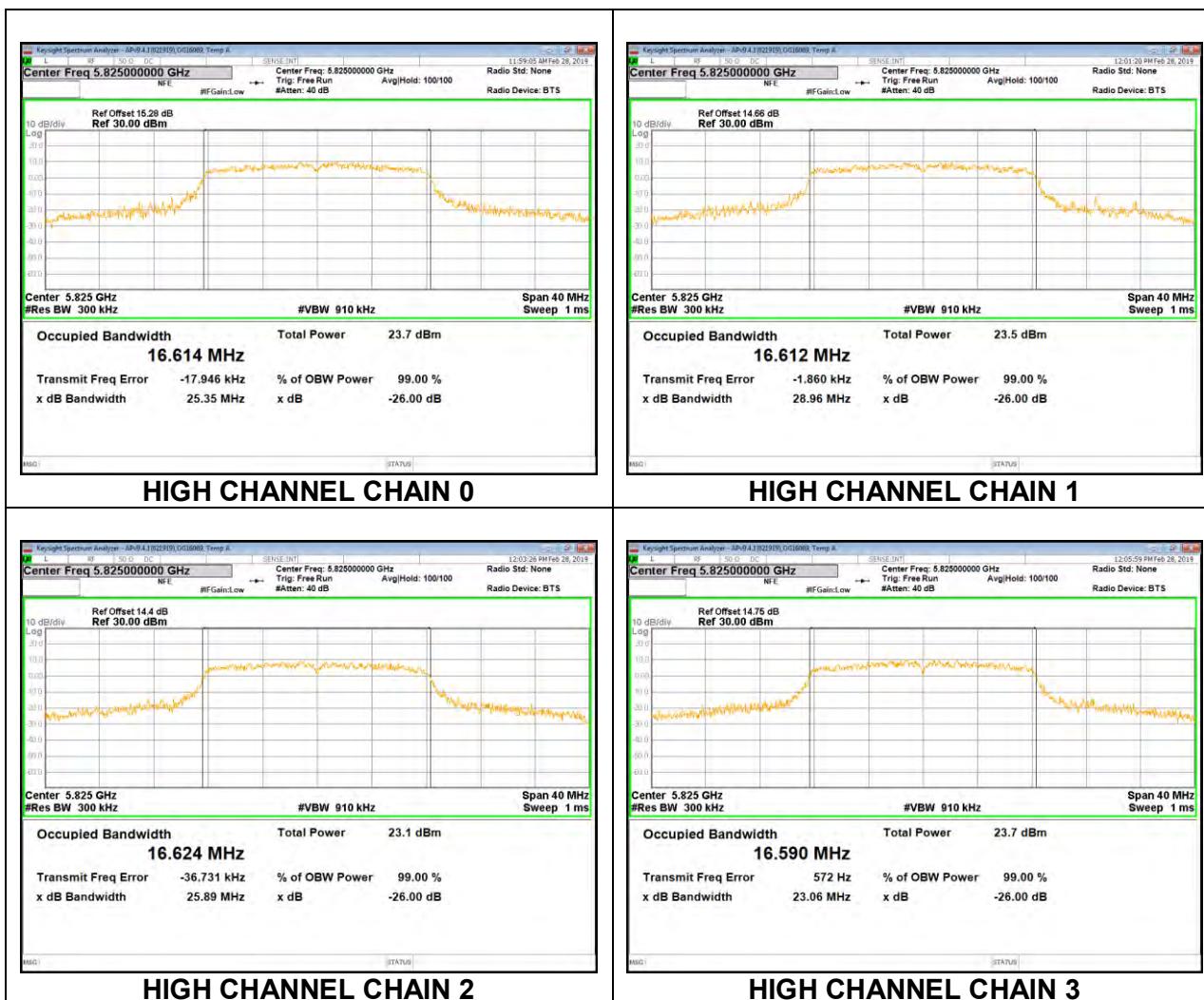


## HIGH CHANNEL

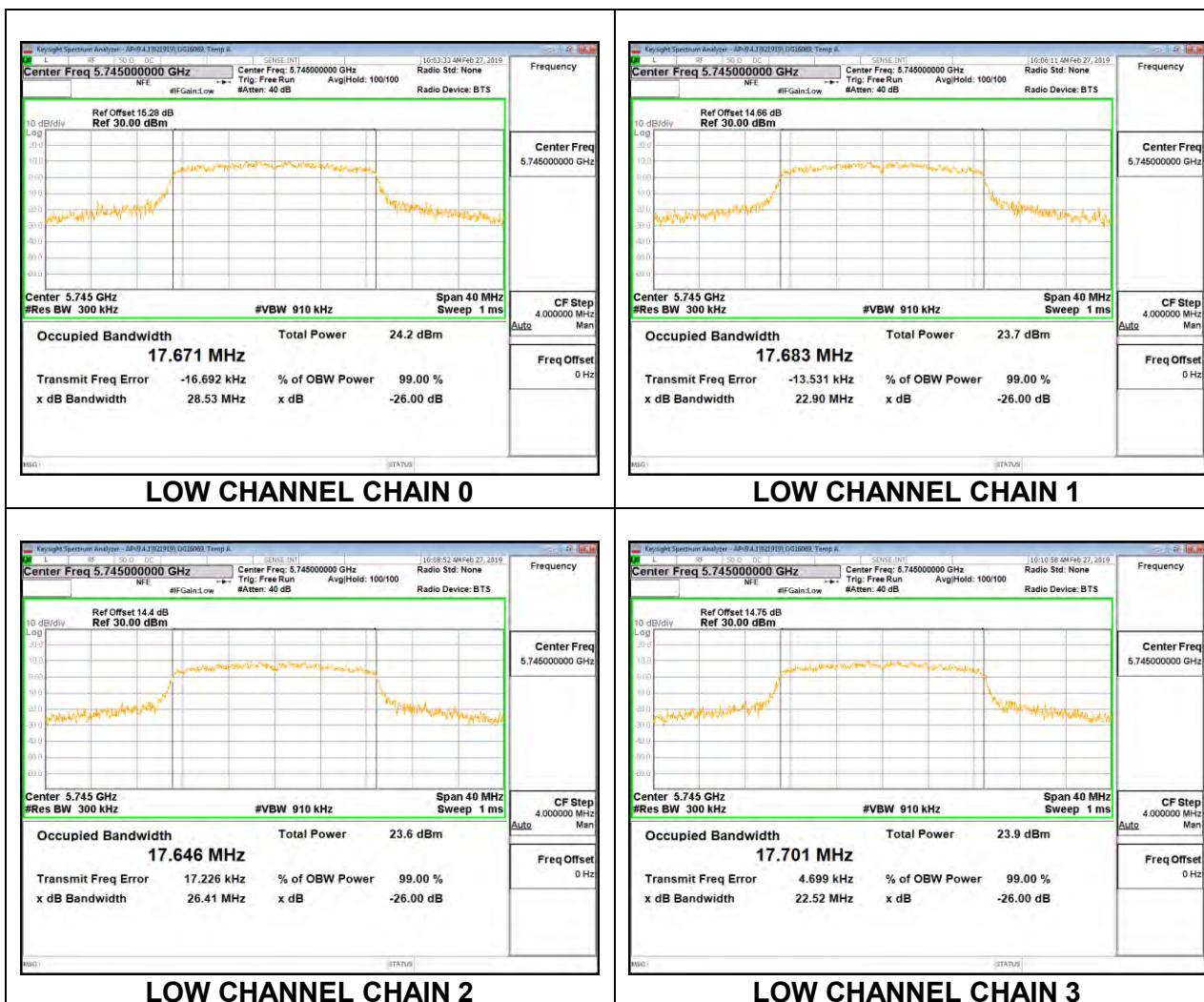


### 8.3.8. 802.11n HT20 MODE IN THE 5.8 GHz BAND

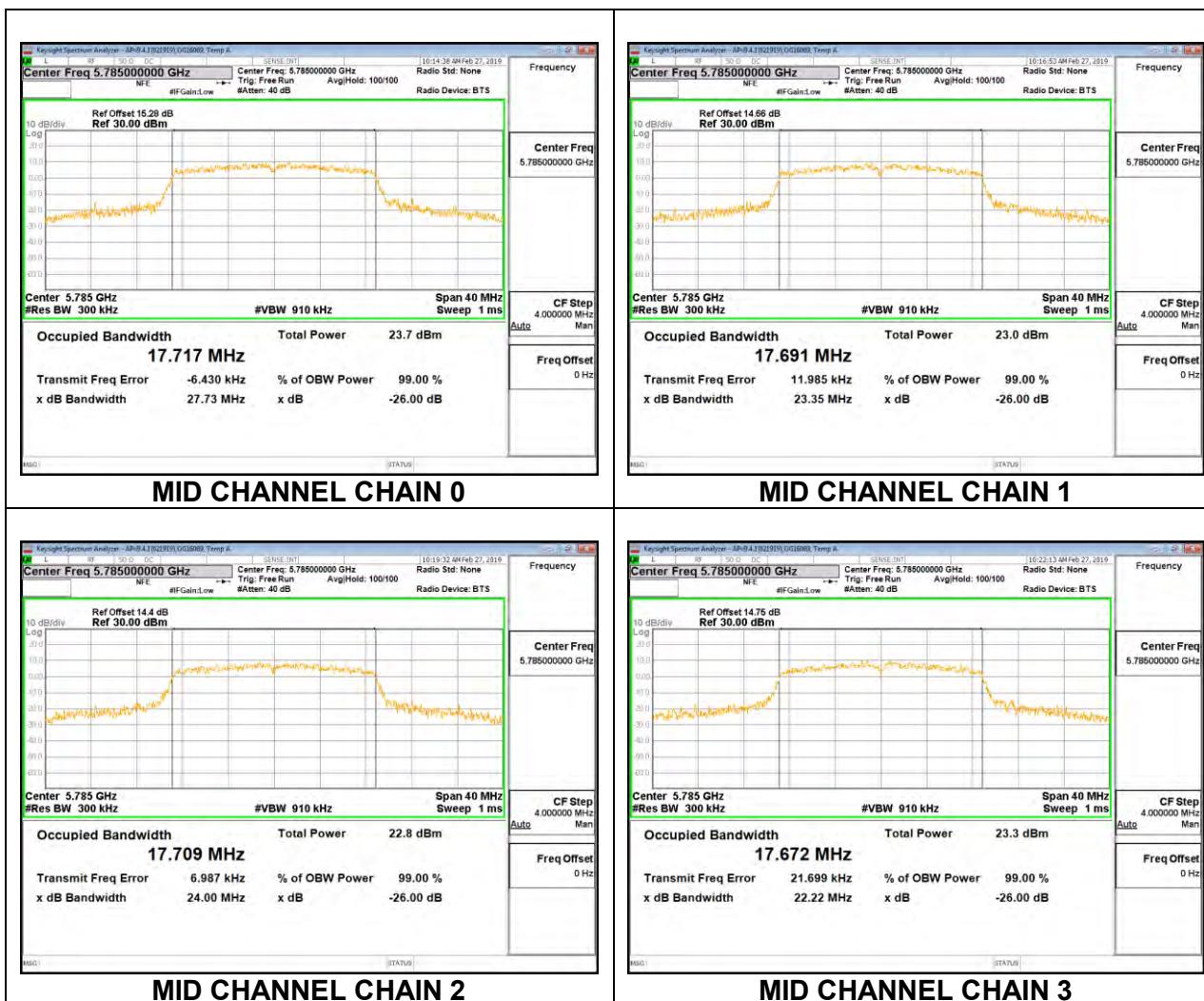
#### 4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)	99% Bandwidth Chain 2 (MHz)	99% Bandwidth Chain 3 (MHz)
Low	5745	17.671	17.683	17.646	17.701
Mid	5785	17.717	17.691	17.709	17.672
High	5825	17.700	17.677	17.748	17.703

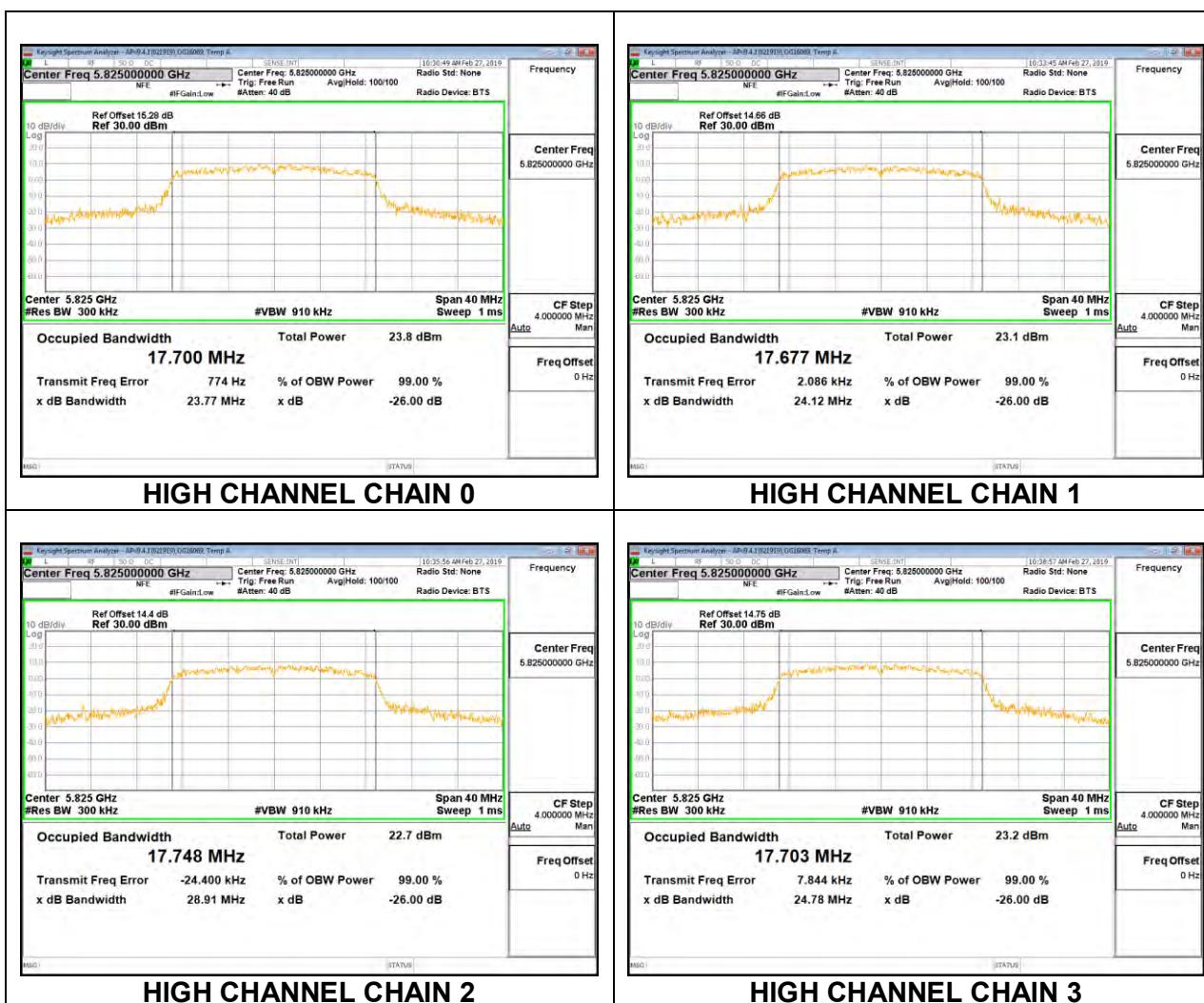
#### LOW CHANNEL



## MID CHANNEL



## HIGH CHANNEL



## 8.4. 6 dB BANDWIDTH

### LIMITS

FCC §15.407 (e)

RSS-247 6.2.4.1

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

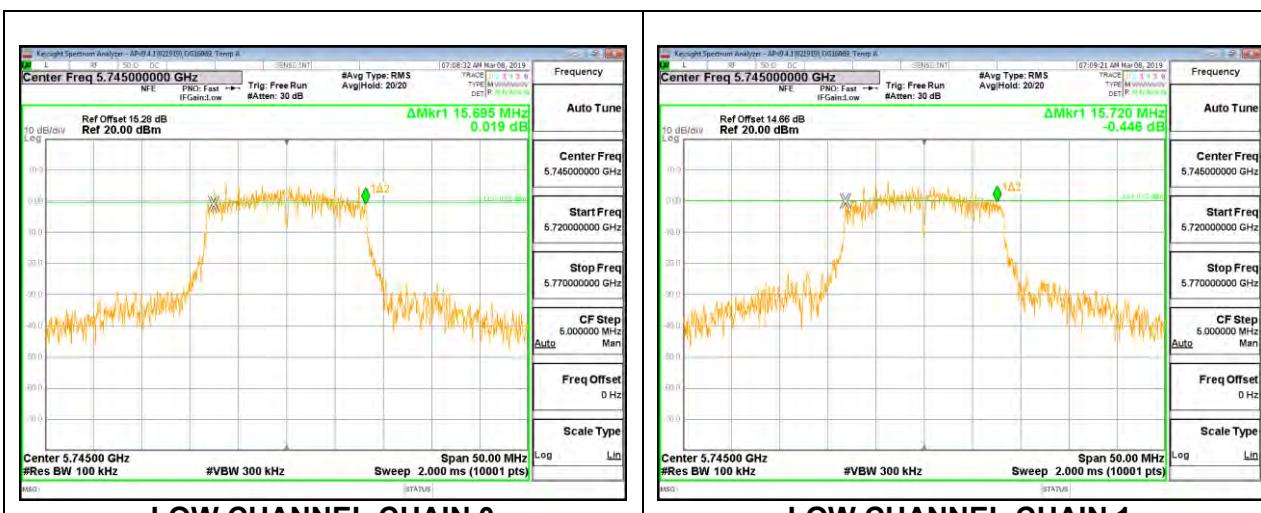
### RESULTS

### 8.4.1. 802.11a MODE IN THE 5.8 GHz BAND

#### 4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE

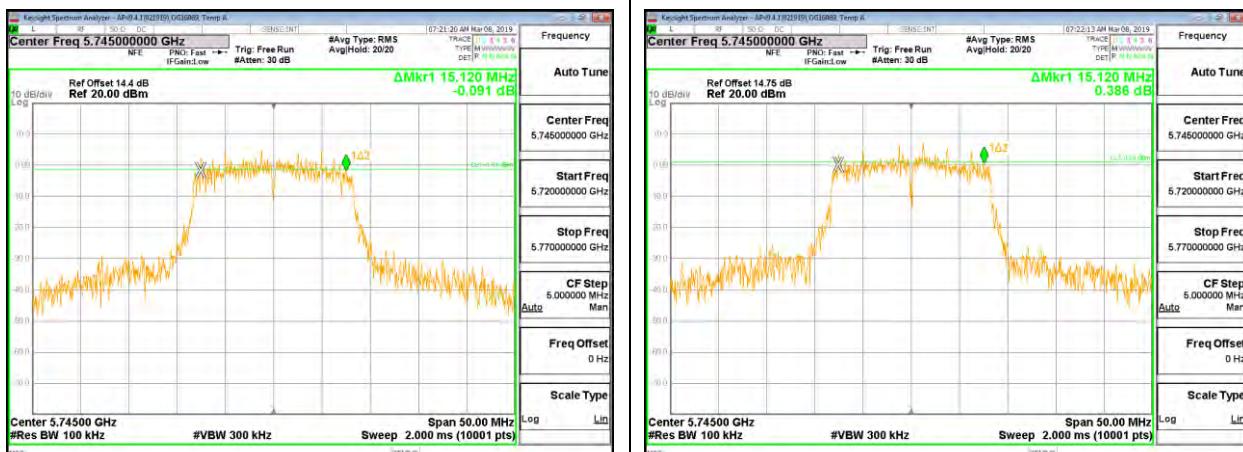
Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	6 dB BW Chain 2 (MHz)	6 dB BW Chain 3 (MHz)	Minimum Limit (MHz)
Low	5745	15.695	15.720	15.120	15.120	0.5
Mid	5785	15.060	15.140	15.455	15.150	0.5
High	5825	15.135	15.075	15.080	15.070	0.5

#### LOW CHANNEL



#### LOW CHANNEL CHAIN 0

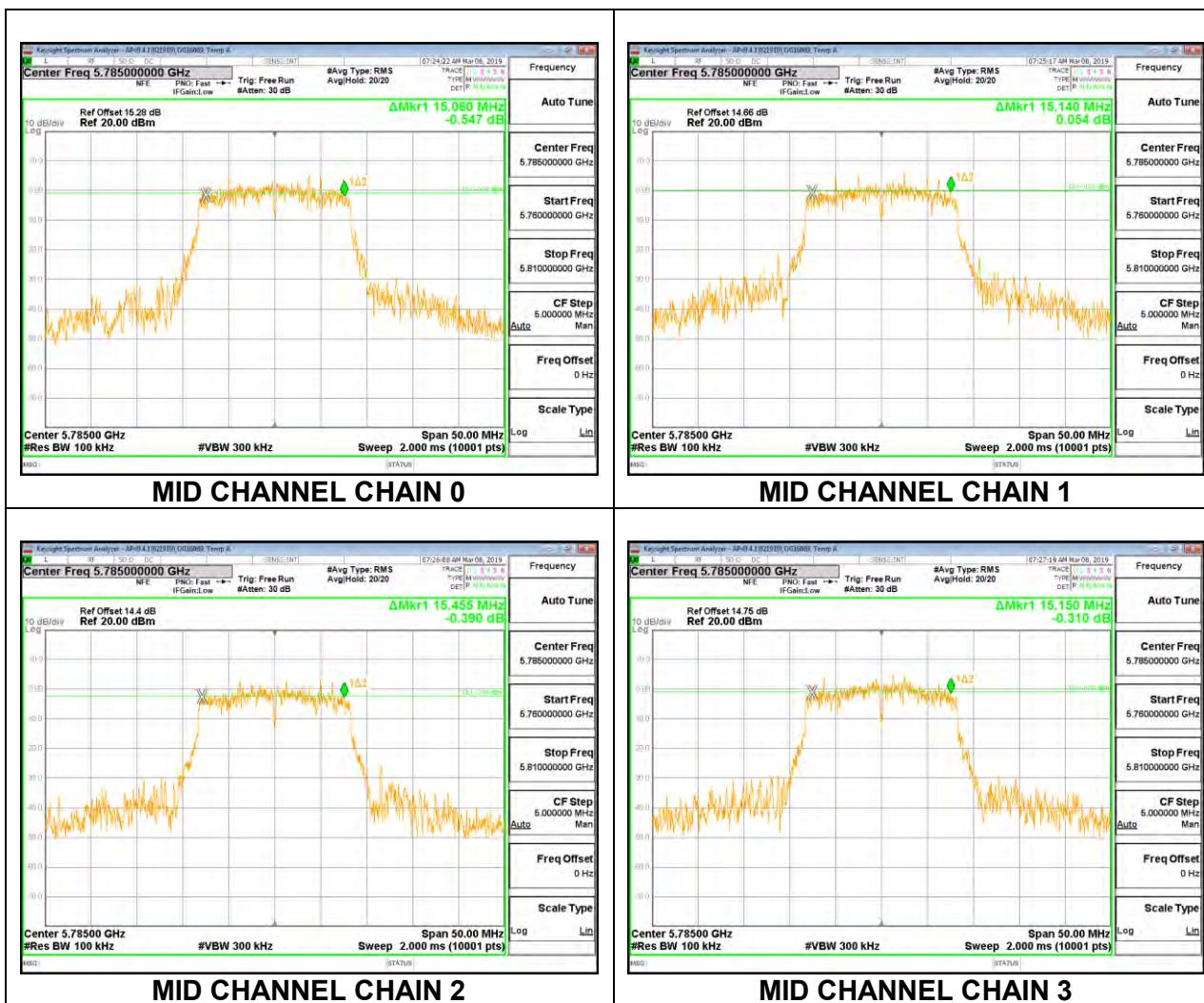
#### LOW CHANNEL CHAIN 1



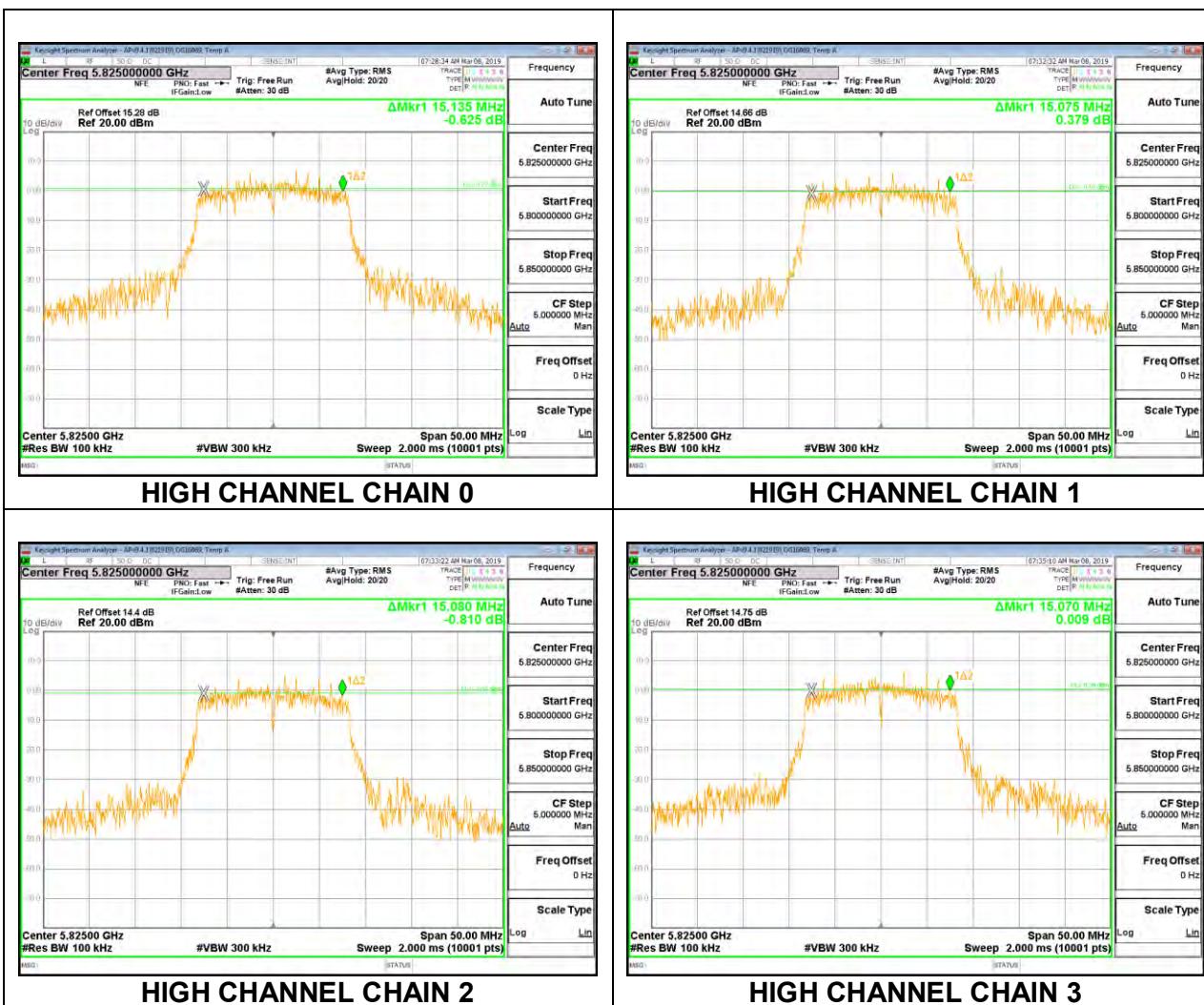
#### LOW CHANNEL CHAIN 2

#### LOW CHANNEL CHAIN 3

## MID CHANNEL



## HIGH CHANNEL

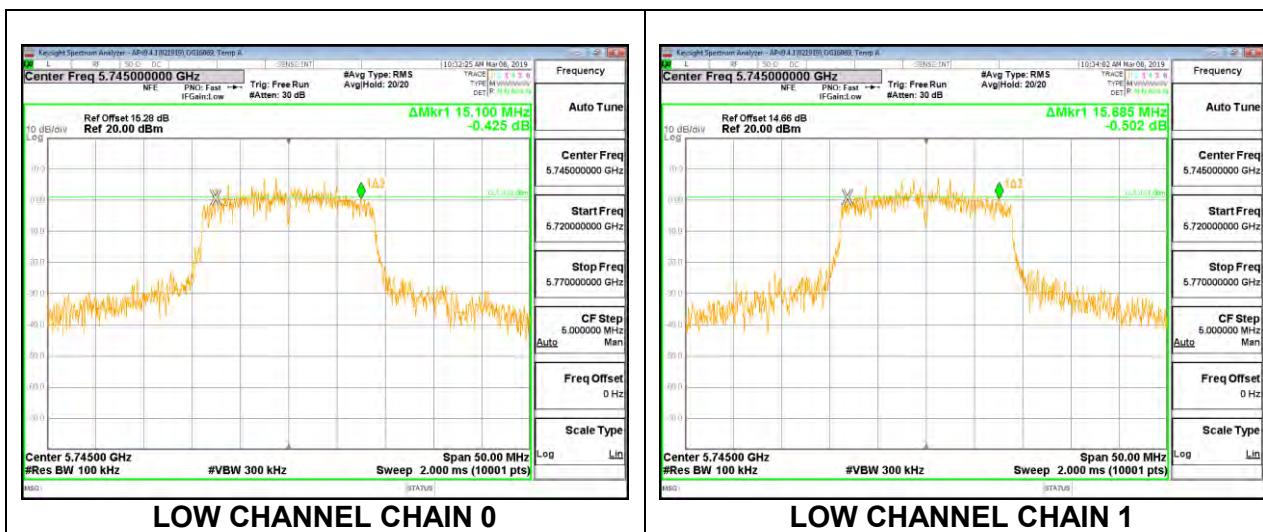


## 8.4.2. 802.11n HT20 MODE IN THE 5.8 GHz BAND

### 4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE

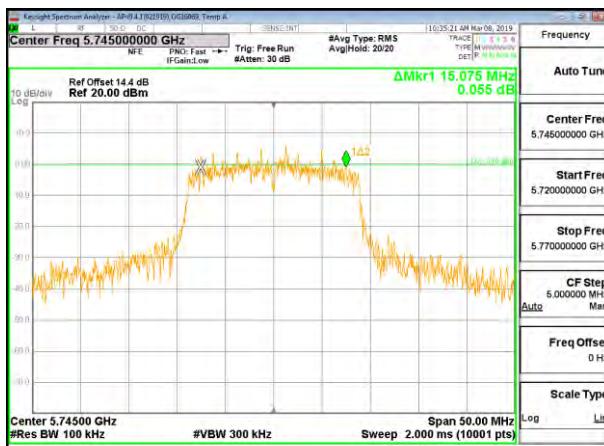
Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	6 dB BW Chain 2 (MHz)	6 dB BW Chain 3 (MHz)	Minimum Limit (MHz)
Low	5745	15.100	15.685	15.075	15.090	0.5
Mid	5785	15.025	15.640	15.000	15.915	0.5
High	5825	15.145	15.665	15.435	15.060	0.5

### LOW CHANNEL



LOW CHANNEL CHAIN 0

LOW CHANNEL CHAIN 1

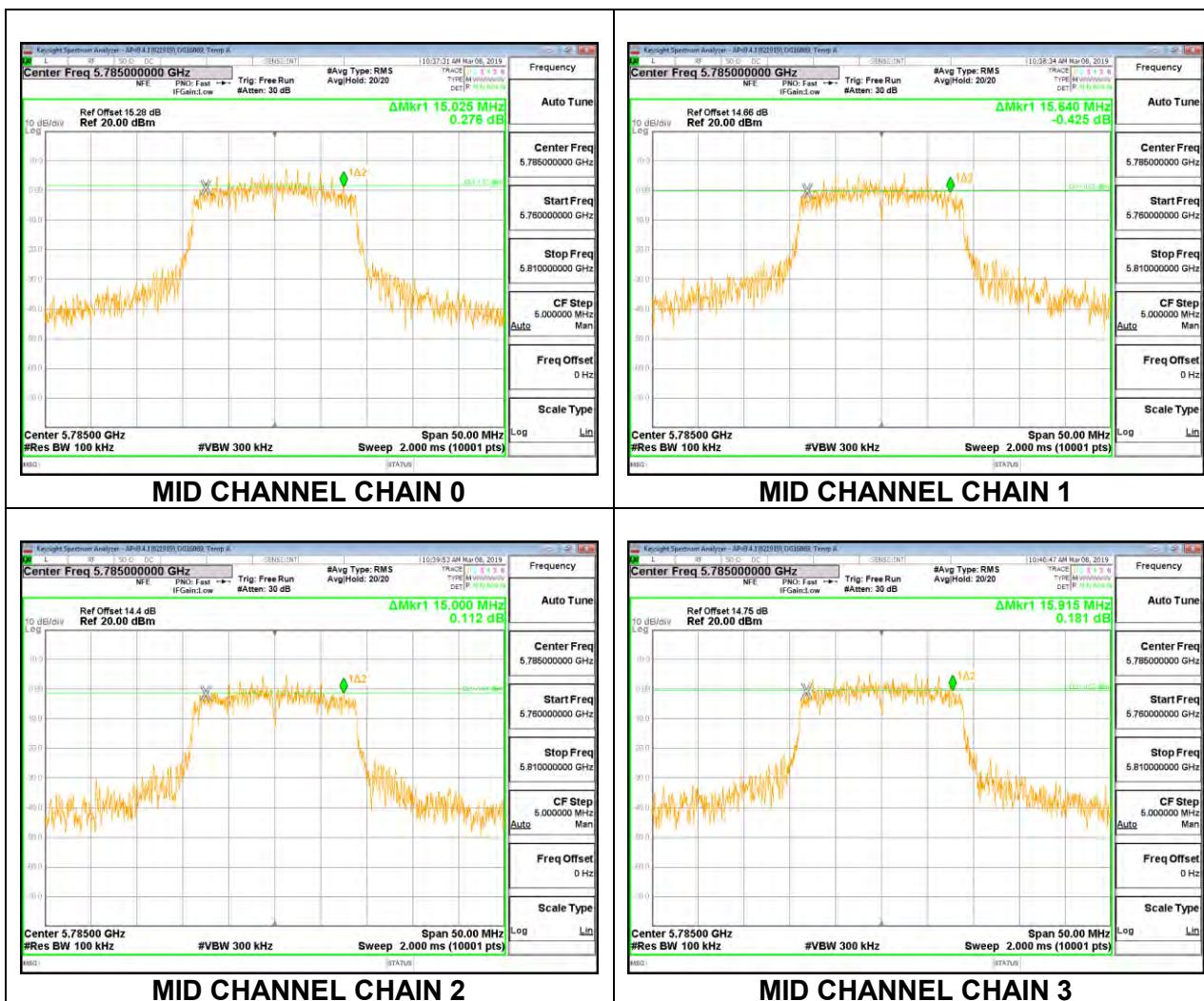


LOW CHANNEL CHAIN 2

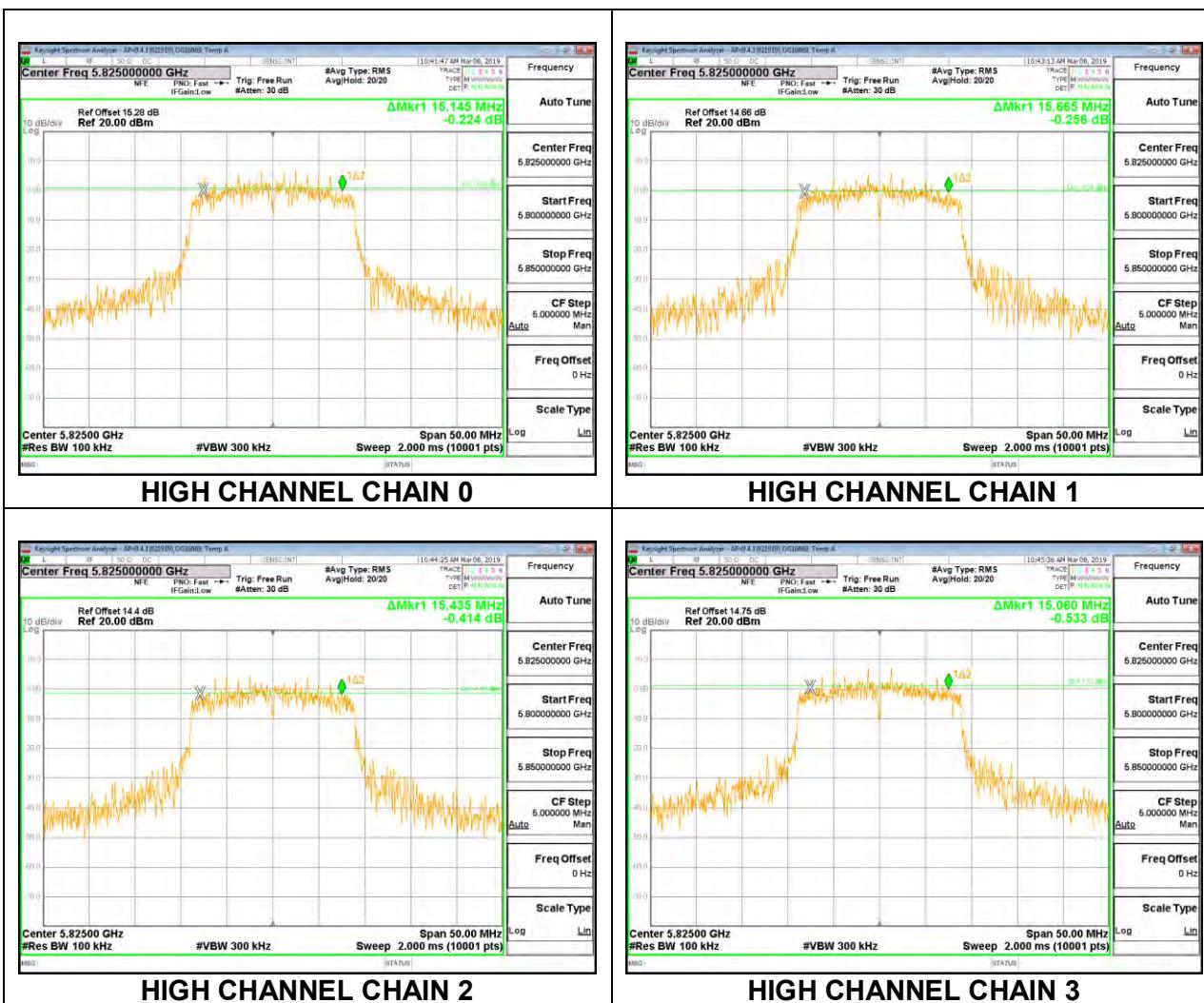


LOW CHANNEL CHAIN 3

## MID CHANNEL



## HIGH CHANNEL



## 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.

## RSS-247

### **Band 5.15-5.25 GHz**

The maximum e.i.r.p. shall not exceed 200 mW or  $10 + 10 \log_{10}B$ , dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

### **Band 5.25-5.35 GHz**

The maximum conducted output power shall not exceed 250 mW or  $11 + 10 \log_{10}B$ , dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

The maximum e.i.r.p. shall not exceed 1.0 W or  $17 + 10 \log_{10}B$ , dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

### **Bands 5.47-5.6 GHz and 5.65-5.725 GHz**

The maximum conducted output power shall not exceed 250 mW or  $11 + 10 \log_{10}B$ , dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

The maximum e.i.r.p. shall not exceed 1.0 W or  $17 + 10 \log_{10}B$ , dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

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

The maximum conducted output power shall not exceed 1 W. The 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 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 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 II.E.3.b (Method PM-G) and for straddles channels KDB 789033 D02 v02r01, Section II.E.2.b (Method SA-1) was used.

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

### DIRECTIONAL ANTENNA GAIN

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:

#### Vertical Polarity (**Worst Case**)

Band (GHz)	Chain 2 Antenna Gain (dBi)	Chain 3 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
5	4.00	3.80	3.90	6.91

#### Horizontal Polarity

Band (GHz)	Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
5	3.40	3.40	3.40	6.41

### 8.5.1. 802.11a MODE IN THE 5.2 GHz BAND

#### IC

(Note: IC PSD was tested by radiated method)

#### Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 99% BW (MHz)
Low	5180	16.4220
Mid	5200	16.4260
High	5240	16.4150

#### Limits

Channel	Frequency (MHz)	ISED EIRP Limit (dBm)	ISED eirp PSD Limit (dBm/ 1MHz)
Low	5180	22.15	10.00
Mid	5200	22.16	10.00
High	5240	22.15	10.00

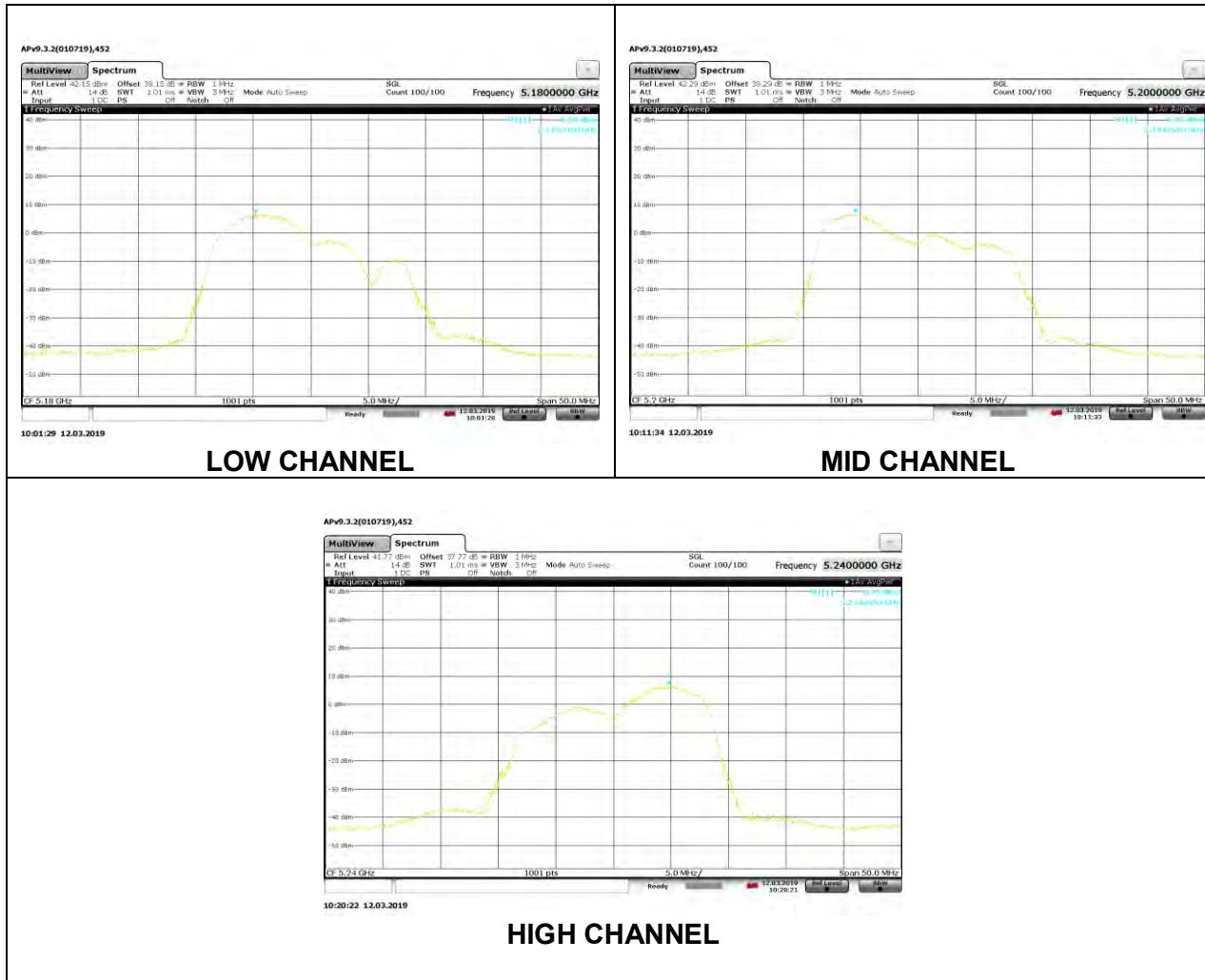
Duty Cycle CF (dB)	2.91	Included in Calculations of Corr'd PSD
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#### Output Power Results

Channel	Frequency (MHz)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	17.50	22.15	-4.65
Mid	5200	17.44	22.16	-4.71
High	5240	17.03	22.15	-5.12

#### PSD Results

Channel	Frequency (MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5180	9.71	10.00	-0.29
Mid	5200	9.76	10.00	-0.24
High	5240	9.65	10.00	-0.35



FCC

**4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE**

**Bandwidth and Antenna Gain**

Channel	Frequency (MHz)	Direction Gain for Power (dBi)	Direction Gain for PSD (dBi)
Low	5180	3.90	6.91
Mid	5200	3.90	6.91
High	5240	3.90	6.91

**Limits**

Channel	Frequency (MHz)	FCC Power Limit (dBm)	FCC PSD Limit (dBm/1M Hz)
Low	5180	24.00	10.09
Mid	5200	24.00	10.09
High	5240	24.00	10.09

<b>Duty Cycle CF (dB)</b>	2.91	<b>Included in Calculations of Corr'd PSD</b>
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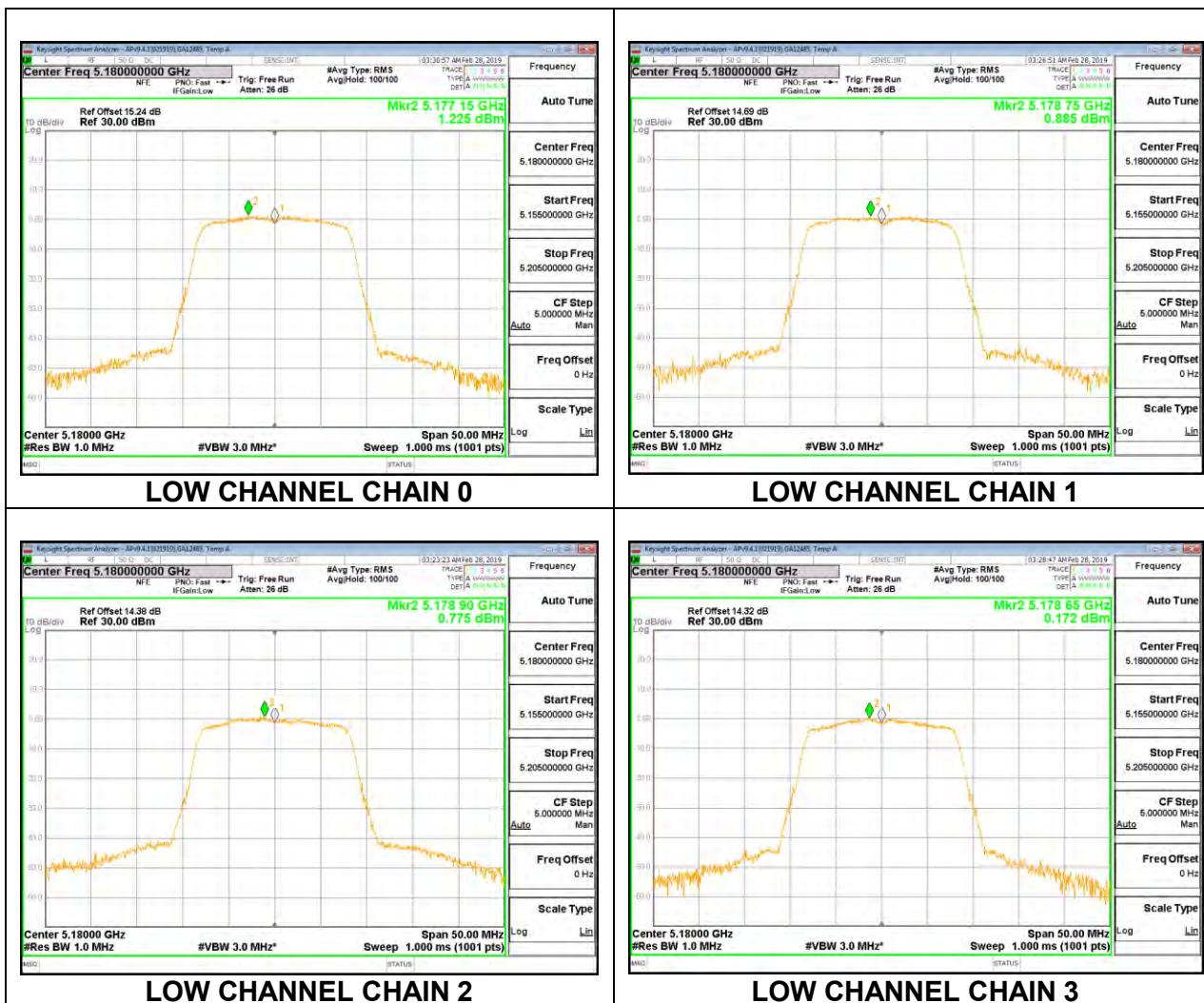
**Output Power Results**

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Chain 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	12.56	12.73	12.22	11.88	18.38	24.00	-5.62
Mid	5200	12.14	12.36	12.54	12.06	18.30	24.00	-5.70
High	5240	11.79	11.68	11.74	11.62	17.73	24.00	-6.27

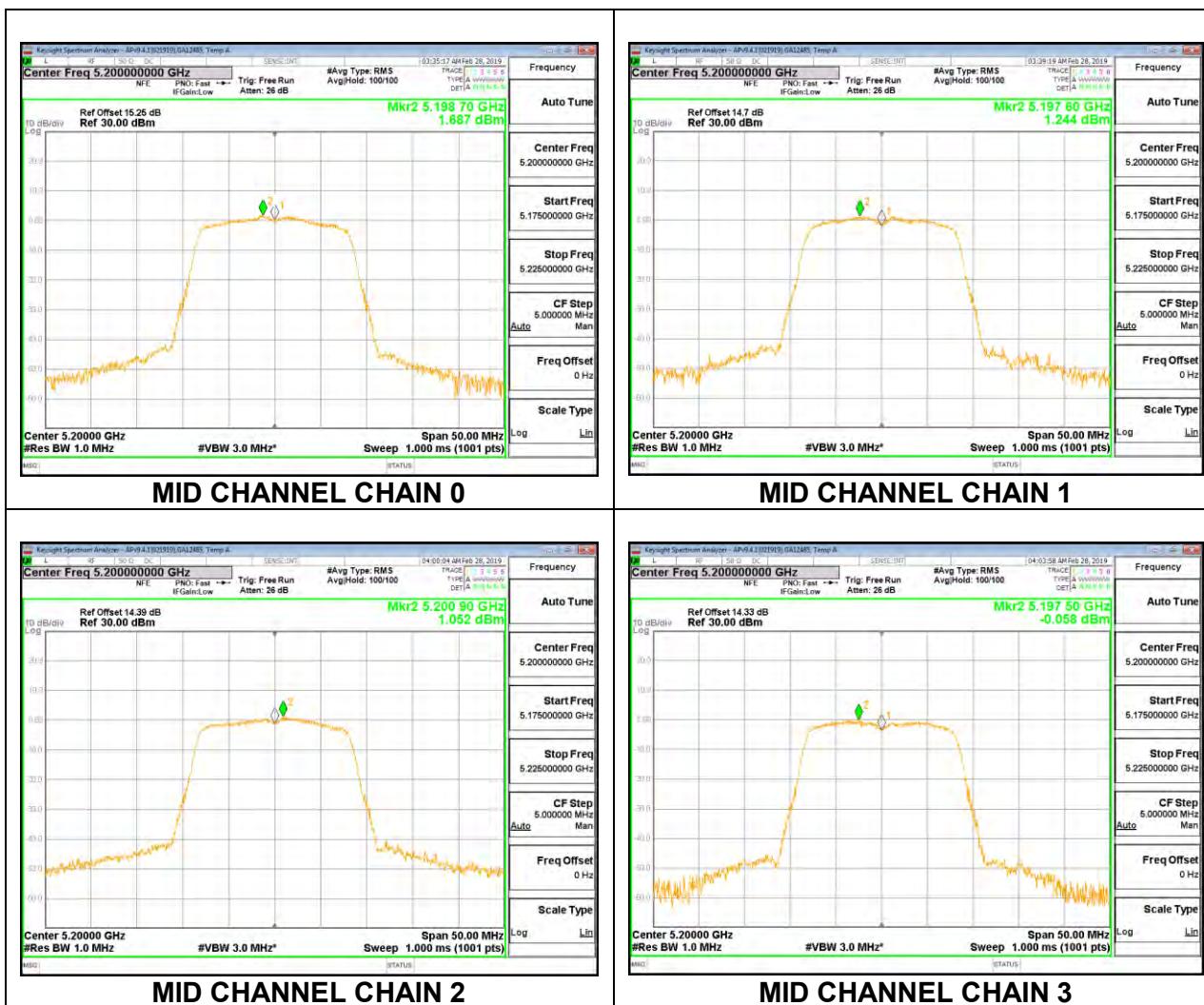
**PSD Results**

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/ 1MHz)	Chain 1 Meas PSD (dBm/ 1MHz)	Chain 2 Meas PSD (dBm/ 1MHz)	Chain 3 Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5180	1.23	0.89	0.78	0.17	9.71	10.09	-0.38
Mid	5200	1.69	1.24	1.05	-0.06	9.96	10.09	-0.13
High	5240	0.95	0.75	0.62	0.05	9.54	10.09	-0.55

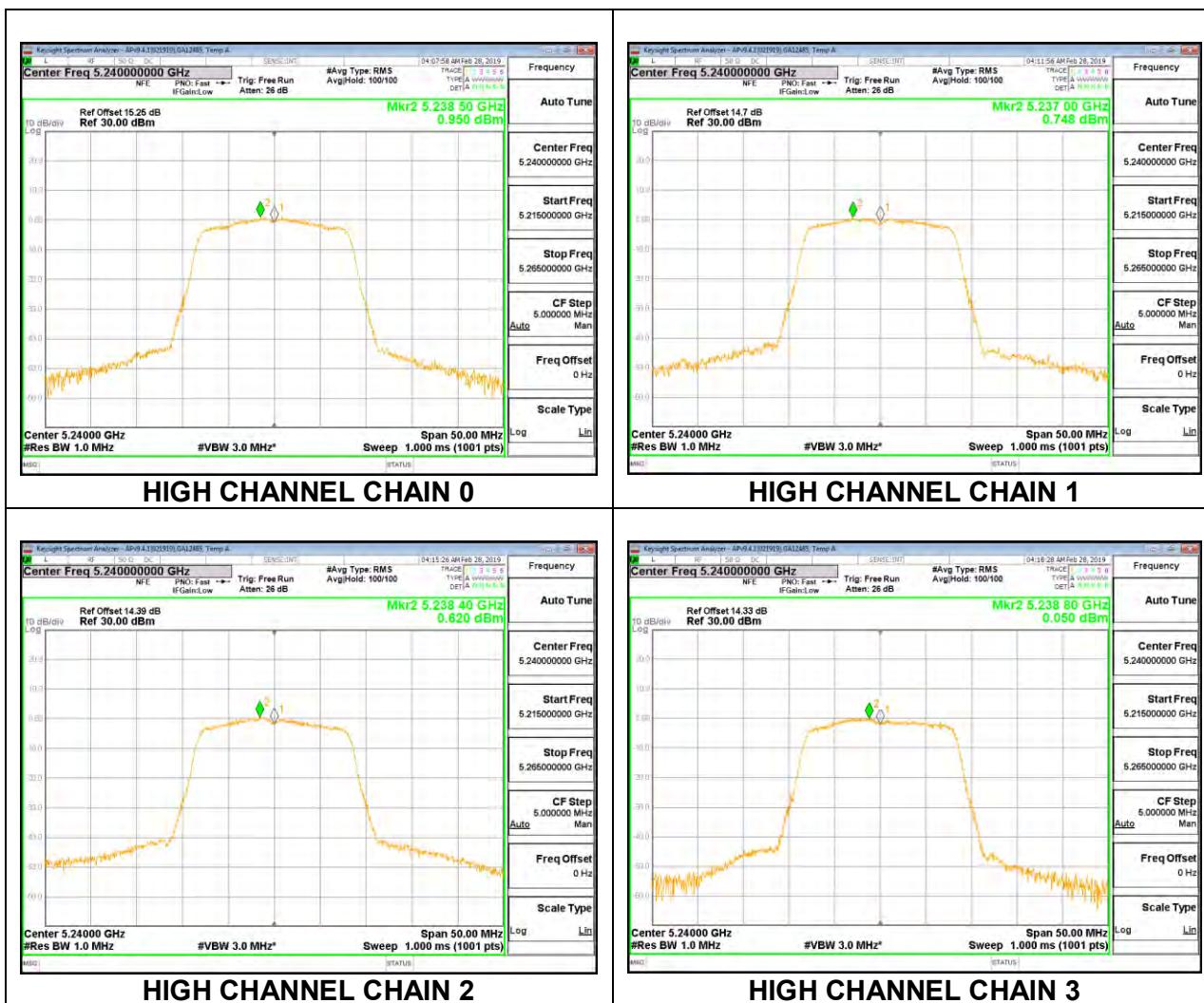
## LOW CHANNEL



## MID CHANNEL



## HIGH CHANNEL



### 8.5.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

#### IC

(Note: IC PSD was tested by radiated method)

#### Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 99% BW (MHz)
Low	5180	17.608
Mid	5200	17.540
High	5240	17.577

#### Limits

Channel	Frequency (MHz)	ISED EIRP Limit (dBm)	ISED eirp PSD Limit (dBm/ 1MHz)
Low	5180	22.46	10.00
Mid	5200	22.44	10.00
High	5240	22.45	10.00

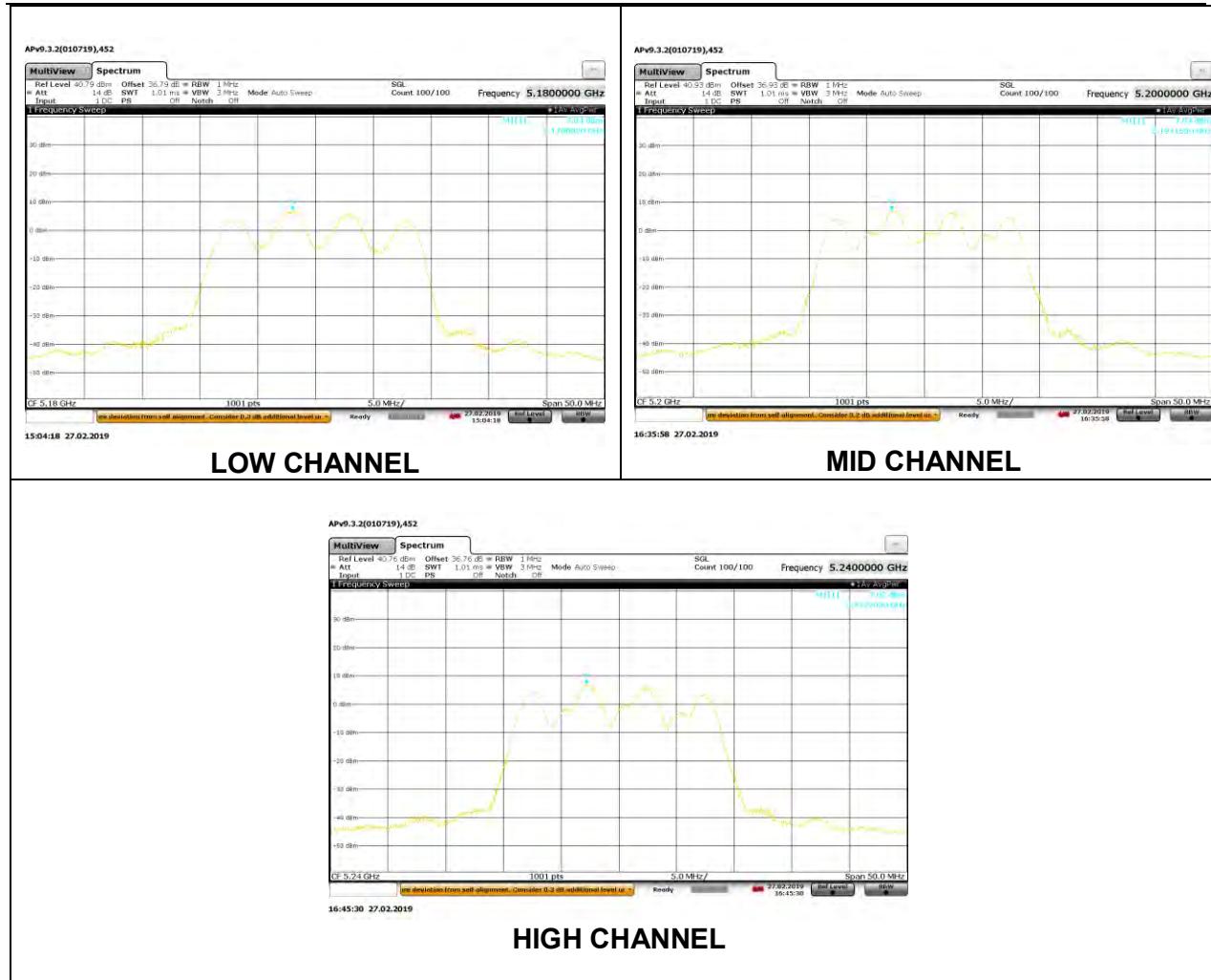
Duty Cycle CF (dB)	2.50	Included in Calculations of Corr'd PSD
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#### Output Power Results

Channel	Frequency (MHz)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	17.08	22.46	-5.38
Mid	5200	16.88	22.44	-5.56
High	5240	16.56	22.45	-5.89

#### PSD Results

Channel	Frequency (MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5180	9.54	10.00	-0.46
Mid	5200	9.54	10.00	-0.46
High	5240	9.52	10.00	-0.48



**FCC**

**4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE**

**Bandwidth and Antenna Gain**

Channel	Frequency (MHz)	Direction Gain for Power (dBi)	Direction Gain for PSD (dBi)
Low	5180	3.90	6.91
Mid	5200	3.90	6.91
High	5240	3.90	6.91

**Limits**

Channel	Frequency (MHz)	FCC Power Limit (dBm)	FCC PSD Limit (dBm/1M Hz)
Low	5180	24.00	10.09
Mid	5200	24.00	10.09
High	5240	24.00	10.09

<b>Duty Cycle CF (dB)</b>	2.50	<b>Included in Calculations of Corr'd PSD</b>
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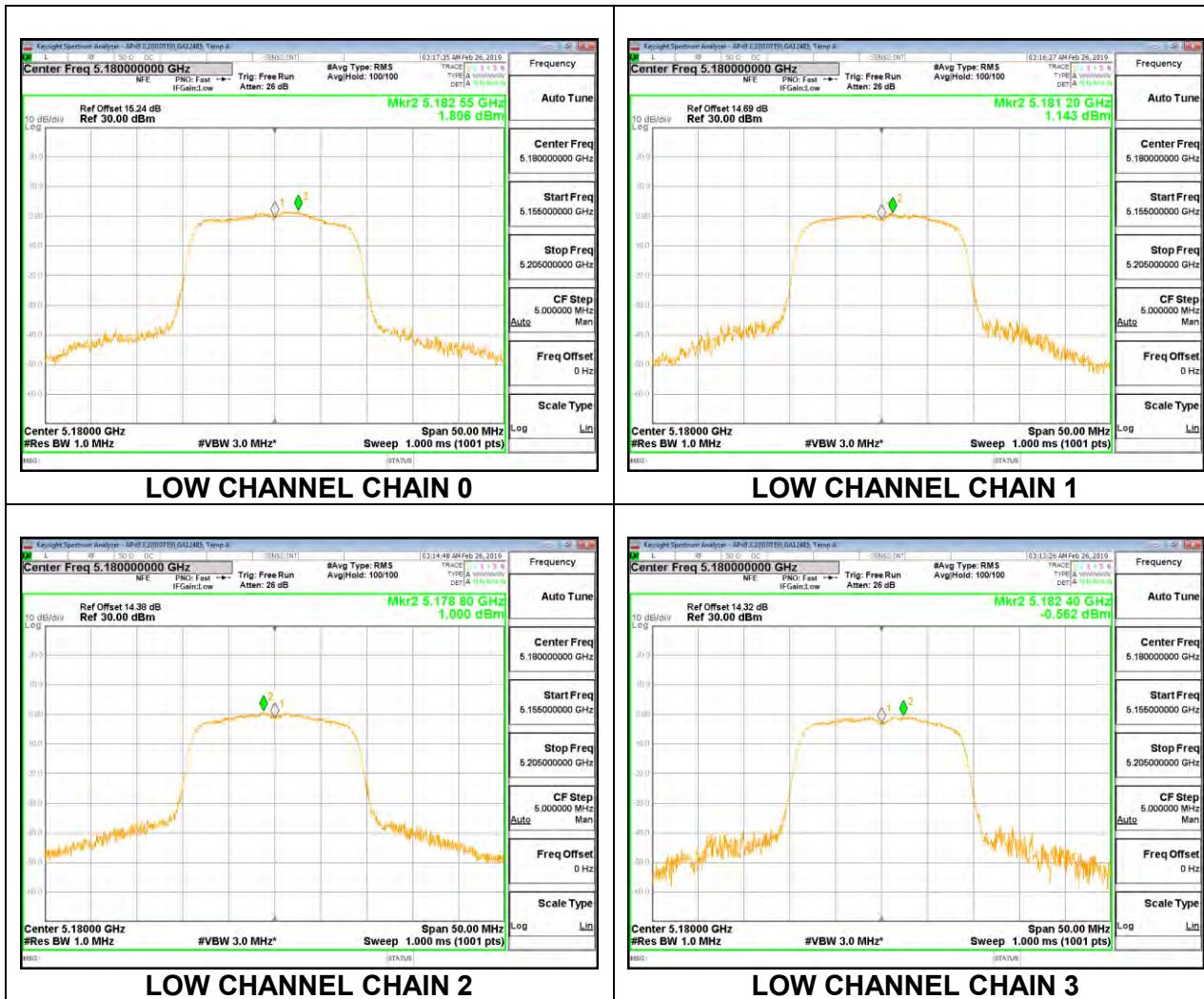
**Output Power Results**

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Chain 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	13.29	14.15	13.78	13.26	19.66	24.00	-4.34
Mid	5200	13.62	13.79	13.87	13.07	19.62	24.00	-4.38
High	5240	13.36	13.82	13.68	13.61	19.64	24.00	-4.36

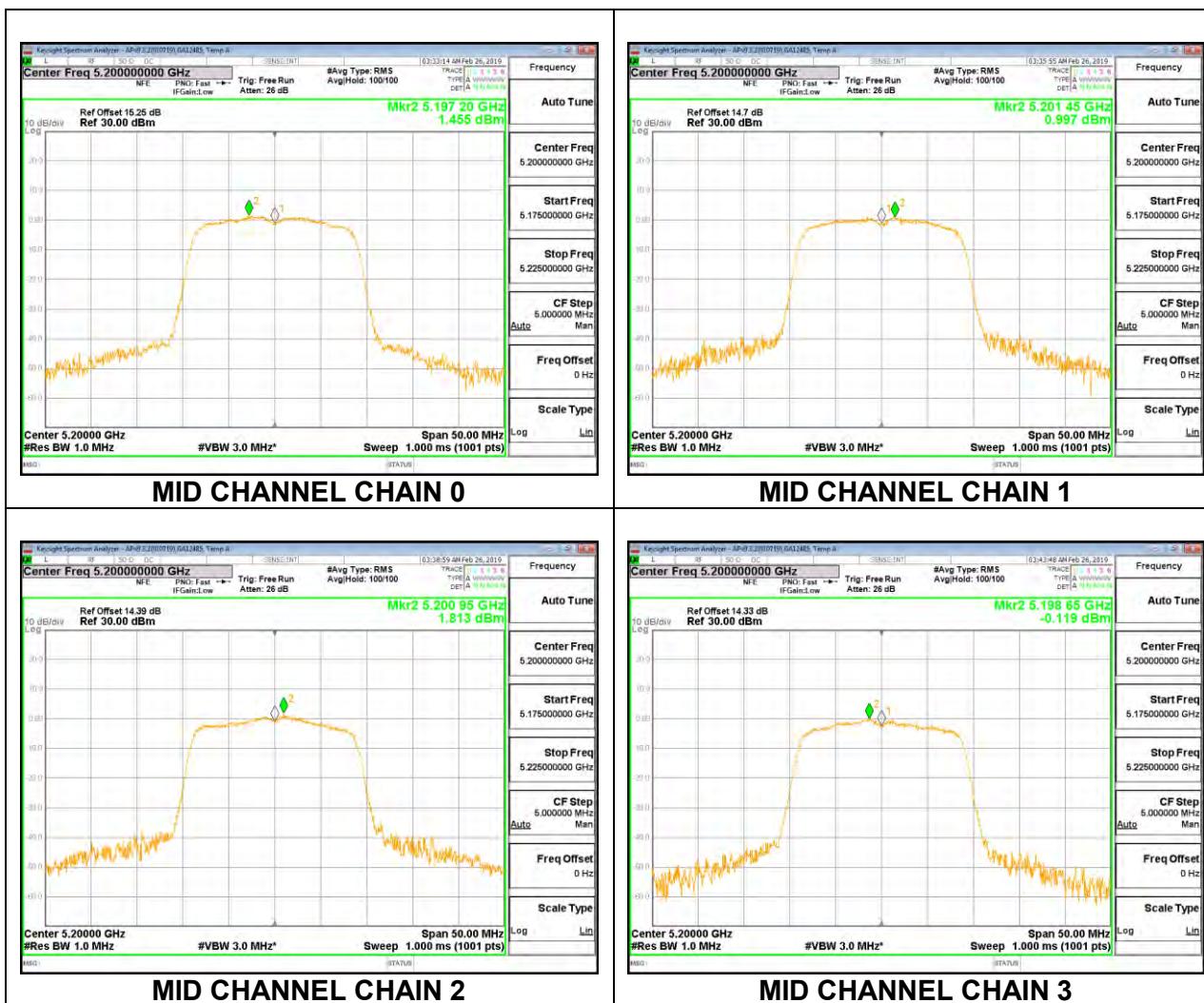
**PSD Results**

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/ 1MHz)	Chain 1 Meas PSD (dBm/ 1MHz)	Chain 2 Meas PSD (dBm/ 1MHz)	Chain 3 Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5180	1.81	1.14	1.00	-0.56	9.45	10.09	-0.64
Mid	5200	1.46	1.00	1.81	-0.12	9.62	10.09	-0.47
High	5240	0.71	0.83	0.11	-0.02	8.94	10.09	-1.15

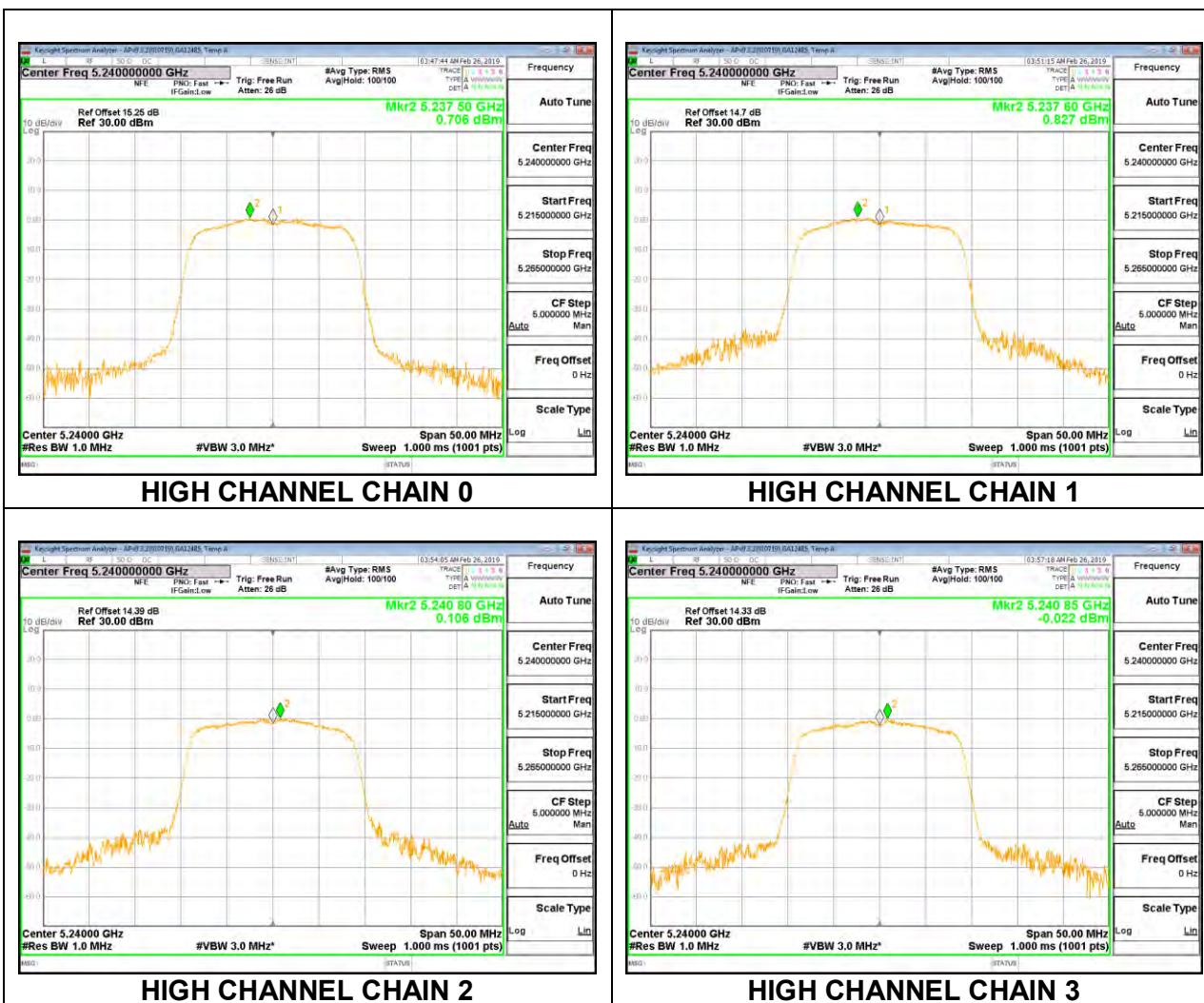
## LOW CHANNEL



## MID CHANNEL



## HIGH CHANNEL



### 8.5.3. 802.11a MODE IN THE 5.3 GHz BAND

#### 4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE (FCC)

##### Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Direction Gain for Power (dBi)	Directiona Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5260	20.10	3.90	6.91	24.00	10.09
Mid	5300	20.05	3.90	6.91	24.00	10.09
High	5320	19.95	3.90	6.91	24.00	10.09

Duty Cycle CF (dB)	2.91	Included in Calculations of Corr'd PSD
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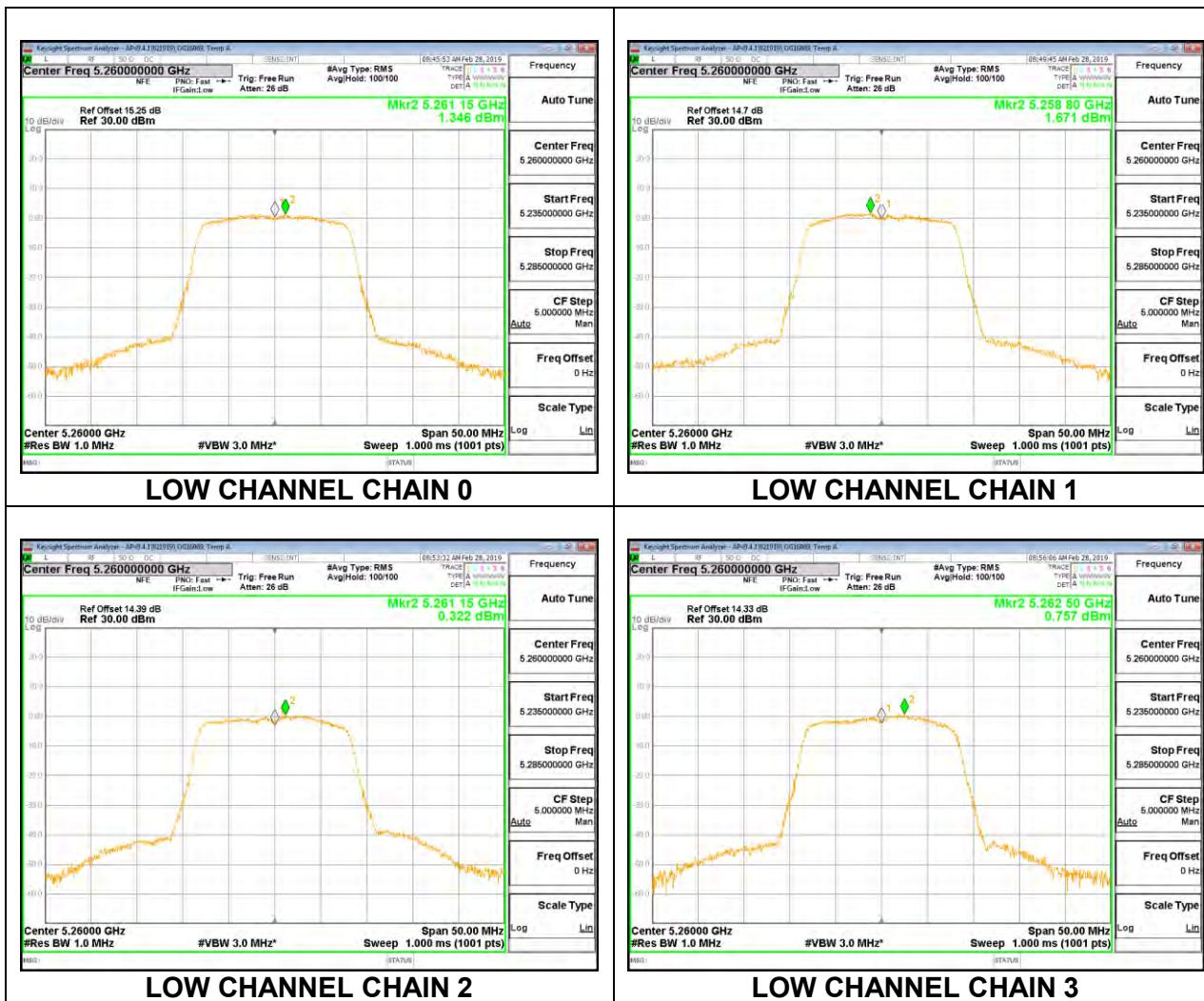
##### Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Chain 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	12.42	12.79	12.05	12.19	18.39	24.00	-5.61
Mid	5300	12.34	12.68	12.46	12.36	18.48	24.00	-5.52
High	5320	12.29	12.47	12.38	12.22	18.36	24.00	-5.64

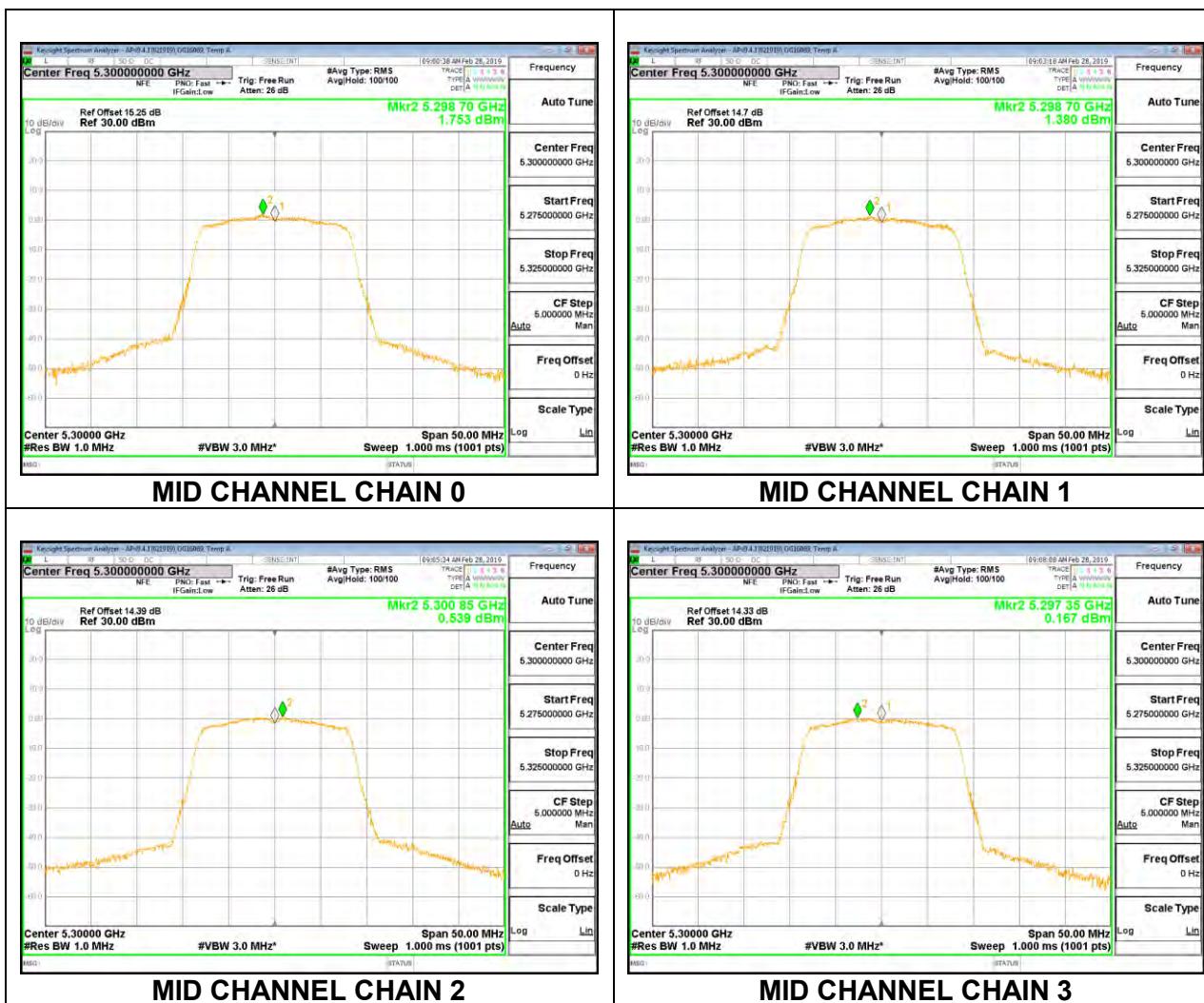
##### PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/ 1MHz)	Chain 1 Meas PSD (dBm/ 1MHz)	Chain 2 Meas PSD (dBm/ 1MHz)	Chain 3 Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5260	1.35	1.67	0.32	0.76	9.99	10.09	-0.10
Mid	5300	1.75	1.38	0.54	0.17	9.94	10.09	-0.15
High	5320	1.37	1.38	0.71	0.48	9.93	10.09	-0.16

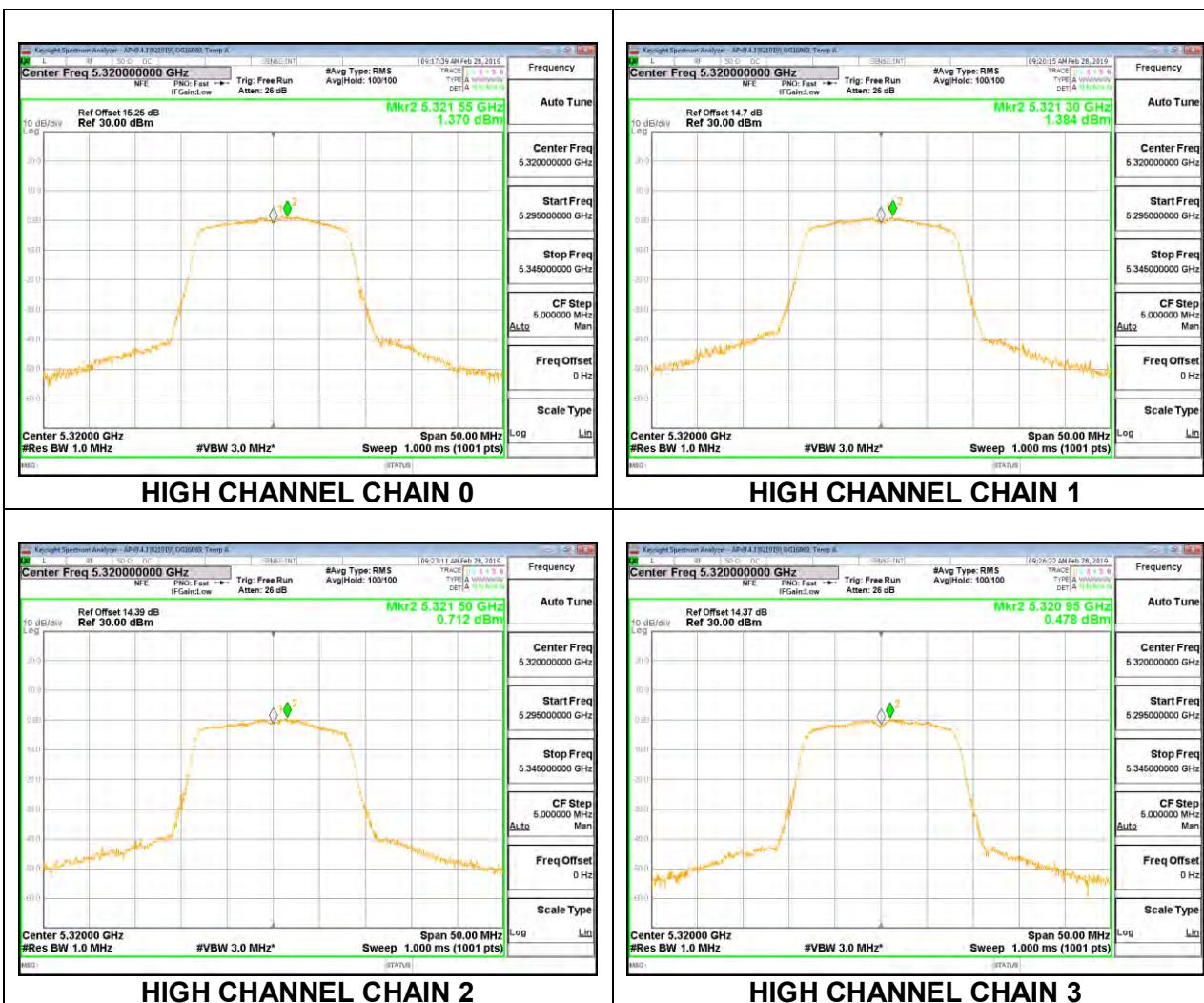
## LOW CHANNEL



## MID CHANNEL



## HIGH CHANNEL



**4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE (IC)**

**Bandwidth, Antenna Gain, and Limits**

Channel	Frequency (MHz)	Min 99% BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5260	16.404	3.90	6.91	23.15	11.00
Mid	5300	16.391	3.90	6.91	23.15	11.00
High	5320	16.429	3.90	6.91	23.16	11.00

Duty Cycle CF (dB)	2.91	Included in Calculations of Corr'd PSD
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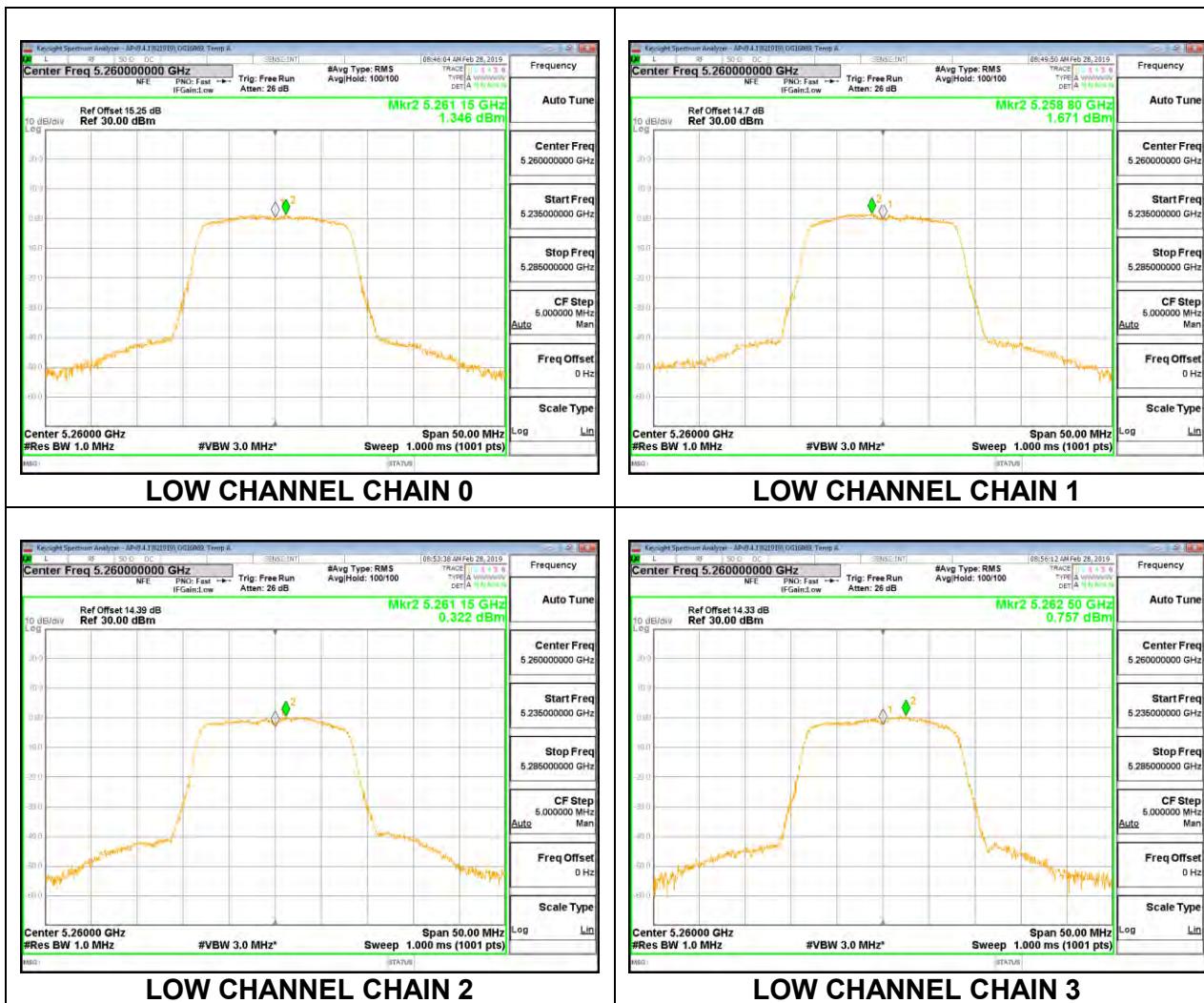
**Output Power Results**

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Chain 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	12.42	12.79	12.05	12.19	18.39	23.15	-4.76
Mid	5300	12.34	12.68	12.46	12.36	18.48	23.15	-4.66
High	5320	12.29	12.47	12.38	12.22	18.36	23.16	-4.79

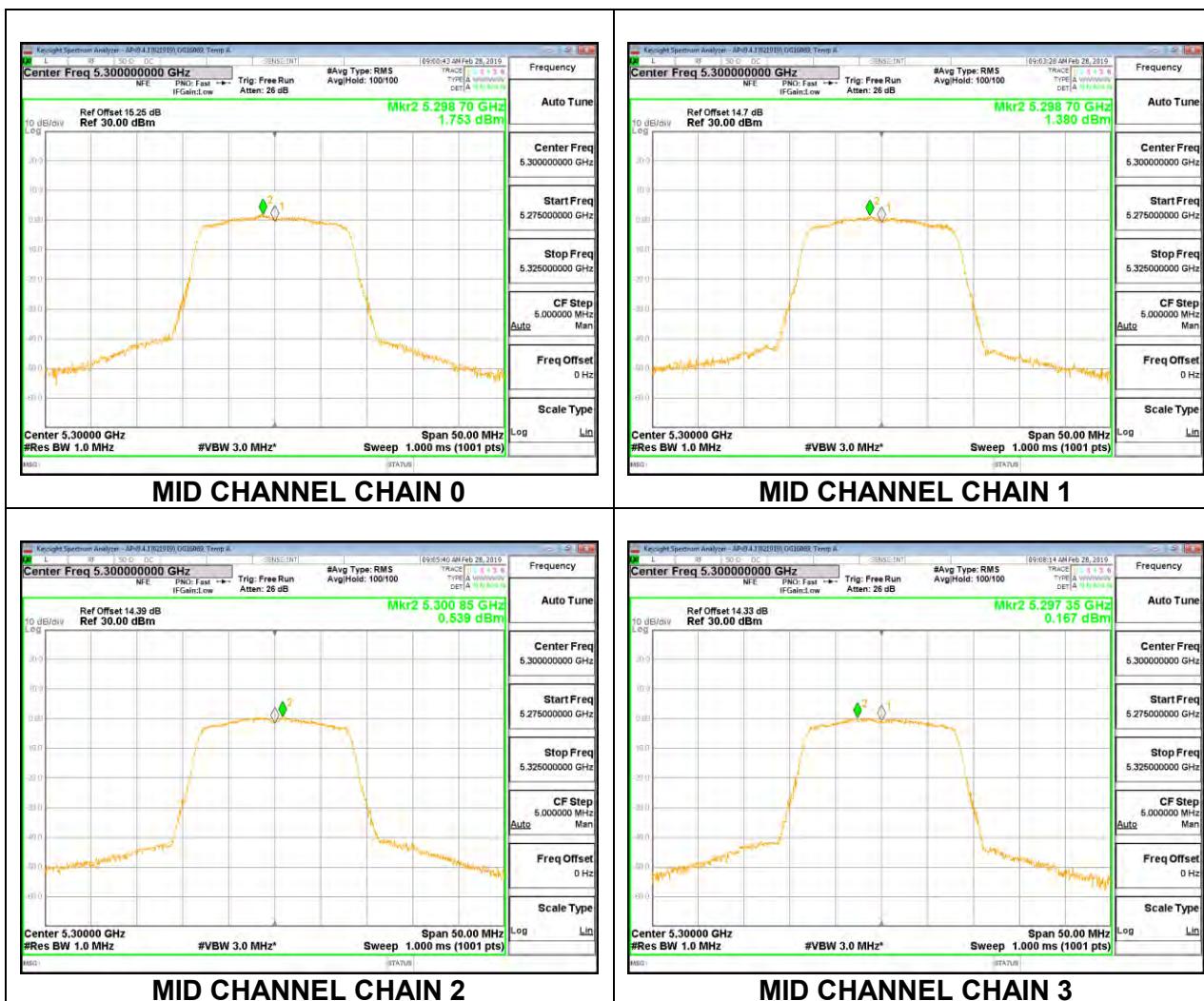
**PSD Results**

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/ 1MHz)	Chain 1 Meas PSD (dBm/ 1MHz)	Chain 2 Meas PSD (dBm/ 1MHz)	Chain 3 Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5260	1.35	1.67	0.32	0.76	9.99	11.00	-1.01
Mid	5300	1.75	1.38	0.54	0.17	9.94	11.00	-1.06
High	5320	1.37	1.38	0.71	0.48	9.93	11.00	-1.07

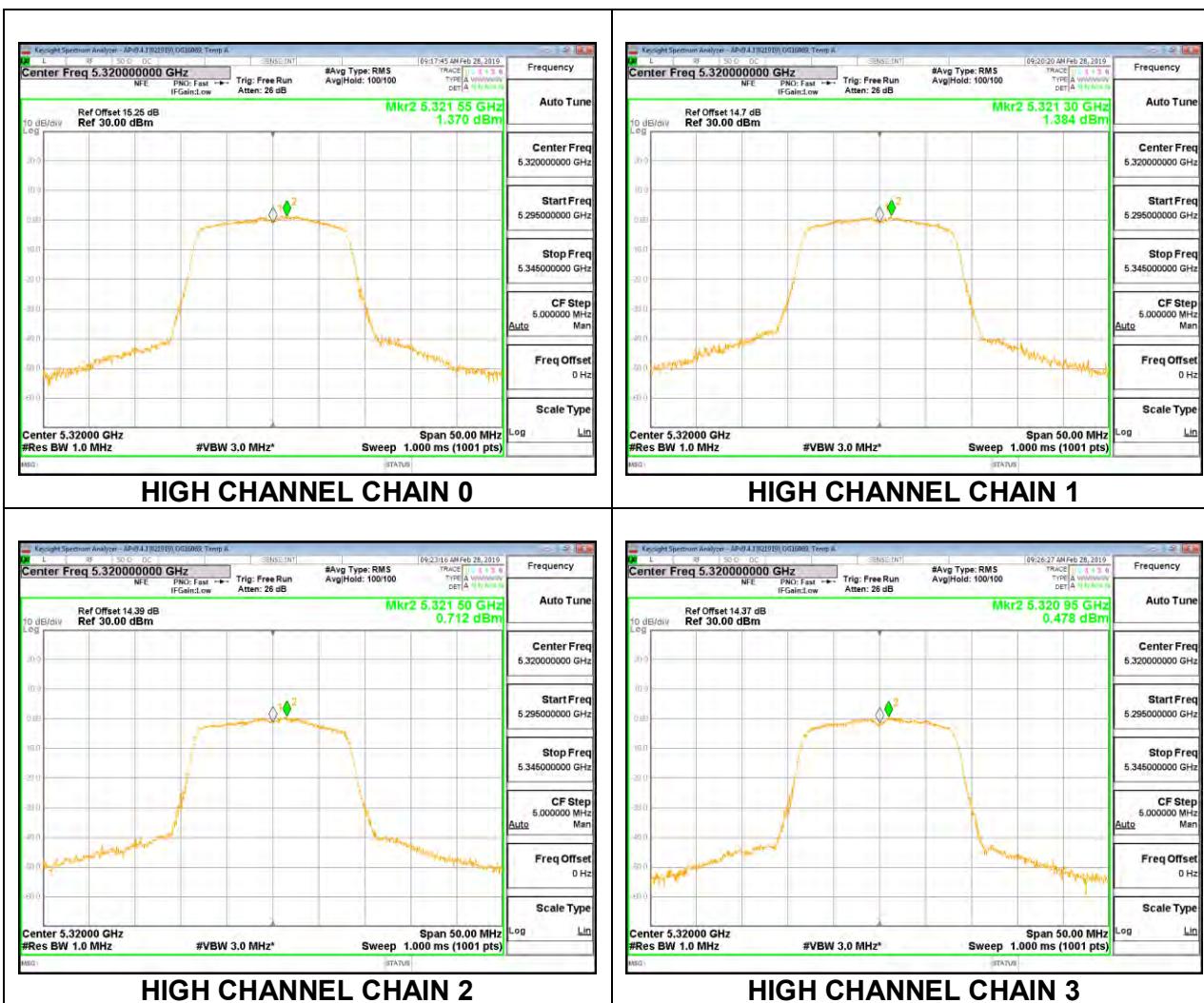
## LOW CHANNEL



## MID CHANNEL



## HIGH CHANNEL



## 8.5.4. 802.11n HT20 MODE IN THE 5.3 GHz BAND

## 4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE (FCC)

## 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/1MHz)
Low	5260	20.35	3.90	6.91	24.00	10.09
Mid	5300	20.30	3.90	6.91	24.00	10.09
High	5320	20.45	3.90	6.91	24.00	10.09

<b>Duty Cycle CF (dB)</b>	2.50	<b>Included in Calculations of Corr'd PSD</b>
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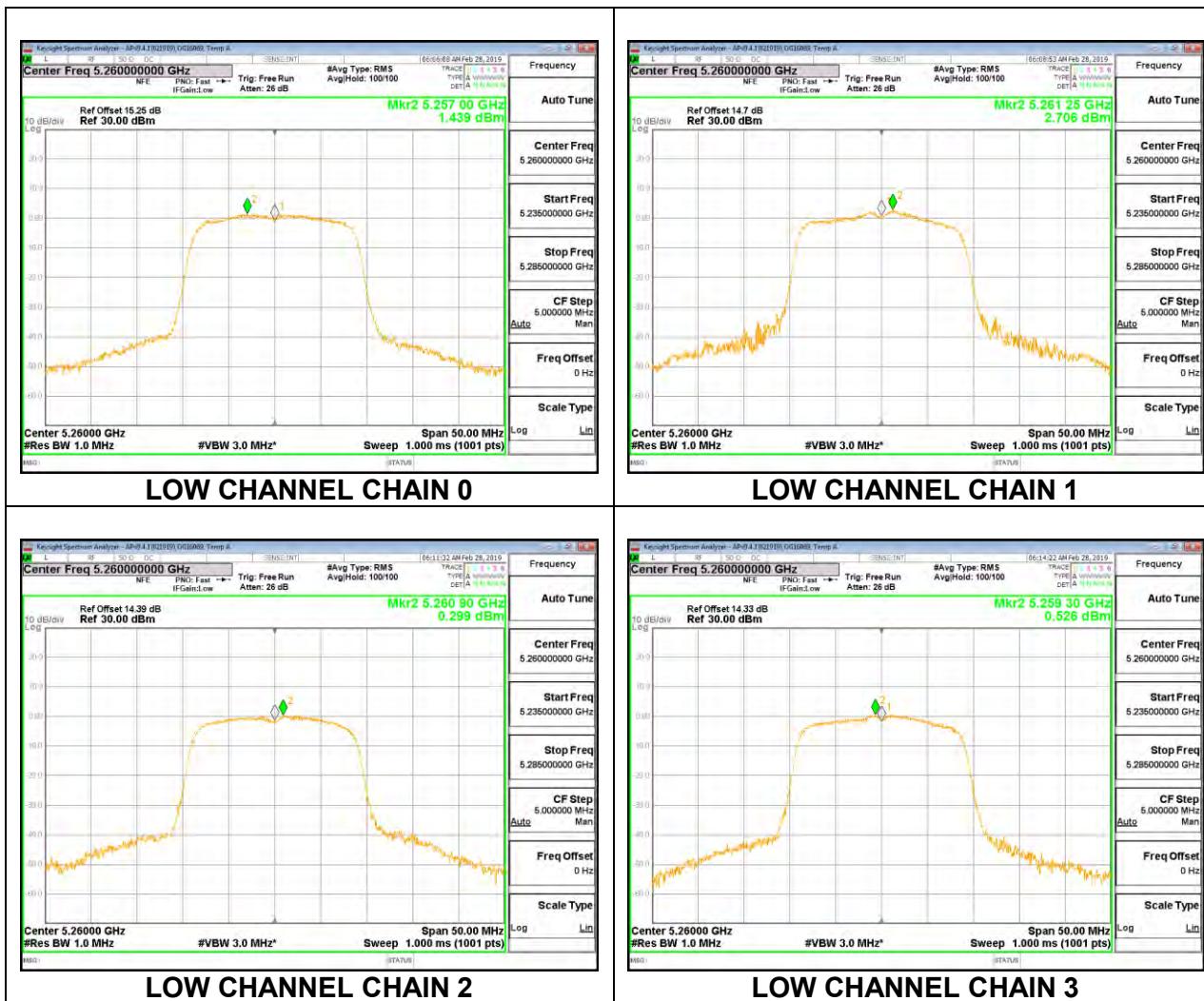
## Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Chain 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	14.85	15.25	14.25	14.91	20.85	24.00	-3.15
Mid	5300	15.61	15.35	15.13	15.85	21.51	24.00	-2.49
High	5320	15.90	15.25	15.00	15.90	21.55	24.00	-2.45

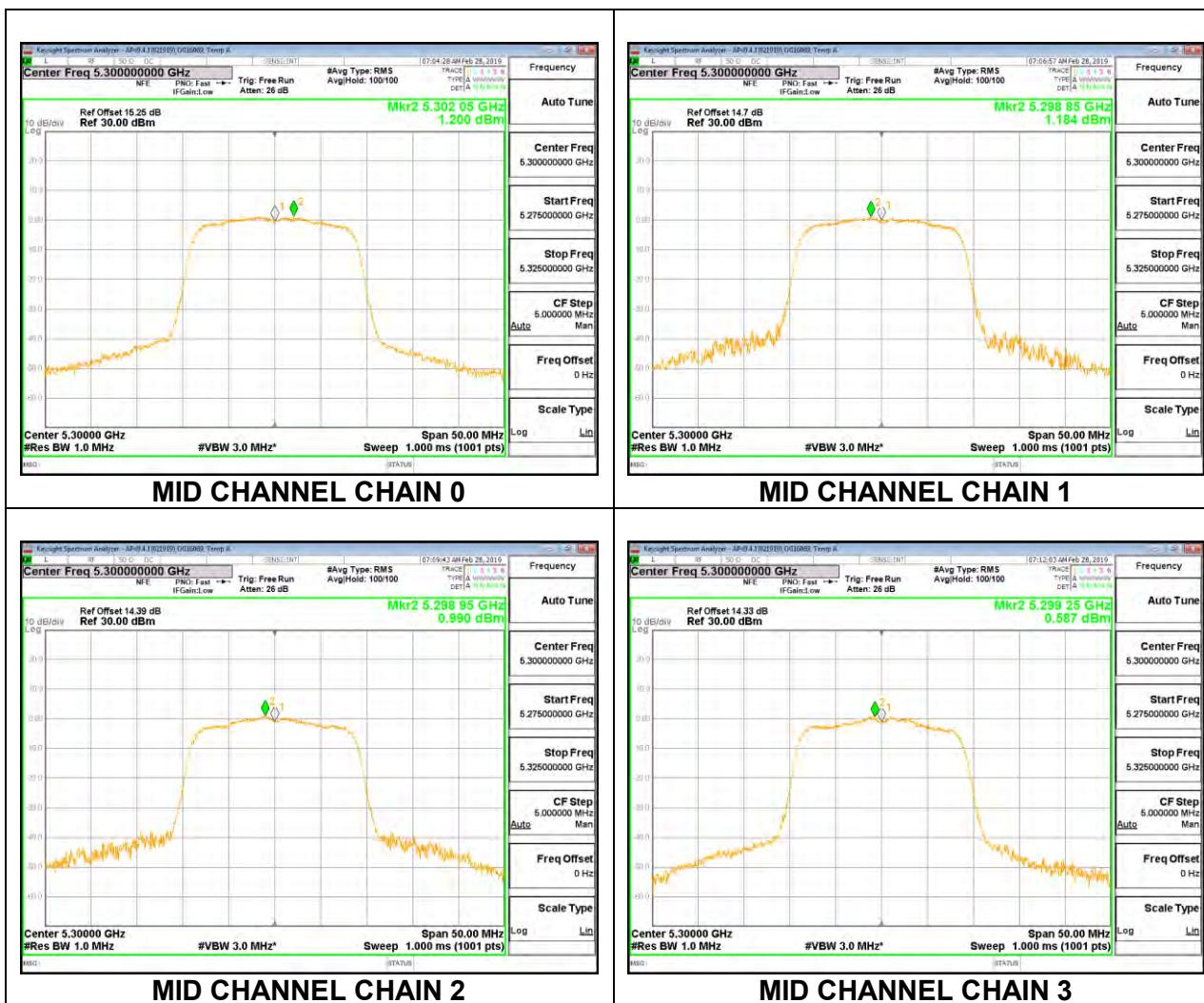
## PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/ 1MHz)	Chain 1 Meas PSD (dBm/ 1MHz)	Chain 2 Meas PSD (dBm/ 1MHz)	Chain 3 Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dB)	PSD Margin (dB)
Low	5260	1.44	2.71	0.30	0.53	9.87	10.09	-0.22
Mid	5300	1.20	1.18	0.99	0.59	9.52	10.09	-0.57
High	5320	1.93	1.86	0.77	0.56	9.85	10.09	-0.24

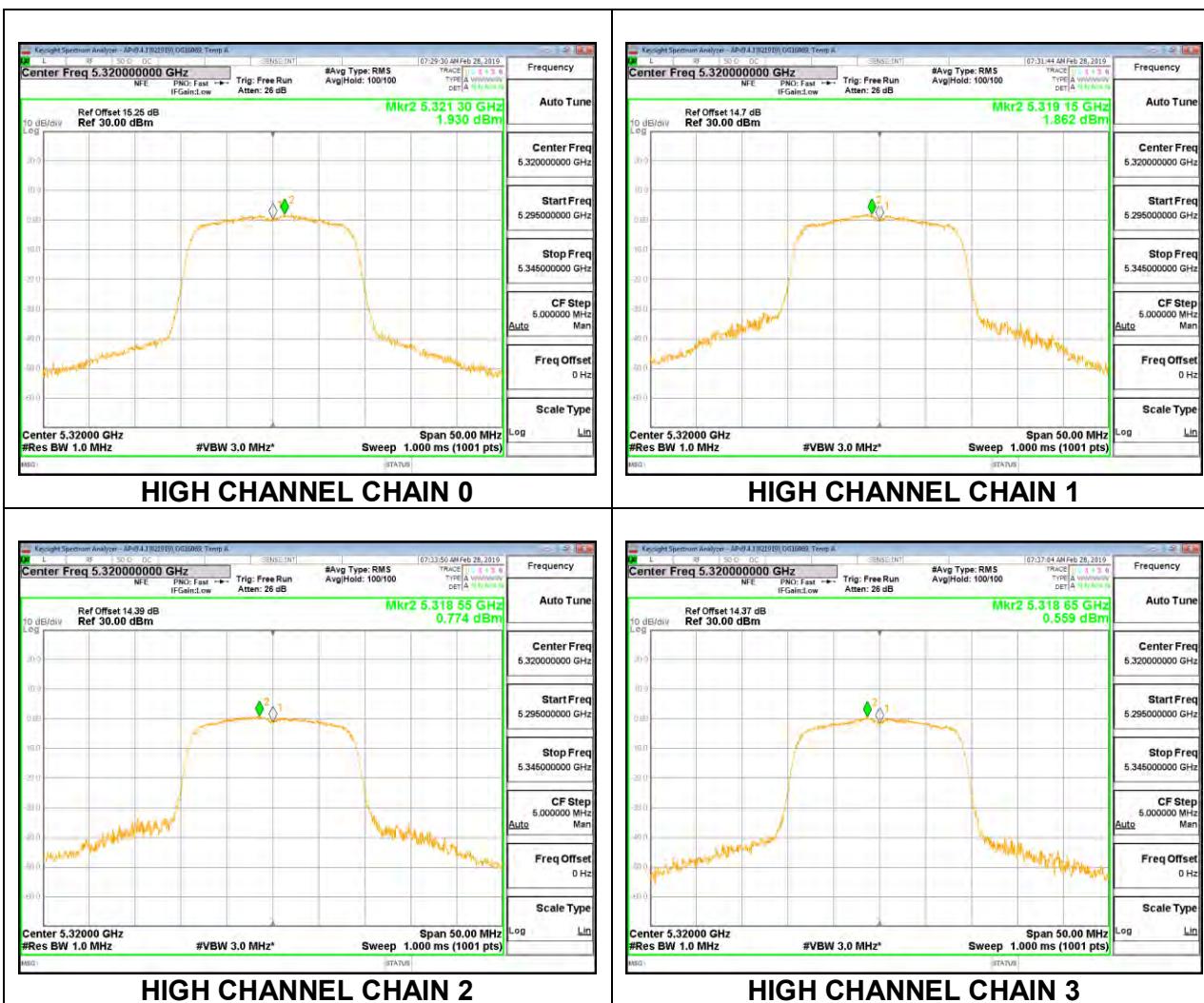
## LOW CHANNEL



## MID CHANNEL



## HIGH CHANNEL



**4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE (IC)**

**Bandwidth, Antenna Gain, and Limits**

Channel	Frequency (MHz)	Min 99% BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5260	17.489	3.90	6.91	23.43	11.00
Mid	5300	17.569	3.90	6.91	23.45	11.00
High	5320	17.560	3.90	6.91	23.45	11.00

Duty Cycle CF (dB)	2.50	Included in Calculations of Corr'd PSD
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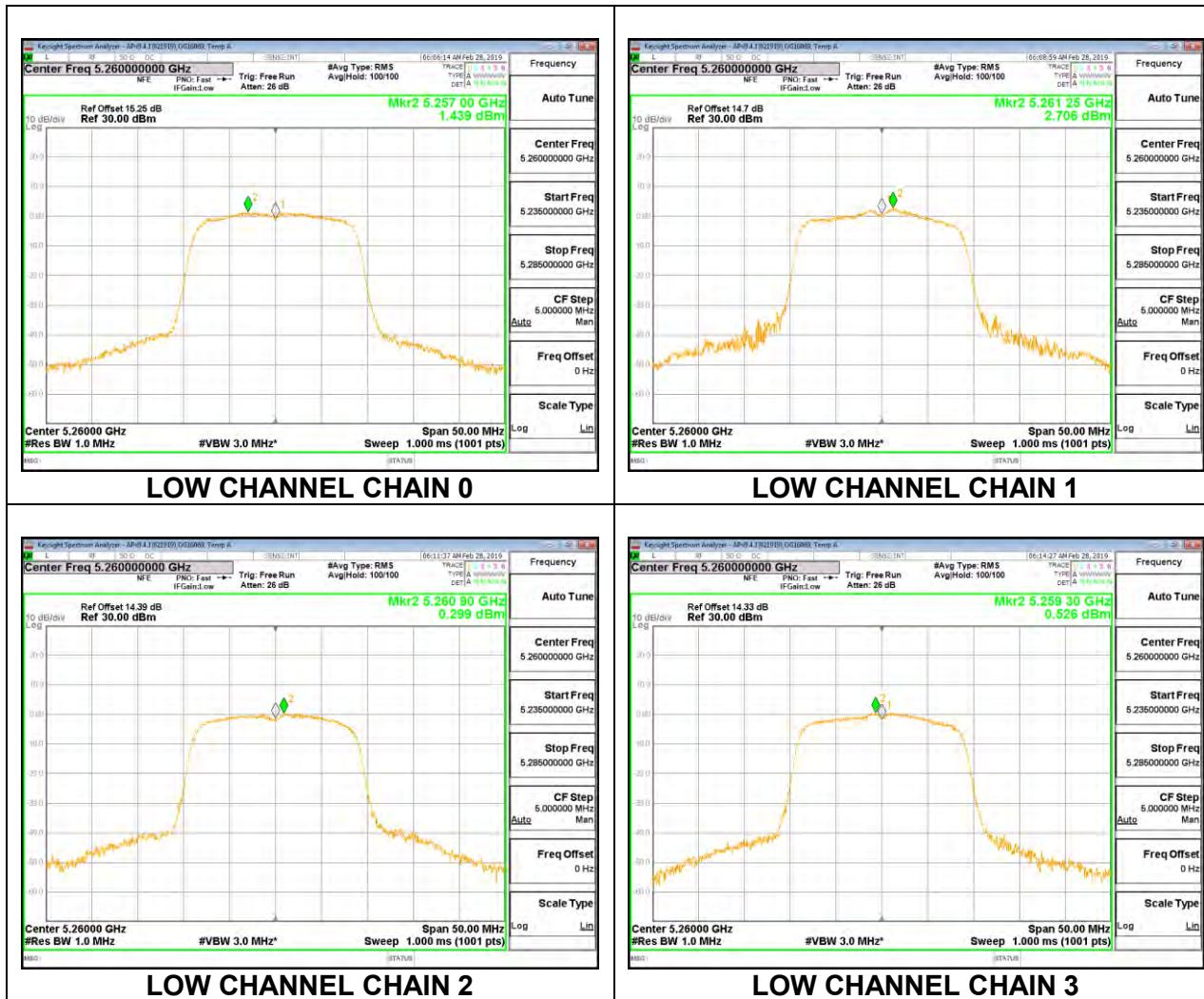
**Output Power Results**

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Chain 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	14.85	15.25	14.25	14.91	20.85	23.43	-2.58
Mid	5300	15.61	15.35	15.13	15.85	21.51	23.45	-1.93
High	5320	15.90	15.25	15.00	15.90	21.55	23.45	-1.89

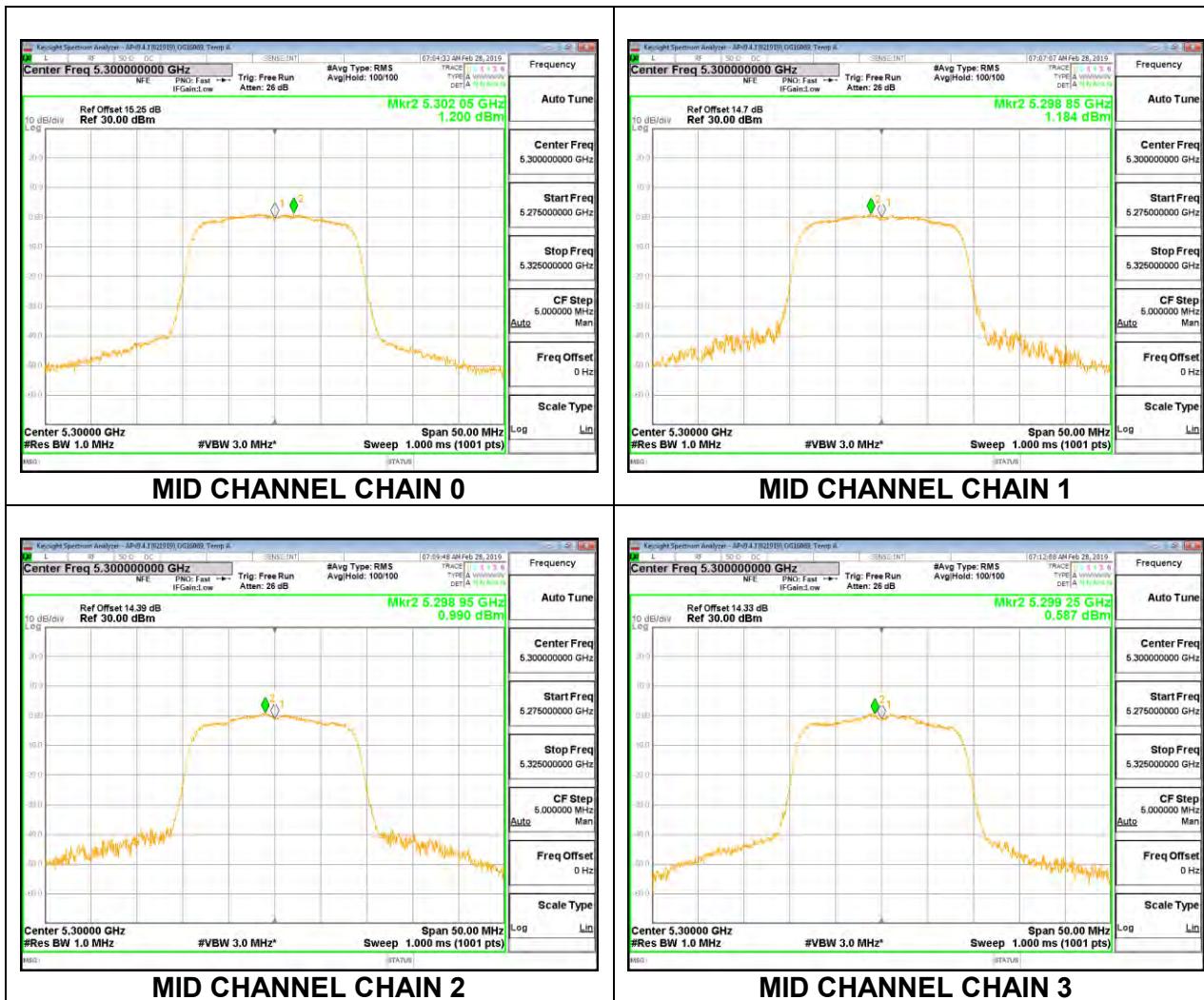
**PSD Results**

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/ 1MHz)	Chain 1 Meas PSD (dBm/ 1MHz)	Chain 2 Meas PSD (dBm/ 1MHz)	Chain 3 Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5260	1.44	2.71	0.30	0.53	9.87	11.00	-1.13
Mid	5300	1.20	1.18	0.99	0.59	9.52	11.00	-1.48
High	5320	1.93	1.86	0.77	0.56	9.85	11.00	-1.15

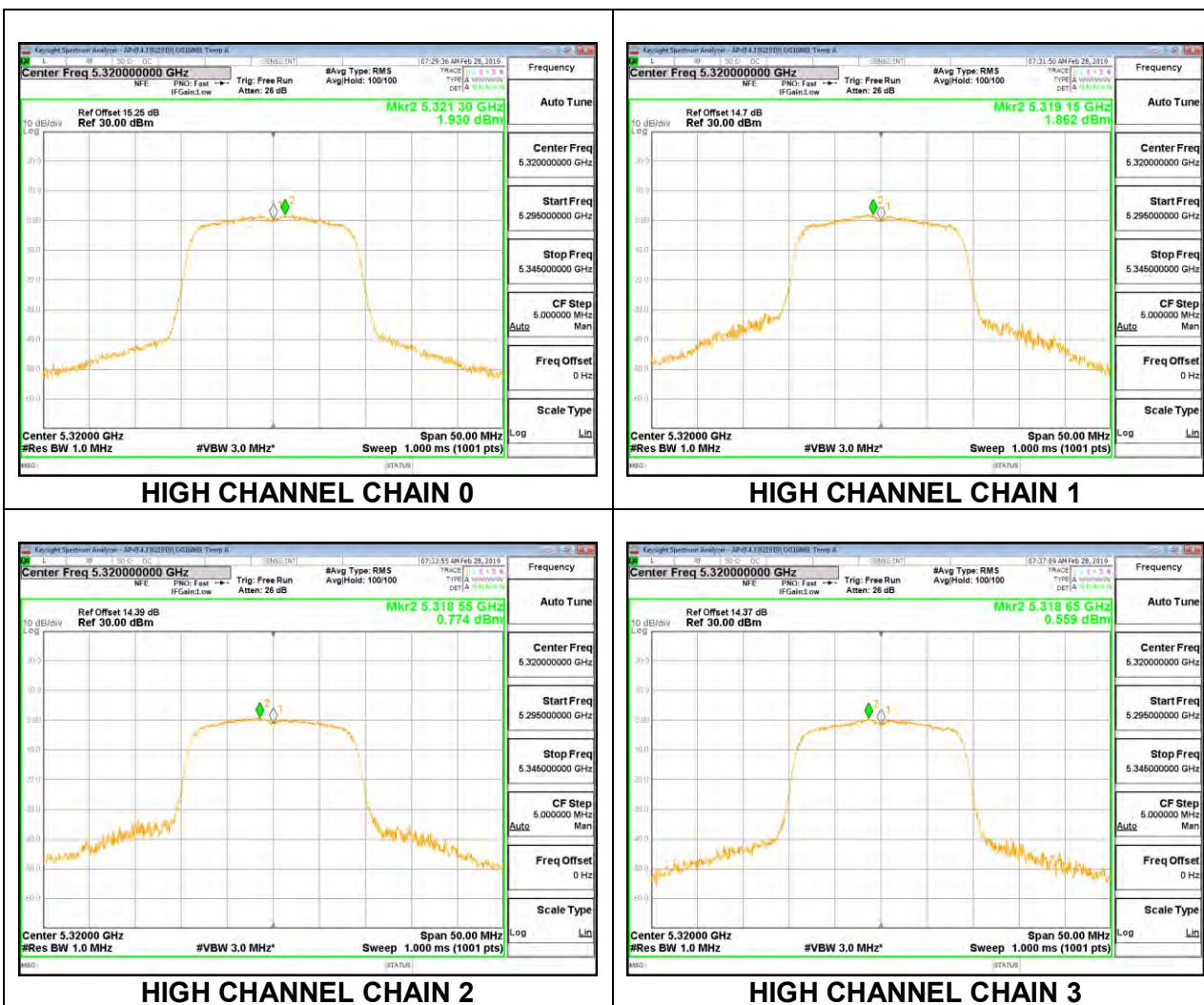
## LOW CHANNEL



## MID CHANNEL



## HIGH CHANNEL



### 8.5.5. 802.11a MODE IN THE 5.6 GHz BAND

#### 4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE (FCC+IC)

##### Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)
Low	5500	20.100	16.408	3.90	6.91
Mid	5580	20.150	16.434	3.90	6.91
High	5700	19.850	16.417	3.90	6.91

##### Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm/1MHz)	ISED PSD Limit (dBm/1MHz)	PSD Limit (dBm/1MHz)
Low	5500	24.00	23.15	29.15	23.15	10.09	11.00	10.09
Mid	5580	24.00	23.16	29.16	23.16	10.09	11.00	10.09
High	5700	23.98	23.15	29.15	23.15	10.09	11.00	10.09

Duty Cycle CF (dB)	2.91	Included in Calculations of Corr'd PSD
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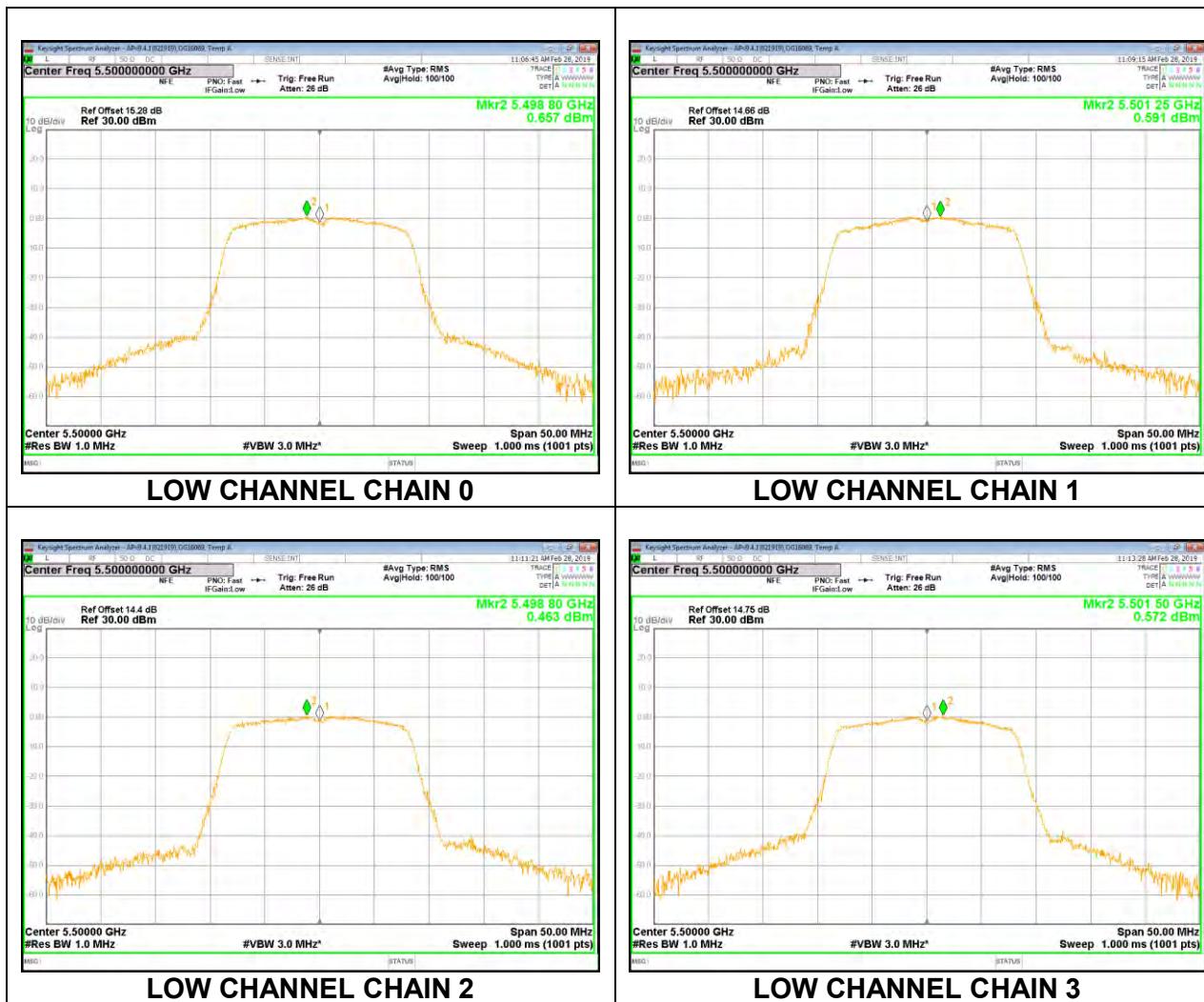
##### Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Chain 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	11.18	11.71	12.02	11.44	17.62	23.15	-5.53
Mid	5580	11.07	11.33	11.94	11.59	17.52	23.16	-5.64
High	5700	10.95	11.21	11.49	11.02	17.19	23.15	-5.96

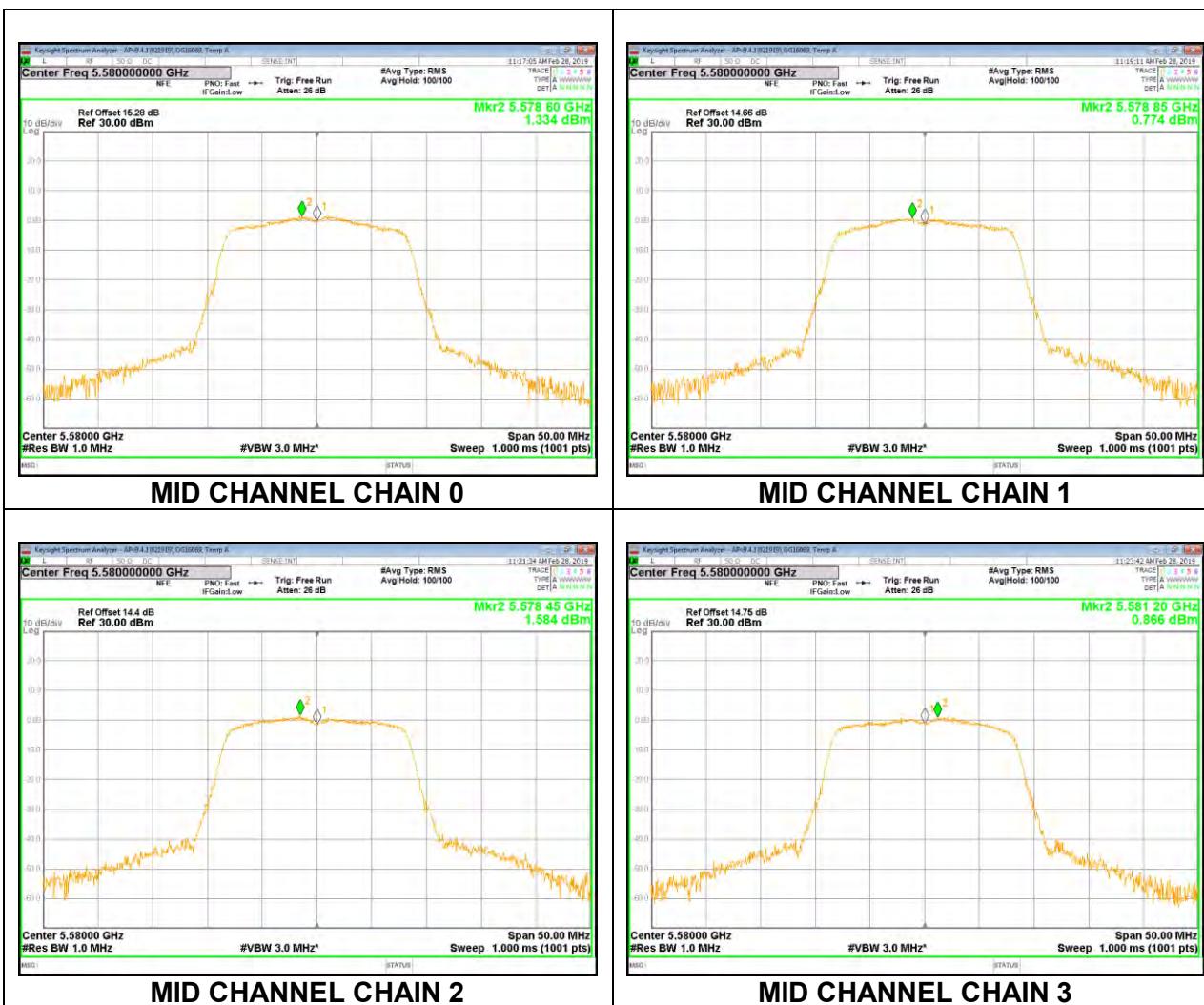
##### PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/ 1MHz)	Chain 1 Meas PSD (dBm/ 1MHz)	Chain 2 Meas PSD (dBm/ 1MHz)	Chain 3 Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5500	0.657	0.591	0.463	0.572	9.502	10.09	-0.59
Mid	5580	1.334	0.774	1.584	0.866	10.083	10.09	-0.01
High	5700	1.124	1.118	1.570	0.592	10.045	10.09	-0.04

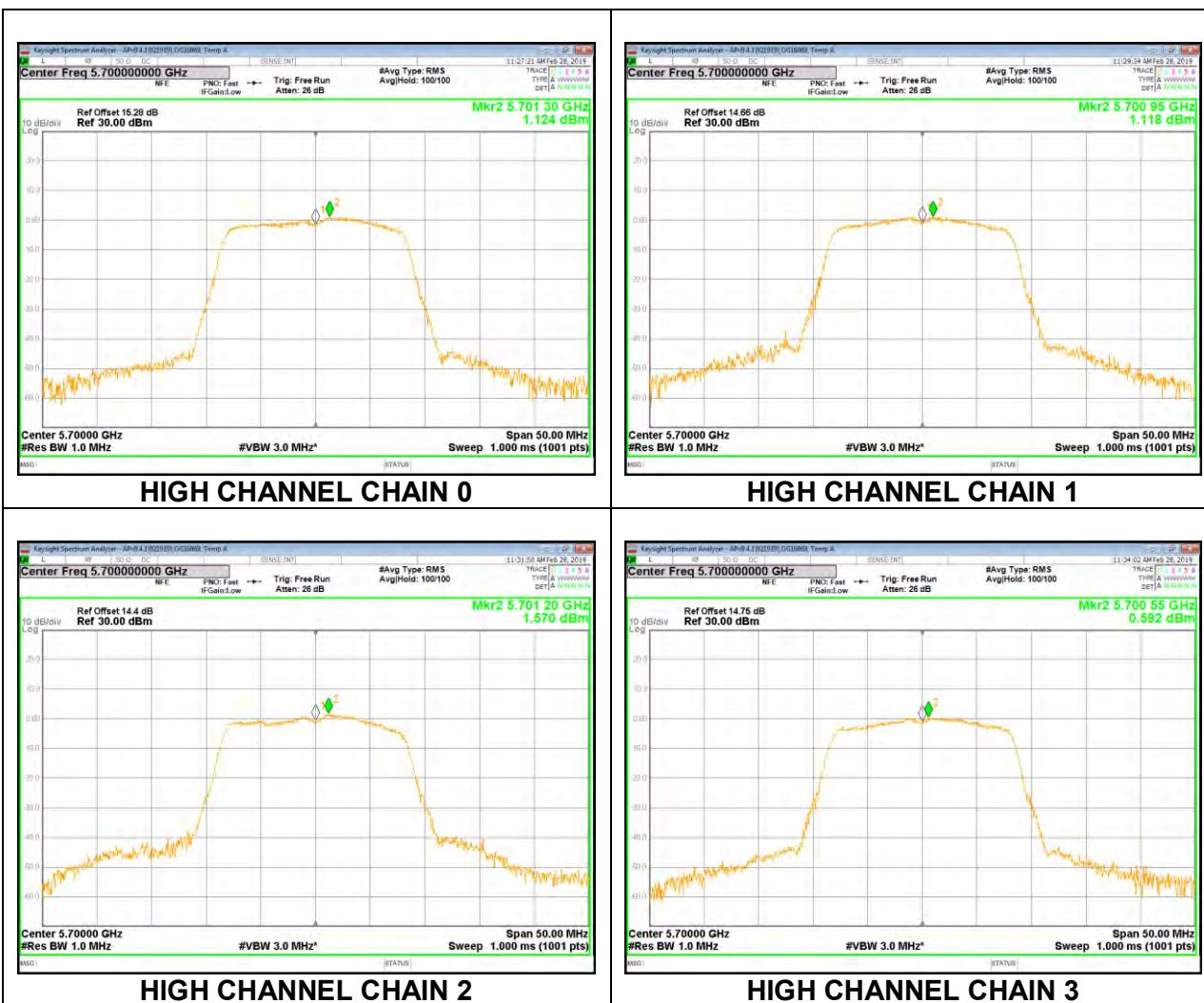
## LOW CHANNEL



## MID CHANNEL



## HIGH CHANNEL



### 8.5.6. 802.11n HT20 MODE IN THE 5.6 GHz BAND

#### 4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE (FCC+IC)

##### Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)
Low	5500	20.450	17.592	3.90	6.91
Mid	5580	20.600	17.557	3.90	6.91
High	5700	20.600	17.564	3.90	6.91

##### Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm/ 1MHz)	ISED PSD Limit (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)
Low	5500	24.00	23.45	29.45	23.45	10.09	11.00	10.09
Mid	5580	24.00	23.44	29.44	23.44	10.09	11.00	10.09
High	5700	24.00	23.45	29.45	23.45	10.09	11.00	10.09

**Duty Cycle CF (dB)** 2.50 **Included in Calculations of Corr'd PSD**

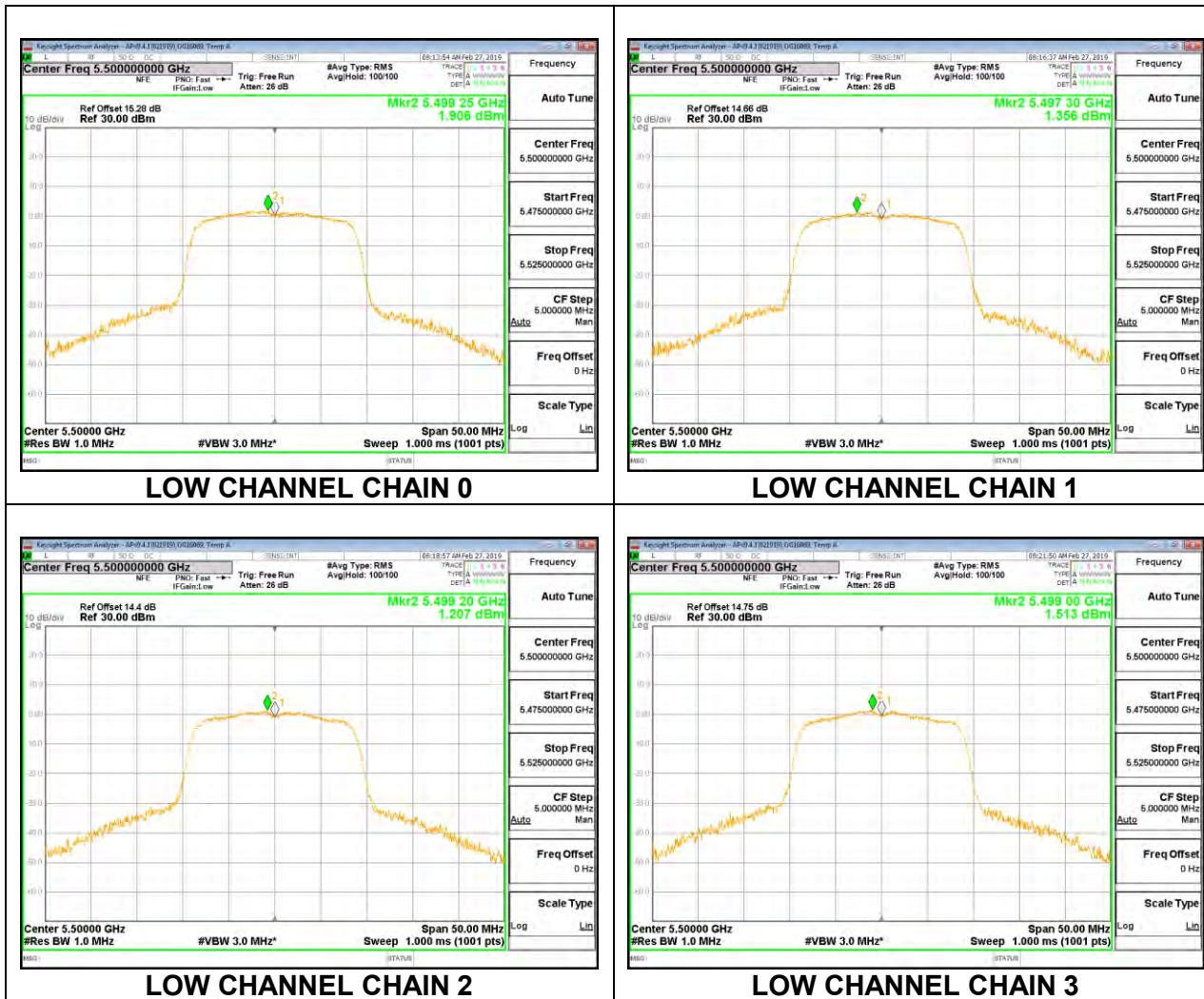
##### Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Chain 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	14.06	13.89	14.50	13.90	20.12	23.45	-3.34
Mid	5580	12.45	13.13	14.11	13.42	19.34	23.44	-4.11
High	5700	12.68	13.51	13.92	12.75	19.27	23.45	-4.18

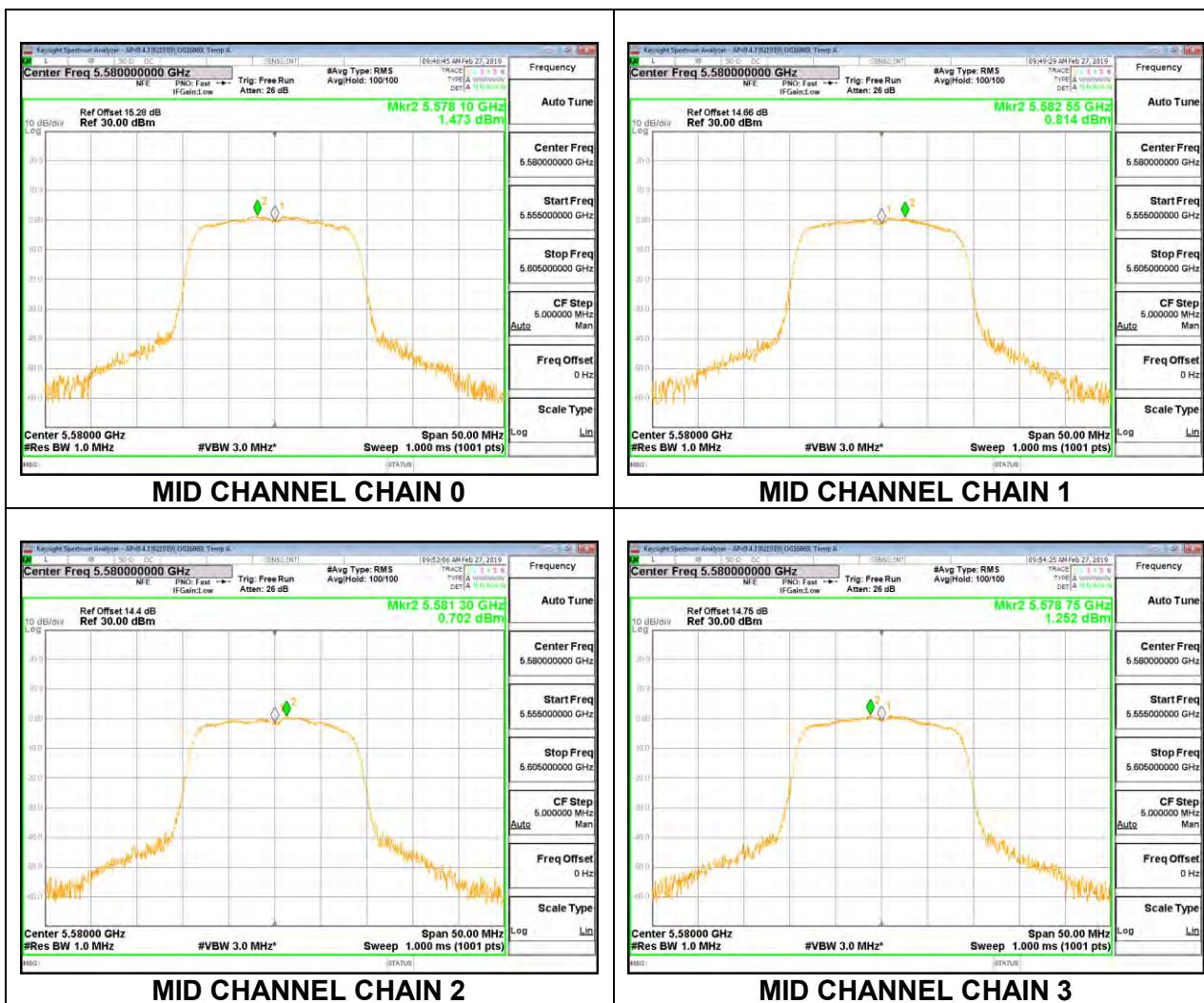
##### PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/ 1MHz)	Chain 1 Meas PSD (dBm/ 1MHz)	Chain 2 Meas PSD (dBm/ 1MHz)	Chain 3 Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5500	1.906	1.356	1.207	1.513	10.024	10.09	-0.07
Mid	5580	1.473	0.814	0.702	1.252	9.592	10.09	-0.50
High	5700	0.883	0.239	-0.218	0.853	8.984	10.09	-1.11

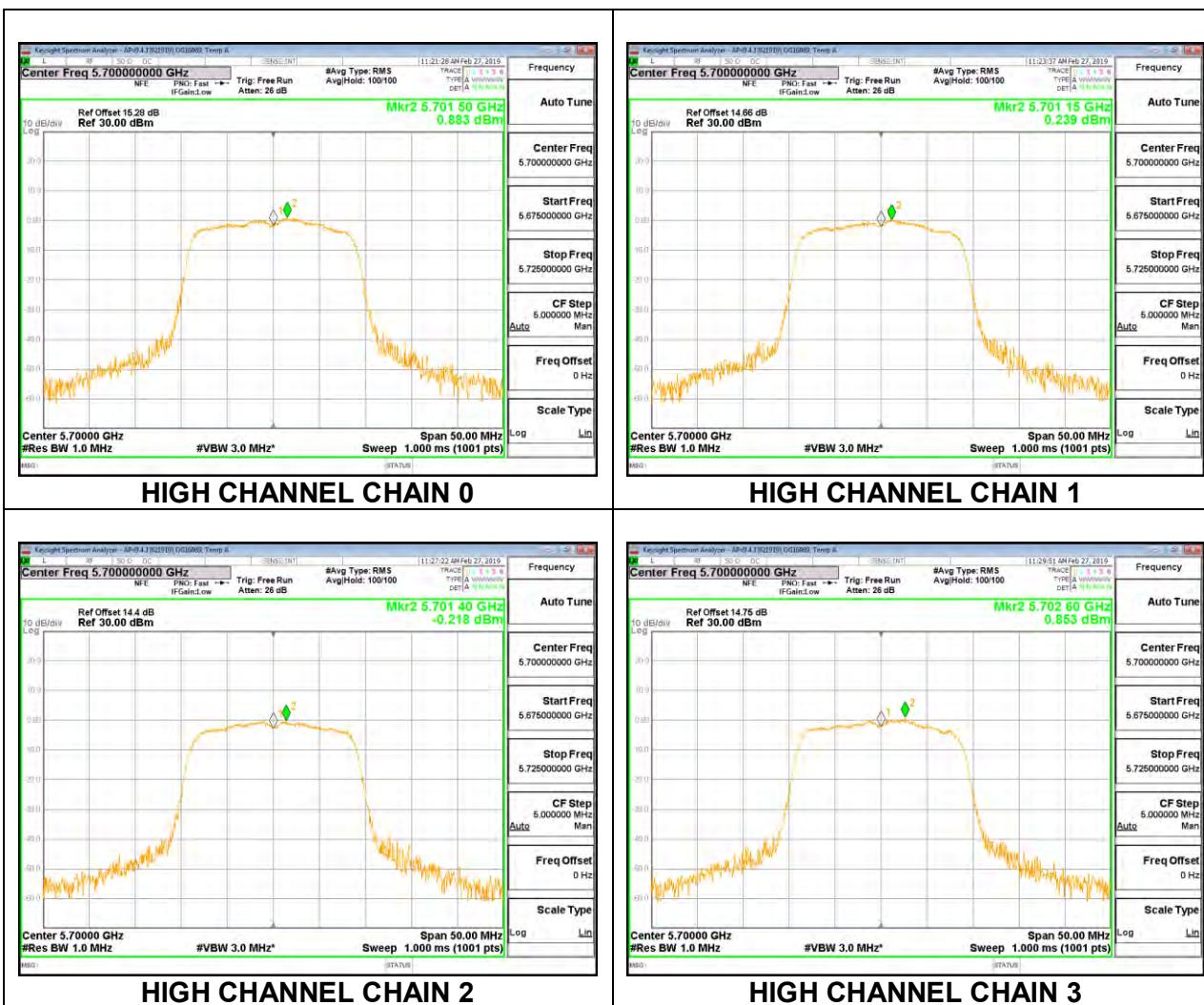
## LOW CHANNEL



## MID CHANNEL



## HIGH CHANNEL



### 8.5.7. 802.11a MODE IN THE 5.8 GHz BAND

#### 4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE (FCC+IC)

##### Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBm)	FCC/ISED Power Limit (dBm)	FCC/ISED PSD Limit (dBm/ 1MHz)
Low	5745	3.90	6.91	30.00	29.09
Mid	5785	3.90	6.91	30.00	29.09
High	5825	3.90	6.91	30.00	29.09

Duty Cycle CF (dB)	2.91	Included in Calculations of Corr'd PSD
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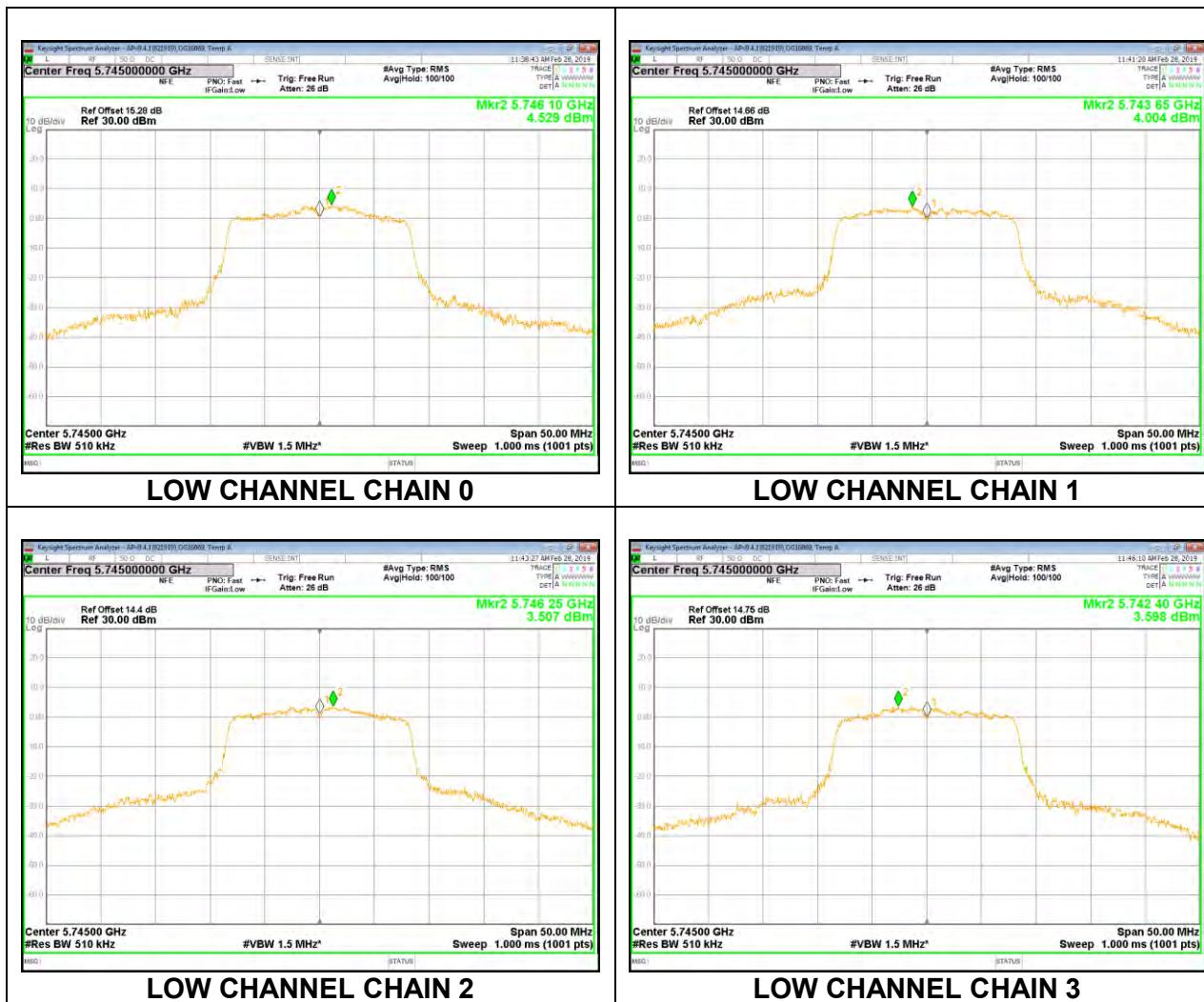
##### Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Chain 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5745	16.39	17.23	17.05	16.66	22.87	30.00	-7.13
Mid	5785	16.11	16.96	16.54	16.13	22.47	30.00	-7.53
High	5825	16.02	16.62	16.15	16.34	22.31	30.00	-7.69

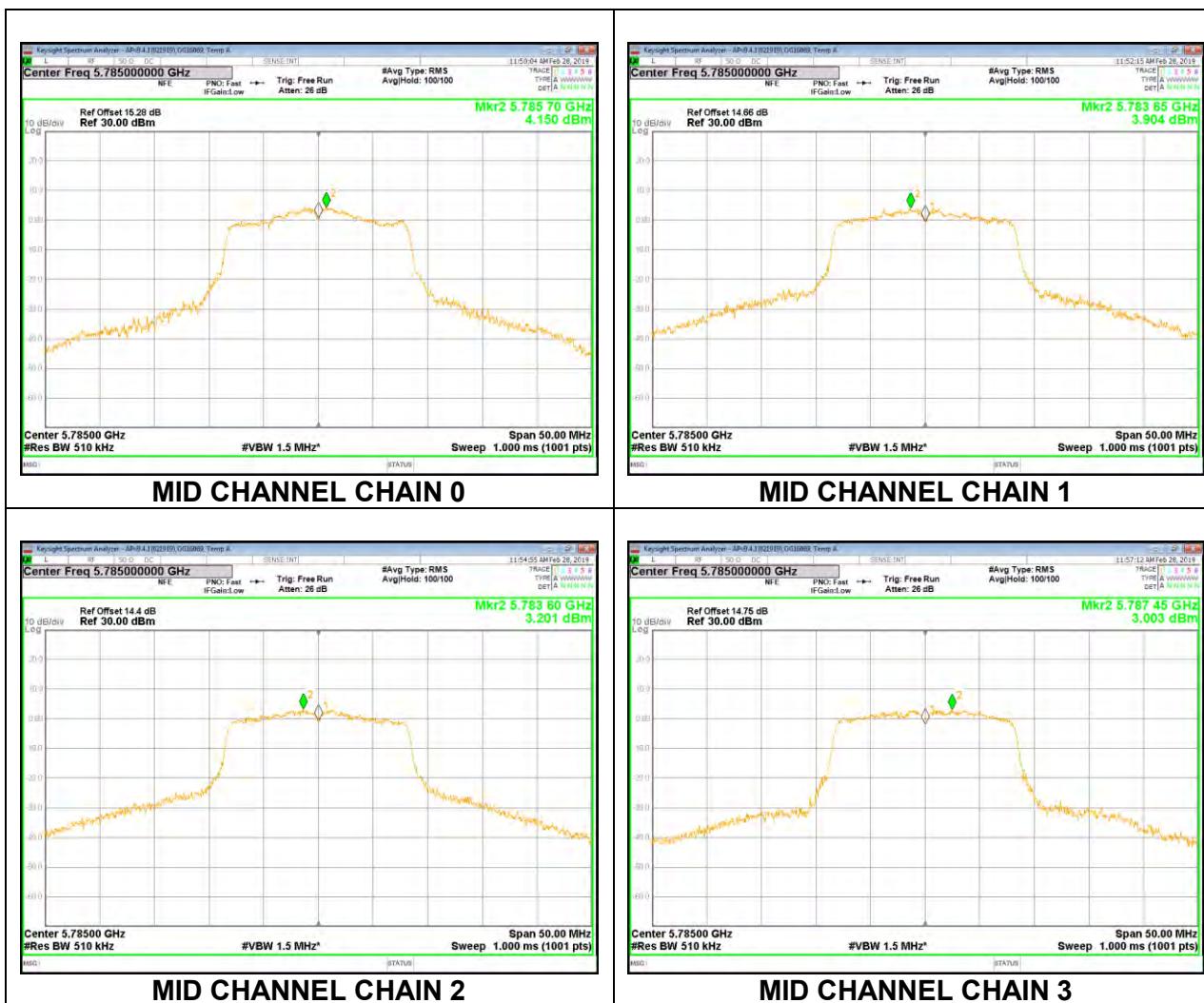
##### PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/ 1MHz)	Chain 1 Meas PSD (dBm/ 1MHz)	Chain 2 Meas PSD (dBm/ 1MHz)	Chain 3 Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5745	4.529	4.004	3.507	3.598	12.859	29.09	-16.23
Mid	5785	4.150	3.904	3.201	3.003	12.521	29.09	-16.57
High	5825	3.864	3.476	3.010	3.606	12.431	29.09	-16.66

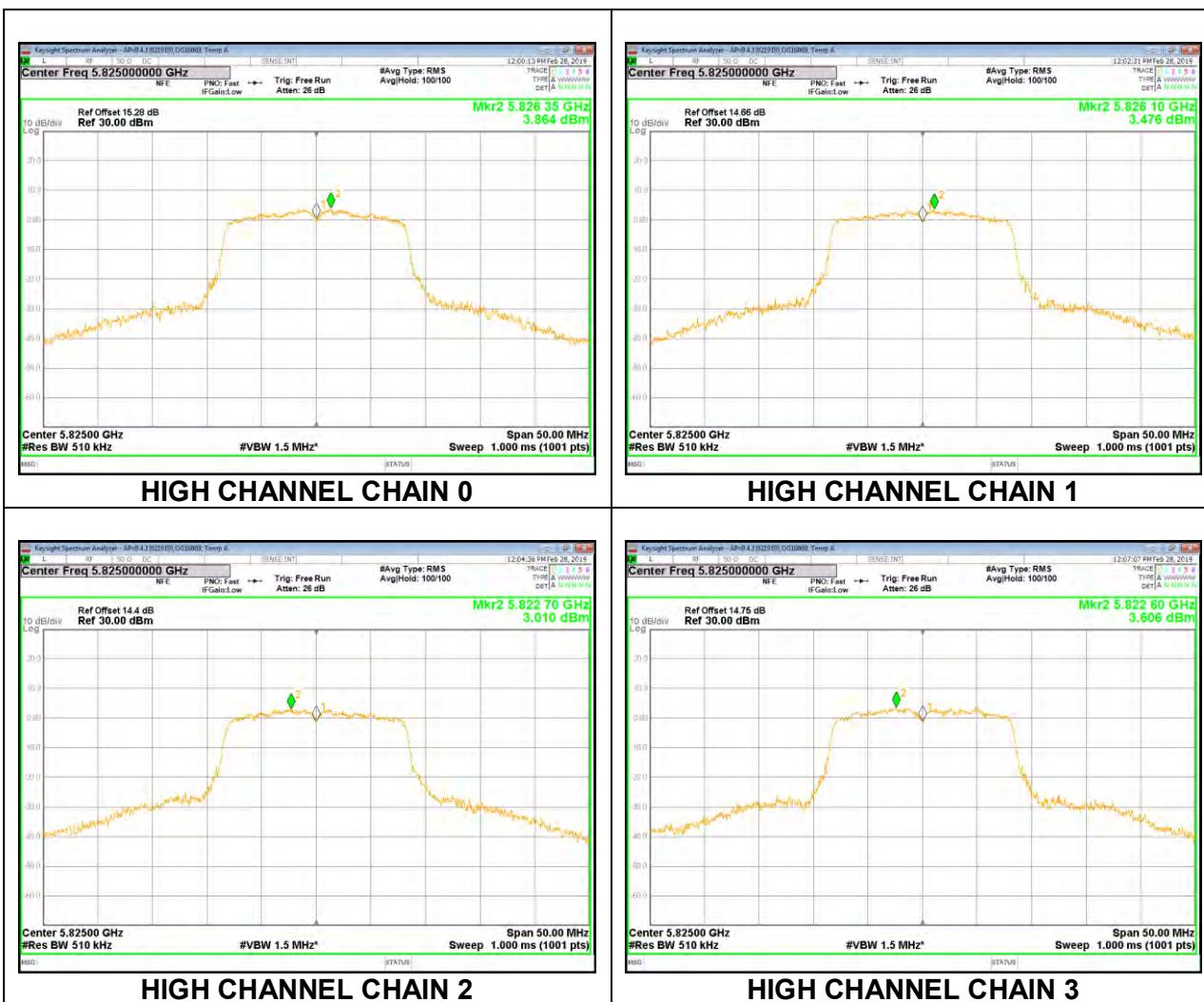
## LOW CHANNEL



## MID CHANNEL



## HIGH CHANNEL



### 8.5.8. 802.11n HT20 MODE IN THE 5.8 GHz BAND

#### 4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE (FCC+IC)

##### Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBm)	FCC/ISED Power Limit (dBm)	FCC/ISED PSD Limit (dBm/ 1MHz)
Low	5745	3.90	6.91	30.00	29.09
Mid	5785	3.90	6.91	30.00	29.09
High	5825	3.90	6.91	30.00	29.09

<b>Duty Cycle CF (dB)</b>	2.50	<b>Included in Calculations of Corr'd PSD</b>
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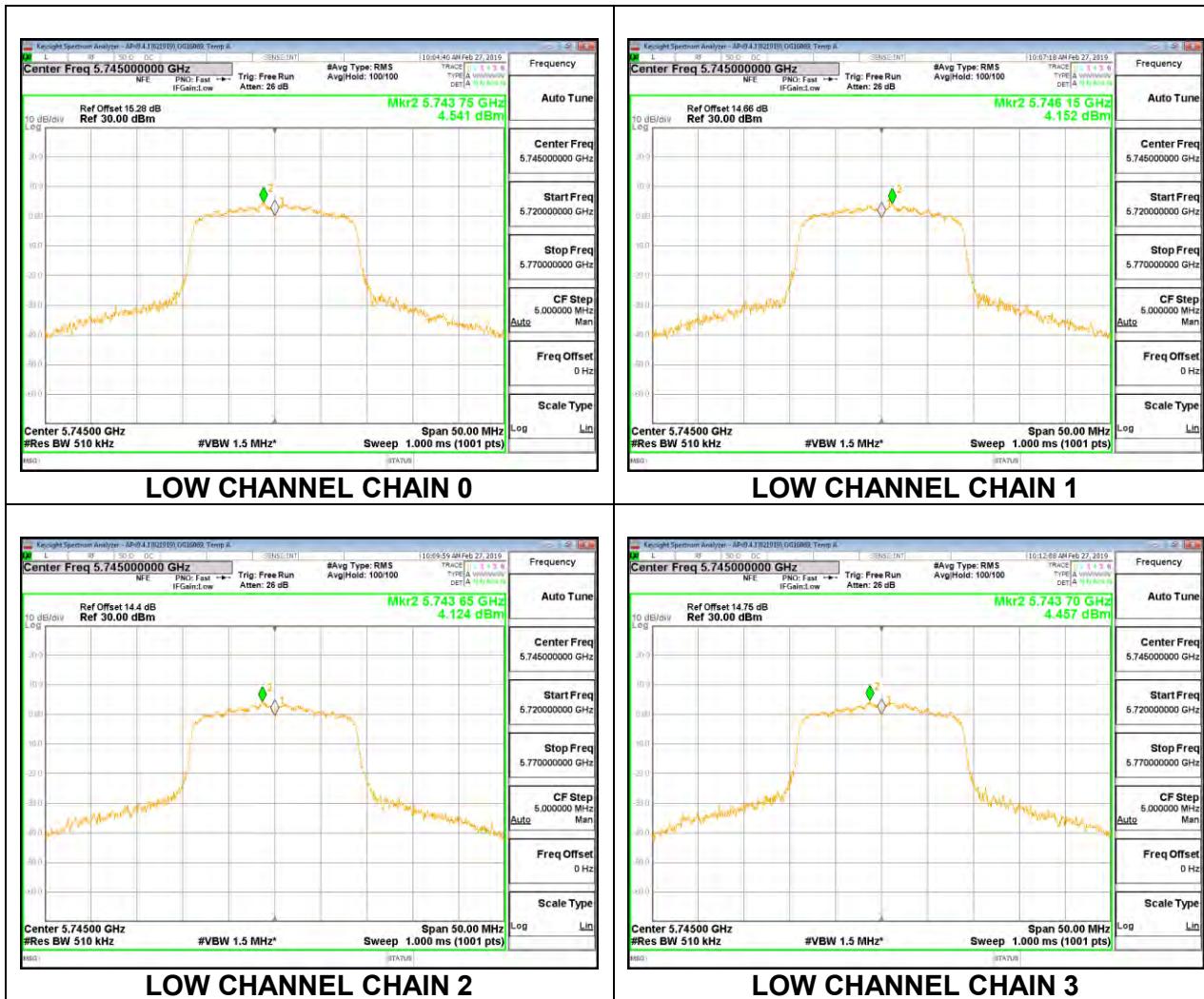
##### Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Chain 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5745	18.90	19.85	19.43	18.96	25.32	30.00	-4.68
Mid	5785	18.41	19.20	19.05	18.81	24.90	30.00	-5.10
High	5825	18.81	19.37	18.75	18.93	24.99	30.00	-5.01

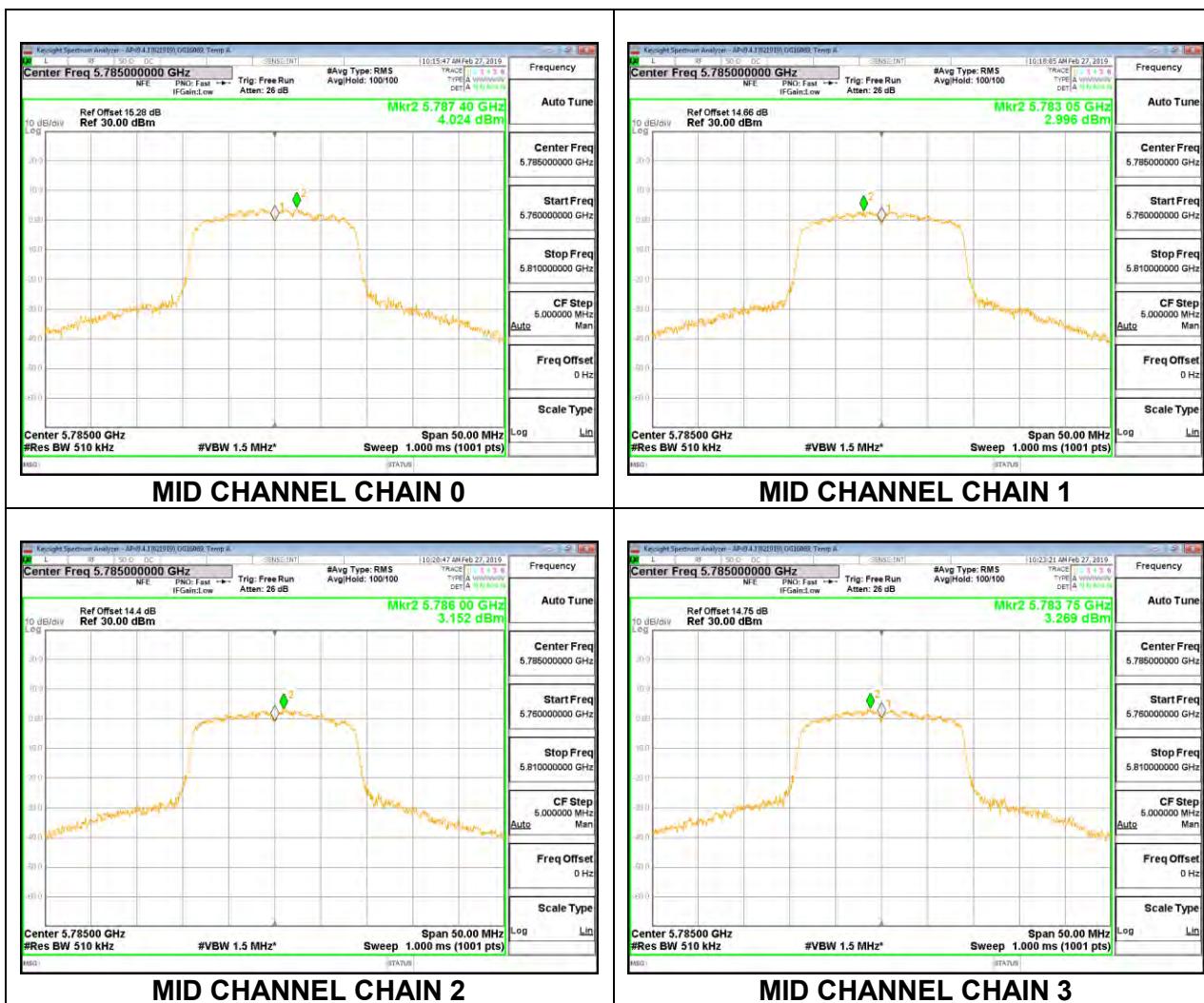
##### PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/ 1MHz)	Chain 1 Meas PSD (dBm/ 1MHz)	Chain 2 Meas PSD (dBm/ 1MHz)	Chain 3 Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5745	4.541	4.152	4.124	4.457	12.843	29.09	-16.25
Mid	5785	4.024	2.996	3.152	3.269	11.899	29.09	-17.19
High	5825	3.826	3.452	3.732	3.690	12.198	29.09	-16.89

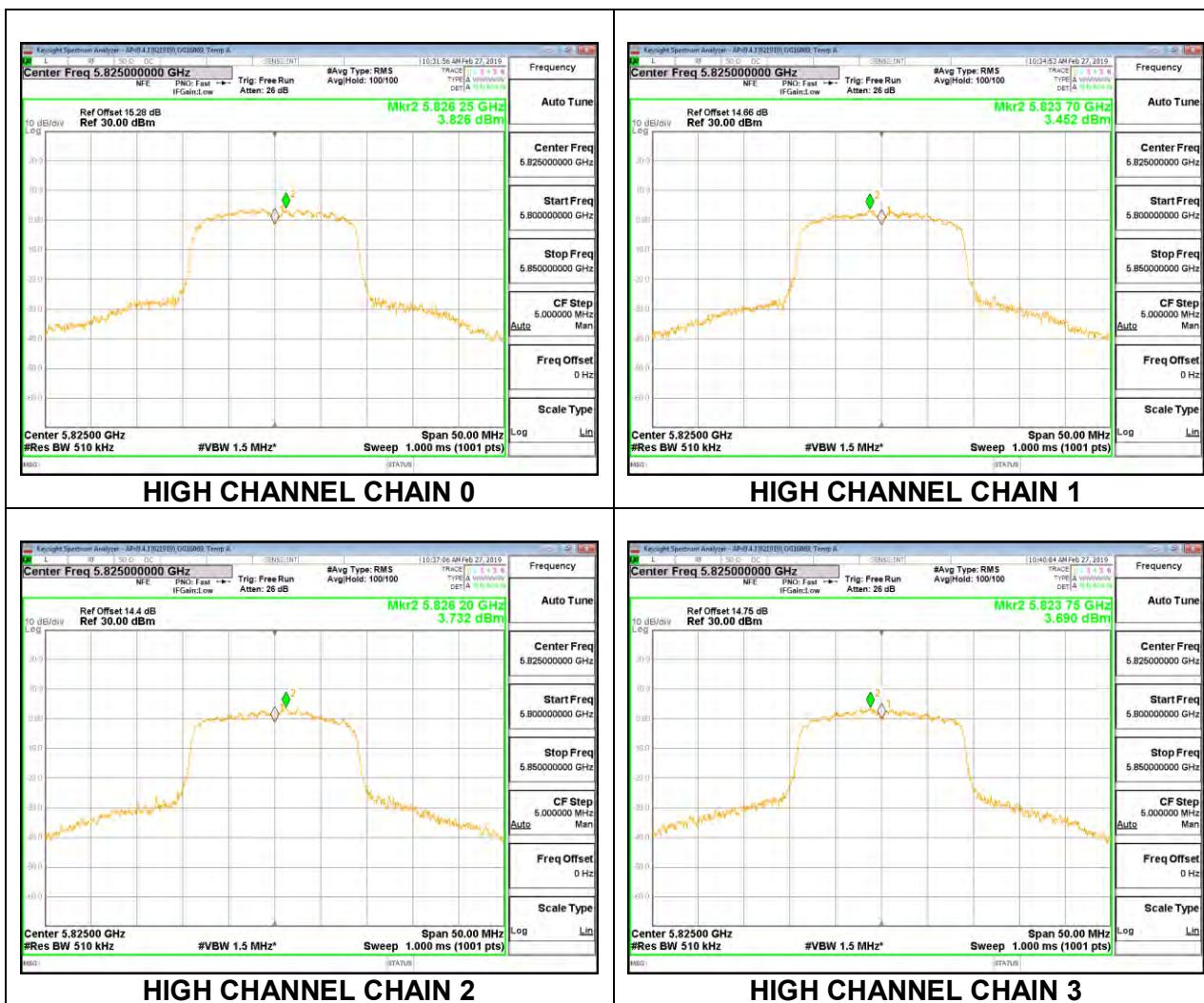
## LOW CHANNEL



## MID CHANNEL



## HIGH CHANNEL



## 9. RADIATED TEST RESULTS

### LIMITS

FCC §15.205 and §15.209 -Restricted bands

FCC §15.407(b)(1-3) -Un-Restricted bands

#### After January 01, 2019 for Outside of the Restricted Bands Emissions

RSS 247 Issue 2 Sections

6.2.1.2 (for 5150-5250 MHz band)

6.2.2.2 (for 5250-5350 MHz band)

6.2.3.2 (for 5470-5600 MHz and 5650-5725 MHz bands)

6.2.4.2 (for 5725-5850 MHz band)

NCC LP0002 §2.7 and §2.8

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

### TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

The spectrum from 30 MHz to 1GHz and 18GHz to 40 GHz is investigated with the transmitter set to transmit at the channel with highest output power as worst-case scenario. 1GHz to 18GHz was set to the lowest, middle, and highest channels in the 5 GHz bands.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

2D antenna use - For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel), parallel and perpendicular are the worst orientations, therefore testing was performed on these two orientations only.

**KDB 414788 Open Field Site(OFS) and Chamber Correlation Justification**

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

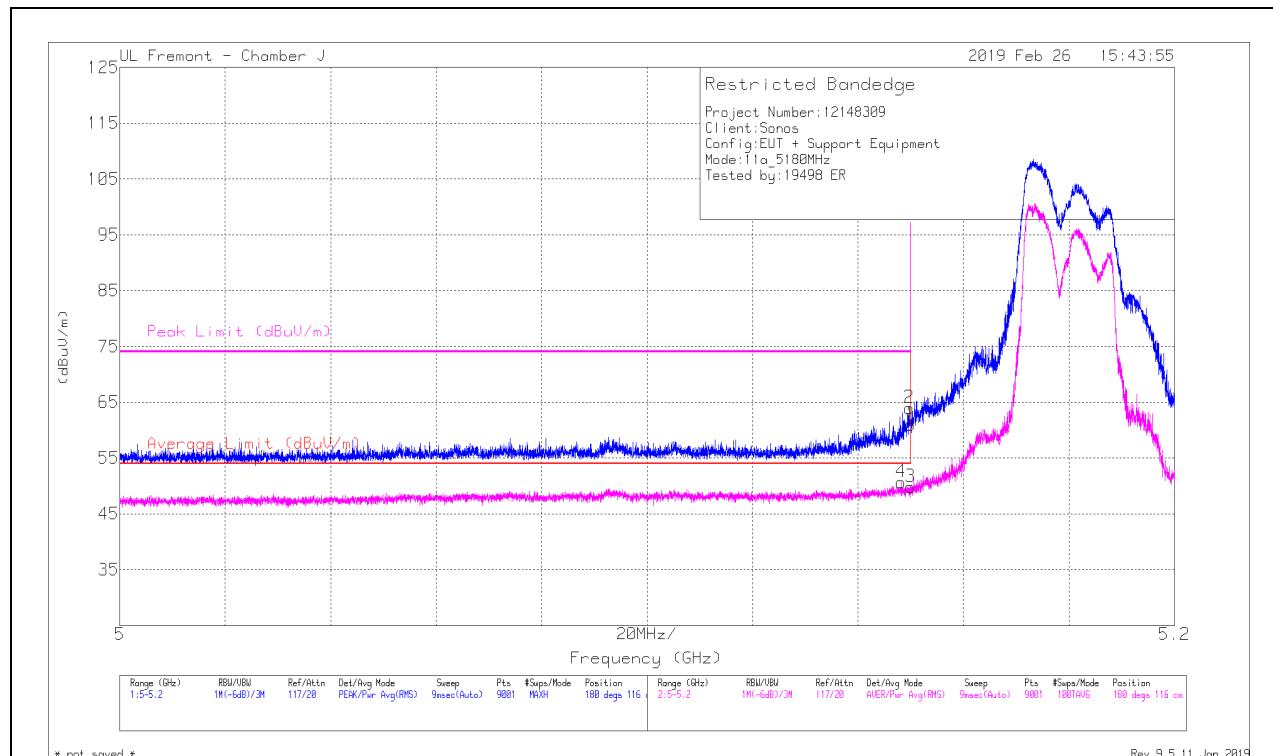
## 9.1. TRANSMITTER ABOVE 1 GHz

### 9.1.1. TX ABOVE 1 GHz 802.11a MODE IN THE 5.2 GHz BAND

#### 4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE

#### BANDEDGE (LOW CHANNEL)

#### HORIZONTAL RESULT



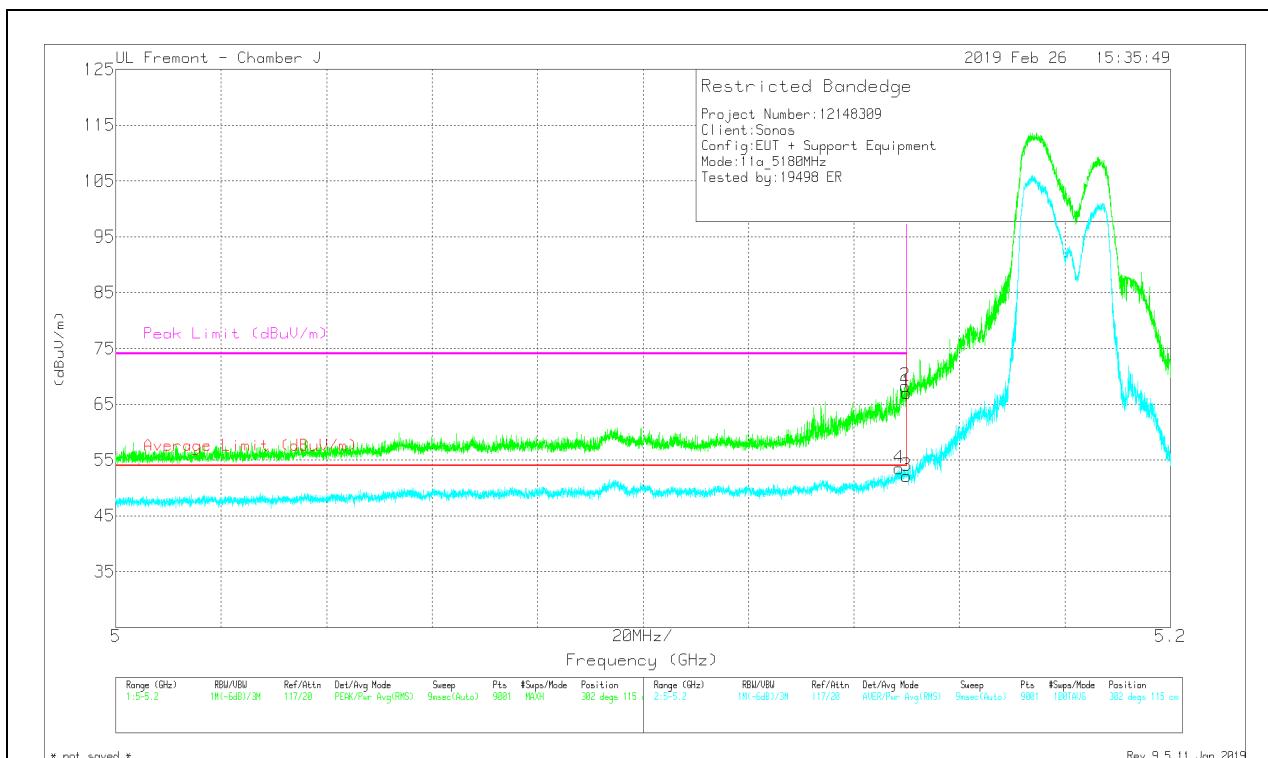
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dBm)	Amp/Cbl/Filtr/Pa d (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	48.36	PK	34.2	-21.6	0	60.96	-	-	74	-13.04	180	116	H
2	* 5.15	51.31	PK	34.2	-21.6	0	63.91	-	-	74	-10.09	180	116	H
3	* 5.15	34.22	RMS	34.2	-21.6	2.91	49.73	54	-4.27	-	-	180	116	H
4	* 5.148	35.12	RMS	34.2	-21.6	2.91	50.63	54	-3.37	-	-	180	116	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK - Peak detector

RMS - RMS detection

## VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	54.49	Pk	34.2	-21.6	0	67.09	-	-	74	-6.91	302	115	V
2	* 5.15	55.71	Pk	34.2	-21.6	0	68.31	-	-	74	-5.69	302	115	V
3	* 5.15	36.69	RMS	34.2	-21.6	2.91	52.2	54	-1.8	-	-	302	115	V
4	* 5.149	37.98	RMS	34.2	-21.6	2.91	53.49	54	-0.51	-	-	302	115	V

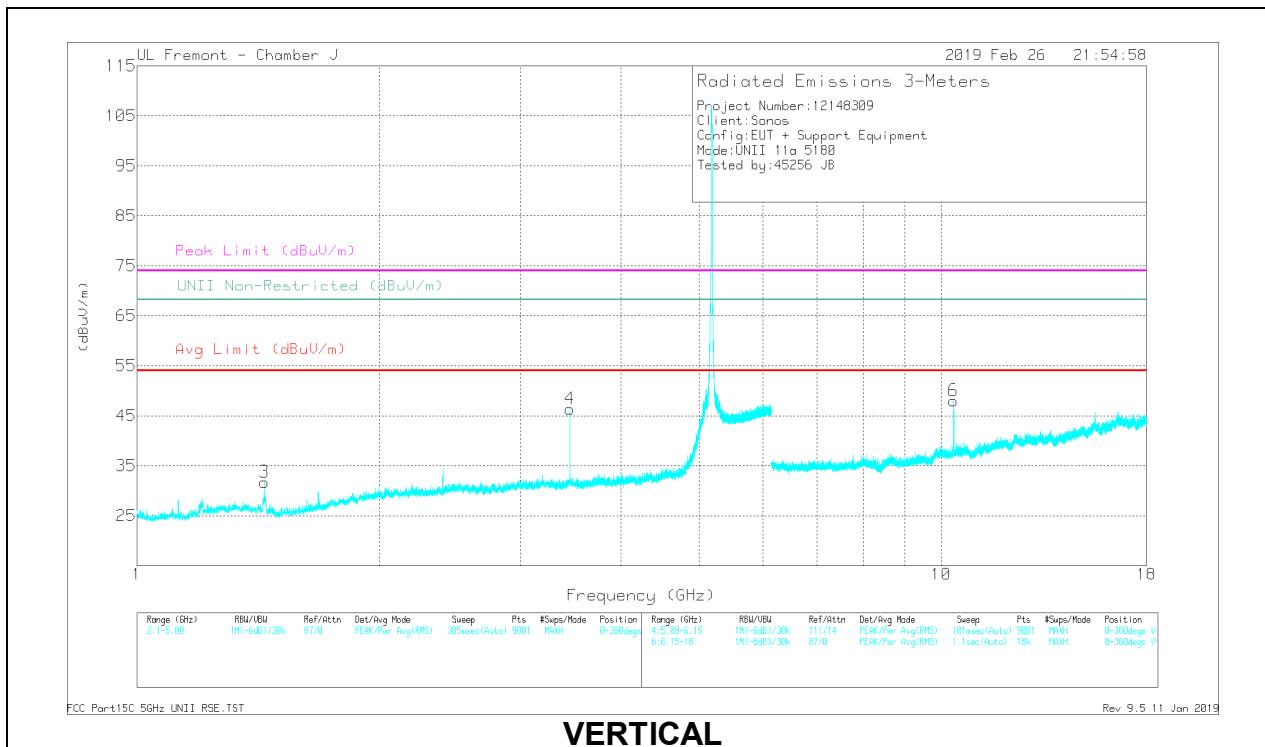
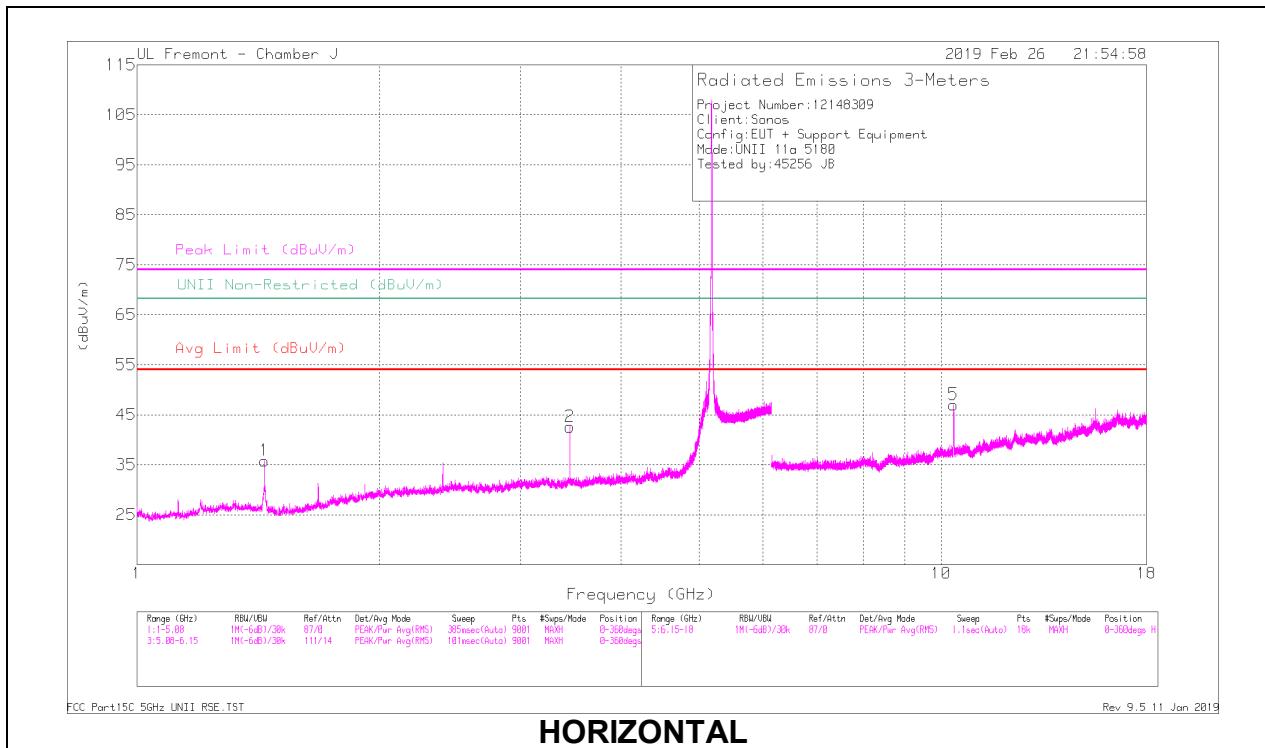
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

## HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL RESULTS



## RADIATED EMISSIONS

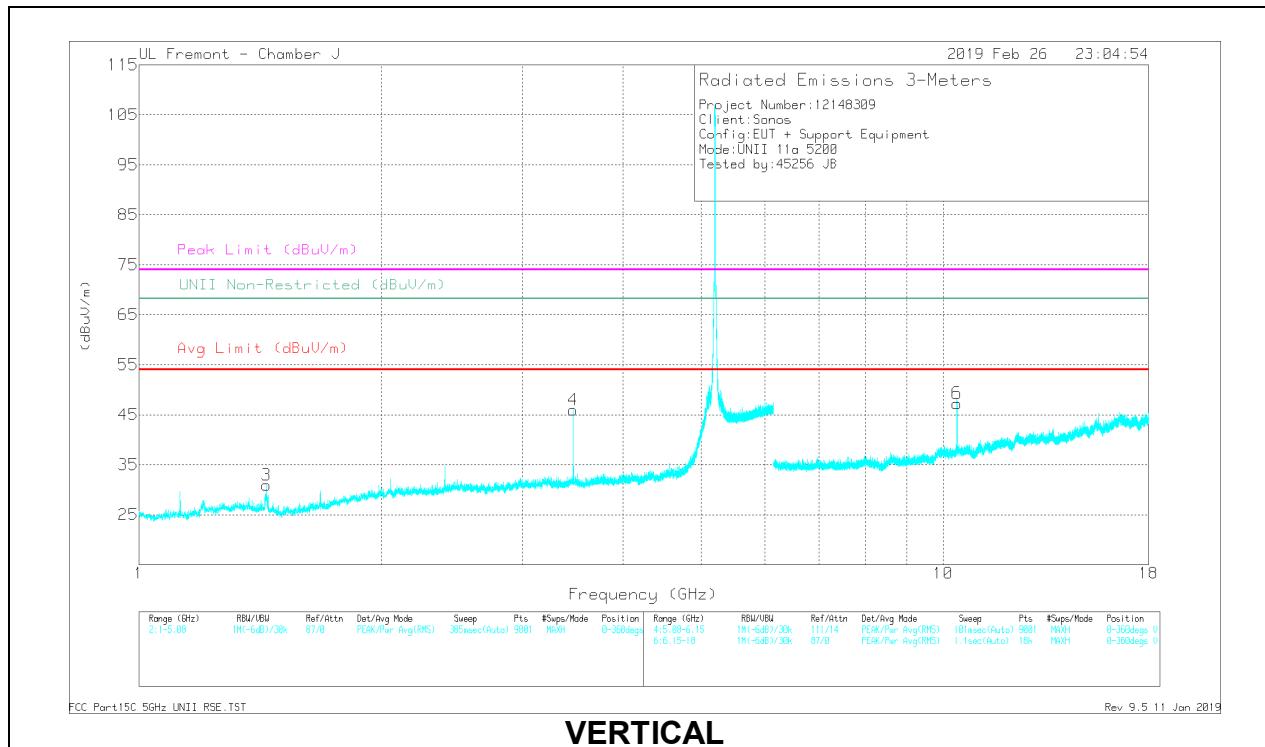
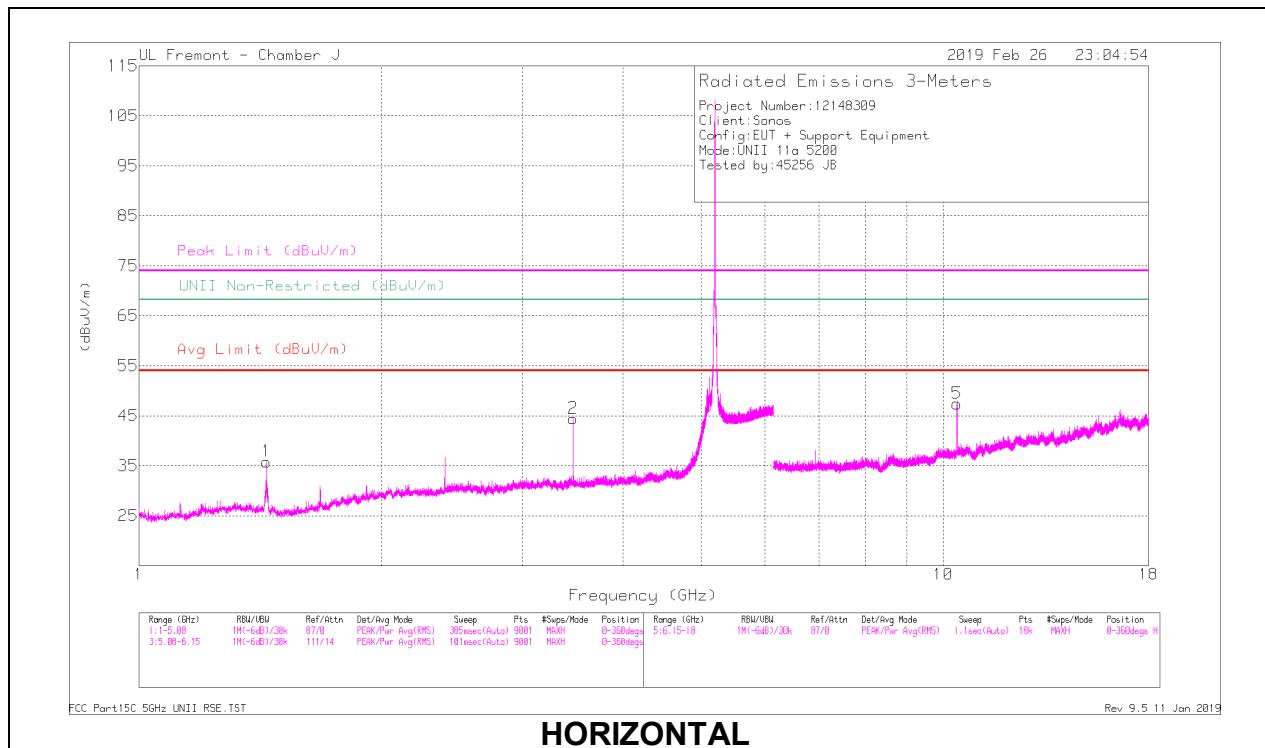
Frequency (GHz)	Marker Rating (dBuV/m)	Det	AF AT0067 (dBm)	Amp/Cable/Filt/Pad (dB)	DC Corr (dB)	Corrected (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	U-NII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Deg)	Height (cm)	Polarity
* 1.439	53.24	PK-U	28.6	-35.9	0	45.94	-	-	74	-28.06	-	-	151	269	H
* 1.44	42.55	ADR	28.6	-35.8	2.91	38.26	54	-15.74	-	-	-	-	151	269	H
3.453	47.57	PK-U	32.6	-33.7	0	46.47	-	-	-	-	68.2	-21.73	236	159	H
* 1.441	49.64	PK-U	28.6	-35.8	0	42.44	-	-	74	-31.56	-	-	34	392	V
* 1.44	39.26	ADR	28.6	-35.8	2.91	34.97	54	-19.03	-	-	-	-	34	392	V
3.453	48.95	PK-U	32.6	-33.7	0	47.85	-	-	-	-	68.2	-20.35	203	116	V
10.359	45.33	PK-U	37.5	-25.5	0	57.33	-	-	-	-	68.2	-10.87	122	207	H
10.355	42.93	PK-U	37.4	-25.5	0	54.83	-	-	-	-	68.2	-13.37	215	103	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

## MID CHANNEL RESULTS



## RADIATED EMISSIONS

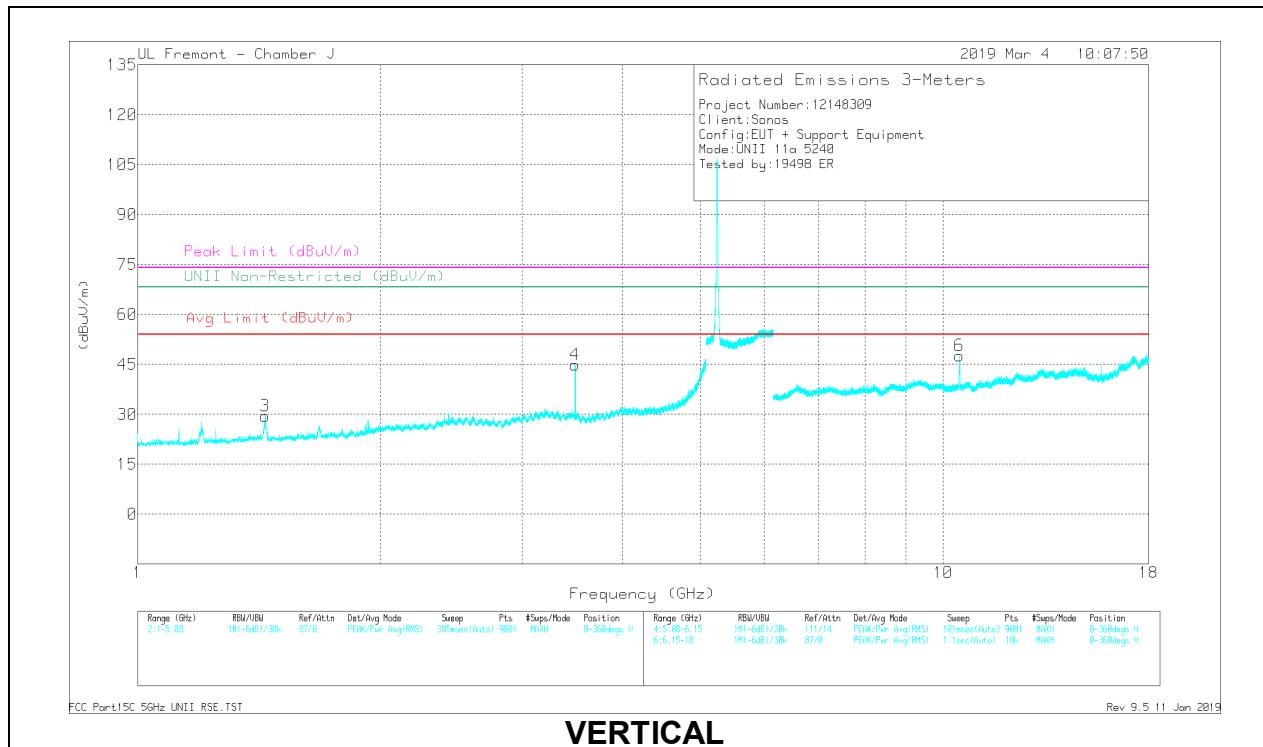
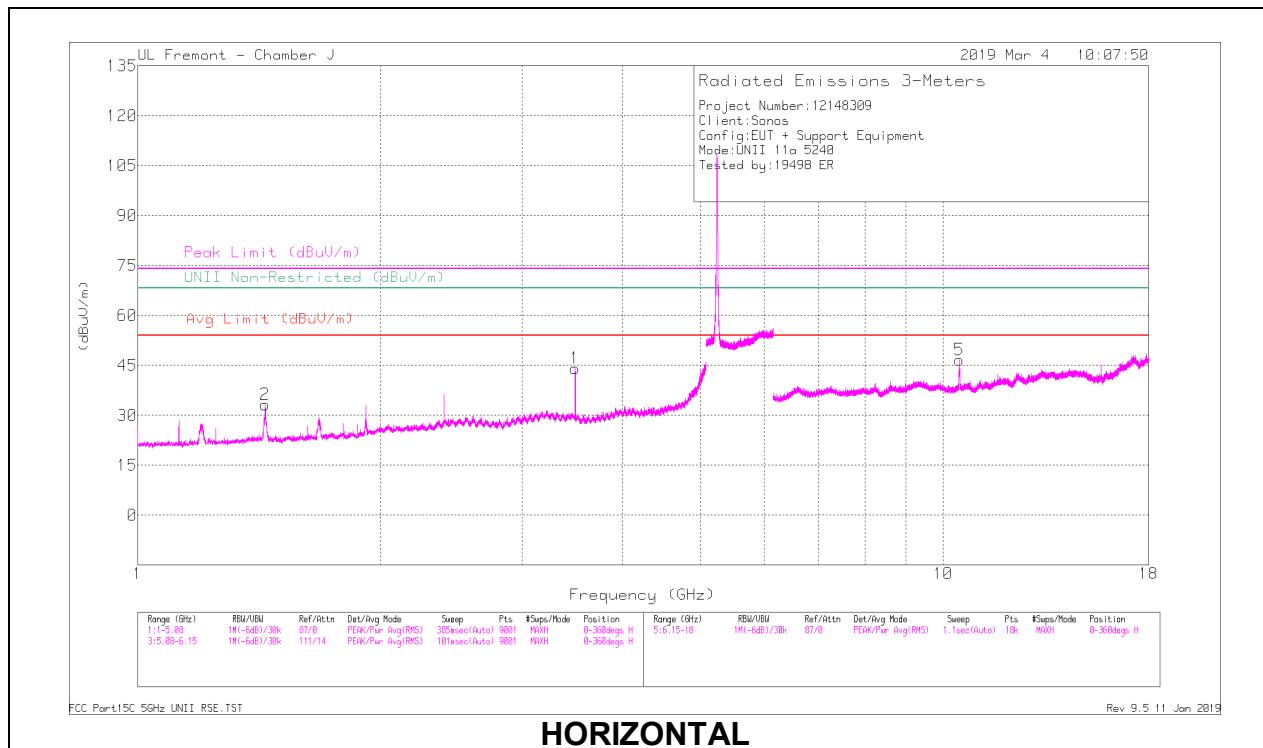
Frequency (GHz)	Marker Rating (dBuV)	Dev	AF AT0067 (dBm)	Amp/Cbif/Filt/Pad (dB)	DC Corr (dB)	Corrected (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	U-NII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.44	52.79	PK-U	28.6	-35.8	0	45.59	-	-	74	-28.41	-	-	149	272	H
* 1.44	42.18	ADR	28.6	-35.8	2.91	37.89	54	-16.11	-	-	-	-	149	272	H
3.467	47.4	PK-U	32.6	-33.7	0	46.3	-	-	-	-	68.2	-21.9	226	110	H
* 1.44	48.26	PK-U	28.6	-35.8	0	41.06	-	-	74	-32.94	-	-	41	198	V
* 1.44	37.03	ADR	28.6	-35.8	2.91	32.74	54	-21.26	-	-	-	-	41	198	V
3.467	48.62	PK-U	32.6	-33.7	0	47.52	-	-	-	-	68.2	-20.68	200	108	V
10.4	44.01	PK-U	37.5	-25.3	0	56.21	-	-	-	-	68.2	-11.99	118	286	H
10.401	46.92	PK-U	37.5	-25.3	0	59.12	-	-	-	-	68.2	-9.08	107	199	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

## HIGH CHANNEL RESULTS



## RADIATED EMISSIONS

Frequency (GHz)	Marker Rating (dBuV)	Det	AF FREQ189055 (dBm)	Amp/Cbfltr/FltrPa d (dB)	DC Corr (dB)	Corrected (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	U-NII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.439	53.39	PK-U	25.1	-35.9	0	42.59	-	-	74	-31.41	-	-	139	123	H
* 1.44	40.98	ADR	25.1	-35.8	2.91	33.19	54	-20.81	-	-	-	-	139	123	H
3.493	49.43	PK-U	30.4	-33.4	0	46.43	-	-	-	-	68.2	-21.77	232	106	H
* 1.438	53.83	PK-U	25.1	-35.9	0	43.03	-	-	74	-30.97	-	-	121	320	V
* 1.44	41.95	ADR	25.1	-35.8	2.91	34.16	54	-19.84	-	-	-	-	121	320	V
3.493	50.71	PK-U	30.4	-33.4	0	47.71	-	-	-	-	68.2	-20.49	24	112	V
10.482	43.44	PK-U	38.3	-25.3	0	56.44	-	-	-	-	68.2	-11.76	61	192	H
10.478	42.7	PK-U	38.3	-25.3	0	55.7	-	-	-	-	68.2	-12.5	360	196	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

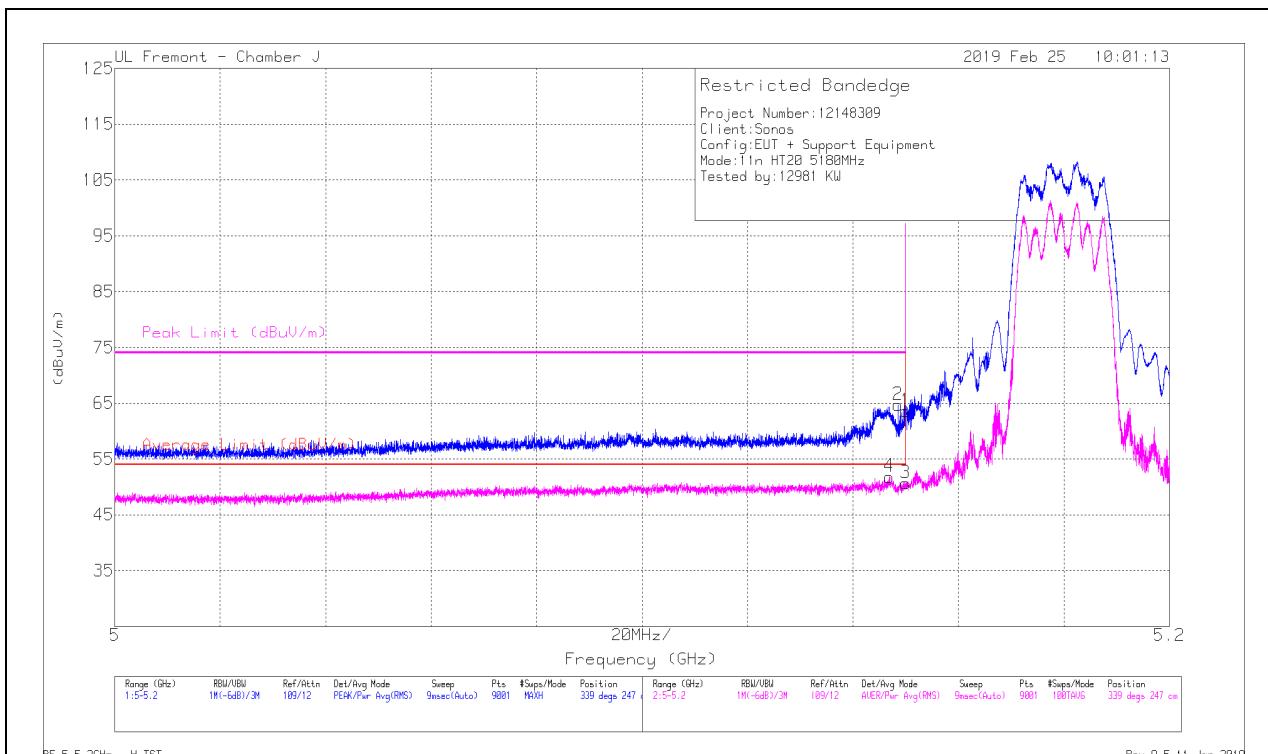
ADR - U-NII AD primary method, RMS average

## 9.1.2. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.2 GHz BAND

### 4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE

#### BANDEDGE (LOW CHANNEL)

#### HORIZONTAL RESULT



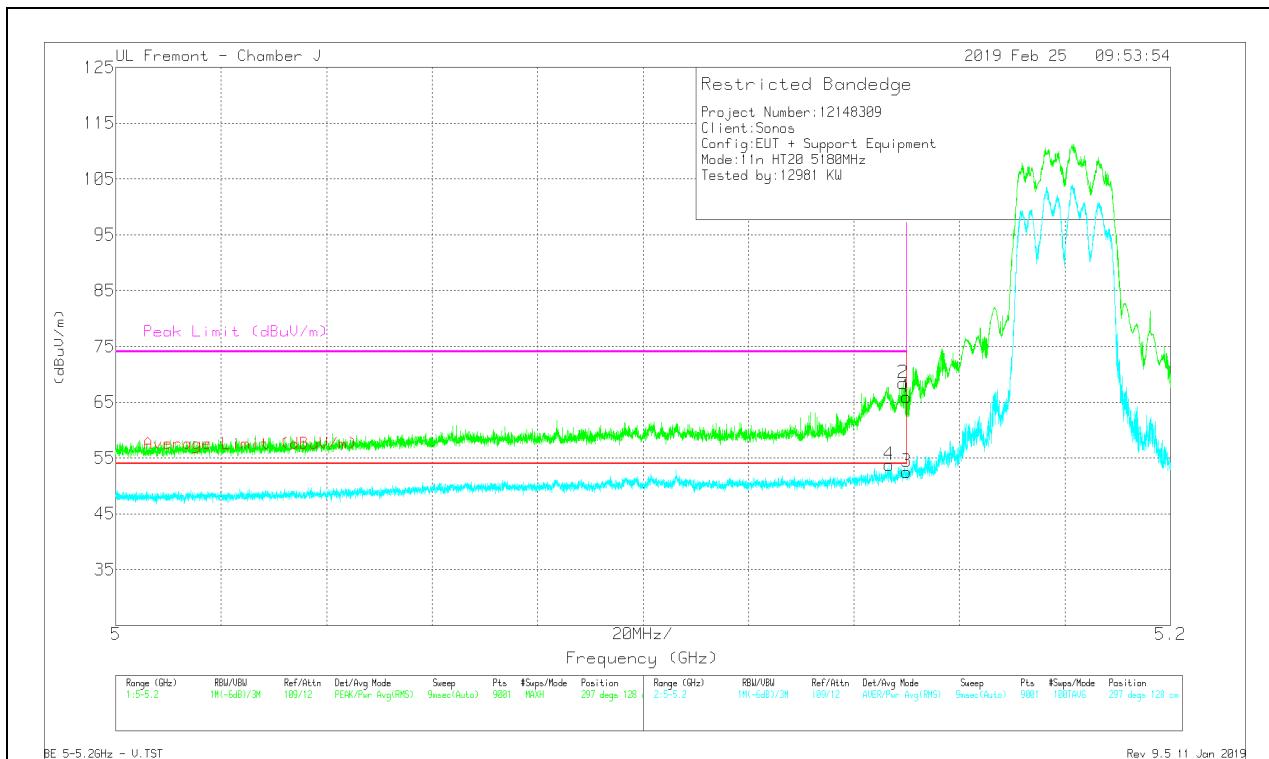
Marker	Frequency (GHz)	Meter Reading (dBmV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Filt/Pad (dB)	DC Corr (dB)	Corrected Reading (dBmV/m)	Average Limit (dBmV/m)	Margin (dB)	Peak Limit (dBmV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	38.45	Pk	34.2	-9.1	0	63.55	-	-	74	-10.45	339	247	H
2	* 5.149	39.65	Pk	34.2	-9.1	0	64.75	-	-	74	-9.25	339	247	H
3	* 5.15	23.09	RMS	34.2	-9.1	2.5	50.69	54	-3.31	-	-	339	247	H
4	* 5.147	24.24	RMS	34.2	-9.1	2.5	51.84	54	-2.16	-	-	339	247	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

## VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	40.85	Pk	34.2	-9.1	0	65.95	-	-	74	-8.05	297	128	V
2	* 5.149	43.37	Pk	34.2	-9.1	0	68.47	-	-	74	-5.53	297	128	V
3	* 5.15	24.98	RMS	34.2	-9.1	2.5	52.58	54	-1.42	-	-	297	128	V
4	* 5.147	26.11	RMS	34.2	-9	2.5	53.81	54	-1.19	-	-	297	128	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection