

## Appendix A

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

Product Name: Visual ear spoon

Trade Mark: E-enjoy

Test Model: E-enjoy E5

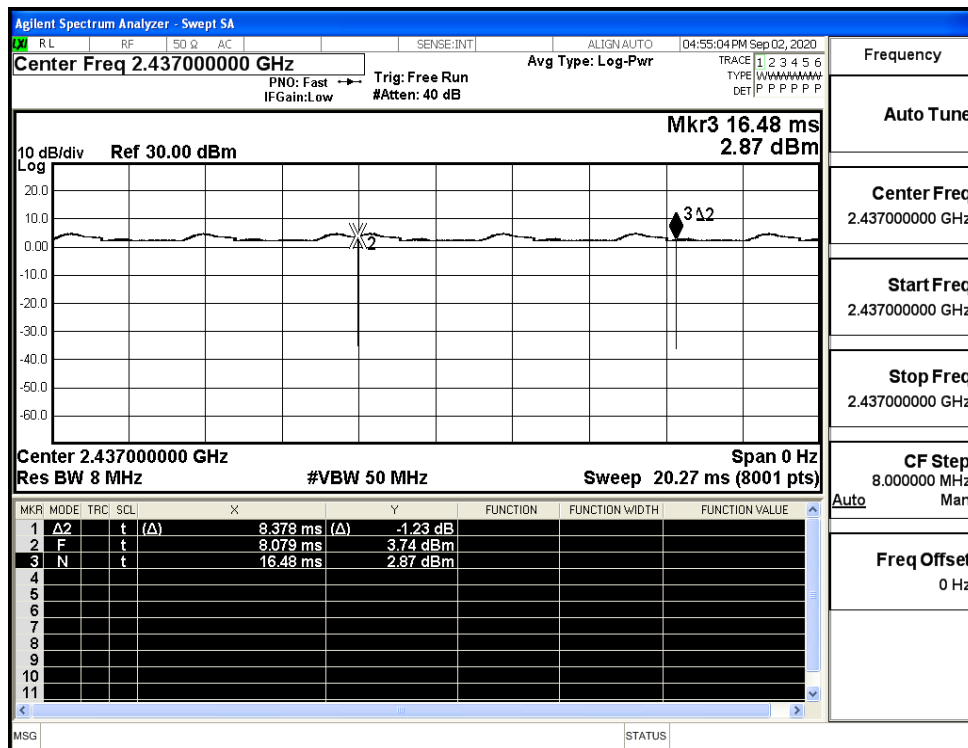
#### Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 23.4°C    |
| Relative Humidity: | 52.5%     |
| ATM Pressure:      | 100.0 kPa |
| Test Engineer:     | Jay Li    |
| Supervised by:     | Li Huan   |

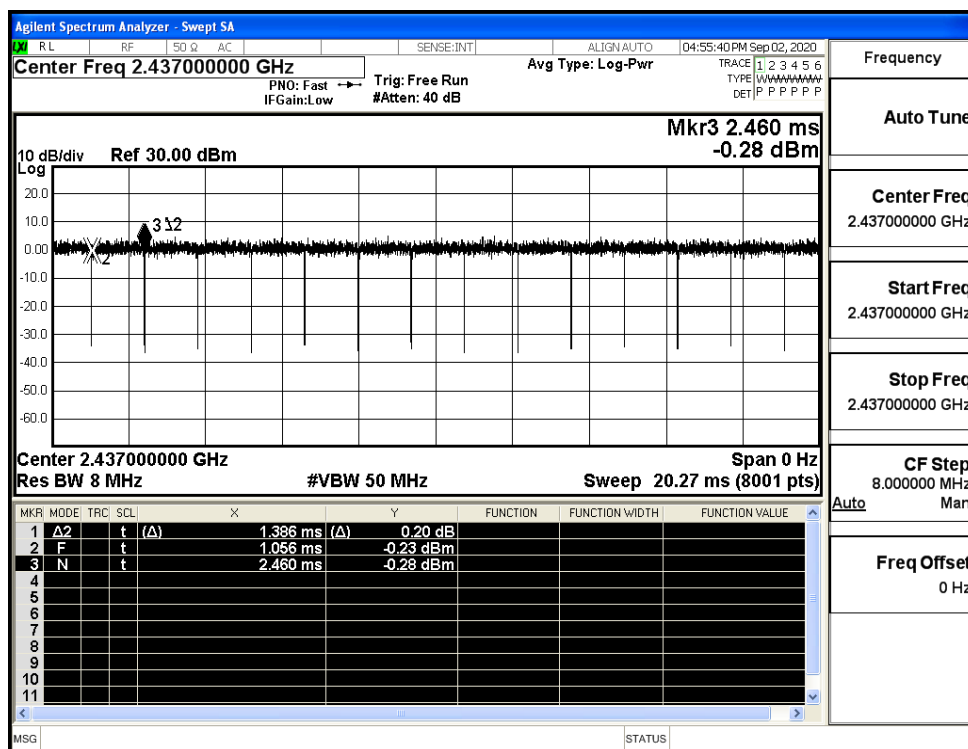
#### A.1 Duty Cycle

| Test Mode | Test Channel | Ant  | Duty Cycle[%] | Verdict |
|-----------|--------------|------|---------------|---------|
| 11B       | 2437         | Ant1 | 99.76         | PASS    |
| 11G       | 2437         | Ant1 | 98.74         | PASS    |
| 11N20SISO | 2437         | Ant1 | 98.46         | PASS    |
| 11N40SISO | 2437         | Ant1 | 98.00         | PASS    |

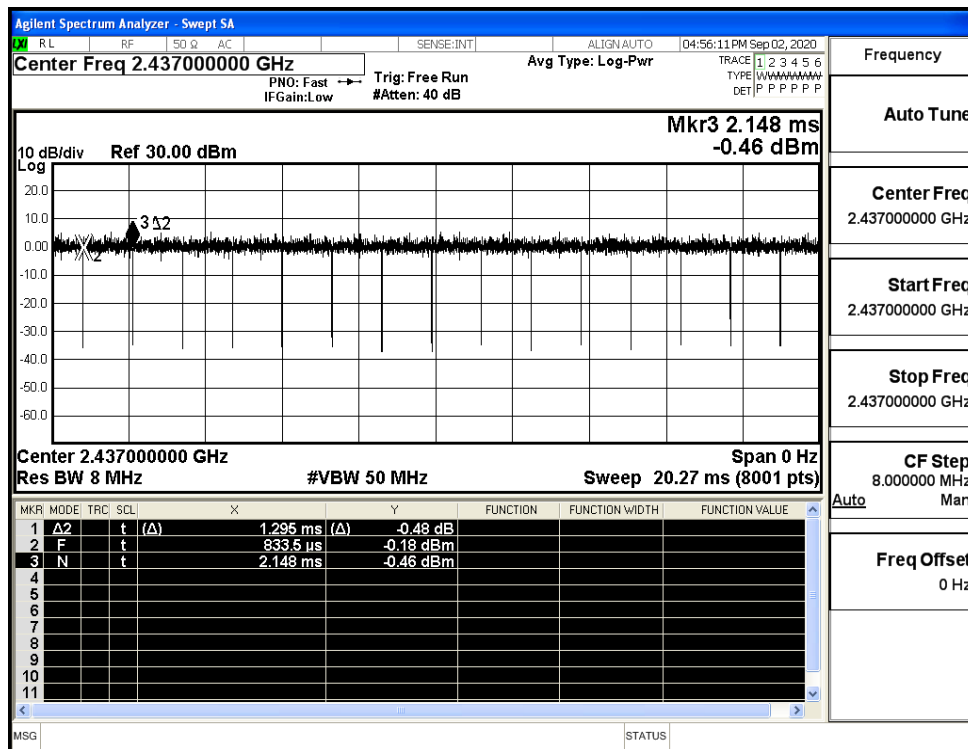
## Duty Cycle\_11B\_2437\_Ant1



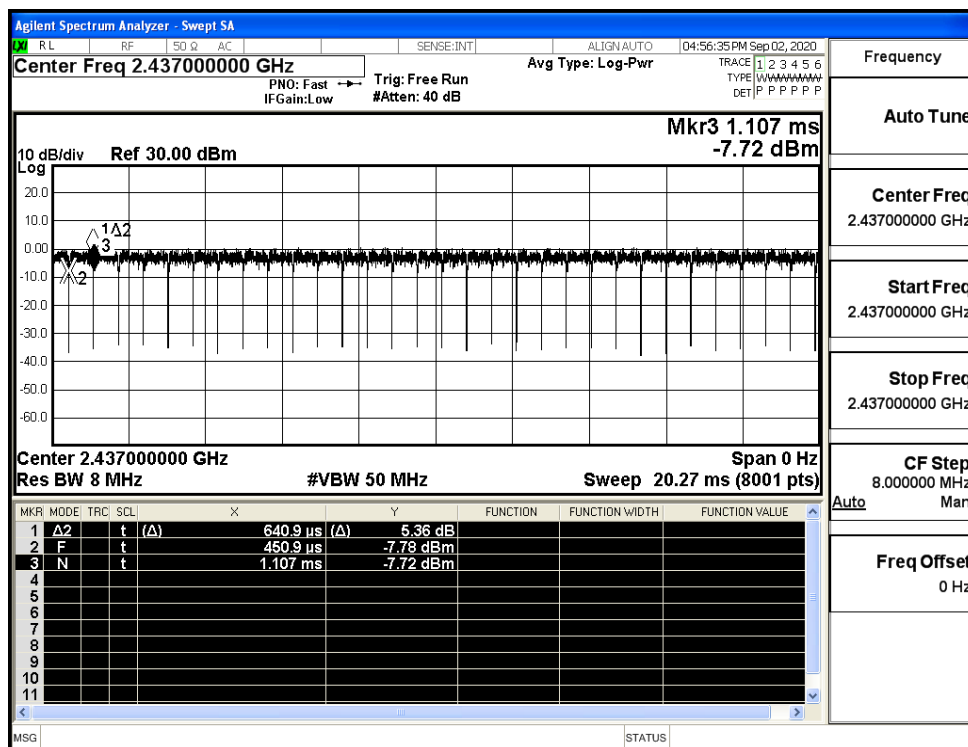
## Duty Cycle\_11G\_2437\_Ant1



## Duty Cycle\_11N20SISO\_2437\_Ant1



## Duty Cycle\_11N40SISO\_2437\_Ant1



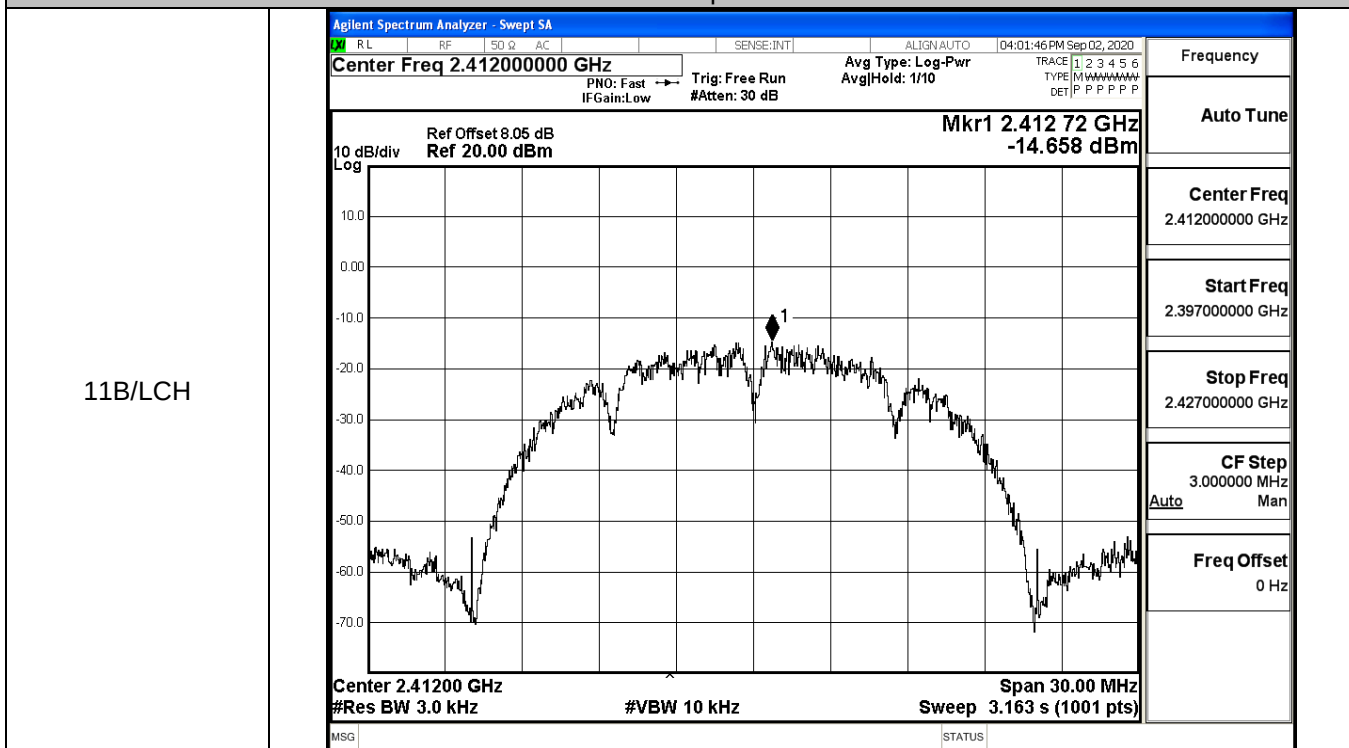
**A.2 Maximum Conducted Output Power**

| Mode      | Channel | Meas.Level [dBm] | Limit [dBm] | Verdict |
|-----------|---------|------------------|-------------|---------|
| 11B       | LCH     | 8.31             | 30          | PASS    |
|           | MCH     | 7.89             | 30          | PASS    |
|           | HCH     | 8.65             | 30          | PASS    |
| 11G       | LCH     | 7.97             | 30          | PASS    |
|           | MCH     | 7.79             | 30          | PASS    |
|           | HCH     | 7.83             | 30          | PASS    |
| 11N20SISO | LCH     | 7.94             | 30          | PASS    |
|           | MCH     | 8.41             | 30          | PASS    |
|           | HCH     | 8.84             | 30          | PASS    |
| 11N40SISO | LCH     | 8.42             | 30          | PASS    |
|           | MCH     | 8.67             | 30          | PASS    |
|           | HCH     | 8.33             | 30          | PASS    |

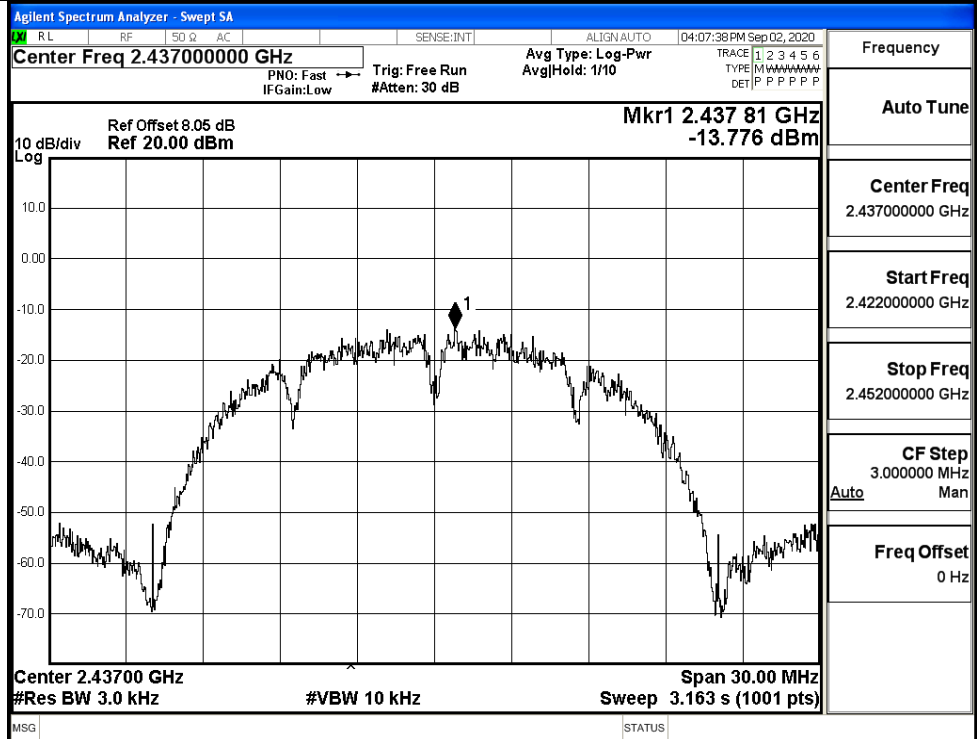
### A.3 Maximum Power Spectral Density

| Mode      | Channel | Meas.Level [dBm/3KHz] | Limit [dBm/3KHz] | Verdict |
|-----------|---------|-----------------------|------------------|---------|
| 11B       | LCH     | -14.658               | 8                | PASS    |
|           | MCH     | -13.776               | 8                | PASS    |
|           | HCH     | -13.409               | 8                | PASS    |
| 11G       | LCH     | -18.432               | 8                | PASS    |
|           | MCH     | -20.397               | 8                | PASS    |
|           | HCH     | -19.314               | 8                | PASS    |
| 11N20SISO | LCH     | -22.123               | 8                | PASS    |
|           | MCH     | -20.670               | 8                | PASS    |
|           | HCH     | -19.340               | 8                | PASS    |
| 11N40SISO | LCH     | -23.228               | 8                | PASS    |
|           | MCH     | -22.232               | 8                | PASS    |
|           | HCH     | -21.293               | 8                | PASS    |

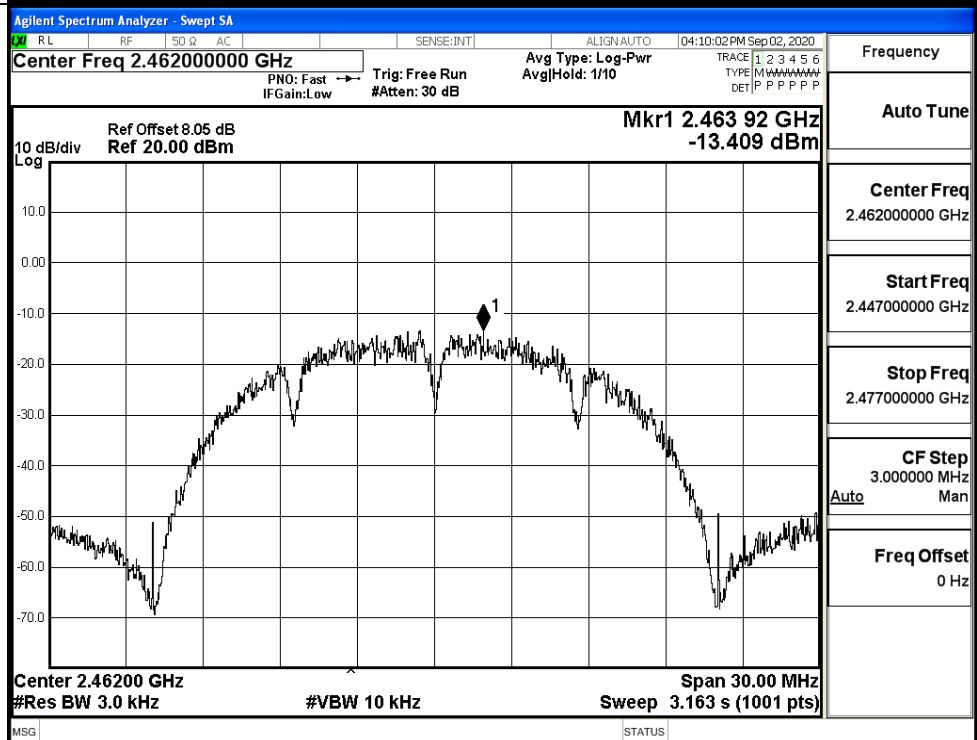
#### Test Graphs



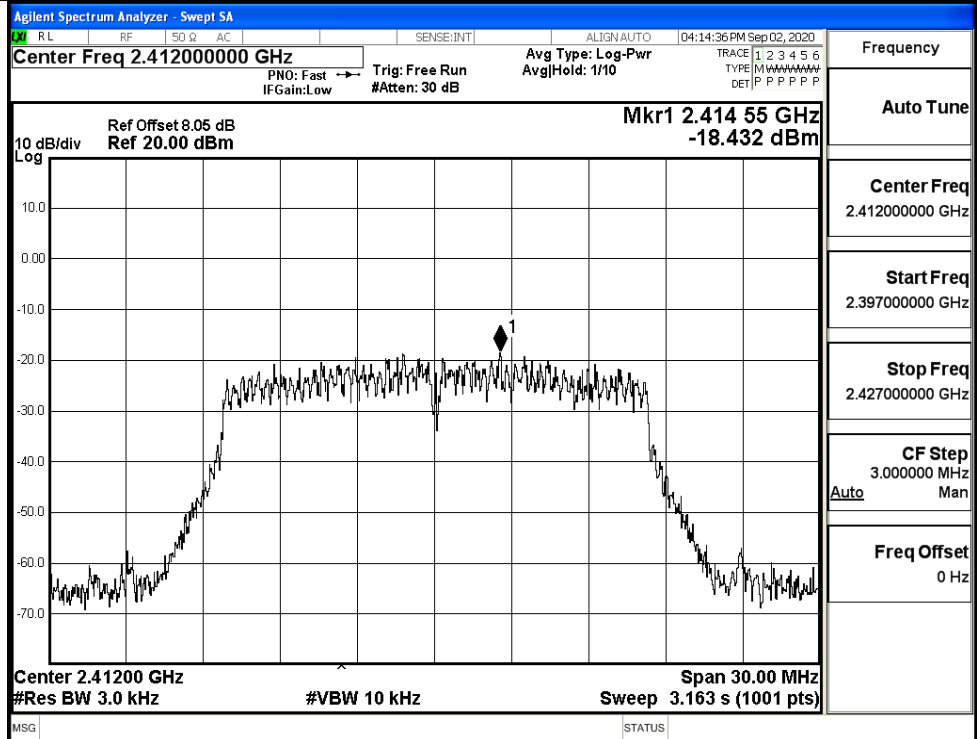
11B/MCH



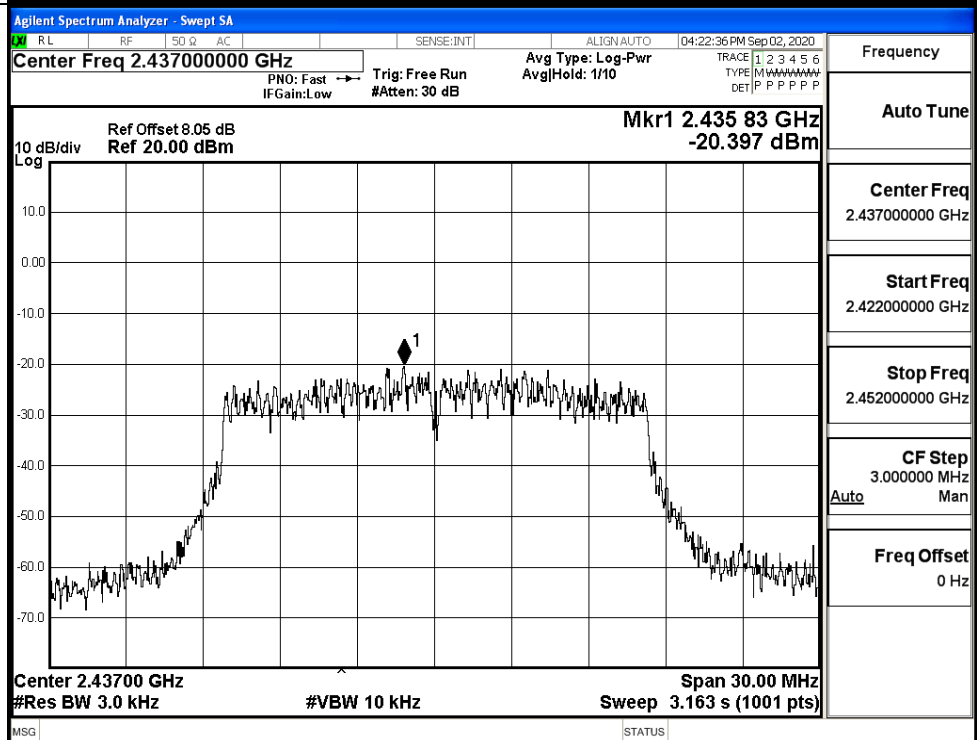
11B/HCH



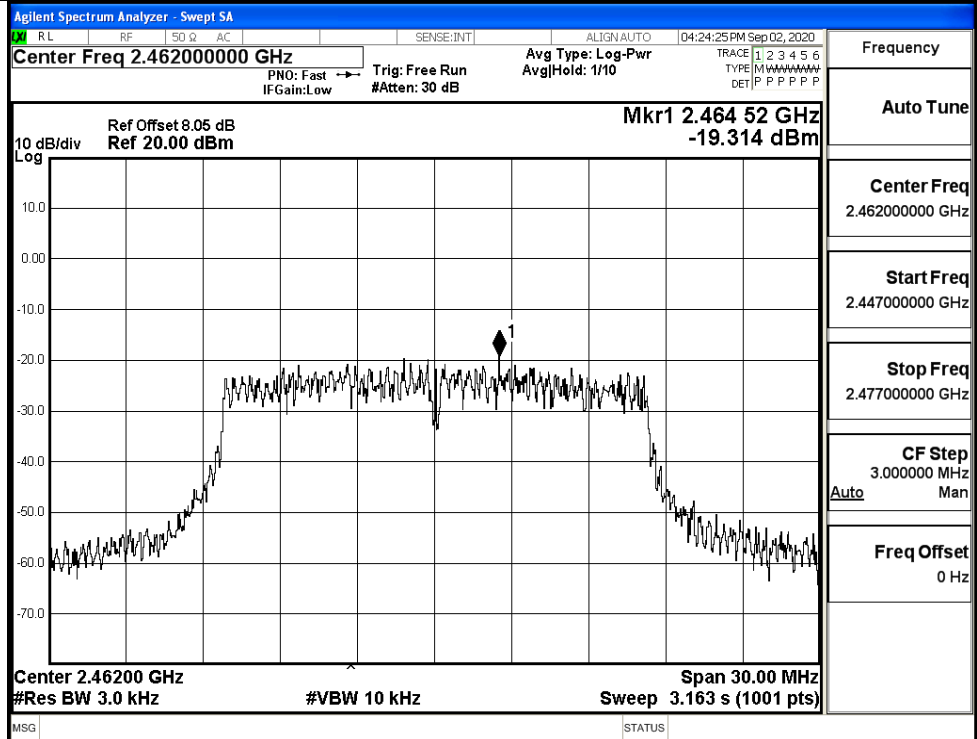
11G/LCH



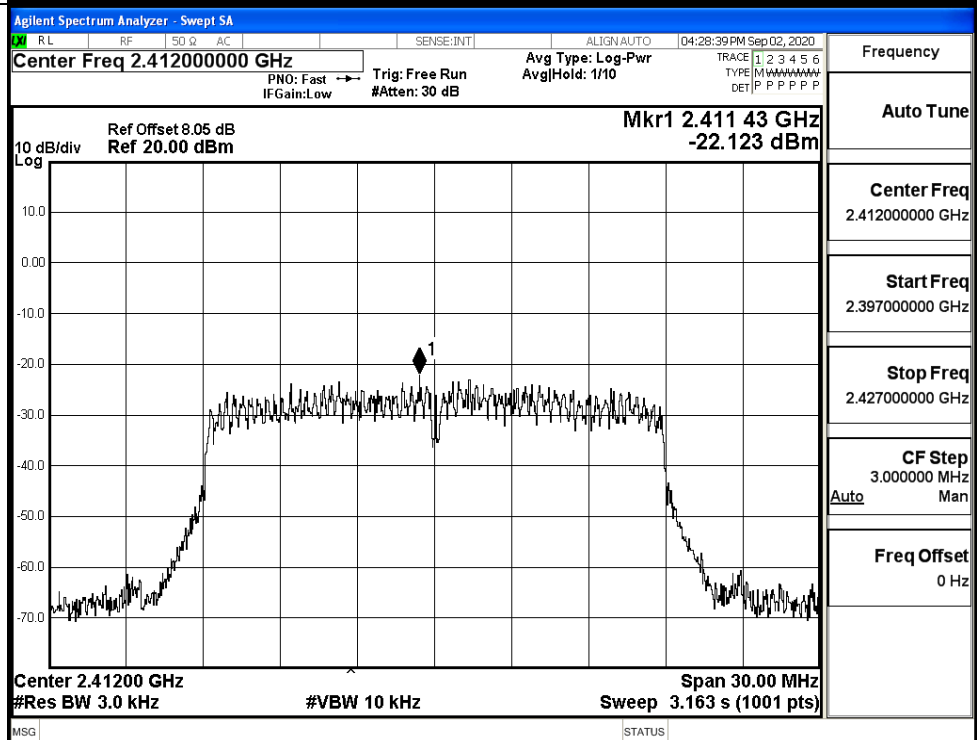
11G/MCH



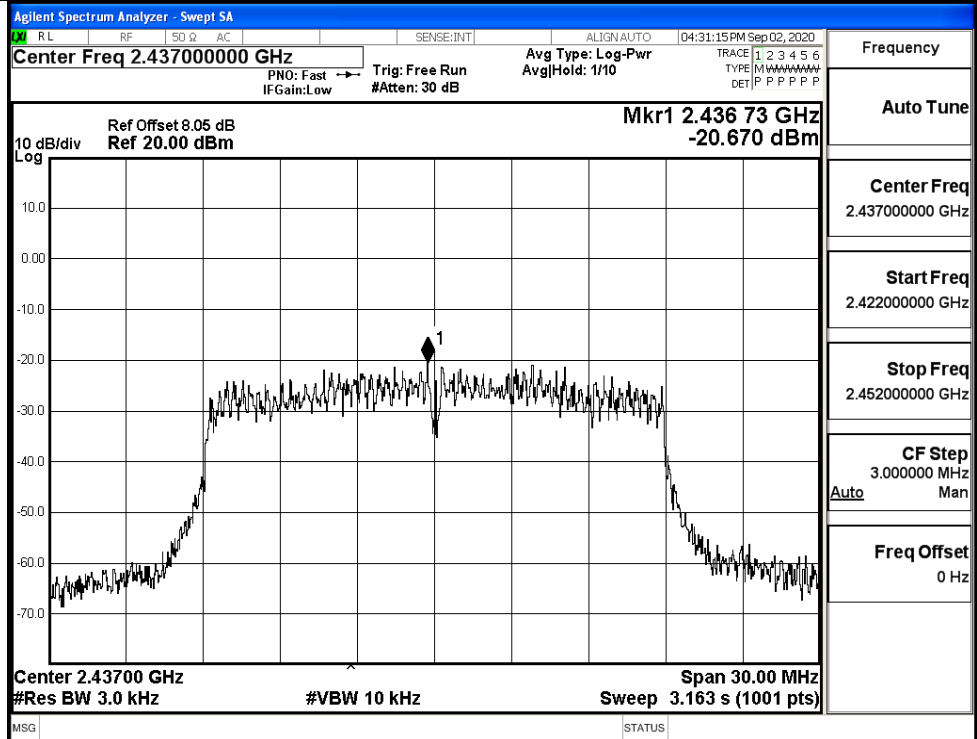
11G/HCH



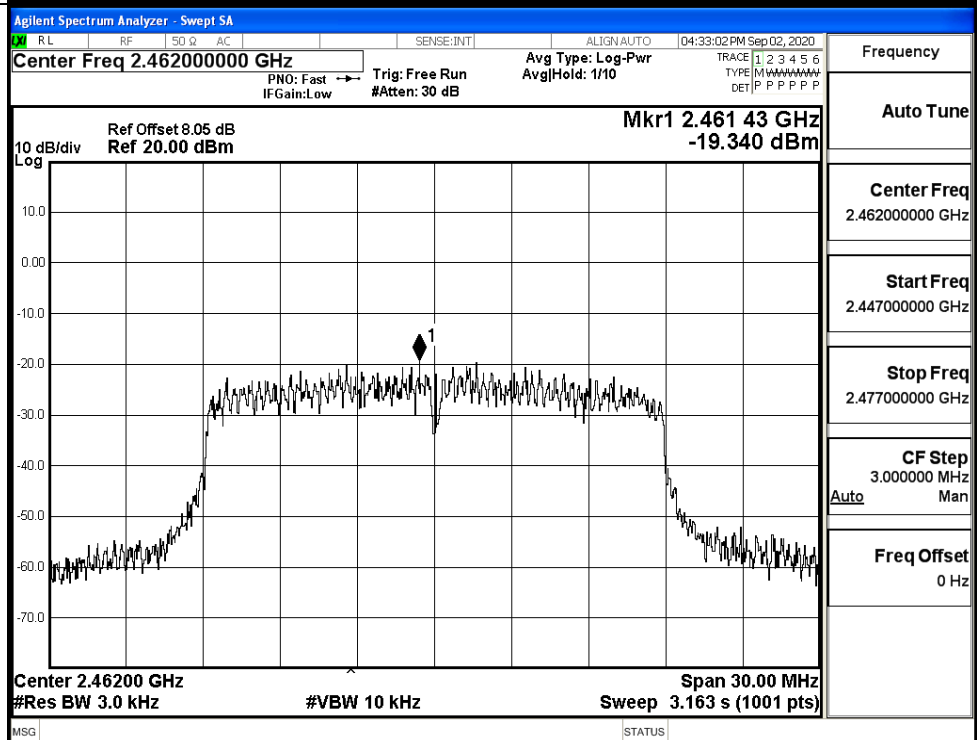
11N20SISO/LCH



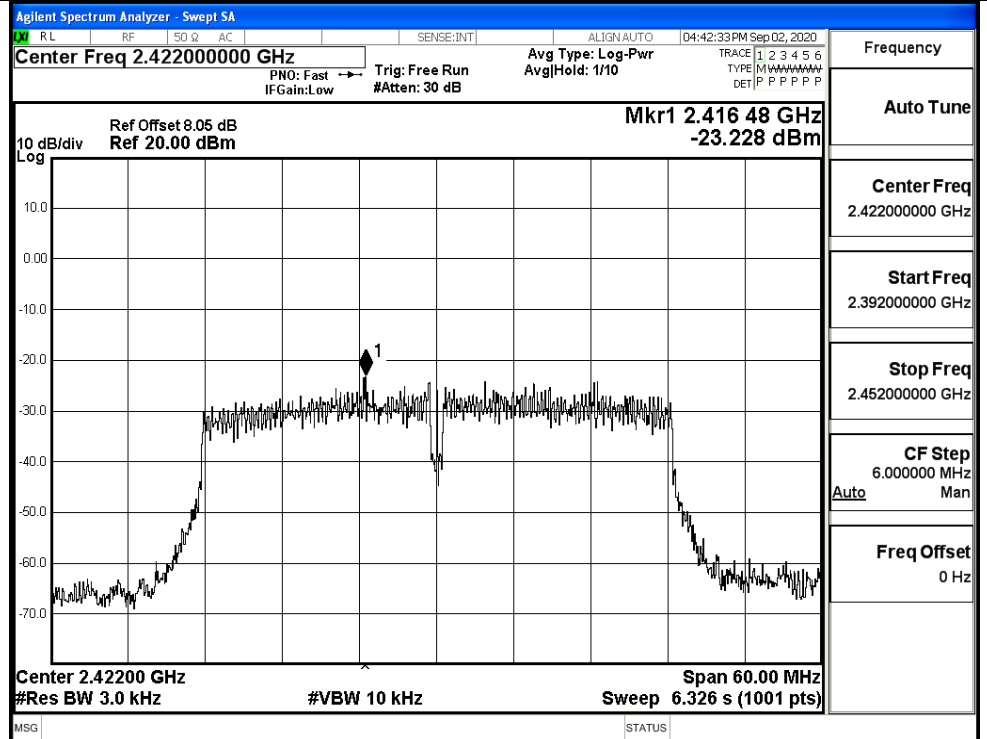
11N20SISO/MCH



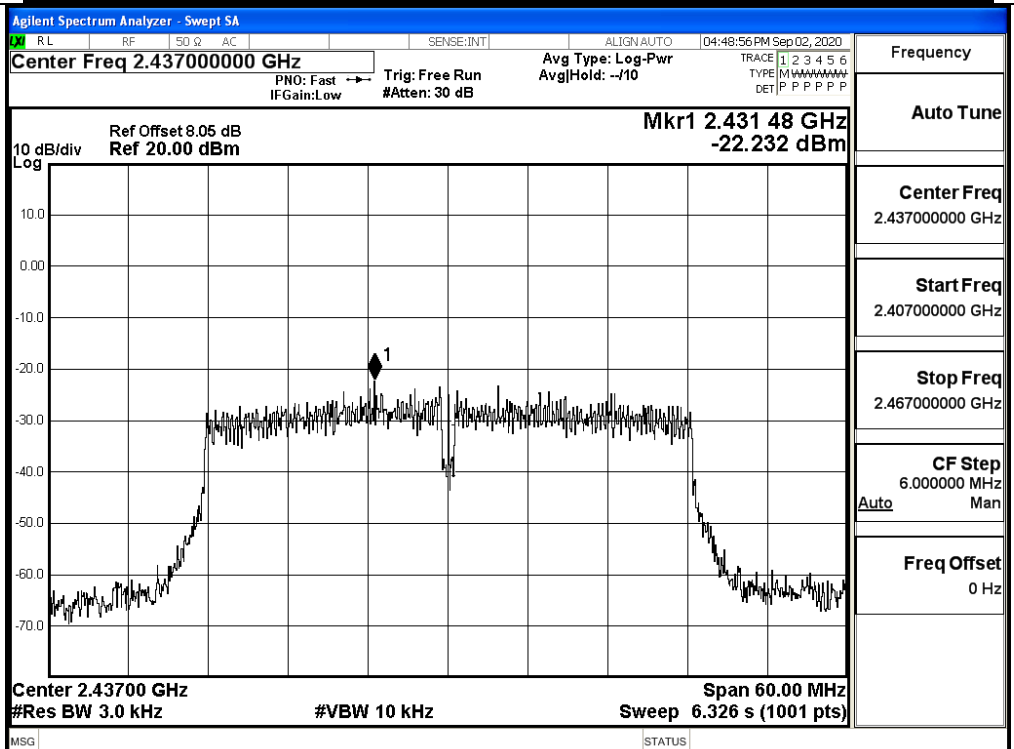
11N20SISO/HCH



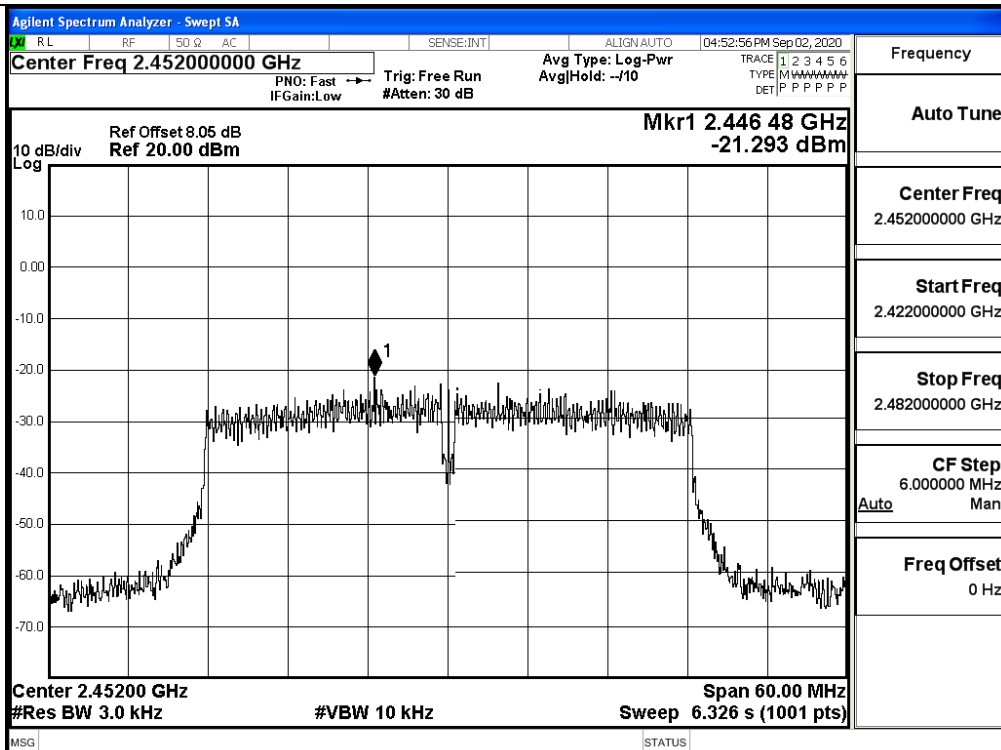
11N40SISO/LCH



11N40SISO/MCH



11N40SISO/HCH

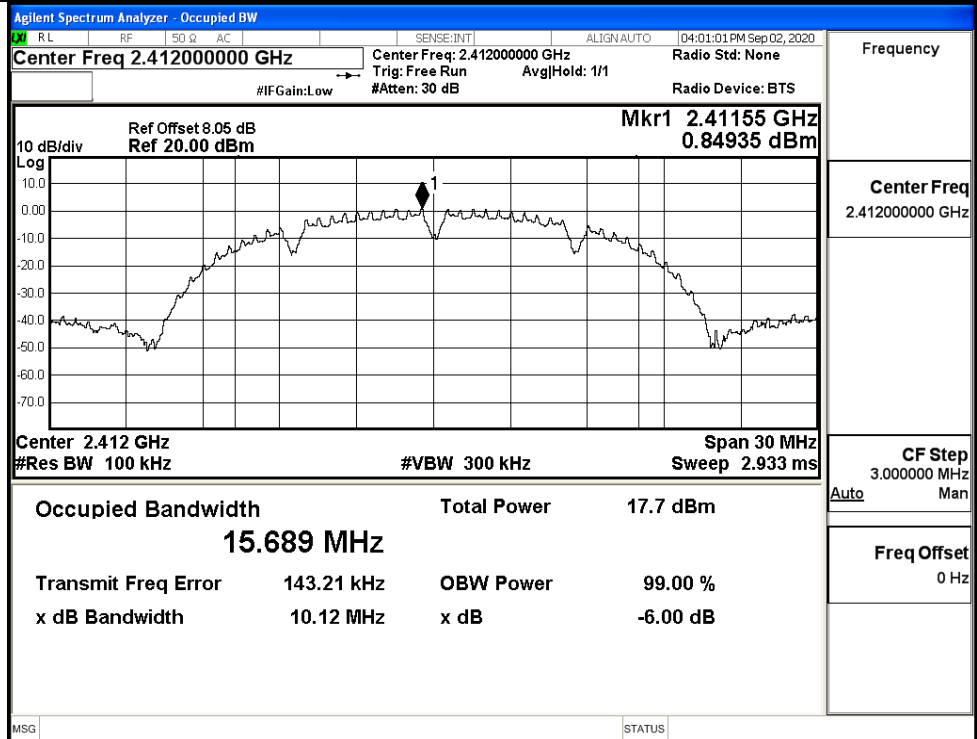


## A.4 6dB Bandwidth

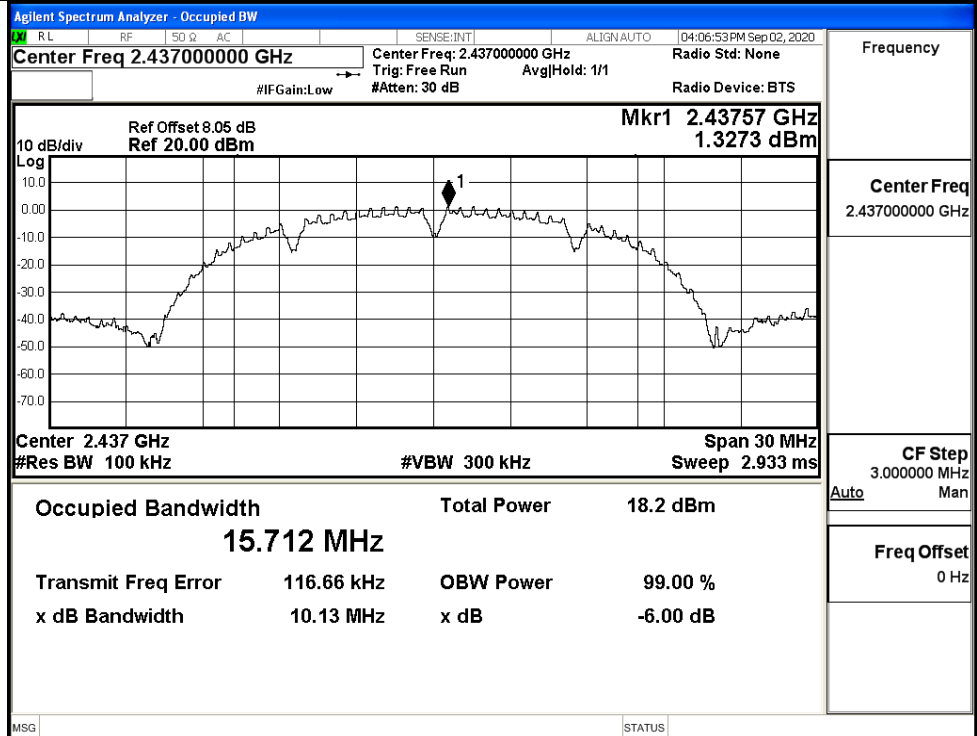
| Mode      | Channel | 6dB Bandwidth [MHz] | Limit [MHz] | Verdict |
|-----------|---------|---------------------|-------------|---------|
| 11B       | LCH     | 10.12               | $\geq 0.5$  | PASS    |
|           | MCH     | 10.13               | $\geq 0.5$  | PASS    |
|           | HCH     | 10.12               | $\geq 0.5$  | PASS    |
| 11G       | LCH     | 15.74               | $\geq 0.5$  | PASS    |
|           | MCH     | 15.40               | $\geq 0.5$  | PASS    |
|           | HCH     | 15.18               | $\geq 0.5$  | PASS    |
| 11N20SISO | LCH     | 15.49               | $\geq 0.5$  | PASS    |
|           | MCH     | 15.49               | $\geq 0.5$  | PASS    |
|           | HCH     | 15.51               | $\geq 0.5$  | PASS    |
| 11N40SISO | LCH     | 35.42               | $\geq 0.5$  | PASS    |
|           | MCH     | 35.22               | $\geq 0.5$  | PASS    |
|           | HCH     | 35.22               | $\geq 0.5$  | PASS    |

## Test Graphs

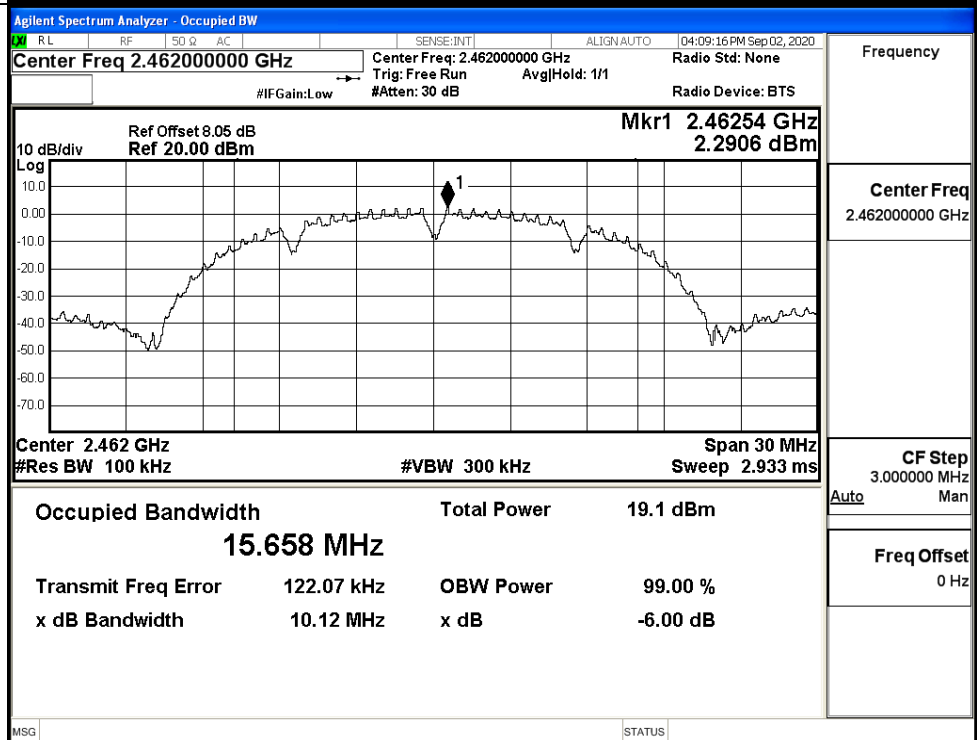
11B/LCH



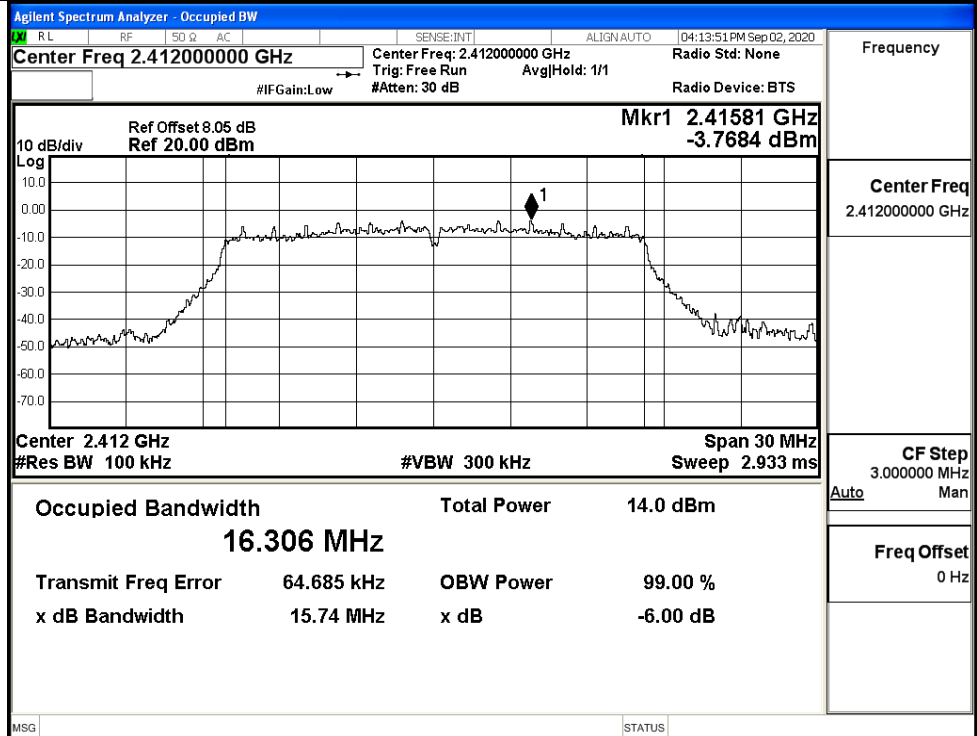
11B/MCH



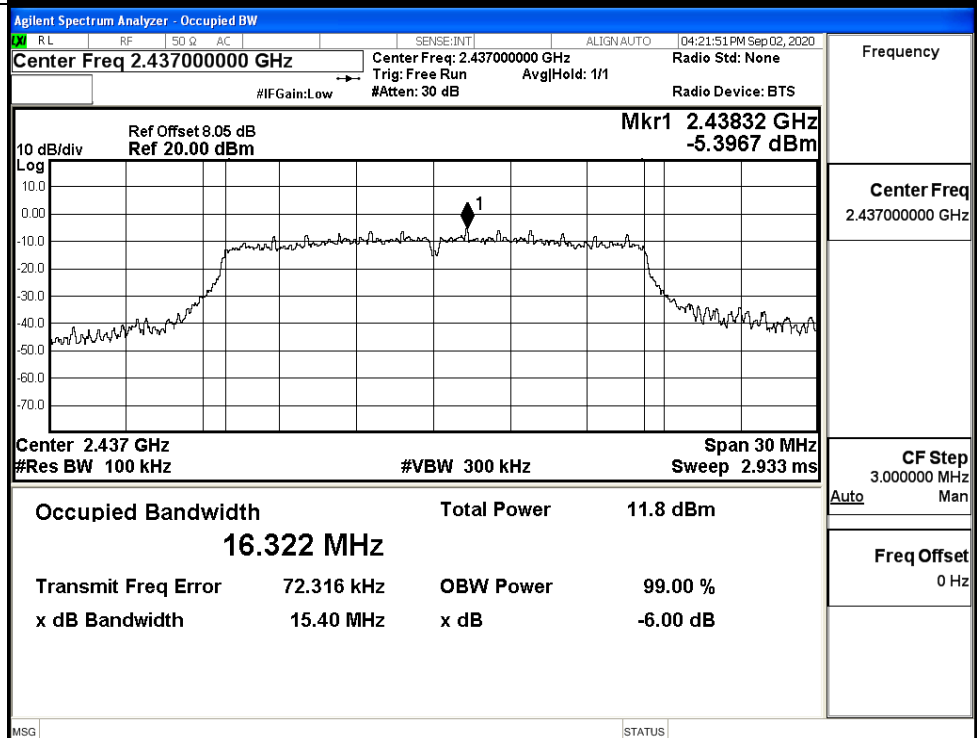
11B/HCH



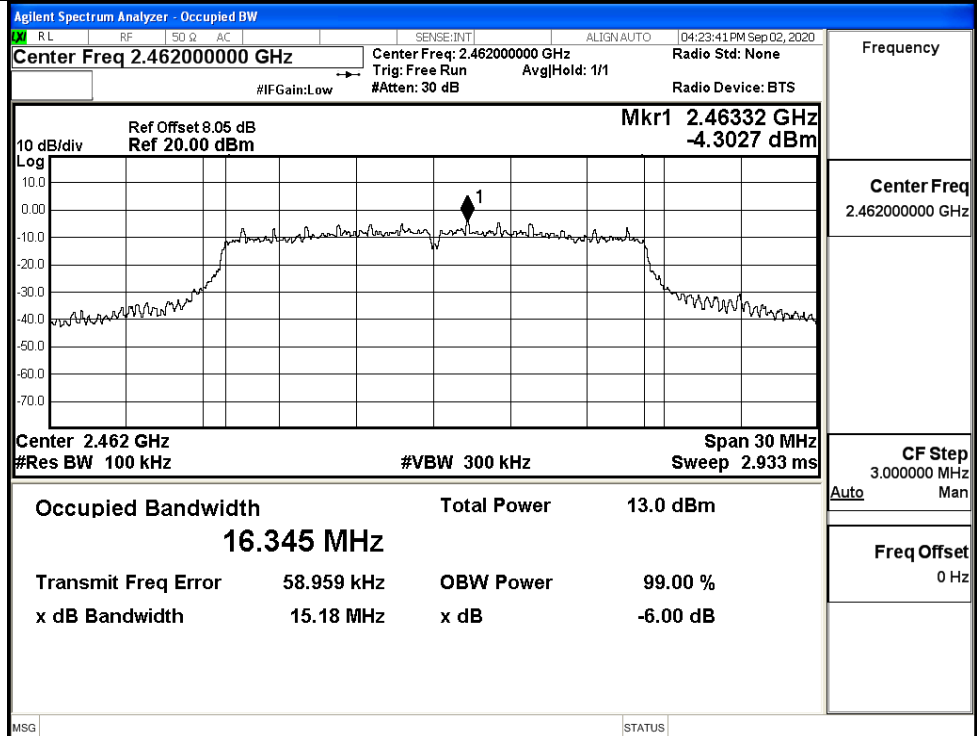
11G/LCH



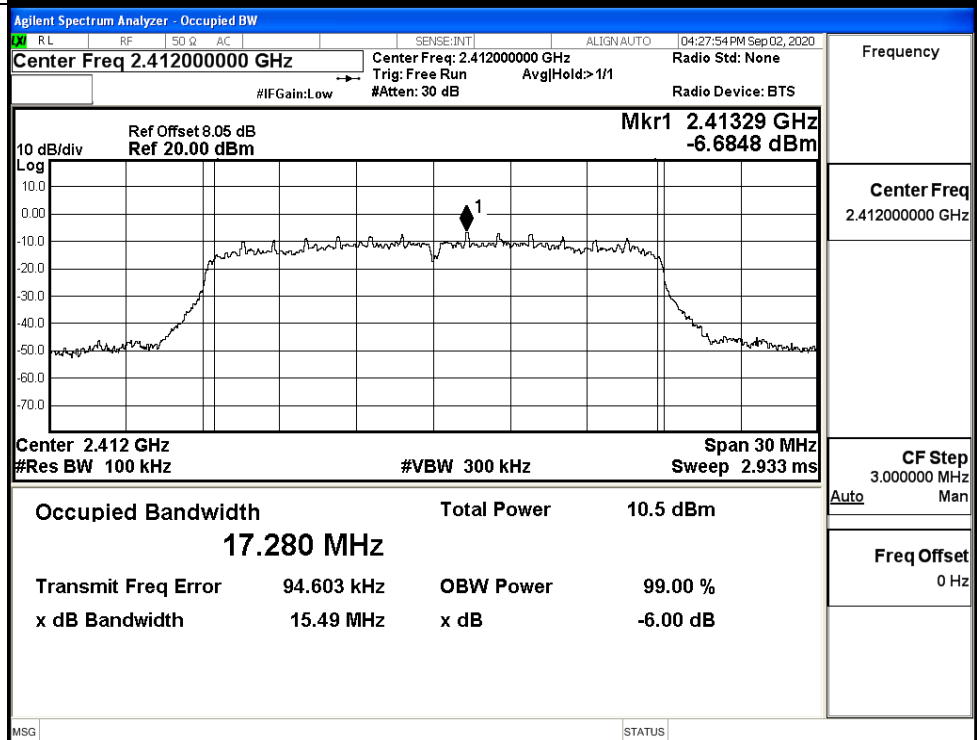
11G/MCH



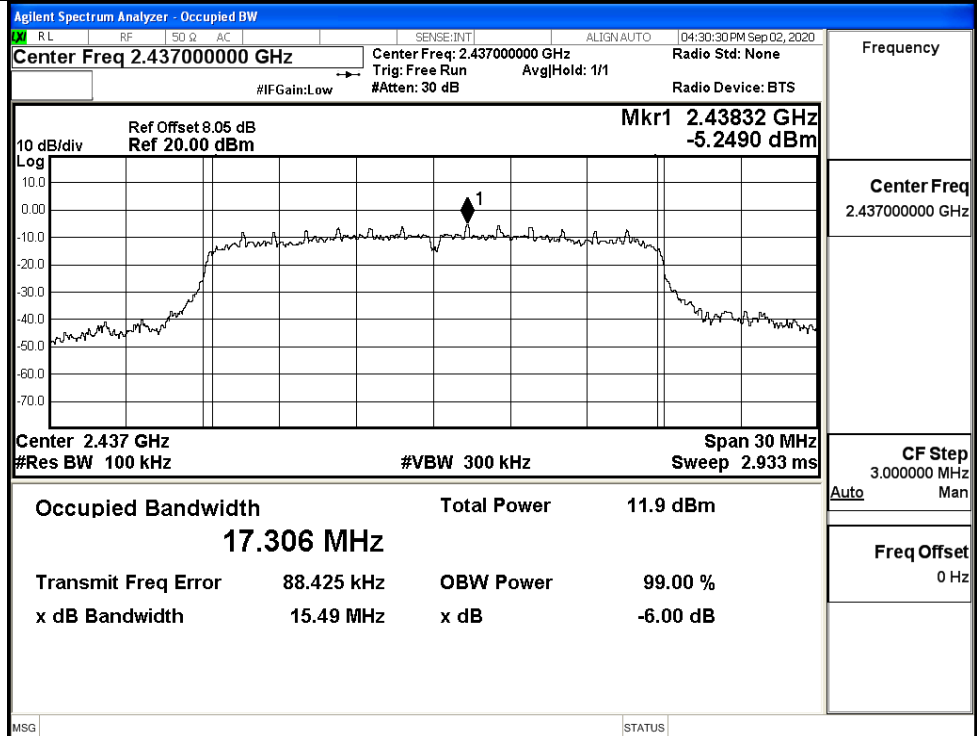
11G/HCH



11N20SISO/LCH



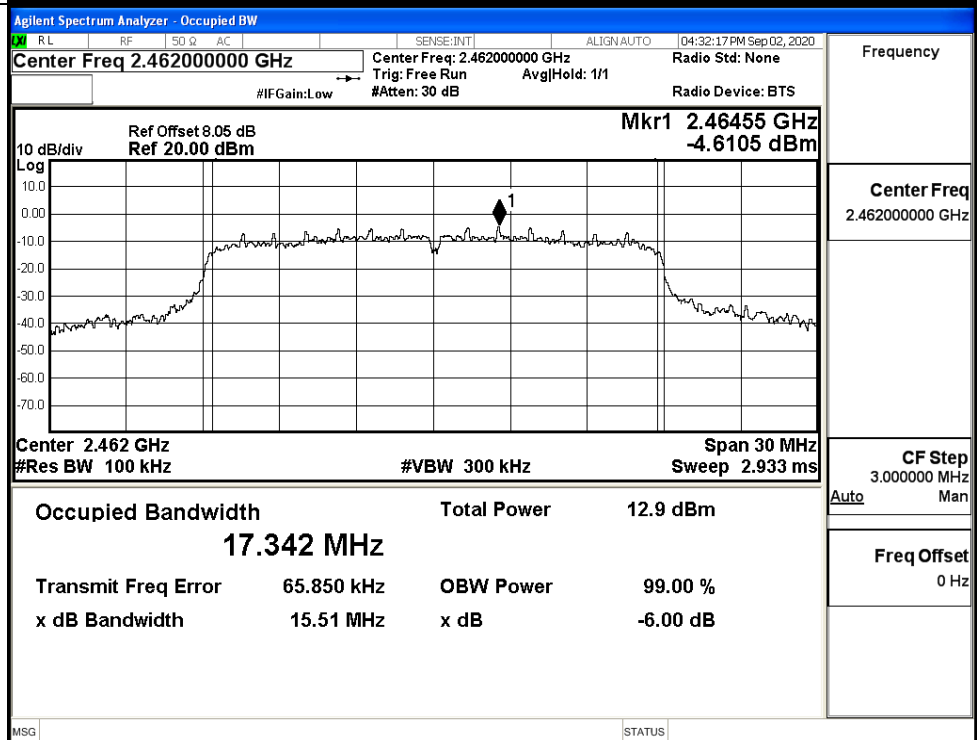
11N20SISO/MCH



Frequency

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

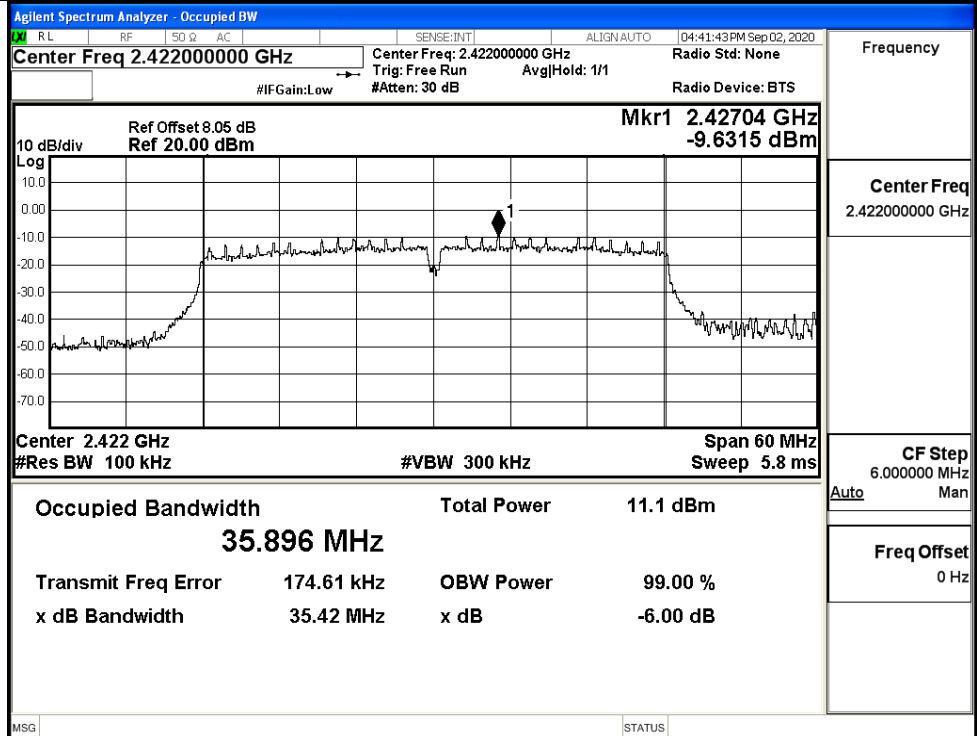
11N20SISO/HCH



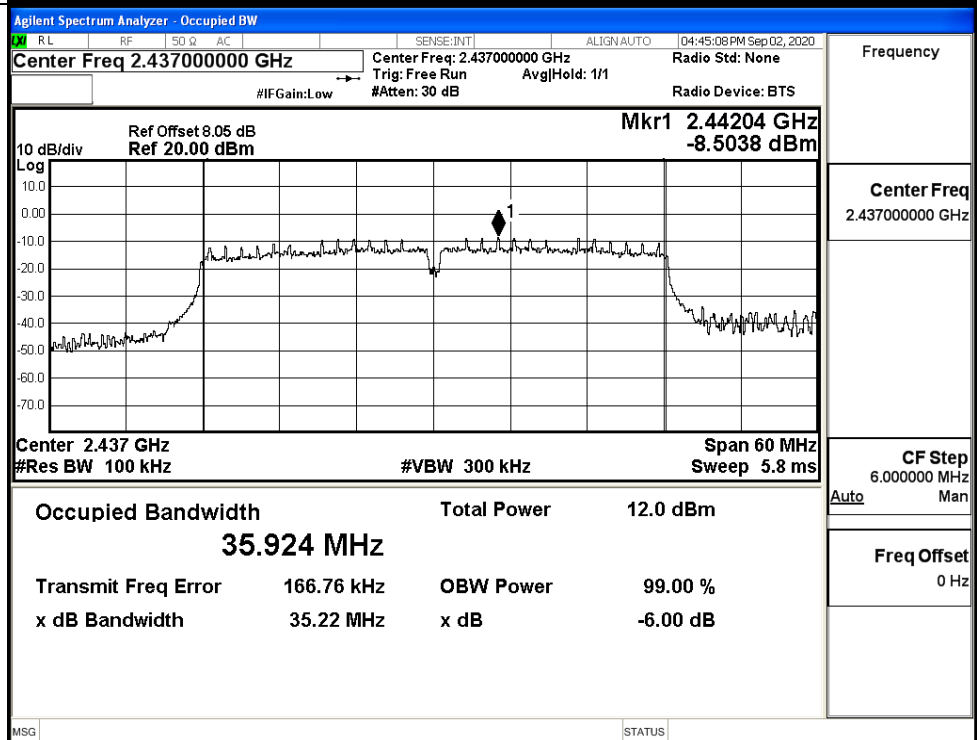
Frequency

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

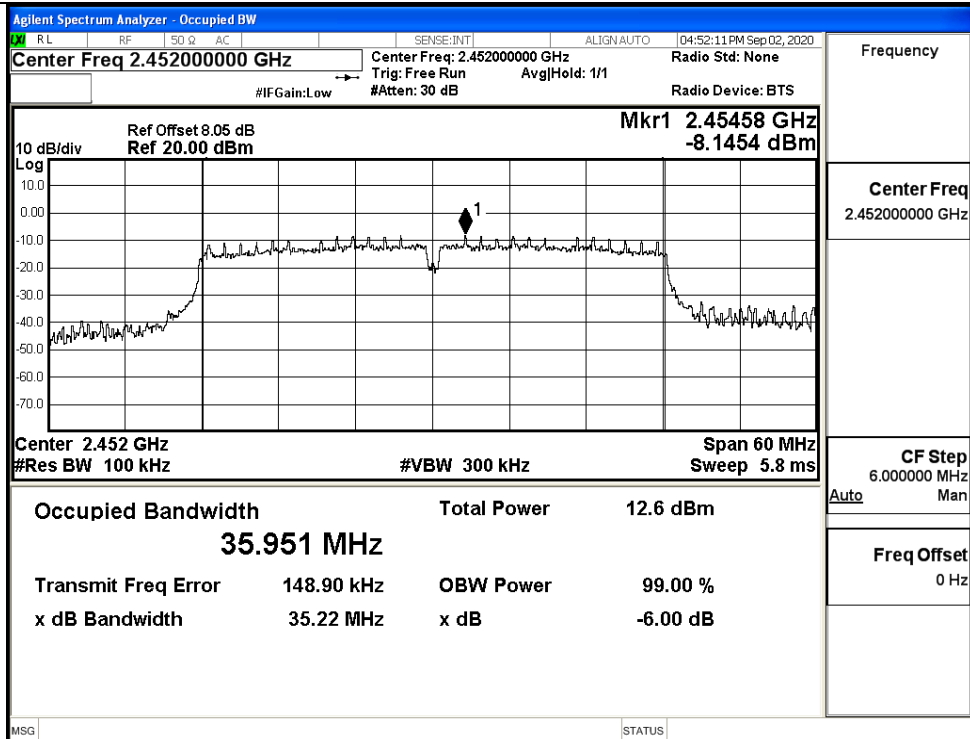
11N40SISO/LCH



11N40SISO/MCH



11N40SISO/HCH

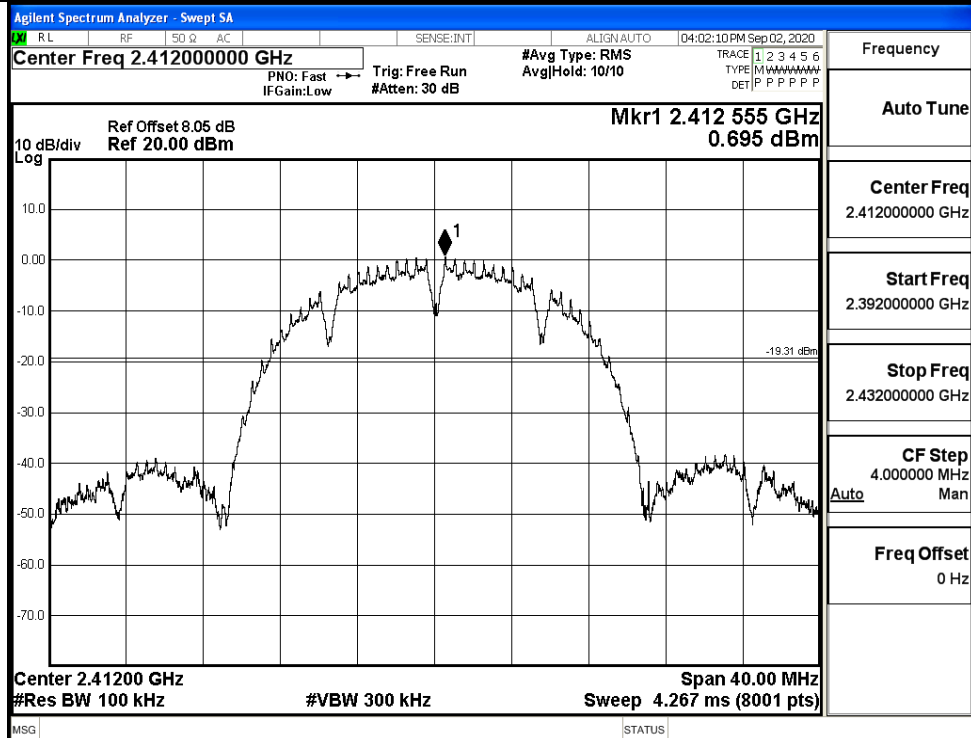


**A.5 RF Conducted Spurious Emissions**

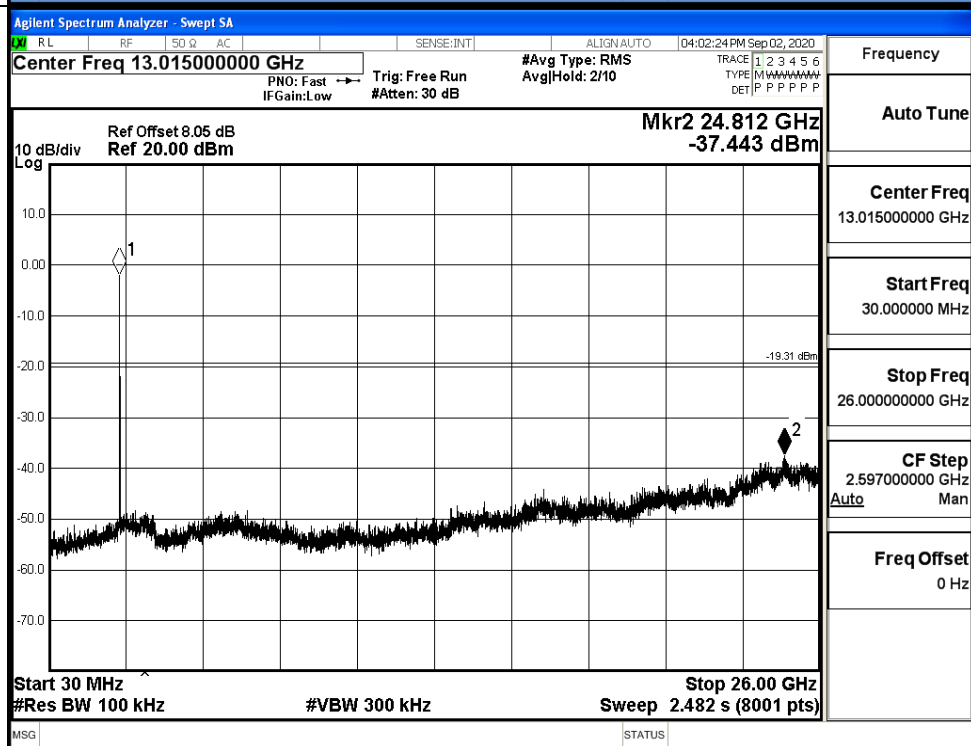
| Mode          | Channel | Pref [dBm] | Max. Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|------------|------------------|-------------|---------|
| 11B           | LCH     | 0.695      | -37.443          | -19.305     | PASS    |
|               | MCH     | 1.237      | -37.902          | -18.763     | PASS    |
|               | HCH     | 1.863      | -37.794          | -18.137     | PASS    |
| 11G           | LCH     | -3.367     | -37.877          | -23.367     | PASS    |
|               | MCH     | -5.949     | -37.498          | -25.949     | PASS    |
|               | HCH     | -4.933     | -38.388          | -24.933     | PASS    |
| 11N20<br>SISO | LCH     | -6.888     | -38.426          | -26.888     | PASS    |
|               | MCH     | -5.427     | -37.895          | -25.427     | PASS    |
|               | HCH     | -4.417     | -37.614          | -24.417     | PASS    |
| 11N40<br>SISO | LCH     | -9.751     | -38.515          | -29.751     | PASS    |
|               | MCH     | -8.861     | -37.831          | -28.861     | PASS    |
|               | HCH     | -8.236     | -38.077          | -28.236     | PASS    |

## 11B LCH Graphs

Pref/11B/LCH

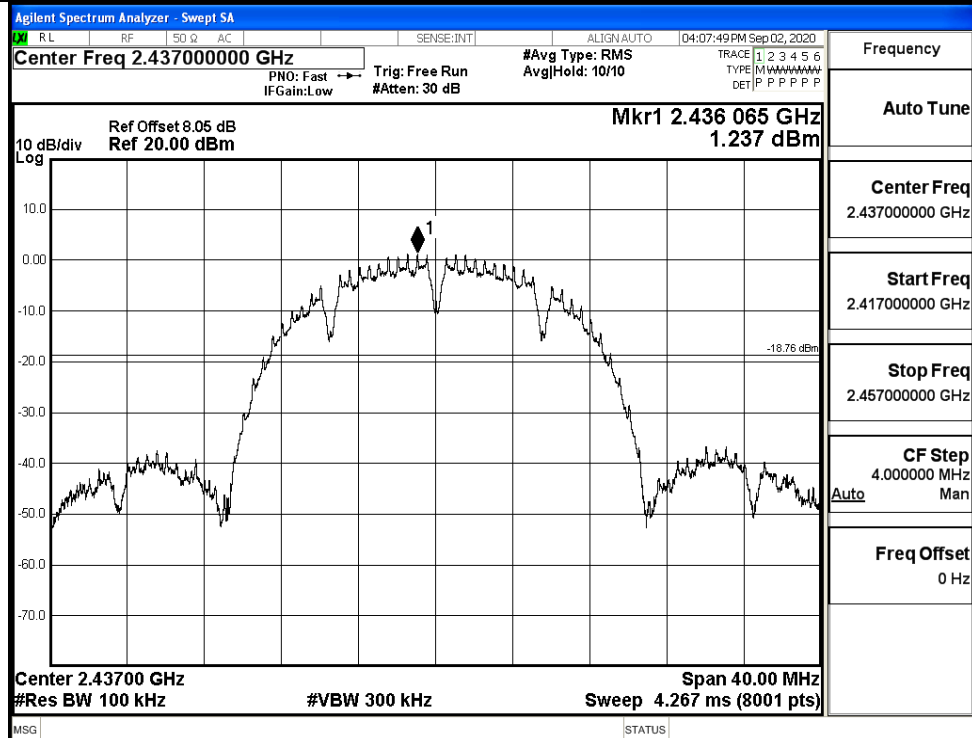


Puw/11B/LCH

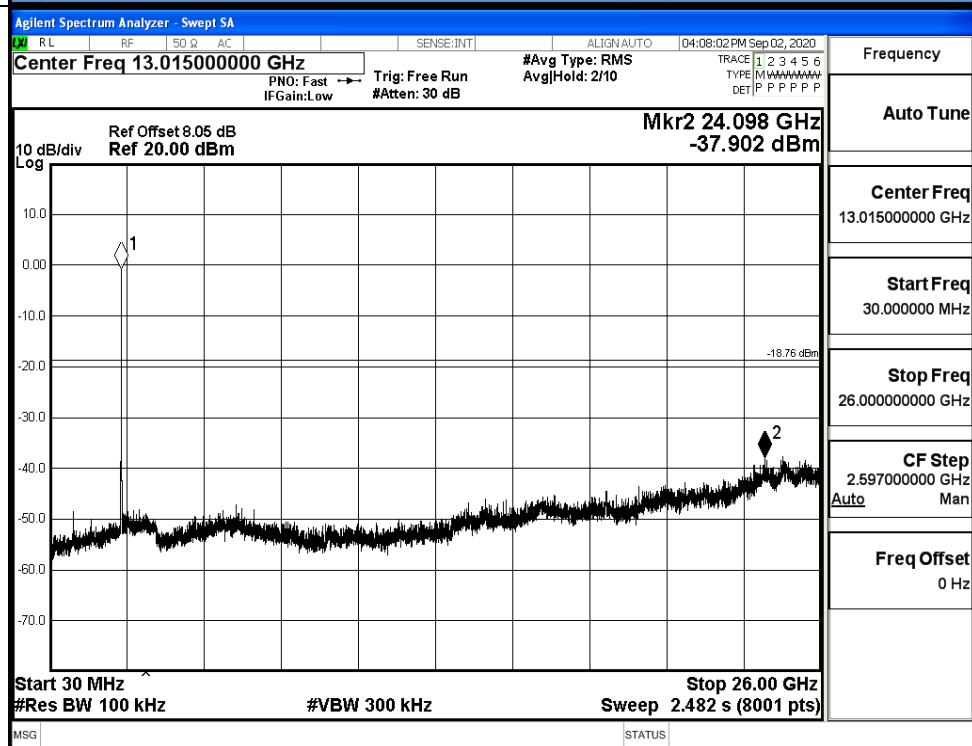


## 11B MCH Graphs

Pref/11B/MCH

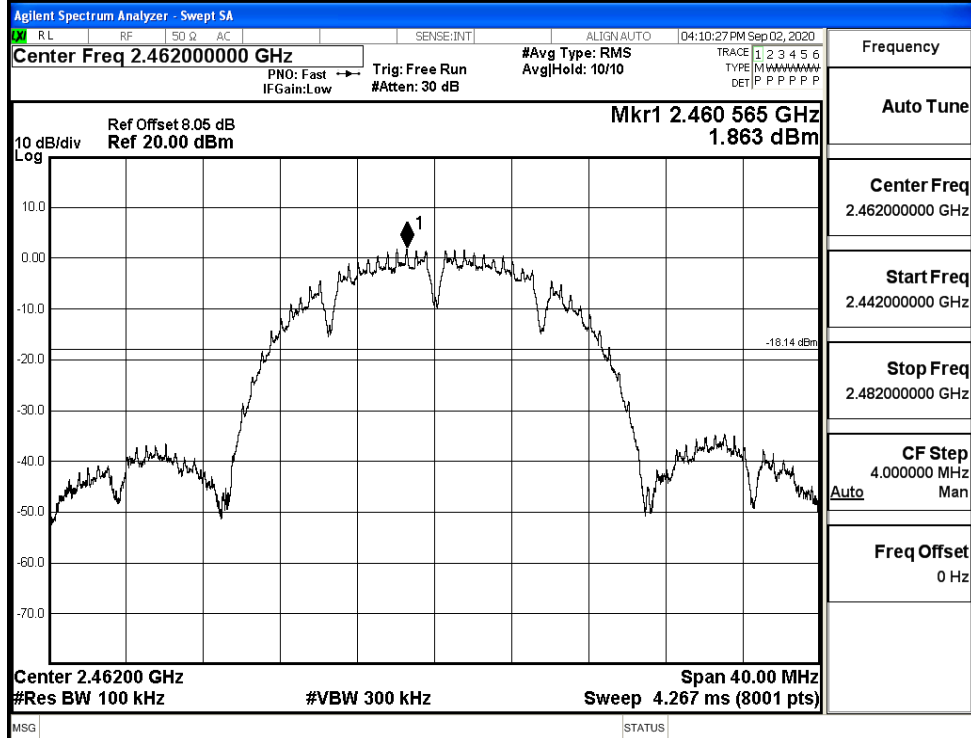


Puw/11B/MCH

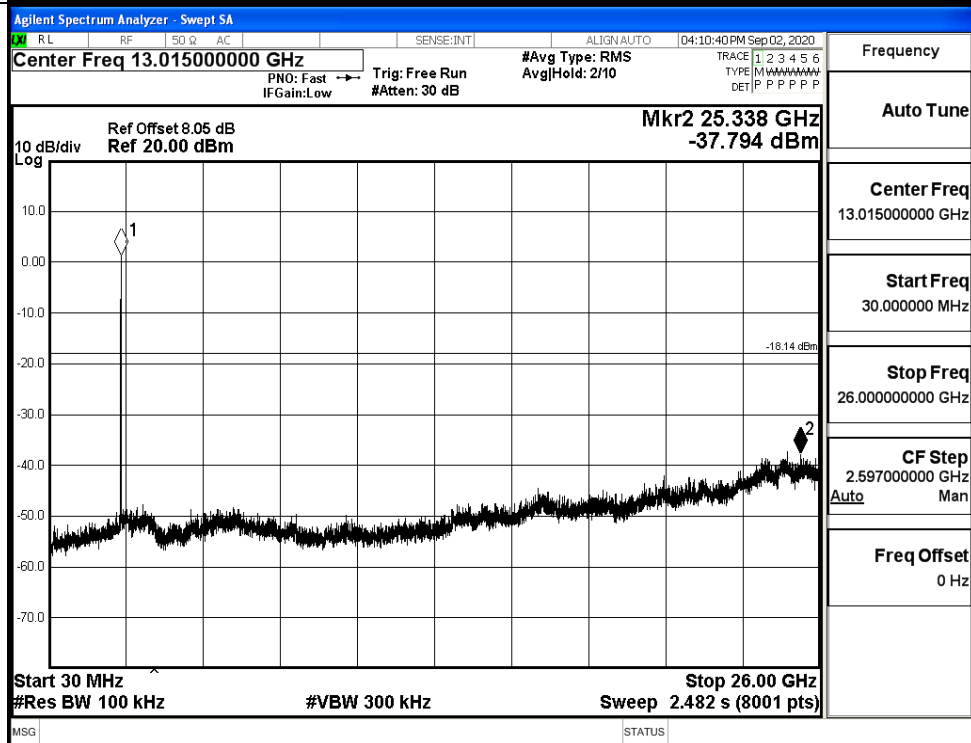


## 11B HCH Graphs

Pref/11B/HCH

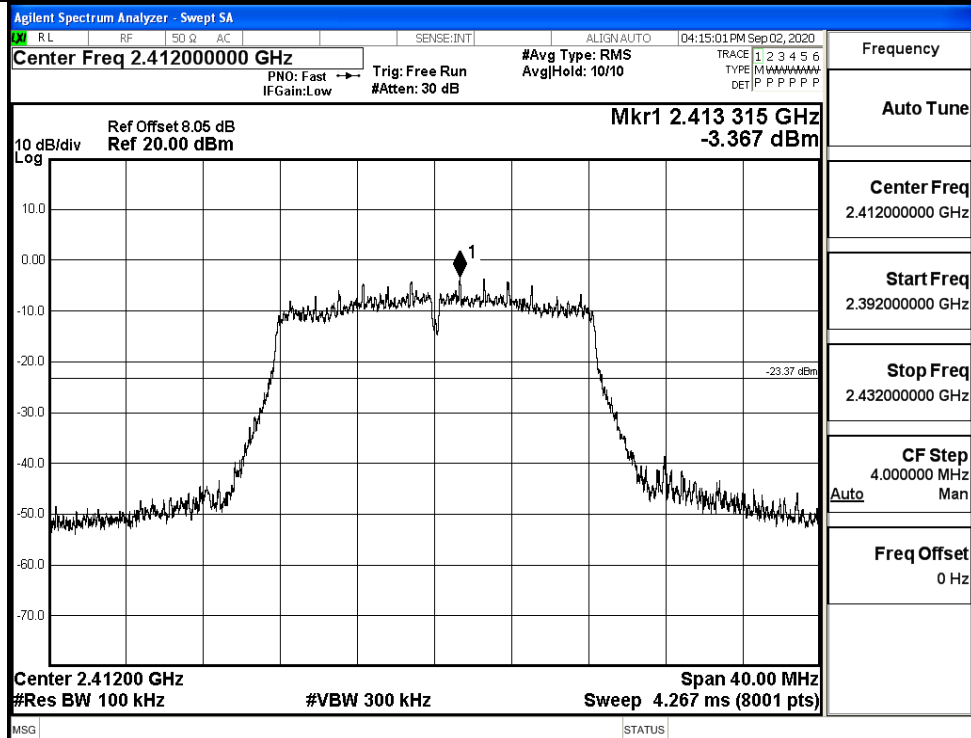


Puw/11B/HCH

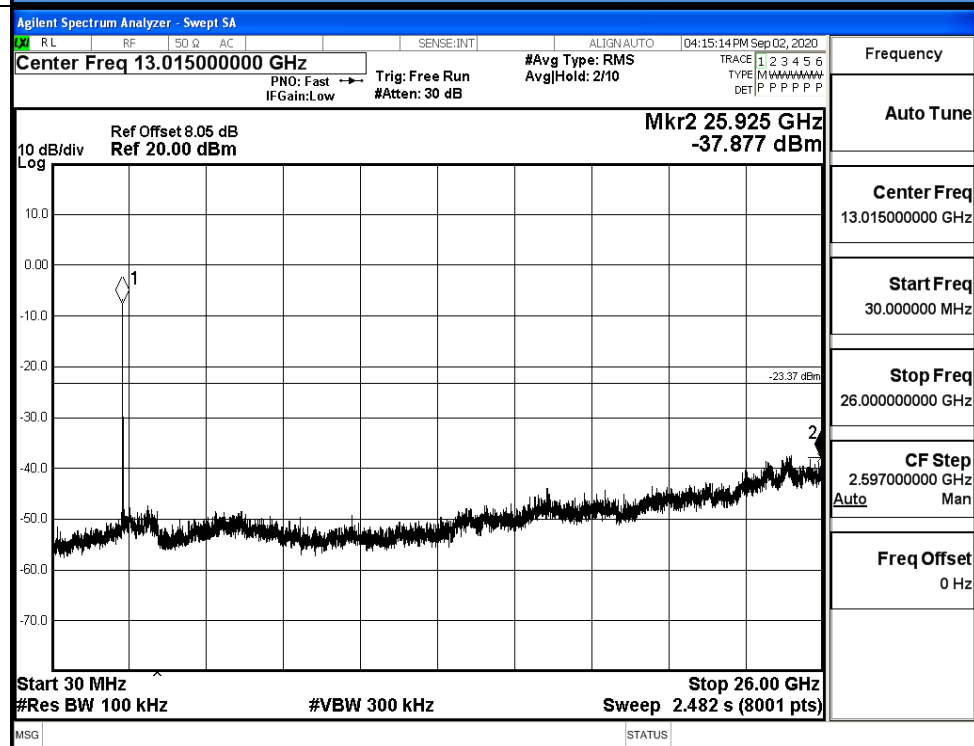


## 11G LCH Graphs

Pref/11G/LCH

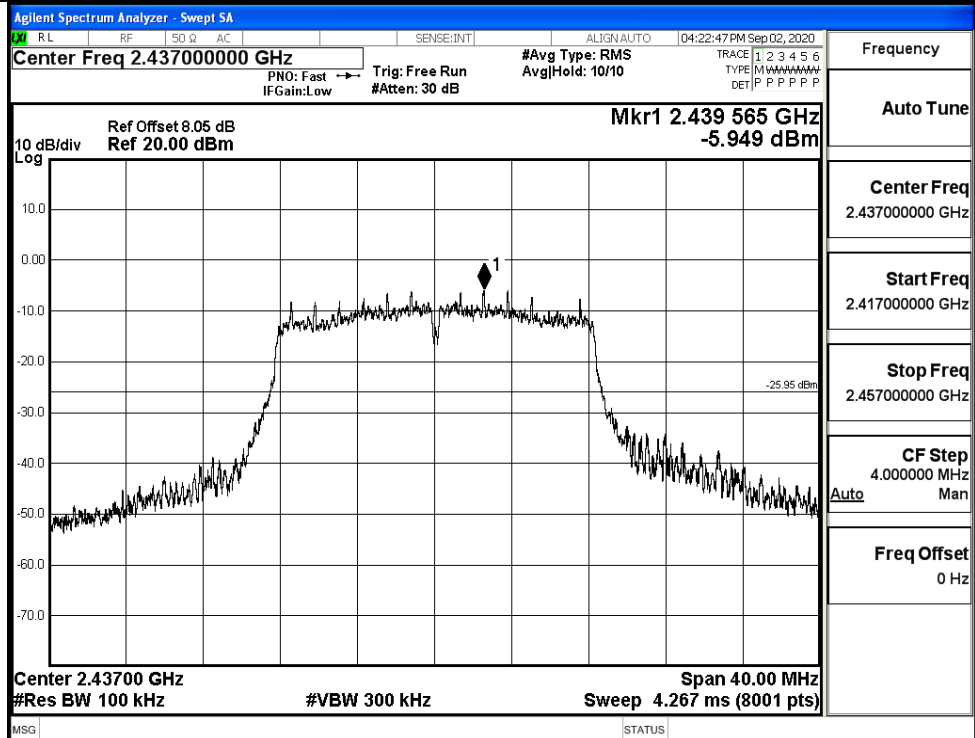


Puw/11G/LCH

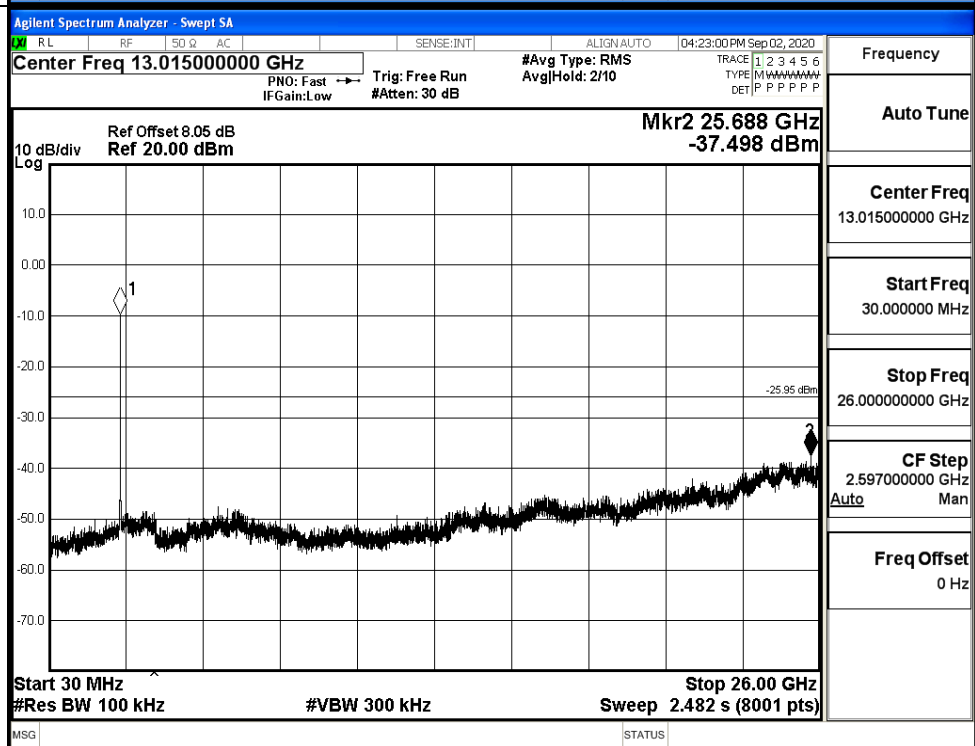


## 11G MCH Graphs

Pref/11G/MCH

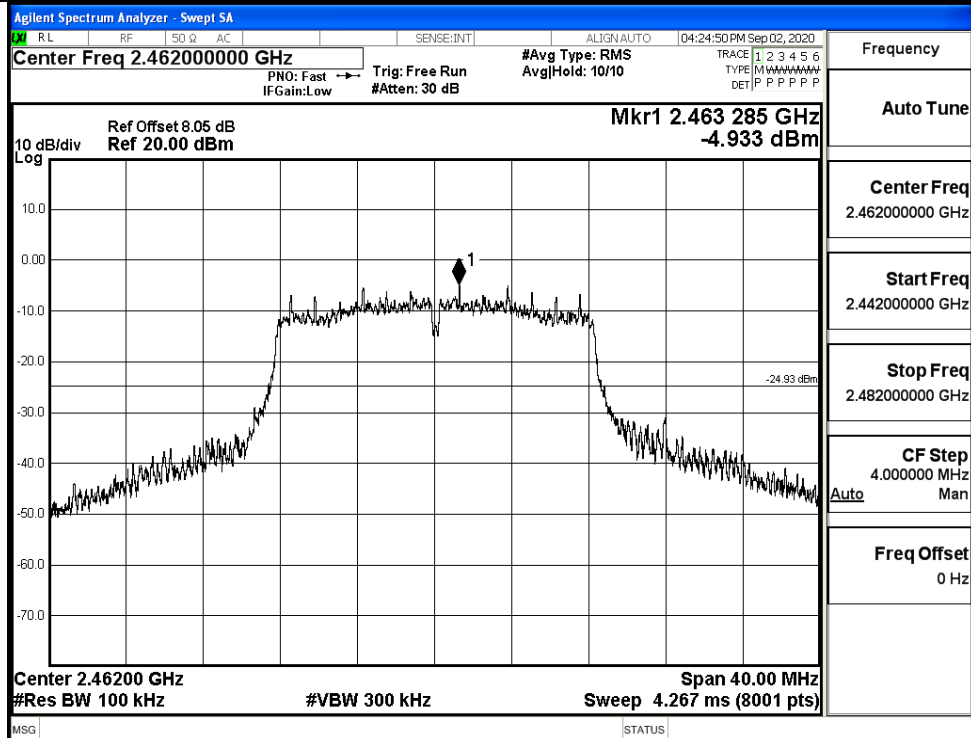


Puw/11G/MCH

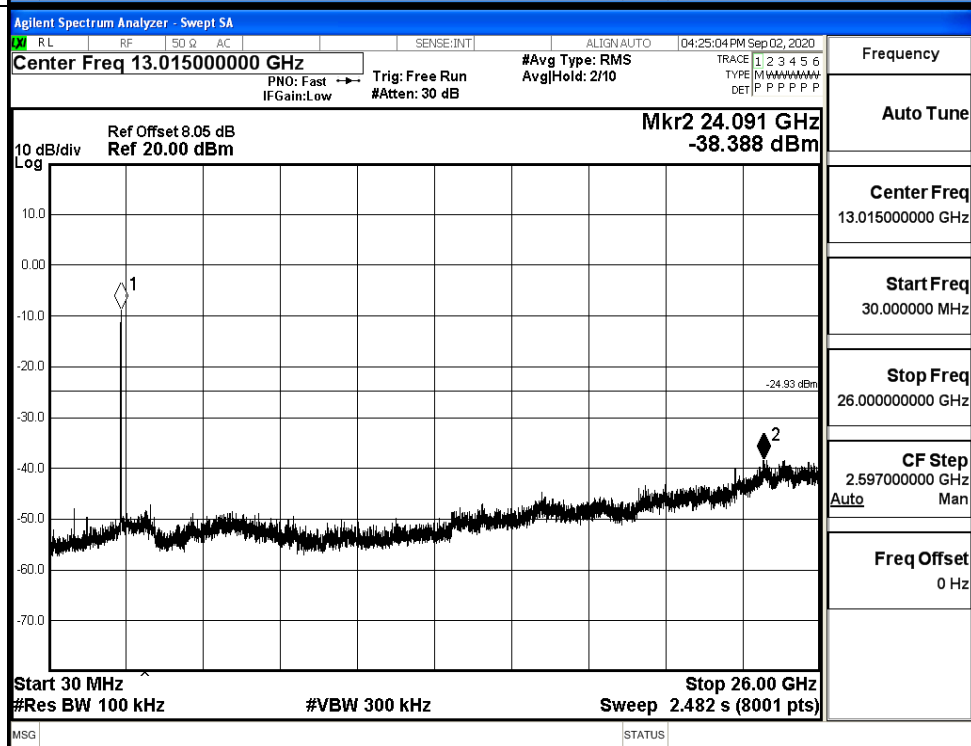


## 11G HCH Graphs

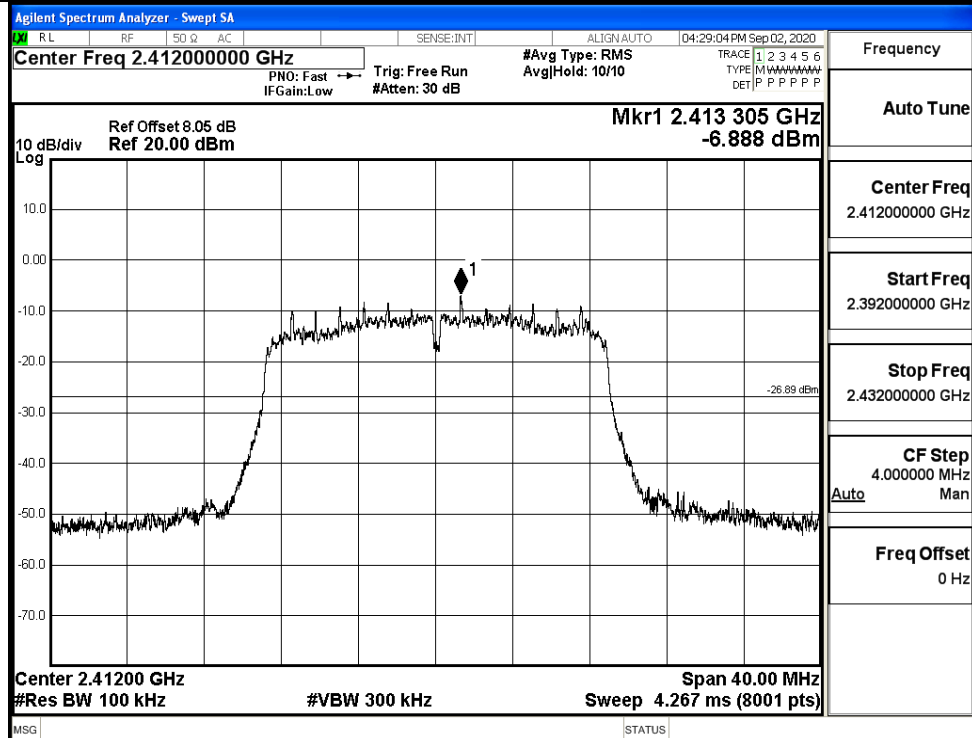
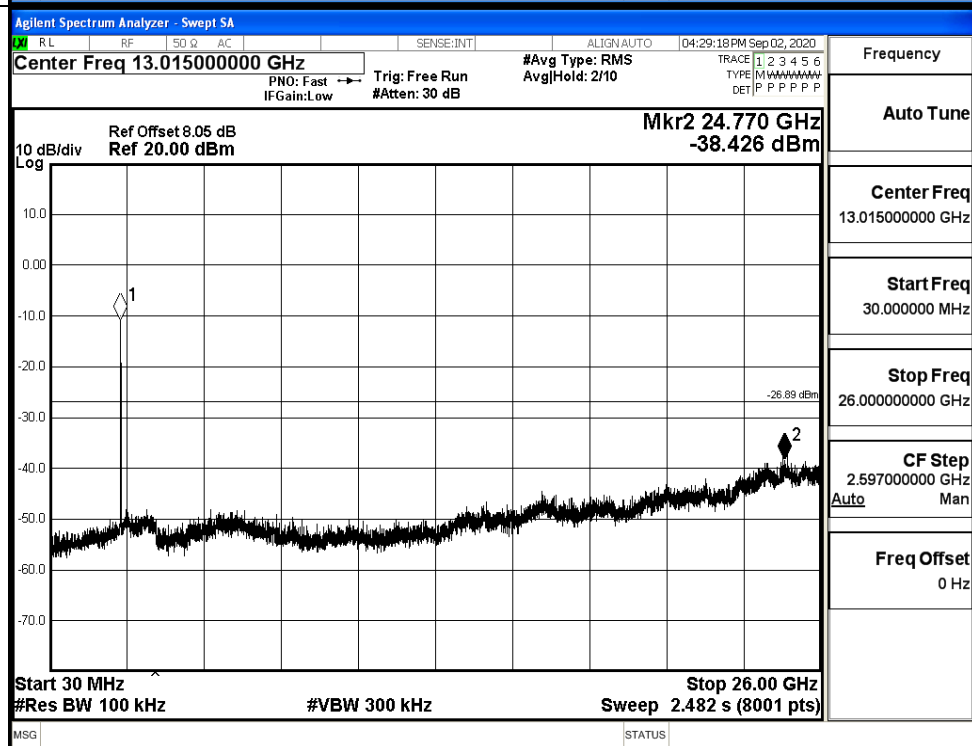
Pref/11G/HCH



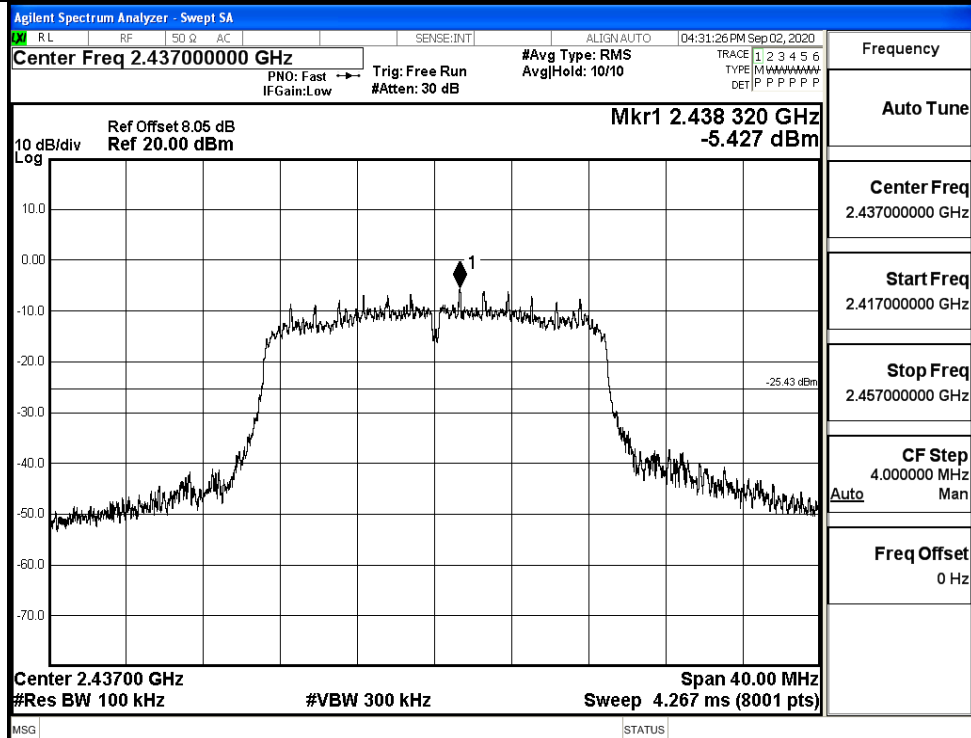
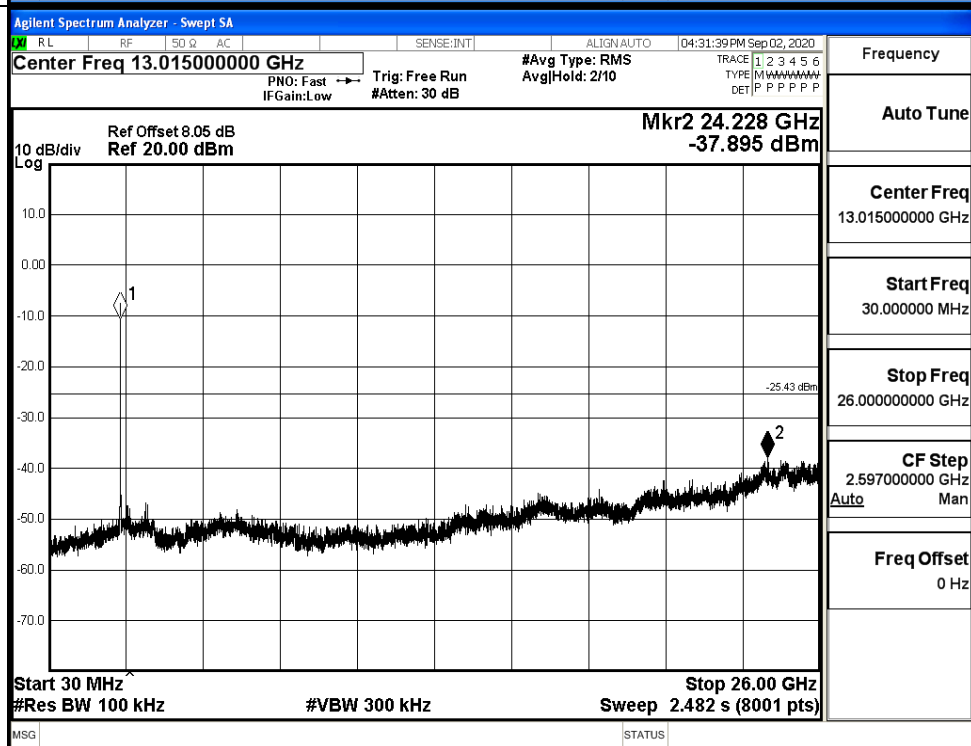
Puw/11G/HCH



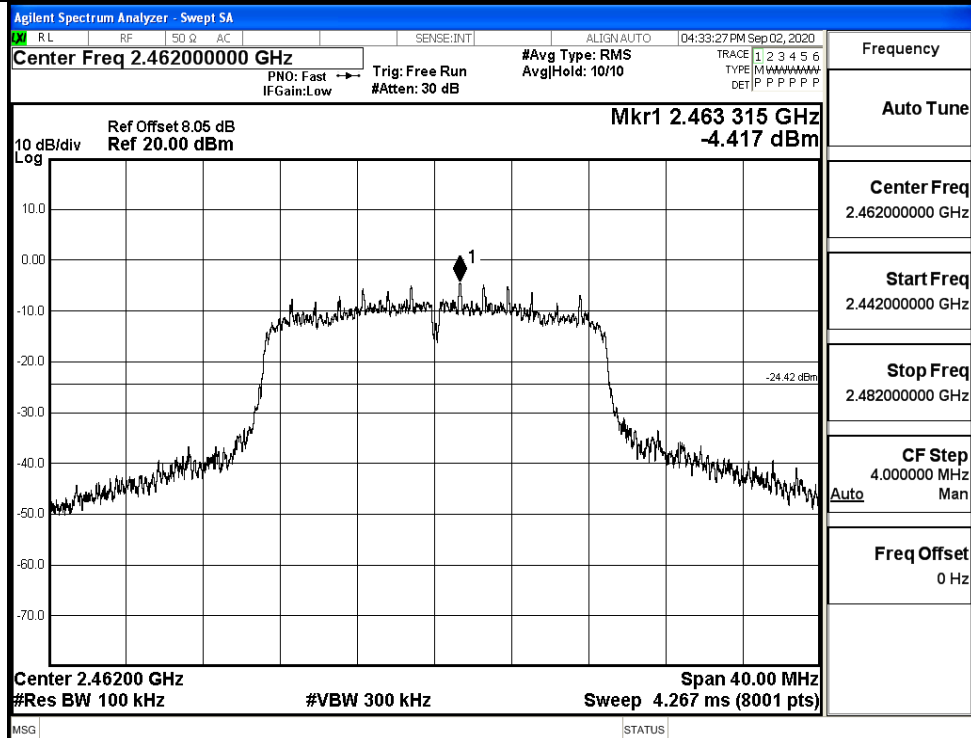
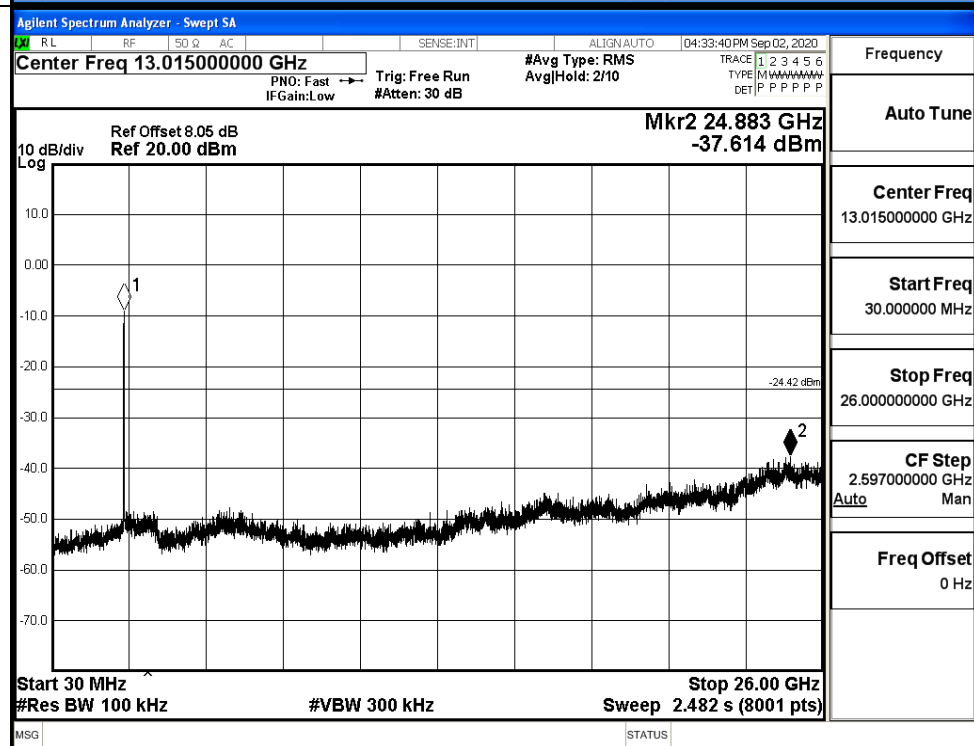
## 11N20SISO LCH Graphs

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

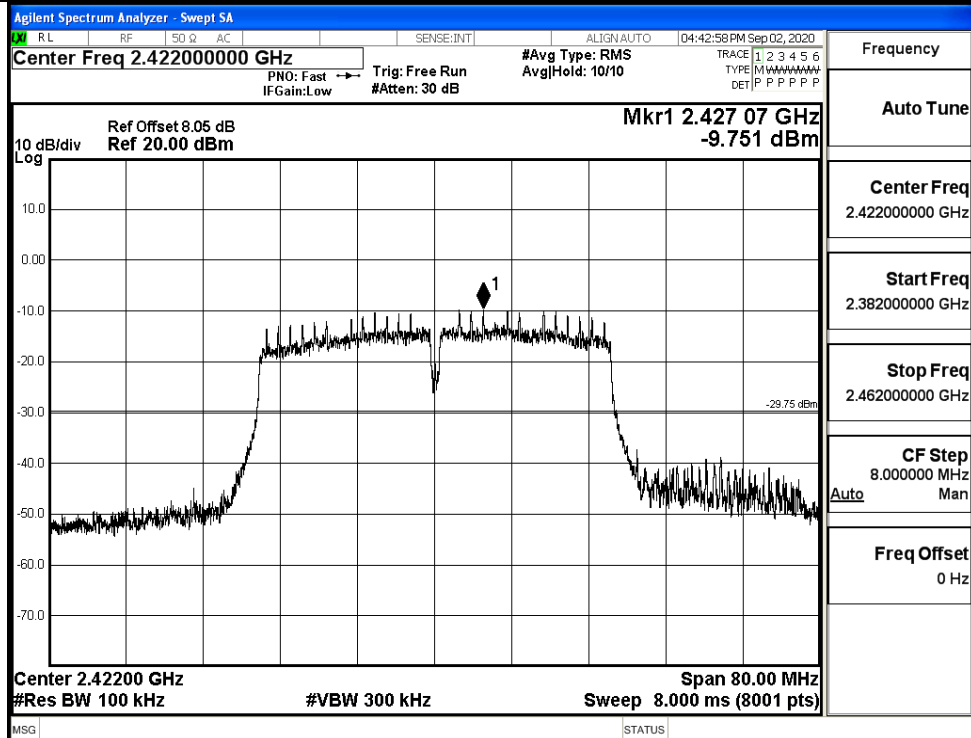
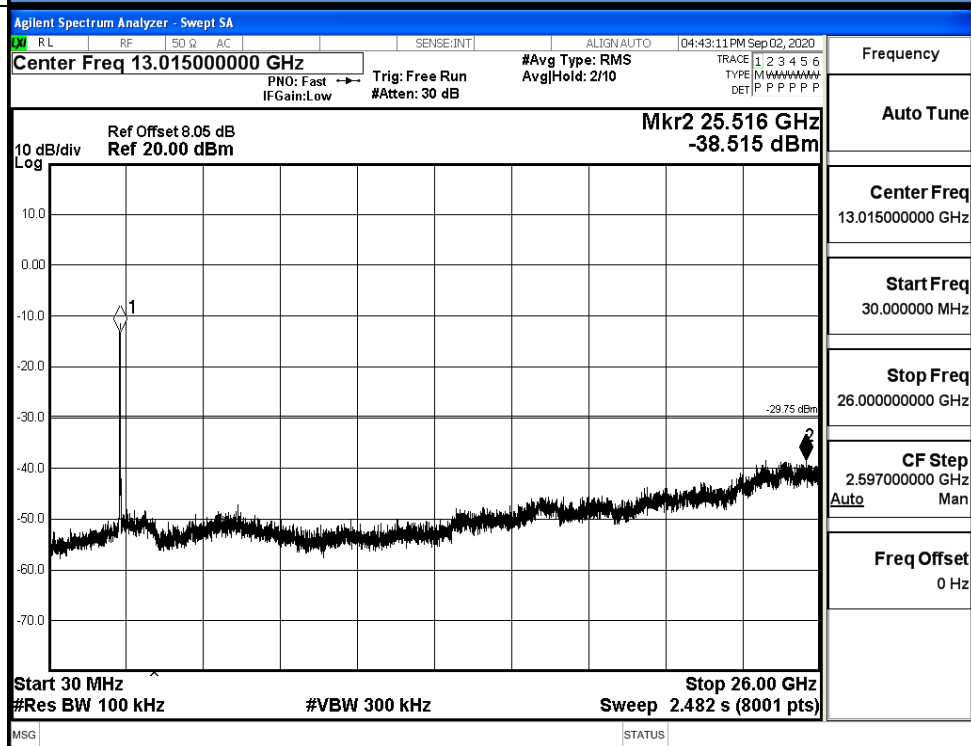
## 11N20SISO\_MCH\_Graphs

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

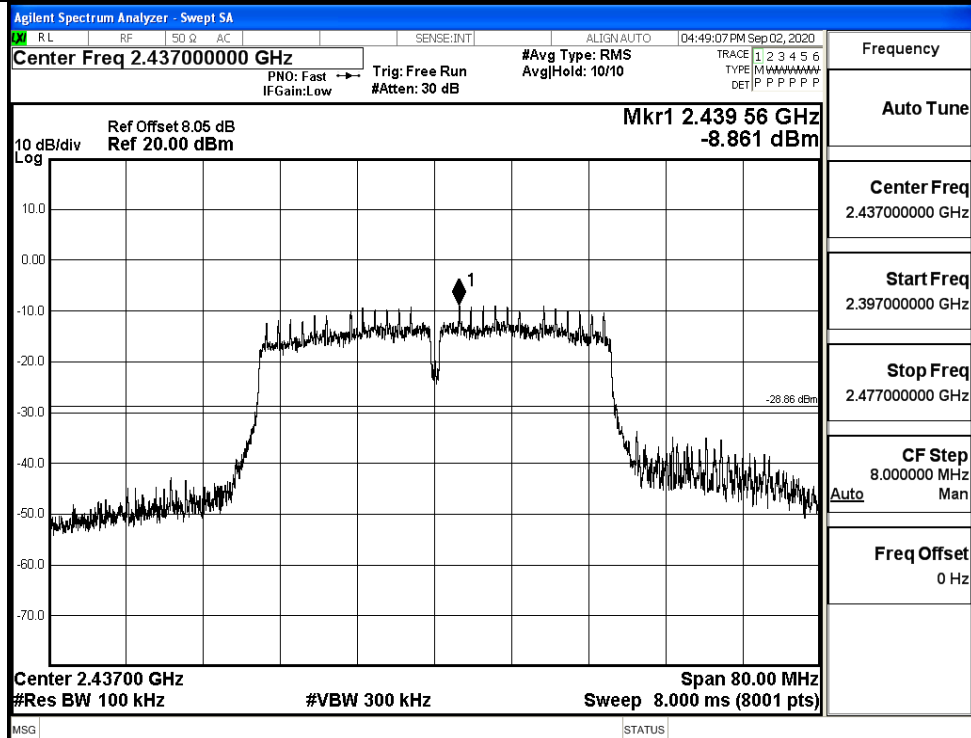
## 11N20SISO HCH Graphs

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

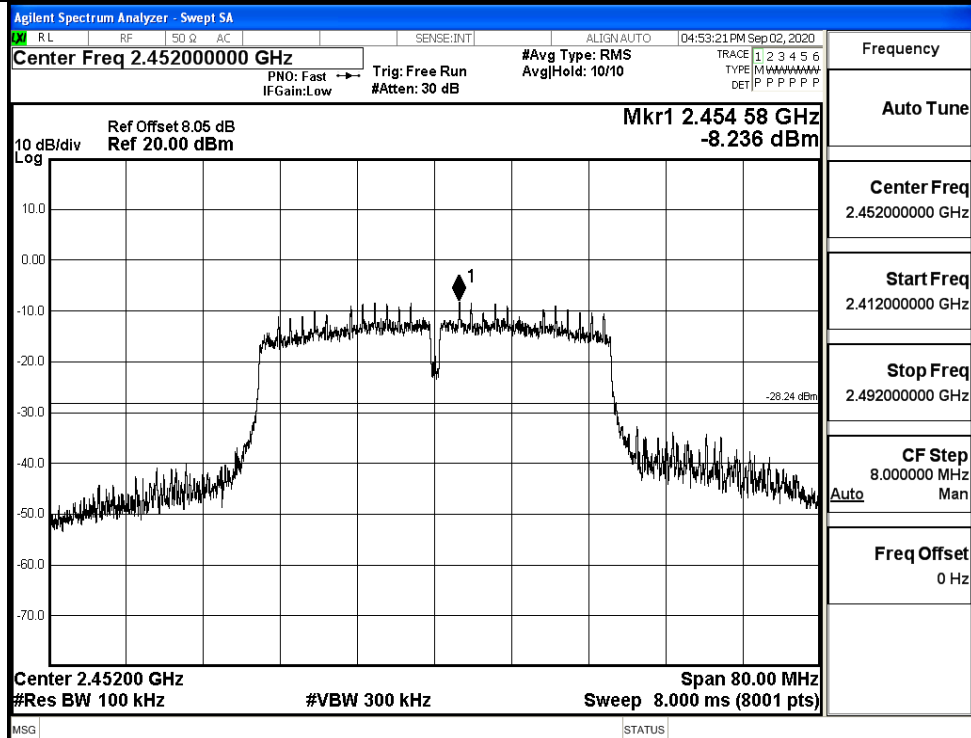
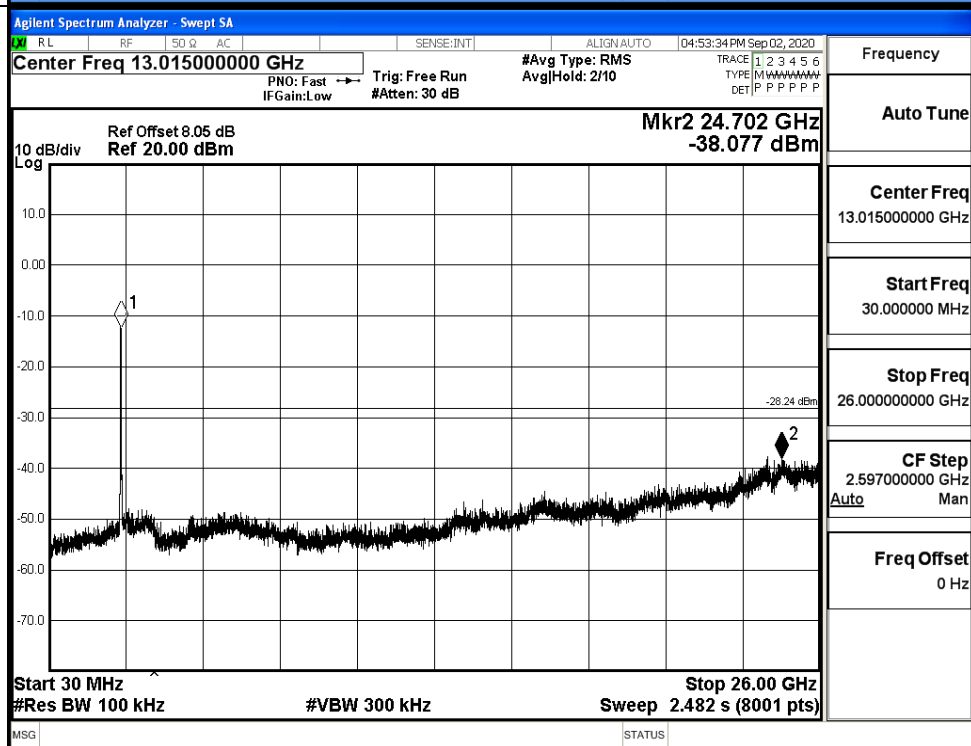
## 11N40SISO LCH Graphs

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

## 11N40SISO\_MCH\_Graphs

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

## 11N40SISO HCH Graphs

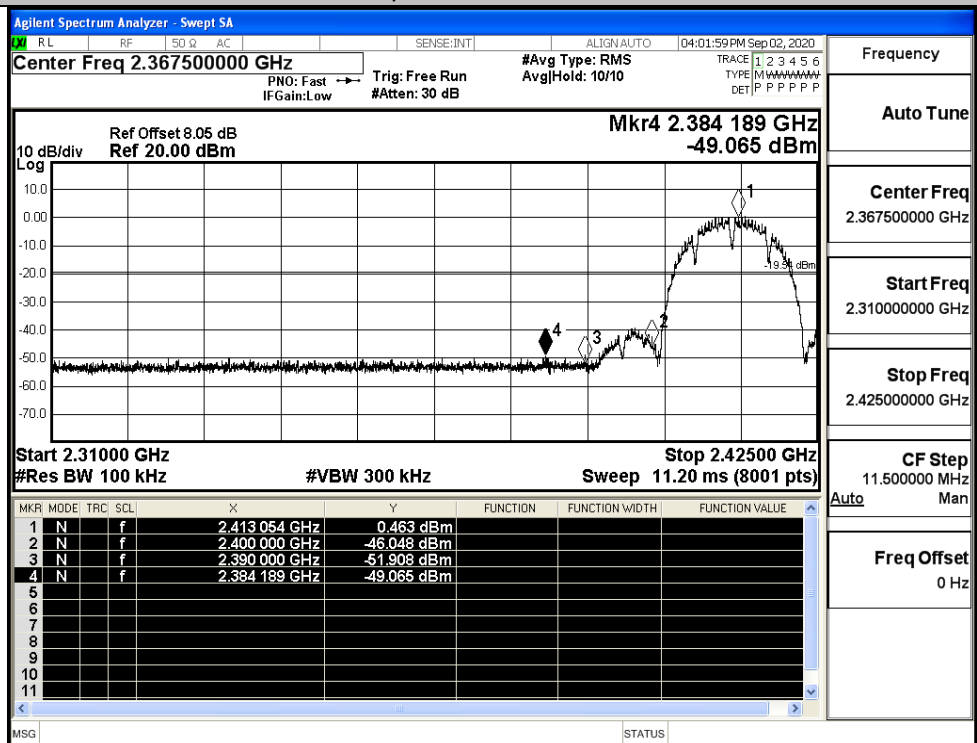
Pref/11N40  
SISO/HCHPuw/11N40  
SISO/HCH

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

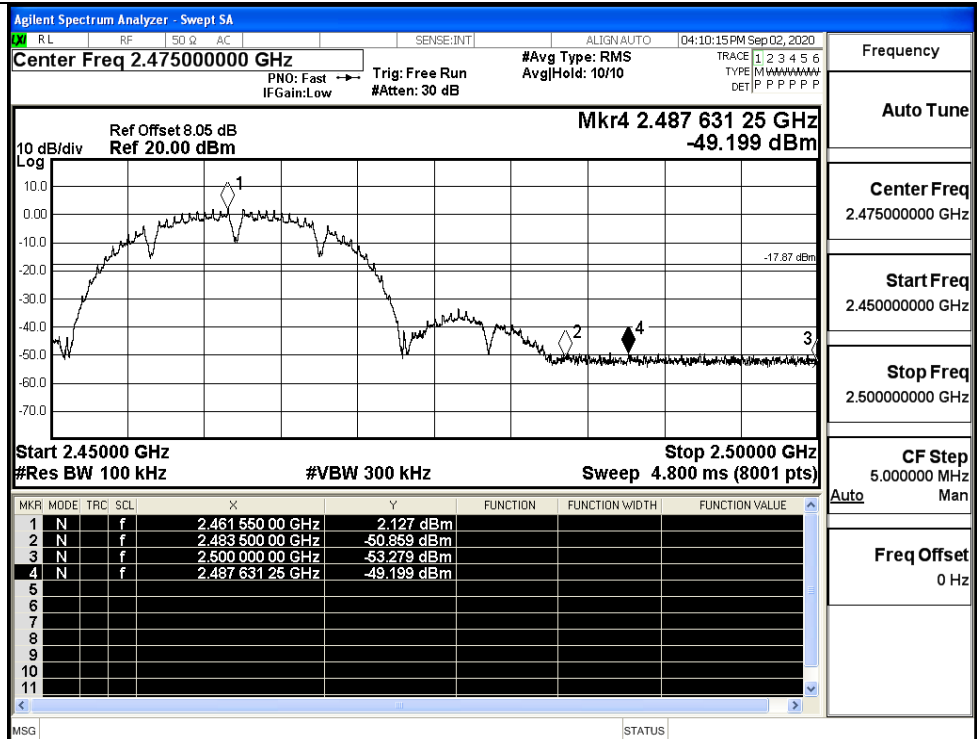
| Mode      | Channel | Carrier Power[dBm] | Max.Spurious Level [dBm] | Limit [dBm] | Verdict |
|-----------|---------|--------------------|--------------------------|-------------|---------|
| 11B       | LCH     | 0.463              | -49.065                  | -19.54      | PASS    |
|           | HCH     | 2.127              | -49.199                  | -17.87      | PASS    |
| 11G       | LCH     | -4.056             | -49.752                  | -24.06      | PASS    |
|           | HCH     | -4.348             | -47.608                  | -24.35      | PASS    |
| 11N20SISO | LCH     | -7.026             | -49.524                  | -27.03      | PASS    |
|           | HCH     | -4.784             | -47.417                  | -24.78      | PASS    |
| 11N40SISO | LCH     | -9.920             | -49.206                  | -29.92      | PASS    |
|           | HCH     | -8.012             | -37.435                  | -28.01      | PASS    |

## Test Graphs

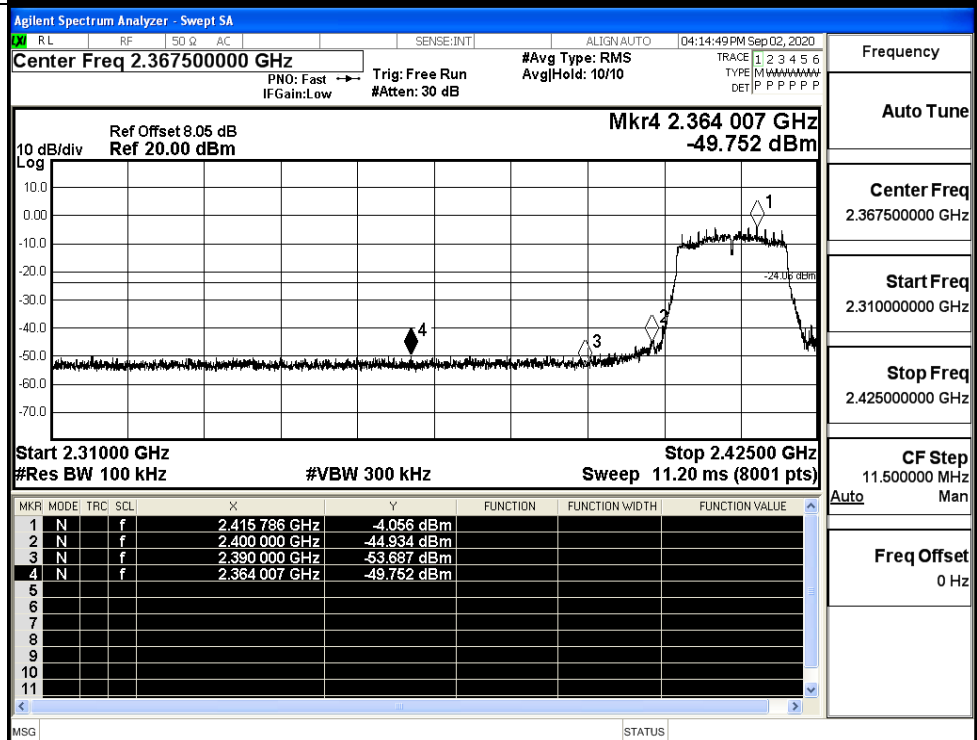
11B/LCH



11B/HCH



11G/LCH



**Agilent Spectrum Analyzer - Swept SA**

RL RF 50 Ω AC SENSE:INT [04:24:39 PM Sep 02, 2020]

**Center Freq 2.475000000 GHz** PNO: Fast → Trigg: Free Run #Avg Type: RMS AvgHold>10/10  
IF Gain: Low #Atten: 30 dB TRACE 1 2 3 4 5 6 TYPE M W X Y Z DET P P P P P P

Ref Offset 8.05 dB Mkr4 2.487 356 25 GHz  
Ref 20.00 dBm -47.608 dBm

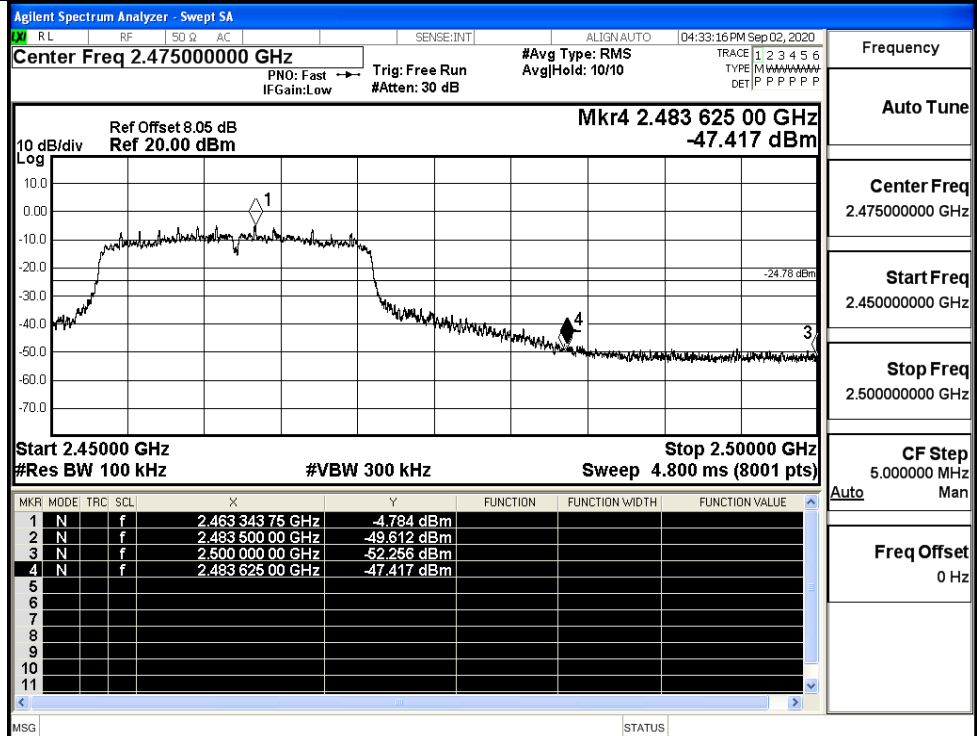
| MKR | MODE | TFC | SCL | X                | Y           | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE |
|-----|------|-----|-----|------------------|-------------|----------|----------------|----------------|
| 1   | N    | f   |     | 2.463 306 25 GHz | -4.348 dBm  |          |                |                |
| 2   | N    | f   |     | 2.483 500 00 GHz | -48.743 dBm |          |                |                |
| 3   | N    | f   |     | 2.500 000 00 GHz | -52.782 dBm |          |                |                |
| 4   | N    | f   |     | 2.487 356 25 GHz | -47.608 dBm |          |                |                |
| 5   |      |     |     |                  |             |          |                |                |
| 6   |      |     |     |                  |             |          |                |                |
| 7   |      |     |     |                  |             |          |                |                |
| 8   |      |     |     |                  |             |          |                |                |
| 9   |      |     |     |                  |             |          |                |                |
| 10  |      |     |     |                  |             |          |                |                |
| 11  |      |     |     |                  |             |          |                |                |

**Start 2.45000 GHz Stop 2.50000 GHz**  
**#Res BW 100 kHz #VBW 300 kHz Sweep 4.800 ms (8001 pts)**

Auto Man CF Step 5.000000 MHz Freq Offset 0 Hz

[illegible]

11N20SISO/HCH



Frequency

Auto Tune

Center Freq

2.475000000 GHz

Start Freq

2.450000000 GHz

Stop Freq

2.500000000 GHz

CF Step

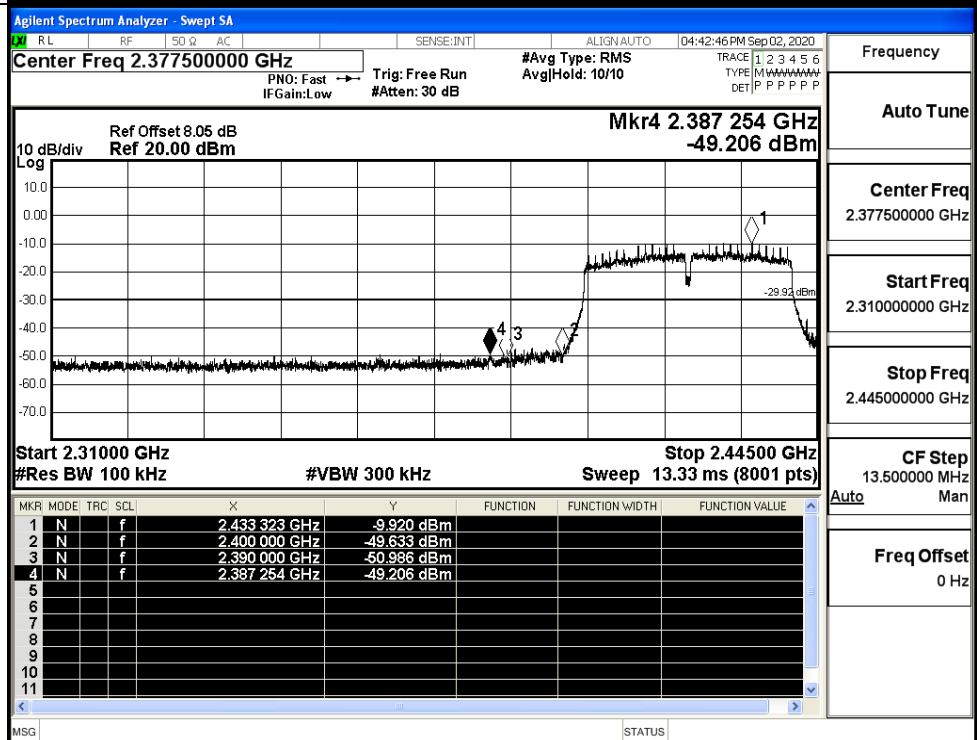
5.000000 MHz

Auto

Freq Offset

0 Hz

11N40SISO/LCH



Frequency

Auto Tune

Center Freq

2.377500000 GHz

Start Freq

2.310000000 GHz

Stop Freq

2.445000000 GHz

CF Step

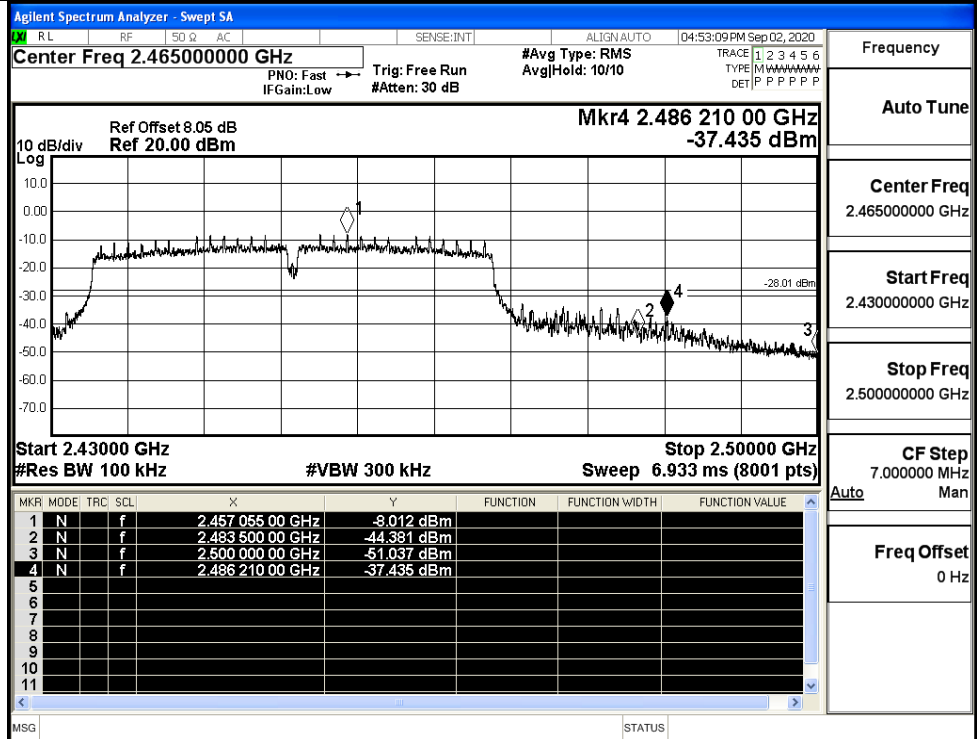
13.500000 MHz

Auto

Freq Offset

0 Hz

11N40SISO/HCH

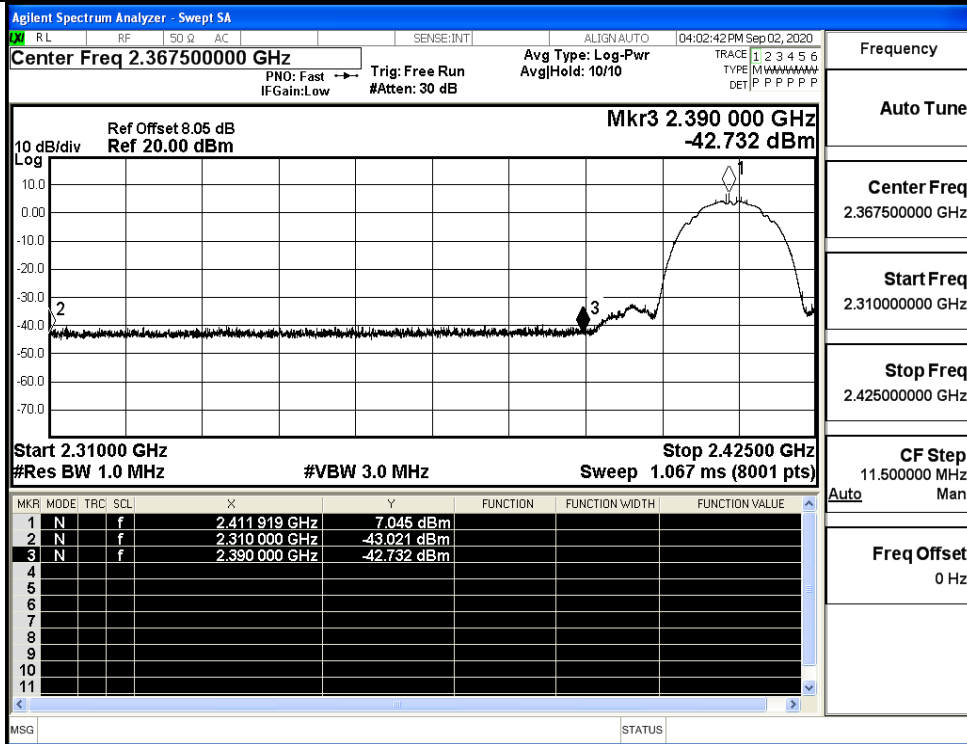


## A.7 Restrict-band band-edge measurements

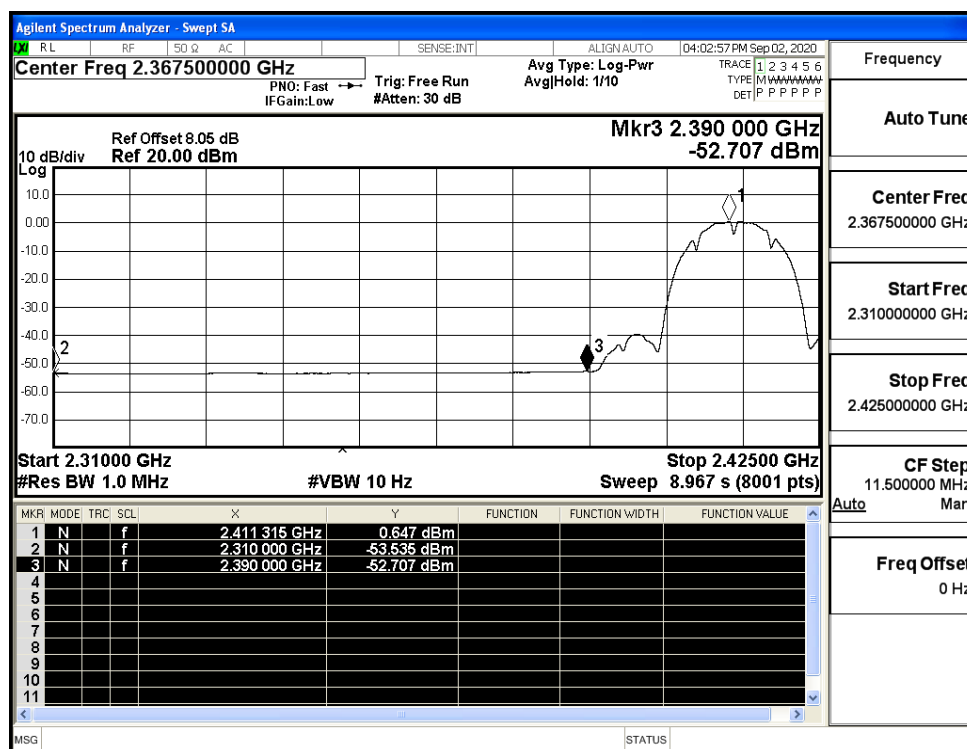
| Test Mode  | Test Channel | Ant  | Freq.  | Power [dBm] | Gain | Ground Factor | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|------------|--------------|------|--------|-------------|------|---------------|------------|----------|----------------|---------|
| 11B        | 2412         | Ant1 | 2310.0 | -43.02      | 2.0  | 0             | 54.21      | PEAK     | 74             | PASS    |
|            | 2412         | Ant1 | 2310.0 | -53.54      | 2.0  | 0             | 43.69      | AV       | 54             | PASS    |
|            | 2412         | Ant1 | 2390.0 | -42.73      | 2.0  | 0             | 54.50      | PEAK     | 74             | PASS    |
|            | 2412         | Ant1 | 2390.0 | -52.71      | 2.0  | 0             | 44.52      | AV       | 54             | PASS    |
|            | 2462         | Ant1 | 2483.5 | -40.82      | 2.0  | 0             | 56.41      | PEAK     | 74             | PASS    |
|            | 2462         | Ant1 | 2483.5 | -51.64      | 2.0  | 0             | 45.59      | AV       | 54             | PASS    |
|            | 2462         | Ant1 | 2500.0 | -42.14      | 2.0  | 0             | 55.09      | PEAK     | 74             | PASS    |
|            | 2462         | Ant1 | 2500.0 | -52.35      | 2.0  | 0             | 44.88      | AV       | 54             | PASS    |
| 11G        | 2412         | Ant1 | 2310.0 | -43.48      | 2.0  | 0             | 53.75      | PEAK     | 74             | PASS    |
|            | 2412         | Ant1 | 2310.0 | -53.46      | 2.0  | 0             | 43.77      | AV       | 54             | PASS    |
|            | 2412         | Ant1 | 2390.0 | -42.56      | 2.0  | 0             | 54.67      | PEAK     | 74             | PASS    |
|            | 2412         | Ant1 | 2390.0 | -52.57      | 2.0  | 0             | 44.66      | AV       | 54             | PASS    |
|            | 2462         | Ant1 | 2483.5 | -39.27      | 2.0  | 0             | 57.96      | PEAK     | 74             | PASS    |
|            | 2462         | Ant1 | 2483.5 | -49.99      | 2.0  | 0             | 47.24      | AV       | 54             | PASS    |
|            | 2462         | Ant1 | 2500.0 | -41.04      | 2.0  | 0             | 56.19      | PEAK     | 74             | PASS    |
|            | 2462         | Ant1 | 2500.0 | -52.33      | 2.0  | 0             | 44.90      | AV       | 54             | PASS    |
| 11N20 SISO | 2412         | Ant1 | 2310.0 | -43.60      | 2.0  | 0             | 53.63      | PEAK     | 74             | PASS    |
|            | 2412         | Ant1 | 2310.0 | -53.60      | 2.0  | 0             | 43.63      | AV       | 54             | PASS    |
|            | 2412         | Ant1 | 2390.0 | -41.93      | 2.0  | 0             | 55.30      | PEAK     | 74             | PASS    |
|            | 2412         | Ant1 | 2390.0 | -53.00      | 2.0  | 0             | 44.23      | AV       | 54             | PASS    |
|            | 2462         | Ant1 | 2483.5 | -34.93      | 2.0  | 0             | 62.30      | PEAK     | 74             | PASS    |
|            | 2462         | Ant1 | 2483.5 | -49.74      | 2.0  | 0             | 47.49      | AV       | 54             | PASS    |
|            | 2462         | Ant1 | 2500.0 | -40.50      | 2.0  | 0             | 56.73      | PEAK     | 74             | PASS    |
|            | 2462         | Ant1 | 2500.0 | -52.33      | 2.0  | 0             | 44.90      | AV       | 54             | PASS    |
| 11N40 SISO | 2422         | Ant1 | 2310.0 | -43.38      | 2.0  | 0             | 53.85      | PEAK     | 74             | PASS    |
|            | 2422         | Ant1 | 2310.0 | -53.57      | 2.0  | 0             | 43.66      | AV       | 54             | PASS    |

|  |      |      |        |        |     |   |       |      |    |      |
|--|------|------|--------|--------|-----|---|-------|------|----|------|
|  | 2422 | Ant1 | 2390.0 | -39.07 | 2.0 | 0 | 58.16 | PEAK | 74 | PASS |
|  | 2422 | Ant1 | 2390.0 | -51.50 | 2.0 | 0 | 45.73 | AV   | 54 | PASS |
|  | 2452 | Ant1 | 2483.5 | -31.20 | 2.0 | 0 | 66.03 | PEAK | 74 | PASS |
|  | 2452 | Ant1 | 2483.5 | -44.68 | 2.0 | 0 | 52.55 | AV   | 54 | PASS |
|  | 2452 | Ant1 | 2500.0 | -38.58 | 2.0 | 0 | 58.65 | PEAK | 74 | PASS |
|  | 2452 | Ant1 | 2500.0 | -51.19 | 2.0 | 0 | 46.04 | AV   | 54 | PASS |

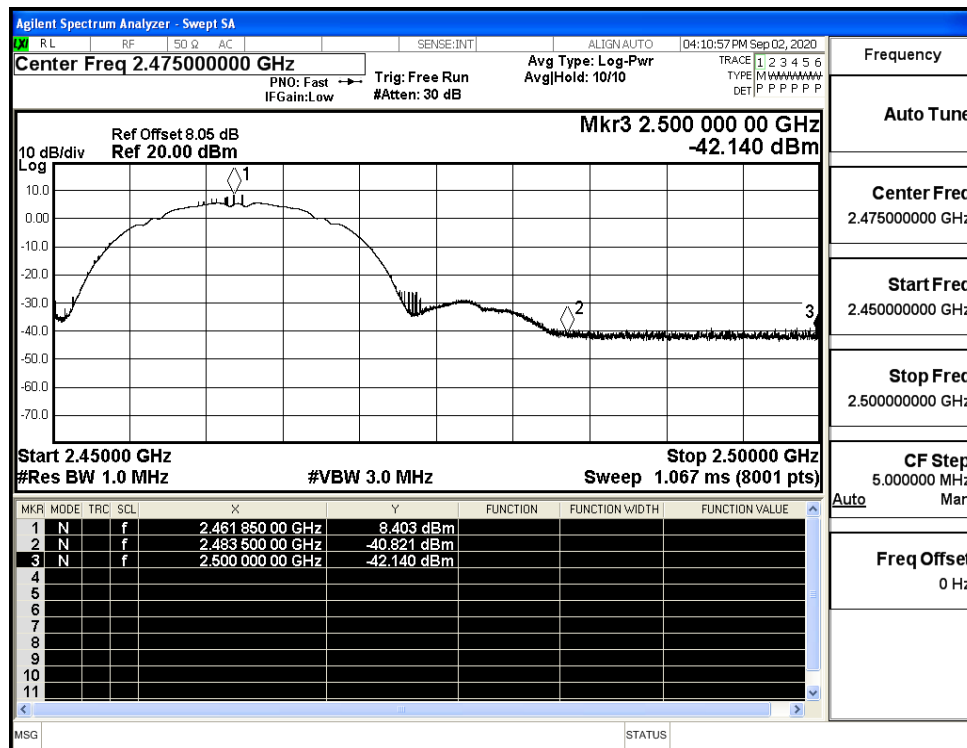
## Restrict-band band-edge measurements\_11B\_2412\_Ant1\_PEAK



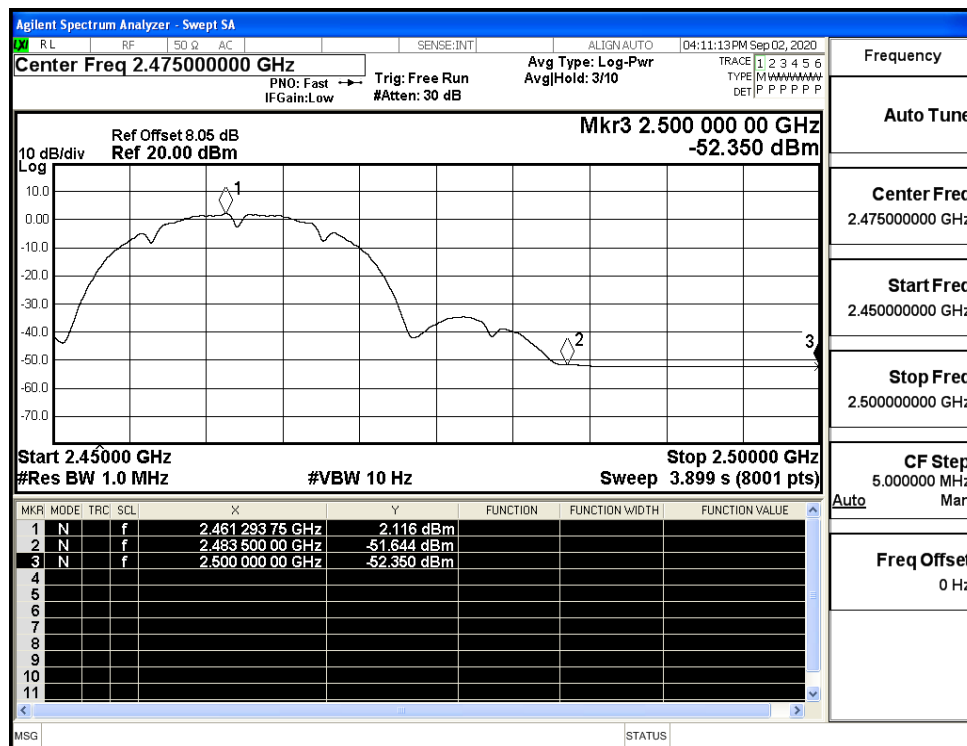
## Restrict-band band-edge measurements\_11B\_2412\_Ant1\_AV



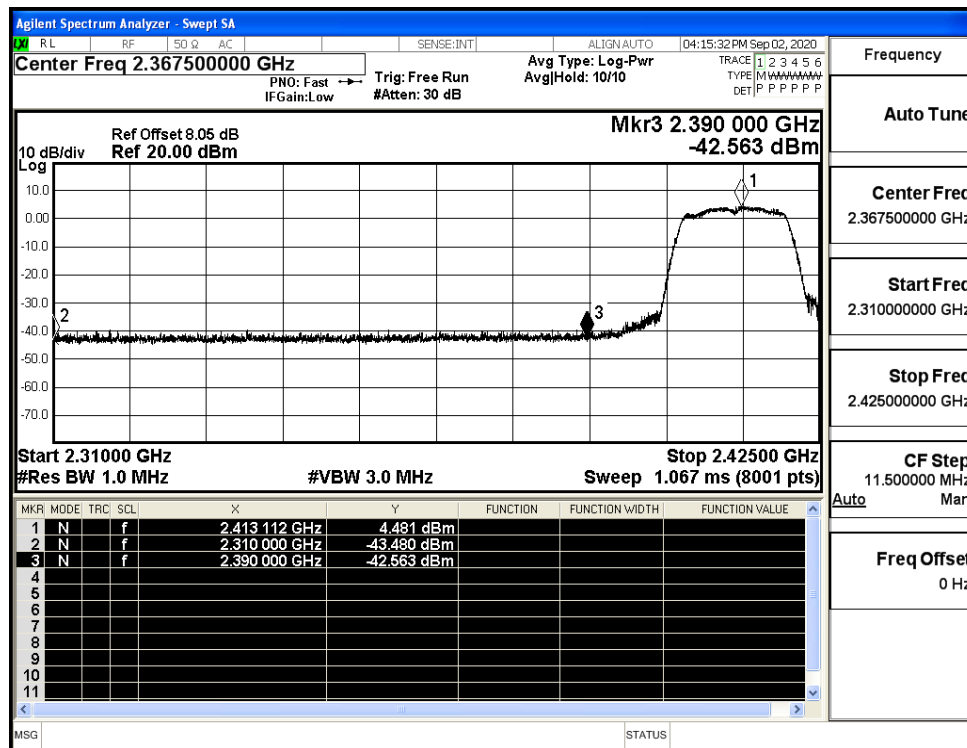
## Restrict-band band-edge measurements\_11B\_2462\_Ant1\_PEAK



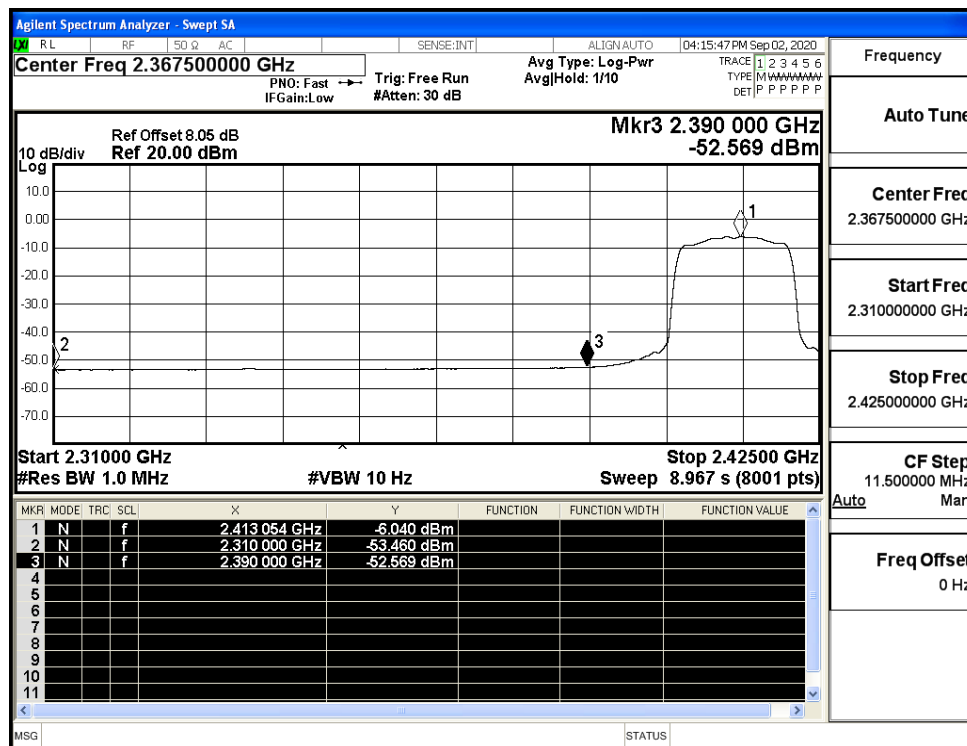
## Restrict-band band-edge measurements\_11B\_2462\_Ant1\_AV



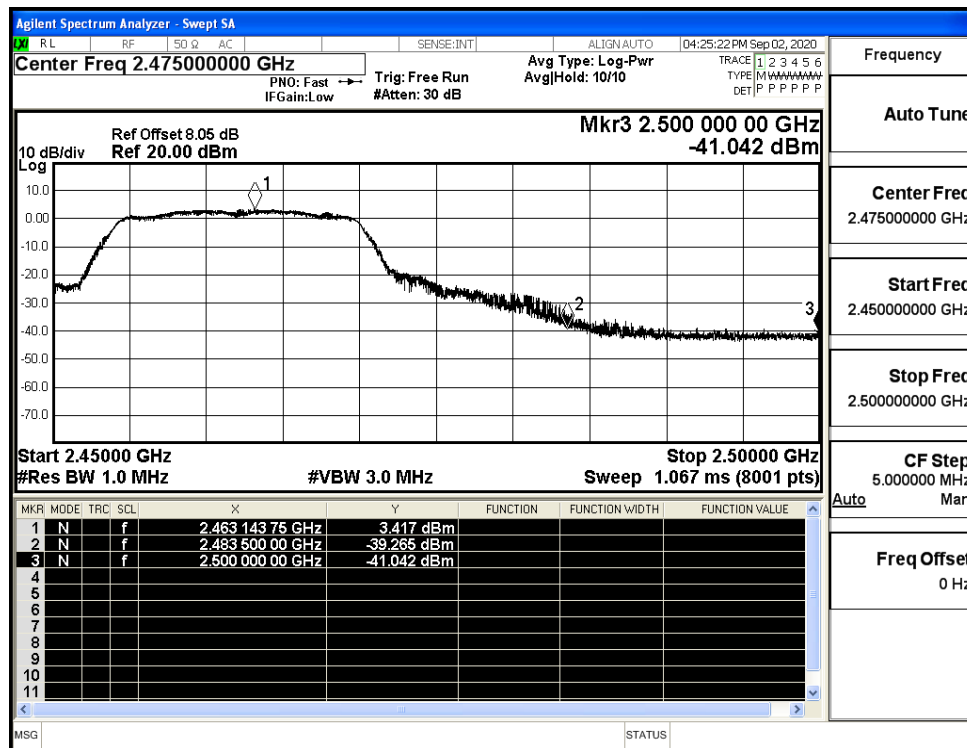
## Restrict-band band-edge measurements\_11G\_2412\_Ant1\_PEAK



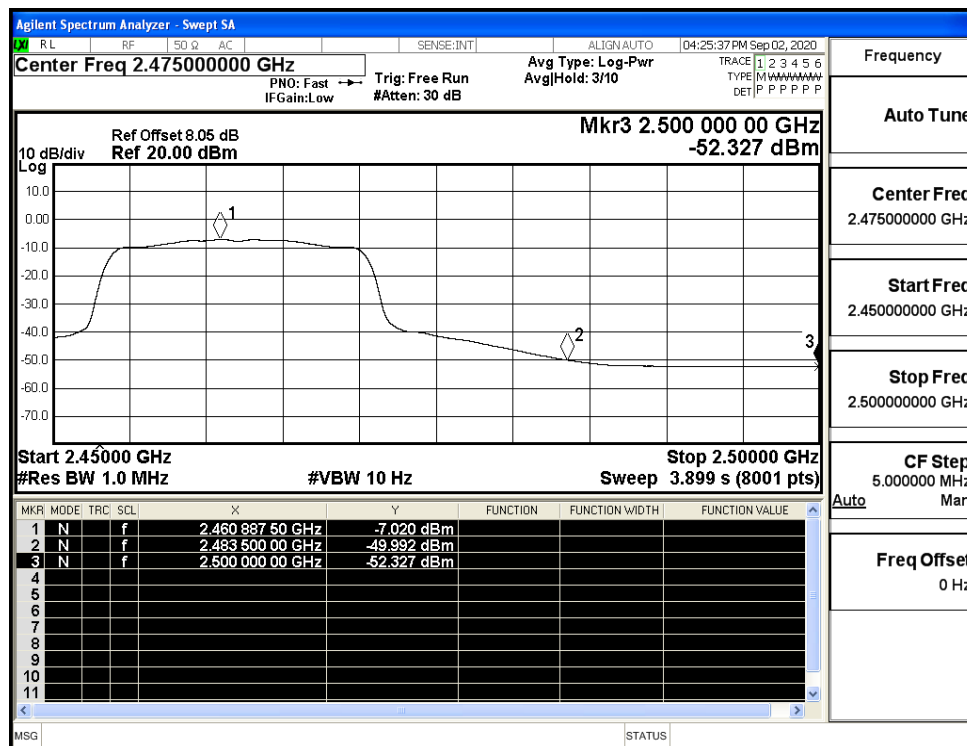
## Restrict-band band-edge measurements\_11G\_2412\_Ant1\_AV



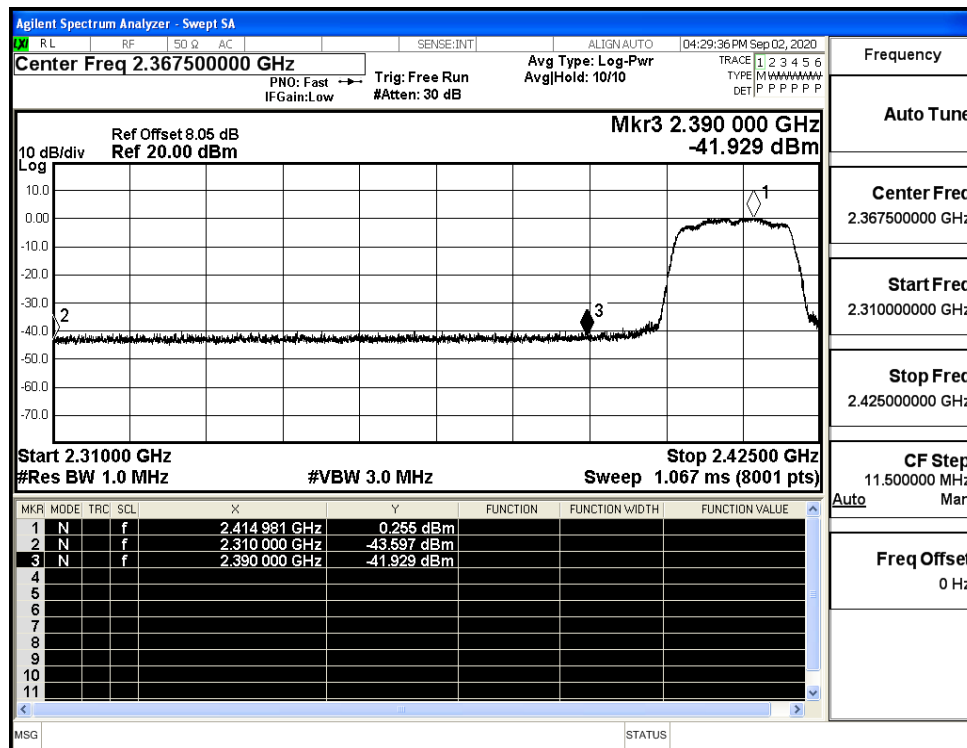
## Restrict-band band-edge measurements\_11G\_2462\_Ant1\_PEAK



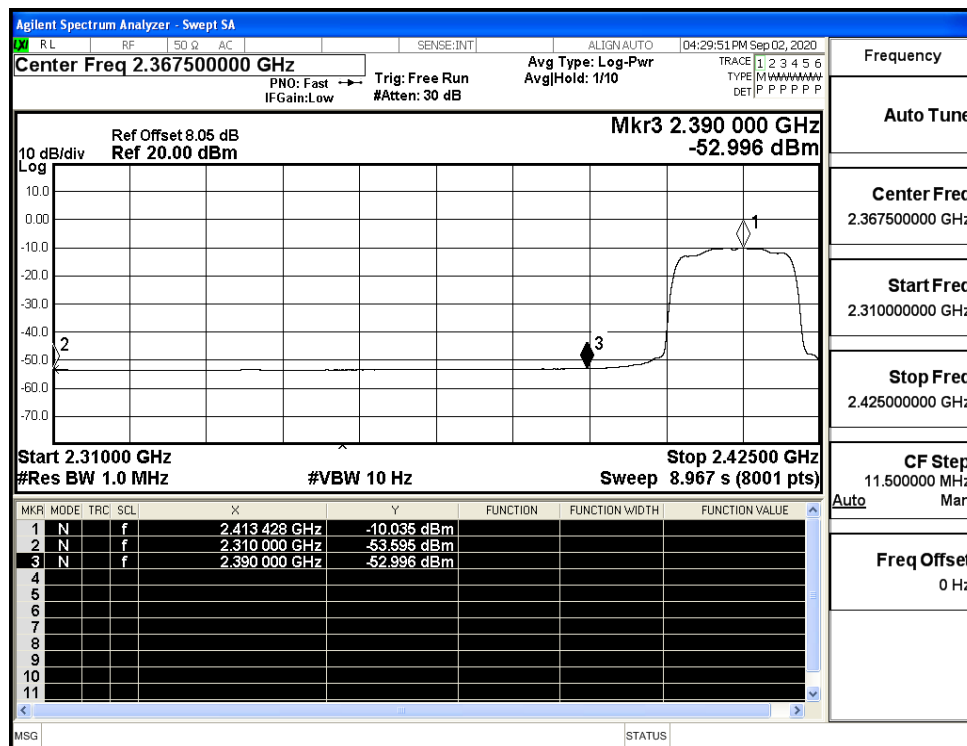
## Restrict-band band-edge measurements\_11G\_2462\_Ant1\_AV



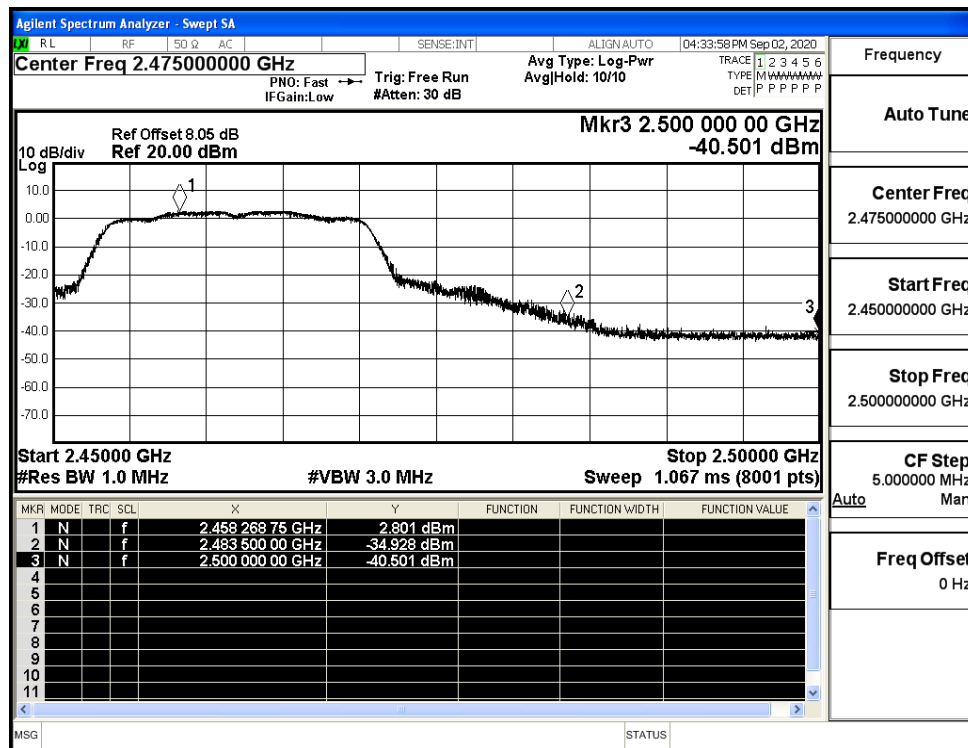
## Restrict-band band-edge measurements\_11N20SISO\_2412\_Ant1\_PEAK



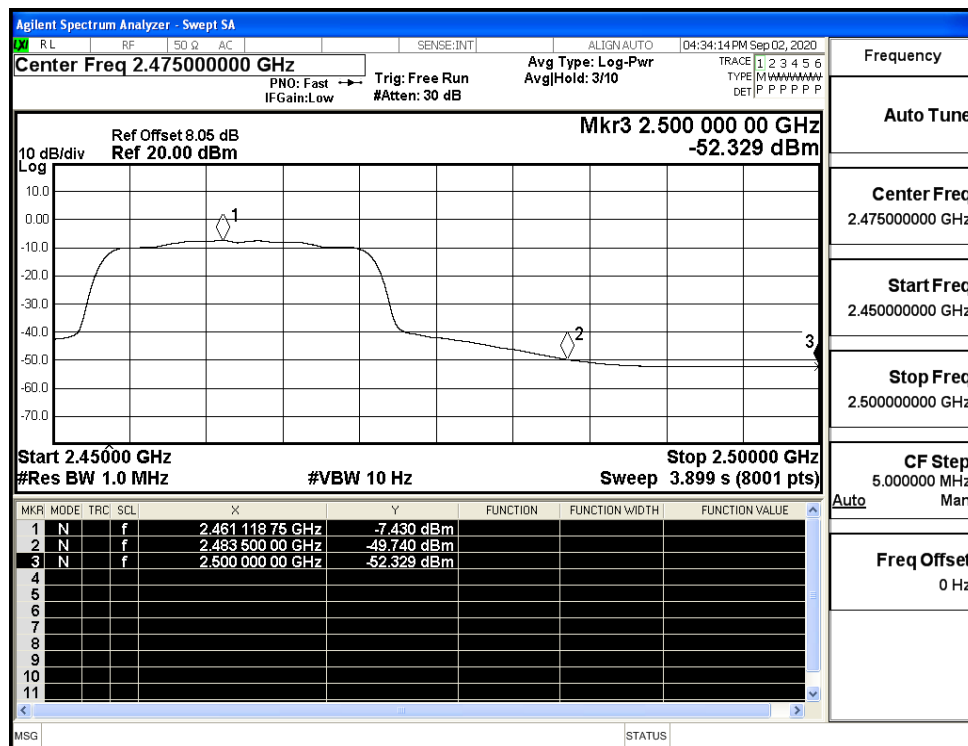
## Restrict-band band-edge measurements\_11N20SISO\_2412\_Ant1\_AV



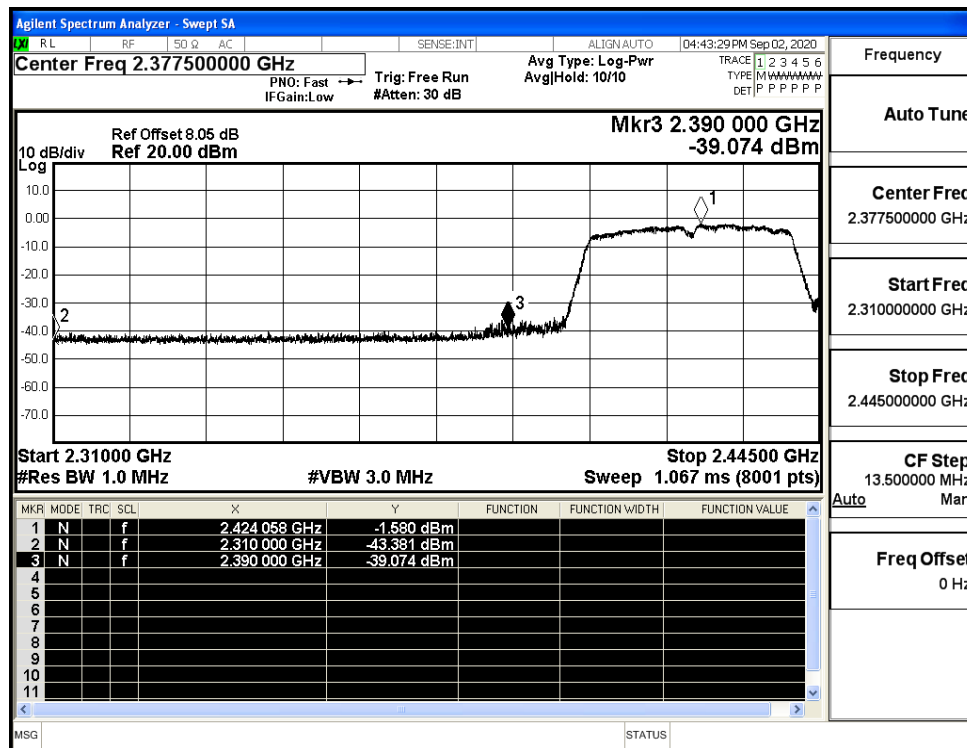
## Restrict-band band-edge measurements\_11N20SISO\_2462\_Ant1\_PEAK



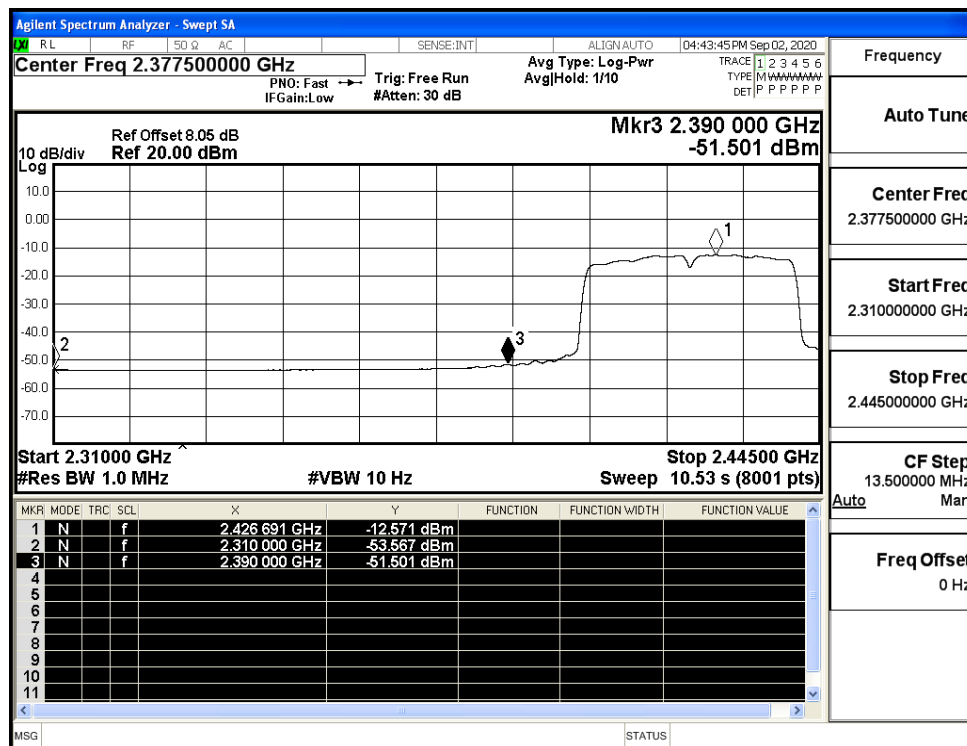
## Restrict-band band-edge measurements\_11N20SISO\_2462\_Ant1\_AV



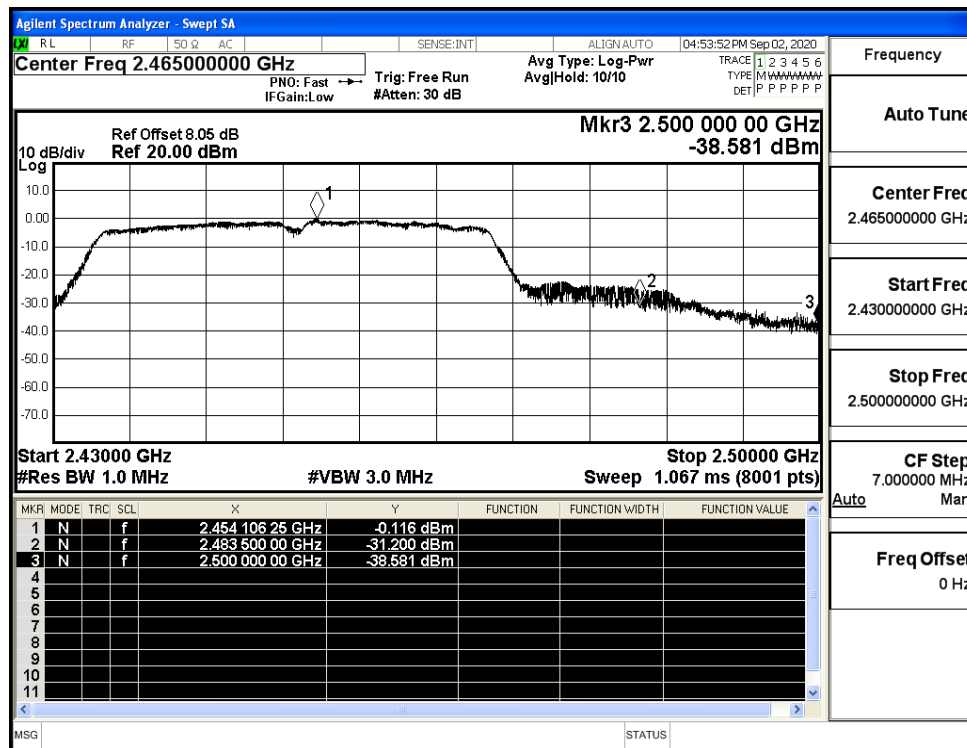
## Restrict-band band-edge measurements\_11N40SISO\_2422\_Ant1\_PEAK



## 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

