

## 8.4 Out of band emissions at the band edge / conducted spurious emissions

### ■ Test requirements and limit, §15.247(d)

§15.247(d) specifies that in any 100 kHz bandwidth outside of the authorized frequency band, the power shall be attenuated according to the following conditions:

If **the peak output power procedure** is used to measure the fundamental emission power to demonstrate compliance to **15.247(b)(3)** requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated **by at least 20 dB** relative to the maximum measured in-band peak PSD level.

If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to **15.247(b)(3)** requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in band average PSD level.

In either case, attenuation to levels below the general emission limits specified in **§15.209(a)** is not required.

### ■ Test Configuration:

Refer to the APPENDIX I.

### ■ Test Procedure

The transmitter output is connected to a spectrum analyzer.

#### - Measurement Procedure 1 – Reference Level of KDB558074 D01v04

1. Set instrument center frequency to DTS channel center frequency.
2. Set the span to  $\geq 1.5$  times the DTS bandwidth.
3. Set the RBW = **100 kHz**.
4. Set the VBW  $\geq 3 \times$  RBW.
5. Detector = **Peak**.
6. Sweep time = **Auto couple**.
7. Trace mode = **Max hold**.
8. **Allow trace to fully stabilize**.
9. Use the peak marker function to determine the maximum PSD level.

#### - Measurement Procedure 2 - Unwanted Emissions of KDB558074 D01v04

1. Set the center frequency and span to encompass frequency range to be measured.
2. Set the RBW = **100 kHz**. (**Actual 1 MHz**, See below note)
3. Set the VBW  $\geq 3 \times$  RBW. (**Actual 3 MHz**, See below note)
4. Detector = **Peak**.
5. Ensure that the number of measurement points  $\geq$  Span / RBW.
6. Sweep time = **Auto couple**.
7. Trace mode = **Max hold**.
8. **Allow the trace to stabilize**. (this may take some time, depending on the extent of the span)
9. Use the peak marker function to determine the maximum amplitude level.

**Note** : The conducted spurious emission was tested with below settings.

**Frequency range: 9 kHz ~ 30 MHz**

**RBW = 100 kHz, VBW = 300 kHz, SWEEP TIME = AUTO, DETECTOR = PEAK, TRACE = MAX HOLD, SWEEP POINT : 40001**

**Frequency range: 30 MHz ~ 10 GHz, 10 GHz ~25 GHz**

**RBW = 1 MHz, VBW = 3 MHz, SWEEP TIME = AUTO, DETECTOR = PEAK, TRACE = MAX HOLD, SWEEP POINT : 40001**

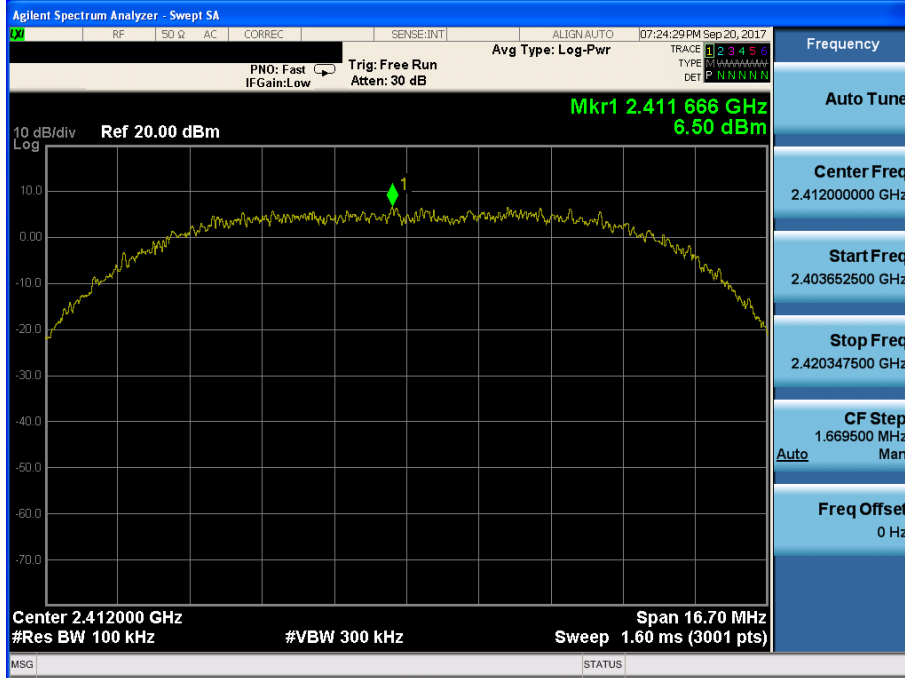
**LIMIT LINE = 20 dB below of the reference level of above measurement procedure Step 2. (RBW = 100 kHz, VBW = 300 kHz)**

If the emission level with above setting was close to the limit (ie, less than 3 dB margin) then zoom scan is required using RBW = 100 kHz, VBW = 300 kHz, SPAN = 100 MHz and BINS = 2001 to get accurate emission level within 100 kHz BW.

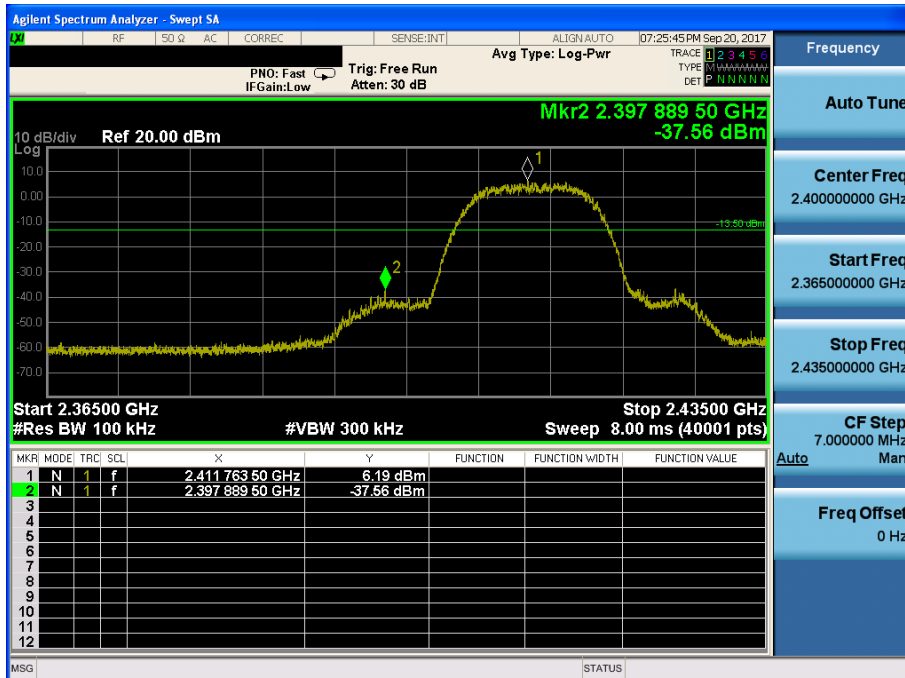
RESULT PLOTS

TM 5 & ANT 1 & Lowest

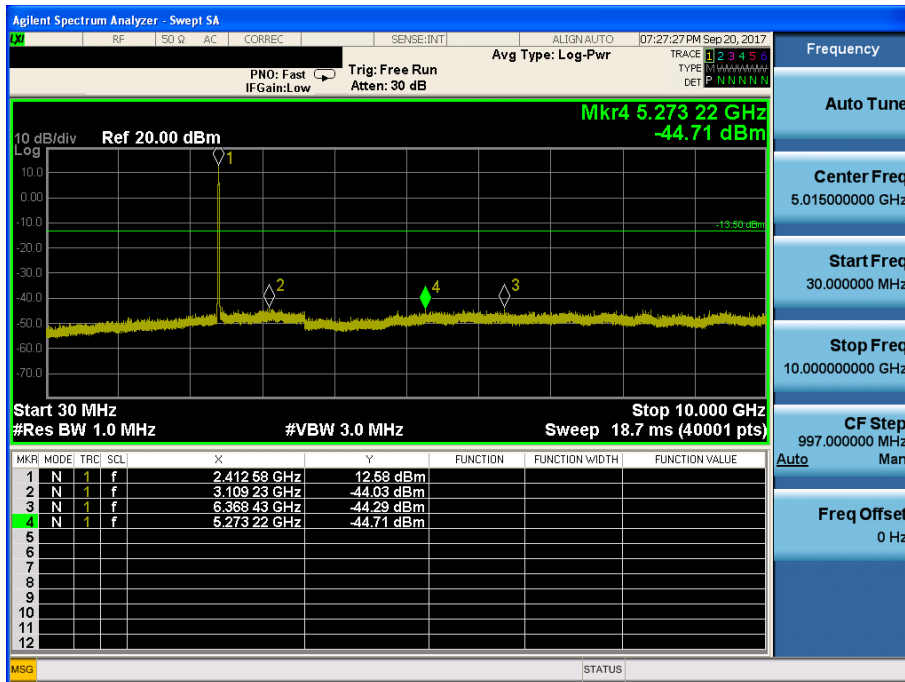
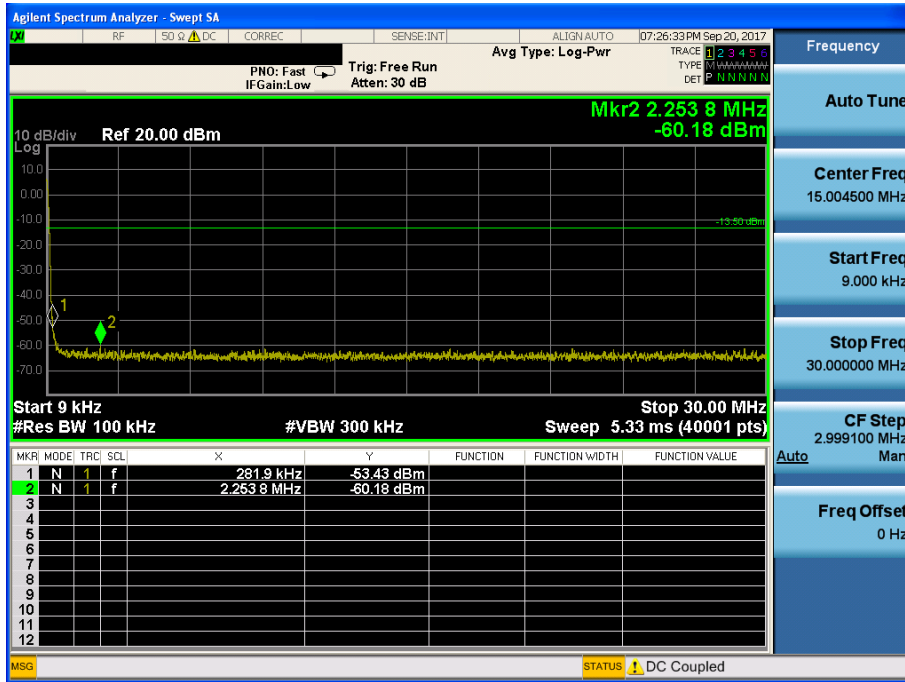
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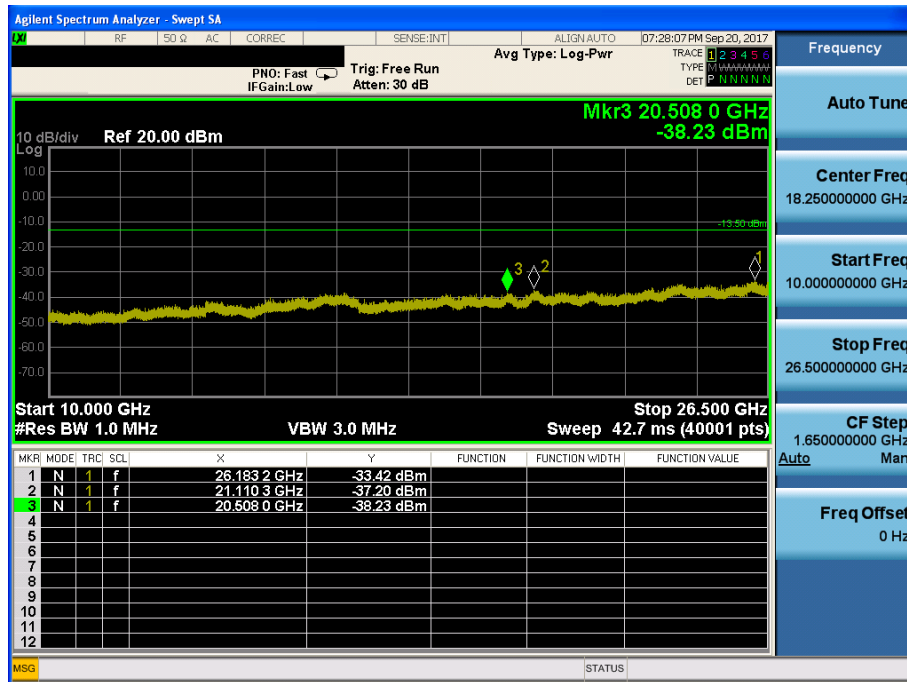
Low Band-edge



### Conducted Spurious Emissions

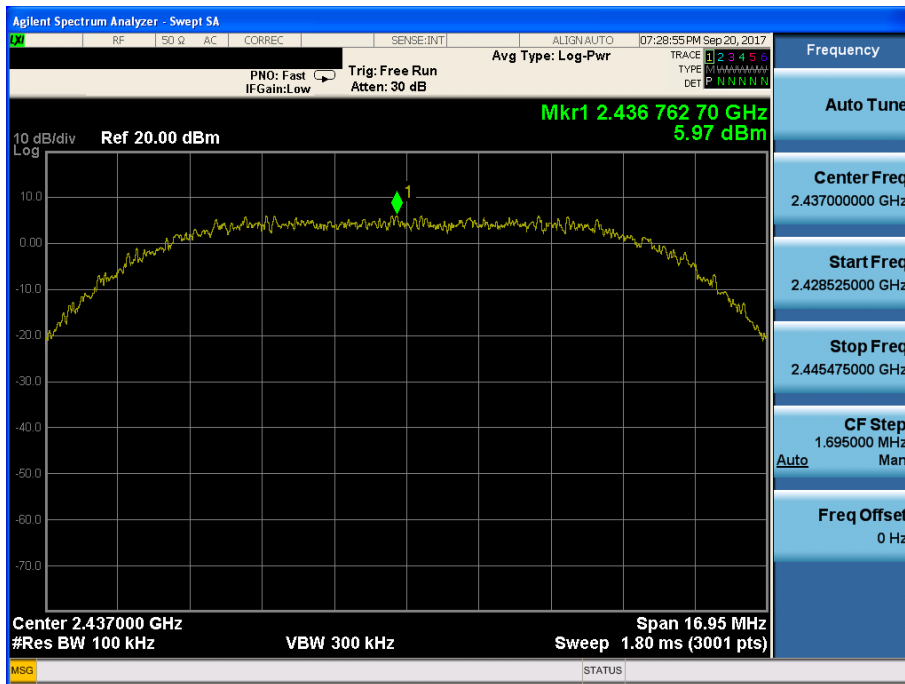


### Conducted Spurious Emissions

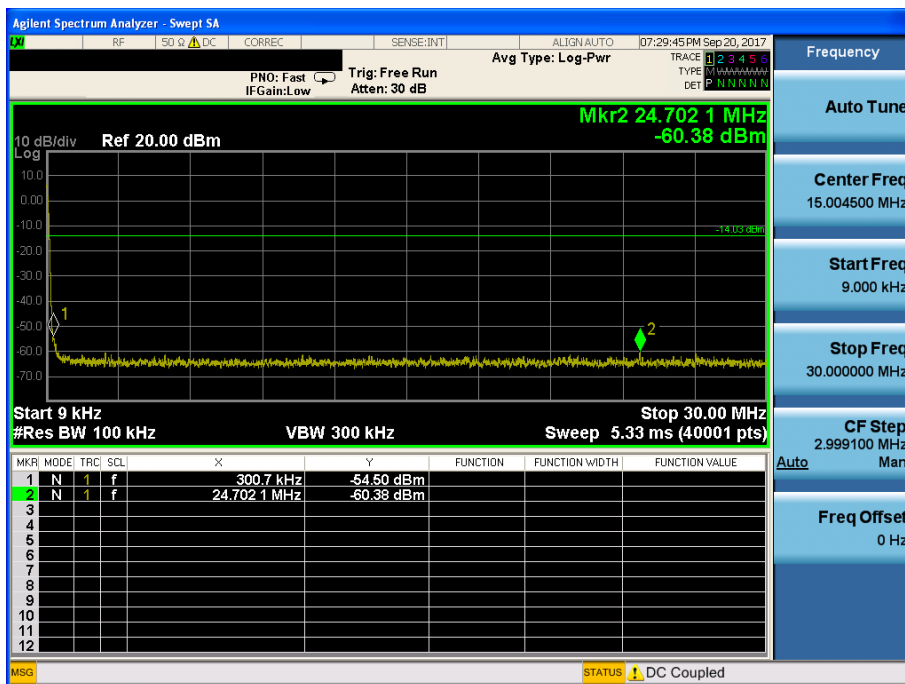


TM 5 & ANT 1 & Middle

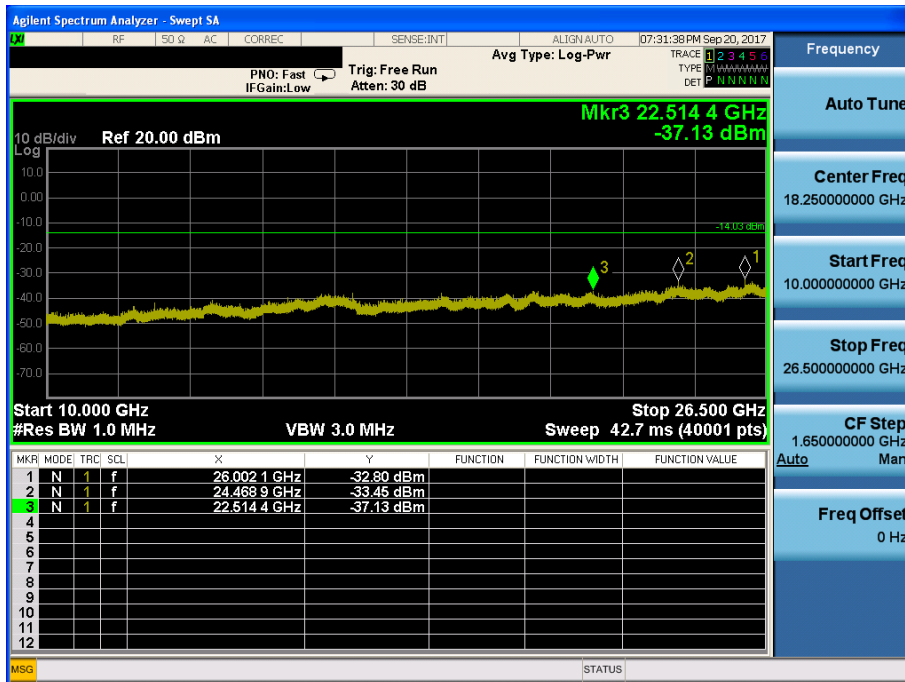
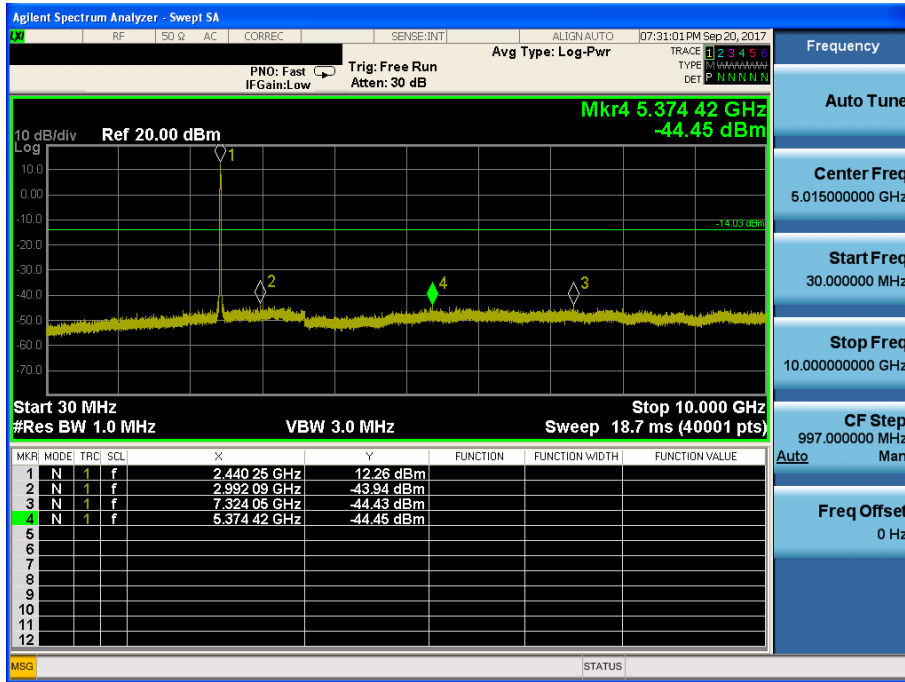
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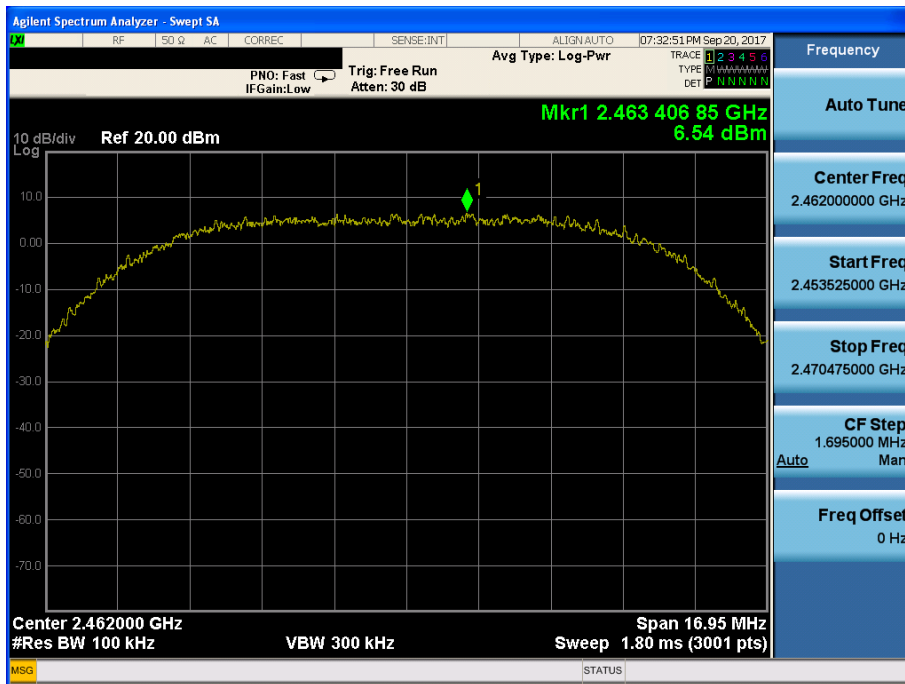
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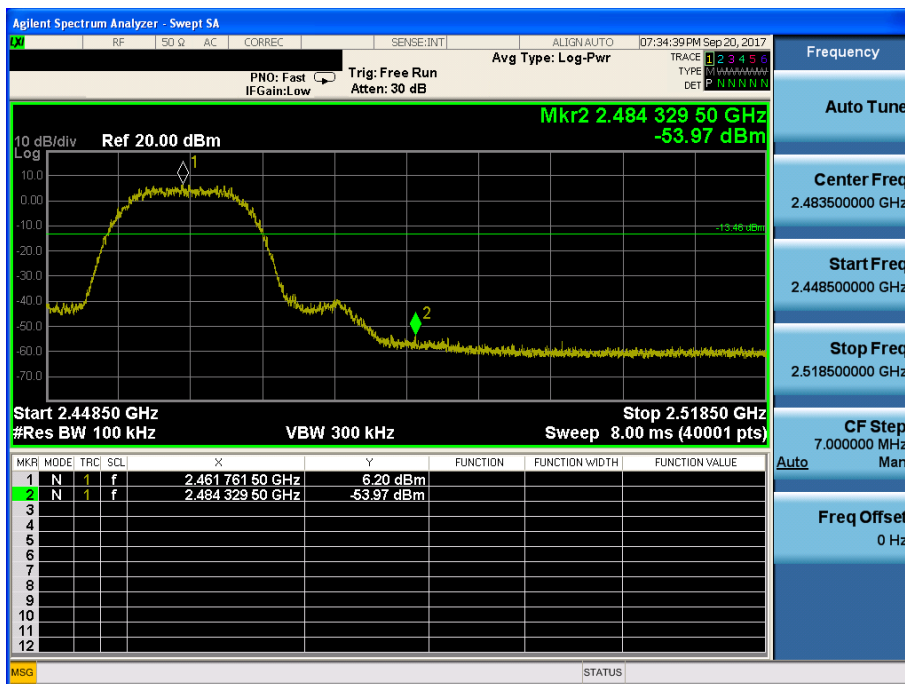
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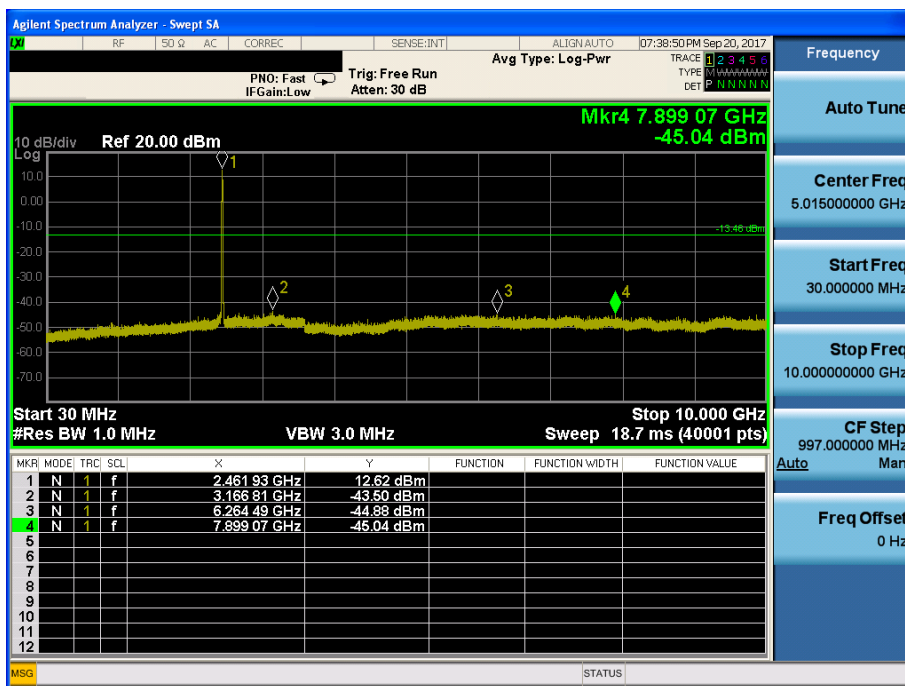
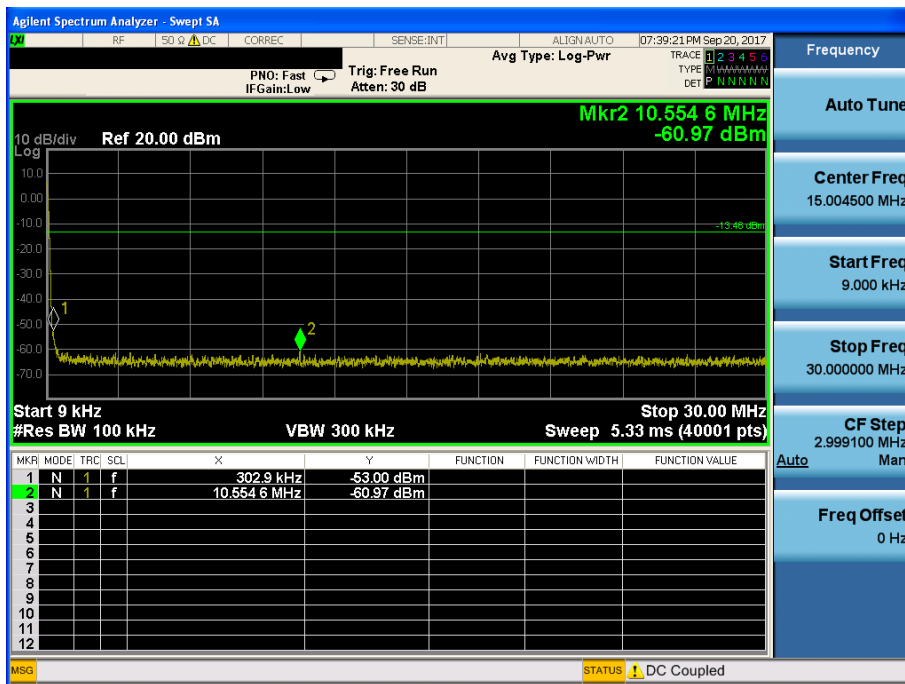
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### High Band-edge

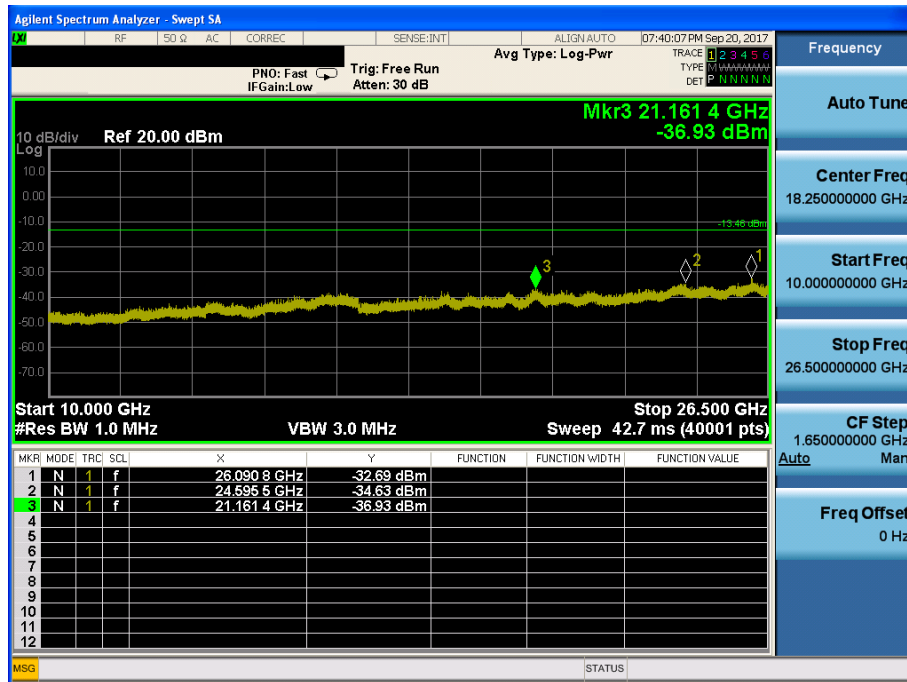


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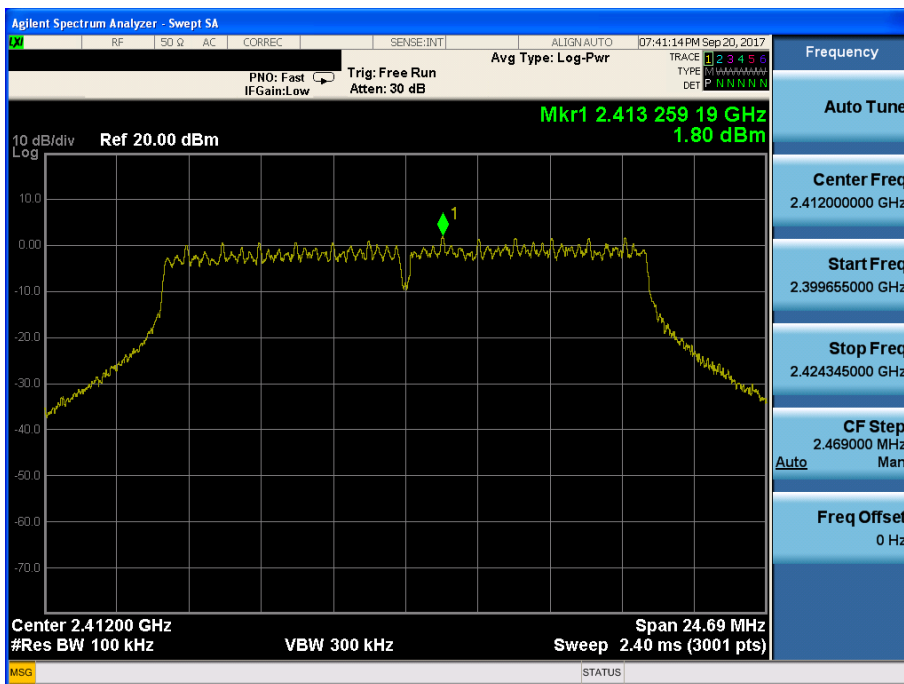


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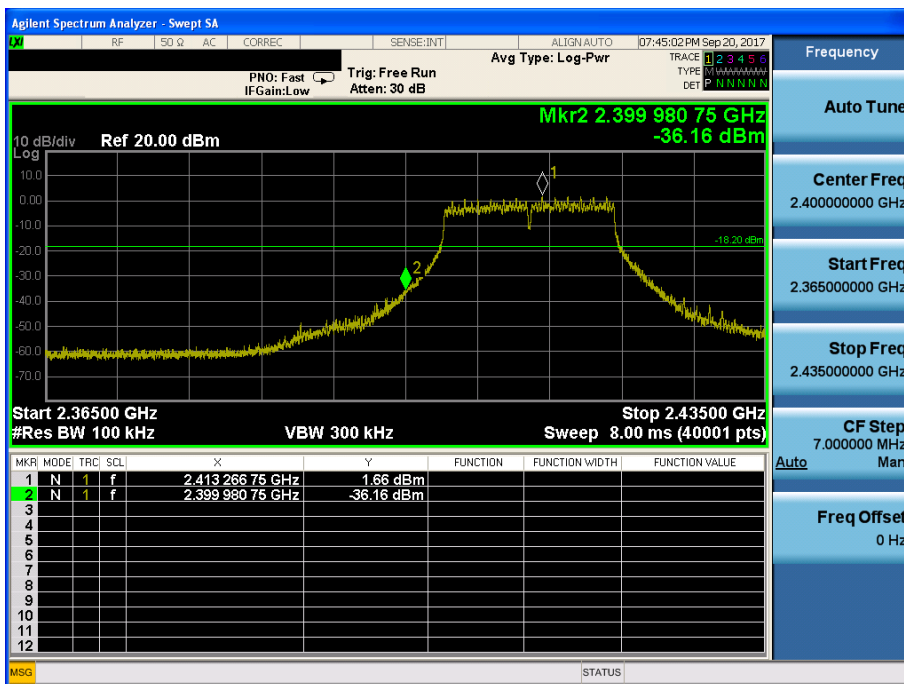


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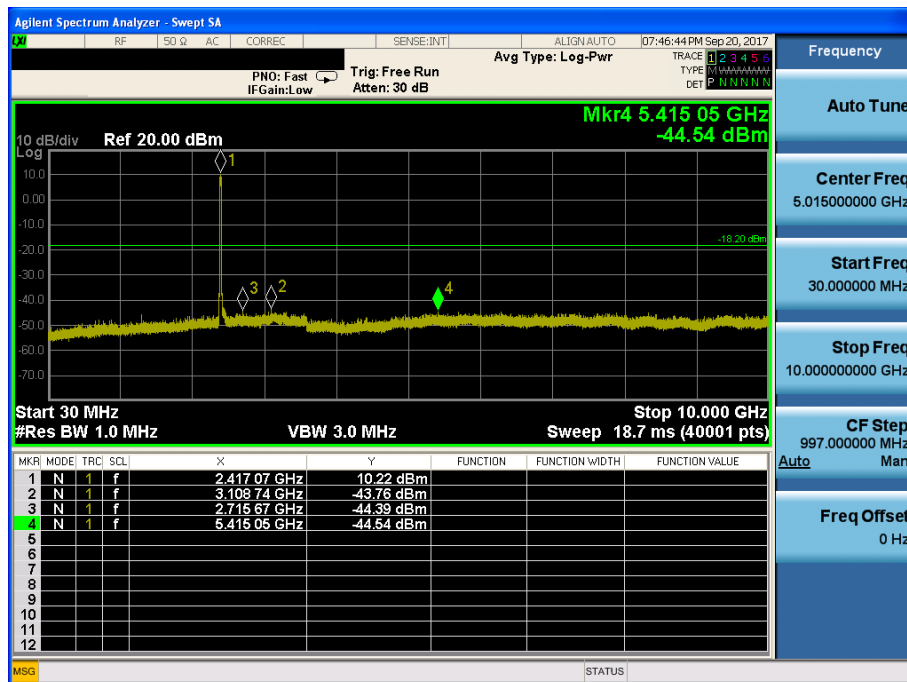
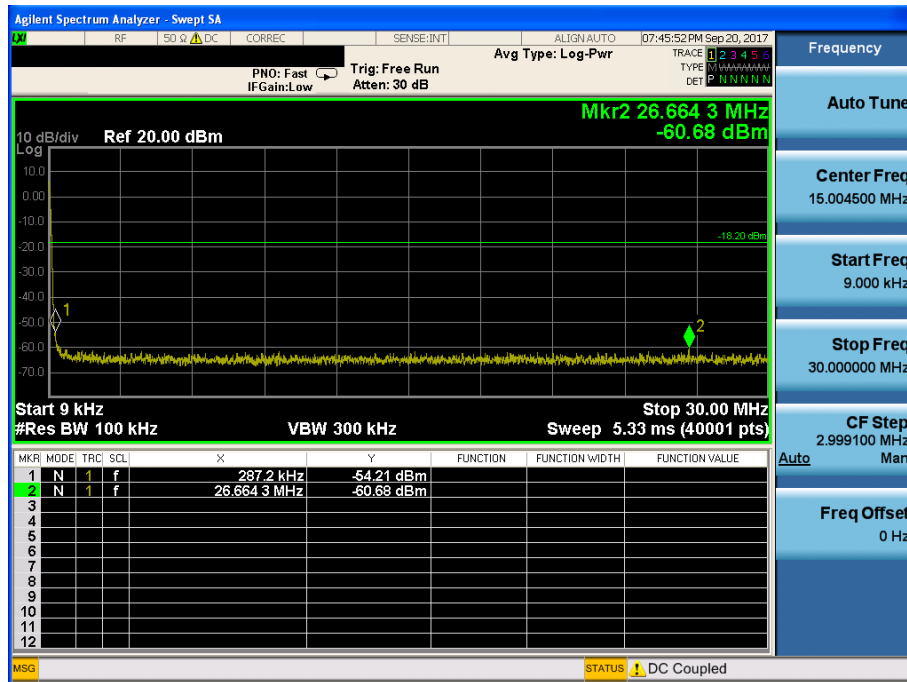
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Low Band-edge



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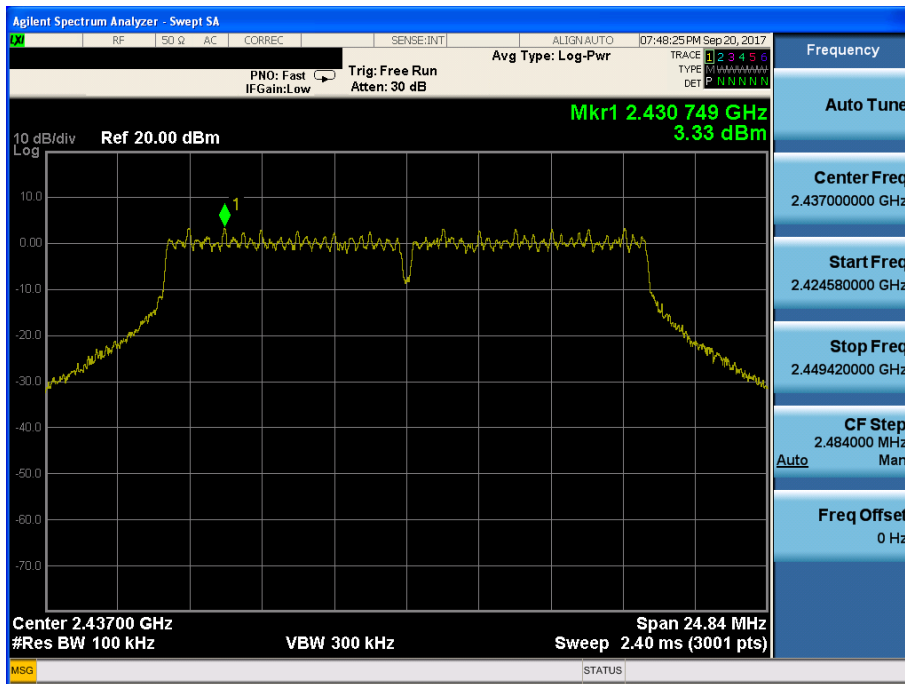


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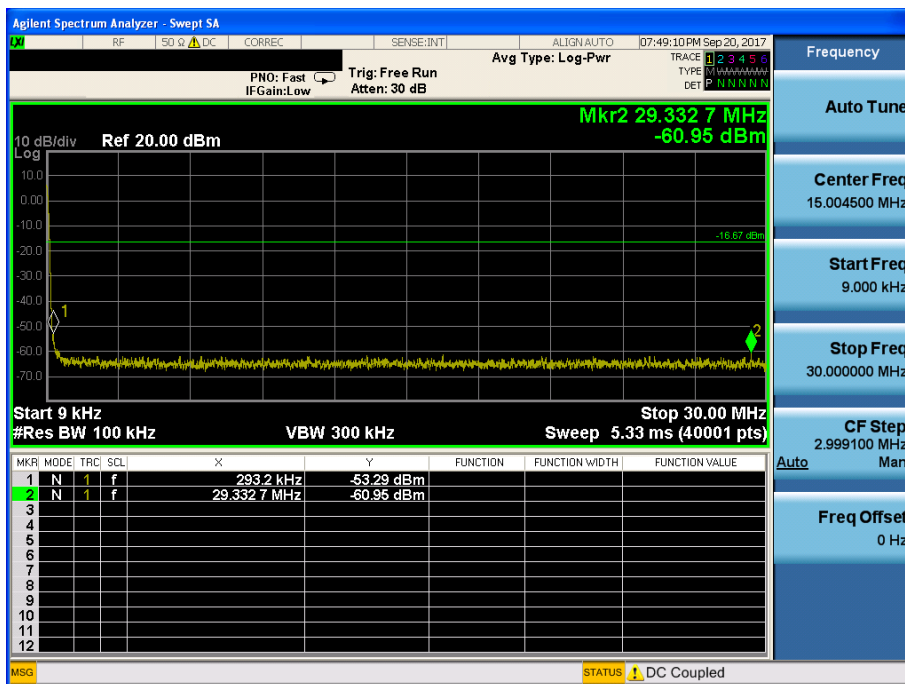


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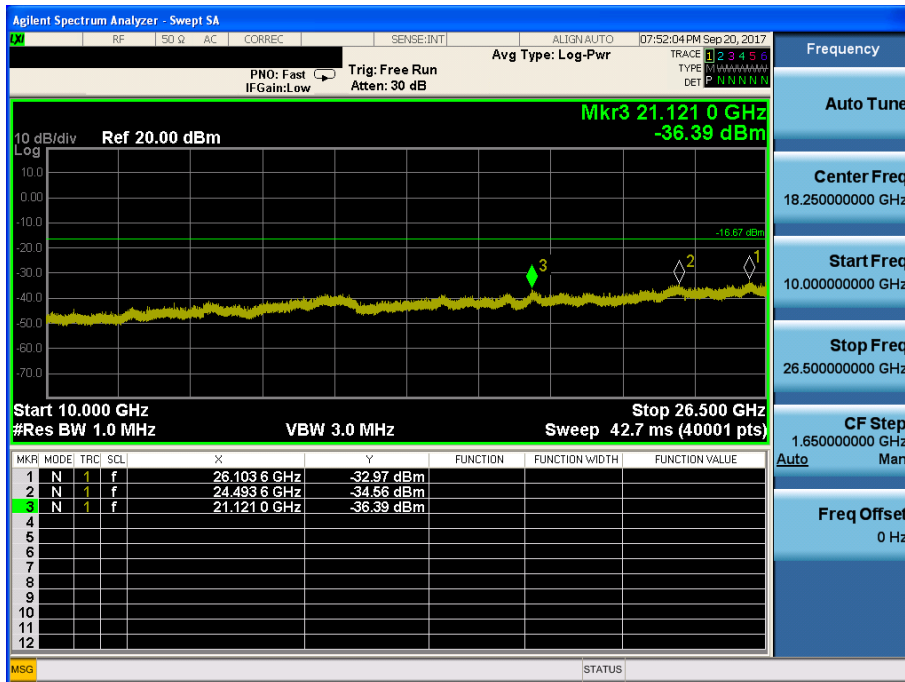
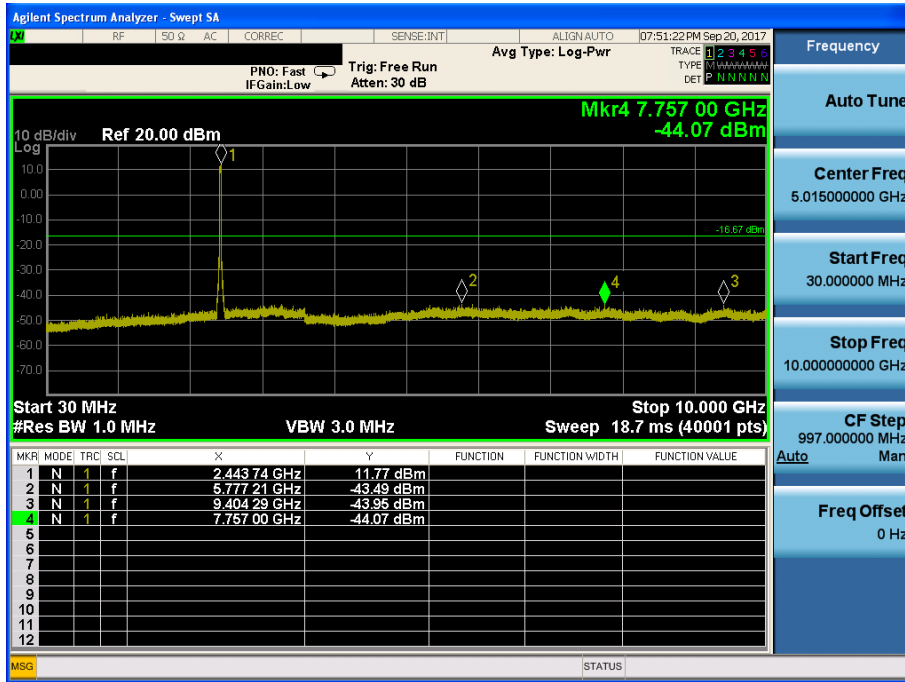
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Conducted Spurious Emissions

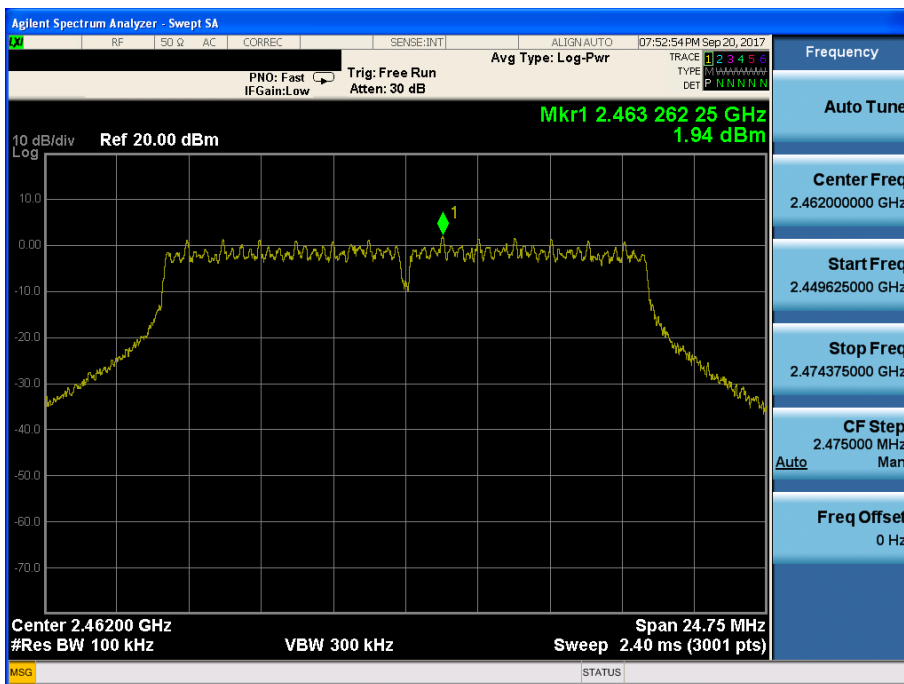


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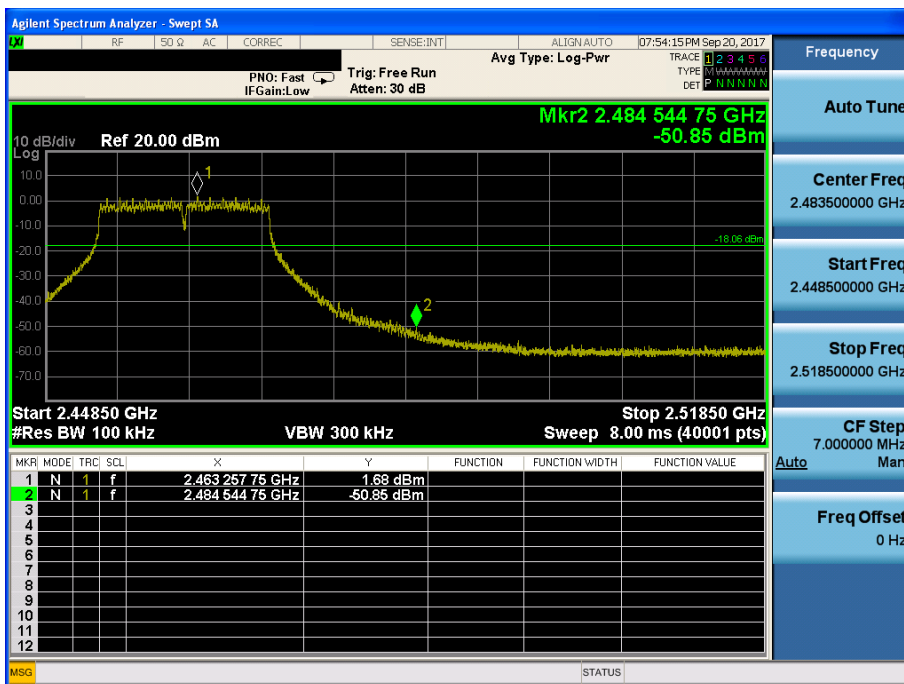


TM 6 & ANT 1 & Highest

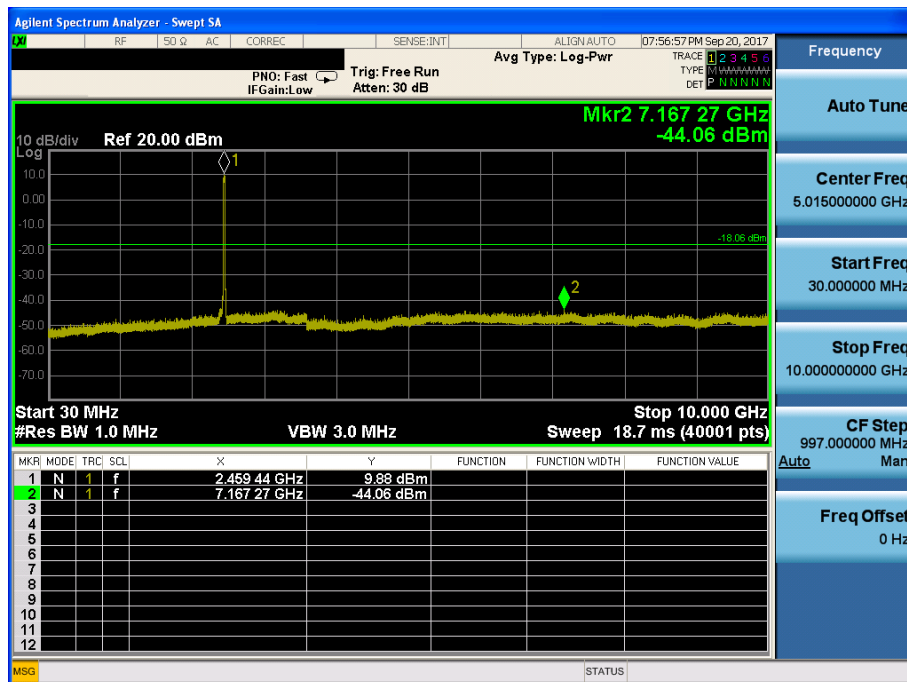
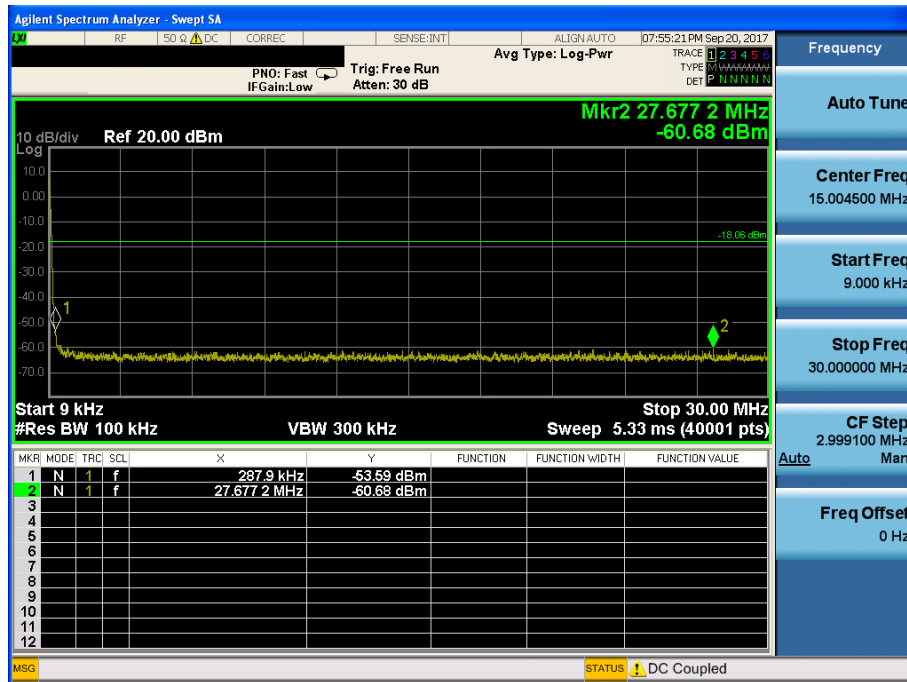
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High Band-edge

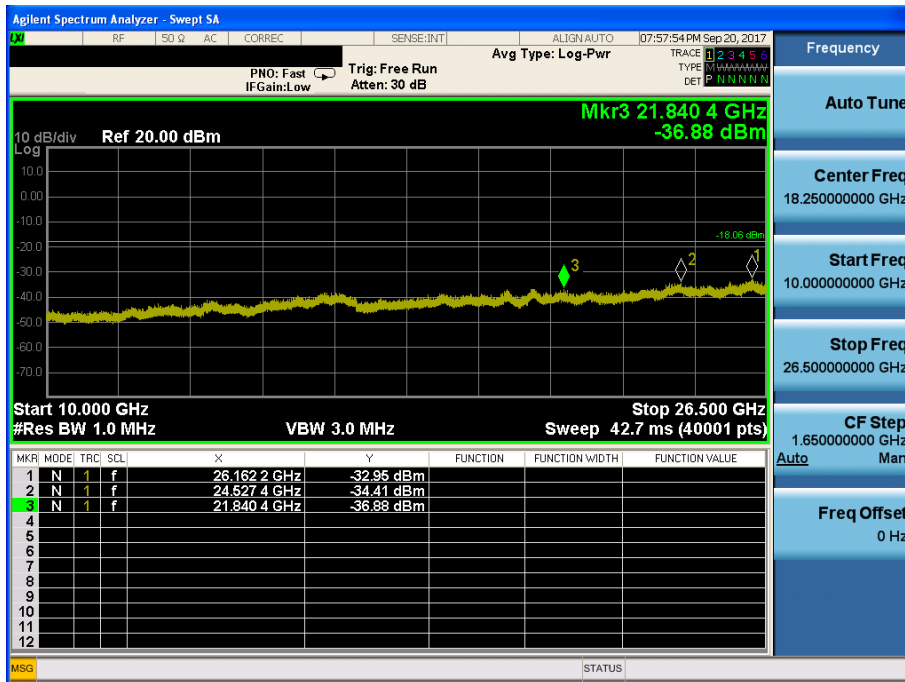


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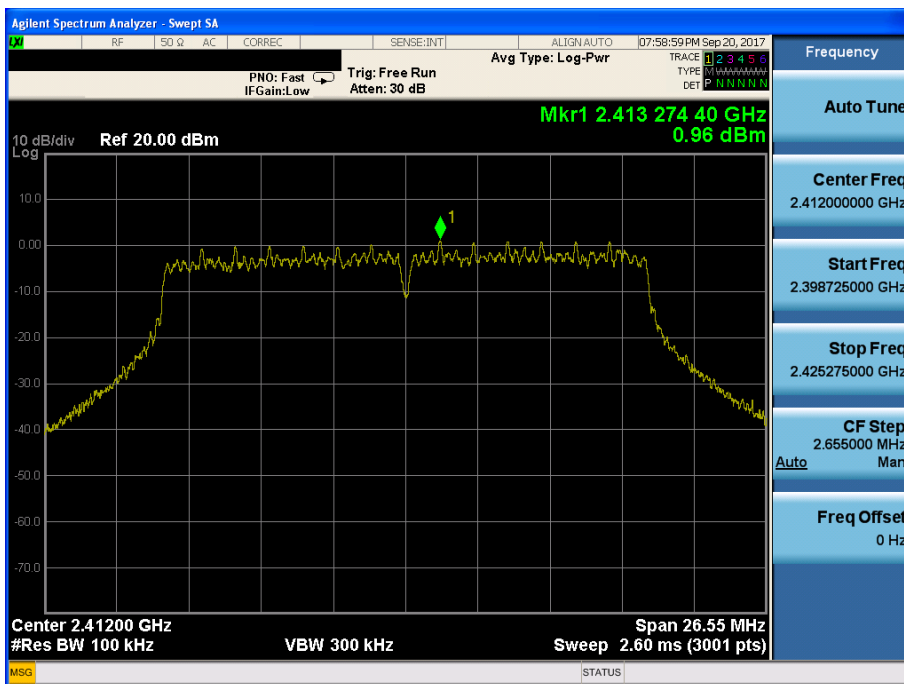


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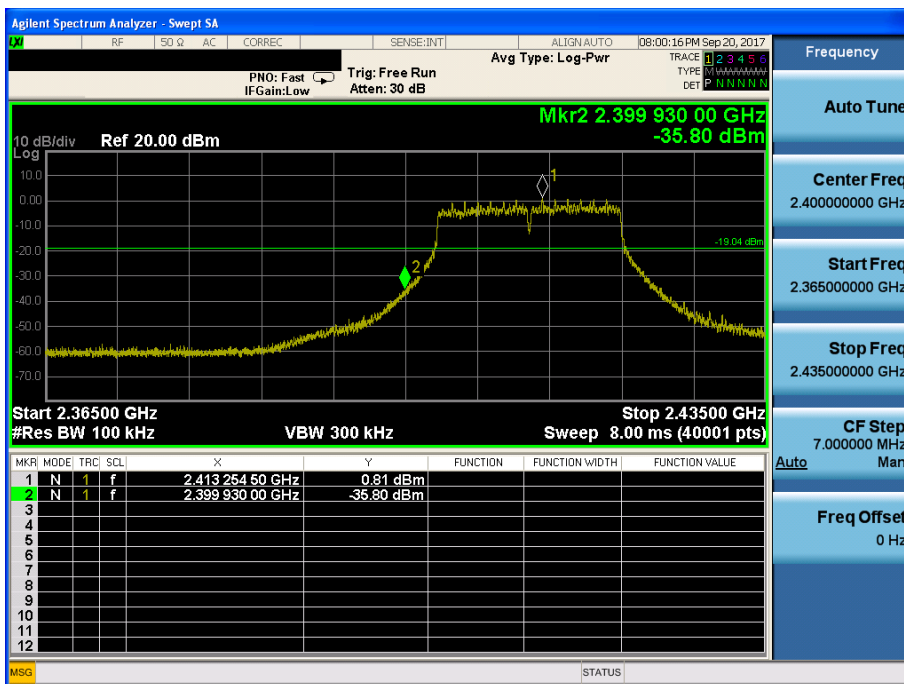


TM 7 & ANT 1 & Lowest

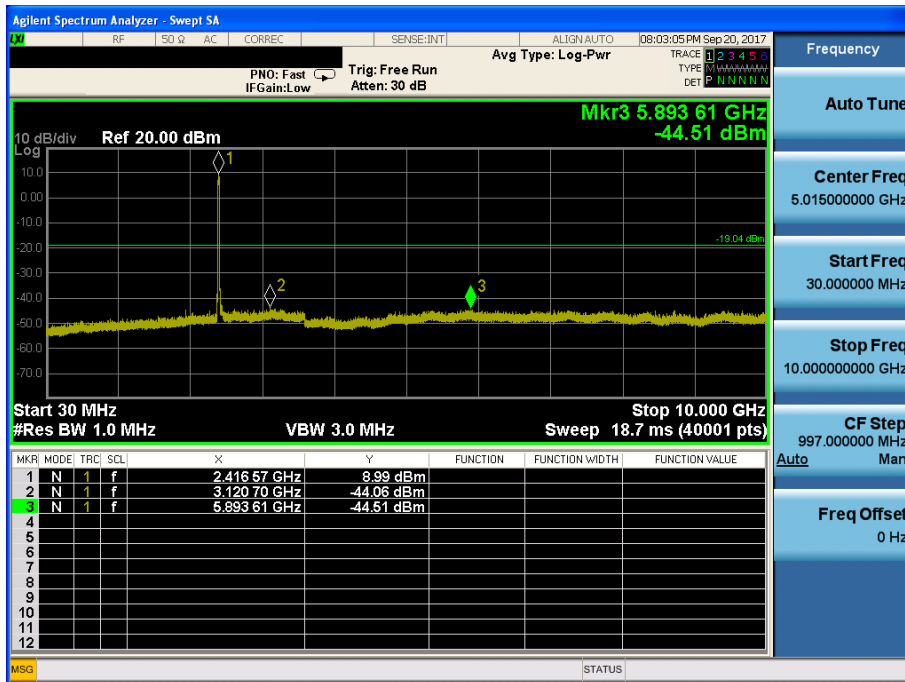
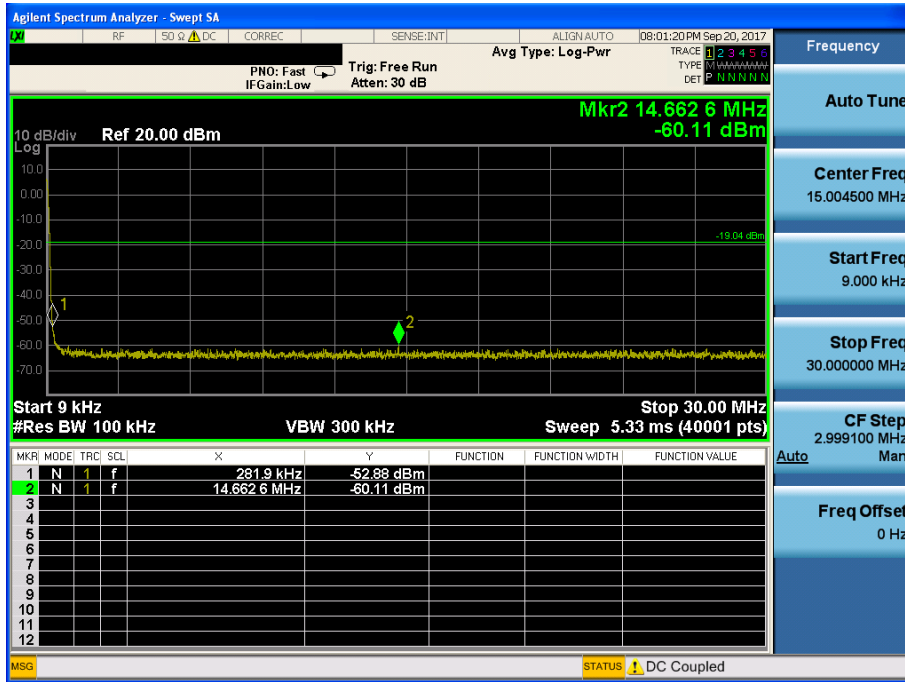
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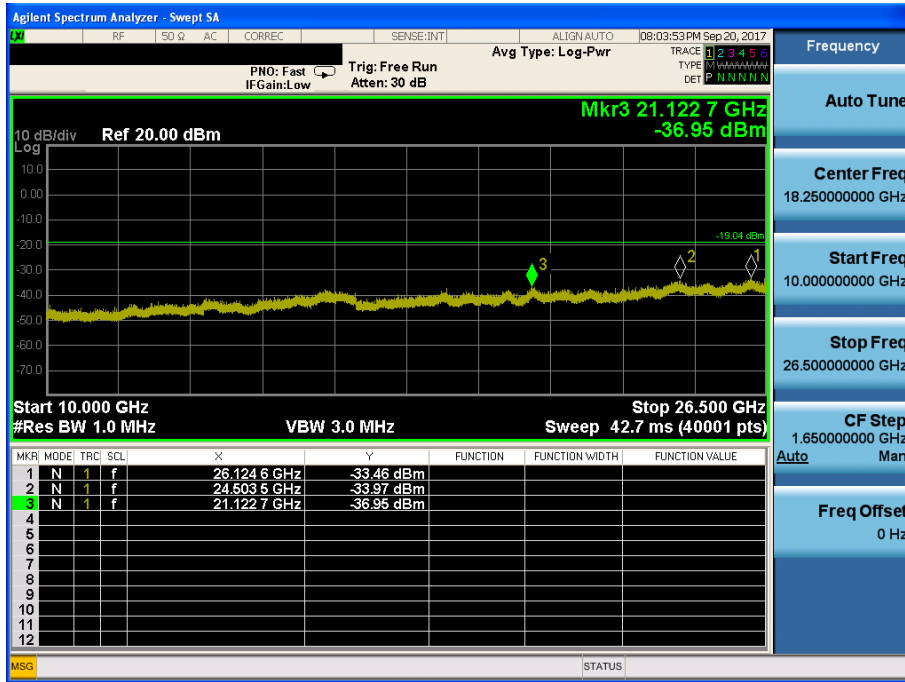
Low Band-edge



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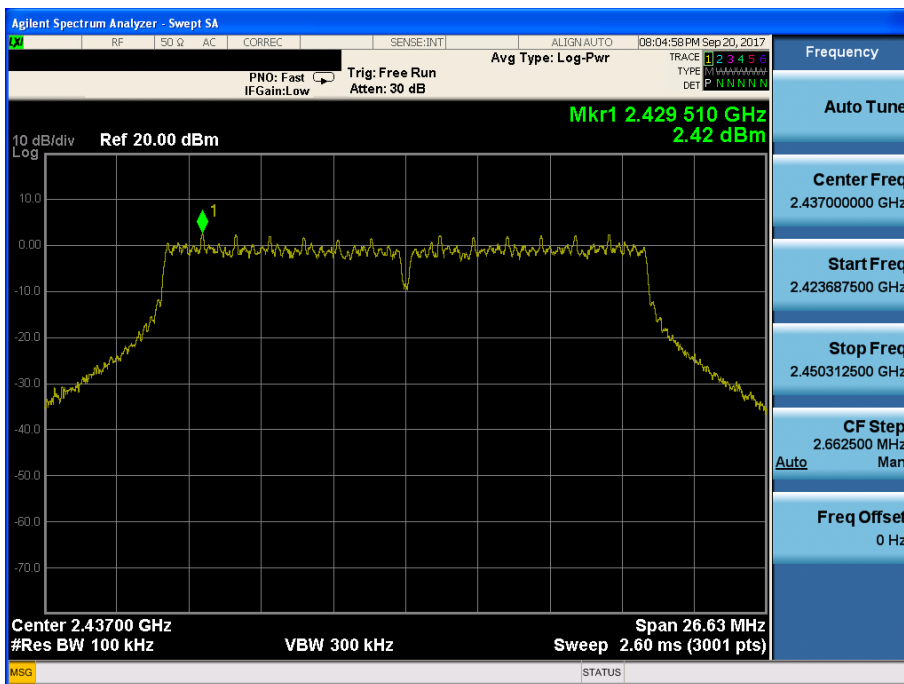


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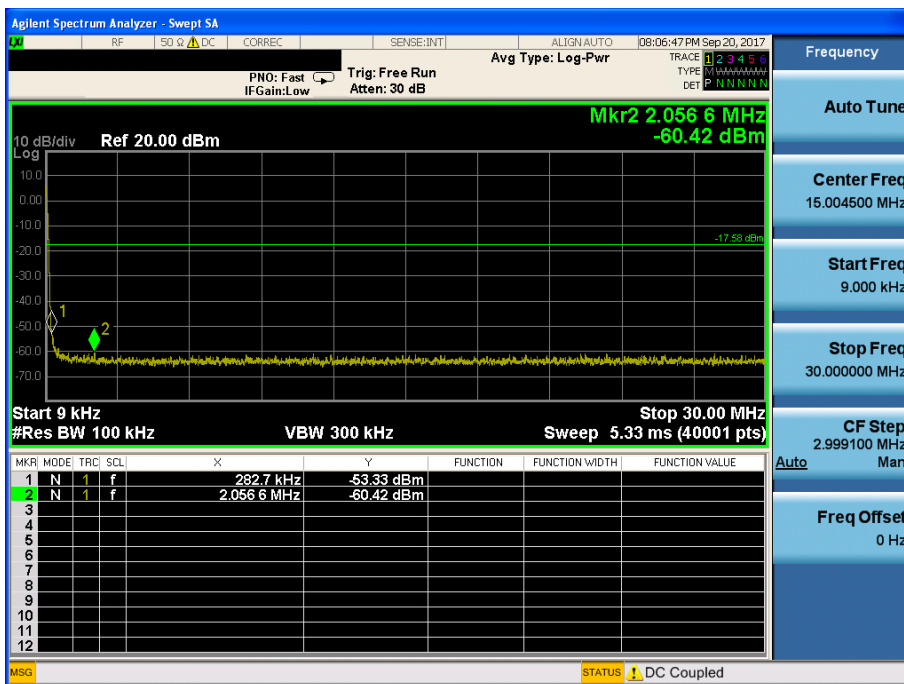


TM 7 & ANT 1 & Middle

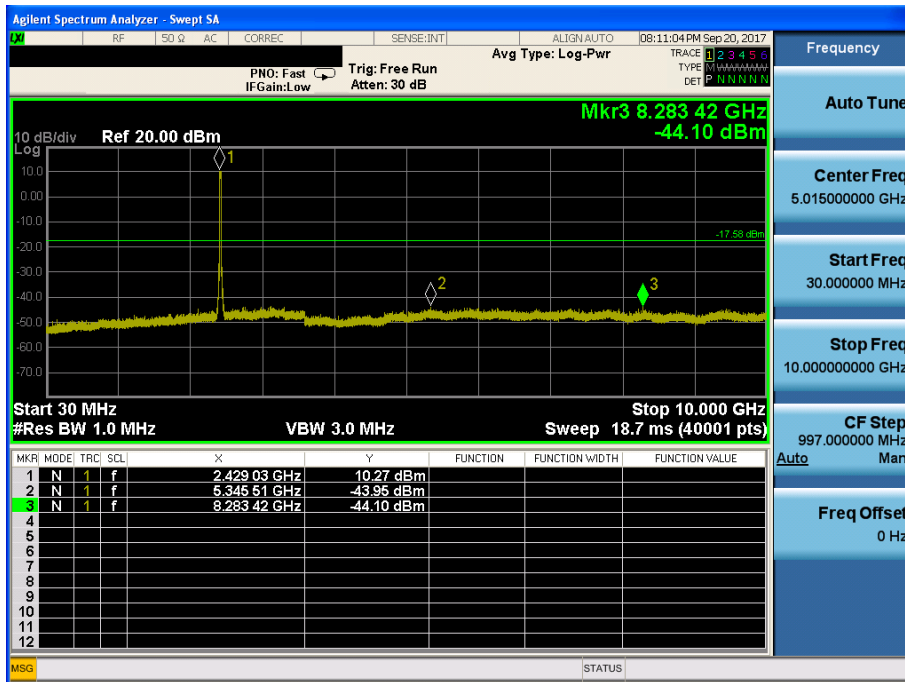
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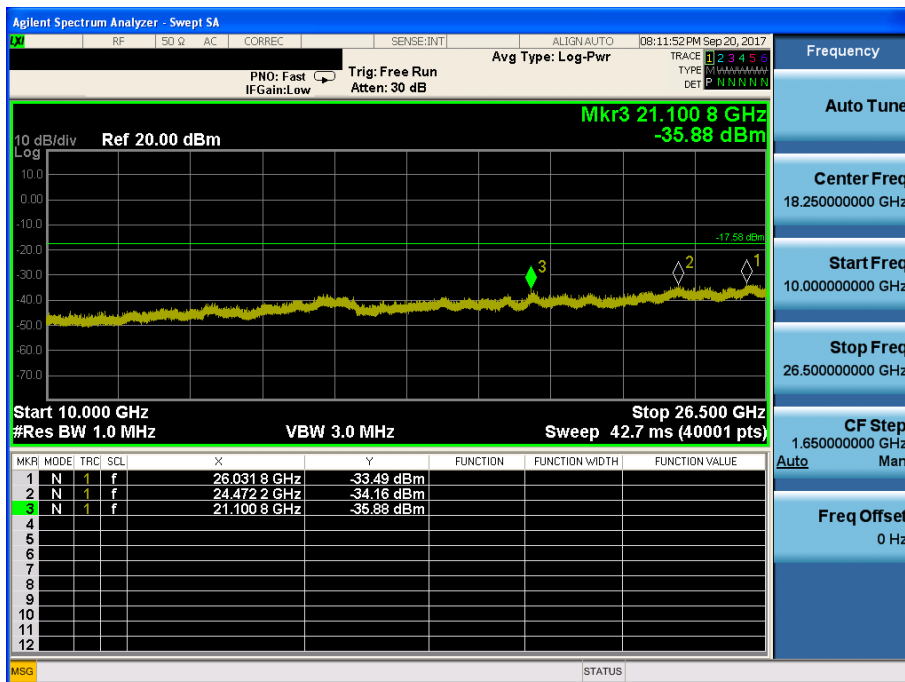
Conducted Spurious Emissions



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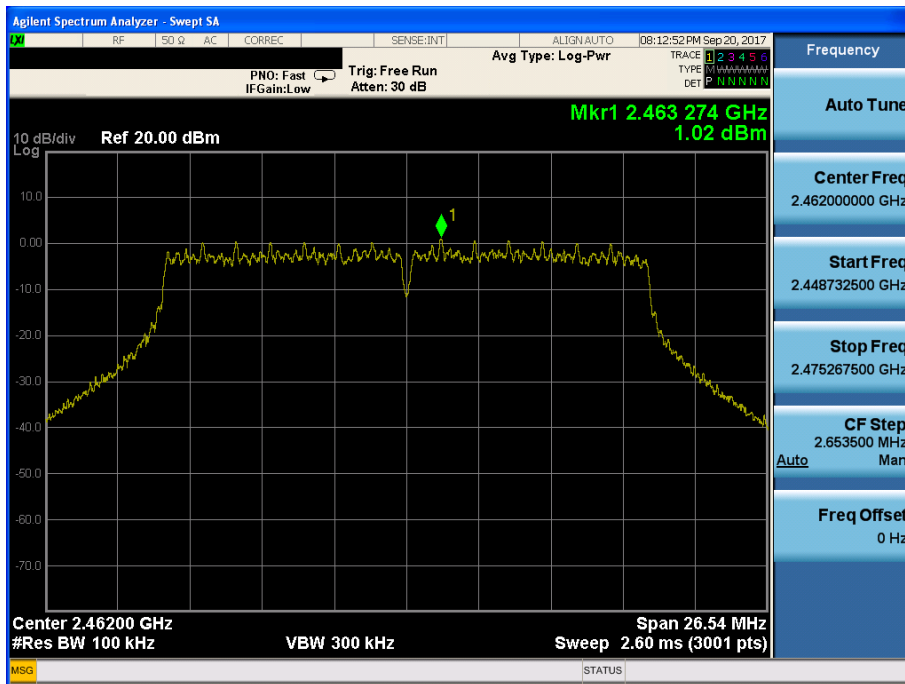


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Auto Man
Freq Offset 0 Hz

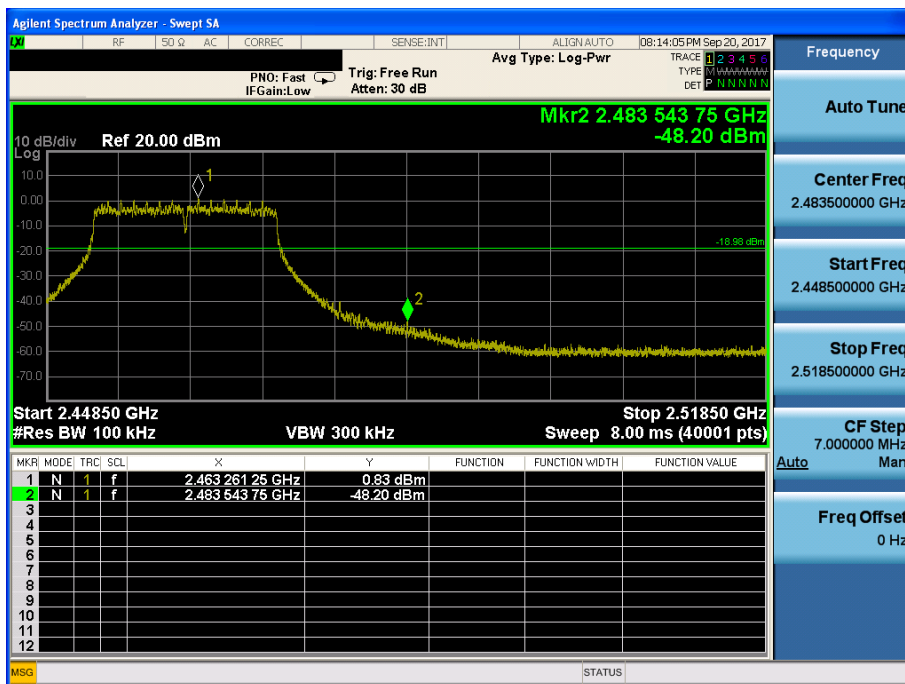


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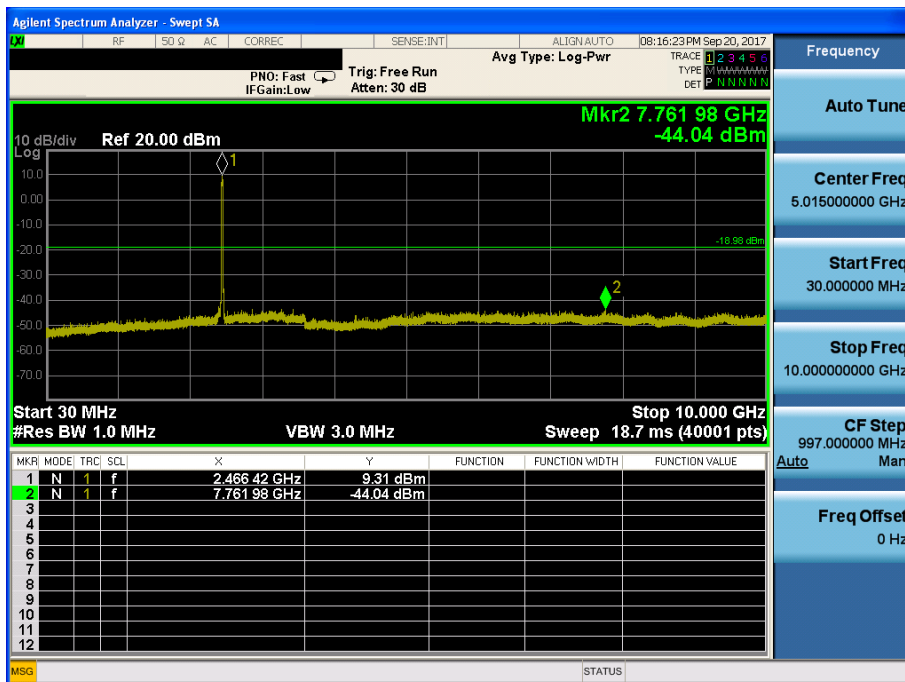
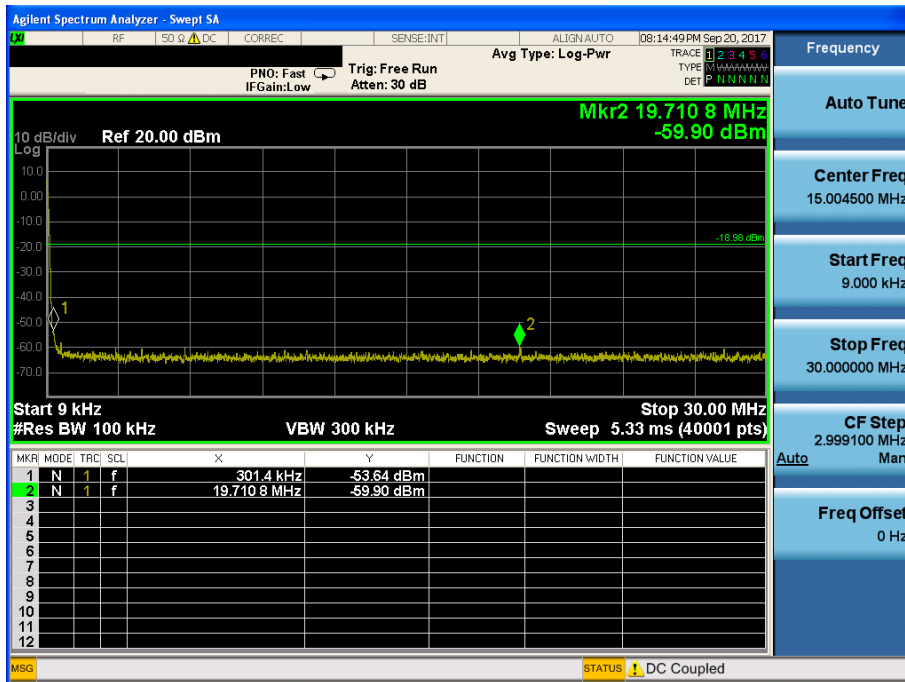
**TM 7 & ANT 1 & Highest Reference**



**High Band-edge**

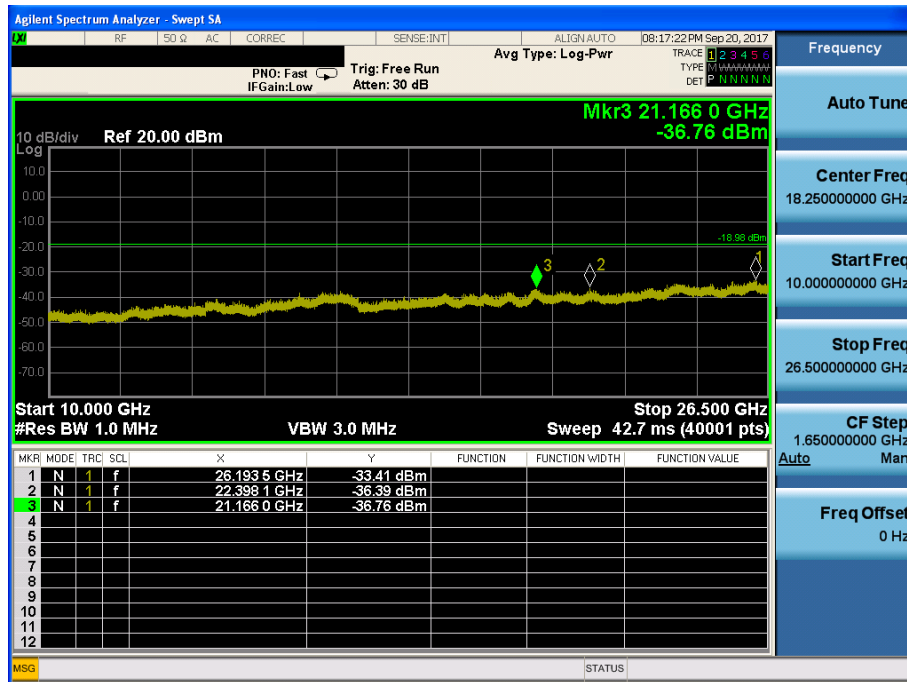


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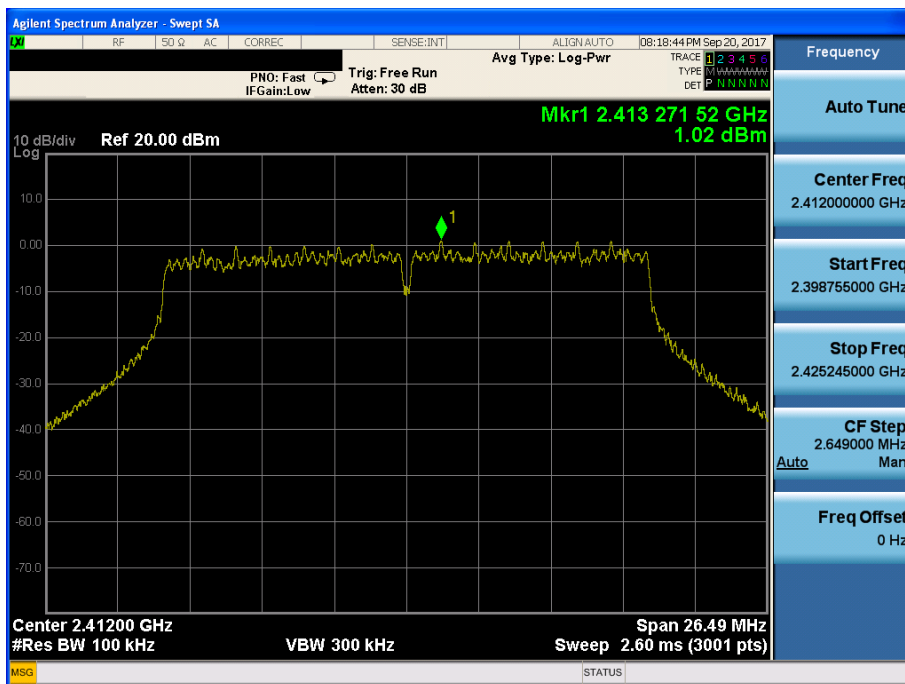


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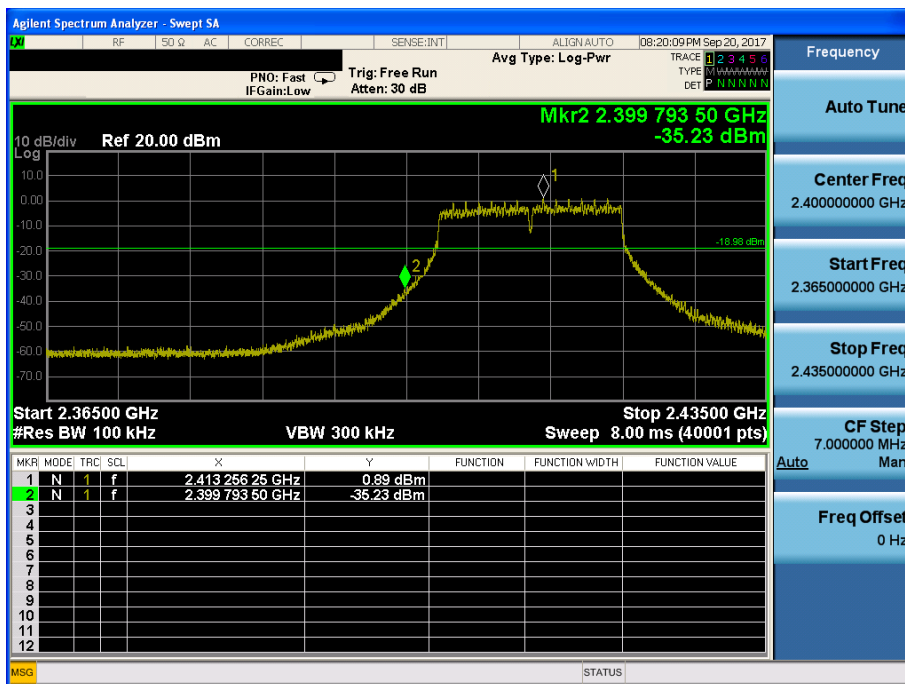


TM 8 & ANT 1 & Lowest

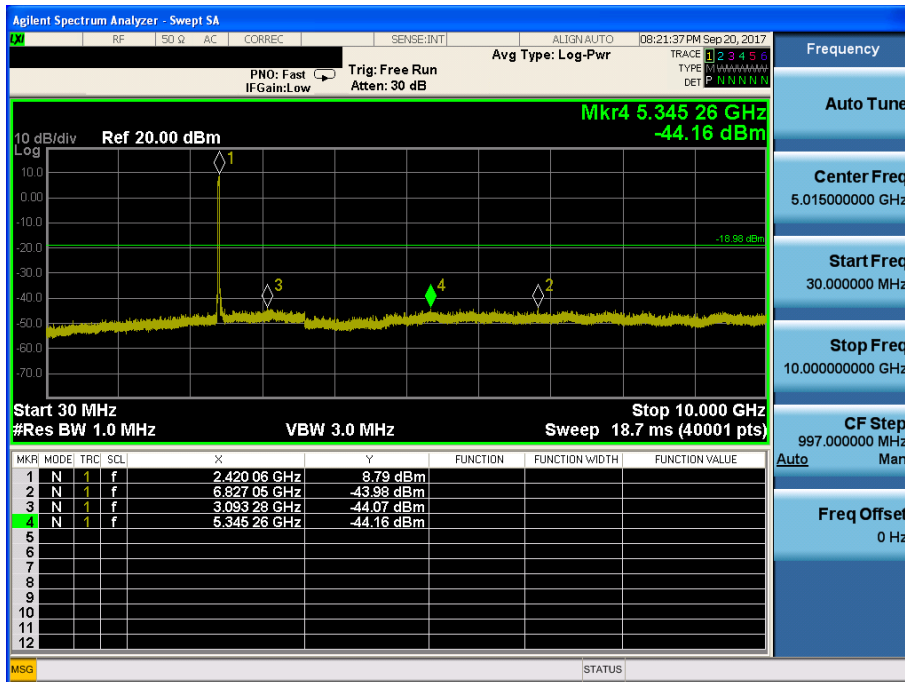
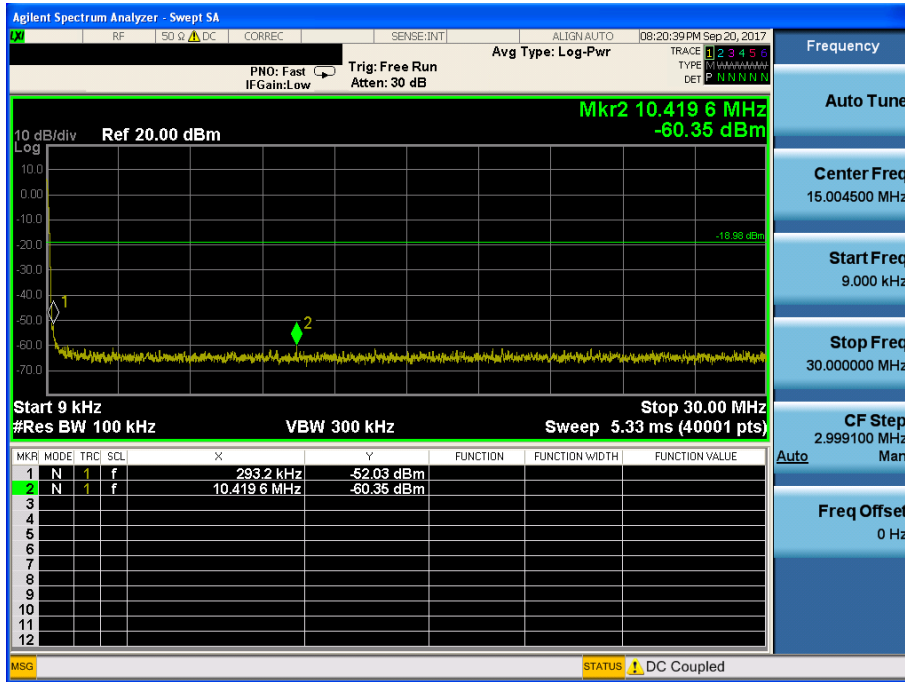
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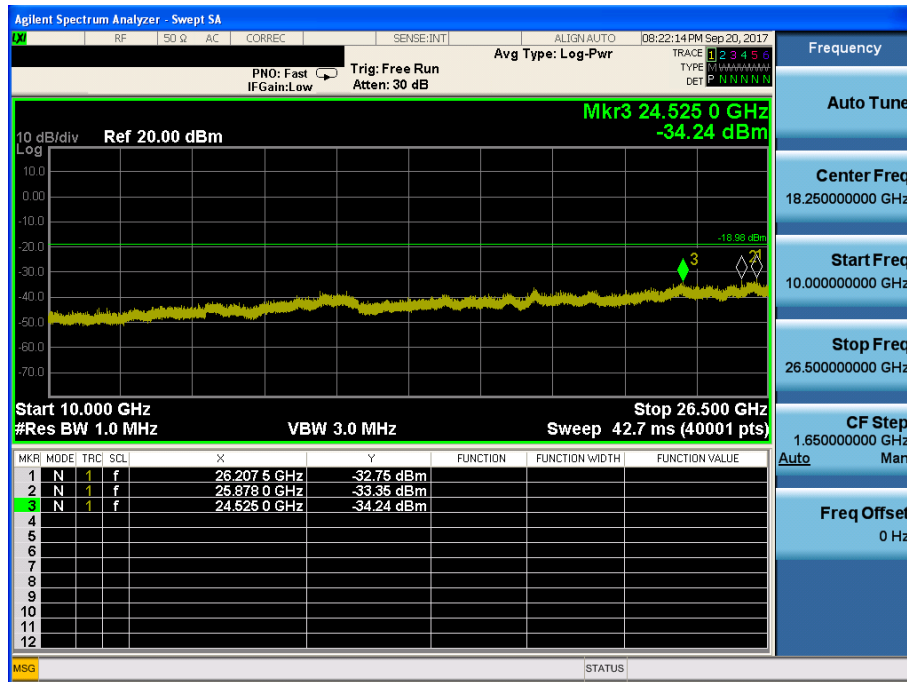
Low Band-edge



### Conducted Spurious Emissions

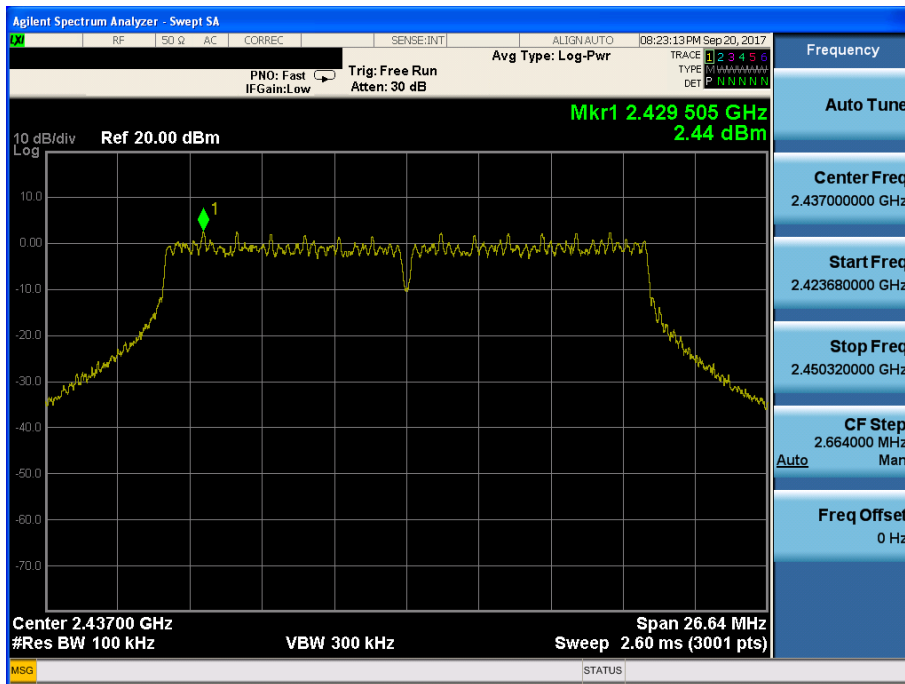


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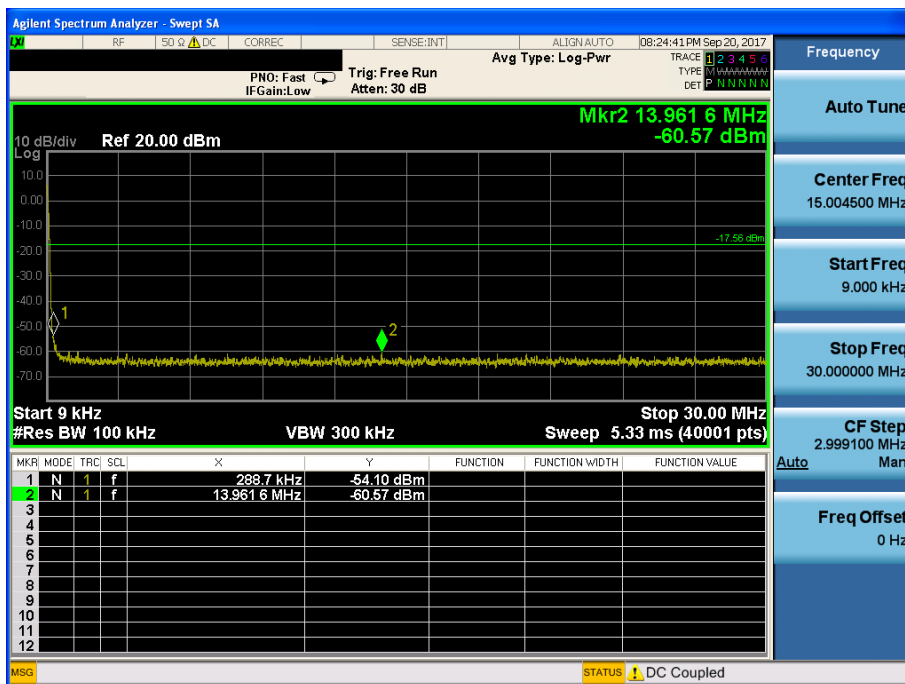


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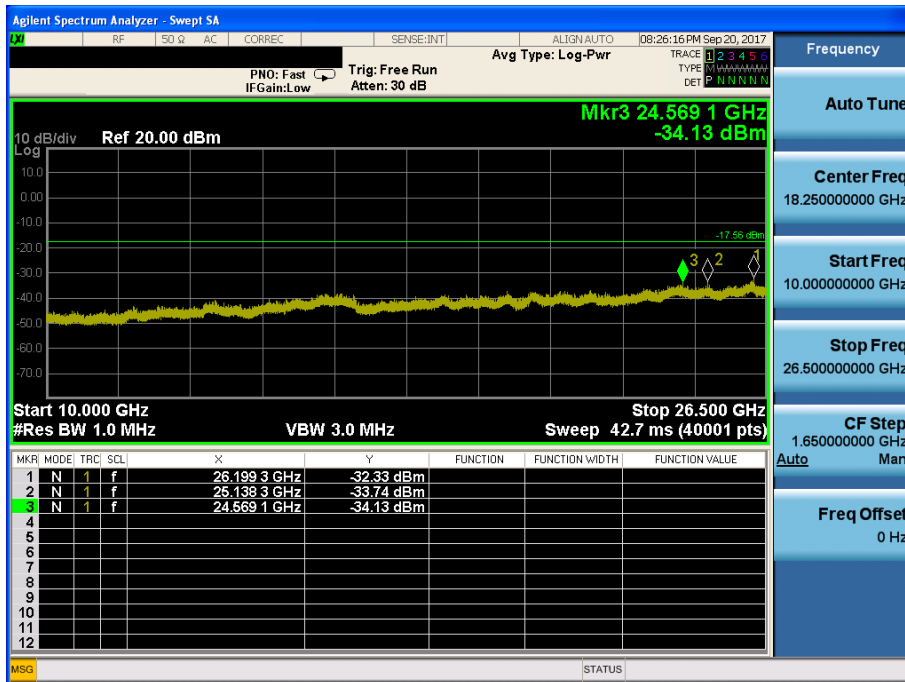
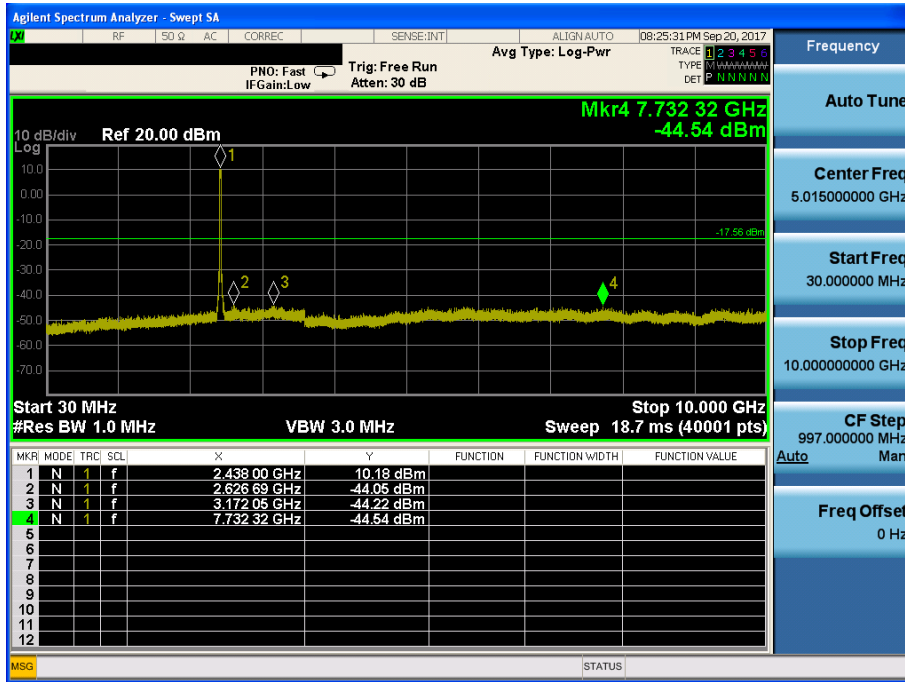
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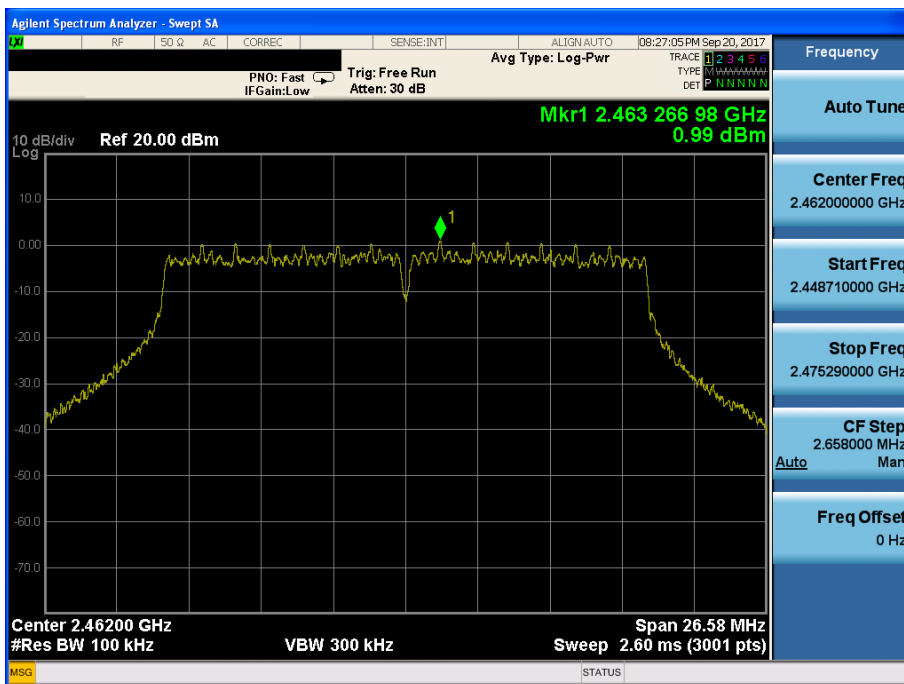


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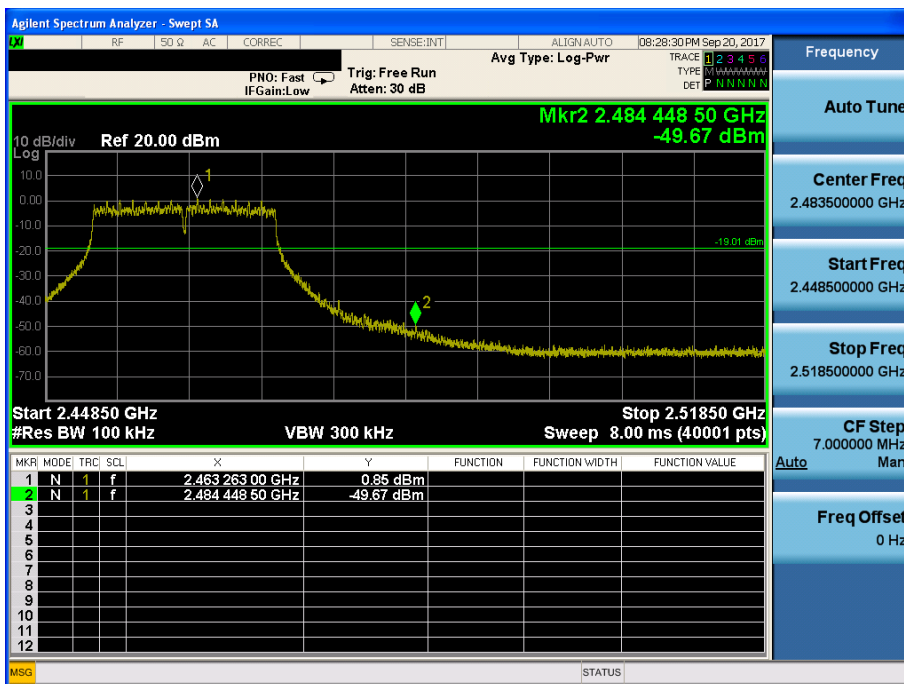


TM 8 & ANT 1 & Highest

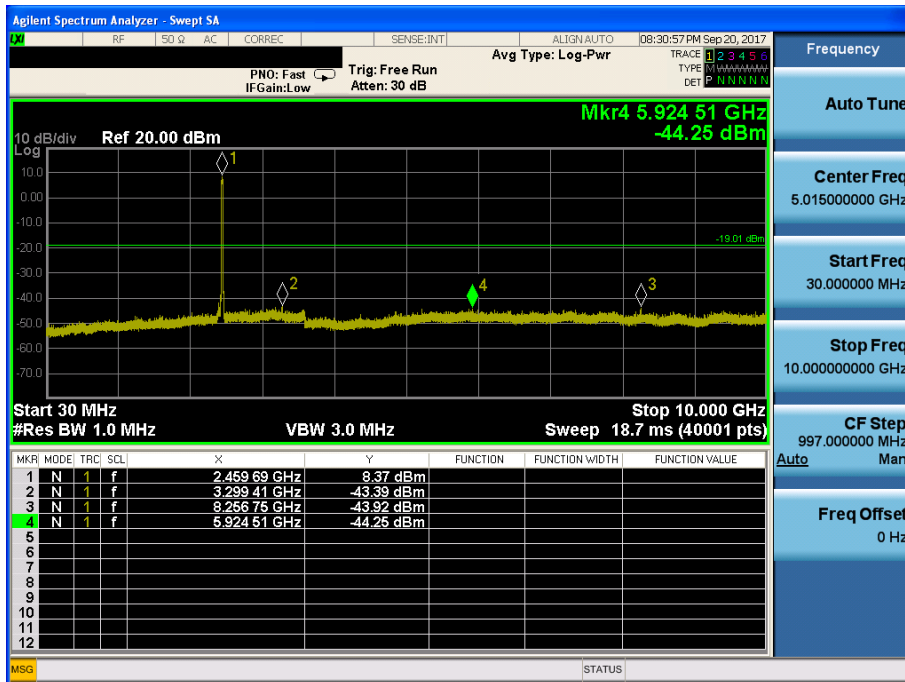
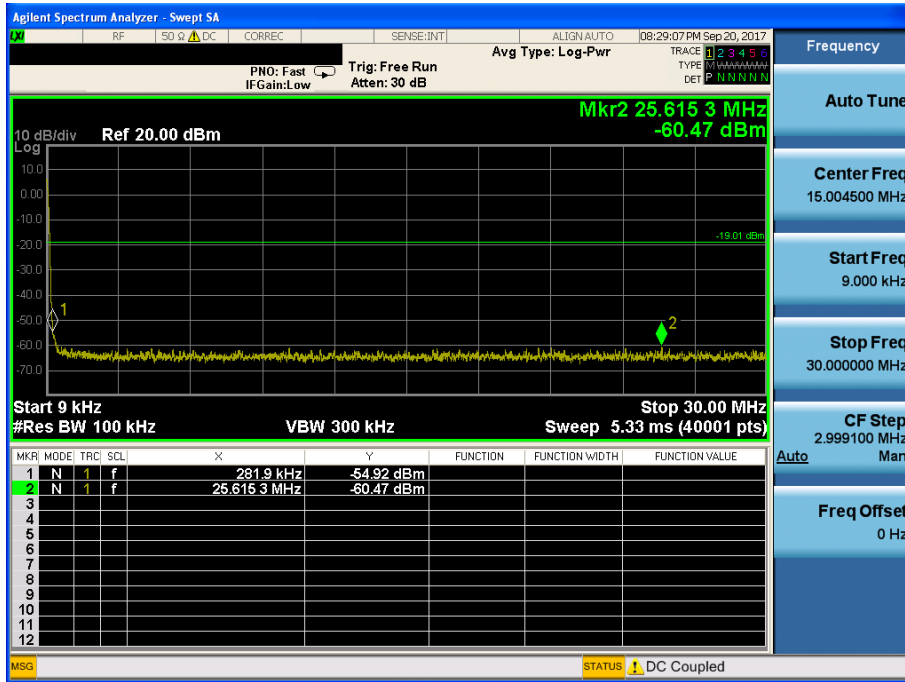
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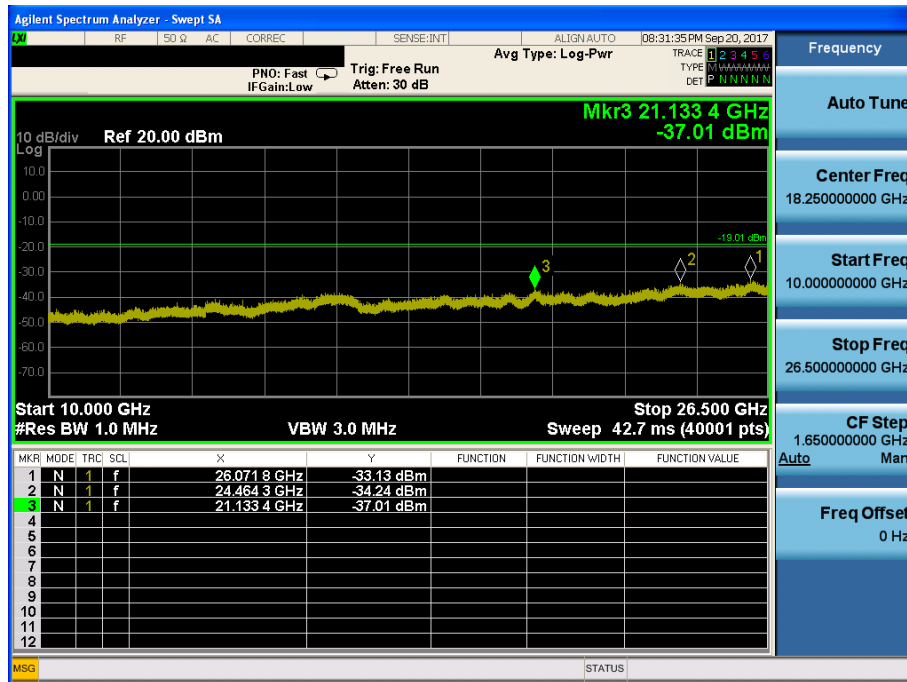


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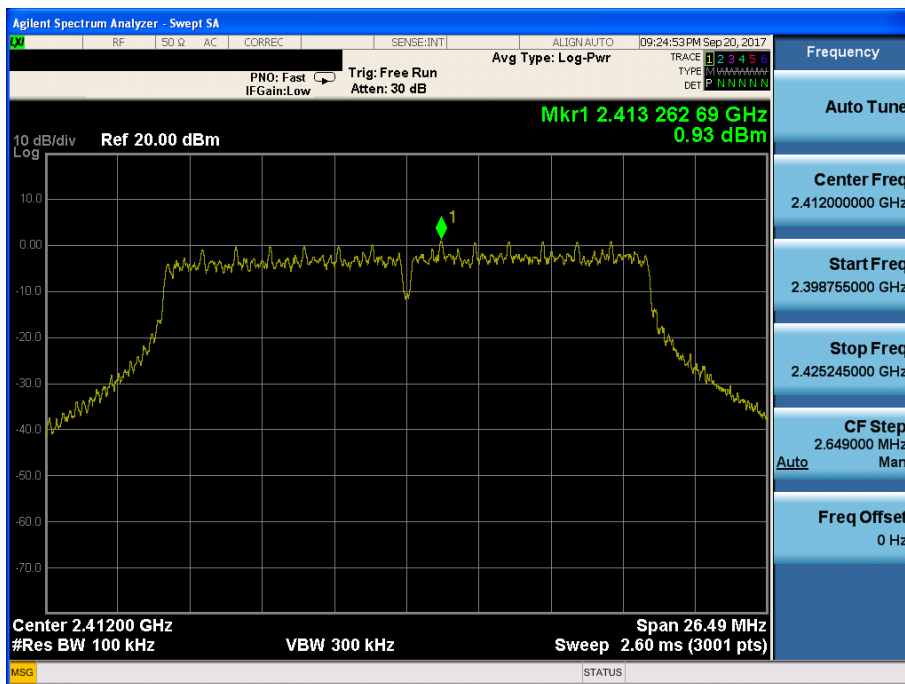


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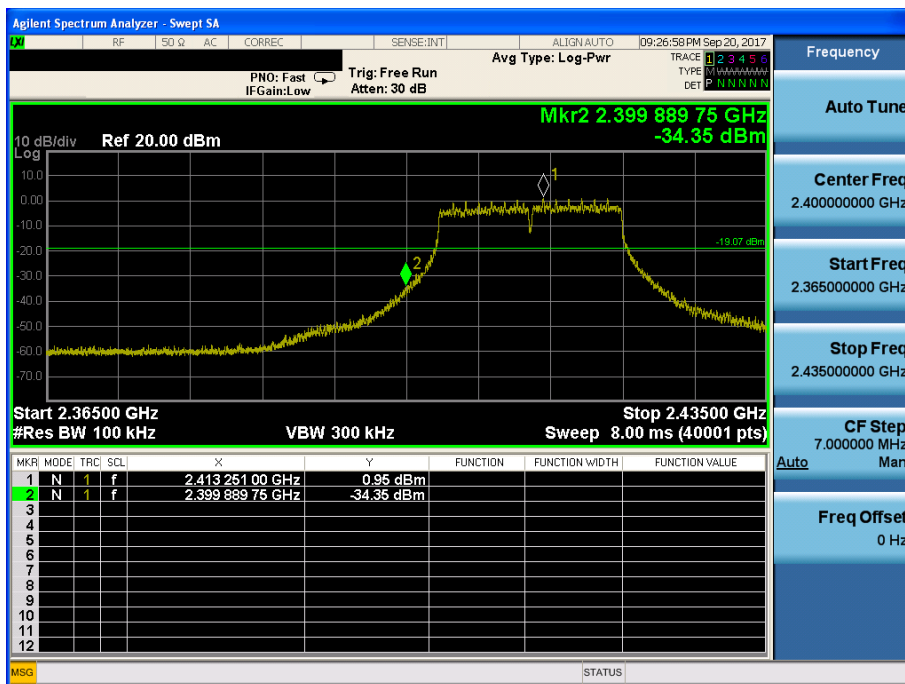


TM 9 & ANT 1 & Lowest

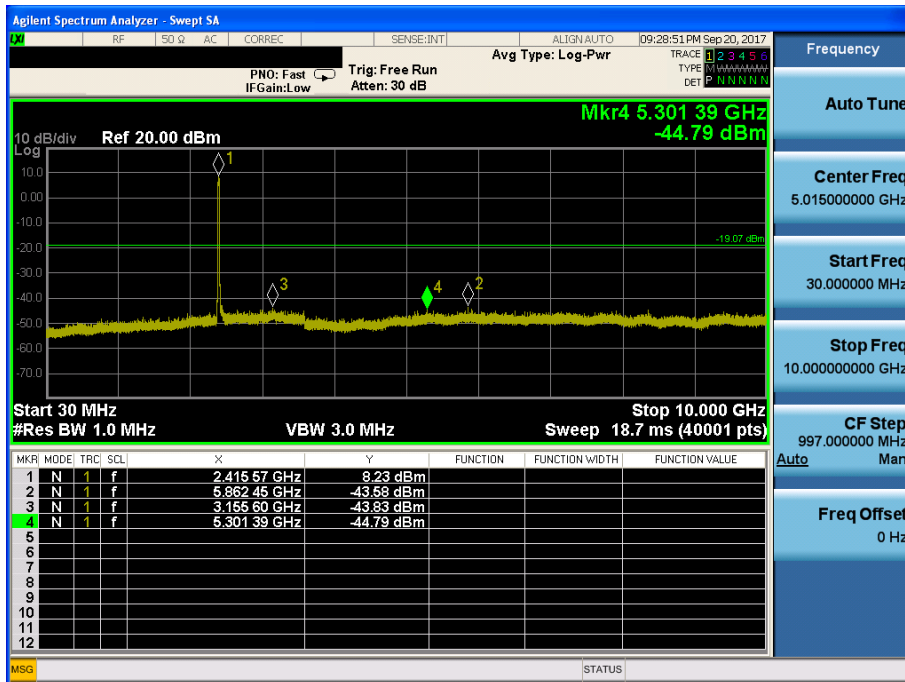
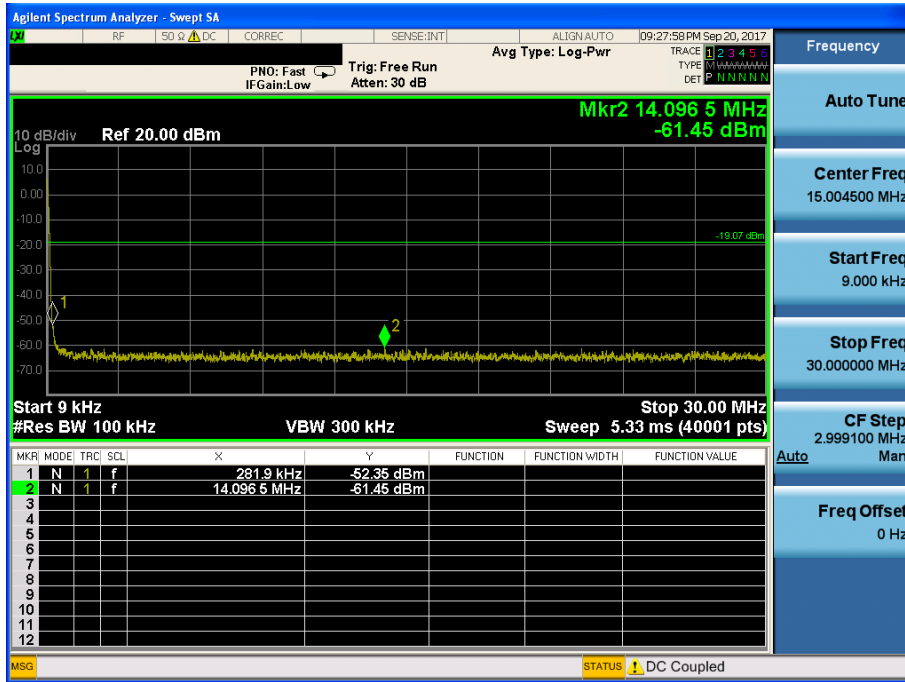
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Low Band-edge



### Conducted Spurious Emissions

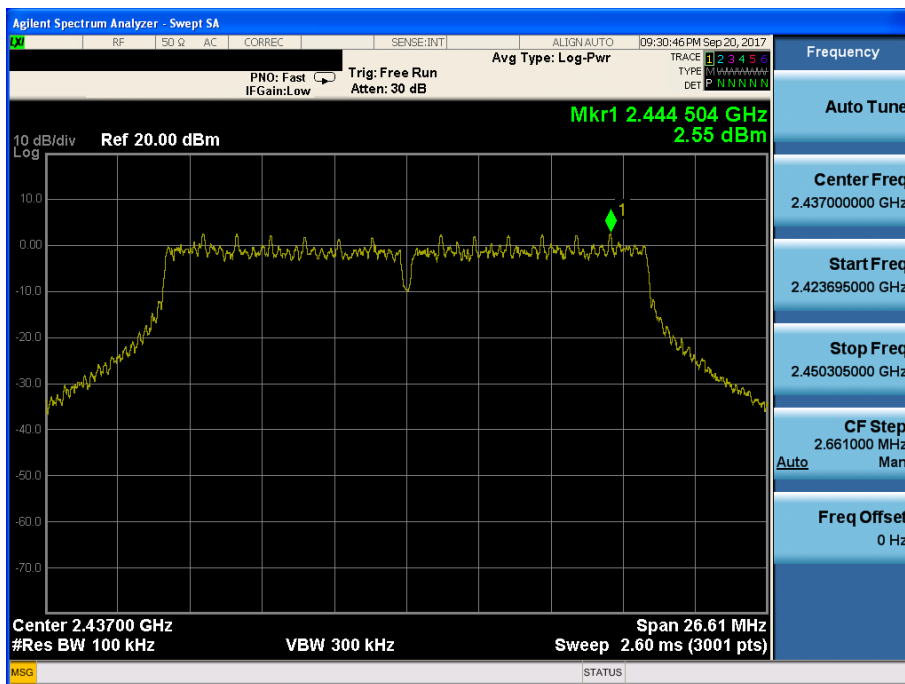


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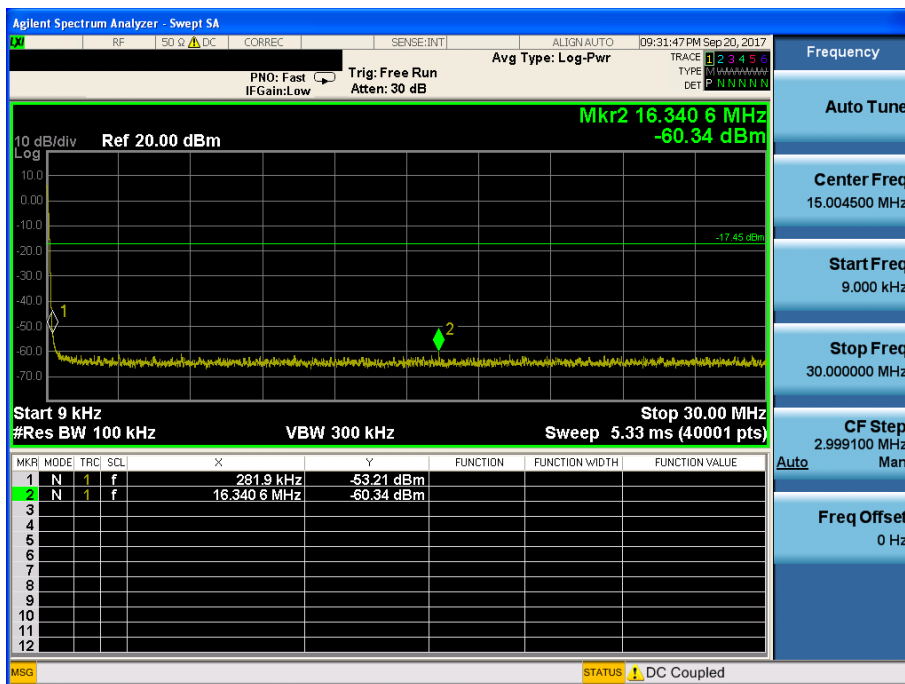


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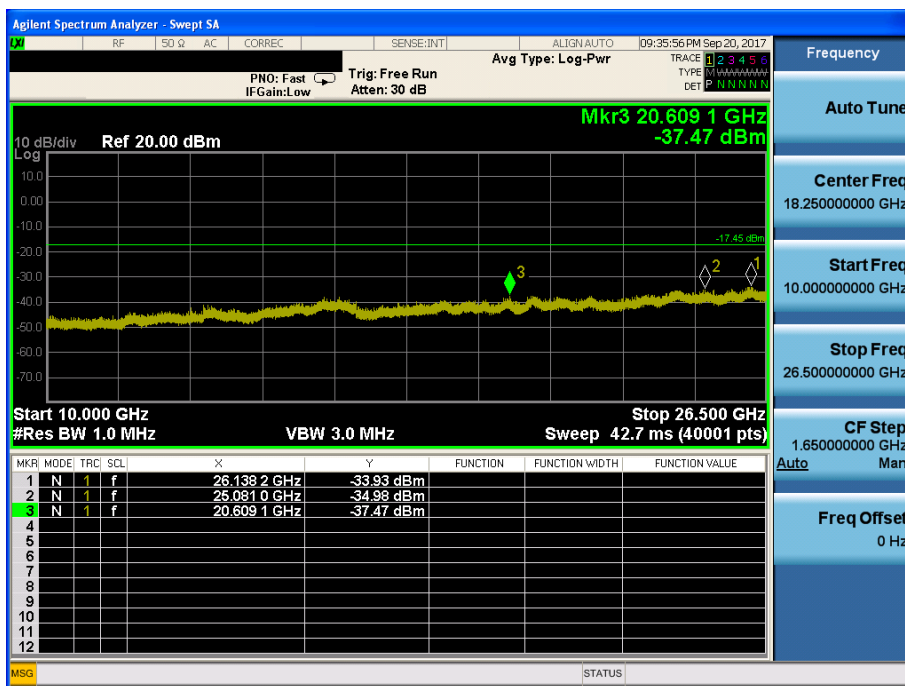
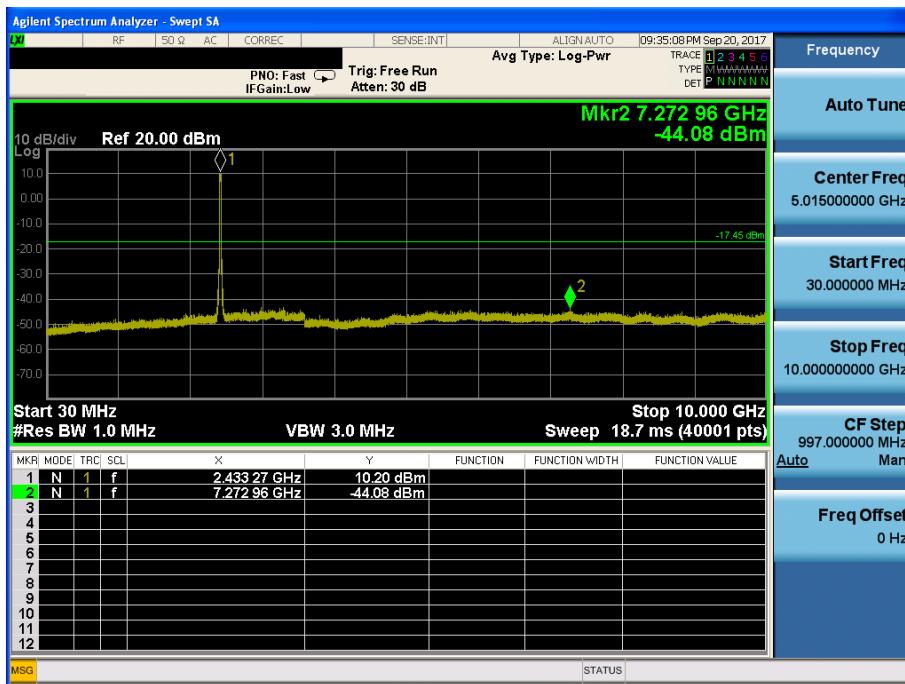
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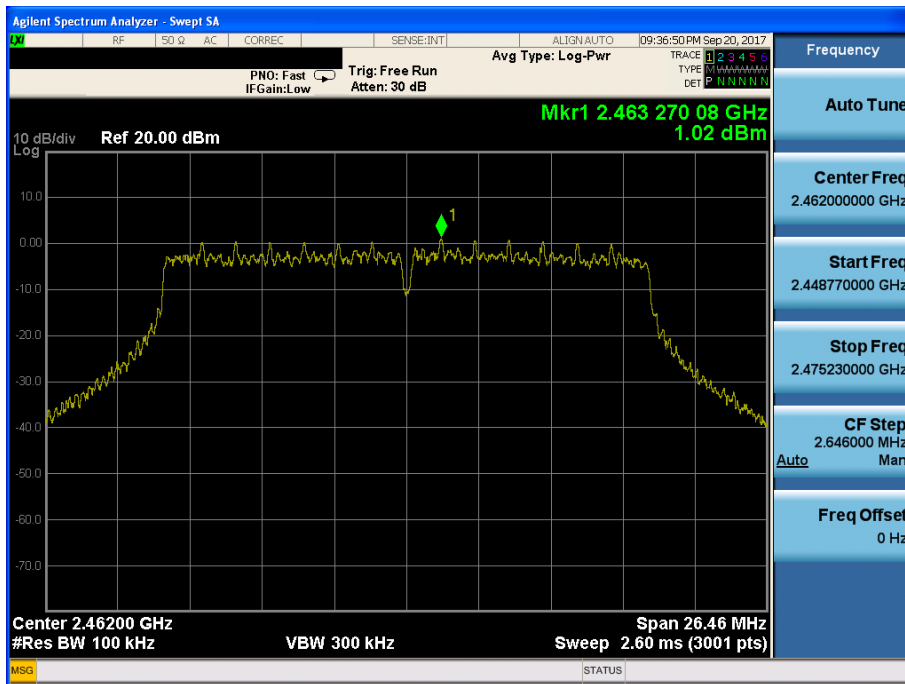
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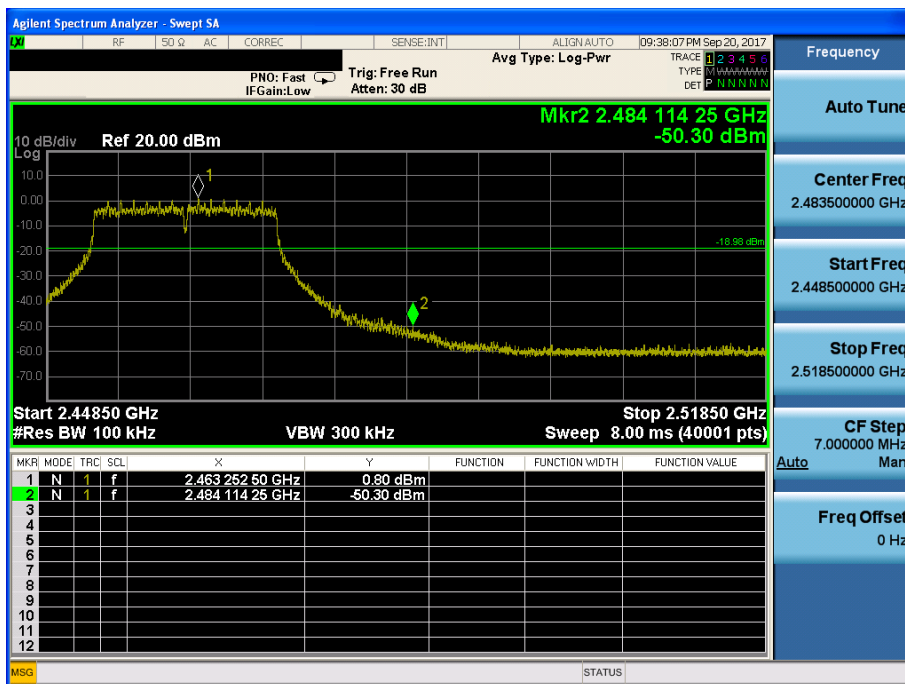
### Conducted Spurious Emissions



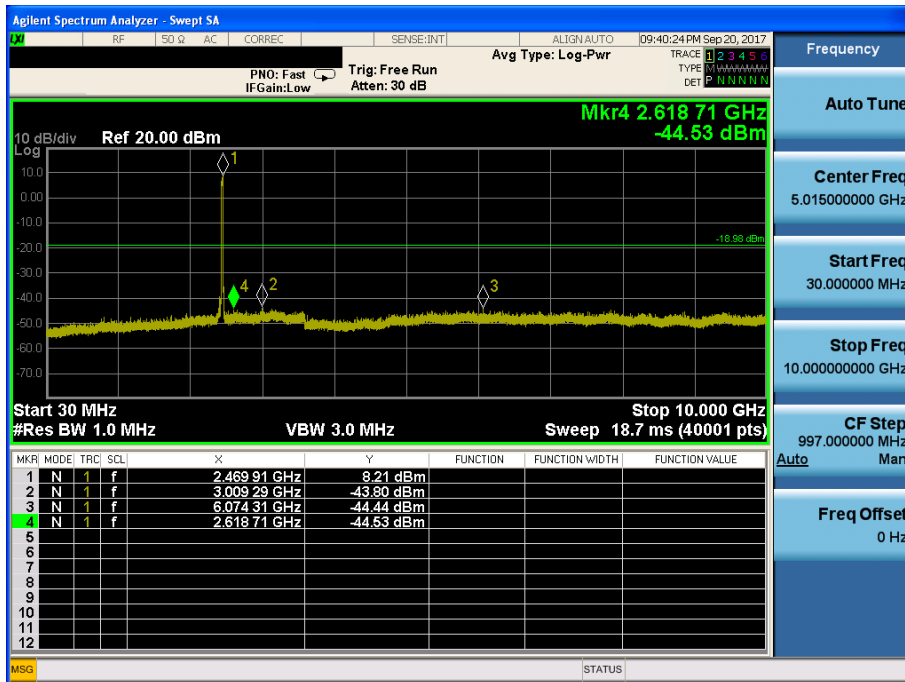
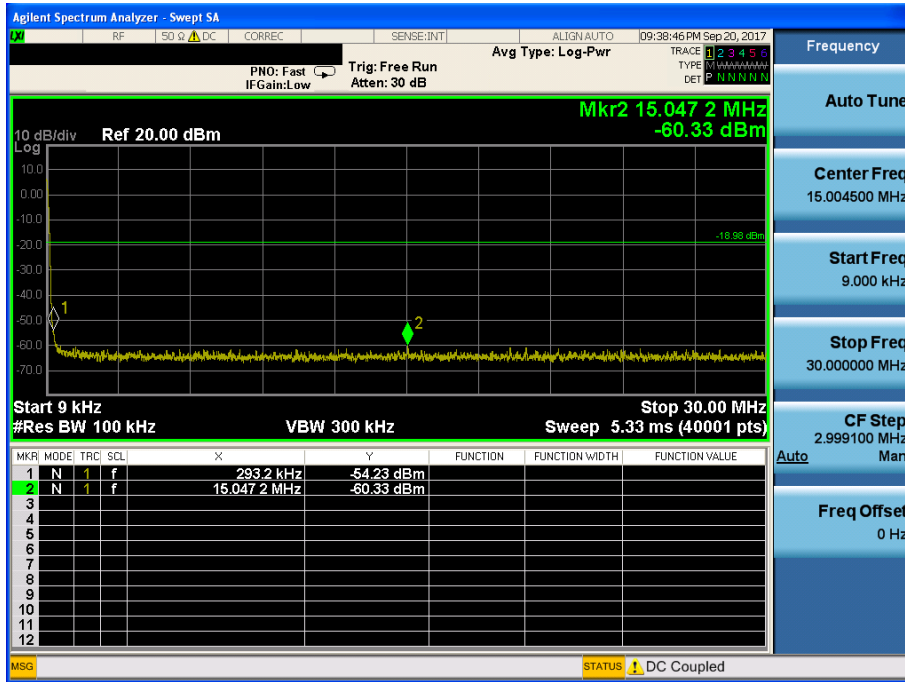
**TM 9 & ANT 1 & Highest Reference**



**High Band-edge**

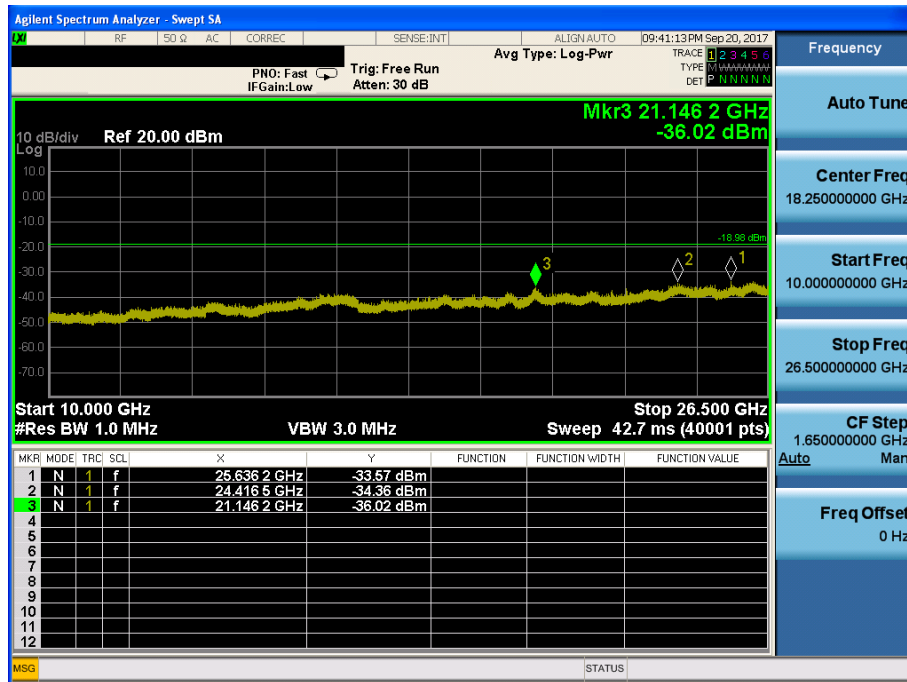


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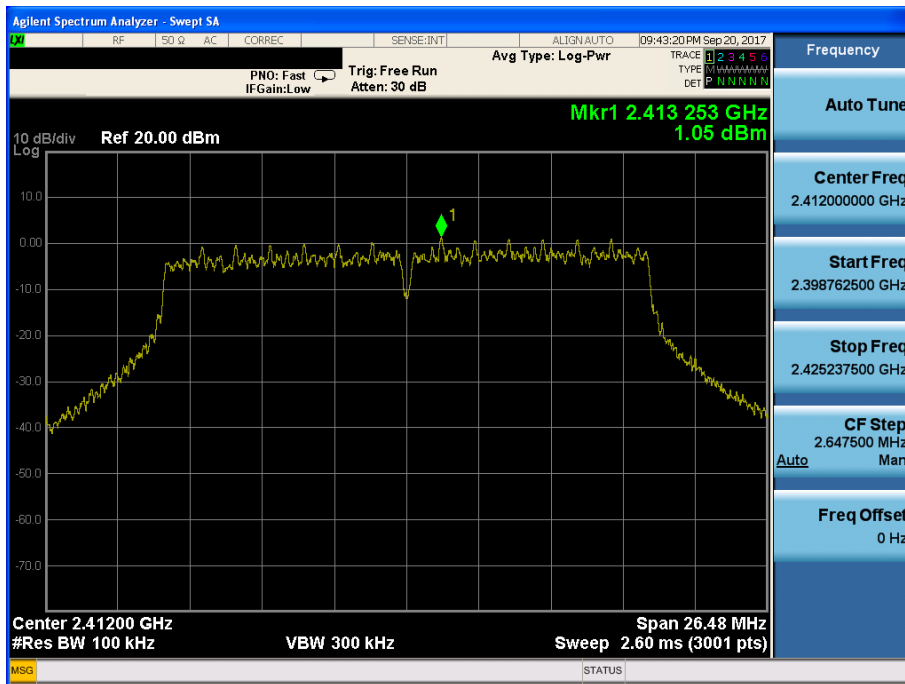




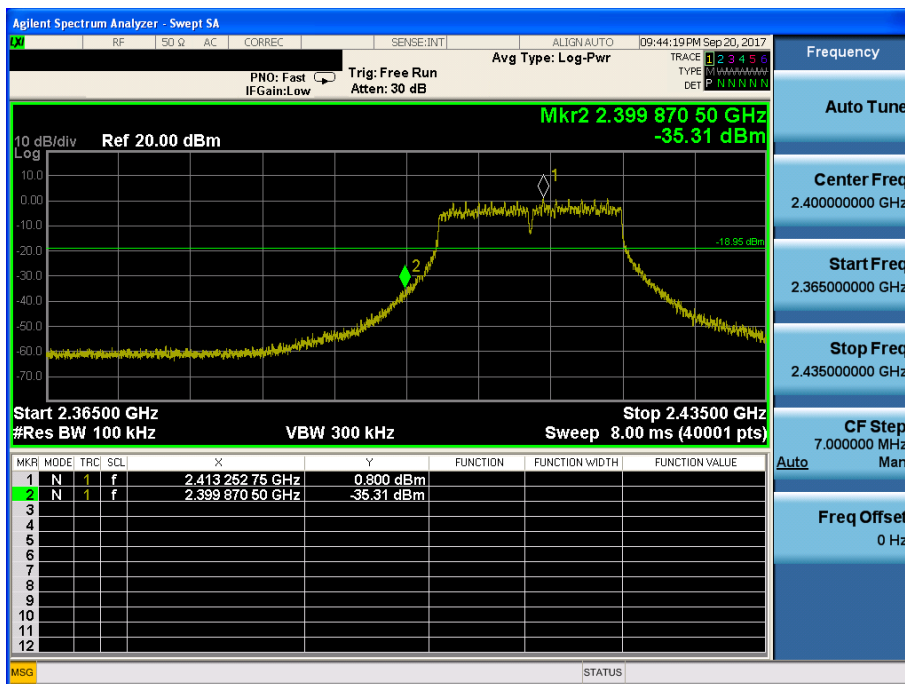
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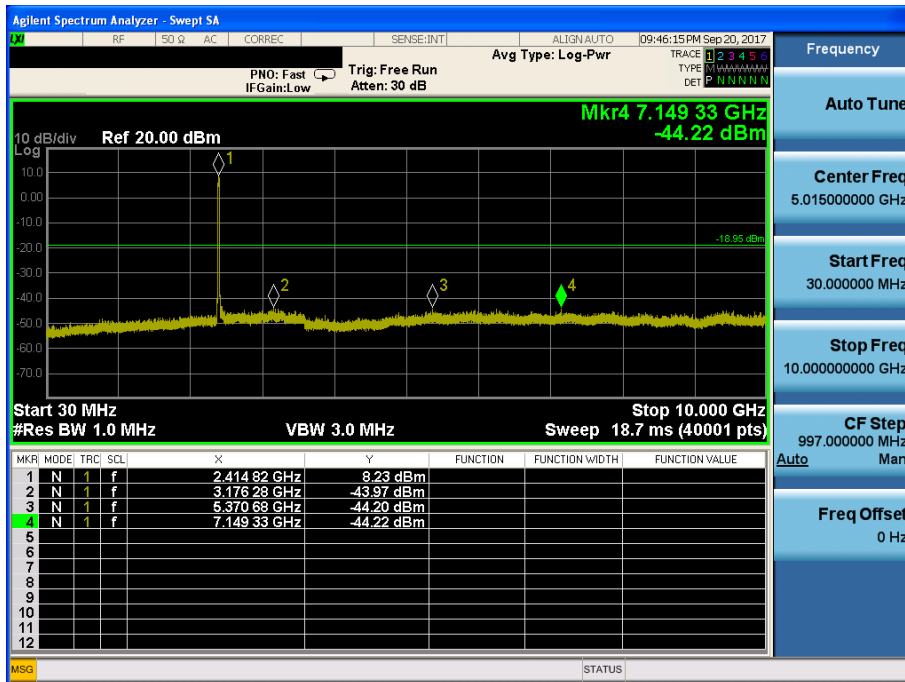
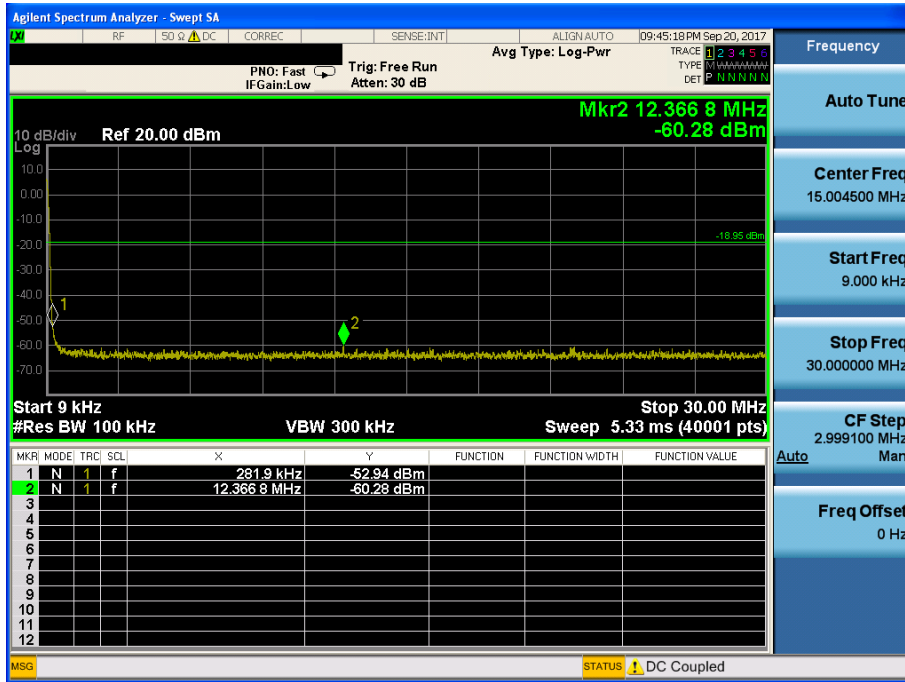
### TM 10 & ANT 1 & Lowest Reference



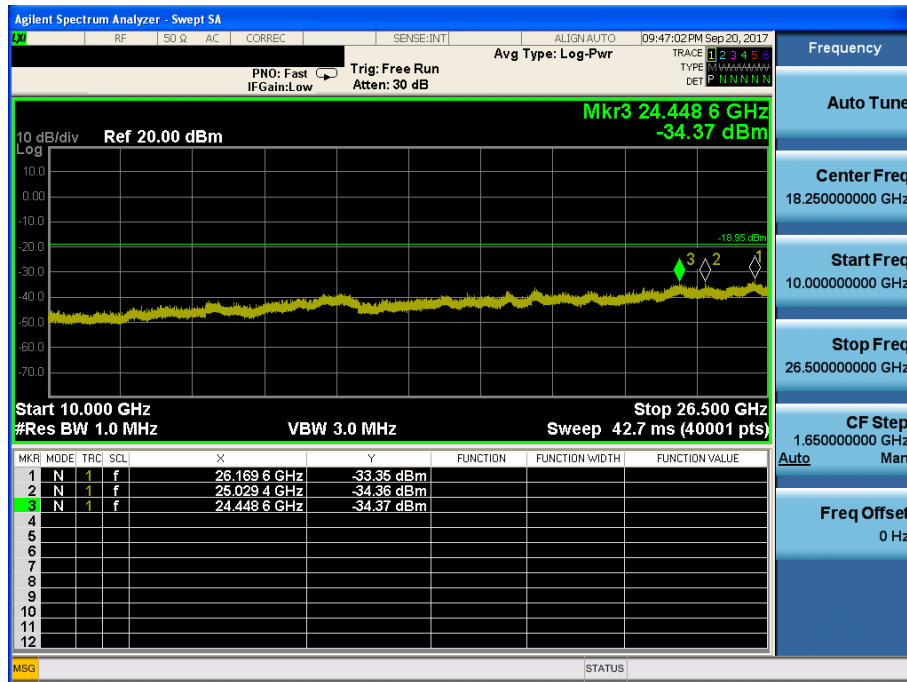
### Low Band-edge



### Conducted Spurious Emissions

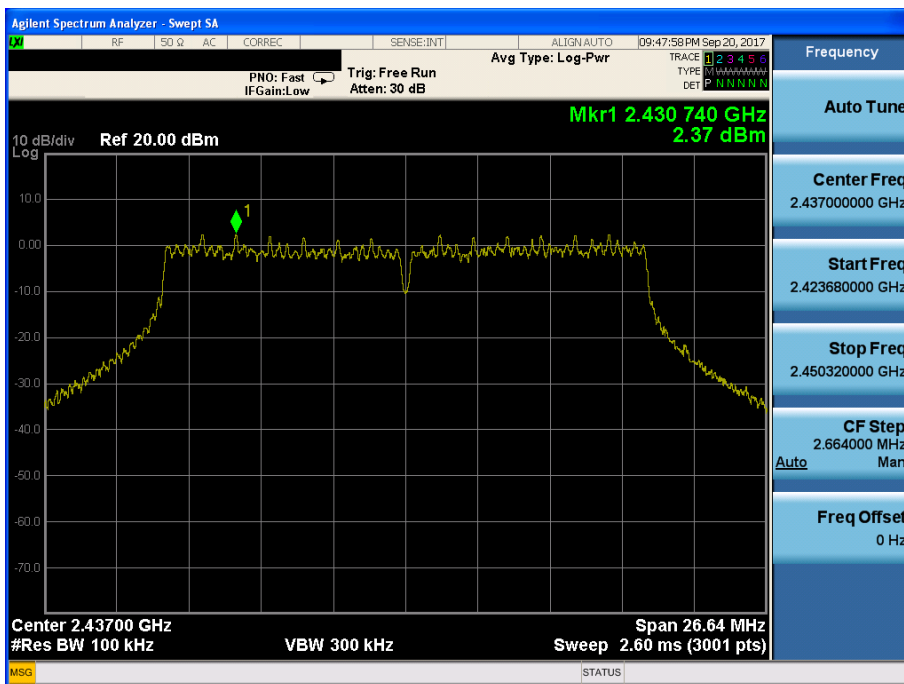


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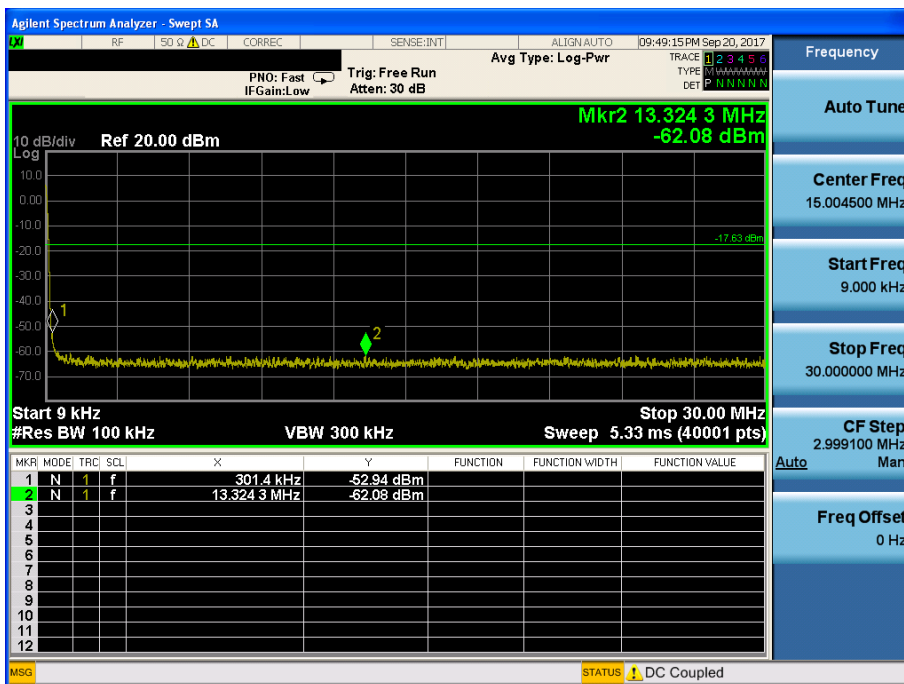


TM 10 & ANT 1 & Middle

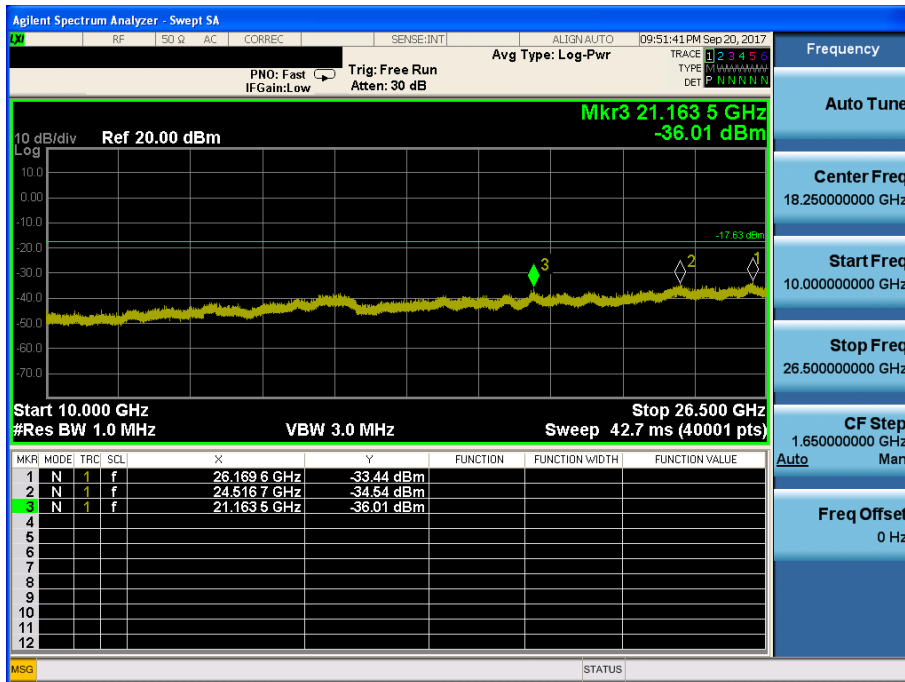
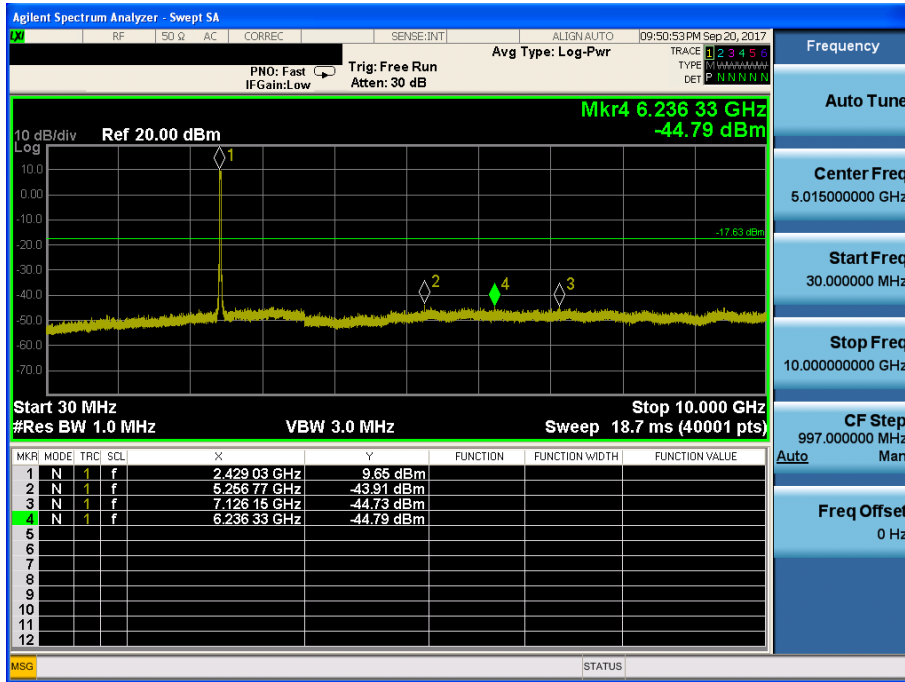
Reference



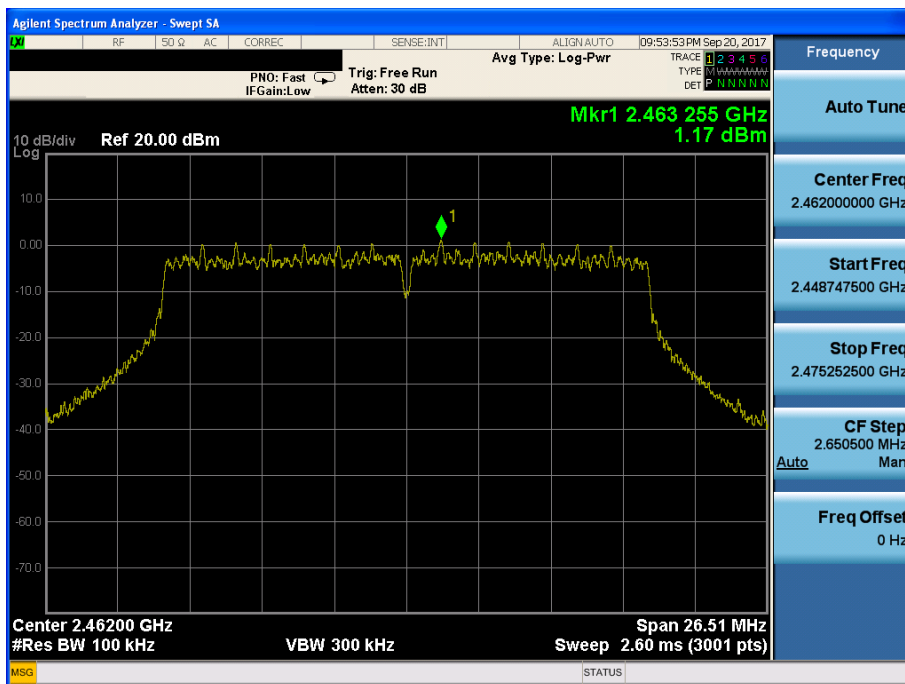
Conducted Spurious Emissions



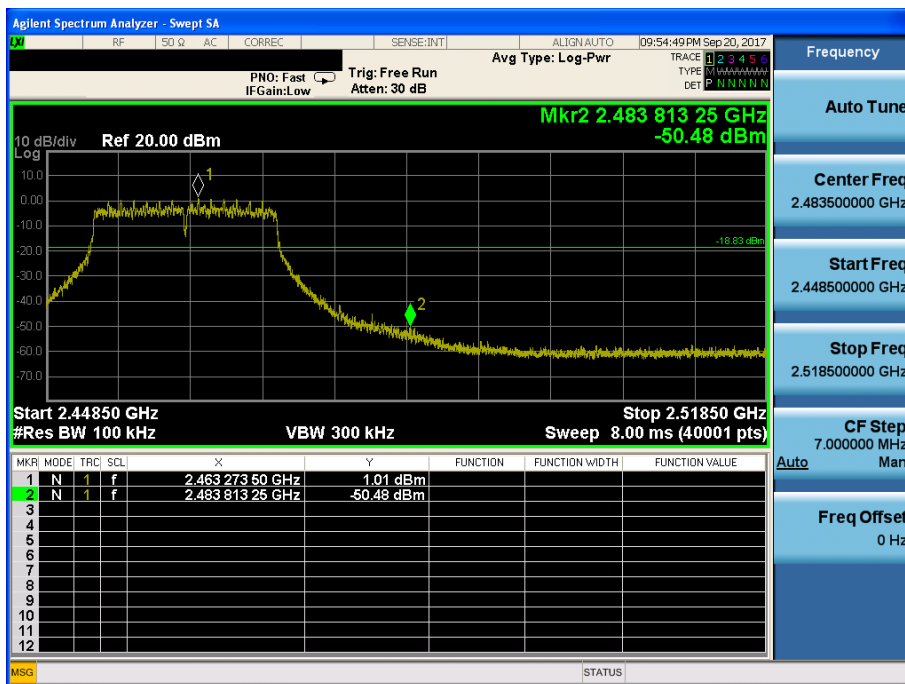
### Conducted Spurious Emissions



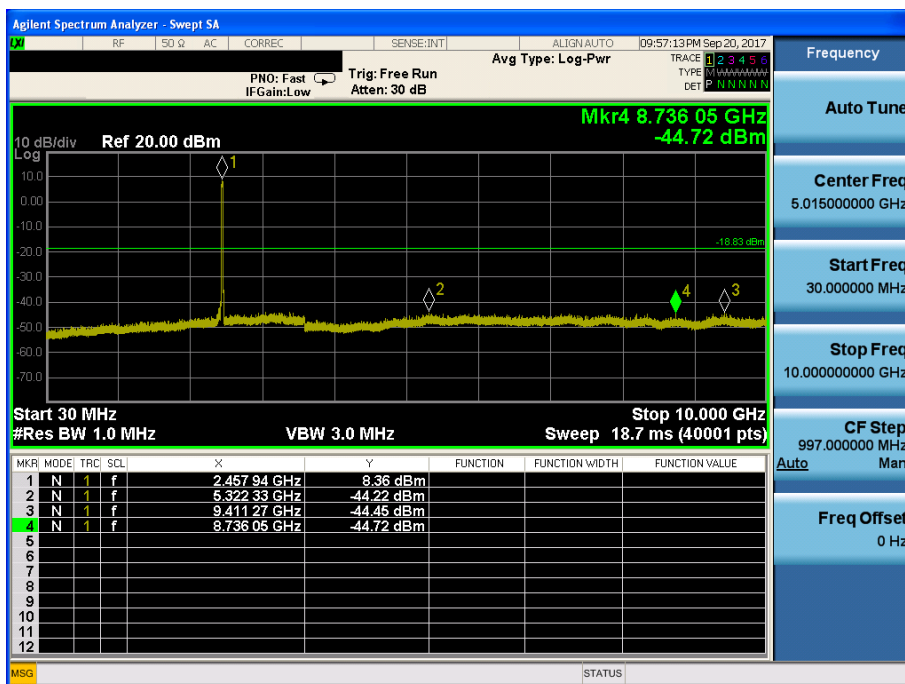
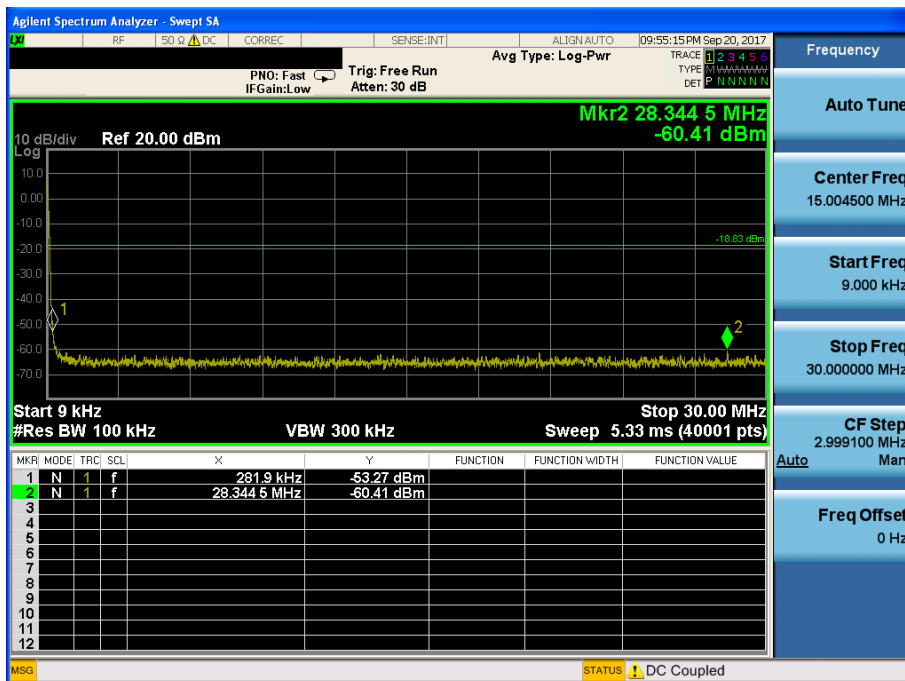
**TM 10 & ANT 1 & Highest Reference**



**High Band-edge**

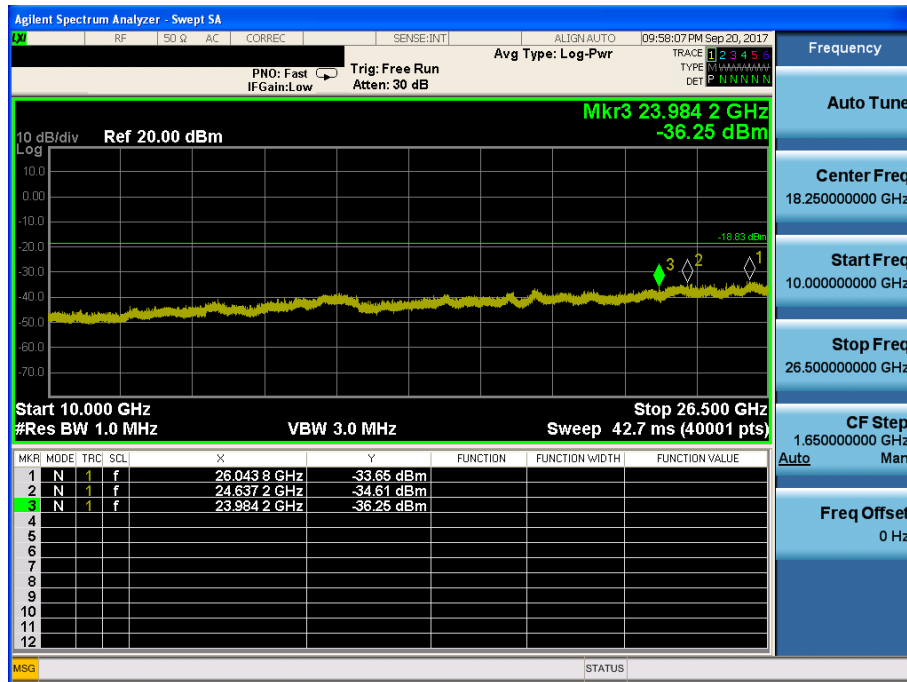


### Conducted Spurious Emissions



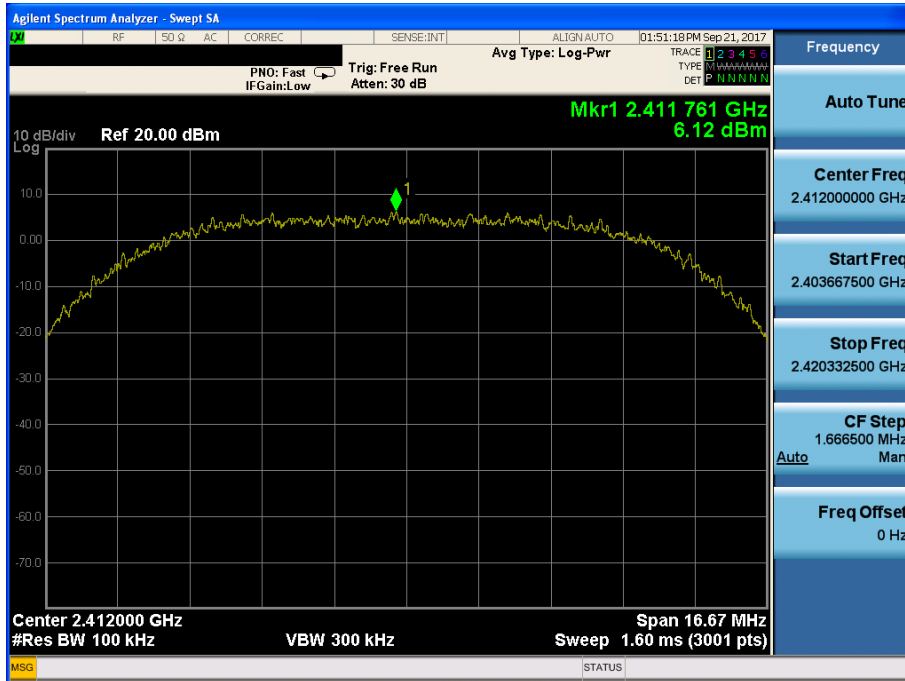


### Conducted Spurious Emissions

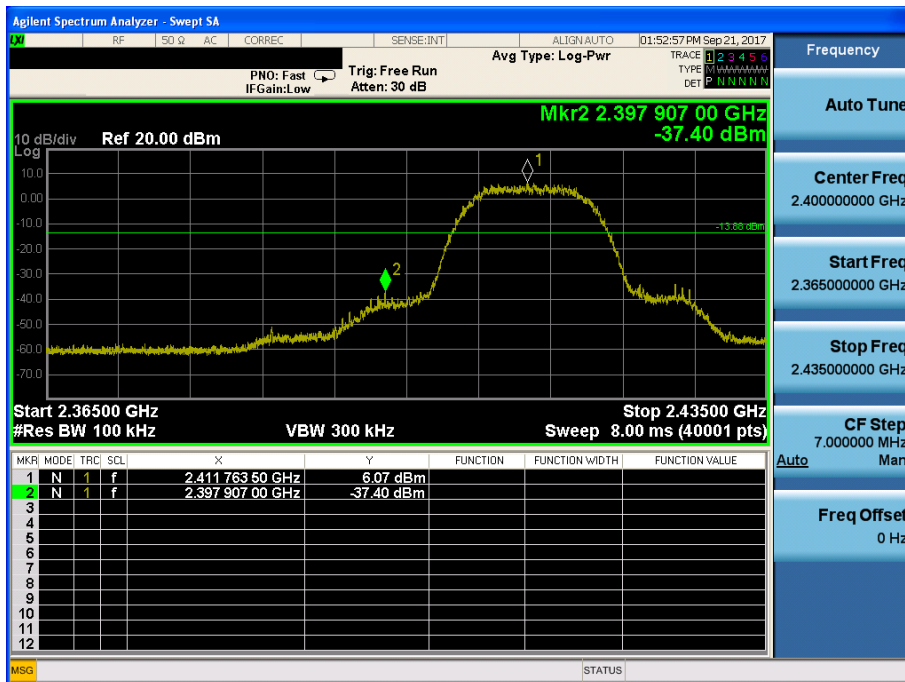


TM 5 & ANT 2 & Lowest

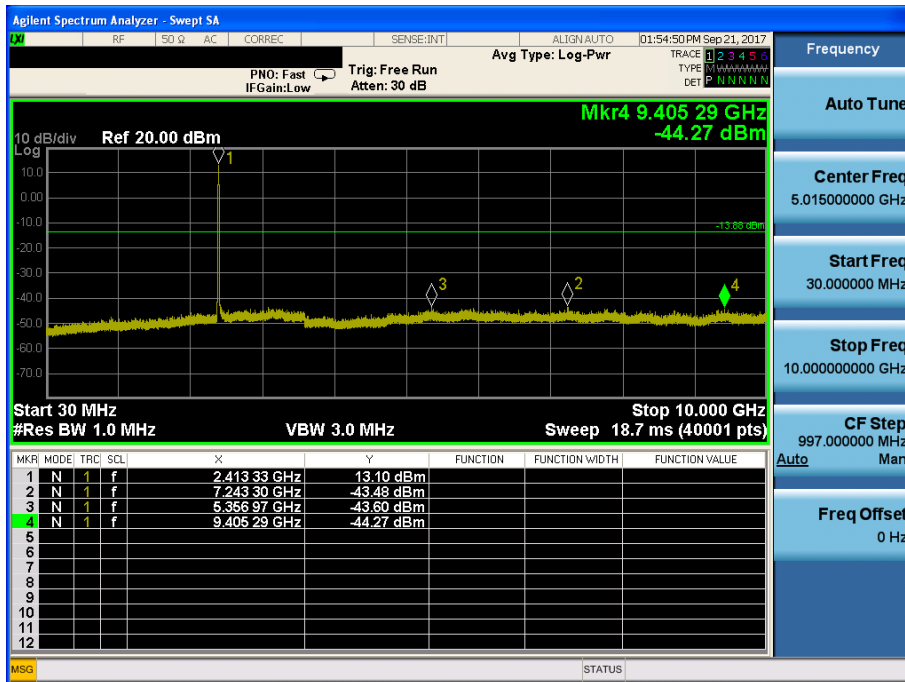
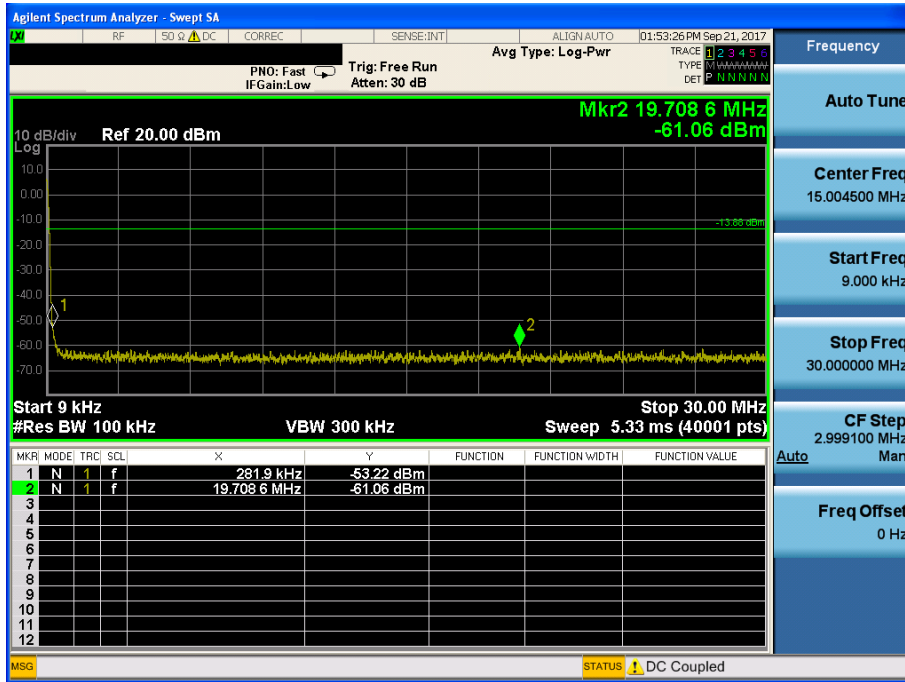
Reference



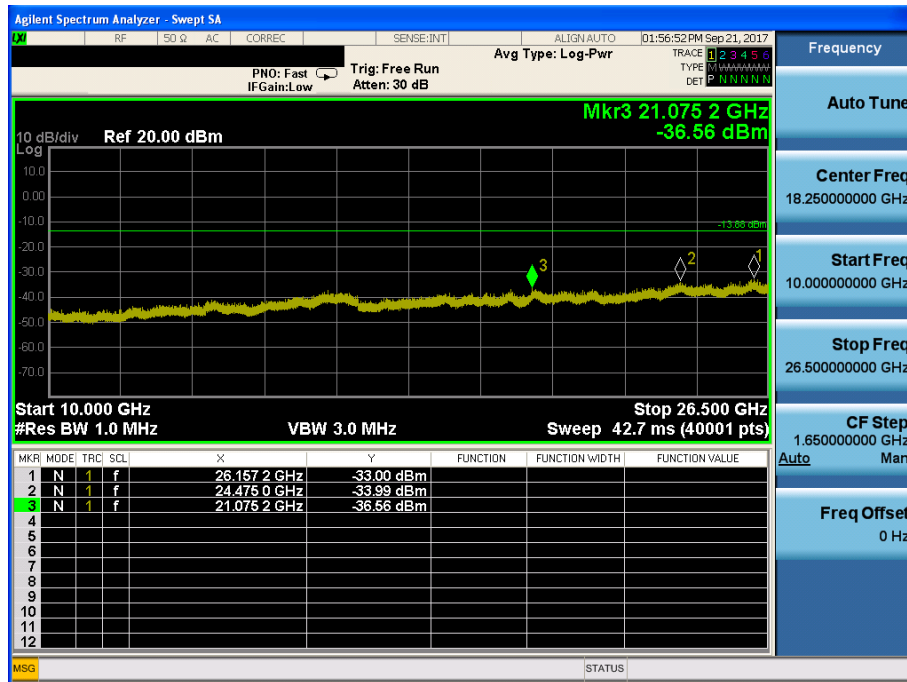
Low Band-edge



### Conducted Spurious Emissions

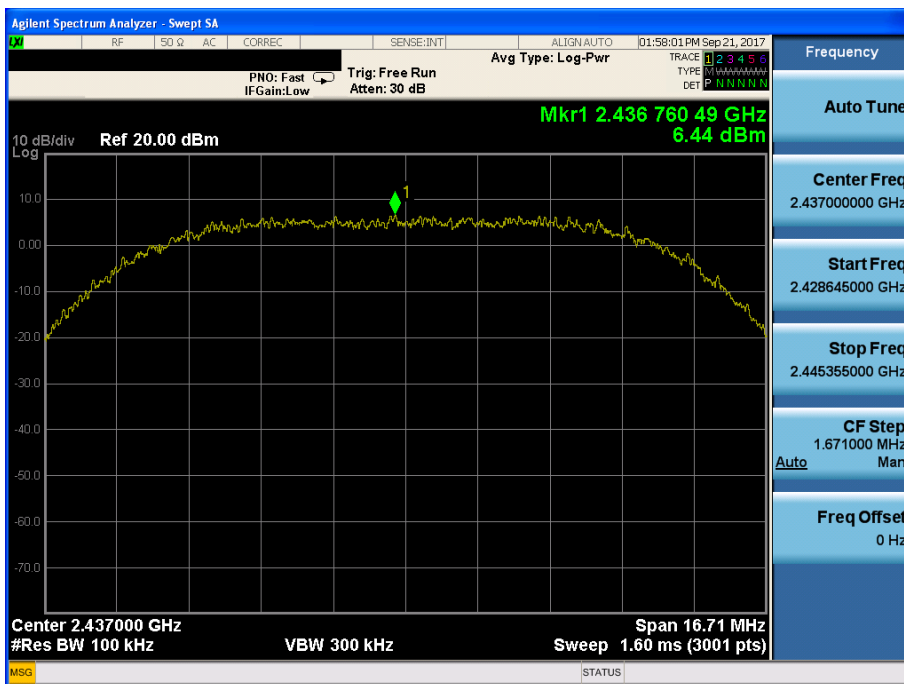


### Conducted Spurious Emissions

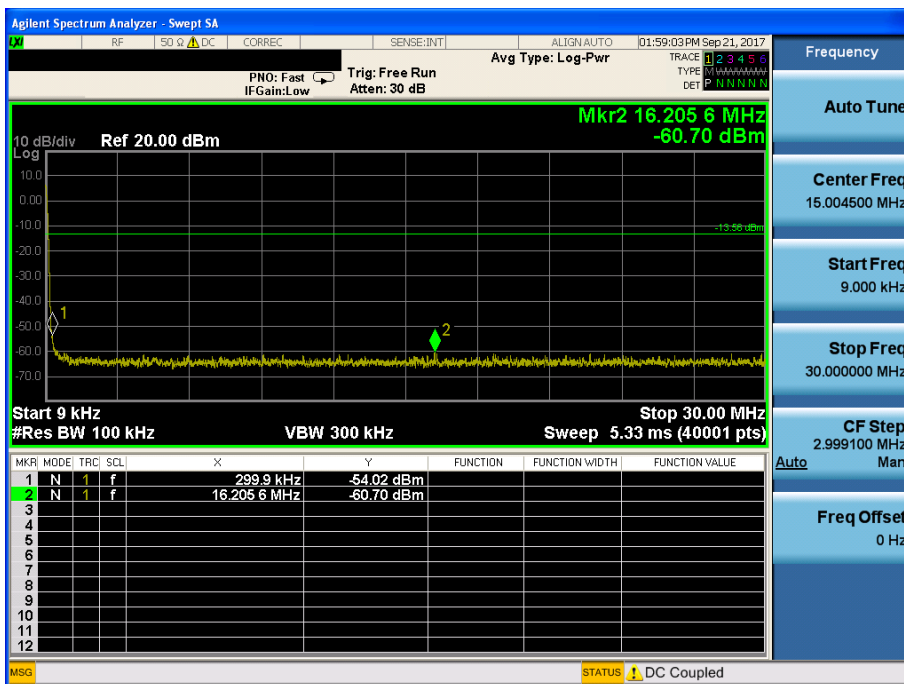


TM 5 & ANT 2 & Middle

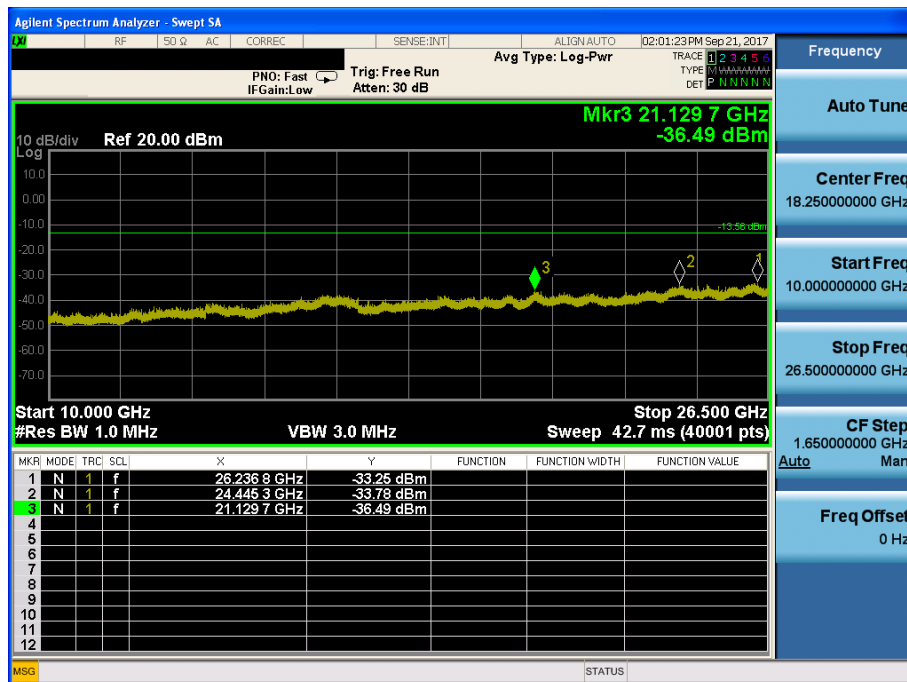
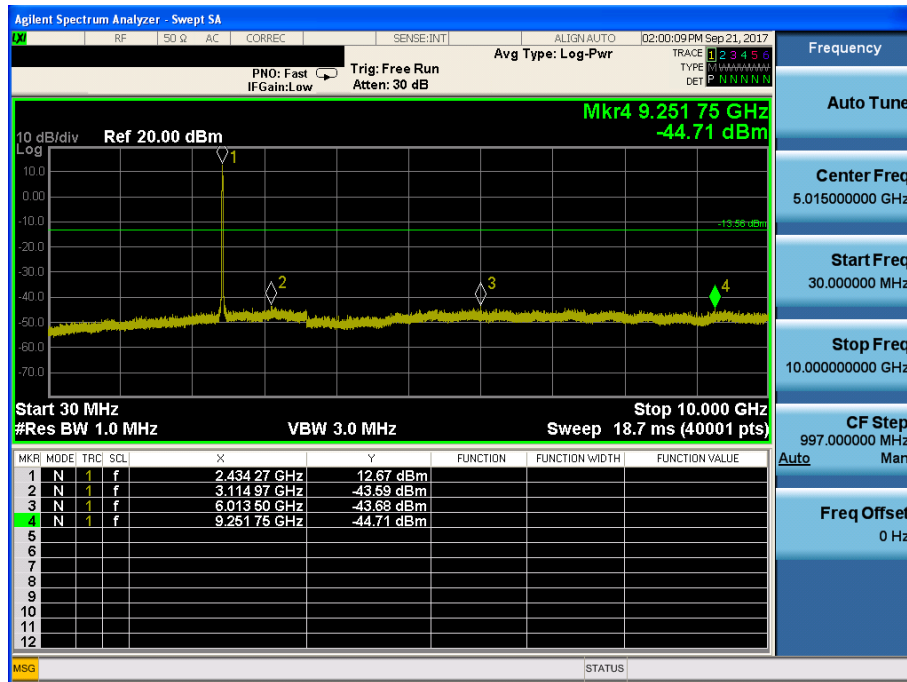
Reference



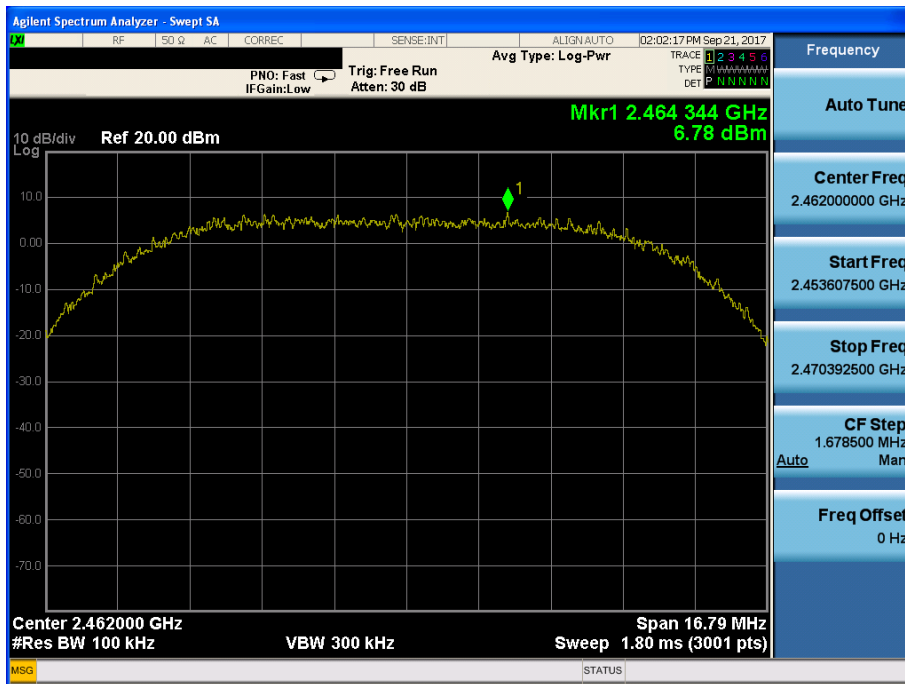
Conducted Spurious Emissions



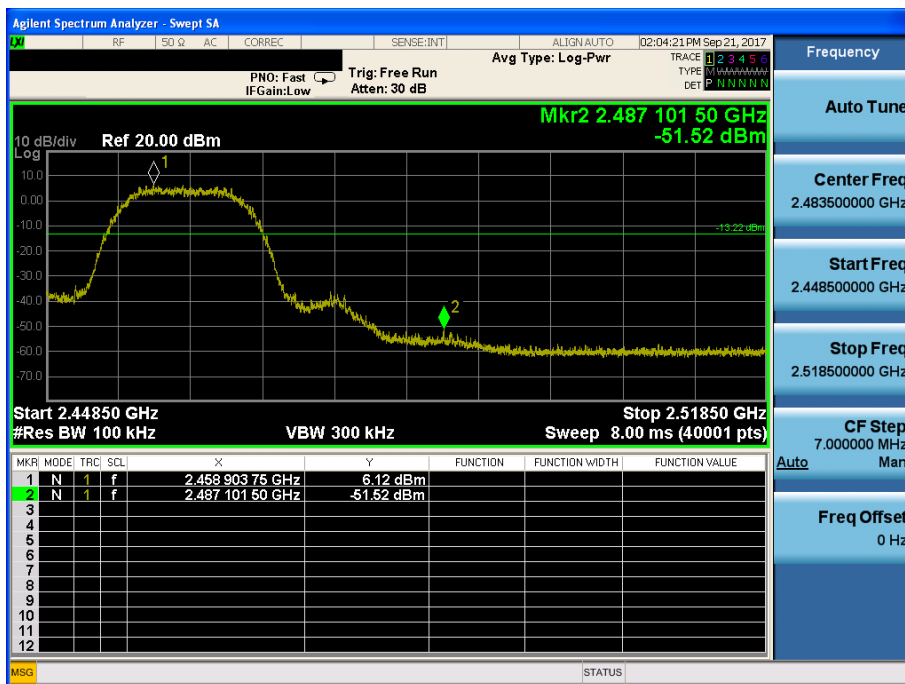
### Conducted Spurious Emissions



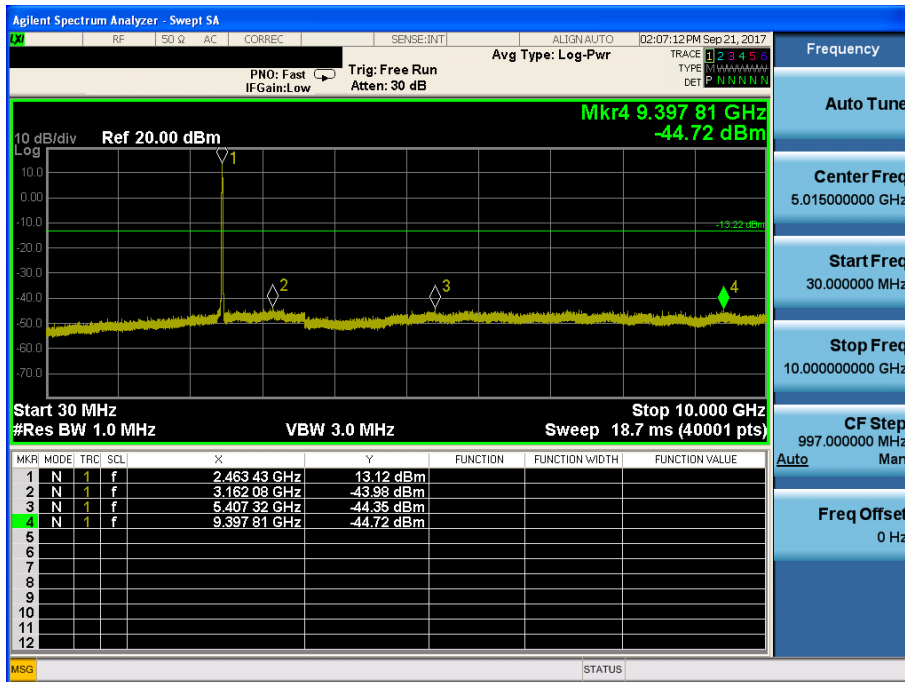
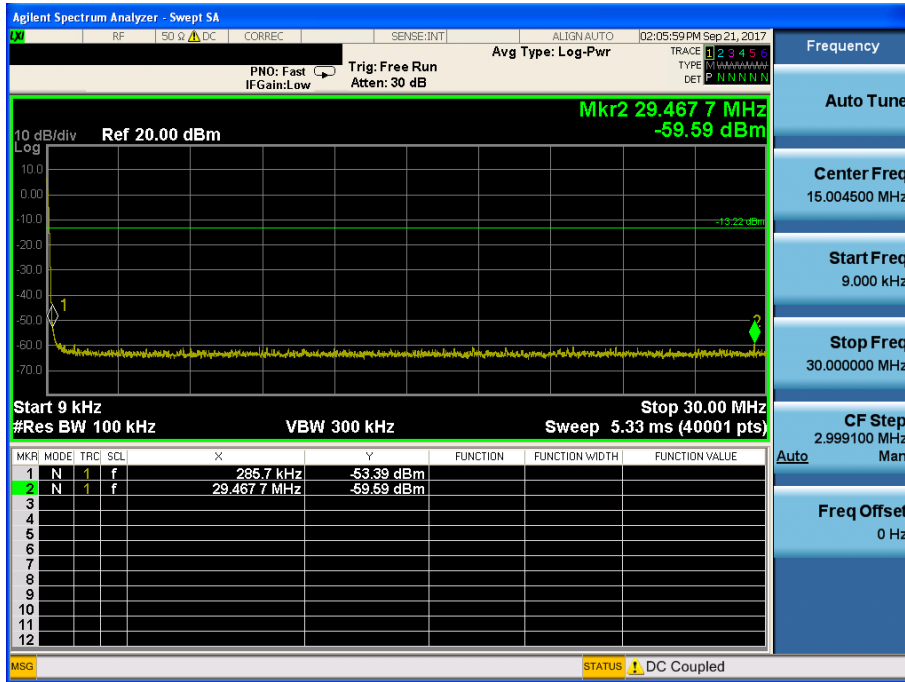
**TM 5 & ANT 2 & Highest Reference**



**High Band-edge**

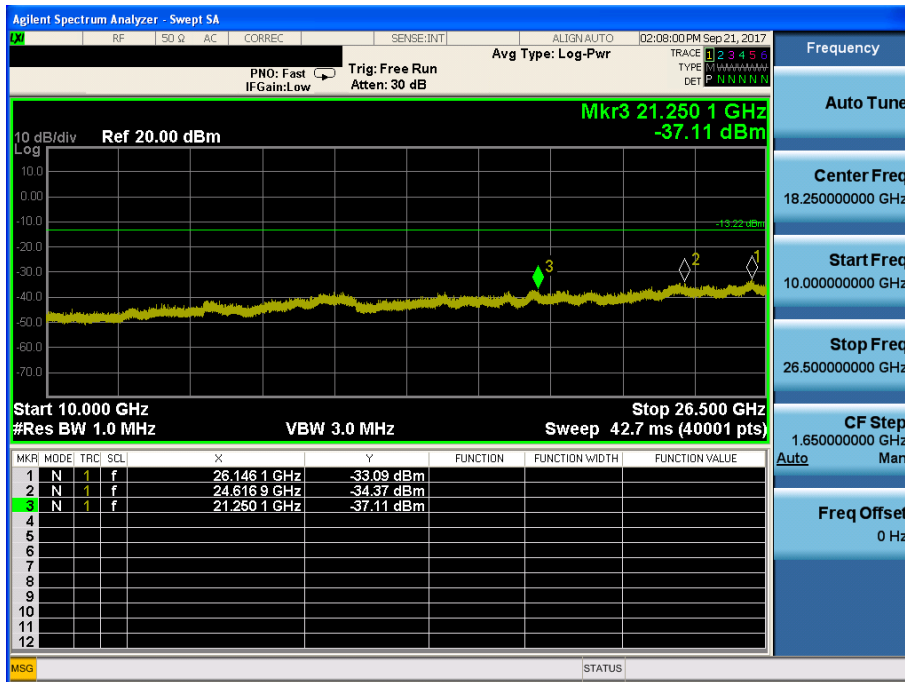


### Conducted Spurious Emissions



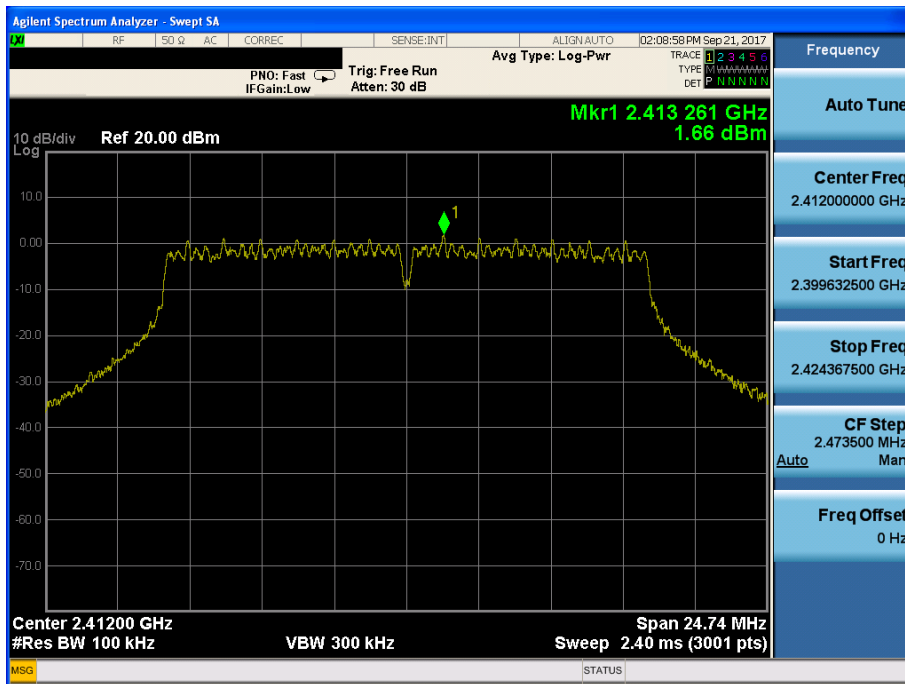


### Conducted Spurious Emissions

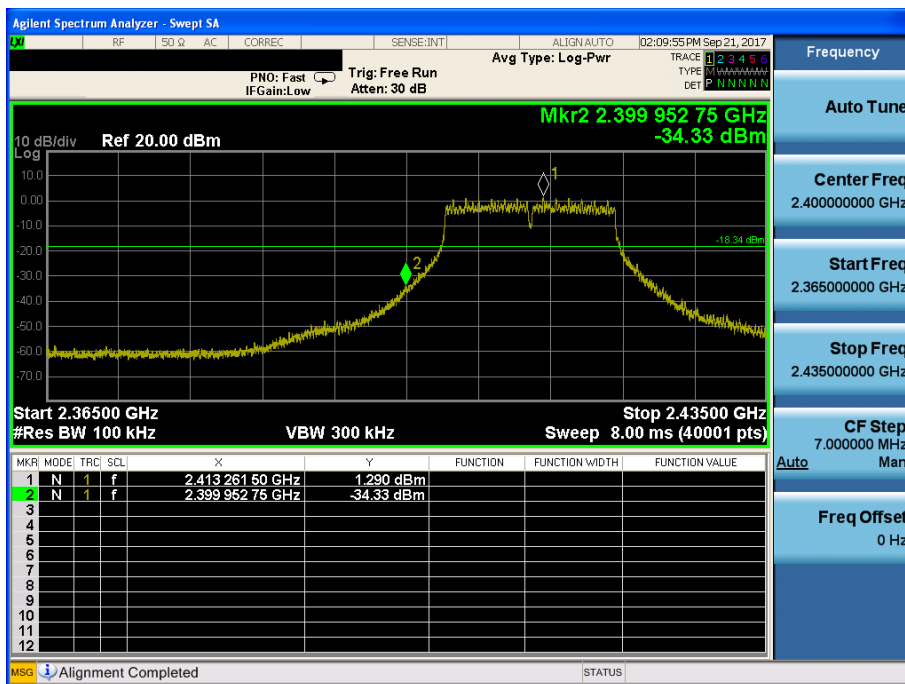


TM 6 & ANT 2 & Lowest

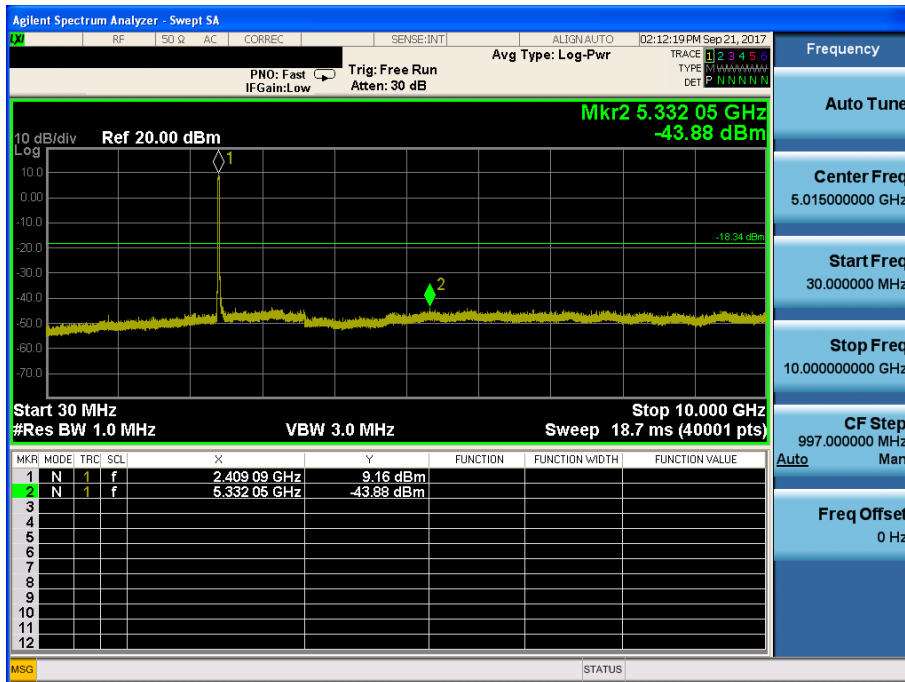
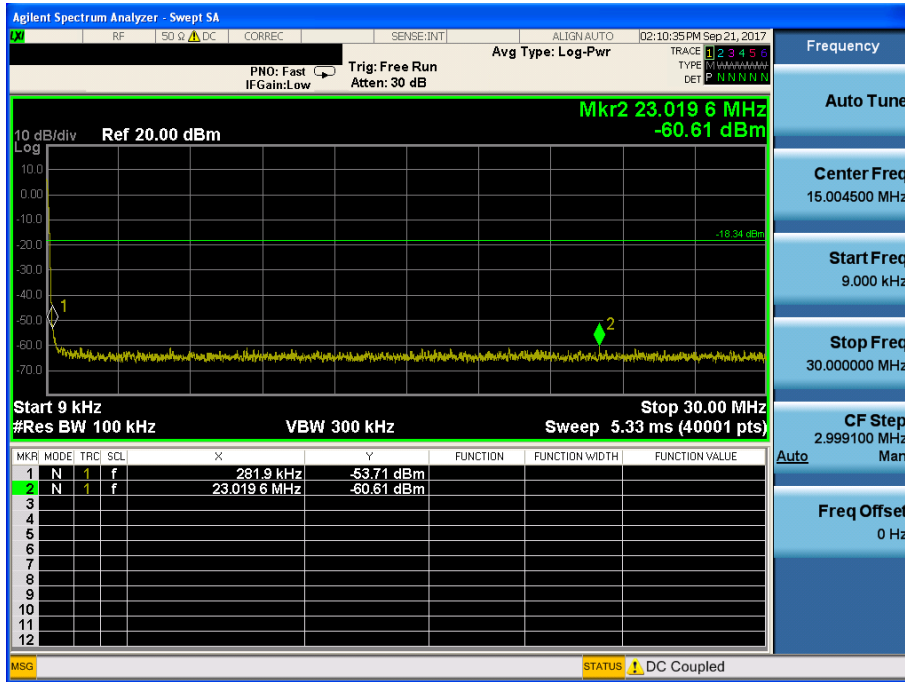
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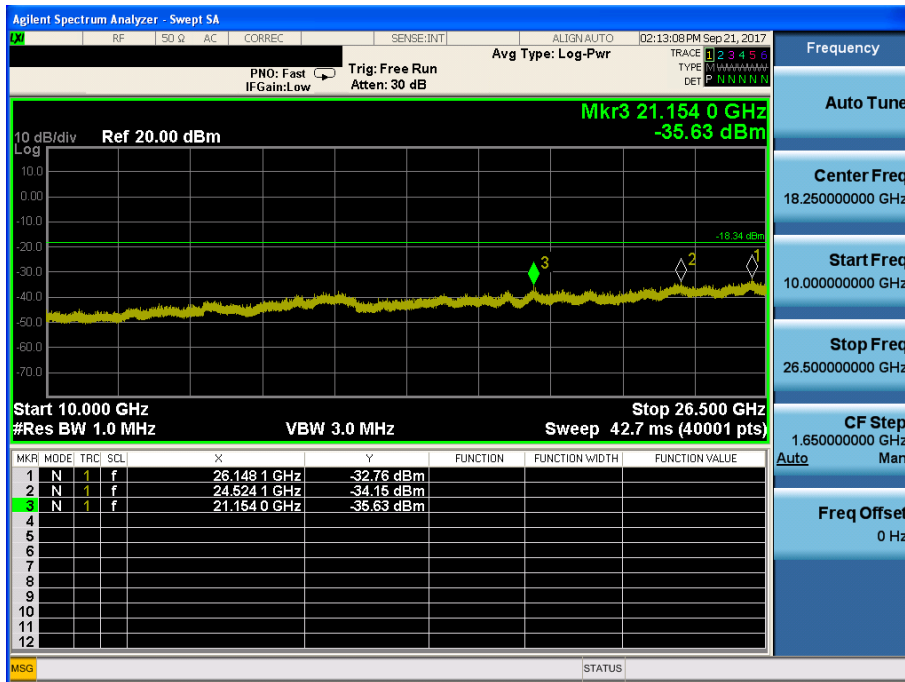
Low Band-edge



### Conducted Spurious Emissions

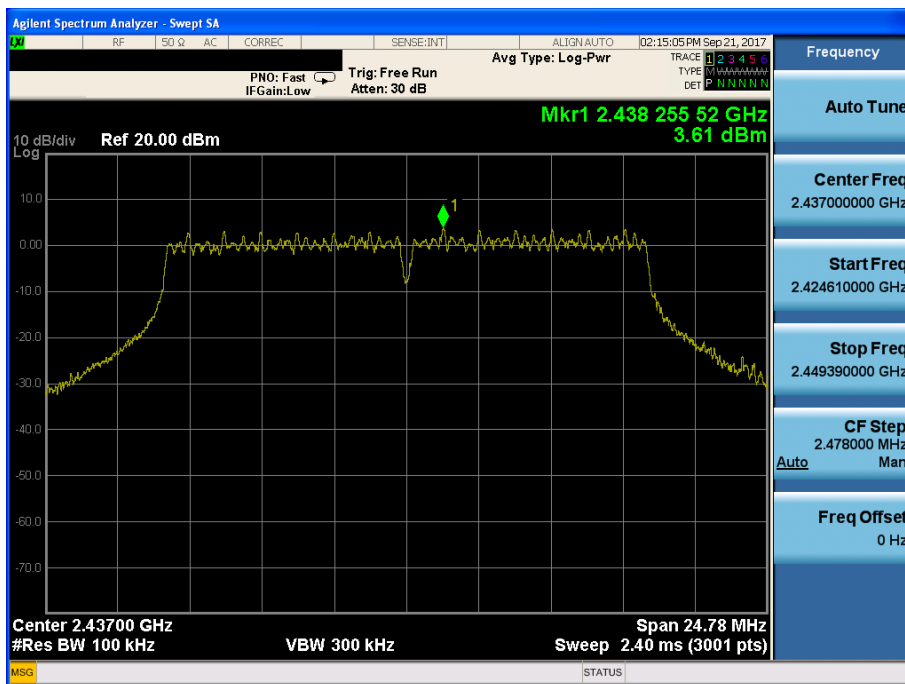


### Conducted Spurious Emissions

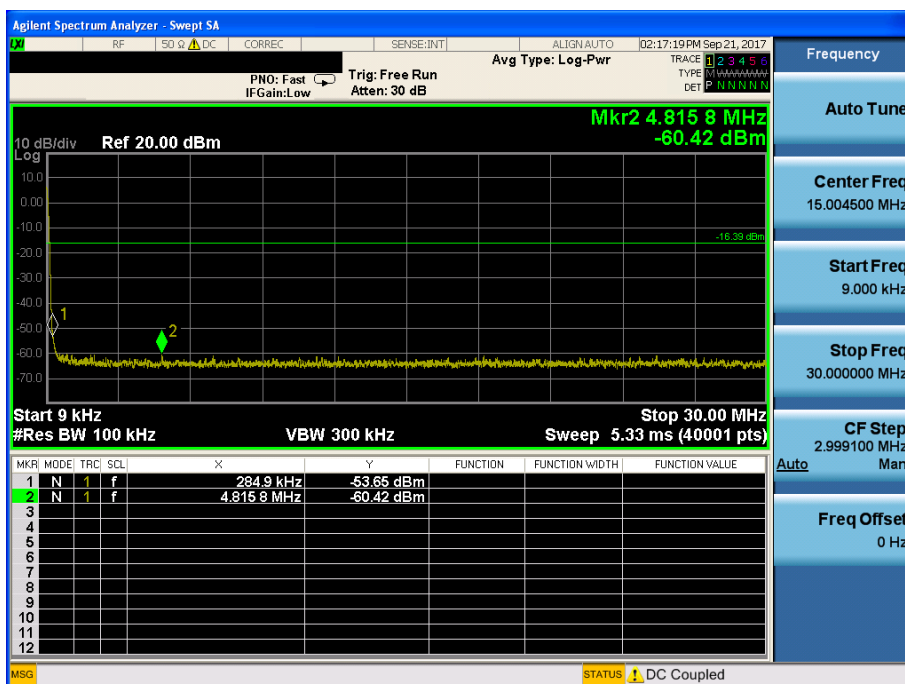


TM 6 & ANT 2 & Middle

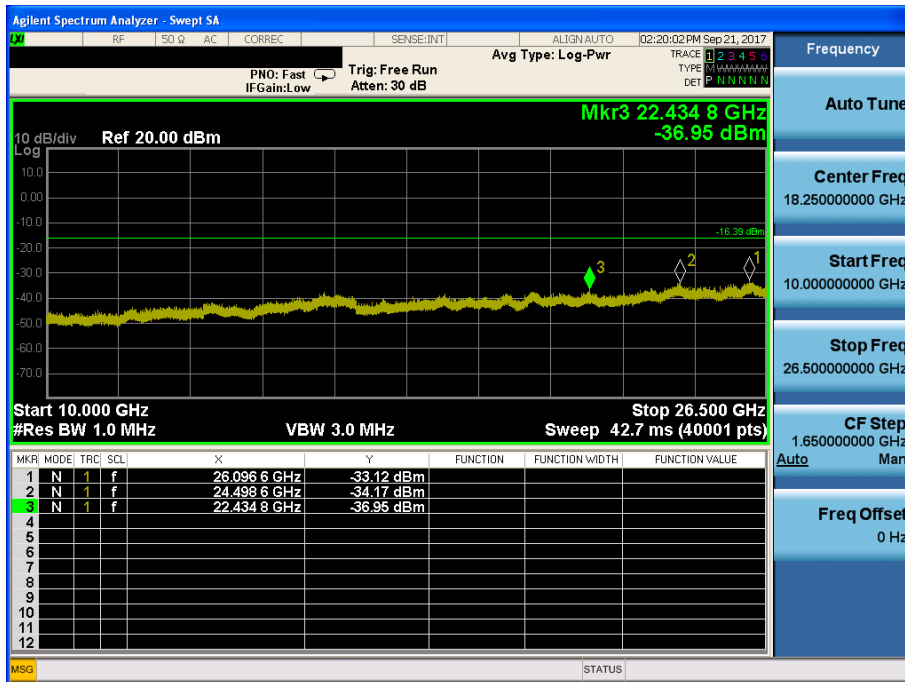
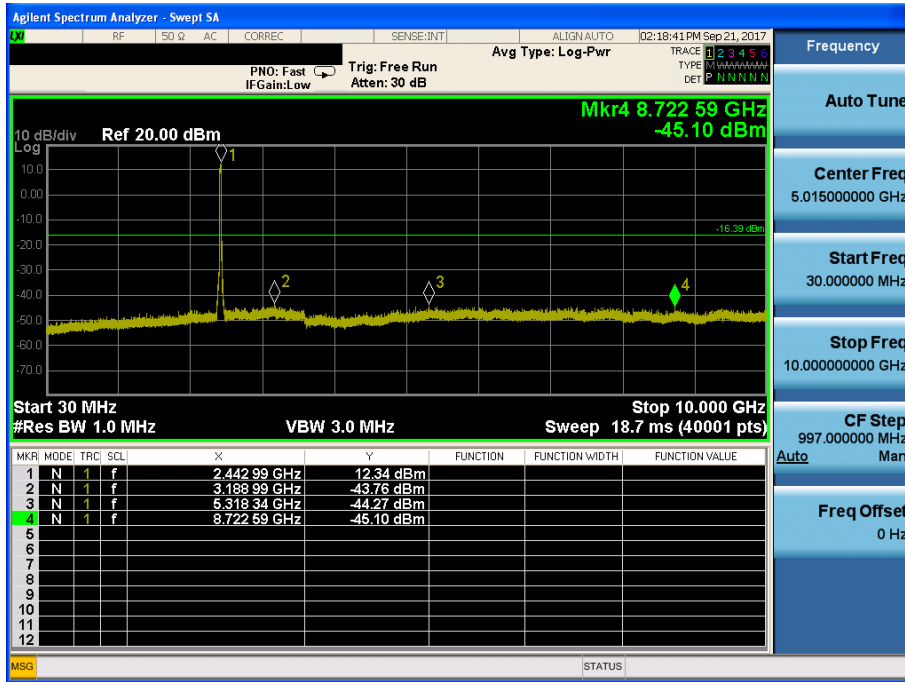
Reference



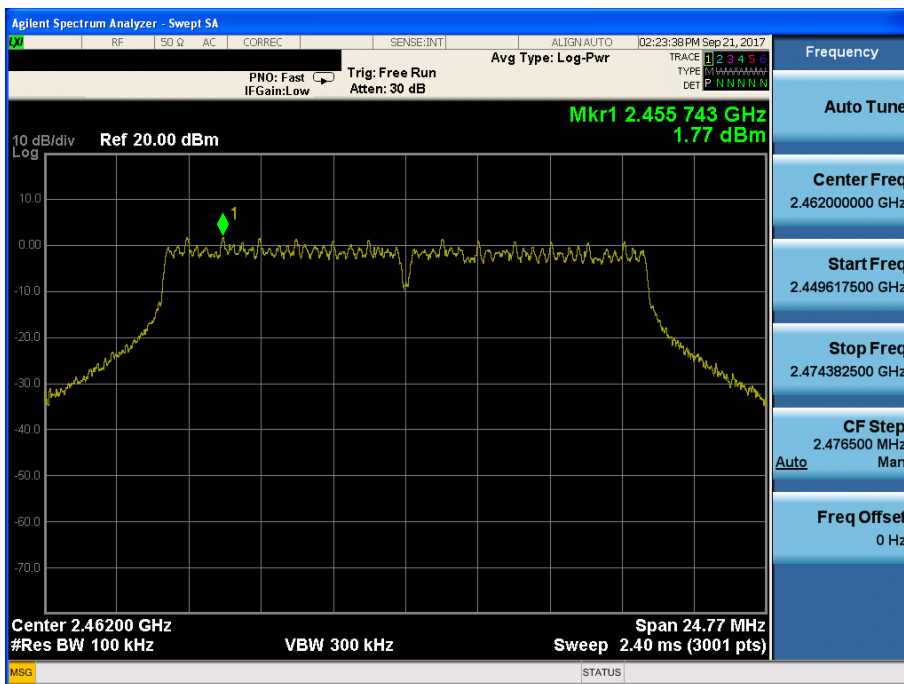
Conducted Spurious Emissions



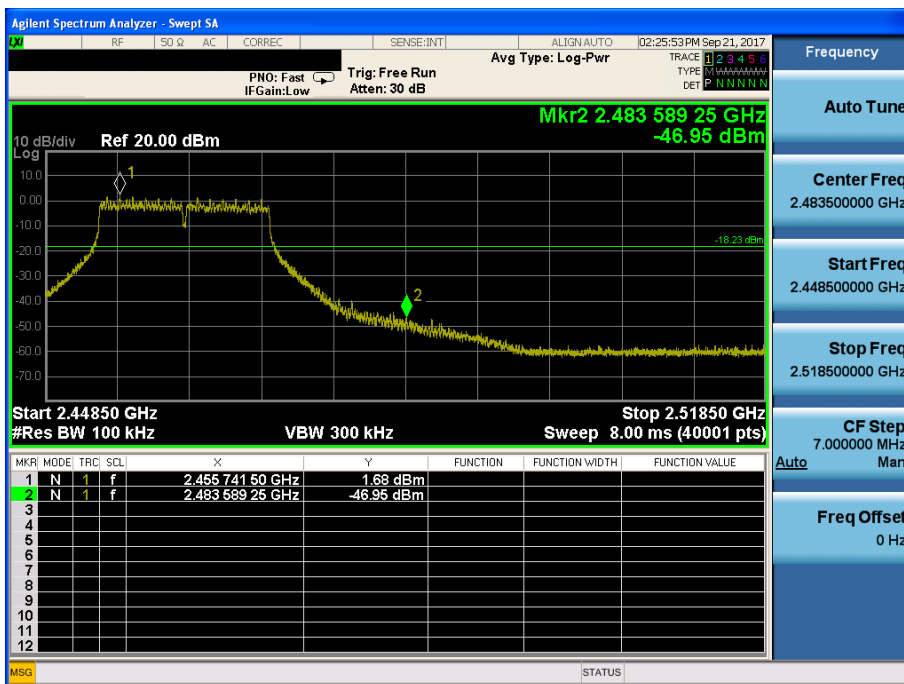
### Conducted Spurious Emissions



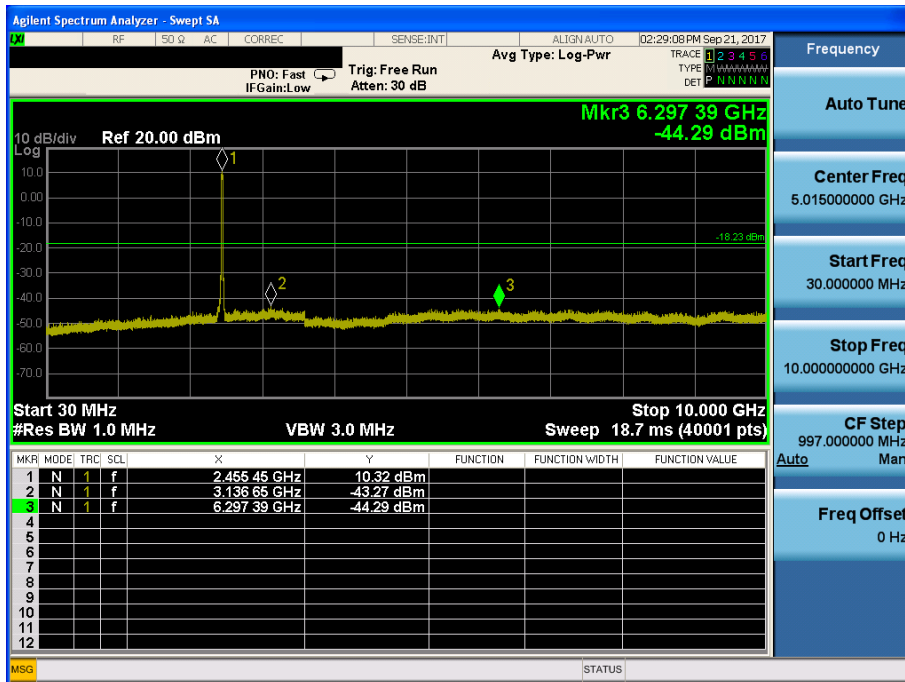
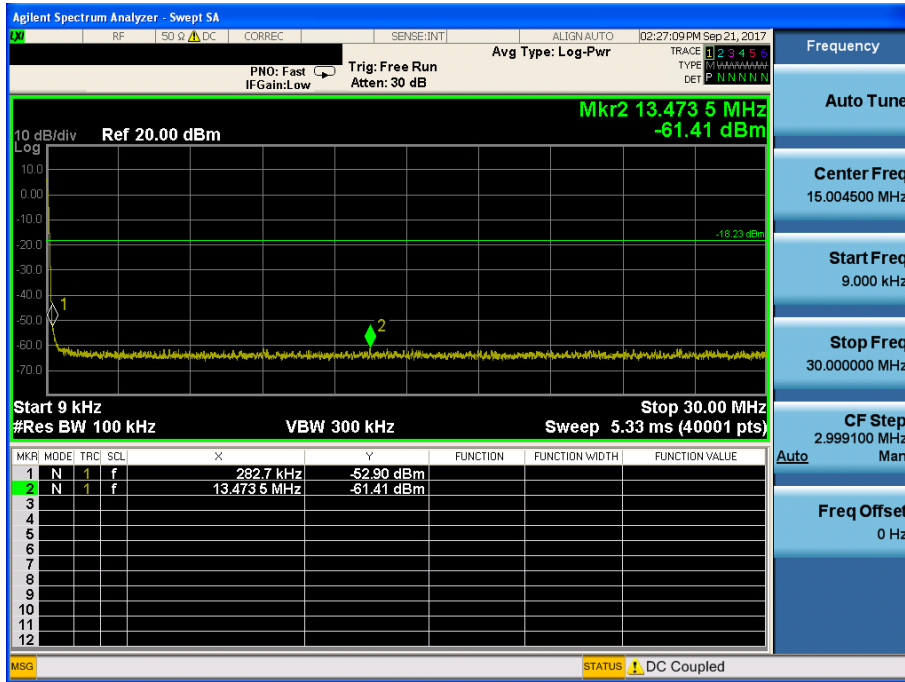
TM 6 & ANT 2 & Highest  
Reference



High Band-edge

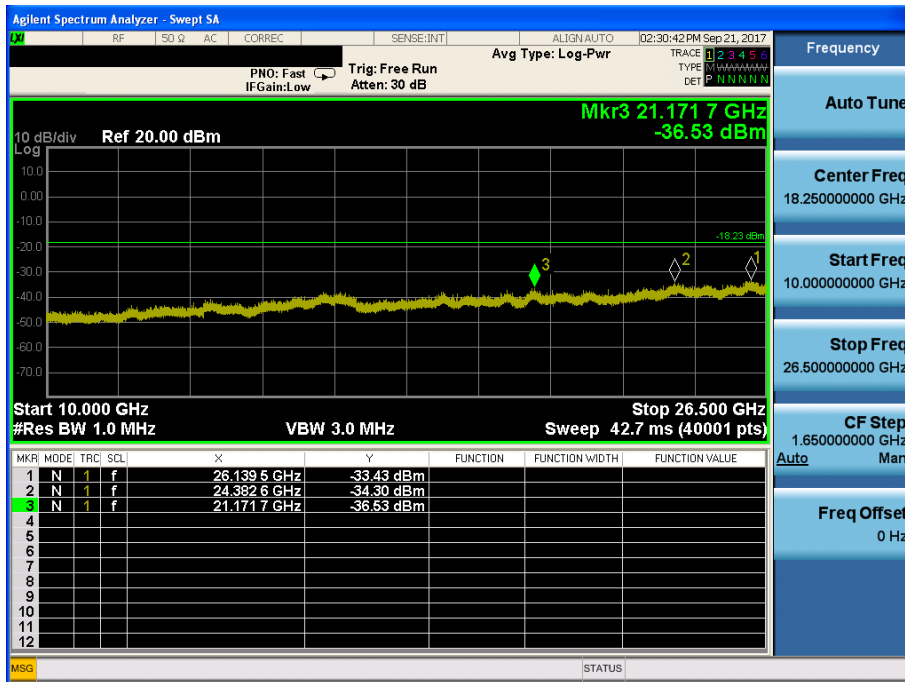


### Conducted Spurious Emissions



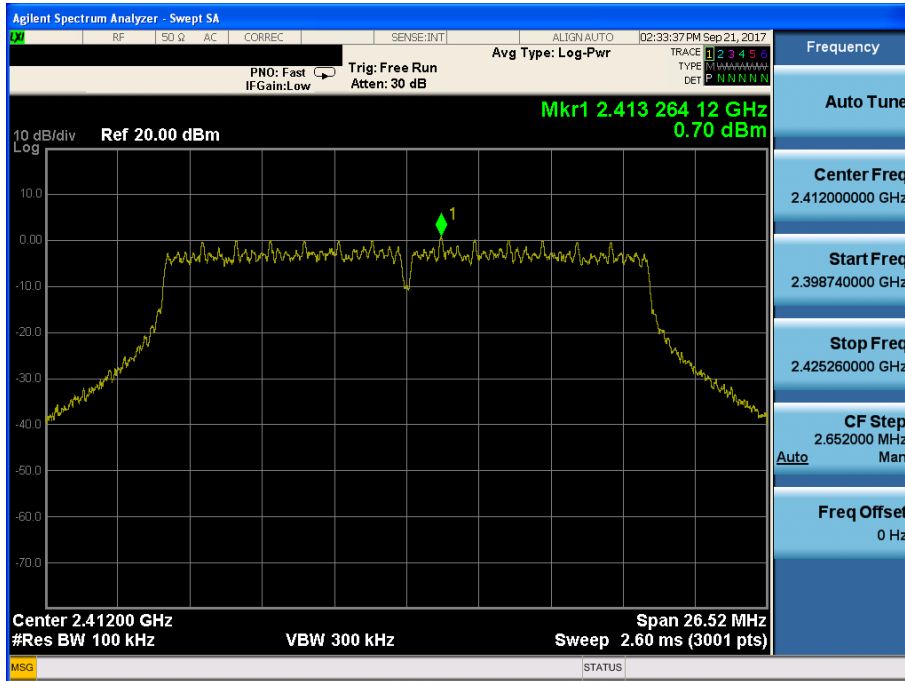


### Conducted Spurious Emissions



TM 7 & ANT 2 & Lowest

Reference



Low Band-edge

