

8.27.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26-dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required. However, PSD measurement was measured by Spectrum Analyzer and duty cycle factor is required

Straddle channel power is measured using PXA spectrum analyzer, duty cycle correction factor is required.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

Bandwidth, Antenna Gain, and Limits

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain (dBi) | Power Limit (dBm) | PSD Limit (dBm) |
|---------|--------------------|-----------------------------|---------------------------|------------------------------|-------------------------|-----------------------|
| Low | 5510 | 40.50 | 36.43 | -0.96 | 24.00 | 11.00 |
| Mid | 5550 | 40.50 | 36.25 | -0.96 | 24.00 | 11.00 |
| Mid | 5590 | 40.50 | 36.25 | -0.96 | 24.00 | 11.00 |
| High | 5630 | 40.20 | 36.17 | -0.96 | 24.00 | 11.00 |
| High | 5670 | 40.60 | 36.33 | -0.96 | 24.00 | 11.00 |

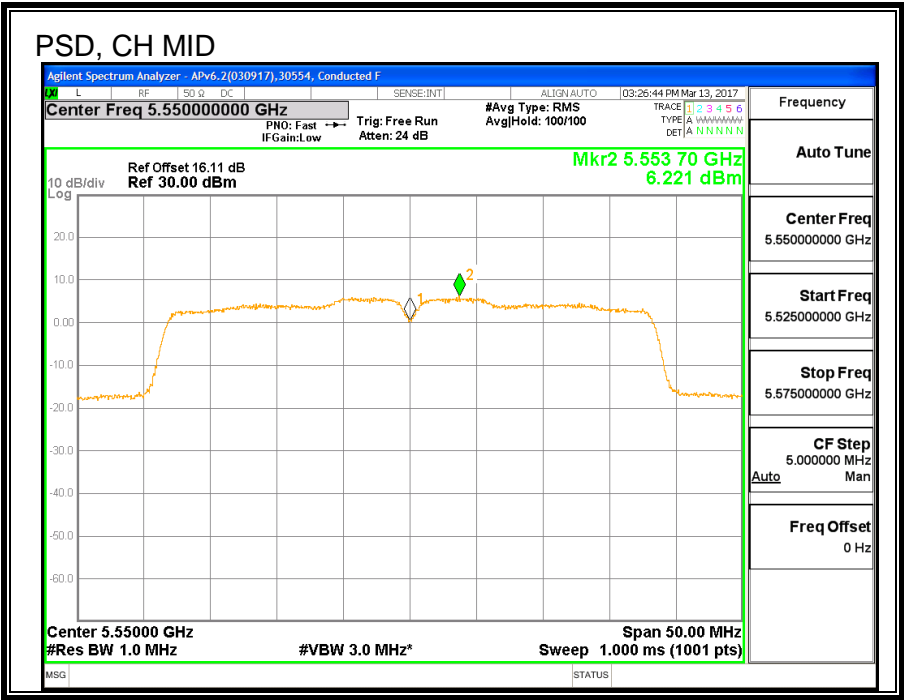
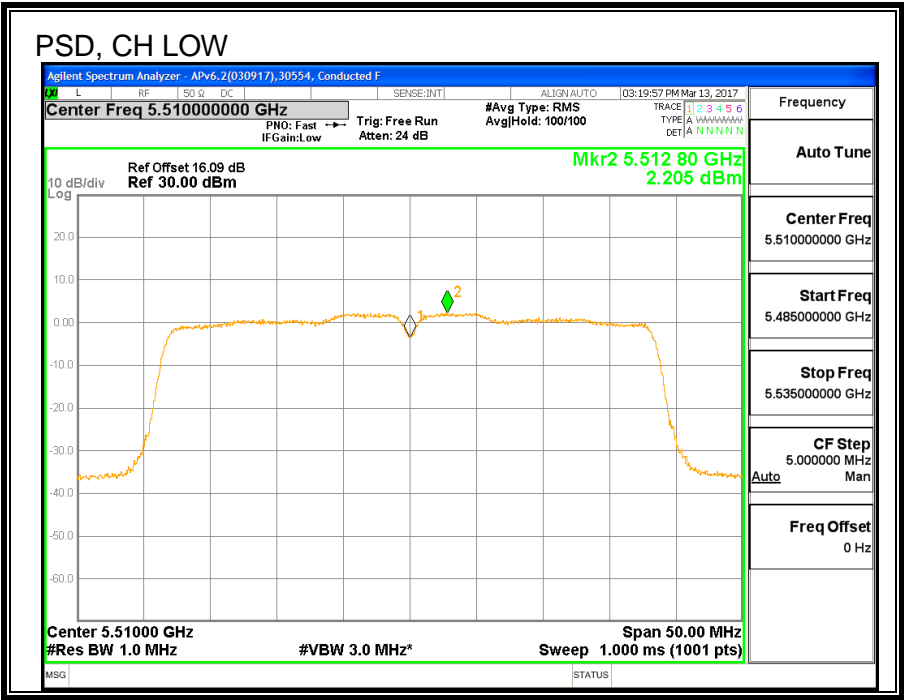
| | | |
|--------------------|------|--|
| Duty Cycle CF (dB) | 0.10 | Included in Calculations of Corr'd PSD |
|--------------------|------|--|

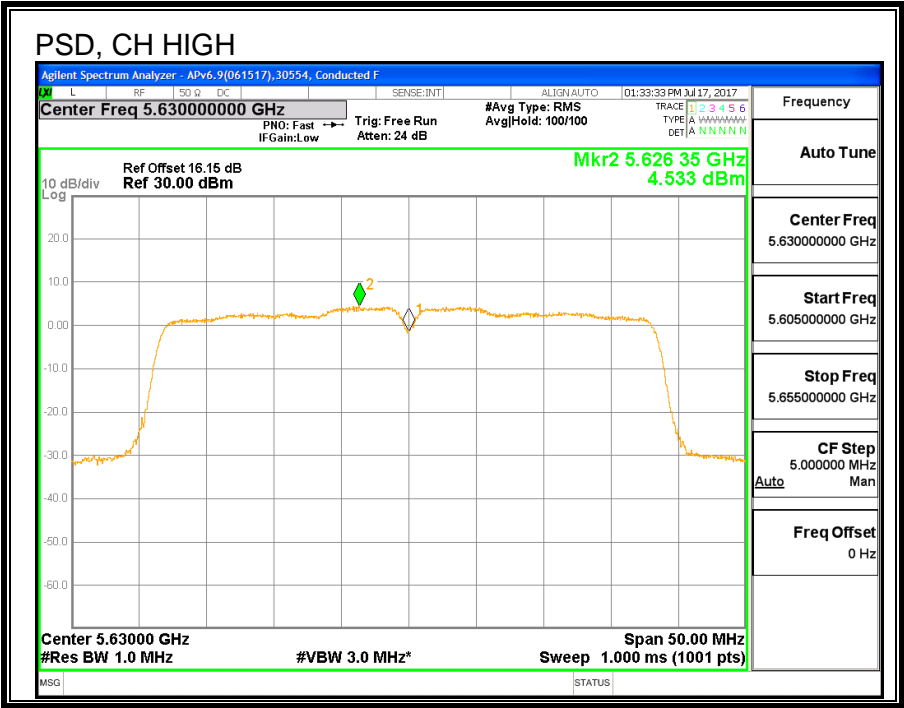
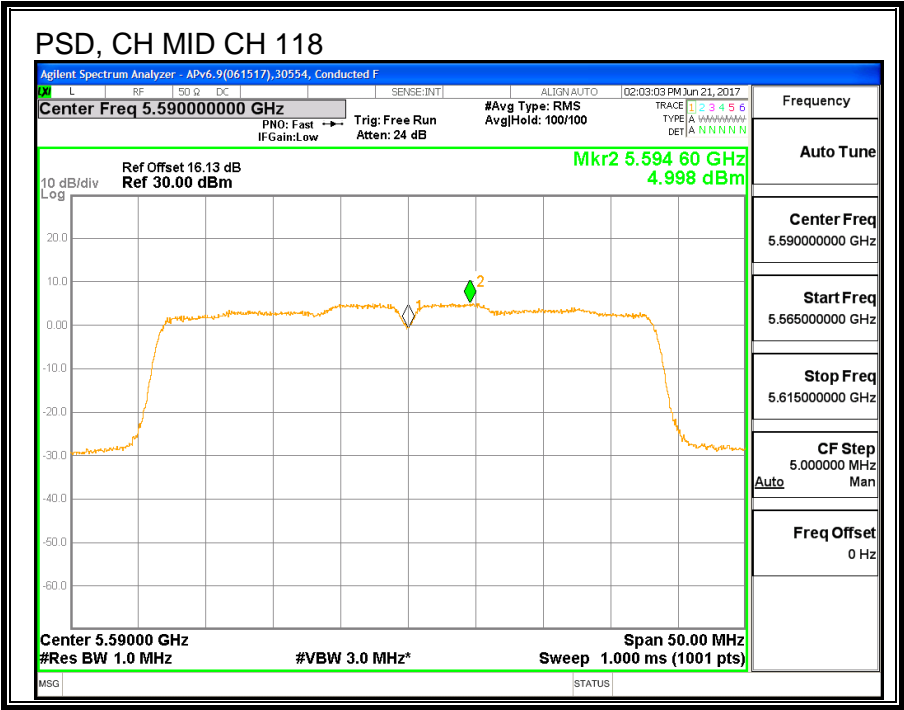
Output Power Results

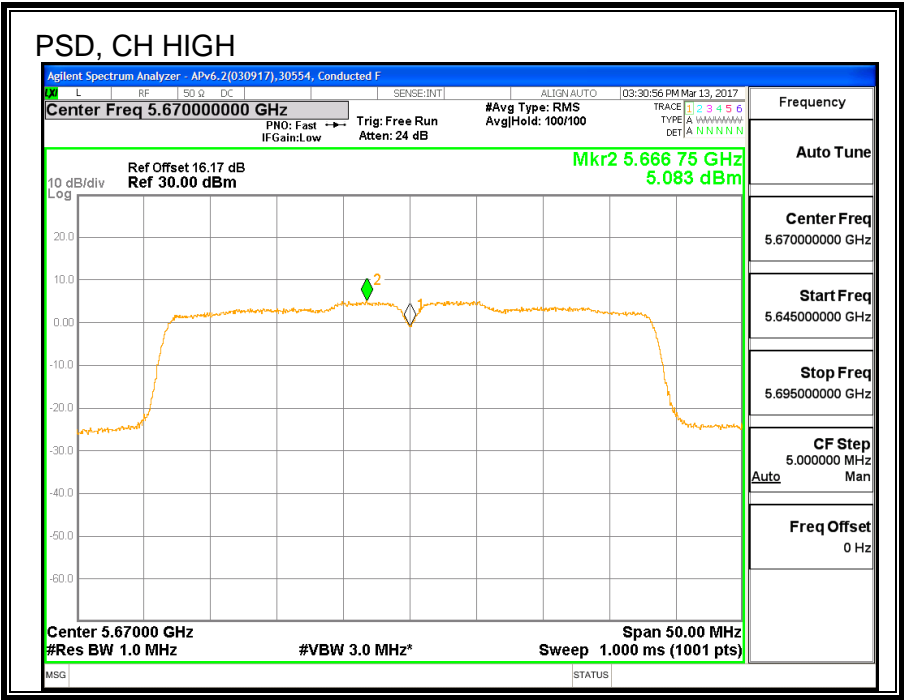
| Channel | Frequency (MHz) | LAT 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---------|--------------------|---------------------------------|-----------------------------------|-------------------------|-------------------------|
| Low | 5510 | 15.80 | 15.80 | 24.00 | -8.20 |
| Mid | 5550 | 18.83 | 18.83 | 24.00 | -5.17 |
| Mid | 5590 | 19.26 | 19.26 | 24.00 | -4.74 |
| High | 5630 | 18.44 | 18.44 | 24.00 | -5.56 |
| High | 5670 | 17.29 | 17.29 | 24.00 | -6.71 |

PSD Results

| Channel | Frequency (MHz) | LAT 3 Meas PSD (dBm) | Total Corr'd PSD (dBm) | PSD Limit (dBm) | PSD Margin (dB) |
|---------|--------------------|-------------------------------|---------------------------------|-----------------------|-----------------------|
| Low | 5510 | 2.21 | 2.31 | 11.00 | -8.70 |
| Mid | 5550 | 6.22 | 6.32 | 11.00 | -4.68 |
| Mid | 5590 | 5.00 | 5.10 | 11.00 | -5.90 |
| High | 5630 | 4.53 | 4.63 | 11.00 | -6.37 |
| High | 5670 | 5.08 | 5.18 | 11.00 | -5.82 |







8.28. 11ac HT40 LAT 3 SISO STRADDLE CHANNEL 142

8.28.1. OUTPUT POWER AND PSD

UNII-2C BAND

Bandwidth, Antenna Gain, and Limits

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PSD (dBi) | Power Limit (dBm) | PSD Limit (dBm) |
|---------|--------------------|-----------------------------|---|---|-------------------------|-----------------------|
| 142 | 5710 | 35.25 | -0.96 | -0.96 | 24.00 | 11.00 |

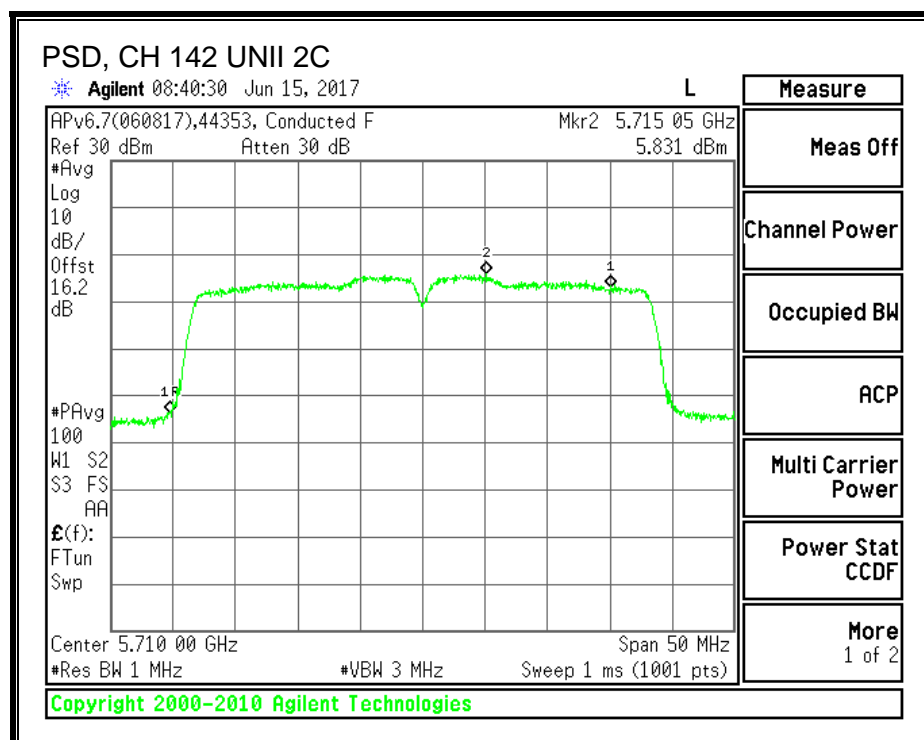
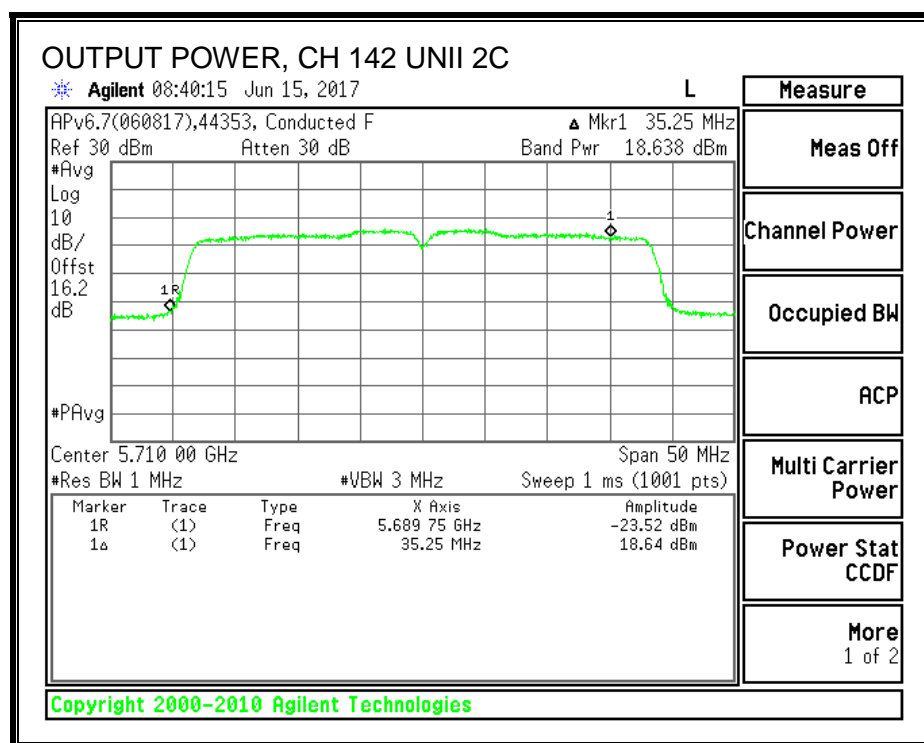
| | | |
|--------------------|------|--|
| Duty Cycle CF (dB) | 0.10 | Included in Calculations of Corr'd Power & PSD |
|--------------------|------|--|

Output Power Results

| Channel | Frequency (MHz) | LAT 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---------|--------------------|---------------------------------|-----------------------------------|-------------------------|-------------------------|
| 142 | 5710 | 18.64 | 18.74 | 24.00 | -5.26 |

PSD Results

| Channel | Frequency (MHz) | LAT 3 Meas PSD (dBm) | Total Corr'd PSD (dBm) | PSD Limit (dBm) | PSD Margin (dB) |
|---------|--------------------|-------------------------------|---------------------------------|-----------------------|-----------------------|
| 142 | 5710 | 5.83 | 5.93 | 11.00 | -5.07 |



UNII-3 BAND

Antenna Gain and Limit

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Directional Gain (dBi) | Power Limit (dBm) | PSD Limit (dBm) |
|---------|--------------------|-----------------------------|------------------------------|-------------------------|-----------------------|
| 142 | 5710 | 5.25 | -0.93 | 30.00 | 30.00 |

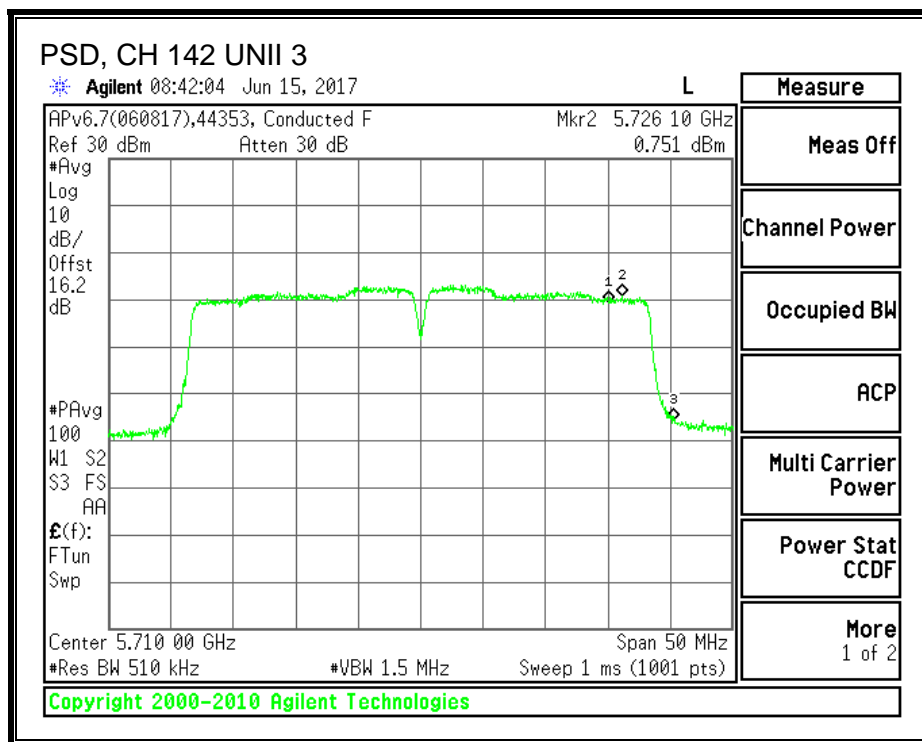
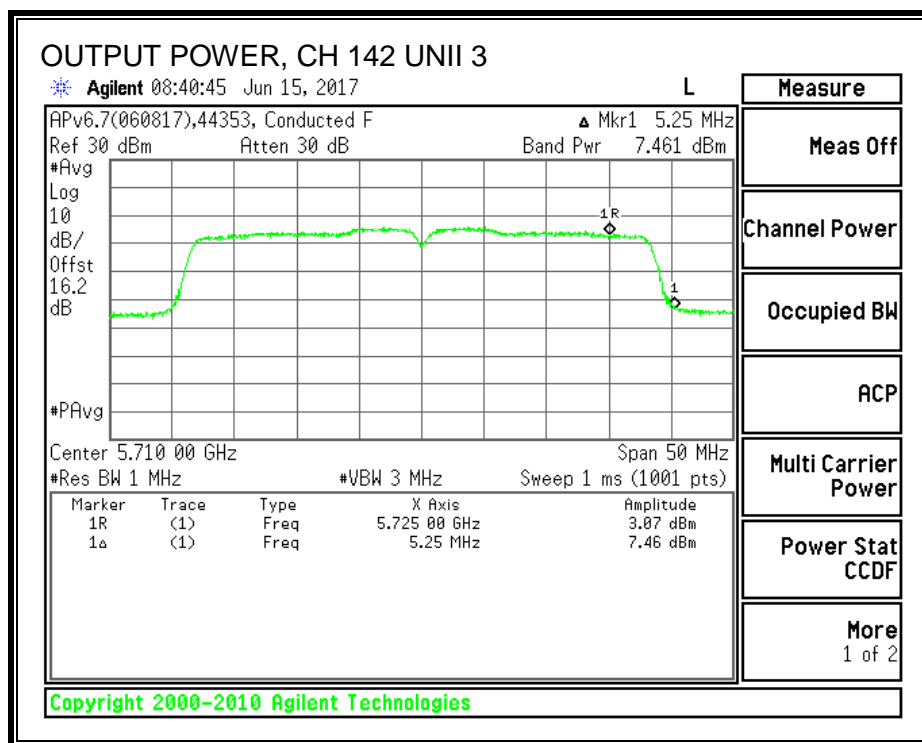
| | | |
|--------------------|------|--|
| Duty Cycle CF (dB) | 0.10 | Included in Calculations of Corr'd Power & PSD |
|--------------------|------|--|

Output Power Results

| Channel | Frequency (MHz) | LAT 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---------|--------------------|---------------------------------|-----------------------------------|-------------------------|-------------------------|
| 142 | 5710 | 7.46 | 7.56 | 30.00 | -22.44 |

PSD Results

| Channel | Frequency (MHz) | LAT 3 Meas PSD (dBm) | Total Corr'd PSD (dBm) | PSD Limit (dBm) | PSD Margin (dB) |
|---------|--------------------|-------------------------------|---------------------------------|-----------------------|-----------------------|
| 142 | 5710 | 0.75 | 0.85 | 30.00 | -29.15 |



8.29. 11n HT40 2TX CDD MIMO MODE IN THE 5.6GHz BAND

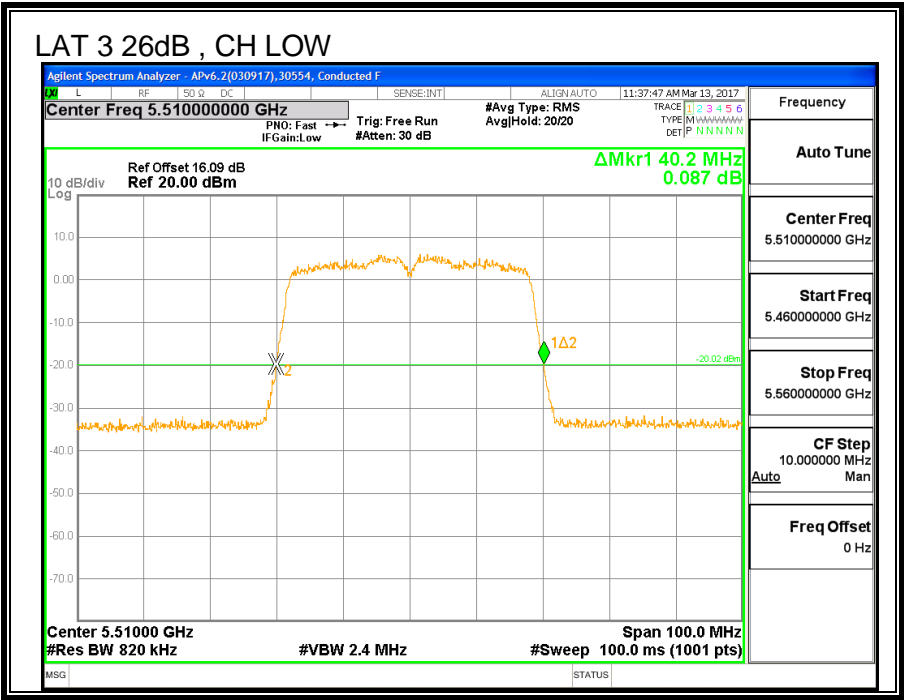
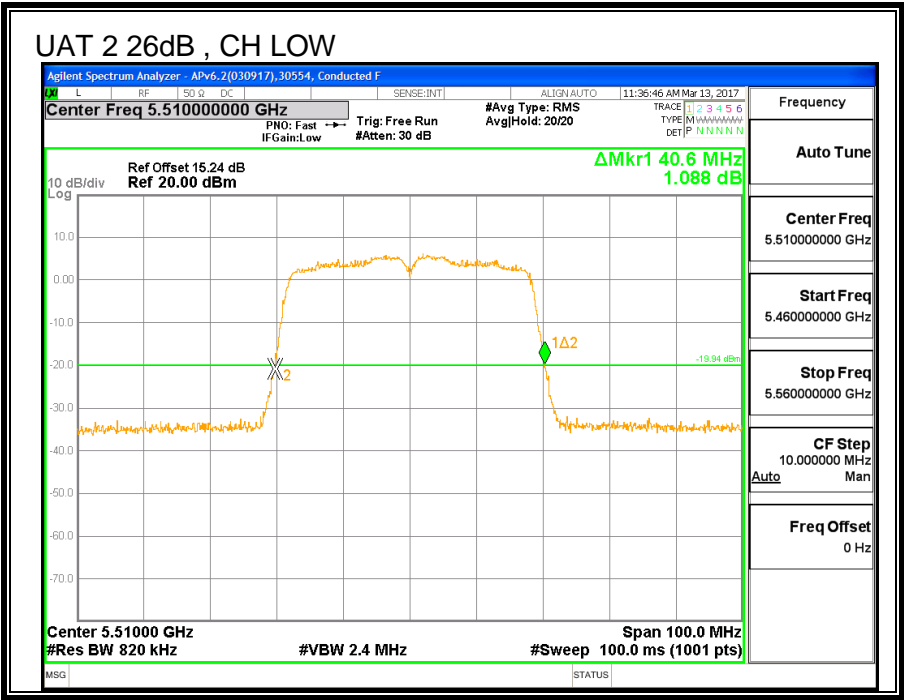
8.29.1. 26 dB BANDWIDTH

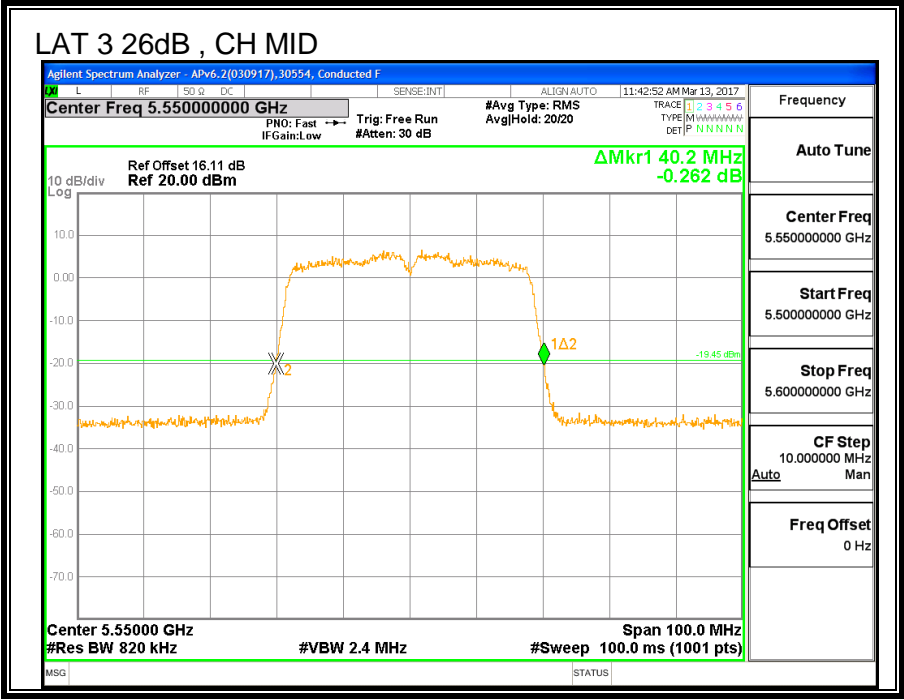
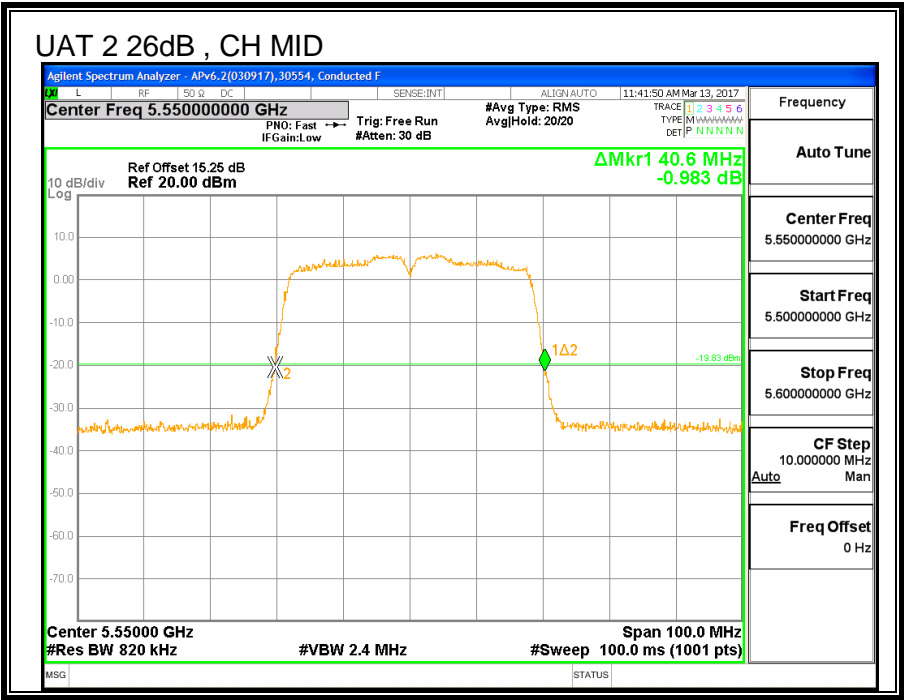
LIMITS

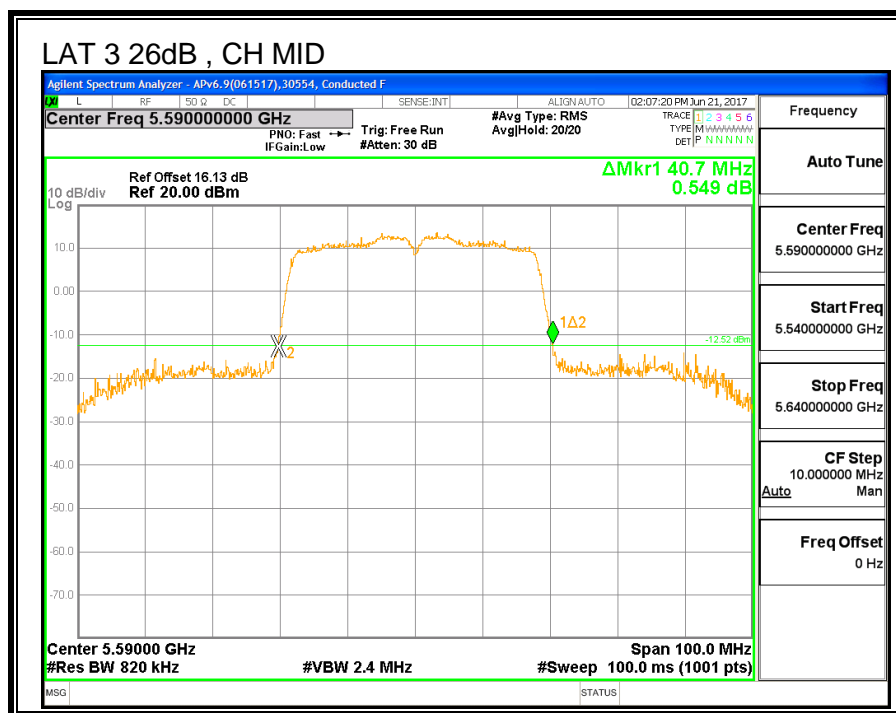
None; for reporting purposes only.

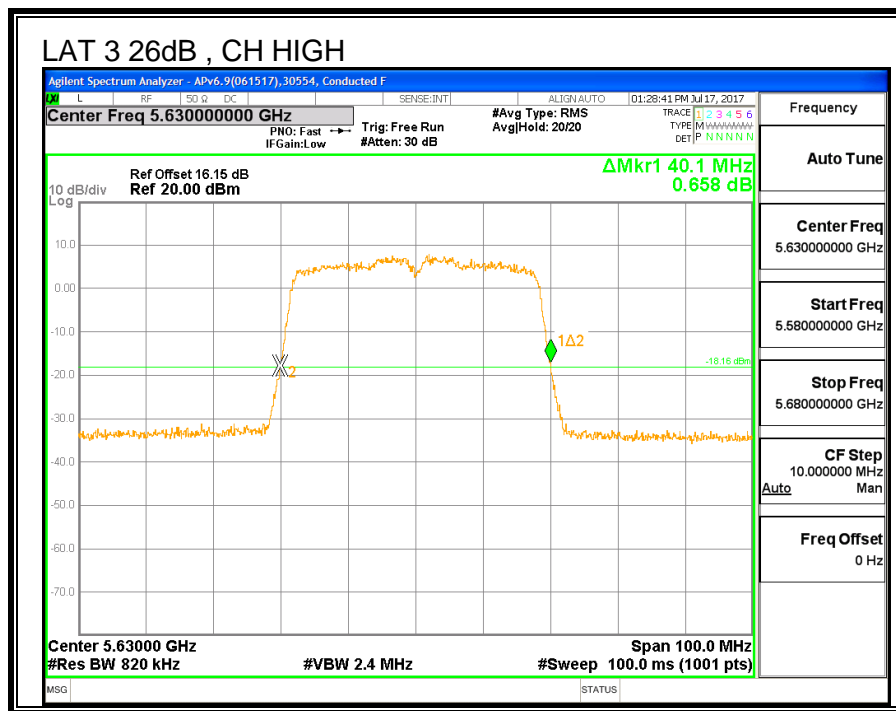
RESULTS

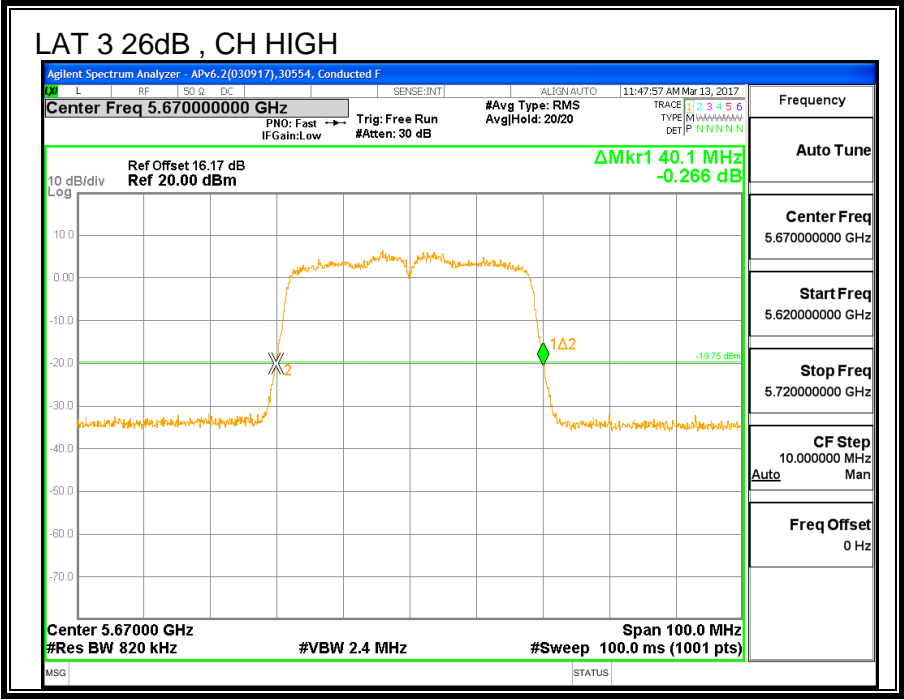
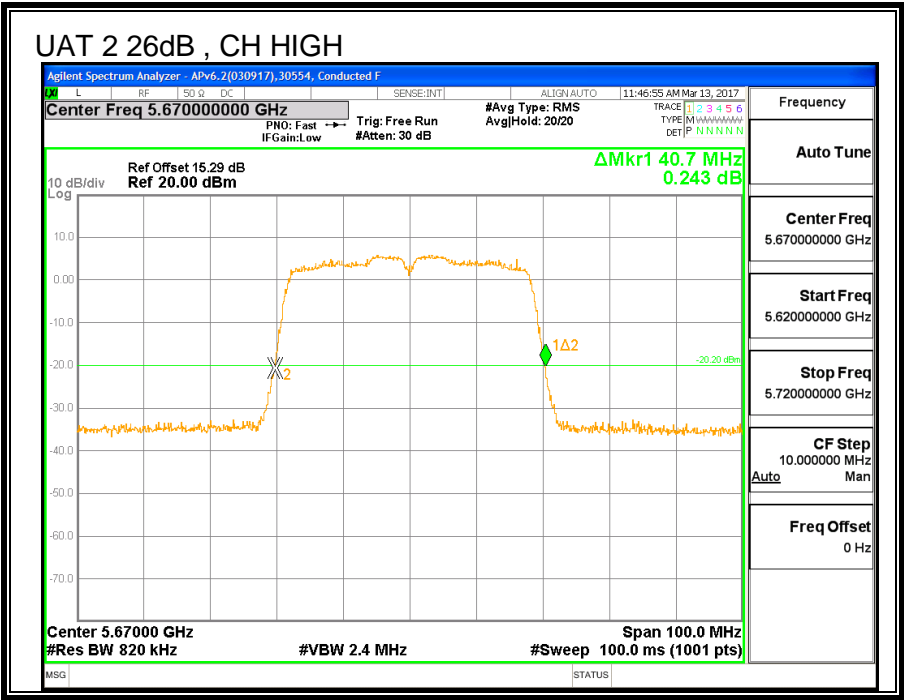
| Channel | Frequency | 26 dB BW UAT 2 (MHz) | 26 dB BW LAT 3 (MHz) |
|---------|-----------|----------------------------|----------------------------|
| Low | 5510 | 40.6 | 40.2 |
| Mid | 5550 | 40.6 | 40.2 |
| Mid | 5590 | 40.8 | 40.7 |
| High | 5630 | 40.5 | 40.1 |
| High | 5670 | 40.7 | 40.1 |
| 142 | 5710 | 40.5 | 40.1 |

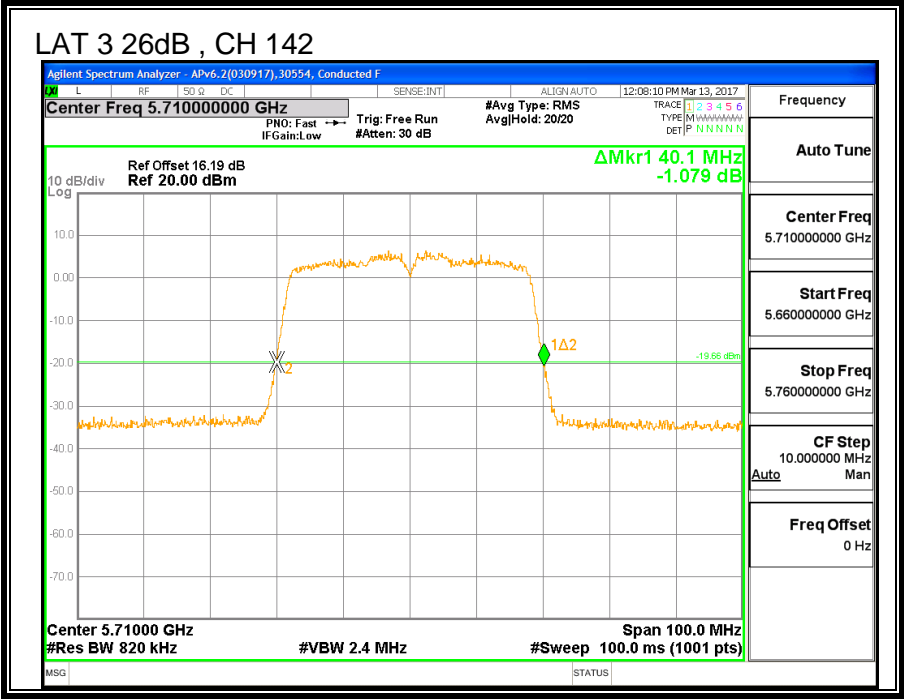
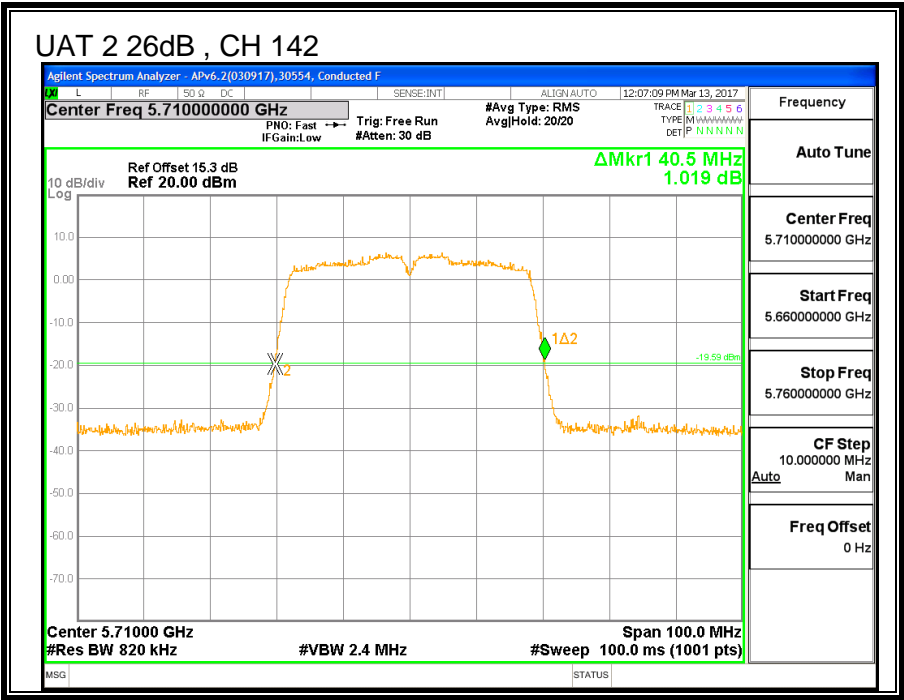












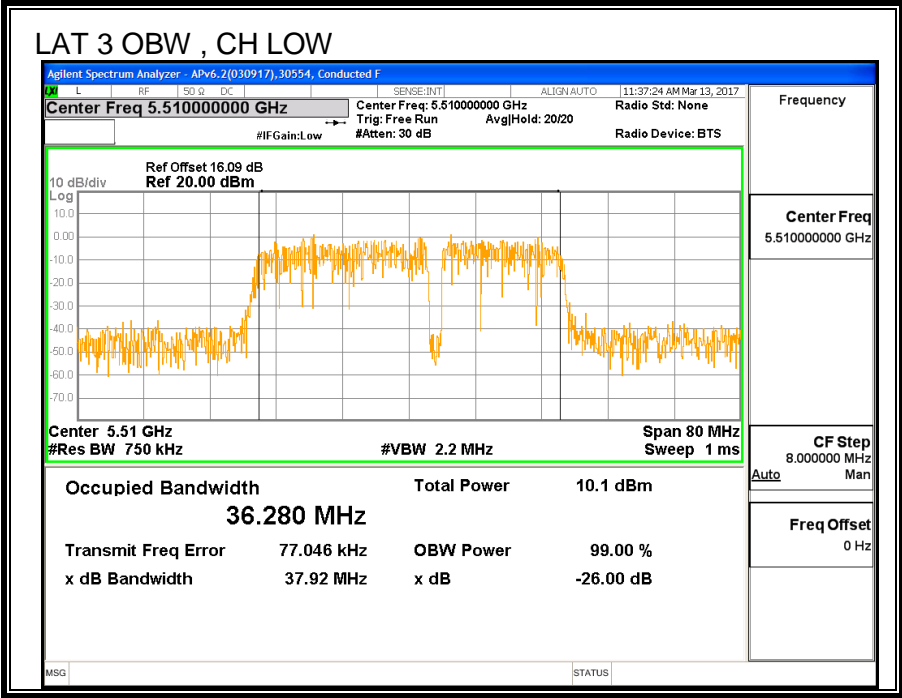
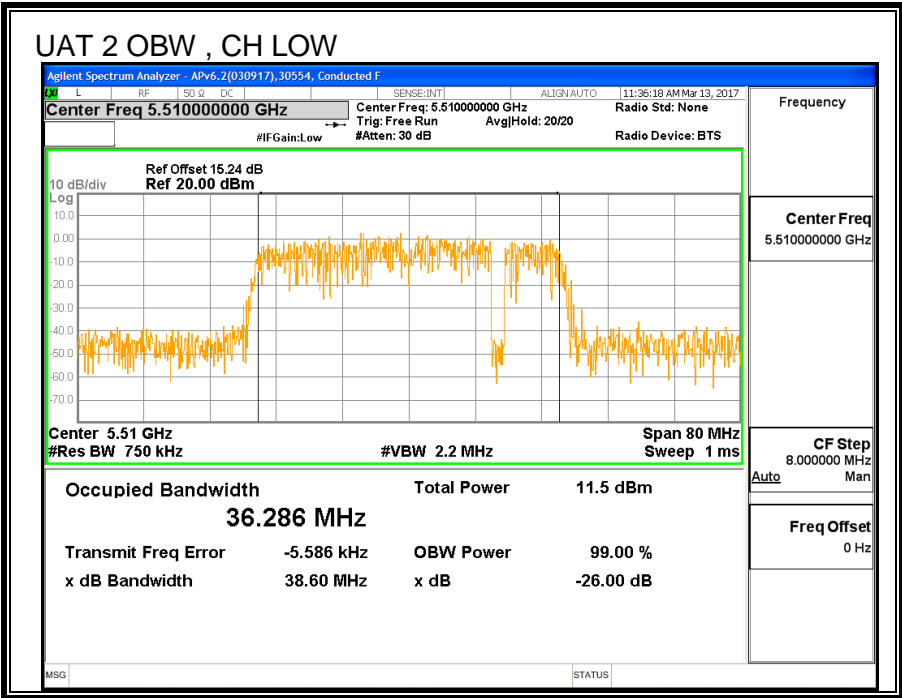
8.29.2. 99% BANDWIDTH

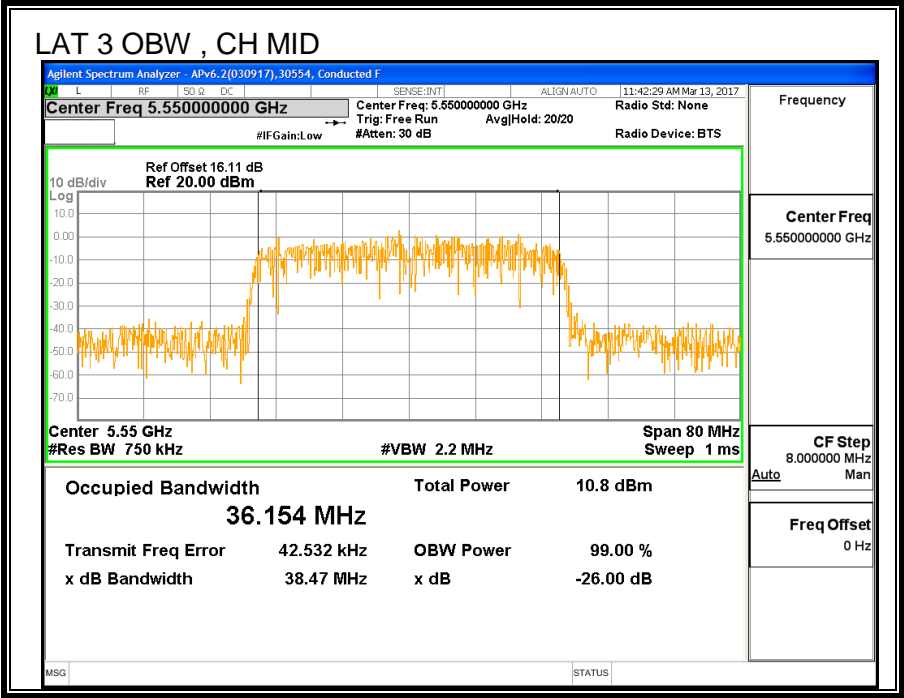
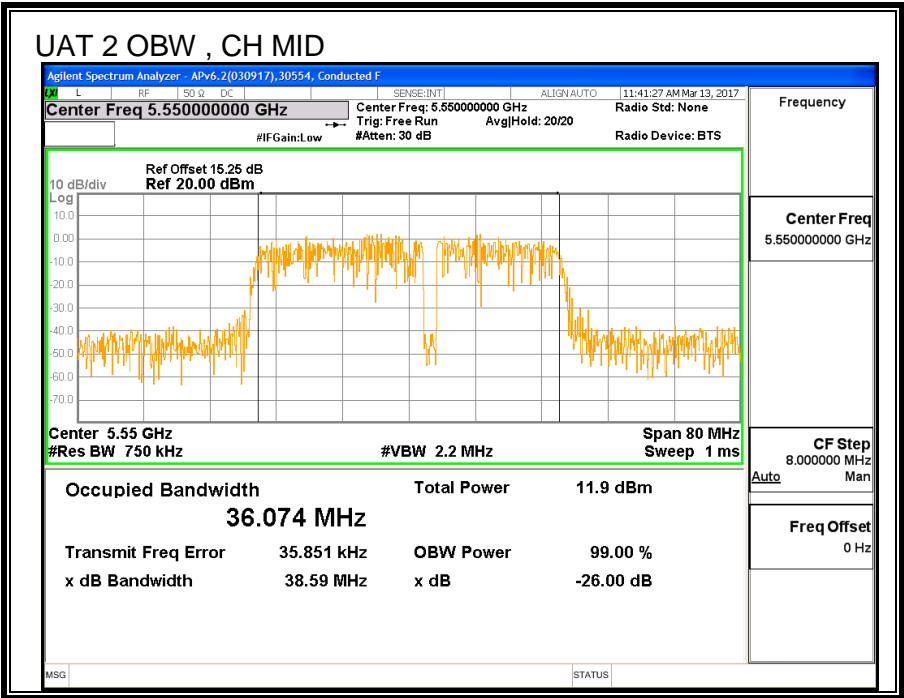
LIMITS

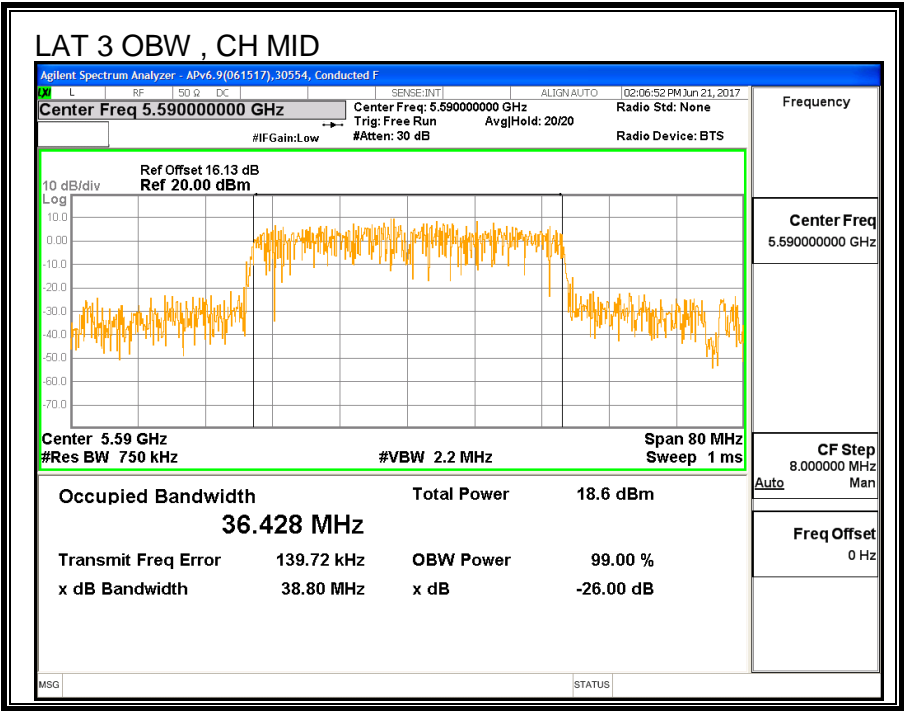
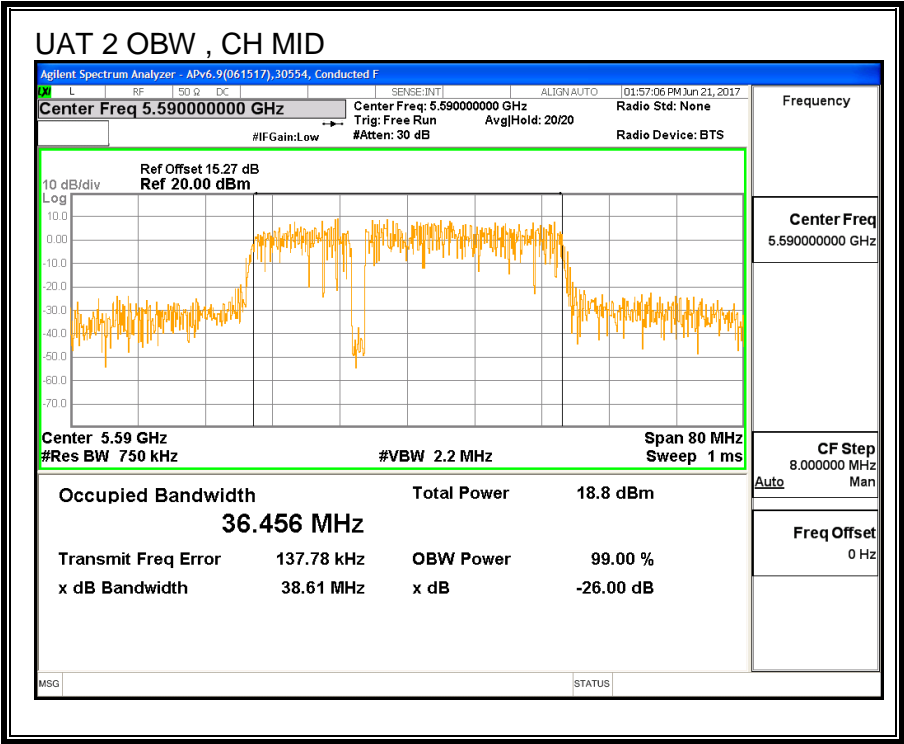
None; for reporting purposes only.

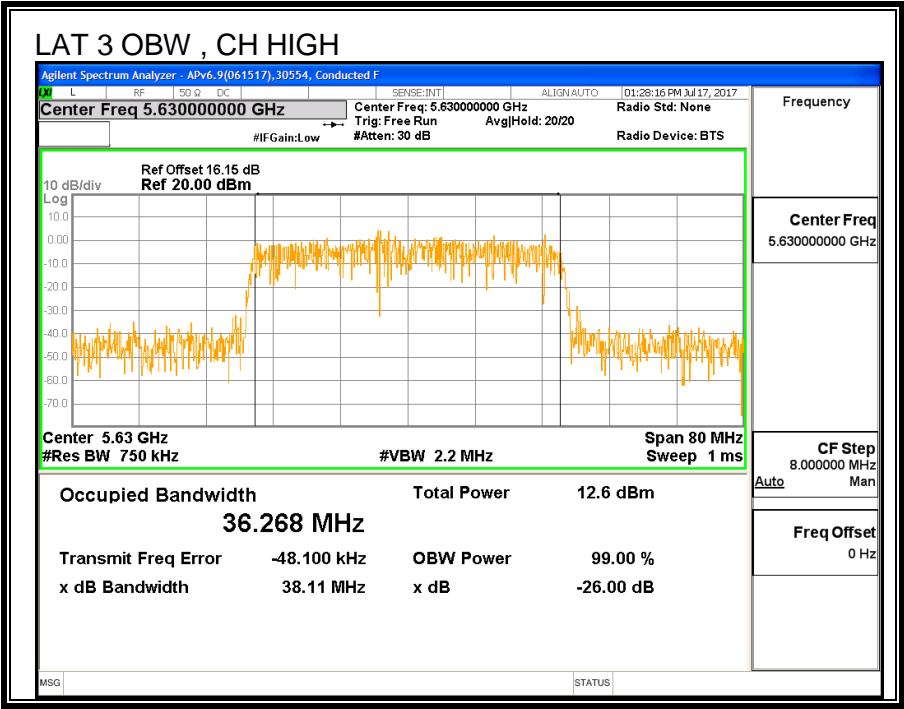
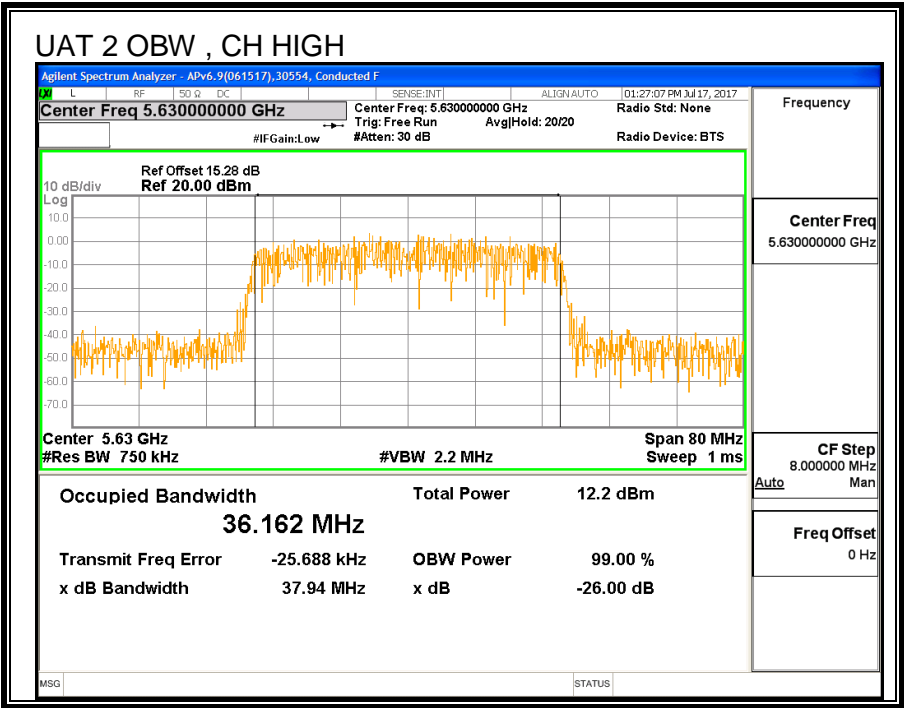
RESULTS

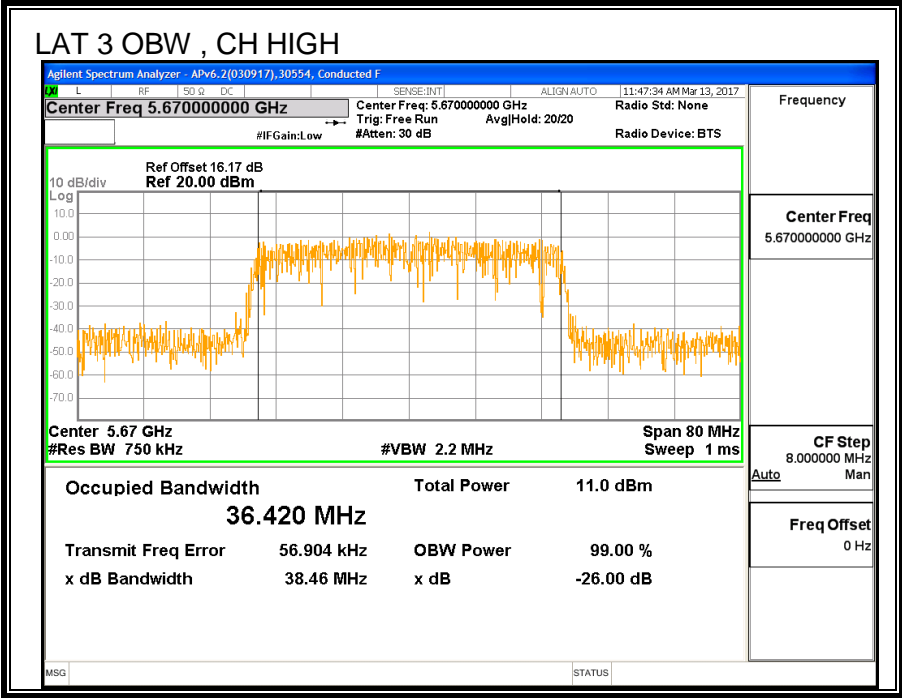
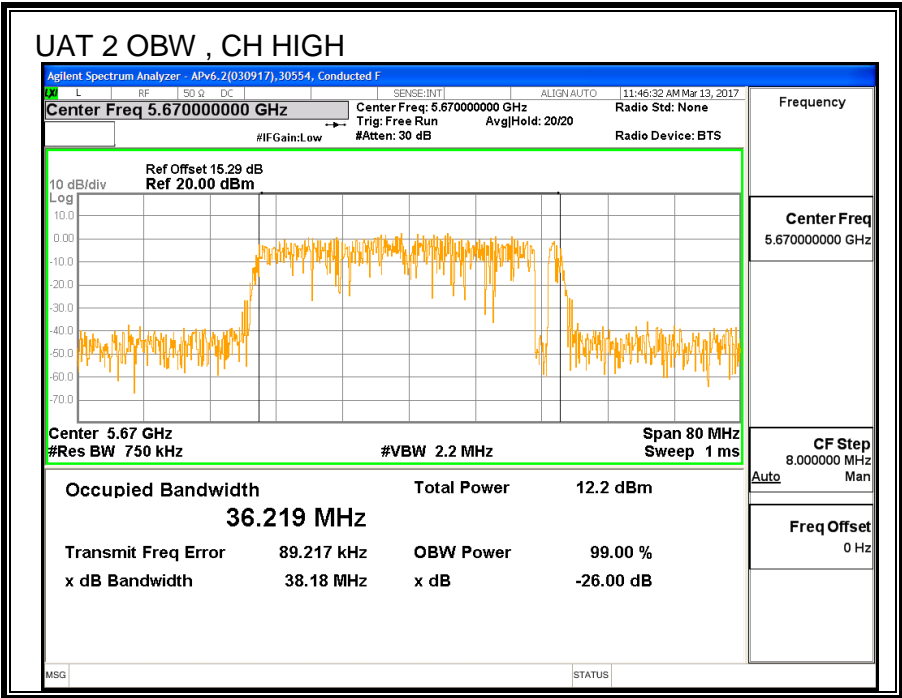
| Channel | Frequency | 99% BW UAT 2 (MHz) | 99% BW LAT 3 (MHz) |
|---------|-----------|--------------------------|--------------------------|
| Low | 5510 | 36.286 | 36.280 |
| Mid | 5550 | 36.074 | 36.154 |
| Mid | 5590 | 36.456 | 36.428 |
| High | 5630 | 36.162 | 36.268 |
| High | 5670 | 36.219 | 36.420 |
| 142 | 5710 | 36.195 | 36.100 |

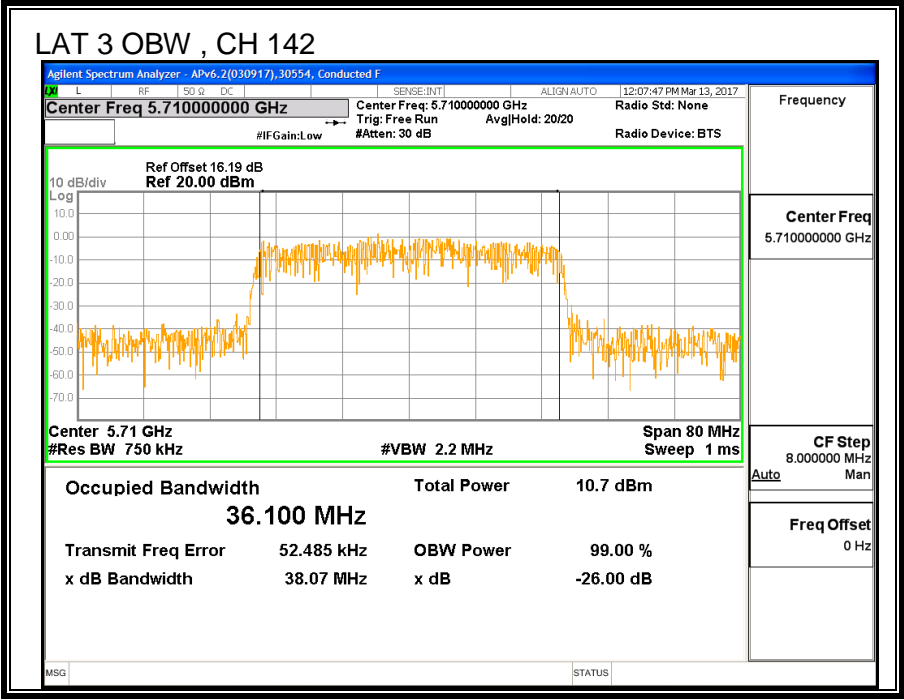
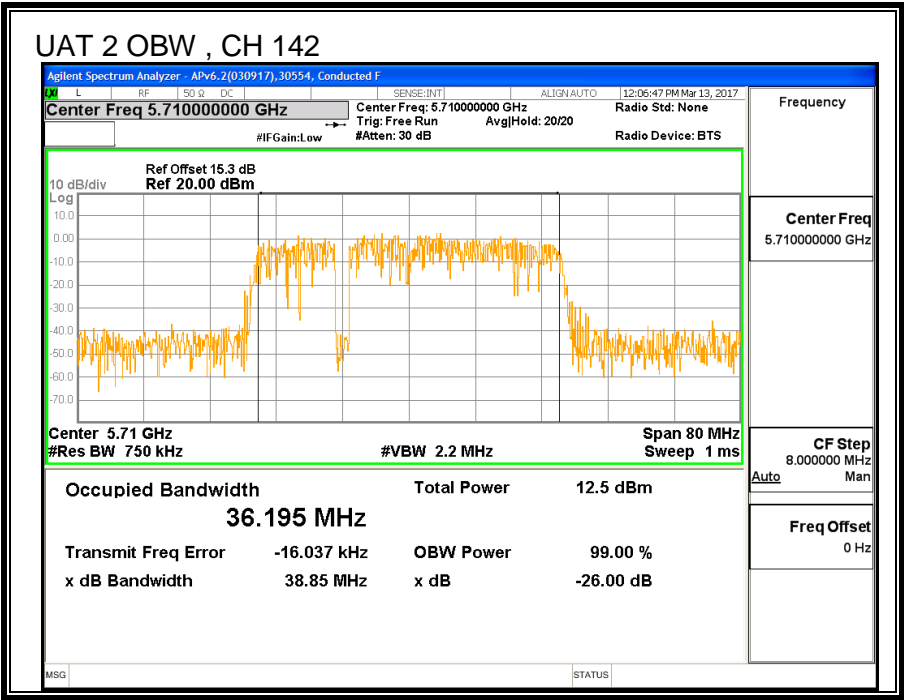












8.29.3. AVERAGE POWER

| | | | |
|------------|-------|--------------|-----------|
| ID: | 30554 | Date: | 7/17/2017 |
|------------|-------|--------------|-----------|

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

RESULTS

| Channel | Frequency (MHz) | UAT 2 Power (dBm) | LAT 3 Power (dBm) | Total Power (dBm) |
|---------|--------------------|-------------------------|-------------------------|-------------------------|
| Low | 5510 | 14.28 | 14.46 | 17.38 |
| Mid | 5550 | 18.33 | 18.45 | 21.40 |
| Mid | 5590 | 19.39 | 19.42 | 22.42 |
| High | 5630 | 18.39 | 18.47 | 21.44 |
| High | 5670 | 15.83 | 15.94 | 18.90 |
| 142 | 5710 | 19.30 | 19.36 | 22.34 |

8.29.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26-dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required. However, PSD measurement was measured by Spectrum Analyzer and duty cycle factor is required

Straddle channel power is measured using PXA spectrum analyzer, duty cycle correction factor is required.

DIRECTIONAL ANTENNA GAIN

For Power used uncorrelated gain: The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

| UAT 2 Antenna Gain (dBi) | LAT 3 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|-----------------------------------|-----------------------------------|---|
| -0.75 | -0.96 | -0.85 |

For PSD used correlated gain: The TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

| UAT 2 Antenna Gain (dBi) | LAT 3 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|-----------------------------------|-----------------------------------|---|
| -0.75 | -0.96 | 2.16 |

RESULTS

Bandwidth, Antenna Gain and Limits

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PSD (dBi) | Power Limit (dBm) | PSD Limit (dBm) |
|---------|--------------------|-----------------------------|---------------------------|---|---|-------------------------|-----------------------|
| Low | 5510 | 40.20 | 36.28 | -0.85 | 2.16 | 24.00 | 11.00 |
| Mid | 5550 | 40.20 | 36.074 | -0.85 | 2.16 | 24.00 | 11.00 |
| Mid | 5590 | 40.20 | 36.074 | -0.85 | 2.16 | 24.00 | 11.00 |
| High | 5630 | 40.50 | 36.268 | -0.85 | 2.16 | 24.00 | 11.00 |
| High | 5670 | 40.10 | 36.219 | -0.85 | 2.16 | 24.00 | 11.00 |

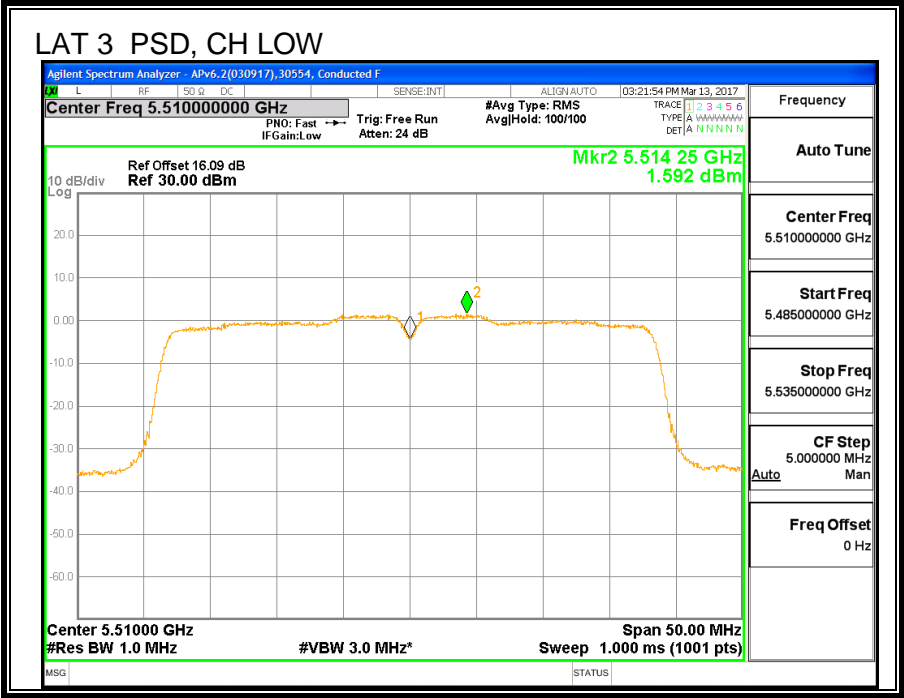
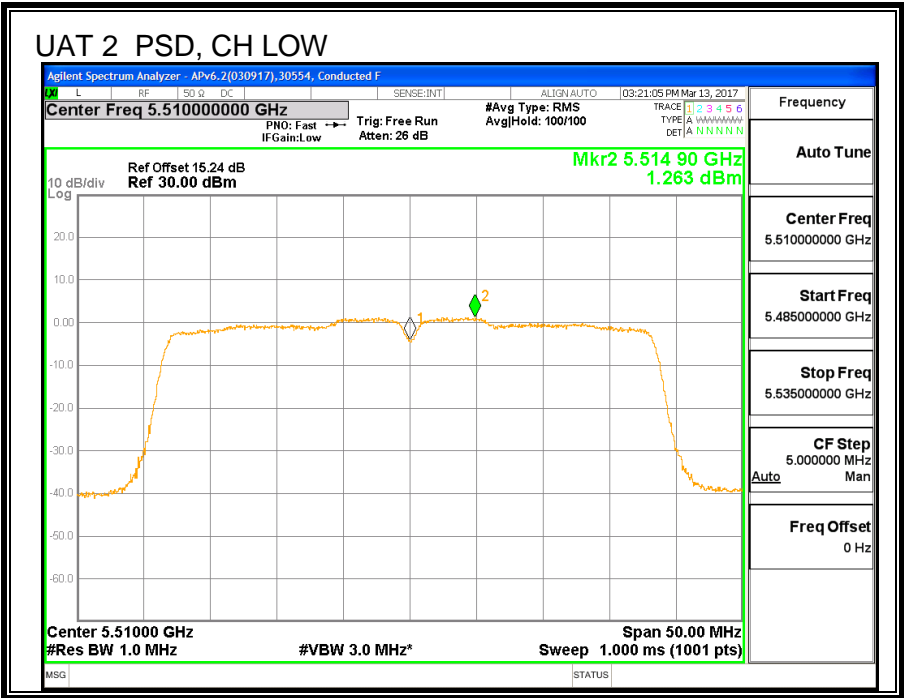
| | | |
|--------------------|------|--|
| Duty Cycle CF (dB) | 0.10 | Included in Calculations of Corr'd PSD |
|--------------------|------|--|

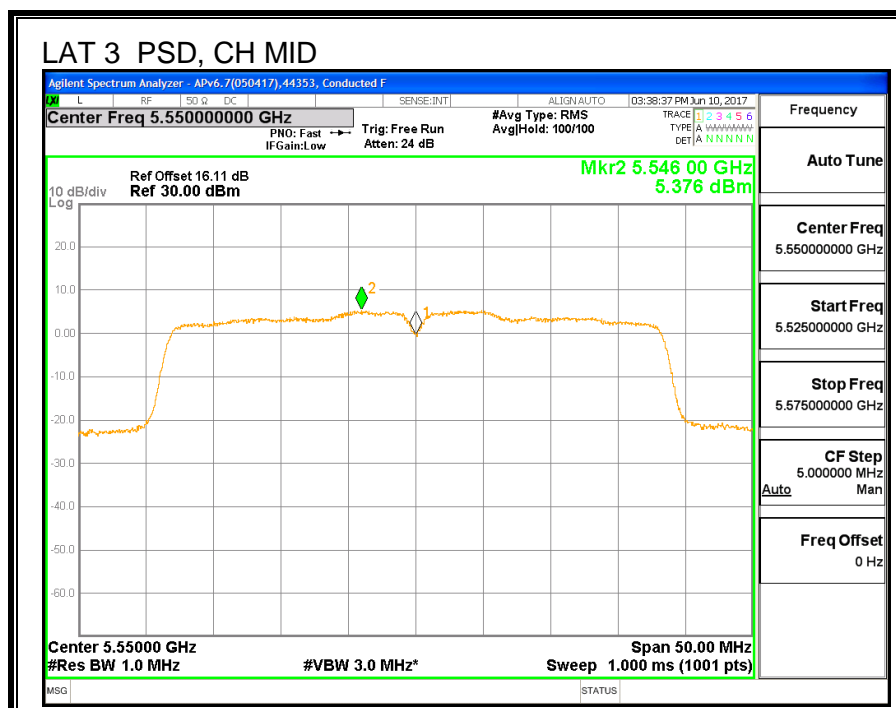
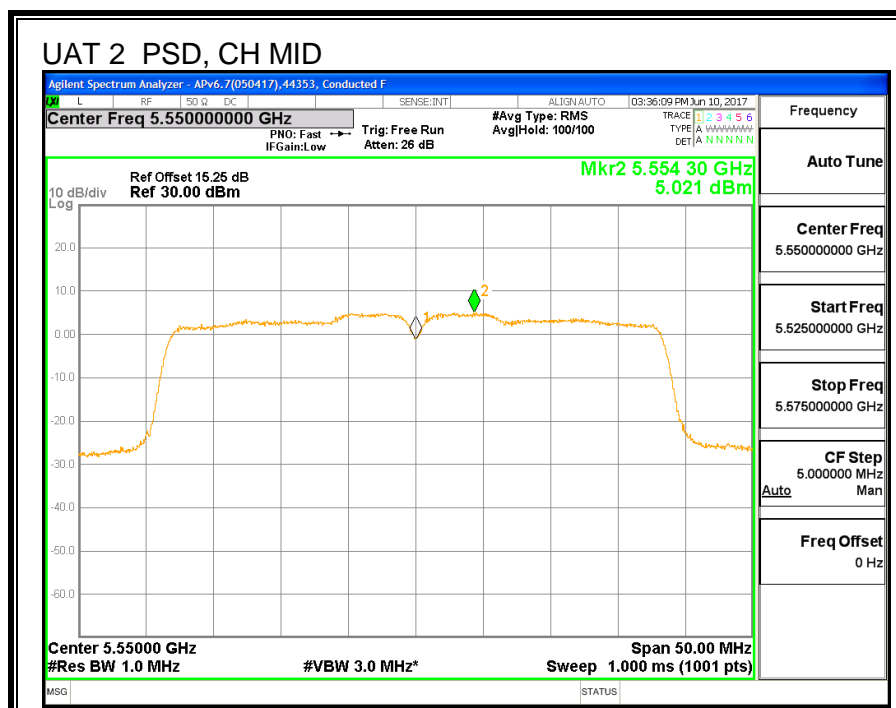
Output Power Results

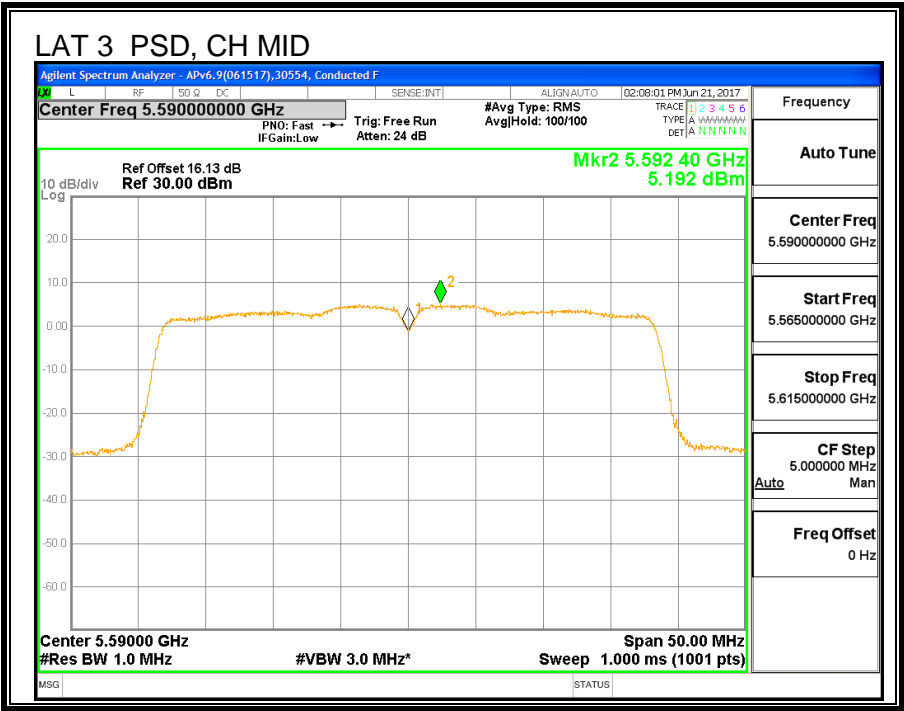
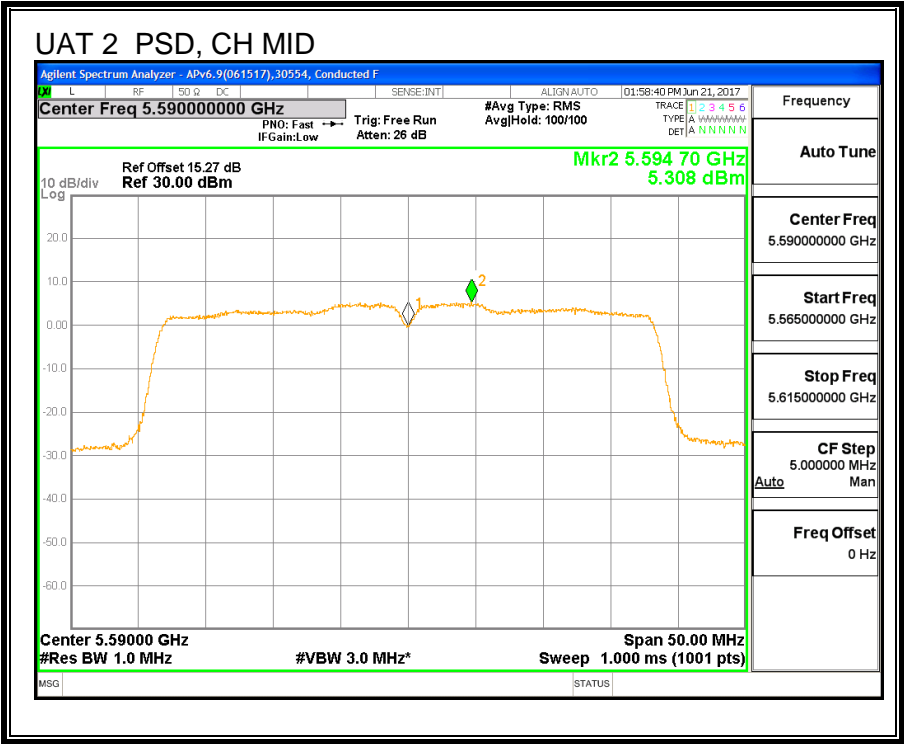
| Channel | Frequency (MHz) | UAT 2 Meas Power (dBm) | LAT 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---------|--------------------|---------------------------------|---------------------------------|-----------------------------------|-------------------------|-------------------------|
| Low | 5510 | 14.28 | 14.46 | 17.38 | 24.00 | -6.62 |
| Mid | 5550 | 18.33 | 18.45 | 21.40 | 24.00 | -2.60 |
| Mid | 5590 | 19.39 | 19.42 | 22.42 | 24.00 | -1.58 |
| High | 5630 | 18.39 | 18.47 | 21.44 | 24.00 | -2.56 |
| High | 5670 | 15.83 | 15.94 | 18.90 | 24.00 | -5.10 |

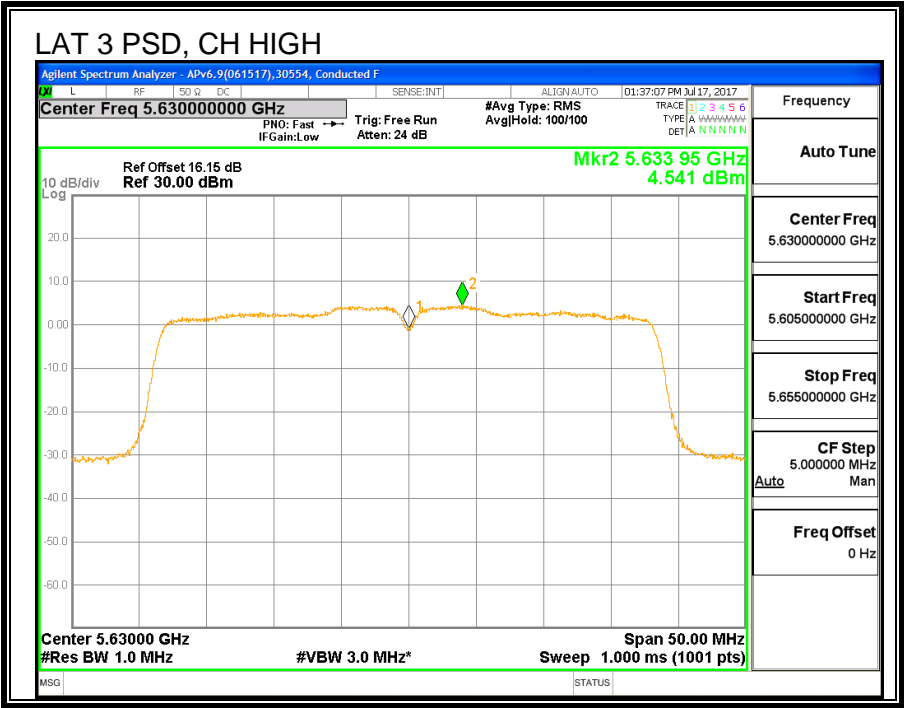
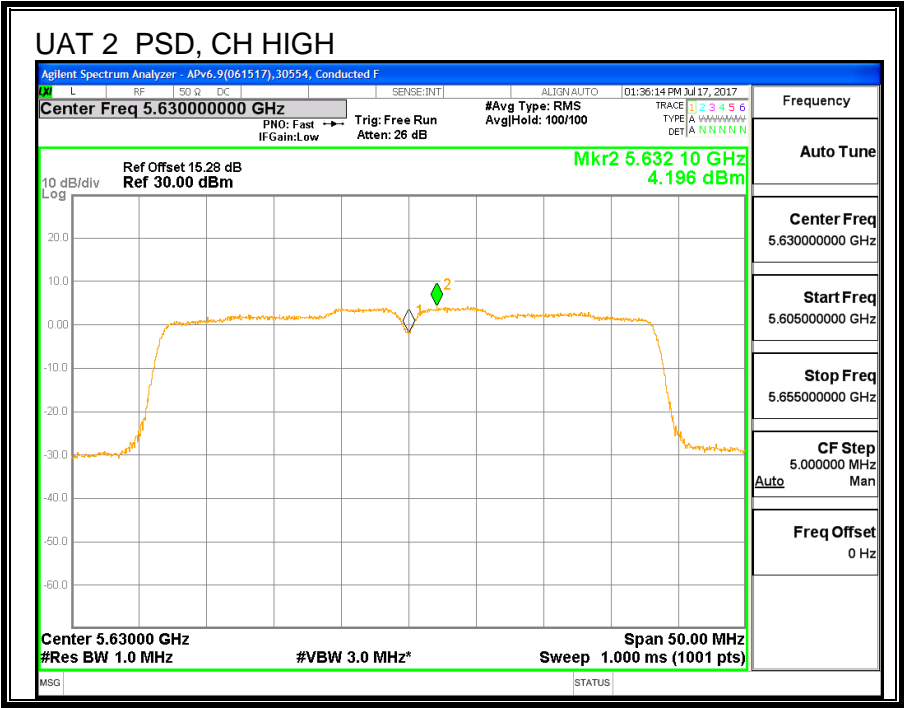
PSD Results

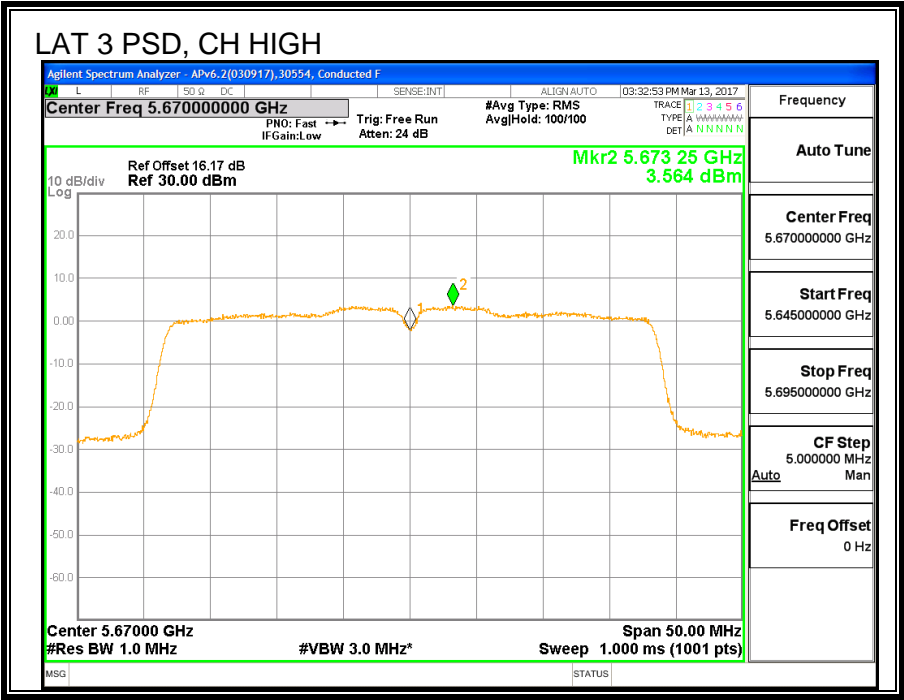
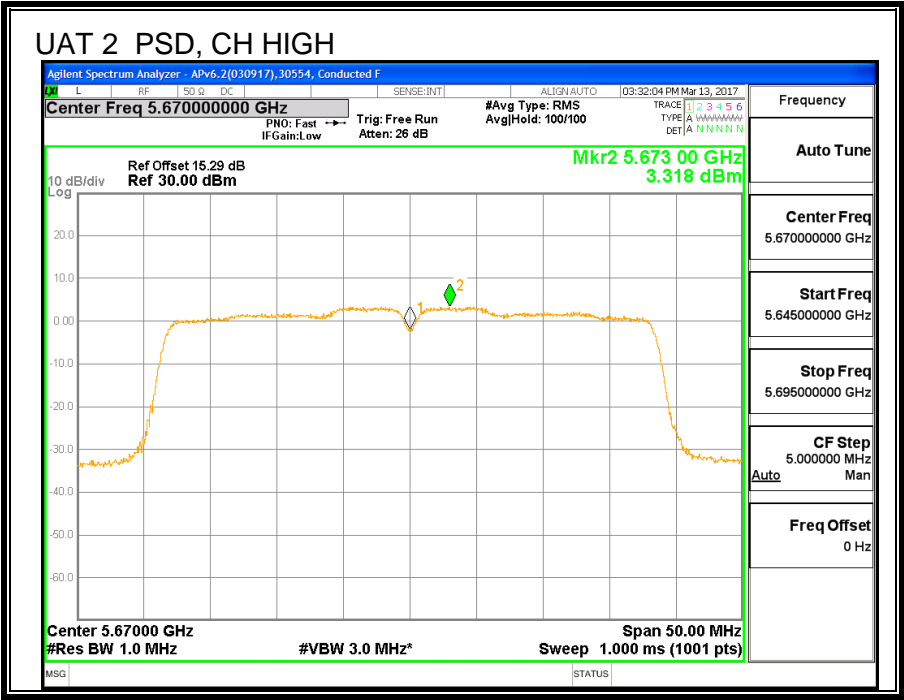
| Channel | Frequency (MHz) | UAT 2 Meas PSD (dBm) | LAT 3 Meas PSD (dBm) | Total Corr'd PSD (dBm) | PSD Limit (dBm) | PSD Margin (dB) |
|---------|--------------------|-------------------------------|-------------------------------|---------------------------------|-----------------------|-----------------------|
| Low | 5510 | 1.263 | 1.592 | 4.54 | 11.00 | -6.46 |
| Mid | 5550 | 5.021 | 5.376 | 8.31 | 11.00 | -2.69 |
| Mid | 5590 | 5.308 | 5.192 | 8.36 | 11.00 | -2.64 |
| High | 5630 | 4.195 | 4.541 | 7.48 | 11.00 | -3.52 |
| High | 5670 | 3.318 | 3.564 | 6.55 | 11.00 | -4.45 |











8.30. 11ac HT40 2TX CDD MIMO STRADDLE CHANNEL 142

8.30.1. OUTPUT POWER AND PSD

UNII-2C BAND

Bandwidth, Antenna Gain, and Limits

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PSD (dBi) | Power Limit (dBm) | PSD Limit (dBm) |
|---------|--------------------|-----------------------------|---|---|-------------------------|-----------------------|
| 142 | 5710 | 35.05 | -0.85 | 2.16 | 24.00 | 11.00 |

| | | |
|--------------------|------|--|
| Duty Cycle CF (dB) | 0.10 | Included in Calculations of Corr'd Power & PSD |
|--------------------|------|--|

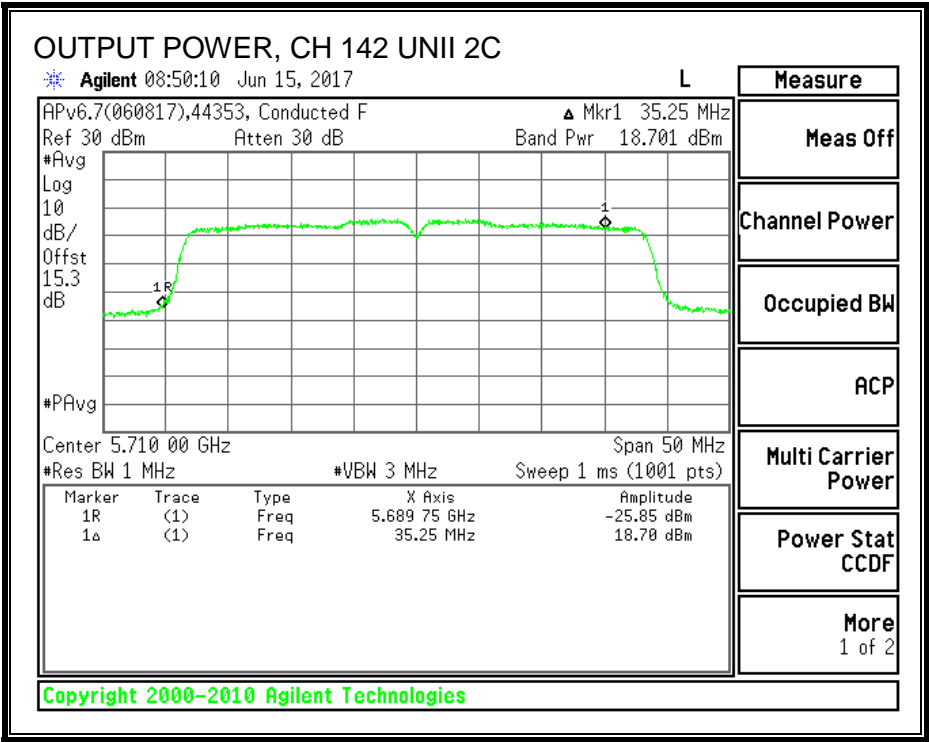
Output Power Results

| Channel | Frequency (MHz) | UAT 2 Meas Power (dBm) | LAT 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---------|--------------------|---------------------------------|---------------------------------|-----------------------------------|-------------------------|-------------------------|
| 142 | 5710 | 18.70 | 18.72 | 21.82 | 24.00 | -2.18 |

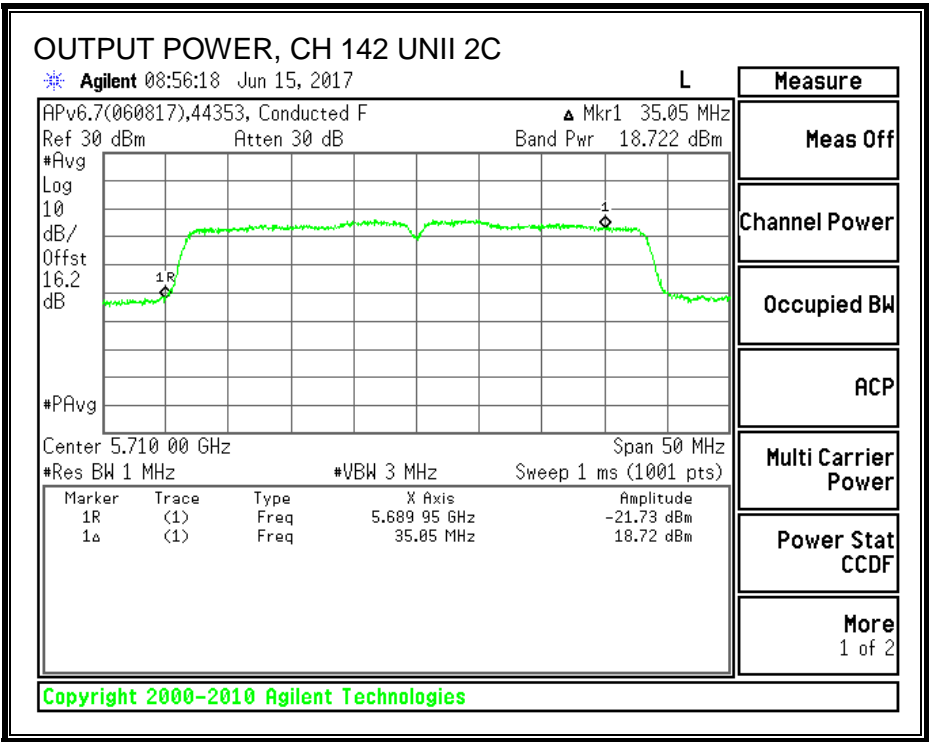
PSD Results

| Channel | Frequency (MHz) | UAT 2 Meas PSD (dBm) | LAT 3 Meas PSD (dBm) | Total Corr'd PSD (dBm) | PSD Limit (dBm) | PSD Margin (dB) |
|---------|--------------------|-------------------------------|-------------------------------|---------------------------------|-----------------------|-----------------------|
| 142 | 5710 | 5.88 | 6.14 | 9.12 | 11.00 | -1.88 |

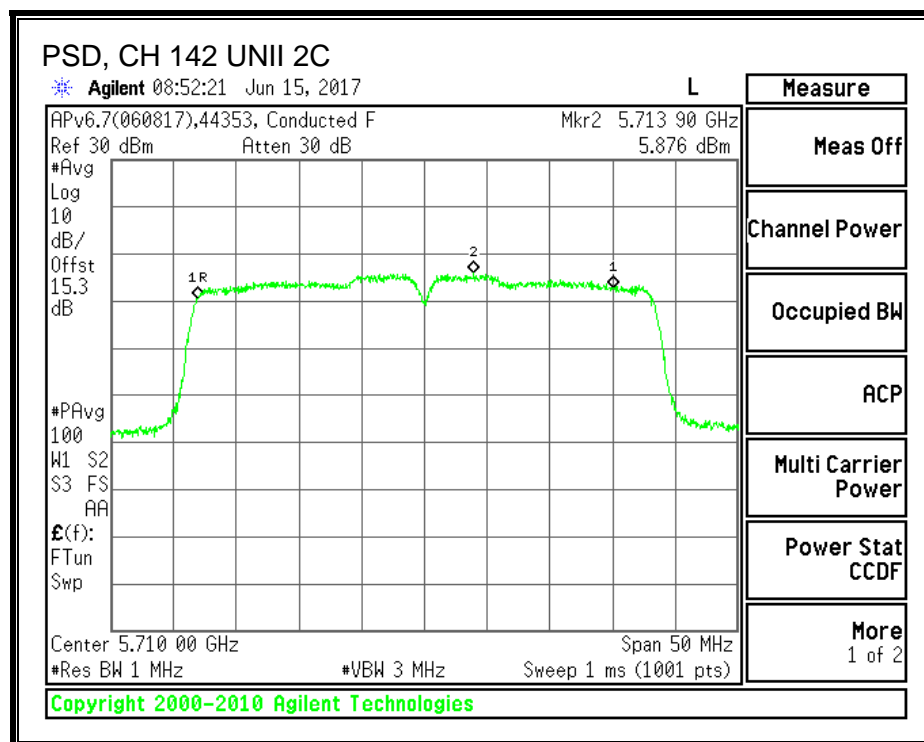
OUTPUT POWER, UAT 2



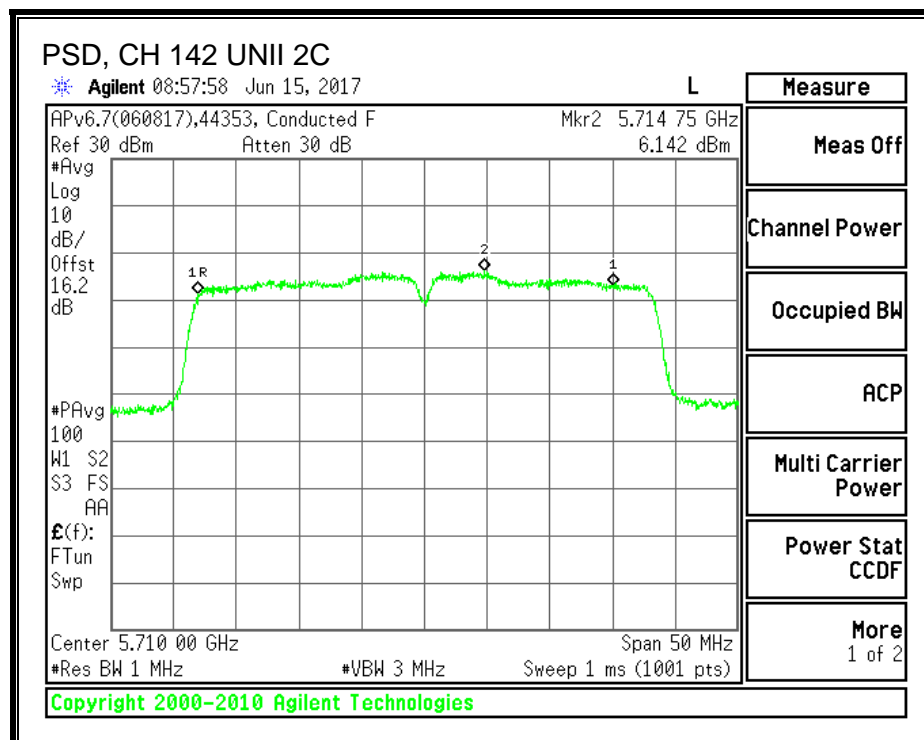
OUTPUT POWER, LAT 3



PSD, UAT 2



PSD, LAT 3



UNII-3 BAND

Antenna Gain and Limit

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Directional Gain For Power (dBi) | Directional Gain For PSD (dBi) | Power Limit (dBm) | PSD Limit (dBm) |
|---------|--------------------|-----------------------------|---|---|-------------------------|-----------------------|
| 142 | 5710 | 5.05 | -0.05 | 2.92 | 30.00 | 30.00 |

| | | |
|---------------------------|------|--|
| Duty Cycle CF (dB) | 0.10 | Included in Calculations of Corr'd Power & PSD |
|---------------------------|------|--|

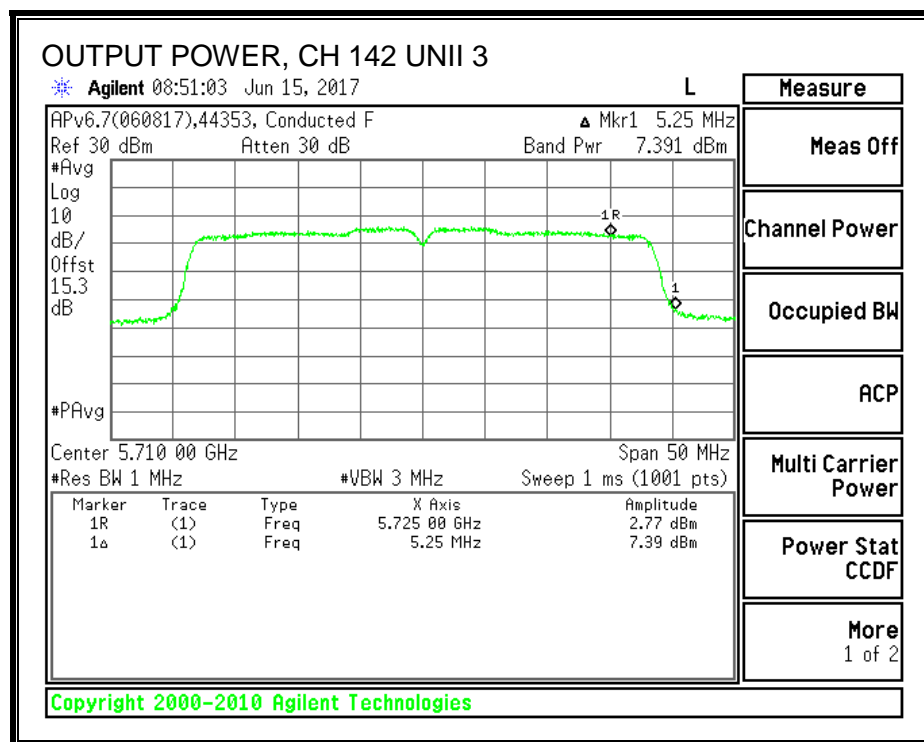
Output Power Results

| Channel | Frequency (MHz) | UAT 2 Meas Power (dBm) | LAT 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---------|--------------------|---------------------------------|---------------------------------|-----------------------------------|-------------------------|-------------------------|
| 142 | 5710 | 7.39 | 7.60 | 10.61 | 30.00 | -19.39 |

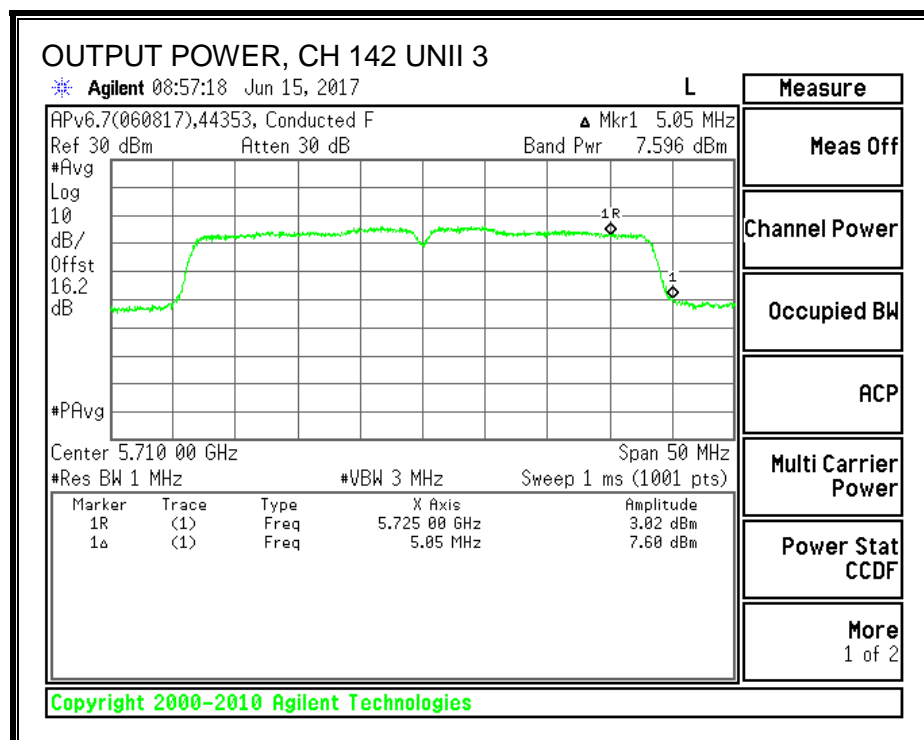
PSD Results

| Channel | Frequency (MHz) | UAT 2 Meas PSD (dBm) | LAT 3 Meas PSD (dBm) | Total Corr'd PSD (dBm) | PSD Limit (dBm) | PSD Margin (dB) |
|---------|--------------------|-------------------------------|-------------------------------|---------------------------------|-----------------------|-----------------------|
| 142 | 5710 | 0.40 | 0.29 | 3.46 | 30.00 | -26.54 |

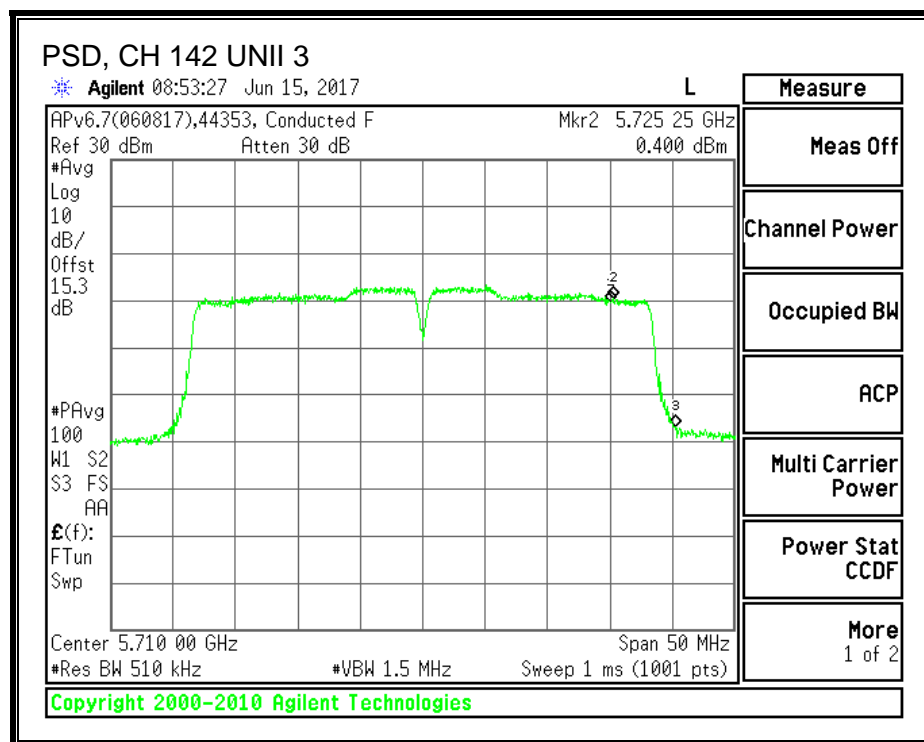
OUTPUT POWER, UAT 2



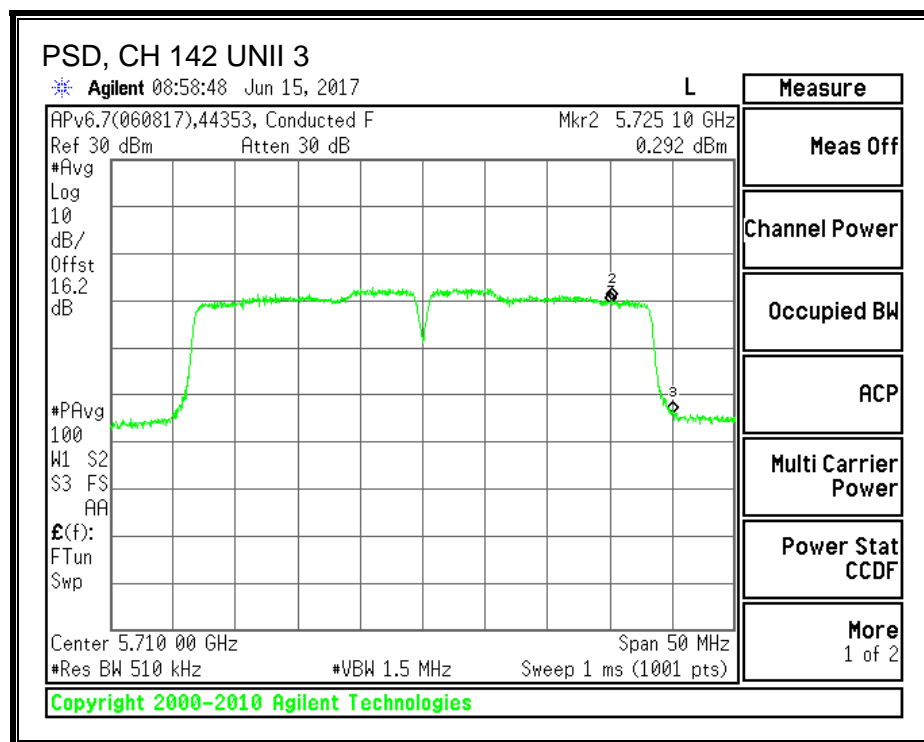
OUTPUT POWER, LAT 3



PSD, UAT 2



PSD, LAT 3



8.30.2. 6 dB BBANDWIDTH

LIMITS

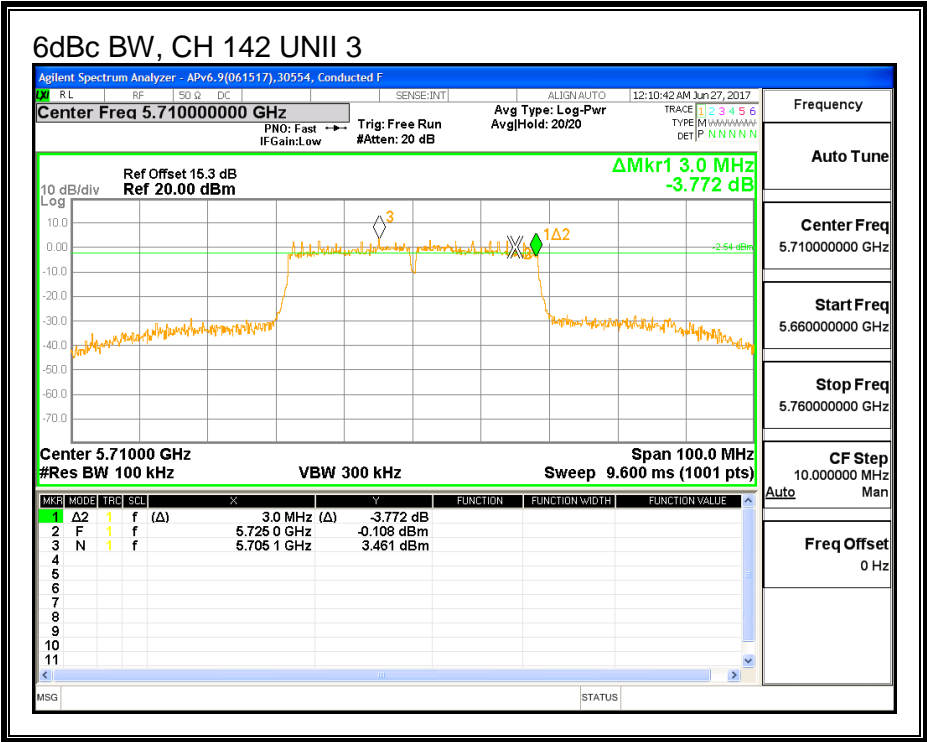
FCC §15.407 (e)

The minimum 6 dB bandwidth shall be at least 500 kHz.

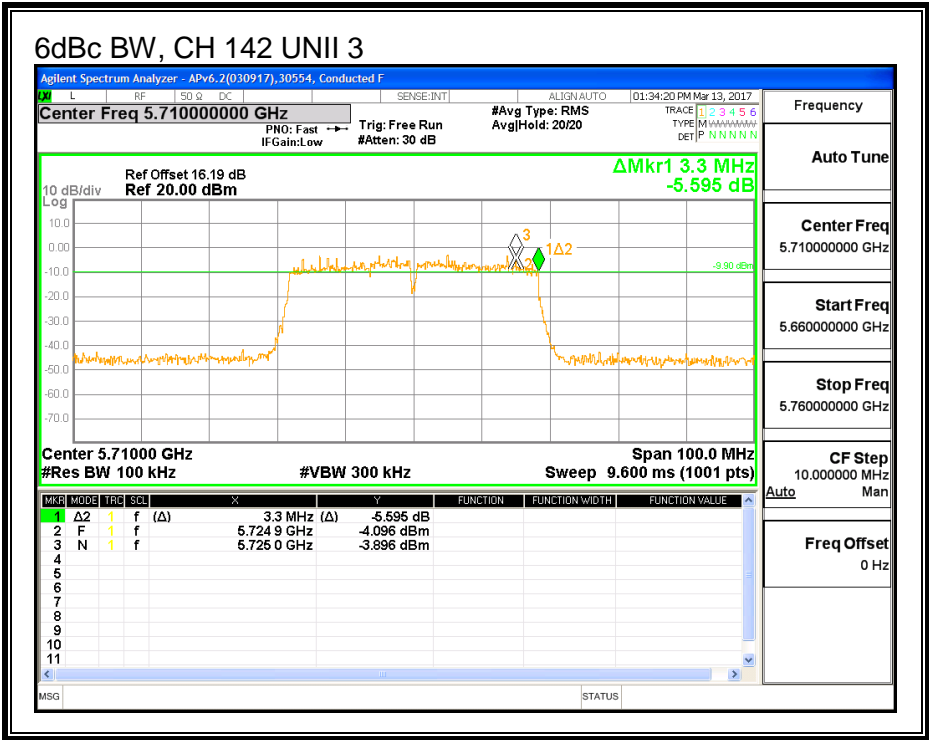
RESULTS

| Channel | Frequency (MHz) | 6 dB BW | 6 dB BW |
|---------|--------------------|----------------|----------------|
| | | Ant A (MHz) | Ant B (MHz) |
| 142 | 5710 | 3.00 | 3.30 |

UAT 2



LAT 3



8.31. 11ac HT80 UAT 2 SISO MODE IN THE 5.6GHz BAND

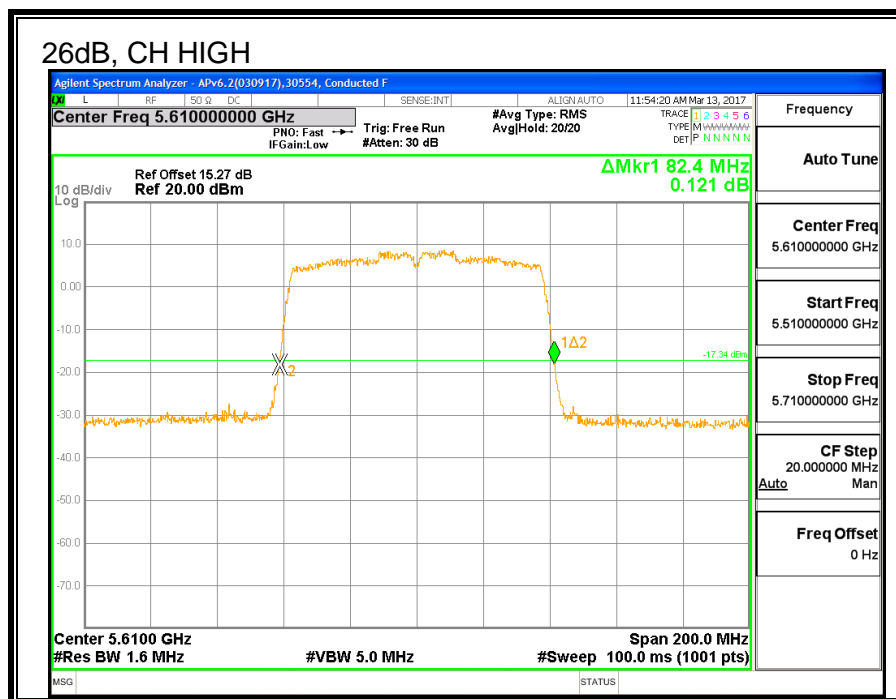
8.31.1. 26 dB BANDWIDTH

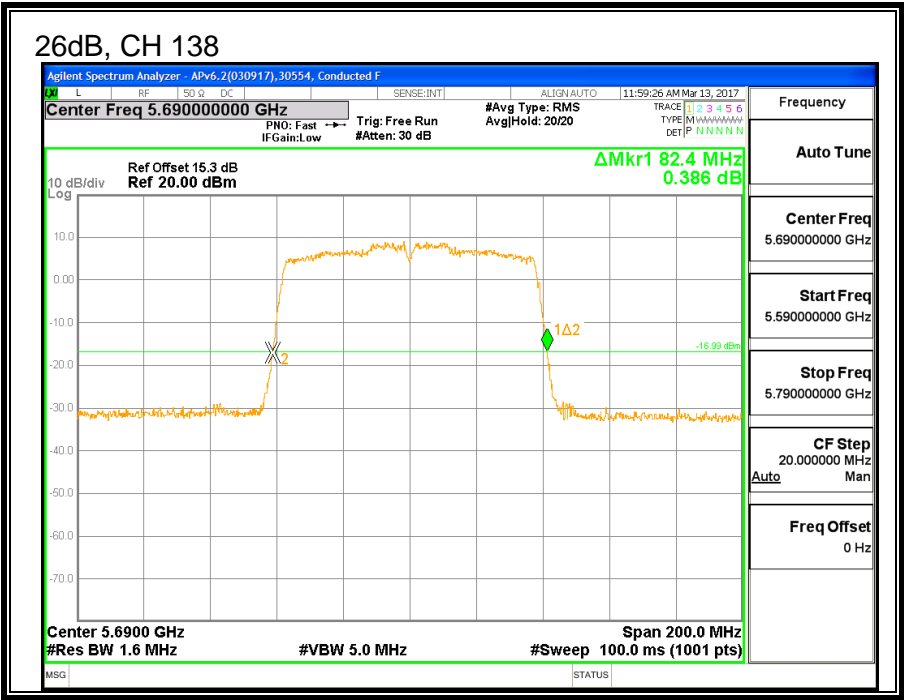
LIMITS

None; for reporting purposes only.

RESULTS

| Channel | Frequency | 26 dB BW UAT 2 (MHz) |
|----------------|------------------|-------------------------------------|
| Low | 5530 | 82.4 |
| High | 5610 | 82.4 |
| 138 | 5690 | 82.4 |





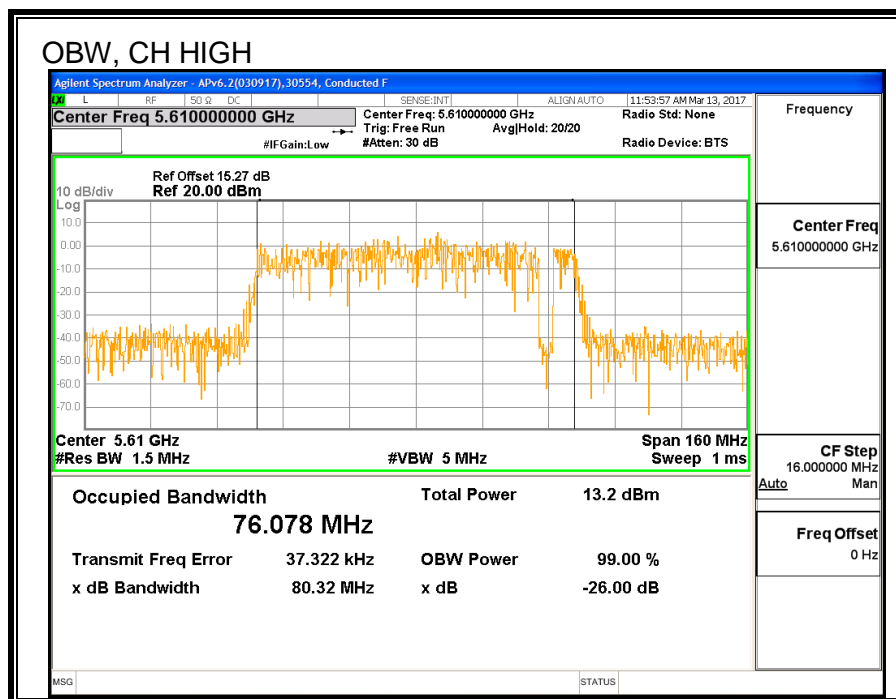
8.31.2. 99% BANDWIDTH

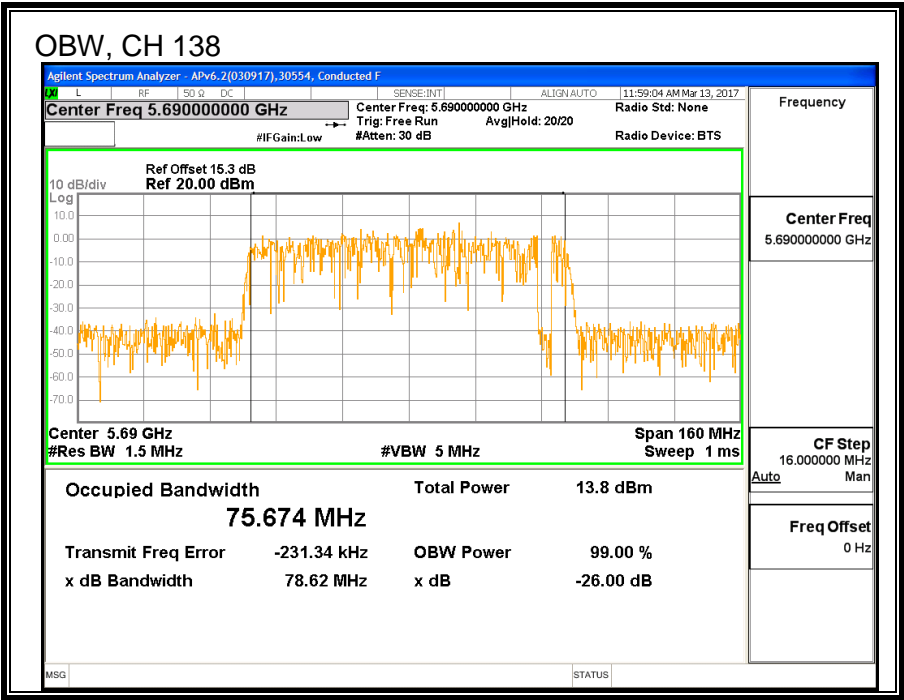
LIMITS

None; for reporting purposes only.

RESULTS

| Channel | Frequency | 99% BW UAT 2 (MHz) |
|---------|-----------|--------------------------|
| Low | 5530 | 75.553 |
| High | 5610 | 76.078 |
| 138 | 5690 | 75.674 |





8.31.3. AVERAGE POWER

| | | | |
|------------|-------|--------------|-----------|
| ID: | 30554 | Date: | 6/13/2017 |
|------------|-------|--------------|-----------|

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

RESULTS

| Channel | Frequency | Power UAT 2 (dBm) |
|---------|-----------|----------------------|
| Low | 5530 | 14.92 |
| High | 5610 | 18.88 |
| 138 | 5690 | 18.93 |

8.31.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26-dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required. However, PSD measurement was measured by Spectrum Analyzer and duty cycle factor is required

Straddle channel power is measured using PXA spectrum analyzer, duty cycle correction factor is required.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

Bandwidth, Antenna Gain, and Limits

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain (dBi) | Power Limit (dBm) | PSD Limit (dBm) |
|---------|--------------------|-----------------------------|---------------------------|------------------------------|-------------------------|-----------------------|
| Low | 5530 | 82.40 | 75.55 | -0.75 | 24.00 | 11.00 |
| High | 5610 | 82.40 | 76.08 | -0.75 | 24.00 | 11.00 |

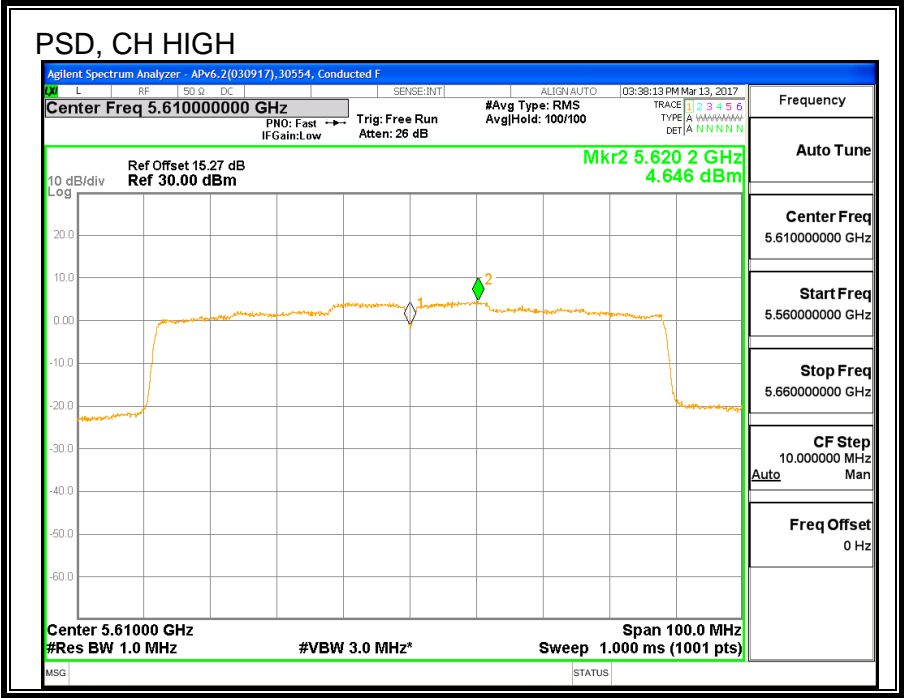
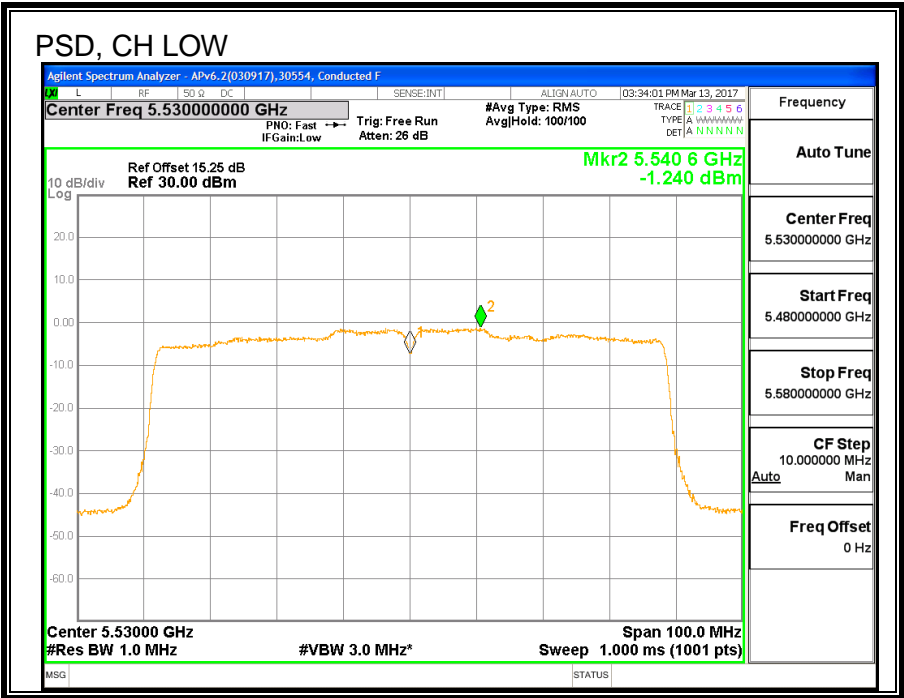
| | | |
|--------------------|------|--|
| Duty Cycle CF (dB) | 0.20 | Included in Calculations of Corr'd PSD |
|--------------------|------|--|

Output Power Results

| Channel | Frequency (MHz) | UAT 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---------|--------------------|---------------------------------|-----------------------------------|-------------------------|-------------------------|
| Low | 5530 | 14.92 | 14.92 | 24.00 | -9.08 |
| High | 5610 | 18.88 | 18.88 | 24.00 | -5.12 |

PSD Results

| Channel | Frequency (MHz) | UAT 2 Meas PSD (dBm) | Total Corr'd PSD (dBm) | PSD Limit (dBm) | PSD Margin (dB) |
|---------|--------------------|-------------------------------|---------------------------------|-----------------------|-----------------------|
| Low | 5530 | -1.240 | -1.040 | 11.00 | -12.04 |
| High | 5610 | 4.646 | 4.846 | 11.00 | -6.15 |



8.31.5. STRADDLE CHANNEL 138 RESULTS

UNII-2C BAND

Bandwidth, Antenna Gain, and Limits

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PSD (dBi) | Power Limit (dBm) | PSD Limit (dBm) |
|---------|--------------------|-----------------------------|---|---|-------------------------|-----------------------|
| 138 | 5690 | 76.20 | -0.75 | -0.75 | 24.00 | 11.00 |

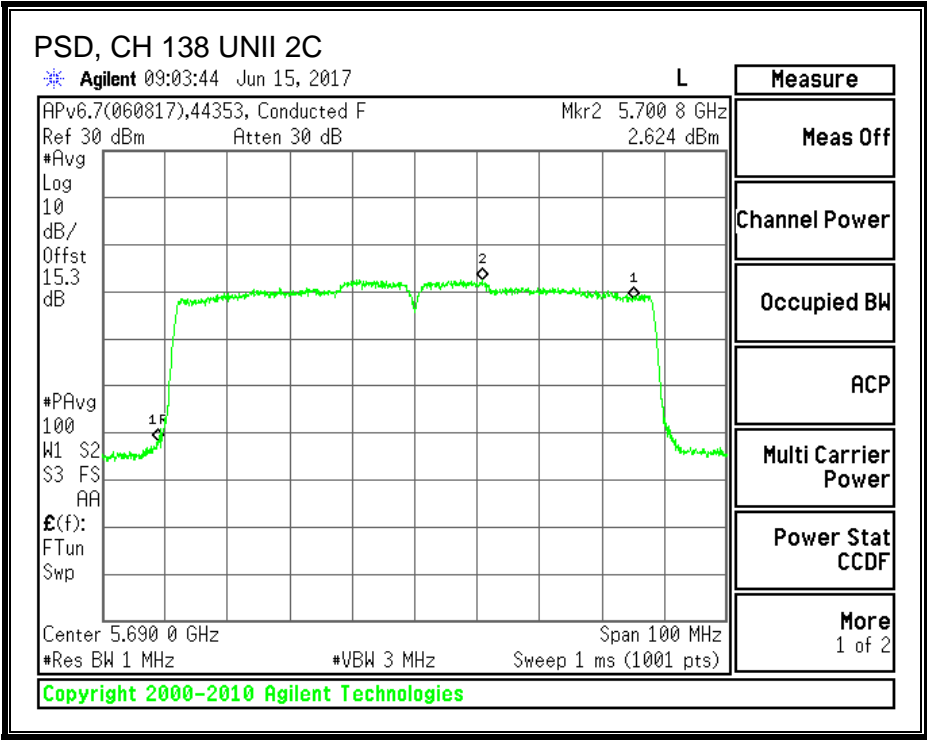
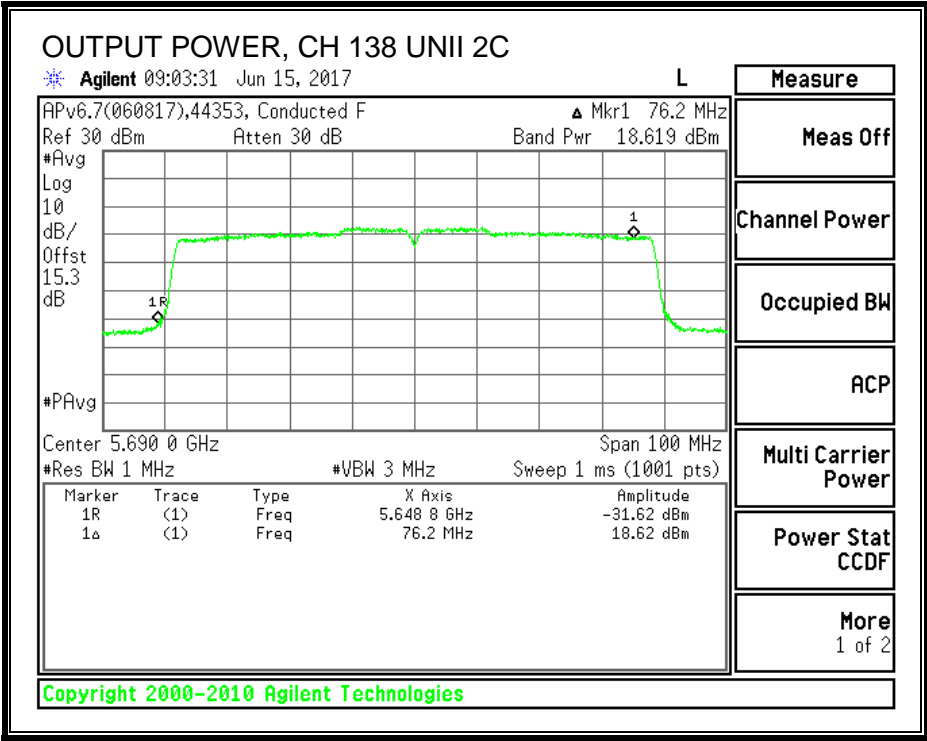
| | | |
|--------------------|------|--|
| Duty Cycle CF (dB) | 0.20 | Included in Calculations of Corr'd Power & PSD |
|--------------------|------|--|

Output Power Results

| Channel | Frequency (MHz) | UAT 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---------|--------------------|---------------------------------|-----------------------------------|-------------------------|-------------------------|
| 138 | 5690 | 18.62 | 18.82 | 24.00 | -5.18 |

PSD Results

| Channel | Frequency (MHz) | UAT 2 Meas PSD (dBm) | Total Corr'd PSD (dBm) | PSD Limit (dBm) | PSD Margin (dB) |
|---------|--------------------|-------------------------------|---------------------------------|-----------------------|-----------------------|
| 138 | 5690 | 2.62 | 2.82 | 11.00 | -8.18 |



UNII-3 BAND

Antenna Gain and Limit

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Directional Gain (dBi) | Power Limit (dBm) | PSD Limit (dBm) |
|---------|--------------------|-----------------------------|------------------------------|-------------------------|-----------------------|
| 138 | 5690 | 6.20 | 0.68 | 30.00 | 30.00 |

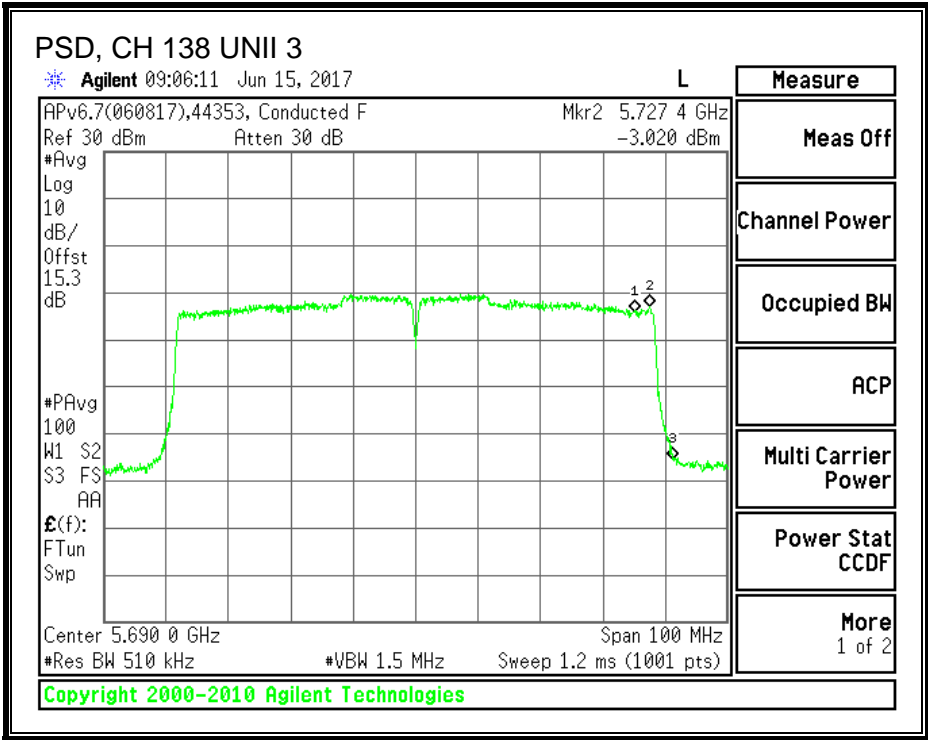
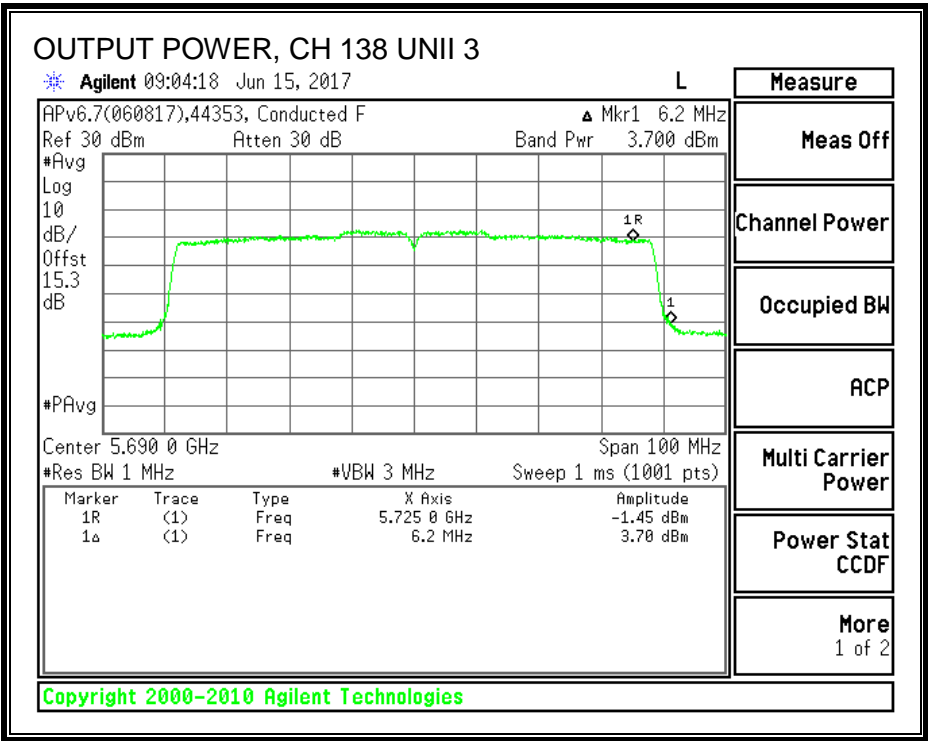
| | | |
|--------------------|------|--|
| Duty Cycle CF (dB) | 0.20 | Included in Calculations of Corr'd Power & PSD |
|--------------------|------|--|

Output Power Results

| Channel | Frequency (MHz) | UAT 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---------|--------------------|---------------------------------|-----------------------------------|-------------------------|-------------------------|
| 138 | 5690 | 3.70 | 3.90 | 30.00 | -26.10 |

PSD Results

| Channel | Frequency (MHz) | UAT 2 Meas PSD (dBm) | Total Corr'd PSD (dBm) | PSD Limit (dBm) | PSD Margin (dB) |
|---------|--------------------|-------------------------------|---------------------------------|-----------------------|-----------------------|
| 138 | 5690 | -3.02 | -2.82 | 30.00 | -32.82 |



8.32. 11ac HT80 LAT 3 SISO MODE IN THE 5.6GHz BAND

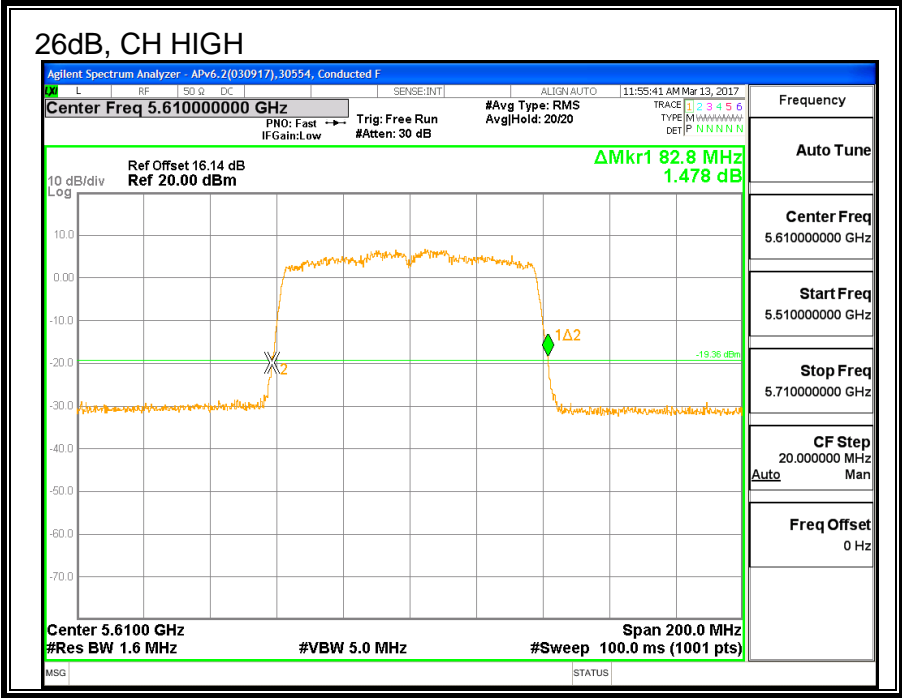
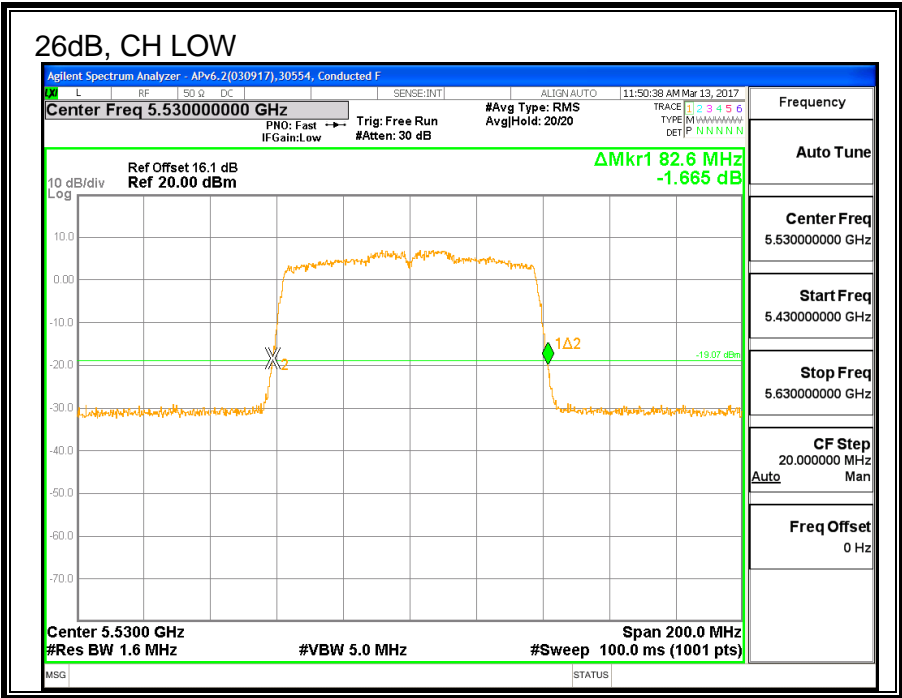
8.32.1. 26 dB BANDWIDTH

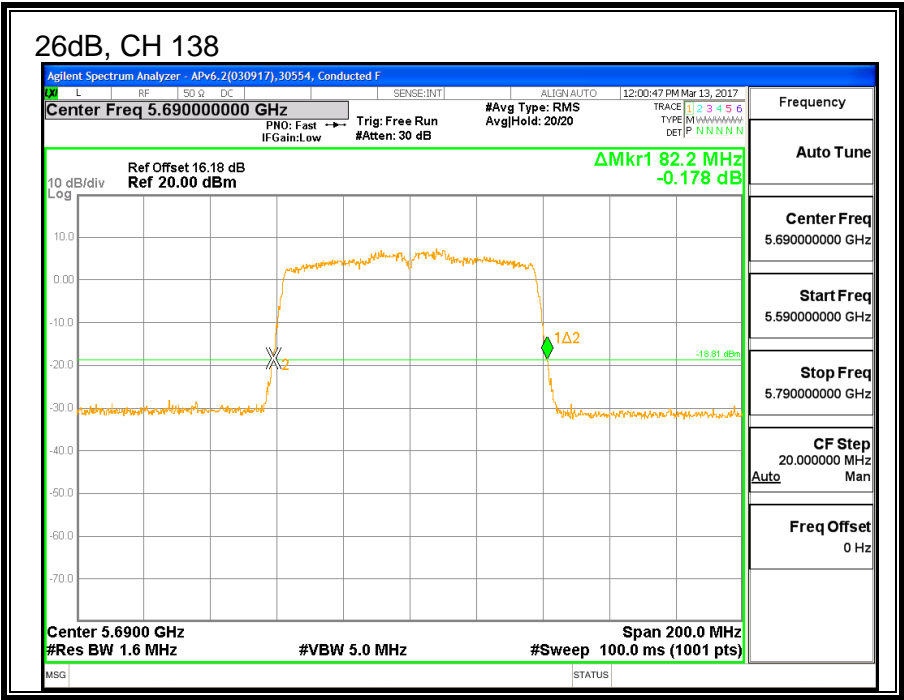
LIMITS

None; for reporting purposes only.

RESULTS

| Channel | Frequency | 26 dB BW LAT 3 (MHz) |
|----------------|------------------|-------------------------------------|
| Low | 5530 | 82.6 |
| High | 5610 | 82.8 |
| 138 | 5690 | 82.2 |





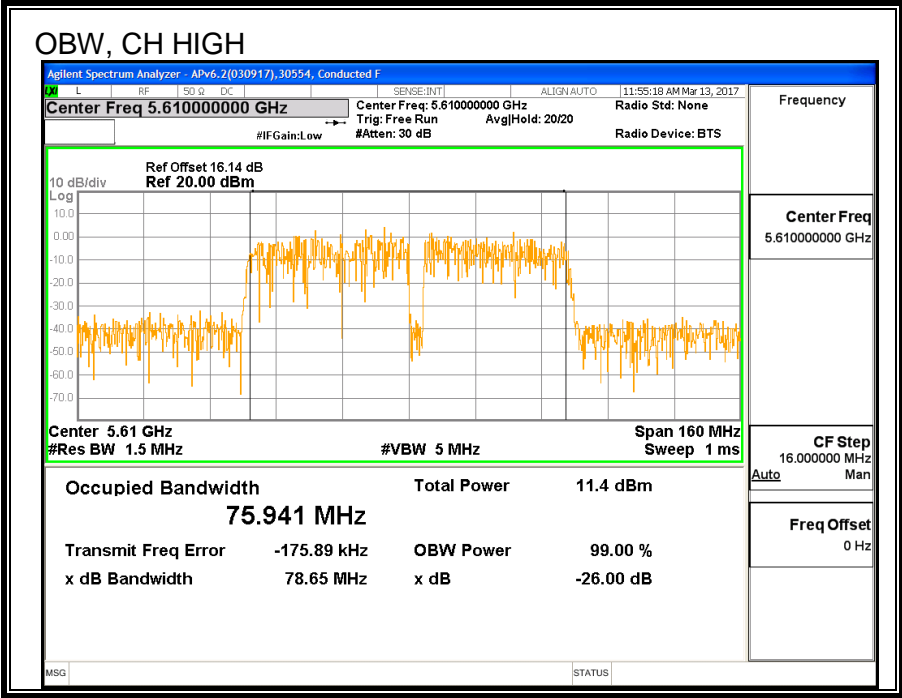
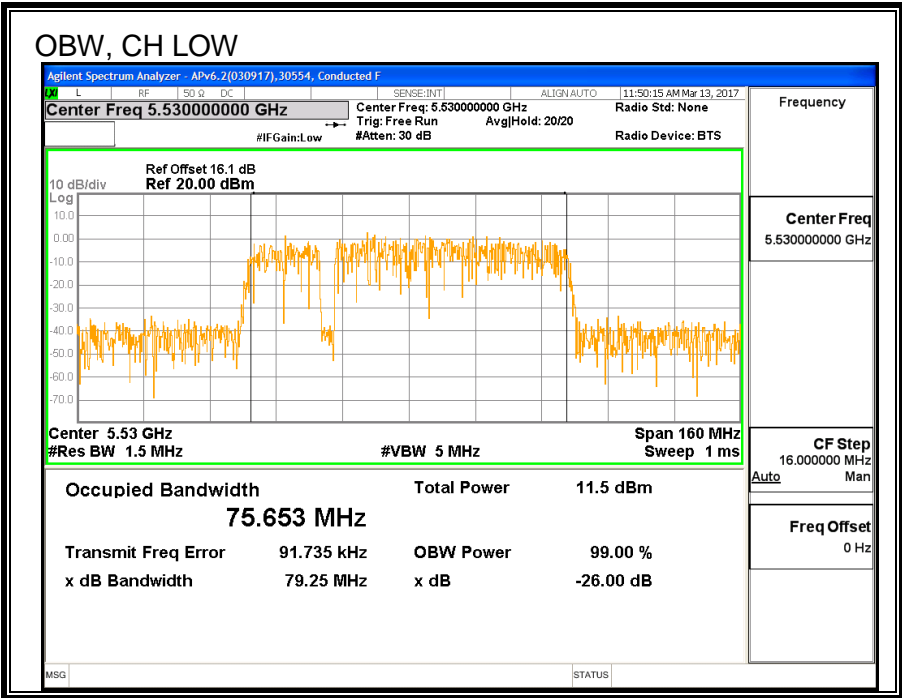
8.32.2. 99% BANDWIDTH

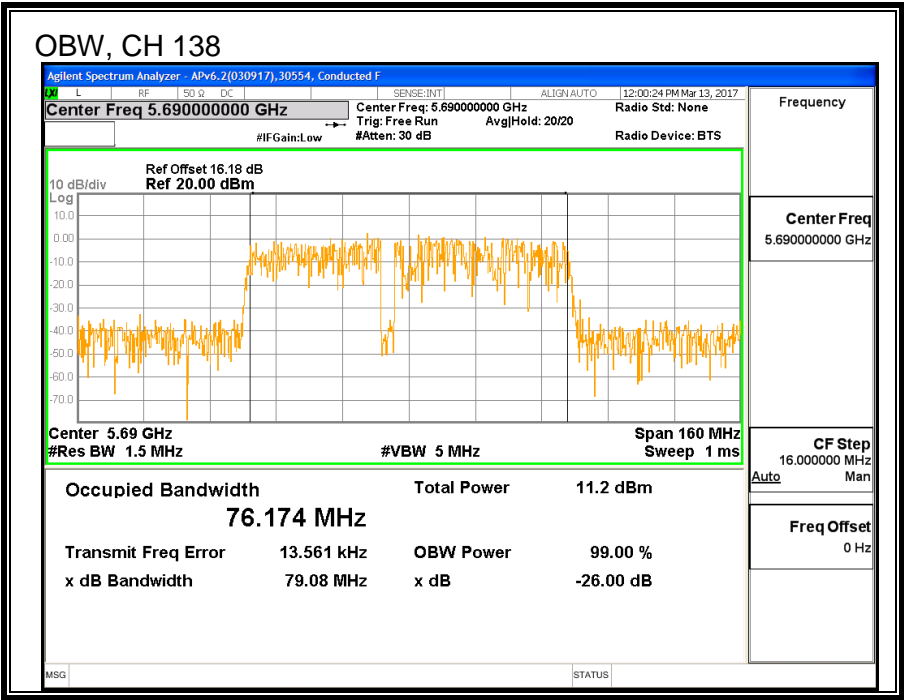
LIMITS

None; for reporting purposes only.

RESULTS

| Channel | Frequency | 99% BW LAT 3 (MHz) |
|---------|-----------|--------------------------|
| Low | 5530 | 75.653 |
| High | 5610 | 75.941 |
| 138 | 5690 | 76.174 |





8.32.3. AVERAGE POWER

| | | | |
|------------|-------|--------------|-----------|
| ID: | 30554 | Date: | 6/13/2017 |
|------------|-------|--------------|-----------|

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

RESULTS

| Channel | Frequency | Power LAT 3 (dBm) |
|---------|-----------|----------------------|
| Low | 5530 | 14.85 |
| High | 5610 | 18.78 |
| 138 | 5690 | 18.87 |

8.32.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26-dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required. However, PSD measurement was measured by Spectrum Analyzer and duty cycle factor is required

Straddle channel power is measured using PXA spectrum analyzer, duty cycle correction factor is required.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

Bandwidth, Antenna Gain, and Limits

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain (dBi) | Power Limit (dBm) | PSD Limit (dBm) |
|---------|--------------------|-----------------------------|---------------------------|------------------------------|-------------------------|-----------------------|
| Low | 5530 | 82.60 | 75.65 | -0.96 | 24.00 | 11.00 |
| Mid | 5610 | 82.80 | 75.94 | -0.96 | 24.00 | 11.00 |

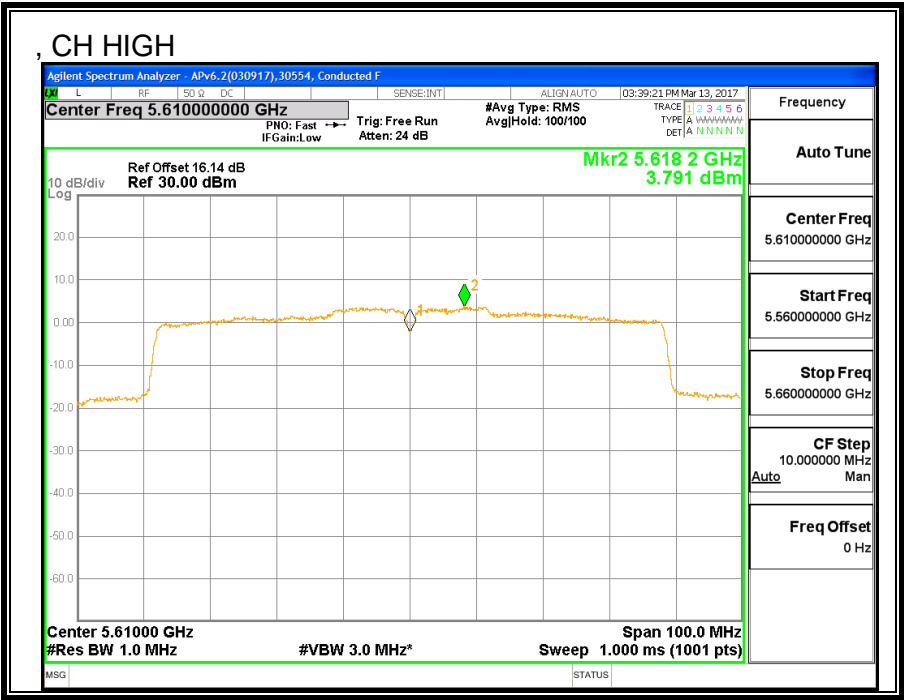
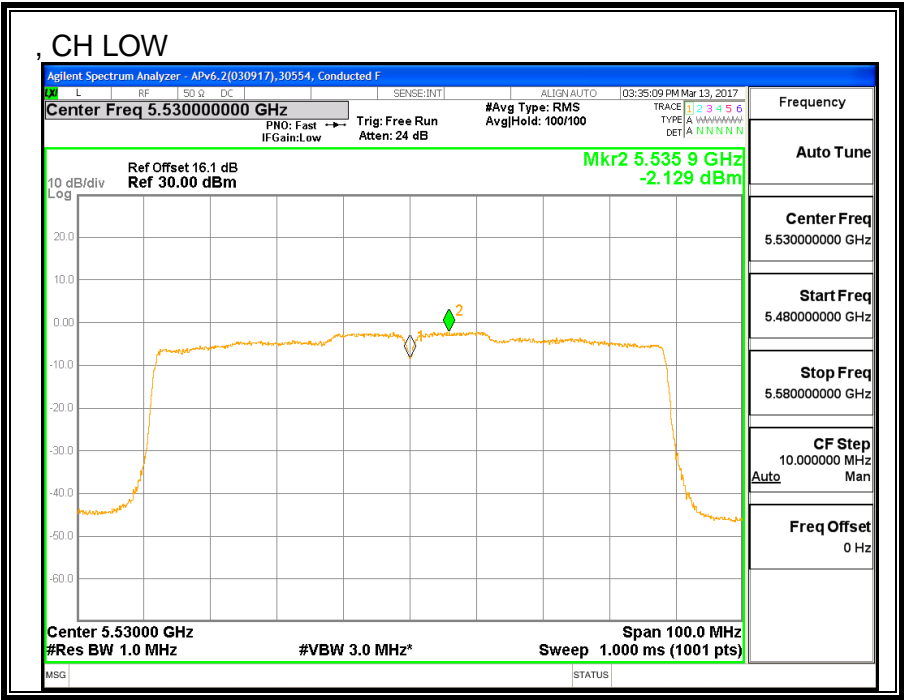
| | | |
|--------------------|------|--|
| Duty Cycle CF (dB) | 0.20 | Included in Calculations of Corr'd PSD |
|--------------------|------|--|

Output Power Results

| Channel | Frequency (MHz) | LAT 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---------|--------------------|---------------------------------|-----------------------------------|-------------------------|-------------------------|
| Low | 5530 | 14.85 | 14.85 | 24.00 | -9.15 |
| Mid | 5610 | 18.78 | 18.78 | 24.00 | -5.22 |

PSD Results

| Channel | Frequency (MHz) | LAT 3 Meas PSD (dBm) | Total Corr'd PSD (dBm) | PSD Limit (dBm) | PSD Margin (dB) |
|---------|--------------------|-------------------------------|---------------------------------|-----------------------|-----------------------|
| Low | 5530 | -2.129 | -1.93 | 11.00 | -12.93 |
| Mid | 5610 | 3.791 | 3.99 | 11.00 | -7.01 |



8.32.5. STRADDLE CHANNEL 138 RESULTS

UNII-2C BAND

Bandwidth, Antenna Gain, and Limits

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PSD (dBi) | Power Limit (dBm) | PSD Limit (dBm) |
|---------|--------------------|-----------------------------|---|---|-------------------------|-----------------------|
| 138 | 5690 | 76.1 | -0.96 | -0.96 | 24.00 | 11.00 |

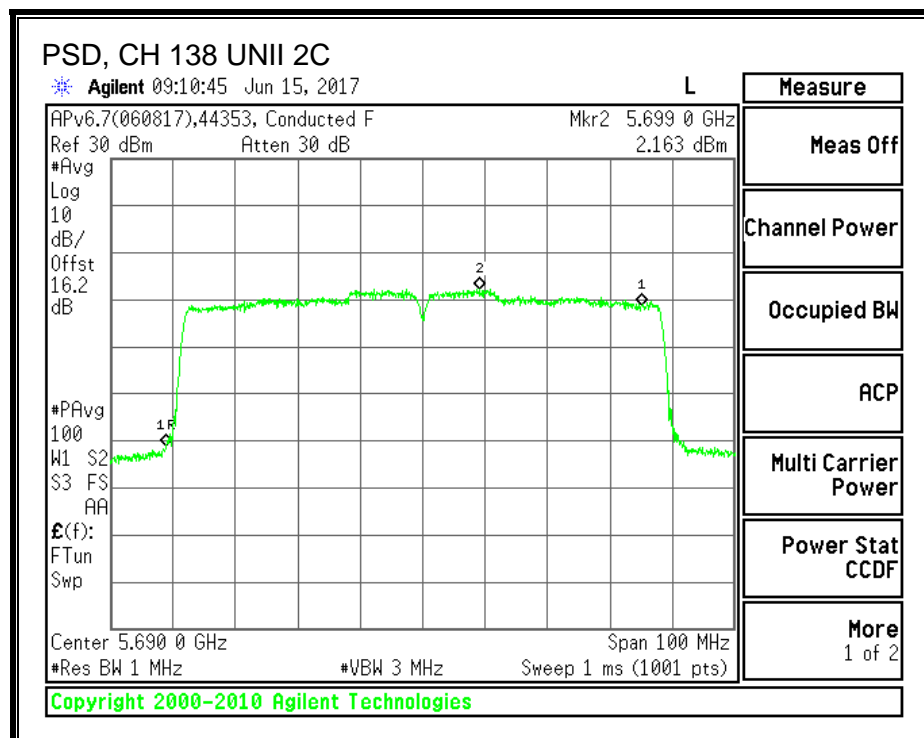
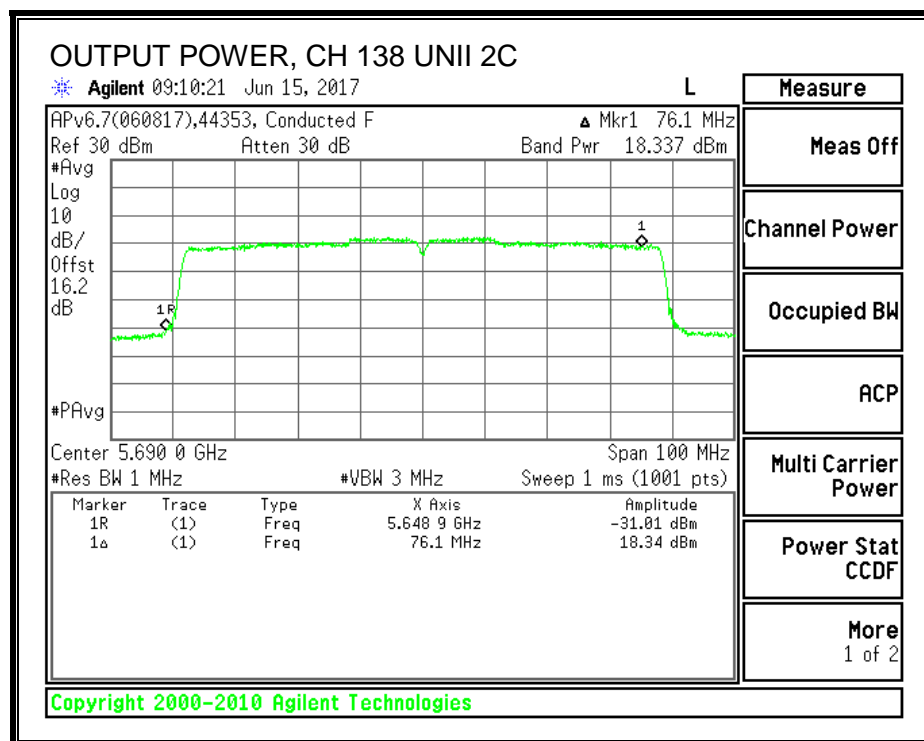
| | | |
|--------------------|------|--|
| Duty Cycle CF (dB) | 0.20 | Included in Calculations of Corr'd Power & PSD |
|--------------------|------|--|

Output Power Results

| Channel | Frequency (MHz) | LAT 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---------|--------------------|---------------------------------|-----------------------------------|-------------------------|-------------------------|
| 138 | 5690 | 18.34 | 18.54 | 24.00 | -5.46 |

PSD Results

| Channel | Frequency (MHz) | LAT 3 Meas PSD (dBm) | Total Corr'd PSD (dBm) | PSD Limit (dBm) | PSD Margin (dB) |
|---------|--------------------|-------------------------------|---------------------------------|-----------------------|-----------------------|
| 138 | 5690 | 2.16 | 2.36 | 11.00 | -8.64 |



UNII-3 BAND

Antenna Gain and Limit

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Directional Gain (dBi) | Power Limit (dBm) | PSD Limit (dBm) |
|---------|--------------------|-----------------------------|------------------------------|-------------------------|-----------------------|
| 138 | 5690 | 6.10 | -0.93 | 30.00 | 30.00 |

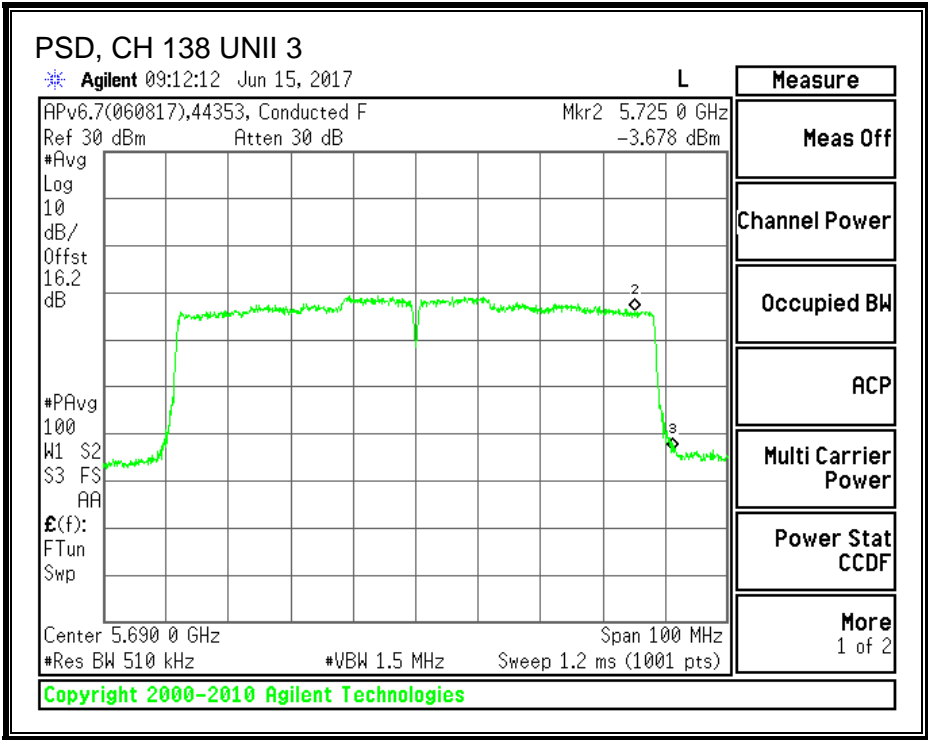
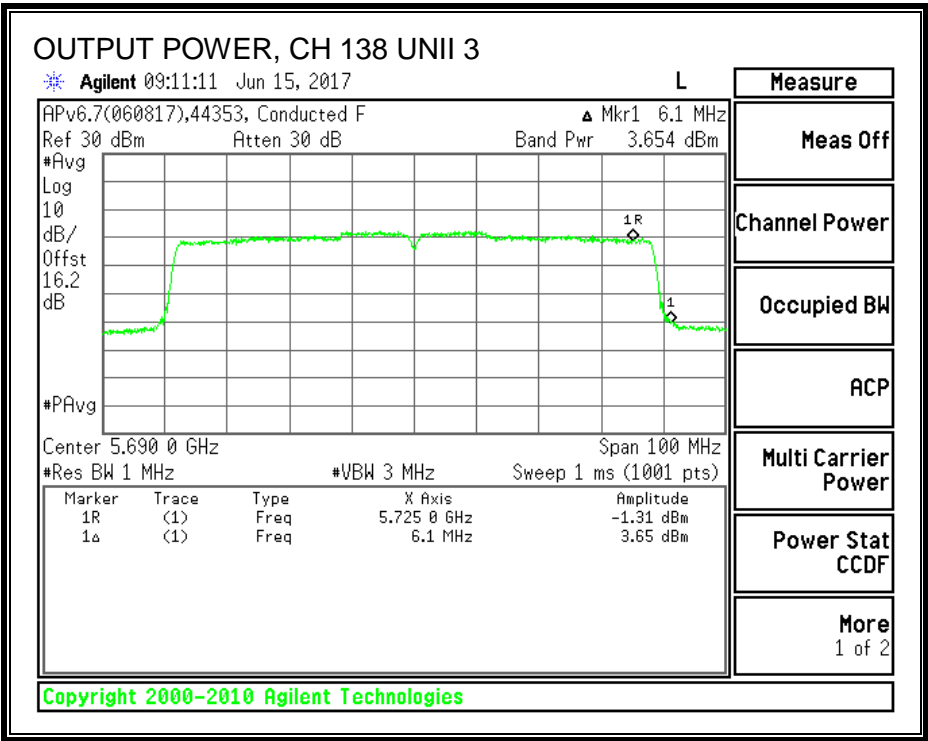
| | | |
|--------------------|------|--|
| Duty Cycle CF (dB) | 0.20 | Included in Calculations of Corr'd Power & PSD |
|--------------------|------|--|

Output Power Results

| Channel | Frequency (MHz) | LAT 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---------|--------------------|---------------------------------|-----------------------------------|-------------------------|-------------------------|
| 138 | 5690 | 3.65 | 3.85 | 30.00 | -26.15 |

PSD Results

| Channel | Frequency (MHz) | LAT 3 Meas PSD (dBm) | Total Corr'd PSD (dBm) | PSD Limit (dBm) | PSD Margin (dB) |
|---------|--------------------|-------------------------------|---------------------------------|-----------------------|-----------------------|
| 138 | 5690 | -3.68 | -3.48 | 30.00 | -33.48 |



8.32.6. 6 dB BANDWIDTH

LIMITS

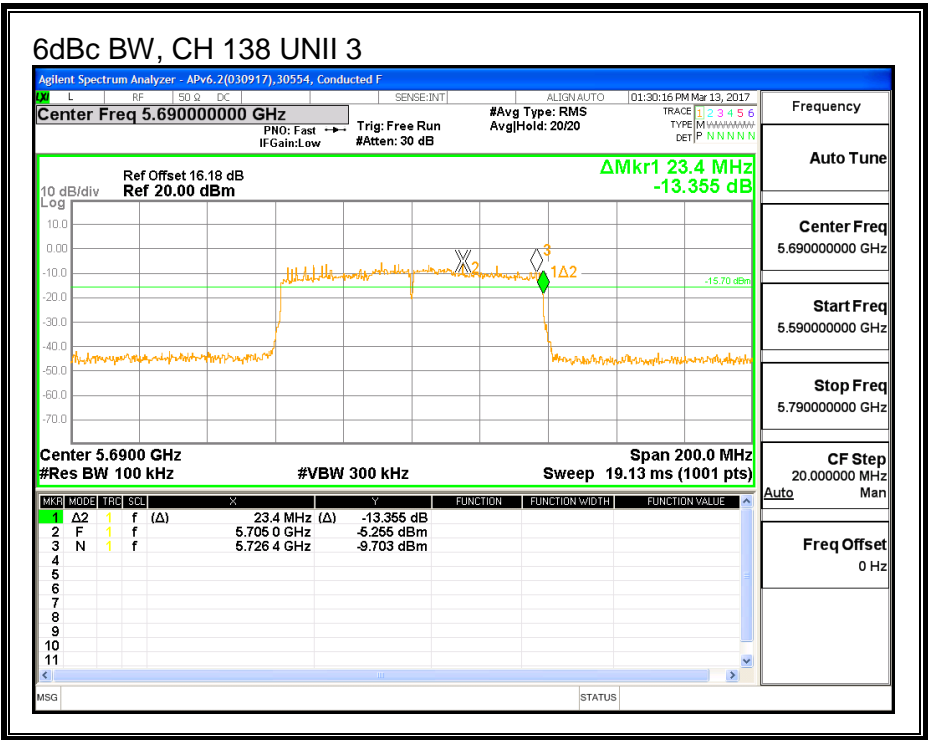
FCC §15.407 (e)

The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) |
|---------|--------------------|-------------------------|
| High | 5690 | 23.40 |

6 dB BANDWIDTH



8.33. 11ac HT80 2TX CDD MIMO MODE IN THE 5.6GHz BAND

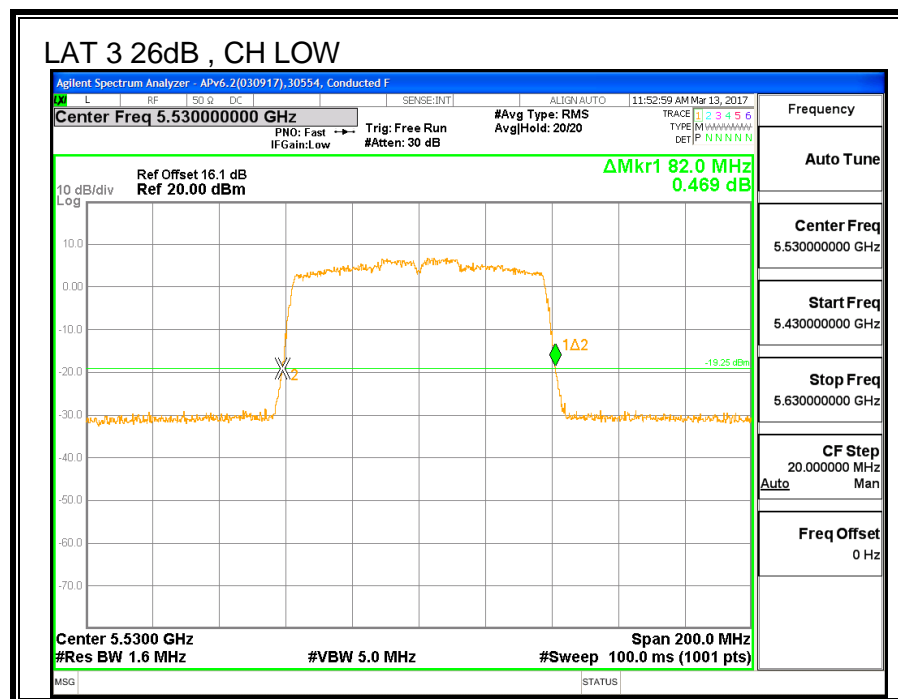
8.33.1. 26 dB BANDWIDTH

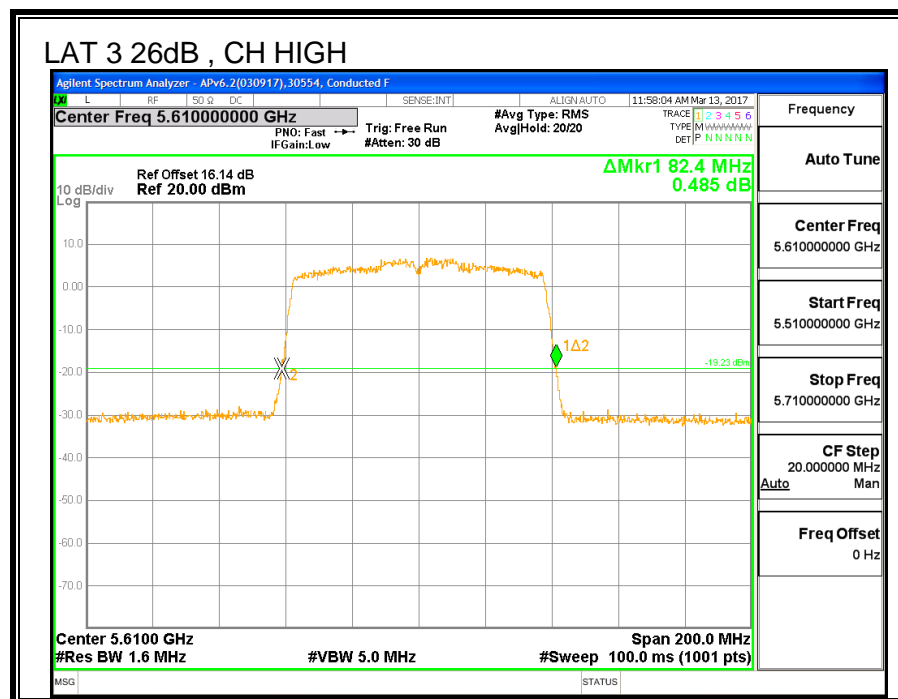
LIMITS

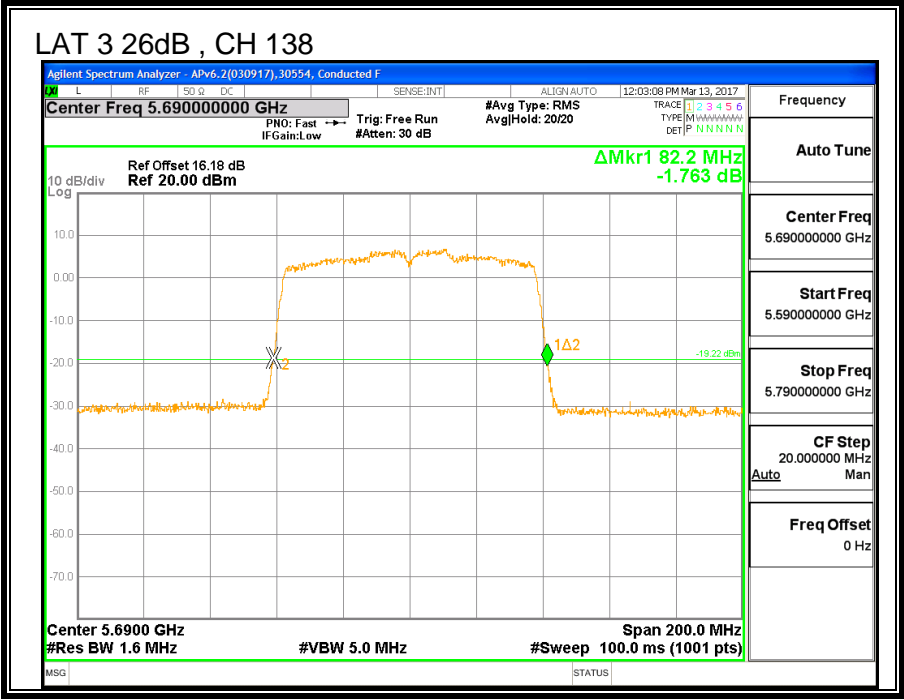
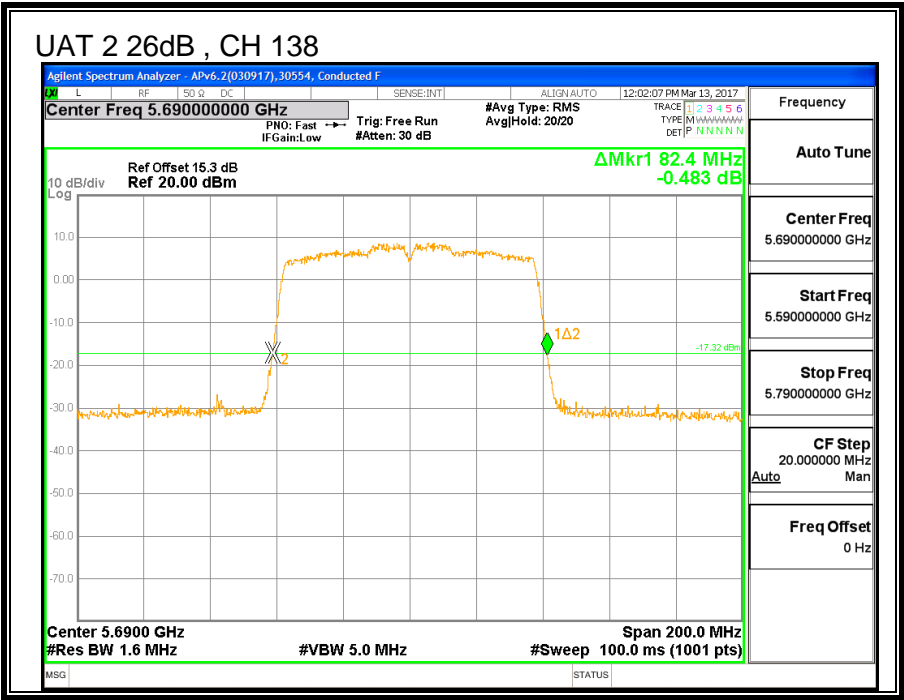
None; for reporting purposes only.

RESULTS

| Channel | Frequency | 26 dB BW UAT 2 (MHz) | 26 dB BW LAT 3 (MHz) |
|---------|-----------|----------------------------|----------------------------|
| Low | 5530 | 82.4 | 82.0 |
| High | 5610 | 82.4 | 82.4 |
| 138 | 5690 | 82.4 | 82.2 |







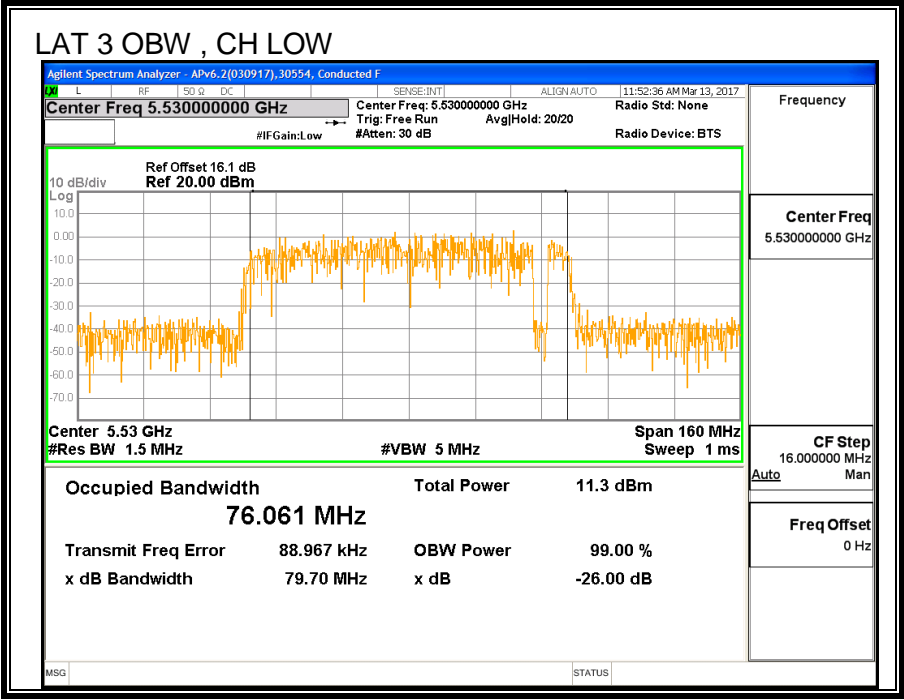
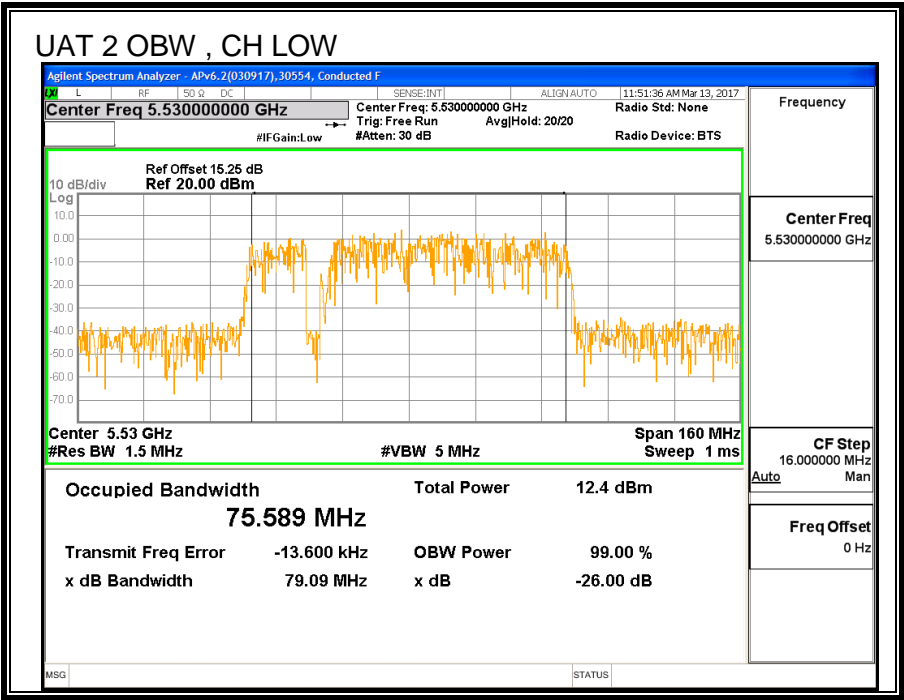
8.33.2. 99% BANDWIDTH

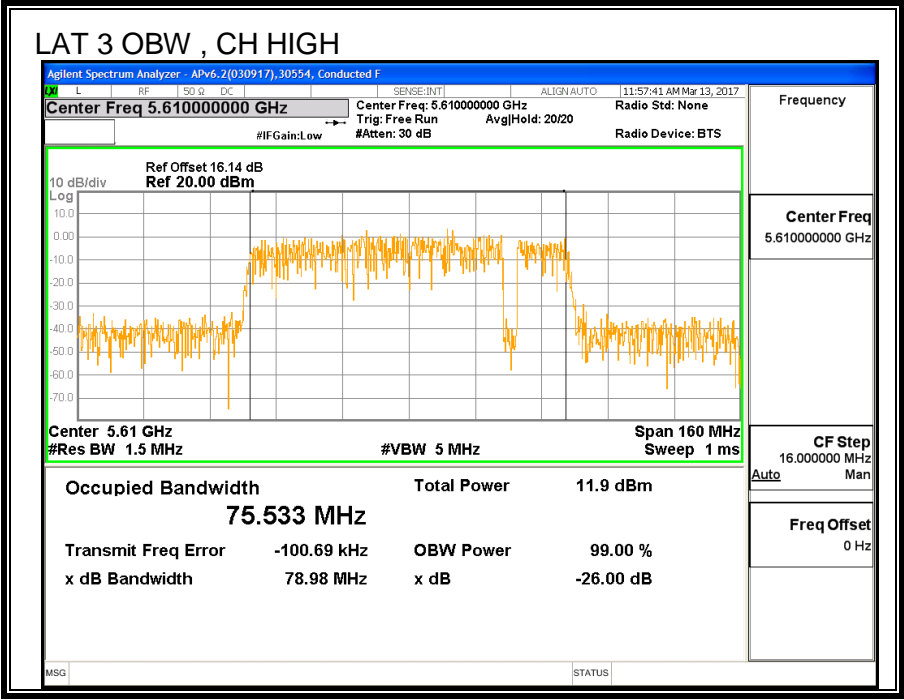
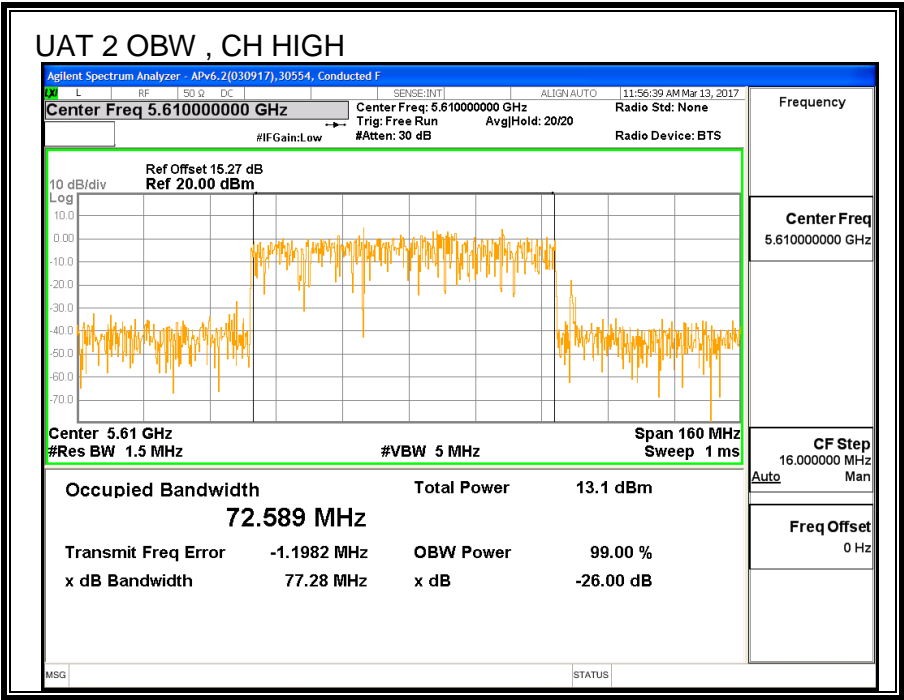
LIMITS

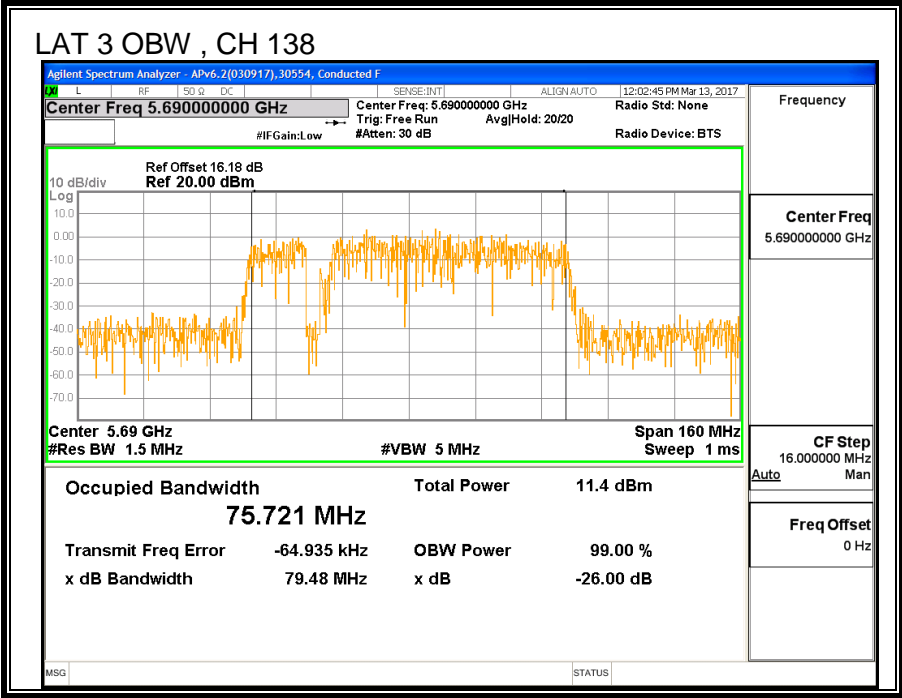
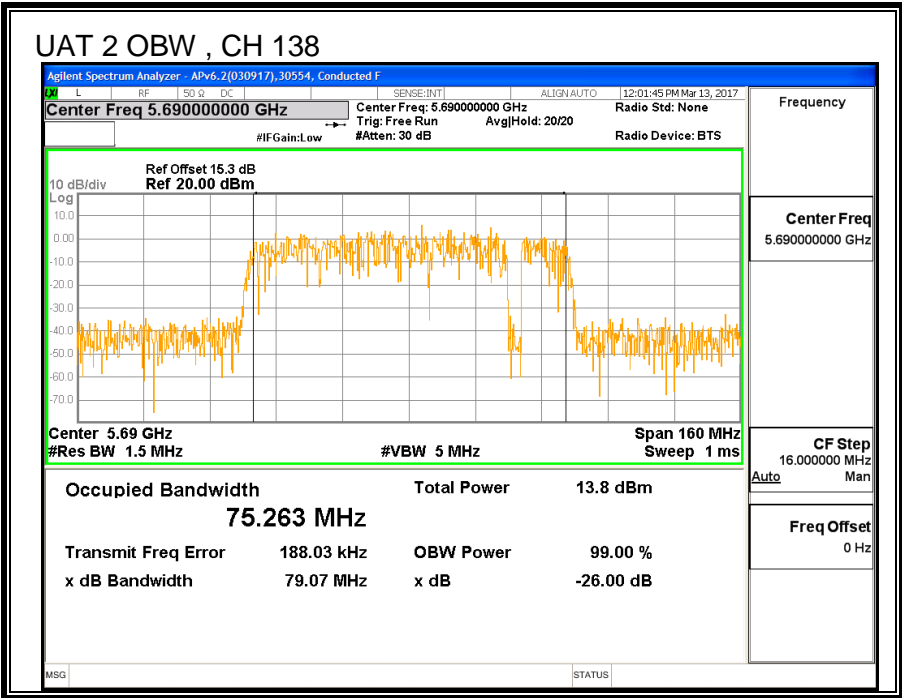
None; for reporting purposes only.

RESULTS

| Channel | Frequency | 99% BW UAT 2 (MHz) | 99% BW LAT 3 (MHz) |
|---------|-----------|--------------------------|--------------------------|
| Low | 5530 | 75.589 | 76.061 |
| High | 5610 | 72.589 | 75.533 |
| 138 | 5690 | 75.263 | 75.721 |







8.33.3. AVERAGE POWER

| | | | |
|------------|-------|--------------|-----------|
| ID: | 30554 | Date: | 6/13/2017 |
|------------|-------|--------------|-----------|

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

RESULTS

Average Power Results

| Channel | Frequency (MHz) | UAT 2 Power (dBm) | LAT 3 Power (dBm) | Total Power (dBm) |
|---------|--------------------|-------------------------|-------------------------|-------------------------|
| Low | 5530 | 13.81 | 13.95 | 16.89 |
| High | 5610 | 18.92 | 18.86 | 21.90 |
| 138 | 5690 | 18.77 | 18.82 | 21.81 |

8.33.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26-dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required. However, PSD measurement was measured by Spectrum Analyzer and duty cycle factor is required

Straddle channel power is measured using PXA spectrum analyzer, duty cycle correction factor is required.

DIRECTIONAL ANTENNA GAIN

For Power used uncorrelated gain: The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

| UAT 2 | LAT 3 | Uncorrelated Chains |
|----------------|----------------|----------------------------|
| Antenna | Antenna | Directional |
| Gain | Gain | Gain |
| (dBi) | (dBi) | (dBi) |
| -0.75 | -0.96 | -0.85 |

For PSD used correlated gain: The TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

| UAT 2 | LAT 3 | Correlated Chains |
|----------------|----------------|--------------------------|
| Antenna | Antenna | Directional |
| Gain | Gain | Gain |
| (dBi) | (dBi) | (dBi) |
| -0.75 | -0.96 | 2.16 |

RESULTS

Bandwidth, Antenna Gain and Limits

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PSD (dBi) | Power Limit (dBm) | PSD Limit (dBm) |
|---------|--------------------|-----------------------------|---------------------------|---|---|-------------------------|-----------------------|
| Low | 5530 | 82.00 | 75.589 | -0.85 | 2.16 | 24.00 | 11.00 |
| High | 5610 | 82.40 | 72.589 | -0.85 | 2.16 | 24.00 | 11.00 |

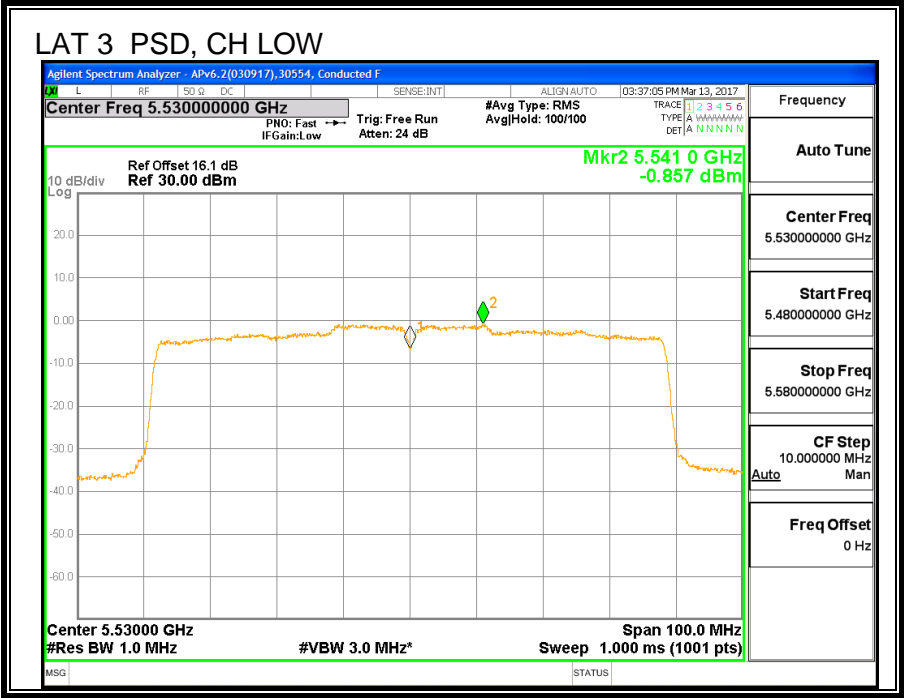
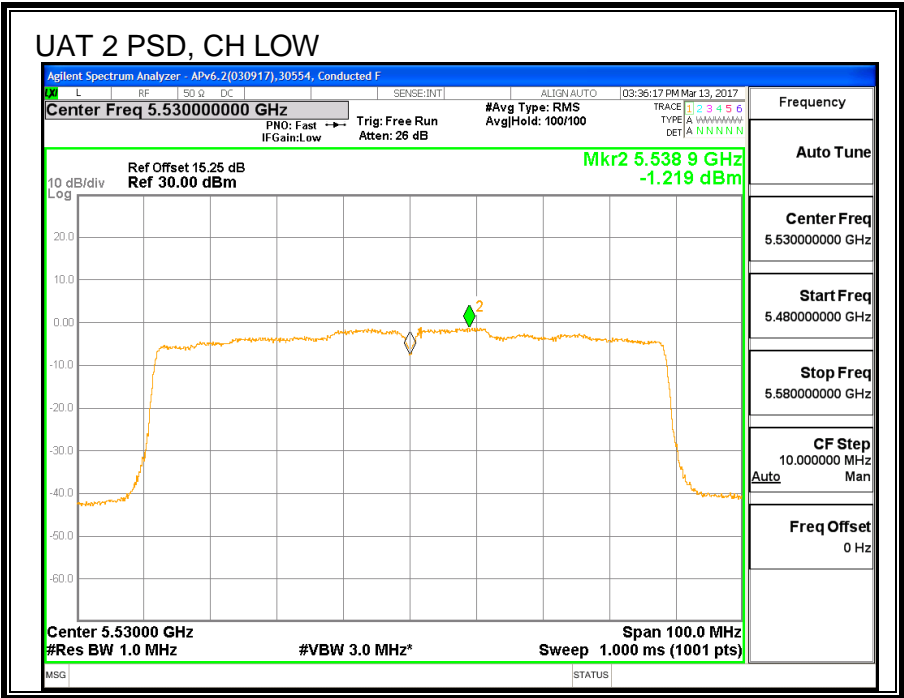
| | | |
|--------------------|------|--|
| Duty Cycle CF (dB) | 0.20 | Included in Calculations of Corr'd PSD |
|--------------------|------|--|

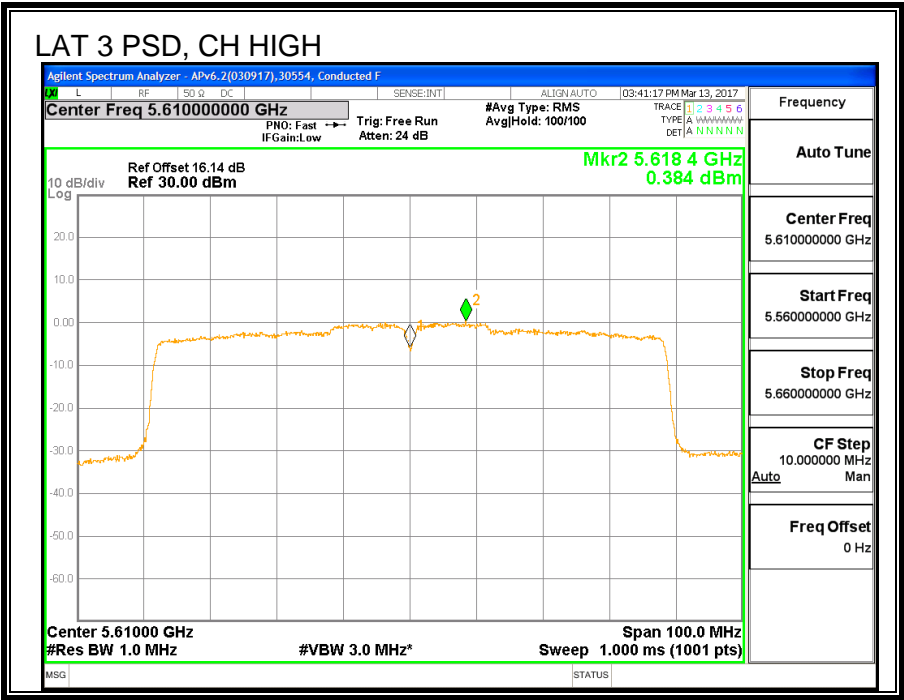
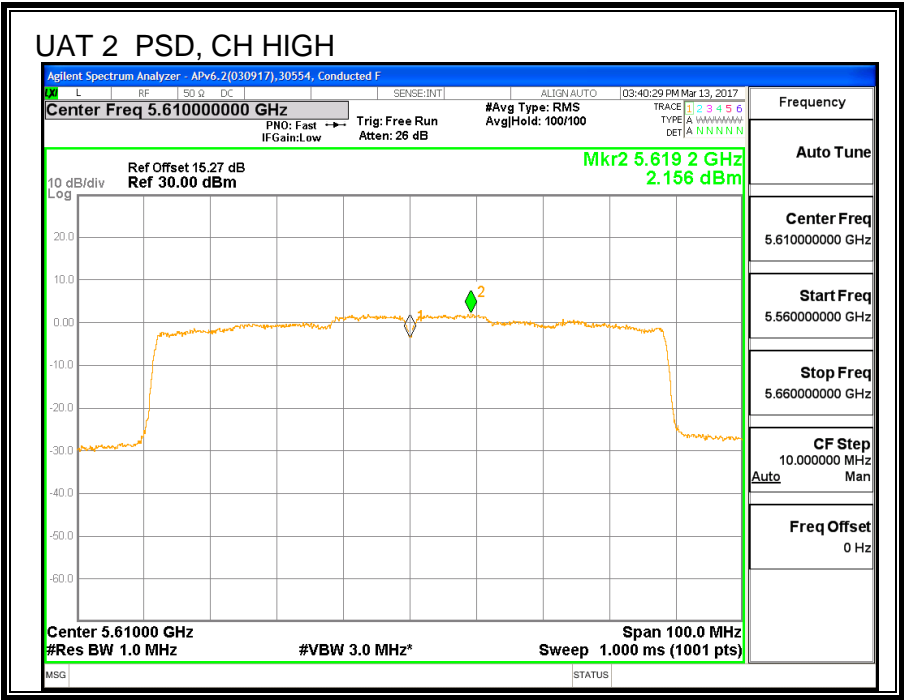
Output Power Results

| Channel | Frequency (MHz) | UAT 2 Meas Power (dBm) | LAT 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---------|--------------------|---------------------------------|---------------------------------|-----------------------------------|-------------------------|-------------------------|
| Low | 5530 | 13.81 | 13.95 | 16.89 | 24.00 | -7.11 |
| High | 5610 | 18.92 | 18.86 | 21.90 | 24.00 | -2.10 |

PSD Results

| Channel | Frequency (MHz) | UAT 2 Meas PSD (dBm) | LAT 3 Meas PSD (dBm) | Total Corr'd PSD (dBm) | PSD Limit (dBm) | PSD Margin (dB) |
|---------|--------------------|-------------------------------|-------------------------------|---------------------------------|-----------------------|-----------------------|
| Low | 5530 | -1.22 | -0.86 | 2.18 | 11.00 | -8.82 |
| High | 5610 | 2.16 | 0.38 | 4.57 | 11.00 | -6.43 |





8.33.5. STRADDLE CHANNEL 138 RESULTS

UNII-2C BAND

Bandwidth, Antenna Gain, and Limits

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PSD (dBi) | Power Limit (dBm) | PSD Limit (dBm) |
|---------|--------------------|-----------------------------|---|---|-------------------------|-----------------------|
| 138 | 5690 | 76.10 | -0.85 | 2.16 | 24.00 | 11.00 |

| | | |
|--------------------|------|--|
| Duty Cycle CF (dB) | 0.20 | Included in Calculations of Corr'd Power & PSD |
|--------------------|------|--|

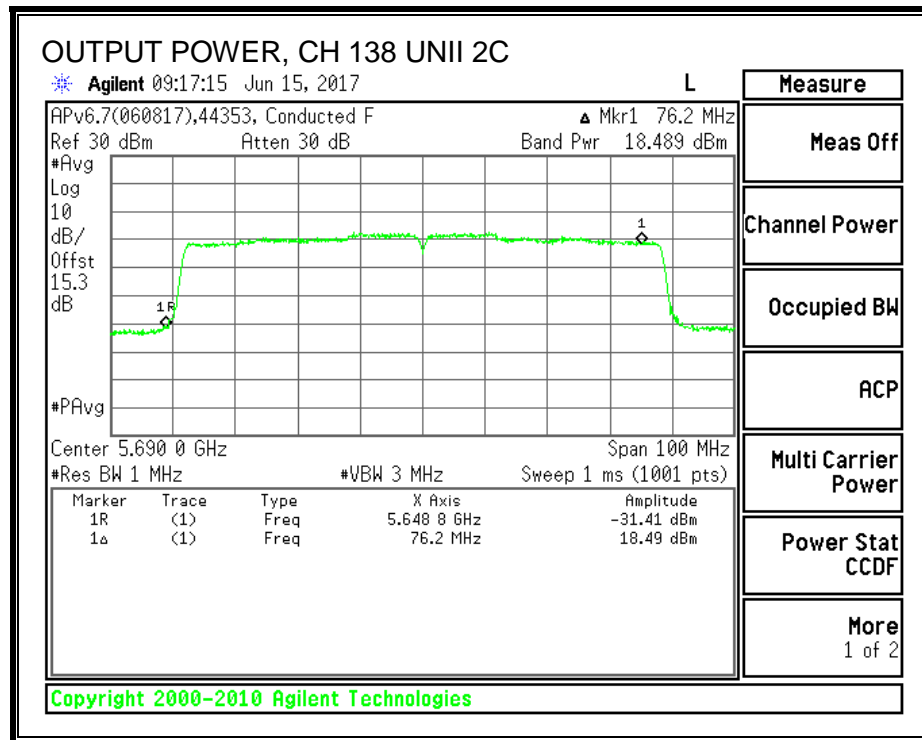
Output Power Results

| Channel | Frequency (MHz) | UAT 2 Meas Power (dBm) | LAT 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---------|--------------------|---------------------------------|---------------------------------|-----------------------------------|-------------------------|-------------------------|
| 138 | 5690 | 18.49 | 18.53 | 21.72 | 24.00 | -2.28 |

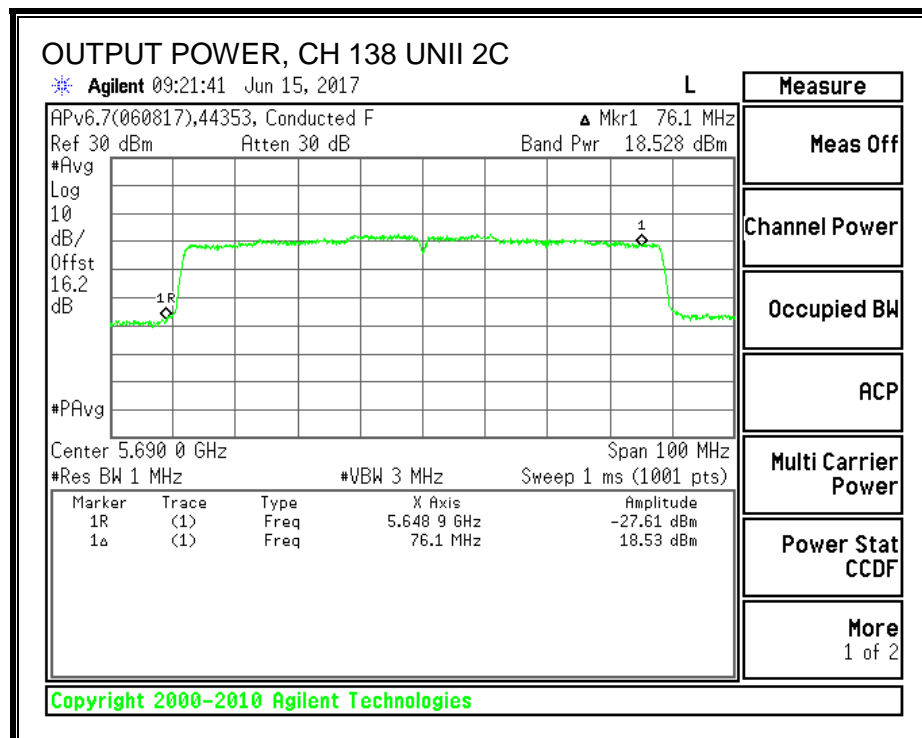
PSD Results

| Channel | Frequency (MHz) | UAT 2 Meas PSD (dBm) | LAT 3 Meas PSD (dBm) | Total Corr'd PSD (dBm) | PSD Limit (dBm) | PSD Margin (dB) |
|---------|--------------------|-------------------------------|-------------------------------|---------------------------------|-----------------------|-----------------------|
| 138 | 5690 | 2.48 | 2.73 | 5.82 | 11.00 | -5.18 |

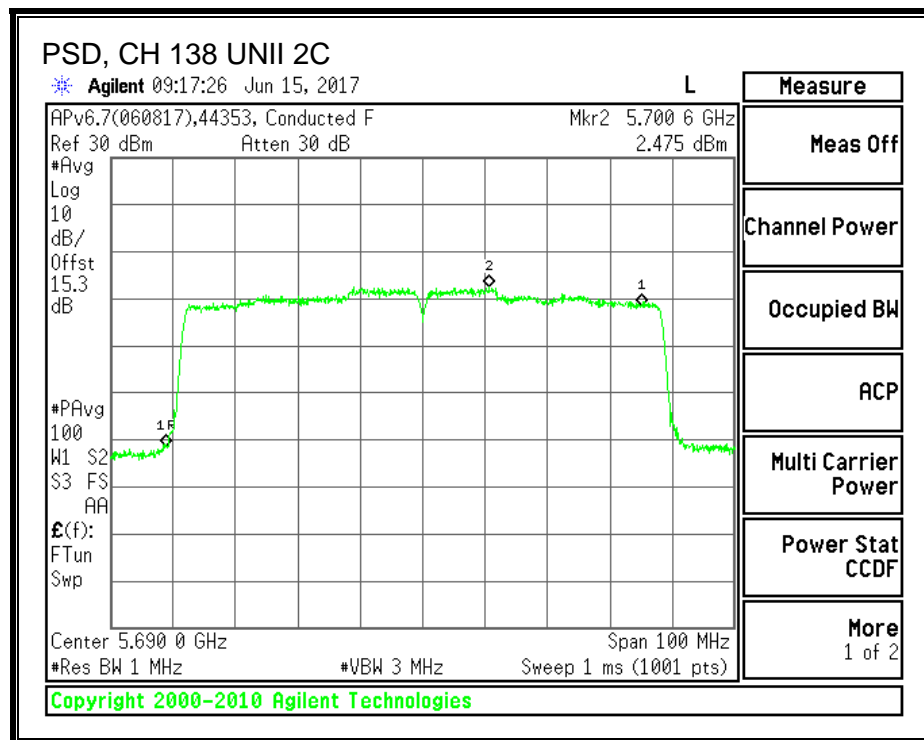
OUTPUT POWER, UAT 2



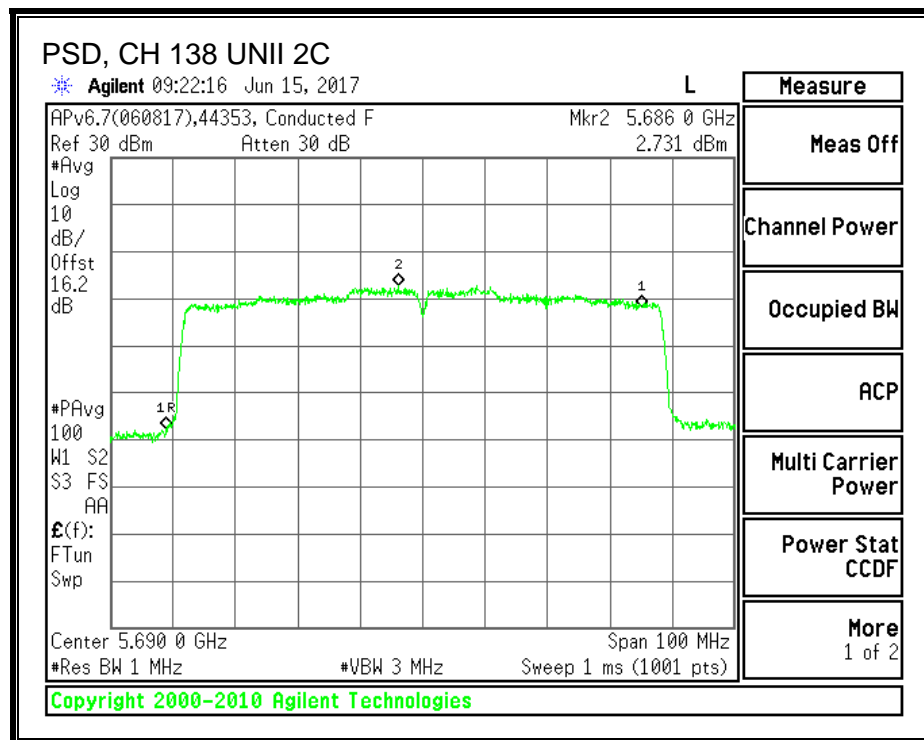
OUTPUT POWER, LAT 3



PSD, UAT 2



PSD, LAT 3



UNII-3 BAND

Antenna Gain and Limit

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Directional Gain (dBi) | Directional Gain (dBi) | Power Limit (dBm) | PSD Limit (dBm) |
|---------|--------------------|-----------------------------|------------------------------|------------------------------|-------------------------|-----------------------|
| 138 | 5690 | 6.10 | -0.05 | 2.92 | 30.00 | 30.00 |

| | | |
|--------------------|------|--|
| Duty Cycle CF (dB) | 0.20 | Included in Calculations of Corr'd Power & PSD |
|--------------------|------|--|

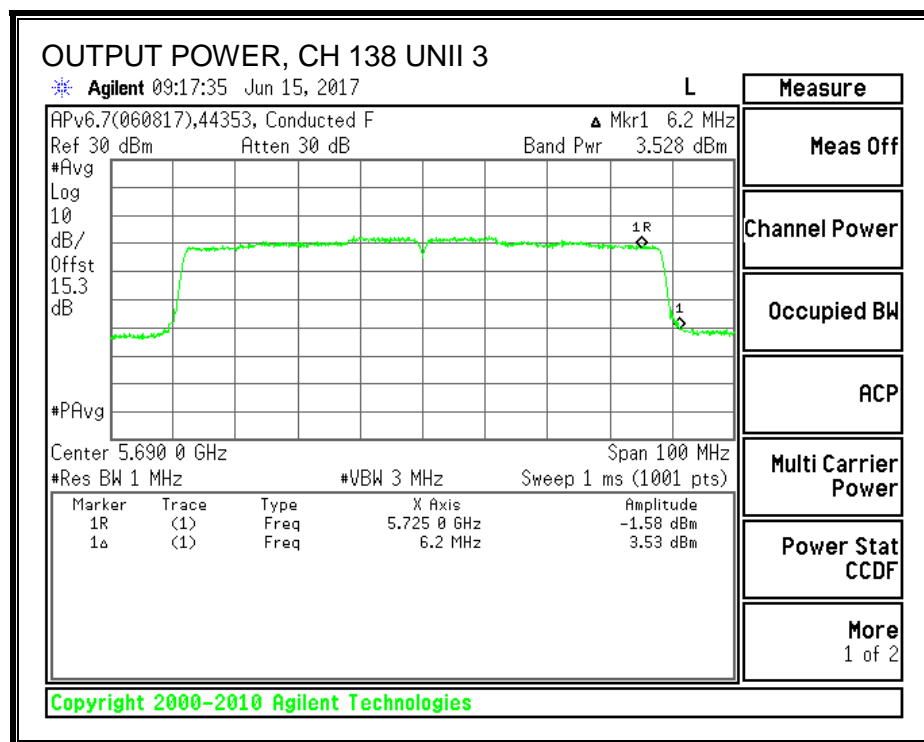
Output Power Results

| Channel | Frequency (MHz) | UAT 2 Meas Power (dBm) | LAT 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---------|--------------------|---------------------------------|---------------------------------|-----------------------------------|-------------------------|-------------------------|
| 138 | 5690 | 3.53 | 3.50 | 6.72 | 30.00 | -23.28 |

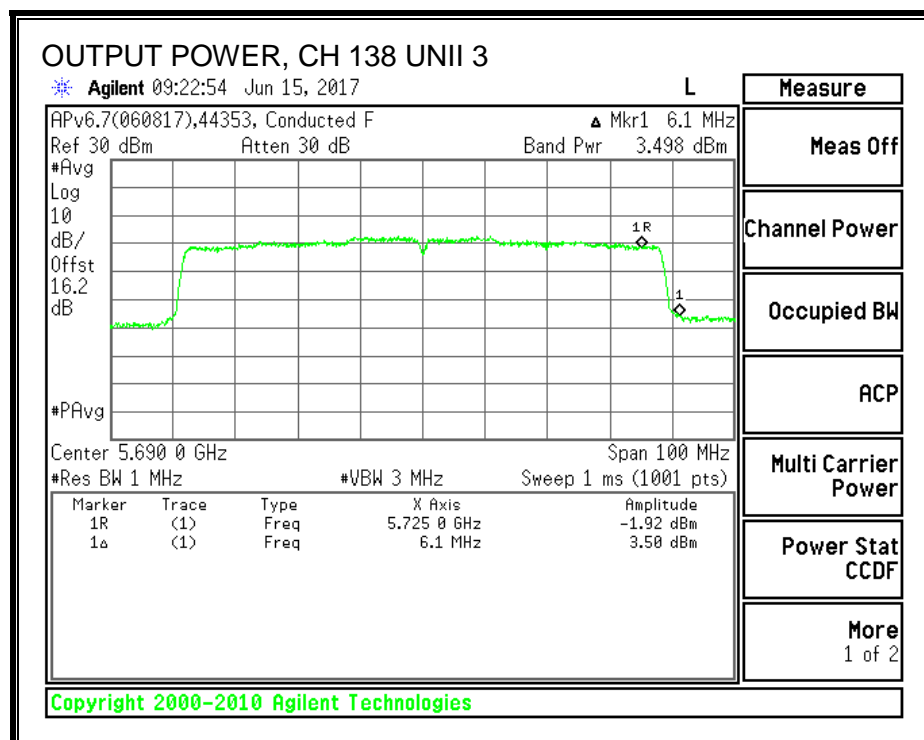
PSD Results

| Channel | Frequency (MHz) | UAT 2 Meas PSD (dBm) | LAT 3 Meas PSD (dBm) | Total Corr'd PSD (dBm) | PSD Limit (dBm) | PSD Margin (dB) |
|---------|--------------------|-------------------------------|-------------------------------|---------------------------------|-----------------------|-----------------------|
| 138 | 5690 | -3.42 | -3.21 | -0.10 | 30.00 | -30.10 |

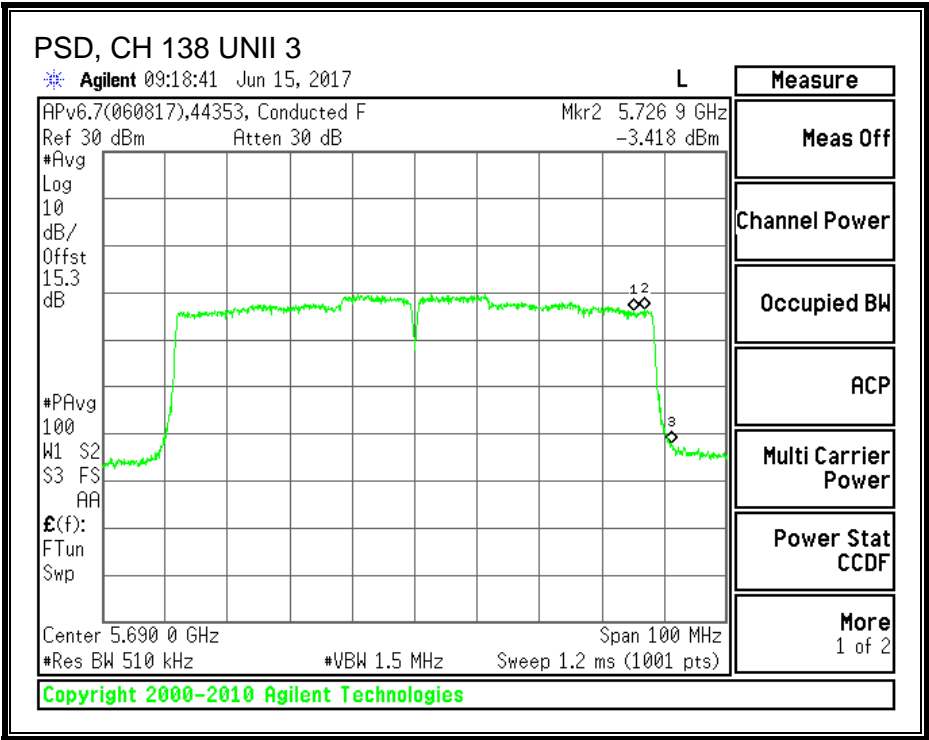
OUTPUT POWER, UAT 2



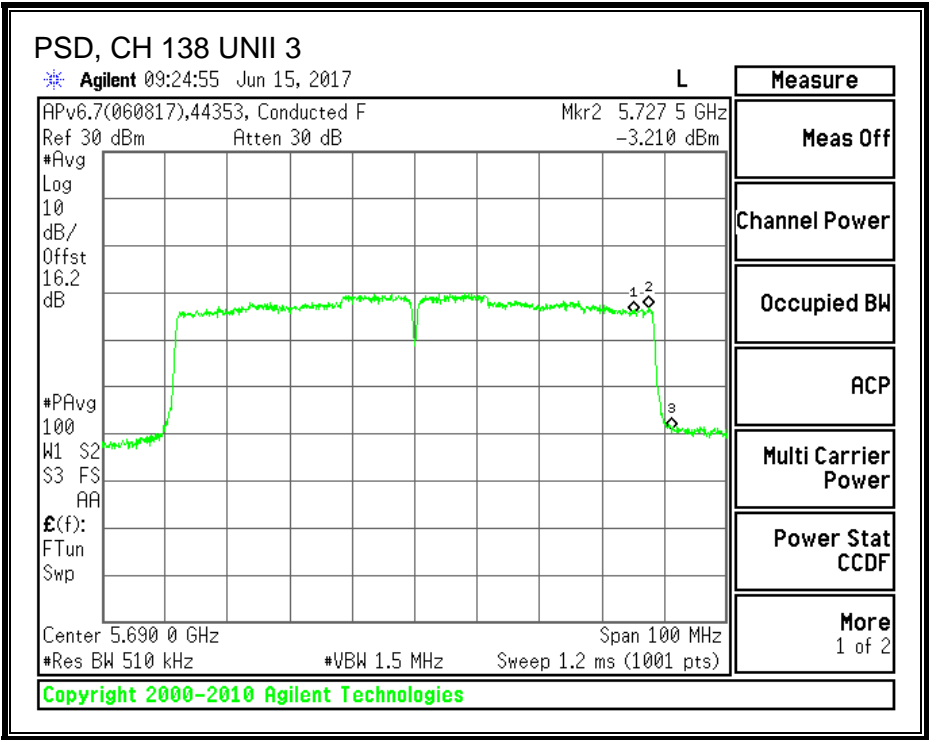
OUTPUT POWER, LAT 3



PSD, UAT 2



PSD, LAT 3



8.33.6. 6 dB BANDWIDTH

LIMITS

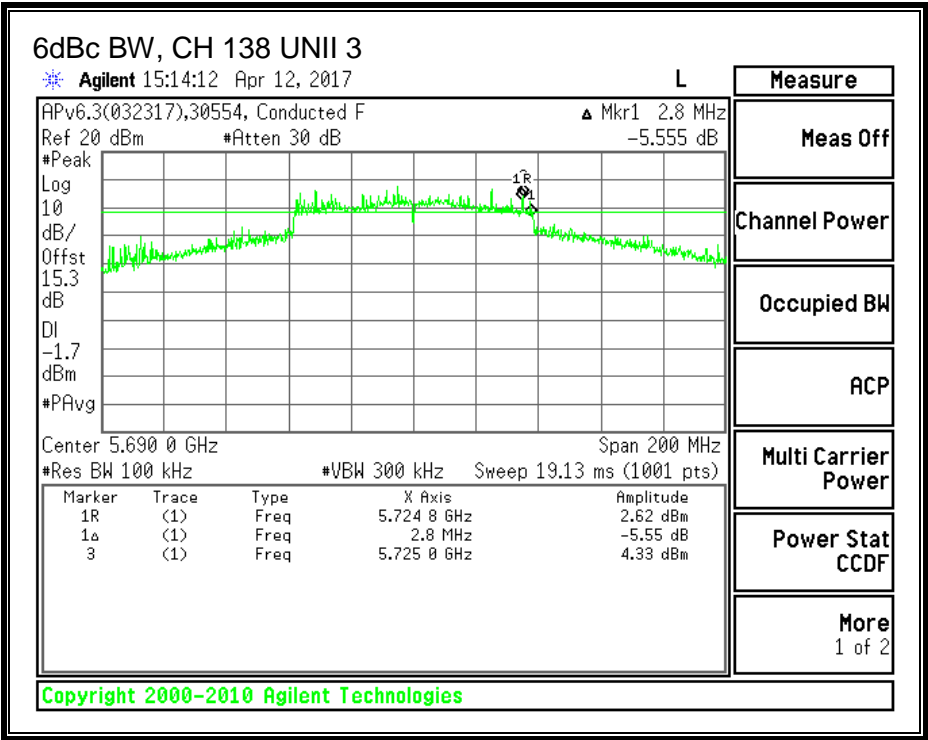
FCC §15.407 (e)

The minimum 6 dB bandwidth shall be at least 500 kHz.

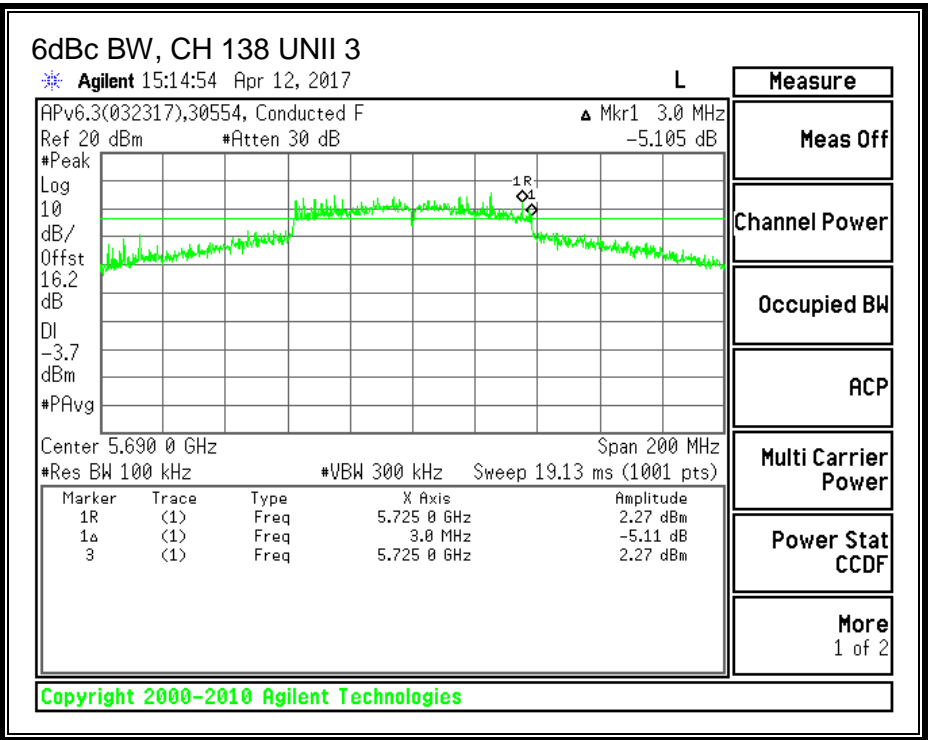
RESULTS

| Channel | Frequency (MHz) | 6 dB BW Ant A (MHz) | 6 dB BW Ant B (MHz) |
|---------|--------------------|---------------------------|---------------------------|
| High | 5690 | 2.80 | 3.00 |

UAT 2



LAT 3



8.34. 11n HT20 UAT 2 SISO MODE IN THE 5.8GHz BAND

8.34.1. 6 dB BANDWIDTH

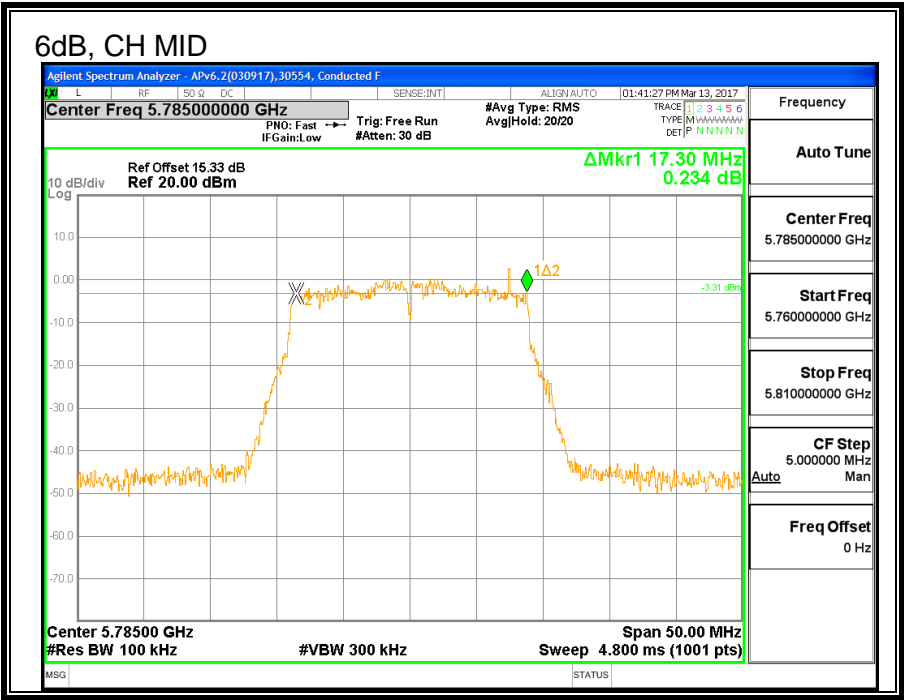
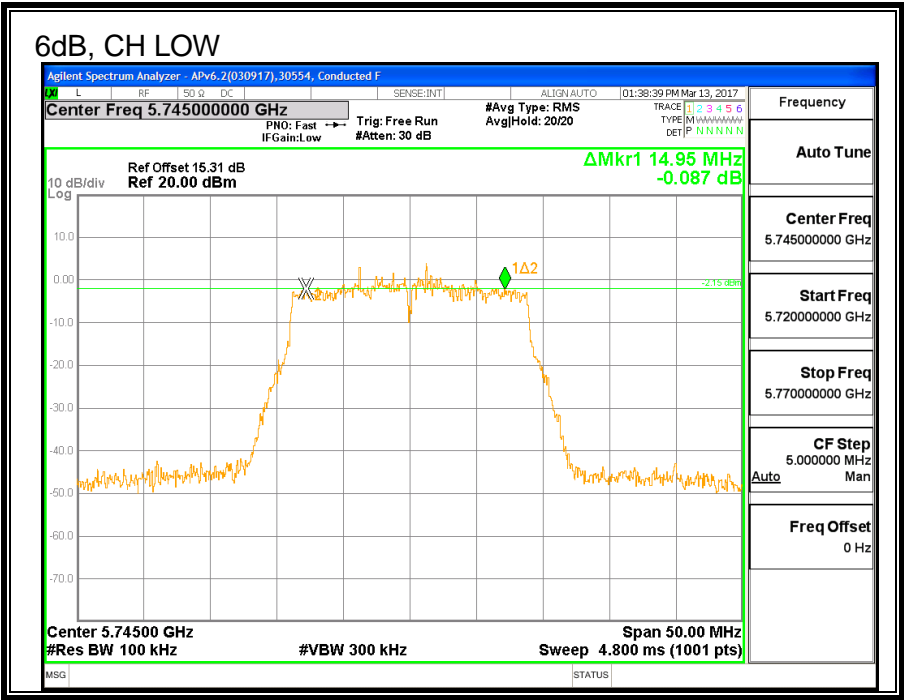
LIMITS

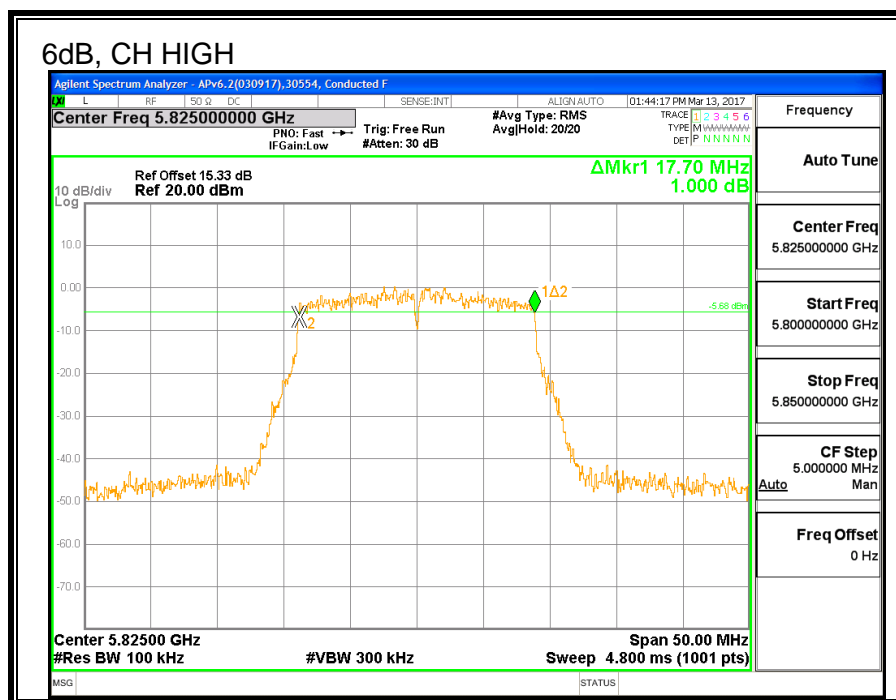
FCC §15.407 (e)

The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

| Channel | Frequency | 6 dB BW UAT 2 (MHz) | Minimum Limit (MHz) |
|---------|-----------|---------------------------|------------------------|
| Low | 5745 | 14.95 | 0.5 |
| Mid | 5785 | 17.30 | 0.5 |
| High | 5825 | 17.70 | 0.5 |





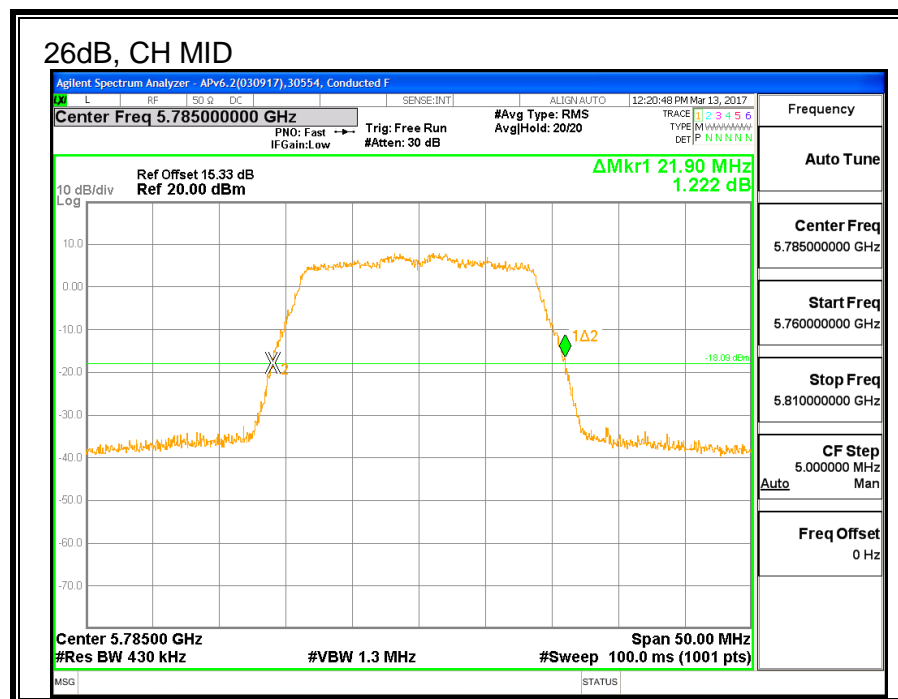
8.34.2. 26 dB BANDWIDTH

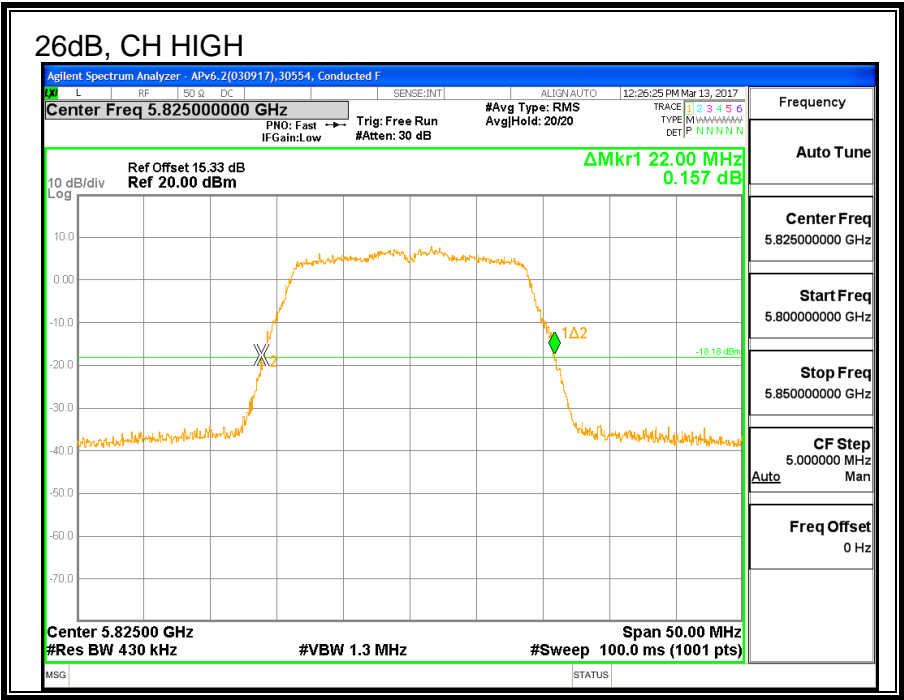
LIMITS

None; for reporting purposes only.

RESULTS

| Channel | Frequency | 26 dB BW UAT 2 (MHz) |
|---------|-----------|----------------------------|
| Low | 5745 | 22.00 |
| Mid | 5785 | 21.9 |
| High | 5825 | 22.00 |





8.34.3. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

| Channel | Frequency | 99% BW UAT 2 (MHz) |
|---------|-----------|--------------------------|
| Low | 5745 | 17.582 |
| Mid | 5785 | 17.742 |
| High | 5825 | 17.488 |