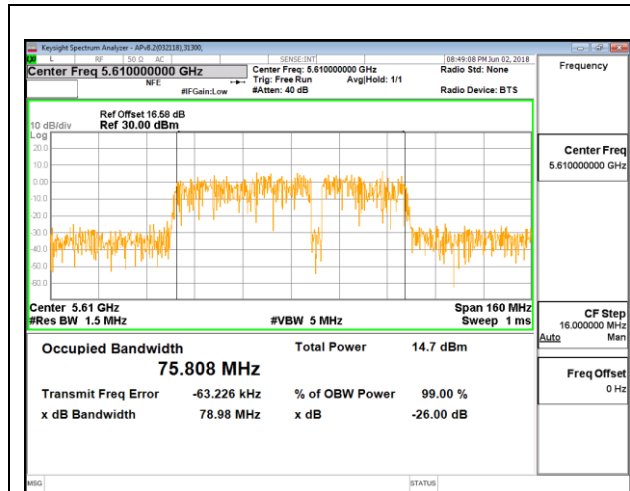
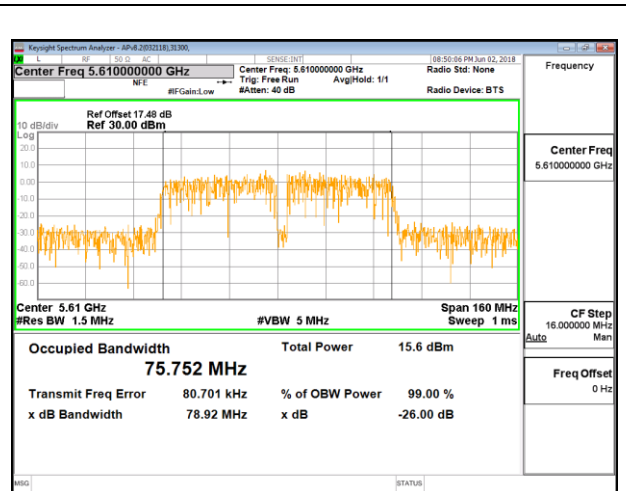


## HIGH CHANNEL

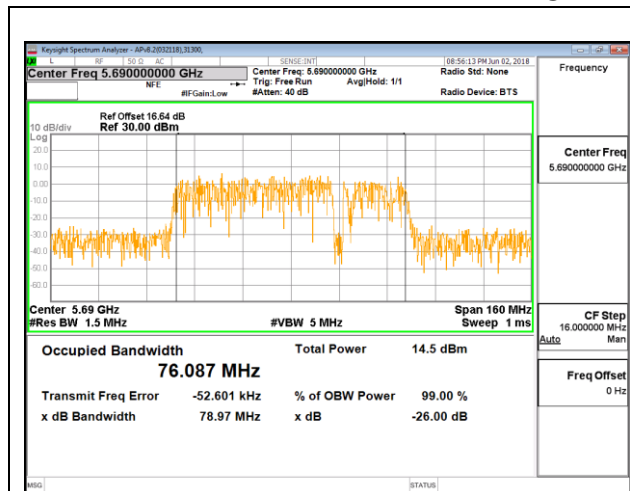


HIGH CHANNEL ANTENNA 4

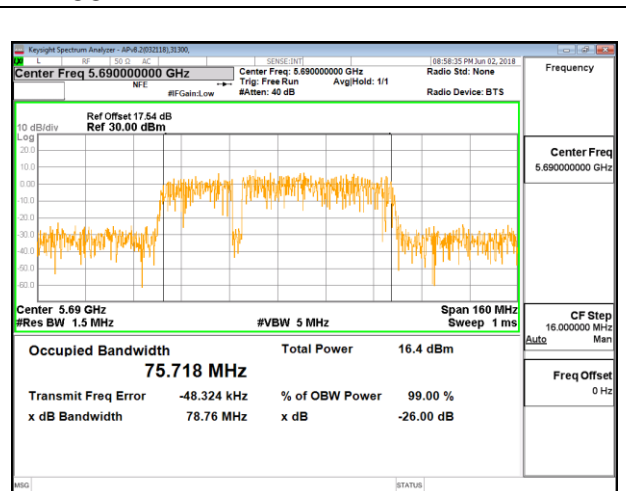


HIGH CHANNEL ANTENNA 5

## CHANNEL 138



CHANNEL 138 ANTENNA 4

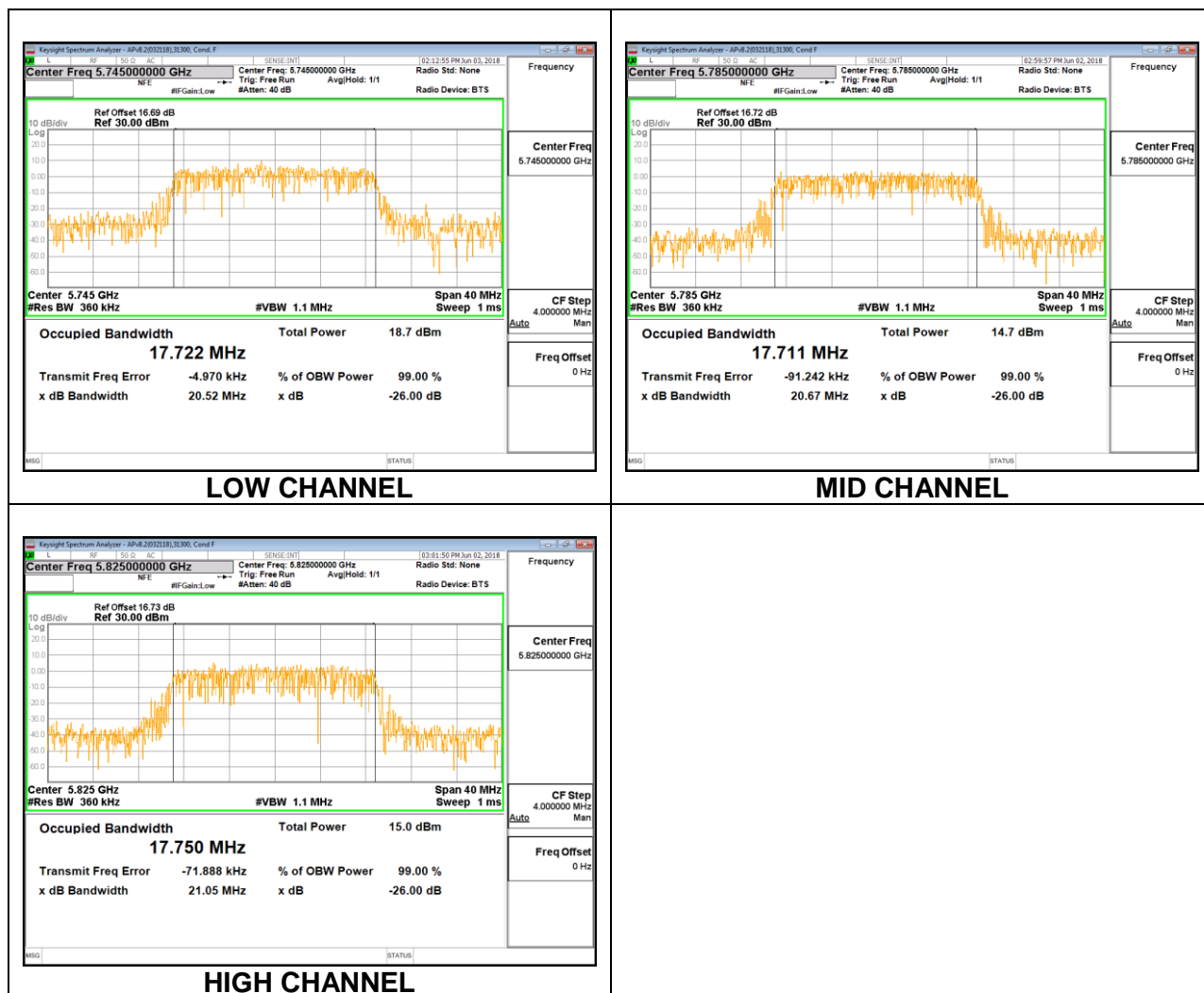


CHANNEL 138 ANTENNA 5

### 8.3.10. 802.11n HT20 MODE IN THE 5.8 GHz BAND

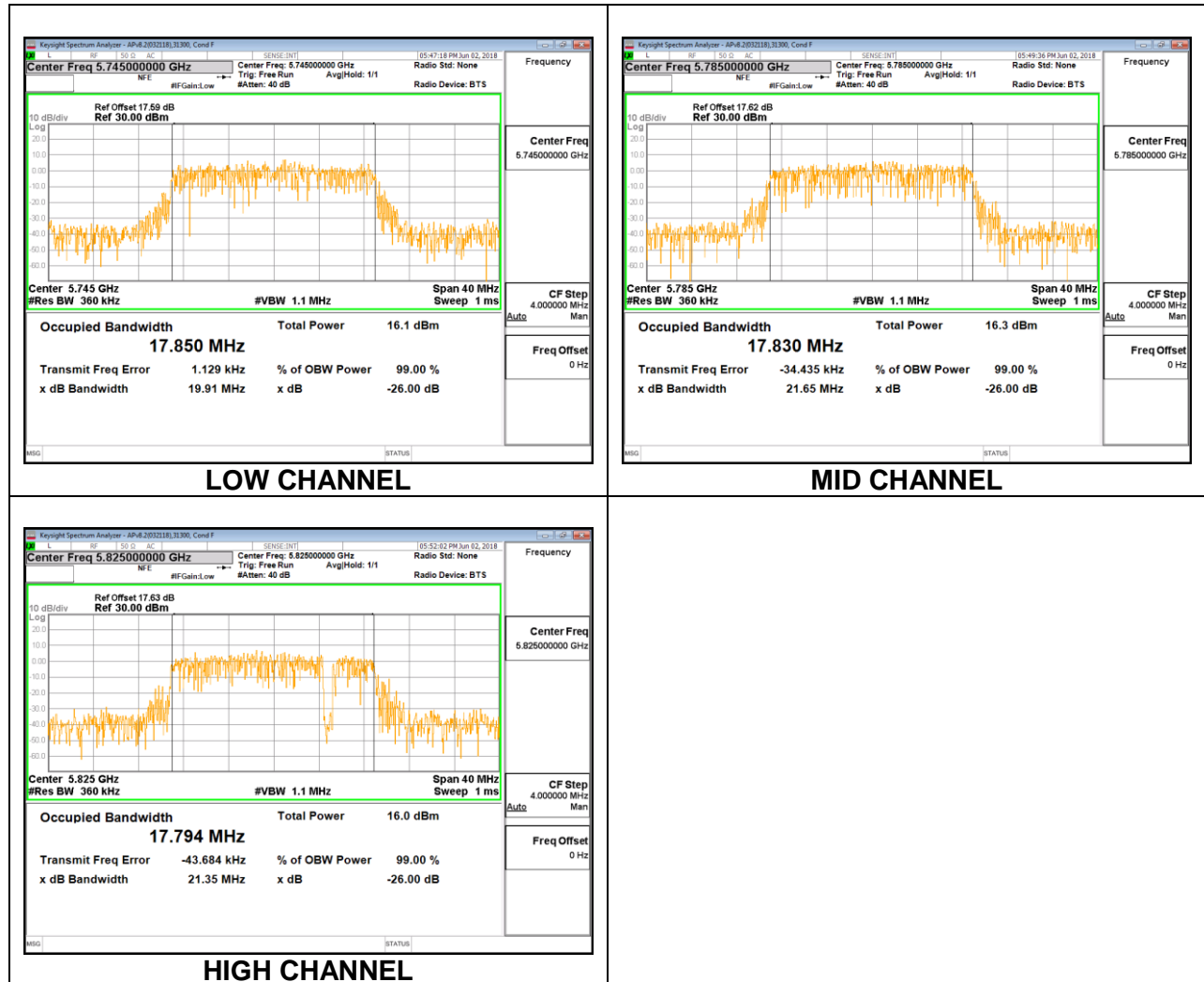
#### 1TX Antenna 4 MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5745	17.7220
Mid	5785	17.7110
High	5825	17.7500



**1TX Antenna 5 MODE**

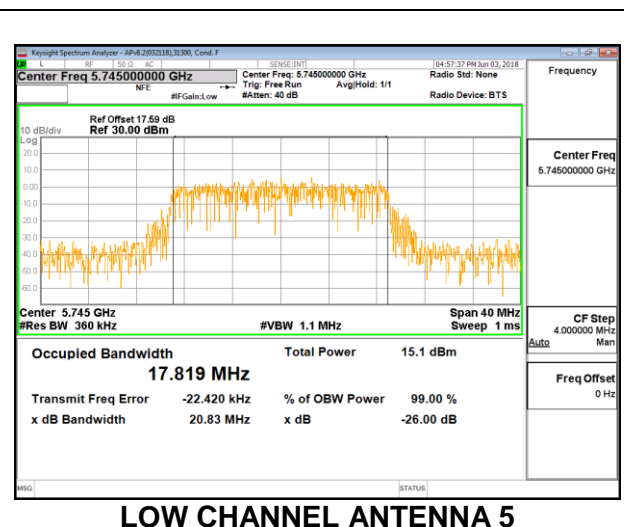
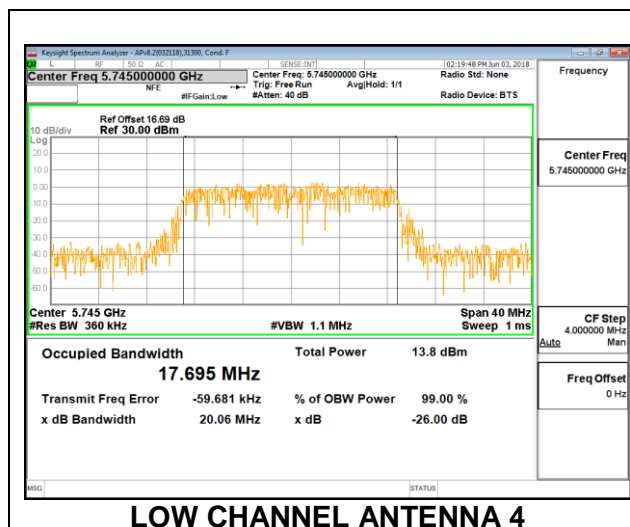
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5745	17.8500
Mid	5785	17.8300
High	5825	17.7940



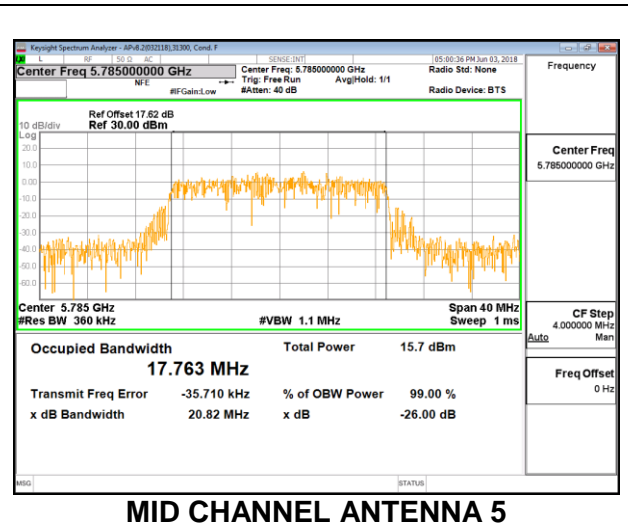
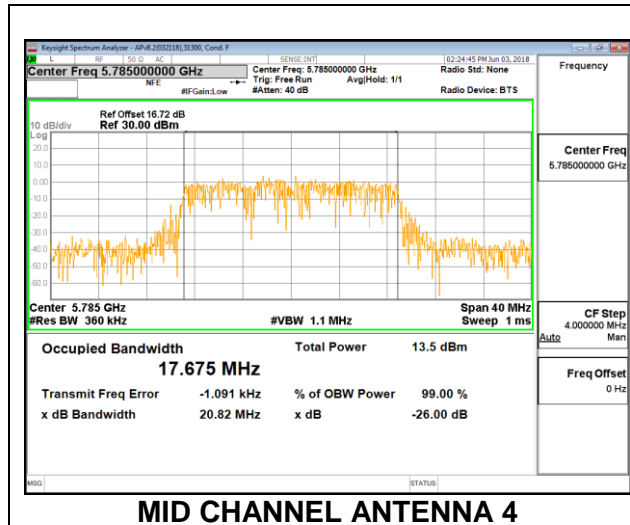
**2TX Antenna 4 + Antenna 5 CDD MODE**

Channel	Frequency (MHz)	99% Bandwidth Antenna 4 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5745	17.6950	17.8190
Mid	5785	17.6750	17.7630
High	5825	17.6260	17.8000

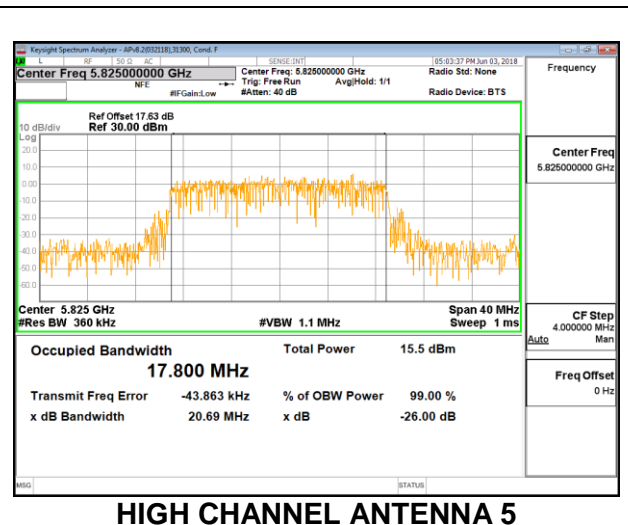
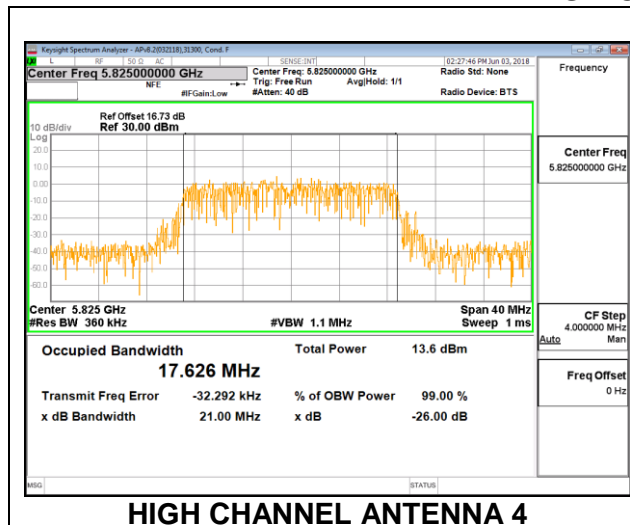
**LOW CHANNEL**



## MID CHANNEL



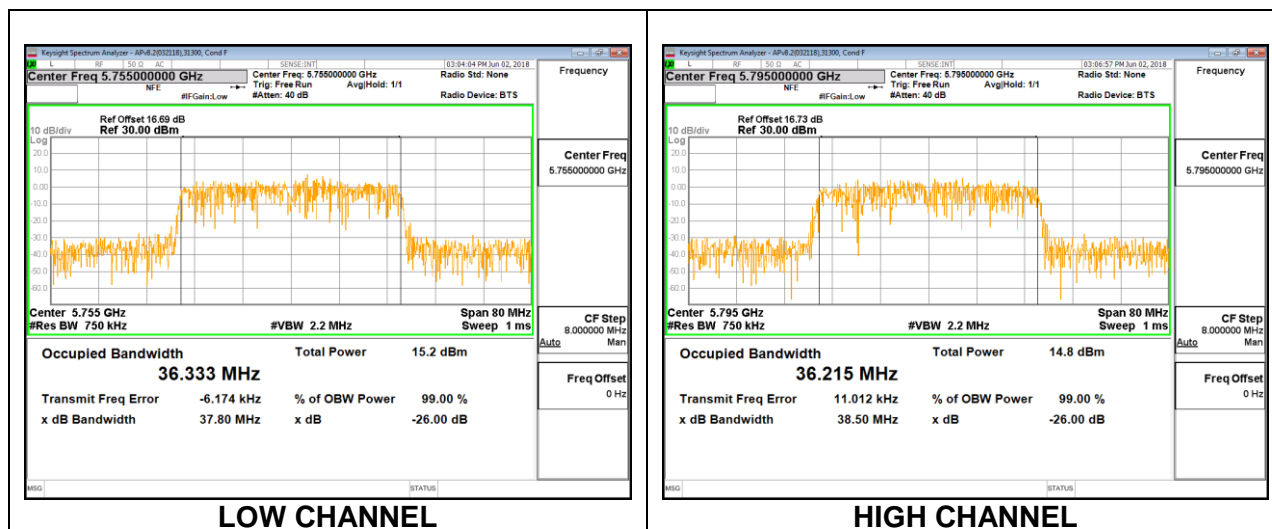
## HIGH CHANNEL



### 8.3.11. 802.11n HT40 MODE IN THE 5.8 GHz BAND

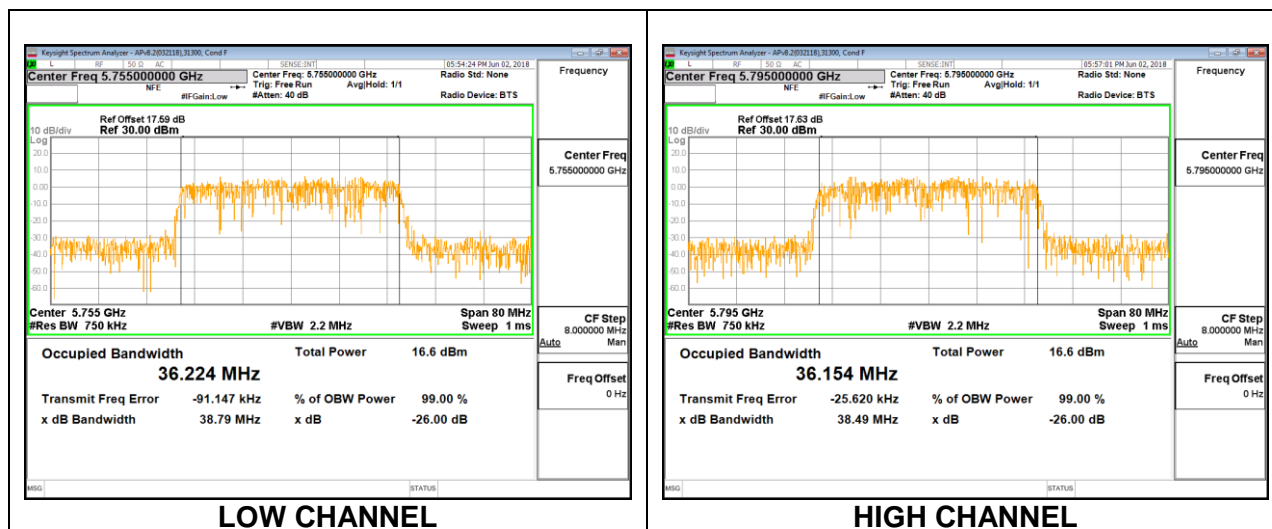
#### 1TX Antenna 4 MODE

Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Low	5755	36.3330
High	5795	36.2150



**1TX Antenna 5 MODE**

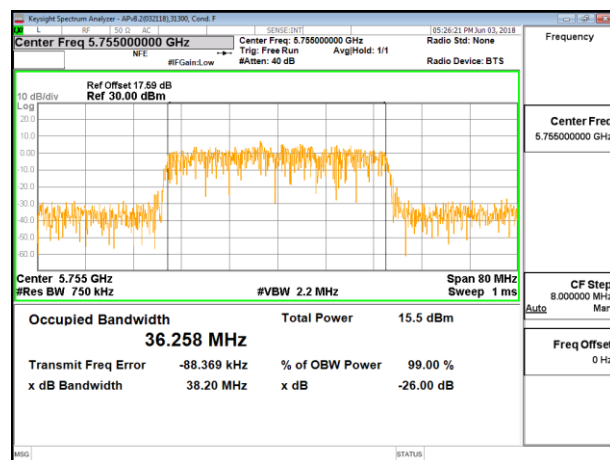
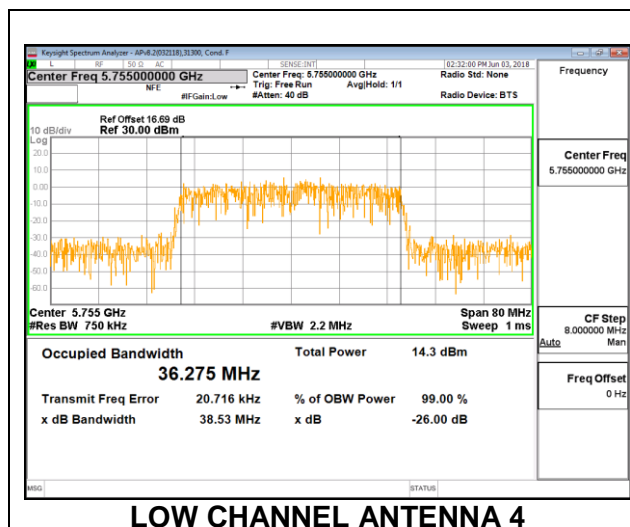
Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Low	5755	36.2240
High	5795	36.1540



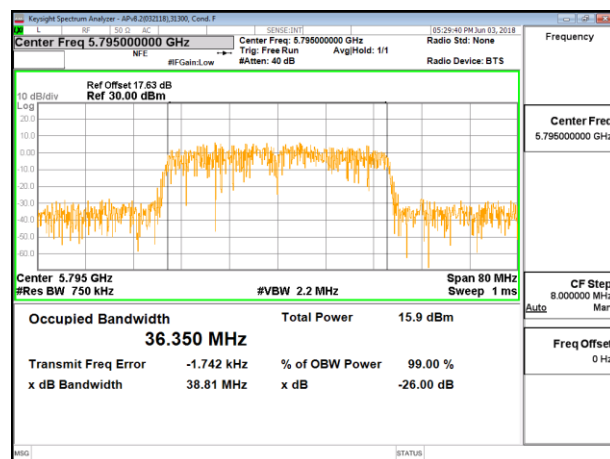
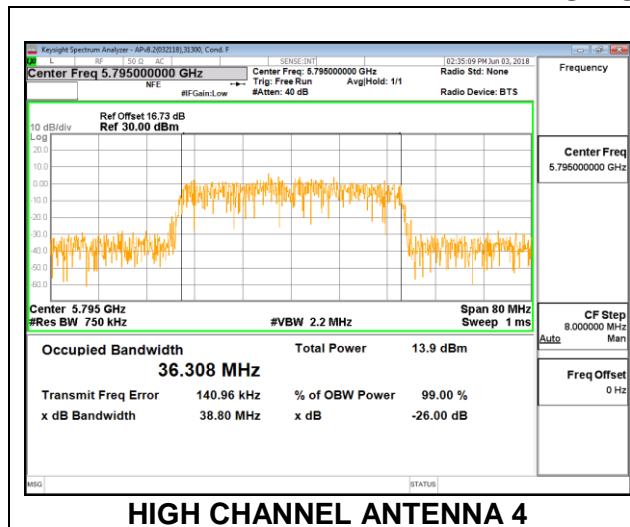
## 2TX Antenna 4 + Antenna 5 CDD MODE

Channel	Frequency	99% Bandwidth Antenna 4 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5755	36.2750	36.2580
High	5795	36.3080	36.3500

### LOW CHANNEL



### HIGH CHANNEL

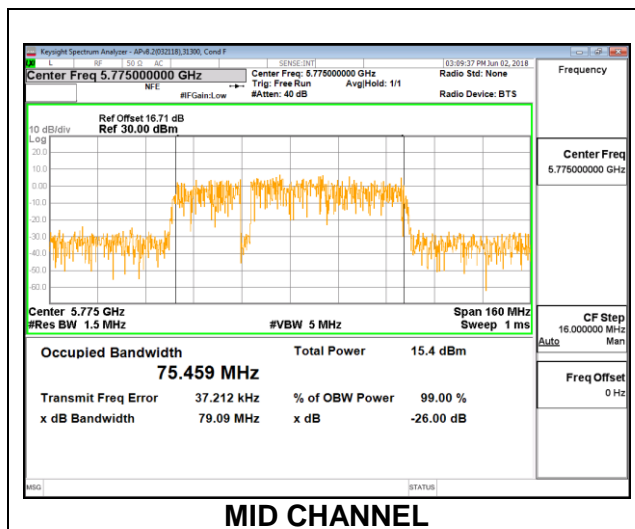




### 8.3.12. 802.11ac VHT80 MODE IN THE 5.8 GHz BAND

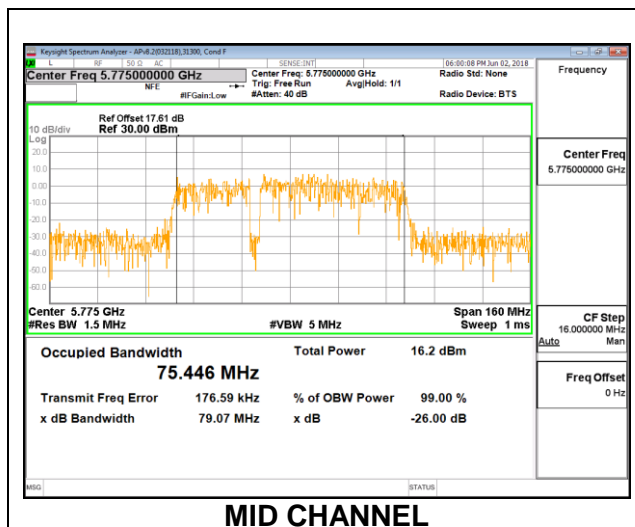
#### 1TX Antenna 4 MODE

Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Mid	5775	75.4590



**1TX Antenna 5 MODE**

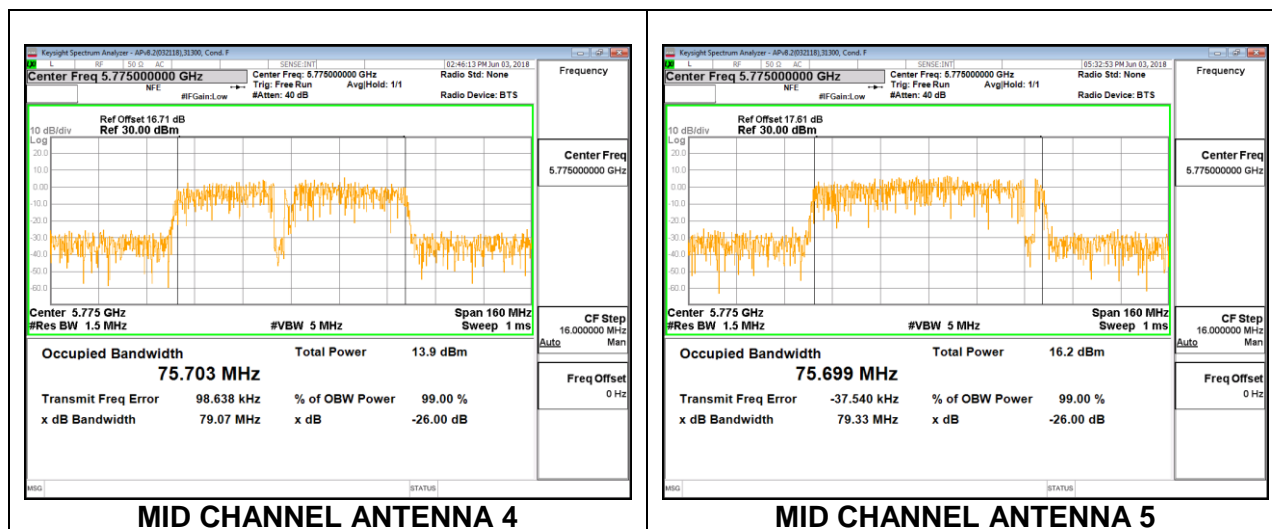
Channel	Frequency	99% Bandwidth
	(MHz)	(MHz)
Mid	5775	75.4460



**2TX Antenna 4 + Antenna 5 CDD MODE**

Channel	Frequency (MHz)	99% Bandwidth Antenna 4 (MHz)	99% Bandwidth Antenna 5 (MHz)
Mid	5775	75.7030	75.6990

**MID CHANNEL**



## 8.4. 6 dB BANDWIDTH

### LIMITS

FCC §15.407 (e)

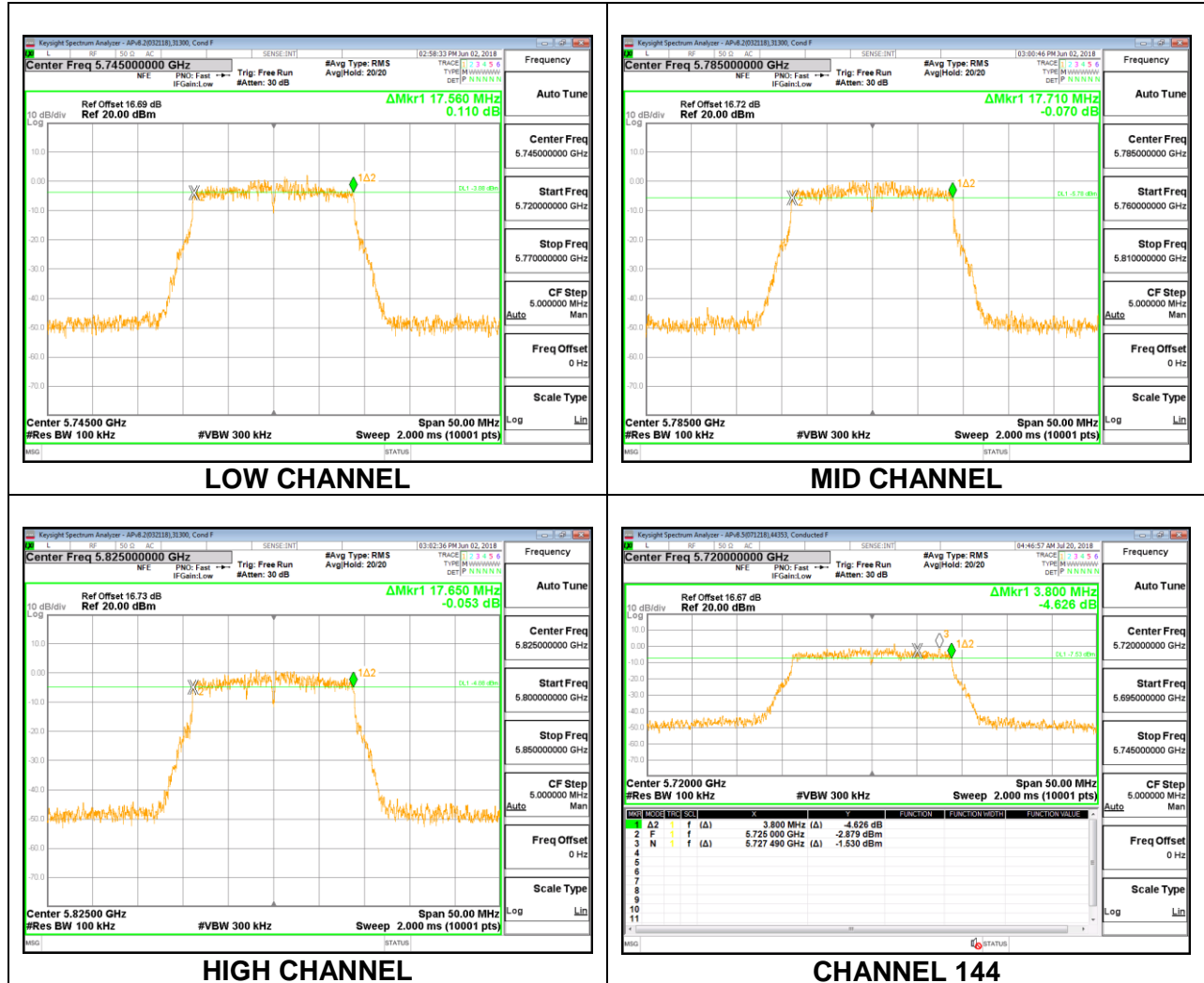
The minimum 6 dB bandwidth shall be at least 500 kHz.

### RESULTS

# 8.4.1. 802.11n HT20 MODE IN THE 5.8 GHz BAND

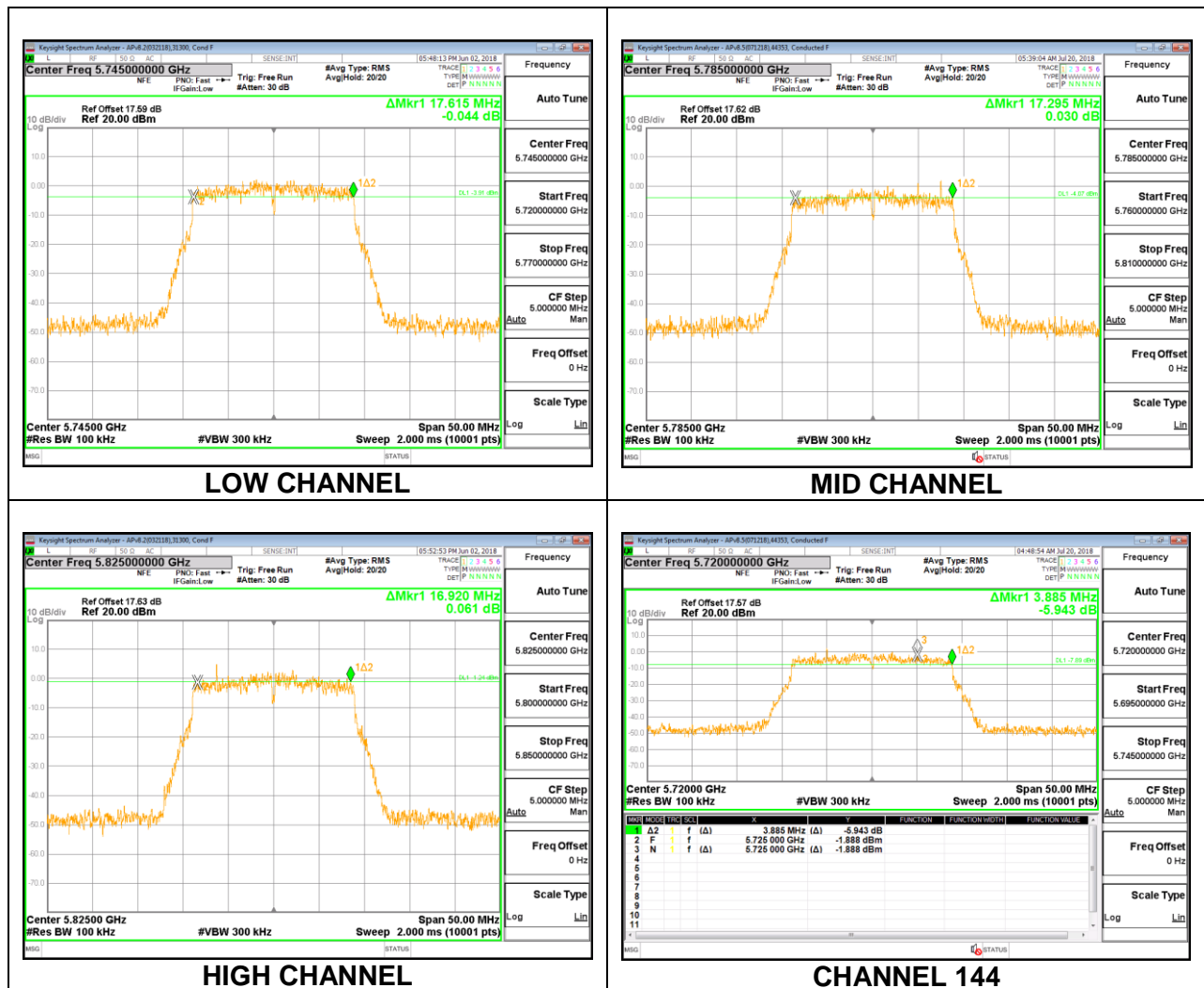
## 1TX Antenna 4 MODE

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5745	17.560	0.5
Mid	5785	17.710	0.5
High	5825	17.650	0.5
144	5720	3.800	0.5



**1TX Antenna 5 MODE**

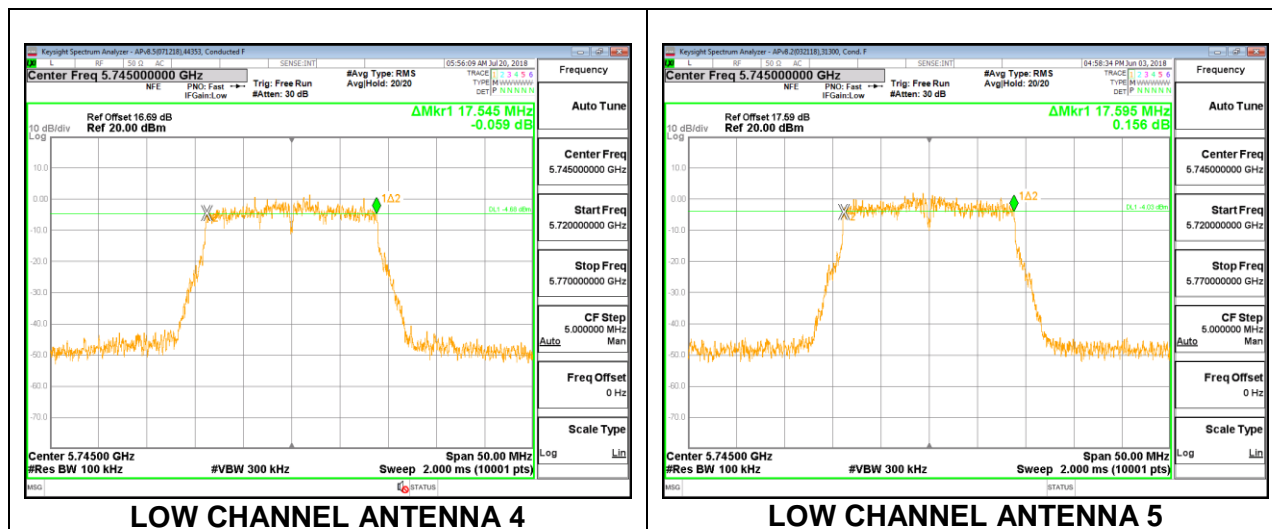
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5745	17.615	0.5
Mid	5785	17.295	0.5
High	5825	16.920	0.5
144	5720	3.885	0.5



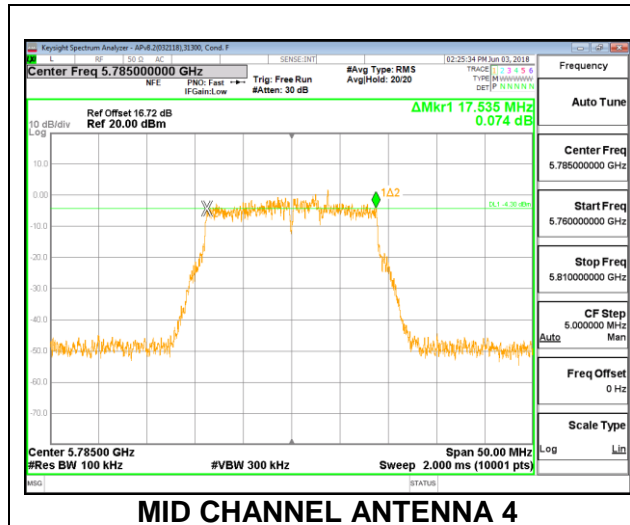
## 2TX Antenna 4 + Antenna 5 CDD MODE

Channel	Frequency (MHz)	6 dB BW Antenna 4 (MHz)	6 dB BW Antenna 5 (MHz)	Minimum Limit (MHz)
Low	5745	17.545	17.595	0.5
Mid	5785	17.535	17.290	0.5
High	5825	17.605	17.335	0.5
144	5720	3.885	3.810	0.5

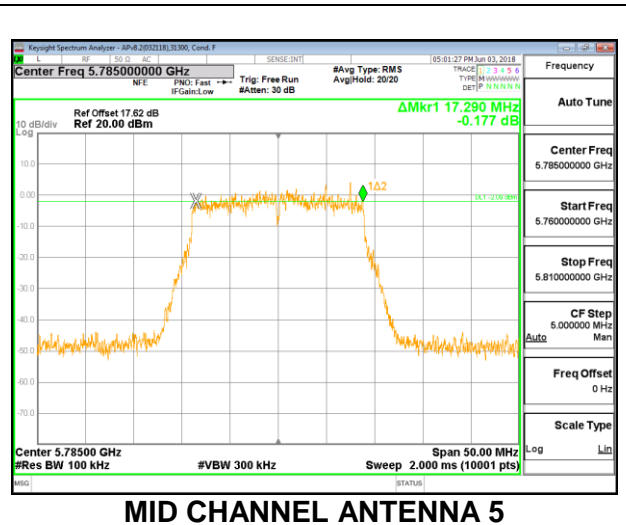
## LOW CHANNEL



## MID CHANNEL

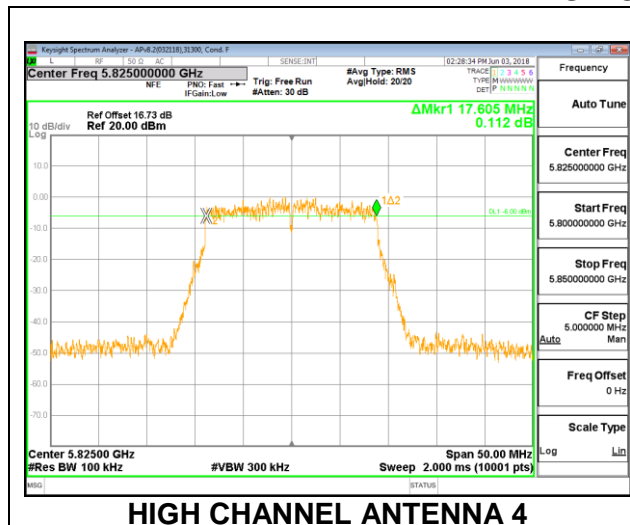


MID CHANNEL ANTENNA 4

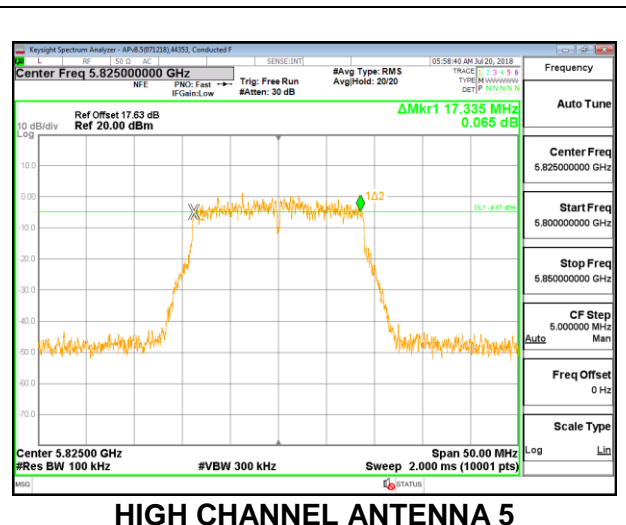


MID CHANNEL ANTENNA 5

## HIGH CHANNEL

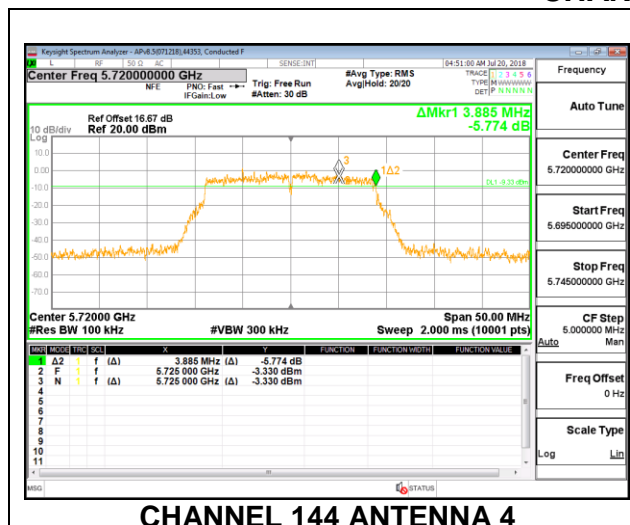


HIGH CHANNEL ANTENNA 4

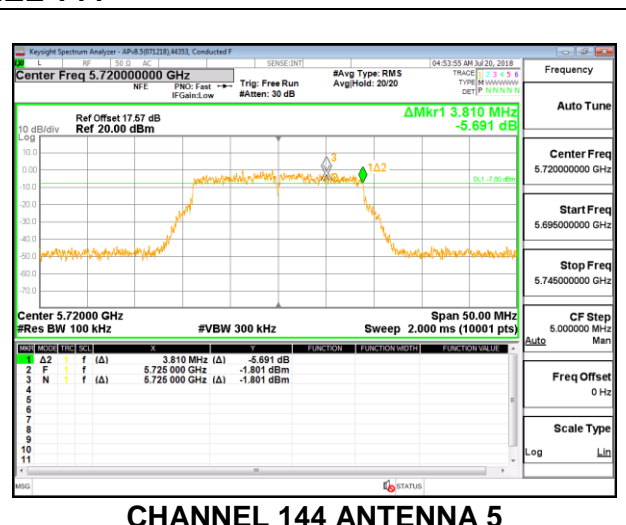


HIGH CHANNEL ANTENNA 5

## CHANNEL 144



CHANNEL 144 ANTENNA 4



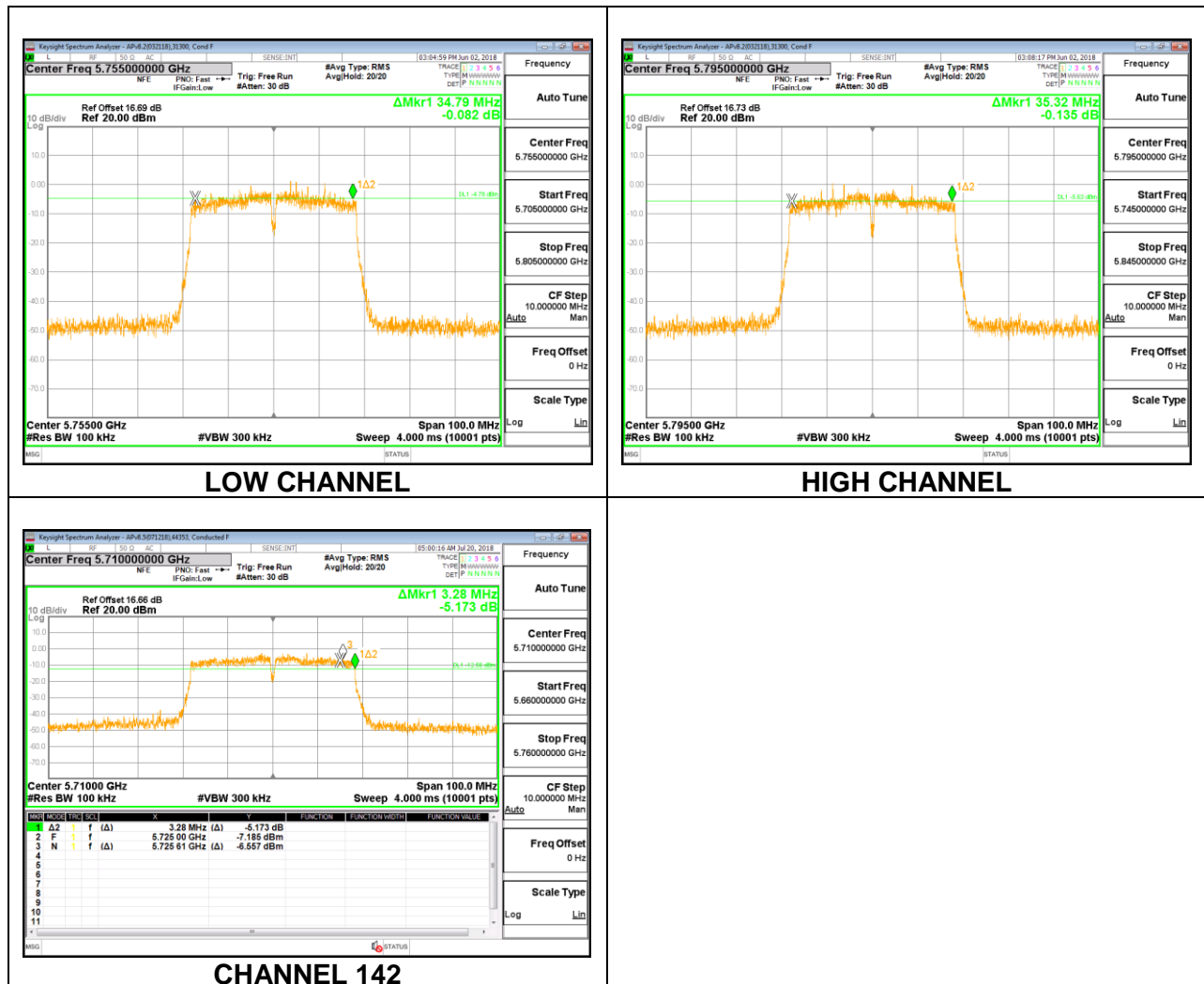
CHANNEL 144 ANTENNA 5



## 8.4.2. 802.11n HT40 MODE IN THE 5.8 GHz BAND

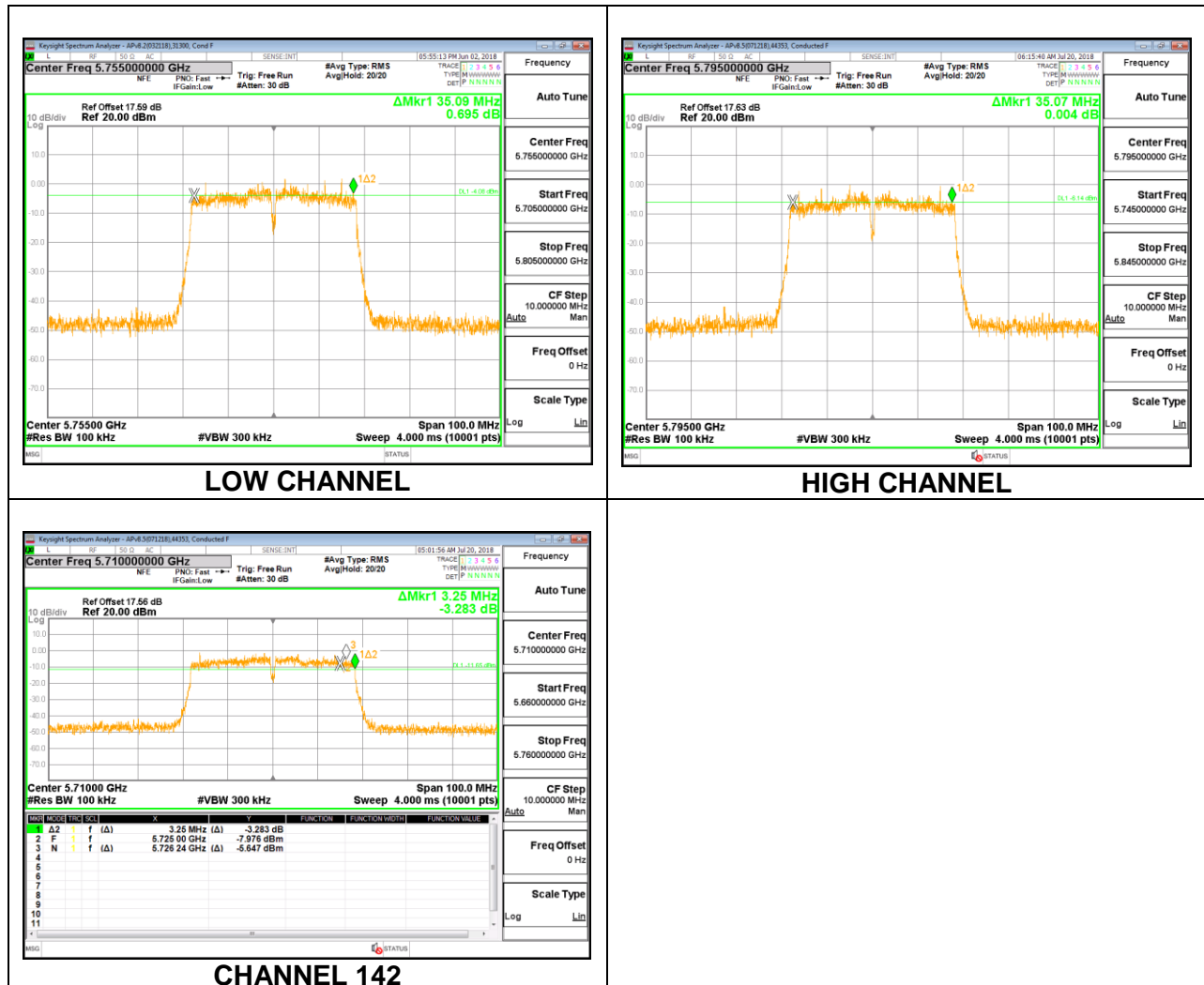
### 1TX Antenna 4 MODE

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5755	34.790	0.5
High	5795	35.320	0.5
142	5710	3.280	0.5



**1TX Antenna 5 MODE**

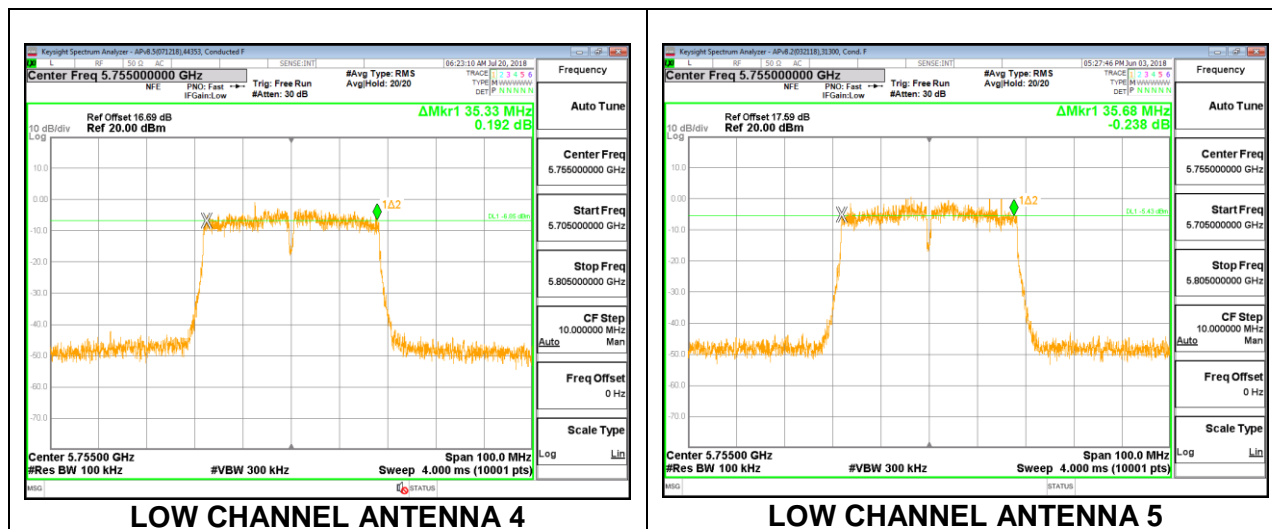
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5755	35.090	0.5
High	5795	35.070	0.5
142	5710	3.250	0.5



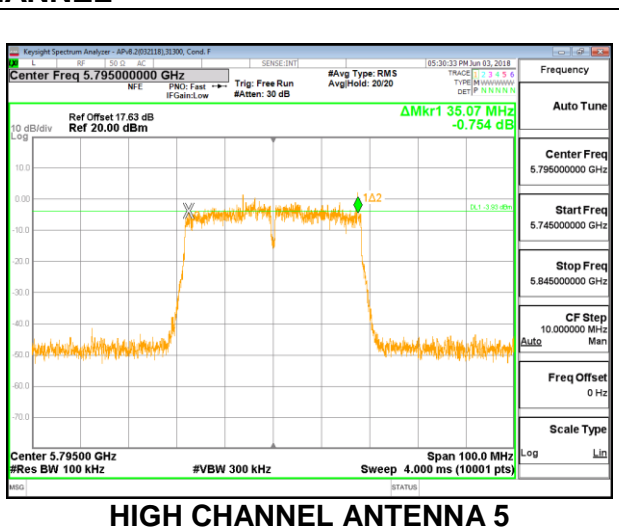
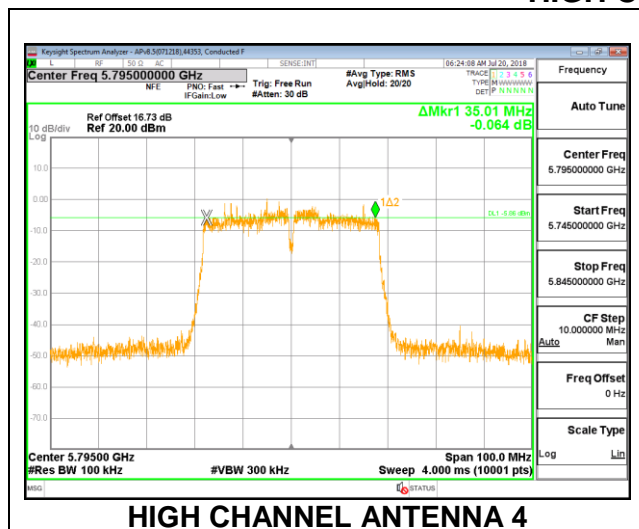
**2TX Antenna 4 + Antenna 5 CDD MODE**

Channel	Frequency (MHz)	6 dB BW Antenna 4 (MHz)	6 dB BW Antenna 5 (MHz)	Minimum Limit (MHz)
Low	5755	35.330	35.680	0.5
High	5795	35.010	35.070	0.5
142	5710	3.260	3.260	0.5

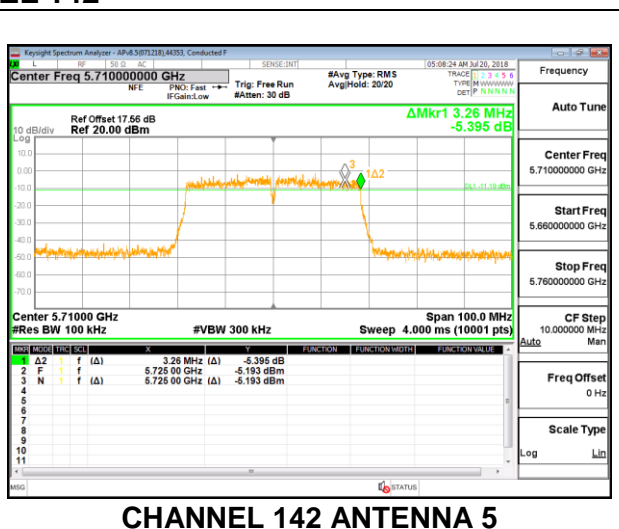
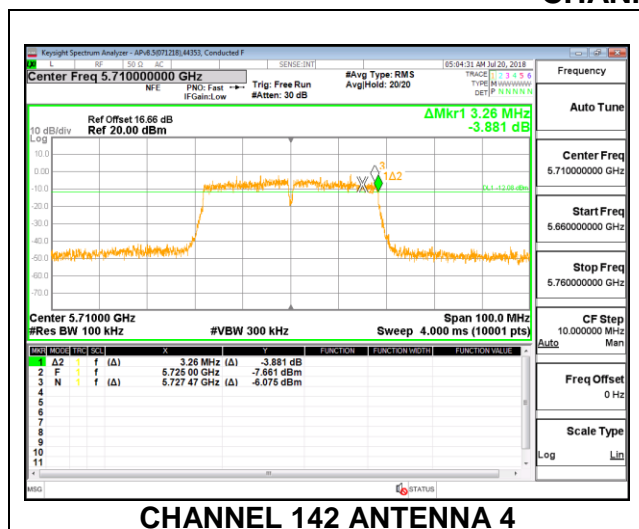
**LOW CHANNEL**



## HIGH CHANNEL



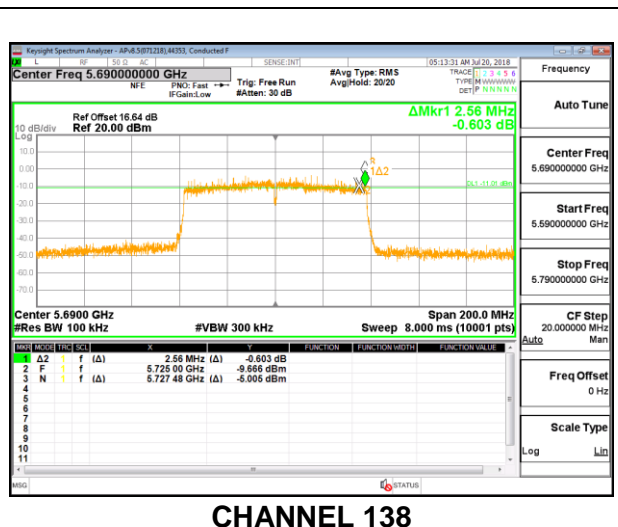
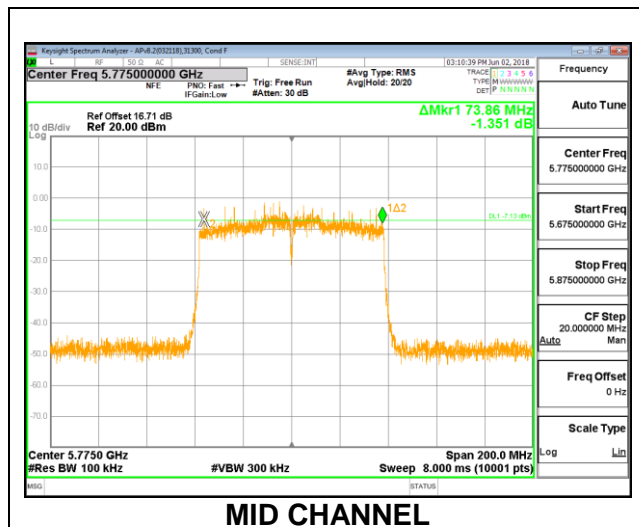
## CHANNEL 142



### 8.4.3. 802.11ac VHT80 MODE IN THE 5.8 GHz BAND

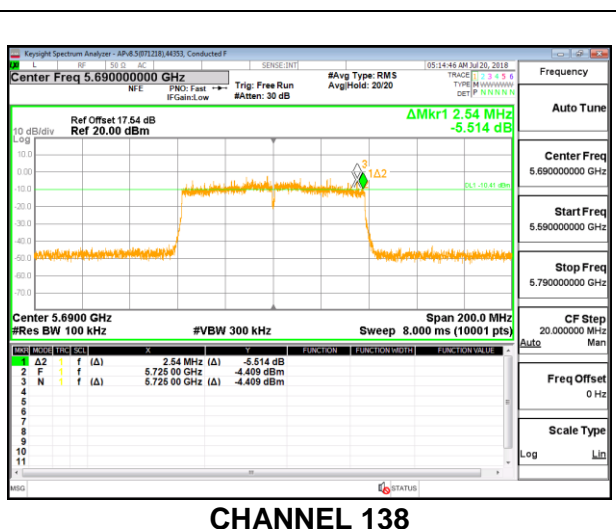
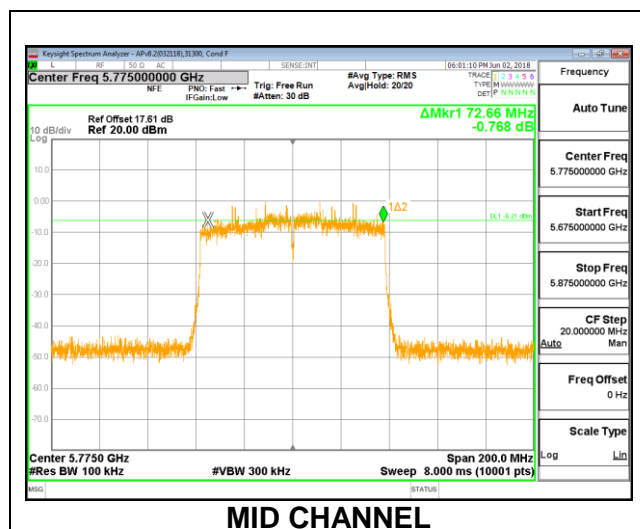
#### 1TX Antenna 4 MODE

Channel	Frequency	6 dB Bandwidth	Minimum Limit
	(MHz)	(MHz)	(MHz)
Mid	5775	73.860	0.5
138	5690	2.560	0.5



**1TX Antenna 5 MODE**

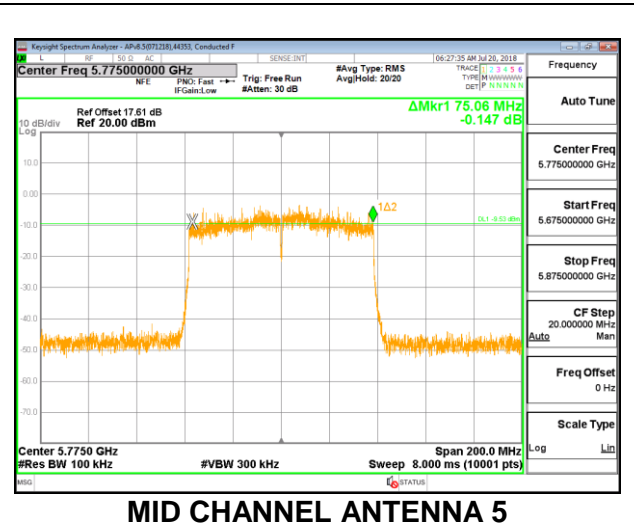
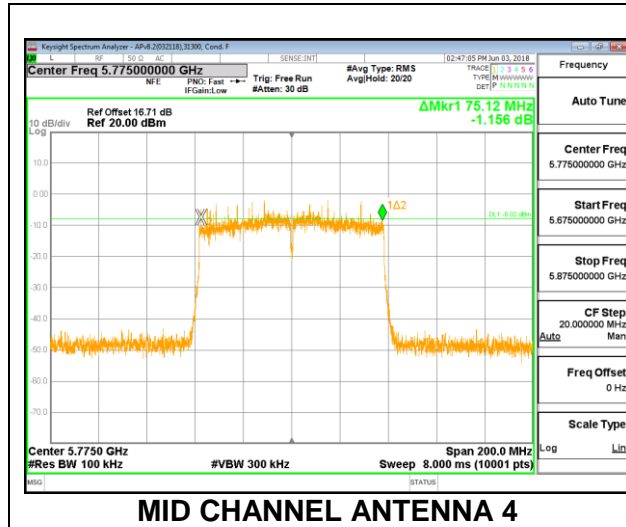
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Mid	5775	72.660	0.5
138	5690	2.540	0.5



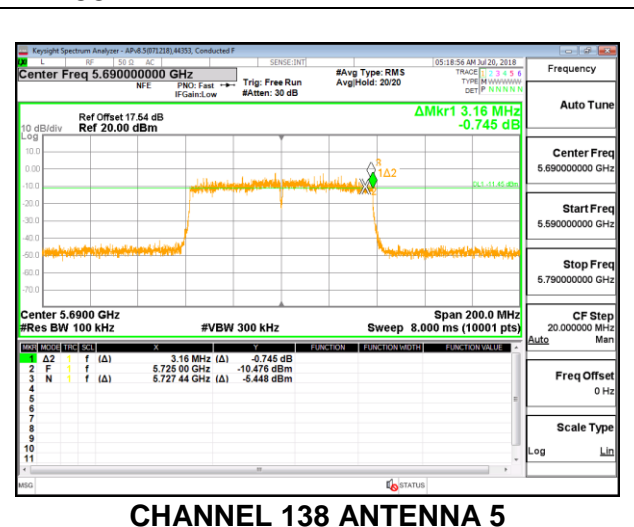
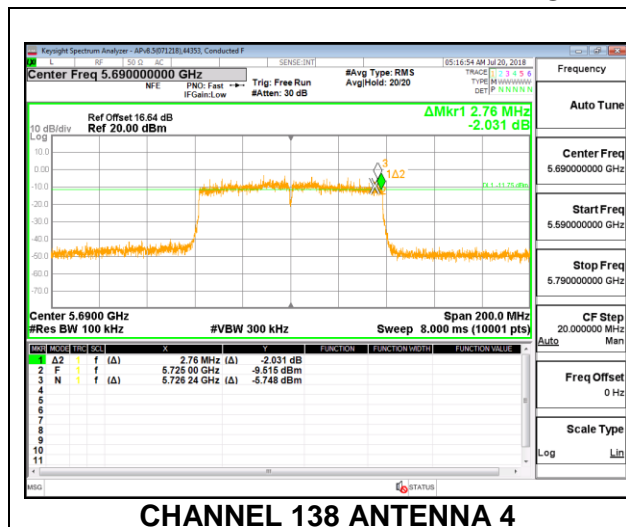
**2TX Antenna 4 + Antenna 5 CDD MODE**

Channel	Frequency (MHz)	6 dB BW Antenna 4 (MHz)	6 dB BW Antenna 5 (MHz)	Minimum Limit (MHz)
Mid	5775	75.120	75.060	0.5
138	5690	2.760	3.160	0.5

**MID CHANNEL**



**CHANNEL 138**



## 8.5. OUTPUT POWER AND PSD

### LIMITS

#### **FCC §15.407**

##### **Band 5.15–5.25 GHz**

(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.

##### **Bands 5.25-5.35 GHz and 5.47-5.725 GHz**

The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. 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.

##### **Band 5.725-5.85 GHz**

The maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz 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. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information.

### TEST PROCEDURE

The measurement method used for output power is KDB 789033 D02 v02r01, Section E.3.b (Method PM-G) and for straddles channels KDB 789033 D02 v02r01, Section E.2.b (Method SA-2) was used.

The measurement method used for power spectral density is KDB 789033 D02 v02r01, Section F



**DIRECTIONAL ANTENNA GAIN**

For 1 TX:

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

For 2 TX:

Tx chains are uncorrelated for power and correlated for PSD due to the device supporting CDD in all MIMO modes. The directional gains are as follows:

<b>Band (GHz)</b>	<b>ANT 4 Gain (dBi)</b>	<b>ANT 5 Gain (dBi)</b>	<b>Uncorrelated Chains Directional Gain (dBi)</b>	<b>Correlated Chains Directional Gain (dBi)</b>
5.2	-5.3	-5.0	-5.15	-2.14
5.3	-5.0	-5.2	-5.10	-2.09
5.6	-3.8	-3.9	-3.85	-0.84
5.8	-3.7	-4.9	-4.26	-1.27

## RESULTS

### 8.5.1. 802.11n HT20 MODE IN THE 5.2 GHz BAND

#### 1TX Antenna 4 MODE MOBILE

##### Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5180	-5.30	24.00	11.00
Mid	5200	-5.30	24.00	11.00
High	5240	-5.30	24.00	11.00

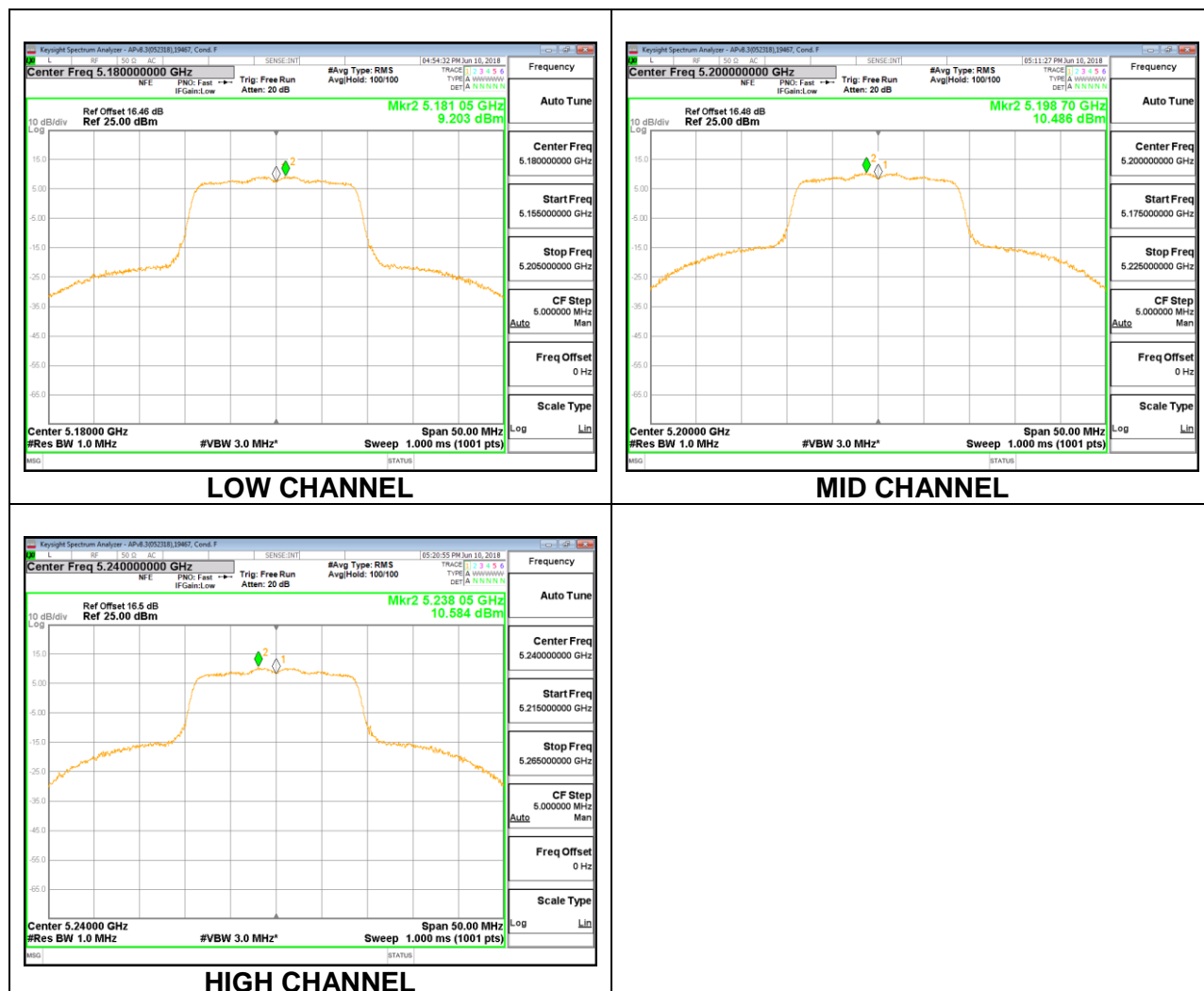
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD
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##### Output Power Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	18.84	18.84	24.00	-5.16
Mid	5200	20.91	20.91	24.00	-3.09
High	5240	20.94	20.94	24.00	-3.06

##### PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5180	9.20	9.20	11.00	-1.80
Mid	5200	10.49	10.49	11.00	-0.51
High	5240	10.58	10.58	11.00	-0.42



**1TX Antenna 5 MODE MOBILE**

**Antenna Gain and Limits**

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5180	-5.00	24.00	11.00
Mid	5200	-5.00	24.00	11.00
High	5240	-5.00	24.00	11.00

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

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	18.81	18.81	24.00	-5.19
Mid	5200	20.87	20.87	24.00	-3.13
High	5240	20.91	20.91	24.00	-3.09

**PSD Results**

Channel	Frequency (MHz)	Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5180	9.27	9.27	11.00	-1.73
Mid	5200	9.84	9.84	11.00	-1.16
High	5240	9.96	9.96	11.00	-1.04