FCC CFR47 PART 15 SUBPART E
INDUSTRY CANADA RSS-210 ISSUE 8

CERTIFICATION TEST REPORT

FOR

Dual-Band 802.11 a/b/g/n Industrial Access Point with Integrated DOCSIS 3.0 Modem

MODEL NUMBER: ZoneFlex7761-CM

FCC ID: S9GZF7761CM
IC: 5912A-ZF7761CM

REPORT NUMBER: 10U13475-3, Revision C

ISSUE DATE: JUNE 06, 2011

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	03/02/11	Initial Issue	F. Ibrahim
A	03/03/11	Inserted the conducted spurious data for the notch band of 5.6-5.65 GHz	F. Ibrahim
B	03/21/11	Revised output power values in sections 7.4.2, section 7.6.2, section 7.7.2, section 7.8.2, and section 7.9.2. Revised MPE section.	F. Ibrahim
C	06/06/11	Revised sections 7.4.6, 7.5.2, 7.5.4, 7.5.6, 7.6.2, 7.6.4, 7.6.6, 7.7.6, 7.8.2, 7.8.4, 7.8.6, 7.9.2, 7.9.4, and 7.9.6 for limits and test procedure paragraphs.	F. Ibrahim

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8. RADIATED TEST RESULTS

8.1. 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 (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. The EUT is configured in accordance with ANSI C63.4. 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 measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

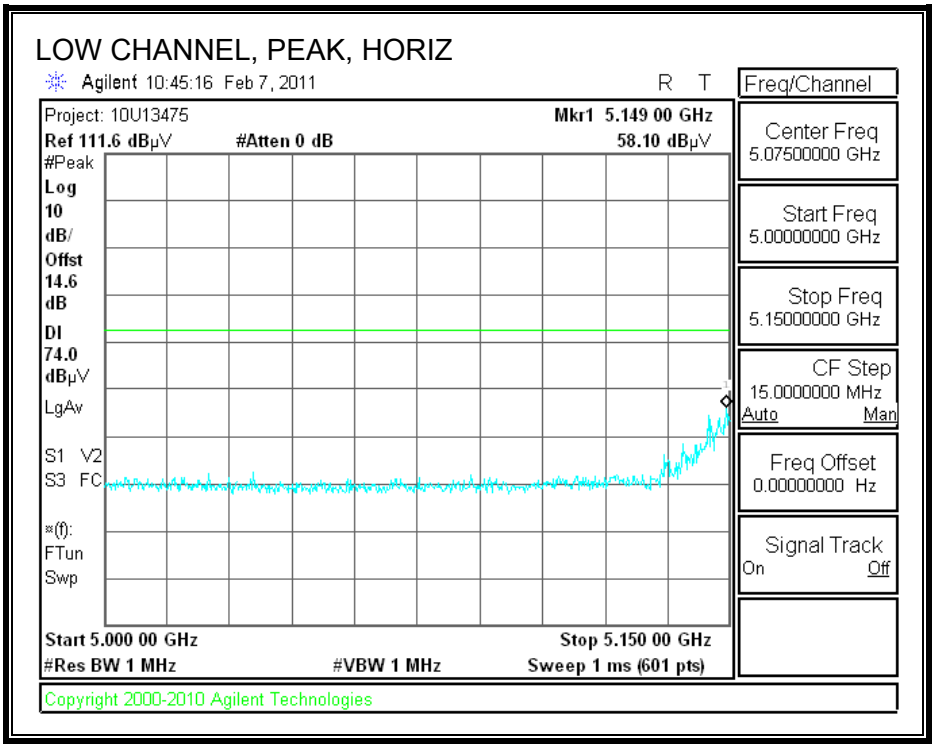
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

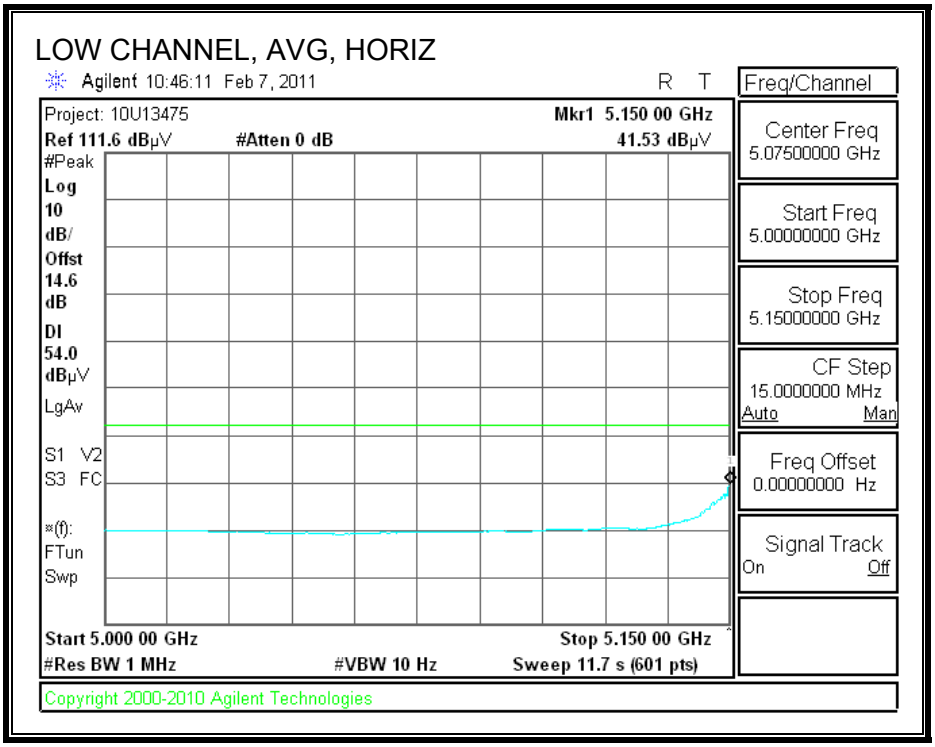
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

8.2. TRANSMITTER ABOVE 1 GHz

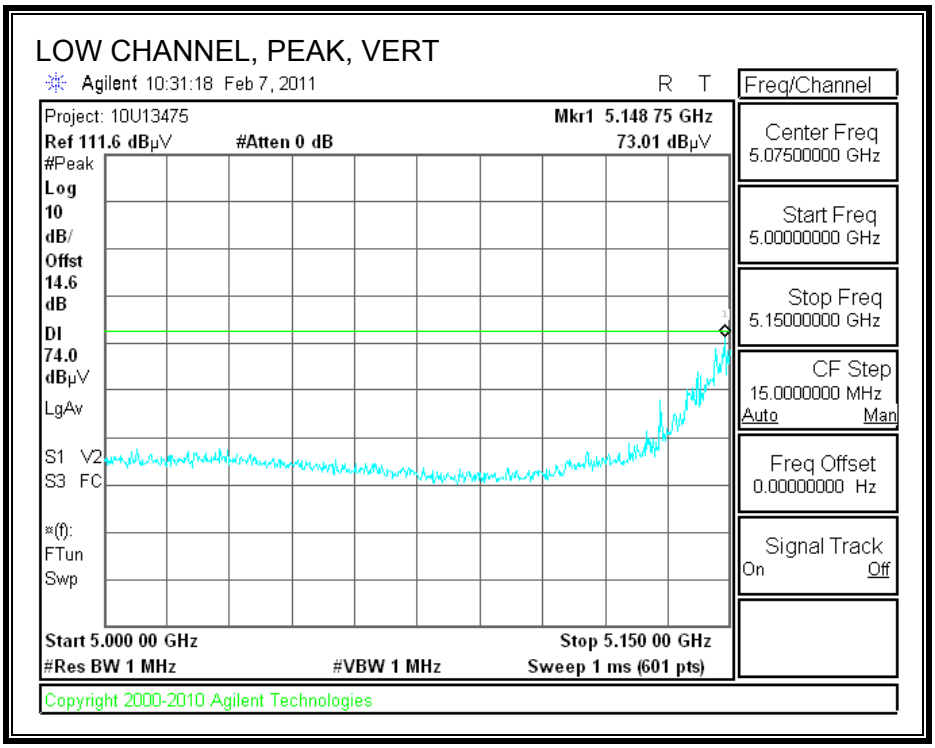
8.2.1. TX ABOVE 1 GHz FOR 802.11a MODE IN THE 5.2 GHz BAND

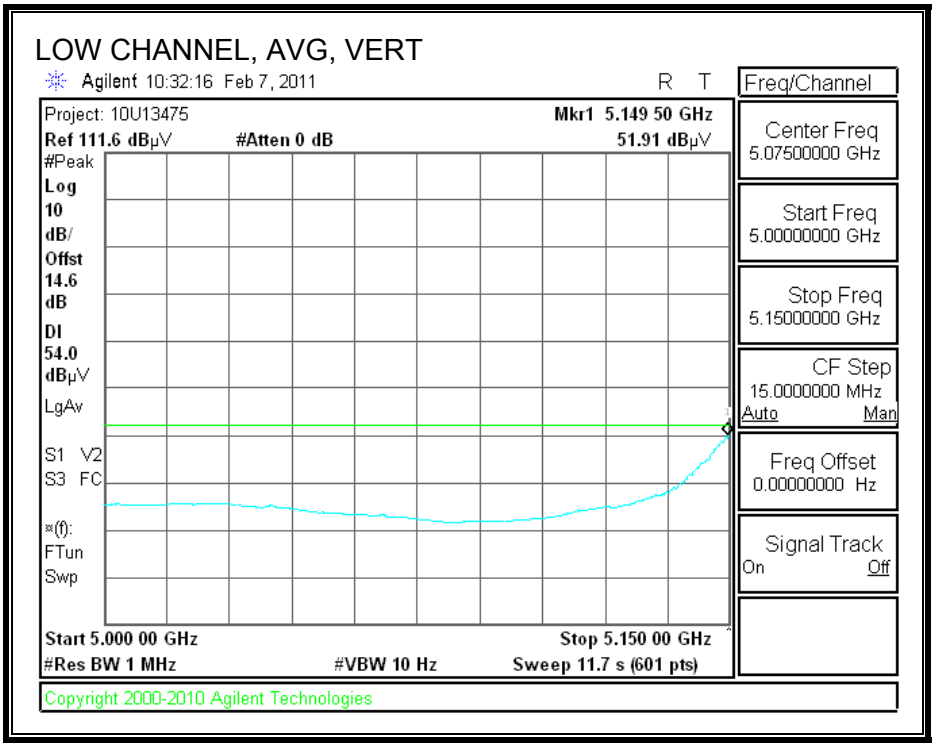
AUTHORIZED BANDEDGE (LOW CHANNEL, HORIZONTAL)





AUTHORIZED BANDEDGE (LOW CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: William Zhuang
Date: 02/02/11
Project #: 10U13475
Company: Ruckus
Test Target: FCC 15.247
Mode Oper: Tx On, 5.2 GHz band, a Mode

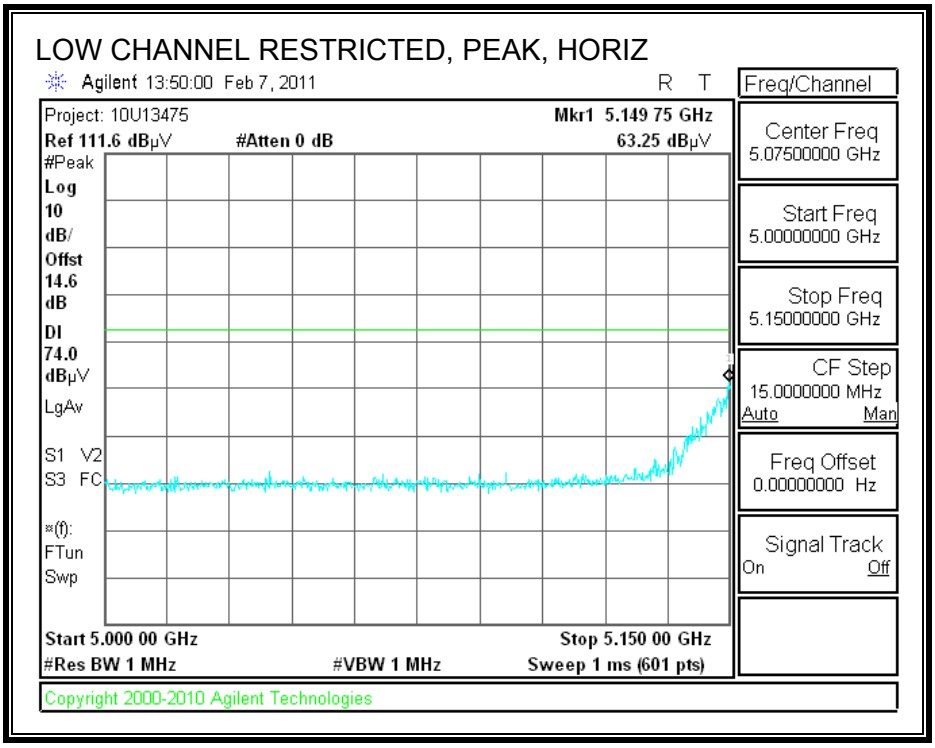
f	Measurement Frequency	Amp	Preamp Gain		Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m		Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength		Margin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

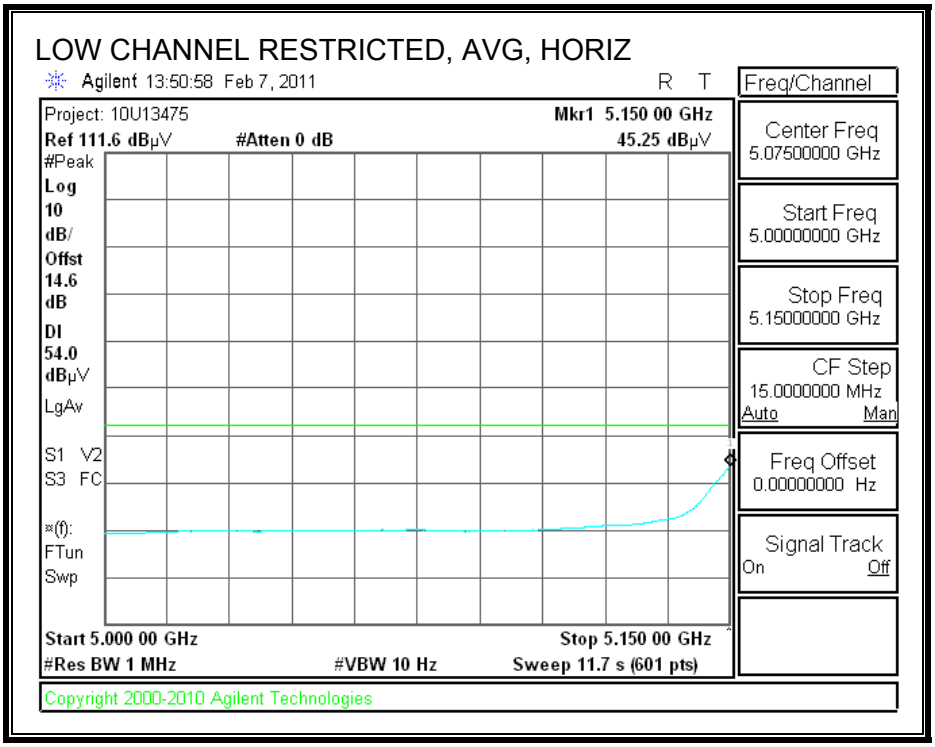
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
Low Ch. 5180 MHz															
15.540	3.0	47.3	38.5	11.3	-32.2	0.0	0.7	65.7	74.0	-8.3	V	P	101.0	190.0	
15.540	3.0	31.0	38.5	11.3	-32.2	0.0	0.7	49.4	54.0	-4.6	V	A	101.0	190.0	
15.540	3.0	45.9	38.5	11.3	-32.2	0.0	0.7	64.3	74.0	-9.7	H	P	98.0	196.0	
15.540	3.0	30.6	38.5	11.3	-32.2	0.0	0.7	48.9	54.0	-5.1	H	A	98.0	196.0	
Mid Ch. 5200 MHz															
15.600	3.0	45.8	38.3	11.4	-32.2	0.0	0.7	64.1	74.0	-9.9	V	P	98.0	169.0	
15.600	3.0	31.2	38.3	11.4	-32.2	0.0	0.7	49.5	54.0	-4.5	V	A	98.0	169.0	
15.600	3.0	45.4	38.3	11.4	-32.2	0.0	0.7	63.7	74.0	-10.3	H	P	98.0	185.0	
15.600	3.0	31.7	38.3	11.4	-32.2	0.0	0.7	49.9	54.0	-4.1	H	A	98.0	185.0	
High Ch. 5240 MHz															
15.720	3.0	45.8	38.0	11.4	-32.2	0.0	0.7	63.7	74.0	-10.3	H	P	98.0	173.0	
15.720	3.0	32.2	38.0	11.4	-32.2	0.0	0.7	50.2	54.0	-3.8	H	A	98.0	173.0	
15.720	3.0	48.5	38.0	11.4	-32.2	0.0	0.7	66.4	74.0	-7.6	V	P	111.0	186.0	
15.720	3.0	34.9	38.0	11.4	-32.2	0.0	0.7	52.8	54.0	-1.2	V	A	111.0	186.0	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

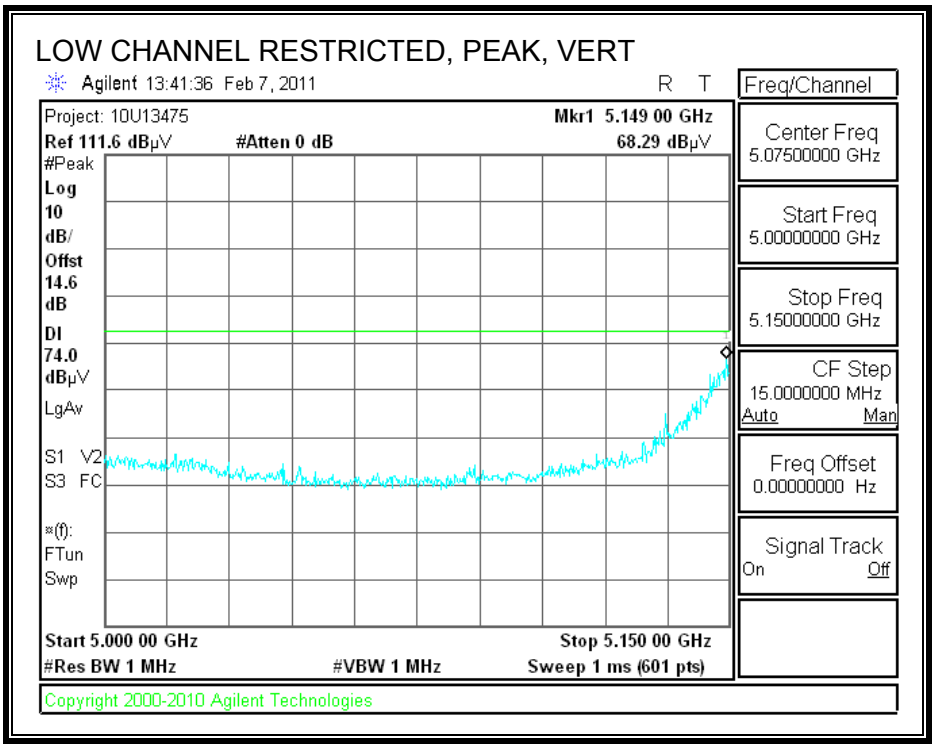
8.2.2. TX ABOVE 1 GHz FOR 802.11n HT20 MODE IN THE 5.2 GHz BAND

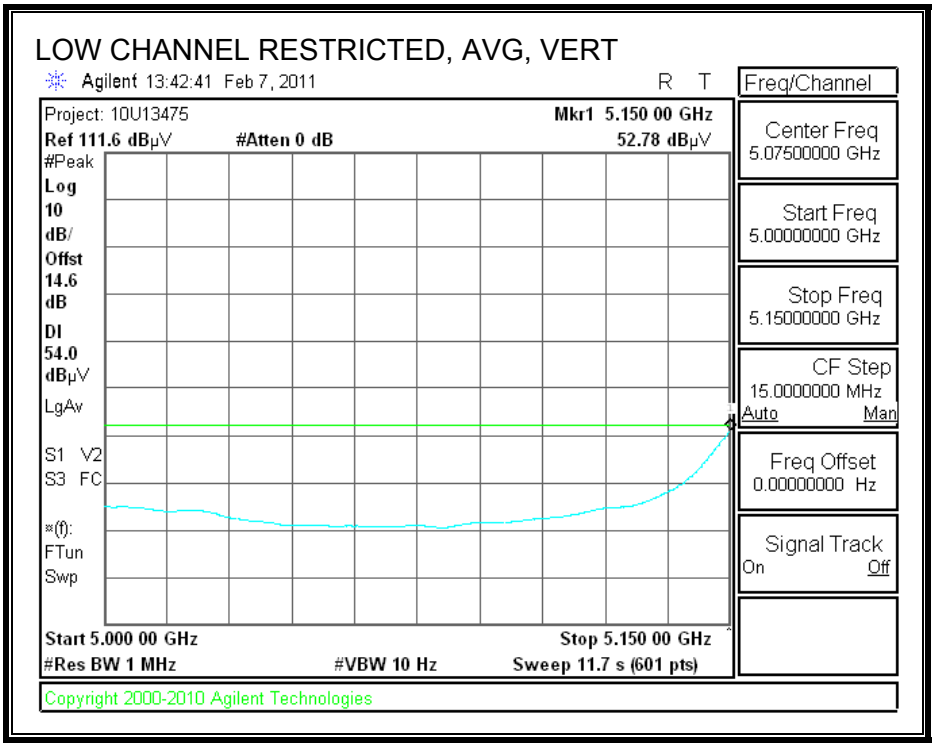
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: William Zhuang
Date: 02/03/11
Project #: 10U13475
Company: Ruckus
Test Target: FCC 15.247
Mode Oper: Tx On, 5.2 GHz band, HT20 MCS8

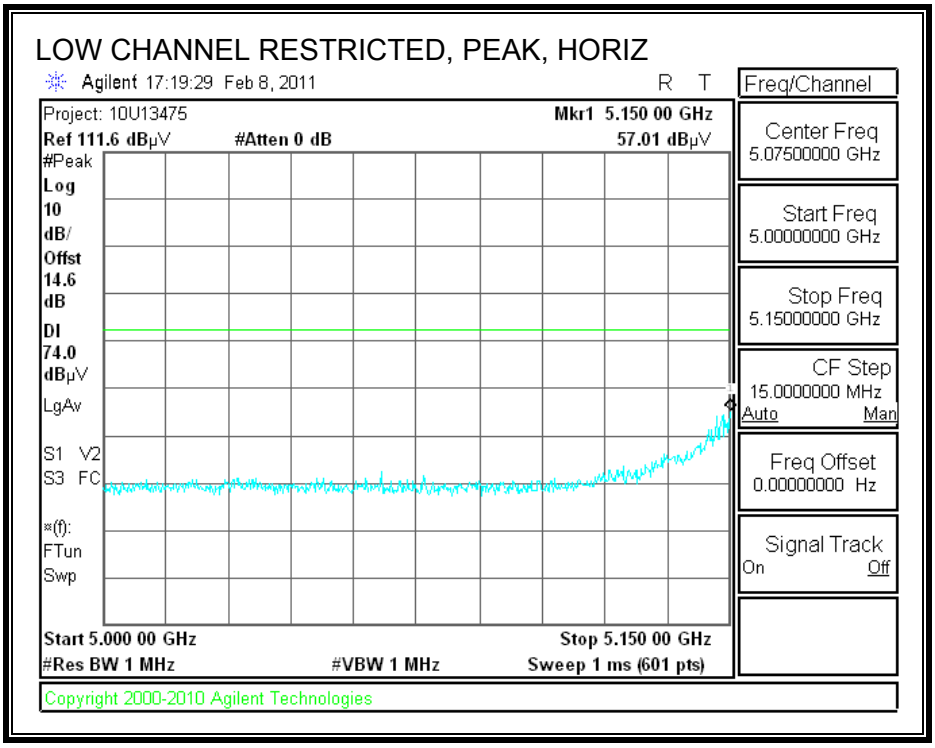
f	Measurement Frequency	Amp	Preamp Gain		Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m		Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength		Margin 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	Ant.High cm	Table Angle Degree	Notes
Low Ch. 5180 MHz															
15.540	3.0	43.0	38.5	11.3	-32.2	0.0	0.7	61.4	74.0	-12.6	H	P	100.0	185.0	
15.540	3.0	31.1	38.5	11.3	-32.2	0.0	0.7	49.5	54.0	-4.5	H	A	100.0	185.0	
15.540	3.0	45.2	38.5	11.3	-32.2	0.0	0.7	63.6	74.0	-10.4	V	P	98.0	340.0	
15.540	3.0	31.6	38.5	11.3	-32.2	0.0	0.7	50.0	54.0	-4.0	V	A	98.0	340.0	
Mid Ch. 5200 MHz															
15.600	3.0	43.6	38.3	11.4	-32.2	0.0	0.7	61.8	74.0	-12.2	H	P	98.0	356.0	
15.600	3.0	30.8	38.3	11.4	-32.2	0.0	0.7	49.0	54.0	-5.0	H	A	98.0	356.0	
15.600	3.0	45.5	38.3	11.4	-32.2	0.0	0.7	63.7	74.0	-10.3	V	P	98.0	177.0	
15.600	3.0	32.6	38.3	11.4	-32.2	0.0	0.7	50.9	54.0	-3.1	V	A	98.0	177.0	
High Ch. 5240 MHz															
15.720	3.0	43.6	38.0	11.4	-32.2	0.0	0.7	61.6	74.0	-12.4	H	P	98.0	29.0	
15.720	3.0	30.3	38.0	11.4	-32.2	0.0	0.7	48.2	54.0	-5.8	H	A	98.0	29.0	
15.720	3.0	41.8	38.0	11.4	-32.2	0.0	0.7	59.8	74.0	-14.2	V	P	98.0	177.0	
15.720	3.0	30.0	38.0	11.4	-32.2	0.0	0.7	48.0	54.0	-6.0	V	A	98.0	177.0	

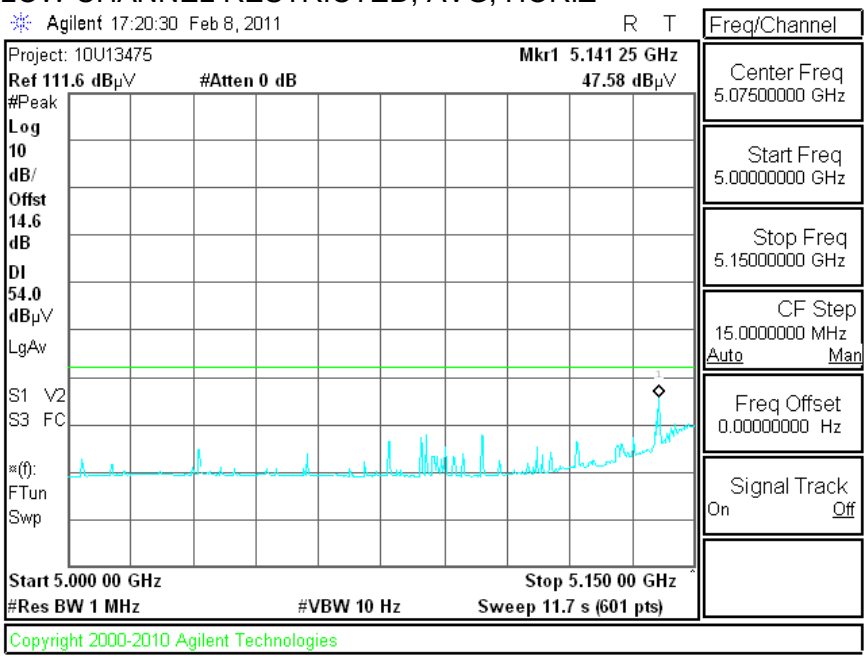
Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

8.2.3. TX ABOVE 1 GHz FOR 802.11n HT40 MODE IN THE 5.2 GHz BAND

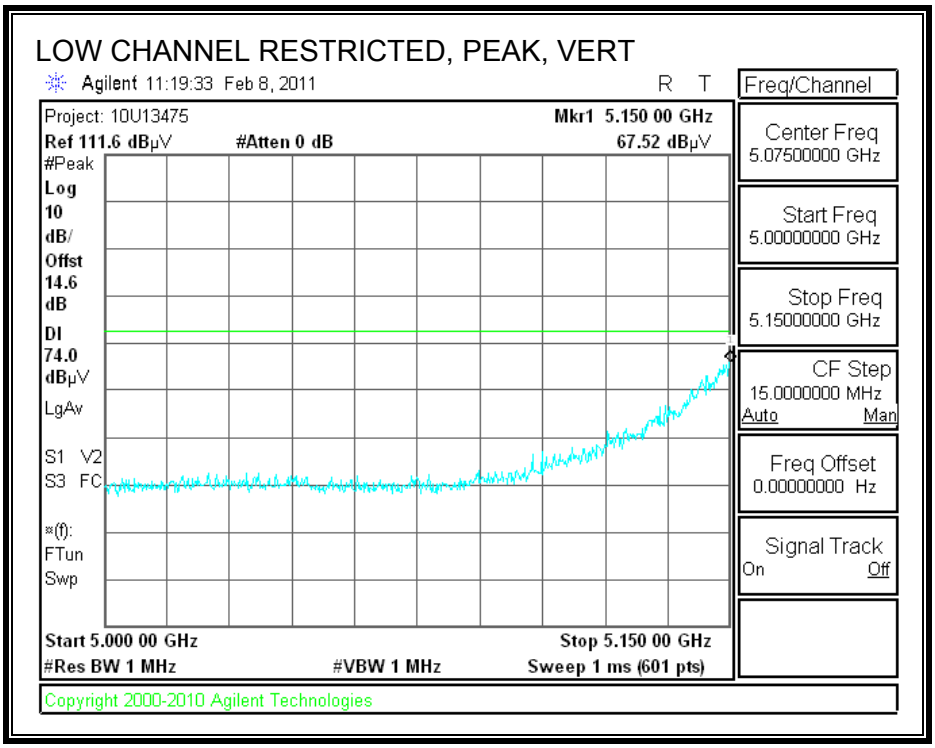
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

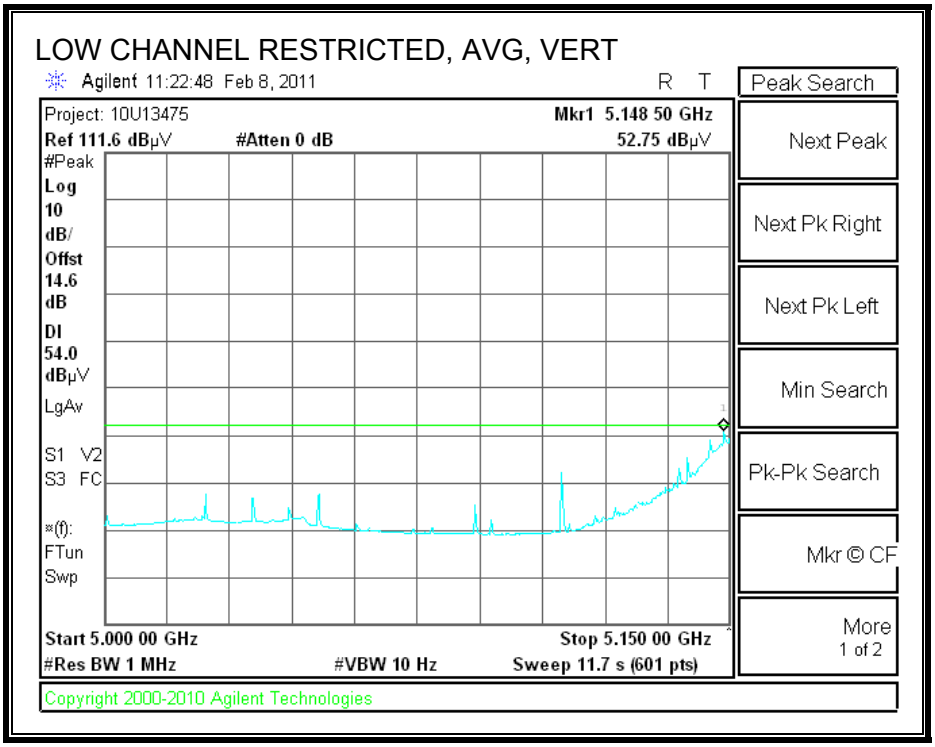


LOW CHANNEL RESTRICTED, AVG, HORIZ



RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: William Zhuang
Date: 02/03/11
Project #: 10U13475
Company: Ruckus
Test Target: FCC 15.247
Mode Oper: Tx On, 5.2 GHz band, HT40 MCS8

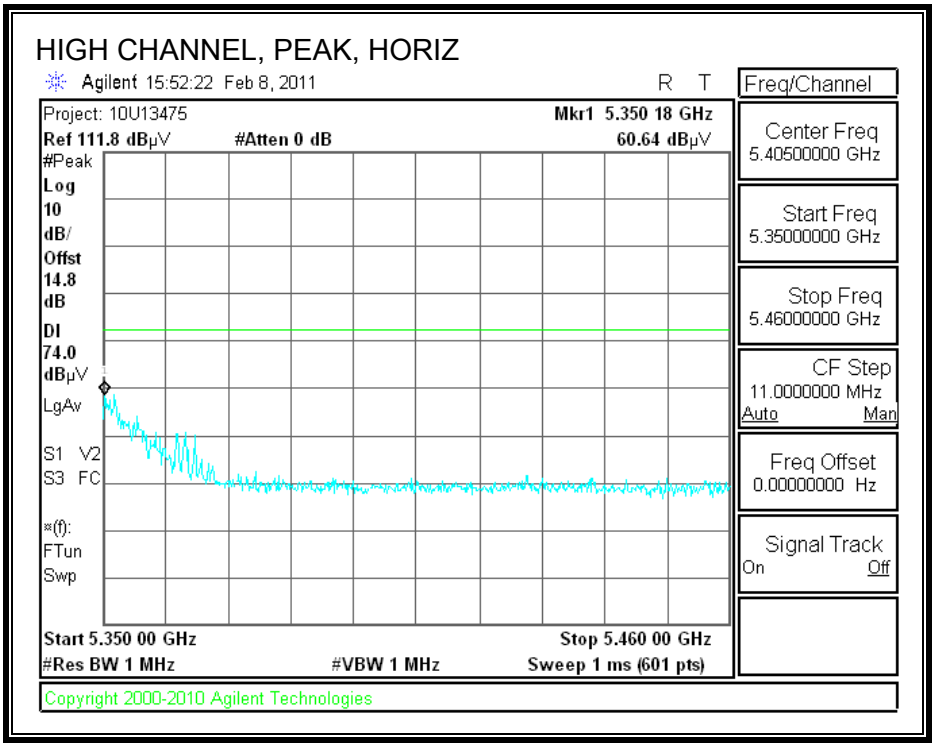
f	Measurement Frequency	Amp	Preamp Gain		Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m		Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength		Margin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

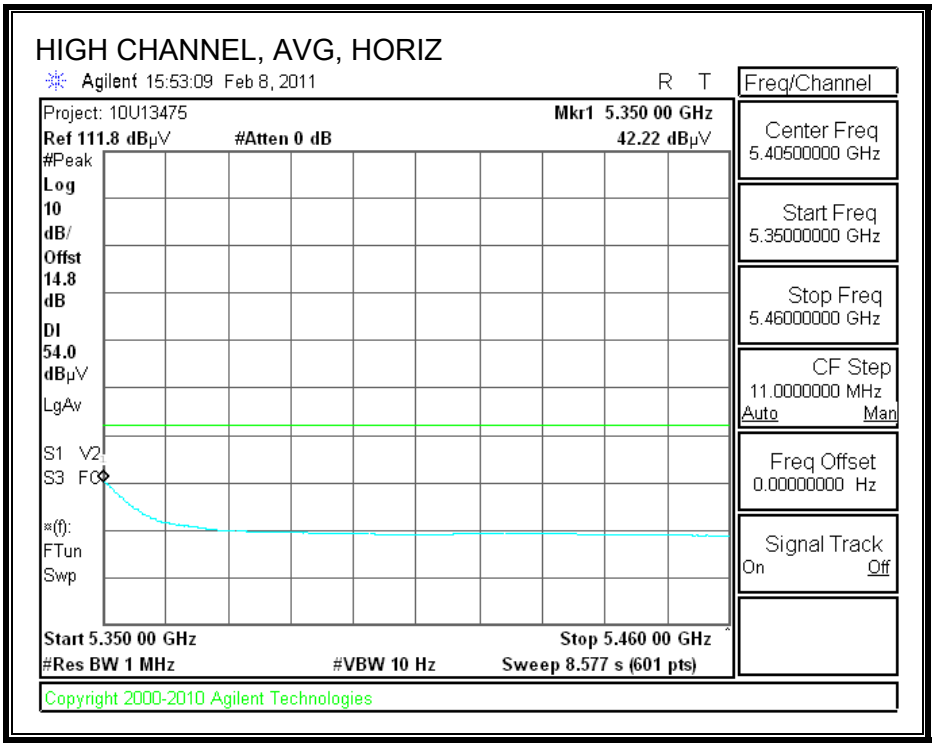
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
Low Ch. 5190 MHz															
15.570	3.0	38.8	38.4	11.4	-32.2	0.0	0.7	57.1	74.0	-16.9	H	P	98.0	351.0	
15.570	3.0	26.0	38.4	11.4	-32.2	0.0	0.7	44.3	54.0	-9.7	H	A	98.0	351.0	
15.570	3.0	43.1	38.4	11.4	-32.2	0.0	0.7	61.4	74.0	-12.6	V	P	108.0	173.0	
15.570	3.0	27.5	38.4	11.4	-32.2	0.0	0.7	45.8	54.0	-8.2	V	A	108.0	173.0	
High Ch. 5230 MHz															
15.690	3.0	42.8	38.1	11.4	-32.2	0.0	0.7	60.8	74.0	-13.2	H	P	98.0	2.0	
15.690	3.0	29.0	38.1	11.4	-32.2	0.0	0.7	47.0	54.0	-7.0	H	A	98.0	2.0	
15.690	3.0	40.7	38.1	11.4	-32.2	0.0	0.7	58.8	74.0	-15.2	V	P	98.0	198.0	
15.690	3.0	28.1	38.1	11.4	-32.2	0.0	0.7	46.2	54.0	-7.8	V	A	98.0	198.0	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

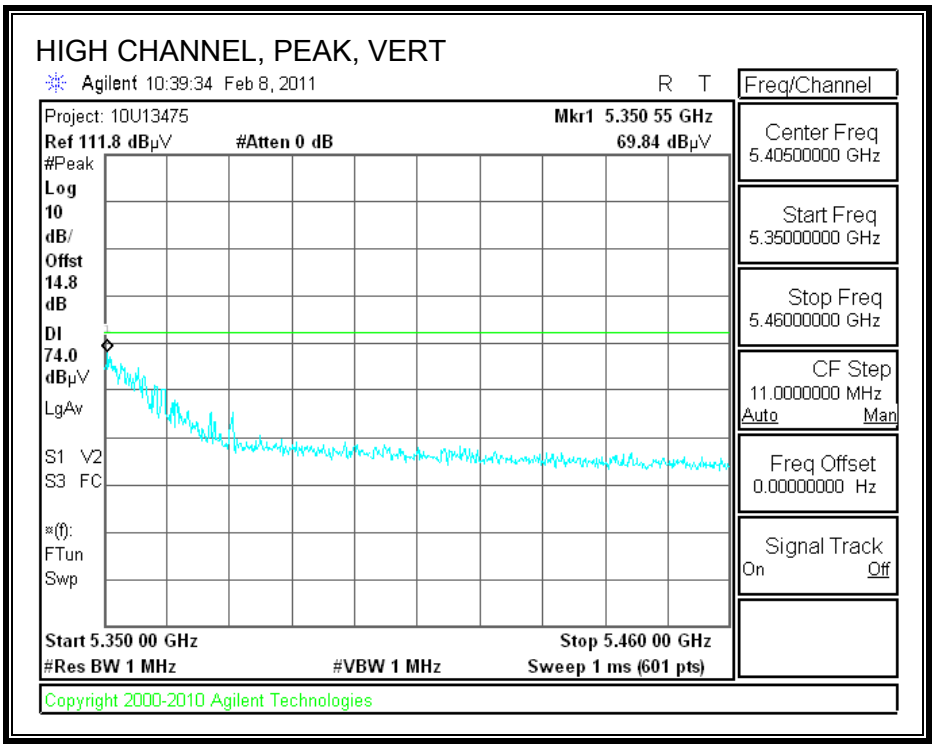
8.2.4. TX ABOVE 1 GHz FOR 802.11a MODE IN THE 5.3 GHz BAND

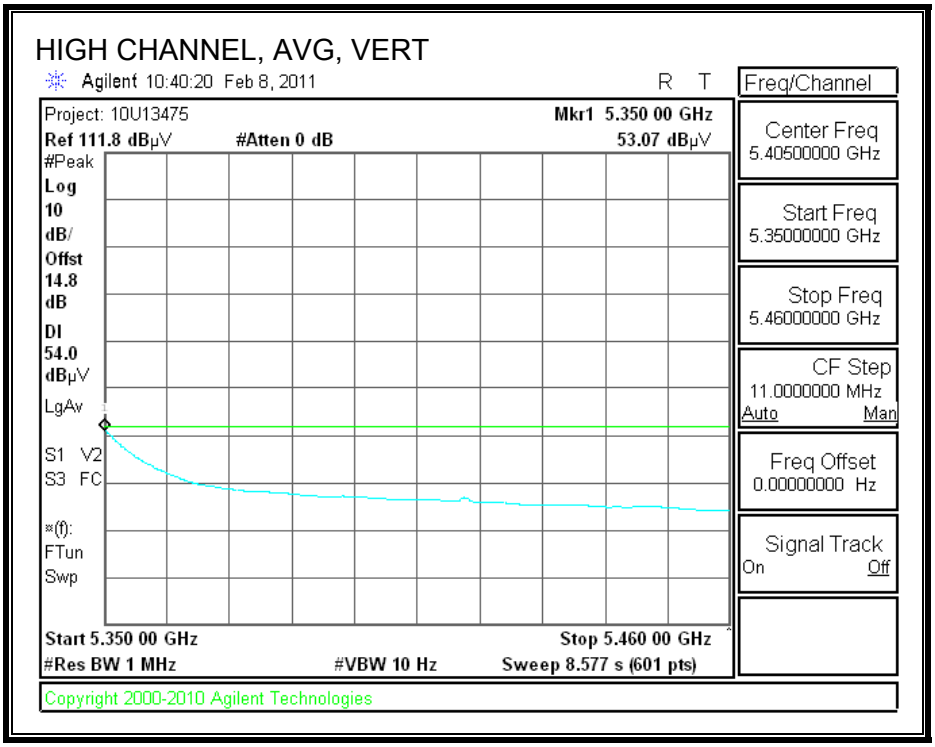
AUTHORIZED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





AUTHORIZED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: William Zhuang
Date: 02/02/11
Project #: 10U13475
Company: Ruckus
Test Target: FCC 15.407
Mode Oper: Tx On, 5.3 GHz band, a Mode

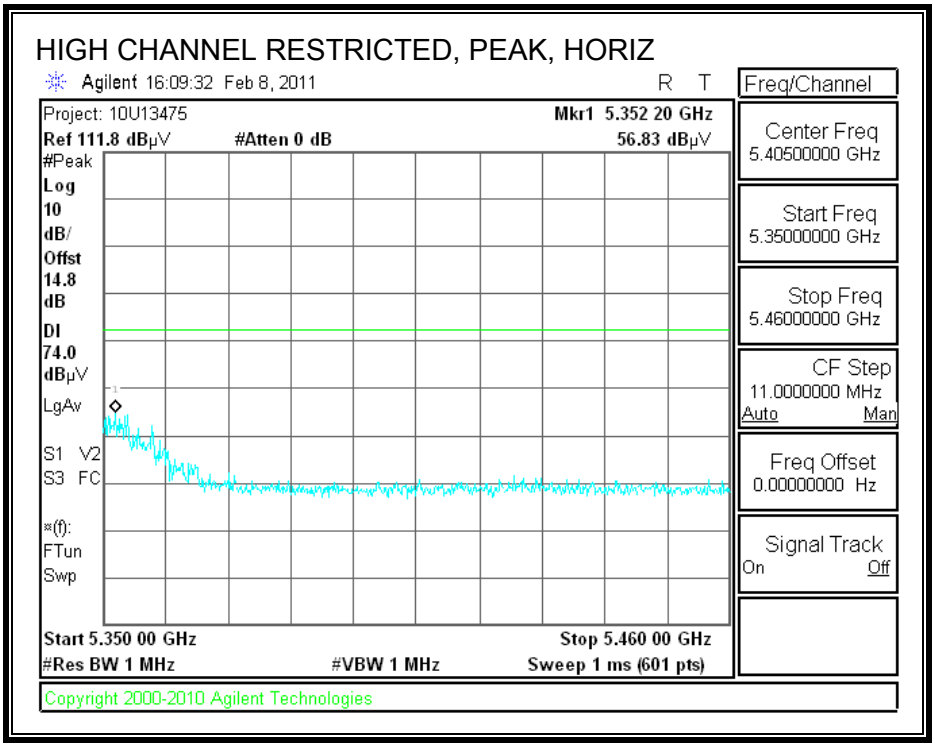
f	Measurement Frequency	Amp	Preamp Gain		Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m		Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength		Margin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

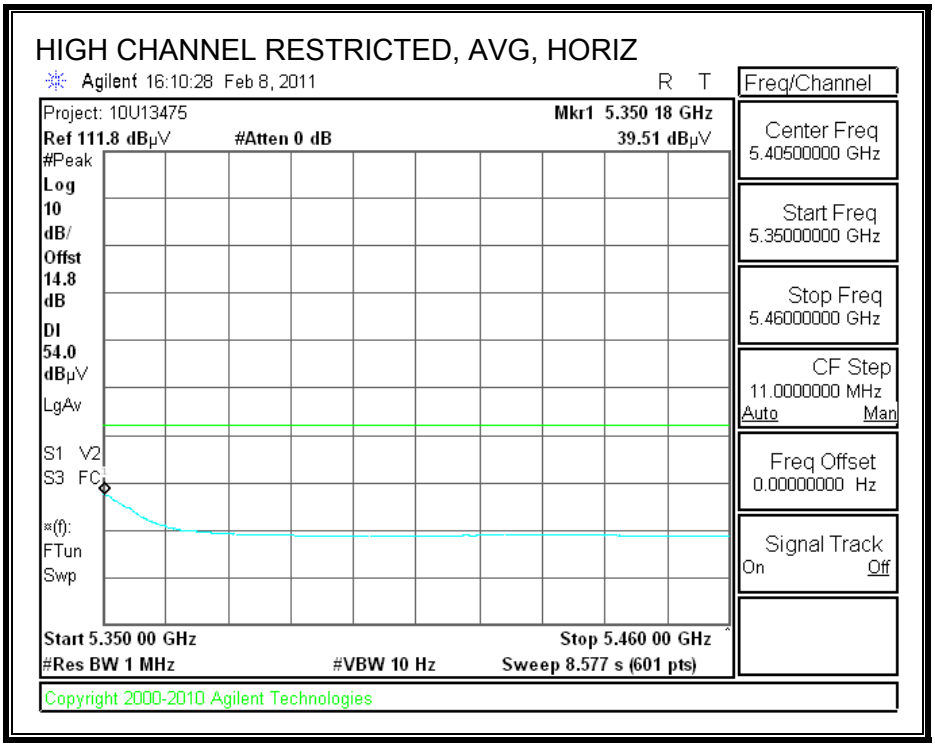
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
Mid Ch. 5300 MHz															
10.600	3.0	51.8	37.6	9.0	-32.6	0.0	0.8	66.5	74.0	-7.5	H	P	99.0	332.0	
10.600	3.0	36.9	37.6	9.0	-32.6	0.0	0.8	51.7	54.0	-2.3	H	A	99.0	332.0	
10.600	3.0	51.4	37.6	9.0	-32.6	0.0	0.8	66.1	74.0	-7.9	V	P	109.0	164.0	
10.600	3.0	37.0	37.6	9.0	-32.6	0.0	0.8	51.7	54.0	-2.3	V	A	109.0	164.0	
15.900	3.0	46.2	37.5	11.5	-32.1	0.0	0.7	63.8	74.0	-10.2	V	P	98.0	348.0	
15.900	3.0	31.8	37.5	11.5	-32.1	0.0	0.7	49.4	54.0	-4.6	V	A	98.0	348.0	
15.900	3.0	47.9	37.5	11.5	-32.1	0.0	0.7	65.5	74.0	-8.5	H	P	99.0	170.0	
15.900	3.0	32.0	37.5	11.5	-32.1	0.0	0.7	49.6	54.0	-4.4	H	A	99.0	170.0	
Low Ch. 5260 MHz															
15.780	3.0	47.9	37.8	11.5	-32.2	0.0	0.7	65.7	74.0	-8.3	H	P	102.0	164.0	
15.780	3.0	32.8	37.8	11.5	-32.2	0.0	0.7	50.6	54.0	-3.4	H	A	102.0	164.0	
15.780	3.0	47.1	37.8	11.5	-32.2	0.0	0.7	64.9	74.0	-9.1	V	P	98.0	159.0	
15.780	3.0	33.3	37.8	11.5	-32.2	0.0	0.7	51.1	54.0	-2.9	V	A	98.0	159.0	
High Ch. 5320 MHz															
10.640	3.0	54.2	37.6	9.1	-32.6	0.0	0.8	69.0	74.0	-5.0	V	P	121.0	175.0	
10.640	3.0	38.5	37.6	9.1	-32.6	0.0	0.8	53.2	54.0	-0.8	V	A	121.0	175.0	
10.640	3.0	55.1	37.6	9.1	-32.6	0.0	0.8	69.9	74.0	-4.1	H	P	122.0	331.0	
10.640	3.0	38.7	37.6	9.1	-32.6	0.0	0.8	53.5	54.0	-0.5	H	A	122.0	331.0	
15.960	3.0	42.7	37.3	11.5	-32.1	0.0	0.7	60.1	74.0	-13.9	H	P	98.0	4.0	
15.960	3.0	29.3	37.3	11.5	-32.1	0.0	0.7	46.7	54.0	-7.3	H	A	98.0	4.0	
15.960	3.0	48.8	37.3	11.5	-32.1	0.0	0.7	66.3	74.0	-7.7	V	P	105.0	350.0	
15.960	3.0	34.2	37.3	11.5	-32.1	0.0	0.7	51.6	54.0	-2.4	V	A	105.0	350.0	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

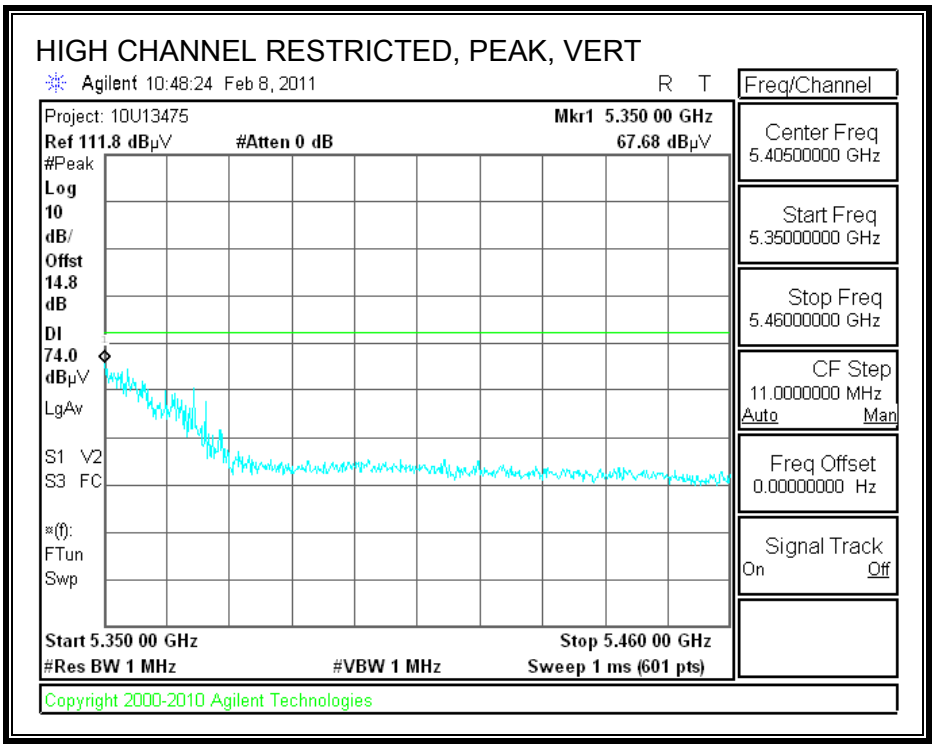
8.2.5. TX ABOVE 1 GHz FOR 802.11n HT20 MODE IN THE 5.3 GHz BAND

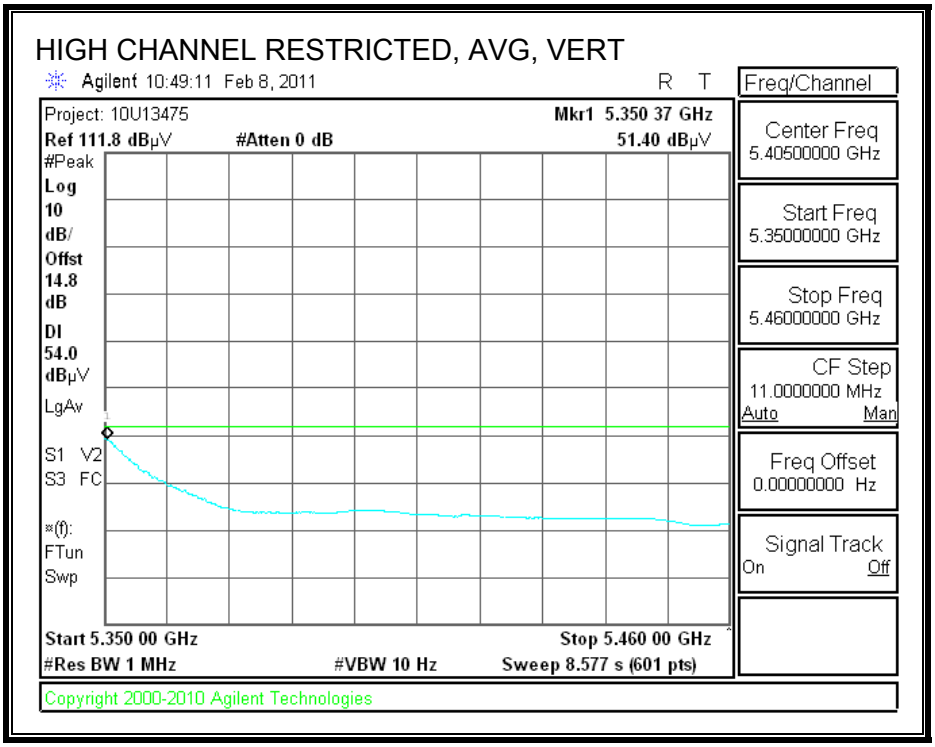
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: William Zhuang
Date: 02/02/11
Project #: 10U13475
Company: Ruckus
Test Target: FCC 15.407
Mode Oper: Tx On, 5.3 GHz band, HT20 MCS8

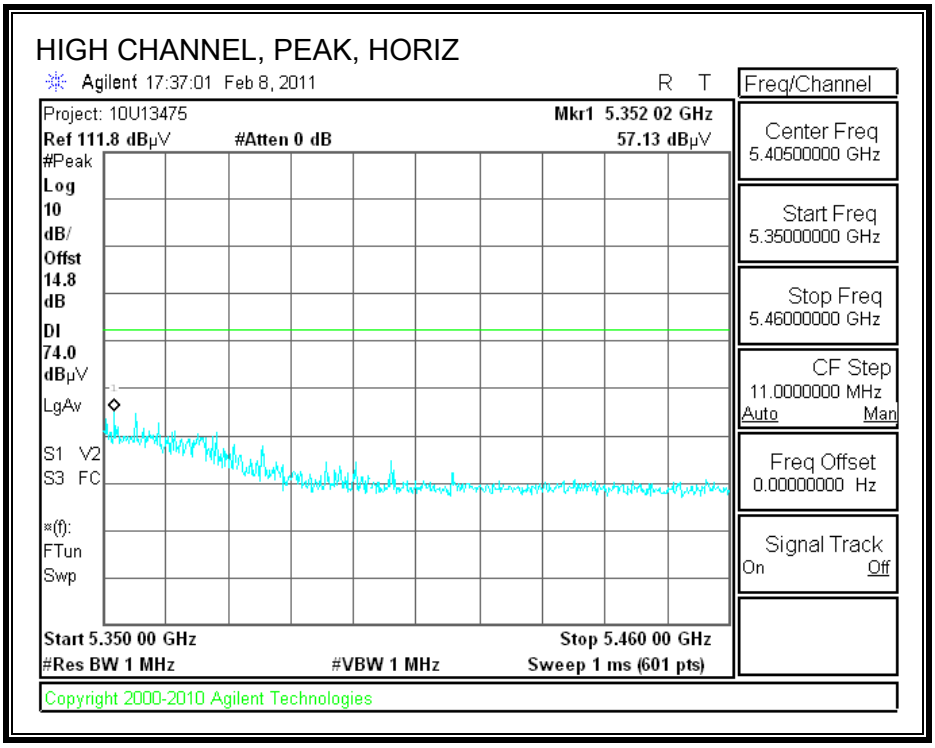
f	Measurement Frequency	Amp	Preamp Gain		Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m		Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength		Margin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

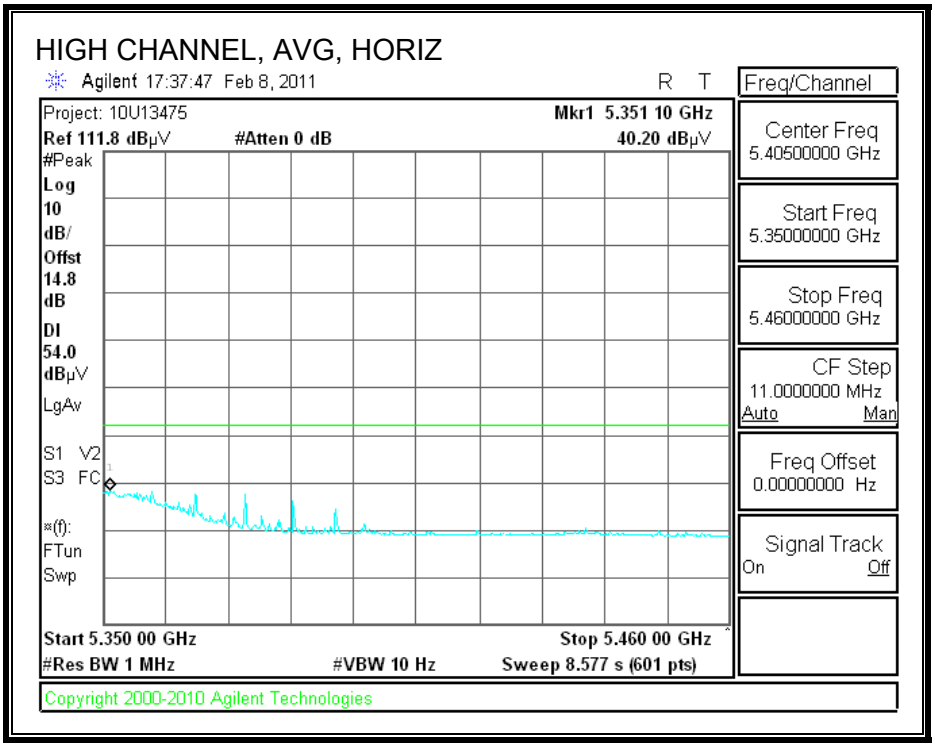
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
Low Ch. 5260 MHz															
15.780	3.0	43.9	37.8	11.5	-32.2	0.0	0.7	61.7	74.0	-12.3	H	P	101.0	166.0	
15.780	3.0	31.6	37.8	11.5	-32.2	0.0	0.7	49.5	54.0	-4.5	H	A	101.0	166.0	
15.780	3.0	46.0	37.8	11.5	-32.2	0.0	0.7	63.8	74.0	-10.2	V	P	98.0	163.0	
15.780	3.0	33.7	37.8	11.5	-32.2	0.0	0.7	51.5	54.0	-2.5	V	A	98.0	163.0	
Mid Ch. 5300 MHz															
10.600	3.0	50.8	37.6	9.0	-32.6	0.0	0.8	65.6	74.0	-8.4	H	P	137.0	163.0	
10.600	3.0	38.8	37.6	9.0	-32.6	0.0	0.8	53.6	54.0	-0.4	H	A	137.0	163.0	
10.600	3.0	48.4	37.6	9.0	-32.6	0.0	0.8	63.2	74.0	-10.8	V	P	98.0	163.0	
10.600	3.0	35.0	37.6	9.0	-32.6	0.0	0.8	49.7	54.0	-4.3	V	A	98.0	163.0	
15.900	3.0	46.3	37.5	11.5	-32.1	0.0	0.7	63.8	74.0	-10.2	V	P	101.0	352.0	
15.900	3.0	33.8	37.5	11.5	-32.1	0.0	0.7	51.3	54.0	-2.7	V	A	101.0	352.0	
15.900	3.0	44.4	37.5	11.5	-32.1	0.0	0.7	61.9	74.0	-12.1	H	P	98.0	170.0	
15.900	3.0	32.3	37.5	11.5	-32.1	0.0	0.7	49.9	54.0	-4.1	H	A	98.0	170.0	
High Ch. 5320 MHz															
10.640	3.0	51.2	37.6	9.1	-32.6	0.0	0.8	66.0	74.0	-8.0	H	P	114.0	347.0	
10.640	3.0	37.9	37.6	9.1	-32.6	0.0	0.8	52.7	54.0	-1.3	H	A	114.0	347.0	
10.640	3.0	50.9	37.6	9.1	-32.6	0.0	0.8	65.7	74.0	-8.3	V	P	110.0	164.0	
10.640	3.0	37.0	37.6	9.1	-32.6	0.0	0.8	51.7	54.0	-2.3	V	A	110.0	164.0	
15.960	3.0	44.7	37.3	11.5	-32.1	0.0	0.7	62.1	74.0	-11.9	V	P	98.0	351.0	
15.960	3.0	31.9	37.3	11.5	-32.1	0.0	0.7	49.3	54.0	-4.7	V	A	98.0	351.0	
15.960	3.0	41.4	37.3	11.5	-32.1	0.0	0.7	58.8	74.0	-15.2	H	P	98.0	170.0	
15.960	3.0	27.6	37.3	11.5	-32.1	0.0	0.7	45.0	54.0	-9.0	H	A	98.0	170.0	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

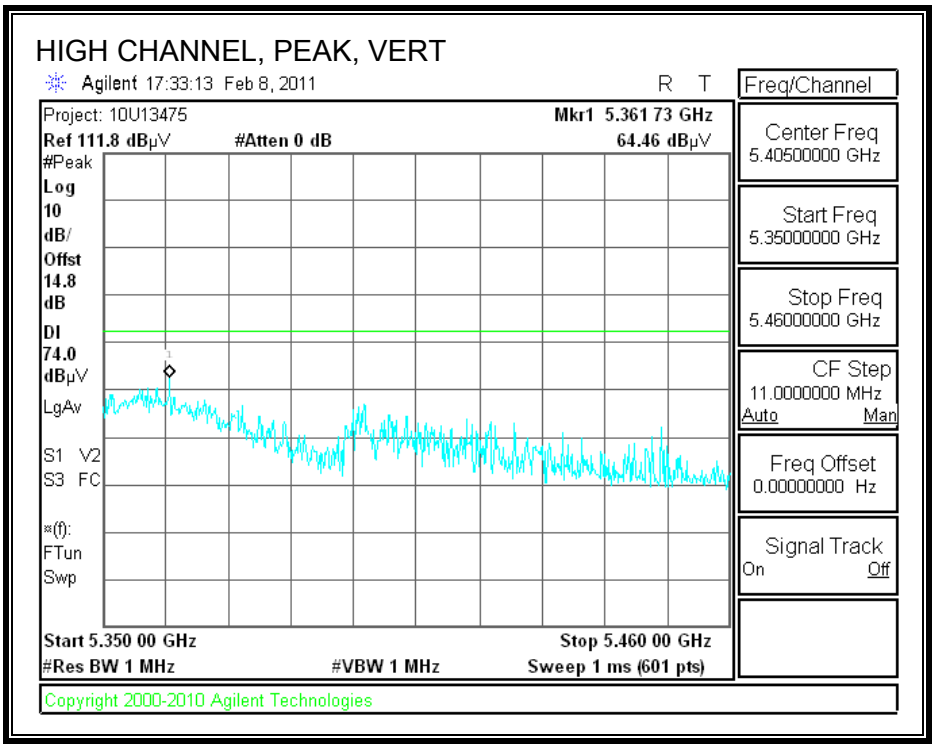
8.2.6. TX ABOVE 1 GHz FOR 802.11n HT40 MODE IN THE 5.3 GHz BAND

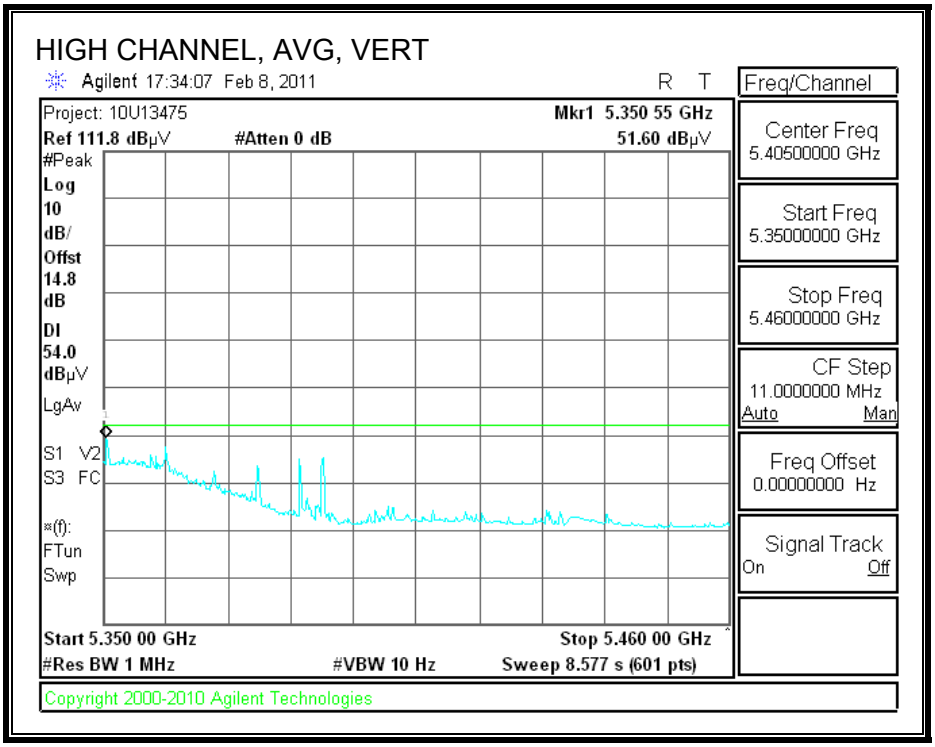
AUTHORIZED BANDEDGE (HIGH CHANNEL 5290 MHz, HORIZONTAL)



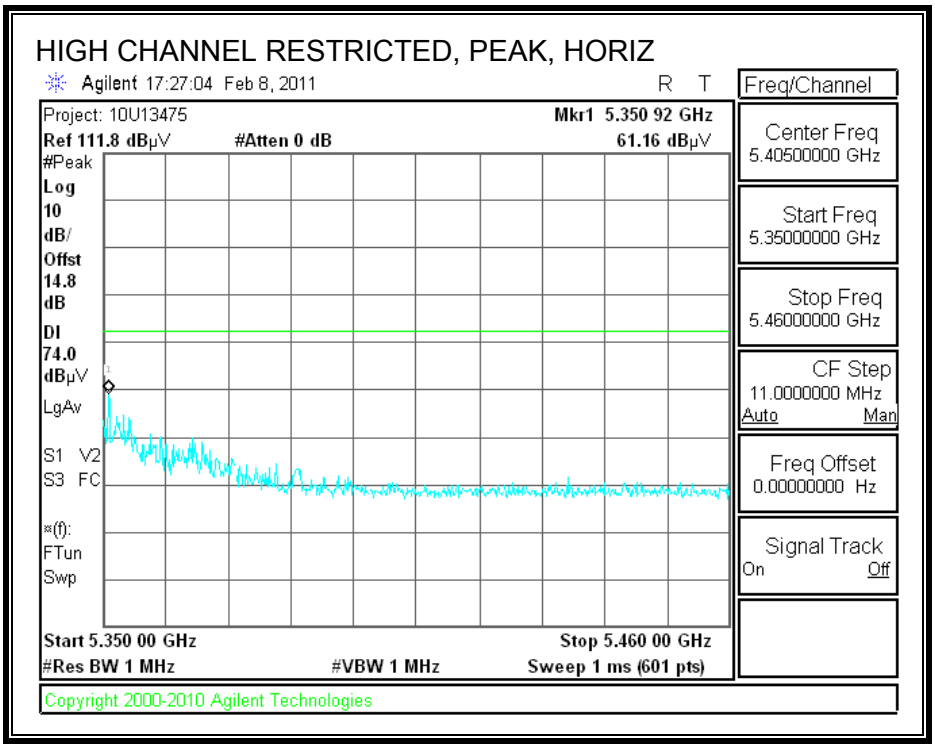


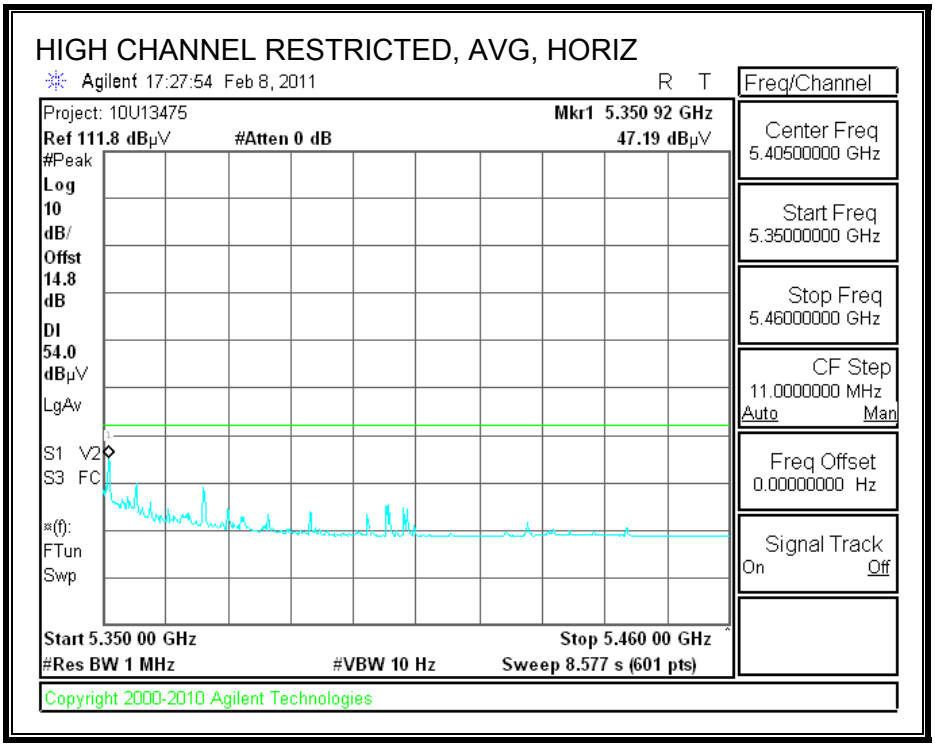
AUTHORIZED BANDEDGE (HIGH CHANNEL 5290 MHz, VERTICAL)



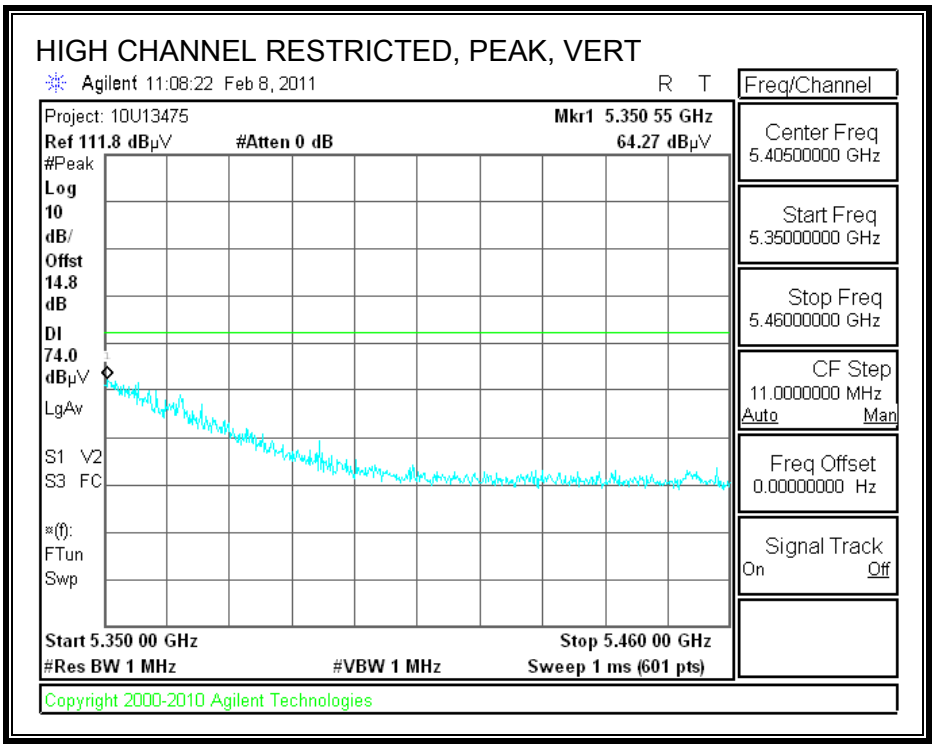


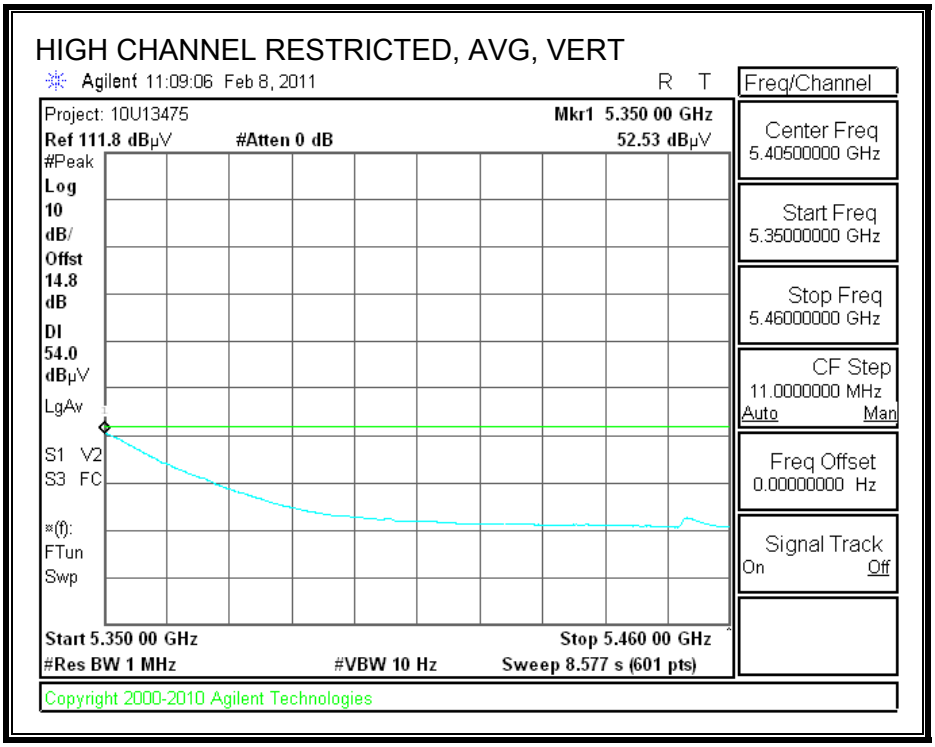
RESTRICTED BANDEDGE (HIGH CHANNEL 5310 MHz, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL 5310 MHz, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: William Zhuang
Date: 02/02/11
Project #: 10U13475
Company: Ruckus
Test Target: FCC 15.407
Mode Oper: Tx On, 5.3 GHz band, HT40 MCS8

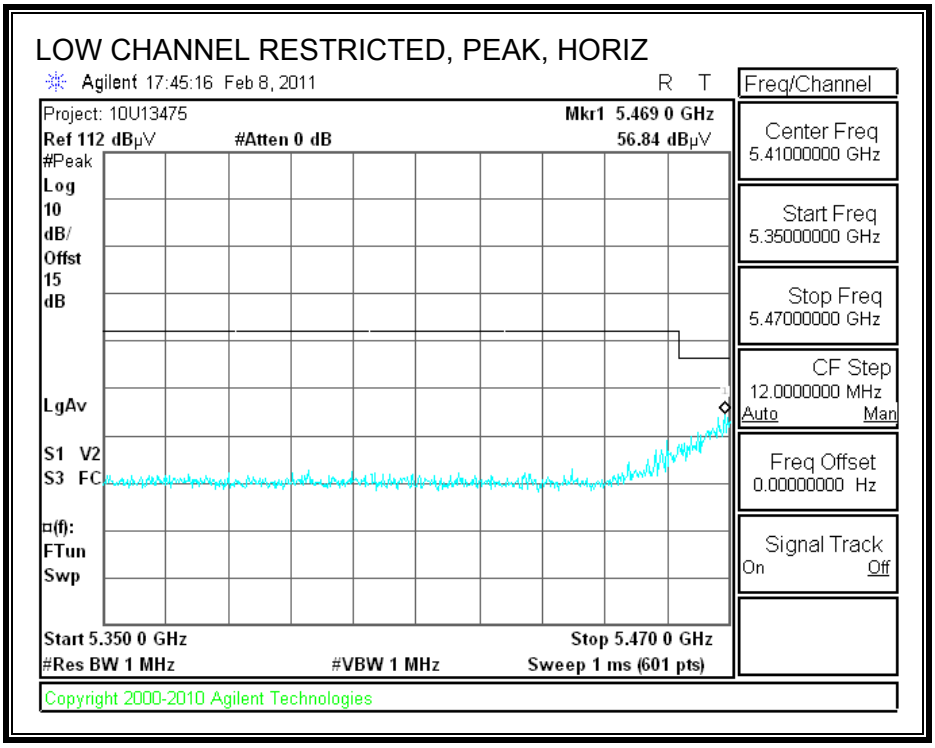
f	Measurement Frequency	Amp	Preamp Gain		Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m		Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength		Margin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

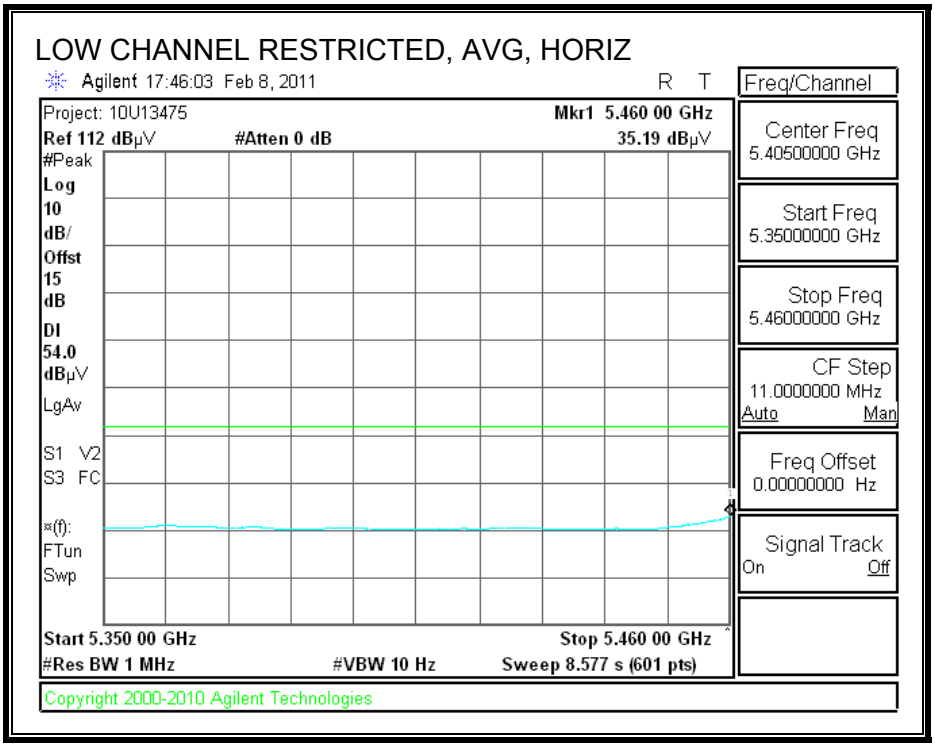
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
Low Ch. 5270 MHz															
15.810	3.0	42.8	37.7	11.5	-32.2	0.0	0.7	60.6	74.0	-13.4	H	P	101.0	164.0	
15.810	3.0	30.9	37.7	11.5	-32.2	0.0	0.7	48.6	54.0	-5.4	H	A	101.0	164.0	
15.810	3.0	41.2	37.7	11.5	-32.2	0.0	0.7	59.0	74.0	-15.0	V	P	98.0	3.0	
15.810	3.0	30.6	37.7	11.5	-32.2	0.0	0.7	48.3	54.0	-5.7	V	A	98.0	3.0	
High Ch. 5310 MHz															
10.620	3.0	52.6	37.6	9.1	-32.6	0.0	0.8	67.4	74.0	-6.6	H	P	150.0	163.0	
10.620	3.0	38.8	37.6	9.1	-32.6	0.0	0.8	53.6	54.0	-0.4	H	A	150.0	163.0	
10.620	3.0	46.3	37.6	9.1	-32.6	0.0	0.8	61.1	74.0	-12.9	V	P	141.0	8.0	
10.620	3.0	31.8	37.6	9.1	-32.6	0.0	0.8	46.6	54.0	-7.4	V	A	141.0	8.0	
15.930	3.0	40.7	37.4	11.5	-32.1	0.0	0.7	58.1	74.0	-15.9	H	P	98.0	172.0	
15.930	3.0	29.3	37.4	11.5	-32.1	0.0	0.7	46.8	54.0	-7.2	H	A	98.0	172.0	
15.930	3.0	41.4	37.4	11.5	-32.1	0.0	0.7	58.9	74.0	-15.1	V	P	98.0	356.0	
15.930	3.0	28.6	37.4	11.5	-32.1	0.0	0.7	46.1	54.0	-7.9	V	A	98.0	356.0	
2nd High Ch. 5290 MHz															
15.870	3.0	34.3	37.5	11.5	-32.1	0.0	0.7	51.9	74.0	-22.1	V	P	194.0	347.0	
15.870	3.0	25.1	37.5	11.5	-32.1	0.0	0.7	42.7	54.0	-11.3	V	A	194.0	347.0	
15.870	3.0	43.0	37.5	11.5	-32.1	0.0	0.7	60.6	74.0	-13.4	H	P	106.0	162.0	
15.870	3.0	27.5	37.5	11.5	-32.1	0.0	0.7	45.1	54.0	-8.9	H	A	106.0	162.0	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

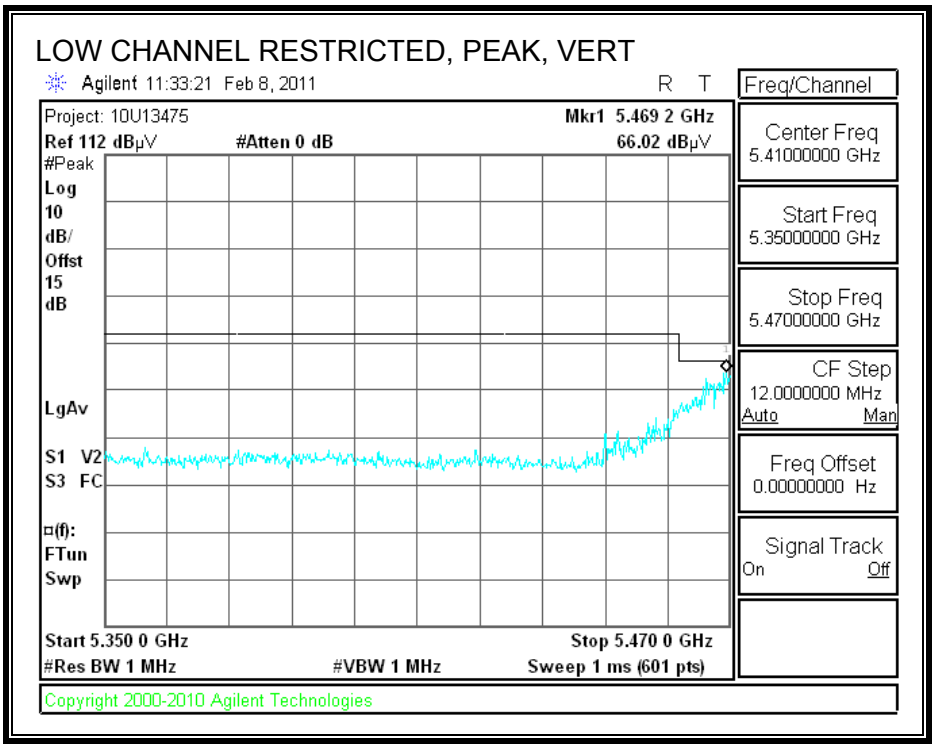
8.2.7. TX ABOVE 1 GHz FOR 802.11a MODE IN THE 5.6 GHz BAND

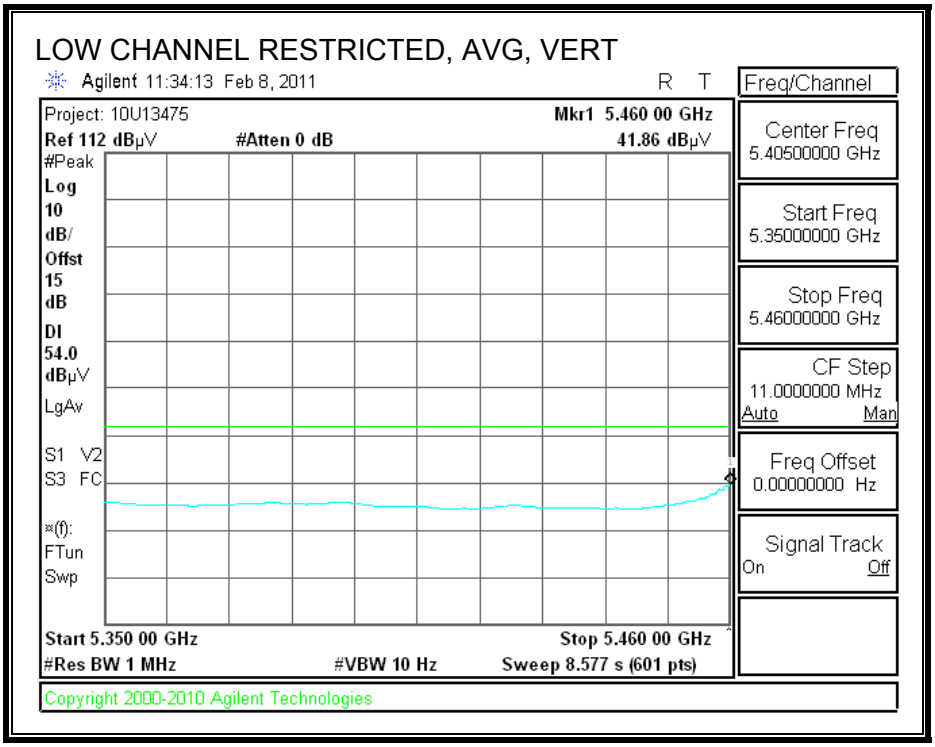
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



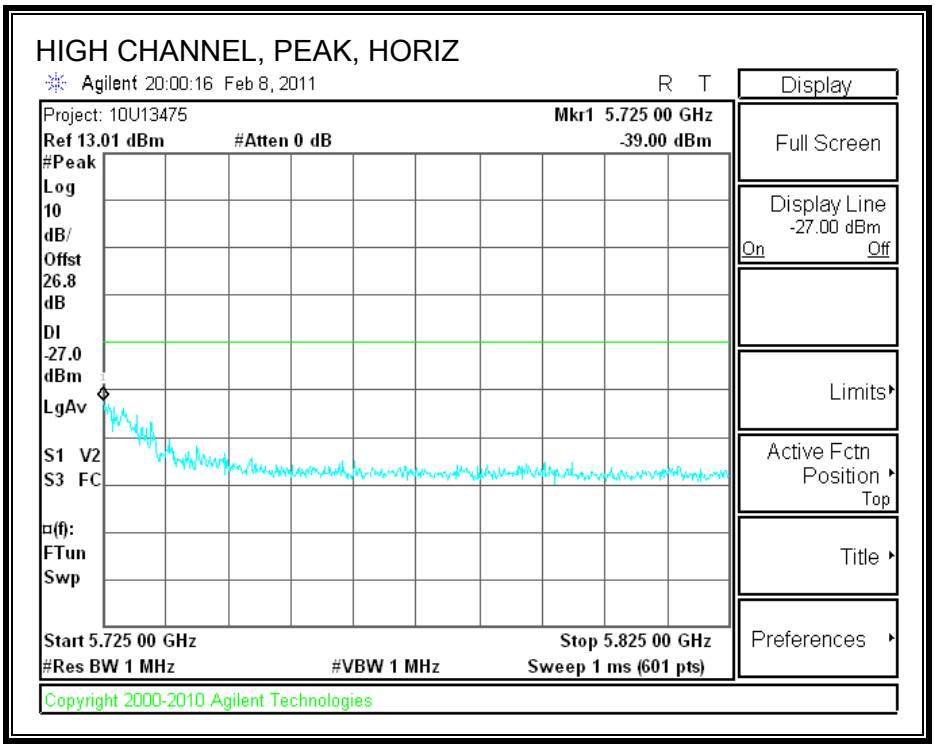


RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

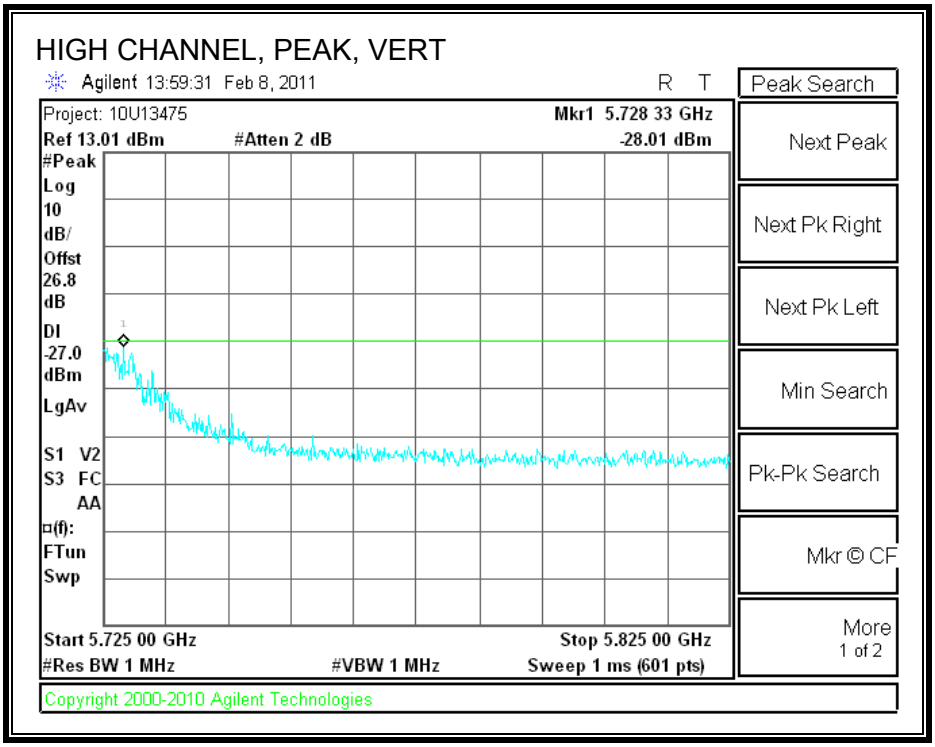




AUTHORIZED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



AUTHORIZED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: William Zhuang
Date: 02/01/11
Project #: 10U13475
Company: Ruckus
Test Target: FCC 15.407
Mode Oper: Tx On, 5.5 GHz band, a Mode

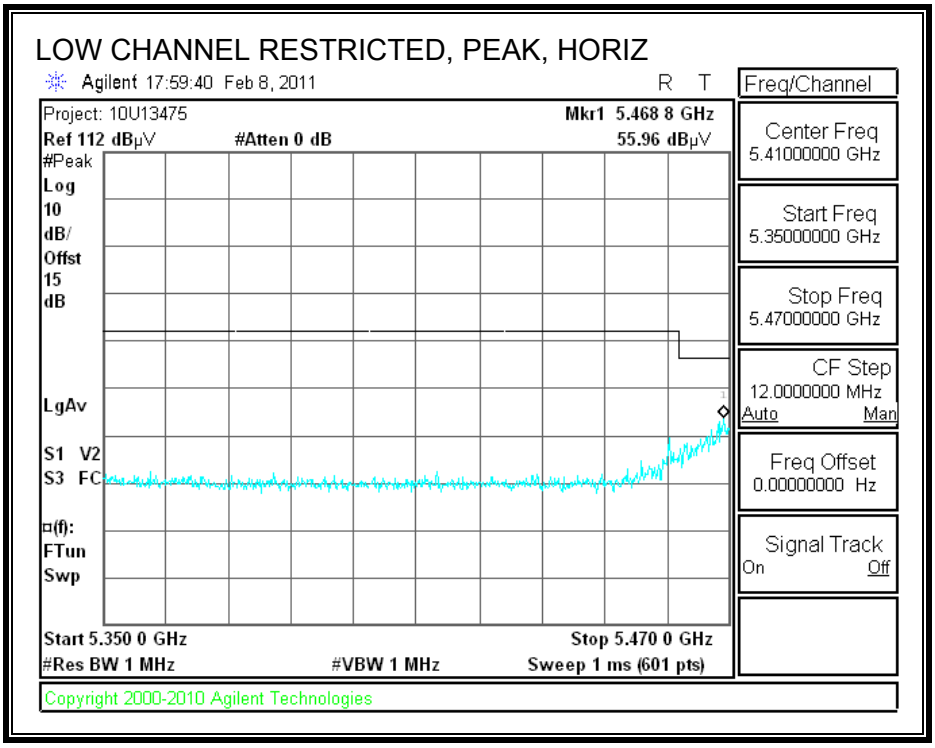
f	Measurement Frequency	Amp	Preamp Gain		Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m		Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength		Margin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

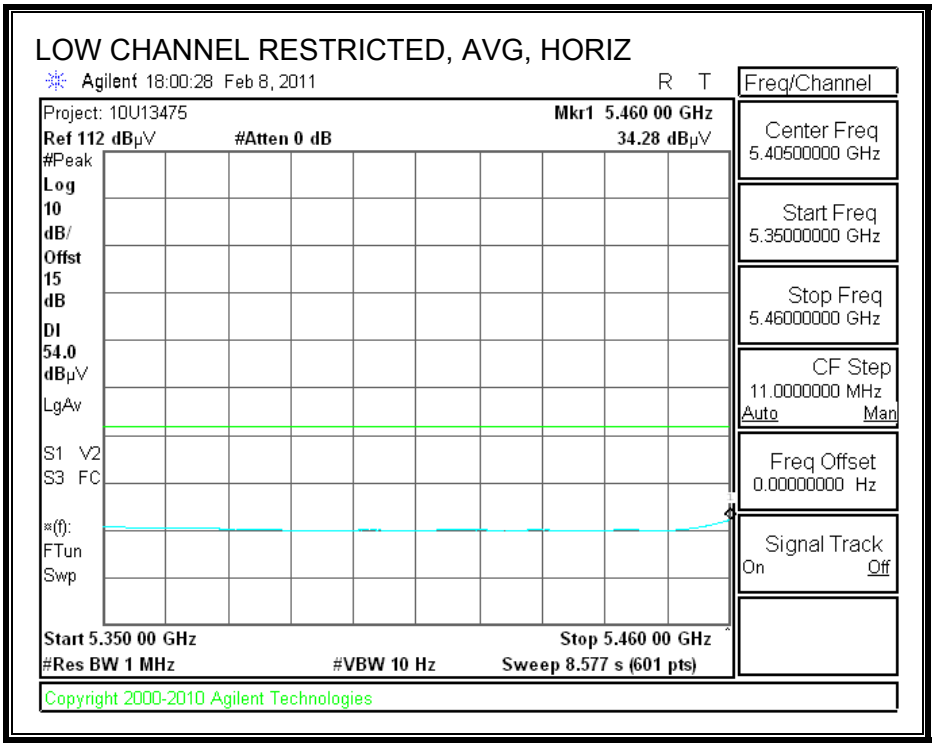
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
Mid Ch. 5580 MHz															
11.160	3.0	54.8	37.8	9.3	-32.6	0.0	0.7	70.1	74.0	-3.9	H	P	153.0	156.0	
11.160	3.0	37.0	37.8	9.3	-32.6	0.0	0.7	52.3	54.0	-1.7	H	A	153.0	156.0	
11.160	3.0	53.4	37.8	9.3	-32.6	0.0	0.7	68.7	74.0	-5.3	V	P	132.0	49.0	
11.160	3.0	36.1	37.8	9.3	-32.6	0.0	0.7	51.3	54.0	-2.7	V	A	132.0	49.0	
Low Ch. 5500 MHz															
11.000	3.0	55.4	37.6	9.2	-32.6	0.0	0.7	70.4	74.0	-3.6	H	P	101.0	355.0	
11.000	3.0	38.4	37.6	9.2	-32.6	0.0	0.7	53.4	54.0	-0.6	H	A	101.0	355.0	
11.000	3.0	57.5	37.6	9.2	-32.6	0.0	0.7	72.4	74.0	-1.6	V	P	136.0	193.0	
11.000	3.0	38.5	37.6	9.2	-32.6	0.0	0.7	53.5	54.0	-0.5	V	A	136.0	193.0	
High Ch. 5700 MHz															
11.400	3.0	51.5	38.0	9.4	-32.5	0.0	0.7	67.0	74.0	-7.0	V	P	153.0	216.0	
11.400	3.0	35.6	38.0	9.4	-32.5	0.0	0.7	51.1	54.0	-2.9	V	A	153.0	216.0	
11.400	3.0	52.7	38.0	9.4	-32.5	0.0	0.7	68.3	74.0	-5.7	H	P	98.0	166.0	
11.400	3.0	37.5	38.0	9.4	-32.5	0.0	0.7	53.1	54.0	-1.0	H	A	98.0	166.0	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

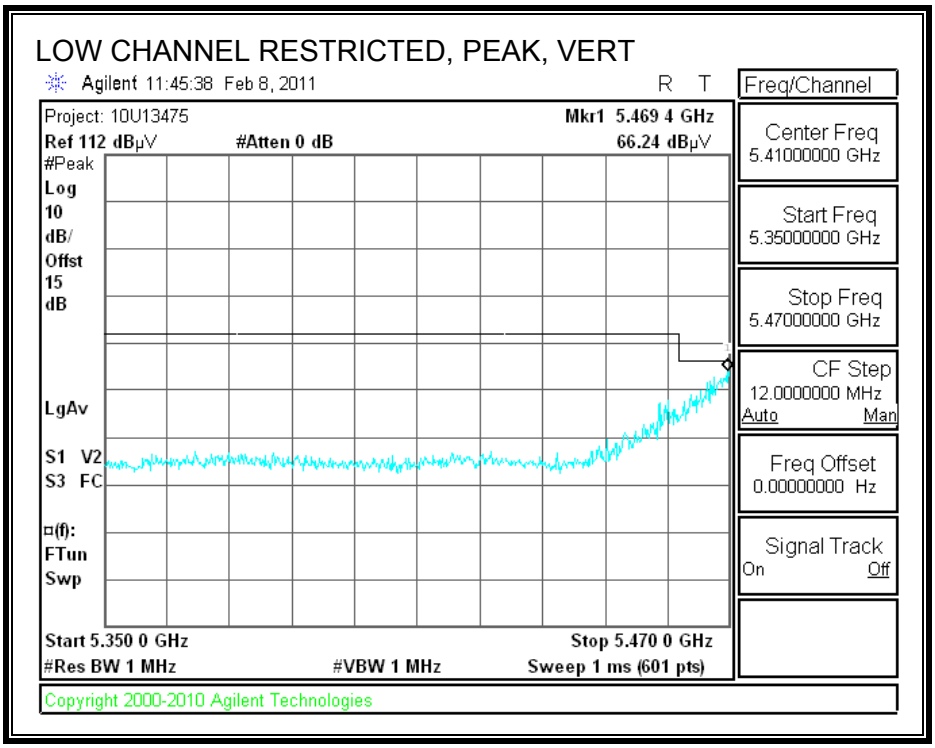
8.2.8. TX ABOVE 1 GHz FOR 802.11n HT20 MODE IN THE 5.6 GHz BAND

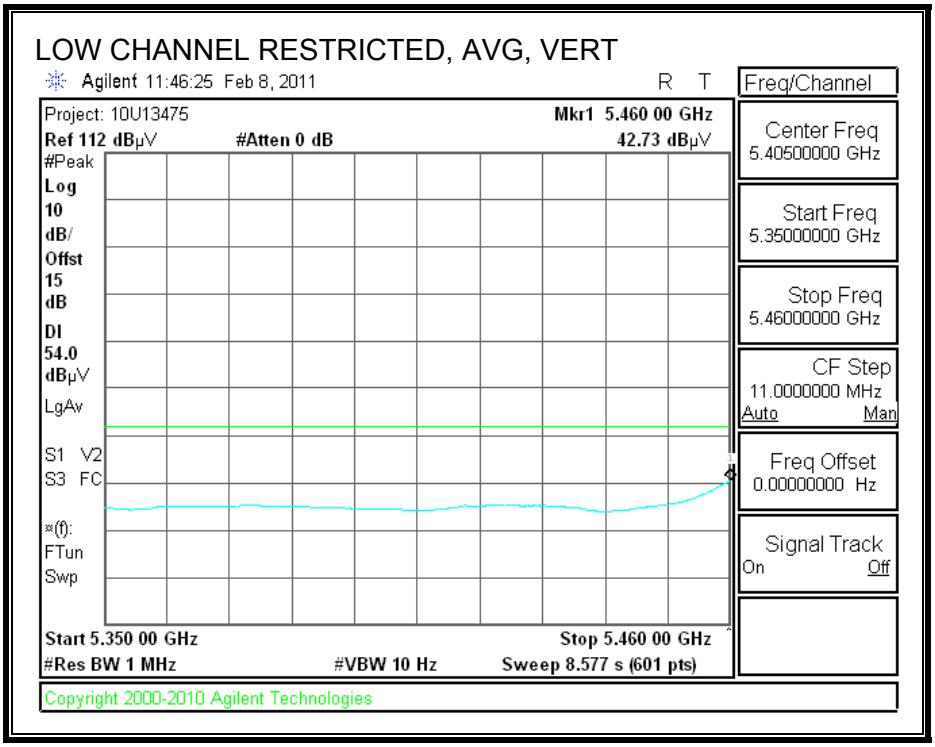
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



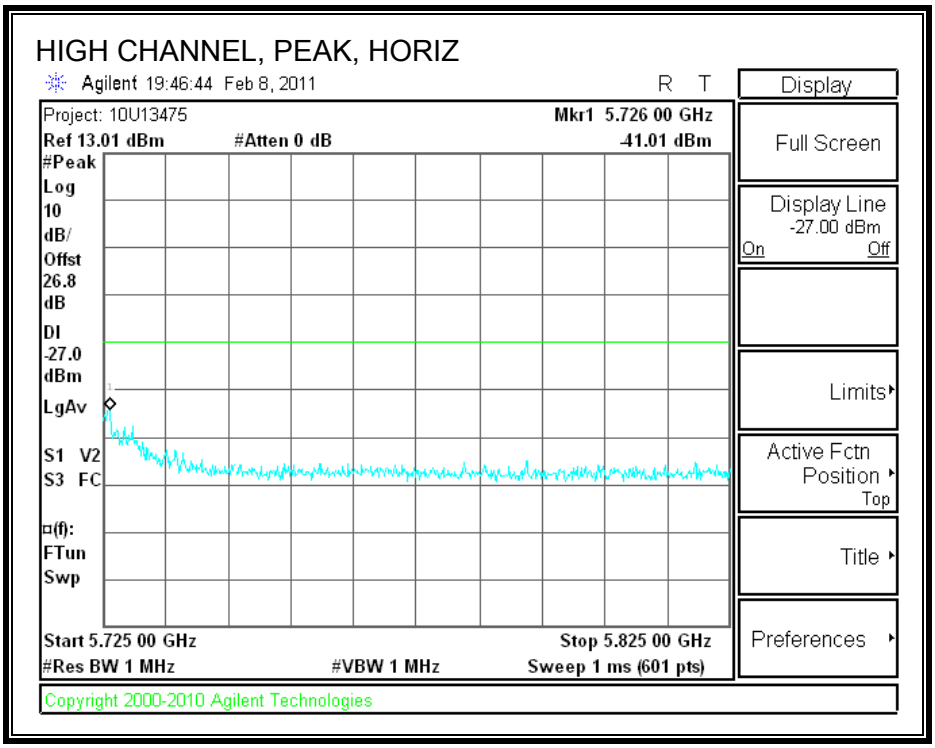


RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

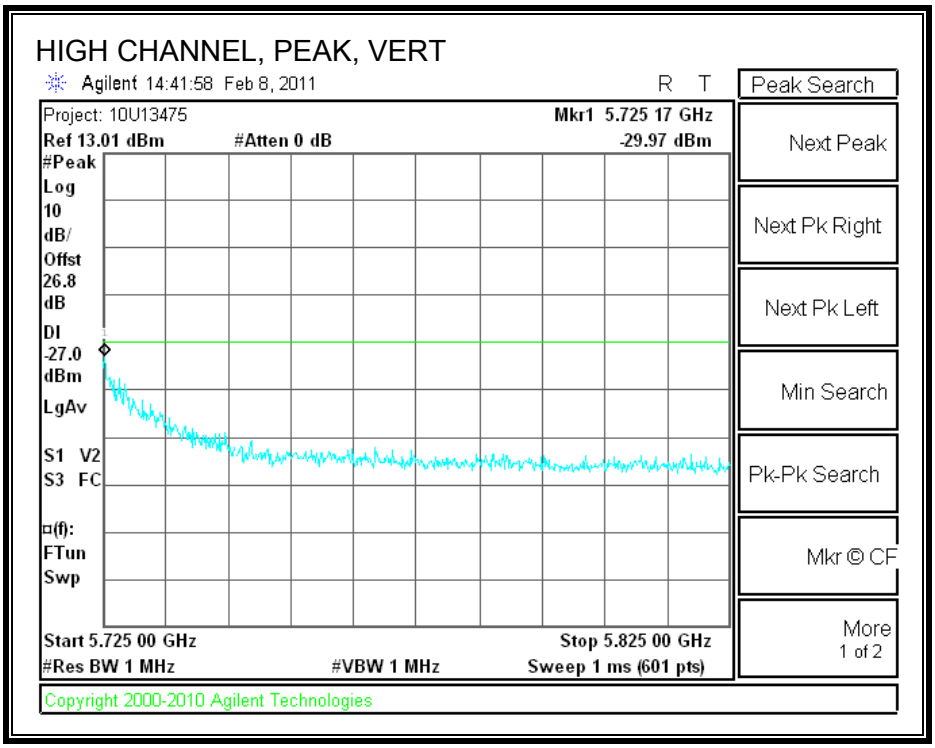




AUTHORIZED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



AUTHORIZED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: William Zhuang
Date: 02/01/11
Project #: 10U13475
Company: Ruckus
Test Target: FCC 15.407
Mode Oper: Tx On, 5.5 GHz band, HT20 MCS8

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

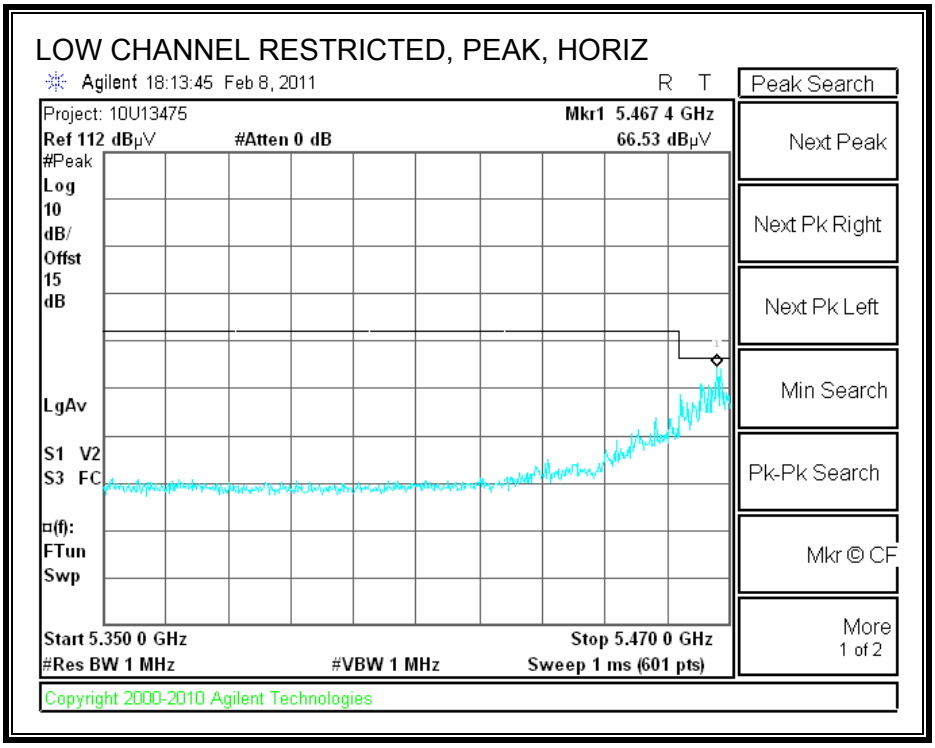
Average Field Strength Limit
Peak Field Strength Limit
Margin vs. Average Limit
Margin vs. Peak Limit

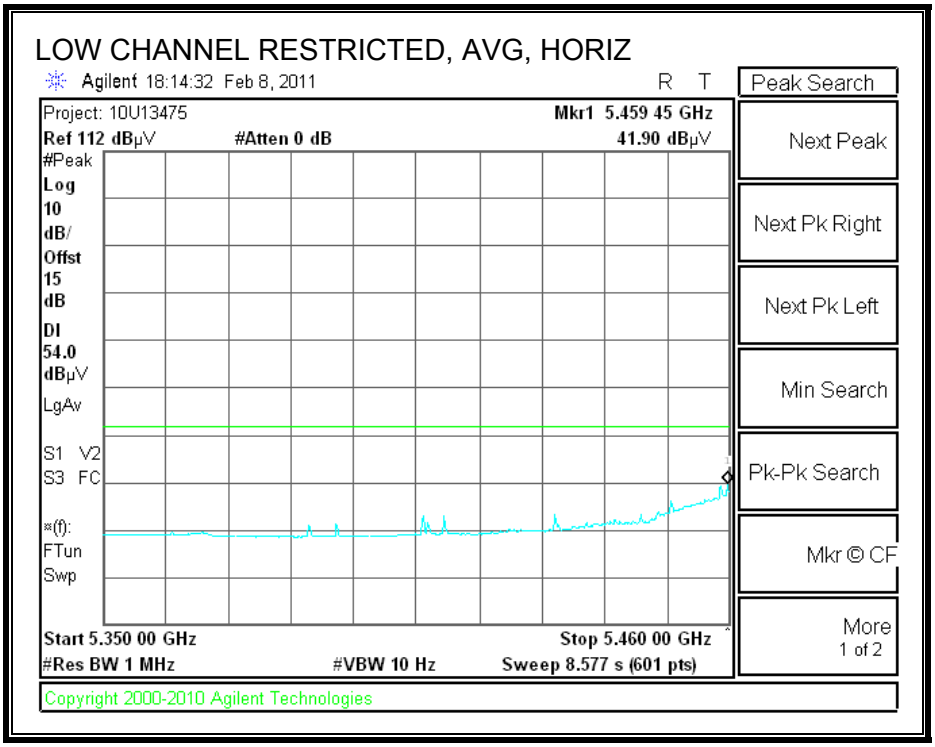
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
Low Ch. 5500 MHz															
11.000	3.0	52.6	37.6	9.2	-32.6	0.0	0.7	67.5	74.0	-6.5	H	P	114.0	353.0	
11.000	3.0	37.2	37.6	9.2	-32.6	0.0	0.7	52.2	54.0	-1.8	H	A	114.0	353.0	
11.000	3.0	47.2	37.6	9.2	-32.6	0.0	0.7	62.1	74.0	-11.9	V	P	98.0	343.0	
11.000	3.0	32.9	37.6	9.2	-32.6	0.0	0.7	47.9	54.0	-6.1	V	A	98.0	343.0	
Mid Ch. 5580 MHz															
11.160	3.0	51.3	37.8	9.3	-32.6	0.0	0.7	66.6	74.0	-7.4	H	P	98.0	159.0	
11.160	3.0	36.5	37.8	9.3	-32.6	0.0	0.7	51.8	54.0	-2.2	H	A	98.0	159.0	
11.160	3.0	50.2	37.8	9.3	-32.6	0.0	0.7	65.5	74.0	-8.5	V	P	104.0	26.0	
11.160	3.0	36.1	37.8	9.3	-32.6	0.0	0.7	51.3	54.0	-2.7	V	A	104.0	26.0	
High Ch. 5700 MHz															
11.400	3.0	49.4	38.0	9.4	-32.5	0.0	0.7	64.9	74.0	-9.1	H	P	132.0	182.0	
11.400	3.0	35.5	38.0	9.4	-32.5	0.0	0.7	51.0	54.0	-3.0	H	A	132.0	182.0	
11.400	3.0	51.0	38.0	9.4	-32.5	0.0	0.7	66.5	74.0	-7.5	V	P	102.0	200.0	
11.400	3.0	36.1	38.0	9.4	-32.5	0.0	0.7	51.6	54.0	-2.4	V	A	102.0	200.0	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

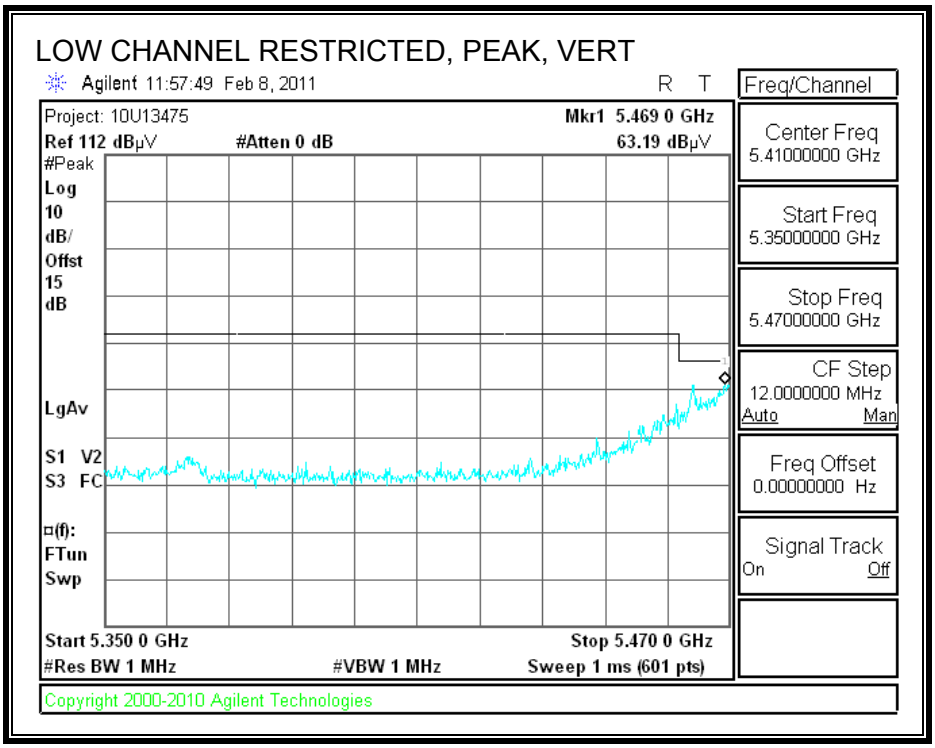
8.2.9. TX ABOVE 1 GHz FOR 802.11n HT40 MODE IN THE 5.6 GHz BAND

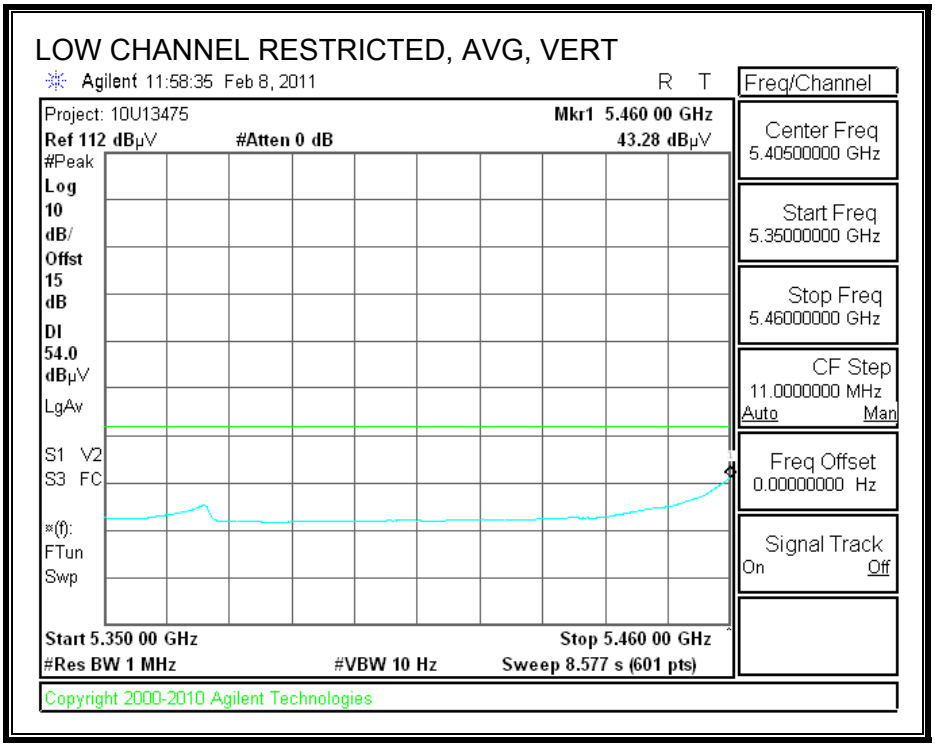
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



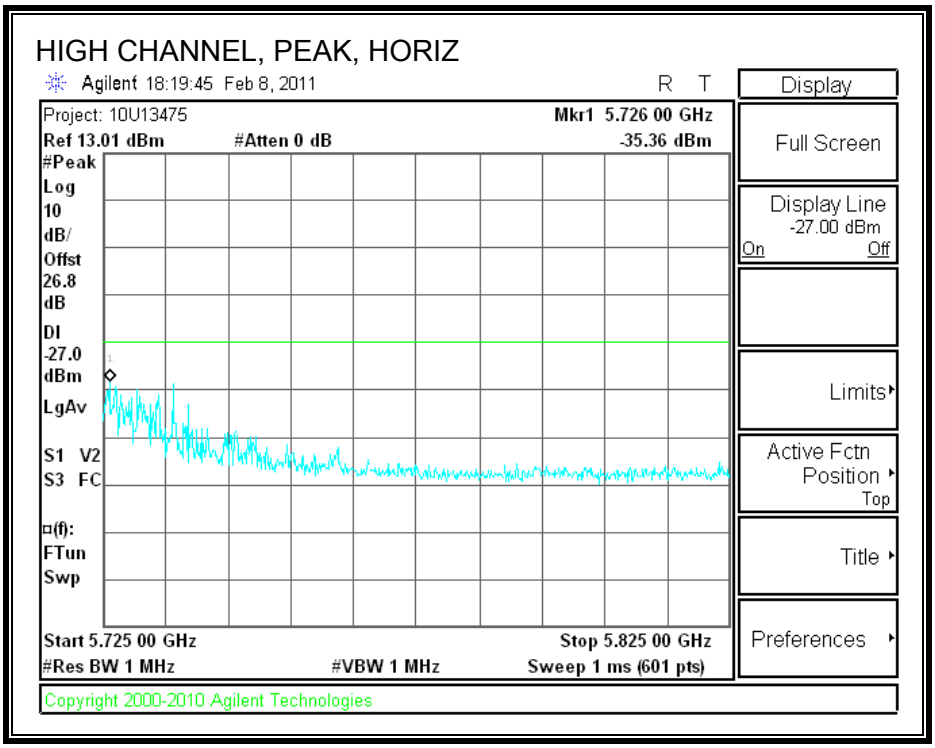


RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

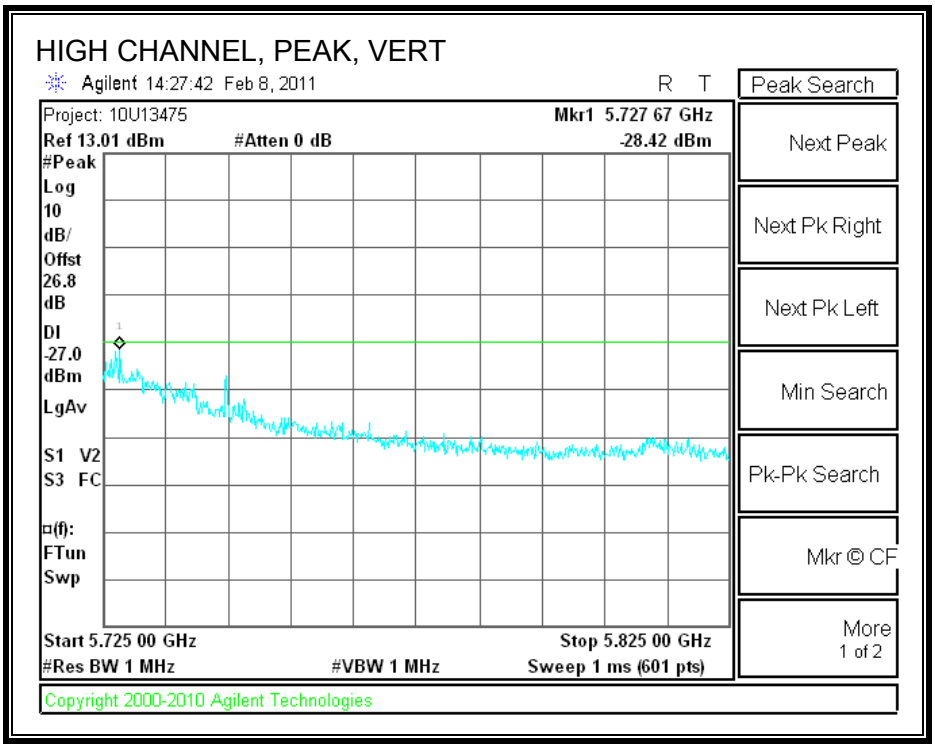




AUTHORIZED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



AUTHORIZED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: William Zhuang
Date: 02/04/11
Project #: 10U13475
Company: Ruckus
Test Target: FCC 15.407
Mode Oper: Tx On, 5.5 GHz band, HT40 MCS8

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		

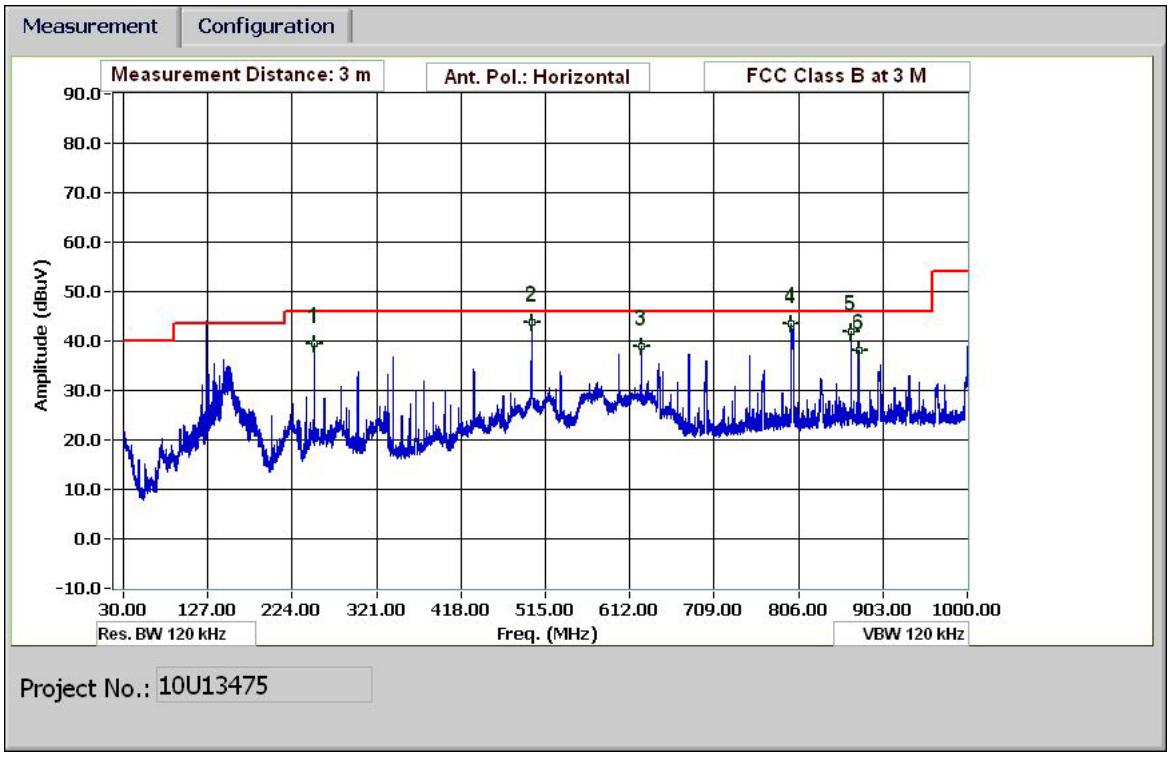
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
Low Ch. 5510 MHz															
11.020	3.0	50.8	37.6	9.2	-32.6	0.0	0.7	65.8	74.0	-8.2	H	P	121.0	17.0	
11.020	3.0	36.3	37.6	9.2	-32.6	0.0	0.7	51.3	54.0	-2.7	H	A	121.0	17.0	
11.020	3.0	48.4	37.6	9.2	-32.6	0.0	0.7	63.4	74.0	-10.6	V	P	193.0	338.0	
11.020	3.0	30.8	37.6	9.2	-32.6	0.0	0.7	45.8	54.0	-8.3	V	A	193.0	338.0	
Mid Ch. 5550 MHz															
11.100	3.0	58.4	37.7	9.3	-32.6	0.0	0.7	73.5	74.0	-0.5	H	P	155.0	45.0	
11.100	3.0	31.7	37.7	9.3	-32.6	0.0	0.7	46.8	54.0	-7.2	H	A	155.0	45.0	
11.100	3.0	55.4	37.7	9.3	-32.6	0.0	0.7	70.5	74.0	-3.5	V	P	117.0	126.0	
11.100	3.0	30.0	37.7	9.3	-32.6	0.0	0.7	45.1	54.0	-8.9	V	A	117.0	126.0	
High Ch. 5670 MHz															
11.340	3.0	49.6	37.9	9.4	-32.6	0.0	0.7	65.1	74.0	-8.9	H	P	133.0	143.0	
11.340	3.0	29.4	37.9	9.4	-32.6	0.0	0.7	44.9	54.0	-9.1	H	A	133.0	143.0	
11.340	3.0	48.0	37.9	9.4	-32.6	0.0	0.7	63.5	74.0	-10.5	V	P	196.0	193.0	
11.340	3.0	27.0	37.9	9.4	-32.6	0.0	0.7	42.5	54.0	-11.5	V	A	196.0	193.0	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

8.3. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT



HORIZONTAL DATA

30-1000MHz Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: William Zhuang
Date: 03/02/11
Project #: 10U13475
Company: Ruckus Wireless
Test Target: FCC-B
Mode Oper: Tx On, Worst Case

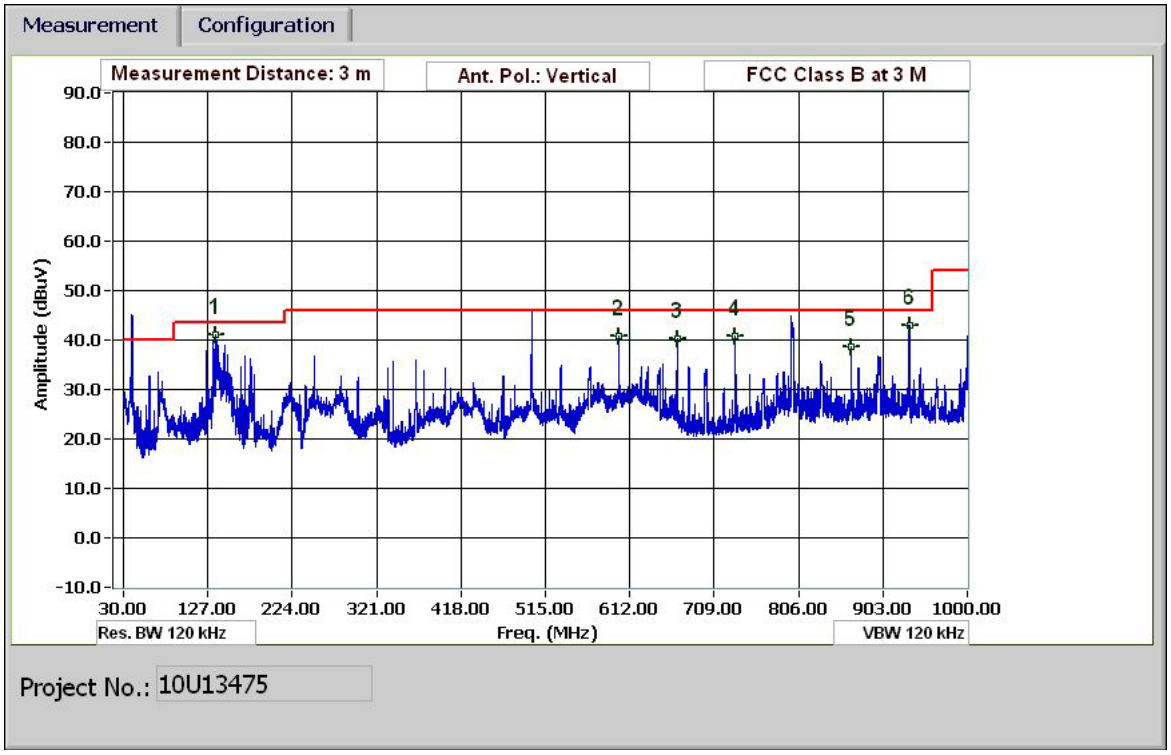
f	Measurement Frequency	Amp	Preamp Gain	Margin	Margin vs. Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		
Read	Analyzer Reading	Filter	Filter Insert Loss		
AF	Antenna Factor	Corr.	Calculated Field Strength		
CL	Cable Loss	Limit	Field Strength Limit		

f MHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Pad dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant. High cm	Table Angle Degree	Notes
Horizontal															
249.969	3.0	54.6	11.8	1.4	28.2	0.0	0.0	39.6	46.0	-6.4	H	P	100.0	0 - 360	
499.939	3.0	53.0	16.7	2.0	27.8	0.0	0.0	43.9	46.0	-2.1	H	P	100.0	0 - 360	
624.985	3.0	45.2	18.7	2.3	27.4	0.0	0.0	38.8	46.0	-7.2	H	P	100.0	0 - 360	
798.152	3.0	47.3	20.9	2.6	27.4	0.0	0.0	43.4	46.0	-2.6	H	P	100.0	0 - 360	
866.675	3.0	45.1	21.6	2.8	27.7	0.0	0.0	41.8	46.0	-4.2	H	P	100.0	0 - 360	
874.955	3.0	41.4	21.6	2.8	27.7	0.0	0.0	38.1	46.0	-7.9	H	P	100.0	0 - 360	

Rev. 1.27.09
Note: No other emissions were detected above the system noise floor.

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

VERTICAL PLOT



Note: The signal over the 40 dBuV/m limit line below point 1 is not from the radio portion, this signal is covered under class A digital report.

VERTICAL DATA

30-1000MHz Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: William Zhuang
Date: 03/02/11
Project #: 10U13475
Company: Ruckus Wireless
Test Target: FCC-B
Mode Oper: Tx On, Worst Case

f	Measurement Frequency	Amp	Preamp Gain	Margin	Margin vs. Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		
Read	Analyzer Reading	Filter	Filter Insert Loss		
AF	Antenna Factor	Corr.	Calculated Field Strength		
CL	Cable Loss	Limit	Field Strength Limit		

f MHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Pad dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant. High cm	Table Angle Degree	Notes
Vertical															
135.604	3.0	54.9	13.4	1.1	28.3	0.0	0.0	41.1	43.5	-2.4	V	P	100.0	0 - 360	
600.024	3.0	47.7	18.4	2.2	27.5	0.0	0.0	40.9	46.0	-5.1	V	P	100.0	0 - 360	
666.626	3.0	46.1	19.2	2.4	27.3	0.0	0.0	40.4	46.0	-5.6	V	P	100.0	0 - 360	
733.349	3.0	45.4	20.0	2.5	27.3	0.0	0.0	40.7	46.0	-5.3	V	P	100.0	0 - 360	
866.675	3.0	42.0	21.6	2.8	27.7	0.0	0.0	38.7	46.0	-7.3	V	P	100.0	0 - 360	
933.277	3.0	46.0	22.1	2.9	27.8	0.0	0.0	43.1	46.0	-2.9	V	P	100.0	0 - 360	

Rev. 1.27.09
Note: No other emissions were detected above the system noise floor.

9. 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.

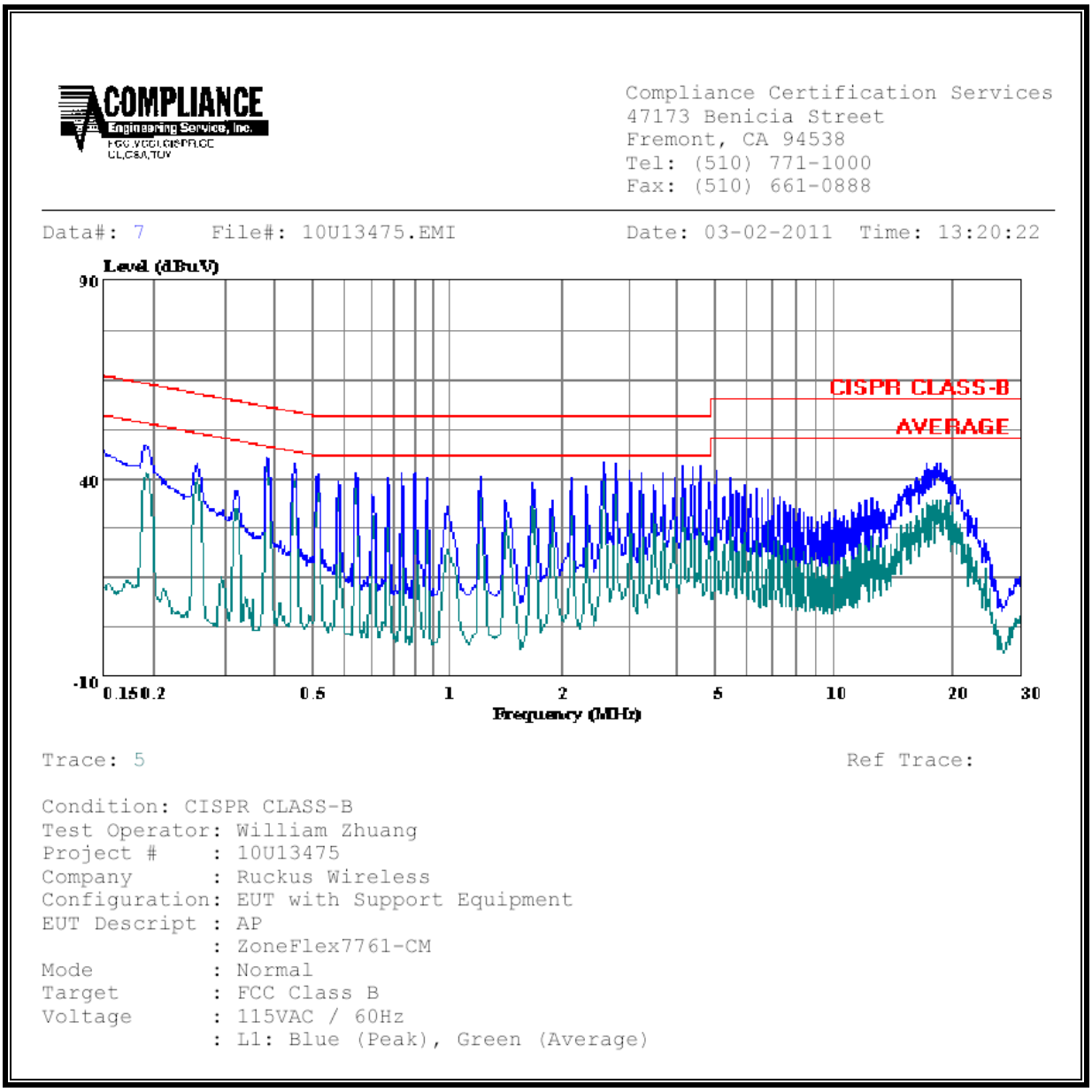
Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	FCC_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.39	45.56	--	43.98	0.00	58.17	48.17	-12.61	-4.19	L1
0.45	43.56	--	39.16	0.00	56.84	46.84	-13.28	-7.68	L1
2.69	44.19	--	39.28	0.00	56.00	46.00	-11.81	-6.72	L1
0.39	44.38	--	42.91	0.00	58.17	48.17	-13.79	-5.26	L2
0.45	43.54	--	35.69	0.00	56.89	46.89	-13.35	-11.20	L2
2.69	43.37	--	36.36	0.00	56.00	46.00	-12.63	-9.64	L2
6 Worst Data									

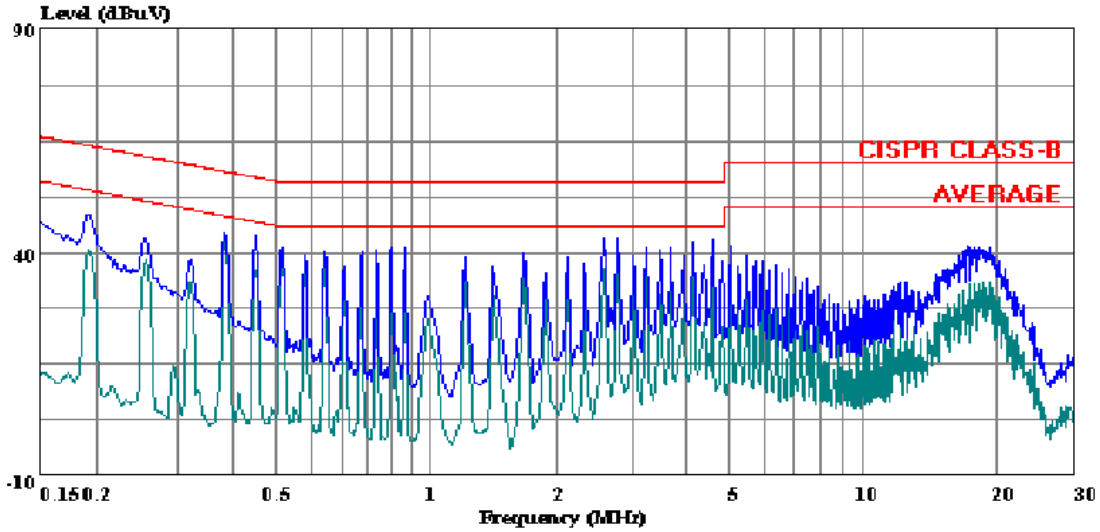
LINE 1 RESULTS



LINE 2 RESULTS

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 14 File#: 10U13475.EMI Date: 03-02-2011 Time: 13:27:41



Trace: 12 Ref Trace:

Condition: CISPR CLASS-B
Test Operator: William Zhuang
Project # : 10U13475
Company : Ruckus Wireless
Configuration: EUT with Support Equipment
EUT Descript : AP
: ZoneFlex7761-CM
Mode : Normal
Target : FCC Class B
Voltage : 115VAC / 60Hz
: L2: Blue (Peak), Green (Average)

10. DYNAMIC FREQUENCY SELECTION

10.1. OVERVIEW

10.1.1. LIMITS

INDUSTRY CANADA

IC RSS-210 is closely harmonized with FCC Part 15 DFS rules. The deviations are as follows:

RSS-210 Issue 7 A9.4 (b) (ii) **Channel Availability Check Time:** …

Additional requirements for the band 5600-5650 MHz: Until further notice, devices subject to this Section shall not be capable of transmitting in the band 5600-5650 MHz, so that Environment Canada weather radars operating in this band are protected.

RSS-210 Issue 7 A9.4 (b) (iv) **Channel closing time:** the maximum channel closing time is 260 ms.

FCC

§15.407 (h) and FCC 06-96 APPENDIX "COMPLIANCE MEASUREMENT PROCEDURES FOR UNLICENSED-NATIONAL INFORMATION INFRASTRUCTURE DEVCIES OPERATING IN THE 5250-5350 MHz AND 5470-5725 MHz BANDS INCORPORATING DYNAMIC FREQUENCY SELECTION".

Table 1: Applicability of DFS requirements prior to use of a channel

Requirement	Operational Mode		
	Master	Client (without radar detection)	Client (with radar detection)
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
Uniform Spreading	Yes	Not required	Not required

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode		
	Master	Client **(without DFS)**	Client **(with DFS)**
DFS Detection Threshold	Yes	Not required	Yes
Channel Closing Transmission Time	Yes	Yes	Yes
Channel Move Time	Yes	Yes	Yes

Table 3: Interference Threshold values, Master or Client incorporating In-Service Monitoring

Maximum Transmit Power	Value (see note)
≥ 200 milliwatt	-64 dBm
< 200 milliwatt	-62 dBm

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna
Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.

Table 4: DFS Response requirement values

Parameter	Value
Non-occupancy period	30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds
Channel Closing Transmission Time	200 milliseconds + approx. 60 milliseconds over remaining 10 second period
The instant that the *Channel Move Time* and the *Channel Closing Transmission Time* begins is as follows: For the Short pulse radar Test Signals this instant is the end of the *Burst*. For the Frequency Hopping radar Test Signal, this instant is the end of the last radar burst generated. For the Long Pulse radar Test Signal this instant is the end of the 12 second period defining the radar transmission. The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate channel changes (an aggregate of approximately 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.	

Table 5 – Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (Microseconds)	PRI (Microseconds)	Pulses	Minimum Percentage of Successful Detection	Minimum Trials
1	1	1428	18	60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

Table 6 – Long Pulse Radar Test Signal

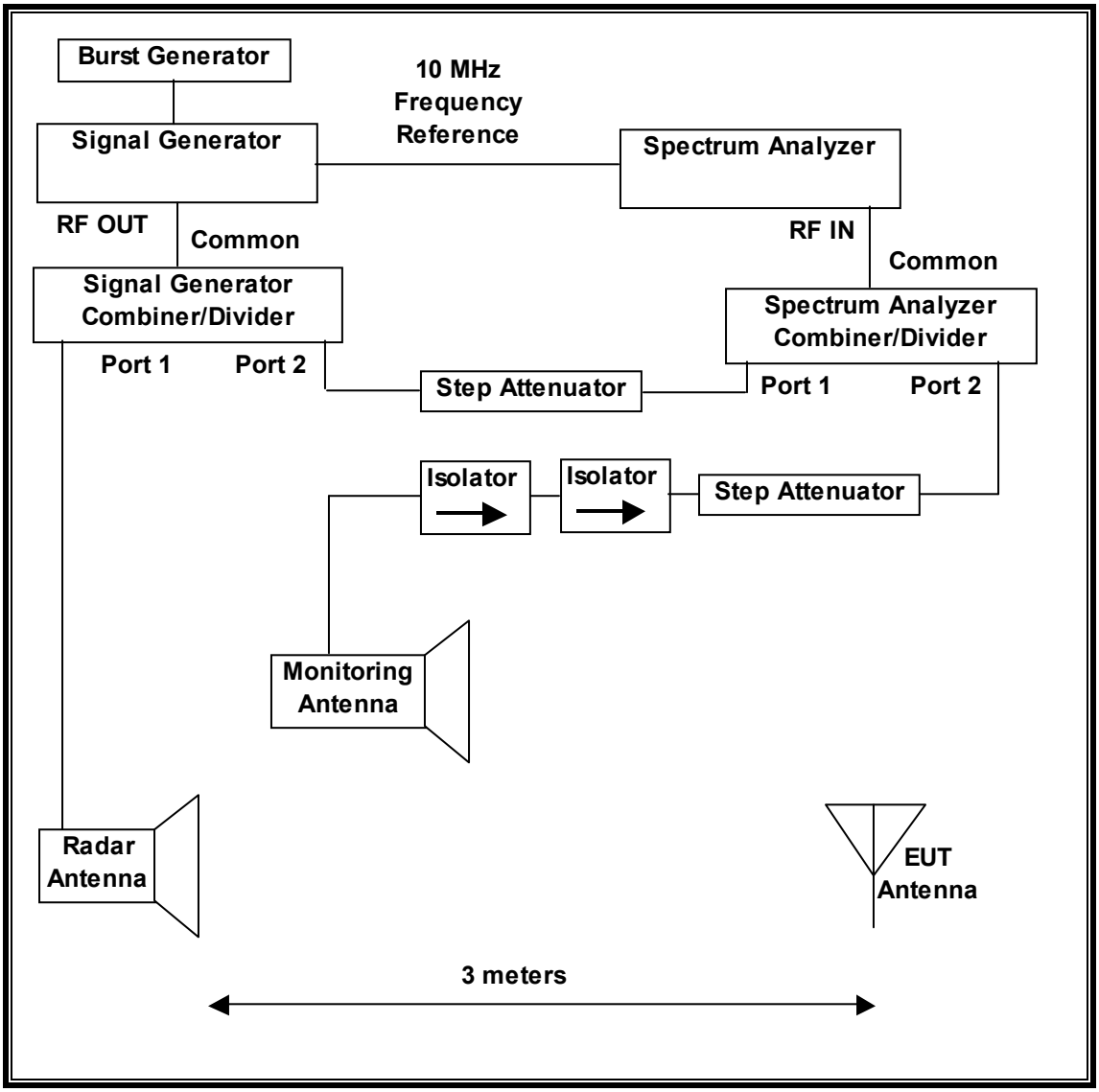
Radar Waveform	Bursts	Pulses per Burst	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Minimum Percentage of Successful Detection	Minimum Trials
5	8-20	1-3	50-100	5-20	1000-2000	80%	30

Table 7 – Frequency Hopping Radar Test Signal

Radar Waveform	Pulse Width (µsec)	PRI (µsec)	Burst Length (ms)	Pulses per Hop	Hopping Rate (kHz)	Minimum Percentage of Successful Detection	Minimum Trials
6	1	333	300	9	.333	70%	30

10.1.2. TEST AND MEASUREMENT SYSTEM

RADIATED METHOD SYSTEM BLOCK DIAGRAM



SYSTEM OVERVIEW

The short pulse and long pulse signal generating system utilizes the NTIA software. The Vector Signal Generator has been validated by the NTIA. The hopping signal generating system utilizes the CCS simulated hopping method and system, which has been validated by the DoD, FCC and NTIA. The software selects waveform parameters from within the bounds of the signal type on a random basis using uniform distribution.

The short pulse types 2, 3 and 4, and the long pulse type 5 parameters are randomized at run-time.

The hopping type 6 pulse parameters are fixed while the hopping sequence is based on the August 2005 NTIA Hopping Frequency List. The initial starting point randomized at run-time and each subsequent starting point is incremented by 475. Each frequency in the 100-length segment is compared to the boundaries of the EUT Detection Bandwidth and the software creates a hopping burst pattern in accordance with Section 7.4.1.3 Method #2 Simulated Freqeuncy Hopping Radar Waveform Generating Subsystem of FCC 06-96 APPENDIX. The frequency of the signal generator is incremented in 1 MHz steps from F_L to F_H for each successive trial. This incremental sequence is repeated as required to generate a minimum of 30 total trials and to maintain a uniform frequency distribution over the entire Detection Bandwidth.

The signal monitoring equipment consists of a spectrum analyzer. The aggregate ON time is calculated by multiplying the number of bins above a threshold during a particular observation period by the dwell time per bin, with the analyzer set to peak detection and max hold.

SYSTEM CALIBRATION

A 50-ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected to a horn antenna via a coaxial cable, with the reference level offset set to (horn antenna gain – coaxial cable loss). The signal generator is set to CW mode. The amplitude of the signal generator is adjusted to yield a level of –64 dBm as measured on the spectrum analyzer.

Without changing any of the instrument settings, the spectrum analyzer is reconnected to the Common port of the Spectrum Analyzer Combiner/Divider. The Reference Level Offset of the spectrum analyzer is adjusted so that the displayed amplitude of the signal is –64 dBm.

The spectrum analyzer displays the level of the signal generator as received at the antenna ports of the Master Device. The interference detection threshold may be varied from the calibrated value of –64 dBm and the spectrum analyzer will still indicate the level as received by the Master Device.

ADJUSTMENT OF DISPLAYED TRAFFIC LEVEL

A link is established between the Master and Slave and the distance between the units is adjusted as needed to provide a suitable received level at the Master and Slave devices. The video test file is streamed to generate WLAN traffic. The monitoring antenna is adjusted so that the WLAN traffic level, as displayed on the spectrum analyzer, is at lower amplitude than the radar detection threshold.

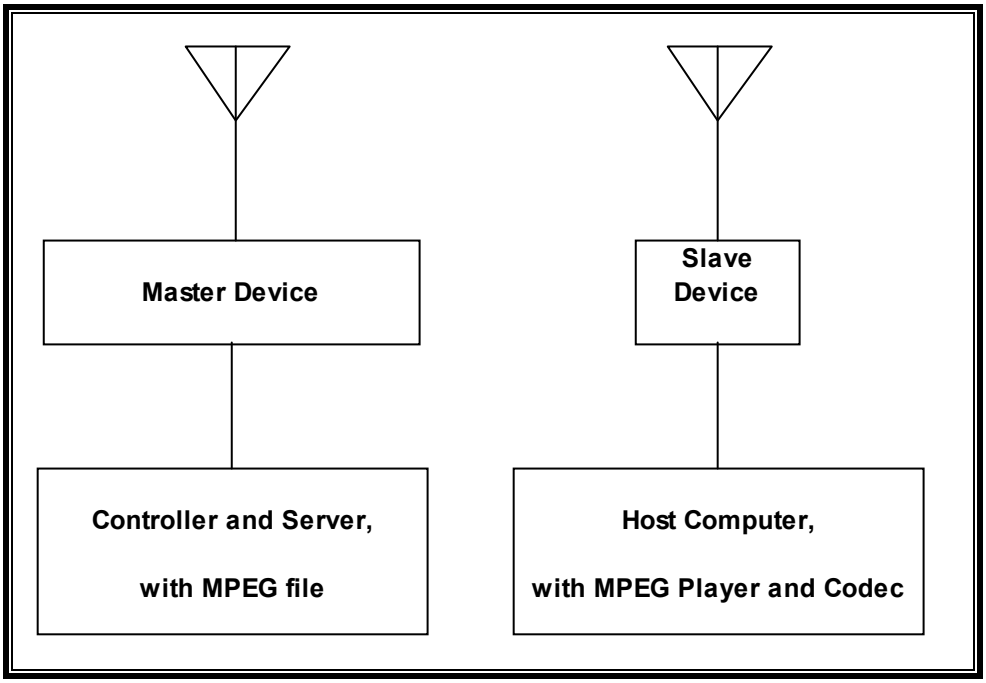
TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the DFS tests documented in this report:

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**Cal Due**
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C00169	04/05/11
Vector Signal Generator, 20GHz	Agilent / HP	E8267C	C01066	02/12/12
Arbitrary Waveform Generator	Agilent / HP	33220A	C01146	05/13/12

10.1.3. SETUP OF EUT

RADIATED METHOD EUT TEST SETUP



SUPPORT EQUIPMENT

The following test and measurement equipment was utilized for the DFS tests documented in this report:

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
AC Adapter (EUT)	Mitra	MPC-1200201	101	DoC
Notebook PC (Host)	IBM / Lenovo	Type 2668-CTO	L3-WGCBK 06/12	DoC
AC Adapter (Host PC)	P.T. Sanken	02K665	11S02K665Z1Z0ZX0992UG	DoC
Notebook PC (Console)	IBM / Lenovo	Type 1859-BAU	L3-HP840 06/08	DoC
AC Adapter (Console PC)	IBM / Lenovo	08K8212	11S08K8212Z1Z7UB4BX0X9	DoC
802.11a/n Multi-Media Adapter (Slave Radio)	Ruckus Wireless	VF7111	02292	S9GVF7XX1
AC Adapter (Slave Device)	Ruckus Wireless	DSA-12R-12AUS 120120	001	DoC

10.1.4. DESCRIPTION OF EUT

The EUT operates over the 5250-5350 MHz and 5470-5725 MHz ranges.

The EUT is a Master Device.

The highest power level within these bands is 29.14 dBm EIRP in the 5250-5350 MHz band and 27.29 dBm EIRP in the 5470-5725 MHz band.

The only antenna assembly utilized with the EUT has a gain of 5.5 dBi.

Three identical antennas are utilized to meet the diversity and MIMO operational requirements.

The rated output power of the Master unit is > 23dBm (EIRP). Therefore the required interference threshold level is –64 dBm. After correction for procedural adjustments, the required radiated threshold at the antenna port is –64 + 1 = -63 dBm.

The calibrated radiated DFS Detection Threshold level is set to –64 dBm. The tested level is lower than the required level hence it provides margin to the limit.

The EUT uses three transmitter/receiver chains, each connected to an antenna to perform radiated tests.

The Slave device associated with the EUT during these tests does not have radar detection capability.

WLAN traffic is generated by streaming the video file TestFile.mp2 “6 ½ Magic Hours” from the Master to the Slave in full motion video mode using VLC version 1.1.4 media player package.

TPC is not required since the maximum EIRP is less than 500 mW (27 dBm), however TPC is implemented.

The EUT utilizes the 802.11a/n architecture. Two nominal channel bandwidths are implemented: 20 MHz and 40 MHz.

The software installed in the access point is revision 9.0.0.153.

MANUFACTURER’S STATEMENT REGARDING UNIFORM CHANNEL SPREADING

This statement is in a separate document.

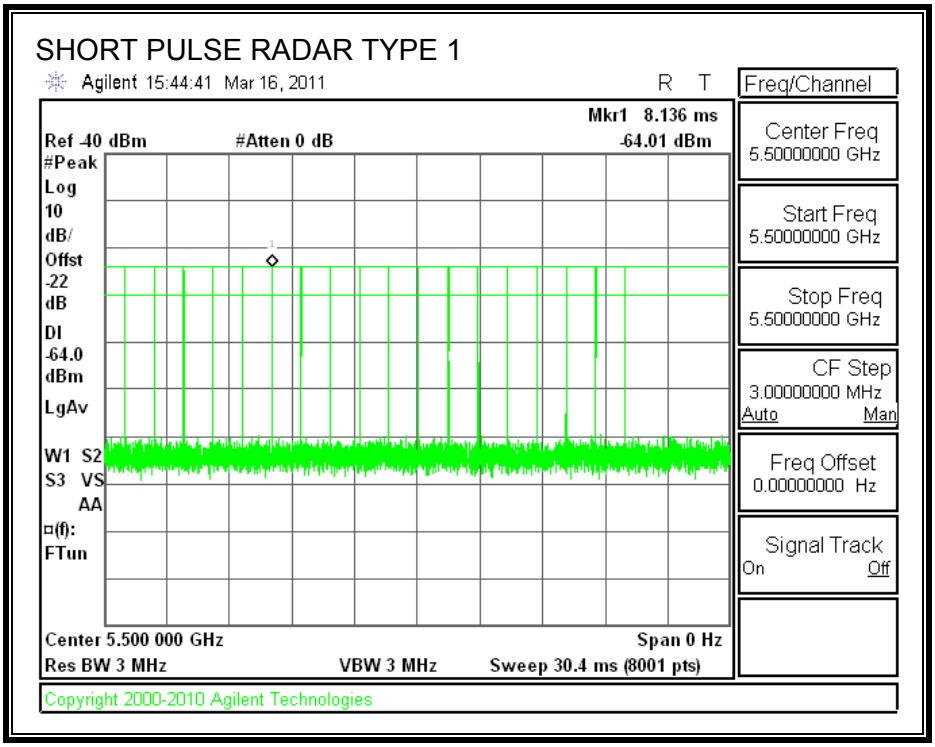
10.2. RESULTS FOR 20 MHz BANDWIDTH

10.2.1. TEST CHANNEL

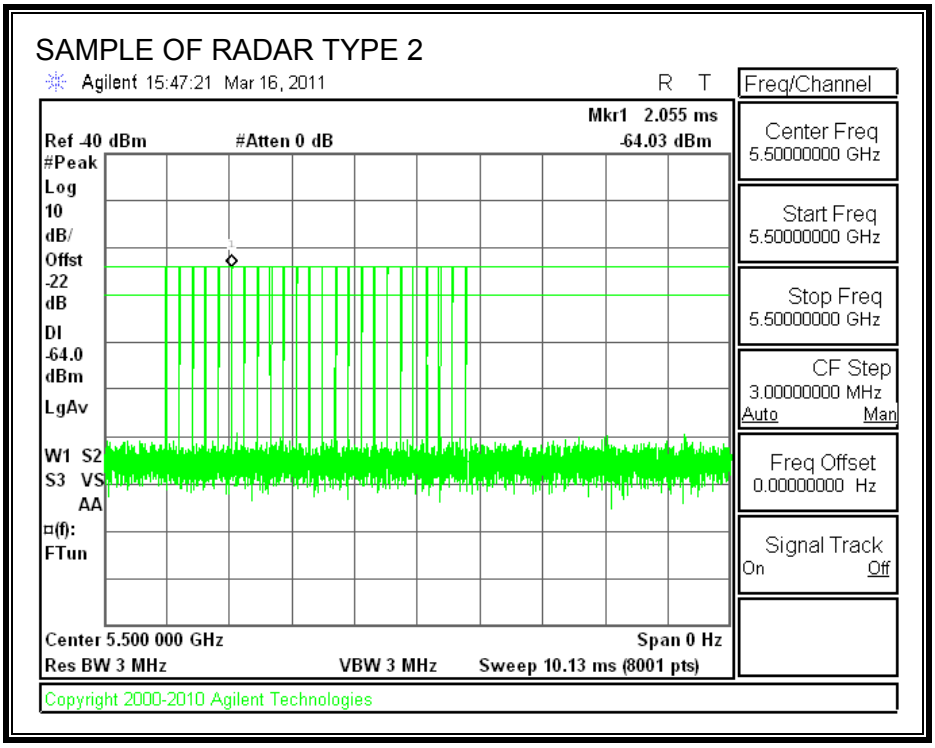
All tests were performed at a channel center frequency of 5500 MHz.

10.2.2. RADAR WAVEFORMS AND TRAFFIC

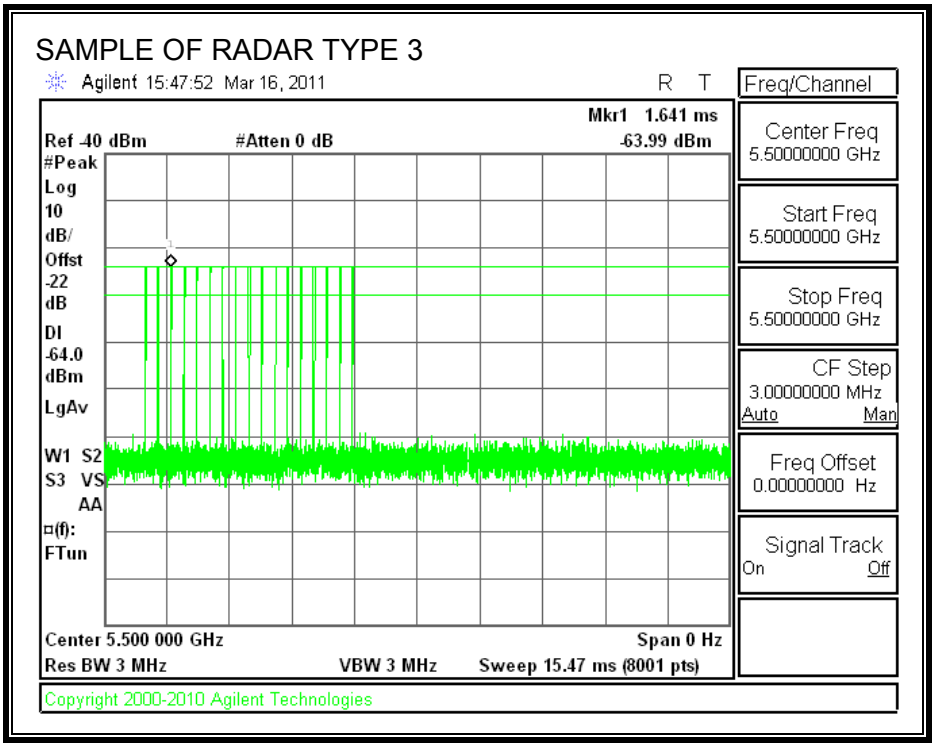
RADAR WAVEFORMS



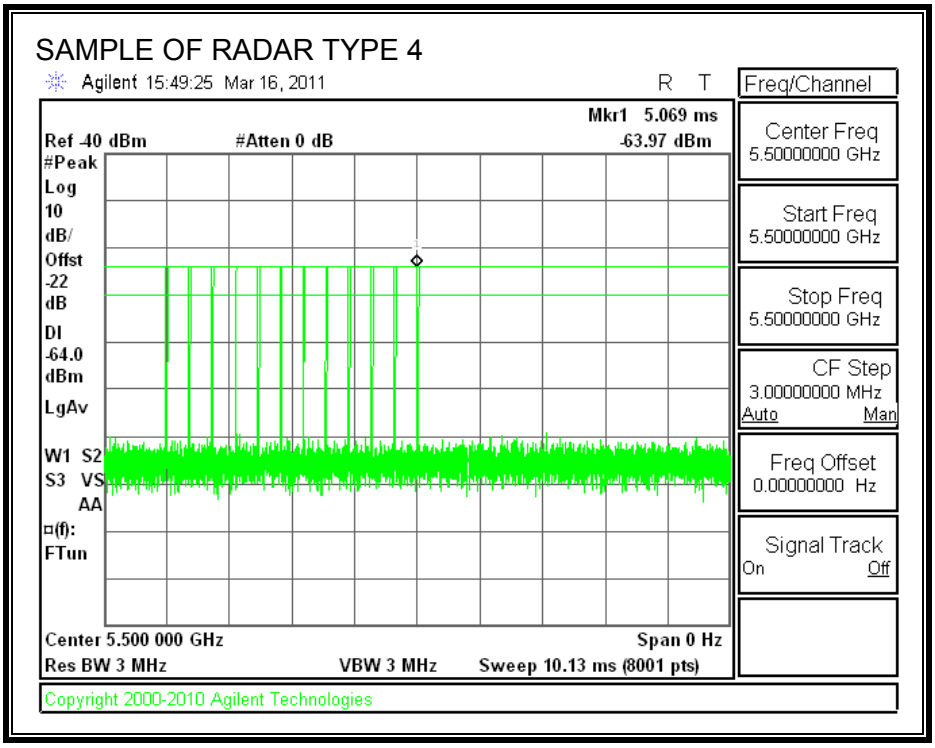
SAMPLE OF RADAR TYPE 2



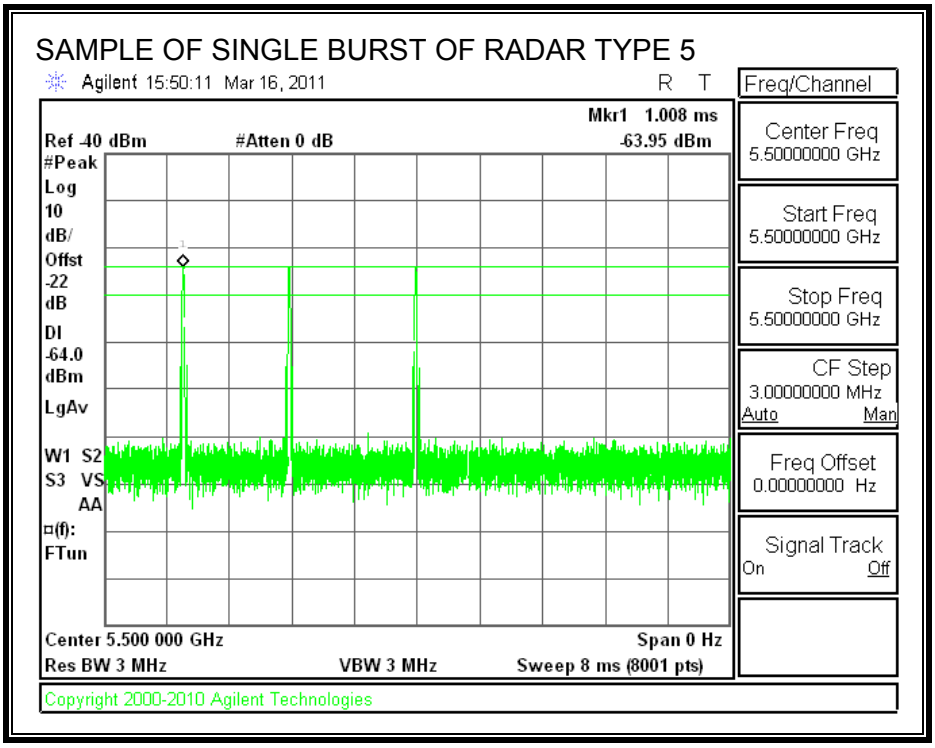
SAMPLE OF RADAR TYPE 3

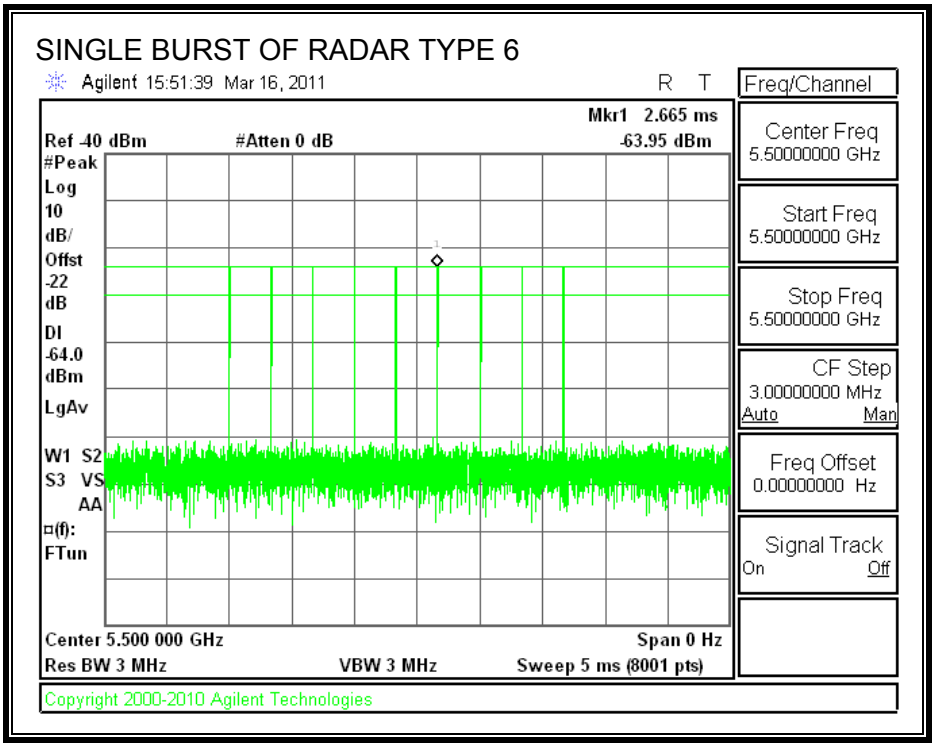


SAMPLE OF RADAR TYPE 4

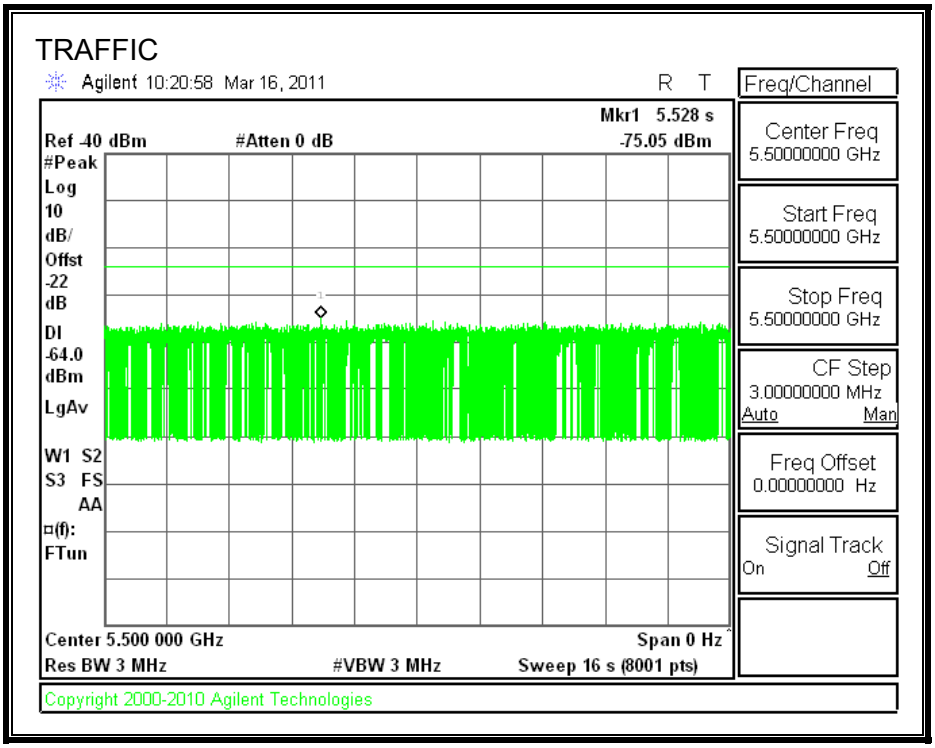


SAMPLE OF SINGLE BURST OF RADAR TYPE 5





TRAFFIC



10.2.3. CHANNEL AVAILABILITY CHECK TIME

PROCEDURE TO DETERMINE INITIAL POWER-UP CYCLE TIME

A link was established on channel then the EUT was rebooted. The time from the cessation of traffic to the re-initialization of traffic was measured as the time required for the EUT to complete the total power-up cycle. The time to complete the initial power-up period is 60 seconds less than this total power-up time.

PROCEDURE FOR TIMING OF RADAR BURST

With a link established on channel, the EUT was rebooted. A radar signal was triggered within 0 to 6 seconds after the initial power-up period, and transmissions on the channel were monitored on the spectrum analyzer.

The Non-Occupancy list was cleared. With a link established on channel, the EUT was rebooted. A radar signal was triggered within 54 to 60 seconds after the initial power-up period, and transmissions on the channel were monitored on the spectrum analyzer.

QUANTITATIVE RESULTS

No Radar Triggered

Timing of Reboot (sec)	Timing of Start of Traffic (sec)	Total Power-up Cycle Time (sec)	Initial Power-up Cycle Time (sec)
29.59	122.0	92.4	32.4

Radar Near Beginning of CAC

Timing of Reboot (sec)	Timing of Radar Burst (sec)	Radar Relative to Reboot (sec)	Radar Relative to Start of CAC (sec)
29.81	62.9	33.1	0.7

Radar Near End of CAC

Timing of Reboot (sec)	Timing of Radar Burst (sec)	Radar Relative to Reboot (sec)	Radar Relative to Start of CAC (sec)
30.15	122.1	92.0	59.5

QUALITATIVE RESULTS

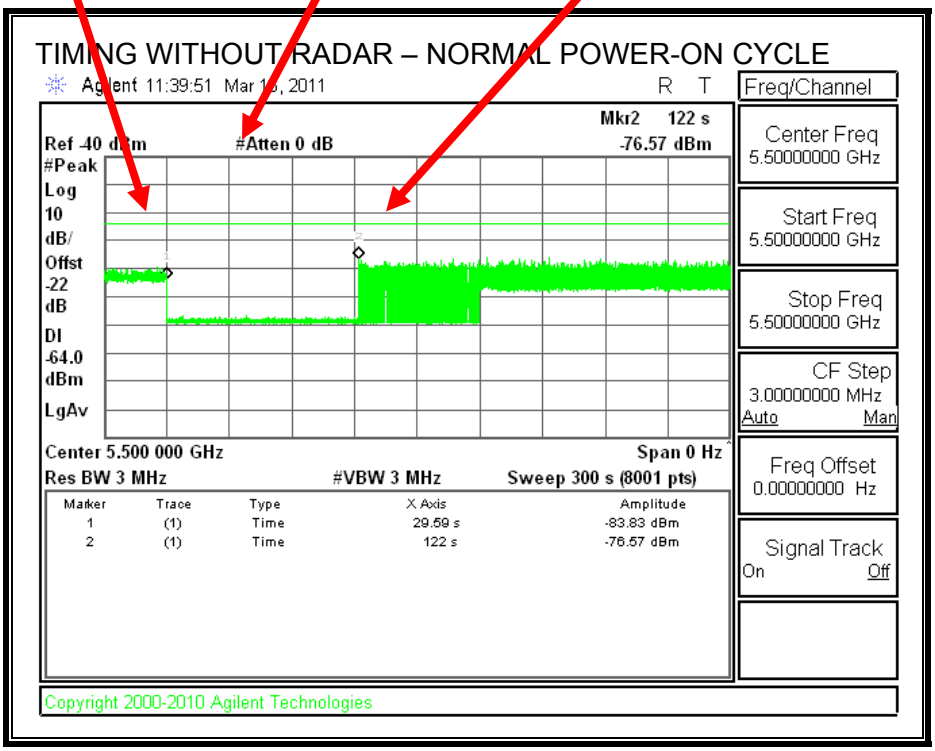
Timing of Radar Burst	Display on Control Computer	Spectrum Analyzer Display
No Radar Triggered	EUT marks Channel as active	Transmissions begin on channel after completion of the initial power-up cycle and the CAC
Within 0 to 6 second window	EUT indicates radar detected	No transmissions on channel
Within 54 to 60 second window	EUT indicates radar detected	No transmissions on channel

TIMING WITHOUT RADAR DURING CAC

AP is rebooted
Traffic ceases
Start of Initial Power-up cycle

End of Initial Power-up cycle
Start of CAC

End of CAC
Traffic is Initiated



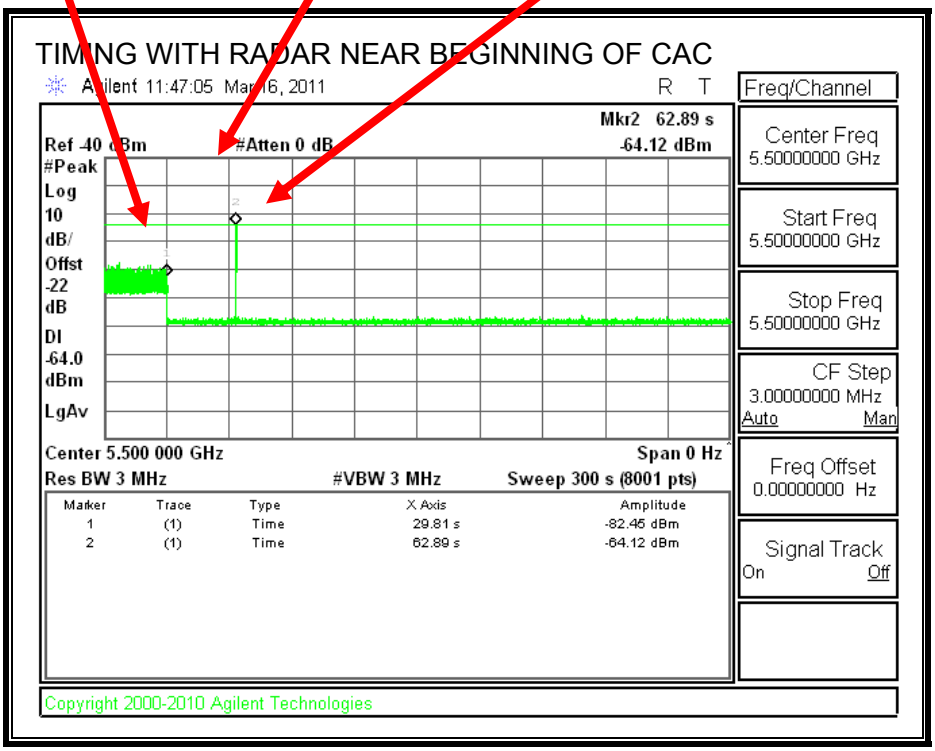
Transmissions begin on channel after completion of the initial power-up cycle and the CAC.

TIMING WITH RADAR NEAR BEGINNING OF CAC

AP is rebooted
Traffic ceases
Start of Initial Power-up cycle

End of Initial Power-up cycle
Start of CAC

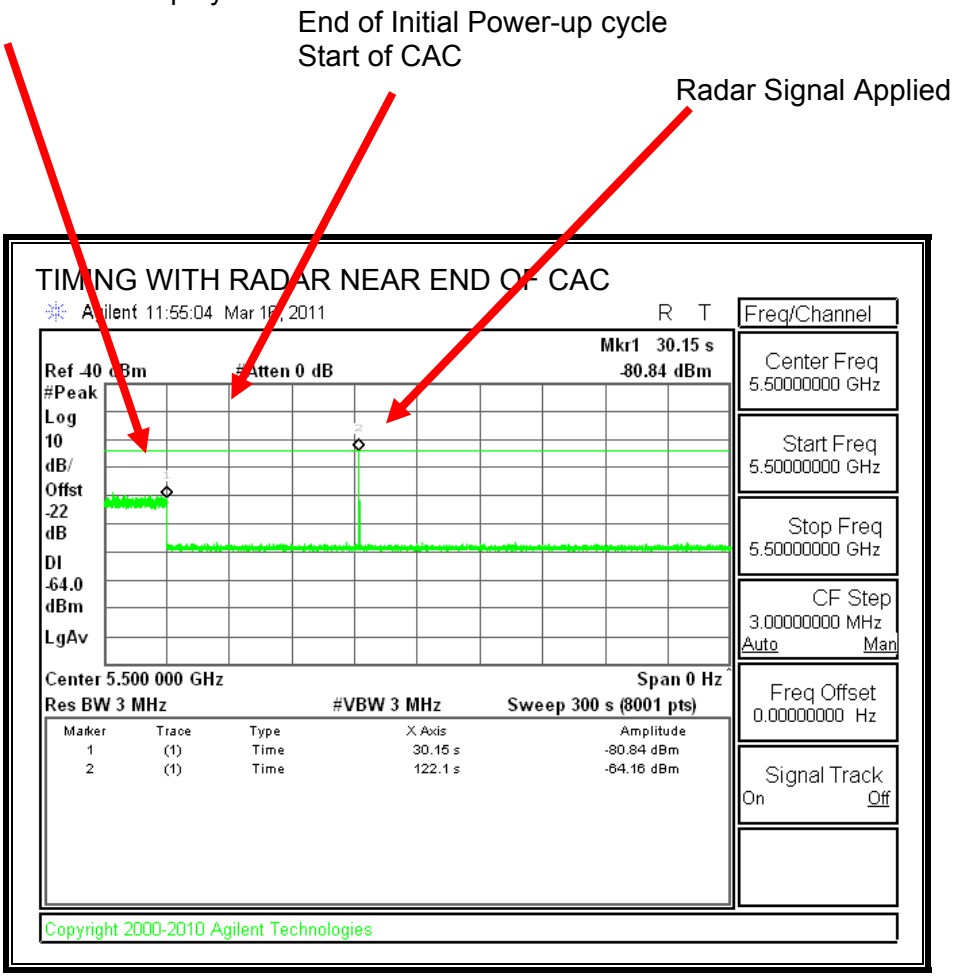
Radar Signal Applied



No EUT transmissions were observed after the radar signal.

TIMING WITH RADAR NEAR END OF CAC

AP is rebooted
Traffic ceases
Start of Initial Power-up cycle



No EUT transmissions were observed after the radar signal.

10.2.4. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

10.2.5. MOVE AND CLOSING TIME

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =
(Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the FCC aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

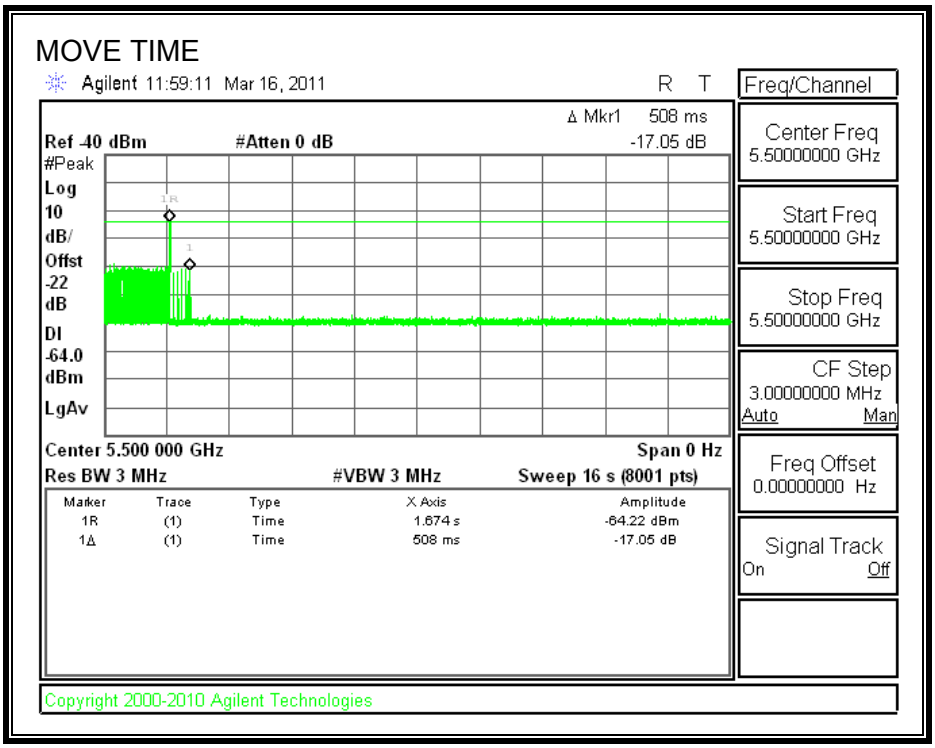
The observation period over which the IC aggregate time is calculated begins at (Reference Marker) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

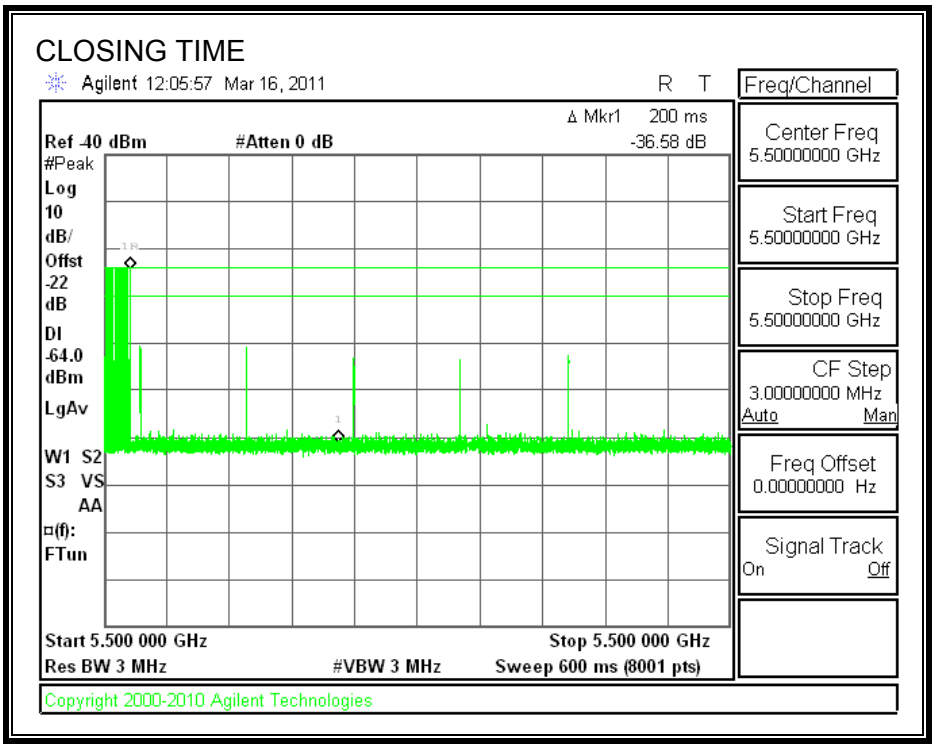
Agency	Channel Move Time (sec)	Limit (sec)
FCC / IC	0.508	10

Agency	Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
FCC	10.0	60
IC	14.0	260

MOVE TIME

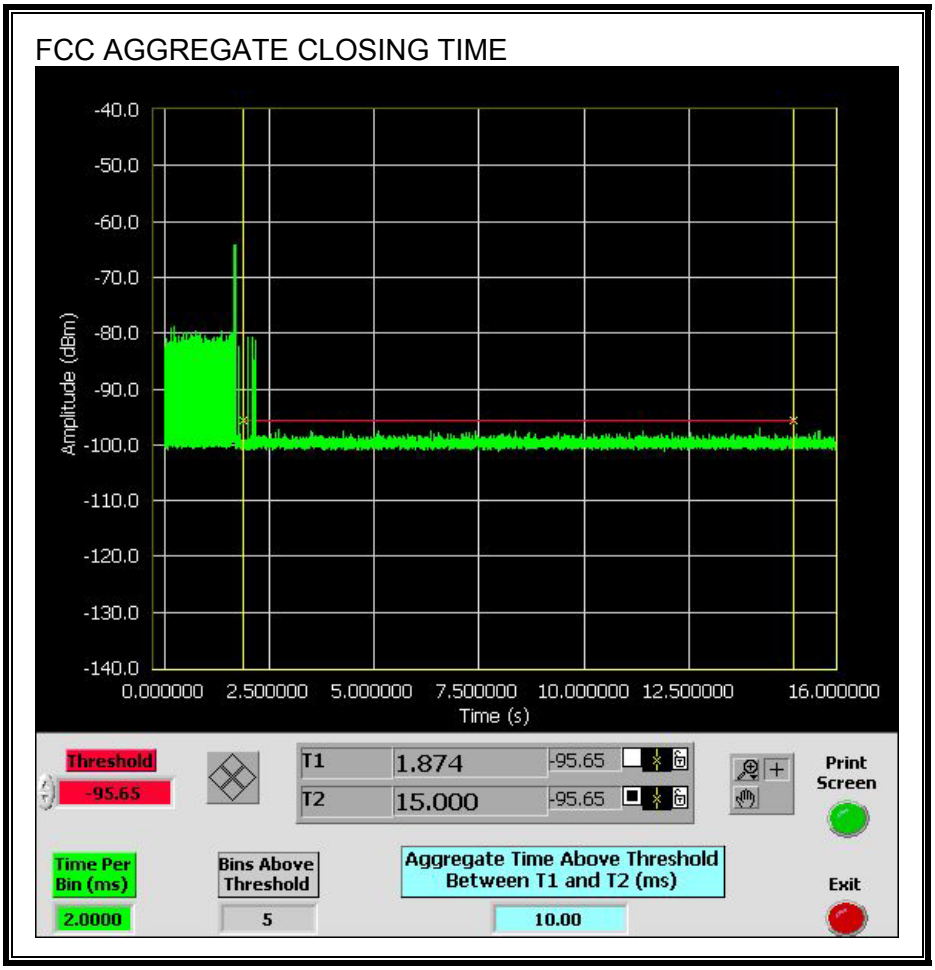


CHANNEL CLOSING TIME

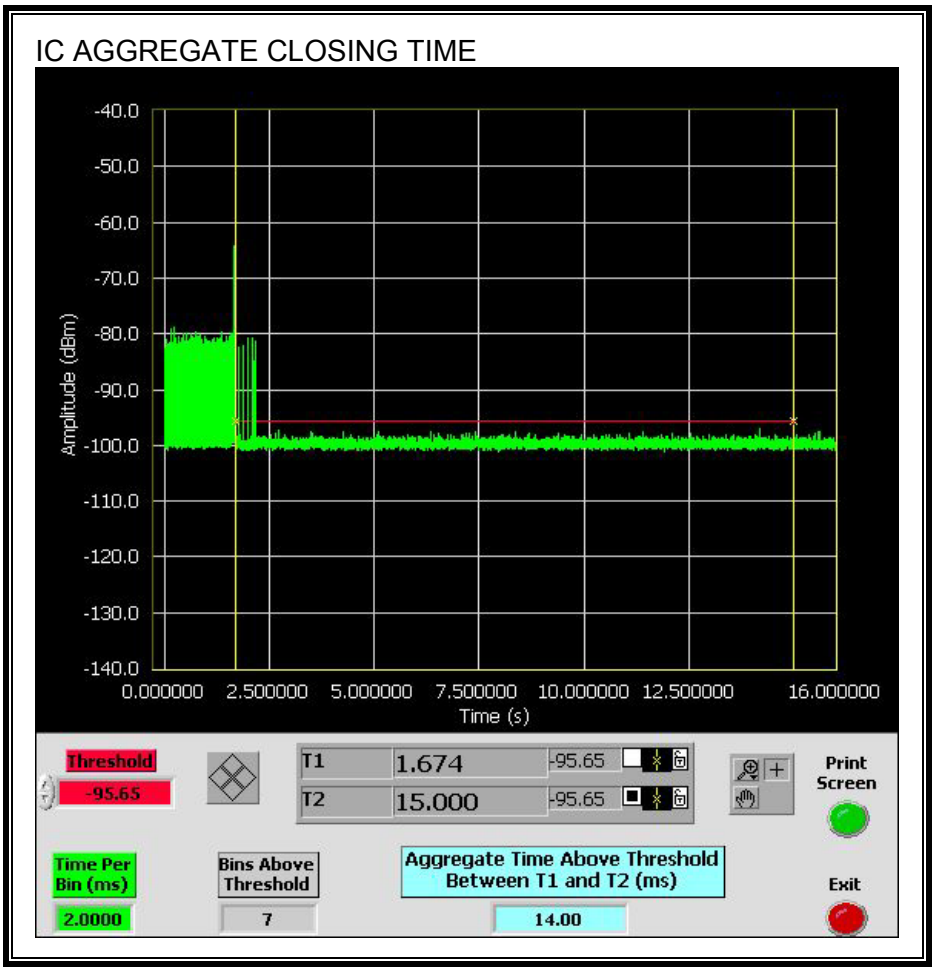


AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

Only intermittent transmissions are observed during the FCC aggregate monitoring period.

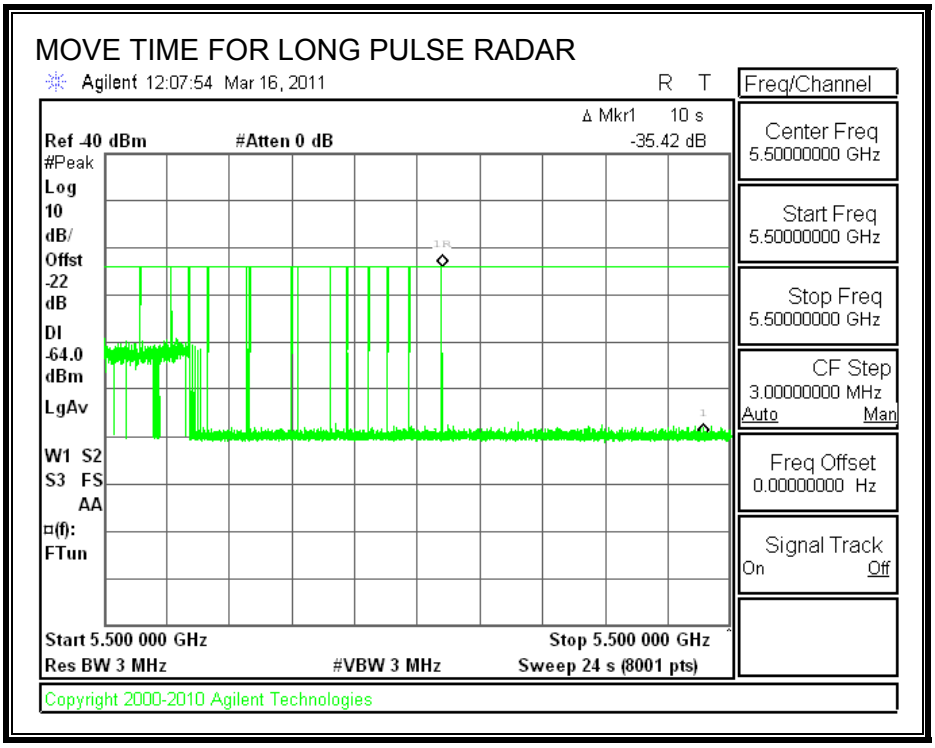


Only intermittent transmissions are observed during the IC aggregate monitoring period.



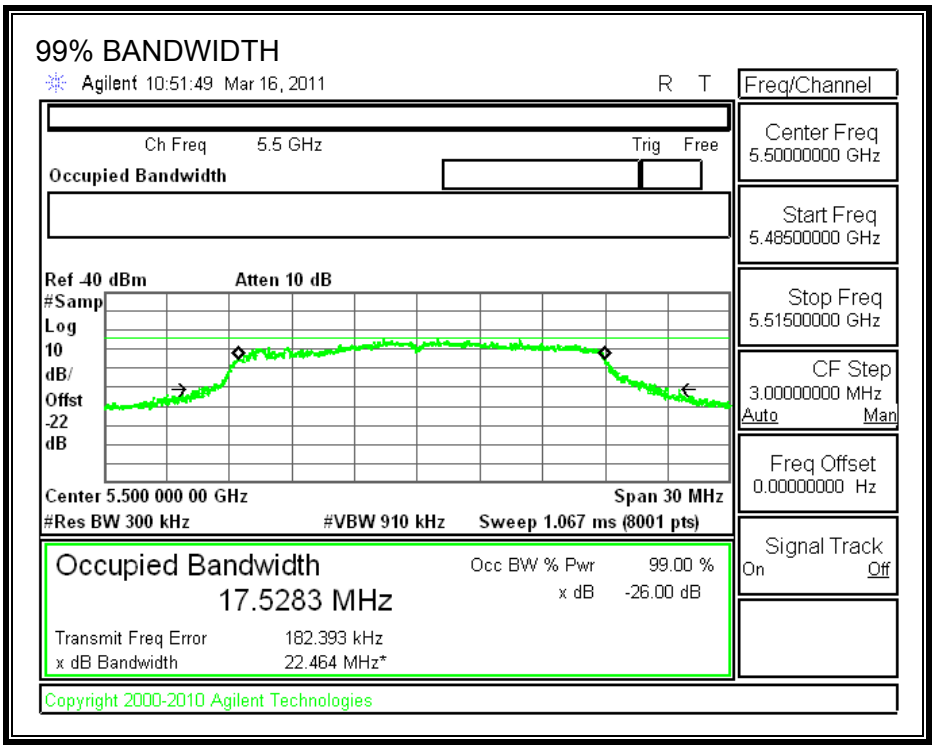
LONG PULSE CHANNEL MOVE TIME

The traffic ceases prior to 10 seconds after the end of the radar waveform.



10.2.6. DETECTION BANDWIDTH

REFERENCE PLOT OF 99% POWER BANDWIDTH



RESULTS

FL (MHz)	FH (MHz)	Detection Bandwidth (MHz)	99% Power Bandwidth (MHz)	Ratio of Detection BW to 99% Power BW (%)	Minimum Limit (%)
5492	5508	16	17.528	91.3	80

DETECTION BANDWIDTH PROBABILITY

DETECTION BANDWIDTH PROBABILITY RESULTS

Detection Bandwidth Test Results				
FCC Type 1 Waveform: 1 us Pulse Width, 1428 us PRI, 18 Pulses per Burst				
Frequency (MHz)	Number of Trials	Number Detected	Detection (%)	Mark
5492	10	10	100	FL
5493	10	10	100	
5494	10	10	100	
5495	10	10	100	
5496	10	10	100	
5497	10	10	100	
5498	10	10	100	
5499	10	10	100	
5500	10	10	100	
5501	10	10	100	
5502	10	10	100	
5503	10	10	100	
5504	10	10	100	
5505	10	10	100	
5506	10	10	100	
5507	10	10	100	
5508	10	10	100	FH

10.2.7. IN-SERVICE MONITORING

RESULTS

FCC Radar Test Summary				
Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail
FCC Short Pulse Type 1	30	100.00	60	Pass
FCC Short Pulse Type 2	30	100.00	60	Pass
FCC Short Pulse Type 3	30	100.00	60	Pass
FCC Short Pulse Type 4	30	100.00	60	Pass
Aggregate		100.00	80	Pass
FCC Long Pulse Type 5	30	100.00	80	Pass
FCC Hopping Type 6	34	100.00	70	Pass

TYPE 1 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 1 1 us Pulse Width, 1428 us PRI, 18 Pulses per Burst	
Trial	**Successful Detection (Yes/No)**
1	Yes
2	Yes
3	Yes
4	Yes
5	Yes
6	Yes
7	Yes
8	Yes
9	Yes
10	Yes
11	Yes
12	Yes
13	Yes
14	Yes
15	Yes
16	Yes
17	Yes
18	Yes
19	Yes
20	Yes
21	Yes
22	Yes
23	Yes
24	Yes
25	Yes
26	Yes
27	Yes
28	Yes
29	Yes
30	Yes

TYPE 2 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 2				
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Successful Detection (Yes/No)
2001	3.7	211.00	24	Yes
2002	3.1	224.00	29	Yes
2003	2.2	189.00	24	Yes
2004	1.9	199.00	27	Yes
2005	1.2	194.00	27	Yes
2006	4.4	190.00	26	Yes
2007	3.3	156.00	29	Yes
2008	3.7	230.00	24	Yes
2009	3.1	213.00	27	Yes
2010	4.9	156.00	29	Yes
2011	3.2	155.00	24	Yes
2012	2.5	172.00	29	Yes
2013	3.5	196.00	28	Yes
2014	4	162.00	27	Yes
2015	1.6	163.00	24	Yes
2016	4.1	182.00	28	Yes
2017	3.8	158.00	28	Yes
2018	1.2	199.00	27	Yes
2019	2.6	169.00	27	Yes
2020	4.7	160.00	29	Yes
2021	2.3	228.00	27	Yes
2022	3.2	192.00	26	Yes
2023	3.6	193.00	25	Yes
2024	3.1	210.00	28	Yes
2025	4.3	190.00	28	Yes
2026	3.3	196.00	24	Yes
2027	4.5	167.00	27	Yes
2028	1.9	216.00	29	Yes
2029	4.5	172.00	29	Yes
2030	3.8	208.00	25	Yes

TYPE 3 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 3				
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Successful Detection (Yes/No)
3001	5.2	321.00	17	Yes
3002	8.1	396.00	17	Yes
3003	5.4	347.00	16	Yes
3004	7.7	329.00	17	Yes
3005	5.9	495.00	18	Yes
3006	5	460.00	17	Yes
3007	9.7	496.00	18	Yes
3008	6.4	255.00	17	Yes
3009	9.3	389.00	16	Yes
3010	8.3	297.00	16	Yes
3011	6	412.00	16	Yes
3012	5.8	377.00	16	Yes
3013	9	351.00	16	Yes
3014	8.3	415.00	17	Yes
3015	5.8	368.00	16	Yes
3016	7.3	437.00	17	Yes
3017	6.4	334.00	17	Yes
3018	5.4	468.00	18	Yes
3019	5.9	272.00	18	Yes
3020	6	434.00	17	Yes
3021	6	459.00	17	Yes
3022	7	341.00	16	Yes
3023	6.7	492.00	16	Yes
3024	9.2	403.00	16	Yes
3025	9.7	451.00	17	Yes
3026	5	264.00	17	Yes
3027	7	471.00	16	Yes
3028	9.1	458.00	17	Yes
3029	7.7	447	16	Yes
3030	8.5	357	18	Yes

TYPE 4 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 4				
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Successful Detection (Yes/No)
4001	16	370.00	12	Yes
4002	13.4	277.00	12	Yes
4003	16.3	344.00	12	Yes
4004	10.4	324.00	12	Yes
4005	15.1	338.00	15	Yes
4006	10.1	365.00	16	Yes
4007	10	430.00	16	Yes
4008	14.9	325.00	15	Yes
4009	10.4	260.00	16	Yes
4010	12.5	495.00	14	Yes
4011	15.1	424.00	15	Yes
4012	18.1	263.00	16	Yes
4013	15.4	499.00	15	Yes
4014	14.1	480.00	15	Yes
4015	18.2	371.00	12	Yes
4016	20	347.00	16	Yes
4017	15.6	350.00	15	Yes
4018	11.9	323.00	12	Yes
4019	19.8	340.00	16	Yes
4020	18.7	495.00	15	Yes
4021	15.8	348.00	12	Yes
4022	11.7	451.00	13	Yes
4023	13.4	376.00	15	Yes
4024	12.9	326.00	14	Yes
4025	13.8	482.00	15	Yes
4026	18.3	344.00	15	Yes
4027	10	351.00	15	Yes
4028	15.1	393.00	14	Yes
4029	12.8	303.00	15	Yes
4030	17.1	262.00	13	Yes

TYPE 5 DETECTION PROBABILITY

Data Sheet for FCC Long Pulse Radar Type 5	
Trial	Successful Detection (Yes/No)
1	Yes
2	Yes
3	Yes
4	Yes
5	Yes
6	Yes
7	Yes
8	Yes
9	Yes
10	Yes
11	Yes
12	Yes
13	Yes
14	Yes
15	Yes
16	Yes
17	Yes
18	Yes
19	Yes
20	Yes
21	Yes
22	Yes
23	Yes
24	Yes
25	Yes
26	Yes
27	Yes
28	Yes
29	Yes
30	Yes

Note: The Type 5 randomized parameters are shown in a separate document.

TYPE 6 DETECTION PROBABILITY

Data Sheet for FCC Hopping Radar Type 6				
1 us Pulse Width, 333 us PRI, 9 Pulses per Burst, 1 Burst per Hop				
NTIA August 2005 Hopping Sequence				
Trial	Starting Index Within Sequence	Signal Generator Frequency (MHz)	Hops within Detection BW	Successful Detection (Yes/No)
1	268	5492	6	Yes
2	743	5493	3	Yes
3	1218	5494	2	Yes
4	1693	5495	5	Yes
5	2168	5496	1	Yes
6	2643	5497	5	Yes
7	3118	5498	4	Yes
8	3593	5499	4	Yes
9	4068	5500	2	Yes
10	4543	5501	4	Yes
11	5018	5502	3	Yes
12	5493	5503	4	Yes
13	5968	5504	2	Yes
14	6443	5505	4	Yes
15	6918	5506	4	Yes
16	7393	5507	2	Yes
17	7868	5508	3	Yes
18	8343	5492	1	Yes
19	8818	5493	2	Yes
20	9293	5494	2	Yes
21	9768	5495	2	Yes
22	10243	5496	2	Yes
23	10718	5497	5	Yes
24	11193	5498	2	Yes
25	11668	5499	3	Yes
26	12143	5500	3	Yes
27	12618	5501	2	Yes
28	13093	5502	5	Yes
29	13568	5503	3	Yes
30	14043	5504	5	Yes
31	14518	5505	5	Yes
32	14993	5506	2	Yes
33	15468	5507	3	Yes
34	15943	5508	6	Yes

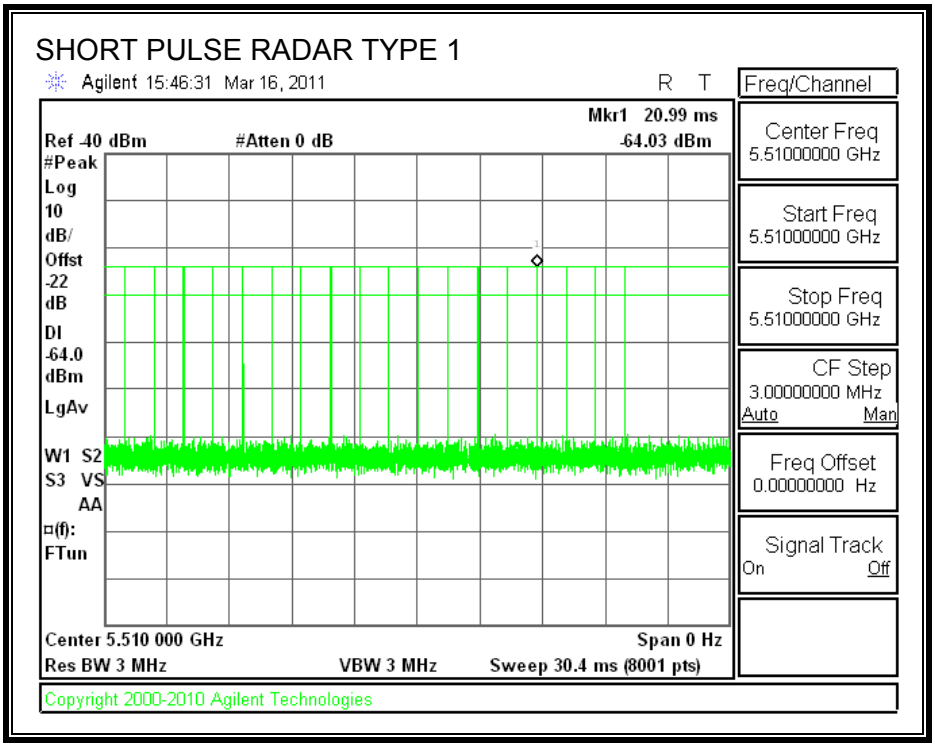
10.3. RESULTS FOR 40 MHz BANDWIDTH

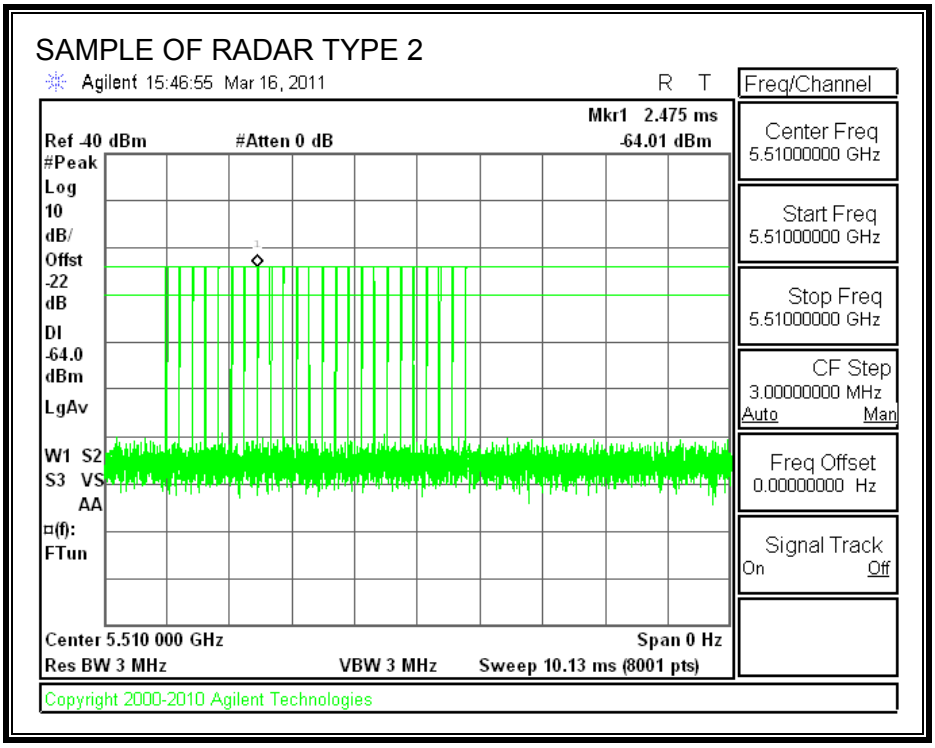
10.3.1. TEST CHANNEL

All tests were performed at a channel center frequency of 5510 MHz.

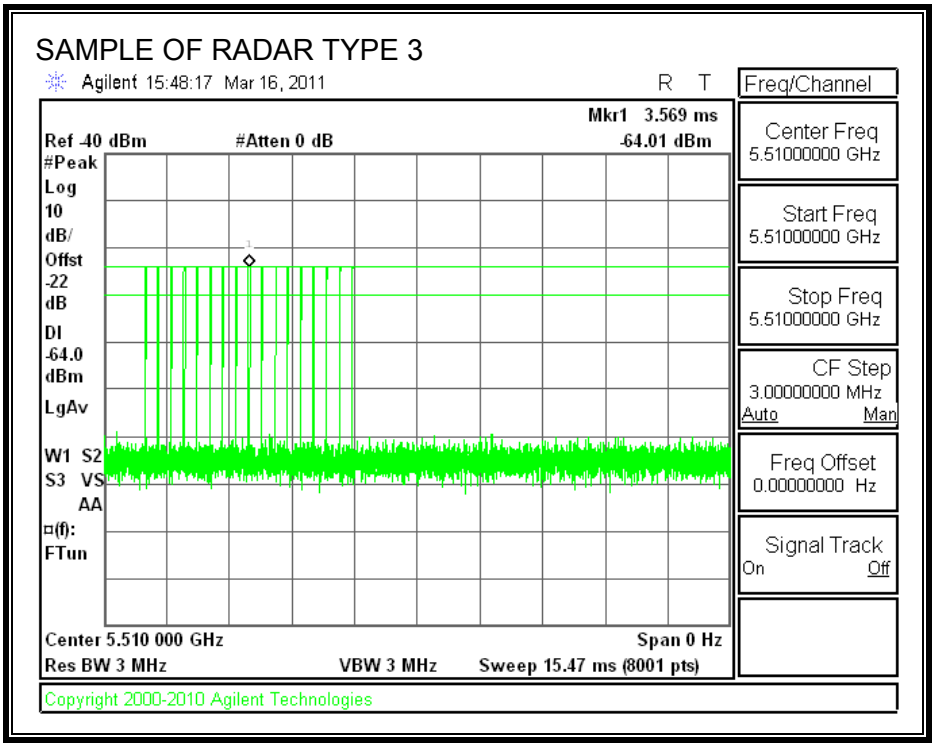
10.3.2. RADAR WAVEFORMS AND TRAFFIC

RADAR WAVEFORMS

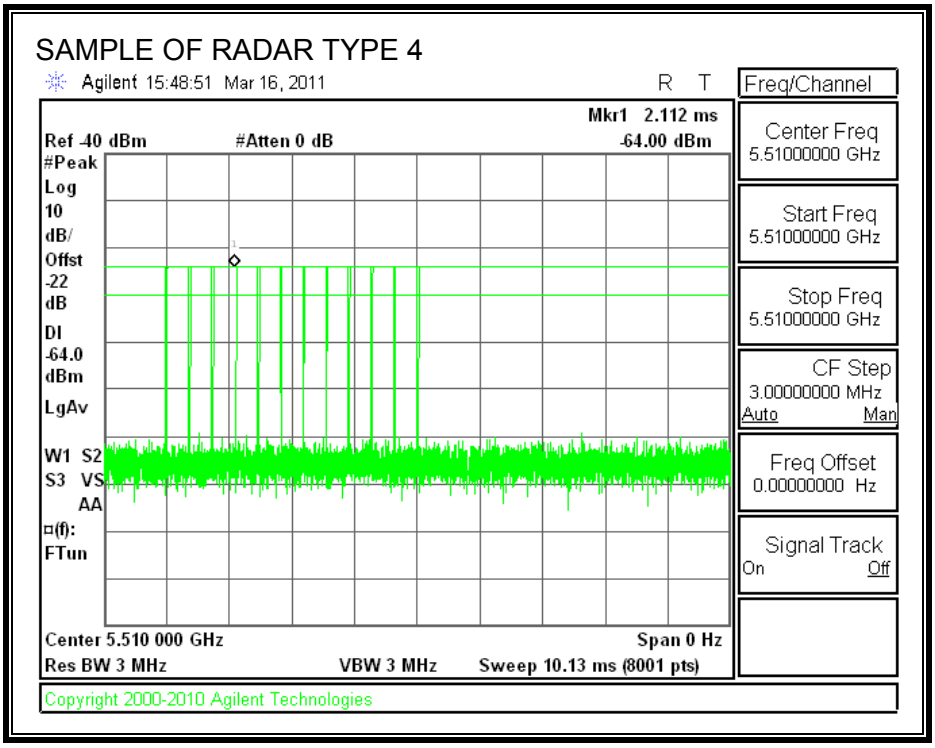


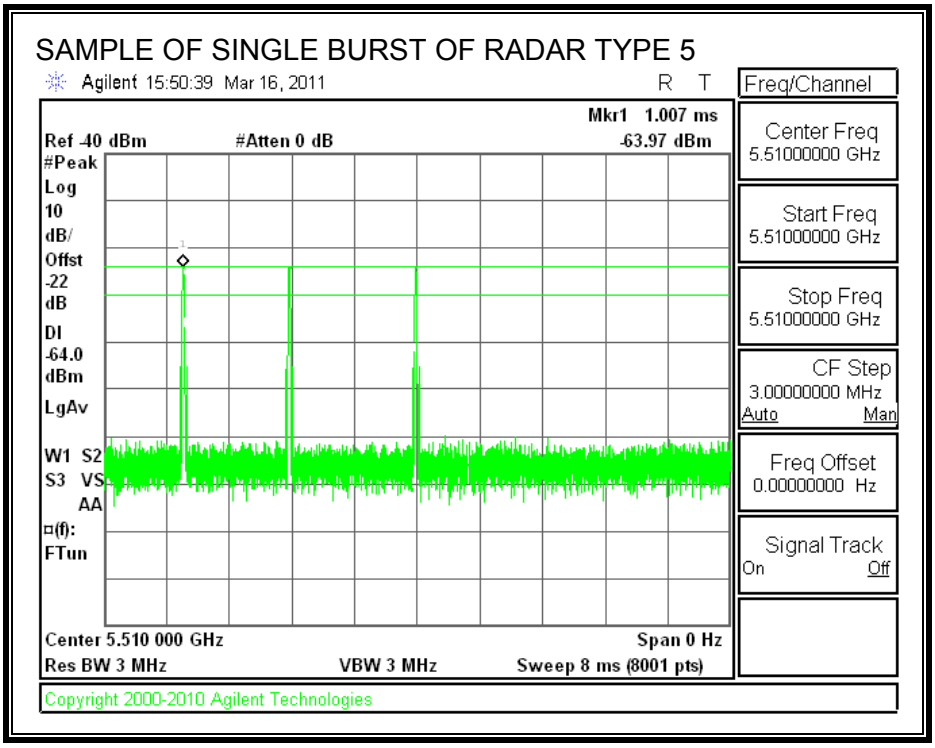


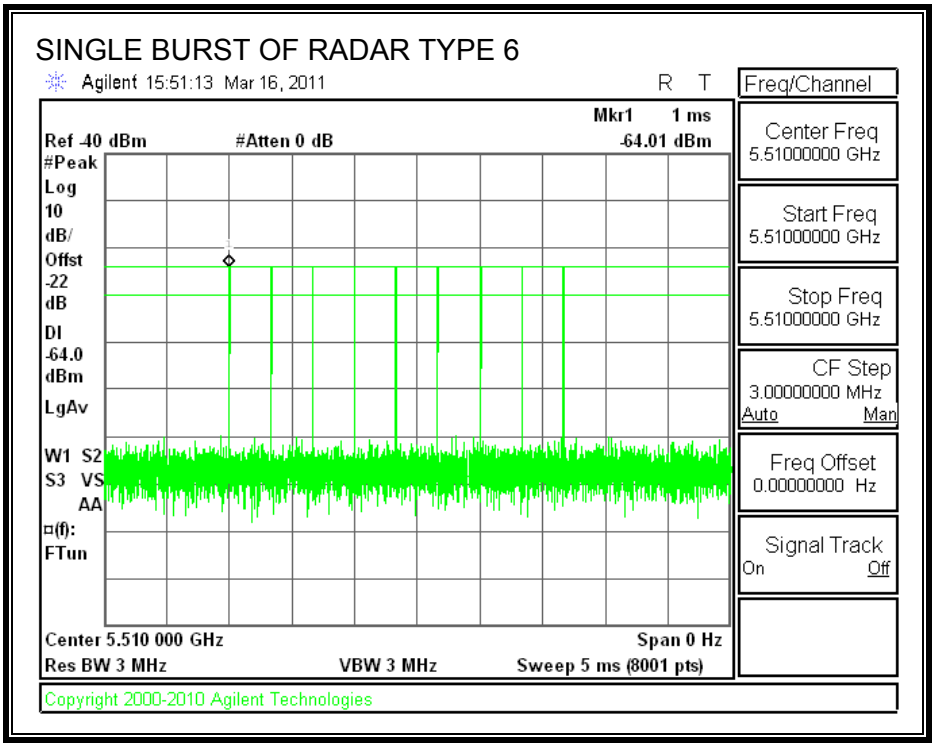
SAMPLE OF RADAR TYPE 3



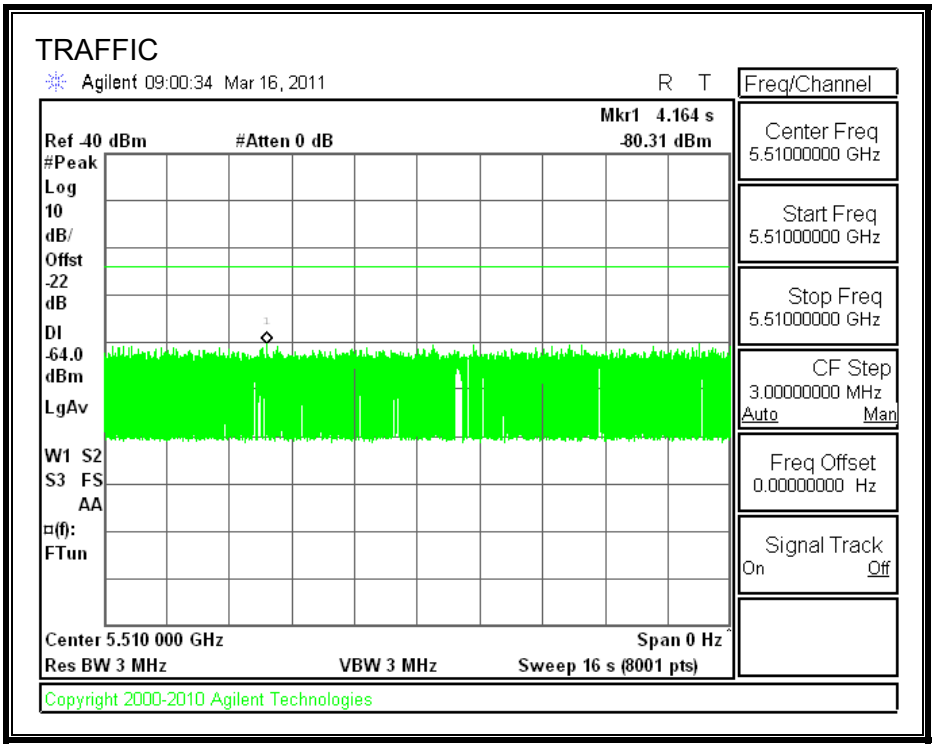
SAMPLE OF RADAR TYPE 4







TRAFFIC



10.3.3. CHANNEL AVAILABILITY CHECK TIME

PROCEDURE TO DETERMINE INITIAL POWER-UP CYCLE TIME

A link was established on channel then the EUT was rebooted. The time from the cessation of traffic to the re-initialization of traffic was measured as the time required for the EUT to complete the total power-up cycle. The time to complete the initial power-up period is 60 seconds less than this total power-up time.

PROCEDURE FOR TIMING OF RADAR BURST

With a link established on channel, the EUT was rebooted. A radar signal was triggered within 0 to 6 seconds after the initial power-up period, and transmissions on the channel were monitored on the spectrum analyzer.

The Non-Occupancy list was cleared. With a link established on channel, the EUT was rebooted. A radar signal was triggered within 54 to 60 seconds after the initial power-up period, and transmissions on the channel were monitored on the spectrum analyzer.

QUANTITATIVE RESULTS

No Radar Triggered

Timing of Reboot (sec)	Timing of Start of Traffic (sec)	Total Power-up Cycle Time (sec)	Initial Power-up Cycle Time (sec)
30.07	120.8	90.7	30.7

Radar Near Beginning of CAC

Timing of Reboot (sec)	Timing of Radar Burst (sec)	Radar Relative to Reboot (sec)	Radar Relative to Start of CAC (sec)
29.74	61.4	31.7	1.0

Radar Near End of CAC

Timing of Reboot (sec)	Timing of Radar Burst (sec)	Radar Relative to Reboot (sec)	Radar Relative to Start of CAC (sec)
30.71	120.8	90.1	59.4

QUALITATIVE RESULTS

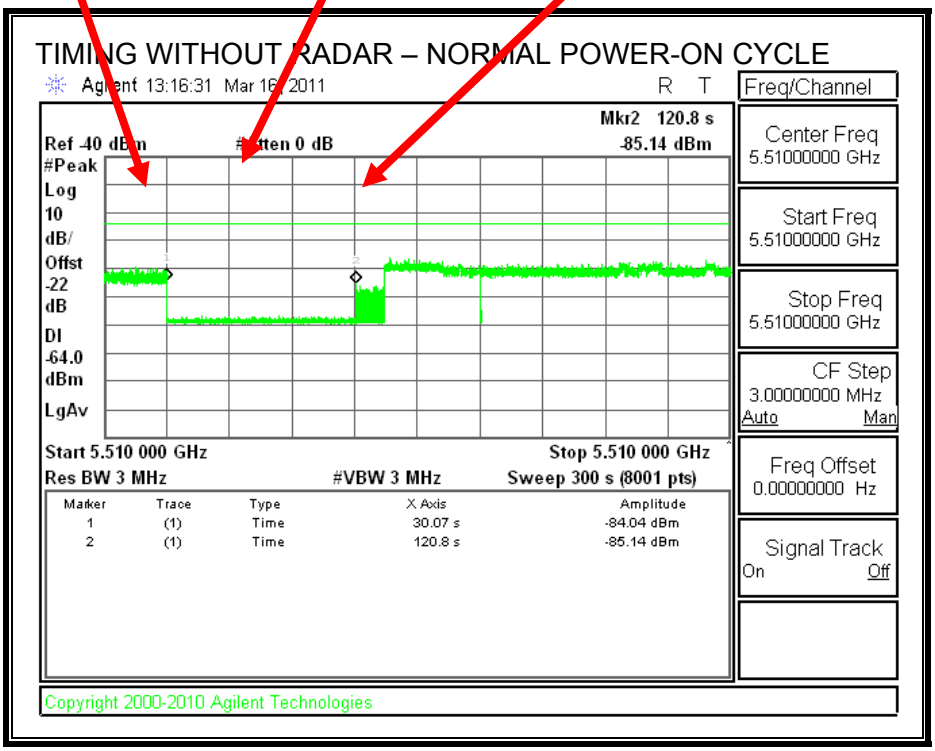
Timing of Radar Burst	Display on Control Computer	Spectrum Analyzer Display
No Radar Triggered	EUT marks Channel as active	Transmissions begin on channel after completion of the initial power-up cycle and the CAC
Within 0 to 6 second window	EUT indicates radar detected	No transmissions on channel
Within 54 to 60 second window	EUT indicates radar detected	No transmissions on channel

TIMING WITHOUT RADAR DURING CAC

AP is rebooted
Traffic ceases
Start of Initial Power-up cycle

End of Initial Power-up cycle
Start of CAC

End of CAC
Traffic is Initiated



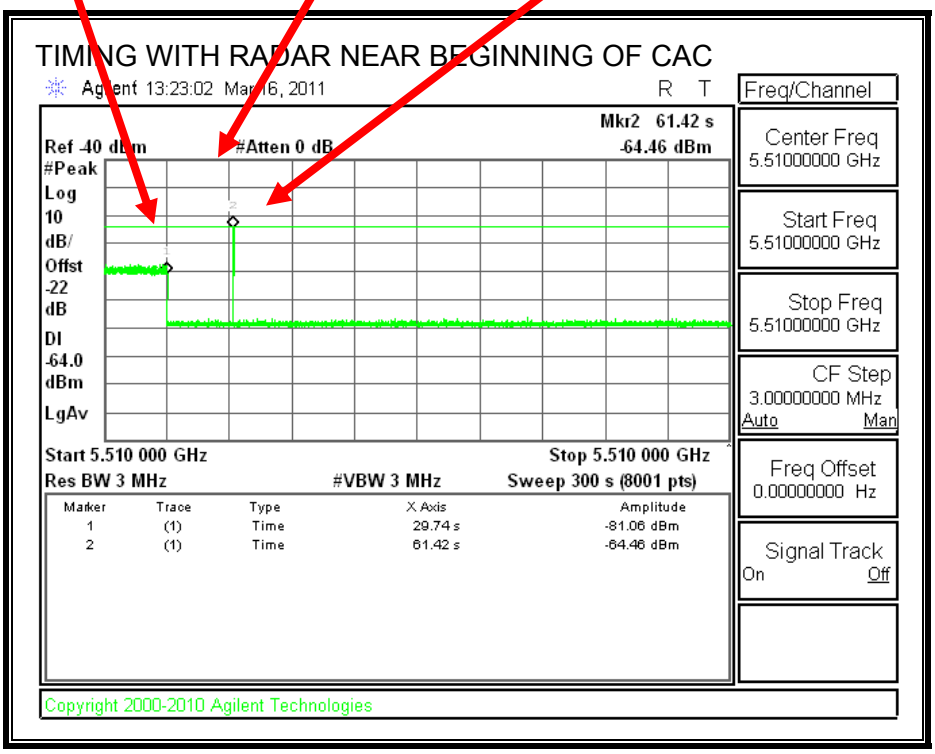
Transmissions begin on channel after completion of the initial power-up cycle and the CAC.

TIMING WITH RADAR NEAR BEGINNING OF CAC

AP is rebooted
Traffic ceases
Start of Initial Power-up cycle

End of Initial Power-up cycle
Start of CAC

Radar Signal Applied



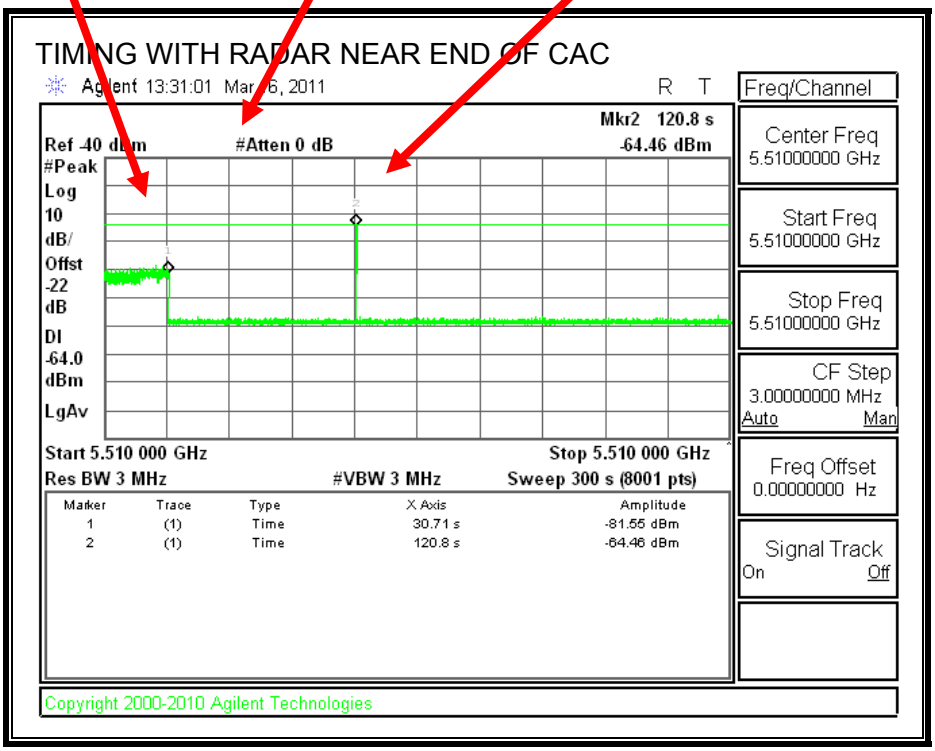
No EUT transmissions were observed after the radar signal.

TIMING WITH RADAR NEAR END OF CAC

AP is rebooted
Traffic ceases
Start of Initial Power-up cycle

End of Initial Power-up cycle
Start of CAC

Radar Signal Applied



No EUT transmissions were observed after the radar signal.

10.3.4. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

10.3.5. MOVE AND CLOSING TIME

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =
(Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the FCC aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

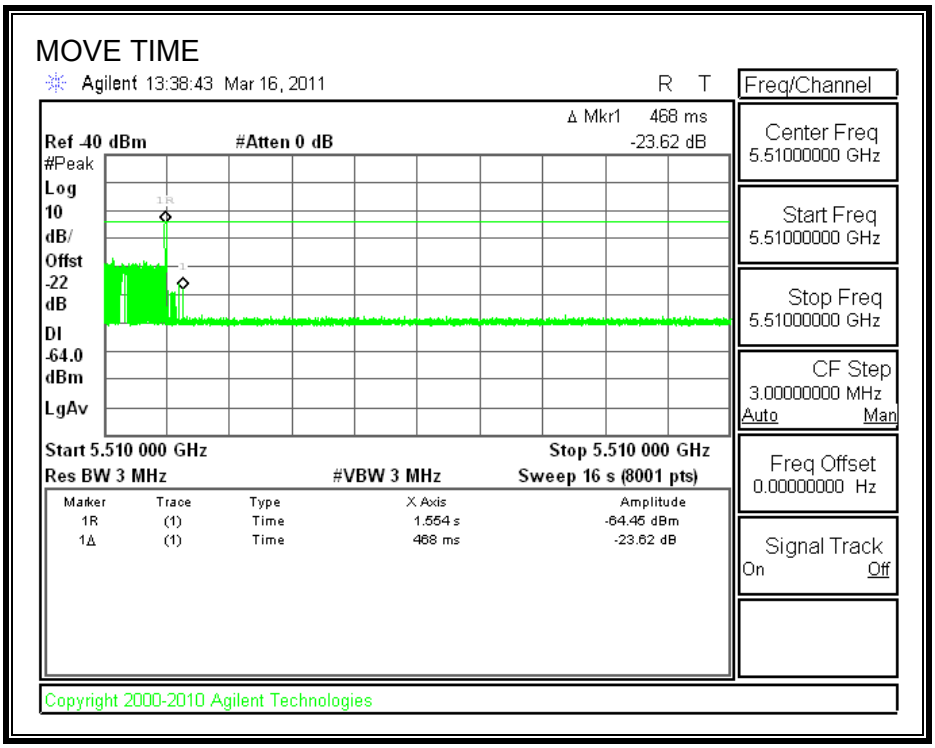
The observation period over which the IC aggregate time is calculated begins at (Reference Marker) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

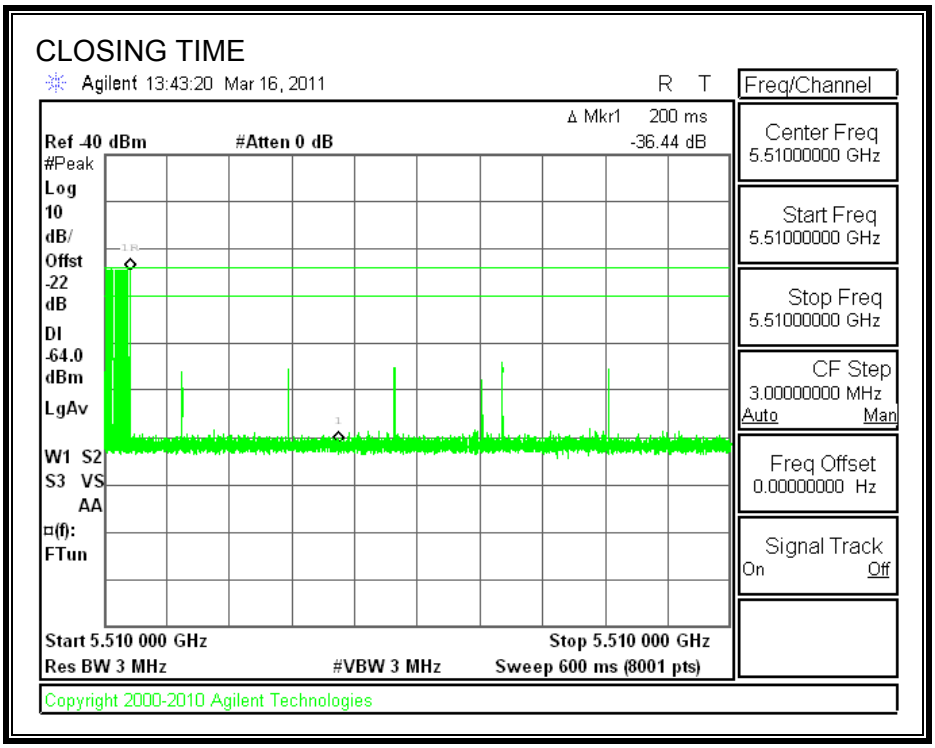
Agency	Channel Move Time (sec)	Limit (sec)
FCC / IC	0.468	10

Agency	Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
FCC	8.0	60
IC	18.0	260

MOVE TIME

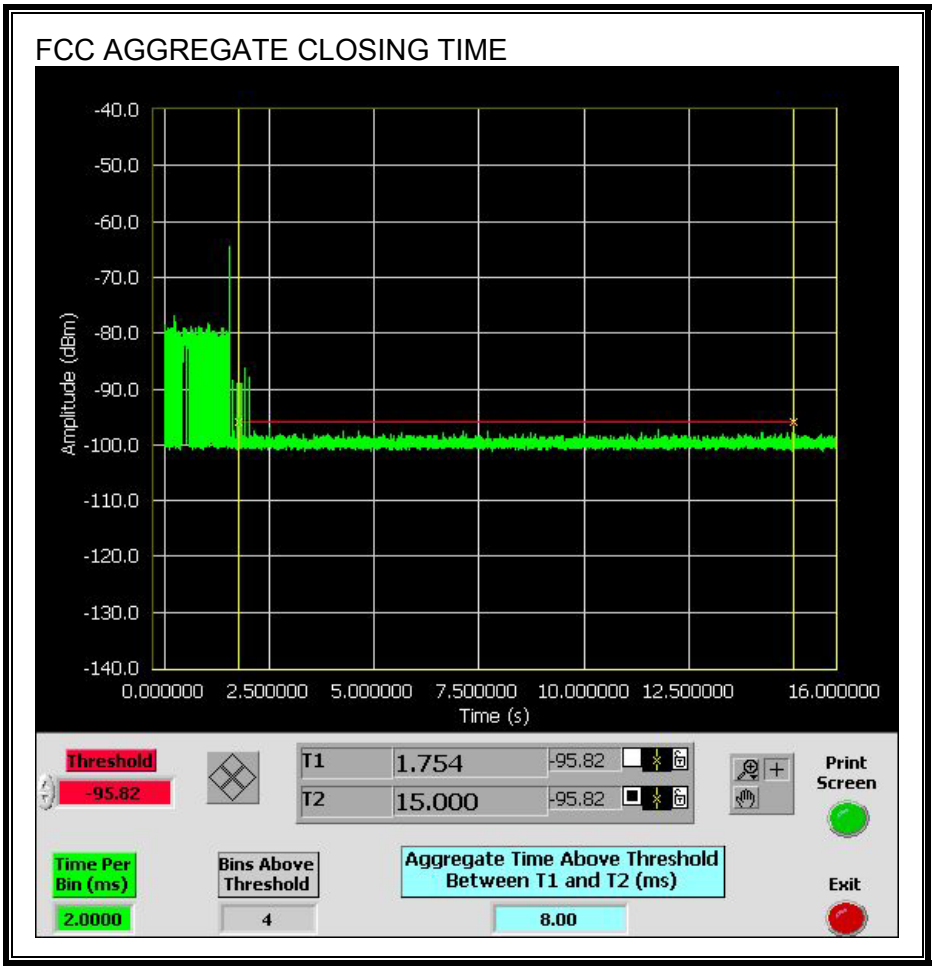


CHANNEL CLOSING TIME

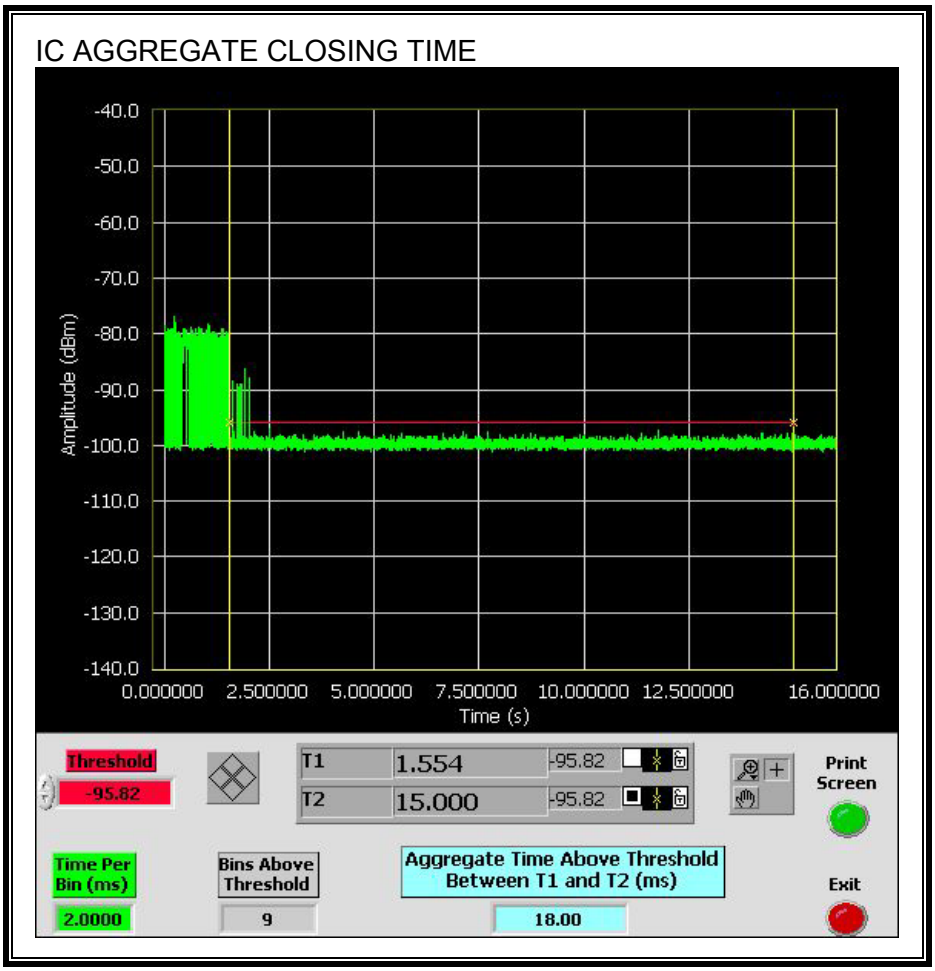


AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

Only intermittent transmissions are observed during the FCC aggregate monitoring period.

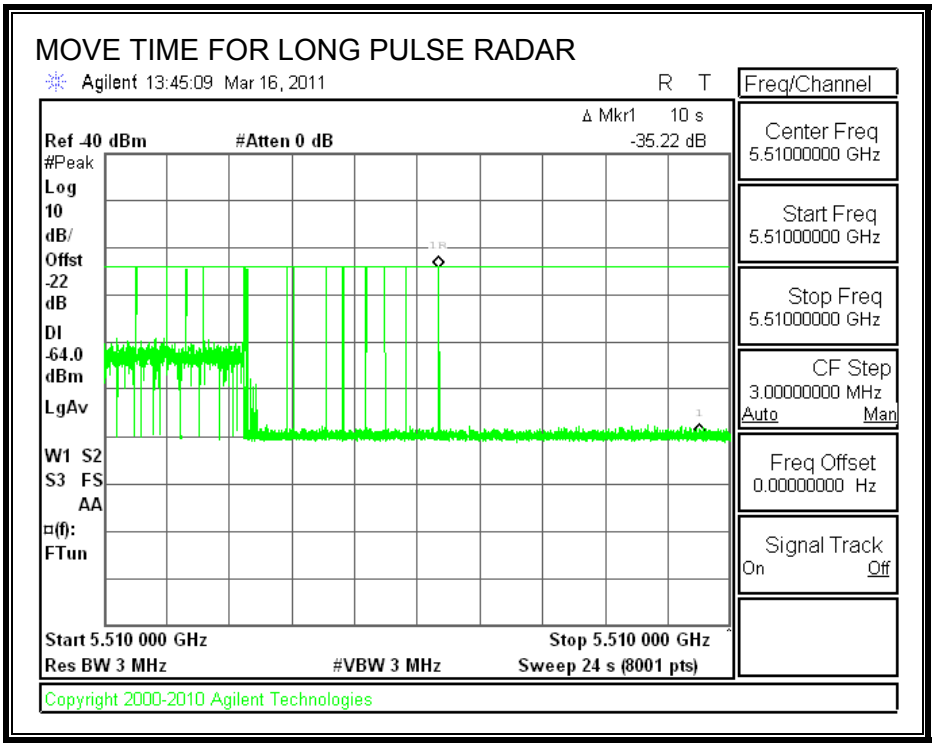


Only intermittent transmissions are observed during the IC aggregate monitoring period.



LONG PULSE CHANNEL MOVE TIME

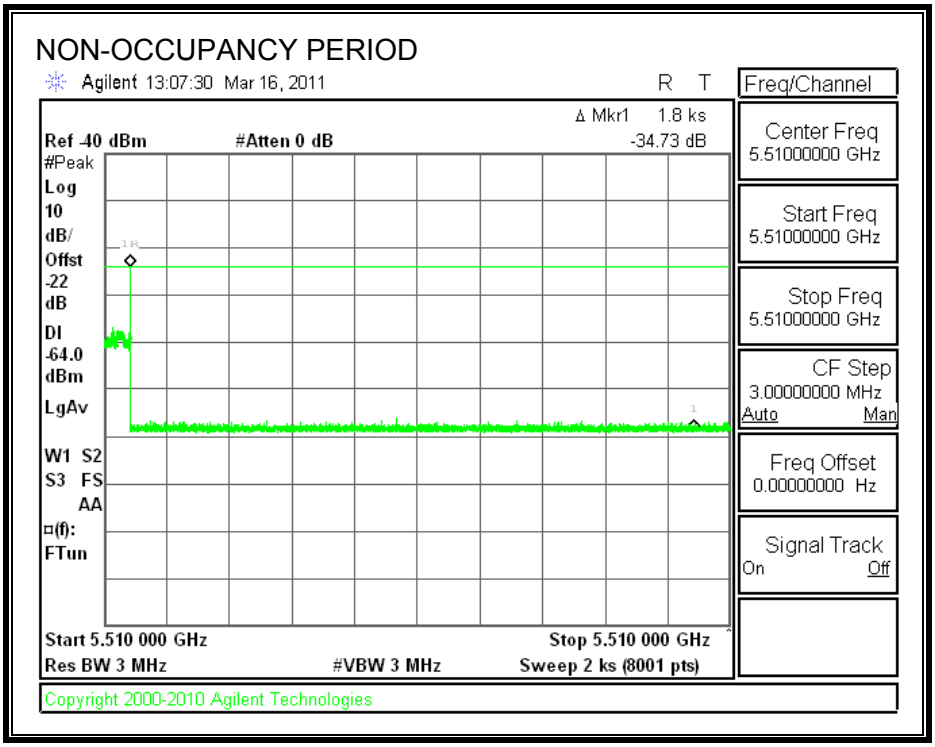
The traffic ceases prior to 10 seconds after the end of the radar waveform.



10.3.6. NON-OCCUPANCY PERIOD

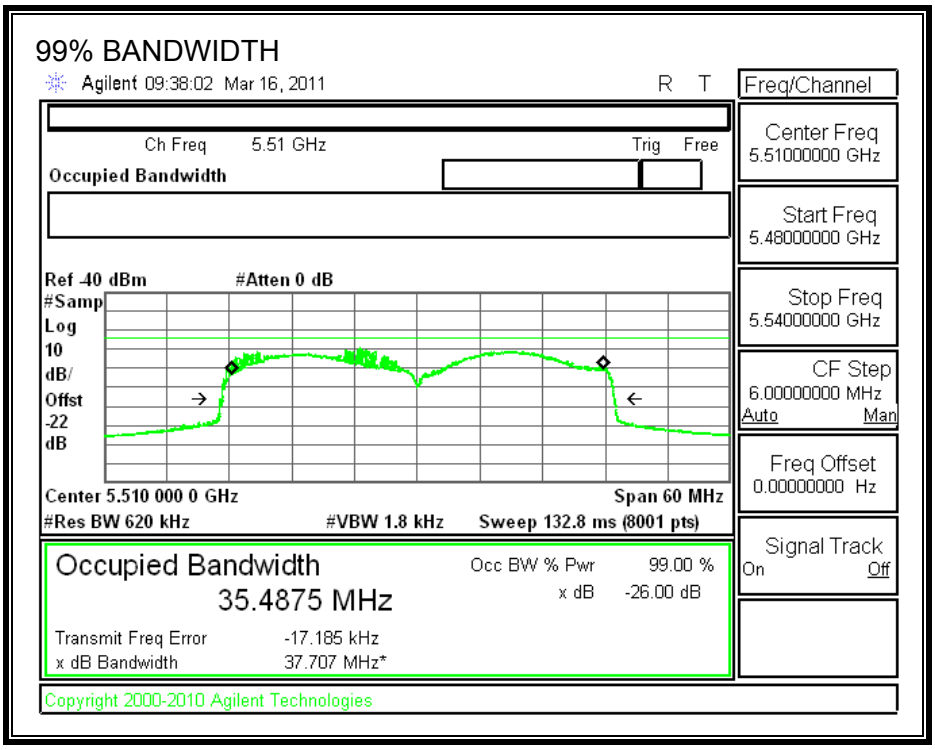
RESULTS

No EUT transmissions were observed on the test channel during the 30-minute observation time.



10.3.7. DETECTION BANDWIDTH

REFERENCE PLOT OF 99% POWER BANDWIDTH



RESULTS

FL (MHz)	FH (MHz)	Detection Bandwidth (MHz)	99% Power Bandwidth (MHz)	Ratio of Detection BW to 99% Power BW (%)	Minimum Limit (%)
5495	5525	30	35.488	84.5	80

DETECTION BANDWIDTH PROBABILITY

DETECTION BANDWIDTH PROBABILITY RESULTS

Detection Bandwidth Test Results				
FCC Type 1 Waveform: 1 us Pulse Width, 1428 us PRI, 18 Pulses per Burst				
Frequency (MHz)	Number of Trials	Number Detected	Detection (%)	Mark
5495	10	10	100	FL
5496	10	10	100	
5497	10	10	100	
5498	10	10	100	
5499	10	10	100	
5500	10	10	100	
5501	10	10	100	
5502	10	10	100	
5503	10	10	100	
5504	10	10	100	
5505	10	10	100	
5506	10	10	100	
5507	10	10	100	
5508	10	10	100	
5509	10	10	100	
5510	10	10	100	
5511	10	10	100	
5512	10	10	100	
5513	10	10	100	
5514	10	10	100	
5515	10	10	100	
5516	10	10	100	
5517	10	10	100	
5518	10	10	100	
5519	10	10	100	
5520	10	10	100	
5521	10	10	100	
5522	10	10	100	
5523	10	10	100	
5524	10	10	100	
5525	10	10	100	FH

10.3.8. IN-SERVICE MONITORING

RESULTS

FCC Radar Test Summary				
Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail
FCC Short Pulse Type 1	30	100.00	60	Pass
FCC Short Pulse Type 2	30	100.00	60	Pass
FCC Short Pulse Type 3	30	100.00	60	Pass
FCC Short Pulse Type 4	30	100.00	60	Pass
Aggregate		100.00	80	Pass
FCC Long Pulse Type 5	30	100.00	80	Pass
FCC Hopping Type 6	31	100.00	70	Pass

TYPE 1 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 1 1 us Pulse Width, 1428 us PRI, 18 Pulses per Burst	
Trial	Successful Detection (Yes/No)
1	Yes
2	Yes
3	Yes
4	Yes
5	Yes
6	Yes
7	Yes
8	Yes
9	Yes
10	Yes
11	Yes
12	Yes
13	Yes
14	Yes
15	Yes
16	Yes
17	Yes
18	Yes
19	Yes
20	Yes
21	Yes
22	Yes
23	Yes
24	Yes
25	Yes
26	Yes
27	Yes
28	Yes
29	Yes
30	Yes

TYPE 2 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 2				
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Successful Detection (Yes/No)
2001	3.7	211.00	24	Yes
2002	3.1	224.00	29	Yes
2003	2.2	189.00	24	Yes
2004	1.9	199.00	27	Yes
2005	1.2	194.00	27	Yes
2006	4.4	190.00	26	Yes
2007	3.3	156.00	29	Yes
2008	3.7	230.00	24	Yes
2009	3.1	213.00	27	Yes
2010	4.9	156.00	29	Yes
2011	3.2	155.00	24	Yes
2012	2.5	172.00	29	Yes
2013	3.5	196.00	28	Yes
2014	4	162.00	27	Yes
2015	1.6	163.00	24	Yes
2016	4.1	182.00	28	Yes
2017	3.8	158.00	28	Yes
2018	1.2	199.00	27	Yes
2019	2.6	169.00	27	Yes
2020	4.7	160.00	29	Yes
2021	2.3	228.00	27	Yes
2022	3.2	192.00	26	Yes
2023	3.6	193.00	25	Yes
2024	3.1	210.00	28	Yes
2025	4.3	190.00	28	Yes
2026	3.3	196.00	24	Yes
2027	4.5	167.00	27	Yes
2028	1.9	216.00	29	Yes
2029	4.5	172.00	29	Yes
2030	3.8	208.00	25	Yes

TYPE 3 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 3				
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Successful Detection (Yes/No)
3001	5.2	321.00	17	Yes
3002	8.1	396.00	17	Yes
3003	5.4	347.00	16	Yes
3004	7.7	329.00	17	Yes
3005	5.9	495.00	18	Yes
3006	5	460.00	17	Yes
3007	9.7	496.00	18	Yes
3008	6.4	255.00	17	Yes
3009	9.3	389.00	16	Yes
3010	8.3	297.00	16	Yes
3011	6	412.00	16	Yes
3012	5.8	377.00	16	Yes
3013	9	351.00	16	Yes
3014	8.3	415.00	17	Yes
3015	5.8	368.00	16	Yes
3016	7.3	437.00	17	Yes
3017	6.4	334.00	17	Yes
3018	5.4	468.00	18	Yes
3019	5.9	272.00	18	Yes
3020	6	434.00	17	Yes
3021	6	459.00	17	Yes
3022	7	341.00	16	Yes
3023	6.7	492.00	16	Yes
3024	9.2	403.00	16	Yes
3025	9.7	451.00	17	Yes
3026	5	264.00	17	Yes
3027	7	471.00	16	Yes
3028	9.1	458.00	17	Yes
3029	7.7	447	16	Yes
3030	8.5	357	18	Yes

TYPE 4 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 4				
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Successful Detection (Yes/No)
4001	16	370.00	12	Yes
4002	13.4	277.00	12	Yes
4003	16.3	344.00	12	Yes
4004	10.4	324.00	12	Yes
4005	15.1	338.00	15	Yes
4006	10.1	365.00	16	Yes
4007	10	430.00	16	Yes
4008	14.9	325.00	15	Yes
4009	10.4	260.00	16	Yes
4010	12.5	495.00	14	Yes
4011	15.1	424.00	15	Yes
4012	18.1	263.00	16	Yes
4013	15.4	499.00	15	Yes
4014	14.1	480.00	15	Yes
4015	18.2	371.00	12	Yes
4016	20	347.00	16	Yes
4017	15.6	350.00	15	Yes
4018	11.9	323.00	12	Yes
4019	19.8	340.00	16	Yes
4020	18.7	495.00	15	Yes
4021	15.8	348.00	12	Yes
4022	11.7	451.00	13	Yes
4023	13.4	376.00	15	Yes
4024	12.9	326.00	14	Yes
4025	13.8	482.00	15	Yes
4026	18.3	344.00	15	Yes
4027	10	351.00	15	Yes
4028	15.1	393.00	14	Yes
4029	12.8	303.00	15	Yes
4030	17.1	262.00	13	Yes

TYPE 5 DETECTION PROBABILITY

Data Sheet for FCC Long Pulse Radar Type 5	
Trial	Successful Detection (Yes/No)
1	Yes
2	Yes
3	Yes
4	Yes
5	Yes
6	Yes
7	Yes
8	Yes
9	Yes
10	Yes
11	Yes
12	Yes
13	Yes
14	Yes
15	Yes
16	Yes
17	Yes
18	Yes
19	Yes
20	Yes
21	Yes
22	Yes
23	Yes
24	Yes
25	Yes
26	Yes
27	Yes
28	Yes
29	Yes
30	Yes

Note: The Type 5 randomized parameters are shown in a separate document.

TYPE 6 DETECTION PROBABILITY

Data Sheet for FCC Hopping Radar Type 6				
1 us Pulse Width, 333 us PRI, 9 Pulses per Burst, 1 Burst per Hop				
NTIA August 2005 Hopping Sequence				
Trial	Starting Index Within Sequence	Signal Generator Frequency (MHz)	Hops within Detection BW	Successful Detection (Yes/No)
1	138	5495	4	Yes
2	613	5496	10	Yes
3	1088	5497	6	Yes
4	1563	5498	7	Yes
5	2038	5499	3	Yes
6	2513	5500	6	Yes
7	2988	5501	8	Yes
8	3463	5502	7	Yes
9	3938	5503	6	Yes
10	4413	5504	6	Yes
11	4888	5505	9	Yes
12	5363	5506	4	Yes
13	5838	5507	8	Yes
14	6313	5508	4	Yes
15	6788	5509	6	Yes
16	7263	5510	9	Yes
17	7738	5511	8	Yes
18	8213	5512	10	Yes
19	8688	5513	5	Yes
20	9163	5514	7	Yes
21	9638	5515	5	Yes
22	10113	5516	2	Yes
23	10588	5517	1	Yes
24	11063	5518	5	Yes
25	11538	5519	7	Yes
26	12013	5520	9	Yes
27	12488	5521	5	Yes
28	12963	5522	10	Yes
29	13438	5523	7	Yes
30	13913	5524	2	Yes
31	14388	5525	8	Yes