

## Appendix C

### RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: LEGENDS PINBALL

Trade Mark: N/A

Test Model: HA8819

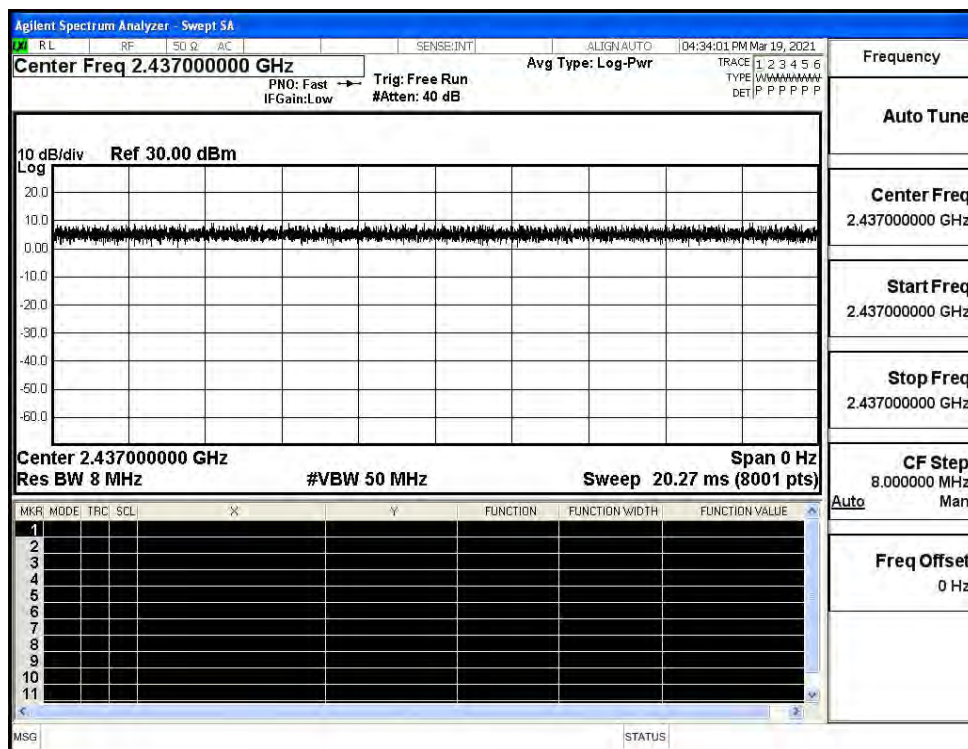
#### Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 22° C     |
| Relative Humidity: | 53%       |
| ATM Pressure:      | 100.0 kPa |
| Test Engineer:     | Kay Hu    |
| Supervised by:     | Li Huan   |

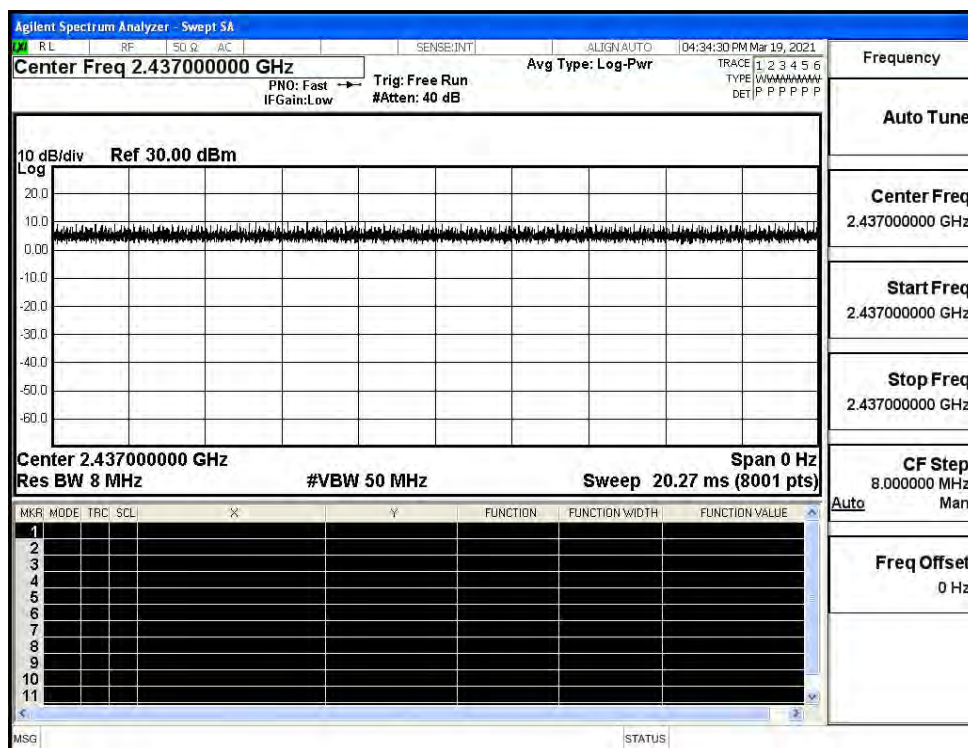
#### C.1 Duty Cycle

| Test Mode | Test Channel | Ant  | Duty Cycle[%] | Verdict |
|-----------|--------------|------|---------------|---------|
| 11B       | 2437         | Ant1 | 100           | PASS    |
| 11G       | 2437         | Ant1 | 100           | PASS    |
| 11N20SISO | 2437         | Ant1 | 100           | PASS    |
| 11N40SISO | 2437         | Ant1 | 100           | PASS    |

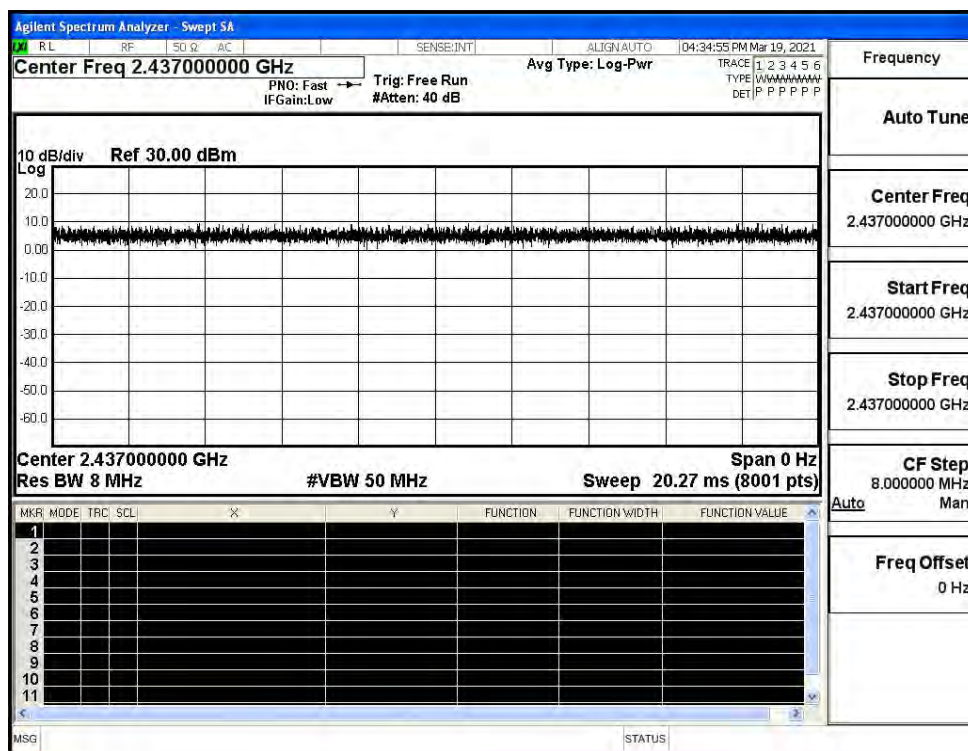
## Duty Cycle\_11B\_2437\_Ant1



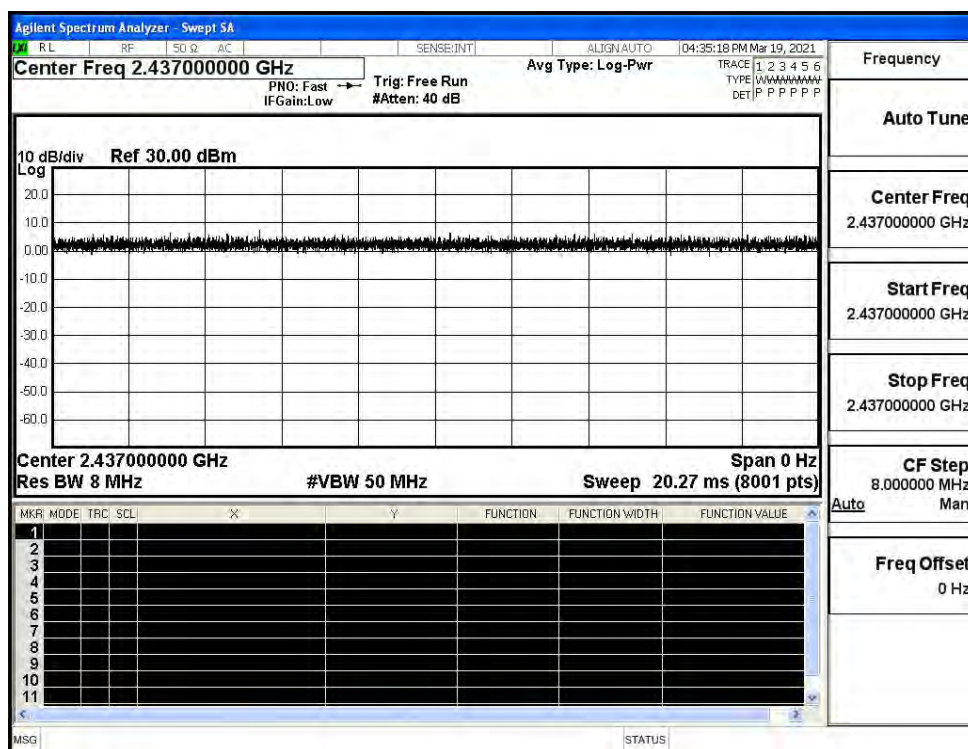
## Duty Cycle\_11G\_2437\_Ant1



## Duty Cycle\_11N20SISO\_2437\_Ant1



## Duty Cycle\_11N40SISO\_2437\_Ant1



**C.2 Maximum Conducted Output Power**

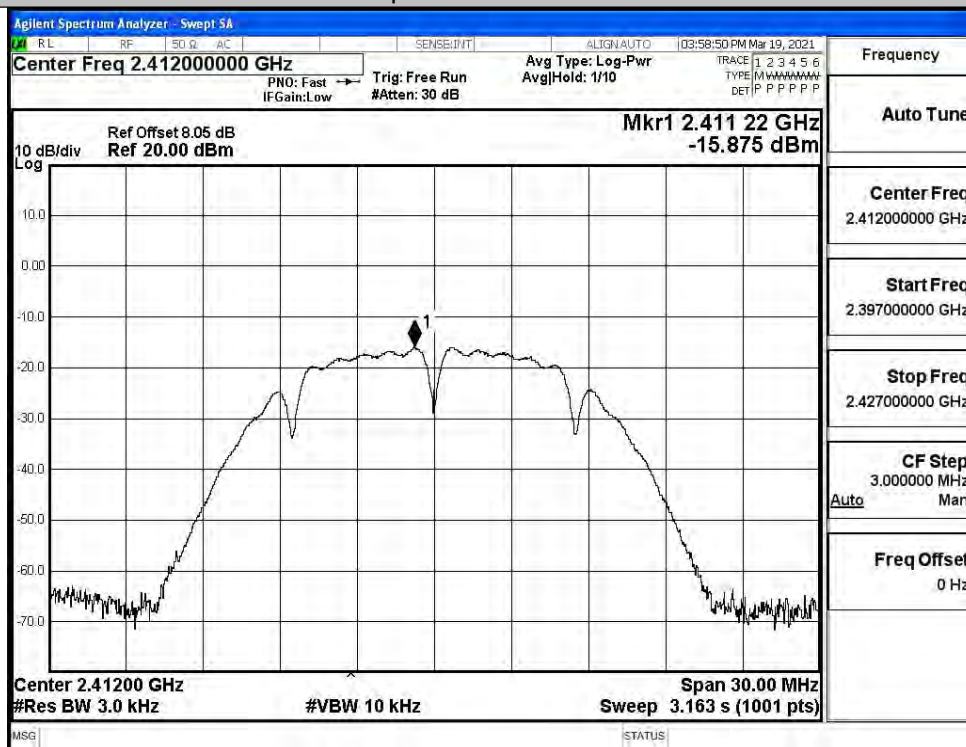
| Mode      | Channel | Meas.Level [dBm] | Limit [dBm] | Verdict |
|-----------|---------|------------------|-------------|---------|
| 11B       | LCH     | 17.03            | 30          | PASS    |
|           | MCH     | 17.75            | 30          | PASS    |
|           | HCH     | 17.33            | 30          | PASS    |
| 11G       | LCH     | <b>17.9</b>      | 30          | PASS    |
|           | MCH     | 17.6             | 30          | PASS    |
|           | HCH     | 17.4             | 30          | PASS    |
| 11N20SISO | LCH     | 16.84            | 30          | PASS    |
|           | MCH     | 17.61            | 30          | PASS    |
|           | HCH     | 16.7             | 30          | PASS    |
| 11N40SISO | LCH     | 15.44            | 30          | PASS    |
|           | MCH     | 16.45            | 30          | PASS    |
|           | HCH     | 16.49            | 30          | PASS    |

### C.3 Maximum Power Spectral Density

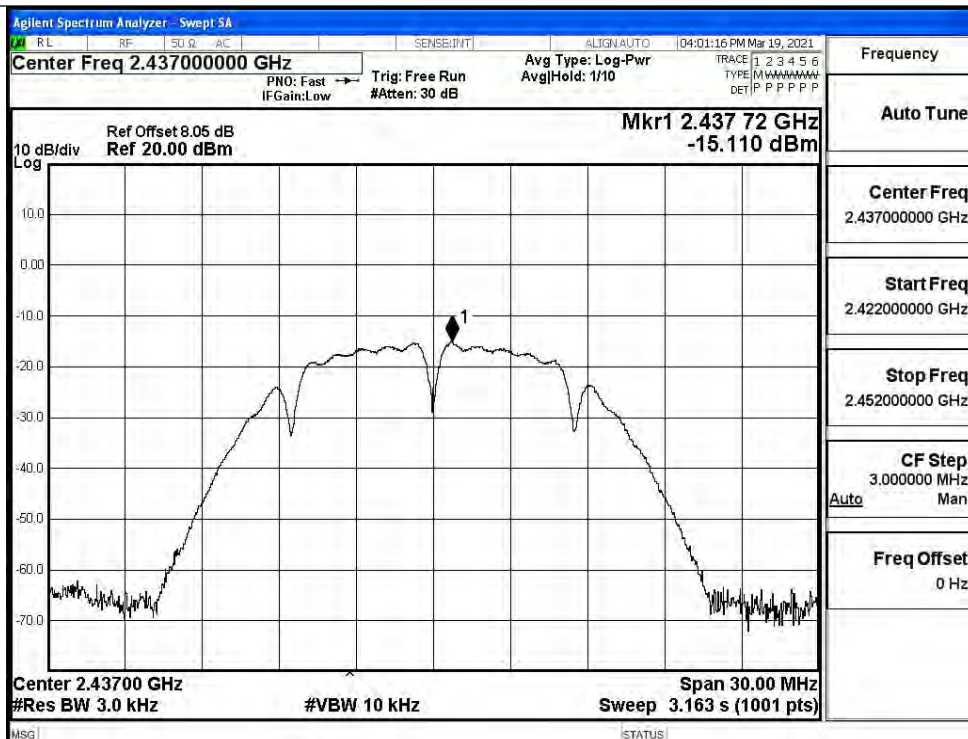
| Mode      | Channel | Meas.Level [dBm/3KHz] | Limit [dBm/3KHz] | Verdict |
|-----------|---------|-----------------------|------------------|---------|
| 11B       | LCH     | -15.875               | 8                | PASS    |
|           | MCH     | -15.110               | 8                | PASS    |
|           | HCH     | -15.659               | 8                | PASS    |
| 11G       | LCH     | -17.524               | 8                | PASS    |
|           | MCH     | -16.870               | 8                | PASS    |
|           | HCH     | -18.118               | 8                | PASS    |
| 11N20SISO | LCH     | -17.327               | 8                | PASS    |
|           | MCH     | -16.350               | 8                | PASS    |
|           | HCH     | -17.719               | 8                | PASS    |
| 11N40SISO | LCH     | -20.660               | 8                | PASS    |
|           | MCH     | -19.896               | 8                | PASS    |
|           | HCH     | -19.387               | 8                | PASS    |

#### Test Graphs

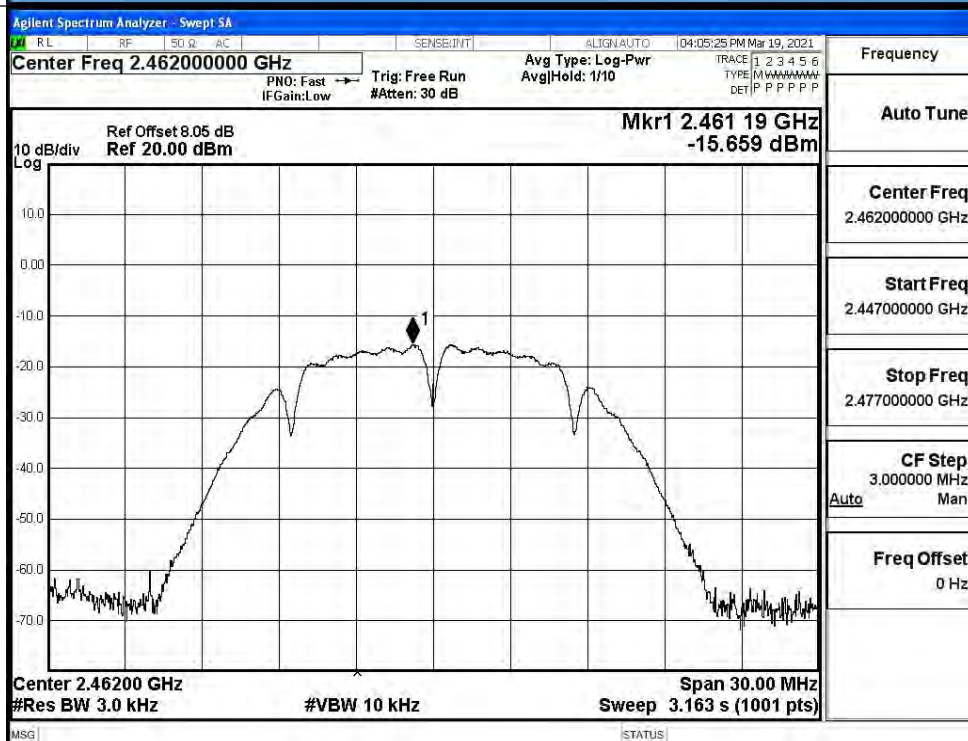
11B/LCH



11B/MCH

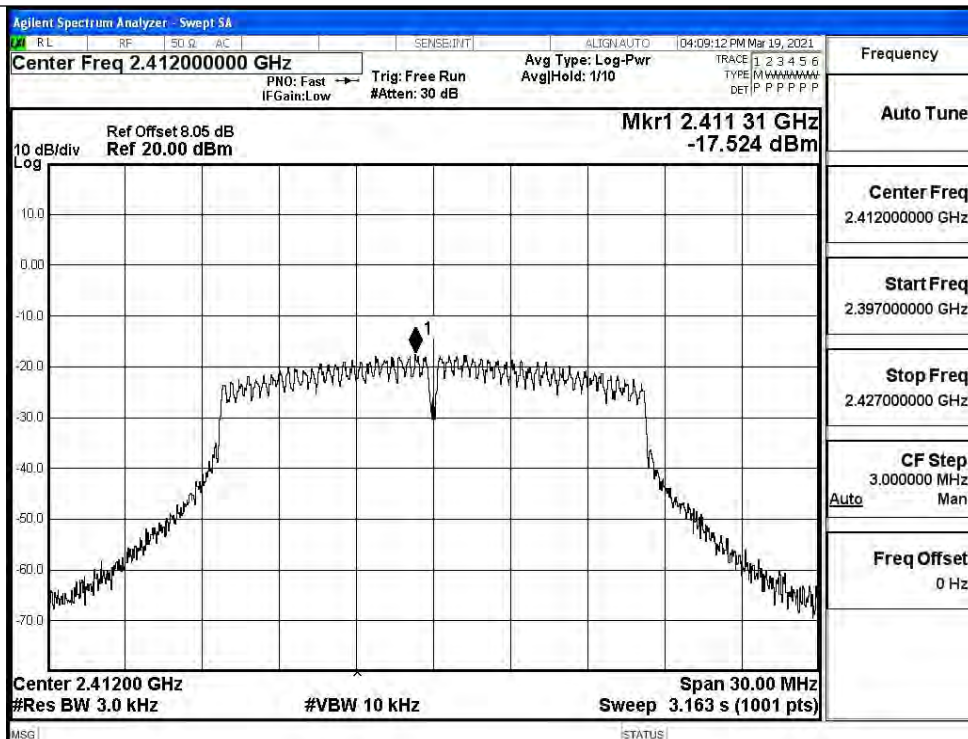


11B/HCH

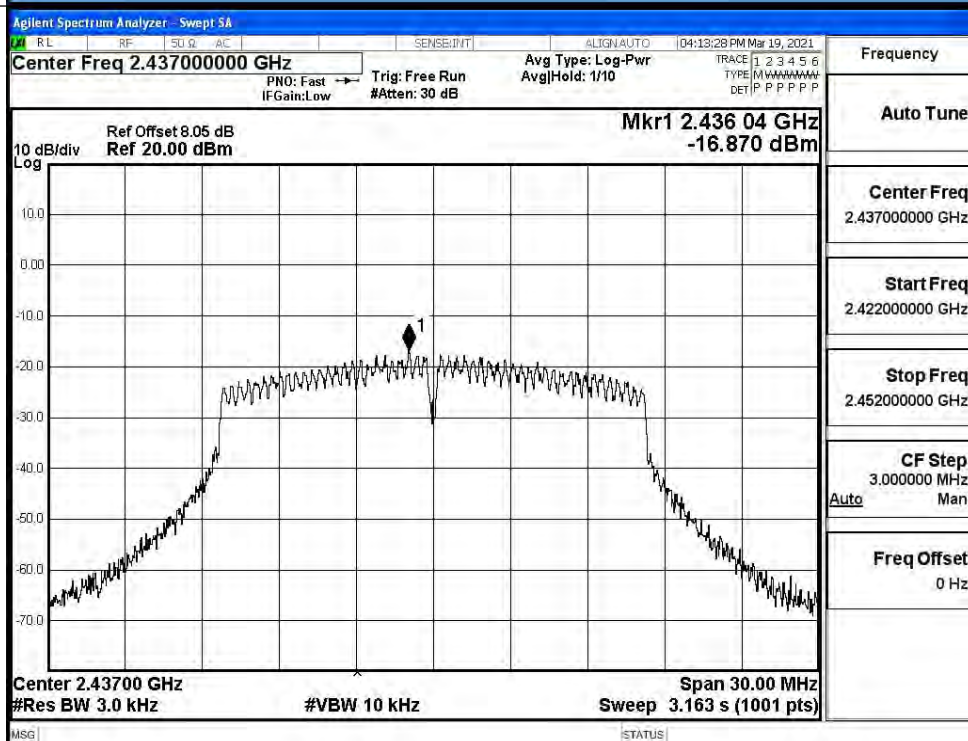




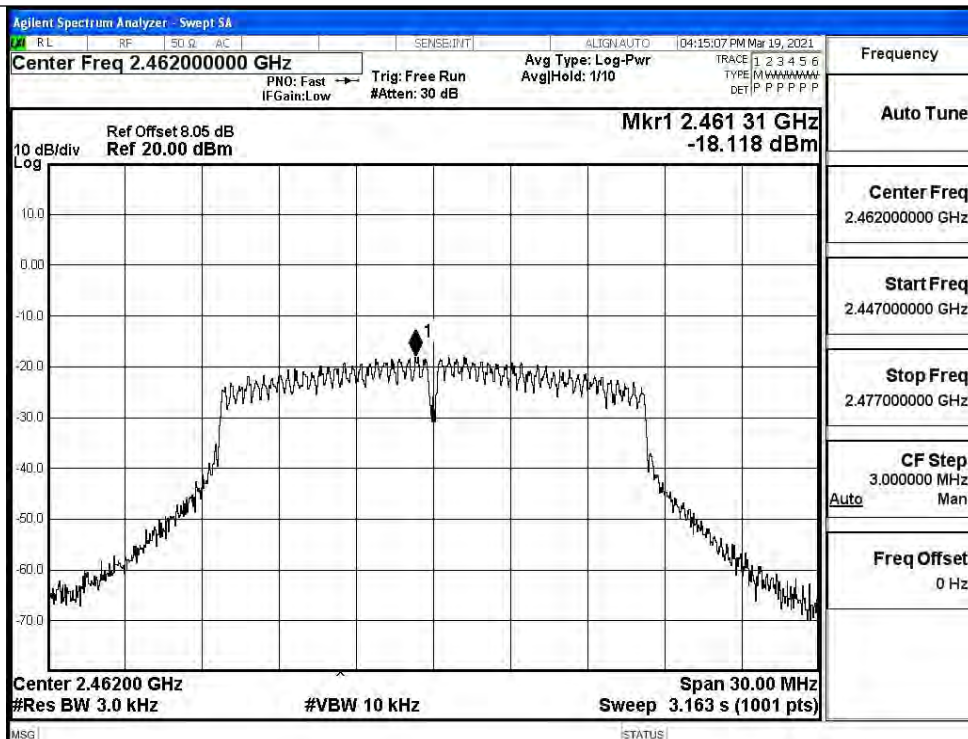
11G/LCH



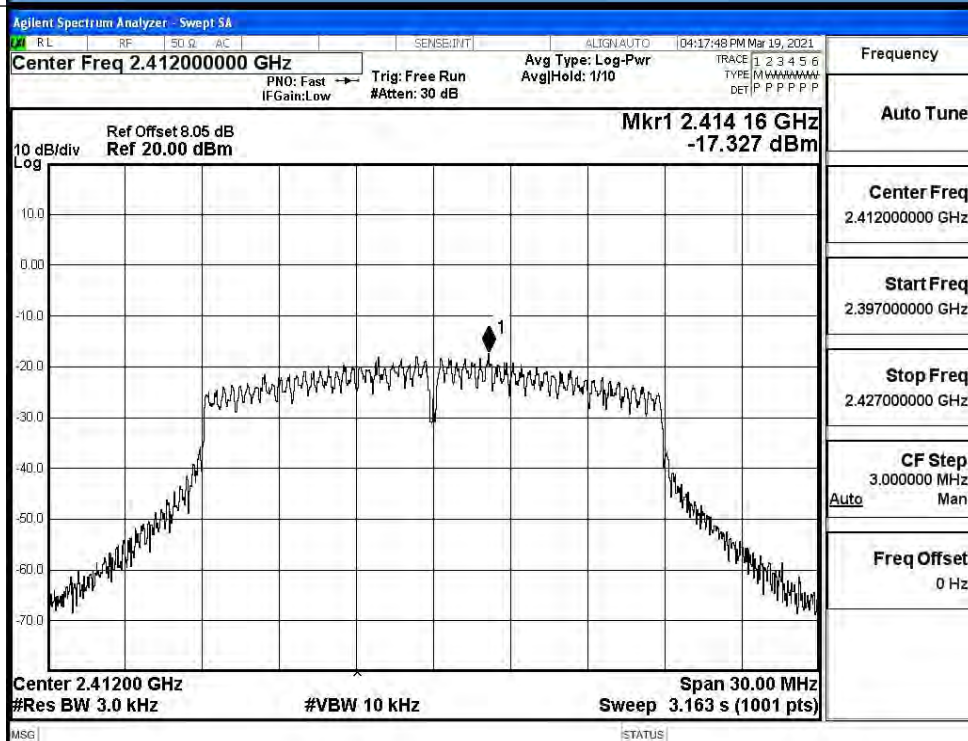
11G/MCH



11G/HCH

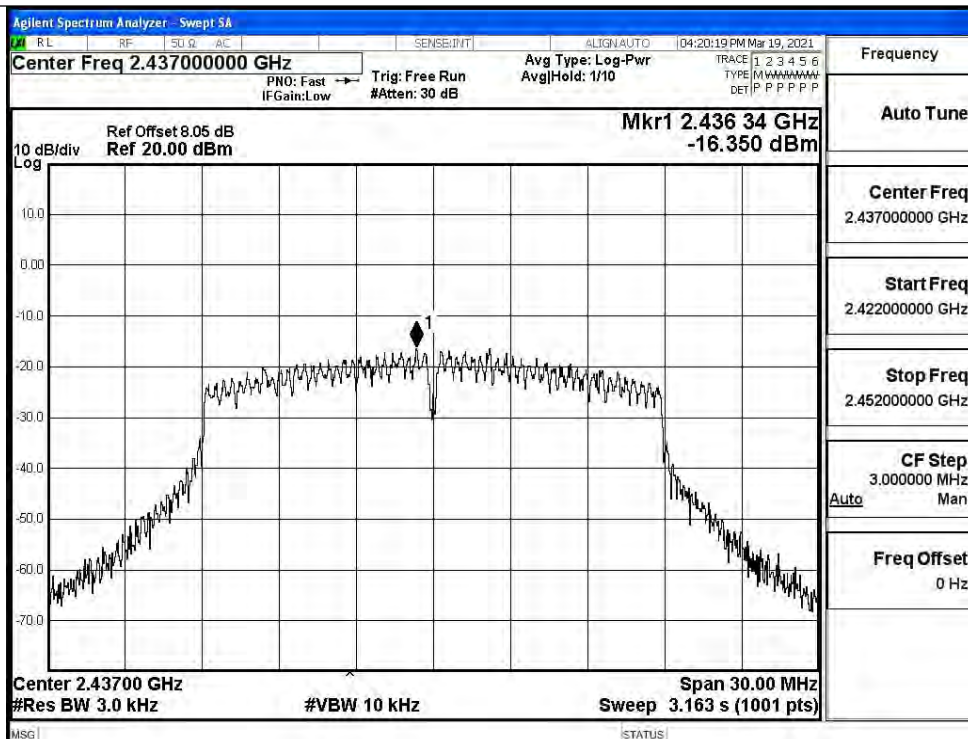


11N20SISO/LCH

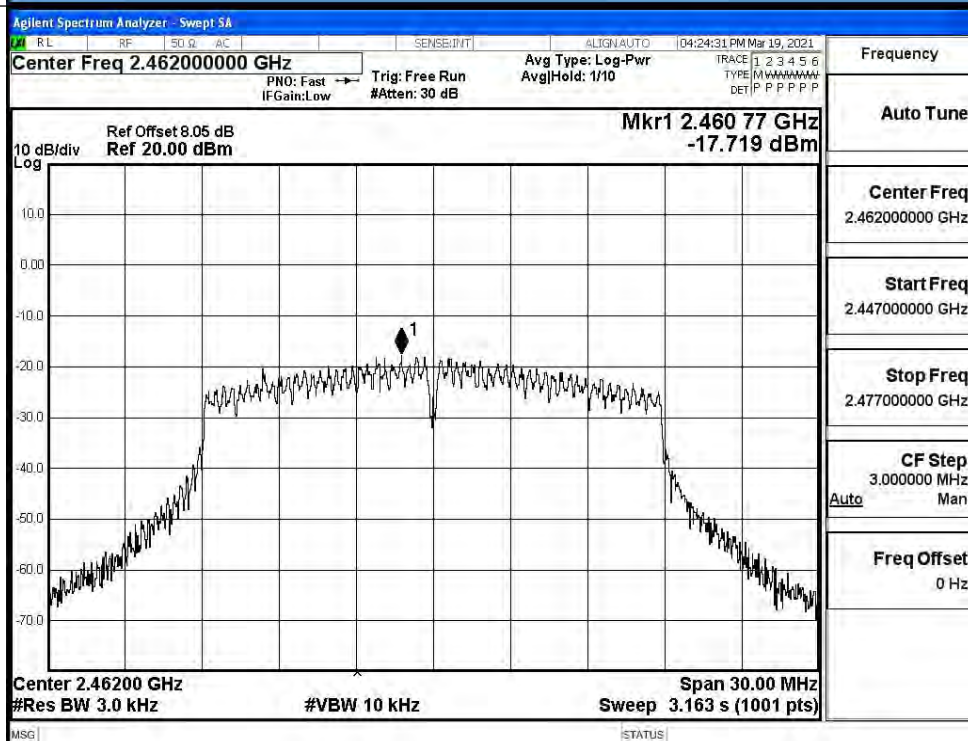




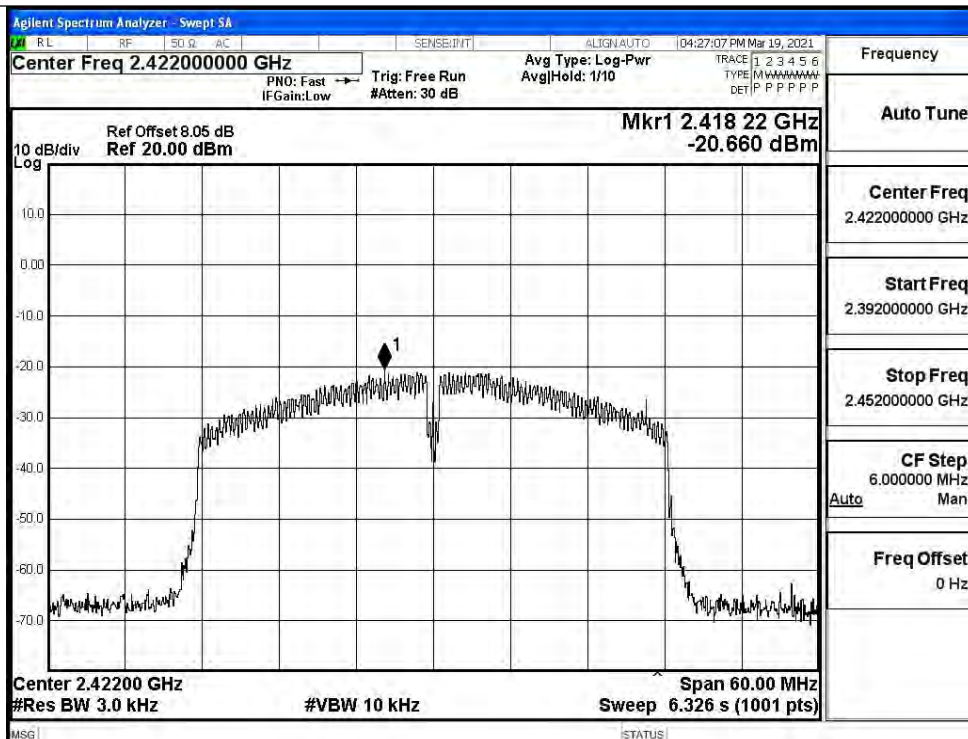
11N20SISO/MCH



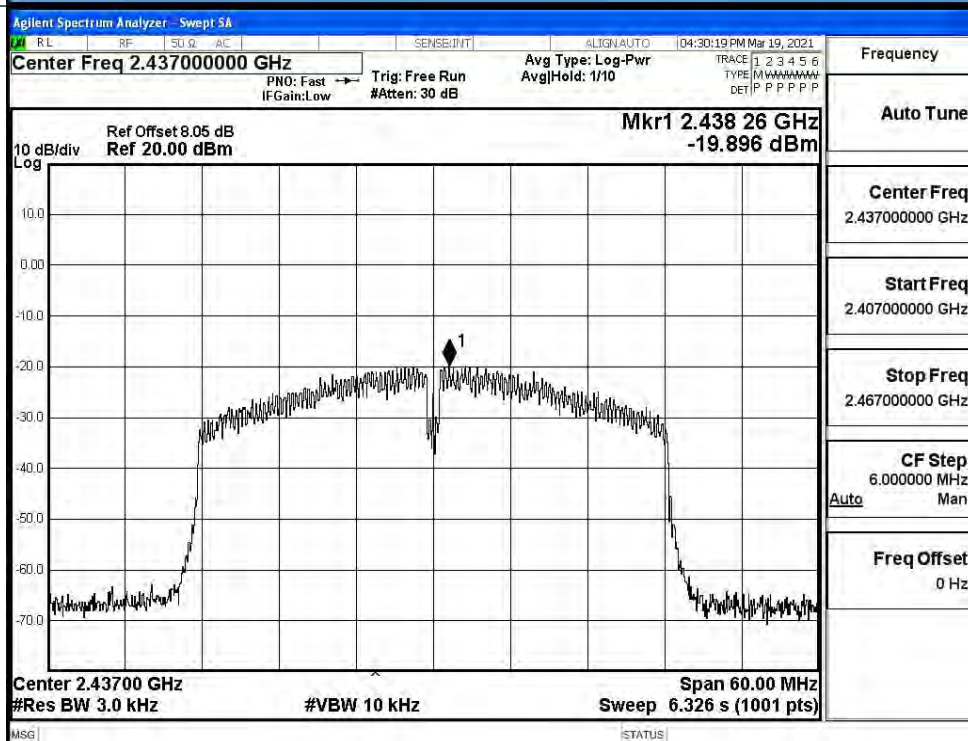
11N20SISO/HCH



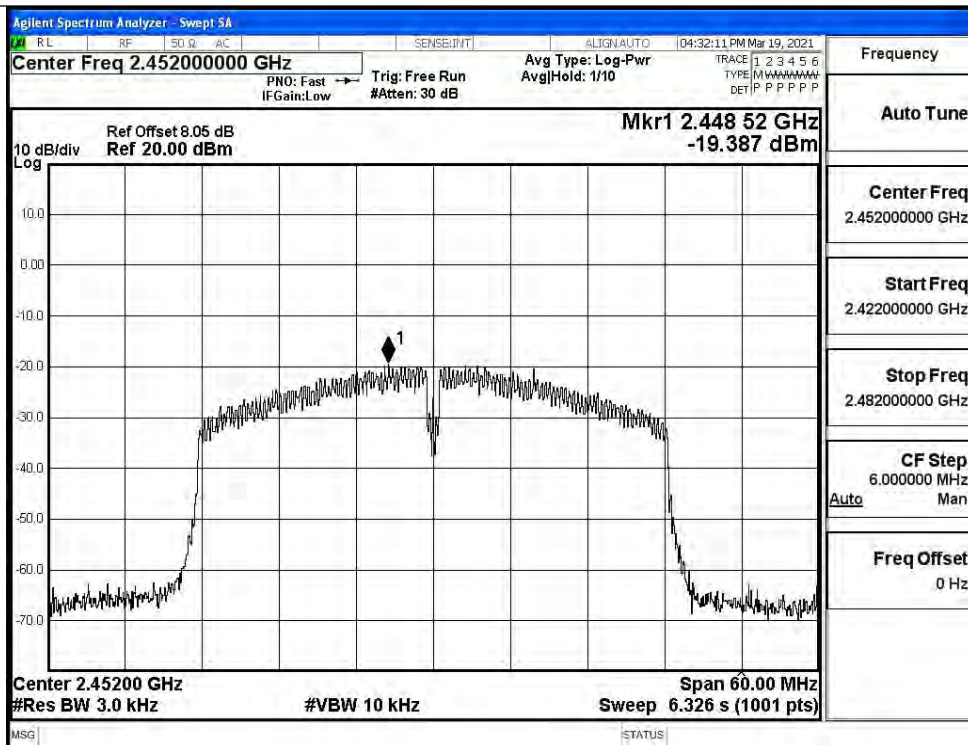
11N40SISO/LCH



11N40SISO/MCH



11N40SISO/HCH

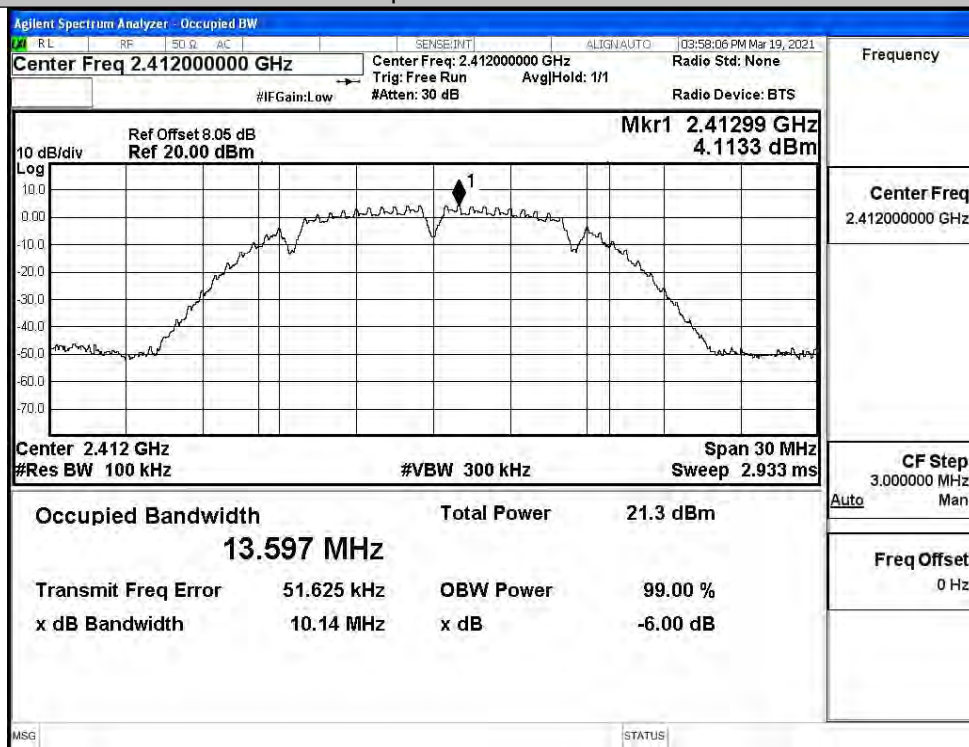


## C.4 6dB Bandwidth

| Mode      | Channel | 6dB Bandwidth [MHz] | Limit [MHz] | Verdict |
|-----------|---------|---------------------|-------------|---------|
| 11B       | LCH     | 10.14               | $\geq 0.5$  | PASS    |
|           | MCH     | 10.13               | $\geq 0.5$  | PASS    |
|           | HCH     | 10.13               | $\geq 0.5$  | PASS    |
| 11G       | LCH     | 15.74               | $\geq 0.5$  | PASS    |
|           | MCH     | 15.73               | $\geq 0.5$  | PASS    |
|           | HCH     | 15.72               | $\geq 0.5$  | PASS    |
| 11N20SISO | LCH     | 16.30               | $\geq 0.5$  | PASS    |
|           | MCH     | 16.28               | $\geq 0.5$  | PASS    |
|           | HCH     | 16.32               | $\geq 0.5$  | PASS    |
| 11N40SISO | LCH     | 25.97               | $\geq 0.5$  | PASS    |
|           | MCH     | 23.85               | $\geq 0.5$  | PASS    |
|           | HCH     | 24.69               | $\geq 0.5$  | PASS    |

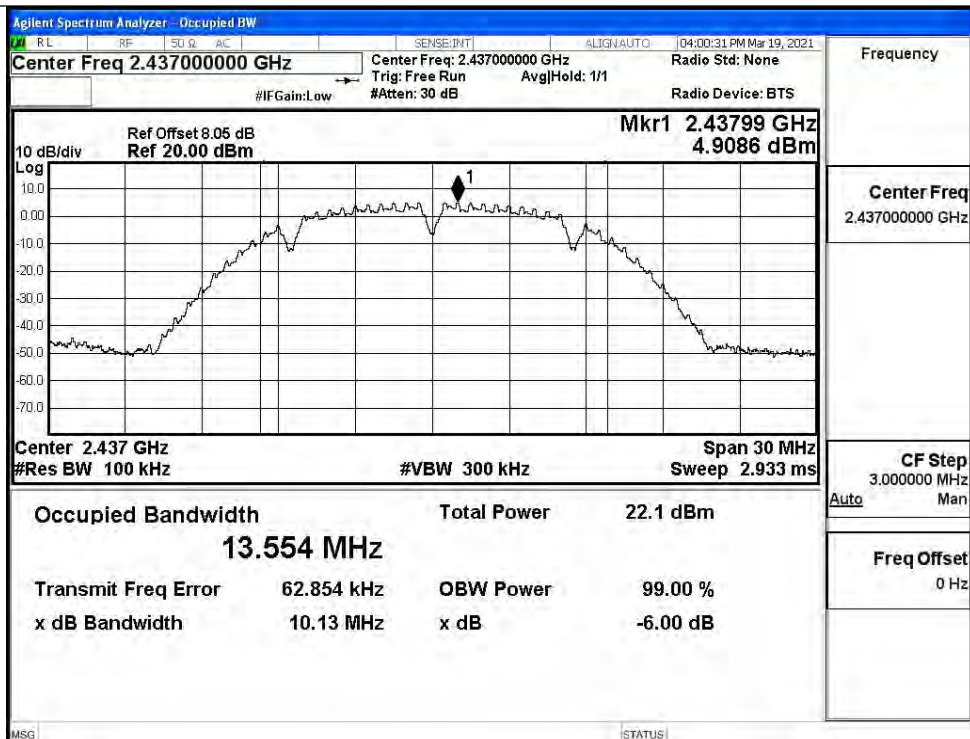
## Test Graphs

11B/LCH

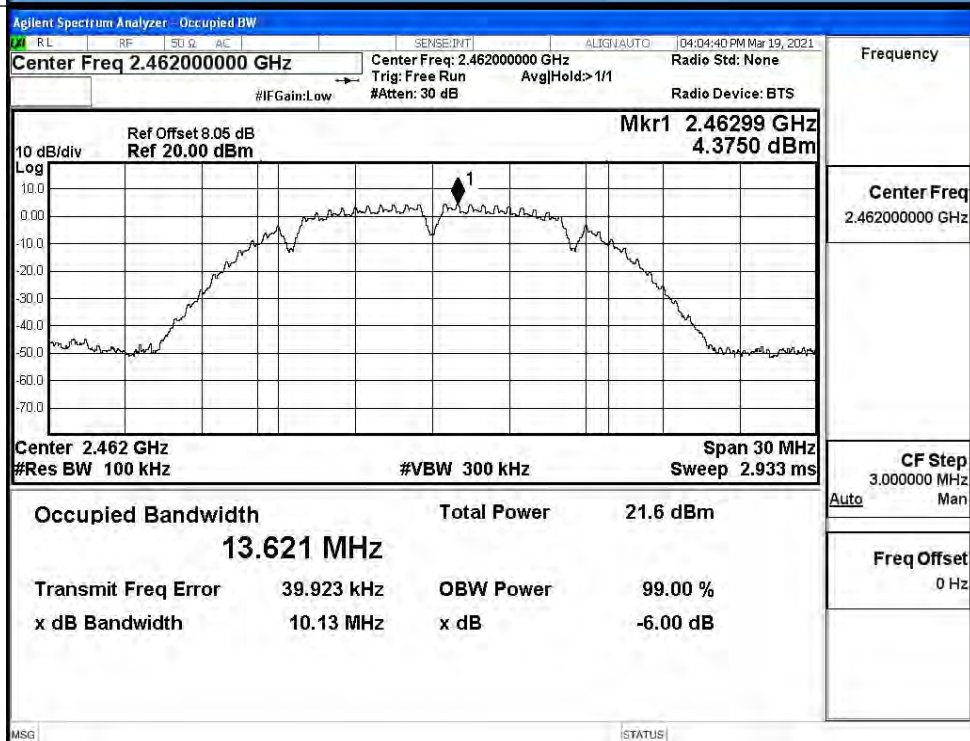




11B/MCH

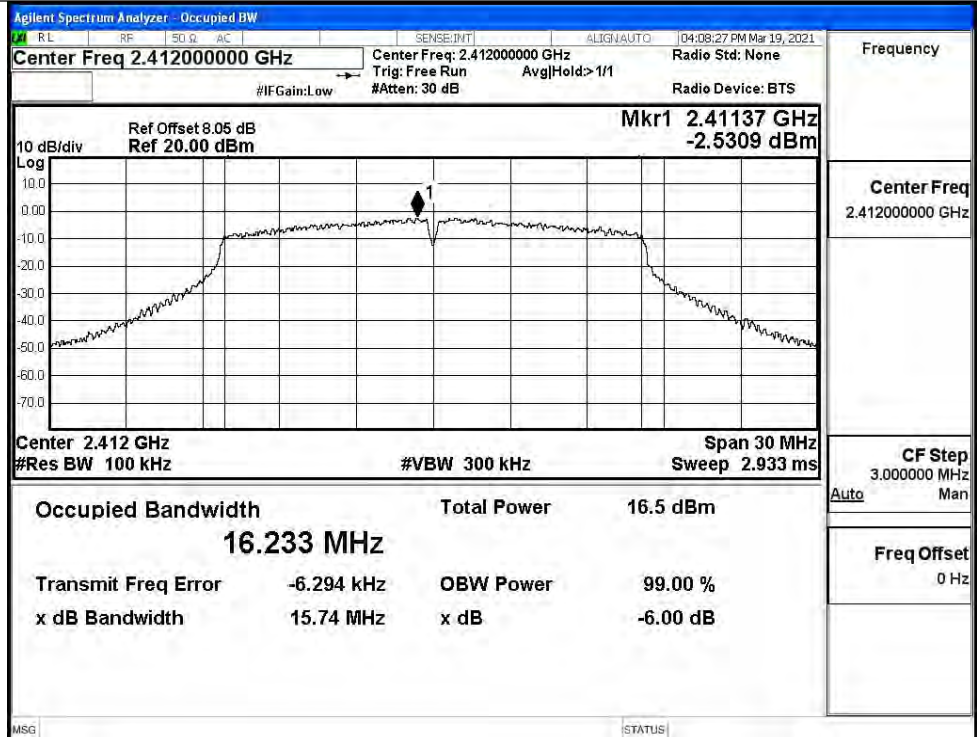


11B/HCH

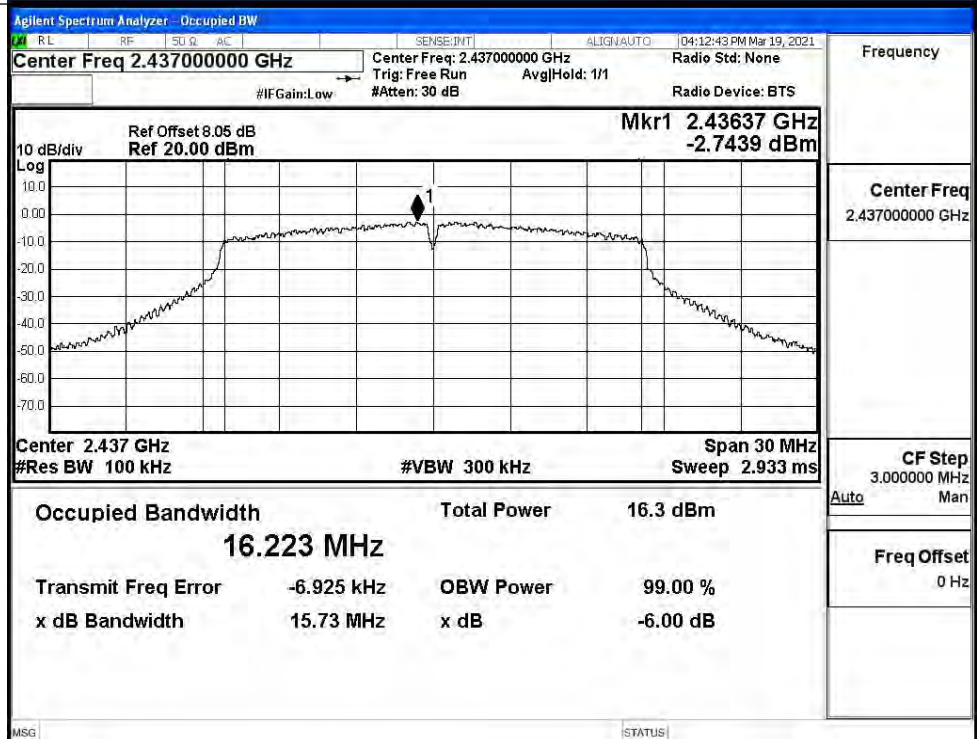




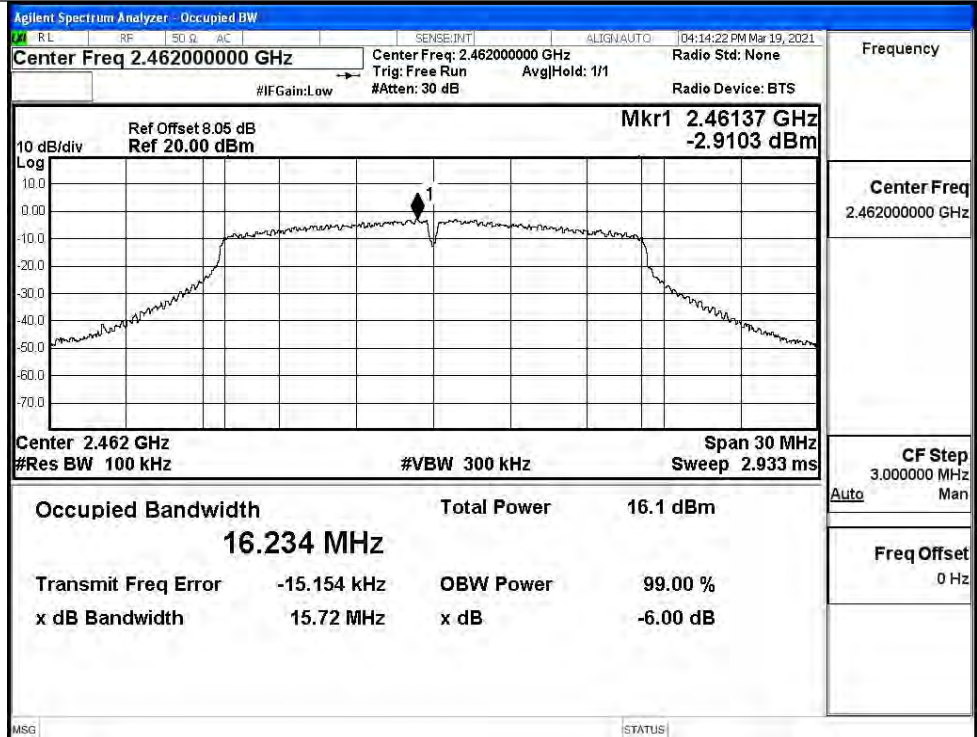
11G/LCH



11G/MCH



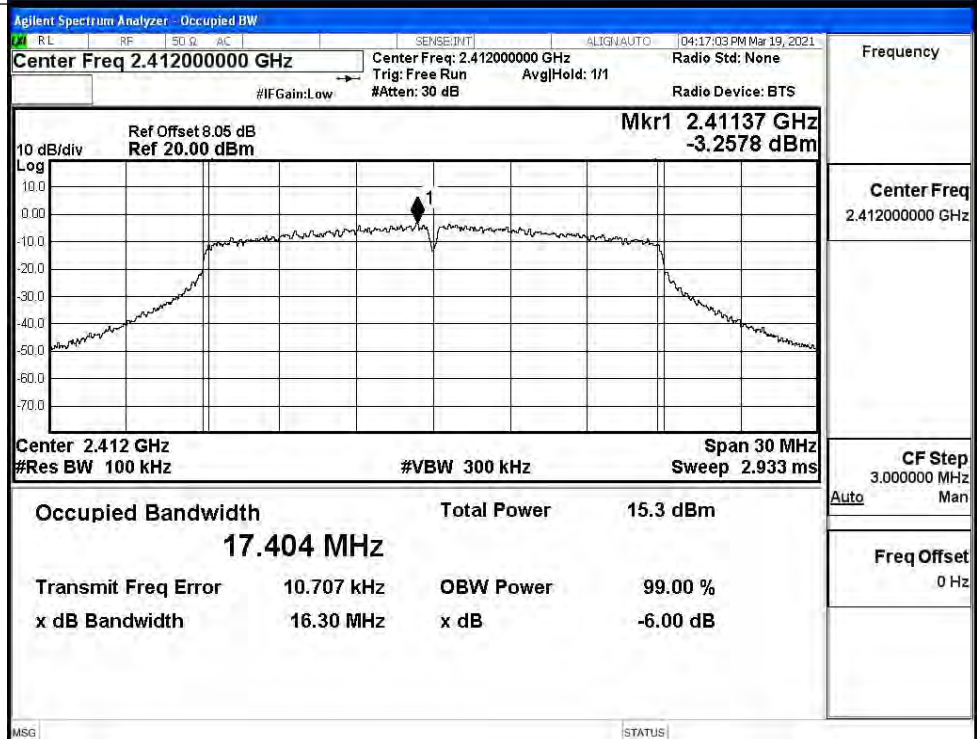
11G/HCH



Frequency

Center Freq  
2.462000000 GHzCF Step  
3.000000 MHz  
Auto ManFreq Offset  
0 Hz

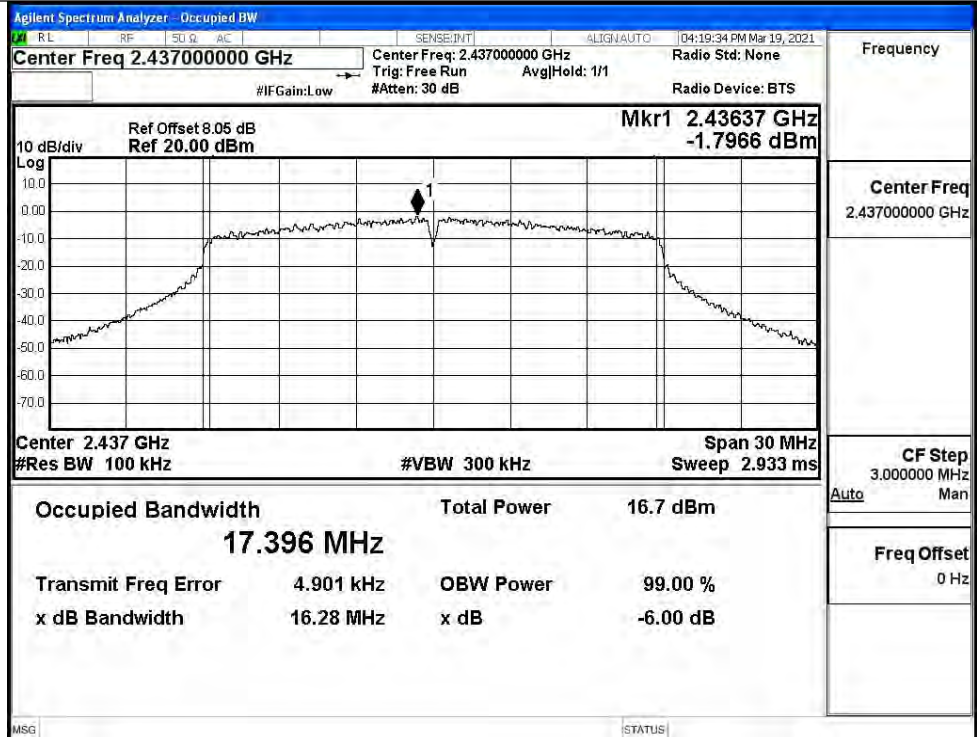
11N20SISO/LCH



Frequency

Center Freq  
2.412000000 GHzCF Step  
3.000000 MHz  
Auto ManFreq Offset  
0 Hz

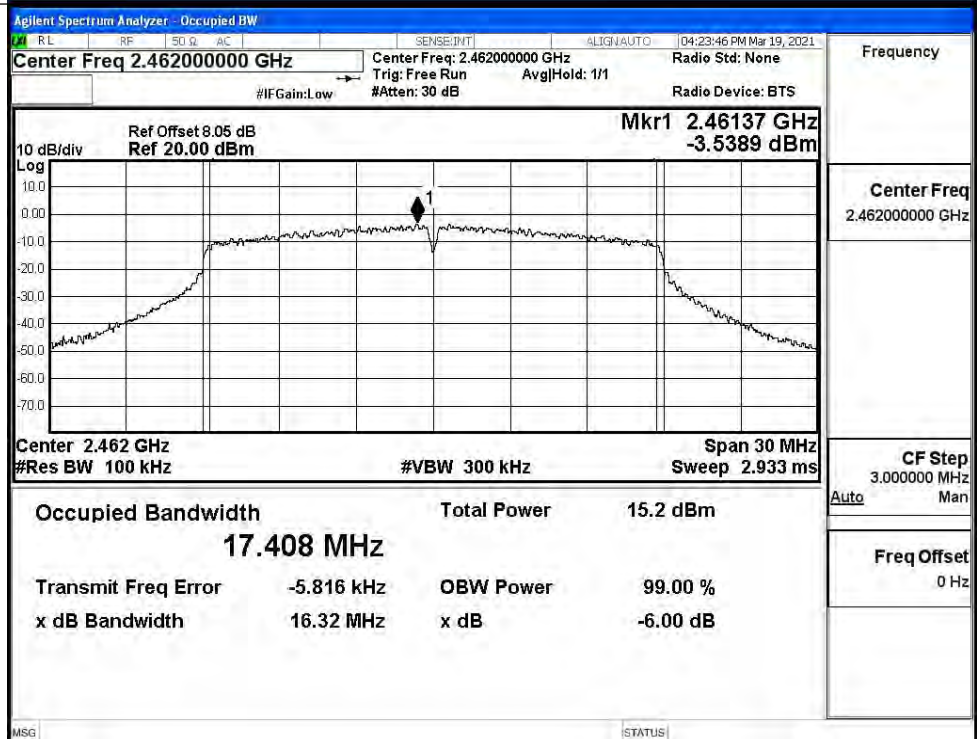
11N20SISO/MCH



Frequency

Center Freq  
2.437000000 GHzCF Step  
3.000000 MHz  
Auto ManFreq Offset  
0 Hz

11N20SISO/HCH

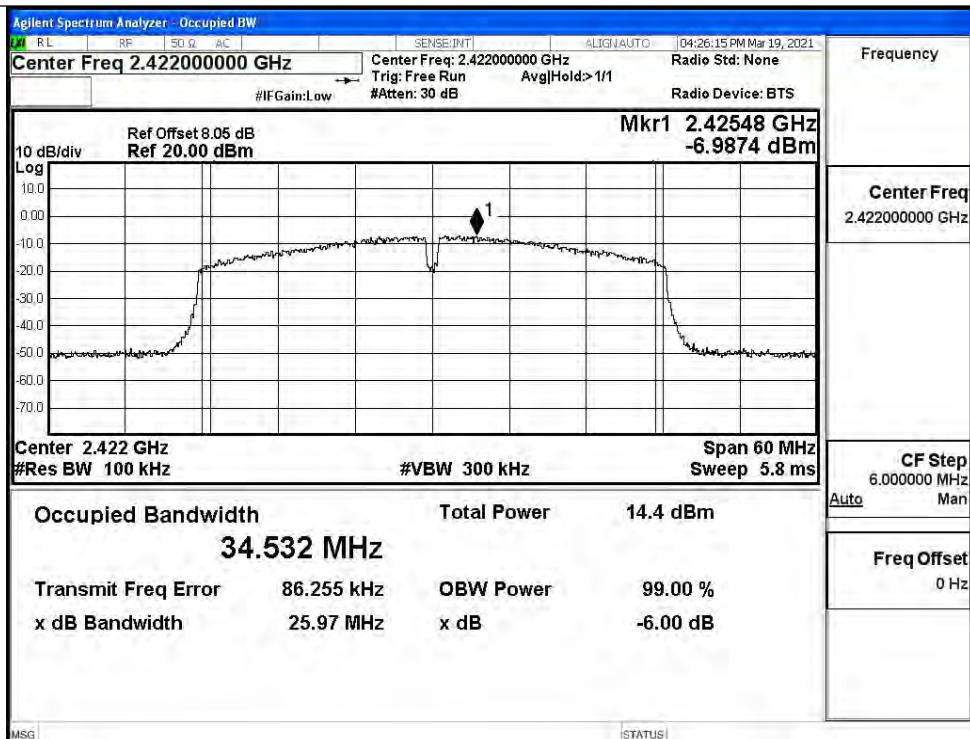


Frequency

Center Freq  
2.462000000 GHzCF Step  
3.000000 MHz  
Auto ManFreq Offset  
0 Hz



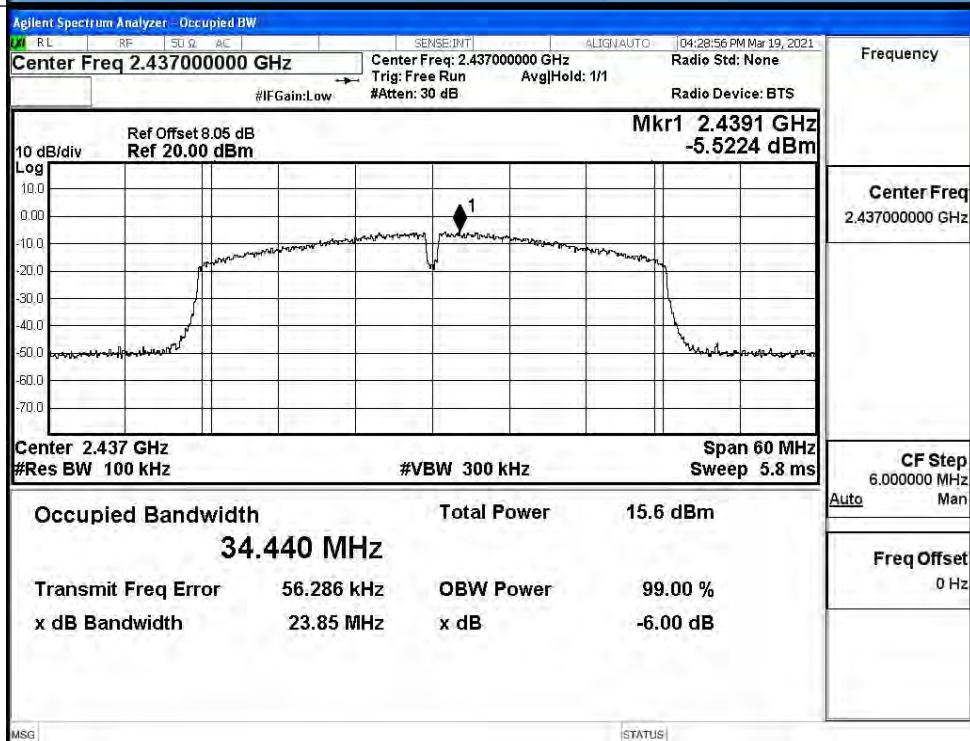
11N40SISO/LCH



Frequency

Center Freq  
2.422000000 GHzCF Step  
6.000000 MHz  
Auto ManFreq Offset  
0 Hz

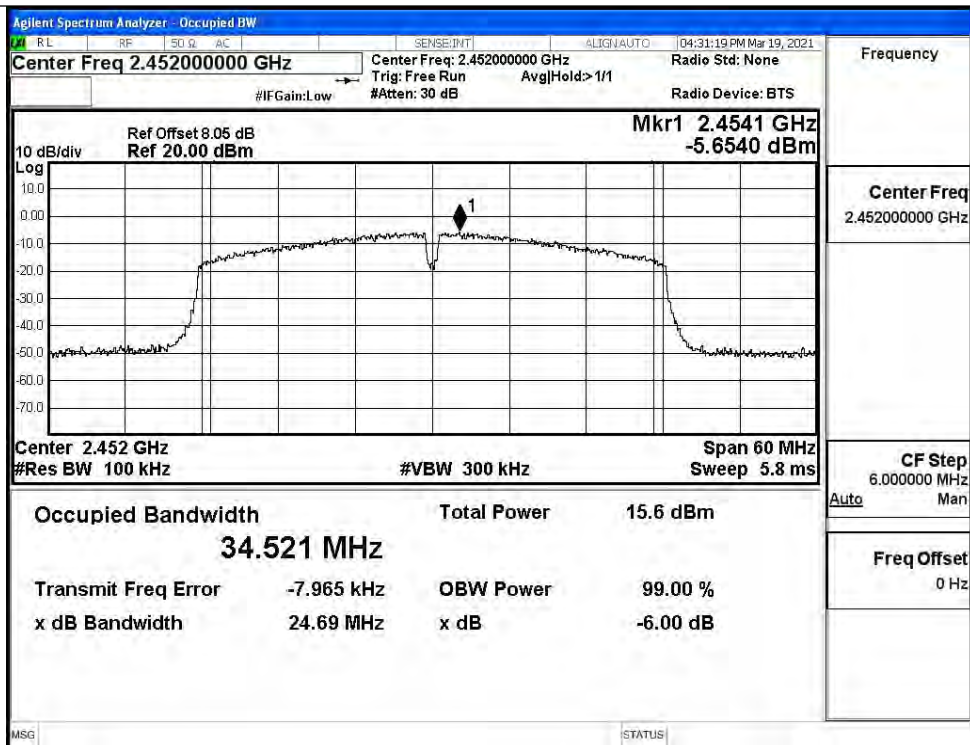
11N40SISO/MCH



Frequency

Center Freq  
2.437000000 GHzCF Step  
6.000000 MHz  
Auto ManFreq Offset  
0 Hz

11N40SISO/HCH



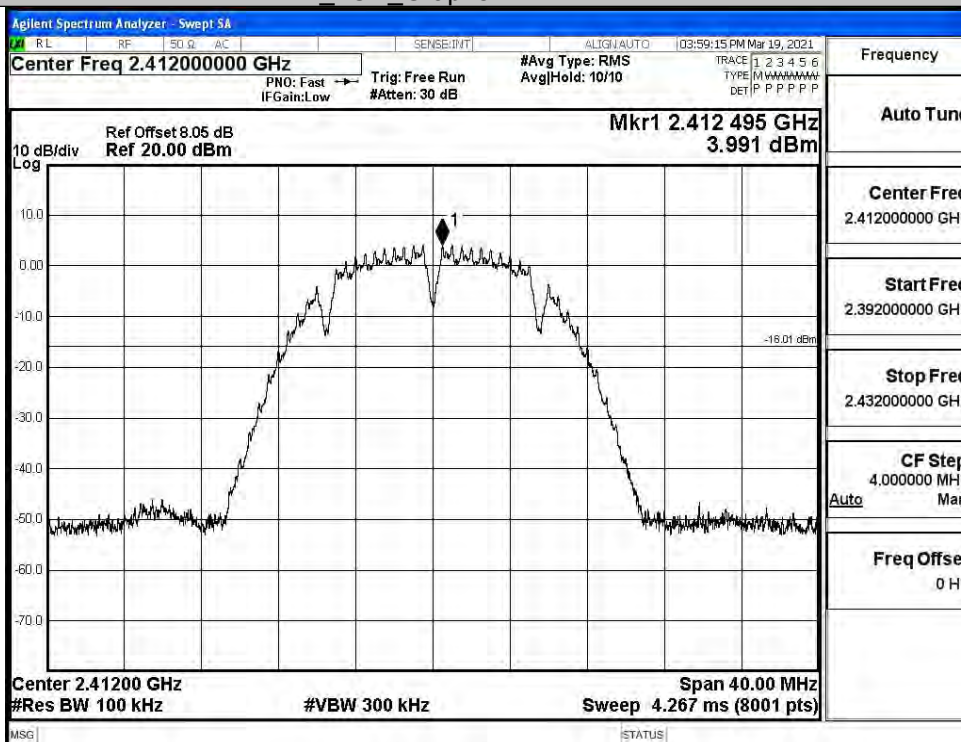


## C.5 RF Conducted Spurious Emissions

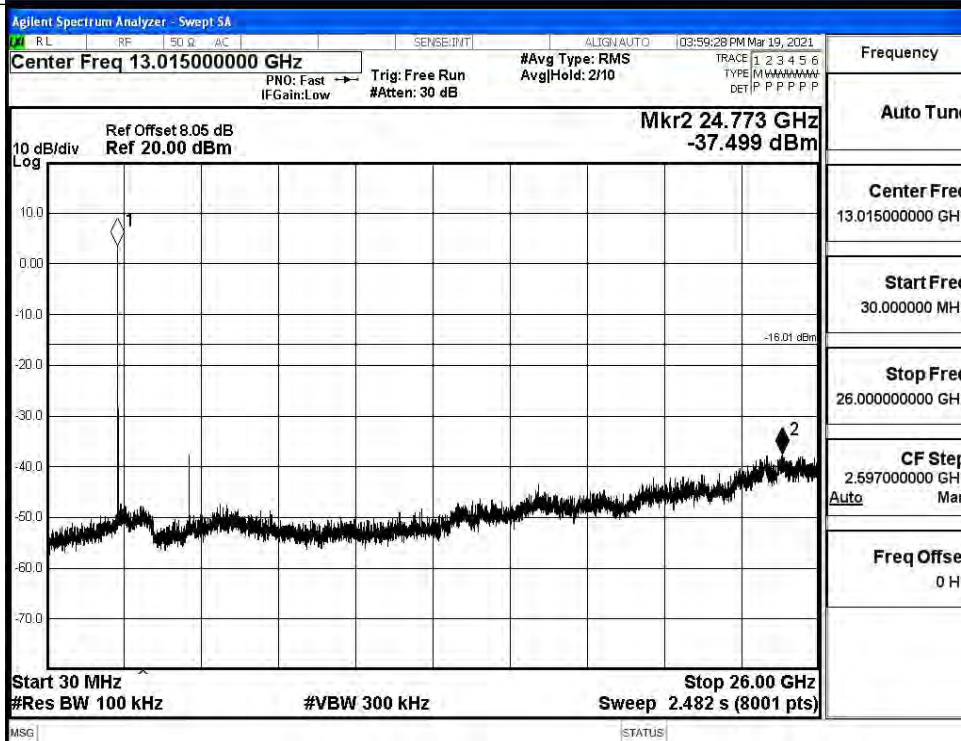
| Mode          | Channel | Pref [dBm] | Max. Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|------------|------------------|-------------|---------|
| 11B           | LCH     | 3.991      | -37.499          | -16.009     | PASS    |
|               | MCH     | 4.783      | -36.325          | -15.217     | PASS    |
|               | HCH     | 4.237      | -36.951          | -15.763     | PASS    |
| 11G           | LCH     | -2.604     | -37.568          | -22.604     | PASS    |
|               | MCH     | -2.865     | -37.781          | -22.865     | PASS    |
|               | HCH     | -2.993     | -37.848          | -22.993     | PASS    |
| 11N20<br>SISO | LCH     | -3.313     | -35.631          | -23.313     | PASS    |
|               | MCH     | -1.846     | -37.164          | -21.846     | PASS    |
|               | HCH     | -3.59      | -37.158          | -23.590     | PASS    |
| 11N40<br>SISO | LCH     | -7.219     | -37.616          | -27.219     | PASS    |
|               | MCH     | -5.679     | -37.412          | -25.679     | PASS    |
|               | HCH     | -6.103     | -37.499          | -26.103     | PASS    |

## 11B LCH Graphs

Pref/11B/LCH

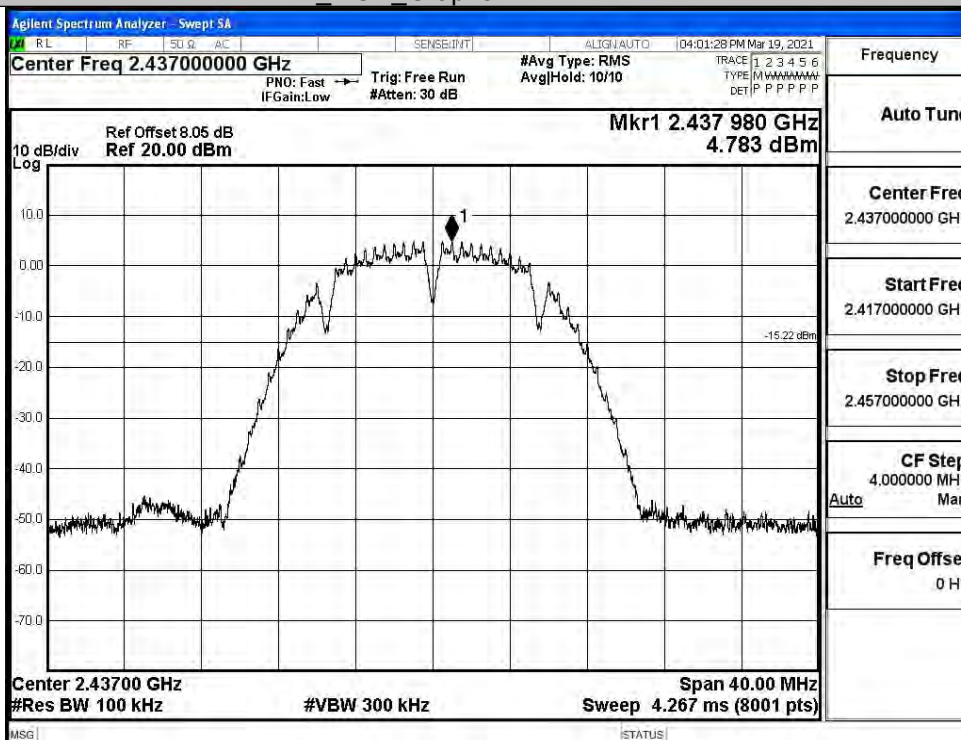


Puw/11B/LCH

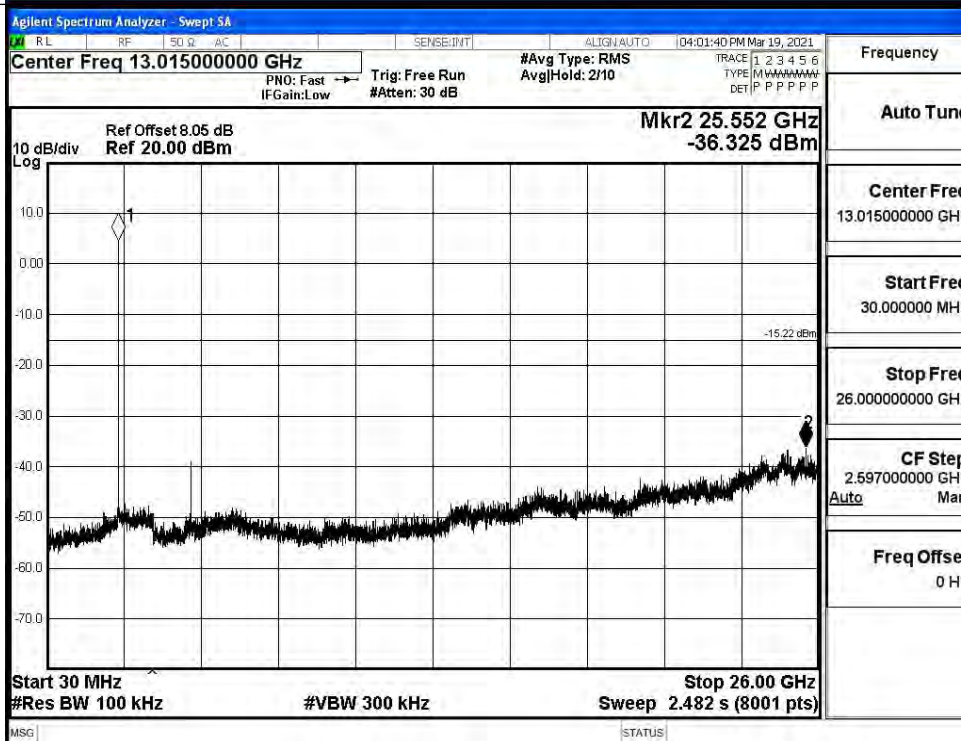


## 11B\_MCH\_Graphs

Pref/11B/MCH

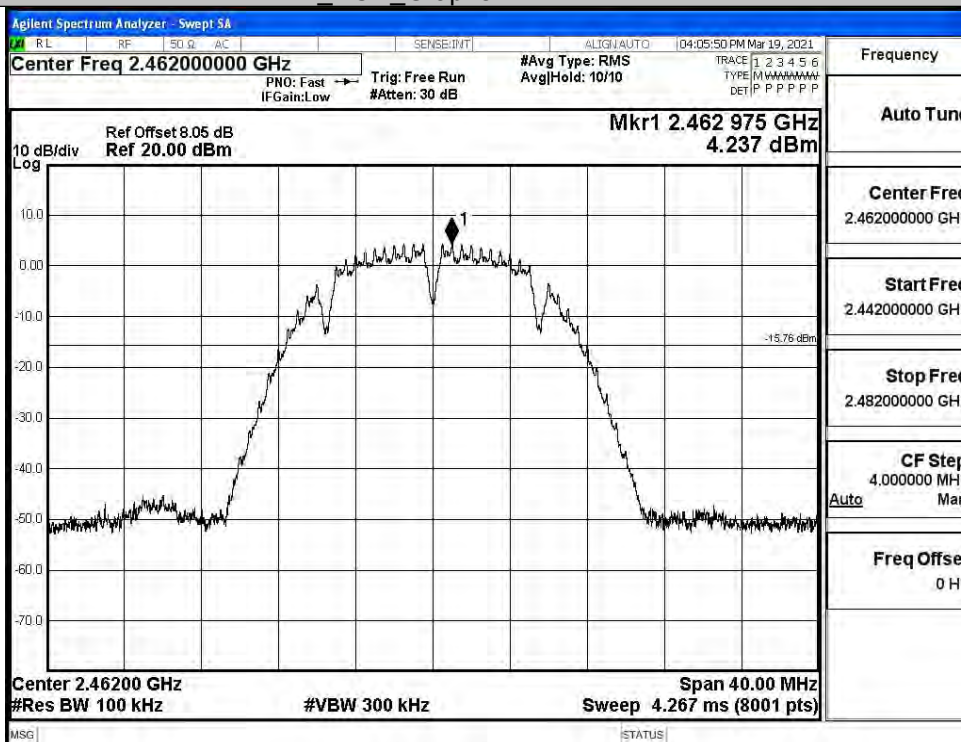


Puw/11B/MCH

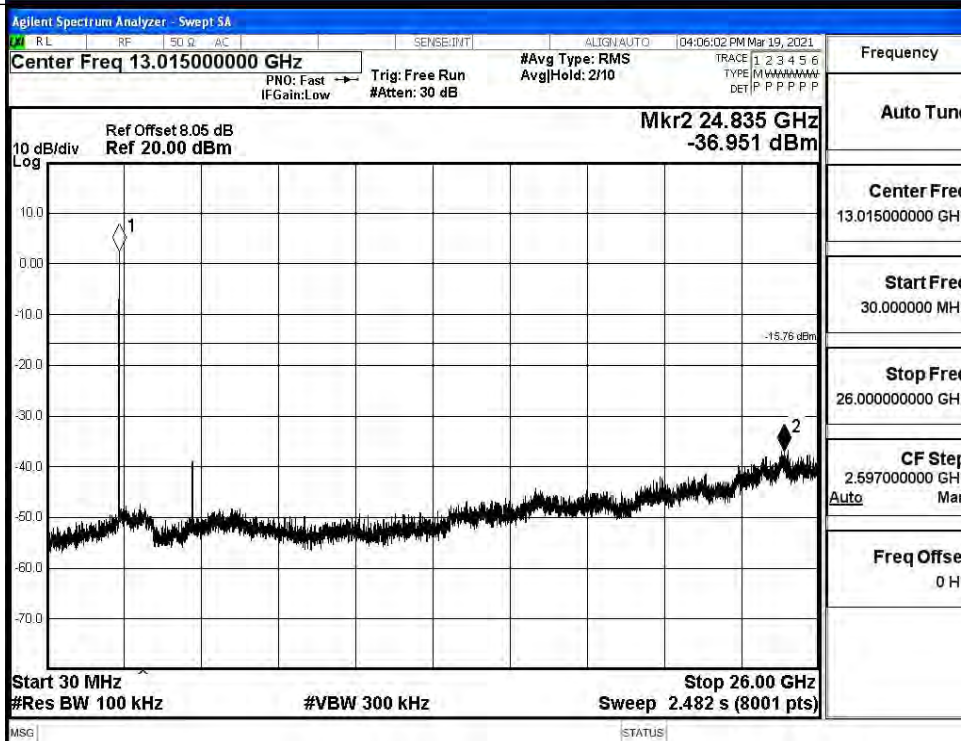


## 11B HCH Graphs

Pref/11B/HCH



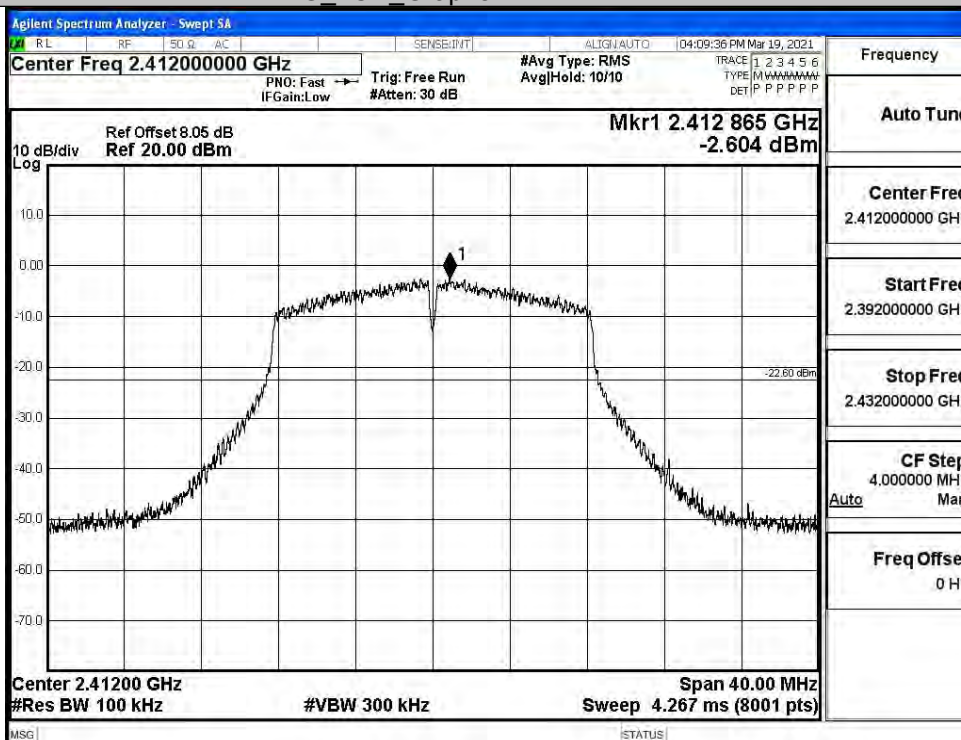
Puw/11B/HCH



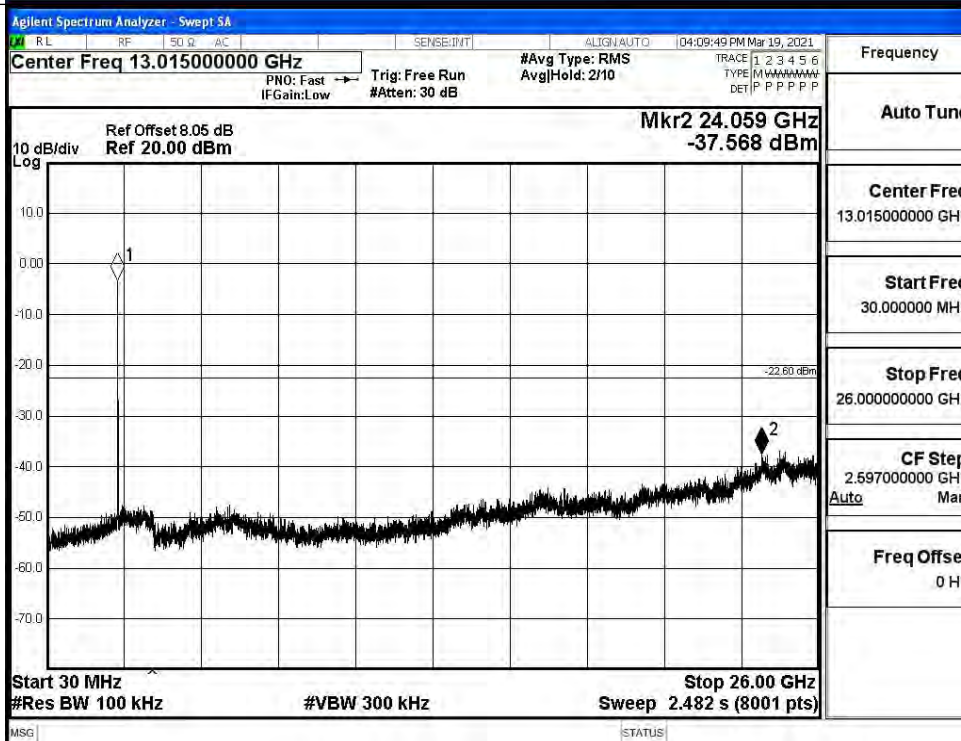


## 11G LCH\_Graphs

Pref/11G/LCH

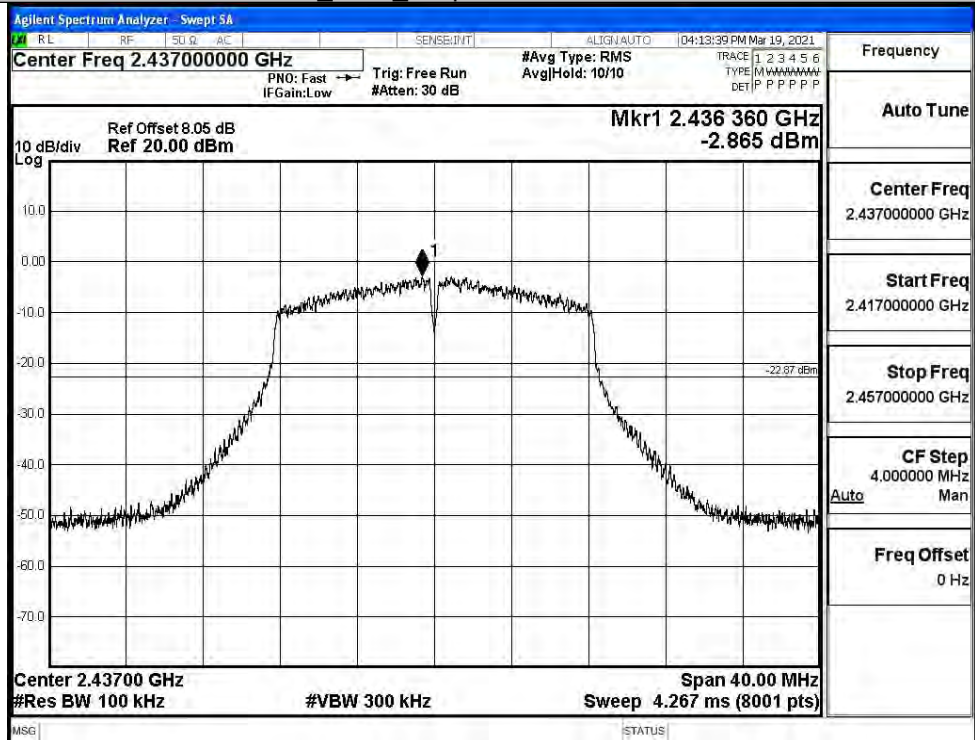


Puw/11G/LCH



## 11G MCH Graphs

Pref/11G/MCH



Puw/11G/MCH



The figure displays two screenshots of an Agilent Spectrum Analyzer, showing frequency spectra for two different signals: Pref/11G/HCH and Puw/11G/HCH.

**Top Screenshot (Pref/11G/HCH):**

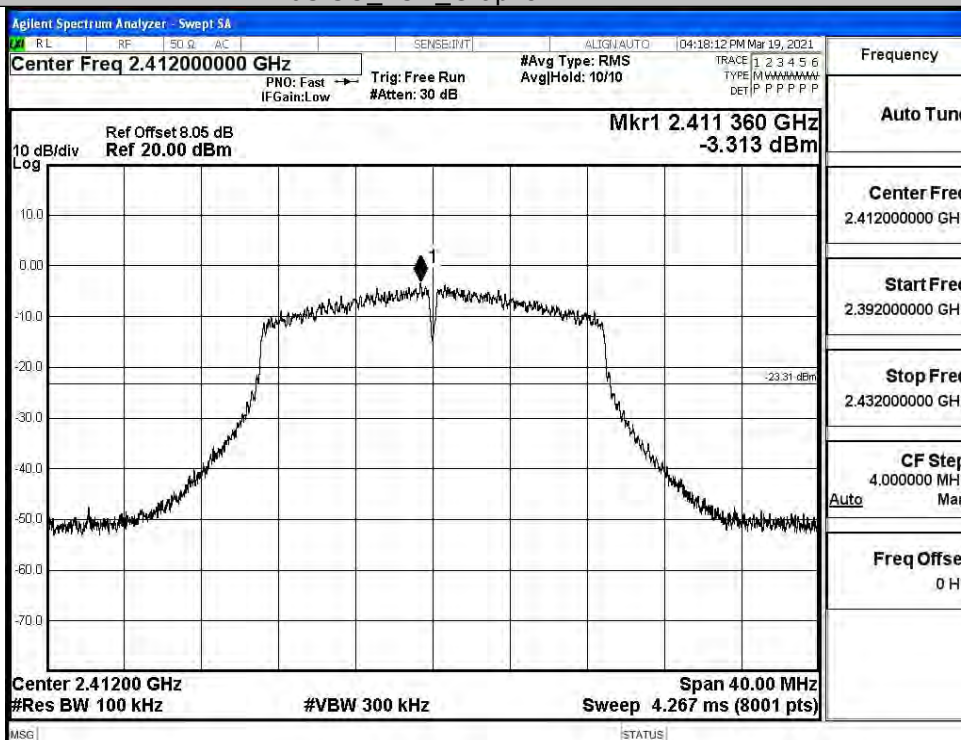
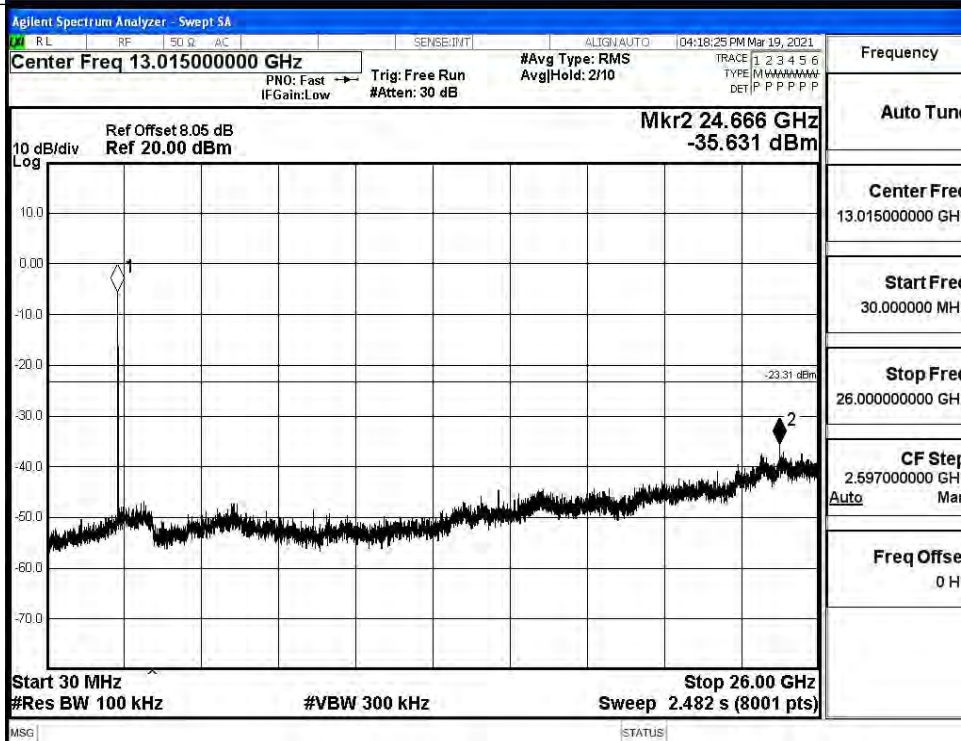
- Center Freq:** 2.46200000 GHz
- Ref Offset:** 8.05 dB
- Ref:** 20.00 dBm
- Mkr1:** 2.461 350 GHz, -2.993 dBm
- Span:** 40.00 MHz
- #Res BW:** 100 kHz
- #VBW:** 300 kHz
- Sweep:** 4.267 ms (8001 pts)
- Frequency Range:** 2.442000000 GHz to 2.482000000 GHz
- CF Step:** 4.000000 MHz
- Freq Offset:** 0 Hz

**Bottom Screenshot (Puw/11G/HCH):**

- Center Freq:** 13.015000000 GHz
- Ref Offset:** 8.05 dB
- Ref:** 20.00 dBm
- Mkr2:** 24.273 GHz, -37.848 dBm
- Start:** 30 MHz
- Stop:** 26.00 GHz
- #Res BW:** 100 kHz
- #VBW:** 300 kHz
- Sweep:** 2.482 s (8001 pts)
- Frequency Range:** 30.0000000 MHz to 26.000000000 GHz
- CF Step:** 2.597000000 GHz
- Freq Offset:** 0 Hz

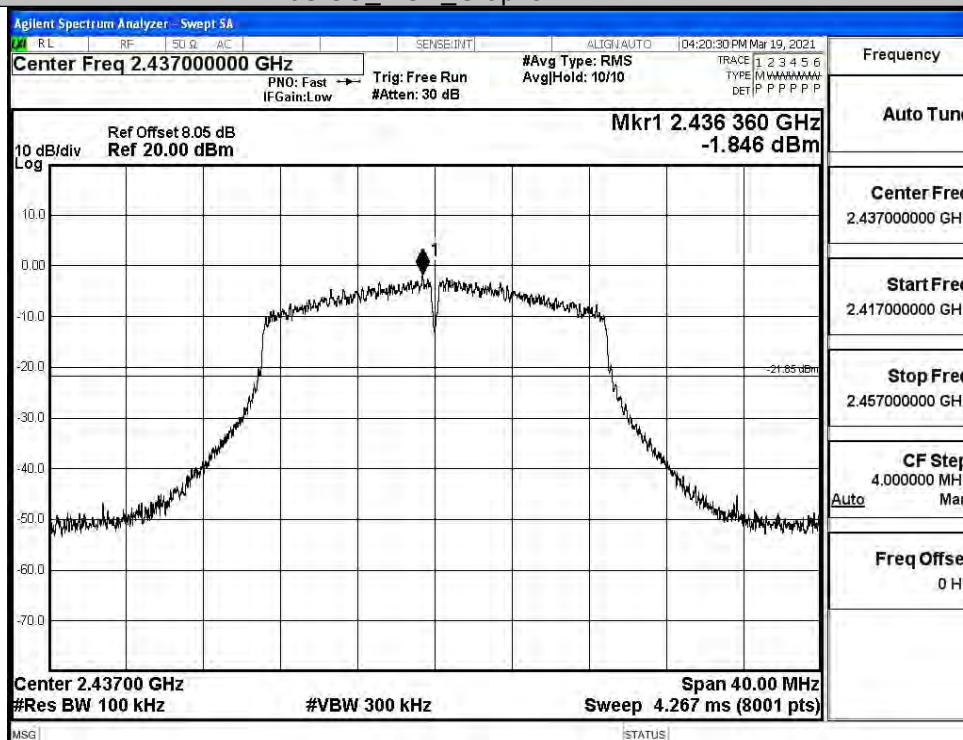
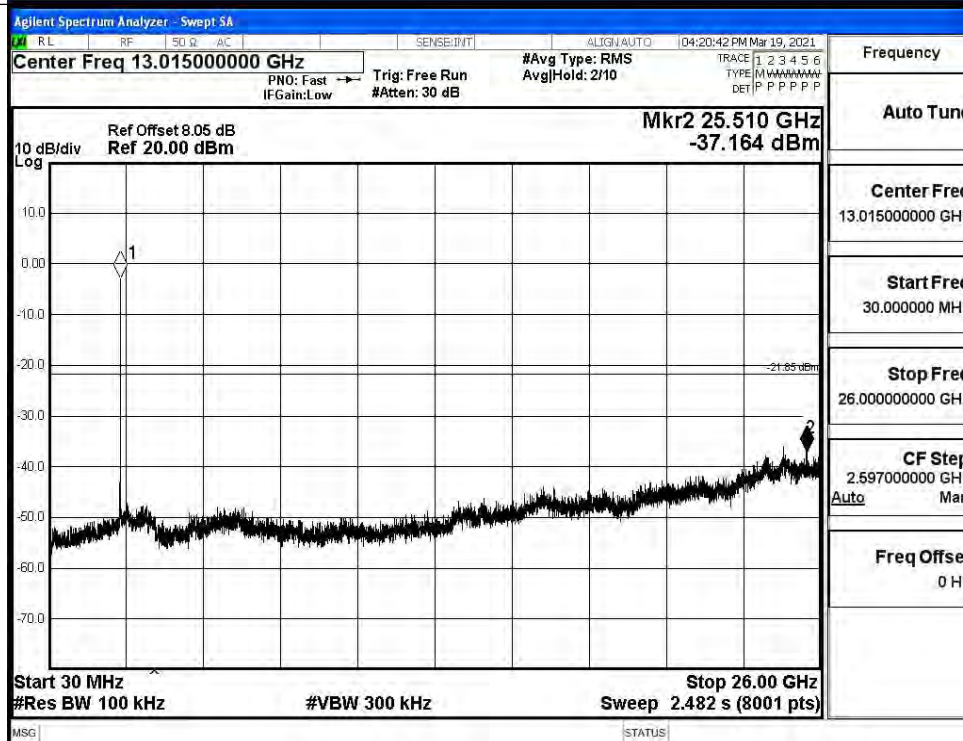


## 11N20SISO LCH\_Graphs

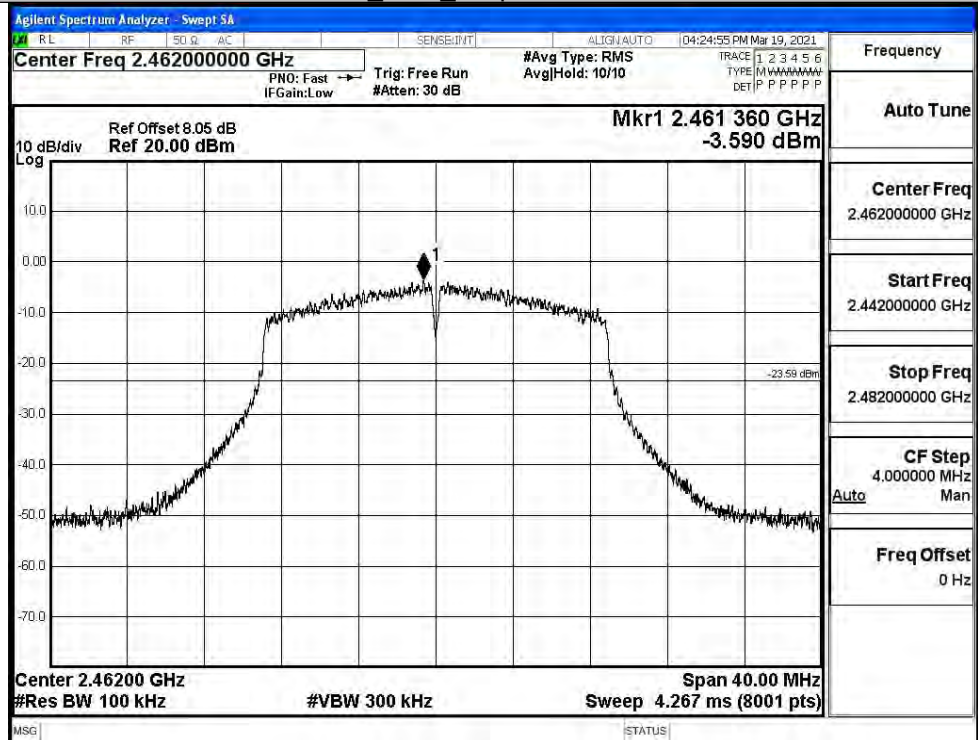
Pref/11N20SIS  
O/LCHPuw/11N20  
SISO/LCH



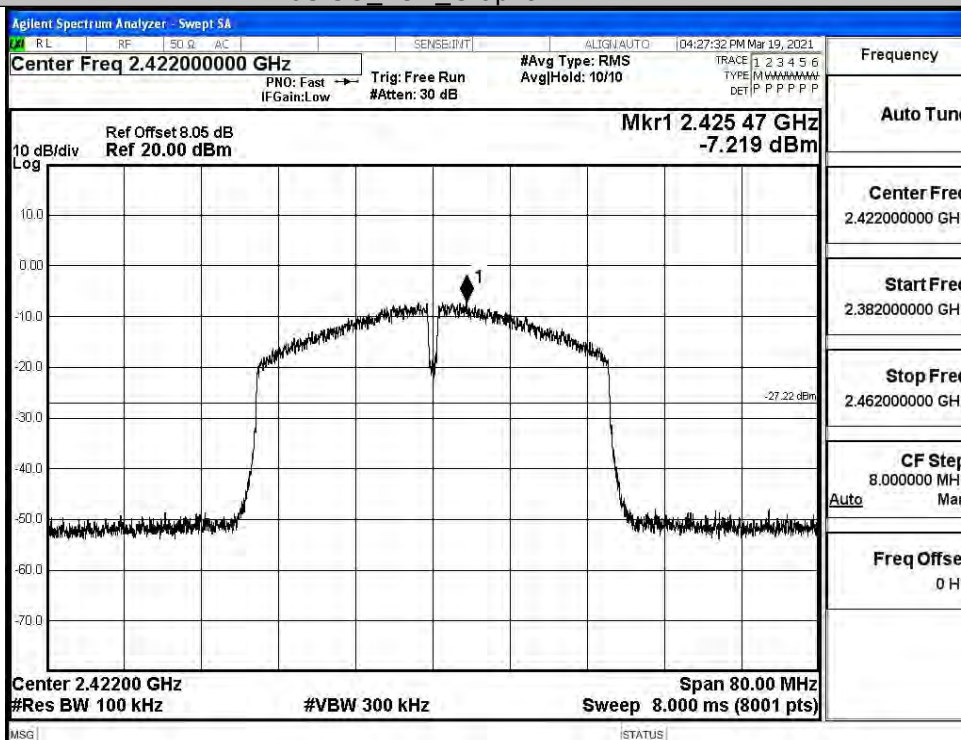
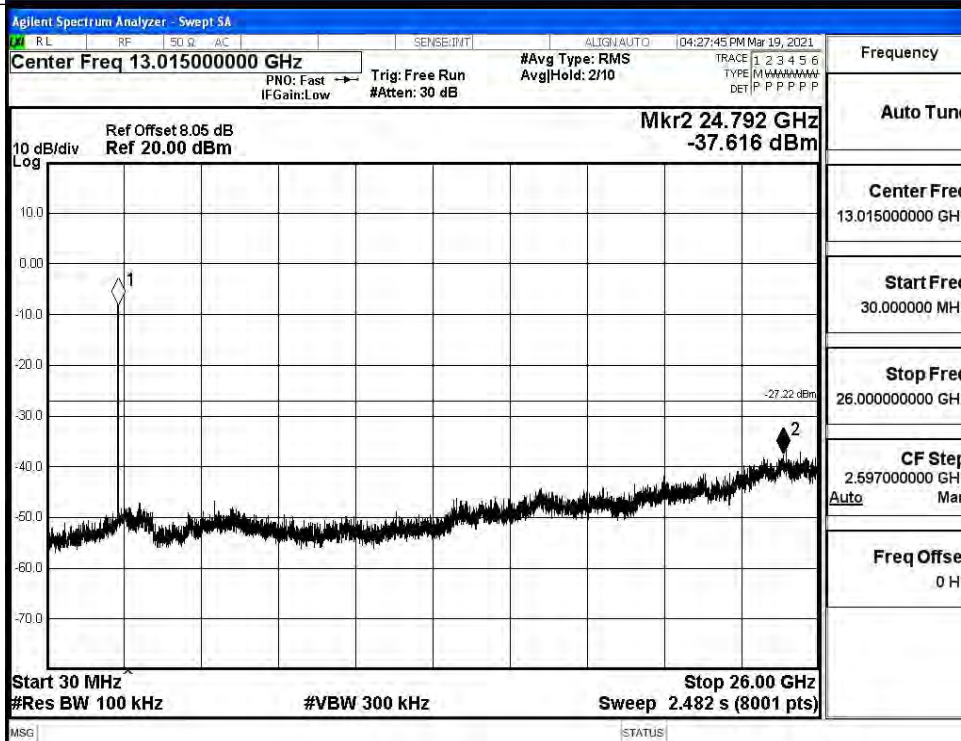
## 11N20SISO\_MCH\_Graphs

Pref/11N20  
SISO/MCHPuw/11N20  
SISO/MCH

## 11N20SISO\_HCH\_Graphs

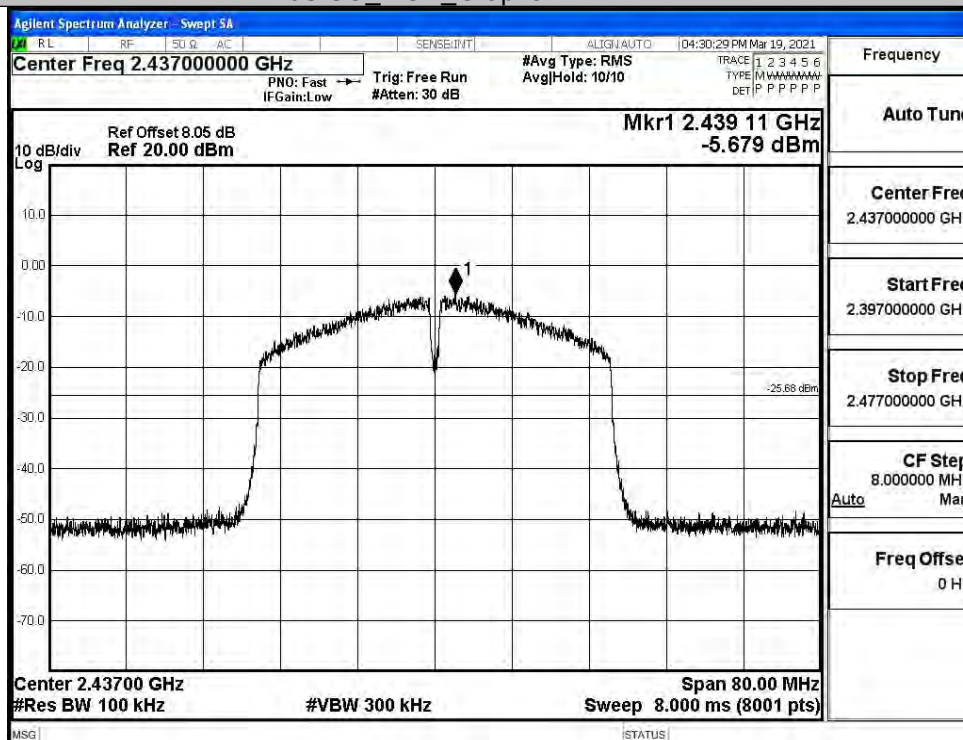
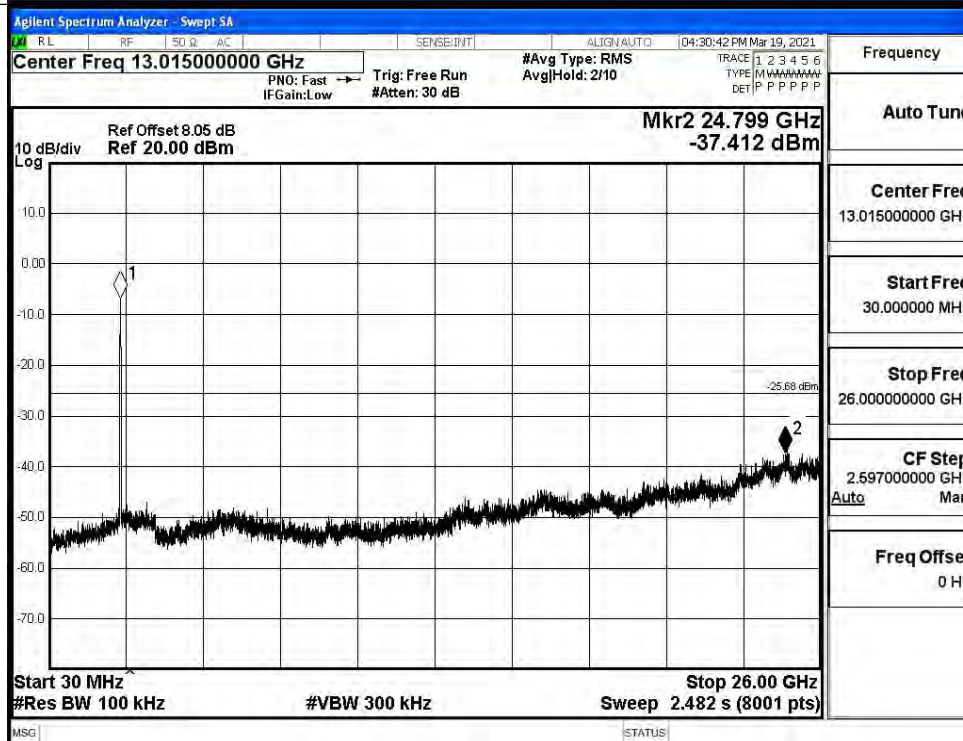
Pref/11N20  
SISO/HCHPuw/11N20  
SISO/HCH

## 11N40SISO LCH\_Graphs

Pref/11N40  
SISO/LCHPuw/11N40  
SISO/LCH

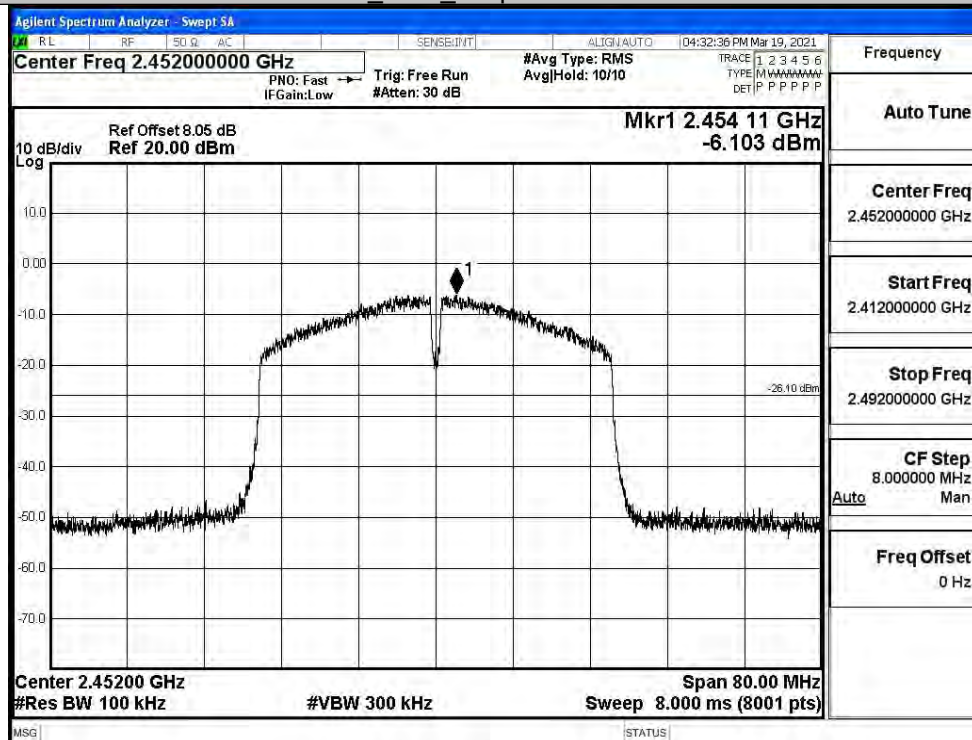
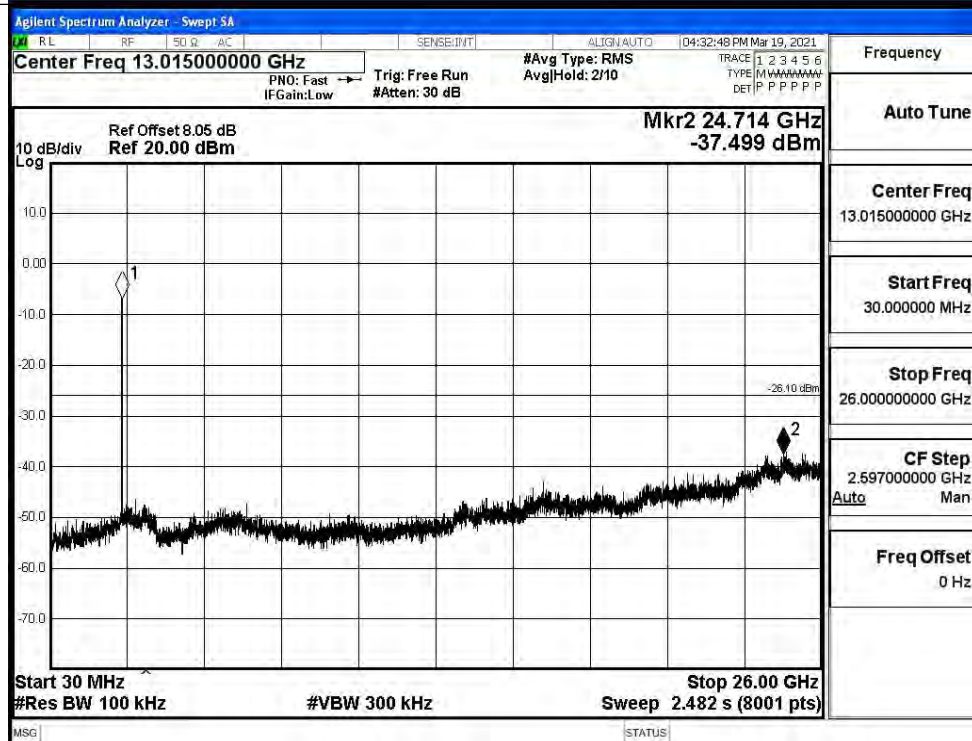


## 11N40SISO\_MCH\_Graphs

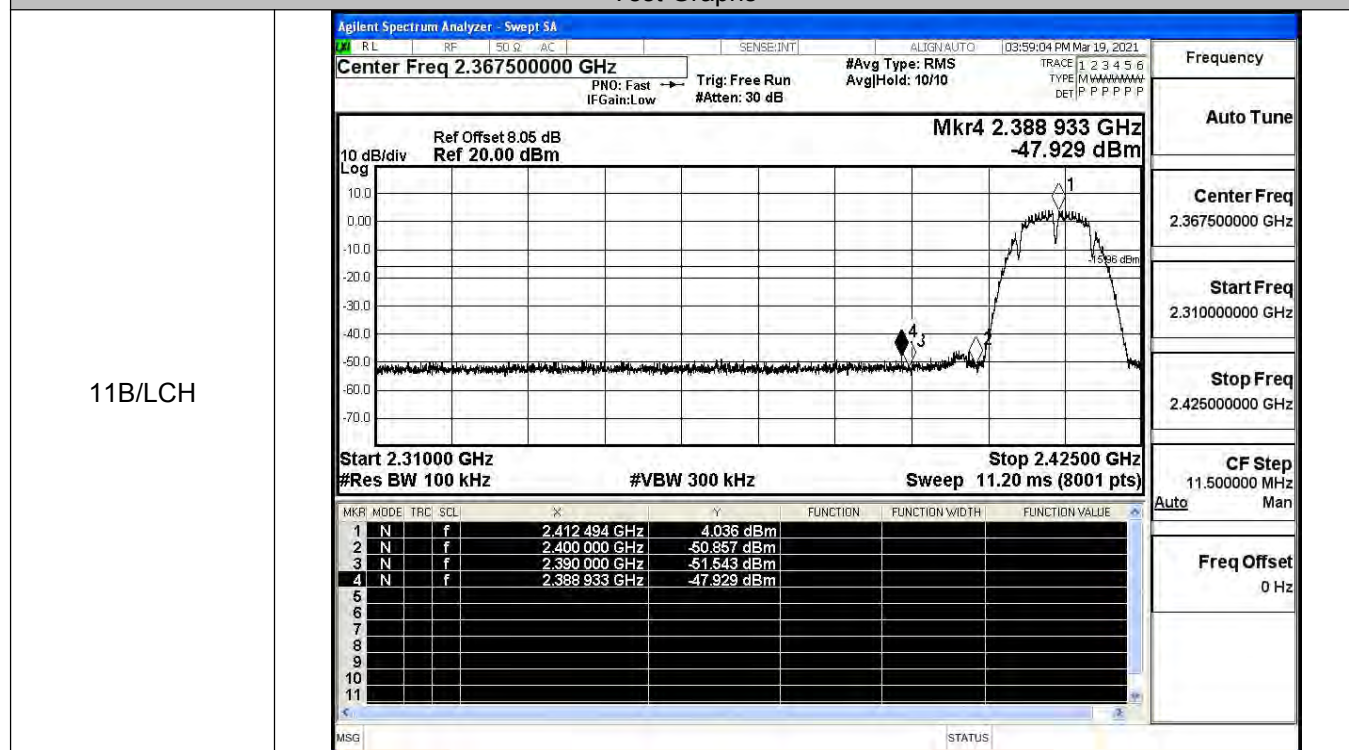
Pref/11N40  
SISO/MCHPuw/11N40  
SISO/MCH



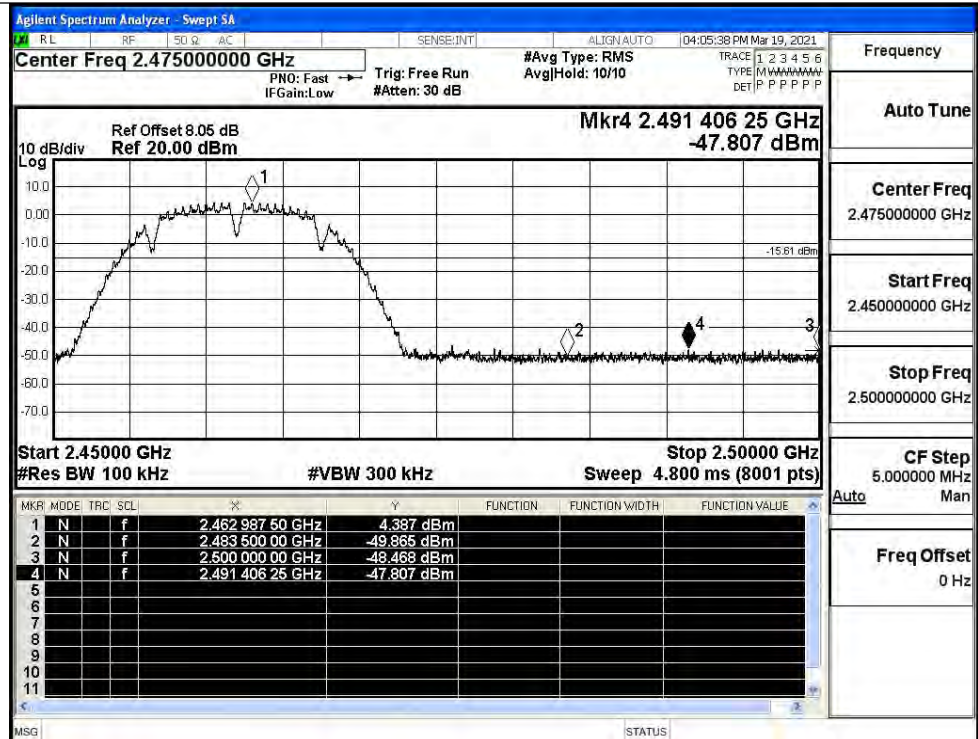
## 11N40SISO\_HCH\_Graphs

Pref/11N40  
SISO/HCHPuw/11N40  
SISO/HCH

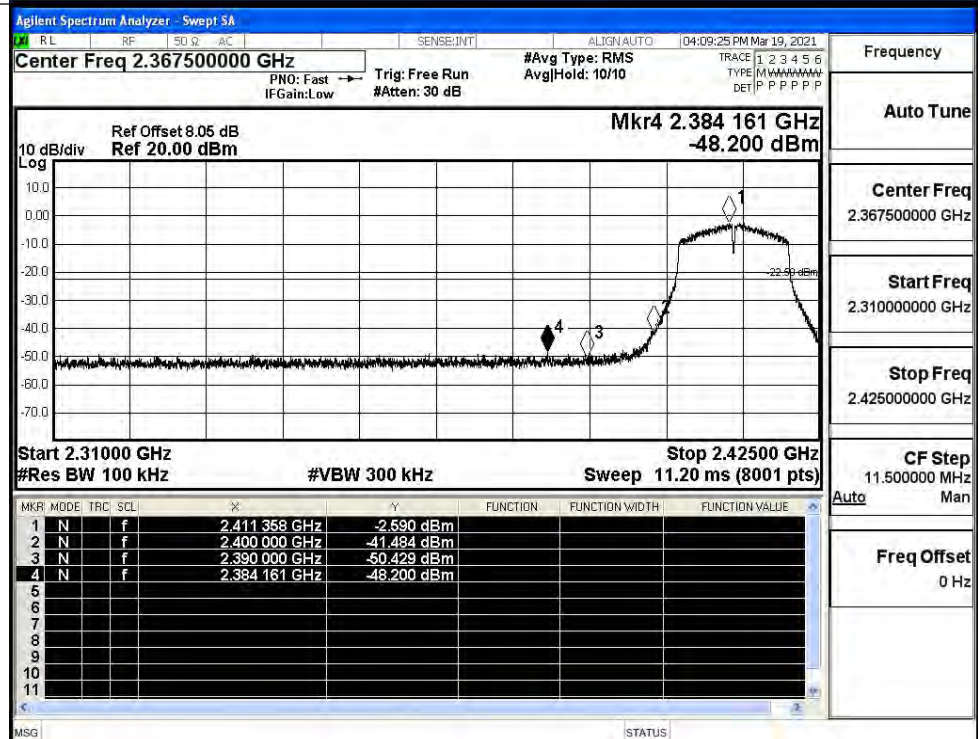
| Mode      | Channel | Carrier Power[dBm] | Max.Spurious Level [dBm] | Limit [dBm] | Verdict |
|-----------|---------|--------------------|--------------------------|-------------|---------|
| 11B       | LCH     | 4.036              | -47.929                  | -15.96      | PASS    |
|           | HCH     | 4.387              | -47.807                  | -15.61      | PASS    |
| 11G       | LCH     | -2.590             | -48.200                  | -22.59      | PASS    |
|           | HCH     | -2.958             | -48.358                  | -22.96      | PASS    |
| 11N20SISO | LCH     | -3.484             | -48.802                  | -23.48      | PASS    |
|           | HCH     | -3.632             | -47.726                  | -23.63      | PASS    |
| 11N40SISO | LCH     | -7.257             | -49.078                  | -27.26      | PASS    |
|           | HCH     | -6.009             | -47.619                  | -26.01      | PASS    |



11B/HCH

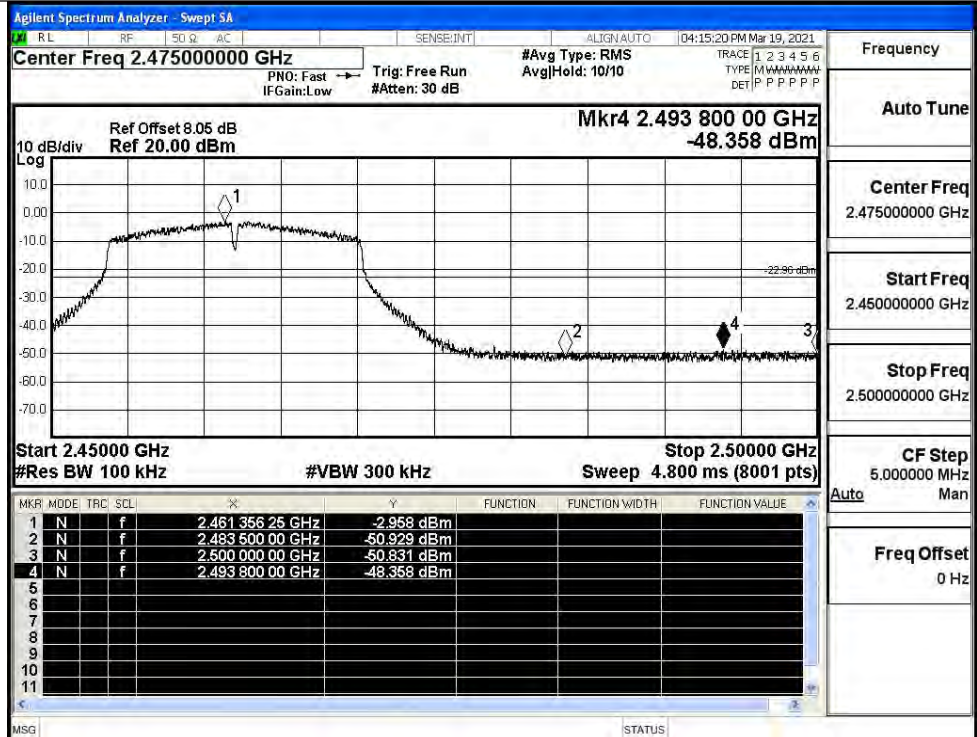


11G/LCH

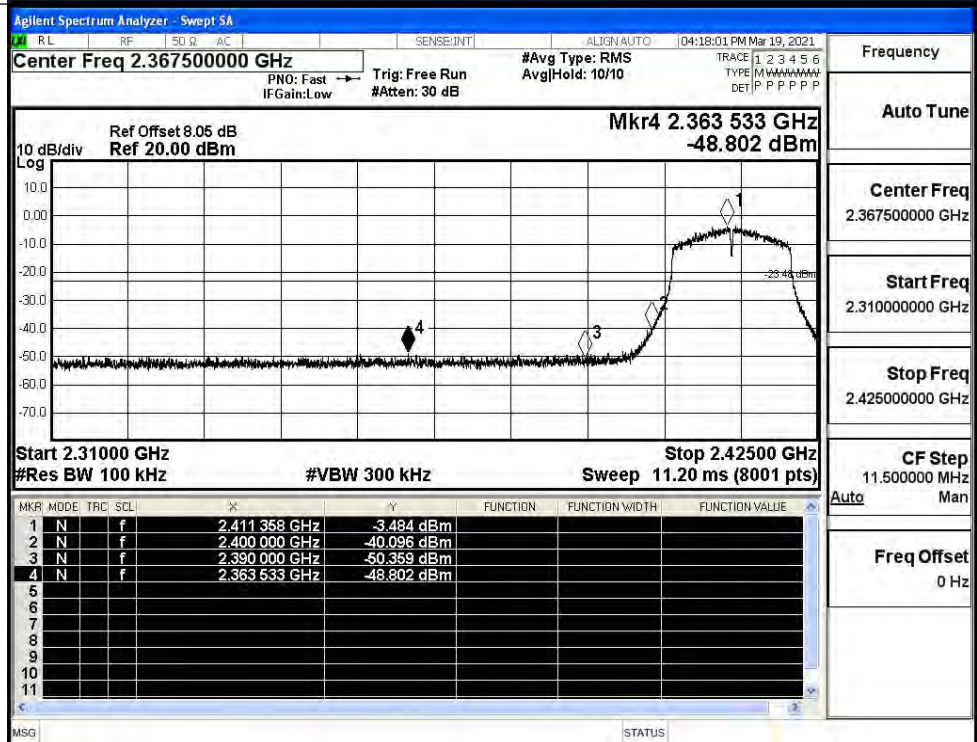




11G/HCH

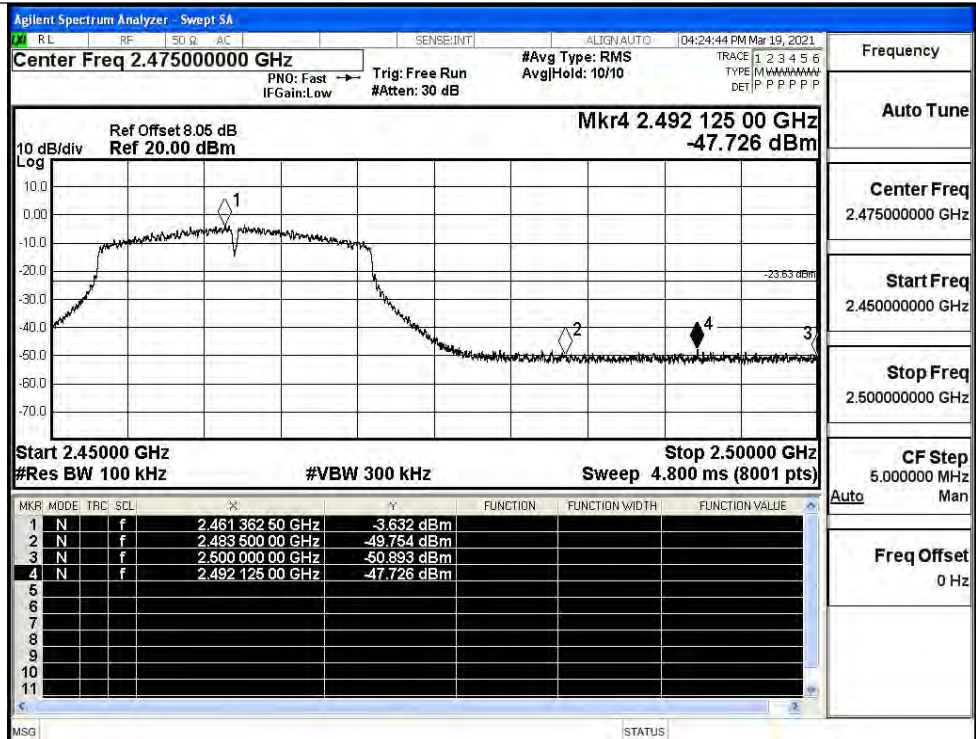


11N20SISO/LCH

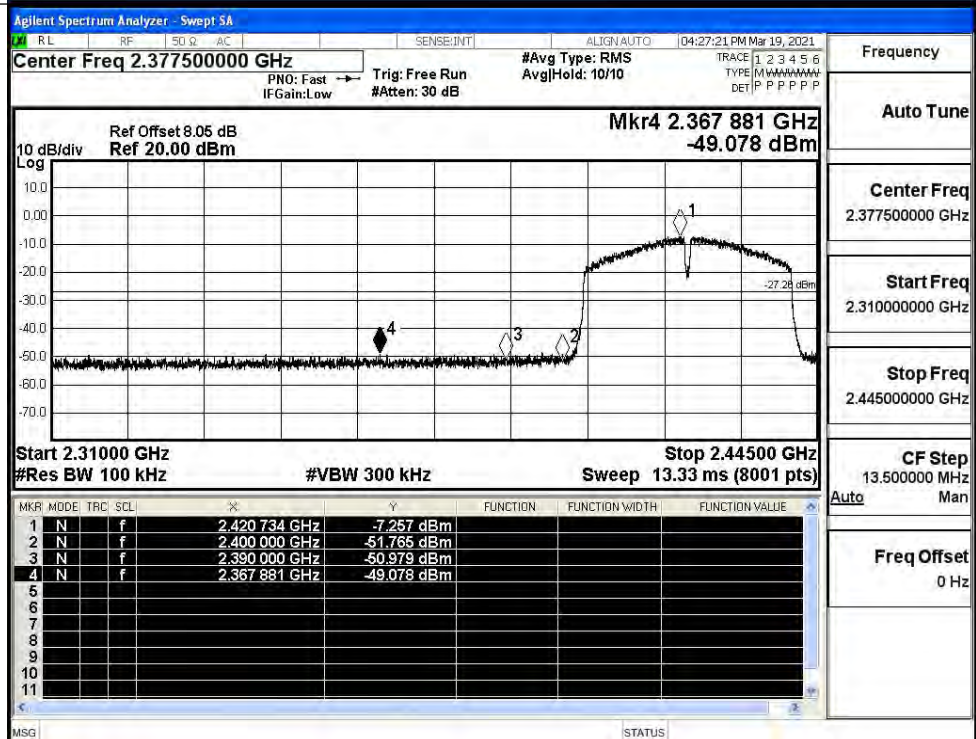




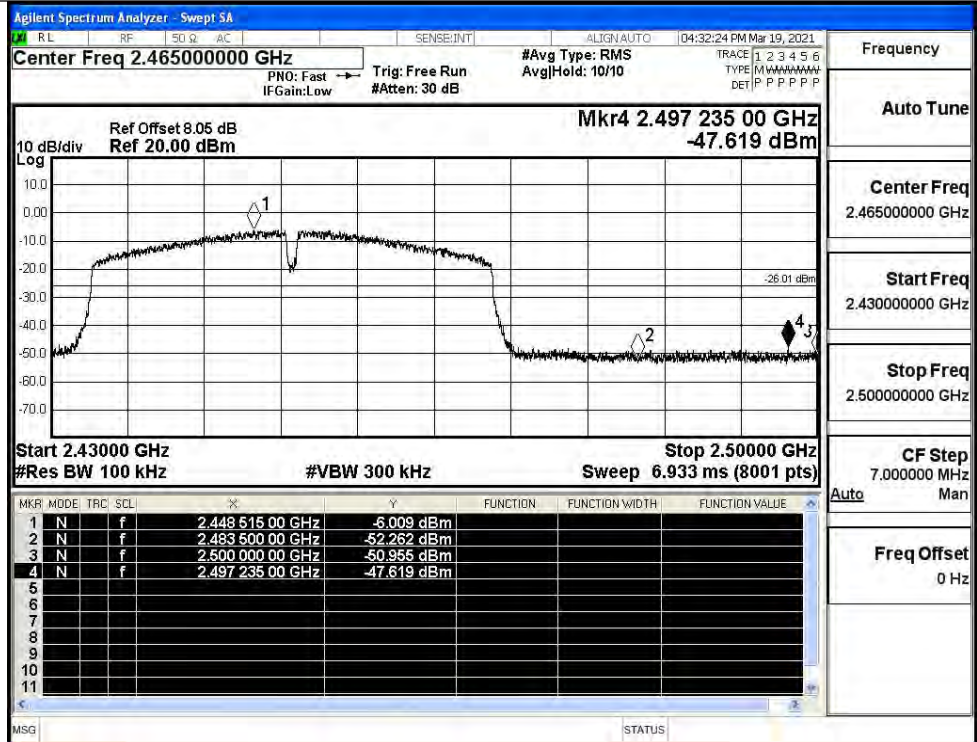
11N20SISO/HCH



11N40SISO/LCH



11N40SISO/HCH



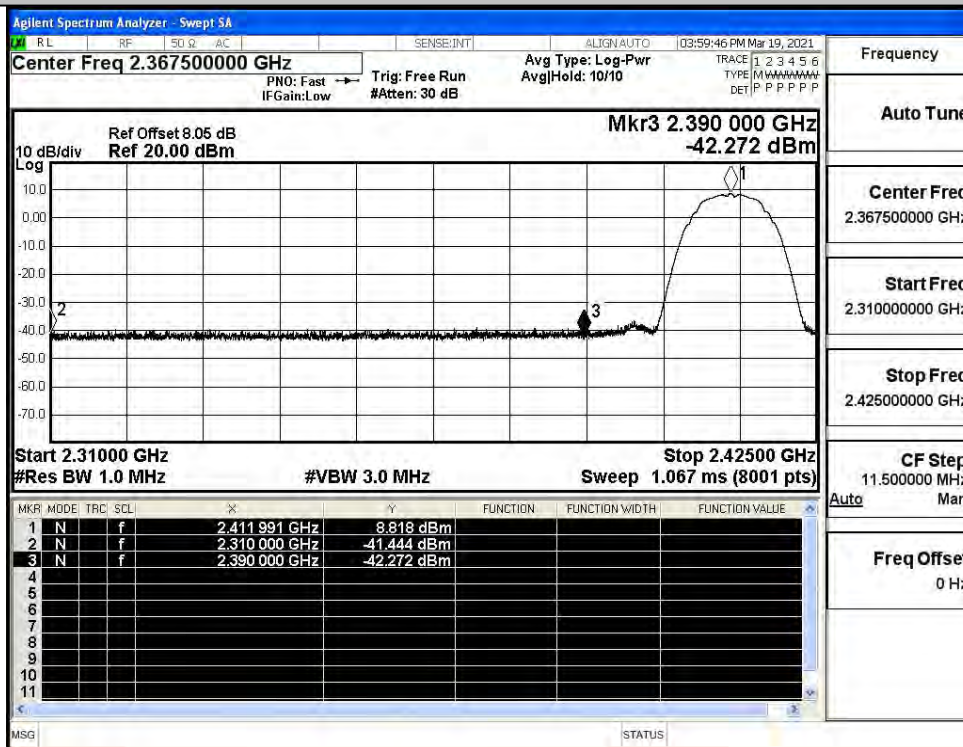
## C.7 Restrict-band band-edge measurements

| Test Mode     | Test Channel | Ant  | Freq.  | Power [dBm] | Gain | Ground Factor | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|---------------|--------------|------|--------|-------------|------|---------------|------------|----------|----------------|---------|
| 11B           | 2412         | Ant1 | 2310.0 | -41.44      | 2.0  | 0             | 55.79      | PEAK     | 74             | PASS    |
|               | 2412         | Ant1 | 2310.0 | -52.65      | 2.0  | 0             | 44.58      | AV       | 54             | PASS    |
|               | 2412         | Ant1 | 2390.0 | -42.27      | 2.0  | 0             | 54.96      | PEAK     | 74             | PASS    |
|               | 2412         | Ant1 | 2390.0 | -52.01      | 2.0  | 0             | 45.22      | AV       | 54             | PASS    |
|               | 2462         | Ant1 | 2483.5 | -40.67      | 2.0  | 0             | 56.56      | PEAK     | 74             | PASS    |
|               | 2462         | Ant1 | 2483.5 | -51.25      | 2.0  | 0             | 45.98      | AV       | 54             | PASS    |
|               | 2462         | Ant1 | 2500.0 | -41.45      | 2.0  | 0             | 55.78      | PEAK     | 74             | PASS    |
|               | 2462         | Ant1 | 2500.0 | -51.04      | 2.0  | 0             | 46.19      | AV       | 54             | PASS    |
| 11G           | 2412         | Ant1 | 2310.0 | -43.37      | 2.0  | 0             | 53.86      | PEAK     | 74             | PASS    |
|               | 2412         | Ant1 | 2310.0 | -52.68      | 2.0  | 0             | 44.55      | AV       | 54             | PASS    |
|               | 2412         | Ant1 | 2390.0 | -39.86      | 2.0  | 0             | 57.37      | PEAK     | 74             | PASS    |
|               | 2412         | Ant1 | 2390.0 | -51.91      | 2.0  | 0             | 45.32      | AV       | 54             | PASS    |
|               | 2462         | Ant1 | 2483.5 | -41.75      | 2.0  | 0             | 55.48      | PEAK     | 74             | PASS    |
|               | 2462         | Ant1 | 2483.5 | -51.27      | 2.0  | 0             | 45.96      | AV       | 54             | PASS    |
|               | 2462         | Ant1 | 2500.0 | -40.75      | 2.0  | 0             | 56.48      | PEAK     | 74             | PASS    |
|               | 2462         | Ant1 | 2500.0 | -51.28      | 2.0  | 0             | 45.95      | AV       | 54             | PASS    |
| 11N20<br>SISO | 2412         | Ant1 | 2310.0 | -42.00      | 2.0  | 0             | 55.23      | PEAK     | 74             | PASS    |
|               | 2412         | Ant1 | 2310.0 | -52.68      | 2.0  | 0             | 44.55      | AV       | 54             | PASS    |
|               | 2412         | Ant1 | 2390.0 | -41.23      | 2.0  | 0             | 56.00      | PEAK     | 74             | PASS    |
|               | 2412         | Ant1 | 2390.0 | -51.88      | 2.0  | 0             | 45.35      | AV       | 54             | PASS    |
|               | 2462         | Ant1 | 2483.5 | -38.97      | 2.0  | 0             | 58.26      | PEAK     | 74             | PASS    |
|               | 2462         | Ant1 | 2483.5 | -51.28      | 2.0  | 0             | 45.95      | AV       | 54             | PASS    |
|               | 2462         | Ant1 | 2500.0 | -41.22      | 2.0  | 0             | 56.01      | PEAK     | 74             | PASS    |
|               | 2462         | Ant1 | 2500.0 | -51.29      | 2.0  | 0             | 45.94      | AV       | 54             | PASS    |
| 11N40<br>SISO | 2422         | Ant1 | 2310.0 | -41.26      | 2.0  | 0             | 55.97      | PEAK     | 74             | PASS    |
|               | 2422         | Ant1 | 2310.0 | -52.73      | 2.0  | 0             | 44.50      | AV       | 54             | PASS    |

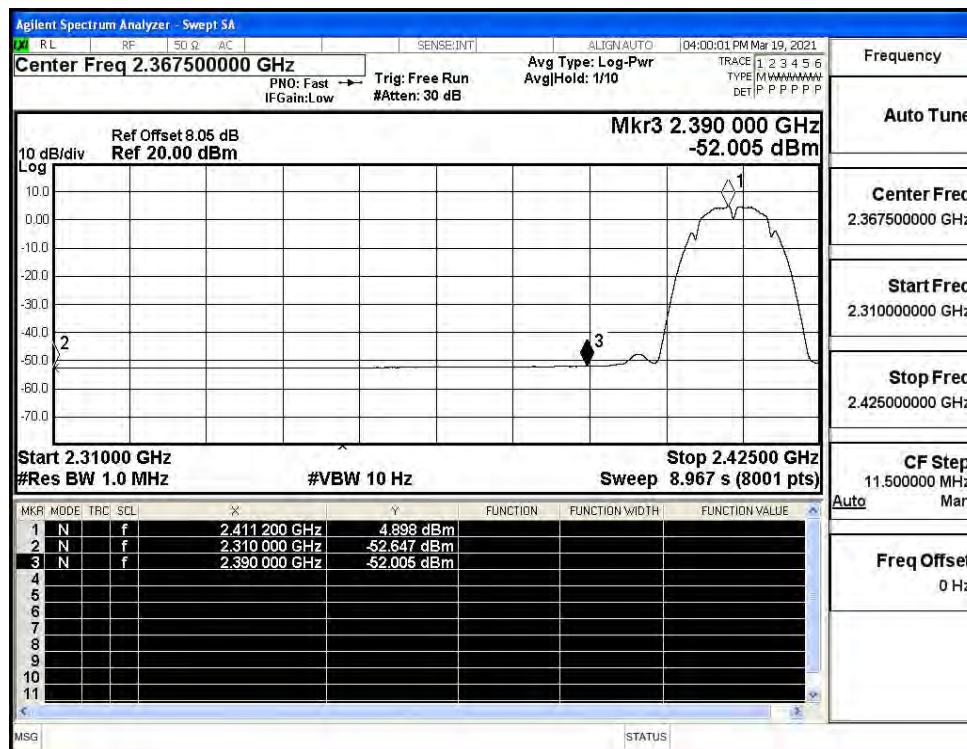
|  |      |      |        |        |     |   |       |      |    |      |
|--|------|------|--------|--------|-----|---|-------|------|----|------|
|  | 2422 | Ant1 | 2390.0 | -41.40 | 2.0 | 0 | 55.83 | PEAK | 74 | PASS |
|  | 2422 | Ant1 | 2390.0 | -51.87 | 2.0 | 0 | 45.36 | AV   | 54 | PASS |
|  | 2452 | Ant1 | 2483.5 | -41.48 | 2.0 | 0 | 55.75 | PEAK | 74 | PASS |
|  | 2452 | Ant1 | 2483.5 | -51.27 | 2.0 | 0 | 45.96 | AV   | 54 | PASS |
|  | 2452 | Ant1 | 2500.0 | -41.34 | 2.0 | 0 | 55.89 | PEAK | 74 | PASS |
|  | 2452 | Ant1 | 2500.0 | -51.32 | 2.0 | 0 | 45.91 | AV   | 54 | PASS |



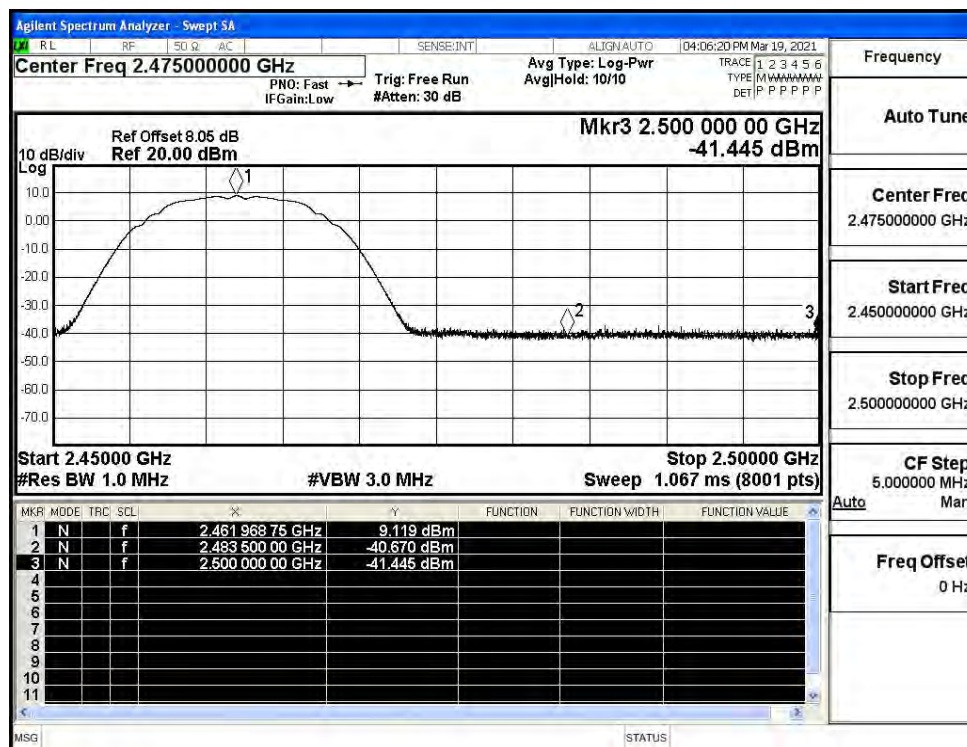
Restrict-band band-edge measurements\_11B\_2412\_Ant1\_PEAK



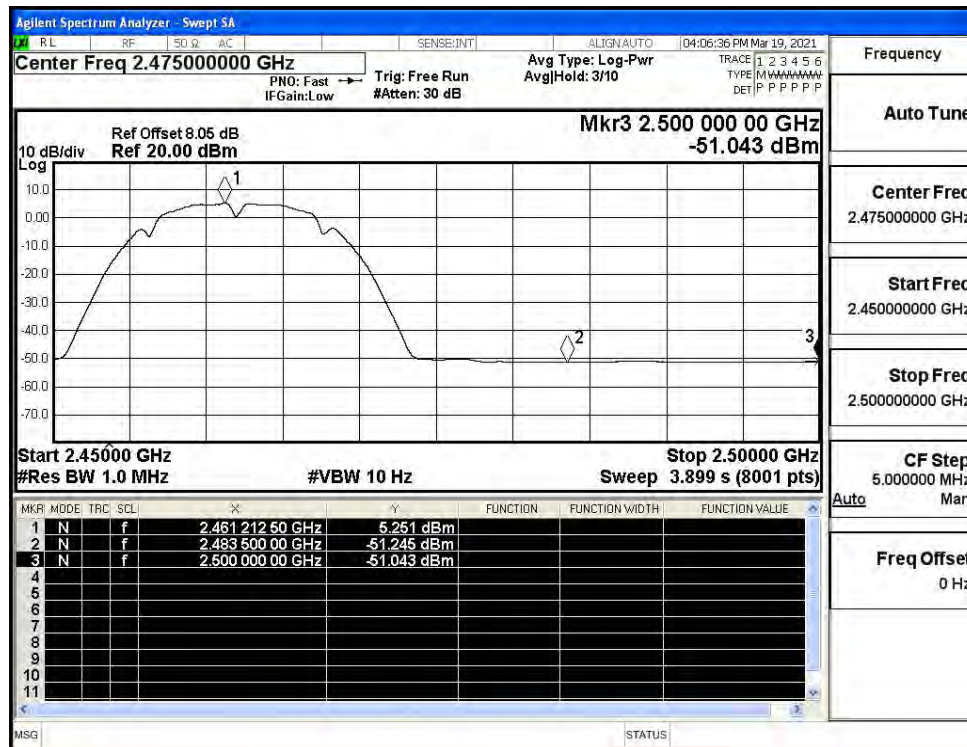
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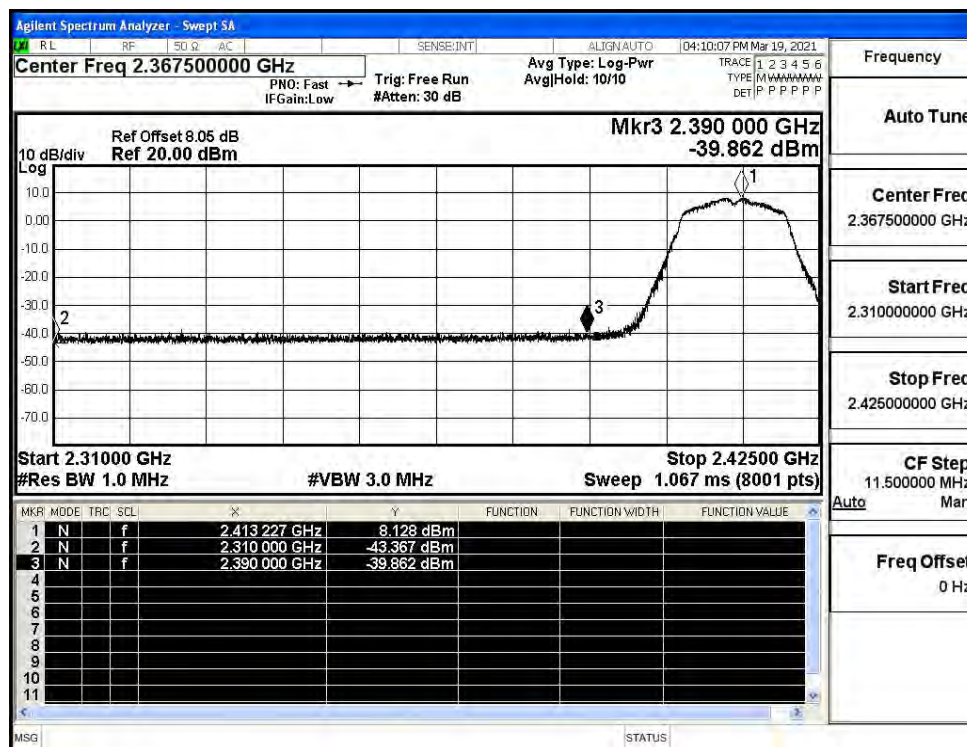
## Restrict-band band-edge measurements\_11B\_2462\_Ant1\_PEAK



## Restrict-band band-edge measurements\_11B\_2462\_Ant1\_AV

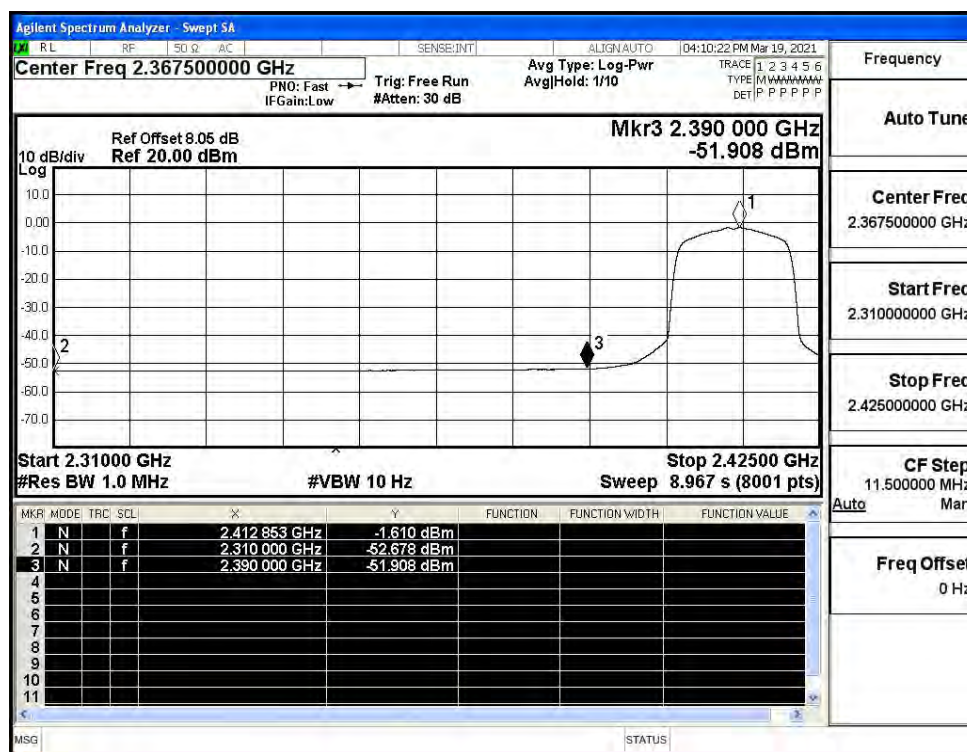


## Restrict-band band-edge measurements\_11G\_2412\_Ant1\_PEAK

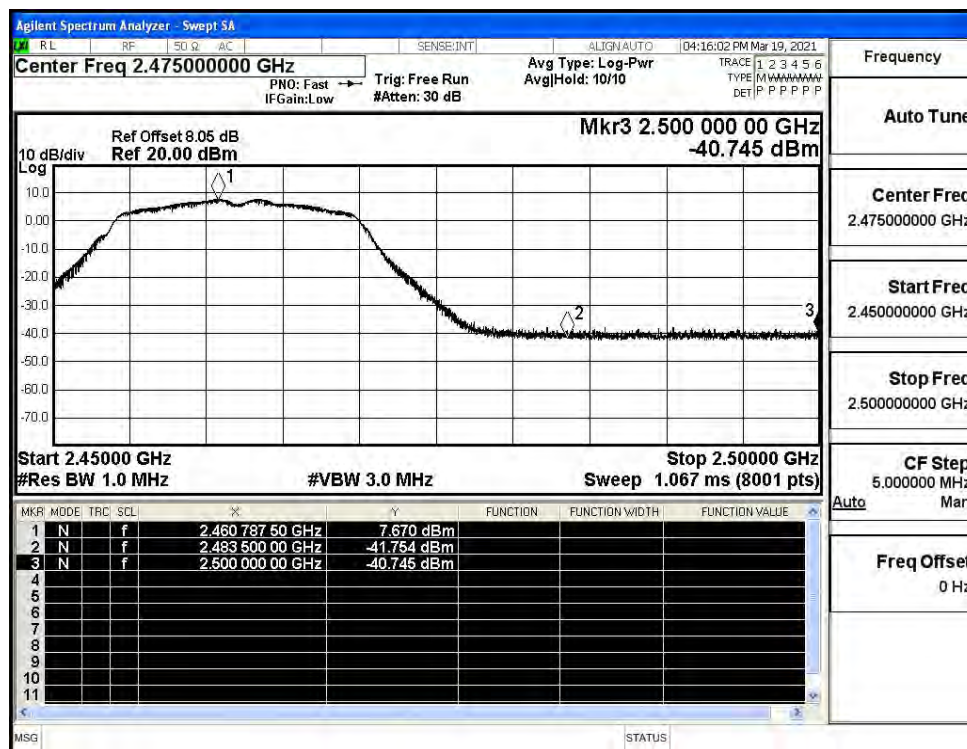




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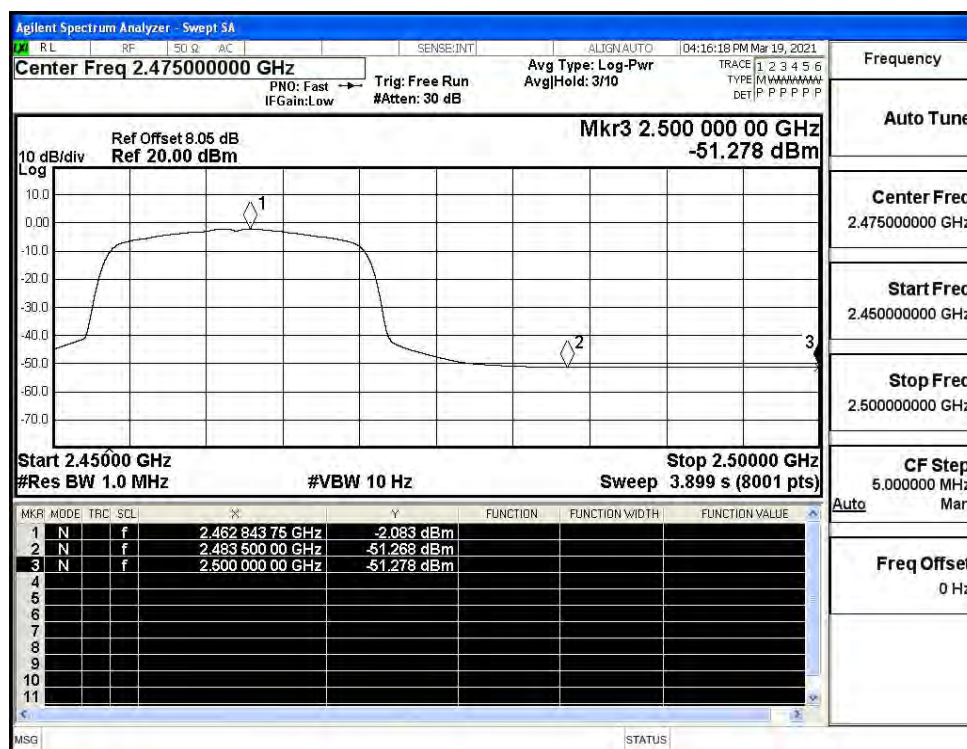


## Restrict-band band-edge measurements\_11G\_2462\_Ant1\_PEAK

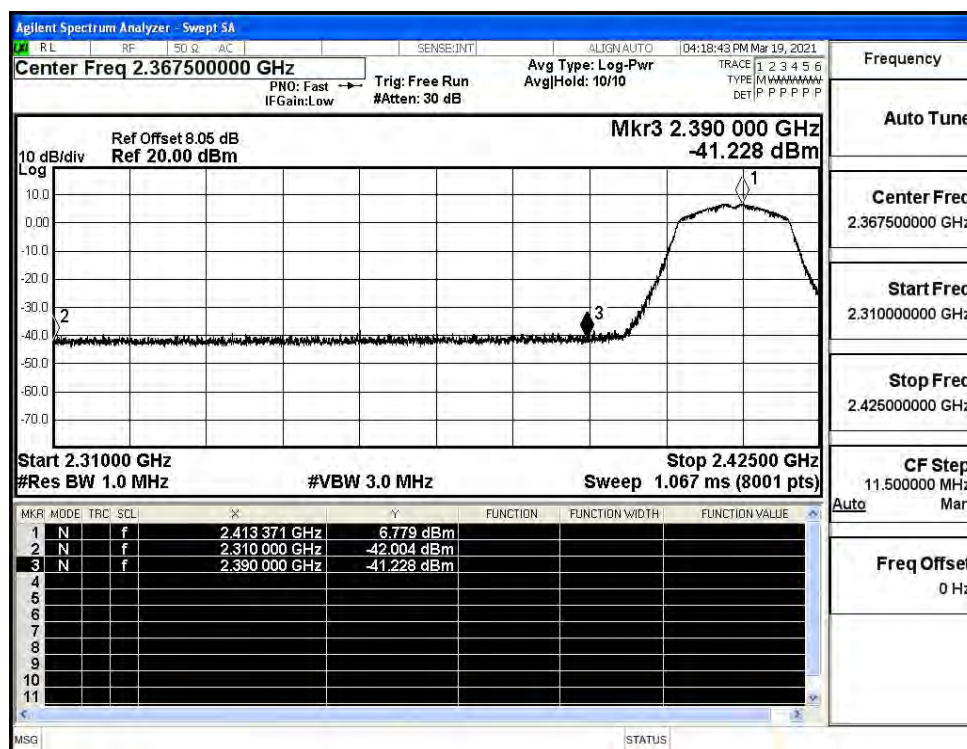




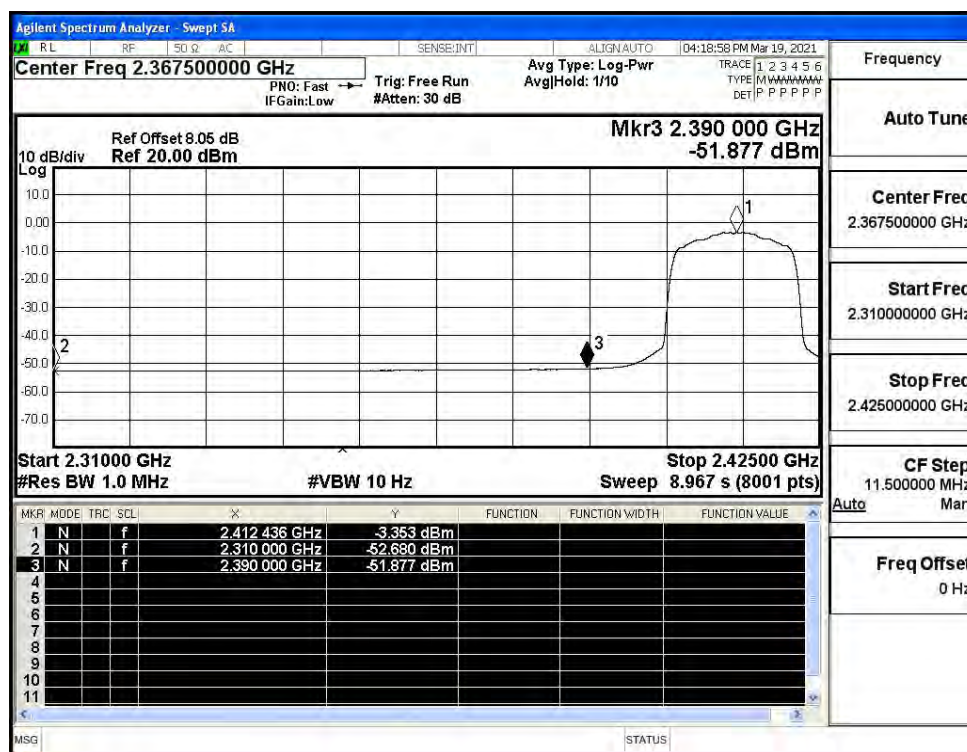
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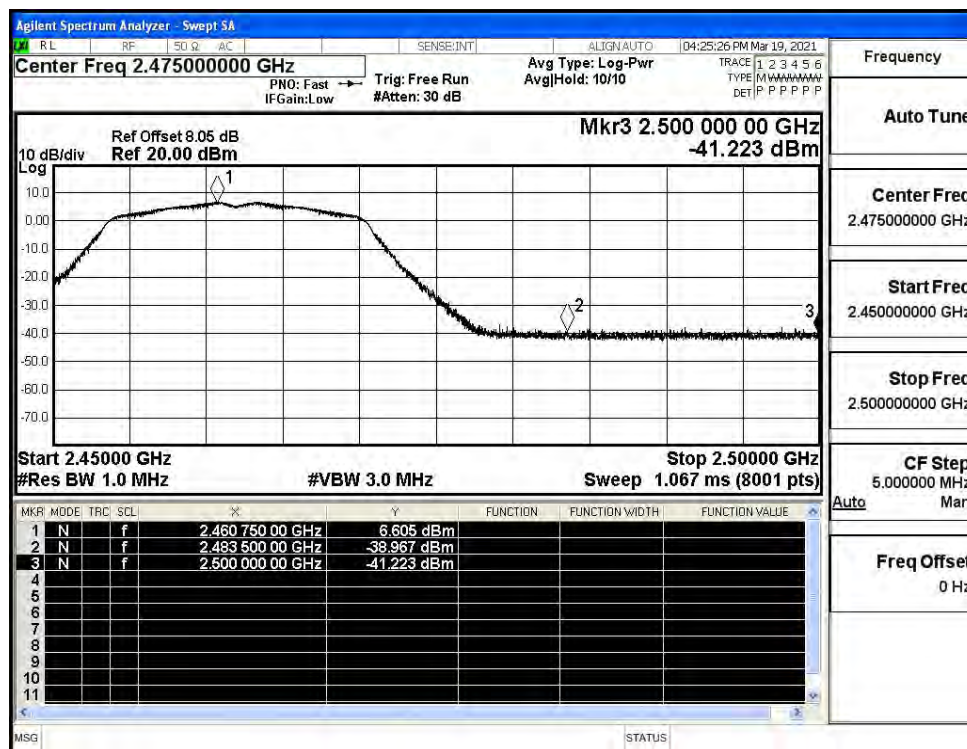
## Restrict-band band-edge measurements\_11N20SISO\_2412\_Ant1\_PEAK



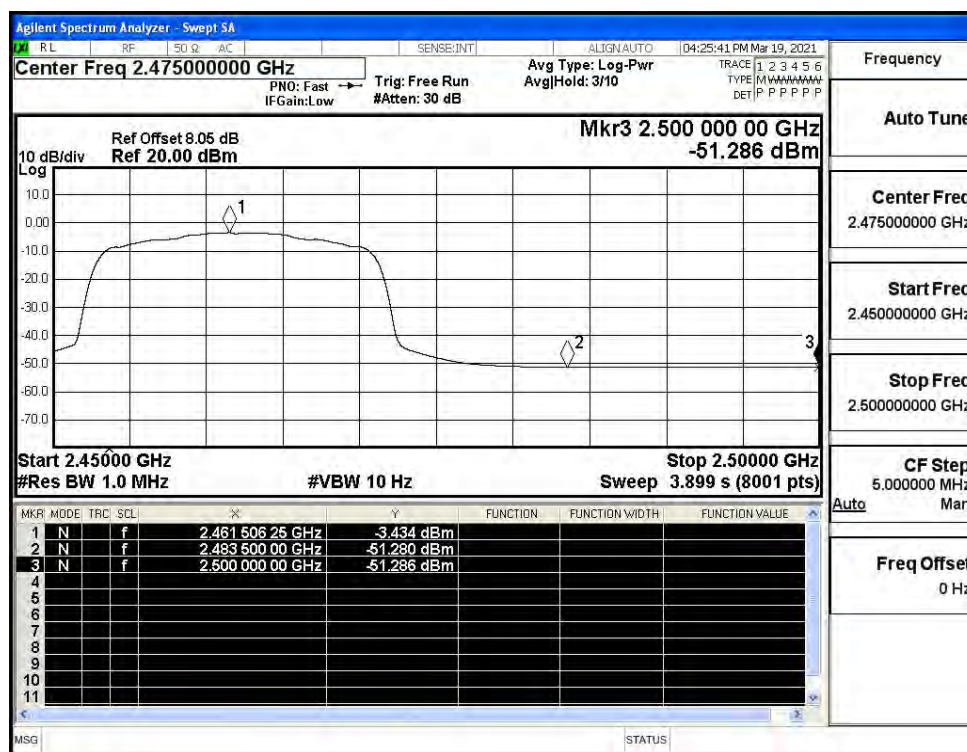
## Restrict-band band-edge measurements\_11N20SISO\_2412\_Ant1\_AV



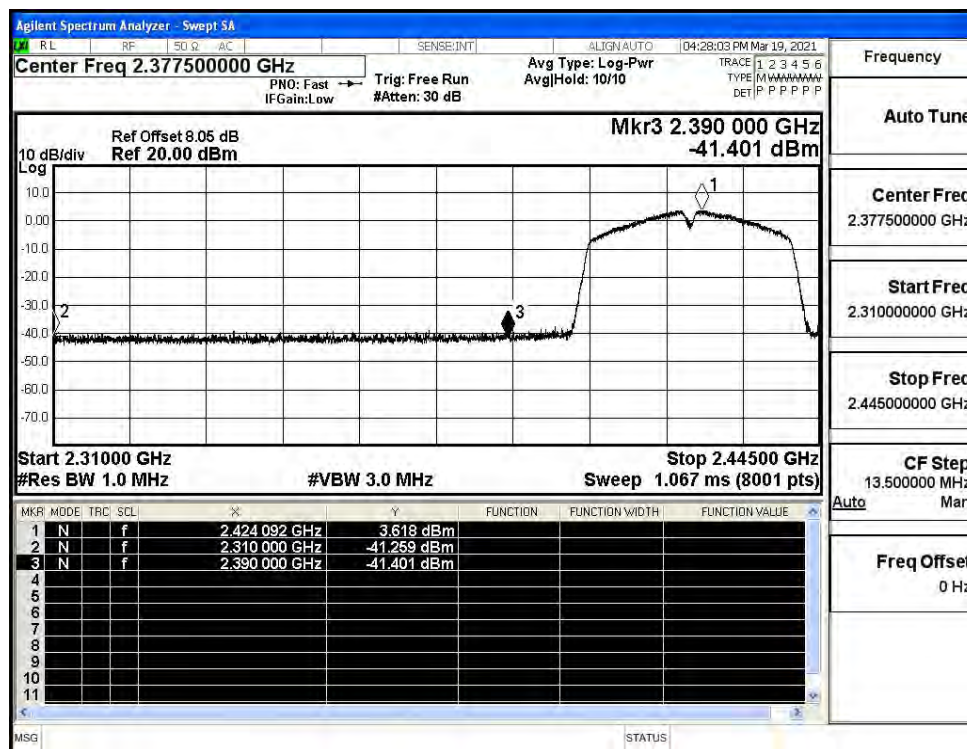
## Restrict-band band-edge measurements\_11N20SISO\_2462\_Ant1\_PEAK



## Restrict-band band-edge measurements\_11N20SISO\_2462\_Ant1\_AV

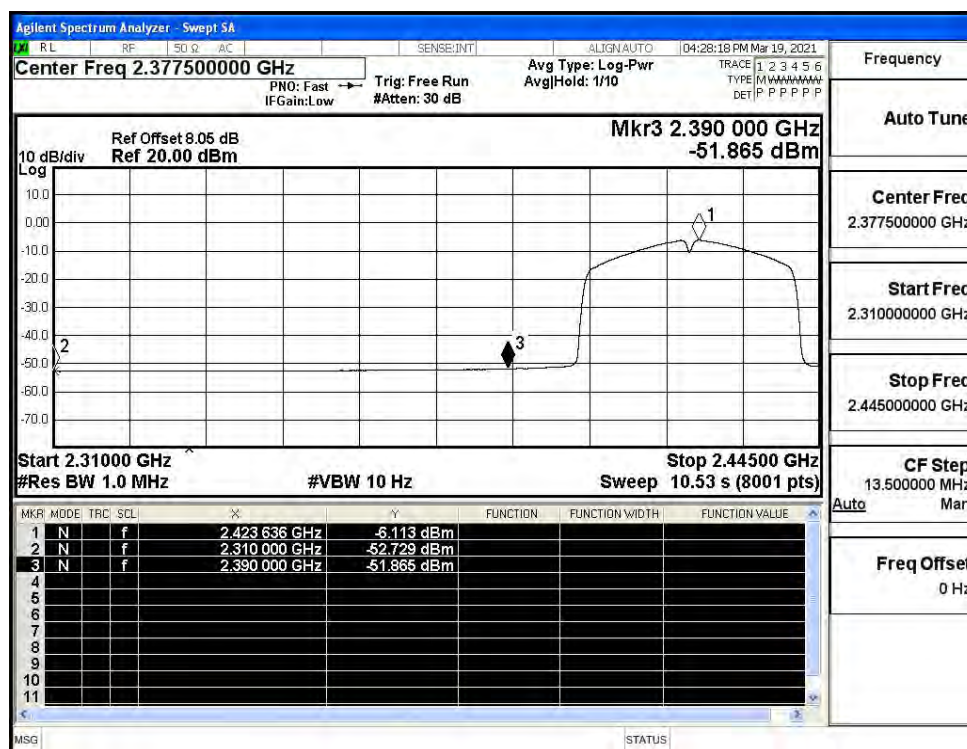


## Restrict-band band-edge measurements\_11N40SISO\_2422\_Ant1\_PEAK

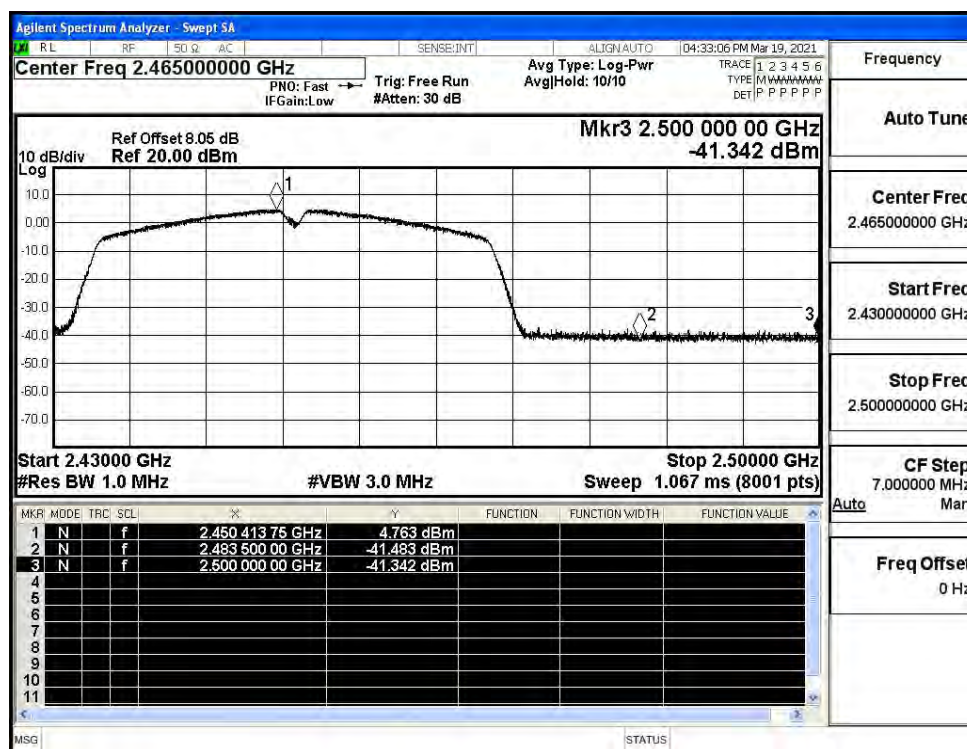




## Restrict-band band-edge measurements\_11N40SISO\_2422\_Ant1\_AV



## Restrict-band band-edge measurements\_11N40SISO\_2452\_Ant1\_PEAK





Restrict-band band-edge measurements\_11N40SISO\_2452\_Ant1\_AV

