

## Appendix A

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

Product Name: ALL-IN-ONE HD Wi-Fi CAMERA

Trade Mark: Guardzilla

Test Model: GZ180

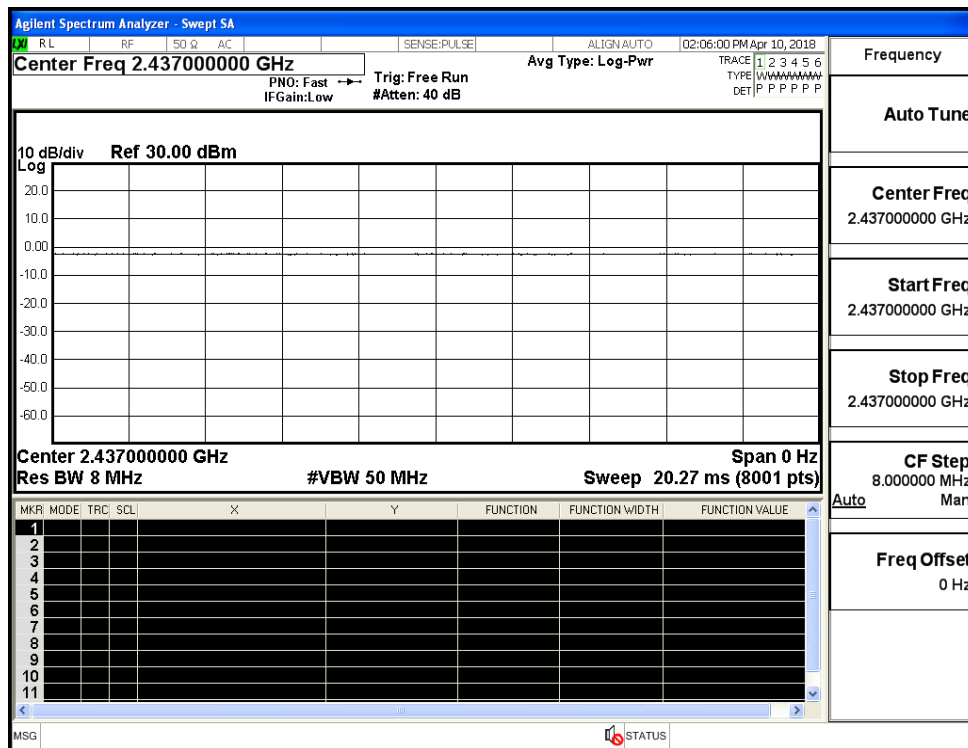
#### Environmental Conditions

|                    |             |
|--------------------|-------------|
| Temperature:       | 21.5 ° C    |
| Relative Humidity: | 52.5%       |
| ATM Pressure:      | 100.0 kPa   |
| Test Engineer:     | Mina.xu     |
| Supervised by:     | Jayden Zhuo |

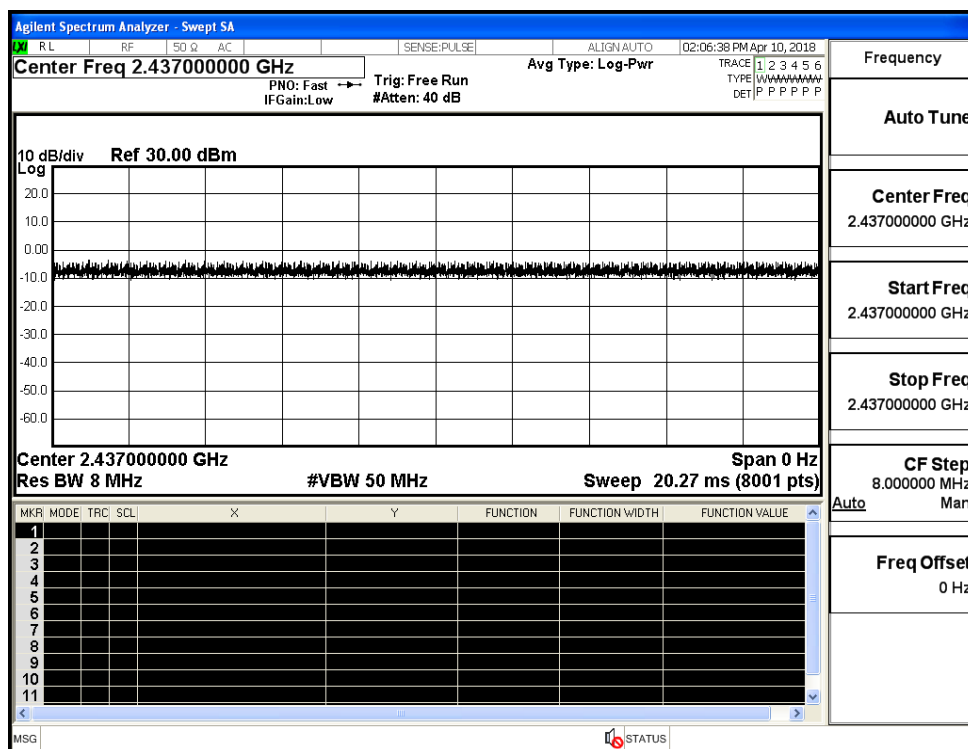
#### A.1 Duty Cycle

| 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    |

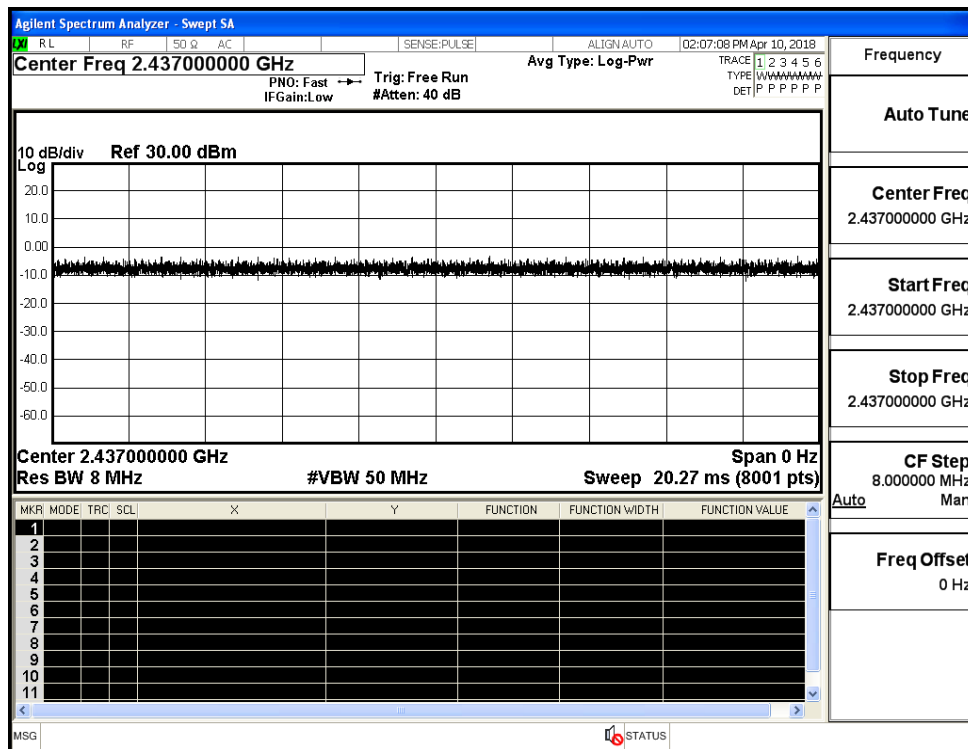
## Duty Cycle\_11B\_2437\_Ant1



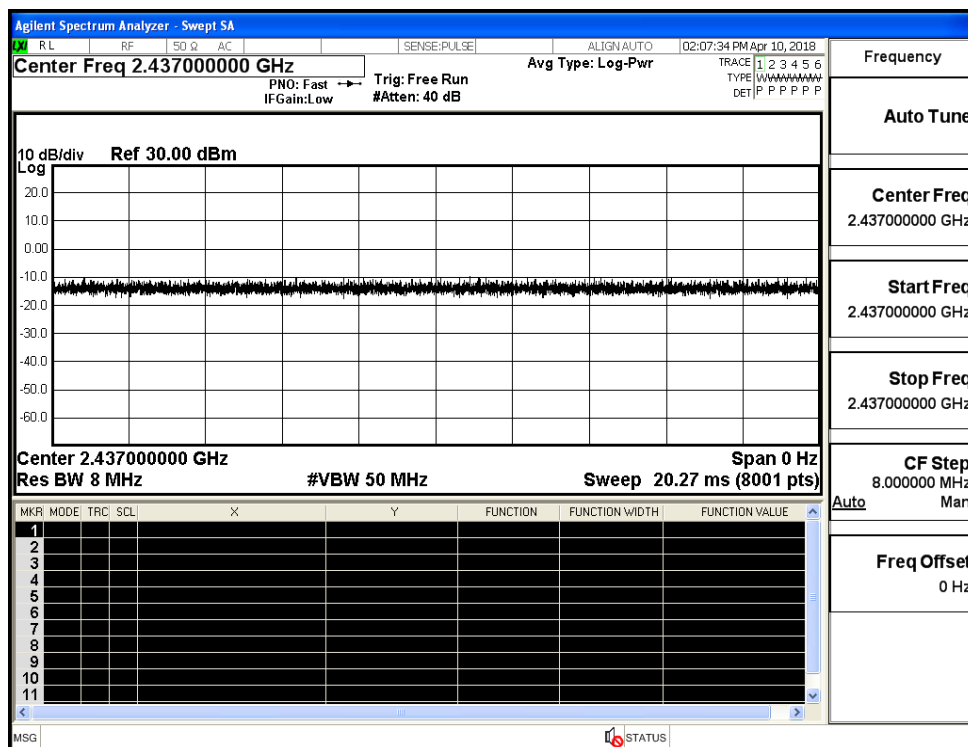
## Duty Cycle\_11G\_2437\_Ant1



## Duty Cycle\_11N20SISO\_2437\_Ant1



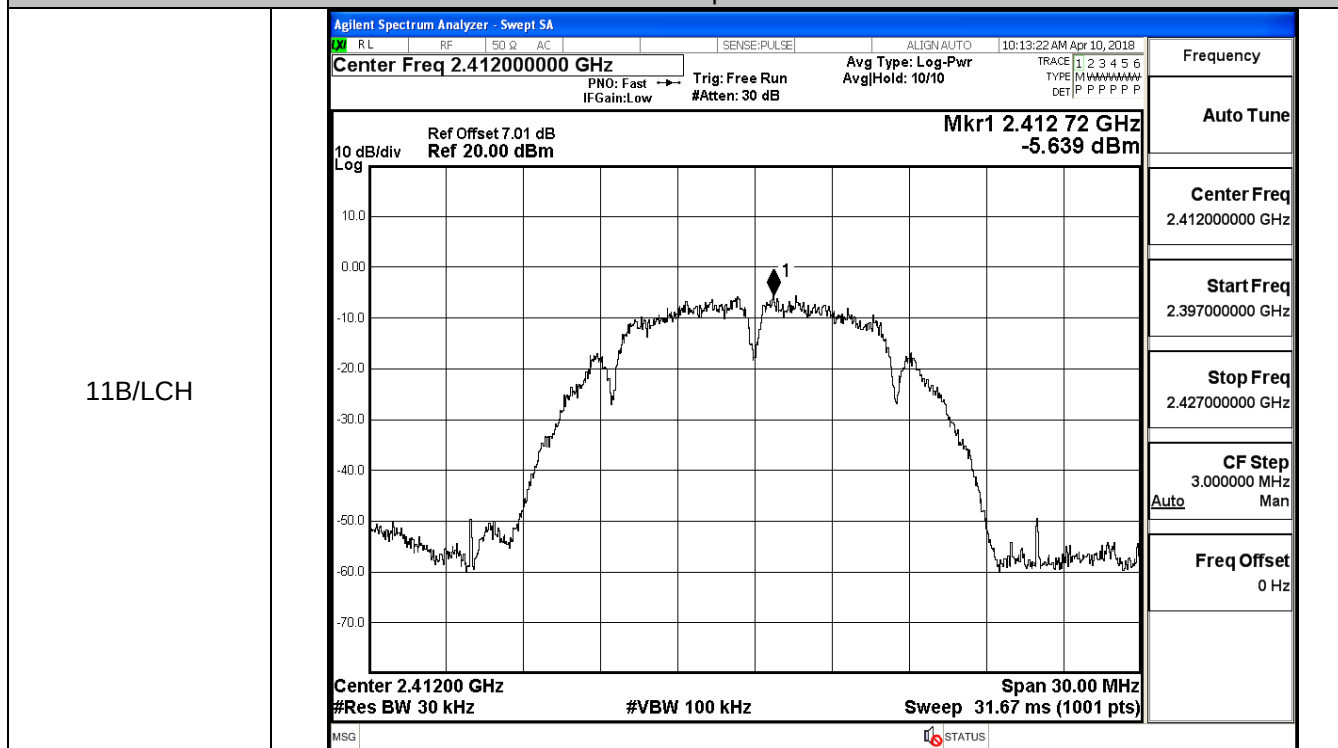
## Duty Cycle\_11N40SISO\_2437\_Ant1



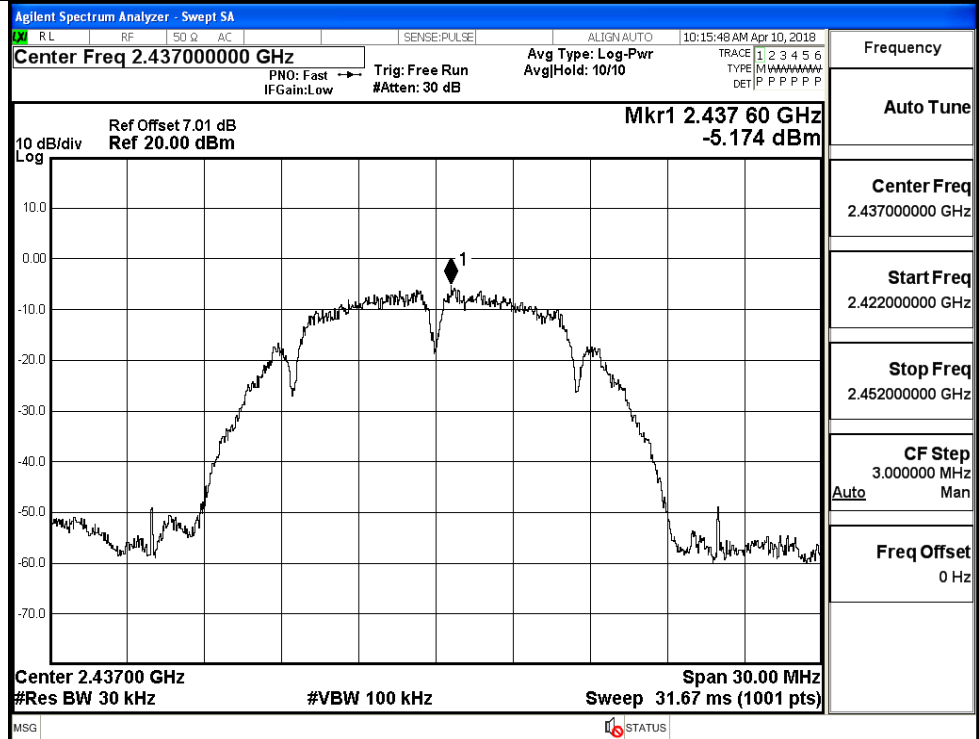
## A.2 Maximum Power Spectral Density

| Mode      | Channel | Meas.Level [dBm/30KHz] | Limit [dBm/3KHz] | Verdict |
|-----------|---------|------------------------|------------------|---------|
| 11B       | LCH     | -5.639                 | 8                | PASS    |
|           | MCH     | -5.174                 | 8                | PASS    |
|           | HCH     | -5.289                 | 8                | PASS    |
| 11G       | LCH     | -10.897                | 8                | PASS    |
|           | MCH     | -10.806                | 8                | PASS    |
|           | HCH     | -11.614                | 8                | PASS    |
| 11N20SISO | LCH     | -12.108                | 8                | PASS    |
|           | MCH     | -12.103                | 8                | PASS    |
|           | HCH     | -11.714                | 8                | PASS    |
| 11N40SISO | LCH     | -15.404                | 8                | PASS    |
|           | MCH     | -15.484                | 8                | PASS    |
|           | HCH     | -15.871                | 8                | PASS    |

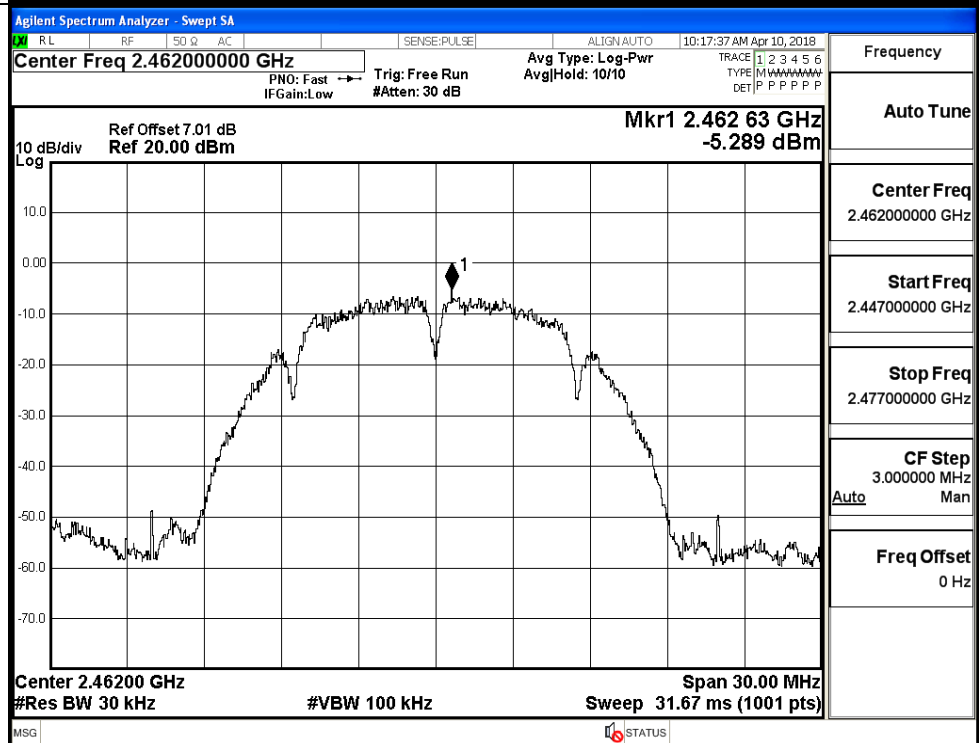
### Test Graphs



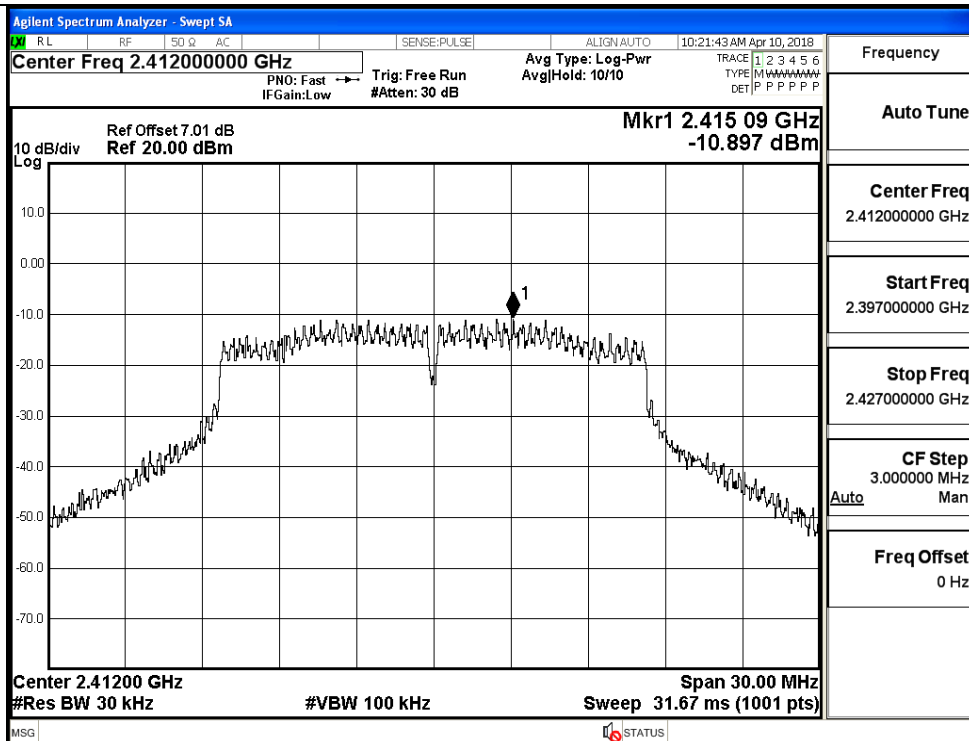
11B/MCH



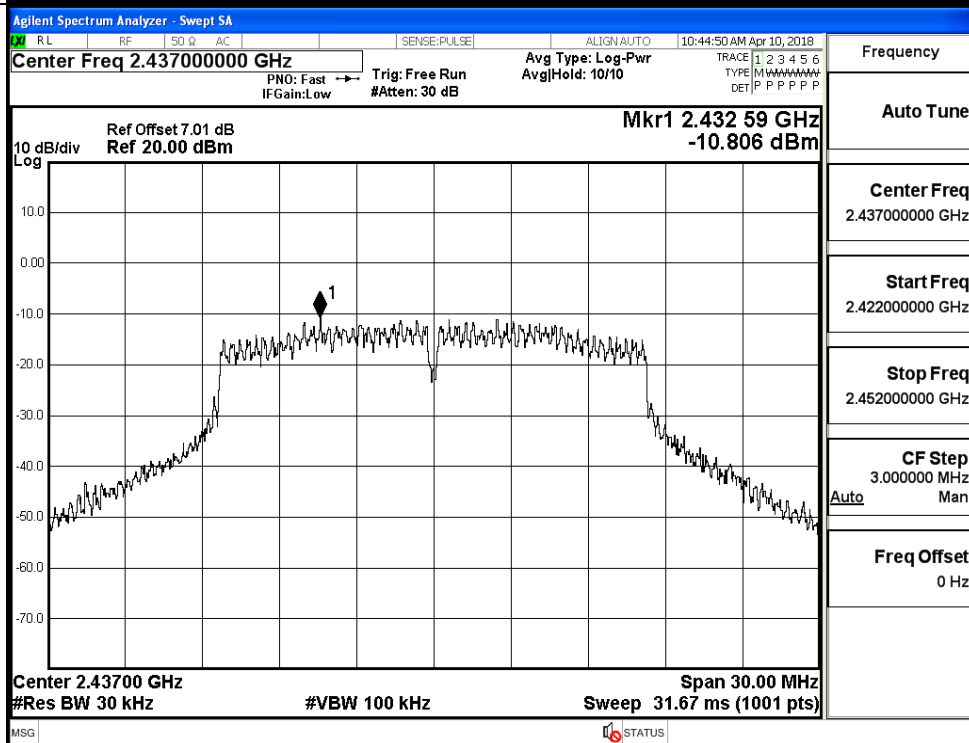
11B/HCH



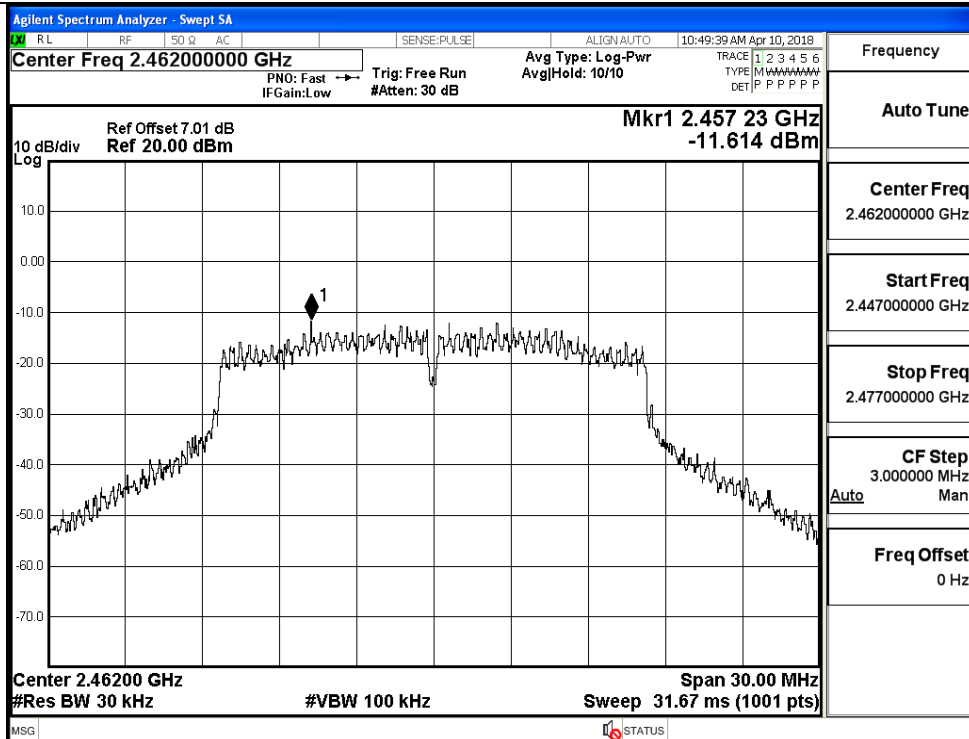
11G/LCH



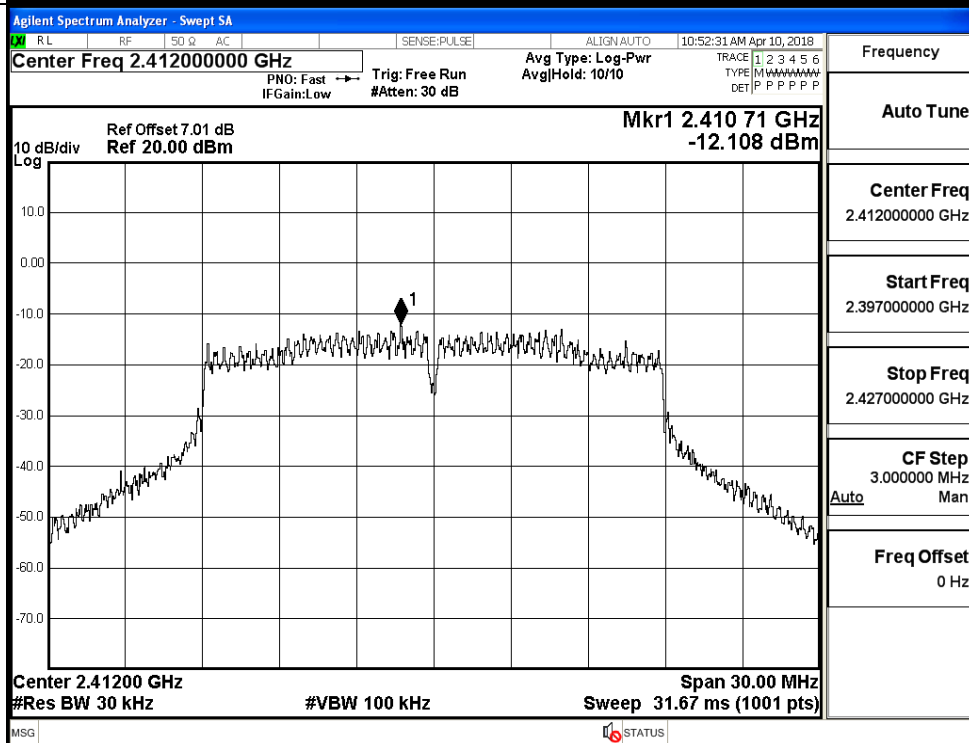
11G/MCH



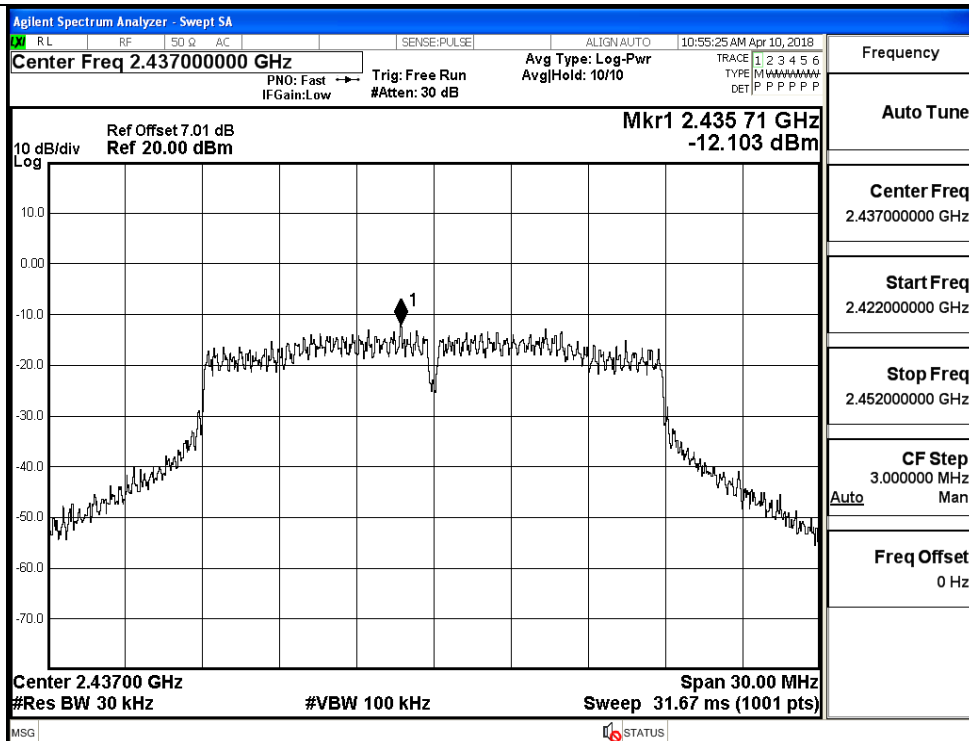
11G/HCH



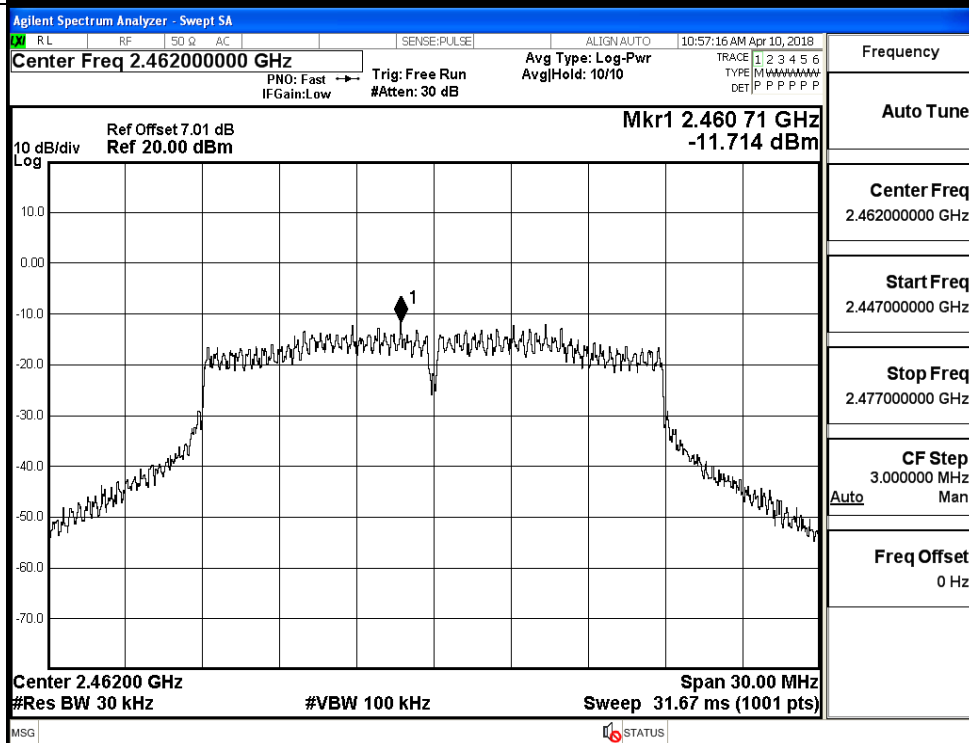
11N20SISO/LCH



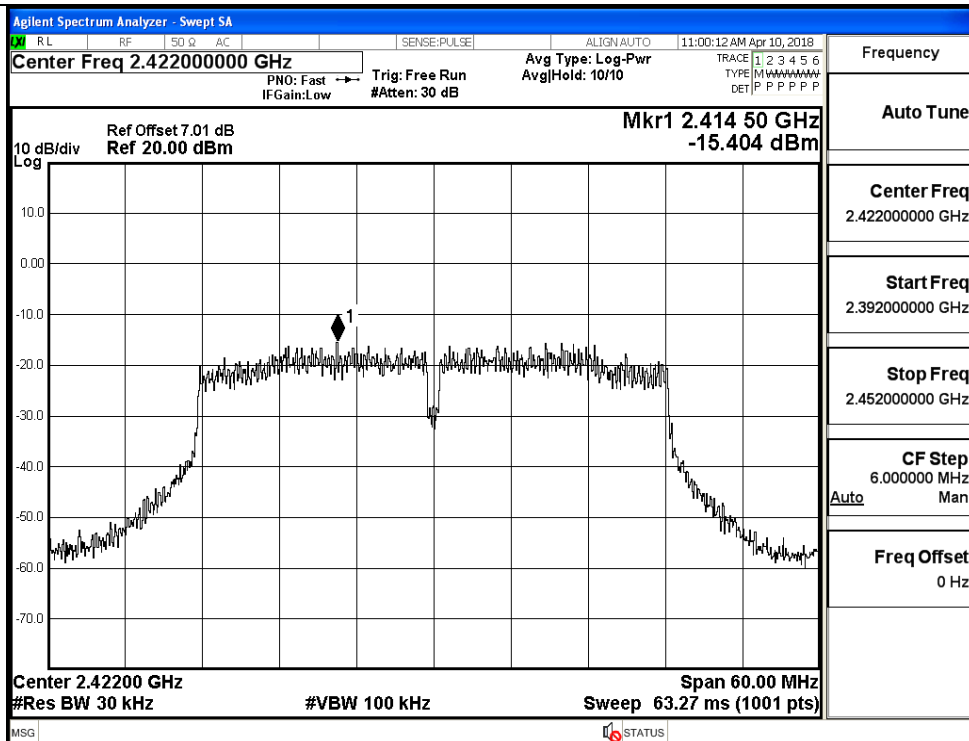
11N20SISO/MCH



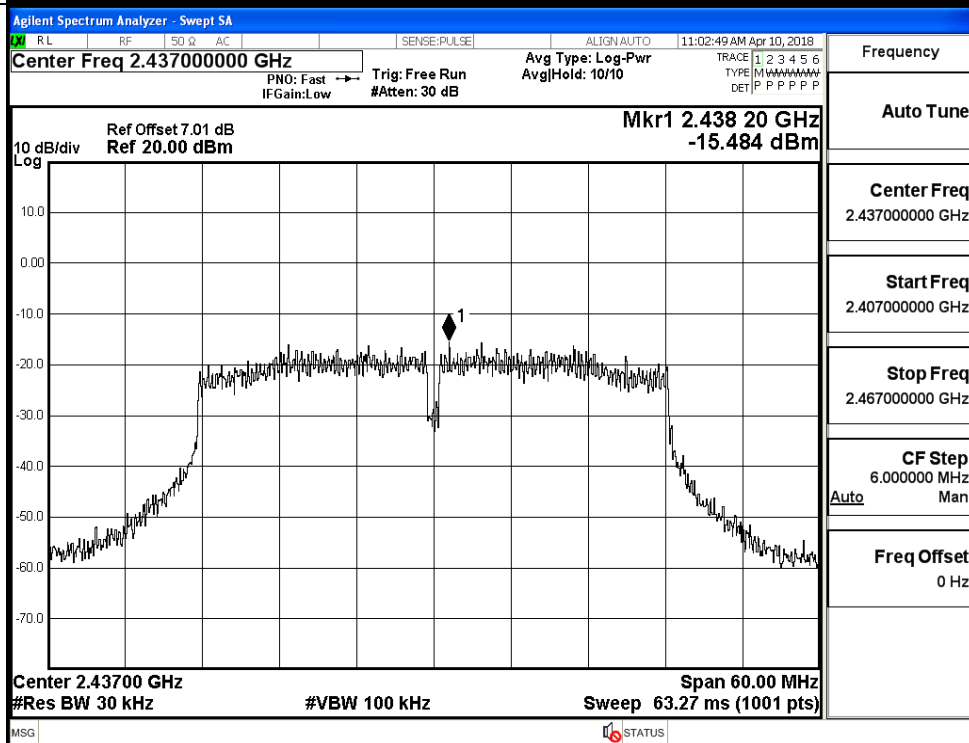
11N20SISO/HCH



11N40SISO/LCH



11N40SISO/MCH



Agilent Spectrum Analyzer - Swept SA

RL RF 50  $\Omega$  AC SENSE:PULSE ALIGN AUTO 11:04:36 AM Apr 10, 2018

Center Freq 2.452000000 GHz PNO: Fast Trg: Free Run Avg Type: Log-Pwr TRACE 1 2 3 4 5 6  
IF Gain: Low #Atten: 30 dB Avg Hold: 10/10 TYPE M W W W W W W W W W  
DET P P P P P P P P

Ref Offset 7.01 dB Mkr1 2.444 50 GHz  
Ref 20.00 dBm -15.871 dBm

10 dB/div Log

The spectrum analyzer display shows a swept signal. The vertical axis is labeled '10 dB/div Log' and ranges from -70.0 to 10.0 dBm. The horizontal axis represents frequency, with a center frequency of 2.45200 GHz and a span of 60.00 MHz. The signal is a noisy trace that rises from approximately -60 dBm at the start of the sweep to a peak of about -15.871 dBm at 2.4445 GHz, then falls back to approximately -60 dBm. A marker labeled '1' is placed on the peak. The display includes various settings: Center Freq 2.452000000 GHz, Res BW 30 kHz, #VBW 100 kHz, Span 60.00 MHz, Sweep 63.27 ms (1001 pts), and CF Step 6.000000 MHz. The status bar at the bottom shows 'MSG' and 'STATUS'.

Stop Freq 2.482000000 GHz

CF Step 6.000000 MHz  
Auto Man

Freq Offset 0 Hz

Center Freq 2.452000000 GHz

Start Freq 2.422000000 GHz

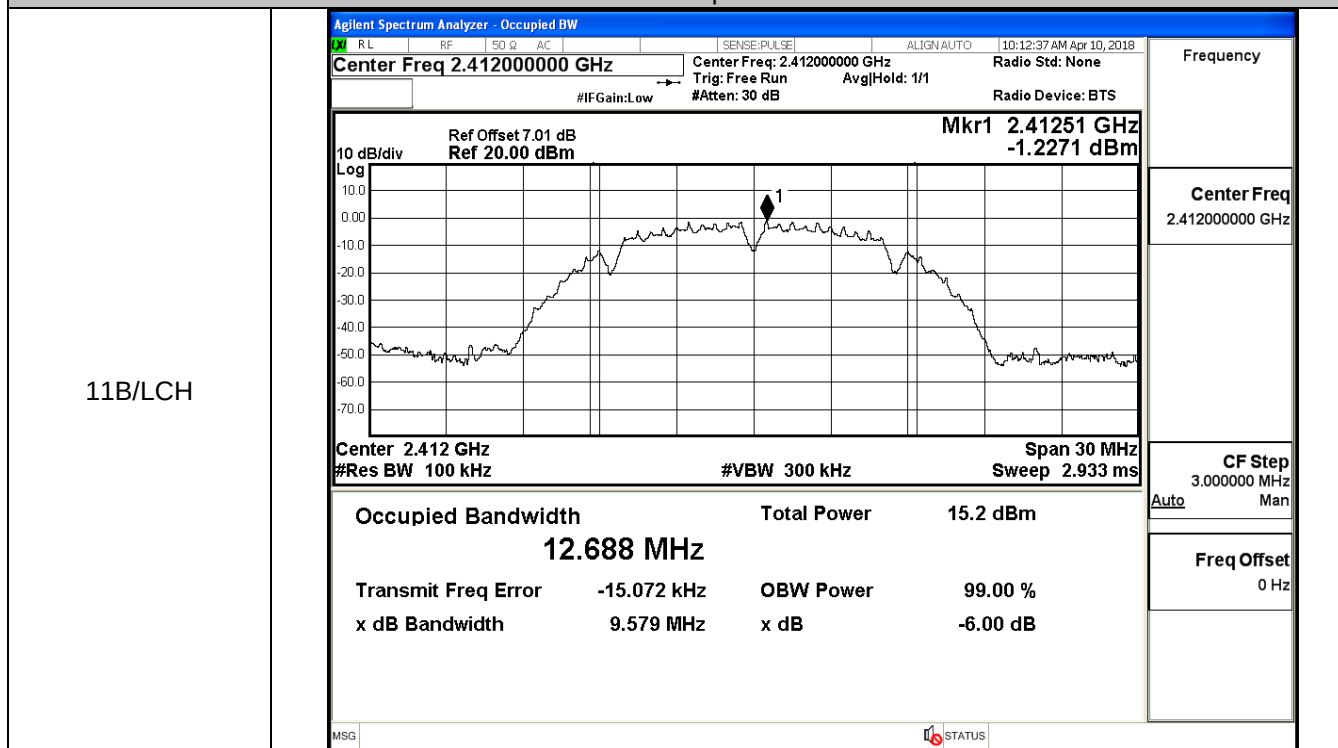
Auto Tune

Frequency

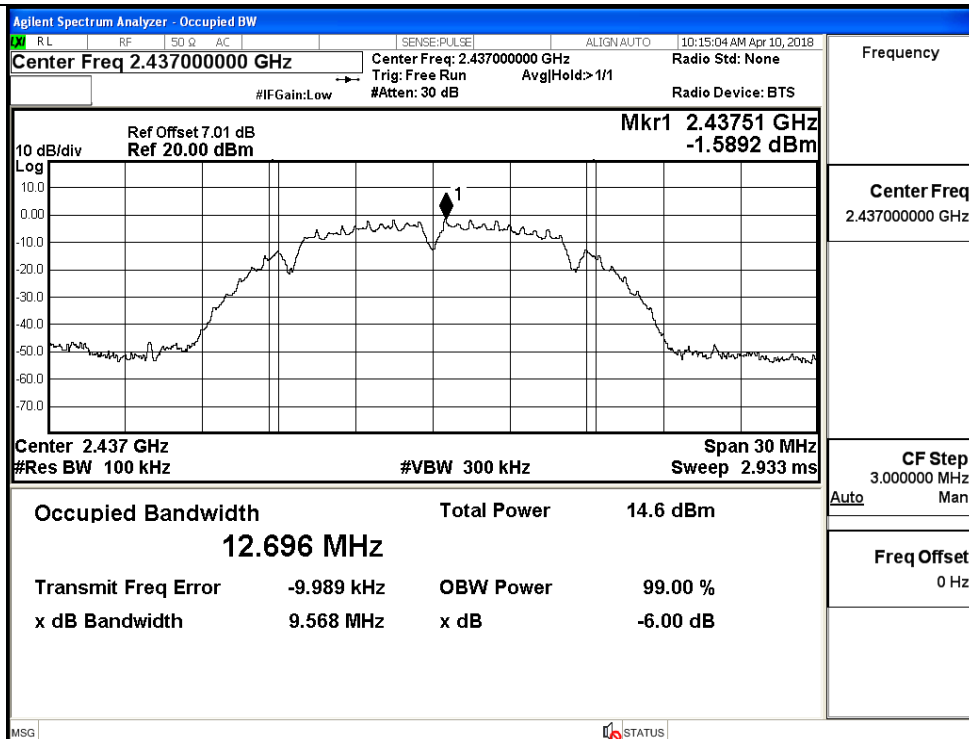
## A.3 6dB Bandwidth

| Mode      | Channel | 6dB Bandwidth [MHz] | Limit [MHz] | Verdict |
|-----------|---------|---------------------|-------------|---------|
| 11B       | LCH     | 9.579               | $\geq 0.5$  | PASS    |
|           | MCH     | 9.568               | $\geq 0.5$  | PASS    |
|           | HCH     | 9.154               | $\geq 0.5$  | PASS    |
| 11G       | LCH     | 15.15               | $\geq 0.5$  | PASS    |
|           | MCH     | 15.09               | $\geq 0.5$  | PASS    |
|           | HCH     | 15.45               | $\geq 0.5$  | PASS    |
| 11N20SISO | LCH     | 15.13               | $\geq 0.5$  | PASS    |
|           | MCH     | 15.15               | $\geq 0.5$  | PASS    |
|           | HCH     | 15.11               | $\geq 0.5$  | PASS    |
| 11N40SISO | LCH     | 35.16               | $\geq 0.5$  | PASS    |
|           | MCH     | 35.15               | $\geq 0.5$  | PASS    |
|           | HCH     | 35.17               | $\geq 0.5$  | PASS    |

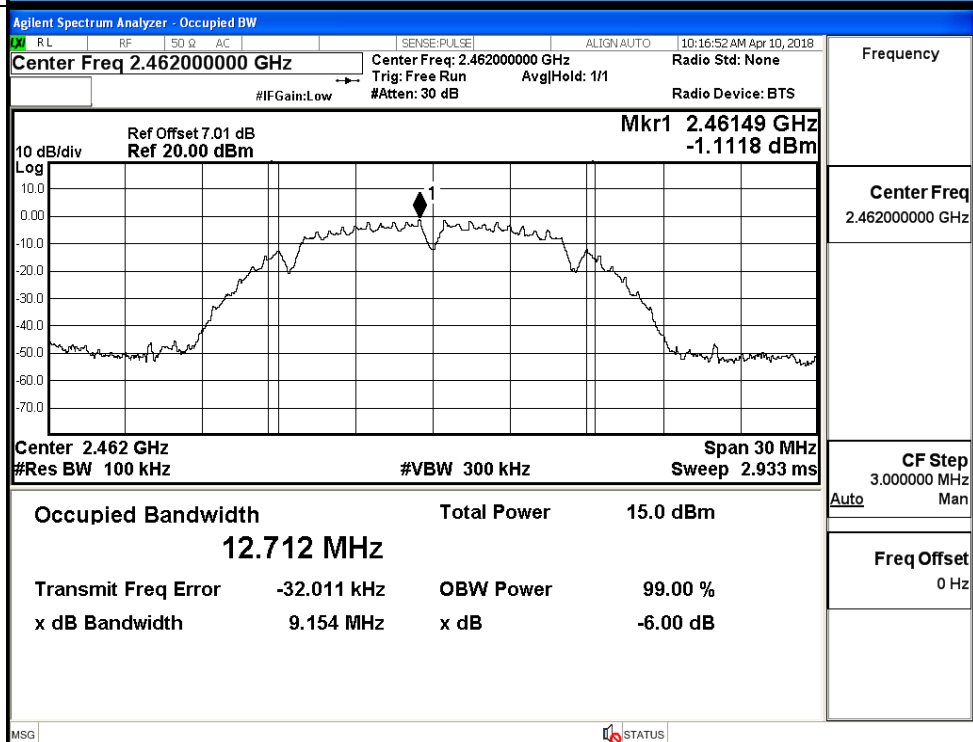
## Test Graphs



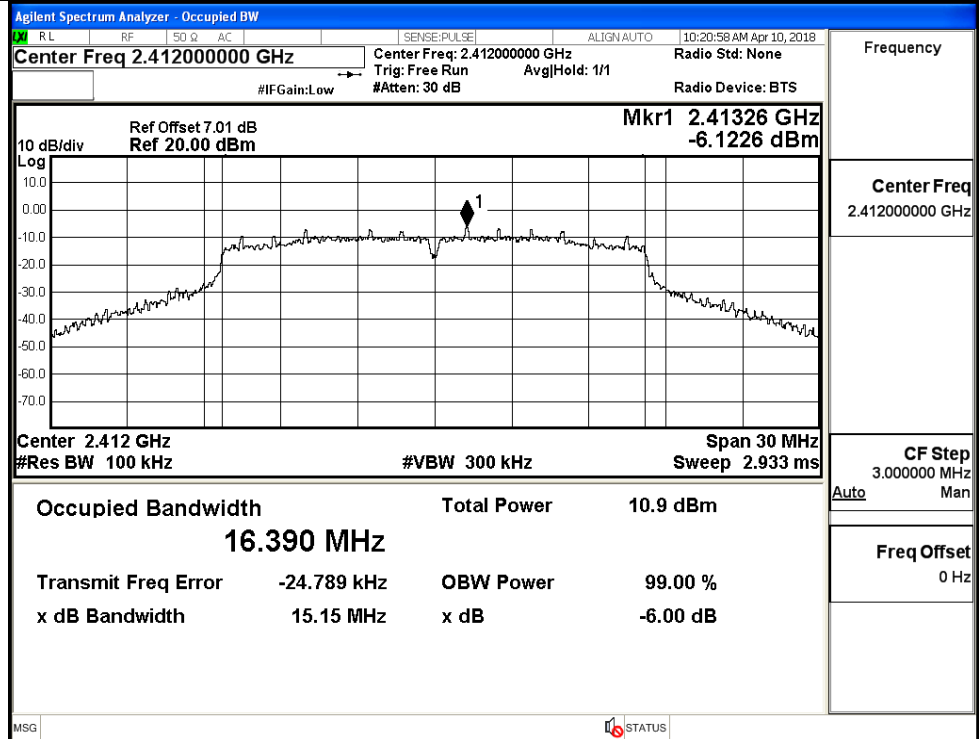
11B/MCH



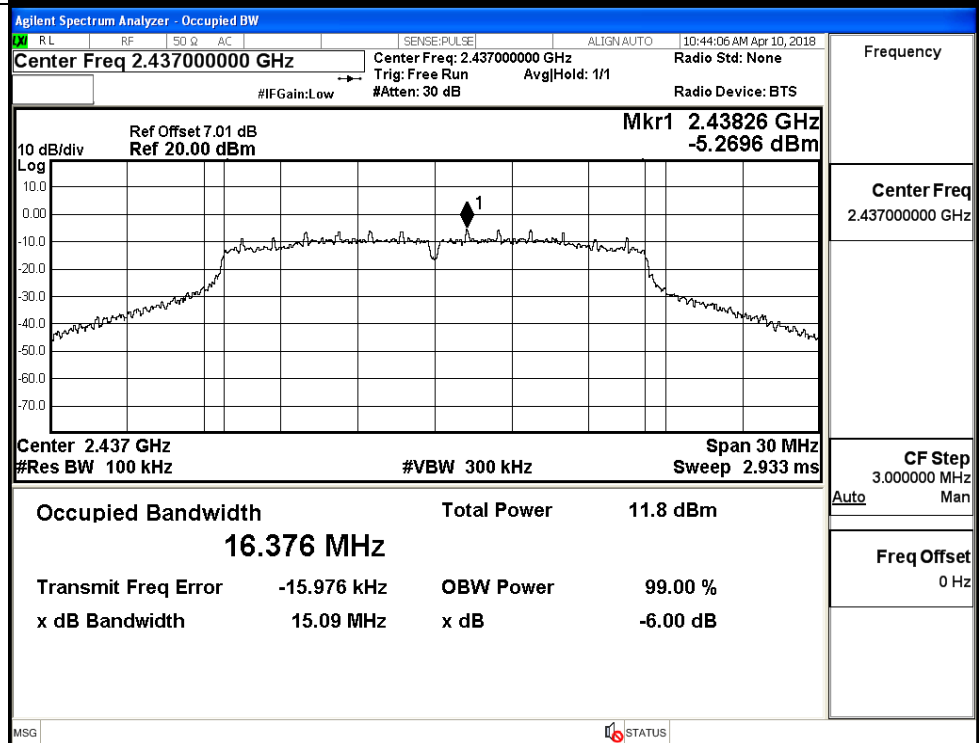
11B/HCH



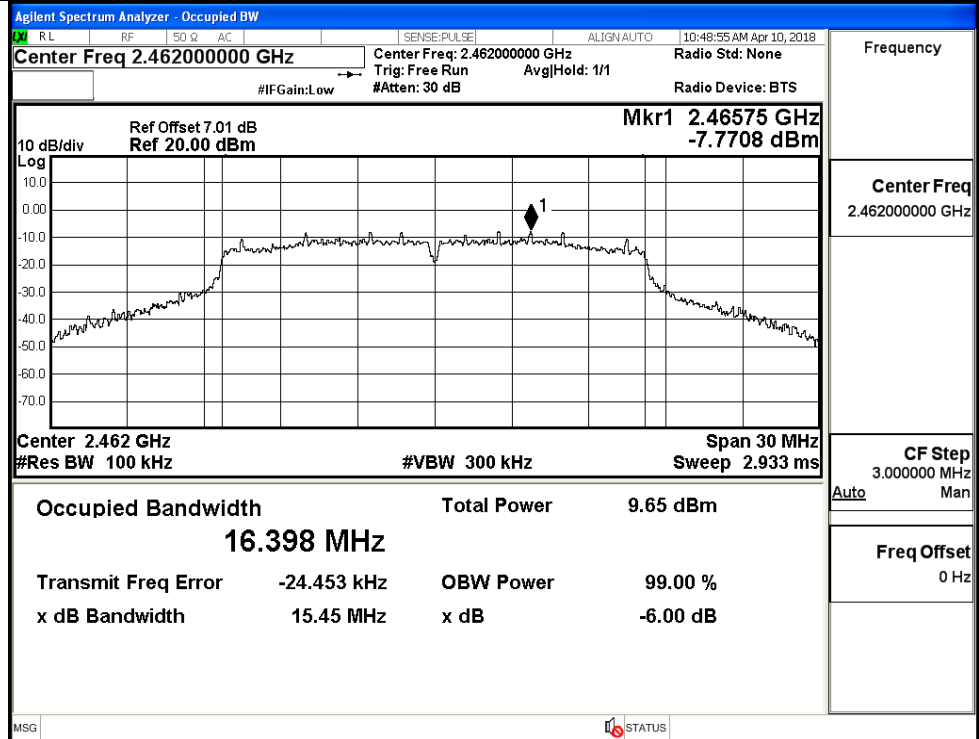
11G/LCH



11G/MCH



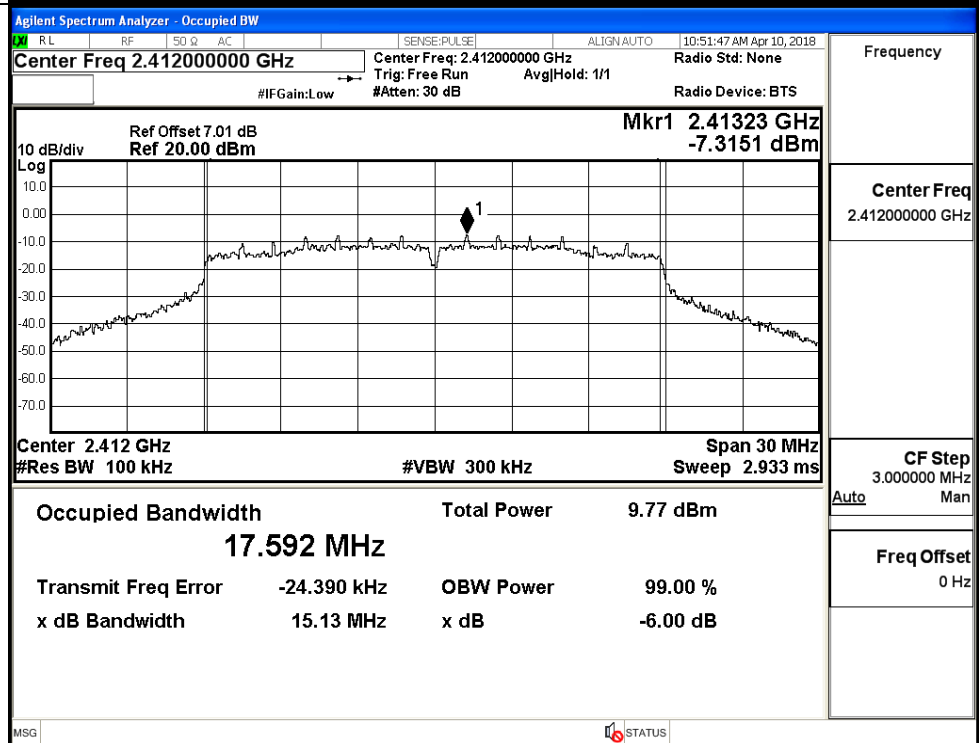
11G/HCH



Frequency

Center Freq  
2.46200000 GHzCF Step  
3.000000 MHz  
Auto ManFreq Offset  
0 Hz

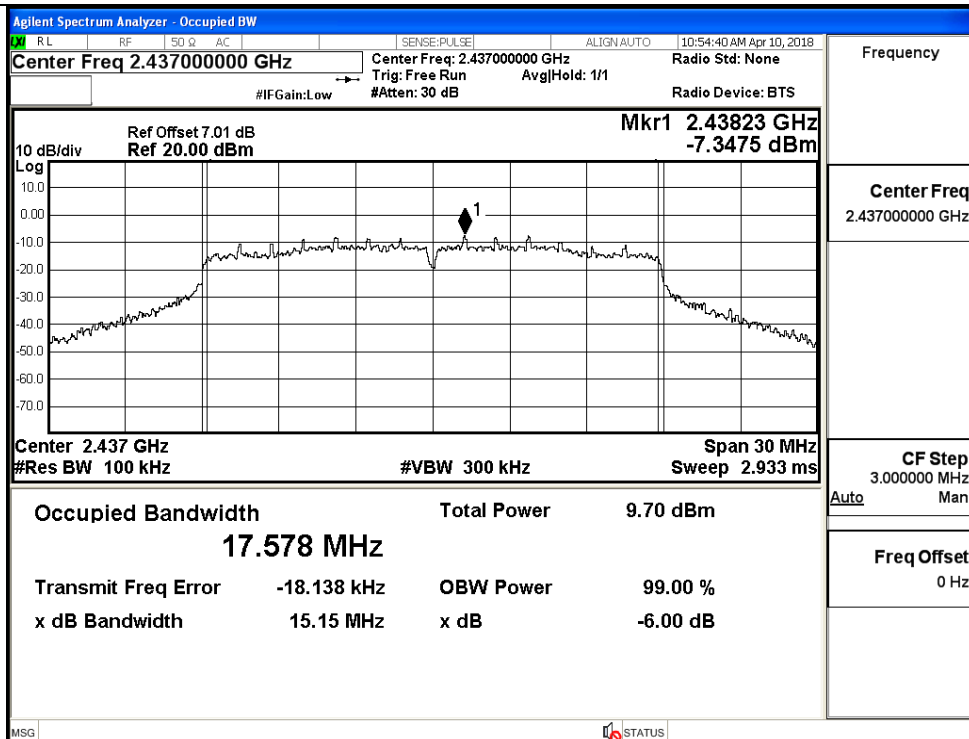
11N20SISO/LCH



Frequency

Center Freq  
2.41200000 GHzCF Step  
3.000000 MHz  
Auto ManFreq Offset  
0 Hz

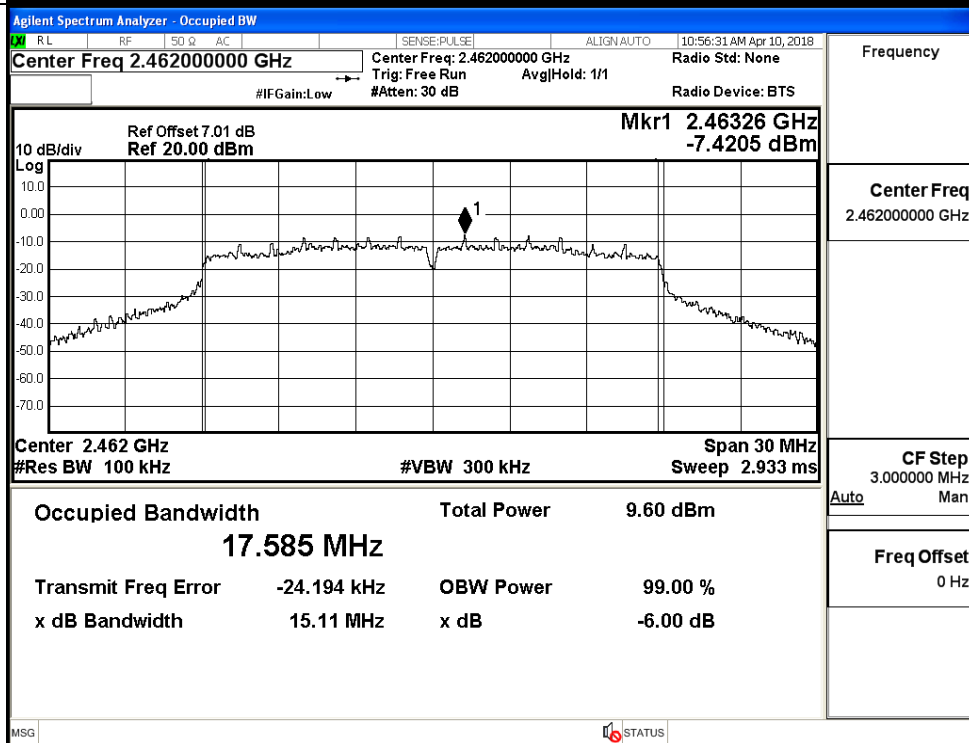
11N20SISO/MCH



Frequency

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

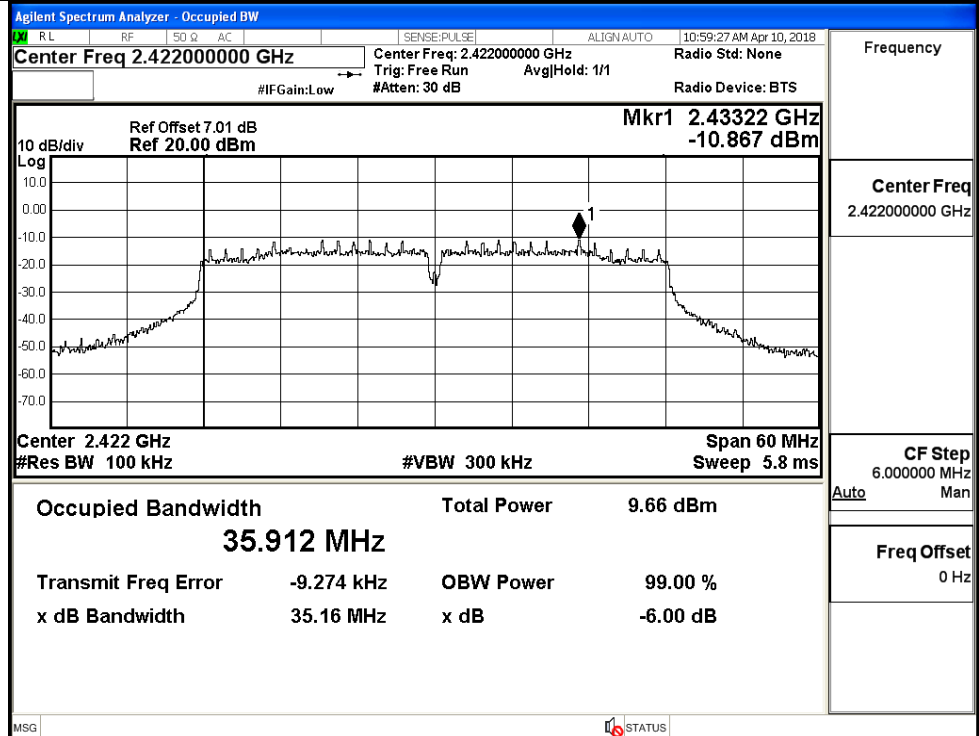
11N20SISO/HCH



Frequency

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

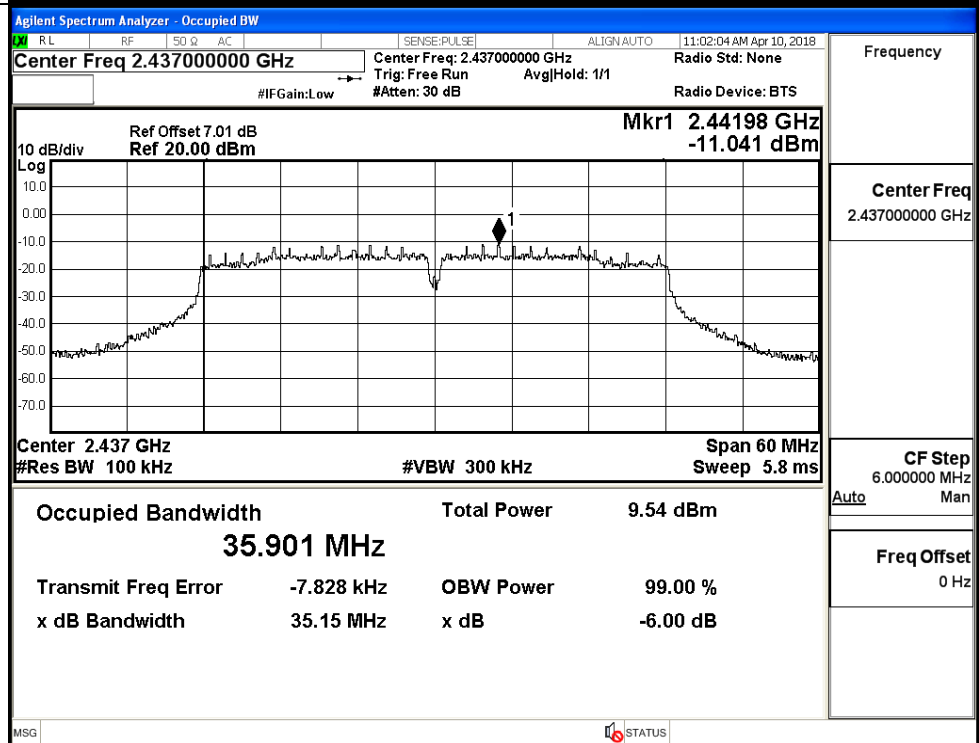
11N40SISO/LCH



Frequency

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

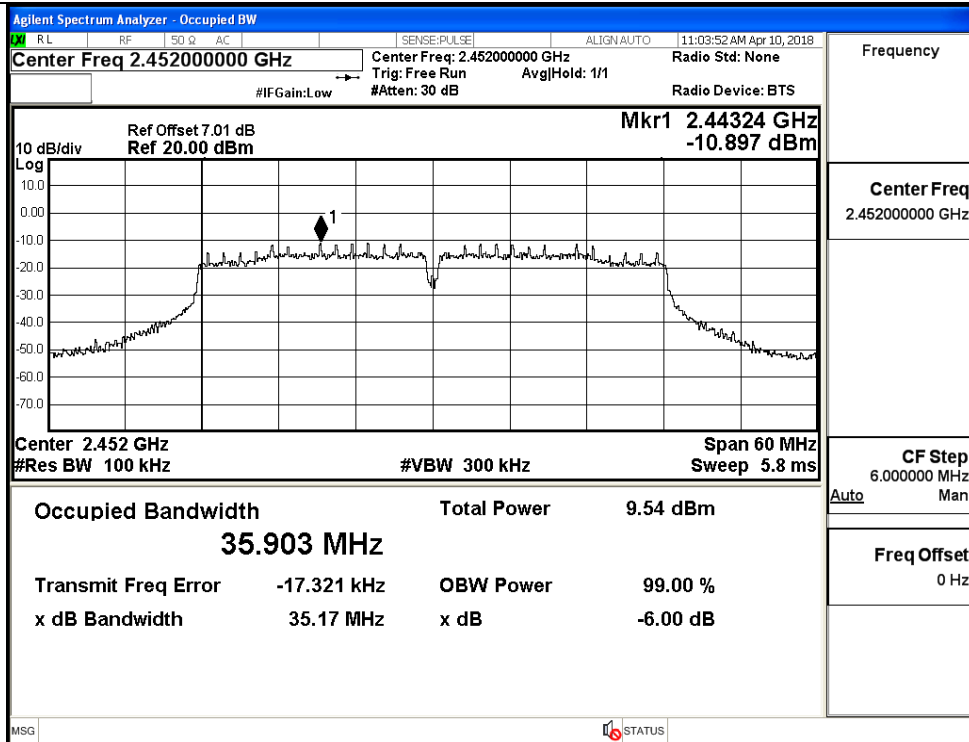
11N40SISO/MCH



Frequency

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

11N40SISO/HCH

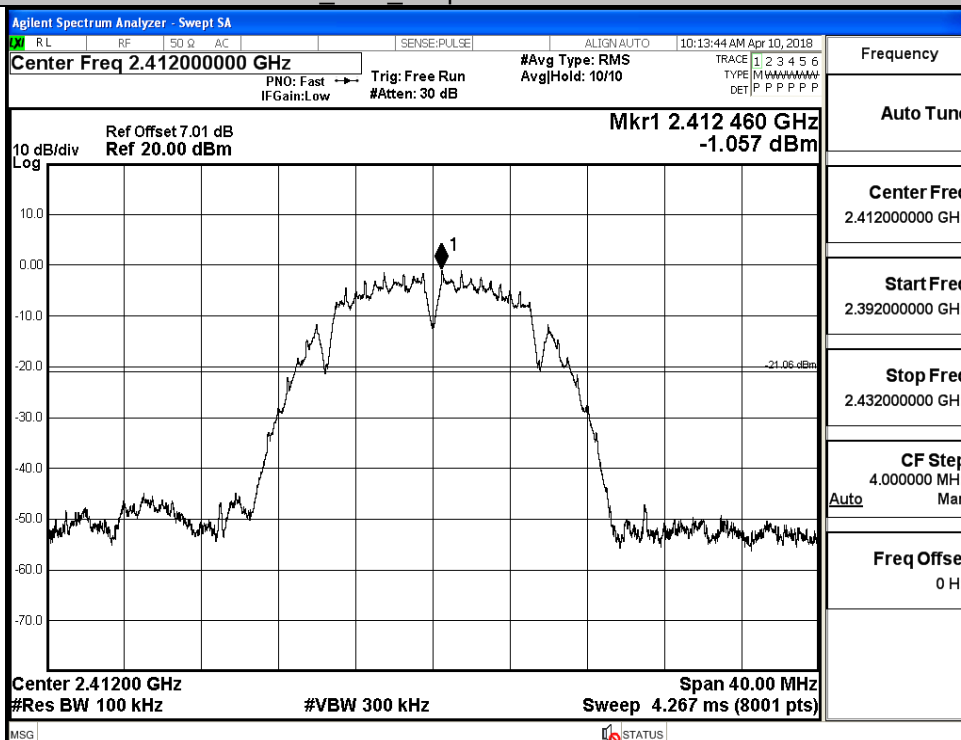


**A.4 RF Conducted Spurious Emissions**

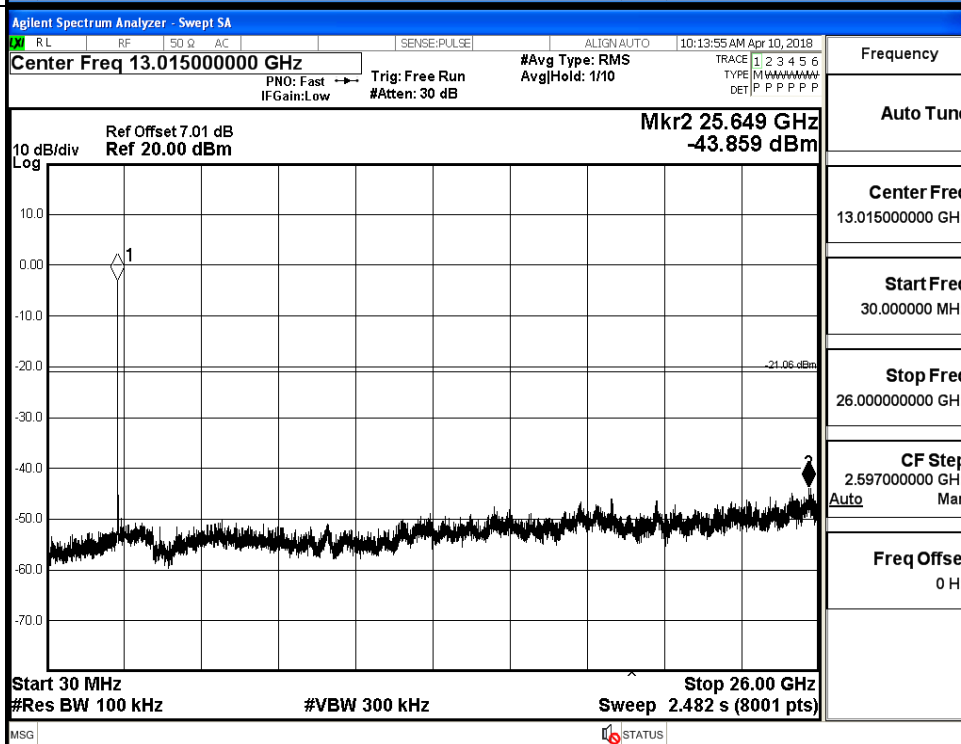
| Mode          | Channel | Pref [dBm] | Max. Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|------------|------------------|-------------|---------|
| 11B           | LCH     | -1.057     | -43.859          | -21.057     | PASS    |
|               | MCH     | -0.661     | -44.313          | -20.661     | PASS    |
|               | HCH     | -1.128     | -44.694          | -21.128     | PASS    |
| 11G           | LCH     | -5.592     | -44.405          | -25.592     | PASS    |
|               | MCH     | -5.79      | -43.326          | -25.790     | PASS    |
|               | HCH     | -7.494     | -44.861          | -27.494     | PASS    |
| 11N20<br>SISO | LCH     | -6.992     | -43.234          | -26.992     | PASS    |
|               | MCH     | -7.312     | -44.038          | -27.312     | PASS    |
|               | HCH     | -7.085     | -44.459          | -27.085     | PASS    |
| 11N40<br>SISO | LCH     | -10.07     | -45.185          | -30.070     | PASS    |
|               | MCH     | -10.486    | -42.639          | -30.486     | PASS    |
|               | HCH     | -10.488    | -44.190          | -30.488     | PASS    |

## 11B LCH Graphs

Pref/11B/LCH

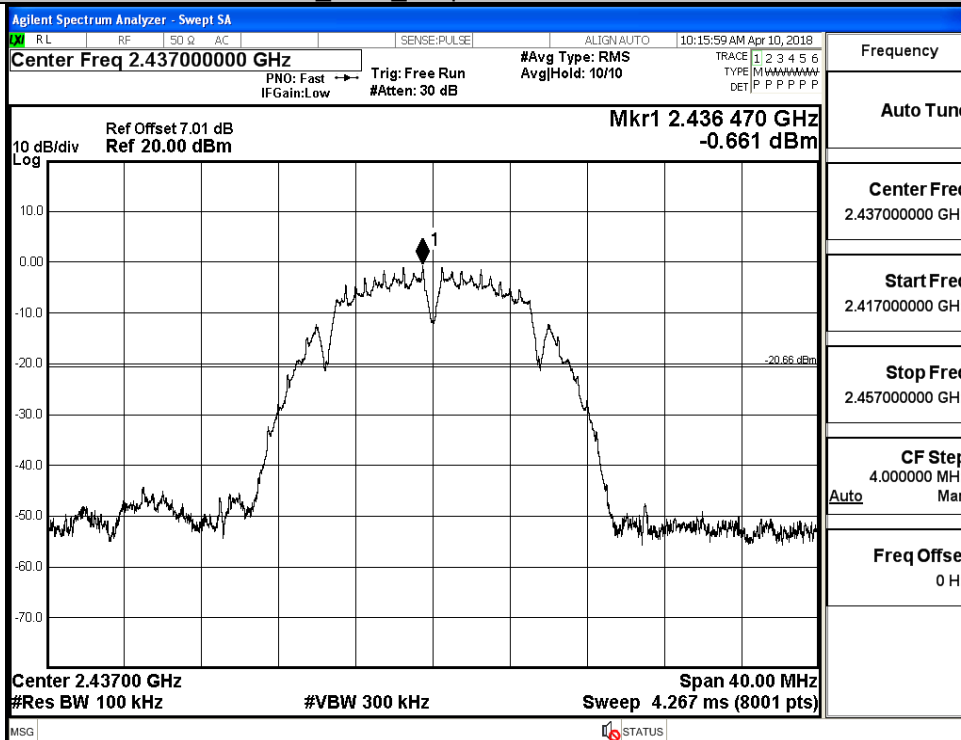


Puw/11B/LCH

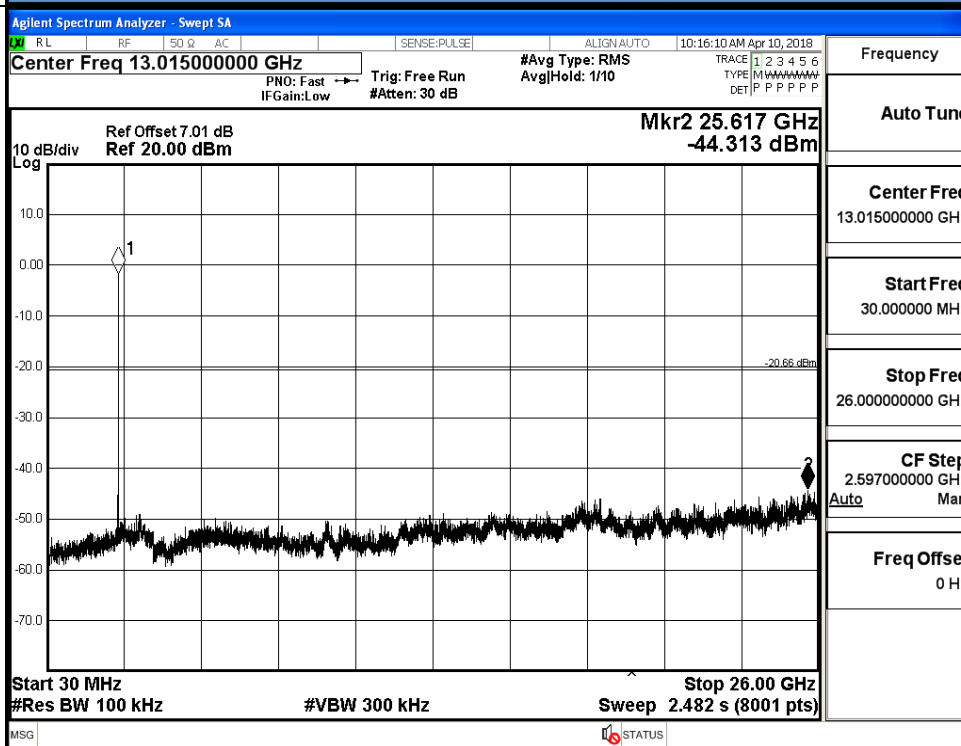


## 11B MCH Graphs

Pref/11B/MCH

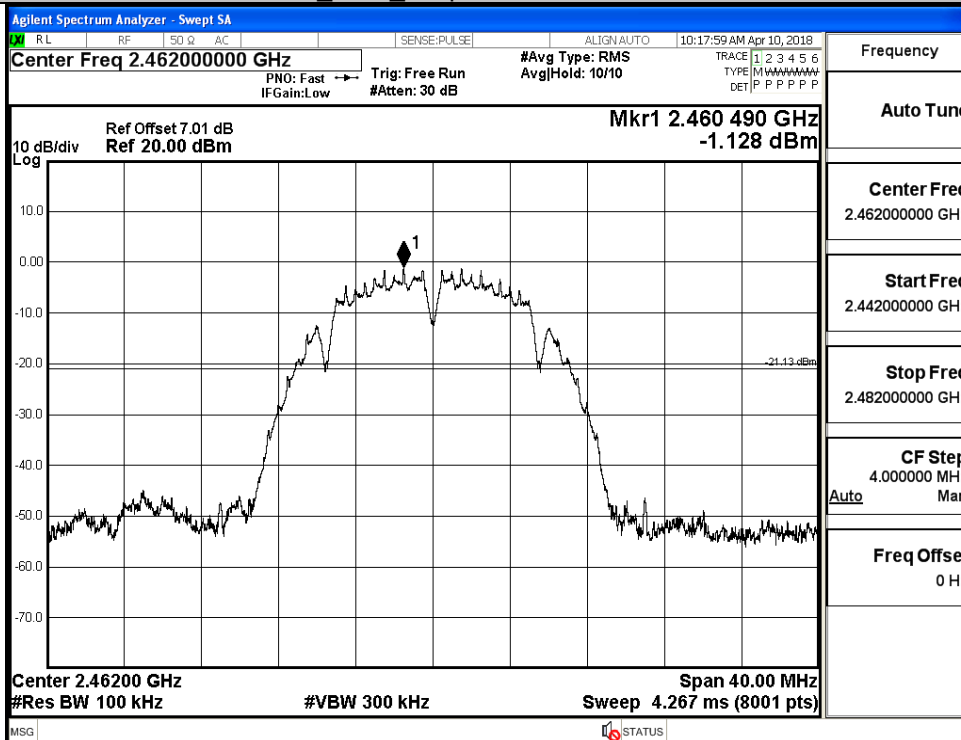


Puw/11B/MCH

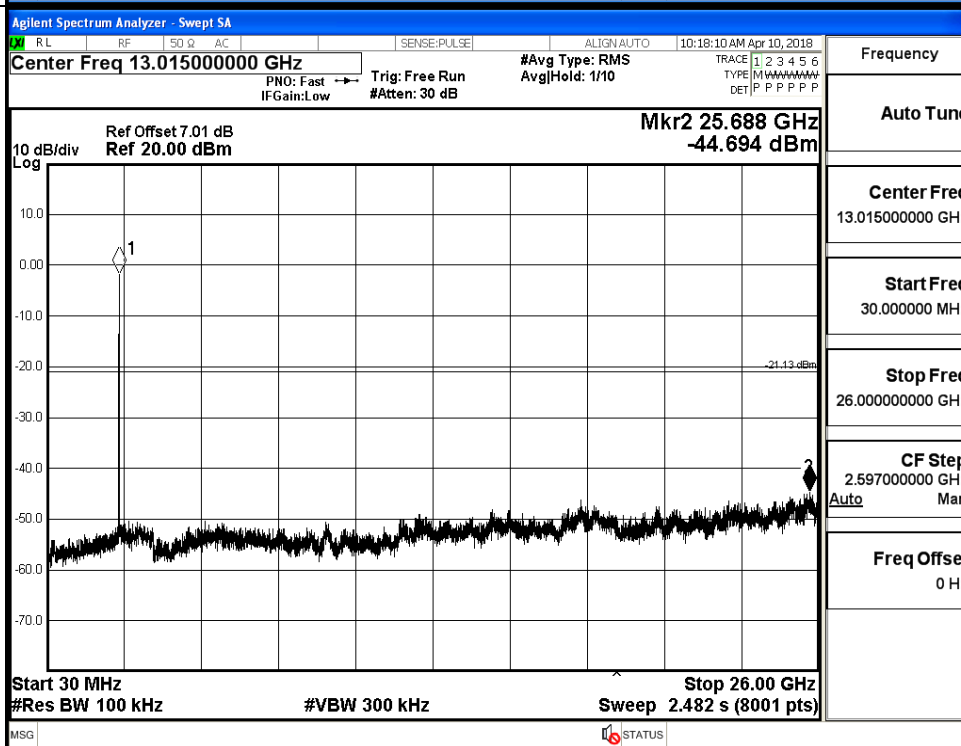


## 11B HCH Graphs

Pref/11B/HCH

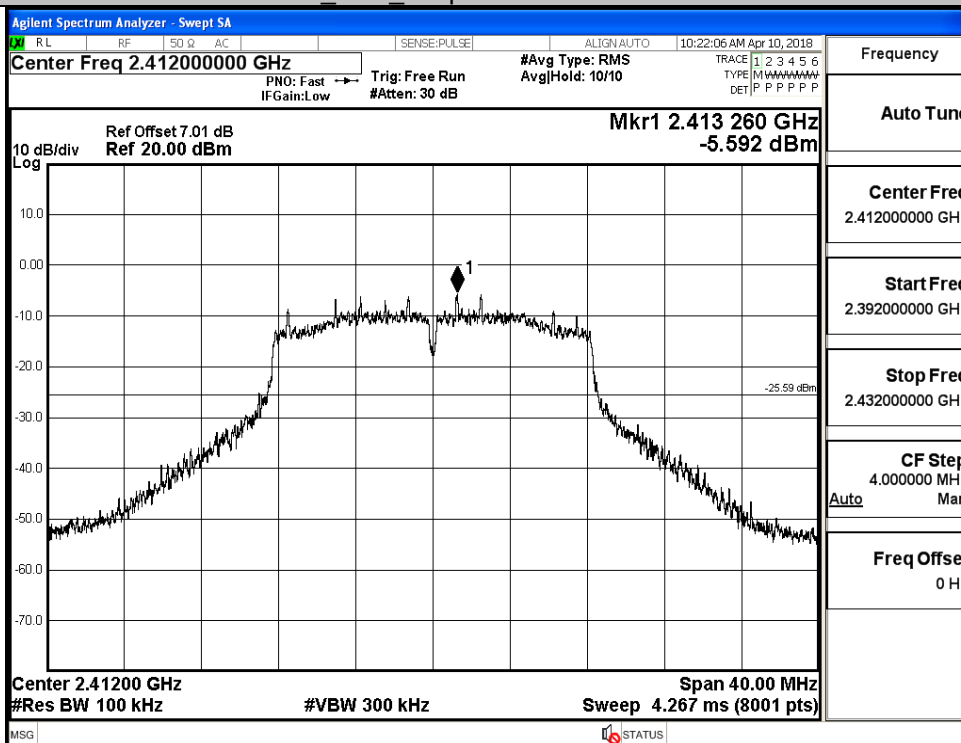


Puw/11B/HCH

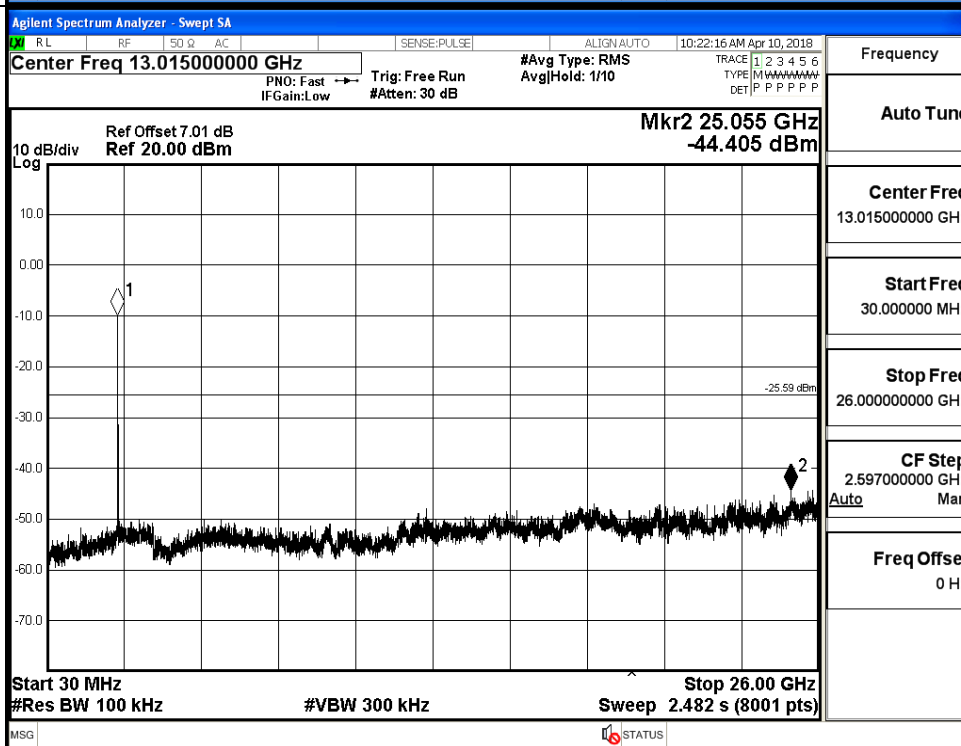


## 11G LCH Graphs

Pref/11G/LCH

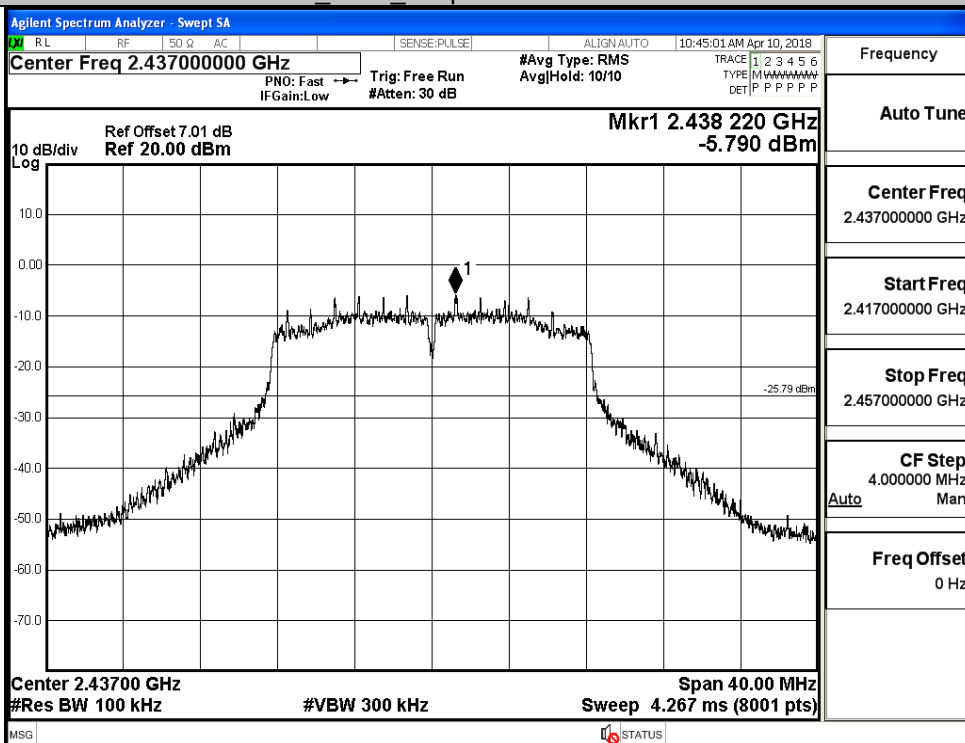


Puw/11G/LCH

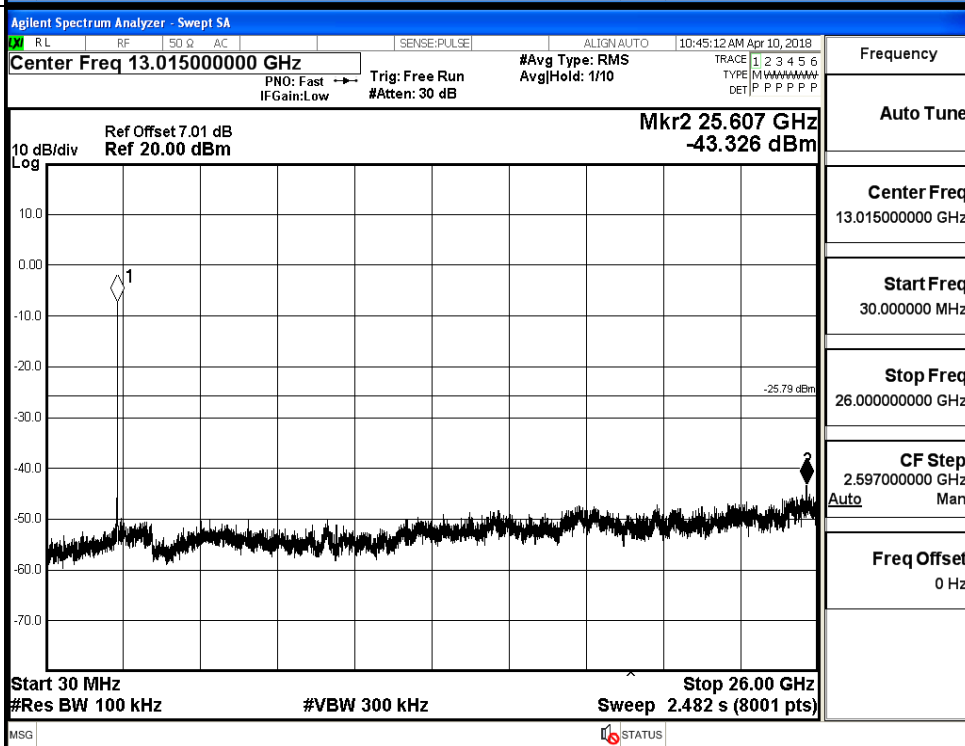


## 11G MCH Graphs

Pref/11G/MCH

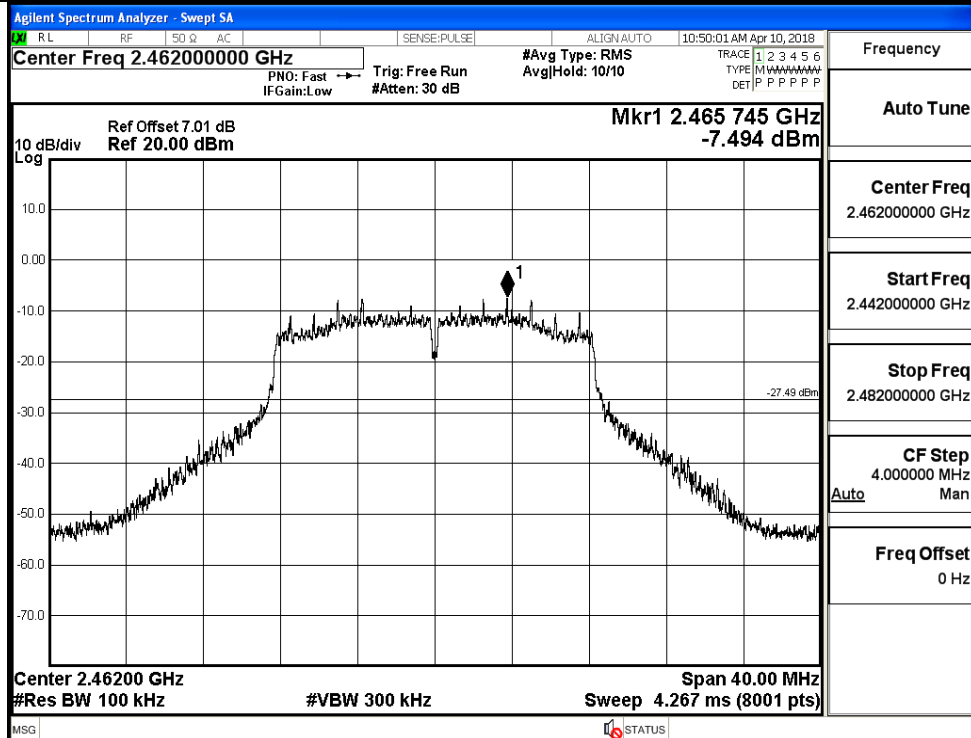


Puw/11G/MCH

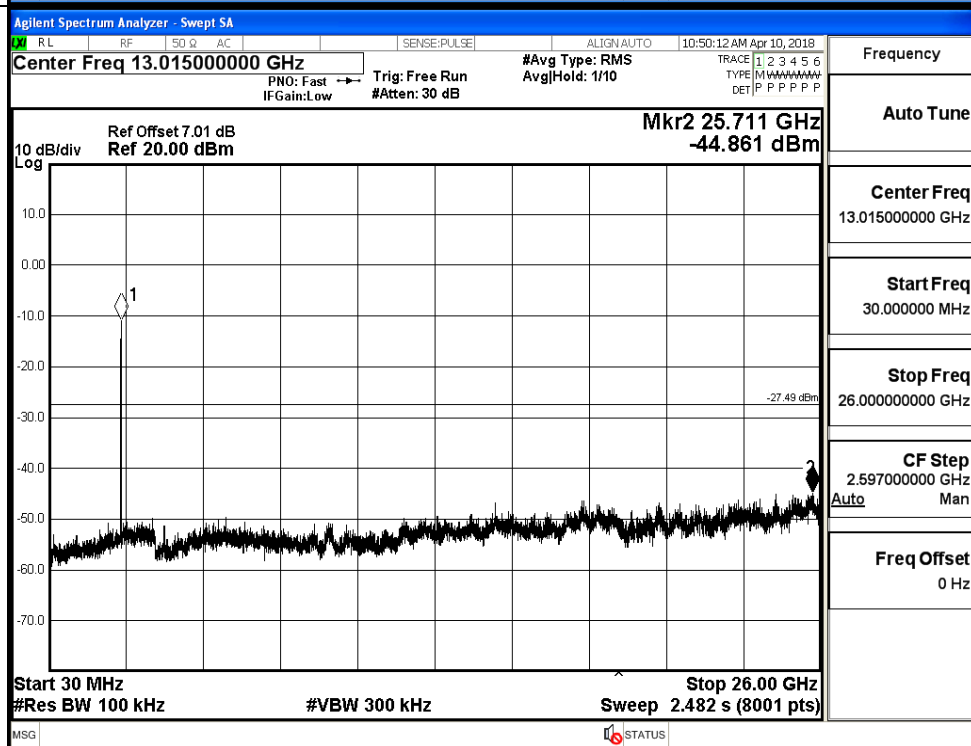


## 11G HCH Graphs

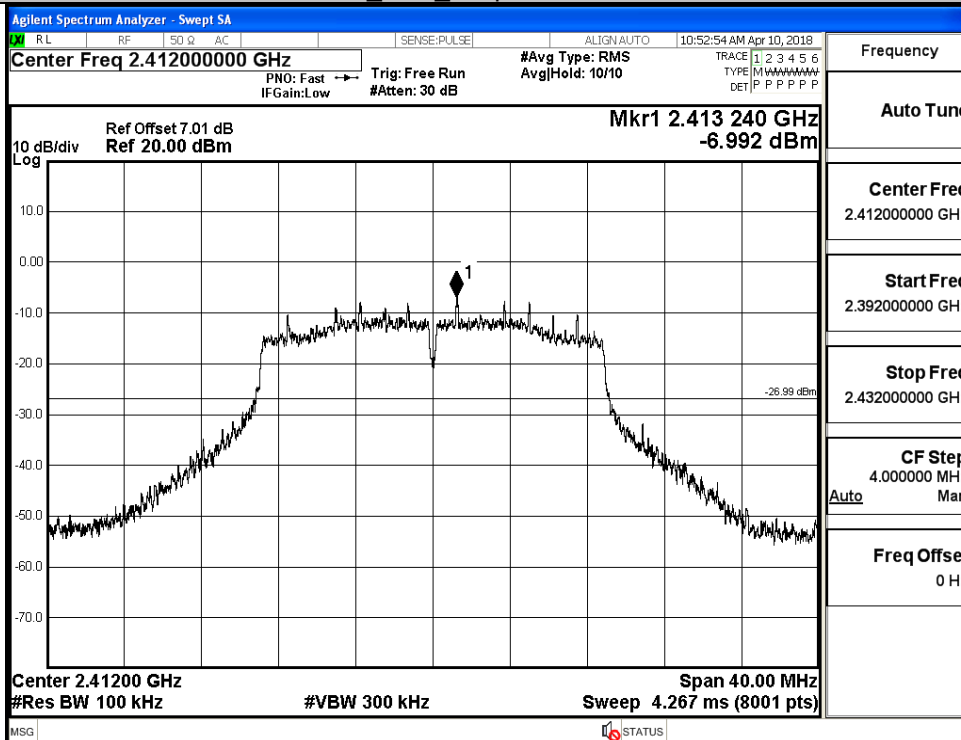
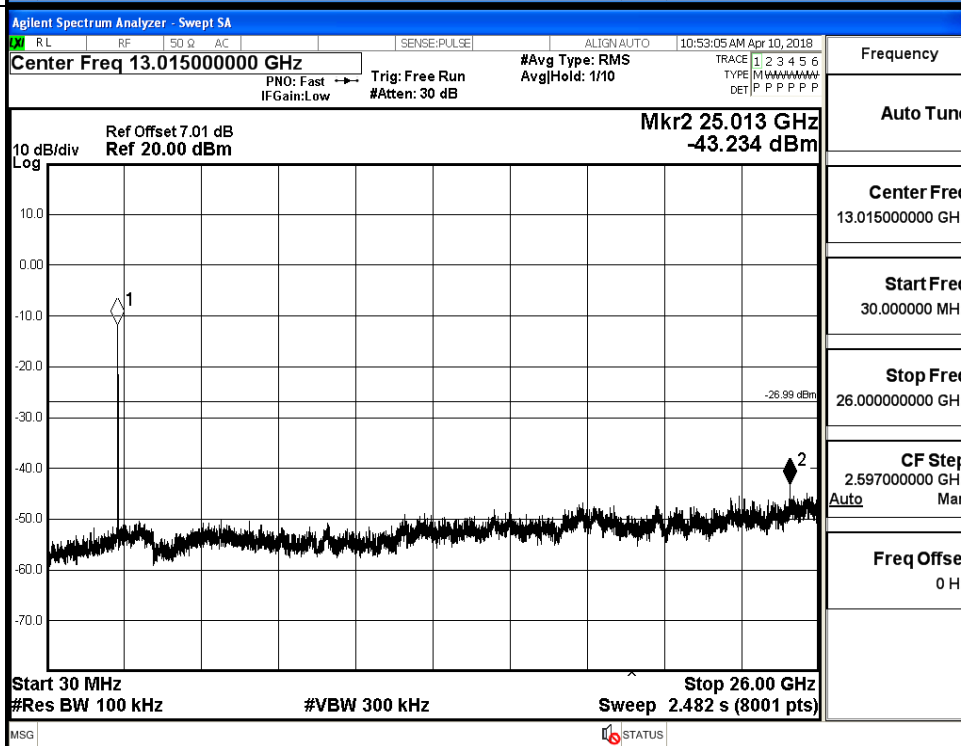
Pref/11G/HCH



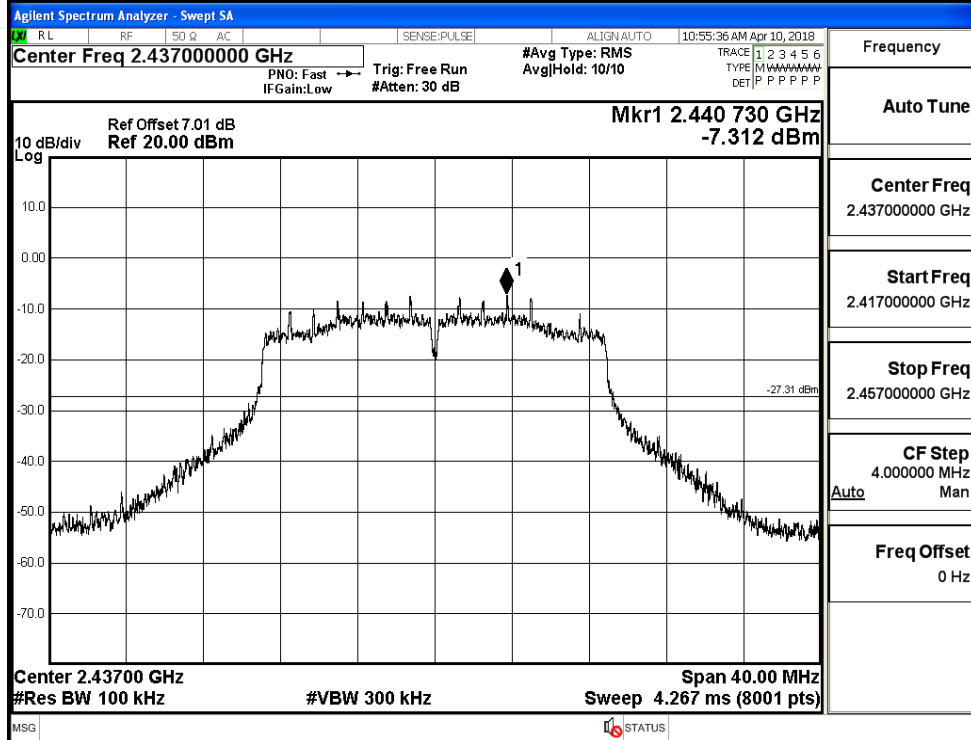
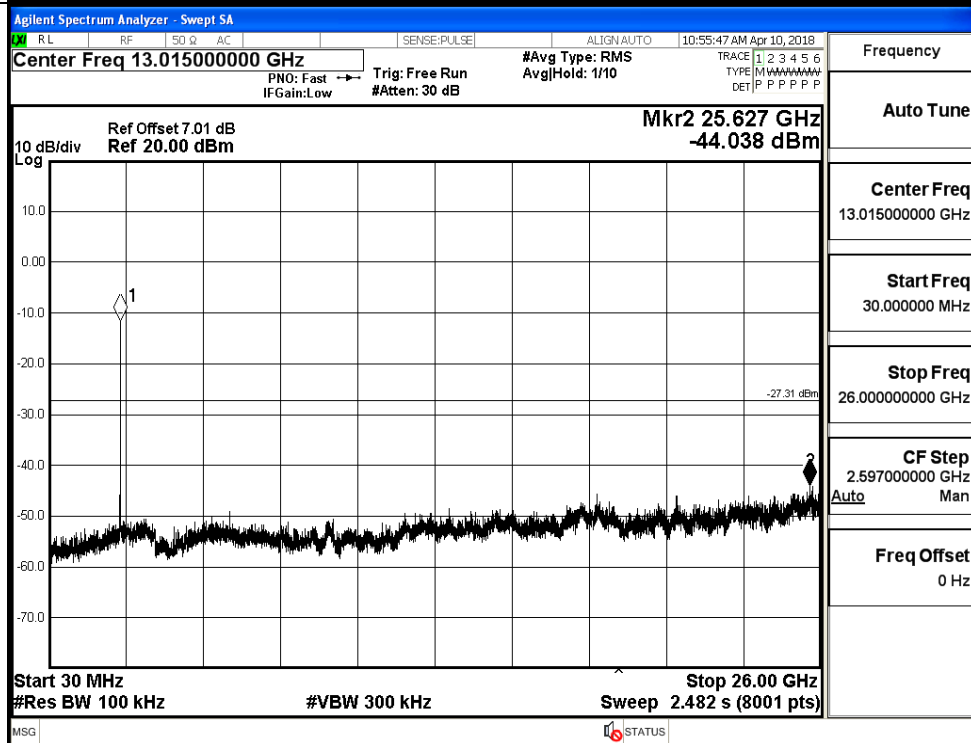
Puw/11G/HCH



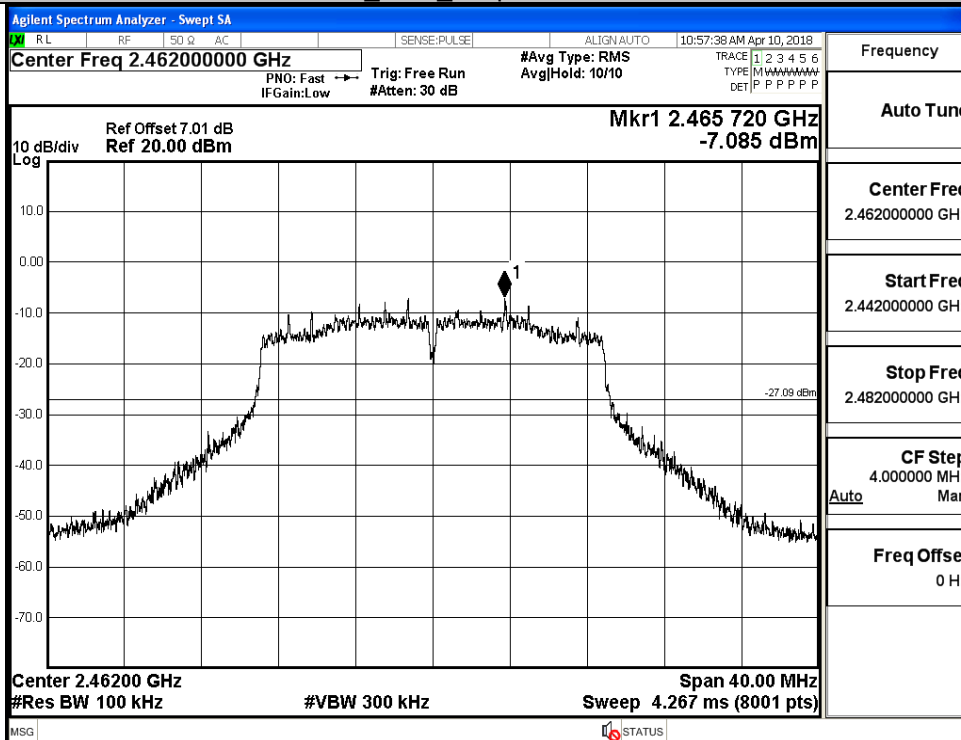
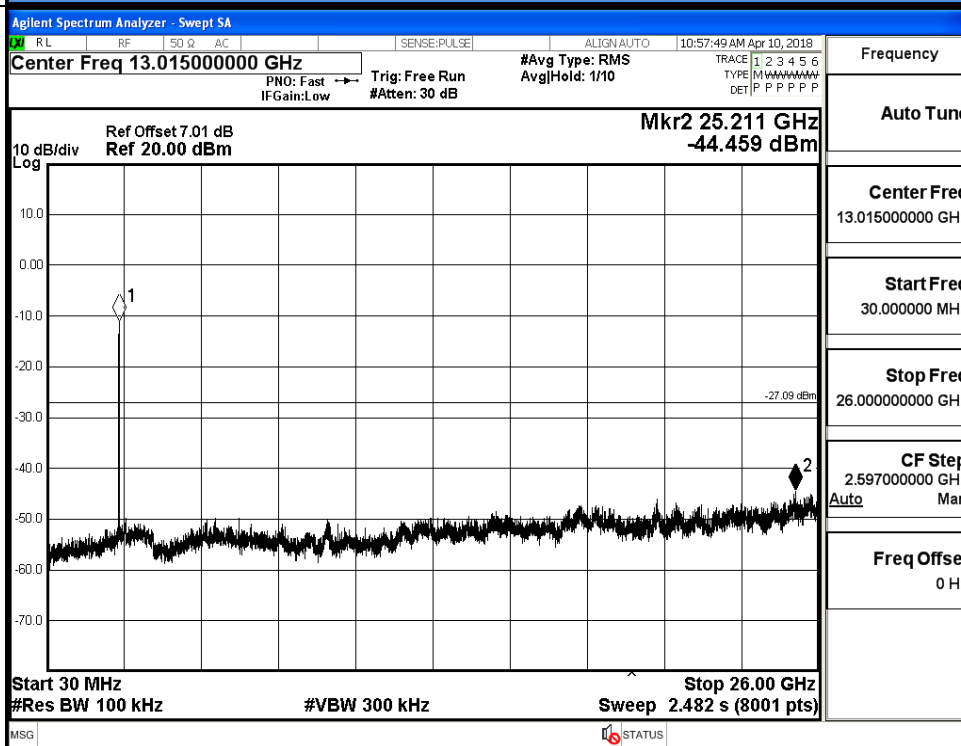
## 11N20SISO LCH Graphs

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

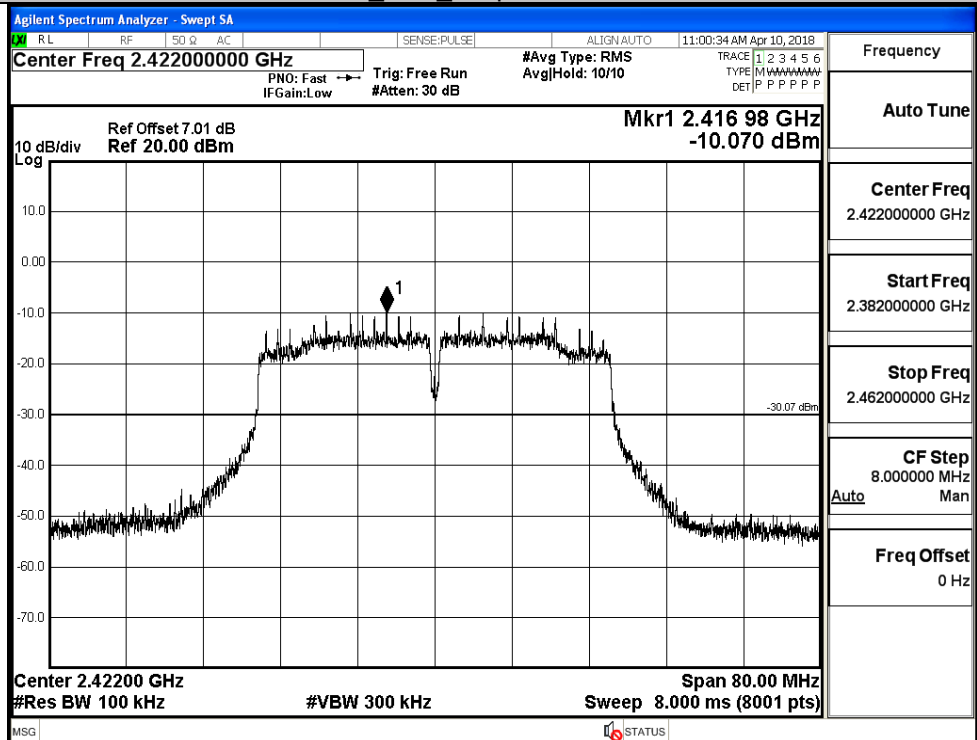
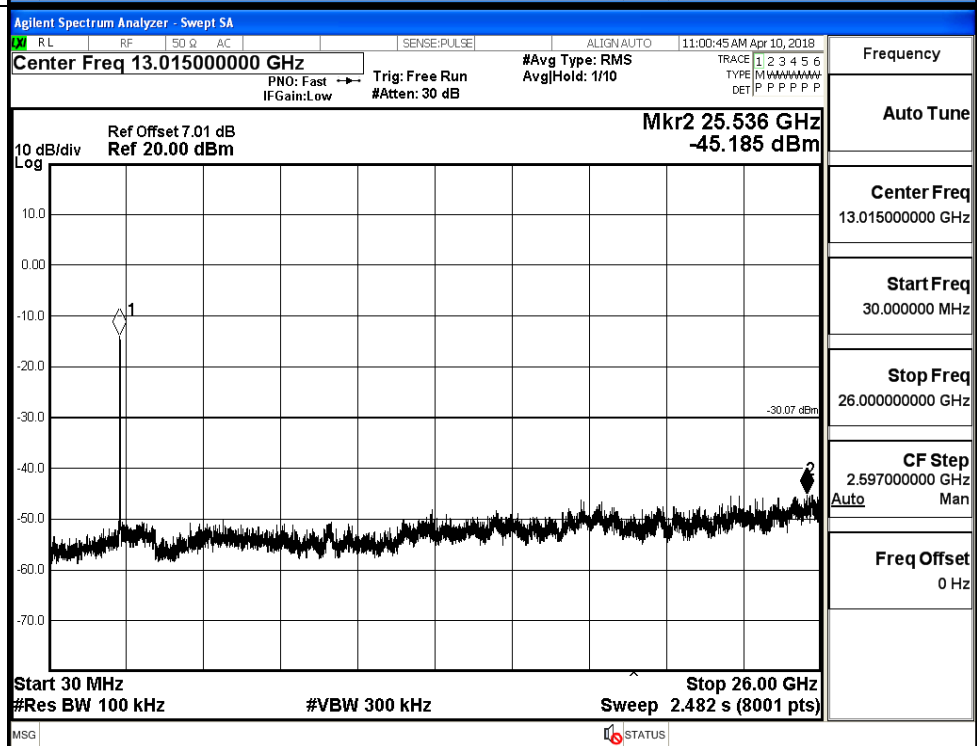
## 11N20SISO\_MCH\_Graphs

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

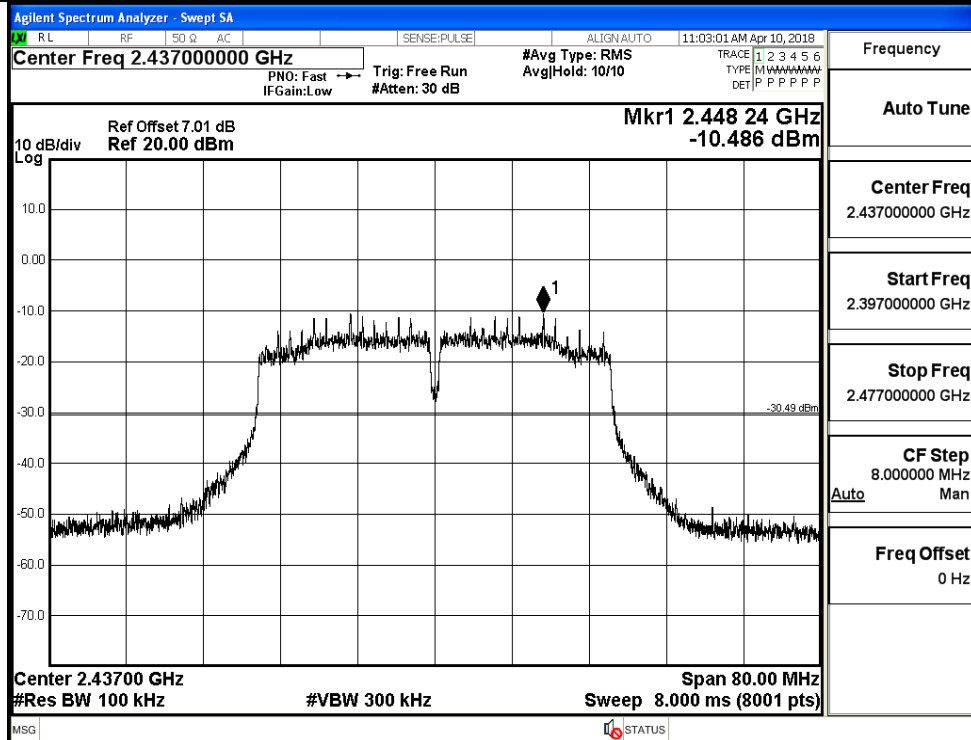
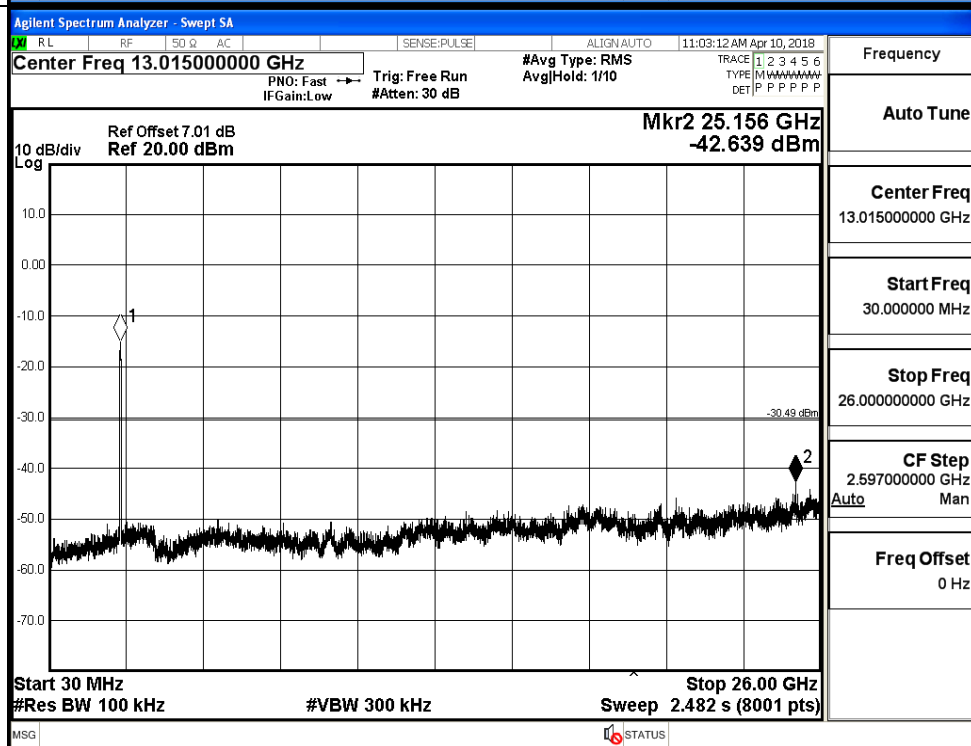
## 11N20SISO HCH Graphs

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

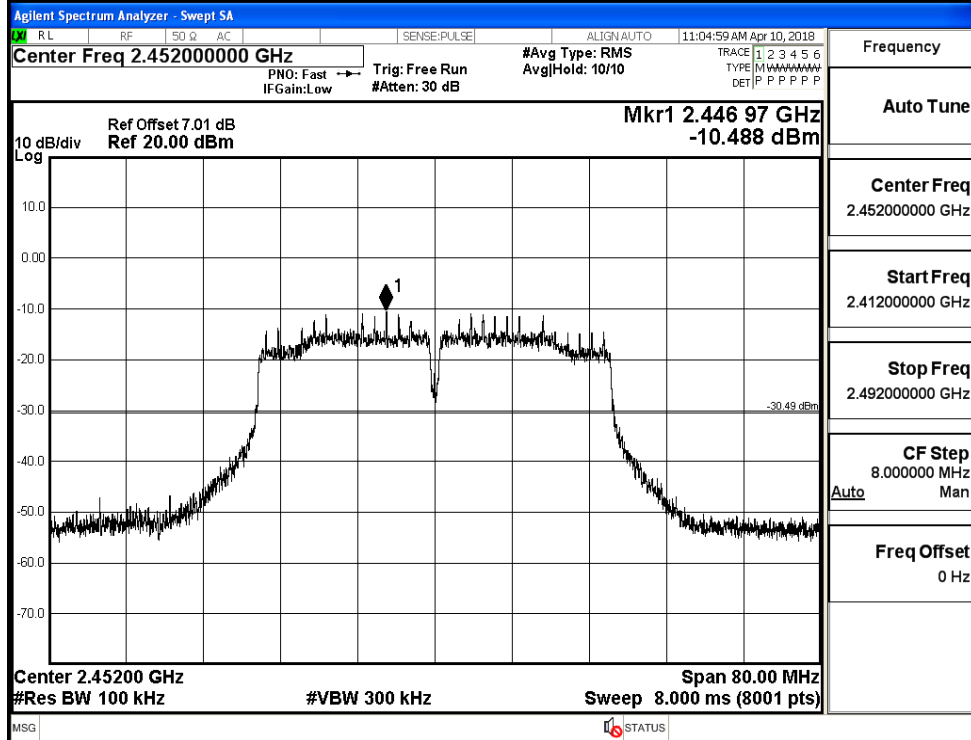
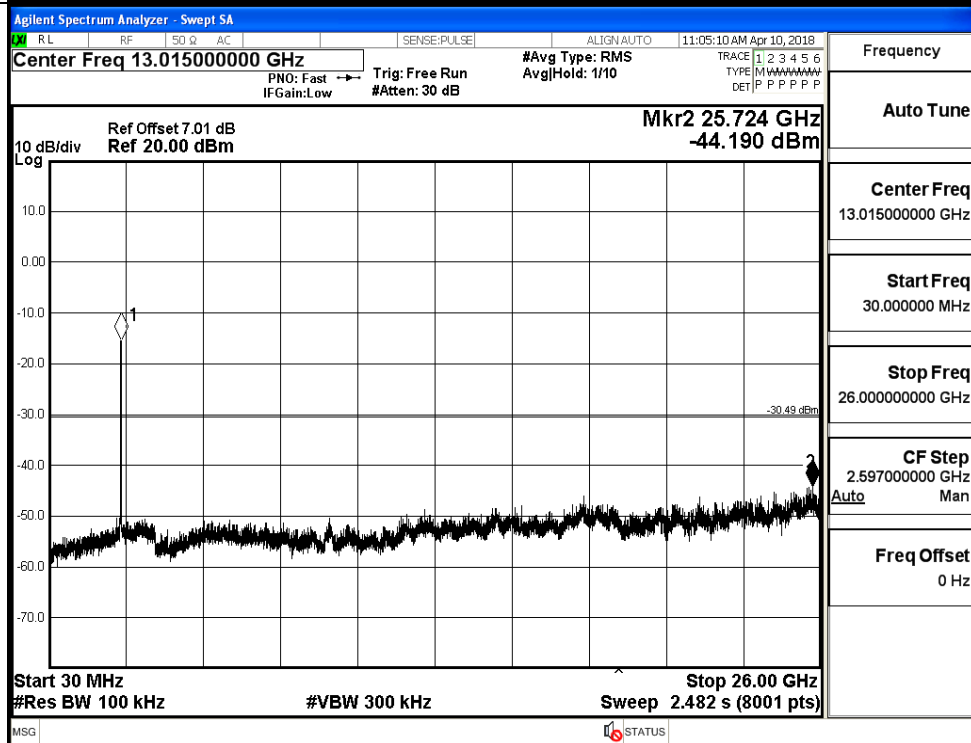
## 11N40SISO LCH Graphs

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

## 11N40SISO\_MCH\_Graphs

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

## 11N40SISO HCH Graphs

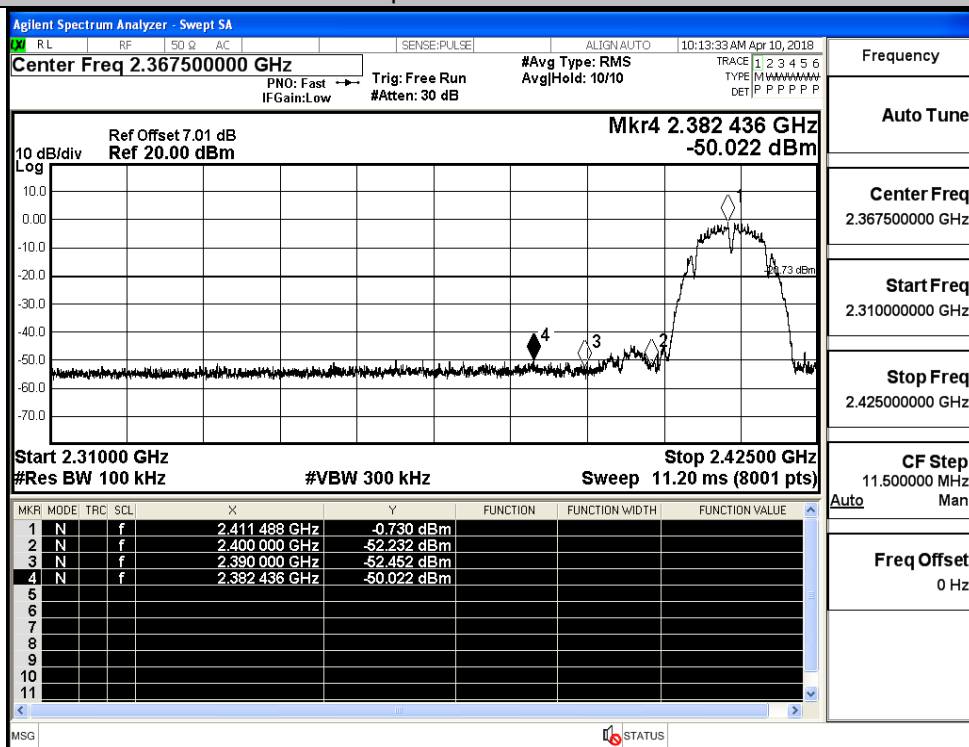
Pref/11N40  
SISO/HCHPuw/11N40  
SISO/HCH

## A.5 Band-edge for RF Conducted Emissions

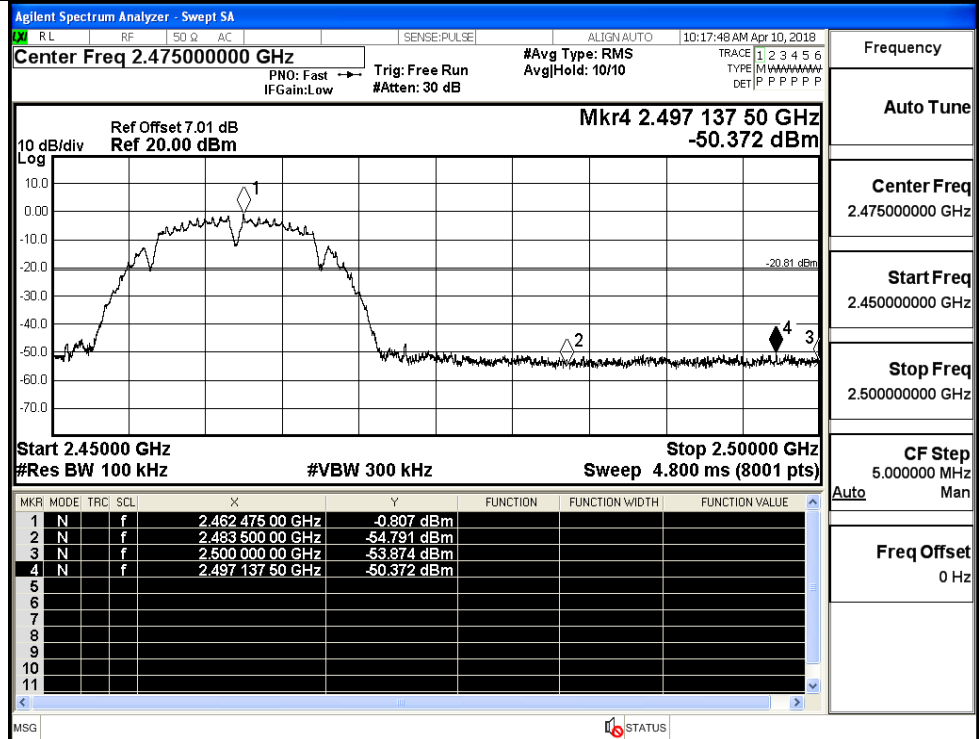
| Mode      | Channel | Carrier Power[dBm] | Max.Spurious Level [dBm] | Limit [dBm] | Verdict |
|-----------|---------|--------------------|--------------------------|-------------|---------|
| 11B       | LCH     | -0.730             | -50.022                  | -20.73      | PASS    |
|           | HCH     | -0.807             | -50.372                  | -20.81      | PASS    |
| 11G       | LCH     | -5.419             | -50.260                  | -25.42      | PASS    |
|           | HCH     | -7.715             | -51.195                  | -27.72      | PASS    |
| 11N20SISO | LCH     | -7.539             | -51.068                  | -27.54      | PASS    |
|           | HCH     | -6.733             | -50.613                  | -26.73      | PASS    |
| 11N40SISO | LCH     | -10.074            | -47.779                  | -30.07      | PASS    |
|           | HCH     | -10.570            | -50.030                  | -30.57      | PASS    |

## Test Graphs

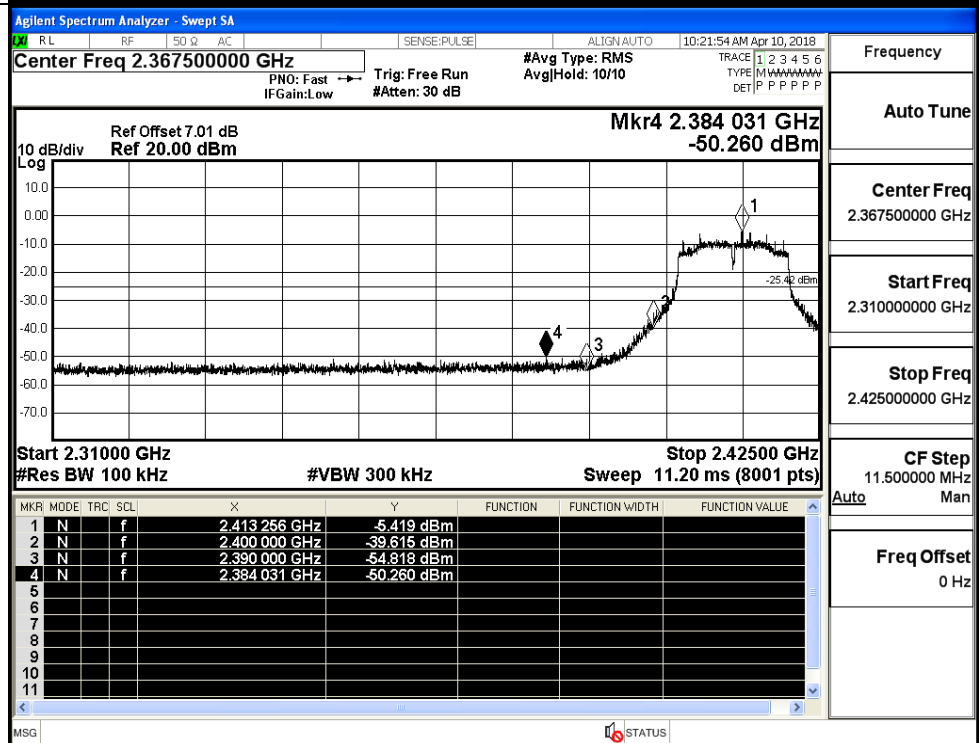
11B/LCH



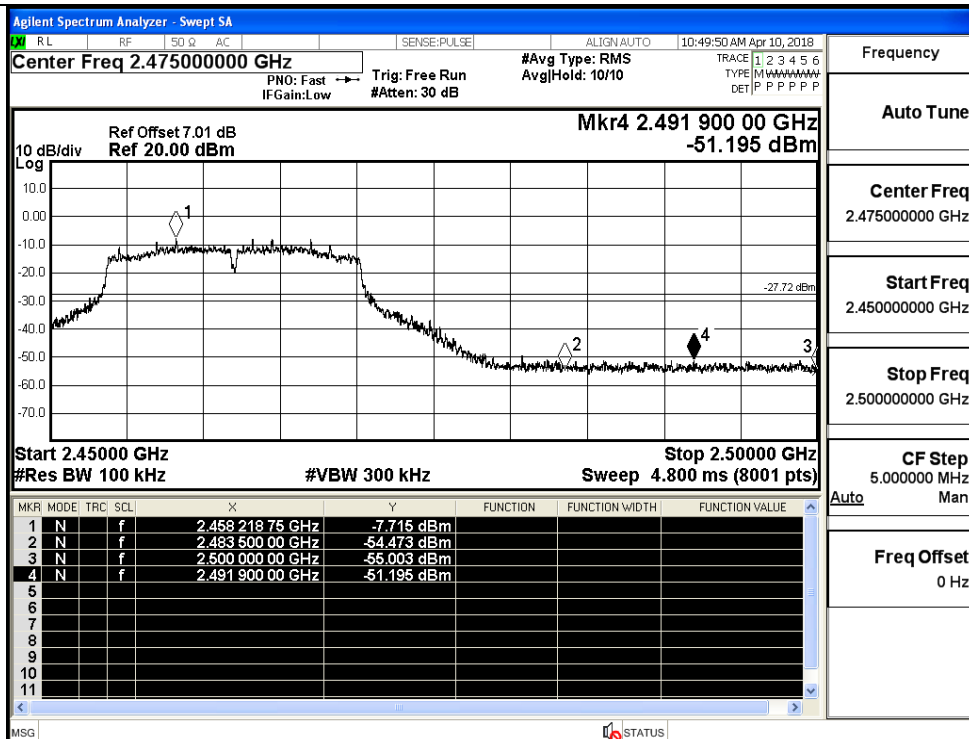
11B/HCH



11G/LCH



11G/HCH



Frequency

Auto Tune

Center Freq

2.475000000 GHz

Start Freq

2.450000000 GHz

Stop Freq

2.500000000 GHz

CF Step

5.000000 MHz

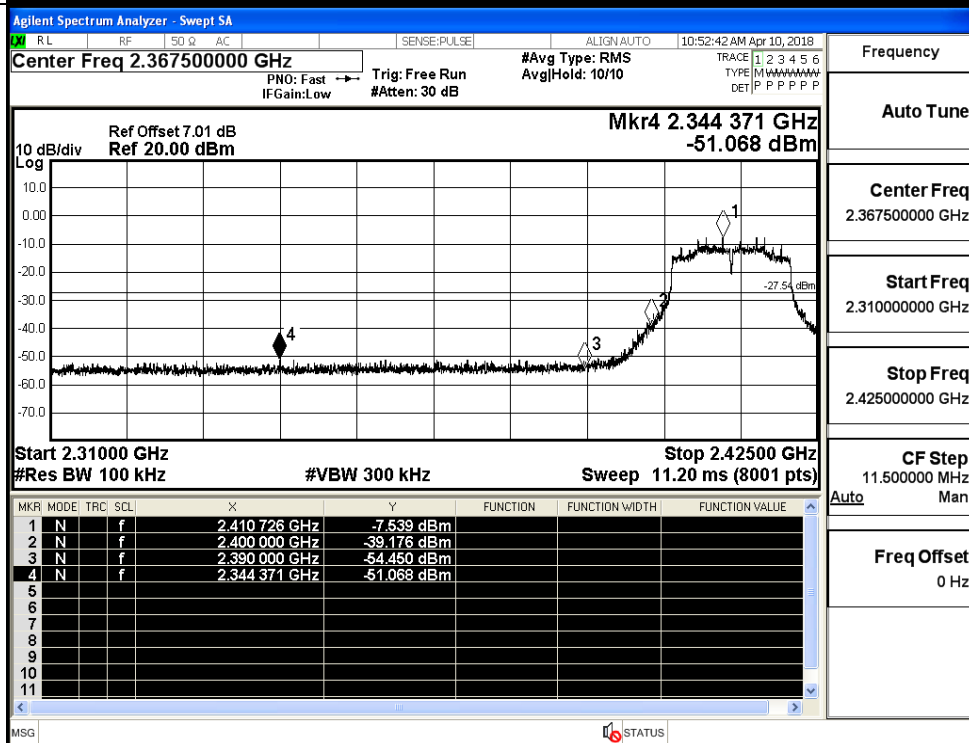
Auto

Man

Freq Offset

0 Hz

11N20SISO/LCH



Frequency

Auto Tune

Center Freq

2.367500000 GHz

Start Freq

2.310000000 GHz

Stop Freq

2.425000000 GHz

CF Step

11.500000 MHz

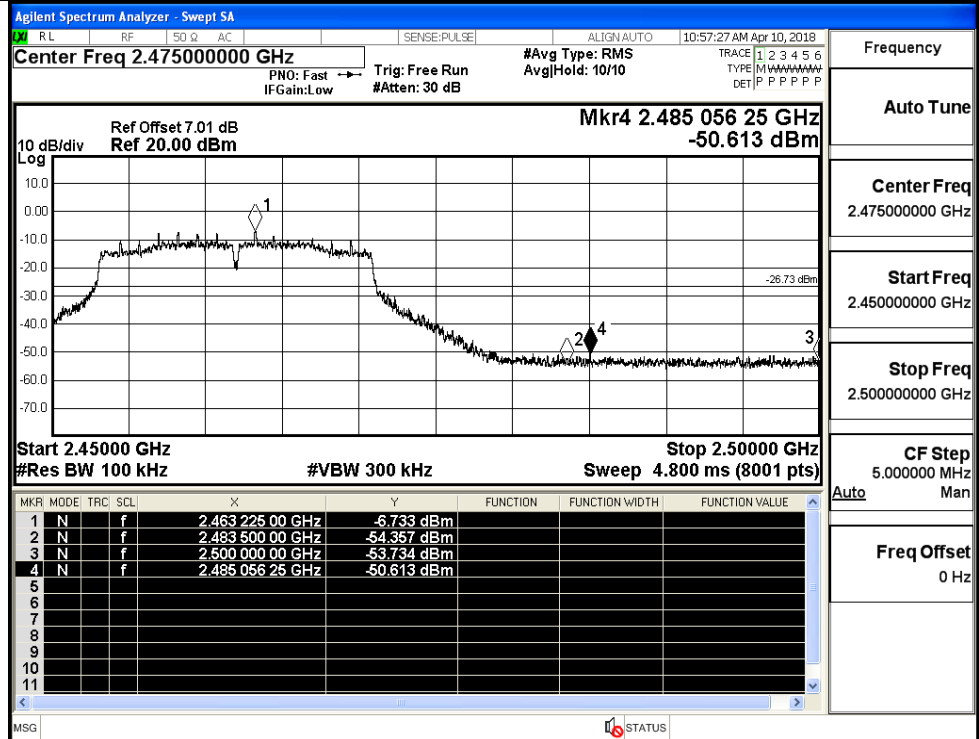
Auto

Man

Freq Offset

0 Hz

11N20SISO/HCH



Frequency

Auto Tune

Center Freq

2.475000000 GHz

Start Freq

2.450000000 GHz

Stop Freq

2.500000000 GHz

CF Step

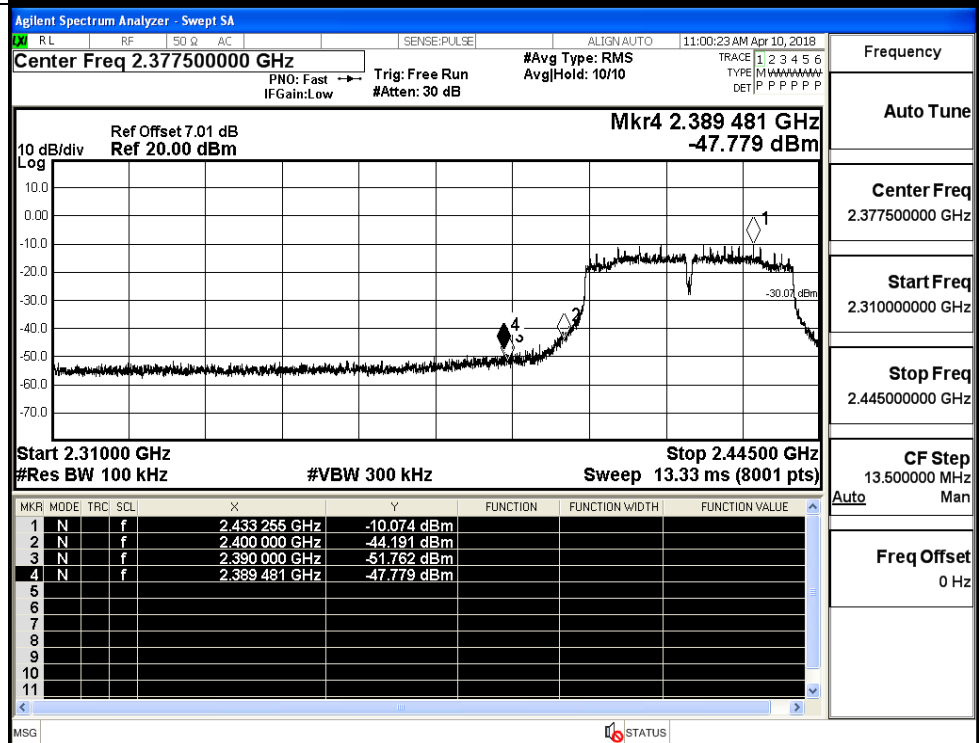
5.000000 MHz

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

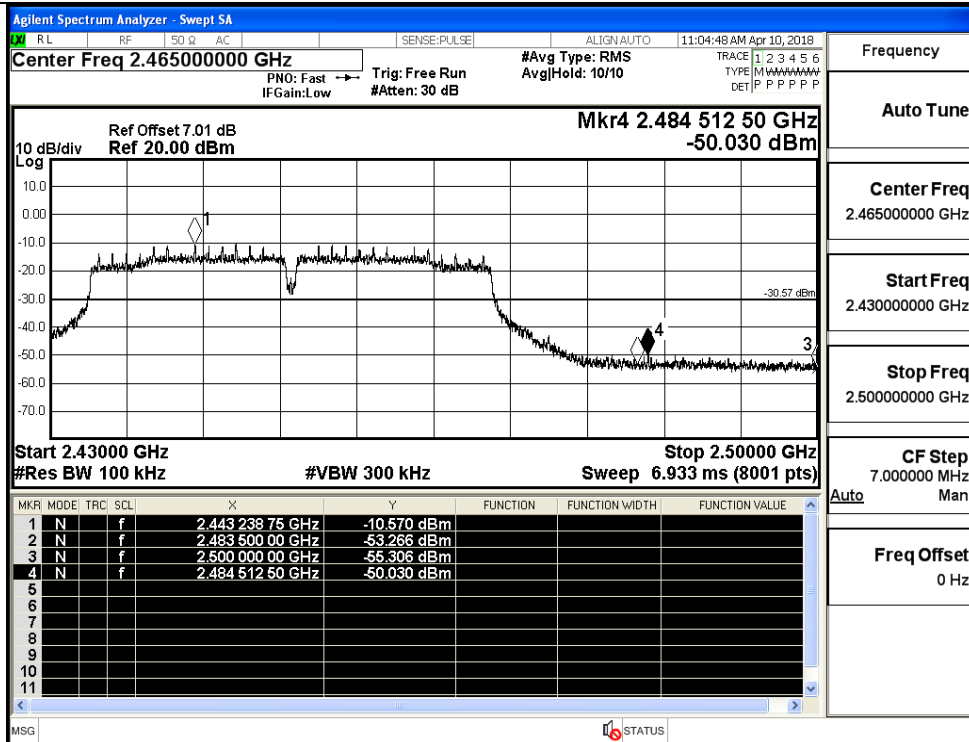
13.500000 MHz

Auto

Freq Offset

0 Hz

11N40SISO/HCH



Frequency

Auto Tune

Center Freq  
2.465000000 GHz

Start Freq  
2.430000000 GHz

Stop Freq  
2.500000000 GHz

CF Step  
7.000000 MHz  
Auto Man

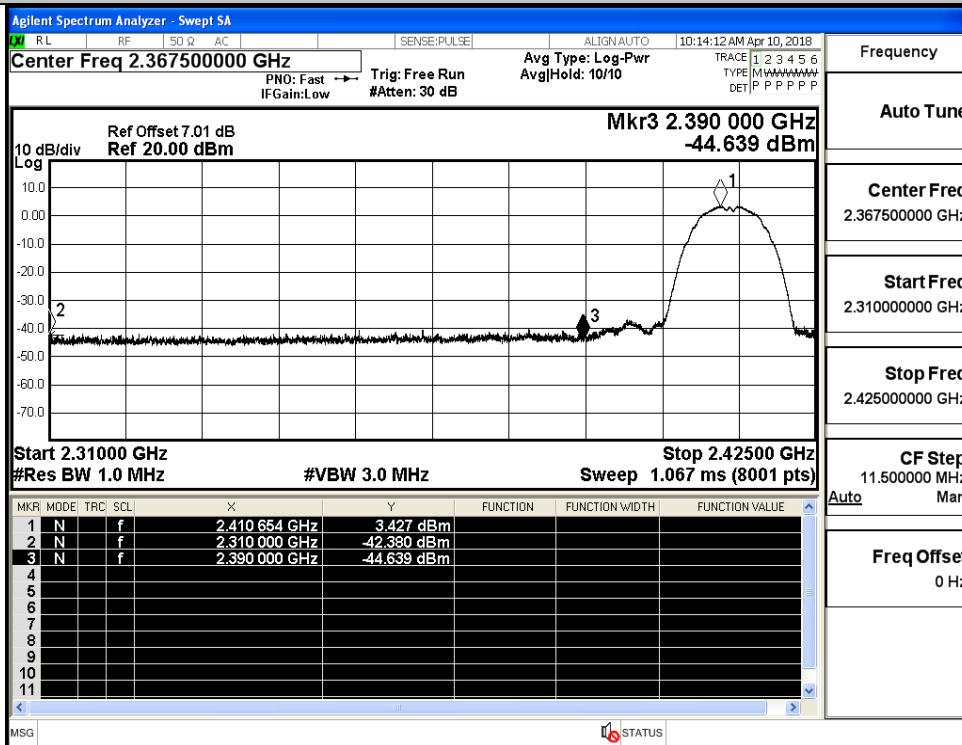
Freq Offset  
0 Hz

## A.6 Restrict-band band-edge measurements

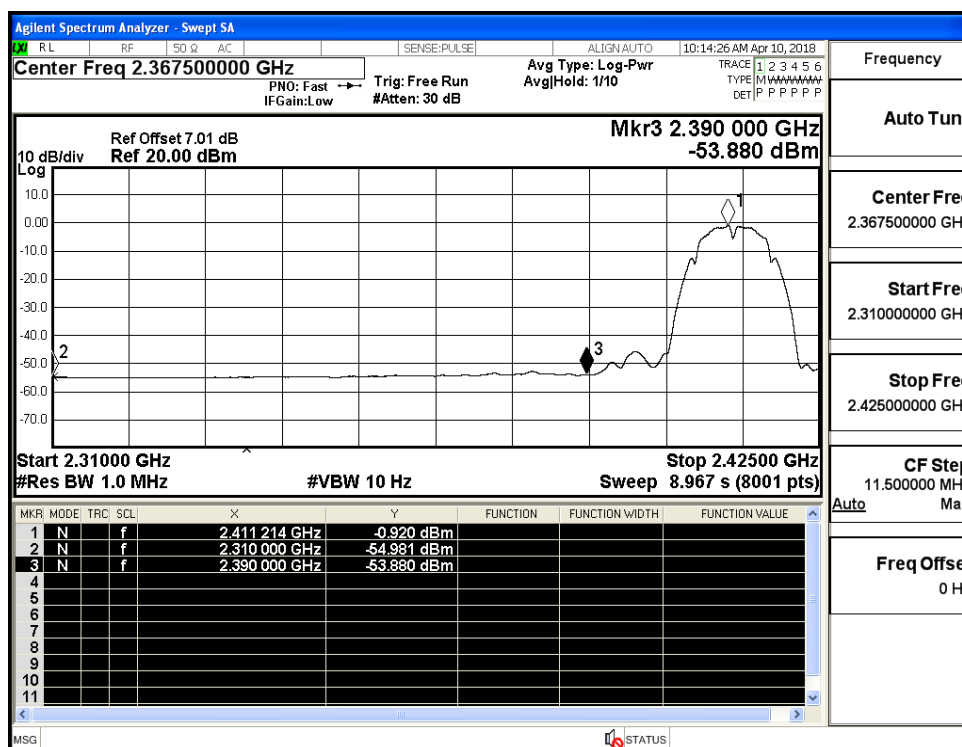
| Test Mode     | Test Channel | Ant  | Freq.  | Power [dBm] | Gain | Ground Factor | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|---------------|--------------|------|--------|-------------|------|---------------|------------|----------|----------------|---------|
| 11B           | 2412         | Ant1 | 2310.0 | -42.38      | 3.0  | 0             | 55.82      | PEAK     | 74             | PASS    |
|               | 2412         | Ant1 | 2310.0 | -54.98      | 3.0  | 0             | 43.22      | AV       | 54             | PASS    |
|               | 2412         | Ant1 | 2390.0 | -44.64      | 3.0  | 0             | 53.56      | PEAK     | 74             | PASS    |
|               | 2412         | Ant1 | 2390.0 | -53.88      | 3.0  | 0             | 44.32      | AV       | 54             | PASS    |
|               | 2462         | Ant1 | 2483.5 | -42.86      | 3.0  | 0             | 55.34      | PEAK     | 74             | PASS    |
|               | 2462         | Ant1 | 2483.5 | -54.10      | 3.0  | 0             | 44.10      | AV       | 54             | PASS    |
|               | 2462         | Ant1 | 2500.0 | -44.14      | 3.0  | 0             | 54.06      | PEAK     | 74             | PASS    |
|               | 2462         | Ant1 | 2500.0 | -53.64      | 3.0  | 0             | 44.56      | AV       | 54             | PASS    |
| 11G           | 2412         | Ant1 | 2310.0 | -44.46      | 3.0  | 0             | 53.74      | PEAK     | 74             | PASS    |
|               | 2412         | Ant1 | 2310.0 | -55.00      | 3.0  | 0             | 43.20      | AV       | 54             | PASS    |
|               | 2412         | Ant1 | 2390.0 | -42.51      | 3.0  | 0             | 55.69      | PEAK     | 74             | PASS    |
|               | 2412         | Ant1 | 2390.0 | -53.87      | 3.0  | 0             | 44.33      | AV       | 54             | PASS    |
|               | 2462         | Ant1 | 2483.5 | -42.81      | 3.0  | 0             | 55.39      | PEAK     | 74             | PASS    |
|               | 2462         | Ant1 | 2483.5 | -53.95      | 3.0  | 0             | 44.25      | AV       | 54             | PASS    |
|               | 2462         | Ant1 | 2500.0 | -44.37      | 3.0  | 0             | 53.83      | PEAK     | 74             | PASS    |
|               | 2462         | Ant1 | 2500.0 | -54.11      | 3.0  | 0             | 44.09      | AV       | 54             | PASS    |
| 11N20<br>SISO | 2412         | Ant1 | 2310.0 | -44.76      | 3.0  | 0             | 53.44      | PEAK     | 74             | PASS    |
|               | 2412         | Ant1 | 2310.0 | -55.00      | 3.0  | 0             | 43.20      | AV       | 54             | PASS    |
|               | 2412         | Ant1 | 2390.0 | -42.94      | 3.0  | 0             | 55.26      | PEAK     | 74             | PASS    |
|               | 2412         | Ant1 | 2390.0 | -53.72      | 3.0  | 0             | 44.48      | AV       | 54             | PASS    |
|               | 2462         | Ant1 | 2483.5 | -43.26      | 3.0  | 0             | 54.94      | PEAK     | 74             | PASS    |
|               | 2462         | Ant1 | 2483.5 | -53.82      | 3.0  | 0             | 44.38      | AV       | 54             | PASS    |
|               | 2462         | Ant1 | 2500.0 | -42.64      | 3.0  | 0             | 55.56      | PEAK     | 74             | PASS    |
|               | 2462         | Ant1 | 2500.0 | -54.10      | 3.0  | 0             | 44.10      | AV       | 54             | PASS    |
| 11N40<br>SISO | 2422         | Ant1 | 2310.0 | -43.63      | 3.0  | 0             | 54.57      | PEAK     | 74             | PASS    |
|               | 2422         | Ant1 | 2310.0 | -55.03      | 3.0  | 0             | 43.17      | AV       | 54             | PASS    |

|  |      |      |        |        |     |   |       |      |    |      |
|--|------|------|--------|--------|-----|---|-------|------|----|------|
|  | 2422 | Ant1 | 2390.0 | -40.40 | 3.0 | 0 | 57.80 | PEAK | 74 | PASS |
|  | 2422 | Ant1 | 2390.0 | -51.65 | 3.0 | 0 | 46.55 | AV   | 54 | PASS |
|  | 2452 | Ant1 | 2483.5 | -42.55 | 3.0 | 0 | 55.65 | PEAK | 74 | PASS |
|  | 2452 | Ant1 | 2483.5 | -53.16 | 3.0 | 0 | 45.04 | AV   | 54 | PASS |
|  | 2452 | Ant1 | 2500.0 | -42.70 | 3.0 | 0 | 55.50 | PEAK | 74 | PASS |
|  | 2452 | Ant1 | 2500.0 | -53.93 | 3.0 | 0 | 44.27 | AV   | 54 | PASS |

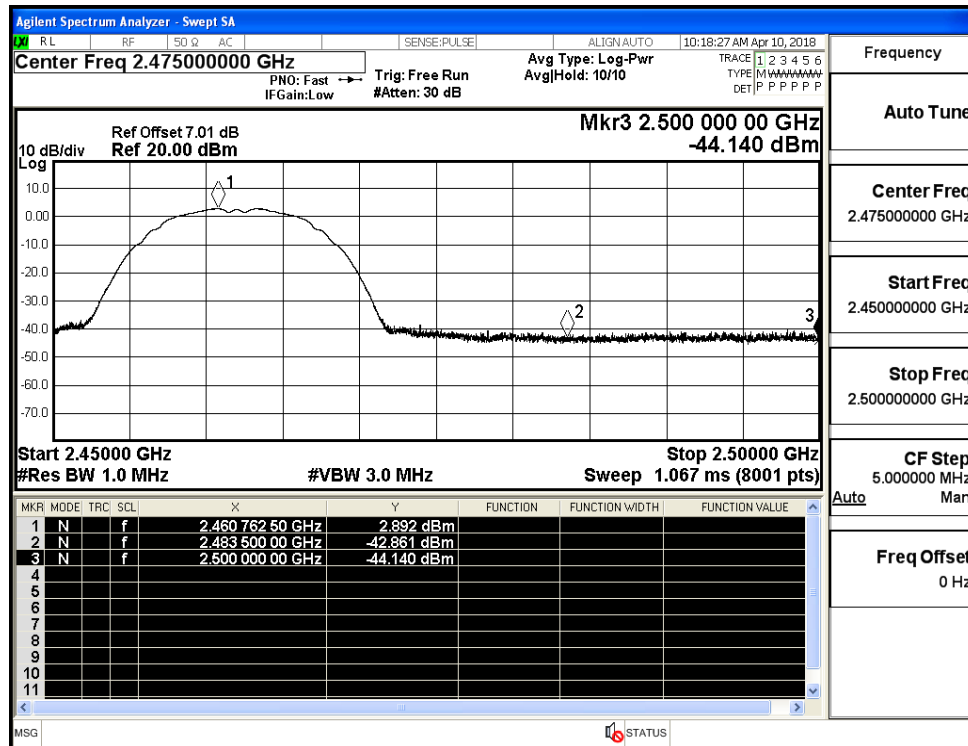
## Restrict-band band-edge measurements\_11B\_2412\_Ant1\_PEAK



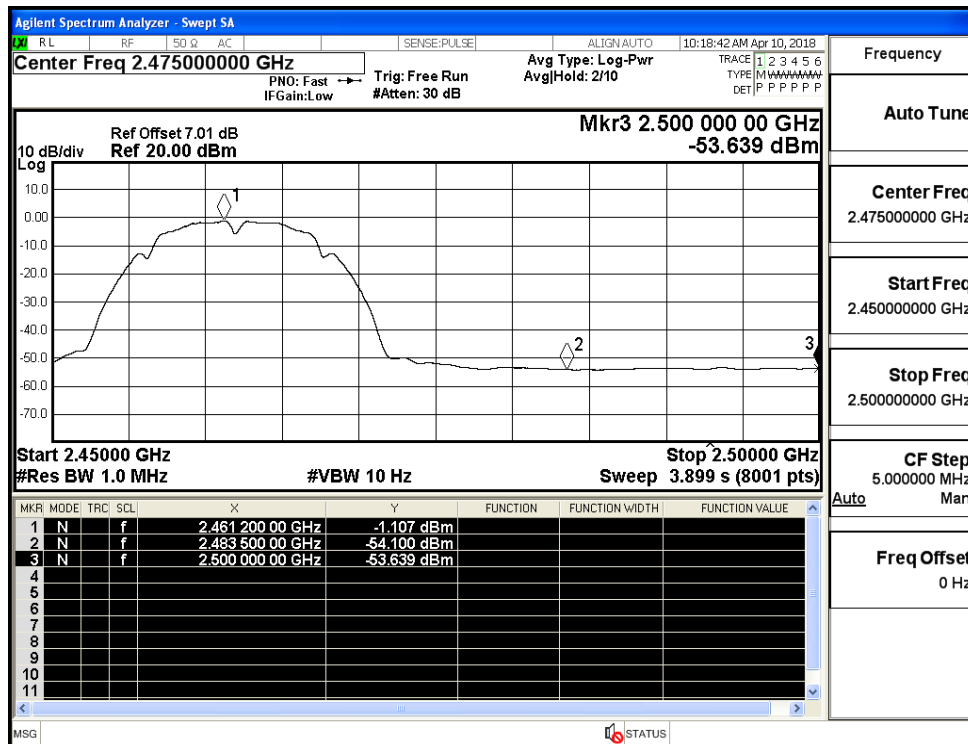
## Restrict-band band-edge measurements\_11B\_2412\_Ant1\_AV



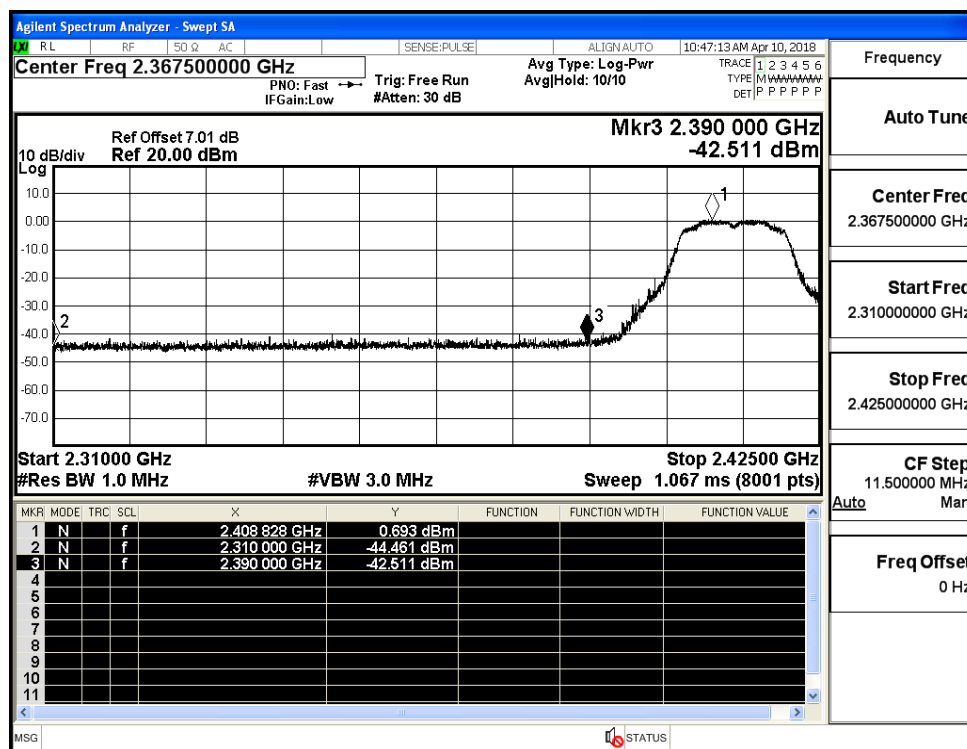
## Restrict-band band-edge measurements\_11B\_2462\_Ant1\_PEAK



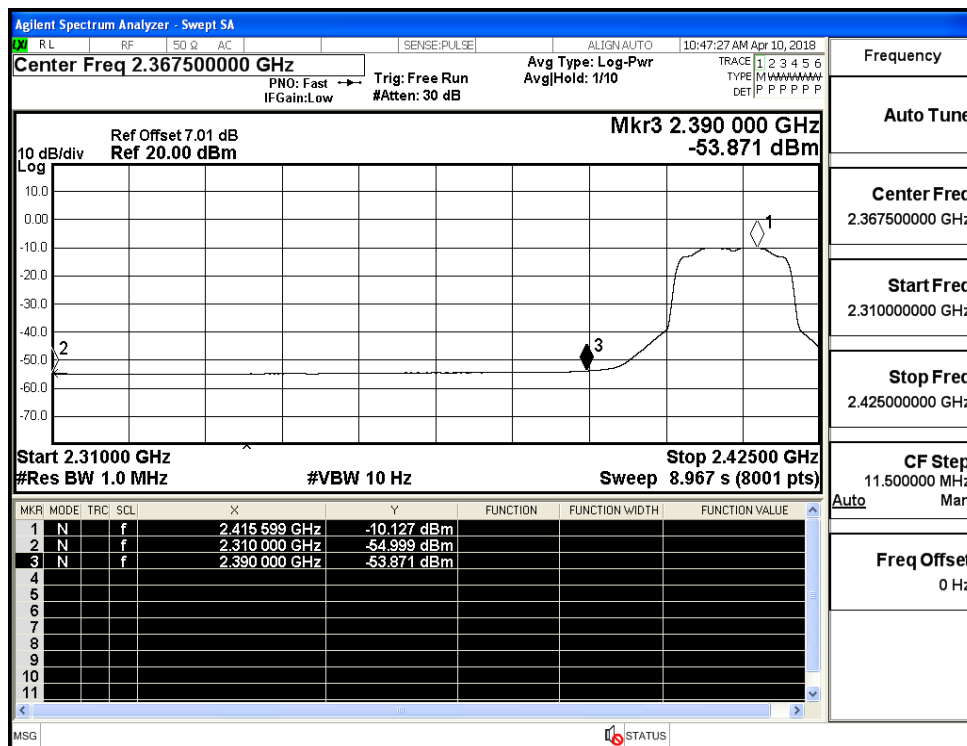
## Restrict-band band-edge measurements\_11B\_2462\_Ant1\_AV



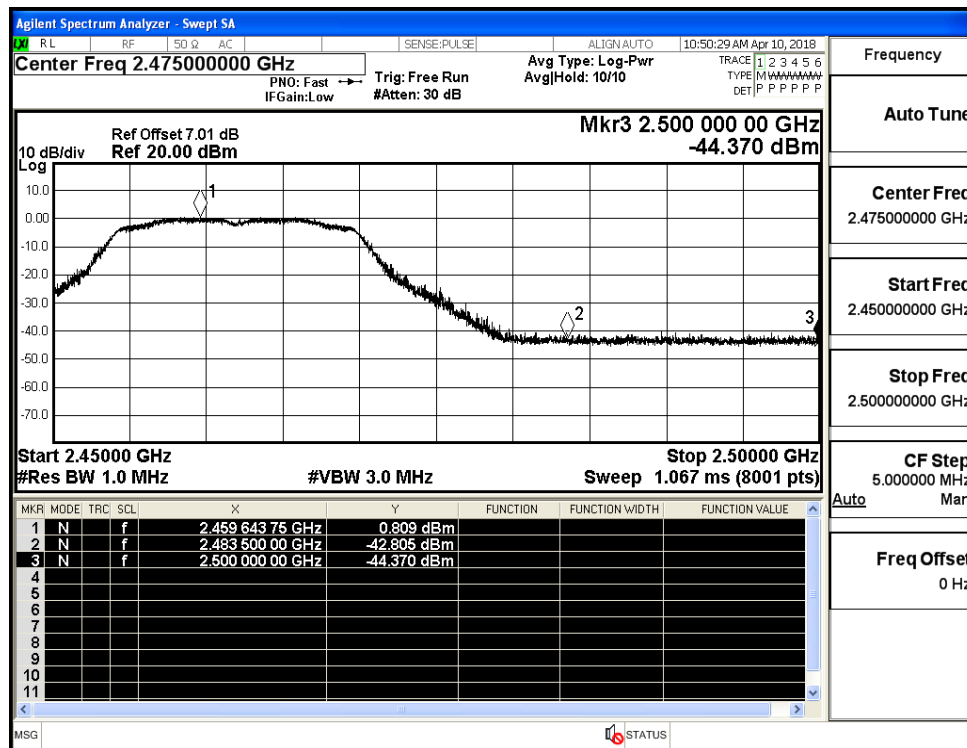
## Restrict-band band-edge measurements\_11G\_2412\_Ant1\_PEAK



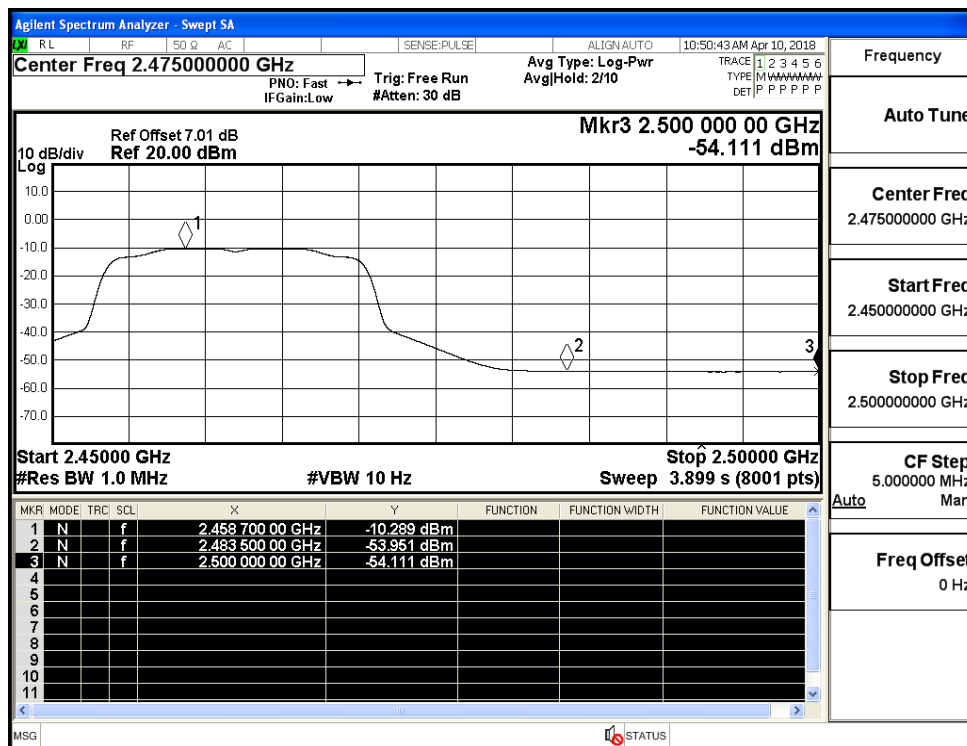
## Restrict-band band-edge measurements\_11G\_2412\_Ant1\_AV



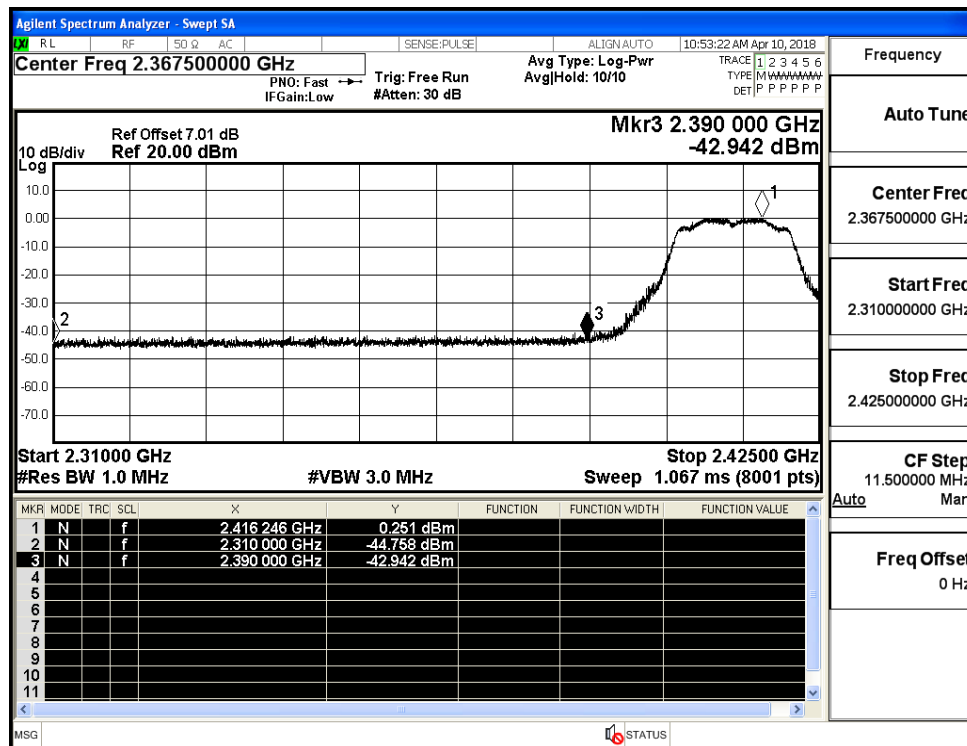
## Restrict-band band-edge measurements\_11G\_2462\_Ant1\_PEAK



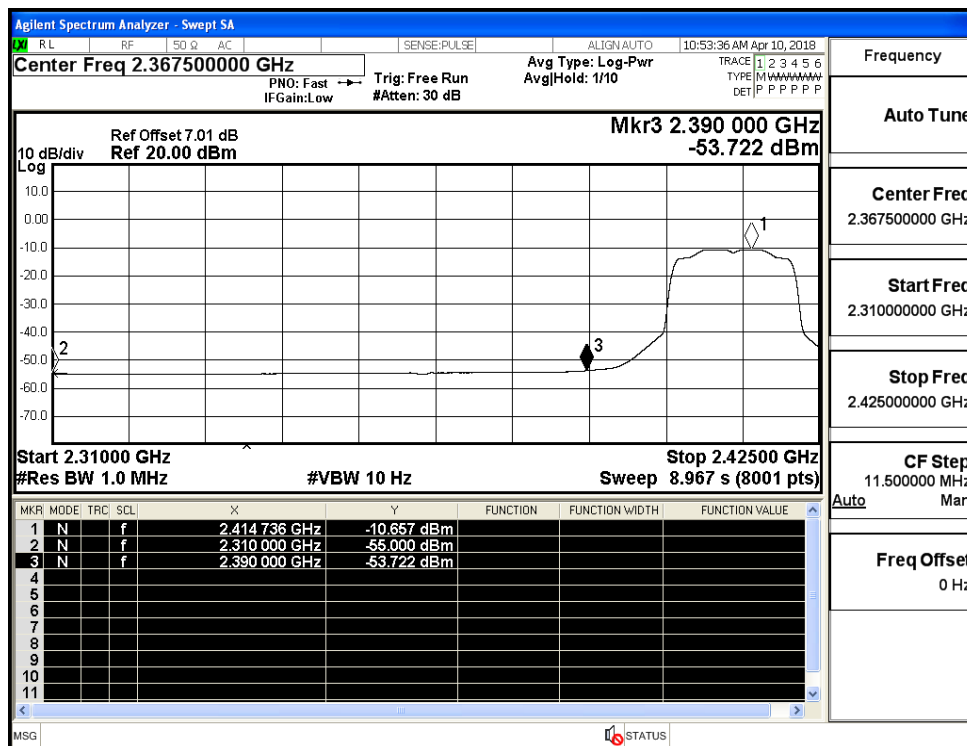
## Restrict-band band-edge measurements\_11G\_2462\_Ant1\_AV



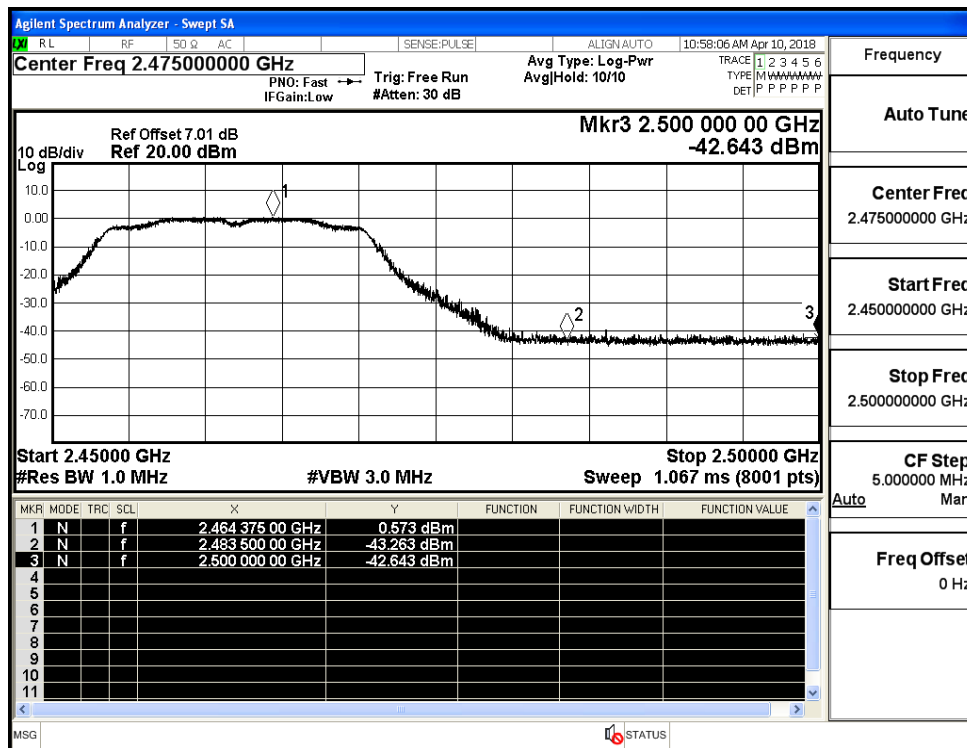
## Restrict-band band-edge measurements\_11N20SISO\_2412\_Ant1\_PEAK



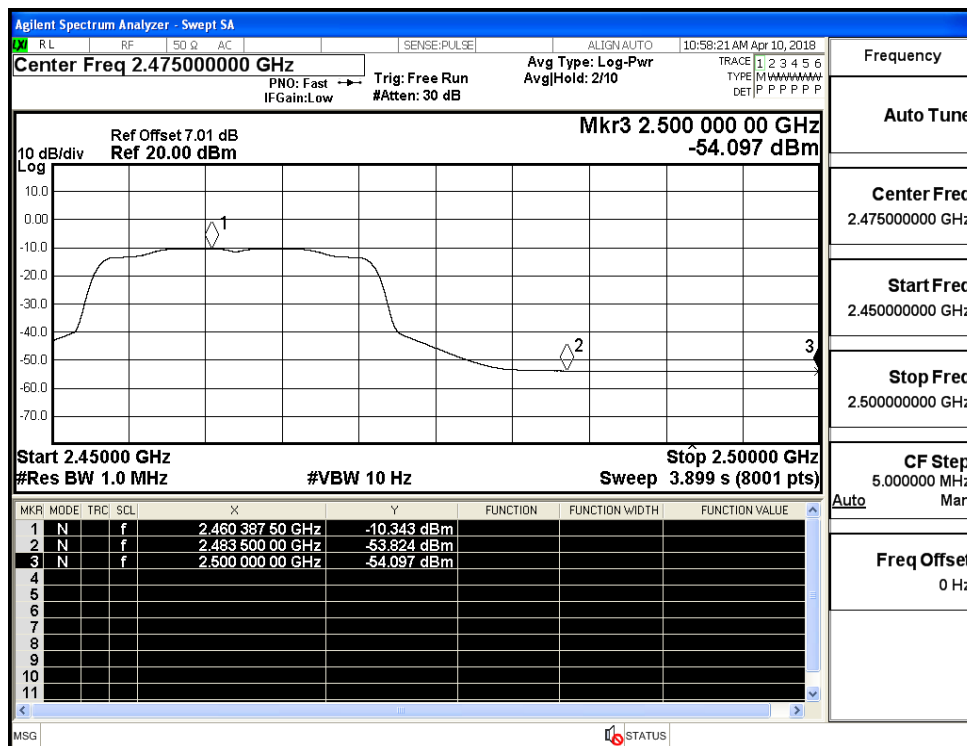
## Restrict-band band-edge measurements\_11N20SISO\_2412\_Ant1\_AV



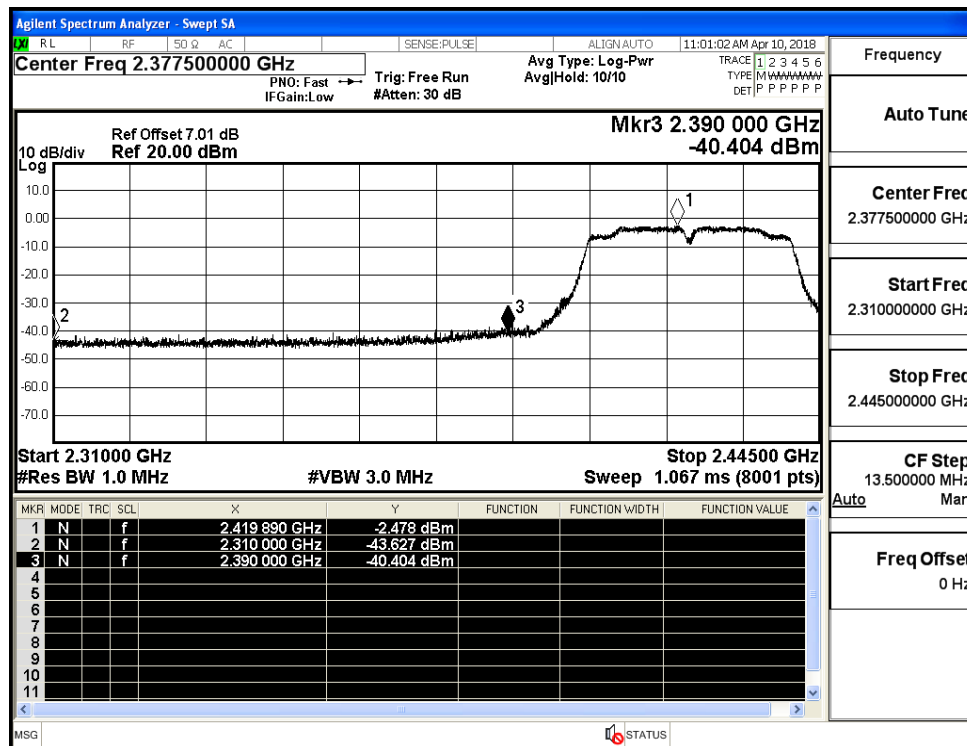
## Restrict-band band-edge measurements\_11N20SISO\_2462\_Ant1\_PEAK



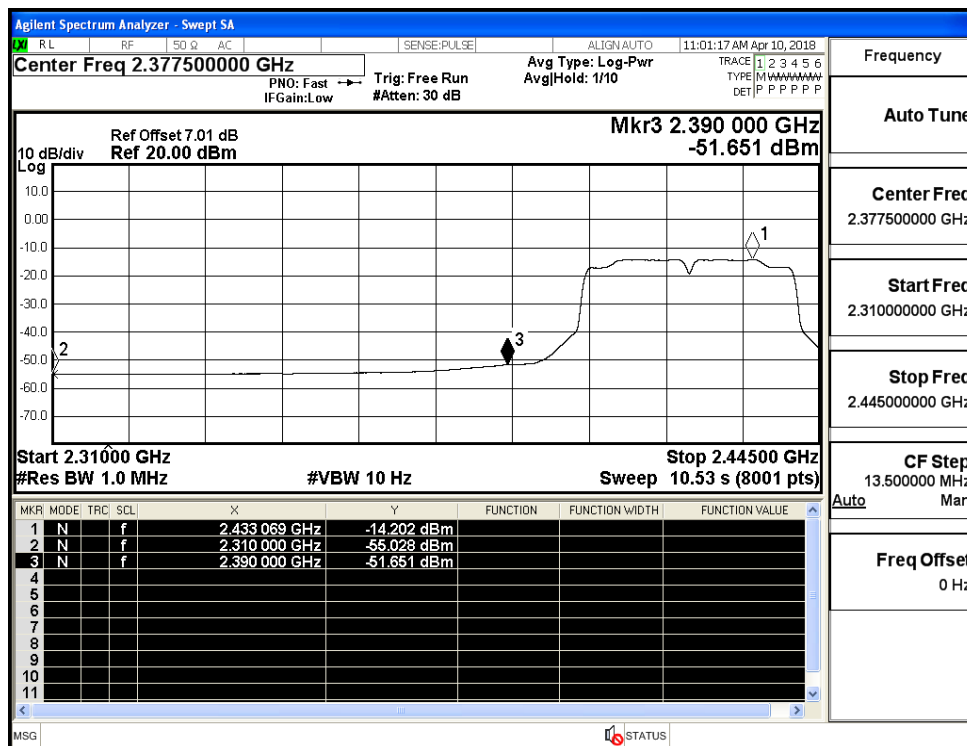
## Restrict-band band-edge measurements\_11N20SISO\_2462\_Ant1\_AV



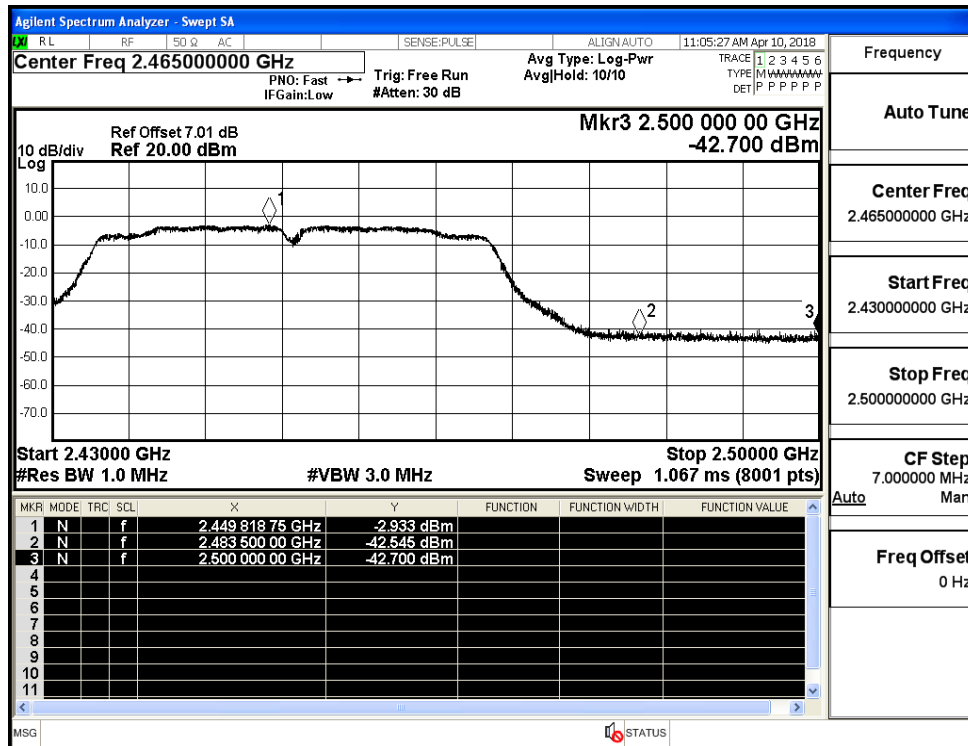
## Restrict-band band-edge measurements\_11N40SISO\_2422\_Ant1\_PEAK



## 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

