

9.4.2. 99% BANDWIDTH

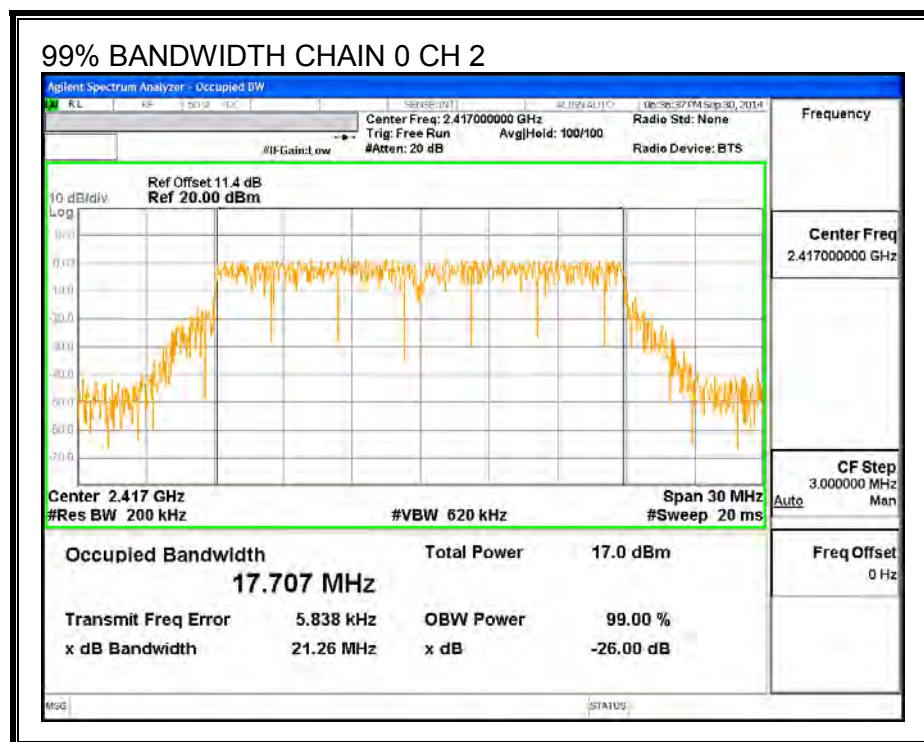
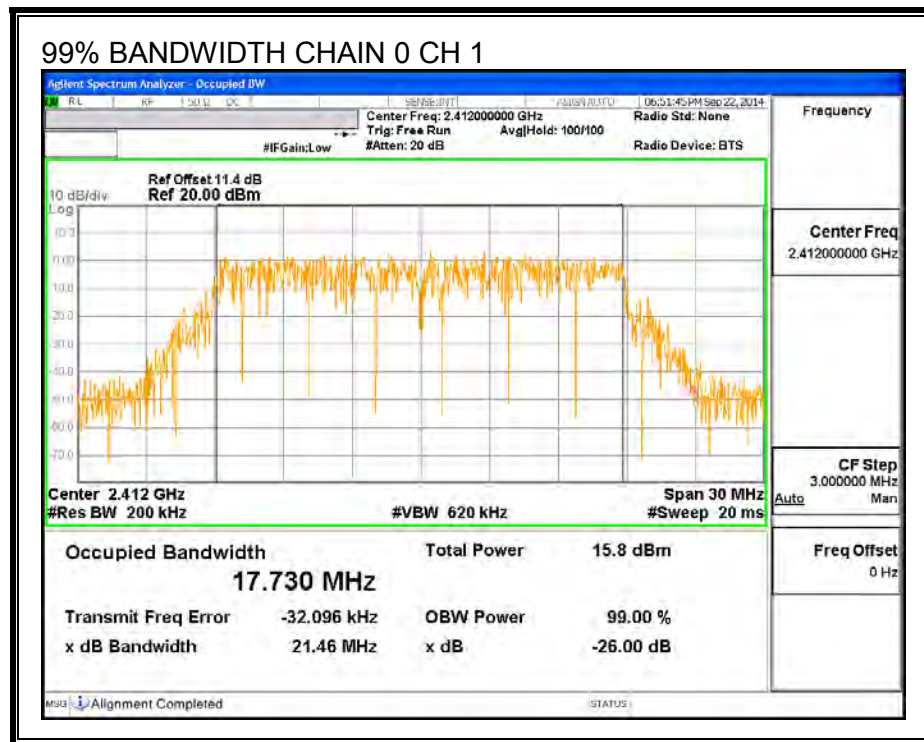
LIMITS

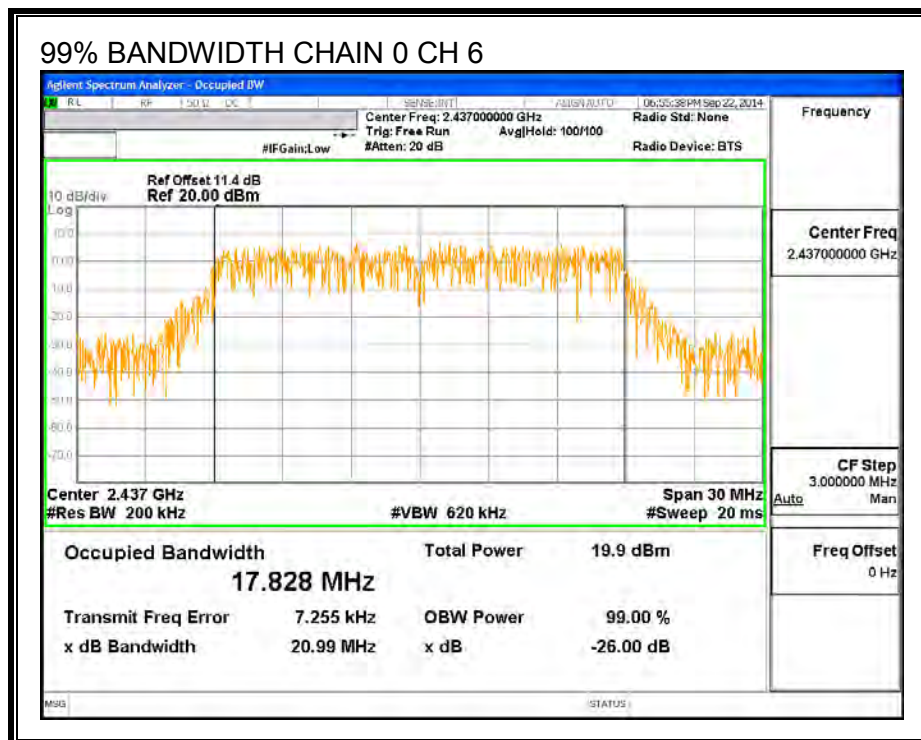
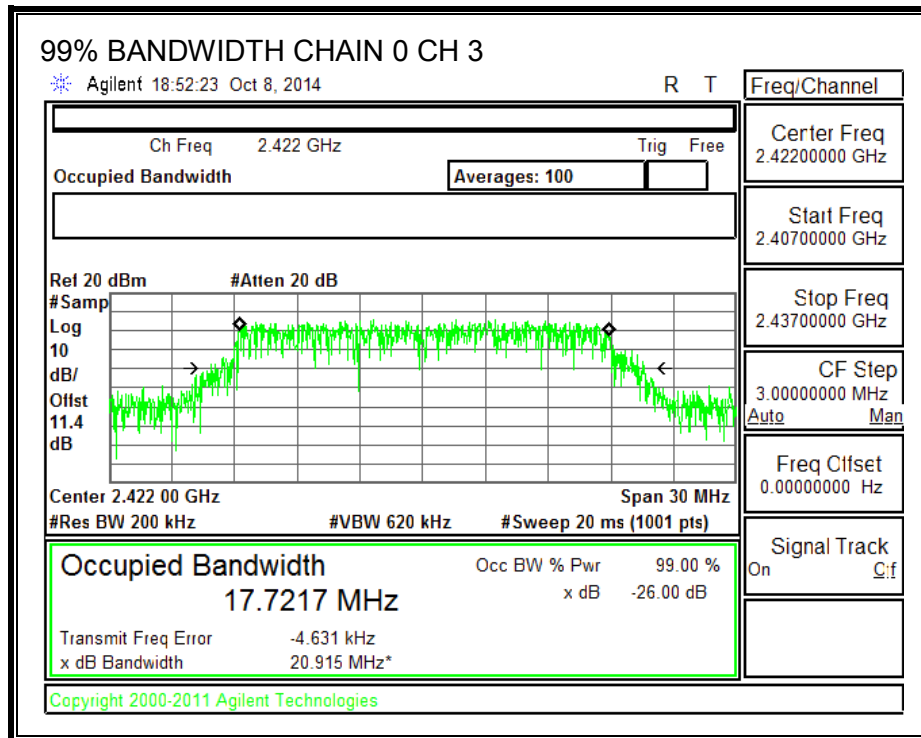
None; for reporting purposes only.

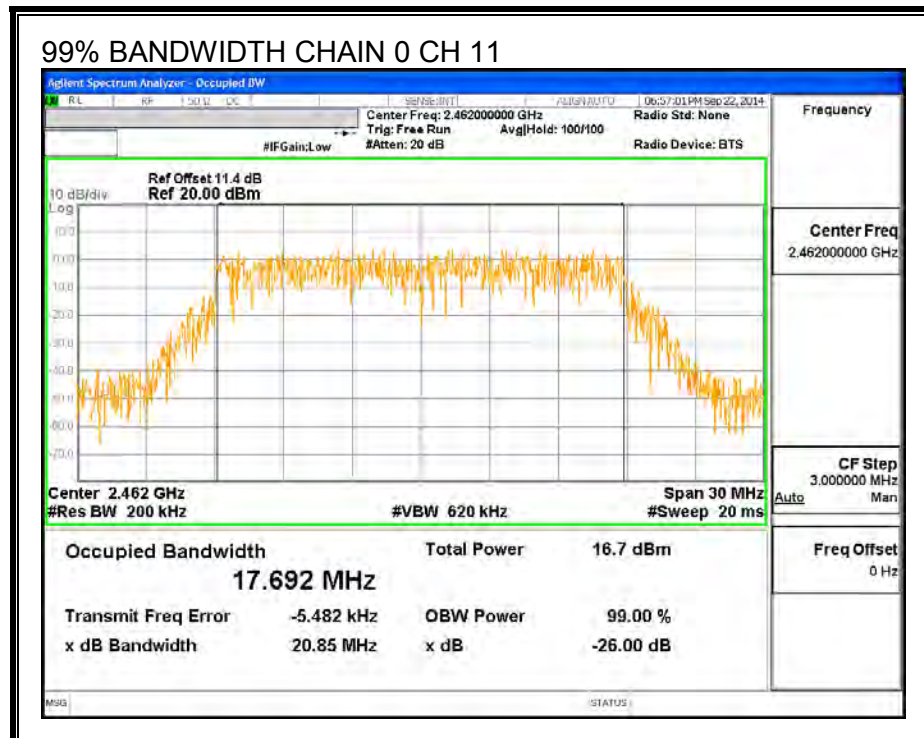
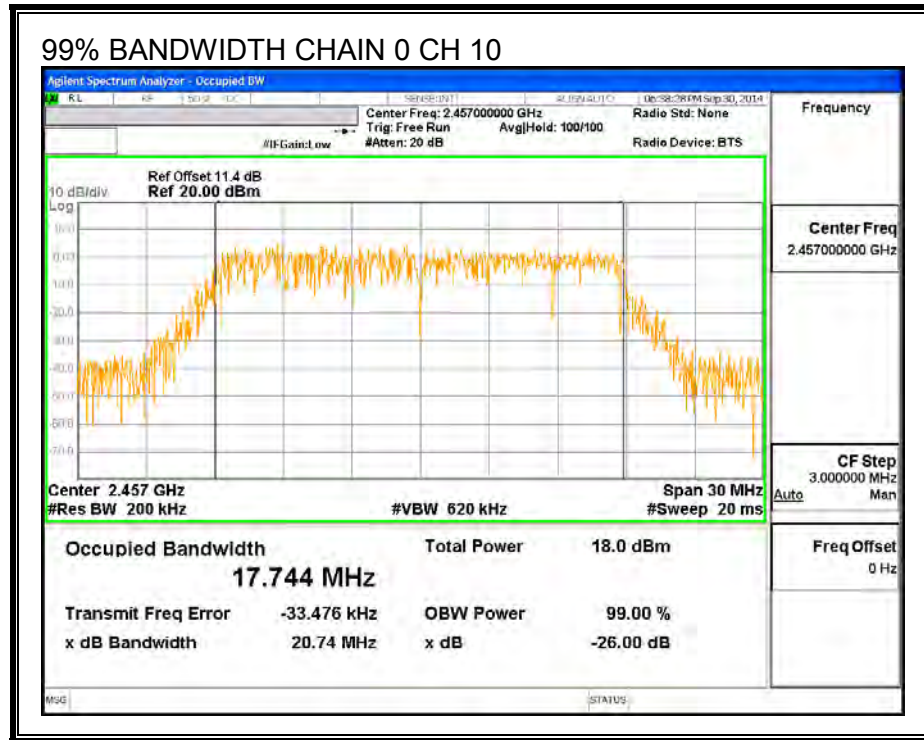
RESULTS

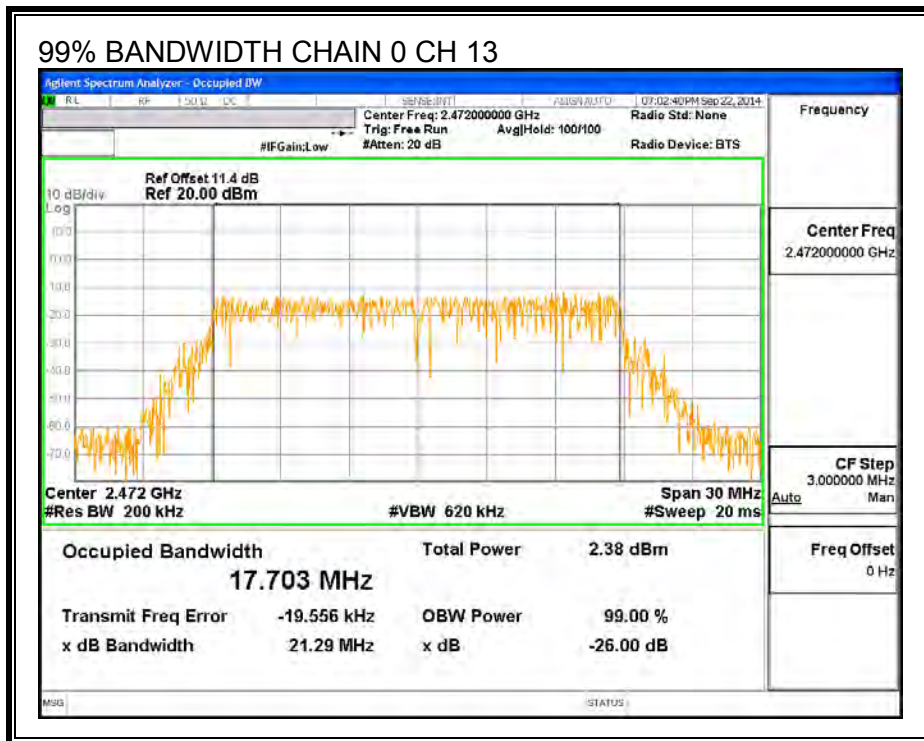
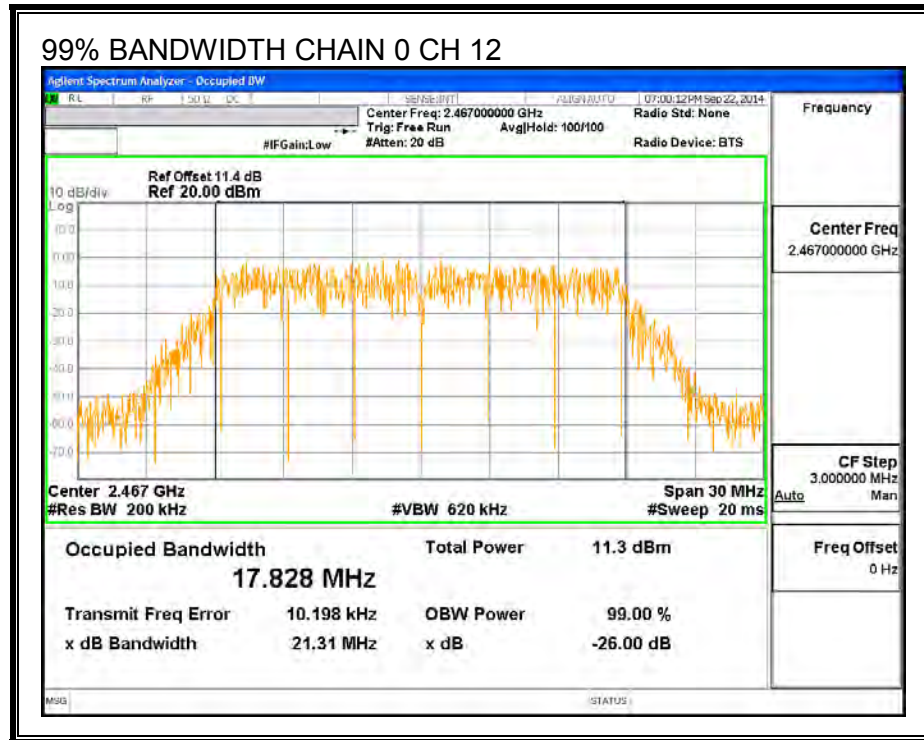
Channel	Frequency (MHz)	99% BW CHAIN 0 (MHz)	99% BW CHAIN 1 (MHz)
1	2412	17.730	17.709
2	2417	17.707	17.703
3	2422	17.722	17.719
6	2437	17.828	17.712
10	2457	17.744	17.806
11	2462	17.692	17.696
12	2467	17.828	17.701
13	2472	17.703	17.719

99% BANDWIDTH, CHAIN 0

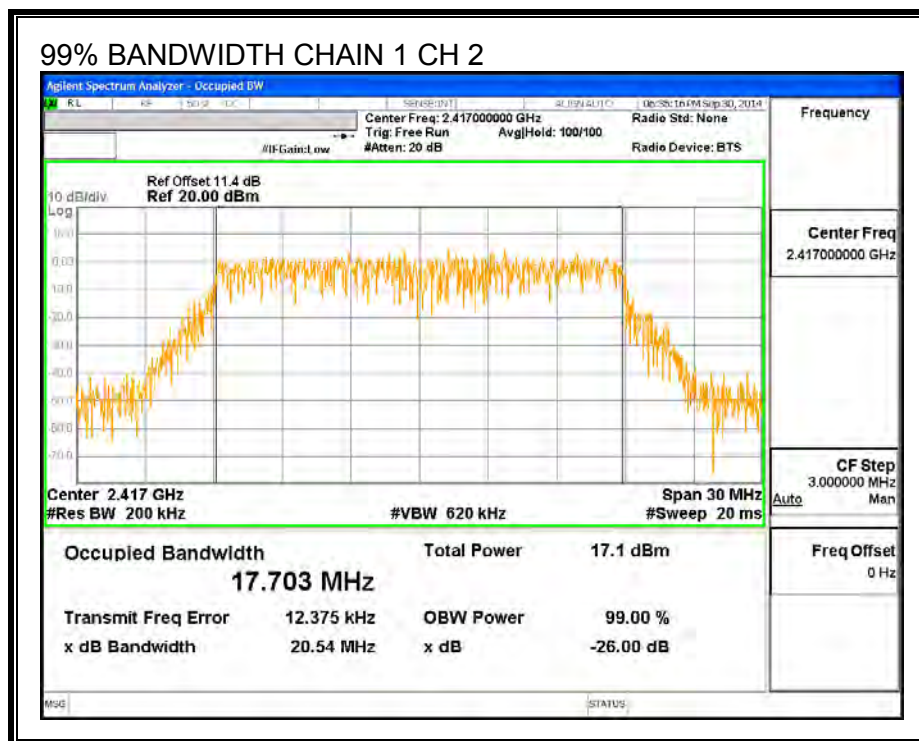
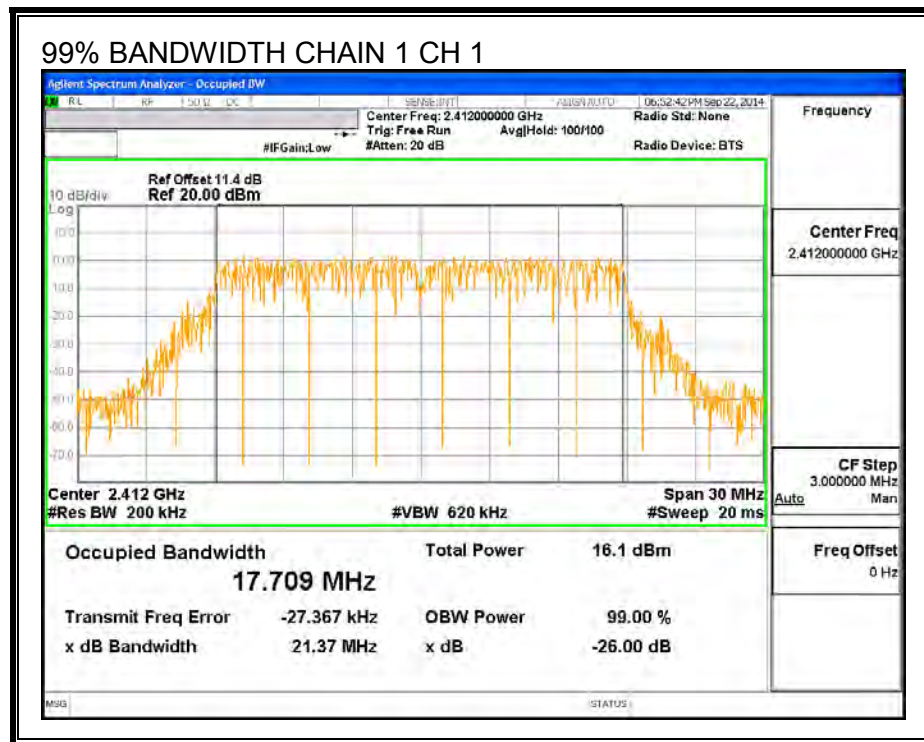


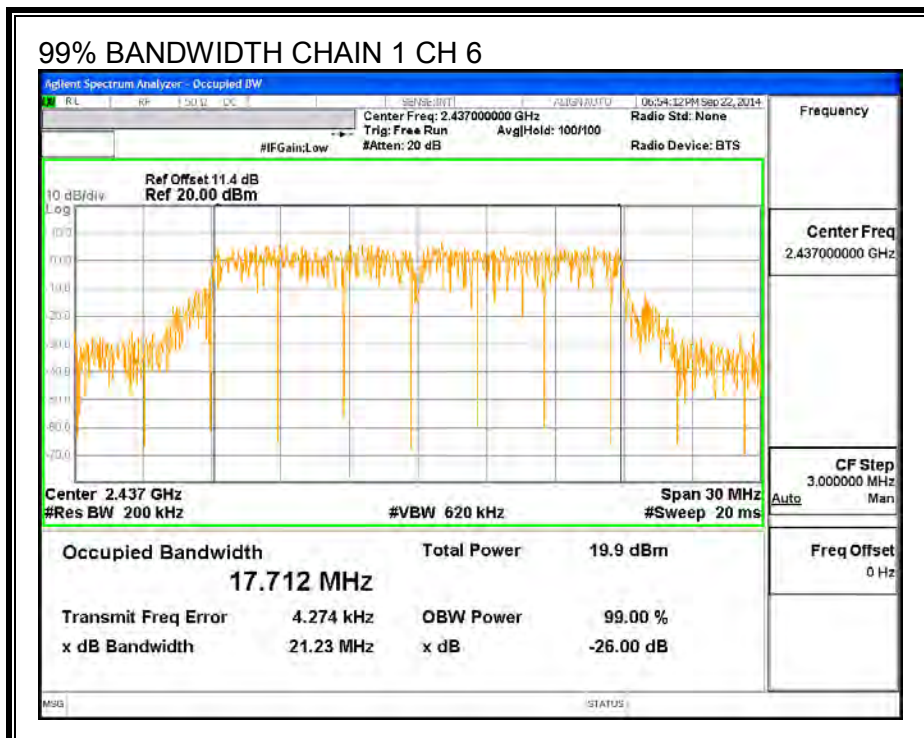
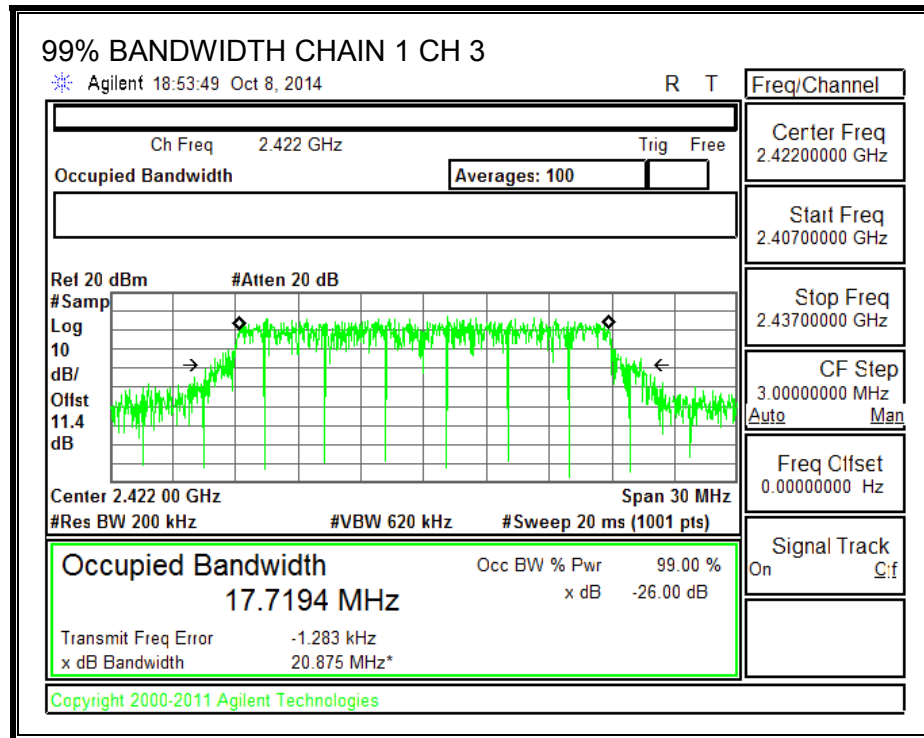


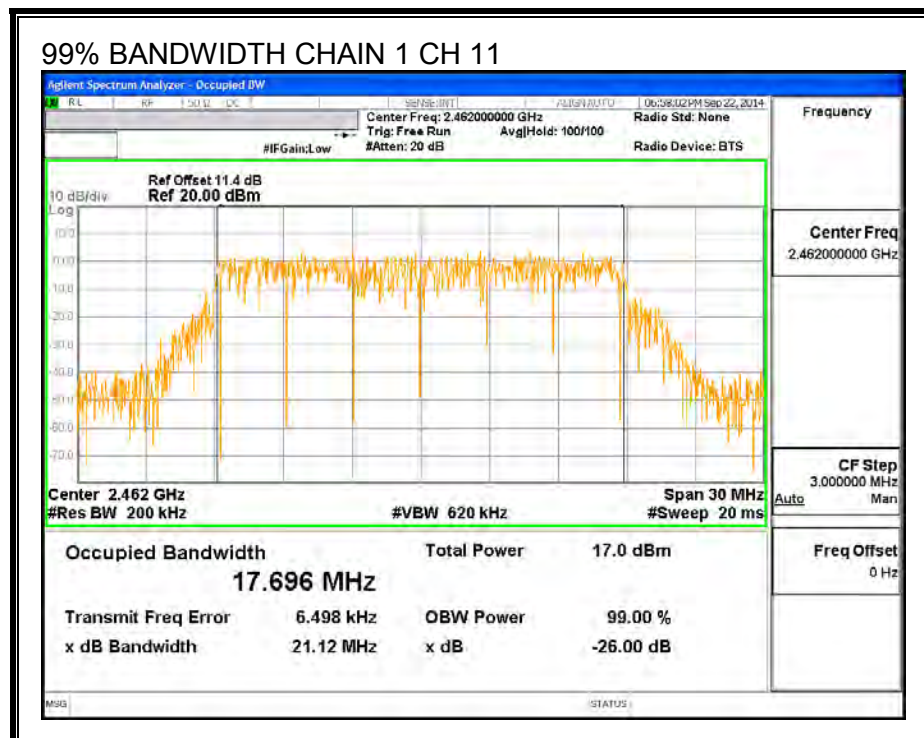
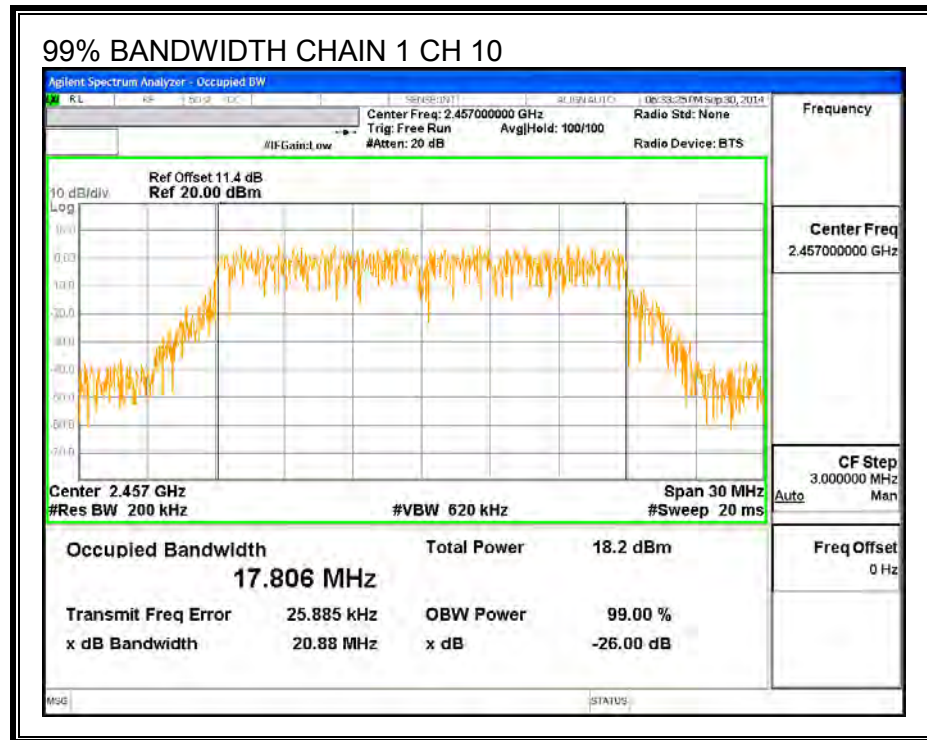




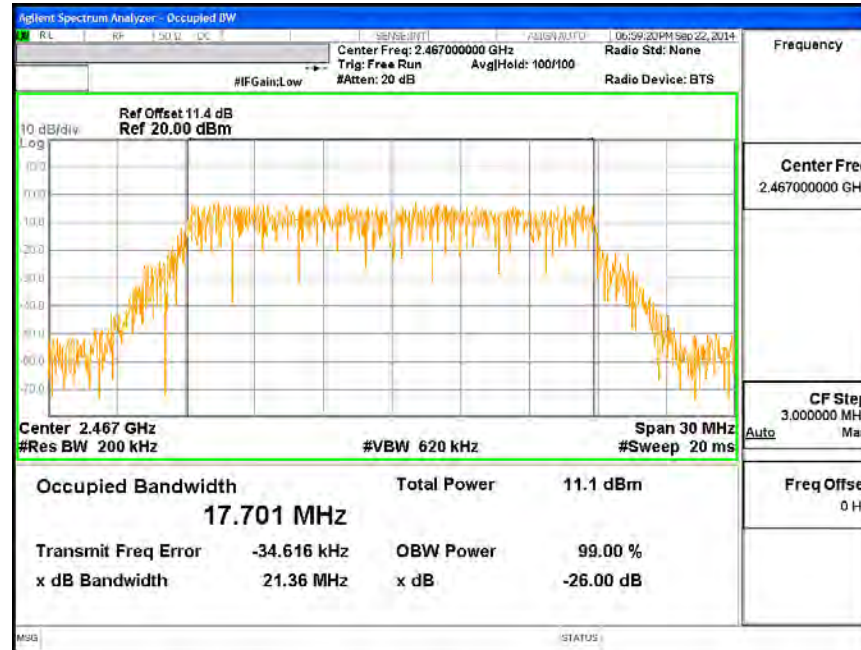
99% BANDWIDTH, CHAIN 1



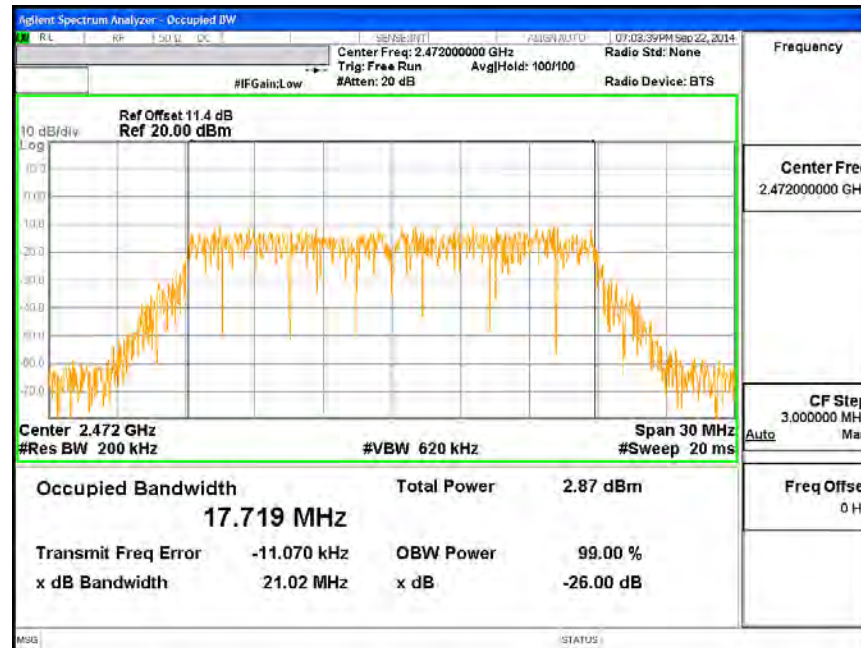




99% BANDWIDTH CHAIN 1 CH 12



99% BANDWIDTH CHAIN 1 CH 13



9.4.3. OUTPUT POWER

LIMITS

FCC §15.247

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.

DIRECTIONAL ANTENNA GAIN

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

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
2.24	3.40	2.86

RESULTS

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
1	2412	2.86	30.00	30	36	30.00
2	2417	2.86	30.00	30	36	30.00
3	2422	2.86	30.00	30	36	30.00
6	2437	2.86	30.00	30	36	30.00
10	2457	2.86	30.00	30	36	30.00
11	2462	2.86	30.00	30	36	30.00
12	2467	2.86	30.00	30	36	30.00
13	2472	2.86	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
1	2412	13.50	13.49	16.51	30.00	-13.49
2	2417	16.49	16.44	19.48	30.00	-10.52
3	2422	18.98	18.89	21.95	30.00	-8.05
6	2437	19.00	18.94	21.98	30.00	-8.02
10	2457	16.96	16.89	19.94	30.00	-10.06
11	2462	11.99	11.94	14.98	30.00	-15.02
12	2467	9.00	8.97	12.00	30.00	-18.00
13	2472	0.00	0.00	3.01	30.00	-26.99

9.4.4. PSD

LIMITS

FCC §15.247

DIRECTIONAL ANTENNA GAIN

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

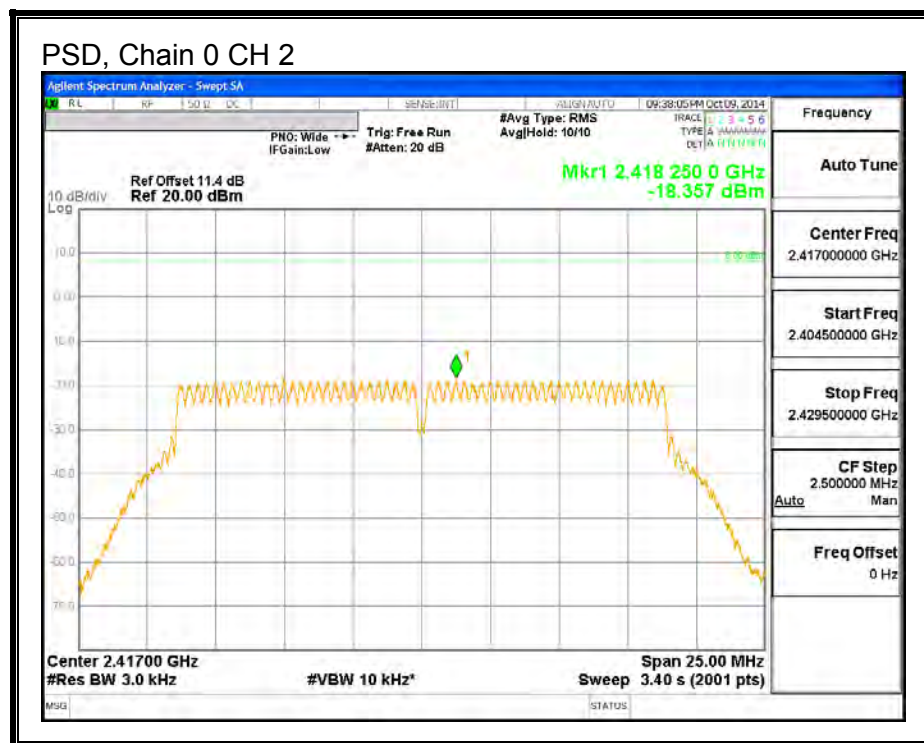
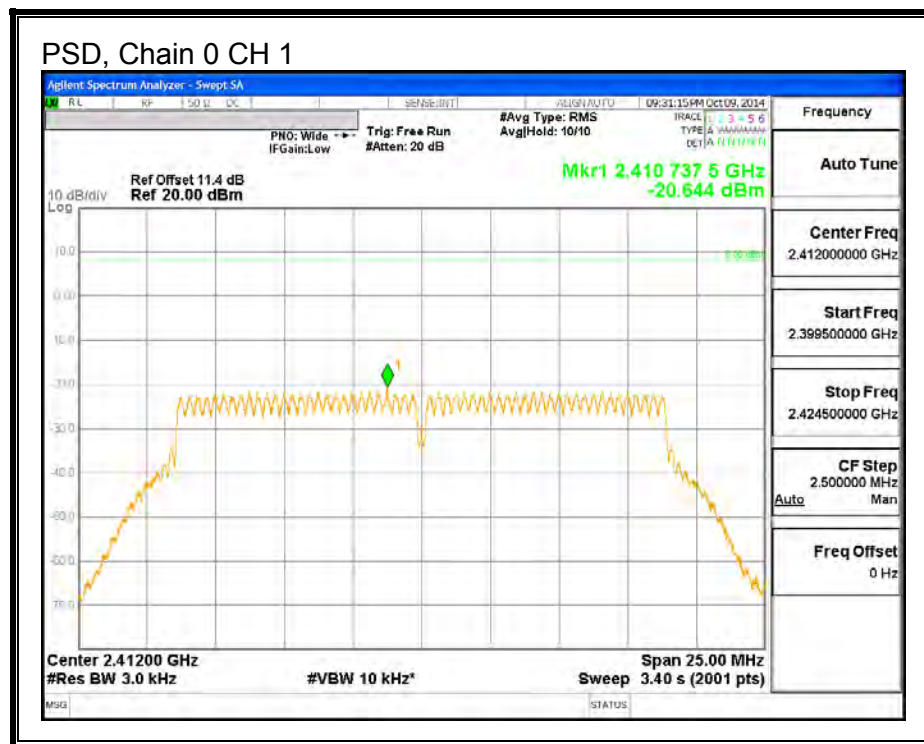
Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
2.24	3.40	5.85

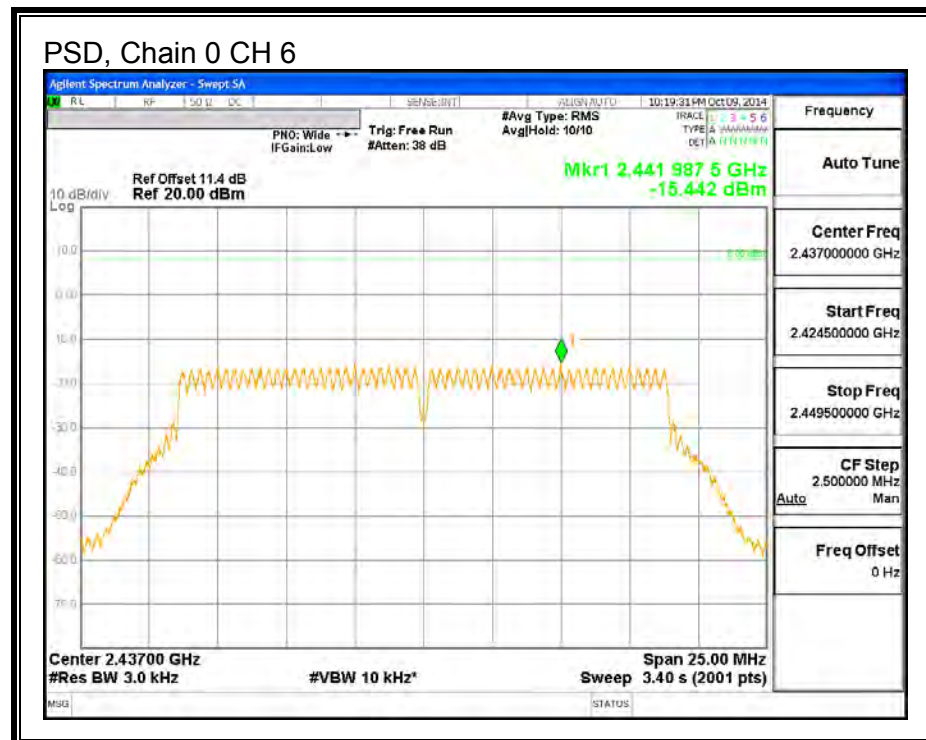
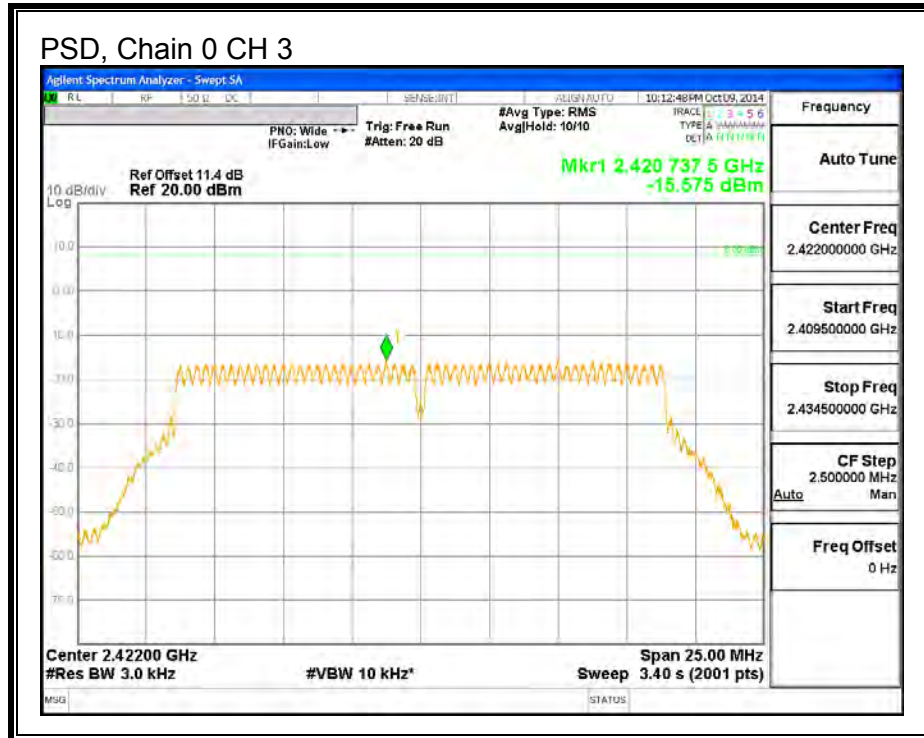
RESULTS

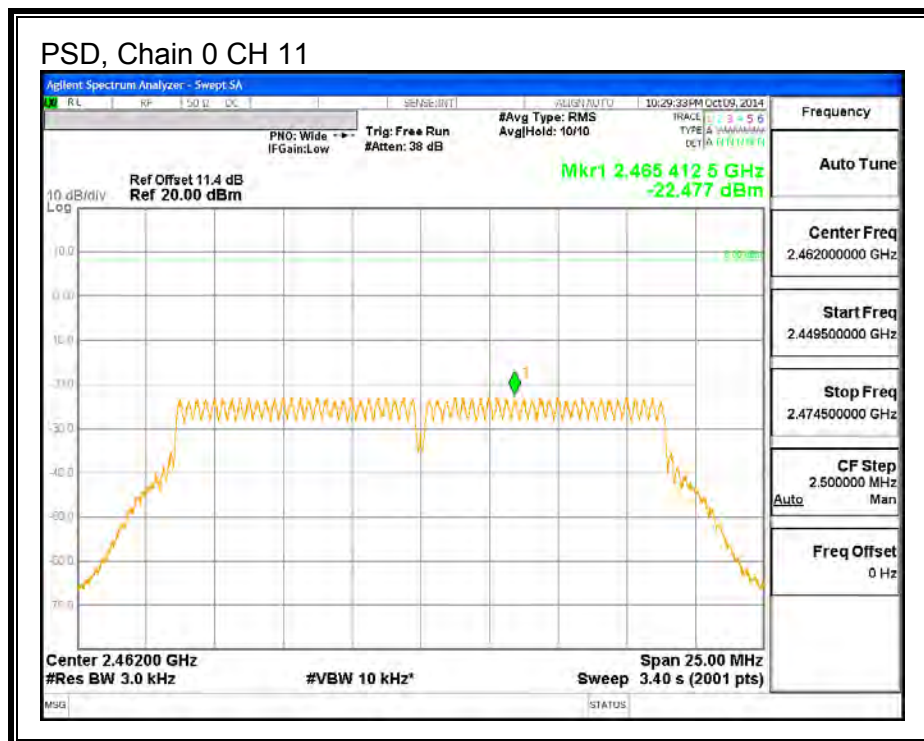
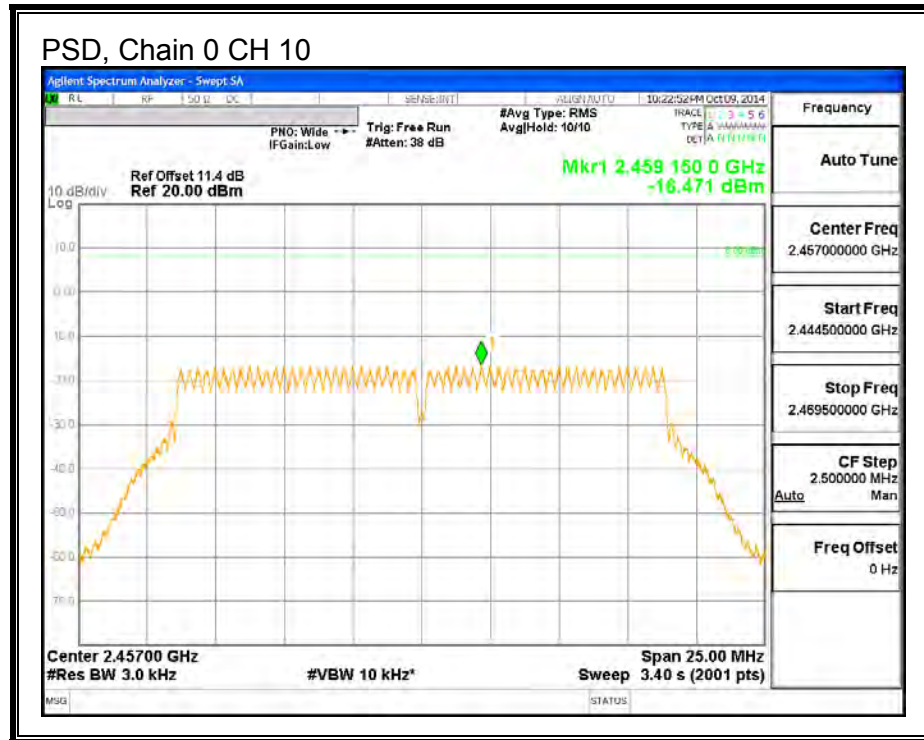
PSD Results

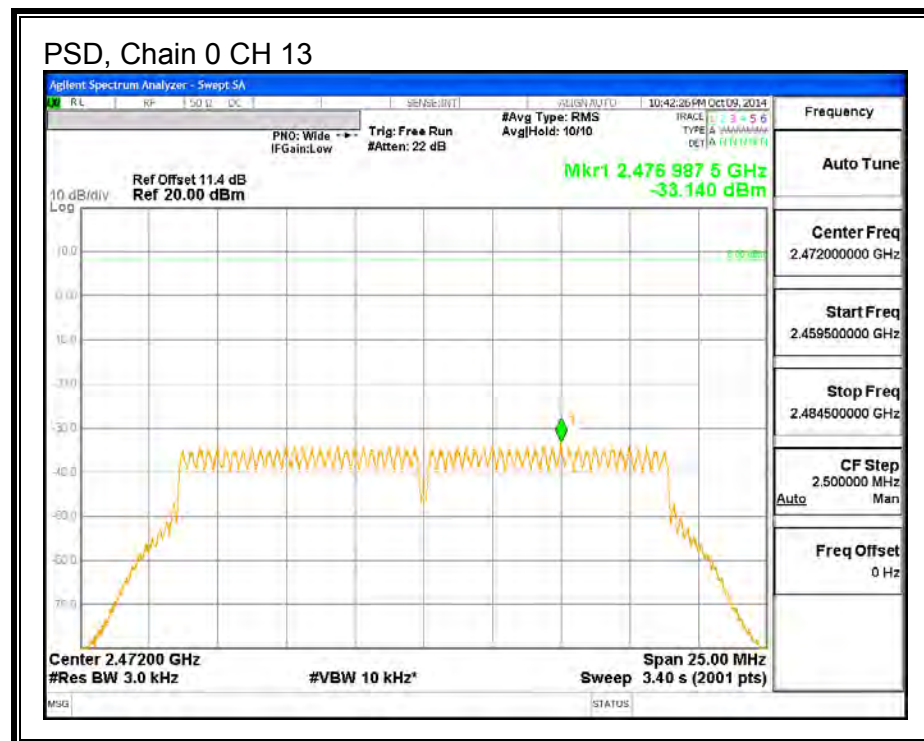
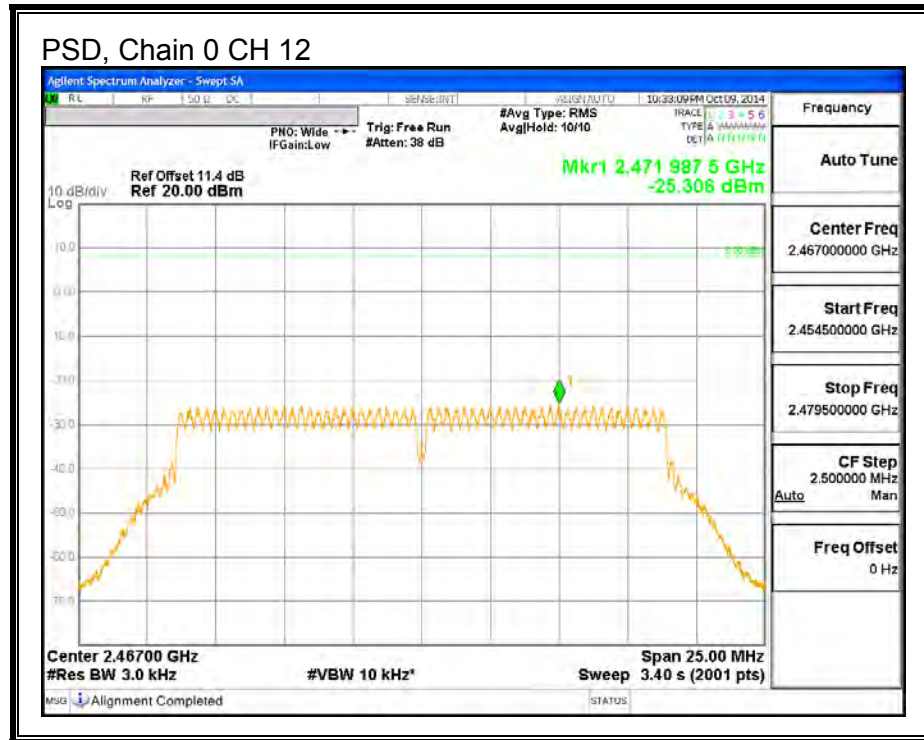
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
1	2412	-20.644	-21.113	-17.86	8.0	-25.9
2	2417	-18.357	-17.479	-14.89	8.0	-22.9
3	2422	-15.575	-15.575	-12.56	9.0	-21.6
6	2437	-15.442	-15.407	-12.41	8.0	-20.4
10	2457	-16.471	-16.486	-13.47	8.0	-21.5
11	2462	-22.477	-22.568	-19.51	8.0	-27.5
12	2467	-25.306	-26.268	-22.75	8.0	-30.8
13	2472	-33.140	-33.182	-30.15	8.0	-38.2

PSD, Chain 0

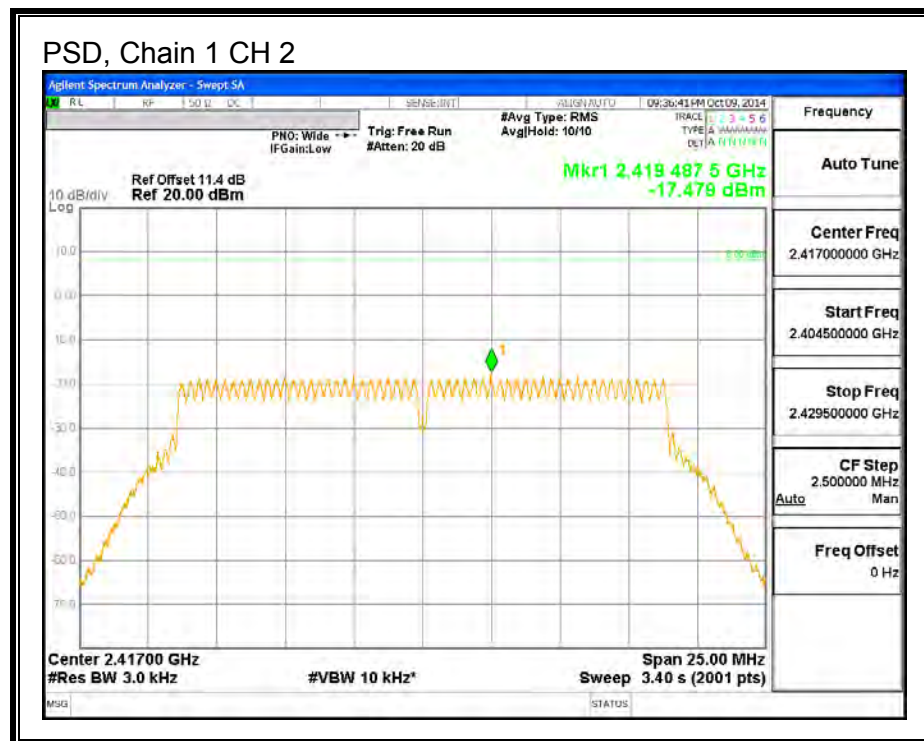
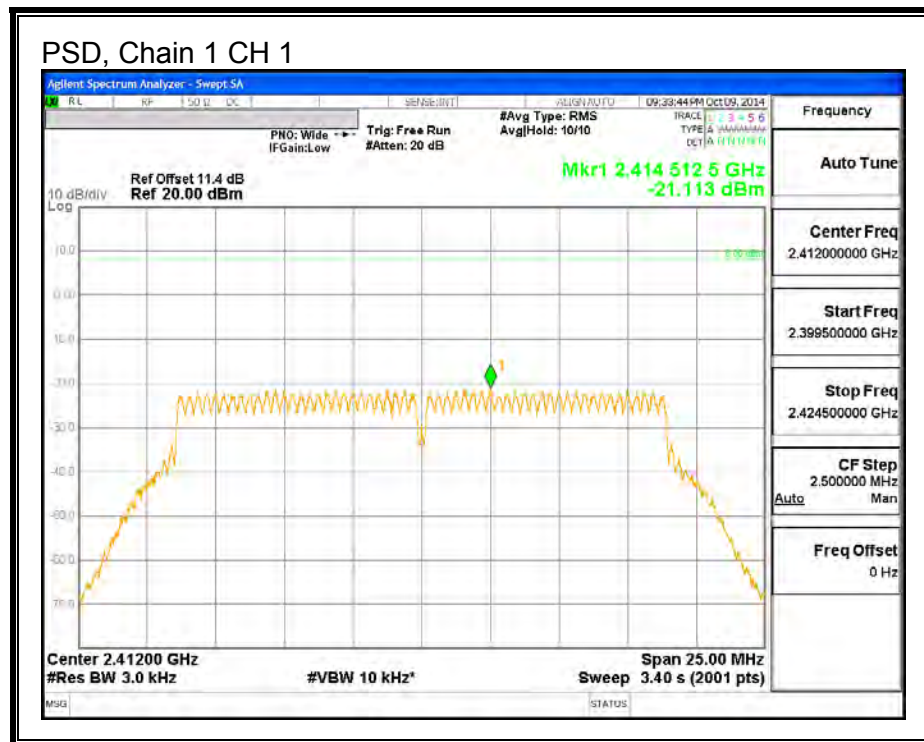


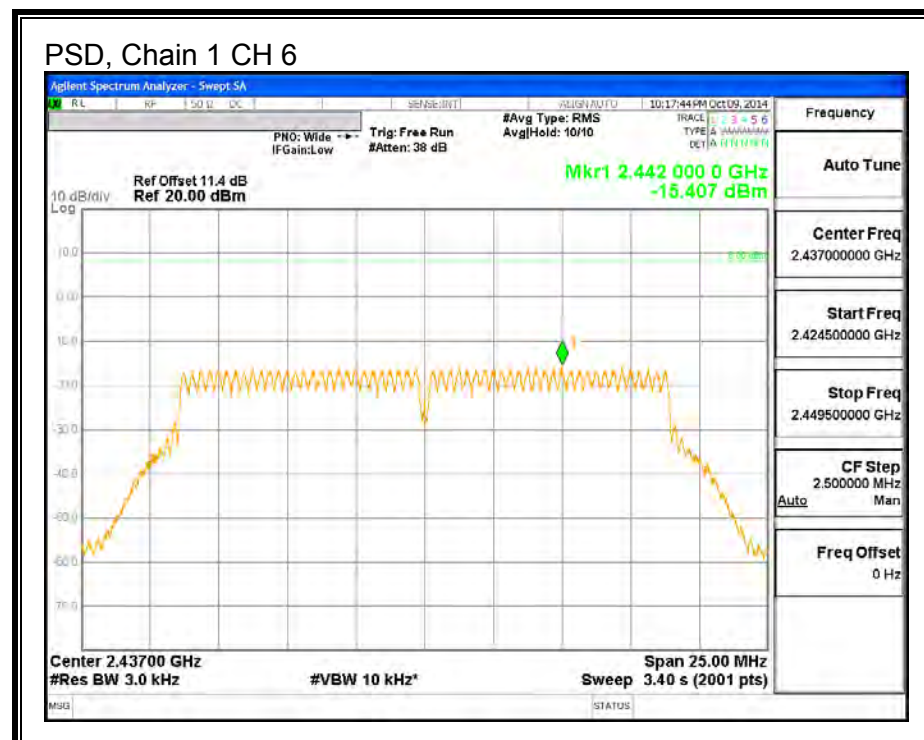
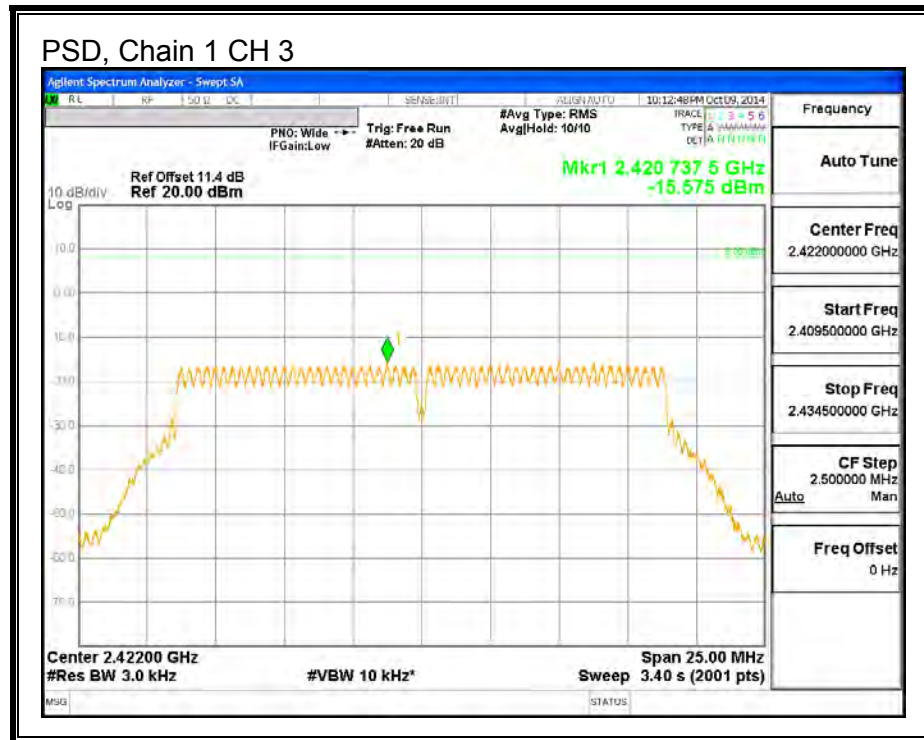


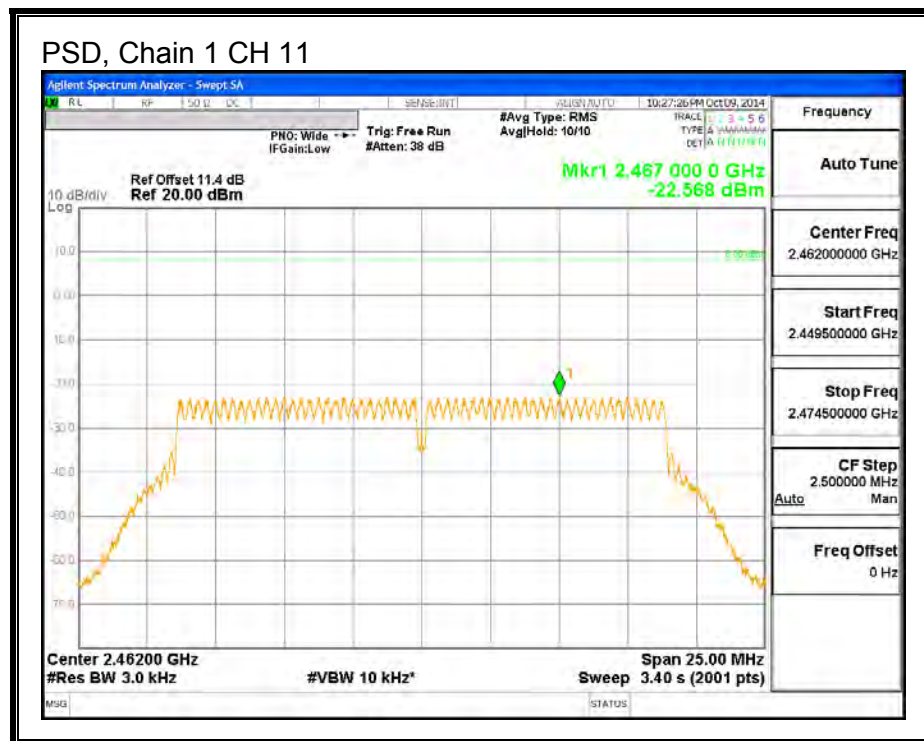
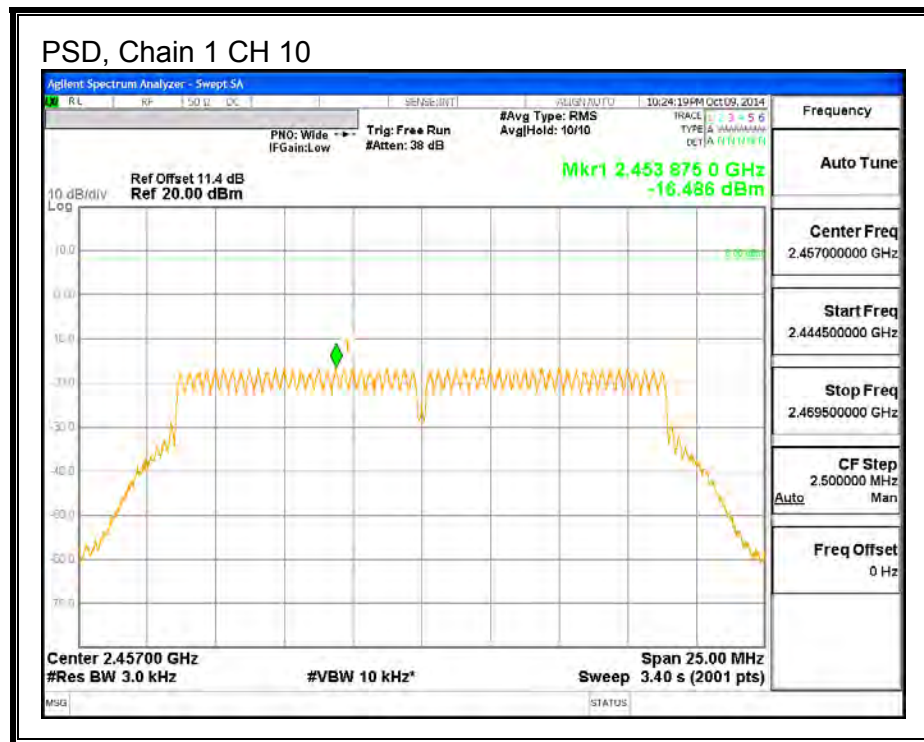


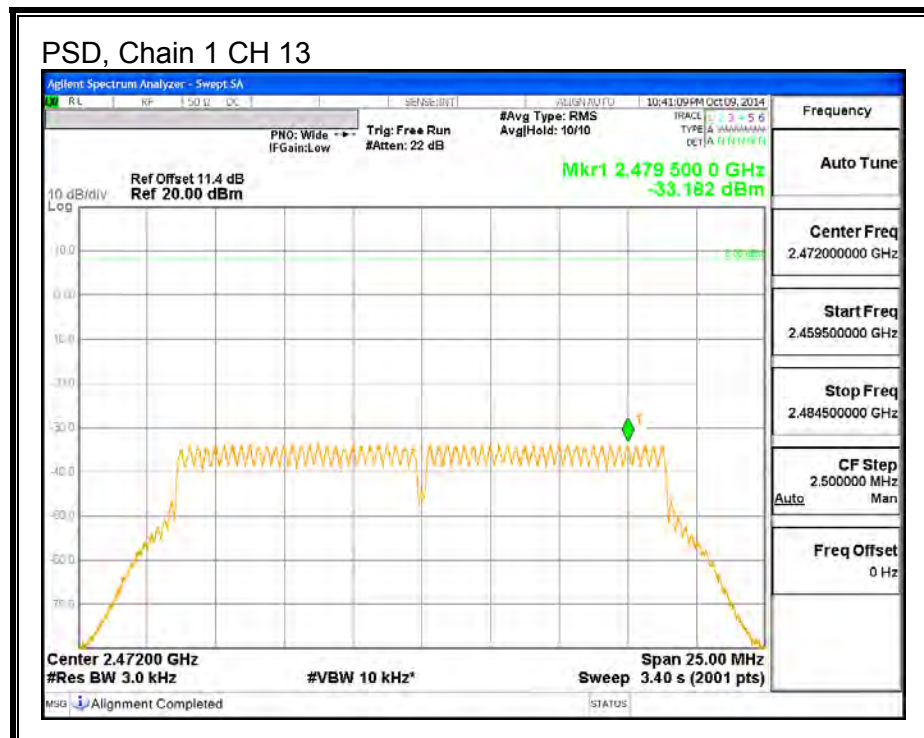
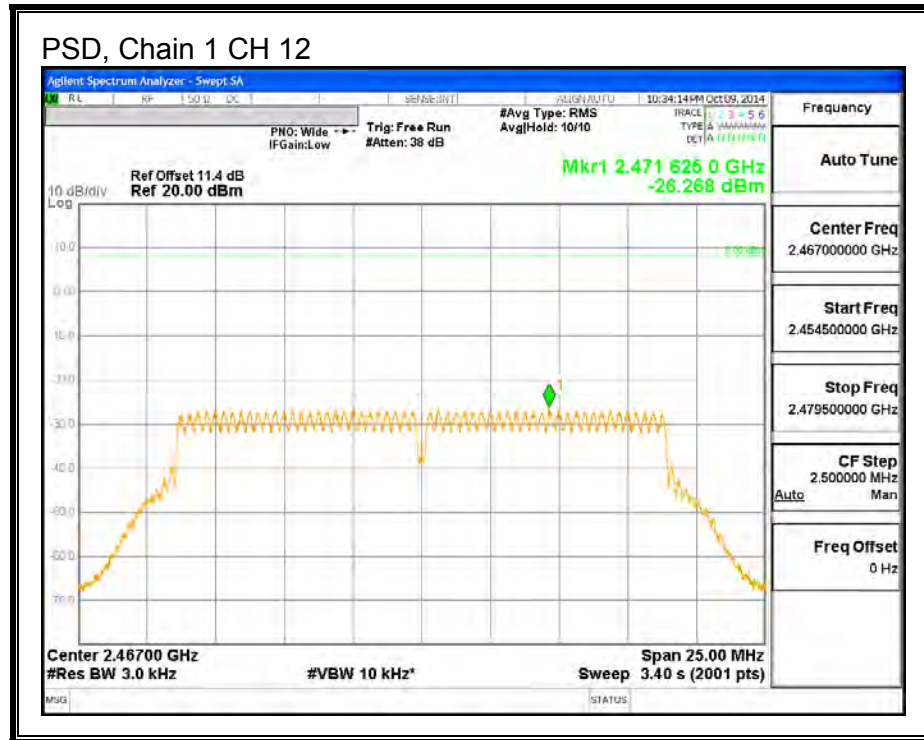


PSD, Chain 1









9.4.5. OUT-OF-BAND EMISSIONS

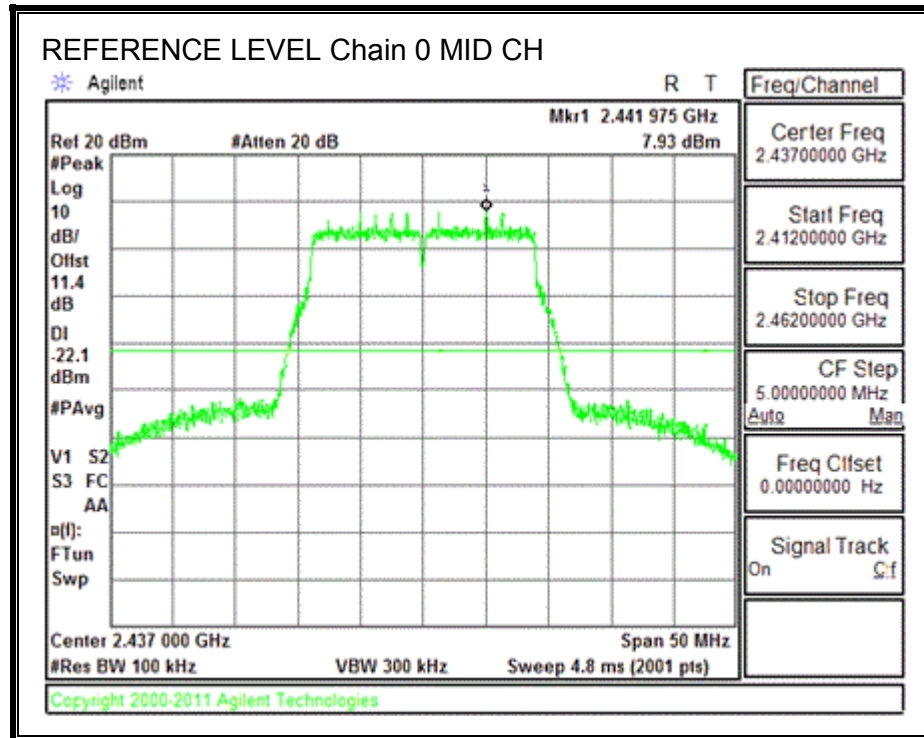
LIMITS

FCC §15.247 (d)

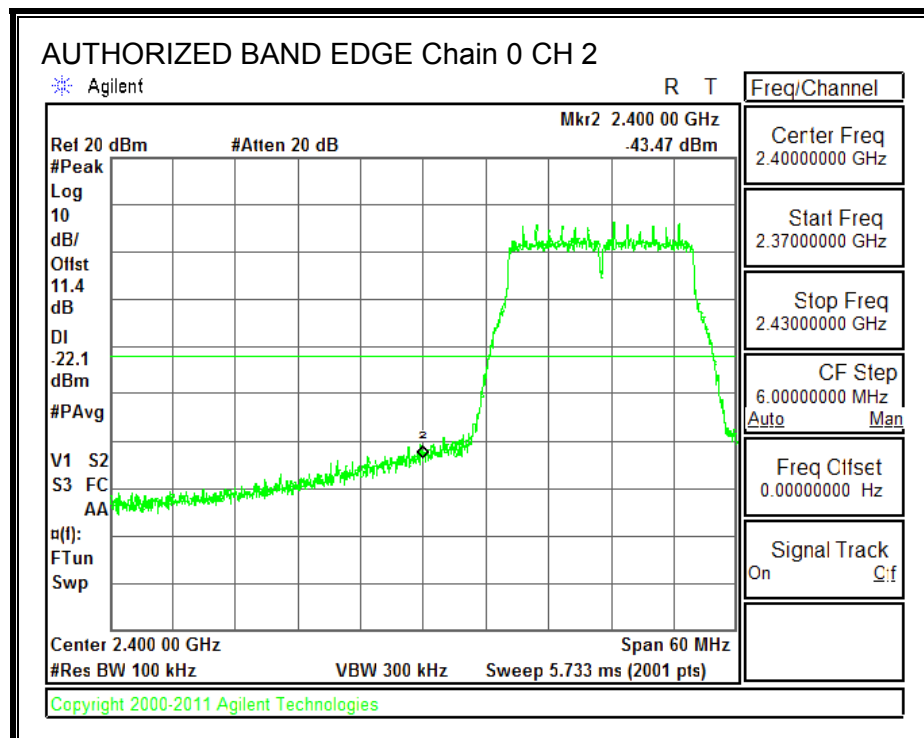
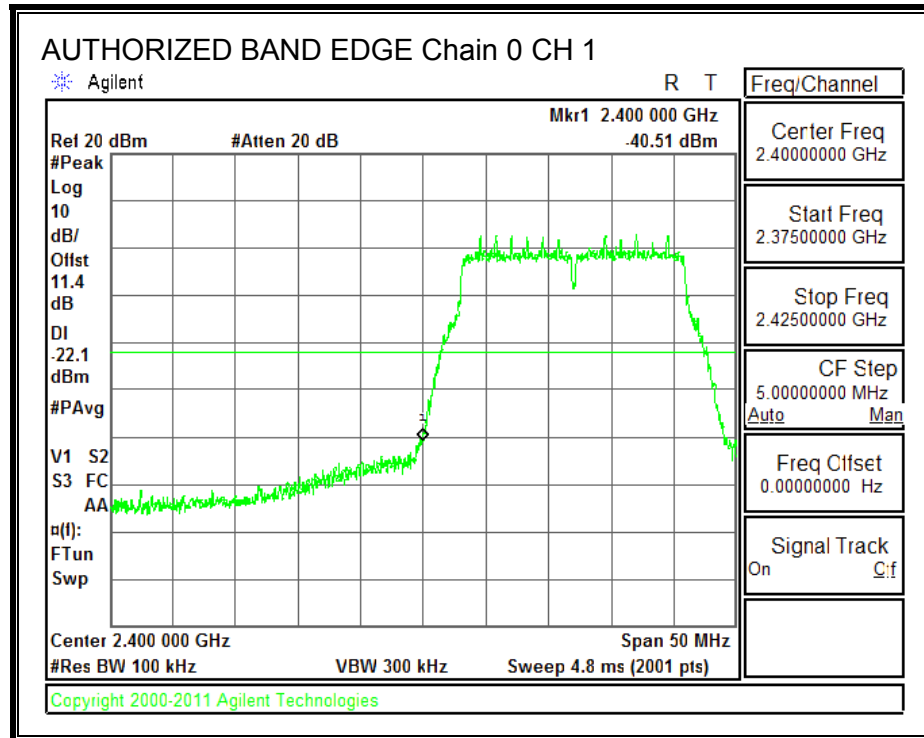
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

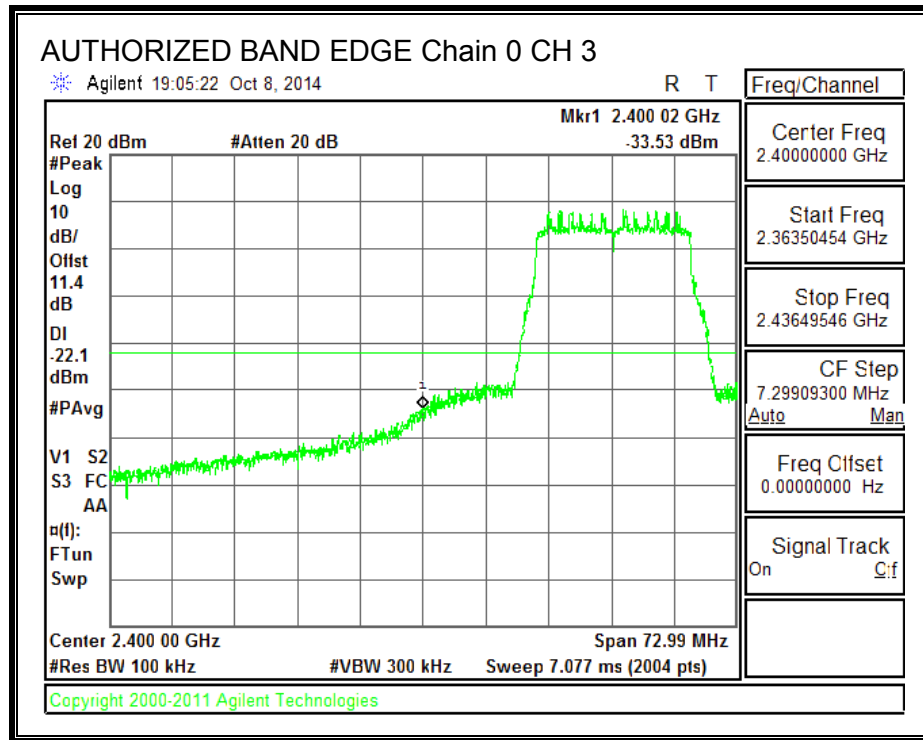
RESULTS

IN-BAND REFERENCE LEVEL, Chain 0

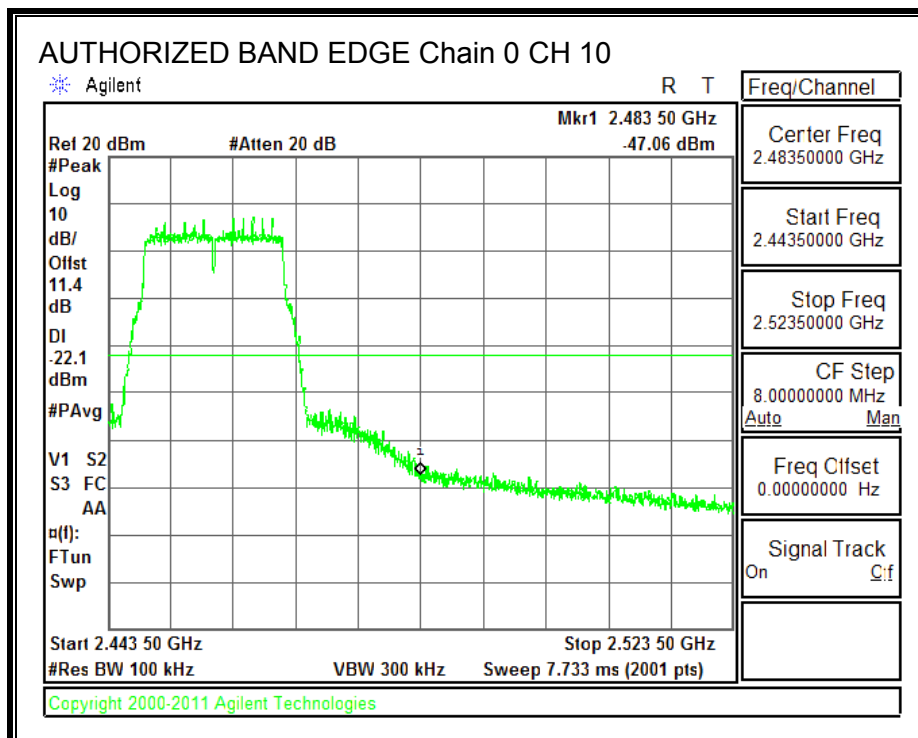


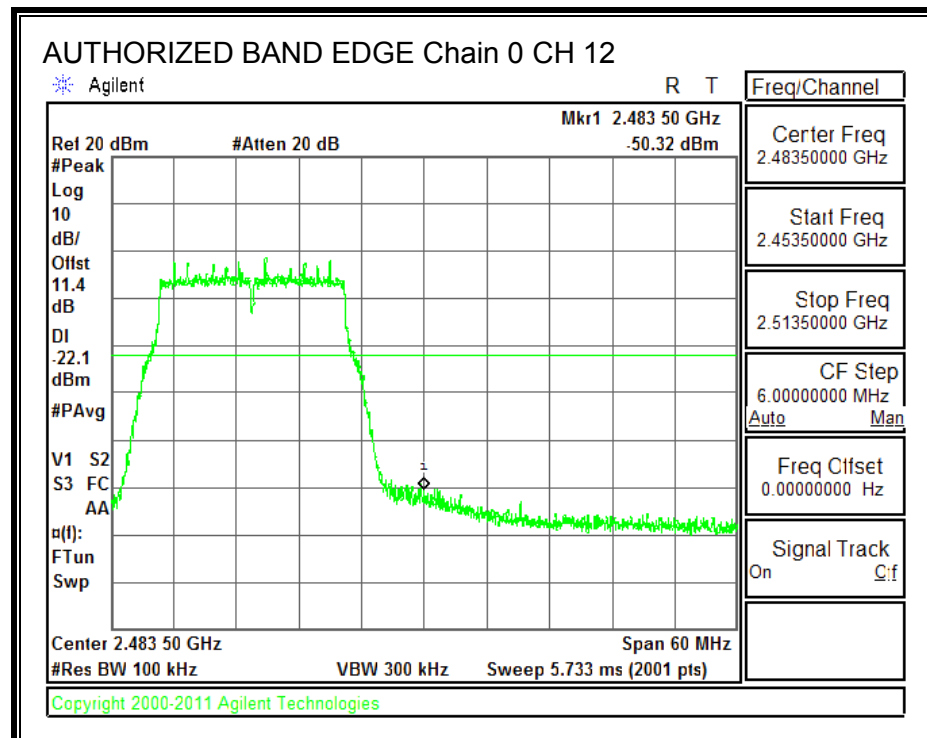
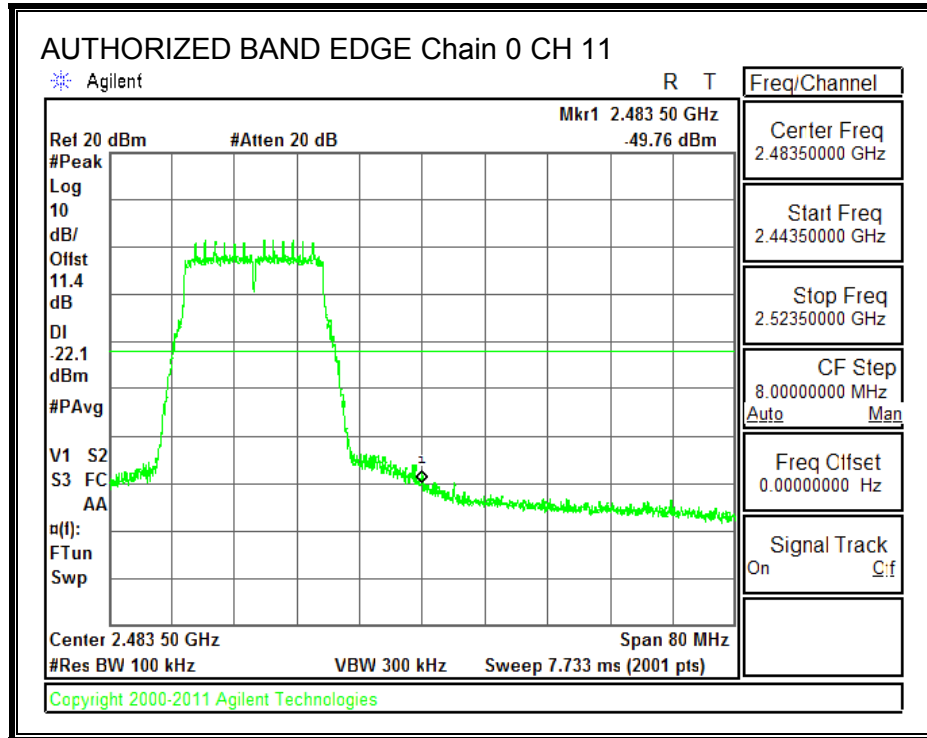
LOW CHANNEL BANDEDGE, Chain 0

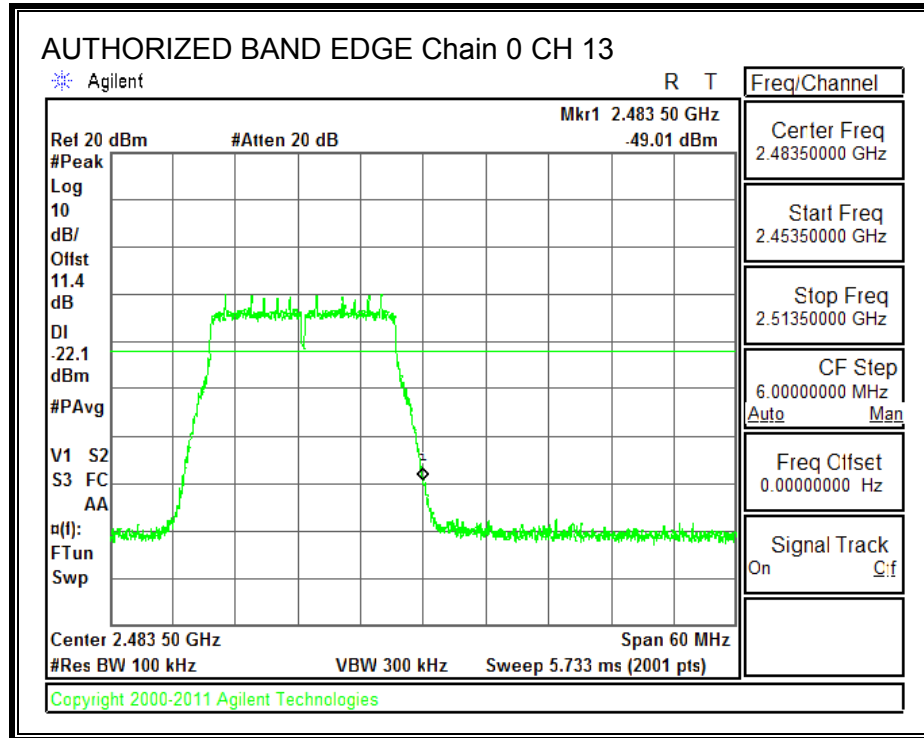




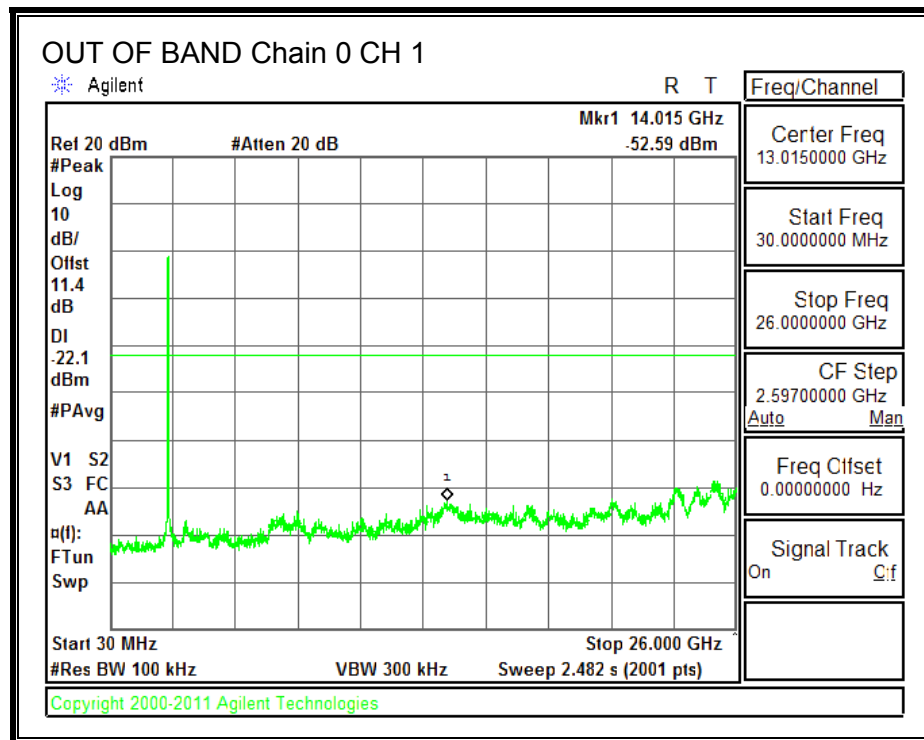
HIGH CHANNEL BANDEDGE, Chain 0

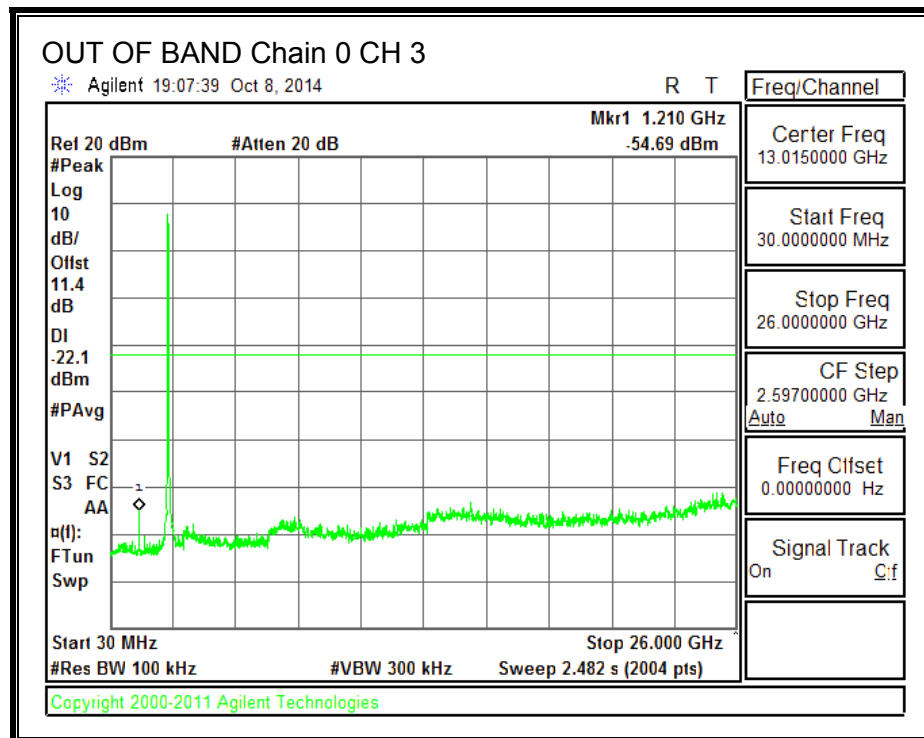
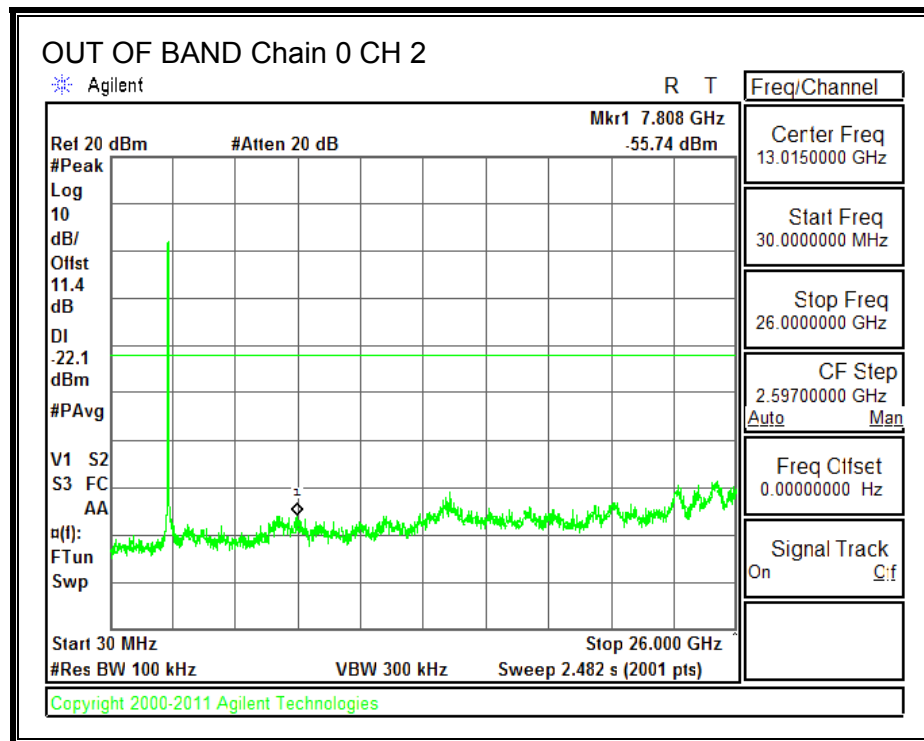


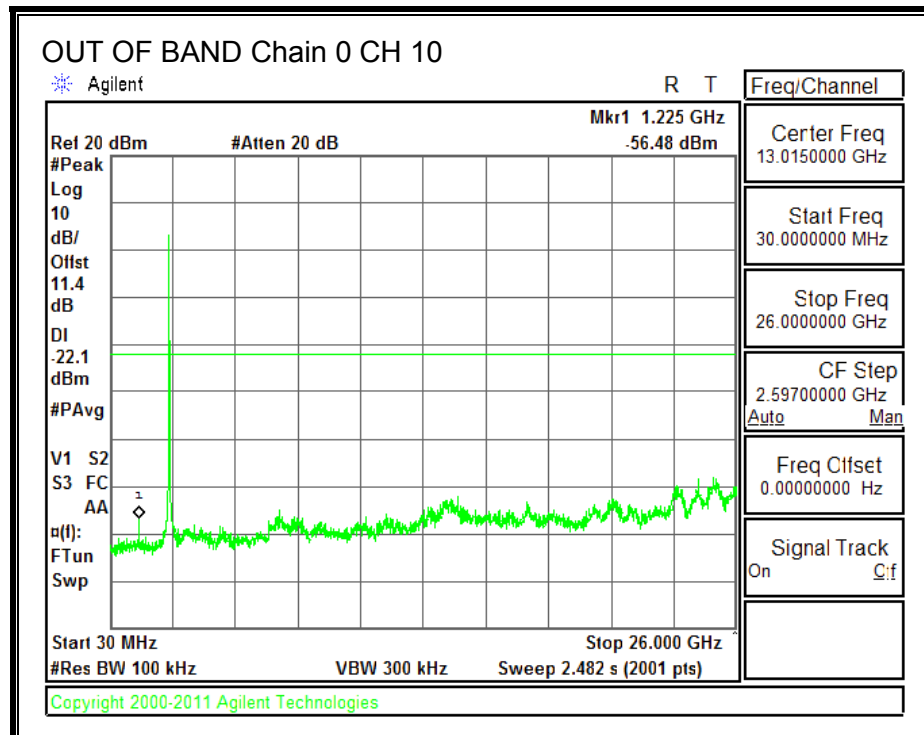
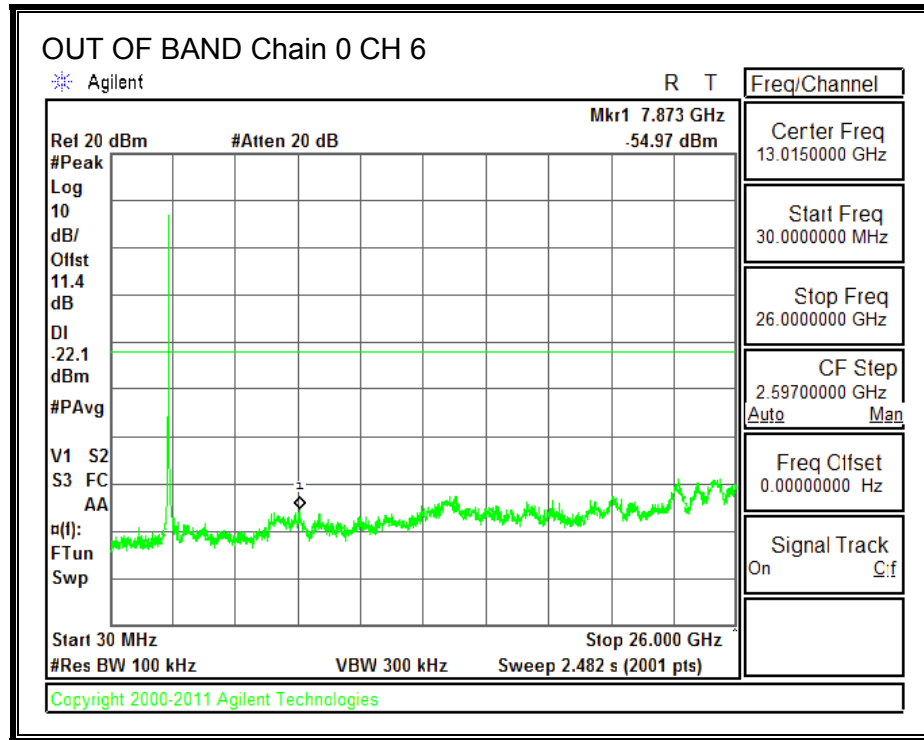


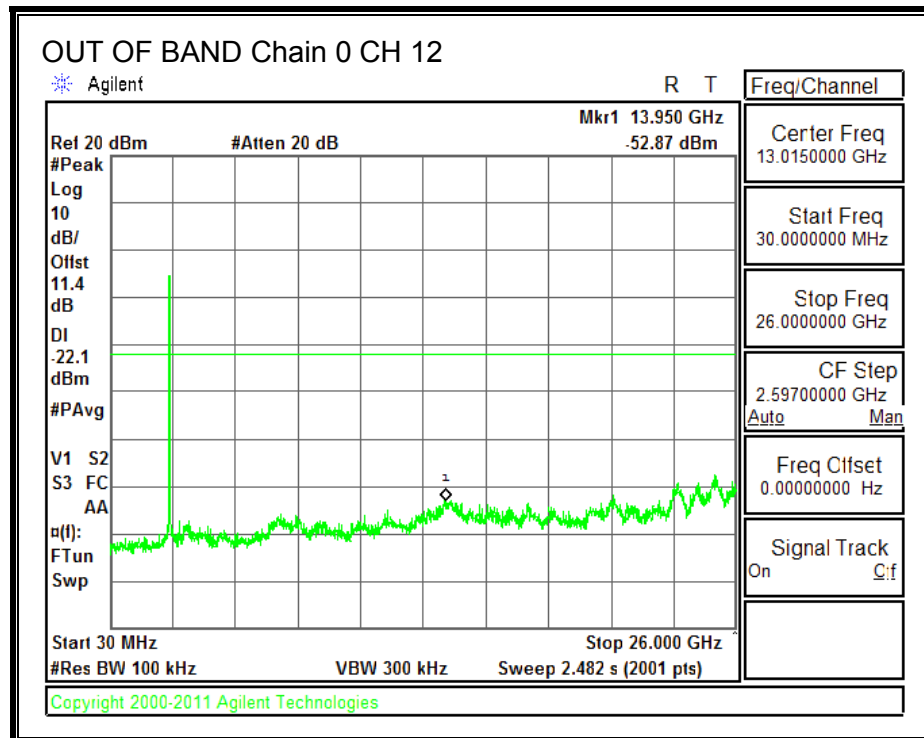
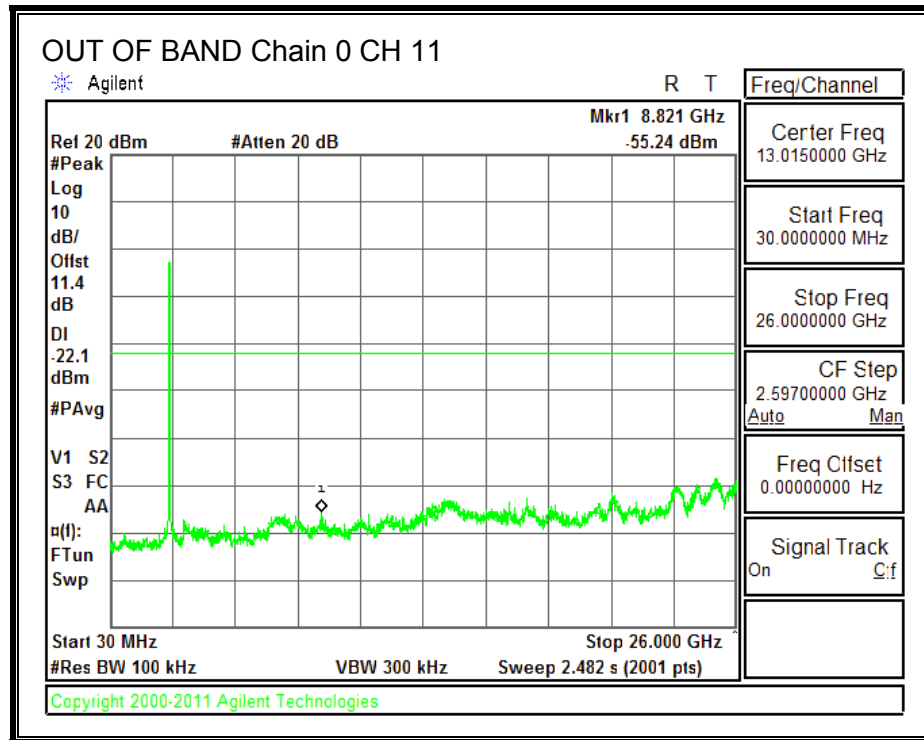


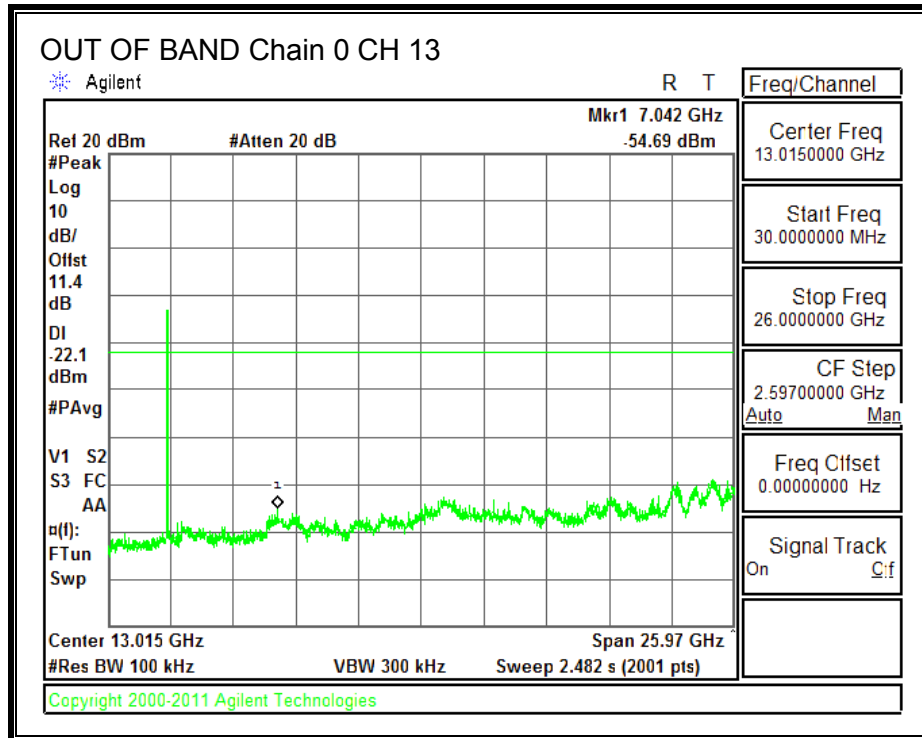
OUT-OF-BAND EMISSIONS, Chain 0



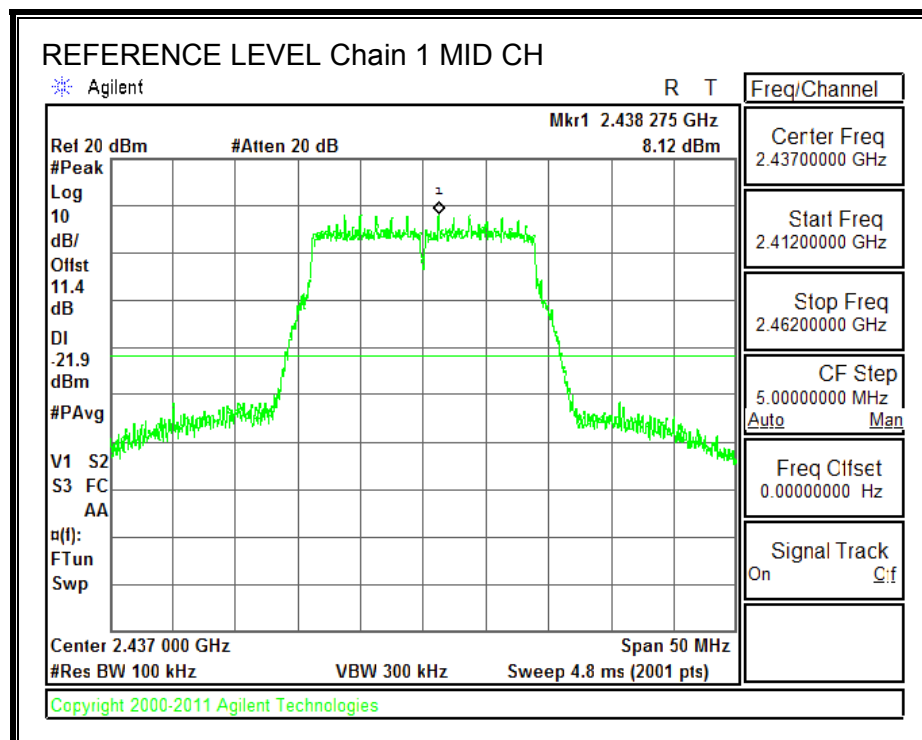




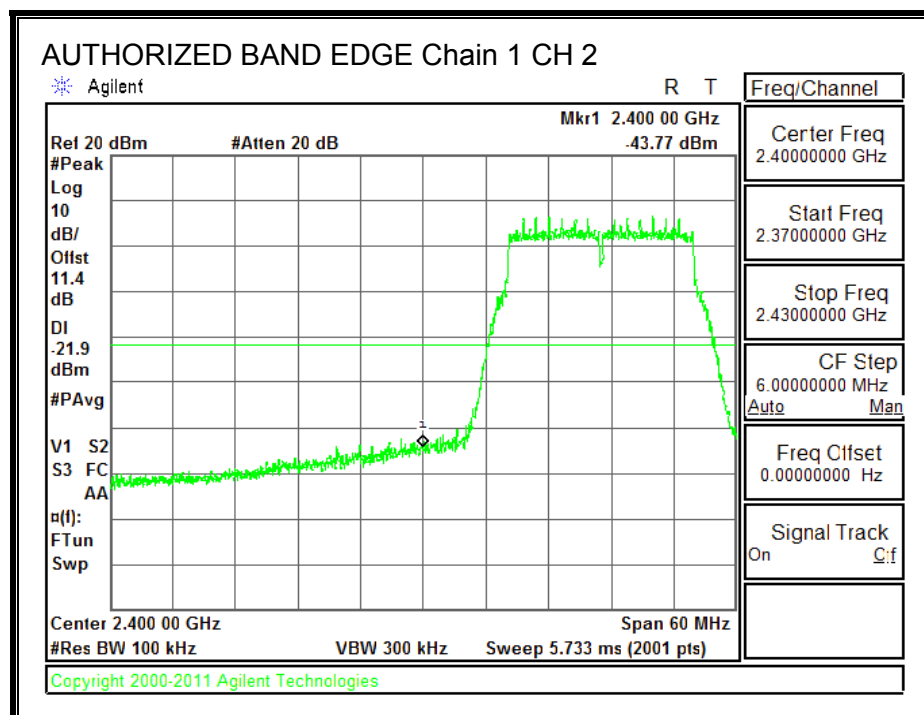
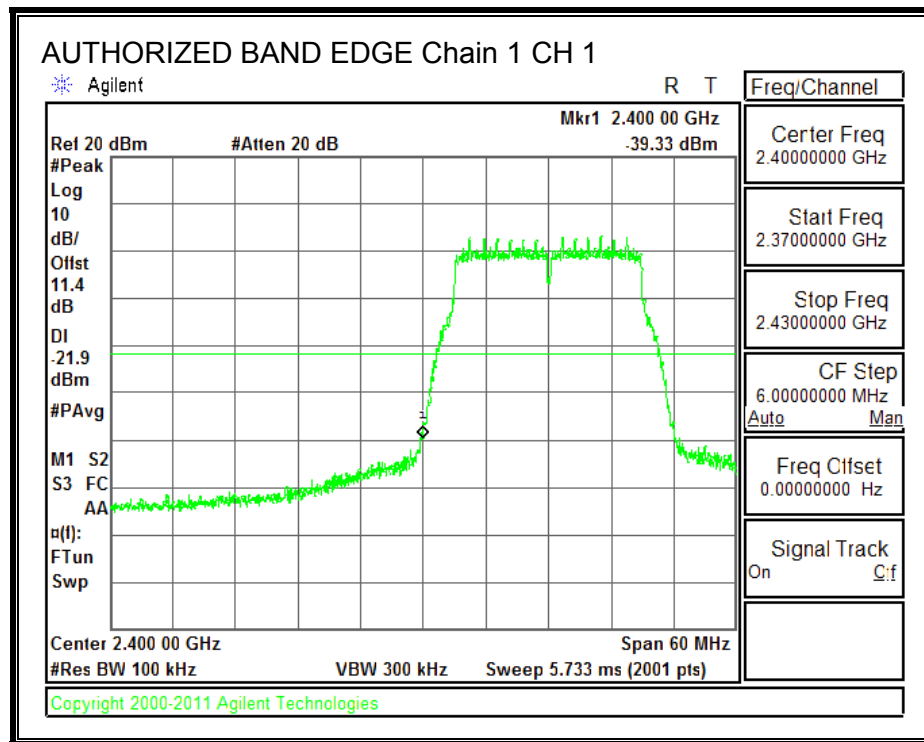


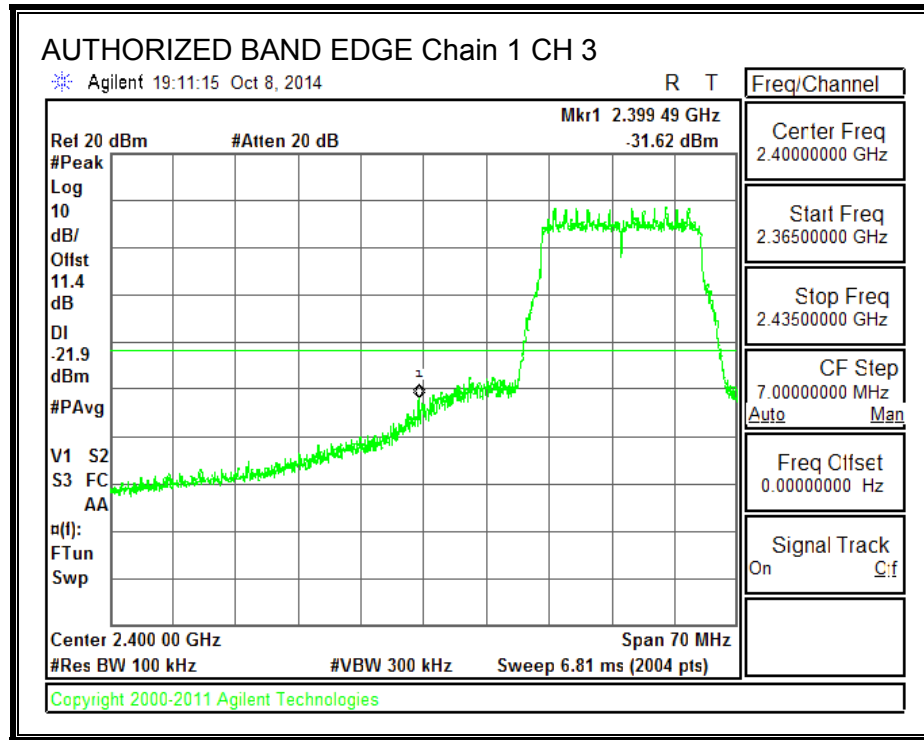


IN-BAND REFERENCE LEVEL, Chain 1

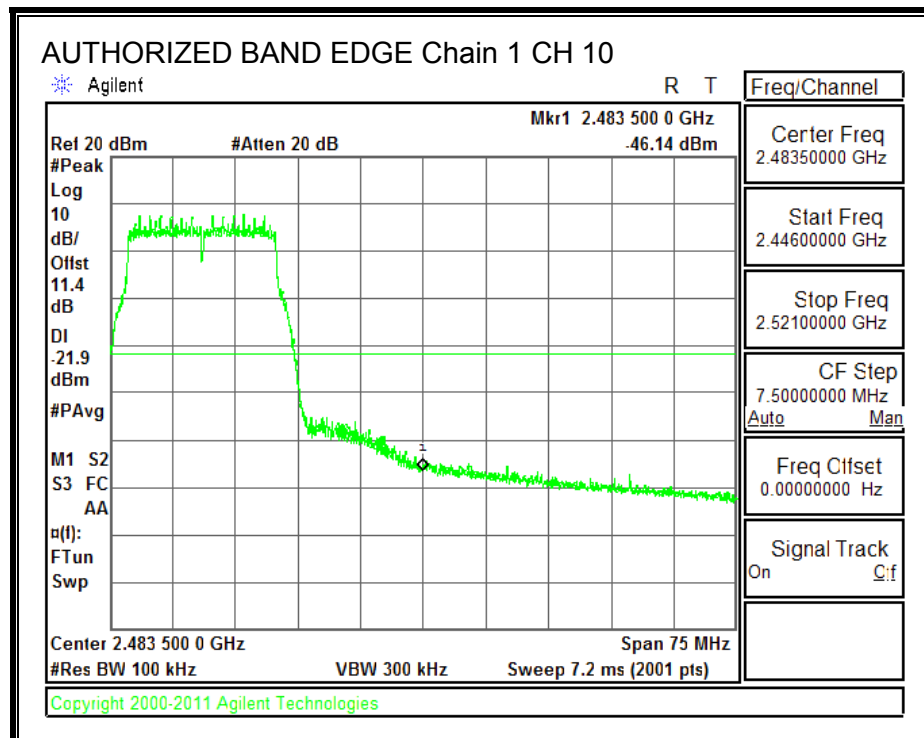


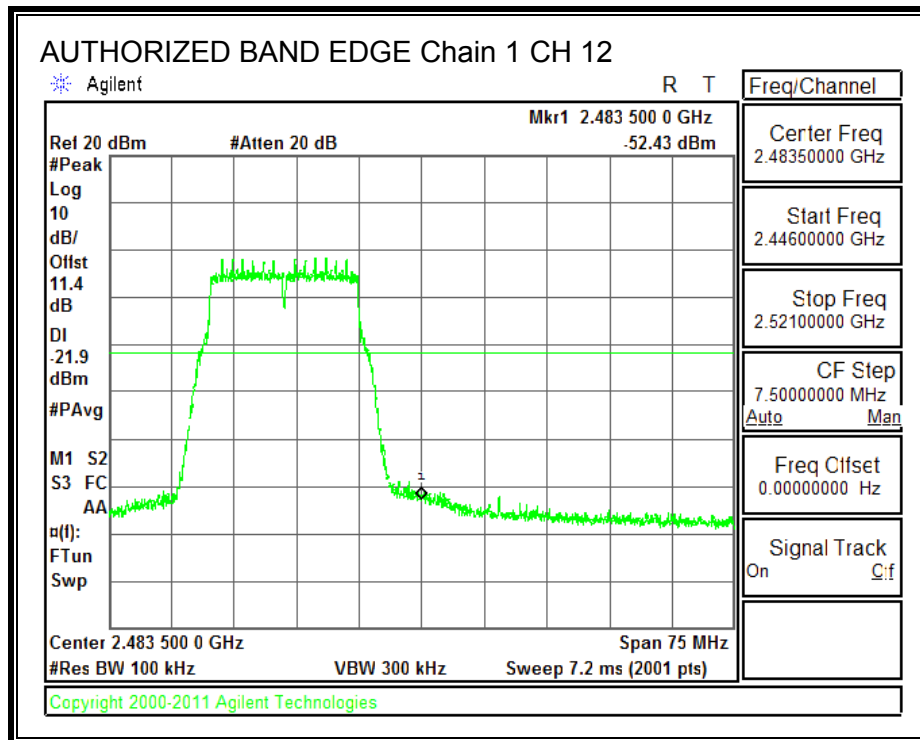
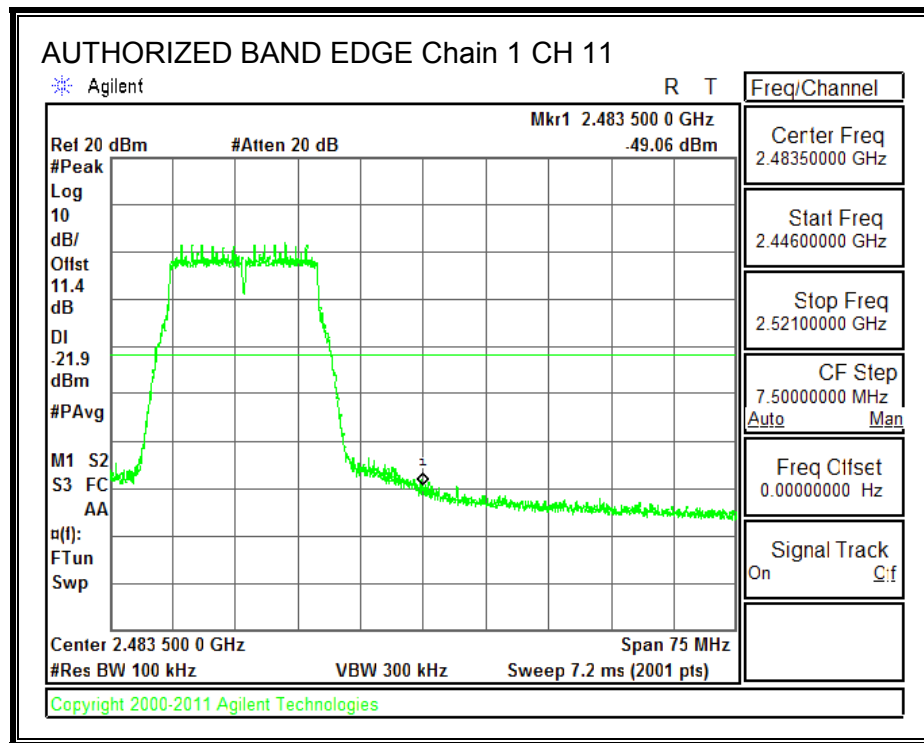
LOW CHANNEL BANDEDGE, Chain 1

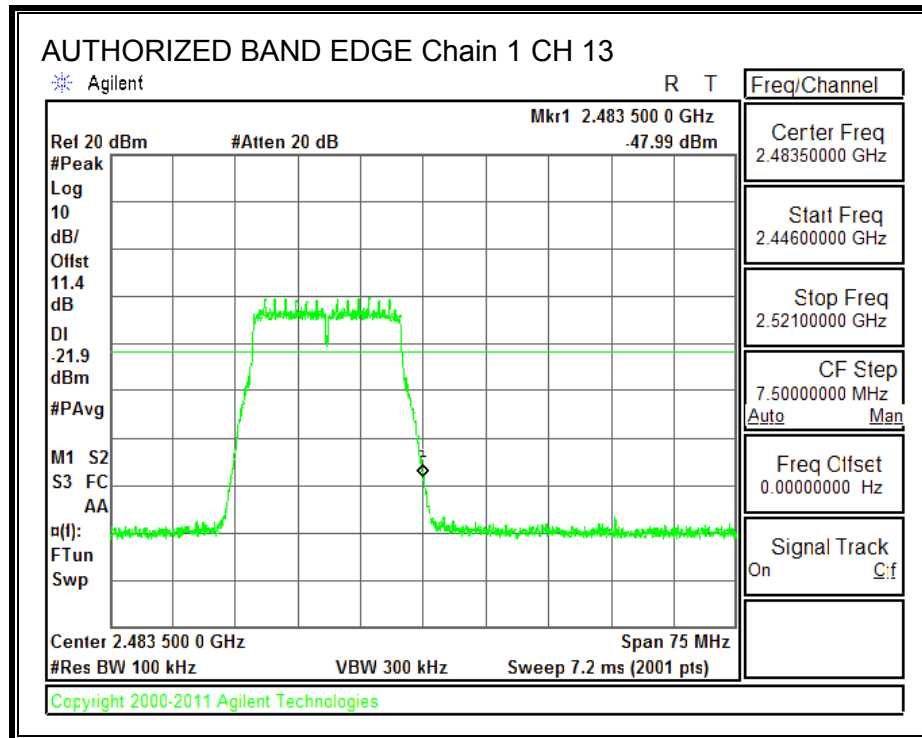




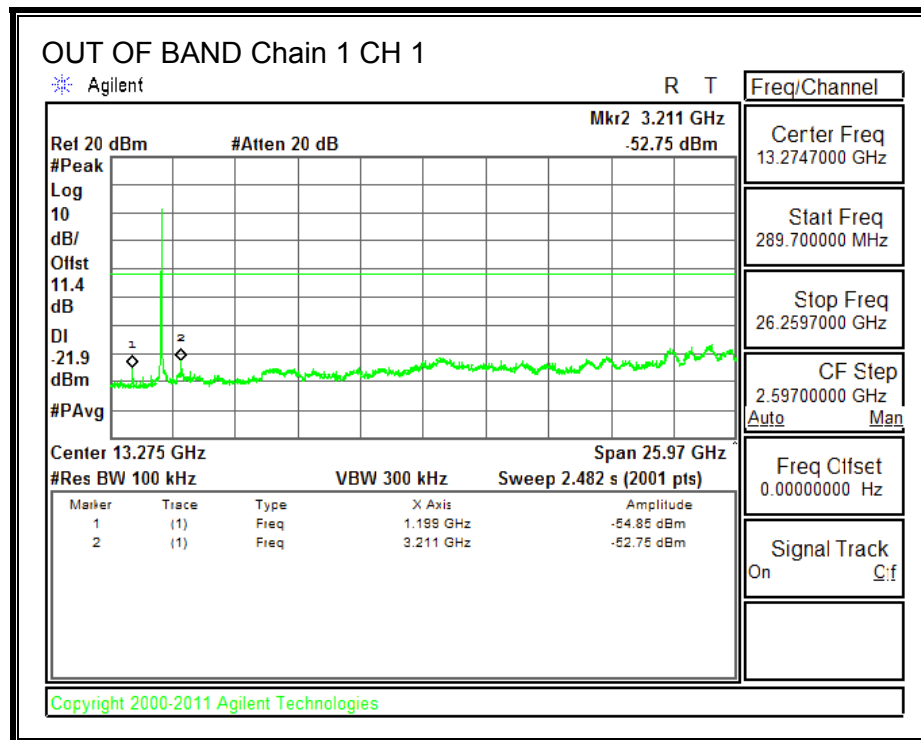
HIGH CHANNEL BANDEDGE, Chain 1

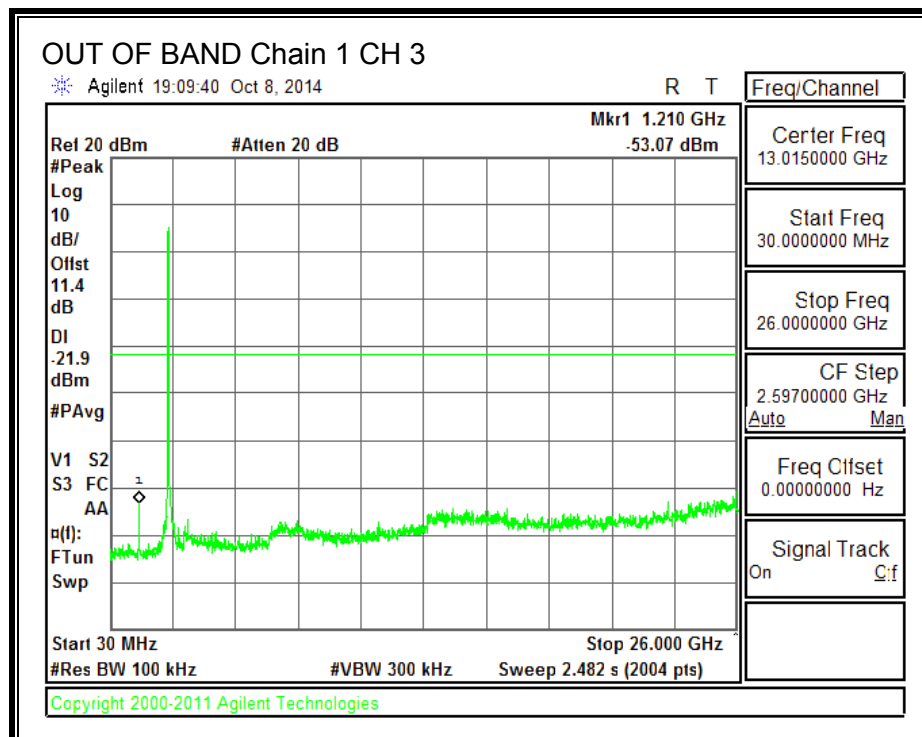
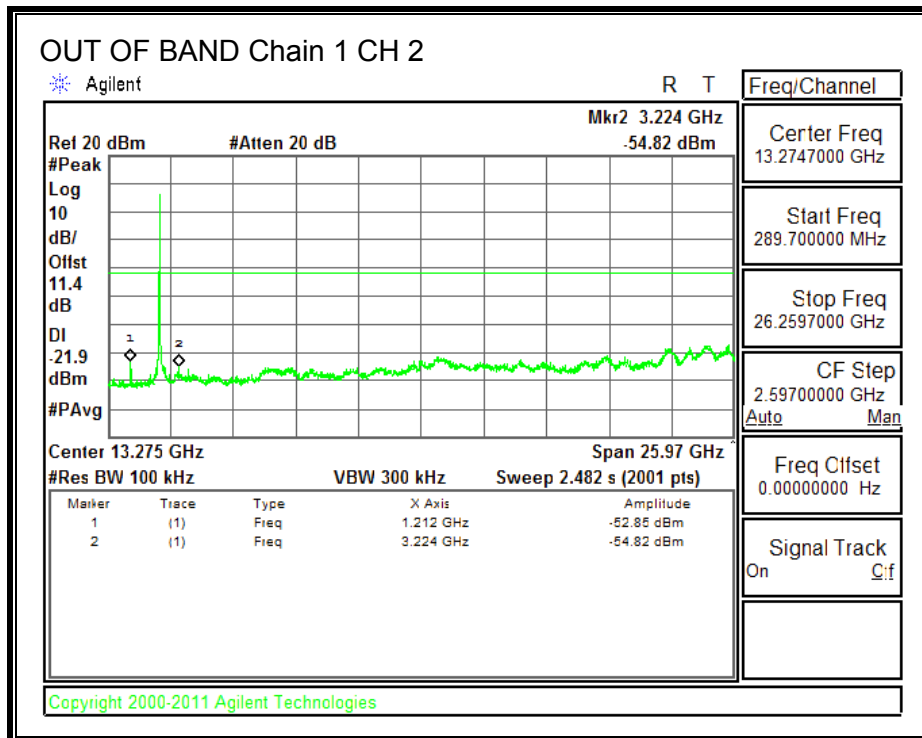


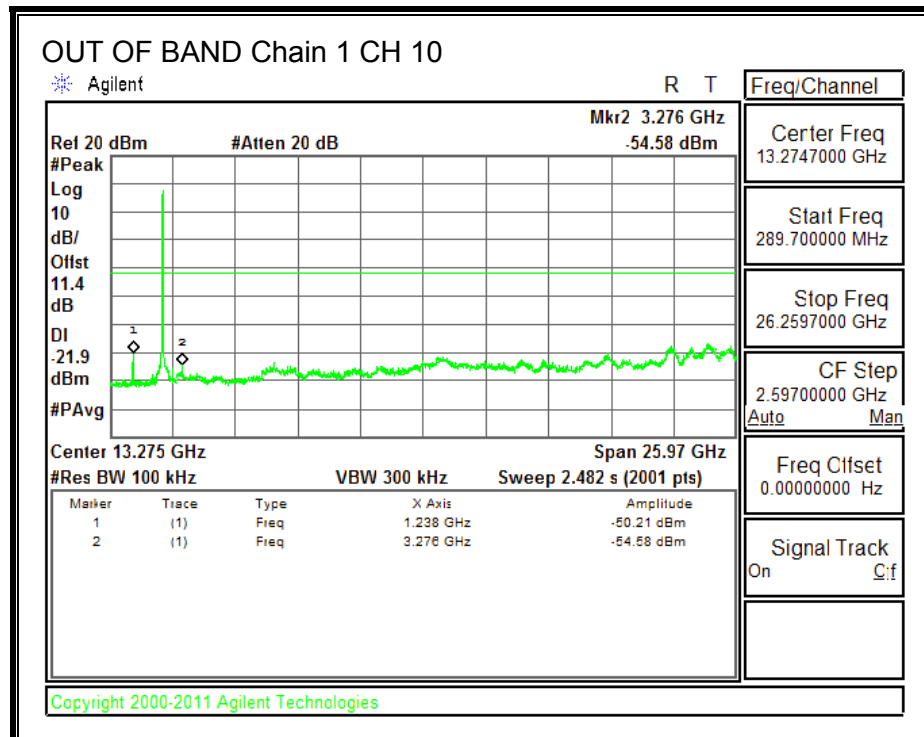
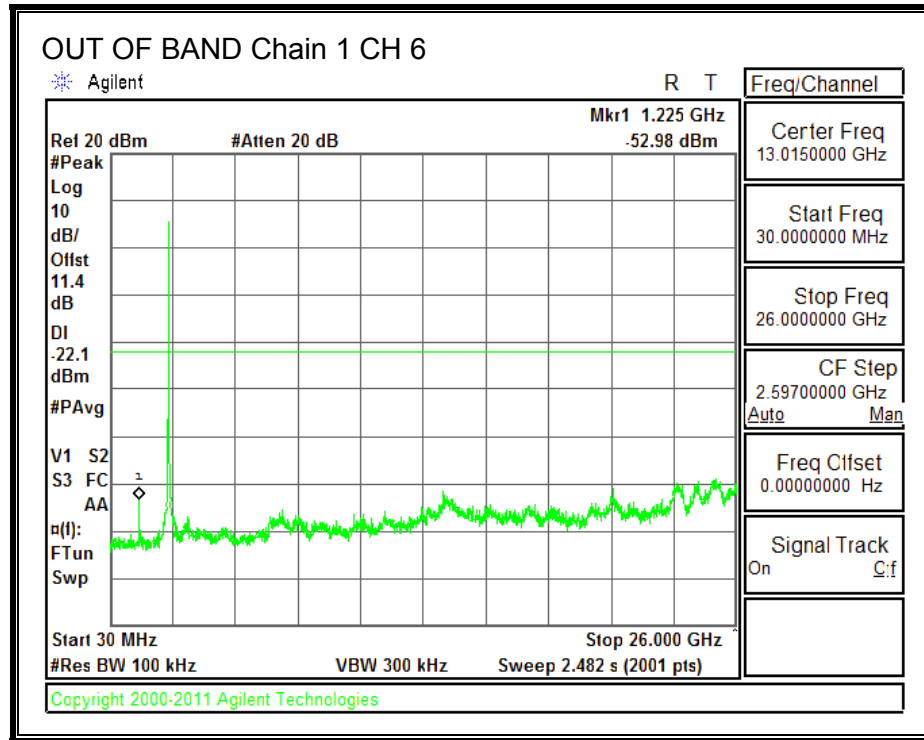


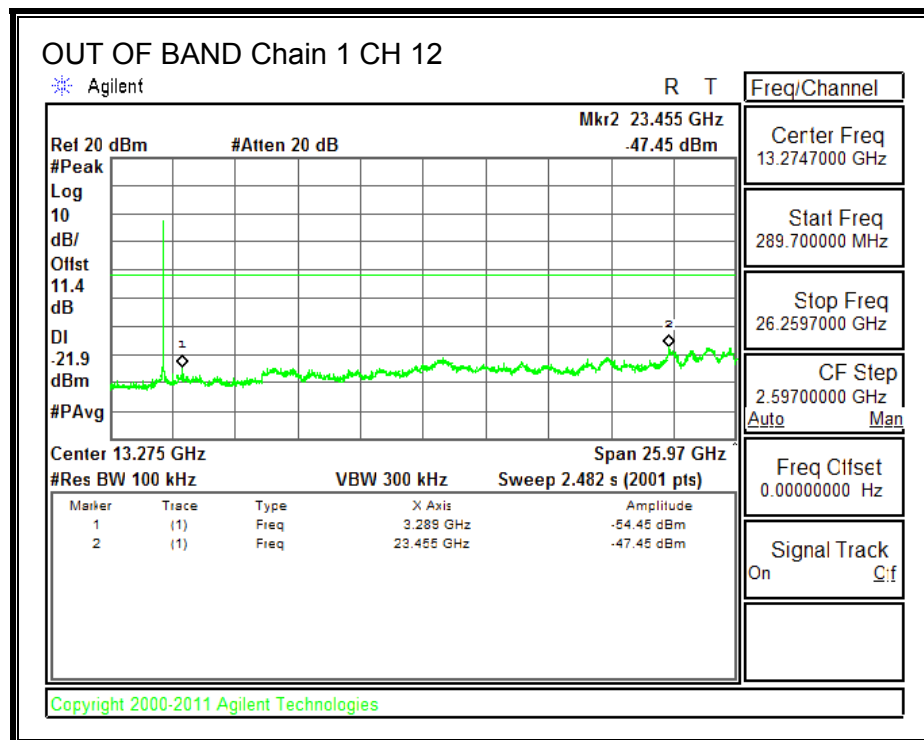
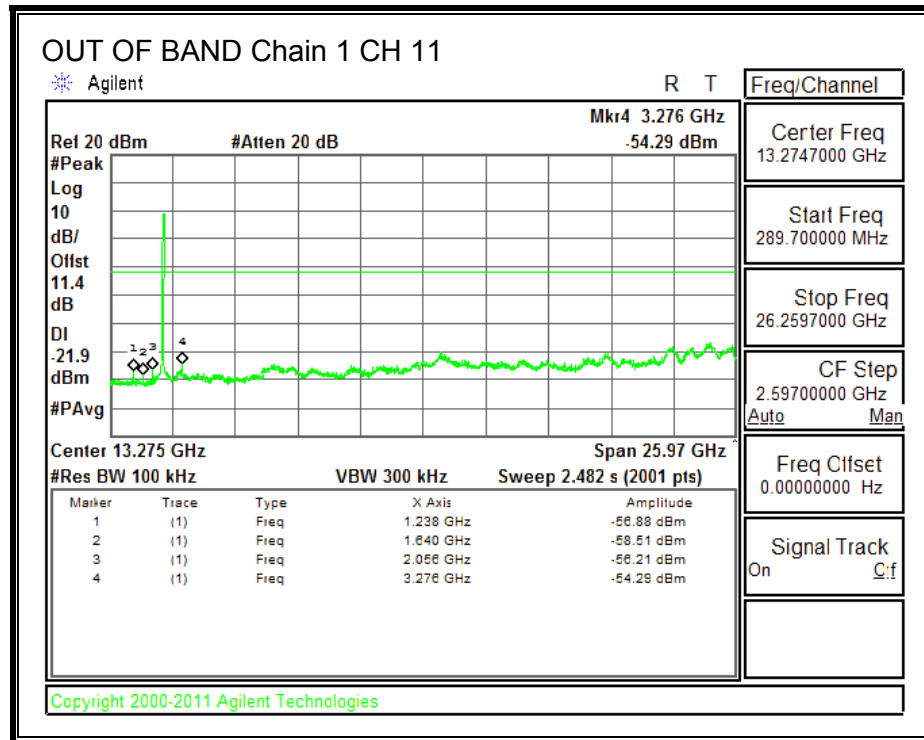


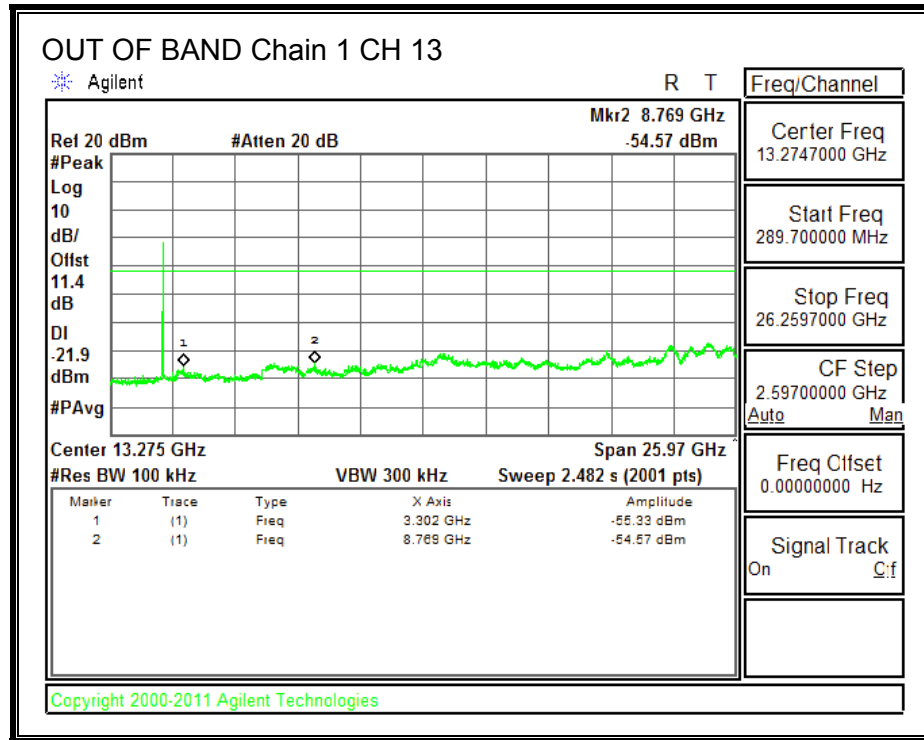
OUT-OF-BAND EMISSIONS, Chain 1











9.5. 802.11ac VHT20 2Tx BF IN THE 2.4 GHz BAND

9.5.1. 6 dB BANDWIDTH

LIMITS

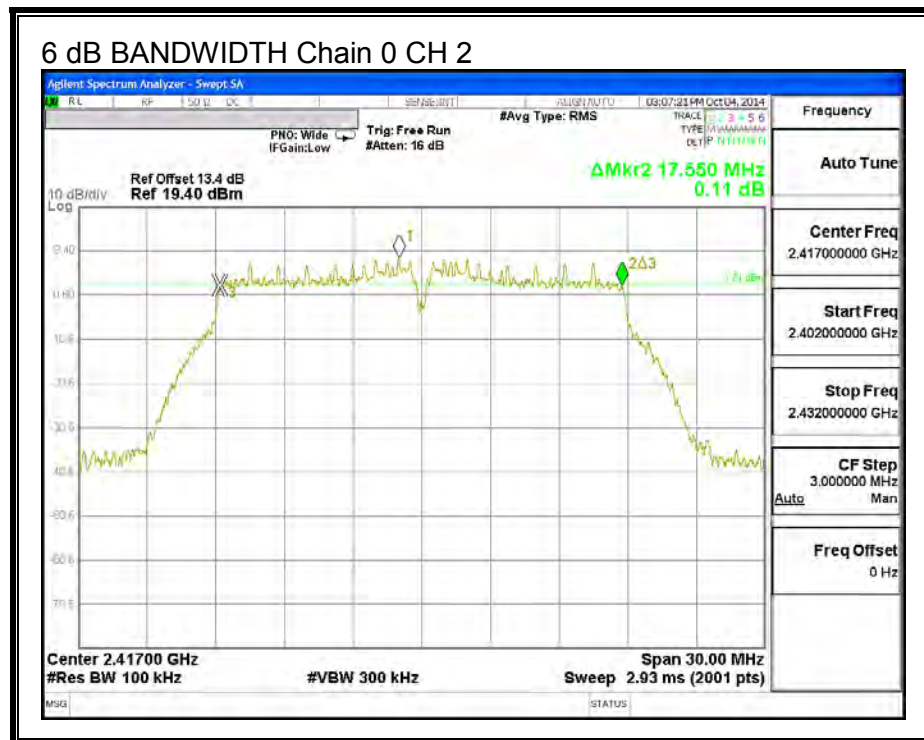
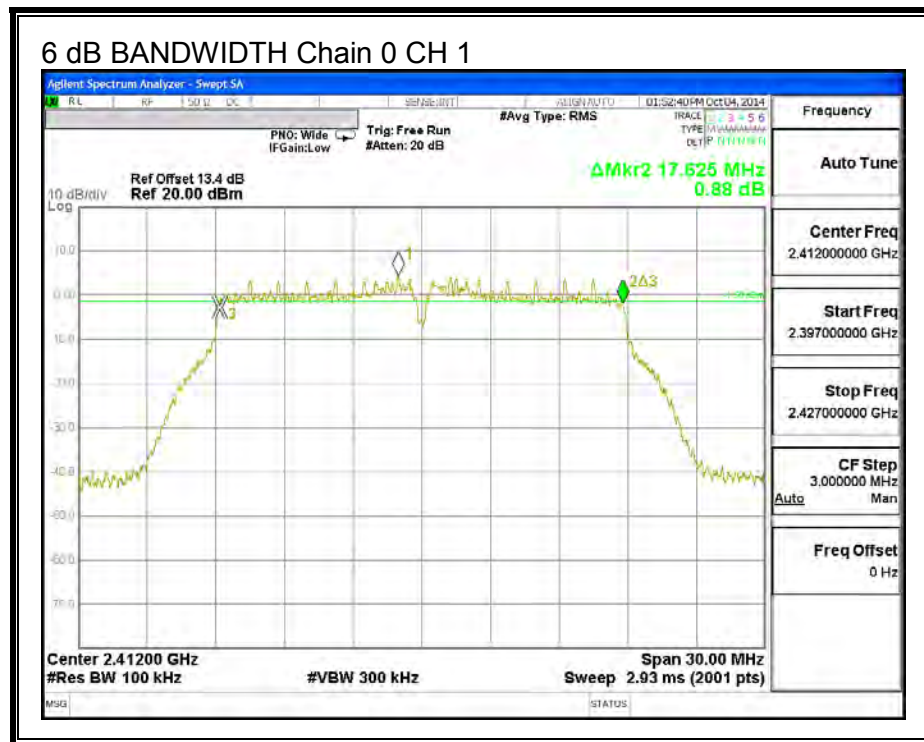
FCC §15.247 (a) (2)

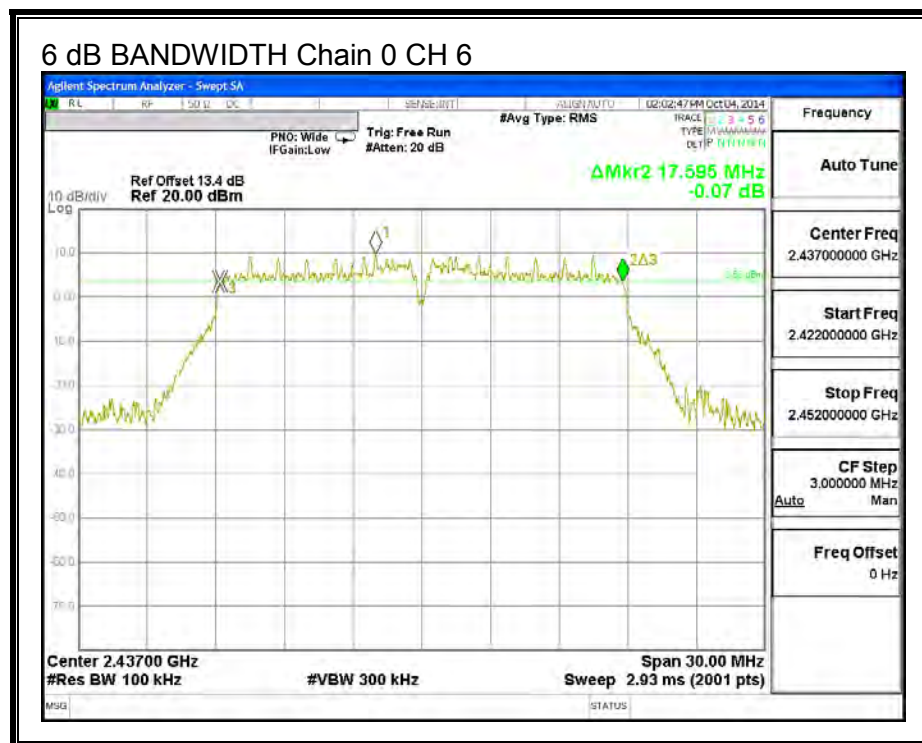
The minimum 6 dB bandwidth shall be at least 500 kHz.

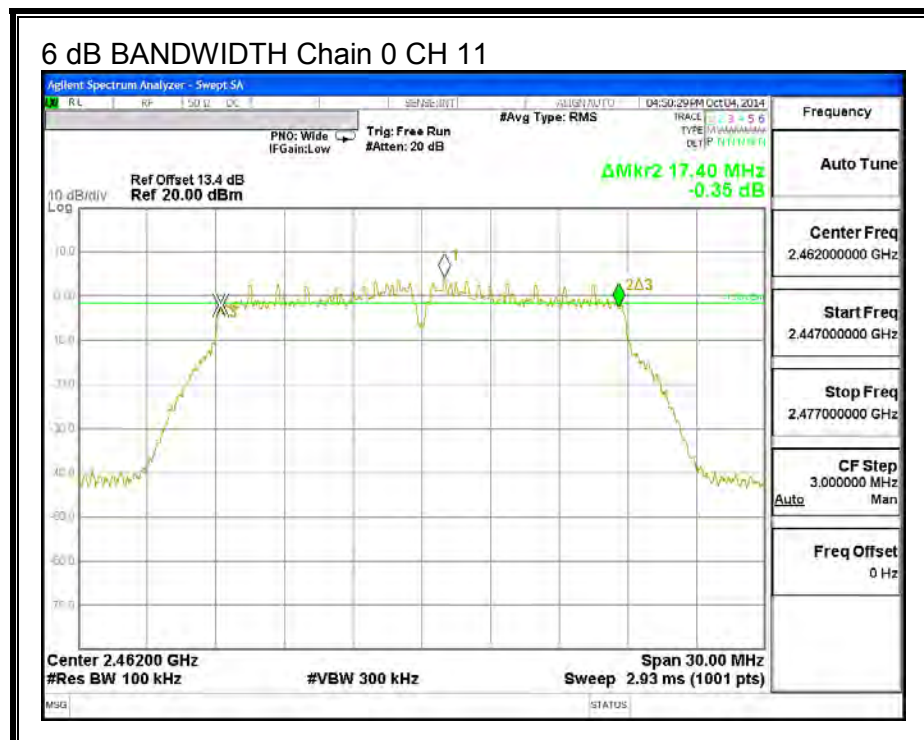
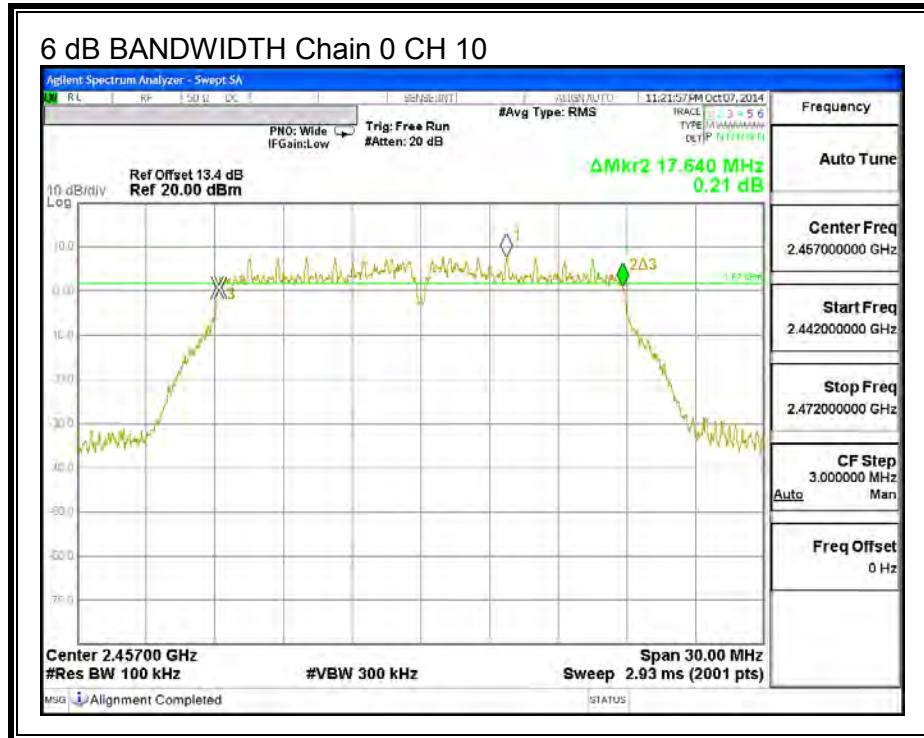
RESULTS

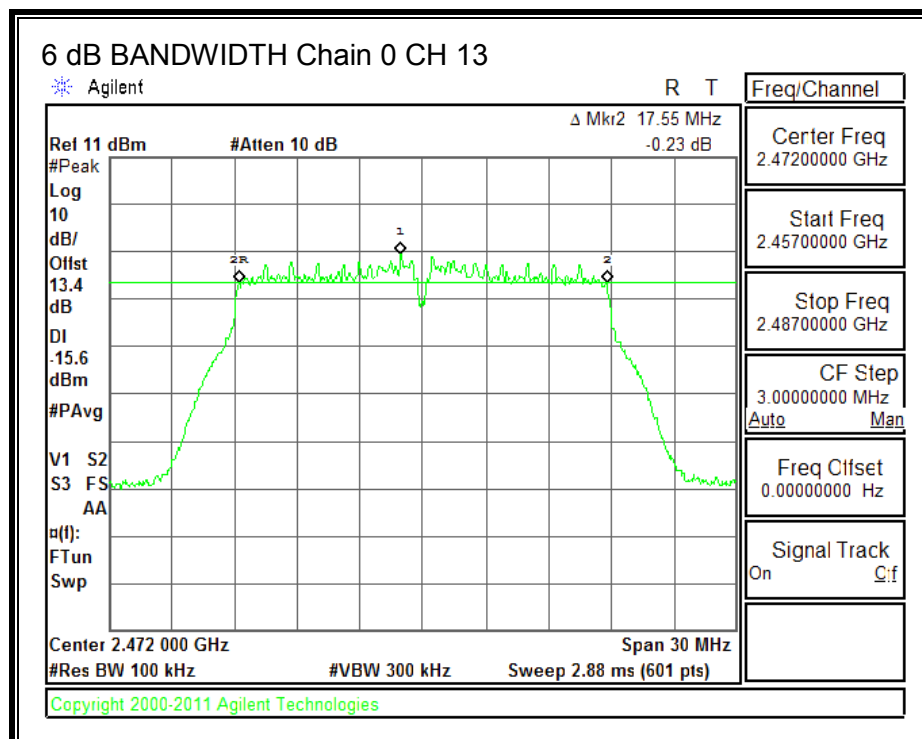
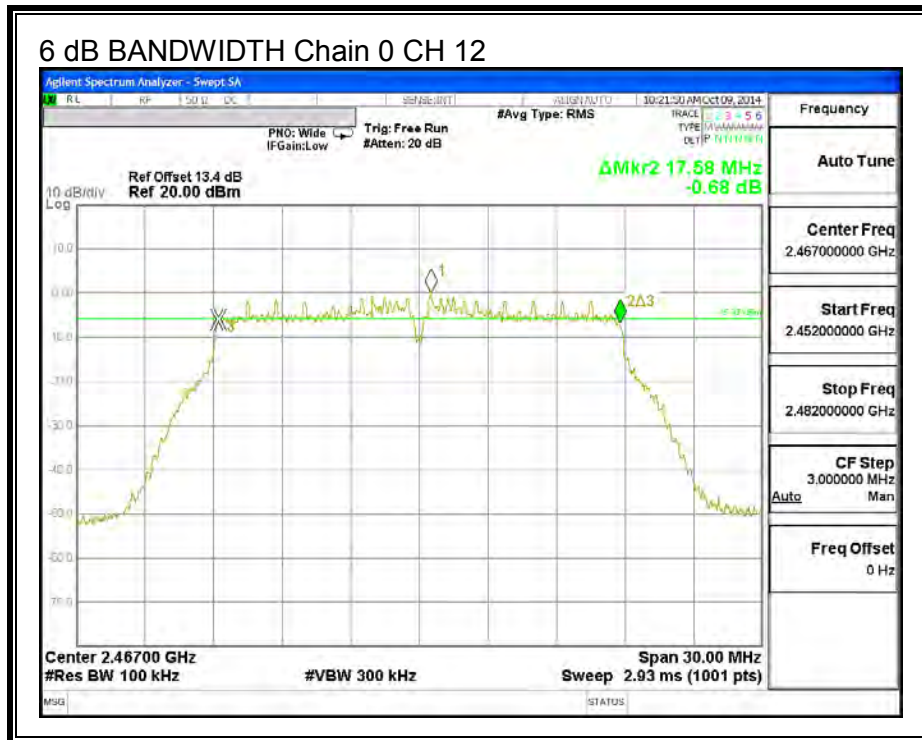
Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
1	2412	17.625	17.565	0.5
2	2417	17.550	17.640	0.5
3	2422	17.595	17.595	0.5
6	2437	17.595	17.595	0.5
10	2457	17.640	17.640	0.5
11	2462	17.400	17.640	0.5
12	2467	17.580	17.700	0.5
13	2472	17.550	17.650	0.5

6 dB BANDWIDTH, Chain 0

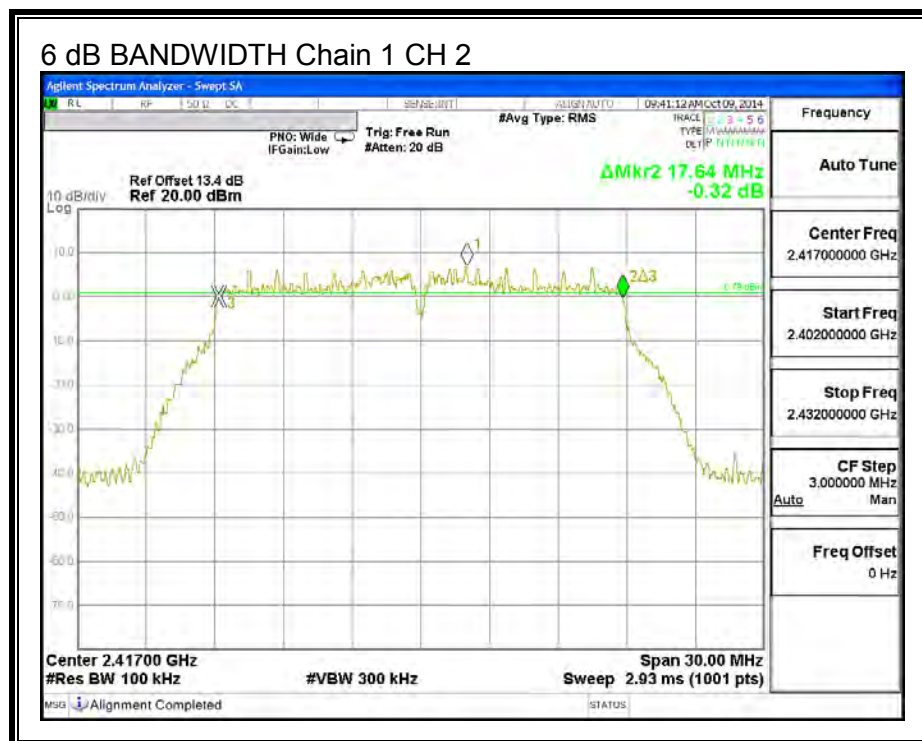
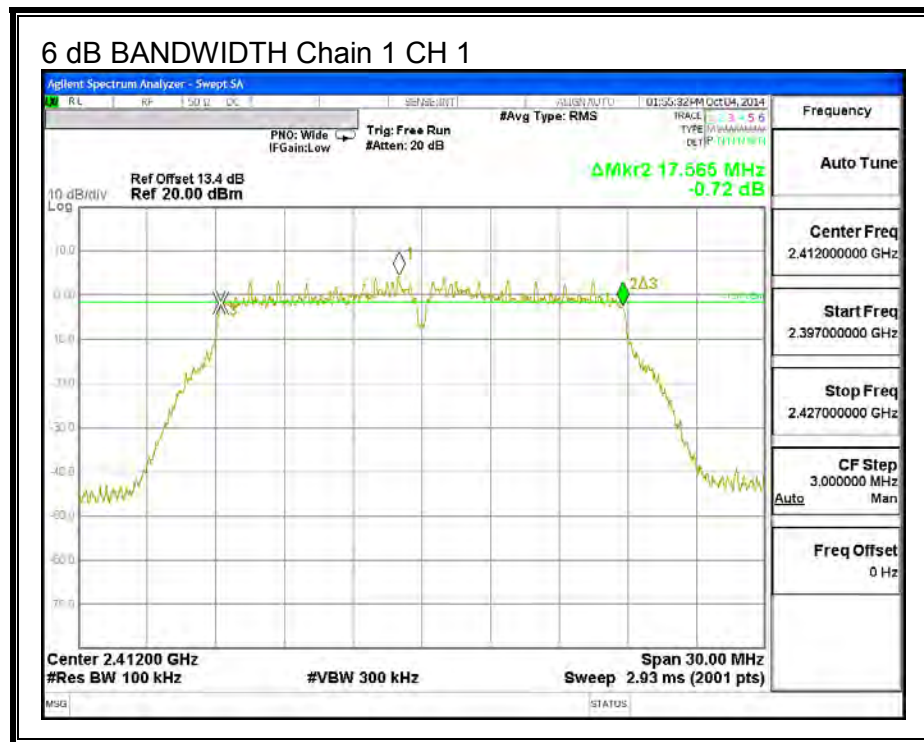


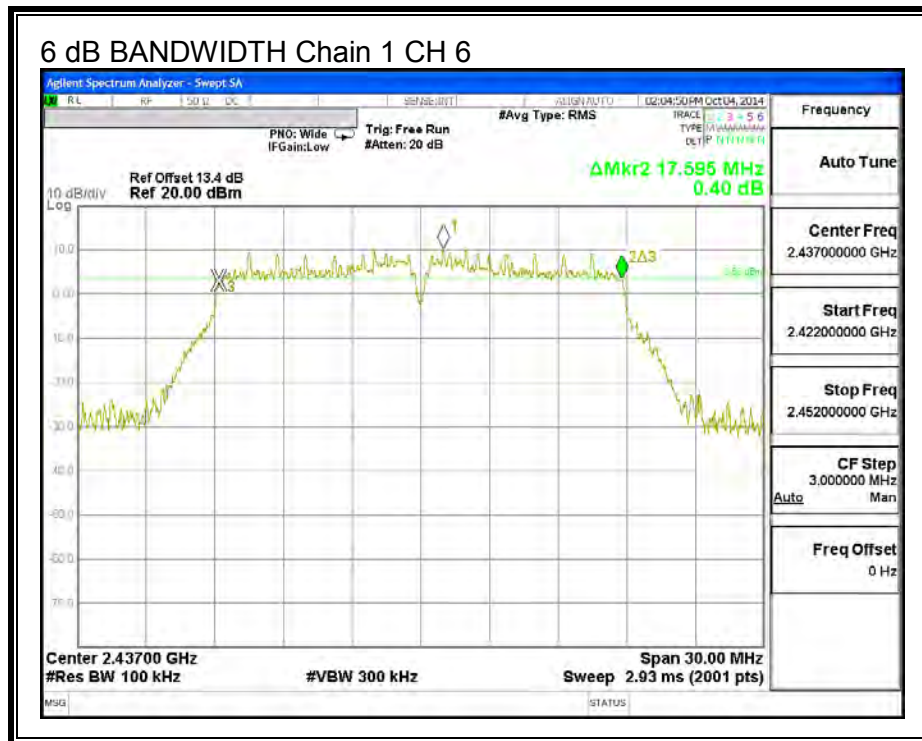
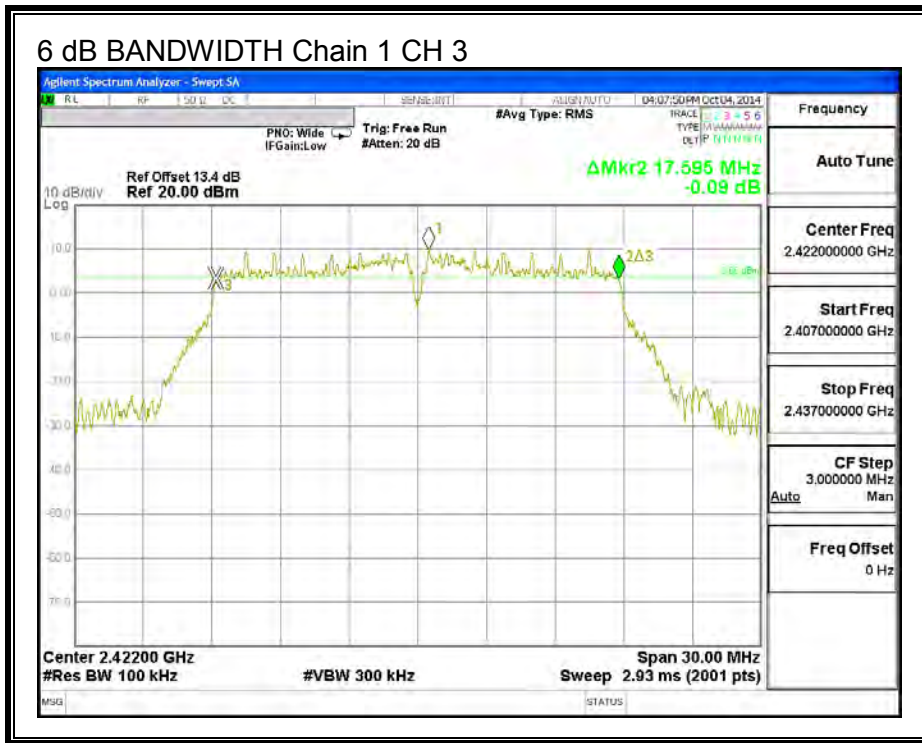


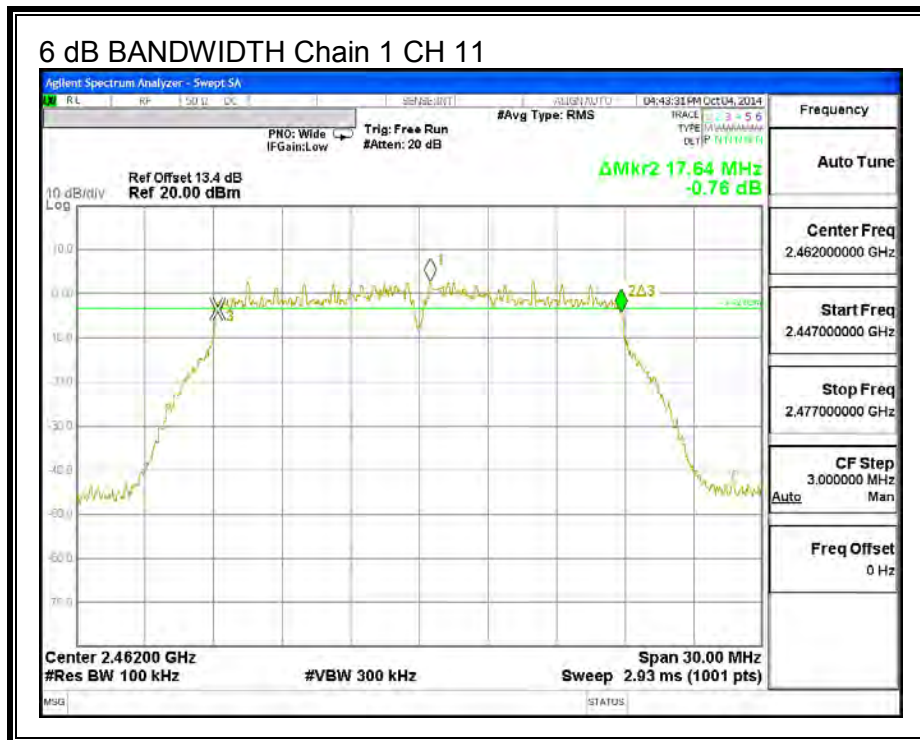
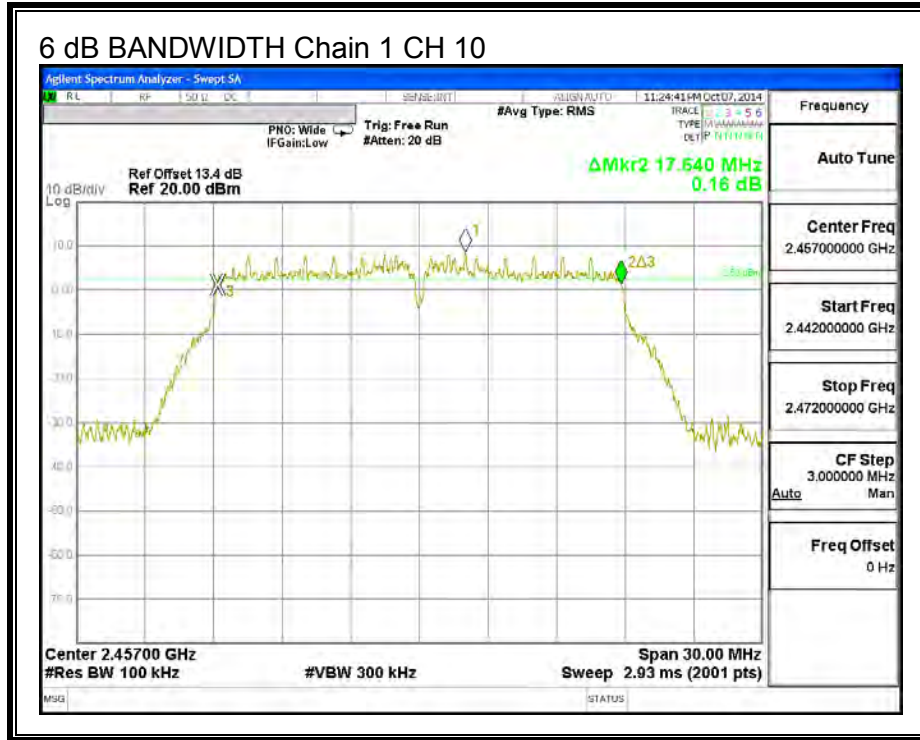


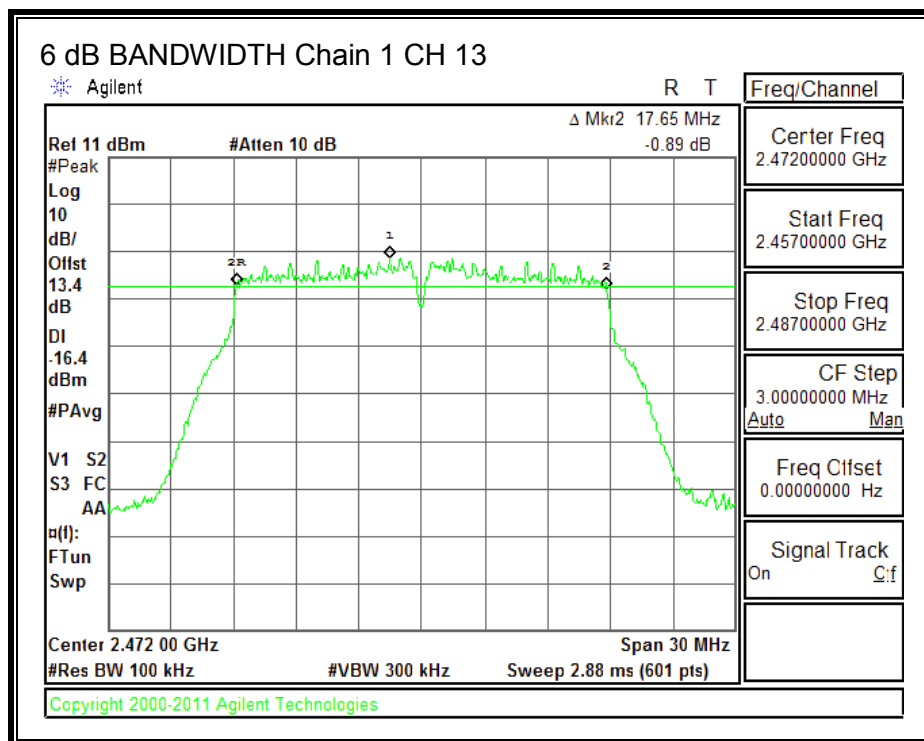


6 dB BANDWIDTH, Chain 1









9.5.2. 99% BANDWIDTH

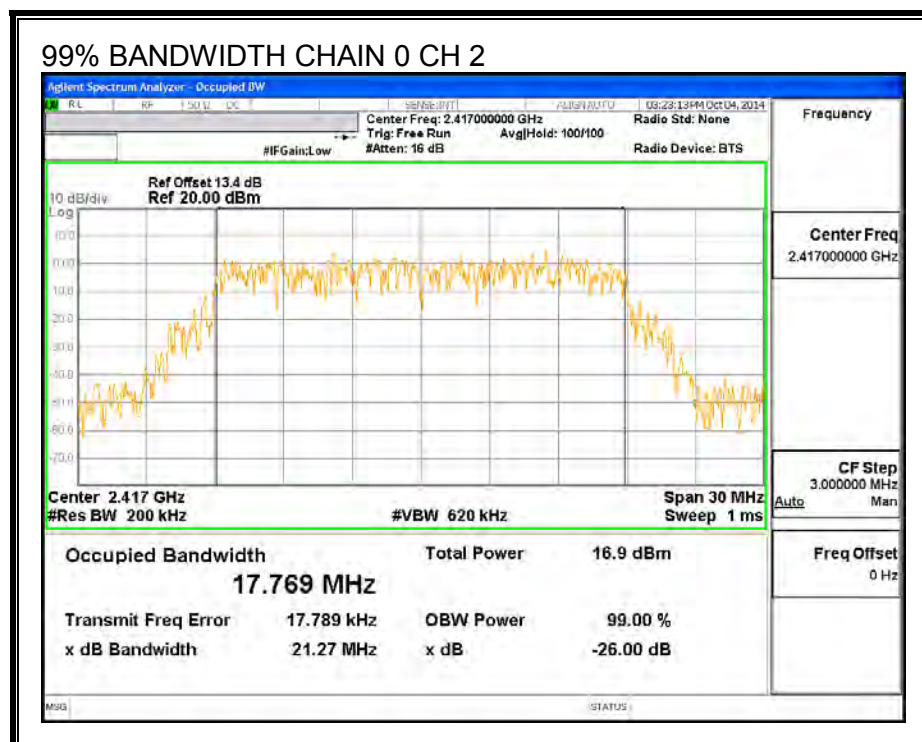
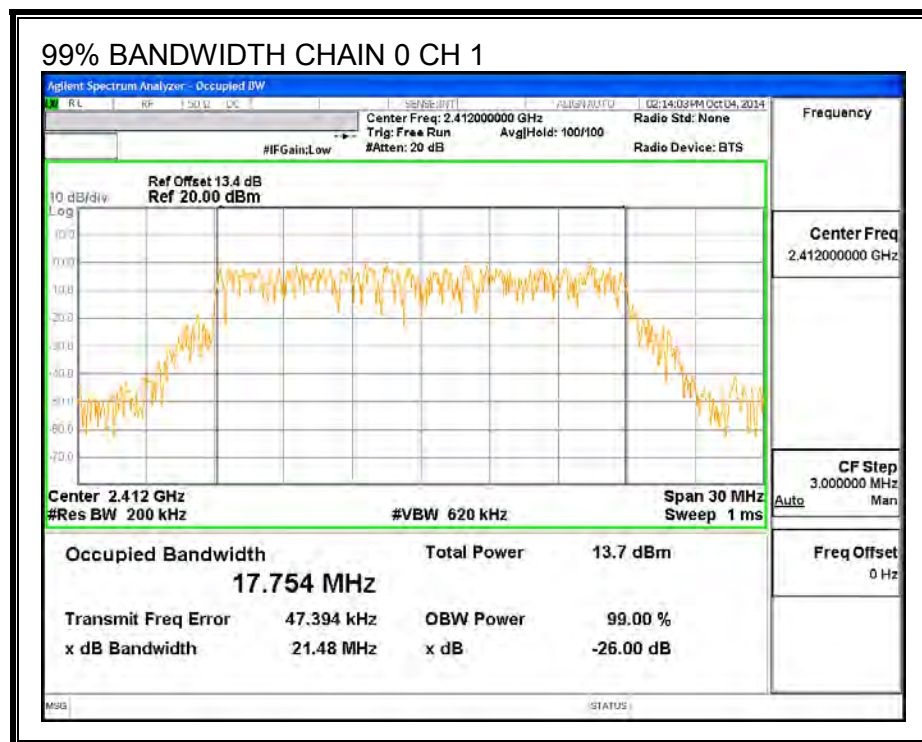
LIMITS

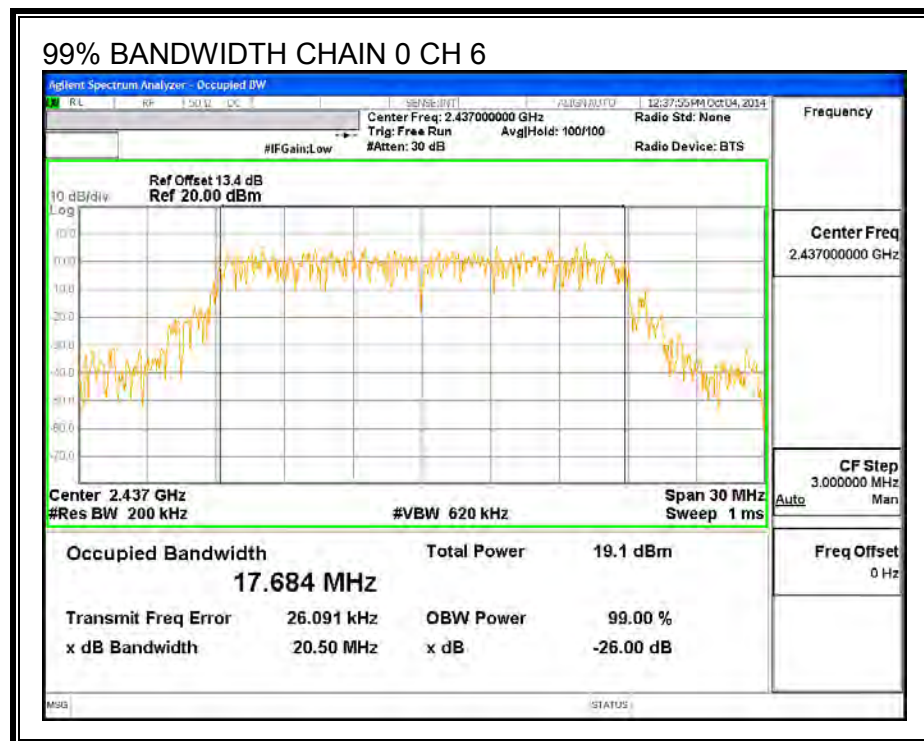
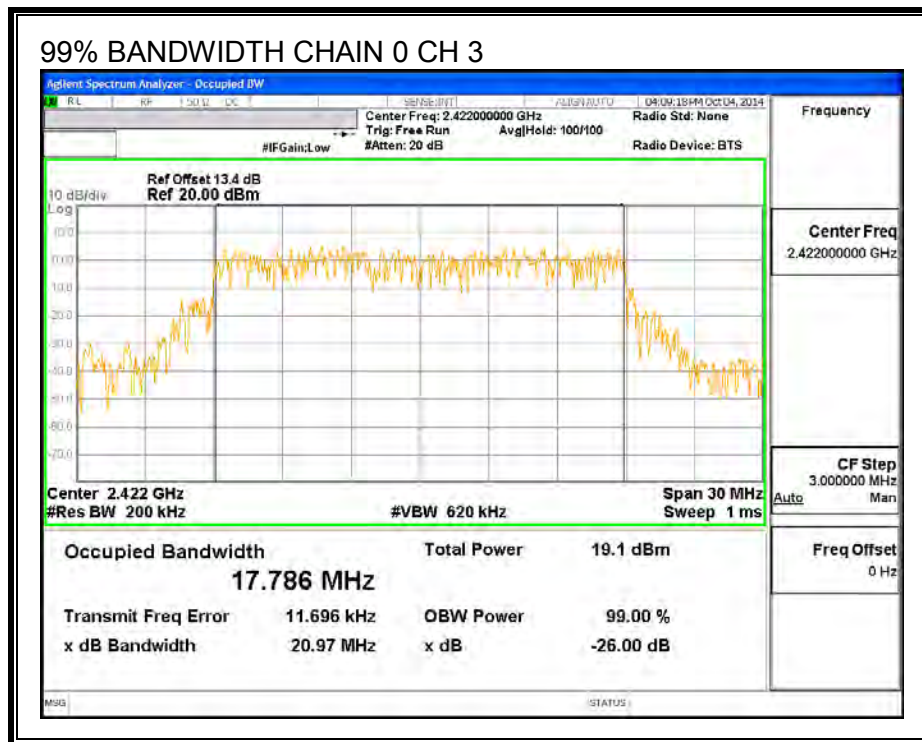
None; for reporting purposes only.

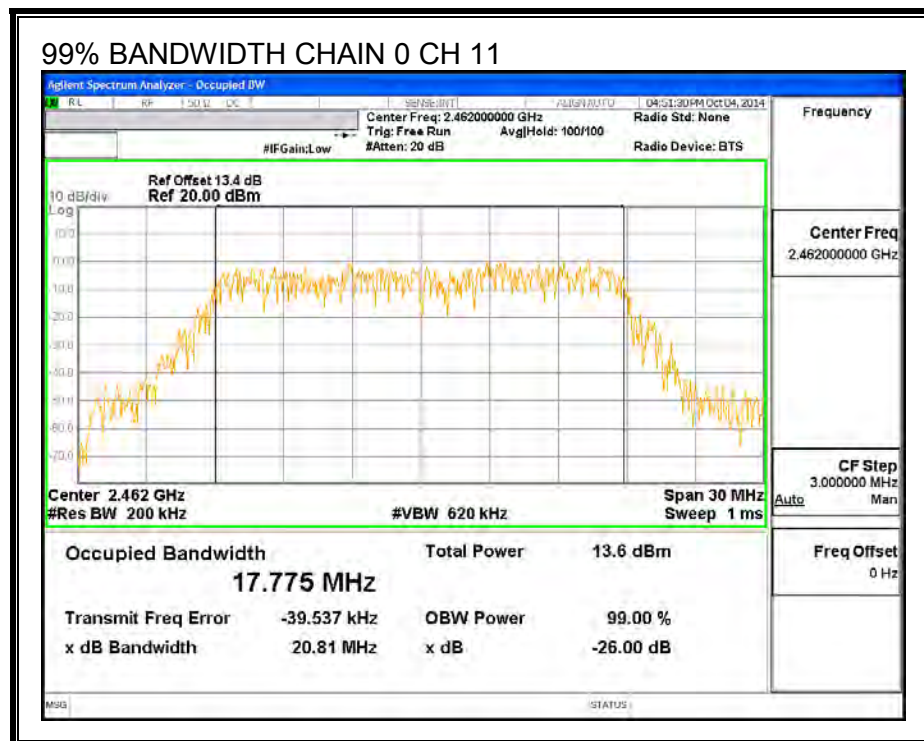
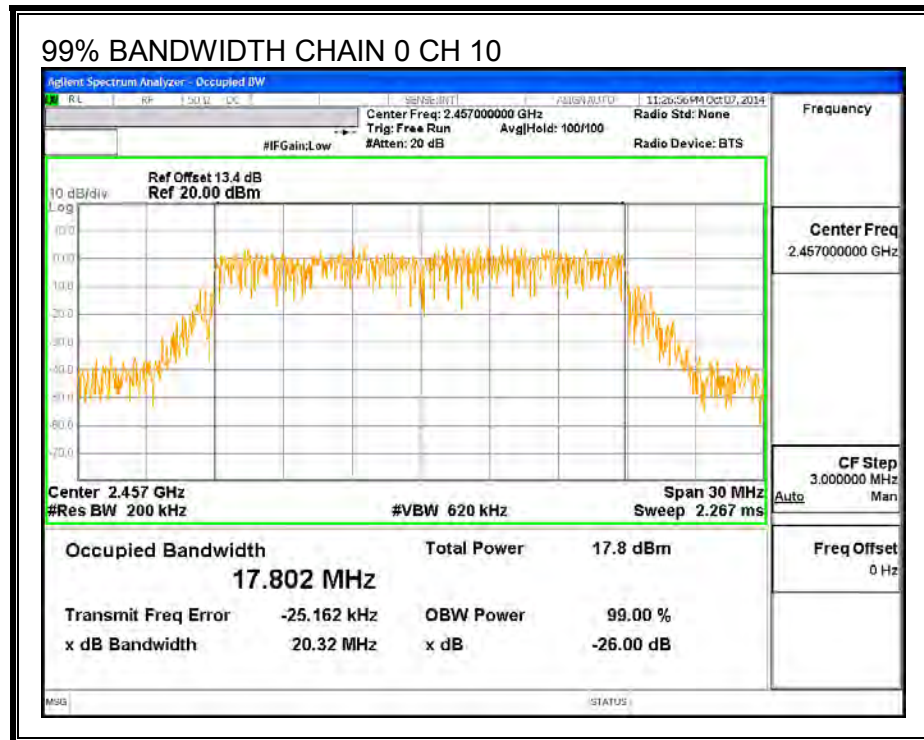
RESULTS

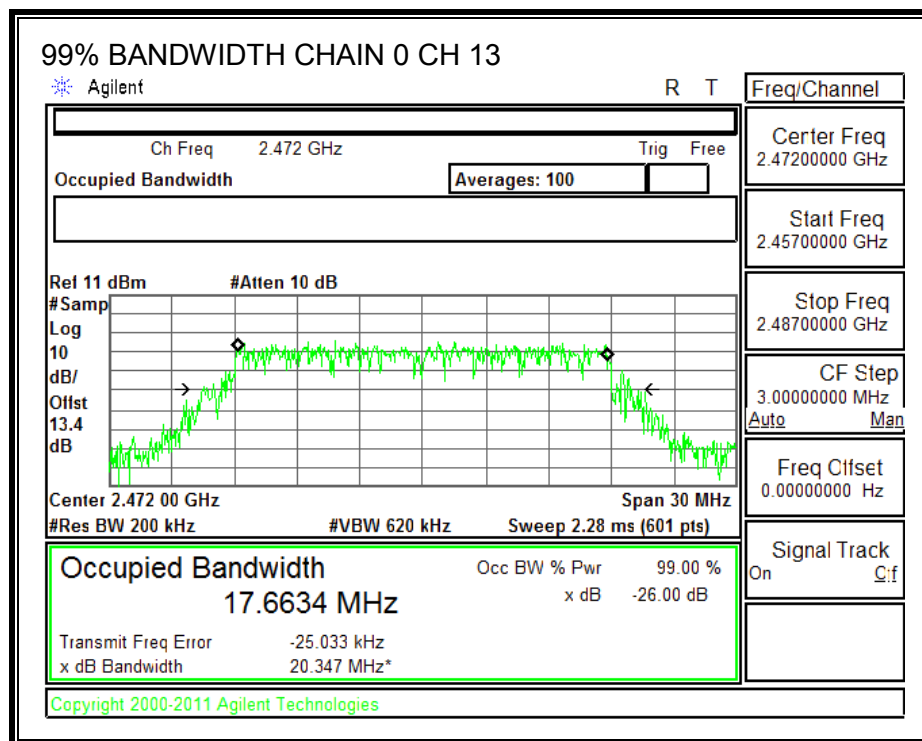
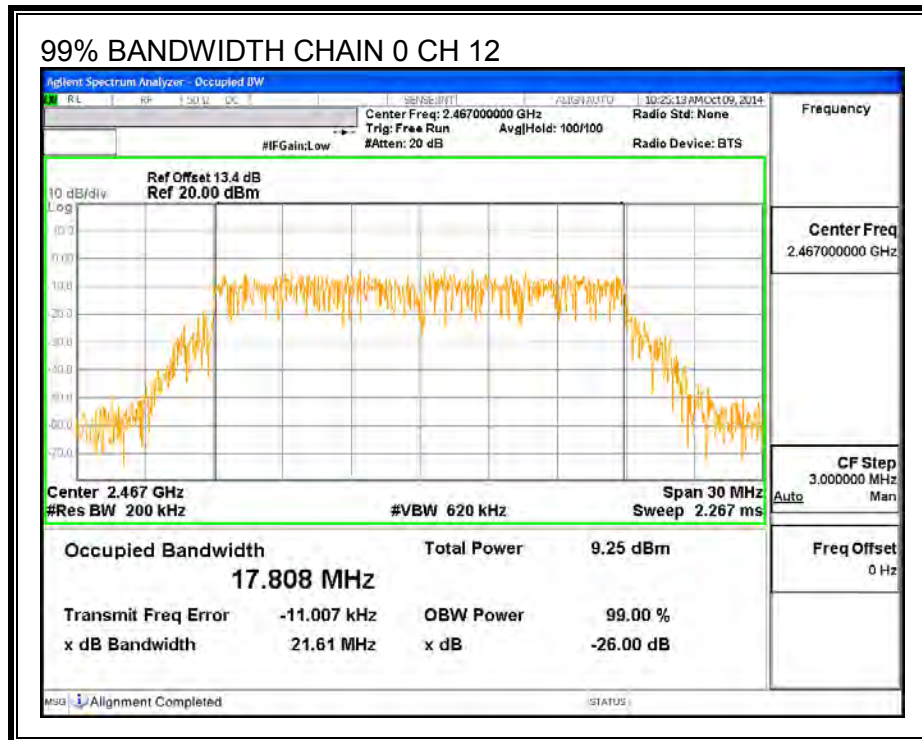
Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
1	2412	17.754	17.742	0.5
2	2417	17.769	17.724	0.5
3	2422	17.786	17.628	0.5
6	2437	17.684	17.738	0.5
10	2457	17.802	17.746	0.5
11	2462	17.775	17.746	0.5
12	2467	17.808	17.735	0.5
13	2472	17.663	17.741	0.5

99% BANDWIDTH, CHAIN 0

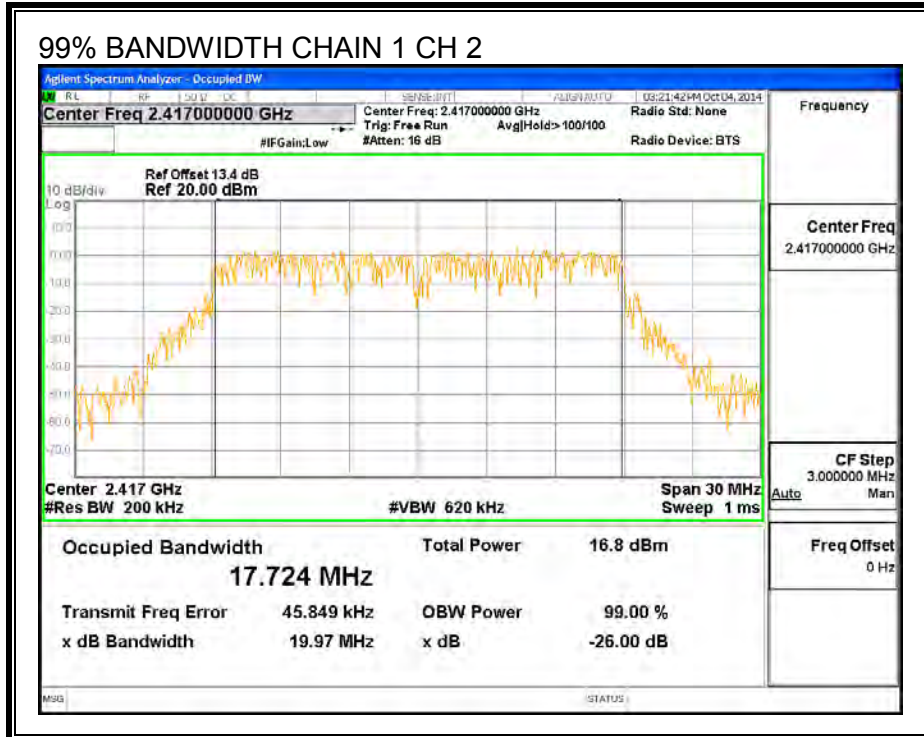
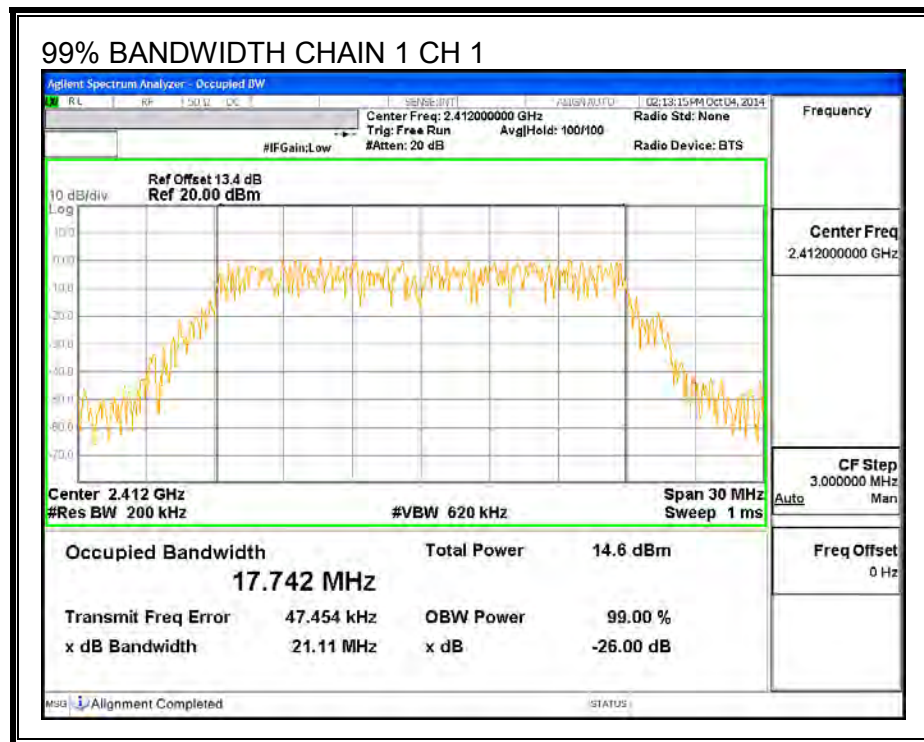


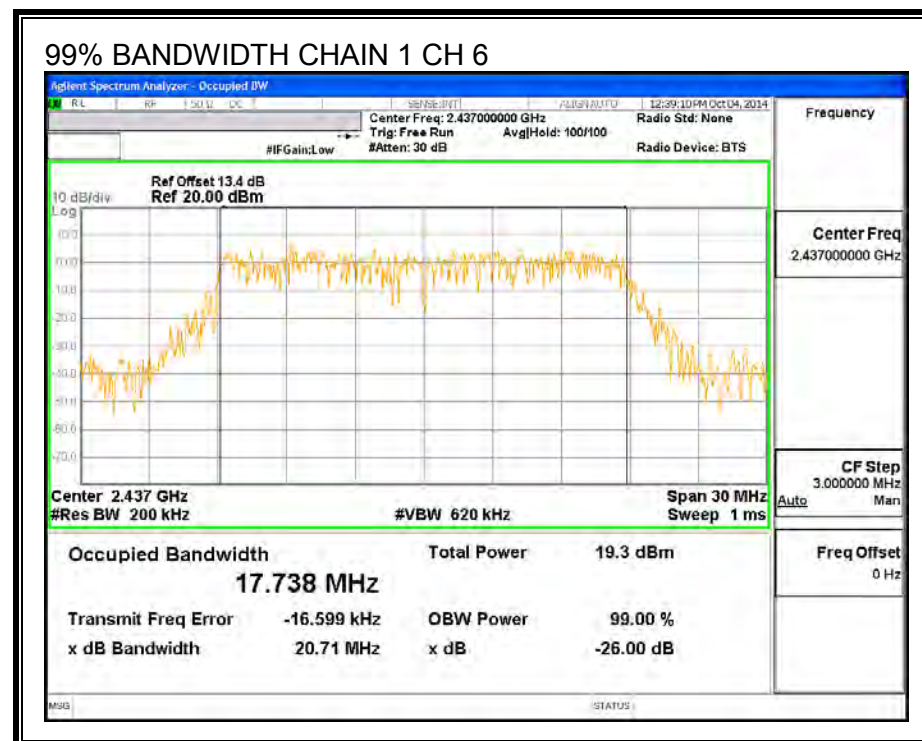
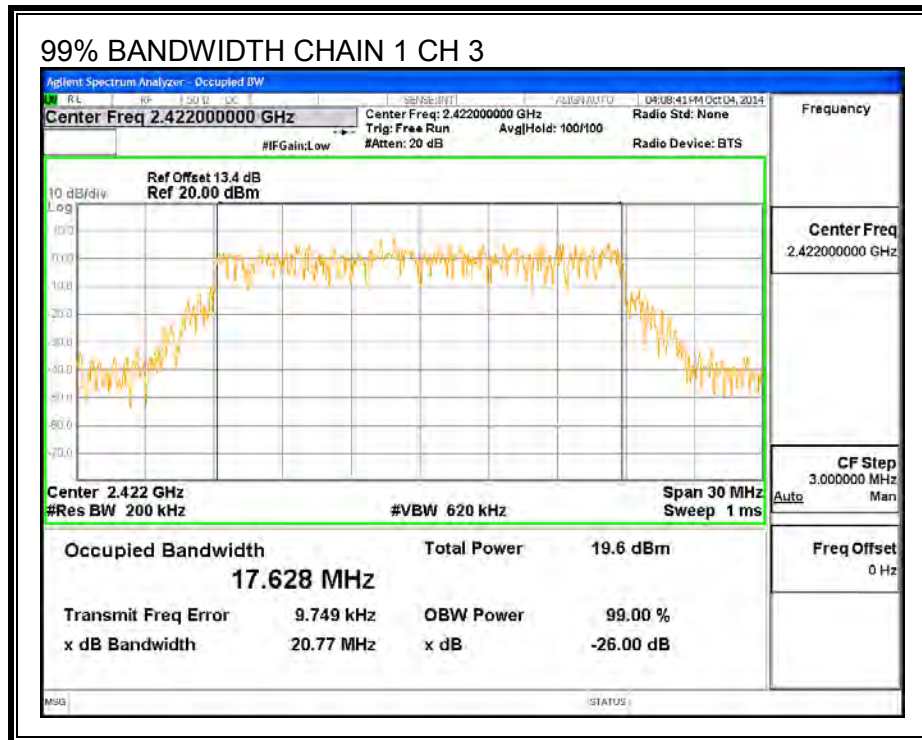




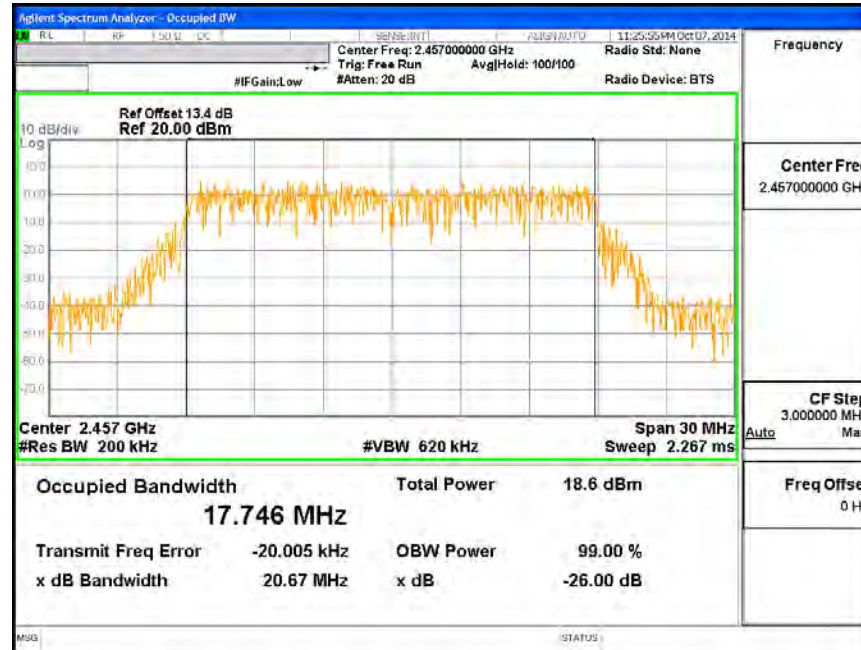


99% BANDWIDTH, CHAIN 1

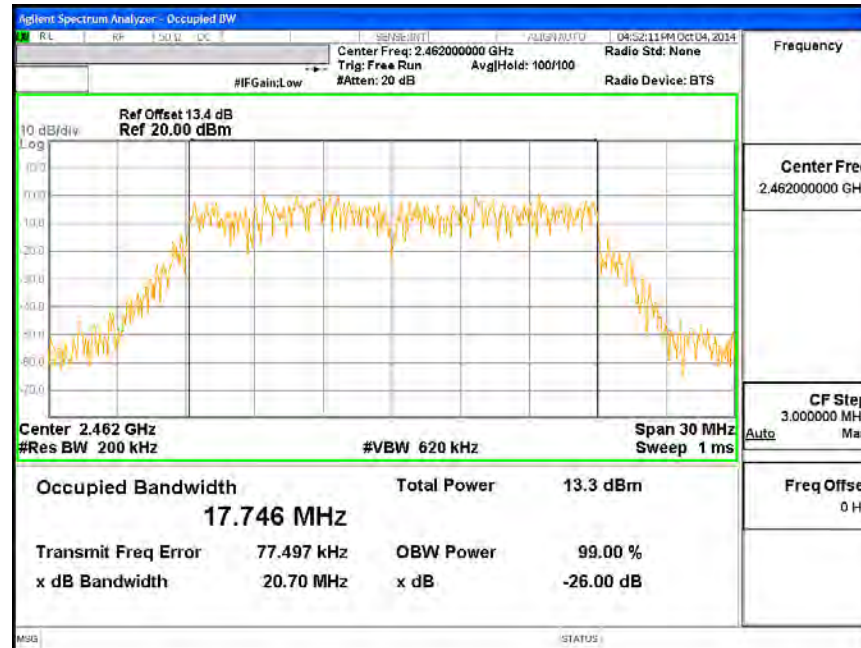


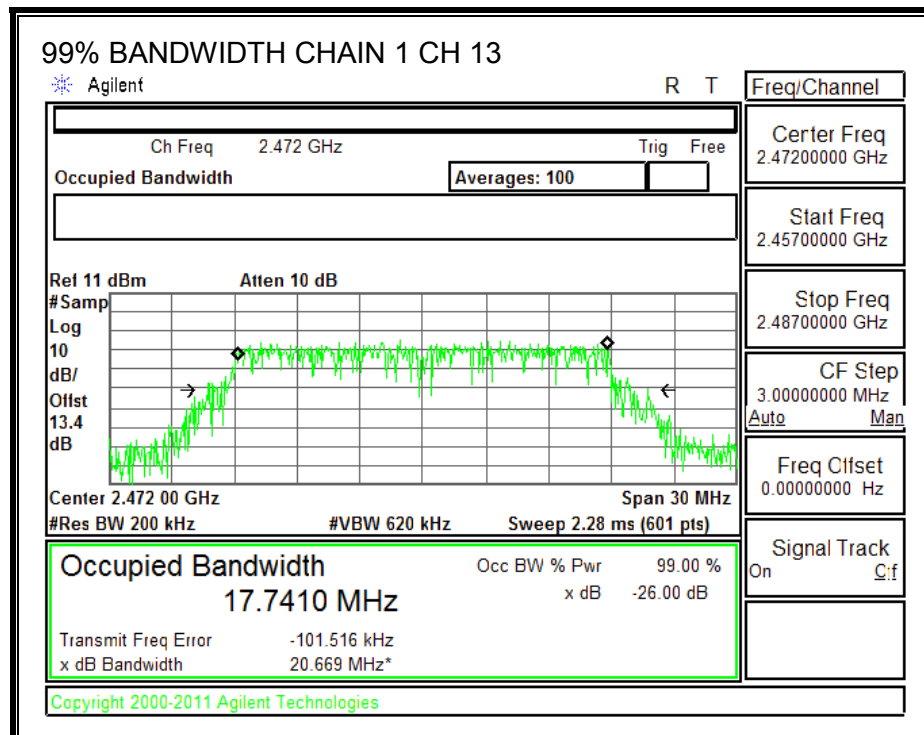
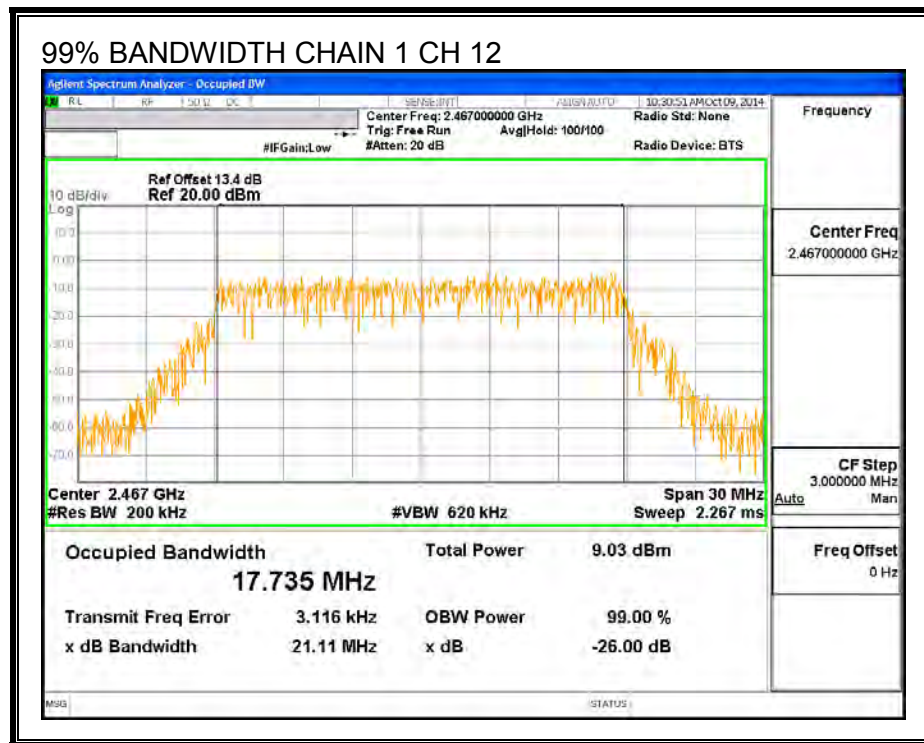


99% BANDWIDTH CHAIN 1 CH 10



99% BANDWIDTH CHAIN 1 CH 11





9.5.3. OUTPUT POWER

LIMITS

FCC §15.247

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.

DIRECTIONAL ANTENNA GAIN

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

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
2.24	3.40	5.85

RESULTS

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
1	2412	5.85	30.00	30	36	30.00
2	2417	5.85	30.00	30	36	30.00
3	2422	5.85	30.00	30	36	30.00
6	2437	5.85	30.00	30	36	30.00
10	2457	5.85	30.00	30	36	30.00
11	2462	5.85	30.00	30	36	30.00
12	2467	5.85	30.00	30	36	30.00
13	2472	5.85	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margi (dB)
1	2412	13.49	13.41	16.46	30.00	-13.54
2	2417	16.50	16.41	19.47	30.00	-10.53
3	2422	18.97	18.95	21.97	30.00	-8.03
6	2437	19.00	18.99	22.01	30.00	-7.99
10	2457	17.00	16.87	19.95	30.00	-10.05
11	2462	11.99	11.94	14.98	30.00	-15.02
12	2467	9.00	8.87	11.95	30.00	-18.05
13	2472	0.04	0.09	3.08	30.00	-26.92

9.5.4. PSD

LIMITS

FCC §15.247

DIRECTIONAL ANTENNA GAIN

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

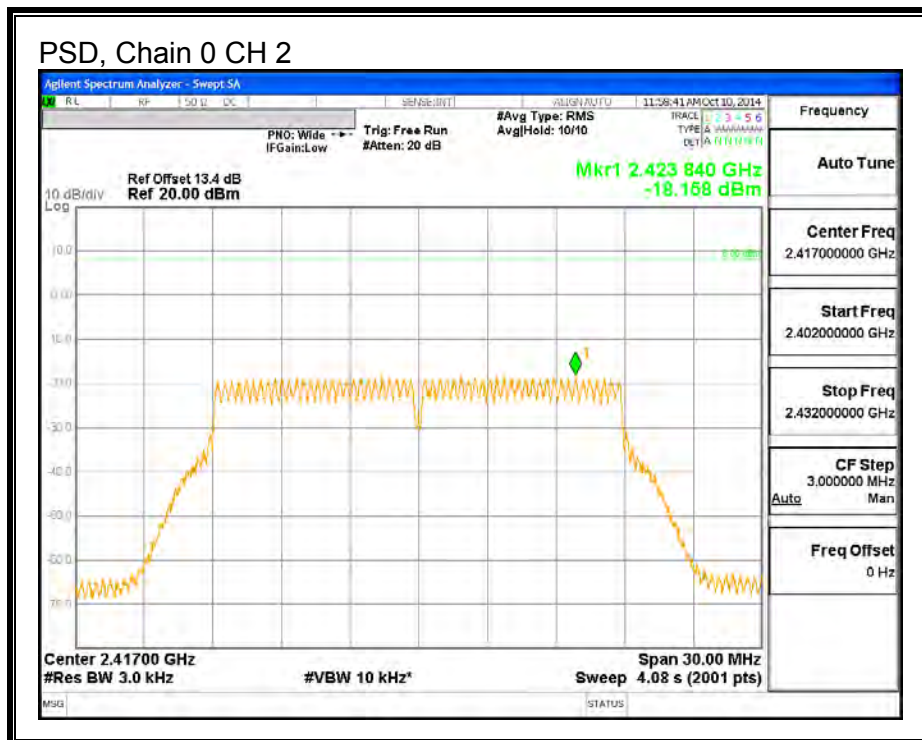
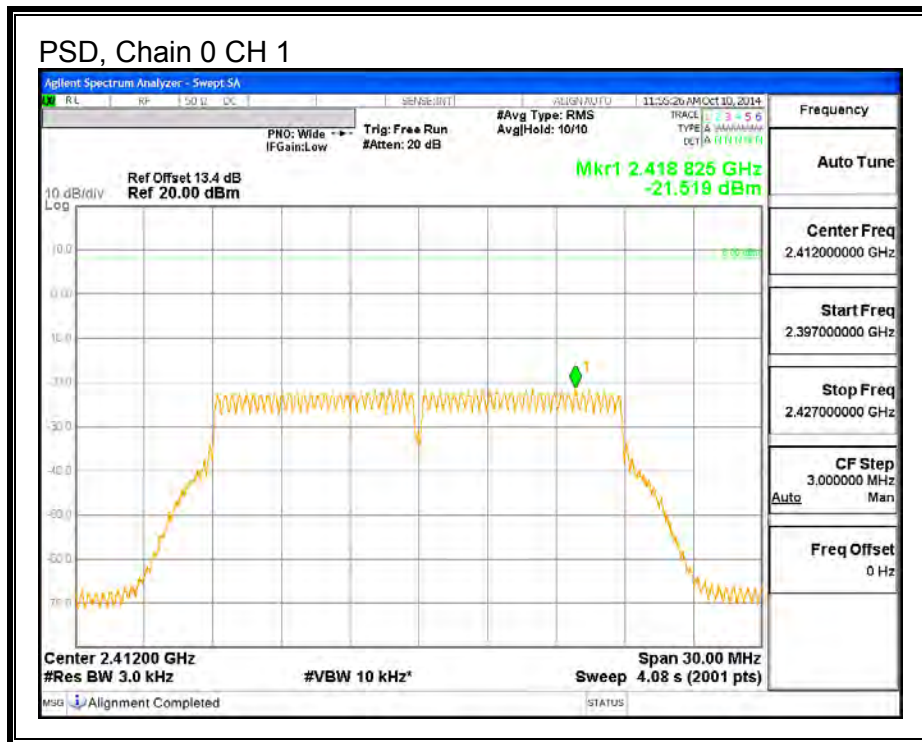
Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
2.2400	3.40	5.85

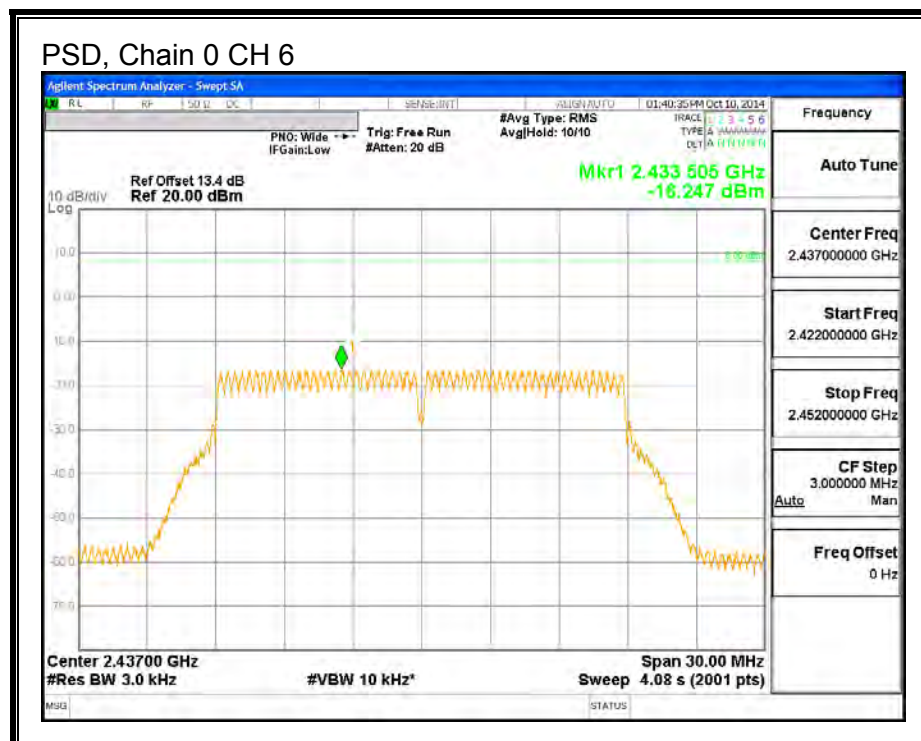
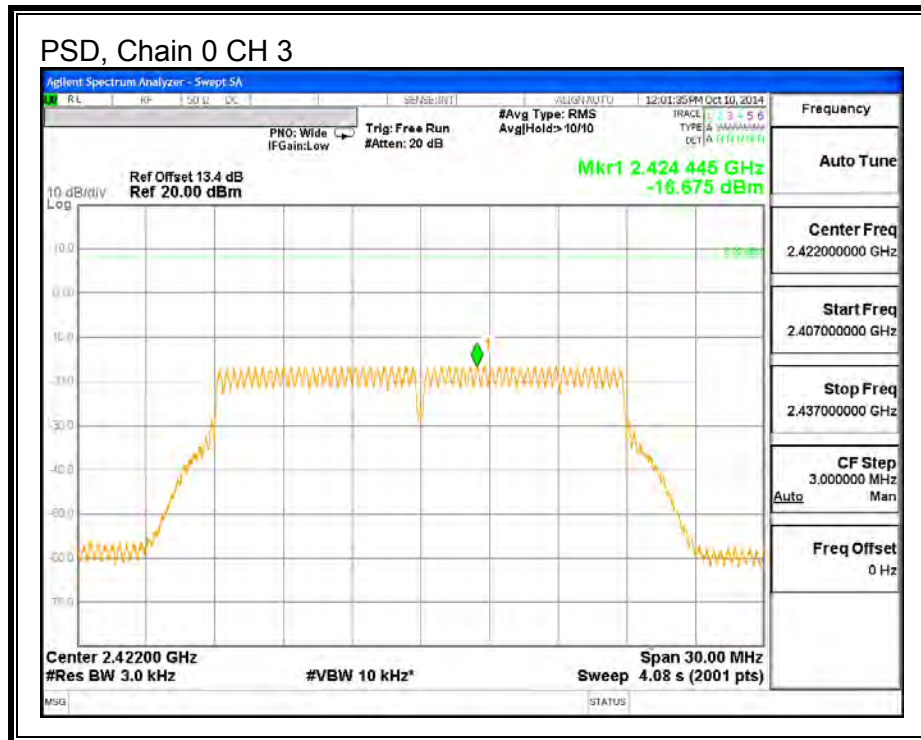
RESULTS

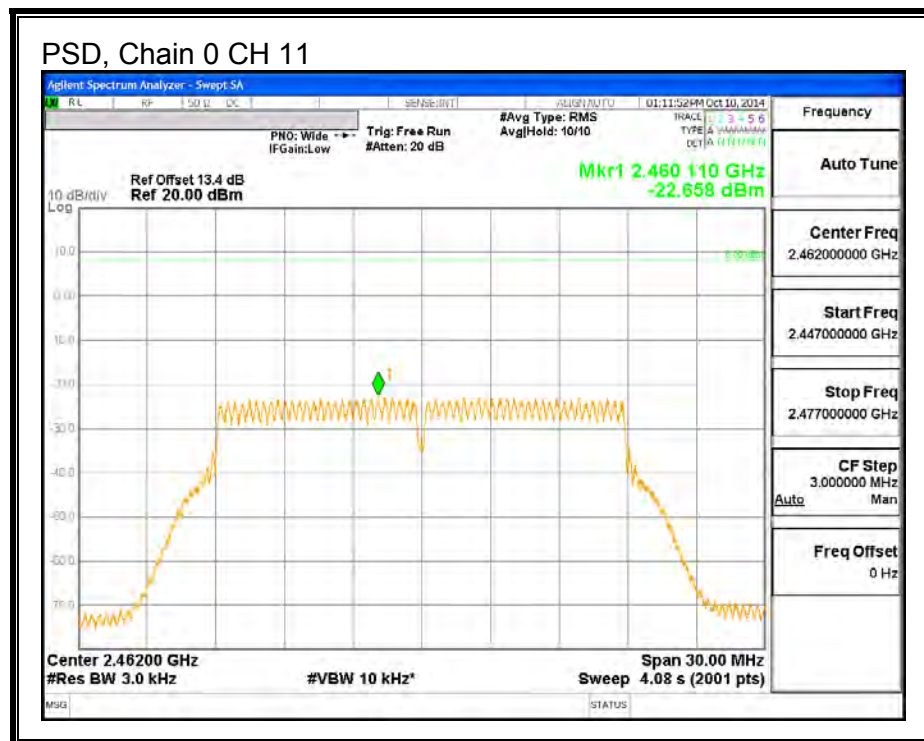
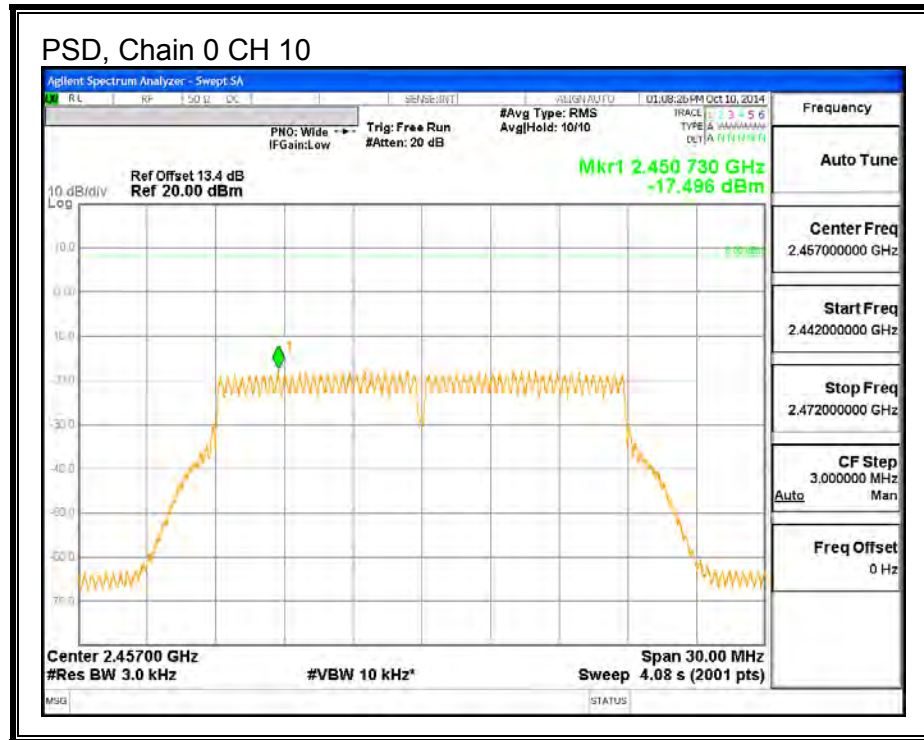
PSD Results

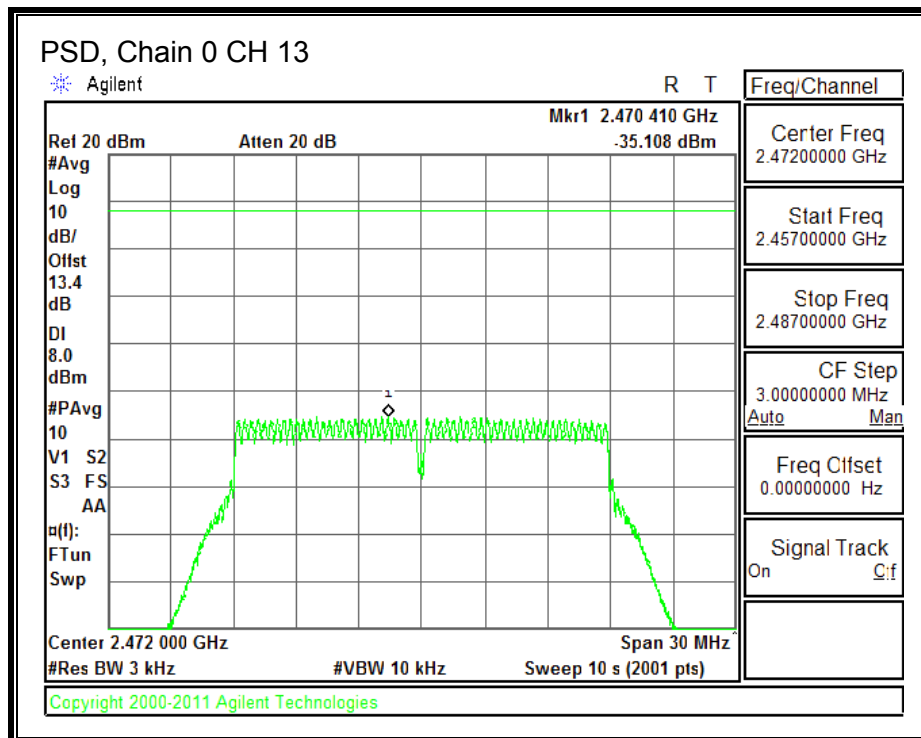
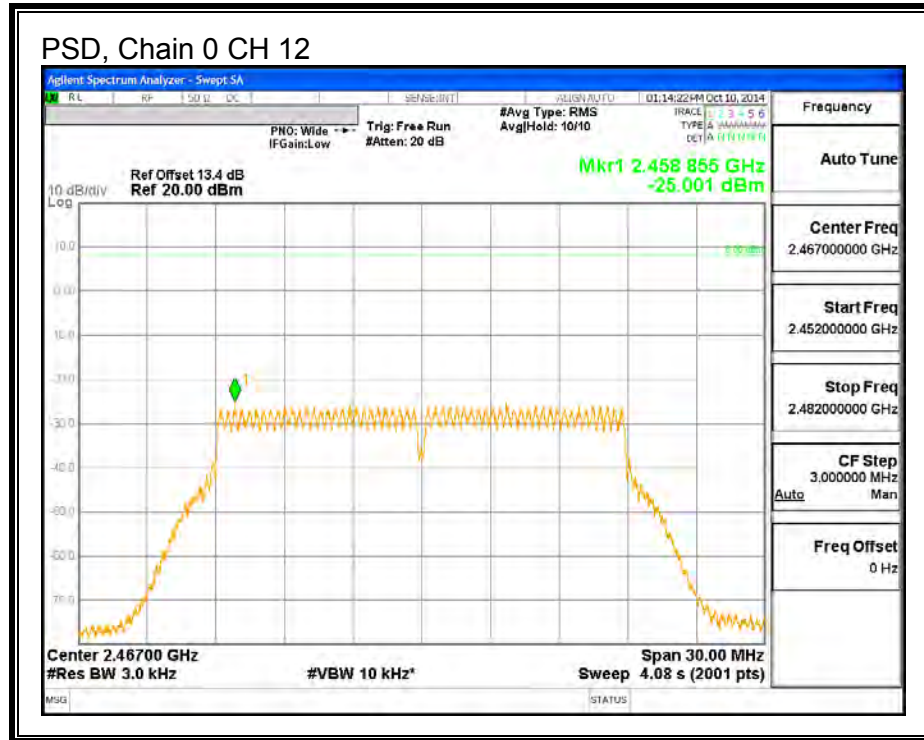
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
1	2412	-21.519	-21.497	-18.50	8.0	-26.5
2	2417	-18.158	-18.037	-15.09	8.0	-23.1
3	2422	-16.709	-15.757	-13.20	8.0	-21.2
6	2437	-16.247	-15.787	-13.00	8.0	-21.0
10	2457	-17.496	-17.835	-14.65	8.0	-22.7
11	2462	-22.658	-22.482	-19.56	8.0	-27.6
12	2467	-25.001	-25.551	-22.26	8.0	-30.3
13	2472	-35.108	-35.666	-32.37	8.0	-40.4

PSD, Chain 0

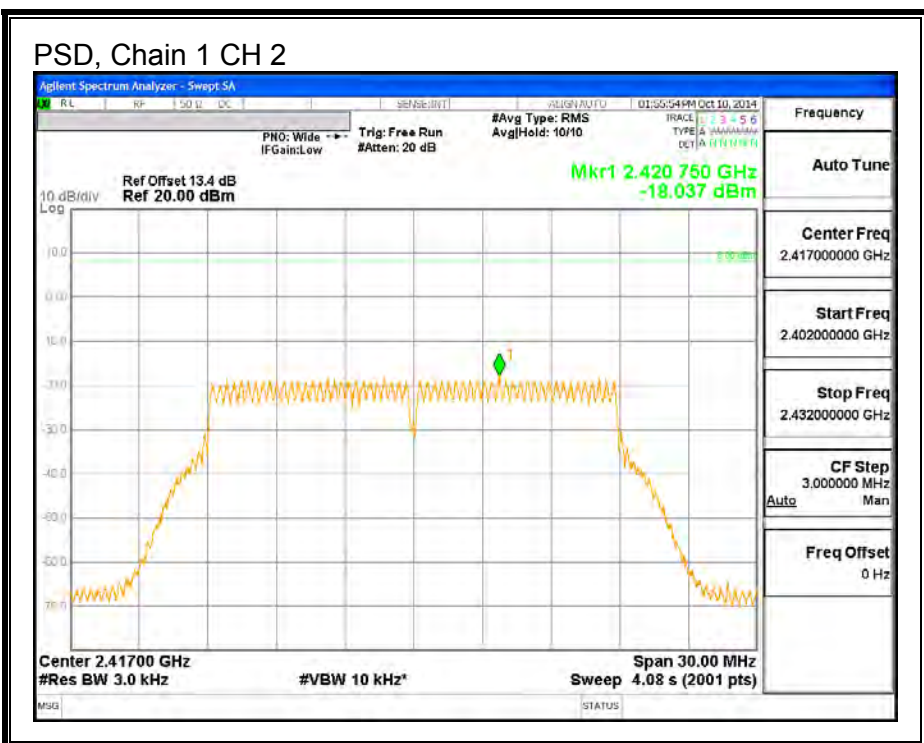
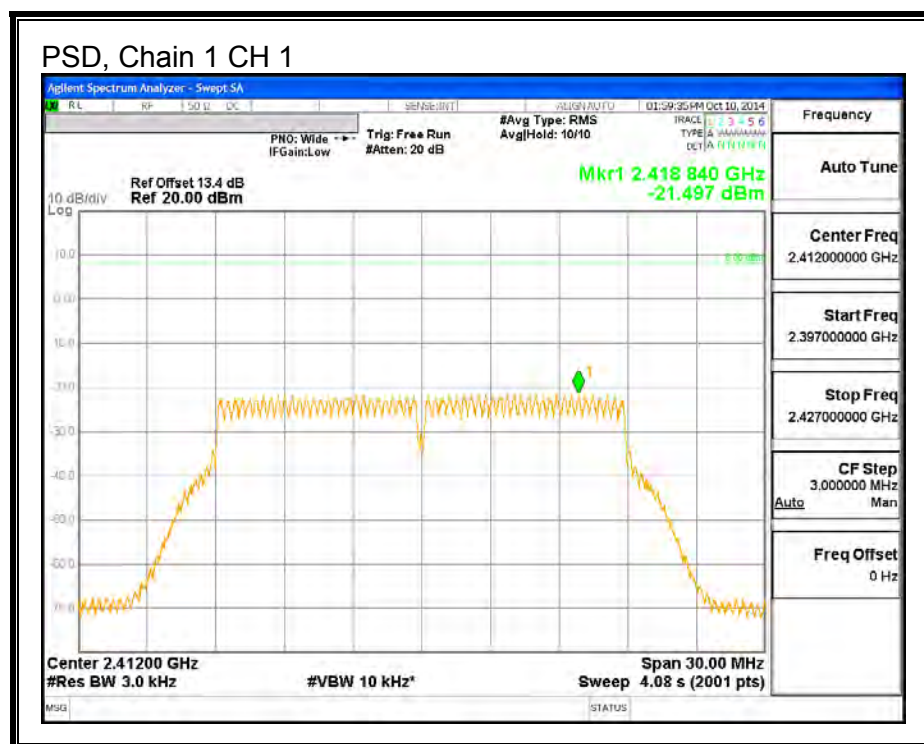


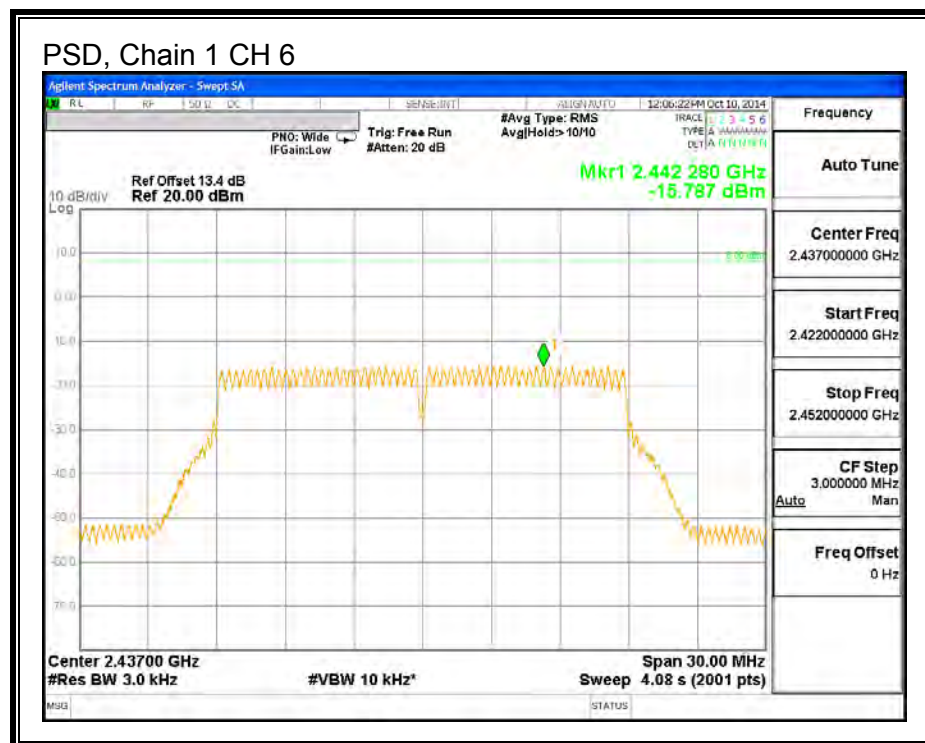
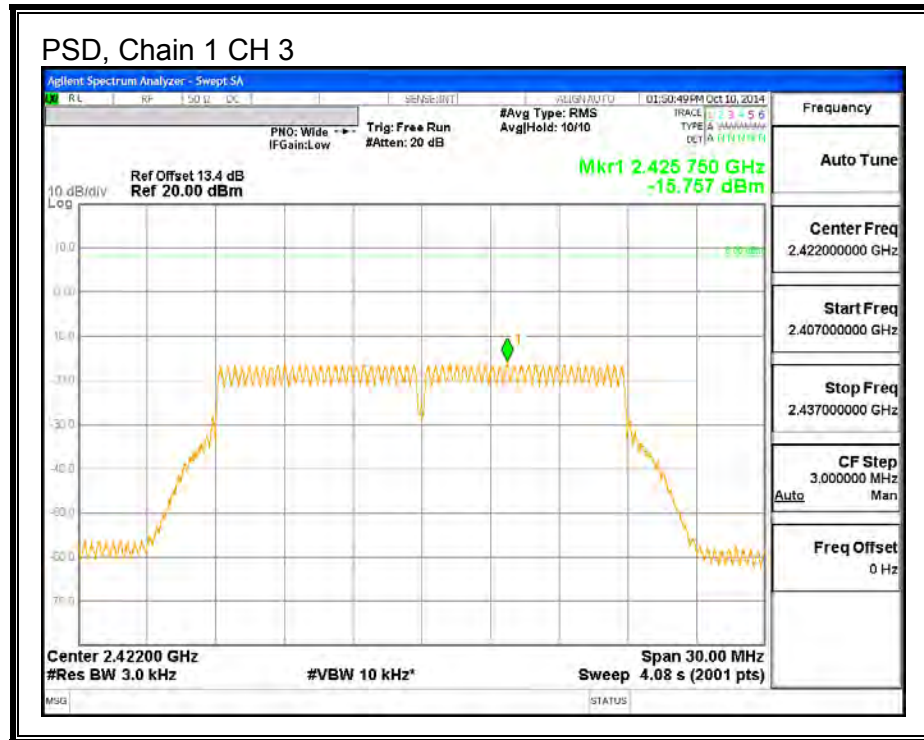


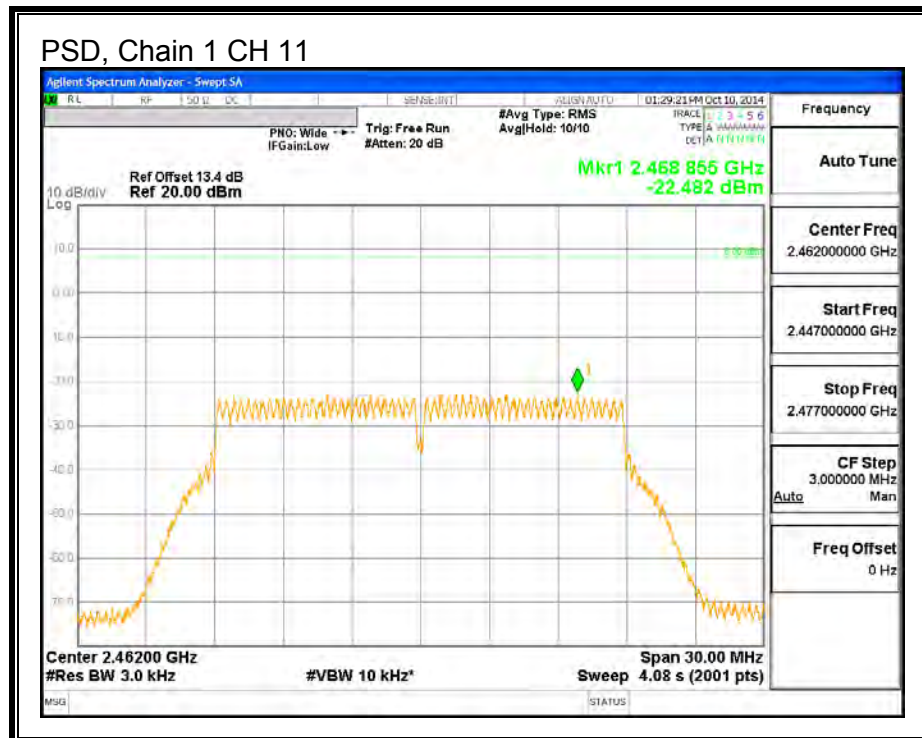
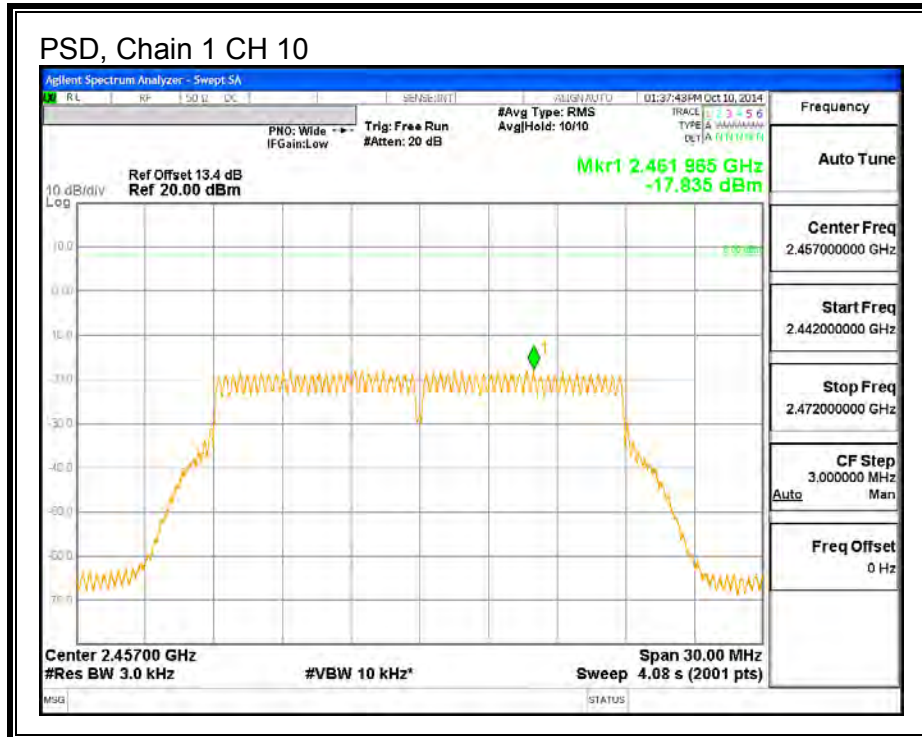


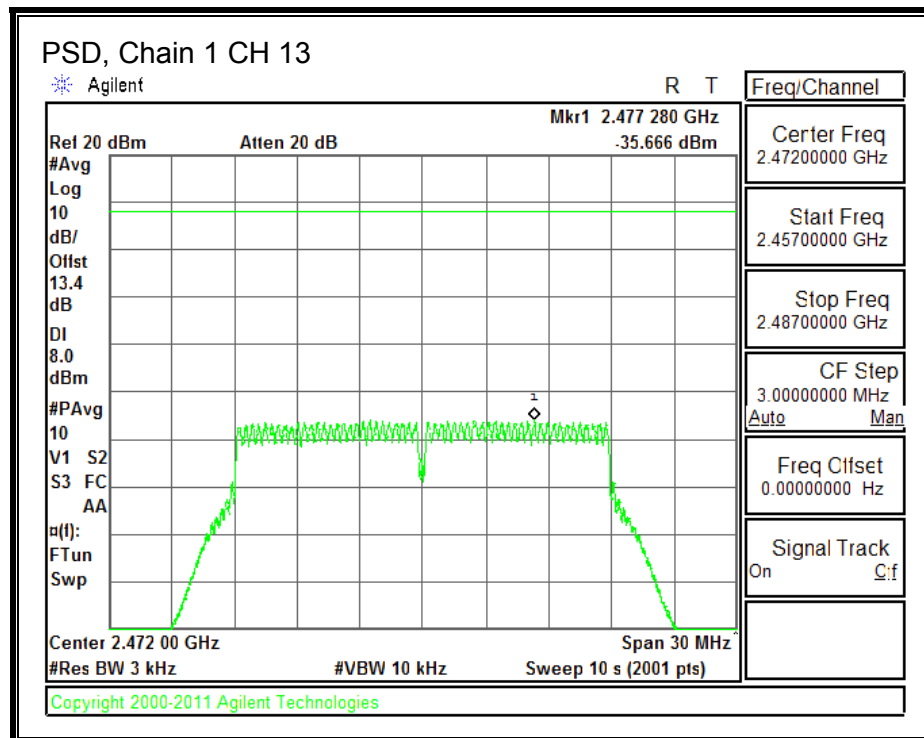
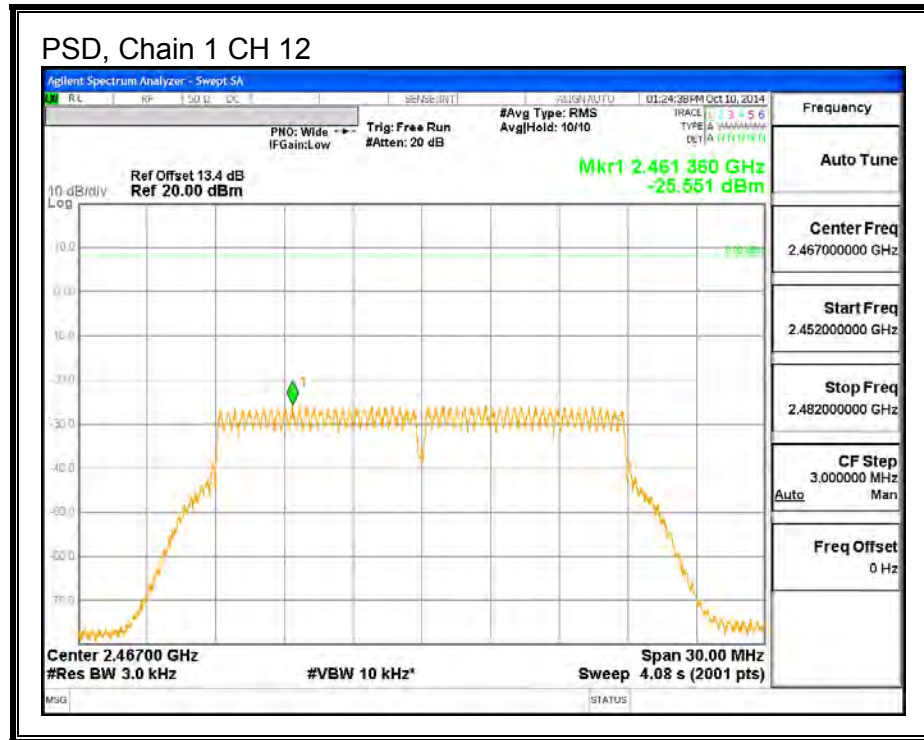


PSD, Chain 1









9.5.5. OUT-OF-BAND EMISSIONS

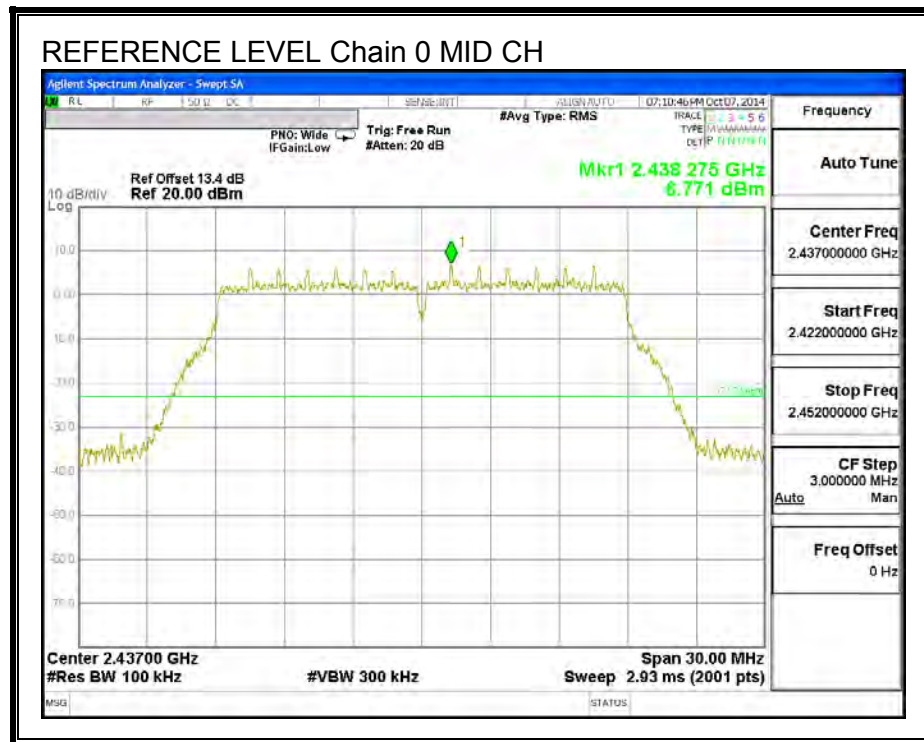
LIMITS

FCC §15.247 (d)

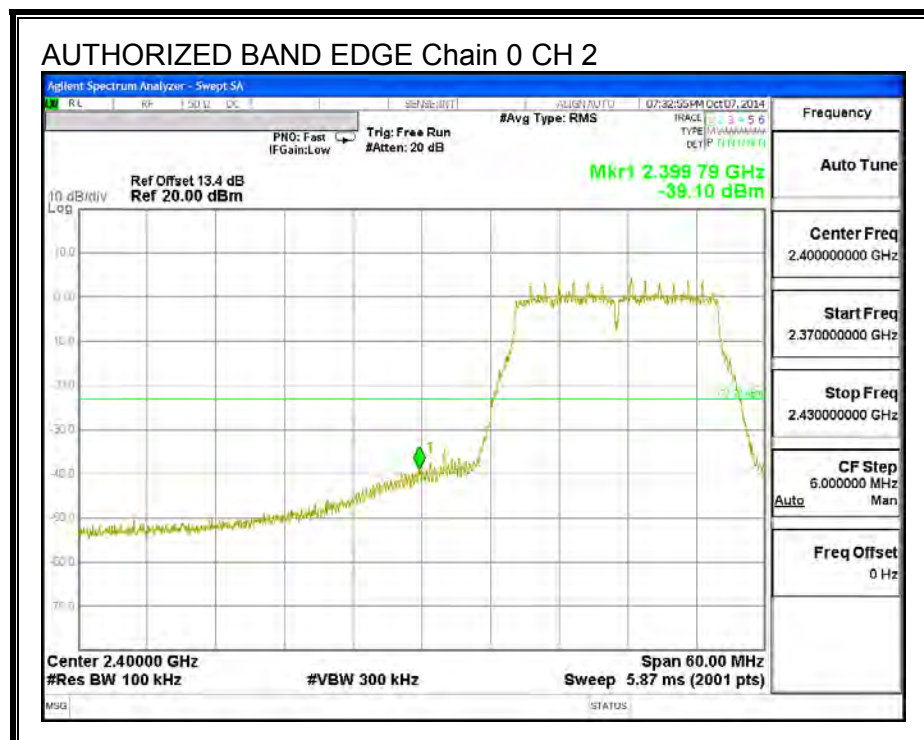
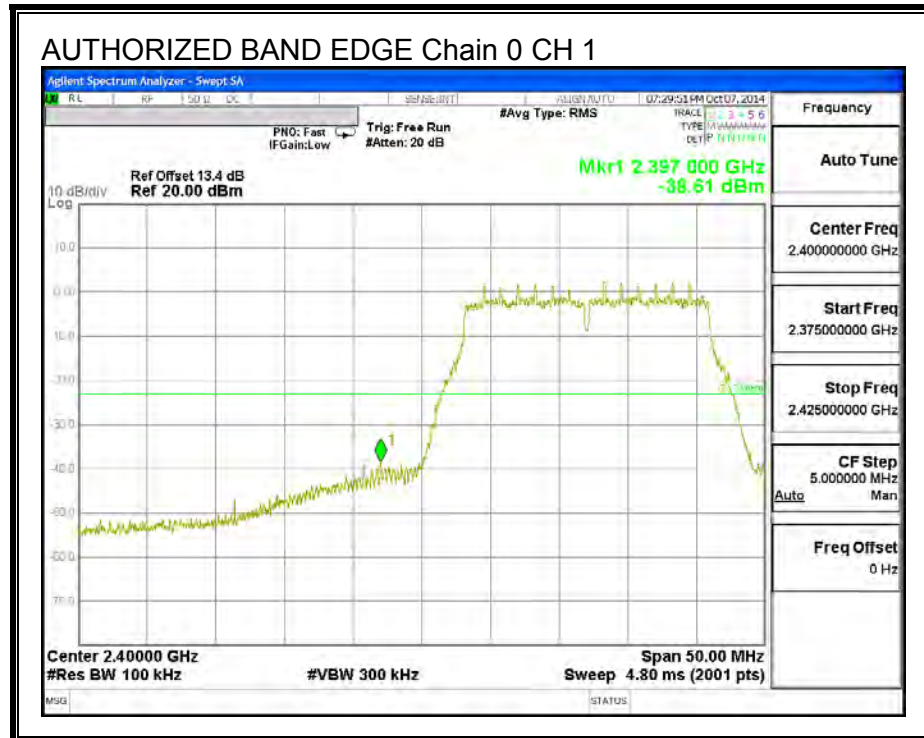
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

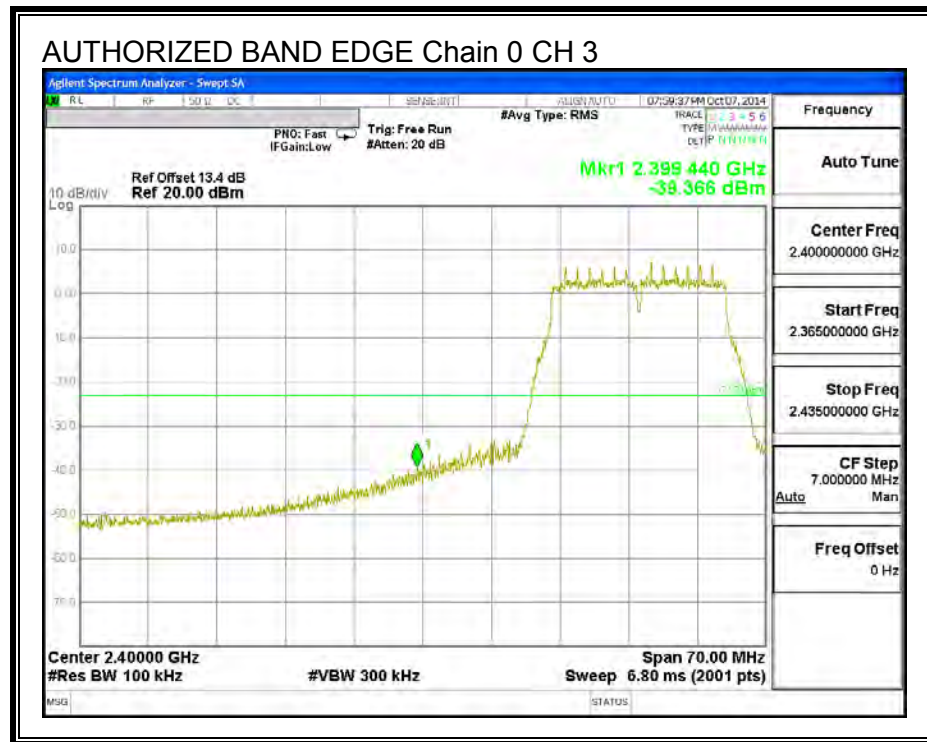
RESULTS

IN-BAND REFERENCE LEVEL, Chain 0

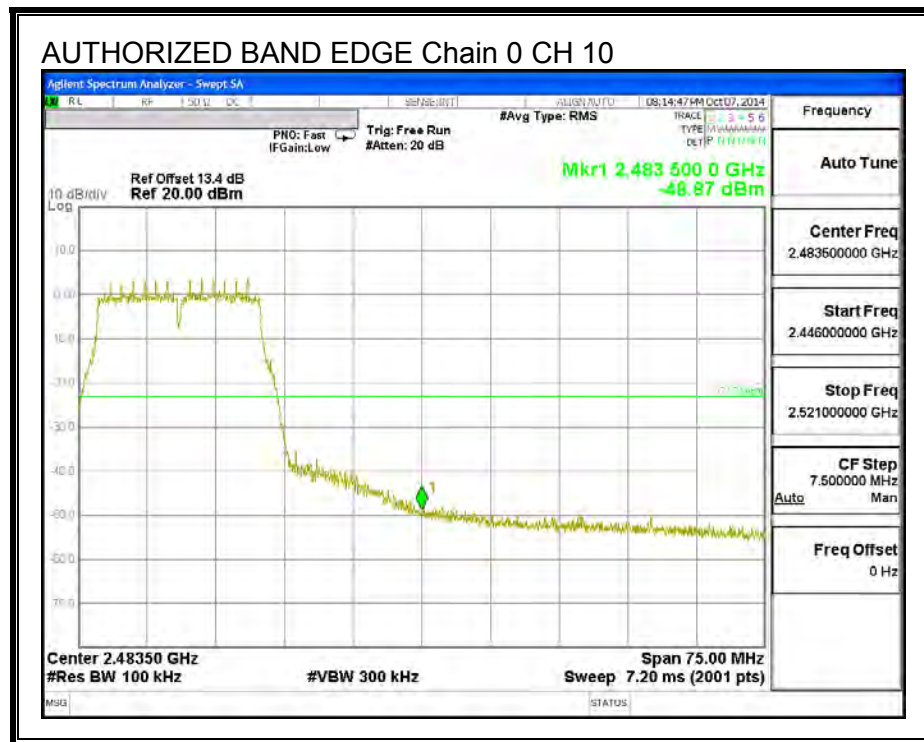


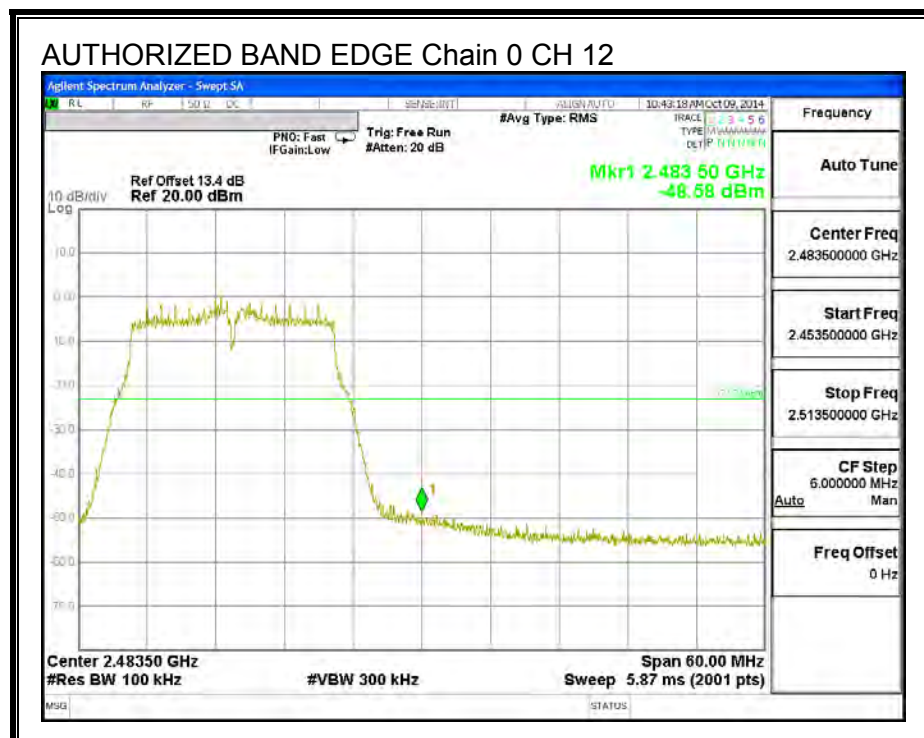
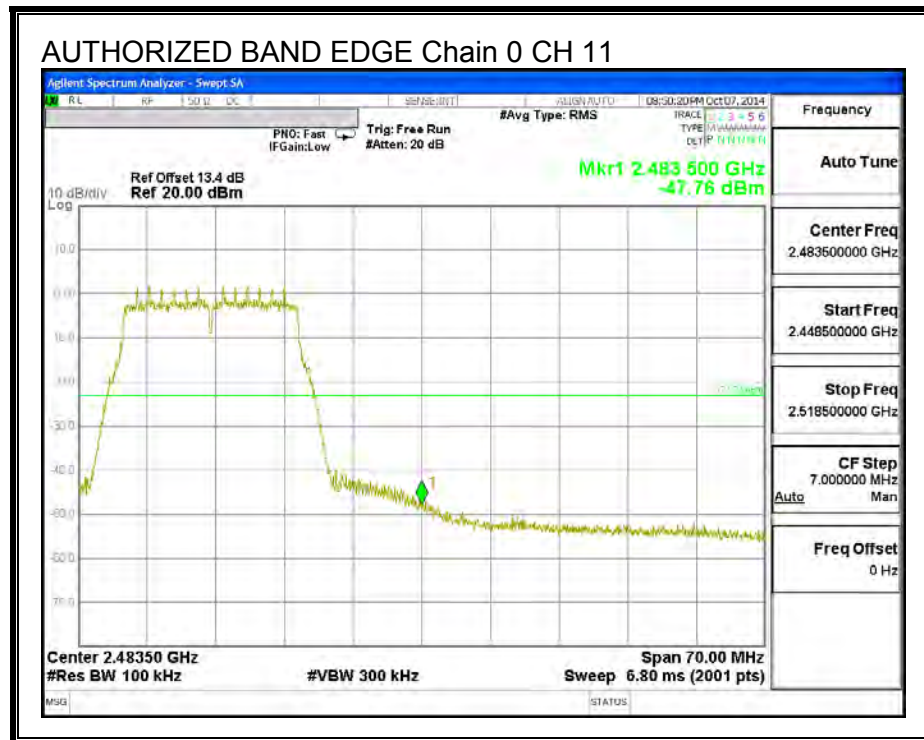
LOW CHANNEL BANDEDGE, Chain 0

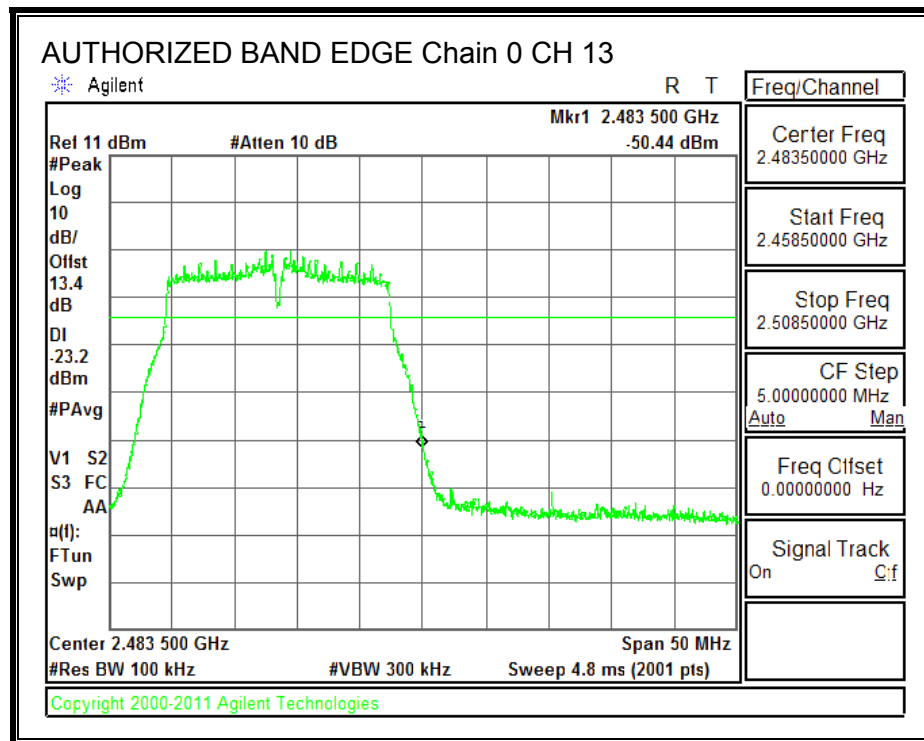




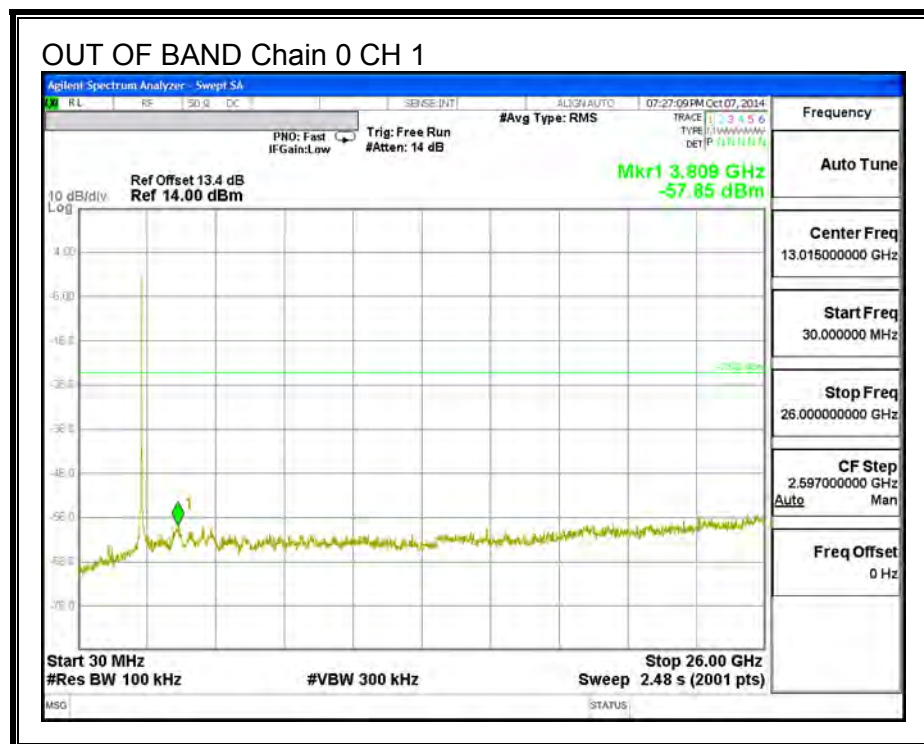
HIGH CHANNEL BANDEDGE, Chain 0

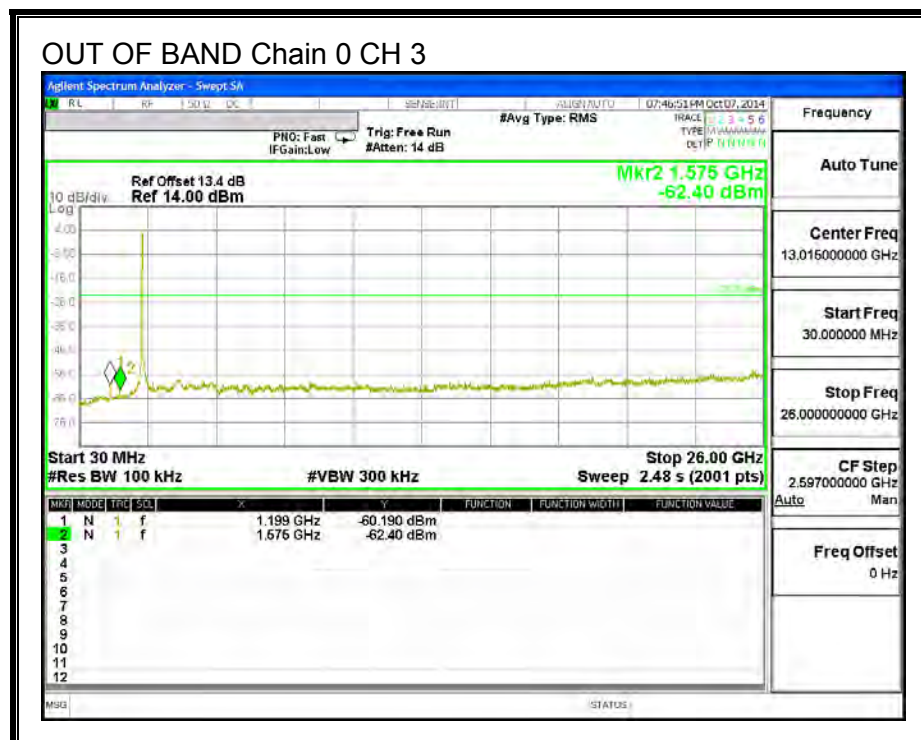
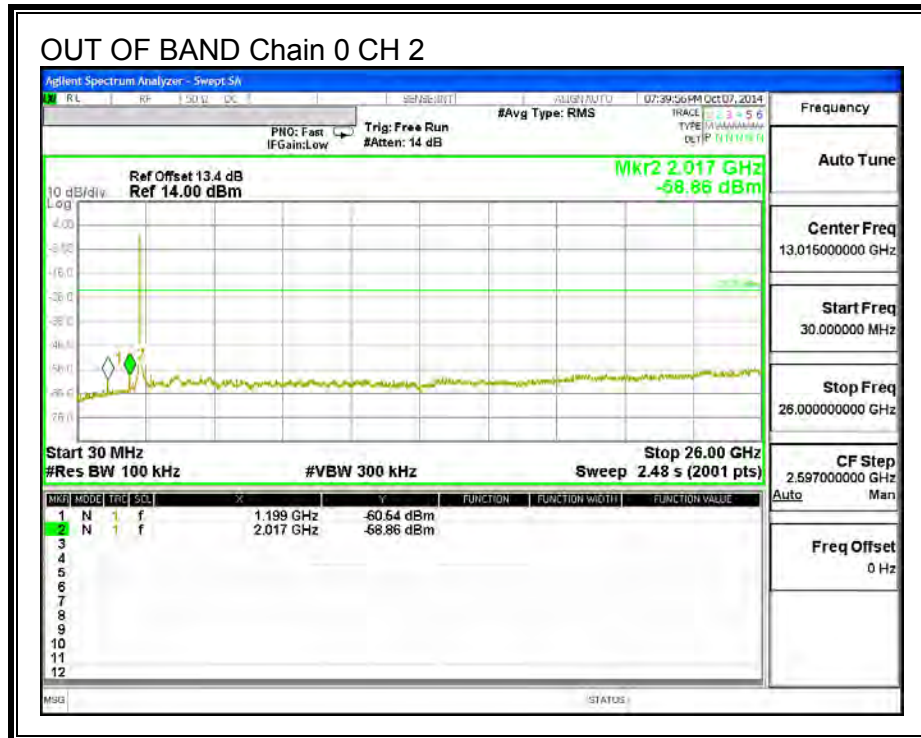


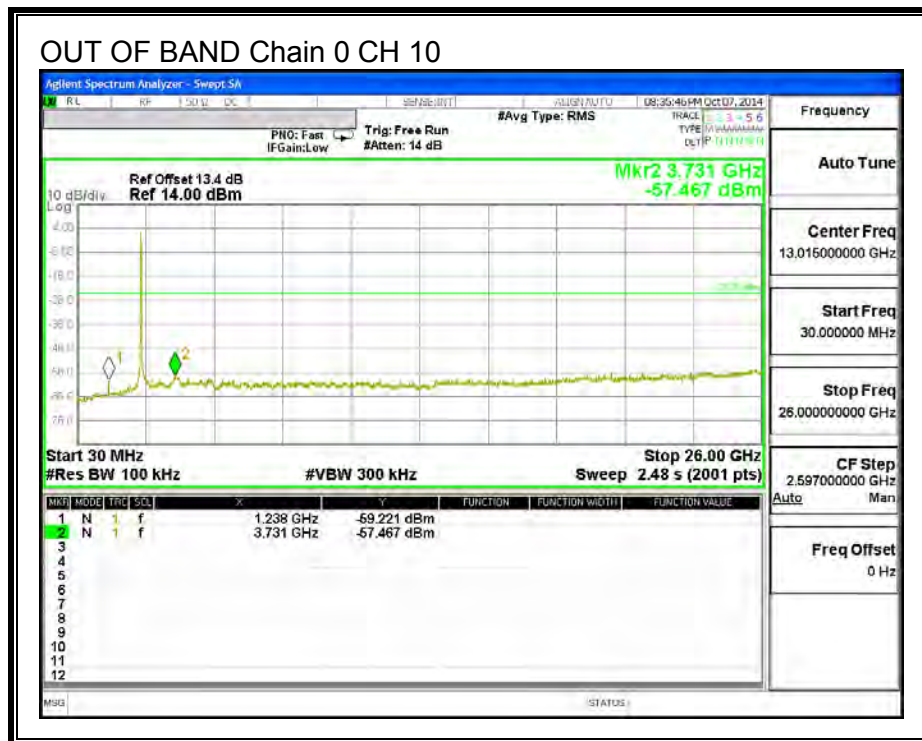
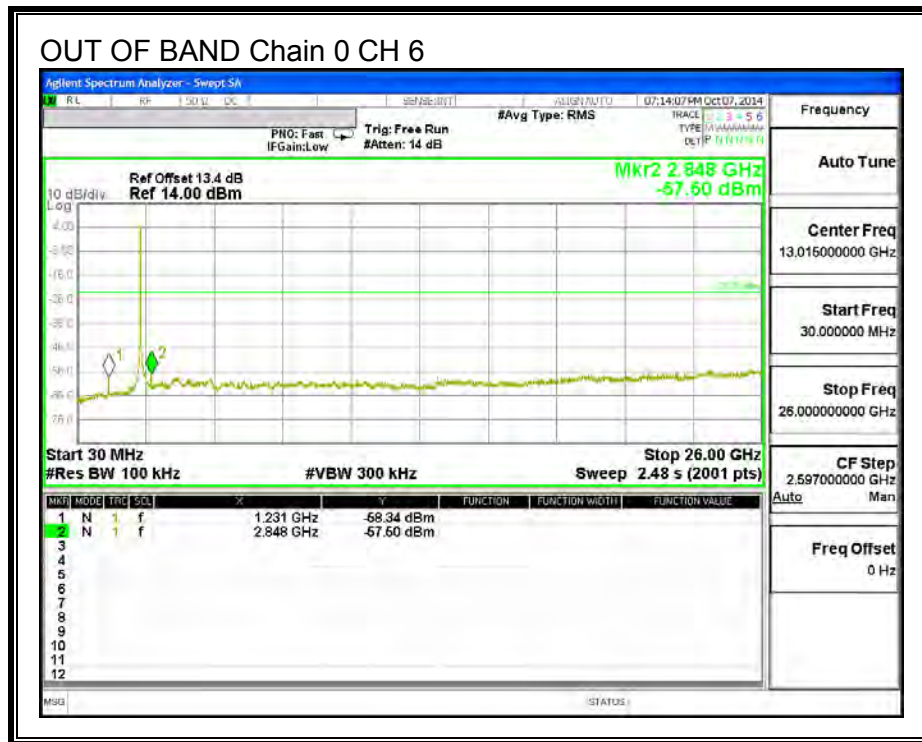


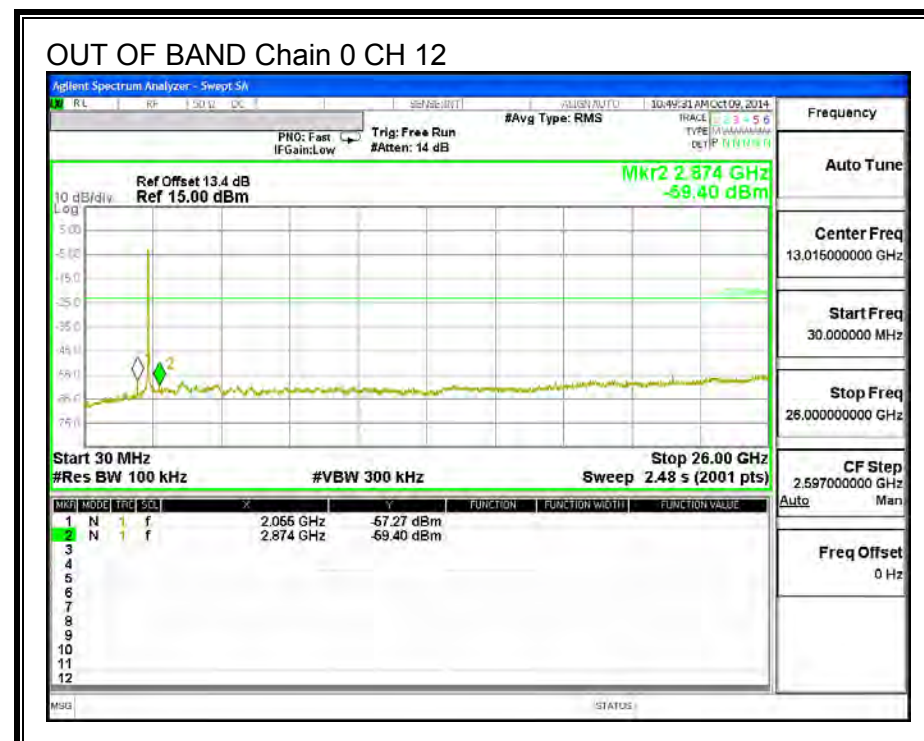
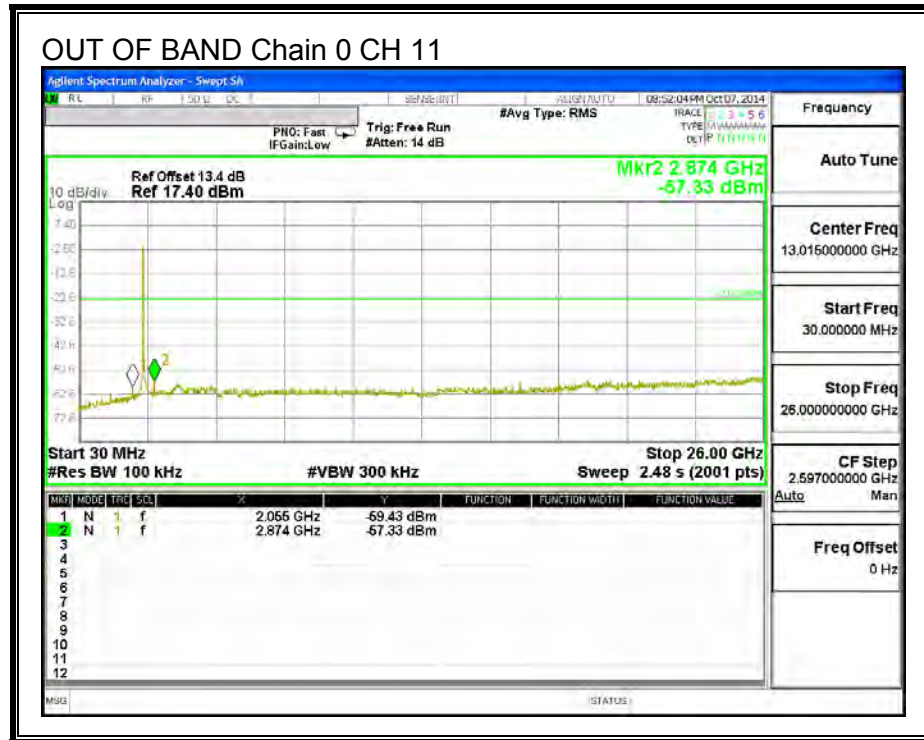


OUT-OF-BAND EMISSIONS, Chain 0



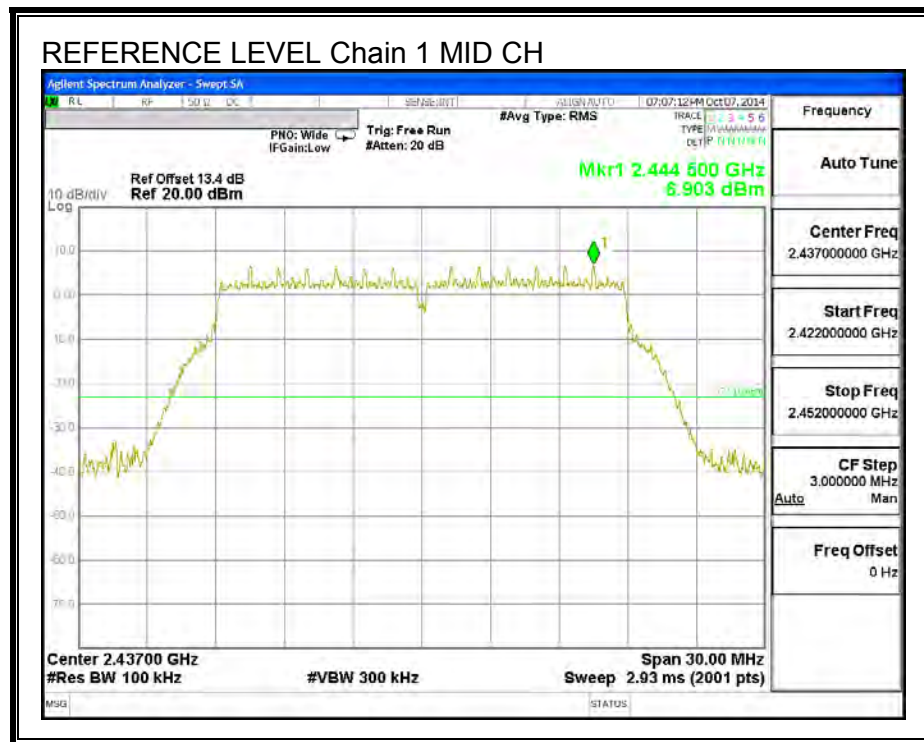




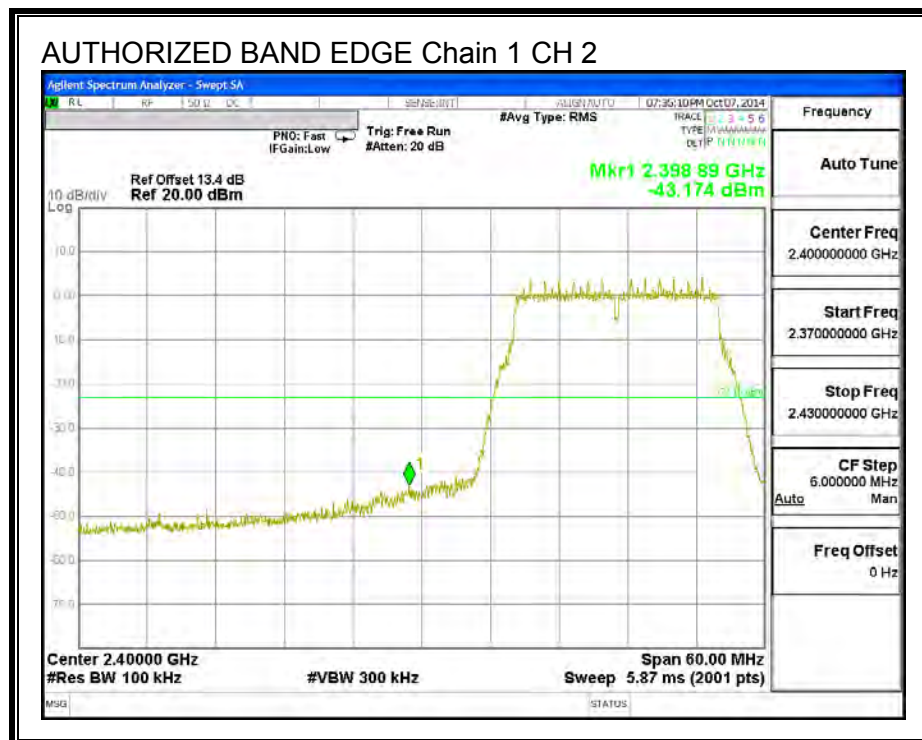
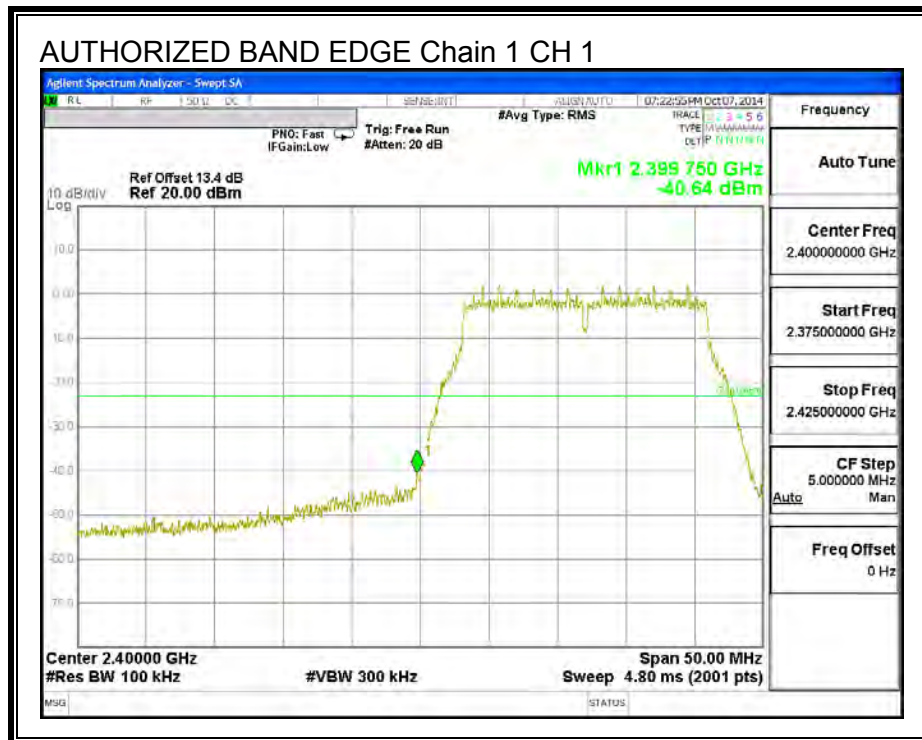


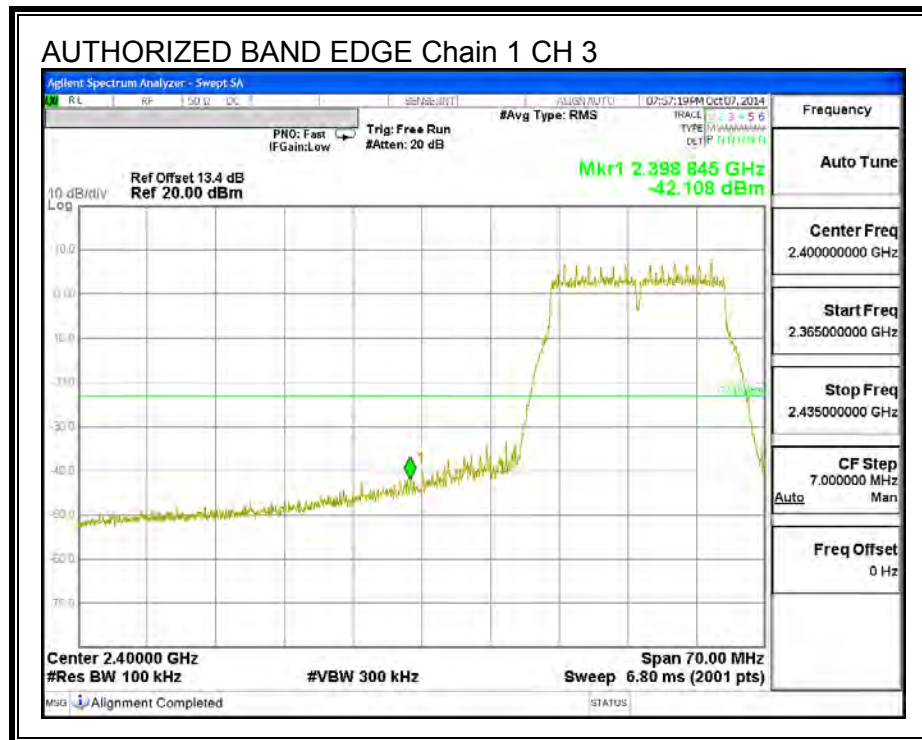


IN-BAND REFERENCE LEVEL, Chain 1

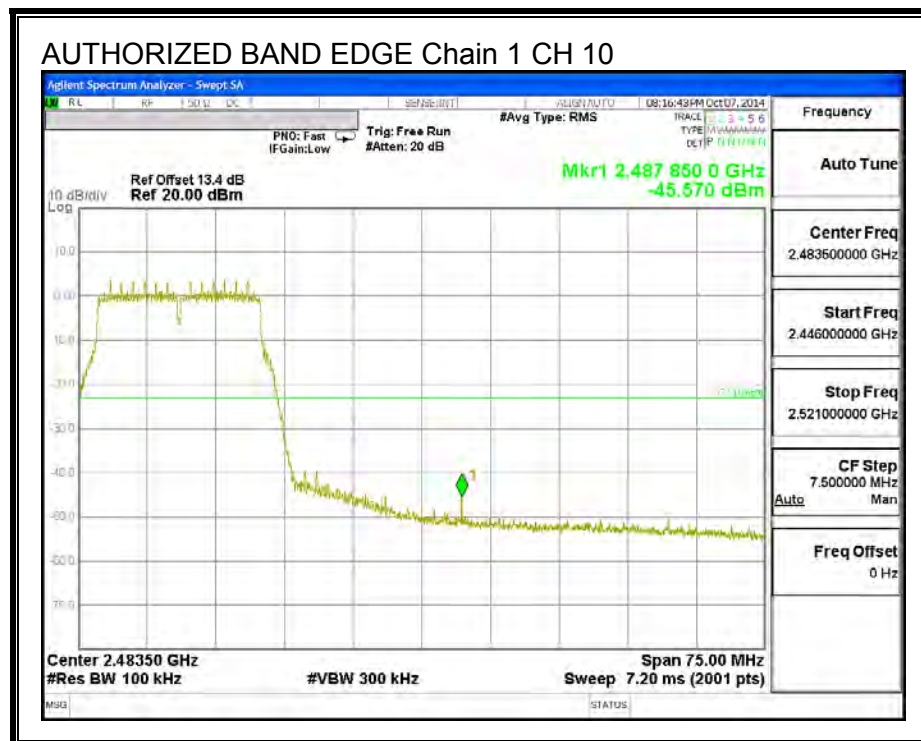


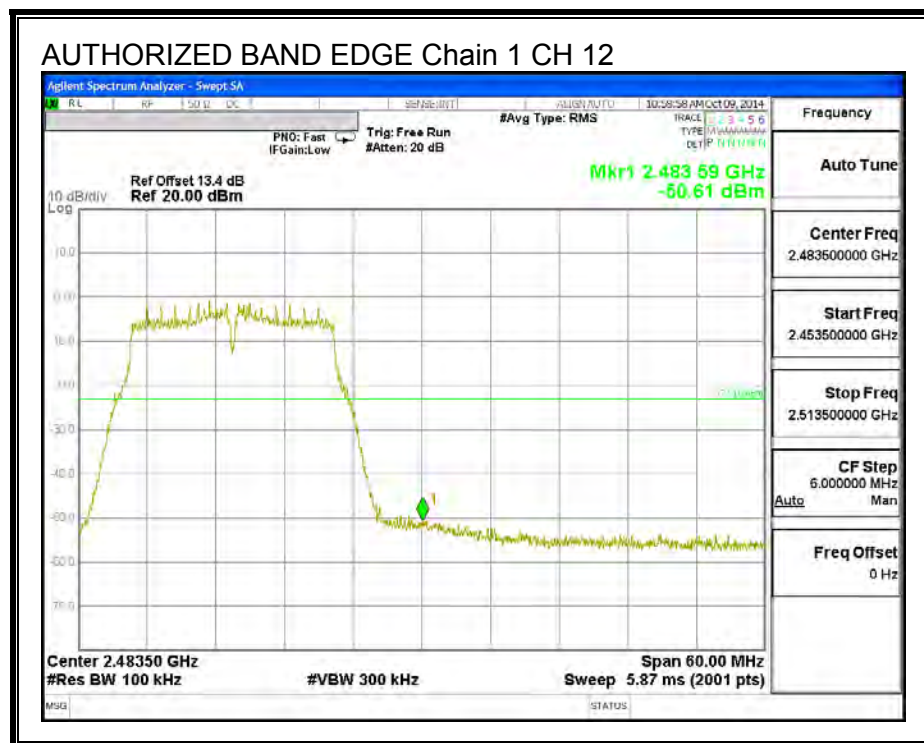
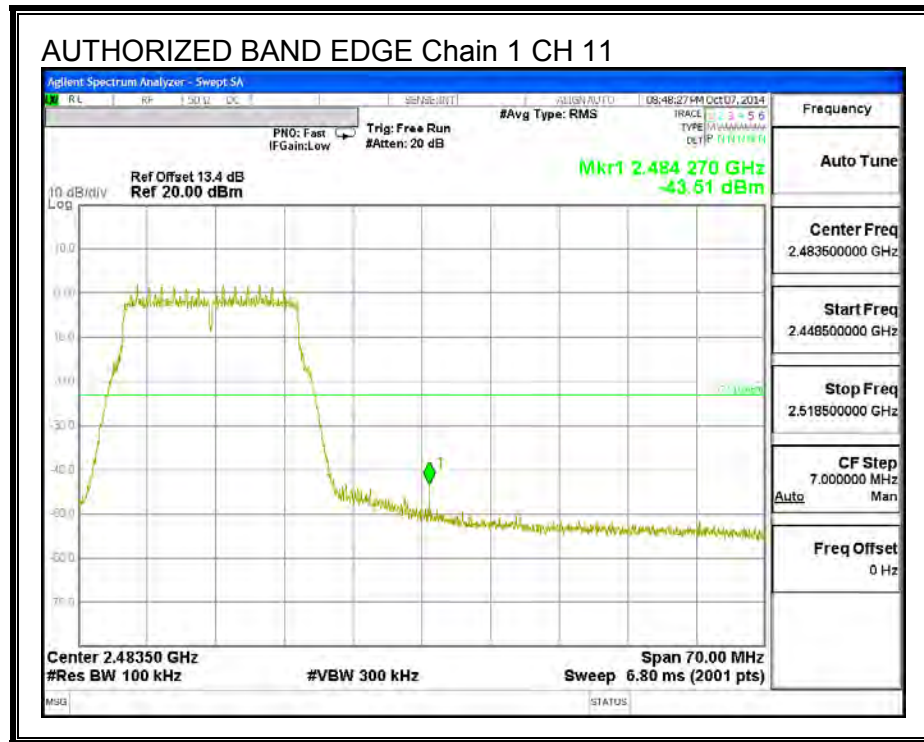
LOW CHANNEL BANDEDGE, Chain 1

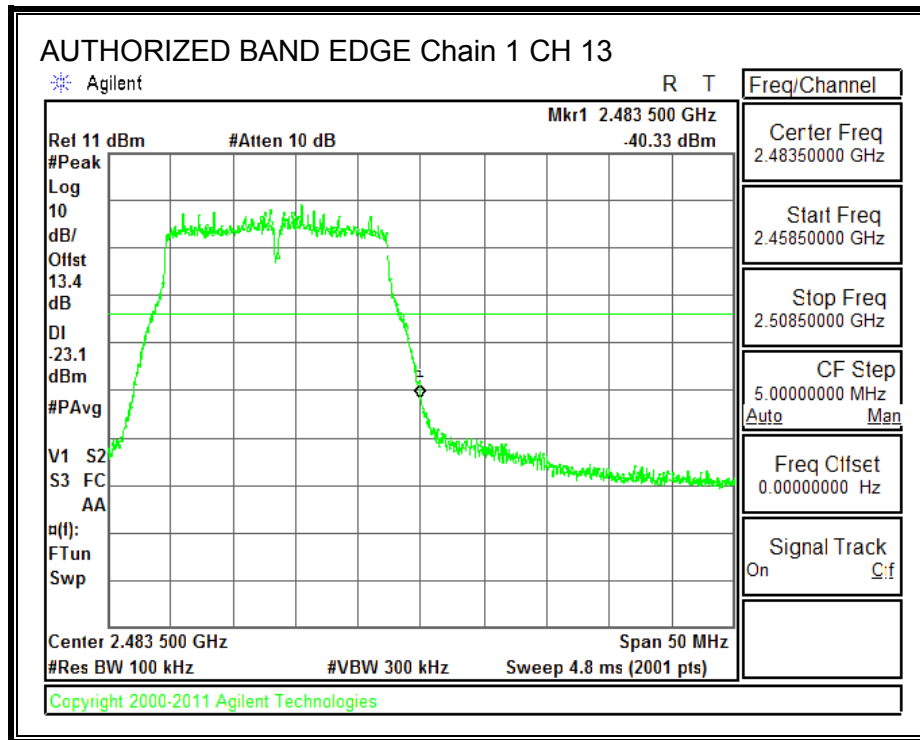




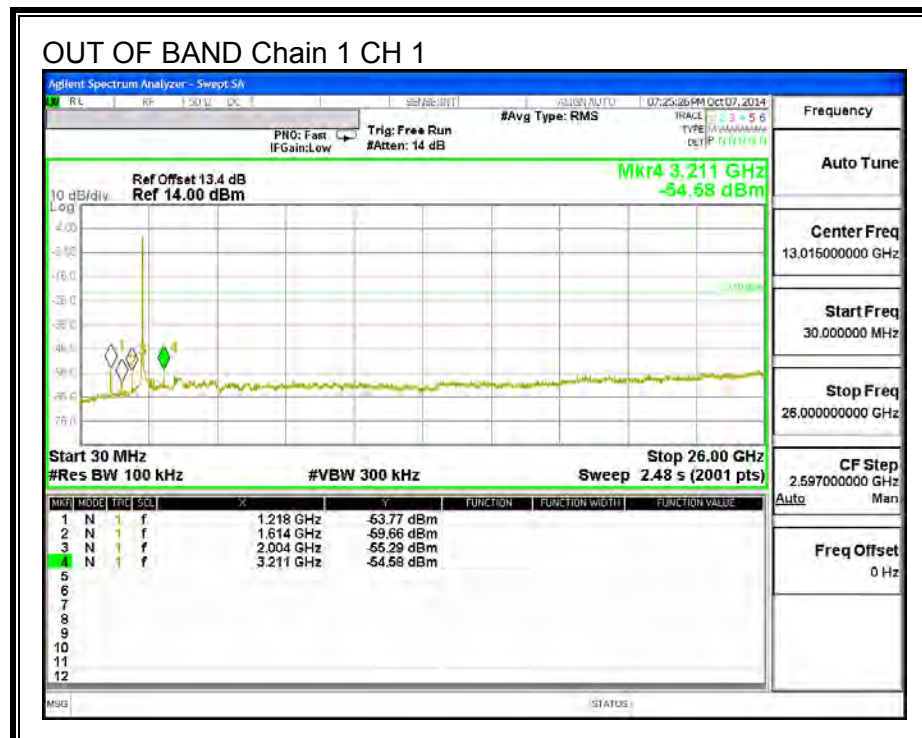
HIGH CHANNEL BANDEDGE, Chain 1



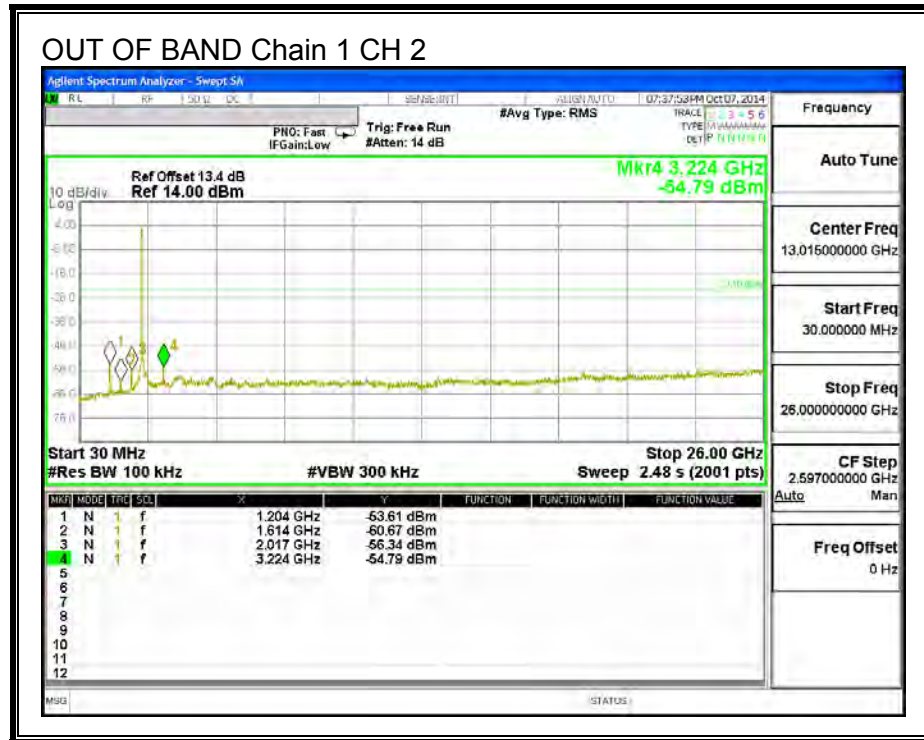




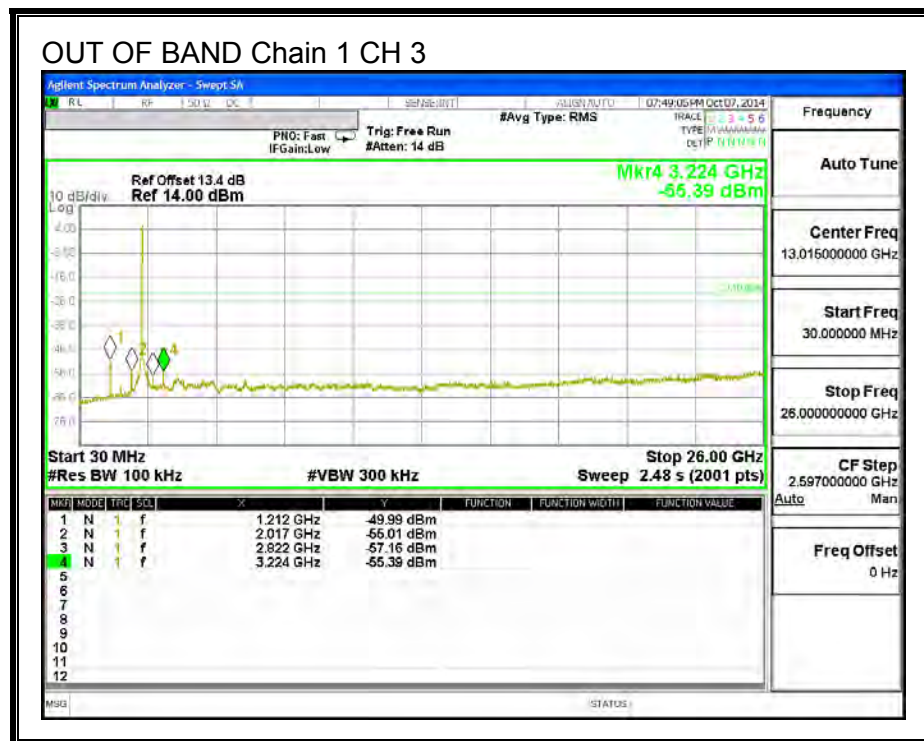
OUT-OF-BAND EMISSIONS, Chain 1



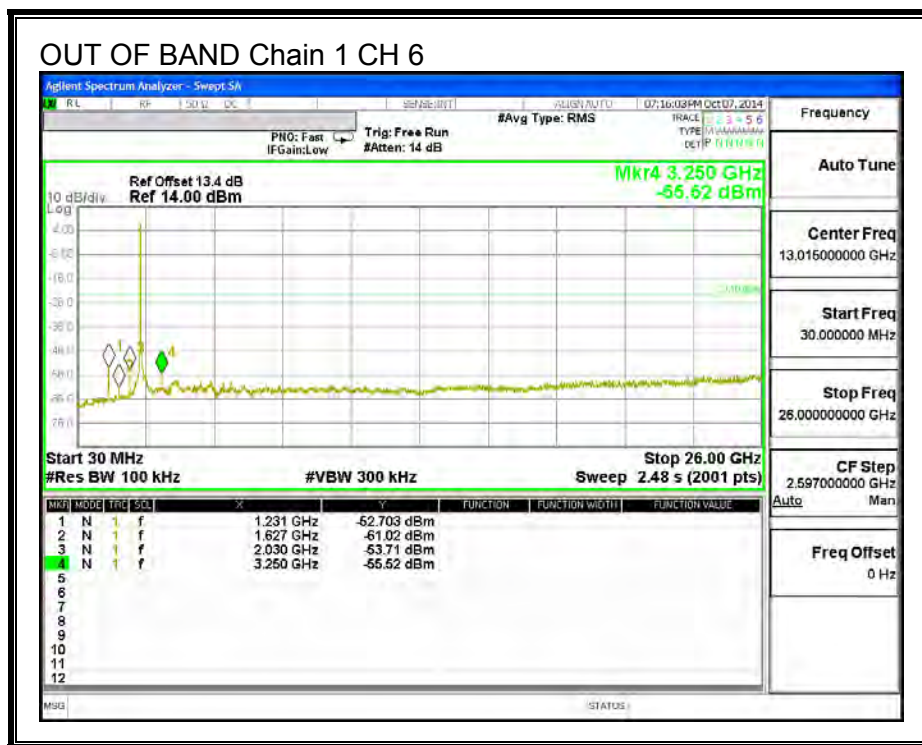
OUT OF BAND Chain 1 CH 2



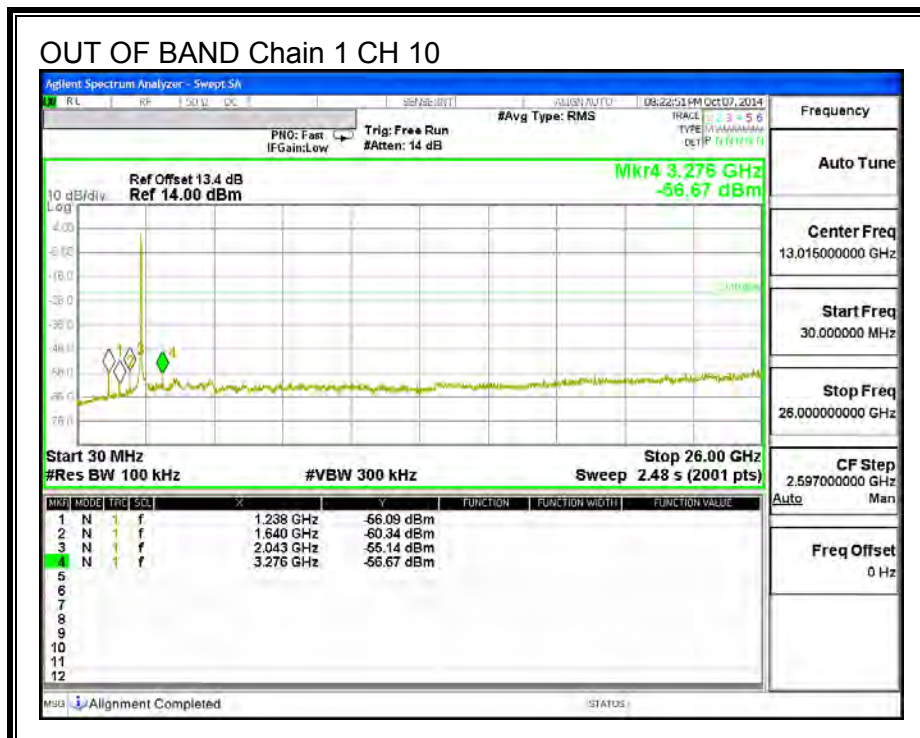
OUT OF BAND Chain 1 CH 3

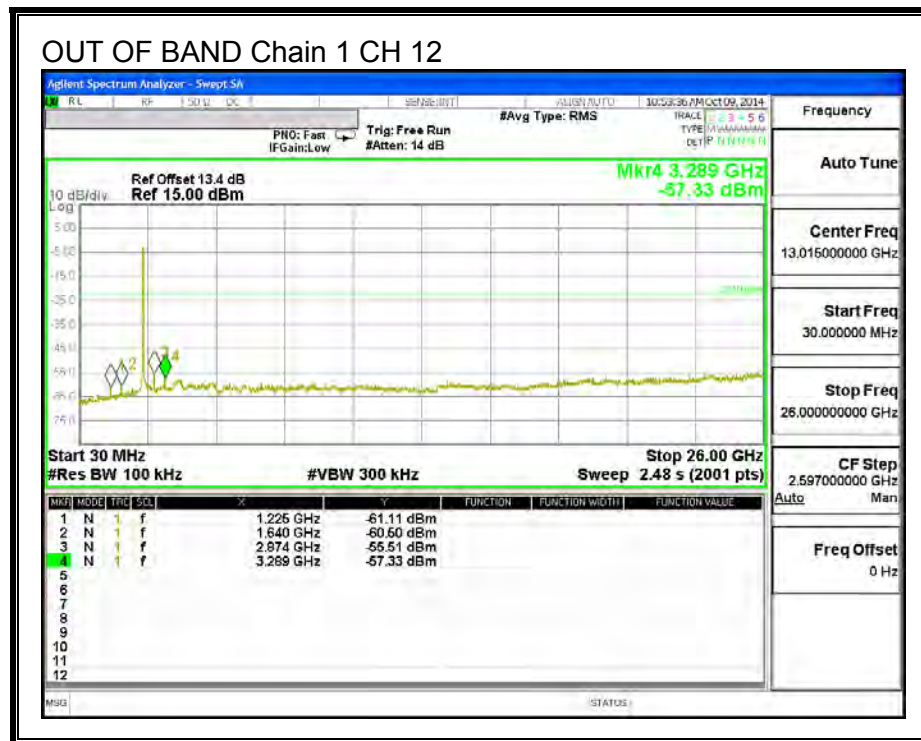
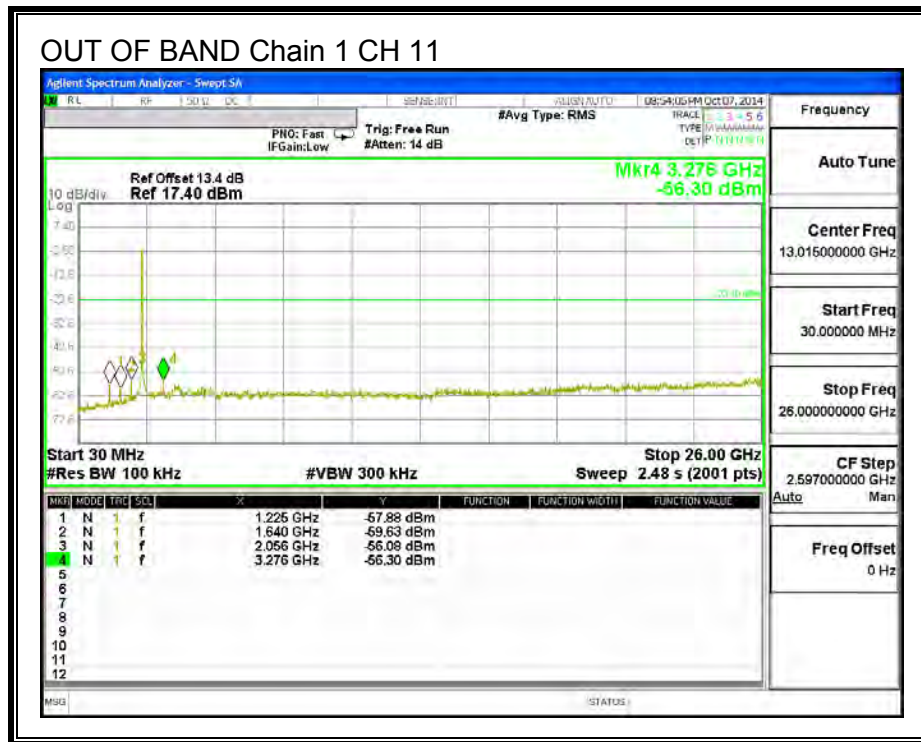


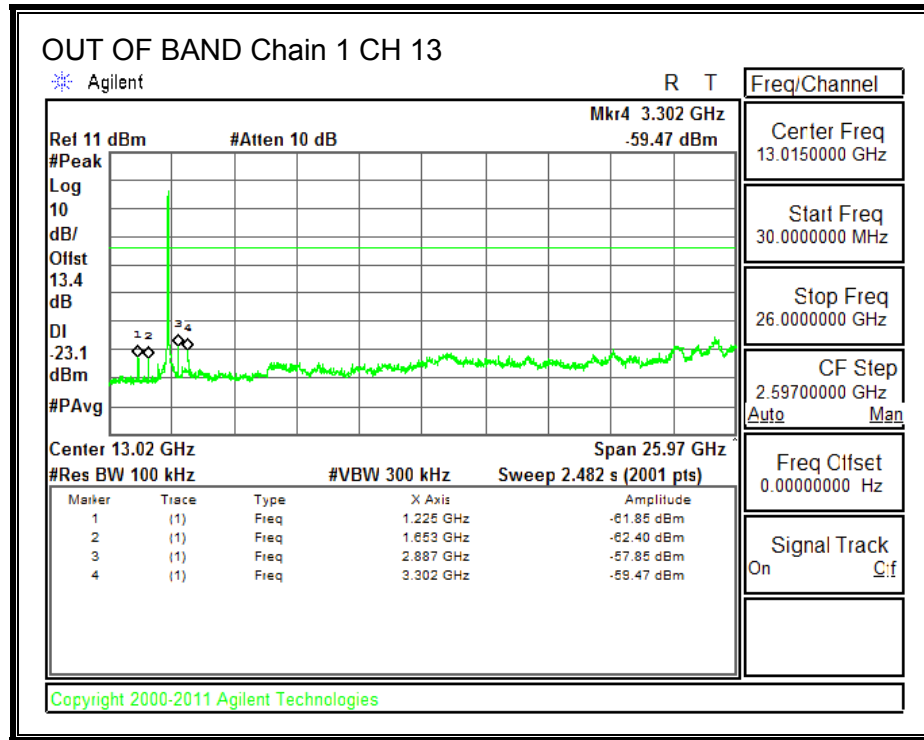
OUT OF BAND Chain 1 CH 6



OUT OF BAND Chain 1 CH 10







10. RADIATED TEST RESULTS

10.1. LIMITS

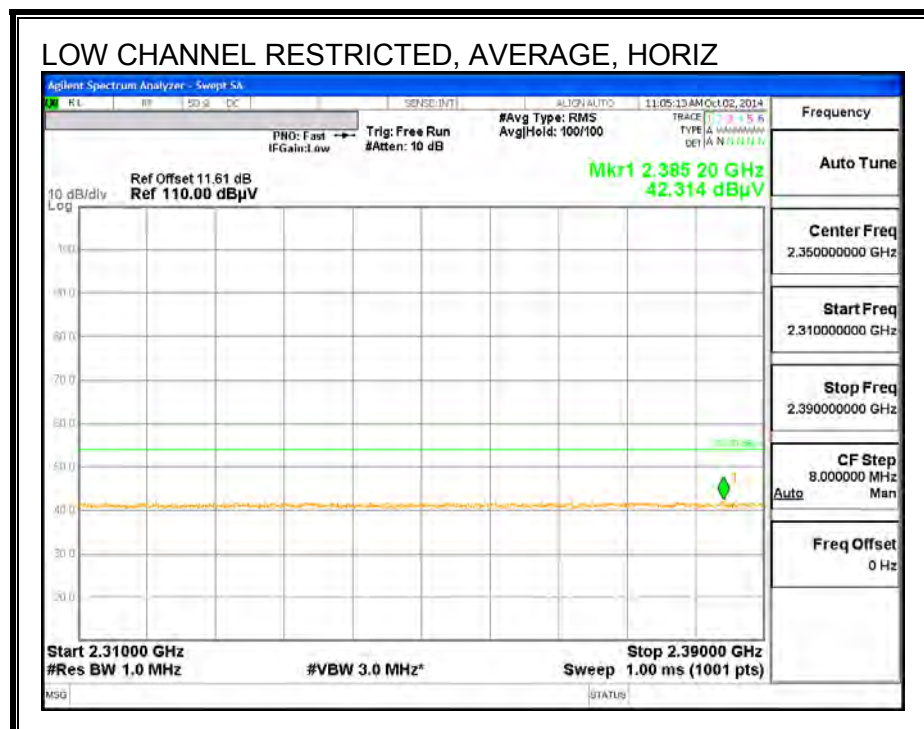
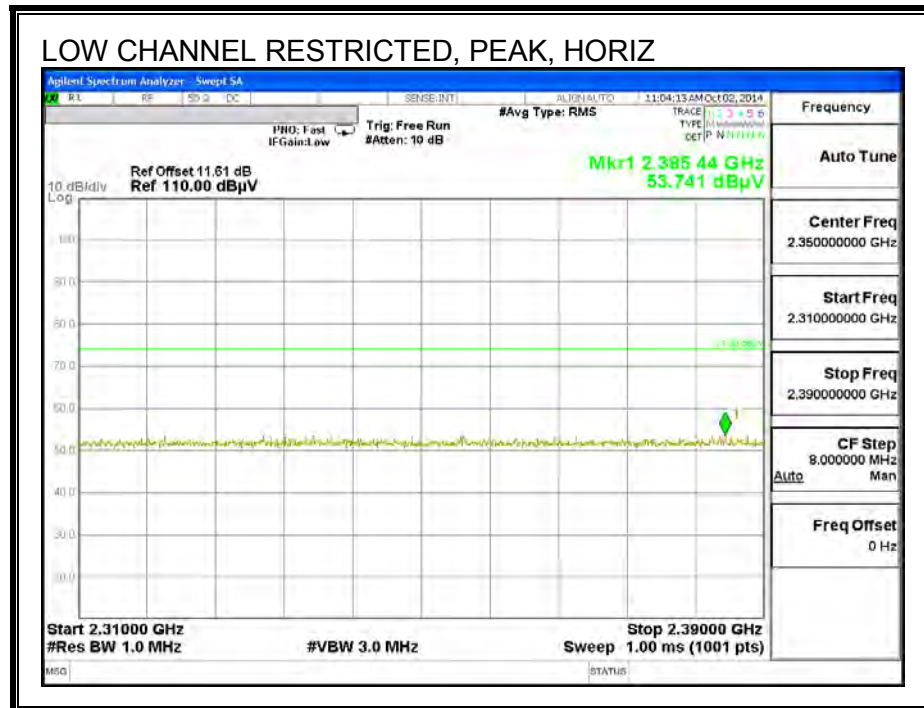
LIMITS

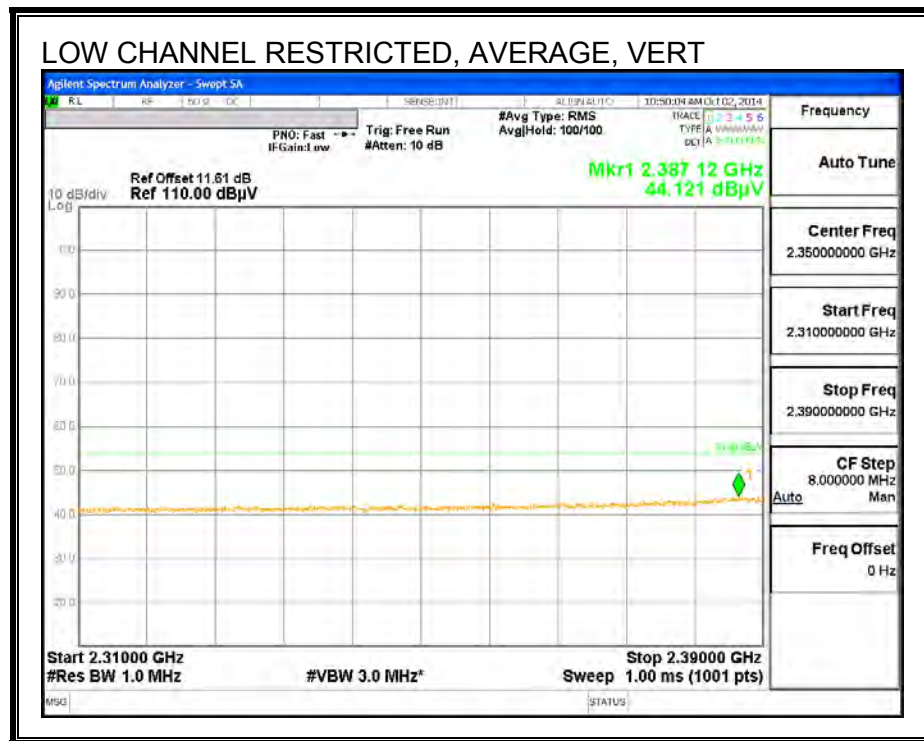
FCC §15.205 and §15.209

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

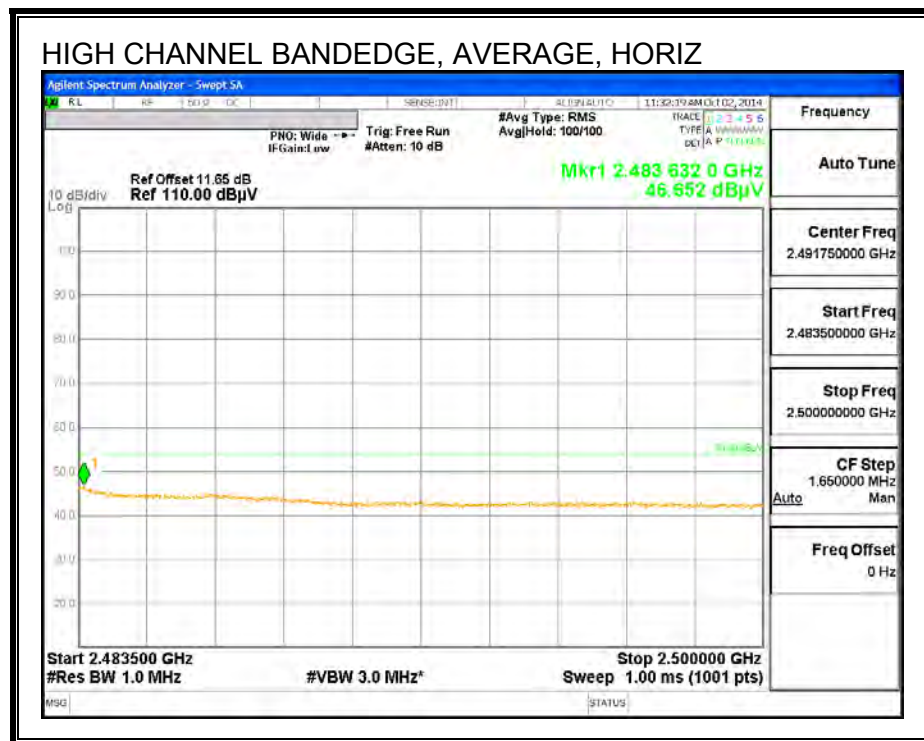
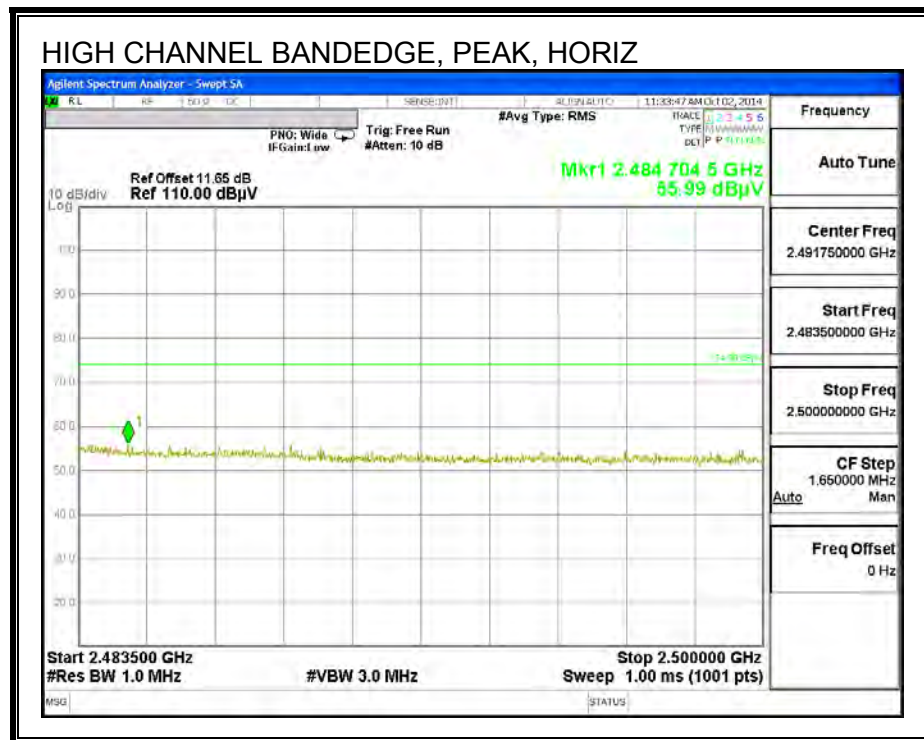
10.2. TX ABOVE 1 GHz 802.11b 1Tx MODE IN THE 2.4 GHz BAND

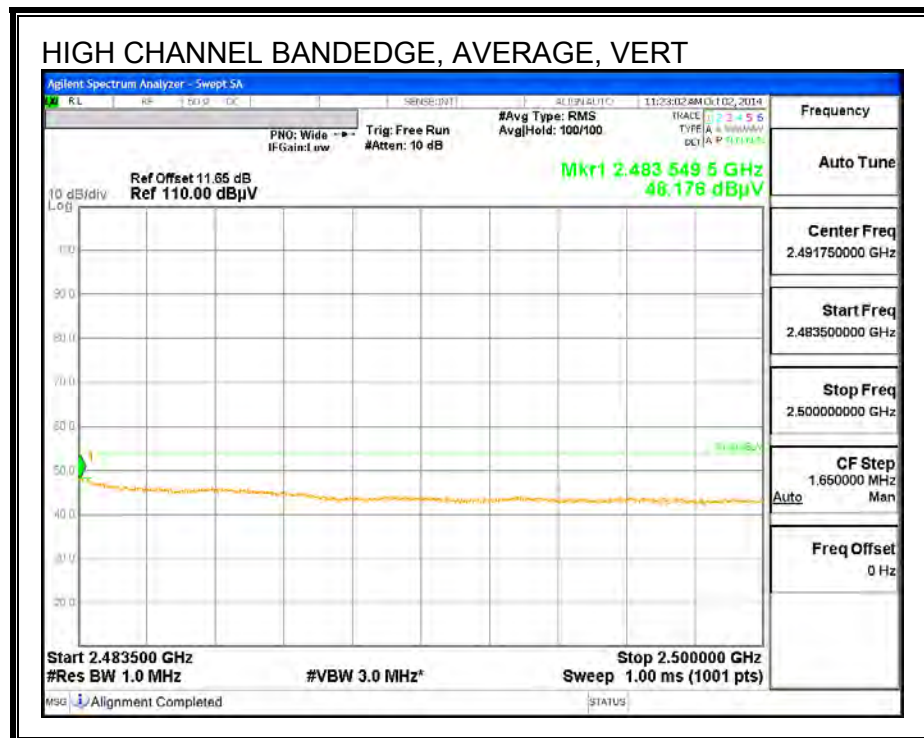
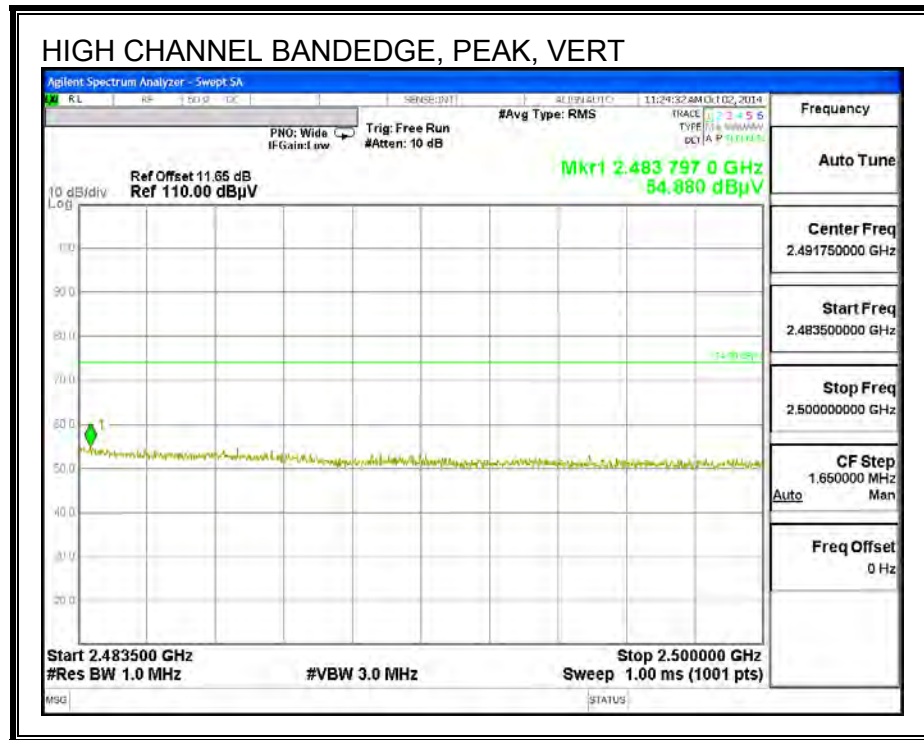
RESTRICTED BANDEDGE (LOW CHANNEL)



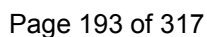


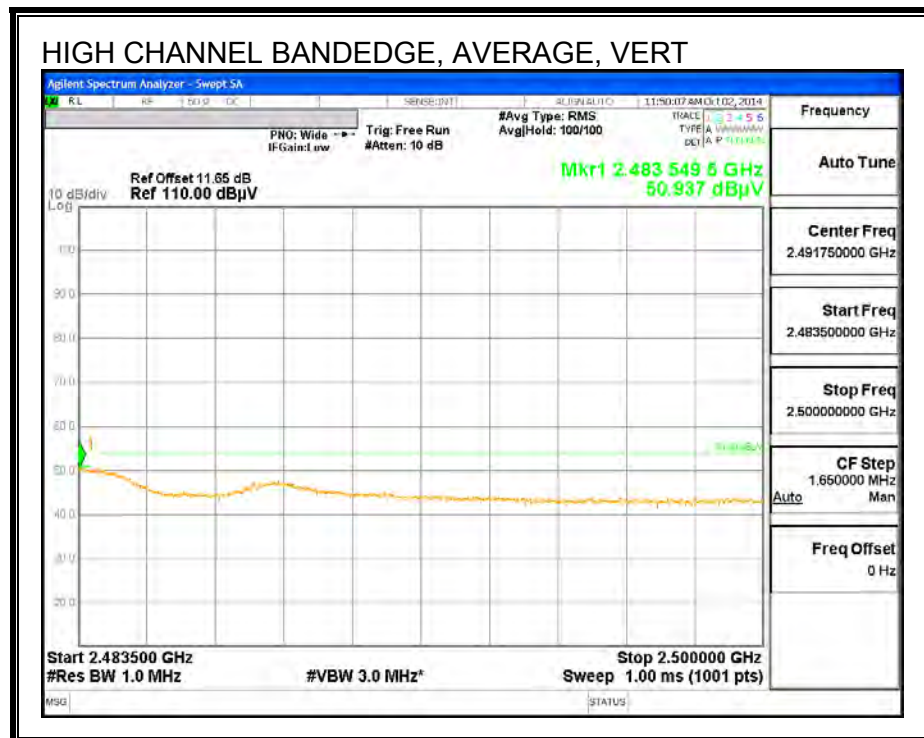
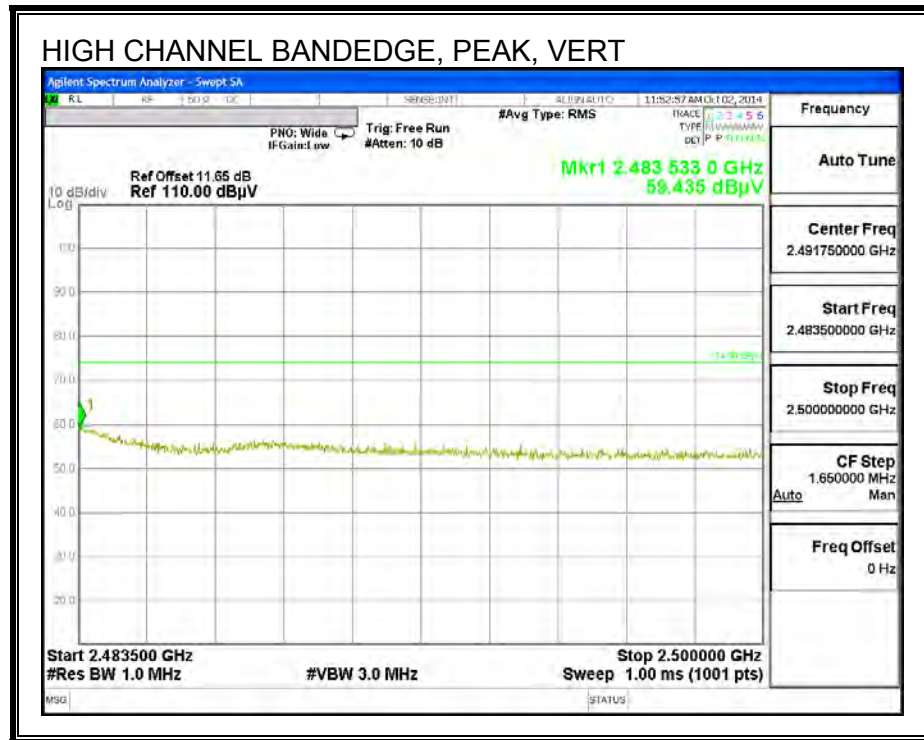
AUTHORIZED BANDEDGE (HIGH CHANNEL, CH 11)



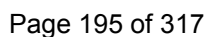


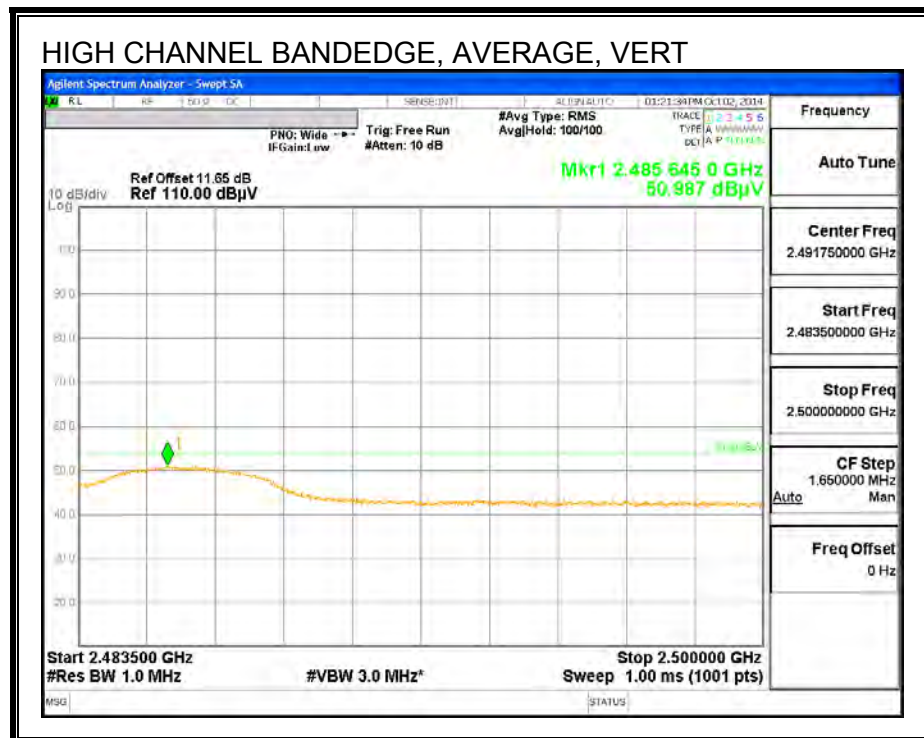
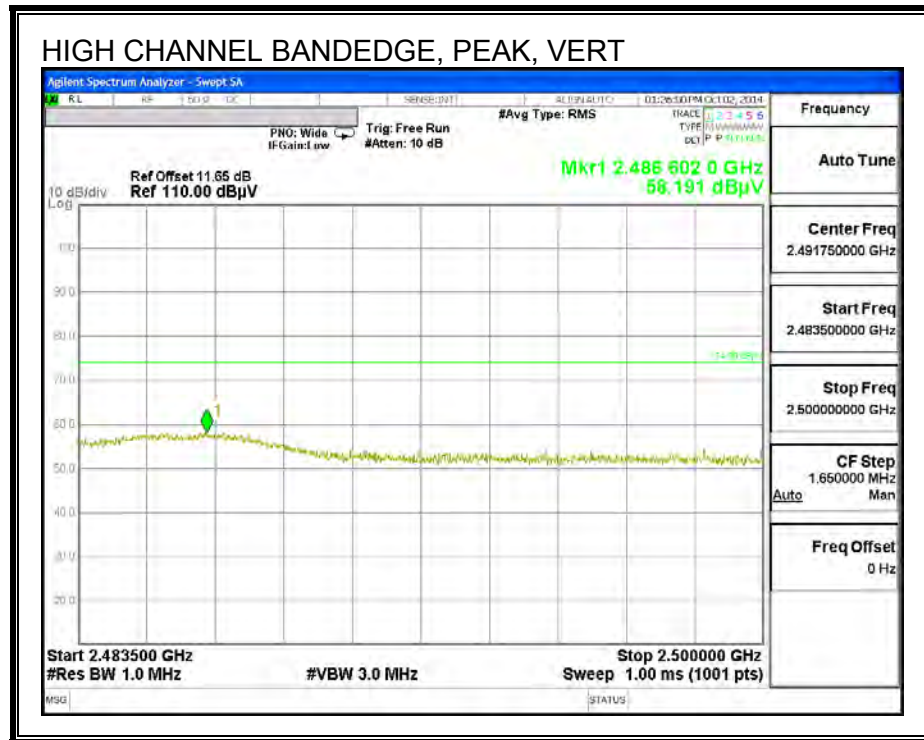
HIGH CHANNEL BANDEDGE, PEAK, HORIZ



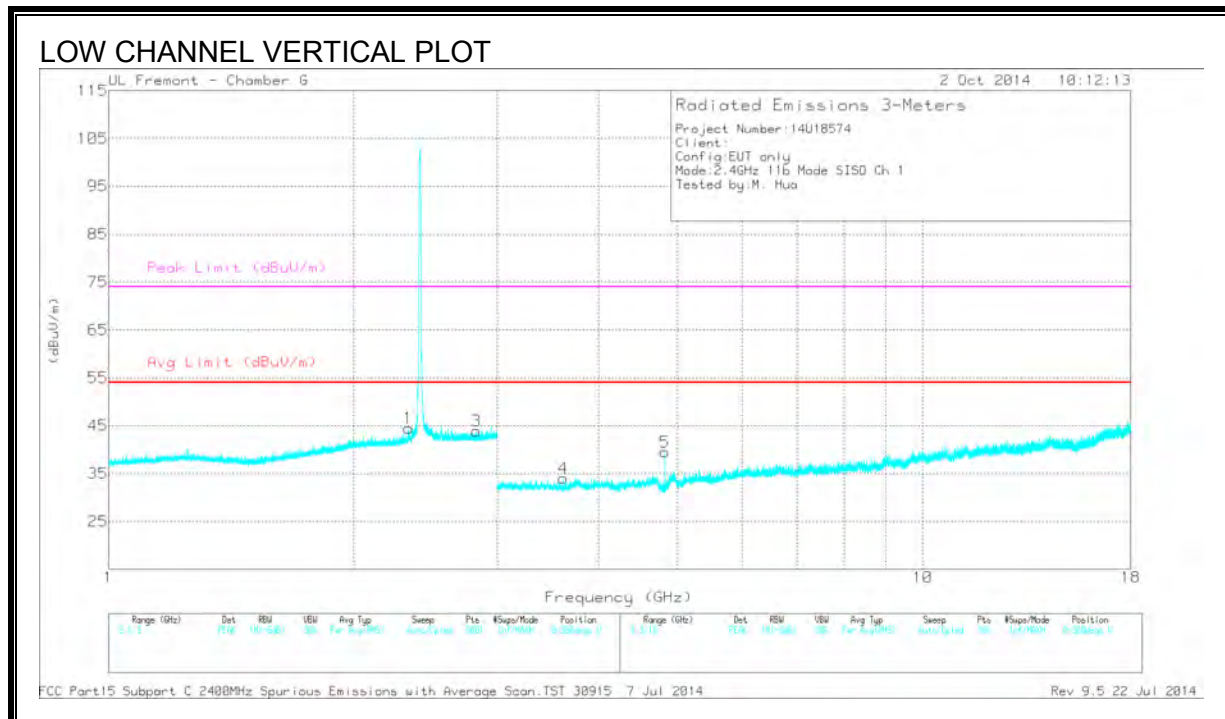
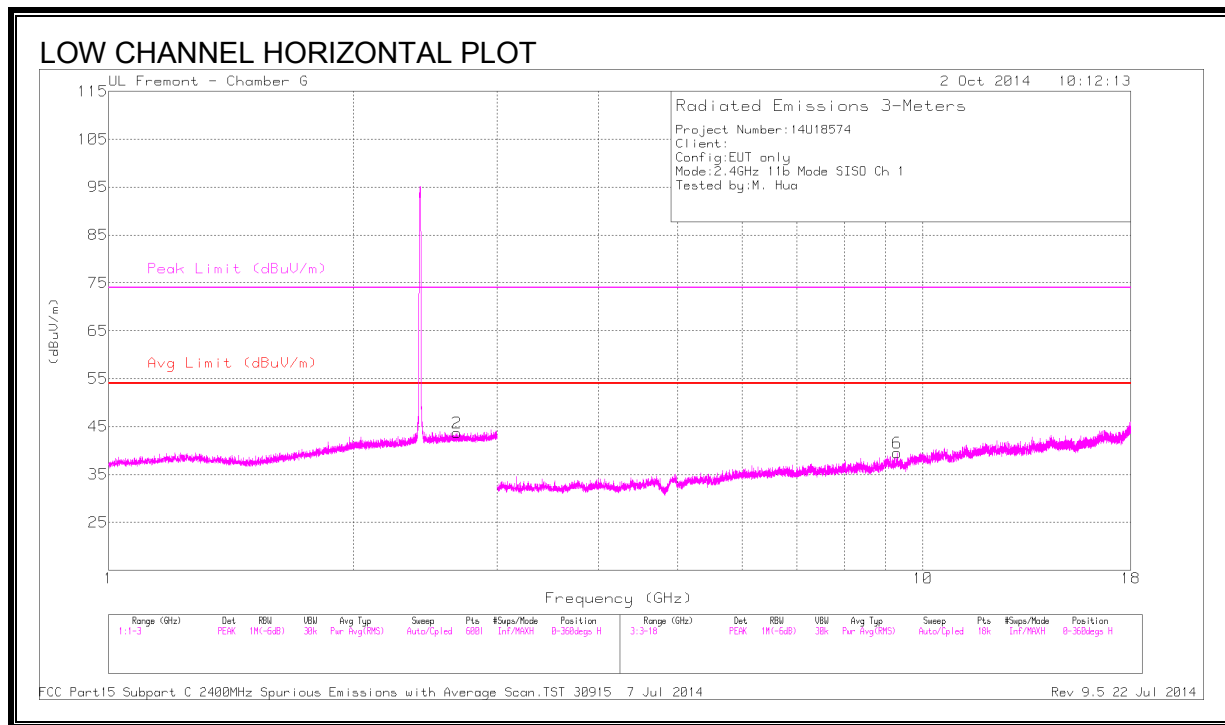


HIGH CHANNEL BANDEDGE, PEAK, HORIZ





HARMONICS AND SPURIOUS EMISSIONS, CH 1



DATA

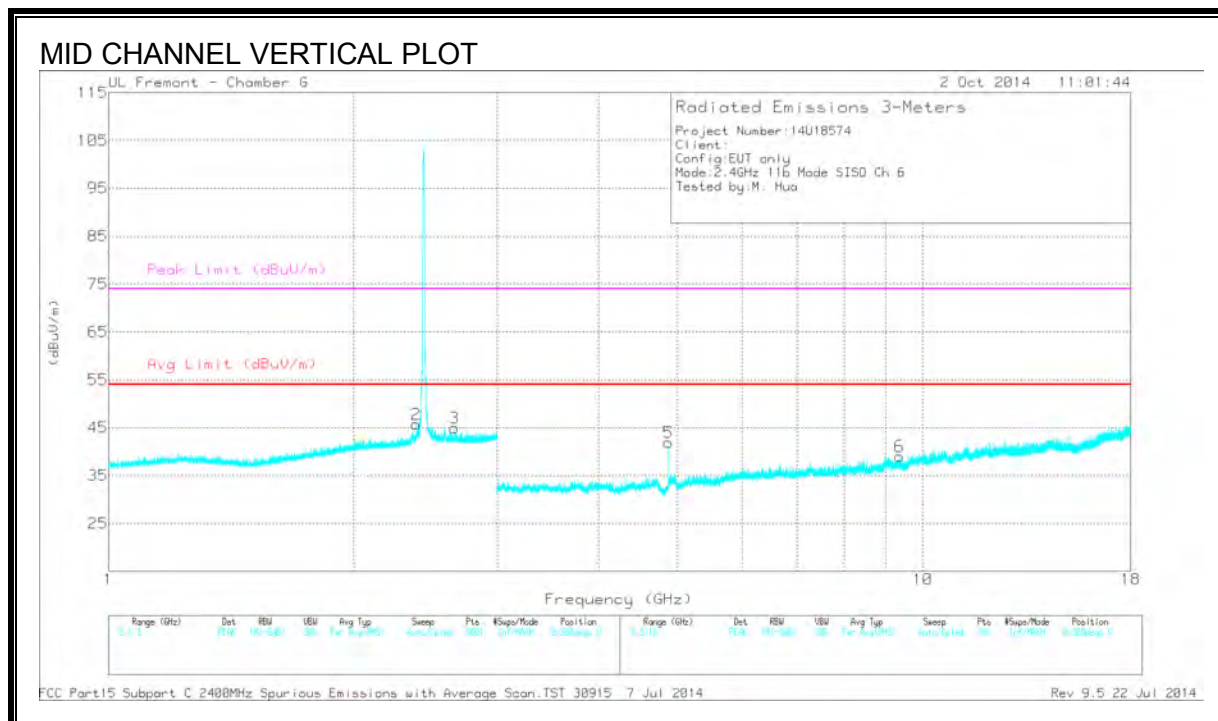
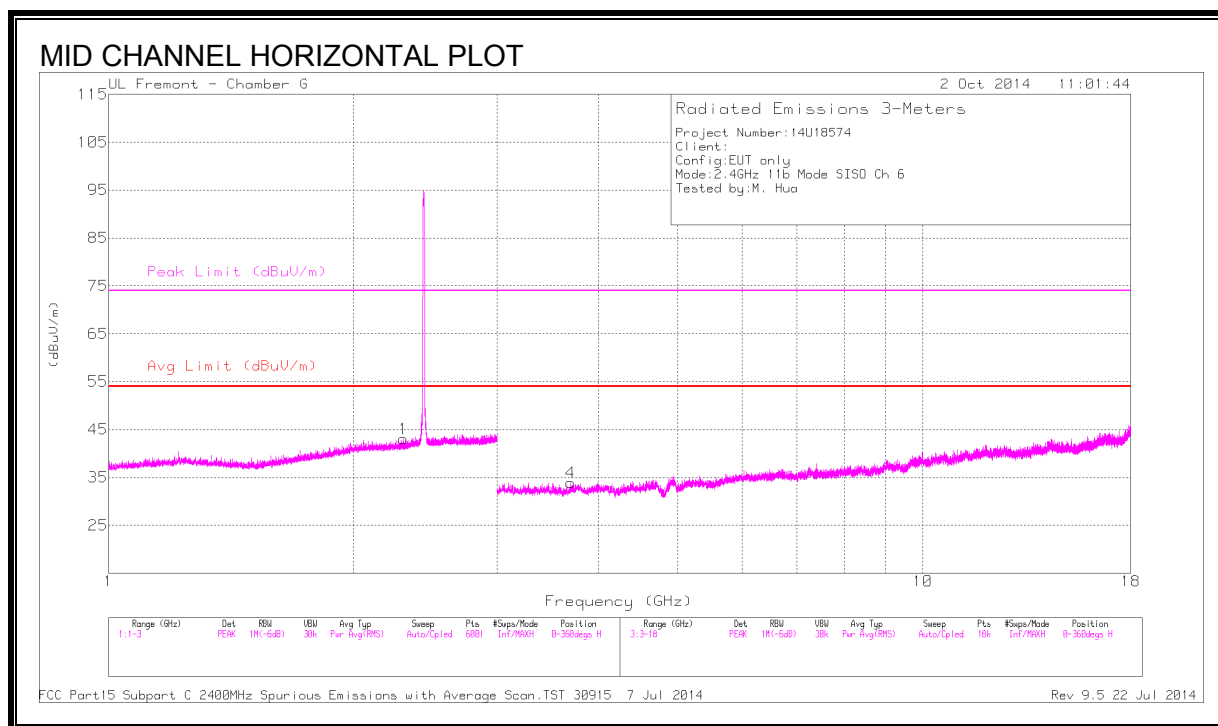
Markers	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.676	43.29	PK2	32.1	-24.8	50.59	-	-	74	-23.41	103	122	H
	* 2.677	31.53	MAv1	32.1	-24.8	38.83	54	-15.17	-	-	103	122	H
1	* 2.335	47.04	PK2	31.7	-25	53.74	-	-	74	-20.26	176	245	V
	* 2.336	35.59	MAv1	31.7	-25	42.29	54	-11.71	-	-	176	245	V
3	* 2.829	42.94	PK2	32.3	-24.8	50.44	-	-	74	-23.56	176	245	V
	* 2.828	31.34	MAv1	32.3	-24.8	38.84	54	-15.16	-	-	176	245	V
6	* 9.301	38.92	PK2	36.5	-28.7	46.72	-	-	74	-27.28	59	210	H
	* 9.301	26.93	MAv1	36.5	-28.7	34.73	54	-19.27	-	-	59	210	H
4	* 3.618	42.03	PK2	32.8	-33.3	41.53	-	-	74	-32.47	216	230	V
	* 3.618	32.84	MAv1	32.8	-33.3	32.34	54	-21.66	-	-	216	230	V
5	* 4.824	43.77	PK2	34.1	-33	44.87	-	-	74	-29.13	193	207	V
	* 4.824	38.19	MAv1	34.1	-33	39.29	54	-14.71	-	-	193	207	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

HARMONICS AND SPURIOUS EMISSIONS, CH 6



DATA

Markers	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/ Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.299	43.92	PK2	31.6	-25	50.52	-	-	74	-23.48	65	170	H
	* 2.299	31.7	MAv1	31.6	-25	38.3	54	-15.7	-	-	65	170	H
2	* 2.385	45.9	PK2	31.8	-24.9	52.8	-	-	74	-21.2	6	203	V
	* 2.389	34.47	MAv1	31.8	-24.9	41.37	54	-12.63	-	-	6	203	V
3	* 2.658	43.42	PK2	32.1	-24.8	50.72	-	-	74	-23.28	6	203	V
	* 2.66	31.96	MAv1	32.1	-24.8	39.26	54	-14.74	-	-	6	203	V
4	* 3.694	40.42	PK2	32.9	-31.8	41.52	-	-	74	-32.48	210	314	H
	* 3.694	28.9	MAv1	32.9	-31.8	30	54	-24	-	-	210	314	H
5	* 4.874	45.07	PK2	34.1	-33.1	46.07	-	-	74	-27.93	189	188	V
	* 4.874	40.14	MAv1	34.1	-33.1	41.14	54	-12.86	-	-	189	188	V
6	* 9.364	37.91	PK2	36.6	-28.4	46.11	-	-	74	-27.89	189	188	V
	* 9.363	26.54	MAv1	36.6	-28.4	34.74	54	-19.26	-	-	189	188	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average