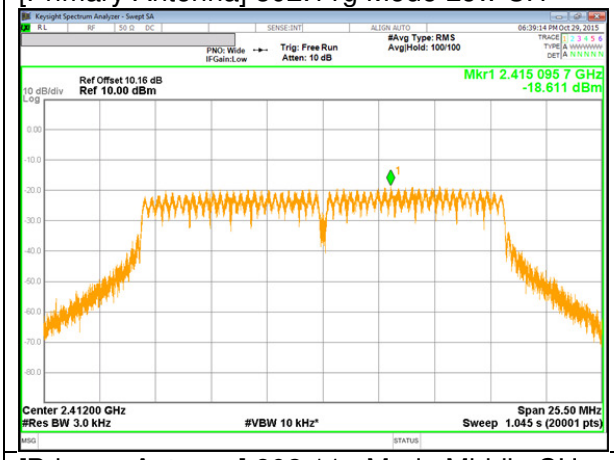
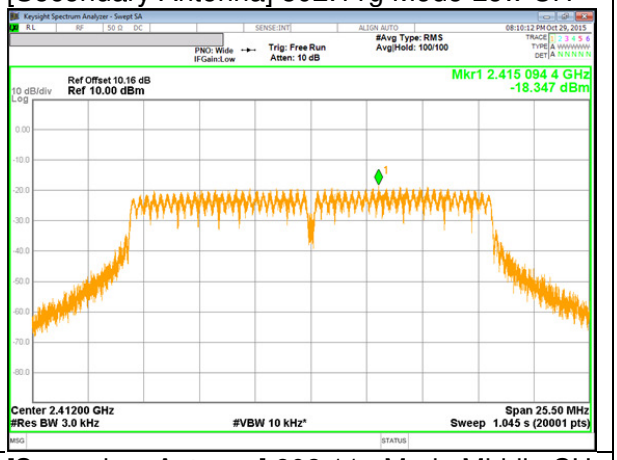
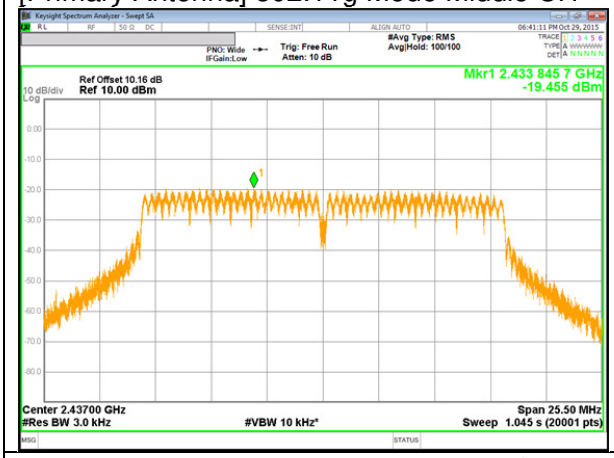
[Primary Antenna] 802.11g Mode Low CH



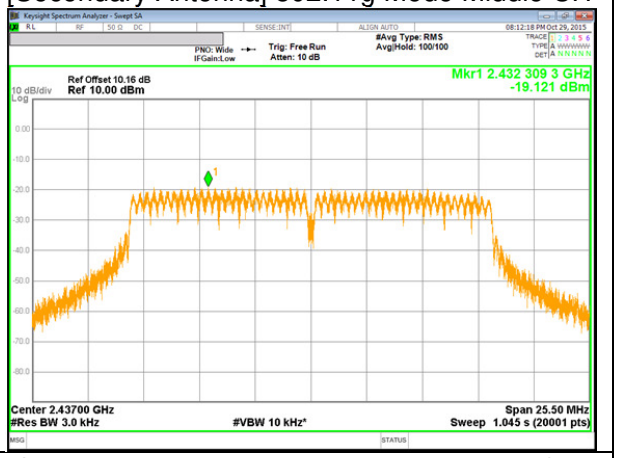
[Secondary Antenna] 802.11g Mode Low CH



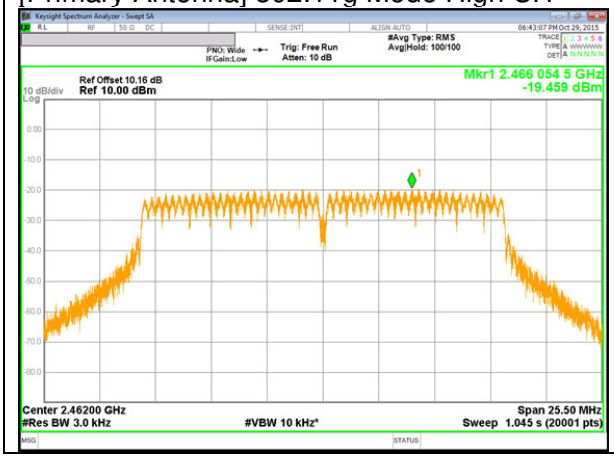
[Primary Antenna] 802.11g Mode Middle CH



[Secondary Antenna] 802.11g Mode Middle CH



[Primary Antenna] 802.11g Mode High CH



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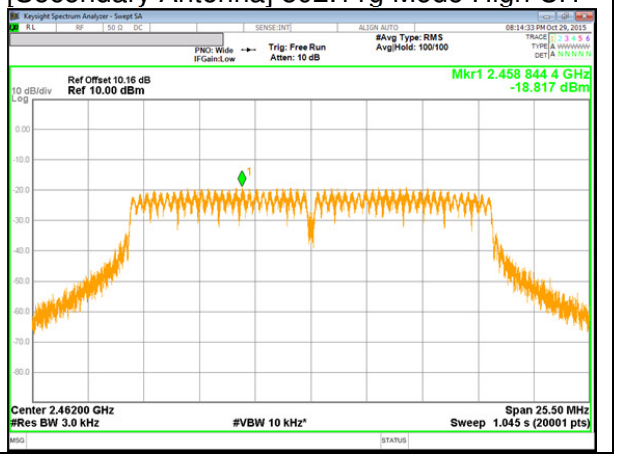

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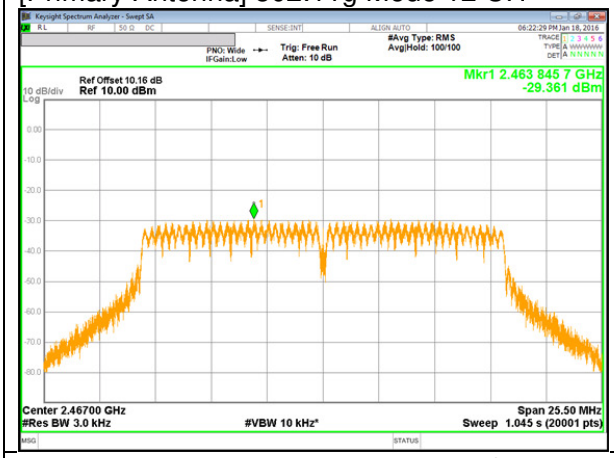
[Primary Antenna] 802.11g Mode 12 CH



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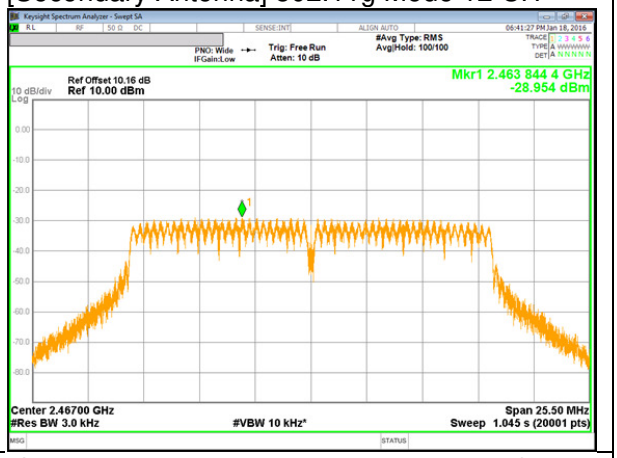
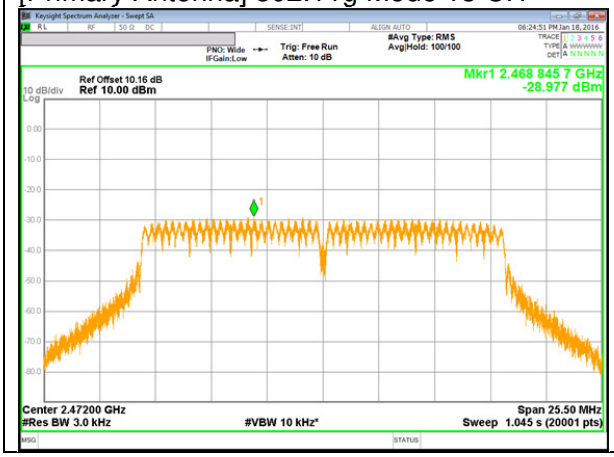
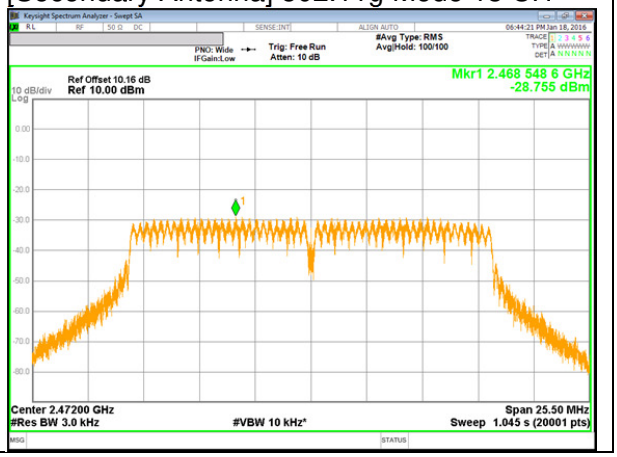


[Primary Antenna] 802.11g Mode 13 CH



[Secondary Antenna] 802.11g Mode 13 CH



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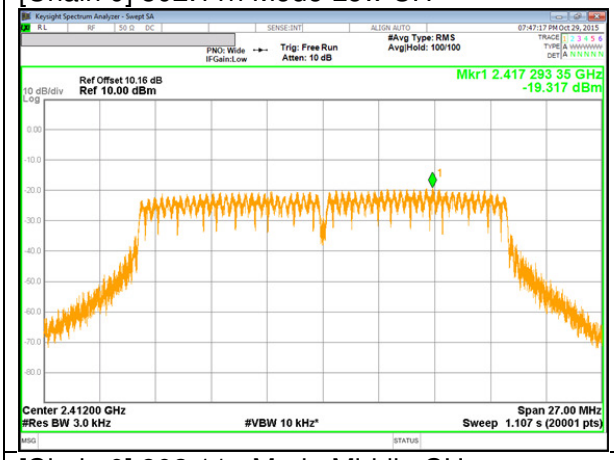
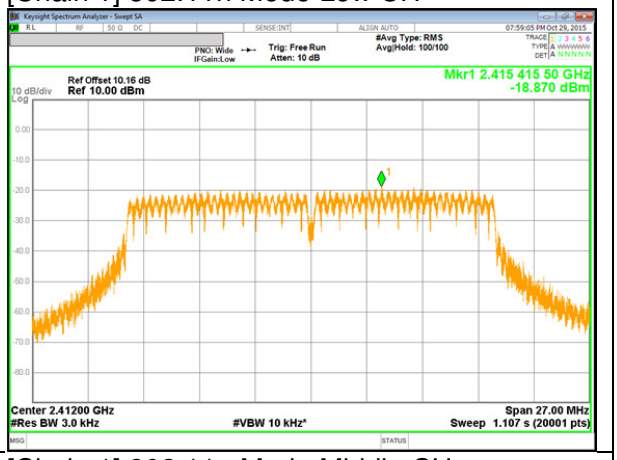
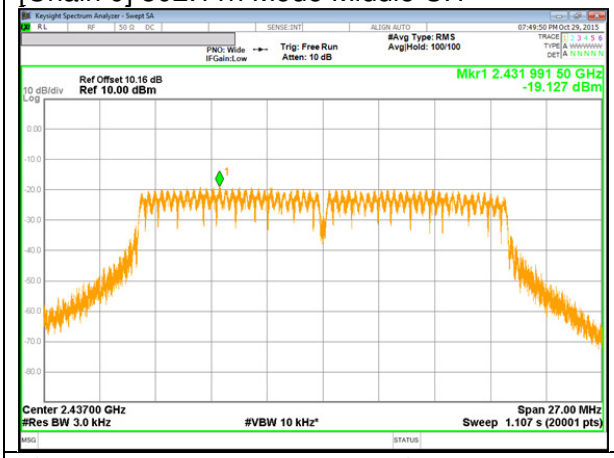
[Chain 0] 802.11n Mode Low CH



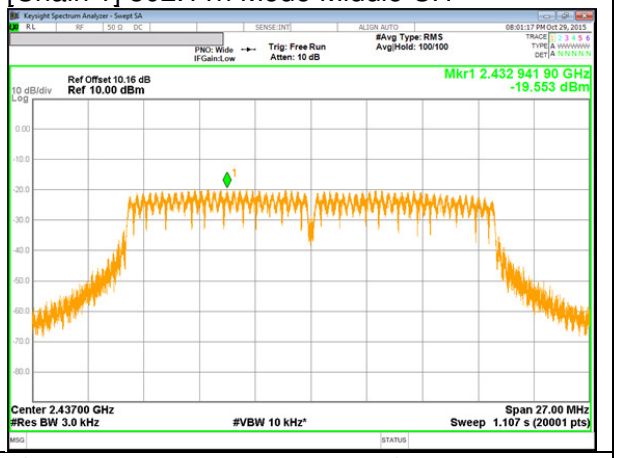
[Chain 1] 802.11n Mode Low CH



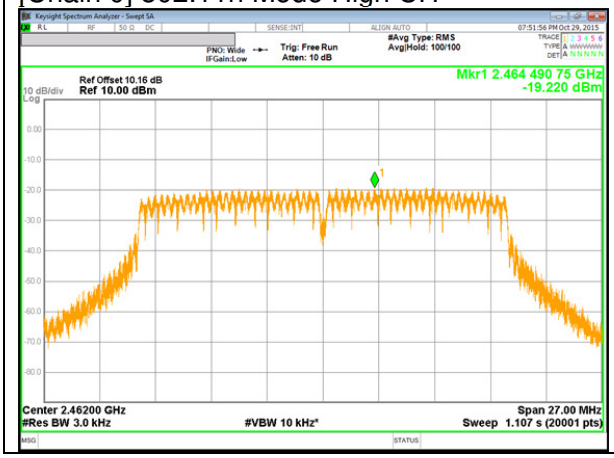
[Chain 0] 802.11n Mode Middle CH



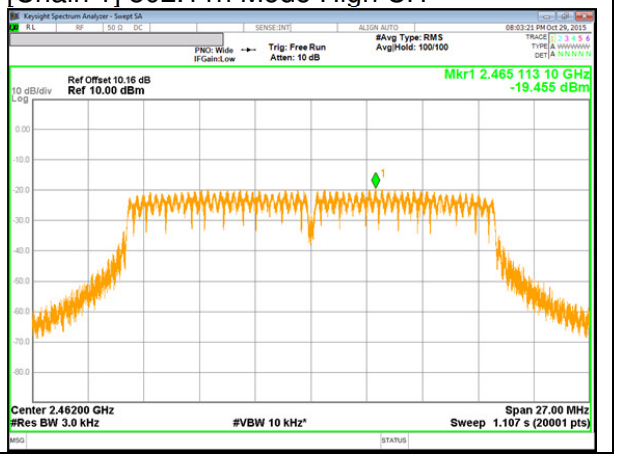
[Chain 1] 802.11n Mode Middle CH



[Chain 0] 802.11n Mode High CH



[Chain 1] 802.11n Mode High CH



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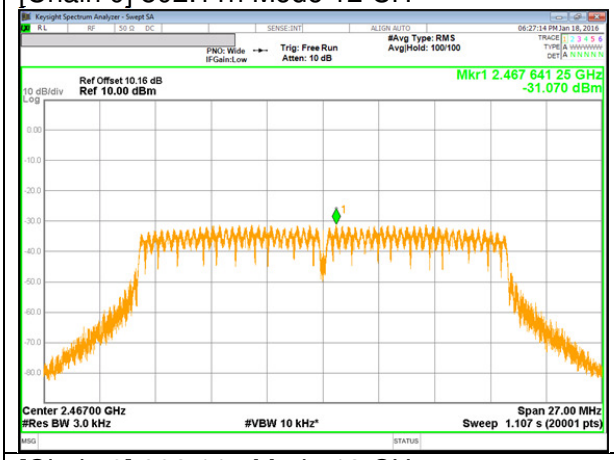
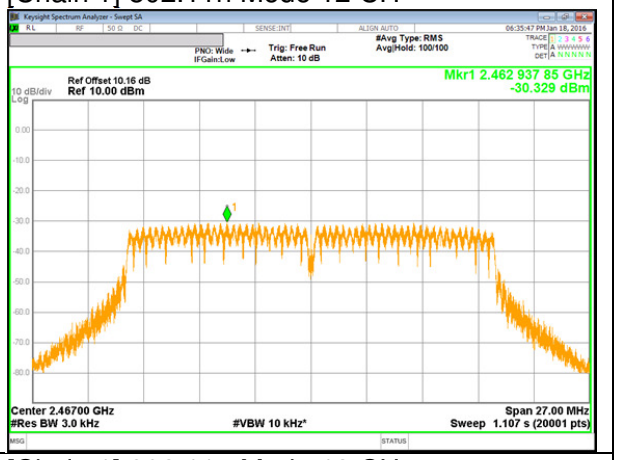
[Chain 0] 802.11n Mode 12 CH



[Chain 1] 802.11n Mode 12 CH



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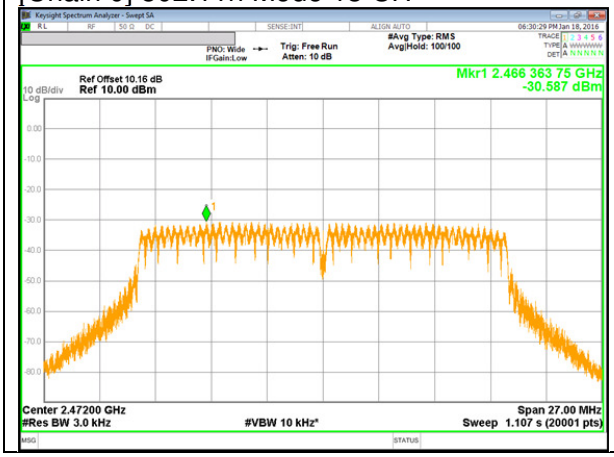
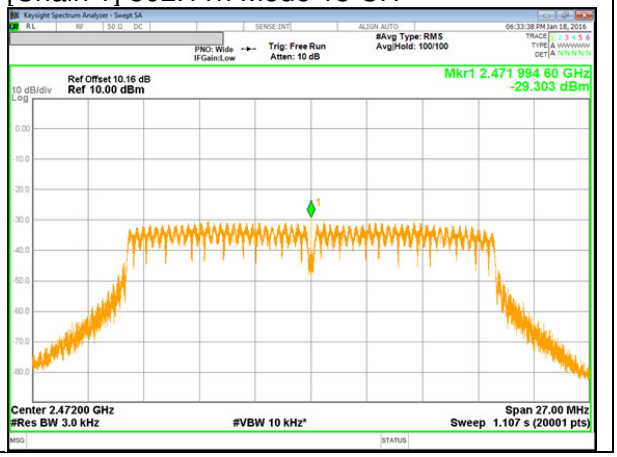


[Chain 1] 802.11n Mode 13 CH



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10.5. 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.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer with RBW = 100 kHz, VBW = 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, bandedge (where measurements to the general radiated limits will not be made) and out-of-band emissions.

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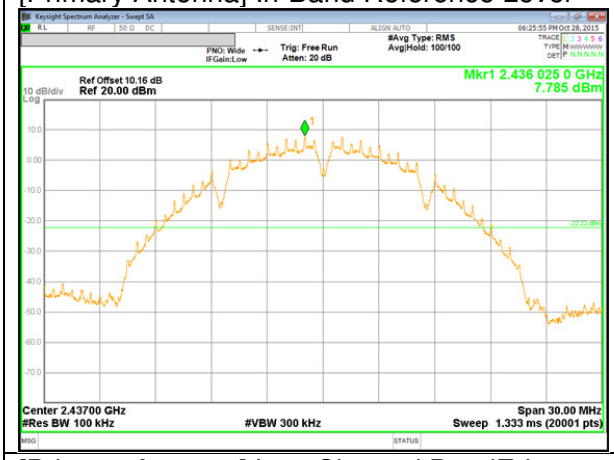
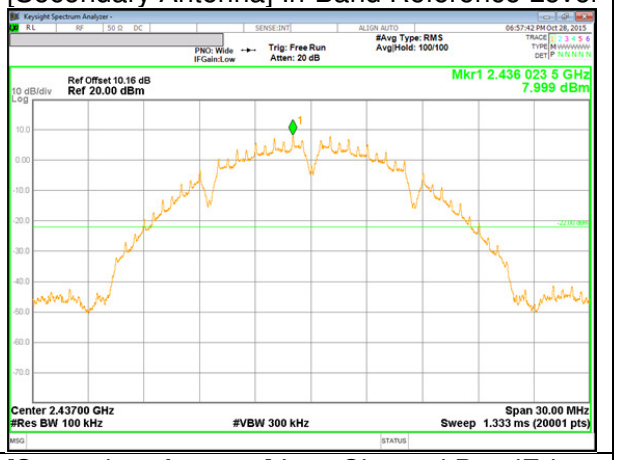
RESULTS

10.5.1. 802.11b MODE IN THE 2.4 GHz BAND

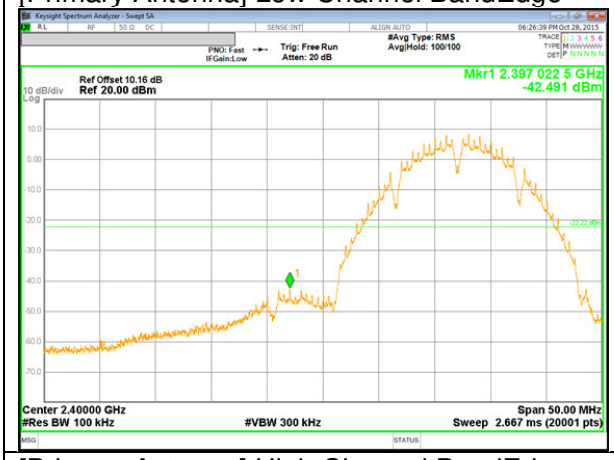
[Primary Antenna] In-Band Reference Level



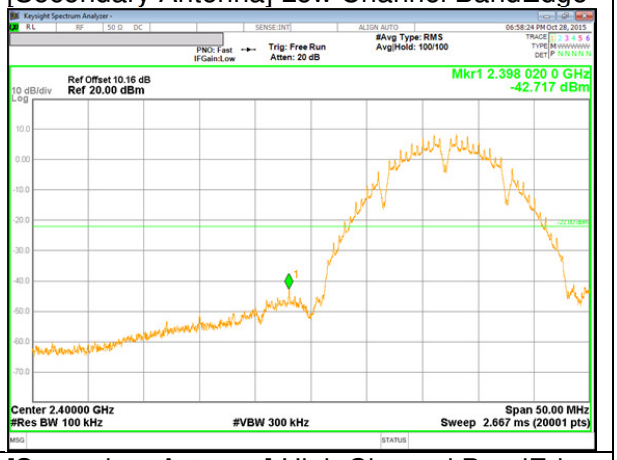
[Secondary Antenna] In-Band Reference Level



[Primary Antenna] Low Channel BandEdge

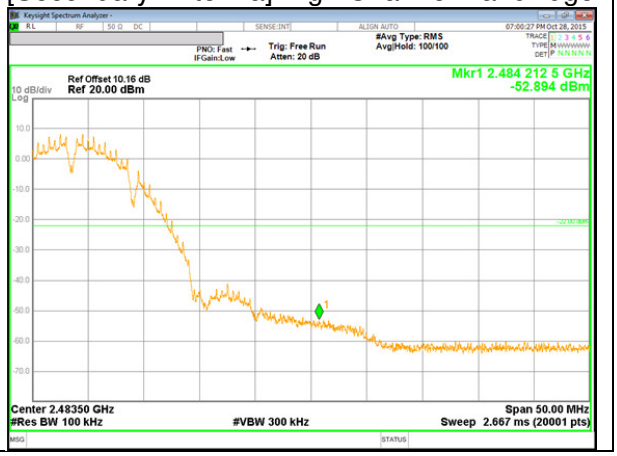


[Secondary Antenna] Low Channel BandEdge



[Primary Antenna] High Channel BandEdge

[Secondary Antenna] High Channel BandEdge



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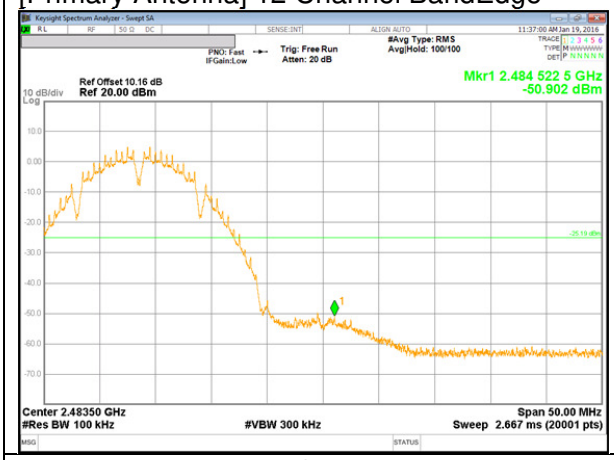
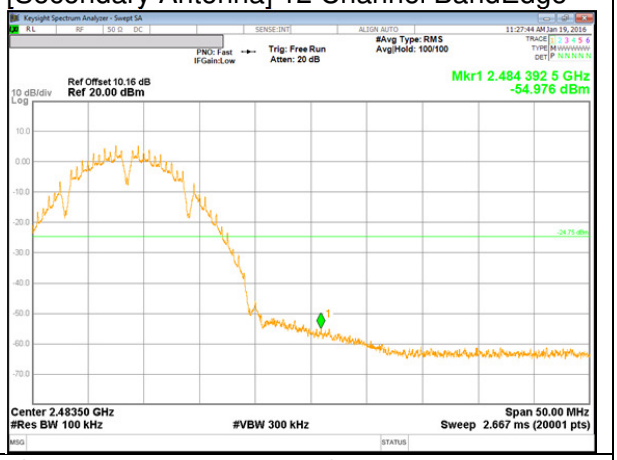
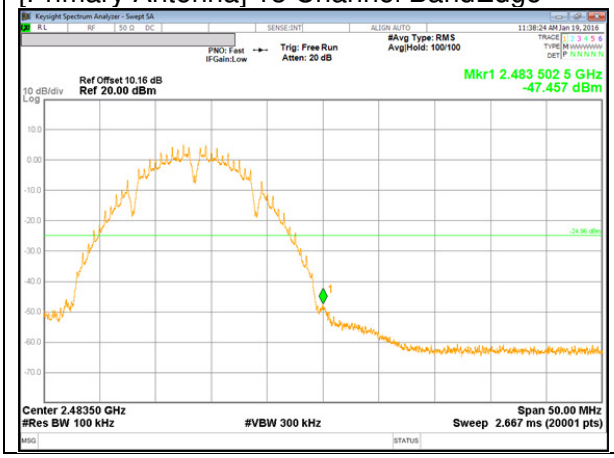
[Primary Antenna] 12 Channel BandEdge



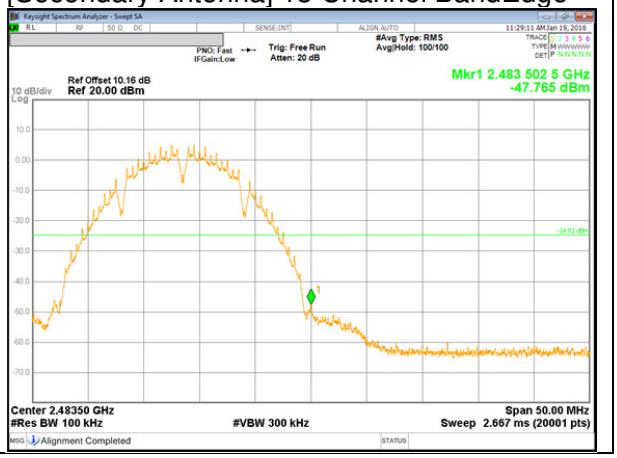
[Secondary Antenna] 12 Channel BandEdge



[Primary Antenna] 13 Channel BandEdge



[Secondary Antenna] 13 Channel BandEdge



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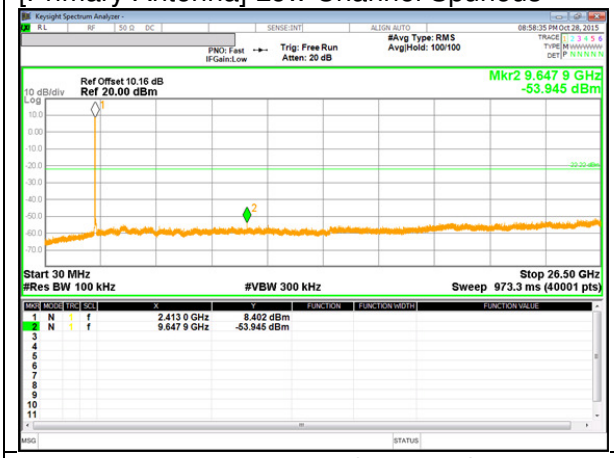
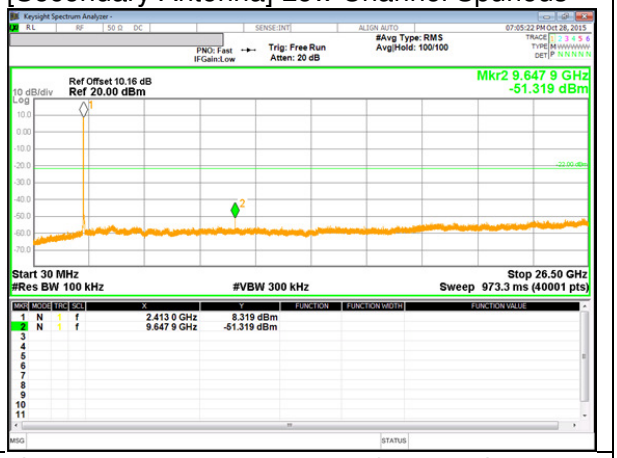
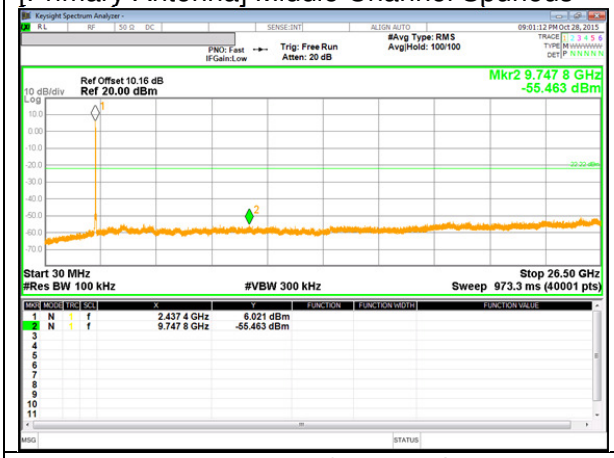
[Primary Antenna] Low Channel Spurious



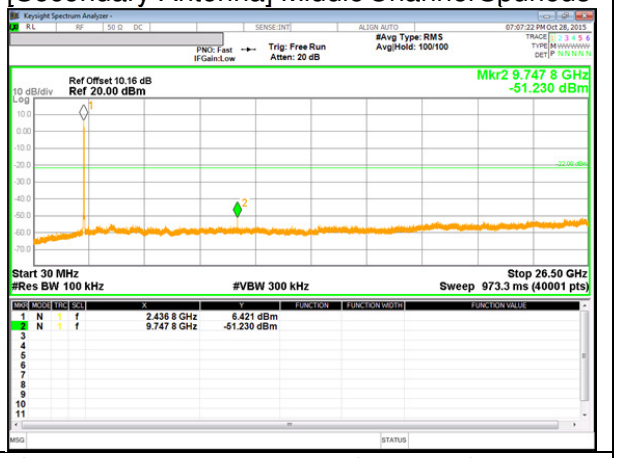
[Secondary Antenna] Low Channel Spurious



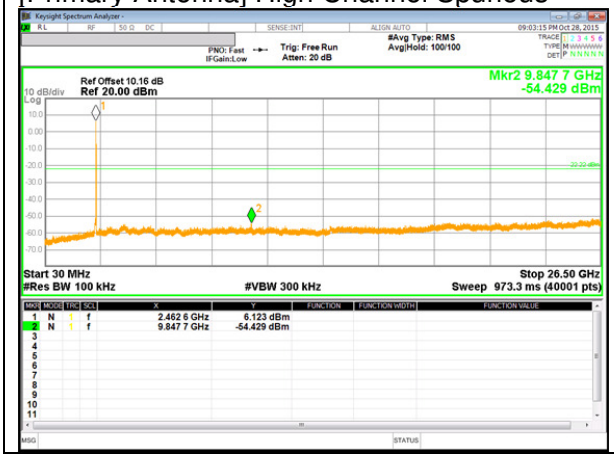
[Primary Antenna] Middle Channel Spurious



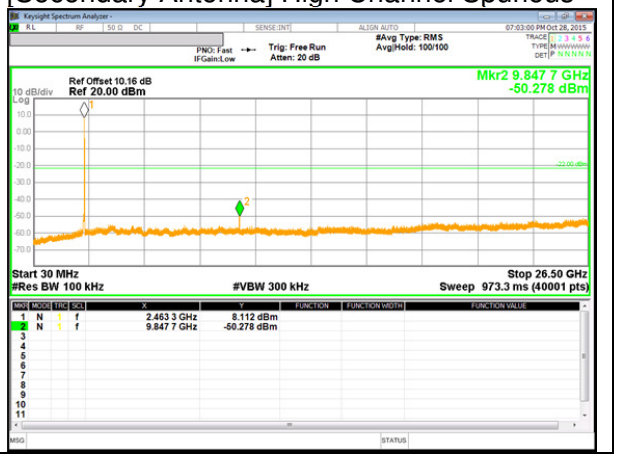
[Secondary Antenna] Middle Channel Spurious



[Primary Antenna] High Channel Spurious



[Secondary Antenna] High Channel Spurious



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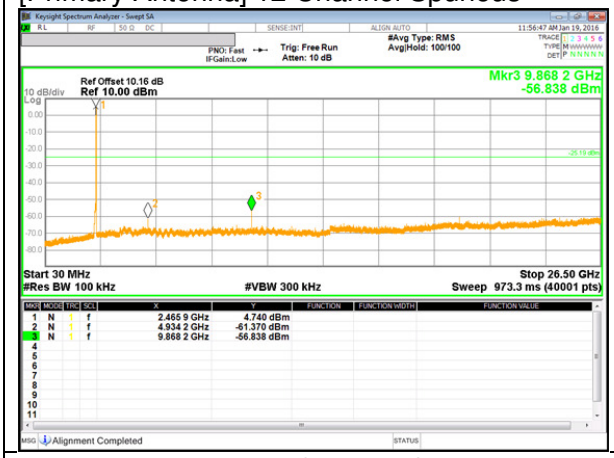
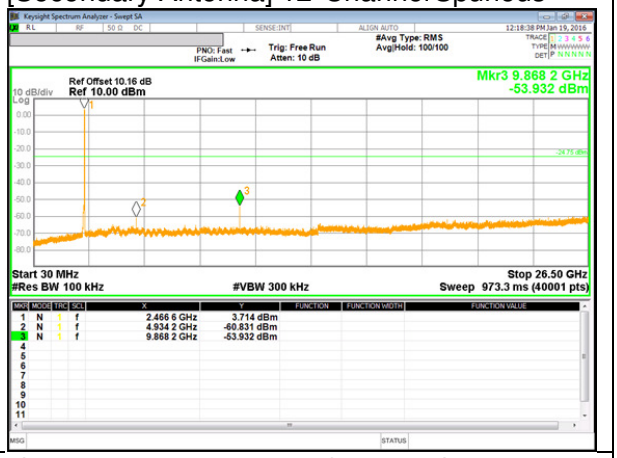
[Primary Antenna] 12 Channel Spurious

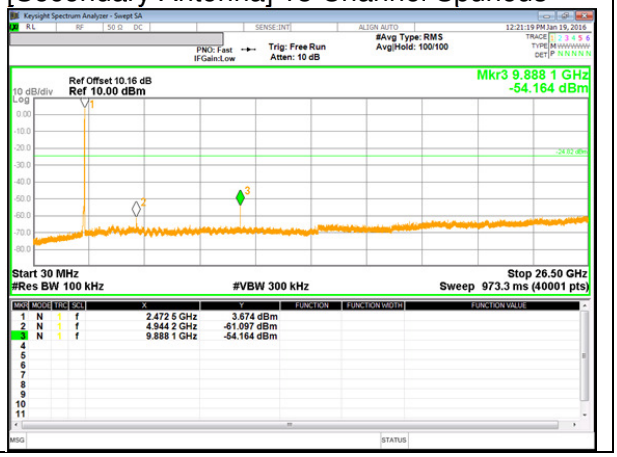


[Secondary Antenna] 12 Channel Spurious



[Primary Antenna] 13 Channel Spurious

[Secondary Antenna] 13 Channel Spurious



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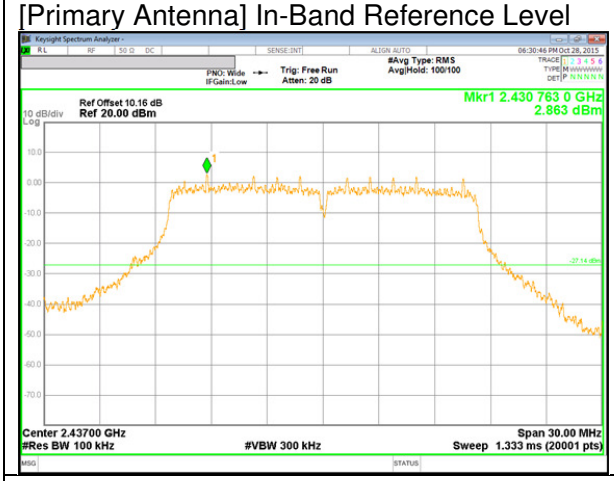
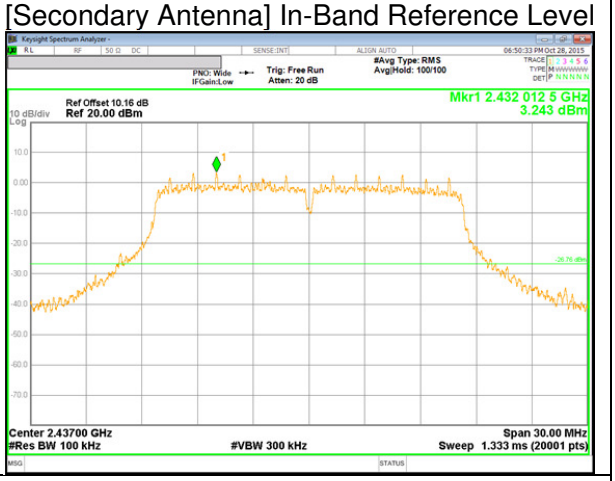
10.5.2. 802.11g MODE IN THE 2.4 GHz BAND

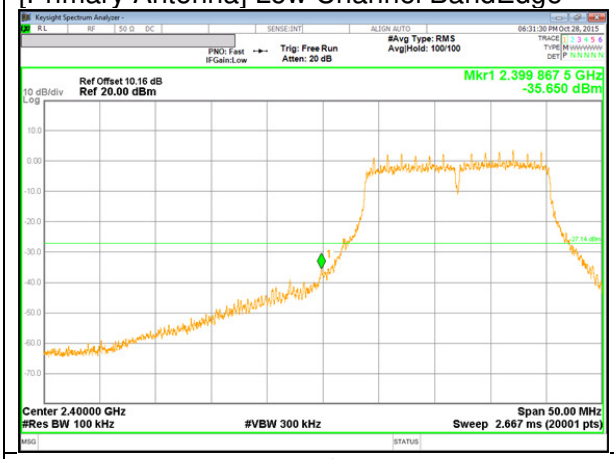
[Primary Antenna] In-Band Reference Level



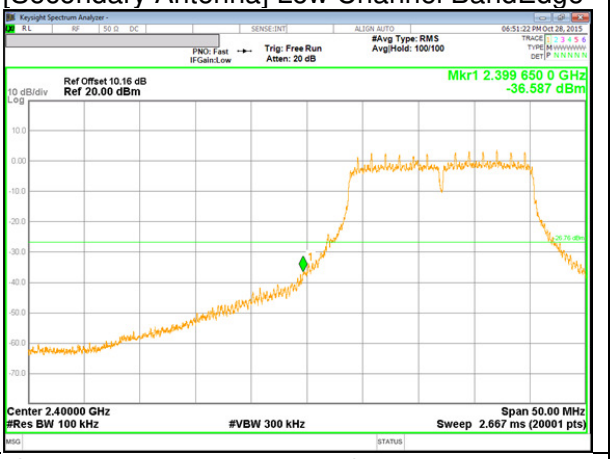
[Secondary Antenna] In-Band Reference Level



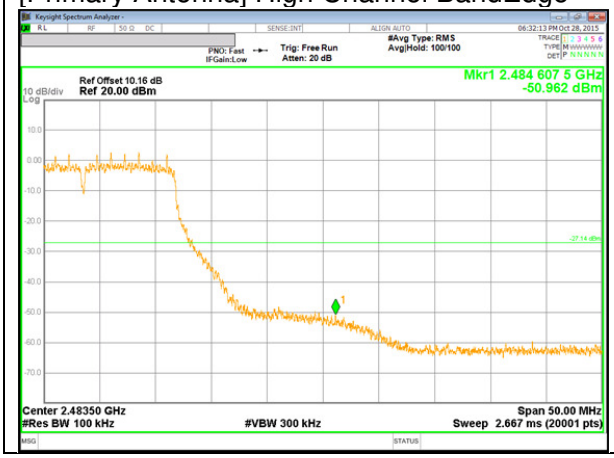
[Primary Antenna] Low Channel BandEdge



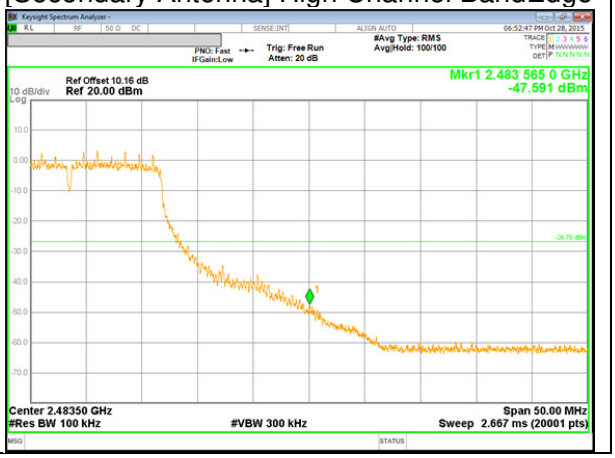
[Secondary Antenna] Low Channel BandEdge



[Primary Antenna] High Channel BandEdge



[Secondary Antenna] High Channel BandEdge



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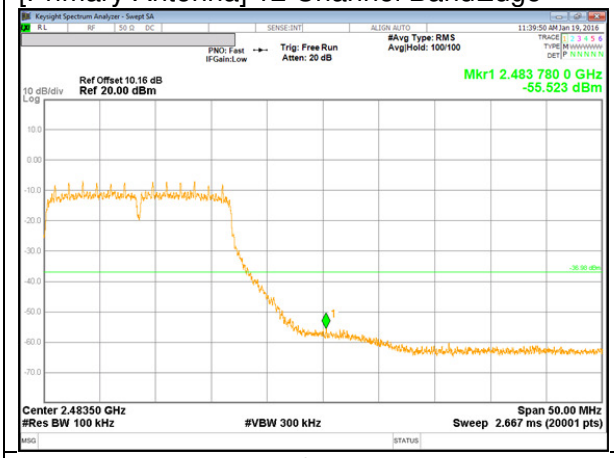
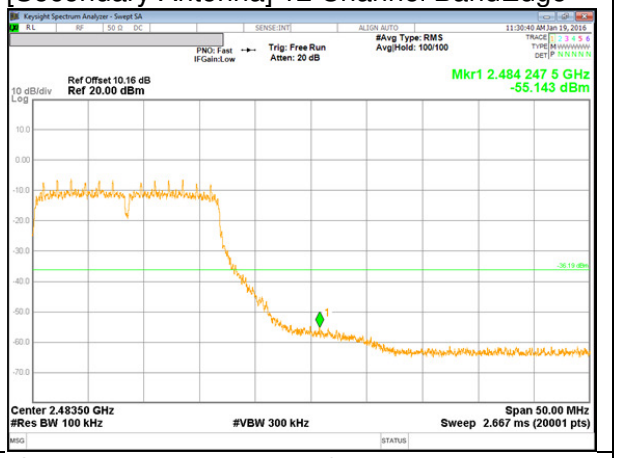
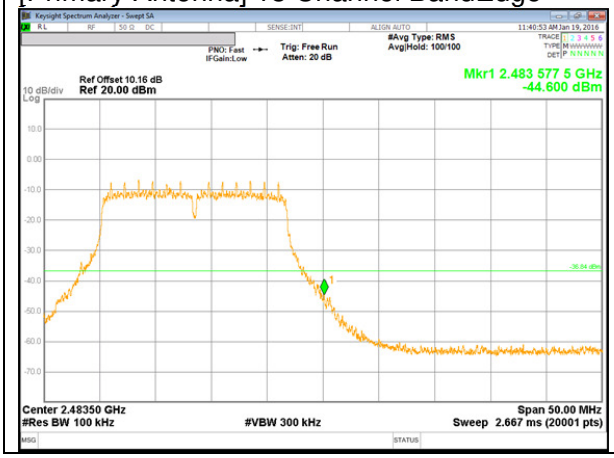
[Primary Antenna] 12 Channel BandEdge



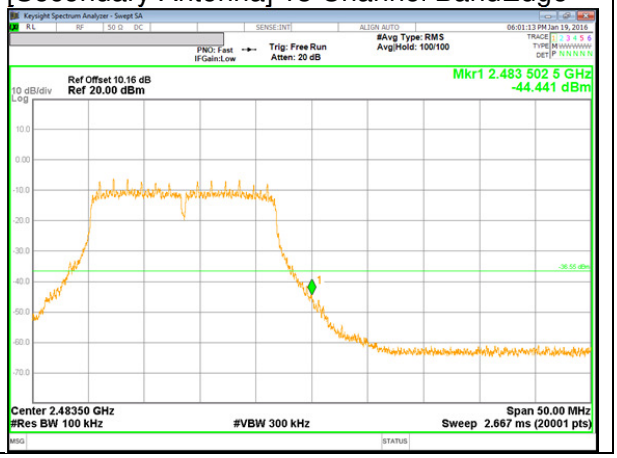
[Secondary Antenna] 12 Channel BandEdge



[Primary Antenna] 13 Channel BandEdge



[Secondary Antenna] 13 Channel BandEdge



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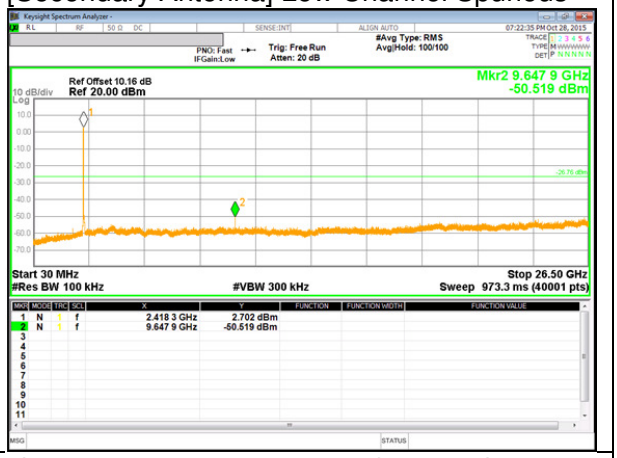
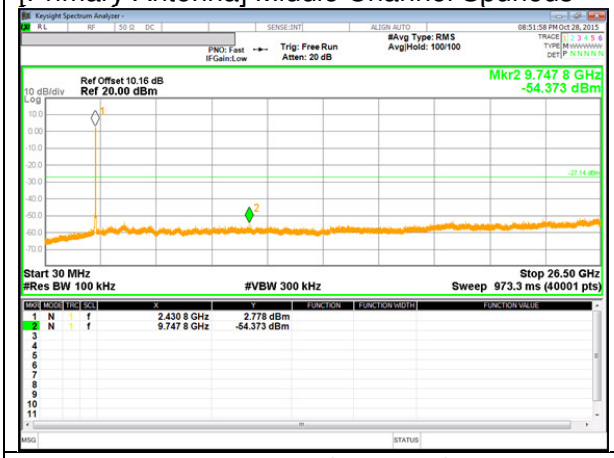
[Primary Antenna] Low Channel Spurious

[Secondary Antenna] Low Channel Spurious

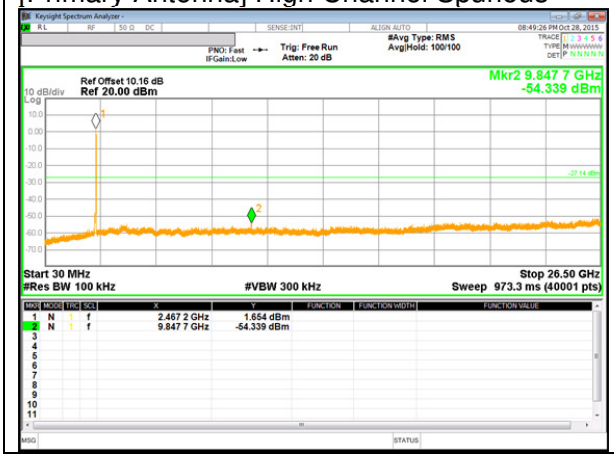


[Primary Antenna] Middle Channel Spurious

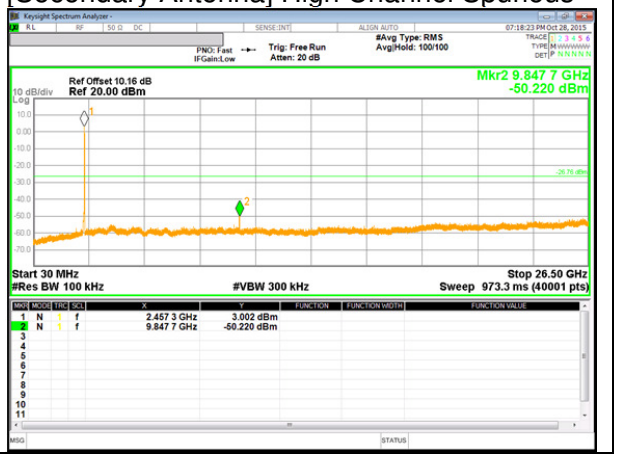


[Secondary Antenna] Middle Channel Spurious

[Primary Antenna] High Channel Spurious



[Secondary Antenna] High Channel Spurious



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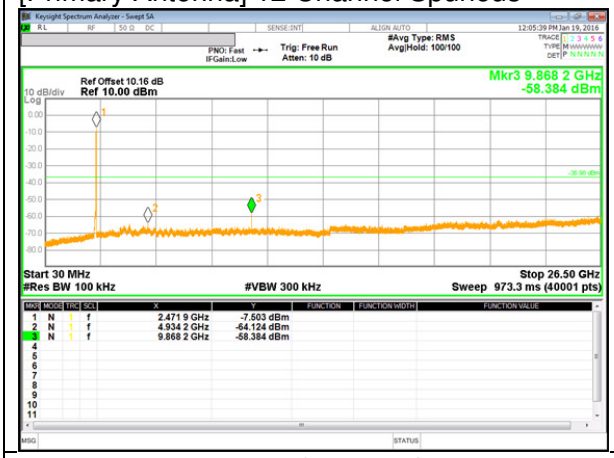
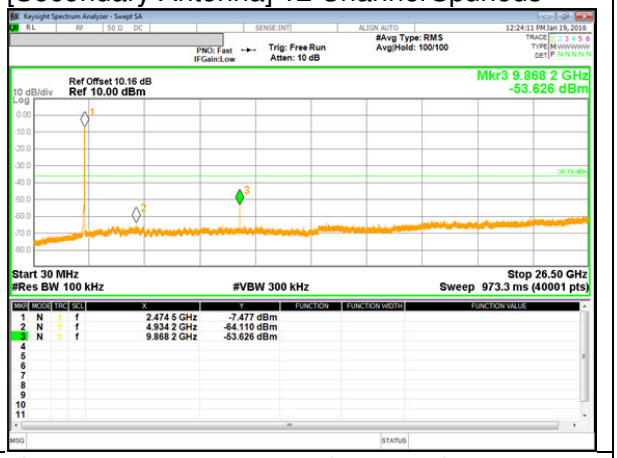
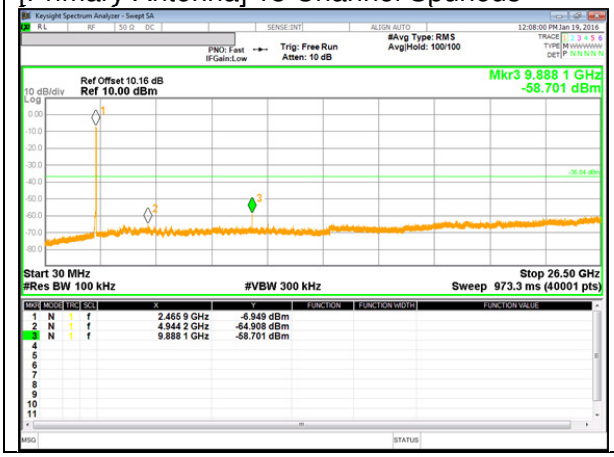
[Primary Antenna] 12 Channel Spurious



[Secondary Antenna] 12 Channel Spurious



[Primary Antenna] 13 Channel Spurious



[Secondary Antenna] 13 Channel Spurious

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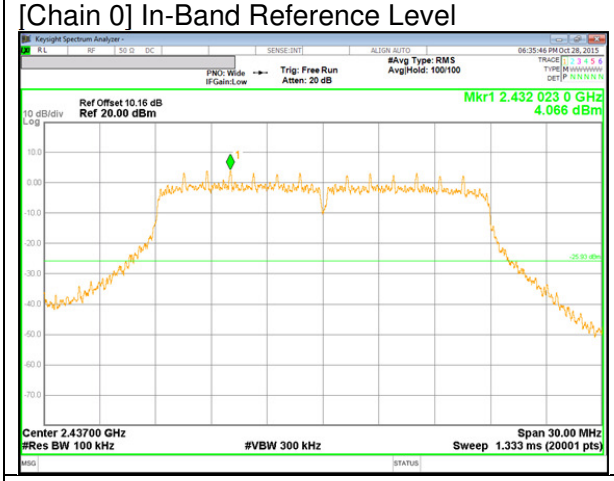
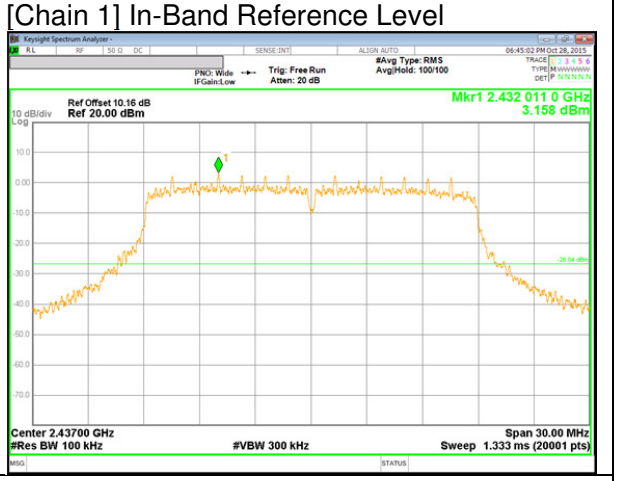
10.5.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

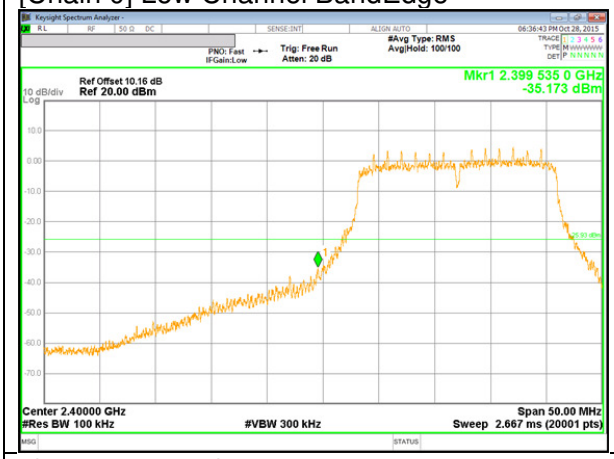
[Chain 0] In-Band Reference Level



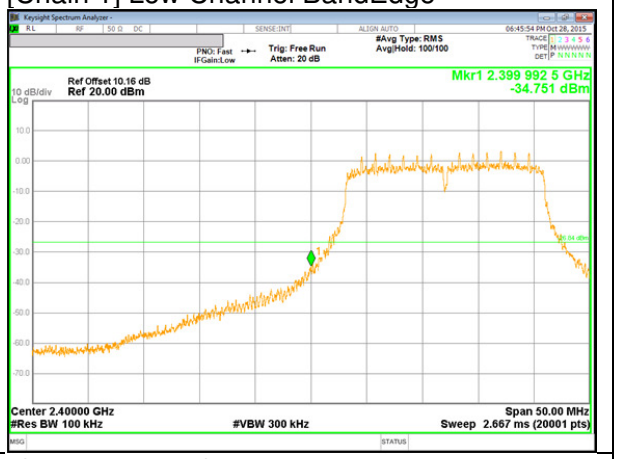
[Chain 1] In-Band Reference Level



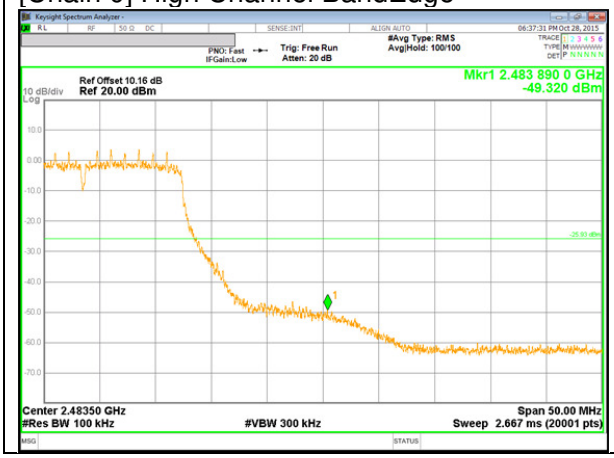
[Chain 0] Low Channel BandEdge



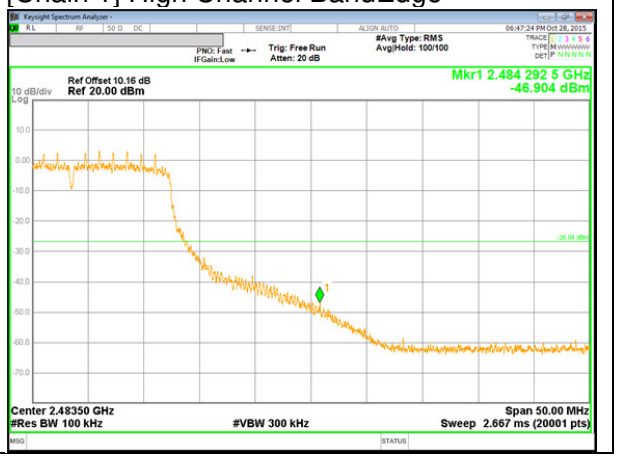
[Chain 1] Low Channel BandEdge



[Chain 0] High Channel BandEdge



[Chain 1] High Channel BandEdge



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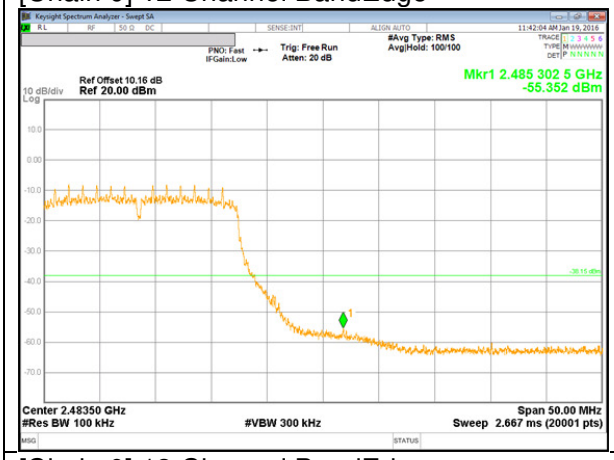
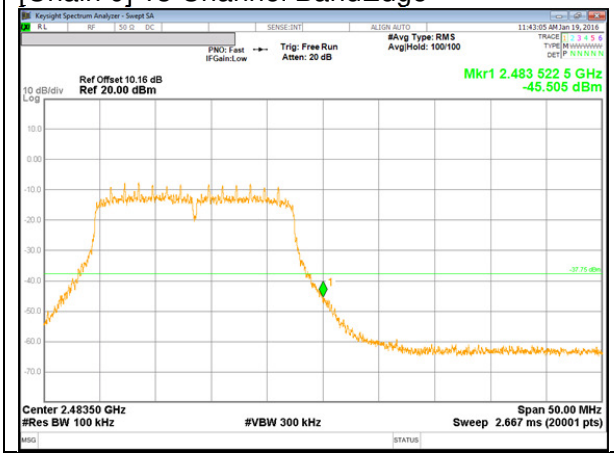
[Chain 0] 12 Channel BandEdge

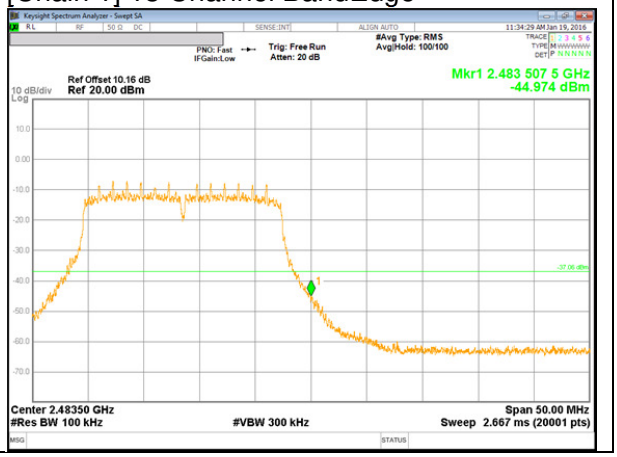


[Chain 1] 12 Channel BandEdge

[Chain 0] 13 Channel BandEdge



[Chain 1] 13 Channel BandEdge



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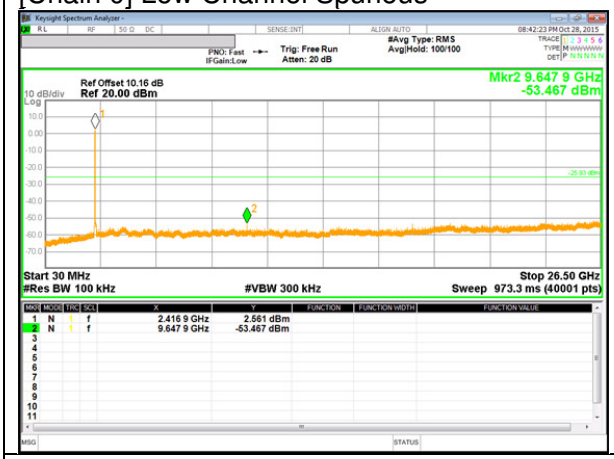
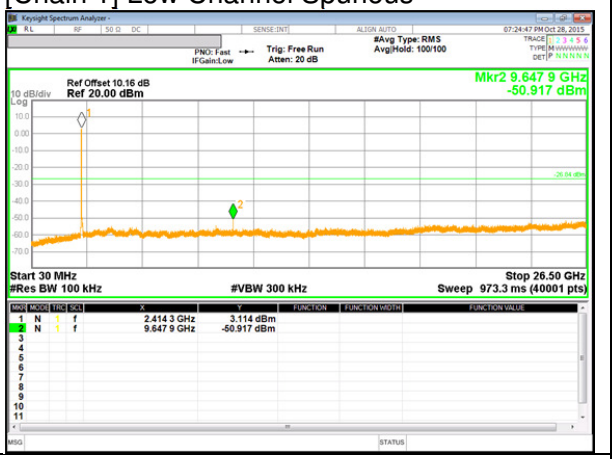
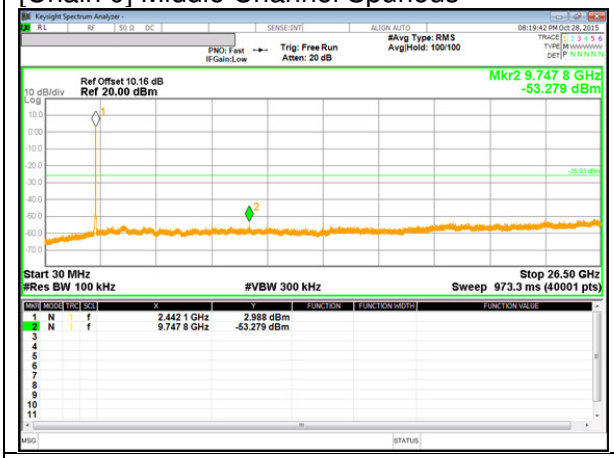
[Chain 0] Low Channel Spurious



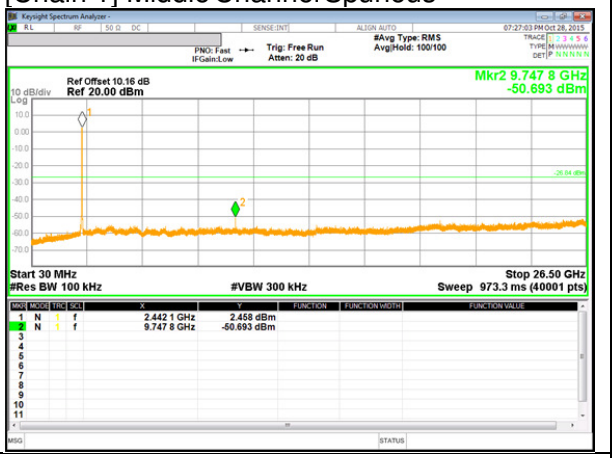
[Chain 1] Low Channel Spurious



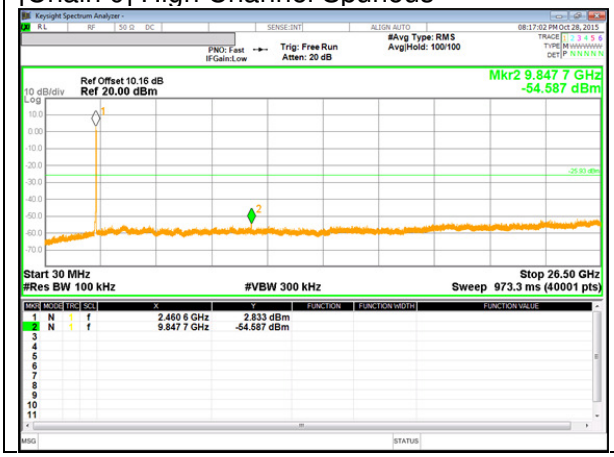
[Chain 0] Middle Channel Spurious



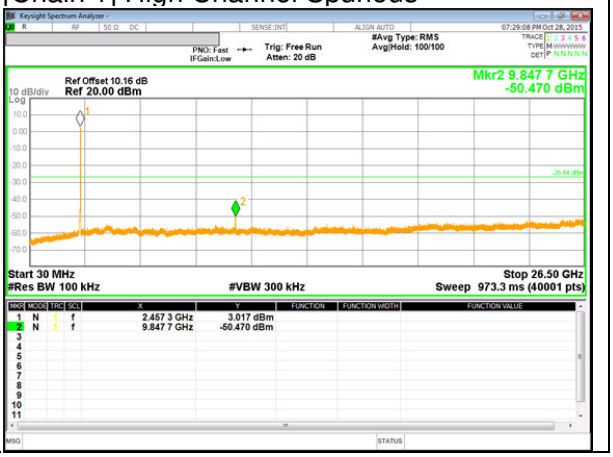
[Chain 1] Middle Channel Spurious



[Chain 0] High Channel Spurious



[Chain 1] High Channel Spurious



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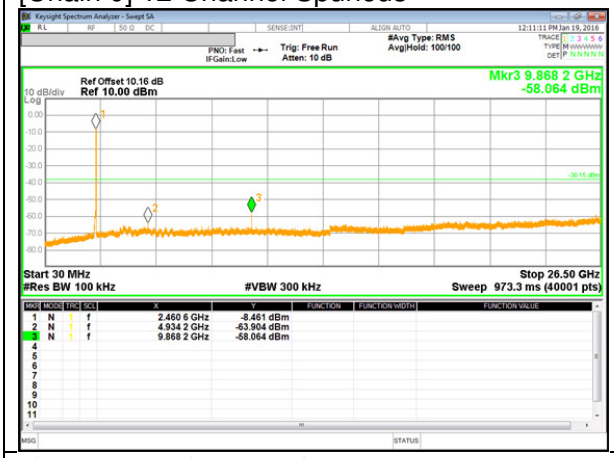
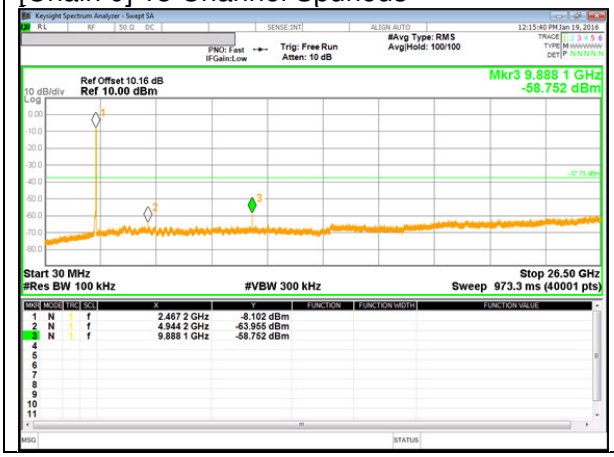
[Chain 0] 12 Channel Spurious



[Chain 1] 12 Channel Spurious

[Chain 0] 13 Channel Spurious



[Chain 1] 13 Channel Spurious

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11. RADIATED TEST RESULTS

11.1. LIMITS AND PROCEDURE

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

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters.

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 measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor for average measurements. Duty cycle factor= 10log (1/x) For this sample B mode = 0dB (duty cycle >98%); G mode = 0.33dB; N mode = 0.35dB.

The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable 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.

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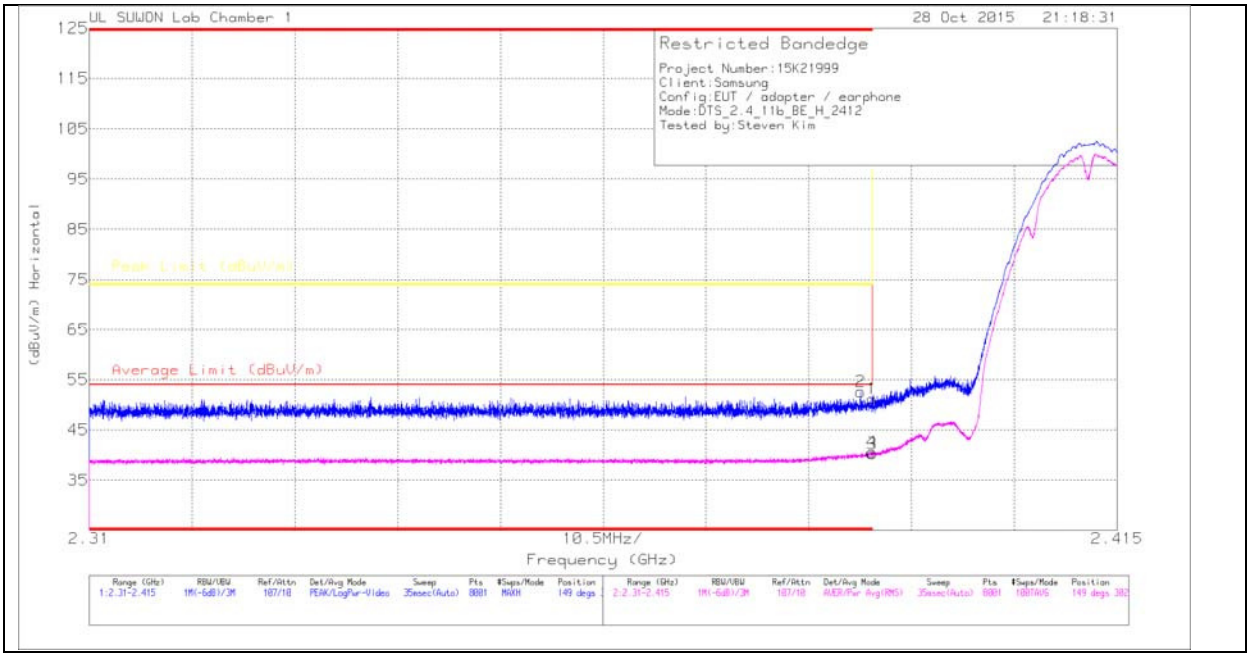
11.2. TRANSMITTER ABOVE 1 GHz

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

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168717)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	47.8	Pk	31.8	-28.4	0	51.2	-	-	74	-22.8	149	302	H
2	* 2.389	49.22	Pk	31.8	-28.4	0	52.62	-	-	74	-21.38	149	302	H
3	* 2.39	36.88	RMS	31.8	-28.4	0	40.28	54	-13.72	-	-	149	302	H
4	* 2.39	37.18	RMS	31.8	-28.4	0	40.58	54	-13.42	-	-	149	302	H

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

Pk - Peak detector

RMS - RMS detection

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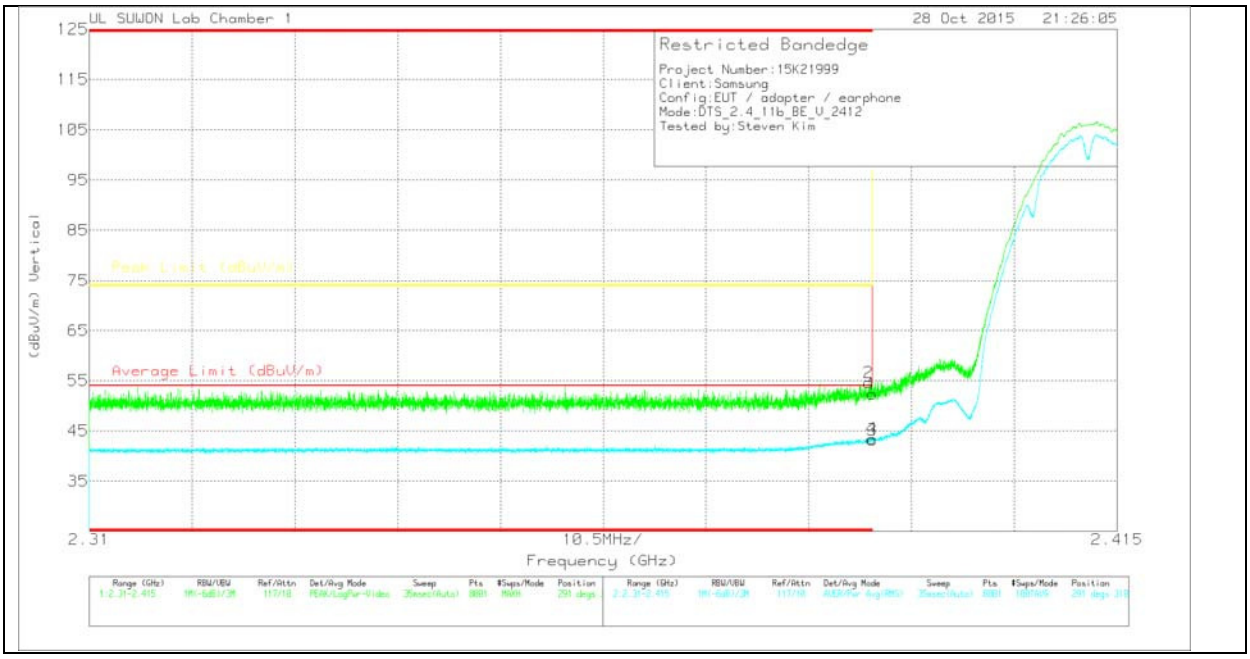
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168717)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	48.96	Pk	31.8	-28.4	0	52.36	-	-	74	-21.64	291	310	V
2	* 2.39	51.19	Pk	31.8	-28.4	0	54.59	-	-	74	-19.41	291	310	V
3	* 2.39	39.83	RMS	31.8	-28.4	0	43.23	54	-10.77	-	-	291	310	V
4	* 2.39	40.06	RMS	31.8	-28.4	0	43.46	54	-10.54	-	-	291	310	V

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

Pk - Peak detector

RMS - RMS detection

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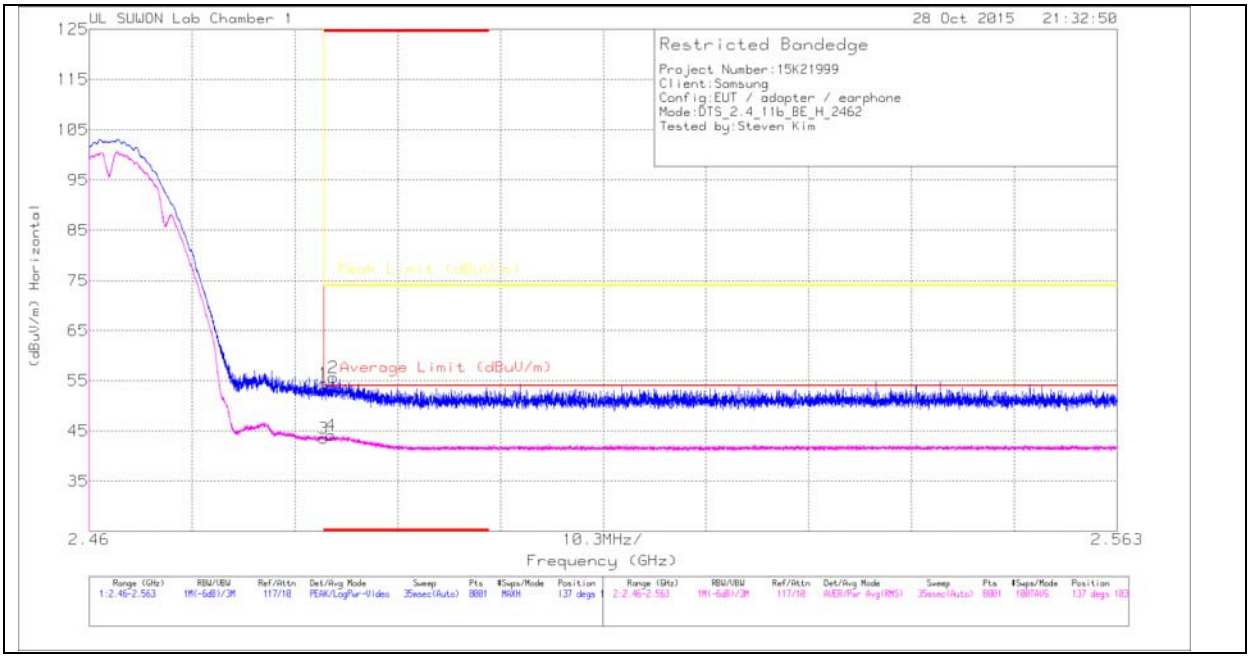
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168717)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	50.72	Pk	32	-28.3	0	54.42	-	-	74	-19.58	137	103	H
2	* 2.484	51.91	Pk	32	-28.3	0	55.61	-	-	74	-18.39	137	103	H
3	* 2.484	39.85	RMS	32	-28.3	0	43.55	54	-10.45	-	-	137	103	H
4	* 2.484	40.45	RMS	32	-28.3	0	44.15	54	-9.85	-	-	137	103	H

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

Pk - Peak detector

RMS - RMS detection

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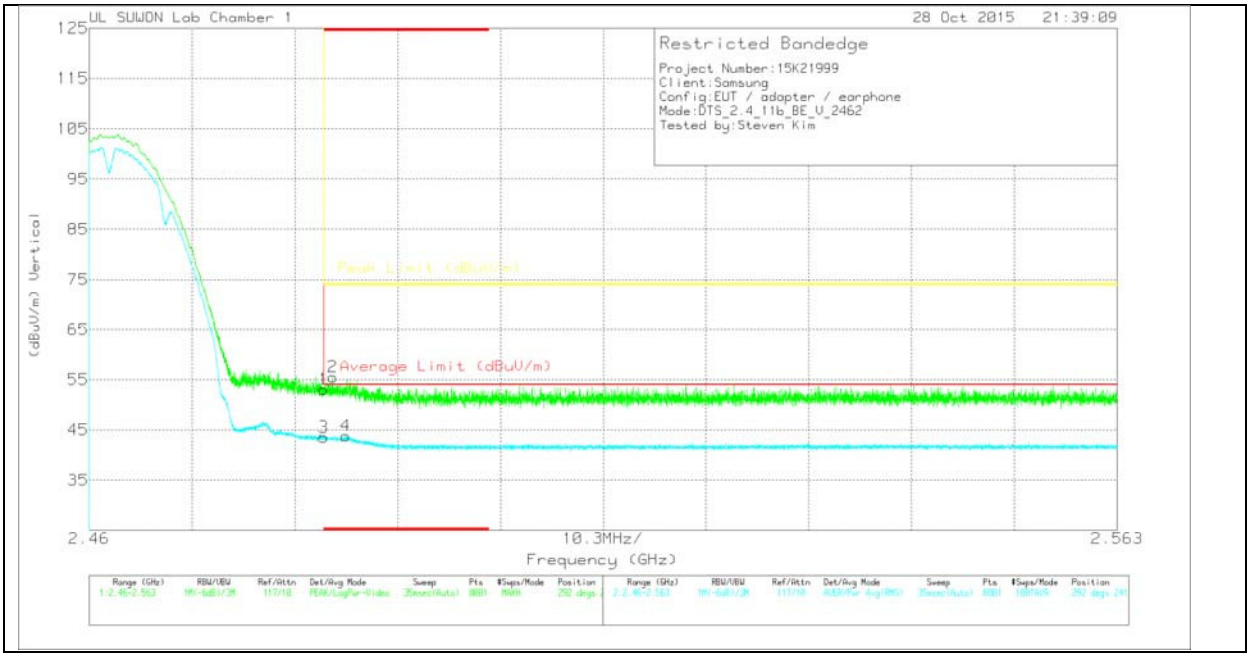
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168717)_150619	Path_2_10dB	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	49.37	Pk	32	-28.3	0	53.07	-	-	74	-20.93	292	241	V
2	* 2.484	51.83	Pk	32	-28.3	0	55.53	-	-	74	-18.47	292	241	V
3	* 2.484	39.86	RMS	32	-28.3	0	43.56	54	-10.44	-	-	292	241	V
4	* 2.486	40.15	RMS	32	-28.3	0	43.85	54	-10.15	-	-	292	241	V

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

Pk - Peak detector

RMS - RMS detection

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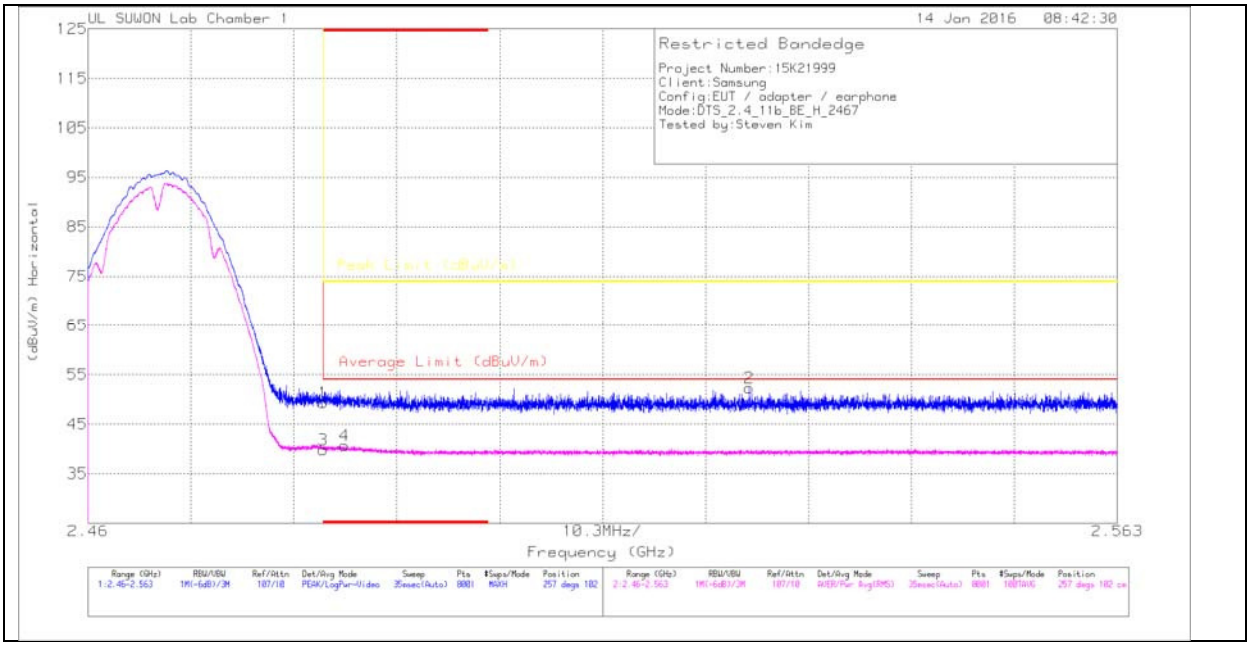
AUTHORIZED BANDEDGE (12 CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168717)_150619	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	45.68	Pk	32	-28.3	0	49.38	-	-	74	-24.62	257	102	H
2	2.526	48.57	Pk	32	-28.3	0	52.27	-	-	74	-21.73	257	102	H
3	* 2.484	36.1	RMS	32	-28.3	0	39.8	54	-14.2	-	-	257	102	H
4	* 2.486	36.96	RMS	32	-28.3	0	40.66	54	-13.34	-	-	257	102	H

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

Pk - Peak detector

RMS - RMS detection

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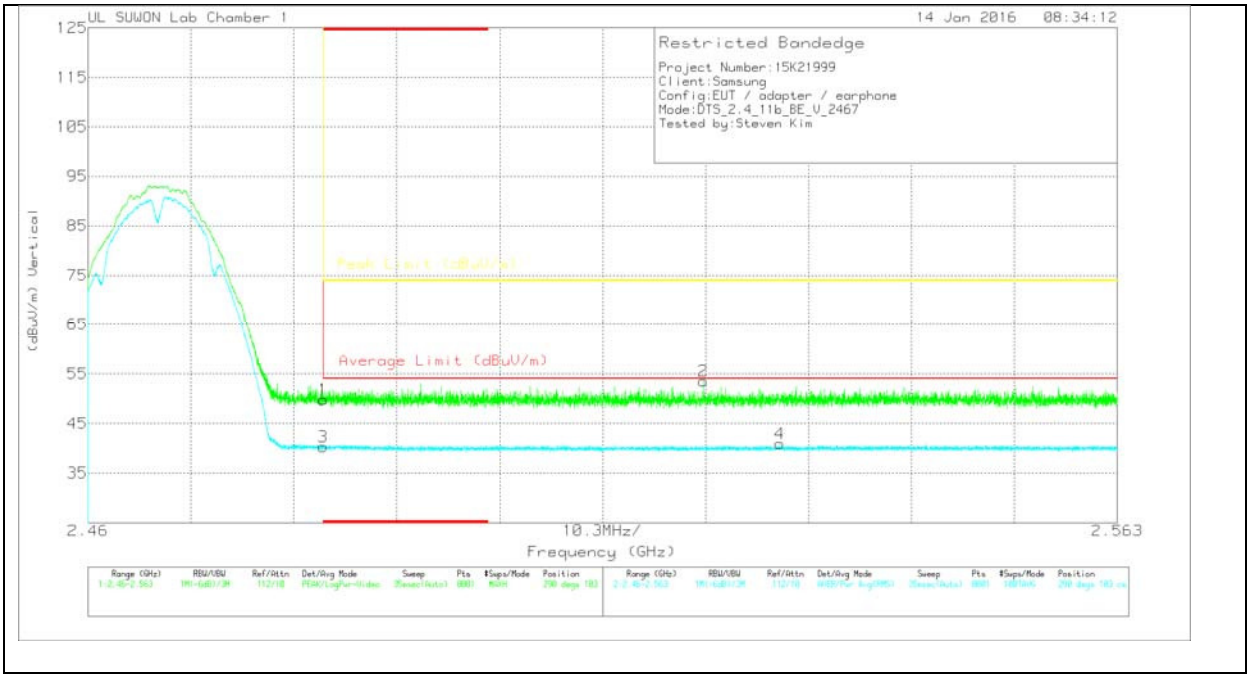
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168717)_150619	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	46.13	Pk	32	-28.3	0	49.83	-	-	74	-24.17	290	103	V
2	2.522	49.82	Pk	32	-28.3	0	53.52	-	-	74	-20.48	290	103	V
3	* 2.484	36.65	RMS	32	-28.3	0	40.35	54	-13.65	-	-	290	103	V
4	2.529	37.23	RMS	32	-28.3	0	40.93	54	-13.07	-	-	290	103	V

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

Pk - Peak detector

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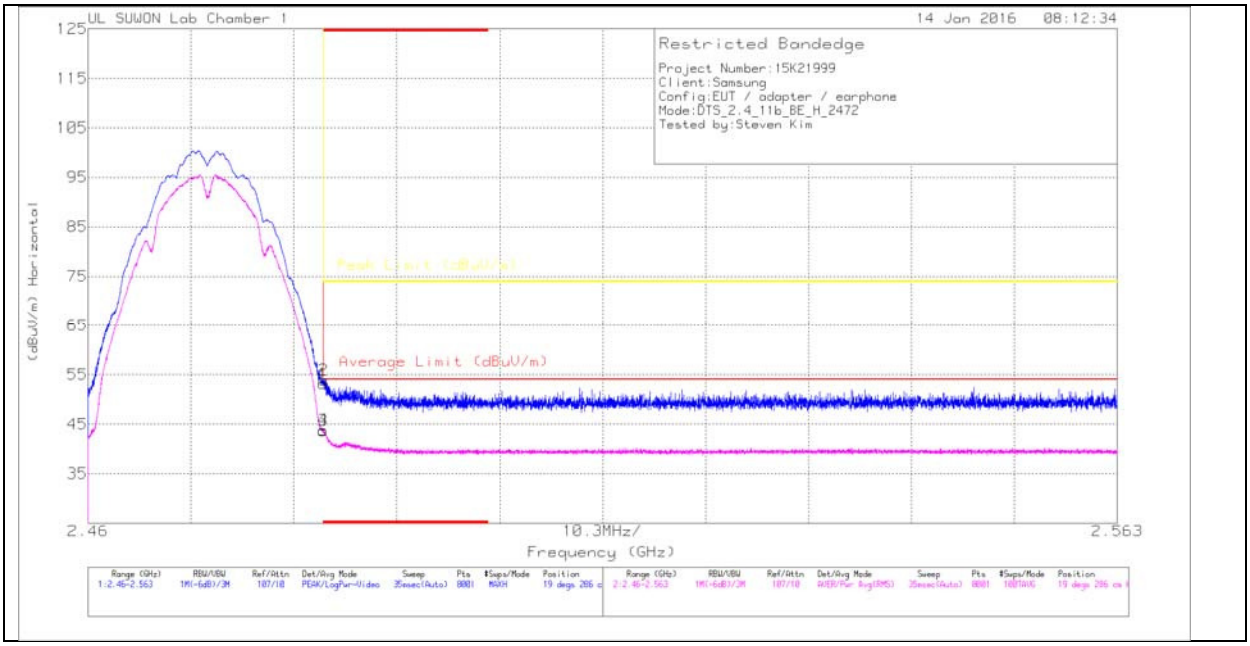
AUTHORIZED BANDEDGE (13 CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117(00168717)_150619	Path_2	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	49.49	Pk	32	-28.3	0	53.19	-	-	74	-20.81	19	286	H
2	* 2.484	50.23	Pk	32	-28.3	0	53.93	-	-	74	-20.07	19	286	H
3	* 2.484	40.01	RMS	32	-28.3	0	43.71	54	-10.29	-	-	19	286	H
4	* 2.484	40.13	RMS	32	-28.3	0	43.83	54	-10.17	-	-	19	286	H

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

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