

**8.29. 802.11n HT20 2Tx (ANTENNA A + ANTENNA B) CDD MODE IN THE  
5.6 GHz BAND**

**8.29.1. 26 dB BANDWIDTH**

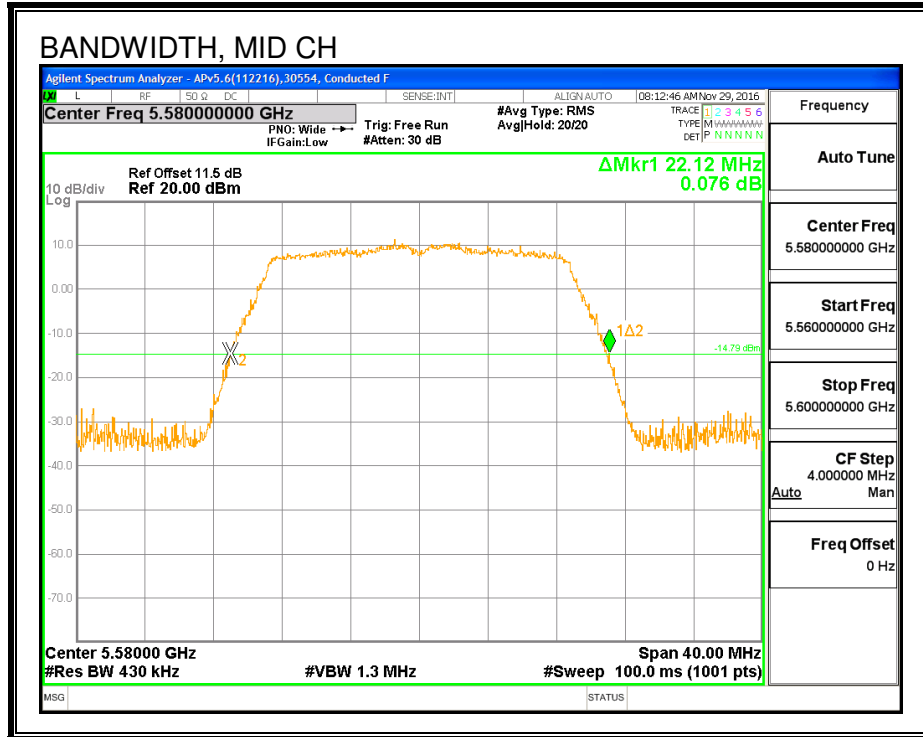
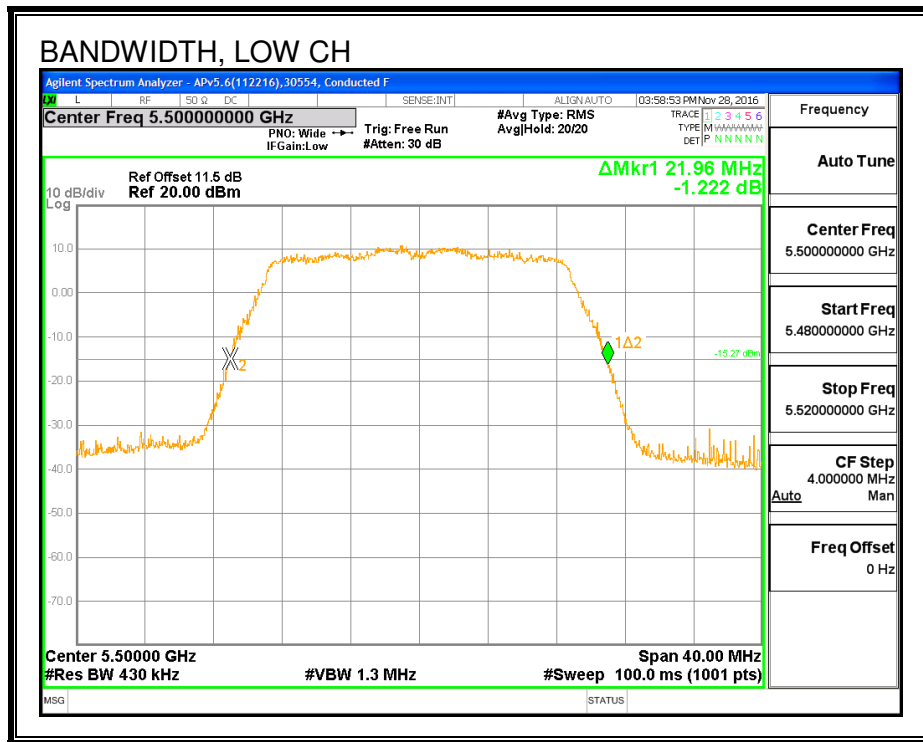
**LIMITS**

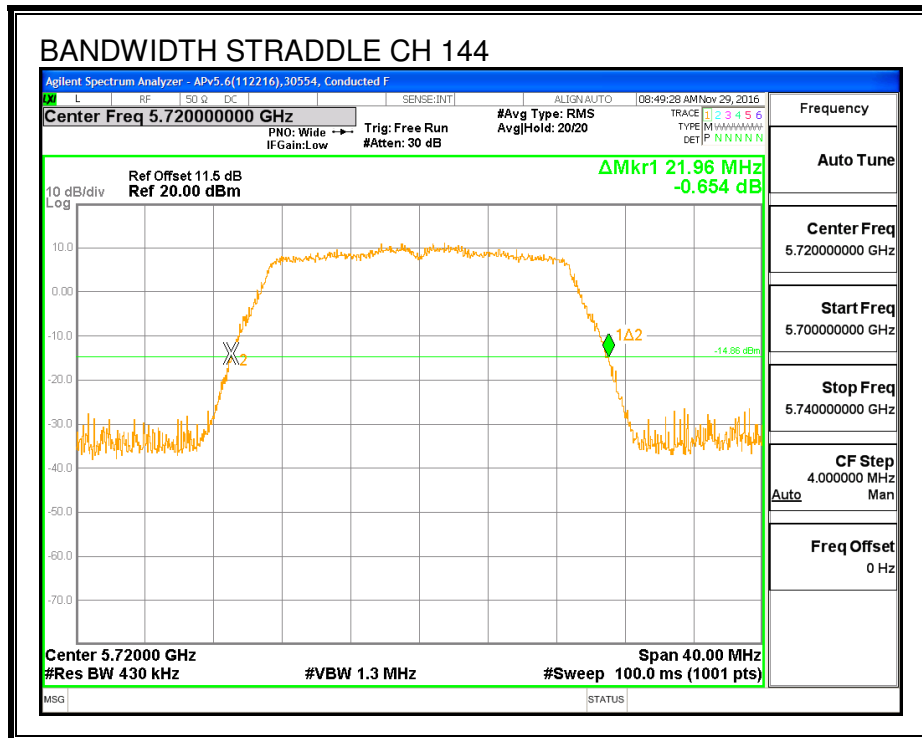
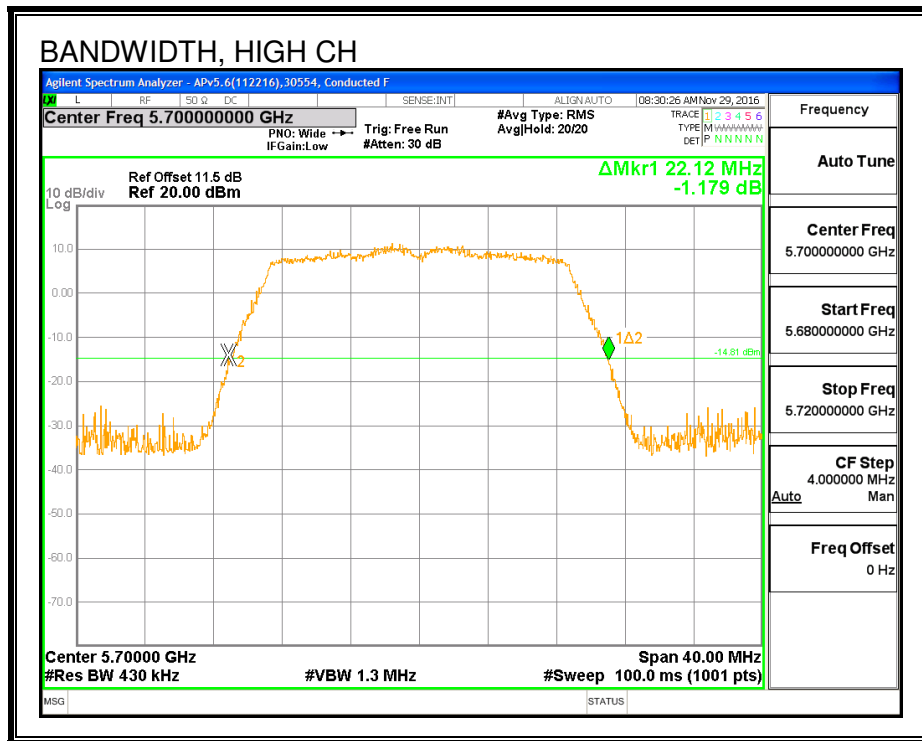
None; for reporting purposes only.

**RESULTS**

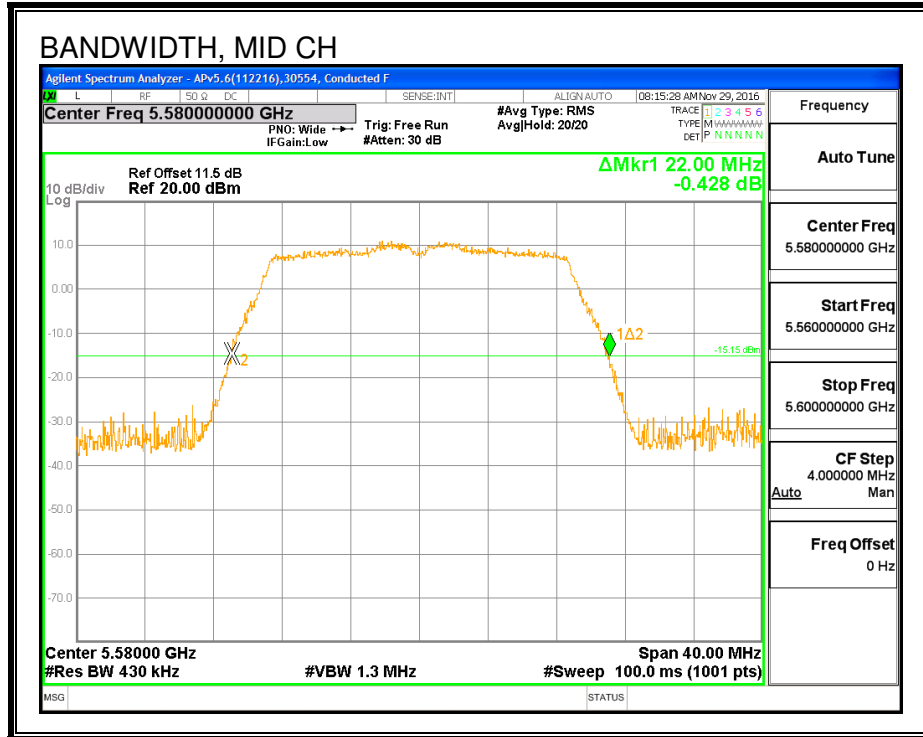
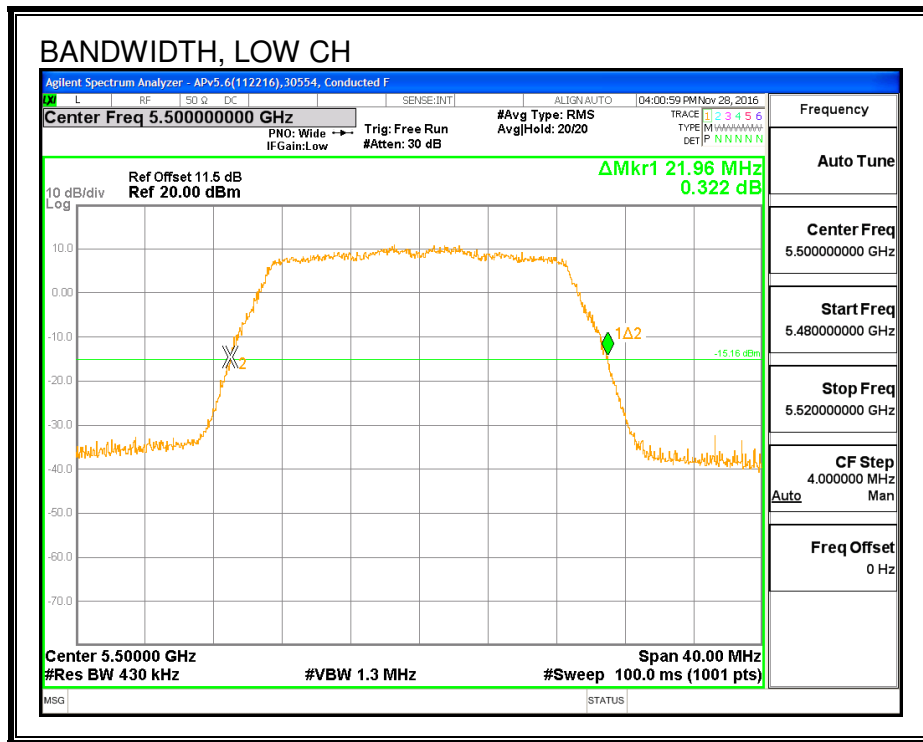
Channel	Frequency (MHz)	26 dB BW Ant A (MHz)	26 dB BW Ant B (MHz)
Low	5500	21.960	21.960
Mid	5580	22.120	22.000
High	5700	22.120	21.920
144	5720	21.960	22.120

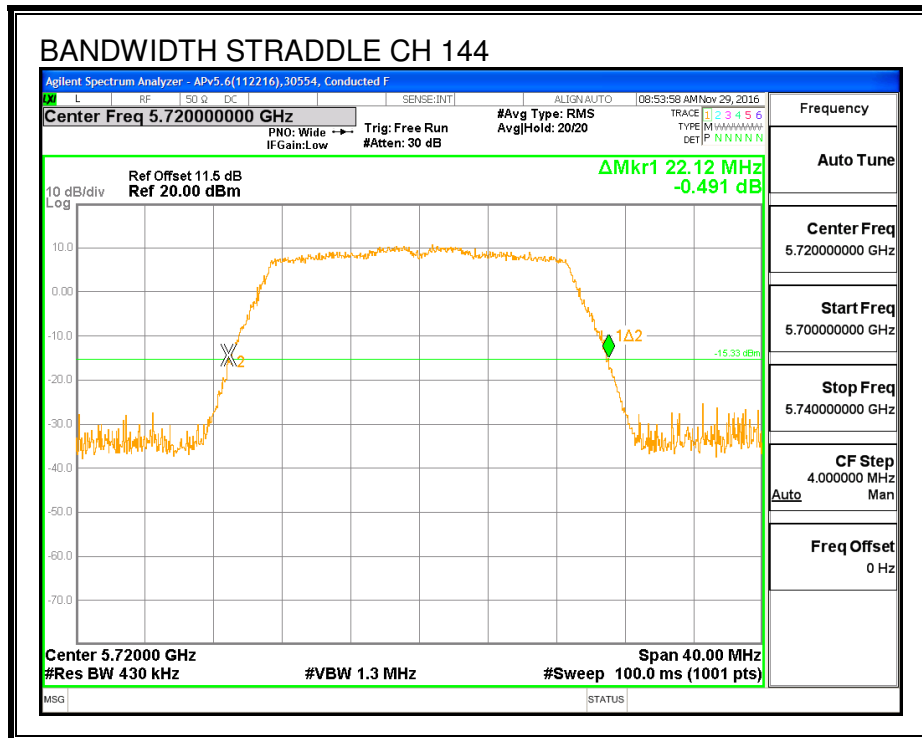
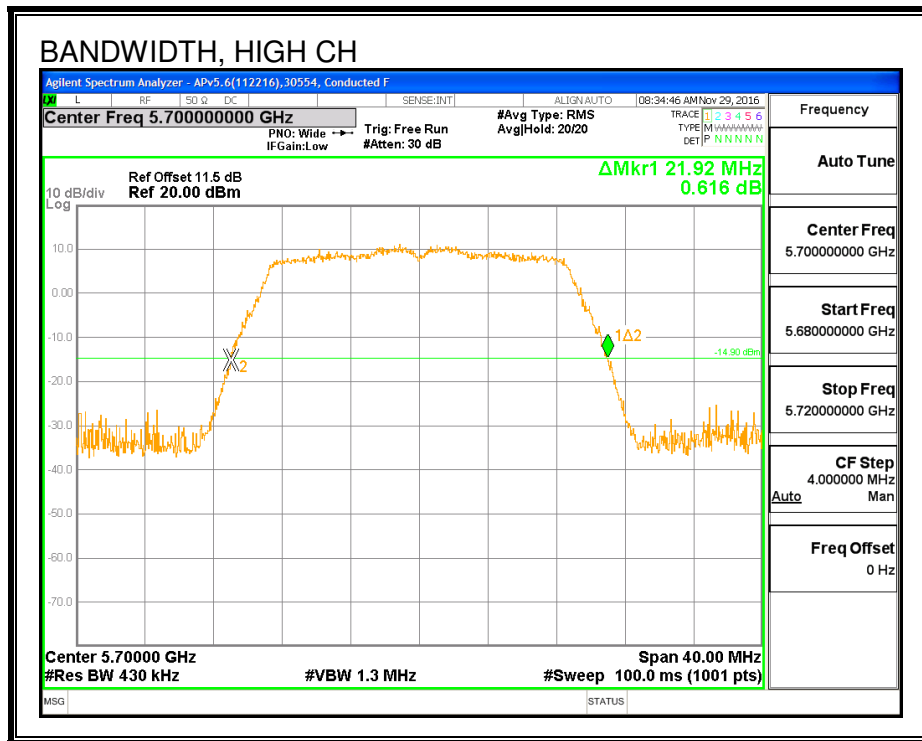
**26 dB BANDWIDTH, ANTENNA A**





**26 dB BANDWIDTH, ANTENNA B**





### 8.29.2. 99% BANDWIDTH

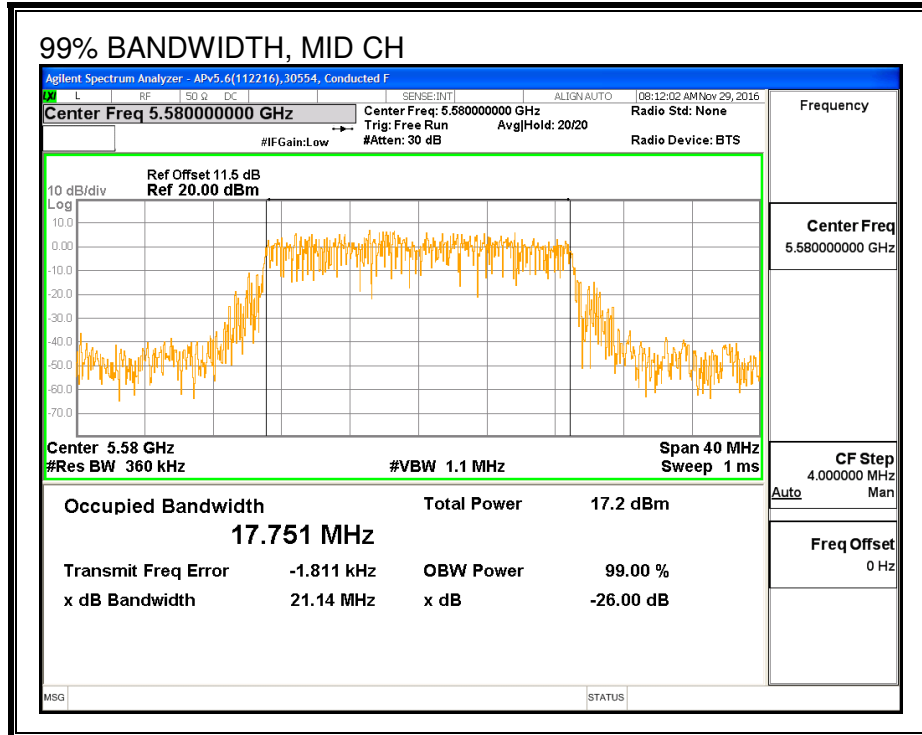
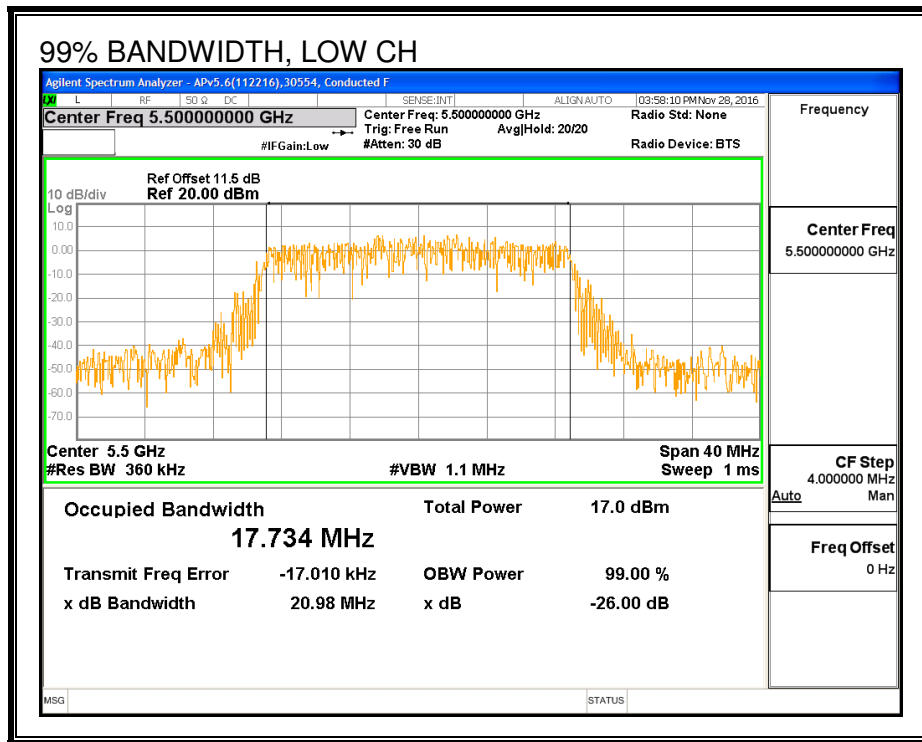
#### LIMITS

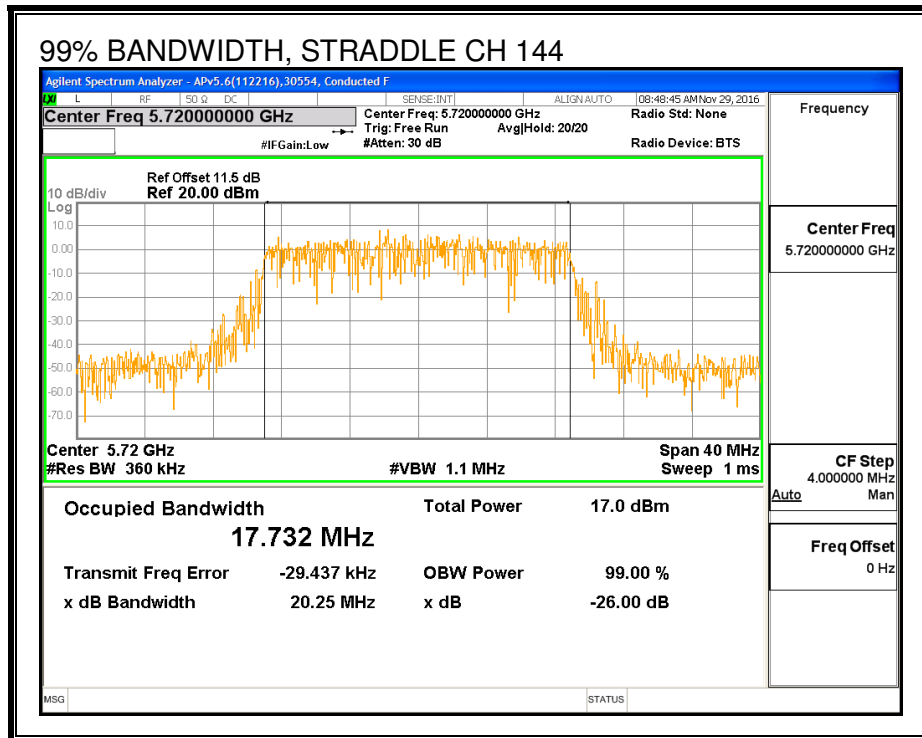
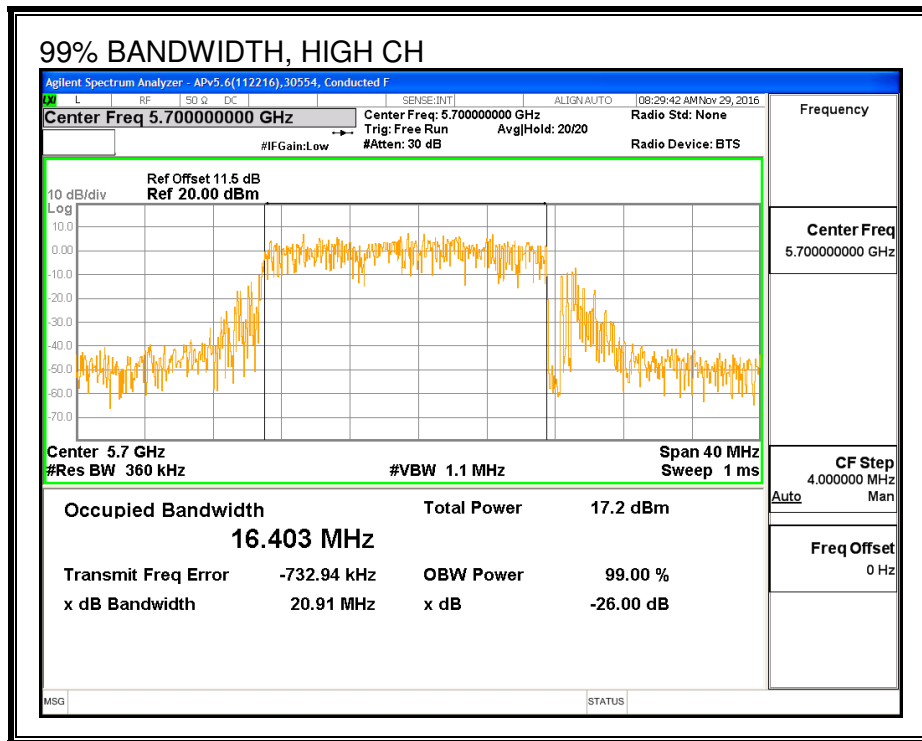
None; for reporting purposes only.

#### RESULTS

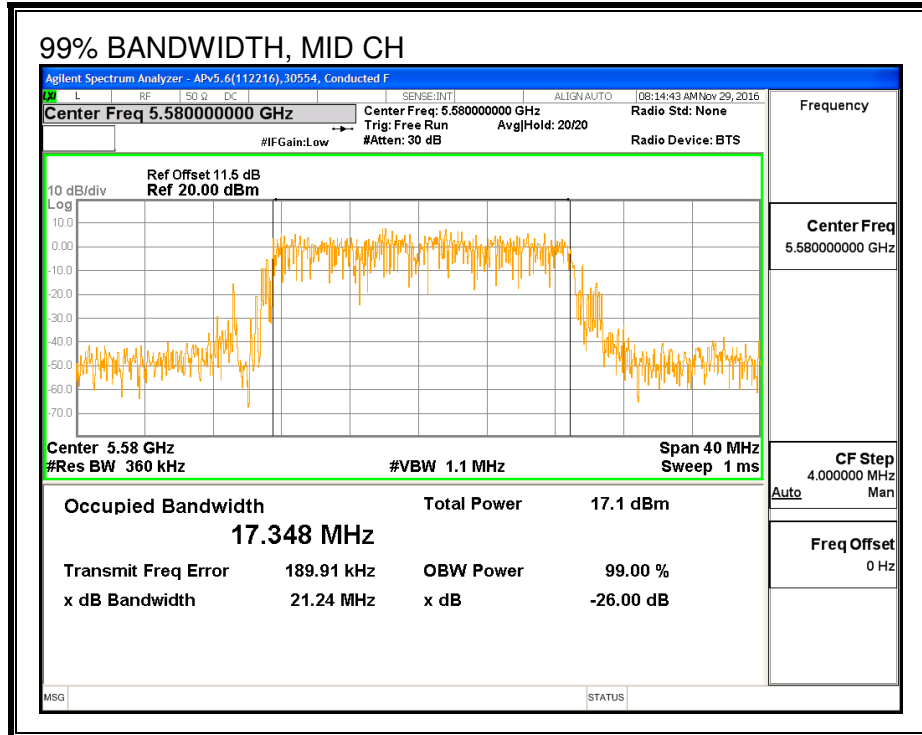
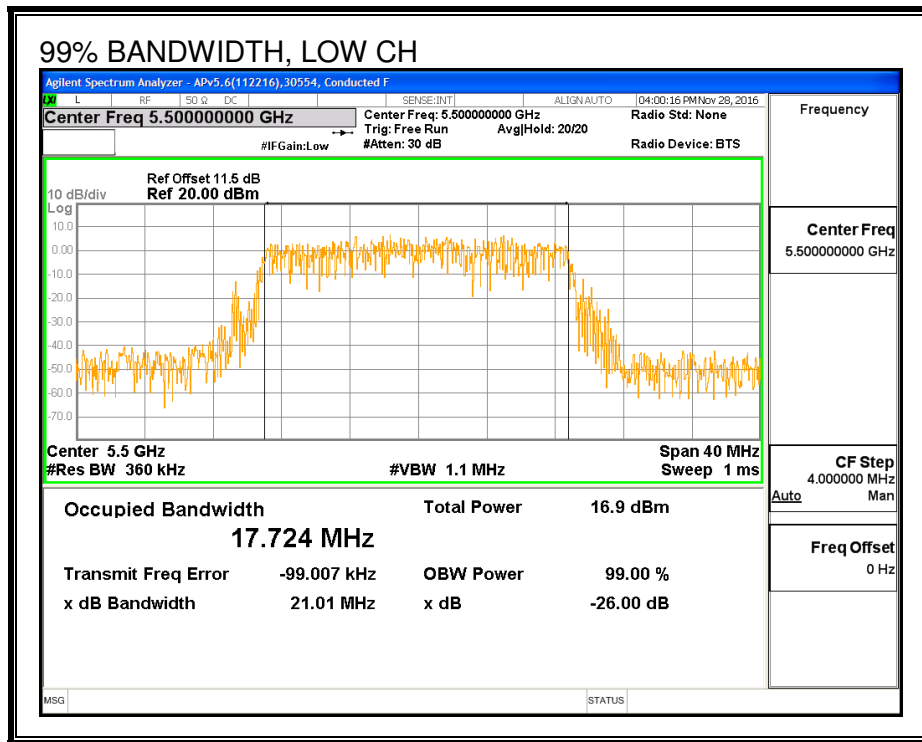
Channel	Frequency (MHz)	99% BW Ant A (MHz)	99% BW Ant B (MHz)
Low	5500	17.734	17.724
Mid	5580	17.751	17.348
High	5700	16.403	17.706
144	5720	17.732	17.710

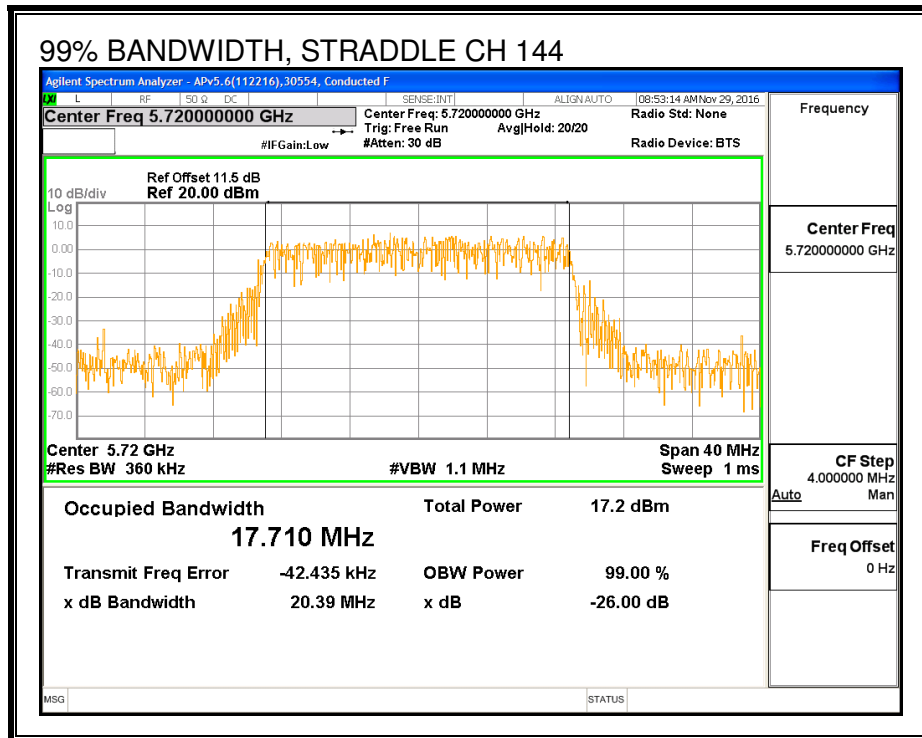
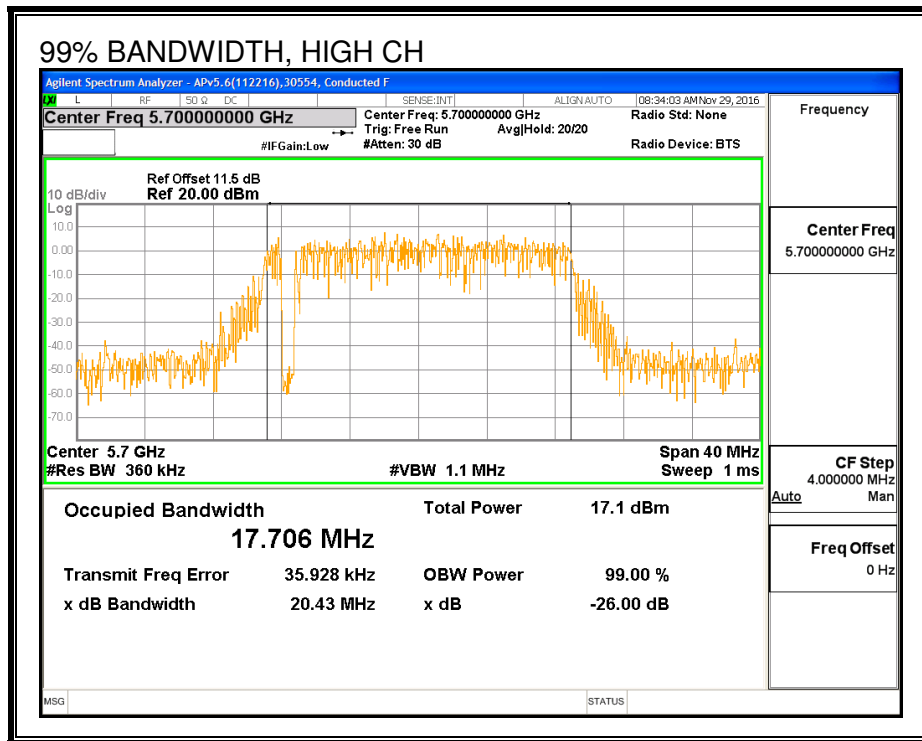
**99% BANDWIDTH, ANTENNA A**





**99% BANDWIDTH, ANTENNA B**





### 8.29.3. AVERAGE POWER

#### LIMITS

None; for reporting purposes only.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### RESULTS

<b>ID:</b>	39472	<b>Date:</b>	2/2/17
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#### Average Power Results

Channel	Frequency (MHz)	Ant A Power (dBm)	Ant B Power (dBm)	Total Power (dBm)
Low	5500	13.79	14.00	16.91
Mid	5580	13.84	13.98	16.92
High	5700	13.93	13.96	16.96
144	5720	13.90	13.99	16.96

## 8.29.4. OUTPUT POWER AND PSD

### 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.

Straddle channel power is measured using PXA spectrum analyzer, 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>Ant A</b>	<b>Ant 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>
5.41	5.17	5.29

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

<b>Ant A</b>	<b>Ant 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>
5.41	5.17	8.30

**RESULTS**

<b>ID:</b>	39472	<b>Date:</b>	2/2/17
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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	5500	21.96	17.72	5.29	8.30	23.49	8.70
Mid	5580	22.00	17.35	5.29	8.30	23.39	8.70
High	5700	21.92	16.40	5.29	8.30	23.15	8.70

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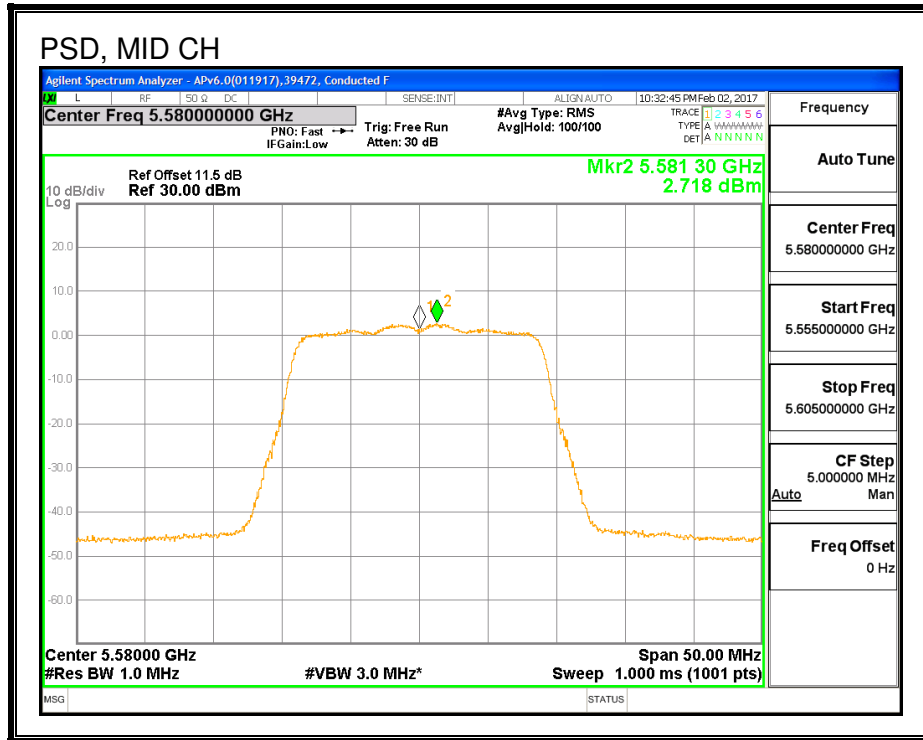
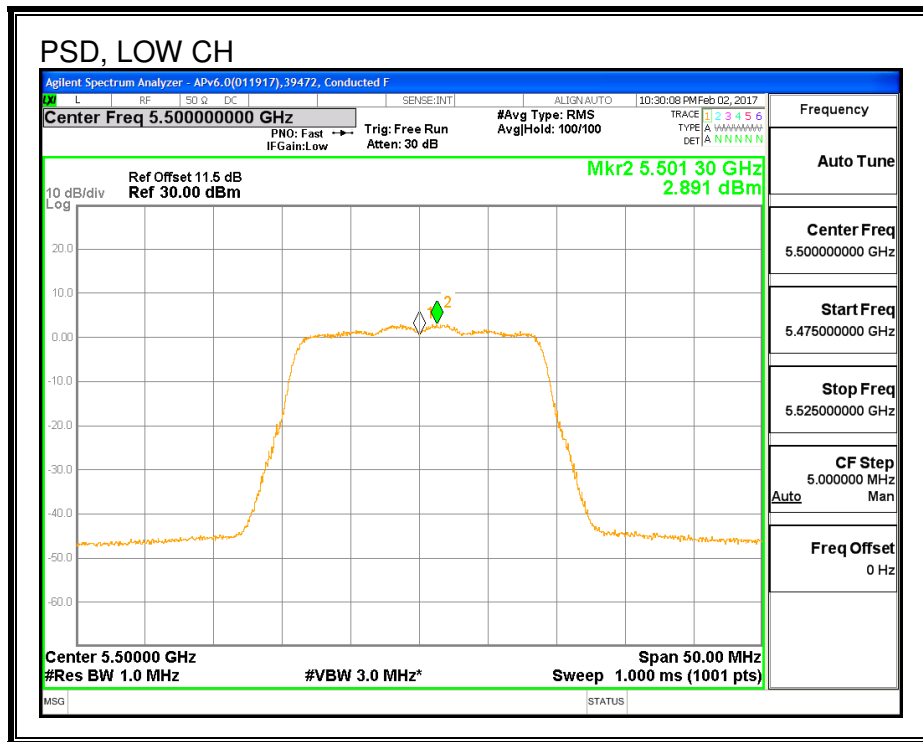
**Output Power Results**

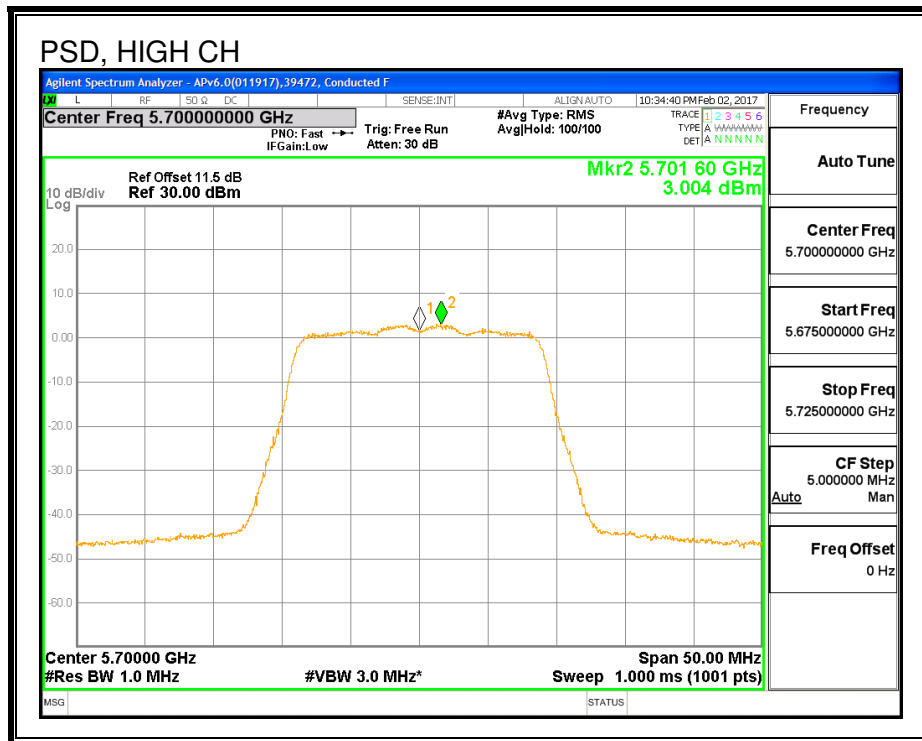
Channel	Frequency (MHz)	Ant A Meas Power (dBm)	Ant B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	13.79	14.00	16.91	23.49	-6.58
Mid	5580	13.84	13.98	16.92	23.39	-6.47
High	5700	13.93	13.96	16.96	23.15	-6.19

**PSD Results**

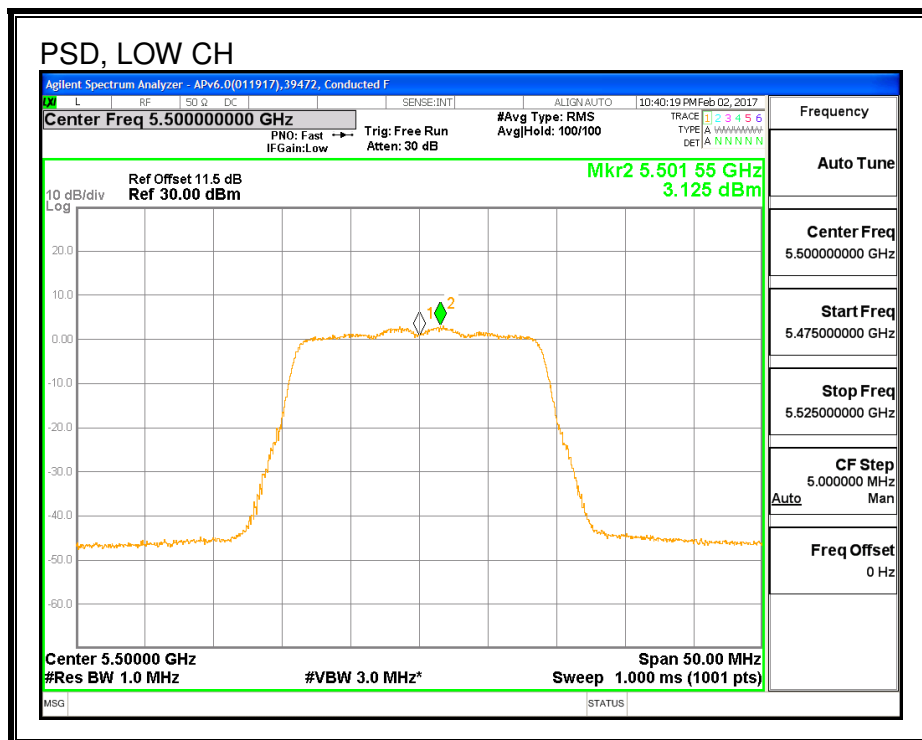
Channel	Frequency (MHz)	Ant A Meas PSD (dBm)	Ant B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5500	2.89	3.13	6.02	8.70	-2.68
Mid	5580	2.72	2.63	5.68	8.70	-3.02
High	5700	3.00	3.34	6.19	8.70	-2.51

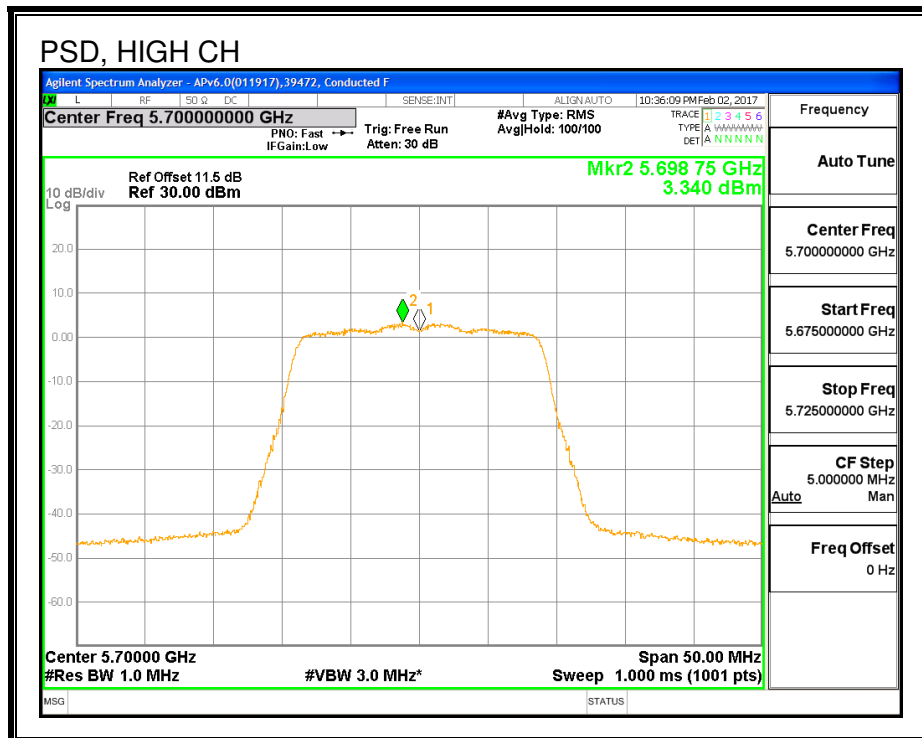
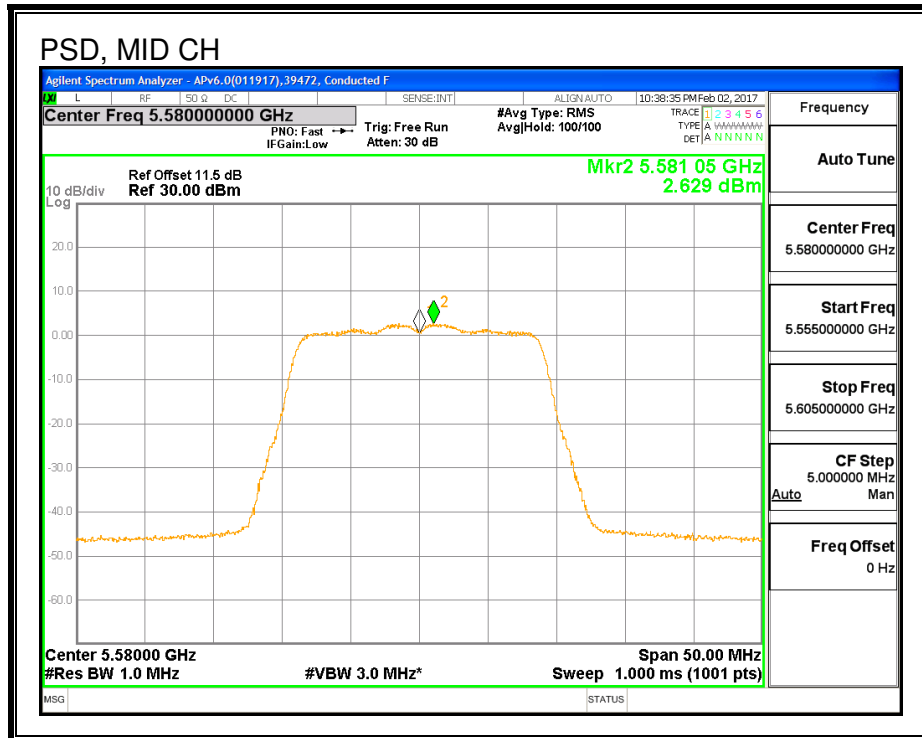
**PSD, ANTENNA A**





### PSD, ANTENNA B





### 8.30. 802.11ac VHT20 2Tx (ANTENNA A + ANTENNA B) CDD STRADDLE CHANNEL 144 RESULTS

#### 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)
144	5720	15.98	5.29	8.30	23.04	8.70

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PSD
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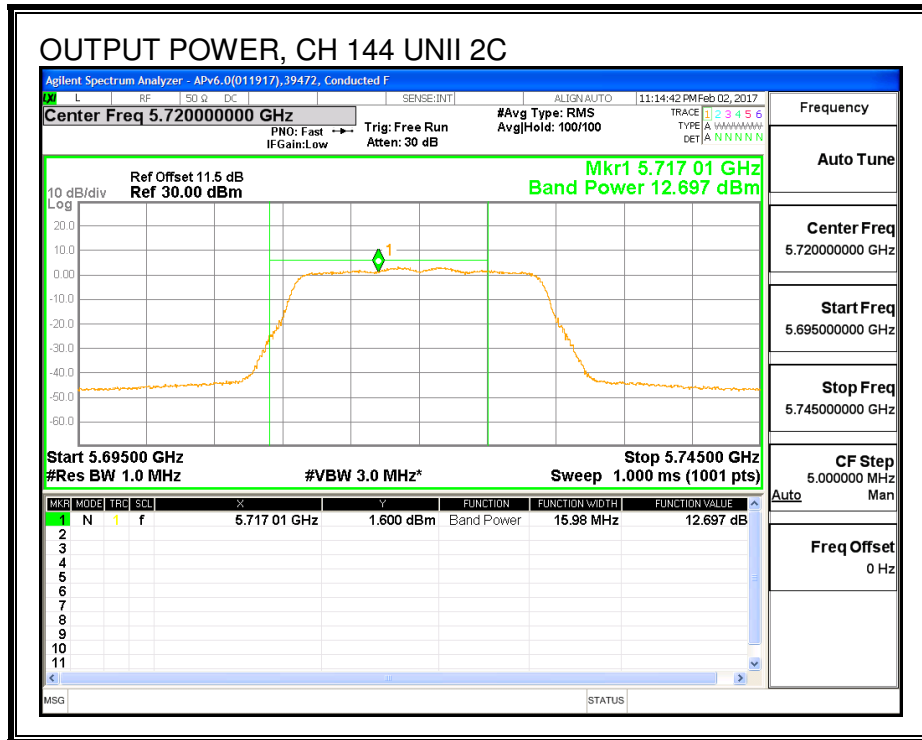
##### Output Power Results

Channel	Frequency (MHz)	Ant A Meas Power (dBm)	Ant B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
144	5720	12.70	13.05	15.88	23.04	-7.15

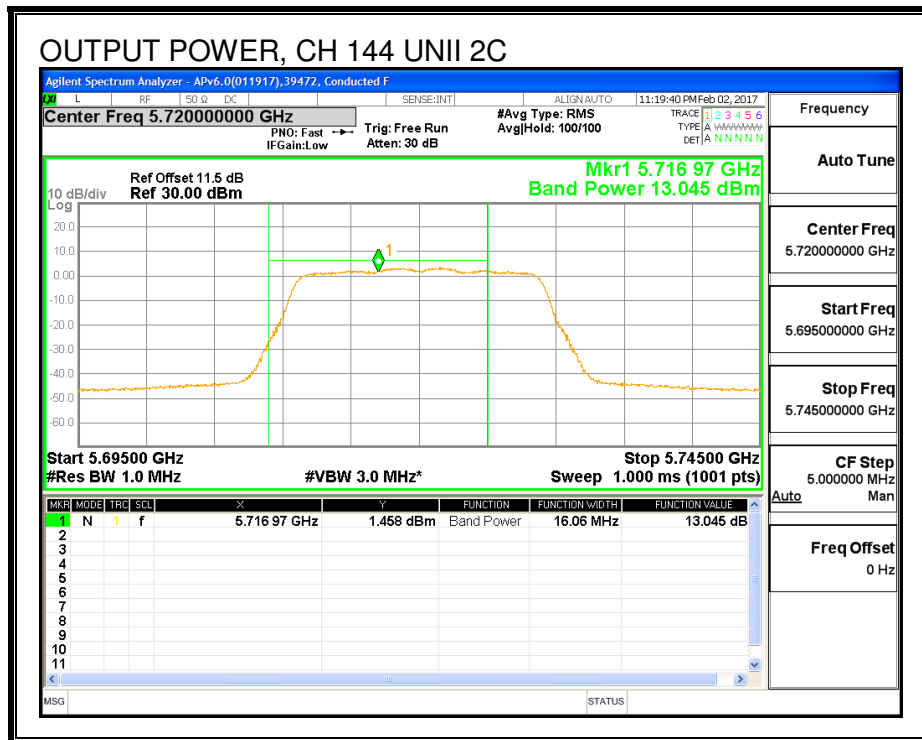
##### PSD Results

Channel	Frequency (MHz)	Ant A Meas PSD (dBm)	Ant B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
144	5720	3.146	3.54	6.36	8.70	-2.34

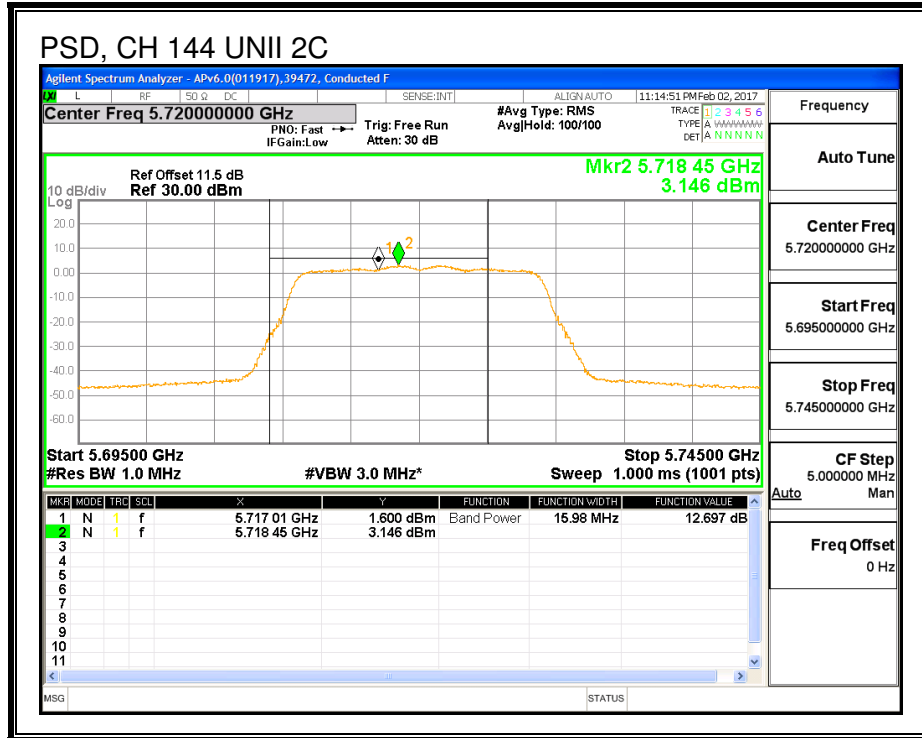
**OUTPUT POWER, ANTENNA A**



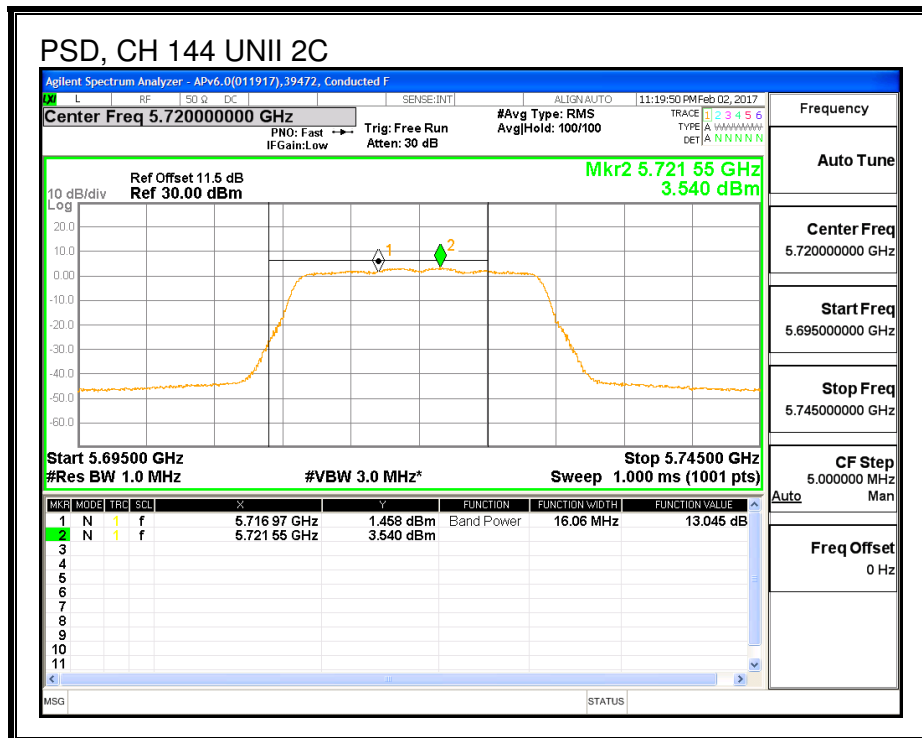
**OUTPUT POWER, ANTENNA B**



**PSD, ANTENNA A**



**PSD, ANTENNA B**



**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)
144	5720	5.98	4.26	7.27	30.00	28.73

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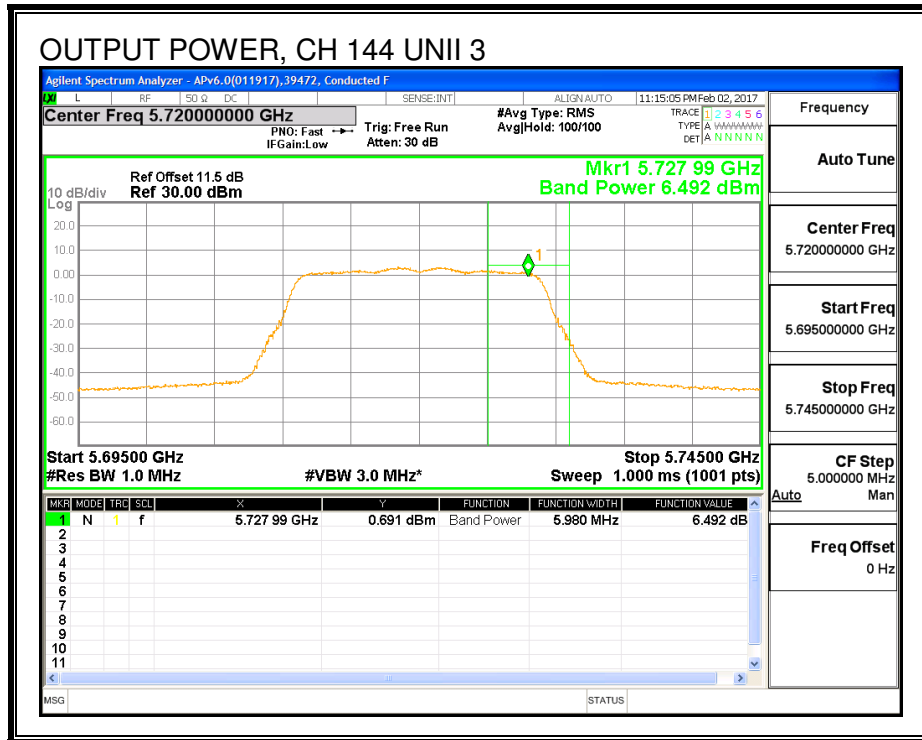
**Output Power Results**

Channel	Frequency (MHz)	Ant A Meas Power (dBm)	Ant B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
144	5720	6.49	6.84	9.68	30.00	-20.32

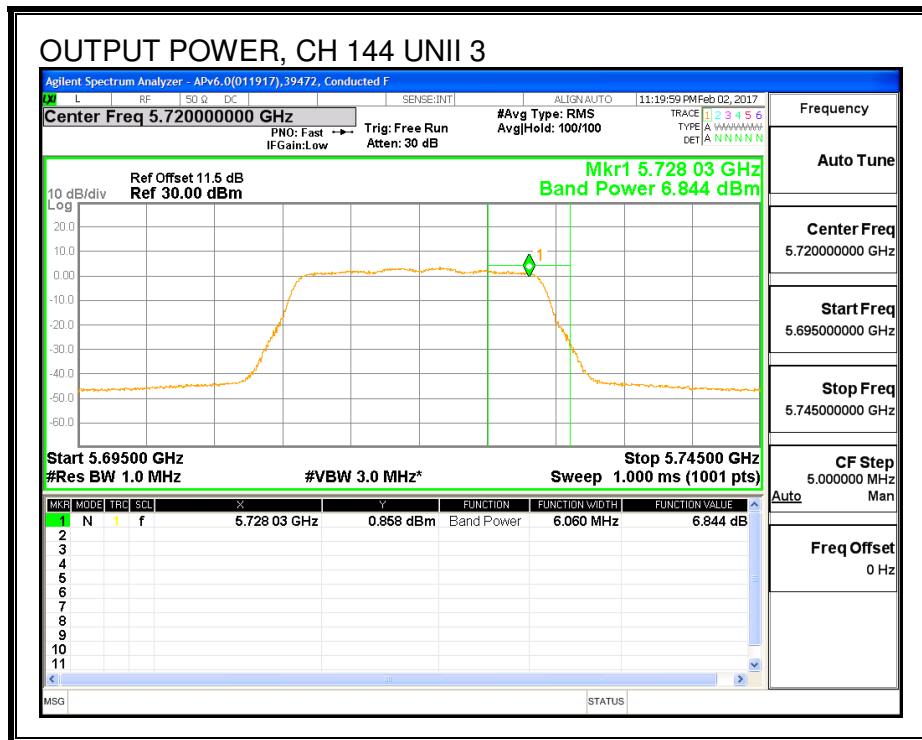
**PSD Results**

Channel	Frequency (MHz)	Ant A Meas PSD (dBm)	Ant B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
144	5720	-1.29	-0.42	2.18	28.73	-26.55

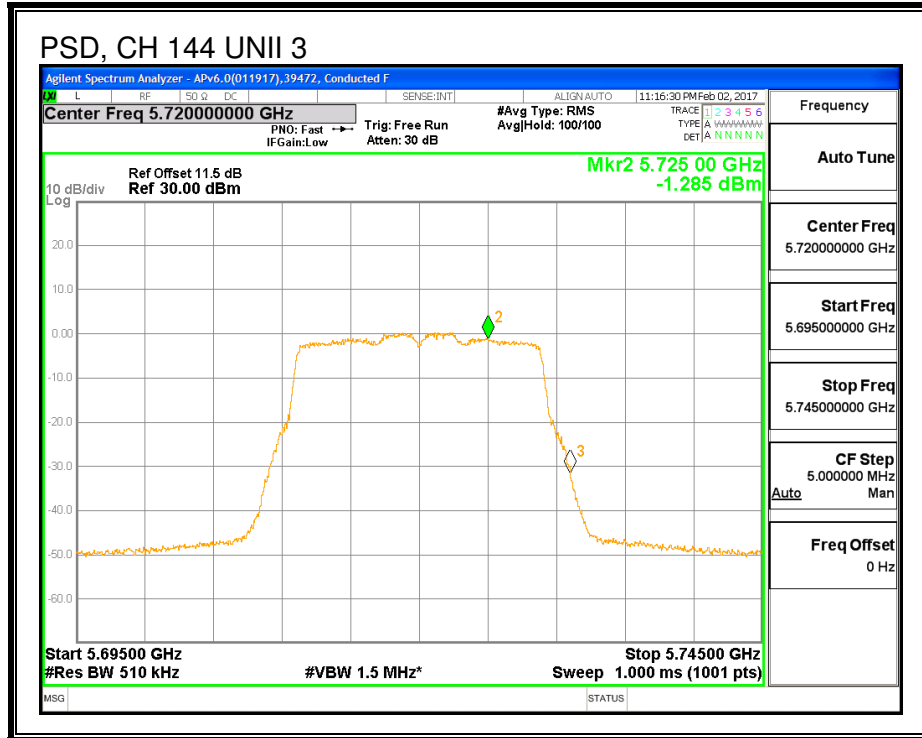
**OUTPUT POWER, ANTENNA A**



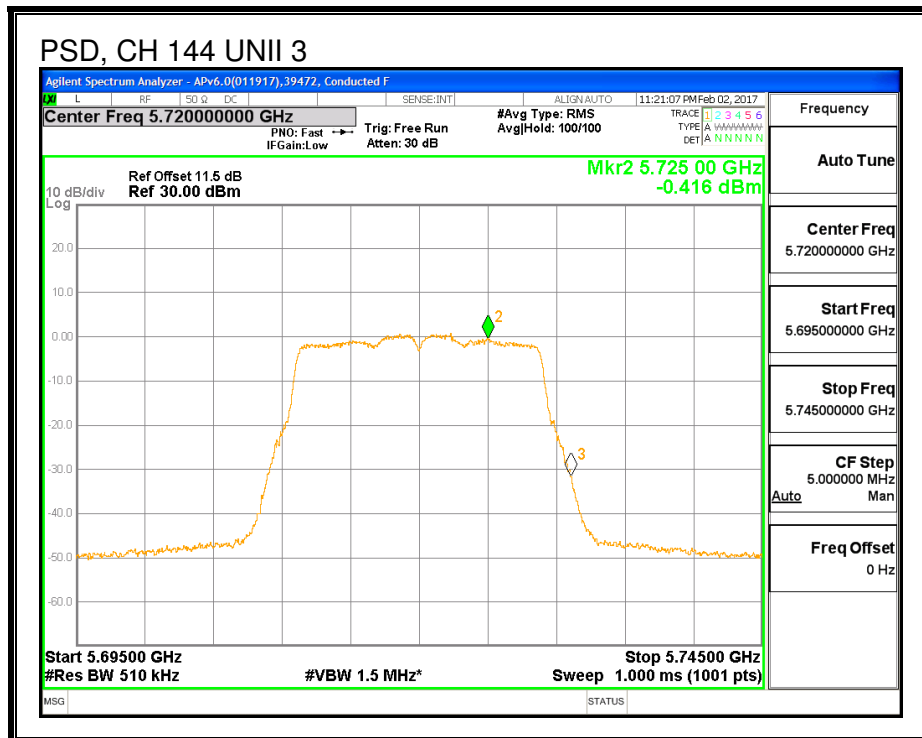
**OUTPUT POWER, ANTENNA B**



**PSD, ANTENNA A**



**PSD, ANTENNA B**



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### 8.30.2. 6 dB BANDWIDTH

#### LIMITS

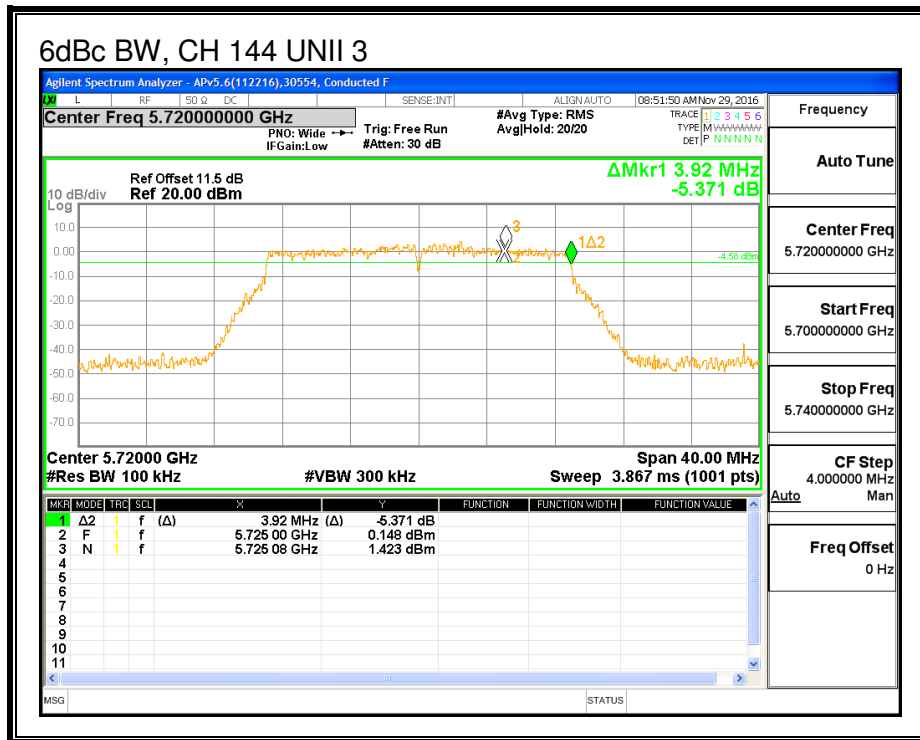
FCC §15.407 (e)

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

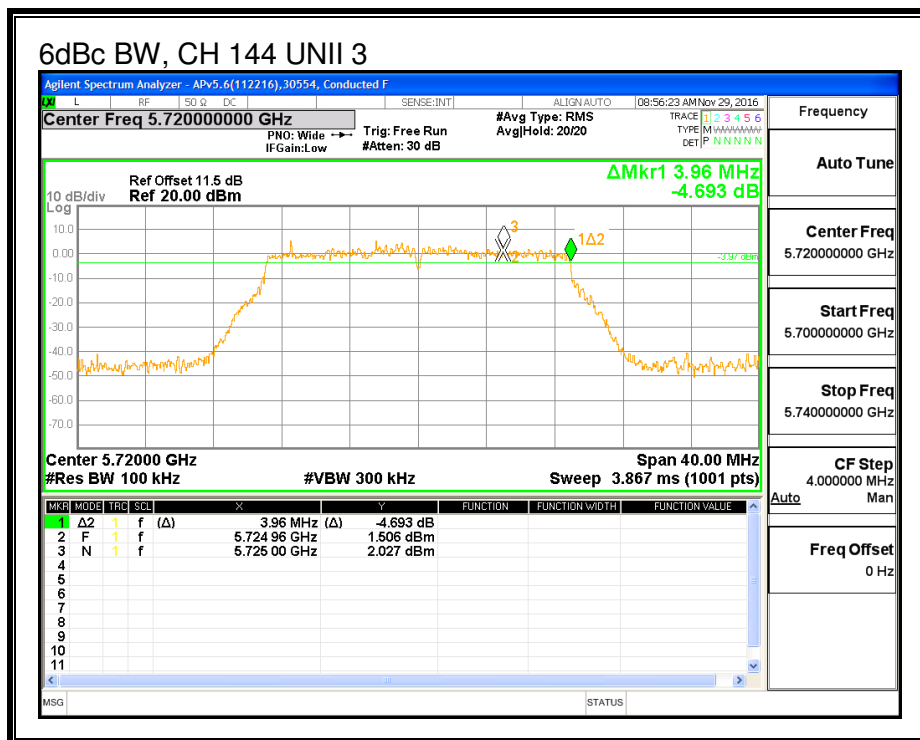
#### RESULTS

Channel	Frequency (MHz)	6 dB BW Ant A (MHz)	6 dB BW Ant B (MHz)
144	5720	3.920	3.960

**ANTENNA A**



**ANTENNA B**



**8.31. 802.11n HT20 2Tx (ANTENNA A + ANTENNA B) STBC MODE IN THE 5.6 GHz BAND**

**8.31.1. 26 dB BANDWIDTH**

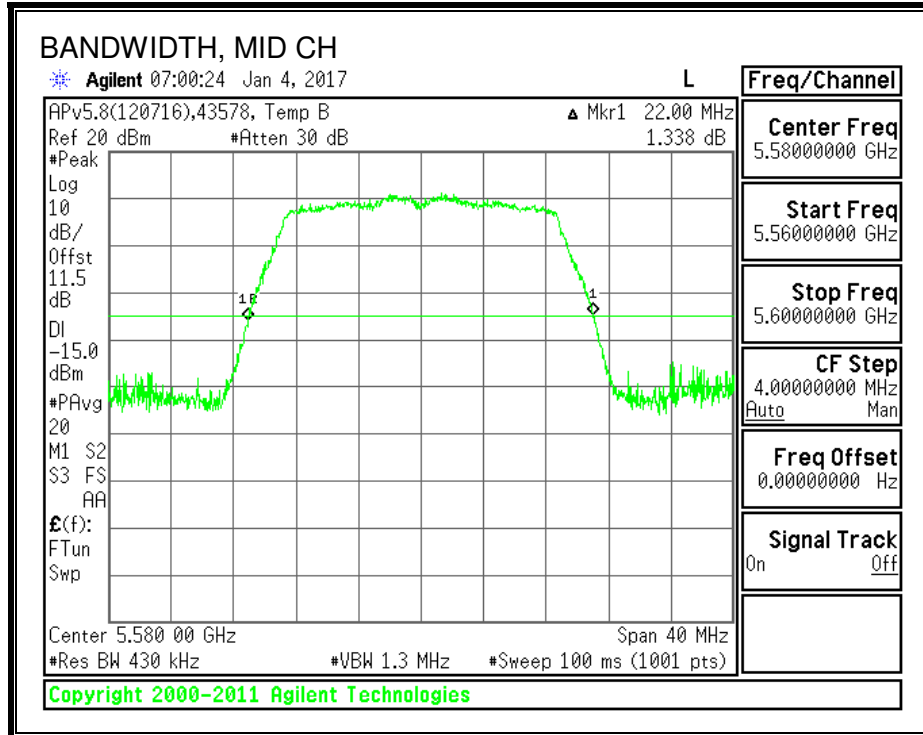
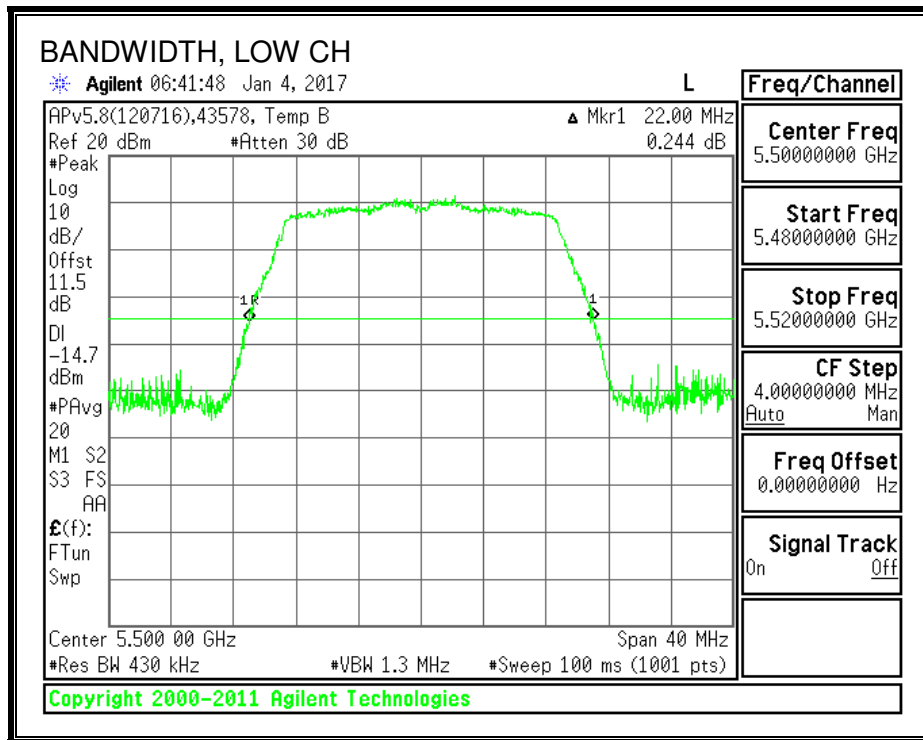
**LIMITS**

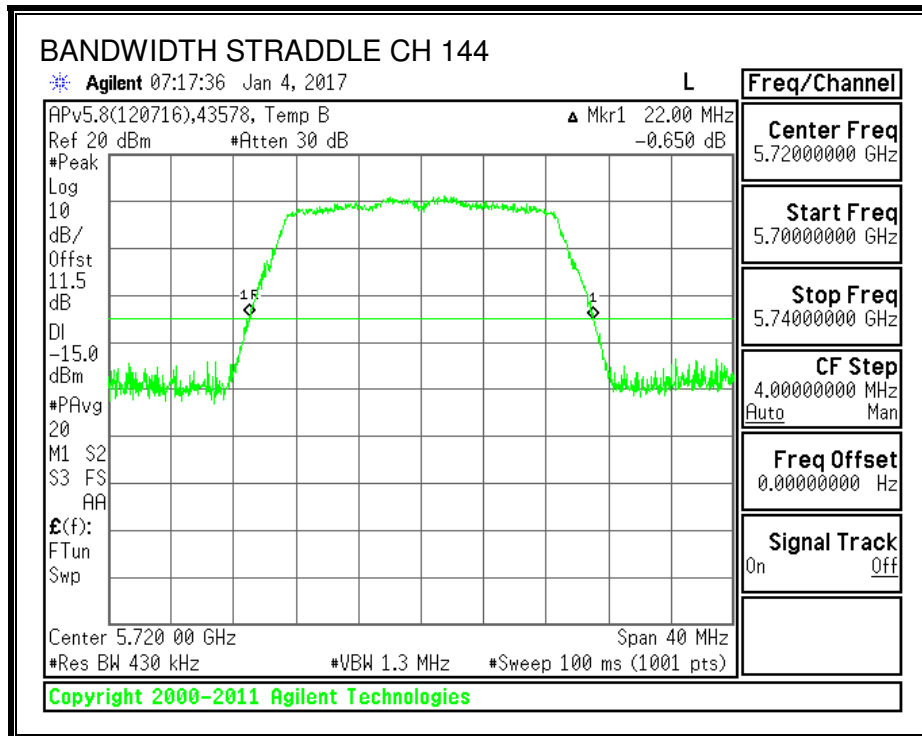
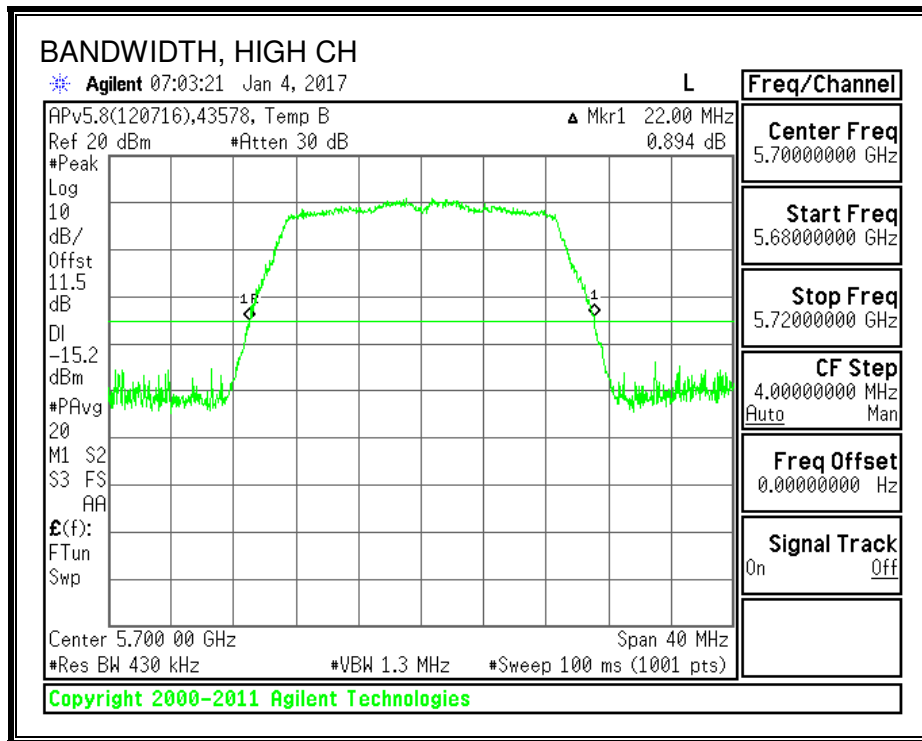
None; for reporting purposes only.

**RESULTS**

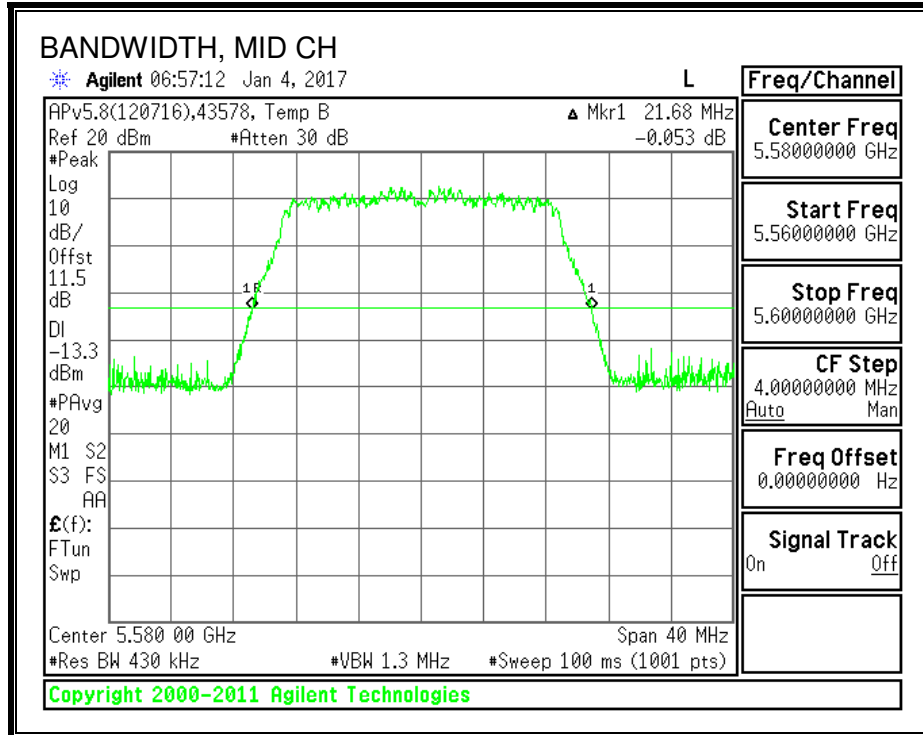
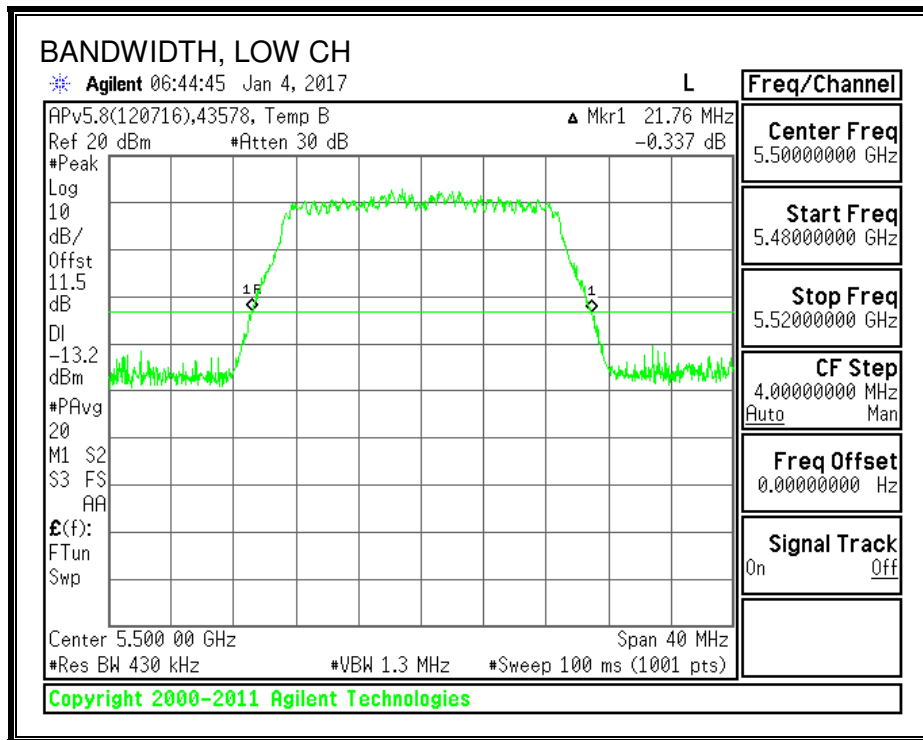
Channel	Frequency (MHz)	26 dB BW	
		Ant A (MHz)	Ant B (MHz)
Low	5500	22.000	21.760
Mid	5580	22.000	21.680
High	5700	22.000	21.800
144	5720	22.000	21.600

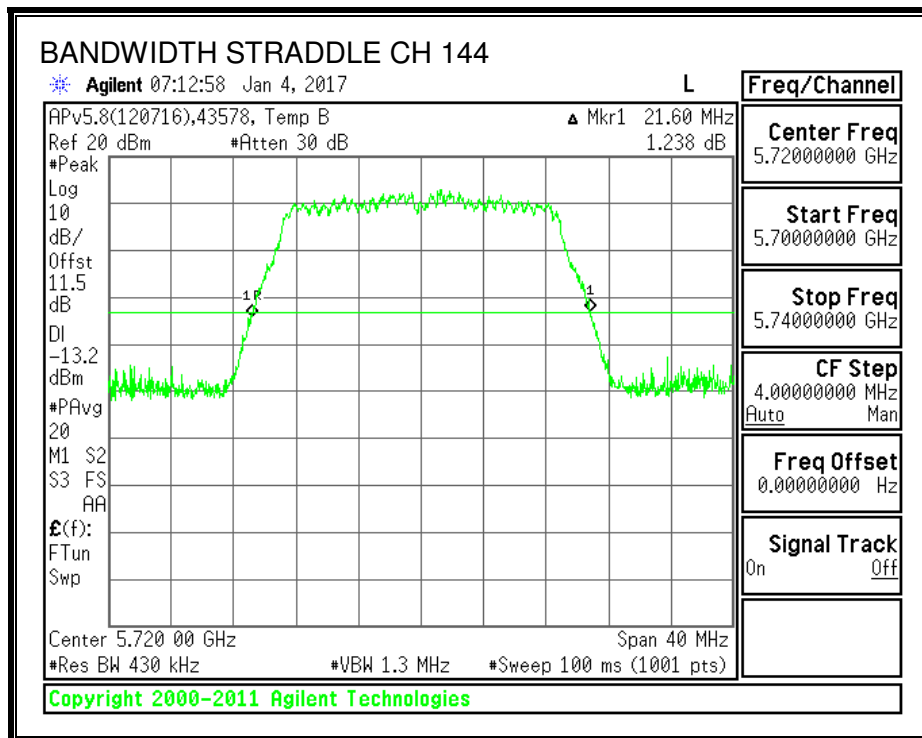
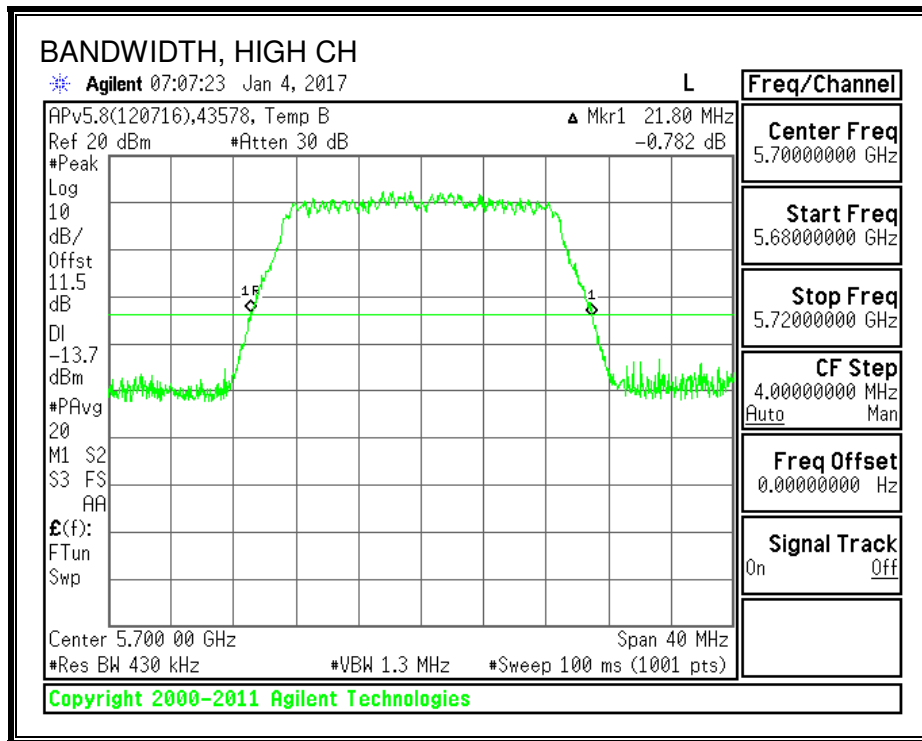
**26 dB BANDWIDTH, ANTENNA A**





**26 dB BANDWIDTH, ANTENNA B**





**8.31.2. 99% BANDWIDTH**

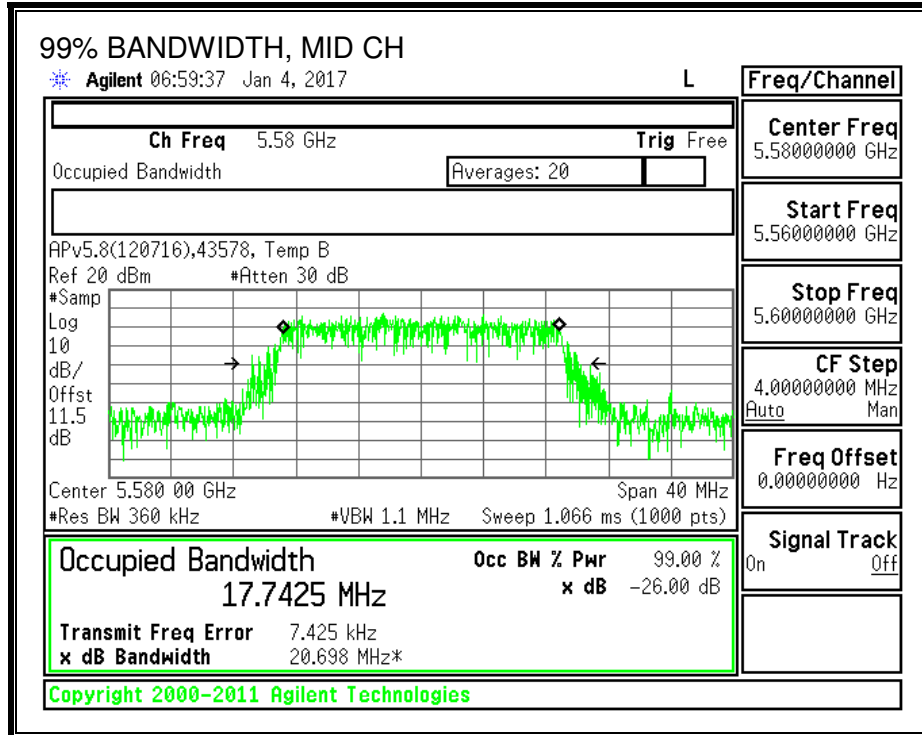
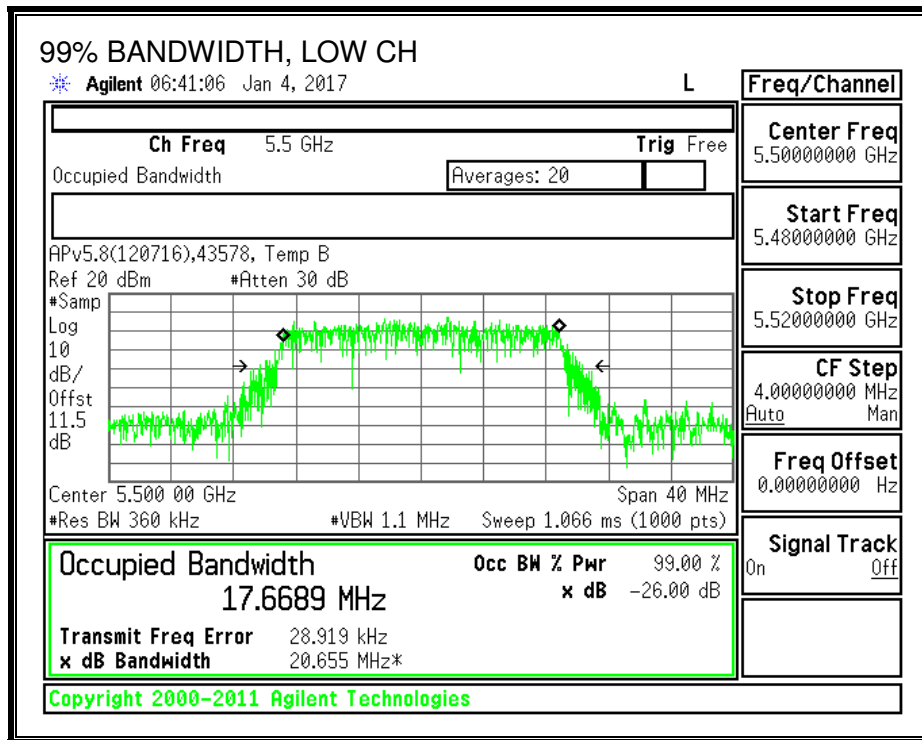
**LIMITS**

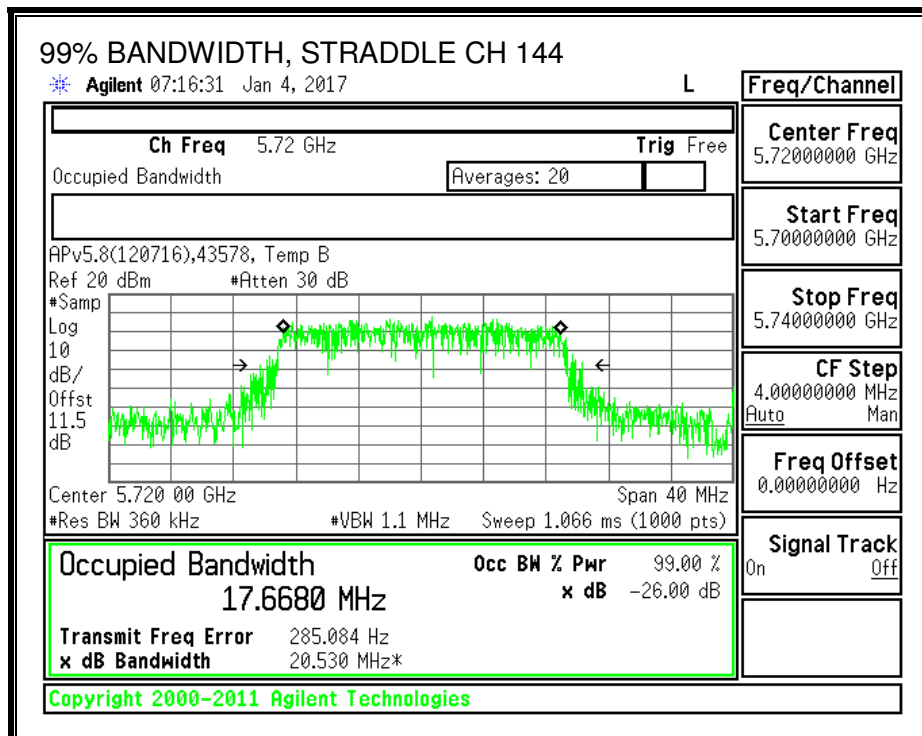
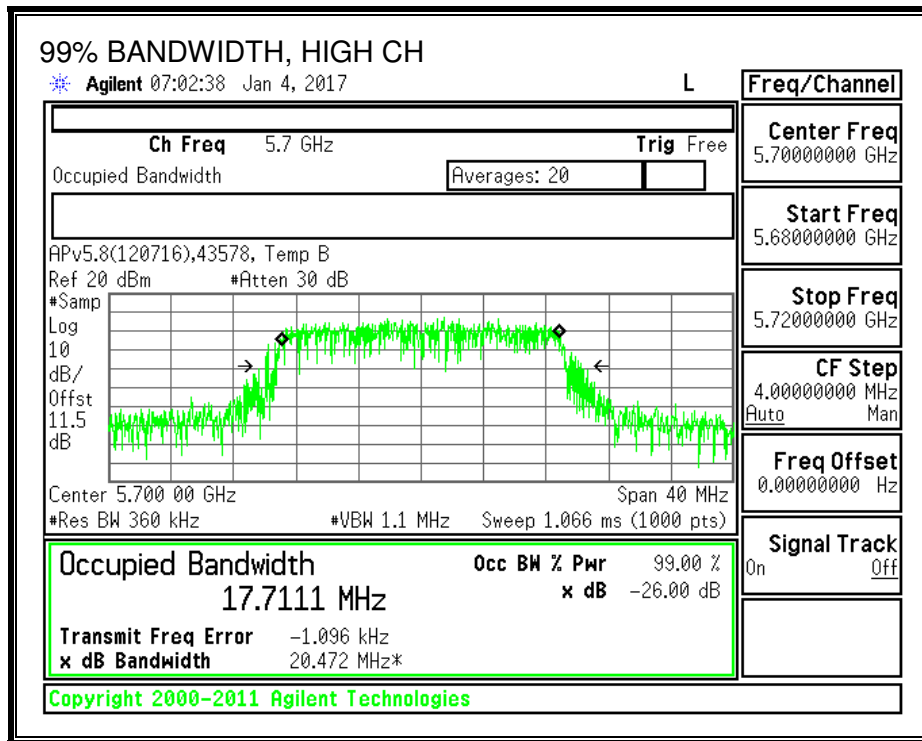
None; for reporting purposes only.

**RESULTS**

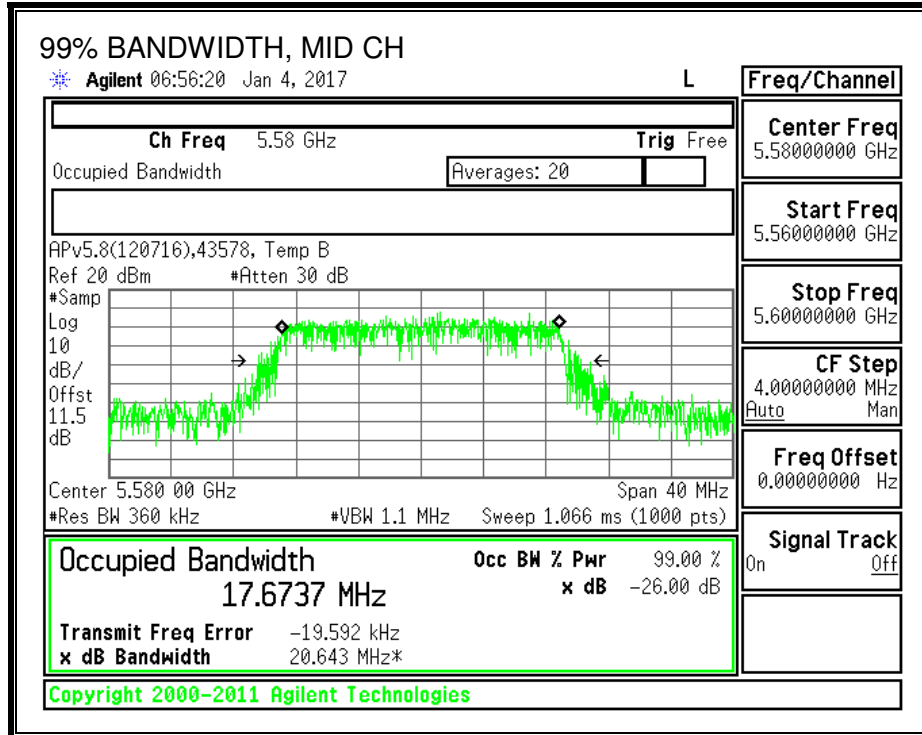
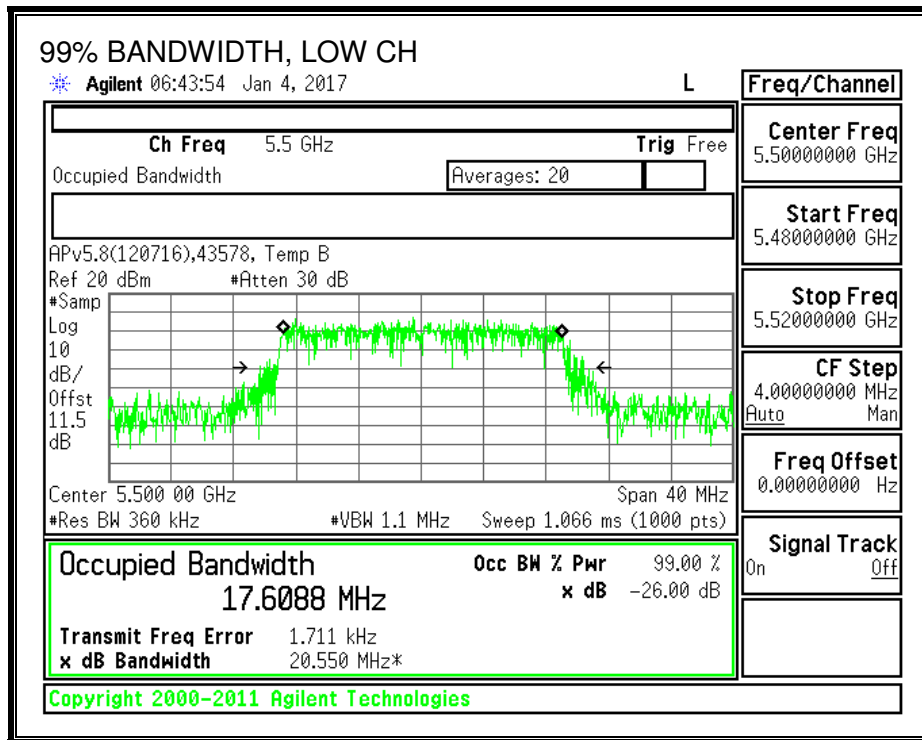
Channel	Frequency (MHz)	99% BW Ant A (MHz)	99% BW Ant B (MHz)
Low	5500	17.669	17.609
Mid	5580	17.743	17.674
High	5700	17.711	17.720
144	5720	17.668	17.708

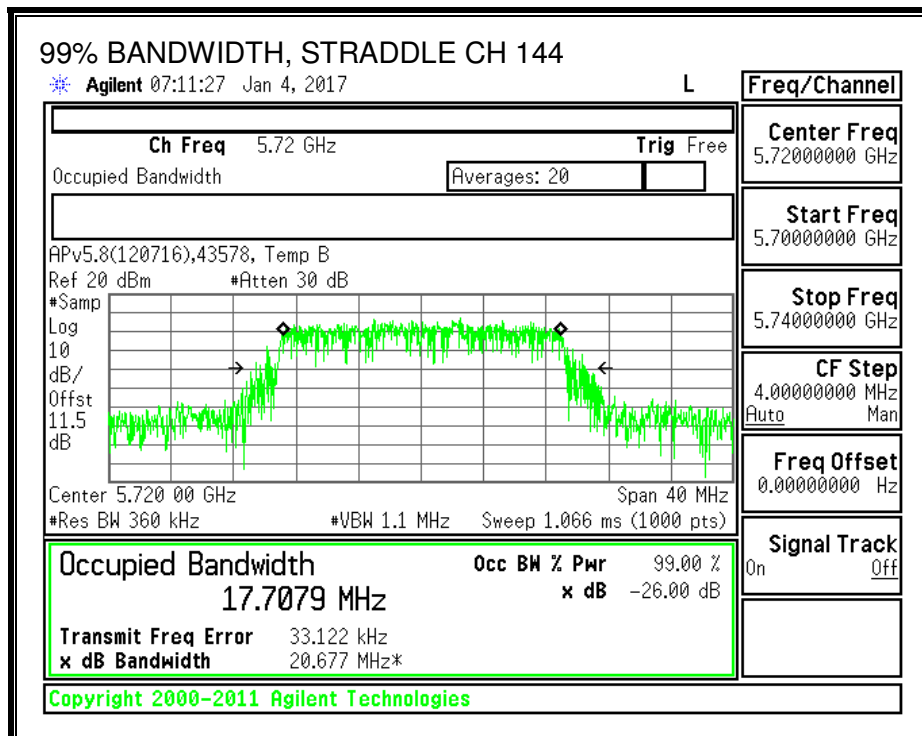
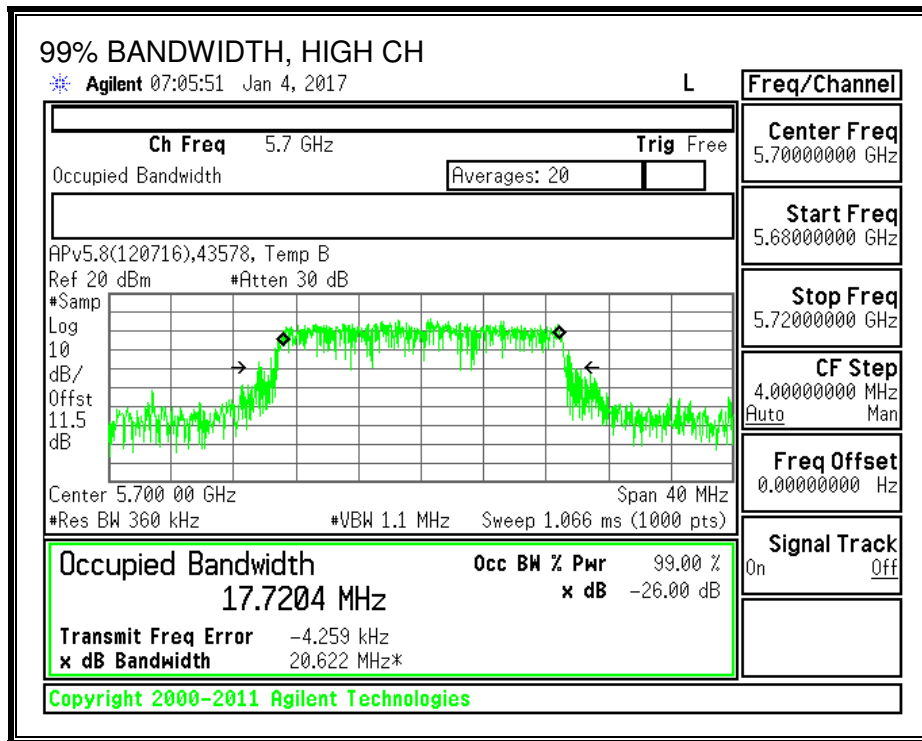
**99% BANDWIDTH, ANTENNA A**





**99% BANDWIDTH, ANTENNA B**





### 8.31.3. AVERAGE POWER

#### LIMITS

None; for reporting purposes only.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### RESULTS

<b>ID:</b>	50822	<b>Date:</b>	2/6/17
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#### Average Power Results

Channel	Frequency (MHz)	Ant A Power (dBm)	Ant B Power (dBm)	Total Power (dBm)
Low	5500	14.90	14.93	17.93
Mid	5580	14.92	14.94	17.94
High	5700	14.00	13.95	16.99
144	5720	14.93	14.96	17.96

### **8.31.4. OUTPUT POWER AND PSD**

#### **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.

Straddle channel power is measured using PXA spectrum analyzer, 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>Ant A Antenna Gain (dBi)</b>	<b>Ant B Antenna Gain (dBi)</b>	<b>Uncorrelated Chains Directional Gain (dBi)</b>
5.41	5.17	5.29

**RESULTS**

<b>ID:</b>	50822	<b>Date:</b>	2/7/17
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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	5500	21.76	17.61	5.29	5.29	23.46	11.00
Mid	5580	21.68	17.67	5.29	5.29	23.47	11.00
High	5700	21.80	17.71	5.29	5.29	23.48	11.00

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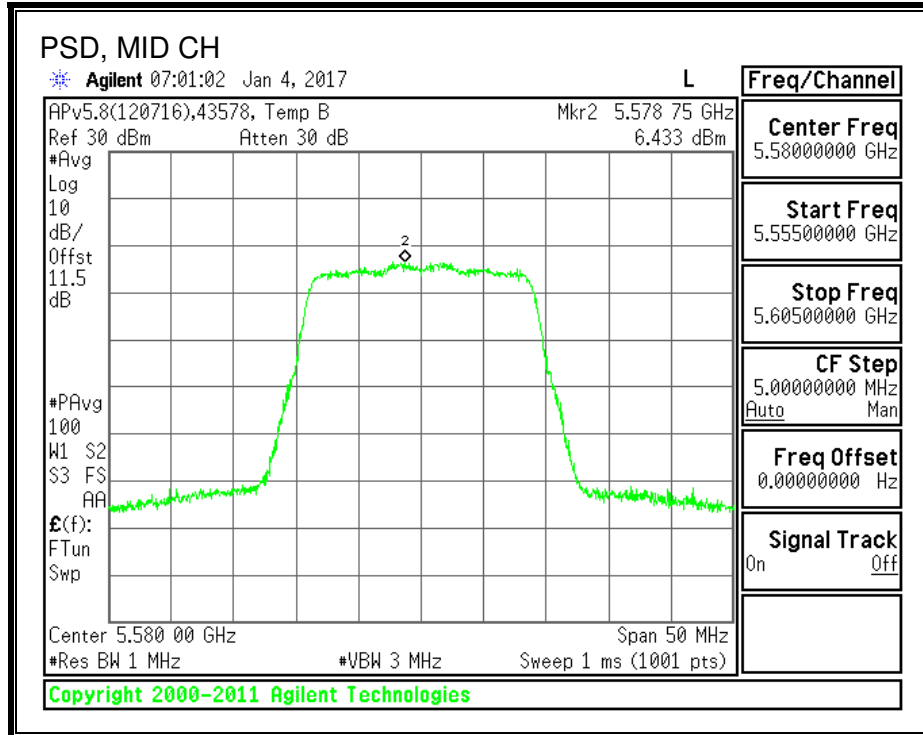
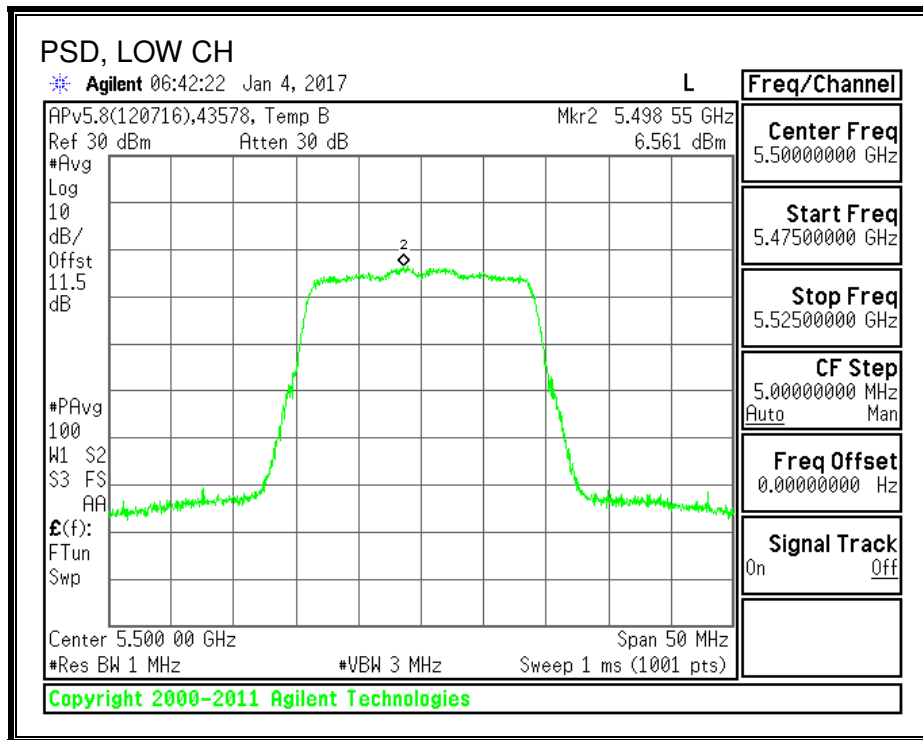
**Output Power Results**

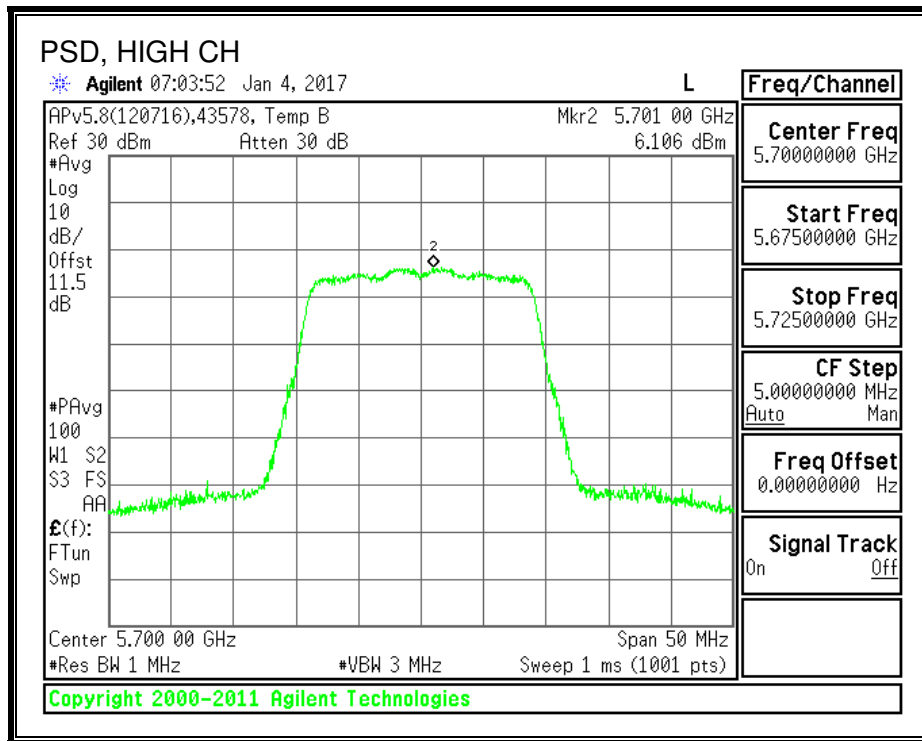
Channel	Frequency (MHz)	Ant A Meas Power (dBm)	Ant B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	14.90	14.93	17.93	23.46	-5.53
Mid	5580	14.92	14.94	17.94	23.47	-5.53
High	5700	14.00	13.95	16.99	23.48	-6.50

**PSD Results**

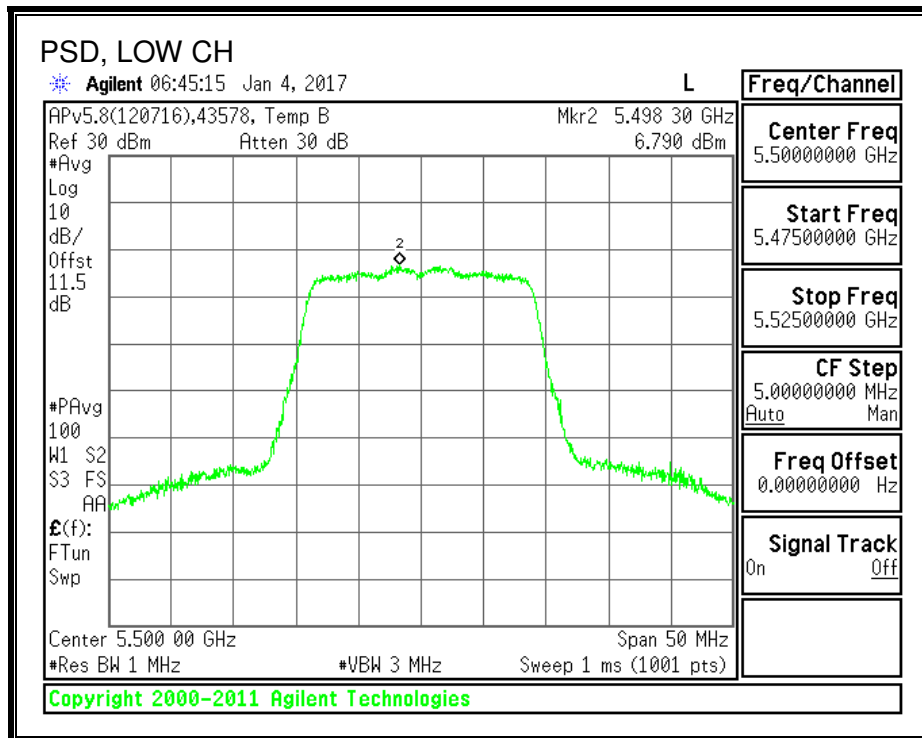
Channel	Frequency (MHz)	Ant A Meas PSD (dBm)	Ant B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5500	6.56	6.79	9.69	11.00	-1.31
Mid	5580	6.43	6.34	9.40	11.00	-1.60
High	5700	6.11	6.48	9.30	11.00	-1.70

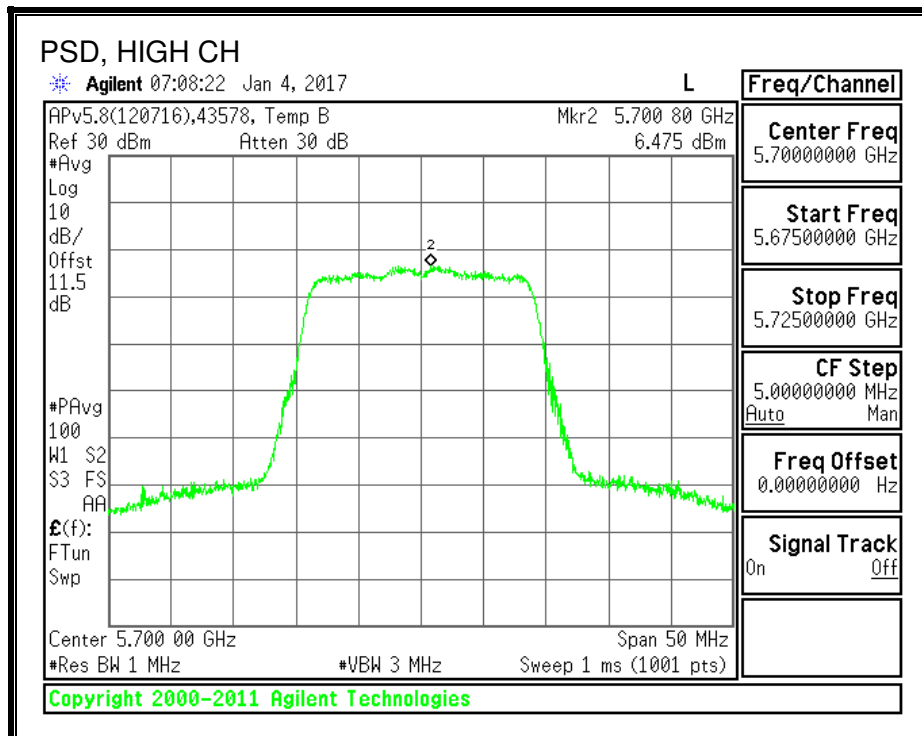
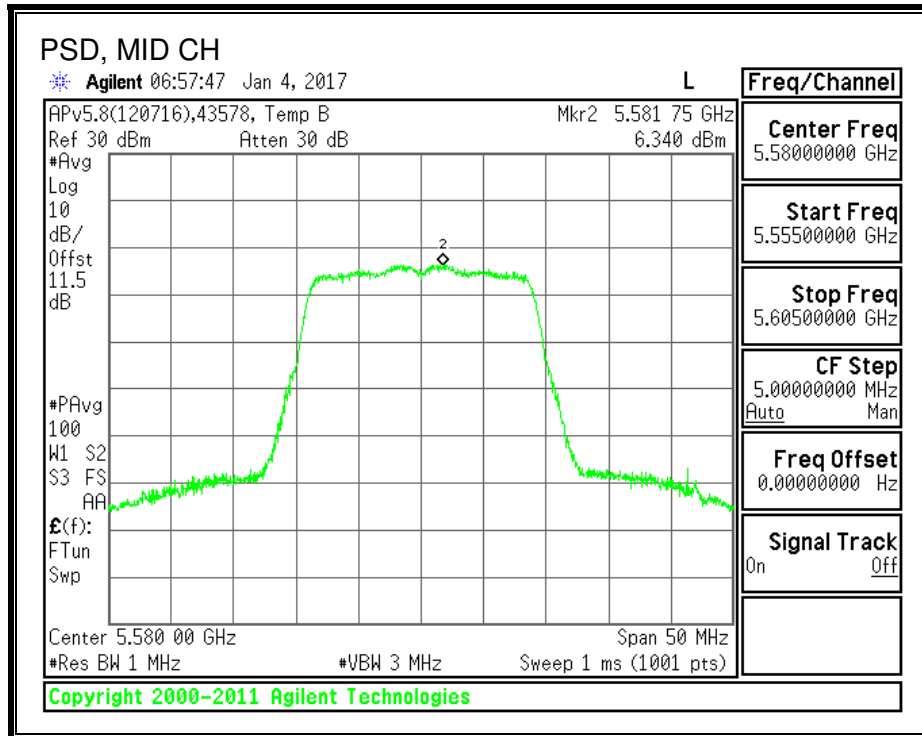
**PSD, ANTENNA A**





**PSD, ANTENNA B**





### 8.32. 802.11ac VHT20 2Tx (ANTENNA A + ANTENNA B) STBC STRADDLE CHANNEL 144 RESULTS

#### 8.32.1. 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)
144	5720	15.80	5.29	5.29	22.99	11.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PSD
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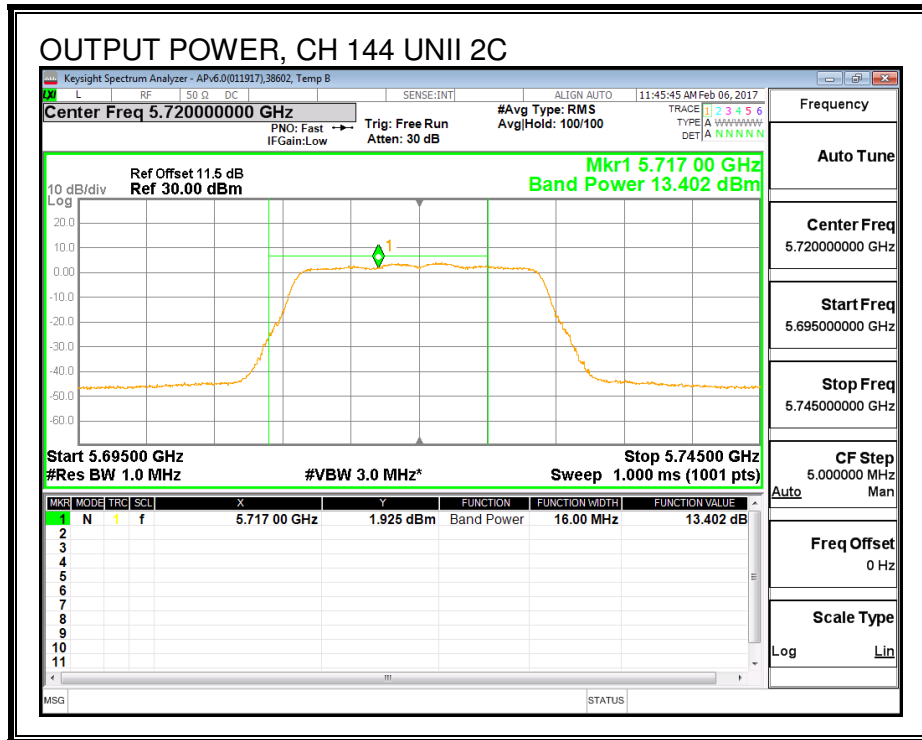
##### Output Power Results

Channel	Frequency (MHz)	Ant A Meas Power (dBm)	Ant B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
144	5720	13.40	13.12	16.28	22.99	-6.71

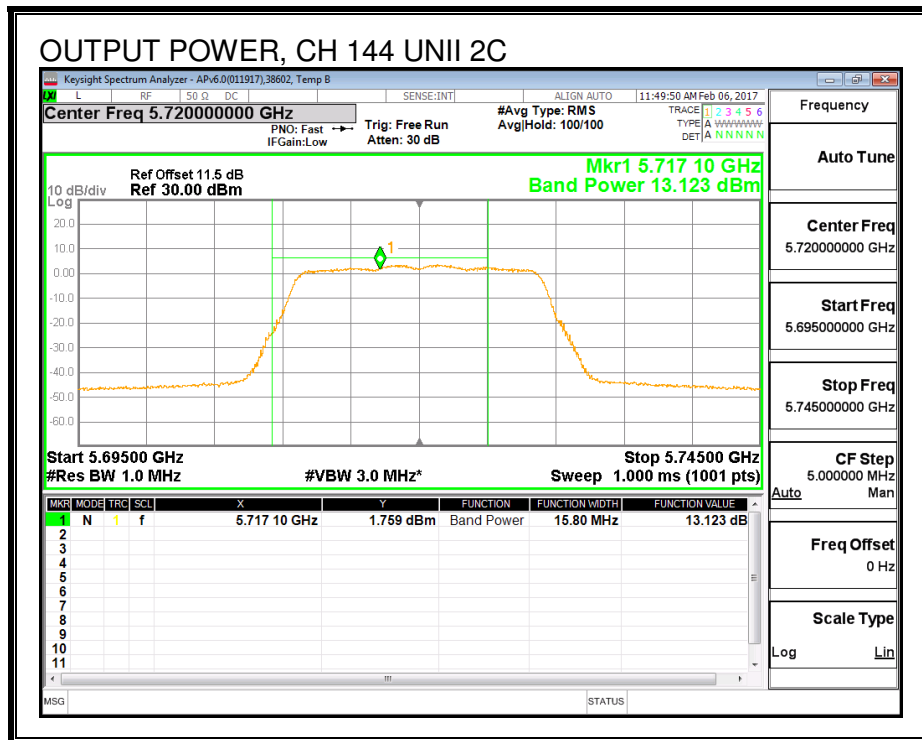
##### PSD Results

Channel	Frequency (MHz)	Ant A Meas PSD (dBm)	Ant B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
144	5720	3.878	3.45	6.68	11.00	-4.32

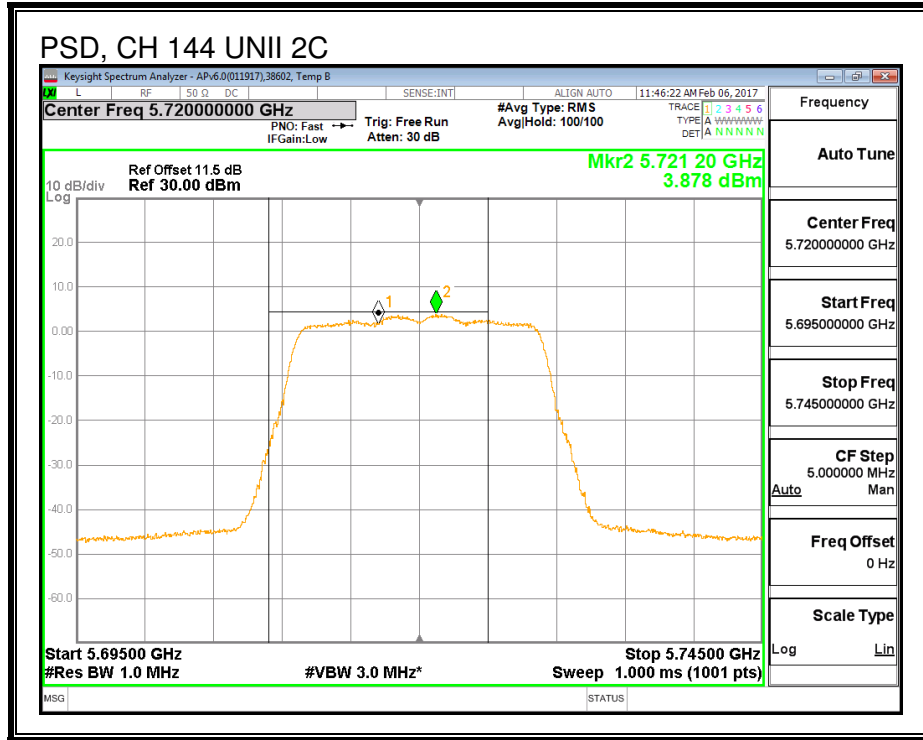
**OUTPUT POWER, ANTENNA A**



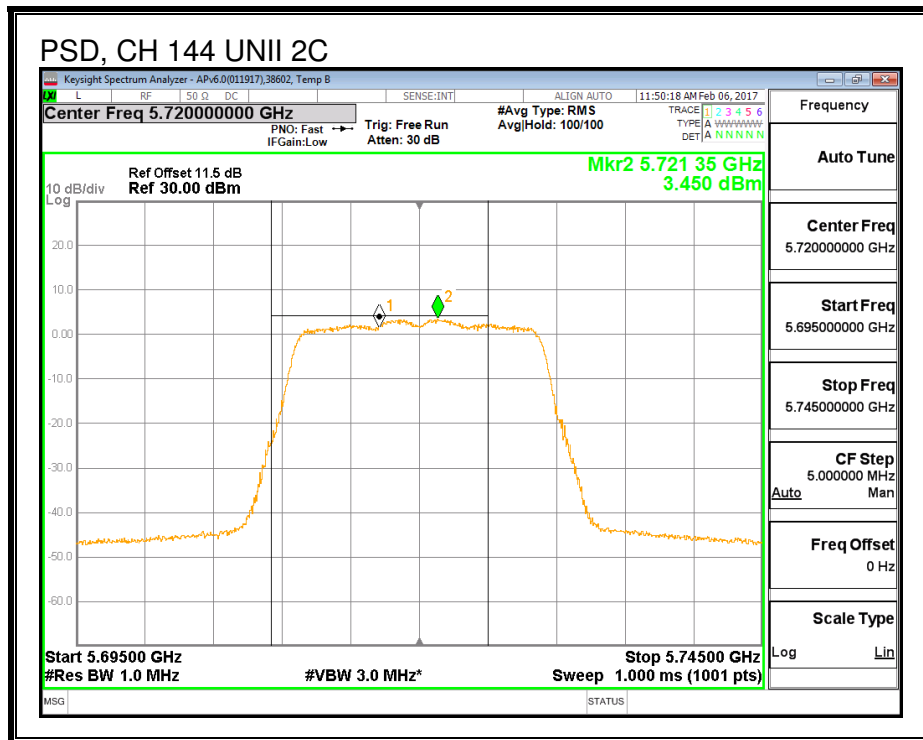
**OUTPUT POWER, ANTENNA B**



**PSD, ANTENNA A**



**PSD, ANTENNA B**



**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)
144	5720	5.80	4.26	4.26	30.00	30.00

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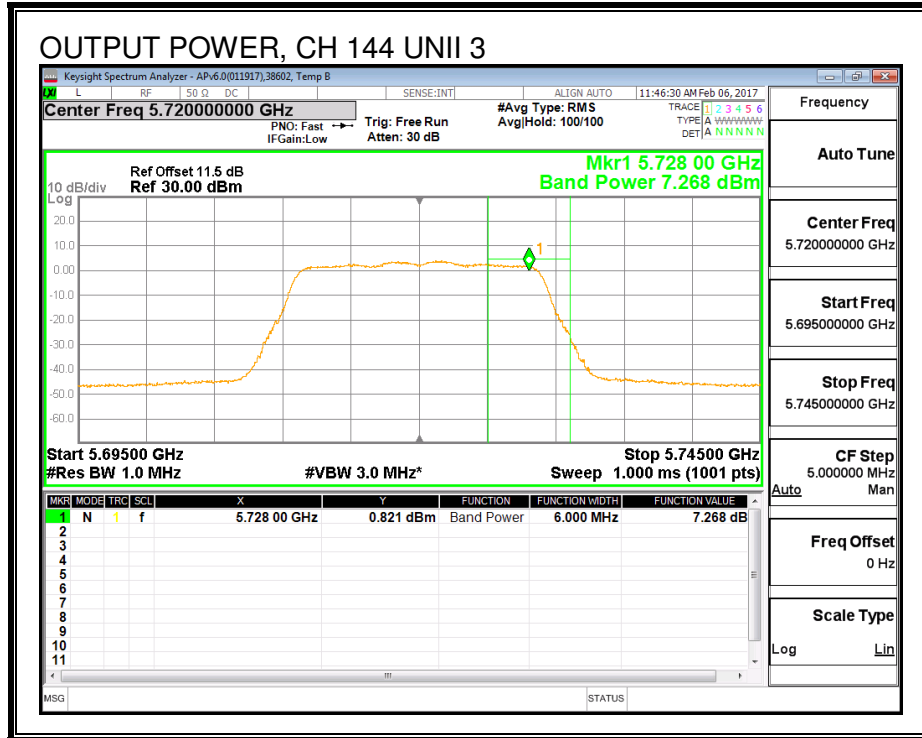
**Output Power Results**

Channel	Frequency (MHz)	Ant A Meas Power (dBm)	Ant B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
144	5720	7.27	7.05	10.17	30.00	-19.83

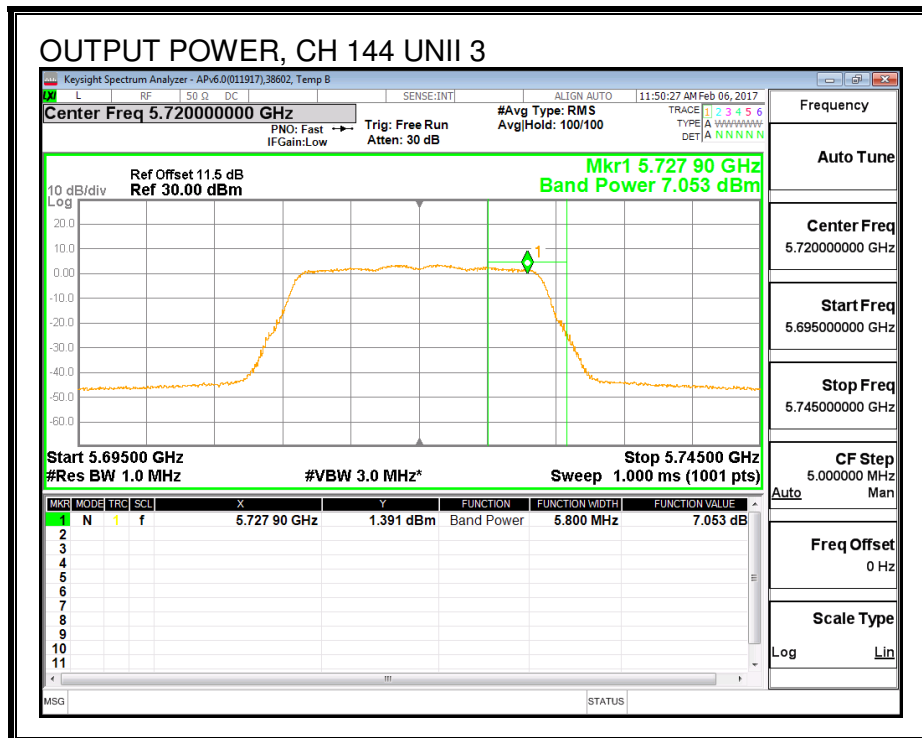
**PSD Results**

Channel	Frequency (MHz)	Ant A Meas PSD (dBm)	Ant B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
144	5720	-0.22	-0.38	2.71	30.00	-27.29

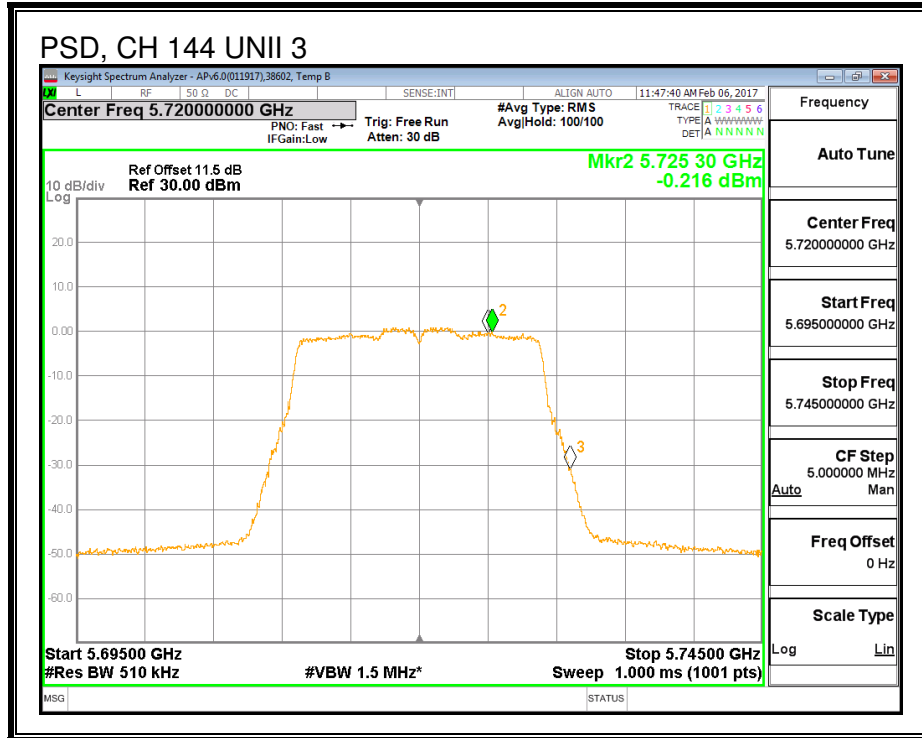
**OUTPUT POWER, ANTENNA A**



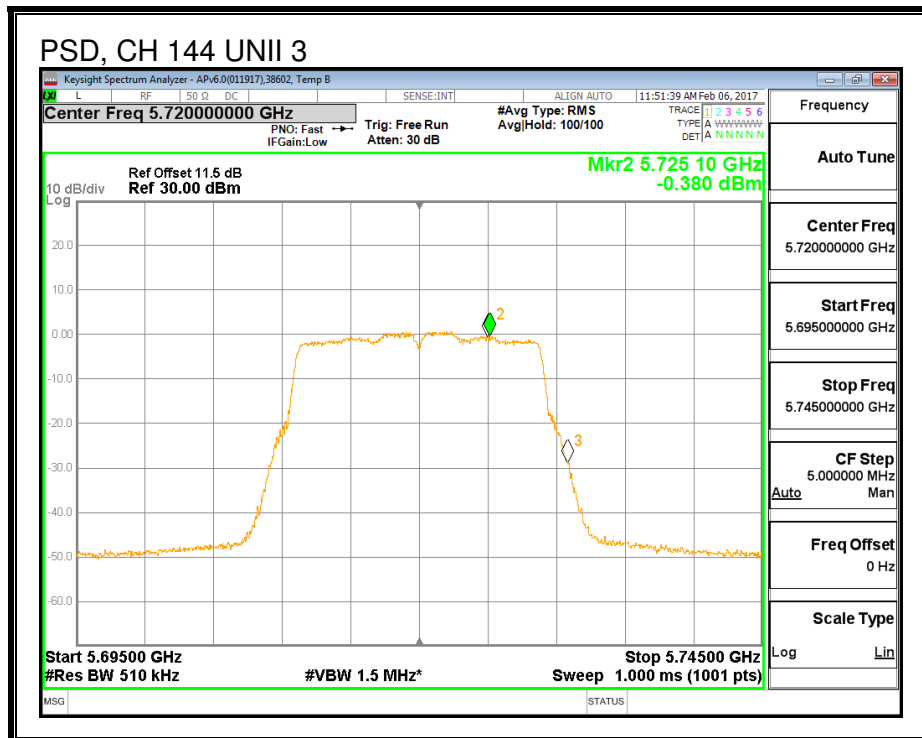
**OUTPUT POWER, ANTENNA B**



**PSD, ANTENNA A**



**PSD, ANTENNA B**



### 8.32.2. 6 dB BANDWIDTH

#### LIMITS

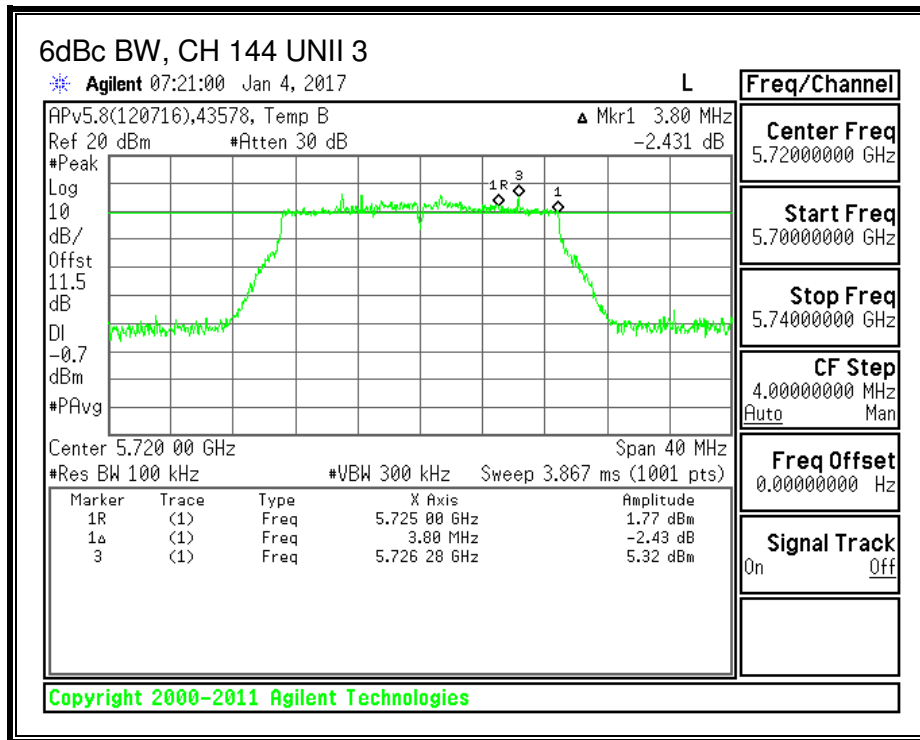
FCC §15.407 (e)

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

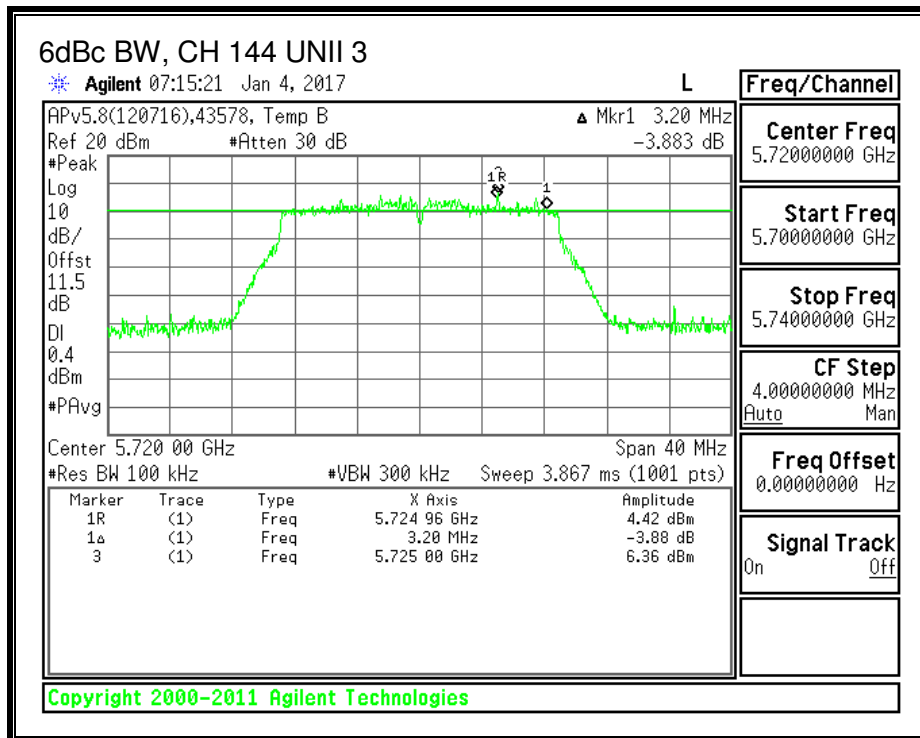
#### RESULTS

Channel	Frequency (MHz)	6 dB BW Ant A (MHz)	6 dB BW Ant B (MHz)
144	5720	3.800	3.200

**ANTENNA A**



**ANTENNA B**



**8.33. 802.11n HT40 ANTENNA A MODE IN THE 5.6 GHz BAND**

**8.33.1. 26 dB BANDWIDTH**

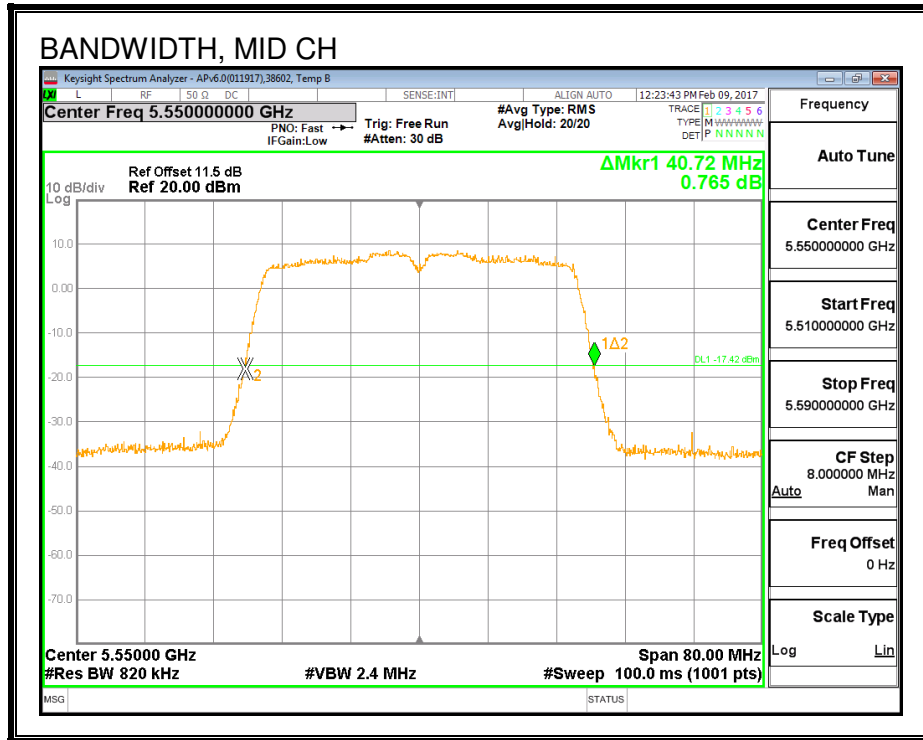
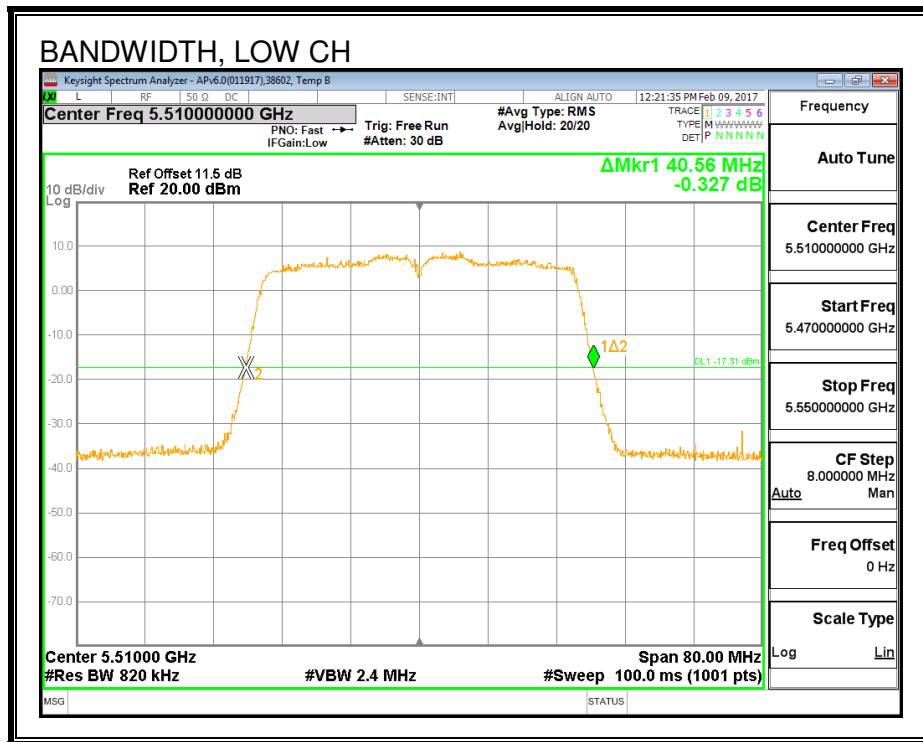
**LIMITS**

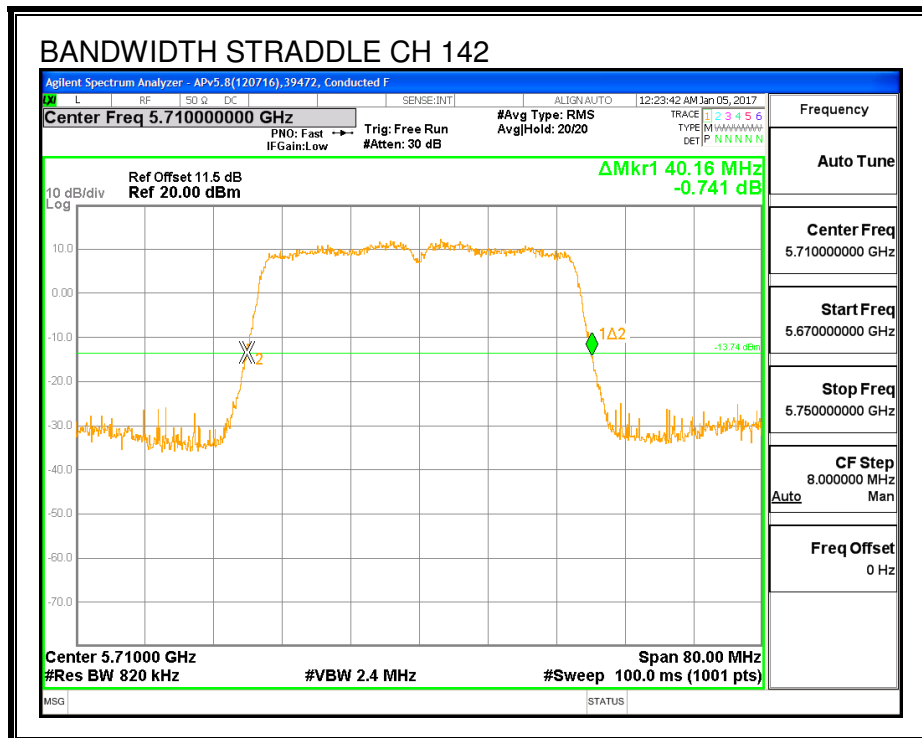
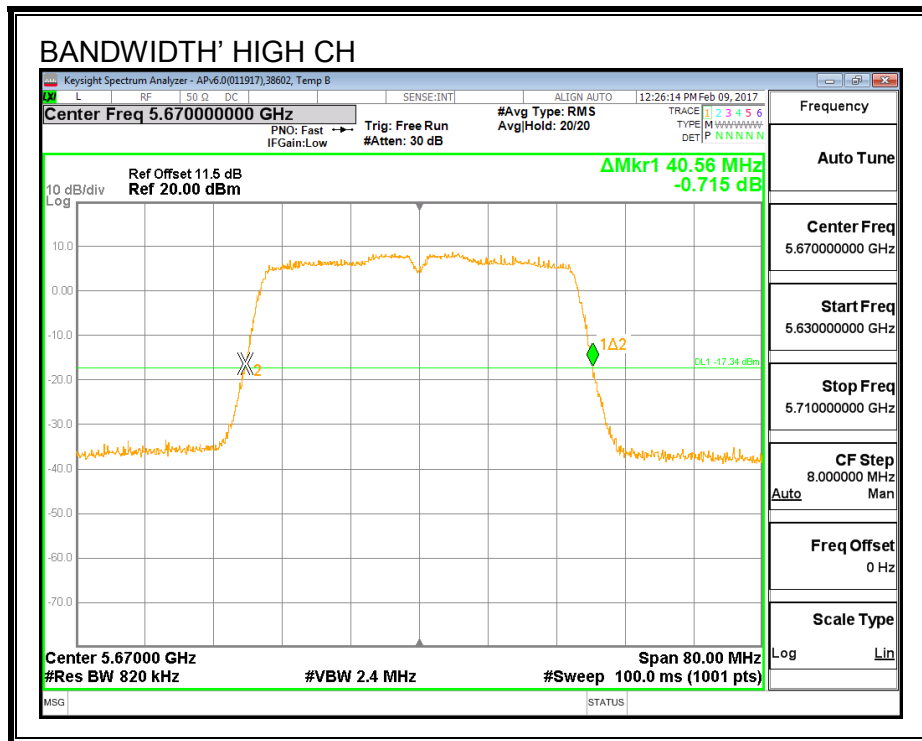
None; for reporting purposes only.

**RESULTS**

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5510	40.560
Mid	5550	40.720
High	5670	40.560
142	5710	40.160

**26 dB BANDWIDTH**





### 8.33.2. 99% BANDWIDTH

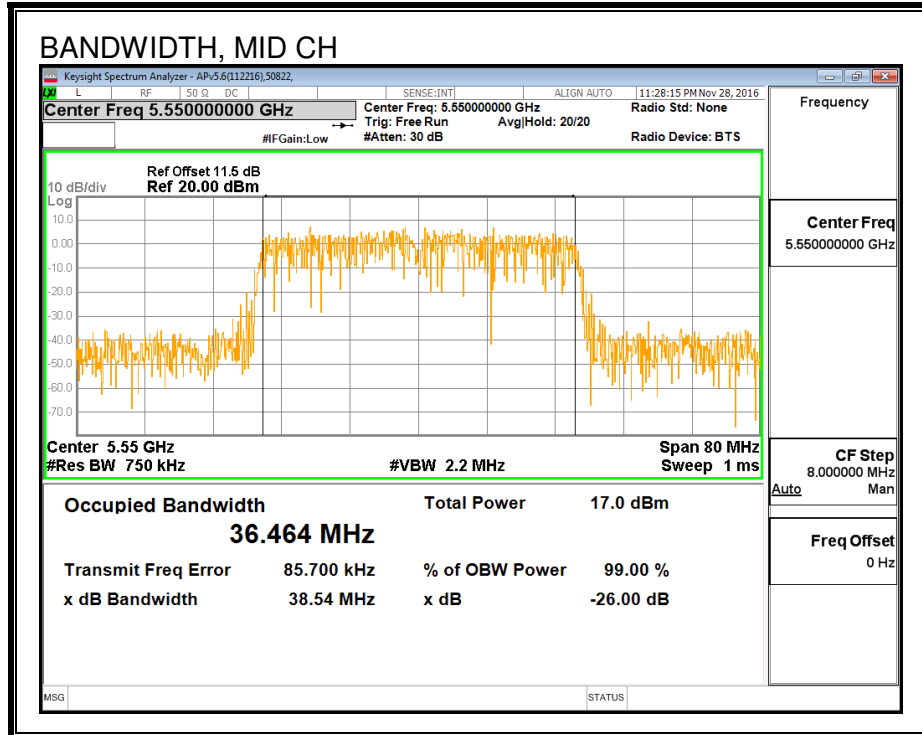
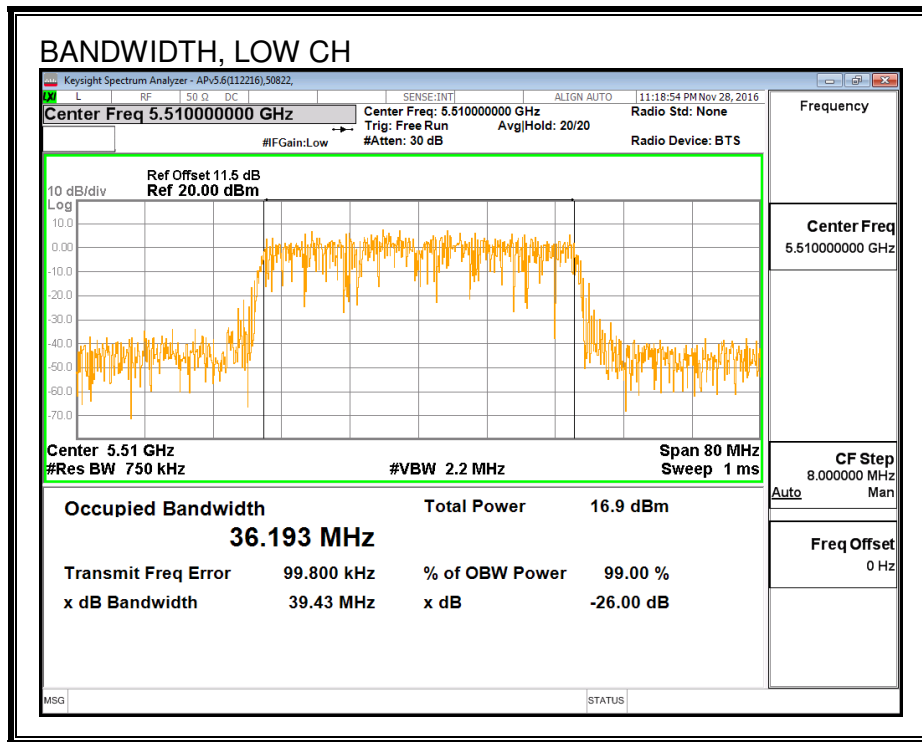
#### LIMITS

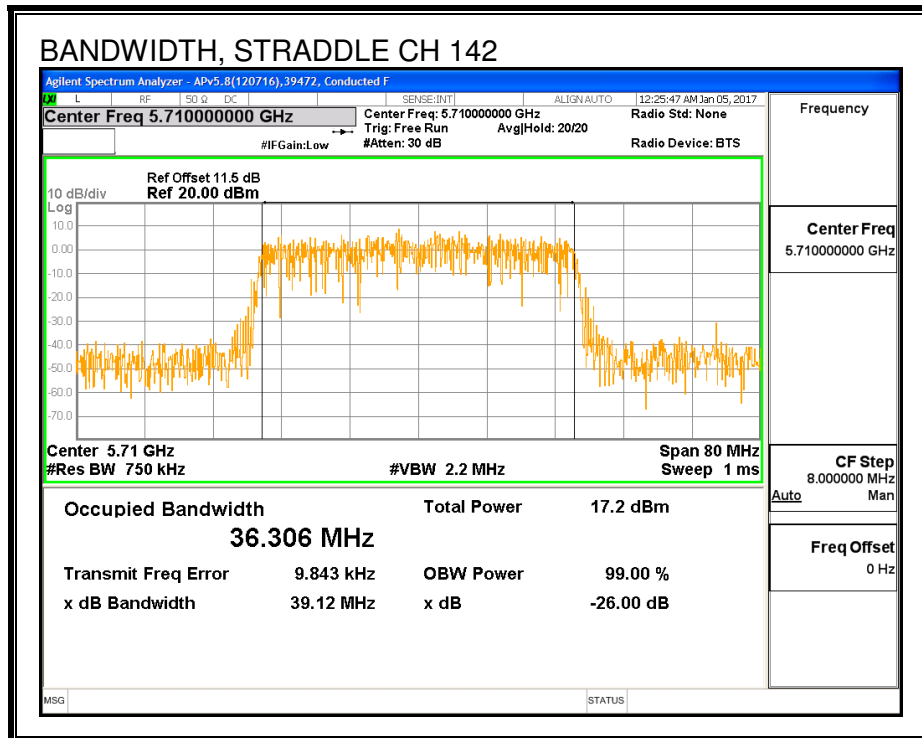
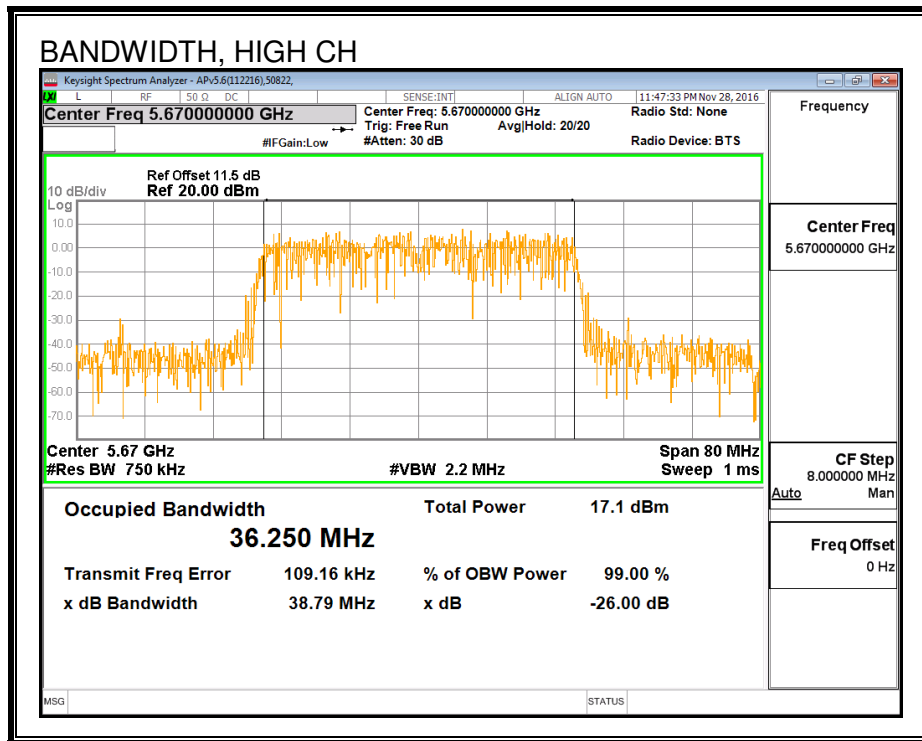
None; for reporting purposes only.

#### RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5510	36.193
Mid	5550	36.464
High	5670	36.250
142	5710	36.306

**99% BANDWIDTH**





### 8.33.3. AVERAGE POWER

#### LIMITS

None; for reporting purposes only.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### RESULTS

<b>ID:</b>	50822	<b>Date:</b>	2/7/17
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Channel	Frequency (MHz)	Power (dBm)
Low	5510	14.45
Mid	5550	14.89
High	5670	14.82
142	5710	14.98

### **8.33.4. OUTPUT POWER AND PSD**

#### **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 peak 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.

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**

<b>ID:</b>	50822	<b>Date:</b>	2/7/17
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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	5510	40.56	36.19	5.41	24.00	11.00
Mid	5550	40.72	36.46	5.41	24.00	11.00
High	5670	40.56	36.25	5.41	24.00	11.00

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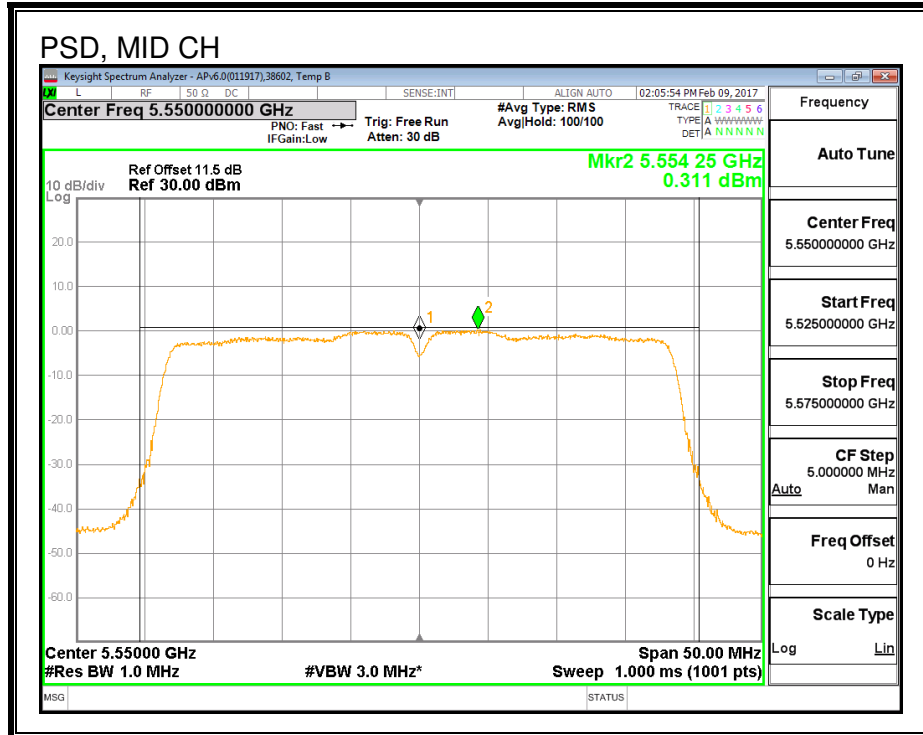
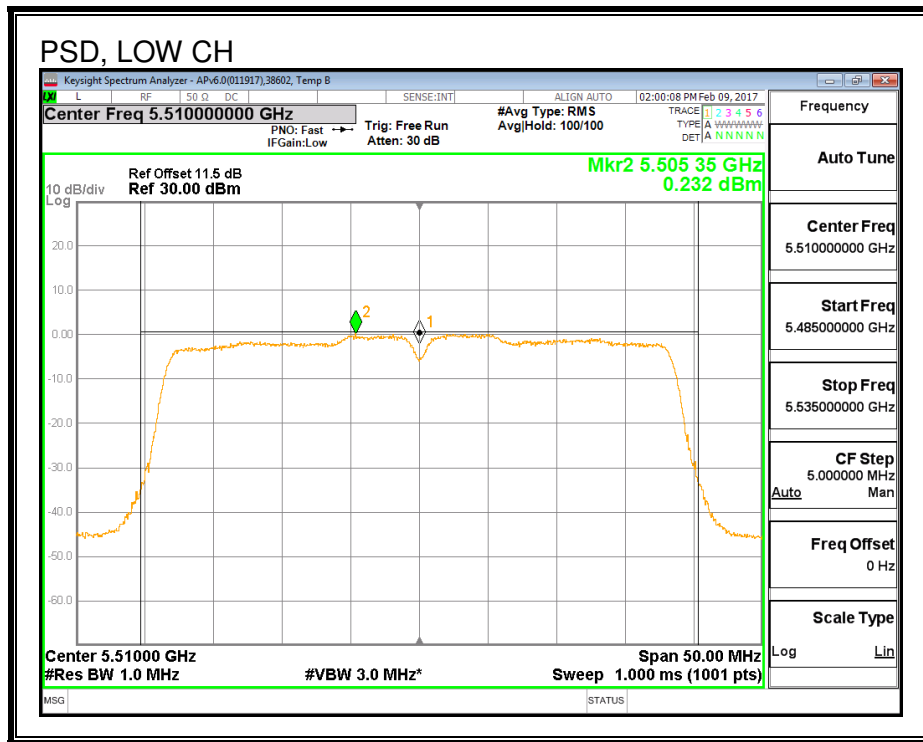
**Output Power Results**

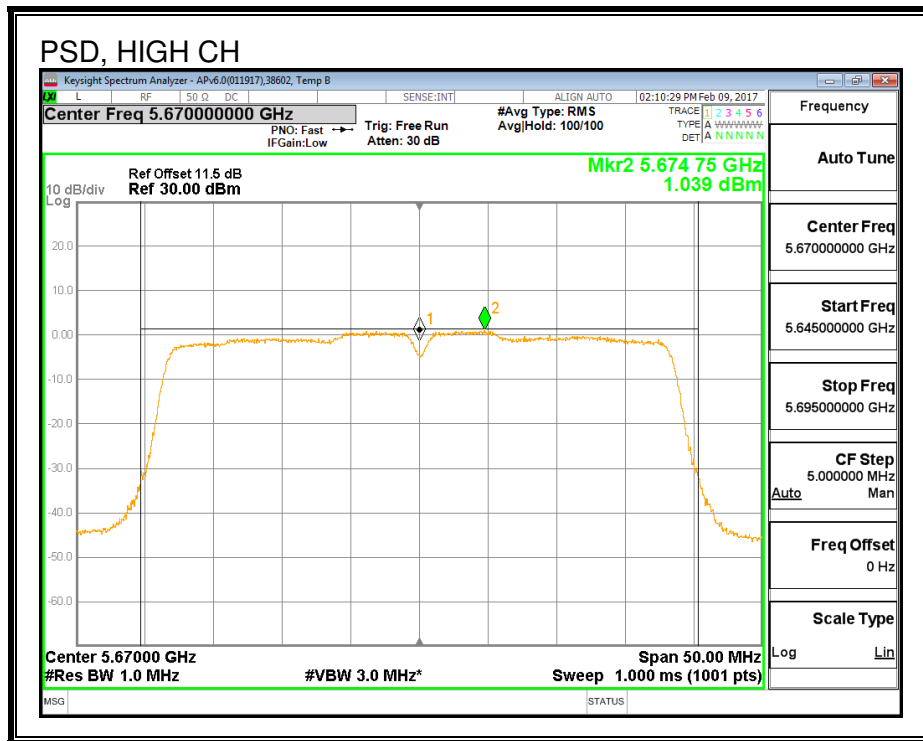
Channel	Frequency (MHz)	Ant A Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5510	14.45	14.45	24.00	-9.55
Mid	5550	14.89	14.89	24.00	-9.11
High	5670	14.82	14.82	24.00	-9.18

**PSD Results**

Channel	Frequency (MHz)	Ant A Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5510	0.23	0.33	11.00	-10.67
Mid	5550	0.31	0.41	11.00	-10.59
High	5670	1.04	1.14	11.00	-9.86

**PSD**





### 8.34. 802.11ac VHT40 ANTENNA A STRADDLE CH 142 RESULTS

#### 8.34.1. 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	35.44	5.41	5.41	24.00	11.00

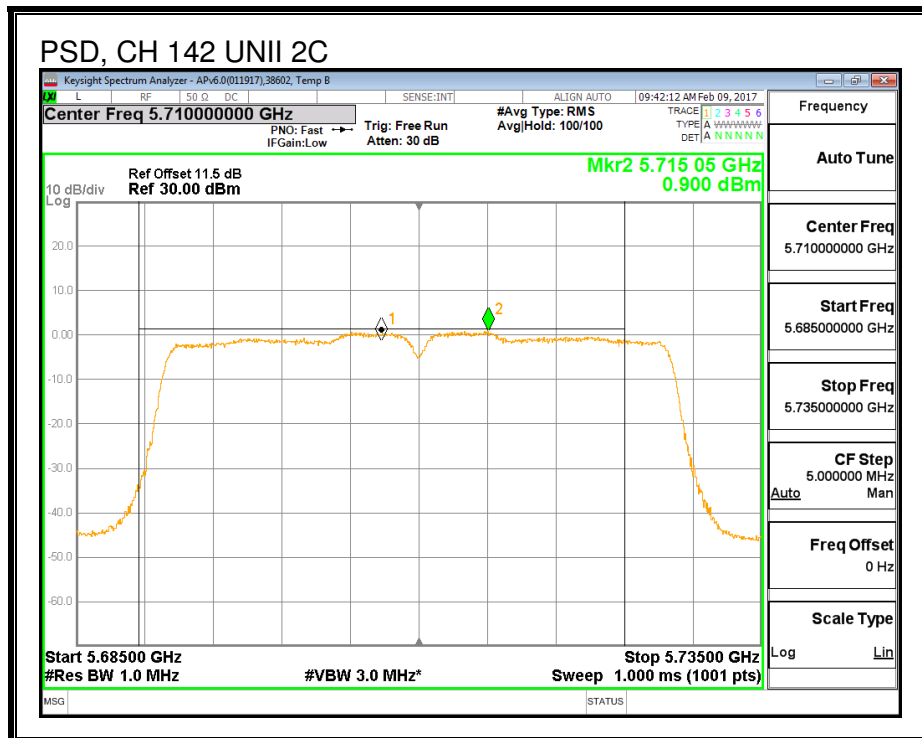
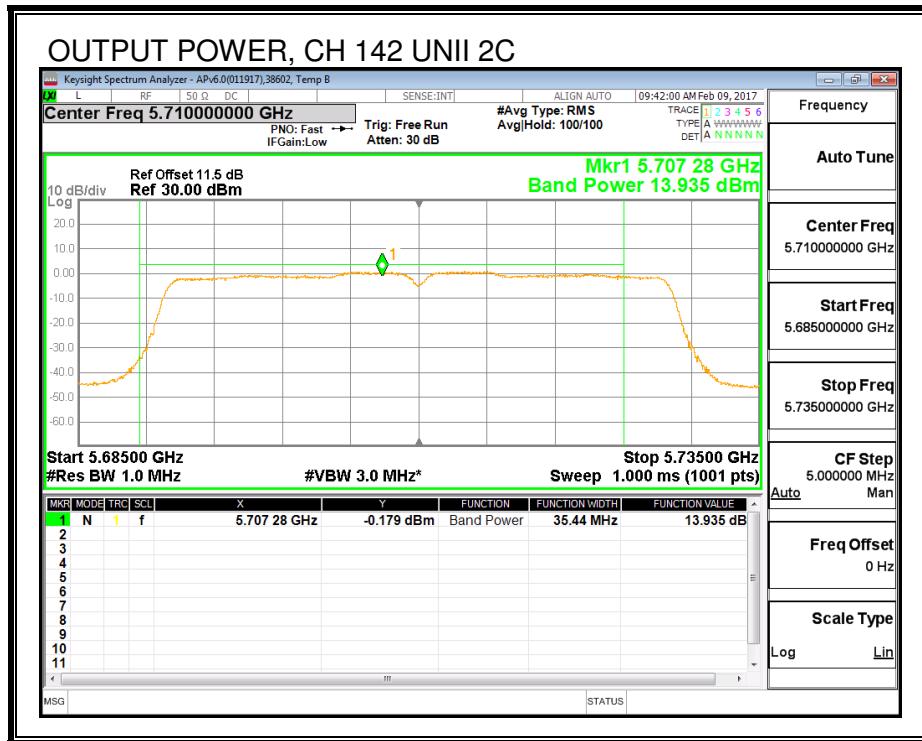
Duty Cycle CF (dB)	0.10	Included in Calculations of Corr'd Power & PSD
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##### Output Power Results

Channel	Frequency (MHz)	Ant A Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
142	5710	13.94	14.04	24.00	-9.97

##### PSD Results

Channel	Frequency (MHz)	Ant A Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
142	5710	0.90	1.00	11.00	-10.00



**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	5.44	4.20	30.00	30.00

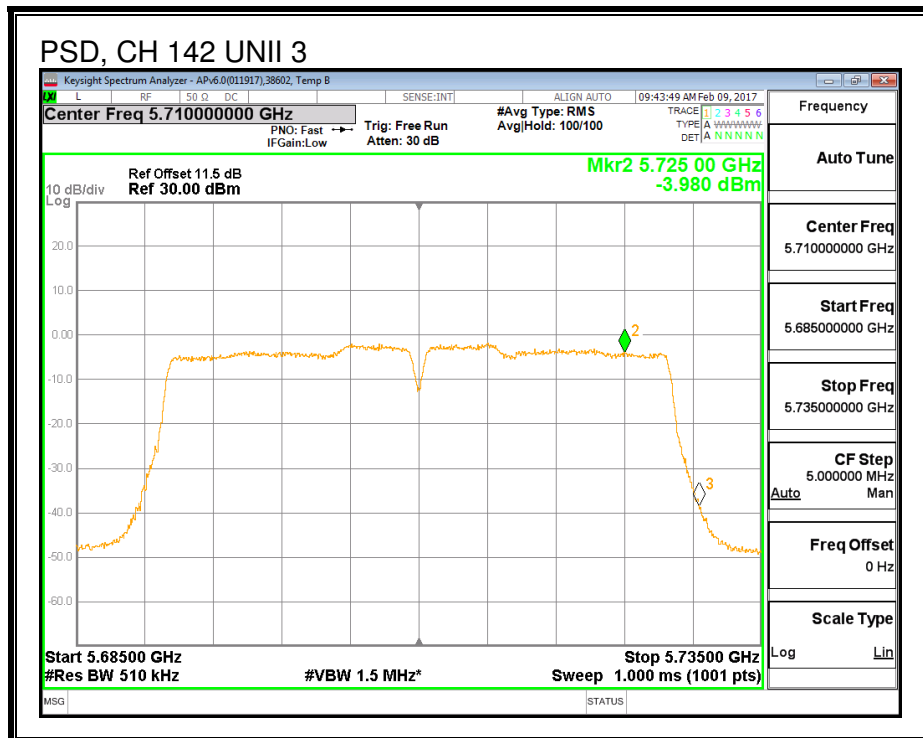
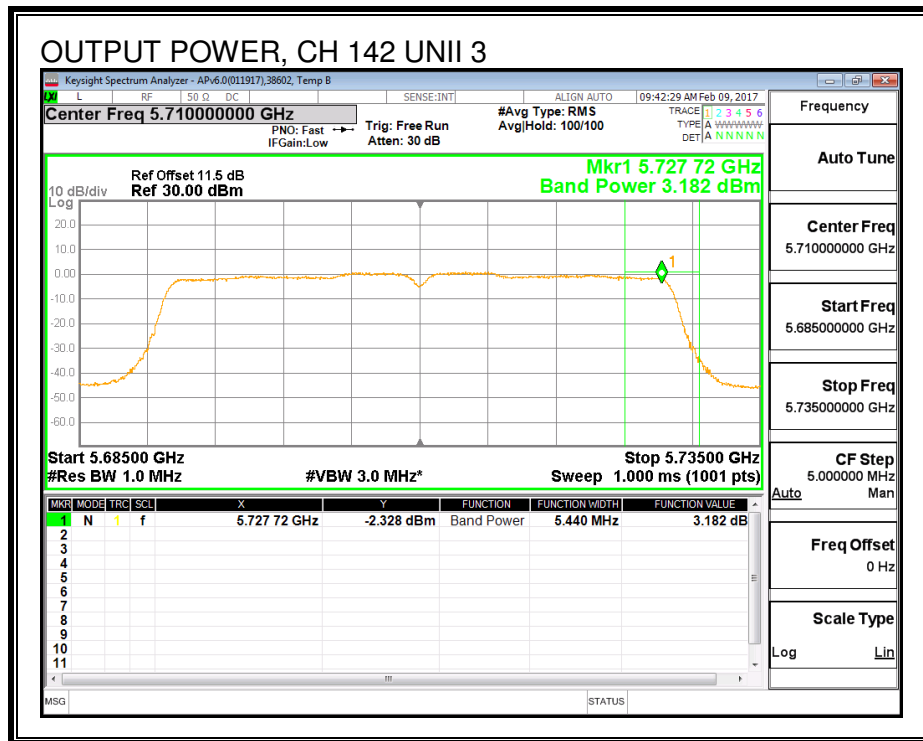
<b>Duty Cycle CF (dB)</b>	0.10	<b>Included in Calculations of Corr'd Power &amp; PSD</b>
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**Output Power Results**

Channel	Frequency (MHz)	Ant A Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
142	5710	3.18	3.28	30.00	-26.72

**PSD Results**

Channel	Frequency (MHz)	Ant A Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
142	5710	-3.98	-3.88	30.00	-33.88



### 8.34.2. 6 dB BANDWIDTH

#### LIMITS

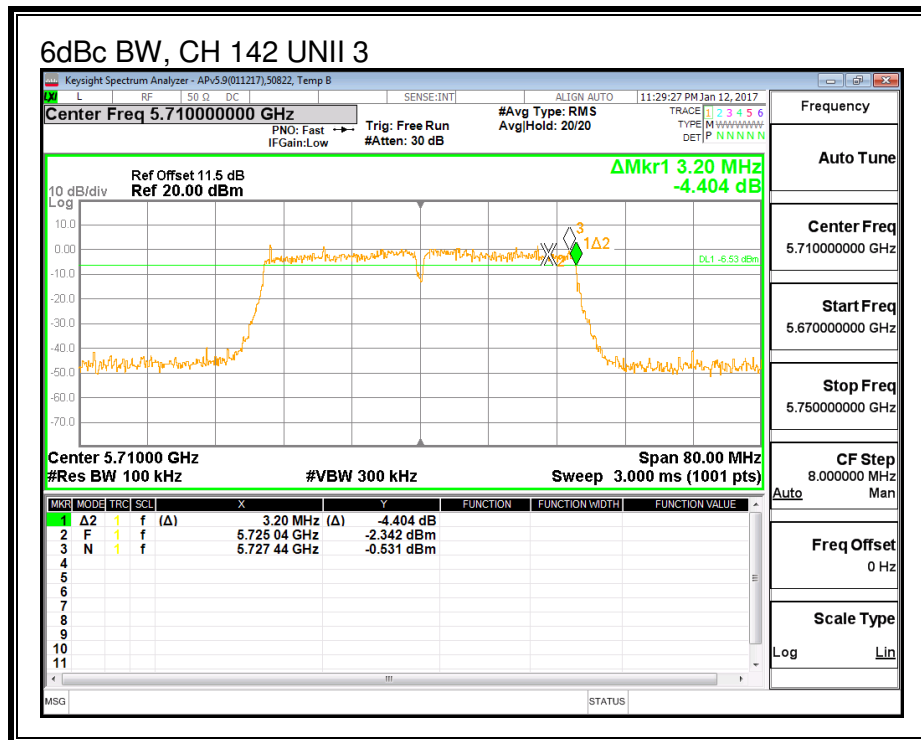
FCC §15.407 (e)

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

#### RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)
142	5710	3.200

#### 6 dB BANDWIDTH



### 8.35. 802.11n HT40 ANTENNA B MODE IN THE 5.6 GHz BAND

#### 8.35.1. 26 dB BANDWIDTH

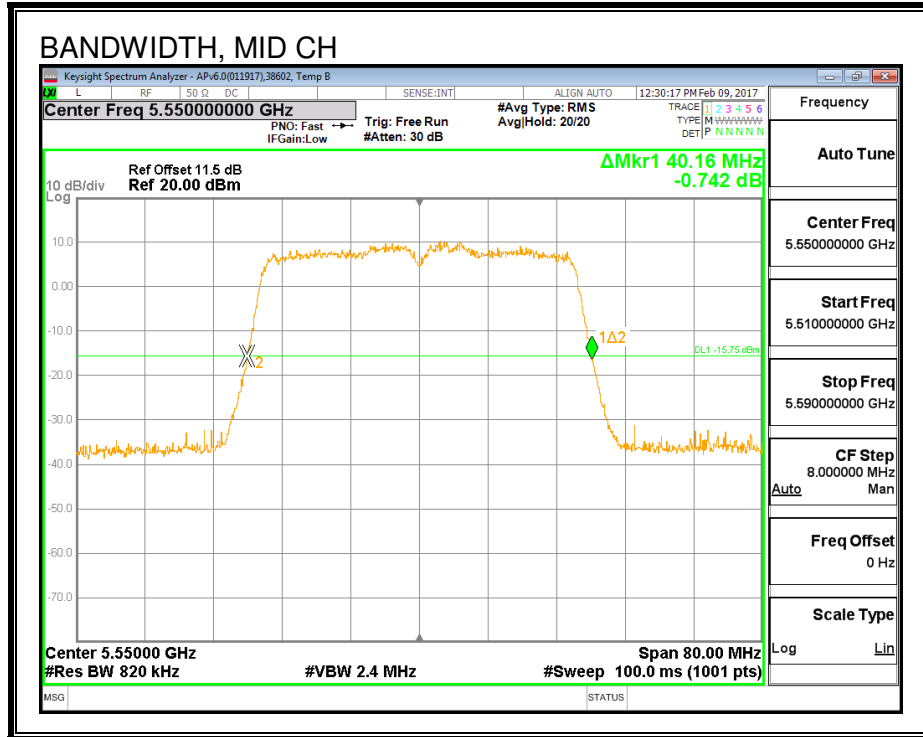
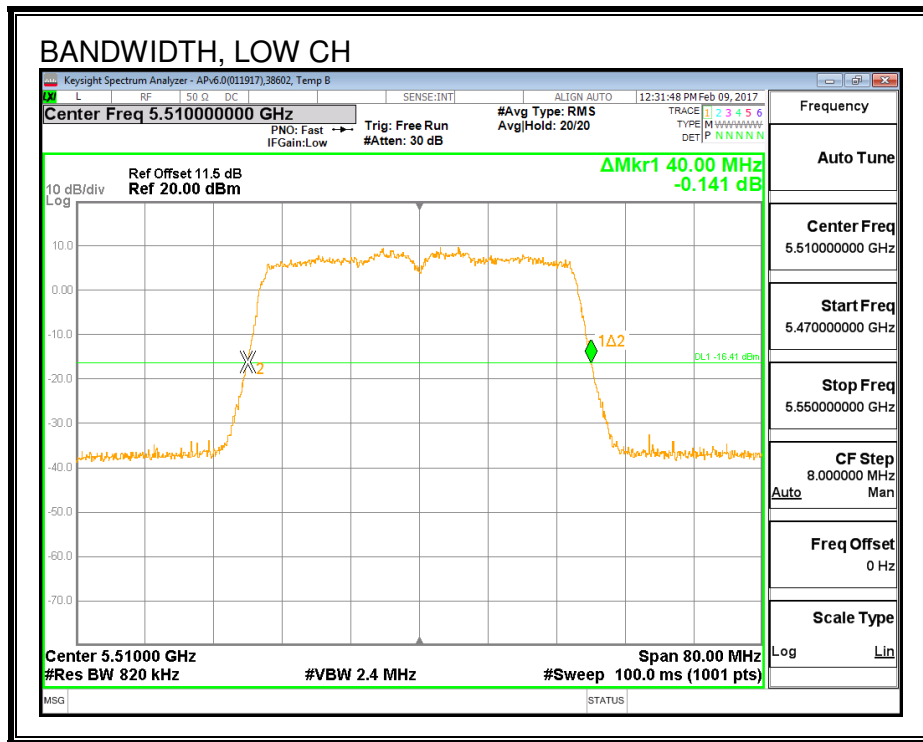
##### LIMITS

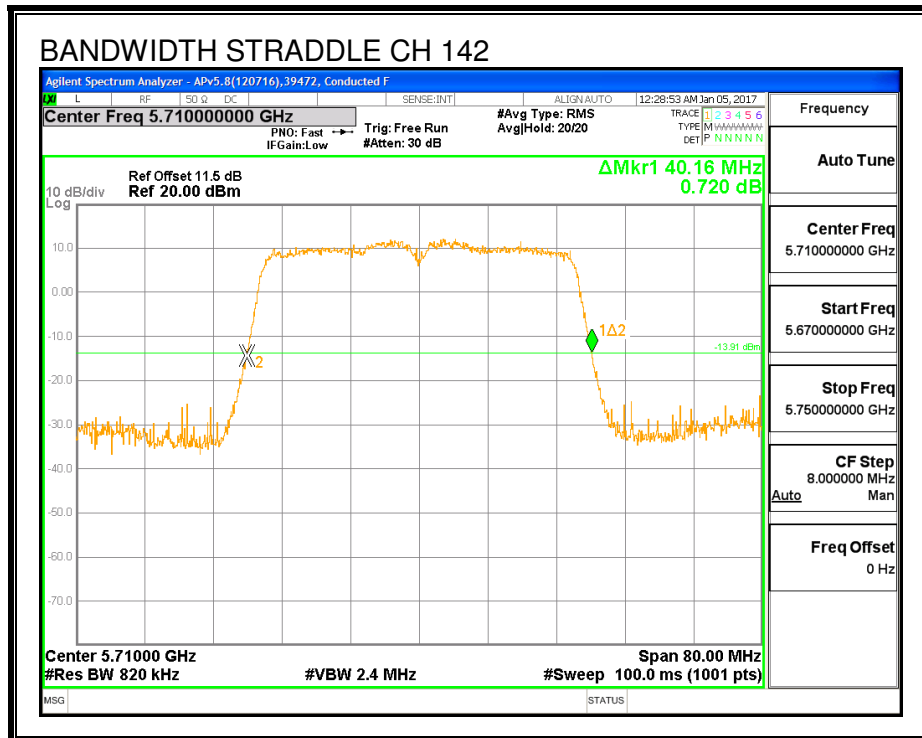
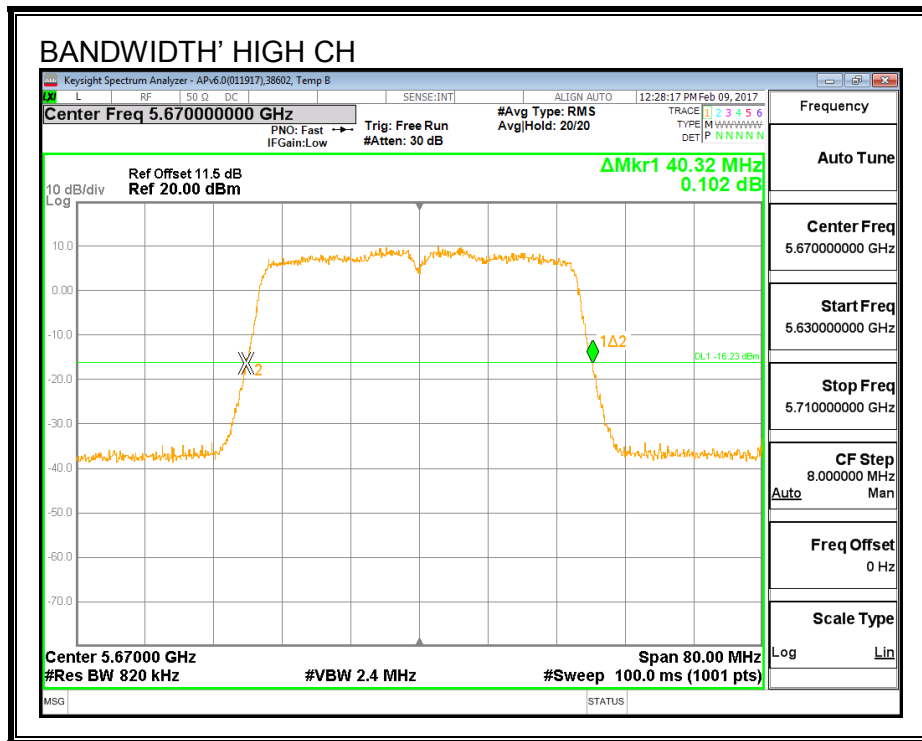
None; for reporting purposes only.

##### RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5510	40.000
Mid	5550	40.160
High	5670	40.320
142	5710	40.160

**26 dB BANDWIDTH**





### 8.35.2. 99% BANDWIDTH

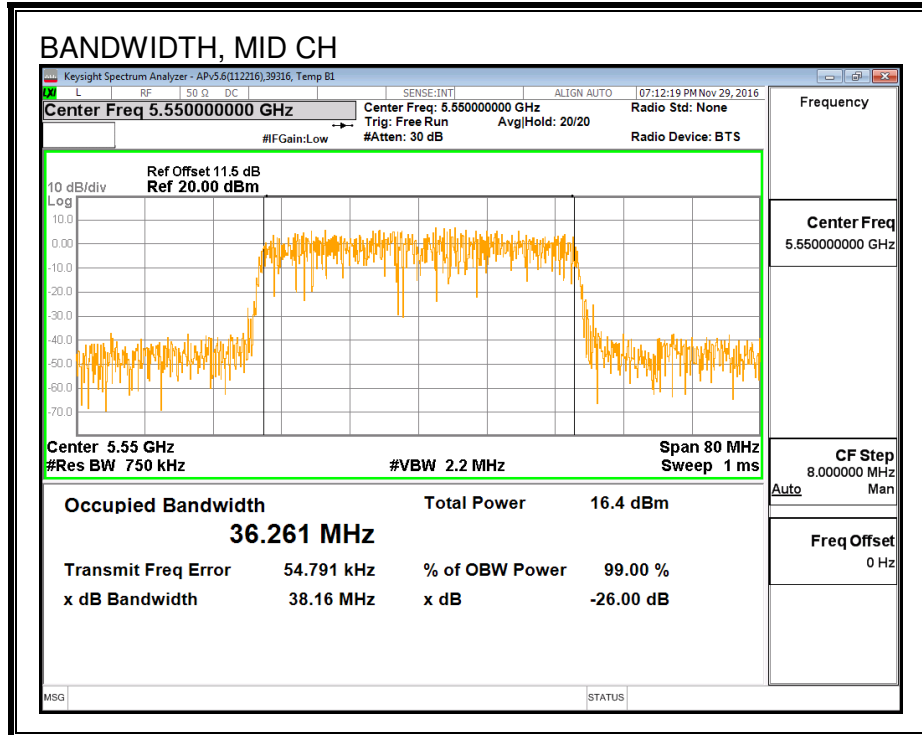
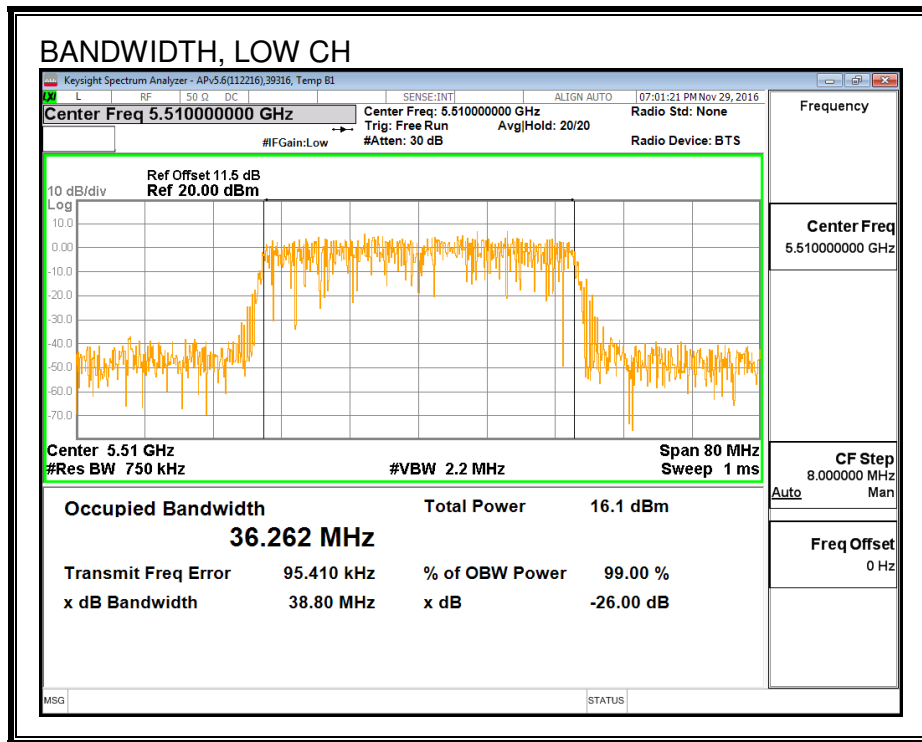
#### LIMITS

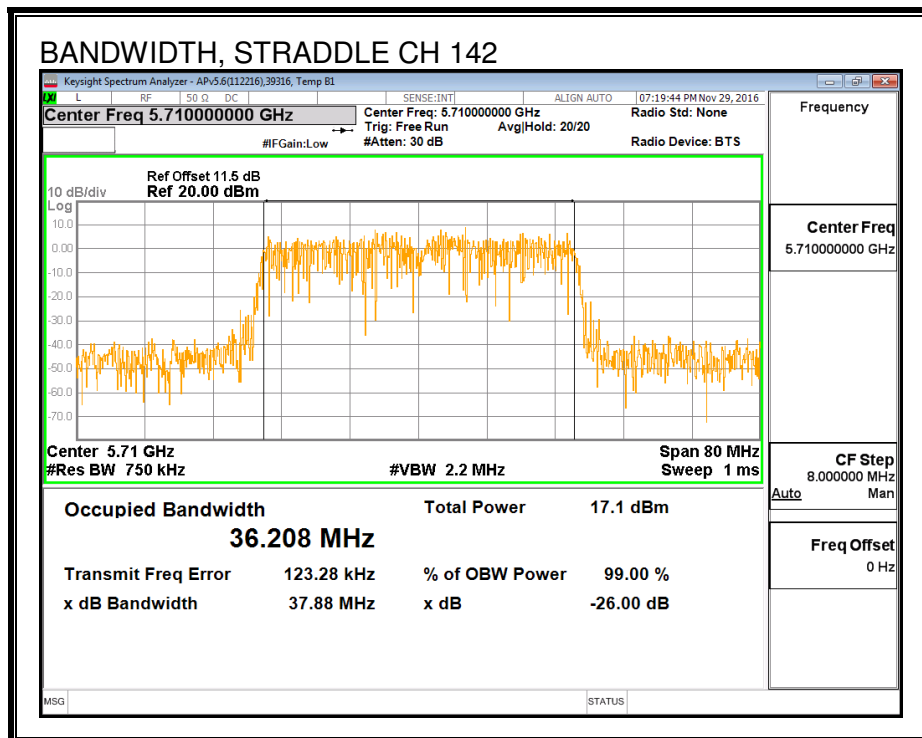
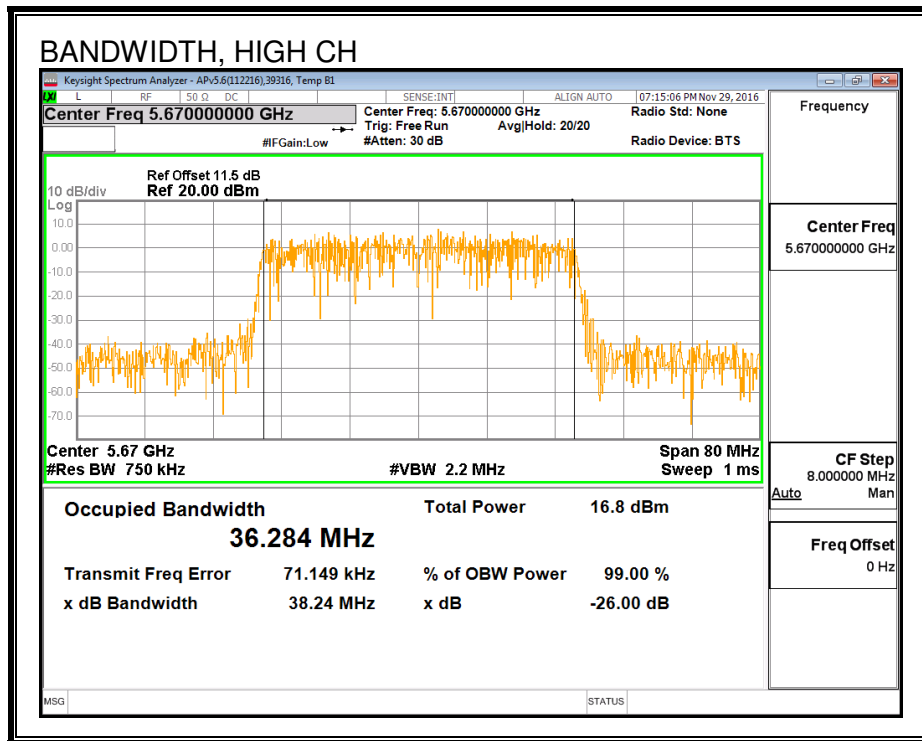
None; for reporting purposes only.

#### RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5510	36.262
Mid	5550	36.261
High	5670	36.284
142	5710	36.208

**99% BANDWIDTH**





### 8.35.3. AVERAGE POWER

#### LIMITS

None; for reporting purposes only.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### RESULTS

<b>ID:</b>	50822	<b>Date:</b>	2/7/17
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Channel	Frequency (MHz)	Power (dBm)
Low	5510	14.31
Mid	5550	14.95
High	5670	14.92
142	5710	14.82

### **8.35.4. OUTPUT POWER AND PSD**

#### **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 peak 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.

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**

<b>ID:</b>	50822	<b>Date:</b>	2/7/17
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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	5510	40.56	36.26	5.17	24.00	11.00
Mid	5550	40.64	36.26	5.17	24.00	11.00
High	5670	40.56	36.28	5.17	24.00	11.00

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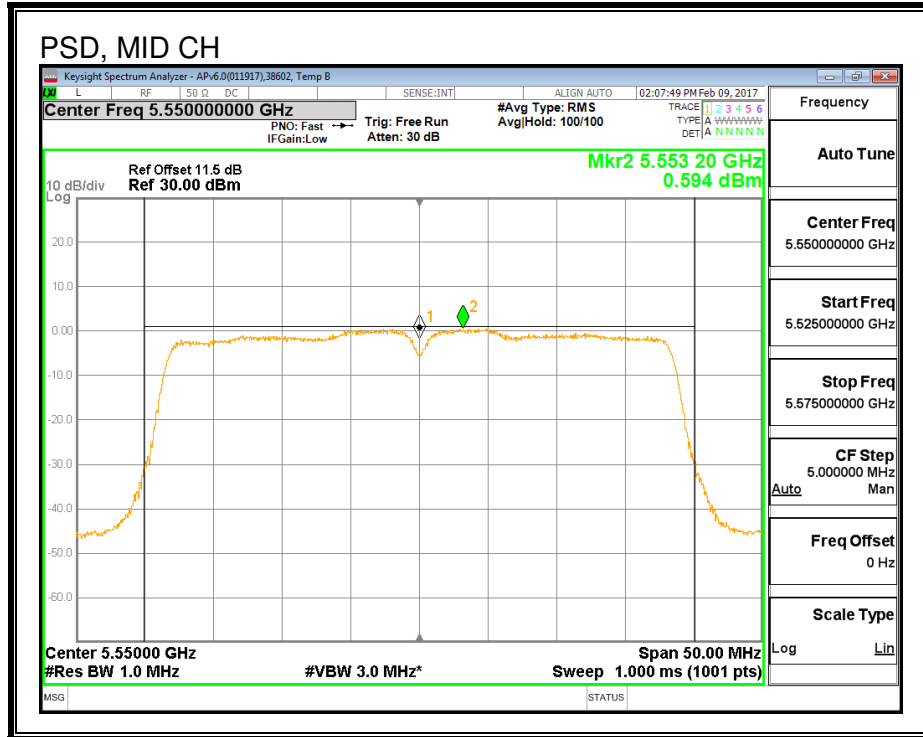
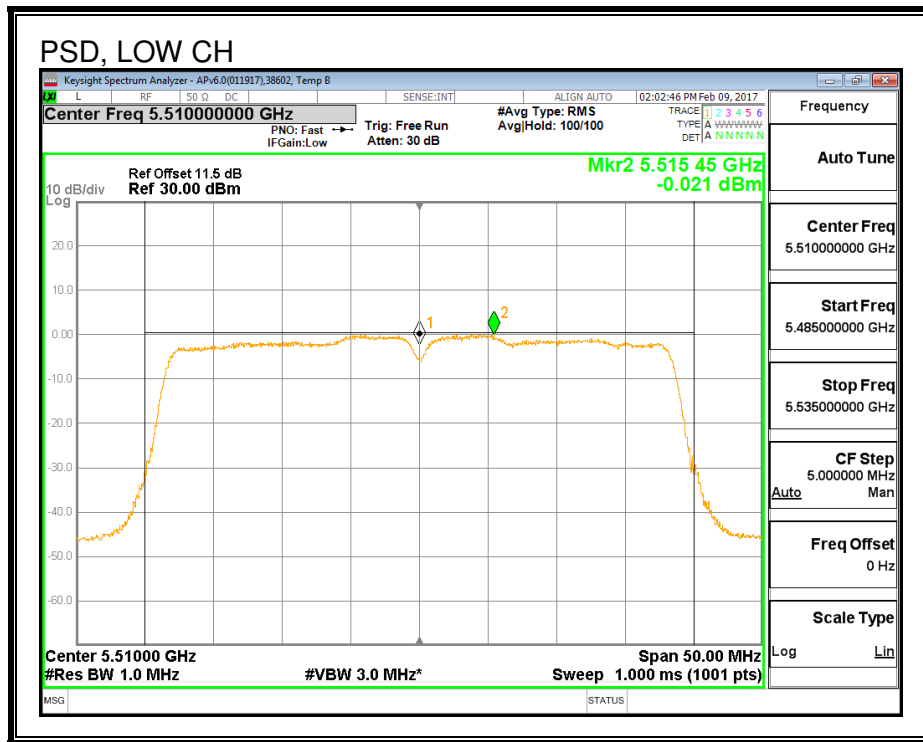
**Output Power Results**

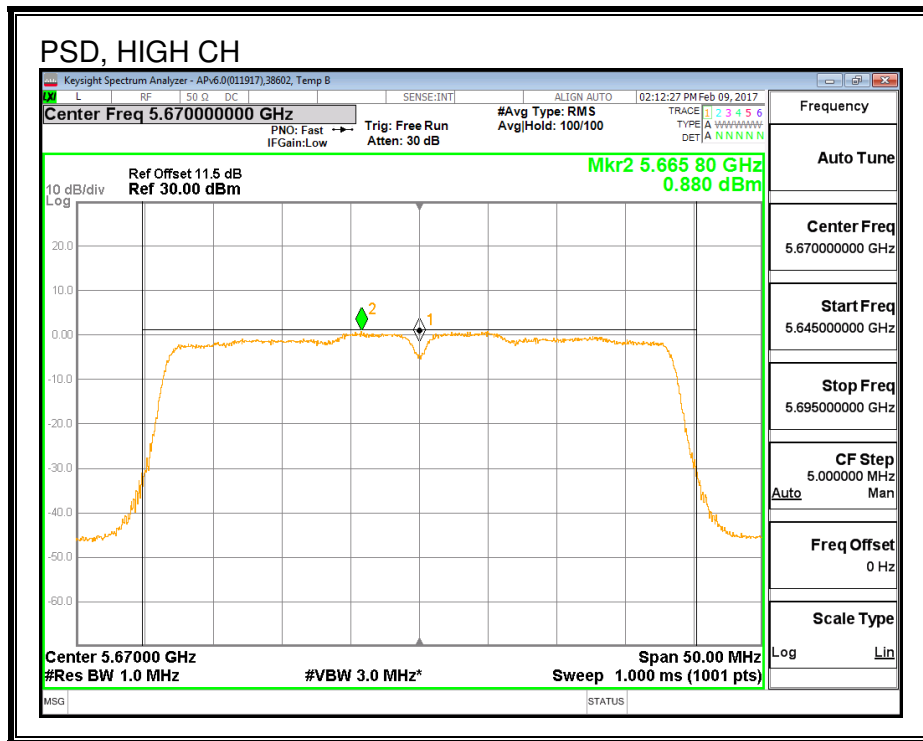
Channel	Frequency (MHz)	Ant B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5510	14.31	14.31	24.00	-9.69
Mid	5550	14.95	14.95	24.00	-9.05
High	5670	14.92	14.92	24.00	-9.08

**PSD Results**

Channel	Frequency (MHz)	Ant B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5510	-0.02	0.08	11.00	-10.92
Mid	5550	0.59	0.69	11.00	-10.31
High	5670	0.88	0.98	11.00	-10.02

**PSD**





### 8.36. 802.11ac VHT40 ANTENNA B STRADDLE CH 142 RESULTS

#### 8.36.1. 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	35.08	5.17	5.17	24.00	11.00

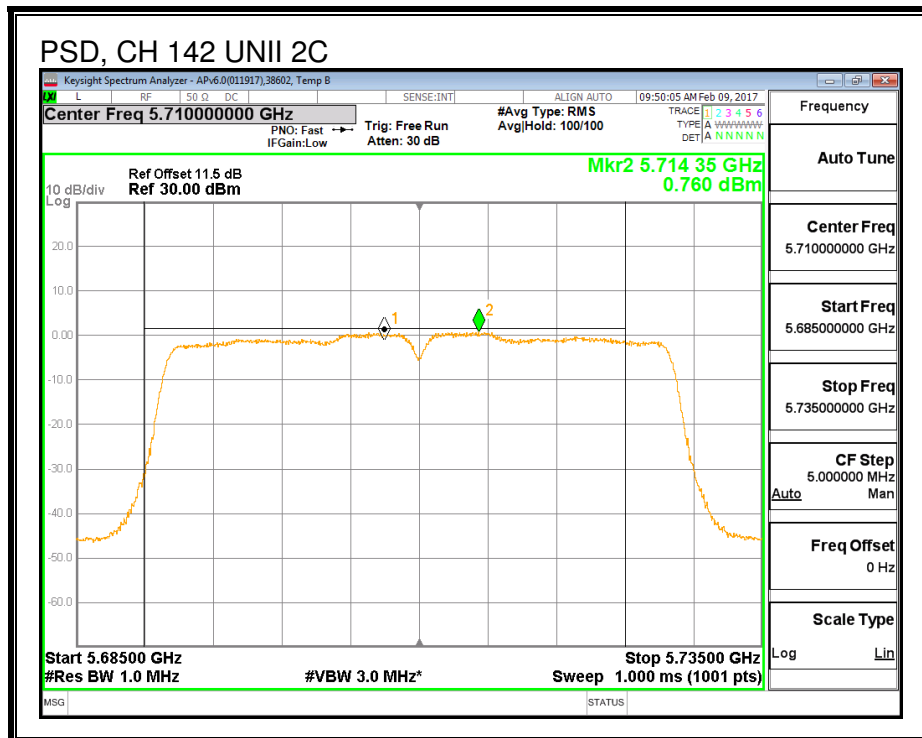
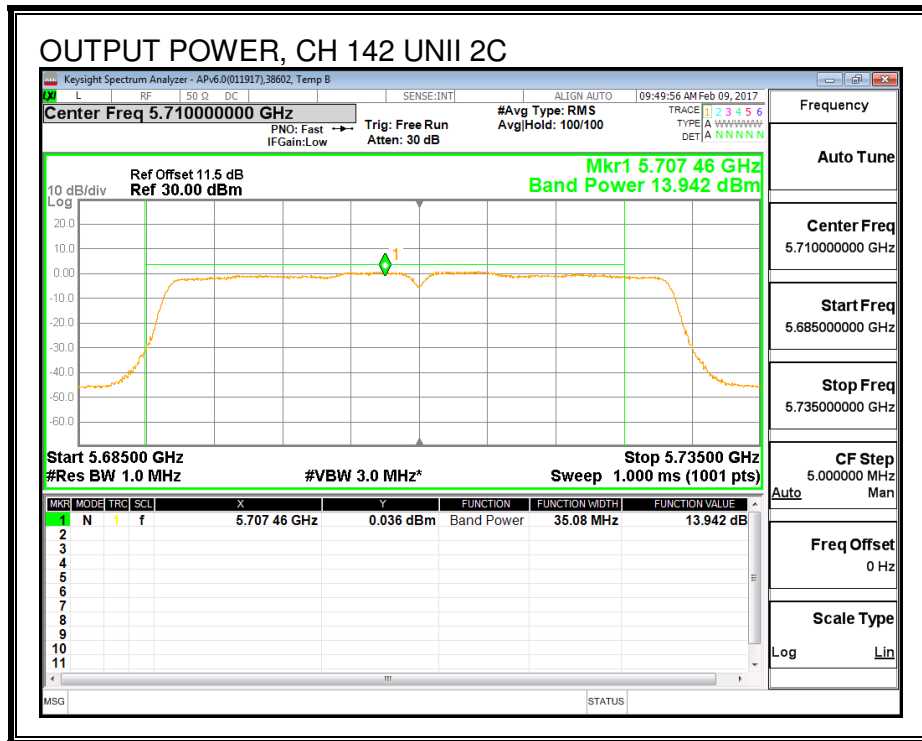
<b>Duty Cycle CF (dB)</b>	0.10	<b>Included in Calculations of Corr'd Power &amp; PSD</b>
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##### Output Power Results

Channel	Frequency (MHz)	Ant B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
142	5710	13.94	14.04	24.00	-9.96

##### PSD Results

Channel	Frequency (MHz)	Ant B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
142	5710	0.76	0.86	11.00	-10.14



**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	5.08	4.32	30.00	30.00

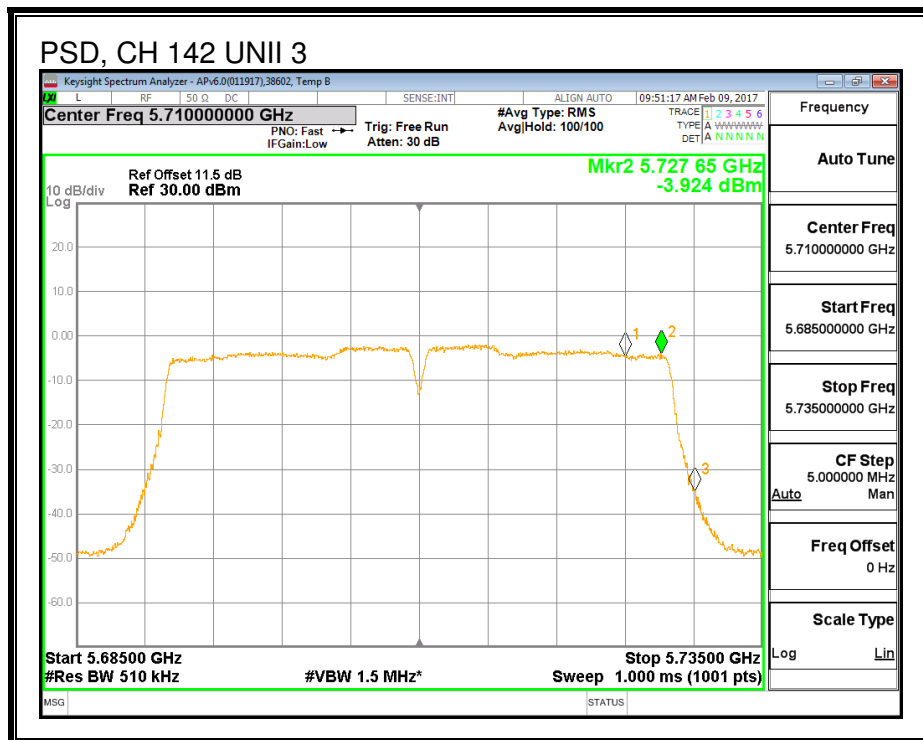
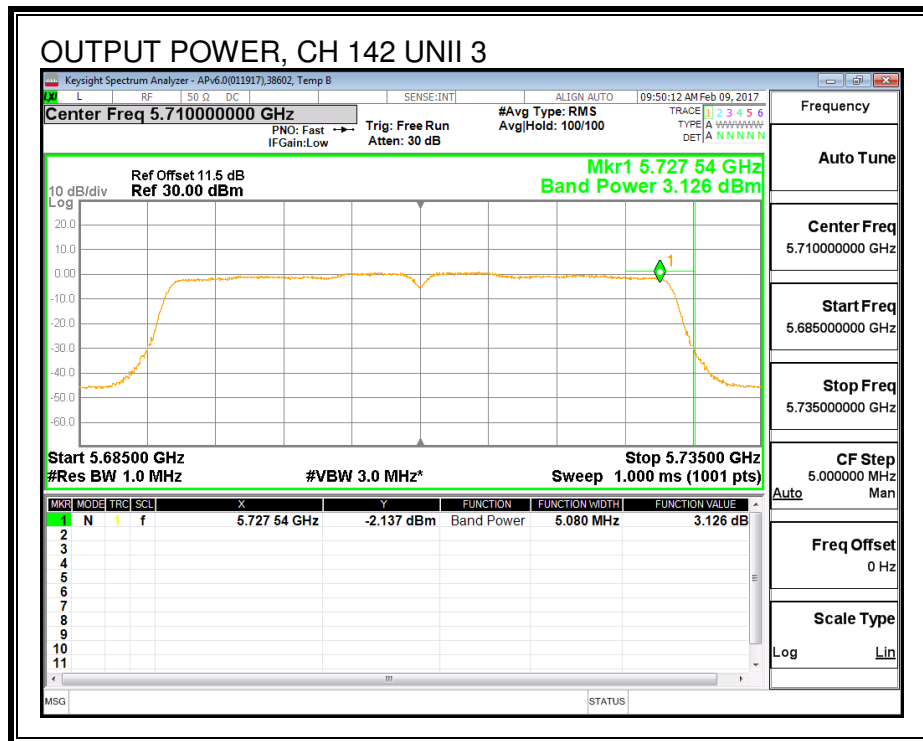
<b>Duty Cycle CF (dB)</b>	0.10	<b>Included in Calculations of Corr'd Power &amp; PSD</b>
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**Output Power Results**

Channel	Frequency (MHz)	Ant B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
142	5710	3.13	3.23	30.00	-26.77

**PSD Results**

Channel	Frequency (MHz)	Ant B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
142	5710	-3.92	-3.82	30.00	-33.82



### 8.36.2. 6 dB BANDWIDTH

#### LIMITS

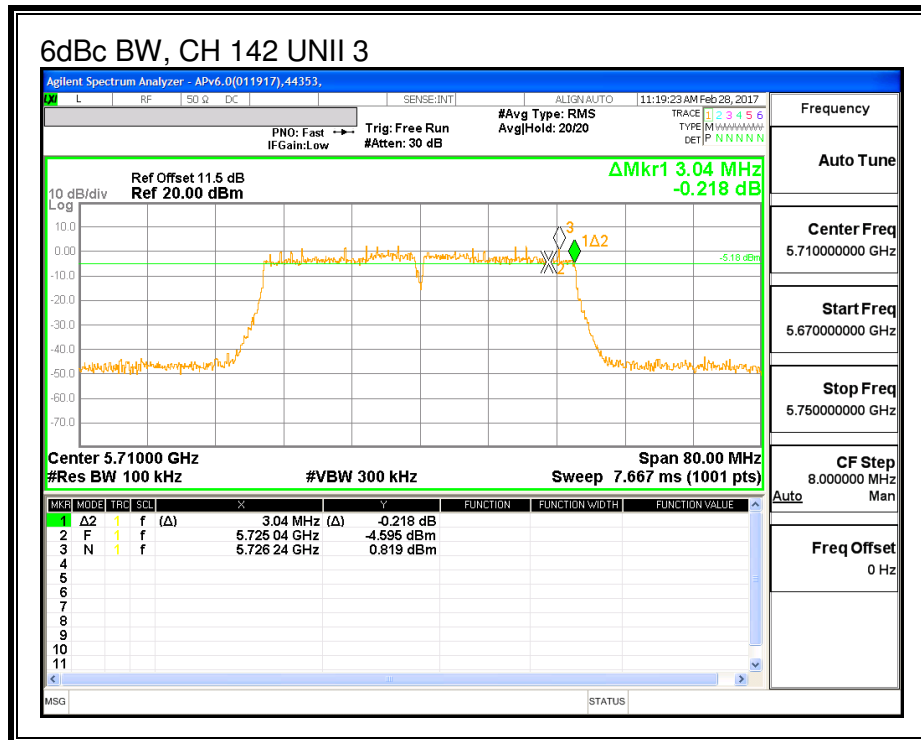
FCC §15.407 (e)

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

#### RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)
142	5710	3.040

#### 6 dB BANDWIDTH



### 8.37. 802.11n HT40 2Tx (ANTENNA A + ANTENNA B) CDD MODE IN THE 5.6 GHz BAND

#### 8.37.1. 26 dB BANDWIDTH

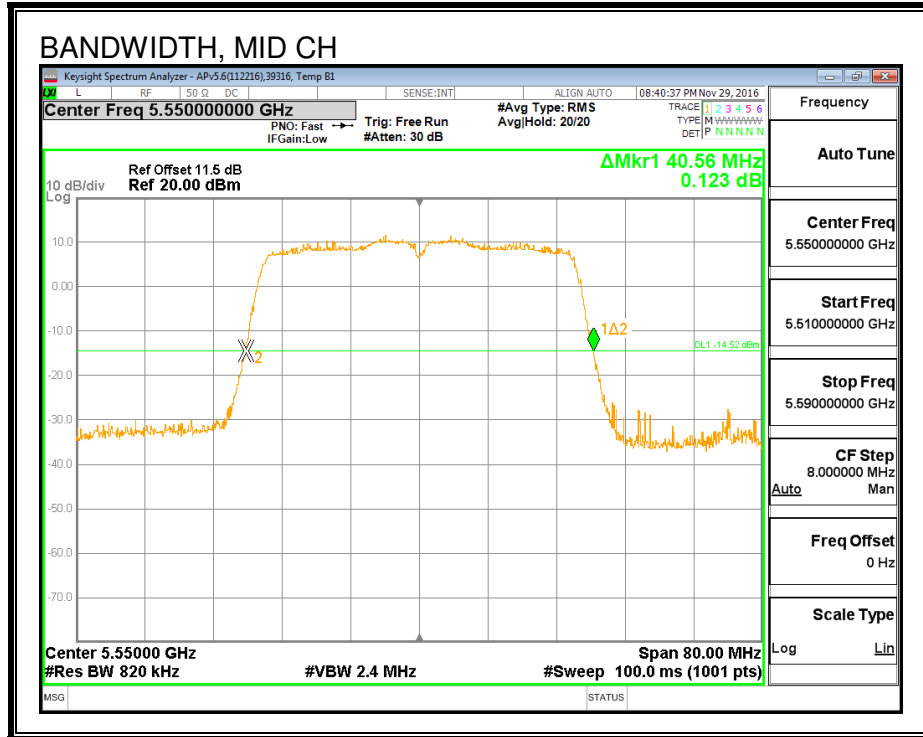
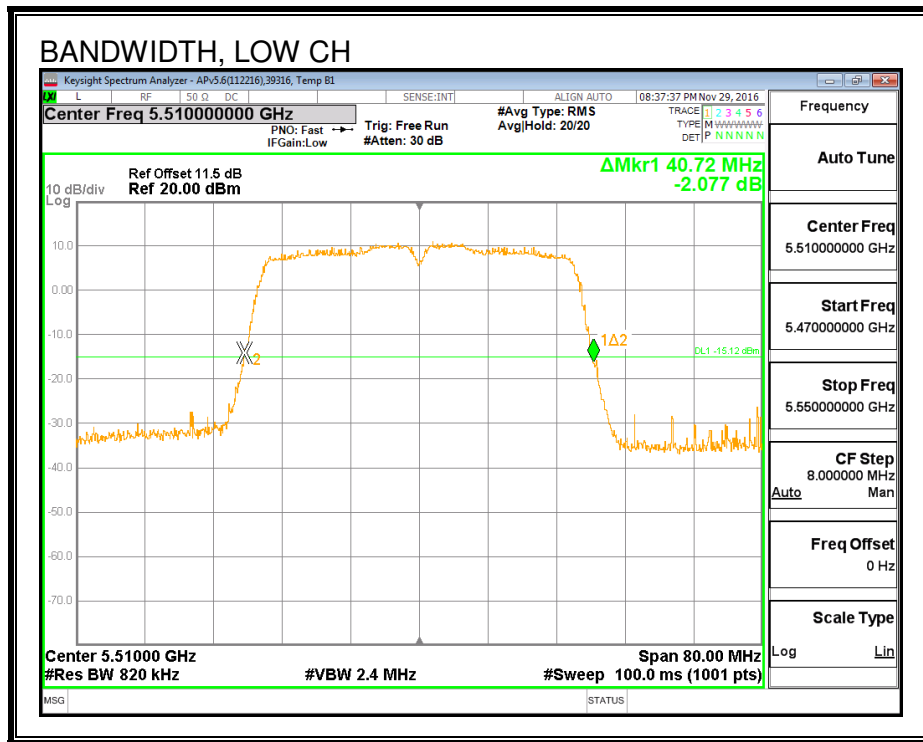
##### LIMITS

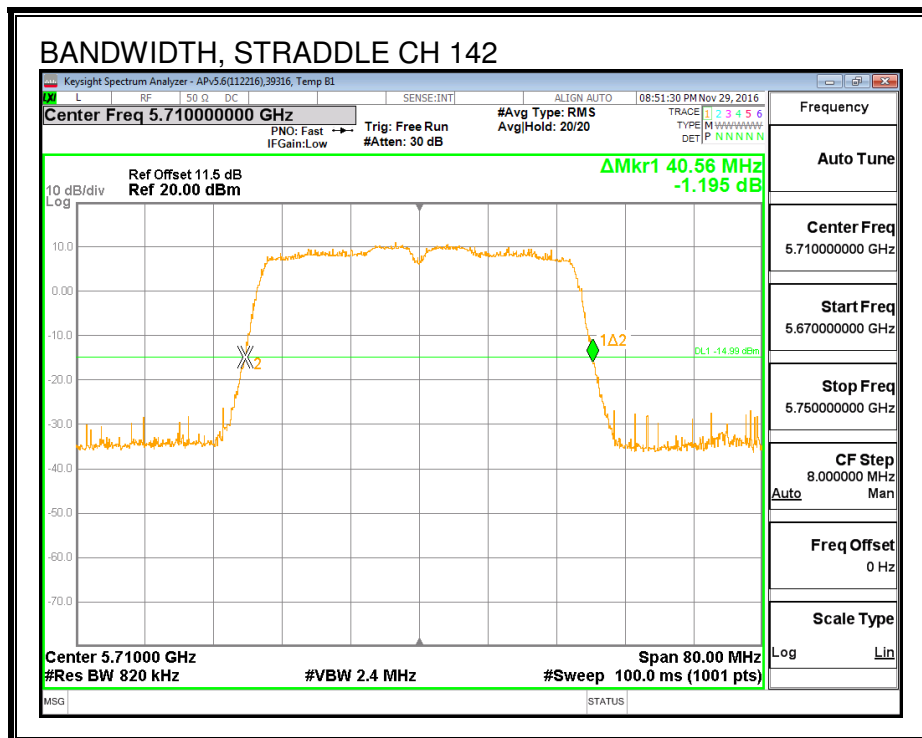
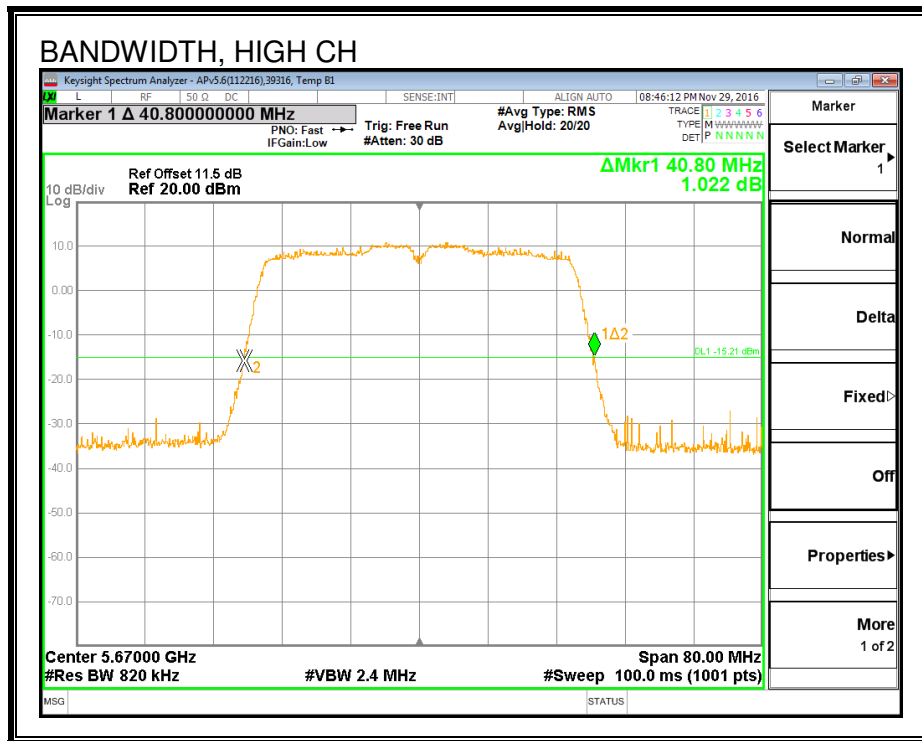
None; for reporting purposes only.

##### RESULTS

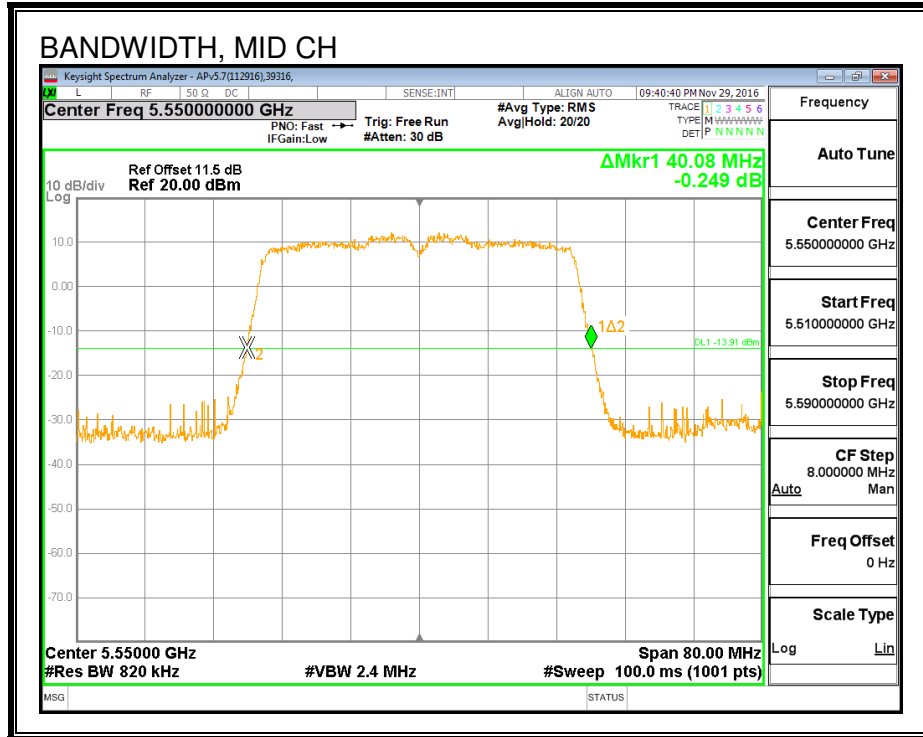
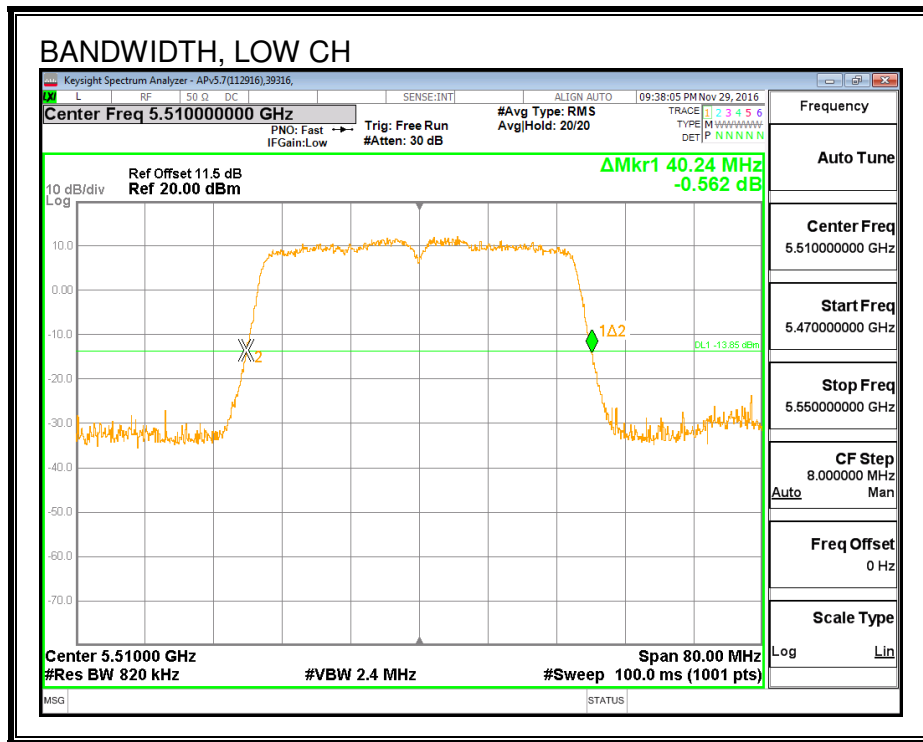
Channel	Frequency (MHz)	26 dB BW	
		Ant A (MHz)	Ant B (MHz)
Low	5510	40.720	40.240
Mid	5550	40.560	40.080
High	5670	40.800	40.080
142	5710	40.560	40.320

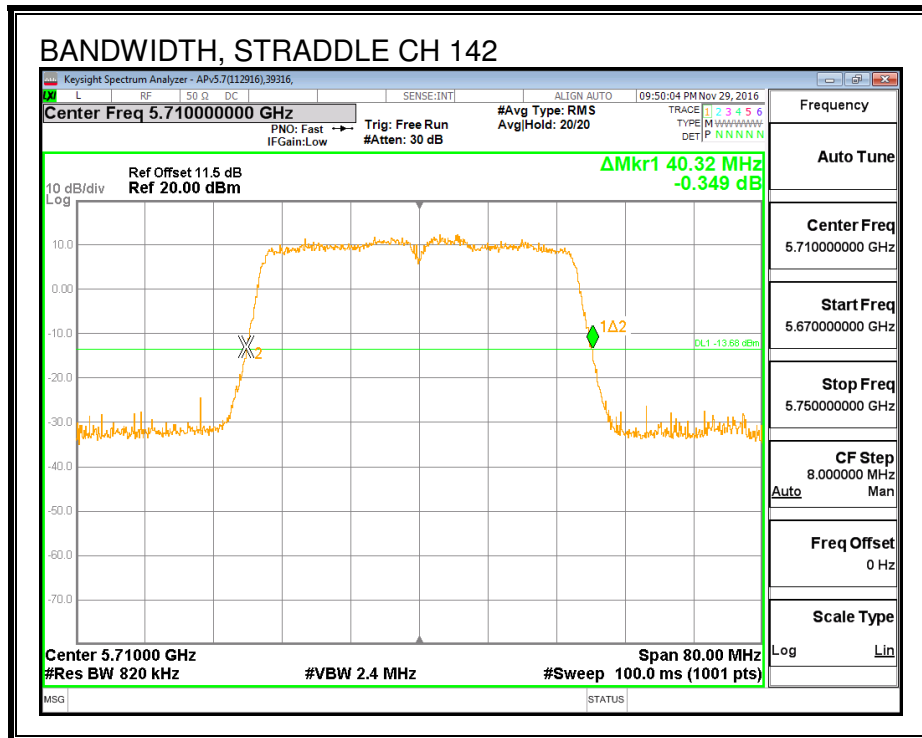
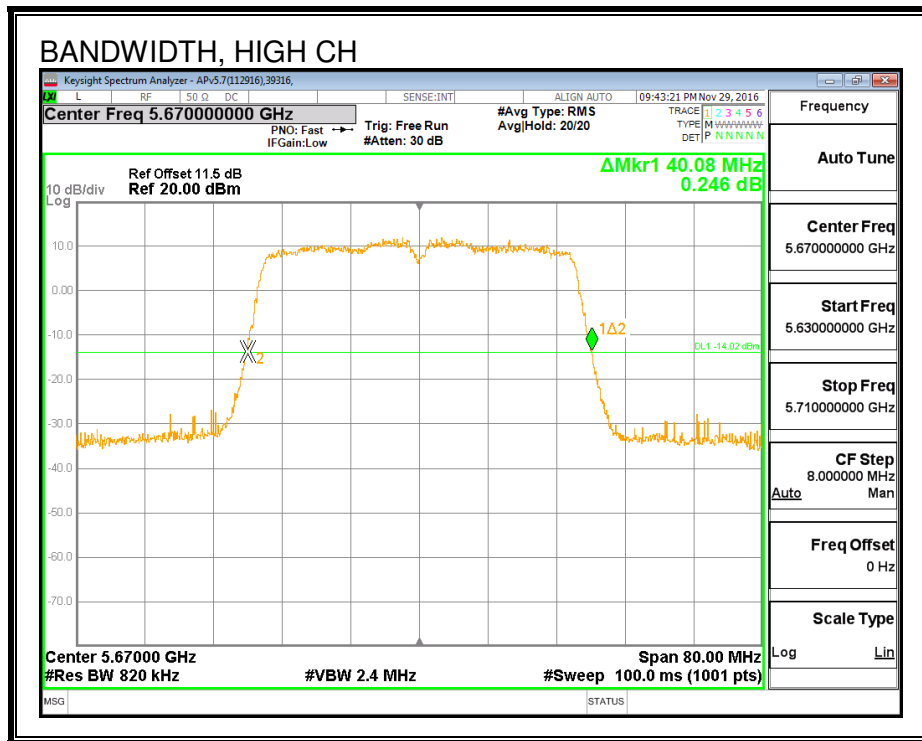
**26 dB BANDWIDTH, ANTENNA A**





**26 dB BANDWIDTH, ANTENNA B**





### 8.37.2. 99% BANDWIDTH

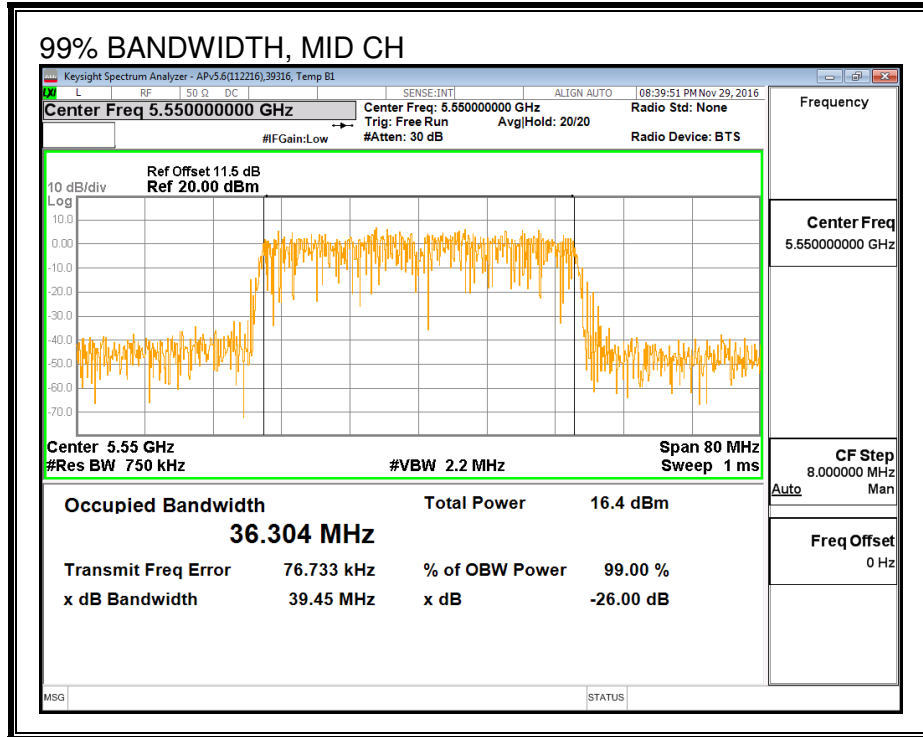
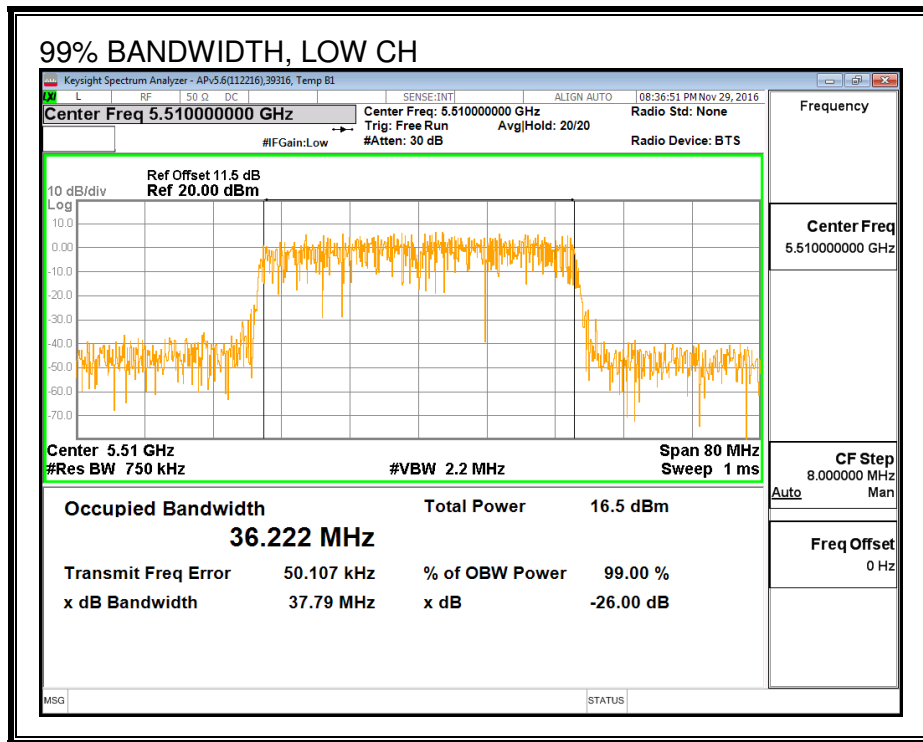
#### LIMITS

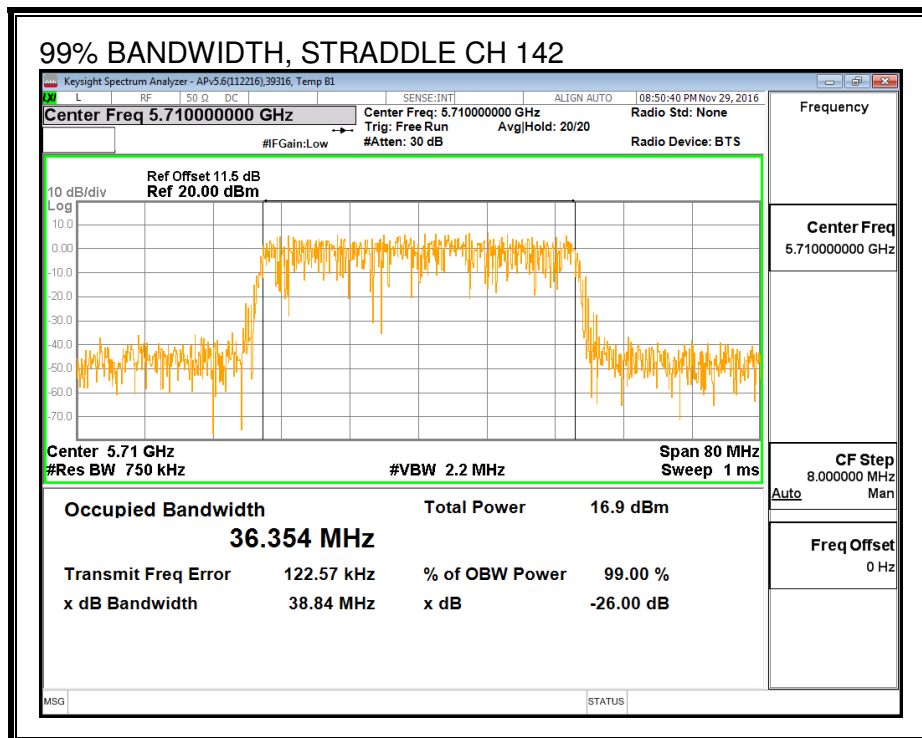
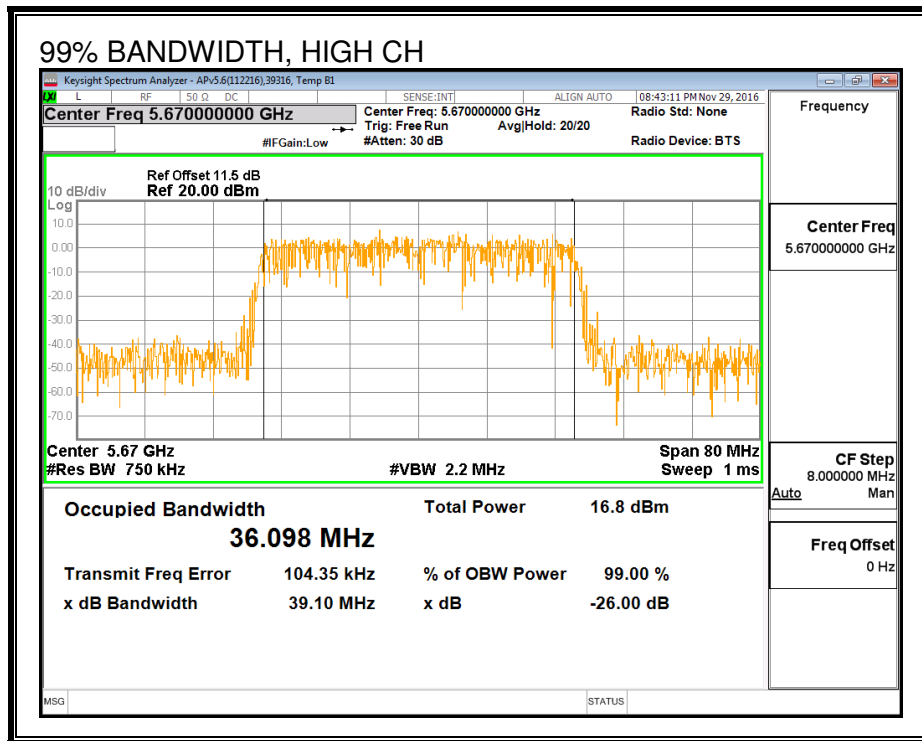
None; for reporting purposes only.

#### RESULTS

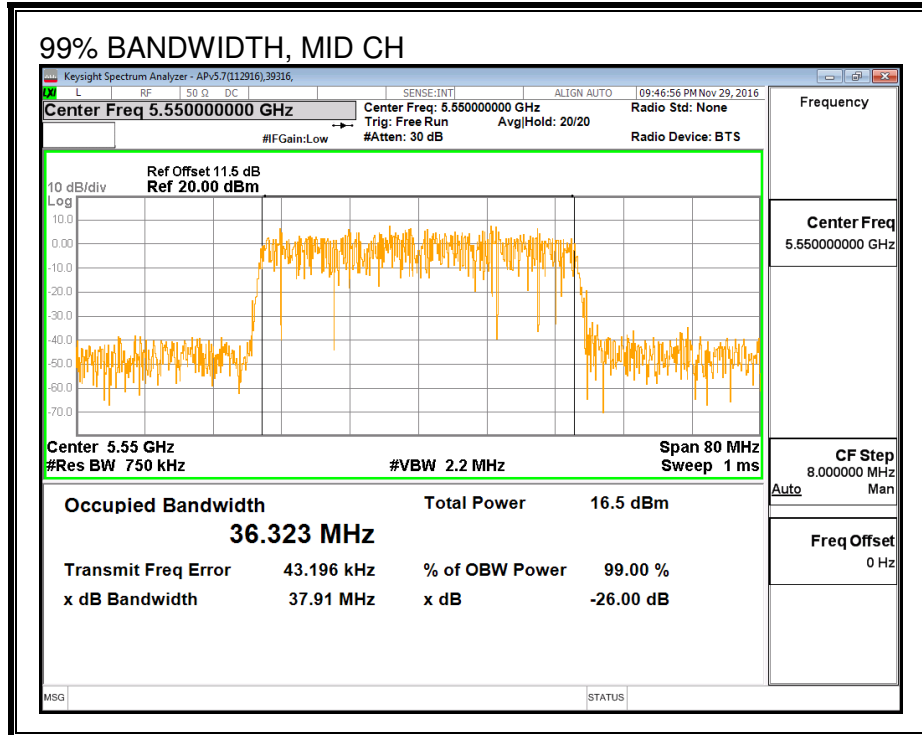
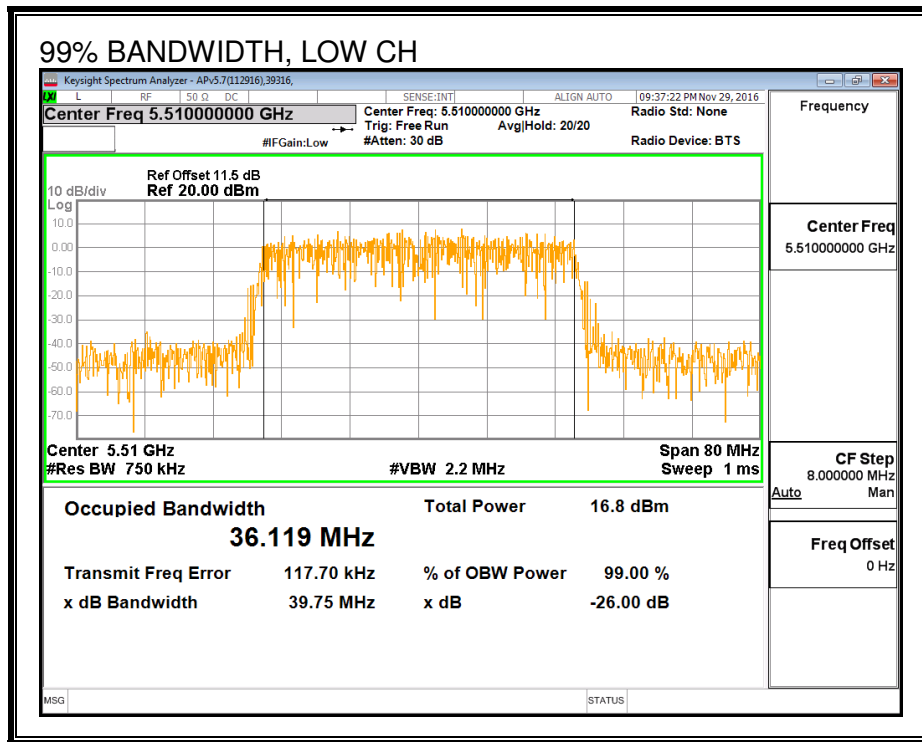
Channel	Frequency (MHz)	99% BW Ant A (MHz)	99% BW Ant B (MHz)
Low	5510	36.222	36.119
Mid	5550	36.304	36.323
High	5670	36.098	36.290
142	5710	36.354	36.209

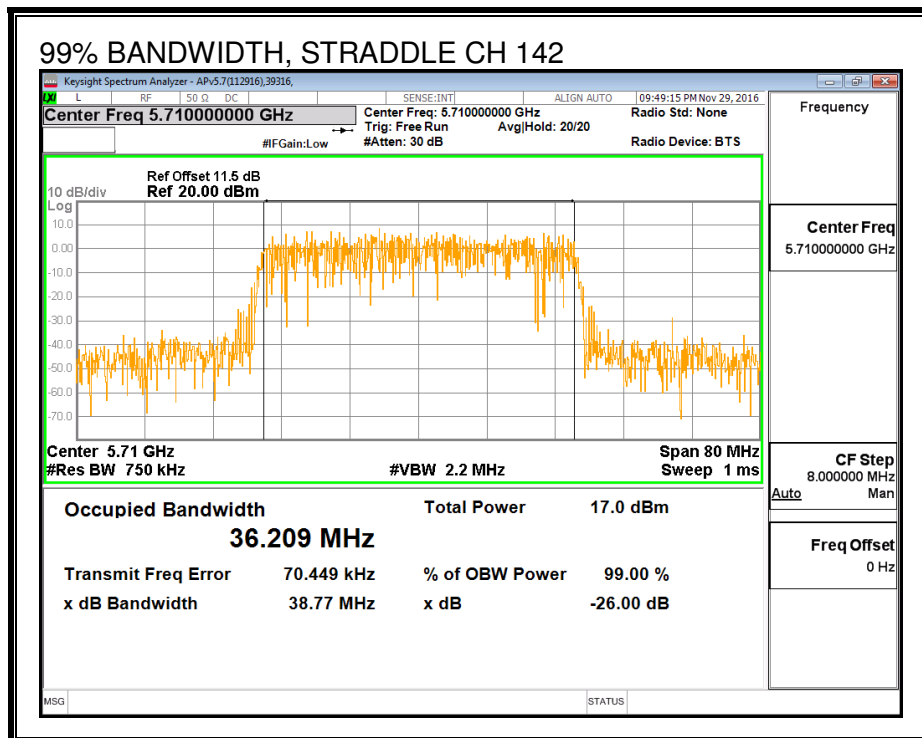
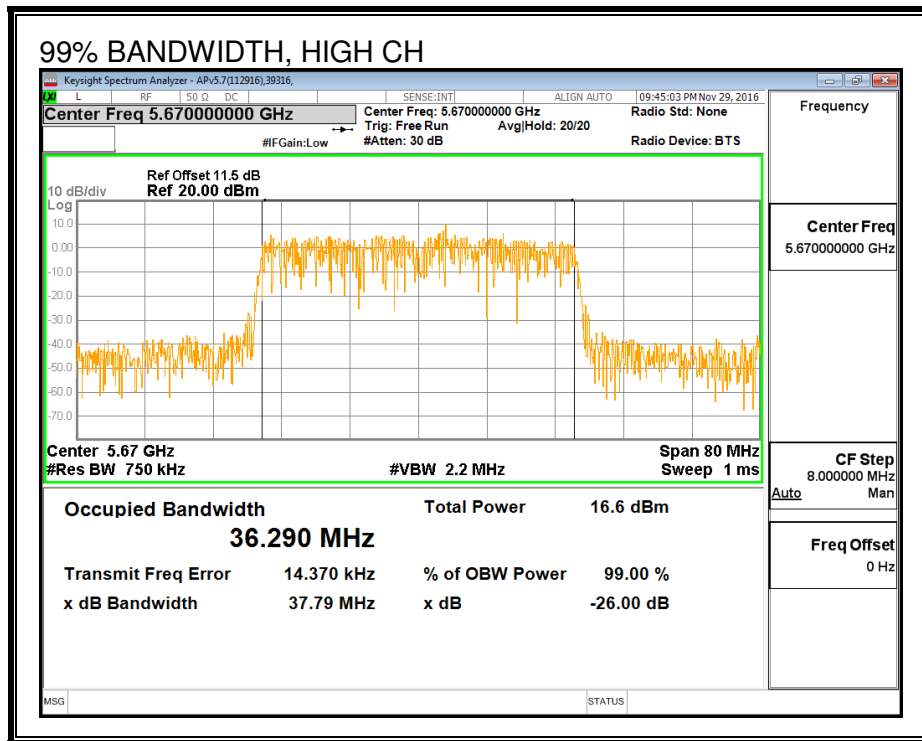
**99% BANDWIDTH, ANTENNA A**





**99% BANDWIDTH, ANTENNA B**





### 8.37.3. AVERAGE POWER

#### LIMITS

None; for reporting purposes only.

#### TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

#### RESULTS

<b>ID:</b>	50822	<b>Date:</b>	2/7/17
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#### Average Power Results

Channel	Frequency (MHz)	Ant A Power (dBm)	Ant B Power (dBm)	Total Power (dBm)
Low	5510	13.47	13.44	16.47
Mid	5550	14.94	14.94	17.95
High	5670	14.98	14.97	17.99
142	5710	14.98	14.89	17.95

### **8.37.4. OUTPUT POWER AND PSD**

#### **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.

Straddle channel power is measured using PXA spectrum analyzer, 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>Ant A</b>	<b>Ant 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>
5.41	5.17	5.29

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

<b>Ant A</b>	<b>Ant B</b>	<b>Correlated Chains</b>
<b>Antenna</b>	<b>Antenna</b>	<b>Directional</b>
<b>Gain</b>	<b>Gain</b>	<b>Gain</b>
<b>(dBi)</b>	<b>(dBi)</b>	<b>(dBi)</b>
5.41	5.17	8.30

**RESULTS**

<b>ID:</b>	38602	<b>Date:</b>	2/9/17
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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	5510	40.24	36.12	5.29	8.30	24.00	8.70
Mid	5550	40.08	36.30	5.29	8.30	24.00	8.70
High	5670	40.08	36.10	5.29	8.30	24.00	8.70

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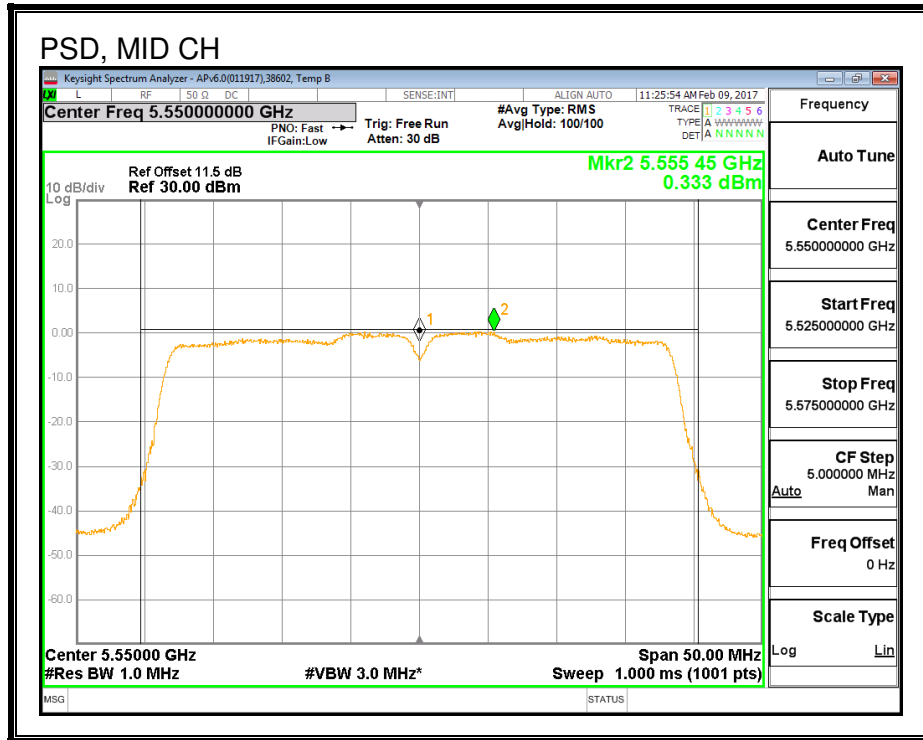
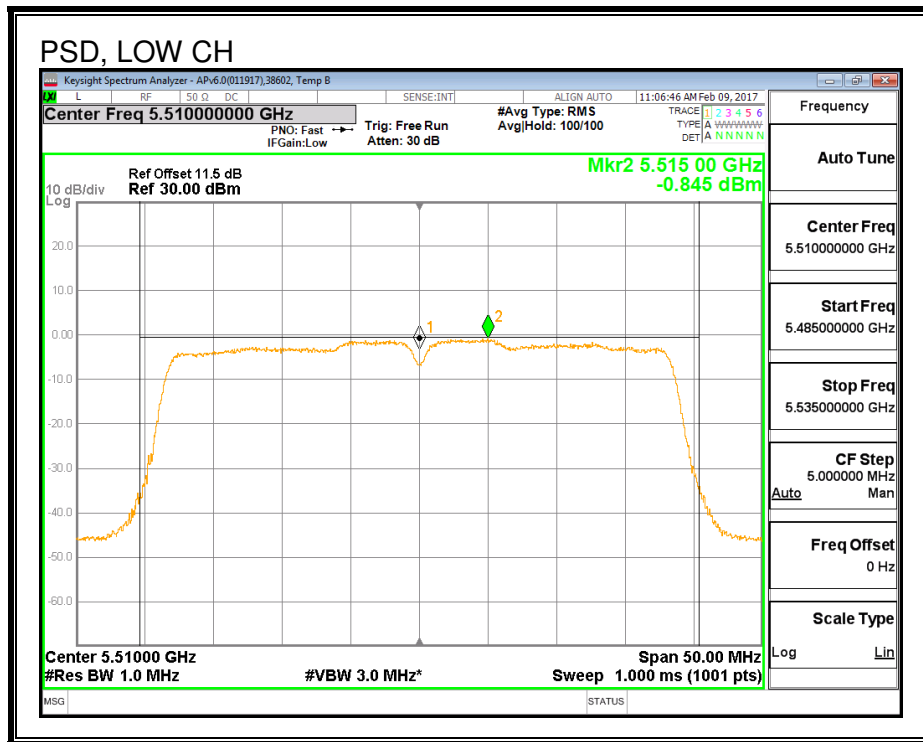
**Output Power Results**

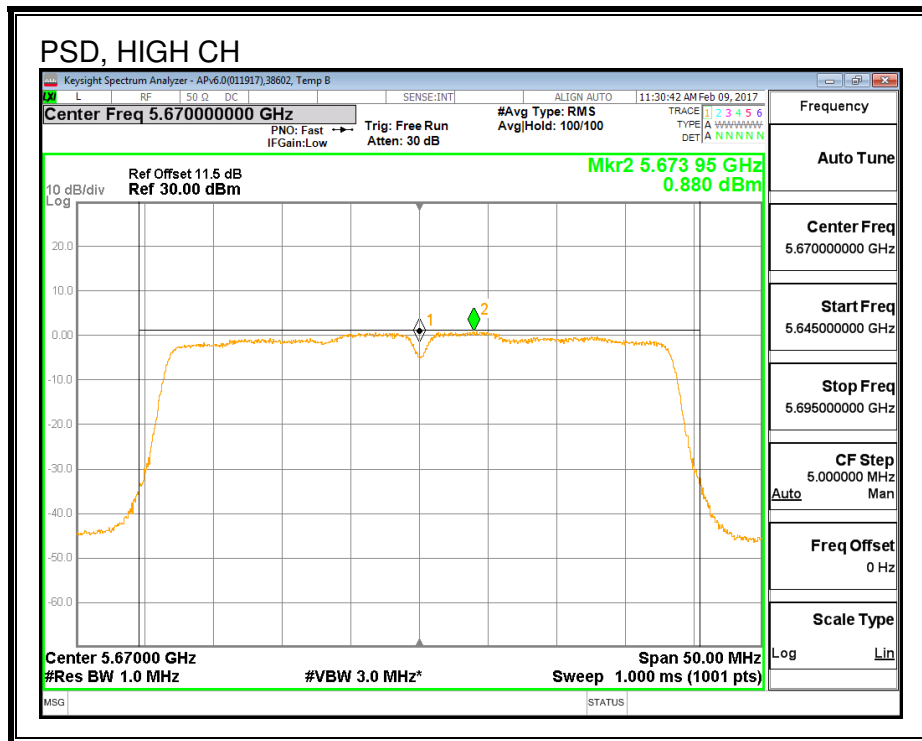
Channel	Frequency (MHz)	Ant A Meas Power (dBm)	Ant B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5510	13.47	13.44	16.47	24.00	-7.53
Mid	5550	14.94	14.94	17.95	24.00	-6.05
High	5670	14.98	14.97	17.99	24.00	-6.01

**PSD Results**

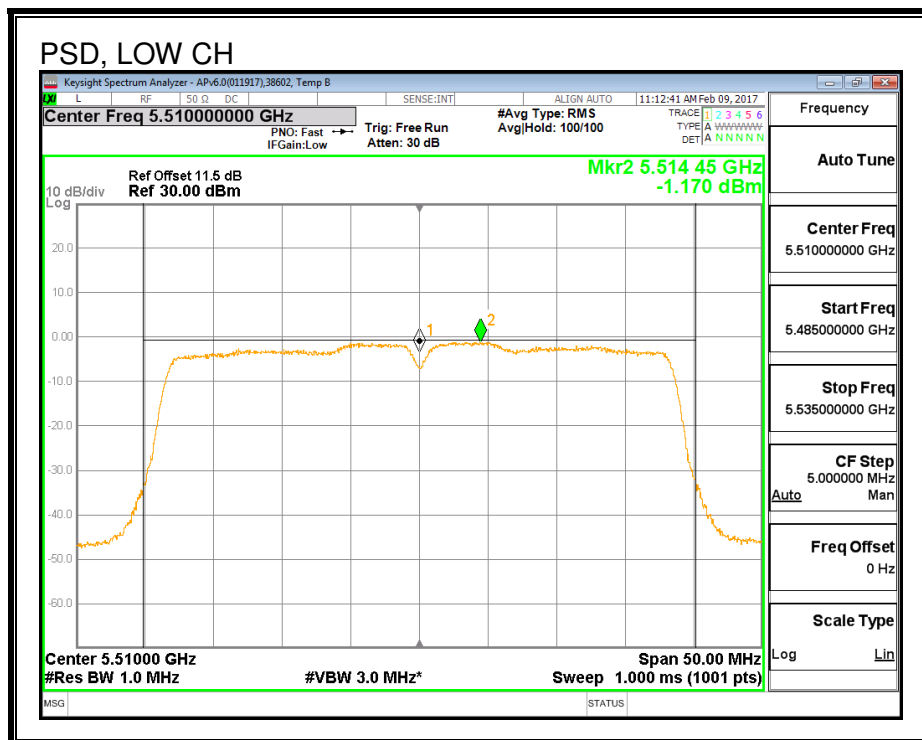
Channel	Frequency (MHz)	Ant A Meas PSD (dBm)	Ant B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5510	-0.85	-1.17	2.11	8.70	-6.59
Mid	5550	0.33	0.39	3.47	8.70	-5.23
High	5670	0.88	0.88	3.99	8.70	-4.71

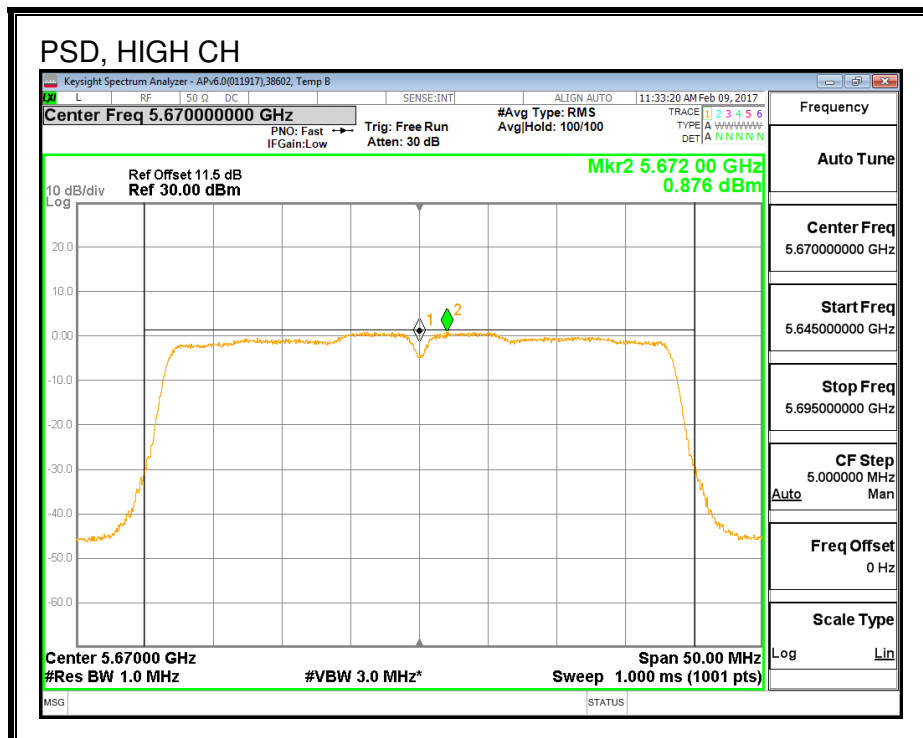
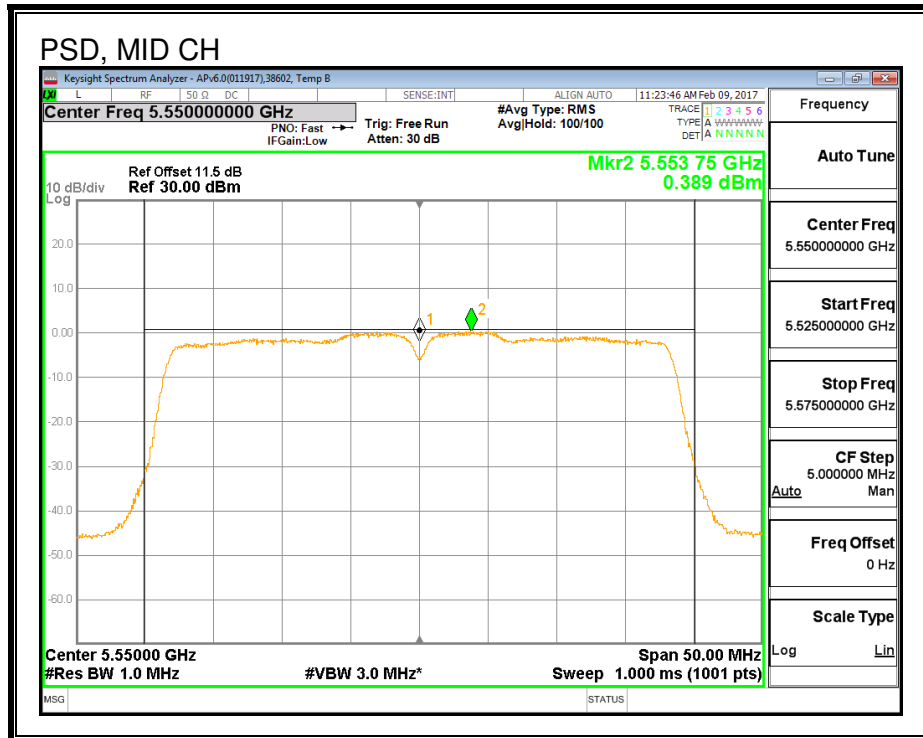
**PSD, ANTENNA A**





### PSD, ANTENNA B





**8.38. 802.11ac VHT40 2Tx (ANTENNA A + ANTENNA B) CDD STRADDLE  
 CHANNEL 142 RESULTS**

**8.38.1. 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	35.12	5.29	8.30	24.00	8.70

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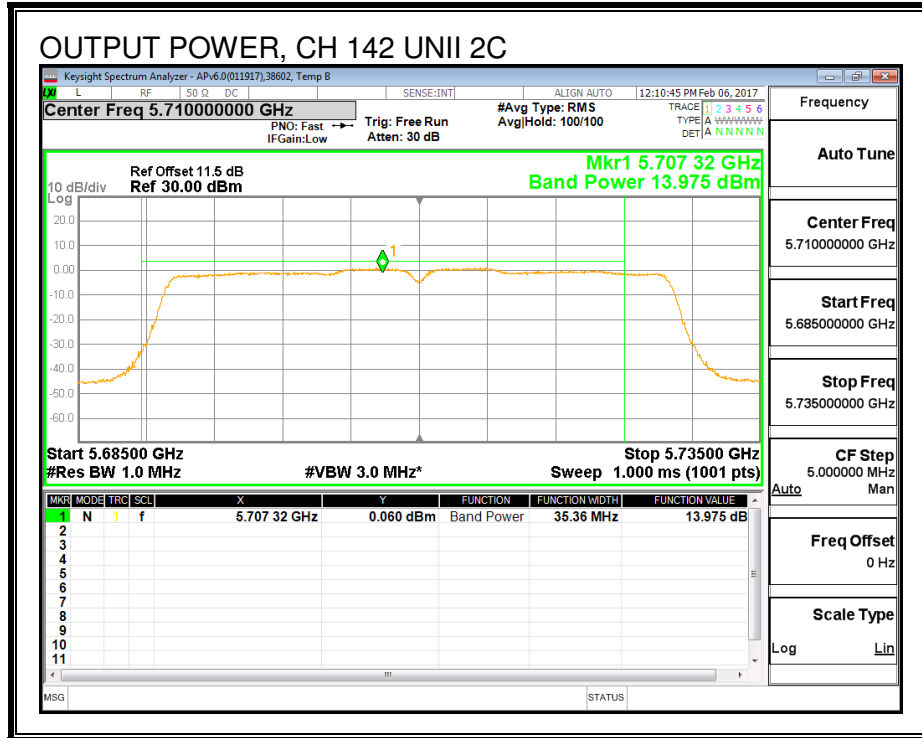
**Output Power Results**

Channel	Frequency (MHz)	Ant A Meas Power (dBm)	Ant B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
142	5710	13.98	13.78	16.99	24.00	-7.01

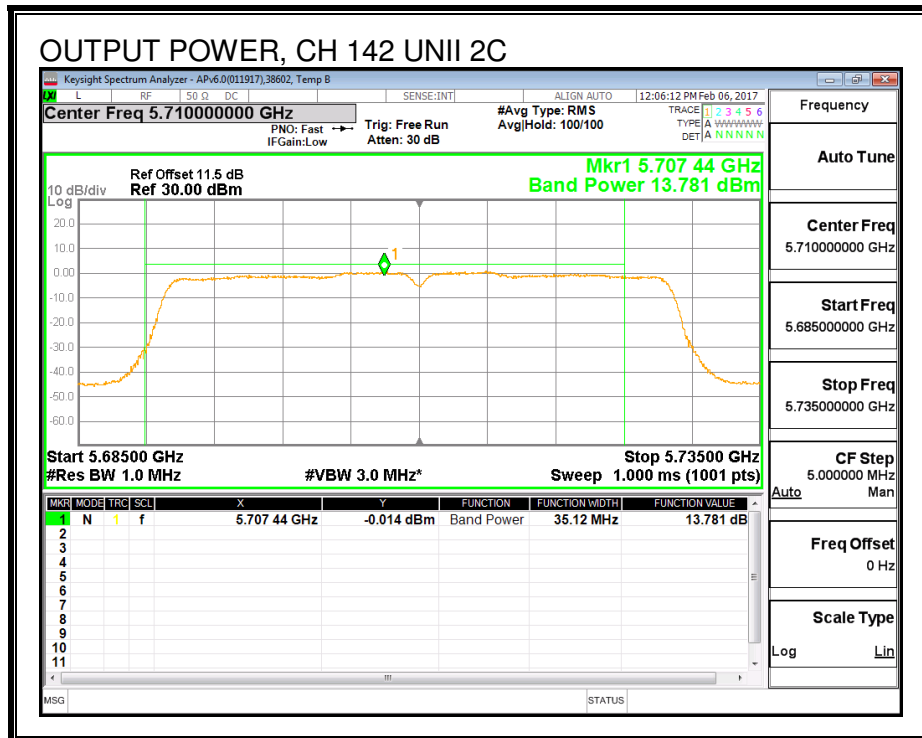
**PSD Results**

Channel	Frequency (MHz)	Ant A Meas PSD (dBm)	Ant B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
142	5710	0.89	0.68	3.90	8.70	-4.80

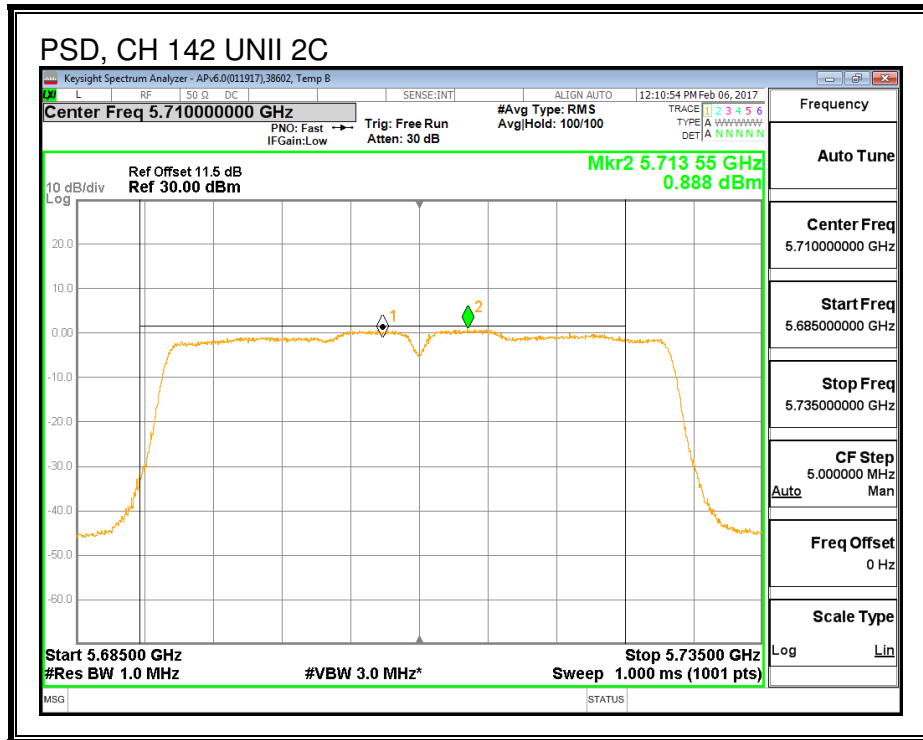
**OUTPUT POWER, ANTENNA A**



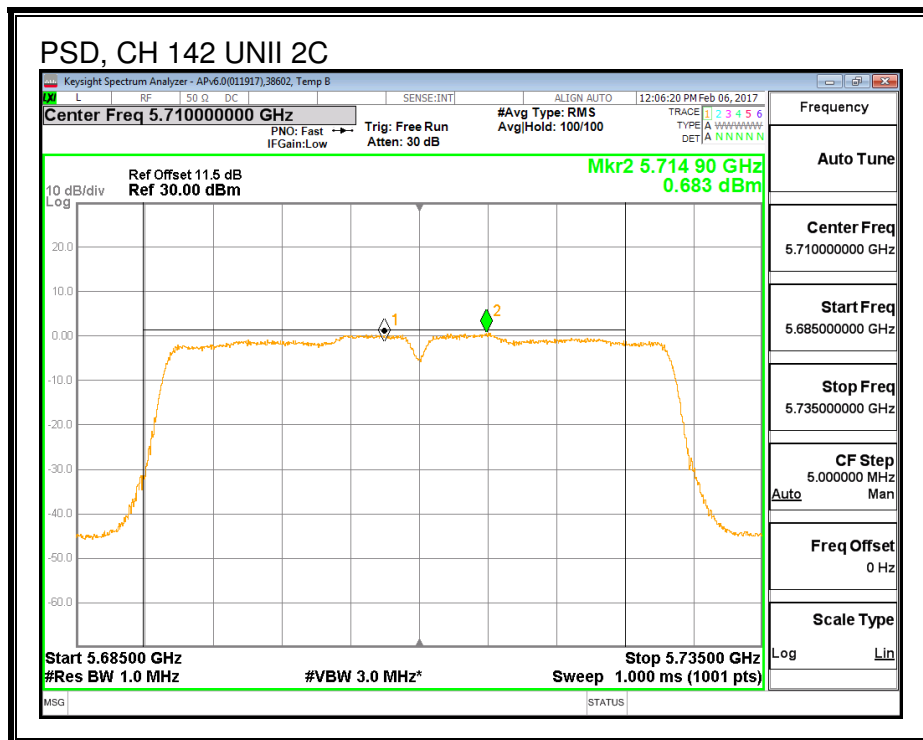
**OUTPUT POWER, ANTENNA B**



**PSD, ANTENNA A**



**PSD, ANTENNA B**



**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	5.12	26.00	7.27	10.00	28.73

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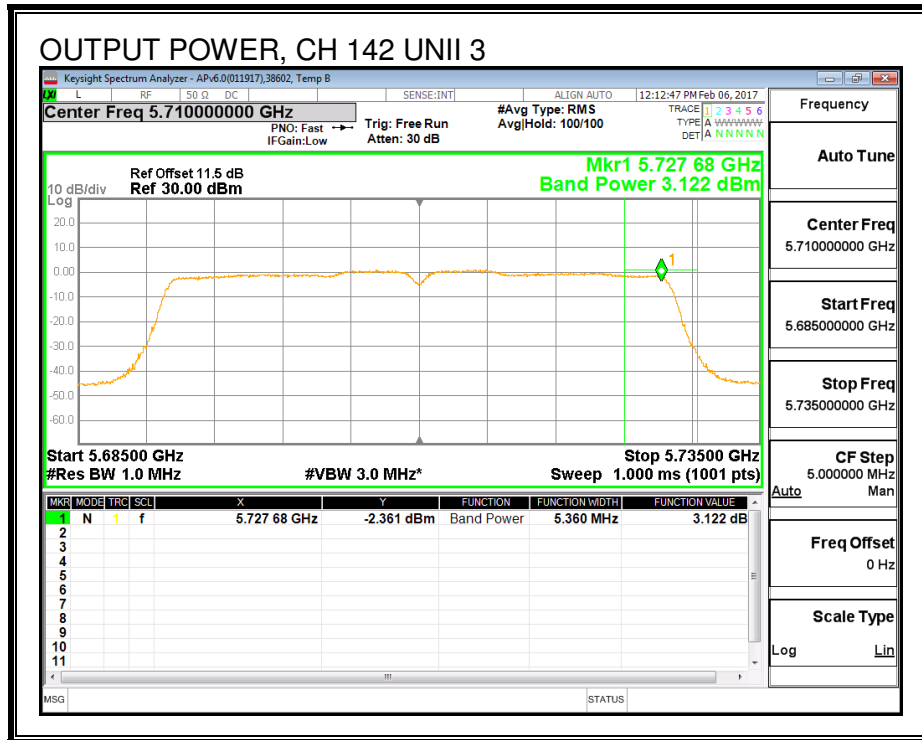
**Output Power Results**

Channel	Frequency (MHz)	Ant A Meas Power (dBm)	Ant B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
142	5710	3.12	3.01	6.18	10.00	-3.82

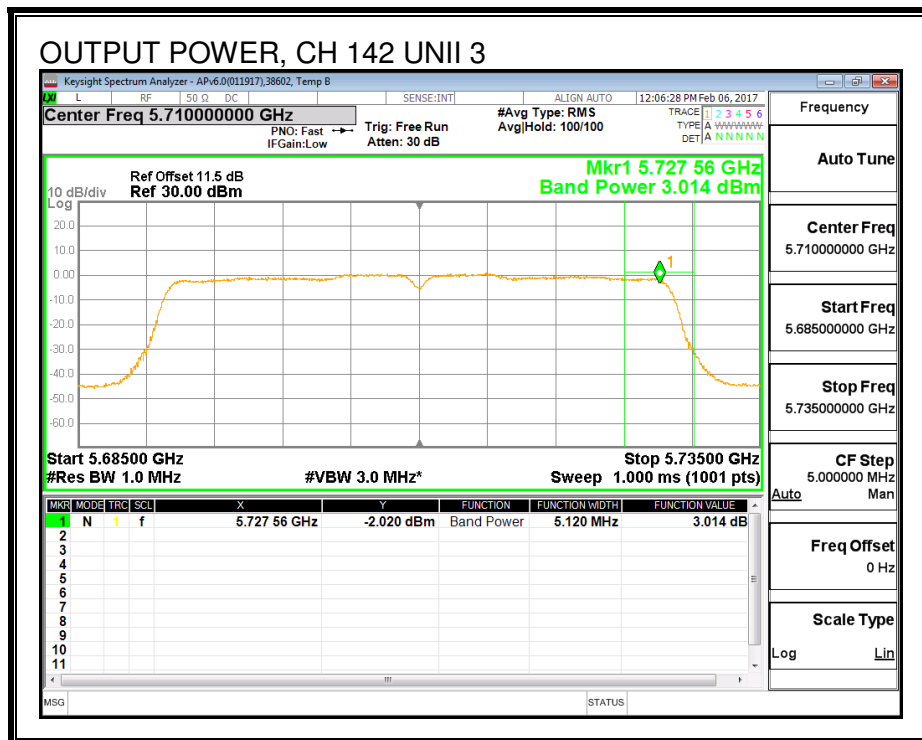
**PSD Results**

Channel	Frequency (MHz)	Ant A Meas PSD (dBm)	Ant B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
142	5710	-4.27	-3.89	-0.97	28.73	-29.70

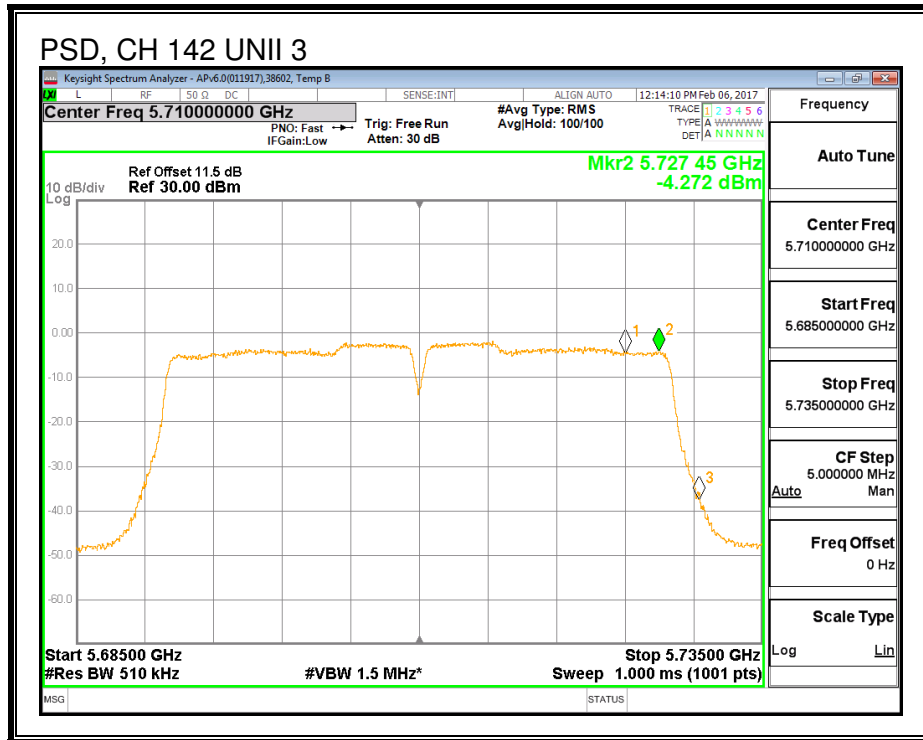
**OUTPUT POWER, ANTENNA A**



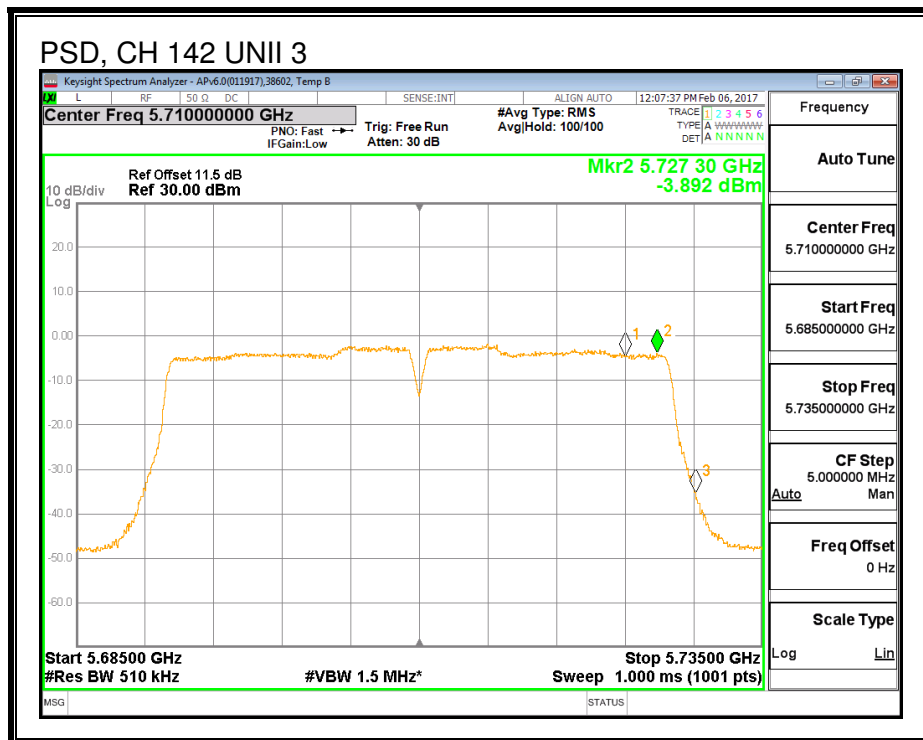
**OUTPUT POWER, ANTENNA B**



**PSD, ANTENNA A**



**PSD, ANTENNA B**



**8.38.2. 6 dB BBANDWIDTH**

**LIMITS**

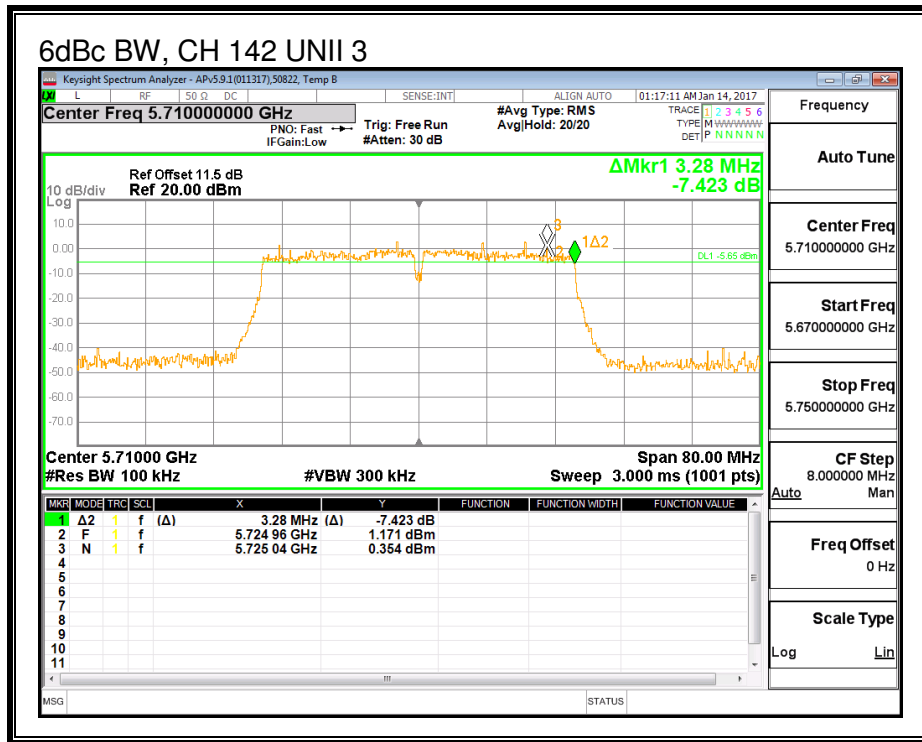
FCC §15.407 (e)

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

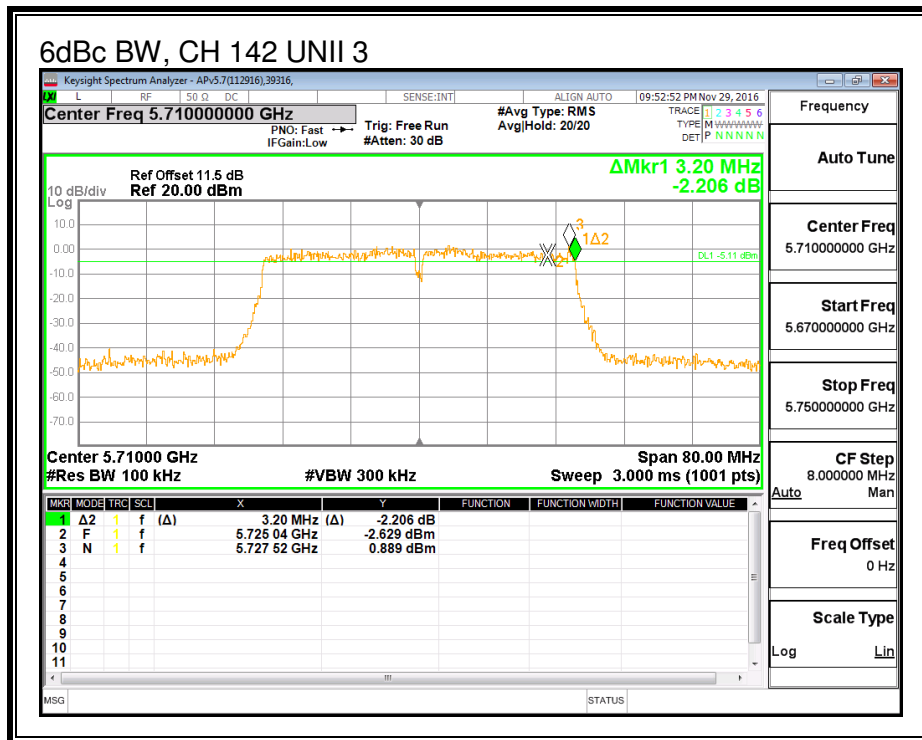
**RESULTS**

Channel	Frequency (MHz)	6 dB BW Ant A (MHz)	6 dB BW Ant B (MHz)
142	5710	3.280	3.200

**ANTENNA A**



**ANTENNA B**



**8.39. 802.11n HT40 2Tx (ANTENNA A + ANTENNA B) STBC MODE IN THE  
5.6 GHz BAND**

**Noted:** Covered by 802.11n HT40 2Tx (ANTENNA A + ANTENNA B) CDD MODE IN THE 5.6 GHz  
BAND

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**8.40. 802.11ac VHT40 2Tx (ANTENNA A + ANTENNA B) STBC STRADDLE  
CHANNEL 142 RESULTS**

**Noted:** Covered by 802.11ac V HT40 2Tx (ANTENNA A + ANTENNA B) CDD STRADDLE CHANNEL  
142 RESULTS in 5.6GHz band