

## Appendix A

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

Product Name: Smart controller

Trade Mark:



Test Model: CL-CIN03-05

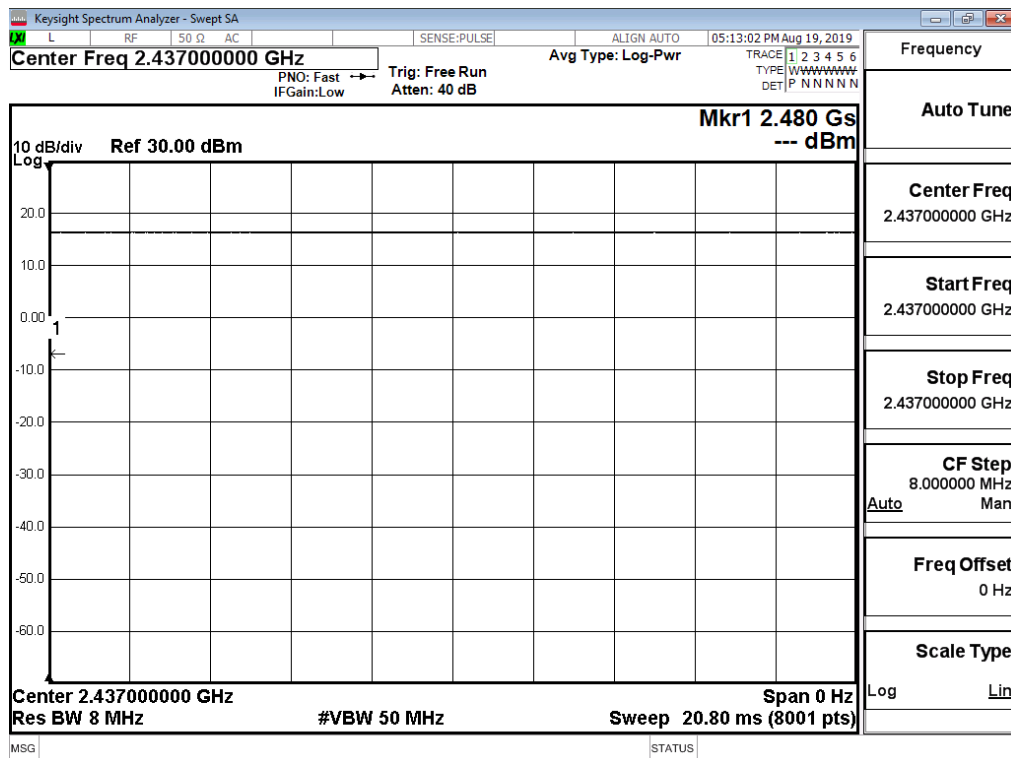
#### Environmental Conditions

|                    |             |
|--------------------|-------------|
| Temperature:       | 23.4 ° C    |
| Relative Humidity: | 54.6%       |
| ATM Pressure:      | 100.0 kPa   |
| Test Engineer:     | CHUANG WANG |
| Supervised by:     | JAYDEN ZHUO |

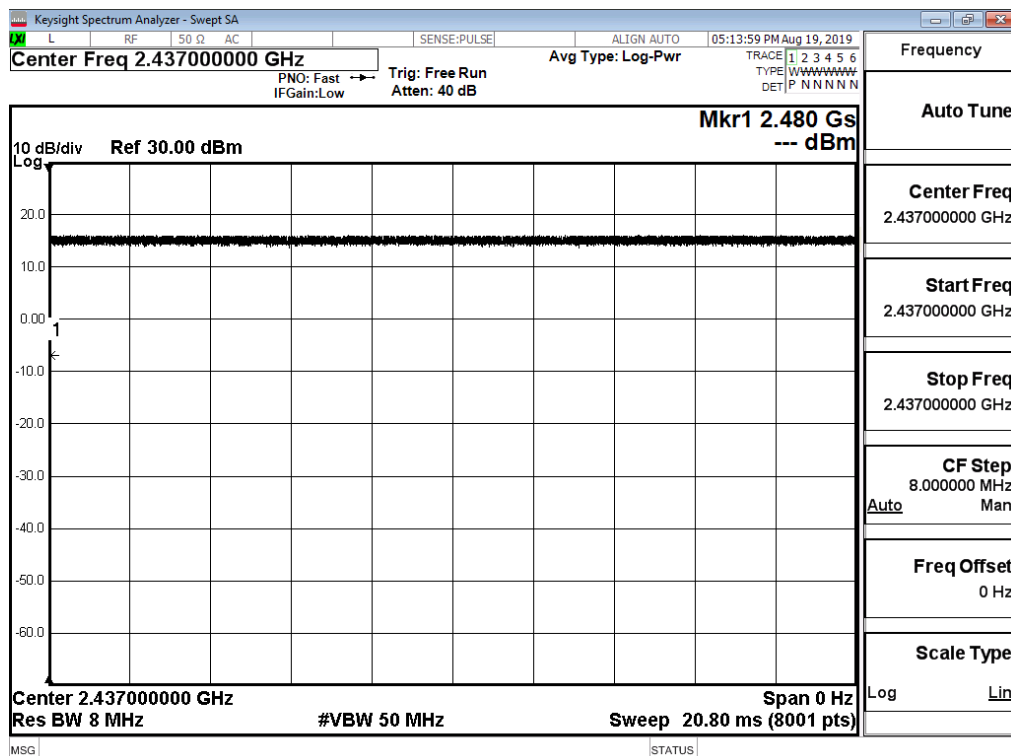
#### A.1 Duty Cycle

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

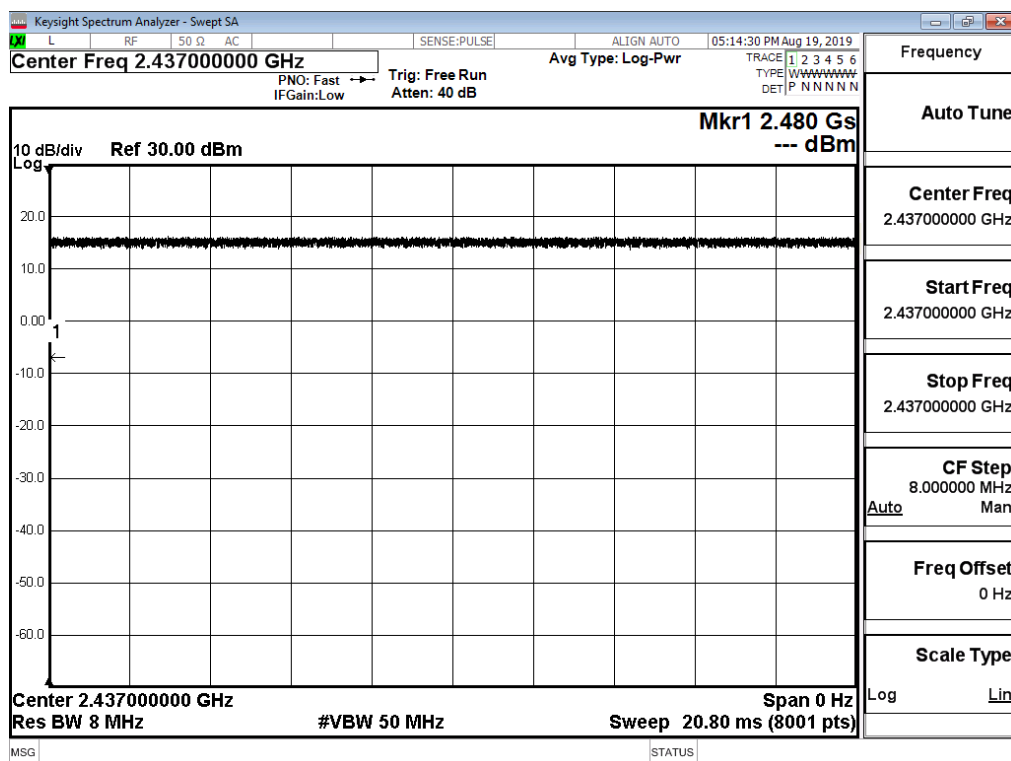
## Duty Cycle\_11B\_2437\_Ant1



## Duty Cycle\_11G\_2437\_Ant1



## Duty Cycle\_11N20SISO\_2437\_Ant1



**A.2 Maximum Conducted Output Power**

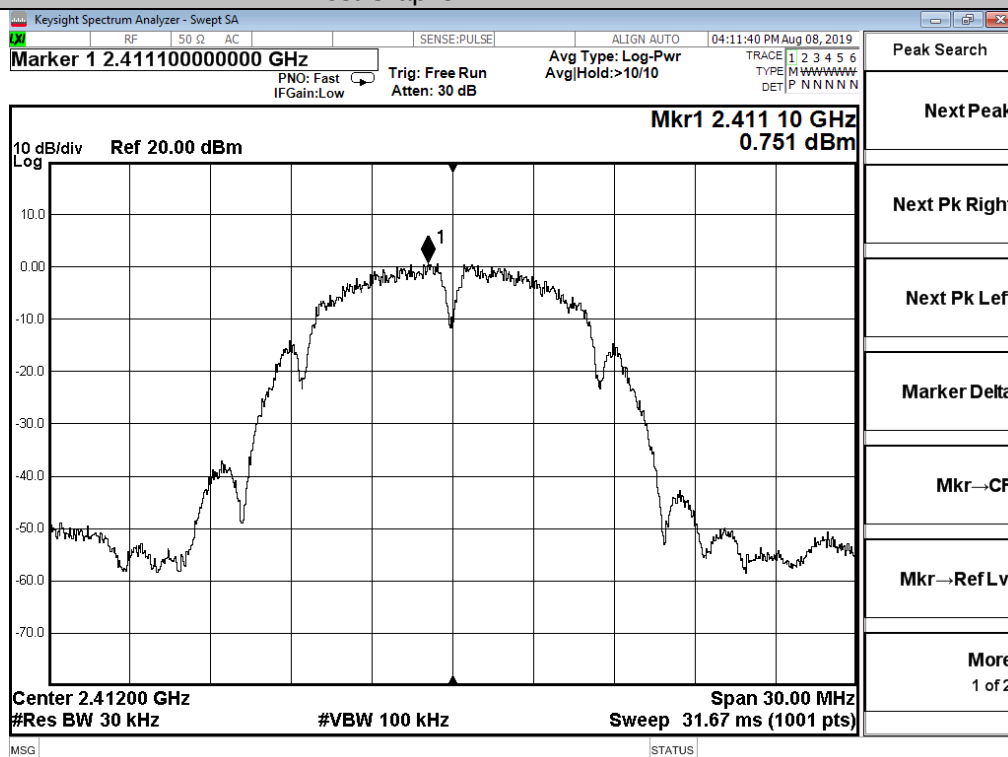
| Mode      | Channel | Meas. Peak Level<br>[dBm] | Limit [dBm] | Verdict |
|-----------|---------|---------------------------|-------------|---------|
| 11B       | LCH     | 18.630                    | 30          | PASS    |
|           | MCH     | 17.519                    | 30          | PASS    |
|           | HCH     | 16.023                    | 30          | PASS    |
| 11G       | LCH     | 18.628                    | 30          | PASS    |
|           | MCH     | 17.999                    | 30          | PASS    |
|           | HCH     | 16.083                    | 30          | PASS    |
| 11N20SISO | LCH     | 18.736                    | 30          | PASS    |
|           | MCH     | 17.401                    | 30          | PASS    |
|           | HCH     | 16.287                    | 30          | PASS    |

### A.3 Maximum Power Spectral Density

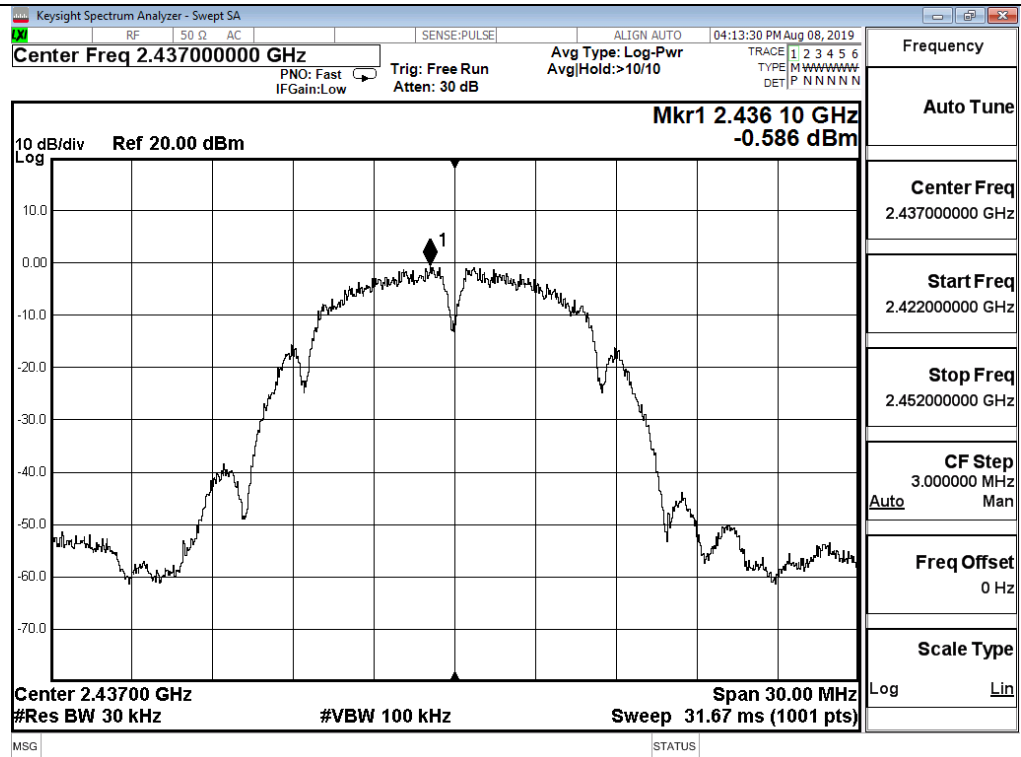
| Mode      | Channel | Meas.Level<br>[dBm/30KHz] | Limit<br>[dBm/3KHz] | Verdict |
|-----------|---------|---------------------------|---------------------|---------|
| 11B       | LCH     | 0.751                     | 8                   | PASS    |
|           | MCH     | -0.586                    | 8                   | PASS    |
|           | HCH     | -2.052                    | 8                   | PASS    |
| 11G       | LCH     | -3.827                    | 8                   | PASS    |
|           | MCH     | -1.511                    | 8                   | PASS    |
|           | HCH     | -2.447                    | 8                   | PASS    |
| 11N20SISO | LCH     | -0.503                    | 8                   | PASS    |
|           | MCH     | -1.083                    | 8                   | PASS    |
|           | HCH     | -1.953                    | 8                   | PASS    |

#### Test Graphs

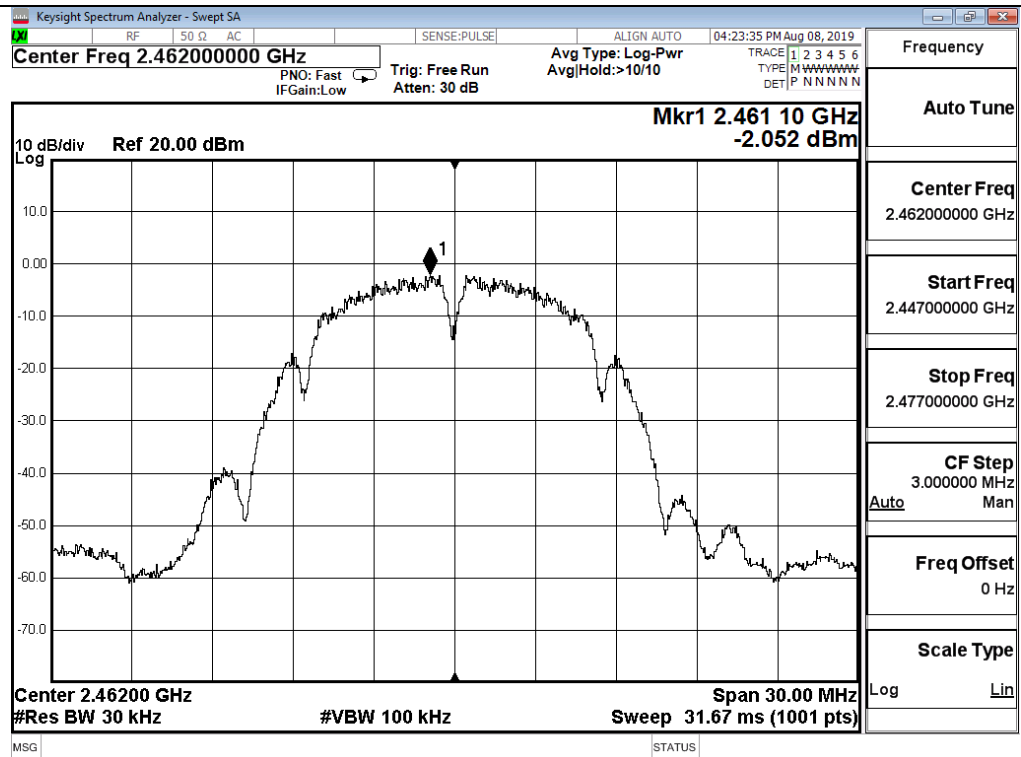
11B/LCH



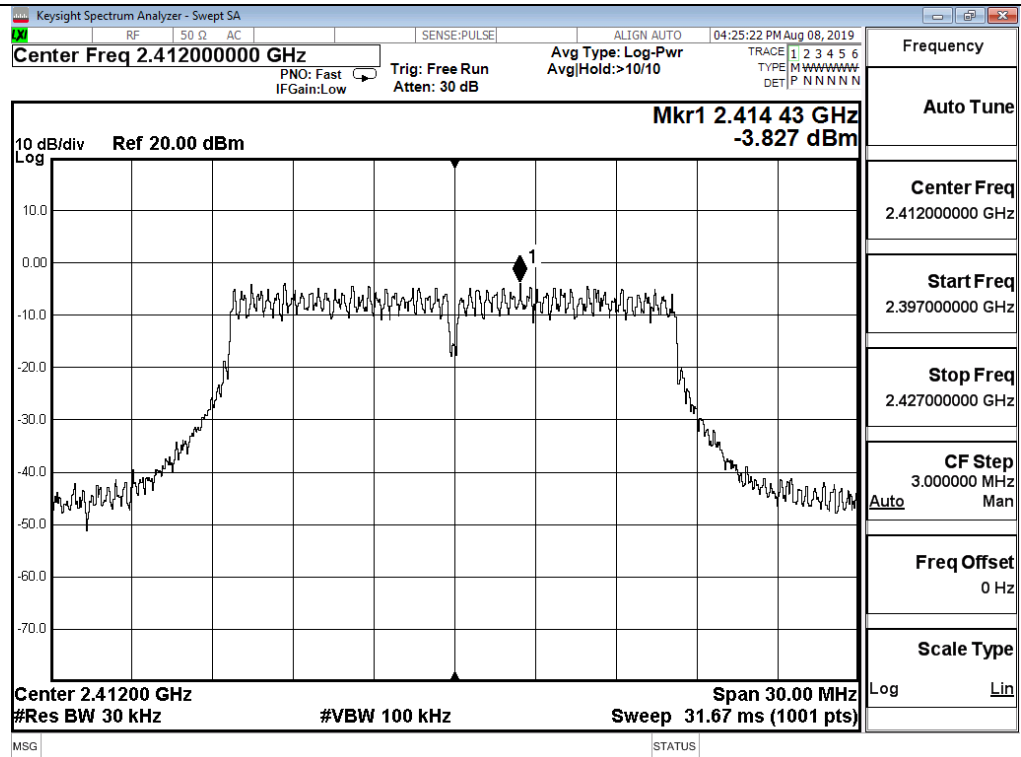
11B/MCH



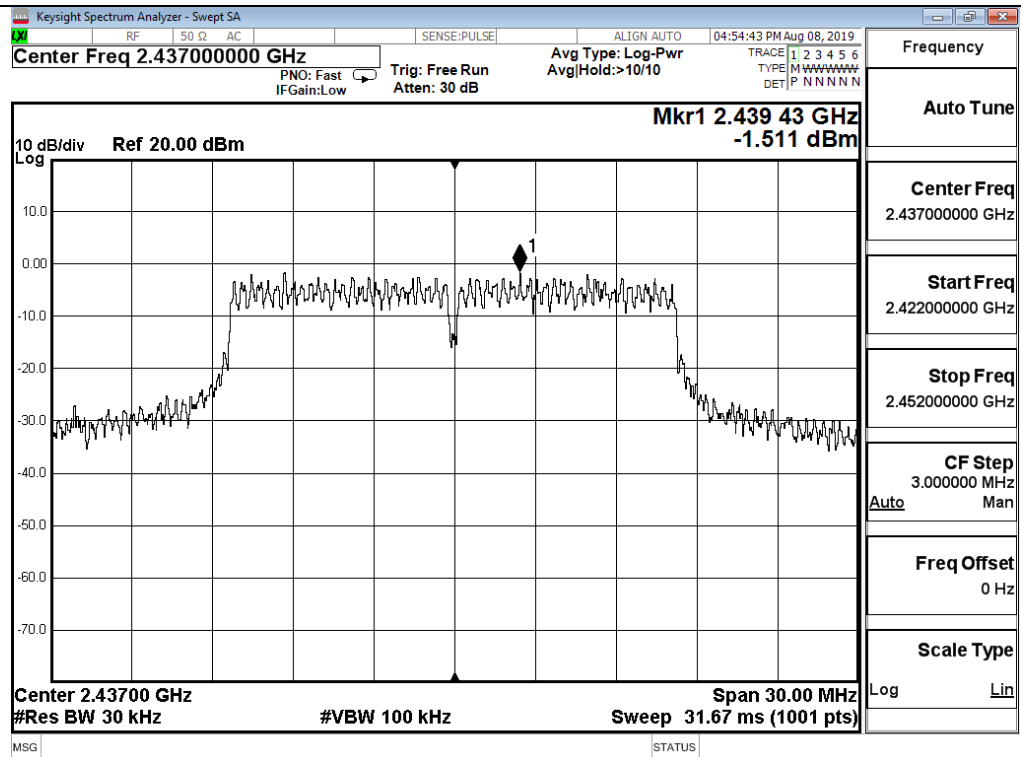
11B/HCH



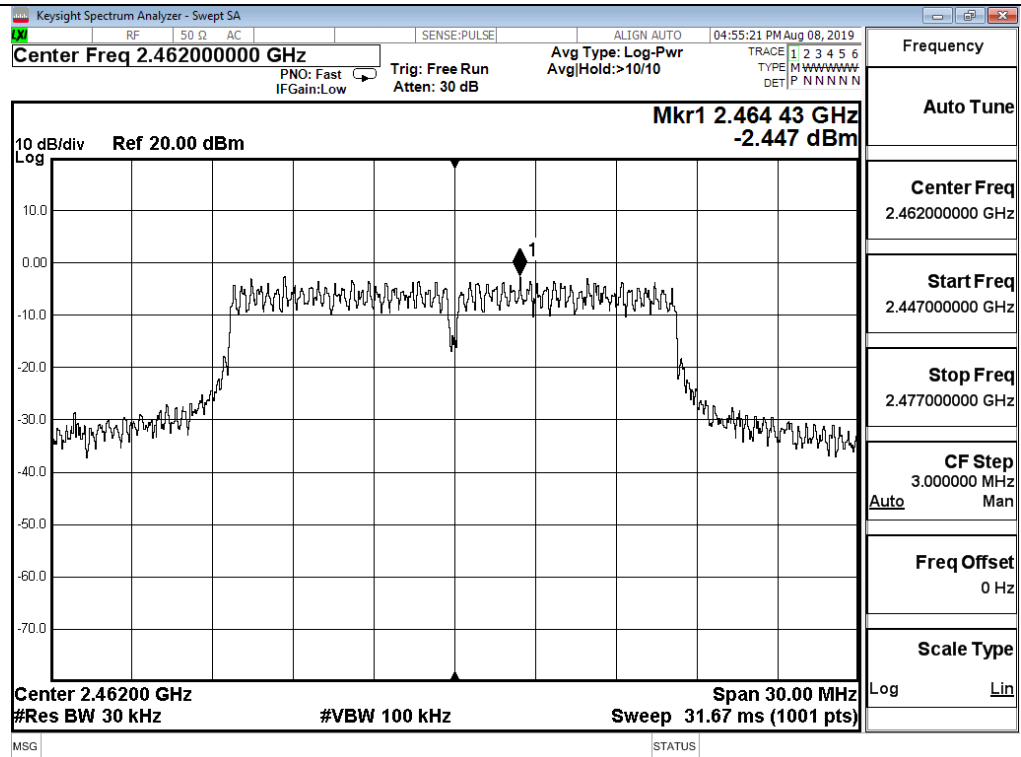
11G/LCH



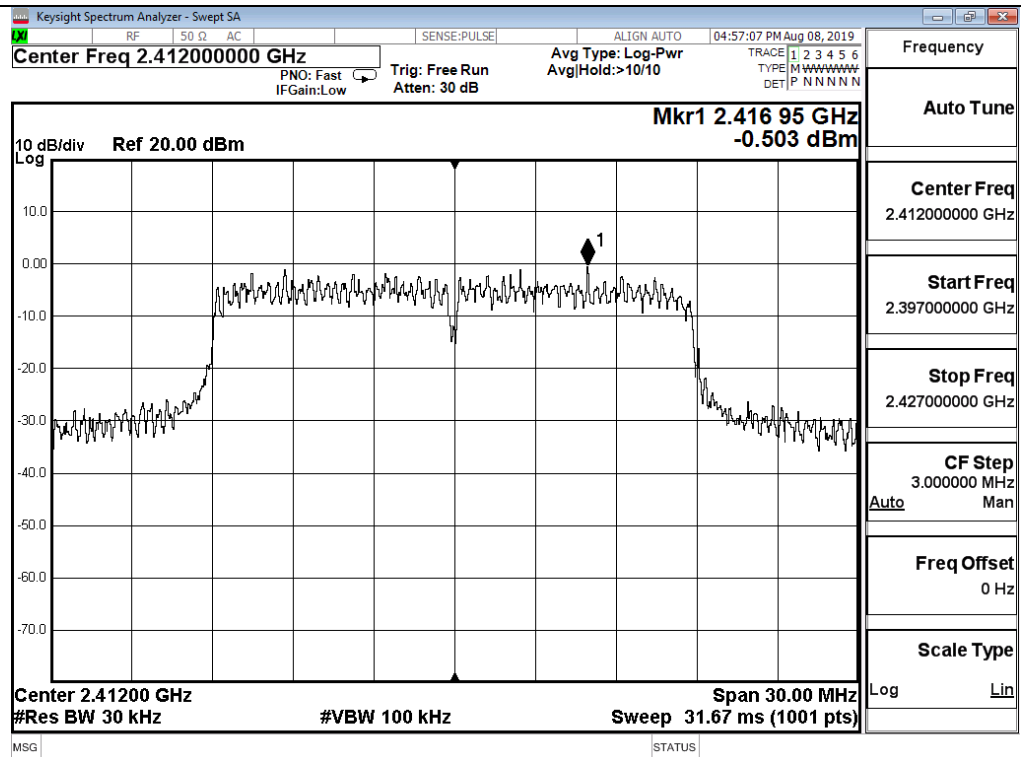
11G/MCH



11G/HCH

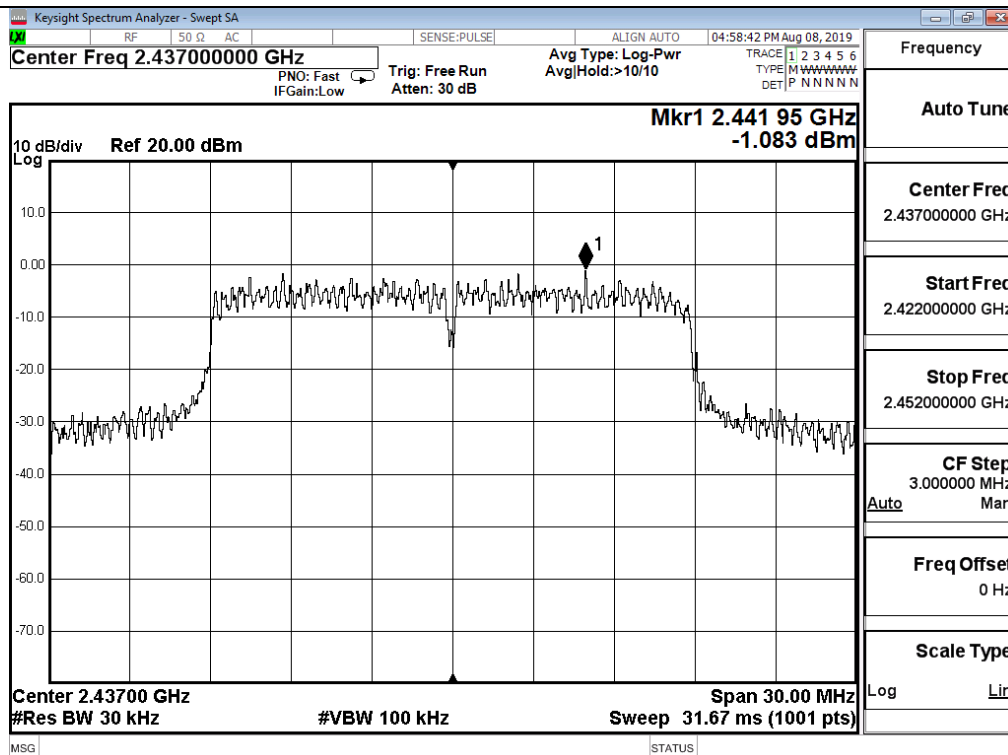


11N20SISO/LCH

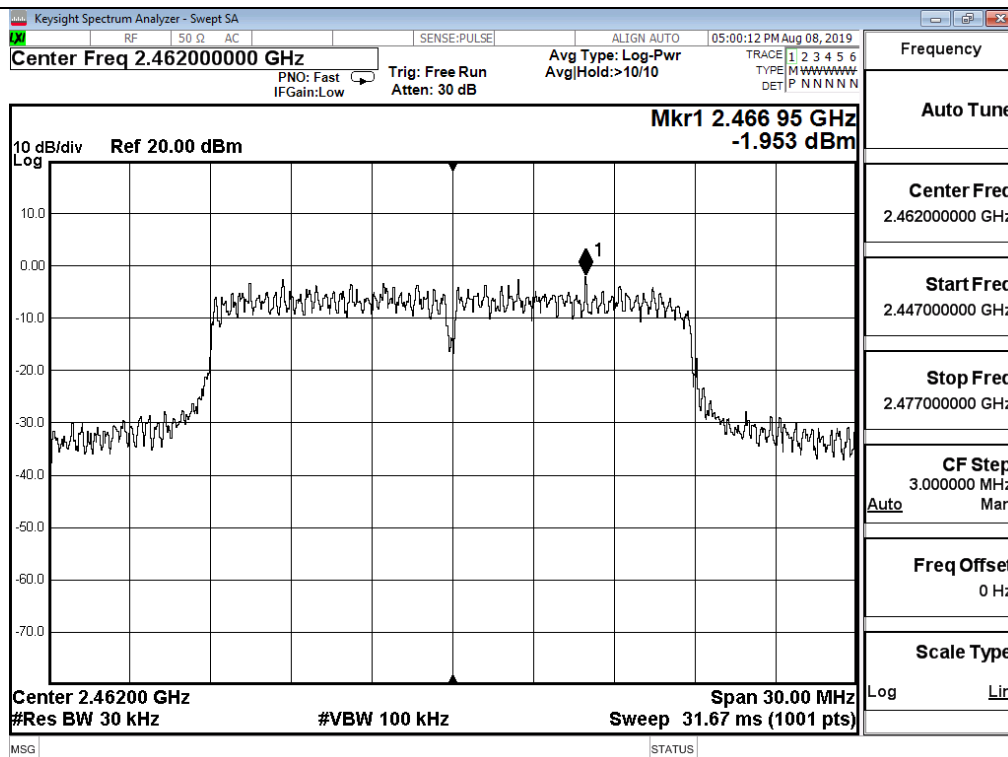




11N20SISO/MCH



11N20SISO/HCH

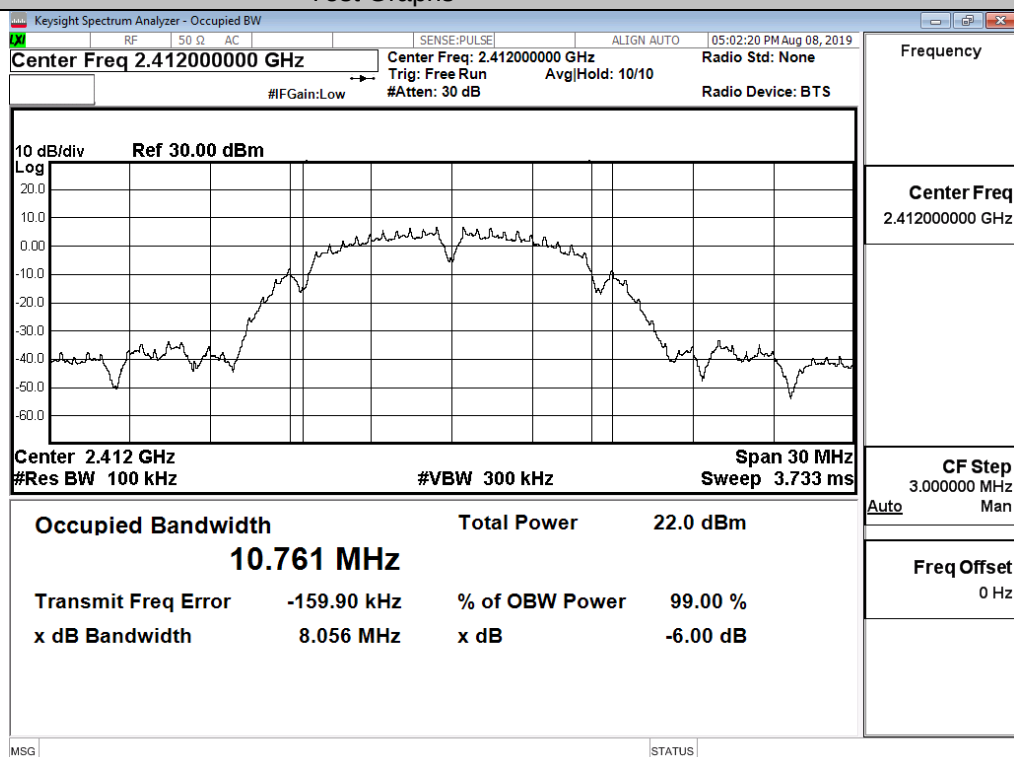


## A.4 6dB Bandwidth

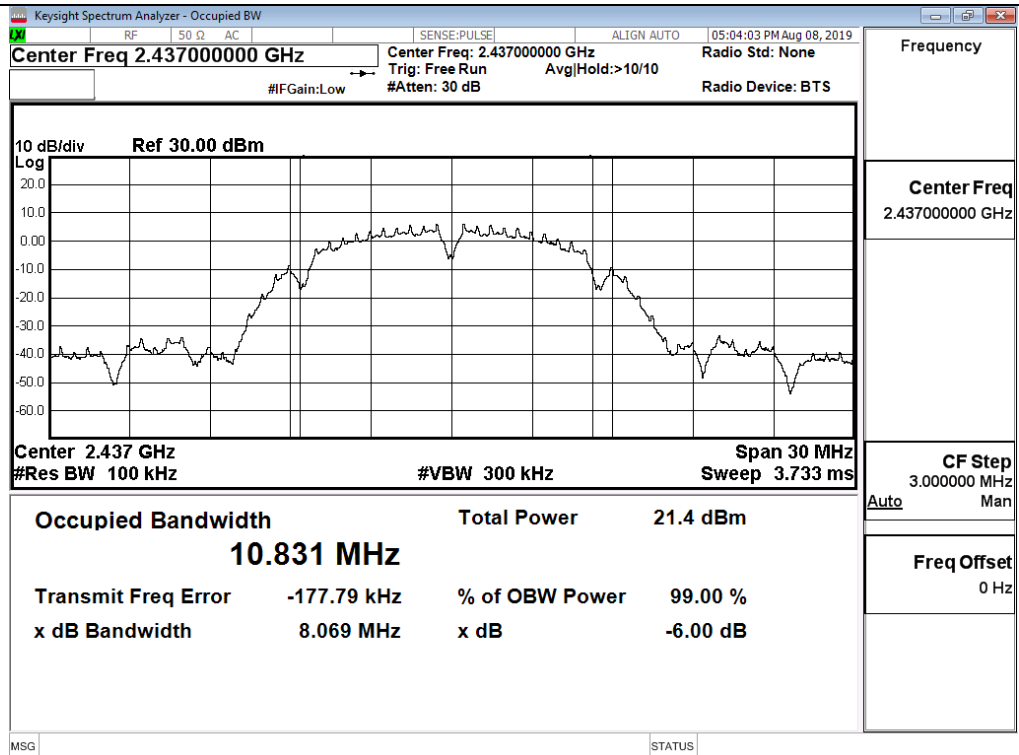
| Mode      | Channel | 6dB Bandwidth [MHz] | Limit [MHz] | Verdict |
|-----------|---------|---------------------|-------------|---------|
| 11B       | LCH     | 8.056               | $\geq 0.5$  | PASS    |
|           | MCH     | 8.069               | $\geq 0.5$  | PASS    |
|           | HCH     | 8.535               | $\geq 0.5$  | PASS    |
| 11G       | LCH     | 16.30               | $\geq 0.5$  | PASS    |
|           | MCH     | 16.29               | $\geq 0.5$  | PASS    |
|           | HCH     | 16.30               | $\geq 0.5$  | PASS    |
| 11N20SISO | LCH     | 16.59               | $\geq 0.5$  | PASS    |
|           | MCH     | 16.64               | $\geq 0.5$  | PASS    |
|           | HCH     | 16.59               | $\geq 0.5$  | PASS    |

### Test Graphs

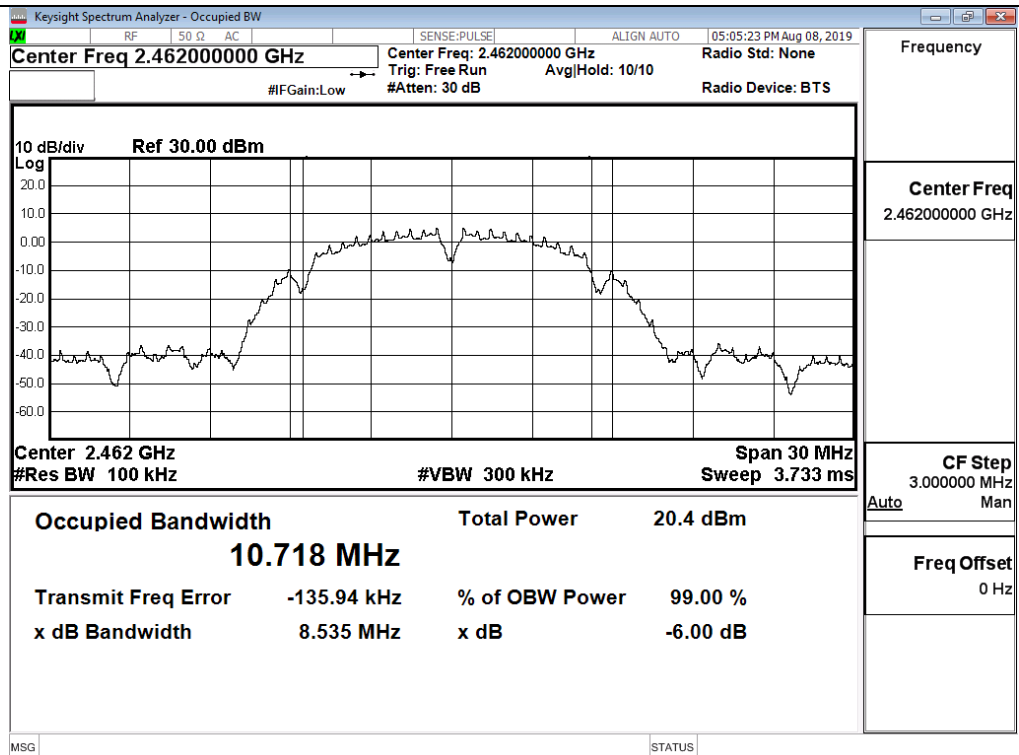
11B/LCH



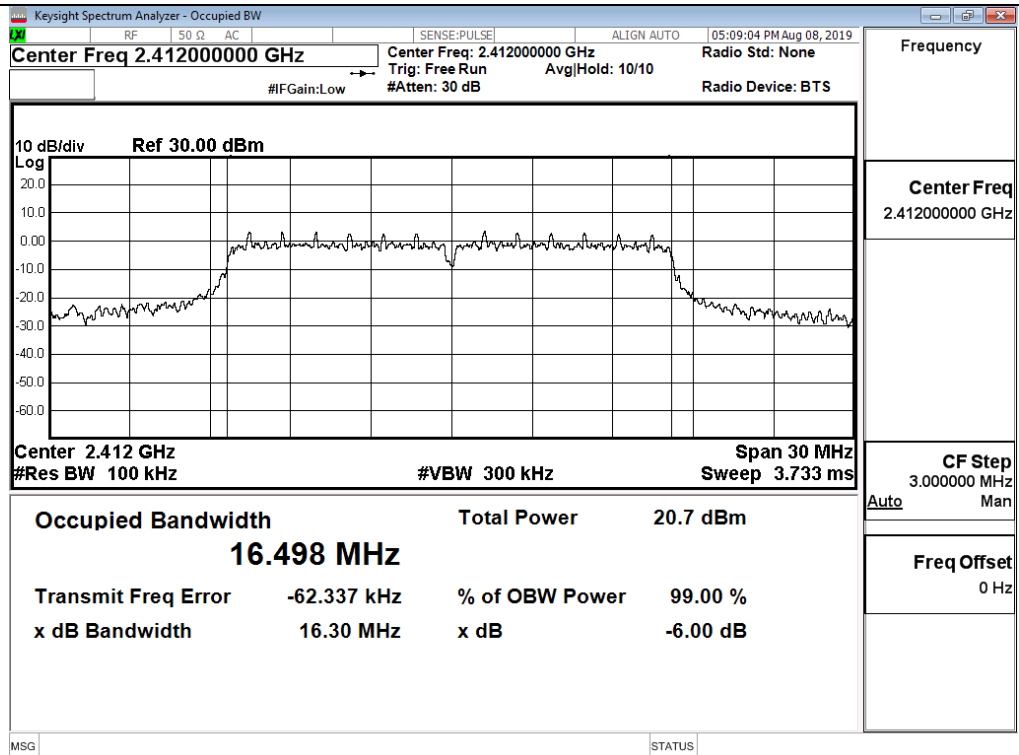
11B/MCH



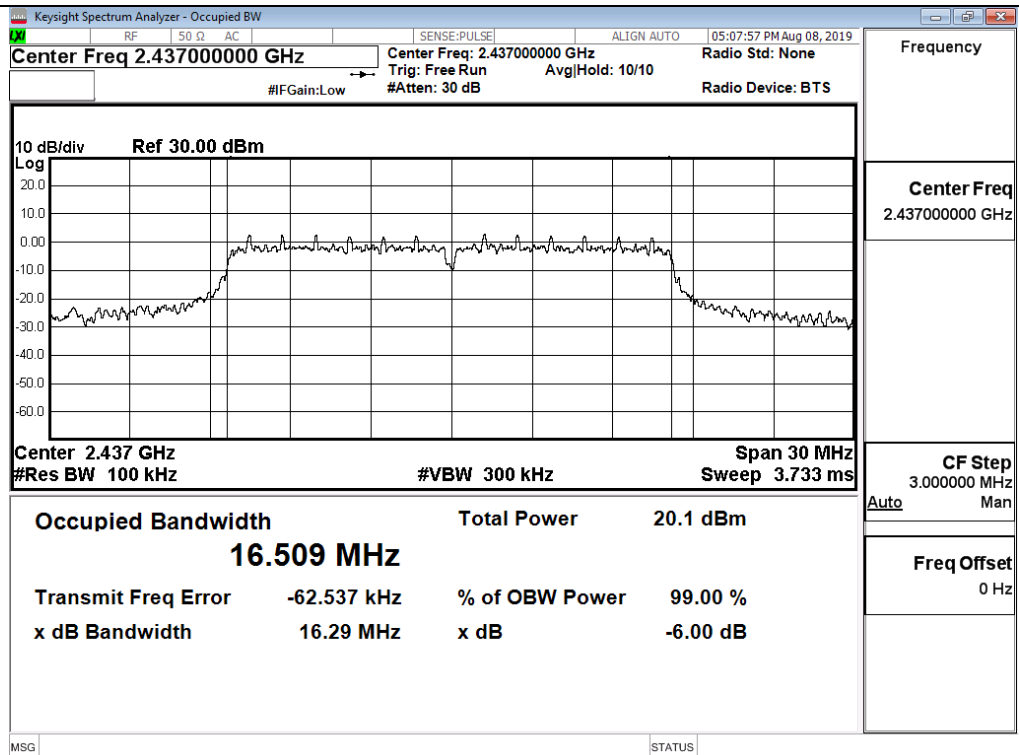
11B/HCH



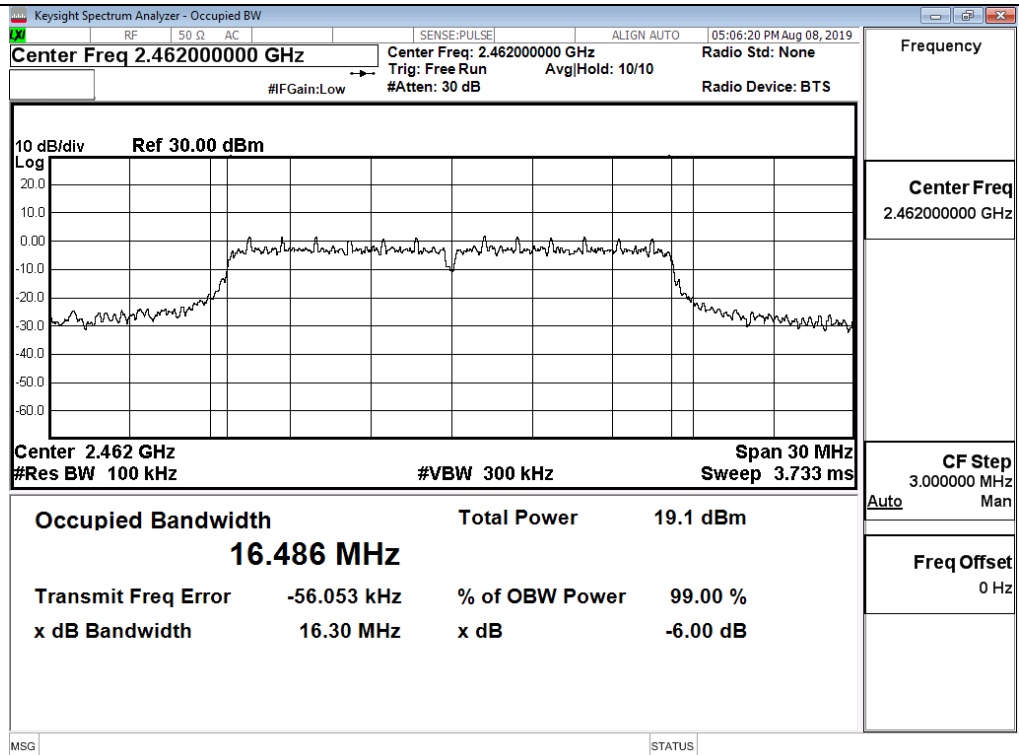
11G/LCH



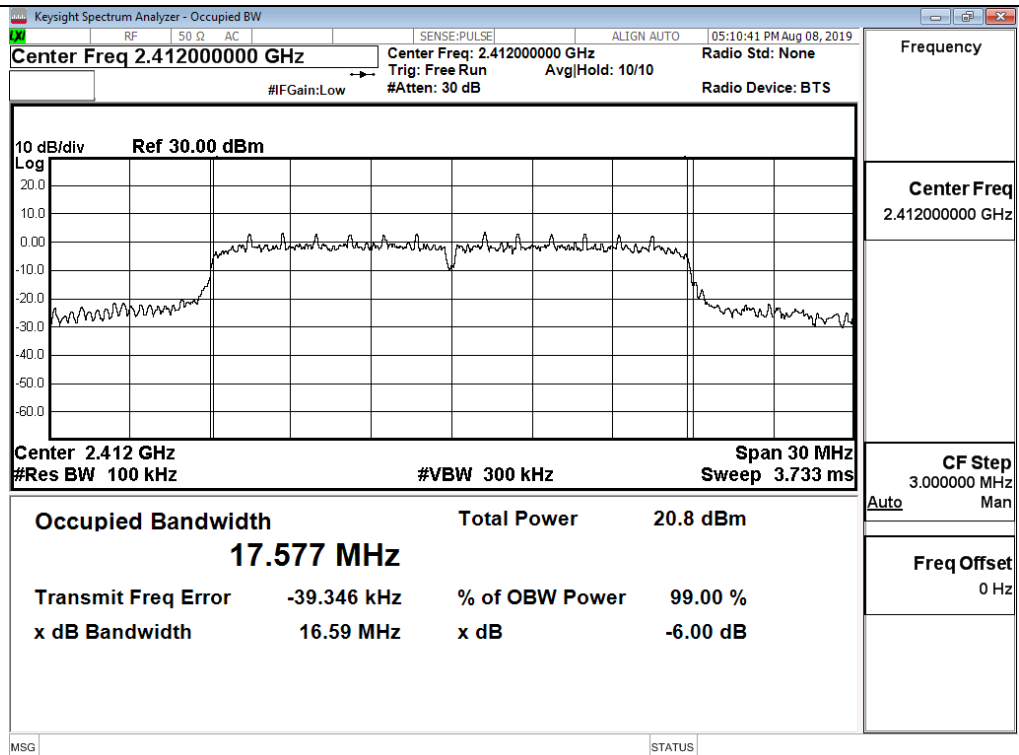
11G/MCH



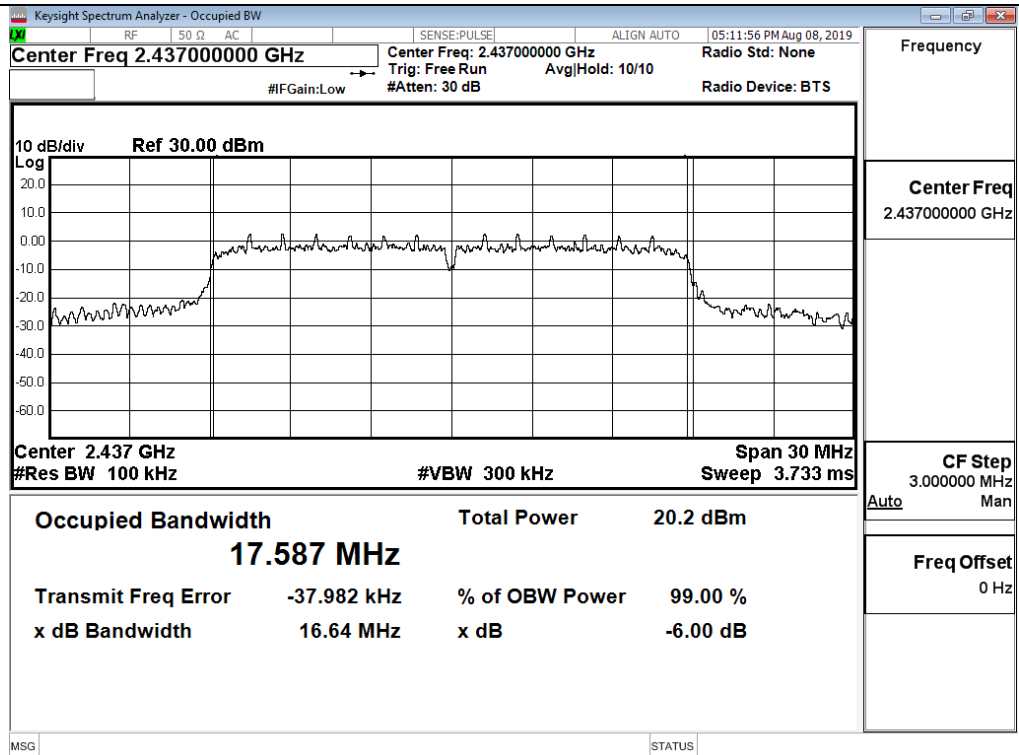
11G/HCH



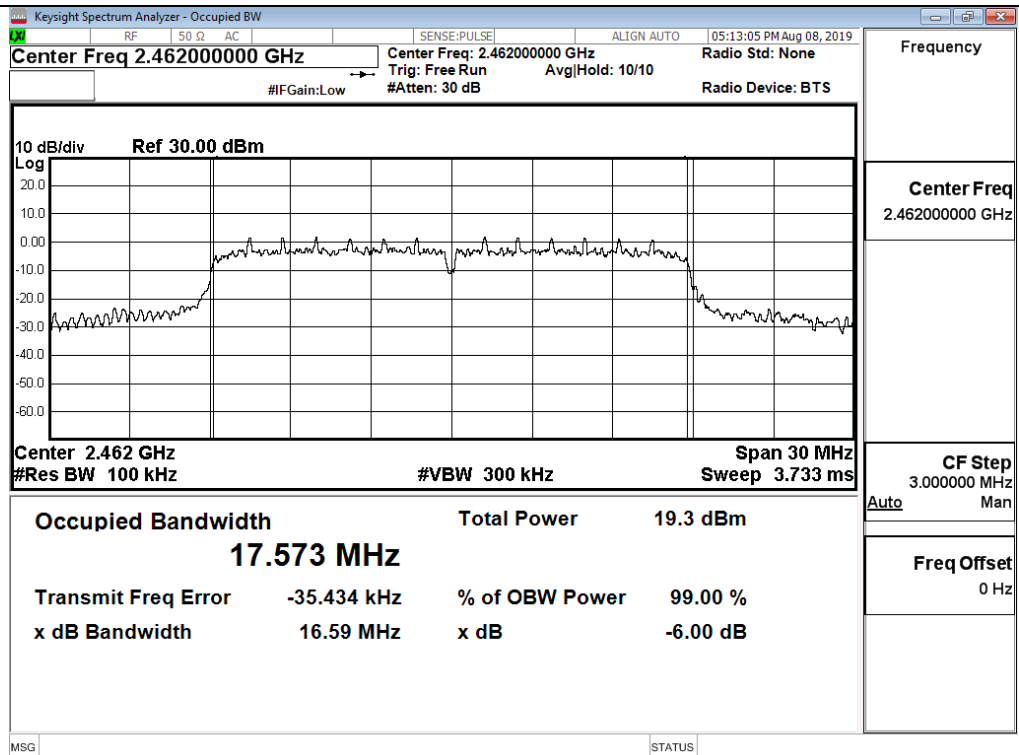
11N20SISO/LCH



11N20SISO/MCH



11N20SISO/HCH

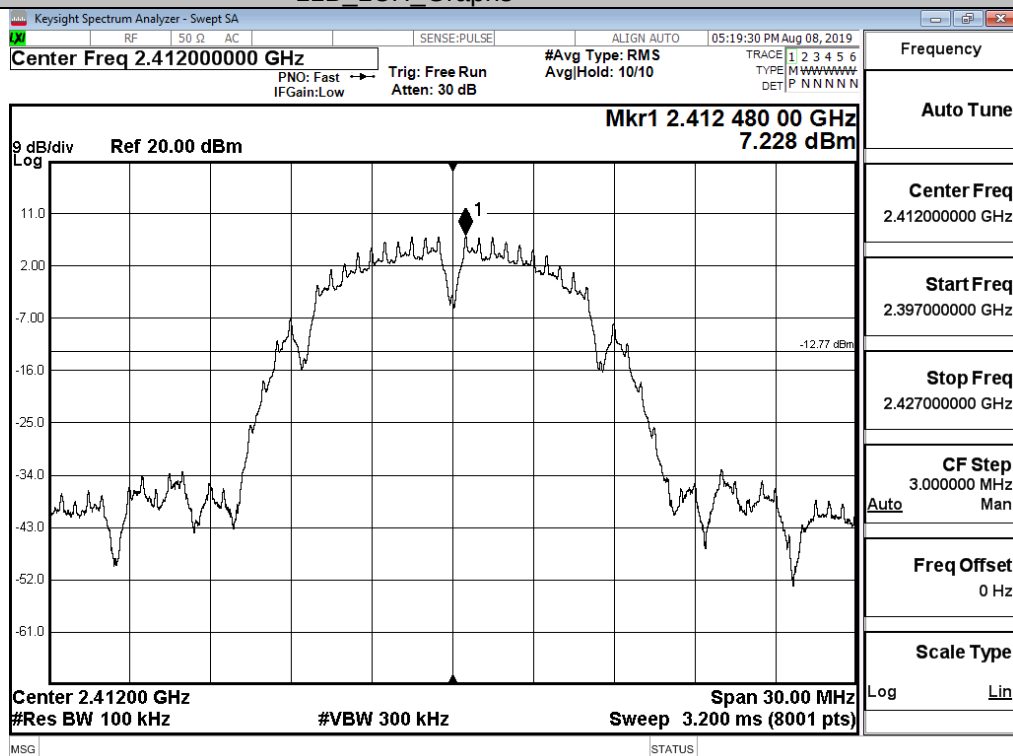


**B.5 RF Conducted Spurious Emissions**

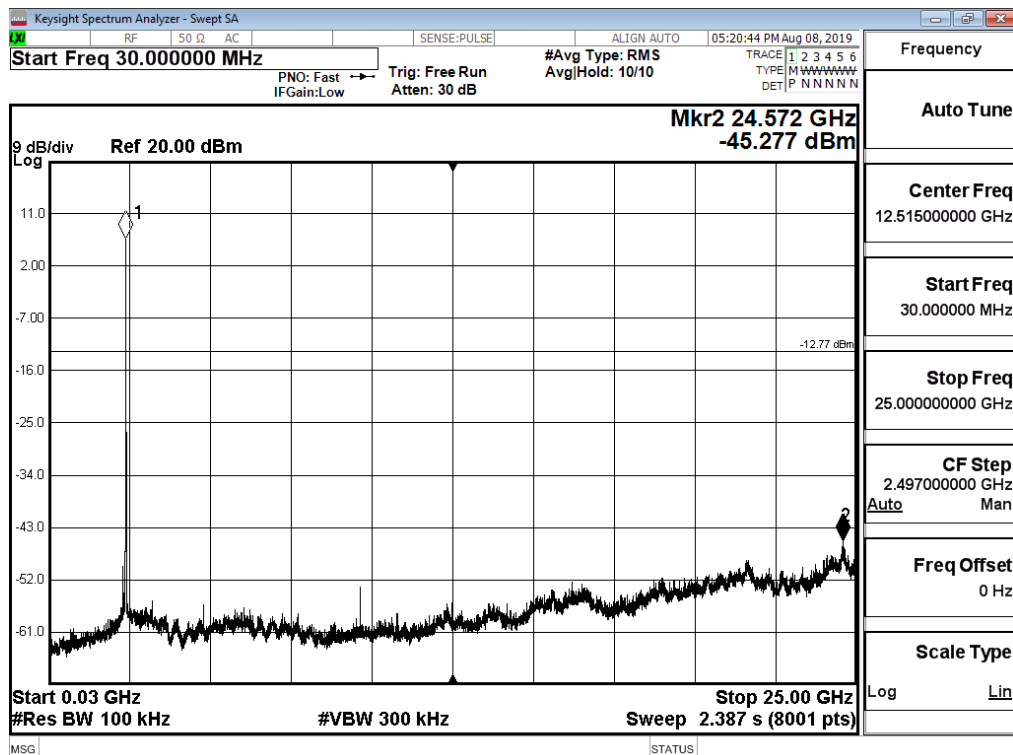
| Mode          | Channel | Pref [dBm] | Max. Level [dBm] | Limit [dBm] | Verdict |
|---------------|---------|------------|------------------|-------------|---------|
| 11B           | LCH     | 7.228      | -45.277          | -12.77      | PASS    |
|               | MCH     | 6.619      | -48.613          | -13.38      | PASS    |
|               | HCH     | 5.535      | -49.601          | -14.46      | PASS    |
| 11G           | LCH     | 2.322      | -48.320          | -17.68      | PASS    |
|               | MCH     | 0.307      | -46.071          | -19.69      | PASS    |
|               | HCH     | -1.097     | -48.715          | -21.10      | PASS    |
| 11N20<br>SISO | LCH     | 2.010      | -45.924          | -17.99      | PASS    |
|               | MCH     | 0.356      | -49.427          | -19.64      | PASS    |
|               | HCH     | -1.011     | -48.073          | -21.01      | PASS    |

## 11B LCH Graphs

Pref/11B/LCH



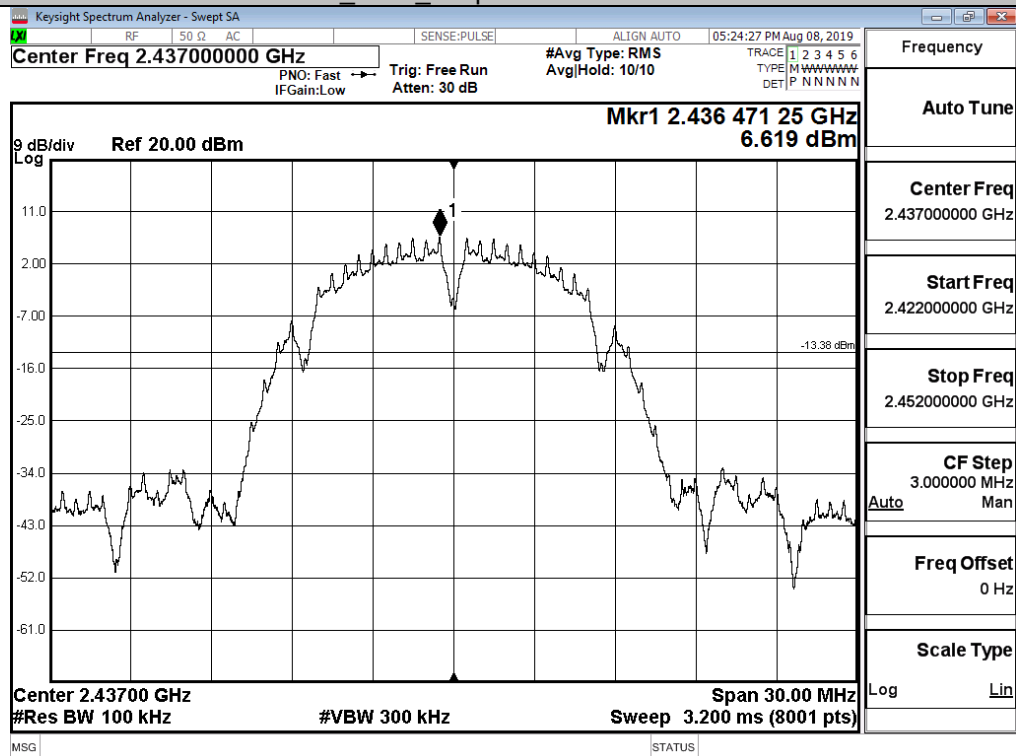
Puw/11B/LCH



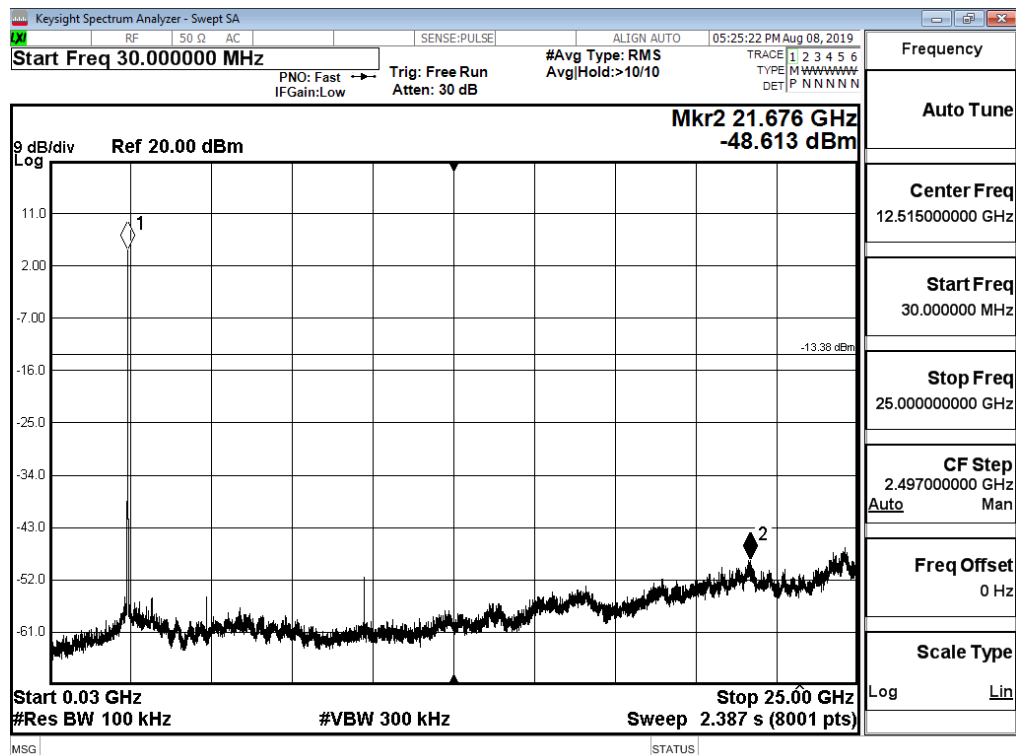


## 11B MCH Graphs

Pref/11B/MCH

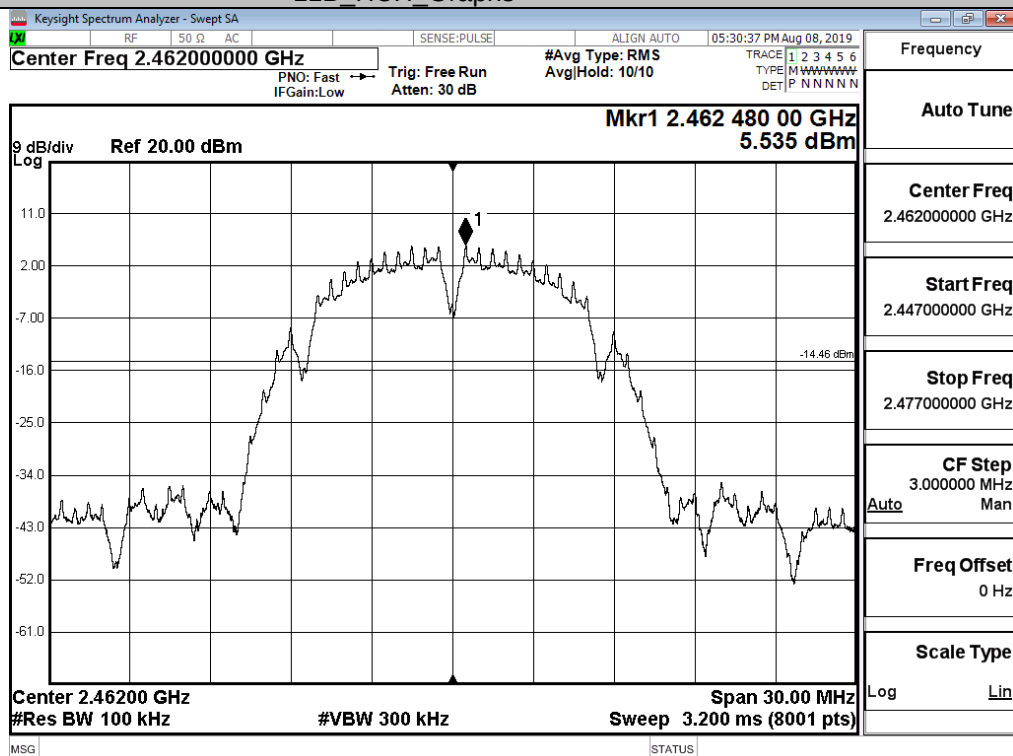


Puw/11B/MCH

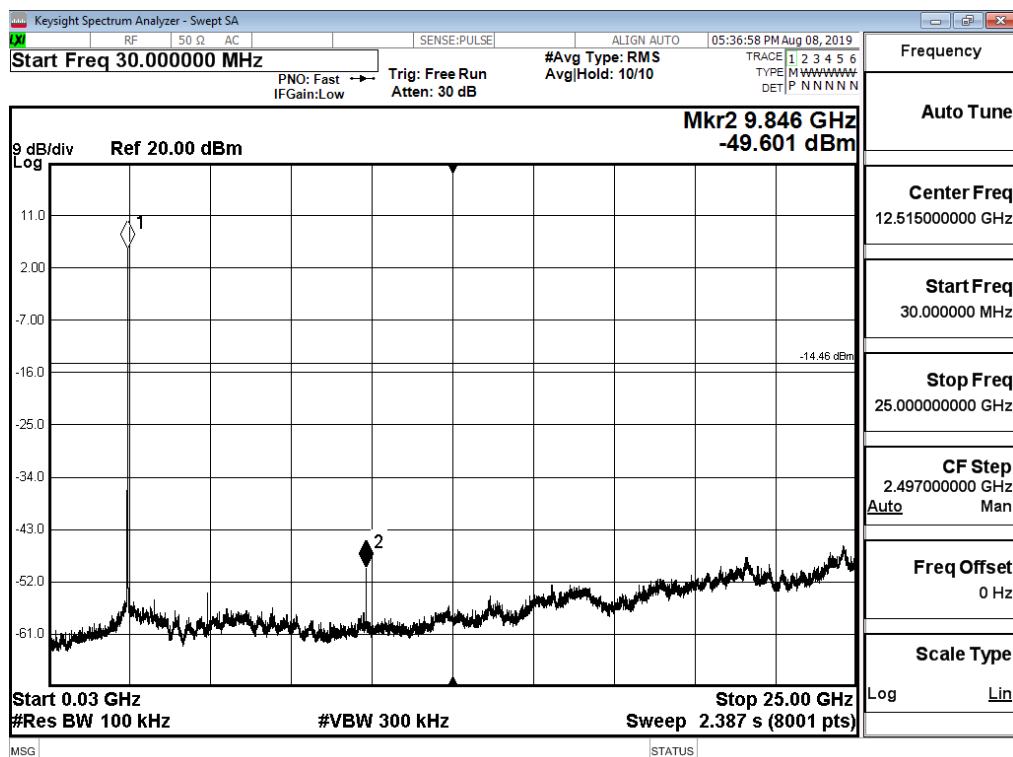


## 11B HCH Graphs

Pref/11B/HCH

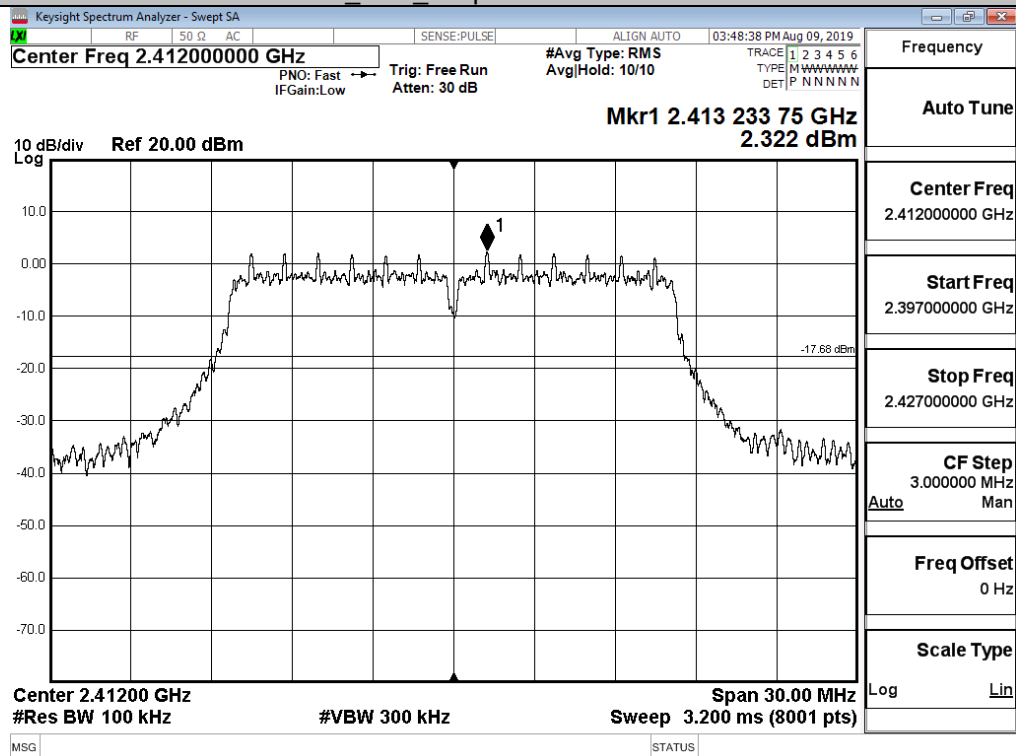


Puw/11B/HCH

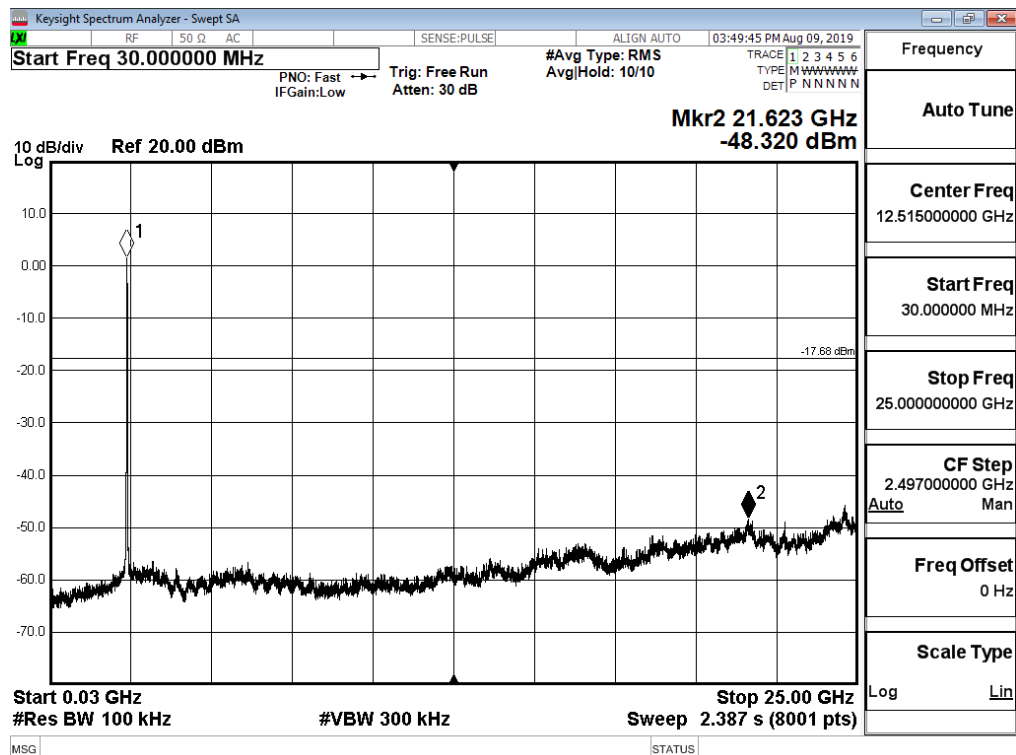


## 11G LCH Graphs

Pref/11G/LCH

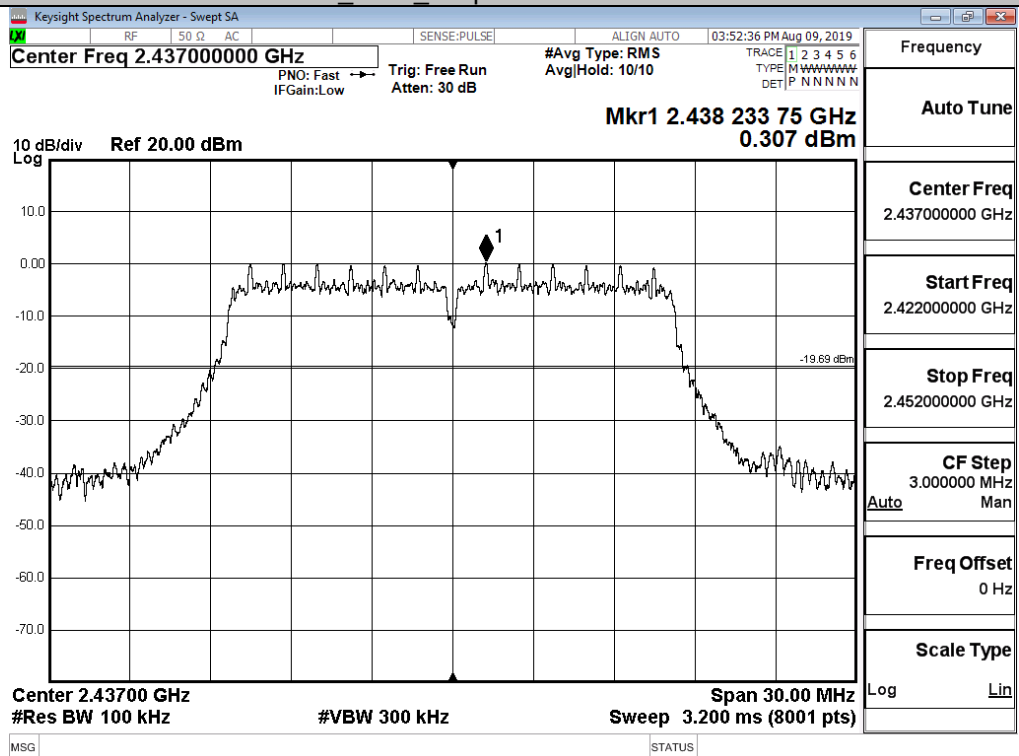


Puw/11G/LCH

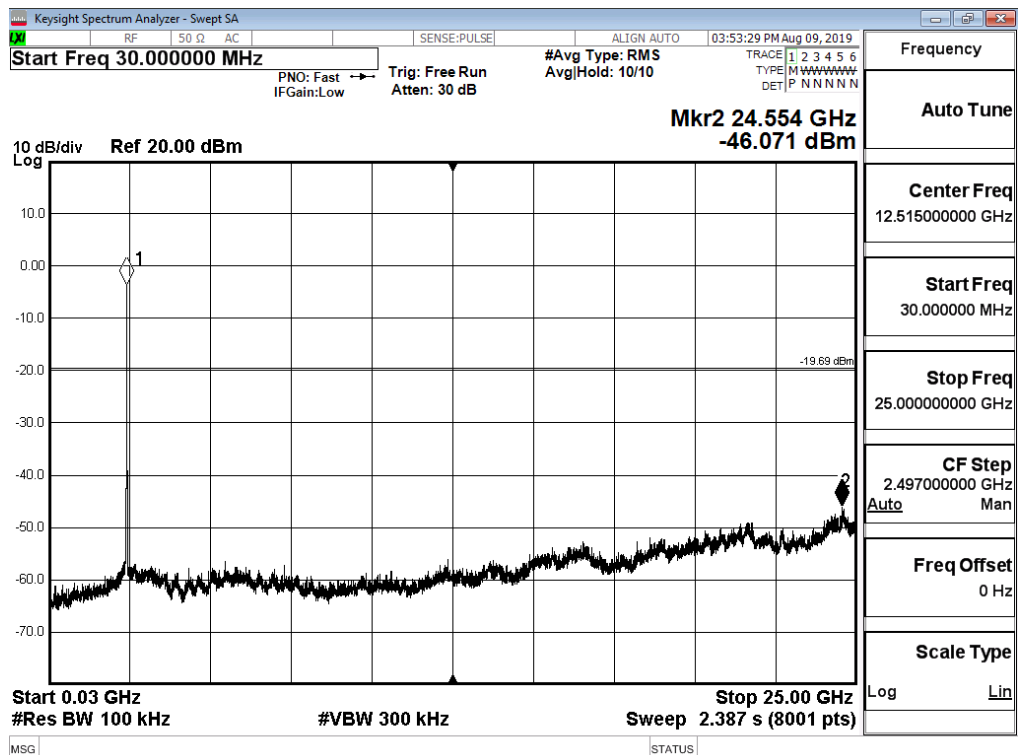


## 11G MCH Graphs

Pref/11G/MCH

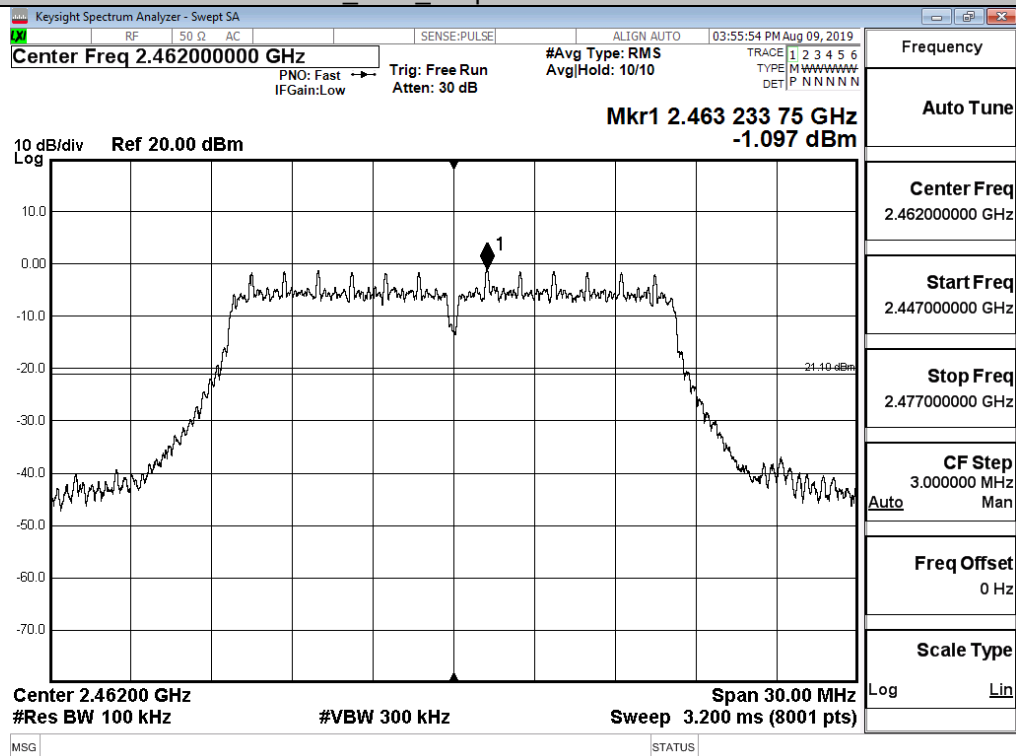


Puw/11G/MCH

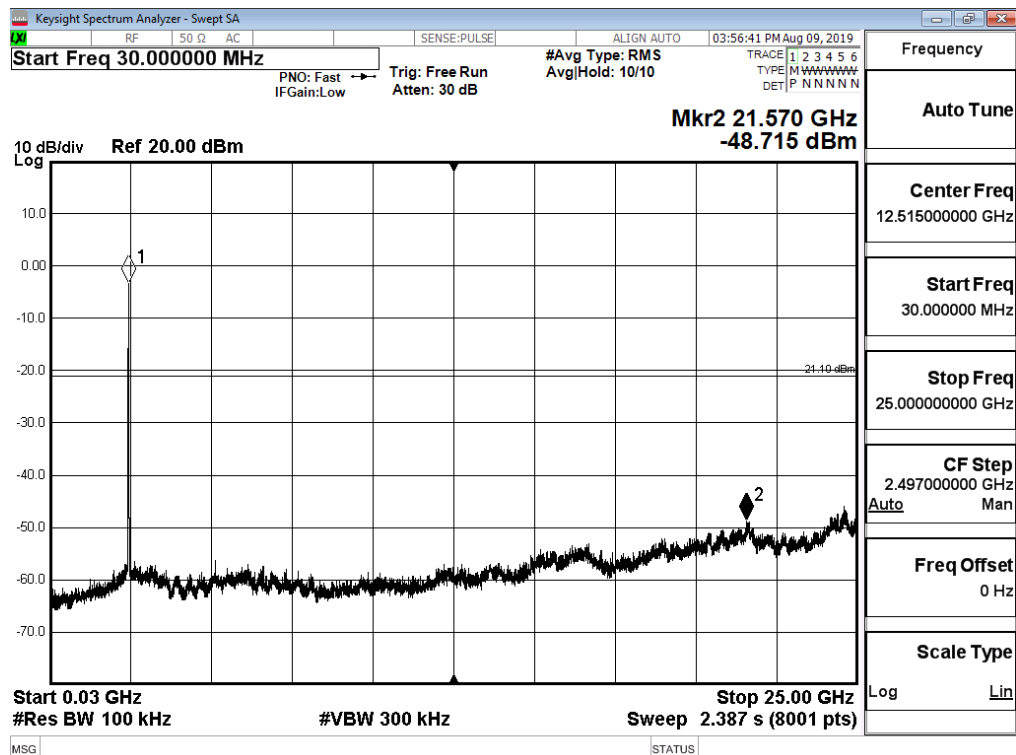


## 11G HCH Graphs

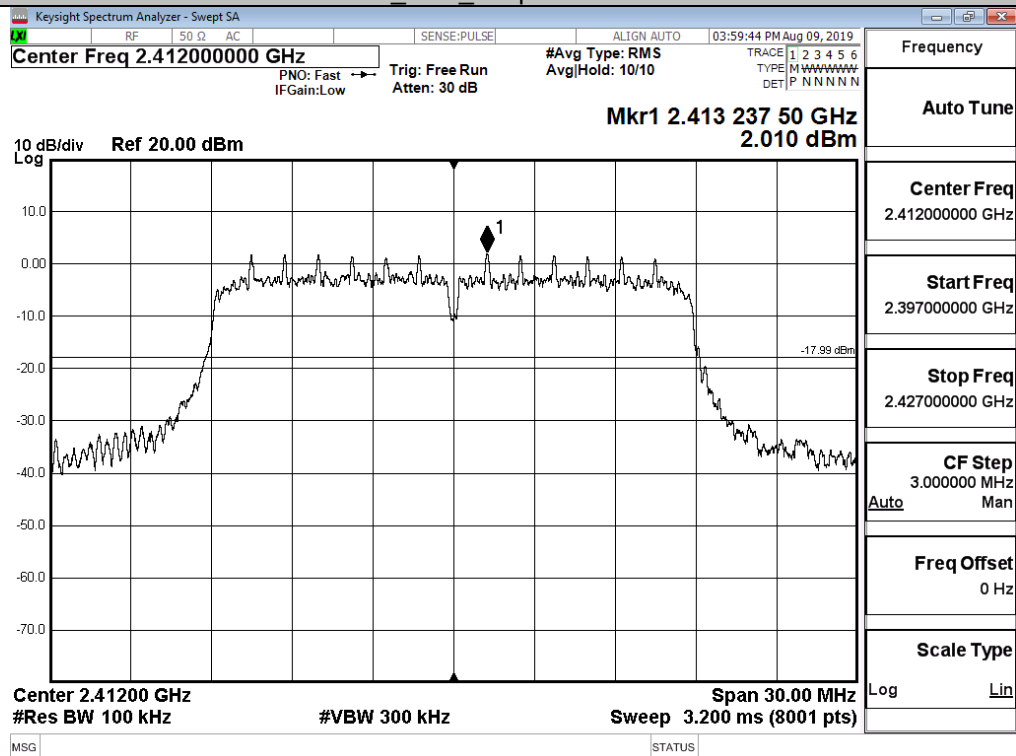
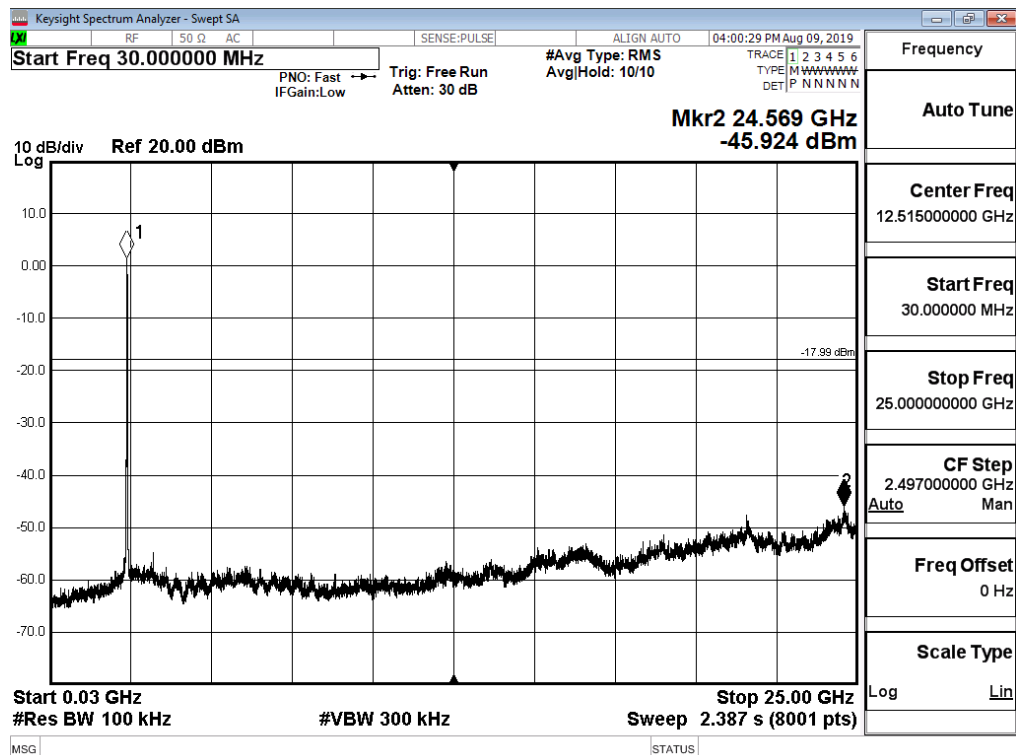
Pref/11G/HCH



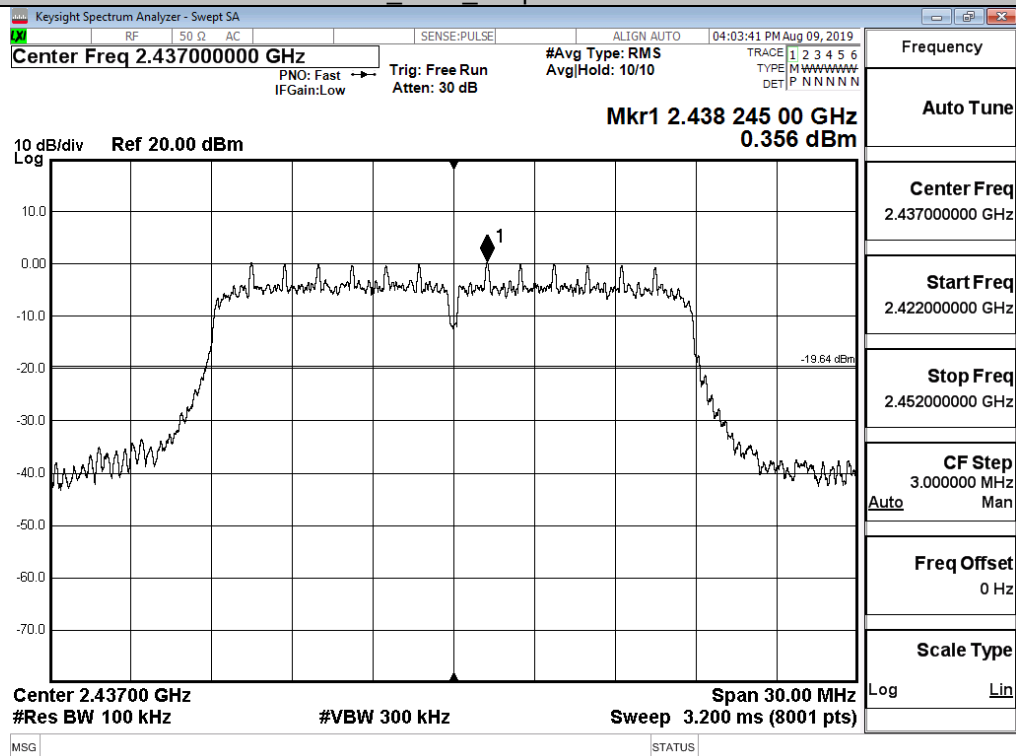
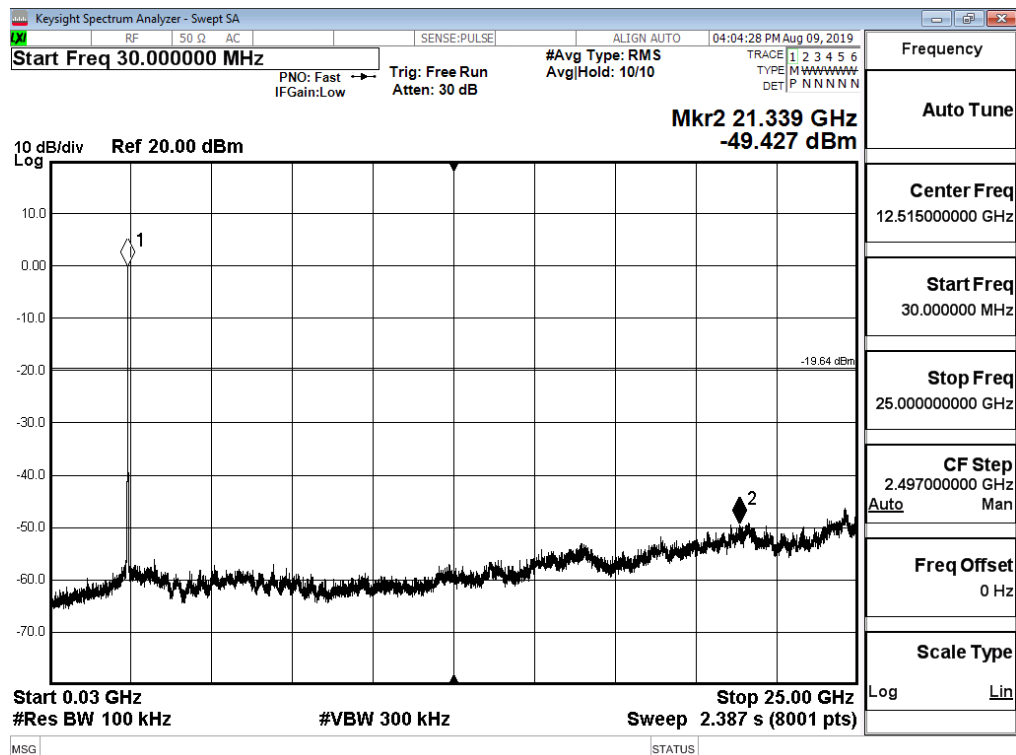
Puw/11G/HCH



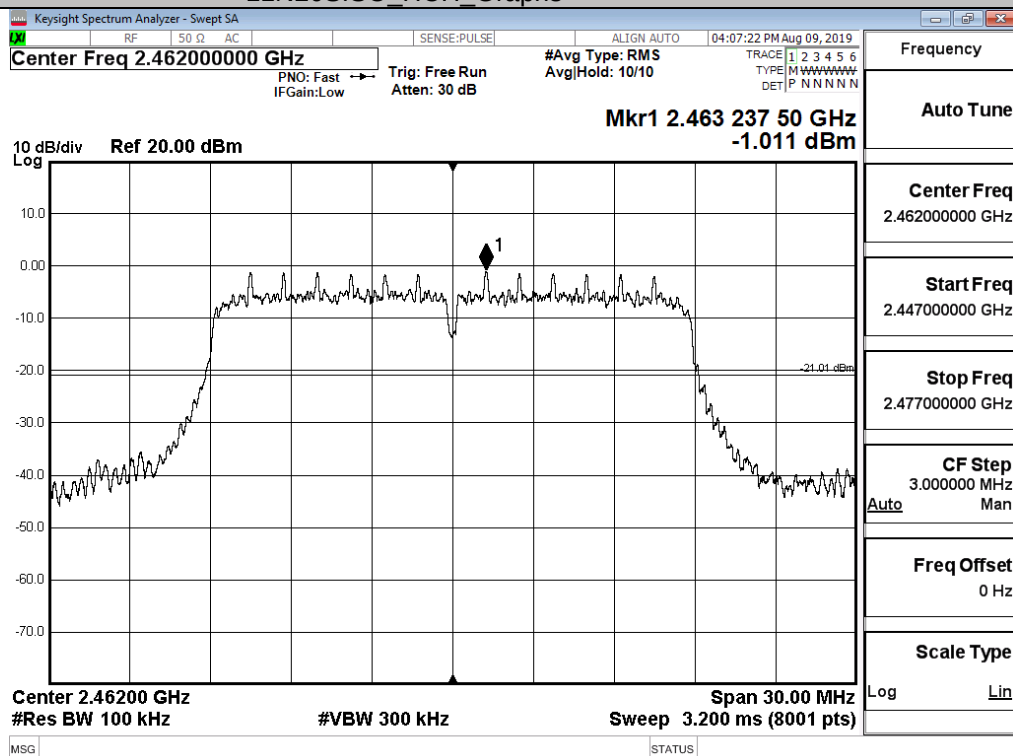
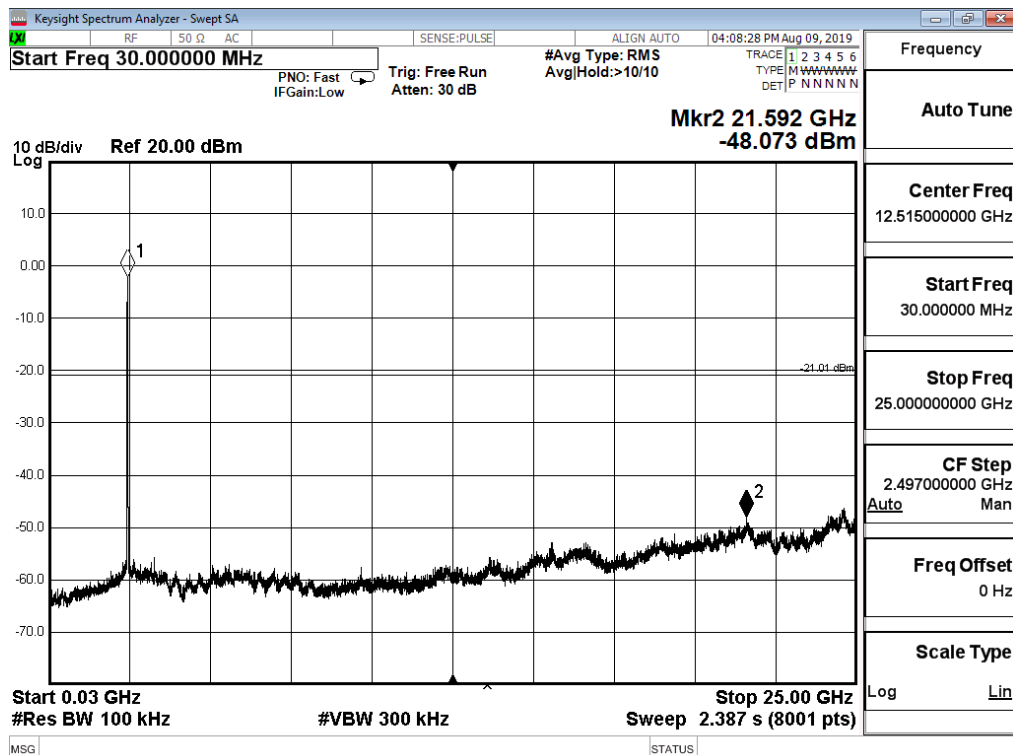
## 11N20SISO LCH Graphs

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

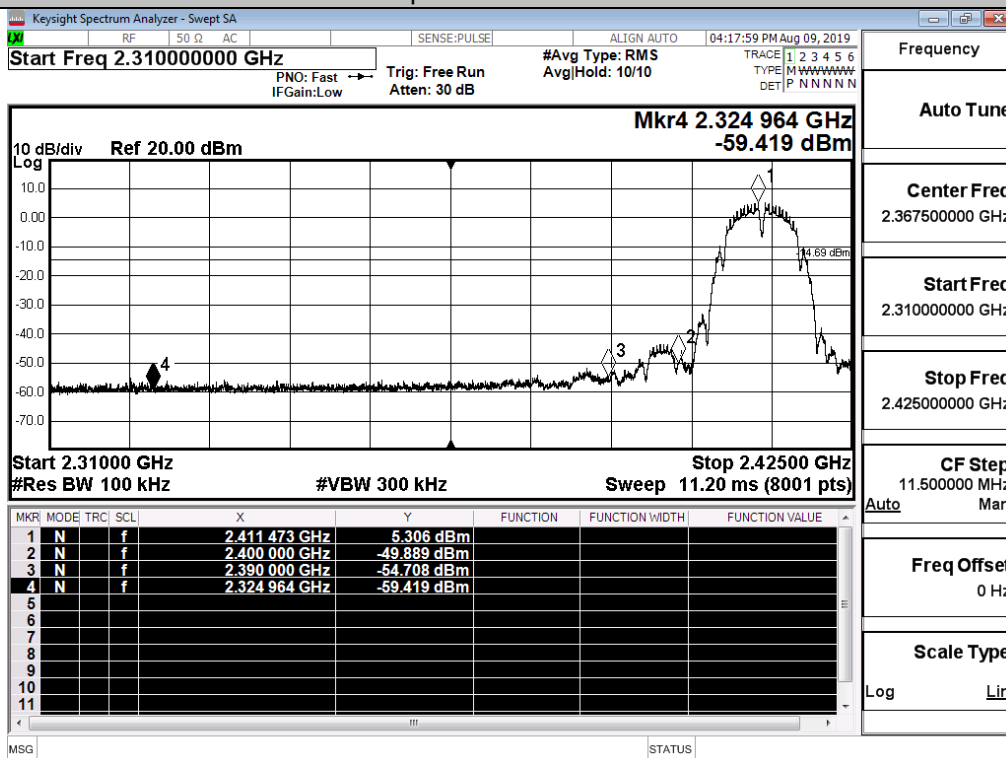


**B.6 Band-edge for RF Conducted Emissions**

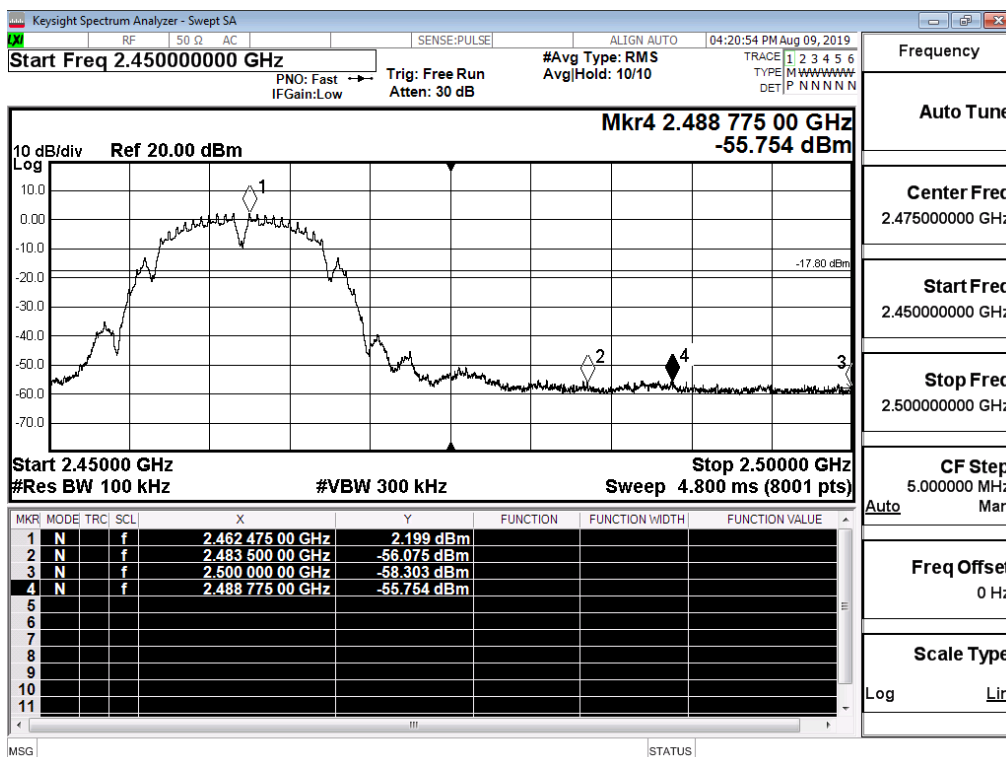
| Mode      | Channel | Carrier Power[dBm] | Max.Spurious Level [dBm] | Limit [dBm] | Verdict |
|-----------|---------|--------------------|--------------------------|-------------|---------|
| 11B       | LCH     | 5.306              | -59.419                  | -14.69      | PASS    |
|           | HCH     | 2.199              | -55.754                  | -17.80      | PASS    |
| 11G       | LCH     | 1.991              | -57.480                  | -18.01      | PASS    |
|           | HCH     | -0.916             | -48.998                  | -20.92      | PASS    |
| 11N20SISO | LCH     | 2.198              | -53.890                  | -17.80      | PASS    |
|           | HCH     | -0.892             | -49.139                  | -20.89      | PASS    |

## Test Graphs

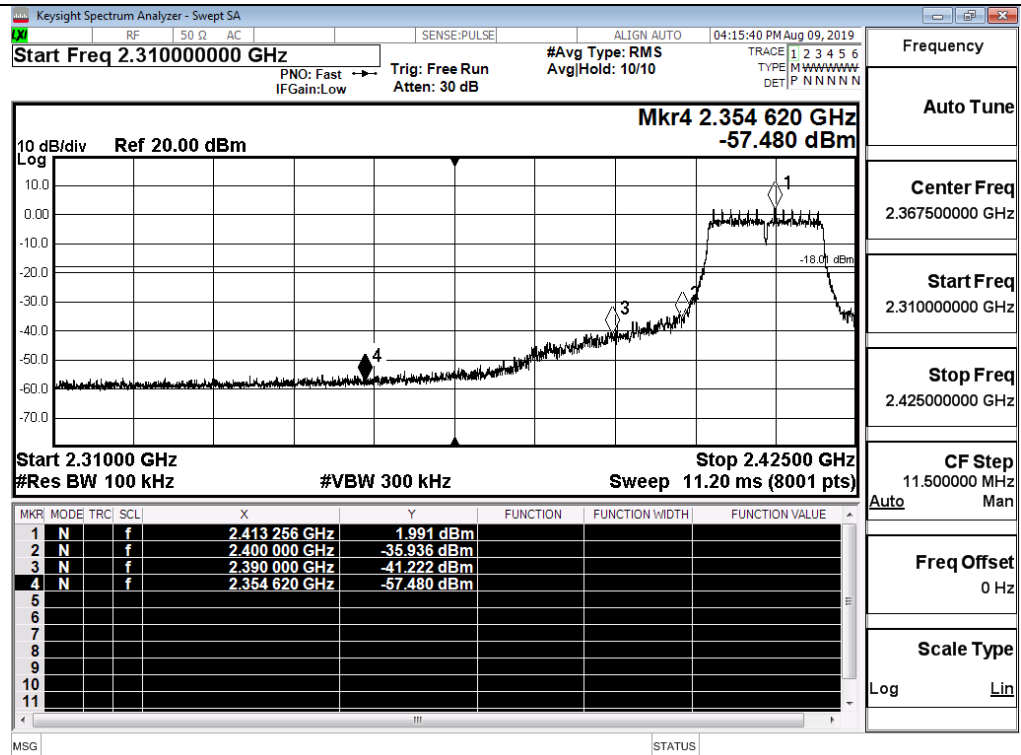
11B/LCH



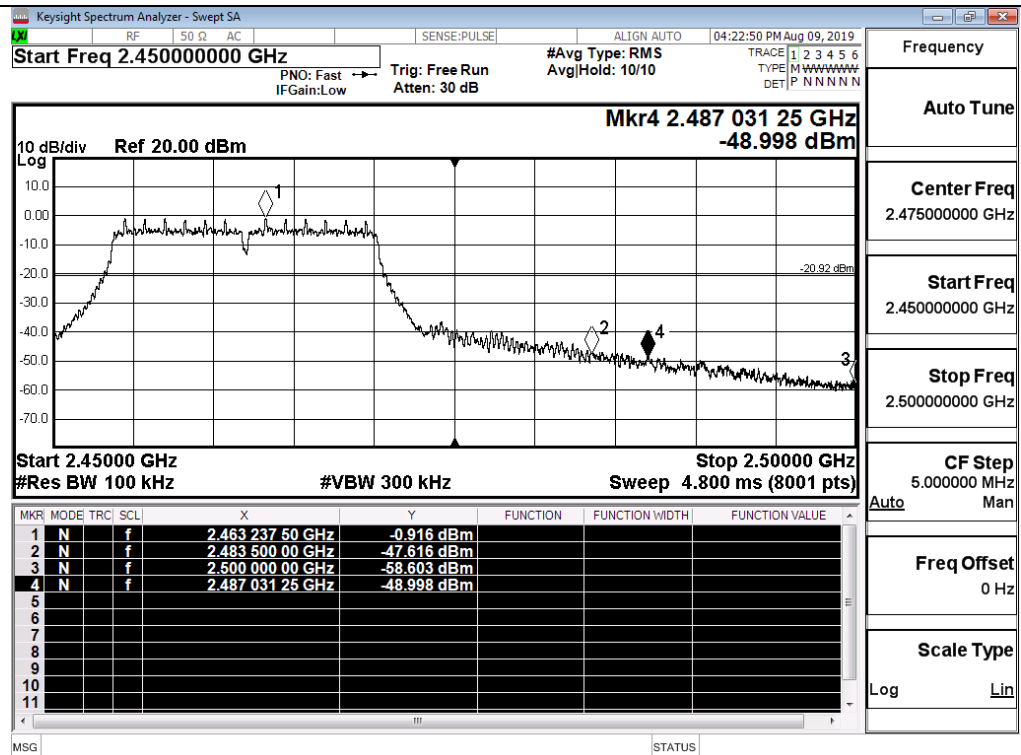
11B/HCH



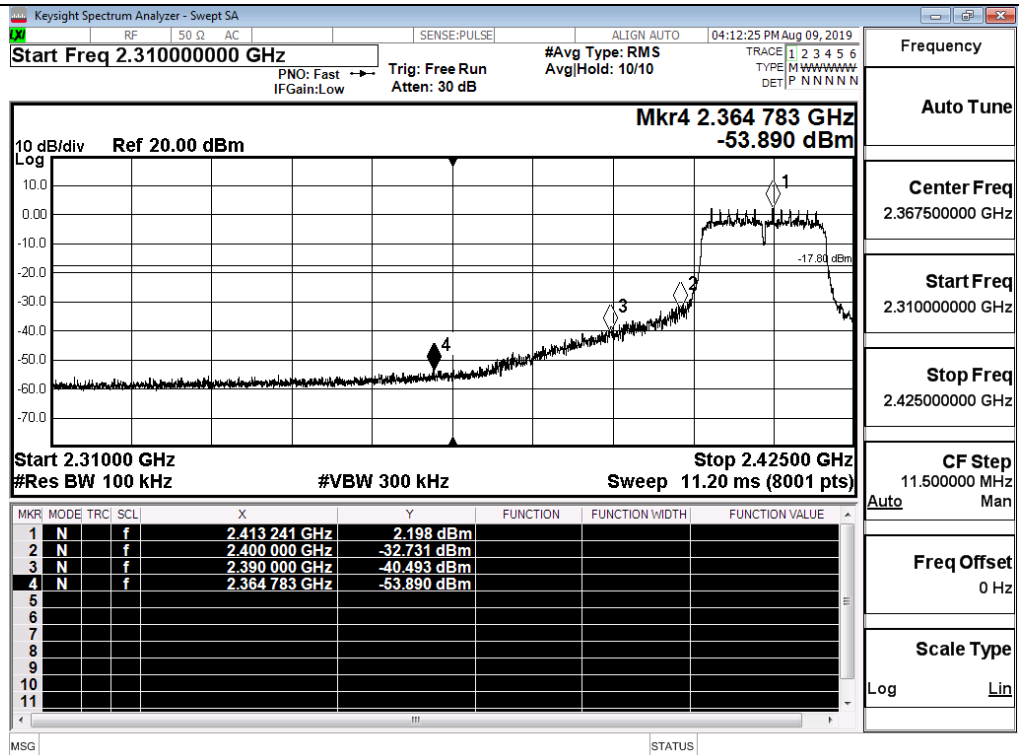
11G/LCH



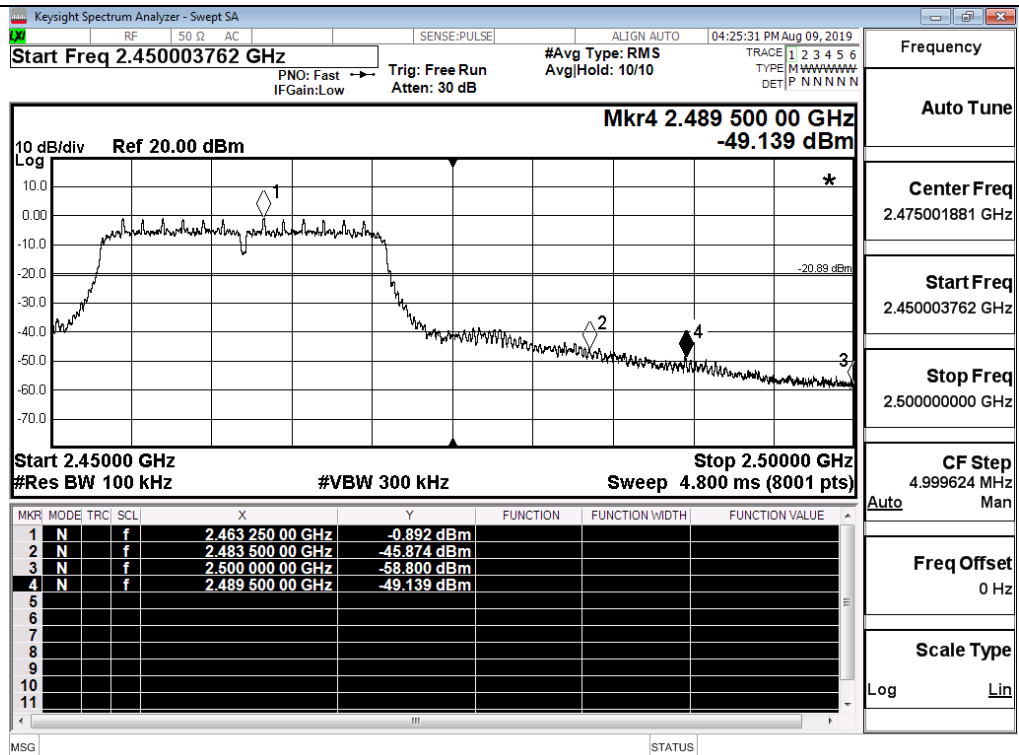
11G/HCH



11N20SISO/LCH



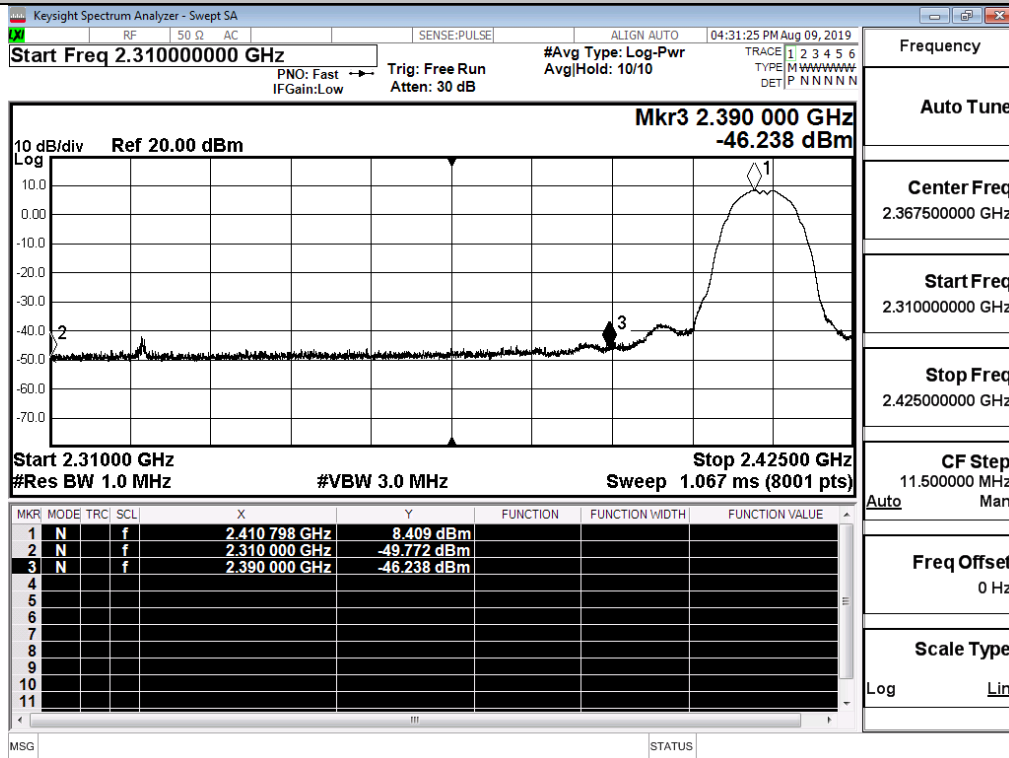
11N20SISO/HCH



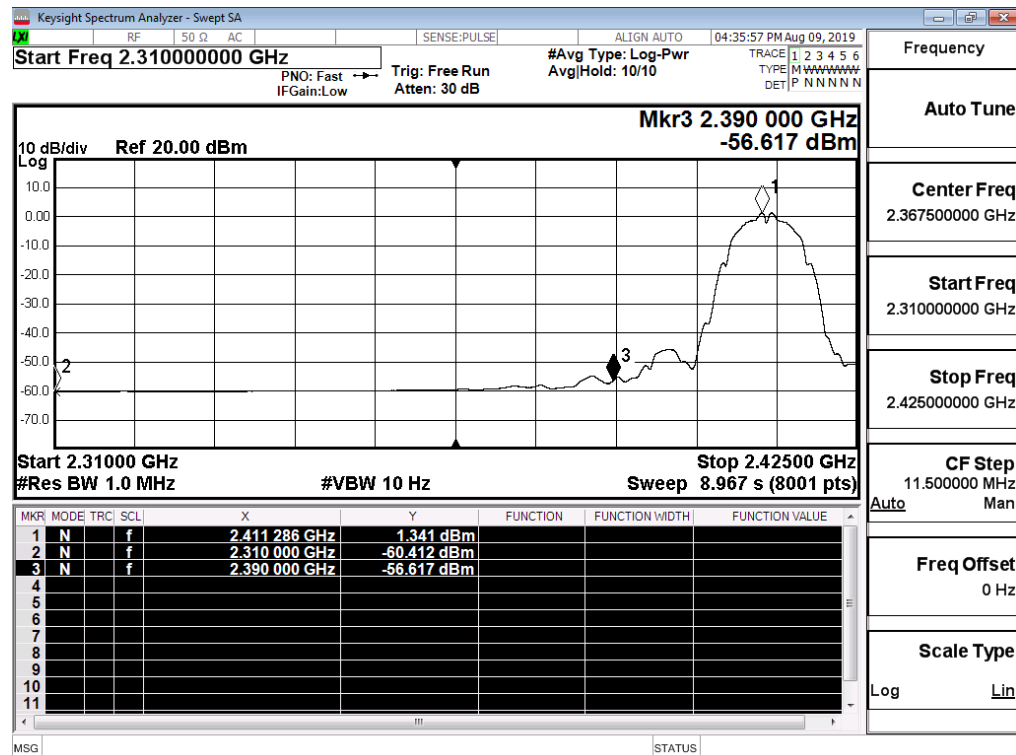
## B.7 Restrict-band band-edge measurements

| Test Mode  | Test Channel | Ant  | Freq.  | Power [dBm] | Gain | Ground Factor | E [dBuV/m] | Detector | Limit [dBuV/m] | Verdict |
|------------|--------------|------|--------|-------------|------|---------------|------------|----------|----------------|---------|
| 11B        | 2412         | Ant1 | 2310.0 | -49.772     | 2.5  | 0             | 47.988     | PEAK     | 74             | PASS    |
|            | 2412         | Ant1 | 2310.0 | -60.412     | 2.5  | 0             | 37.348     | AV       | 54             | PASS    |
|            | 2412         | Ant1 | 2390.0 | -46.238     | 2.5  | 0             | 51.522     | PEAK     | 74             | PASS    |
|            | 2412         | Ant1 | 2390.0 | -56.617     | 2.5  | 0             | 41.143     | AV       | 54             | PASS    |
|            | 2462         | Ant1 | 2483.5 | -48.939     | 2.5  | 0             | 48.821     | PEAK     | 74             | PASS    |
|            | 2462         | Ant1 | 2483.5 | -56.512     | 2.5  | 0             | 41.248     | AV       | 54             | PASS    |
|            | 2462         | Ant1 | 2500.0 | -48.321     | 2.5  | 0             | 49.439     | PEAK     | 74             | PASS    |
|            | 2462         | Ant1 | 2500.0 | -57.225     | 2.5  | 0             | 40.535     | AV       | 54             | PASS    |
| 11G        | 2412         | Ant1 | 2310.0 | -47.706     | 2.5  | 0             | 50.054     | PEAK     | 74             | PASS    |
|            | 2412         | Ant1 | 2310.0 | -60.342     | 2.5  | 0             | 37.418     | AV       | 54             | PASS    |
|            | 2412         | Ant1 | 2390.0 | -27.275     | 2.5  | 0             | 70.485     | PEAK     | 74             | PASS    |
|            | 2412         | Ant1 | 2390.0 | -46.549     | 2.5  | 0             | 51.211     | AV       | 54             | PASS    |
|            | 2462         | Ant1 | 2483.5 | -33.285     | 2.5  | 0             | 64.475     | PEAK     | 74             | PASS    |
|            | 2462         | Ant1 | 2483.5 | -43.814     | 2.5  | 0             | 53.946     | AV       | 54             | PASS    |
|            | 2462         | Ant1 | 2500.0 | -47.993     | 2.5  | 0             | 49.767     | PEAK     | 74             | PASS    |
|            | 2462         | Ant1 | 2500.0 | -56.040     | 2.5  | 0             | 41.720     | AV       | 54             | PASS    |
| 11N20 SISO | 2412         | Ant1 | 2310.0 | -49.525     | 2.5  | 0             | 48.235     | PEAK     | 74             | PASS    |
|            | 2412         | Ant1 | 2310.0 | -60.388     | 2.5  | 0             | 37.372     | AV       | 54             | PASS    |
|            | 2412         | Ant1 | 2390.0 | -27.648     | 2.5  | 0             | 70.112     | PEAK     | 74             | PASS    |
|            | 2412         | Ant1 | 2390.0 | -46.381     | 2.5  | 0             | 51.379     | AV       | 54             | PASS    |
|            | 2462         | Ant1 | 2483.5 | -26.736     | 2.5  | 0             | 71.024     | PEAK     | 74             | PASS    |
|            | 2462         | Ant1 | 2483.5 | -44.202     | 2.5  | 0             | 53.558     | AV       | 54             | PASS    |
|            | 2462         | Ant1 | 2500.0 | -44.700     | 2.5  | 0             | 53.060     | PEAK     | 74             | PASS    |
|            | 2462         | Ant1 | 2500.0 | -54.777     | 2.5  | 0             | 42.983     | AV       | 54             | PASS    |

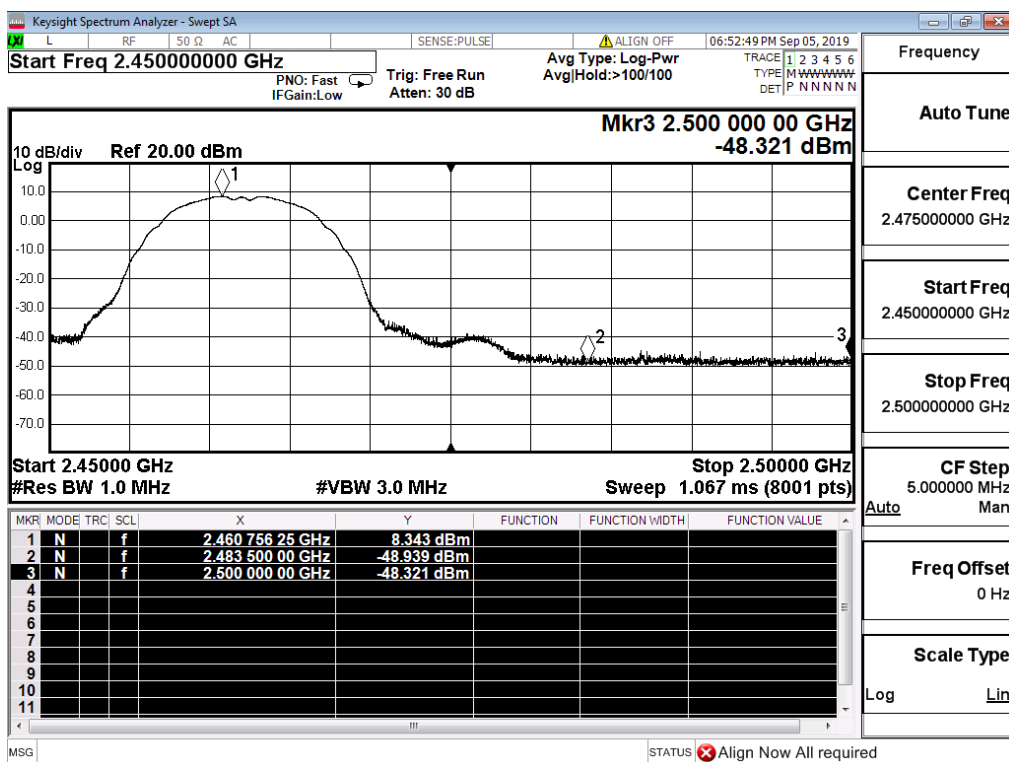
## Restrict-band band-edge measurements\_11B\_2412\_Ant1\_PEAK



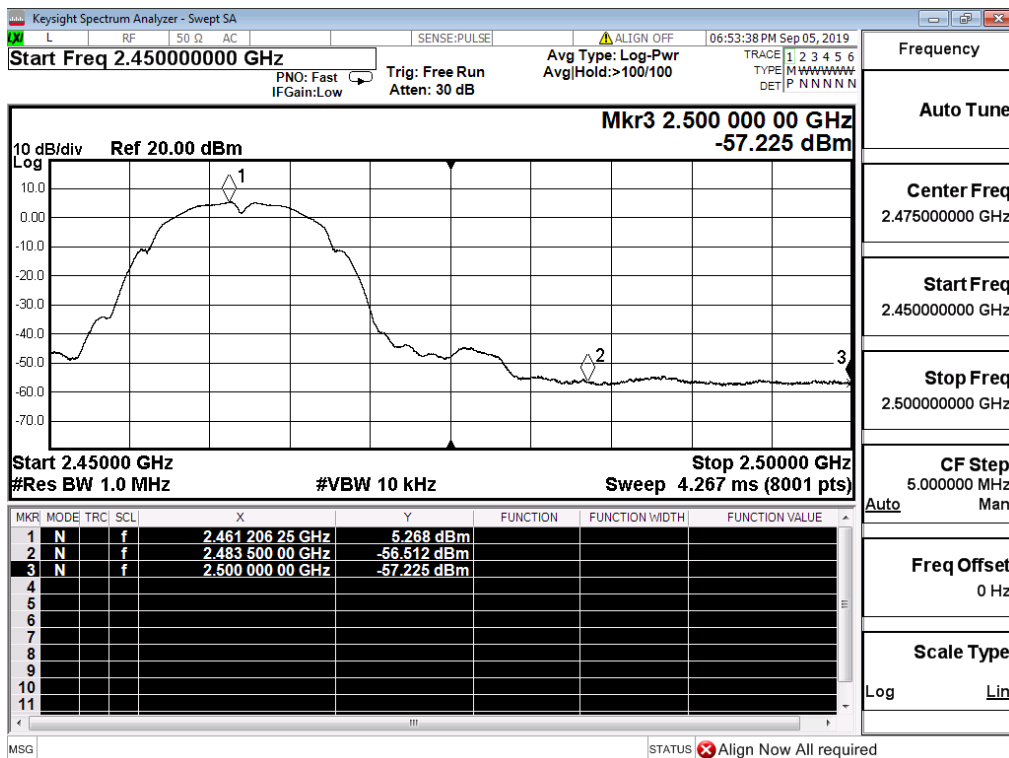
## Restrict-band band-edge measurements\_11B\_2412\_Ant1\_AV



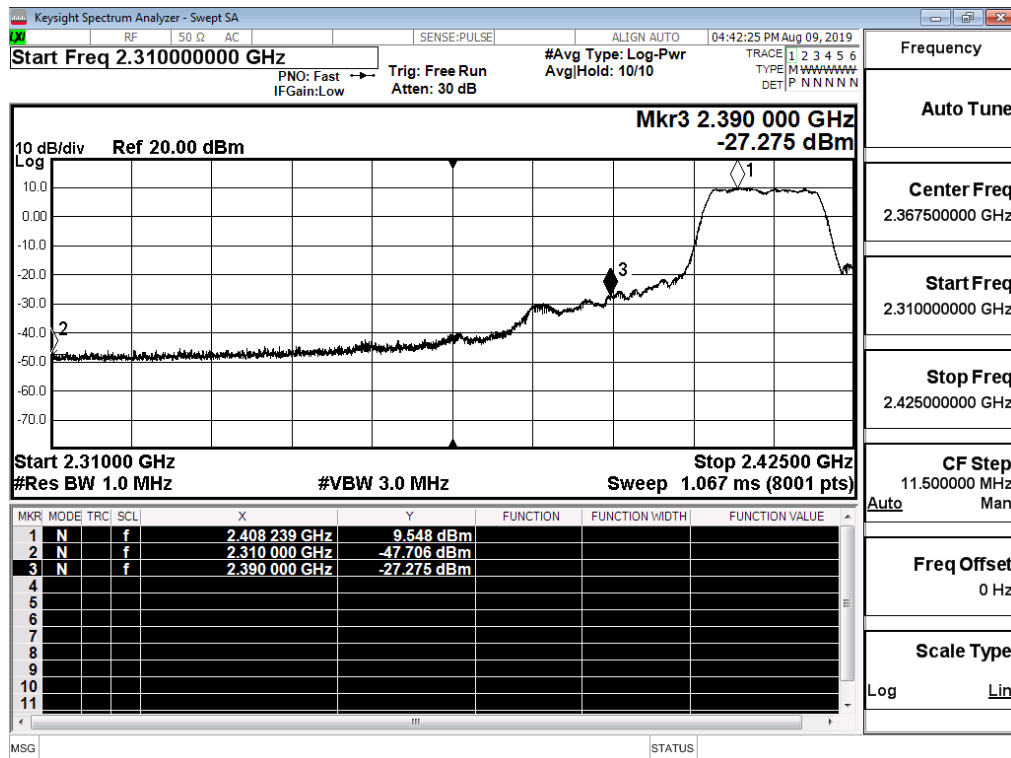
## Restrict-band band-edge measurements\_11B\_2462\_Ant1\_PEAK



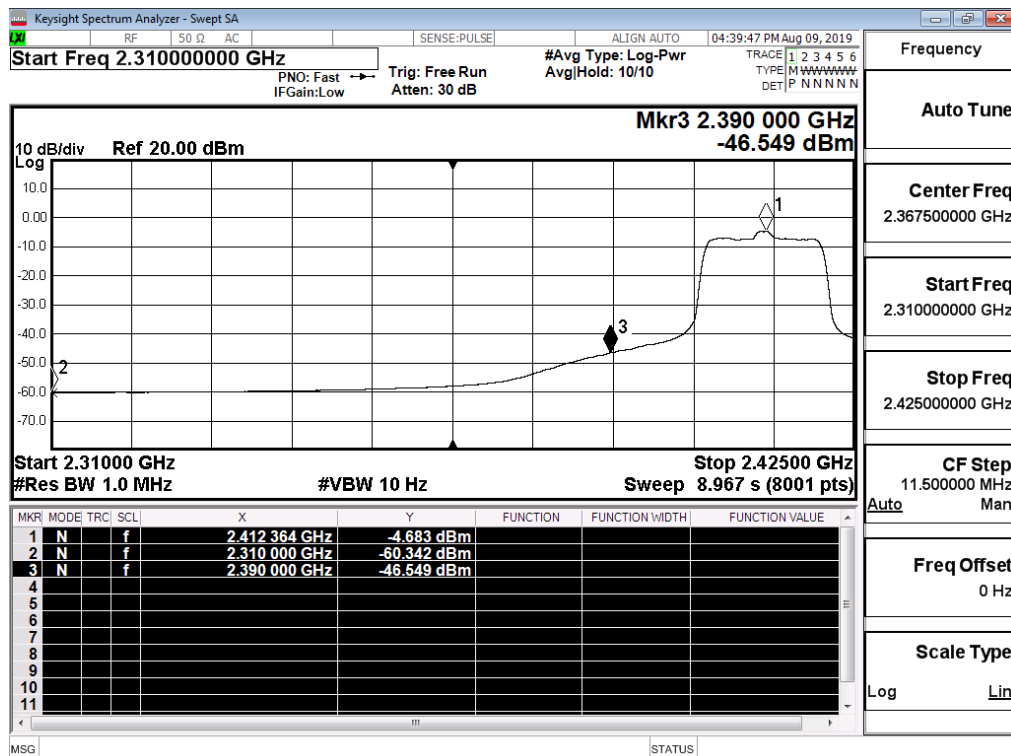
## Restrict-band band-edge measurements\_11B\_2462\_Ant1\_AV



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

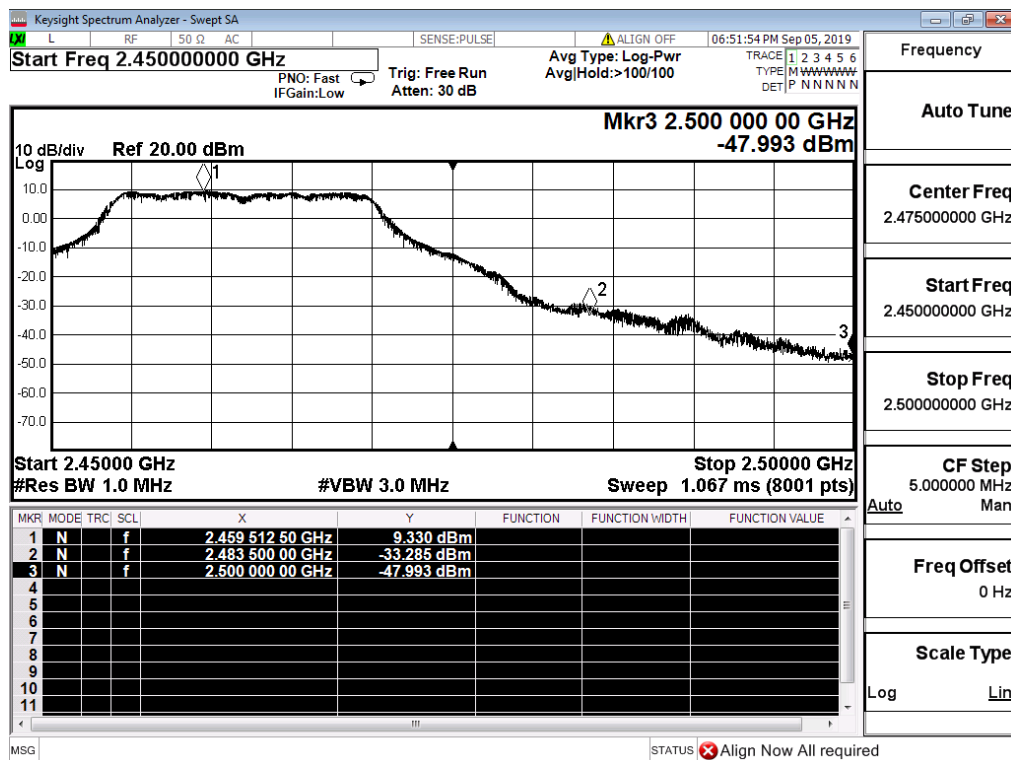


## Restrict-band band-edge measurements\_11G\_2412\_Ant1\_AV

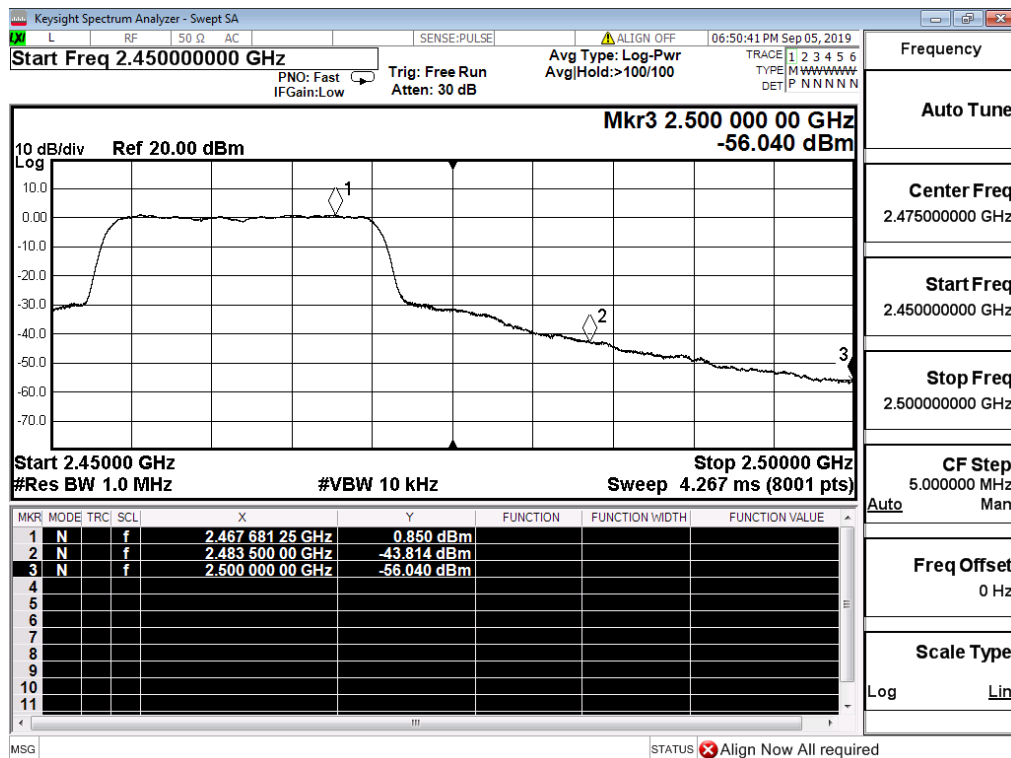




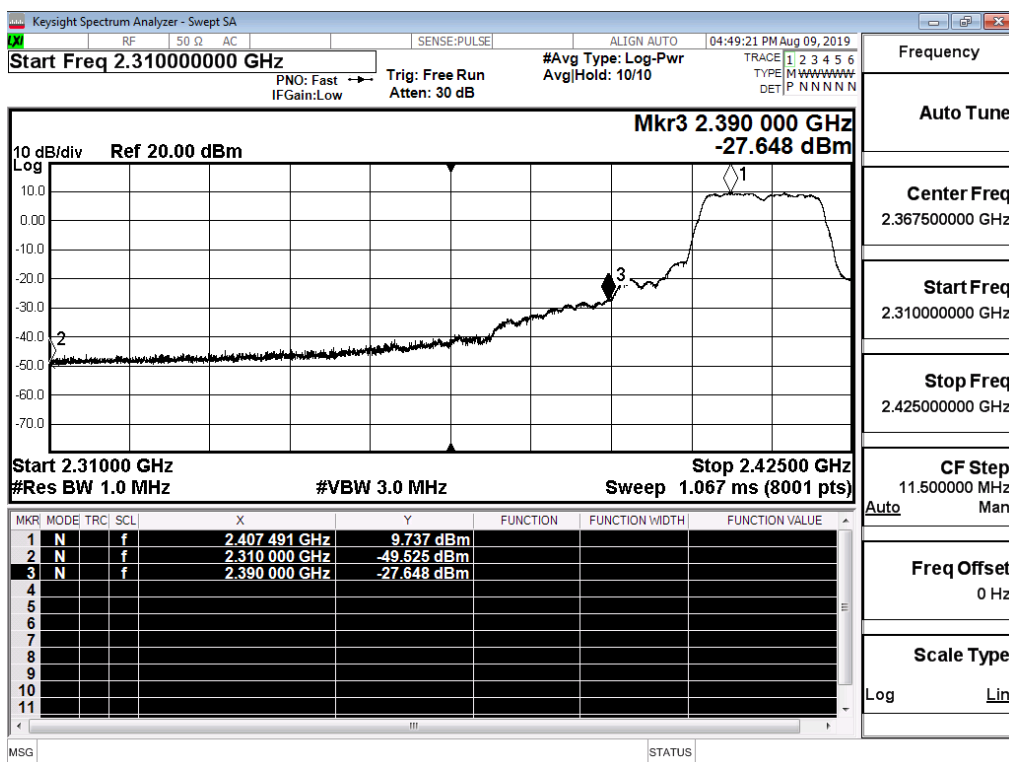
## Restrict-band band-edge measurements\_11G\_2462\_Ant1\_PEAK



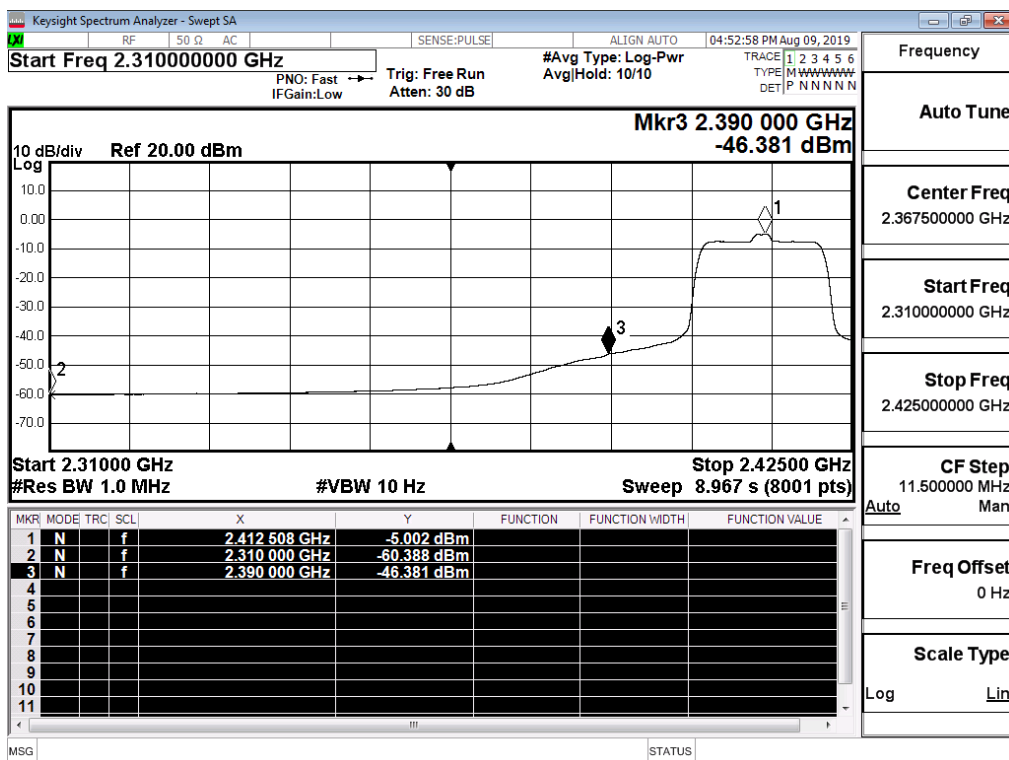
## Restrict-band band-edge measurements\_11G\_2462\_Ant1\_AV



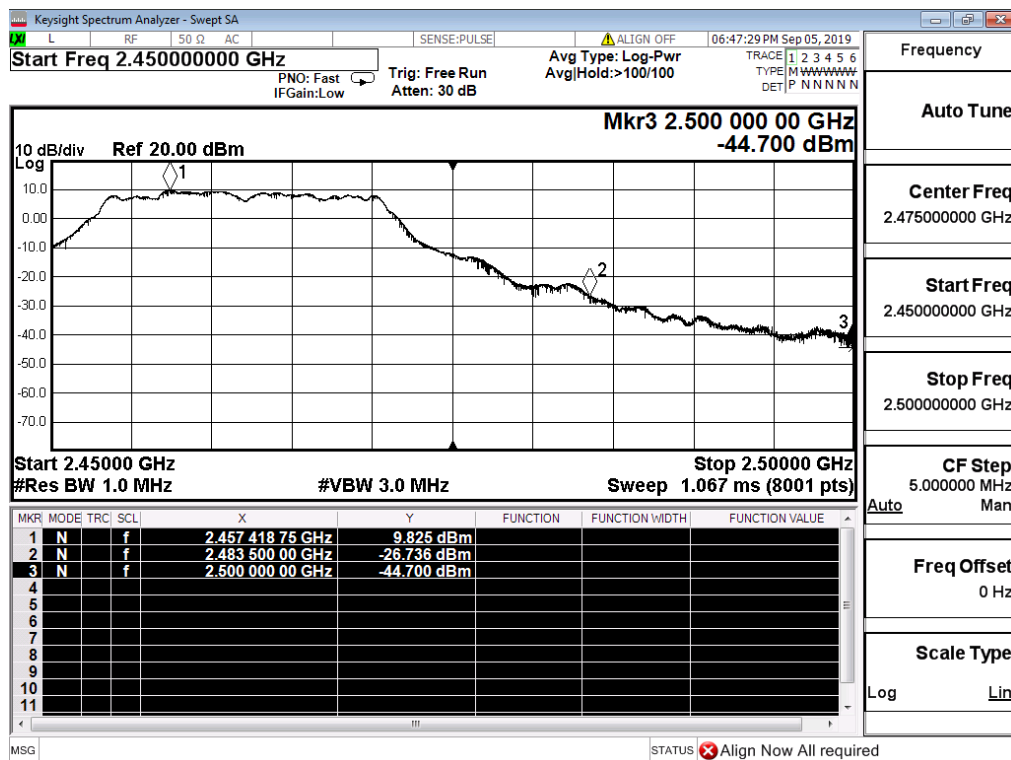
## Restrict-band band-edge measurements\_11N20SISO\_2412\_Ant1\_PEAK



## 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

