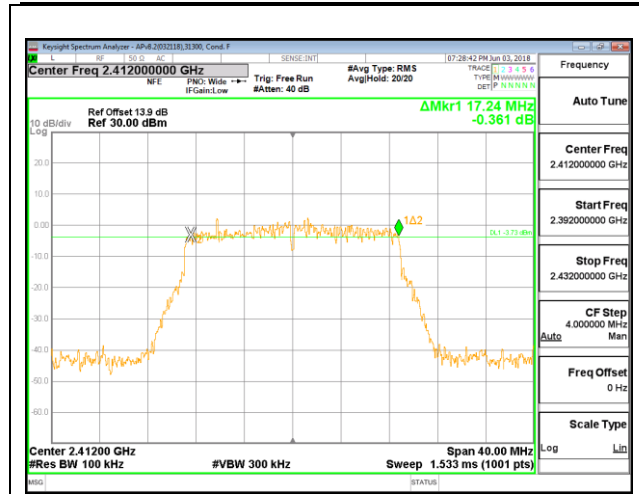


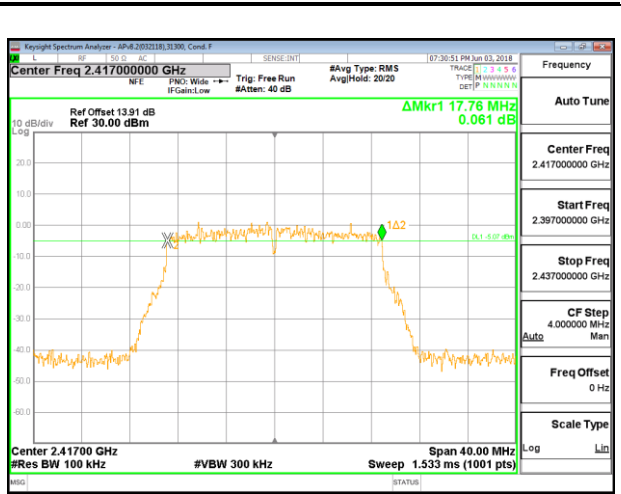
**8.3.2. 802.11n HT20 MODE**

**1TX Antenna 2 MODE**

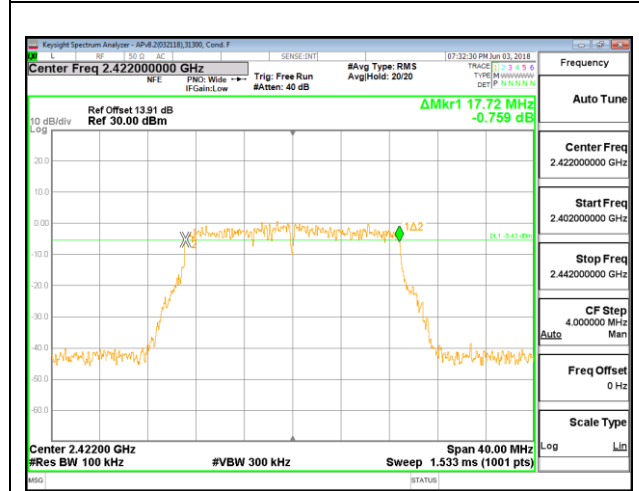
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	17.2400	0.5
Low 2	2417	17.7600	0.5
Low 3	2422	17.7200	0.5
Mid 6	2437	17.3200	0.5
High 9	2452	17.6000	0.5
High 10	2457	17.2000	0.5
High 11	2462	17.3200	0.5
High 12	2467	17.5600	0.5
High 13	2472	17.6400	0.5



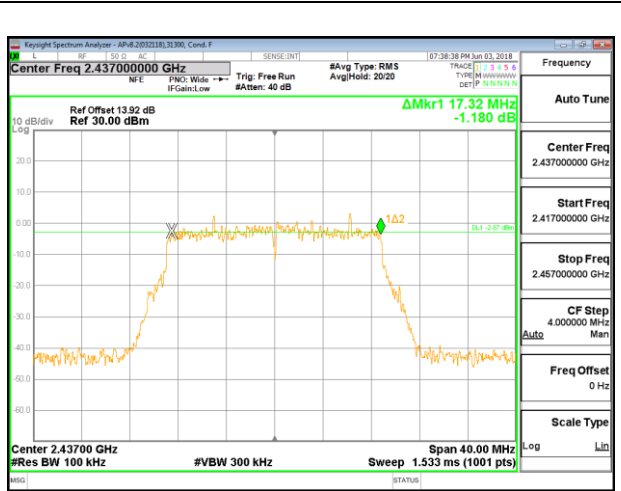
LOW CHANNEL 1



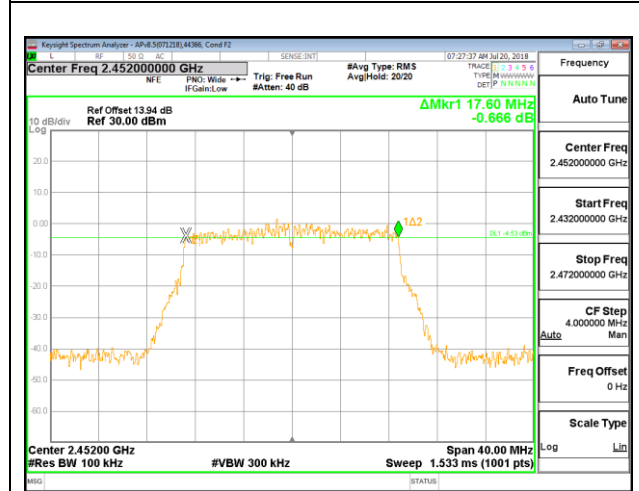
LOW CHANNEL 2



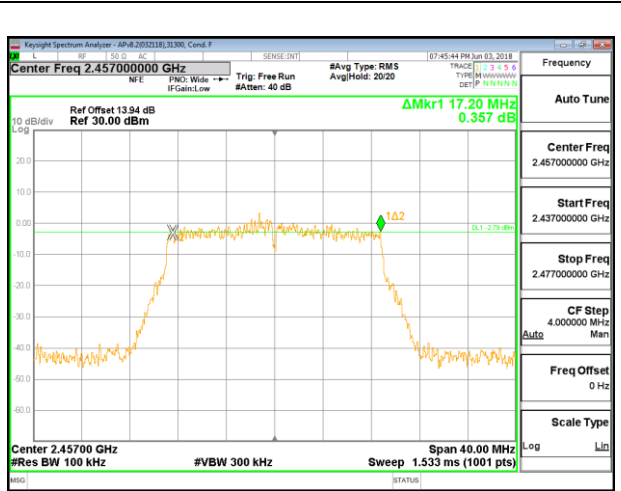
LOW CHANNEL 3



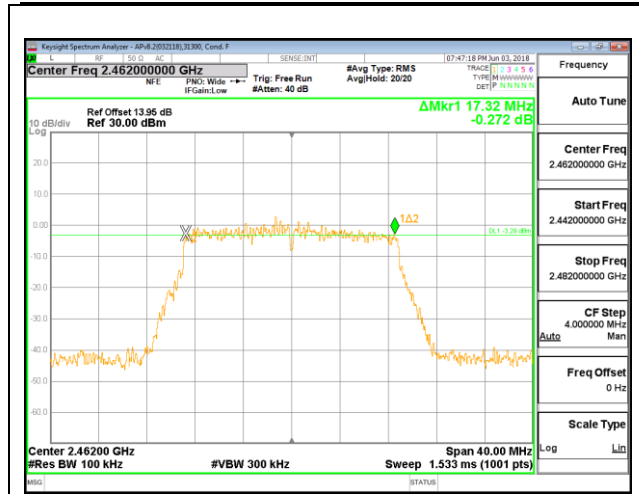
MID CHANNEL 6



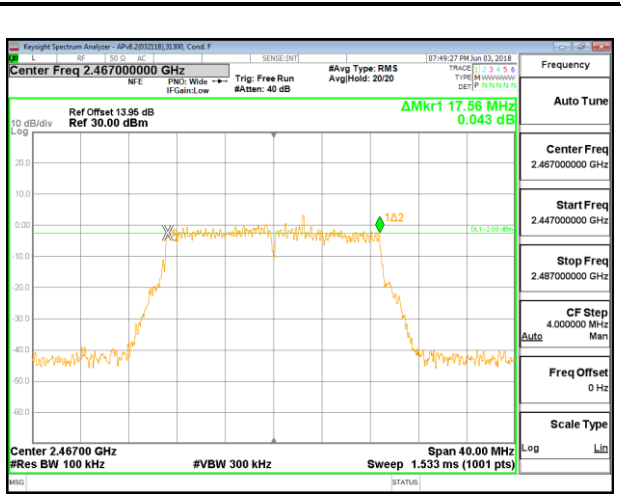
HIGH CHANNEL 9



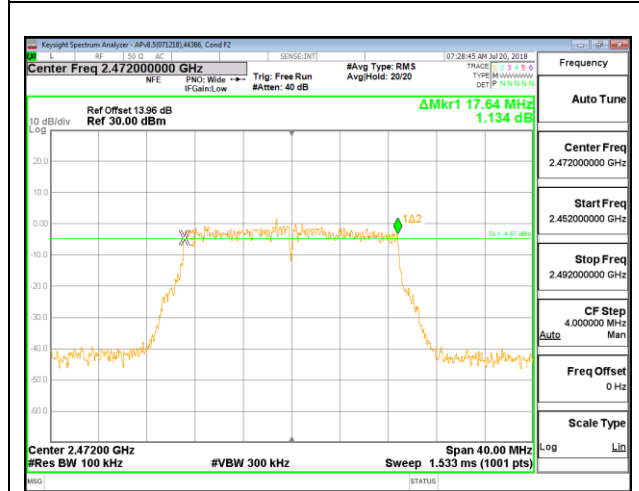
HIGH CHANNEL 10



**HIGH CHANNEL 11**



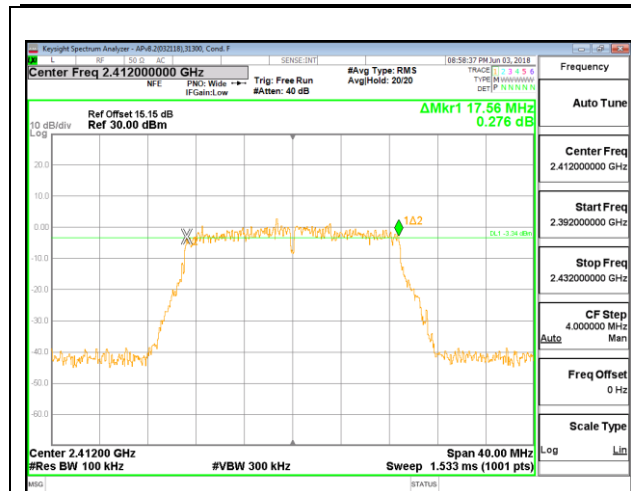
**HIGH CHANNEL 12**



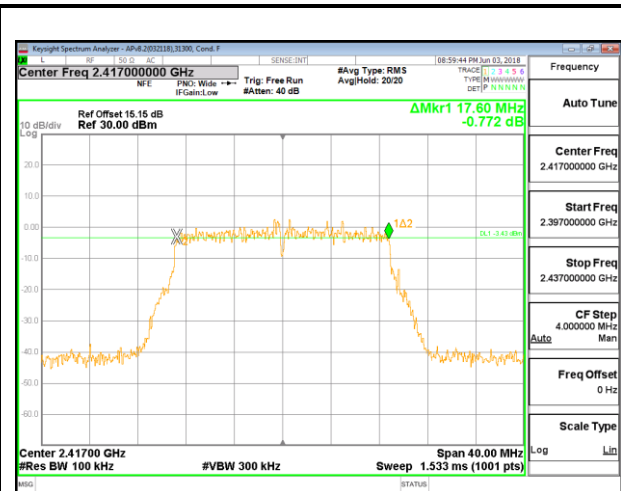
**HIGH CHANNEL 13**

**1TX Antenna 5 MODE**

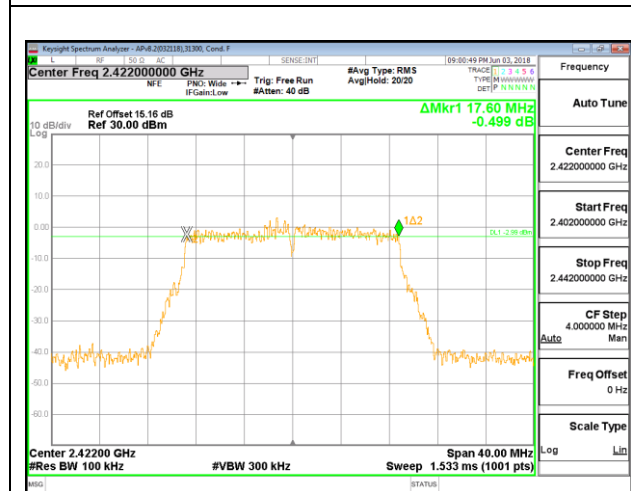
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	17.5600	0.5
Low 2	2417	17.6000	0.5
Low 3	2422	17.6000	0.5
Mid 6	2437	17.6800	0.5
High 9	2452	17.6000	0.5
High 10	2457	17.6400	0.5
High 11	2462	17.6800	0.5
High 12	2467	17.7600	0.5
High 13	2472	17.6800	0.5



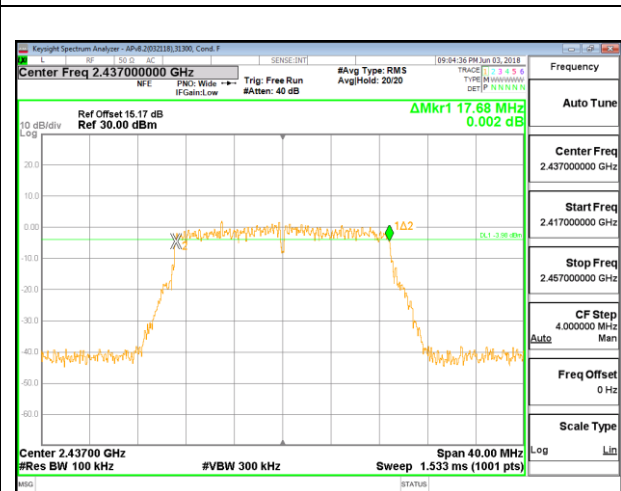
LOW CHANNEL 1



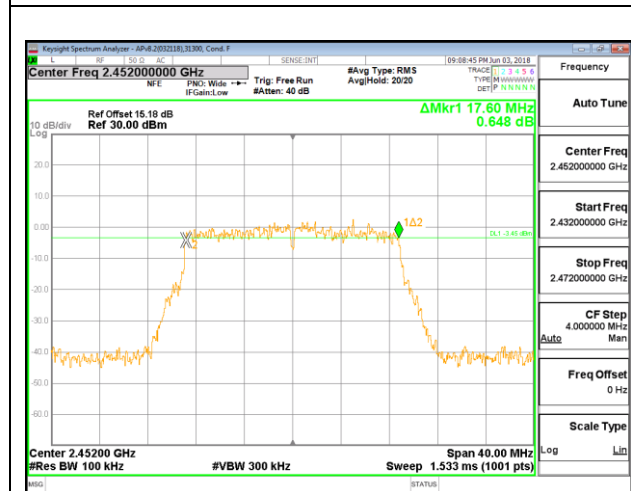
LOW CHANNEL 2



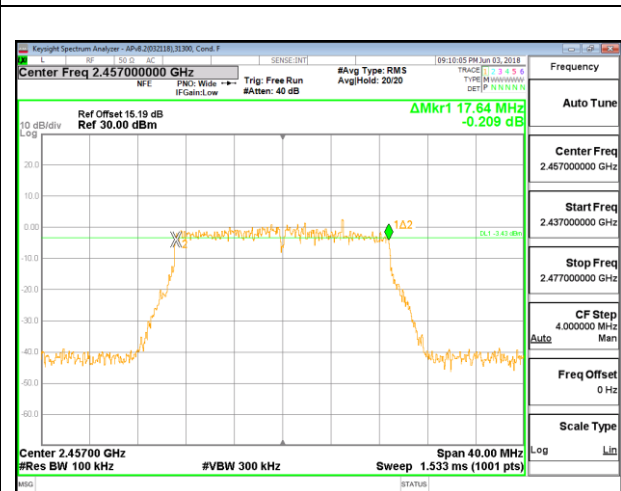
LOW CHANNEL 3



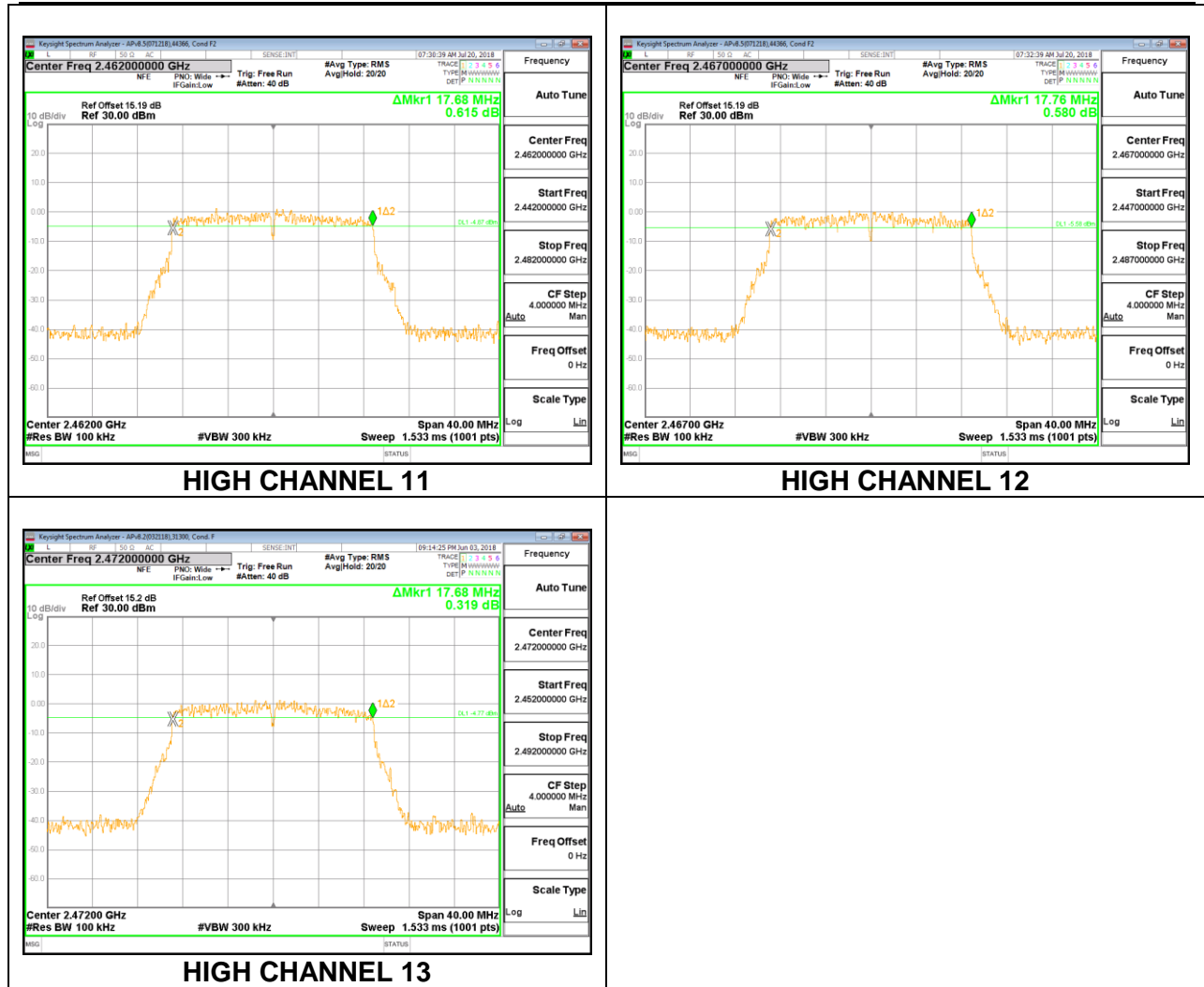
MID CHANNEL 6



HIGH CHANNEL 9



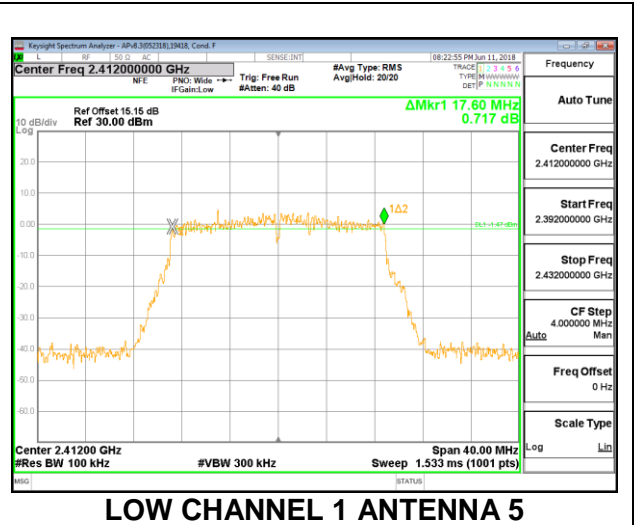
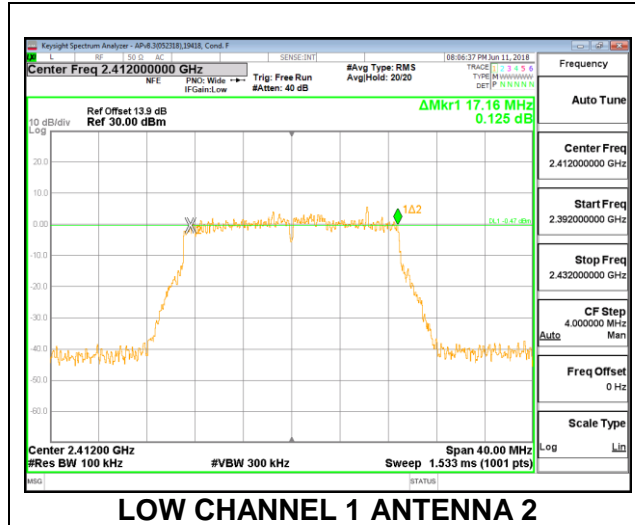
HIGH CHANNEL 10



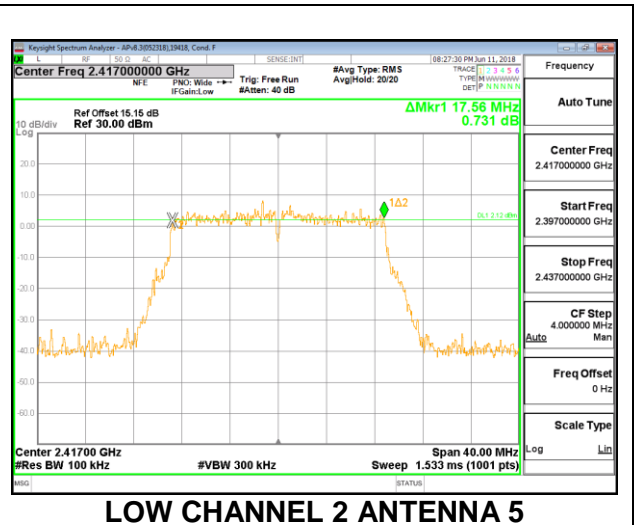
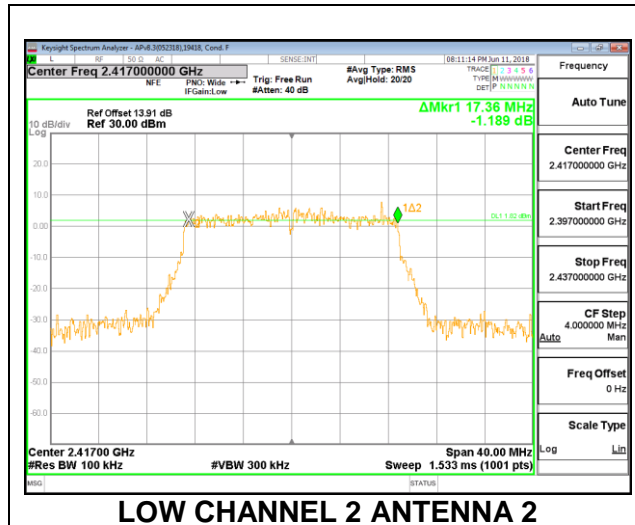
**8.3.3. 2TX Antenna 2 + Antenna 5 CDD MODE**

Channel	Frequency (MHz)	6 dB BW ANT 2 (MHz)	6 dB BW ANT 5 (MHz)	Minimum Limit (MHz)
Low 1	2412	17.1600	17.6000	0.5
Low 2	2417	17.3600	17.5600	0.5
Low 3	2422	17.6400	17.5600	0.5
Low 4	2427	17.6400	17.6000	0.5
Mid 6	2437	17.5600	17.6000	0.5
High 8	2447	17.3600	17.6000	0.5
High 9	2452	17.3200	17.2000	0.5
High 10	2457	17.5600	17.6400	0.5
High 11	2462	17.6000	17.7200	0.5
High 12	2467	17.6000	17.6000	0.5
High 13	2472	17.6000	17.6000	0.5

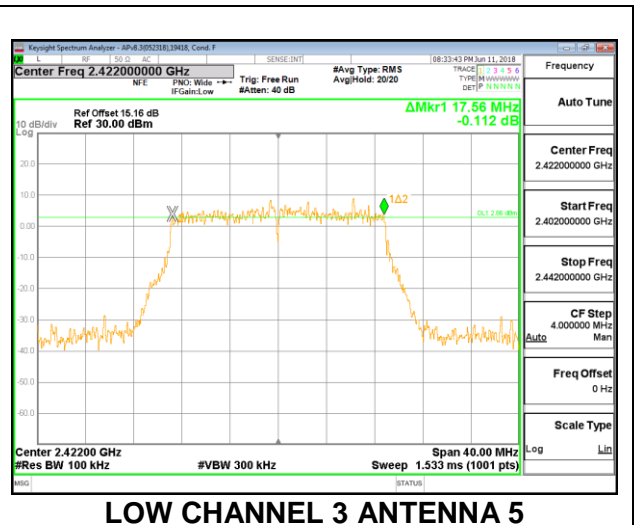
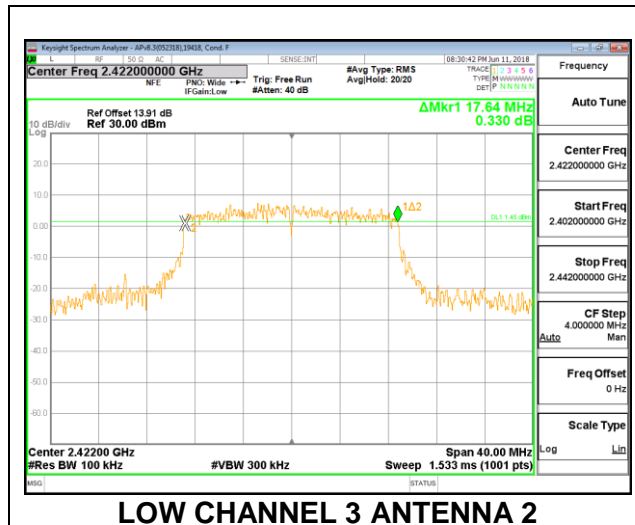
### LOW CHANNEL 1



### LOW CHANNEL 2

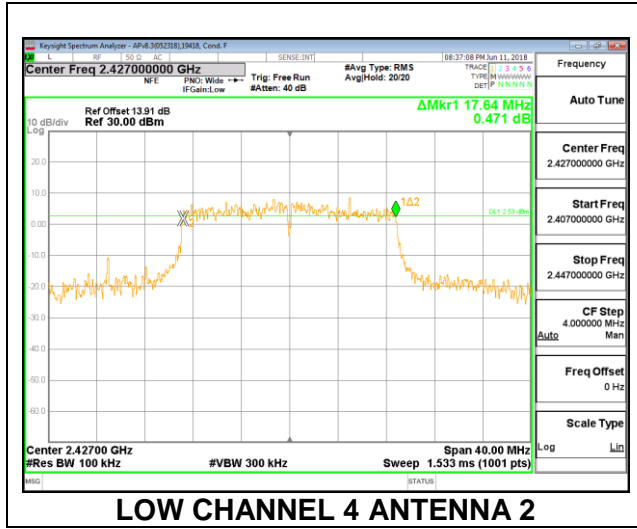


### LOW CHANNEL 3

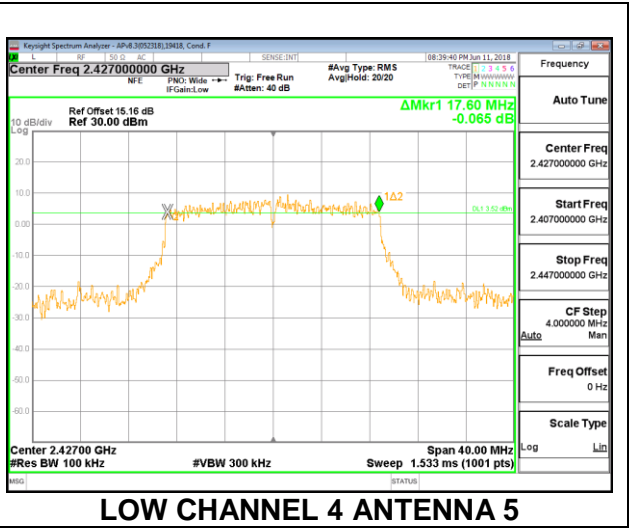




**LOW CHANNEL 4**

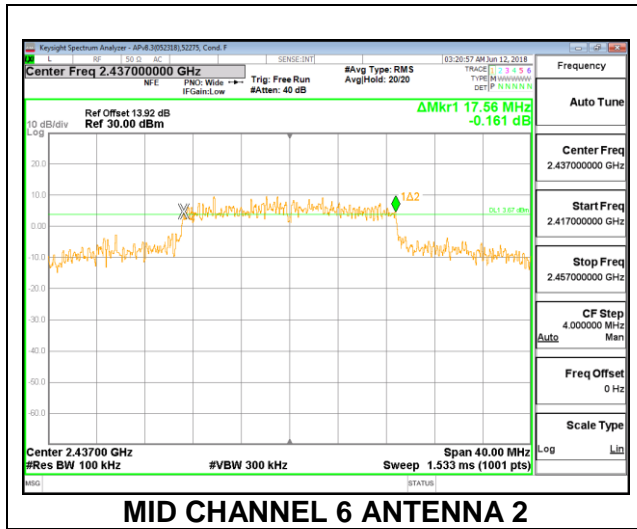


**LOW CHANNEL 4 ANTENNA 2**

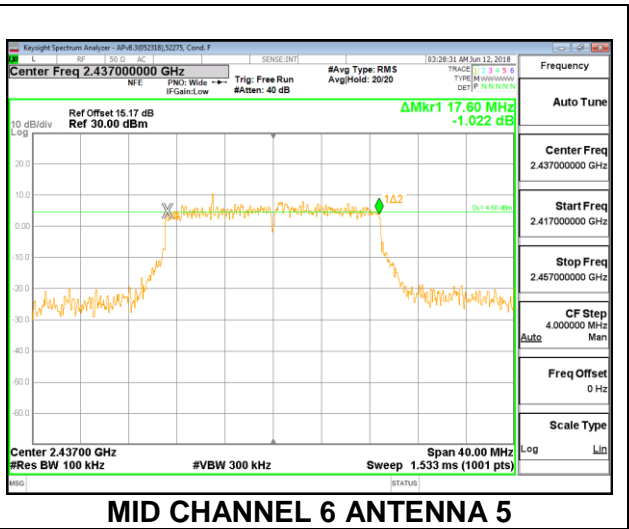


**LOW CHANNEL 4 ANTENNA 5**

**MID CHANNEL 6**

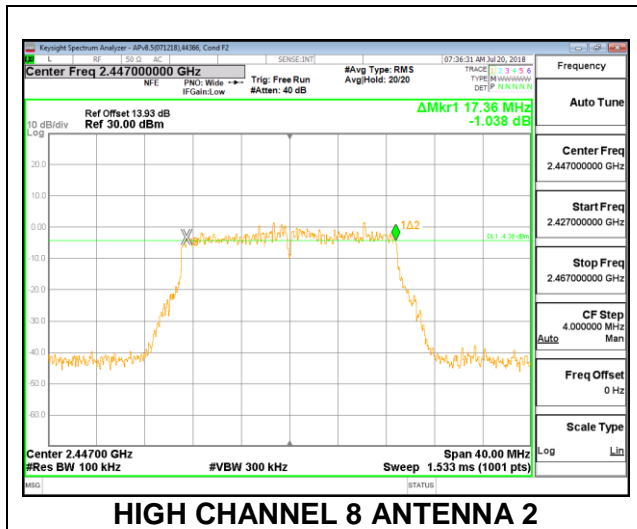


**MID CHANNEL 6 ANTENNA 2**

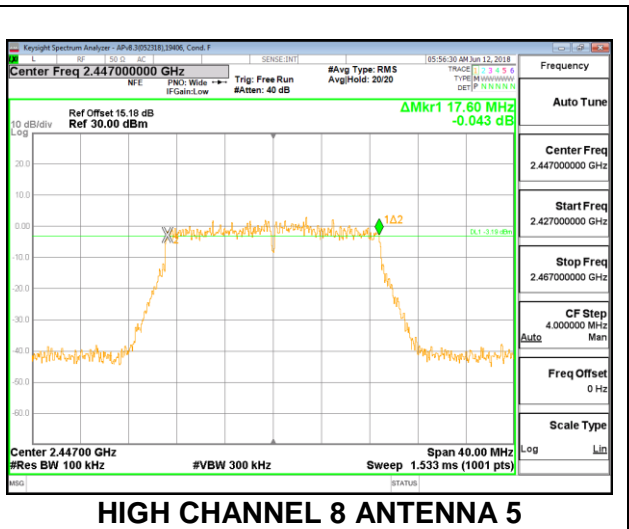


**MID CHANNEL 6 ANTENNA 5**

**HIGH CHANNEL 8**

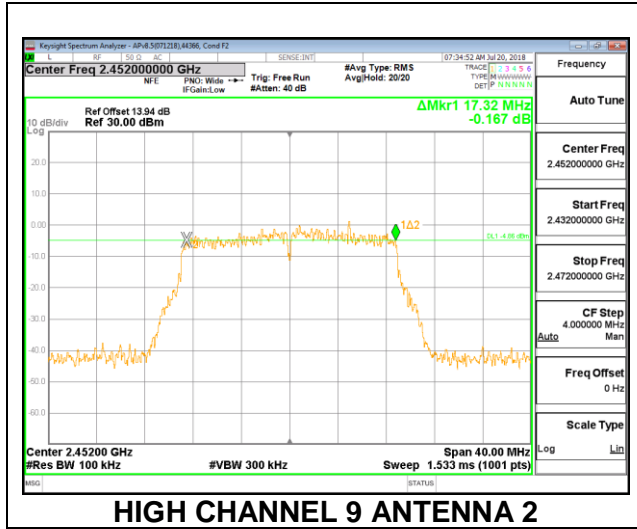


**HIGH CHANNEL 8 ANTENNA 2**

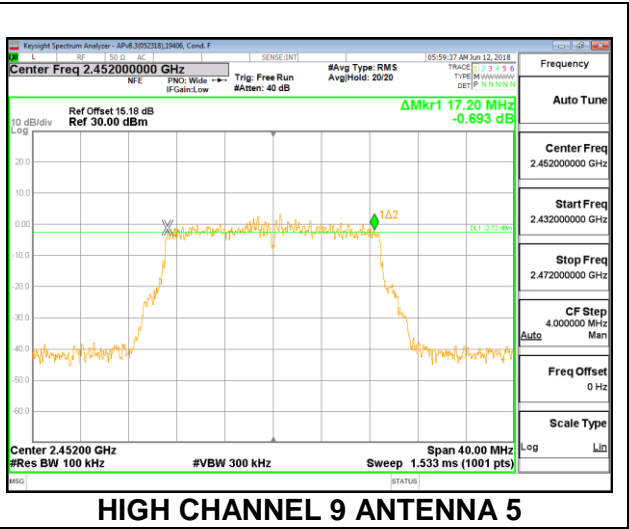


**HIGH CHANNEL 8 ANTENNA 5**

### HIGH CHANNEL 9

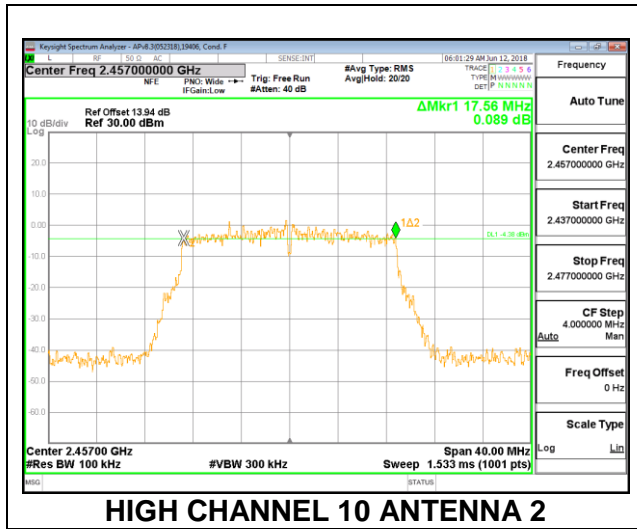


HIGH CHANNEL 9 ANTENNA 2

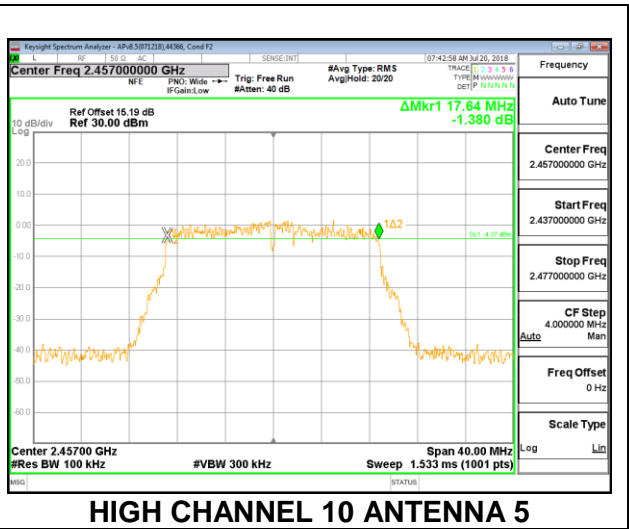


HIGH CHANNEL 9 ANTENNA 5

### HIGH CHANNEL 10

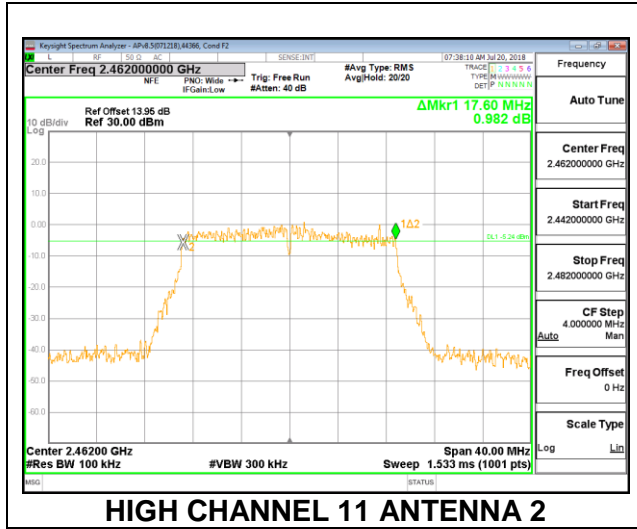


HIGH CHANNEL 10 ANTENNA 2

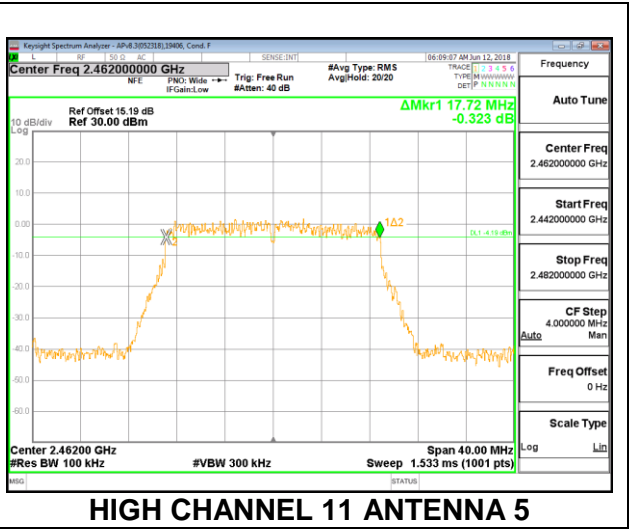


HIGH CHANNEL 10 ANTENNA 5

### HIGH CHANNEL 11

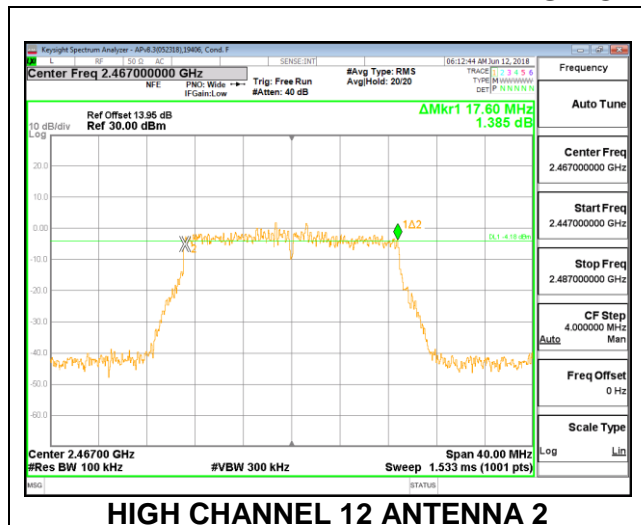


HIGH CHANNEL 11 ANTENNA 2

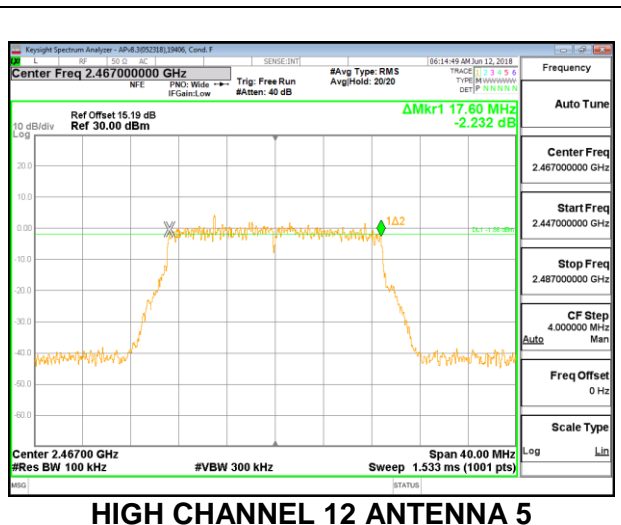


HIGH CHANNEL 11 ANTENNA 5

### HIGH CHANNEL 12

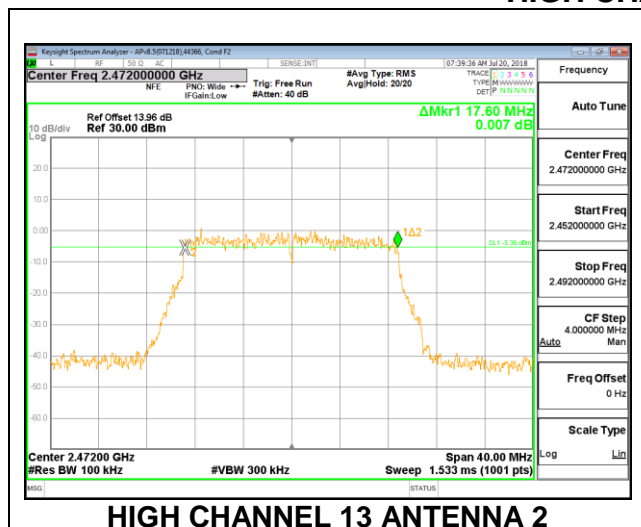


HIGH CHANNEL 12 ANTENNA 2

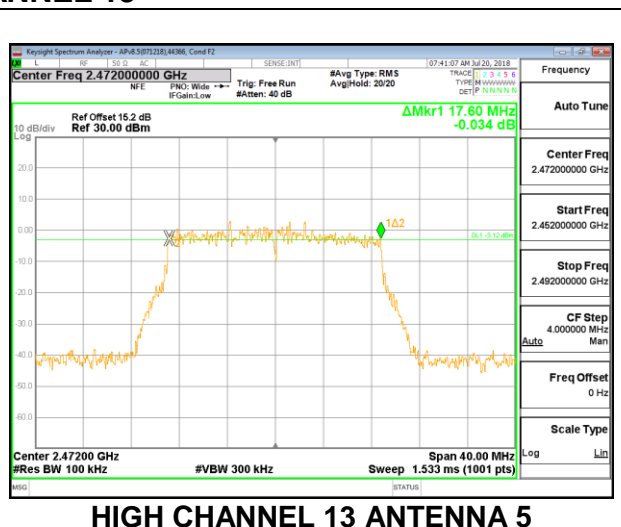


HIGH CHANNEL 12 ANTENNA 5

### HIGH CHANNEL 13



HIGH CHANNEL 13 ANTENNA 2



HIGH CHANNEL 13 ANTENNA 5

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## **8.4. OUTPUT POWER**

### **LIMITS**

FCC §15.247 (b) (3)

RSS-247 5.4 (d)

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### **TEST PROCEDURE**

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for a gated average reading of power.

**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 2 Antenna Gain (dBi)</b>	<b>ANT 5 Antenna Gain (dBi)</b>	<b>Uncorrelated Chains Directional Gain (dBi)</b>	<b>Correlated Chains Directional Gain (dBi)</b>
2.4	-2.80	-4.90	-3.72	-0.78

**RESULTS**

<b>ID:</b>	30554	<b>Date:</b>	7/27/2018
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**8.4.1. 802.11b MODE**

**1TX Antenna 2 MODE**

**Limits**

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-2.80	30.00	30	36	30.00
Low 2	2417	-2.80	30.00	30	36	30.00
Mid 6	2437	-2.80	30.00	30	36	30.00
High 11	2462	-2.80	30.00	30	36	30.00
High 12	2467	-2.80	30.00	30	36	30.00
High 13	2472	-2.80	30.00	30	36	30.00

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

Channel	Frequency (MHz)	ANT 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	20.36	20.36	30.00	-9.64
Low 2	2417	21.59	21.59	30.00	-8.41
Mid 6	2437	21.65	21.65	30.00	-8.35
High 11	2462	21.61	21.61	30.00	-8.39
High 12	2467	20.44	20.44	30.00	-9.56
High 13	2472	18.93	18.93	30.00	-11.07

**1TX Antenna 5 MODE**

**Limits**

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-4.90	30.00	30	36	30.00
Low 2	2417	-4.90	30.00	30	36	30.00
Mid 6	2437	-4.90	30.00	30	36	30.00
High 11	2462	-4.90	30.00	30	36	30.00
High 12	2467	-4.90	30.00	30	36	30.00
High 13	2472	-4.90	30.00	30	36	30.00

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

Channel	Frequency (MHz)	ANT 5 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	20.41	20.41	30.00	-9.59
Low 2	2417	21.80	21.80	30.00	-8.20
Mid 6	2437	21.91	21.91	30.00	-8.09
High 11	2462	21.86	21.86	30.00	-8.14
High 12	2467	20.33	20.33	30.00	-9.67
High 13	2472	18.93	18.93	30.00	-11.07

**8.4.2. 802.11n HT20 MODE**

**1TX Antenna 2 MODE**

**Limits**

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-2.80	30.00	30	36	30.00
Low 2	2417	-2.80	30.00	30	36	30.00
Low 3	2422	-2.80	30.00	30	36	30.00
Mid 6	2437	-2.80	30.00	30	36	30.00
High 9	2452	-2.80	30.00	30	36	30.00
High 10	2457	-2.80	30.00	30	36	30.00
High 11	2462	-2.80	30.00	30	36	30.00
High 12	2467	-2.80	30.00	30	36	30.00
High 13	2472	-2.80	30.00	30	36	30.00

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

Channel	Frequency (MHz)	ANT 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	17.41	17.41	30.00	-12.59
Low 2	2417	19.38	19.38	30.00	-10.62
Low 3	2422	21.40	21.40	30.00	-8.60
Mid 6	2437	21.47	21.47	30.00	-8.53
High 9	2452	21.38	21.38	30.00	-8.62
High 10	2457	19.45	19.45	30.00	-10.55
High 11	2462	17.39	17.39	30.00	-12.61
High 12	2467	15.47	15.47	30.00	-14.53
High 13	2472	7.93	7.93	30.00	-22.07



**1TX Antenna 5 MODE**

**Limits**

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-4.90	30.00	30	36	30.00
Low 2	2417	-4.90	30.00	30	36	30.00
Low 3	2422	-4.90	30.00	30	36	30.00
Mid 6	2437	-4.90	30.00	30	36	30.00
High 9	2452	-4.90	30.00	30	36	30.00
High 10	2457	-4.90	30.00	30	36	30.00
High 11	2462	-4.90	30.00	30	36	30.00
High 12	2467	-4.90	30.00	30	36	30.00
High 13	2472	-4.90	30.00	30	36	30.00

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

Channel	Frequency (MHz)	ANT 5 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	17.39	17.39	30.00	-12.61
Low 2	2417	19.42	19.42	30.00	-10.58
Low 3	2422	21.37	21.37	30.00	-8.63
Mid 6	2437	21.45	21.45	30.00	-8.55
High 9	2452	21.31	21.31	30.00	-8.69
High 10	2457	19.42	19.42	30.00	-10.58
High 11	2462	17.44	17.44	30.00	-12.56
High 12	2467	15.43	15.43	30.00	-14.57
High 13	2472	7.97	7.97	30.00	-22.03

**8.4.3. 2TX Antenna 2 + Antenna 5 CDD MODE**

**Limits**

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-3.72	30.00	36	30.00
Low 2	2417	-3.72	30.00	36	30.00
Low 3	2422	-3.72	30.00	36	30.00
Low 4	2427	-3.72	30.00	36	30.00
Mid 6	2437	-3.72	30.00	36	30.00
High 8	2447	-3.72	30.00	36	30.00
High 9	2452	-3.72	30.00	36	30.00
High 10	2457	-3.72	30.00	36	30.00
High 11	2462	-3.72	30.00	36	30.00
High 12	2467	-3.72	30.00	36	30.00
High 13	2472	-3.72	30.00	36	30.00

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

Channel	Frequency (MHz)	ANT 2 Meas Power (dBm)	ANT 5 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margi (dB)
Low 1	2412	16.44	16.41	19.44	30.00	-10.56
Low 2	2417	18.43	18.39	21.42	30.00	-8.58
Low 3	2422	19.91	19.86	22.90	30.00	-7.10
Low 4	2427	21.41	21.42	24.43	30.00	-5.57
Mid 6	2437	21.44	21.48	24.47	30.00	-5.53
High 8	2447	21.39	21.43	24.42	30.00	-5.58
High 9	2452	19.88	19.92	22.91	30.00	-7.09
High 10	2457	18.43	18.46	21.46	30.00	-8.54
High 11	2462	16.44	16.47	19.47	30.00	-10.53
High 12	2467	14.41	14.39	17.41	30.00	-12.59
High 13	2472	6.95	6.97	9.97	30.00	-20.03

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## **8.5. POWER SPECTRAL DENSITY**

### **LIMITS**

FCC §15.247 (e)

RSS-247 (5.2) (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

### **RESULTS**

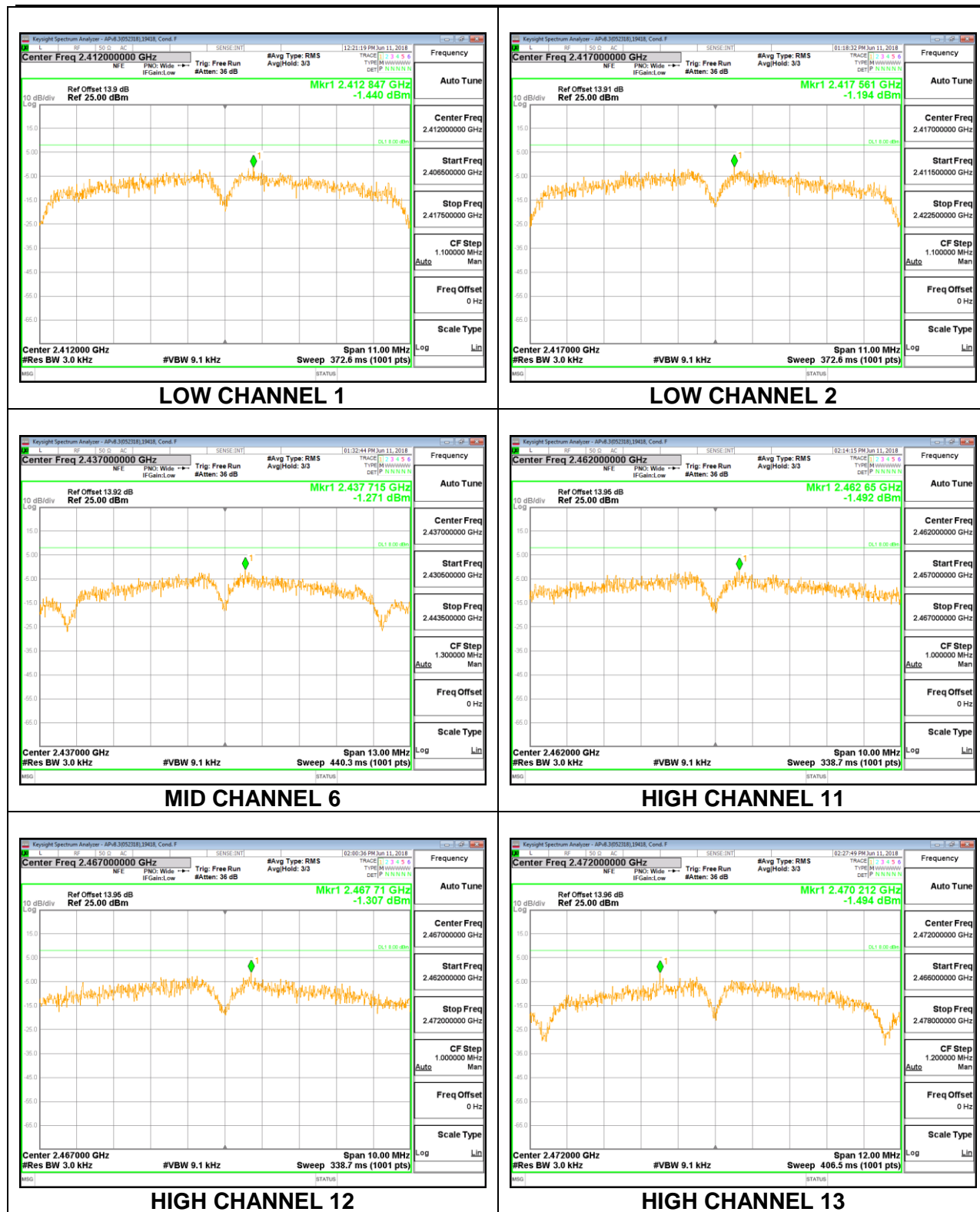
**8.5.1. 802.11b MODE**

**1TX Antenna 2 MODE**

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

<b>Channel</b>	<b>Frequency (MHz)</b>	<b>ANT 2 Meas (dBm/ 3kHz)</b>	<b>Total Corr'd PSD (dBm/ 3kHz)</b>	<b>Limit (dBm/ 3kHz)</b>	<b>Margin (dB)</b>
Low 1	2412	-1.44	-1.44	8.0	-9.4
Low 2	2417	-1.19	-1.19	8.0	-9.2
Mid 6	2437	-1.27	-1.27	8.0	-9.3
High 11	2462	-1.49	-1.49	8.0	-9.5
High 12	2467	-1.31	-1.31	8.0	-9.3
High 13	2472	-1.49	-1.49	8.0	-9.5

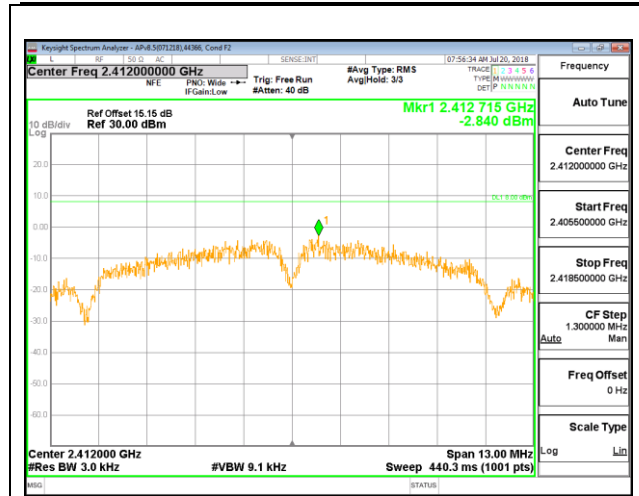


**1TX Antenna 5 MODE**

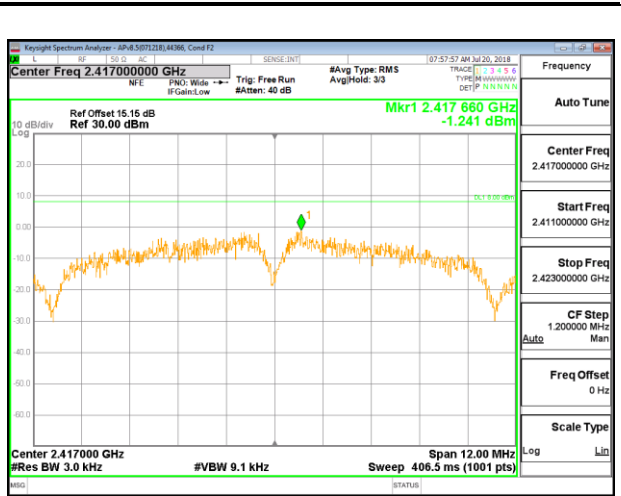
<b>Duty Cycle CF (dB)</b>	0.00	<b>Included in Calculations of Corr'd PSD</b>
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**PSD Results**

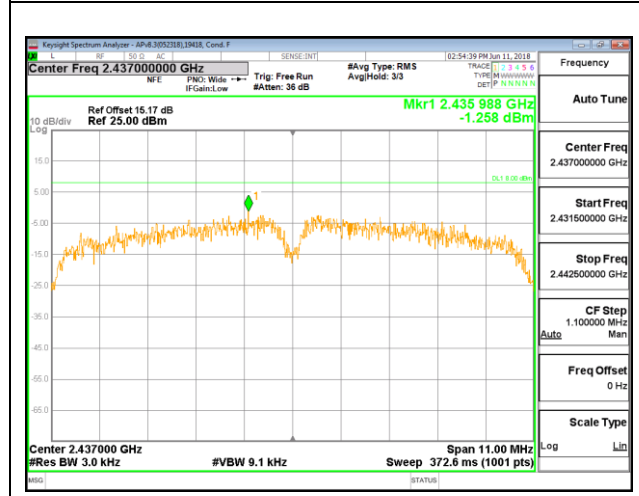
<b>Channel</b>	<b>Frequency (MHz)</b>	<b>ANT 5 Meas (dBm/ 3kHz)</b>	<b>Total Corr'd PSD (dBm/ 3kHz)</b>	<b>Limit (dBm/ 3kHz)</b>	<b>Margin (dB)</b>
Low 1	2412	-2.84	-2.84	8.0	-10.8
Low 2	2417	-1.24	-1.24	8.0	-9.2
Mid 6	2437	-1.26	-1.26	8.0	-9.3
High 11	2462	-1.08	-1.08	8.0	-9.1
High 12	2467	-0.93	-0.93	8.0	-8.9
High 13	2472	-3.16	-3.16	8.0	-11.2



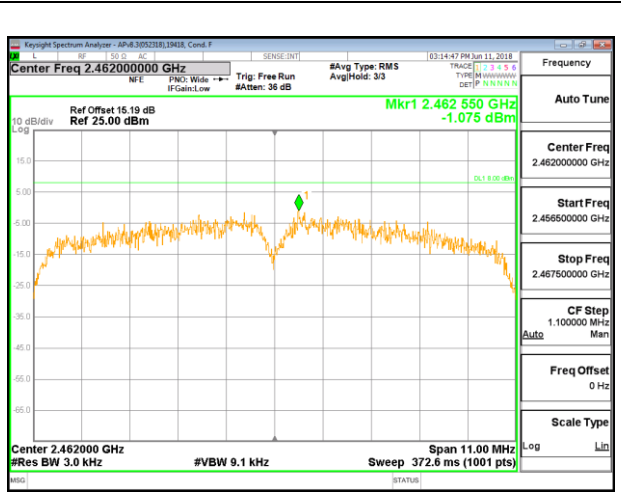
LOW CHANNEL 1



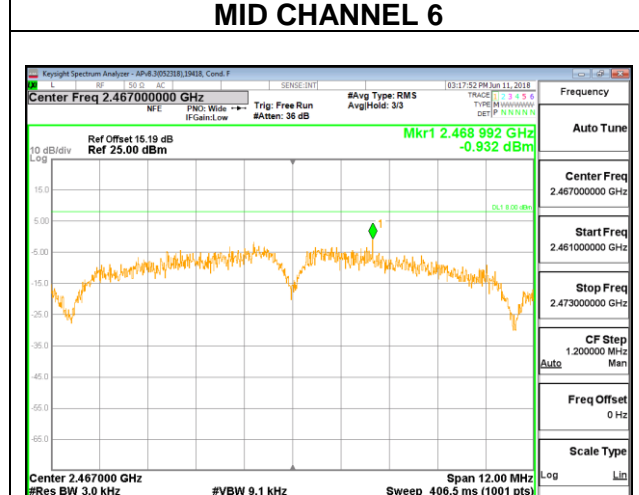
LOW CHANNEL 2



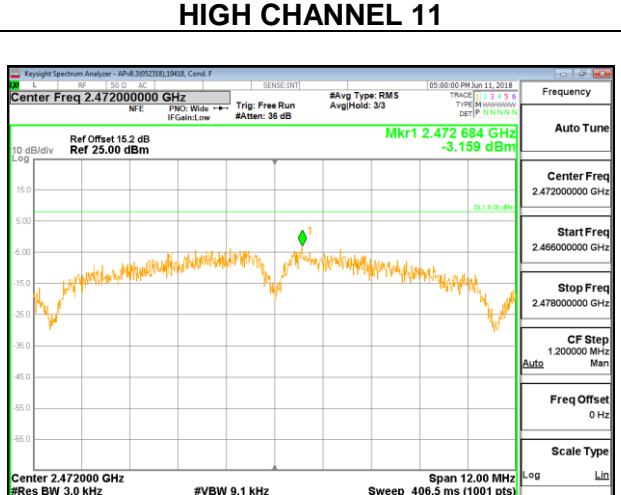
MID CHANNEL 6



HIGH CHANNEL 11



HIGH CHANNEL 12



HIGH CHANNEL 13

**8.5.2. 802.11n HT20 MODE**

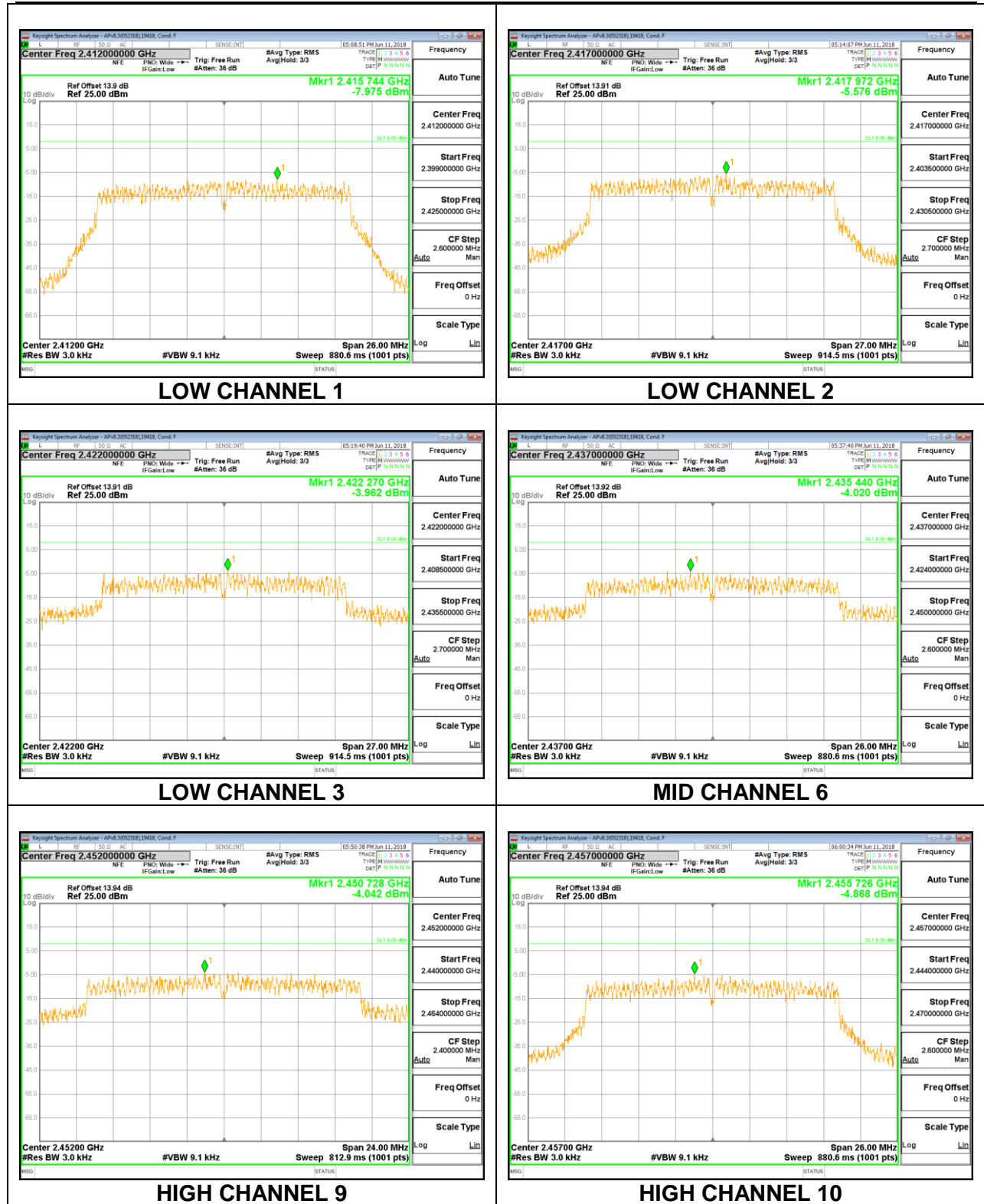
**1TX Antenna 2 MODE**

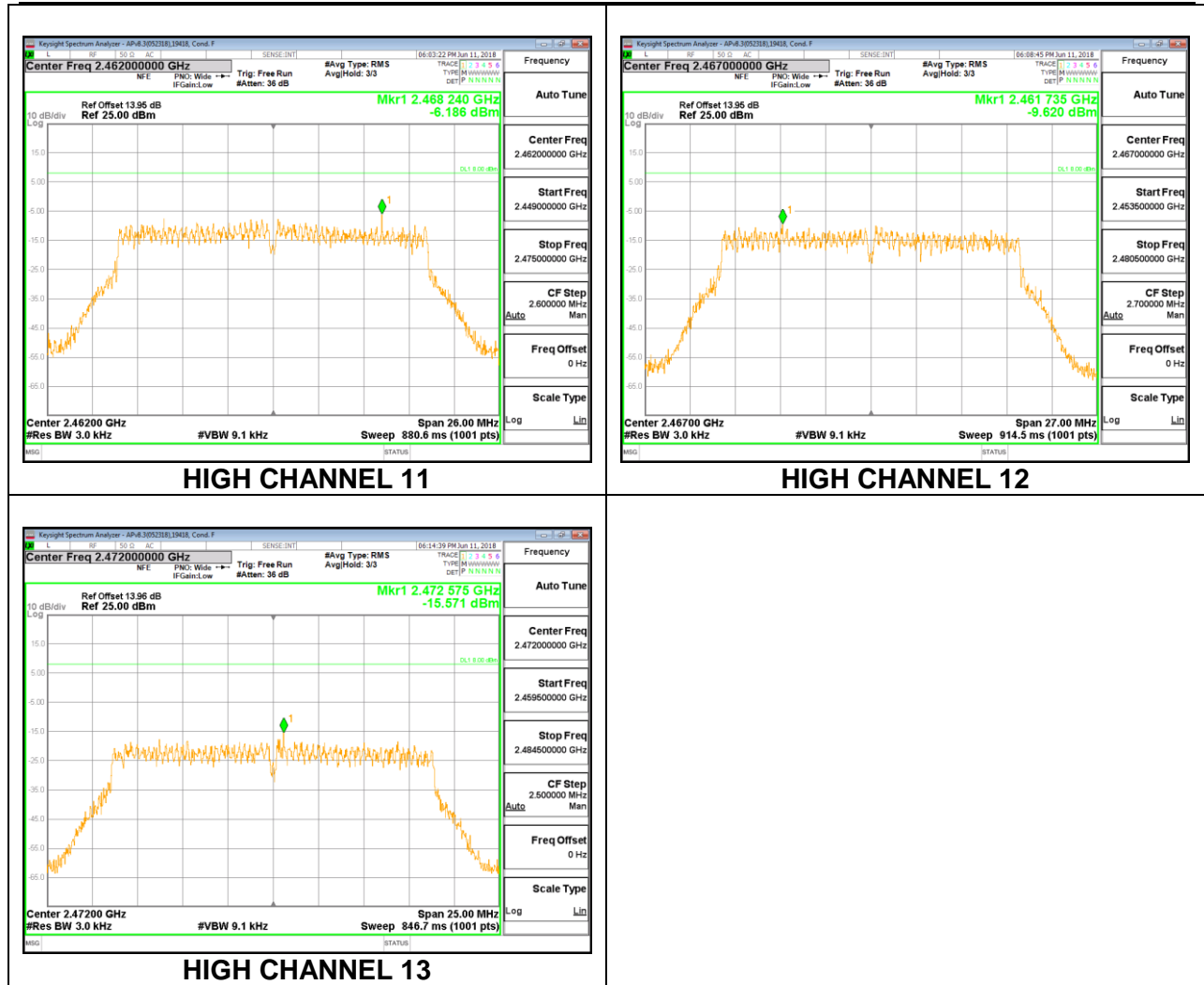
<b>Duty Cycle CF (dB)</b>	0.00	<b>Included in Calculations of Corr'd PSD</b>
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**PSD Results**

<b>Channel</b>	<b>Frequency (MHz)</b>	<b>ANT 2 Meas (dBm/ 3kHz)</b>	<b>Total Corr'd PSD (dBm/ 3kHz)</b>	<b>Limit (dBm/ 3kHz)</b>	<b>Margin (dB)</b>
Low 1	2412	-7.98	-7.98	8.0	-16.0
Low 2	2417	-5.58	-5.58	8.0	-13.6
Low 3	2422	-3.96	-3.96	8.0	-12.0
Mid 6	2437	-4.02	-4.02	8.0	-12.0
High 9	2452	-4.04	-4.04	8.0	-12.0
High 10	2457	-4.87	-4.87	8.0	-12.9
High 11	2462	-6.19	-6.19	8.0	-14.2
High 12	2467	-9.62	-9.62	8.0	-17.6
High 13	2472	-15.57	-15.57	8.0	-23.6





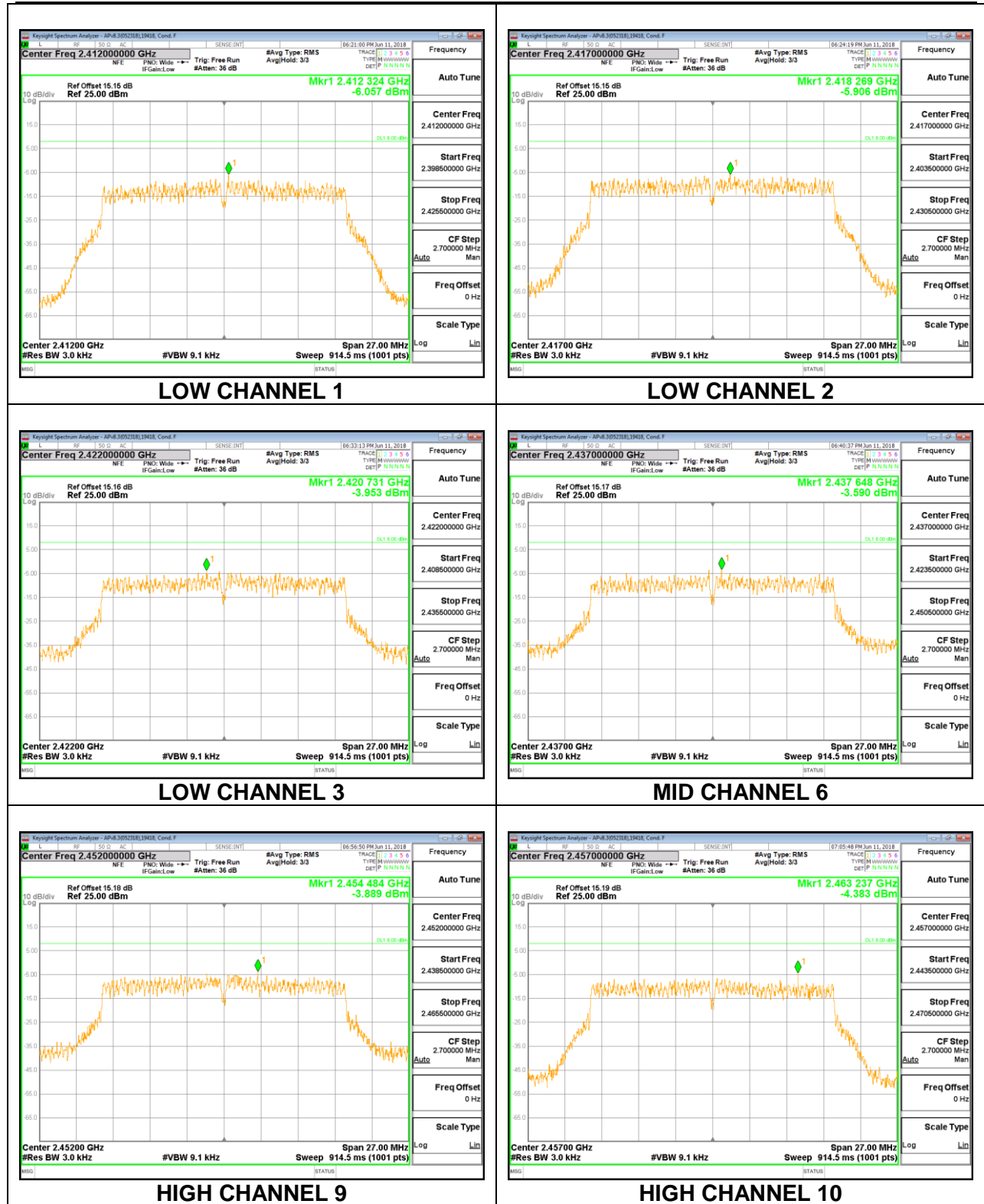


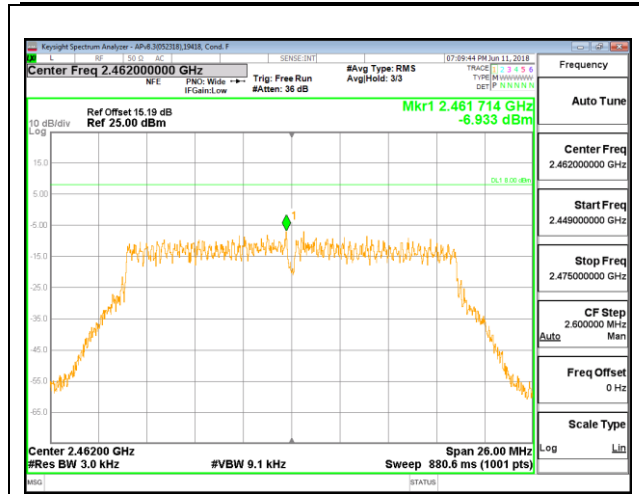
**1TX Antenna 5 MODE**

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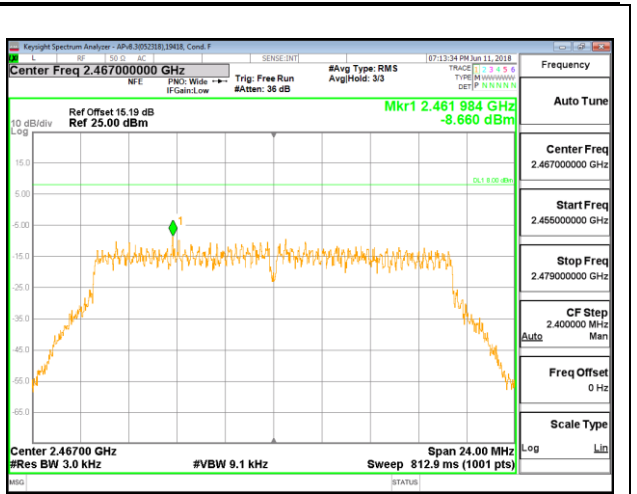
**PSD Results**

<b>Channel</b>	<b>Frequency (MHz)</b>	<b>ANT 5 Meas (dBm/ 3kHz)</b>	<b>Total Corr'd PSD (dBm/ 3kHz)</b>	<b>Limit (dBm/ 3kHz)</b>	<b>Margin (dB)</b>
Low 1	2412	-6.06	-6.06	8.0	-14.1
Low 2	2417	-5.91	-5.91	8.0	-13.9
Low 3	2422	-3.95	-3.95	8.0	-12.0
Mid 6	2437	-3.59	-3.59	8.0	-11.6
High 9	2452	-3.89	-3.89	8.0	-11.9
High 10	2457	-4.38	-4.38	8.0	-12.4
High 11	2462	-6.93	-6.93	8.0	-14.9
High 12	2467	-8.66	-8.66	8.0	-16.7
High 13	2472	-16.25	-16.25	8.0	-24.3

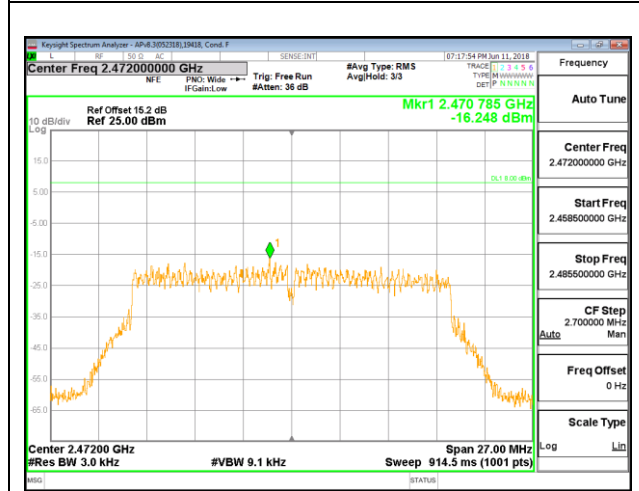




**HIGH CHANNEL 11**



**HIGH CHANNEL 12**



**HIGH CHANNEL 13**