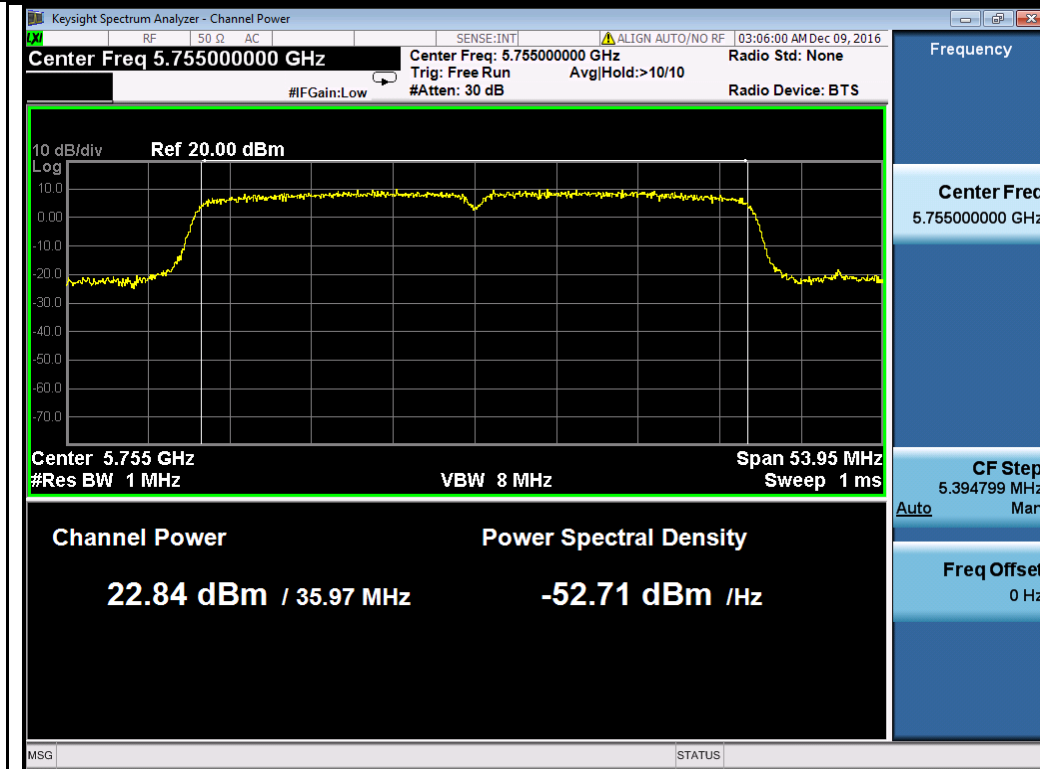
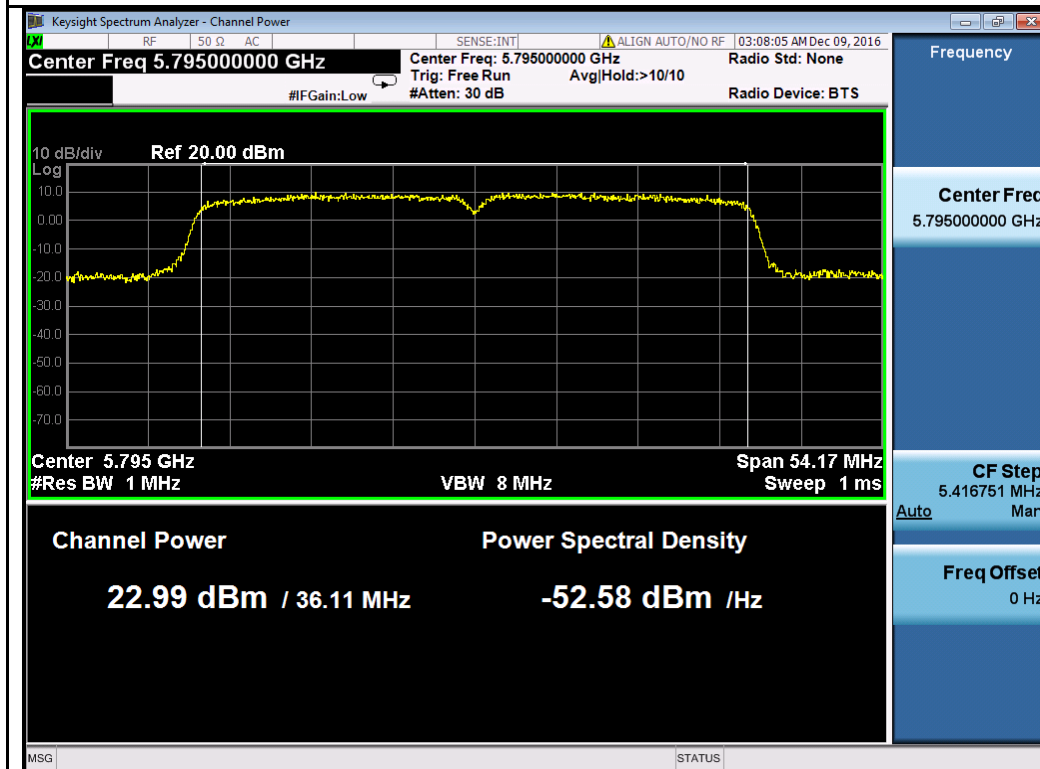
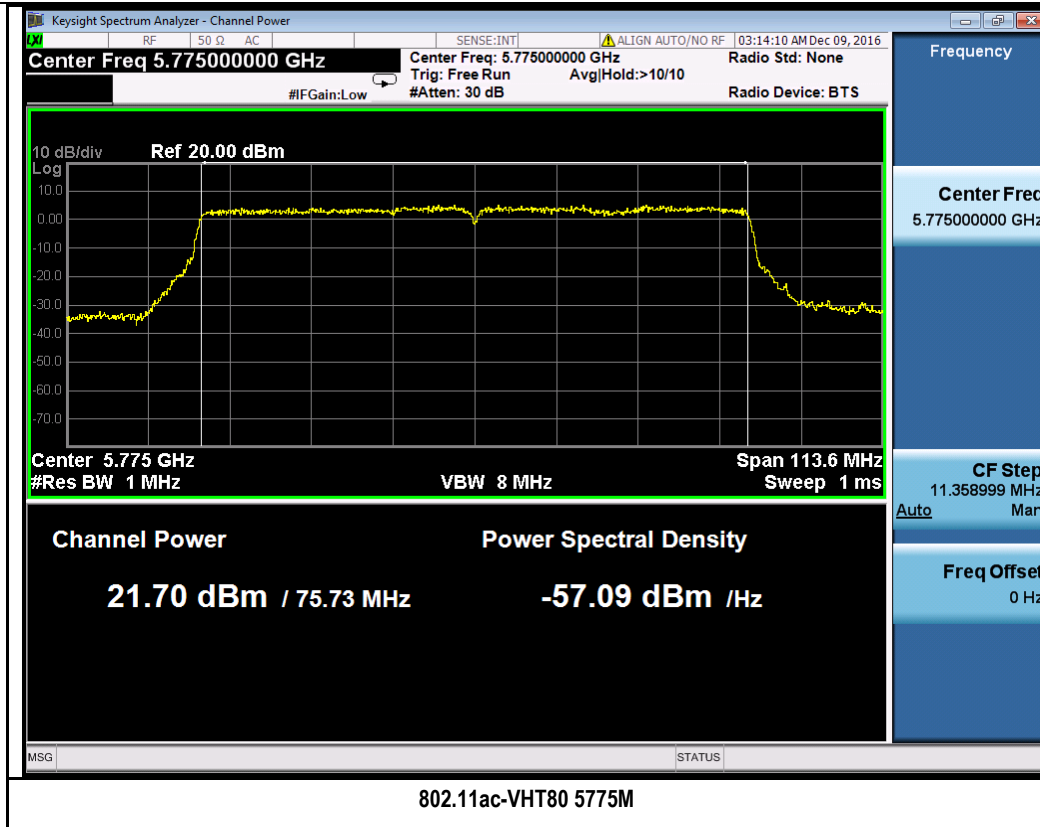




802.11n-HT40 5755M

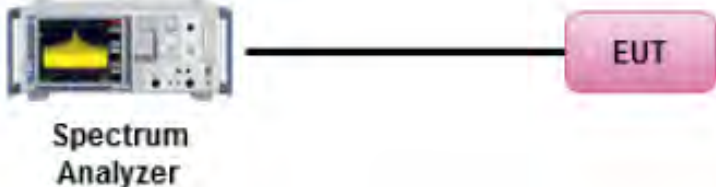


802.11n-HT40 5795M



## 10.4 Peak Spectral Density

### Requirement(s):

| Spec           | Item                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Requirement                                                                                                                                          | Applicable                                                                 |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| § 15.407       | a)(1)(i)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. | <input checked="" type="checkbox"/>                                        |
|                | a)(3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.                                         | <input checked="" type="checkbox"/>                                        |
| Test Setup     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                      |                                                                            |
| Test Procedure | <p>789033 D02 General UNII Test Procedures New Rules v01r02, II.F. Method SA-1</p> <p><u>Maximum spectral density measurement procedure</u></p> <ul style="list-style-type: none"> <li>- Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.</li> <li>- Set RBW = 1 MHz</li> <li>- Set VBW ≥ 3 MHz</li> <li>- Detector = RMS.</li> <li>- Sweep time = auto couple.</li> <li>- Trace mode = max hold.</li> <li>- Trace average at least 100 traces in power averaging</li> <li>- Use the peak marker function to determine the maximum amplitude level within the RBW.</li> </ul> <p>Apply correction to the result if different RBW is used.</p> |                                                                                                                                                      |                                                                            |
| Test Date      | 12/05/2016 – 12/20/2016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Environmental condition                                                                                                                              | Temperature 22°C<br>Relative Humidity 42%<br>Atmospheric Pressure 1020mbar |
| Remark         | Per KDB 662911 D01 Multiple Transmitter Output v02r01, the direction gain for horizontal polarization and vertical polarization is calculated separately. For 5GHz band, peak antenna gain = 3.5 dBi, directional gain = 3 dB, total gain = 6.5 dBi. Highest of total gain is 6.5 dBi. The power limit and PSD limit will be reduced by amount of 0.5 dB.                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                      |                                                                            |
| Result         | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                      |                                                                            |

Test Data    ☒ Yes                      ☐ N/A

Test Plot    ☒ Yes (See below)              ☐ N/A

Test was done by Shuo Zhang at RF test site.

### PSD measurement result for 5.2GHz

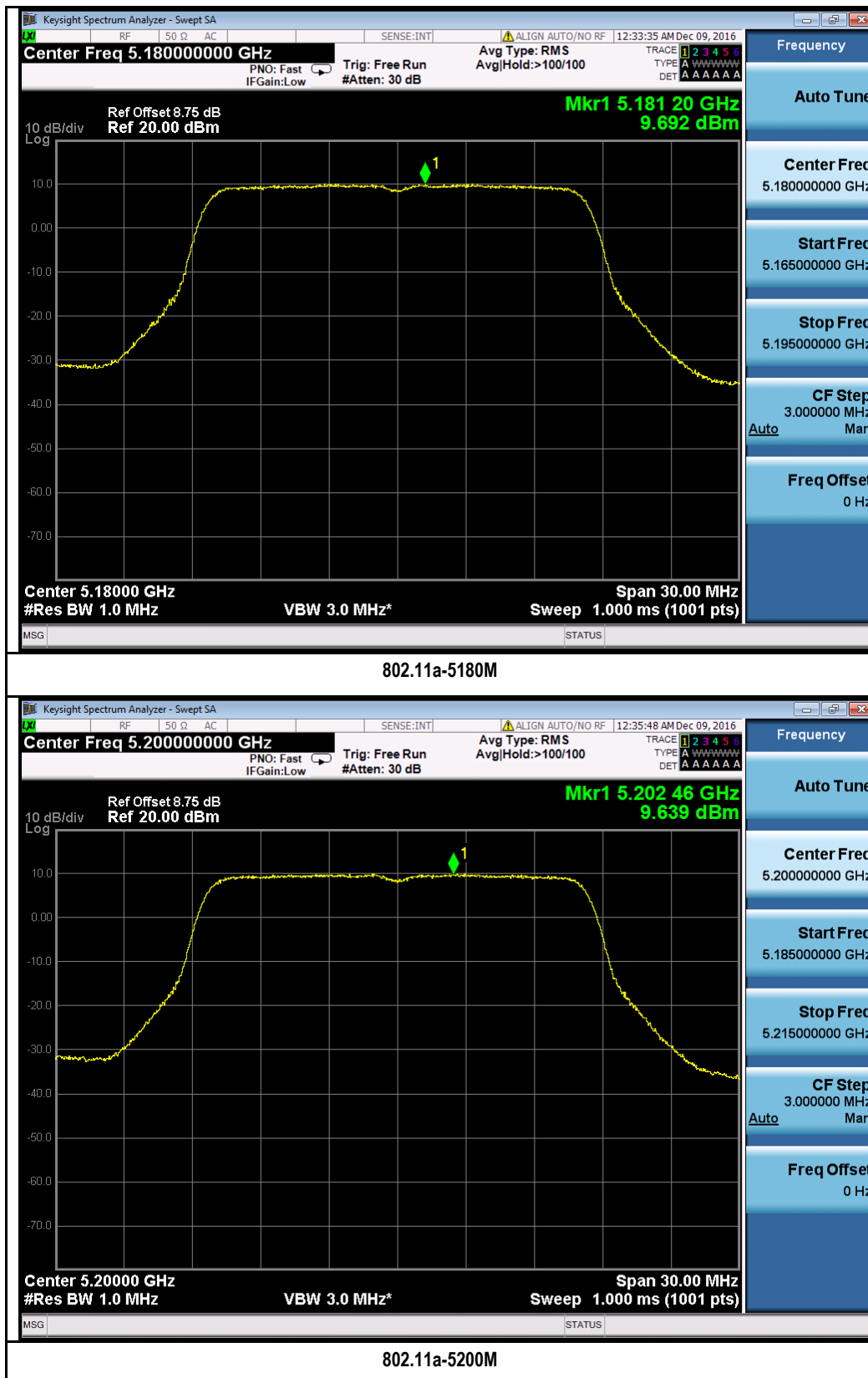
| Type | Test mode   | Freq (MHz) | CH   | Conducted PSD (dBm/MHz) |        |        |        |          | Limit (dBm/MHz) | Result |
|------|-------------|------------|------|-------------------------|--------|--------|--------|----------|-----------------|--------|
|      |             |            |      | Chain1                  | Chain2 | Chain3 | Chain4 | Combined |                 |        |
| PSD  | 802.11a     | 5180       | Low  | 9.69                    | 10.25  | 9.61   | 9.94   | 15.90    | 16.5            | Pass   |
|      |             | 5200       | Mid  | 9.64                    | 10.06  | 9.75   | 9.58   | 15.78    | 16.5            | Pass   |
|      |             | 5240       | High | 10                      | 10.41  | 9.64   | 9.74   | 15.98    | 16.5            | Pass   |
|      | 802.11n-20  | 5180       | Low  | 9.28                    | 9.78   | 9.17   | 9.53   | 15.47    | 16.5            | Pass   |
|      |             | 5200       | Mid  | 9.18                    | 9.75   | 9.29   | 9.5    | 15.46    | 16.5            | Pass   |
|      |             | 5240       | High | 9.46                    | 9.5    | 9.38   | 9.47   | 15.47    | 16.5            | Pass   |
|      | 802.11n-40  | 5190       | Low  | 6.65                    | 6.68   | 6.69   | 6.78   | 12.72    | 16.5            | Pass   |
|      |             | 5230       | High | 8.42                    | 8.89   | 9.19   | 8.7    | 14.83    | 16.5            | Pass   |
|      | 802.11ac-80 | 5210       | Mid  | 3.22                    | 3.31   | 3.25   | 3.13   | 9.25     | 16.5            | Pass   |

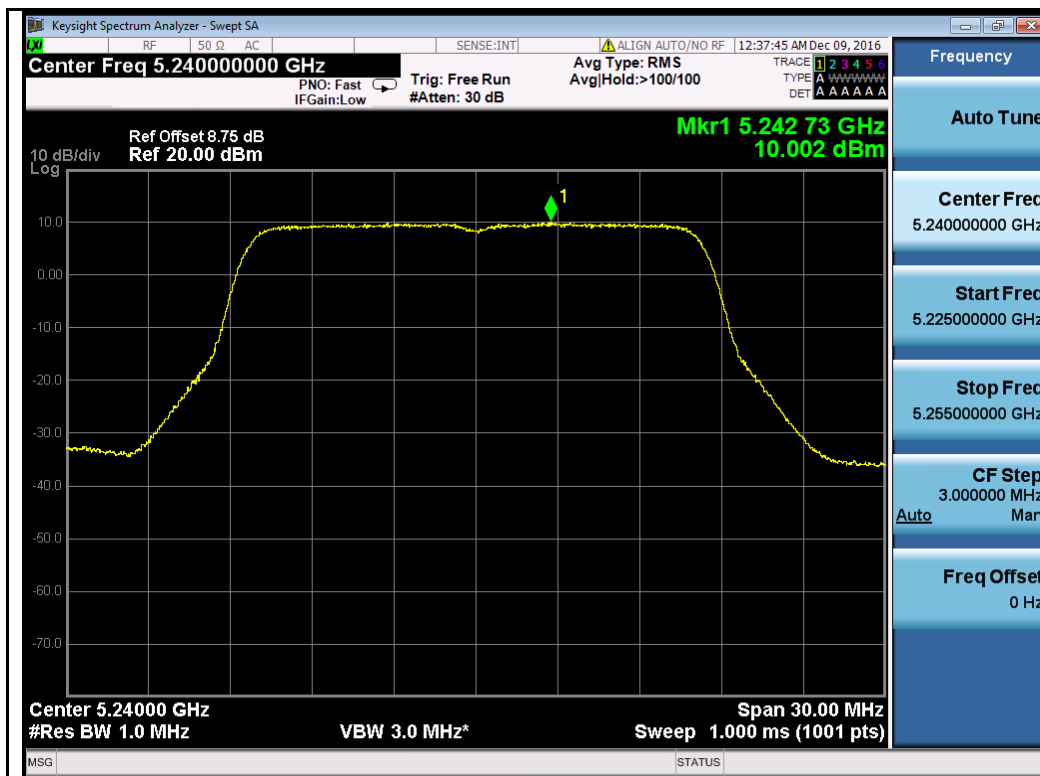
### PSD measurement result for 5.8GHz

| Test mode   | Freq (MHz)                                                                                     | CH   | Conducted PSD (dBm/100kHz) |        |        |        |          | Correction factor (dB) | PSD (dBm/500 kHz) | Limit (dBm/500 kHz) | Result |
|-------------|------------------------------------------------------------------------------------------------|------|----------------------------|--------|--------|--------|----------|------------------------|-------------------|---------------------|--------|
|             |                                                                                                |      | Chain1                     | Chain2 | Chain3 | Chain4 | Combined |                        |                   |                     |        |
| 802.11a     | 5745                                                                                           | Low  | 2.31                       | 2.84   | 2.71   | 2.45   | 8.60     | 6.99                   | 15.59             | 29.5                | Pass   |
|             | 5785                                                                                           | Mid  | 2.32                       | 2.93   | 2.58   | 2.34   | 8.57     | 6.99                   | 15.56             | 29.5                | Pass   |
|             | 5825                                                                                           | High | 2.73                       | 3.08   | 2.94   | 2.76   | 8.90     | 6.99                   | 15.89             | 29.5                | Pass   |
| 802.11n-20  | 5745                                                                                           | Low  | 1.77                       | 2.29   | 2.89   | 2.90   | 8.51     | 6.99                   | 15.50             | 29.5                | Pass   |
|             | 5785                                                                                           | Mid  | 2.02                       | 2.90   | 2.33   | 2.63   | 8.50     | 6.99                   | 15.49             | 29.5                | Pass   |
|             | 5825                                                                                           | High | 2.04                       | 2.72   | 2.77   | 2.61   | 8.57     | 6.99                   | 15.56             | 29.5                | Pass   |
| 802.11n-40  | 5755                                                                                           | Low  | -0.41                      | -0.30  | -0.03  | -0.53  | 5.71     | 6.99                   | 12.70             | 29.5                | Pass   |
|             | 5795                                                                                           | High | -0.65                      | -0.03  | 0.2    | -0.38  | 5.82     | 6.99                   | 12.81             | 29.5                | Pass   |
| 802.11ac-80 | 5775                                                                                           | Mid  | -4.67                      | -4.81  | -3.91  | -5.30  | 1.38     | 6.99                   | 8.37              | 29.5                | Pass   |
| Note        | BW correction factor = $10\log(500\text{kHz}/\text{RBW})$ , RBW was set to 100kHz during test. |      |                            |        |        |        |          |                        |                   |                     |        |

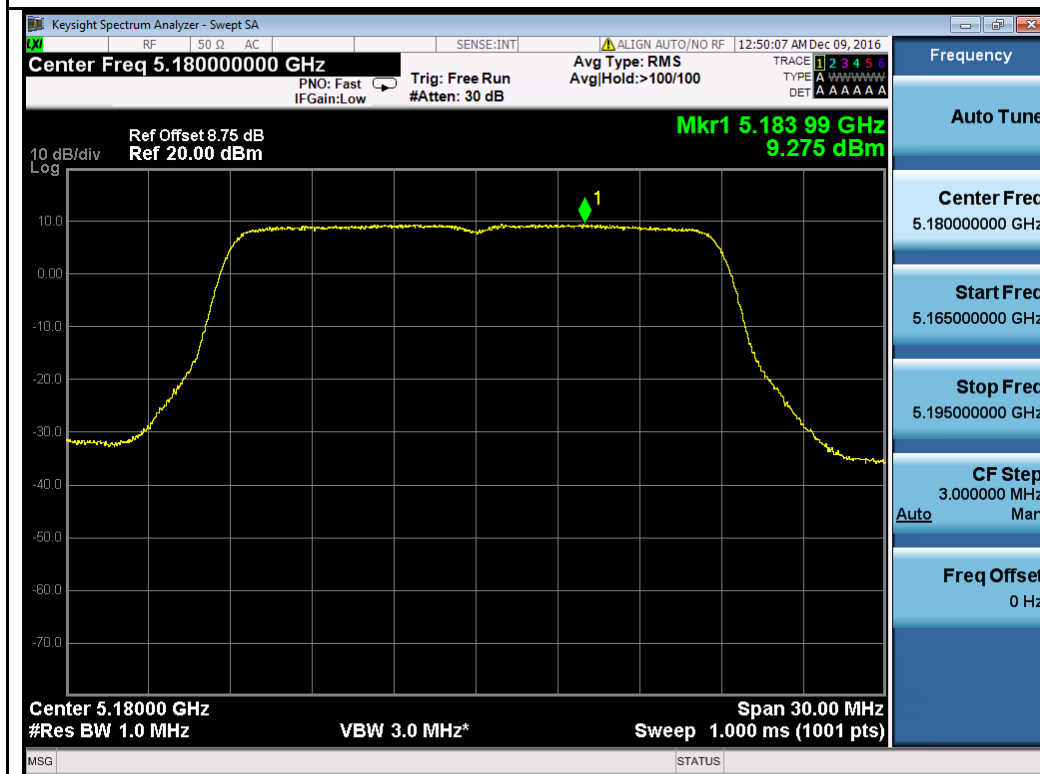
## Test Plot for W52:

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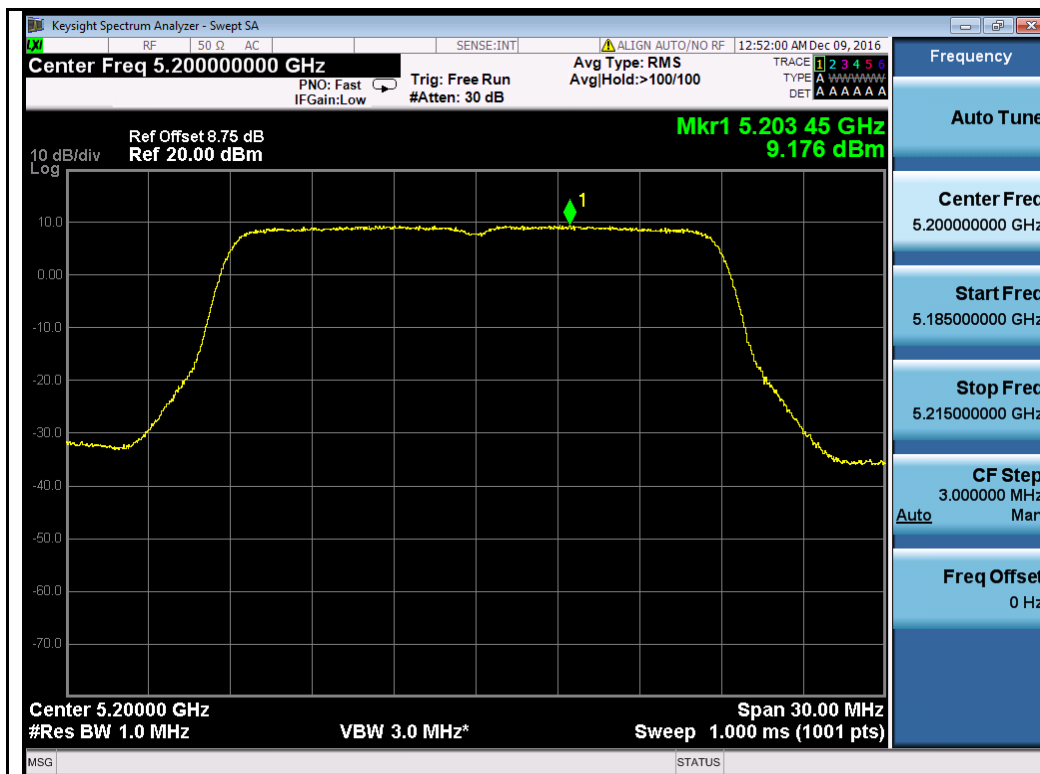




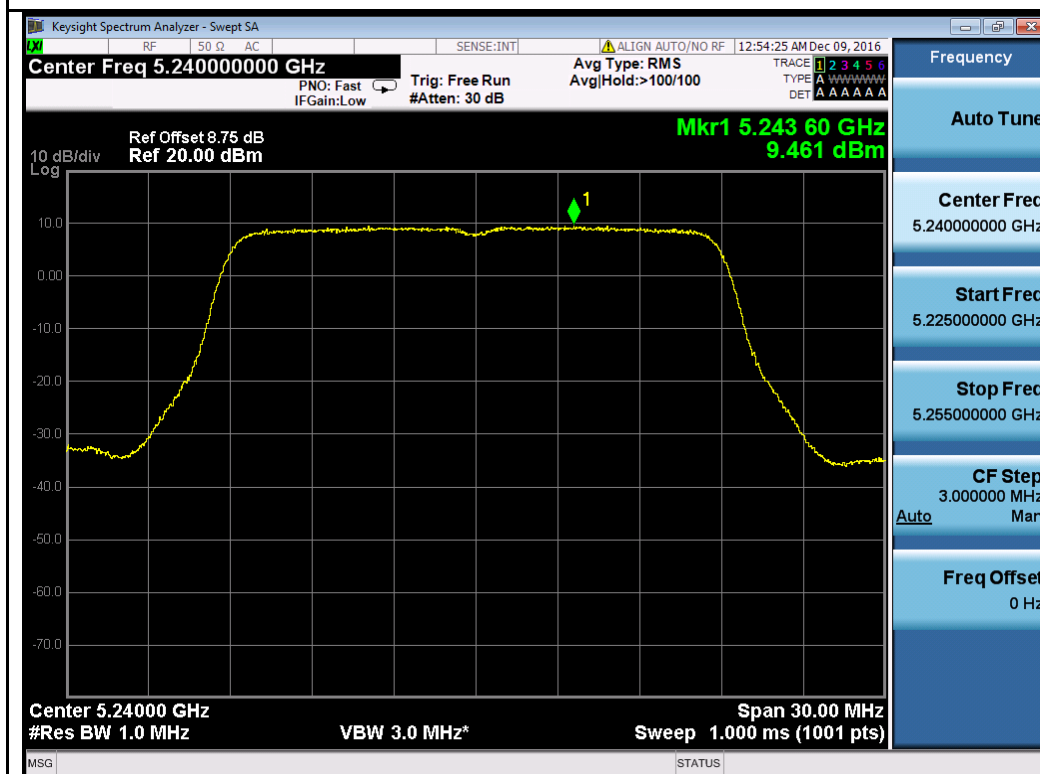
802.11a-5240M



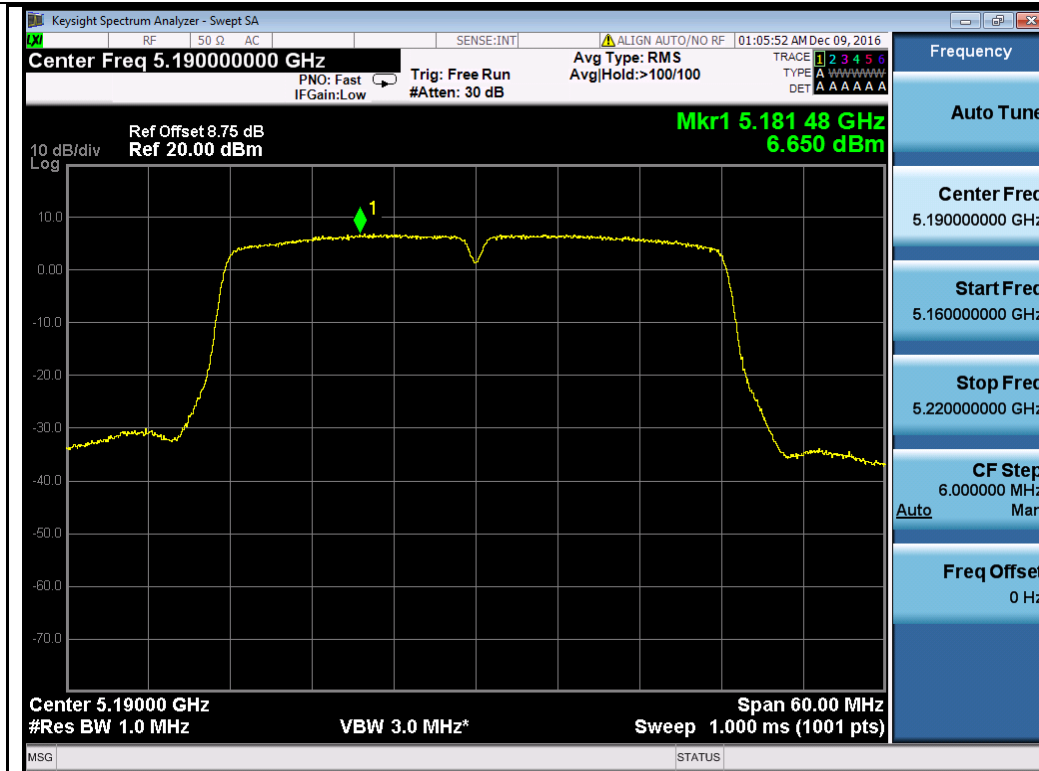
802.11n-HT20 5180M



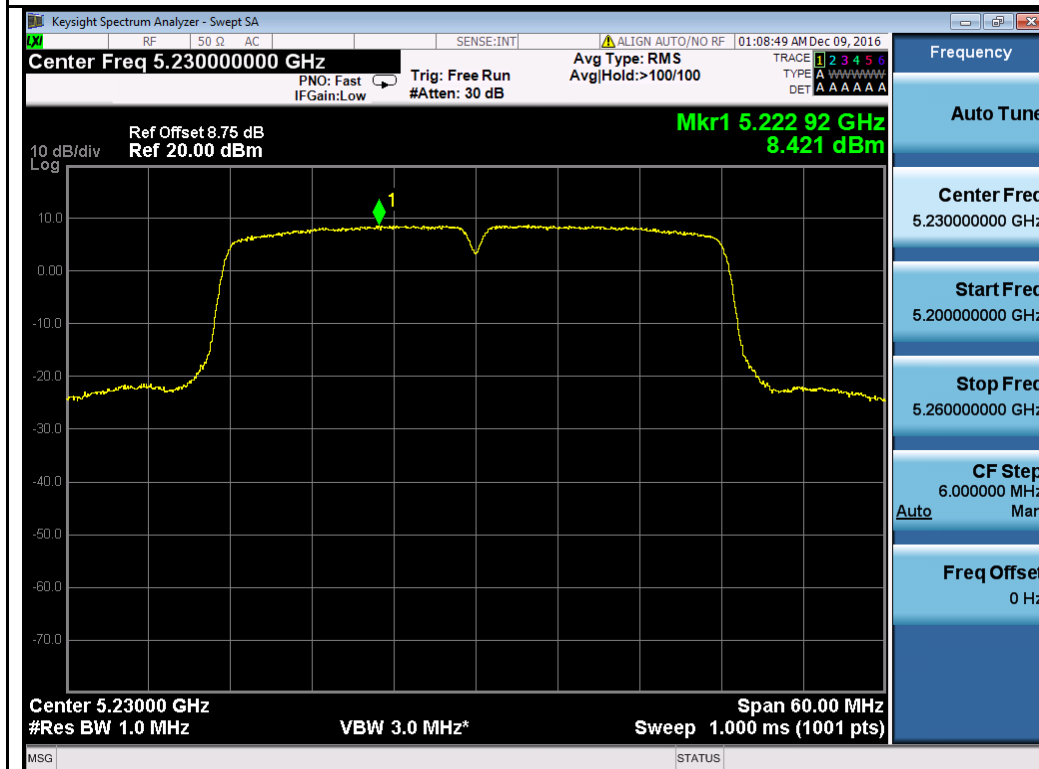
802.11n-HT20 5200M



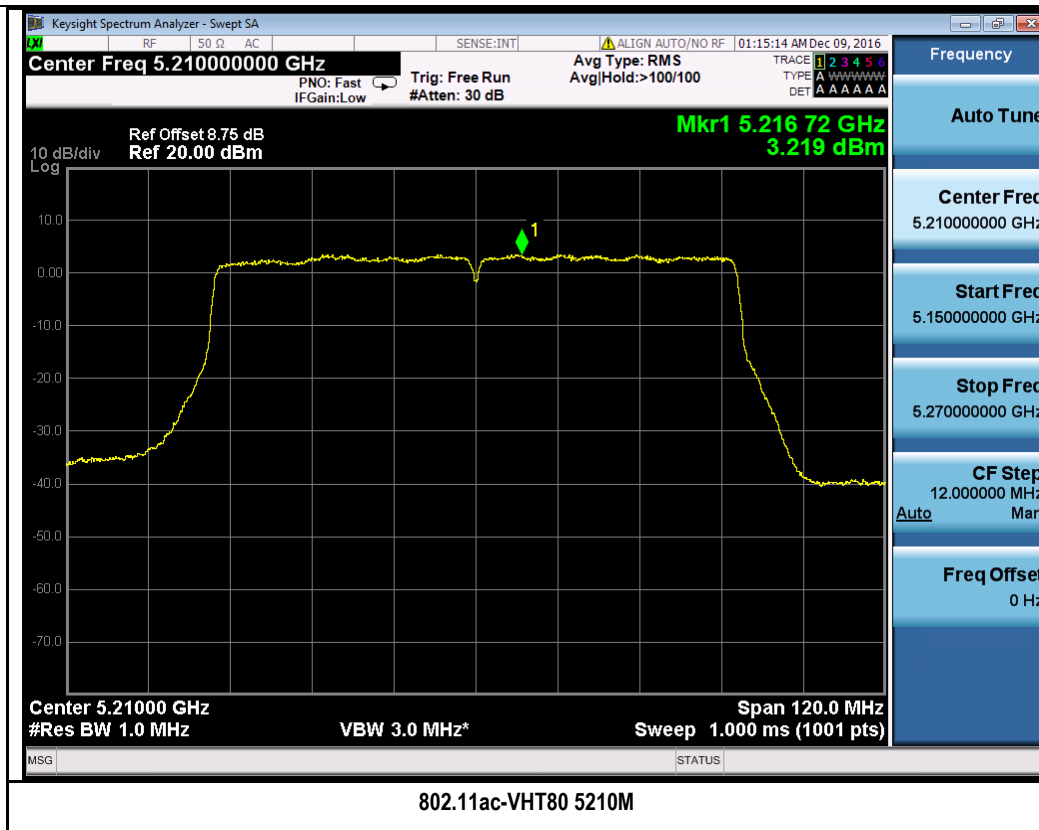
802.11n-HT20 5240M



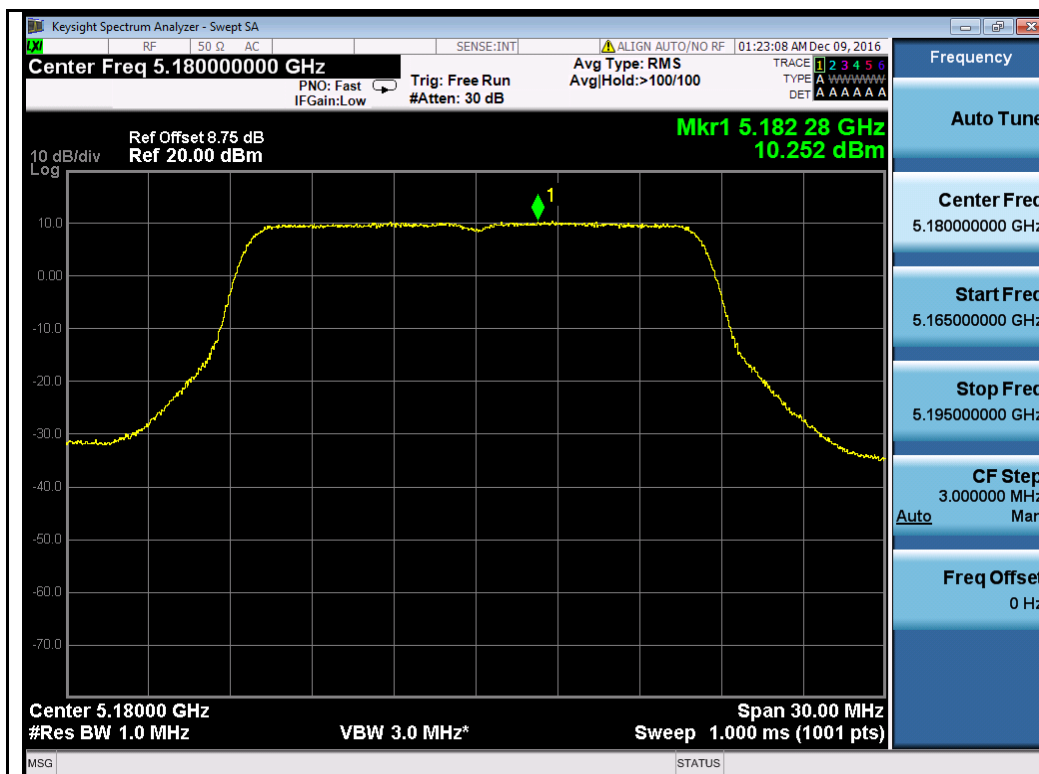
802.11n-HT40 5190M



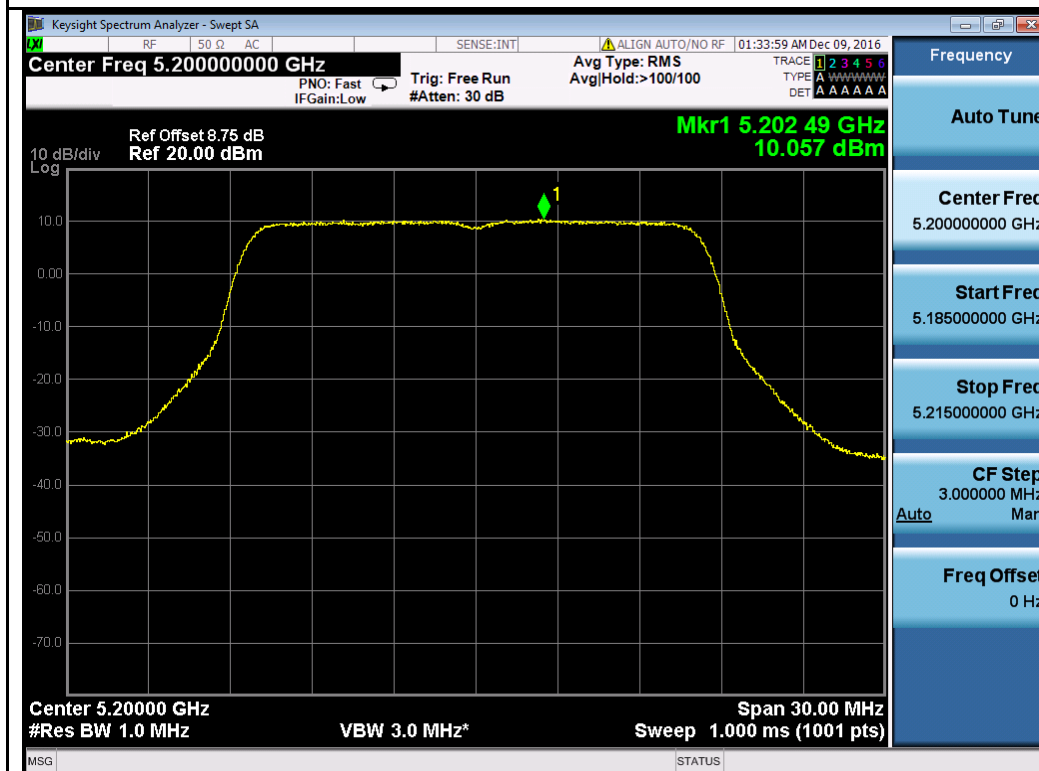
802.11n-HT40 5230M



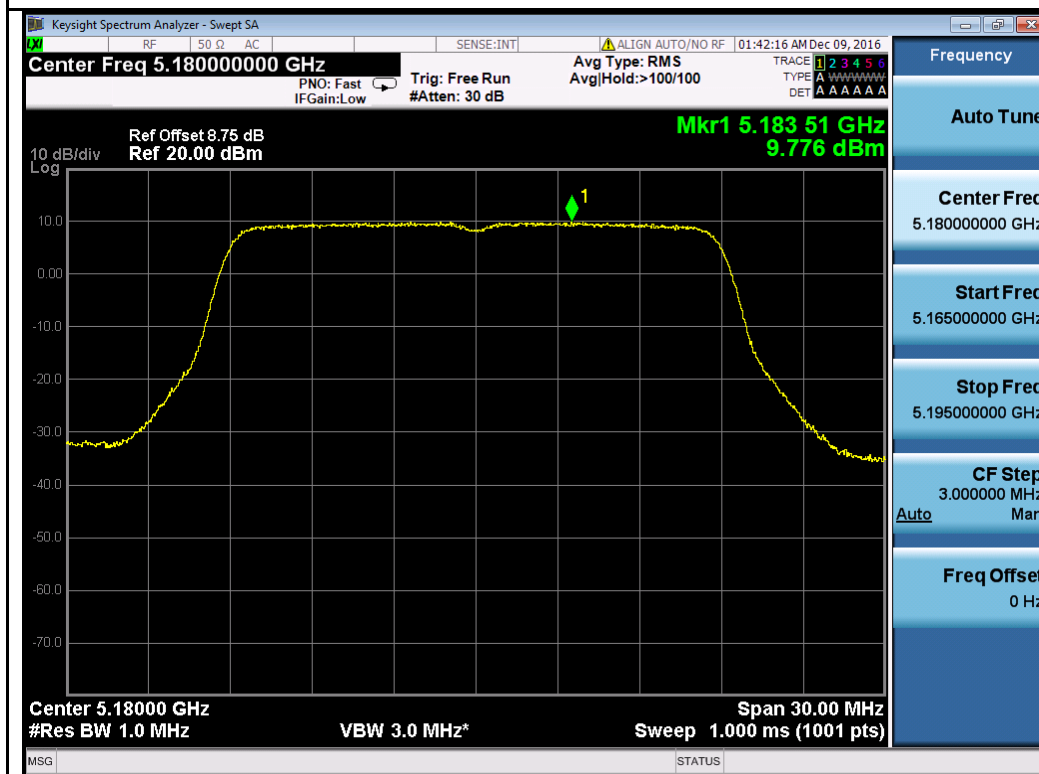
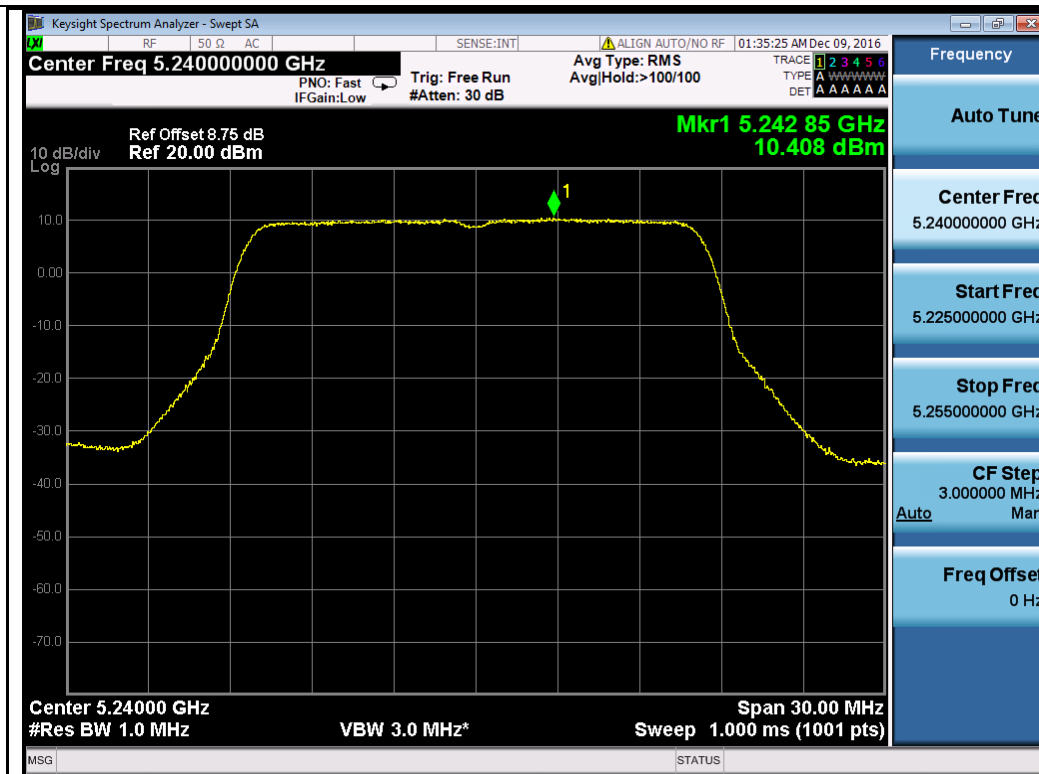
**Chain 2:**

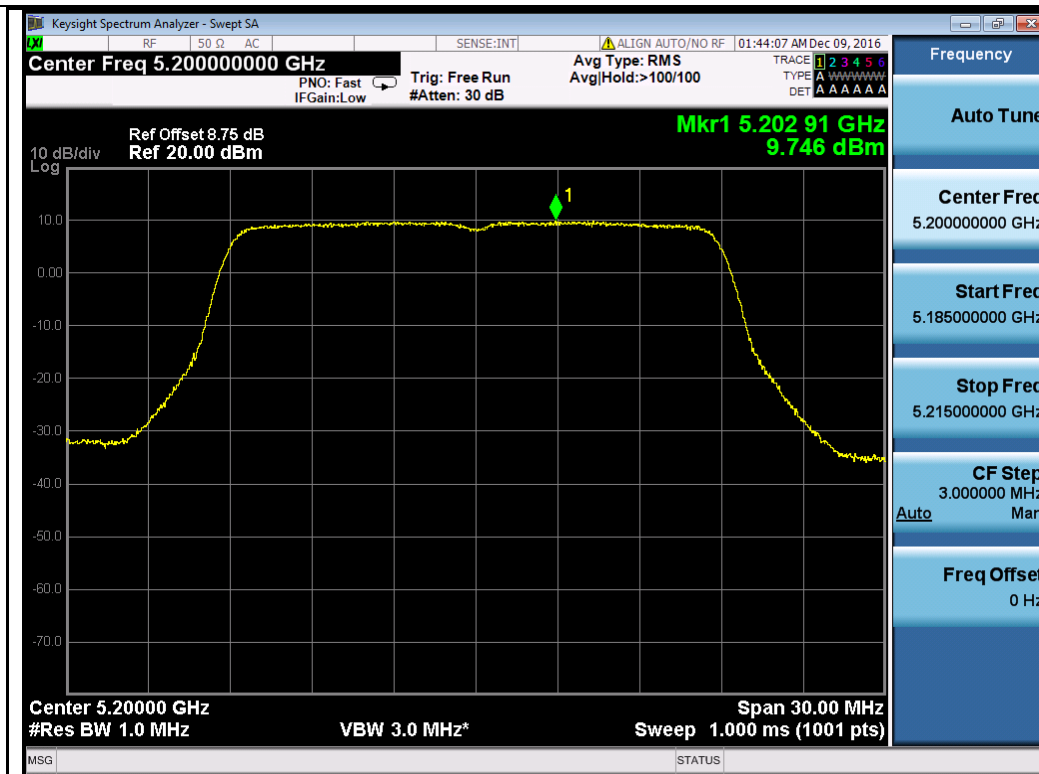


802.11a-5180M

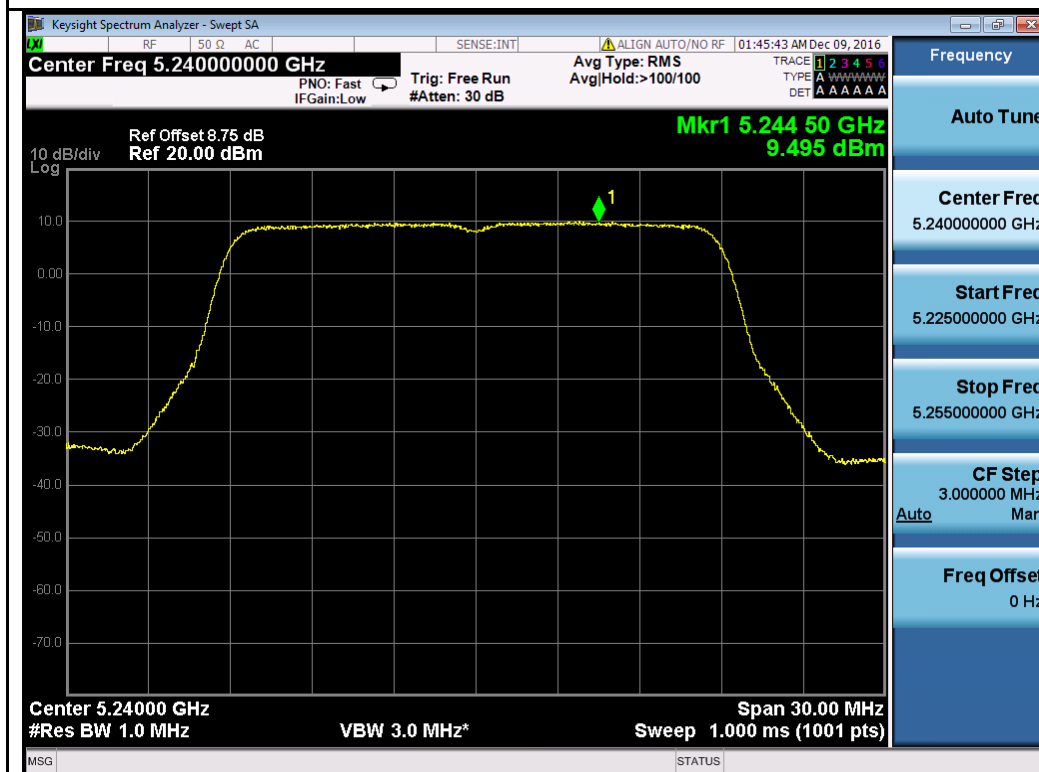


802.11a-5200M

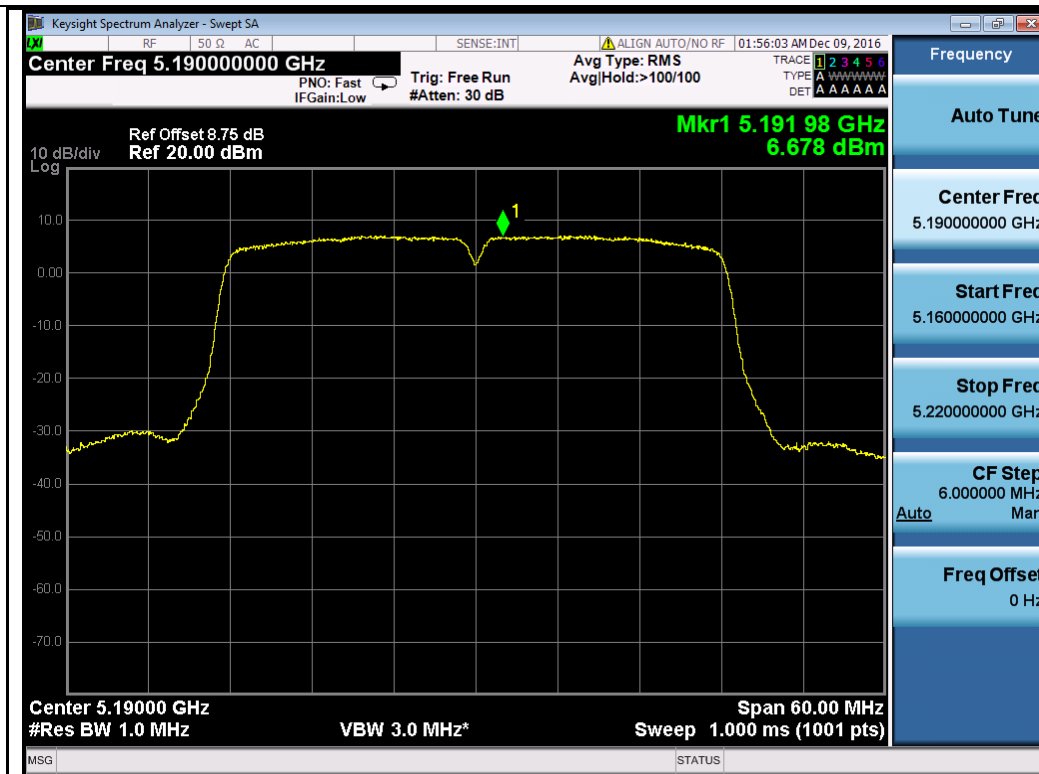




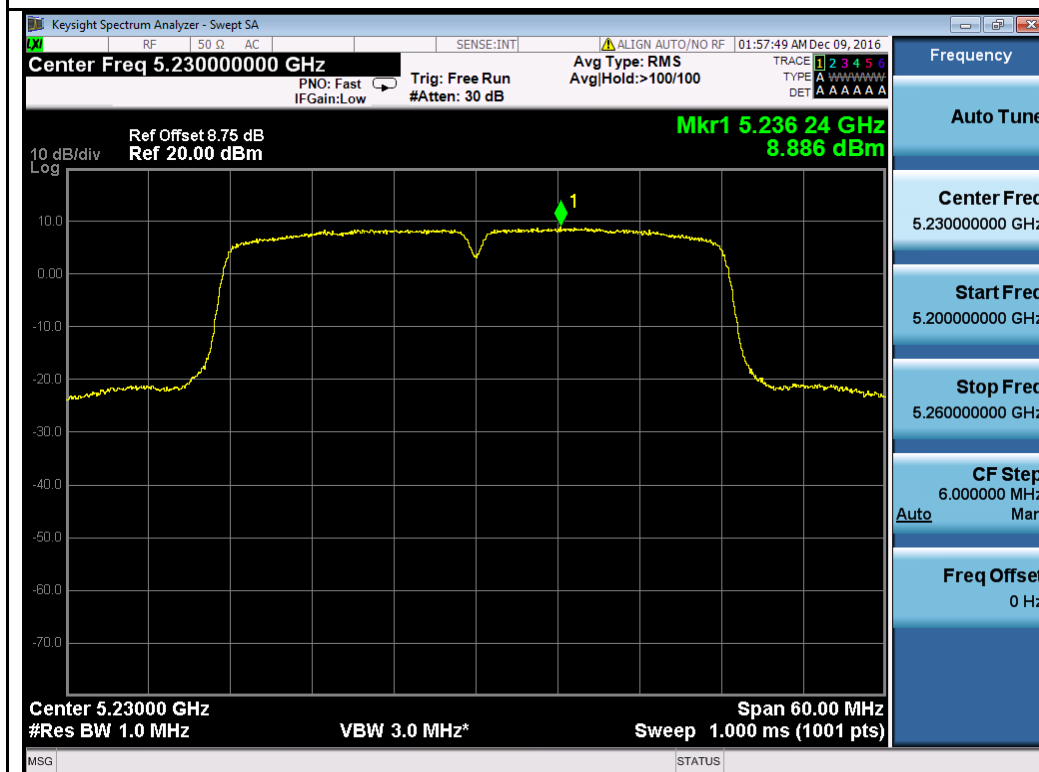
802.11n-HT20 5200M



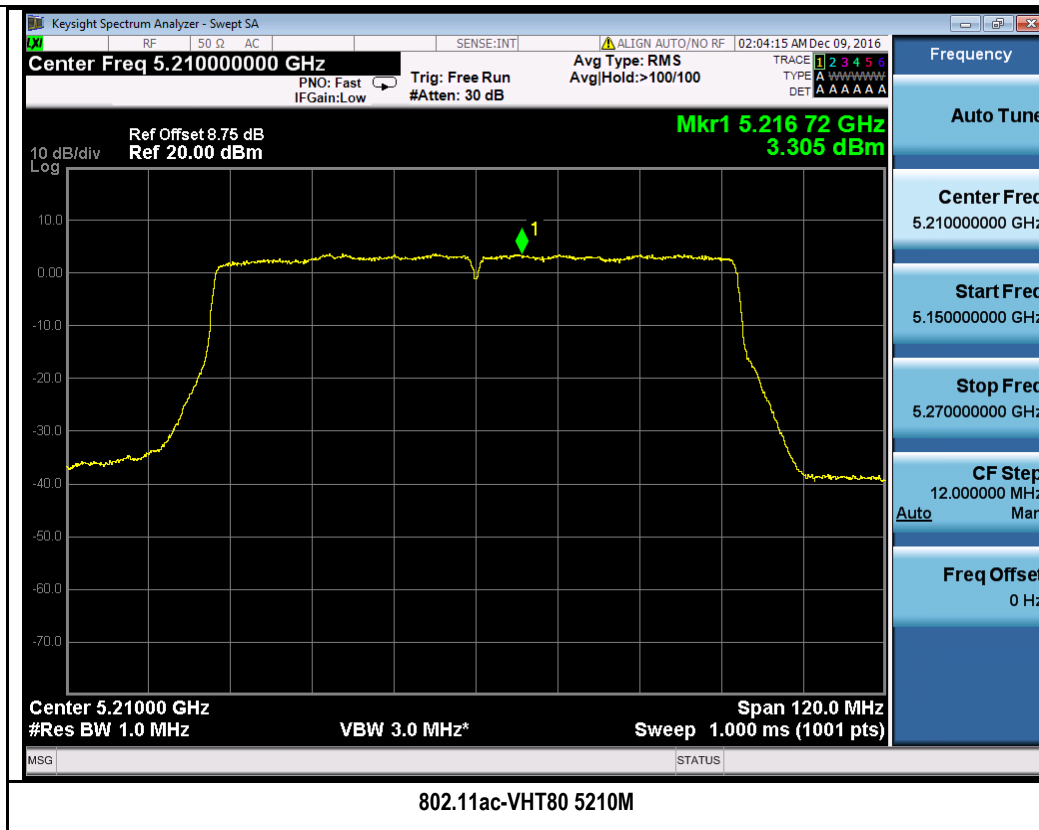
802.11n-HT20 5240M



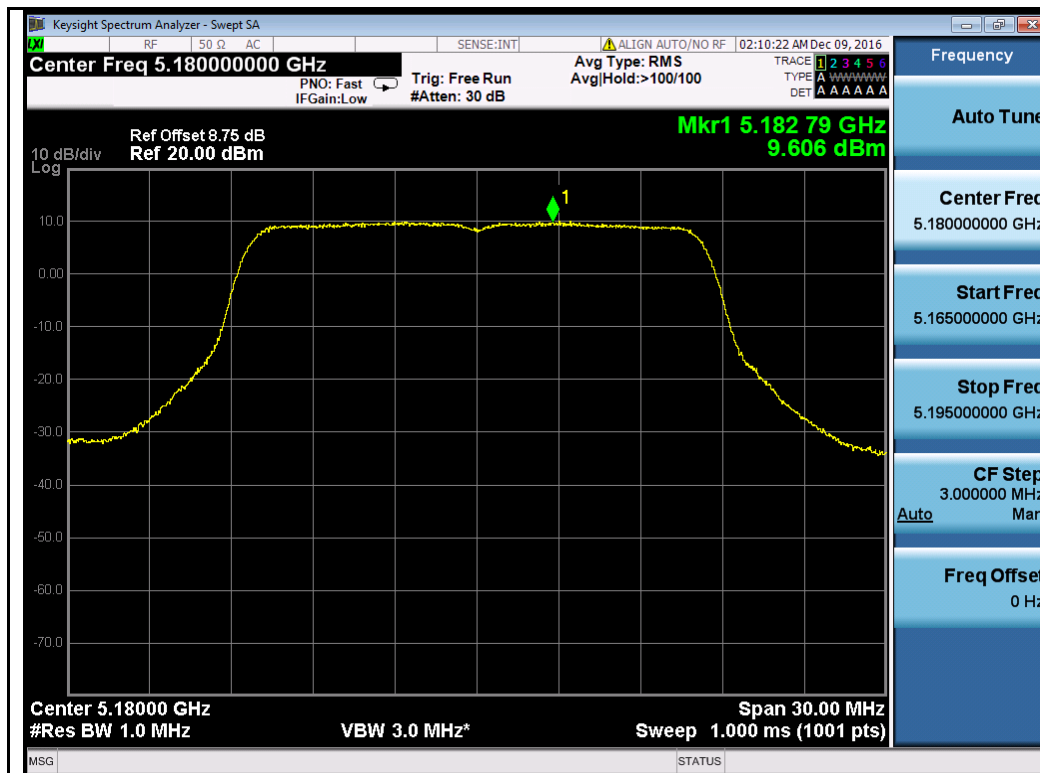
802.11n-HT40 5190M



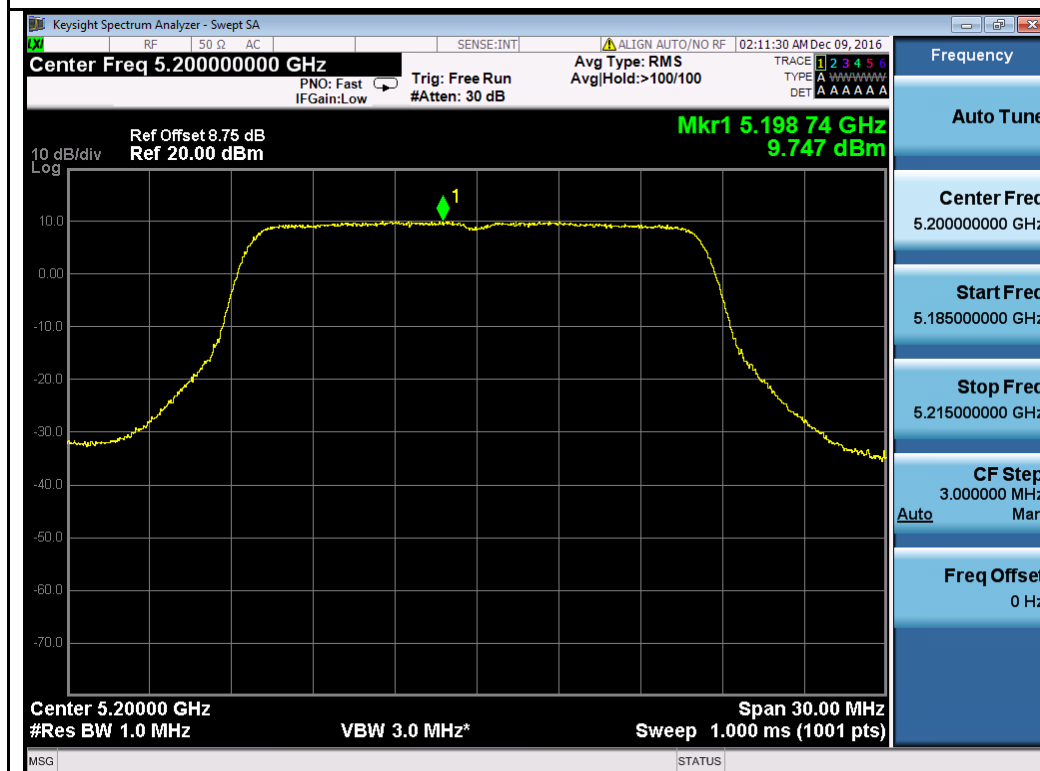
802.11n-HT40 5230M



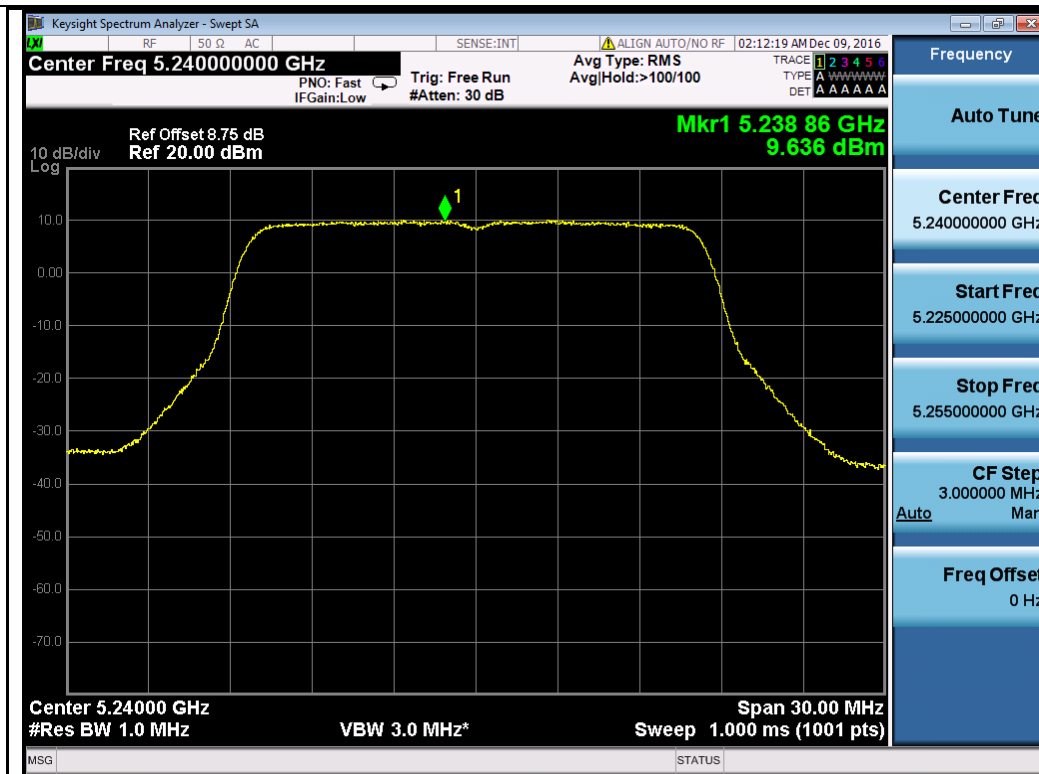
### Chain 3:



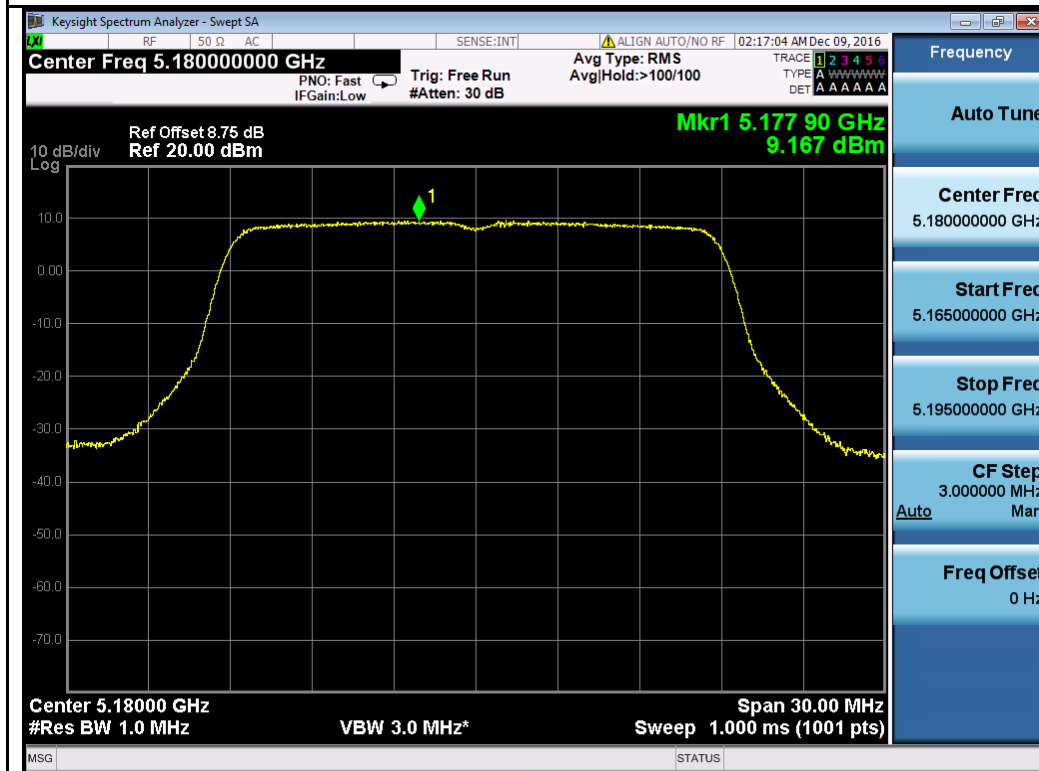
802.11a-5180M



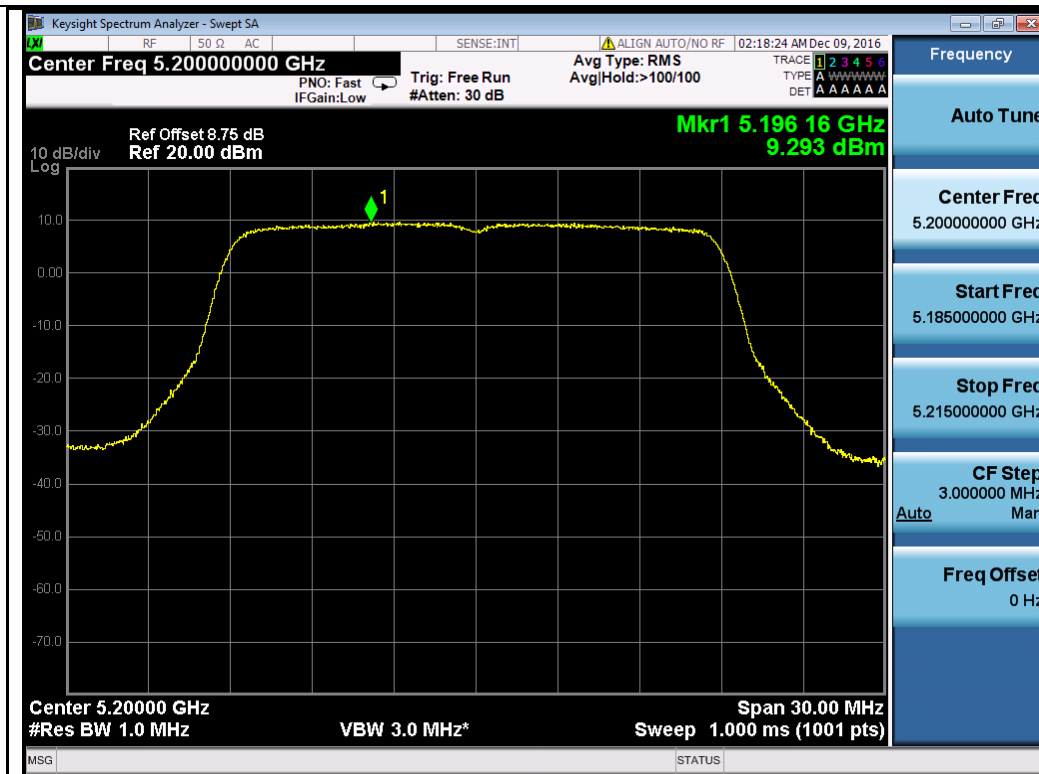
802.11a-5200M



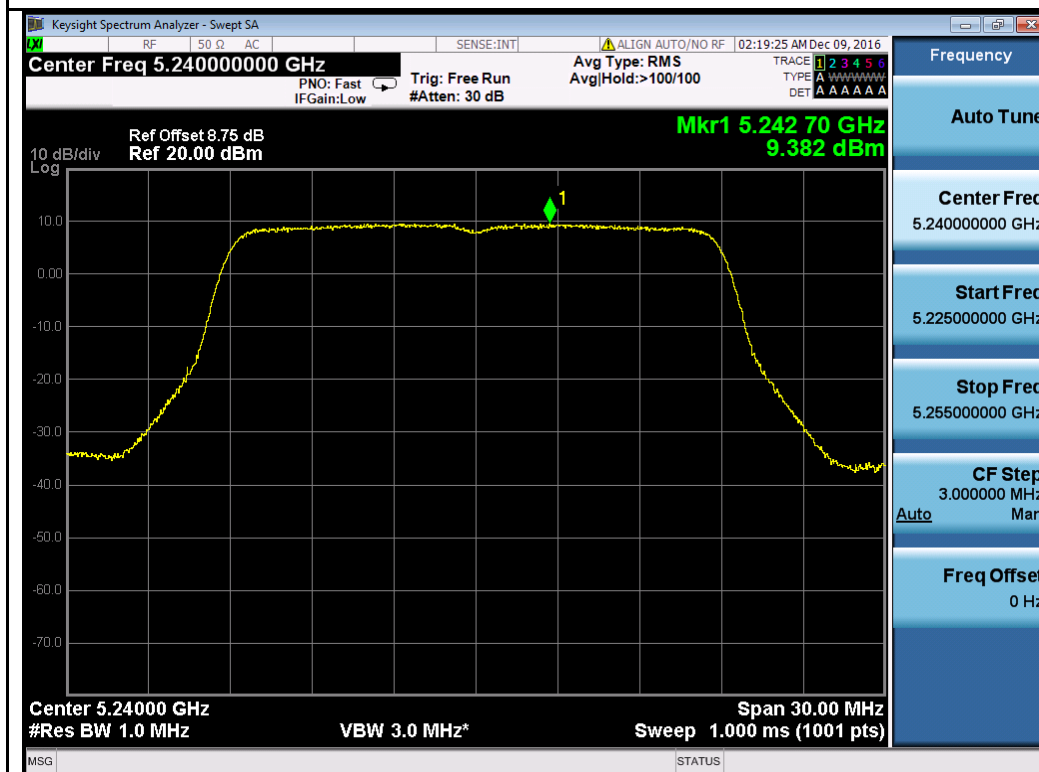
802.11a-5240M



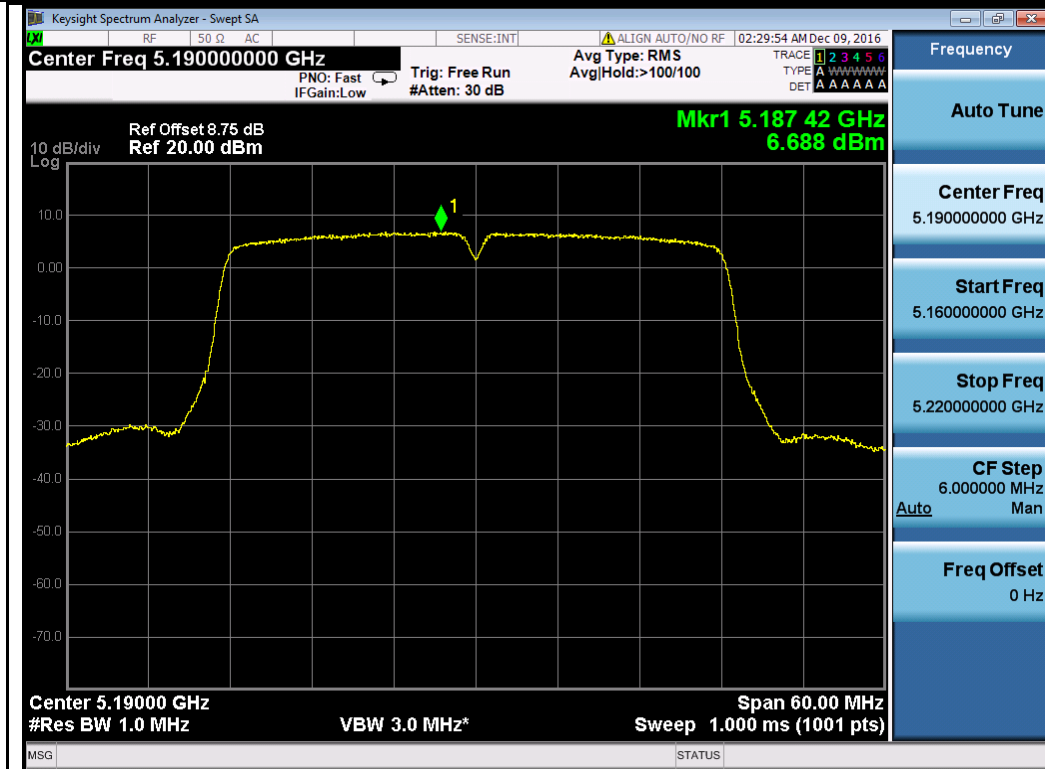
802.11n-HT20 5180M



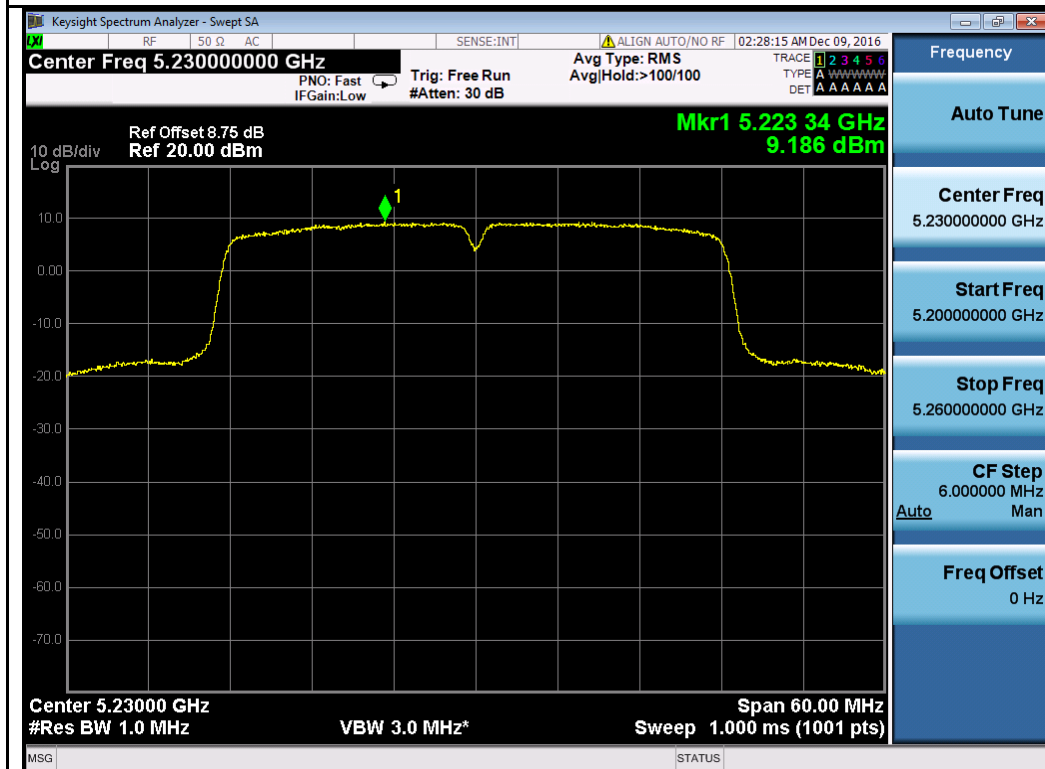
802.11n-HT20 5200M



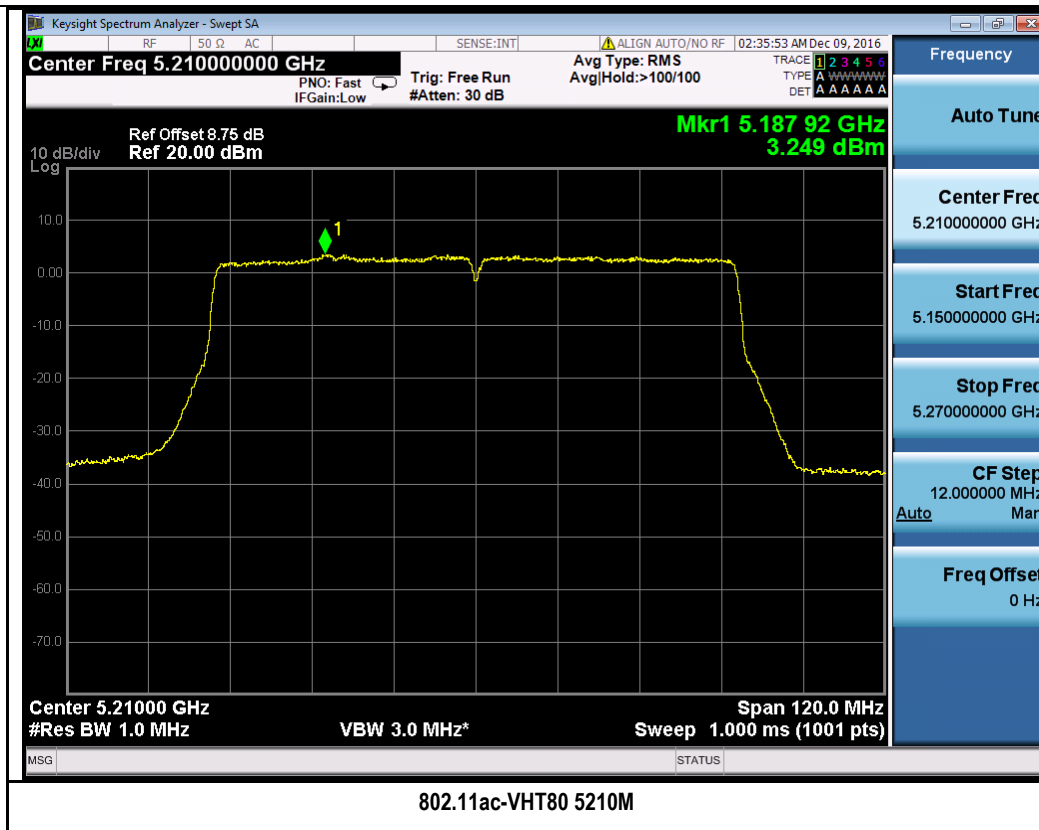
802.11n-HT20 5240M



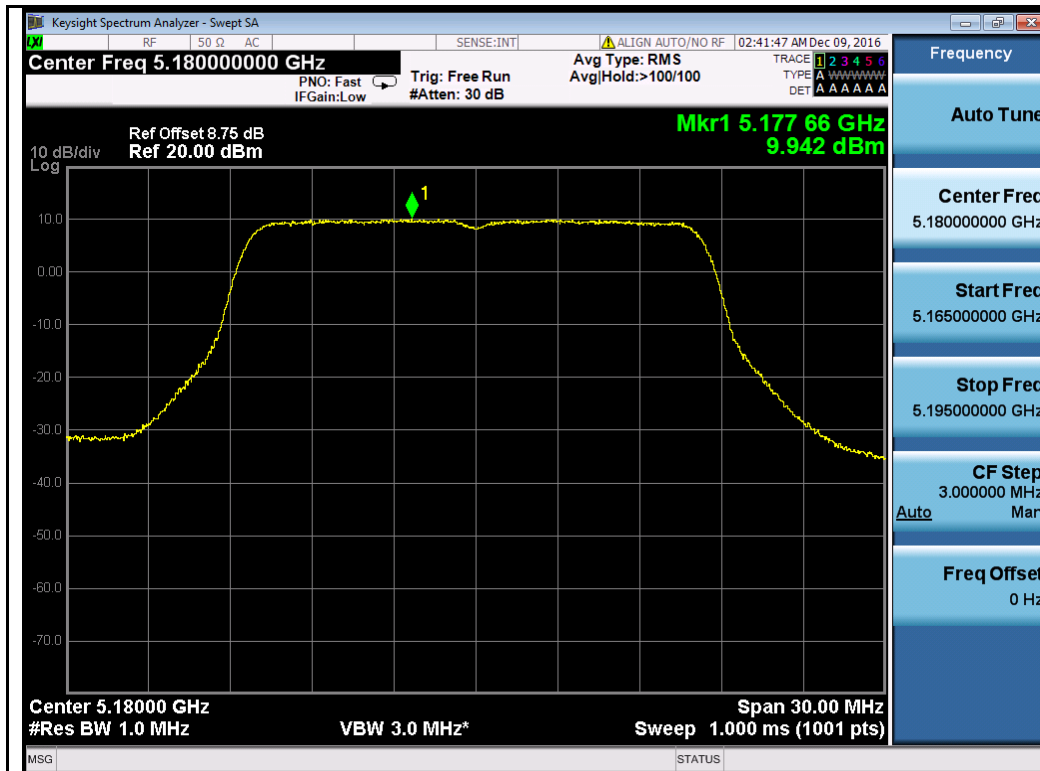
802.11n-HT40 5190M



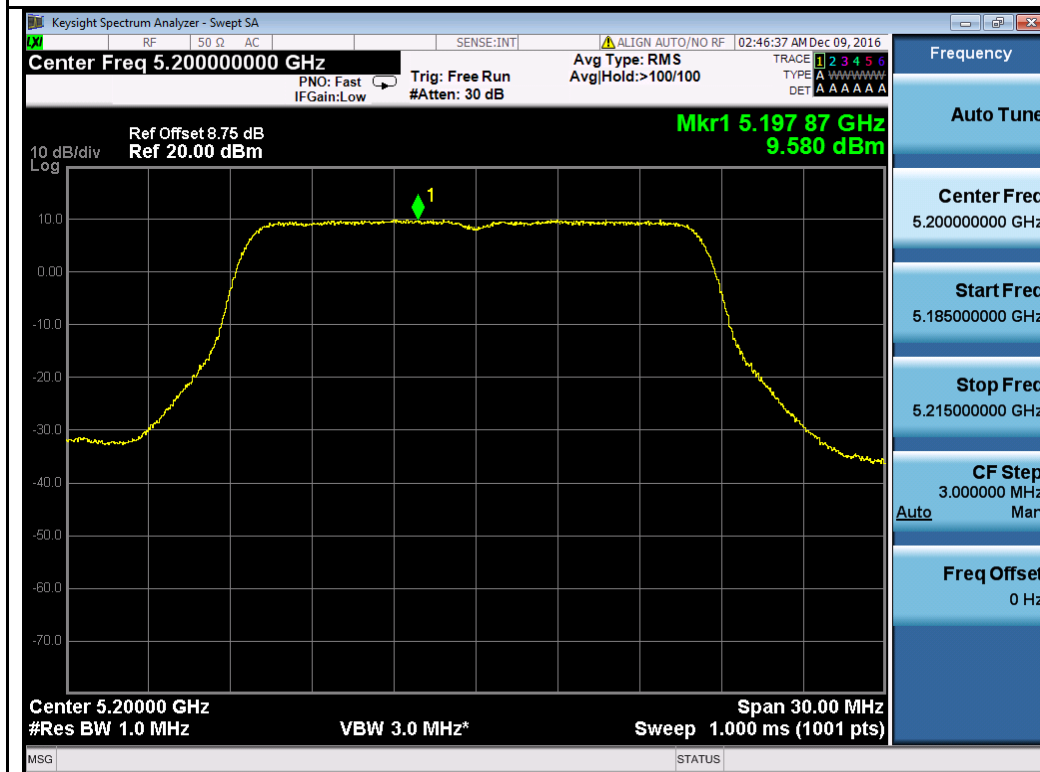
802.11n-HT40 5230M



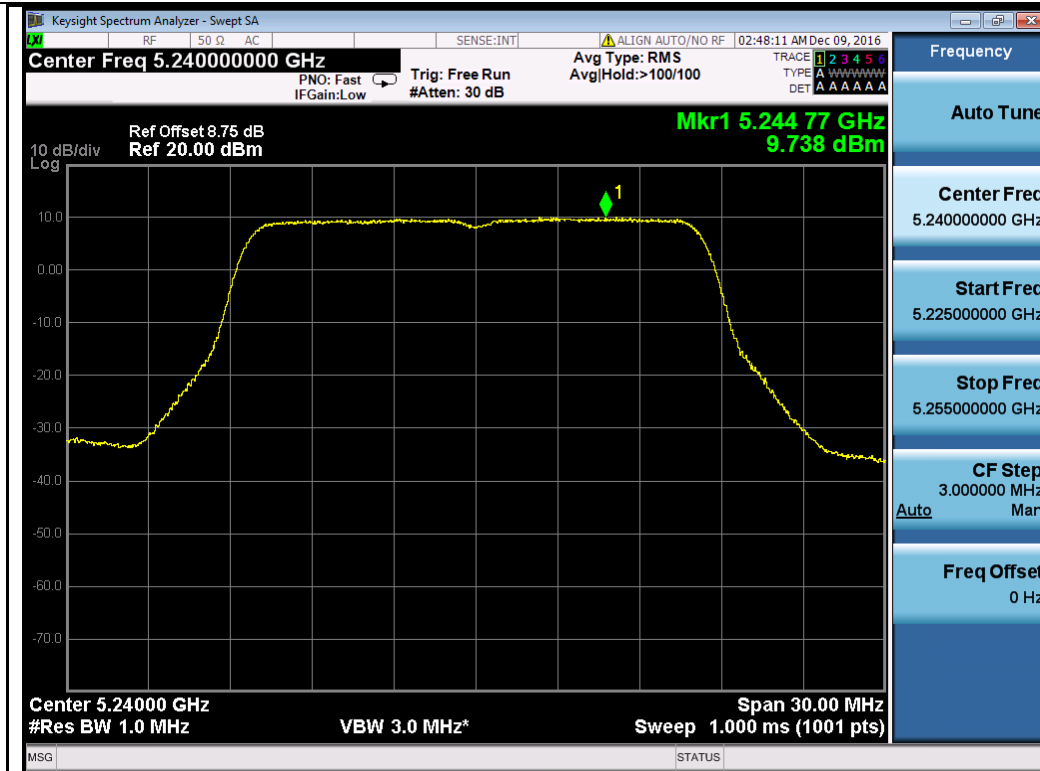
**Chain 4:**



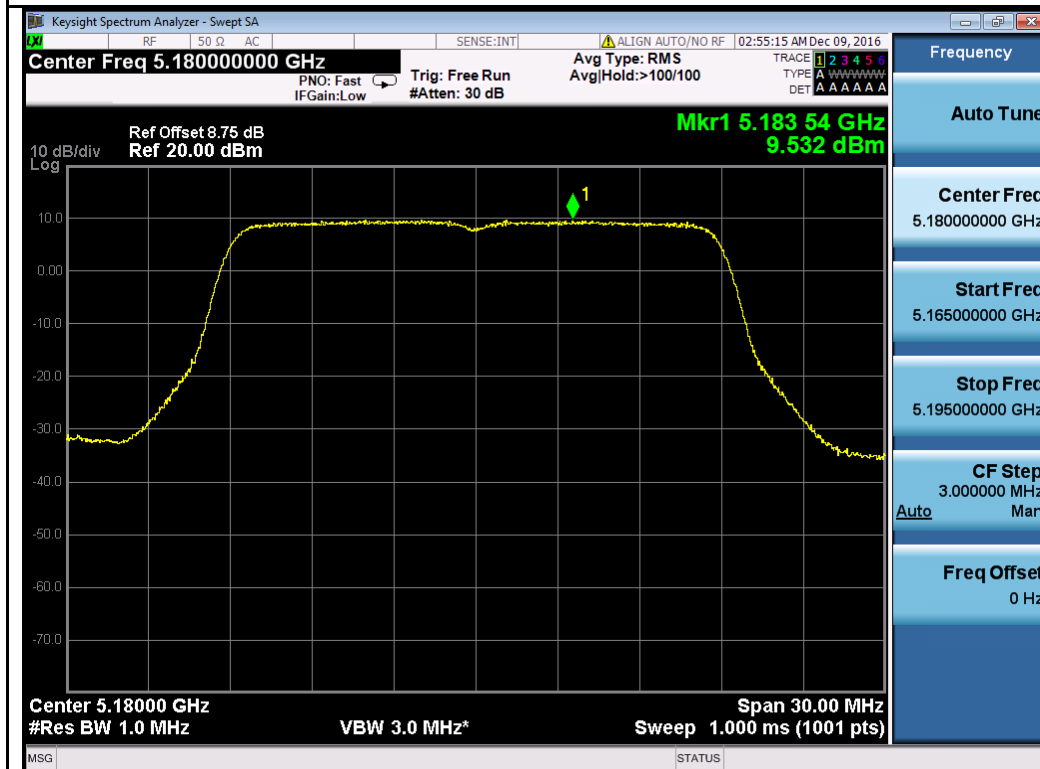
802.11a-5180M



802.11a-5200M

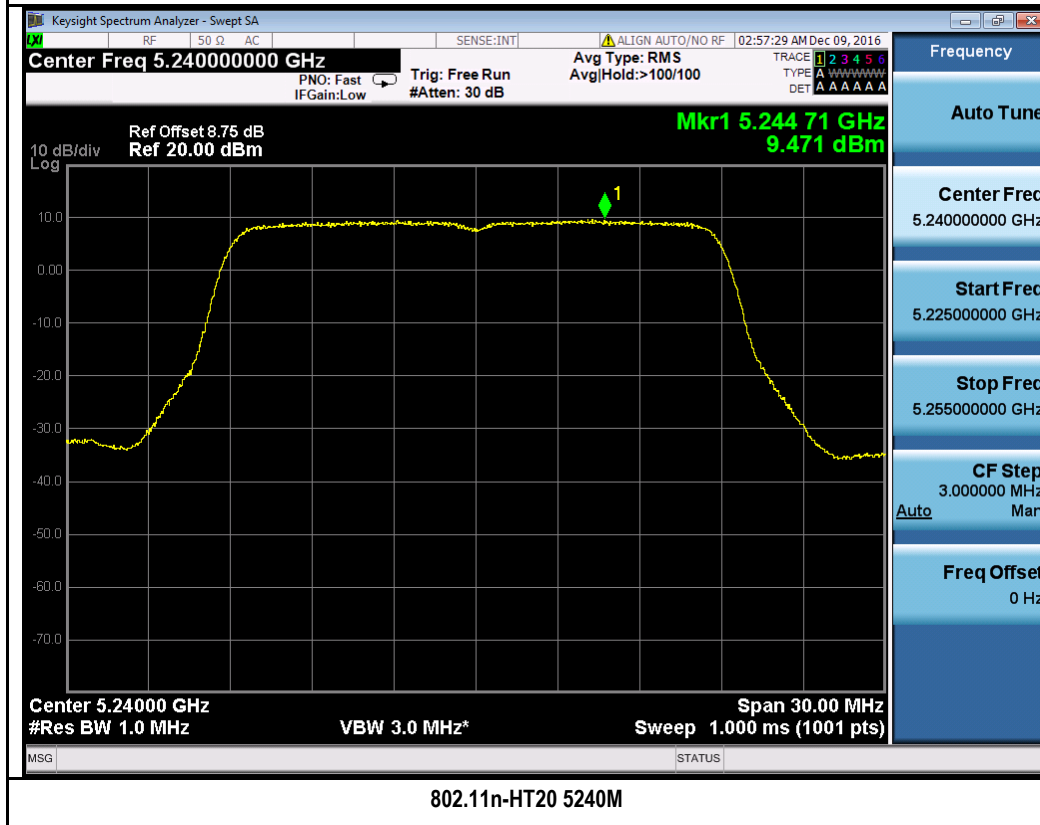


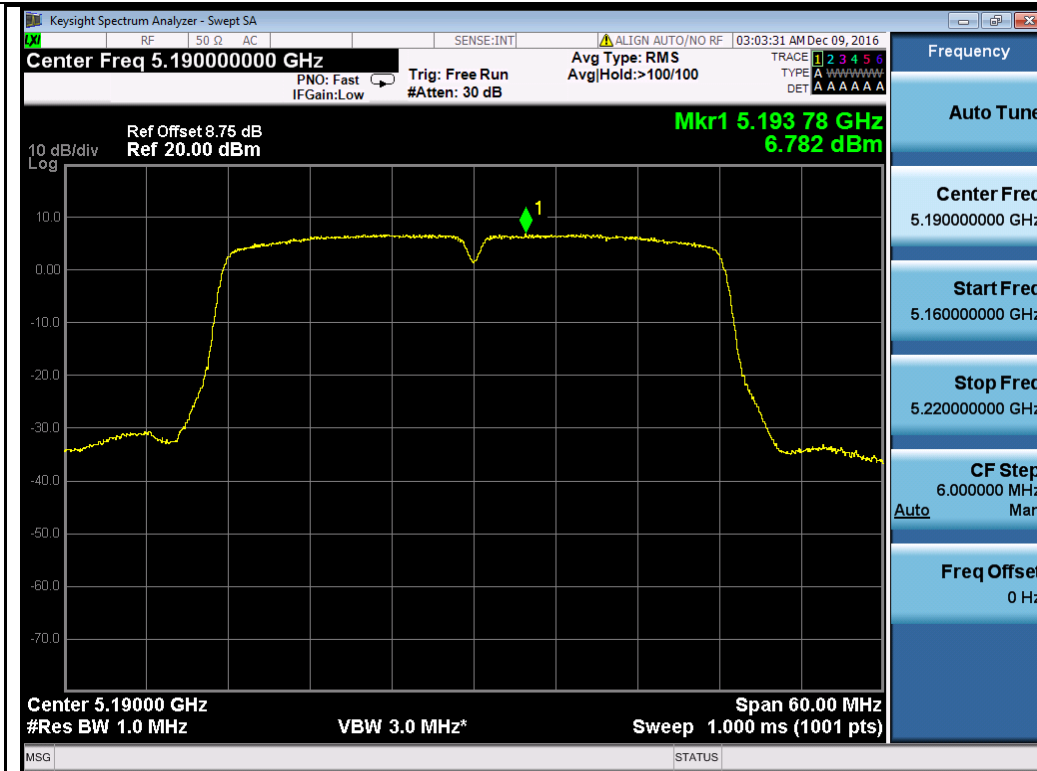
802.11a-5240M



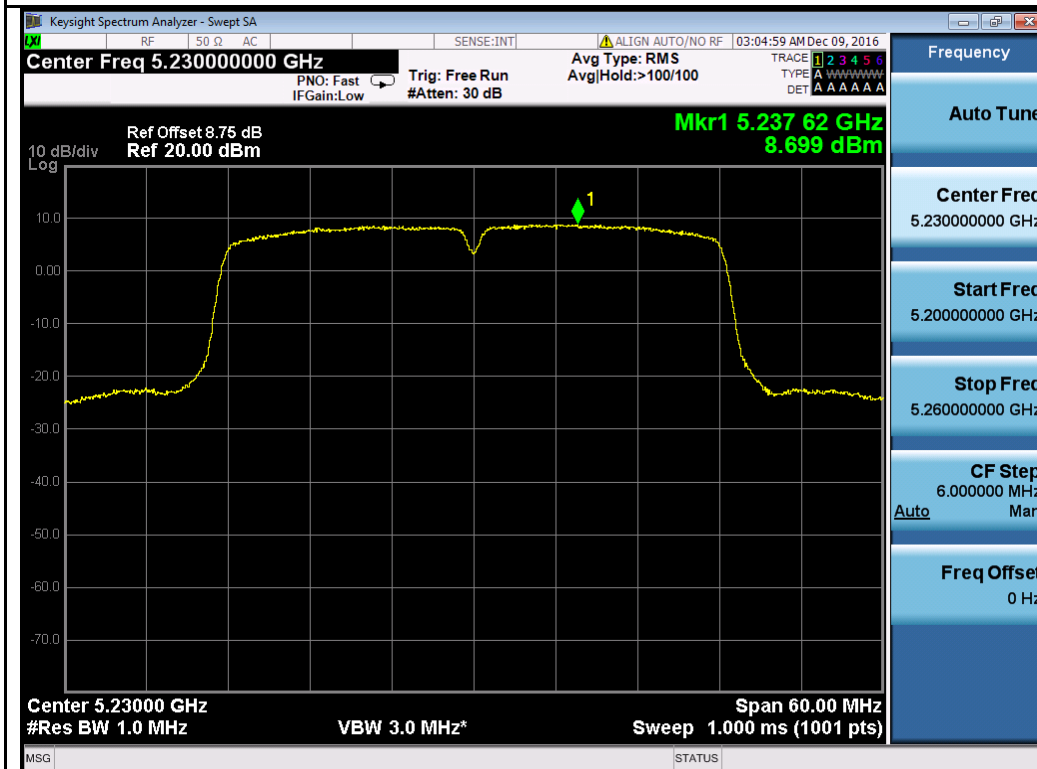
802.11n-HT20 5180M

802.11n-HT20 5200M

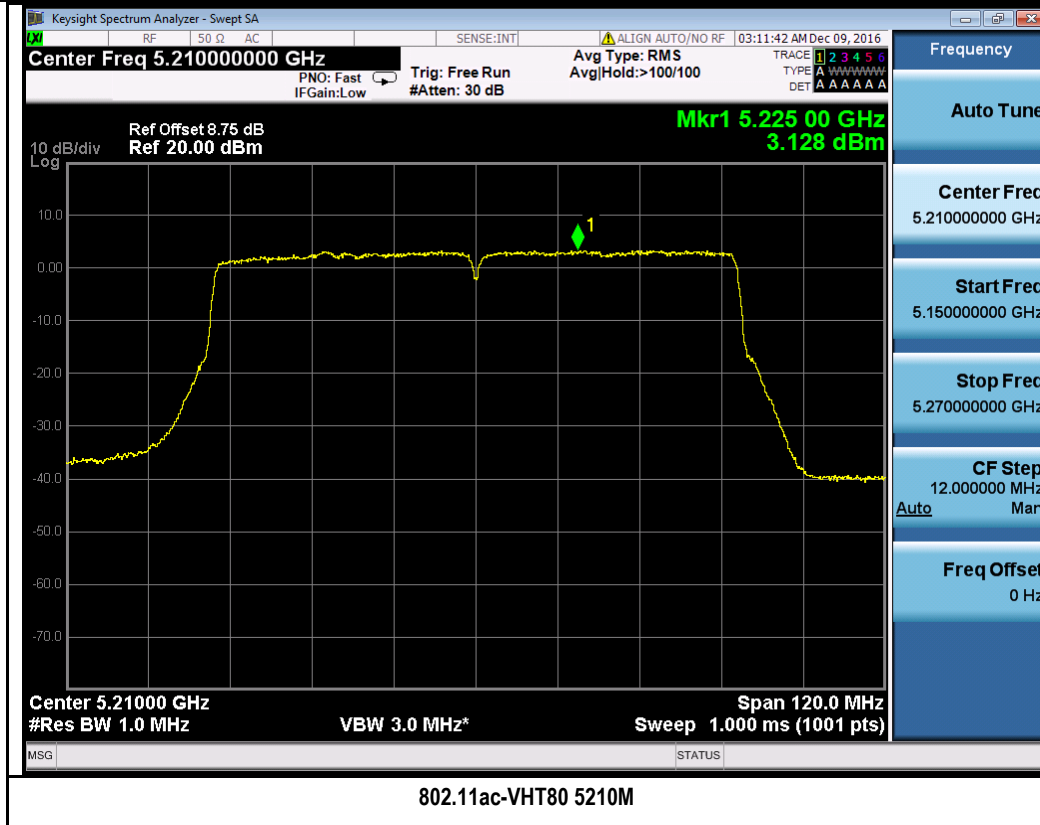




802.11n-HT40 5190M

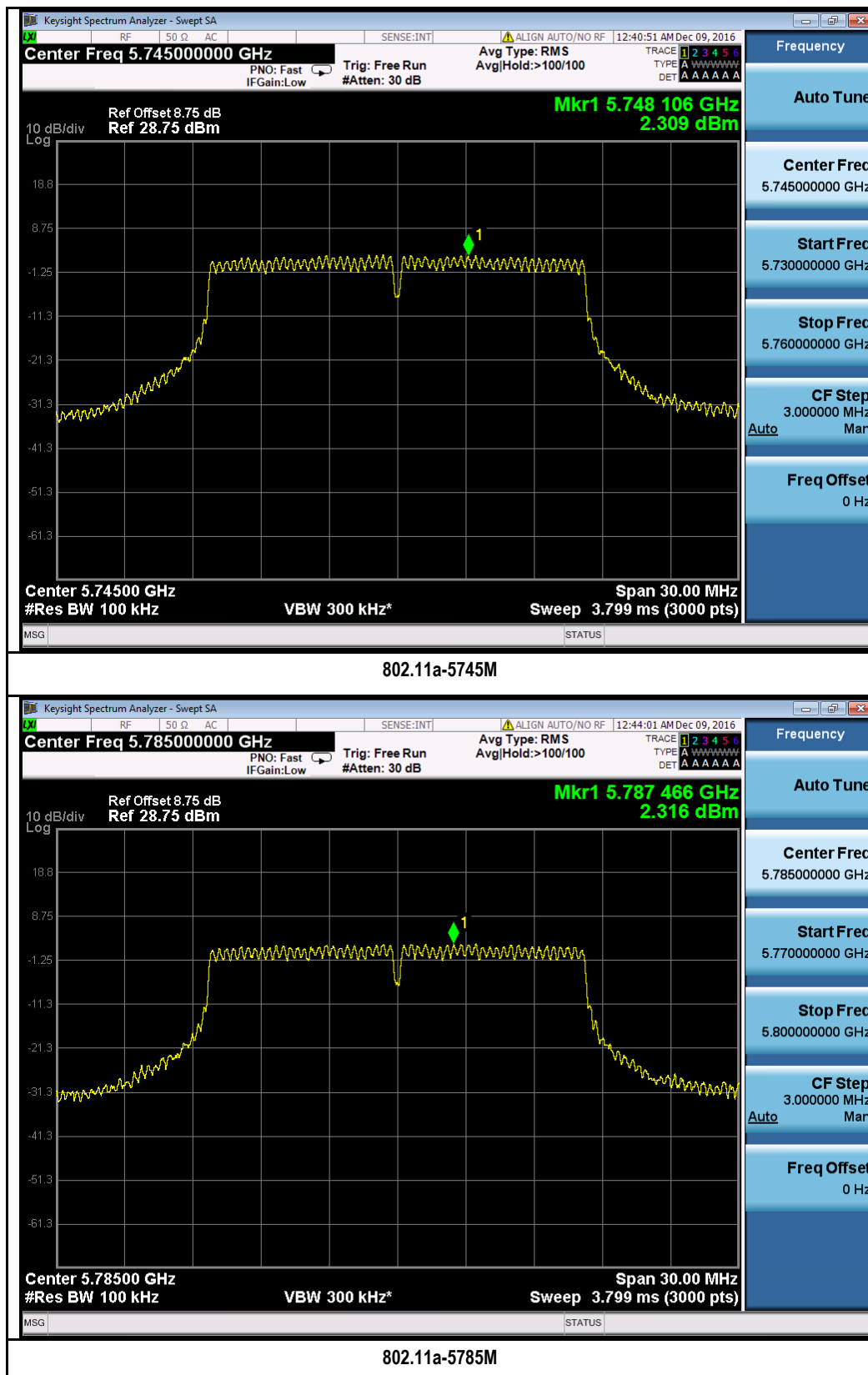


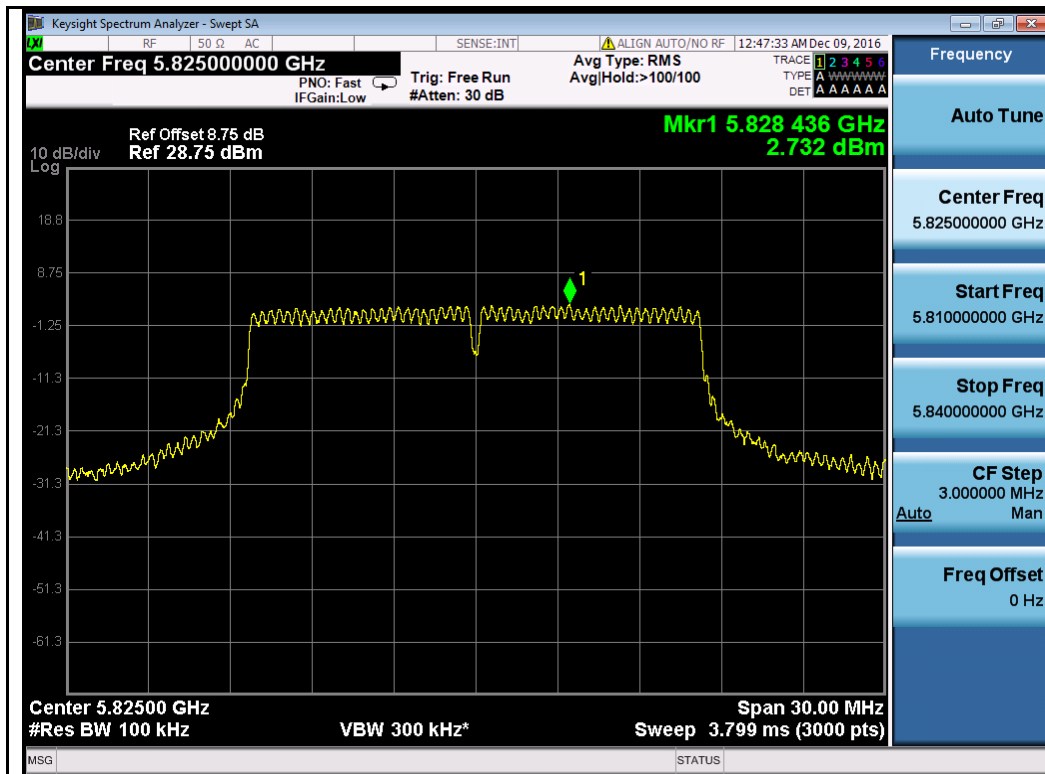
802.11n-HT40 5230M



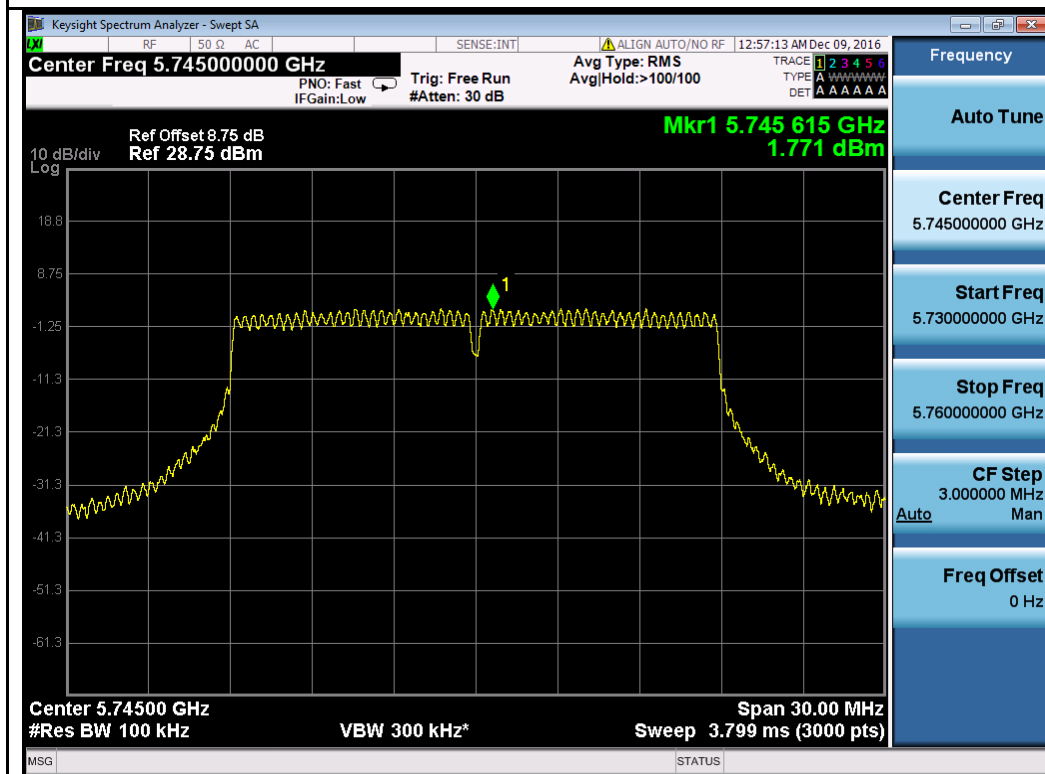
## Test Plot for W58:

### Chain 1:

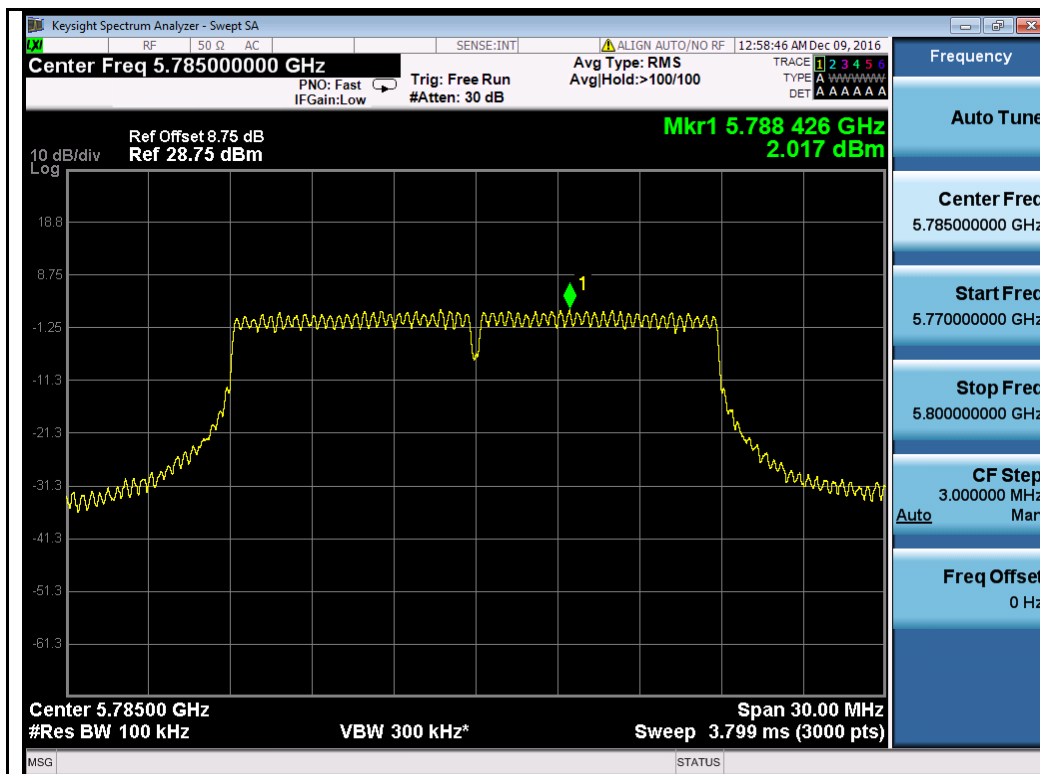




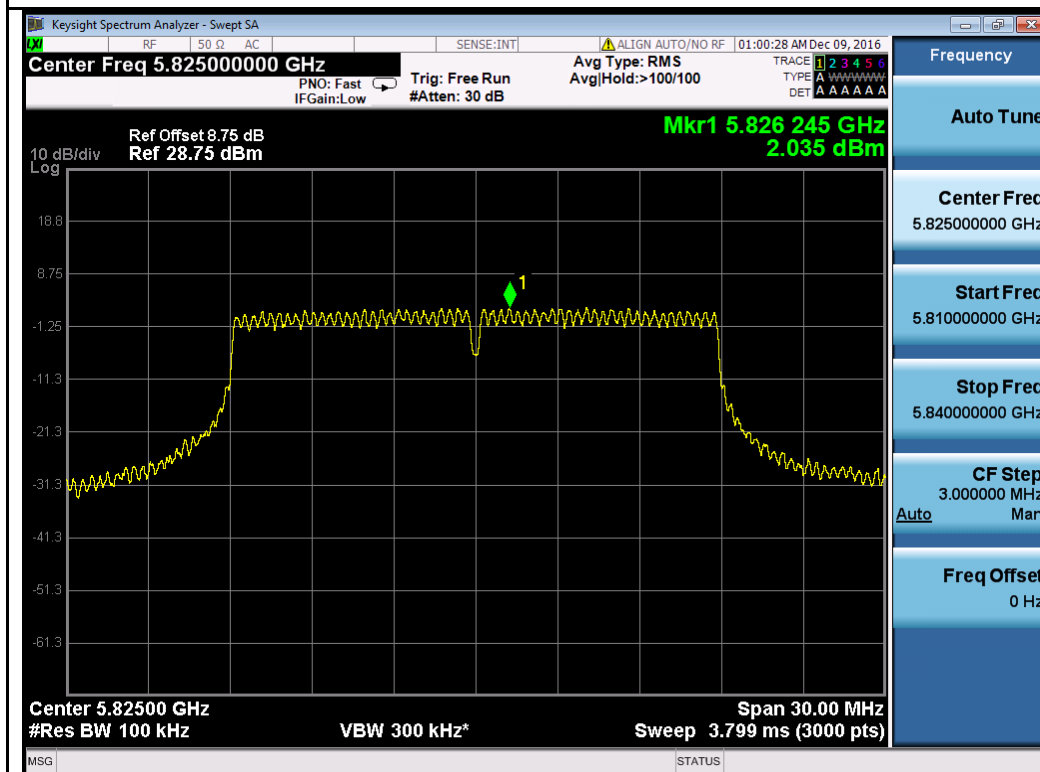
802.11a-5825M



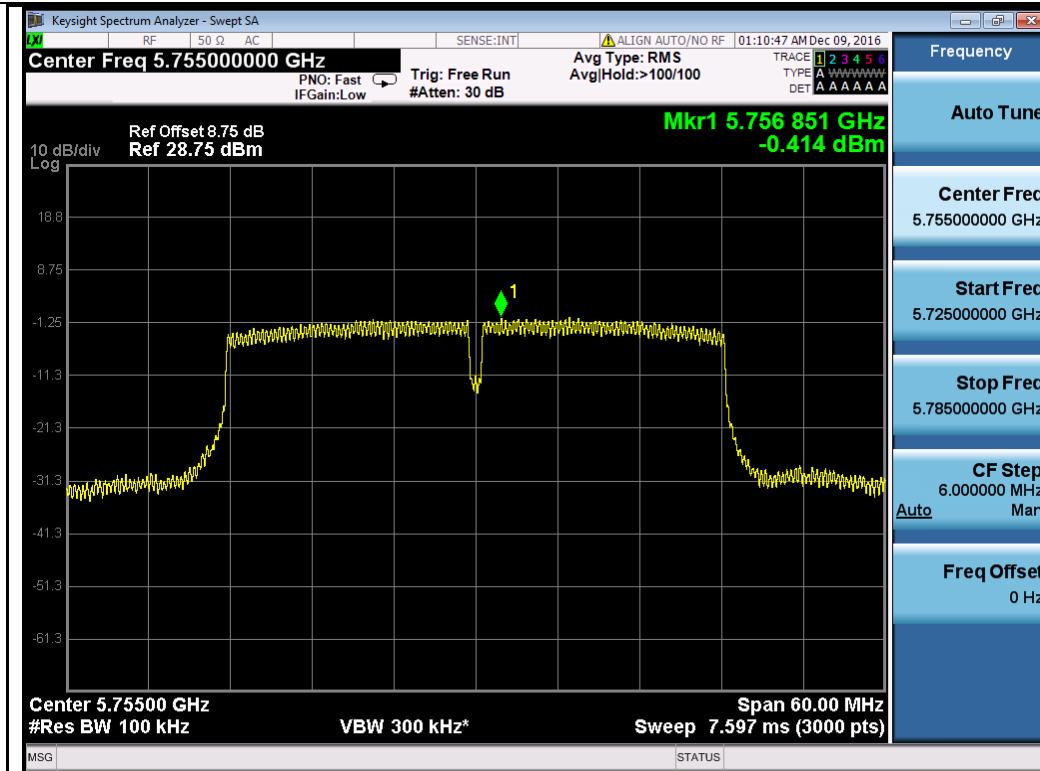
802.11n-HT20 5745M



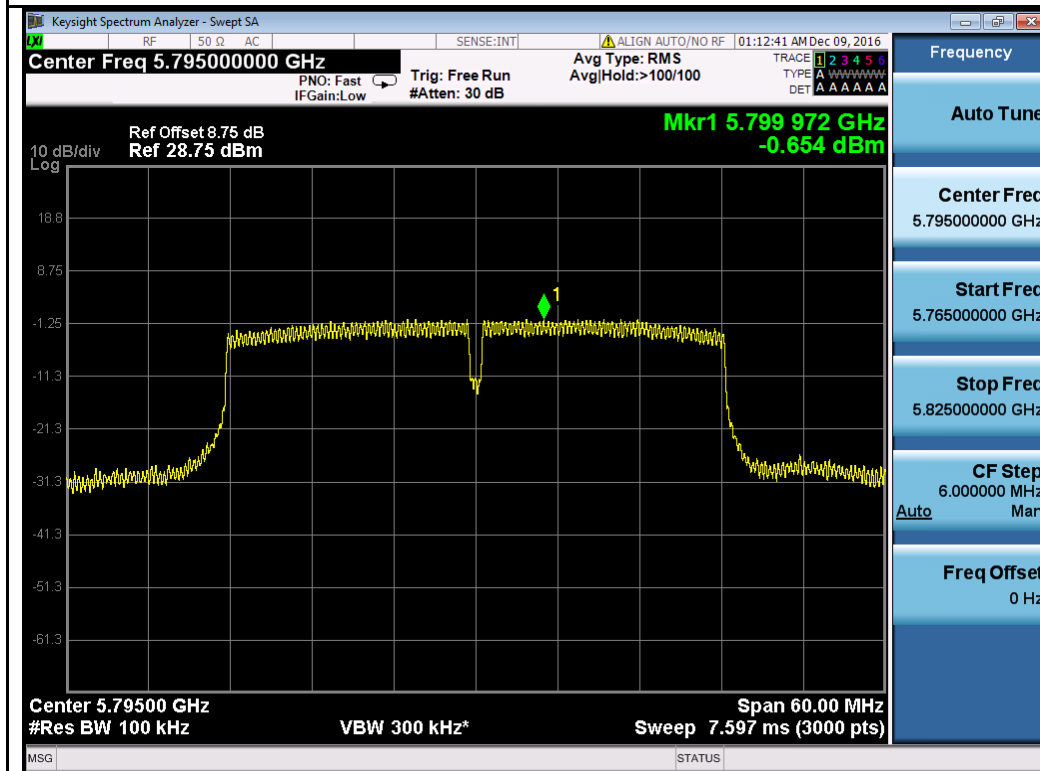
802.11n-HT20 5785M



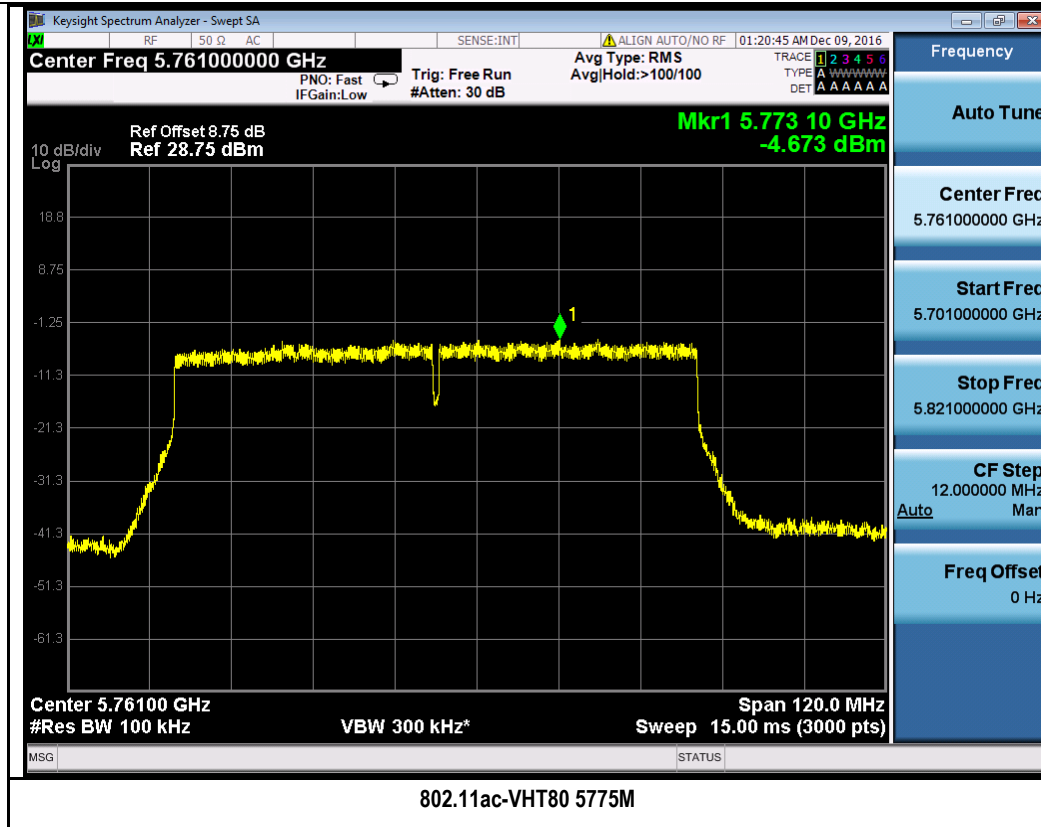
802.11n-HT20 5825M



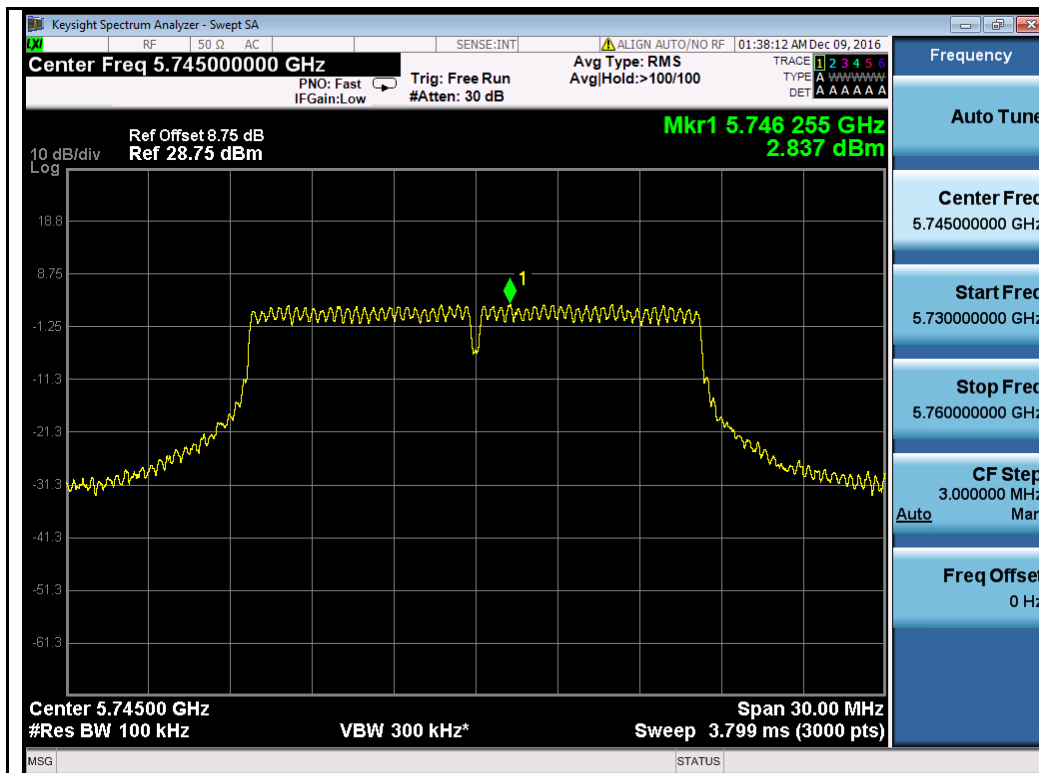
802.11n-HT40 5755M



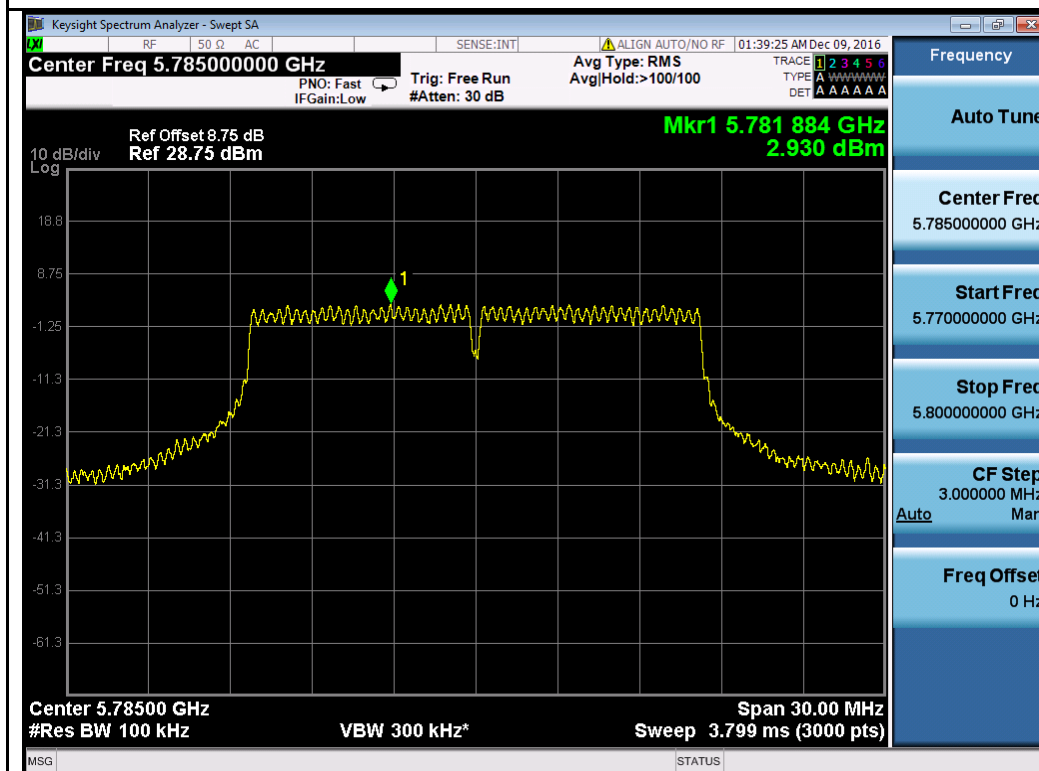
802.11n-HT40 5795M



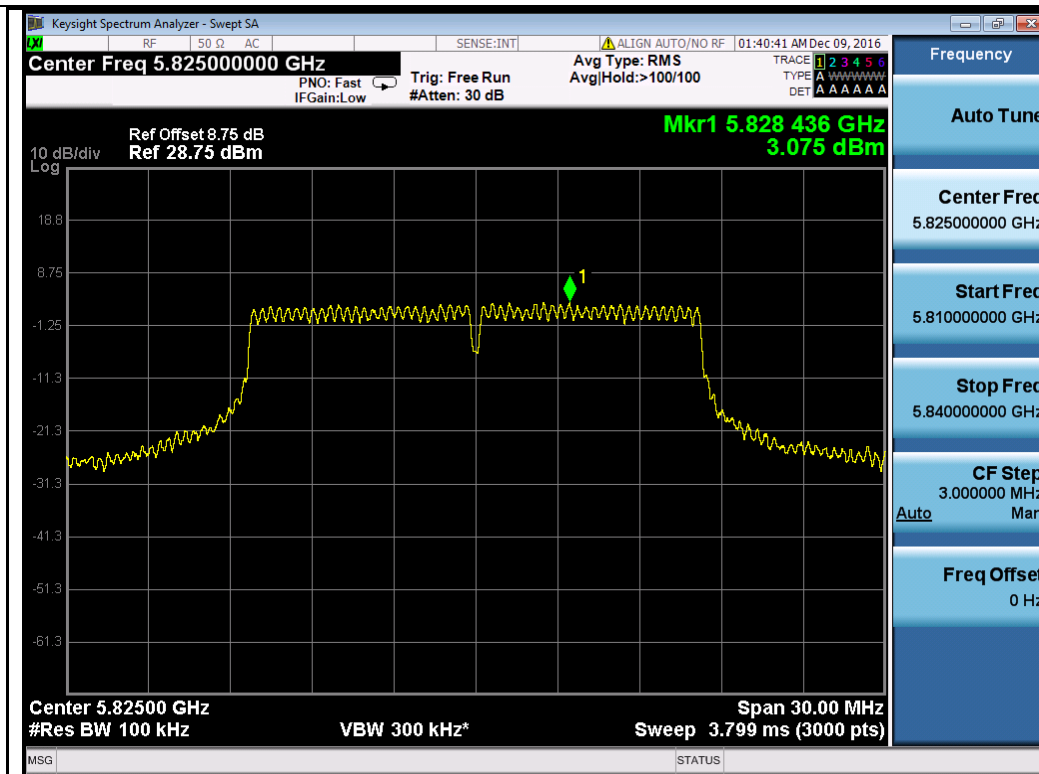
## Chain 2:



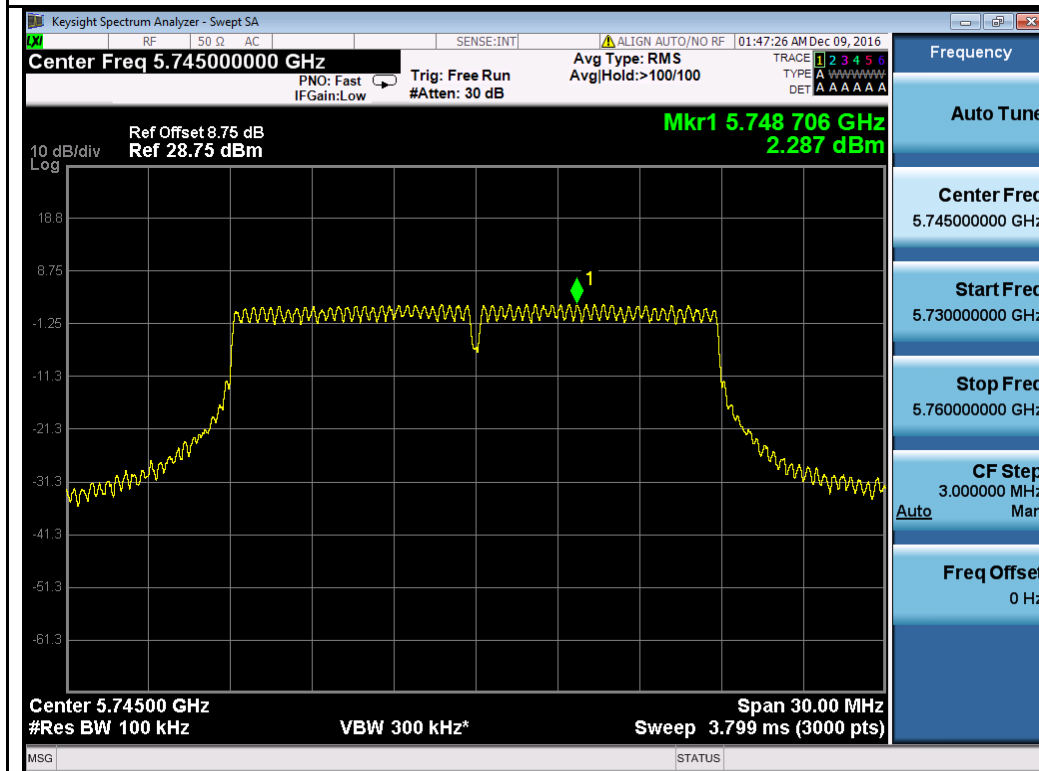
802.11a-5745M



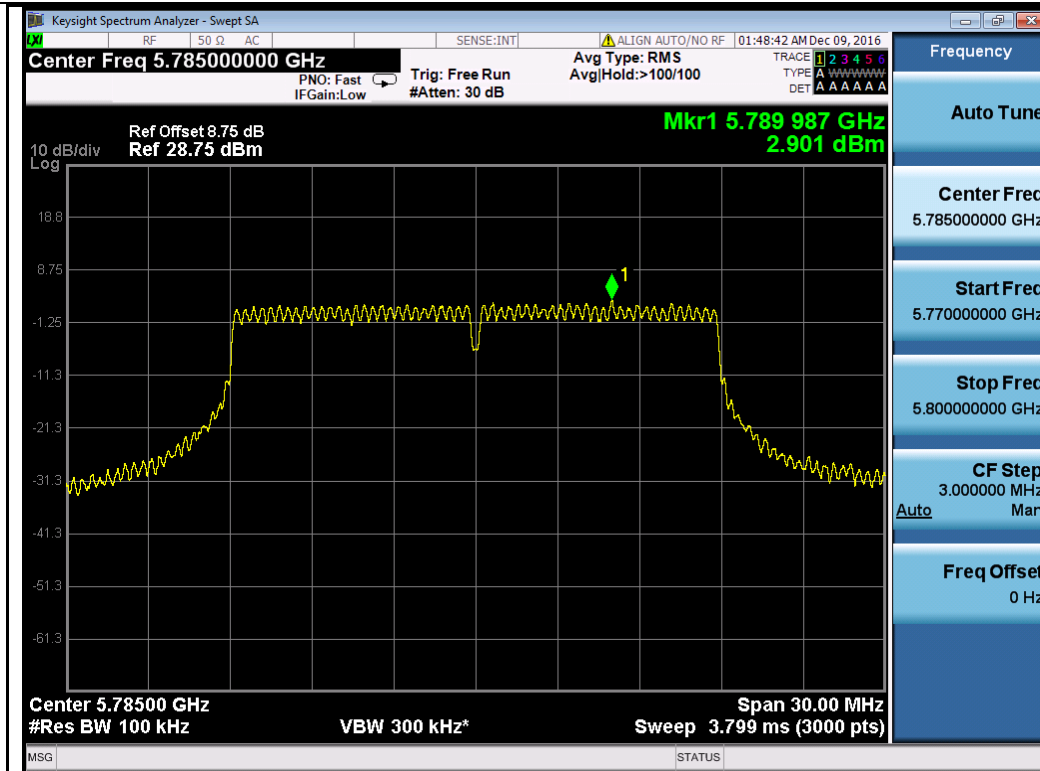
802.11a-5785M



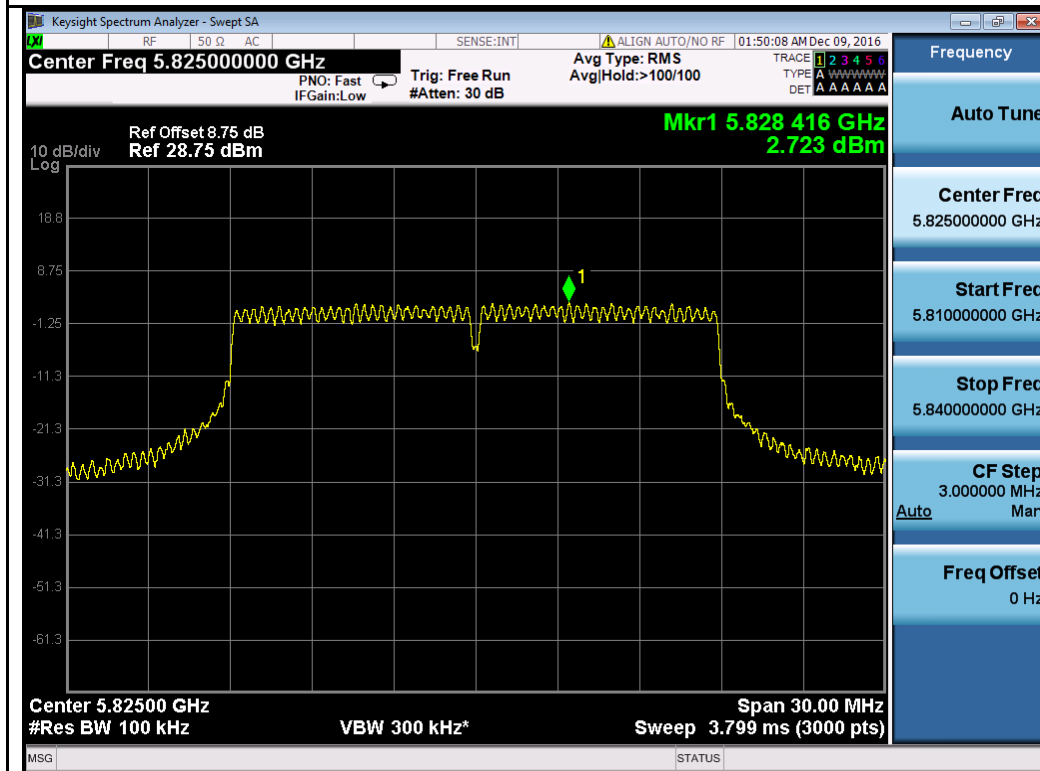
802.11a-5825M



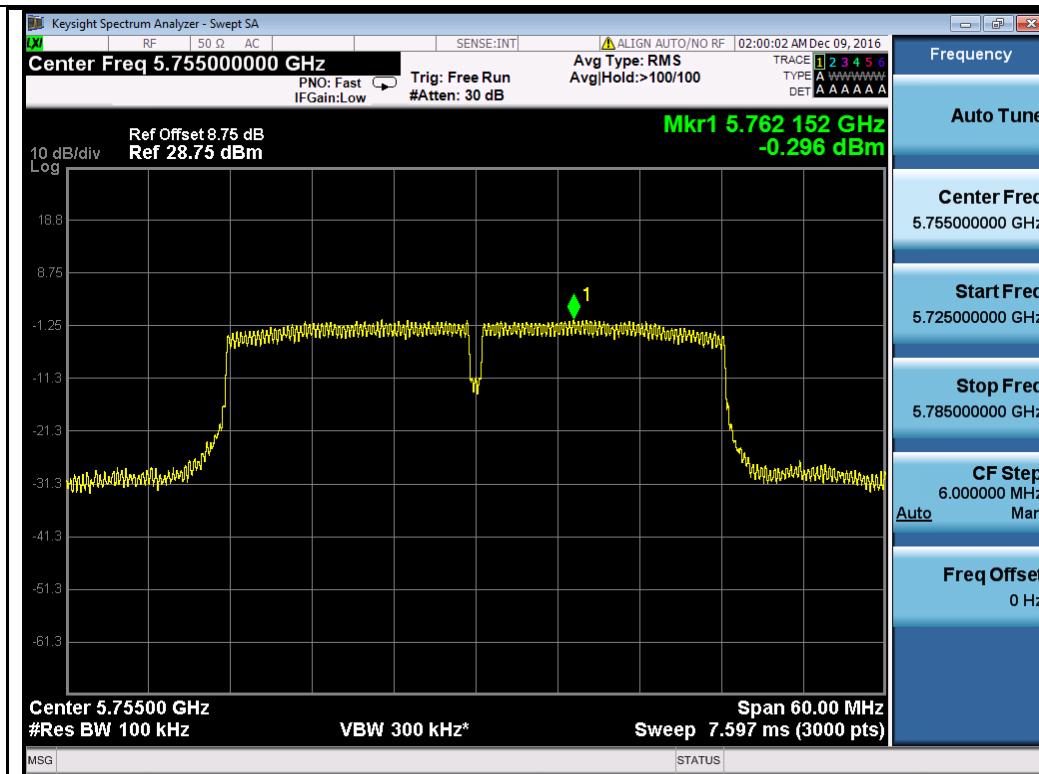
802.11n-HT20 5745M



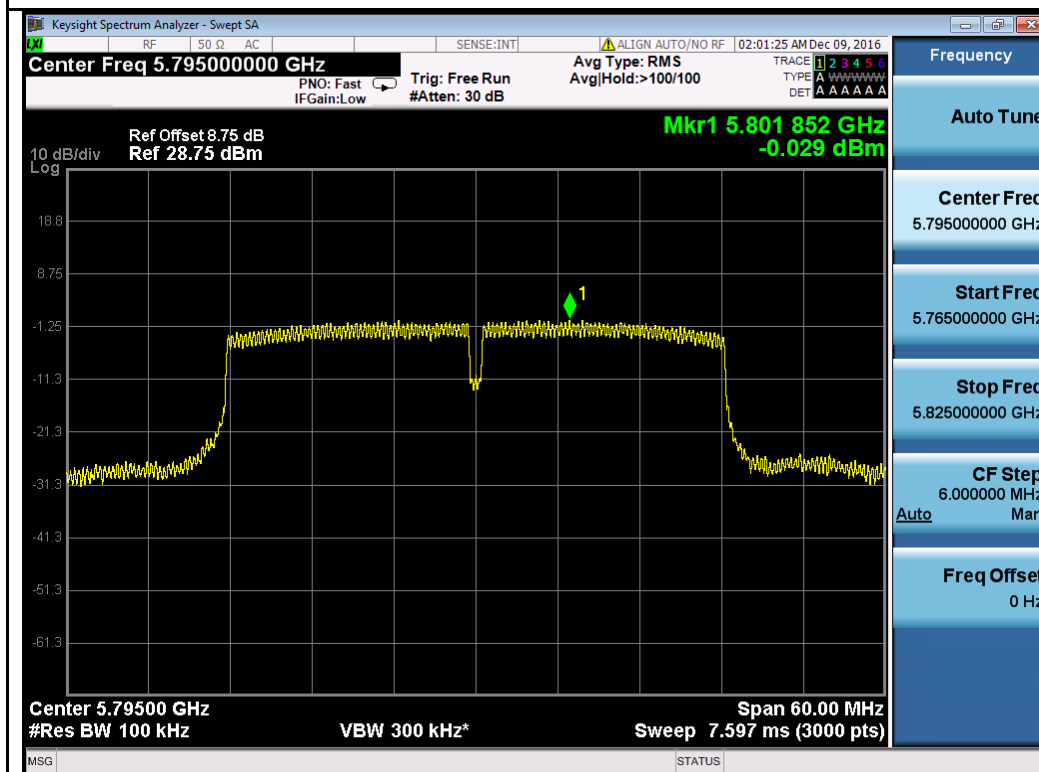
802.11n-HT20 5785M



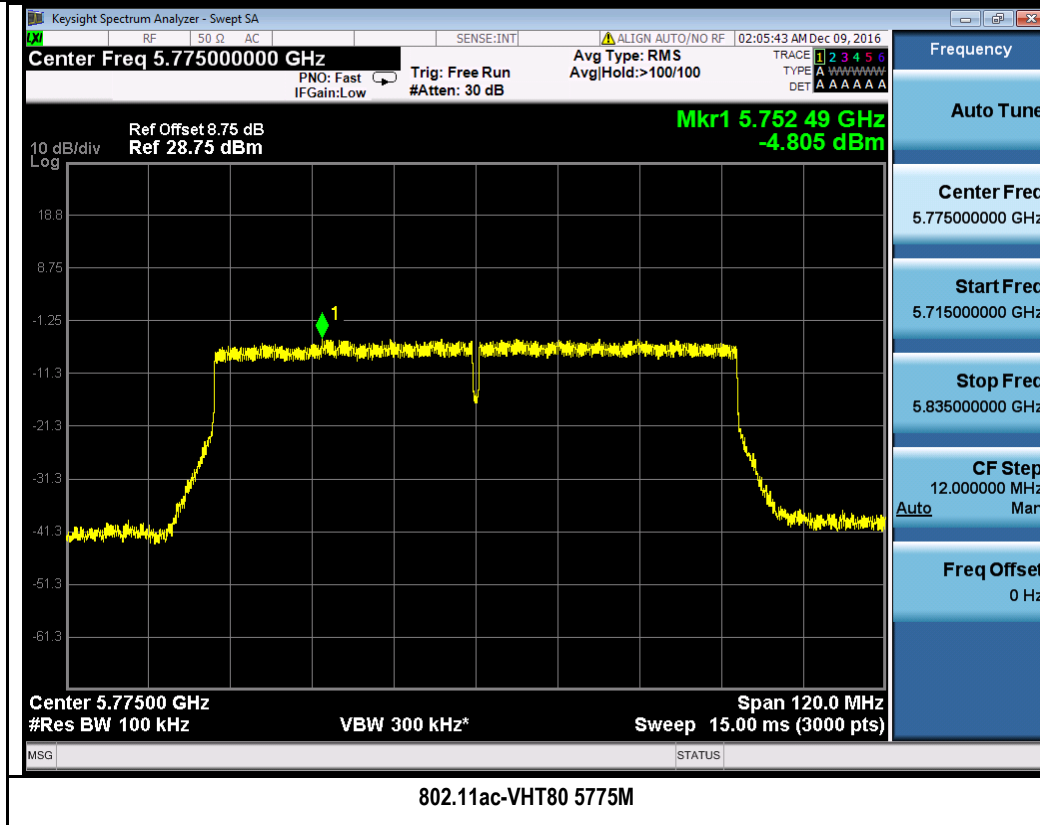
802.11n-HT20 5825M



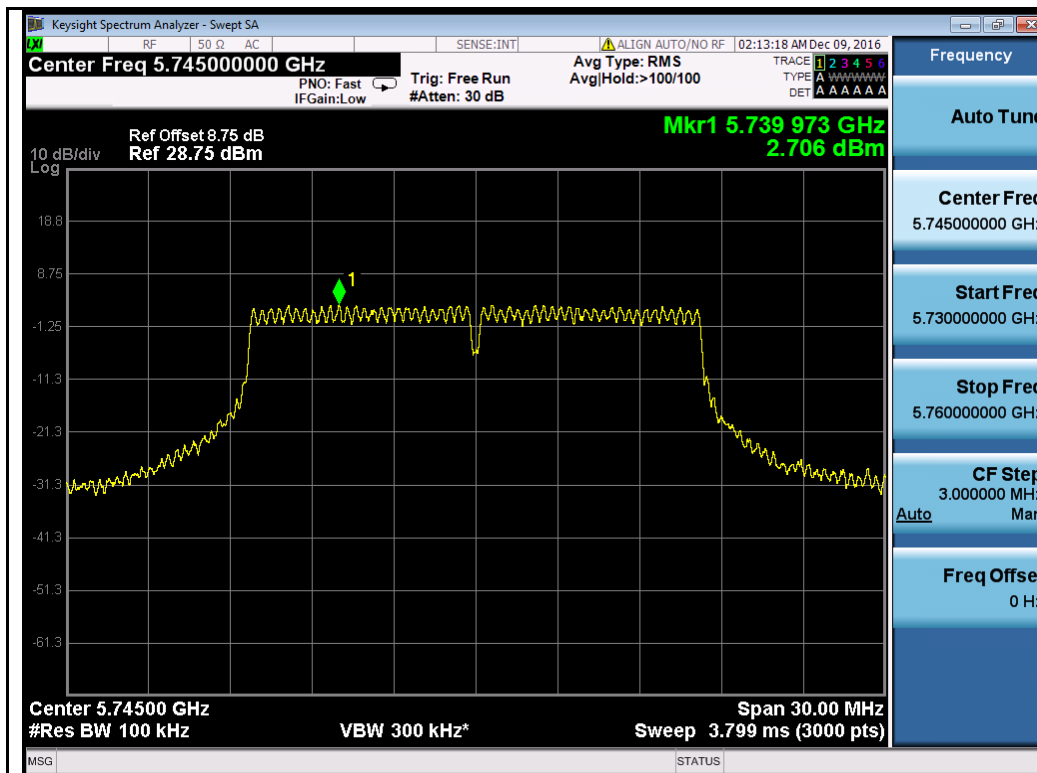
802.11n-HT40 5755M



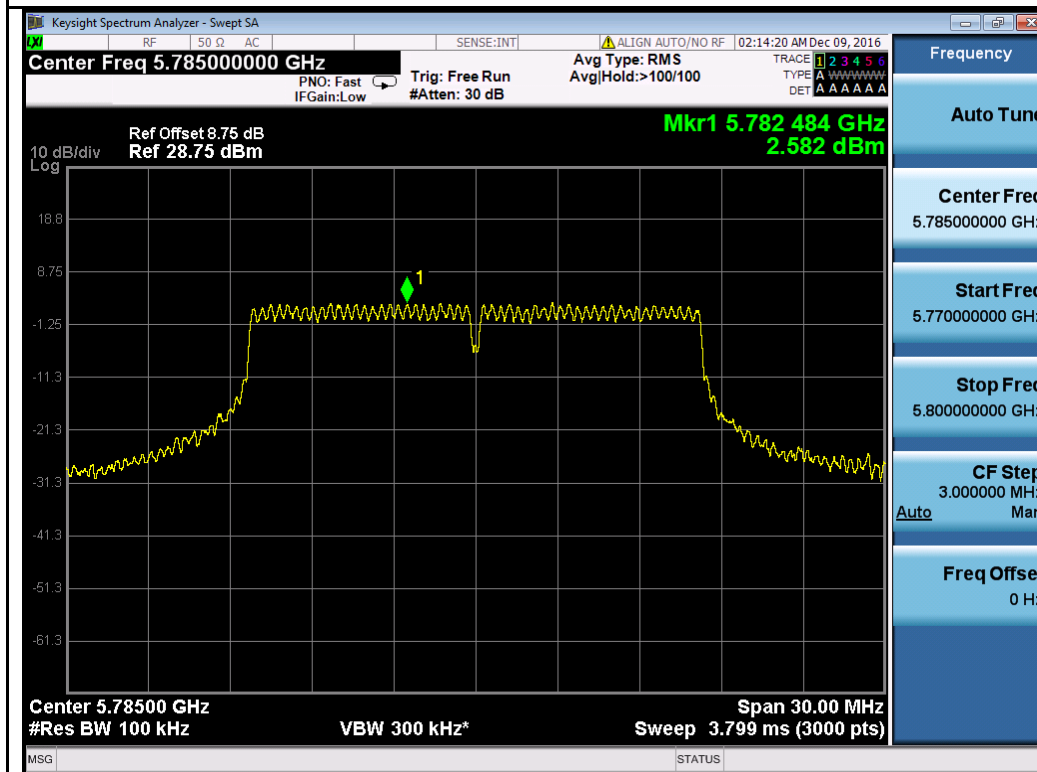
802.11n-HT40 5795M



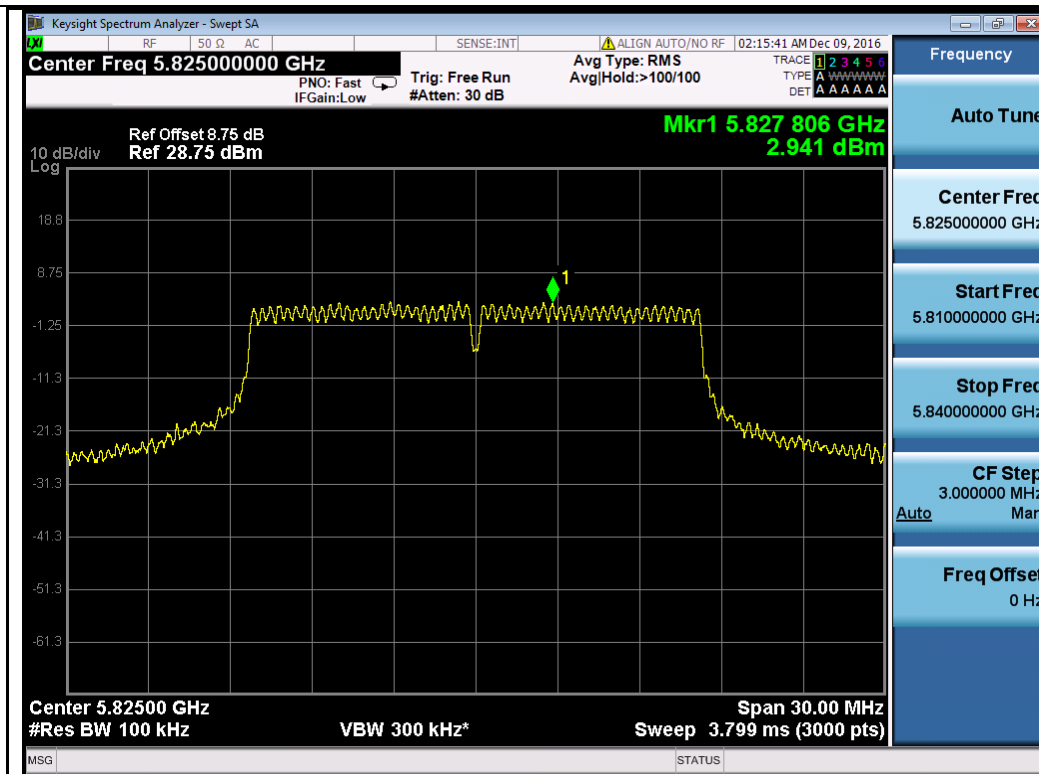
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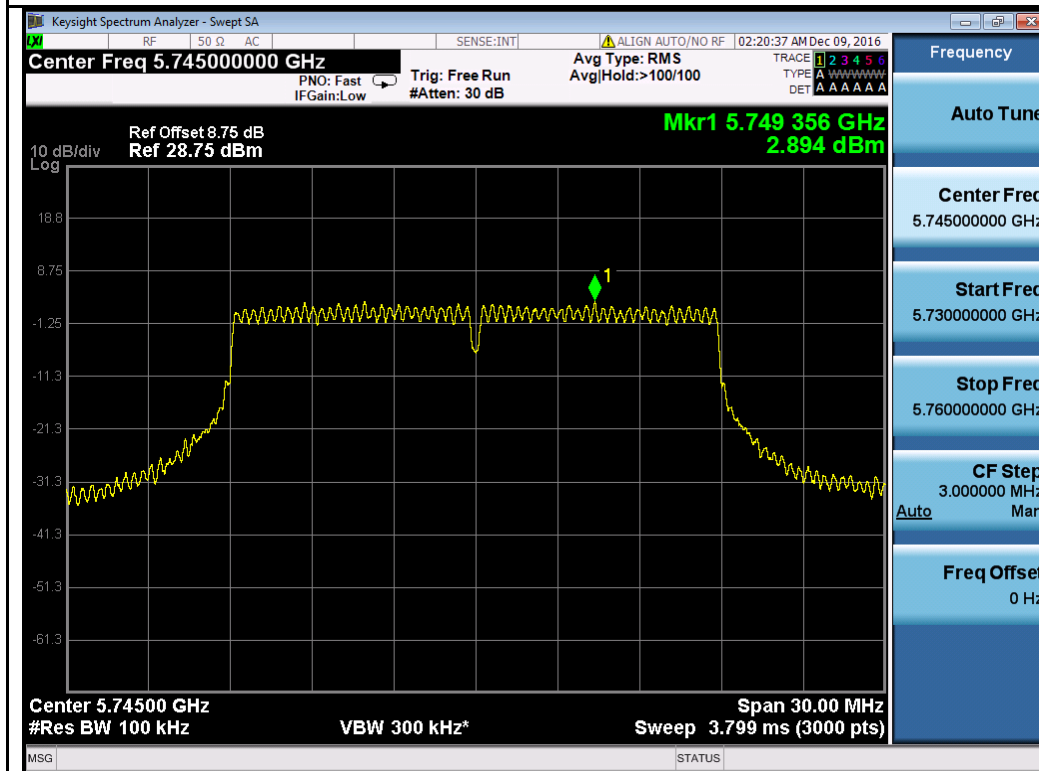
802.11a-5745M



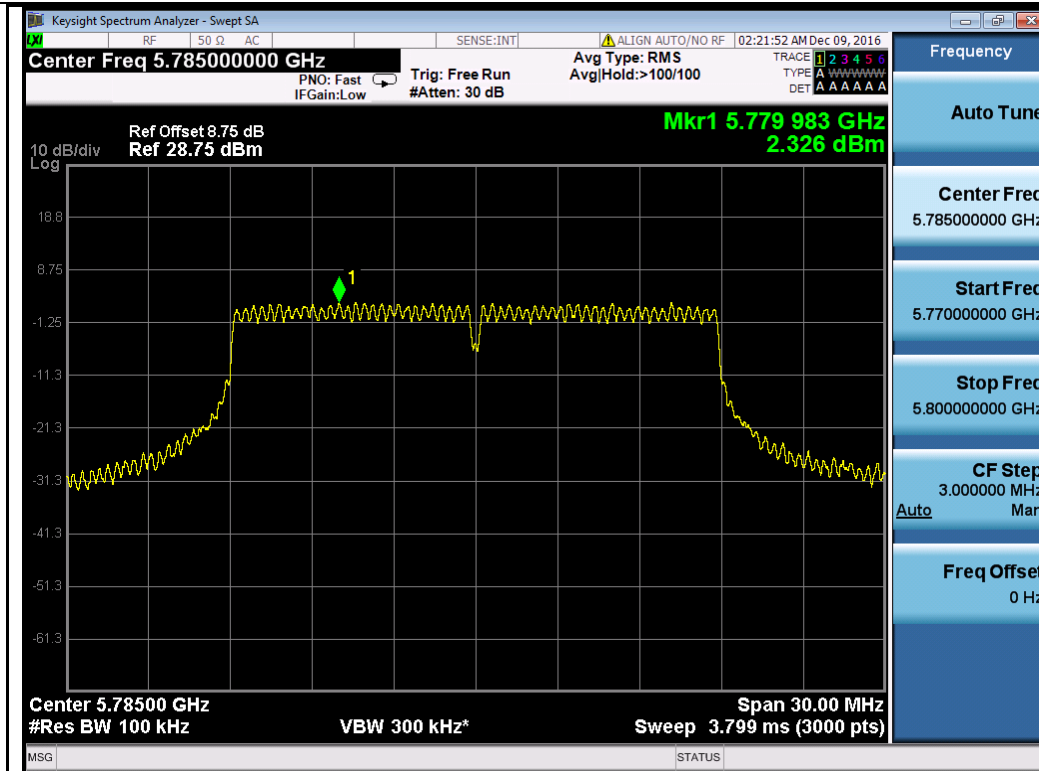
802.11a-5785M



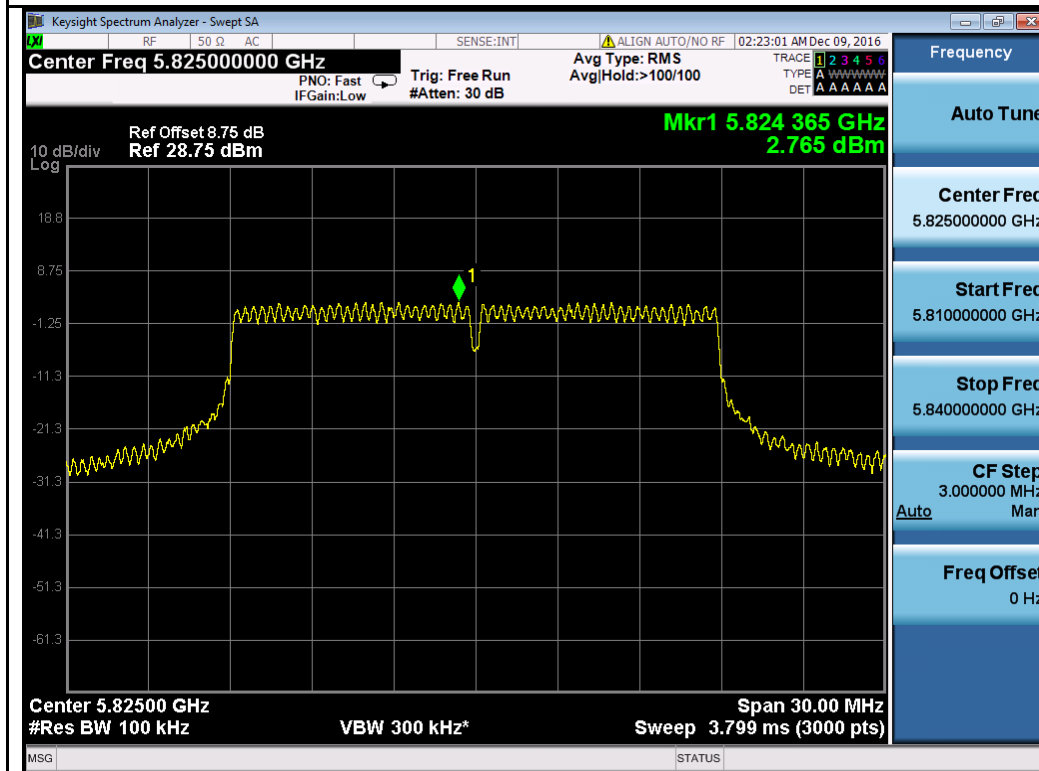
802.11a-5825M



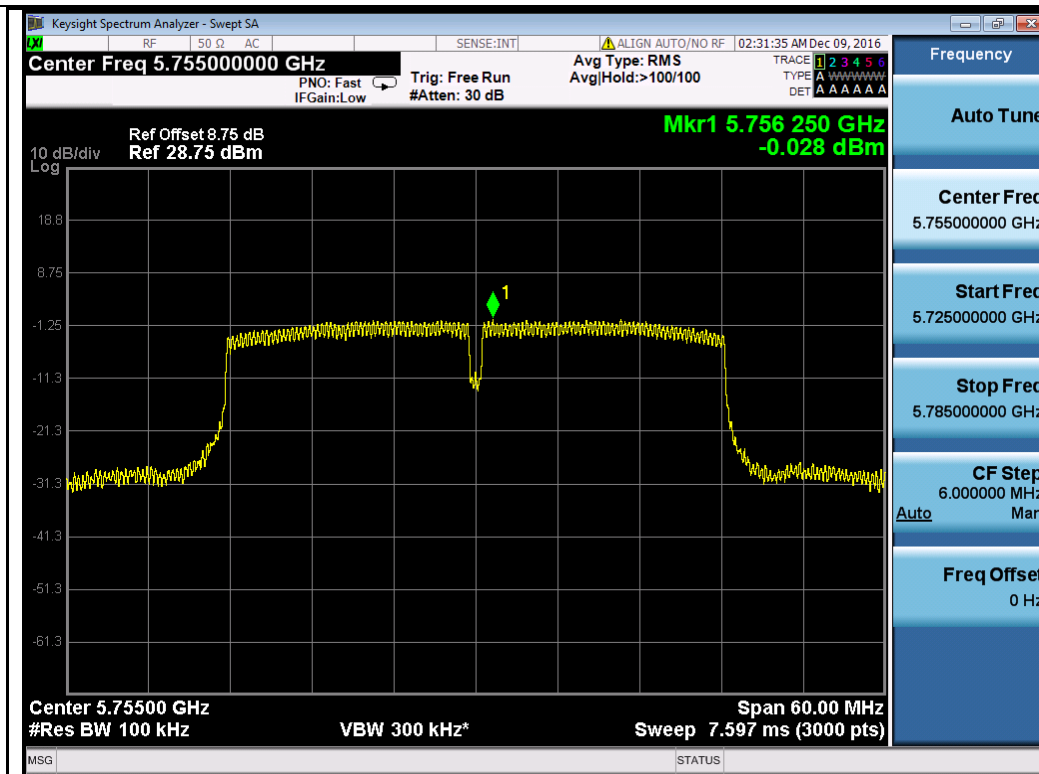
802.11n-HT20 5745M



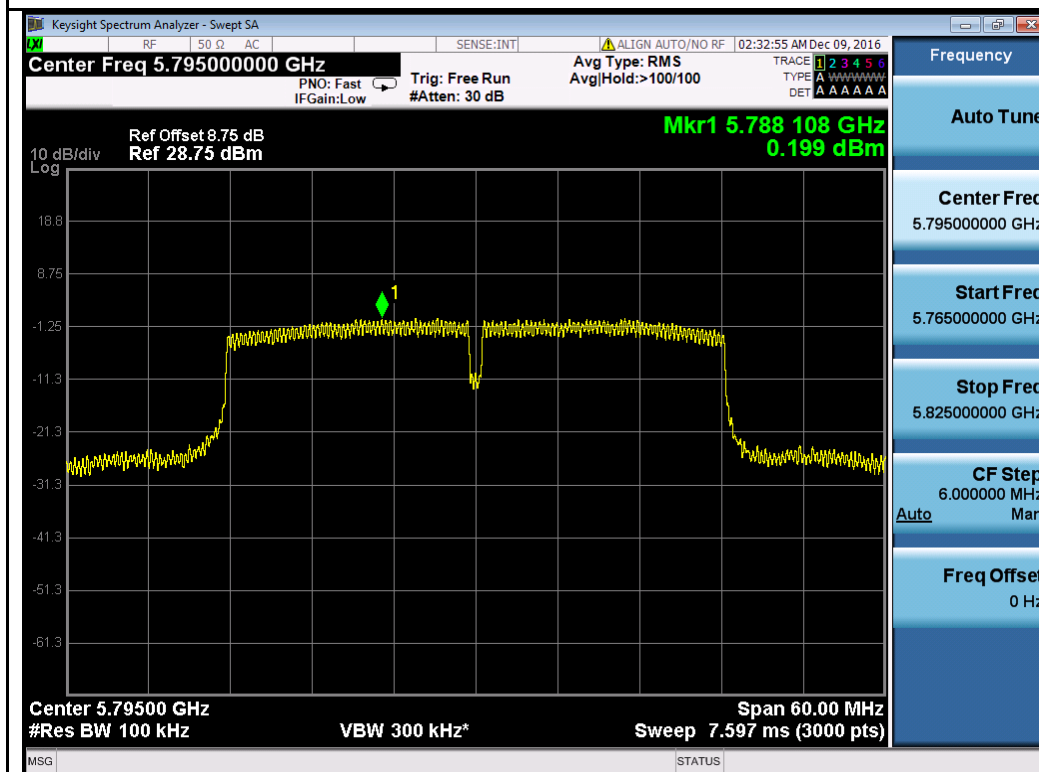
802.11n-HT20 5785M



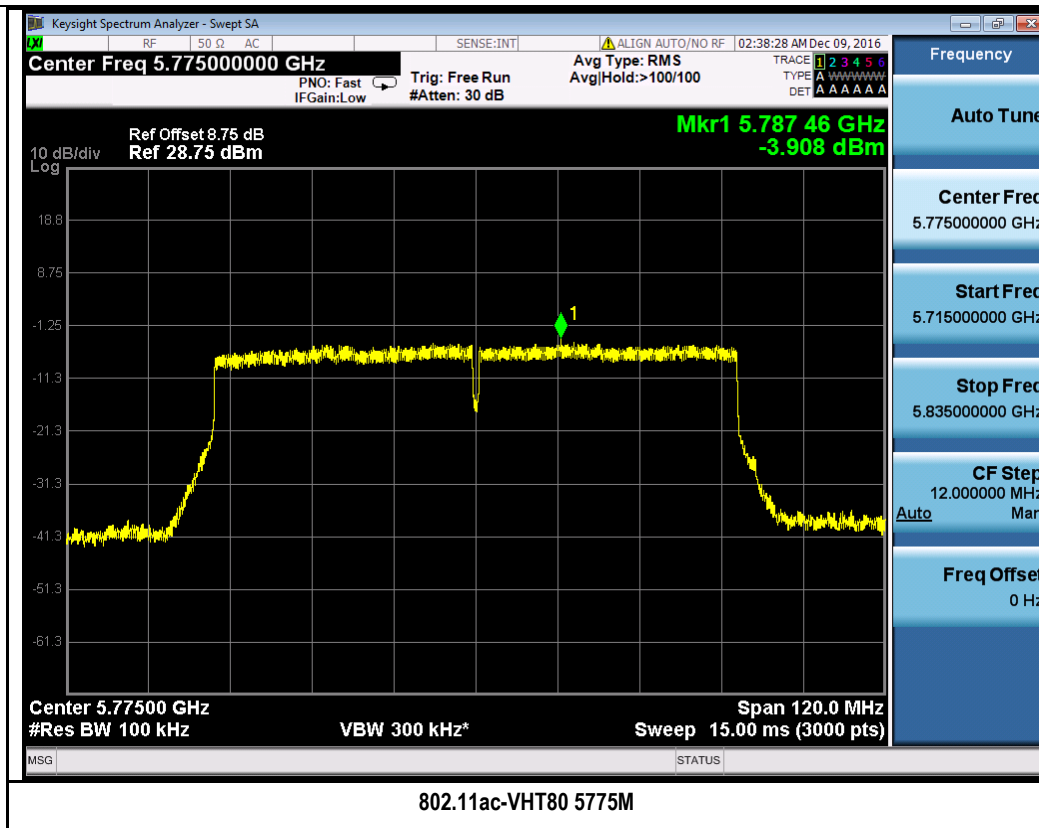
802.11n-HT20 5825M



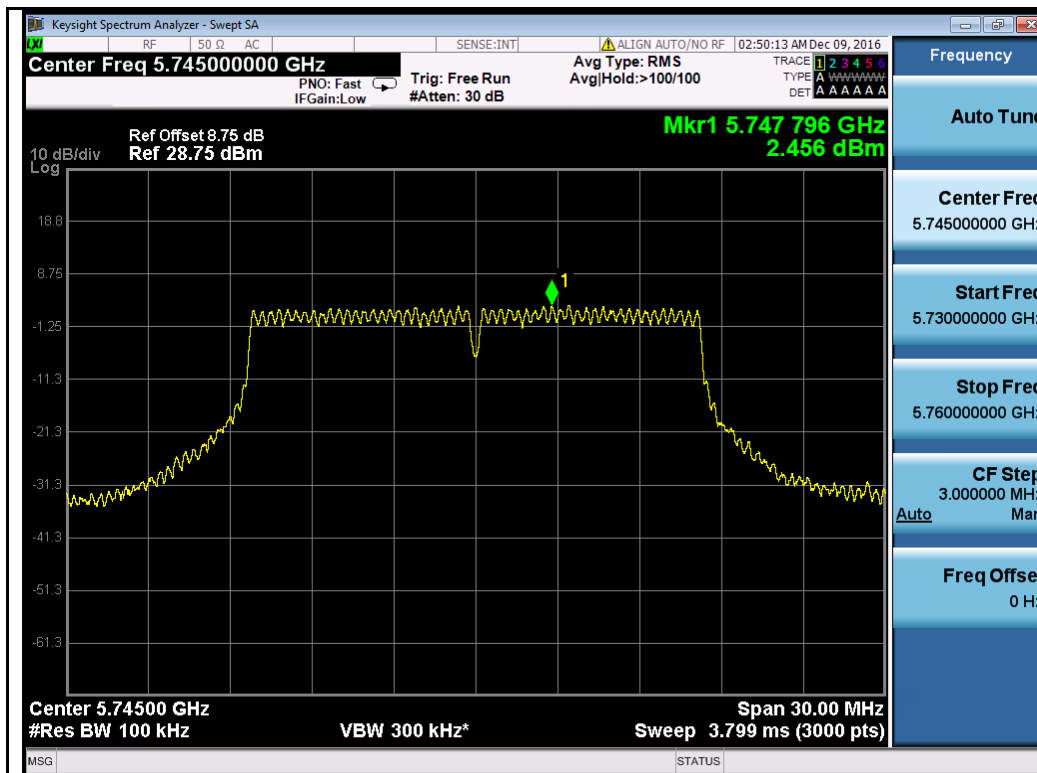
802.11n-HT40 5755M



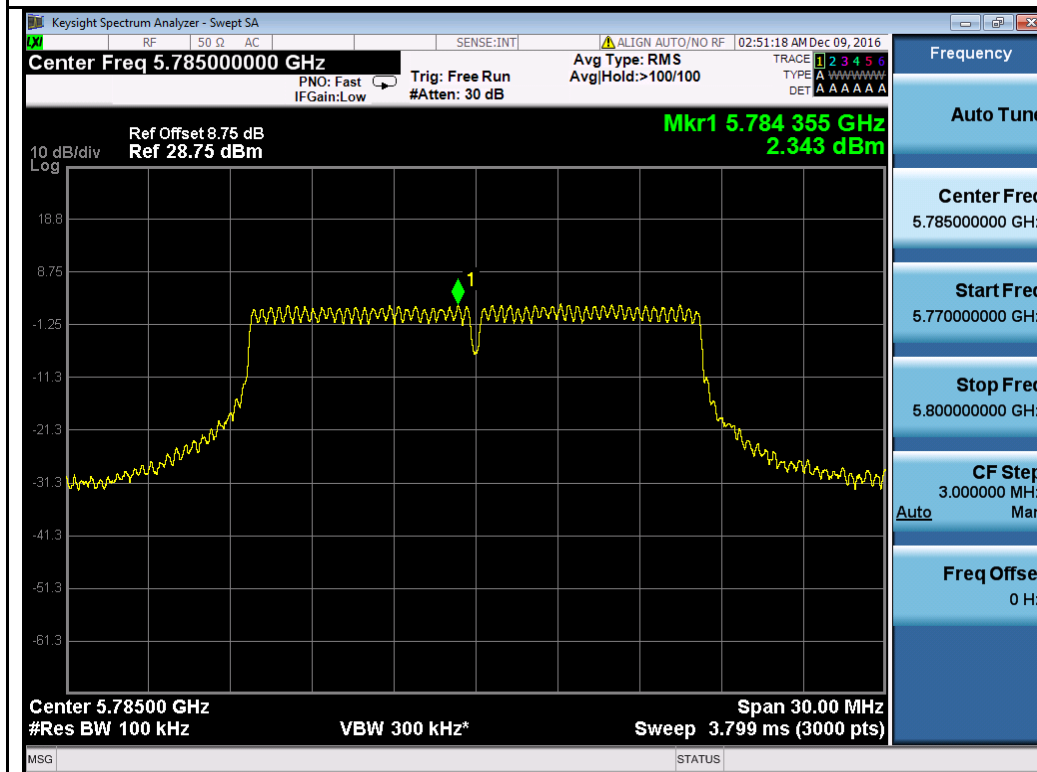
802.11n-HT40 5795M



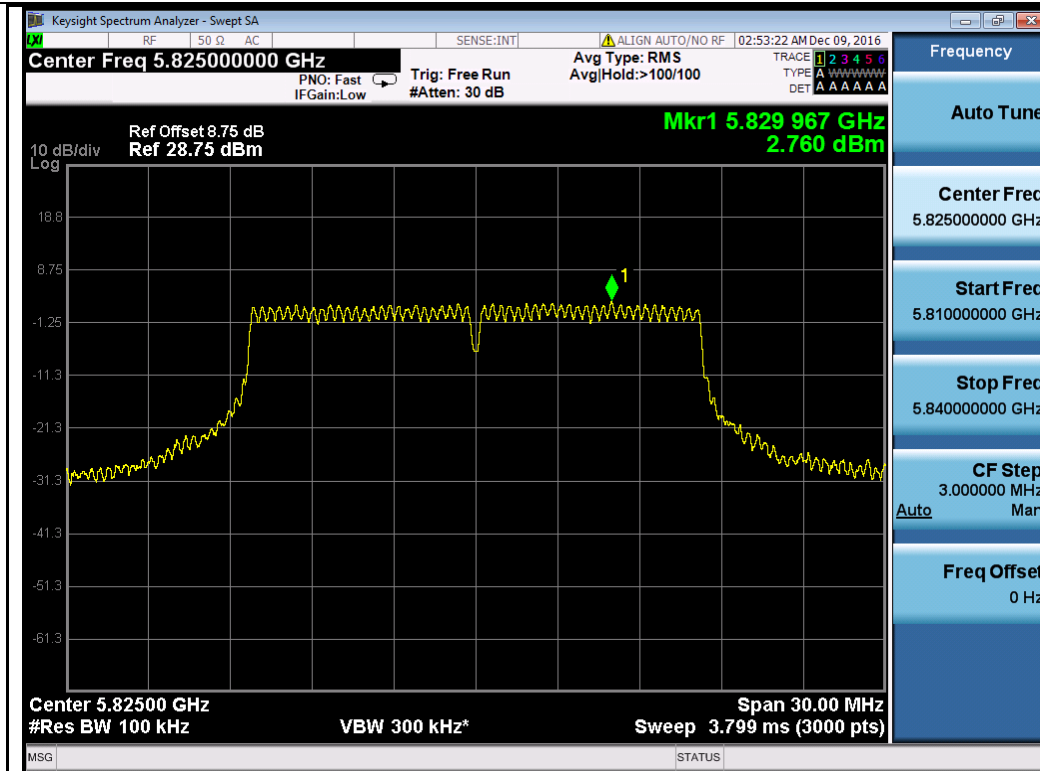
**Chain 4:**



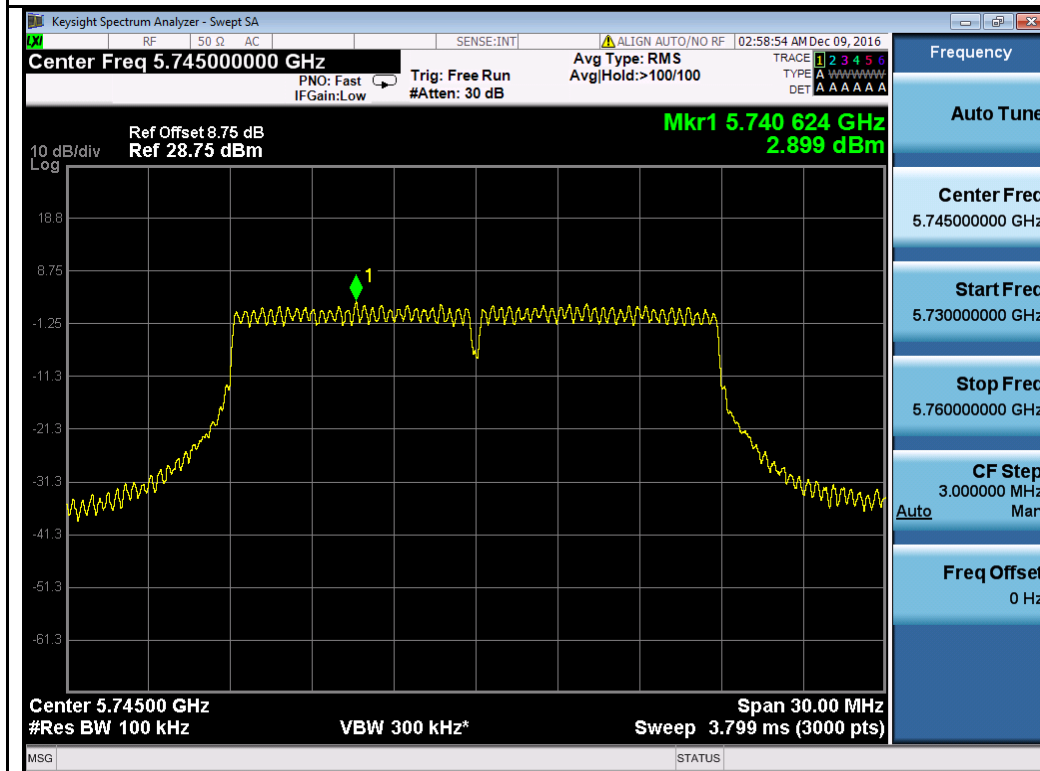
802.11a-5745M



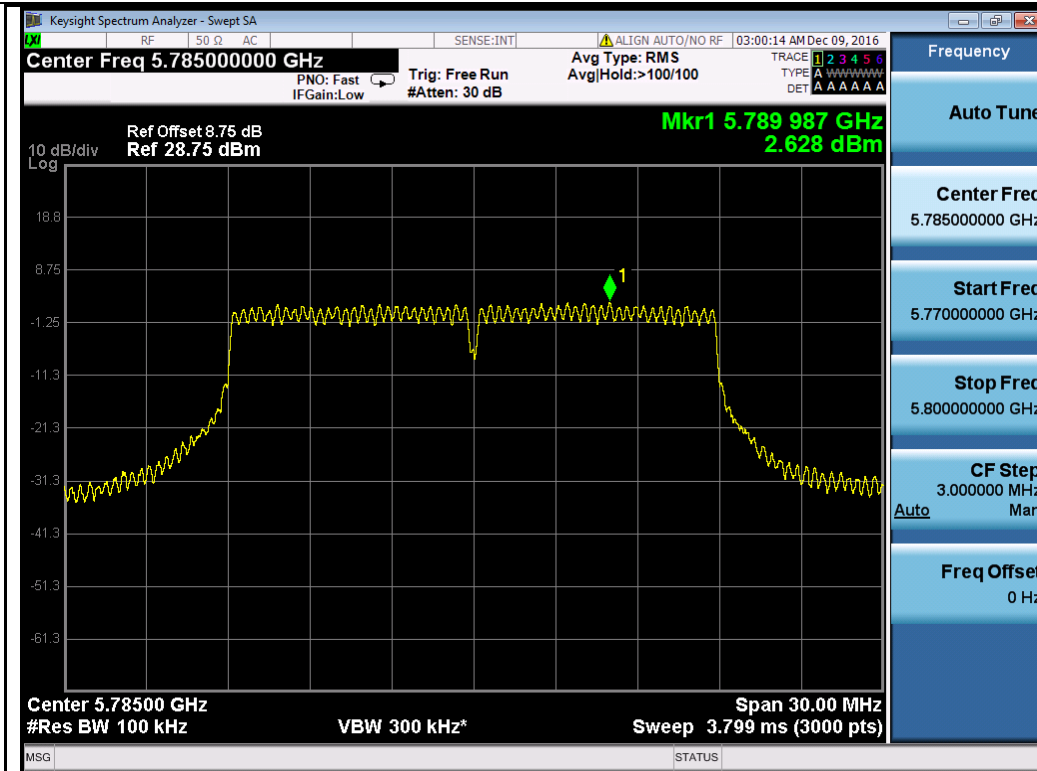
802.11a-5785M



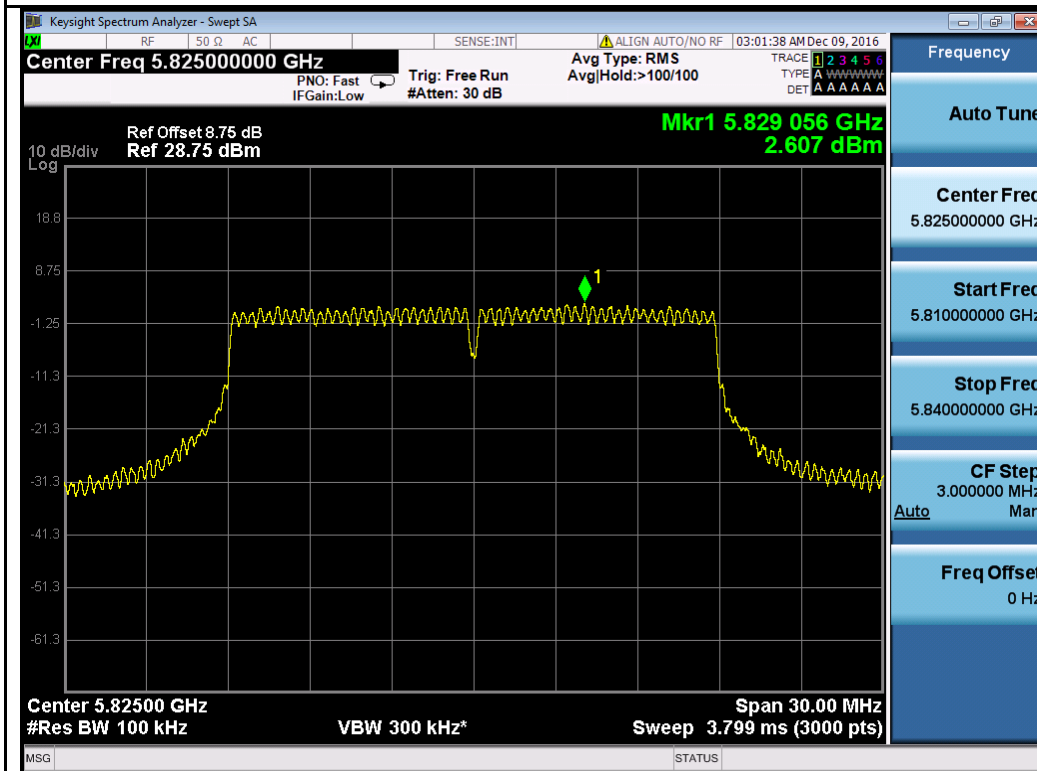
802.11a-5825M



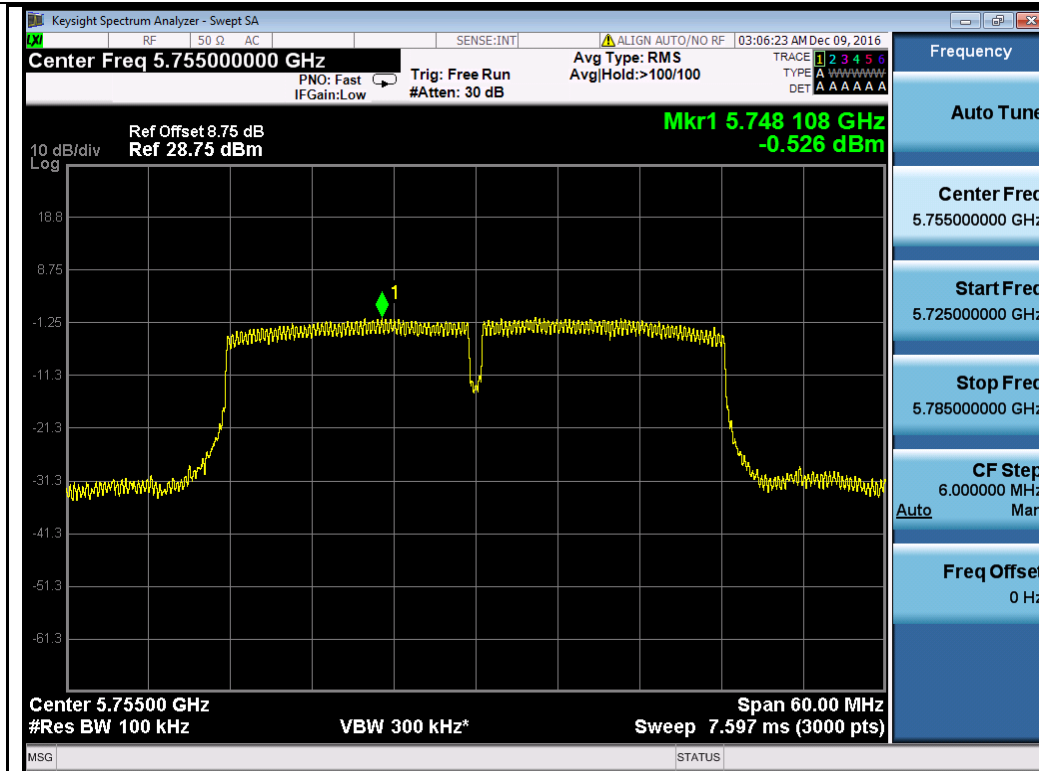
802.11n-HT20 5745M



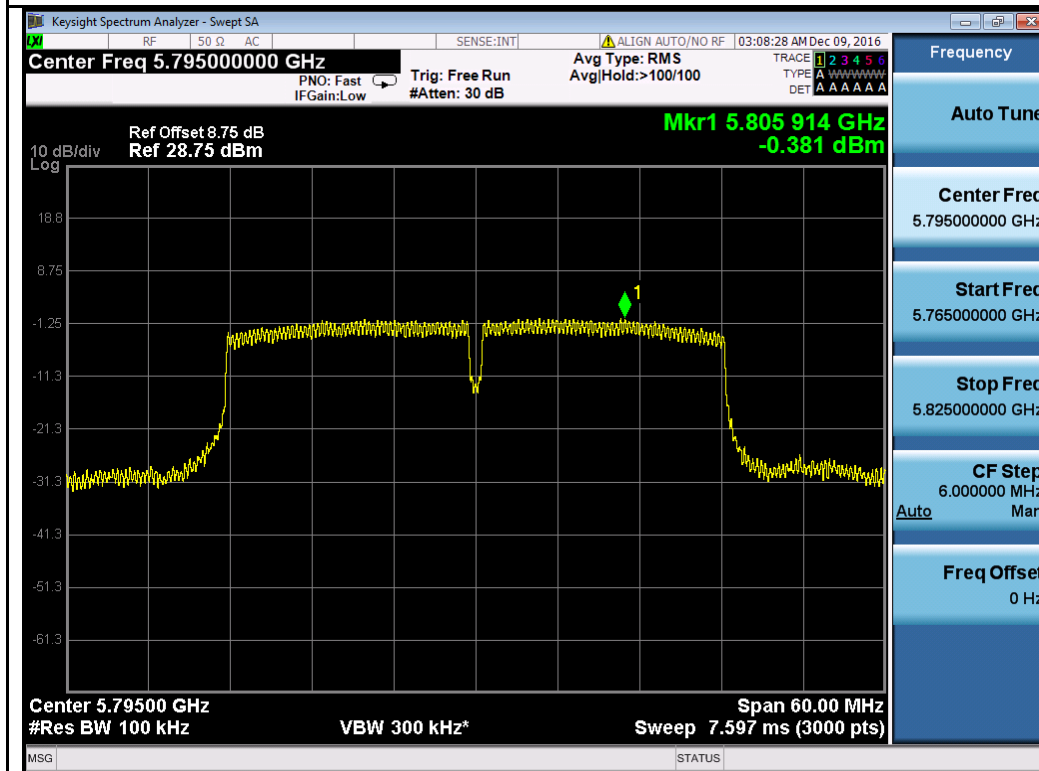
802.11n-HT20 5785M



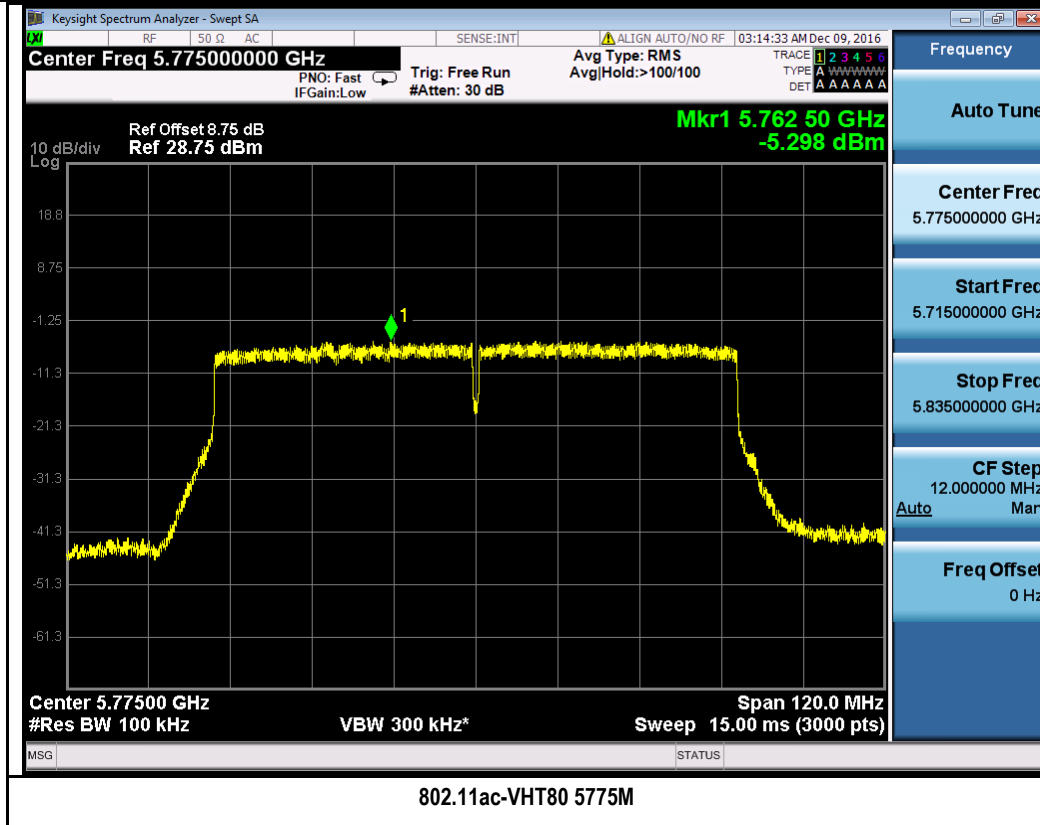
802.11n-HT20 5825M



802.11n-HT40 5755M

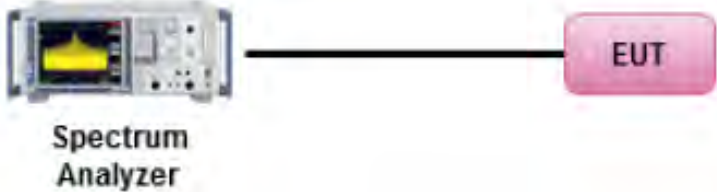


802.11n-HT40 5795M



## 10.5 Band Edge and Emission Mask Measurement

### Requirement(s):

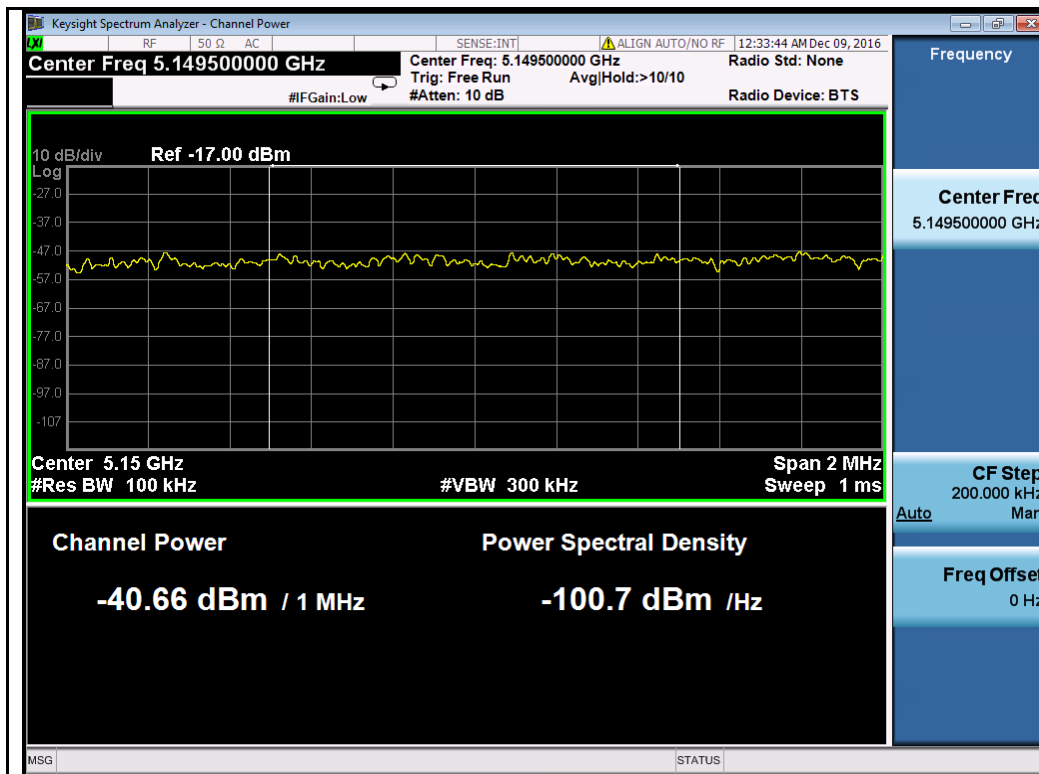
| Spec                                    | Item                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Applicable                          |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| 47CFR§<br>15.407(b)(2),<br>15.407(b)(6) | (1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.                                                                                                                                                                                                                                                                                                                                          | <input checked="" type="checkbox"/> |
|                                         | (4)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | For transmitters operating in the 5.725-5.825 GHz band: all emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge. | <input checked="" type="checkbox"/> |
| Test Setup                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     |
| Procedure                               | <p>789033 D02 General UNII Test Procedures New Rules v01r02, II.F. Method SA-1</p> <p><u>Band Edge measurement:</u></p> <ul style="list-style-type: none"> <li>- For average emissions measurements, follow the procedures described in section II.G.6., "Procedures for Average Unwanted Emissions Measurements above 1000 MHz", except for the following changes:</li> <li>- Set RBW=100kHz</li> <li>- Set VBW=300kHz</li> <li>- Perform a band-power integration across the 1 MHz bandwidth in which the band-edge emission level is to be measured.</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     |
| Remark                                  | Antenna gain was added to the offset.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     |
| Result                                  | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     |

Test Data ☐ Yes (See below) ☒ N/A

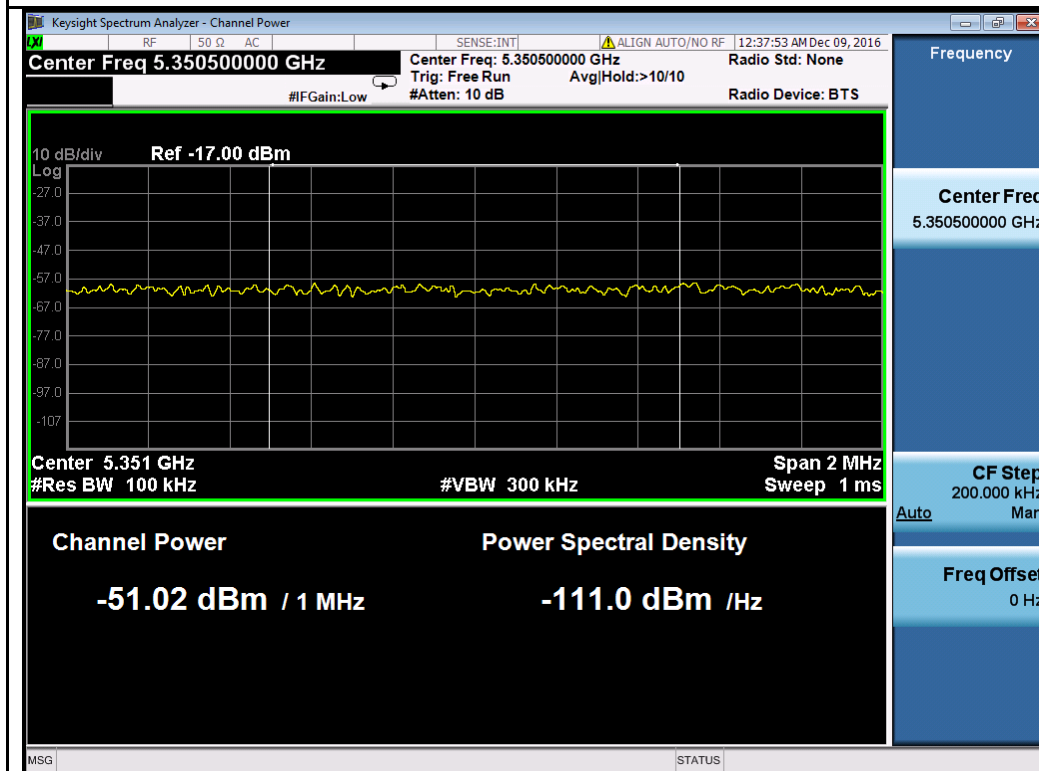
Test Plot ☒ Yes (See below) ☐ N/A

Test was done by Shuo Zhang at RF test site.

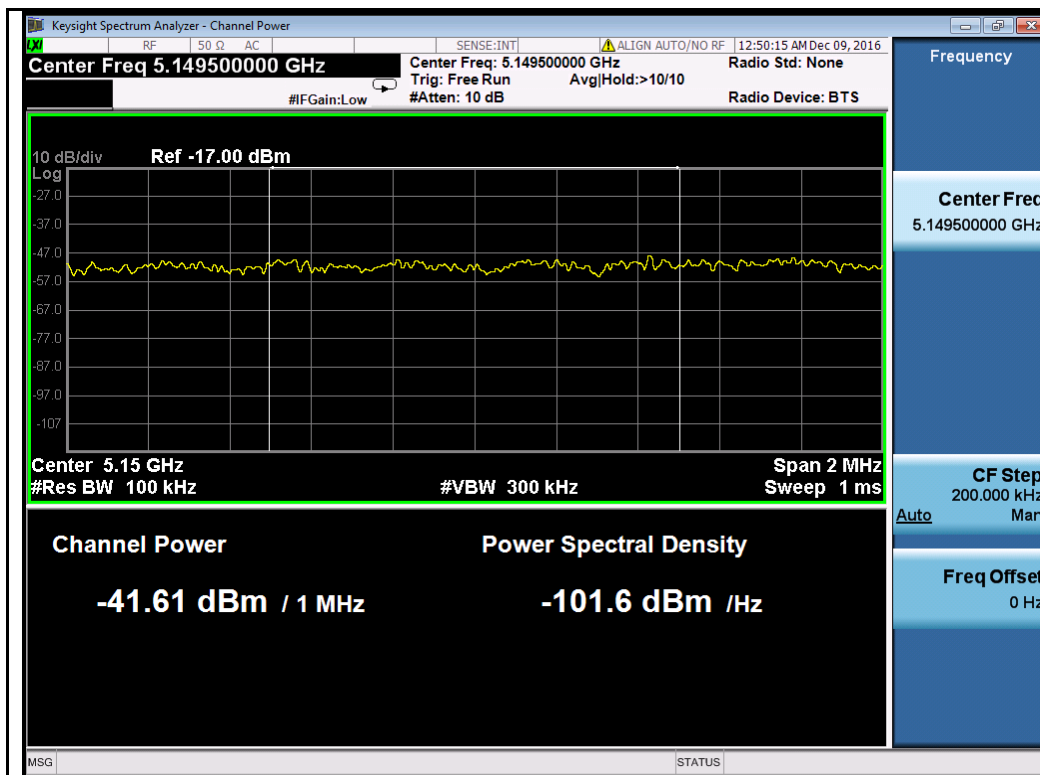
**Test Plots for W52:**  
**Chain 1:**



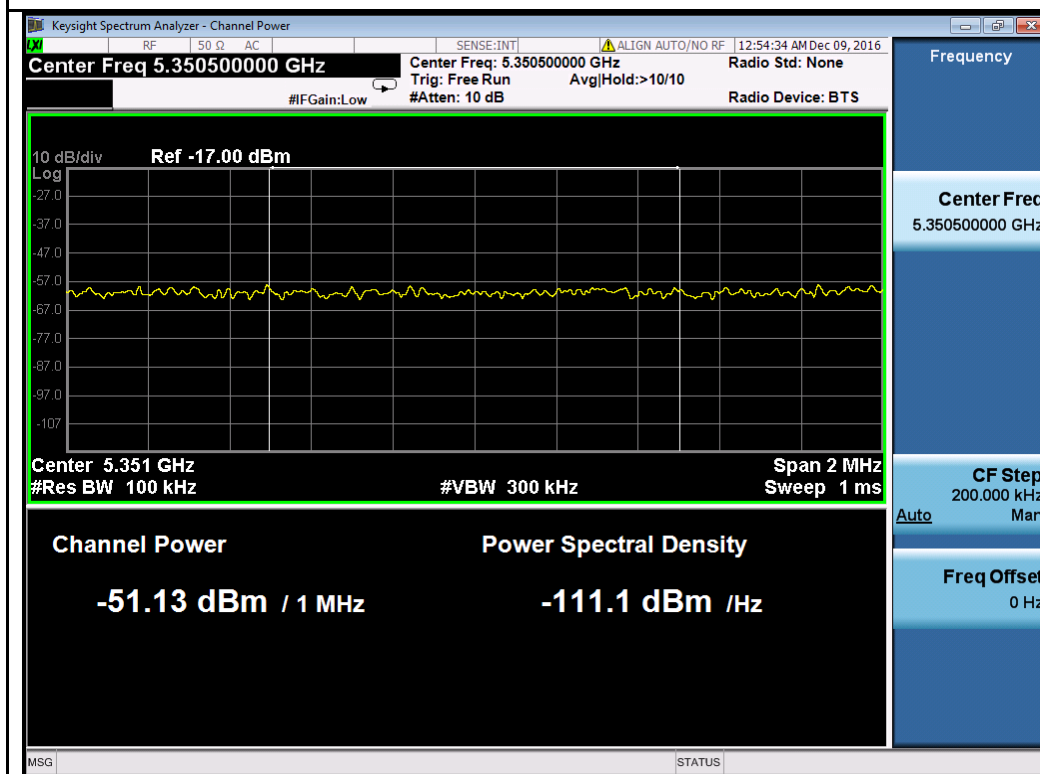
802.11a-5180MHz



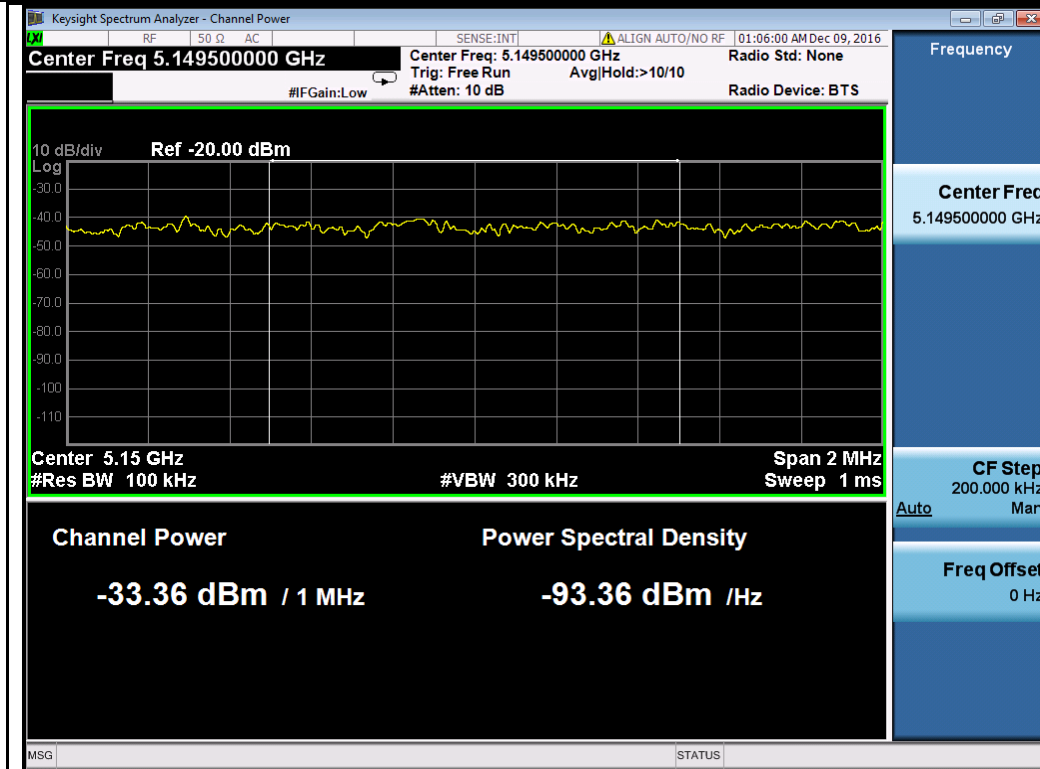
802.11a-5240MHz



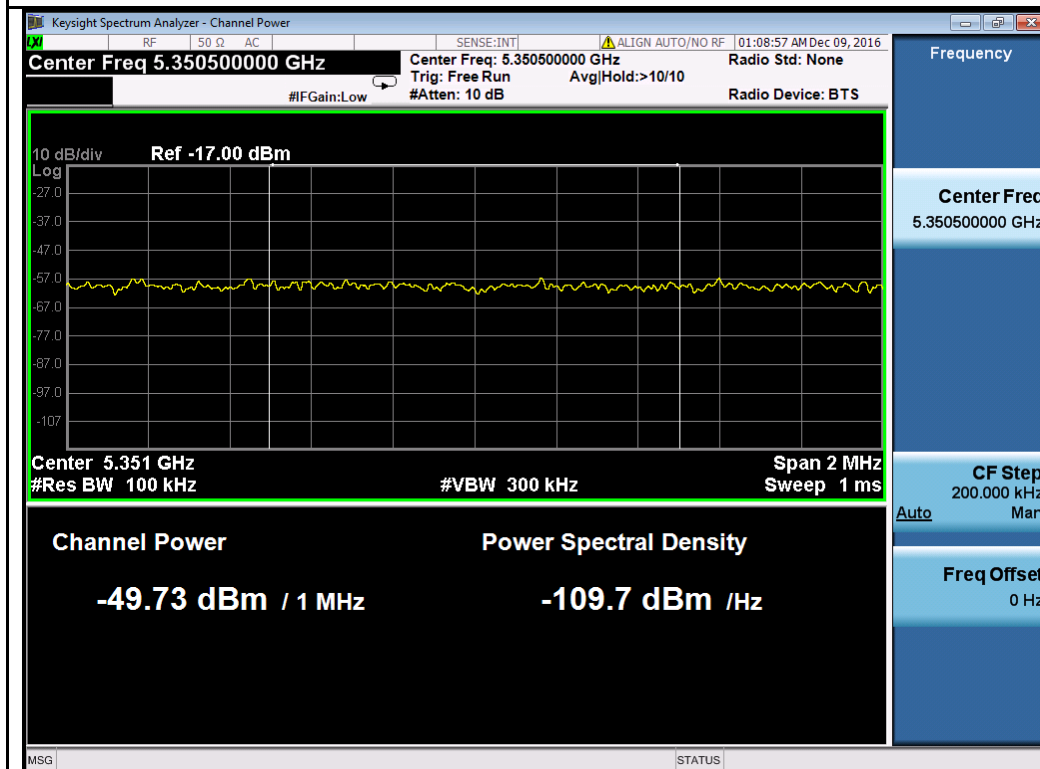
802.11n-HT20-5180MHz



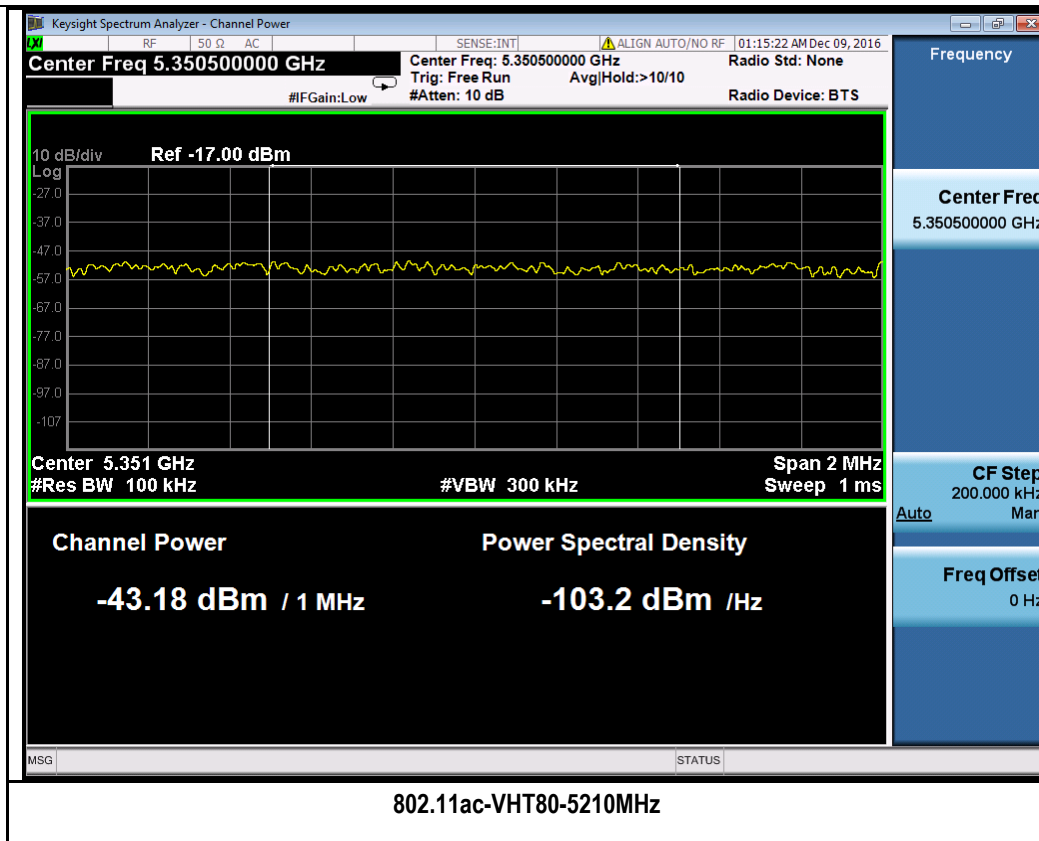
802.11n-HT20-5240MHz



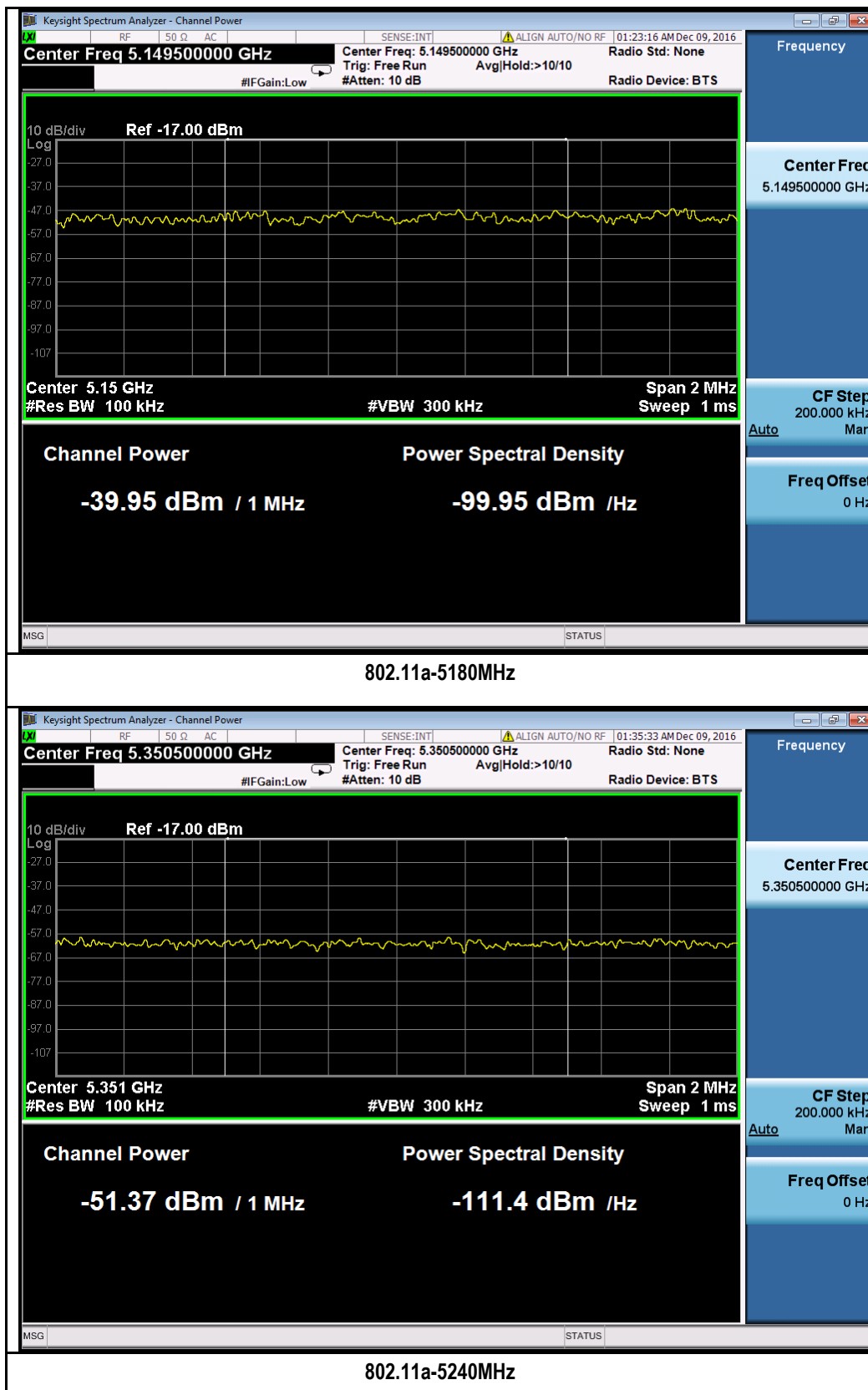
802.11n-HT40-5190MHz

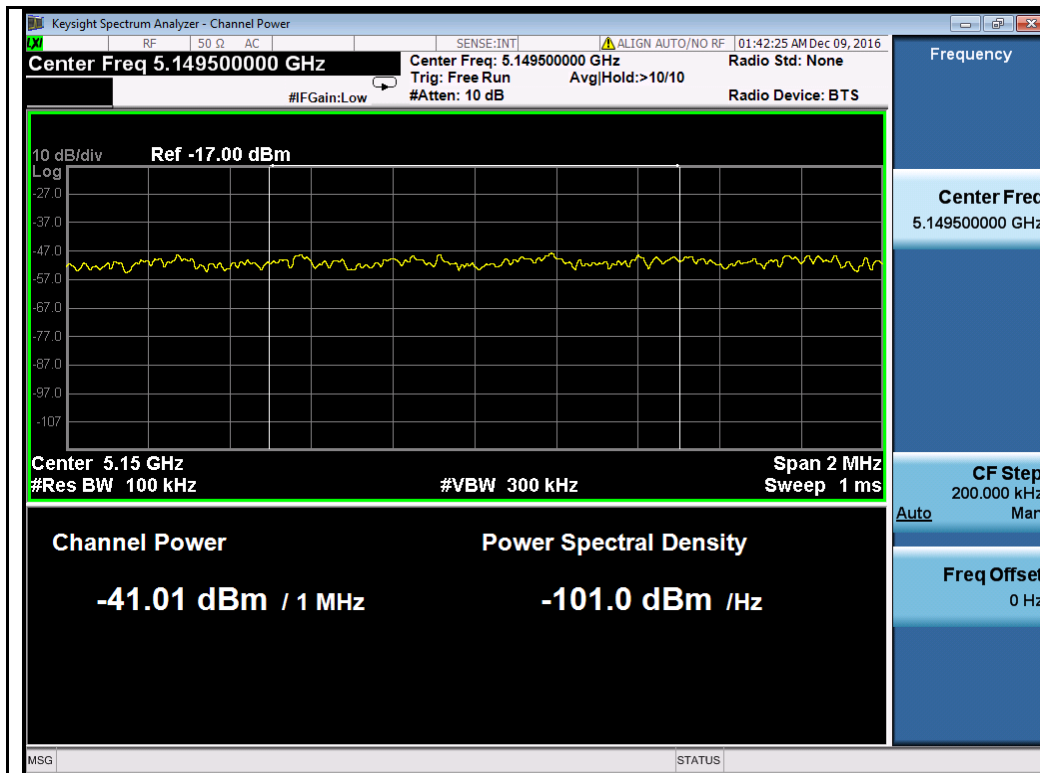


802.11n-HT40-5230MHz

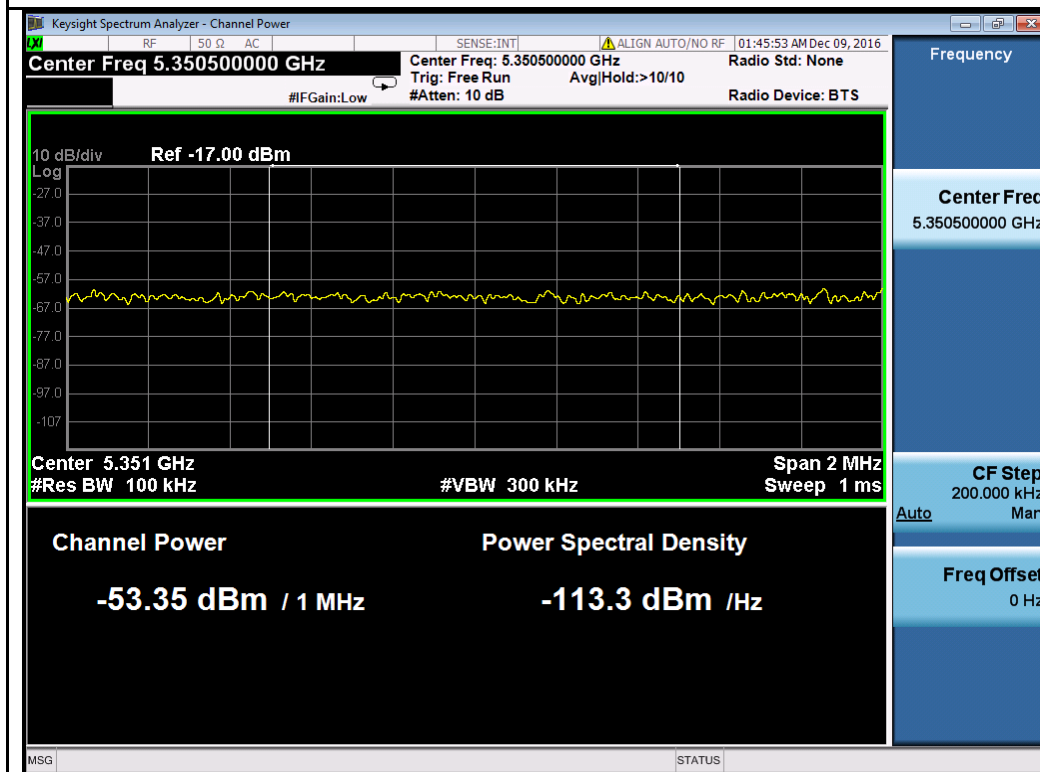


**Chain 2:**

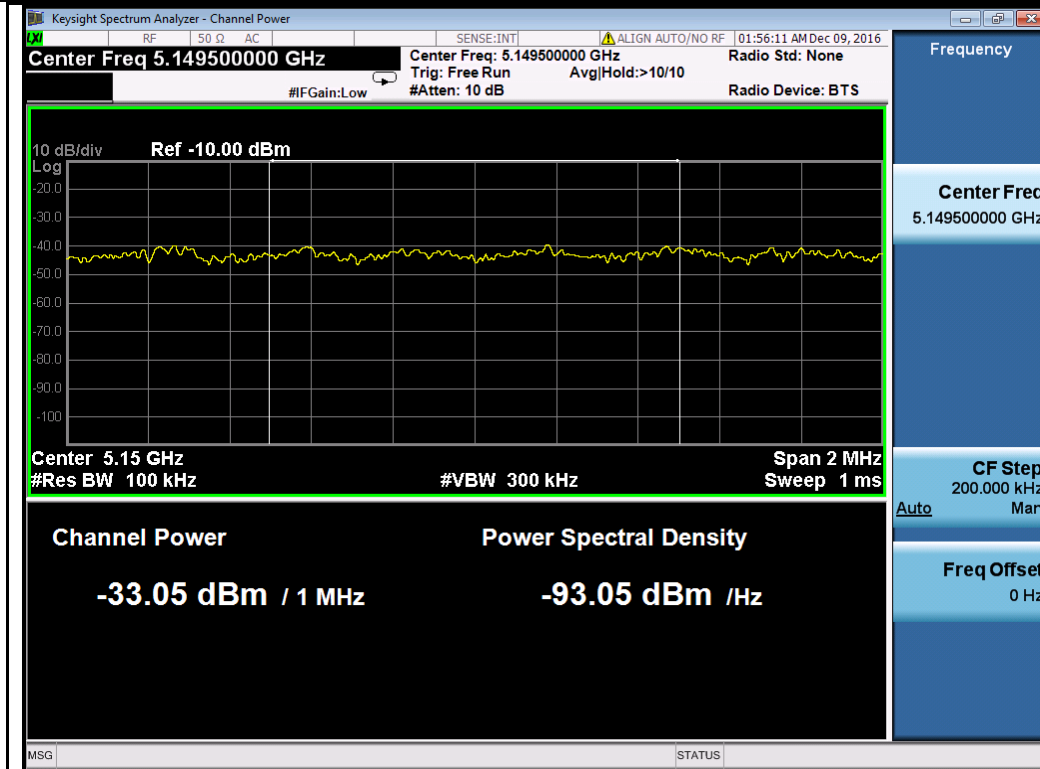




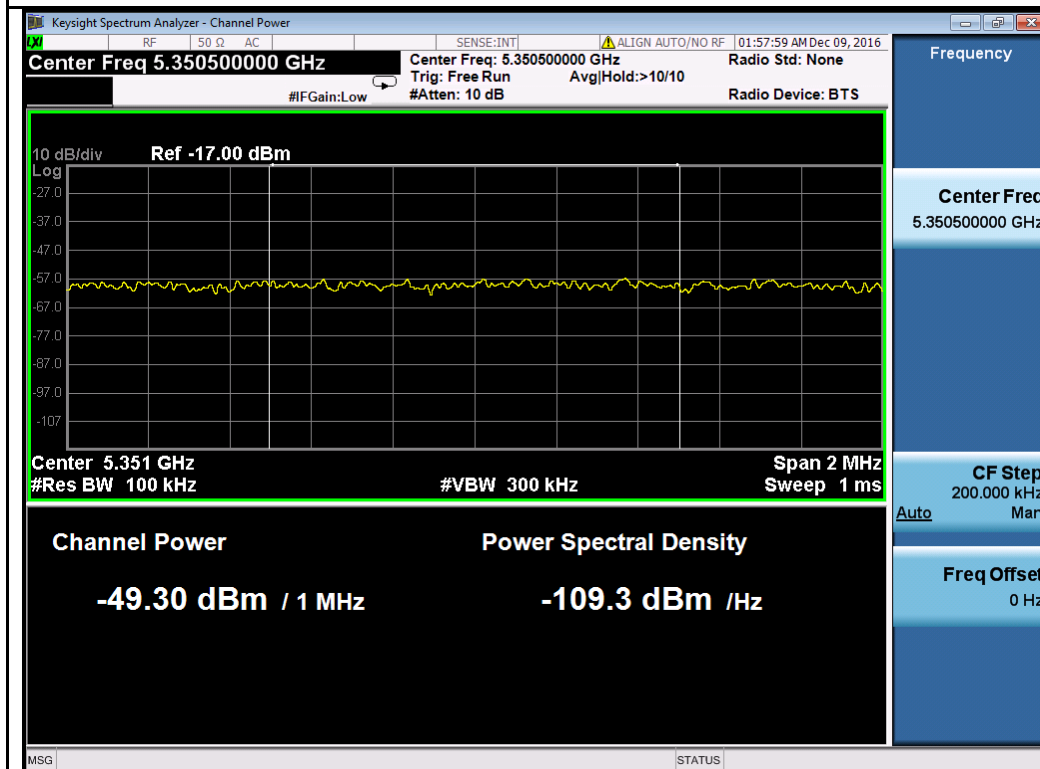
802.11n-HT20-5180MHz



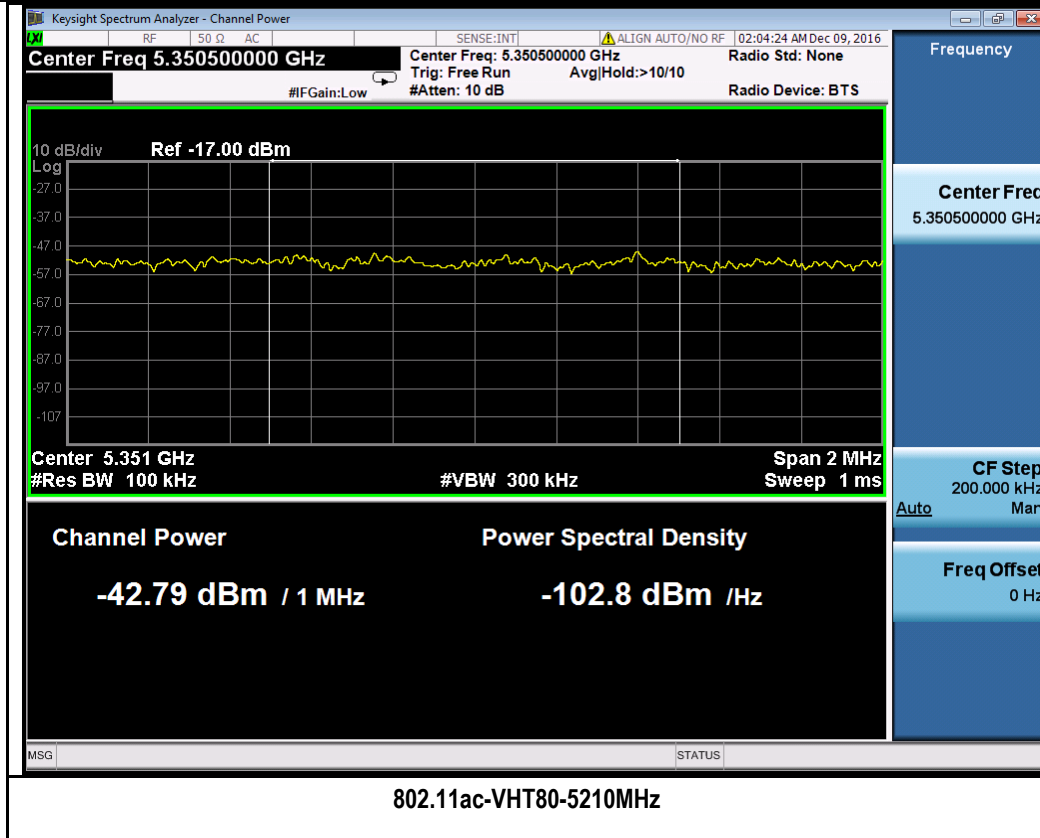
802.11n-HT20-5240MHz



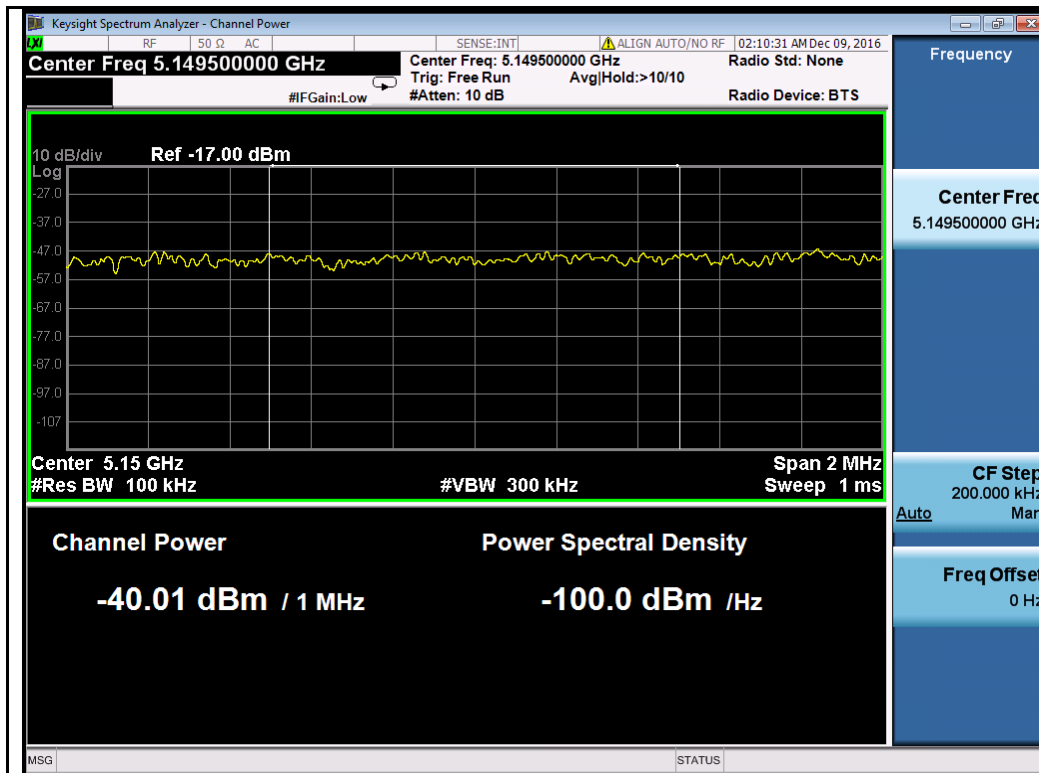
802.11n-HT40-5190MHz



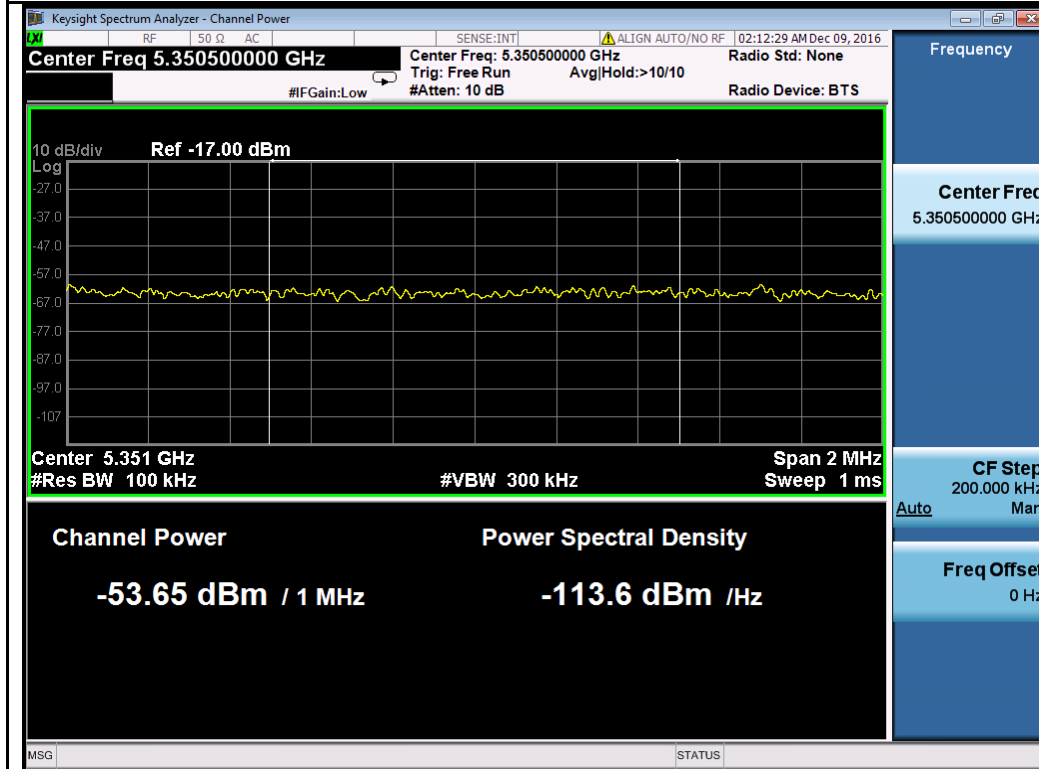
802.11n-HT40-5230MHz



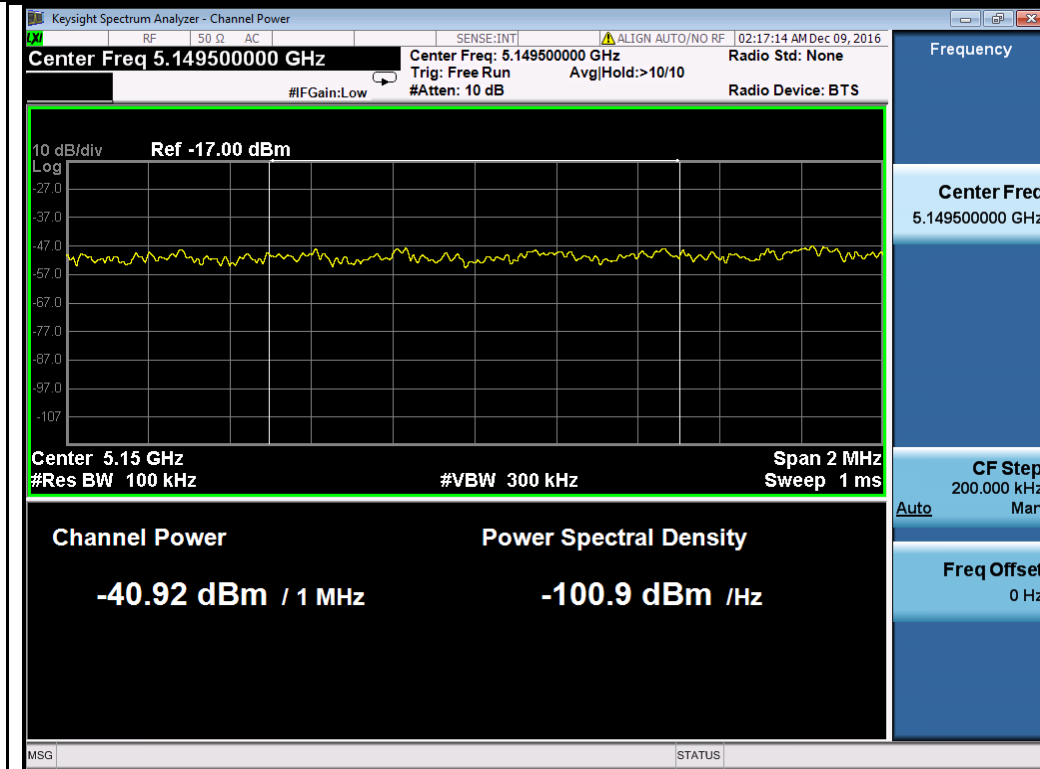
**Chain 3:**



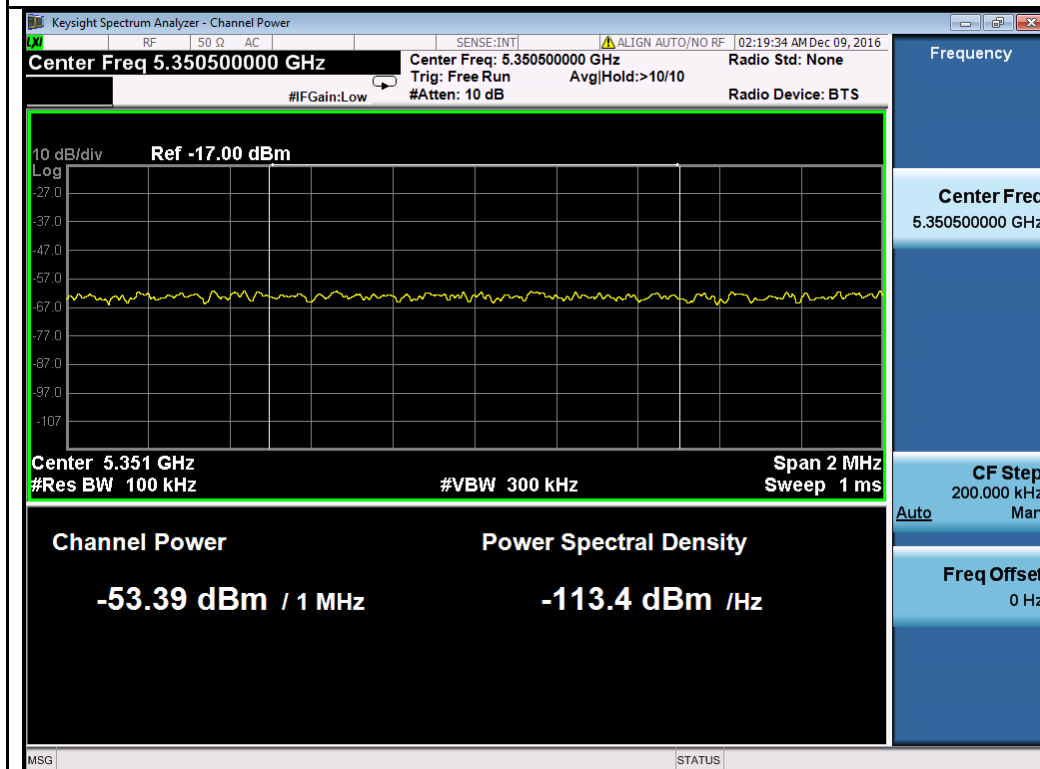
**802.11a-5180MHz**



**802.11a-5240MHz**



802.11n-HT20-5180MHz



802.11n-HT20-5240MHz