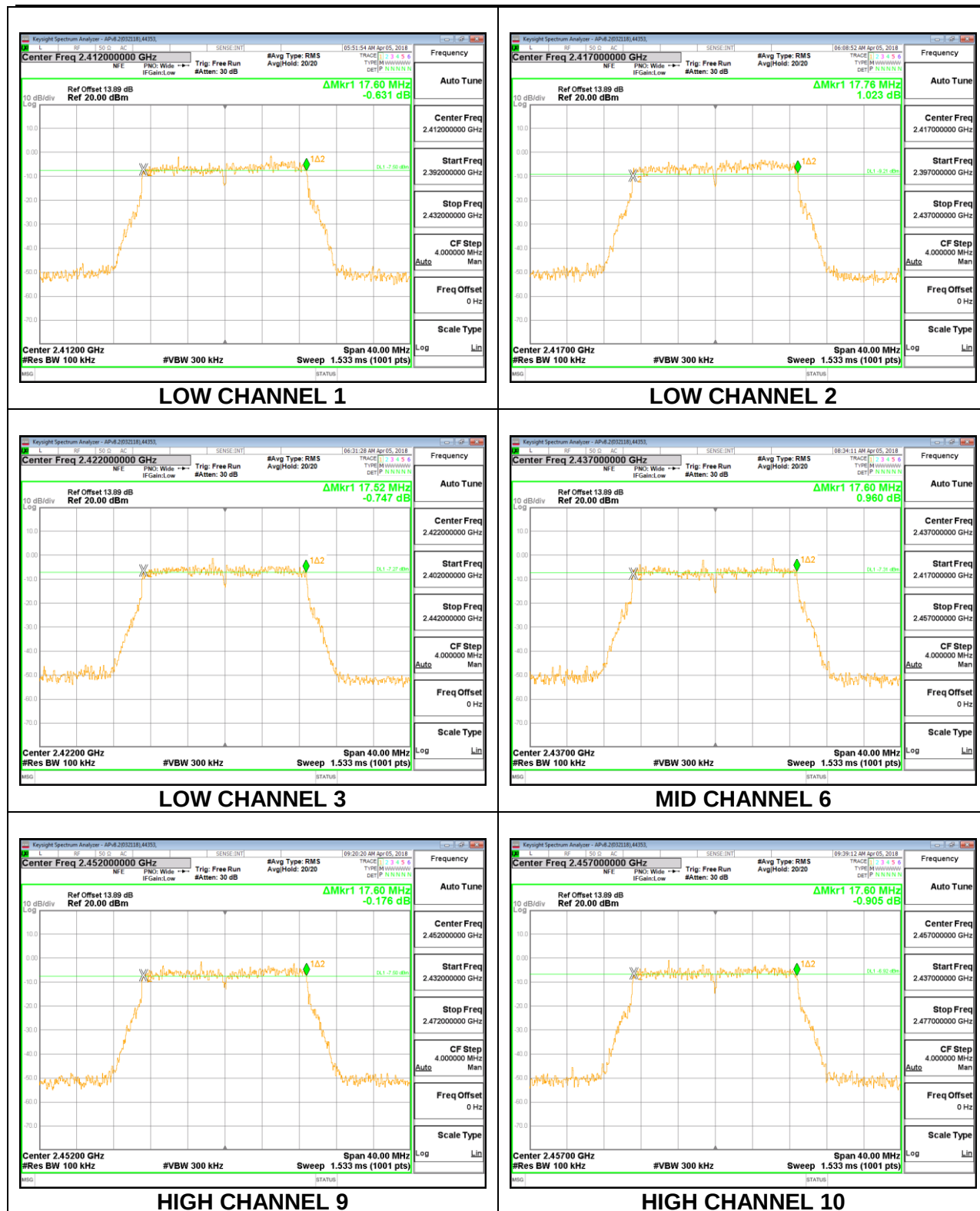
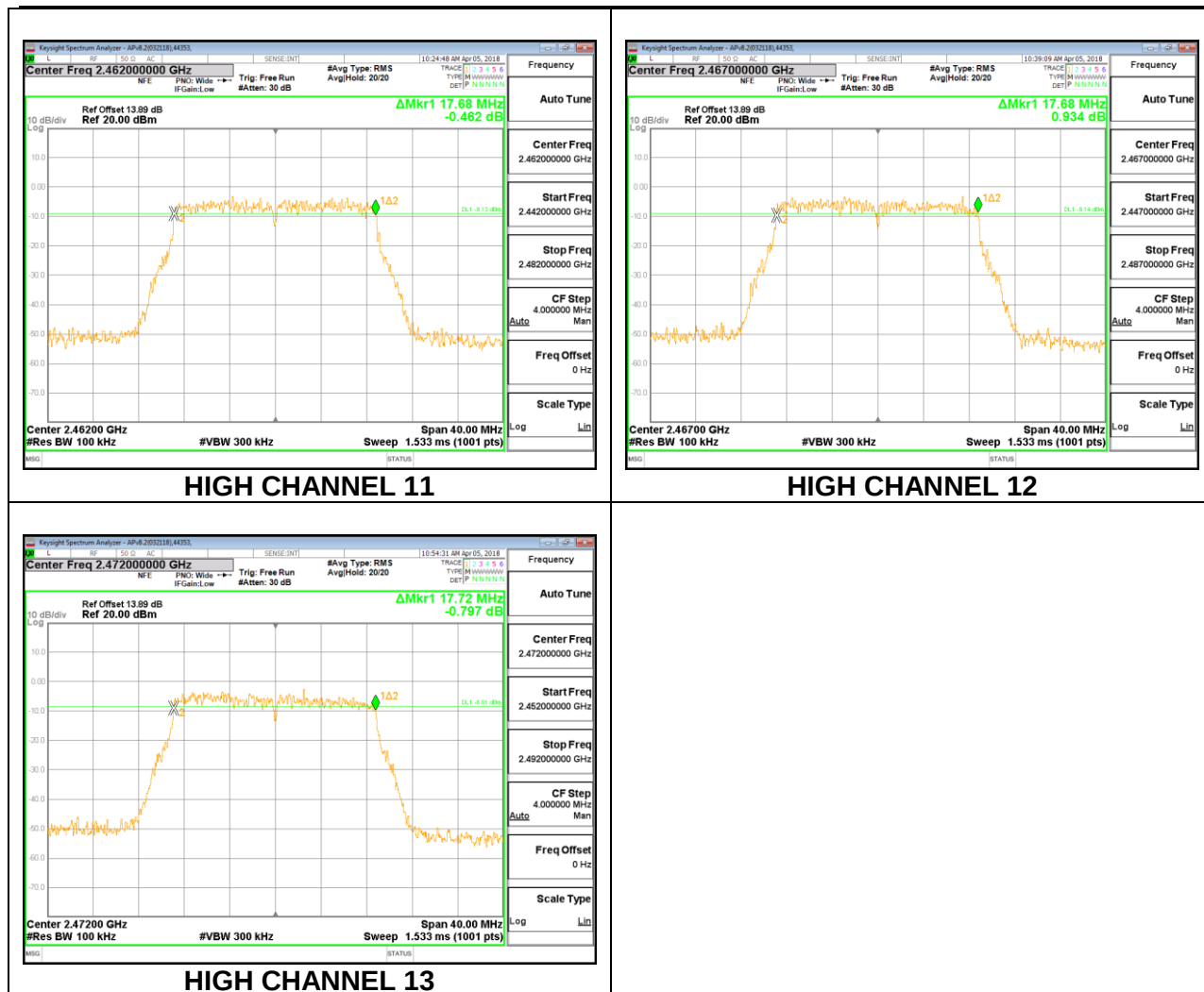


8.3.2. 802.11n HT20 MODE

1TX Antenna 4 MODE

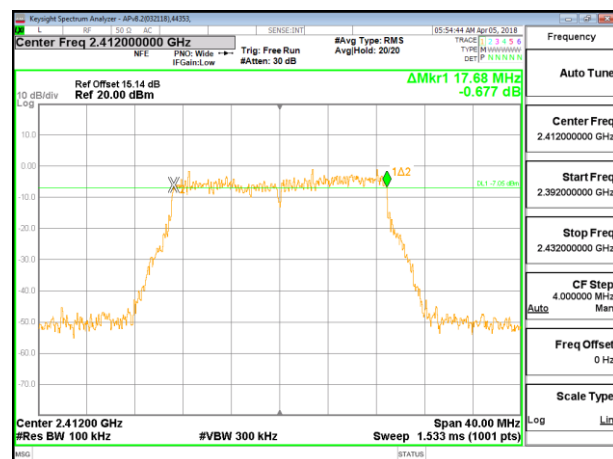
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	17.6000	0.5
Low 2	2417	17.7600	0.5
Low 3	2422	17.5200	0.5
Mid 6	2437	17.6000	0.5
High 9	2452	17.6000	0.5
High 10	2457	17.5600	0.5
High 11	2462	17.6800	0.5
High 12	2467	17.6800	0.5
High 13	2472	17.7200	0.5



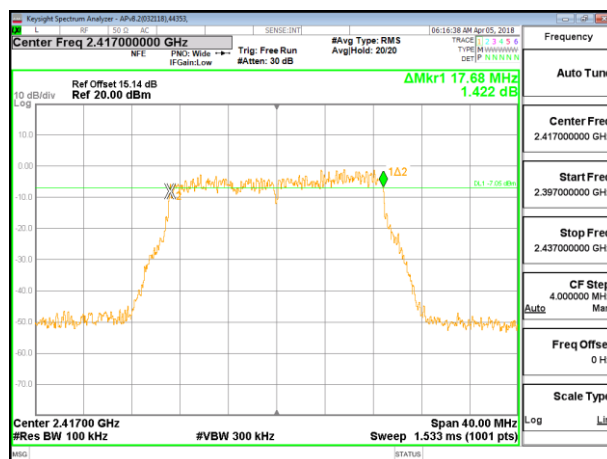


1TX Antenna 3 MODE

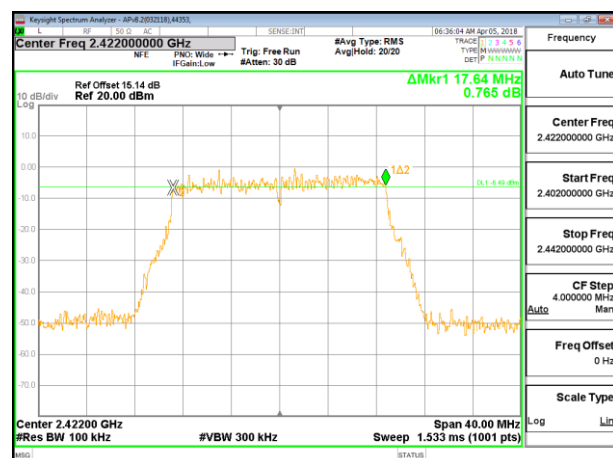
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	17.6800	0.5
Low 2	2417	17.6800	0.5
Low 3	2422	17.6400	0.5
Mid 6	2437	17.6000	0.5
High 9	2452	17.6000	0.5
High 10	2457	17.3200	0.5
High 11	2462	17.6800	0.5
High 12	2467	17.6000	0.5
High 13	2472	17.6400	0.5



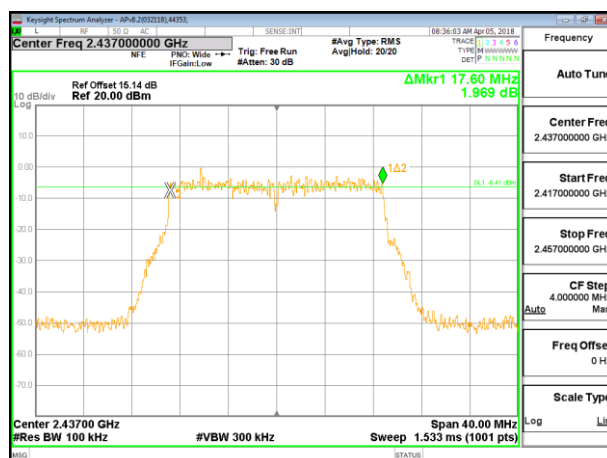
LOW CHANNEL 1



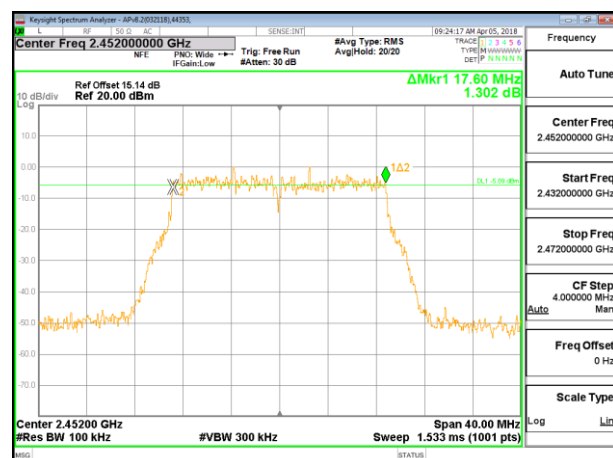
LOW CHANNEL 2



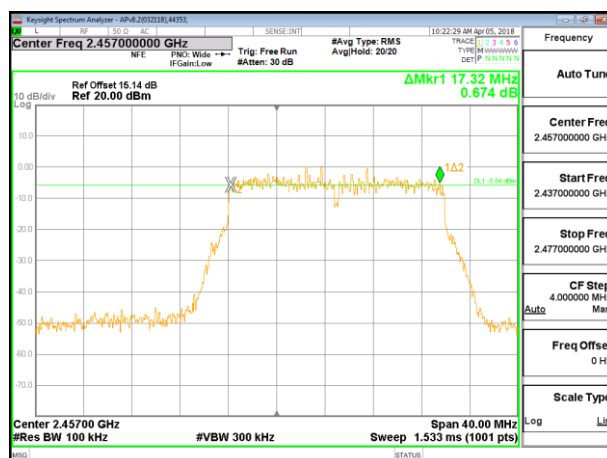
LOW CHANNEL 3



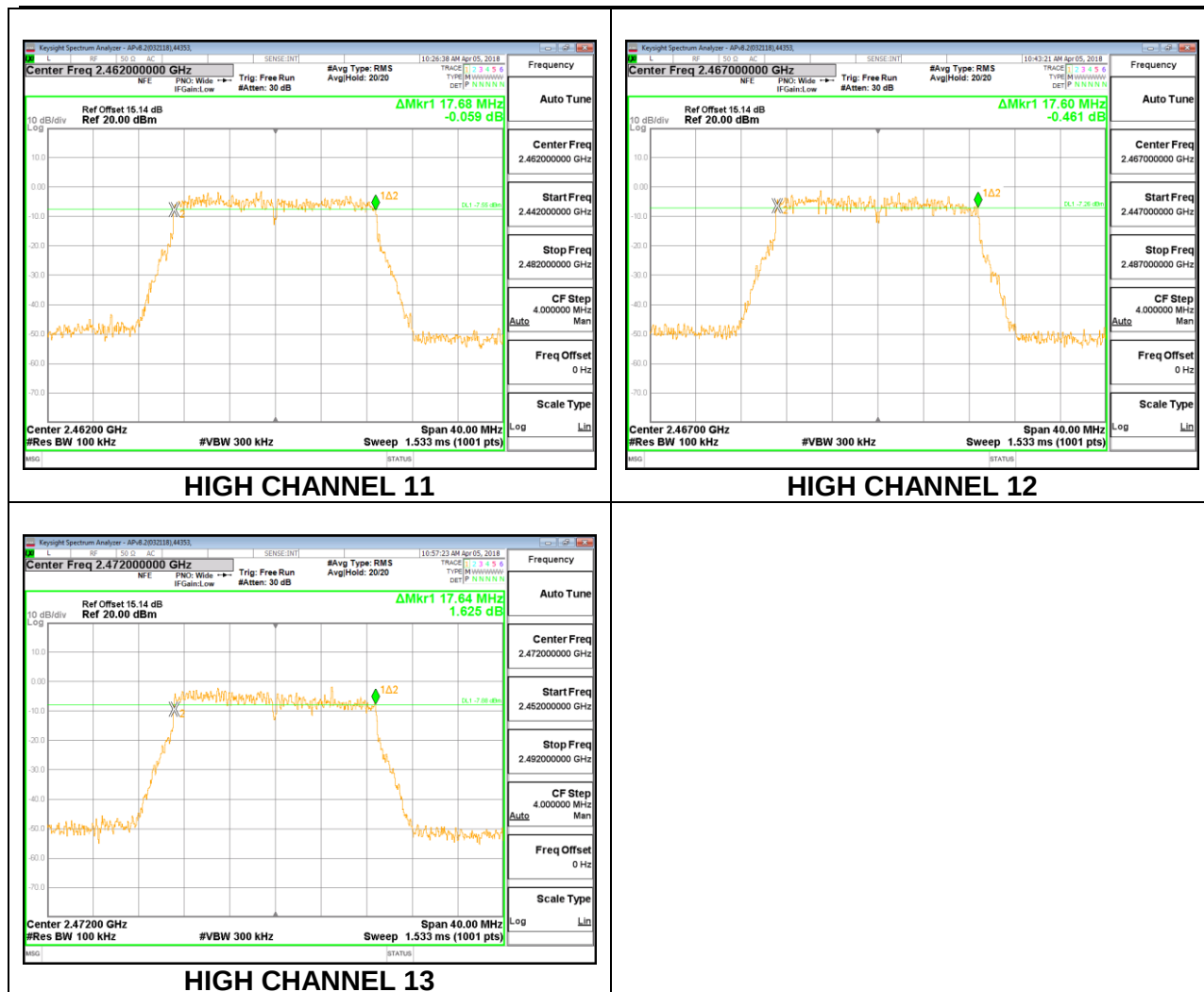
MID CHANNEL 6



HIGH CHANNEL 9



HIGH CHANNEL 10



8.3.3. 2TX Antenna 4 + Antenna 3 CDD MODE

Channel	Frequency (MHz)	6 dB BW ANT 4 (MHz)	6 dB BW ANT 3 (MHz)	Minimum Limit (MHz)
Low 1	2412	17.720	17.720	0.5
Low 2	2417	17.640	17.600	0.5
Low 3	2422	17.520	17.680	0.5
Low 4	2427	17.680	17.680	0.5
Mid 6	2437	17.560	17.240	0.5
High 8	2447	17.760	17.520	0.5
High 9	2452	17.280	17.760	0.5
High 10	2457	17.640	17.600	0.5
High 11	2462	17.640	17.640	0.5
High 12	2467	17.720	17.600	0.5
High 13	2472	17.240	17.000	0.5

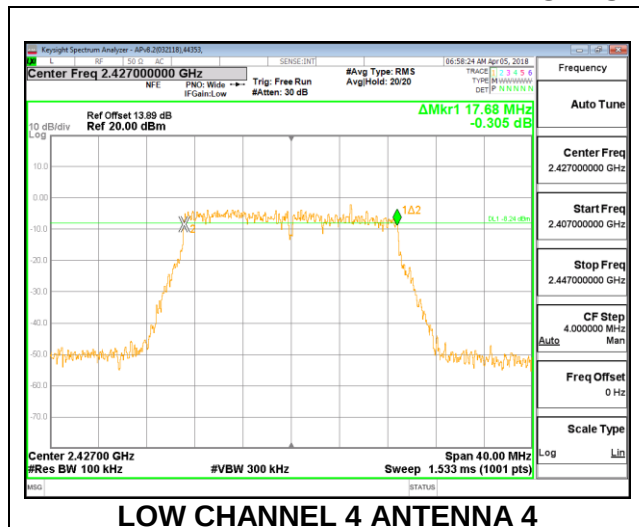
LOW CHANNEL 1 ANTENNA 4

LOW CHANNEL 1 ANTENNA 3

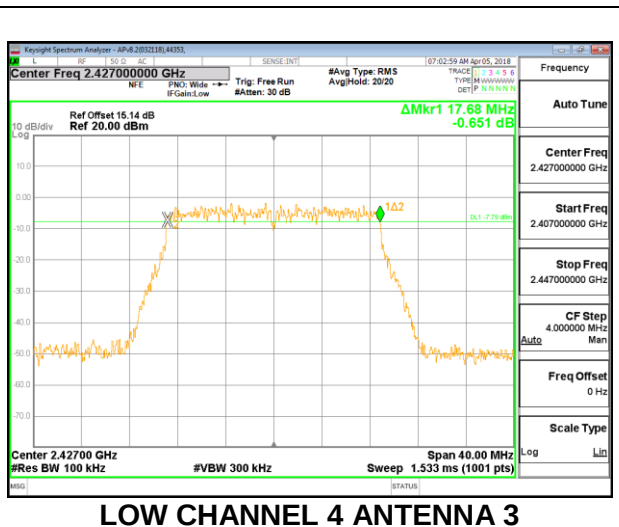
Two side-by-side screenshots of a Keysight Spectrum Analyzer showing the frequency response of two antennas. The left plot is for 'LOW CHANNEL 2 ANTENNA 4' and the right plot is for 'LOW CHANNEL 2 ANTENNA 3'. Both plots show a similar frequency response with a peak around 2.417 GHz. The left plot has a peak of 17.64 MHz and -0.590 dB, while the right plot has a peak of 17.60 MHz and -0.397 dB. The plots include various parameters like Center Freq, Span, Sweep, and Res BW.

Two side-by-side screenshots of a Keysight Spectrum Analyzer showing the frequency response of two antennas. The left screenshot is for 'LOW CHANNEL 3 ANTENNA 4' and the right is for 'LOW CHANNEL 3 ANTENNA 3'. Both plots show a bandpass filter response centered at 2.422 GHz. The left plot has a peak at 17.52 MHz with a loss of -0.230 dB, while the right plot has a peak at 17.68 MHz with a loss of 0.680 dB. Both plots show a 3-dB bandwidth of approximately 1.533 ms (1001 pts) and a span of 40.00 MHz.

LOW CHANNEL 4

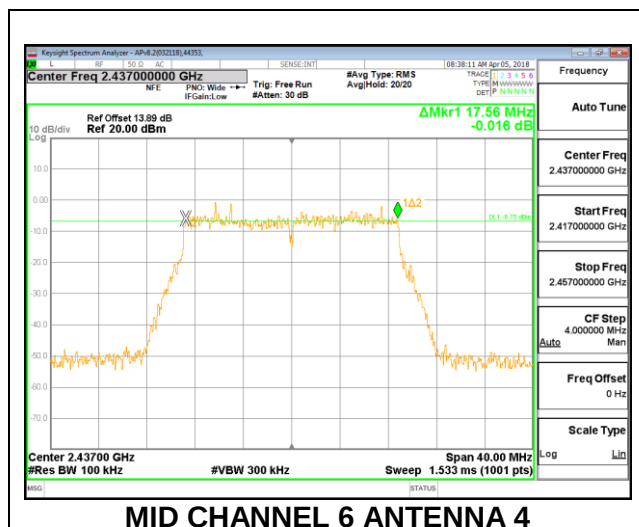


LOW CHANNEL 4 ANTENNA 4

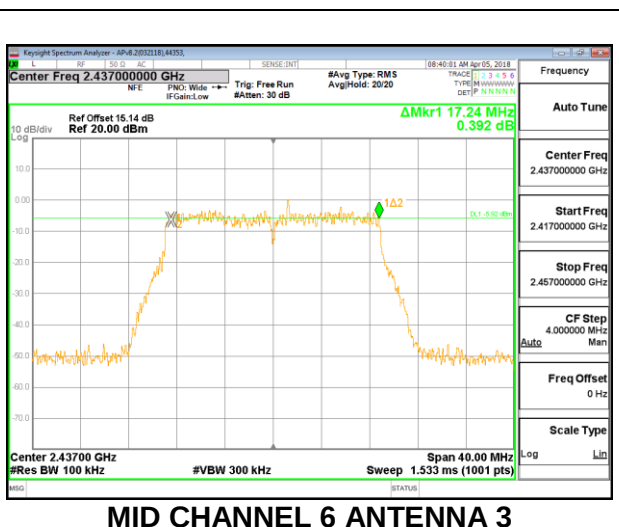


LOW CHANNEL 4 ANTENNA 3

MID CHANNEL 6

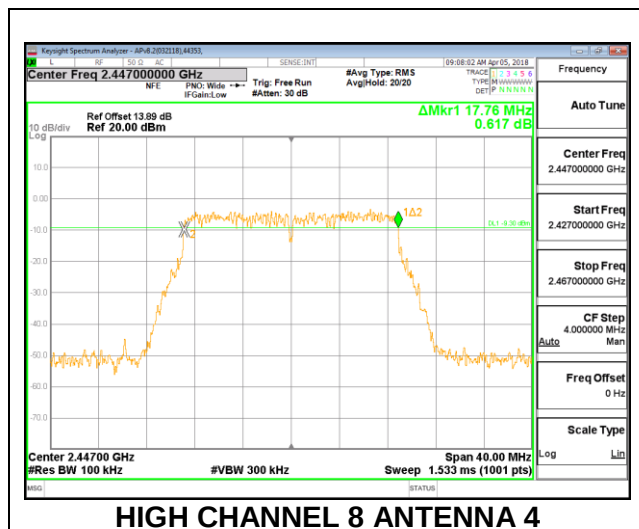


MID CHANNEL 6 ANTENNA 4

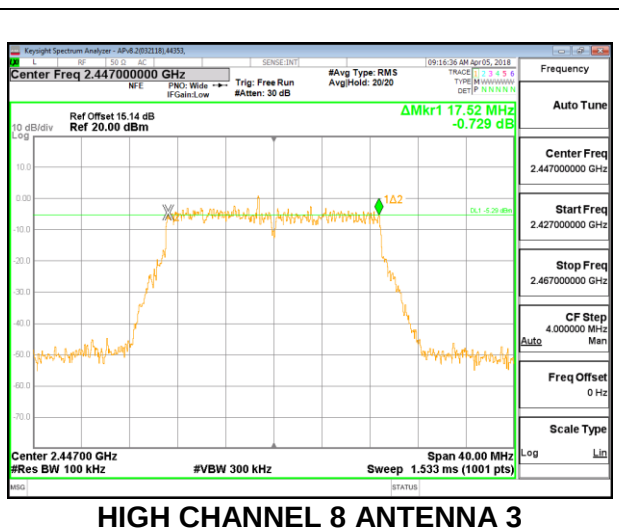


MID CHANNEL 6 ANTENNA 3

HIGH CHANNEL 8

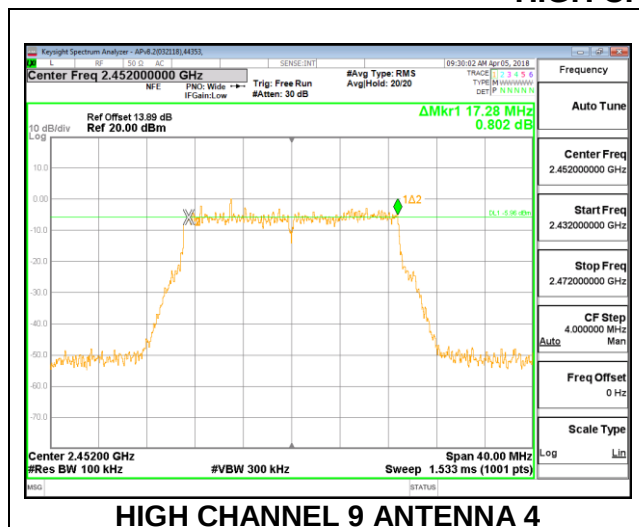


HIGH CHANNEL 8 ANTENNA 4

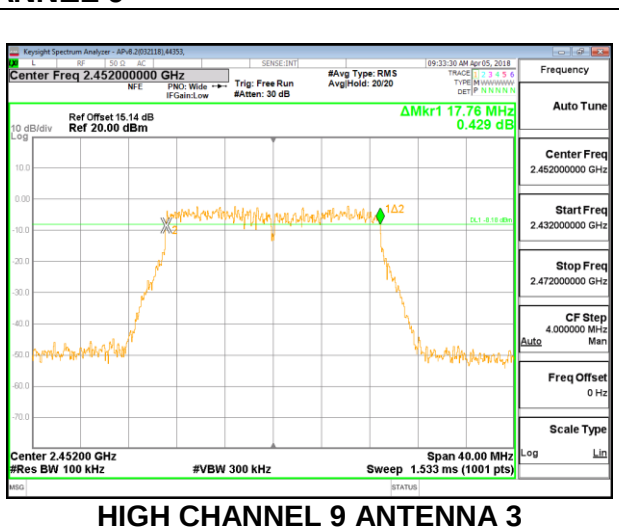


HIGH CHANNEL 8 ANTENNA 3

HIGH CHANNEL 9

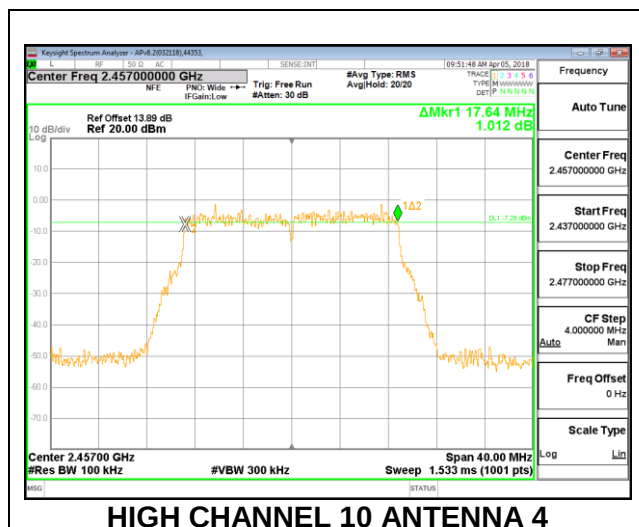


HIGH CHANNEL 9 ANTENNA 4

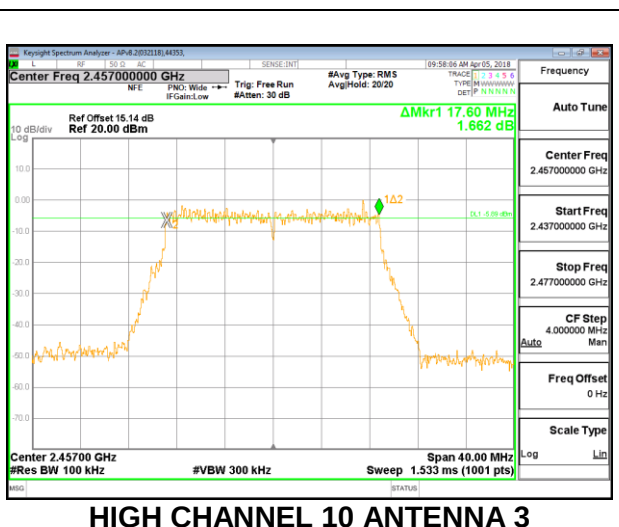


HIGH CHANNEL 9 ANTENNA 3

HIGH CHANNEL 10

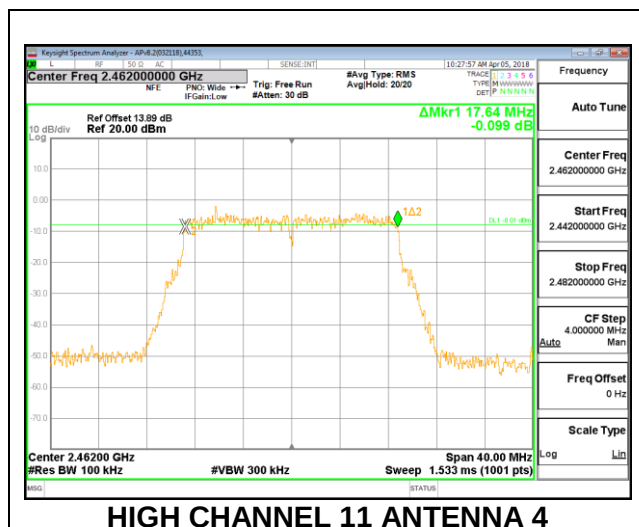


HIGH CHANNEL 10 ANTENNA 4

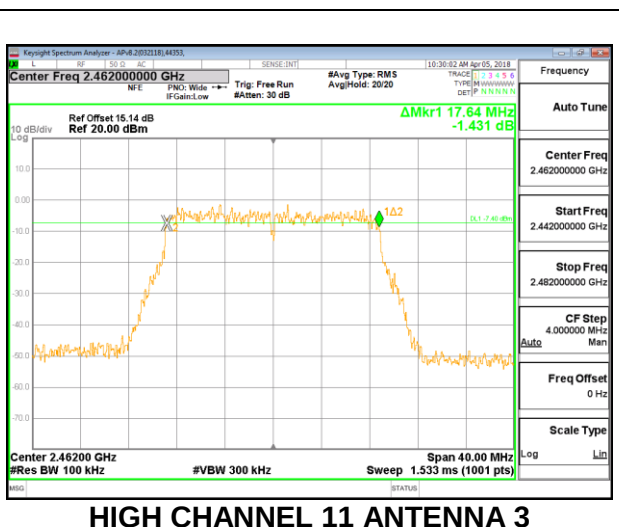


HIGH CHANNEL 10 ANTENNA 3

HIGH CHANNEL 11

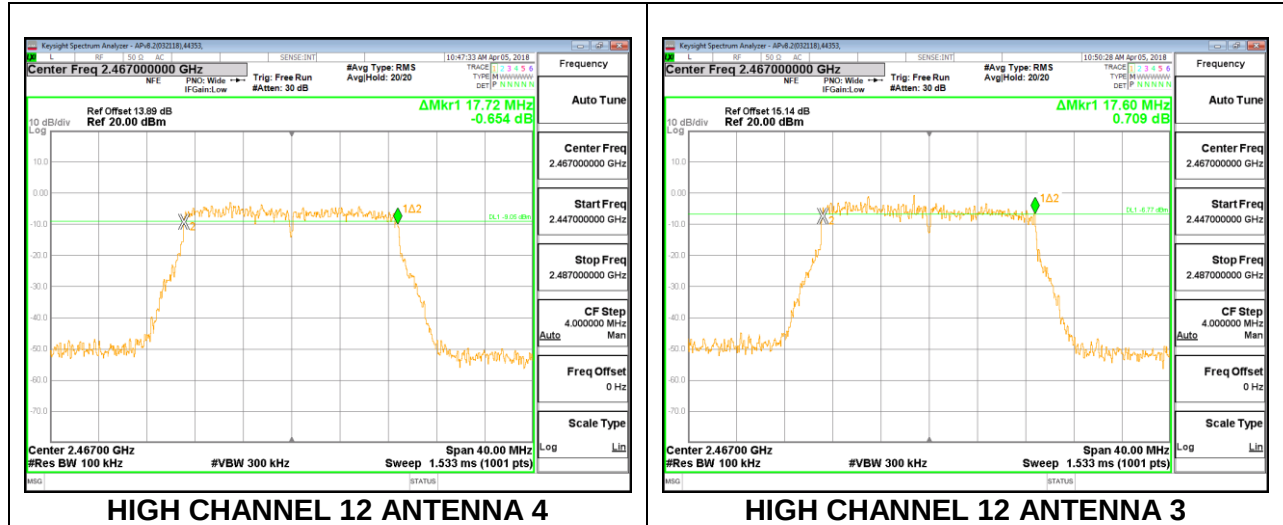


HIGH CHANNEL 11 ANTENNA 4

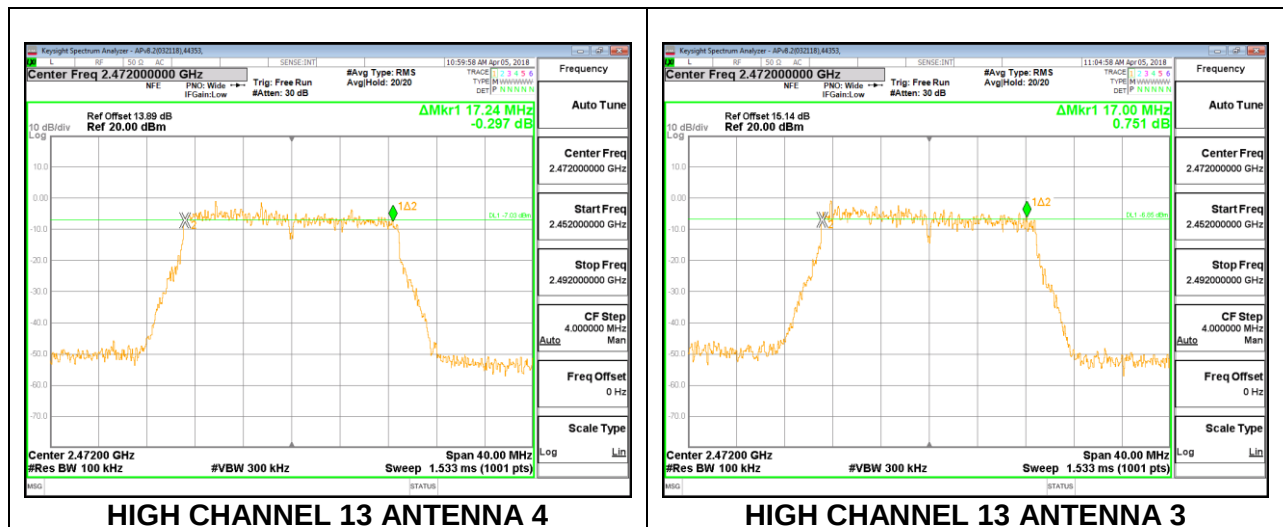


HIGH CHANNEL 11 ANTENNA 3

HIGH CHANNEL 12



HIGH CHANNEL 13



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

Measurements perform using a wideband gated RF 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:

Band (GHz)	ANT 4 Antenna Gain (dBi)	ANT 3 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
2.4	-2.30	-4.80	-3.37	-0.45

RESULTS

ID:	30554	Date:	7/17/2018
------------	-------	--------------	-----------

8.4.1. 802.11b MODE

1TX Antenna 4 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	-2.30	30.00	30	36	30.00
Low 2	2417	-2.30	30.00	30	36	30.00
Mid 6	2437	-2.30	30.00	30	36	30.00
High 11	2462	-2.30	30.00	30	36	30.00
High 12	2467	-2.30	30.00	30	36	30.00
High 13	2472	-2.30	30.00	30	36	30.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power
---------------------------	------	---

Results

Channel	Frequency (MHz)	ANT 4 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	20.44	20.44	30.00	-9.56
Low 2	2417	20.65	20.65	30.00	-9.35
Mid 6	2437	20.66	20.66	30.00	-9.34
High 11	2462	20.70	20.70	30.00	-9.30
High 12	2467	20.41	20.41	30.00	-9.59
High 13	2472	18.90	18.90	30.00	-11.10

1TX Antenna 3 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	-4.80	30.00	30	36	30.00
Low 2	2417	-4.80	30.00	30	36	30.00
Mid 6	2437	-4.80	30.00	30	36	30.00
High 11	2462	-4.80	30.00	30	36	30.00
High 12	2467	-4.80	30.00	30	36	30.00
High 13	2472	-4.80	30.00	30	36	30.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power
---------------------------	------	---

Results

Channel	Frequency (MHz)	ANT 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	20.40	20.40	30.00	-9.60
Low 2	2417	21.87	21.87	30.00	-8.13
Mid 6	2437	21.71	21.71	30.00	-8.29
High 11	2462	21.89	21.89	30.00	-8.11
High 12	2467	20.44	20.44	30.00	-9.56
High 13	2472	18.92	18.92	30.00	-11.08

8.4.2. 802.11n HT20 MODE

1TX Antenna 4 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	-2.30	30.00	30	36	30.00
Low 2	2417	-2.30	30.00	30	36	30.00
Low 3	2422	-2.30	30.00	30	36	30.00
Mid 6	2437	-2.30	30.00	30	36	30.00
High 9	2452	-2.30	30.00	30	36	30.00
High 10	2457	-2.30	30.00	30	36	30.00
High 11	2462	-2.30	30.00	30	36	30.00
High 12	2467	-2.30	30.00	30	36	30.00
High 13	2472	-2.30	30.00	30	36	30.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power
--------------------	------	--

Results

Channel	Frequency (MHz)	ANT 4 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	17.30	17.30	30.00	-12.70
Low 2	2417	19.46	19.46	30.00	-10.54
Low 3	2422	20.68	20.68	30.00	-9.32
Mid 6	2437	20.55	20.55	30.00	-9.45
High 9	2452	20.41	20.41	30.00	-9.59
High 10	2457	19.44	19.44	30.00	-10.56
High 11	2462	17.31	17.31	30.00	-12.69
High 12	2467	15.28	15.28	30.00	-14.72
High 13	2472	7.91	7.91	30.00	-22.09

1TX Antenna 3 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	-4.80	30.00	30	36	30.00
Low 2	2417	-4.80	30.00	30	36	30.00
Low 3	2422	-4.80	30.00	30	36	30.00
Mid 6	2437	-4.80	30.00	30	36	30.00
High 9	2452	-4.80	30.00	30	36	30.00
High 10	2457	-4.80	30.00	30	36	30.00
High 11	2462	-4.80	30.00	30	36	30.00
High 12	2467	-4.80	30.00	30	36	30.00
High 13	2472	-4.80	30.00	30	36	30.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power
--------------------	------	--

Results

Channel	Frequency (MHz)	ANT 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	17.28	17.28	30.00	-12.72
Low 2	2417	19.39	19.39	30.00	-10.61
Low 3	2422	21.80	21.80	30.00	-8.20
Mid 6	2437	21.82	21.82	30.00	-8.18
High 9	2452	21.80	21.80	30.00	-8.20
High 10	2457	19.35	19.35	30.00	-10.65
High 11	2462	17.43	17.43	30.00	-12.57
High 12	2467	15.40	15.40	30.00	-14.60
High 13	2472	7.78	7.78	30.00	-22.22

8.4.3. 2TX Antenna 4 + Antenna 3 CDD MODE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	-3.37	30.00	36	30.00
Low 2	2417	-3.37	30.00	36	30.00
Low 3	2422	-3.37	30.00	36	30.00
Low 4	2427	-3.37	30.00	36	30.00
Mid 6	2437	-3.37	30.00	36	30.00
High 8	2447	-3.37	30.00	36	30.00
High 9	2452	-3.37	30.00	36	30.00
High 10	2457	-3.37	30.00	36	30.00
High 11	2462	-3.37	30.00	36	30.00
High 12	2467	-3.37	30.00	36	30.00
High 13	2472	-3.37	30.00	36	30.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power
--------------------	------	--

Results

Channel	Frequency (MHz)	ANT 4 Meas Power (dBm)	ANT 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	16.45	16.41	19.44	30.00	-10.56
Low 2	2417	18.32	18.45	21.40	30.00	-8.60
Low 3	2422	19.93	19.87	22.91	30.00	-7.09
Low 4	2427	20.66	21.81	24.28	30.00	-5.72
Mid 6	2437	20.62	21.83	24.28	30.00	-5.72
High 8	2447	20.65	21.81	24.28	30.00	-5.72
High 9	2452	19.87	19.78	22.84	30.00	-7.16
High 10	2457	18.42	18.38	21.41	30.00	-8.59
High 11	2462	16.37	16.39	19.39	30.00	-10.61
High 12	2467	14.40	14.35	17.39	30.00	-12.61
High 13	2472	6.82	6.85	9.85	30.00	-20.15

8.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

RSS-247 (5.2) (b)

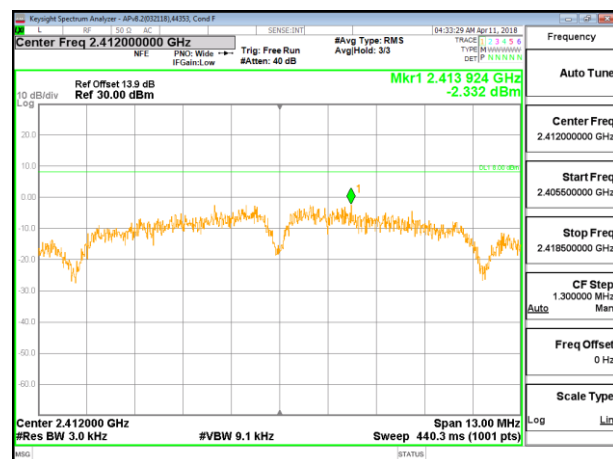
The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

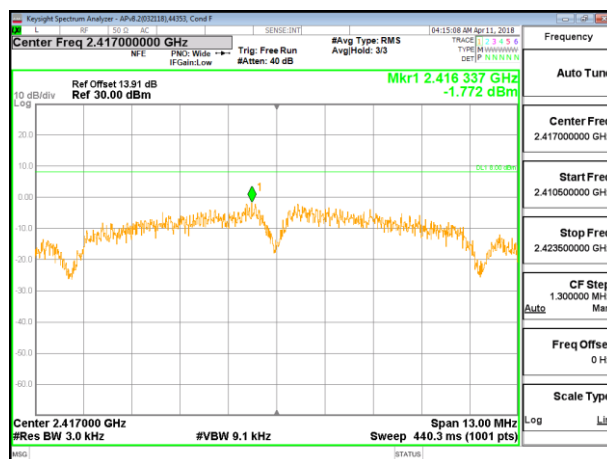
8.5.1. 802.11b MODE

1TX Antenna 4 MODE

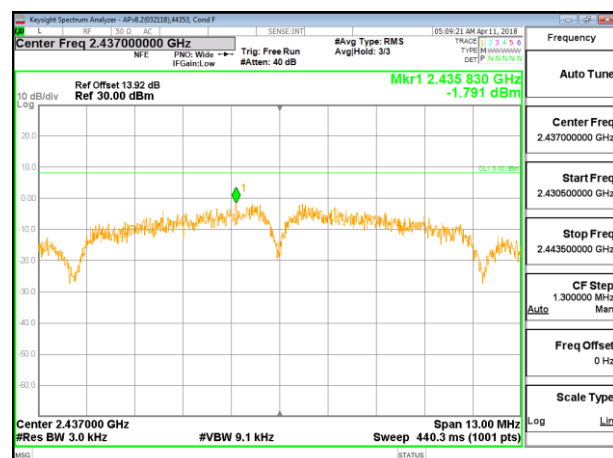
Duty Cycle CF (dB)		0.00	Included in Calculations of Corr'd PSD		
PSD Results					
Channel	Frequency (MHz)	ANT 4 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-2.33	-2.33	8.0	-10.3
Low 2	2417	-1.77	-1.77	8.0	-9.8
Mid 6	2437	-1.79	-1.79	8.0	-9.8
High 11	2462	-1.62	-1.62	8.0	-9.6
High 12	2467	-2.32	-2.32	8.0	-10.3
High 13	2472	-3.43	-3.43	8.0	-11.4



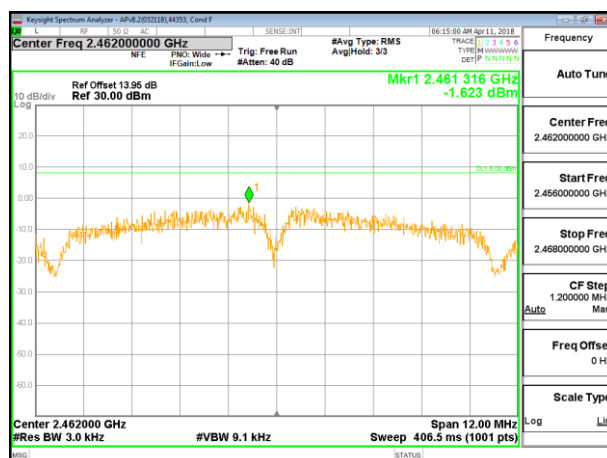
LOW CHANNEL 1



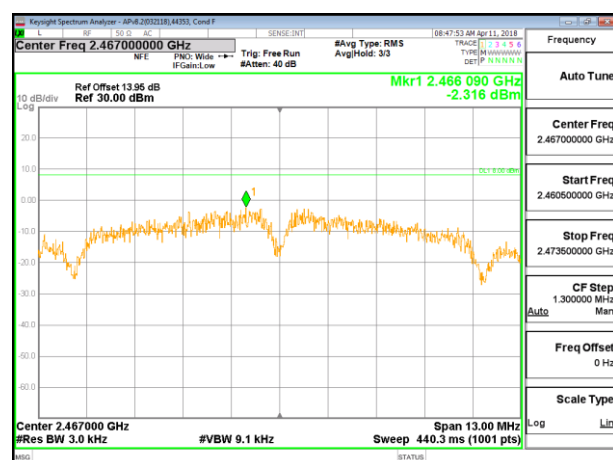
LOW CHANNEL 2



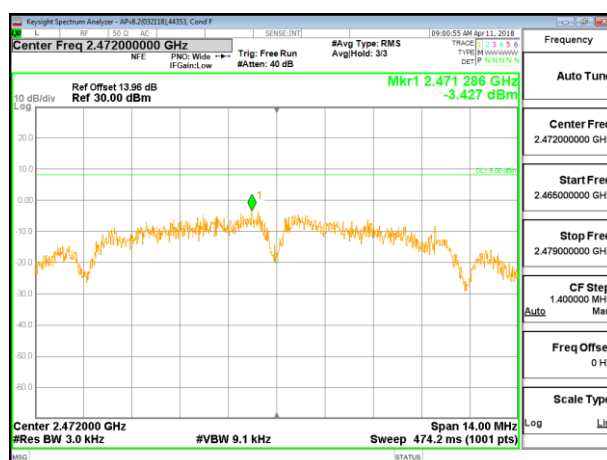
MID CHANNEL 6



HIGH CHANNEL 11



HIGH CHANNEL 12



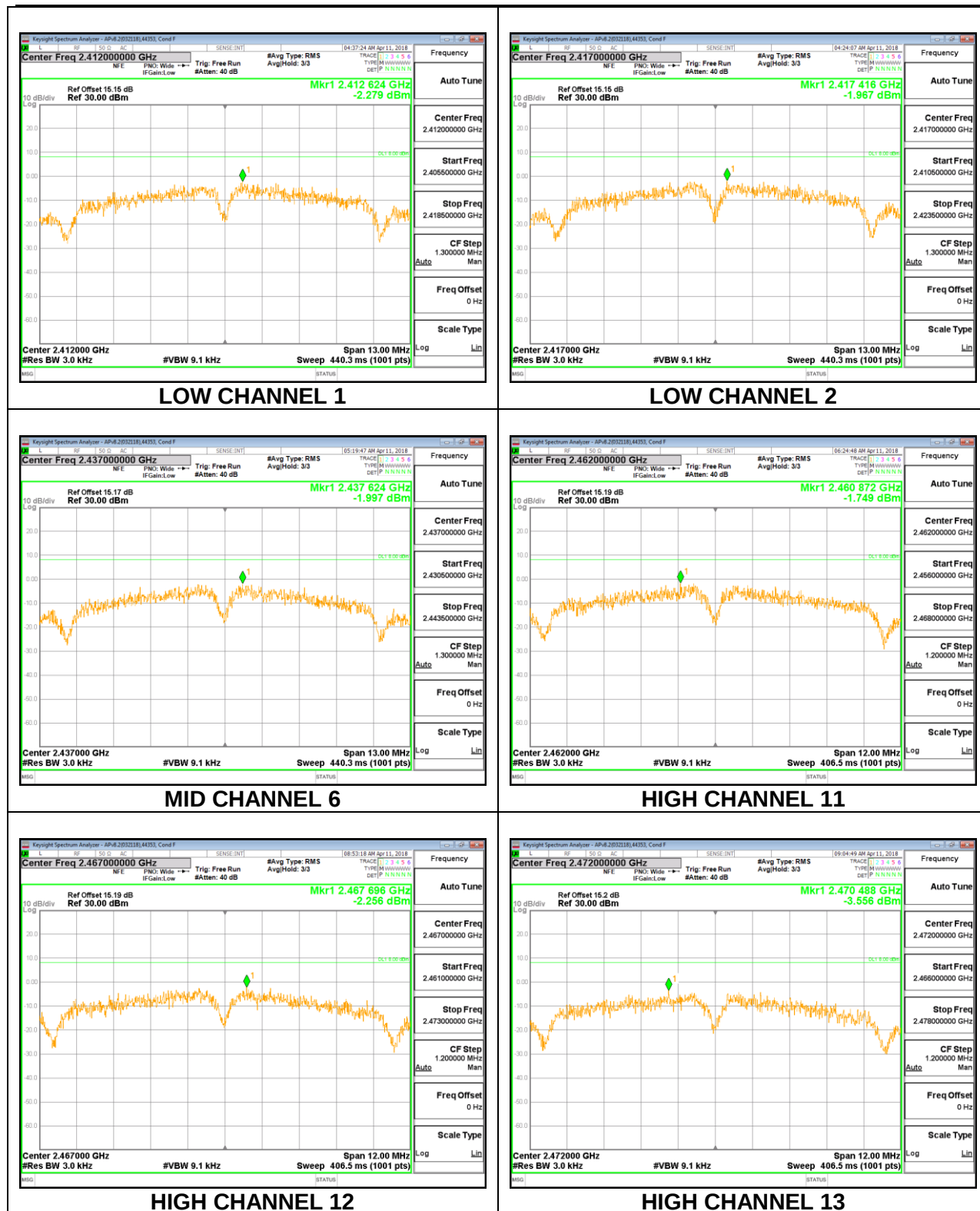
HIGH CHANNEL 13

1TX Antenna 3 MODE

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD
---------------------------	------	---

PSD Results

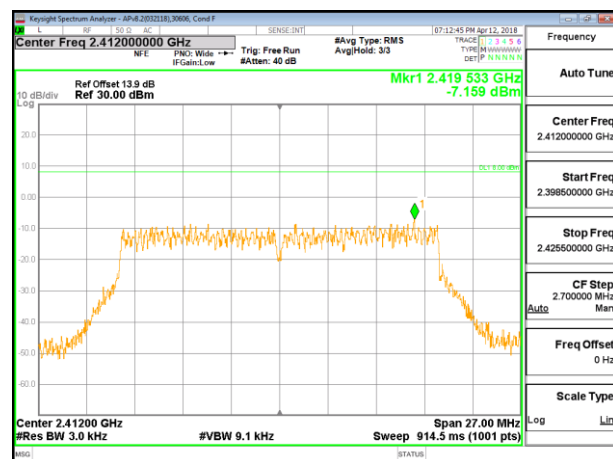
Channel	Frequency (MHz)	ANT 3 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-2.28	-2.28	8.0	-10.3
Low 2	2417	-1.97	-1.97	8.0	-10.0
Mid 6	2437	-2.00	-2.00	8.0	-10.0
High 11	2462	-1.75	-1.75	8.0	-9.8
High 12	2467	-2.26	-2.26	8.0	-10.3
High 13	2472	-3.56	-3.56	8.0	-11.6



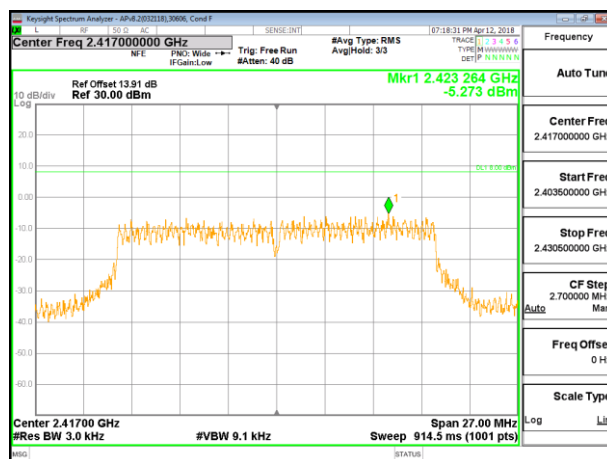
8.5.2. 802.11n HT20 MODE

1TX Antenna 4 MODE

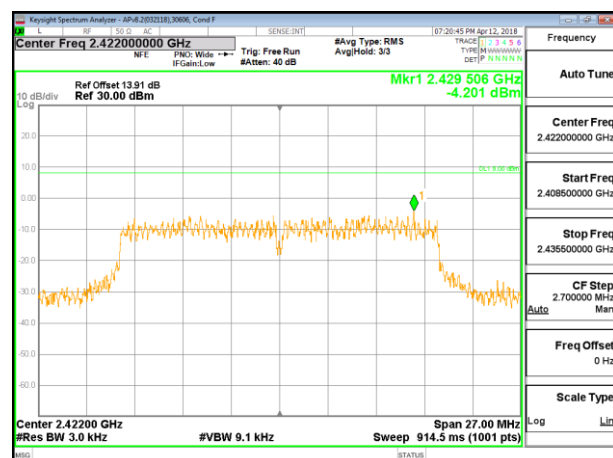
Duty Cycle CF (dB)		0.00	Included in Calculations of Corr'd PSD		
PSD Results					
Channel	Frequency (MHz)	ANT 4 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-7.16	-7.16	8.0	-15.2
Low 2	2417	-5.27	-5.27	8.0	-13.3
Low 3	2422	-4.20	-4.20	8.0	-12.2
Mid 6	2437	-4.11	-4.11	8.0	-12.1
High 9	2452	-4.19	-4.19	8.0	-12.2
High 10	2457	-5.31	-5.31	8.0	-13.3
High 11	2462	-7.16	-7.16	8.0	-15.2
High 12	2467	-9.11	-9.11	8.0	-17.1
High 13	2472	-16.61	-16.61	8.0	-24.6



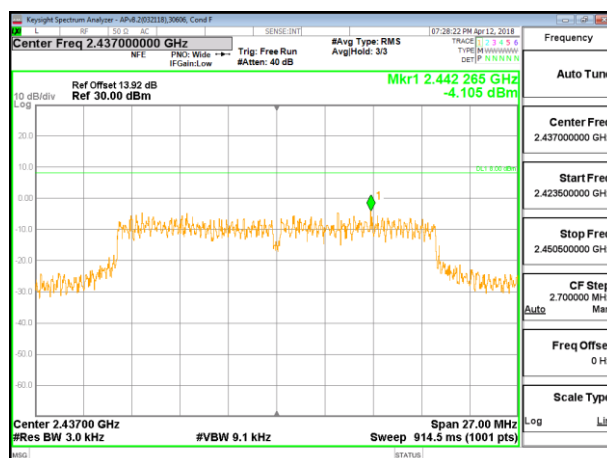
LOW CHANNEL 1



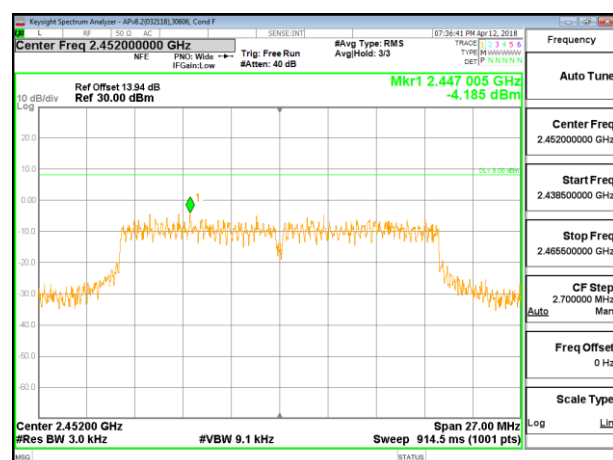
LOW CHANNEL 2



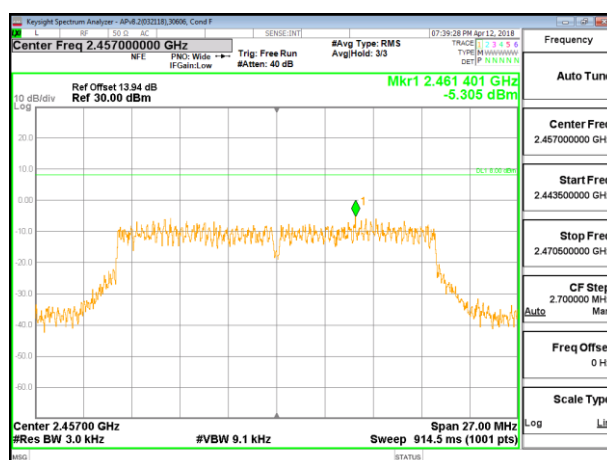
LOW CHANNEL 3



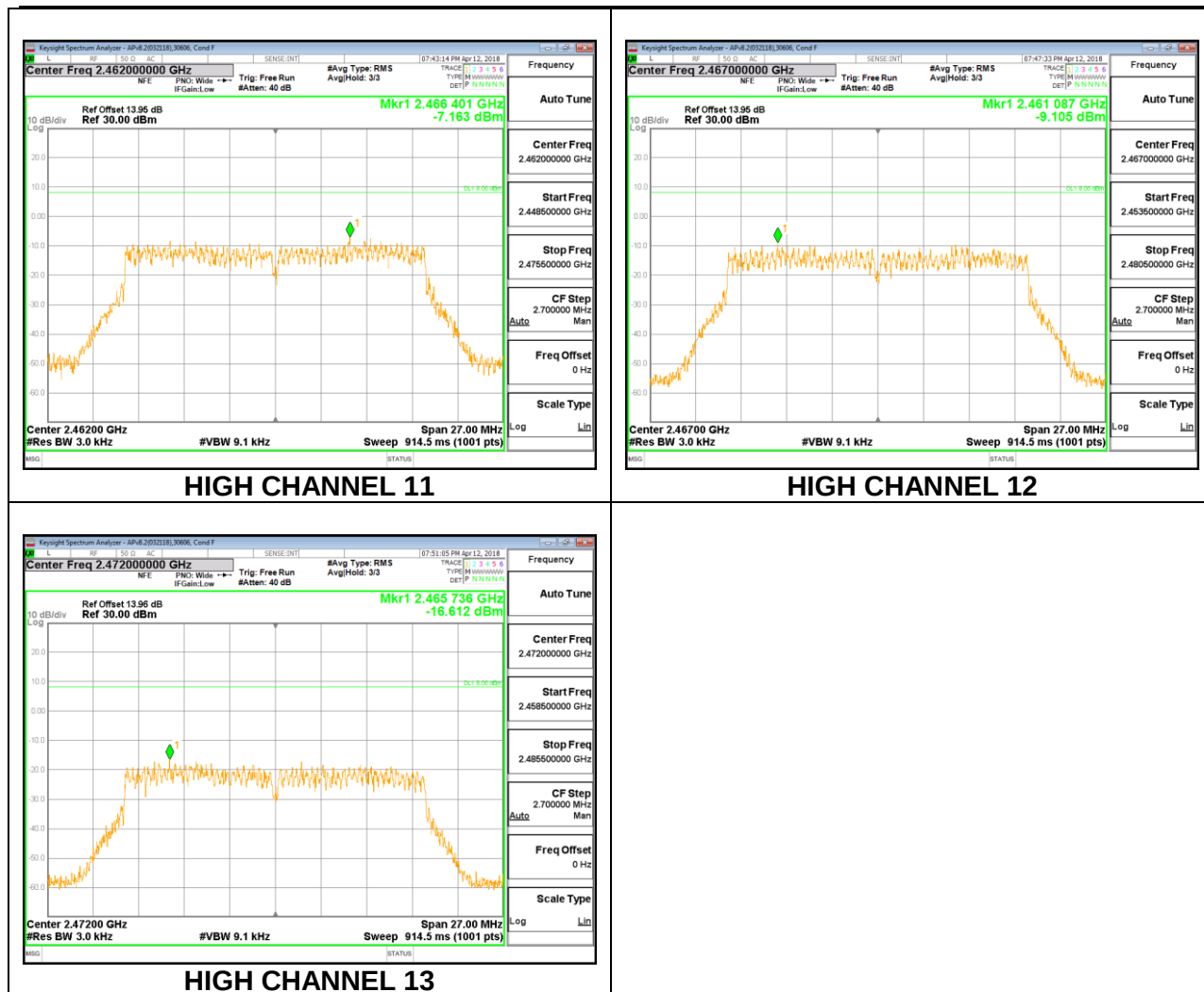
MID CHANNEL 6



HIGH CHANNEL 9



HIGH CHANNEL 10

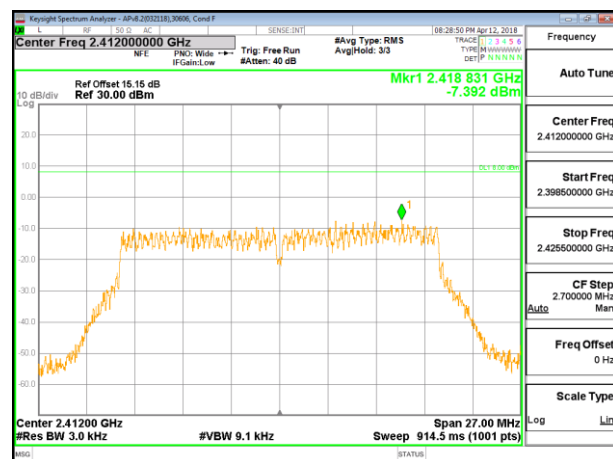


1TX Antenna 3 MODE

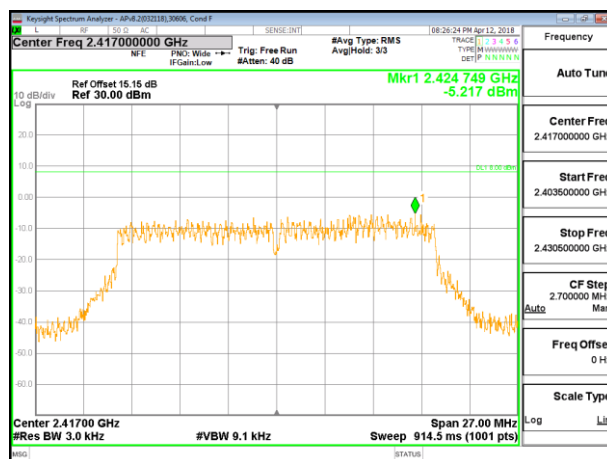
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD
---------------------------	------	---

PSD Results

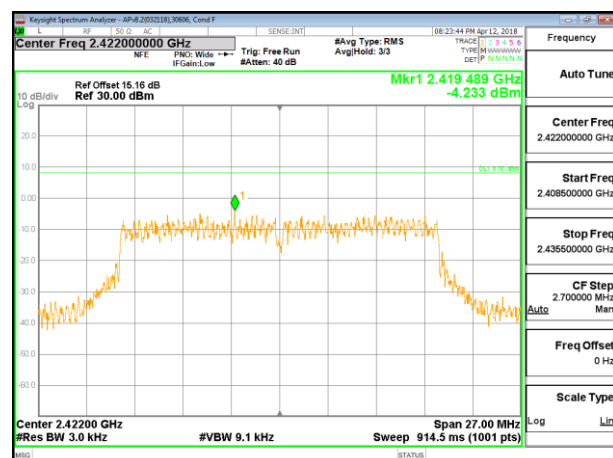
Channel	Frequency (MHz)	ANT 3 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-7.39	-7.39	8.0	-15.4
Low 2	2417	-5.22	-5.22	8.0	-13.2
Low 3	2422	-4.23	-4.23	8.0	-12.2
Mid 6	2437	-4.22	-4.22	8.0	-12.2
High 9	2452	-4.26	-4.26	8.0	-12.3
High 10	2457	-5.35	-5.35	8.0	-13.4
High 11	2462	-7.27	-7.27	8.0	-15.3
High 12	2467	-9.02	-9.02	8.0	-17.0
High 13	2472	-16.74	-16.74	8.0	-24.7



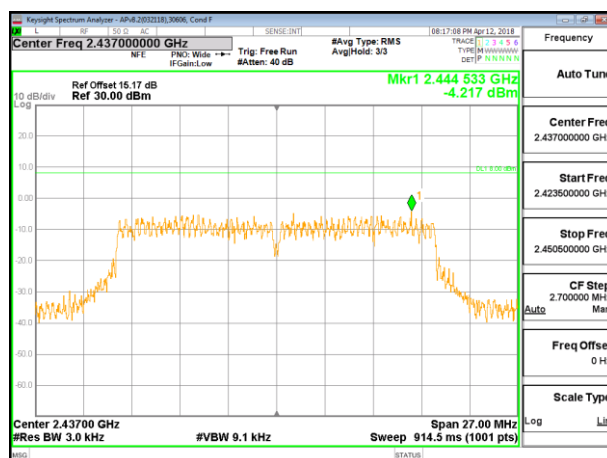
LOW CHANNEL 1



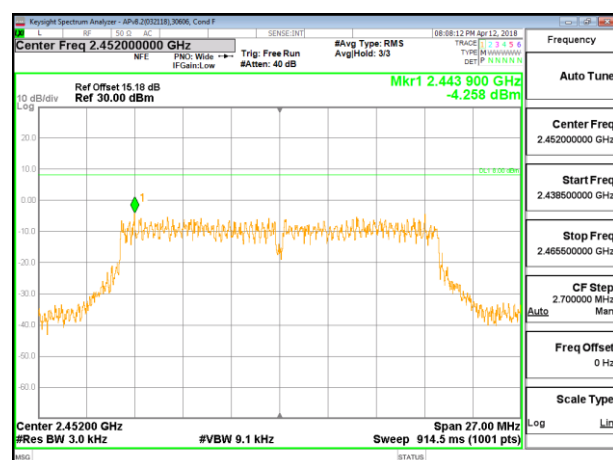
LOW CHANNEL 2



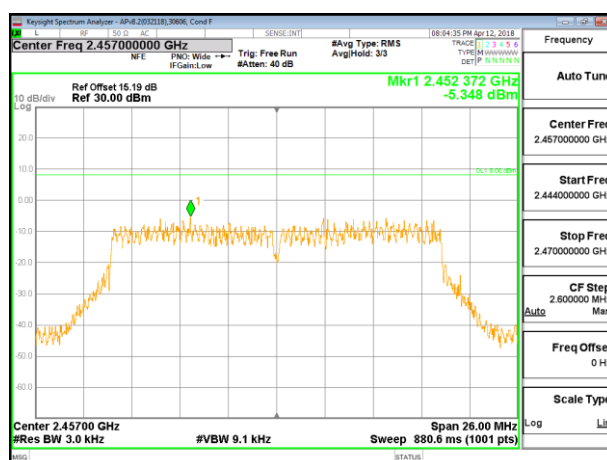
LOW CHANNEL 3



MID CHANNEL 6



HIGH CHANNEL 9



HIGH CHANNEL 10

