

8.11.6. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

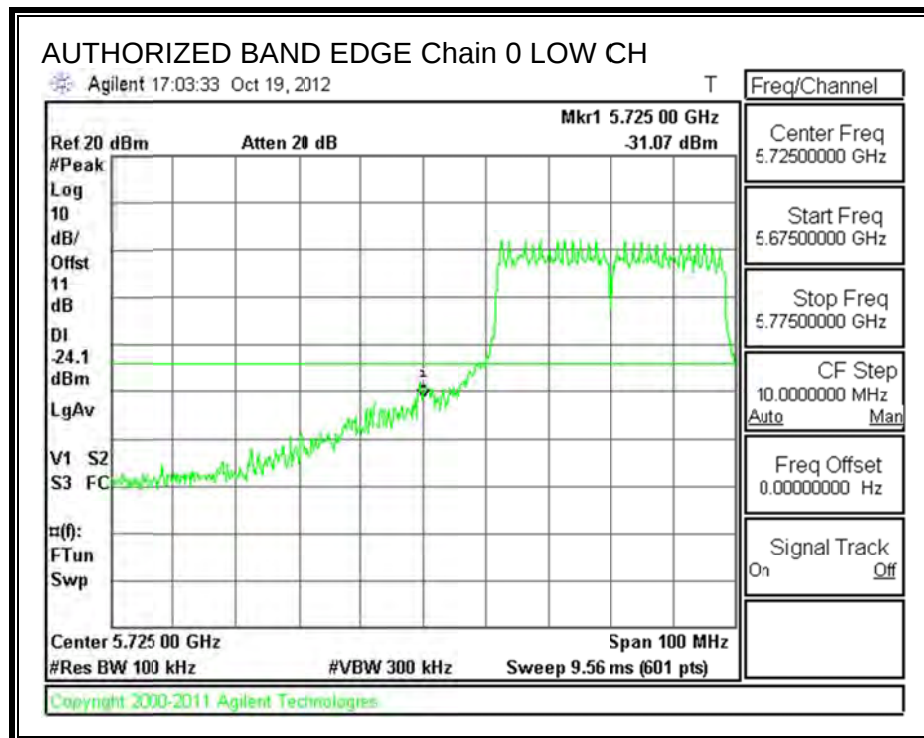
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the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

TEST PROCEDURE

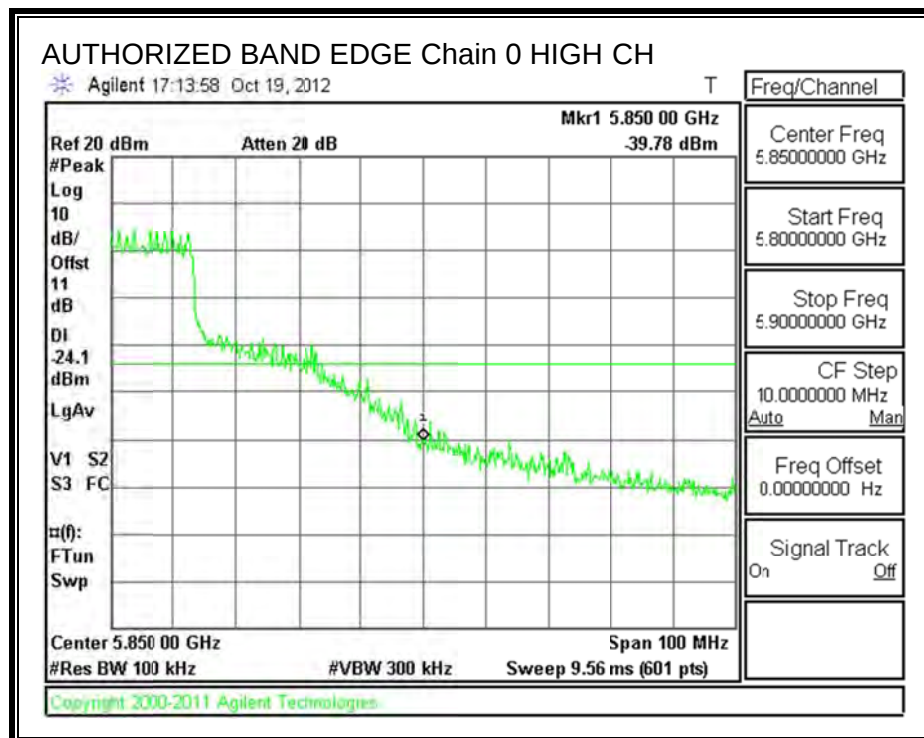
The transmitter output is connected to a spectrum analyzer with RBW = 100 kHz, VBW = 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, bandedge (where measurements to the general radiated limits will not be made) and out-of-band emissions.

RESULTS

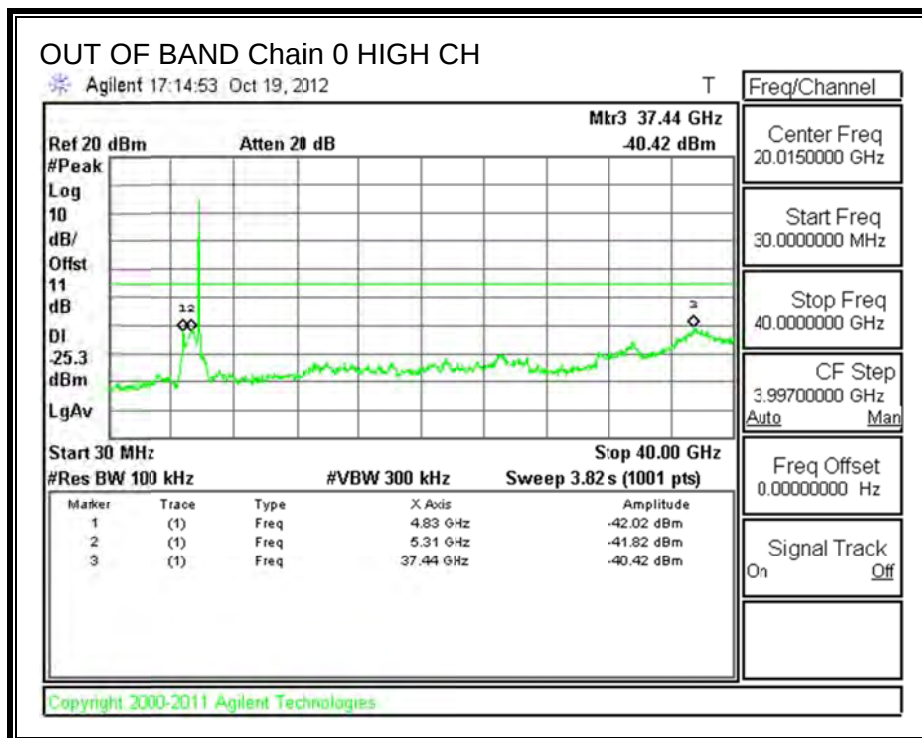
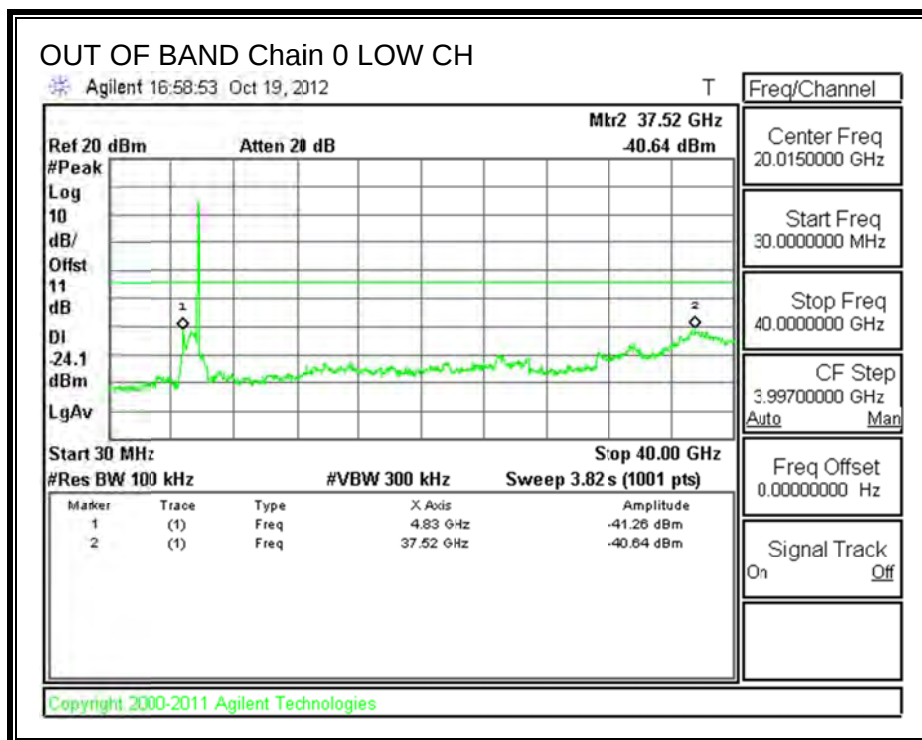
LOW CHANNEL BANDEDGE, Chain 0



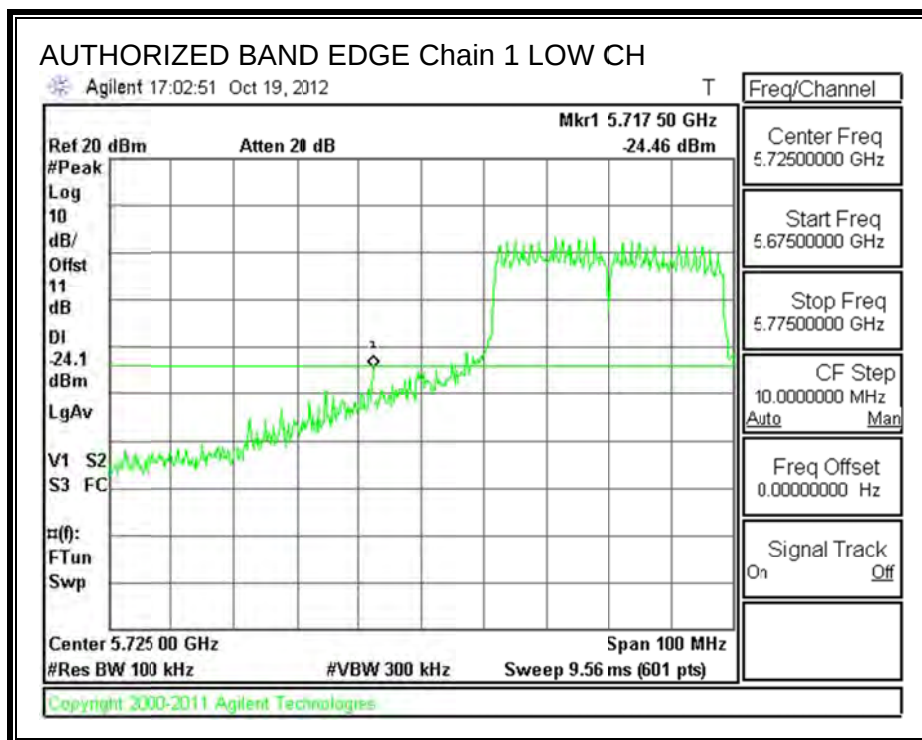
HIGH CHANNEL BANDEDGE, Chain 0



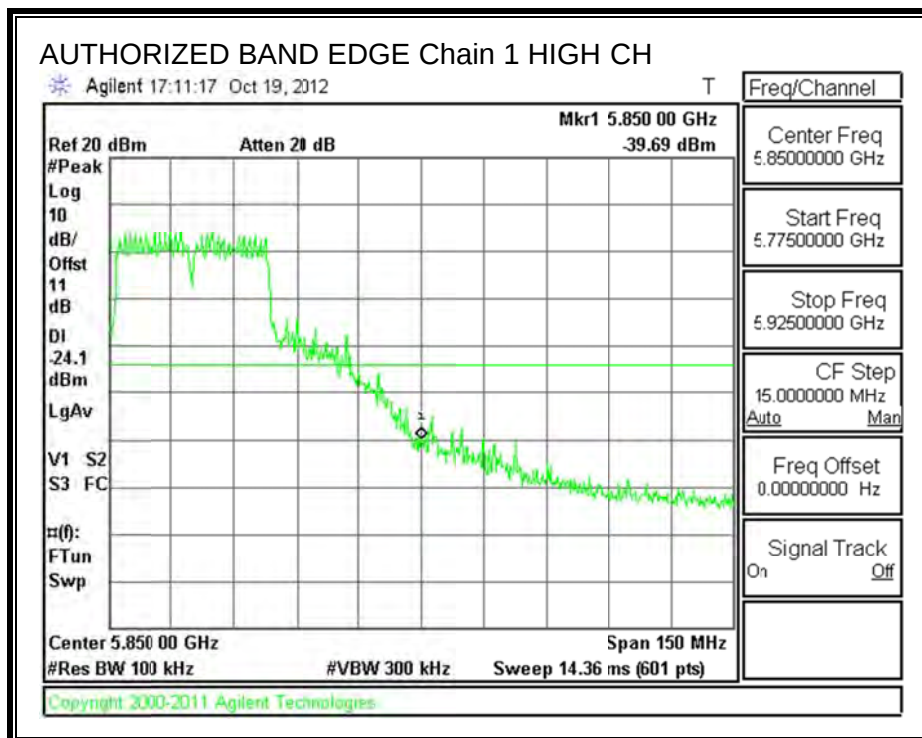
OUT-OF-BAND EMISSIONS, Chain 0

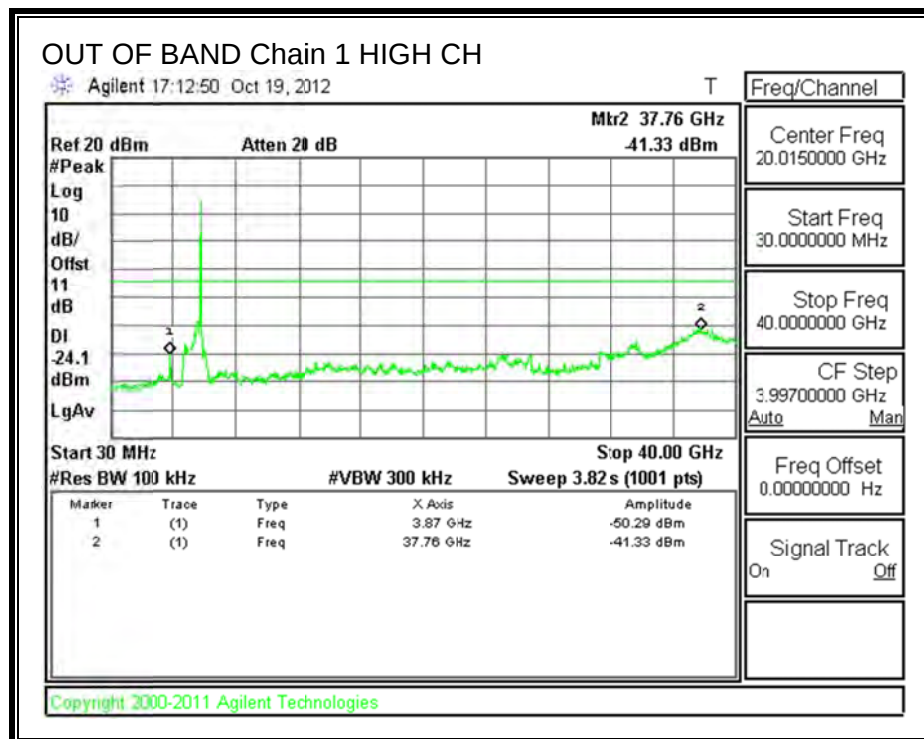
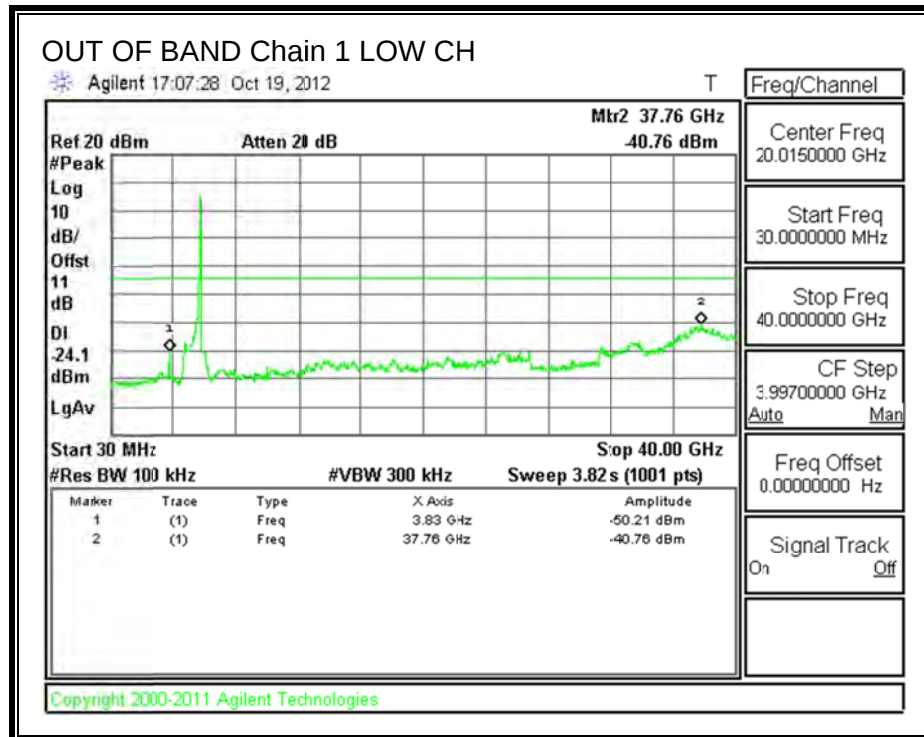


LOW CHANNEL BANDEDGE, Chain 1



HIGH CHANNEL BANDEDGE, Chain 1





9. RADIATED TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

Frequency Range (MHz)	Field Strength Limit ($\mu\text{V/m}$) at 3 m	Field Strength Limit (dB $\mu\text{V/m}$) 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 1 MHz for peak measurements and as applicable for average measurements.

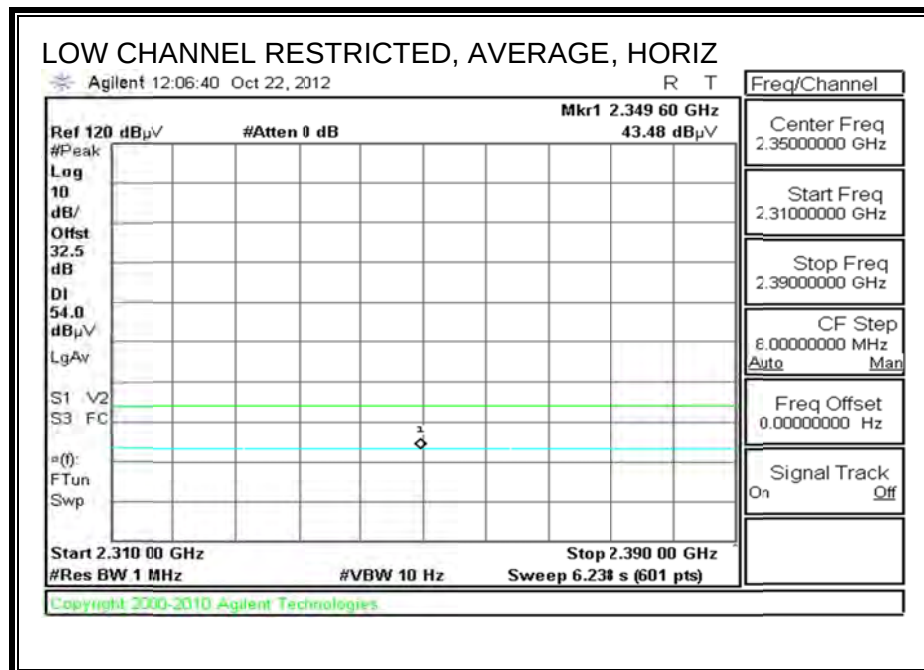
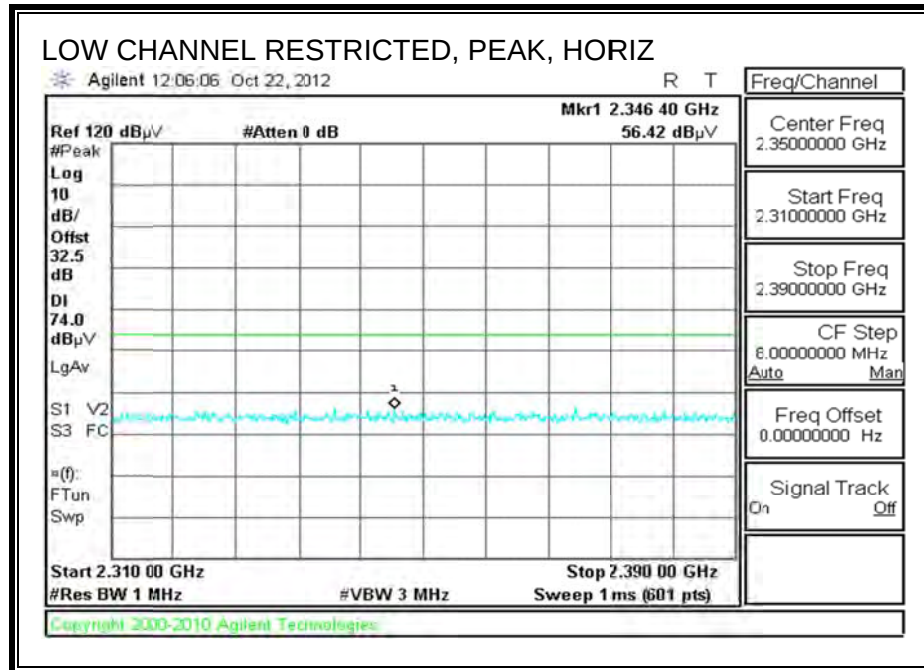
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

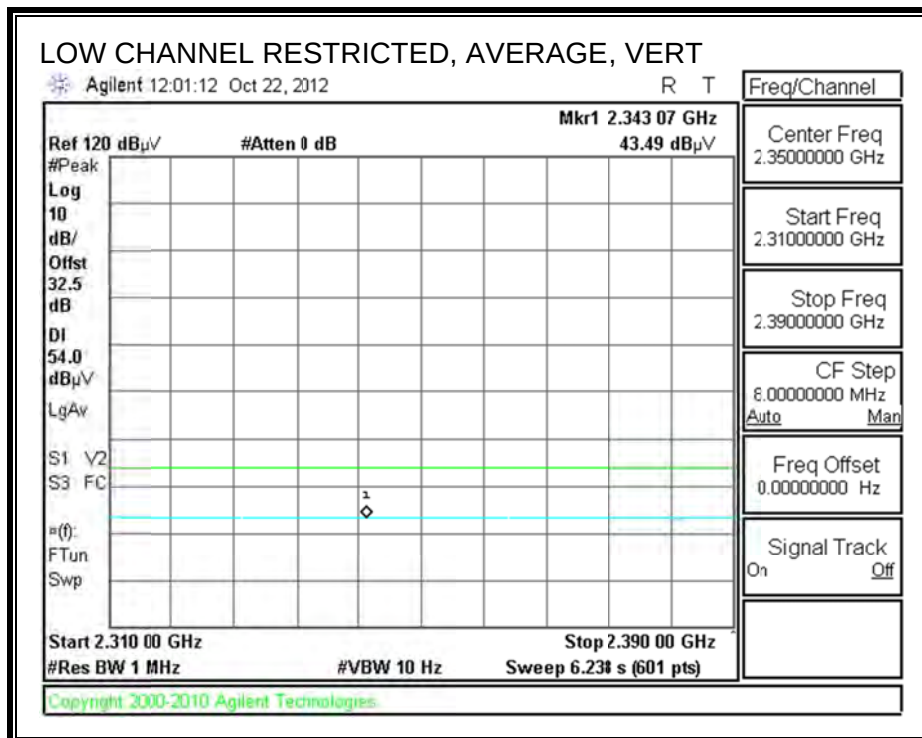
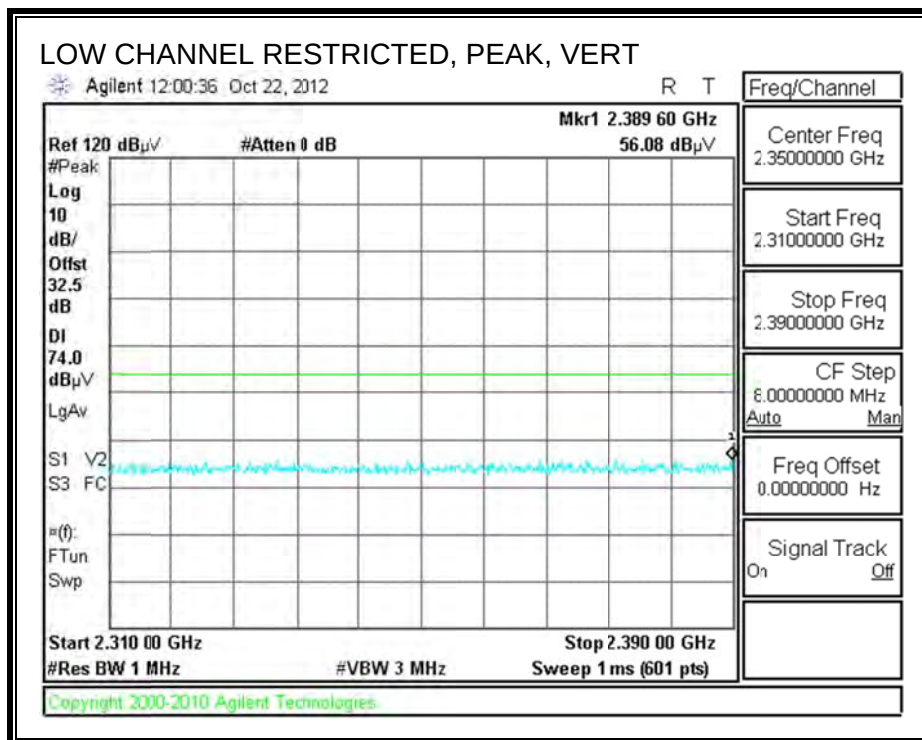
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

9.2. TRANSMITTER ABOVE 1 GHz

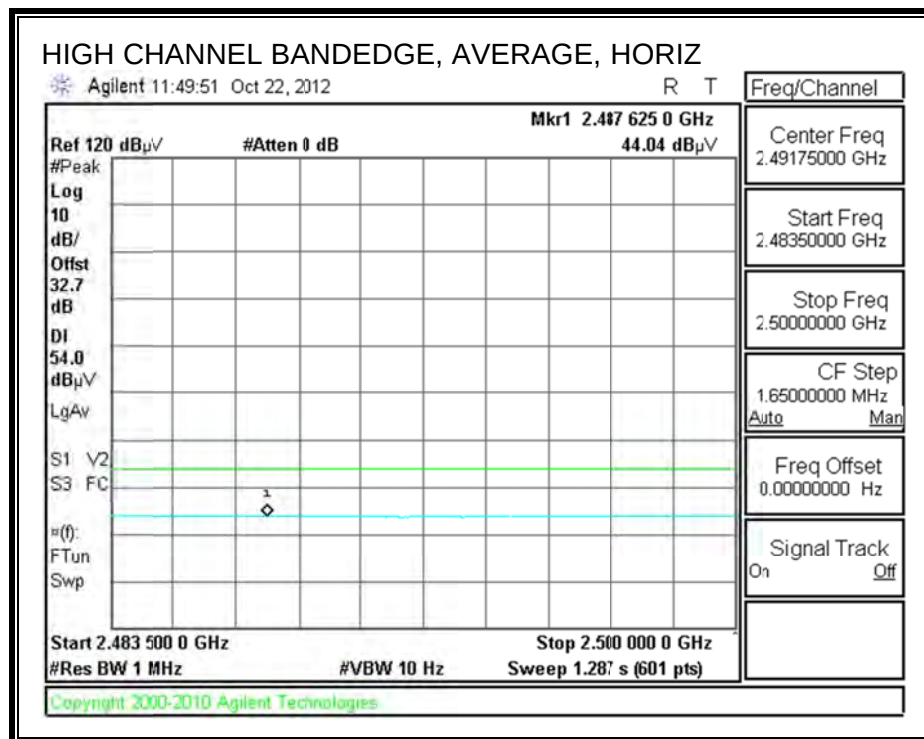
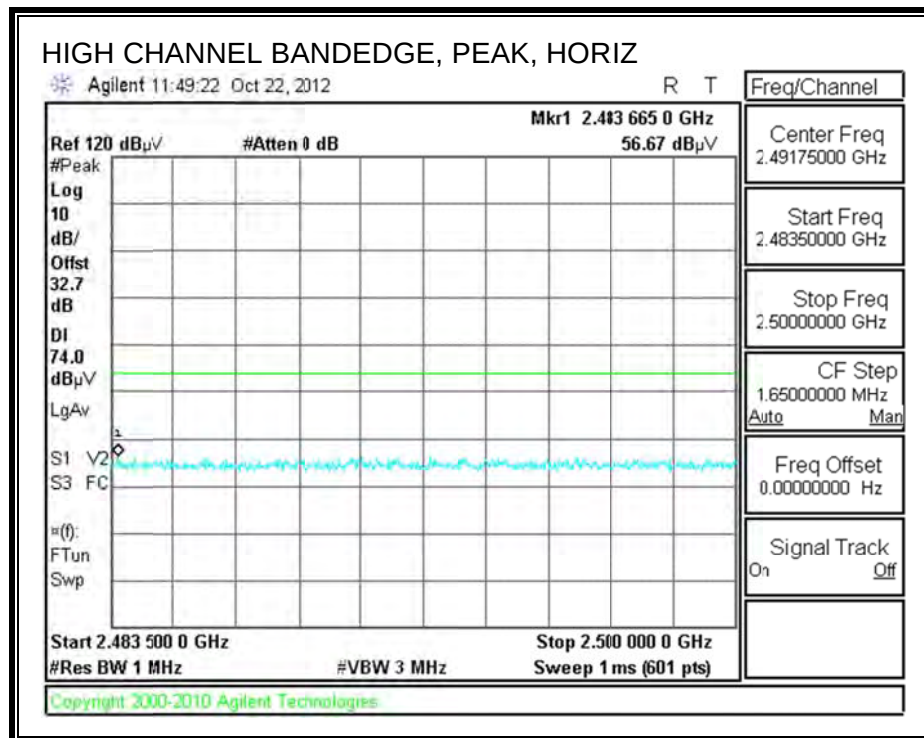
9.2.1. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND

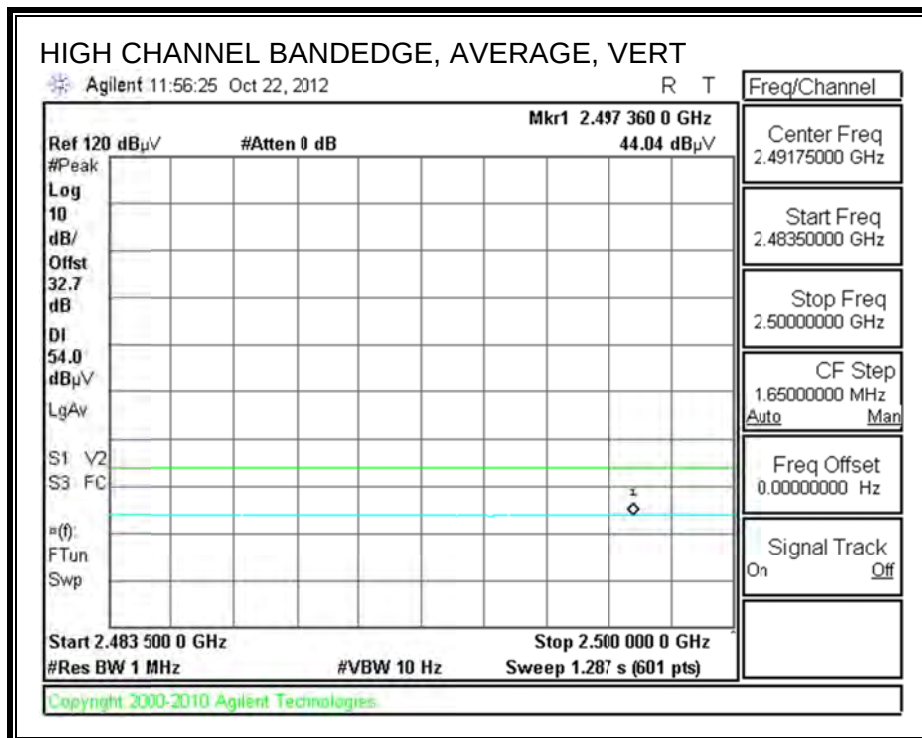
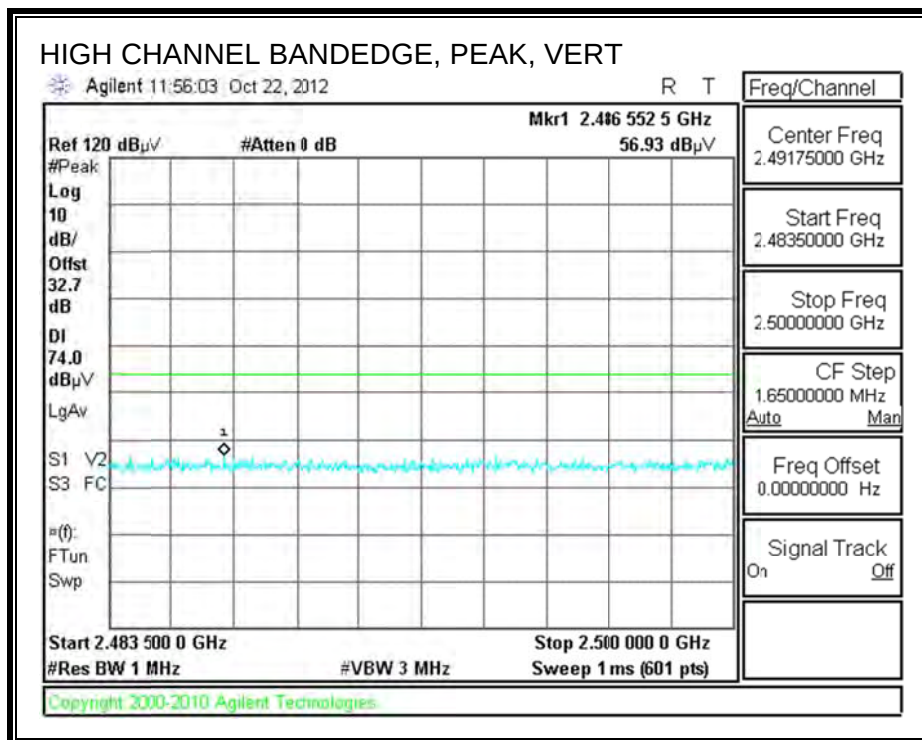
RESTRICTED BANDEDGE (LOW CHANNEL)





AUTHORIZED BANDEDGE (HIGH CHANNEL)



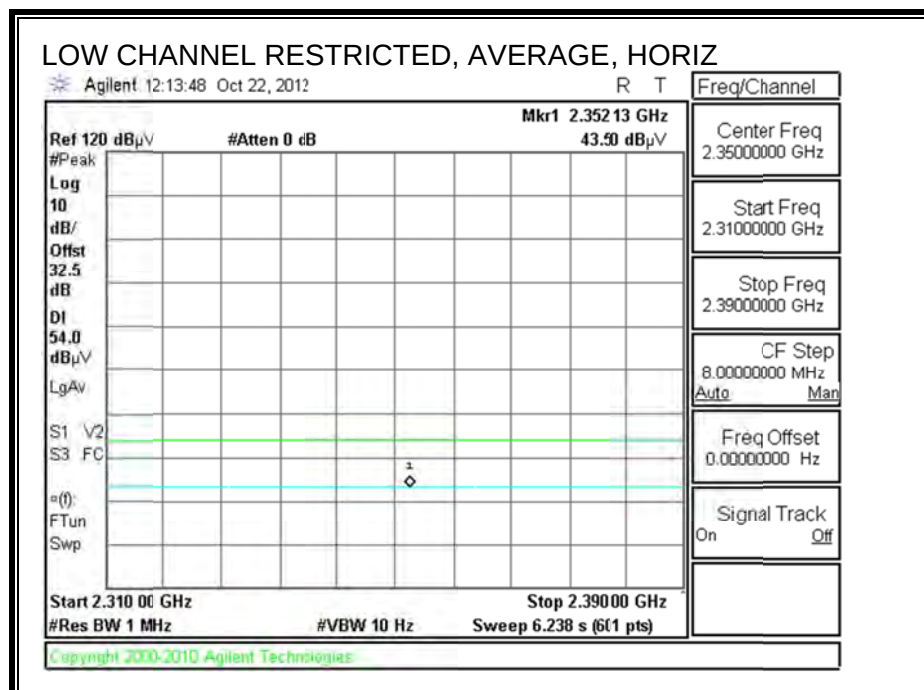
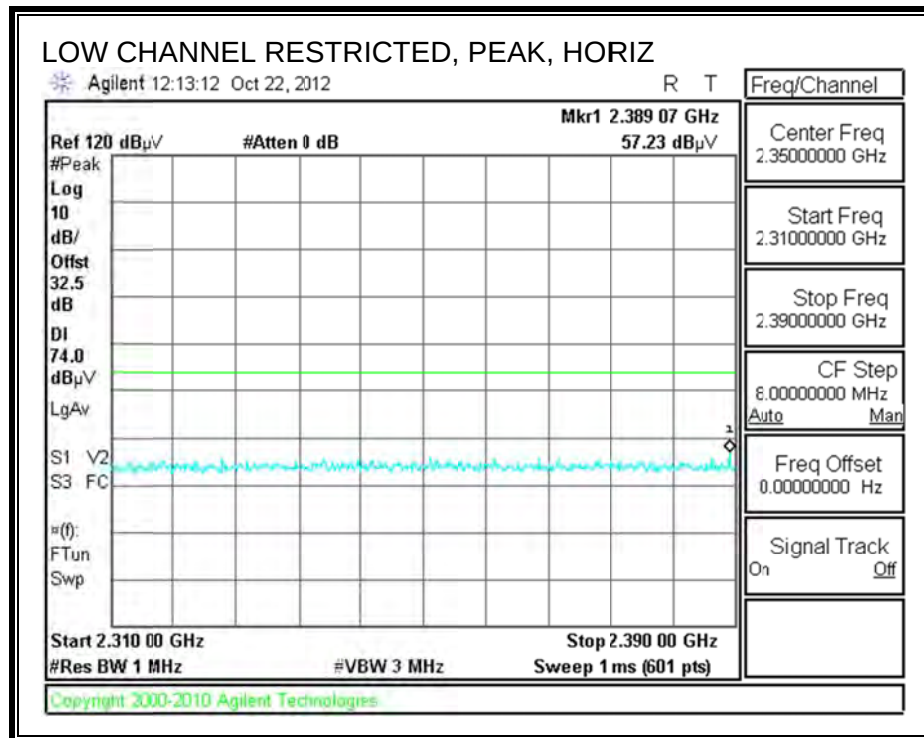


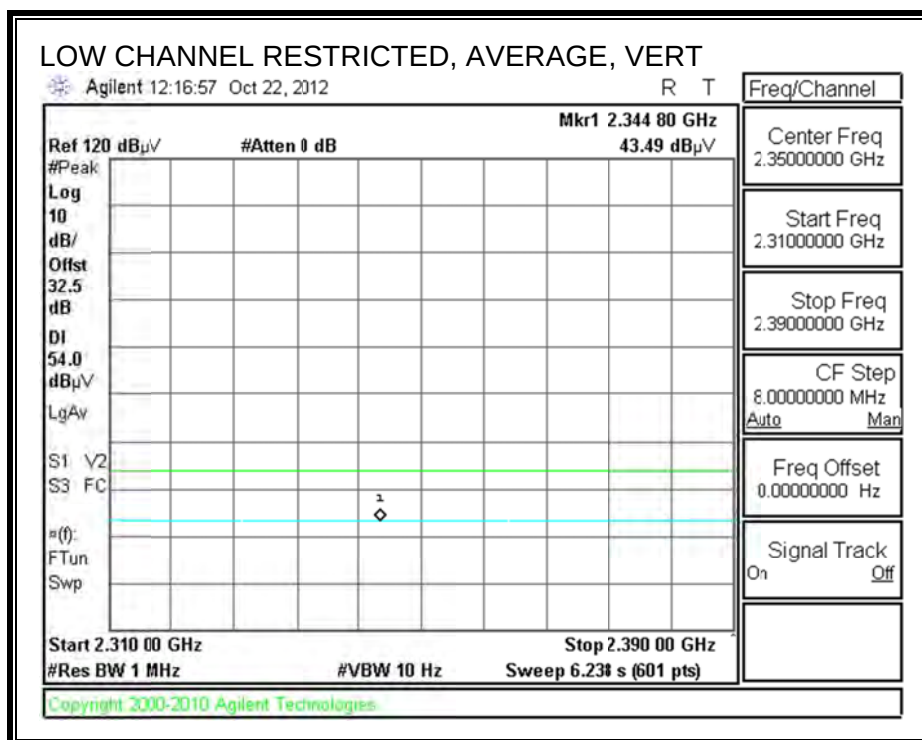
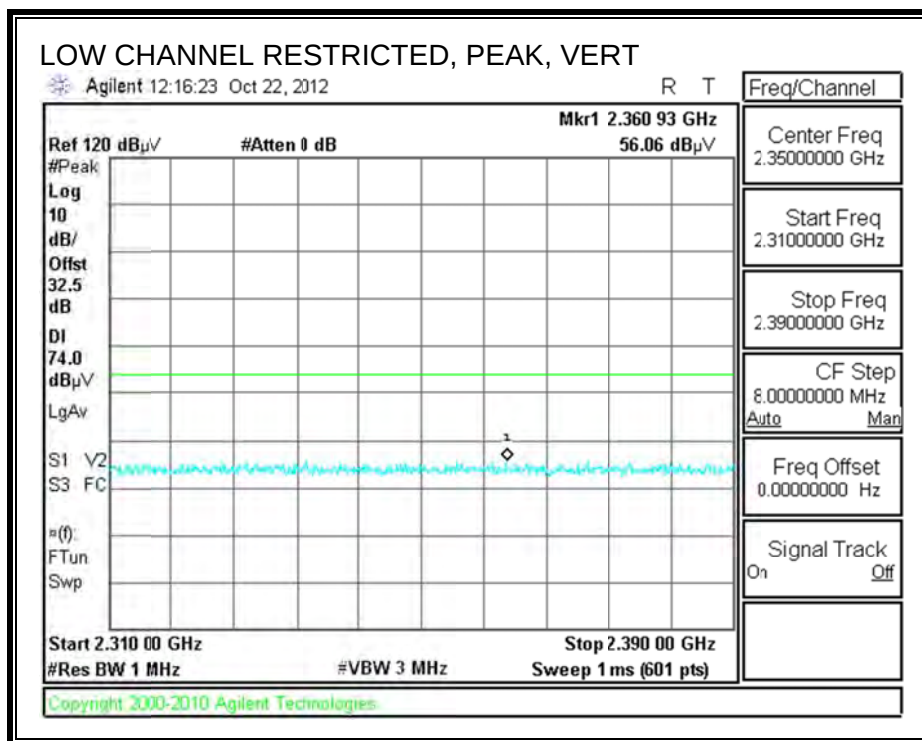
HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement															
Compliance Certification Services, Fremont 3m Chamber															
Company:		Ruckus													
Project #:		12U14419													
Date:		10/22/2012													
Test Engineer:		David Garcia													
Configuration:		EUT with laptop in remote location, CAT 5, and AC adapter, New FCC Sample													
Mode:		11b, Tx (99% duty cycle)													
Test Equipment:															
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit							
T60; S/N: 2238 @3m		T34 HP 8449B						FCC 15.205							
Hi Frequency Cables															
3' cable 22807700		12' cable 22807600		20' cable 22807500		HPF		Reject Filter		Peak Measurements RBW=1MHz; VBW=3MHz Average Measurements RBW=1MHz; VBW=10Hz					
3' cable 22807700		12' cable 22807600		20' cable 22807500				R_001							
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Channel: 2412 MHz															
4.824	3.0	41.0	22.5	33.1	6.8	-34.1	0.0	0.0	46.9	38.3	74	54	-27.1	-15.7	Set=23 V
4.824	3.0	39.0	28.8	33.1	6.8	-34.1	0.0	0.0	44.8	34.6	74	54	-29.2	-19.4	H
Mid Channel: 2437 MHz															
4.874	3.0	42.3	36.3	33.2	6.8	-34.0	0.0	0.0	48.2	42.2	74	54	-25.8	-11.8	Set=23 V
4.874	3.0	39.5	30.0	33.2	6.8	-34.0	0.0	0.0	45.4	35.9	74	54	-28.6	-18.1	H
High Channel: 2462 MHz															
4.924	3.0	45.2	41.7	33.2	6.8	-34.0	0.0	0.0	51.2	47.7	74	54	-22.8	-6.3	Set=23 V
7.386	3.0	46.6	40.8	36.4	9.1	-33.1	0.0	0.0	59.0	53.2	74	54	-15.0	-0.8	V
12.310	3.0	35.8	25.2	39.4	12.0	-32.3	0.0	0.0	54.9	44.4	74	54	-19.1	-9.6	V
4.924	3.0	41.0	34.3	33.2	6.8	-34.0	0.0	0.0	47.0	40.3	74	54	-27.0	-13.7	H
7.386	3.0	40.0	29.3	36.4	9.1	-33.1	0.0	0.0	52.4	41.7	74	54	-21.6	-12.3	H
12.310	3.0	38.2	26.3	39.4	12.0	-32.3	0.0	0.0	57.3	45.4	74	54	-16.7	-8.6	H
Rev: 11.10.1															
f	Measurement Frequency		Amp	Preamp Gain		Avg Lim	Average Field Strength Limit								
Dist	Distance to Antenna		D Corr	Distance Correct to 3 meters		Pk Lim	Peak Field Strength Limit								
Read	Analyzer Reading		Avg	Average Field Strength @ 3 m		Avg Mar	Margin vs. Average Limit								
AF	Antenna Factor		Peak	Calculated Peak Field Strength		Pk Mar	Margin vs. Peak Limit								
CL	Cable Loss		HPF	High Pass Filter											

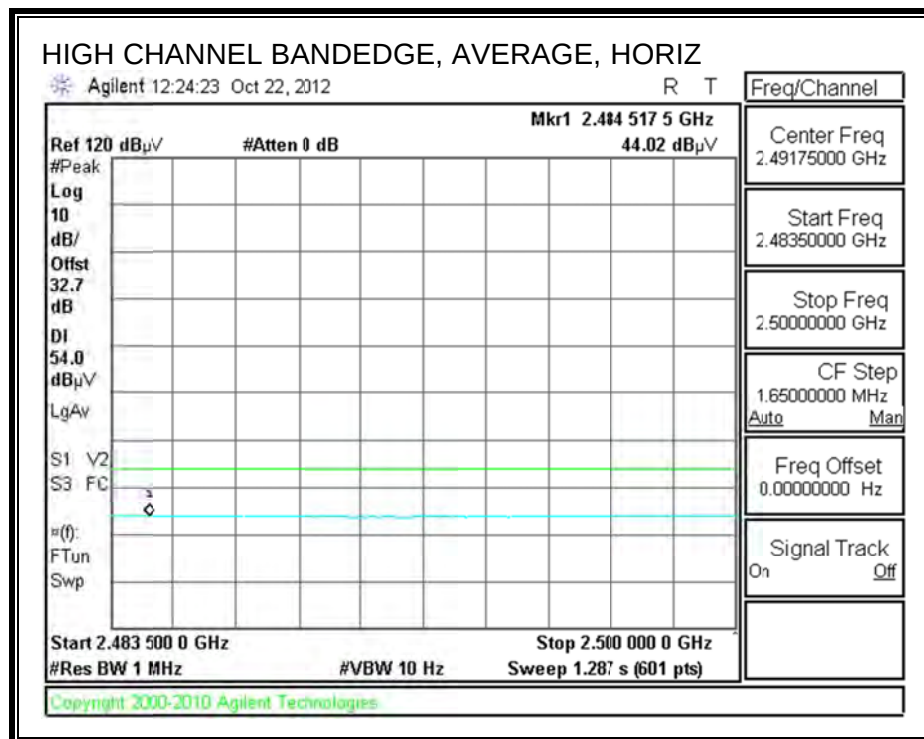
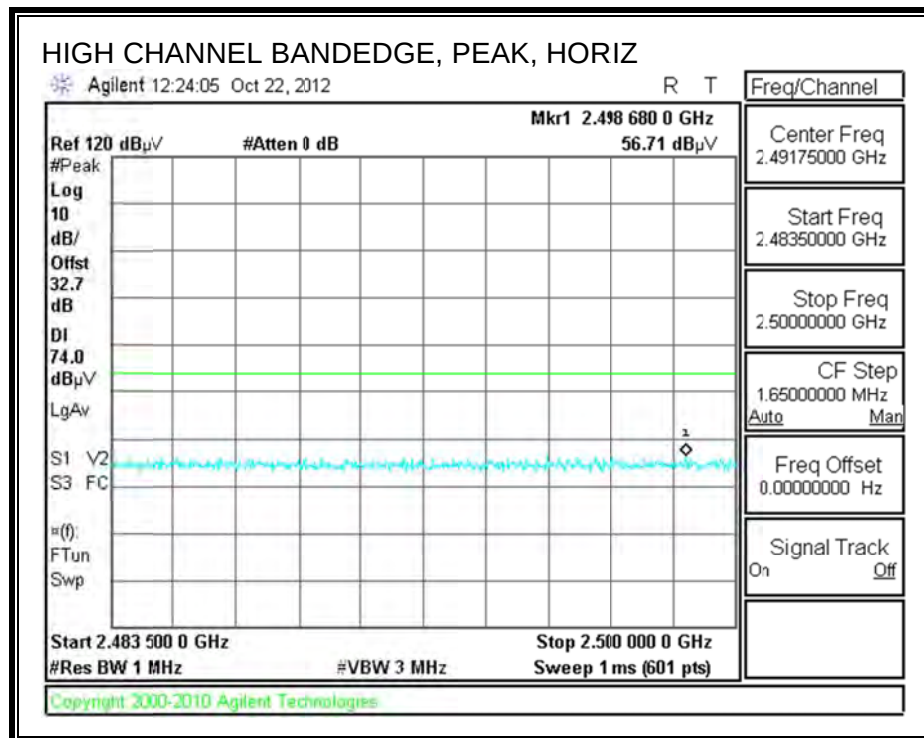
9.2.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND

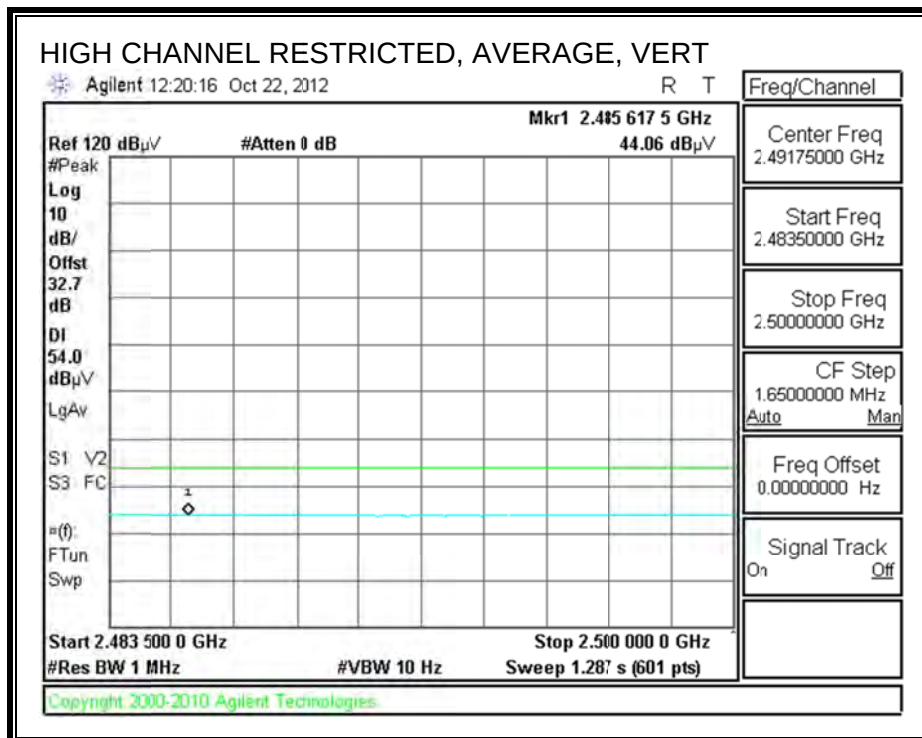
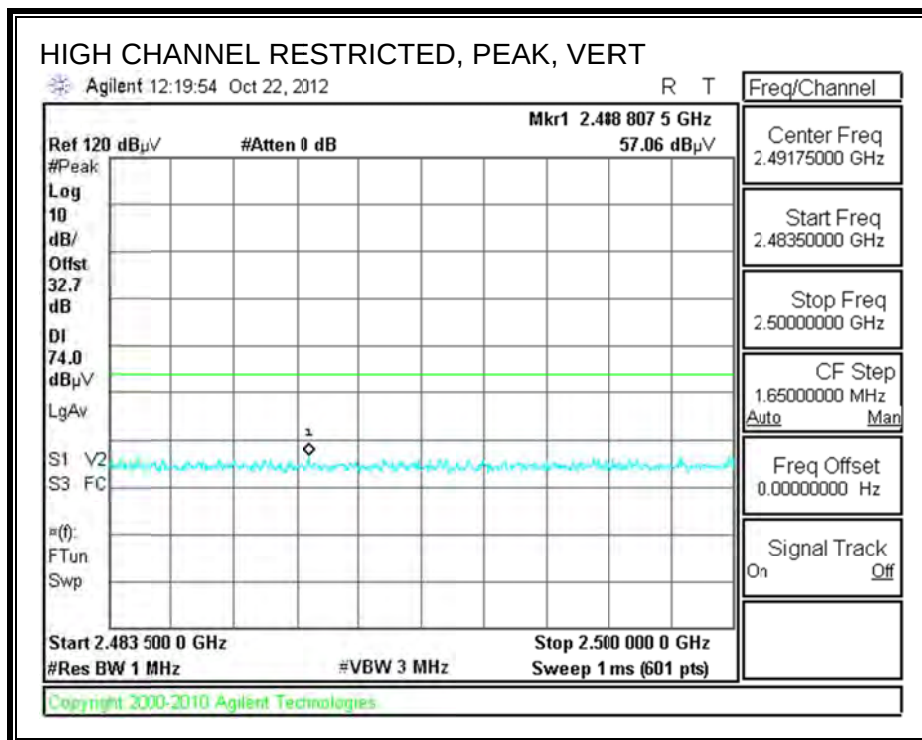
RESTRICTED BANDEDGE (LOW CHANNEL)





AUTHORIZED BANDEDGE (HIGH CHANNEL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
 Compliance Certification Services, Fremont 3m Chamber

Company: Ruckus

Project #: 12U14419

Date: 10/22/2012

Test Engineer: David Garcia

Configuration: EUT with laptop in remote location, CAT 5, and AC adapter, New FCC Sample

Mode: 11g, Tx (99% duty cycle)

Test Equipment:

Horn 1-18GHz
 T60; S/N: 2238 @3m

Pre-amplifier 1-26GHz
 T34 HP 8449B

Pre-amplifier 26-40GHz
 [Empty]

Horn > 18GHz
 [Empty]

Limit
 FCC 15.205

3' cable 22807700
 3' cable 22807700

12' cable 22807600
 12' cable 22807600

20' cable 22807500
 20' cable 22807500

HPF
 [Empty]

Reject Filter
 R_001

Peak Measurements
 RBW=1MHz, VBW=3MHz
Average Measurements
 RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Channel: 2412 MHz															
4.824	3.0	38.8	26.6	33.1	6.8	-34.1	0.0	0.0	44.6	32.4	74	54	-29.4	-21.6	Set=22 V
4.824	3.0	37.2	25.0	33.1	6.8	-34.1	0.0	0.0	43.1	30.8	74	54	-30.9	-23.2	H
Mid Channel: 2437 MHz															
4.874	3.0	43.6	30.4	33.2	6.8	-34.0	0.0	0.0	49.5	36.3	74	54	-24.5	-17.7	Set=22 V
4.874	3.0	39.3	27.4	33.2	6.8	-34.0	0.0	0.0	45.2	33.3	74	54	-28.8	-20.7	H
High Channel: 2462 MHz															
4.924	3.0	50.5	37.5	33.2	6.8	-34.0	0.0	0.0	56.5	43.5	74	54	-17.5	-10.5	Set=22 V
7.386	3.0	49.8	36.7	36.4	9.1	-33.1	0.0	0.0	62.2	49.1	74	54	-11.8	-4.9	V
12.310	3.0	34.7	23.2	39.4	12.0	-32.3	0.0	0.0	53.8	42.4	74	54	-20.2	-11.6	V
4.924	3.0	47.0	34.6	33.2	6.8	-34.0	0.0	0.0	53.0	40.6	74	54	-21.0	-13.4	H
7.386	3.0	43.2	28.0	36.4	9.1	-33.1	0.0	0.0	55.6	40.4	74	54	-18.4	-13.6	H
12.310	3.0	37.6	26.2	39.4	12.0	-32.3	0.0	0.0	56.7	45.3	74	54	-17.3	-8.7	H

Rev. 11.10.11

f Measurement Frequency

Dist Distance to Antenna

Read Analyzer Reading

AF Antenna Factor

CL Cable Loss

Amp Preamp Gain

D Corr Distance Correct to 3 meters

Avg Average Field Strength @ 3 m

Peak Calculated Peak Field Strength

HPF High Pass Filter

Avg Lim Average Field Strength Limit

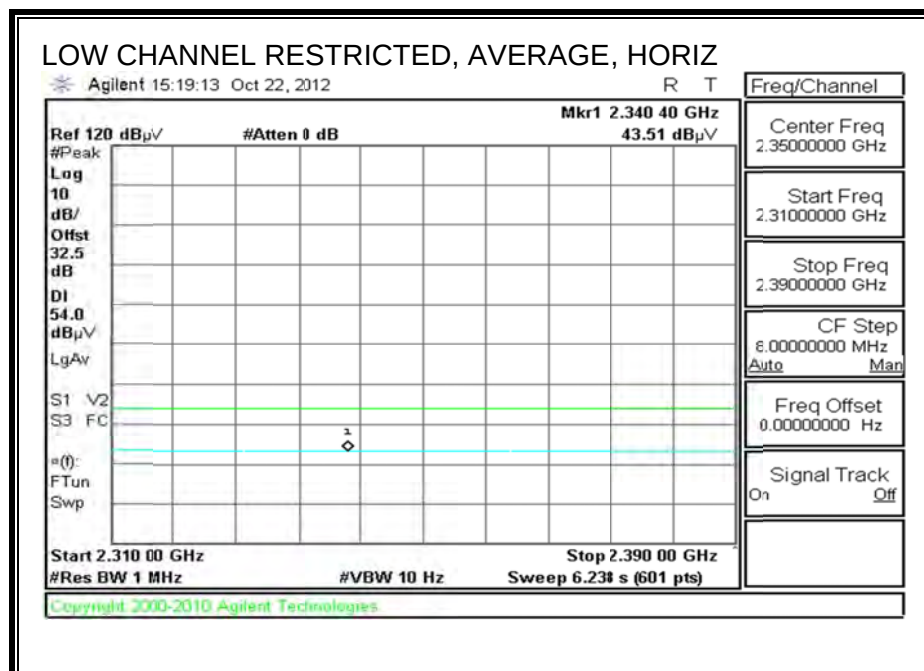
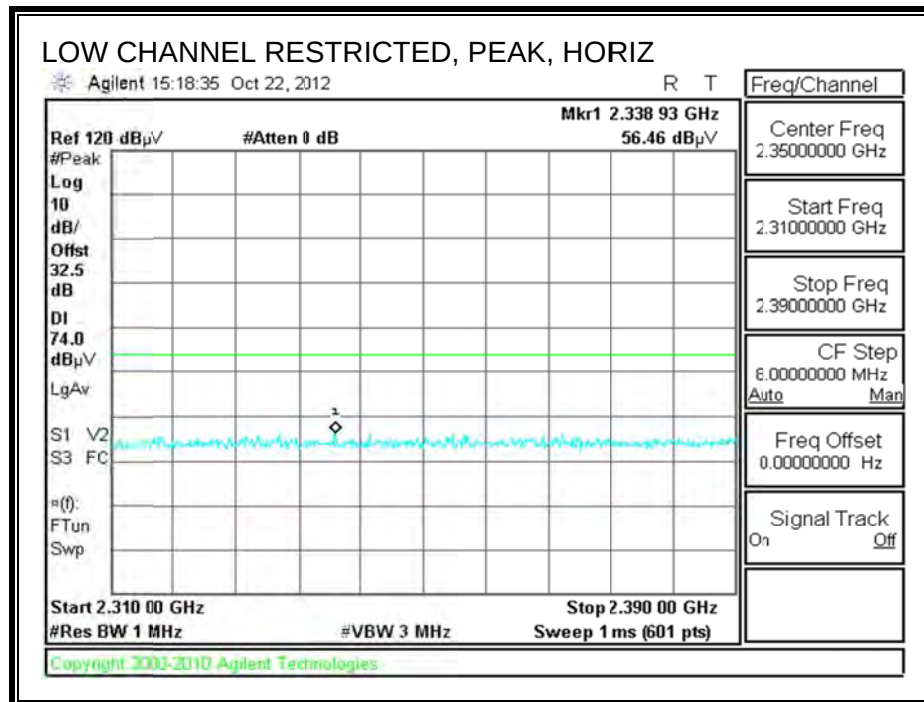
Pk Lim Peak Field Strength Limit

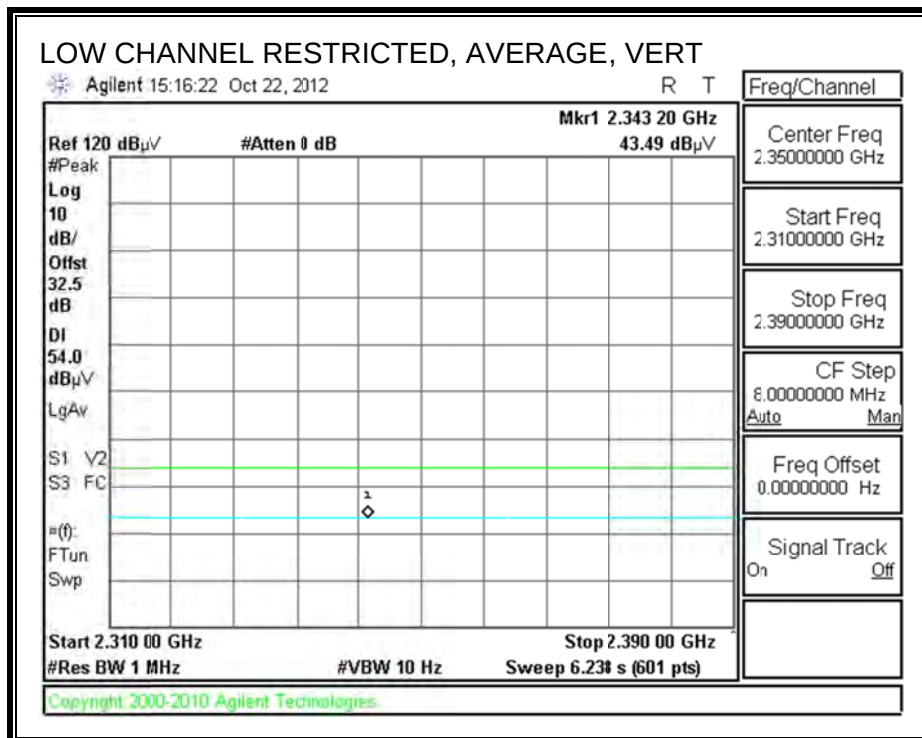
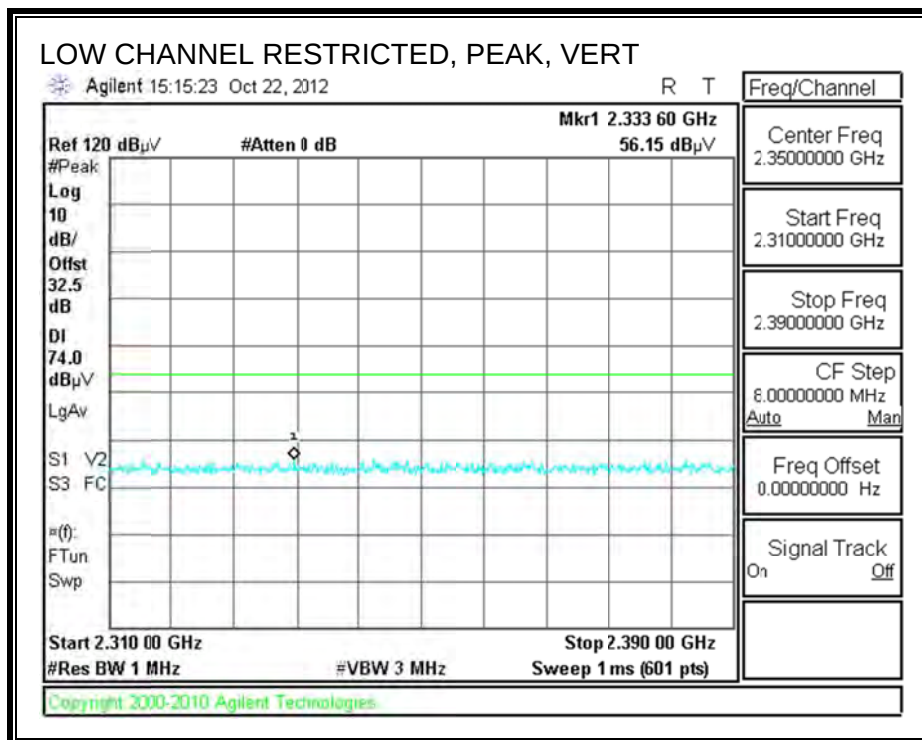
Avg Mar Margin vs. Average Limit

Pk Mar Margin vs. Peak Limit

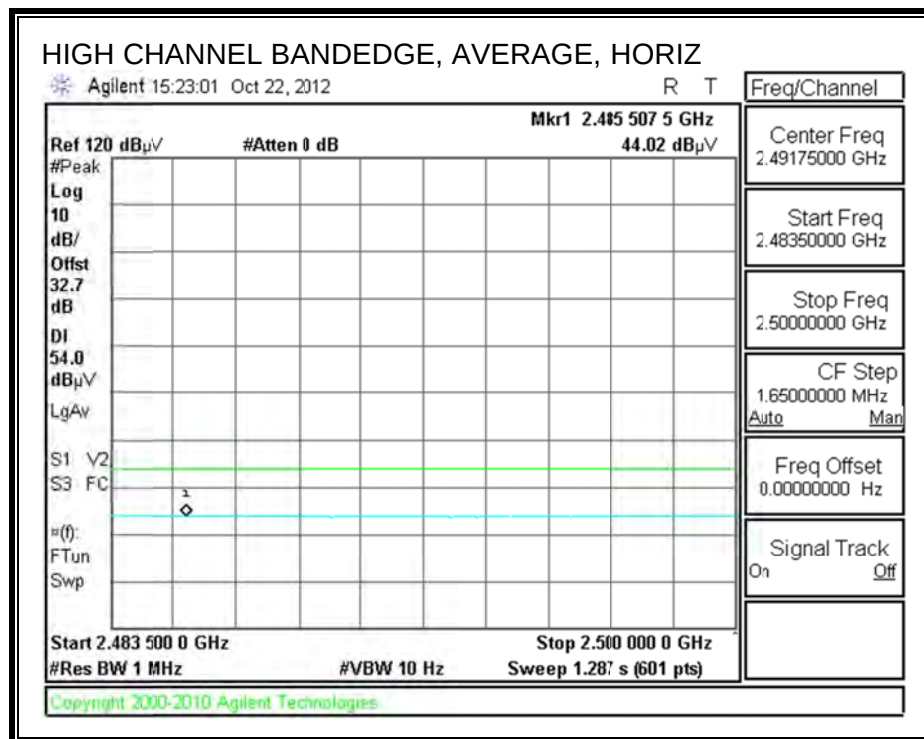
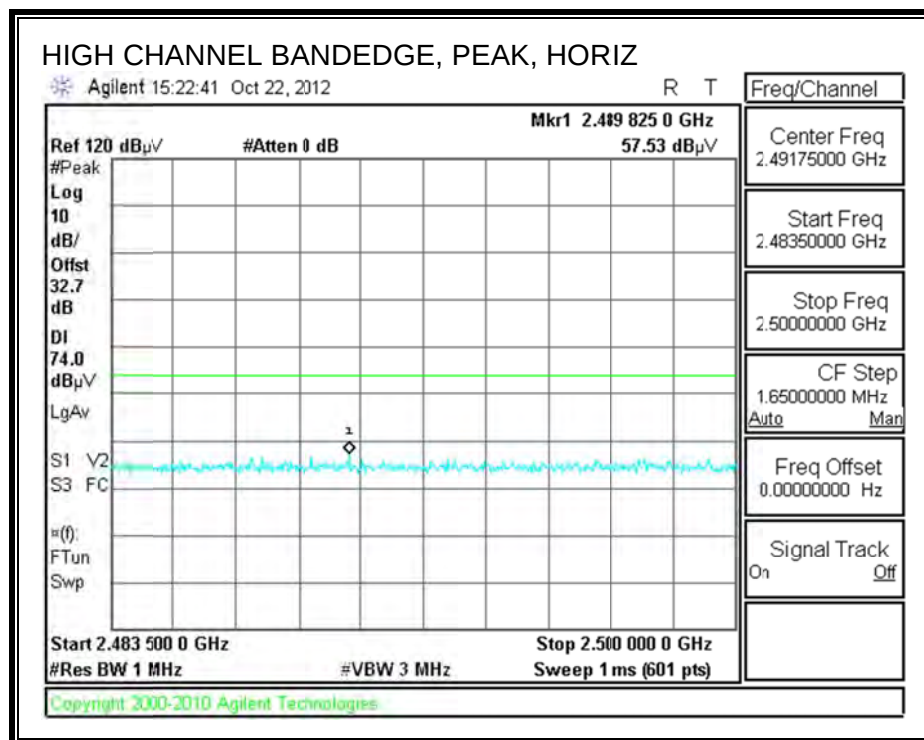
9.2.3. TX ABOVE 1 GHz 802.11n HT20 CDD MODE IN THE 2.4 GHz BAND

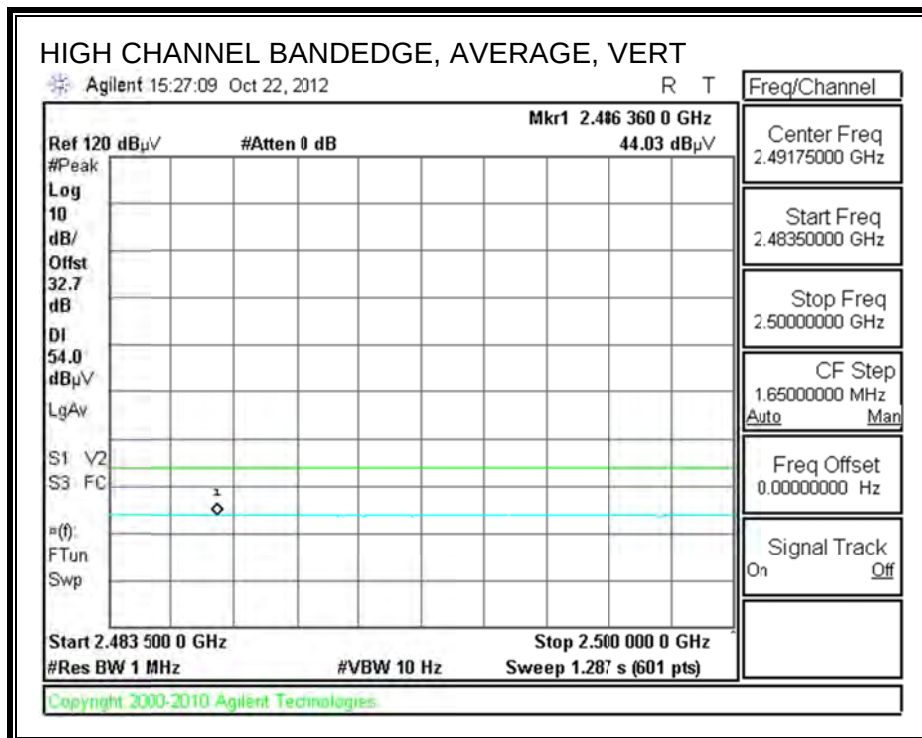
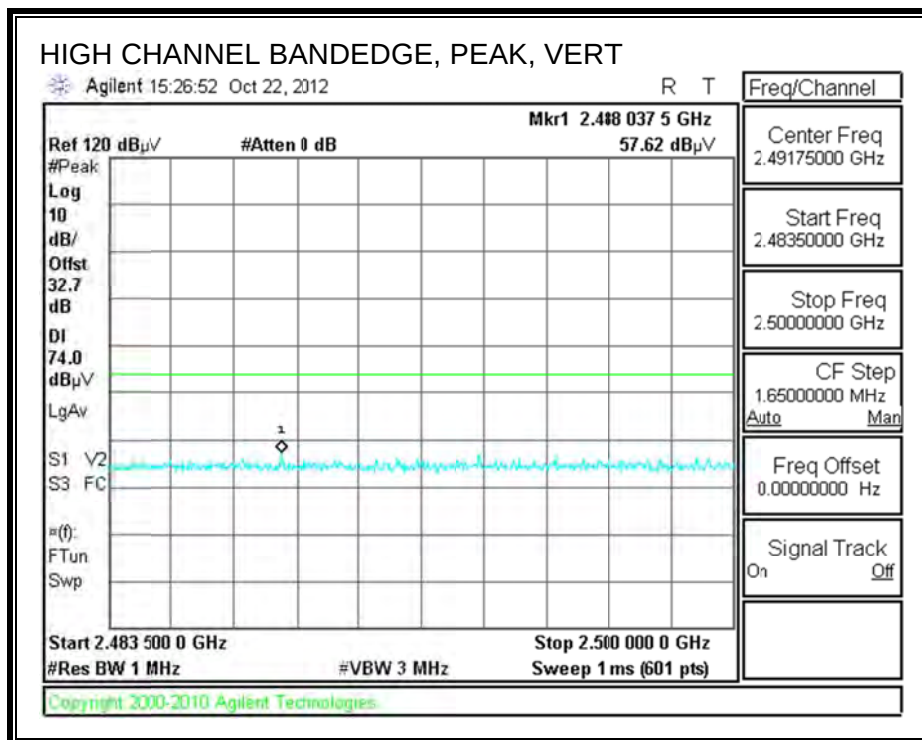
RESTRICTED BANDEDGE (LOW CHANNEL)





AUTHORIZED BANDEDGE (HIGH CHANNEL)



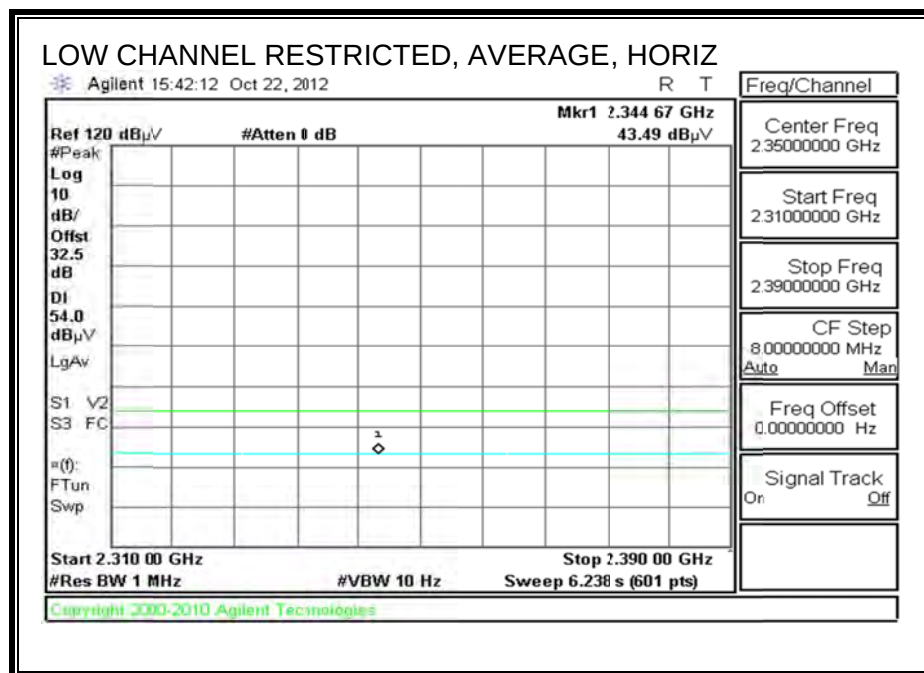
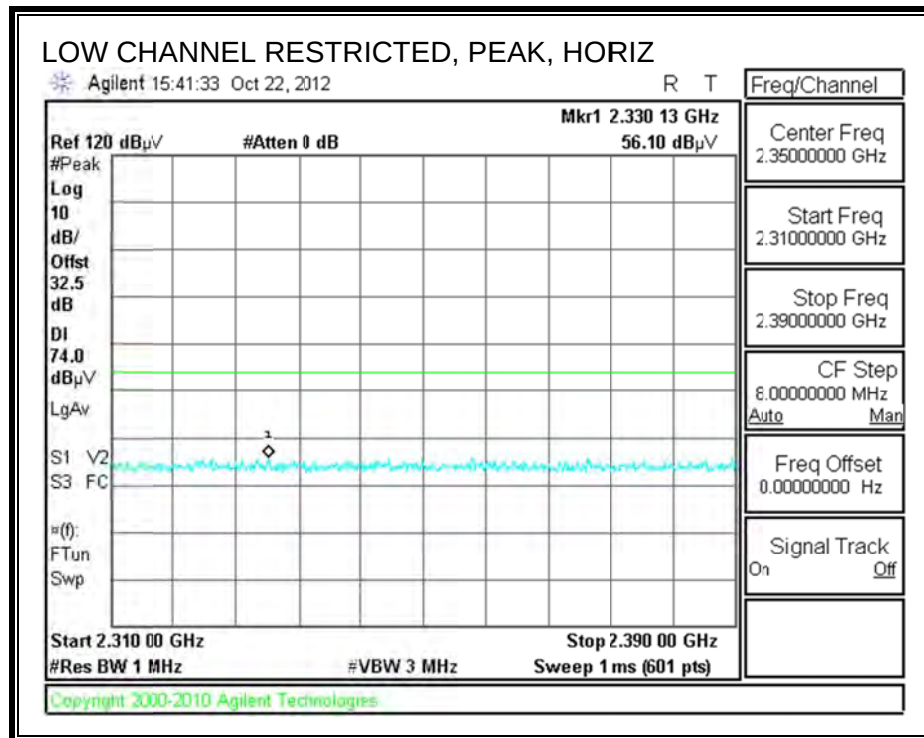


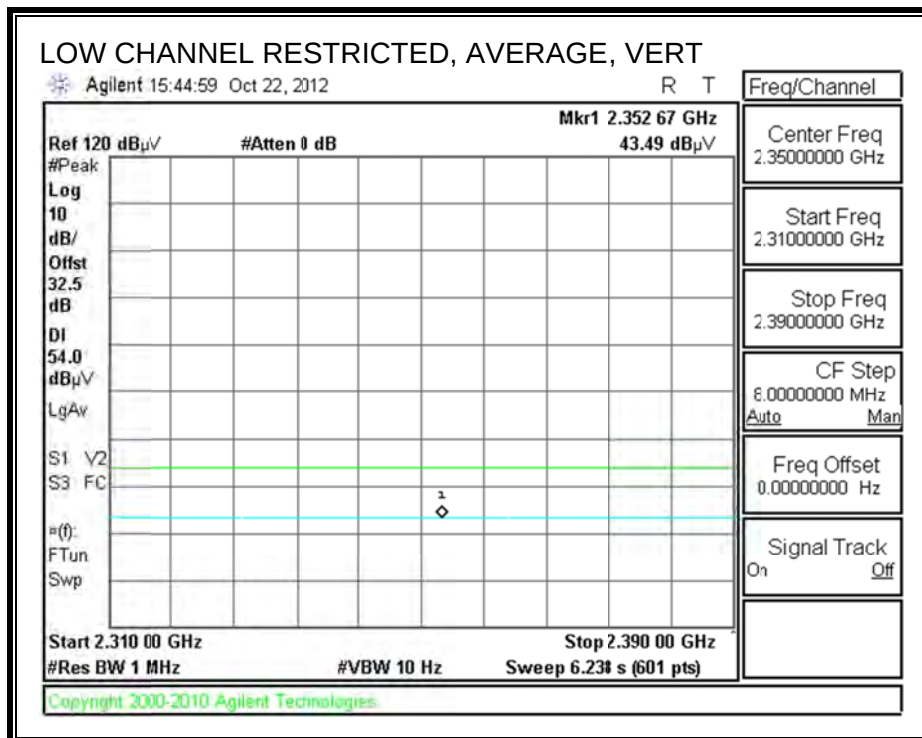
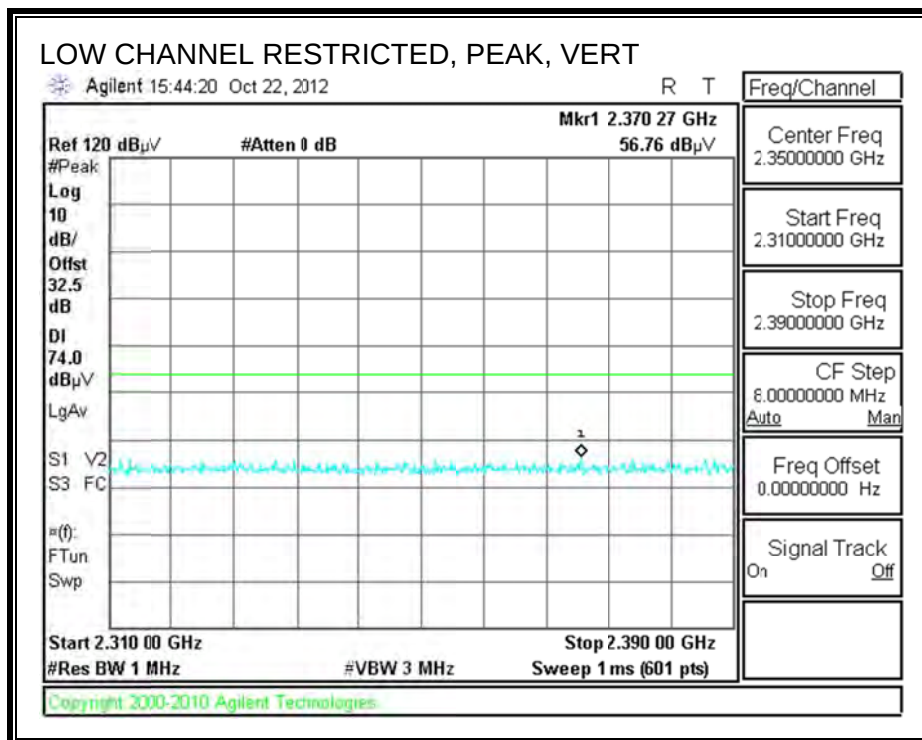
HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement															
Compliance Certification Services, Fremont 3m Chamber															
Company:		Ruckus													
Project #:		12U14419													
Date:		10/22/2012													
Test Engineer:		David Garcia													
Configuration:		EUT with laptop in remote location, CAT 5, and AC adapter, New FCC Sample													
Mode:		11n, HT20 CDD, Tx (99% duty cycle)													
Test Equipment:															
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit							
T60; S/N: 2238 @3m		T34 HP 8449B						FCC 15.205							
Hi Frequency Cables															
3' cable 22807700		12' cable 22807600		20' cable 22807500		HPF		Reject Filter		Peak Measurements RBW=1MHz; VBW=3MHz Average Measurements RBW=1MHz; VBW=10Hz					
3' cable 22807700		12' cable 22807600		20' cable 22807500				R_001							
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Channel: 2412 MHz															
4.824	3.0	37.6	25.2	33.1	6.8	-34.1	0.0	0.0	43.5	31.1	74	54	-30.5	-22.9	Set=22 V
4.824	3.0	36.5	24.2	33.1	6.8	-34.1	0.0	0.0	42.4	30.1	74	54	-31.6	-23.9	H
Mid Channel: 2437 MHz															
4.874	3.0	41.3	28.3	33.2	6.8	-34.0	0.0	0.0	47.2	34.2	74	54	-26.8	-19.8	Set=22 V
4.874	3.0	38.8	25.8	33.2	6.8	-34.0	0.0	0.0	44.7	31.7	74	54	-29.3	-22.3	H
High Channel: 2462 MHz															
4.924	3.0	49.6	36.7	33.2	6.8	-34.0	0.0	0.0	55.6	42.7	74	54	-18.4	-11.3	Set=22 V
7.386	3.0	50.5	37.4	36.4	9.1	-33.1	0.0	0.0	63.0	49.8	74	54	-11.0	-4.2	V
12.310	3.0	35.1	22.7	39.4	12.0	-32.3	0.0	0.0	54.2	41.8	74	54	-19.8	-12.2	V
4.924	3.0	45.3	32.8	33.2	6.8	-34.0	0.0	0.0	51.3	38.8	74	54	-22.7	-15.2	H
7.386	3.0	36.3	24.6	36.4	9.1	-33.1	0.0	0.0	48.7	37.0	74	54	-25.3	-17.0	H
12.310	3.0	34.0	21.8	39.4	12.0	-32.3	0.0	0.0	53.1	40.9	74	54	-20.9	-13.1	H
Rev: 11.10.1															
f	Measurement Frequency		Amp	Preamp Gain		Avg Lim	Average Field Strength Limit								
Dist	Distance to Antenna		D Corr	Distance Correct to 3 meters		Pk Lim	Peak Field Strength Limit								
Read	Analyzer Reading		Avg	Average Field Strength @ 3 m		Avg Mar	Margin vs. Average Limit								
AF	Antenna Factor		Peak	Calculated Peak Field Strength		Pk Mar	Margin vs. Peak Limit								
CL	Cable Loss		HPF	High Pass Filter											

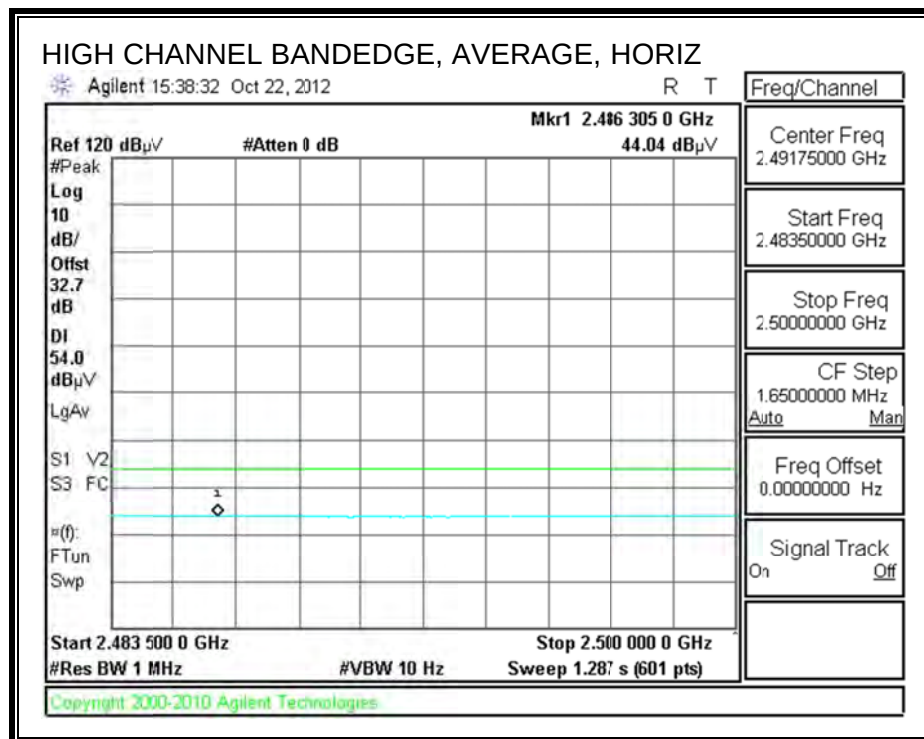
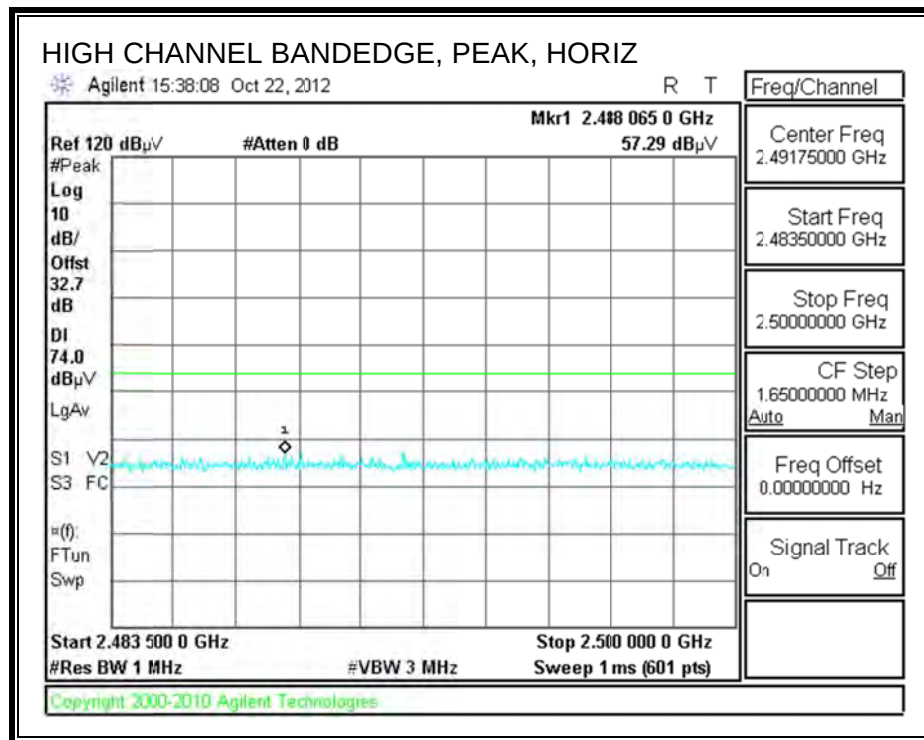
9.2.4. TX ABOVE 1 GHz 802.11n HT20 SDM MODE IN THE 2.4 GHz BAND

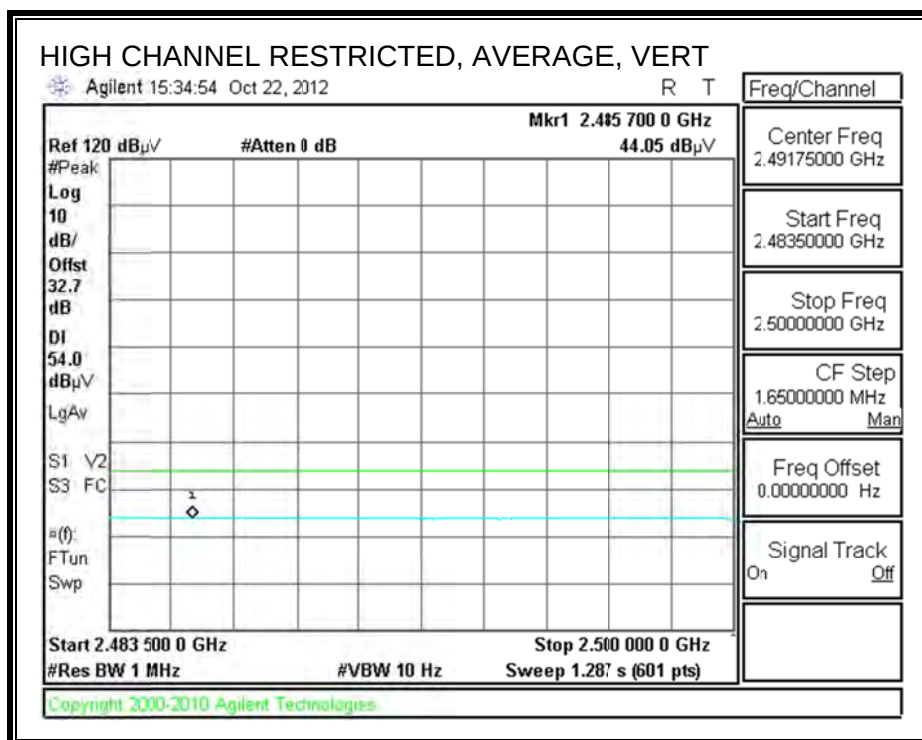
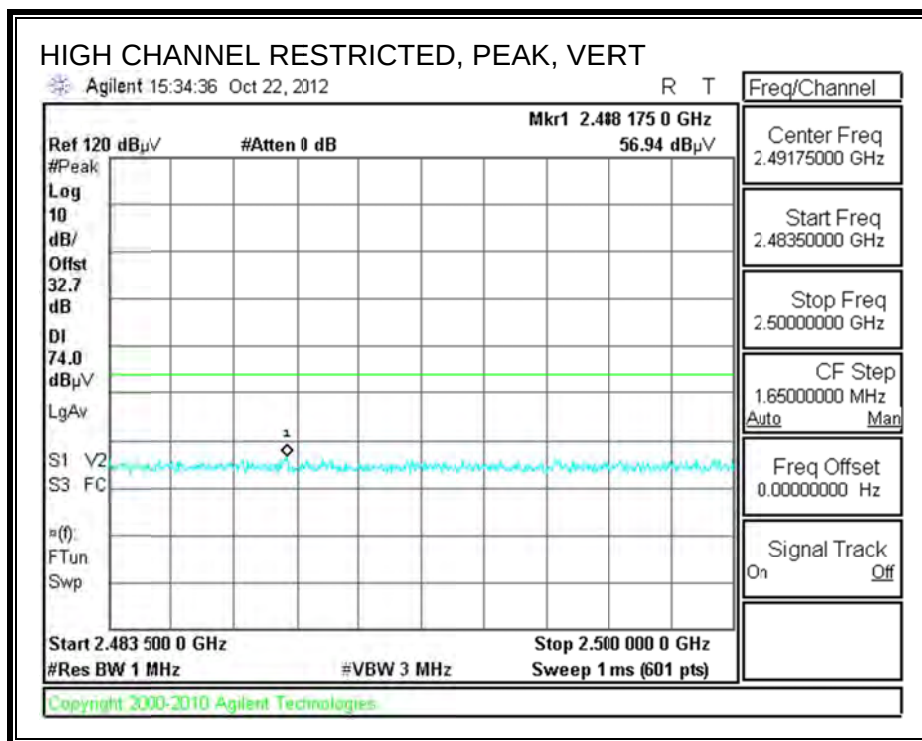
RESTRICTED BANDEDGE (LOW CHANNEL)





AUTHORIZED BANDEDGE (HIGH CHANNEL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
 Compliance Certification Services, Fremont 3m Chamber

Company: Ruckus

Project #: 12U14419

Date: 10/22/2012

Test Engineer: David Garcia

Configuration: EUT with laptop in remote location, CAT 5, and AC adapter, New FCC Sample

Mode: 11n, HT20 SDM, Tx (99% duty cycle)

Test Equipment:

Horn 1-18GHz
 T60; S/N: 2238 @3m

Pre-amplifier 1-26GHz
 T34 HP 8449B

Pre-amplifier 26-40GHz
 [Empty]

Horn > 18GHz
 [Empty]

Limit
 FCC 15.205

3' cable 22807700
 3' cable 22807700

12' cable 22807600
 12' cable 22807600

20' cable 22807500
 20' cable 22807500

HPF
 [Empty]

Reject Filter
 R_001

Peak Measurements
 RBW=1MHz, VBW=3MHz
Average Measurements
 RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Channel: 2412 MHz															
4.824	3.0	39.0	26.6	33.1	6.8	-34.1	0.0	0.0	44.9	32.5	74	54	-29.1	-21.5	Set=22 V
4.824	3.0	36.8	24.6	33.1	6.8	-34.1	0.0	0.0	42.6	30.4	74	54	-31.4	-23.6	H
Mid Channel: 2437 MHz															
4.874	3.0	43.7	30.9	33.2	6.8	-34.0	0.0	0.0	49.6	36.8	74	54	-24.4	-17.2	Set=22 V
4.874	3.0	40.2	27.1	33.2	6.8	-34.0	0.0	0.0	46.1	33.0	74	54	-27.9	-21.0	H
High Channel: 2462 MHz															
4.924	3.0	50.0	27.1	33.2	6.8	-34.0	0.0	0.0	56.0	43.1	74	54	-18.0	-10.9	Set=22 V
7.386	3.0	49.5	27.0	36.4	9.1	-33.1	0.0	0.0	61.9	49.5	74	54	-12.1	-4.5	V
12.310	3.0	35.6	22.8	39.4	12.0	-32.3	0.0	0.0	54.7	42.0	74	54	-19.3	-12.0	V
4.924	3.0	43.3	31.6	33.2	6.8	-34.0	0.0	0.0	49.3	37.6	74	54	-24.7	-16.4	H
7.386	3.0	40.6	27.9	36.4	9.1	-33.1	0.0	0.0	53.1	40.3	74	54	-20.9	-13.7	H
12.310	3.0	33.3	21.1	39.4	12.0	-32.3	0.0	0.0	52.4	40.2	74	54	-21.6	-13.8	H

Rev. 11.10.11

f Measurement Frequency

Dist Distance to Antenna

Read Analyzer Reading

AF Antenna Factor

CL Cable Loss

Amp Preamp Gain

D Corr Distance Correct to 3 meters

Avg Average Field Strength @ 3 m

Peak Calculated Peak Field Strength

HPF High Pass Filter

Avg Lim Average Field Strength Limit

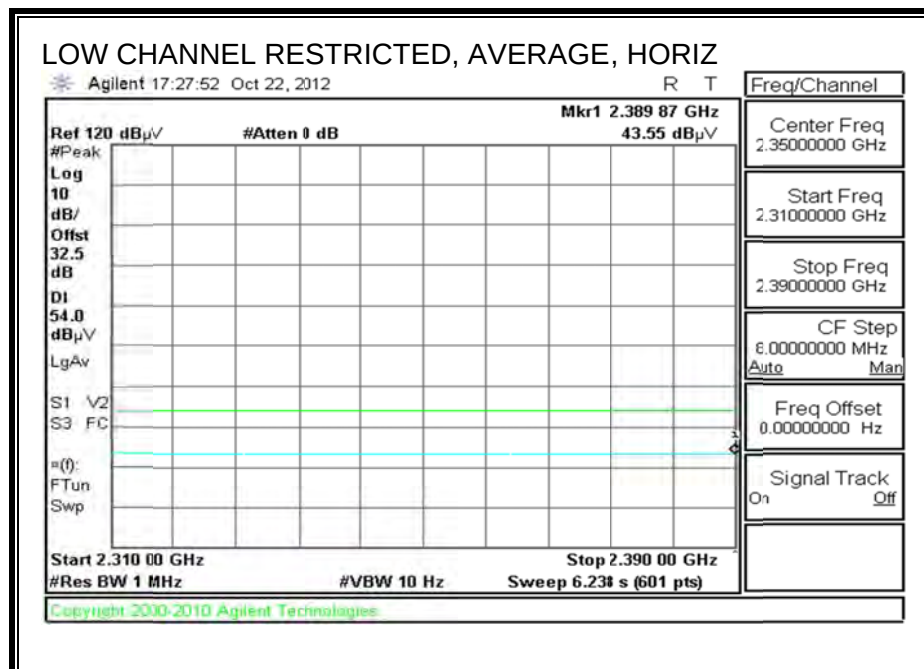
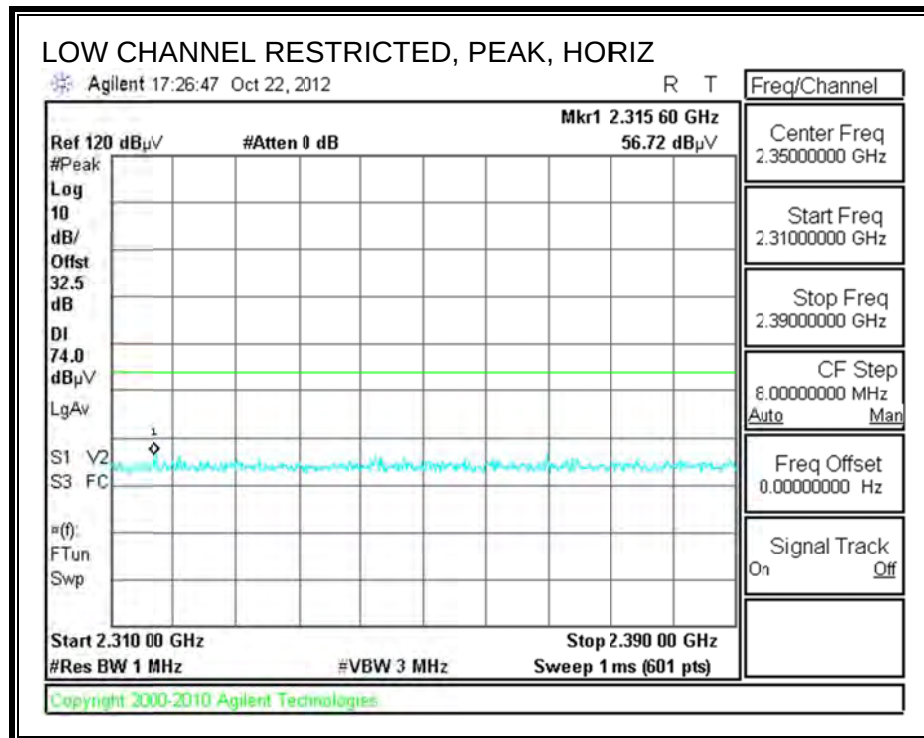
Pk Lim Peak Field Strength Limit

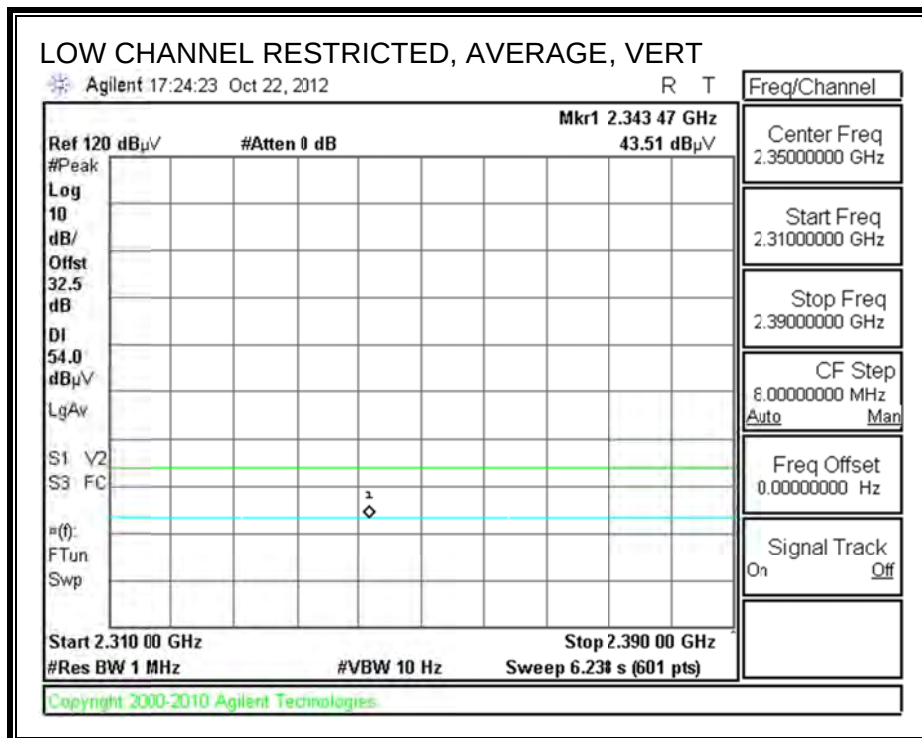
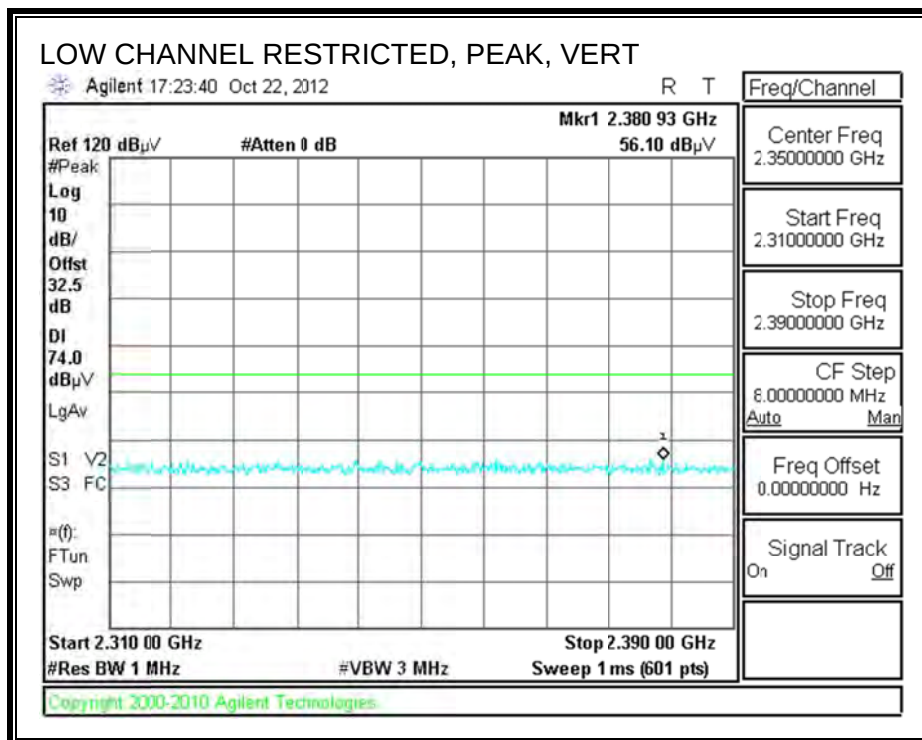
Avg Mar Margin vs. Average Limit

Pk Mar Margin vs. Peak Limit

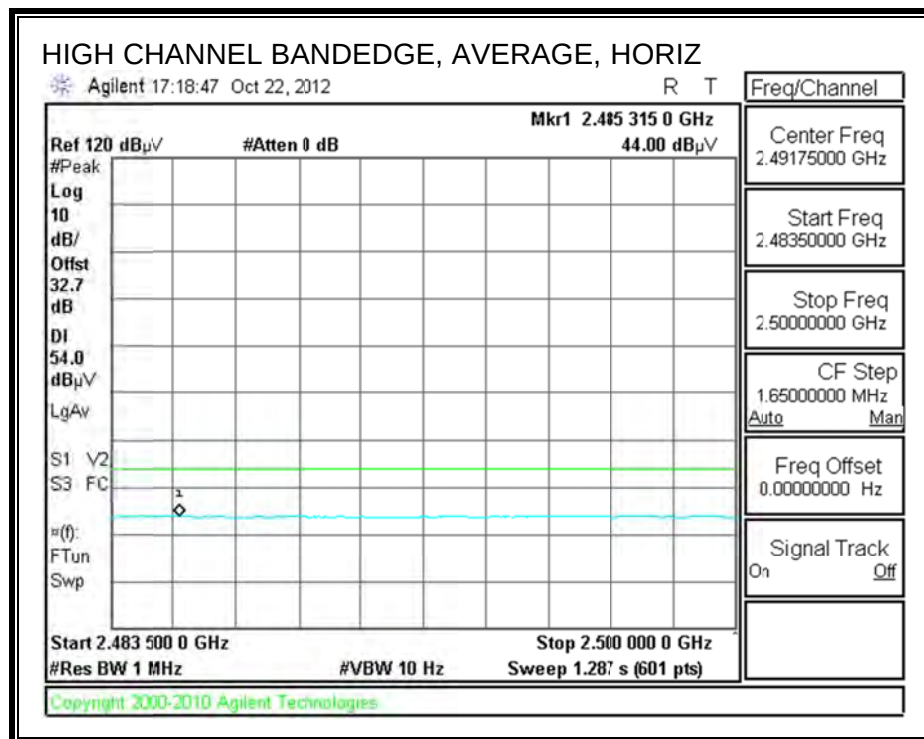
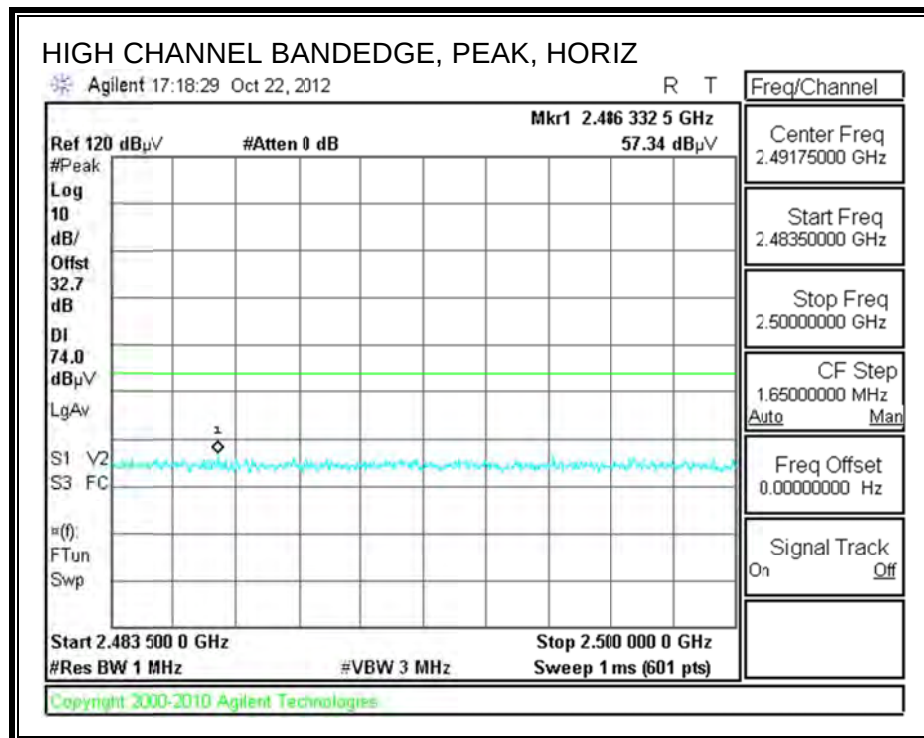
9.2.5. TX ABOVE 1 GHz 802.11n HT40 CDD MODE IN THE 2.4 GHz BAND

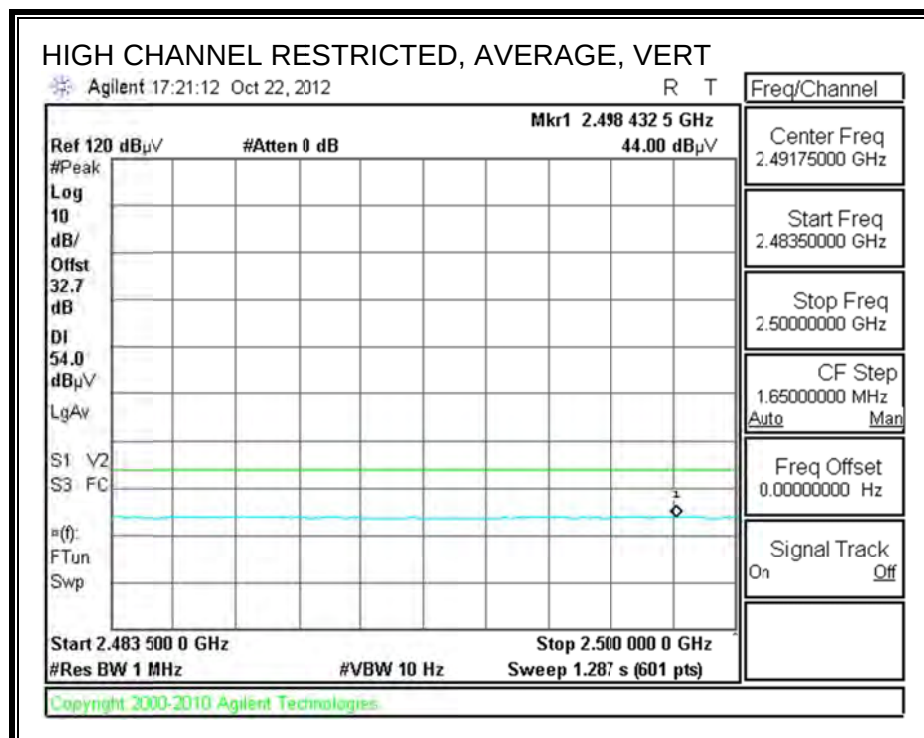
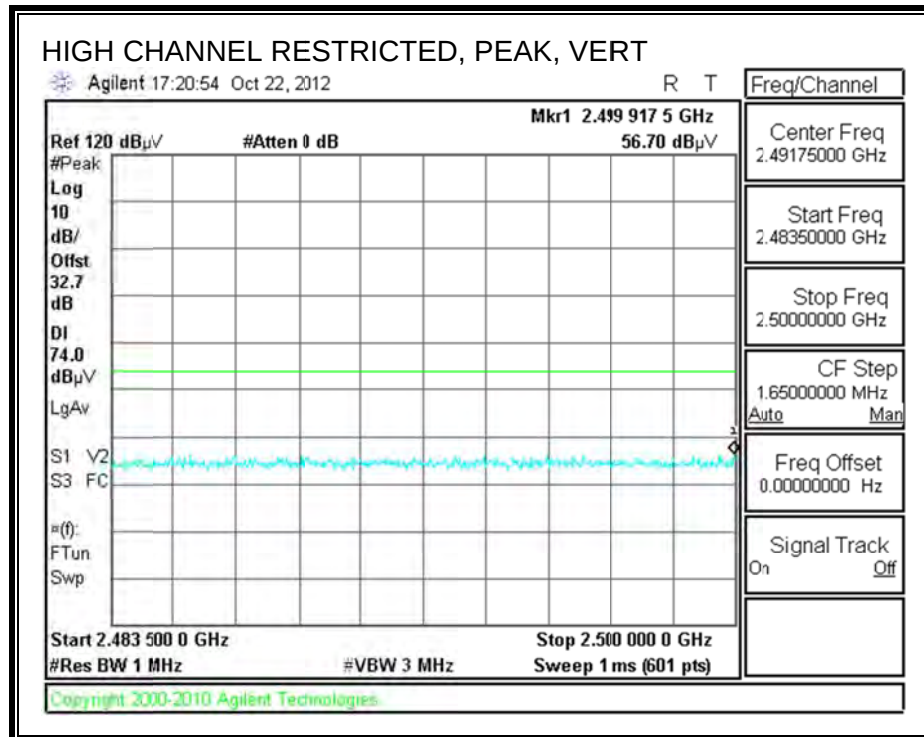
RESTRICTED BANDEDGE (LOW CHANNEL)





AUTHORIZED BANDEDGE (HIGH CHANNEL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 3m Chamber

Company: Ruckus
Project #: 12U14419
Date: 10/22/2012
Test Engineer: David Garcia
Configuration: EUT with laptop in remote location, CAT 5, and AC adapter, New FCC Sample
Mode: 11n, HT40 CDD, Tx (99% duty cycle)

Test Equipment:

Horn 1-18GHz
 T60; S/N: 2238 @3m

Pre-amplifier 1-26GHz
 T34 HP 8449B

Pre-amplifier 26-40GHz

Horn > 18GHz

Limit
 FCC 15.205

Hi Frequency Cables

3' cable 22807700
 3' cable 22807700

12' cable 22807600
 12' cable 22807600

20' cable 22807500
 20' cable 22807500

HPF

Reject Filter
 R_001

Peak Measurements
 RBW=1MHz; VBW=3MHz
Average Measurements
 RBW=1MHz; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Channel: 2422 MHz															
4.844	3.0	34.7	25.5	33.1	6.8	-34.0	0.0	0.0	40.5	31.4	74	54	-33.5	-22.6	Set=22 V
4.844	3.0	35.7	24.1	33.1	6.8	-34.0	0.0	0.0	41.5	30.0	74	54	-32.5	-24.0	H
Mid Channel: 2437 MHz															
4.874	3.0	40.5	28.4	33.2	6.8	-34.0	0.0	0.0	46.4	34.3	74	54	-27.6	-19.7	Set=22 V
4.874	3.0	35.7	24.4	33.2	6.8	-34.0	0.0	0.0	41.6	30.3	74	54	-32.4	-23.7	H
High Channel: 2452 MHz															
4.904	3.0	44.0	32.3	33.2	6.8	-34.0	0.0	0.0	50.0	38.3	74	54	-24.0	-15.7	Set=22 V
7.356	3.0	38.4	25.6	36.4	9.1	-33.1	0.0	0.0	50.8	38.0	74	54	-23.2	-16.0	V
4.904	3.0	39.4	27.9	33.2	6.8	-34.0	0.0	0.0	45.3	33.8	74	54	-28.7	-20.2	H
7.356	3.0	35.2	23.1	36.4	9.1	-33.1	0.0	0.0	47.6	35.5	74	54	-26.4	-18.5	H

Rev. 11.10.1

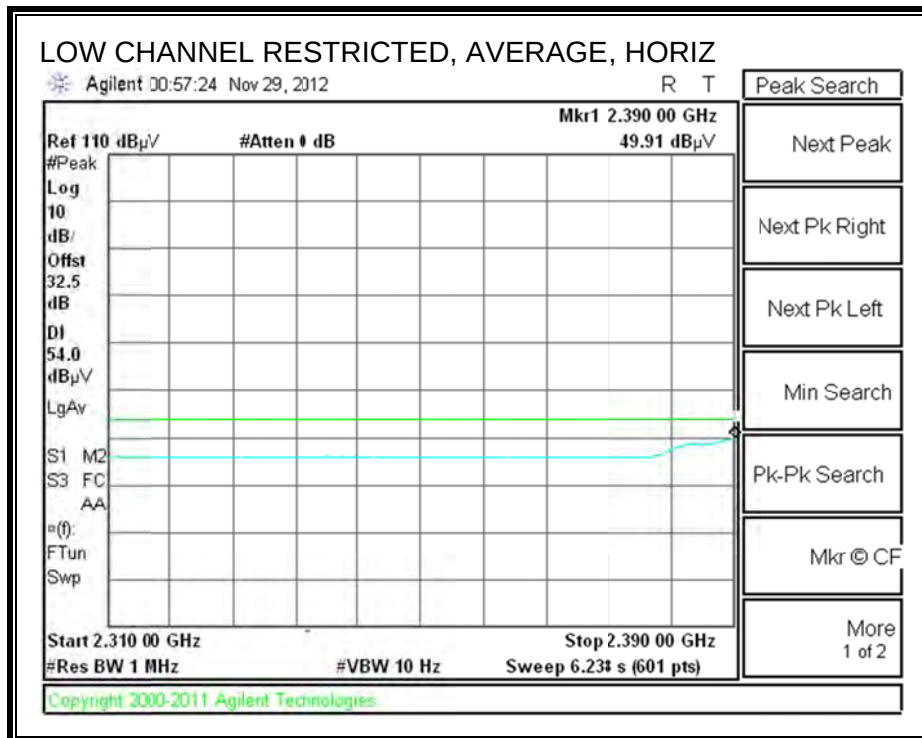
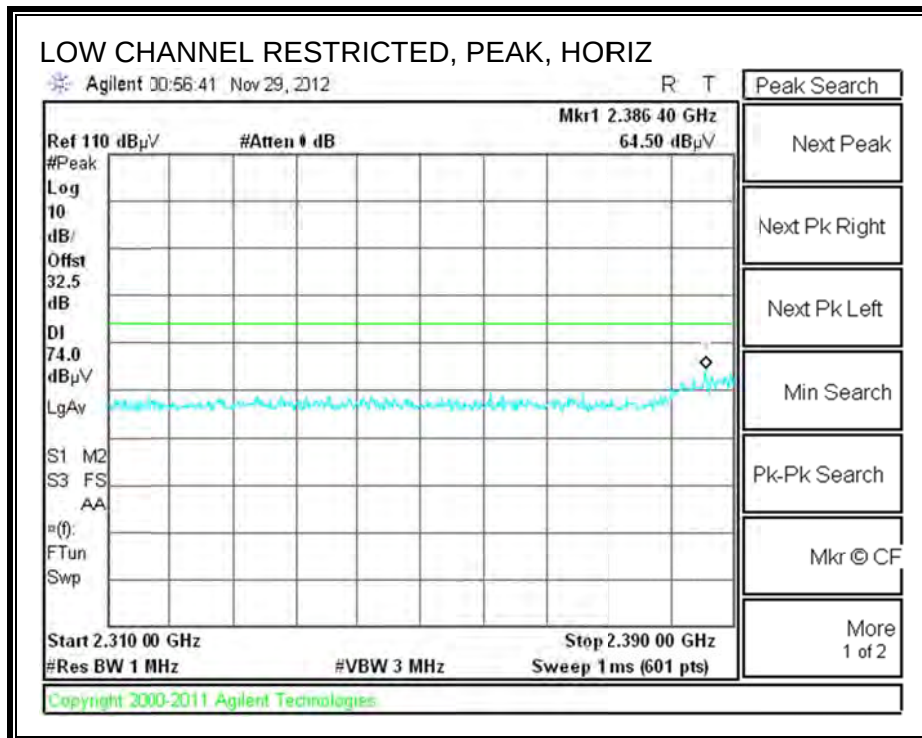
f Measurement Frequency
 Dist Distance to Antenna
 Read Analyzer Reading
 AF Antenna Factor
 CL Cable Loss

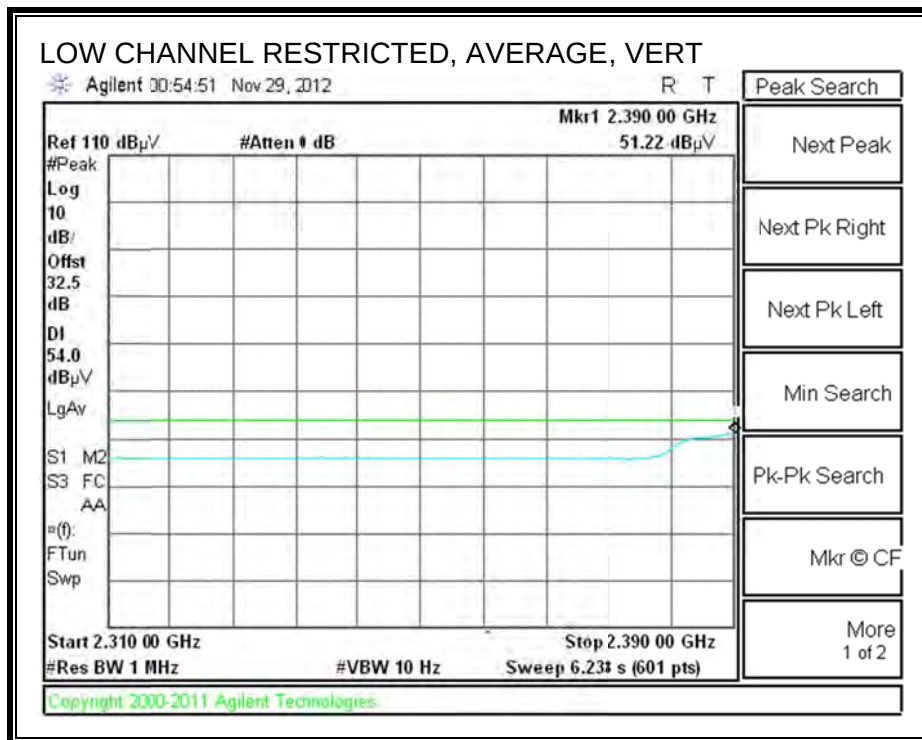
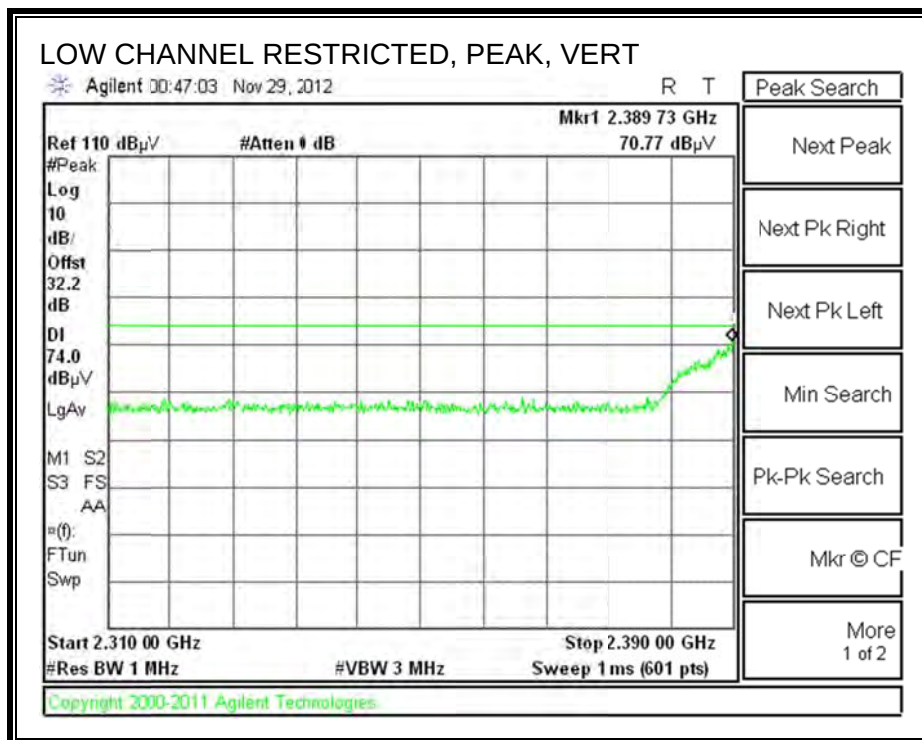
Amp Preamp Gain
 D Corr Distance Correct to 3 meters
 Avg Average Field Strength @ 3 m
 Peak Calculated Peak Field Strength
 HPF High Pass Filter

Avg Lim Average Field Strength Limit
 Pk Lim Peak Field Strength Limit
 Avg Mar Margin vs. Average Limit
 Pk Mar Margin vs. Peak Limit

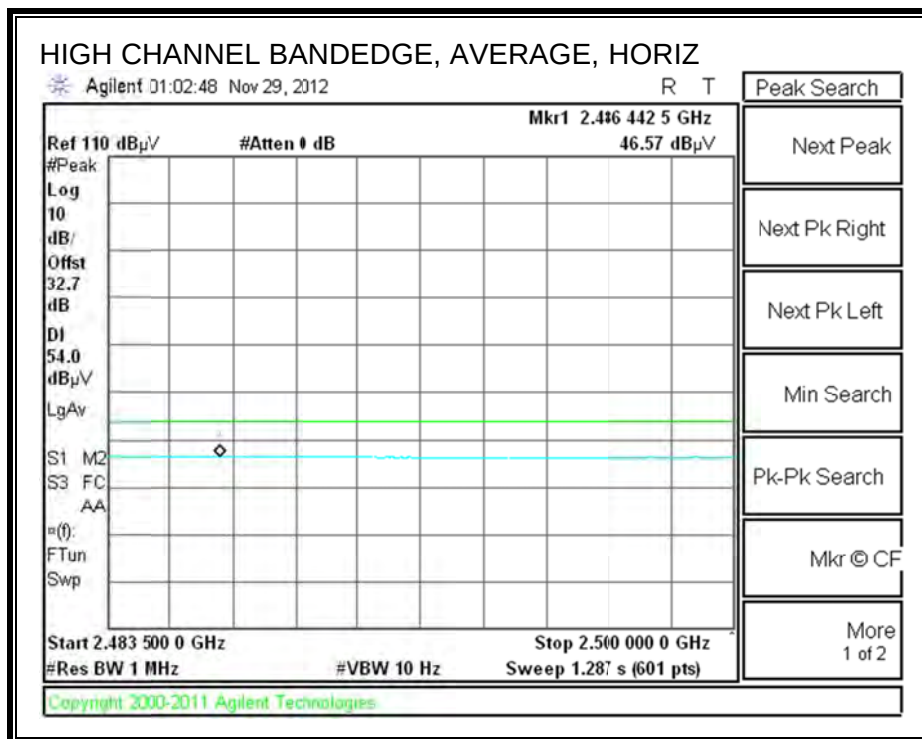
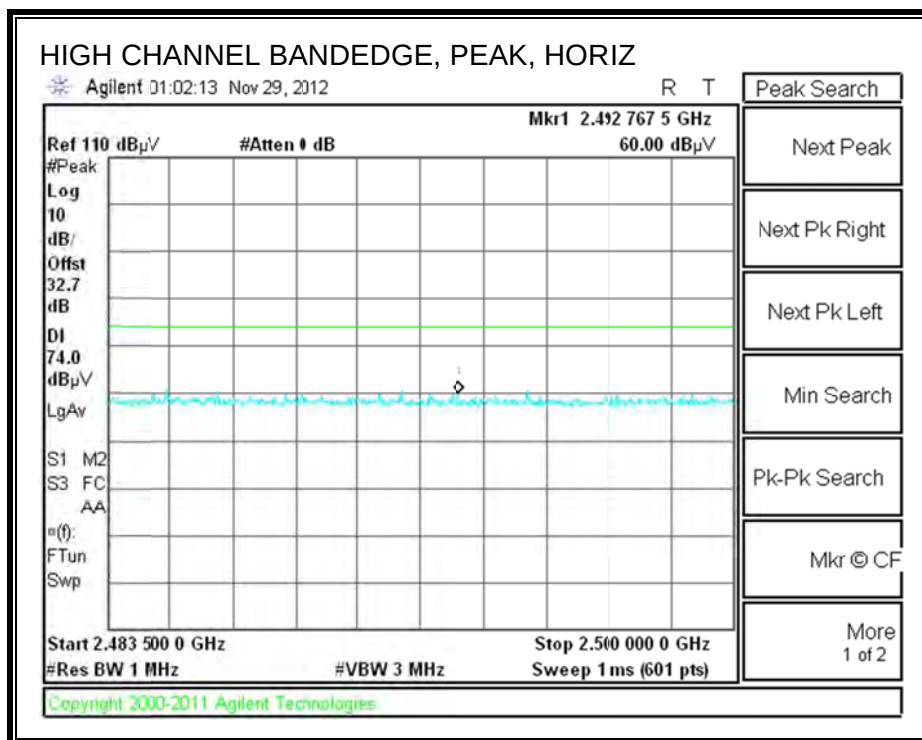
9.2.6. TX ABOVE 1 GHz 802.11n HT40 SDM MODE IN THE 2.4 GHz BAND

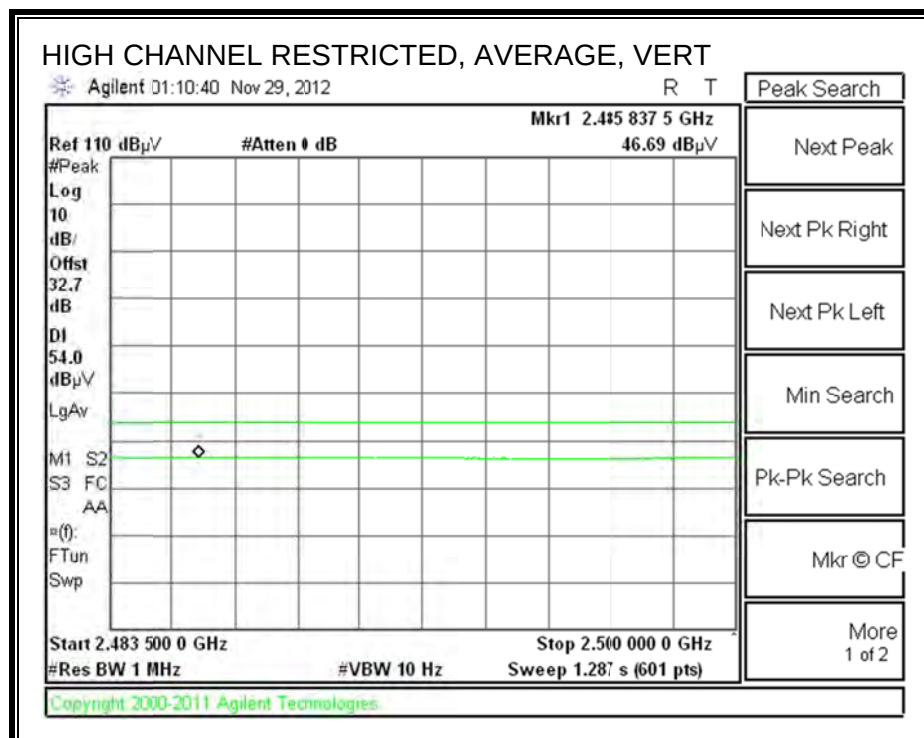
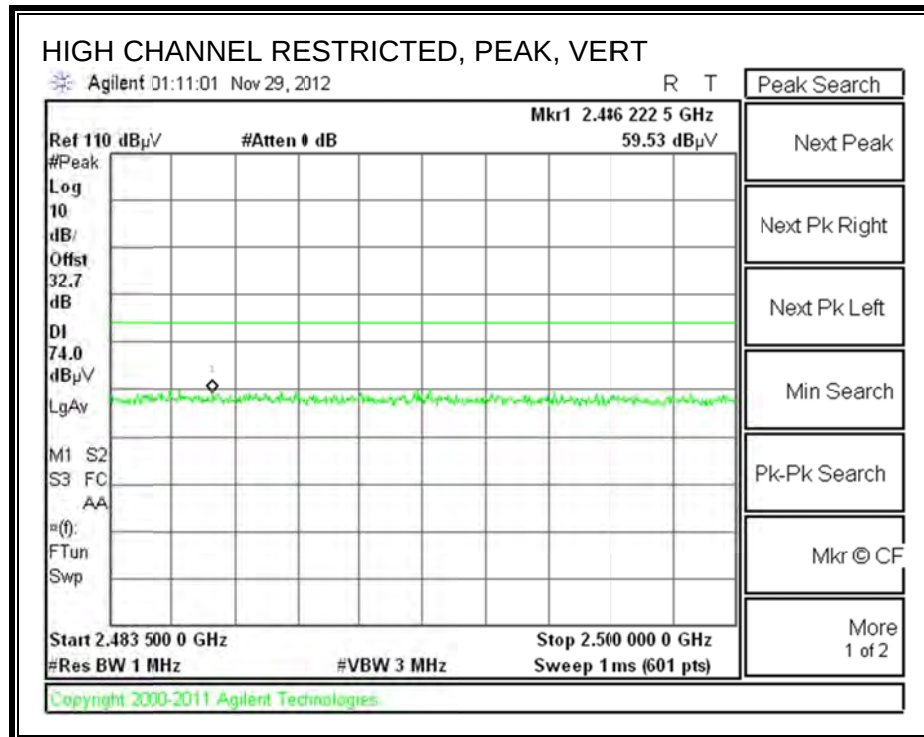
RESTRICTED BANDEDGE (LOW CHANNEL)





AUTHORIZED BANDEDGE (HIGH CHANNEL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement															
Compliance Certification Services, Fremont 3m Chamber															
Company:		Ruckus													
Project #:		12U14419													
Date:		10/23/2012													
Test Engineer:		David Garcia													
Configuration:		EUT with laptop in remote location, CAT 5, and AC adapter, New FCC Sample													
Mode:		11n, HT40 SDM, TX													
Test Equipment:															
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit							
T60; S/N: 2238 @3m		T34 HP 8449B						FCC 15.205							
Hi Frequency Cables															
3' cable 22807700		12' cable 22807600		20' cable 22807500		HPF		Reject Filter		Peak Measurements RBW=1MHz, VBW=3MHz Average Measurements RBW=1MHz ; VBW=10Hz					
3' cable 22807700		12' cable 22807600		20' cable 22807500				R_001							
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Channel: 2422 MHz															
4.844	3.0	27.3	26.5	33.1	6.8	-34.0	0.0	0.0	33.2	32.4	74	54	-40.8	-21.6	V
4.844	3.0	26.9	26.0	33.1	6.8	-34.0	0.0	0.0	32.8	31.8	74	54	-41.2	-22.2	H
Mid Channel: 2437 MHz															
4.874	3.0	27.2	26.6	33.2	6.8	-34.0	0.0	0.0	33.1	32.5	74	54	-40.9	-21.5	V
4.874	3.0	27.3	26.2	33.2	6.8	-34.0	0.0	0.0	33.3	32.1	74	54	-40.7	-21.9	H
High Channel: 2452 MHz															
4.904	3.0	30.3	29.1	33.2	6.8	-34.0	0.0	0.0	36.2	35.1	74	54	-37.8	-18.9	V
7.356	3.0	31.3	30.5	36.4	9.1	-33.1	0.0	0.0	43.7	42.8	74	54	-30.3	-11.2	V
4.904	3.0	27.7	26.4	33.2	6.8	-34.0	0.0	0.0	33.7	32.4	74	54	-40.3	-21.6	H
7.356	3.0	28.2	27.4	36.4	9.1	-33.1	0.0	0.0	40.6	39.7	74	54	-33.4	-14.3	H
Rev. 11.10.1															
f	Measurement Frequency		Amp	Preamp Gain		Avg Lim	Average Field Strength Limit								
Dist	Distance to Antenna		D Corr	Distance Correct to 3 meters		Pk Lim	Peak Field Strength Limit								
Read	Analyzer Reading		Avg	Average Field Strength @ 3 m		Avg Mar	Margin vs. Average Limit								
AF	Antenna Factor		Peak	Calculated Peak Field Strength		Pk Mar	Margin vs. Peak Limit								
CL	Cable Loss		HPF	High Pass Filter											

9.2.7. TX ABOVE 1 GHz 802.11a MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement													
Compliance Certification Services, Fremont 5m Chamber													
Test Engr:		David Garcia/Kristopher Nguyen											
Date:		09/01/10											
Project #:		12U14419											
Company:		Ruckus											
Test Target:		15.205											
Mode Oper:		11a Tx											
f	Measurement Frequency			Amp	Preamp Gain			Average Field Strength Limit					
Dist	Distance to Antenna			D Corr	Distance Correct to 3 meters			Peak Field Strength Limit					
Read	Analyzer Reading			Avg	Average Field Strength @ 3 m			Margin vs. Average Limit					
AF	Antenna Factor			Peak	Calculated Peak Field Strength			Margin vs. Peak Limit					
CL	Cable Loss			HPF	High Pass Filter								
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
Mid Channel 5785 MHz													
11.570	3.0	49.7	38.9	10.6	-35.5	0.0	0.0	63.7	74.0	-10.3	H	P	
11.570	3.0	34.9	38.9	10.6	-35.5	0.0	0.0	48.9	54.0	-5.1	H	A	
11.570	3.0	46.5	38.9	10.6	-35.5	0.0	0.0	60.5	74.0	-13.5	V	P	
11.570	3.0	33.4	38.9	10.6	-35.5	0.0	0.0	47.4	54.0	-6.6	V	A	
Low Channel 5745 MHz													
11.490	3.0	49.9	38.8	10.5	-35.5	0.0	0.0	63.7	74.0	-10.3	H	P	
11.490	3.0	36.2	38.8	10.5	-35.5	0.0	0.0	50.1	54.0	-3.9	H	A	
11.490	3.0	50.6	38.8	10.5	-35.5	0.0	0.0	64.4	74.0	-9.6	V	P	
11.490	3.0	34.1	38.8	10.5	-35.5	0.0	0.0	47.9	54.0	-6.1	V	A	
High Channel 5825 MHz													
11.650	3.0	47.5	39.0	10.7	-35.5	0.0	0.0	61.7	74.0	-12.3	H	P	
11.650	3.0	33.4	39.0	10.7	-35.5	0.0	0.0	47.5	54.0	-6.5	H	A	
11.650	3.0	48.6	39.0	10.7	-35.5	0.0	0.0	62.8	74.0	-11.2	V	P	
11.650	3.0	33.0	39.0	10.7	-35.5	0.0	0.0	47.2	54.0	-6.8	V	A	
Rev. 4.1.2.7													
Note: No other emissions were detected above the system noise floor.													

9.2.8. TX ABOVE 1 GHz 802.11n HT20 CDD MODE IN THE 5.8 GHz BAND

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tony Wagoner
Date: 10/23/12
Project #: 12U14419
Company: Ruckus
Test Target: 15.205
Mode Oper: 11n HT20 CDD

f Measurement Frequency Amp Preamp Gain Average Field Strength Limit
Dist Distance to Antenna D Corr Distance Correct to 3 meters Peak Field Strength Limit
Read Analyzer Reading Avg Average Field Strength @ 3 m Margin vs. Average Limit
AF Antenna Factor Peak Calculated Peak Field Strength Margin vs. Peak Limit
CL Cable Loss HPF High Pass Filter

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
Low Channel, 5745 MHz													
11.490	3.0	48.5	38.9	11.2	-33.1	0.0	0.0	65.5	74.0	-8.5	H	P	
11.490	3.0	33.7	38.9	11.2	-33.1	0.0	0.0	50.7	54.0	-3.3	H	A	
11.490	3.0	53.1	38.9	11.2	-33.1	0.0	0.0	70.1	74.0	-3.9	V	P	
11.490	3.0	36.5	38.9	11.2	-33.1	0.0	0.0	53.5	54.0	-0.5	V	A	
Mid Channel, 5785 MHz													
11.570	3.0	46.5	38.9	11.3	-33.0	0.0	0.0	63.7	74.0	-10.3	H	P	
11.570	3.0	30.9	38.9	11.3	-33.0	0.0	0.0	48.2	54.0	-5.8	H	A	
11.570	3.0	52.6	38.9	11.3	-33.0	0.0	0.0	69.8	74.0	-4.2	V	P	
11.570	3.0	35.7	38.9	11.3	-33.0	0.0	0.0	52.9	54.0	-1.1	V	A	
High Channel, 5825													
11.650	3.0	47.3	39.0	11.4	-32.9	0.0	0.0	64.9	74.0	-9.1	H	P	
11.650	3.0	32.2	39.0	11.4	-32.9	0.0	0.0	49.8	54.0	-4.2	H	A	
11.650	3.0	52.3	39.0	11.4	-32.9	0.0	0.0	69.8	74.0	-4.2	V	P	
11.650	3.0	35.8	39.0	11.4	-32.9	0.0	0.0	53.3	54.0	-0.7	V	A	

Rev. 4.12.7

Note: No other emissions were detected above the system noise floor.

9.2.9. TX ABOVE 1 GHz 802.11n HT20 SDM MODE IN THE 5.8 GHz BAND

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tony Wagoner
Date: 10/23/12
Project #: 12U14419
Company: Ruckus
Test Target: 15.247
Mode Oper: 11n HT20 SDM

f Measurement Frequency Amp Preamp Gain Average Field Strength Limit
Dist Distance to Antenna D Corr Distance Correct to 3 meters Peak Field Strength Limit
Read Analyzer Reading Avg Average Field Strength @ 3 m Margin vs. Average Limit
AF Antenna Factor Peak Calculated Peak Field Strength Margin vs. Peak Limit
CL Cable Loss HPF High Pass Filter

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
Low Channel, 5745 MHz													
11.490	3.0	40.1	38.9	11.2	-33.1	0.0	0.0	65.5	74.0	-8.5	H	P	
11.490	3.0	27.7	38.9	11.2	-33.1	0.0	0.0	50.7	54.0	-3.3	H	A	
11.490	3.0	48.0	38.9	11.2	-33.1	0.0	0.0	70.1	74.0	-3.9	V	P	
11.490	3.0	33.6	38.9	11.2	-33.1	0.0	0.0	53.5	54.0	-0.5	V	A	
Mid Channel, 5785 MHz													
11.570	3.0	41.8	38.9	11.3	-33.0	0.0	0.0	63.7	74.0	-10.3	H	P	
11.570	3.0	28.7	38.9	11.3	-33.0	0.0	0.0	48.2	54.0	-5.8	H	A	
11.570	3.0	50.6	38.9	11.3	-33.0	0.0	0.0	69.8	74.0	-4.2	V	P	
11.570	3.0	34.8	38.9	11.3	-33.0	0.0	0.0	52.9	54.0	-1.1	V	A	
High Channel, 5825													
11.650	3.0	41.9	39.0	11.4	-32.9	0.0	0.0	64.9	74.0	-9.1	H	P	
11.650	3.0	28.6	39.0	11.4	-32.9	0.0	0.0	49.8	54.0	-4.2	H	A	
11.650	3.0	50.6	39.0	11.4	-32.9	0.0	0.0	69.8	74.0	-4.2	V	P	
11.650	3.0	32.6	39.0	11.4	-32.9	0.0	0.0	53.3	54.0	-0.7	V	A	

Rev. 4.12.7

Note: No other emissions were detected above the system noise floor.

9.2.10. TX ABOVE 1 GHz 802.11n HT40 CDD MODE IN THE 5.8 GHz BAND

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tony Wagoner
Date: 10/23/11
Project #: 12U14419
Company: Ruckus
Test Target: 15.247
Mode Oper: 11n HT40 CDD

f	Measurement Frequency	Amp	Preamp Gain	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter	

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
Low Channel, 5755 MHz													
11.510	3.0	39.6	38.9	11.2	-33.1	0.0	0.0	65.5	74.0	-8.5	H	P	
11.510	3.0	24.9	38.9	11.2	-33.1	0.0	0.0	50.7	54.0	-3.3	H	A	
11.510	3.0	45.8	38.9	11.2	-33.1	0.0	0.0	70.1	74.0	-3.9	V	P	
11.510	3.0	30.3	38.9	11.2	-33.1	0.0	0.0	53.5	54.0	-0.5	V	A	
High Channel, 5795MHz													
11.590	3.0	38.9	39.0	11.4	-32.9	0.0	0.0	64.9	74.0	-9.1	H	P	
11.590	3.0	26.1	39.0	11.4	-32.9	0.0	0.0	49.8	54.0	-4.2	H	A	
11.590	3.0	45.2	39.0	11.4	-32.9	0.0	0.0	69.8	74.0	-4.2	V	P	
11.590	3.0	31.0	39.0	11.4	-32.9	0.0	0.0	53.3	54.0	-0.7	V	A	

Rev. 4.12.7

9.2.11. TX ABOVE 1 GHz 802.11n HT40 SDM MODE IN THE 5.8 GHz BAND

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber

Test Engr: David Garcia
Date: 10/23/12
Project #: 12U14419
Company: Ruckus
Test Target: 15.247
Mode Oper: 11n HT40, SDM

f Measurement Frequency Amp Preamp Gain Average Field Strength Limit
Dist Distance to Antenna D Corr Distance Correct to 3 meters Peak Field Strength Limit
Read Analyzer Reading Avg Average Field Strength @ 3 m Margin vs. Average Limit
AF Antenna Factor Peak Calculated Peak Field Strength Margin vs. Peak Limit
CL Cable Loss HPF High Pass Filter

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Ftr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
Low Channel, 5755 MHz													
11.510	3.0	36.7	38.9	11.2	-33.1	0.0	0.0	65.5	74.0	-8.5	H	P	
11.510	3.0	23.3	38.9	11.2	-33.1	0.0	0.0	50.7	54.0	-3.3	H	A	
11.510	3.0	42.2	38.9	11.2	-33.1	0.0	0.0	70.1	74.0	-3.9	V	P	
11.510	3.0	36.7	38.9	11.2	-33.1	0.0	0.0	53.5	54.0	-0.5	V	A	
High Channel, 5795MHz													
11.590	3.0	38.0	39.0	11.4	-32.9	0.0	0.0	64.9	74.0	-9.1	H	P	
11.590	3.0	24.6	39.0	11.4	-32.9	0.0	0.0	49.8	54.0	-4.2	H	A	
11.590	3.0	42.2	39.0	11.4	-32.9	0.0	0.0	69.8	74.0	-4.2	V	P	
11.590	3.0	29.3	39.0	11.4	-32.9	0.0	0.0	53.3	54.0	-0.7	V	A	

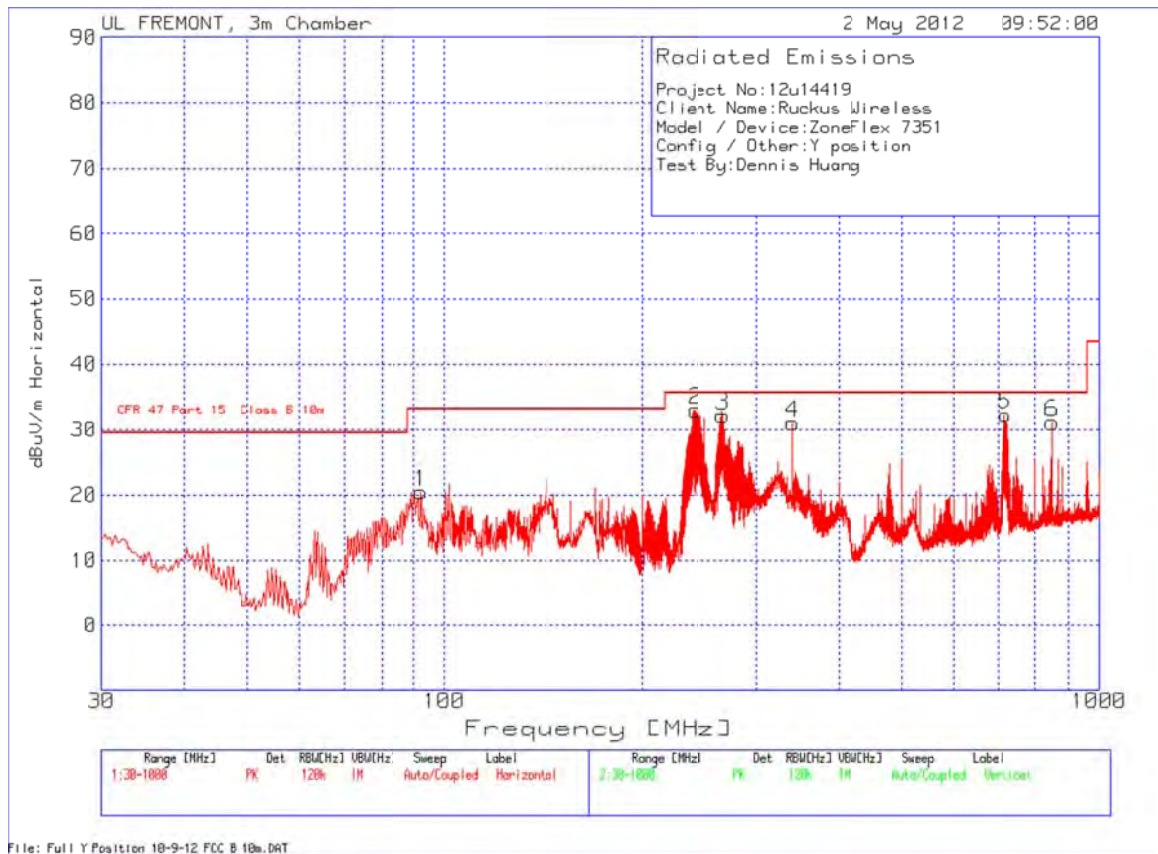
Rev. 4.1.2.7

Note: No other emissions were detected above the system noise floor.

9.3. WORST-CASE BELOW 1 GHz

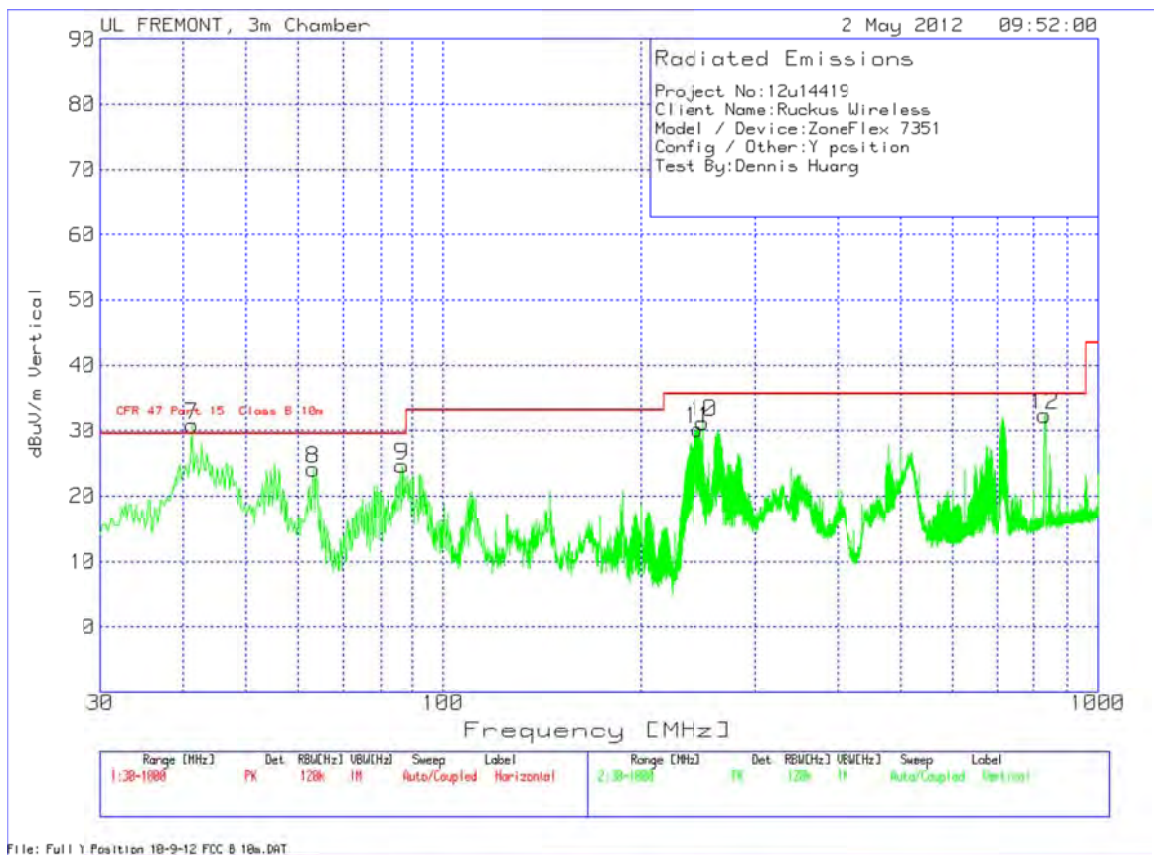
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERTICAL PLOT



HORIZONTAL AND VERTICAL DATA

Project No:12u14419										
Client Name:Ruckus Wireless										
Model / Device:ZoneFlex 7351										
Config / Other:Y position										
Test By:Dennis Huang										
Test Frequency MHz	Meter Reading dB(μV)	Detector	Pre Amp Factor dB	Antenna Factor dB/m	3m to 10m Conversion dB	Corrected dB(μV/m)	Class B limit dB(μV/m)	Margin dB	Height cm	Polarity
92.2242	49.92	PK	-27	8.1	-10.5	20.52	33.1	-12.58	200	Horz
240.9033	58.08	PK	-26	11.4	-10.5	32.98	35.6	-2.62	100	Horz
266.8785	55.57	PK	-25.8	12.9	-10.5	32.17	35.6	-3.43	100	Horz
339.958	53.41	PK	-25.6	13.7	-10.5	31.01	35.6	-4.59	100	Horz
720.0879	46.07	PK	-23.3	20	-10.5	32.27	35.6	-3.33	100	Horz
850.1579	43.3	PK	-23.2	21.5	-10.5	31.1	35.6	-4.5	100	Horz
42.61	49.04	QP	-27.4	12.1	-10.5	23.24	29.6	-6.36	113	Vert
63.1475	54.28	PK	-27.2	7.6	-10.5	24.18	29.6	-5.42	100	Vert
86.7966	54.8	PK	-27	7.4	-10.5	24.7	29.6	-4.9	100	Vert
250.014	56.15	PK	-25.9	11.5	-10.5	31.25	35.6	-4.35	100	Vert
244.7802	55.23	PK	-26	11.5	-10.5	30.23	35.6	-5.37	100	Vert
831.7426	44.74	PK	-23.1	21.2	-10.5	32.34	35.6	-3.26	300	Vert

10. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

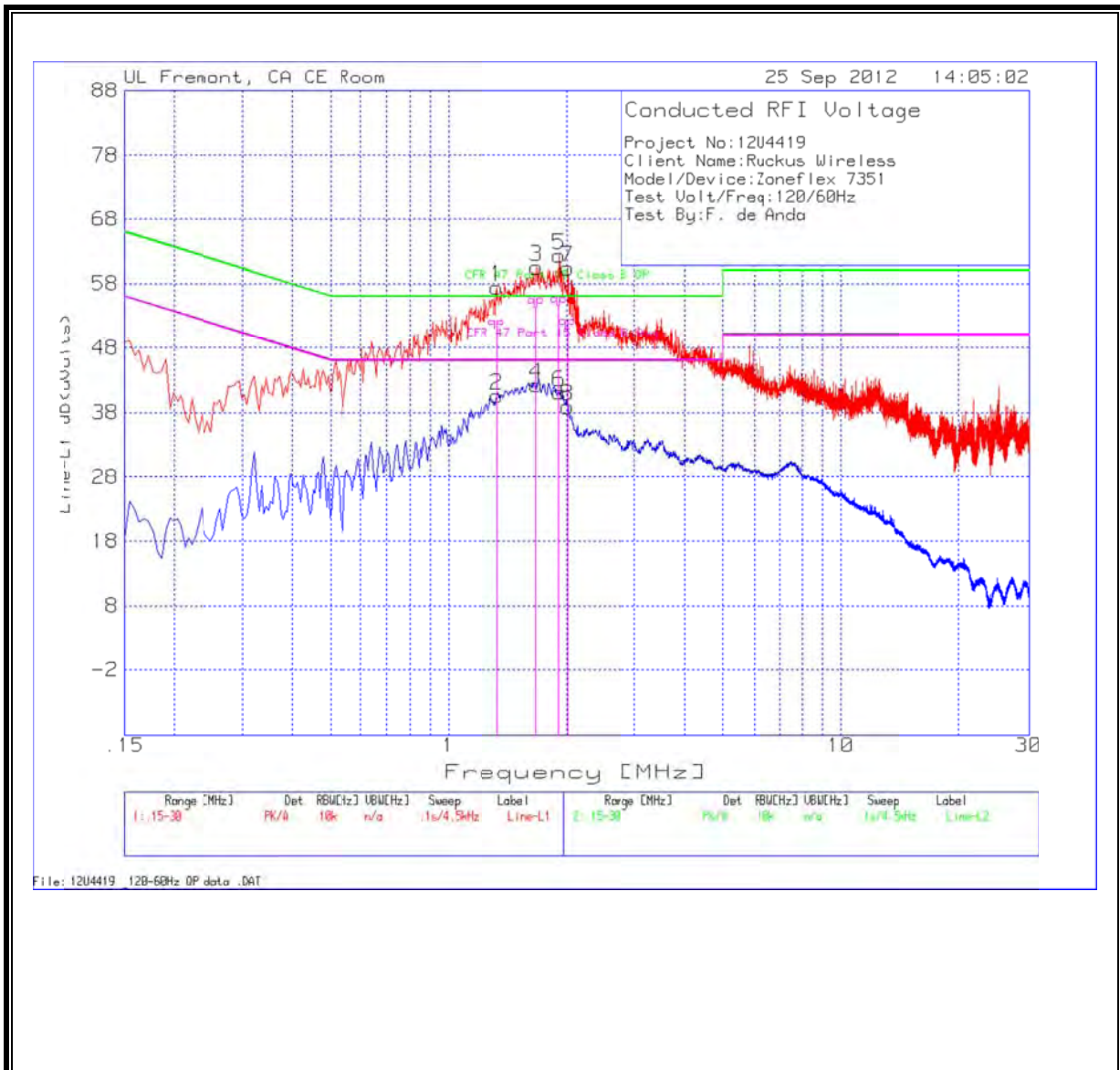
Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

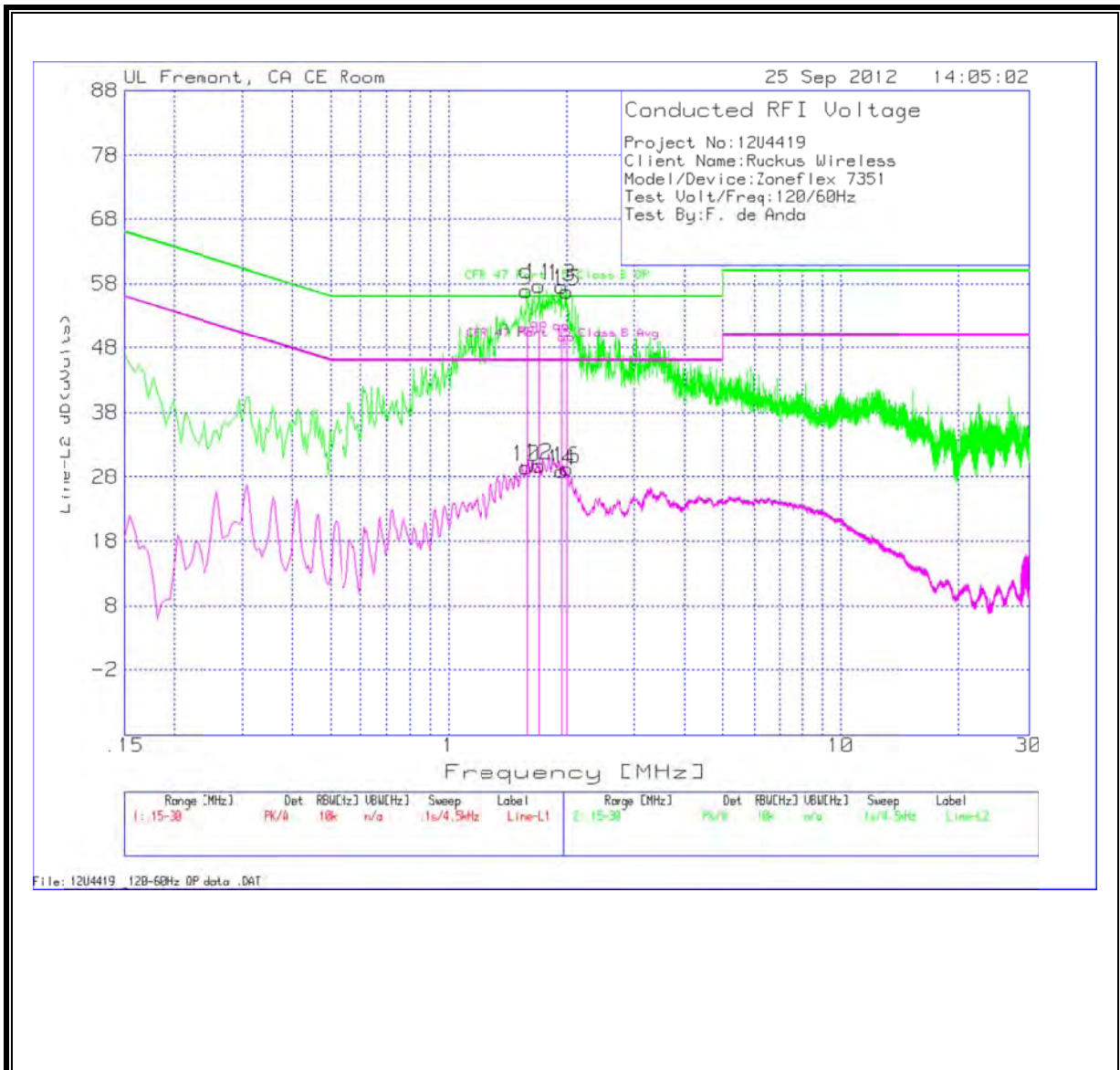
6 WORST EMISSIONS

Project No:12U4419									
Client Name:Ruckus Wireless									
Model/Device:Zoneflex 7351									
Test Volt/Freq:120/60Hz									
Test By:F. de Anda									
Frequency MHz	Reading dB(μV)	Detector	T24 LISN dB	Cables dB	Corrected dB(μV)	Class B QP Limit dB(μV)	QP Margin dB	Class B Av Limit dB(μV)	Av Margin dB
Line-L1									
1.3325	50.78	QP	0.1	0.1	50.98	56	-5.02	--	--
1.3335	40.4	Av	0.1	0.1	40.6	--	--	46	-5.4
1.6735	54.16	QP	0.1	0.1	54.36	56	-1.64	--	--
1.6755	42.08	Av	0.1	0.1	42.28	--	--	46	-3.72
1.9085	54.35	QP	0.1	0.1	54.55	56	-1.45	--	--
1.9095	40.82	Av	0.1	0.1	41.02	--	--	46	-4.98
2.0075	50.88	QP	0.1	0.1	51.08	56	-4.92	--	--
2.0085	38.68	Av	0.1	0.1	38.88	--	--	46	-7.12
Line-L2									
1.5885	49.75	QP	0.1	0.1	49.95	56	-6.05	--	--
1.5855	29.43	Av	0.1	0.1	29.63	--	--	46	-16.37
1.7055	50.46	QP	0.1	0.1	50.66	56	-5.34	--	--
1.7025	29.7	Av	0.1	0.1	29.9	--	--	46	-16.1
1.937	50.06	QP	0.1	0.1	50.26	56	-5.74	--	--
1.941	28.7	Av	0.1	0.1	28.9	--	--	46	-17.1
1.995	48.24	QP	0.1	0.1	48.44	56	-7.56	--	--
1.995	29.15	Av	0.1	0.1	29.35	--	--	46	-16.65

LINE 1 RESULTS

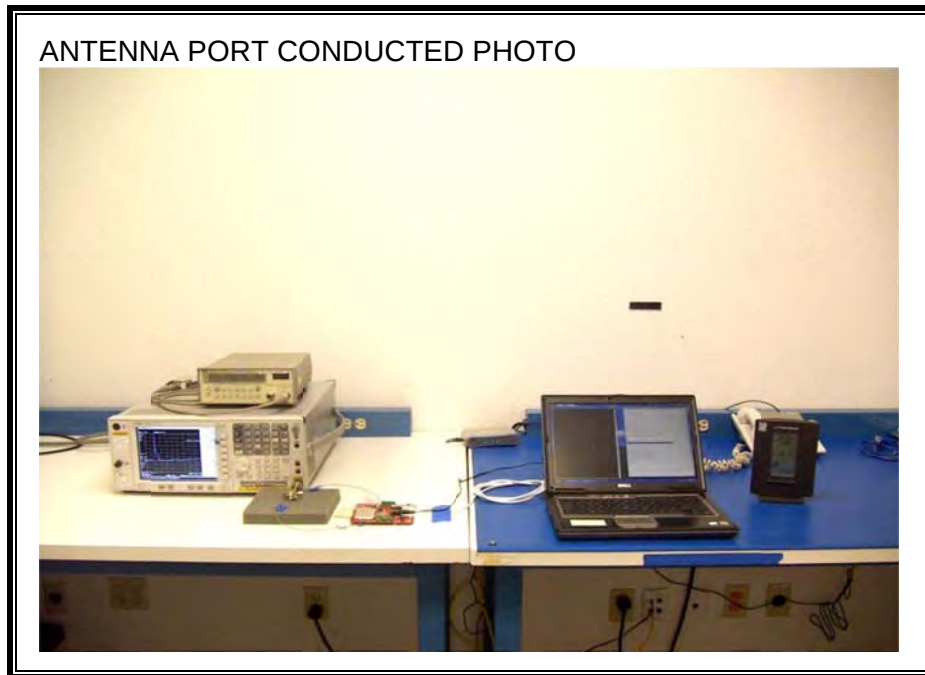


LINE 2 RESULTS



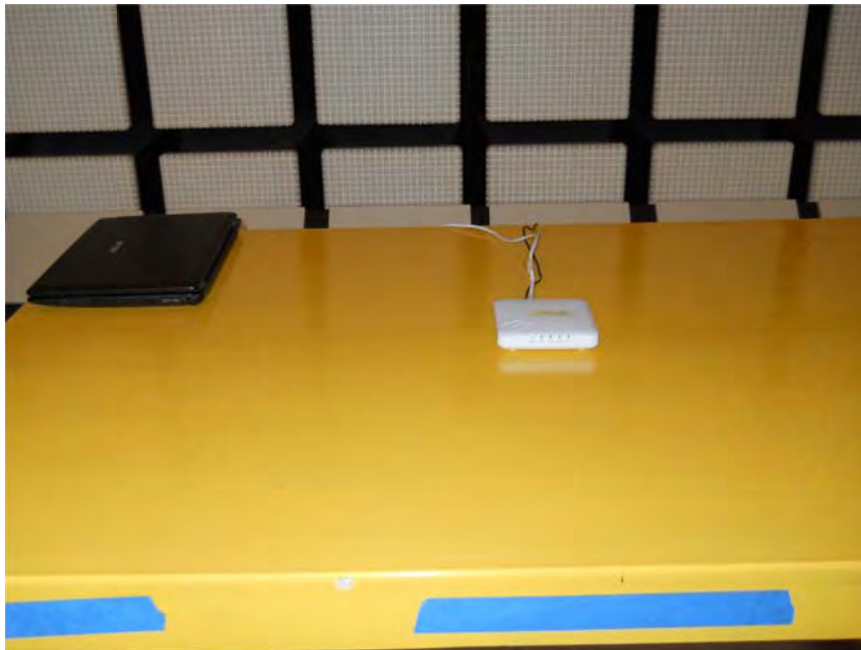
11. SETUP PHOTOS

ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP

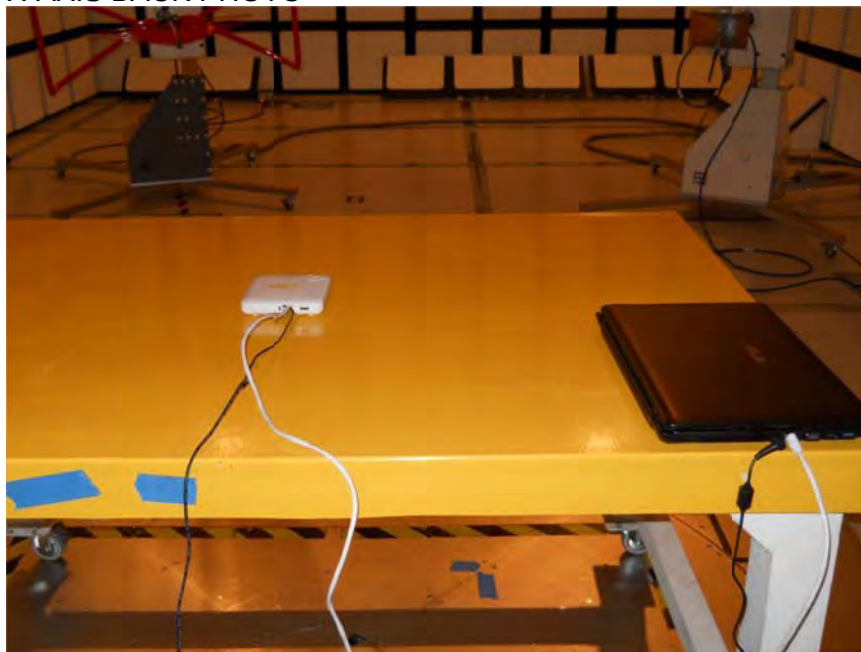


RADIATED RF MEASUREMENT SETUP FOR PORTABLE CONFIGURATION

X-AXIS FRONT PHOTO



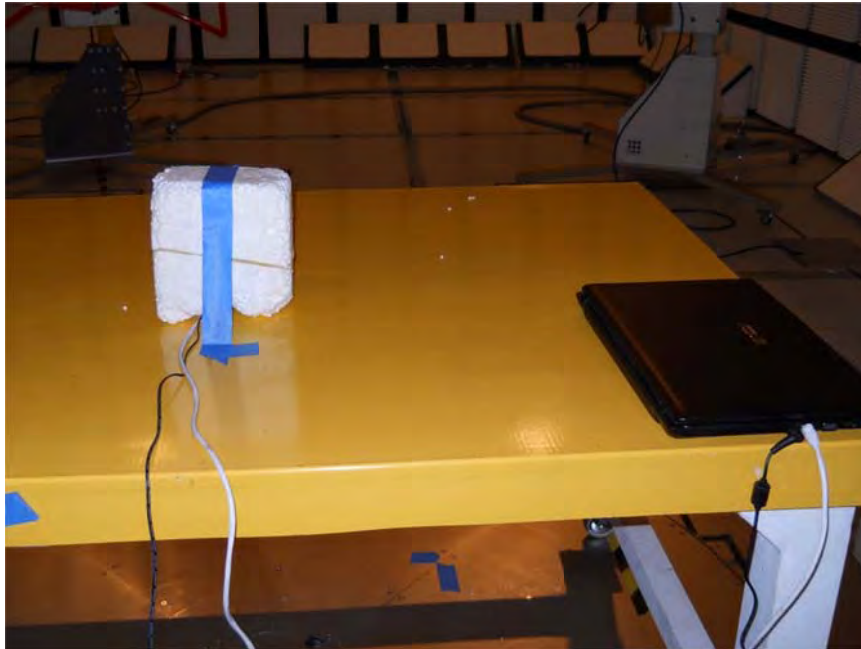
X-AXIS BACK PHOTO



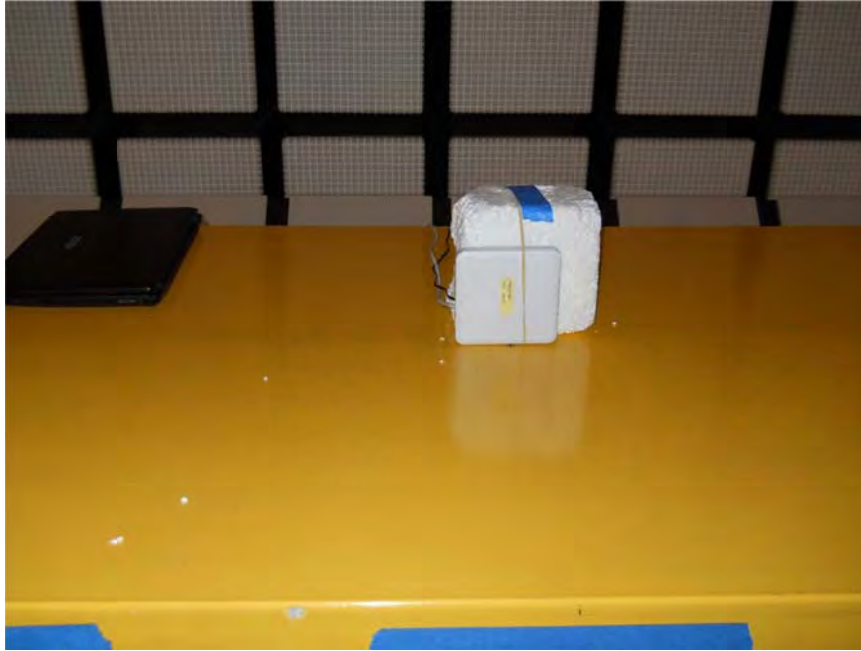
Y-AXIS FRONT PHOTO



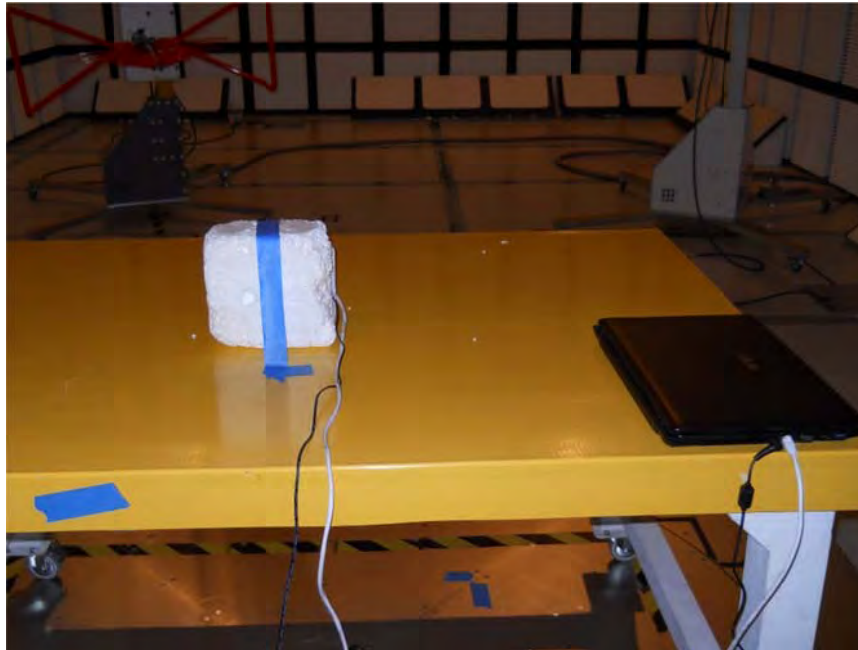
Y-AXIS BACK PHOTO



Z-AXIS FRONT PHOTO



Z-AXIS BACK PHOTO

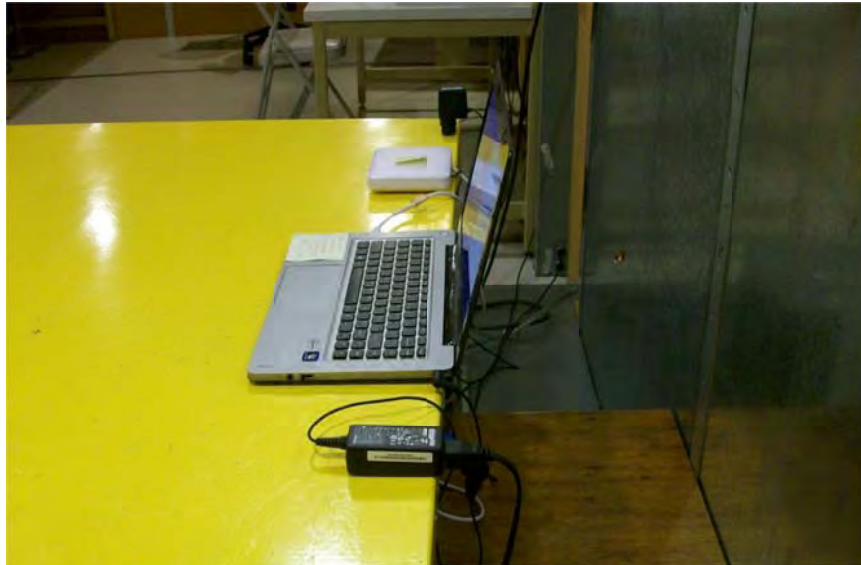


POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP

LINE CONDUCTED FRONT PHOTO



LINE CONDUCTED BACK PHOTO



END OF REPORT