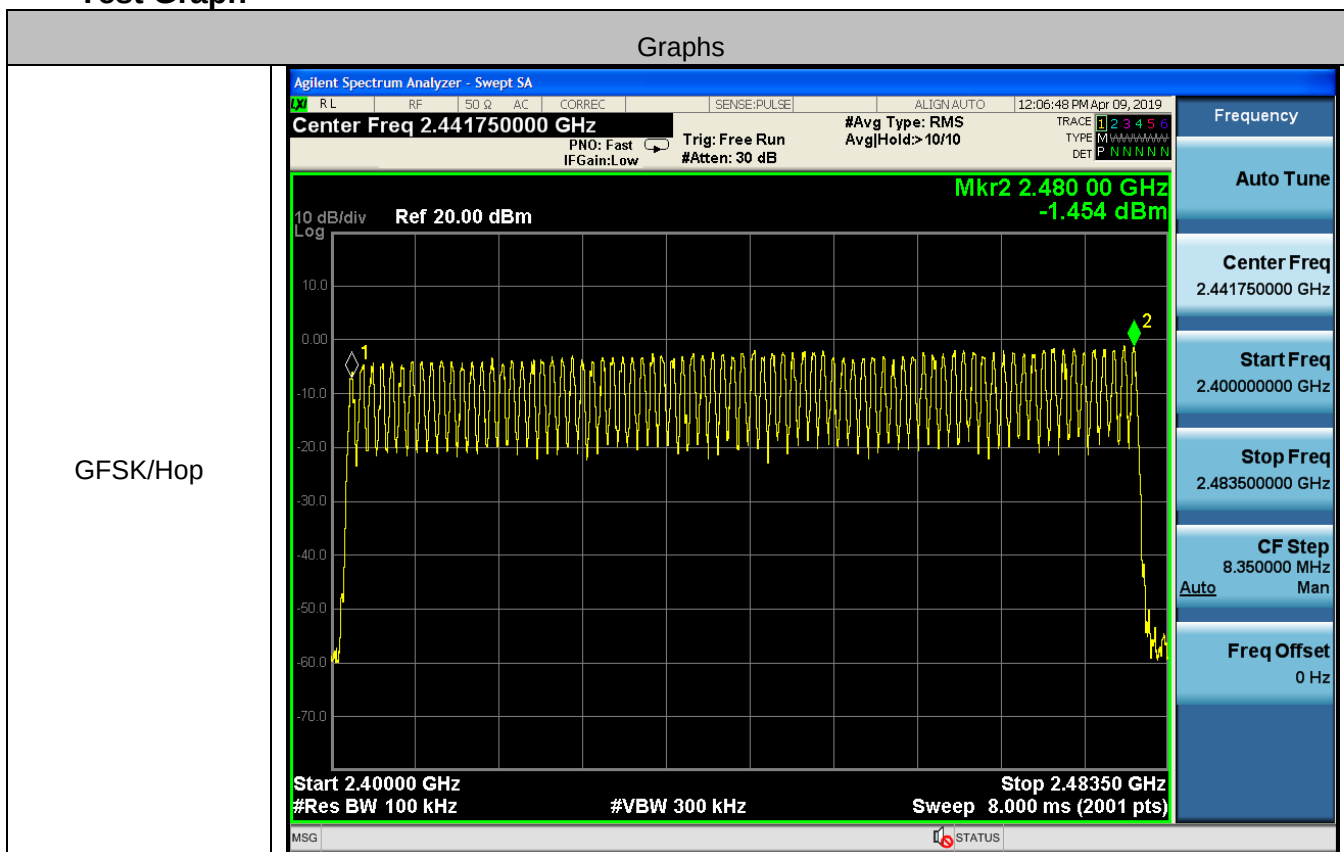




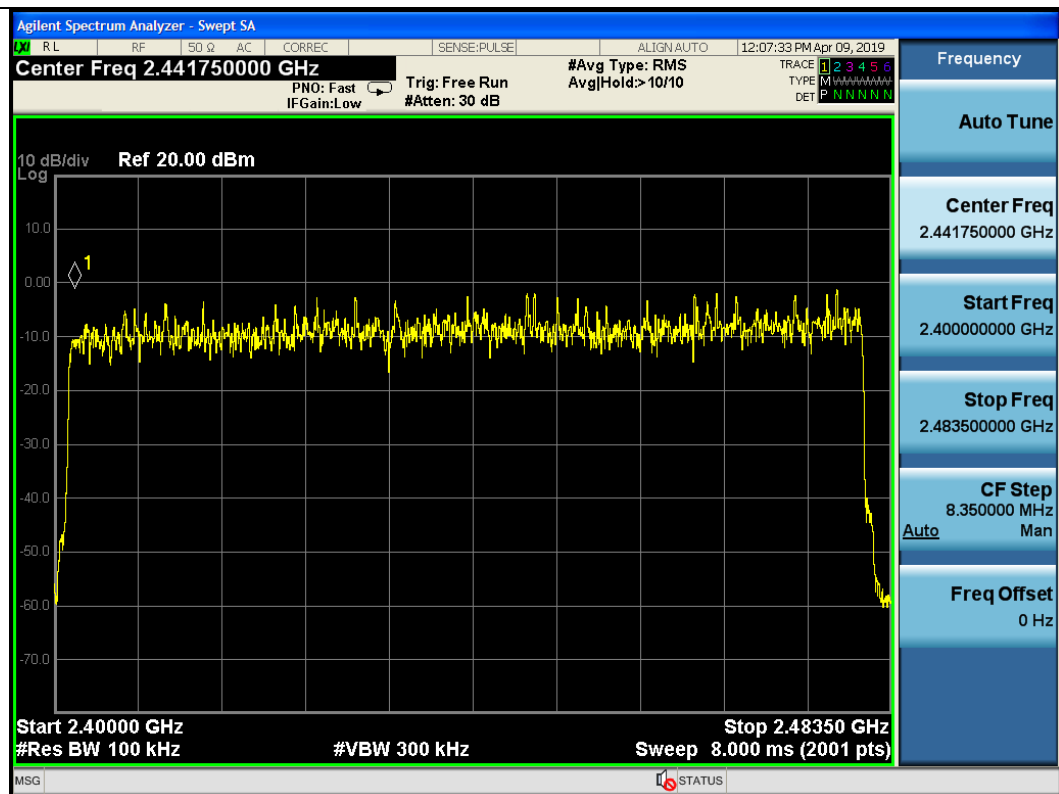
#### A.4 Hopping Channel Number

| 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 Graph



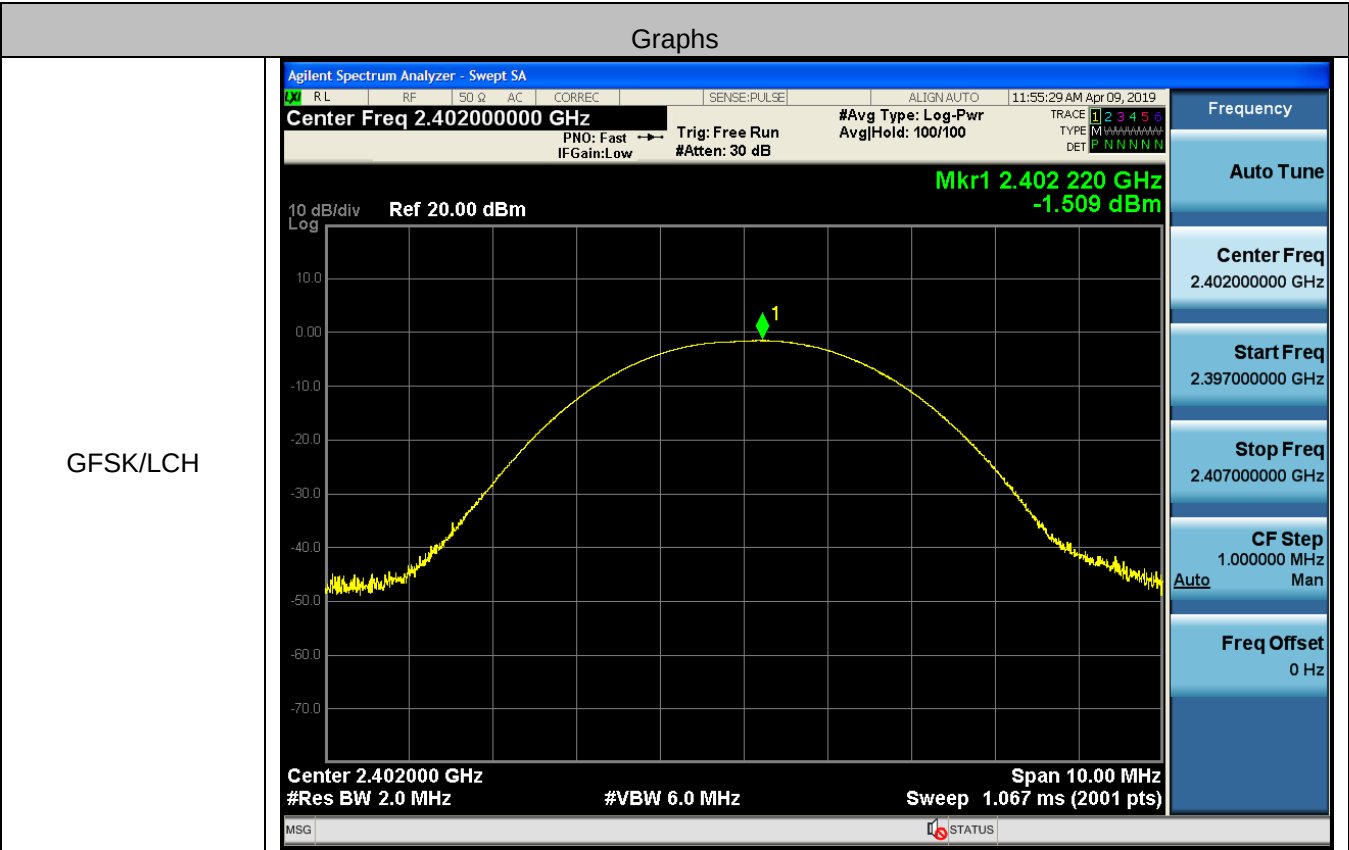
$\pi/4$ DQPSK/Hop

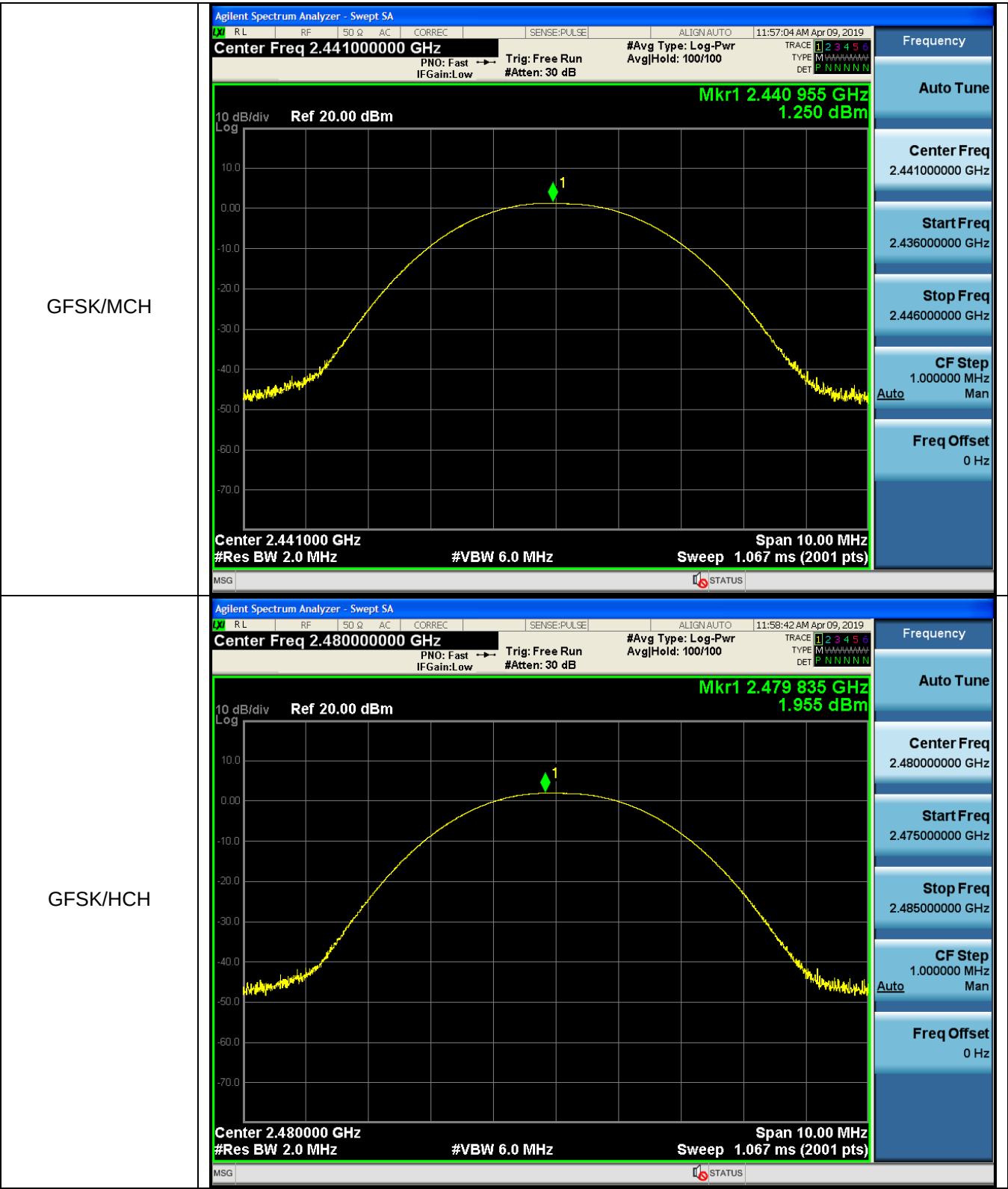


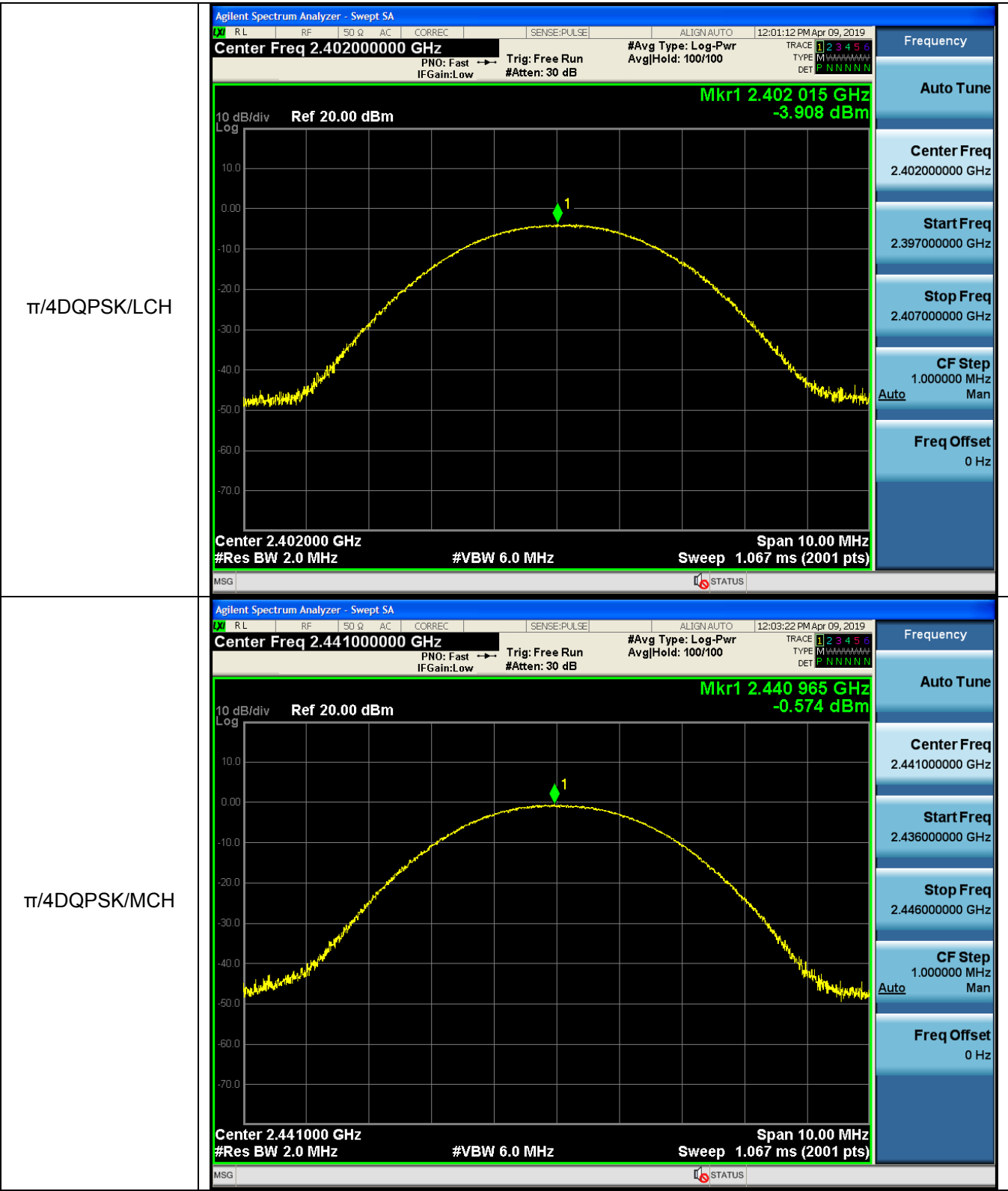
A.5 Conducted Peak Output Power

| Mode          | Channel. | Maximum Peak Output Power<br>[dBm] | Limit<br>[dBm] | Verdict |
|---------------|----------|------------------------------------|----------------|---------|
| GFSK          | LCH      | -1.509                             | 21             | PASS    |
| GFSK          | MCH      | 1.250                              | 21             | PASS    |
| GFSK          | HCH      | 1.955                              | 21             | PASS    |
| $\pi/4$ DQPSK | LCH      | -3.908                             | 21             | PASS    |
| $\pi/4$ DQPSK | MCH      | -0.574                             | 21             | PASS    |
| $\pi/4$ DQPSK | HCH      | 0.304                              | 21             | PASS    |

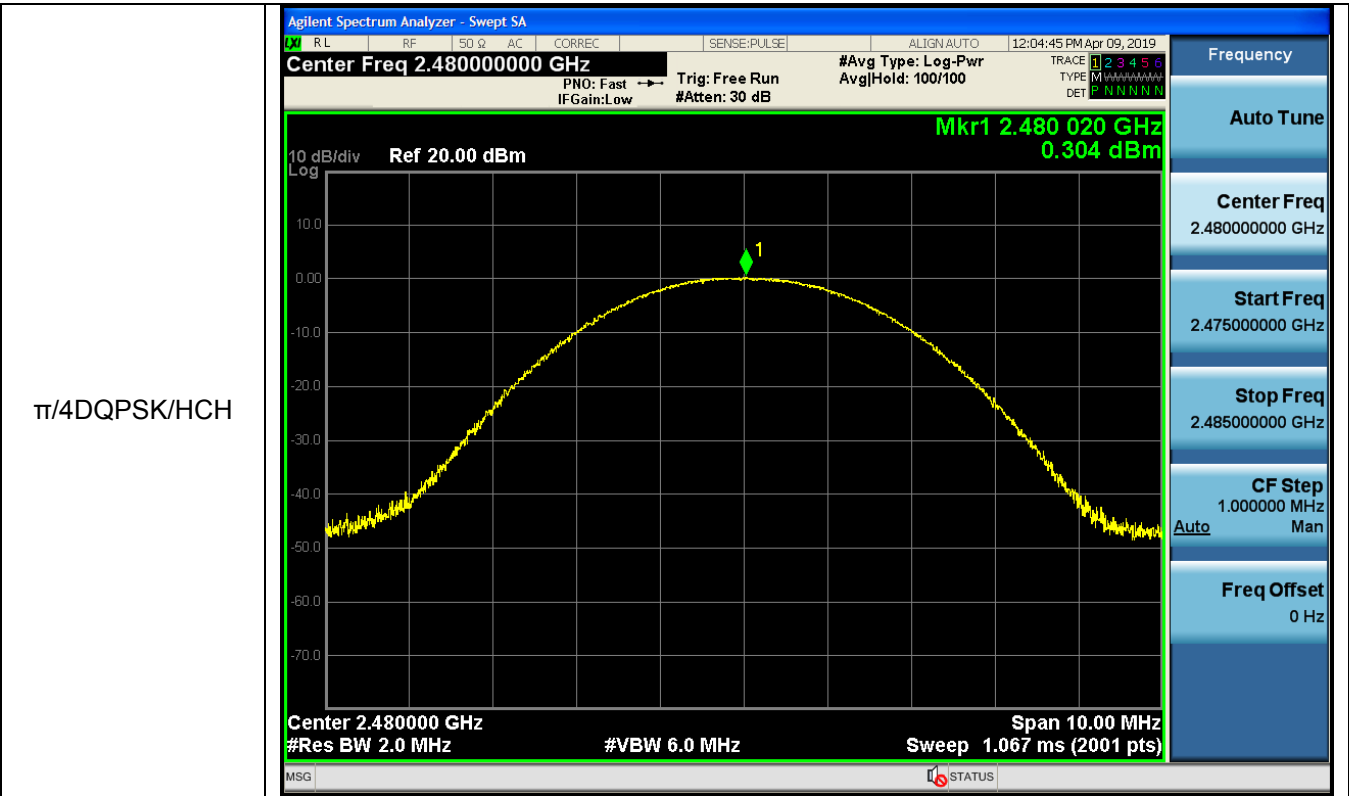
Test Graph











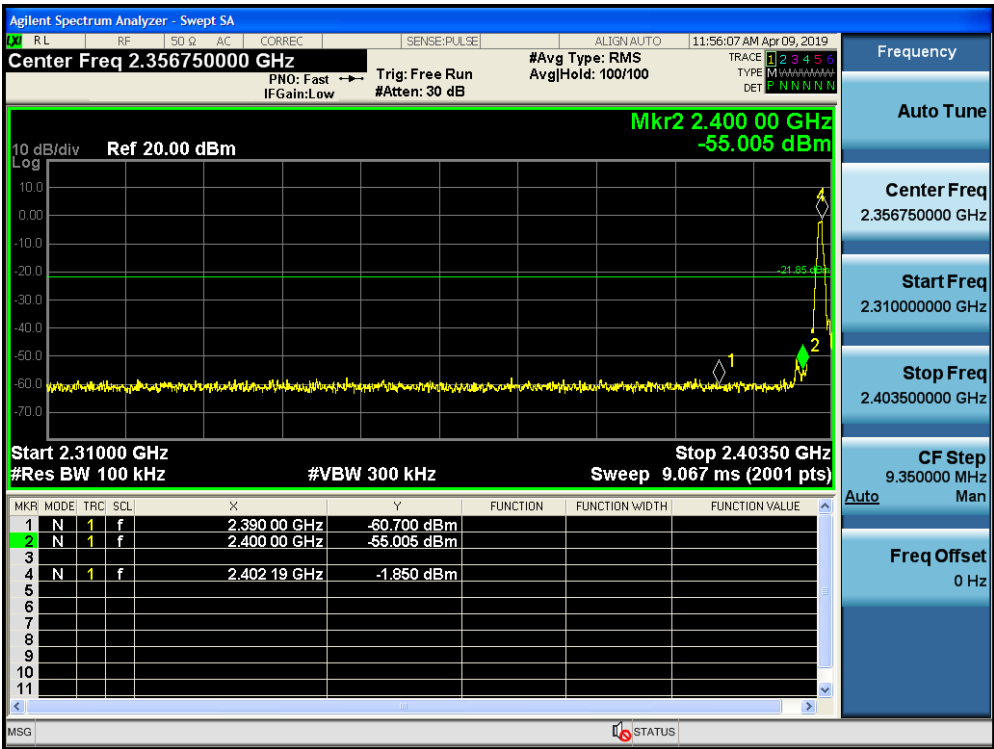
**A.6 Band-edge for RF Conducted Emissions**

| Type         | Carrier Frequency(MHz) | Frequency(MHz) | Carrier Frequency Power [dBm] | Bandedge Peak(dBm) | Upper limit(dBm) | Conclusion |
|--------------|------------------------|----------------|-------------------------------|--------------------|------------------|------------|
| 1DH5         | 2402                   | 2390           | -1.850                        | -60.70             | -21.850          | Pass       |
| 1DH5         | 2402                   | 2400           | -1.850                        | -55.00             | -21.850          | Pass       |
| 1DH5         | 2480                   | 2483.5         | 1.487                         | -60.75             | -18.513          | Pass       |
| 1DH5         | 2480                   | 2500           | 1.487                         | -59.87             | -18.513          | Pass       |
| 2DH5         | 2402                   | 2390           | -5.385                        | -59.50             | -25.385          | Pass       |
| 2DH5         | 2402                   | 2400           | -5.385                        | -57.01             | -25.385          | Pass       |
| 2DH5         | 2480                   | 2483.5         | -1.190                        | -60.17             | -21.190          | Pass       |
| 2DH5         | 2480                   | 2500           | -1.190                        | -60.48             | -21.190          | Pass       |
| 1DH5-Hopping | 2402                   | 2390           | -3.266                        | -60.32             | -23.266          | Pass       |
| 1DH5-Hopping | 2402                   | 2400           | -3.266                        | -59.96             | -23.266          | Pass       |
| 1DH5-Hopping | 2480                   | 2483.5         | -1.547                        | -59.82             | -21.547          | Pass       |
| 1DH5-Hopping | 2480                   | 2500           | -1.547                        | -56.58             | -21.547          | Pass       |
| 2DH5-Hopping | 2402                   | 2390           | -4.459                        | -58.49             | -24.459          | Pass       |
| 2DH5-Hopping | 2402                   | 2400           | -4.459                        | -55.81             | -24.459          | Pass       |
| 2DH5-Hopping | 2480                   | 2483.5         | -1.093                        | -56.34             | -21.093          | Pass       |
| 2DH5-Hopping | 2480                   | 2500           | -1.093                        | -56.78             | -21.093          | Pass       |

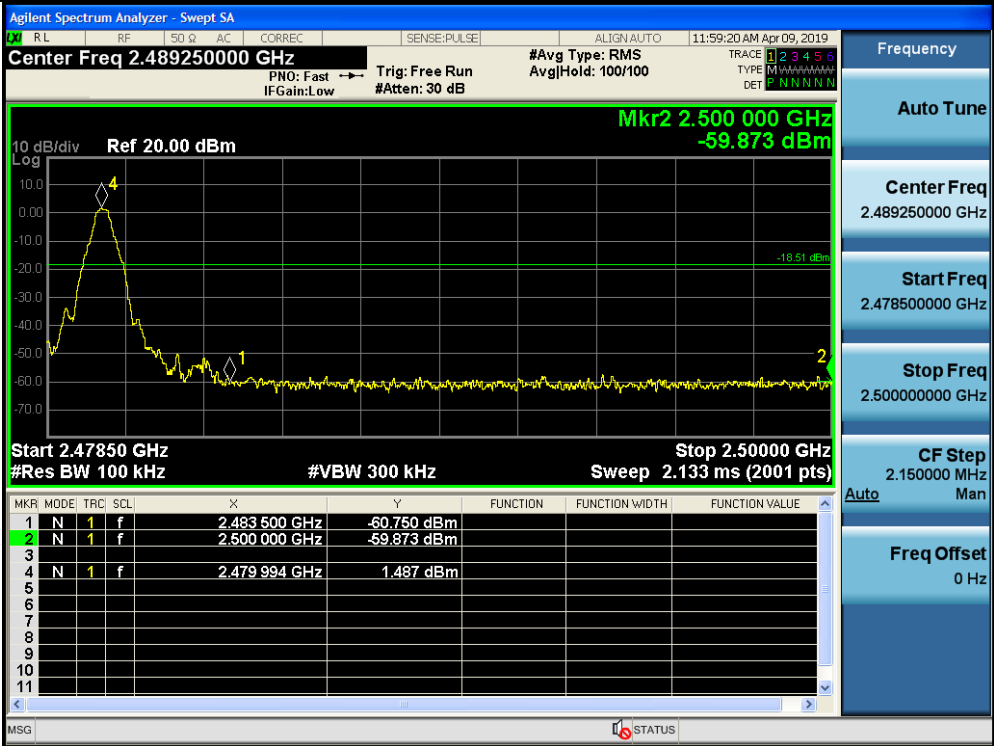
Test Graph

Graphs

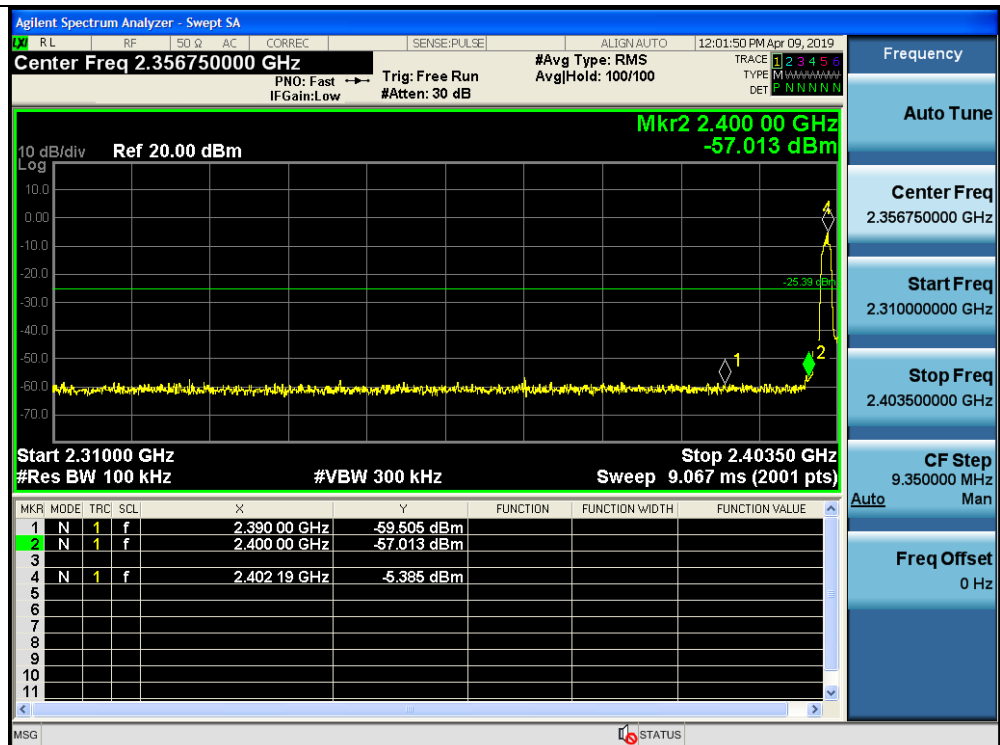
GFSK/LCH/No Hop



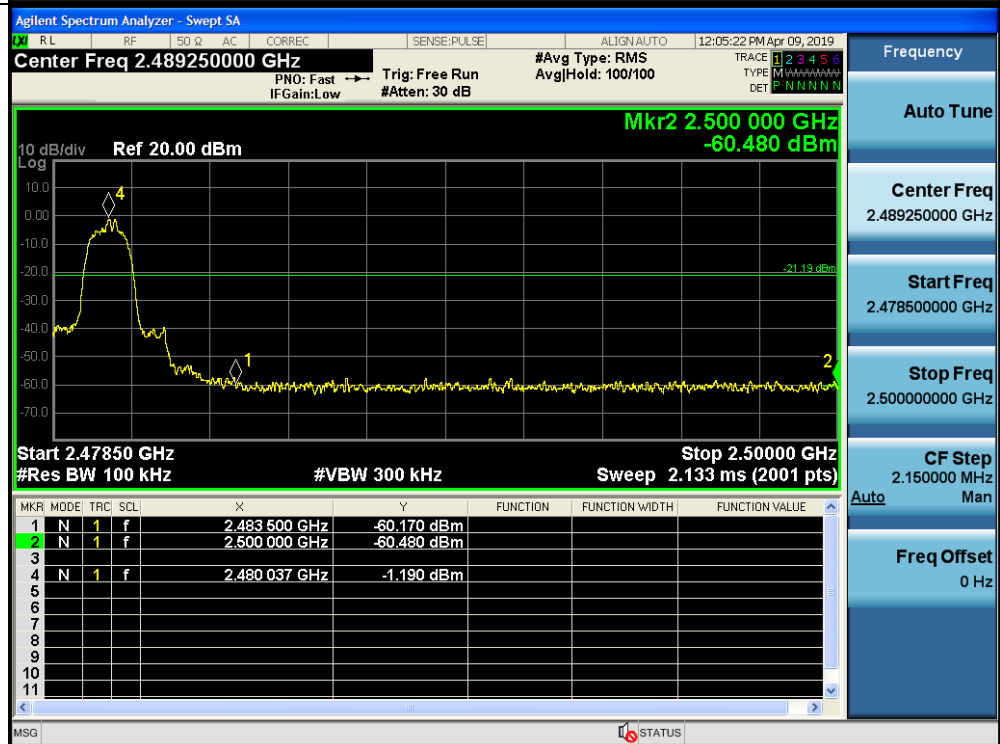
GFSK/HCH/No Hop



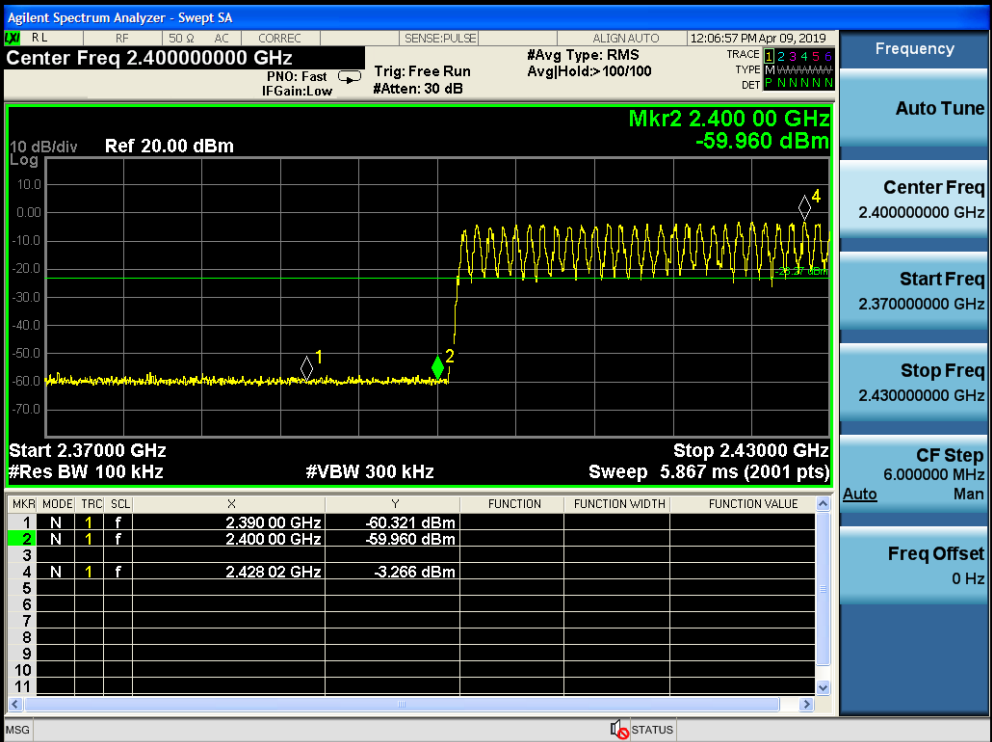
$\pi$  /4DQPSK/LCH/No  
Hop



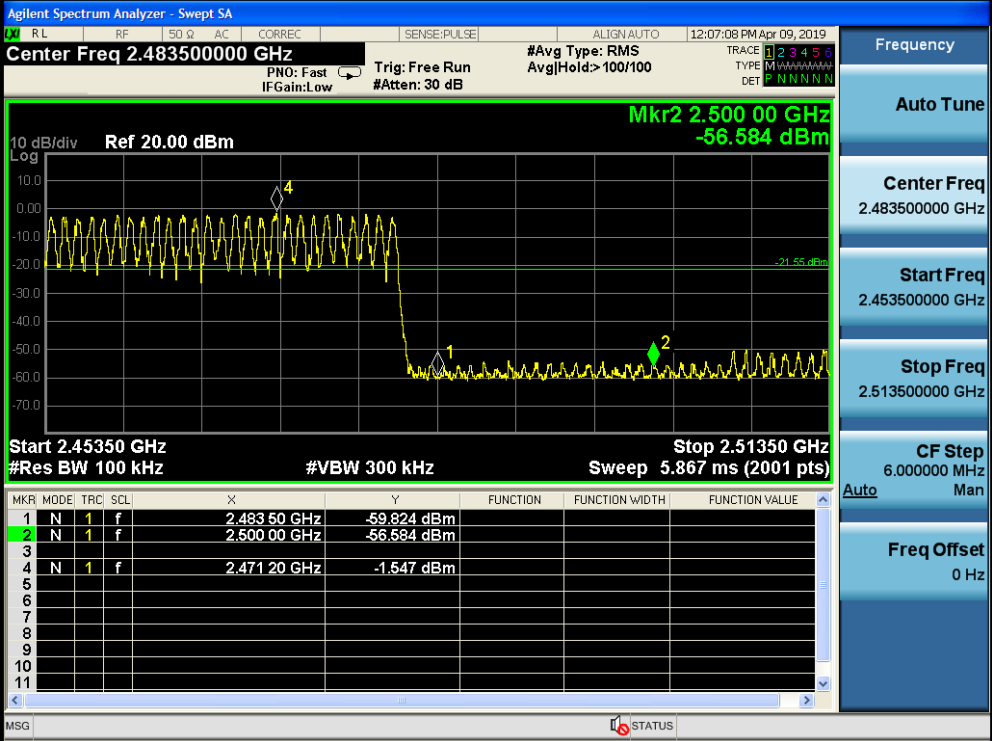
$\pi$  /4DQPSK/HCH/No  
Hop



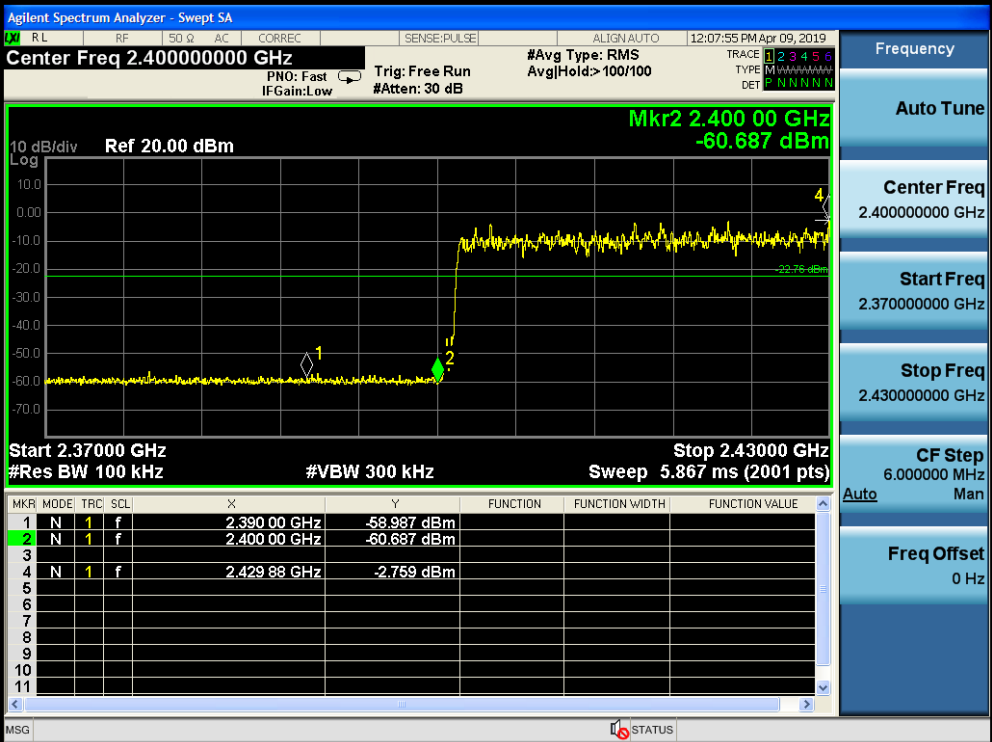
GFSK/LCH/Hop



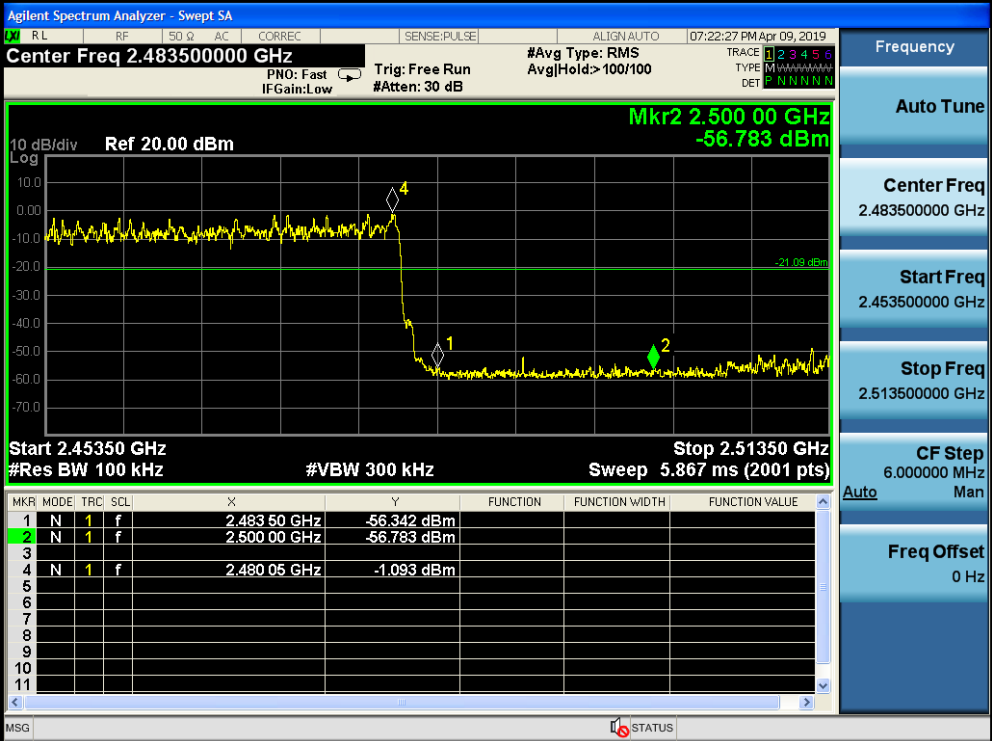
GFSK/HCH/Hop



$\pi$  /4DQPSK/LCH/Hop

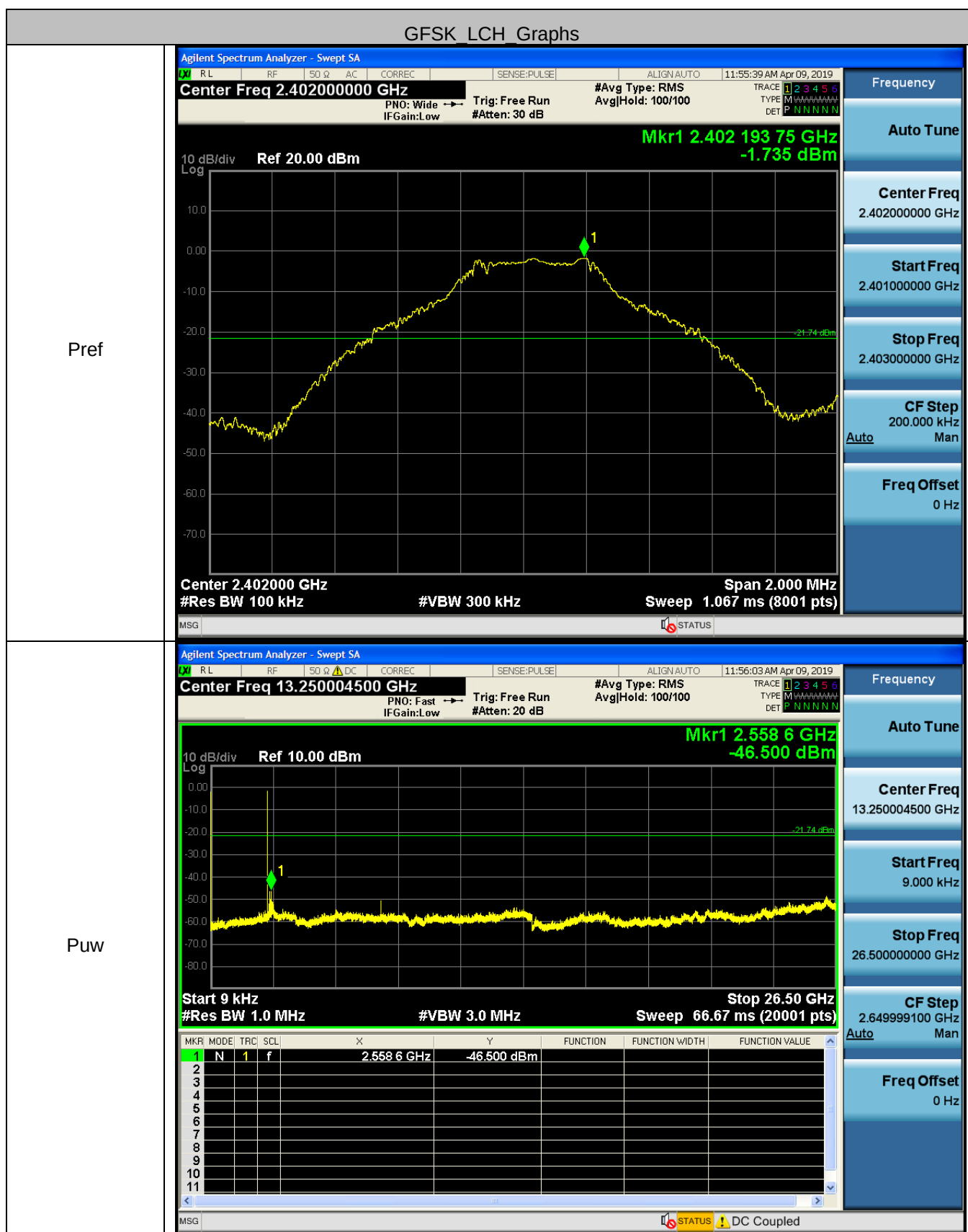


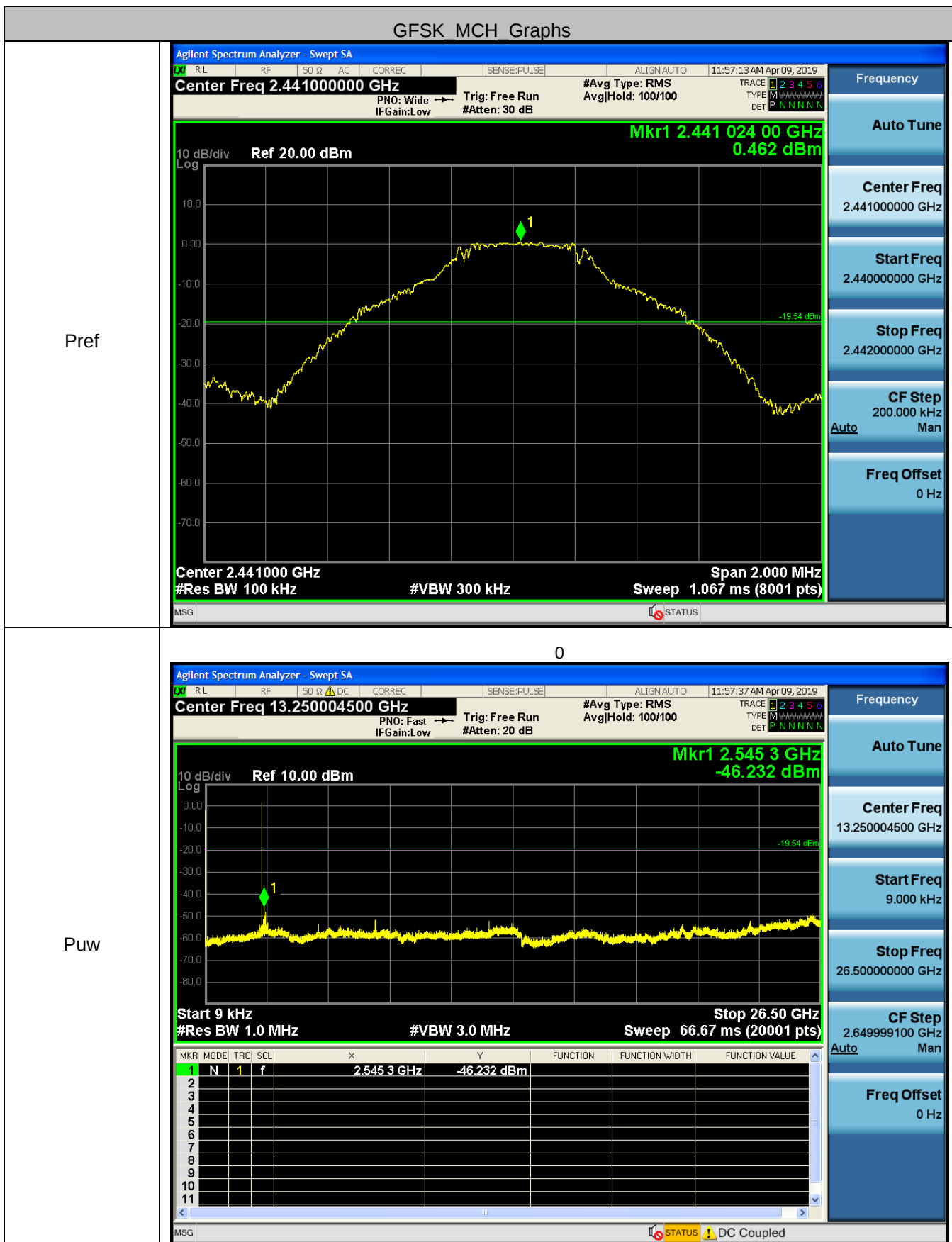
$\pi$  /4DQPSK/HCH/Hop



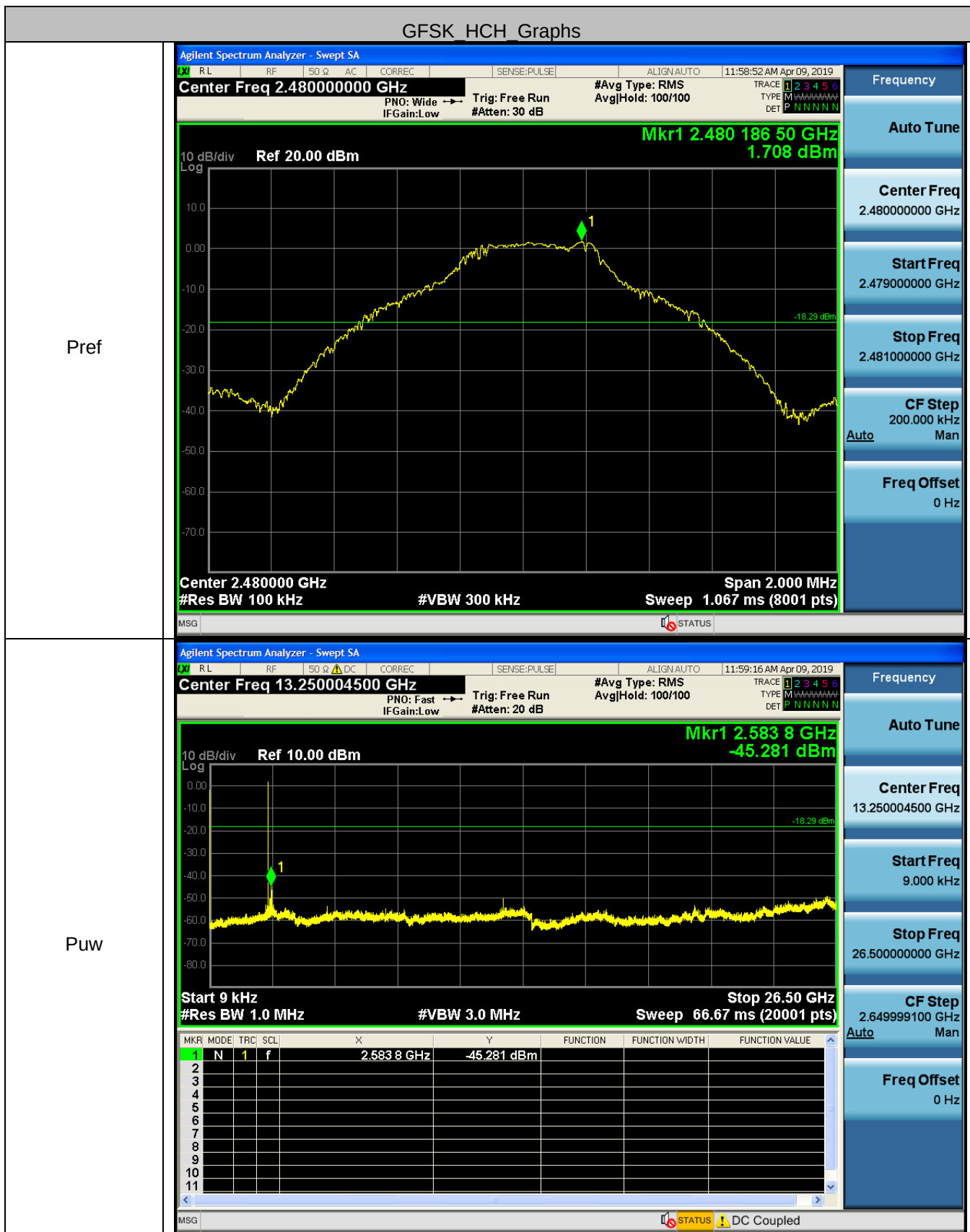
## A.7 RF Conducted Spurious Emissions

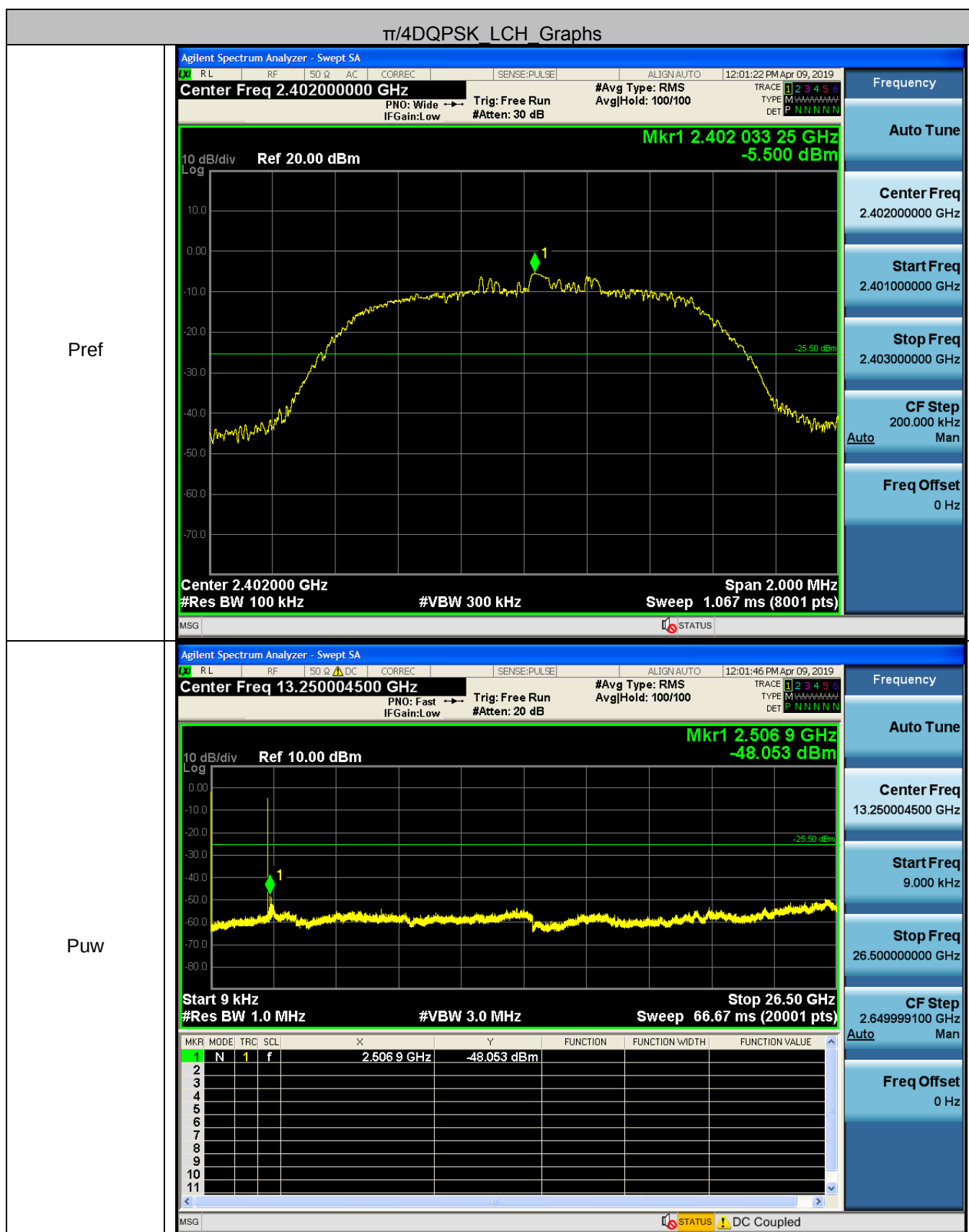
## Test Graph

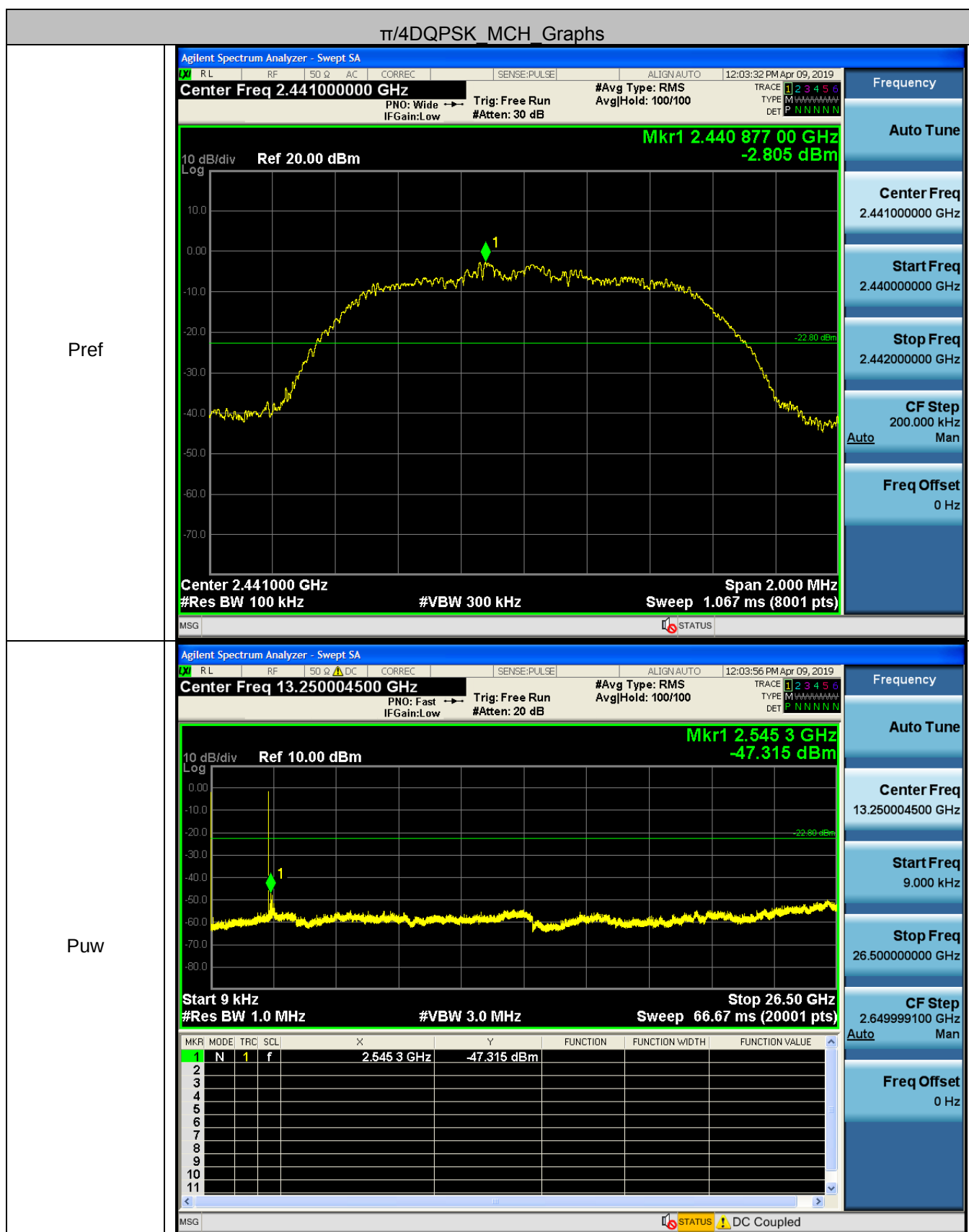


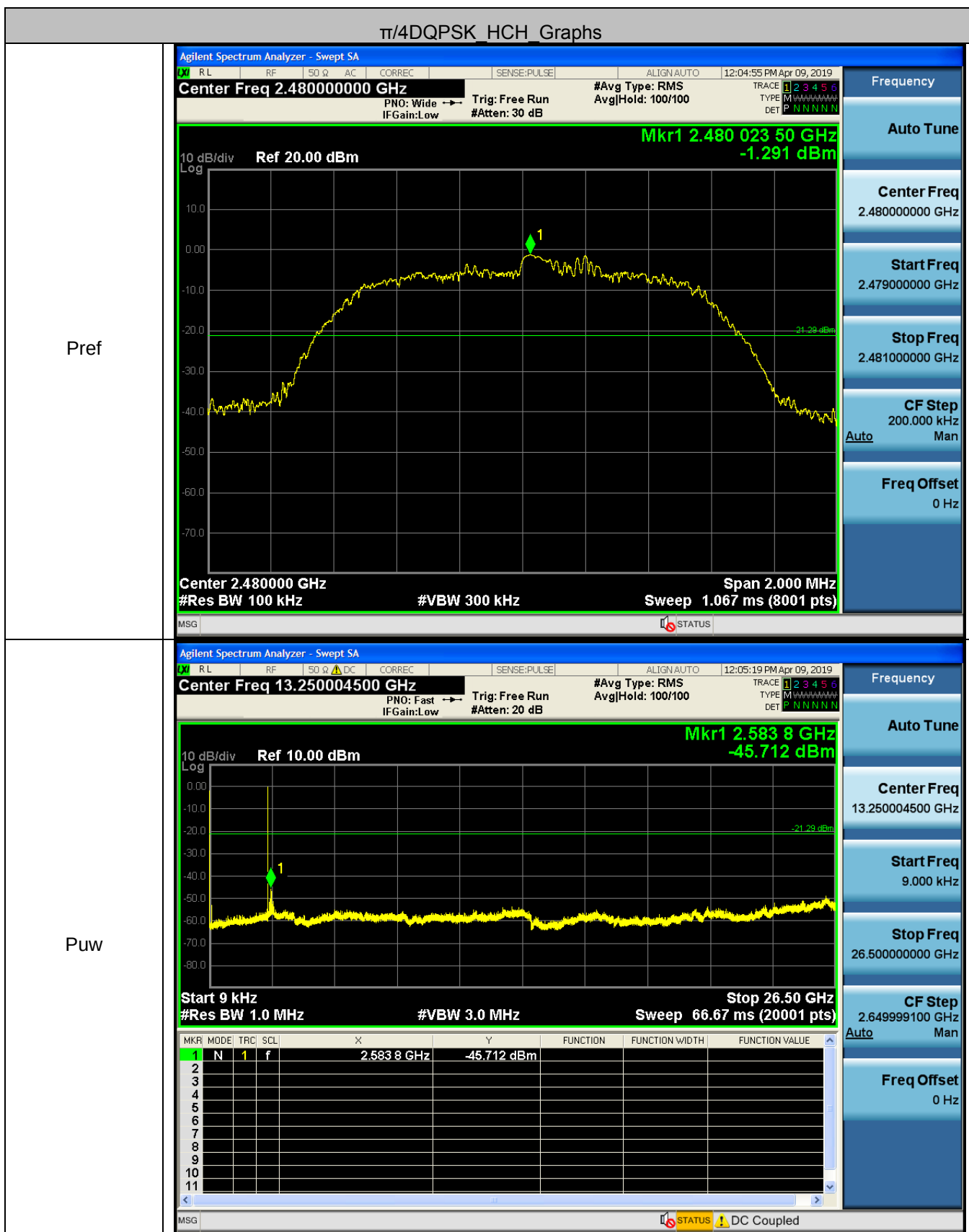








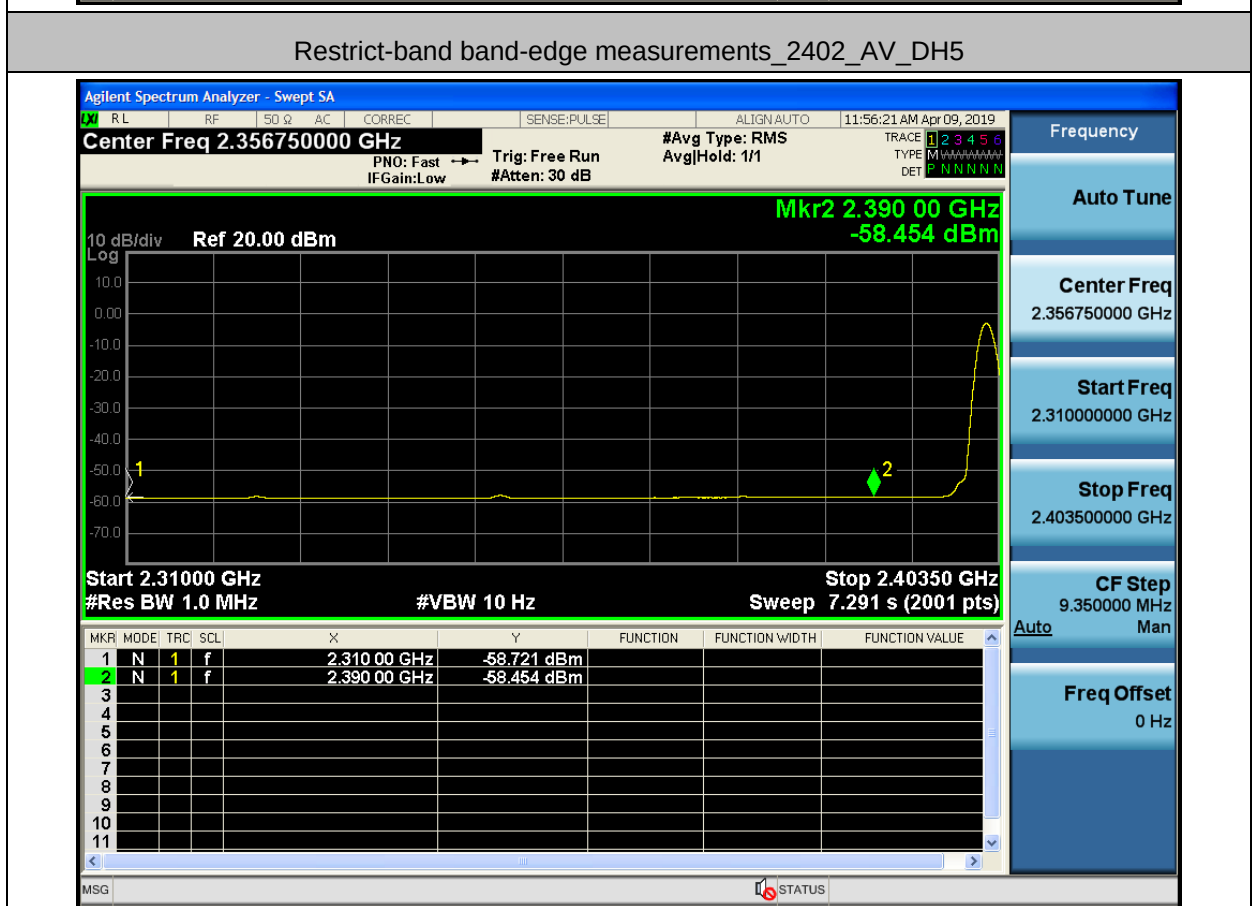
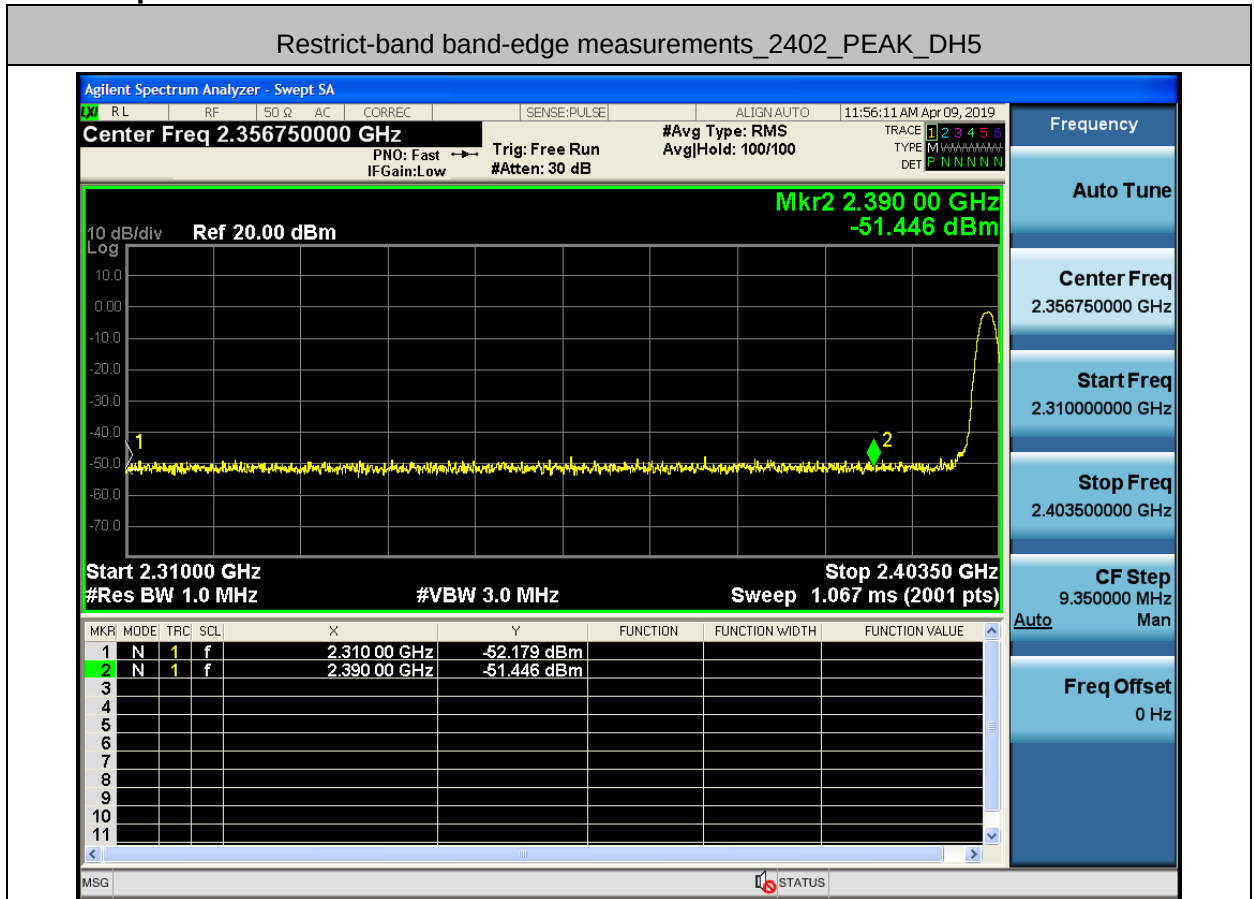




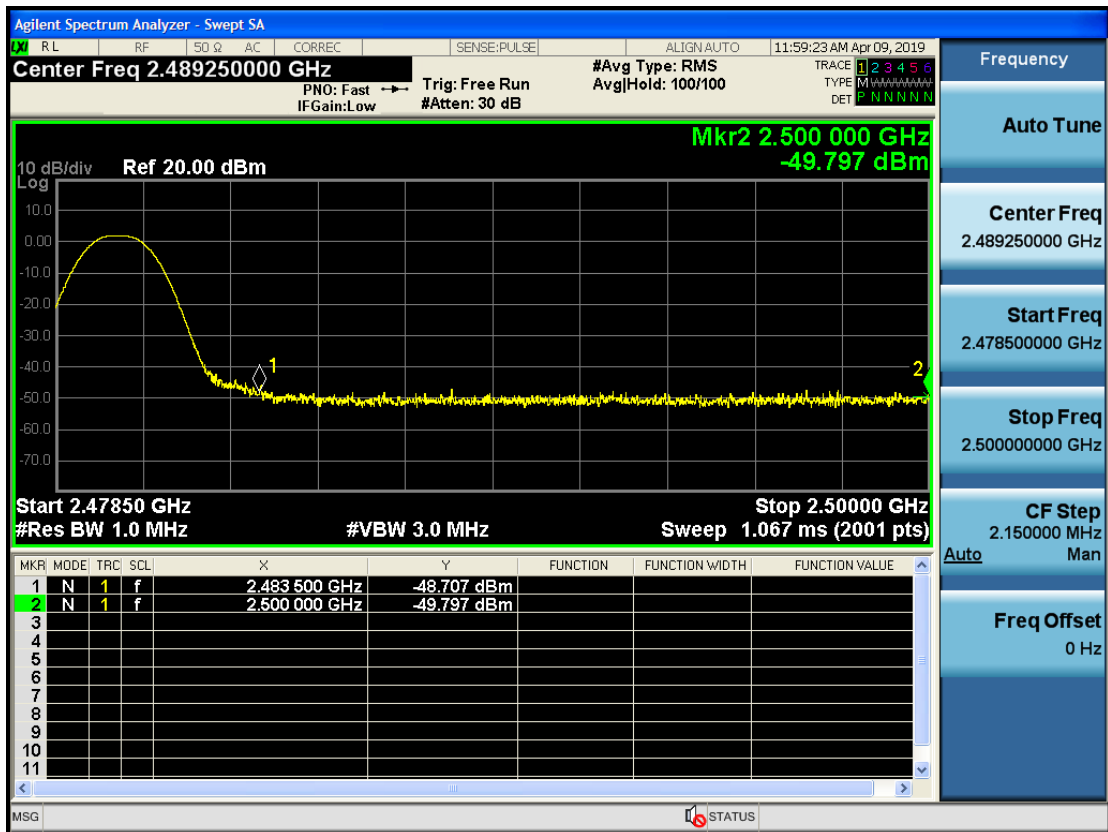
A.8 Restrict-band measurements

| Type | Carrier Frequency (MHz) | Frequency(MHz) | Gain | Ground Factor | Peak Value(dBm) | E [dBuV/m] | Limit [dBuV/m] | Average Value(dBm) | E [dBuV/m] | Limit [dBuV/m] | Conclusion |
|------|-------------------------|----------------|------|---------------|-----------------|------------|----------------|--------------------|------------|----------------|------------|
| 1DH5 | 2402                    | 2310           | 2.00 | 0.00          | -52.18          | 45.02      | 74             | -58.72             | 38.48      | 38.42          | Pass       |
| 1DH5 | 2402                    | 2390           | 2.00 | 0.00          | -51.45          | 45.75      | 74             | -58.45             | 38.75      | 38.85          | Pass       |
| 1DH5 | 2480                    | 2483.5         | 2.00 | 0.00          | -48.71          | 48.49      | 74             | -54.48             | 42.72      | 45.33          | Pass       |
| 1DH5 | 2480                    | 2500           | 2.00 | 0.00          | -49.80          | 47.40      | 74             | -57.92             | 39.28      | 39.58          | Pass       |
| 2DH5 | 2402                    | 2310           | 2.00 | 0.00          | -49.94          | 47.26      | 74             | -58.72             | 38.48      | 38.45          | Pass       |
| 2DH5 | 2402                    | 2390           | 2.00 | 0.00          | -50.24          | 46.96      | 74             | -58.49             | 38.71      | 38.79          | Pass       |
| 2DH5 | 2480                    | 2483.5         | 2.00 | 0.00          | -49.57          | 47.63      | 74             | -55.54             | 41.66      | 43.37          | Pass       |
| 2DH5 | 2480                    | 2500           | 2.00 | 0.00          | -52.29          | 44.91      | 74             | -57.90             | 39.30      | 39.36          | Pass       |

## Test Graph



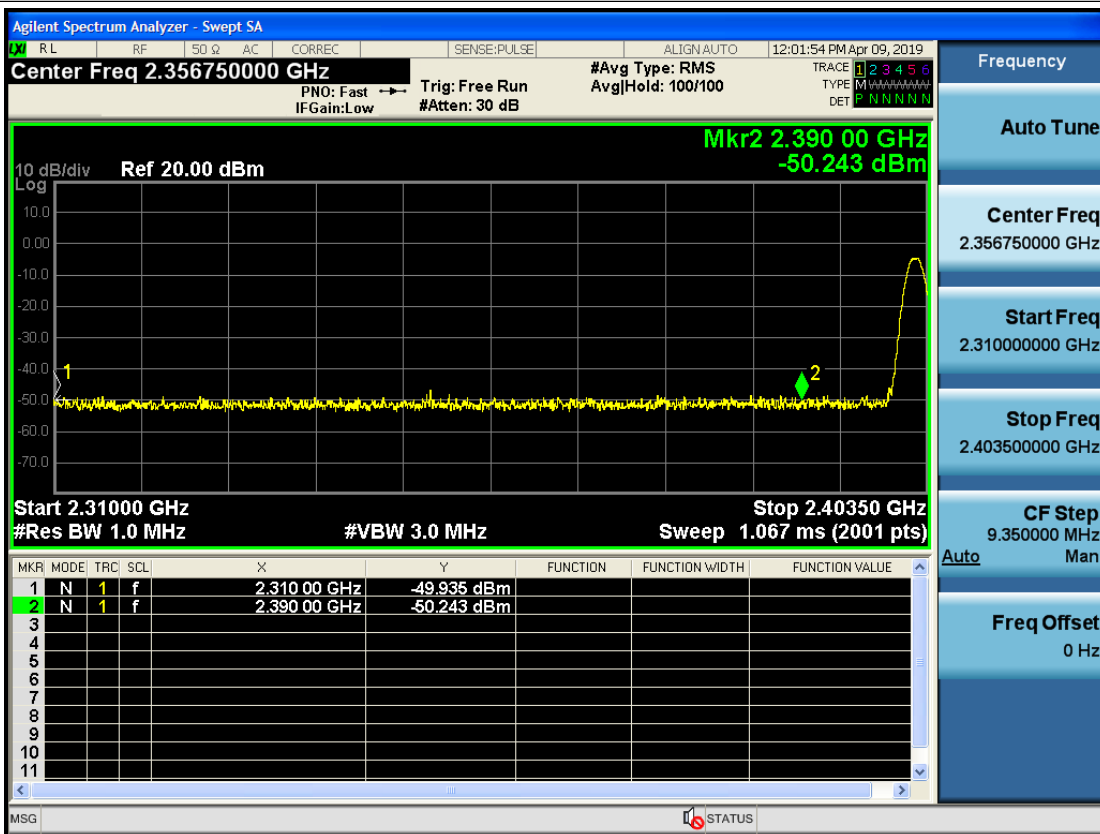
### Restrict-band band-edge measurements\_2480\_PEAK\_DH5



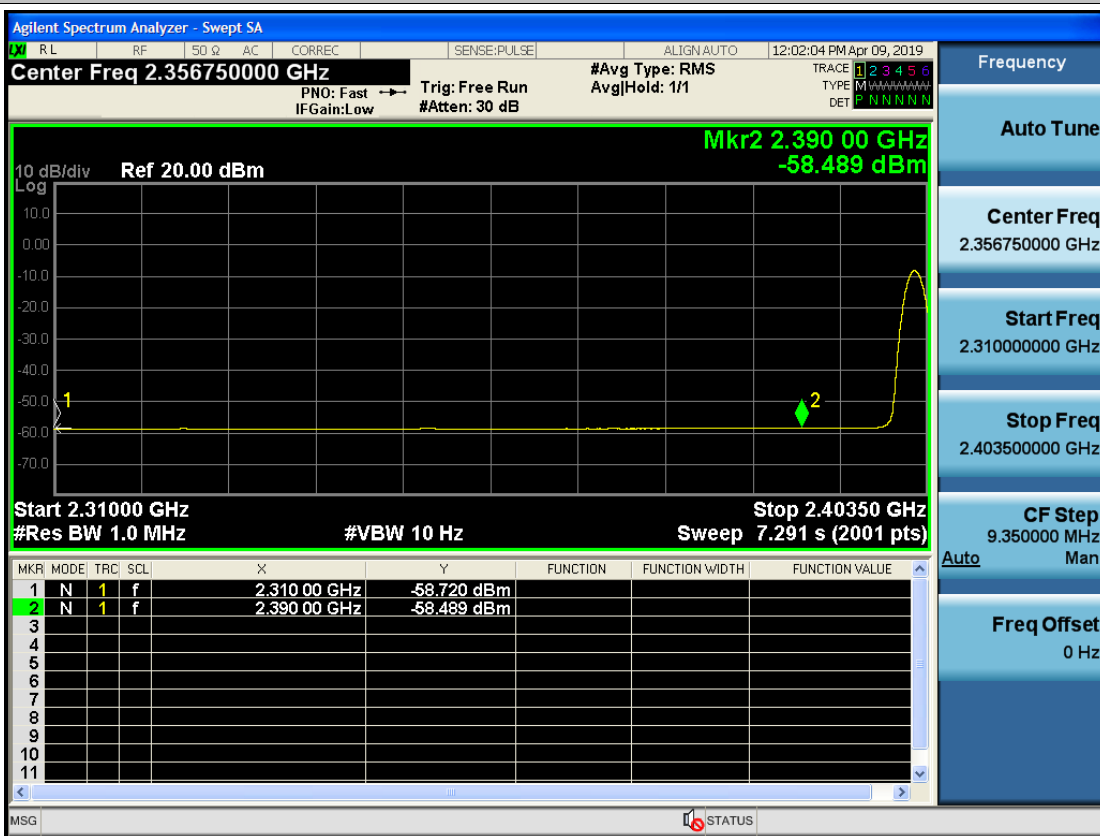
### Restrict-band band-edge measurements\_2480\_AV\_DH5



## Restrict-band band-edge measurements 2402 PEAK 2DH5

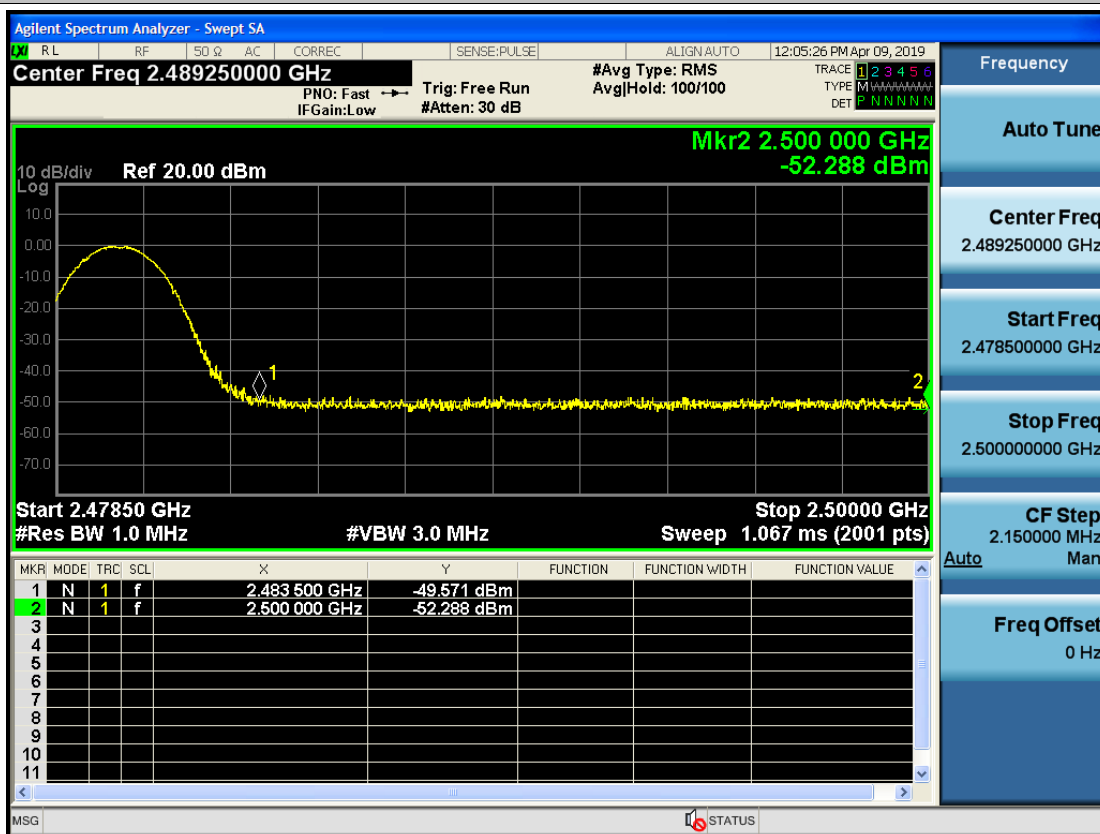


## Restrict-band band-edge measurements\_2402\_AV\_2DH5





## Restrict-band band-edge measurements 2480 PEAK 2DH5



## Restrict-band band-edge measurements\_2480\_AV\_2DH5

