

8.8.4. OUTPUT POWER

LIMITS

FCC §15.247

IC RSS-247 (5.4) (4)

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)
4.20	5.10	4.67

RESULTS

ID:	39919	Date:	9/2/16
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Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low_1	2412	4.67	30.00	30	36	30.00
Low_2	2417	4.67	30.00	30	36	30.00
Low_3	2422	4.67	30.00	30	36	30.00
Low_4	2427	4.67	30.00	30	36	30.00
Low_5	2432	4.67	30.00	30	36	30.00
Mid_6	2437	4.67	30.00	30	36	30.00
Low_7	2442	4.67	30.00	30	36	30.00
Low_8	2447	4.67	30.00	30	36	30.00
High_9	2452	4.67	30.00	30	36	30.00
High_10	2457	4.67	30.00	30	36	30.00
High_11	2462	4.67	30.00	30	36	30.00
High_12	2467	4.67	30.00	30	36	30.00
High_13	2472	4.67	30.00	30	36	30.00

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

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margi (dB)
Low_1	2412	15.23	15.36	18.31	30.00	-11.69
Low_2	2417	16.11	15.94	19.04	30.00	-10.96
Low_3	2422	20.03	20.15	23.10	30.00	-6.90
Low_4	2427	22.08	22.16	25.13	30.00	-4.87
Low_5	2432	22.35	22.38	25.38	30.00	-4.62
Mid_6	2437	22.41	22.44	25.44	30.00	-4.56
Low_7	2442	22.32	22.37	25.36	30.00	-4.64
Low_8	2447	22.11	22.17	25.15	30.00	-4.85
High_9	2452	21.12	21.16	24.15	30.00	-5.85
High_10	2457	19.86	19.69	22.79	30.00	-7.21
High_11	2462	15.19	15.23	18.22	30.00	-11.78
High_12	2467	12.34	12.16	15.26	30.00	-14.74
High_13	2472	2.25	2.20	5.24	30.00	-24.76

8.8.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247

IC RSS-247 (5.2) (2)

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 KHz band during any time interval of continuous transmissions.

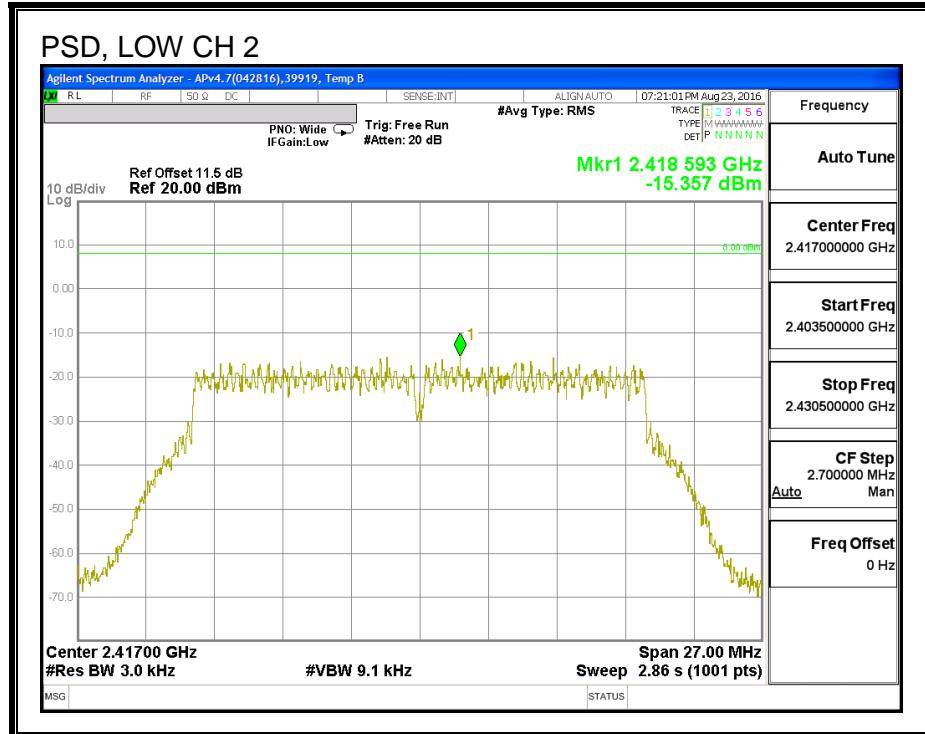
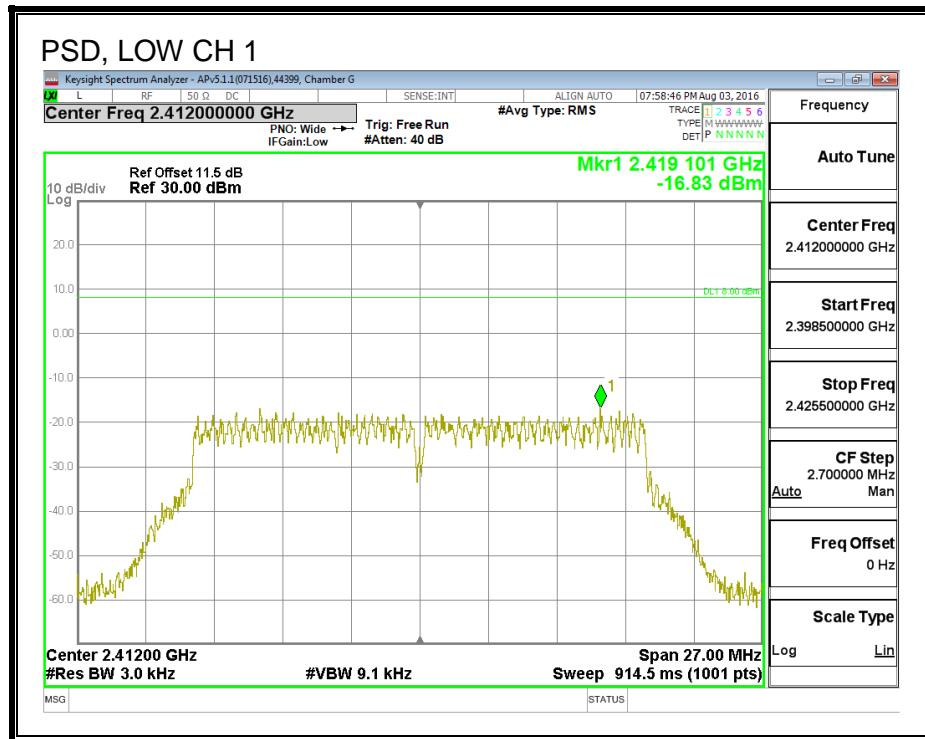
RESULTS

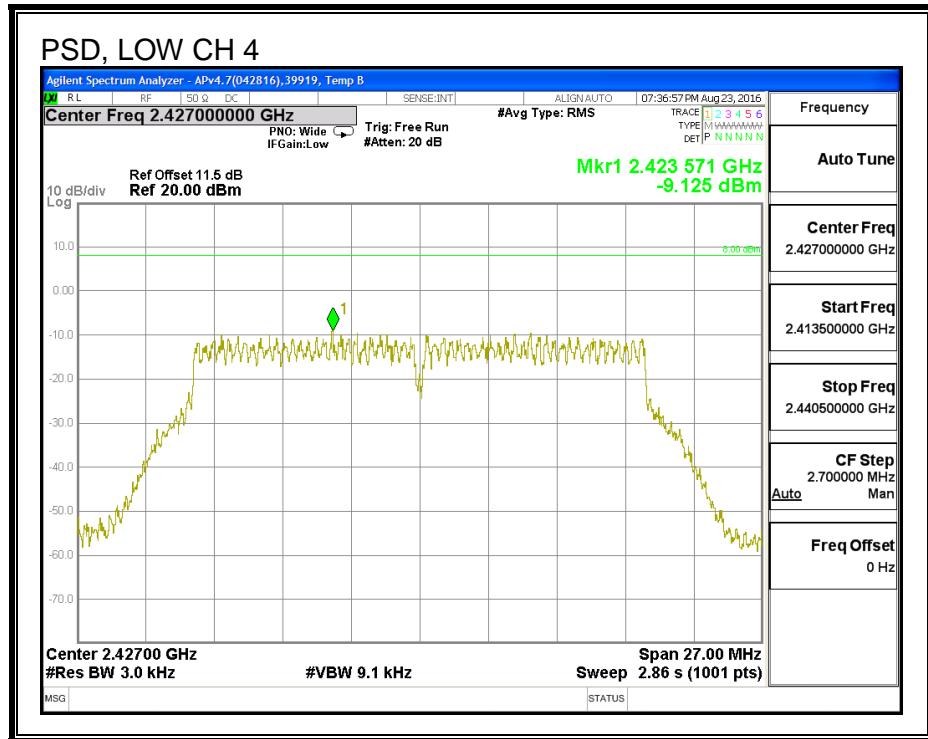
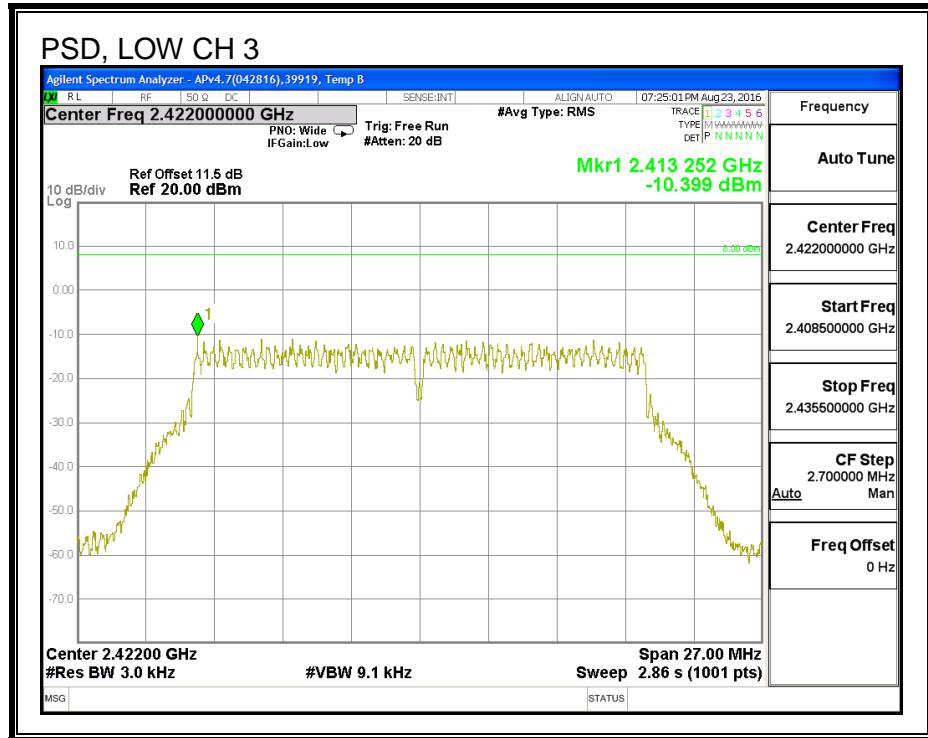
Duty Cycle CF (dB)	0.12	Included in Calculations of Corr'd PSD
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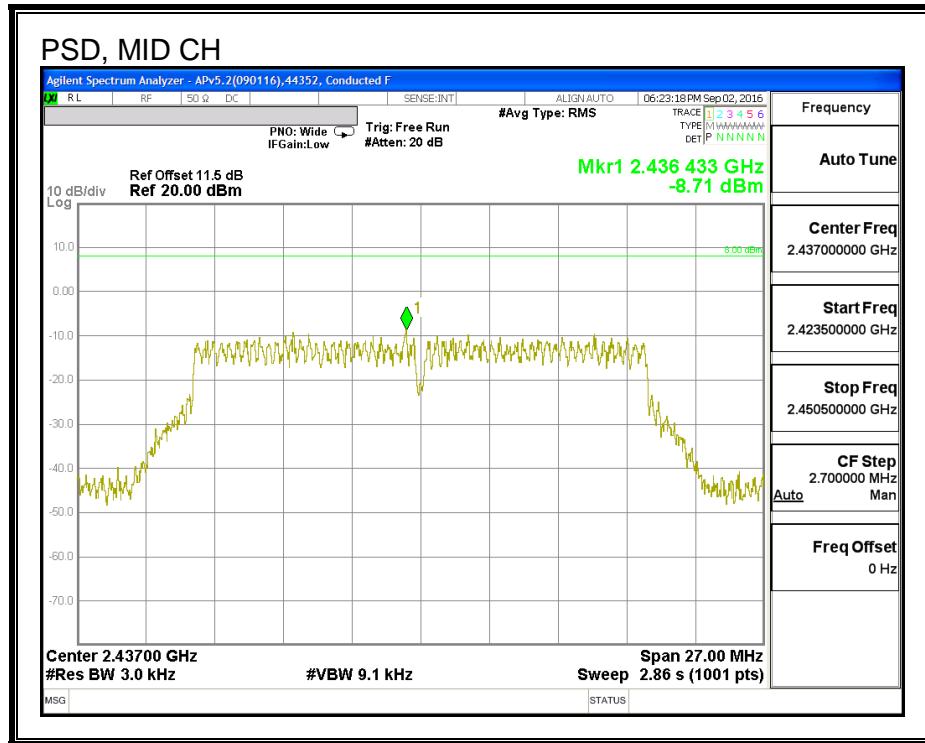
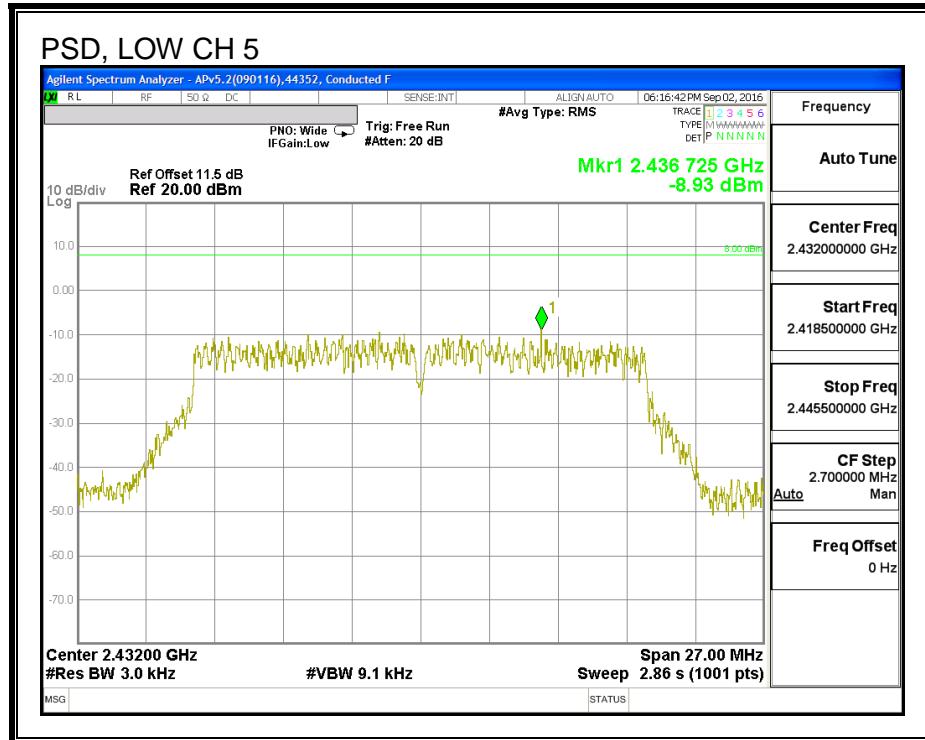
PSD Results

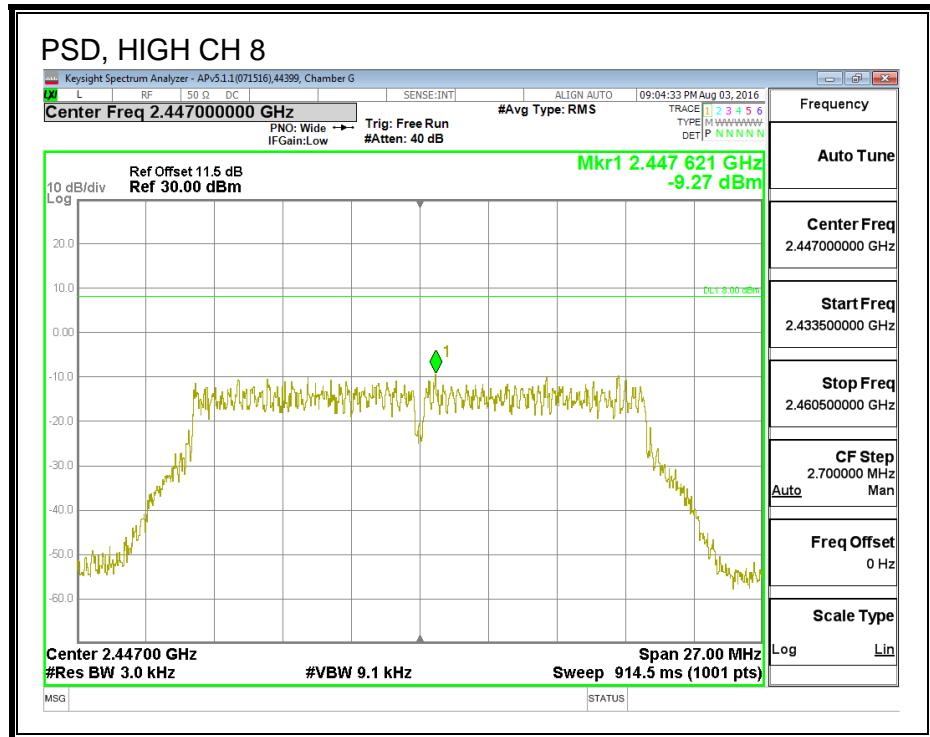
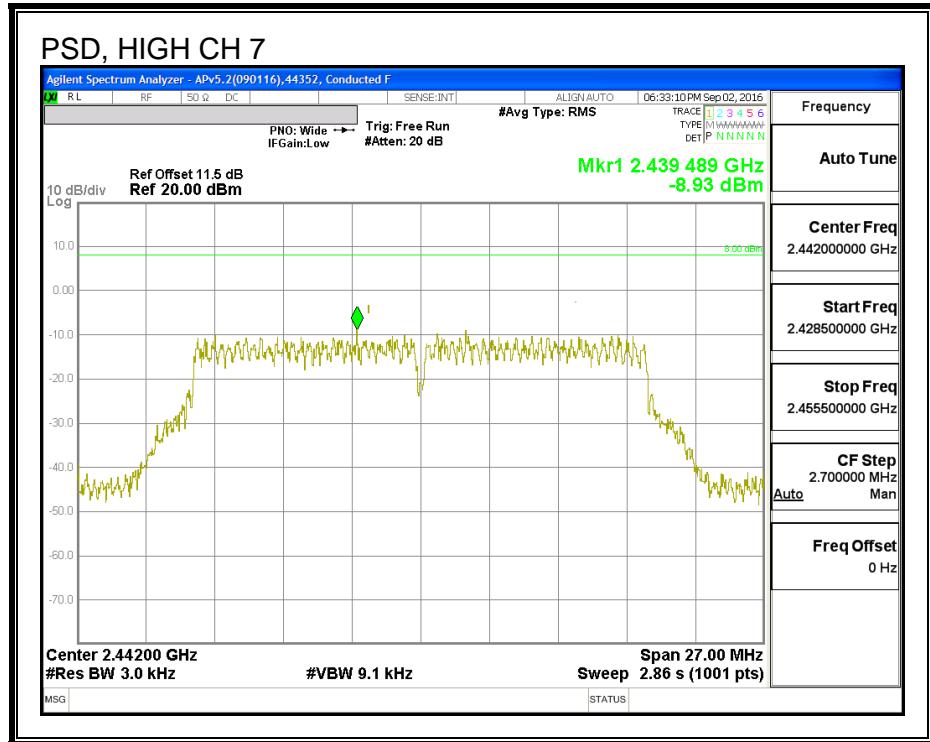
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total Corr'd PSD (dBm)	Limit (dBm)	Margin (dB)
Low_1	2412	-16.83	-16.40	-13.48	8.0	-21.5
Low_2	2417	-15.36	-15.54	-12.32	8.0	-20.3
Low_3	2422	-10.40	-10.01	-7.07	8.0	-15.1
Low_4	2427	-9.13	-8.82	-5.84	8.0	-13.8
Low_5	2432	-8.93	-8.88	-5.77	8.0	-13.8
Mid_6	2437	-8.71	-8.67	-5.56	8.0	-13.6
High_7	2442	-8.93	-8.96	-5.81	8.0	-13.8
High_8	2447	-9.27	-9.43	-6.22	8.0	-14.2
High_9	2452	-10.22	-10.05	-7.01	8.0	-15.0
High_10	2457	-12.41	-12.50	-9.32	8.0	-17.3
High_11	2462	-16.05	-15.63	-12.71	8.0	-20.7
High_12	2467	-19.70	-20.04	-16.74	8.0	-24.7
High_13	2472	-26.90	-27.10	-23.87	8.0	-31.9

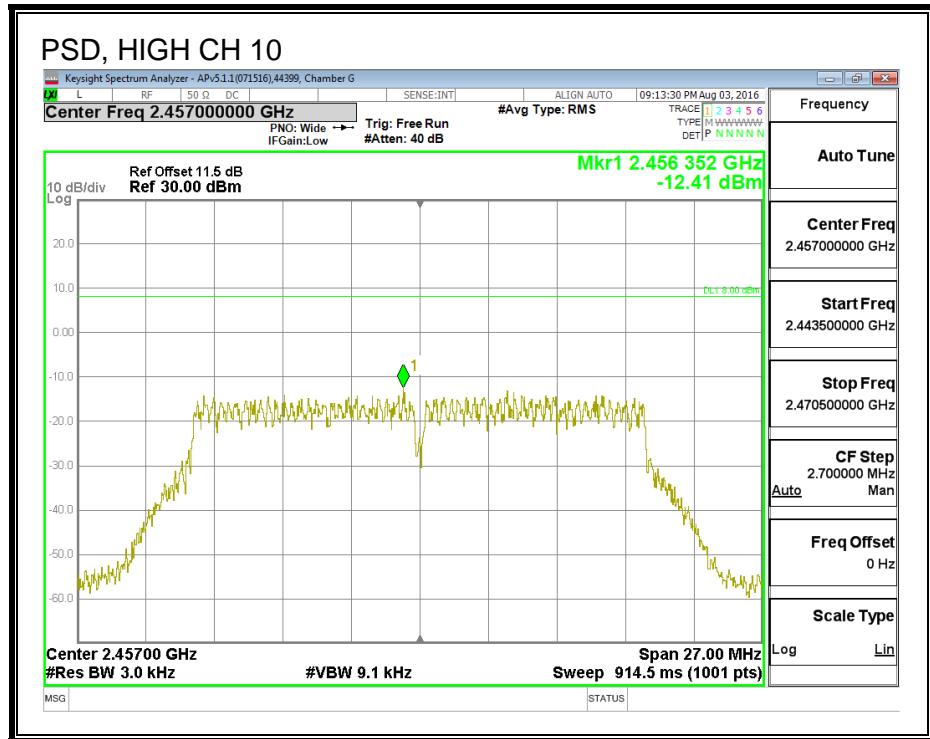
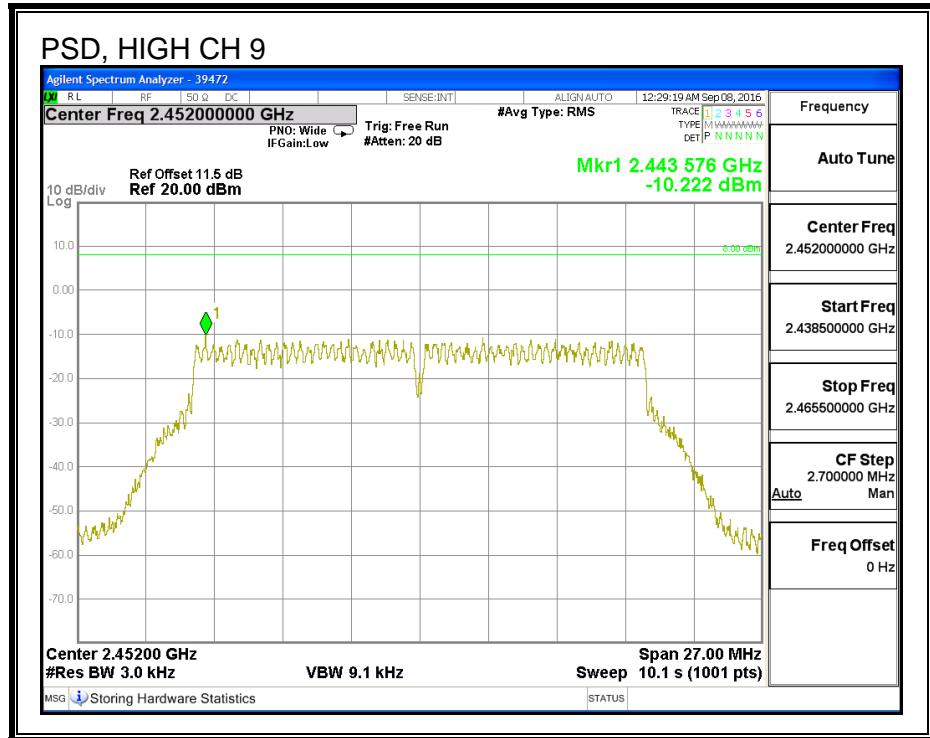
PSD, CHAIN 0

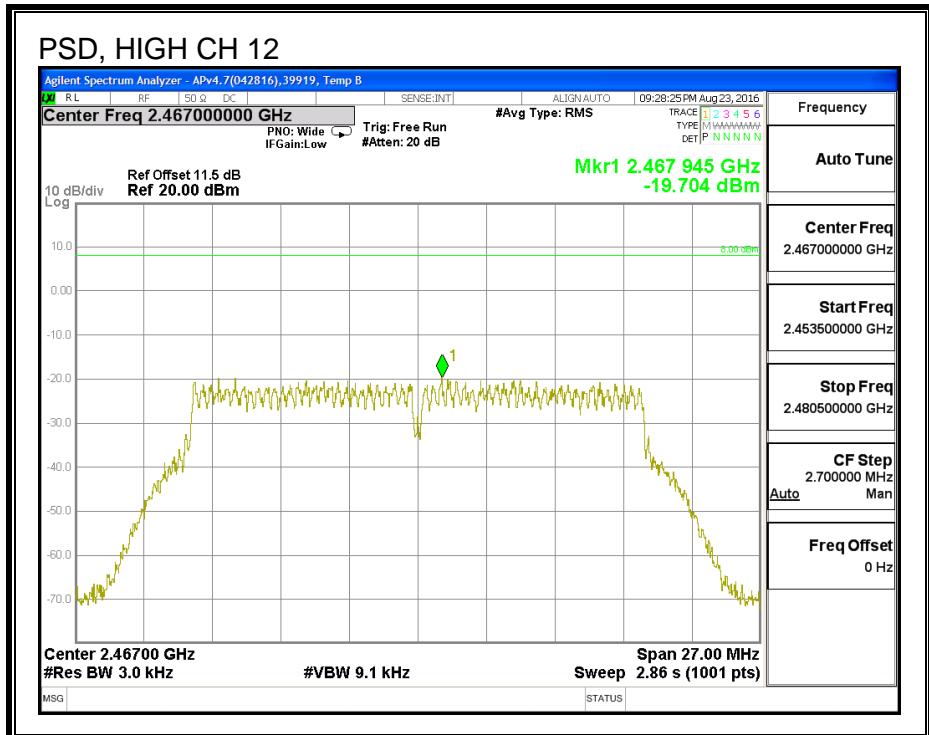
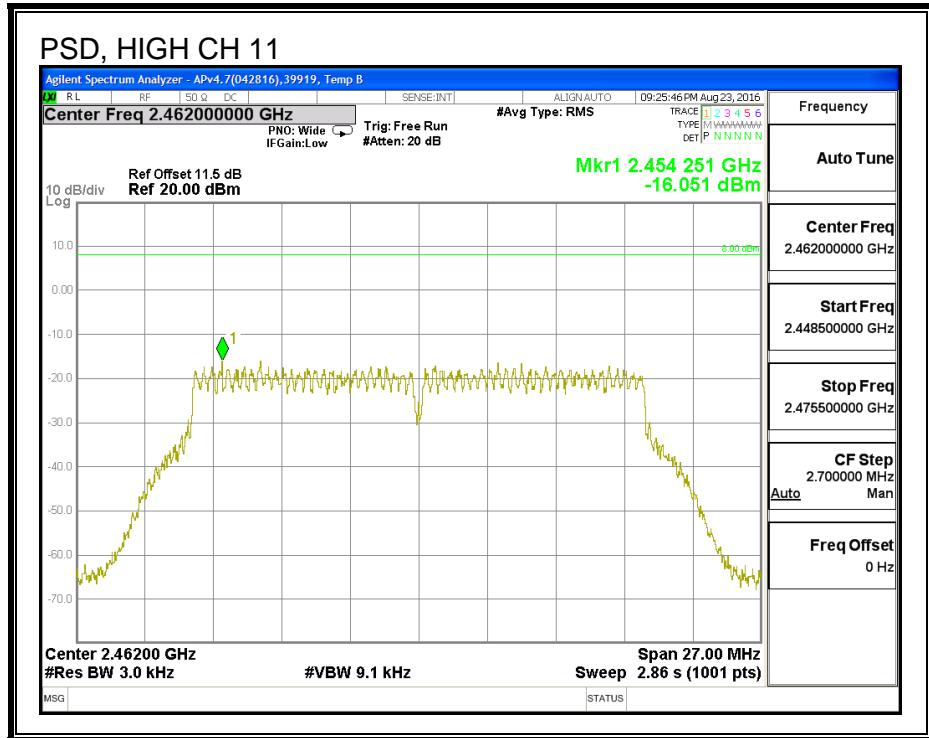


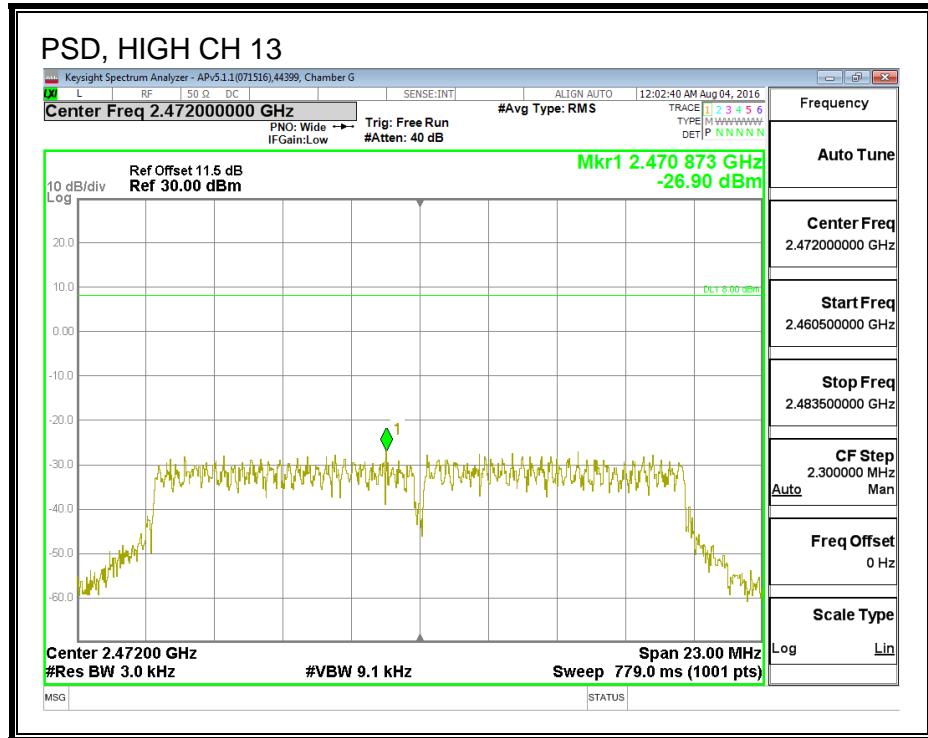




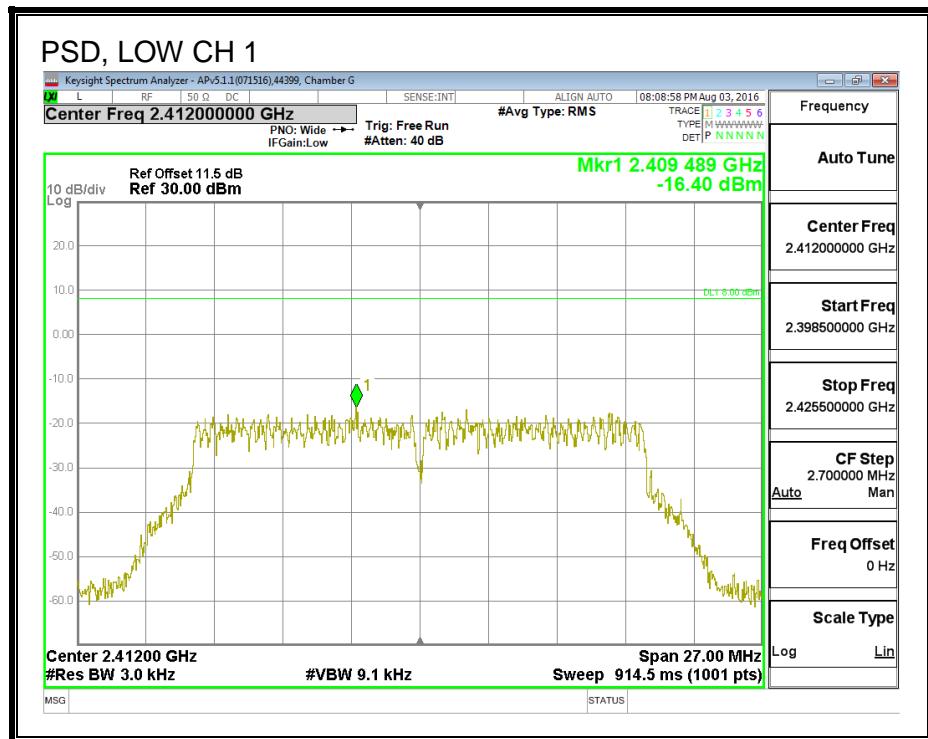


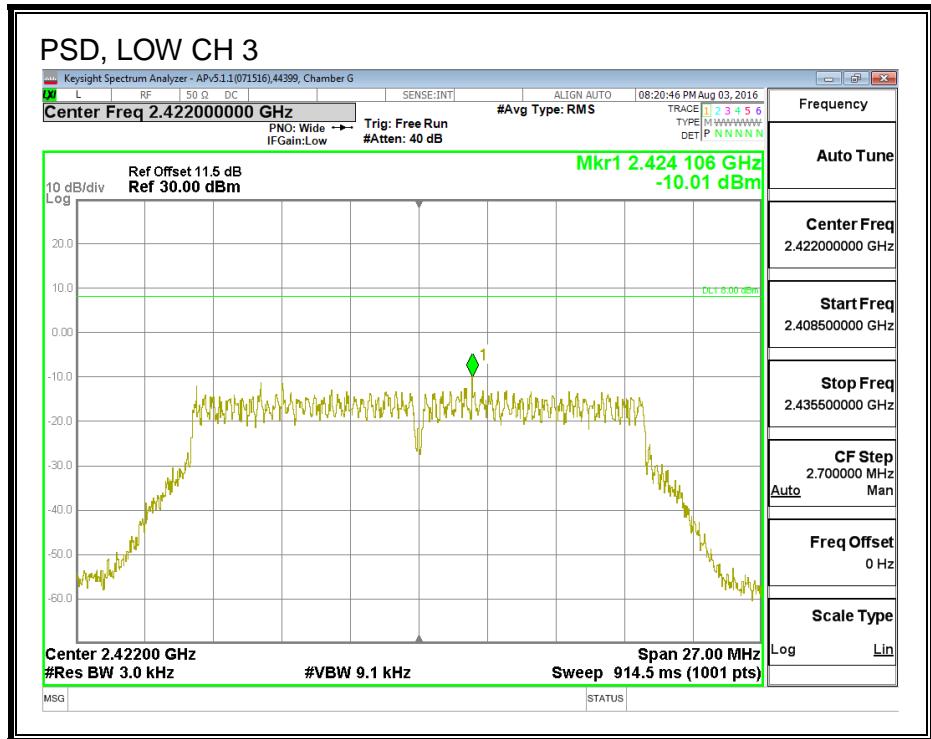
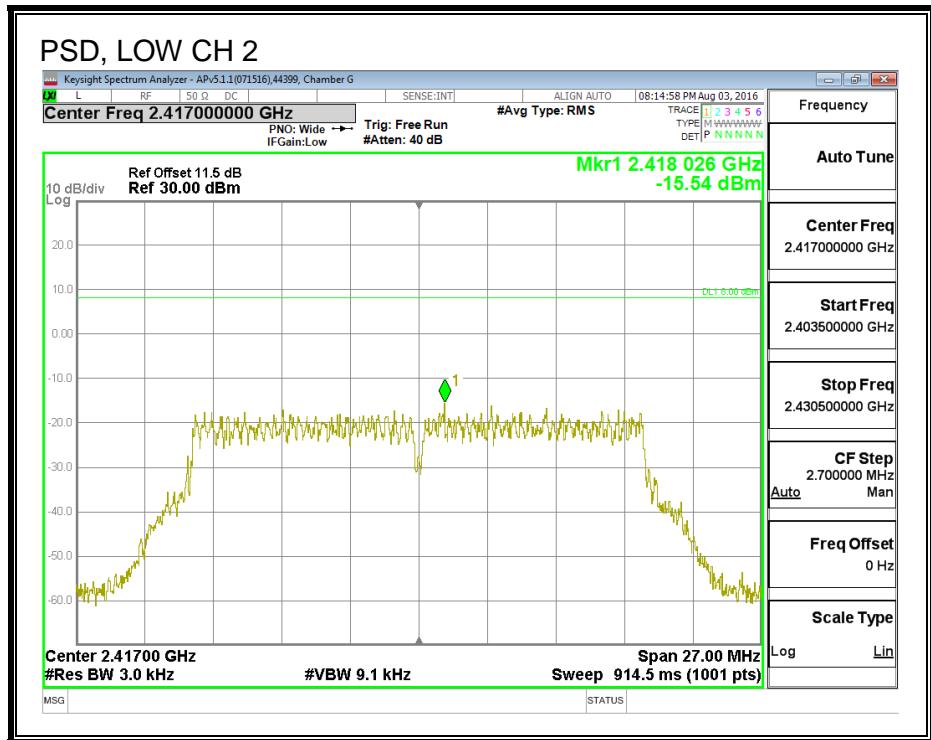


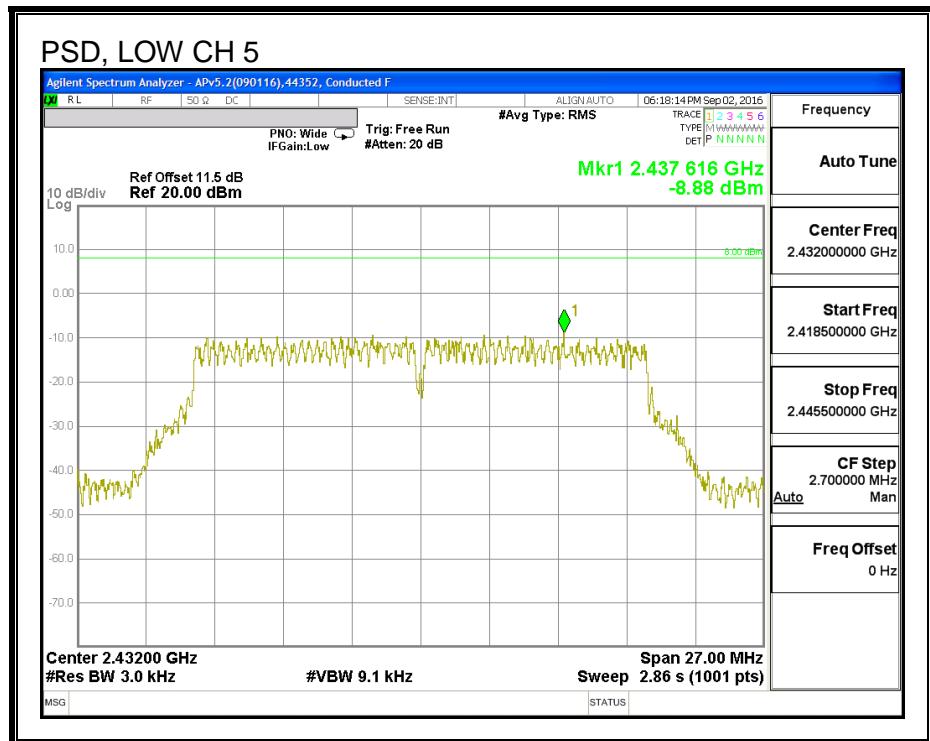
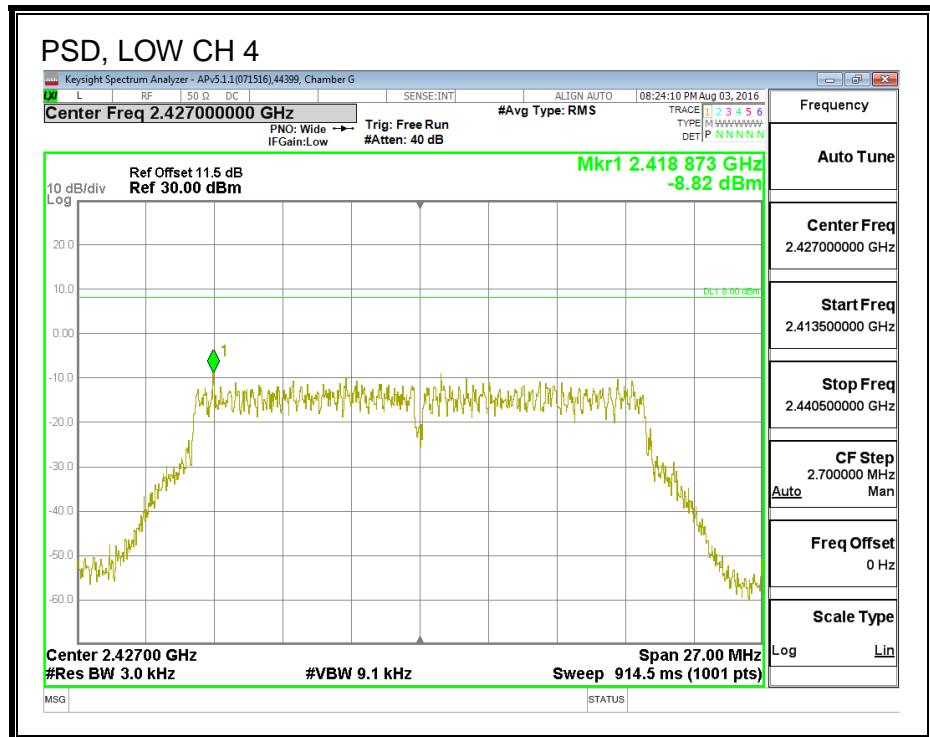


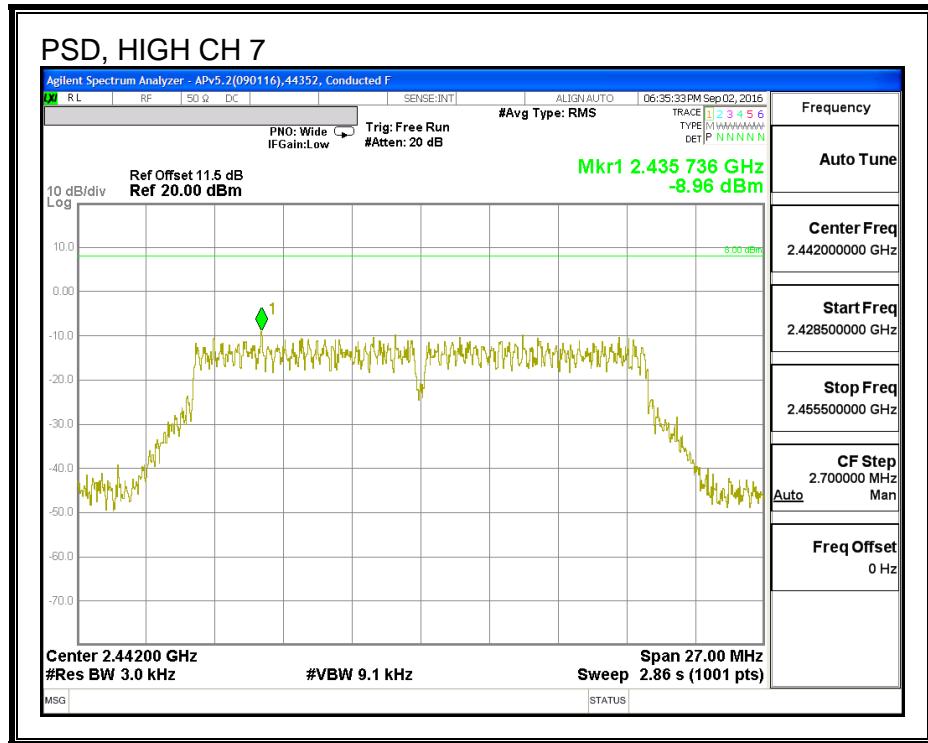
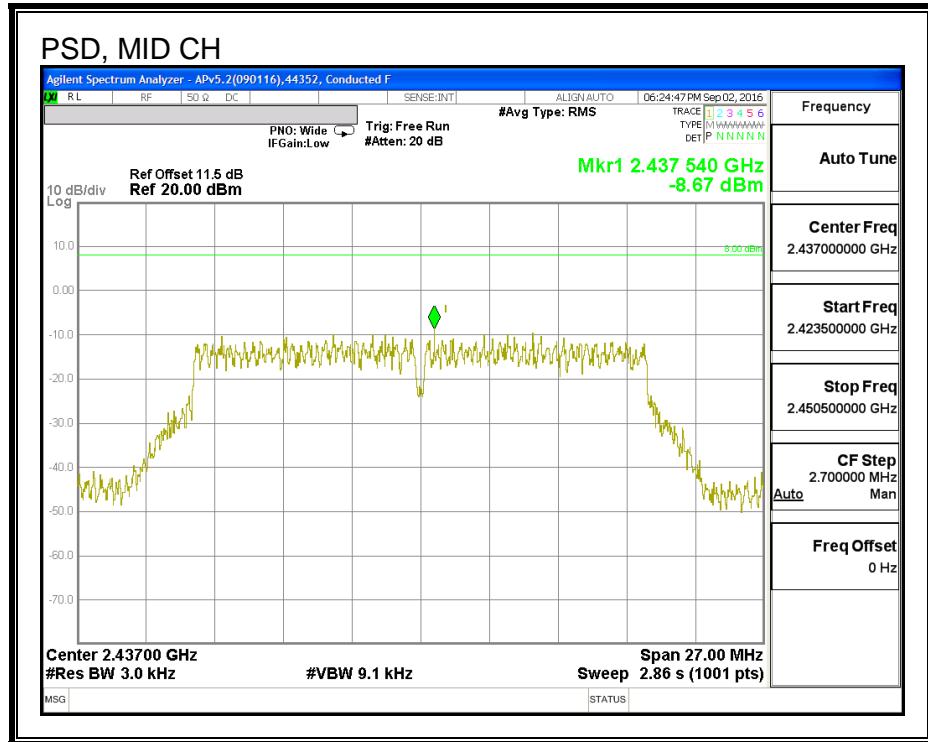


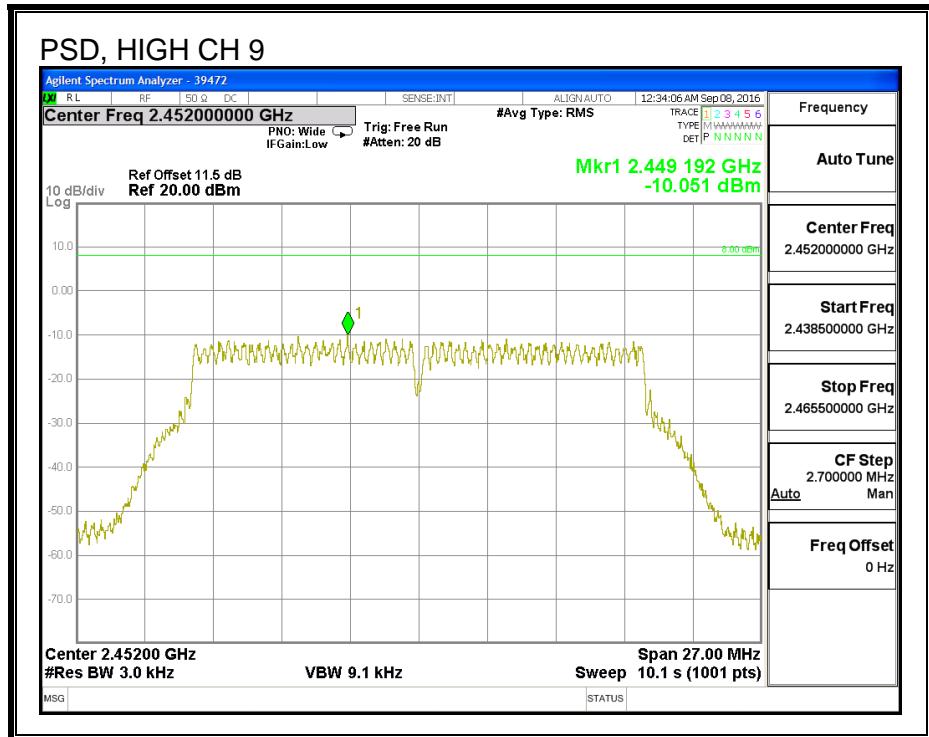
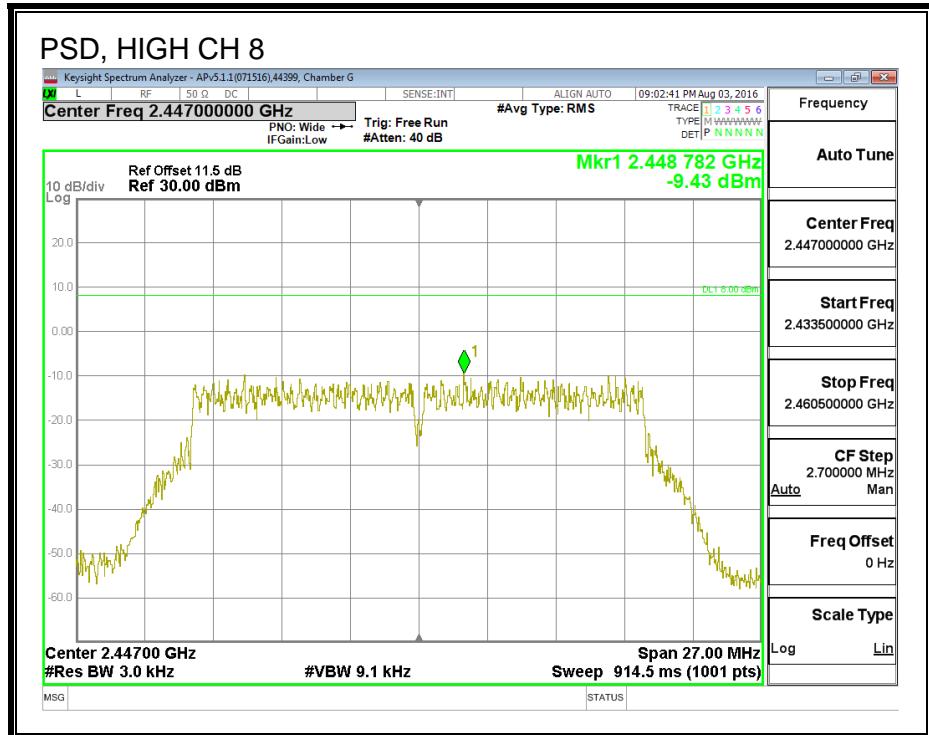
PSD, CHAIN 1

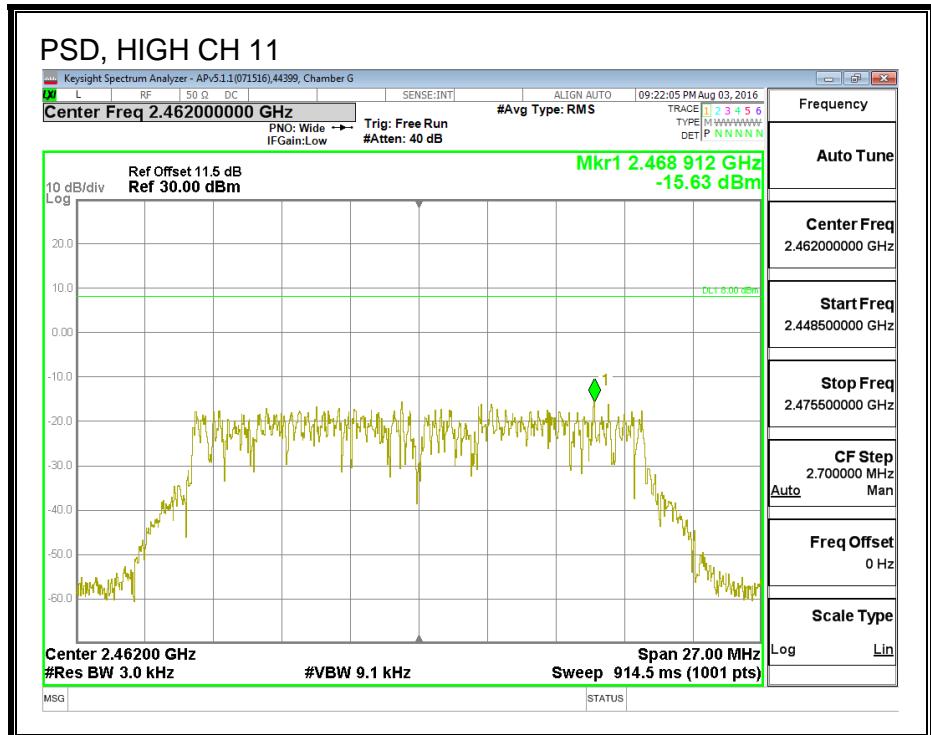
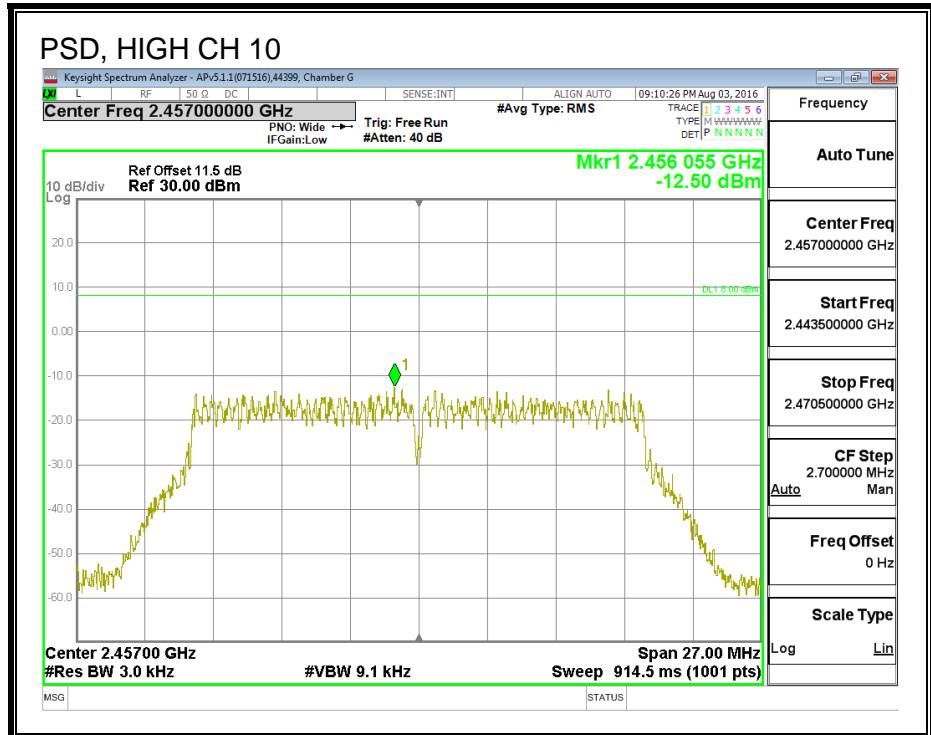


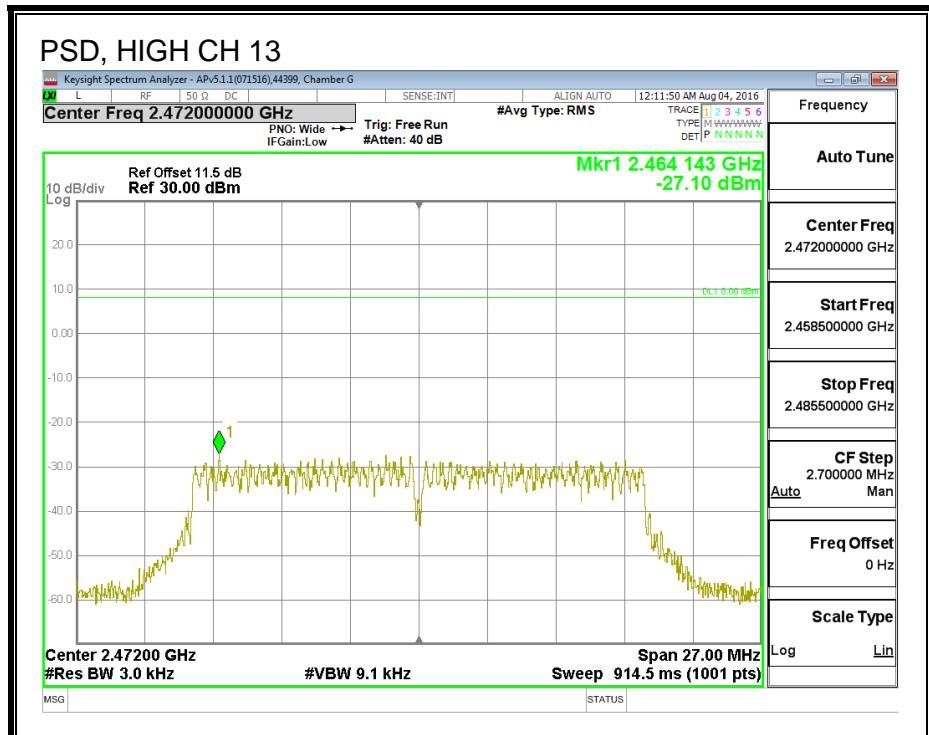
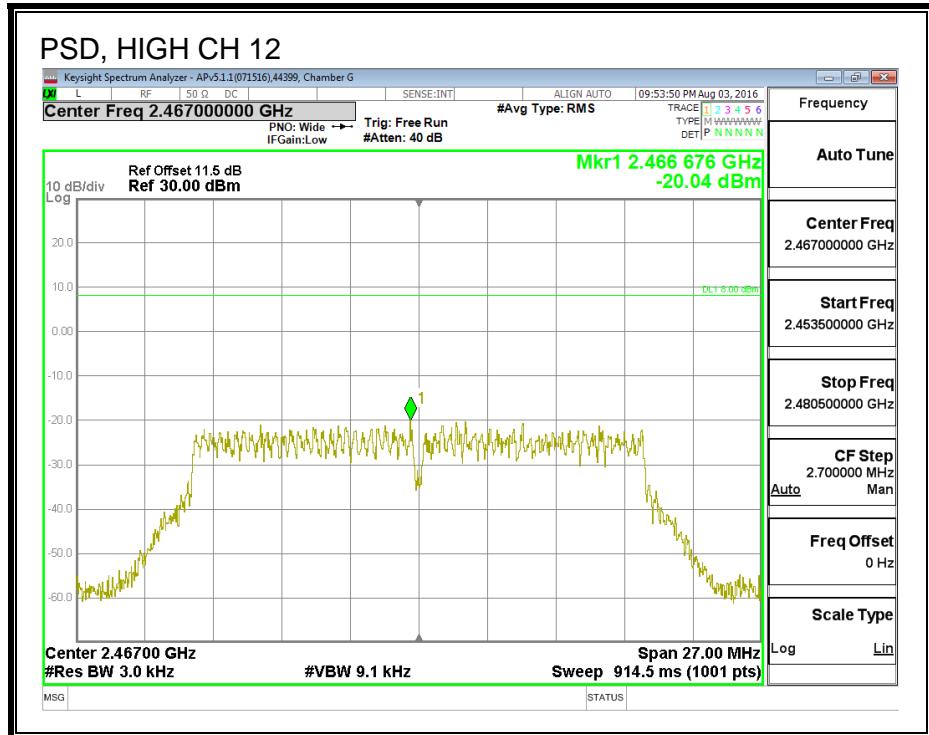












8.8.6. OUT-OF-BAND EMISSIONS

LIMITS

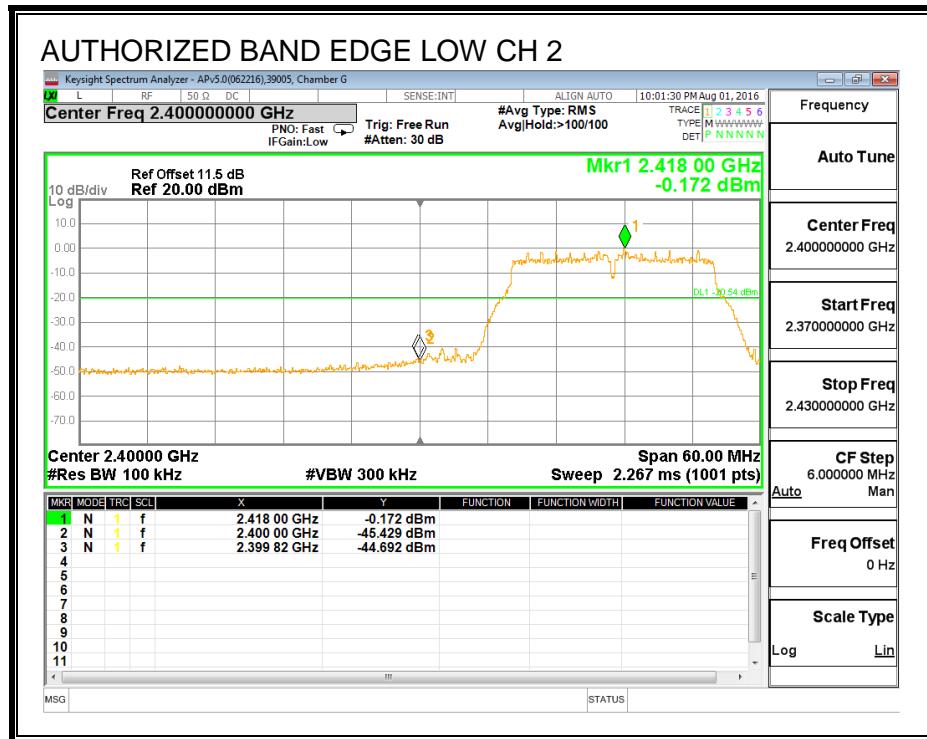
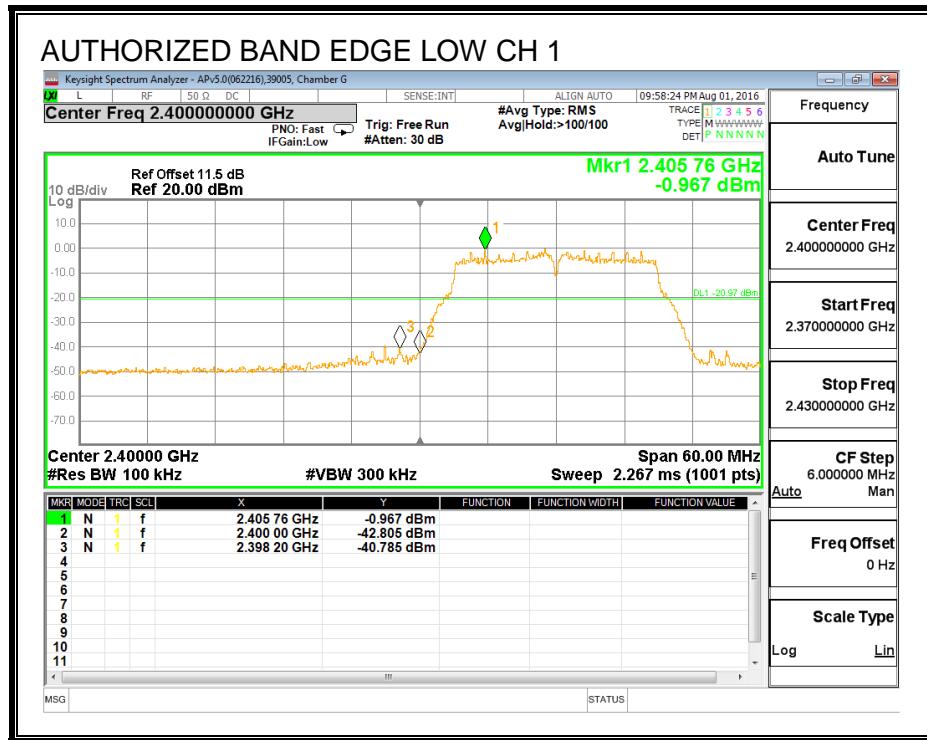
FCC §15.247 (d)

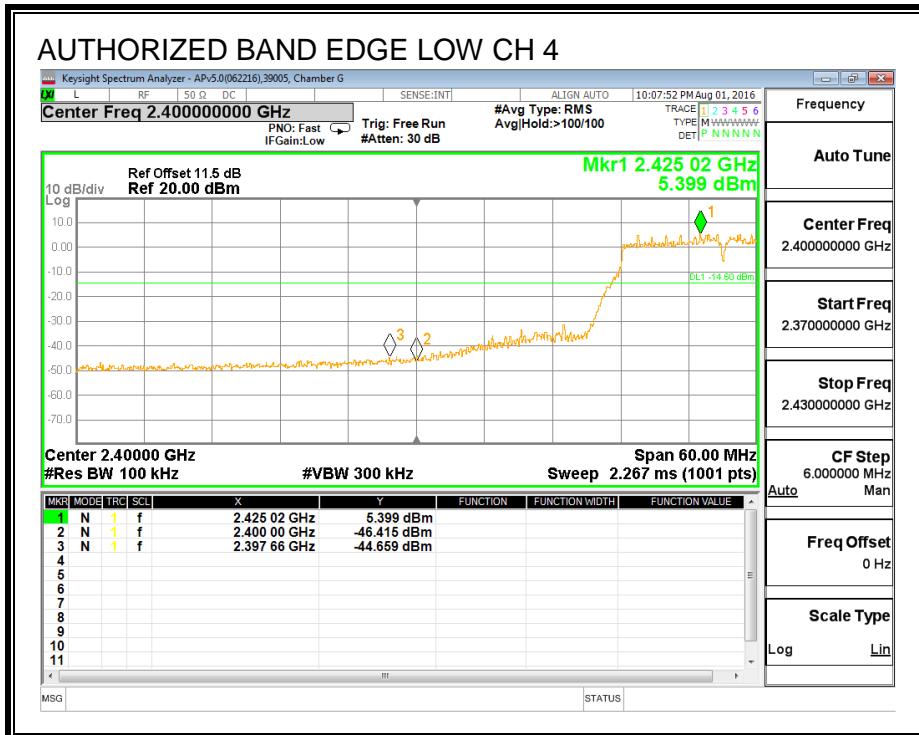
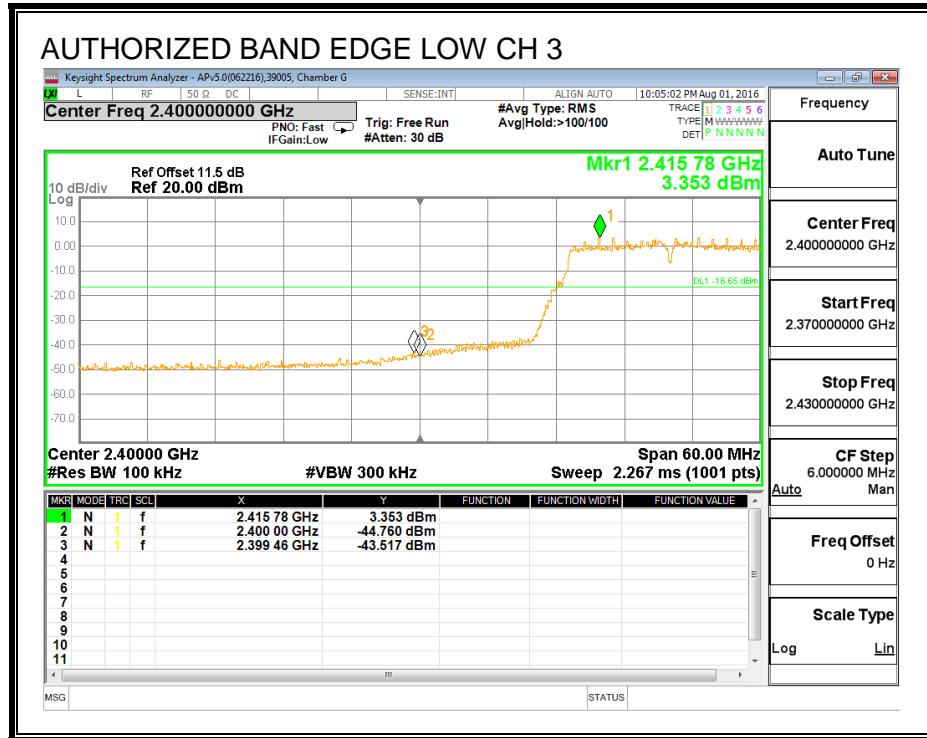
IC RSS-247 (5.5)

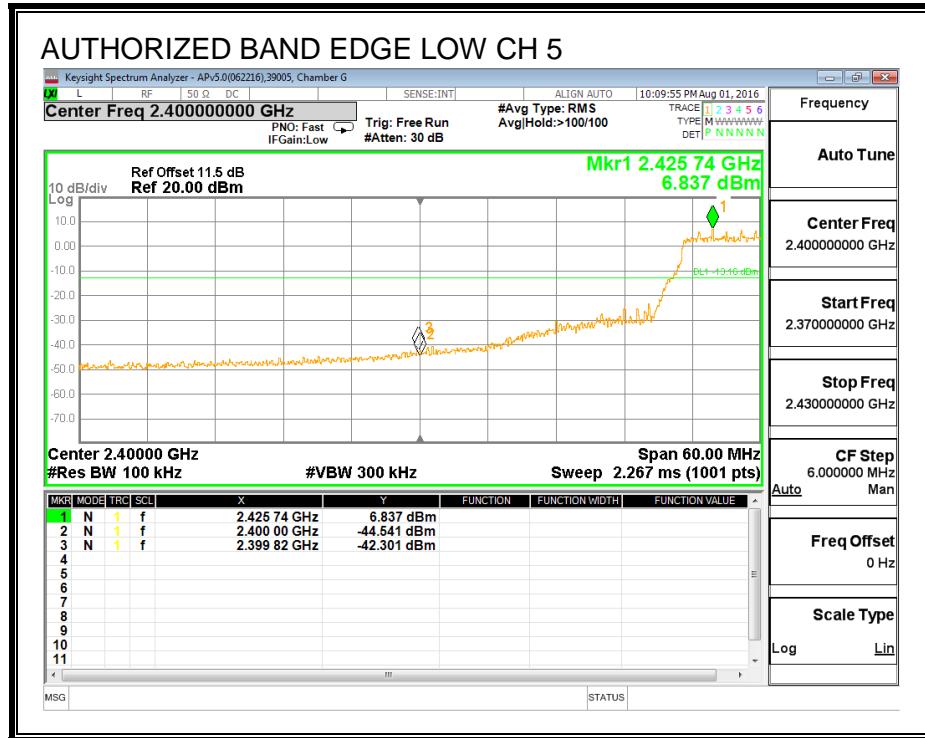
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the 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

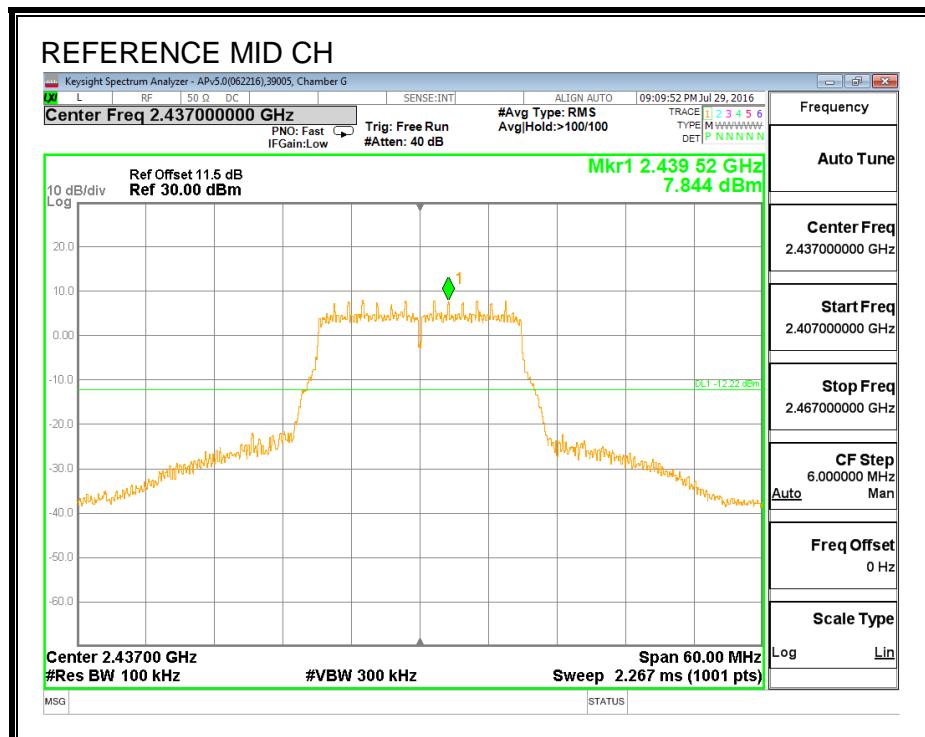
LOW CHANNEL BANDEDGE, CHAIN 0



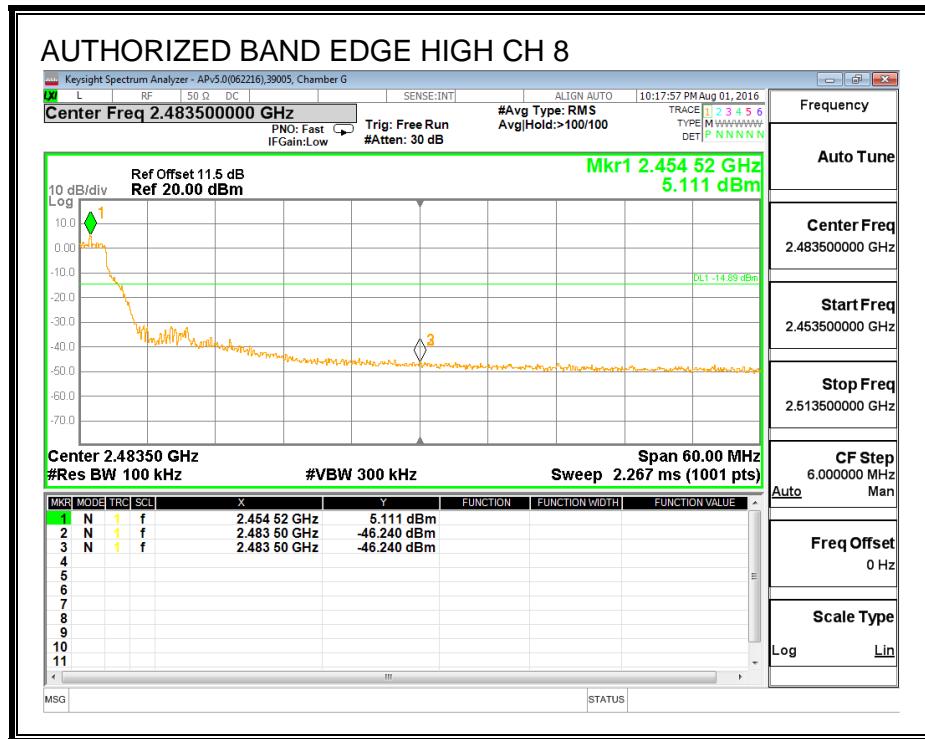
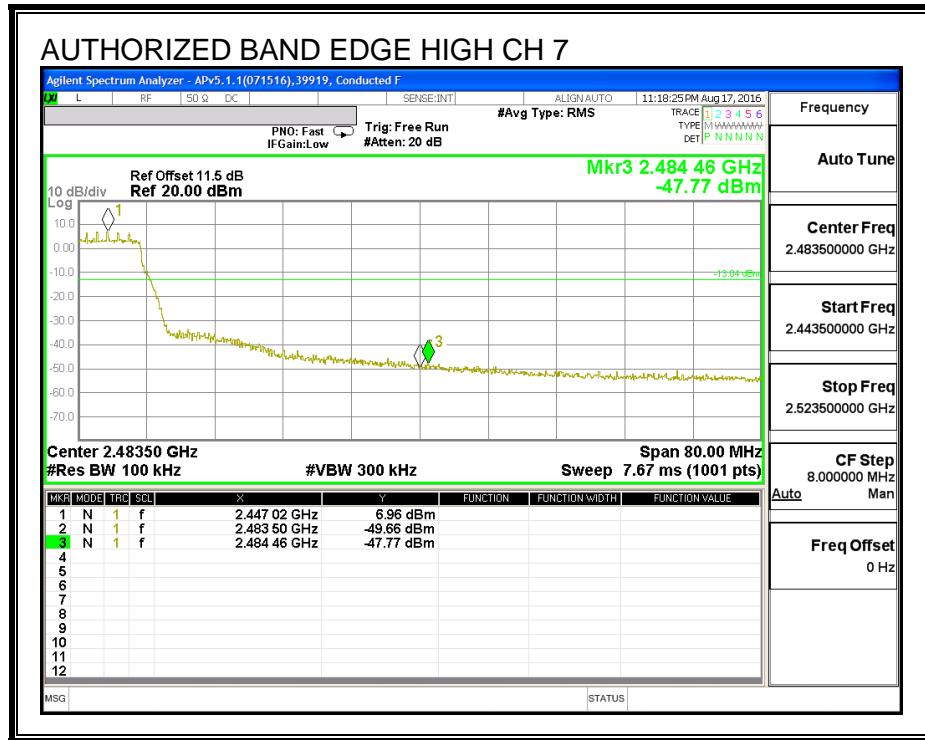


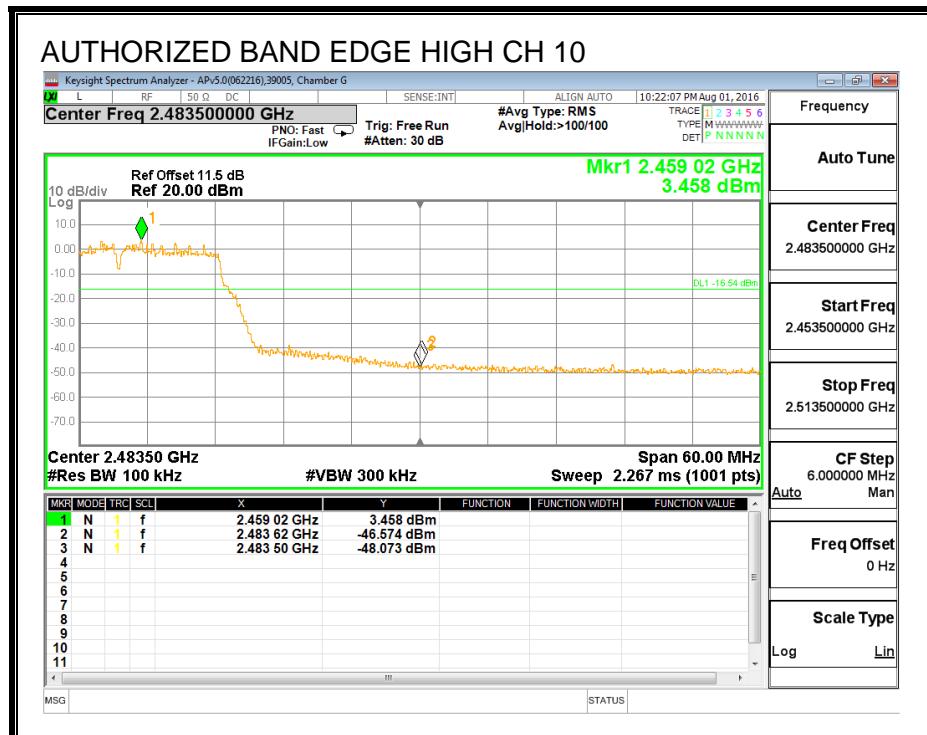
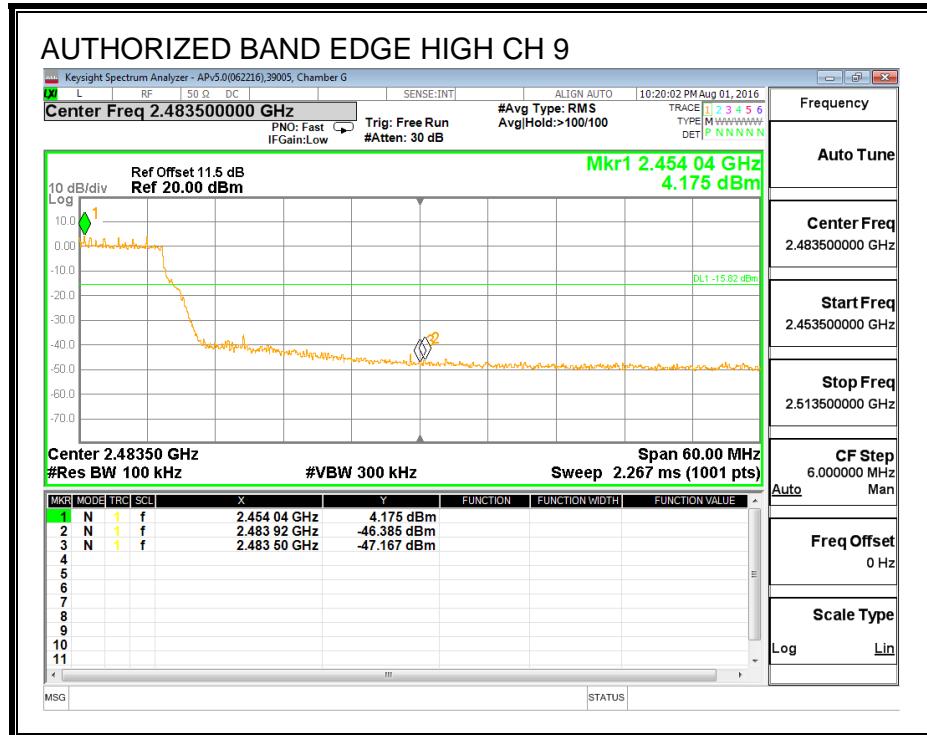


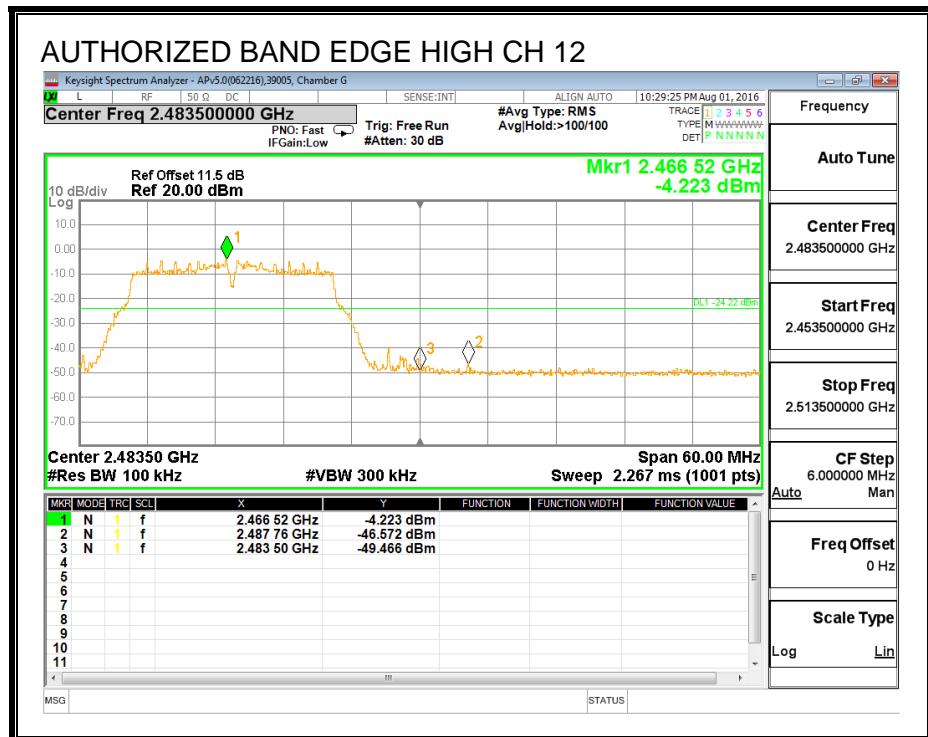
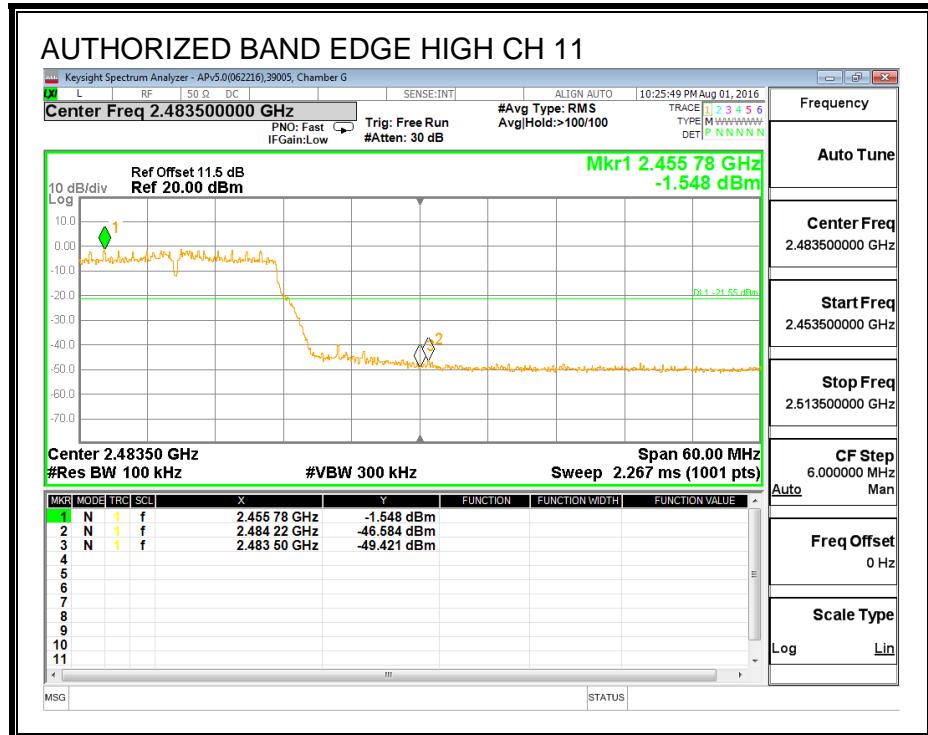
MID CHANNEL REFERENCE, CHAIN 0

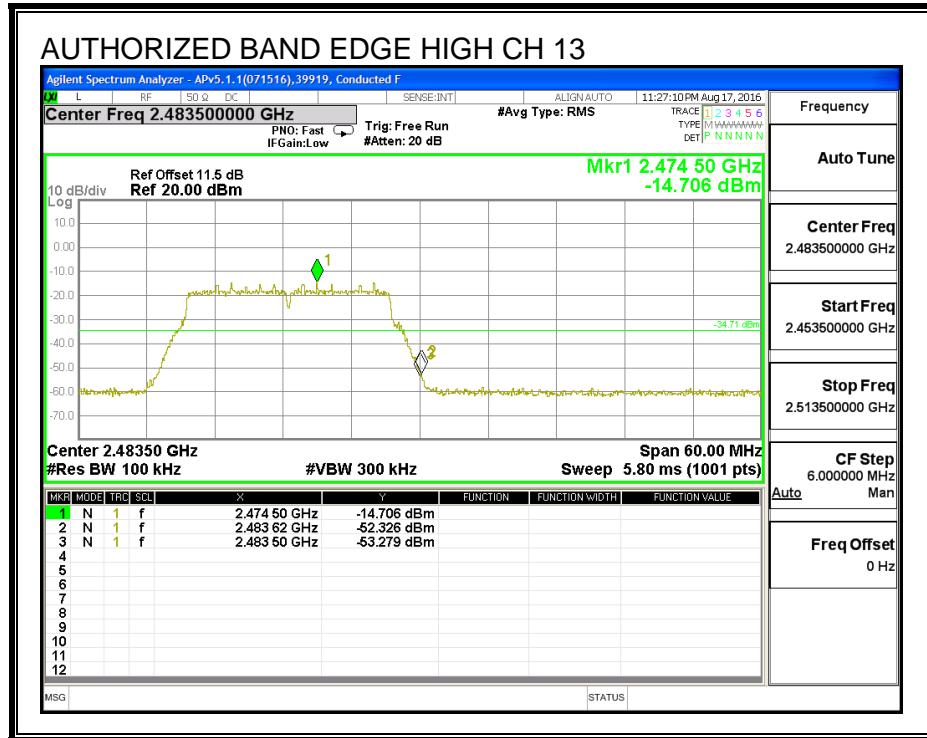


HIGH CHANNEL BANDEDGE, CHAIN 0

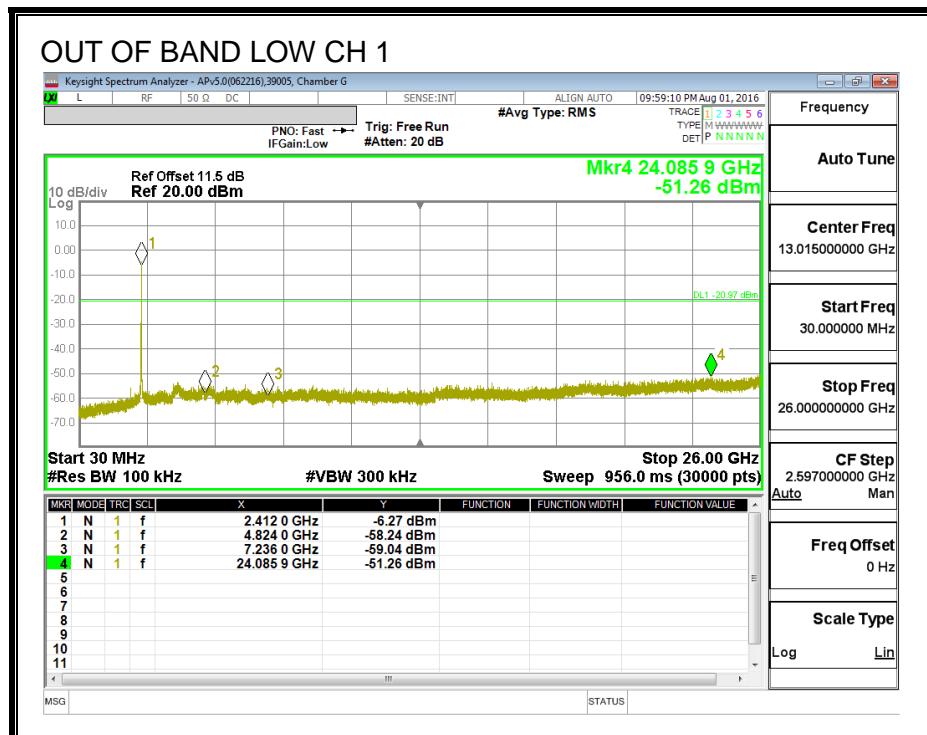


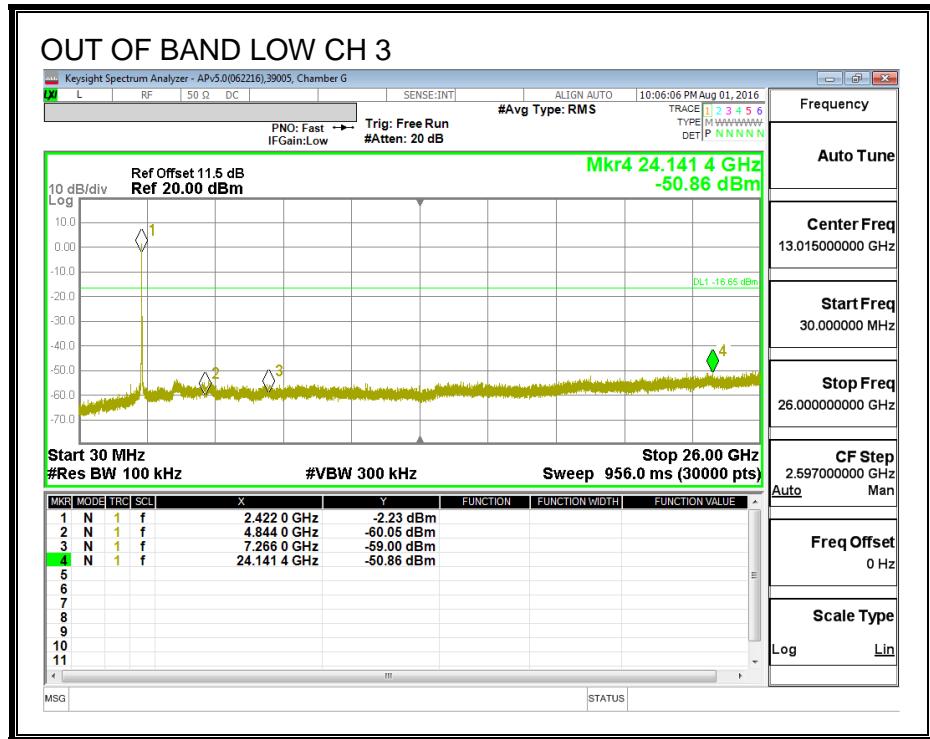
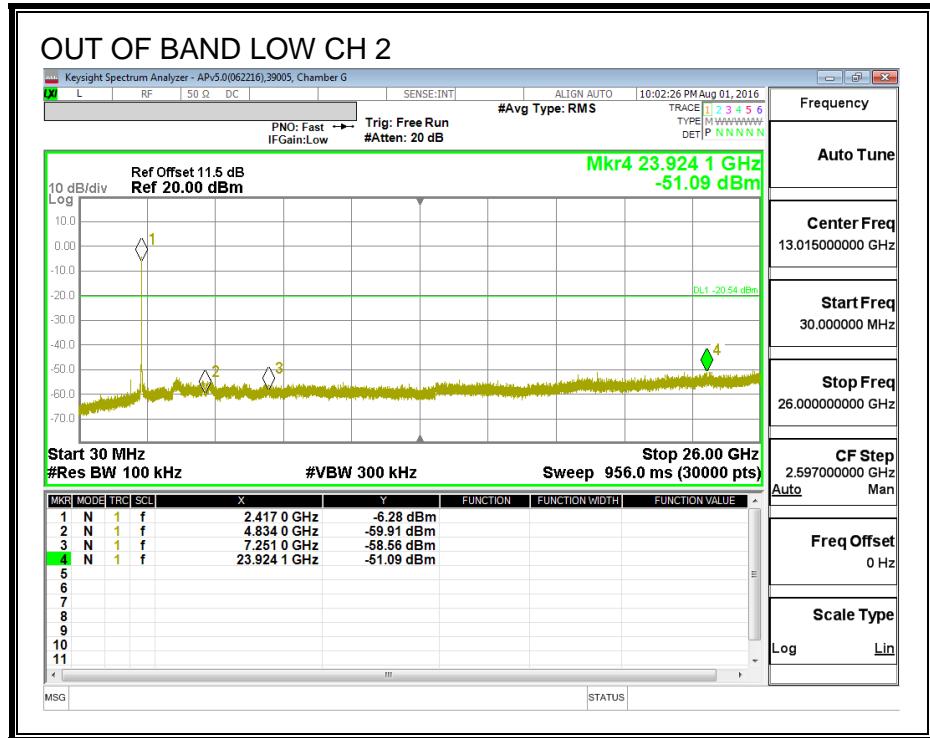


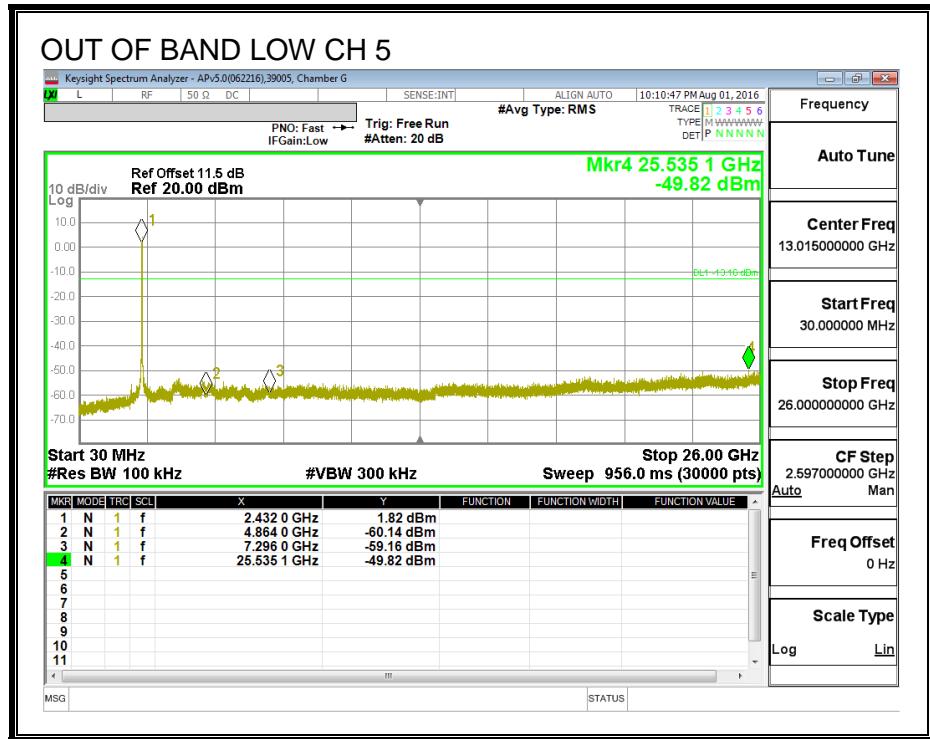
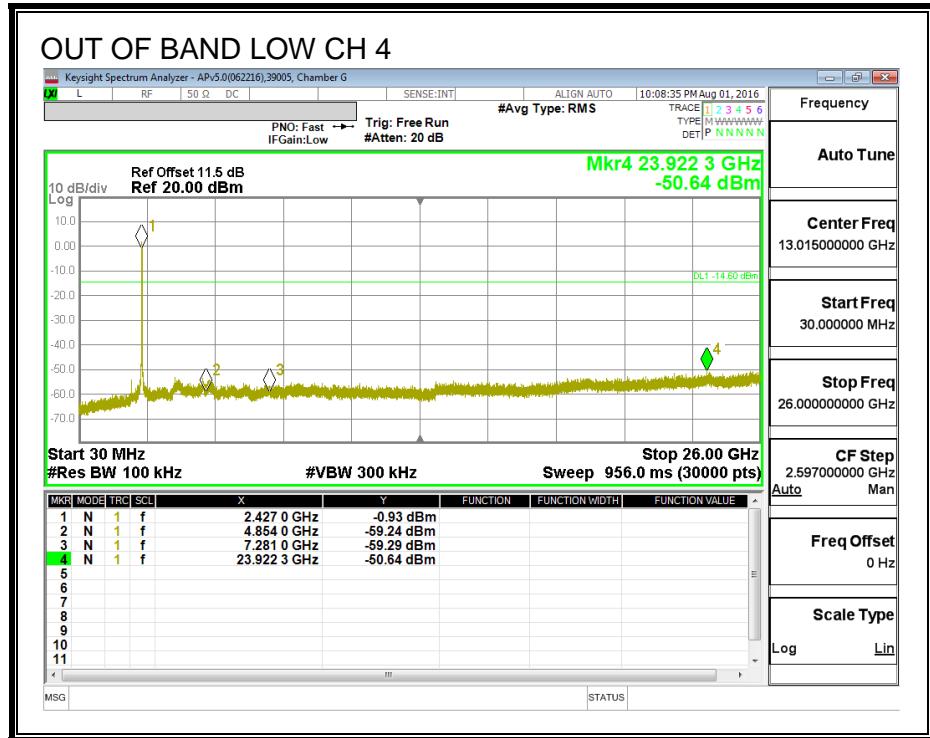


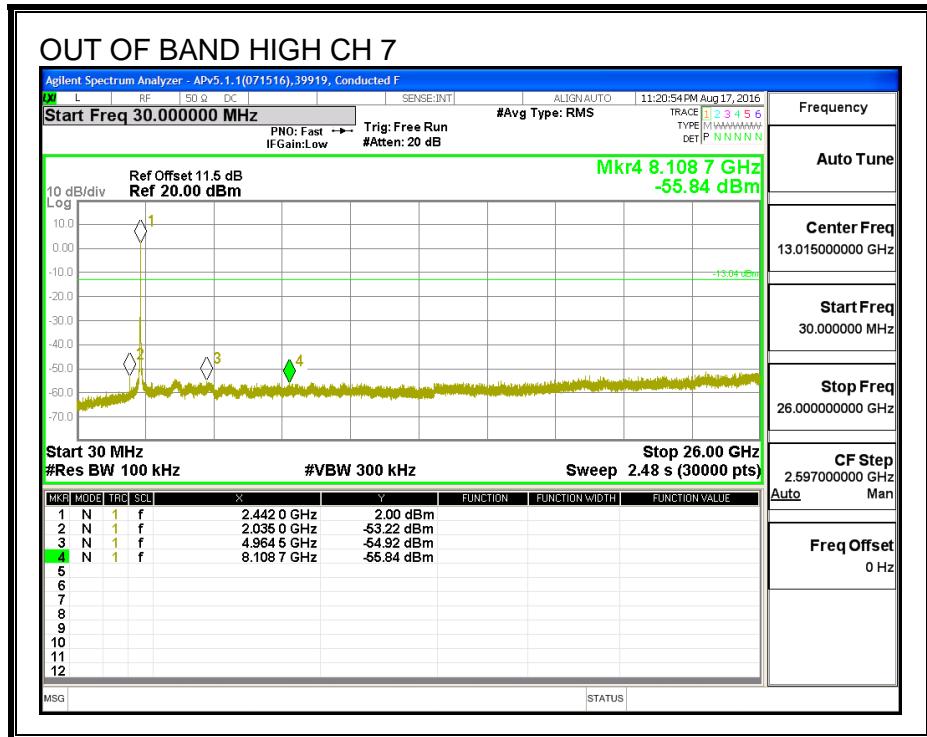
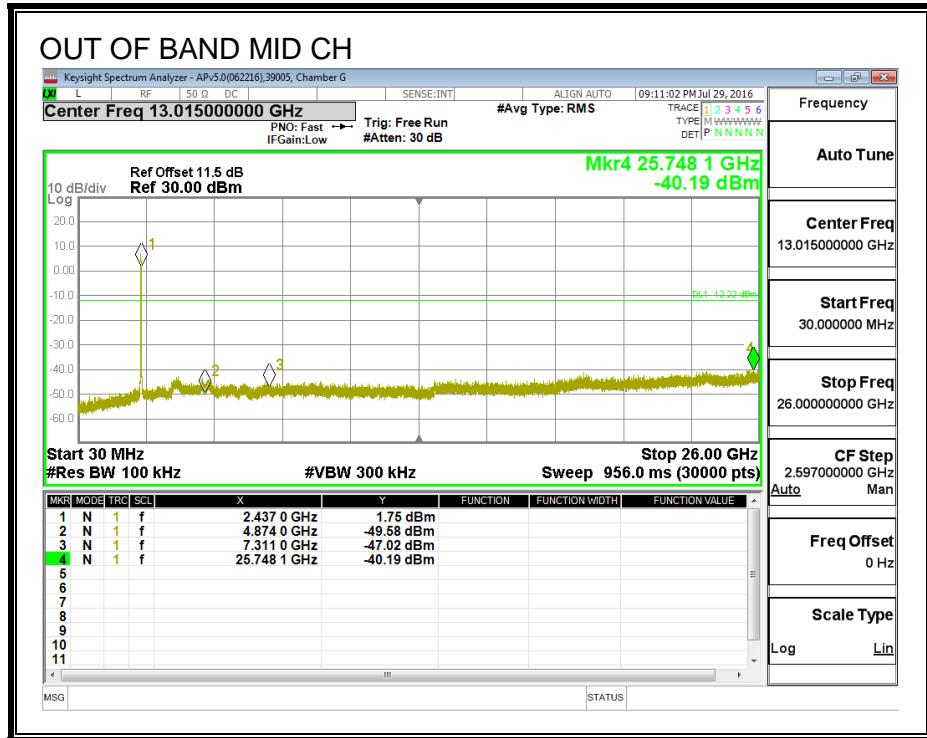


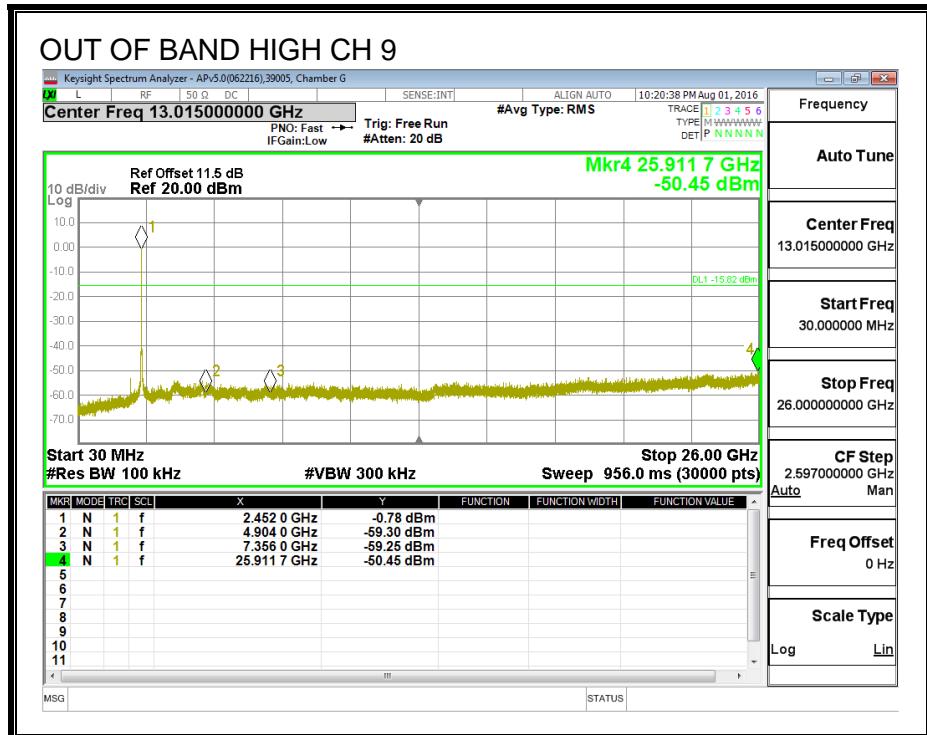
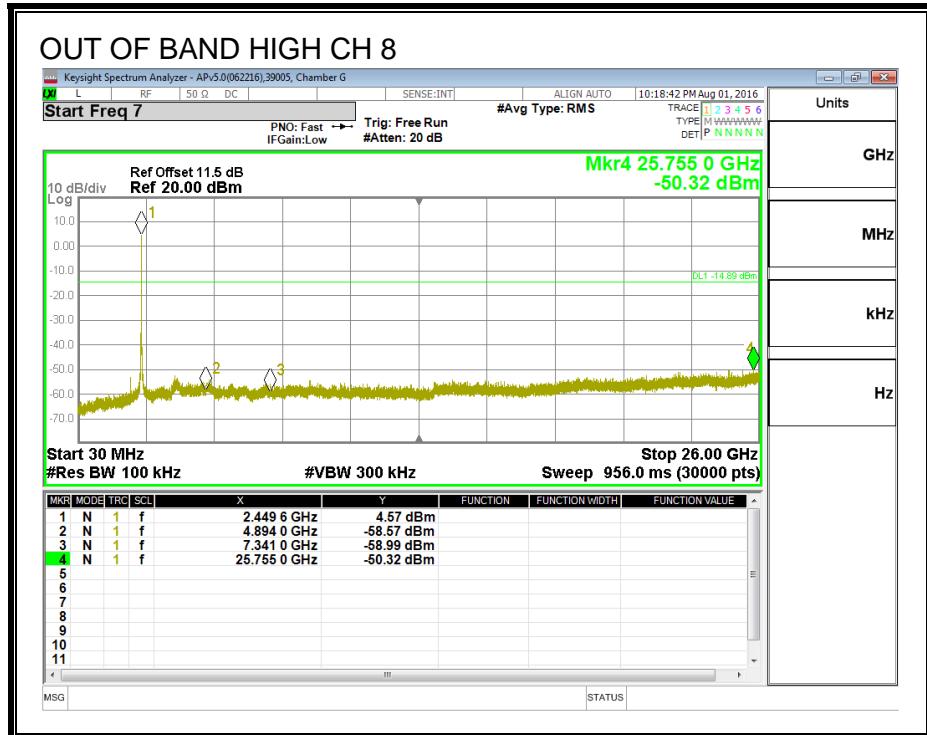
OUT-OF-BAND EMISSIONS, CHAIN 0

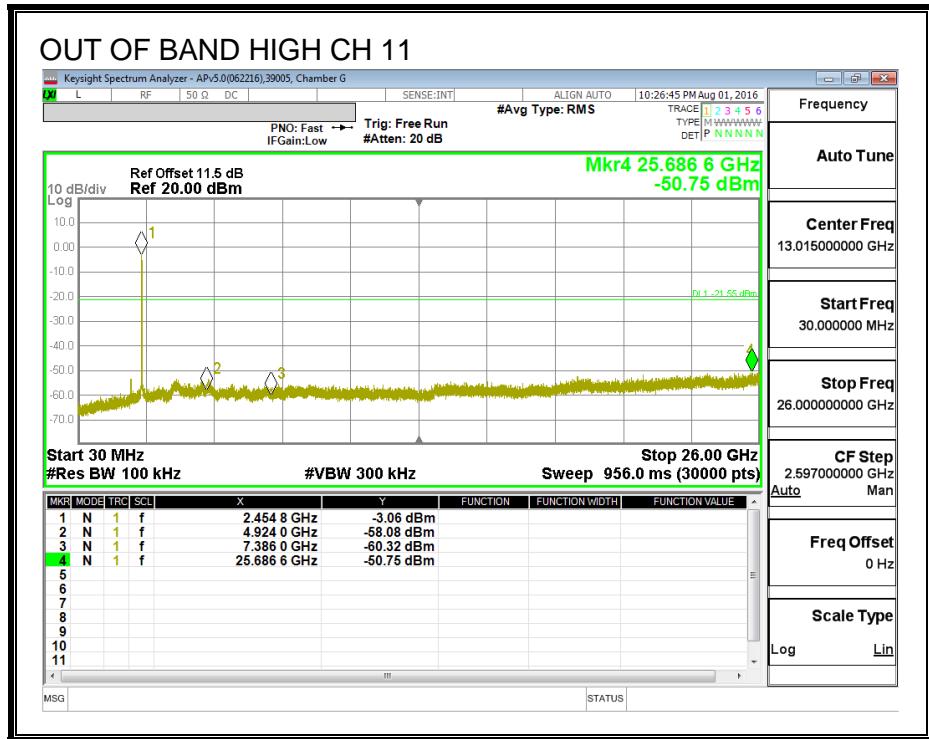
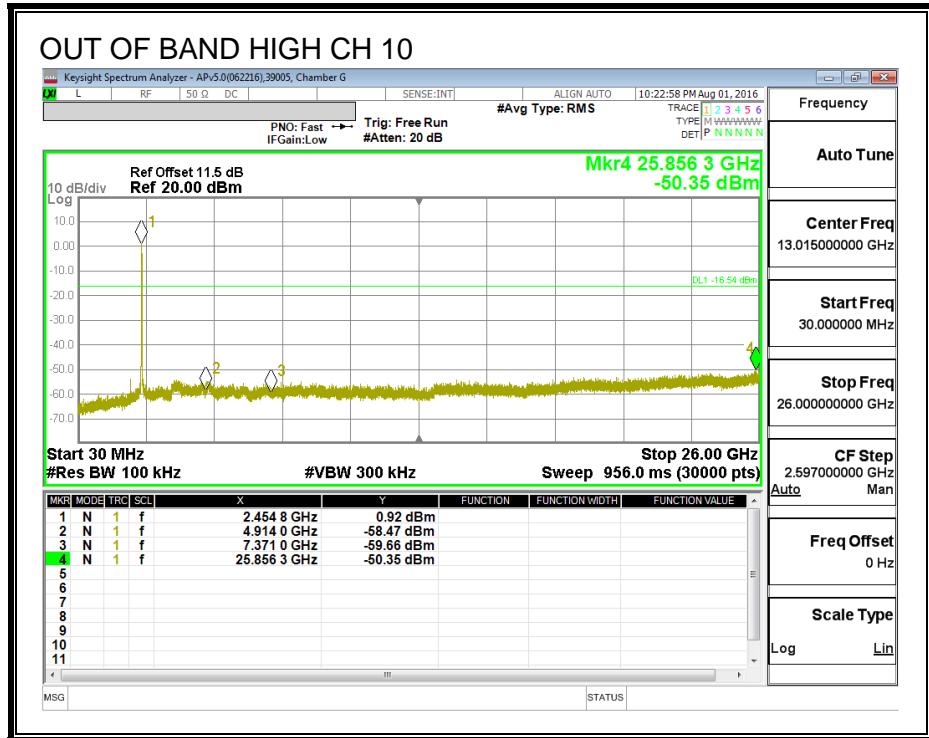


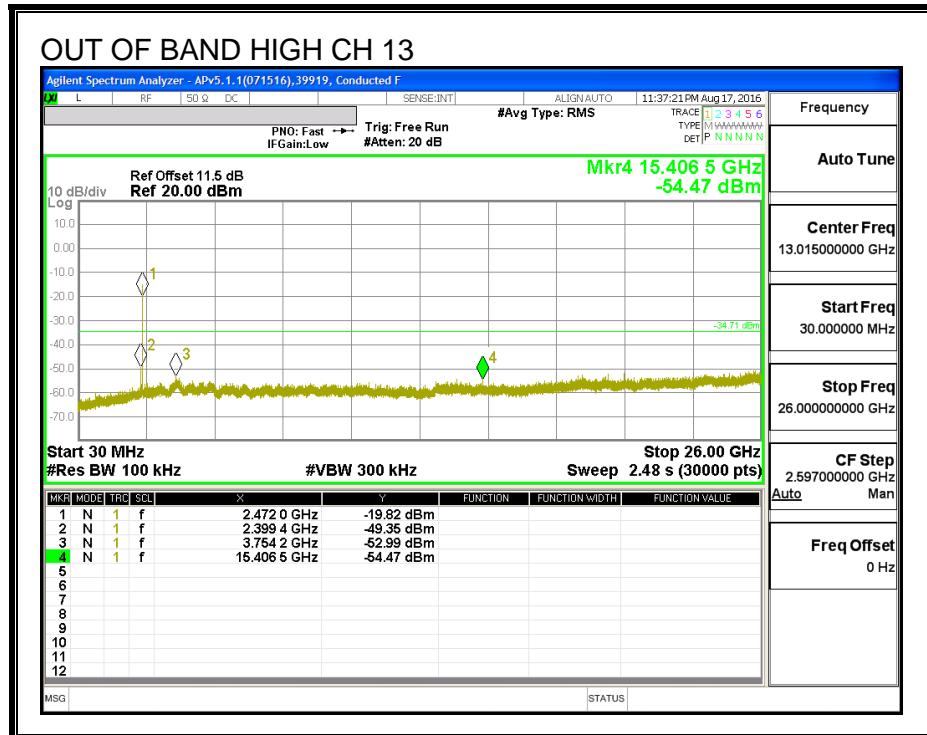
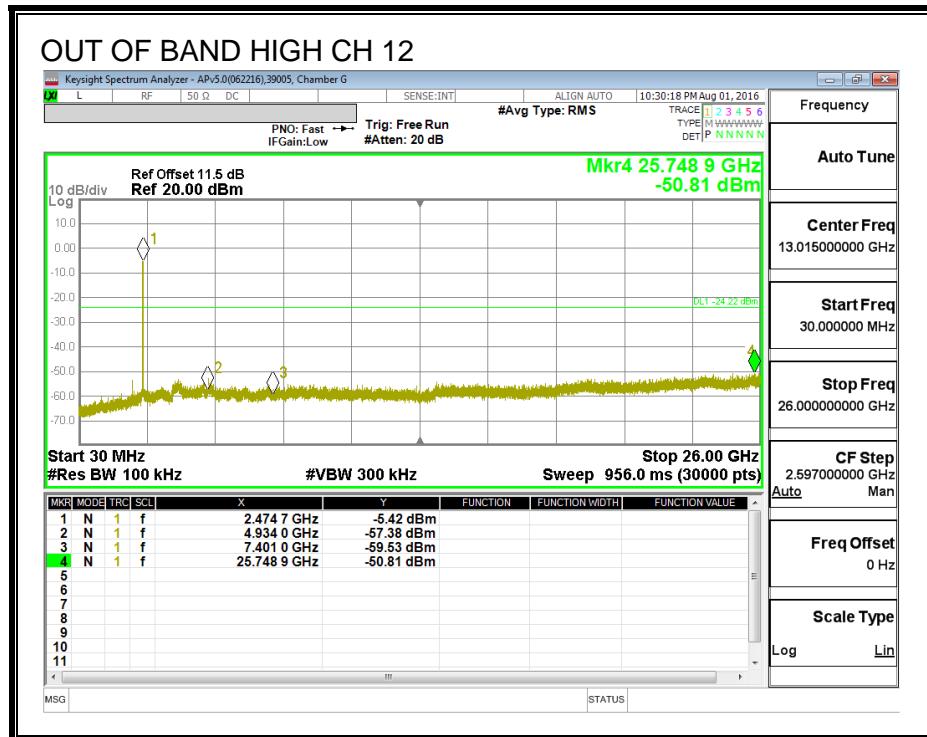




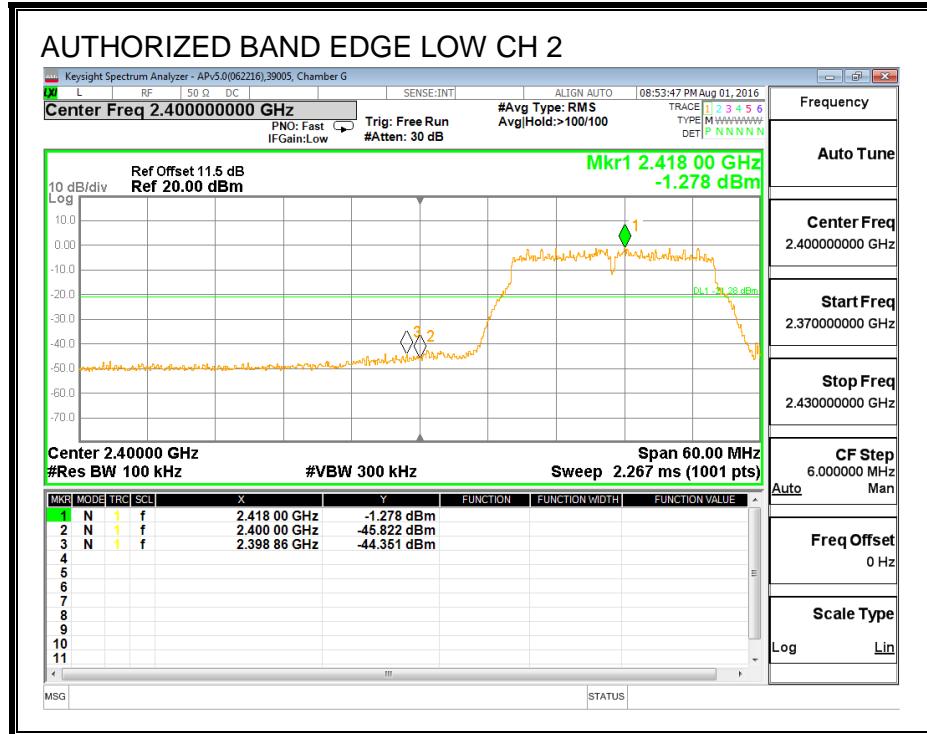
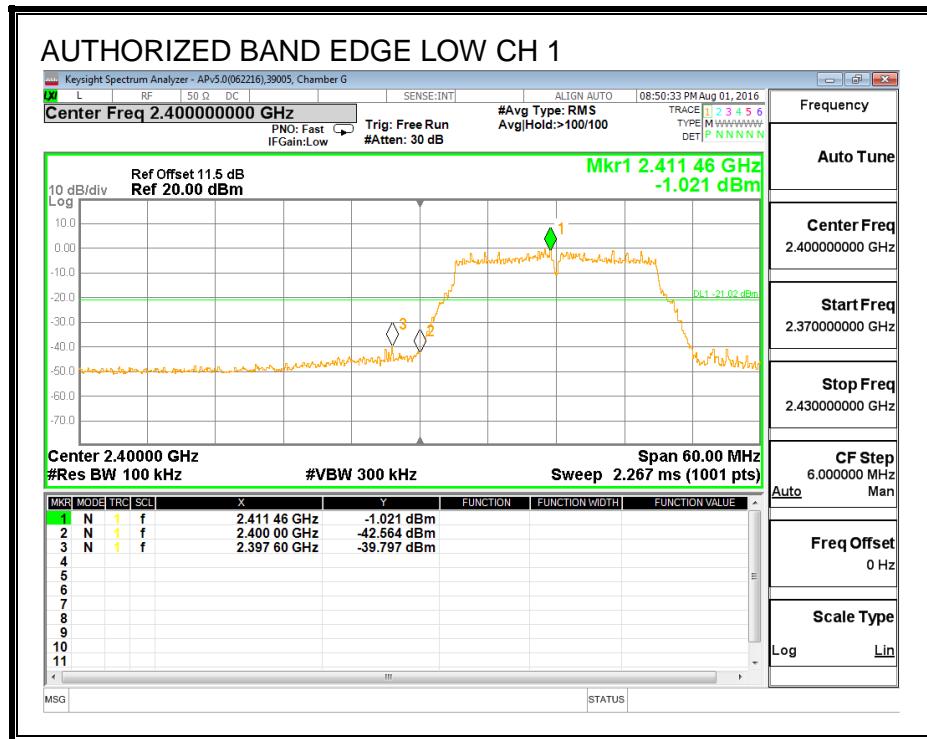


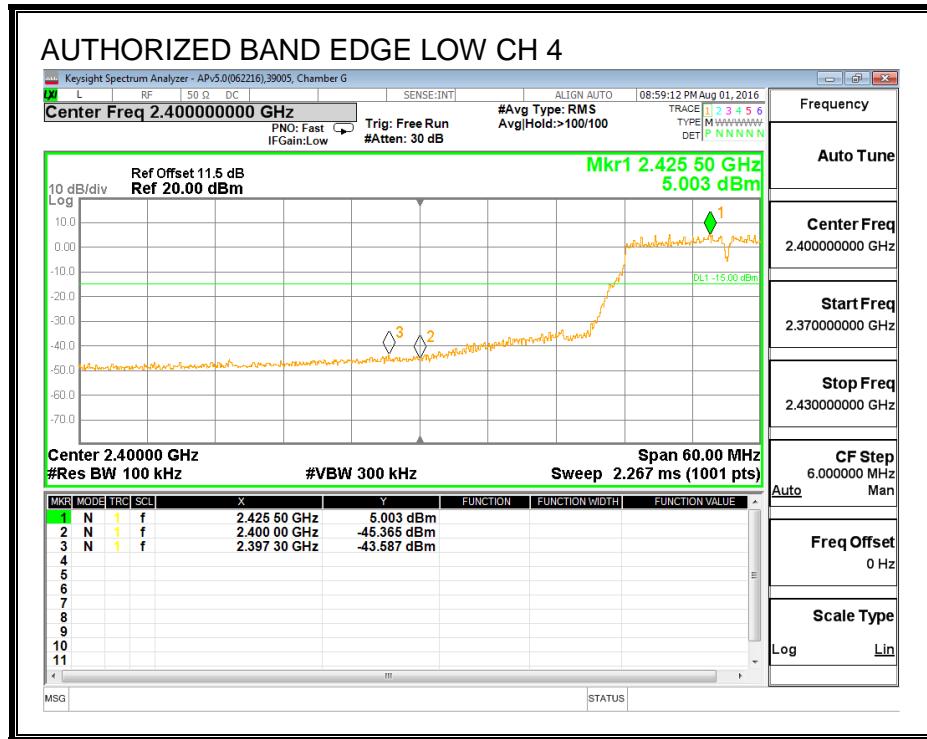
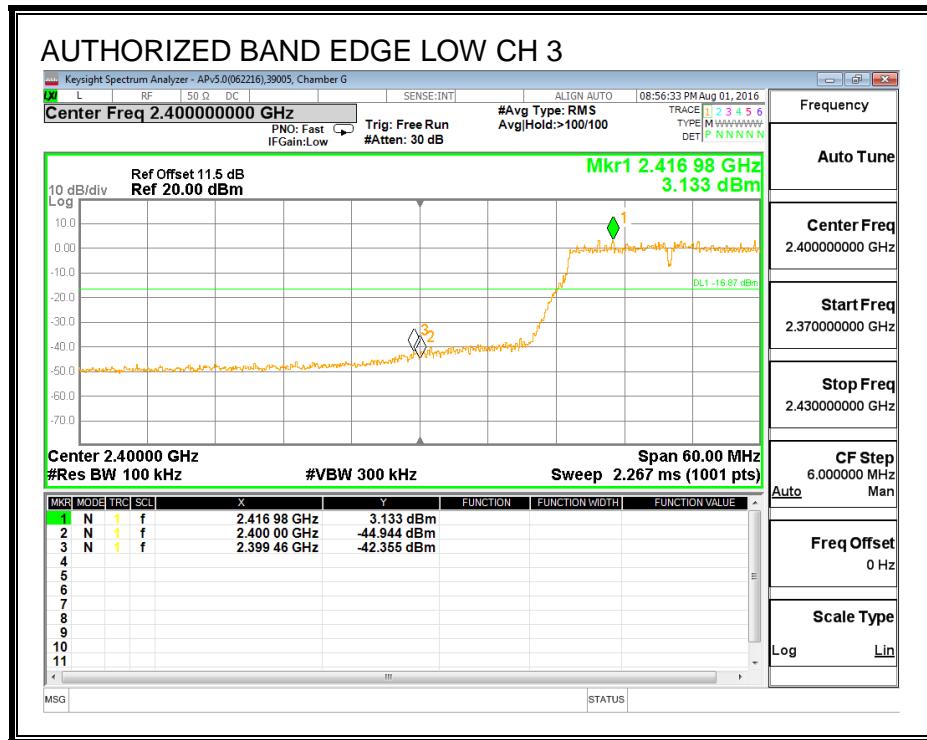


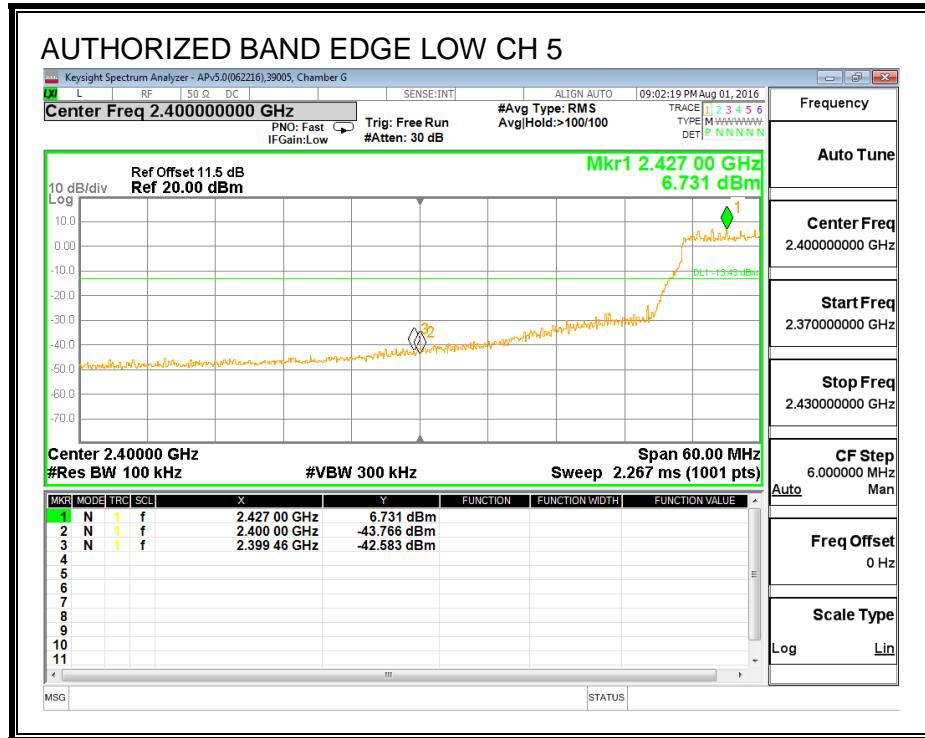




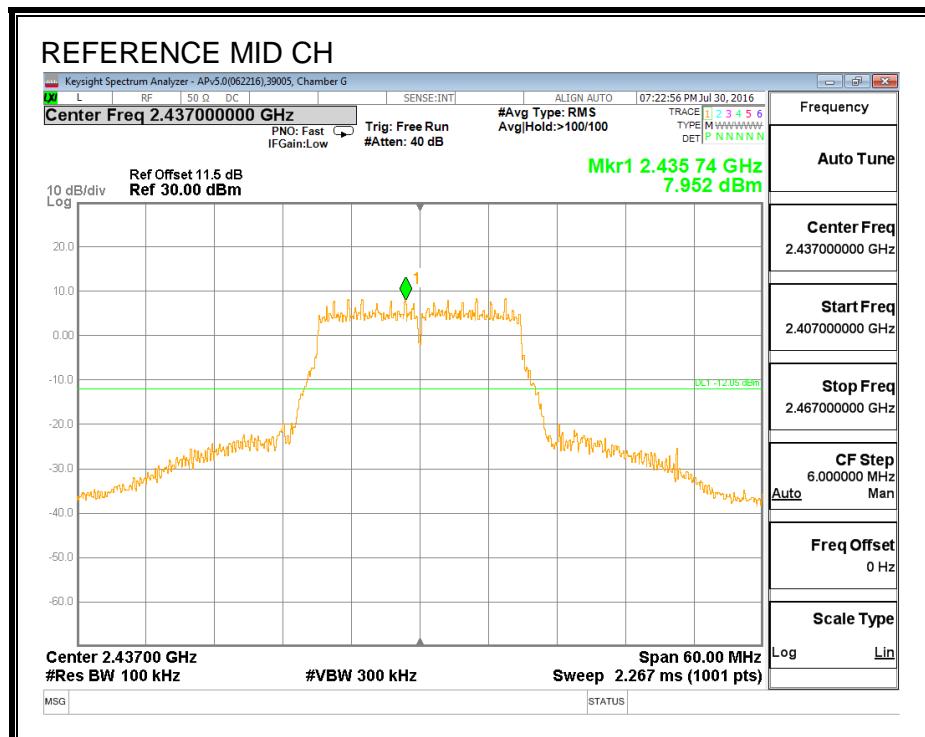
LOW CHANNEL BANDEDGE, CHAIN 1



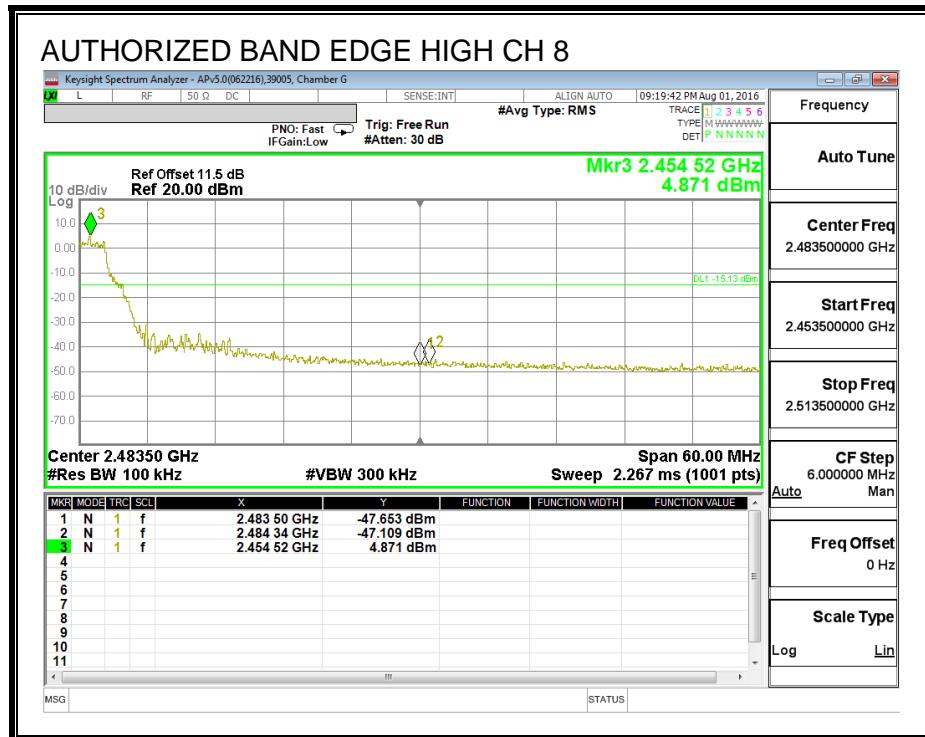
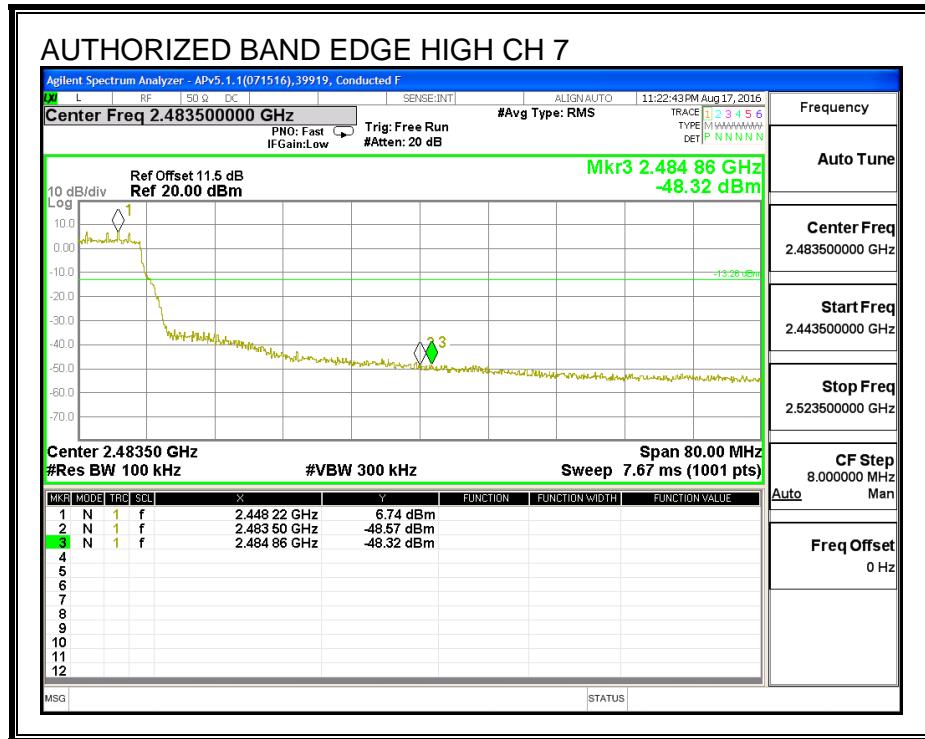


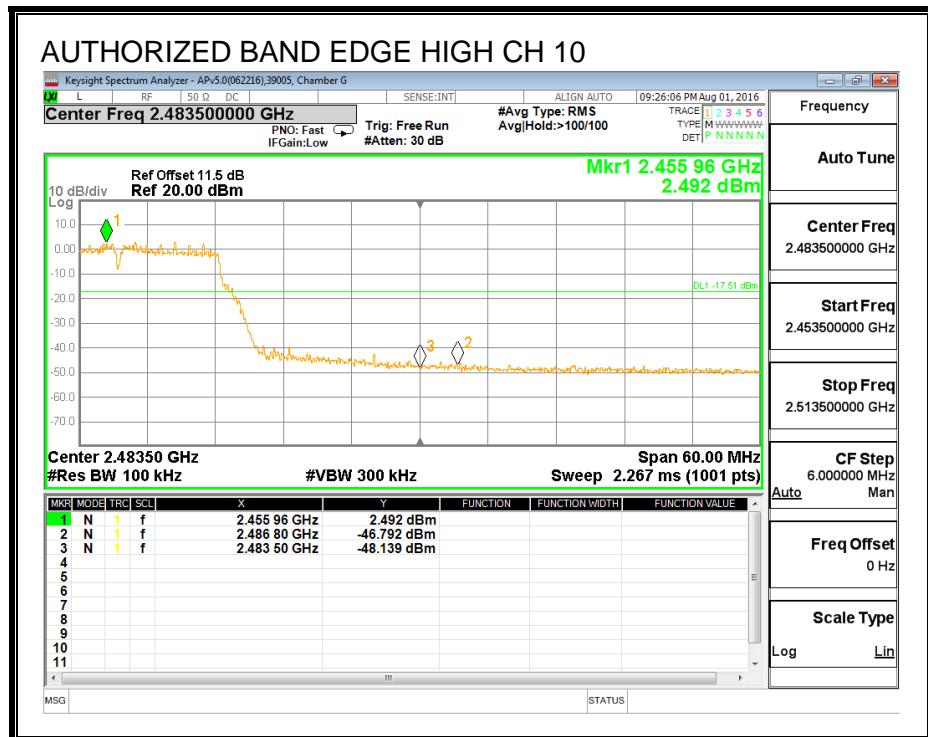
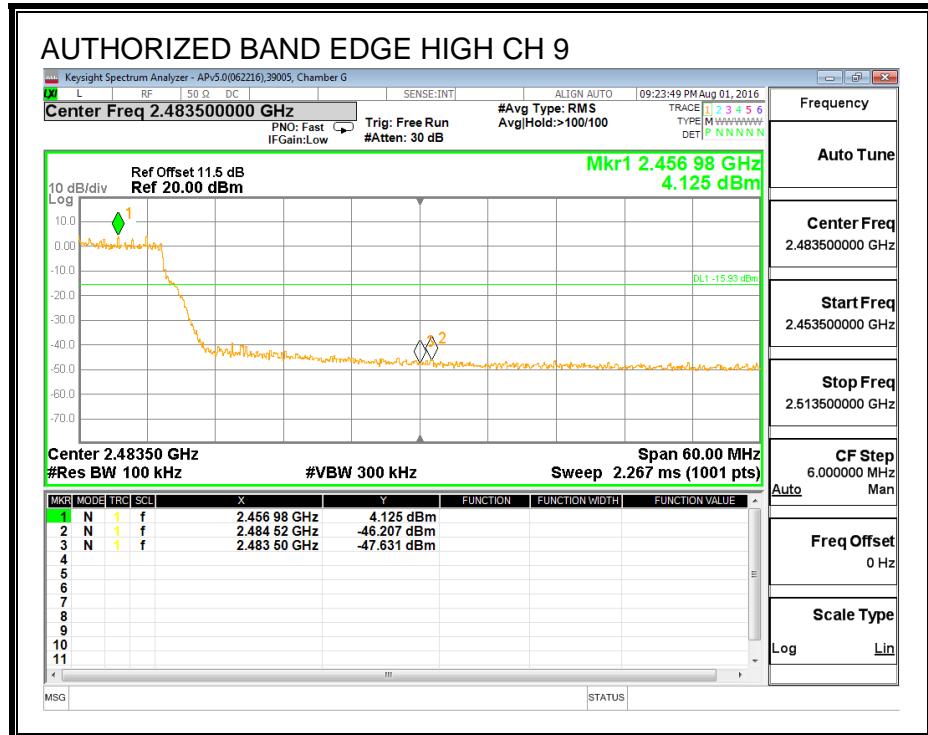


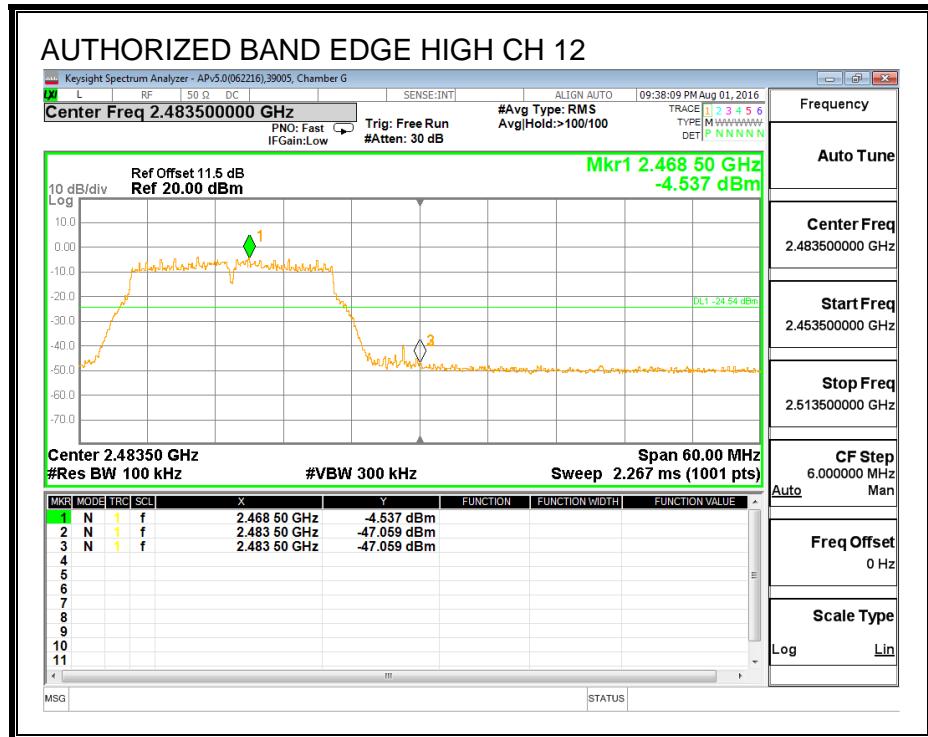
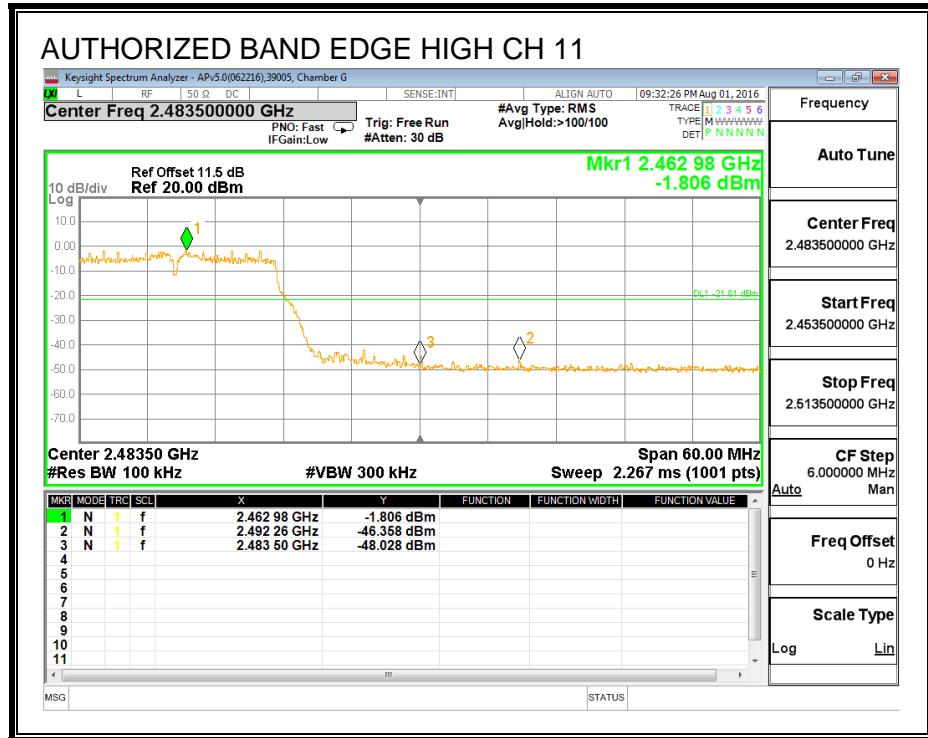
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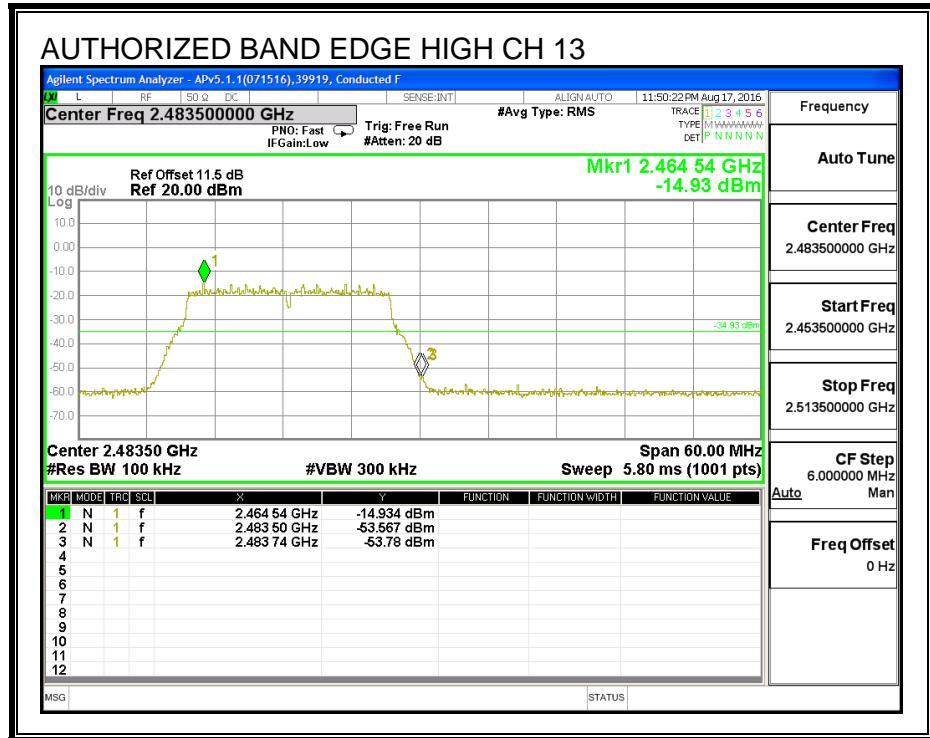


HIGH CHANNEL BANDEDGE, CHAIN 1

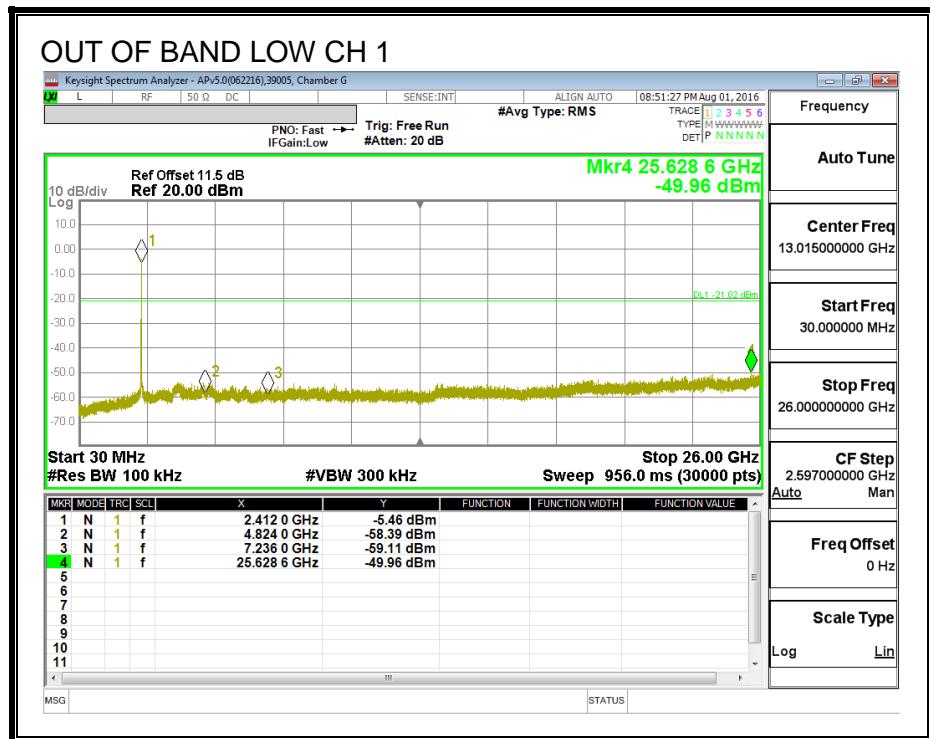


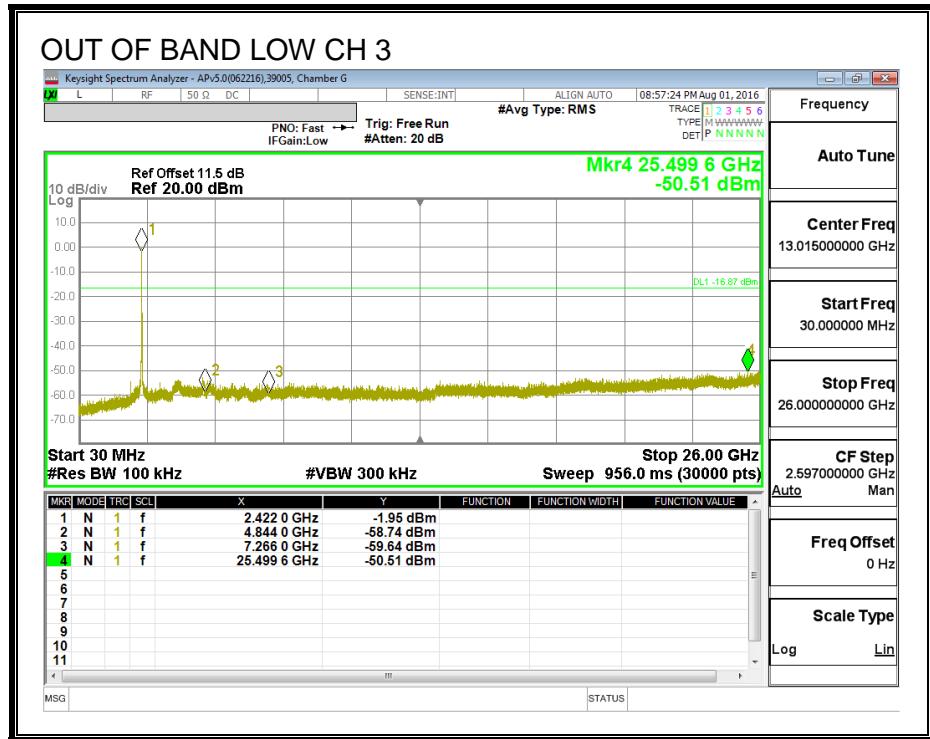
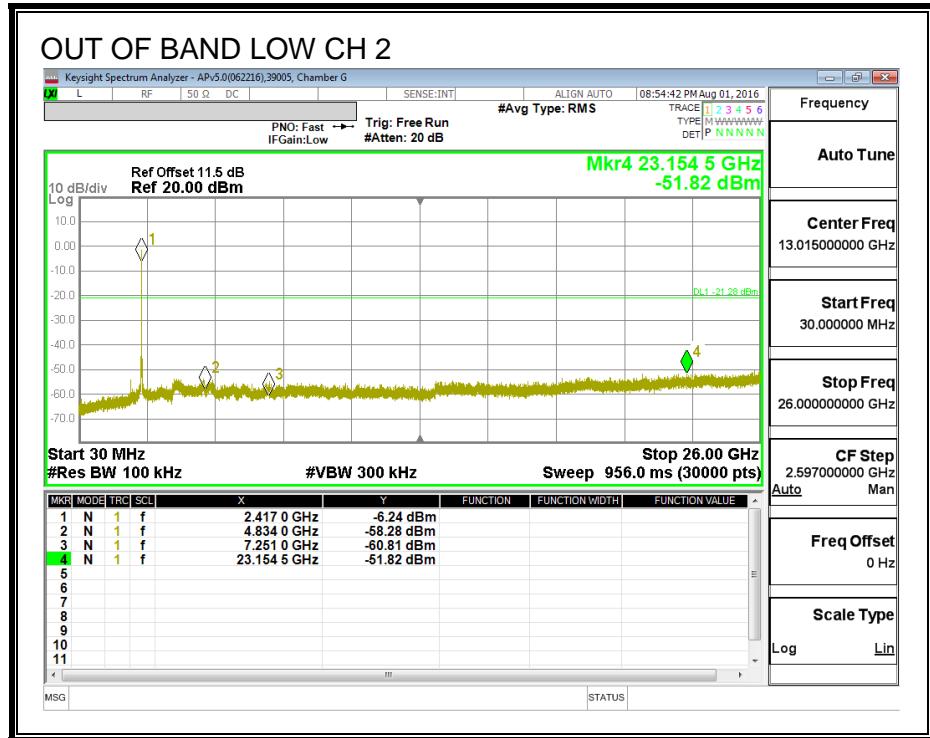


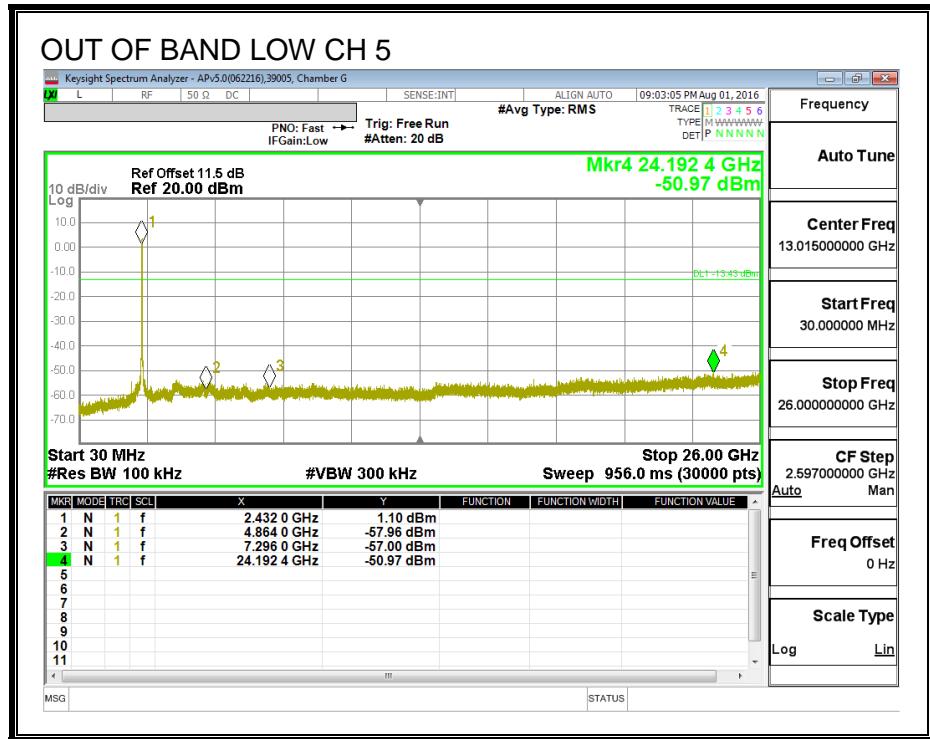
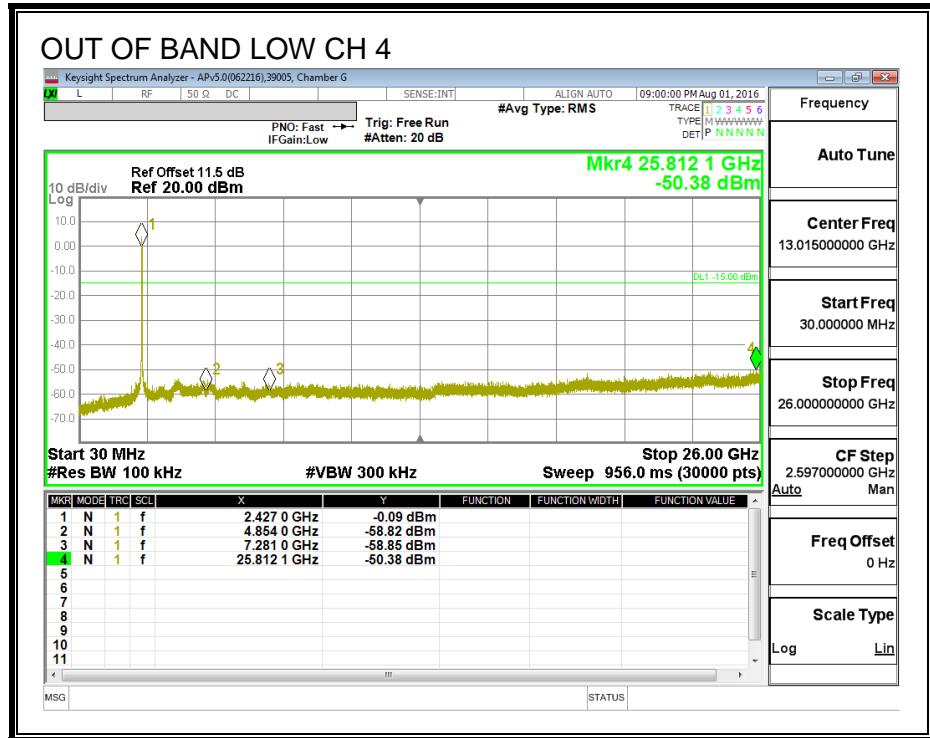


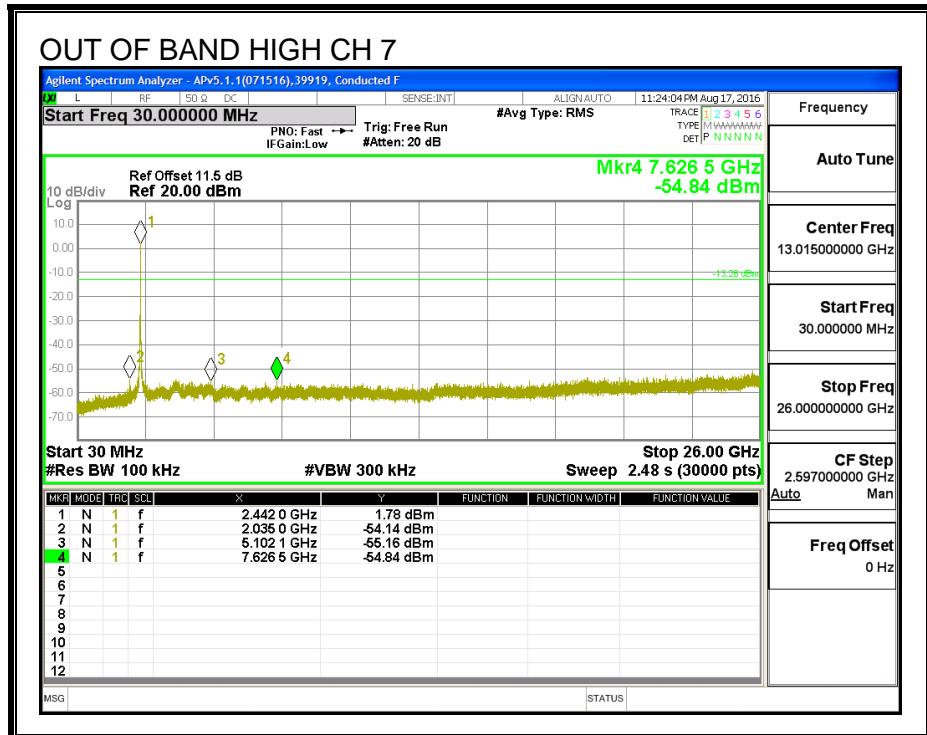
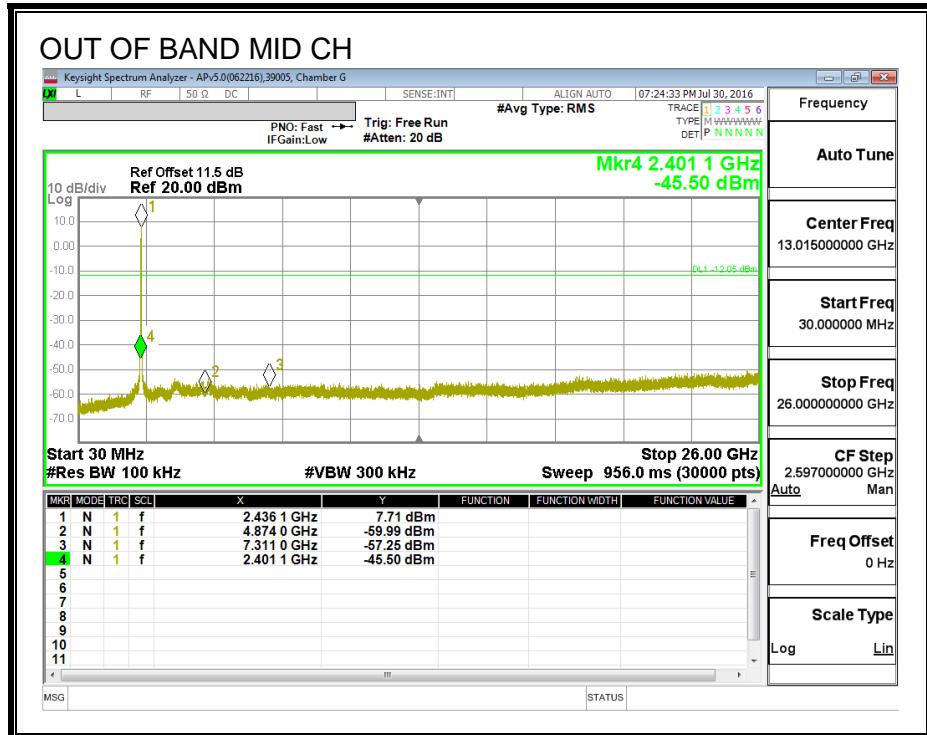


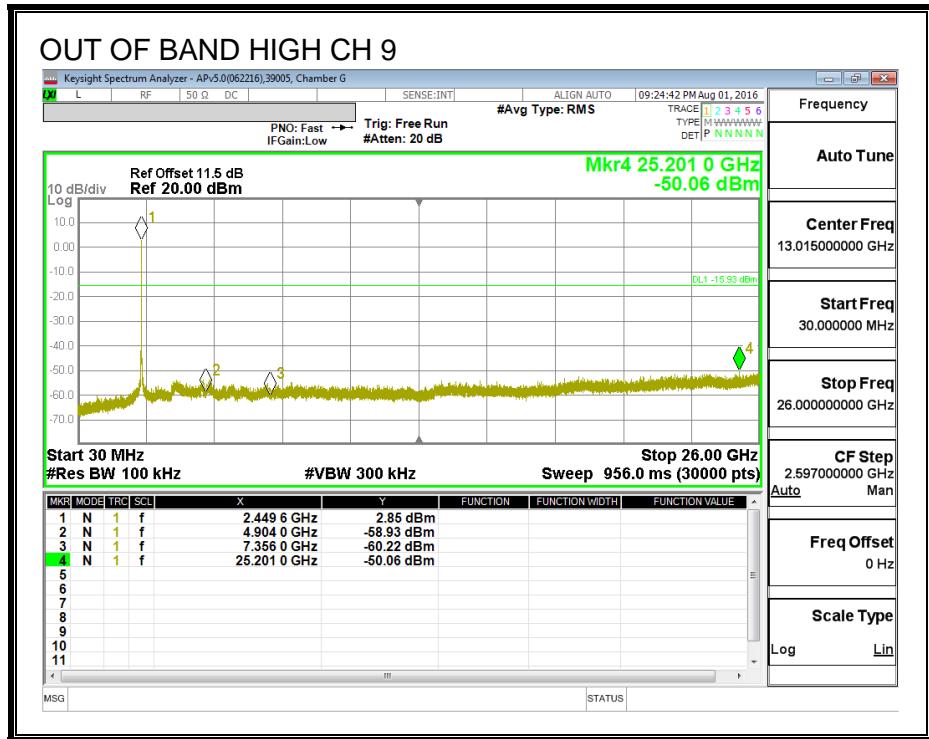
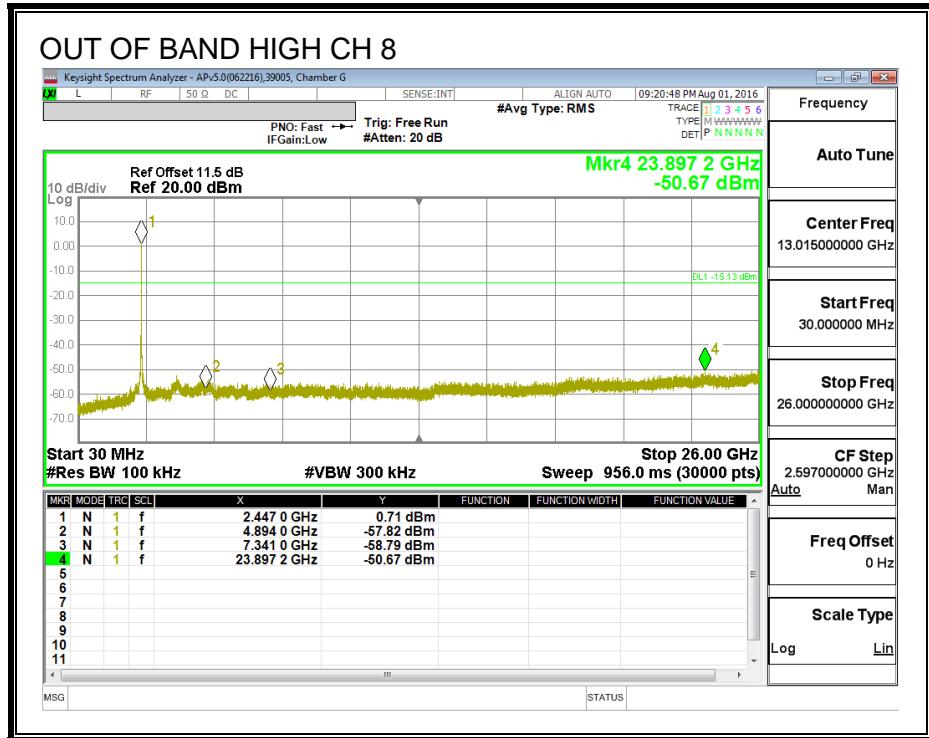
OUT-OF-BAND EMISSIONS, CHAIN 1

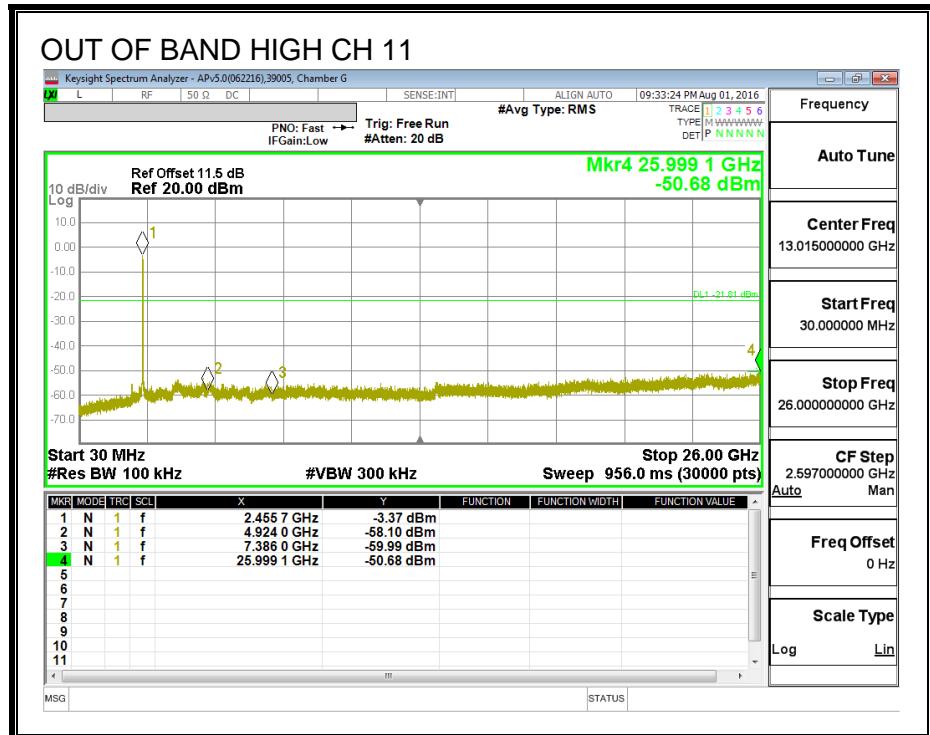
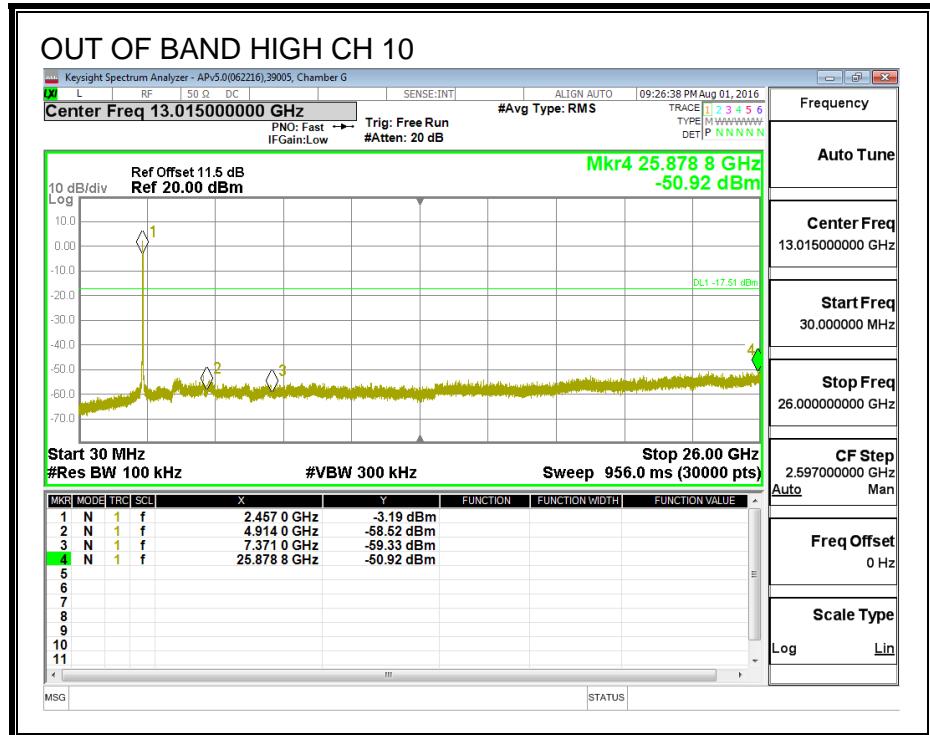


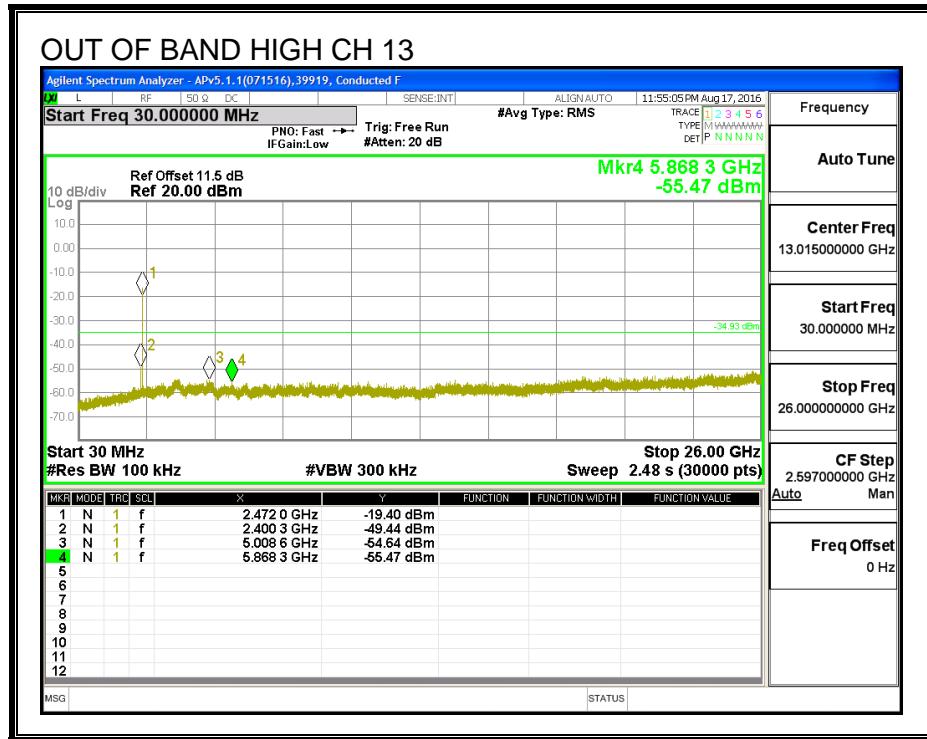
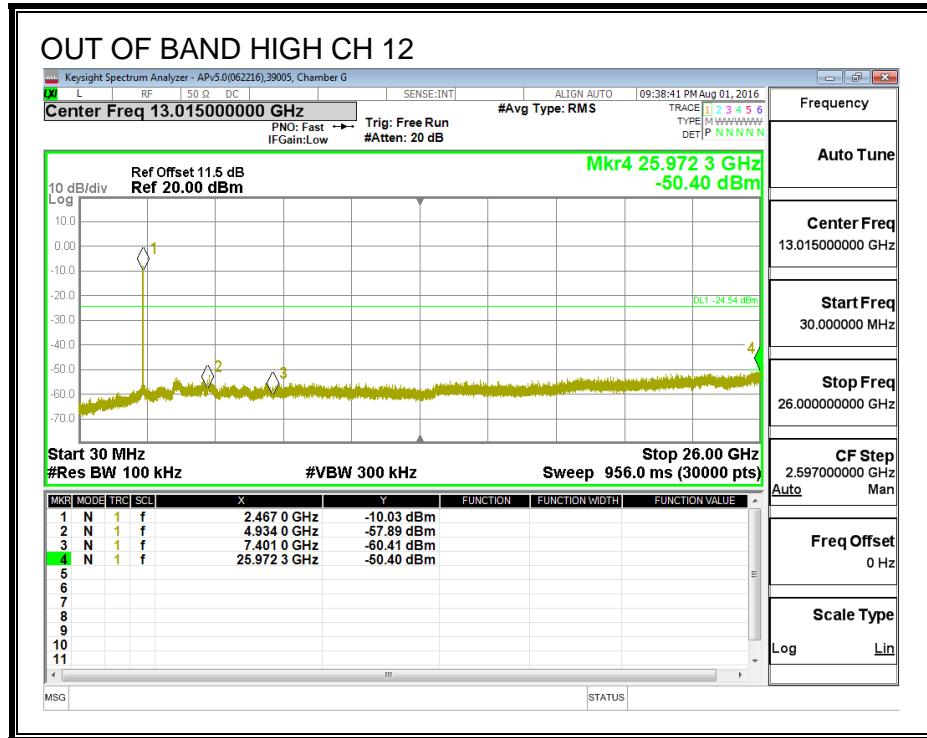












9. RADIATED TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-GEN, Section 8.9 and 8.10.

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.

For 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.

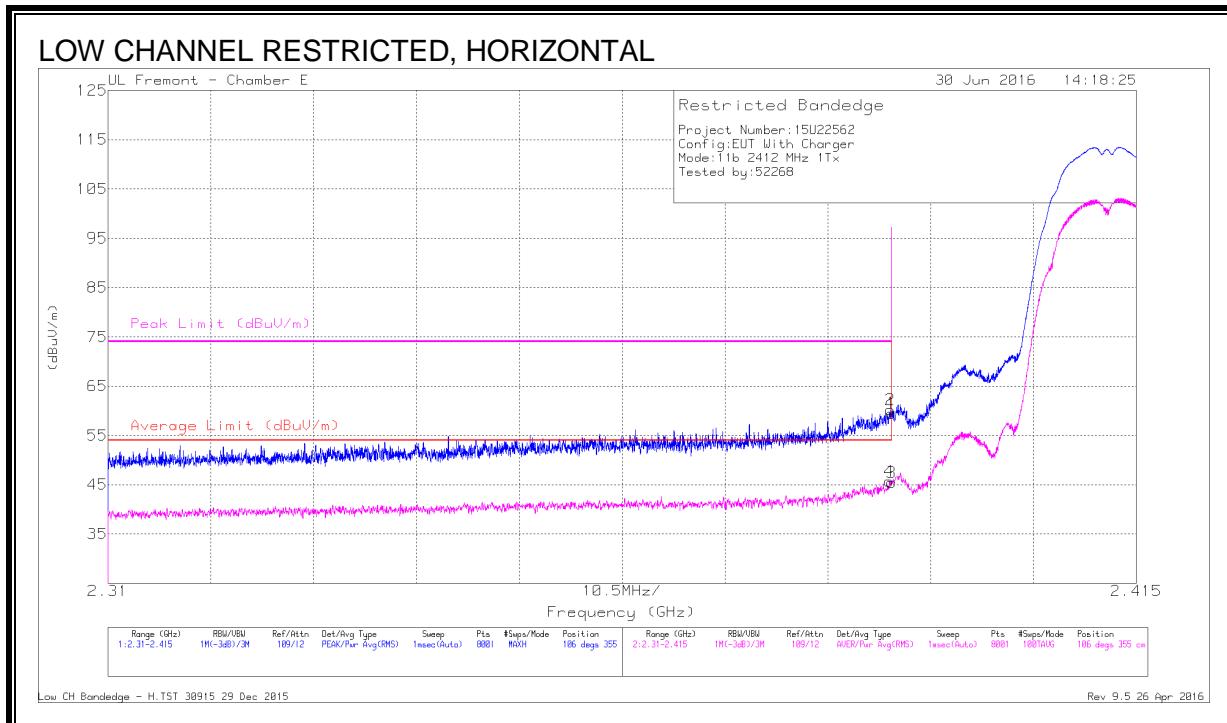
For 2.4 GHz band, the spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

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

Note: Project number 15U22562 was used before the new number was issued.

9.2. 802.11b 1Tx MODE IN THE 2.4 GHz BAND CHAIN 0

RESTRICTED BANDEDGE (LOW CHANNEL, CH 1)



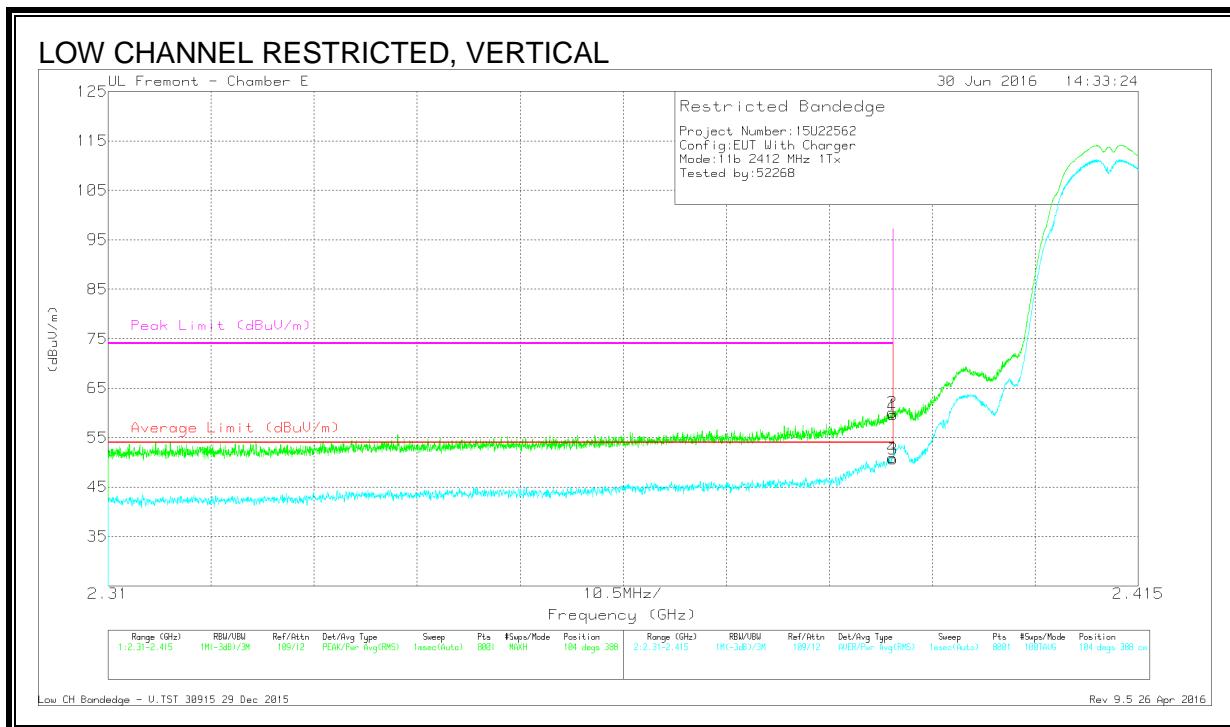
DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cpl/Fltr/Pa d (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	47.34	Pk	32.1	-19.9	59.54	-	-	74	-14.46	106	355	H
2	* 2.39	48.02	Pk	32.1	-19.9	60.22	-	-	74	-13.78	106	355	H
3	* 2.39	33.21	RMS	32.1	-19.9	45.41	54	-8.59	-	-	106	355	H
4	* 2.39	33.51	RMS	32.1	-19.9	45.71	54	-8.29	-	-	106	355	H

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

Pk - Peak detector

RMS - RMS detection



DATA

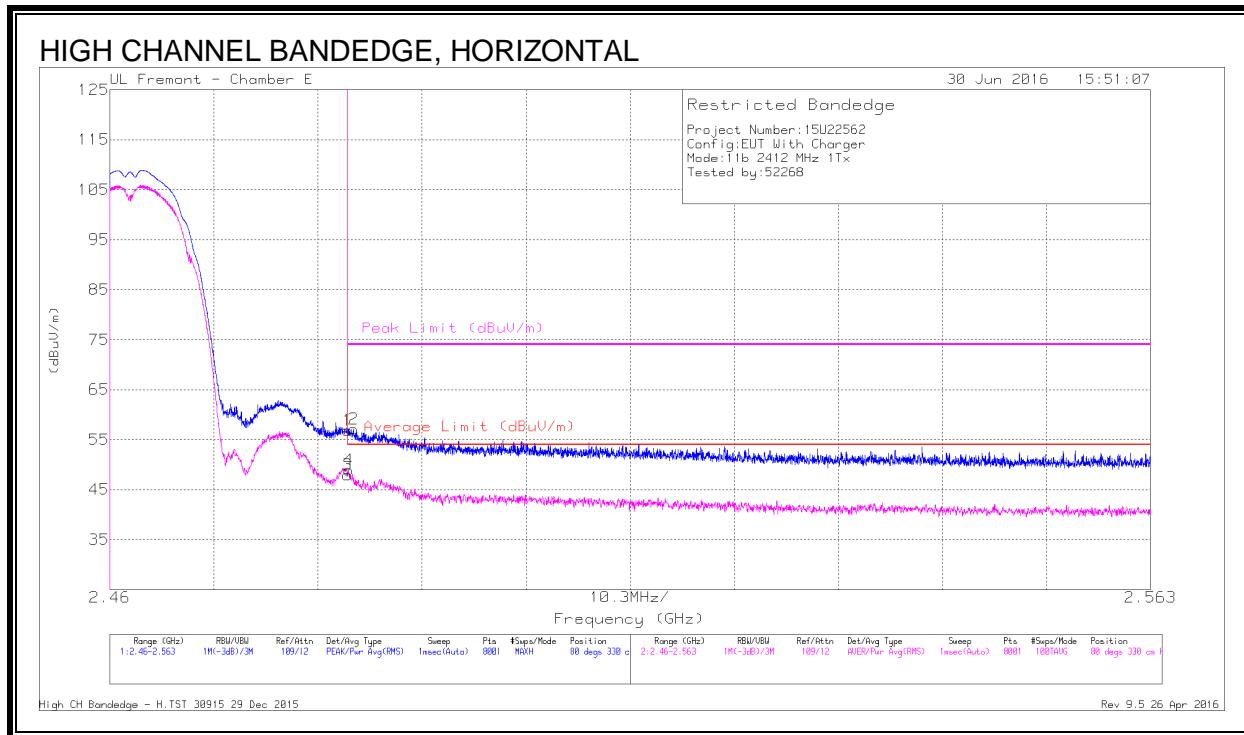
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	47.37	Pk	32.1	-19.9	59.57	-	-	74	-14.43	104	388	V
2	* 2.39	47.93	Pk	32.1	-19.9	60.13	-	-	74	-13.87	104	388	V
3	* 2.39	38.43	RMS	32.1	-19.9	50.63	54	-3.37	-	-	104	388	V
4	* 2.39	38.7	RMS	32.1	-19.9	50.9	54	-3.1	-	-	104	388	V

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

Pk - Peak detector

RMS - RMS detection

RESTRICTED BANDEDGE (HIGH CHANNEL, CH 11)



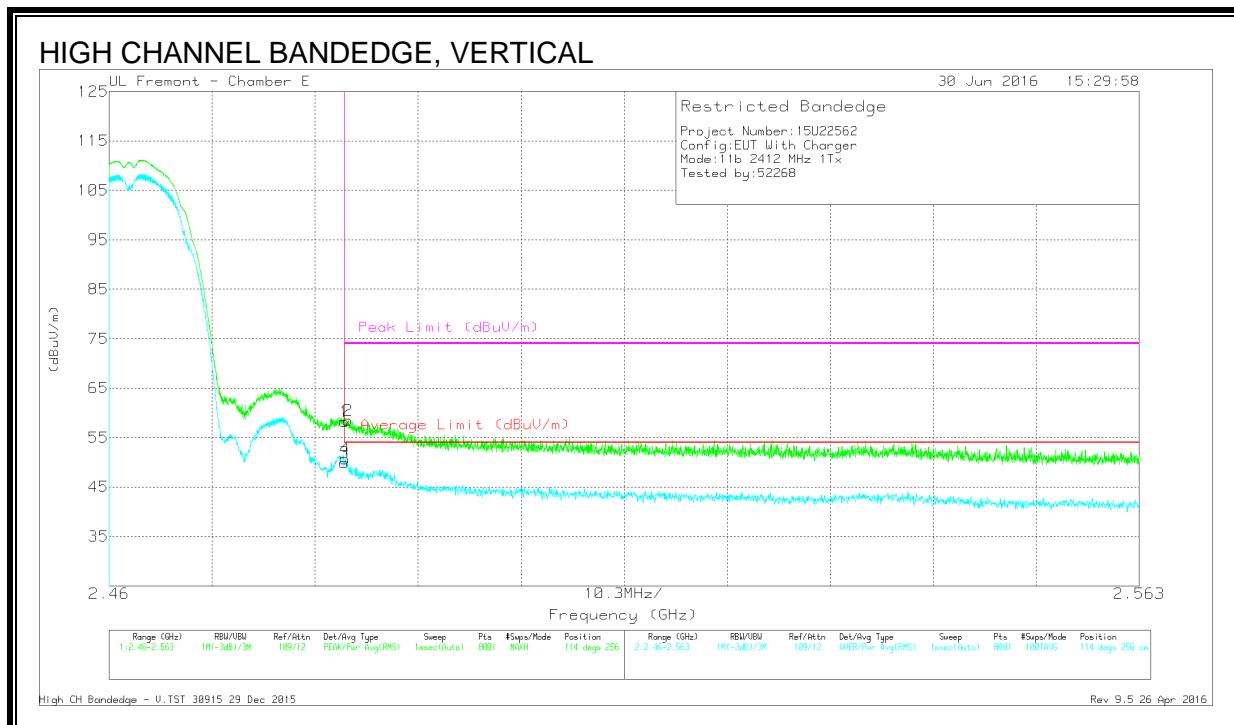
DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	44.59	Pk	32.3	-20	56.89	-	-	74	-17.11	80	330	H
2	* 2.484	44.77	Pk	32.3	-20	57.07	-	-	74	-16.93	80	330	H
3	* 2.484	35.63	RMS	32.3	-20	47.93	54	-6.07	-	-	80	330	H
4	* 2.484	36.59	RMS	32.3	-20	48.89	54	-5.11	-	-	80	330	H

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

Pk - Peak detector

RMS - RMS detection



DATA

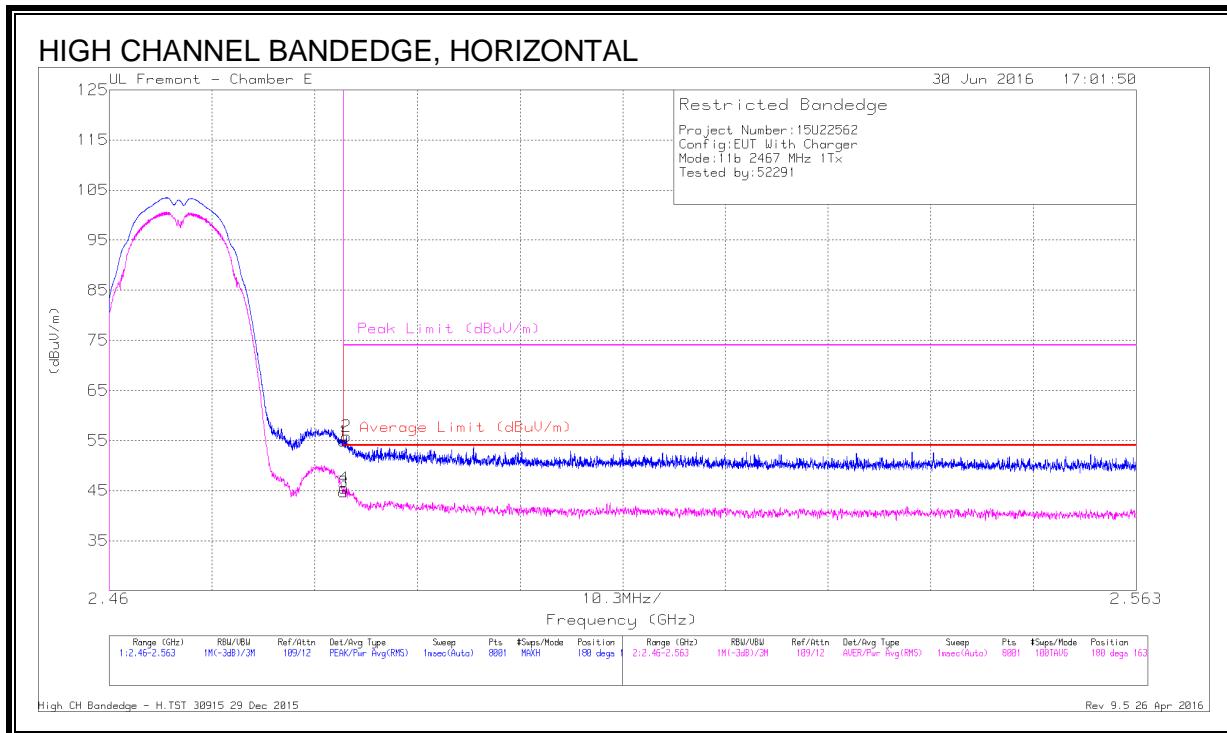
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	45.98	Pk	32.3	-20	58.28	-	-	74	-15.72	114	256	V
2	* 2.484	46.17	Pk	32.3	-20	58.47	-	-	74	-15.53	114	256	V
3	* 2.484	37.65	RMS	32.3	-20	49.95	54	-4.05	-	-	114	256	V
4	* 2.484	38.34	RMS	32.3	-20	50.64	54	-3.36	-	-	114	256	V

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

Pk - Peak detector

RMS - RMS detection

RESTRICTED BANDEDGE (HIGH CHANNEL, CH 12)



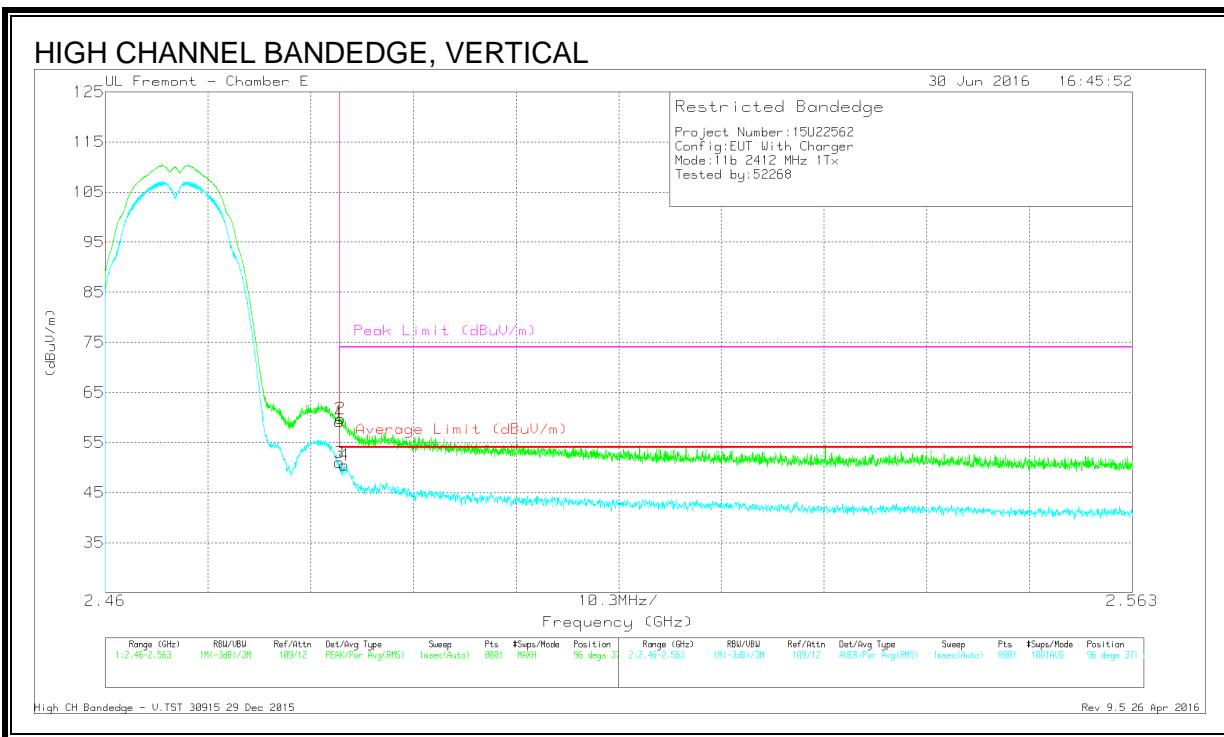
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Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	42.52	Pk	32.3	-20	54.82	-	-	74	-19.18	180	163	H
2	* 2.484	43.55	Pk	32.3	-20	55.85	-	-	74	-18.15	180	163	H
3	* 2.484	32.41	RMS	32.3	-20	44.71	54	-9.29	-	-	180	163	H
4	* 2.484	33.21	RMS	32.3	-20	45.51	54	-8.49	-	-	180	163	H

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

Pk - Peak detector

RMS - RMS detection



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	46.84	Pk	32.3	-20	59.14	-	-	74	-14.86	96	371	V
2	* 2.484	47.48	Pk	32.3	-20	59.78	-	-	74	-14.22	96	371	V
3	* 2.484	38.72	RMS	32.3	-20	51.02	54	-2.98	-	-	96	371	V
4	* 2.484	38.2	RMS	32.3	-20	50.5	54	-3.5	-	-	96	371	V

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

Pk - Peak detector

RMS - RMS detection