

### 8.7.2. 99% BANDWIDTH

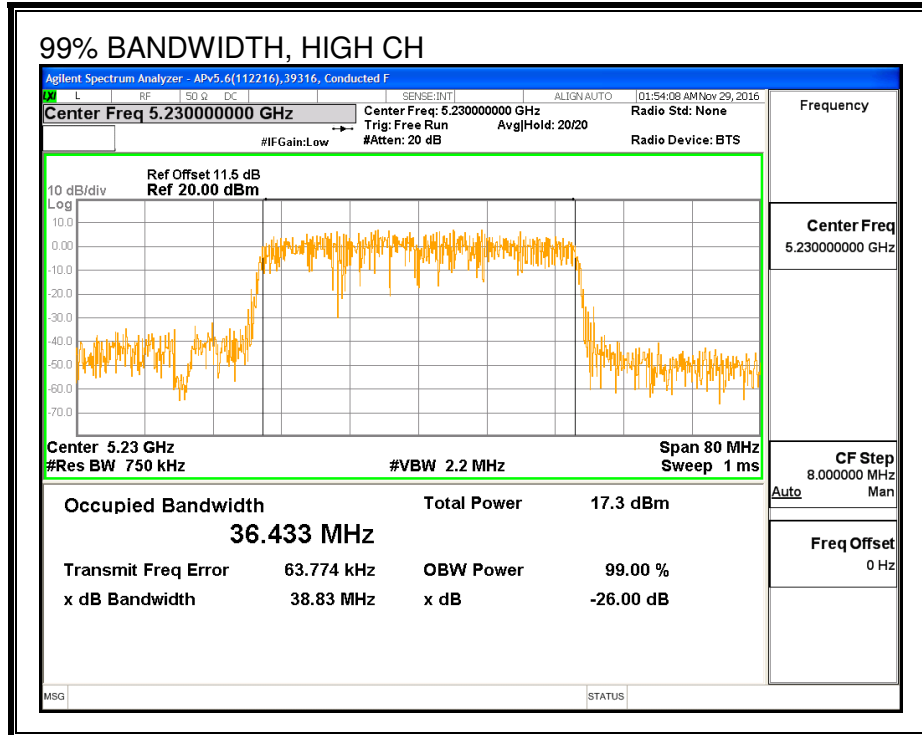
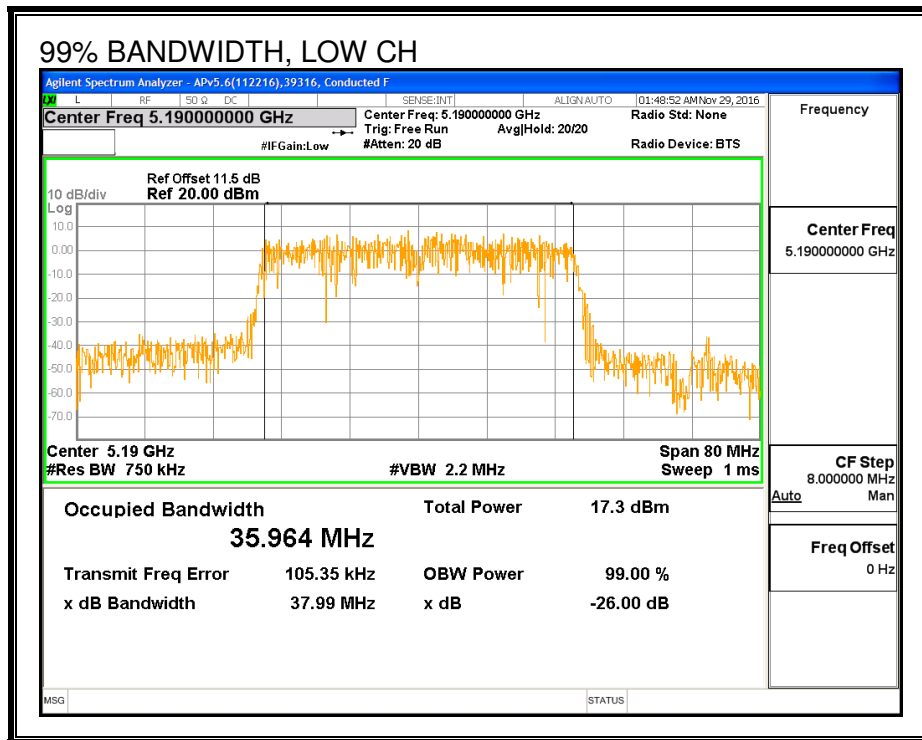
#### LIMITS

None; for reporting purposes only.

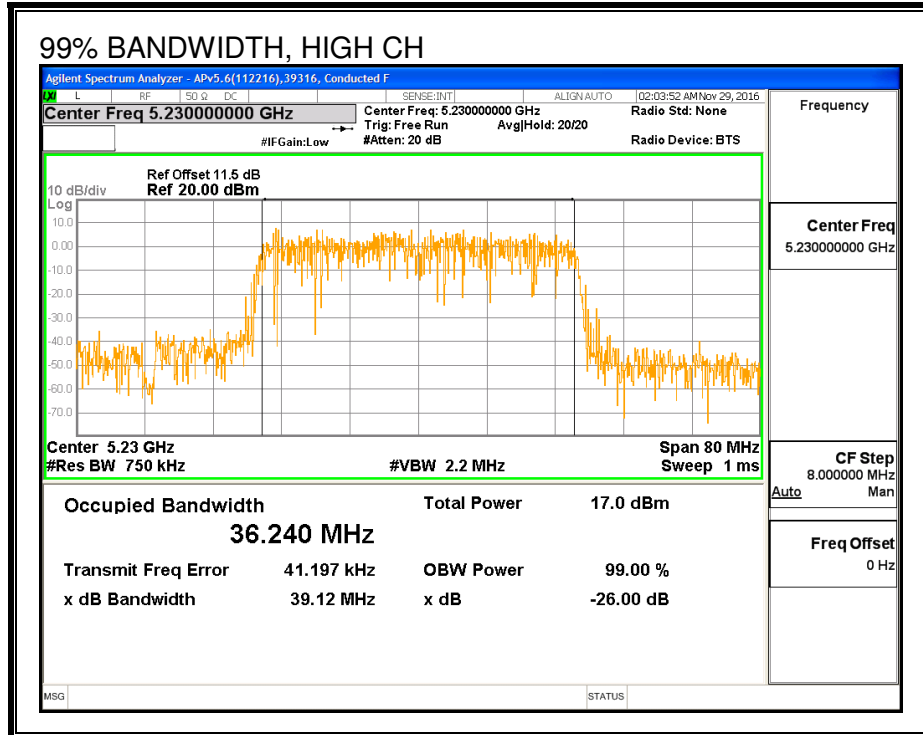
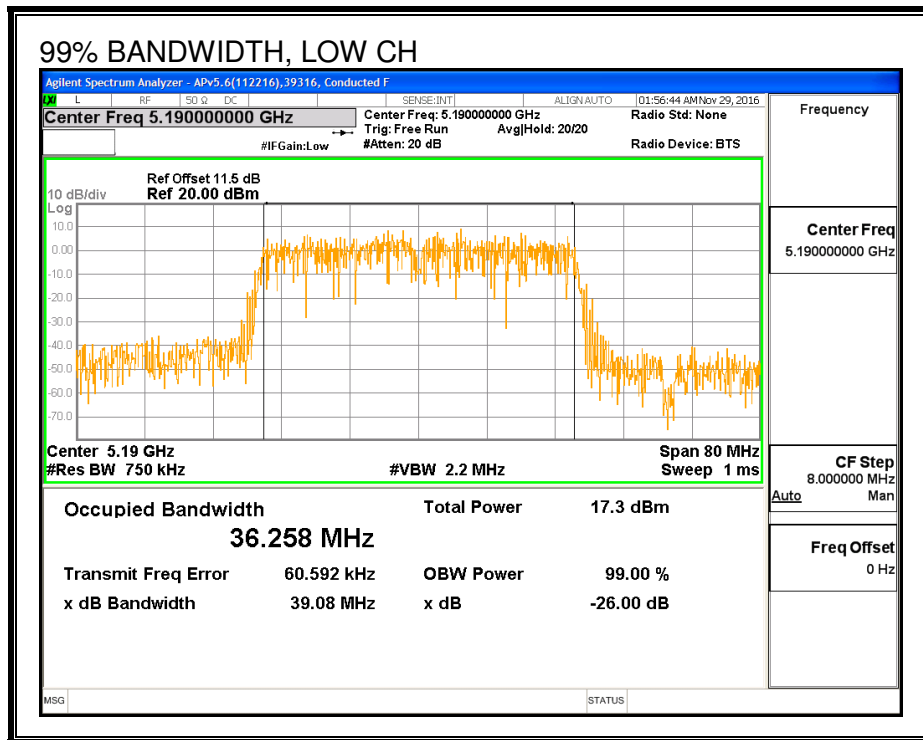
#### RESULTS

Channel	Frequency (MHz)	99% BW Antenna A (MHz)	99% BW Antenna B (MHz)
Low	5190	35.964	36.258
High	5230	36.433	36.240

**99% BANDWIDTH, Antenna A**



**99% BANDWIDTH, Antenna B**



### 8.7.3. AVERAGE POWER

#### LIMITS

None; for reporting purposes only.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### RESULTS

<b>ID:</b>	45256	<b>Date:</b>	1/31/17
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#### **Average Power Results**

<b>Channel</b>	<b>Frequency (MHz)</b>	<b>Antenna A Power (dBm)</b>	<b>Antenna B Power (dBm)</b>	<b>Total Power (dBm)</b>
Low	5190	12.92	12.95	15.95
High	5230	16.88	15.97	19.46

## 8.7.4. OUTPUT POWER AND PSD

### LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum 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.

**DIRECTIONAL ANTENNA GAIN**

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

<b>Antenna A</b>	<b>Antenna B</b>	<b>Uncorrelated Chains</b>
<b>Gain</b>	<b>Gain</b>	<b>Directional</b>
<b>(dBi)</b>	<b>(dBi)</b>	<b>Gain</b>
<b>(dBi)</b>	<b>(dBi)</b>	<b>(dBi)</b>
3.48	3.33	3.41

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

<b>Antenna A</b>	<b>Antenna B</b>	<b>Correlated Chains</b>
<b>Gain</b>	<b>Gain</b>	<b>Directional</b>
<b>(dBi)</b>	<b>(dBi)</b>	<b>Gain</b>
<b>(dBi)</b>	<b>(dBi)</b>	<b>(dBi)</b>
3.48	3.33	6.42

**RESULTS**

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**Antenna Gain and Limits**

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5190	3.41	6.42	24.00	10.58
High	5230	3.41	6.42	24.00	10.58

<b>Duty Cycle CF (dB)</b>	0.10	<b>Included in Calculations of Corr'd PSD</b>
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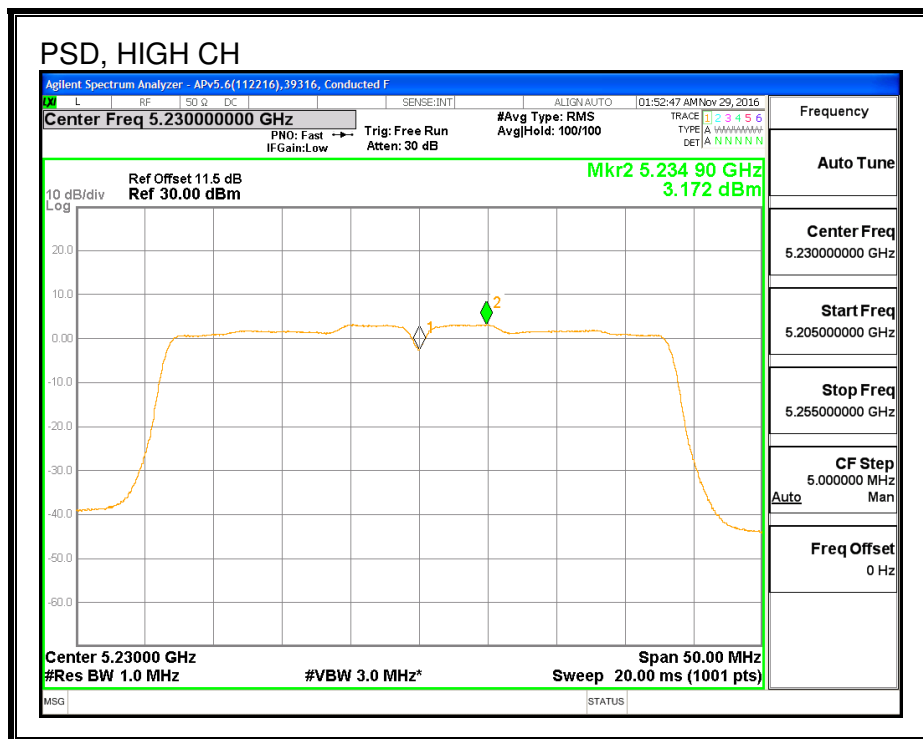
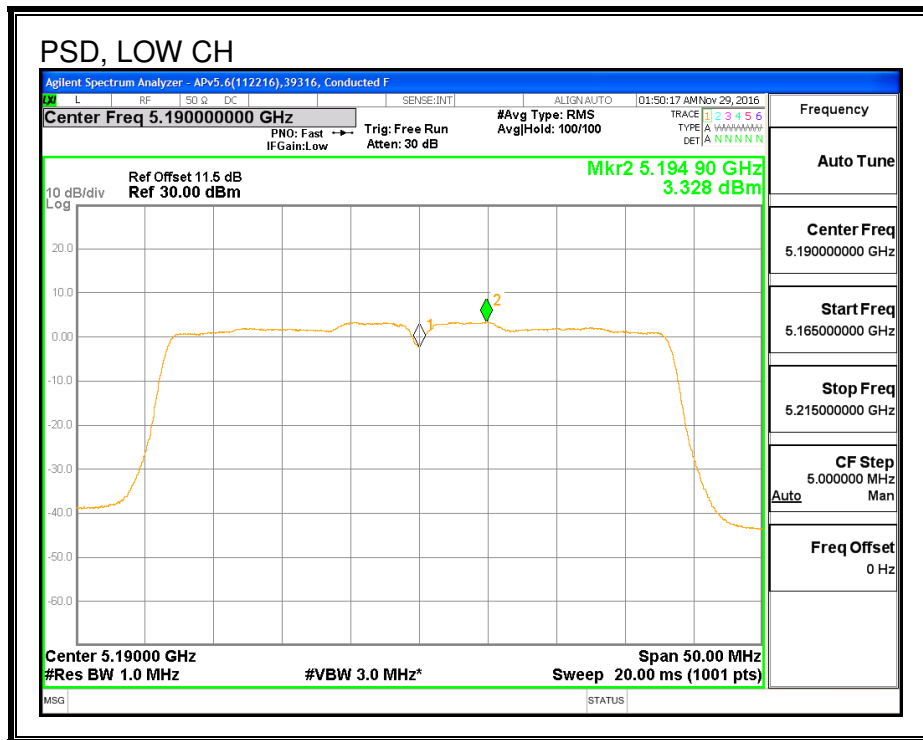
**Output Power Results**

Channel	Frequency (MHz)	Antenna A Meas Power (dBm)	Antenna B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5190	12.92	12.95	15.95	24.00	-8.05
High	5230	16.88	15.97	19.46	24.00	-4.54

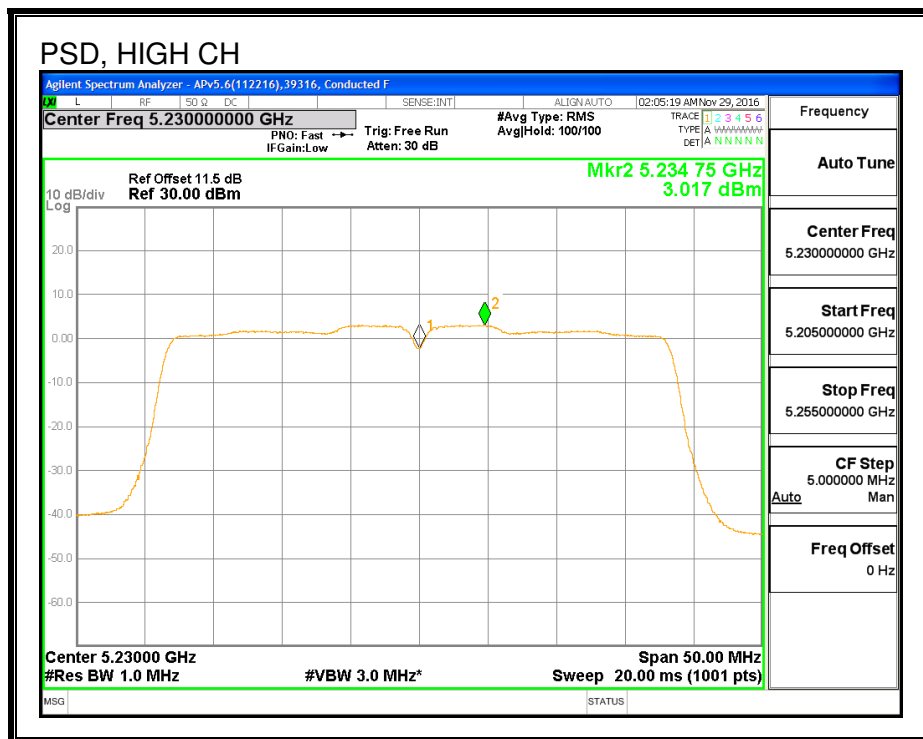
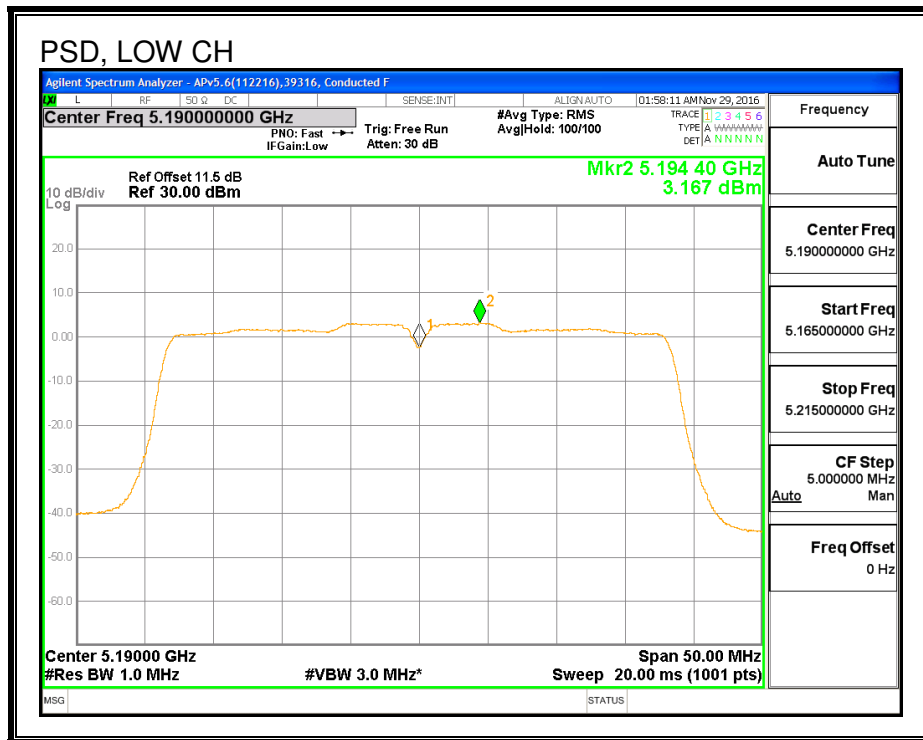
**PSD Results**

Channel	Frequency (MHz)	Antenna A Meas PSD (dBm)	Antenna B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5190	3.33	3.17	6.36	10.58	-4.22
High	5230	3.17	3.02	6.21	10.58	-4.37

**PSD, Antenna A**



**PSD, Antenna B**



**8.8. 802.11ac VHT80 Antenna A MODE IN THE 5.2 GHz BAND**

**8.8.1. 26 dB BANDWIDTH**

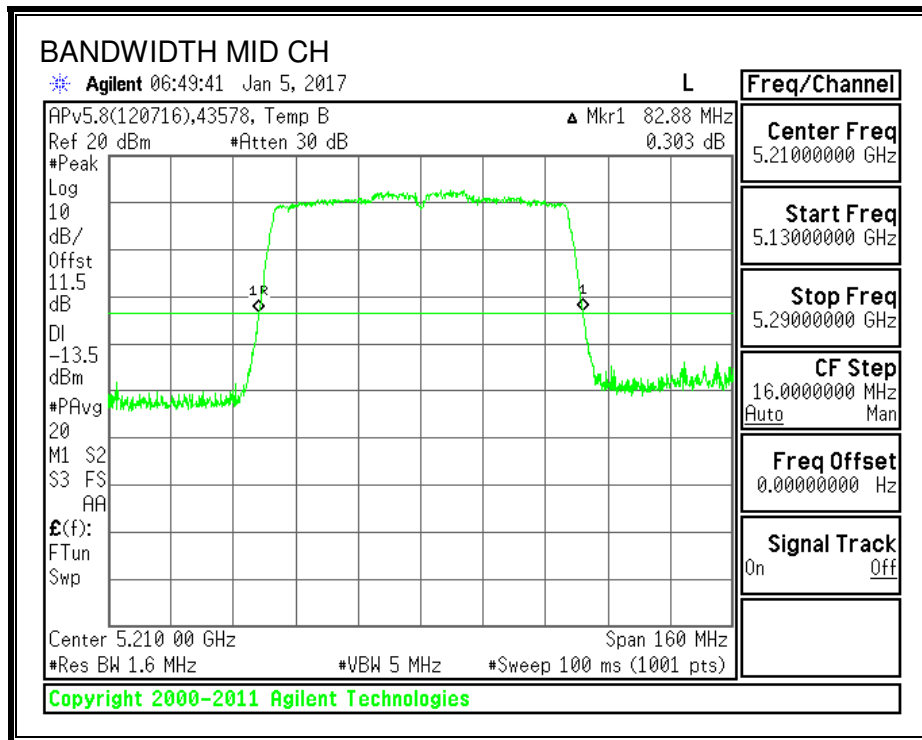
**LIMITS**

None; for reporting purposes only.

**RESULTS**

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Mid	5210	82.880

**26 dB BANDWIDTH**



### 8.8.2. 99% BANDWIDTH

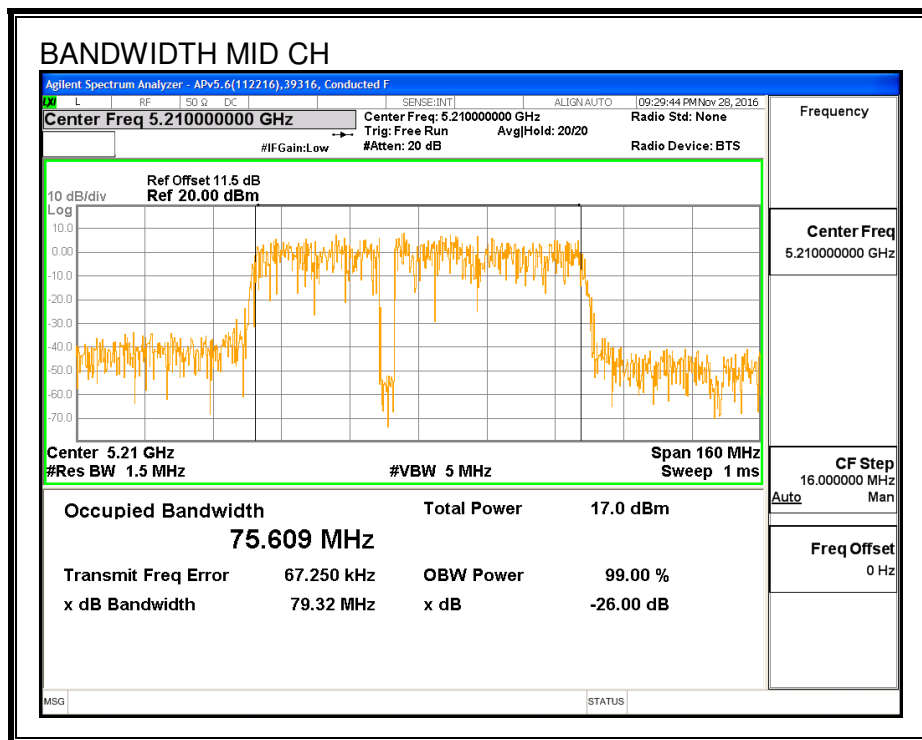
#### LIMITS

None; for reporting purposes only.

#### RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Mid	5210	75.609

#### 99% BANDWIDTH



### 8.8.3. AVERAGE POWER

#### LIMITS

None; for reporting purposes only.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### RESULTS

<b>ID:</b>	45256	<b>Date:</b>	1/31/17
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Channel	Frequency (MHz)	Power (dBm)
Mid	5210	13.45

## 8.8.4. OUTPUT POWER AND PSD

### LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum 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.

### DIRECTIONAL ANTENNA GAIN

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

**RESULTS**

<b>ID:</b>	45256	<b>Date:</b>	1/31/17
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**Antenna Gain and Limits**

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Mid	5210	3.48	3.48	24.00	11.00

<b>Duty Cycle CF (dB)</b>	0.20	<b>Included in Calculations of Corr'd PSD</b>
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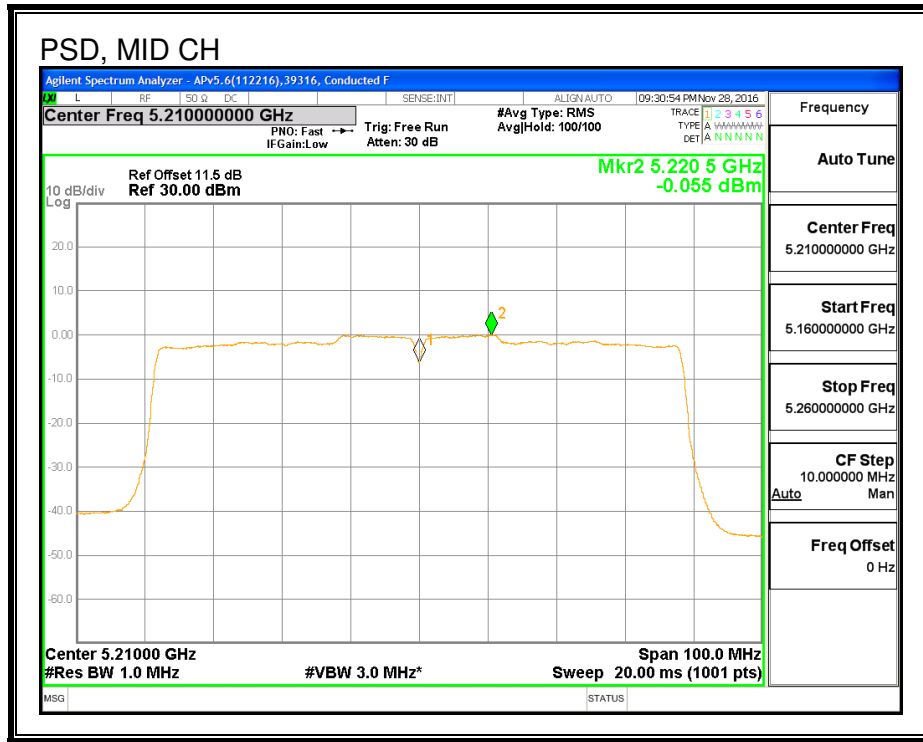
**Output Power Results**

Channel	Frequency (MHz)	Antenna A Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5210	13.45	13.45	24.00	-10.55

**PSD Results**

Channel	Frequency (MHz)	Antenna A Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5210	-0.055	0.15	11.00	-10.86

**PSD**



## 8.9. 802.11ac VHT80 Antenna B MODE IN THE 5.2 GHz BAND

### 8.9.1. 26 dB BANDWIDTH

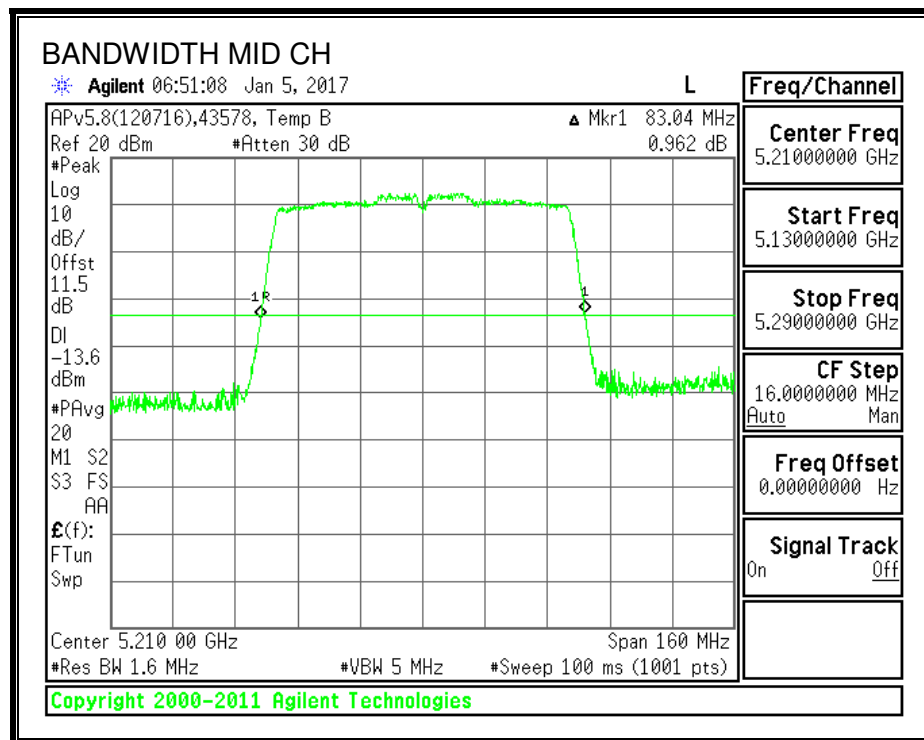
#### LIMITS

None; for reporting purposes only.

#### RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Mid	5210	83.040

#### 26 dB BANDWIDTH



### 8.9.2. 99% BANDWIDTH

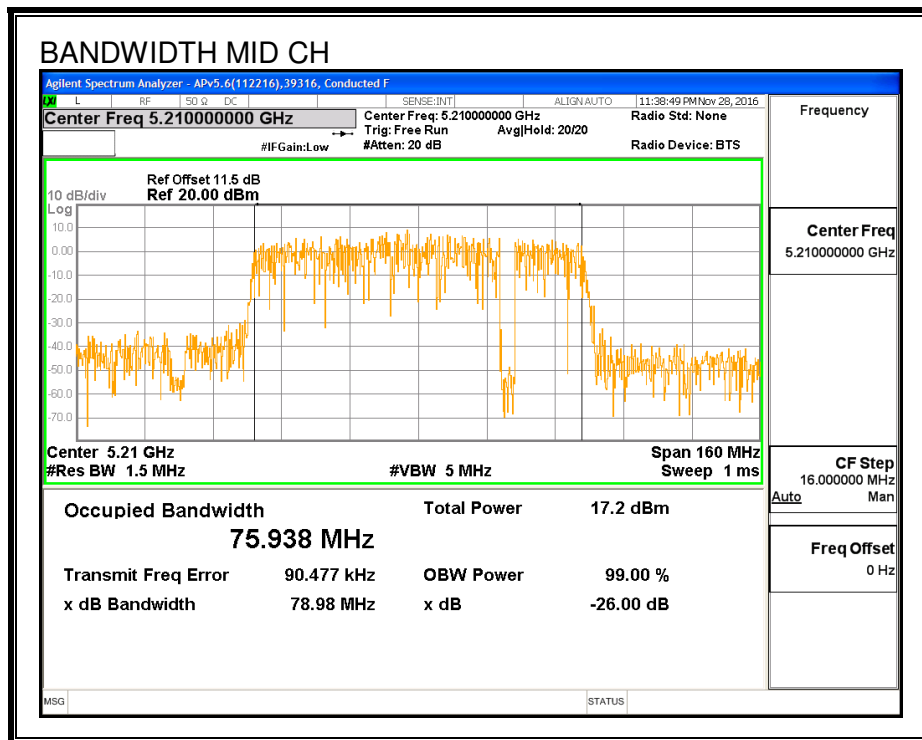
#### LIMITS

None; for reporting purposes only.

#### RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Mid	5210	75.938

#### 99% BANDWIDTH



### 8.9.3. AVERAGE POWER

#### LIMITS

None; for reporting purposes only.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### RESULTS

<b>ID:</b>	45256	<b>Date:</b>	1/31/17
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Channel	Frequency (MHz)	Power (dBm)
Mid	5210	13.41

## 8.9.4. OUTPUT POWER AND PSD

### LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum 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.

### DIRECTIONAL ANTENNA GAIN

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

**RESULTS**

<b>ID:</b>	45256	<b>Date:</b>	1/31/17
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**Antenna Gain and Limits**

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Mid	5210	3.33	3.33	24.00	11.00

<b>Duty Cycle CF (dB)</b>	0.20	<b>Included in Calculations of Corr'd PSD</b>
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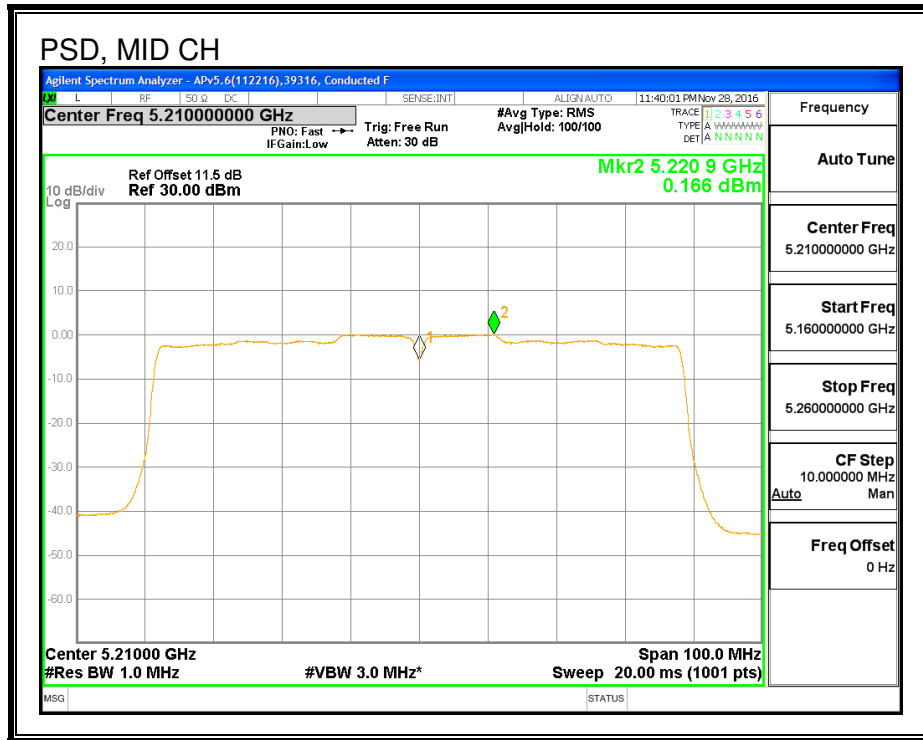
**Output Power Results**

Channel	Frequency (MHz)	Antenna B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5210	13.41	13.41	24.00	-10.59

**PSD Results**

Channel	Frequency (MHz)	Antenna B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5210	0.17	0.37	11.00	-10.63

**PSD**



**8.10. 802.11ac VHT80 2Tx (Antenna A + Antenna B) CDD MODE IN THE 5.2 GHz BAND**

**8.10.1. 26 dB BANDWIDTH**

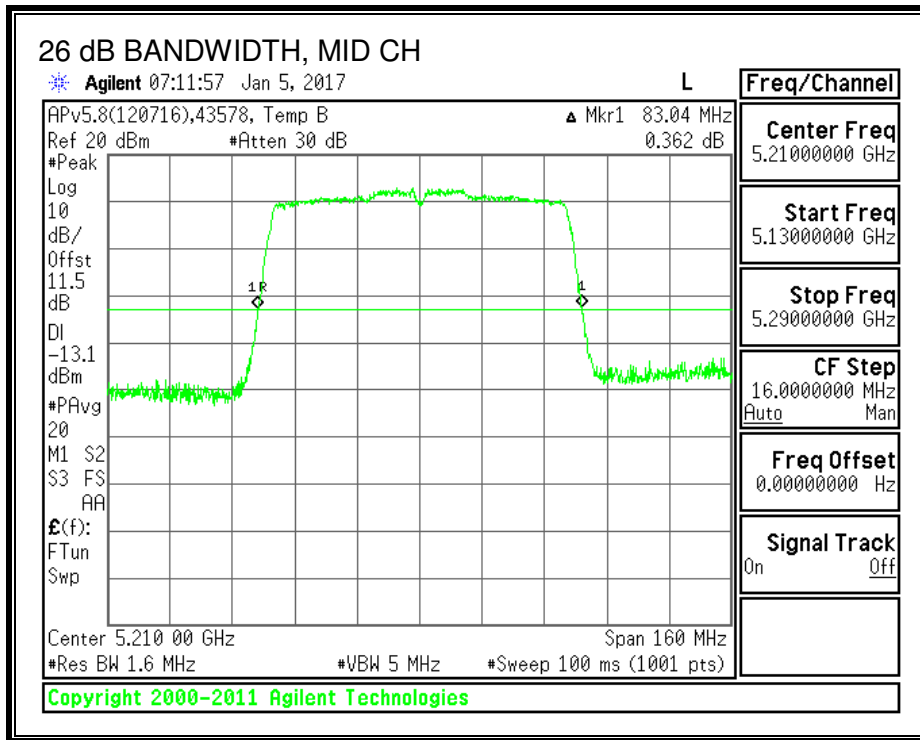
**LIMITS**

None; for reporting purposes only.

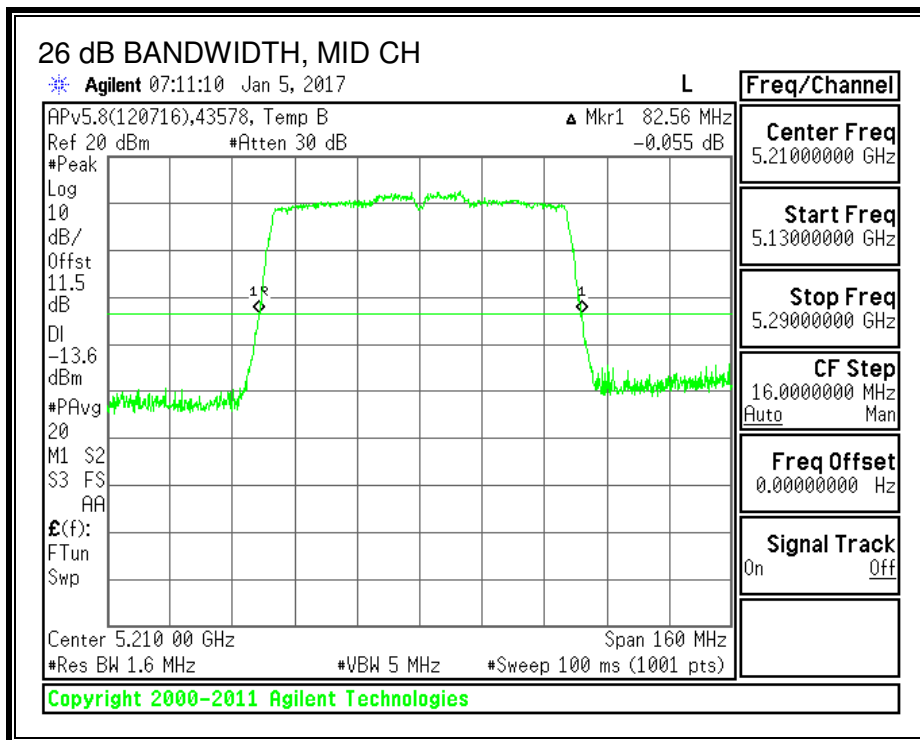
**RESULTS**

Channel	Frequency (MHz)	26 dB BW Antenna A (MHz)	26 dB BW Antenna B (MHz)
Mid	5210	83.040	82.560

**26 DB BANDWIDTH, Antenna A**



**26 DB BANDWIDTH, Antenna B**



### 8.10.2. 99% BANDWIDTH

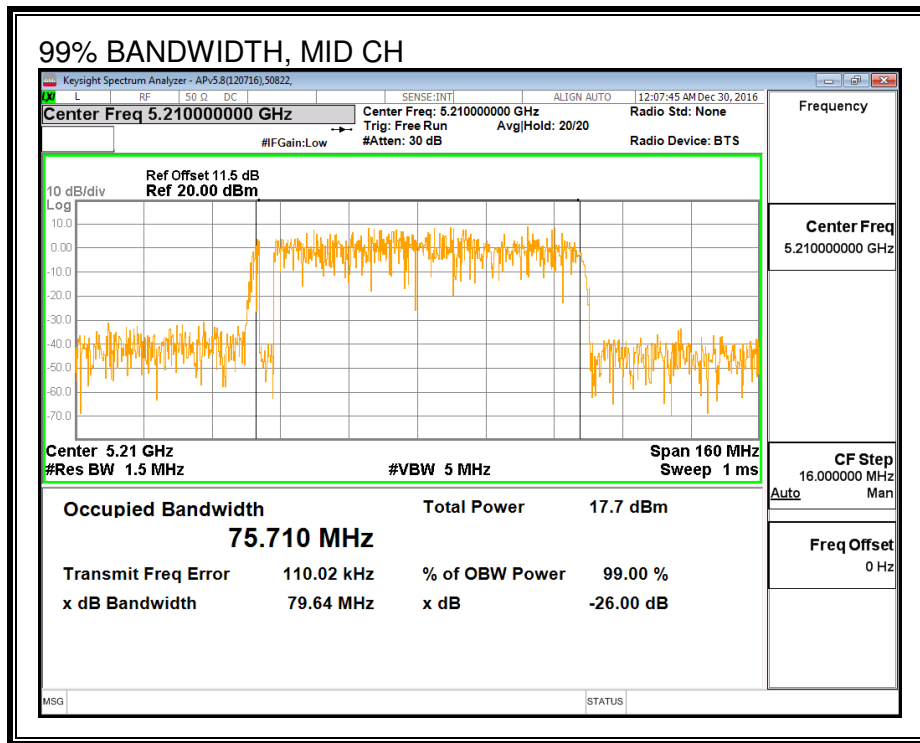
#### LIMITS

None; for reporting purposes only.

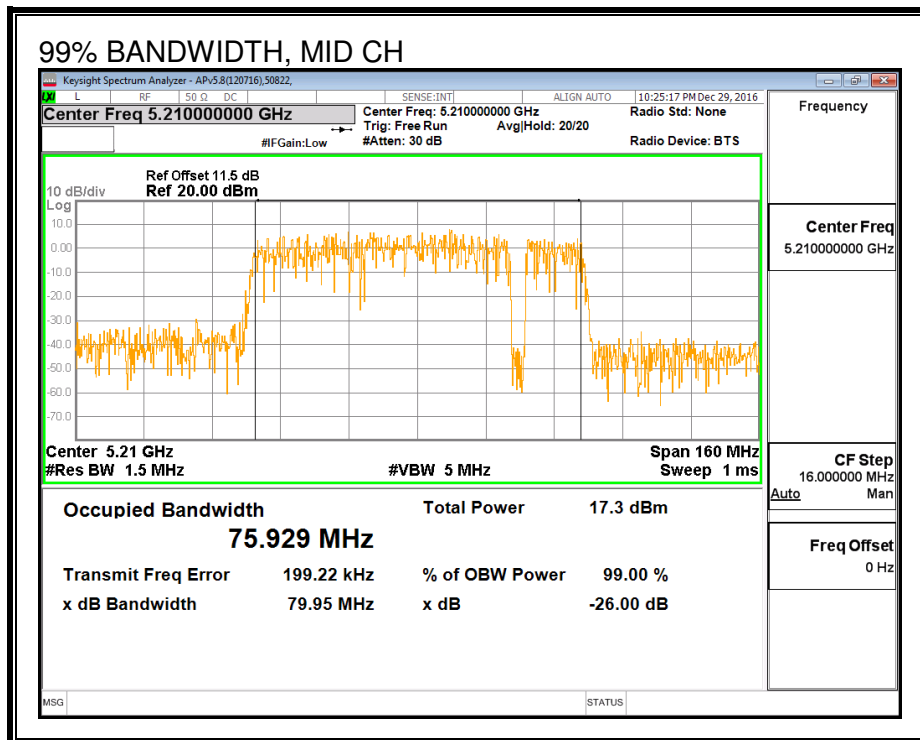
#### RESULTS

Channel	Frequency (MHz)	99% BW Ant A (MHz)	99% BW Ant B (MHz)
Mid	5210	75.710	75.929

**99% BANDWIDTH, Antenna A**



**99% BANDWIDTH, Antenna B**



### 8.10.3. AVERAGE POWER

#### LIMITS

None; for reporting purposes only.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### RESULTS

<b>ID:</b>	45256	<b>Date:</b>	1/31/17
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Channel	Frequency (MHz)	Antenna A Power (dBm)	Antenna B Power (dBm)	Total Power (dBm)
Mid	5210	11.98	11.92	14.96

## 8.10.4. OUTPUT POWER AND PSD

### LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum 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.

**DIRECTIONAL ANTENNA GAIN**

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

<b>Antenna A</b>	<b>Antenna B</b>	<b>Uncorrelated Chains</b>
<b>Gain (dBi)</b>	<b>Gain (dBi)</b>	<b>Directional Gain (dBi)</b>
3.48	3.33	3.41

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

<b>Antenna A</b>	<b>Antenna B</b>	<b>Correlated Chains</b>
<b>Gain (dBi)</b>	<b>Gain (dBi)</b>	<b>Directional Gain (dBi)</b>
3.48	3.33	6.42

**RESULTS**

<b>ID:</b>	45256	<b>Date:</b>	1/31/17
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**Antenna Gain and Limits**

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Mid	5210	3.41	6.42	24.00	10.58

<b>Duty Cycle CF (dB)</b>	0.21	<b>Included in Calculations of Corr'd PSD</b>
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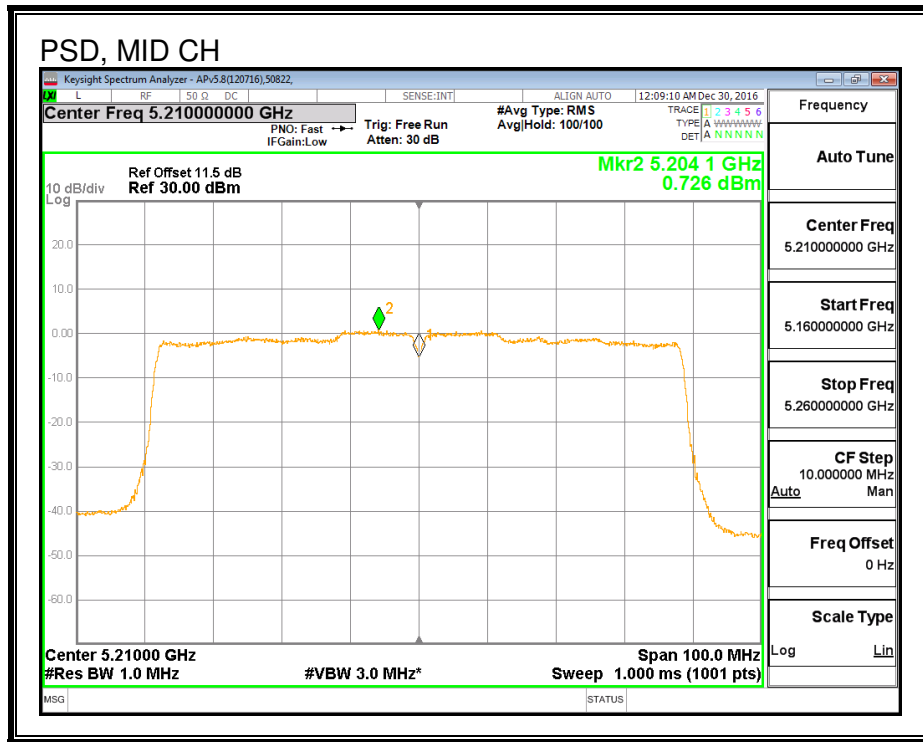
**Output Power Results**

Channel	Frequency (MHz)	Antenna A Meas Power (dBm)	Antenna B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5210	11.98	11.92	14.96	24.00	-9.04

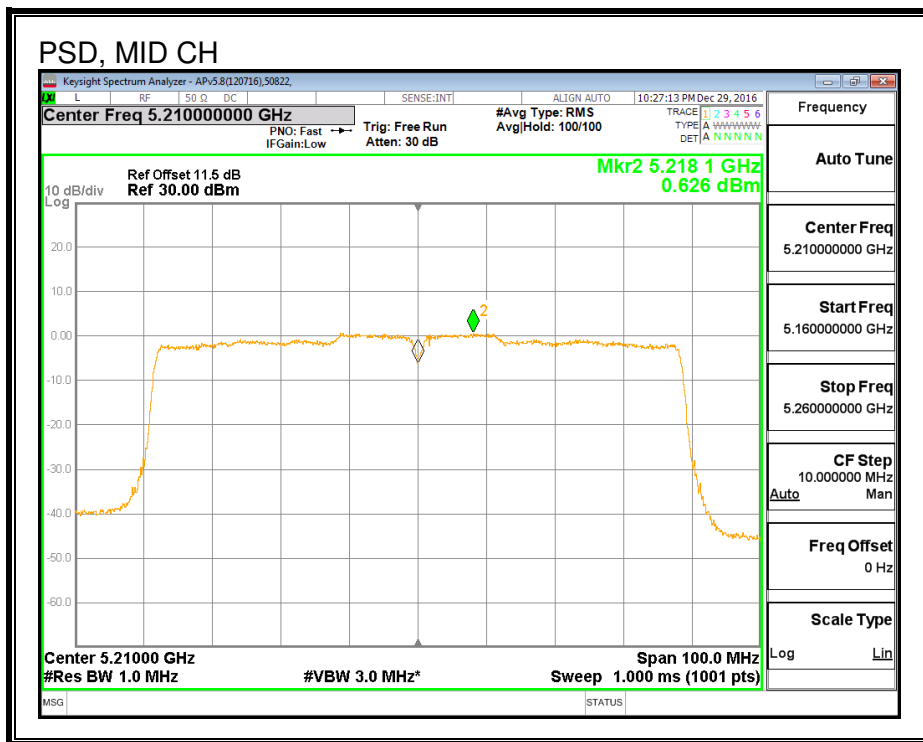
**PSD Results**

Channel	Frequency (MHz)	Antenna A Meas PSD (dBm)	Antenna B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5210	0.73	0.63	3.90	10.58	-6.68

**PSD, Antenna A**



**PSD, Antenna B**



## 8.11. 802.11n HT20 Antenna A MODE IN THE 5.3 GHz BAND

### 8.11.1. 26 dB BANDWIDTH

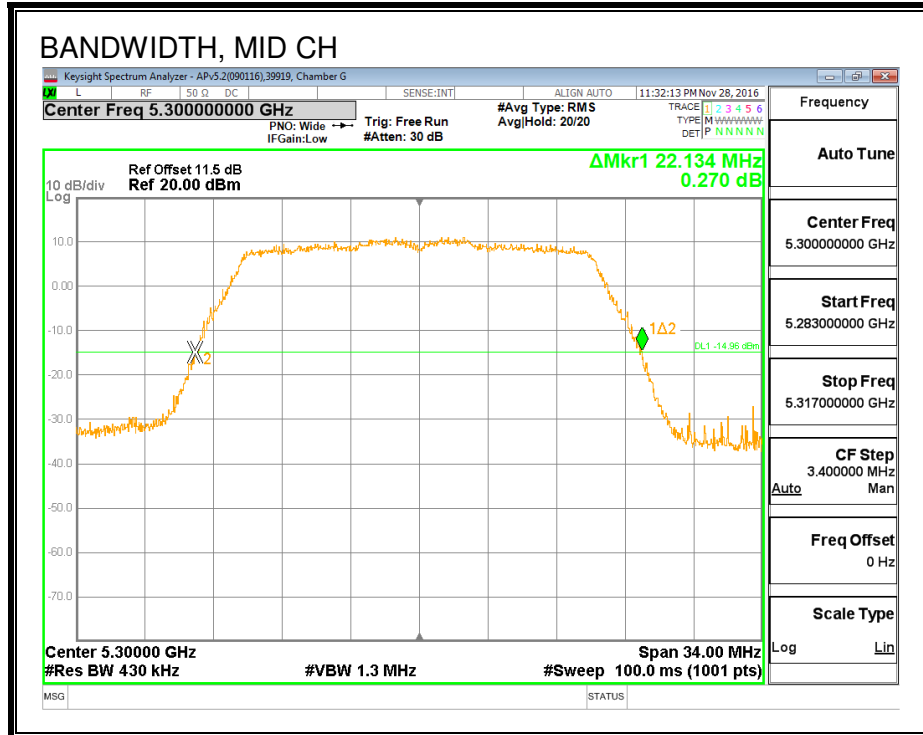
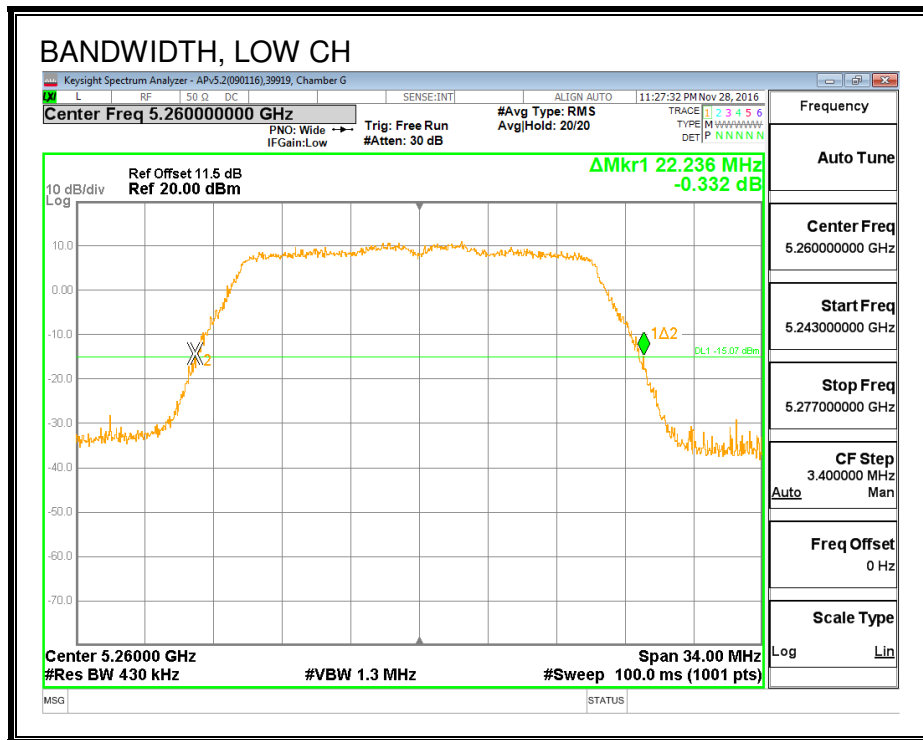
#### LIMITS

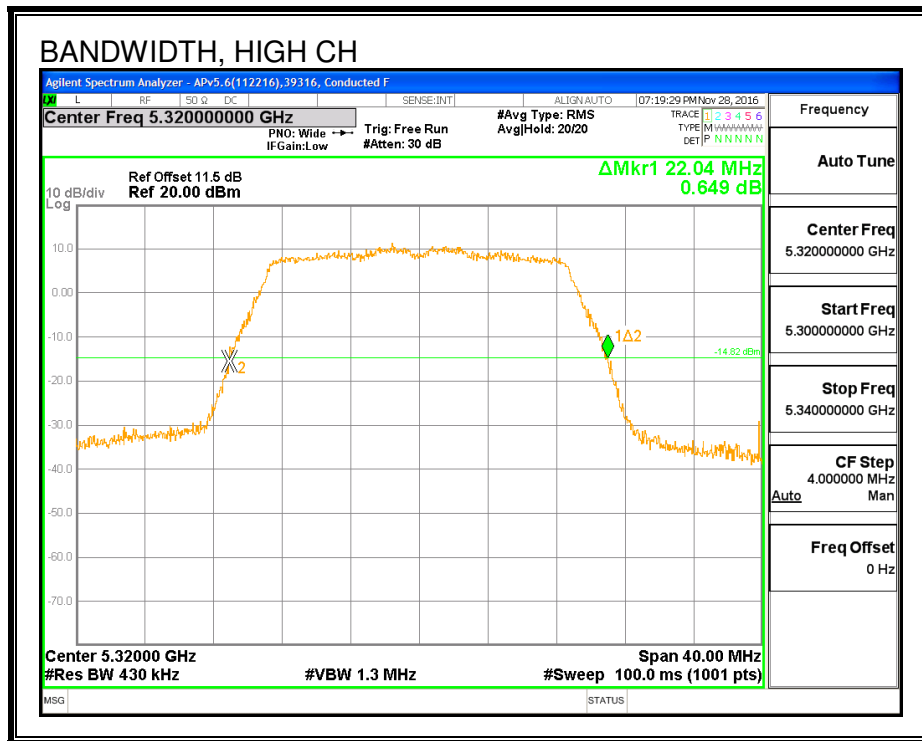
None; for reporting purposes only.

#### RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5260	22.236
Mid	5300	22.134
High	5320	22.040

**26 dB BANDWIDTH**





### 8.11.2. 99% BANDWIDTH

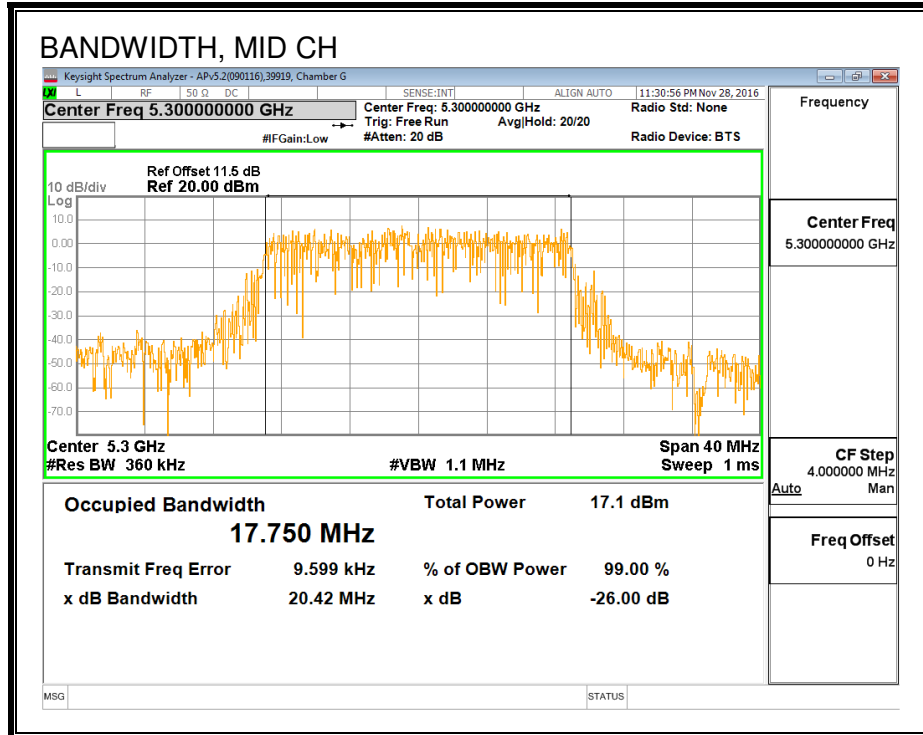
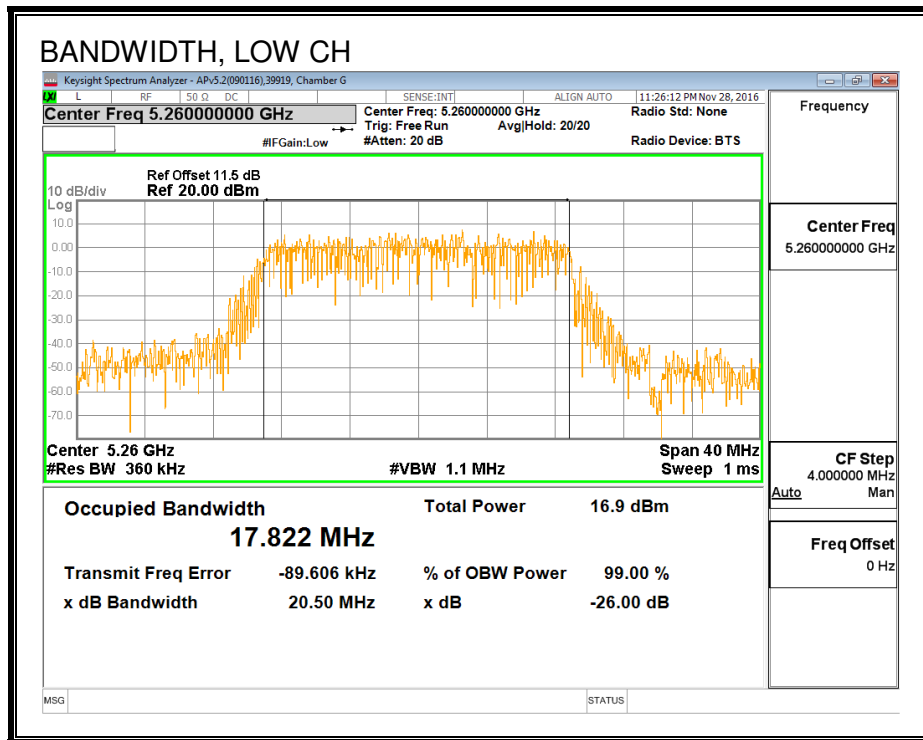
#### LIMITS

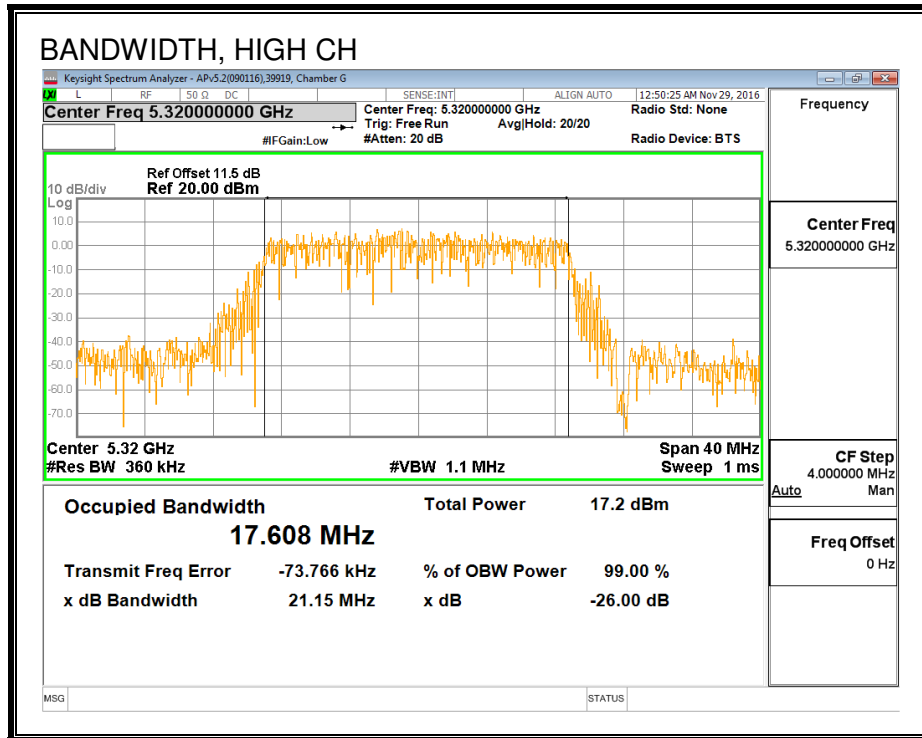
None; for reporting purposes only.

#### RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5260	17.822
Mid	5300	17.750
High	5320	17.608

**99% BANDWIDTH**





### 8.11.3. AVERAGE POWER

#### LIMITS

None; for reporting purposes only.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### RESULTS

<b>ID:</b>	45256	<b>Date:</b>	1/31/17
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Channel	Frequency (MHz)	Power (dBm)
Low	5260	15.97
Mid	5300	15.92
High	5320	15.98

#### **8.11.4. OUTPUT POWER AND PSD**

##### **LIMITS**

FCC §15.407 (a) (2)

For the band 5.25–5.35 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.

##### **DIRECTIONAL ANTENNA GAIN**

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

**RESULTS**

<b>ID:</b>	45256	<b>Date:</b>	1/31/17
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**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	5260	22.24	17.82	4.11	23.51	11.00
Mid	5300	22.13	17.75	4.11	23.49	11.00
High	5320	22.04	17.61	4.11	23.46	11.00

<b>Duty Cycle CF (dB)</b>	0.00	<b>Included in Calculations of Corr'd PSD</b>
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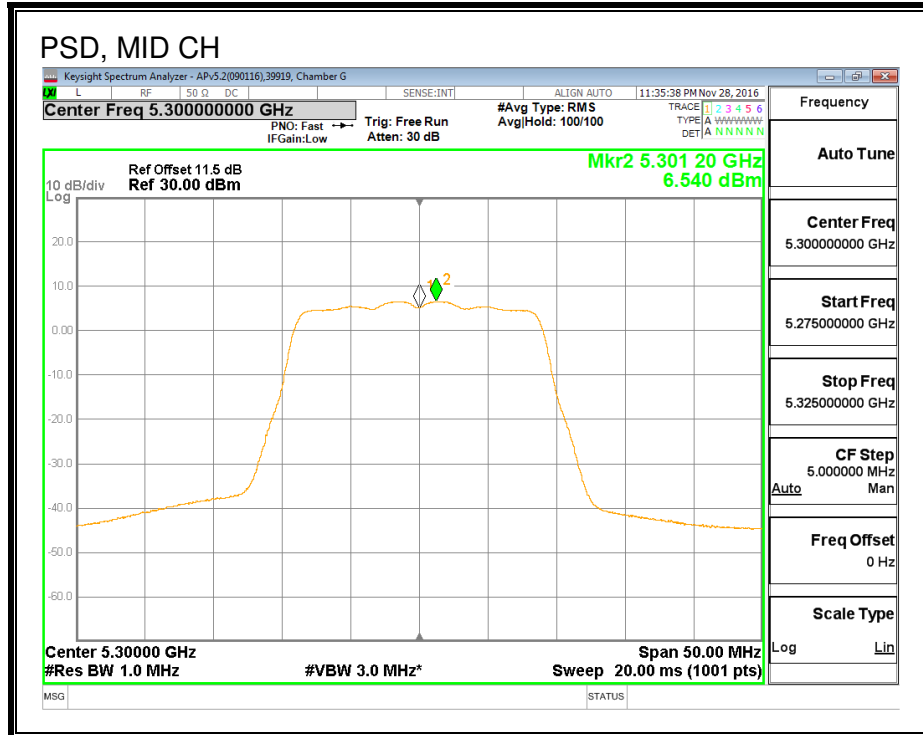
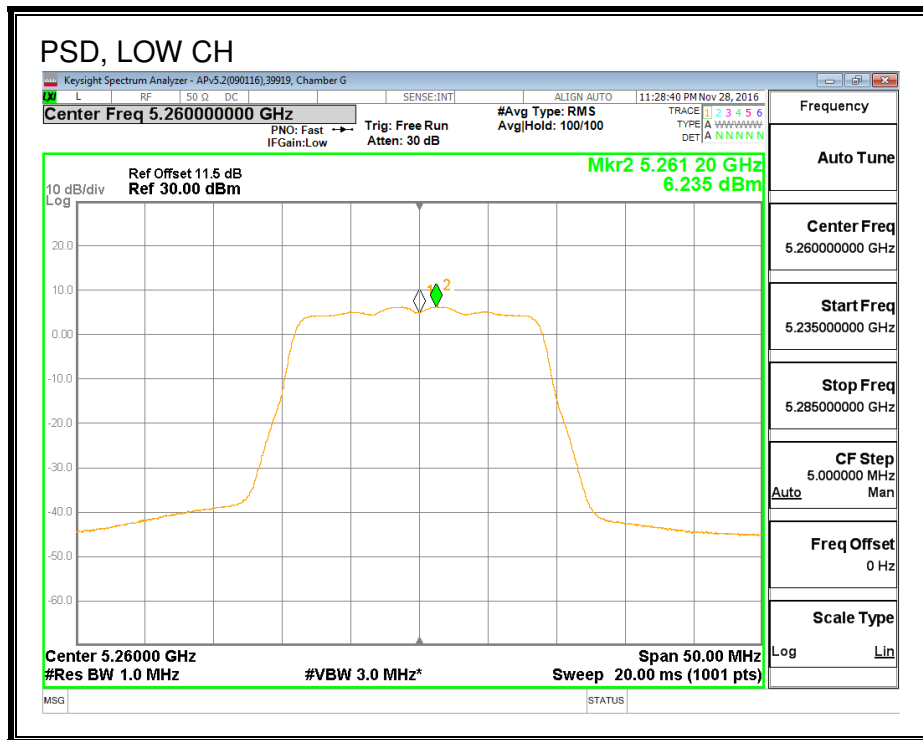
**Output Power Results**

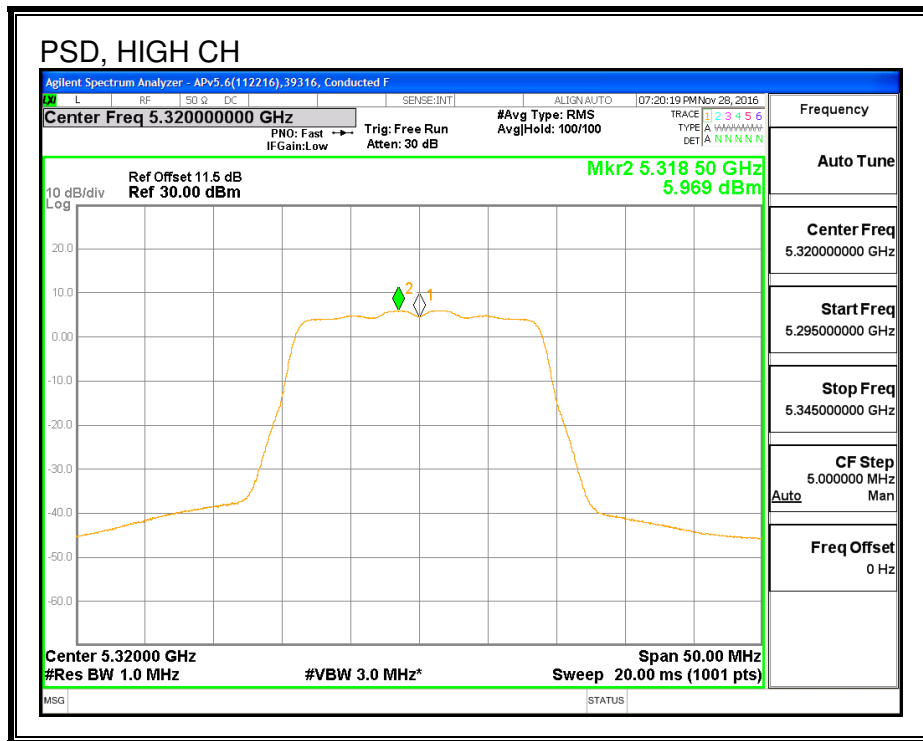
Channel	Frequency (MHz)	Antenna A Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	15.97	15.97	23.51	-7.54
Mid	5300	15.92	15.92	23.49	-7.57
High	5320	15.98	15.98	23.46	-7.48

**PSD Results**

Channel	Frequency (MHz)	Antenna A Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5260	6.24	6.24	11.00	-4.77
Mid	5300	6.54	6.54	11.00	-4.46
High	5320	5.97	5.97	11.00	-5.03

**PSD**





## 8.12. 802.11n HT20 Antenna B MODE IN THE 5.3 GHz BAND

### 8.12.1. 26 dB BANDWIDTH

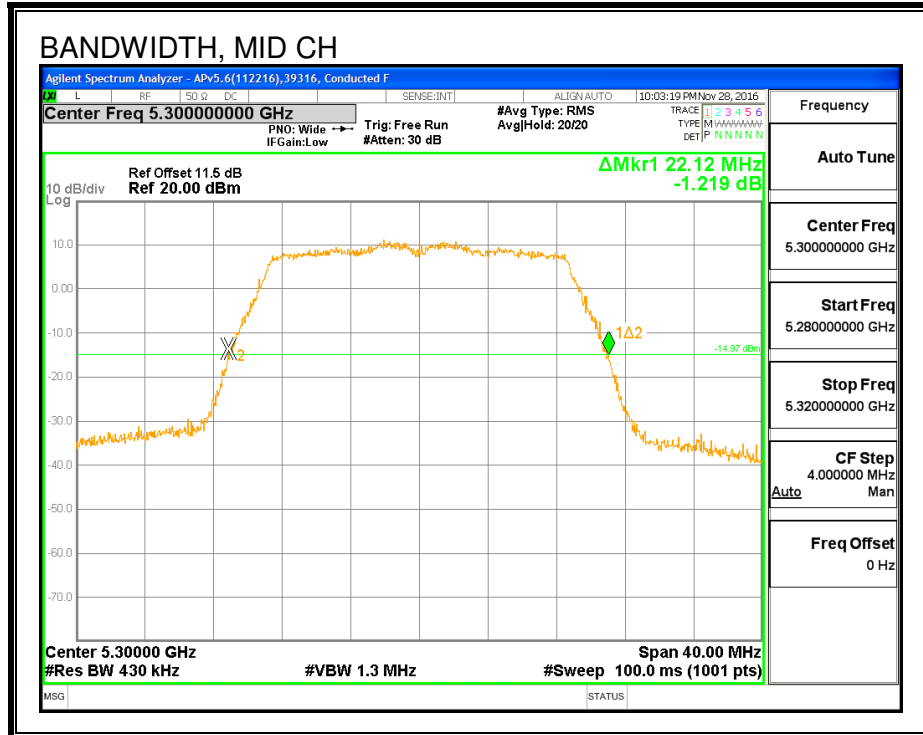
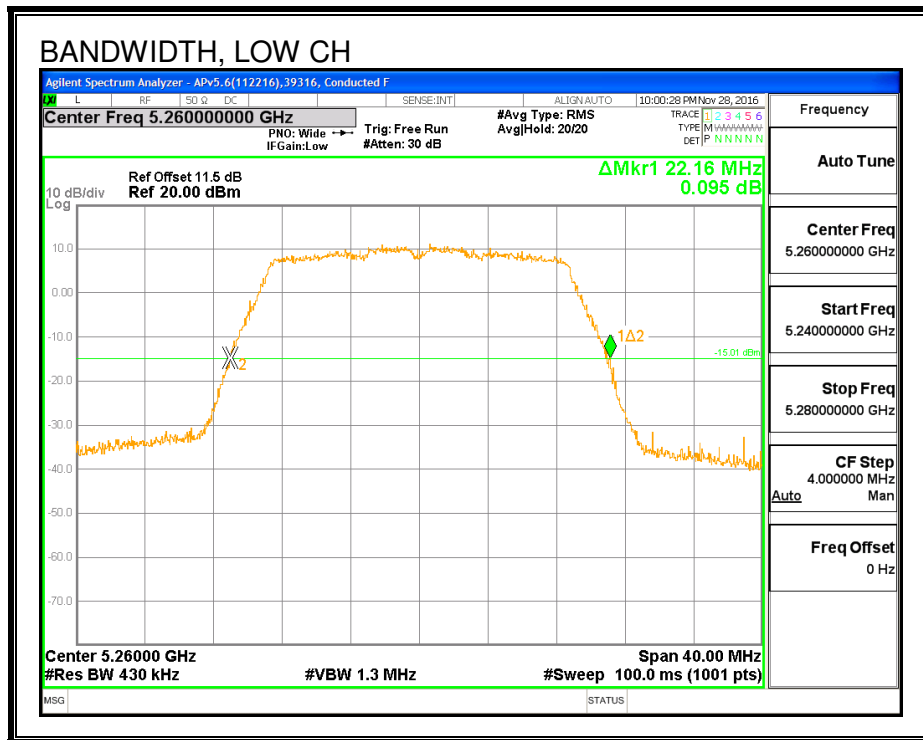
#### LIMITS

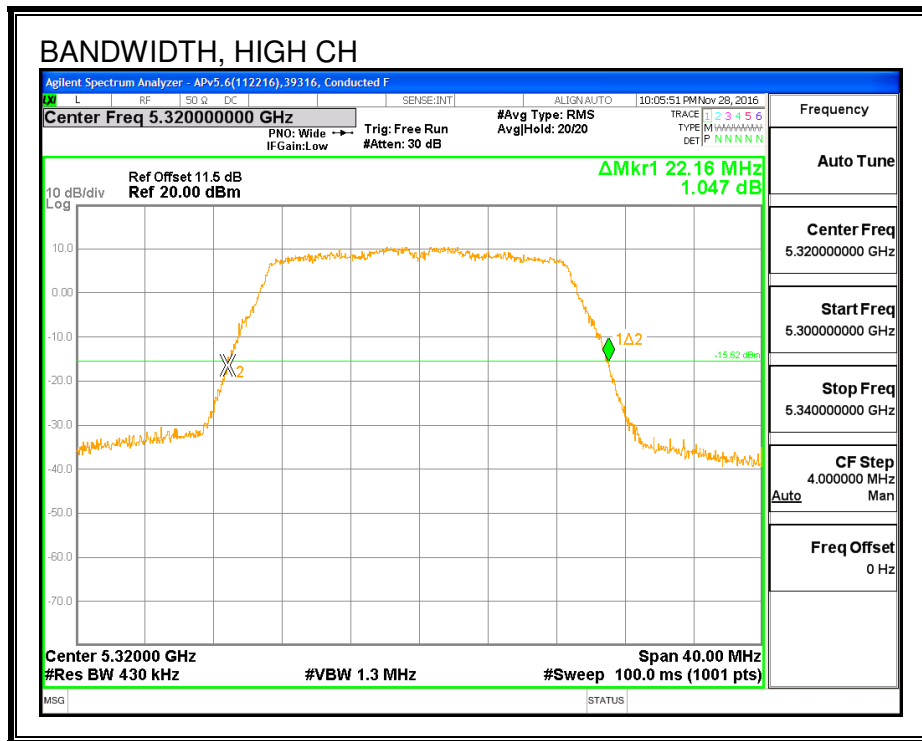
None; for reporting purposes only.

#### RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5260	22.160
Mid	5300	22.120
High	5320	22.160

**26 dB BANDWIDTH**





### 8.12.2. 99% BANDWIDTH

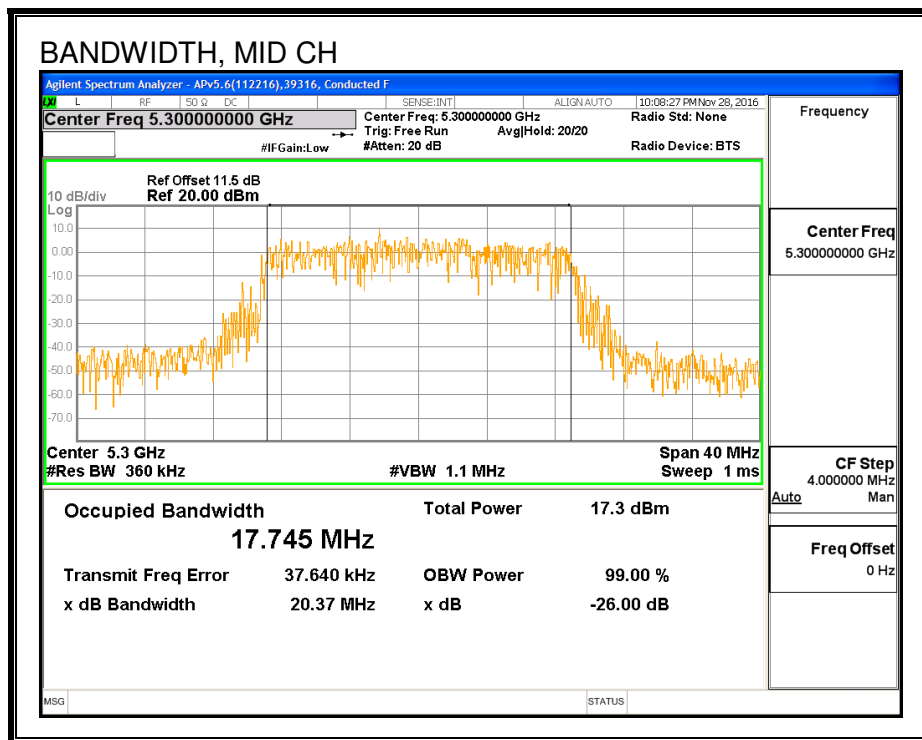
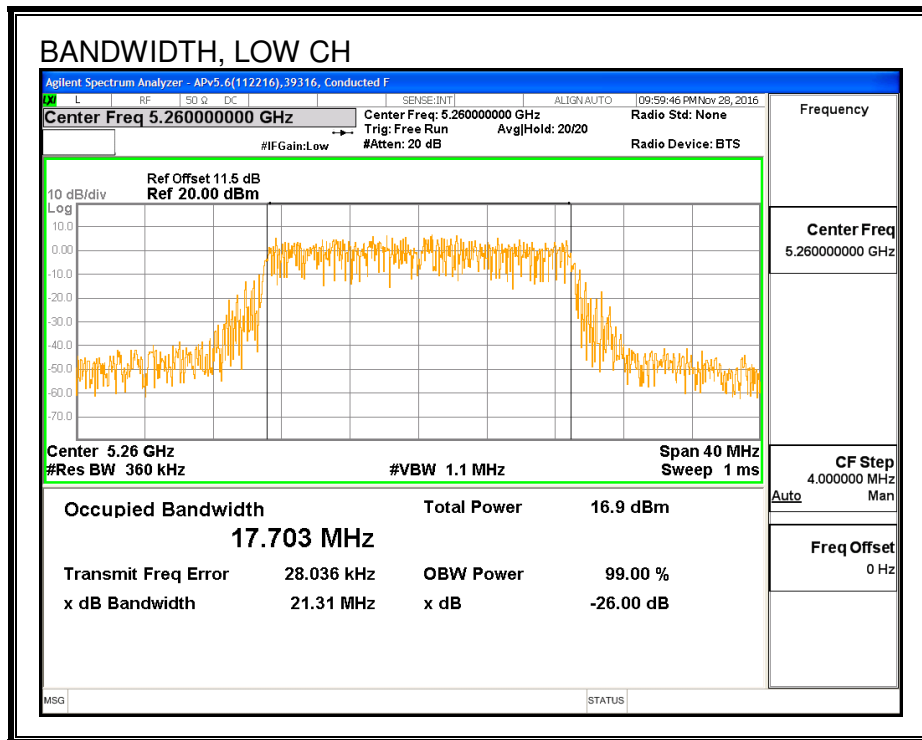
#### LIMITS

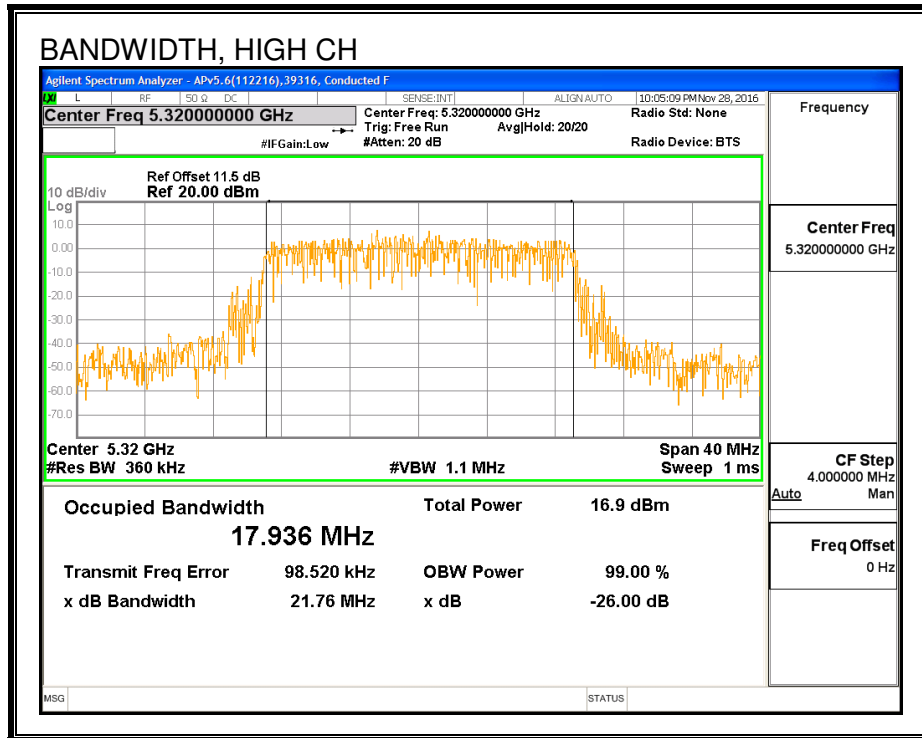
None; for reporting purposes only.

#### RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5260	17.703
Mid	5300	17.745
High	5320	17.936

**99% BANDWIDTH**





### 8.12.3. AVERAGE POWER

#### LIMITS

None; for reporting purposes only.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### RESULTS

<b>ID:</b>	45256	<b>Date:</b>	1/31/17
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Channel	Frequency (MHz)	Power (dBm)
Low	5260	15.95
Mid	5300	15.94
High	5320	15.88

## 8.12.4. OUTPUT POWER AND PSD

### LIMITS

FCC §15.407 (a) (2)

For the band 5.25–5.35 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.

### DIRECTIONAL ANTENNA GAIN

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

**RESULTS**

<b>ID:</b>	45256	<b>Date:</b>	1/31/17
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**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	5260	22.16	17.70	3.36	23.48	11.00
Mid	5300	22.12	17.75	3.36	23.49	11.00
High	5320	22.16	17.94	3.36	23.54	11.00

<b>Duty Cycle CF (dB)</b>	0.00	<b>Included in Calculations of Corr'd PSD</b>
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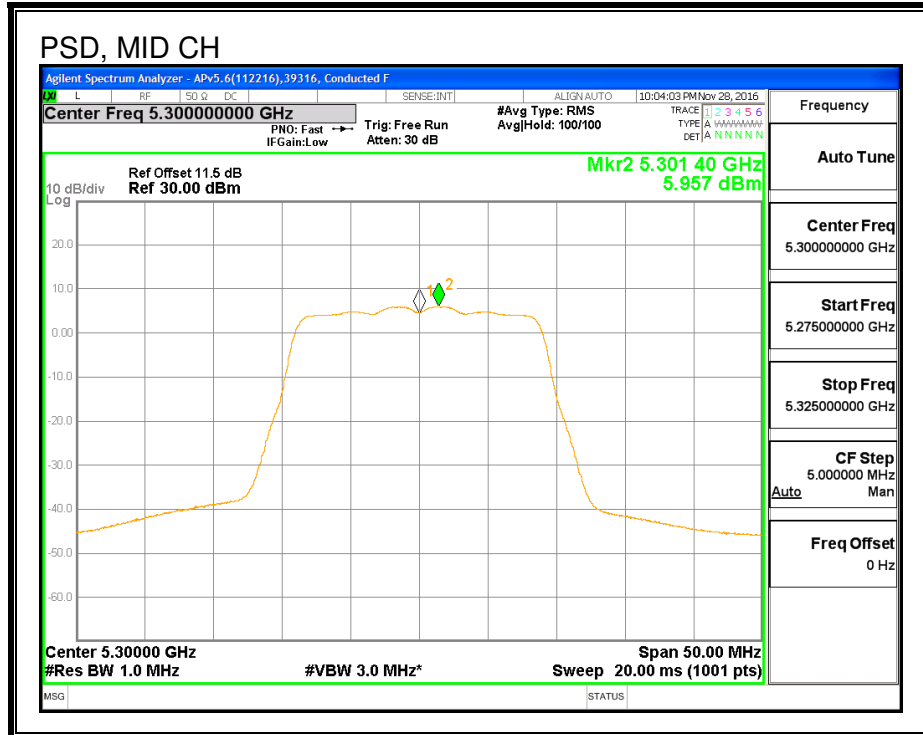
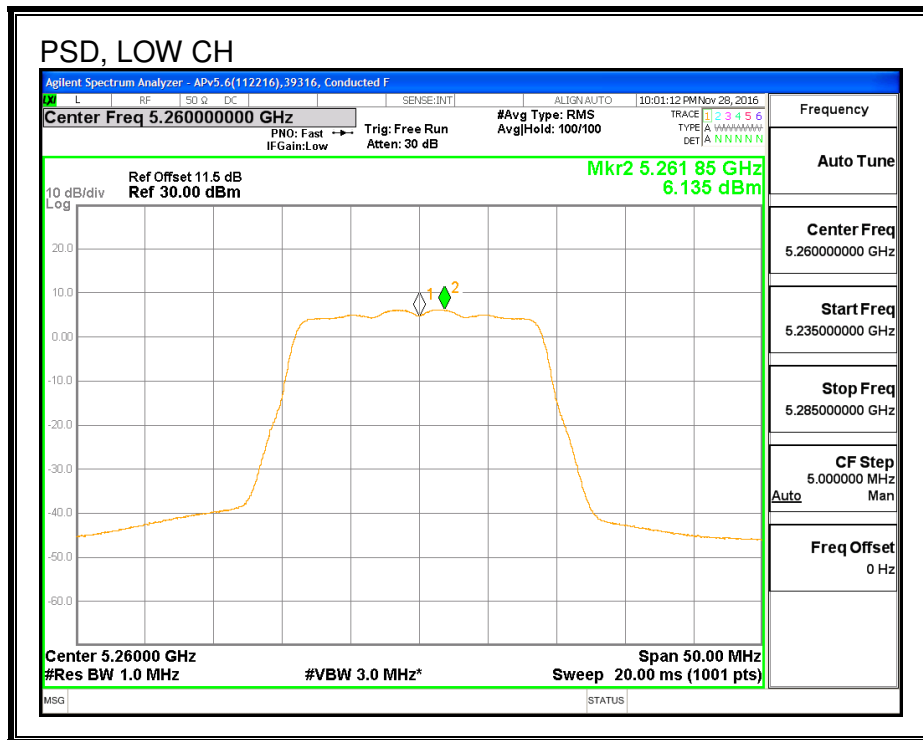
**Output Power Results**

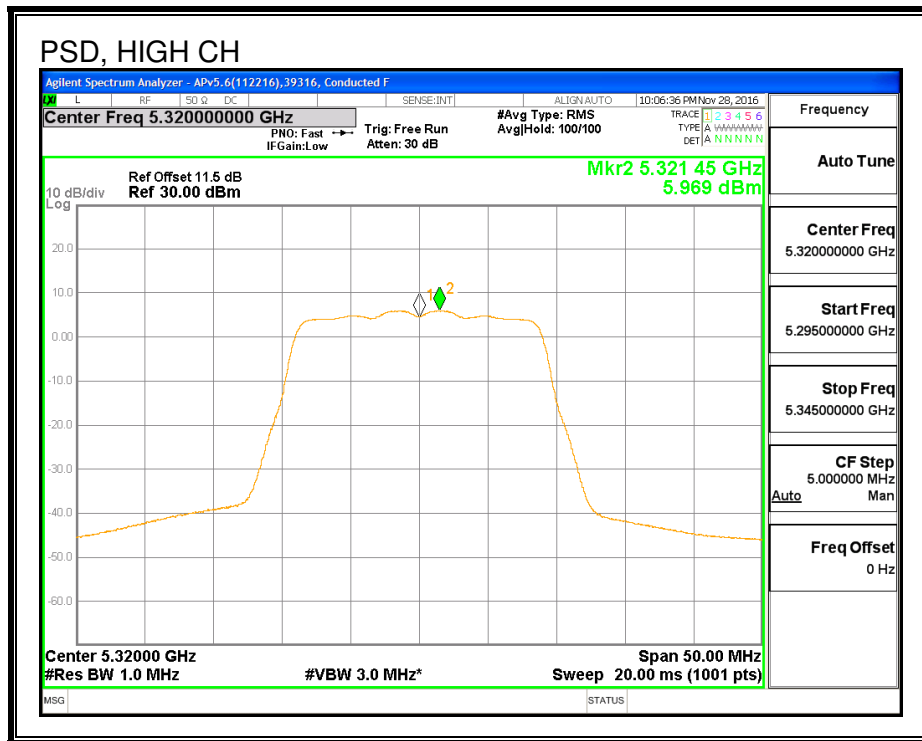
Channel	Frequency (MHz)	Antenna B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	15.95	15.95	23.48	-7.53
Mid	5300	15.94	15.94	23.49	-7.55
High	5320	15.88	15.88	23.54	-7.66

**PSD Results**

Channel	Frequency (MHz)	Antenna B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5260	6.14	6.14	11.00	-4.87
Mid	5300	5.96	5.96	11.00	-5.04
High	5320	5.97	5.97	11.00	-5.03

**PSD**





### 8.13. 802.11n HT20 2Tx (Antenna A + Antenna B) CDD MODE IN THE 5.3 GHz BAND

#### 8.13.1. 26 dB BANDWIDTH

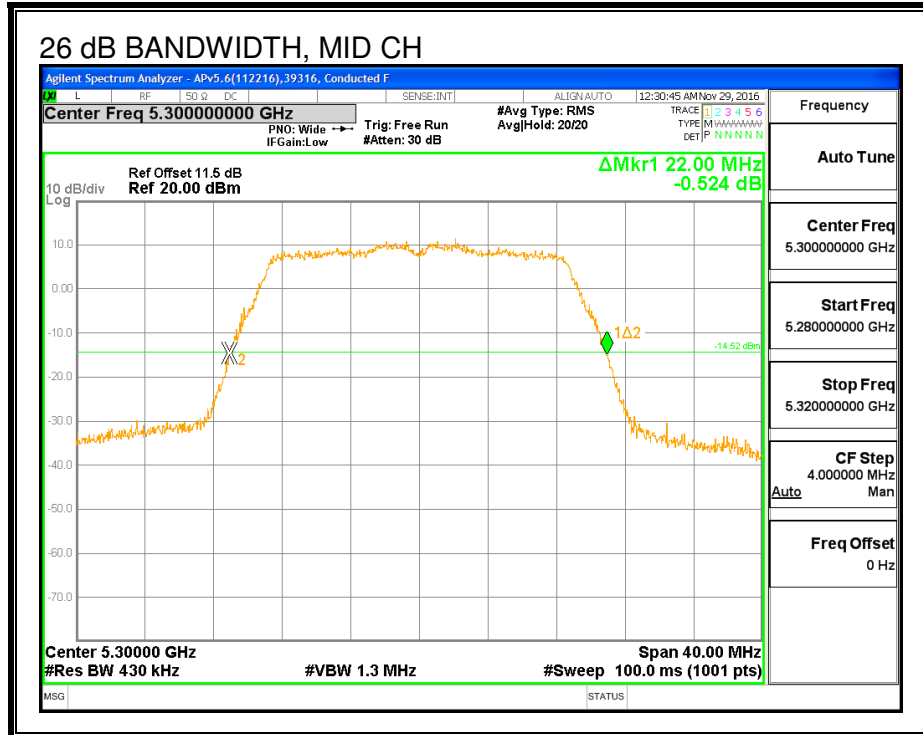
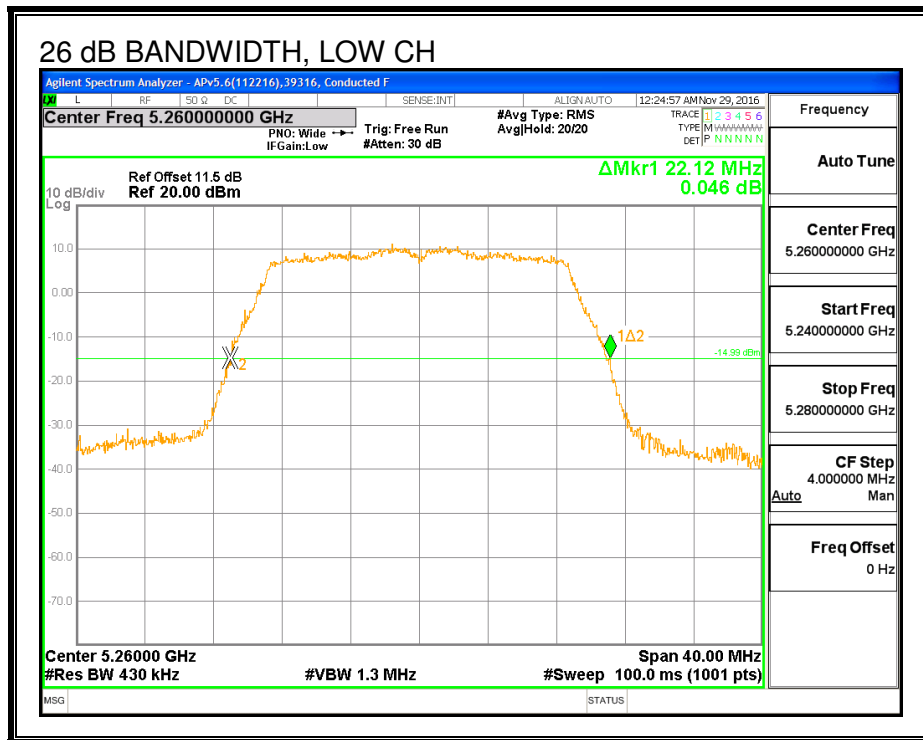
##### LIMITS

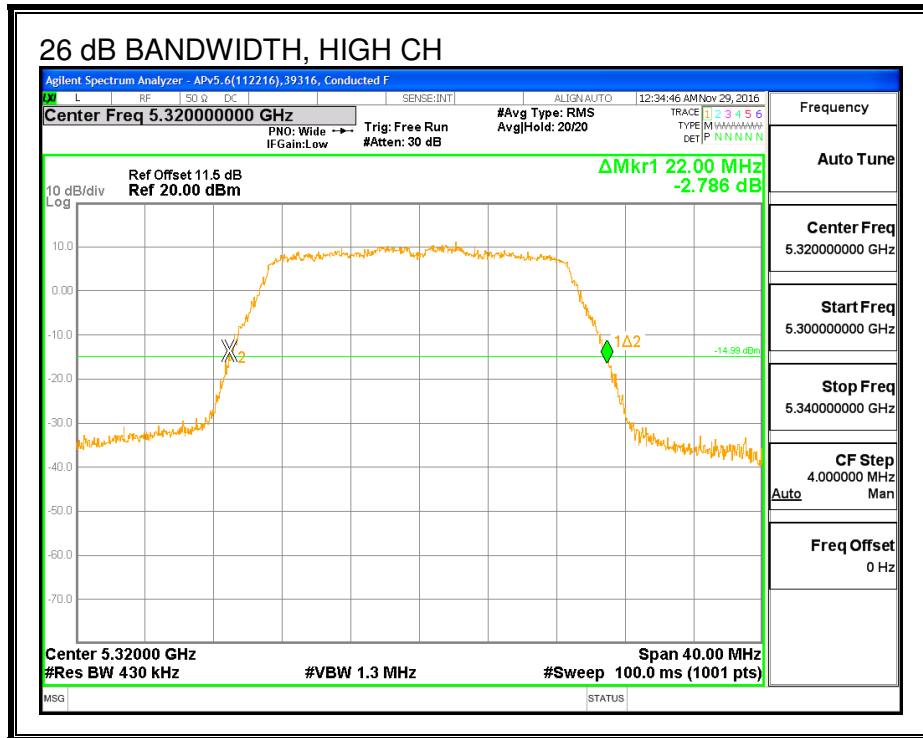
None; for reporting purposes only.

##### RESULTS

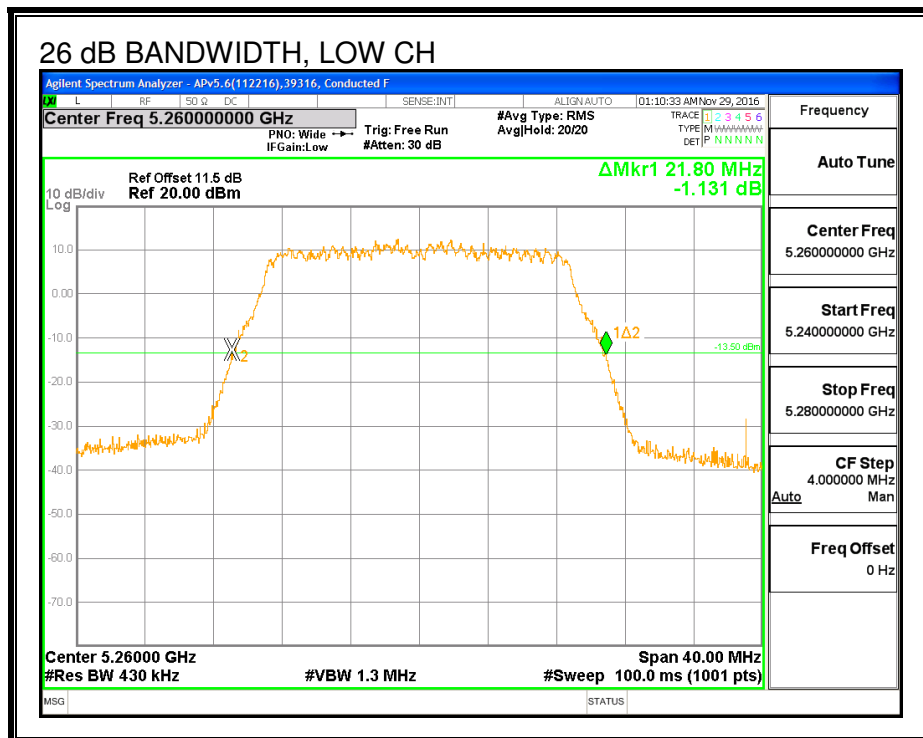
Channel	Frequency (MHz)	26 dB BW Antenna A (MHz)	26 dB BW Antenna B (MHz)
Low	5260	22.120	21.800
Mid	5300	22.000	21.720
High	5320	22.000	21.640

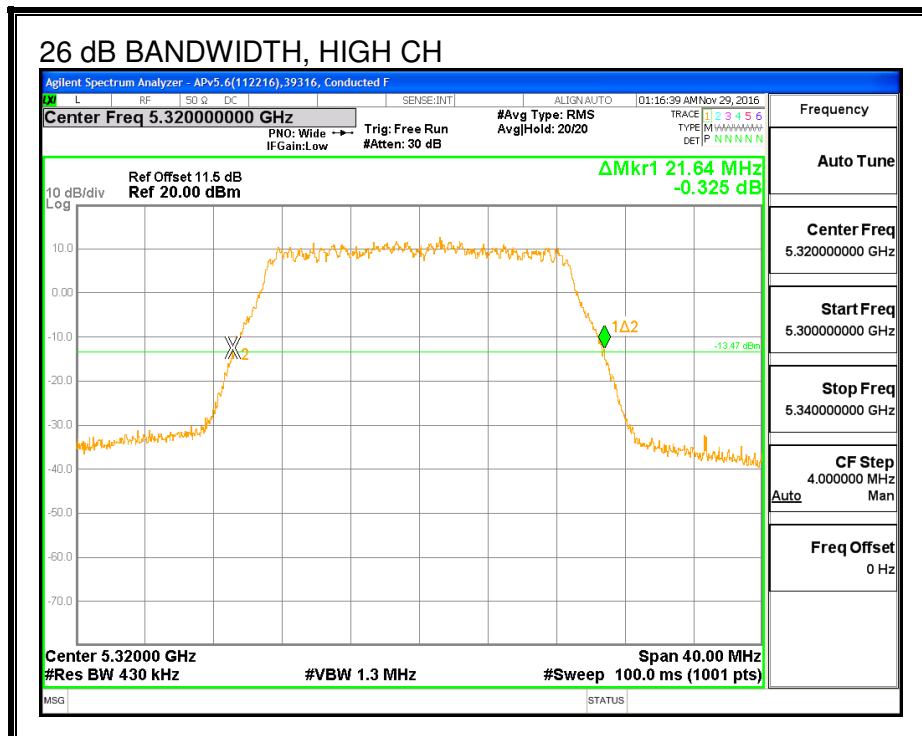
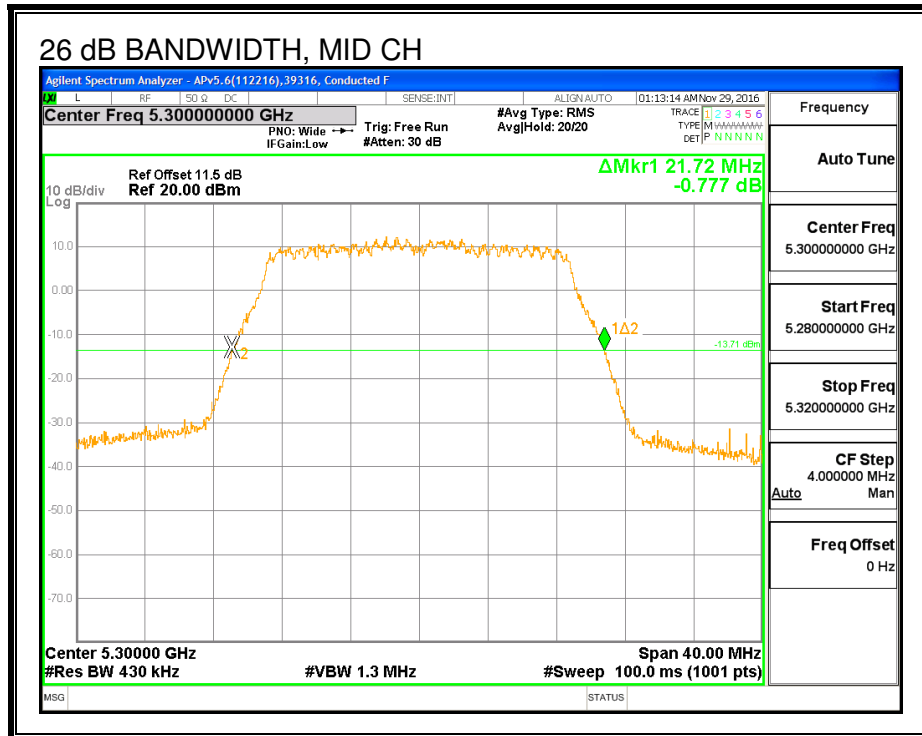
**26 DB BANDWIDTH, ANTENNA A**





**26 DB BANDWIDTH, ANTENNA B**





### 8.13.2. 99% BANDWIDTH

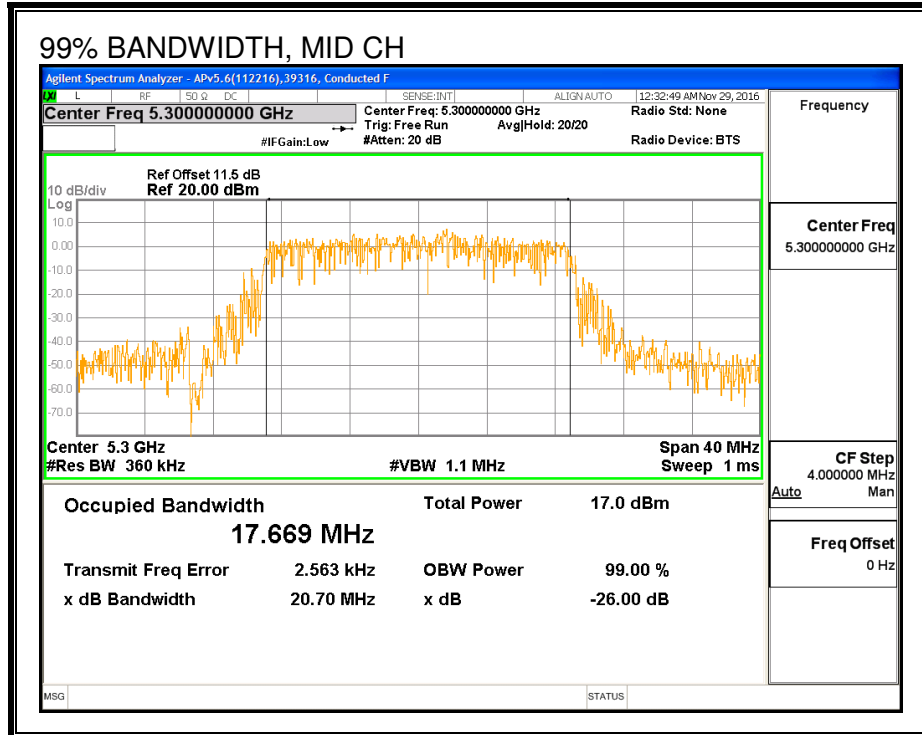
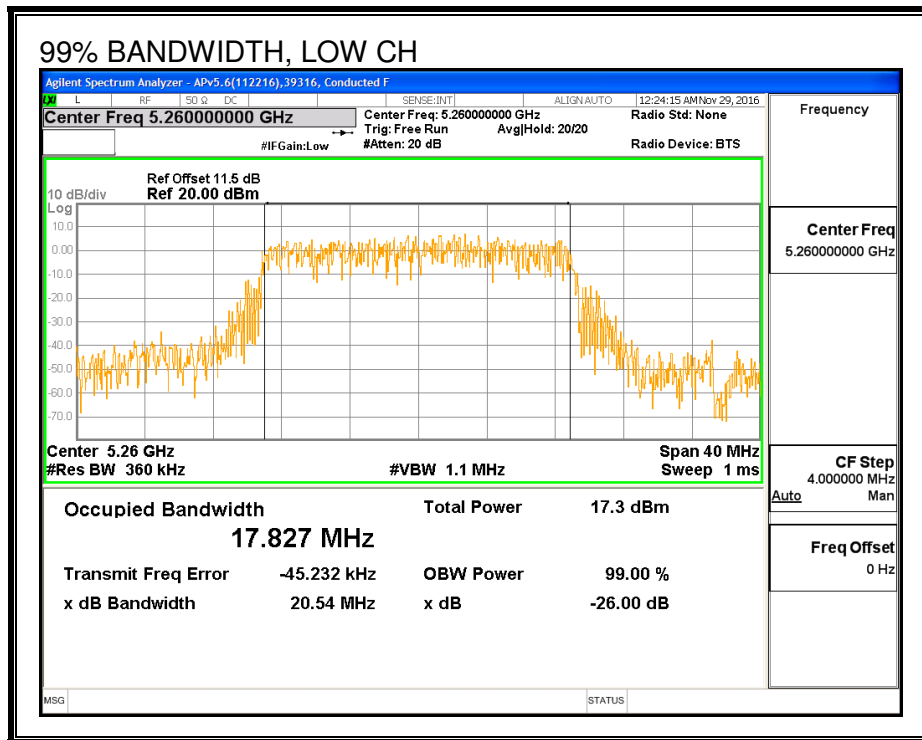
#### LIMITS

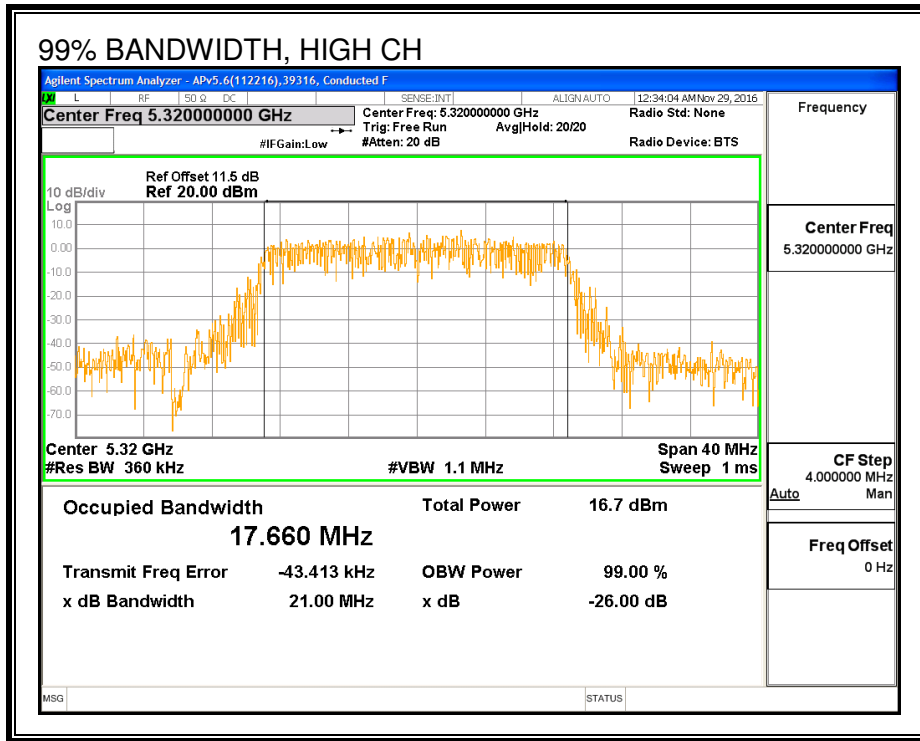
None; for reporting purposes only.

#### RESULTS

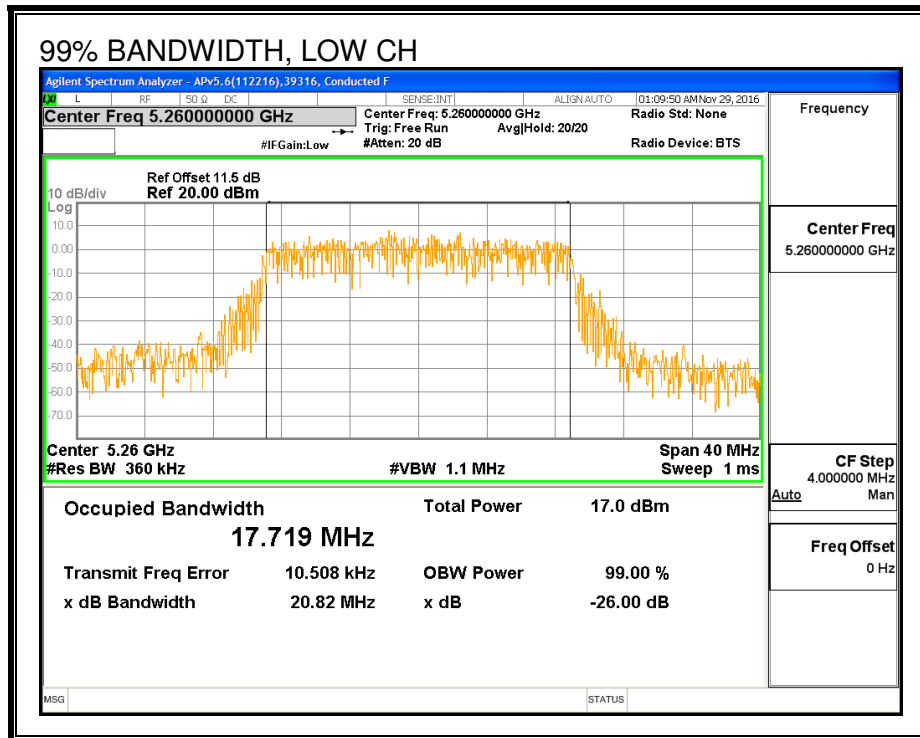
Channel	Frequency (MHz)	99% BW Antenna A (MHz)	99% BW Antenna B (MHz)
Low	5260	17.827	17.719
Mid	5300	17.669	17.799
High	5320	17.660	17.791

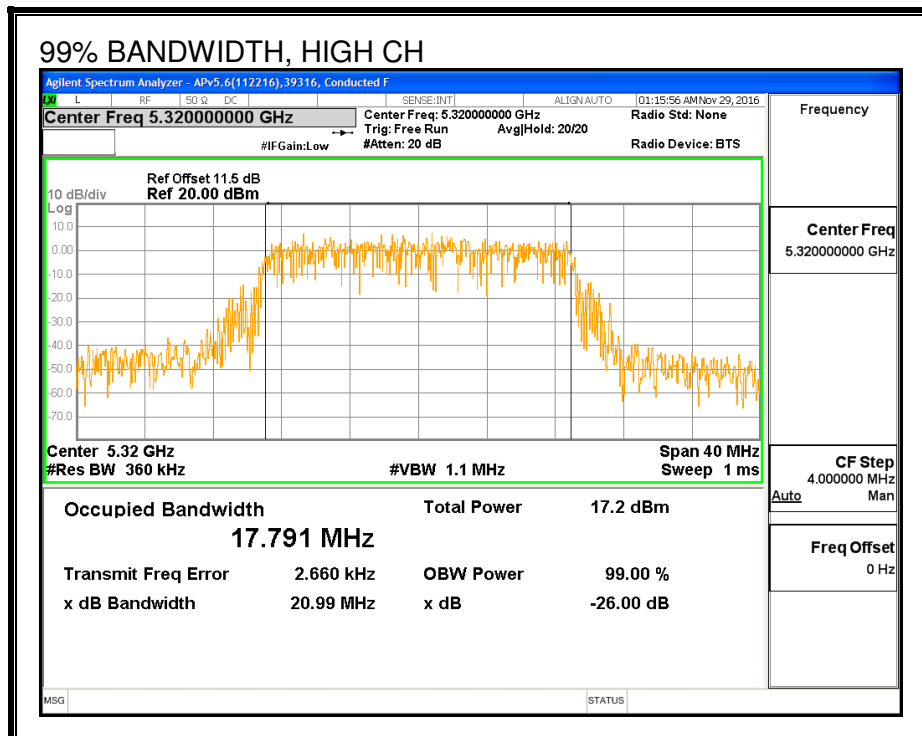
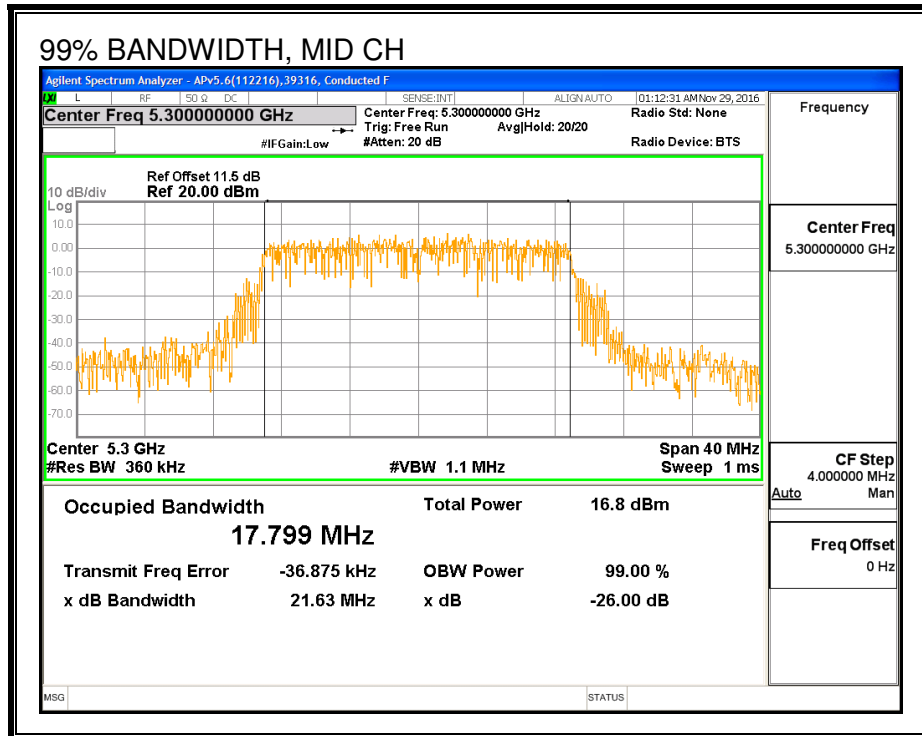
**99% BANDWIDTH, ANTENNA A**





**99% BANDWIDTH, ANTENNA B**





### 8.13.3. AVERAGE POWER

#### LIMITS

None; for reporting purposes only.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### RESULTS

<b>ID:</b>	45256	<b>Date:</b>	1/31/17
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#### **Average Power Results**

<b>Channel</b>	<b>Frequency (MHz)</b>	<b>Antenna A Power (dBm)</b>	<b>Antenna B Power (dBm)</b>	<b>Total Power (dBm)</b>
Low	5260	14.98	14.93	17.97
Mid	5300	14.99	14.93	17.97
High	5320	14.42	14.44	17.44

### 8.13.4. OUTPUT POWER AND PSD

#### LIMITS

FCC §15.407 (a) (2)

For the band 5.25–5.35 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.

#### DIRECTIONAL ANTENNA GAIN

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

Antenna A	Antenna B	Uncorrelated Chains
Gain (dBi)	Gain (dBi)	Directional Gain (dBi)
4.11	3.36	3.75

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

Antenna A	Antenna B	Correlated Chains
Gain (dBi)	Gain (dBi)	Directional Gain (dBi)
4.11	3.36	6.75

**RESULTS**

<b>ID:</b>	39316	<b>Date:</b>	11/29/16
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**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	5260	21.80	17.719	3.75	6.75	23.48	10.25
Mid	5300	21.72	17.669	3.75	6.75	23.47	10.25
High	5320	21.64	17.66	3.75	6.75	23.47	10.25

<b>Duty Cycle CF (dB)</b>	0.00	<b>Included in Calculations of Corr'd PSD</b>
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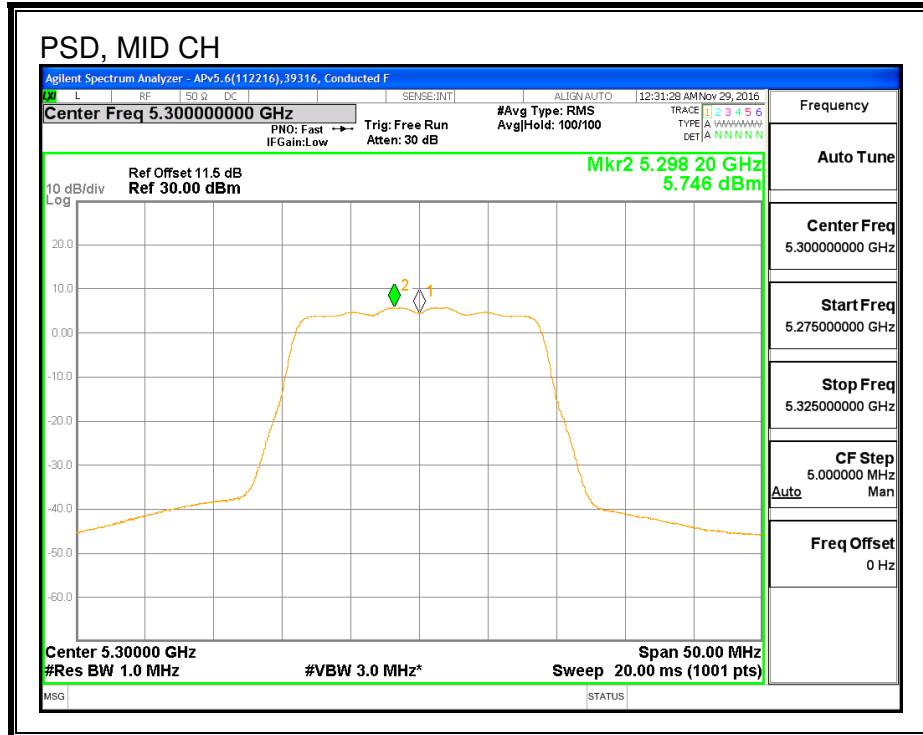
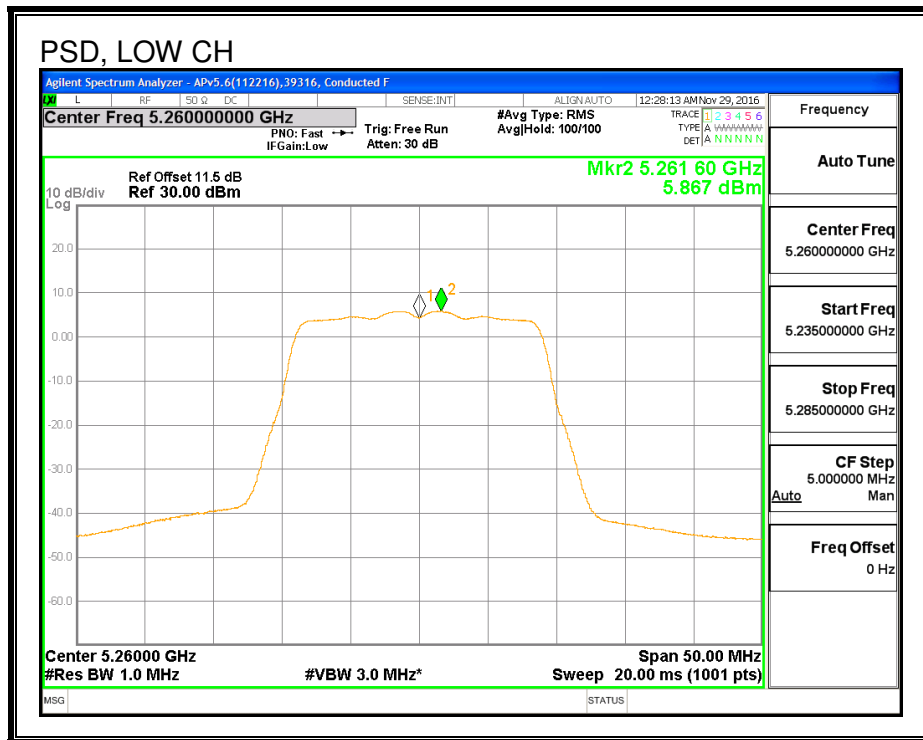
**Output Power Results**

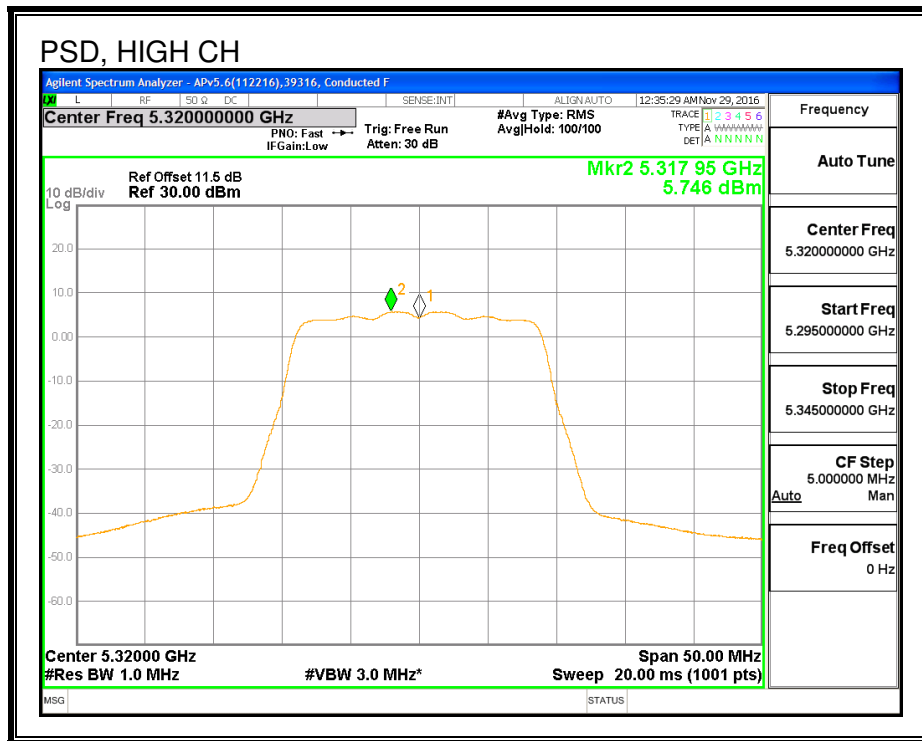
Channel	Frequency (MHz)	Antenna A Meas Power (dBm)	Antenna B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	14.98	14.93	17.97	23.48	-5.52
Mid	5300	14.99	14.93	17.97	23.47	-5.50
High	5320	14.42	14.44	17.44	23.47	-6.03

**PSD Results**

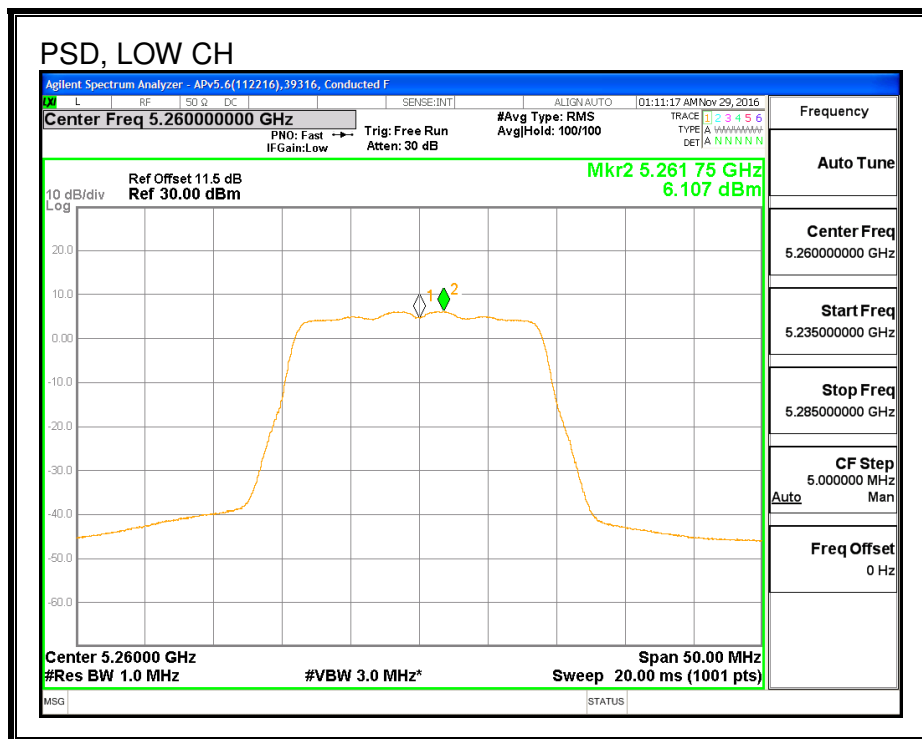
Channel	Frequency (MHz)	Antenna A Meas PSD (dBm)	Antenna B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5260	5.87	6.11	9.00	10.25	-1.25
Mid	5300	5.75	6.05	8.91	10.25	-1.34
High	5320	5.75	5.97	8.87	10.25	-1.38

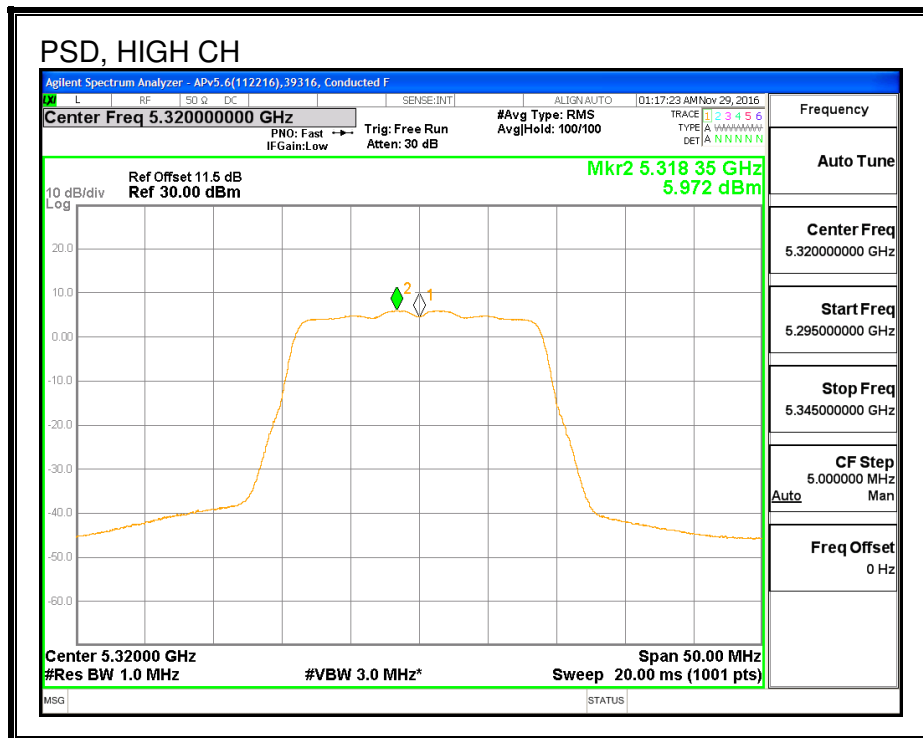
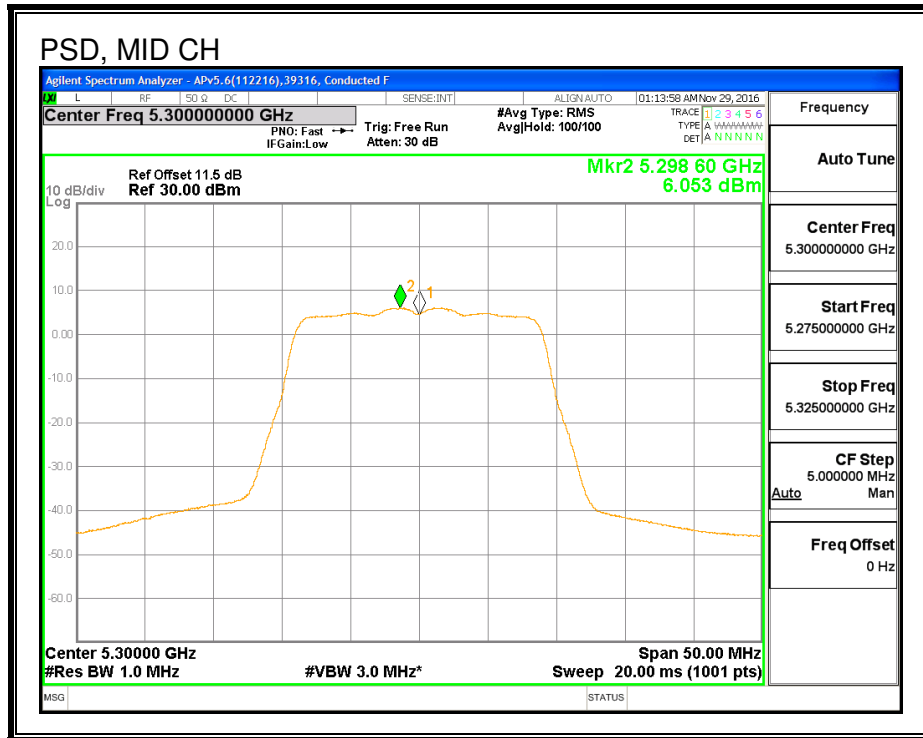
**PSD, ANTENNA A**





**PSD, ANTENNA B**





## 8.14. 802.11n HT20 2Tx (ANTENNA A + ANTENNA B) STBC MODE IN THE 5.3 GHz BAND

### 8.14.1. 26 dB BANDWIDTH

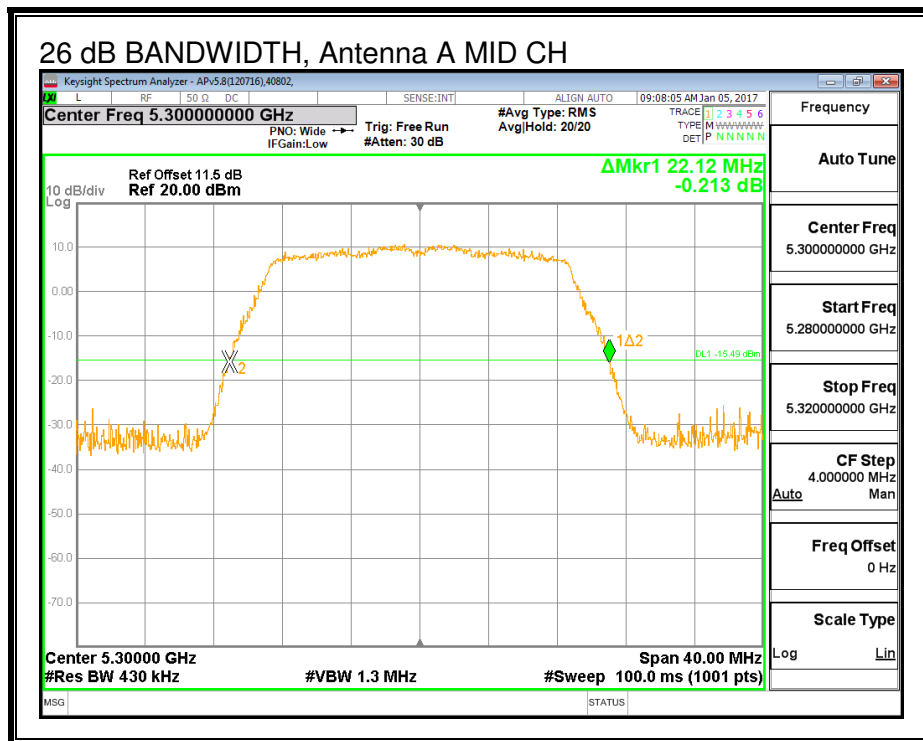
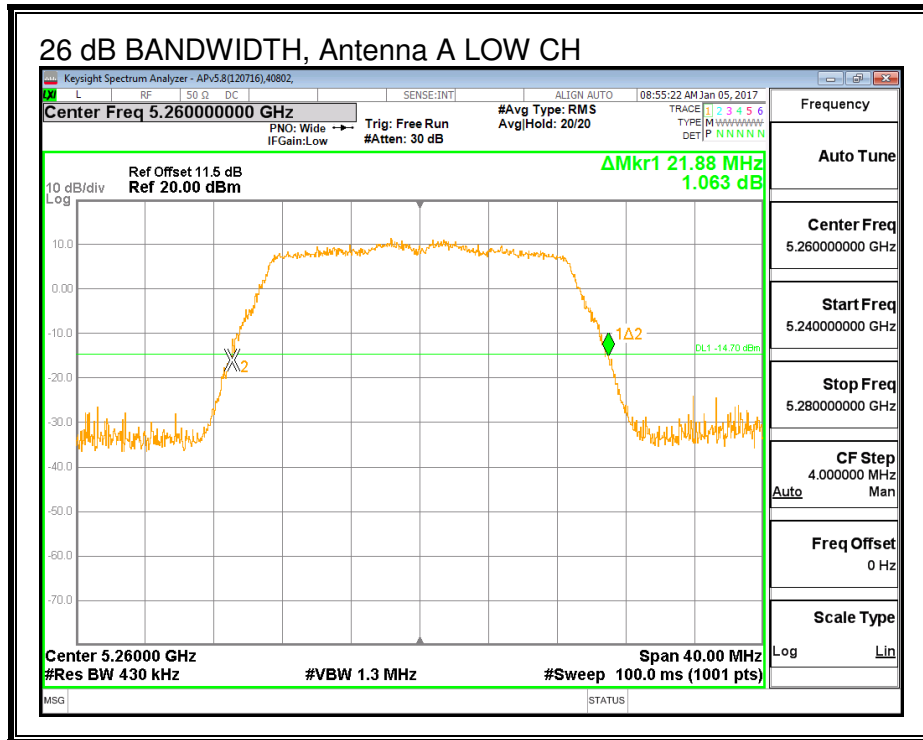
#### LIMITS

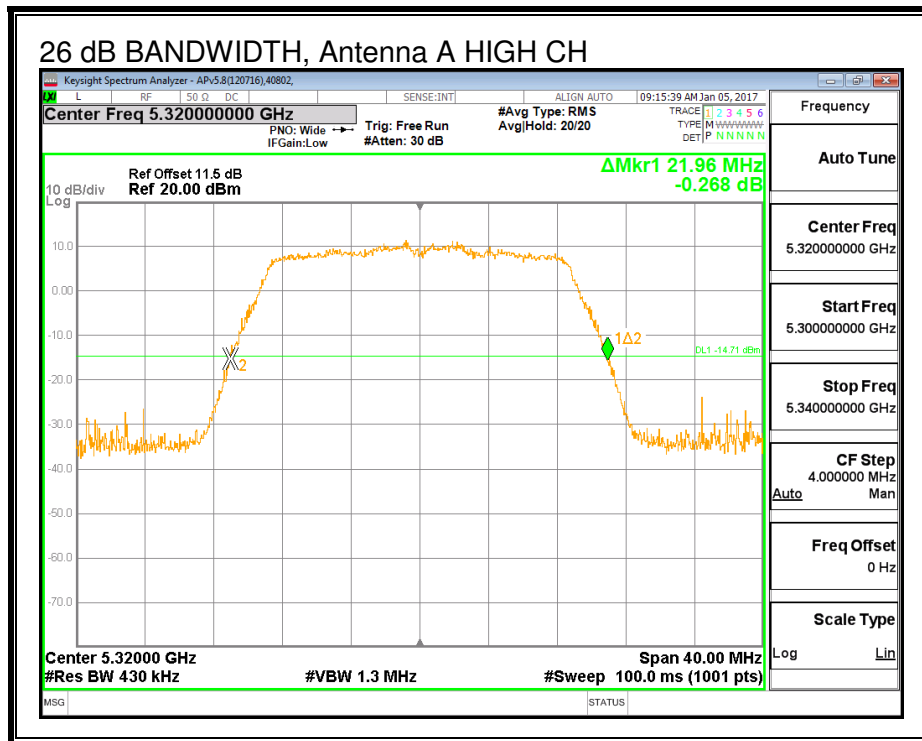
None; for reporting purposes only.

#### RESULTS

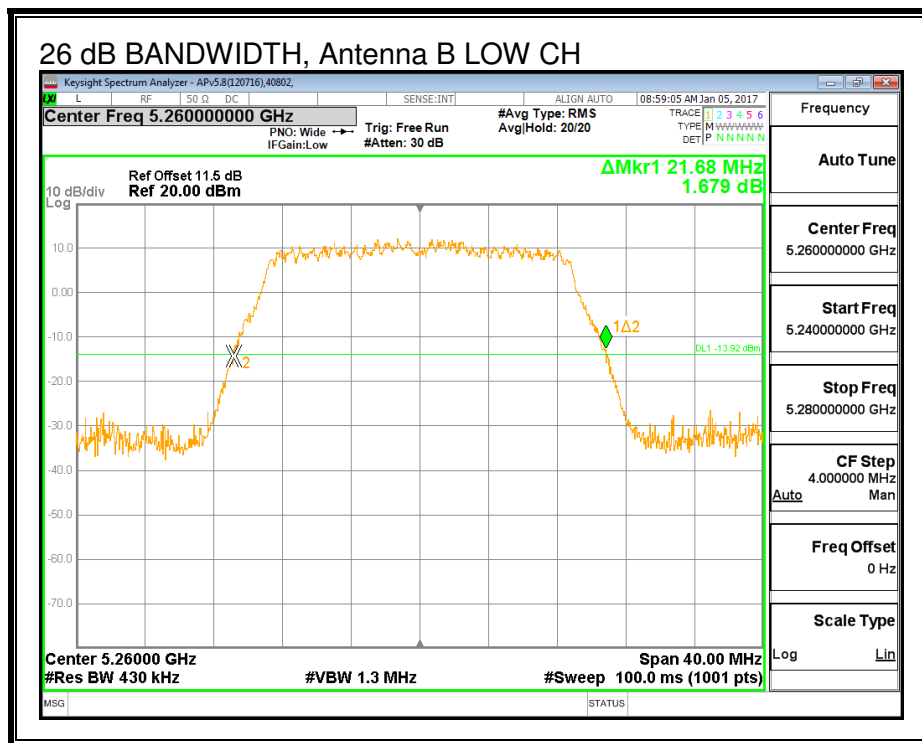
Channel	Frequency (MHz)	26 dB BW Antenna A (MHz)	26 dB BW Antenna B (MHz)
Low	5260	21.880	21.680
Mid	5300	22.120	21.640
High	5320	21.960	21.560

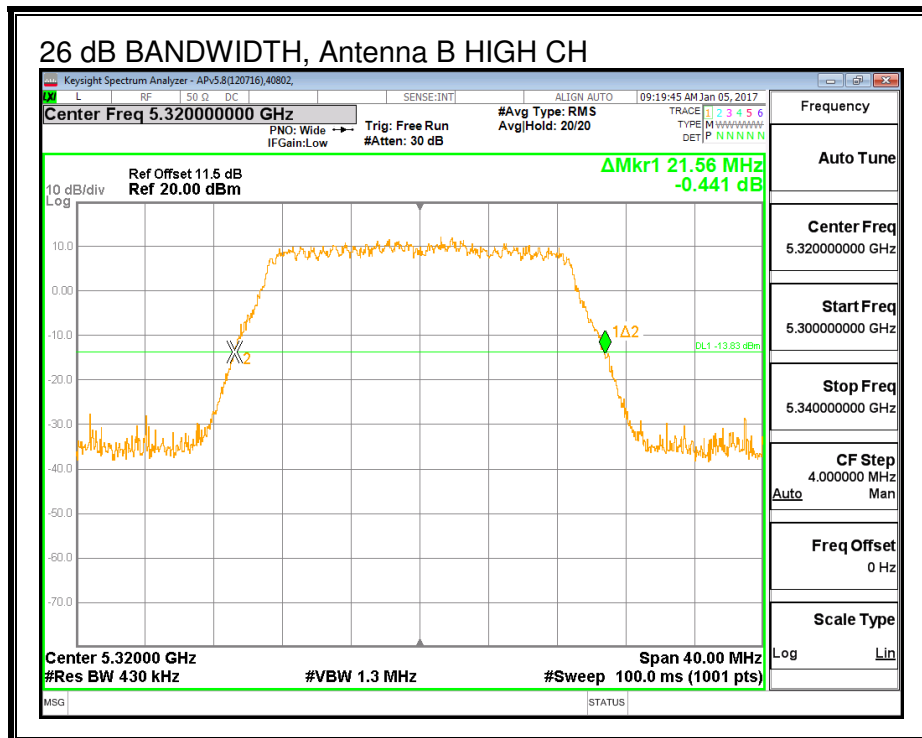
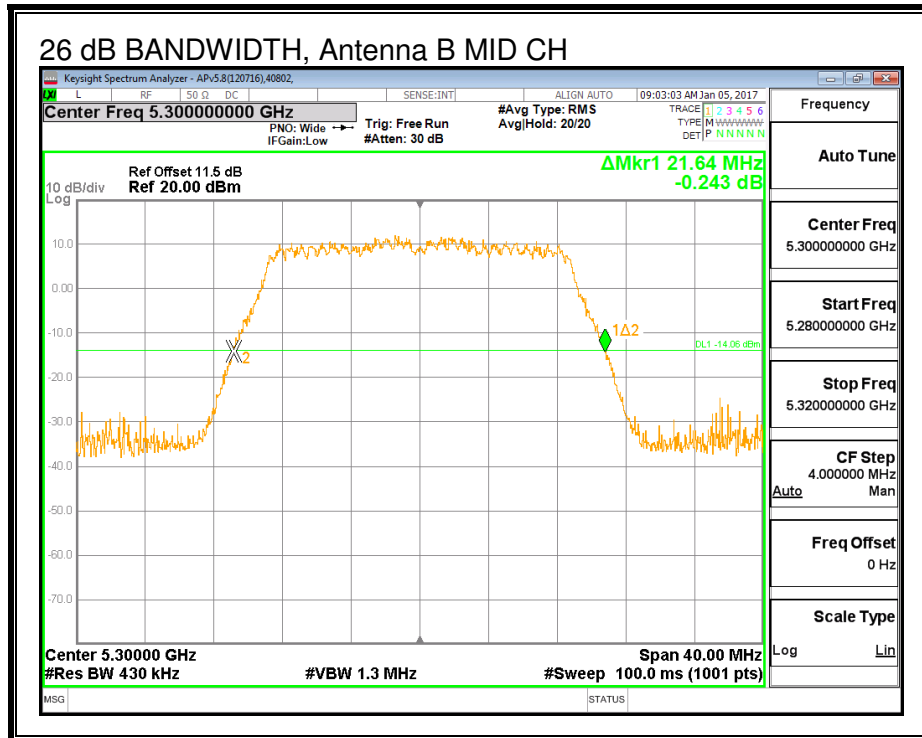
**26 dB BANDWIDTH, Antenna A**





**26 dB BANDWIDTH, Antenna B**





**8.14.2. 99% BANDWIDTH**

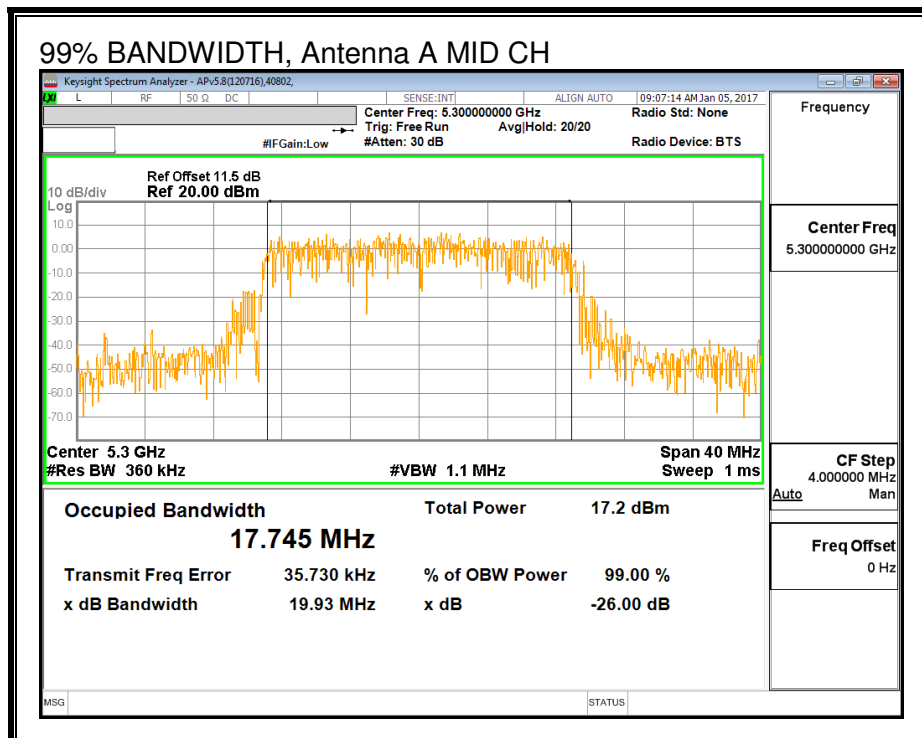
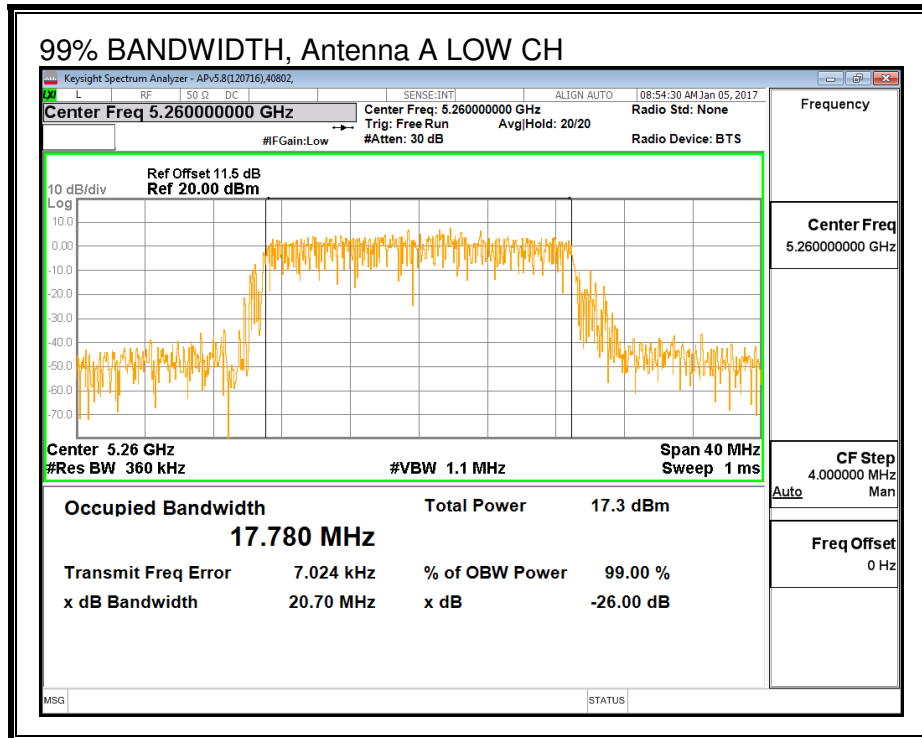
**LIMITS**

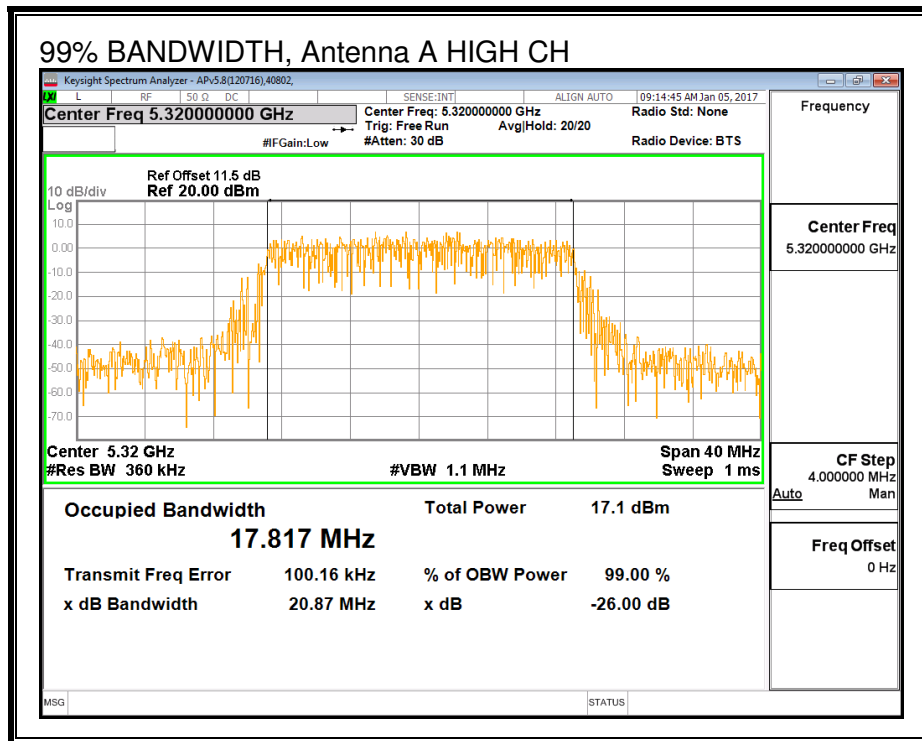
None; for reporting purposes only.

**RESULTS**

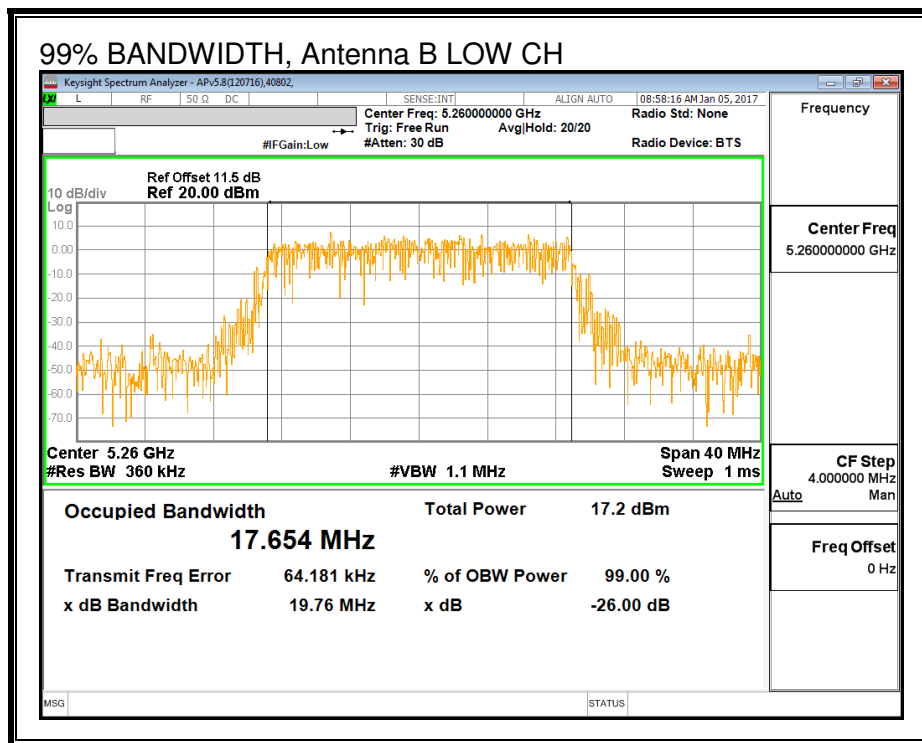
Channel	Frequency (MHz)	99% BW Antenna A (MHz)	99% BW Antenna B (MHz)
Low	5260	17.780	17.654
Mid	5300	17.745	17.914
High	5320	17.817	17.738

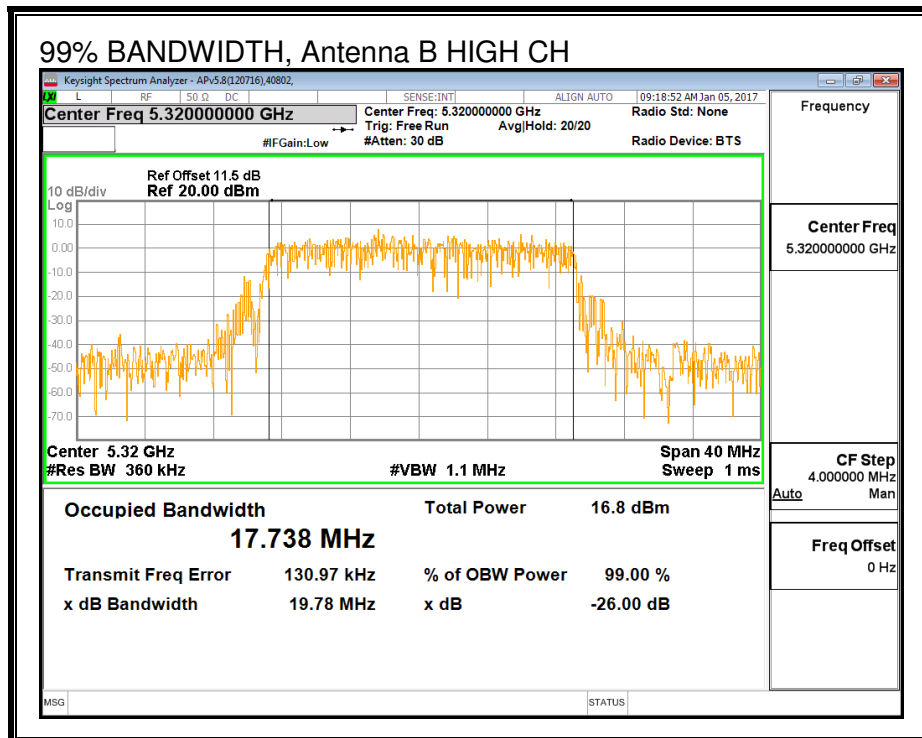
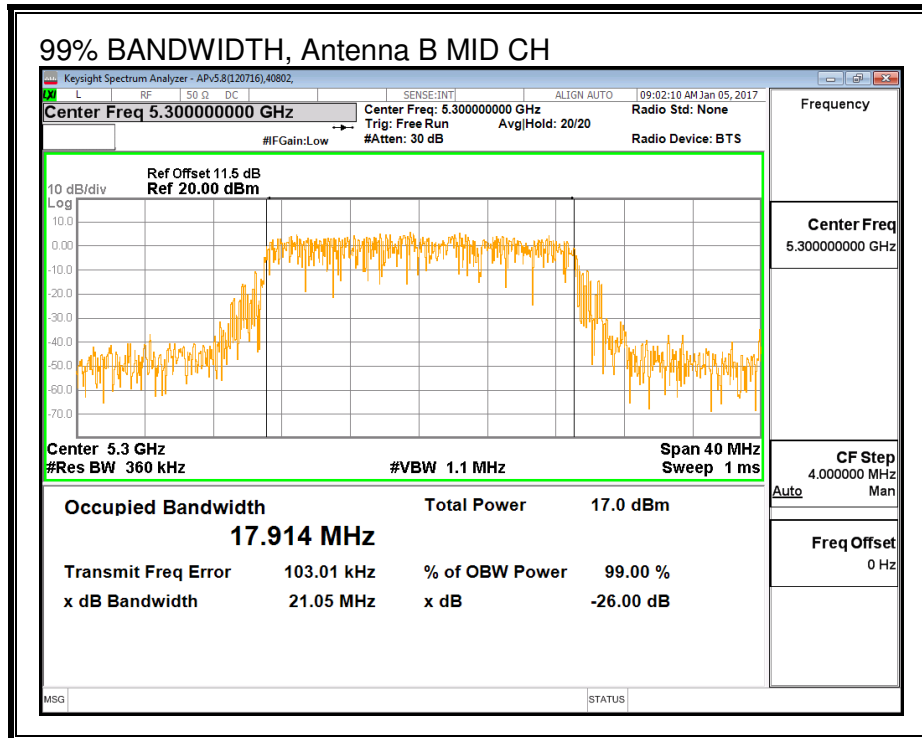
**99% BANDWIDTH, Antenna A**





**99% BANDWIDTH, Antenna B**





### 8.14.3. AVERAGE POWER

#### LIMITS

None; for reporting purposes only.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### RESULTS

<b>ID:</b>	45256	<b>Date:</b>	1/31/17
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#### Average Power Results

Channel	Frequency (MHz)	Antenna A Power (dBm)	Antenna B Power (dBm)	Total Power (dBm)
Low	5260	15.91	15.90	18.92
Mid	5300	15.99	15.96	18.99
High	5320	14.41	14.49	17.46

**8.14.4. OUTPUT POWER AND PSD**

**LIMITS**

FCC §15.407 (a) (2)

For the band 5.25–5.35 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.

**DIRECTIONAL ANTENNA GAIN**

The TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

Use this table for uncorrelated chains and unequal antenna gain

<b>Antenna A</b>	<b>Antenna B</b>	<b>Uncorrelated Chains</b>
<b>Gain</b>	<b>Gain</b>	<b>Directional</b>
<b>(dBi)</b>	<b>(dBi)</b>	<b>Gain</b>
<b>(dBi)</b>	<b>(dBi)</b>	<b>(dBi)</b>
4.11	3.36	3.75

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

<b>Antenna A</b>	<b>Antenna B</b>	<b>Correlated Chains</b>
<b>Gain</b>	<b>Gain</b>	<b>Directional</b>
<b>(dBi)</b>	<b>(dBi)</b>	<b>Gain</b>
<b>(dBi)</b>	<b>(dBi)</b>	<b>(dBi)</b>
4.11	3.36	6.75

**RESULTS**

**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)
Low	5260	21.68	3.75	6.75	24.00	10.25
Mid	5300	21.64	3.75	6.75	24.00	10.25
High	5320	21.56	3.75	6.75	24.00	10.25

<b>Duty Cycle CF (dB)</b>	0.00	<b>Included in Calculations of Corr'd Power &amp; PSD</b>
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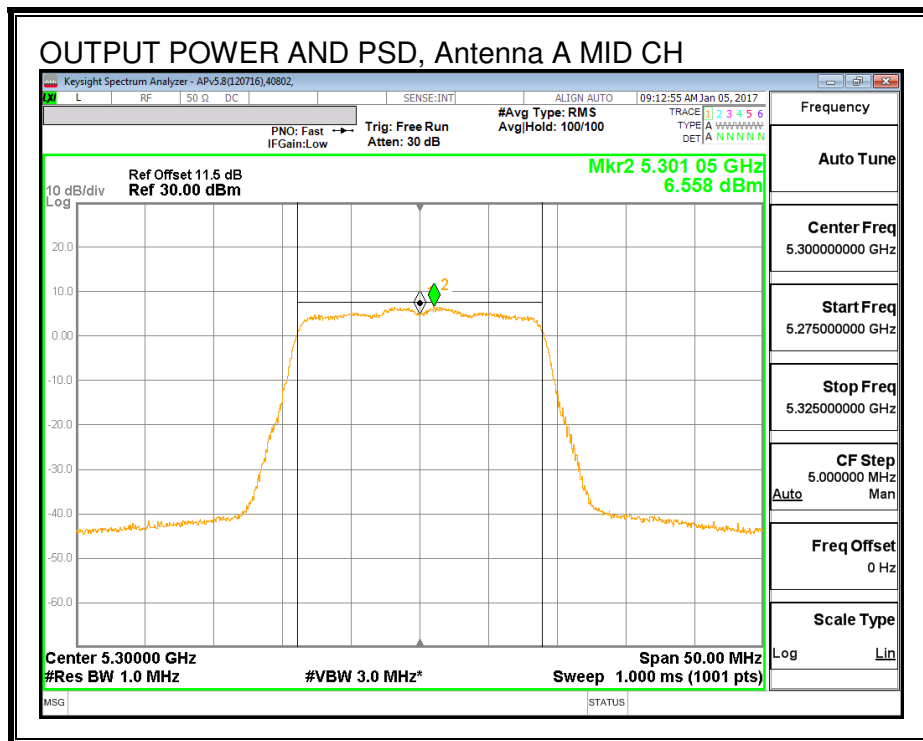
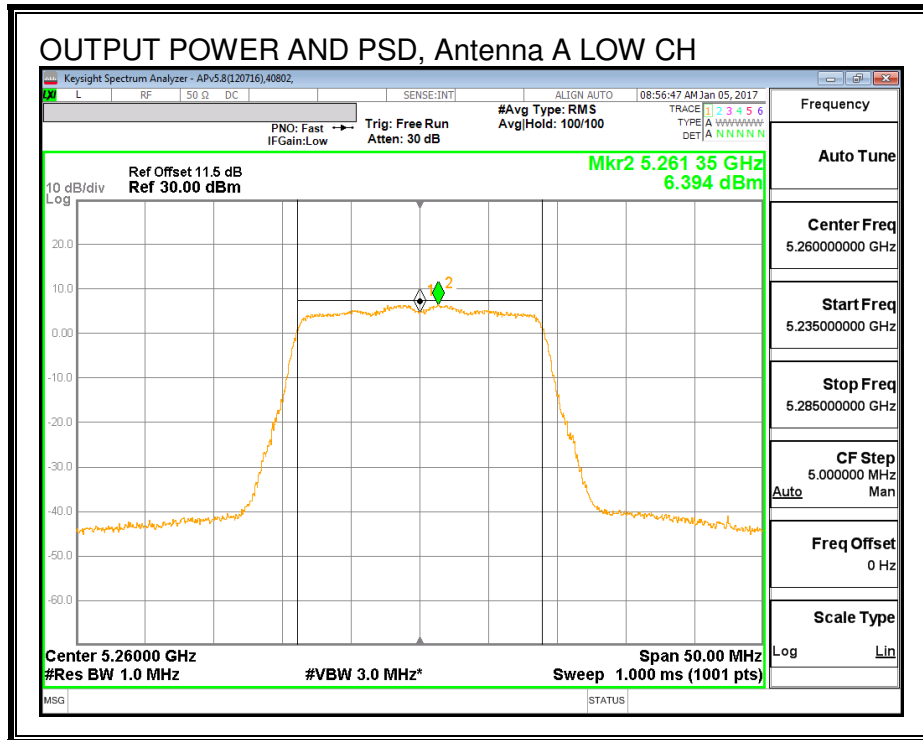
**Output Power Results**

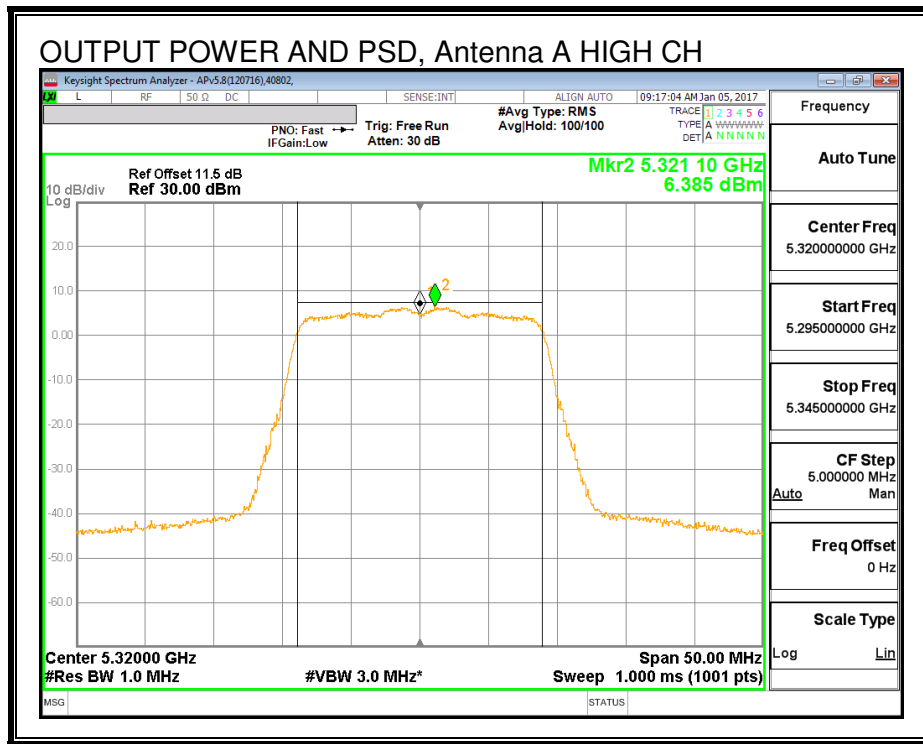
Channel	Frequency (MHz)	Antenna A Meas Power (dBm)	Antenna B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	15.91	15.90	18.92	24.00	-5.08
Mid	5300	15.99	15.96	18.99	24.00	-5.01
High	5320	14.41	14.49	17.46	24.00	-6.54

**PSD Results**

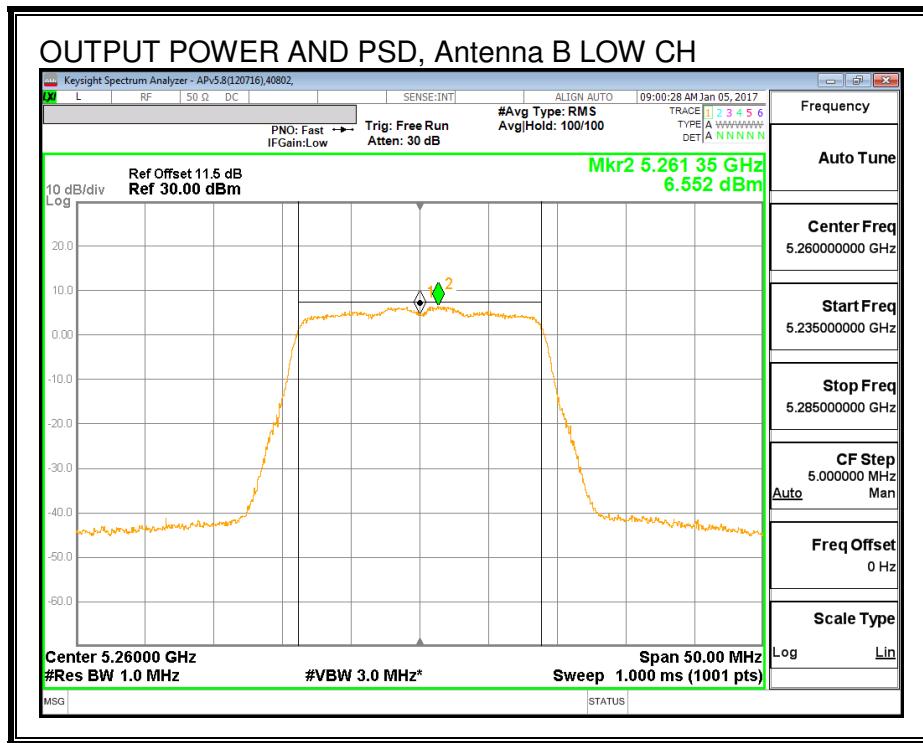
Channel	Frequency (MHz)	Antenna A Meas PSD (dBm)	Antenna B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5260	6.39	6.55	9.48	10.25	-0.77
Mid	5300	6.56	6.32	9.45	10.25	-0.80
High	5320	6.39	6.33	9.37	10.25	-0.88

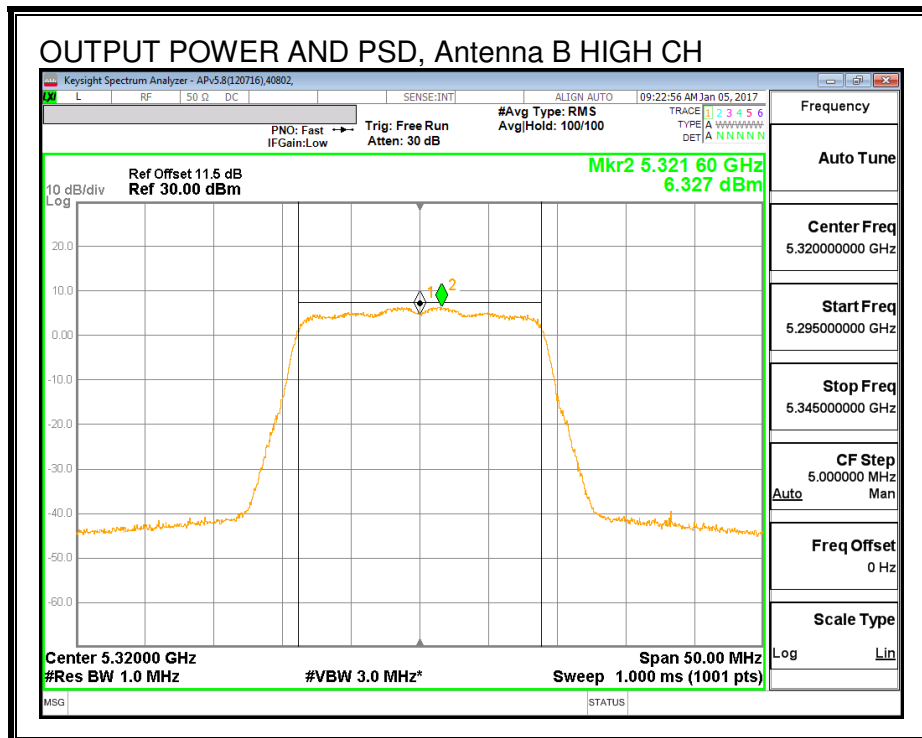
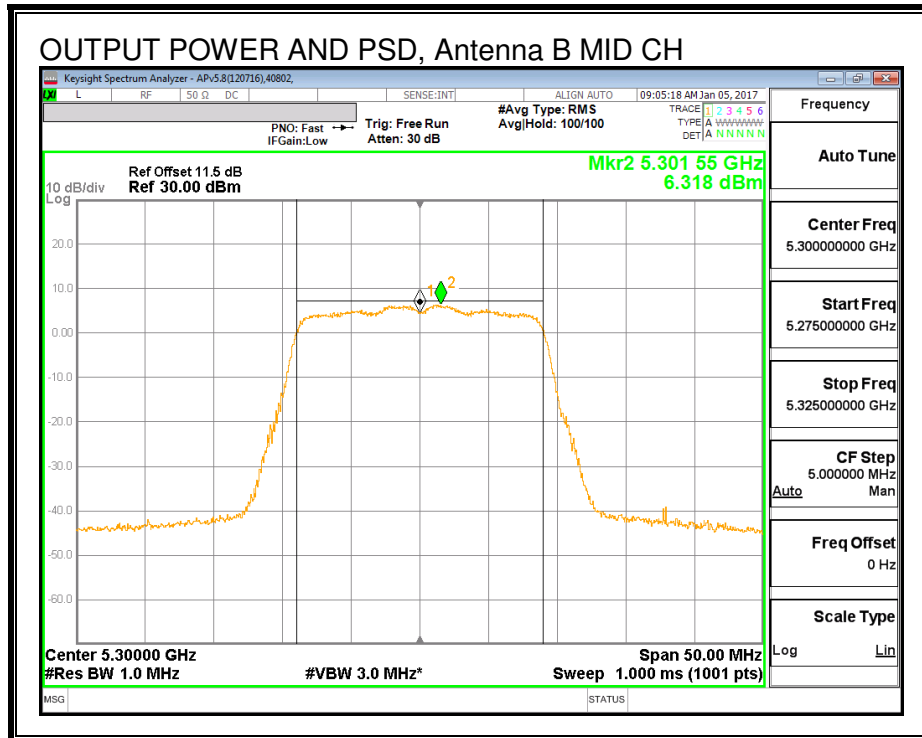
**OUTPUT POWER AND PSD, Antenna A**





### OUTPUT POWER AND PSD, Antenna B





**8.15. 802.11n HT40 ANTENNA A MODE IN THE 5.3 GHz BAND**

**8.15.1. 26 dB BANDWIDTH**

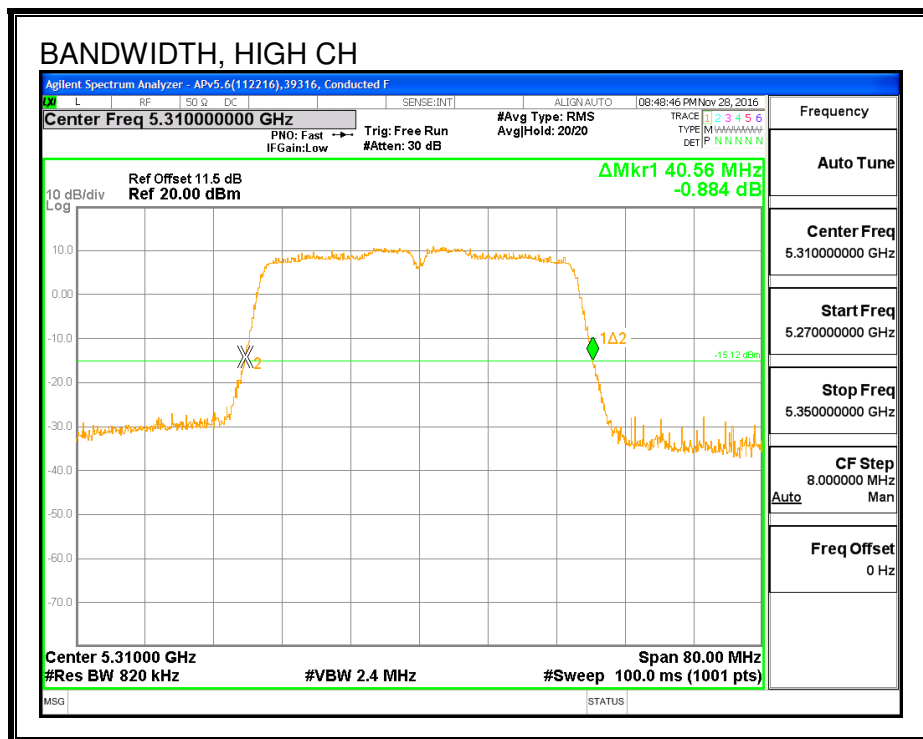
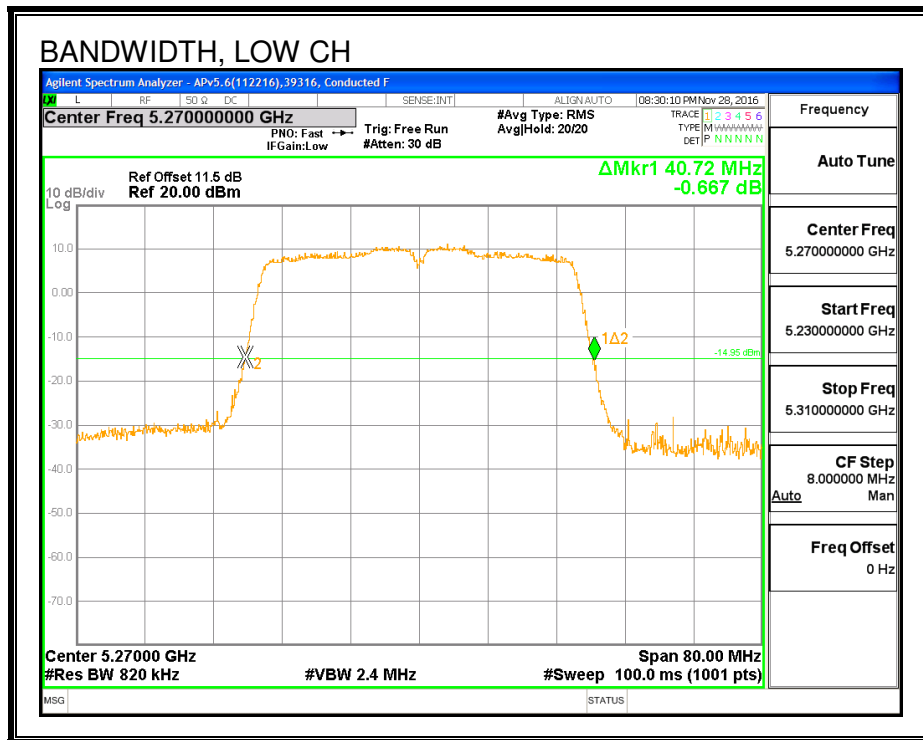
**LIMITS**

None; for reporting purposes only.

**RESULTS**

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5270	40.720
High	5310	40.560

**26 dB BANDWIDTH**



### 8.15.2. 99% BANDWIDTH

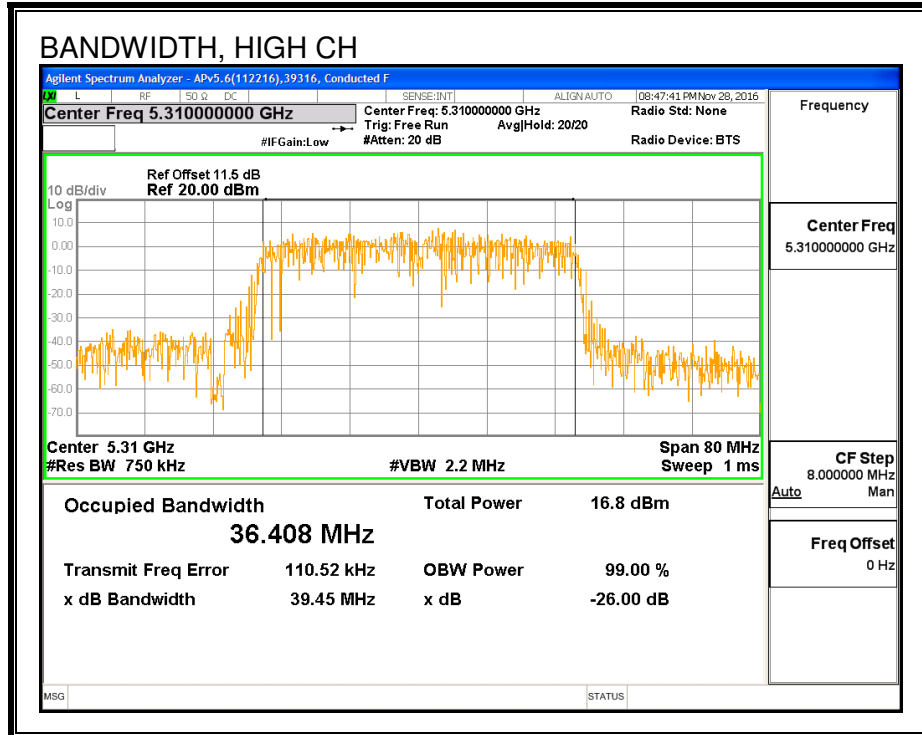
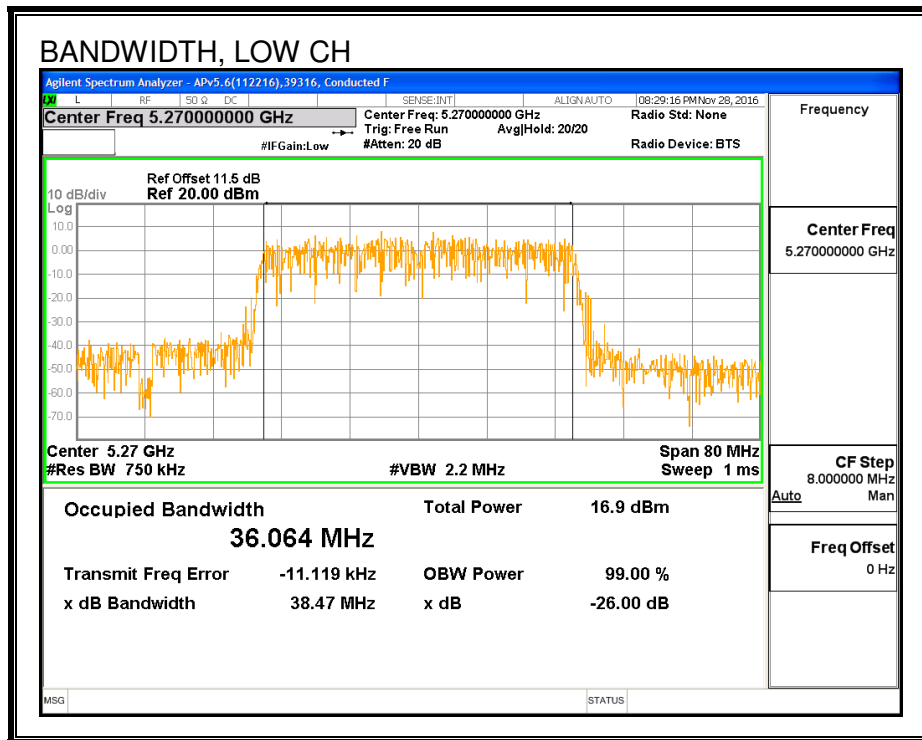
#### LIMITS

None; for reporting purposes only.

#### RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5270	36.064
High	5310	36.408

**99% BANDWIDTH**



### 8.15.3. AVERAGE POWER

#### LIMITS

None; for reporting purposes only.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### RESULTS

<b>ID:</b>	45256	<b>Date:</b>	1/31/17
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Channel	Frequency (MHz)	Power (dBm)
Low	5270	15.89
High	5310	13.97

## 8.15.4. OUTPUT POWER AND PSD

### LIMITS

FCC §15.407 (a) (2)

For the band 5.25–5.35 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.

### DIRECTIONAL ANTENNA GAIN

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

**RESULTS**

<b>ID:</b>	39919	<b>Date:</b>	2/14/17
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**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	5270	40.72	36.06	4.11	24.00	11.00
High	5310	40.56	36.41	4.11	24.00	11.00

<b>Duty Cycle CF (dB)</b>	0.11	<b>Included in Calculations of Corr'd PSD</b>
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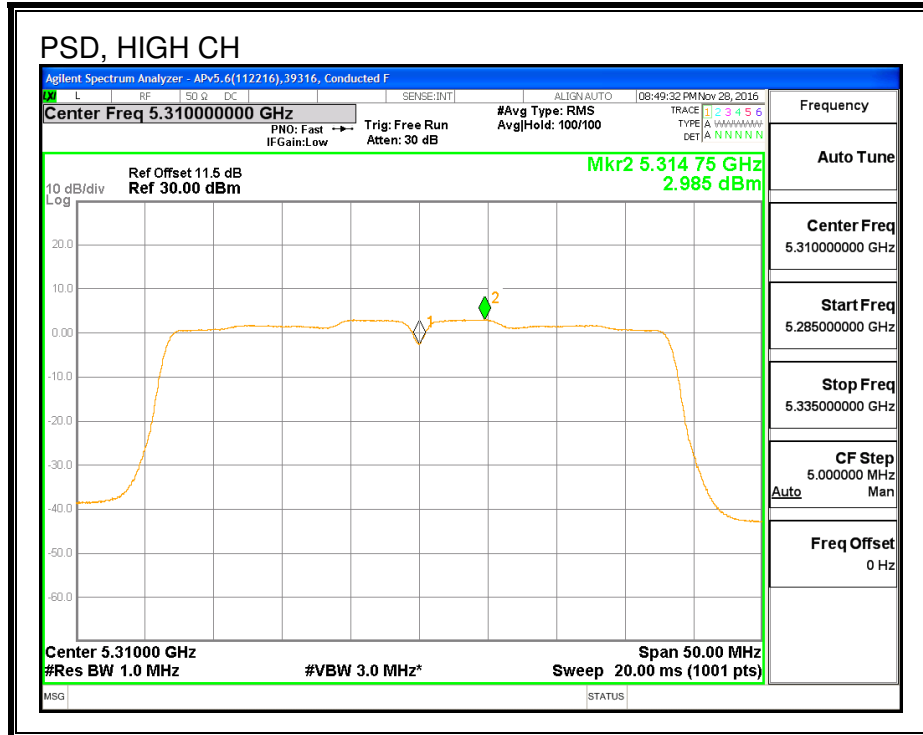
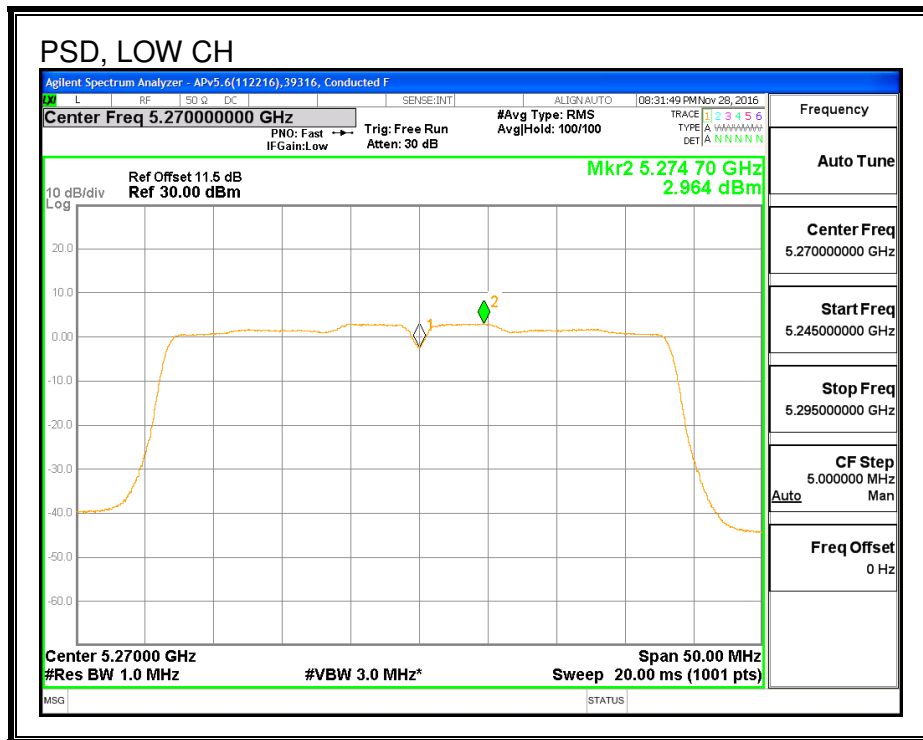
**Output Power Results**

Channel	Frequency (MHz)	Antenna A Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	15.89	15.89	24.00	-8.11
High	5310	13.97	13.97	24.00	-10.03

**PSD Results**

Channel	Frequency (MHz)	Antenna A Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5270	2.96	3.07	11.00	-7.93
High	5310	2.99	3.10	11.00	-7.91

**PSD**



## 8.16. 802.11n HT40 ANTENNA B MODE IN THE 5.3 GHz BAND

### 8.16.1. 26 dB BANDWIDTH

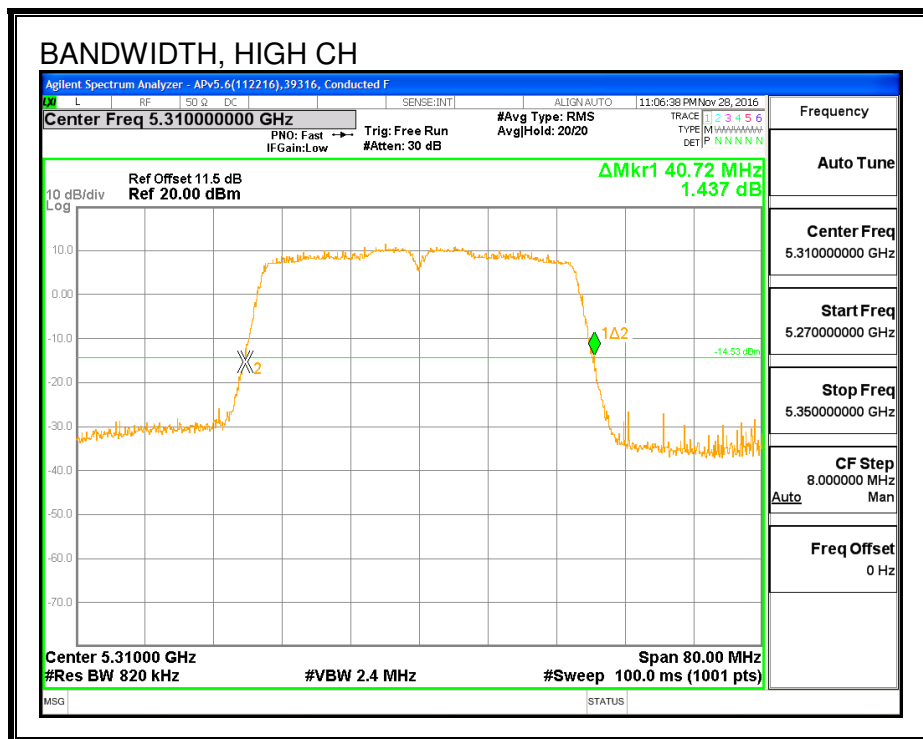
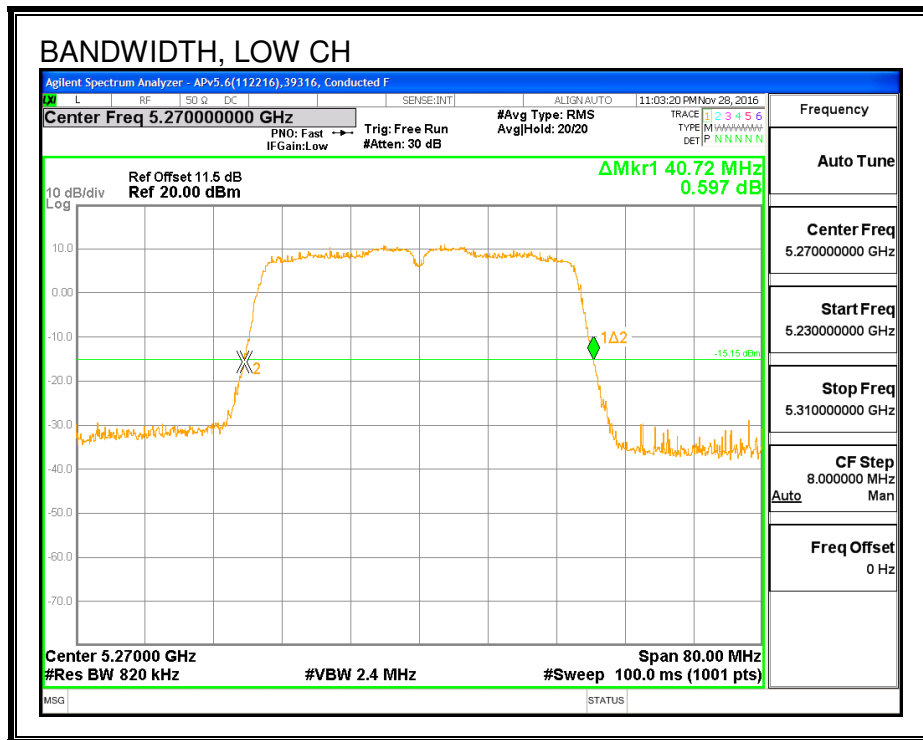
#### LIMITS

None; for reporting purposes only.

#### RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5270	40.720
High	5310	40.720

**26 dB BANDWIDTH**



### 8.16.2. 99% BANDWIDTH

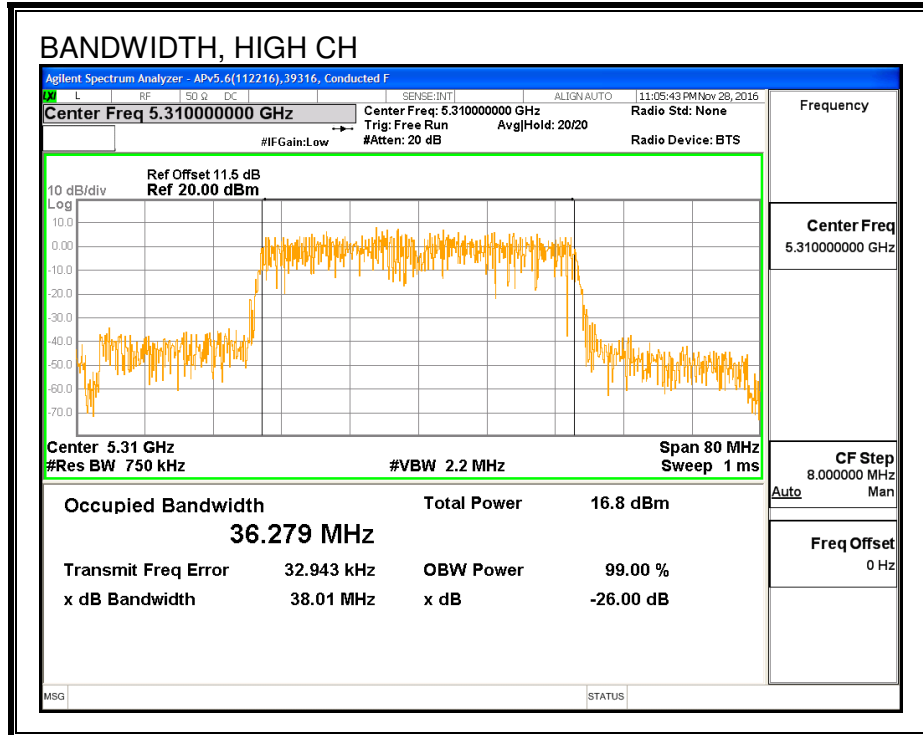
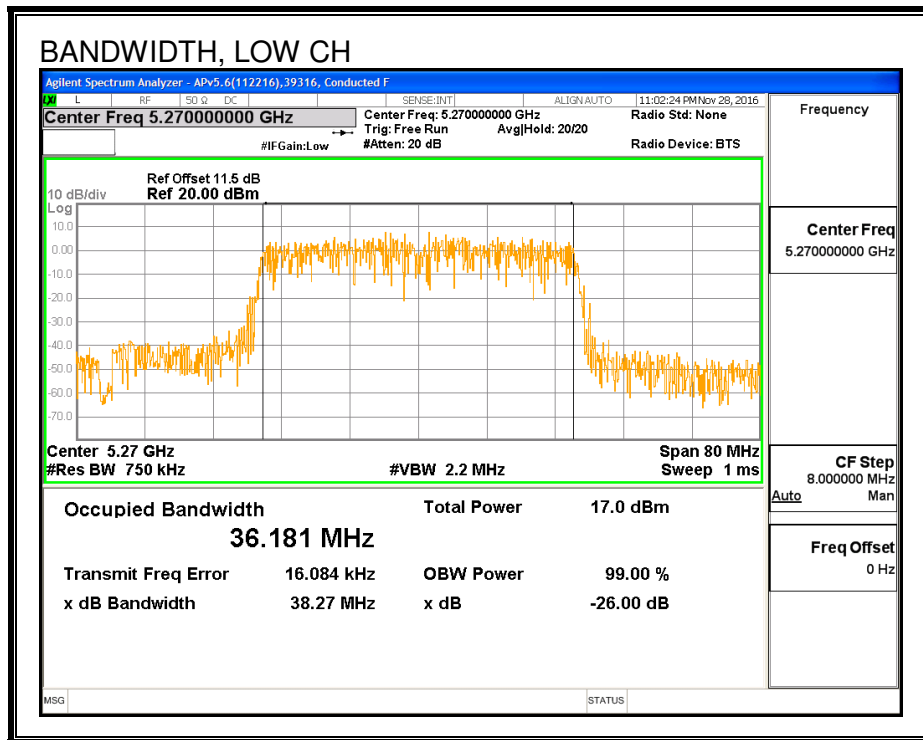
#### LIMITS

None; for reporting purposes only.

#### RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5270	36.181
High	5310	36.279

**99% BANDWIDTH**



### 8.16.3. AVERAGE POWER

#### LIMITS

None; for reporting purposes only.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### RESULTS

<b>ID:</b>	45256	<b>Date:</b>	1/31/17
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Channel	Frequency (MHz)	Power (dBm)
Low	5270	15.90
High	5310	13.98

## 8.16.4. OUTPUT POWER AND PSD

### LIMITS

FCC §15.407 (a) (2)

For the band 5.25–5.35 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.

### DIRECTIONAL ANTENNA GAIN

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

**RESULTS**

<b>ID:</b>	39919	<b>Date:</b>	2/14/17
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**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	5270	40.72	36.18	3.36	24.00	11.00
High	5310	40.72	36.28	3.36	24.00	11.00

<b>Duty Cycle CF (dB)</b>	0.11	<b>Included in Calculations of Corr'd PSD</b>
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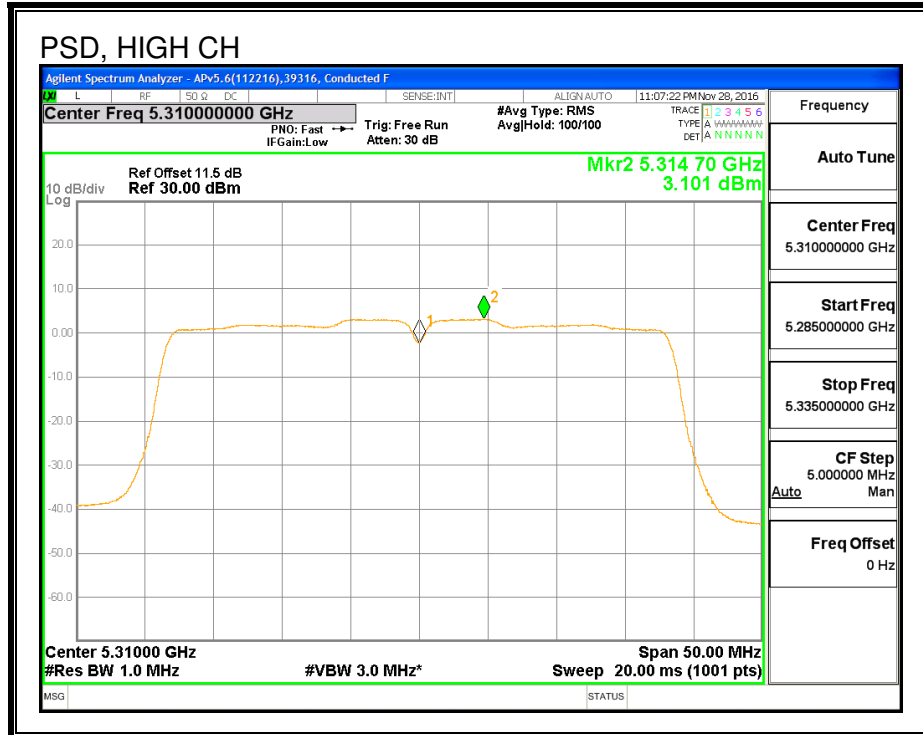
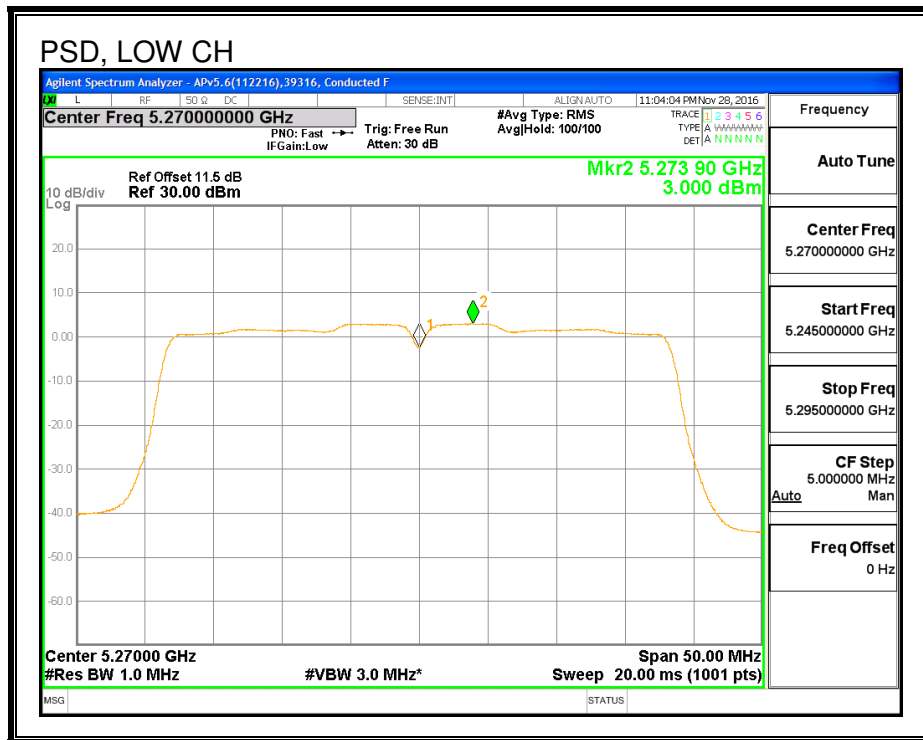
**Output Power Results**

Channel	Frequency (MHz)	Antenna B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	15.90	15.90	24.00	-8.10
High	5310	13.98	13.98	24.00	-10.02

**PSD Results**

Channel	Frequency (MHz)	Antenna B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5270	3.00	3.11	11.00	-7.89
High	5310	3.10	3.21	11.00	-7.79

**PSD**



## 8.17. 802.11n HT40 2Tx (ANTENNA A + ANTENNA B) CDD MODE IN THE 5.3 GHz BAND

### 8.17.1. 26 dB BANDWIDTH

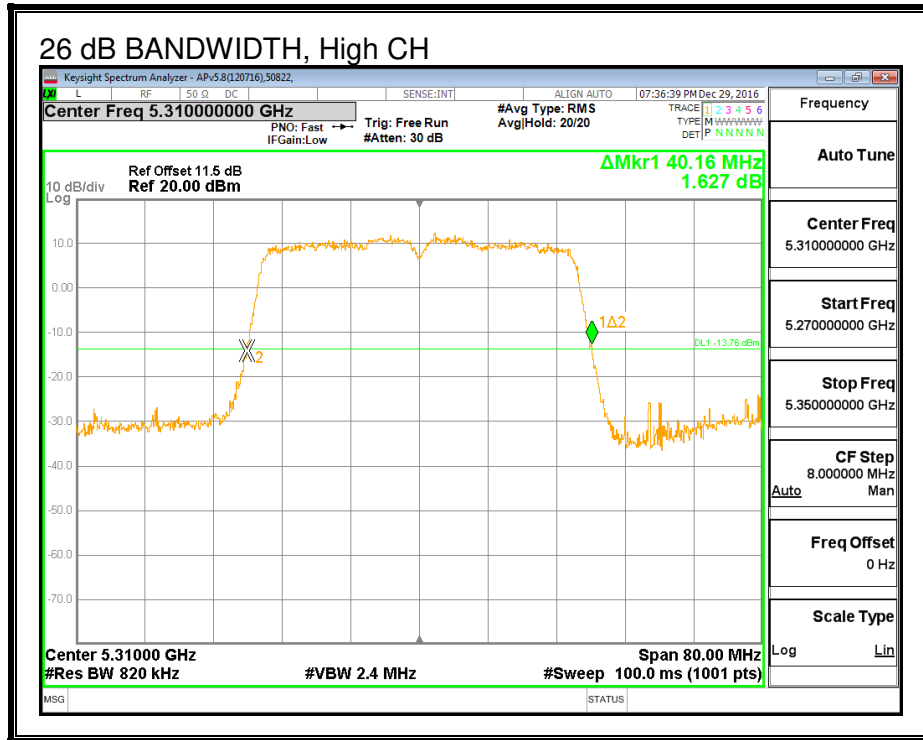
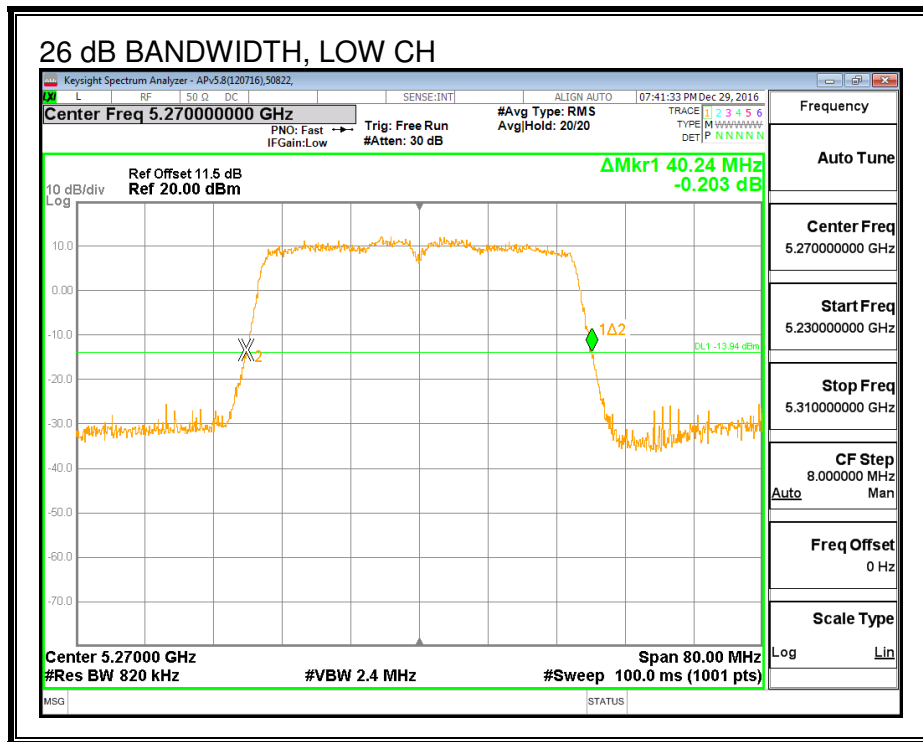
#### LIMITS

None; for reporting purposes only.

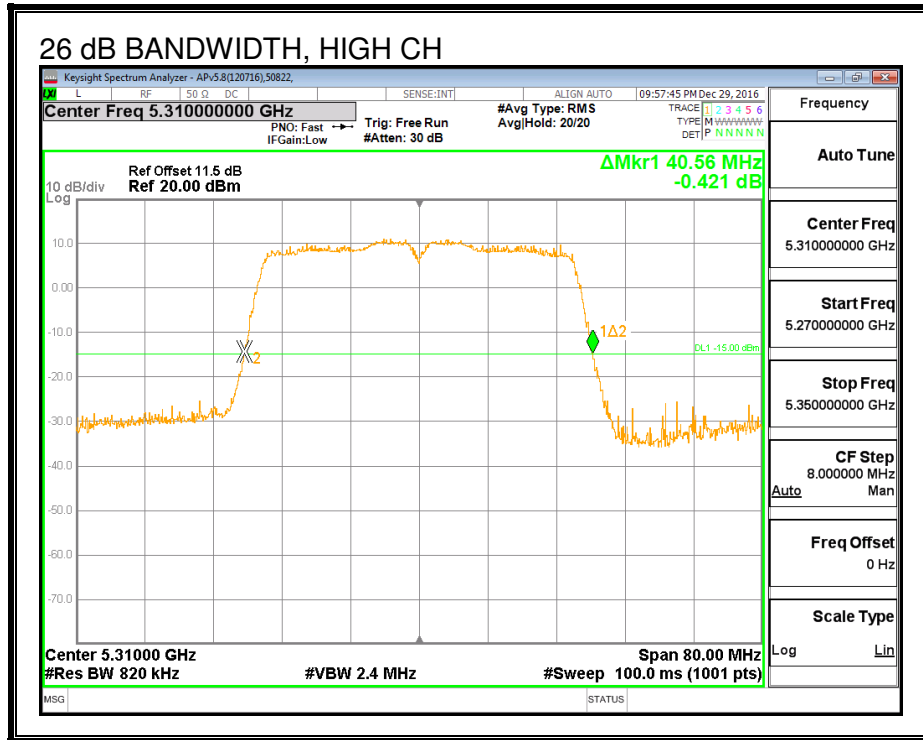
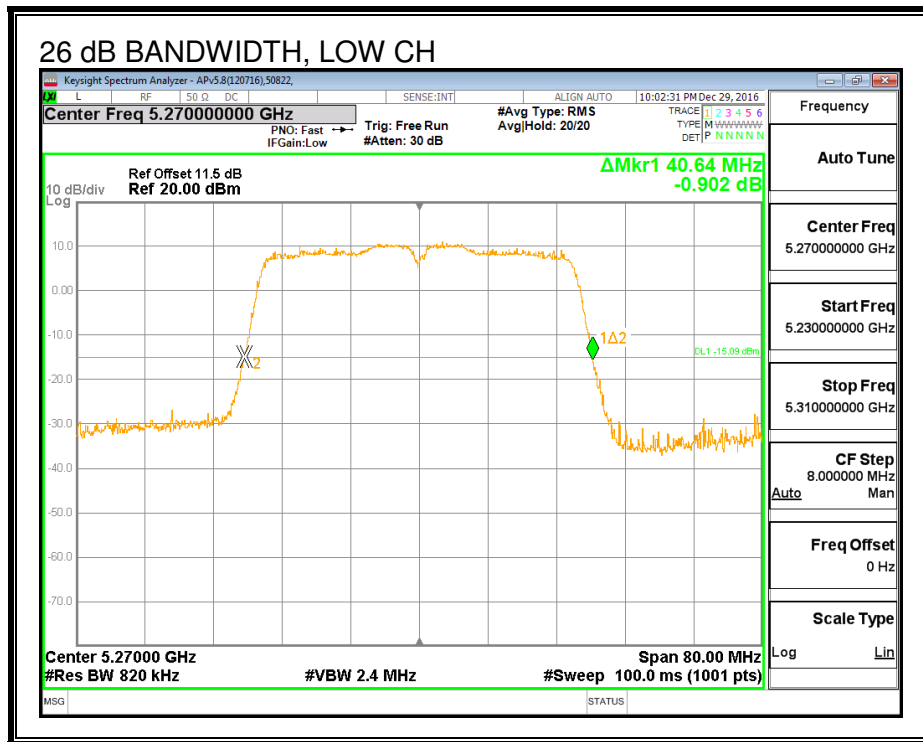
#### RESULTS

Channel	Frequency (MHz)	26 dB BW Antenna A (MHz)	26 dB BW Antenna B (MHz)
Low	5270	40.240	40.640
High	5310	40.160	40.560

**26 DB BANDWIDTH, ANTENNA A**



**26 DB BANDWIDTH, ANTENNA B**



### 8.17.2. 99% BANDWIDTH

#### LIMITS

None; for reporting purposes only.

#### RESULTS

Channel	Frequency (MHz)	99% BW Antenna A (MHz)	99% BW Antenna B (MHz)
Low	5270	36.257	36.298
High	5310	36.250	36.243