

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

ISSUE DATE: MARCH 3, 2011

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NVLAP LAB CODE 200065-0

Revision History

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	Ruckus Wireless 880 West Maude Ave., Suite 101 Sunnyvale, CA 94085, U.S.A
EUT DESCRIPTION:	Dual-Band 802.11 a/b/g/n Industrial Access Point with Integrated DOCSIS 3.0 Modem
MODEL:	ZoneFlex7761-CM
SERIAL NUMBER:	C0C5200001BD
DATE TESTED:	NOVEMBER 2, 2010 - MARCH 2, 2011

APPLICABLE STANDARDS				
STANDARD	TEST RESULTS			
CFR 47 Part 15 Subpart E	Pass			
INDUSTRY CANADA RSS-210 Issue 8	Pass			
INDUSTRY CANADA RSS-GEN Issue 3	Pass			

Compliance Certification Services, Inc. (CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by CCS will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For CCS By:

FRANK IBRAHIM EMC SUPERVISOR COMPLIANCE CERTIFICATION SERVICES

Tested By:

William Shing

WILLIAM ZHUANG EMC ENGINEER COMPLIANCE CERTIFICATION SERVICES

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 3, and RSS-210 Issue 8.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <u>http://www.ccsemc.com</u>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB) 36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

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

The radio module is manufactured by Ruckus Wireless.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

THREE CHAIN CONFIGURATION IN THE 5.2 GHz BAND

Frequency Range	Mode	Output Power	Output Power
(MHz)		(dBm)	(mW)
5180 - 5240	802.11a	12.29	16.94
5180 - 5240	802.11n HT20	15.71	37.24
5190 - 5230	802.11n HT40	16.85	48.42

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5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes MIMO dual-band antenna with a maximum peak gain of **5 dBi** in the 2.4 GHz band and a MIMO Omni antenna for only 5 GHz band with maximum peak gain of **5.5 dBi** in the 5 GHz bands.

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was version 9.0.0.0.65 and the cable modem firmware was version V92004.

The RF conducted testing used Atheros Radio Test software which we call "ART". The version number is v0_5_b25ALL.

5.5. WORST-CASE CONFIGURATION AND MODE

For Radiated Emissions and Power line Conducted Emissions, the channel with the highest conducted output power was selected.

Worst-case data rates as provided by the manufacturer are:

For 11a mode: 6Mbps For 11n HT20 (5.2 GHz band): MCS8 For 11n HT40 (5.2 GHz band): MCS8

Peak Power Spectral Density was investigated for individual chains versus combiner, and it was determined that combiner is worst-case; therefore, all final measurements of PPSD were performed using a combiner.

RF Conducted Spurious was investigated for individual chains versus combiner, and it was determined that combiner is worst-case; therefore, all final measurements of RF conducted spurious were performed using a combiner.

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5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST					
Description	Manufacturer	Model	Serial Number		
Laptop PC	IBM	2366	78-BWY97		
AC/DC Adapter	IBM	02K6665	1Z0Z0500ZF		
POE	RUCKUS	NPE-5818	10A282617		
AC/DC Adapter	RUCKUS	PA1060-48 T1A125	1022		
USB Mouse	Microsoft	X09-13962	N/A		
AC/DC Adapter	RUCKUS	MPC-1200201	101		

Note: AC/DC adapter MPC-1200201 was used to power the radio for radiated emissions 3-1000 MHz and power line conducted emissions tests.

I/O CABLES

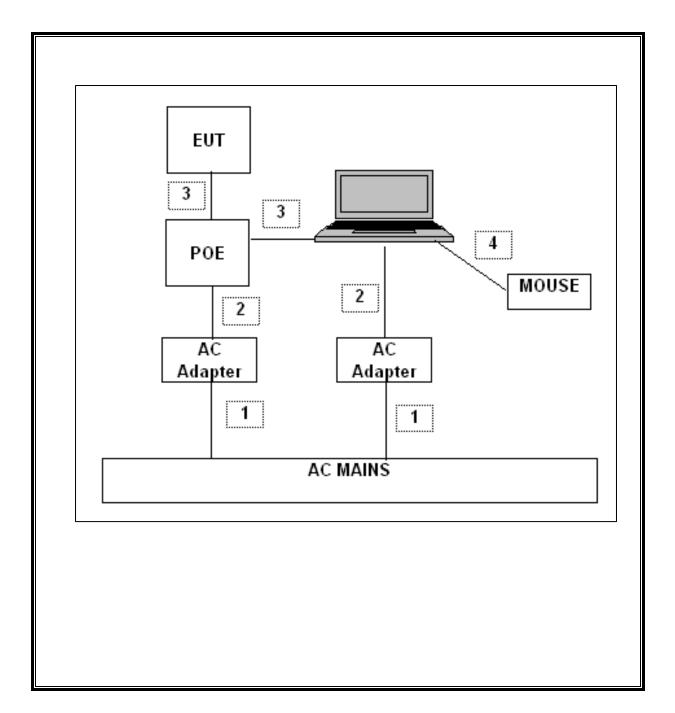
	VO CABLE LIST					
Cable No.	Port	# of Identical Ports	Connector Type		Cable Length	Remarks
1	AC Input	2	AC	Un-Shielded	1.5m	N/A
2	DC Input	2	DC	Un-Shielded		N/A
3	Ethernet	2	RJ45	Un-Shielded	1.5m	N/A
4	USB	1	USB	Un-Shielded	1.5m	N/A

TEST SETUP

The Access Point EUT is controlled externally with a laptop, via Ethernet.

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SETUP DIAGRAM FOR RADIO TESTS



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6. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST						
Description Manufacturer Model Asset Ca						
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01178	08/30/10		
Peak Power Meter	Boonton	4541	C01185	03/01/10		
Peak Power Sensor	Boonton	57006	C01203	02/24/10		
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	07/12/11		
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	01/06/12		
Antenna, Horn, 18 GHz	EMCO	3115	C00945	06/29/11		
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01052	07/14/11		
EMI Test Receiver, 30 MHz	R&S	ESHS 20	N02396	05/06/11		
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	11/10/11		
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	N02481	11/10/11		

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7. ANTENNA PORT TEST RESULTS

7.1. 802.11a THREE CHAIN LEGACY MODE IN THE 5.2 GHz BAND

7.1.1. 26 dB and 99% BANDWIDTH

<u>LIMITS</u>

None; for reporting purposes only.

TEST PROCEDURE

The transmitter outputs are connected to the spectrum analyzer via a combiner. The RBW is set to 1% to 3% of the measured bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal bandwidth function is utilized.

RESULTS

CHAIN 1

Channel	Frequency	26 dB Bandwidth	99% Bandwidth
	(MHz)	(MHz)	(MHz)
Low	5180	22.434	16.3921
Middle	5200	20.997	16.4137
High	5240	20.336	16.4002

CHAIN 2

Channel	Frequency	26 dB Bandwidth	99% Bandwidth
	(MHz)	(MHz)	(MHz)
Low	5180	18.770	16.2711
Middle	5200	19.012	16.5410
High	5240	21.031	16.3638

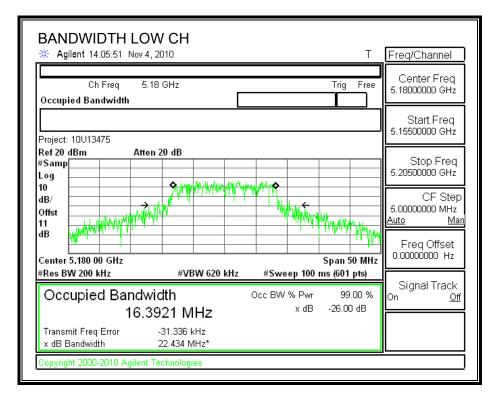
CHAIN 3

Channel	Frequency	26 dB Bandwidth	99% Bandwidth
	(MHz)	(MHz)	(MHz)
Low	5180	18.24	16.5538
Middle	5200	19.45	16.4851
High	5240	21.76	16.4216

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CHAIN 1

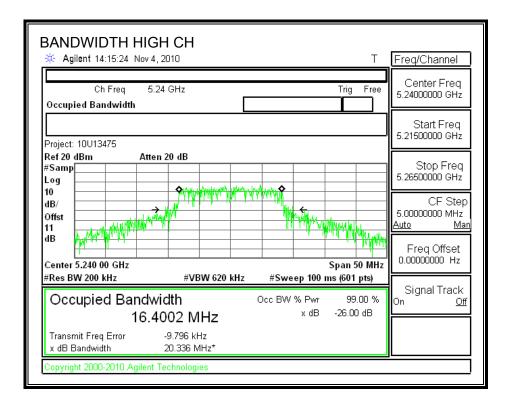
26 dB and 99% BANDWIDTH



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Center 5.2000 GHz #VBW 620 kHz #Sweep 100 ms (601 pts)	Freq/Channel
Ref 20 dBm Atten 20 dB #Samp	Center Freq 5.20000000 GHz
#Samp Log 10 dB/ Offst 11 dB Center 5.200 00 GHz #Res BW 200 kHz #VBW 620 kHz #Sweep 100 ms (601 pts) Occupied Bandwidth Occ BW % Pwr 99.00 %	Start Freq 5.17500000 GHz
dB Center 5.200 00 GHz Span 50 MHz #Res BW 200 kHz #VBW 620 kHz #Sweep 100 ms (601 pts) Occupied Bandwidth Occ BW % Pwr 99.00 %	Stop Freq 5.22500000 GHz CF Step 5.00000000 MHz
Occupied Bandwidth Occ BW % Pwr 99.00 %	<u>Auto Man</u> Freq Offset 0.00000000 Hz
16.4137 MHz × dB -26.00 dB	Signal Track On <u>Off</u>
Transmit Freq Error -14.597 kHz x dB Bandwidth 20.997 MHz*	

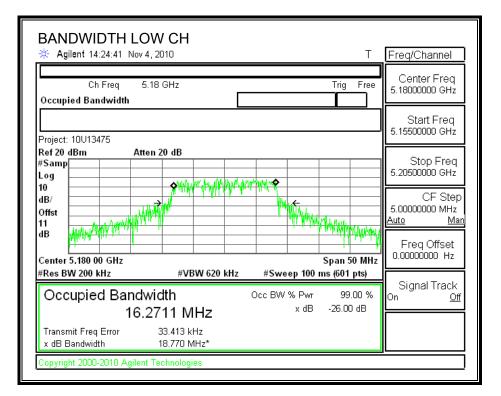
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CHAIN 2

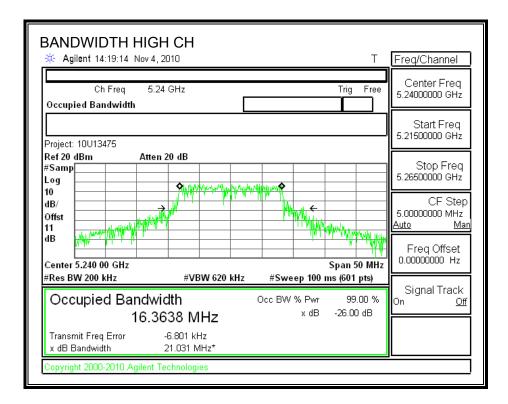
26 dB and 99% BANDWIDTH



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BANDWIDTH MID	-		Т	Freq/Channel
Ch Freq 5 Occupied Bandwidth	2 GHz		Trig Free	Center Freq 5.2000000 GHz
Project: 10U13475				Start Freq 5.17500000 GHz
#Samp	n 20 dB	lberni ulası, s ⊘		Stop Freq 5.22500000 GHz
10 dB/ Offst 11 dB	→ W	←		CF Step 5.0000000 MHz <u>Auto Man</u>
dB			Span 50 MHz	Freq Offset 0.00000000 Hz
#Res BW 200 kHz	#VBW 620 kHz	#Sweep 100 n	ns (601 pts)	Signal Track
Occupied Bandw 16.5	/idth 5410 MHz	Occ BW % Pwr x dB	99.00 % -26.00 dB	On <u>Off</u>
Transmit Freq Error x dB Bandwidth	12.000 kHz 19.012 MHz*			
Copyright 2000-2010 Agilent	Technologies			

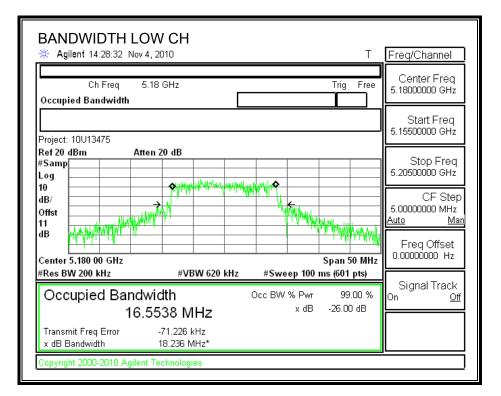
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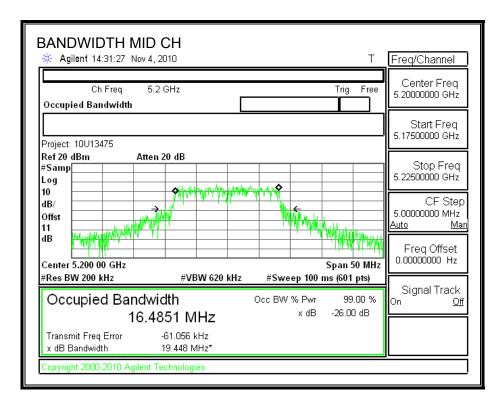
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CHAIN 3

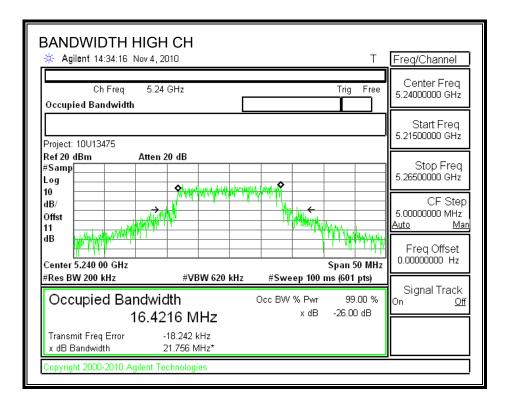
26 dB and 99% BANDWIDTH



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7.1.2. OUTPUT POWER

LIMITS

FCC §15.407 (a) (1)

IC RSS-210 A9.2 (1)

Antenna	10 Log	Effective
Gain	(# Tx Chains)	Legacy Gain
(dBi)	(dB)	(dBi)
5.5	4.77	10.27

For the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

The transmitter output operates continuously therefore Method # 1 is used.

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REPORT NO: 10U13475-3 FCC ID: S9GZF7761CM

RESULTS

Limit

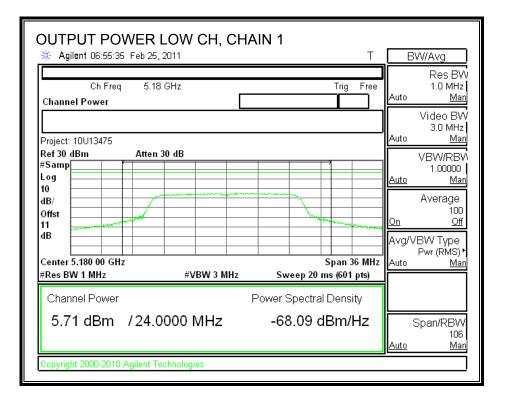
Channel	Frequency	Fixed	В	4 + 10 Log B	Effective	Limit
		Limit		Limit	Ant. Gain	
	(MHz)	(dBm)	(MHz)	(dBm)	(dBi)	(dBm)
Low	5180	16.99	18.24	16.61	10.27	12.34
Mid	5200	16.99	19.012	16.79	10.27	12.52
High	5240	16.99	20.336	17.08	10.27	12.72

Individual Chain Results

Channel	Frequency	Chain 1	Chain 2	Chain 3	Total	Limit	Margin
		Power	Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5180	5.71	9.14	6.95	12.27	12.34	-0.07
Mid	5200	5.92	8.54	7.70	12.29	12.52	-0.23
High	5240	5.45	8.63	7.77	12.25	12.72	-0.47

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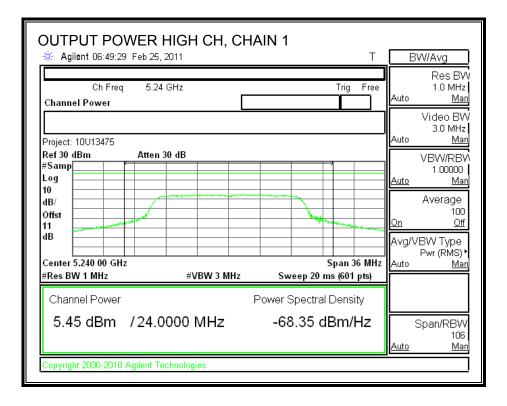
CHAIN 1 OUTPUT POWER



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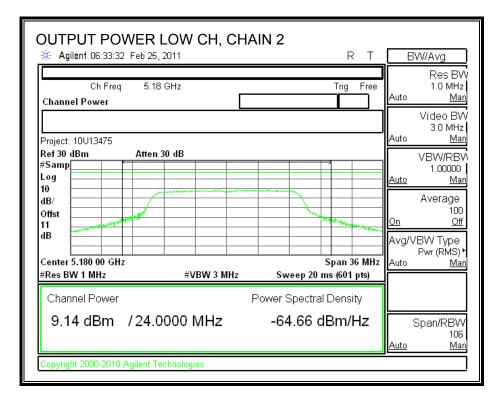
OUTPUT POWER MID CH, CHAIN 1	BW/Avg
Ch Freq 5.2 GHz Trig Free Channel Power	Res BW 1.0 MHz Auto <u>Man</u> Video BW 3.0 MHz
	Auto <u>Man</u> VBVV/RBW 1.00000 <u>Auto Man</u> Average 100 <u>On Off</u> Avg/VBW Type Pwr (RMS) • Auto <u>Man</u>
Channel Power Power Spectral Density 5.92 dBm / 24.0000 MHz -67.88 dBm/Hz Copyright 2000-2010 Agilent Technologies	Span/RBW 106 <u>Auto Man</u>

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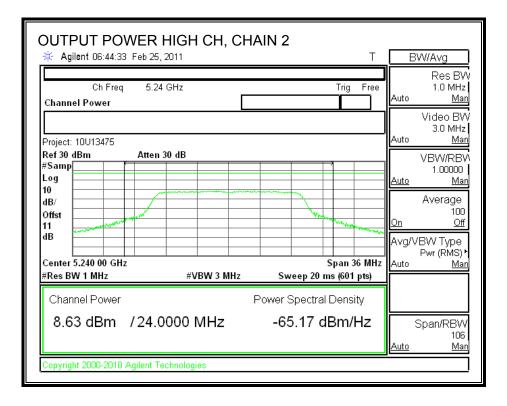
CHAIN 2 OUTPUT POWER



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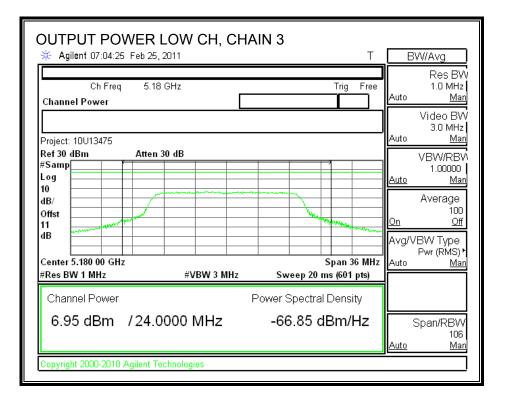
OUTPUT POWER MID CH, Cl Agilent 06:41:58 Feb 25, 2011	HAIN 2	BW/Avg
Ch Freq 5.2 GHz Channel Power	Trig Free	Res BW 1.0 MHz Auto <u>Man</u> Video BW
Project: 10U13475 Ref 30 dBm Atten 30 dB #Samp Log 10 dB/ Offst 11 dB Center 5.200 00 GHz	Span 36 MHz	3.0 MHz Auto <u>Man</u> VBW/RBW 1.00000 <u>Auto Man</u> Average 100 <u>On Off</u> Avg/VBW Type Pwr (RMS)► Auto Man
#Res BW 1 MHz #VBW 3 MH		
Channel Power 8.54 dBm /24.0000 MHz	Power Spectral Density -65.26 dBm/Hz	Span/RBW 106 <u>Auto Man</u>
Copyright 2000-2010 Agilent Technologies		

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CHAIN 3 OUTPUT POWER



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OUTPUT POWER MID CH, CHAIN 3 Agilent 07:06:04 Feb 25, 2011 T	BW/Avg
Ch Freq 5.2 GHz Trig Free Channel Power	Res BW 1.0 MHz Auto <u>Man</u> Video BW 3.0 MHz
Ref 30 dBm Atten 30 dB #Samp 10 Log 10 dB/ Offst 11 dB	Auto <u>Man</u> VBW/RBW 1.00000 <u>Auto Man</u> Average 100 <u>On Off</u> Avg/VBW Type Pwr (RMS) •
#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (601 pts)	Auto <u>Man</u>
Channel Power Spectral Density 7.70 dBm / 24.0000 MHz -66.10 dBm/Hz	Span/RBW 106 <u>Auto Man</u>
Copyright 2000-2010 Agilent Technologies	

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OUTPUT POWER HIGH CH, CHAIN 3	BW/Avg
Ch Freq 5.24 GHz Trig Free Channel Power	Auto <u>Man</u>
Project: 10U13475	Video BW 3.0 MHz Auto <u>Man</u>
Ref 30 dBm Atten 30 dB #Samp 1 Log 1 10 1	VBW/RBV 1.00000 <u>Auto Man</u>
dB/ Offst	Average 100 <u>On Off</u>
dB Center 5.240 00 GHz #Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (601 pts)	Avg/VBW Type Pwr (RMS)
Channel Power Power Spectral Density	
7.77 dBm / 24.0000 MHz -66.03 dBm/Hz	Span/RBW 106 <u>Auto Man</u>
Copyright 2000-2010 Agilent Technologies	

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7.1.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 11 dB (including 10 dB pad and 1.0 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency	Chain 1	Chain 2	Chain 3	Total
		Power	Power	Power	Power
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)
Low	5180	5.47	8.54	7.32	12.06
Middle	5200	5.25	8.97	7.17	12.16
High	5240	5.17	9.05	7.36	12.25

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7.1.4. PEAK POWER SPECTRAL DENSITY

LIMITS

FCC §15.407 (a) (1)

IC RSS-210 A9.2 (1)

Antenna	10 Log	Effective	
Gain	(# Tx Chains)	Legacy Gain	
(dBi)	(dB)	(dBi)	
5.5	4	۰	10.27

For the 5.15-5.25 GHz band, the peak power spectral density shall not exceed 4 dBm in any 1 MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002. PPSD method #2 was used.

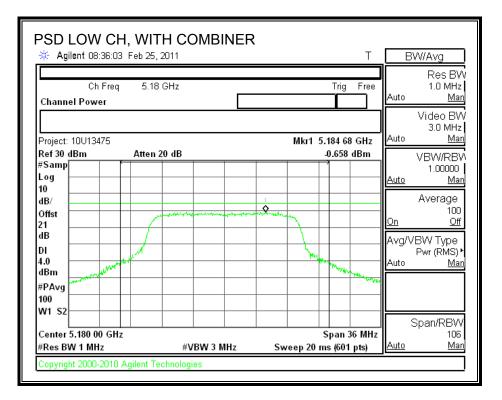
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RESULTS

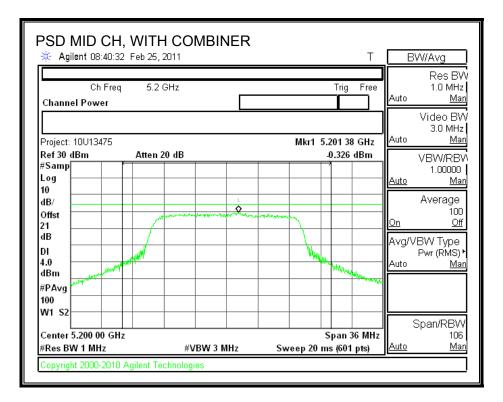
Channel	Frequency	PPSD With Combiner	Limit	Margin
	(MHz)	(dBm)	(dBm)	(dB)
Low	5180	-0.658	-0.27	-0.388
Middle	5200	-0.326	-0.27	-0.056
High	5240	-0.793	-0.27	-0.523

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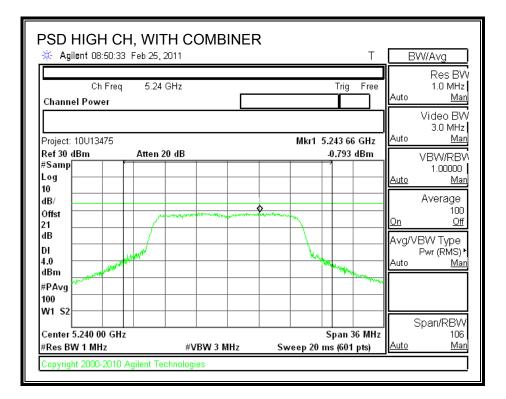
POWER SPECTRAL DENSITY WITH COMBINER



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7.1.5. PEAK EXCURSION

LIMITS

FCC §15.407 (a) (6)

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

TEST PROCEDURE

The transmitter outputs are connected to the spectrum analyzer via a combiner.

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

Since Method # 1 was used for peak power measurements, Method # 1 settings are used for the second PPSD trace.

RESULTS

CHAIN 1

Channel	Frequency	Peak Excursion	Limit	Margin
	(MHz)	(dB)	(dB)	(dB)
Low	5180	9.17	13	-3.83
Middle	5200	9.44	13	-3.56
High	5240	8.55	13	-4.45

CHAIN 2

Channel	Frequency	Peak Excursion	Limit	Margin
	(MHz)	(dB)	(dB)	(dB)
Low	5180	10.04	13	-2.96
Middle	5200	10.04	13	-2.96
High	5240	10.11	13	-2.89

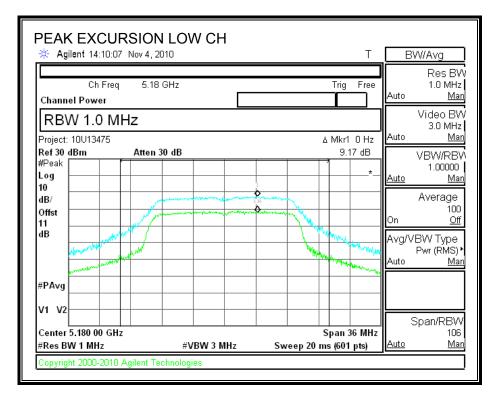
CHAIN 3

Channel	Frequency	Peak Excursion	Limit	Margin
	(MHz)	(dB)	(dB)	(dB)
Low	5180	10.10	13	-2.90
Middle	5200	10.32	13	-2.68
High	5240	9.17	13	-3.83

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CHAIN 1

PEAK EXCURSION



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🔆 Agilent 14:14:04 Nov 4, 2	010		Т	B	W/Avg
Ch Freq 5.2 Channel Power	GHz		Trig Free	Auto	Res BV 1.0 MHz <u>Ma</u>
RBW 1.0 MHz Project: 10U13475		۵	. Mkr1 0 Hz	Auto	Video BV 3.0 MHz <u>Ma</u>
Ref 30 dBm Atten #Peak Log 10	30 dB		9.44 dB	<u>Auto</u>	VBW/RB\ 1.00000 <u>Ma</u>
dB/ Offst				On	Average 100 <u>Off</u>
dB		North Contraction of the second secon	and and a second s	Avg/V Auto	BW Type Pwr (RMS) <u>Ma</u>
#PAvg					
V1 V2					Span/RBV
#Res BW 1 MHz	#VBW 3 MHz	sweep 20 m	špan 36 MHz s (601 pts)	<u>Auto</u>	106 <u>Ma</u>

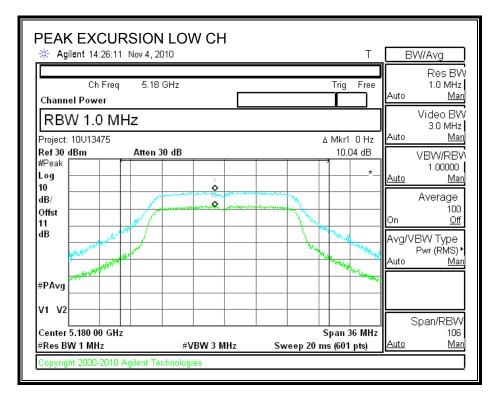
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PEAK EXCURSION			Т	В	W/Avg
Ch Freq 5.24 (Channel Power	GHz		Trig Free	Auto	Res BV 1.0 MHz <u>Mar</u>
RBW 1.0 MHz Project: 10U13475		١٨	Mkr1 0 Hz	Auto	Video BV 3.0 MHz <u>Mar</u>
Ref 30 dBm Atten 30 #Peak Log 10	0 dB		8.55 dB	<u>Auto</u>	VBVV/RBV 1.00000 <u>Mar</u>
dB/ Offst		And the second s		On	Average 100 <u>Off</u>
dB		Mura	William markey willing	Avg/v Auto	/BW Type Pwr (RMS)∙ <u>Mar</u>
#PAvg			LAV		
V1 V2		Sp	an 36 MHz		Span/RBW 106
#Res BW 1 MHz	#VBW 3 MHz	Sweep 20 ms		<u>Auto</u>	Mar

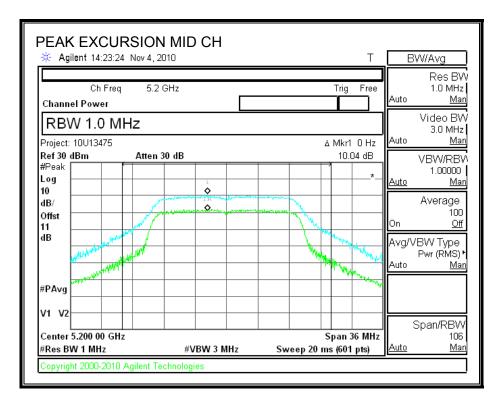
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CHAIN 2

PEAK EXCURSION



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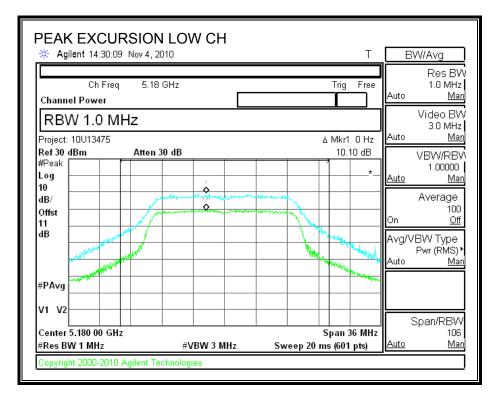
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PEAK EXCURSION		Т	BW/Avg
Ch Freq 5.24		Trig Free	Res BW
RBW 1.0 MHz Project: 10U13475		∆ Mkr1 O Hz	Video BV 3.0 MHz Auto <u>Man</u>
Ref 30 dBm Atten 3 #Peak Log 10	1	10.11 dB	VBW/RBV 1.00000 <u>Auto Man</u>
dB/ Offst		terment the	Average 100 On <u>Off</u>
dB		March Contraction	Avg/VBW Type Pwr (RMS) • Auto <u>Man</u>
#PAvg			-
V1 V2			Span/RBW
Center 5.240 00 GHz #Res BW 1 MHz	#VBW 3 MHz	Span 36 MH: Sweep 20 ms (601 pts)	z 106 <u>Auto Man</u>

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CHAIN 3

PEAK EXCURSION



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🔆 Agilent 14:32:56 Nov 4,	2010		T 🗌	BW/Avg
Ch Freq 5. Channel Power	2 GHz	Trig F	Free Auto	Res BV 1.0 MHz <u>Mar</u>
RBW 1.0 MHz Project: 10U13475		 ∆ Mkr1 0	Hz Auto	Video BV 3.0 MHz <u>Mar</u>
Ref 30 dBm Atte #Peak Log 10	1 30 dB		dB _*_ <u>Auto</u>	VBW/RBV 1.00000 <u>Mar</u>
10 dB/ Offst	Junder and a second second	hondruckaning	On	Average 100 <u>Off</u>
dB			Avg.	/VBW Type Pwr (RMS) • <u>Mar</u>
#PAvg				
V1 V2				Span/RBW
Center 5.200 00 GHz #Res BW 1 MHz	#VBW 3 MHz	Span 36 Sweep 20 ms (601 pt		106 Mar

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🔆 Agilent 14:35:42 Nov 4,	N HIGH CH 2010	Т	BW/Avg
Ch Freq 5.2 Channel Power	14 GHz	Trig Free	Res BV e 1.0 MHz Auto <u>Mar</u>
RBW 1.0 MHz Project: 10U13475		۵ Mkr1 O Hz	Video BV 3.0 MHz Auto <u>Mar</u>
#Peak Log	1 30 dB	9.17 dB	VBW/RBV 1.00000 <u>Auto Mar</u>
10 dB/ Offst	and the second s	and have been a second	Average 100 On <u>Off</u>
dB		March How March	Avg/VBW Type Pwr (RMS) [•] Auto <u>Mar</u>
#PAvg			**
V1 V2			Span/RBW
Center 5.240 00 GHz #Res BW 1 MHz	#VBW 3 MHz	Span 36 MH Sweep 20 ms (601 pts)	z 106 <u>Auto Mar</u>

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7.1.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.407 (b) (1)

IC RSS-210 A9.3 (1)

For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm / MHz.

TEST PROCEDURE

Conducted RF measurements of the transmitter output are made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

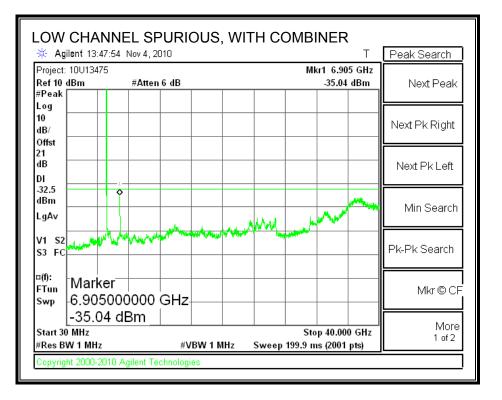
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1 MHz. The video bandwidth is set to 1 MHz. Peak detection measurements are compared to EIRP limit, adjusted for the maximum antenna gain.

Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

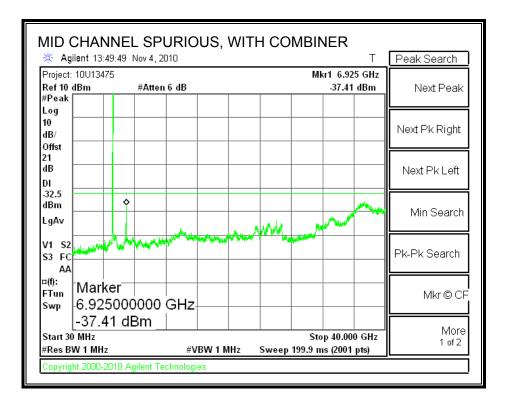
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RESULTS

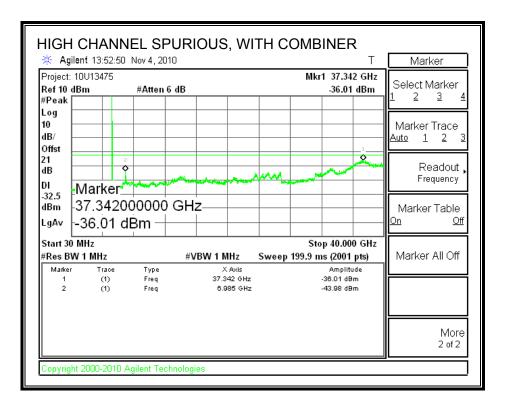
SPURIOUS EMISSIONS WITH COMBINER



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7.2. 802.11n THREE CHAINS HT20 MODE IN THE 5.2 GHz BAND

7.2.1. 26 dB and 99% BANDWIDTH

<u>LIMITS</u>

None; for reporting purposes only.

TEST PROCEDURE

The transmitter outputs are connected to the spectrum analyzer via a combiner. The RBW is set to 1% to 3% of the measured bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal bandwidth function is utilized.

RESULTS

CHAIN 1

Channel	Frequency	26 dB Bandwidth	99% Bandwidth
	(MHz)	(MHz)	(MHz)
Low	5180	20.028	17.4629
Middle	5200	20.142	17.6717
High	5240	19.635	17.5555

CHAIN 2

Channel	Frequency	26 dB Bandwidth	99% Bandwidth
	(MHz)	(MHz)	(MHz)
Low	5180	19.665	17.6511
Middle	5200	19.579	17.5286
High	5240	19.124	17.7595

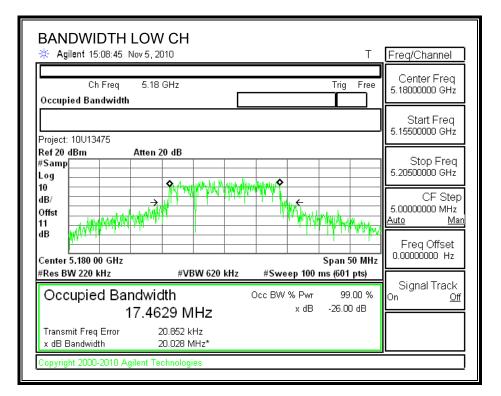
CHAIN 3

Channel	Frequency	26 dB Bandwidth	99% Bandwidth
	(MHz)	(MHz)	(MHz)
Low	5180	20.732	17.6570
Middle	5200	19.699	17.4910
High	5240	19.445	17.5278

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CHAIN 1

26 dB and 99% BANDWIDTH



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BANDWIDTH MID CH * Agilent 15:13:25 Nov 5, 2010 T	Freq/Channel
Ch Freq 5.2 GHz Trig Free Occupied Bandwidth	Center Freq 5.2000000 GHz
Project: 10U13475	Start Freq 5.17500000 GHz
Ref 20 dBm Atten 20 dB #Samp Log	Stop Freq 5.22500000 GHz
10 dB/ Offst 11 12 14 14 14 14 14 14 14 14 14 14	CF Step 5.0000000 MHz <u>Auto Man</u>
dB Center 5.200 00 GHz Span 50 MHz	Freq Offset 0.00000000 Hz
#Res BW 200 kHz #VBW 620 kHz #Sweep 100 ms (601 pts)	Oi an al Tao al t
Occupied Bandwidth Occ BW % Pwr 99.00 % 17.6717 MHz x dB -26.00 dB	Signal Track On <u>Off</u>
Transmit Freq Error -52.409 kHz x dB Bandwidth 20.142 MHz*	
Copyright 2000-2010 Agilent Technologies	

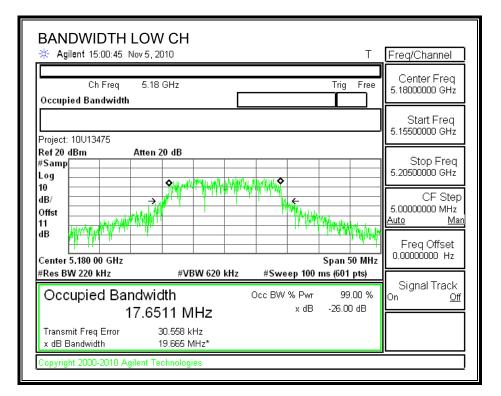
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BANDWIDTH HIGH CH	Freq/Channel
Ch Freq 5.24 GHz Trig Free Occupied Bandwidth	Center Freq 5.24000000 GHz
Project: 10U13475 Ref 20 dBm Atten 20 dB	Start Freq 5.21500000 GHz
#Samp Log 10 dB/ Offst 11 dB // → → → → → → → → → → → → → → → → → →	Stop Freq 5.2650000 GHz CF Step 5.0000000 MHz <u>Auto Man</u>
dB dB content of the second se	Freq Offset 0.00000000 Hz Signal Track
Occupied Bandwidth Occ BW % Pwr 99.00 % 17.5555 MHz × dB -26.00 dB	On <u>Off</u>
Transmit Freq Error -96.452 kHz x dB Bandwidth 19.635 MHz*	

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CHAIN 2

26 dB and 99% BANDWIDTH



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BANDWIDTH MID CH Agilent 14:57:07 Nov 5, 2010	Т	Freq/Channel
Ch Freq 5.2 GHz Occupied Bandwidth	Trig Free	Center Freq 5.20000000 GHz
Project: 10U13475		Start Freq 5.17500000 GHz
Ref 20 dBm Atten 20 dB #Samp Log 10 \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	Marka Aller	Stop Freq 5.22500000 GHz
dB/ Offst		CF Step 5.0000000 MHz <u>Auto Man</u>
Center 5.200 00 GHz	Span 50 MHz	Freq Offset 0.00000000 Hz
#Res BW 220 kHz #VBW 620 kHz	#Sweep 100 ms (601 pts)	Signal Track
Occupied Bandwidth 17.5286 MHz	Occ BW % Pwr 99.00 % x dB -26.00 dB	On <u>Off</u>
Transmit Freq Error -50.314 kHz x dB Bandwidth 19.579 MHz*		
Copyright 2000-2010 Agilent Technologies		

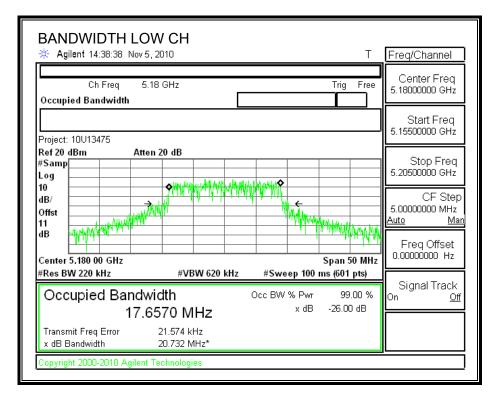
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BANDWIDTH HIGH CH	Т	Freq/Channel
Ch Freq 5.24 GHz Occupied Bandwidth	Trig Free	Center Freq 5.24000000 GHz
Project: 10U13475		Start Freq 5.21500000 GHz
Ref 20 dBm Atten 20 dB #Samp Log 10 Atten 20 dB Atten		Stop Freq 5.26500000 GHz
dB/ Offst 11 dB		CF Step 5.00000000 MHz <u>Auto Man</u>
Center 5.240 00 GHz #Res BW 220 kHz #VBW 620 kH	Span 50 MHz Iz #Sweep 100 ms (601 pts)	Freq Offset 0.00000000 Hz
Occupied Bandwidth 17.7595 MHz	Occ BW % Pwr 99.00 % x dB -26.00 dB	Signal Track On <u>Off</u>
Transmit Freq Error -45.898 kHz x dB Bandwidth 19.124 MHz*		
Copyright 2000-2010 Agilent Technologies		I

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CHAIN 3

26 dB and 99% BANDWIDTH



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BANDWIDTH MID C			Т	Freq/Channel
Ch Freq 5.2 0 Occupied Bandwidth	GHz		Trig Free	Center Freq 5.20000000 GHz
Project: 10U13475				Start Freq 5.17500000 GHz
Ref 20 dBm Atten 2 #Samp Log				Stop Freq 5.22500000 GHz
10 dB/ Offst 11 dB				CF Step 5.0000000 MHz <u>Auto Man</u>
Center 5.200 00 GHz			Span 50 MHz	Freq Offset 0.00000000 Hz
#Res BW 220 kHz Occupied Bandwid		#Sweep 100 Occ BW % Pwr	99.00 %	Signal Track On <u>Off</u>
Transmit Freq Error -2	10 MHz 22.154 kHz 9.699 MHz*	x dB	-26.00 dB	
Copyright 2000-2010 Agilent Teo	hnologies			

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BANDWIDTH HIGH CH ※ Agilent 14:46:55 Nov 5, 2010 T	Freq/Channel
Ch Freq 5.24 GHz Trig Free Occupied Bandwidth	Center Freq 5.24000000 GHz
Project: 10U13475	Start Freq 5.21500000 GHz
Ref 20 dBm Atten 20 dB #Samp Log 10 dB/ Offst 11 dB Center 5.240 00 GHz Span 50 MHz	Stop Freq 5.2650000 GHz CF Step 5.0000000 MHz <u>Auto Man</u> Freq Offset 0.00000000 Hz
	Signal Track On <u>Off</u>
17.5278 MHz x dB -26.00 dB Transmit Freq Error 7.268 kHz x dB Bandwidth 19.445 MHz* Copyright 2000-2010 Agilent Technologies	

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7.2.2. OUTPUT POWER

LIMITS

FCC §15.407 (a) (1)

IC RSS-210 A9.2 (1)

For the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

The transmitter output operates continuously therefore Method # 1 is used.

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REPORT NO: 10U13475-3 FCC ID: S9GZF7761CM

RESULTS

Limit

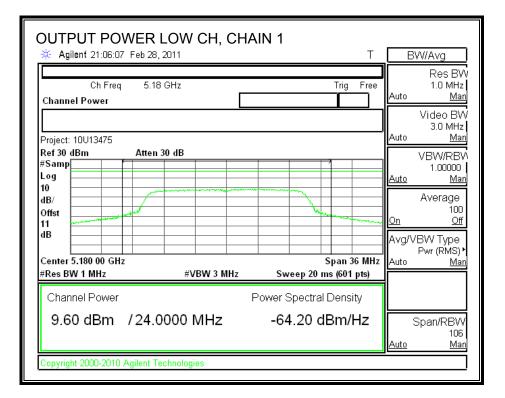
Channel	Frequency	Fixed	В	4 + 10 Log B	Antenna	Limit
onanner	riequency	TIXCU	D	4 · 10 L0g D	Antenna	Linit
		Limit		Limit	Gain	
	(MU=)	(dDma)		(dBm)		(dDma)
	(MHz)	(dBm)	(MHz)	(dBm)	(dBi)	(dBm)
Low	5180	16.99	19.665	16.94	5.50	16.94
Mid	5200	16.99	19.579	16.92	5.50	16.92
High	5240	16.99	19.124	16.82	5.50	16.82

Individual Chain Results

Channel	Frequency	Chain 1	Chain 2	Chain 3	Total	Limit	Margin
		Power	Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5180	9.60	12.23	10.44	15.67	16.94	-1.27
Mid	5200	9.90	12.35	10.14	15.71	16.92	-1.20
High	5240	9.06	12.19	10.29	15.48	16.82	-1.34

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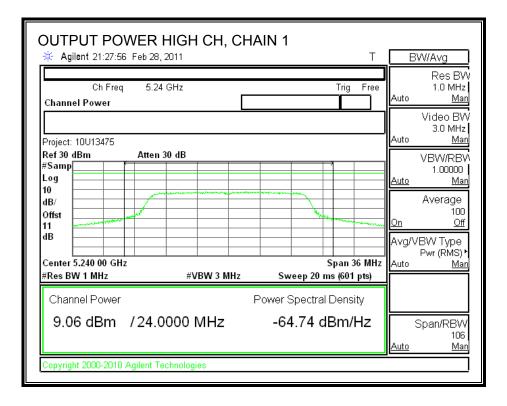
CHAIN 1 OUTPUT POWER



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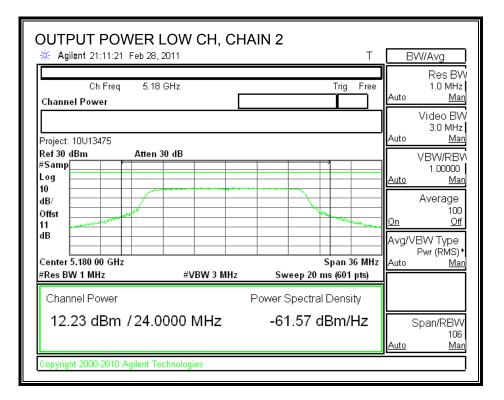
OUTPUT POWER MID CH, CH	IAIN 1	BW/Avg
Ch Freq 5.2 GHz Channel Power	Trig Free	Res BW 1.0 MHz Auto <u>Man</u> Video BW 3.0 MHz
Project: 10U13475 Ref 30 dBm Atten 30 dB #Samp Log 10 dB/ Offst 11 dB Center 5.200 00 GHz #Res BW 1 MHz #VBW 3 MHz	Span 36 MHz	Auto Man VBW/RBW 1.00000 Auto Man Average 100 On Off Avg/VBW Type Pwr (RMS) Auto Man
Channel Power 9.90 dBm /24.0000 MHz Copyright 2000-2010 Agilent Technologies	Sweep 20 ms (601 pts) Power Spectral Density -63.90 dBm/Hz	Span/RBW 106 <u>Auto Man</u>

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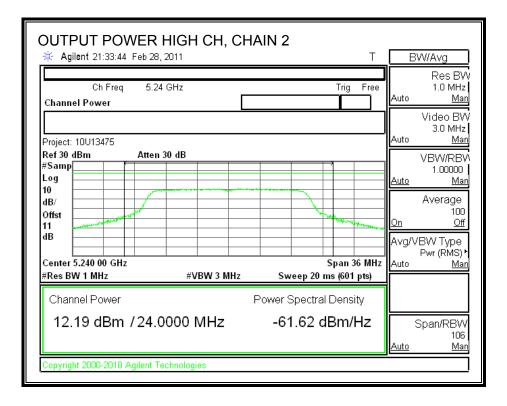
CHAIN 2 OUTPUT POWER



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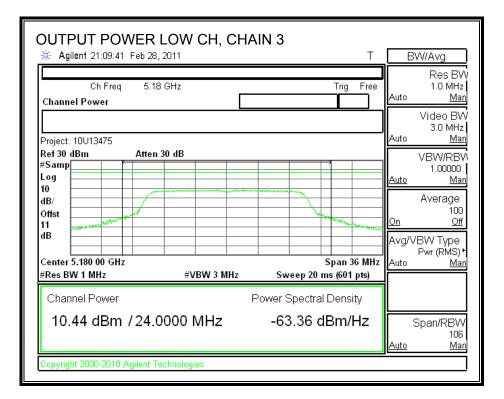
Agilent 21:13:06 Feb 28, 2011 T	BW/Avg
Ch Freq 5.2 GHz Trig Free Channel Power	Res BW 1.0 MHz Auto <u>Man</u> Video BW
L Project: 10U13475 Ref 30 dB Atten 30 dB #Samp definition of the second seco	3.0 MHz Auto <u>Man</u> VBW/RBW 1.00000 <u>Auto Man</u> Average 100 On <u>Off</u> Avg/VBW Type Pwr (RMS) • Auto Man
#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (601 pts) Channel Power Power Spectral Density 12.35 dBm / 24.0000 MHz -61.45 dBm/Hz	Span/RBW 106 <u>Auto Man</u>

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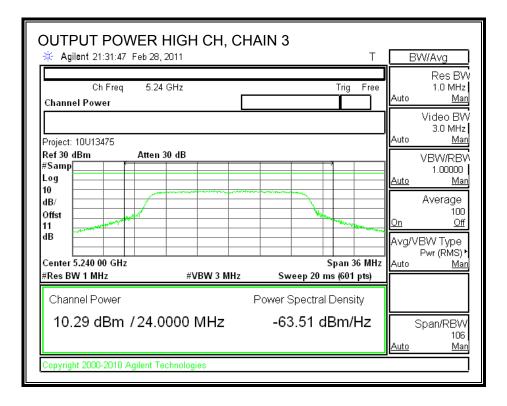
CHAIN 3 OUTPUT POWER



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OUTPUT POWER I	-	N 3	BW/Avg
	GHz	Trig Free	Brwning Res BW 1.0 MHz Auto Man Video BW 3.0 MHz
Project: 10U13475 Ref 30 dBm Atten : #Samp difference and the second s		Span 36 MHz	Auto <u>Man</u> VBW/RBW 1.00000 <u>Auto Man</u> Average 100 <u>On Off</u> Avg/VBW Type Pwr (RMS)*
#Res BW 1 MHz Channel Power 10.14 dBm /24.0 Copyright 2000-2010 Agilent Te	000 MHz	Sweep 20 ms (601 pts) Power Spectral Density -63.66 dBm/Hz	Span/RBW 106 <u>Auto Man</u>

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7.2.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 11 dB (including 10 dB pad and 1.0 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency	Chain 1	Chain 2	Chain 3	Total
		Power	Power	Power	Power
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)
Low	5180	9.31	12.03	10.07	15.40
Middle	5200	9.32	11.91	10.11	15.36
High	5240	9.01	11.52	10.12	15.11

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7.2.4. PEAK POWER SPECTRAL DENSITY

LIMITS

FCC §15.407 (a) (1)

IC RSS-210 A9.2 (1)

For the 5.15-5.25 GHz band, the peak power spectral density shall not exceed 4 dBm in any 1 MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 4 dBm.

TEST PROCEDURE

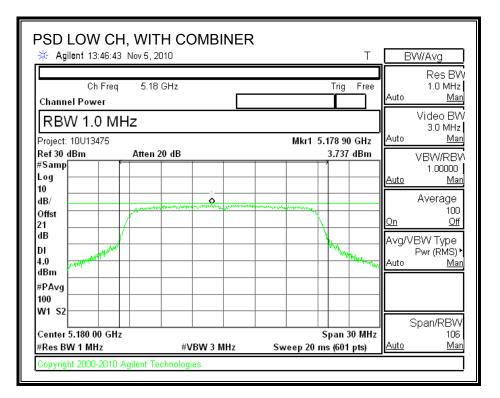
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002. PPSD method #2 was used.

RESULTS

Channel	Frequency	PPSD With Combiner	Limit	Margin
	(MHz)	(dBm)	(dBm)	(dB)
Low	5180	3.74	4	-0.26
Middle	5200	3.40	4	-0.60
High	5240	2.98	4	-1.02

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POWER SPECTRAL DENSITY WITH COMBINER



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PSD MID CH, WIT		Т	BW/Avg
Ch Freq 5.2 Channel Power	? GHz	Trig Free	Res BV 1.0 MHz Auto <u>Mar</u>
RBW 1.0 MHz Project: 10U13475		Mkr1 5.199 30 GHz	Video BV 3.0 MHz Auto <u>Mar</u>
#Samp Log	20 dB	3.400 dBm	VBW/RBV 1.00000 <u>Auto Mar</u>
10 dB/ Offst 21			Average 100 <u>On Off</u>
dB / / DI 4.0 WWWWWWWWWWW		Many Markey	Avg/VBW Type Pwr (RMS) • Auto <u>Mar</u>
#PAvg 100 W1 S2			-
Center 5.200 00 GHz #Res BW 1 MHz	#VBW 3 MHz	Span 30 MH: Sweep 20 ms (601 pts)	Span/RBW z 106 <u>Auto Mar</u>

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PSD HIGH CH, WI		κ T	BW/Avg
Ch Freq 5.24 Channel Power	GHz	Trig Free	Res BW 1.0 MHz Auto <u>Man</u>
RBW 1.0 MHz Project: 10U13475		Mkr1 5.238 45 GHz	Video BV 3.0 MHz Auto <u>Man</u>
Ref 30 dBm Atten 2 #Samp Log 10	20 dB	2.979 dBm	VBW/RBV 1.00000 <u>Auto Man</u>
dB/			Average 100 <u>On Off</u>
dB DI 4.0			Avg/VBW Type Pwr (RMS) • Auto <u>Man</u>
dBm ////////////////////////////////////			-
W1 S2 Center 5.240 00 GHz #Res BW 1 MHz	#VBW 3 MHz	Span 30 MH; Sweep 20 ms (601 pts)	Span/RBW 106 Auto Man

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7.2.5. PEAK EXCURSION

LIMITS

FCC §15.407 (a) (6)

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

TEST PROCEDURE

The transmitter outputs are connected to the spectrum analyzer via a combiner.

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

Since Method # 1 was used for peak power measurements, Method # 1 settings are used for the second PPSD trace.

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RESULTS

CHAIN 1

Channel	Frequency	Peak Excursion	Limit	Margin
	(MHz)	(dB)	(dB)	(dB)
Low	5180	10.50	13	-2.50
Middle	5200	10.47	13	-2.53
High	5240	10.16	13	-2.84

CHAIN 2

Channel	Frequency	Peak Excursion	Limit	Margin
	(MHz)	(dB)	(dB)	(dB)
Low	5180	9.64	13	-3.36
Middle	5200	9.23	13	-3.77
High	5240	9.52	13	-3.48

CHAIN 3

Channel	Frequency	Peak Excursion	Limit	Margin
	(MHz)	(dB)	(dB)	(dB)
Low	5180	10.33	13	-2.67
Middle	5200	11.84	13	-1.16
High	5240	10.36	13	-2.64

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CHAIN 1

PEAK EXCURSION

PEAK EXCURSION			-	El alla
🔆 Agilent 15:11:34 Nov 5, 20	J1U		T	BW/Avg
Ch Freq 5.18 Channel Power	GHz		Trig Free	Res BV 1.0 MHz Auto <u>Mar</u>
RBW 1.0 MHz Project: 10U13475			Mkr1 0 Hz	Video BV 3.0 MHz Auto Mar
Ref 30 dBm Atten 3 #Peak Log	30 dB		10.50 dB	VBW/RBV 1.00000 <u>Auto Mar</u>
10 dB/ Offst 11		A Construction of the second s		Average 100 On <u>Off</u>
dB			Maple and	Avg/VBW Type Pwr (RMS) • Auto <u>Mar</u>
#PAvg				
V1 V2				Span/RBW
Center 5.180 00 GHz #Res BW 1 MHz	#VBW 3 MHz	Sweep 20 m	špan 30 MHz s (601 pts)	106 <u>Auto Mar</u>
Copyright 2000-2010 Agilent Te	chnologies			

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🔆 Agilent 15:15:09 Nov 5,	2010					Т	В	W/Avg
Ch Freq 5.2 Channel Power	! GHz				Trig	Free	Auto	Res BV 1.0 MHz <u>Ma</u>
RBW 1.0 MHz Project: 10U13475					۸ Mkr1	0 Hz	Auto	Video BV 3.0 MHz <u>Ma</u>
Ref 30 dBm Atten #Peak	30 dB	1			10.4	47 dB *_	<u>Auto</u>	VBW/RB ¹ 1.00000 <u>Ma</u>
dB/ Offst		~~î	with	anner b	٩		On	Average 100 <u>Off</u>
dB					Marine Walk	and the second sec	Avg/v Auto	/BW Type Pwr (RMS) Ma
#PAvg								
V1 V2								Span/RBV
Center 5.200 00 GHz #Res BW 1 MHz	#VBW	3 MHz	Sw	eep 20 m	•	30 MHz nts)	<u>Auto</u>	106 Ma

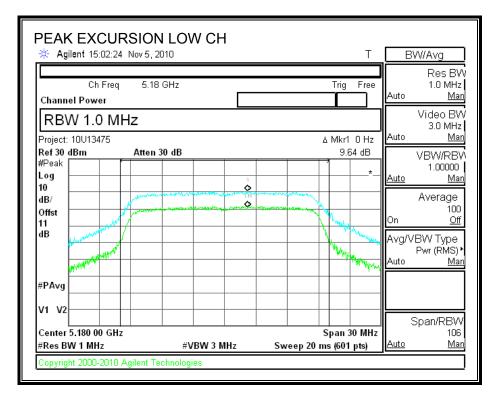
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PEAK EXCURSION Agilent 15:20:03 Nov 5, 20			Т	B	/V/Avg
Ch Freq 5.24 (Channel Power	GHz	-	Frig Free	Auto	Res BV 1.0 MHz <u>Mar</u>
RBW 1.0 MHz Project: 10U13475		۸۷	/kr1 0 Hz	Auto	Video BW 3.0 MHz <u>Mar</u>
Ref 30 dBm Atten 3 #Peak Log 10	0 dB		10.16 dB	<u>Auto</u>	VBVV/RBV 1.00000 <u>Mar</u>
dB/ Offst		man and the second	*	On	Average 100 <u>Off</u>
dB			When the stand of the stand	Avg/V Auto	BW Type Pwr (RMS)∙ <u>Mar</u>
#PAvg					
V1 V2 Center 5.240 00 GHz #Res BW 1 MHz	#VBW 3 MHz	Sp Sweep 20 ms	an 30 MHz (601 pts)	S Auto	pan/RBW 106 Mar

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CHAIN 2

PEAK EXCURSION



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🔆 Agilent 14:58:50 Nov 5, 3	2010		T BW/Avg
Ch Freq 5.2 Channel Power	GHz	Trig Fi	ree Res BV 1.0 MHz Auto <u>Ma</u>
RBW 1.0 MHz Project: 10U13475		۵ Mkr1 0	Video BV 3.0 MHz Hz Auto <u>Ma</u>
Ref 30 dBm Atten #Peak Log 10	30 dB	9.23 d	B VBW/RB) _*_ <u>Auto Ma</u>
dB/ Offst		and a second sec	Average 100 On <u>Off</u>
dB			Avg/VBW Type Pwr (RMS) Auto <u>Ma</u>
#PAvg			
V1 V2			Span/RBW
Center 5.200 00 GHz #Res BW 1 MHz	#VBW 3 MHz	Span 30 M Sweep 20 ms (601 pts	II

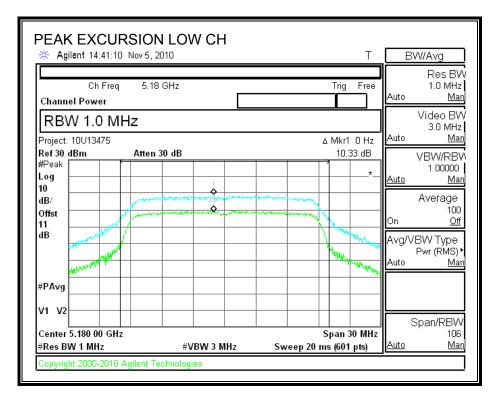
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PEAK EXCURSION * Agilent 14:54:58 Nov 5, 20		т	BW/Avg
Ch Freq 5.24 C		Trig Free	Res BW 1.0 MHz Auto <u>Man</u>
RBW 1.0 MHz Project: 10U13475		۵ Mkr1 O Hz	Video BW 3.0 MHz Auto <u>Man</u>
Ref 30 dBm Atten 3 #Peak Log 10	1	9.52 dB	VBW/RBV 1.00000 <u>Auto Man</u>
dB/ Offst	·····	with a second se	Average 100 On <u>Off</u>
dB		and the second s	Pwr (RMS) •
#PAvg			-
V1 V2 Center 5.240 00 GHz #Res BW 1 MHz	#VBW 3 MHz	Span 30 MHz Sweep 20 ms (601 pts)	Span/RBW 106 Auto Man
Copyright 2000-2010 Agilent Tec		3 4 c c p 20 ma (00 1 p a)	

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CHAIN 3

PEAK EXCURSION



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PEAK EXCURSION			Т	В	W/Avg
Ch Freq 5.2 Channel Power	GHz		Trig Free	Auto	Res BV 1.0 MHz <u>Ma</u>
RBW 1.0 MHz Project: 10U13475		۵	Mkr1 0 Hz	Auto	Video BV 3.0 MHz <u>Ma</u>
Ref 30 dBm Atten 3 #Peak Log 10	1		11.84 dB	<u>Auto</u>	VBW/RB\ 1.00000 <u>Ma</u>
dB/ Offst		Manuna Manun		On	Average 100 <u>Off</u>
dB			And and a start of the start of	Avg/v Auto	/BW Type Pwr (RMS) Ma
#PAvg					
V1 V2					Span/RBV
Center 5.200 00 GHz #Res BW 1 MHz	#VBW 3 MHz	Sweep 20 m	pan 30 MHz s (601 pts)	<u>Auto</u>	106 <u>Ma</u>

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PEAK EXCURSION			Т	BV	WAvg
Ch Freq 5.24 Channel Power	GHz	Т	rig Free	Auto	Res BV 1.0 MHz <u>Man</u>
RBW 1.0 MHz Project: 10U13475		۵M	kr1 0 Hz	Auto	Video BV 3.0 MHz <u>Man</u>
Ref 30 dBm Atten 3 #Peak Log 10	0 dB	1	10.36 dB	<u>Auto</u>	VBW/RBV 1.00000 <u>Mar</u>
dB/ Offst	ann an	Mary Burnet and a for		On	Average 100 <u>Off</u>
dB			Wellow Control	Avg/VE Auto	BW Type Pwr (RMS)≛ <u>Man</u>
#PAvg					
V1 V2				S	pan/RBW
Center 5.240 00 GHz #Res BW 1 MHz	#VBW 3 MHz	Spa Sweep 20 ms (n 30 MHz 601 pts)	<u>Auto</u>	106 <u>Mar</u>

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7.2.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.407 (b) (1)

IC RSS-210 A9.3 (1)

For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm / MHz.

TEST PROCEDURE

Conducted RF measurements of the transmitter output are made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

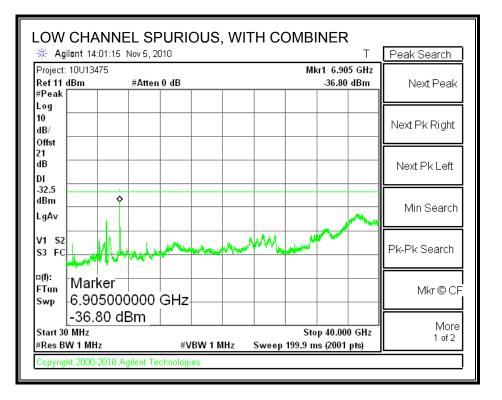
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1 MHz. The video bandwidth is set to 1 MHz. Peak detection measurements are compared to EIRP limit, adjusted for the maximum antenna gain.

Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

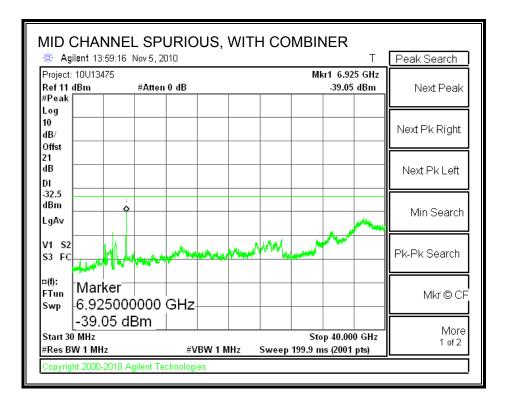
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RESULTS

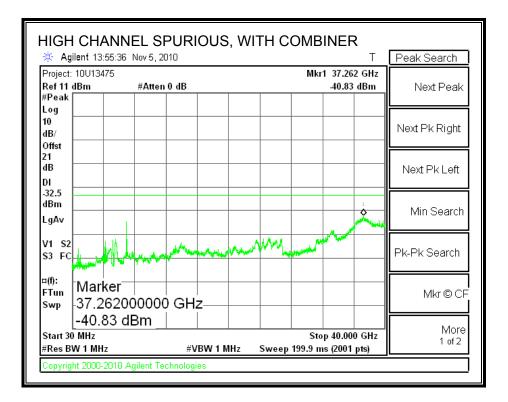
SPURIOUS EMISSIONS WITH COMBINER



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7.3. 802.11n THREE CHAINS HT40 MODE IN THE 5.2 GHz BAND

7.3.1. 26 dB and 99% BANDWIDTH

<u>LIMITS</u>

None; for reporting purposes only.

TEST PROCEDURE

The transmitter outputs are connected to the spectrum analyzer via a combiner. The RBW is set to 1% to 3% of the measured bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal bandwidth function is utilized.

RESULTS

CHAIN 1

Channel	Frequency	26 dB Bandwidth	99% Bandwidth
	(MHz)	(MHz)	(MHz)
Low	5190	38.101	36.3802
High	5230	39.237	36.1201

CHAIN 2

Channel	Frequency	26 dB Bandwidth	99% Bandwidth
	(MHz)	(MHz)	(MHz)
Low	5190	38.814	36.1397
High	5230	37.375	36.3575

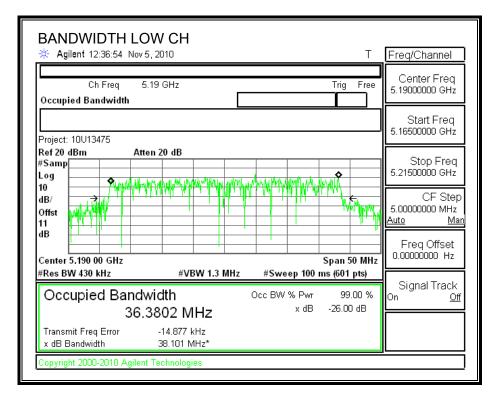
CHAIN 3

Channel	Frequency	26 dB Bandwidth	99% Bandwidth
	(MHz)	(MHz)	(MHz)
Low	5190	38.534	35.9210
High	5230	40.760	36.3548

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CHAIN 1

26 dB and 99% BANDWIDTH



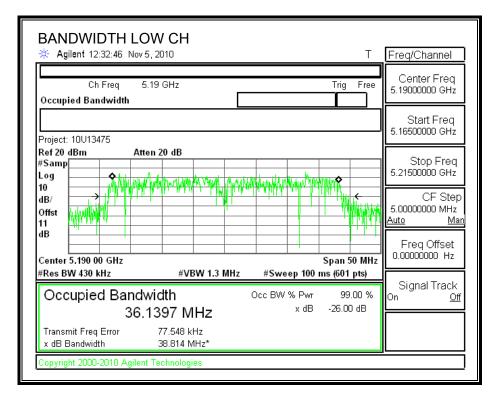
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BANDWIDTH HIGH CH	Freq/Channel
Ch Freq 5.23 GHz Trig Free Occupied Bandwidth	Center Freq 5.23000000 GHz
Project: 10U13475	Start Freq 5.2050000 GHz
Ref 20 dBm Atten 20 dB #Samp Log 10 Atten 20 dB	Stop Freq 5.2550000 GHz
10 dB/ →	CF Step 5.0000000 MHz <u>Auto Man</u>
dB Center 5.230 00 GHz Span 50 MHz	Freq Offset 0.00000000 Hz
#Res BW 430 kHz #VBW 1.3 MHz #Sweep 100 ms (601 pts)	
Occupied Bandwidth Occ BW % Pwr 99.00 % 36.1201 MHz × dB -26.00 dB	Signal Track On <u>Off</u>
Transmit Freq Error -13.036 kHz x dB Bandwidth 39.237 MHz*	
Copyright 2000-2010 Agilent Technologies	

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CHAIN 2

26 dB and 99% BANDWIDTH



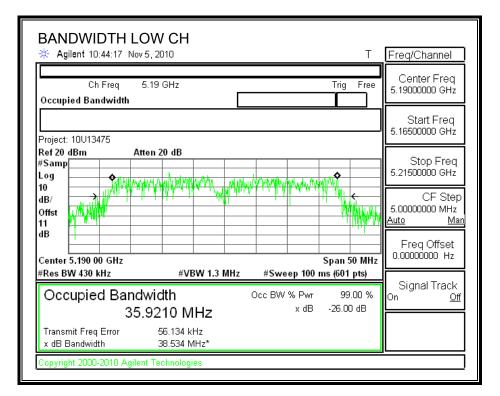
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BANDWIDTH HIGH CH	Freq/Channel
Ch Freq 5.23 GHz Trig Free Occupied Bandwidth	Center Freq 5.23000000 GHz
Project: 10U13475	Start Freq 5.20500000 GHz
Ref 20 dBm Atten 20 dB #Samp Log 10	Stop Freq 5.25500000 GHz
10 dB/ Offst 11	CF Step 5.00000000 MHz <u>Auto Man</u>
dB Center 5.230 00 GHz Span 50 MHz	Freq Offset 0.00000000 Hz
#Res BW 430 kHz #VBW 1.3 MHz #Sweep 100 ms (601 pts)	
Occupied Bandwidth Occ BW % Pwr 99.00 % 36.3575 MHz × dB -26.00 dB	Signal Track On <u>Off</u>
Transmit Freq Error 6.744 kHz x dB Bandwidth 37.375 MHz*	
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CHAIN 3

26 dB and 99% BANDWIDTH



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BANDWIDTH HIGH CH	Freq/Channel
Ch Freq 5.23 GHz Trig Free Occupied Bandwidth	Center Freq 5.23000000 GHz
Project: 10U13475	Start Freq 5.20500000 GHz
Ref 20 dBm Atten 20 dB #Samp Log . A Bite strategic data and a strategic	Stop Freq 5.2550000 GHz
Log 10 4B/ → 10 Coffst 11 Coffst Coffst 11	CF Step 5.0000000 MHz <u>Auto Man</u>
Center 5.230 00 GHz Span 50 MHz	Freq Offset 0.00000000 Hz
#Res BW 430 kHz #VBW 1.3 MHz #Sweep 100 ms (601 pts)	
Occupied Bandwidth Occ BW % Pwr 99.00 % 36.3548 MHz x dB -26.00 dB	Signal Track On <u>Off</u>
Transmit Freq Error-100.347 kHzx dB Bandwidth40.760 MHz*	
Copyright 2000-2010 Agilent Technologies	

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7.3.2. OUTPUT POWER

LIMITS

FCC §15.407 (a) (1)

IC RSS-210 A9.2 (1)

For the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

The transmitter output operates continuously therefore Method # 1 is used.

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REPORT NO: 10U13475-3 FCC ID: S9GZF7761CM

RESULTS

Limit

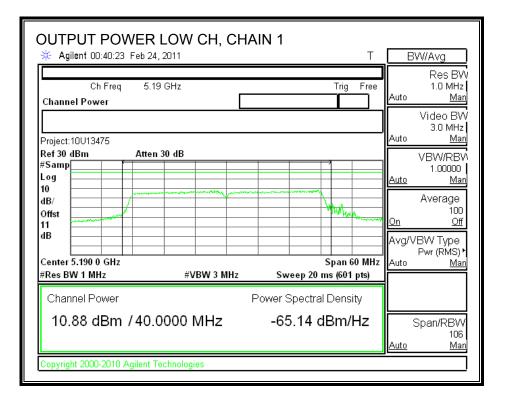
Channel	Frequency	Fixed	В	4 + 10 Log B	Antenna	Limit
		Limit		Limit	Gain	
	(MHz)	(dBm)	(MHz)	(dBm)	(dBi)	(dBm)
Low	5190	16.99	38.101	19.81	5.50	16.99
High	5230	16.99	37.275	19.71	5.50	16.99

Individual Chain Results

Channel	Frequency	Chain 1	Chain 2	Chain 3	Total	Limit	Margin
		Power	Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5190	10.88	12.96	11.83	16.74	16.99	-0.25
High	5230	10.88	13.50	11.40	16.85	16.99	-0.14

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CHAIN 1 OUTPUT POWER

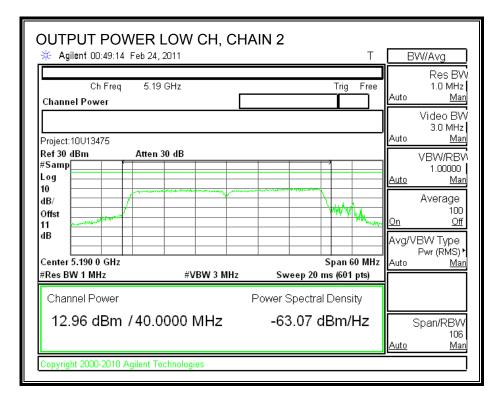


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OUTPUT POWER * Agilent 01:05:13 Feb 24,	,	AIN 1	BW/Avg
Ch Freq 5.23 Channel Power) GHz	Trig Free	Res BW 1.0 MHz Auto <u>Man</u>
Project:10U13475			Video BW 3.0 MHz Auto <u>Man</u>
Ref 30 dBm Atten #Samp Dog 10			VBW/RBV 1.00000 <u>Auto Man</u>
dB/ Offst		an a	Average 100 <u>On Off</u>
dB		Span 60 MHz	Avg/VBW Type Pwr (RMS) • Auto <u>Man</u>
#Res BW 1 MHz Channel Power	#VBW 3 MHz	Sweep 20 ms (601 pts) Power Spectral Density	
10.88 dBm /40.0	0000 MHz	-65.14 dBm/Hz	Span/RBW 106 <u>Auto Man</u>
Copyright 2000-2010 Agilent To	echnologies		

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CHAIN 2 OUTPUT POWER

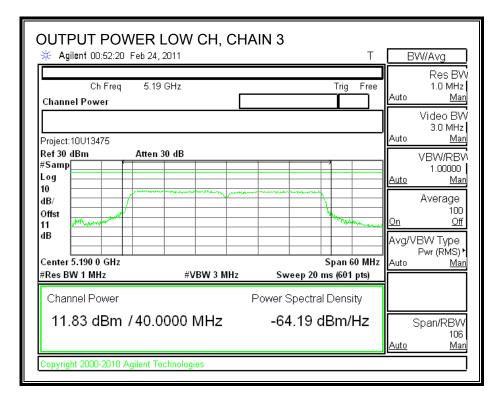


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OUTPUT POWER	,	. IN 2 ⊤	BW/Avg
Ch Freq 5.23 Channel Power	l GHz	Trig Free	Res BW 1.0 MHz Auto <u>Man</u> Video BW 3.0 MHz
Project: 10U13475 Ref 30 dBm Atten #Samp	30 dB		Avg/VBW Type
Center 5.230 0 GHz #Res BW 1 MHz	#VBW 3 MHz	Span 60 MHz Sweep 20 ms (601 pts)	Pwr (RMS) ► Auto <u>Man</u>
Channel Power 13.50 dBm /40.0	0000 MHz	ower Spectral Density -62.52 dBm/Hz	Span/RBW 106 <u>Auto Man</u>

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CHAIN 3 OUTPUT POWER



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OUTPUT POWER	,	AIN 3	BW/Avg
Ch Freq 5.23 Channel Power	3 GHz	Trig Free	Res BW 1.0 MHz Auto <u>Man</u>
Project: 10U13475 Ref 30 dBm Atten	30 dB		Video BW 3.0 MHz Auto <u>Man</u>
#Samp Atten			VBW/RBV 1.00000 <u>Auto Man</u>
dB/ Offst			Average 100 <u>On Off</u>
dB Center 5.230 000 GHz #Res BW 1 MHz	#VBW 3 MHz	Span 63 MHz Sweep 20 ms (601 pts)	Avg/VBW Type Pwr (RMS) • Auto <u>Man</u>
Channel Power		Power Spectral Density	
11.40 dBm / 42.0	0000 MHz	-64.83 dBm/Hz	Span/RBW 106 <u>Auto Man</u>
Copyright 2000-2010 Agilent T	echnologies		

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7.3.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 11 dB (including 10 dB pad and 1.0 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency	Chain 1	Chain 2	Chain 3	Total
		Power	Power	Power	Power
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)
Low	5190	10.18	12.11	11.21	16.01
High	5230	10.03	13.02	11.47	16.45

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7.3.4. PEAK POWER SPECTRAL DENSITY

LIMITS

FCC §15.407 (a) (1)

IC RSS-210 A9.2 (1)

For the 5.15-5.25 GHz band, the peak power spectral density shall not exceed 4 dBm in any 1 MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 4 dBm.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002. PPSD method #2 was used.

RESULTS

Channel	Frequency	PPSD With Combiner	Limit	Margin
	(MHz)	(dBm)	(dBm)	(dB)
Low	5190	3.914	4	-0.086
High	5230	2.561	4	-1.439

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POWER SPECTRAL DENSITY WITH COMBINER

PSD LOW CH, WITI Agilent 09:52:45 Nov 5, 20		Т	BW/Avg
Ch Freq 5.19 (Channel Power	θHz	Trig Free	Res BW 1.0 MHz Auto <u>Man</u>
RBW 1.0 MHz Project: 10U13475		Mkr1 5.201 1 GHz	Video BW 3.0 MHz Auto <u>Man</u>
Ref 30 dBm Atten 20 #Samp Log 10) dB	3.914 dBm	VBW/RBV 1.00000 <u>Auto Man</u>
dB/		I marken and	Average 100 <u>On Off</u>
dB Dl 4.0 dBm			Avg/VBW Type Pwr (RMS) • Auto <u>Man</u>
#PAvg 100 W1 S2			
Center 5.190 0 GHz #Res BW 1 MHz	#VBW 3 MHz	Span 60 MH: Sweep 20 ms (601 pts)	Span/RBW 106 Auto Man

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PSD HIGH CH, WIT <u>Agilent</u> 10:02:43 Nov 5, 21		T	Freq/Channel
Ch Freq 5.23 Channel Power	GHz	Trig Free	Center Freq 5.23000000 GHz
Project: 10U13475		Mkr1 5.221 8 GHz	Start Freq 5.2000000 GHz
Ref 30 dBm Atten 2 #Samp Log	20 dB	2.561 dBm	Stop Freq 5.26000000 GHz
21	Langer and Stranger and Stranger and Stranger	1947 "Strauter outer out	CF Step 6.00000000 MHz <u>Auto Man</u>
dB Dl 4.0 mt. duyl w ft ^{ree}			Freq Offset 0.00000000 Hz
#PAvg 100 W1 S2			Signal Track On <u>Off</u>
Center 5.230 0 GHz #Res BW 1 MHz	#VBW 3 MHz	Span 60 MH: Sweep 20 ms (601 pts)	z

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7.3.5. PEAK EXCURSION

LIMITS

FCC §15.407 (a) (6)

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

TEST PROCEDURE

The transmitter outputs are connected to the spectrum analyzer via a combiner.

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

Since Method # 1 was used for peak power measurements, Method # 1 settings are used for the second PPSD trace.

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RESULTS

CHAIN 1

Channel	Frequency	Peak Excursion	Limit	Margin
	(MHz)	(dB)	(dB)	(dB)
Low	5190	11.18	13	-1.82
High	5230	11.64	13	-1.36

CHAIN 2

Channel	Frequency	Peak Excursion	Limit	Margin
	(MHz)	(dB)	(dB)	(dB)
Low	5190	12.28	13	-0.72
High	5230	12.79	13	-0.21

CHAIN 3

Channel	Frequency	Peak Excursion	Limit	Margin
	(MHz)	(dB)	(dB)	(dB)
Low	5190	11.65	13	-1.35
High	5230	11.94	13	-1.06

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CHAIN 1

PEAK EXCURSION

PEAK EXCURSION * Agilent 16:51:07 Nov 10, 1		Т	BW/Avg
Ch Freq 5.19 Channel Power	GHz	Trig Fre	Res BV
RBW 1.0 MHz Project: 10U13475		۵ Mkr1 O H	Video BW 3.0 MHz Auto <u>Man</u>
Ref 30 dBm Atten : #Peak Log	1	11.18 dB	
10 dB/ Offst 11	18	and the second sec	Average 100 On <u>Off</u>
dB			Avg/vBvv Type
#PAvg			
V1 V2			Span/RBW
Center 5.190 0 GHz #Res BW 1 MHz	#VBW 3 MHz	Span 60 MH Sweep 20 ms (601 pts)	

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PEAK EXCURSION # Agilent 12:47:26 Nov 5, 20			т	B	/V/Avg
Ch Freq 5.23 C		Tri	g Free	Auto	Res BV 1.0 MHz <u>Man</u>
RBW 1.0 MHz Project: 10U13475		ے م	r1 O Hz	Auto	Video BV 3.0 MHz <u>Man</u>
Ref 30 dBm Atten 30 #Peak Log 10) dB	1	1.64 dB	<u>Auto</u>	VBVV/RBV 1.00000 <u>Man</u>
dB/ water have have been	mande alland alland			On	Average 100 <u>Off</u>
dB			^{na} nhayhara MMMMhalla	Avg/V Auto	BW Type Pwr (RMS) • <u>Mar</u>
#PAvg					
V1 V2		Spar	1 60 MHz	5	pan/RBW 106
#Res BW 1 MHz Copyright 2000-2010 Agilent Tec	#VBW 3 MHz	Sweep 20 ms (6	01 pts)	<u>Auto</u>	<u>Man</u>

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CHAIN 2

PEAK EXCURSION

PEAK EXCURSION		Т	BW/Avg
Ch Freq 5.19 Channel Power		Trig Free	Res BW 1.0 MHz Auto <u>Man</u>
RBW 1.0 MHz Project: 10U13475		∆ Mkr1 0 Hz	Video BW 3.0 MHz Auto <u>Man</u>
Ref 30 dBm Atten 3 #Peak Log	0 dB	12.28 dB	VBW/RBM 1.00000 <u>Auto Man</u>
10 dB/ Offst		and a second	Average 100 On <u>Off</u>
dB		Here and a contraction	Avg/VBW Type Pwr (RMS) ► Auto <u>Man</u>
#PAvg			-
V1 V2		Span 60 MHz	Span/RBW
#Res BW 1 MHz	#VBW 3 MHz	Sweep 20 ms (601 pts)	Auto Man

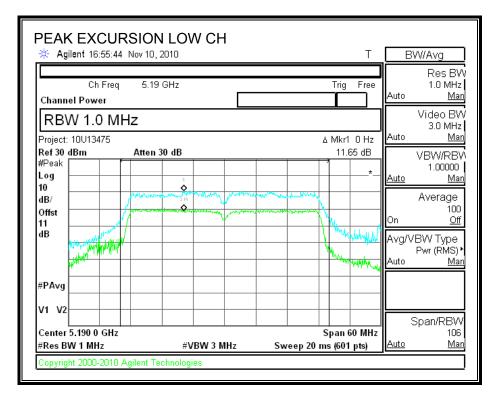
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PEAK EXCURSION			тГ	BW/Avg
Ch Freq 5.23 Channel Power	GHz	Trig F	ree Au	Res BV 1.0 MHz to <u>Mar</u>
RBW 1.0 MHz Project: 10U13475		∆ Mkr1 0	Hz Au	Video BV 3.0 MHz to <u>Mar</u>
Ref 30 dBm Atten : #Peak Log 10		12.79 c	IB _*_ <u>Au</u>	VBW/RBV 1.00000 to <u>Mar</u>
dB/ Offst			On	Average 100 <u>Off</u>
dB				g/VBW Type Pwr (RMS) • to <u>Mar</u>
#PAvg				
V1 V2				Span/RBW
#Res BW 1 MHz	#VBW 3 MHz	Span 60 M Sweep 20 ms (601 pts	— II.	106 <u>to Mar</u>

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CHAIN 3

PEAK EXCURSION



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PEAK EXCURSION			Т	BM	//Avg
Ch Freq 5.23 Channel Power	GHz	Ţ	rig Free	Auto	Res BV 1.0 MHz <u>Man</u>
RBW 1.0 MHz Project: 10U13475		ΔN	1kr1 O Hz	Auto	Video BW 3.0 MHz <u>Man</u>
Ref 30 dBm Atten 3 #Peak Log 10	0 dB	1	11.94 dB	\ <u>Auto</u>	/BW/RBV 1.00000 <u>Man</u>
dB/ Offst	· · · · · · · · · · · · · · · · · · ·	a service service	M.L. Jonahihay	, On	Average 100 <u>Off</u>
dB			Margan and and		3W Type ⁹ wr (RMS) ► <u>Mar</u>
#PAvg					
V1 V2		Sp	an 60 MHz	SI	pan/RBW 106
#Res BW 1 MHz	#VBW 3 MHz	Sweep 20 ms (<u>Auto</u>	Mar

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7.3.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.407 (b) (1)

IC RSS-210 A9.3 (1)

For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm / MHz.

TEST PROCEDURE

Conducted RF measurements of the transmitter output are made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

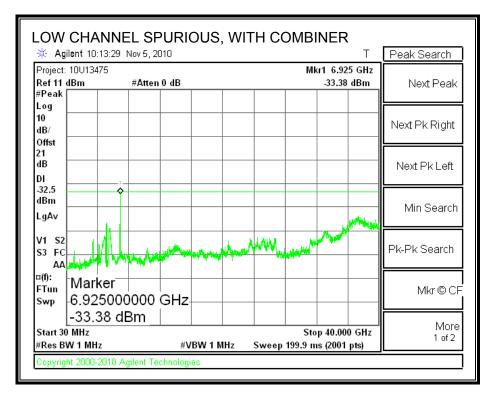
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1 MHz. The video bandwidth is set to 1 MHz. Peak detection measurements are compared to EIRP limit, adjusted for the maximum antenna gain.

Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

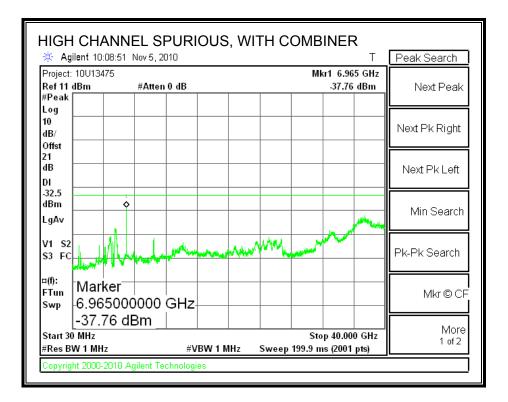
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RESULTS

SPURIOUS EMISSIONS WITH COMBINER



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7.4. RECEIVER CONDUCTED SPURIOUS EMISSIONS

LIMITS

IC RSS-GEN 7.2.3.1

Antenna Conducted Measurement: Receiver spurious emissions at any discrete frequency shall not exceed 2 nanowatts (-57 dBm) in the band 30-1000 MHz, or 5 nanowatts (-53 dBm) above 1 GHz.

TEST PROCEDURE

IC RSS-GEN 4.10, Conducted Method

The receiver antenna port is connected to a spectrum analyzer.

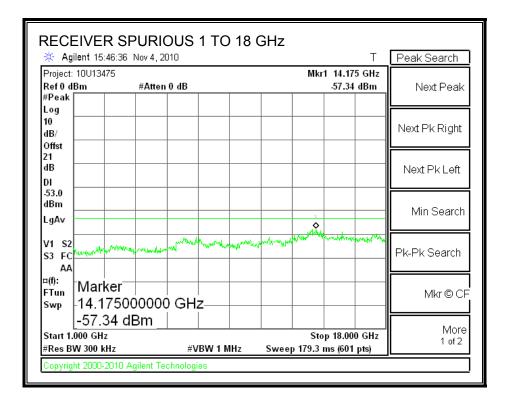
The spectrum from 30 MHz to 18 GHz is investigated with the receiver set to the middle channel of each 5 GHz band.

Preliminary tests on individual chains, and on all chains with a combiner, were performed. The worst-case configuration was with a combiner, therefore final test were performed with all chains feeding a combiner.

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RECEIVER SPURIOUS EMISSIONS FOR 802.11a MODE IN THE 5.2 GHz BAND

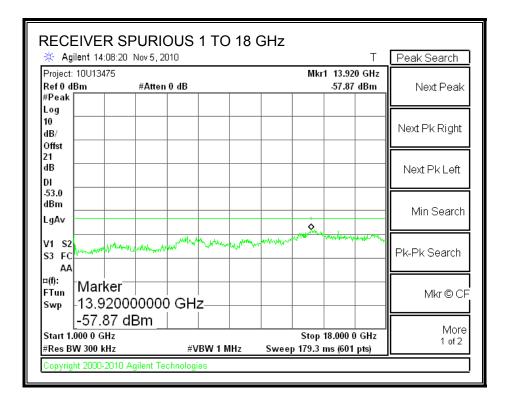
	EIVER S			30 T	O 10	00 M	Hz			
🔆 Agi	ilent 15:43:32	Nov 4, 20	010						Т	Peak Search
Ref0d #Peak	10U13475 Bm	#Atten	0 dB				Mk	r1 933. -67.34		Next Peak
Log 10 dB/ Offst										Next Pk Right
21 dB										Next Pk Left
DI -57.0 dBm										Min Search
LgA∨										
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RECEIVER SPURIOUS EMISSIONS FOR 802.11n HT20 MODE IN THE 5.2 GHz BAND

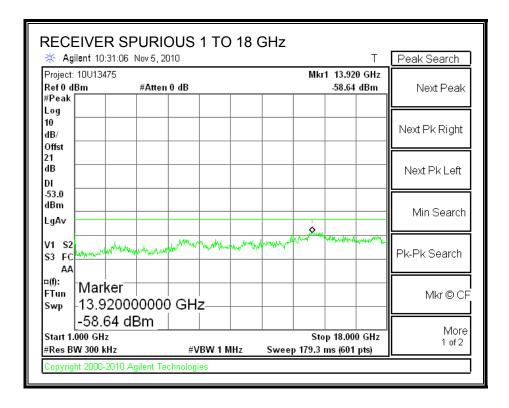
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🄆 Agi	ilent 14:12:19	Nov 5, 20	010						Т	Peak Search
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RECEIVER SPURIOUS EMISSIONS FOR 802.11n HT40 MODE IN THE 5.2 GHz BAND

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¤(f): FTun Swp	Marker 867.40									Mkr © CF
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8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

<u>LIMITS</u>

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.

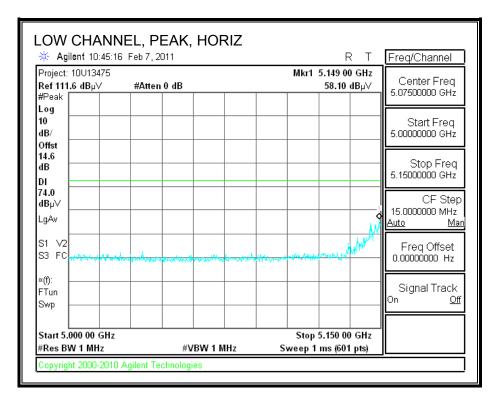
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

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)

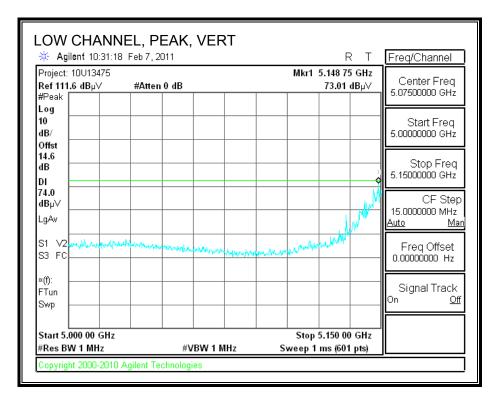


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Agilent 10:48 Project: 10U13475			Mind	R T 5.150 00 GHz	Freq/Channel
Project. 10013475 Ref 111.6 dBµ∨ #Peak □ □ □	#Atten 0	dB		5.150 00 GH2 41.53 dBµ∨	Center Freq 5.07500000 GHz
Log 10 dB/ Offst					Start Freq 5.0000000 GHz
14.6 dB DI					Stop Freq 5.15000000 GHz
54.0 dBµ∨ LgAv					CF Step 15.000000 MHz <u>Auto Mar</u>
S1 V2 S3 FC					Freq Offset 0.00000000 Hz
≈(f): FTun Swp					Signal Track On <u>Off</u>
Start 5.000 00 GH #Res BW 1 MHz	z	#VBW 10 Hz	Stop Sweep 11.7	5.150 00 GHz	

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AUTHORIZED BANDEDGE (LOW CHANNEL, VERTICAL)



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🔆 Agilent 10:32	2:16 Feb 7, 2011			RT	Freq/Channel
Project: 10U13475 Ref 111.6 dB µ∨ #Peak □	#Atten 0 dE	3	Mkr1	5.149 50 GHz 51.91 dBµ∀	Center Freq 5.07500000 GHz
Log 10 dB/ Offst					Start Freq 5.0000000 GHz
14.6 dB DI					Stop Freq 5.15000000 GHz
54.0 dBµ∨ LgAv					CF Step 15.0000000 MHz <u>Auto Mar</u>
S1 V2 S3 FC					Freq Offset 0.00000000 Hz
×(f): FTun Swp					Signal Track On <u>Off</u>
Start 5.000 00 GH #Res BW 1 MHz	lz	#VBW 10 Hz	•	5.150 00 GHz 7 s (601 pts)	

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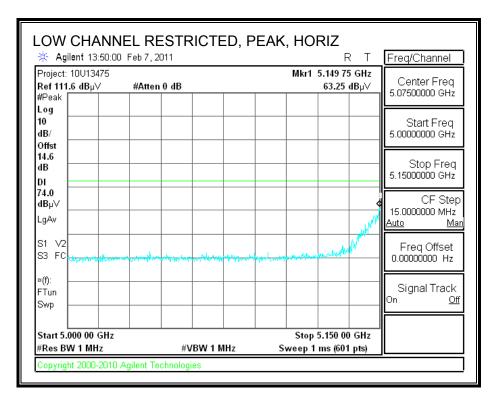
HARMONICS AND SPURIOUS EMISSIONS

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Limit Margin vs. Peak Limit store AIS P 101.0 190.0 Store Morea <t< th=""><th>moject #: IOU13475 set Target: Kuckus set Target: FCC 15.247 ode Oper: Tx On, 5.2 CHz band, a Mode f Measurement Frequency Amp Preamp Gain Average Field Strength Limit Read Analyzer Reading: Average Field Strength Margin v3. Peak Limit Margin v3. Peak Limit AF Antenna Factor Peak Calculated Peak Field Strength Margin v3. Peak Limit CL Cabu Loss HPF High Pass Filte Margin v3. Peak Limit f Notes Peak Calculated Peak Field Strength Margin v3. Peak Limit f Notes Peak Of the B B B B B B B B B B W Pice Pice Notes f Dist Read AF CL Amp D Corr Fit Corr. Limit Margin v3. Peak Limit f Dist Read AF CL Amp D Corr Fit Corr. Limit Margin v3. 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ev. 4.1.2.7	ev. 4.1.2.7	ev. 4.1.2.7	ev. 4.1.2.7																	
						missions	were de	tected	above t	he syster	n nois	se floor.								

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

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

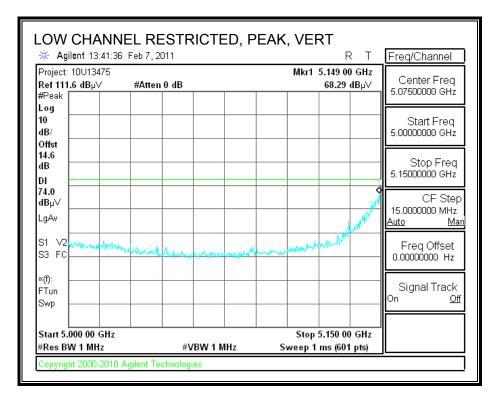


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🔆 Agilent 13:50):58 Feb 7 , 2011	RT	Freq/Channel
Project: 10U13475 Ref 111.6 dB µ∀ #Peak	#Atten 0 dB	Mkr1 5.150 00 GHz 45.25 dBμ∀	Center Freq 5.07500000 GHz
Log 10 dB/			Start Freq 5.0000000 GHz
Offst 14.6 dB DI			Stop Freq 5.1500000 GHz
54.0 dBµ∨ LgAv			CF Step 15.000000 MHz
S1 V2 S3 FC			Auto <u>Man</u> Freq Offset 0.0000000 Hz
×(f): FTun Swp			Signal Track
Start 5.000 00 GH #Res BW 1 MHz	Iz #VBW 10 H	Stop 5.150 00 GHz z Sweep 11.7 s (601 pts)	

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RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



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🔆 Agilent 13:42:4	41 Feb 7, 2011	R T	Freq/Channel
Project: 10∪13475 Ref 111.6 dB µ∨ #Peak	#Atten 0 dB	Mkr1 5.150 00 GHz 52.78 dBµ∀	Center Freq 5.07500000 GHz
Log 10 dB/			Start Freq 5.0000000 GHz
Offst 14.6 dB			- Stop Freq 5.1500000 GHz
DI			CF Step 15.0000000 MHz
S1 V2 S3 FC			Freq Offset 0.00000000 Hz
»(f): FTun Swp			Signal Track
Start 5.000 00 GHz #Res BW 1 MHz	#VBW 10 H	Stop 5.150 00 GHz z Sweep 11.7 s (601 pts)	

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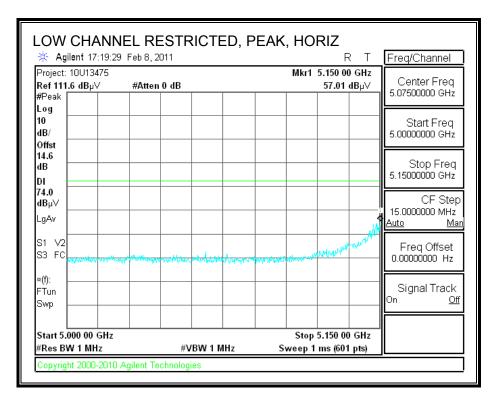
HARMONICS AND SPURIOUS EMISSIONS

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 Q 3 m Margin vs. Average Limit AF Antenna Factor Peak Calculated Peak Field Strength Margin vs. Average Limit CL Cable Loss HPF High Pass Filter Margin vs. Peak Limit Margin vs. Peak Limit f Dist Read AF CL Amp D Corr Filt Corr. Limit Margin vs. Peak Limit f Dist Read AF CL Amp D Corr. Hit Margin vs. Peak Limit Margin vs. Peak Limit f Dist Read AF CL Amp D Corr. Limit Margin vs. Peak Limit Margin vs. Peak Limit f Dist Read AF CL Amp D Corr. Limit Margin vs. Peak Limit f Obst Read AF CL Amp D Corr Linit Margin vs. Peak Limit	roject *: IOUI 3475 ompany: Ruckus str Target: FCC 15.247 fode Oper: Tx On, 5.2 GHz band, HT20 MCS8 f Measurement Frequency Amp Preamp Gain Average Field Strength Limit Read Analyzer Reading Average Field Strength Q 3 m Margin vs. Average Limit Read Analyzer Reading Average Field Strength Q 3 m Margin vs. Average Limit AF Anterna Factor Peak Calculated Peak Field Strength Margin vs. Average Limit f Read AF CL Amp D Corr Fitz Corr. Limit Margin vs. Average Limit f Note Peak Field Strength Margin vs. Average Limit Margin vs. Peak Limit CL Cabe Loss HPF High Pass Filter Margin vs. Peak Limit strong Association Association Association Average Field Strength Dit Det AntHigh Table Angle Notes strong Read AF CL Amp D Corr Fitz Corr. Limit Margin vs. Average Limit strong Association	roject *: IOUI 3475 ompany: Ruckus set Target: FCC 15.247 fode Oper: Tx On, 5.2 GHz band, HT20 MCS8 f Measurement Frequency Amp Preamp Gain Average Field Strength Limit Read Analyzer Reading Average Field Strength Compt Limit Limit Read Analyzer Reading Average Field Strength Compt Limit Margin vs. Average Limit AF Anterna Factor Peak Calculated Peak Field Strength Compt Limit Margin vs. Average Limit f Note Peak Peak Field Strength Compt Limit Margin vs. Average Limit f Note Peak Calculated Peak Field Strength Compt Margin vs. Average Limit Margin vs. Average Limit f Dist Read AF CL Amp D Corr Fitz Corr. Limit Margin vs. Average Limit f Dist Read AF CL Amp D Corr Fitz Corr. Limit Margin vs. Preak Limit f Dist Read AF CL Amp D Corr Fitz Corr. Limit Margin vs. Preage Limit	roject *: IOUI 3475 ompany: Ruckus set Target: FCC 15.247 fode Oper: Tx On, 5.2 GHz band, HT20 MCS8 f Measurement Frequency Amp Preamp Gain Average Field Strength Limit Read Analyzer Reading Average Field Strength Compt Limit Limit Read Analyzer Reading Average Field Strength Compt Limit Margin vs. Average Limit AF Anterna Factor Peak Calculated Peak Field Strength Compt Limit Margin vs. Average Limit f Note Peak Peak Field Strength Compt Limit Margin vs. Average Limit f Note Peak Calculated Peak Field Strength Compt Margin vs. Average Limit Margin vs. Average Limit f Dist Read AF CL Amp D Corr Fitz Corr. Limit Margin vs. Average Limit f Dist Read AF CL Amp D Corr Fitz Corr. Limit Margin vs. Preak Limit f Dist Read AF CL Amp D Corr Fitz Corr. Limit Margin vs. Preage Limit	ata.	•	William		g											
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5.600 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 5.600 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 5.600 3.0 45.5 38.3 11.4 -32.2 0.0 0.7 49.0 54.0 -5.0 H A 98.0 356.0 5.600 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 5.600 3.0 32.6 38.3 11.4 -32.2 0.0 0.7 61.6 74.0 -12.4 H P 98.0 177.0 5.720 3.0 43.6 38.0 11.4 -32.2 0.0 0.7 48.2 54.0 -5.8 H A 98.0 29.0 5.720 3.0 41.8 38.0 11.4 -32.2 0.0	5.600 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 5.600 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 5.600 3.0 45.5 38.3 11.4 -32.2 0.0 0.7 63.7 74.0 -10.3 V P 98.0 356.0 5.600 3.0 32.6 38.3 11.4 -32.2 0.0 0.7 63.7 74.0 -10.3 V P 98.0 177.0 5.600 3.0 32.6 38.3 11.4 -32.2 0.0 0.7 61.6 74.0 -12.4 H P 98.0 177.0 5.720 3.0 43.6 38.0 11.4 -32.2 0.0 0.7 48.2 54.0 -5.8 H A 98.0 29.0 5.720 3.0 41.8 38.0 11.4 -32.2 0.0	5.600 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 5.600 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 5.600 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 5.600 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 5.600 3.0 32.6 38.3 11.4 -32.2 0.0 0.7 61.6 -3.1 V A 98.0 177.0 igh Ch. 5240 MHz - - - - - - - - - - - - - - - - - - - - - - - - - -	5.600 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 5.600 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 5.600 3.0 45.5 38.3 11.4 -32.2 0.0 0.7 63.7 74.0 -10.3 V P 98.0 356.0 5.600 3.0 32.6 38.3 11.4 -32.2 0.0 0.7 63.7 74.0 -10.3 V P 98.0 177.0 5.600 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 5.720 3.0 43.6 38.0 11.4 -32.2 0.0 0.7 48.2 54.0 -5.8 H P 98.0 29.0 5.720 3.0 30.3 38.0 11.4 -32.2 0.0				38.5	11.3	-32.2	0.0	0.7	50.0	54.0	-4.0	v	A	98.0	340.0	
5.600 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 5.600 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 5.600 3.0 32.6 38.3 11.4 -32.2 0.0 0.7 63.7 74.0 -10.3 V P 98.0 177.0 5.600 3.0 32.6 38.3 11.4 -32.2 0.0 0.7 50.9 54.0 -3.1 V P 98.0 177.0 Exp.Ch.55240 MHz	5.600 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 5.600 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 5.600 3.0 32.6 38.3 11.4 -32.2 0.0 0.7 63.7 74.0 -10.3 V P 98.0 177.0 5.600 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 (a) C 5240 MHz	5.600 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 5.600 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 5.600 3.0 32.6 38.3 11.4 -32.2 0.0 0.7 63.7 74.0 -10.3 V P 98.0 177.0 igh Ch. 5240 MHz	5.600 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 5.600 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 5.600 3.0 32.6 38.3 11.4 -32.2 0.0 0.7 63.7 74.0 -10.3 V P 98.0 177.0 6.600 3.0 32.6 38.3 11.4 -32.2 0.0 0.7 63.7 74.0 -10.3 V P 98.0 177.0 6.60 3.0 32.6 38.0 11.4 -32.2 0.0 0.7 61.6 74.0 -12.4 H P 98.0 29.0 5.720 3.0 43.6 38.0 11.4 -32.2 0.0 0.7 48.2 54.0 -5.8 H A 98.0 29.0 5.720 3.0 41.8 38.0 11.4 -32.2 0.0				38.3	11.4	-32.2	0.0	0.7	61.8	74.0	-12.2	н	Р	98.0	356.0	
5.600 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 ligh Ch. 55240 MHz	5.600 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 ligh Ch. 5540 MHz	5.600 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 igh Ch. 5240 MHz	5.600 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 ligh. Ch. 5240 MHz 30.0 43.6 38.0 11.4 -32.2 0.0 0.7 61.6 74.0 -12.4 H P 98.0 29.0 5.720 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 5.720 3.0 41.8 38.0 11.4 -32.2 0.0 0.7 48.2 54.0 -5.8 H A 98.0 29.0 5.720 3.0 30.3 38.0 11.4 -32.2 0.0 0.7 48.0 54.0 -6.0 V A 98.0 177.0 5.720 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 ev. 4.12.7	5.600	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	
High Ch. 5240 MHz V V V V V V 5.720 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 5.720 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 5.720 3.0 41.8 38.0 11.4 -32.2 0.0 0.7 48.2 54.0 -14.2 V P 98.0 177.0 5.720 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	High Ch. 5240 MHz Image: Mile and Mi	igh Ch. 5240 MHz id id id id id id id id id 5.720 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 5.720 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 5.720 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 5.720 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	High Ch. 5240 MHz V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V																
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5.720 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 5.720 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 tev. 4.1.2.7	5.720 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 5.720 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 tev. 4.1.2.7	5.720 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 5.720 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 ev. 4.1.2.7	5.720 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 5.720 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 ev. 4.1.2.7	5.720	3.0	43.6											*		
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lev. 4.1.2.7	lev. 4.1.2.7	ev. 4.1.2.7	ev. 4.1.2.7																
						missions	were de	tected	above t	the system	n nois	e floor.							

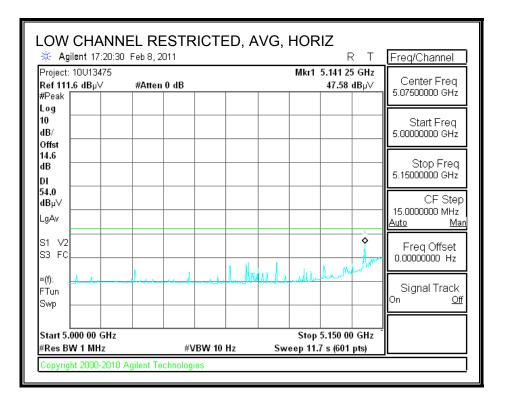
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8.2.3. TX ABOVE 1 GHz FOR 802.11n HT40 MODE IN THE 5.2 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

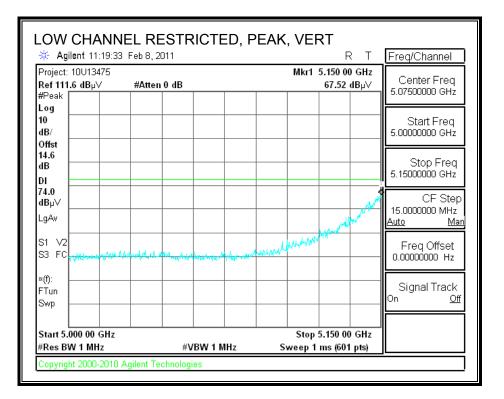


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RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



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🔆 Agilent 11:22:4	NEL RESTRICT B Feb 8, 2011		RT	Peak Search
Project: 10U13475 Ref 111.6 dB µV #Peak	#Atten 0 dB	Mki	r1 5.148 50 GHz 52.75 dBµ∨	Next Peak
Log 10 dB/				Next Pk Right
14.6 dB DI				Next Pk Left
54.0 dBµ∨ LgAv			1	Min Search
S1 V2 S3 FC			- Alexander	Pk-Pk Search
*(f): FTun Swp		╺╍╼╸┫┹╼┯╼┛╟╸	- Marine	Mkr © CF
Start 5.000 00 GHz #Res BW 1 MHz	#VBW 1		op 5.150 00 GHz 11.7 s (601 pts)	More 1 of 2

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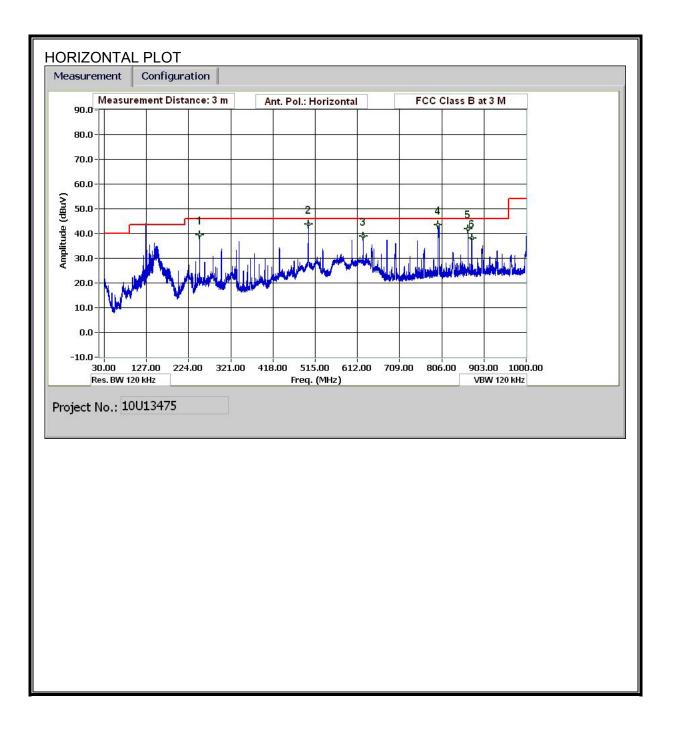
HARMONICS AND SPURIOUS EMISSIONS

et:	10U1347 Ruckus	5												
et:	Ruckus													
	Kuckus FCC 15.247													
11.1	Tx On, 5.		band.	HT40 M	C58									
£	Masaman	ant Fra		4 mm	Dwarmen (lain			A 170 YO 40	Field Street	ath I innit			
Dist Read AF		Distance to Antenna Analyzer Reading			Distance Correct to 3 meters Average Field Strength @ 3 m				Peak Field Strength Limit Margin vs. Average Limit					
		CL	Cable Los	5		прг	nign Pas:	; rutei						
Dist	Read	AF	CL	Amp			Corr.	Limit			Det.	Ant.High	_	Notes
		dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/QP	cm	Degree	
3.0	z 38.8	38.4	11.4	-32.2	0.0	0.7	57.1	74.0	-16.9	H	Р	98.0	351.0	
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	
5230 MI	Iz								ļ					
3.0	42.8	38.1		-32.2	0.0	0.7	60.8	74.0	-13.2	H	P	98.0 09.0		
3.0	28.1	38.1			0.0	0.7	46.2	54.0	-7.8	V	A	98.0	198.0	
	Dist Read AF CL Dist (m) 190 MH 3.0 3.0 3.0 3.0 5230 M 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.03.0 3.0 3.0 3.03.0 3.03.03.03.03.03.03.03.0	Dist Distance Read Analyzer AF Antenna CL Cable Los Dist Read (m) dBuV 190 MHz 3.0 38.8 3.0 26.0 3.0 43.1 3.0 27.5 5230 MHz 3.0 42.8 3.0 29.0 3.0 40.7 3.0 28.1 7	Dist Distance to Anter Read Analyzer Reading AF Antenna Factor CL Cable Loss Dist Read AF (m) dBuV dB/m 190 MHz 3.0 38.8 38.4 3.0 26.0 38.4 3.0 43.1 38.4 3.0 27.5 38.4 5230 MHz 3.0 42.8 38.11 3.0 42.8 38.1 3.0 29.0 38.1 3.0 40.7 38.1 3.0 28.1 38.1 3.0 28.1 38.1 3.0 28.1 38.1	Dist Distance to Antenna Read Analyzer Reading AF Antenna Factor CL Cable Loss Dist Read AF CL (m) dBuV dB/m dB 190 MHz 3.0 38.8 38.4 11.4 3.0 26.0 38.4 11.4 3.0 27.5 38.4 11.4 5230 MHz 3.0 42.8 38.1 11.4 3.0 29.0 38.1 11.4 3.0 40.7 38.1 11.4 3.0 28.1 38.1 11.4 3.0 38.1	Dist Distance to Antenna D Corr Read Analyzer Reading Avg AF Antenna Factor Peak CL Cable Loss HPF Dist Read AF CL Ang (m) dBuV dB/m dB dB 190 MHz - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - <td>Dist Distance to Antenna D Corr Distance Read Analyzer Reading Avg Average I AF Antenna Factor Peak Calculate CL Cable Loss HPF High Past Dist Read AF CL Amp D Corr (m) dBuV dB/m dB dB dB 190 MHz 0.0 3.0 38.8 38.4 11.4 -32.2 0.0 3.0 3.0 26.0 38.4 11.4 -32.2 0.0 3.0 3.0 43.1 38.4 11.4 -32.2 0.0 3.0 20.0 3.0 40.7 38.1 11.4 -32.2 0.0 3.0 40.7 38.1 11.4 -32.2 0.0 3.0 29.0 38.1 11.4 -32.2 0.0 3.0 3.0 40.7 38.1 11.4 -32.2 0.0 3.0 3.0 28.1 38.1 11.4 <</td> <td>Dist Distance to Antenna D Corr Distance Correct Read Analyzer Reading Avg Average Field S AF Antenna Factor Peak Calculated Peak CL Cable Loss HPF High Pass Filter Dist Read AF CL Amp D Corr Fltr (m) dBuV dB/m dB dB dB dB dB 190 MHz </td> <td>Dist Distance to Antenna D Corr Distance Correct to 3 me Read Analyzer Reading Avg Average Field Strength @ AF Antenna Factor Peak Calculated Peak Field Strength @ CL Cable Loss HPF High Pass Filter Dist Read AF CL Amp D Corr Fltr Corr. (m) dBuV dB/m dB dB dB dB dB dB dB dB dB MP MBuV/ml 100 114 -32.2 0.0 0.7 57.1 3.0 26.0 38.4 11.4 -32.2 0.0 0.7 45.8 3.0 43.1 38.4 11.4 -32.2 0.0 0.7 45.8 5230 MHz </td> <td>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 Peak Calculated Peak Field Strength Dist Read AF CL Amp D Corr Fltr Corr. Limit (m) dBuV dB/m dB dB dB dB dBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/</td> <td>Dist Distance to Antenna D Corr Distance Correct to 3 meters Peak Fix Read Analyzer Reading Avg Average Field Strength @ 3 m Margin Margin Margin Calculated Peak Field Strength Margin Margi</td> <td>Dist Distance to Antenna D Corr Distance Correct to 3 meters Peak Field Strength Read Analyzer Reading Avg Average Field Strength @ 3 m Margin vs. Average AF Antenna Factor Peak Calculated Peak Field Strength Margin vs. Average CL Cable Loss HPF Peak Calculated Peak Field Strength Margin vs. Peak Lin (m) dBuV dB/m dB dB dB dB uV/m Margin vs. Peak Lin 3.0 38.8 38.4 11.4 -32.2 0.0 0.7 57.1 74.0 -16.9 H 3.0 26.0 38.4 11.4 -32.2 0.0 0.7 61.4 74.0 -12.6 V 3.0 43.1 38.4 11.4 -32.2 0.0 0.7 60.8 74.0 -13.2 H 3.0 42.8 38.1 11.4 -32.2 0.0 0.7 45.8 54.0 -8.2 V 5230 MHz 3.0 40.7<td>Dist Read Analyzer Reading Ar Avg Average Field Strength @ 3 m Peak Field Strength Limit Margin vs. Average Limit AF Antenna Factor Cable Loss Peak HPF Peak HBF Calculated Peak Field Strength Margin vs. Average Limit Margin vs. Peak Limit 0 Object Peak HPF Calculated Peak Field Strength Margin vs. Peak Limit 0 ABuV dB dB dB dB dB 10 MBuV dB/m dB dB dB dB V/m 3.0 38.8 38.4 11.4 -32.2 0.0 0.7 57.1 74.0 -16.9 H 3.0 38.8 38.4 11.4 -32.2 0.0 0.7 44.3 54.0 -9.7 H A 3.0 43.1 38.4 11.4 -32.2 0.0 0.7 61.4 74.0 -12.6 V P 3.0 42.8 38.1 11.4 -32.2 0.0 0.7 60.8 74.0 -13.2 H P</td><td>Dist Read Analyzer Reading Arf Avg Average Field Strength @ 3 m Peak Field Strength Limit Margin vs. Average Limit AF Antenna Factor CL Peak Calculated Peak Field Strength Ø and Margin vs. Peak Limit Margin vs. Average Limit Margin vs. Peak Calculated Peak Field Strength Ø and Margin vs. Peak Limit Margin vs. Peak Limit Dist CL Read dB AF CL Amp dB D Corr dB Filt Corr. Limit Margin vs. Peak Limit Ant. High P(A) 00 MHz 0 0 0.07 57.1 74.0 -16.9 H P 98.0 3.0 38.8 38.4 11.4 -32.2 0.0 0.7 44.3 54.0 -9.7 H A 98.0 3.0 26.0 38.4 11.4 -32.2 0.0 0.7 45.8 54.0 -8.2 V A 108.0 3.0 42.8 38.1 11.4 -32.2 0.0 0.7 60.8 74.0 -13.2 H P 98.0<td>Dist Read Analyzer Reading Antenna Factor D Corr Peak Distance Correct to 3 meters Avg Average Field Strength @ 3 m Calculated Peak Field Strength Peak Field Strength Limit Margin vs. Average Limit Dist CL Artenna Factor Cable Loss Peak HPF Corr HpF Filtr Corr HB Corr HB Limit Margin vs. Peak Limit Margin vs. Peak Limit Dist Cable Loss AF CL Amp D Corr Peak Filtr Galculated Peak Field Strength Margin vs. Peak Limit Ant High Table Angle Degree Dist (m) dBuV dB dB dB Corr B Limit dB Margin vs. Peak Limit 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 3.0 38.8 38.4 11.4 -32.2 0.0 0.7 61.4 74.0 -12.6 V P 108.0 173.0 3.0 27.5 38.1 11.4 -32.2 0.0 0.7 45.8 54.0 -3.2 V A 108.0 173.0 3.0 42.8 38.1 11.4 -32.2 0.0 <</td></td></td>	Dist Distance to Antenna D Corr Distance Read Analyzer Reading Avg Average I AF Antenna Factor Peak Calculate CL Cable Loss HPF High Past Dist Read AF CL Amp D Corr (m) dBuV dB/m dB dB dB 190 MHz 0.0 3.0 38.8 38.4 11.4 -32.2 0.0 3.0 3.0 26.0 38.4 11.4 -32.2 0.0 3.0 3.0 43.1 38.4 11.4 -32.2 0.0 3.0 20.0 3.0 40.7 38.1 11.4 -32.2 0.0 3.0 40.7 38.1 11.4 -32.2 0.0 3.0 29.0 38.1 11.4 -32.2 0.0 3.0 3.0 40.7 38.1 11.4 -32.2 0.0 3.0 3.0 28.1 38.1 11.4 <	Dist Distance to Antenna D Corr Distance Correct Read Analyzer Reading Avg Average Field S AF Antenna Factor Peak Calculated Peak CL Cable Loss HPF High Pass Filter Dist Read AF CL Amp D Corr Fltr (m) dBuV dB/m dB dB dB dB dB 190 MHz	Dist Distance to Antenna D Corr Distance Correct to 3 me Read Analyzer Reading Avg Average Field Strength @ AF Antenna Factor Peak Calculated Peak Field Strength @ CL Cable Loss HPF High Pass Filter Dist Read AF CL Amp D Corr Fltr Corr. 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Limit (m) dBuV dB/m dB dB dB dB dBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/mdBuV/	Dist Distance to Antenna D Corr Distance Correct to 3 meters Peak Fix Read Analyzer Reading Avg Average Field Strength @ 3 m Margin Margin Margin Calculated Peak Field Strength Margin Margi	Dist Distance to Antenna D Corr Distance Correct to 3 meters Peak Field Strength Read Analyzer Reading Avg Average Field Strength @ 3 m Margin vs. Average AF Antenna Factor Peak Calculated Peak Field Strength Margin vs. Average CL Cable Loss HPF Peak Calculated Peak Field Strength Margin vs. Peak Lin (m) dBuV dB/m dB dB dB dB uV/m Margin vs. Peak Lin 3.0 38.8 38.4 11.4 -32.2 0.0 0.7 57.1 74.0 -16.9 H 3.0 26.0 38.4 11.4 -32.2 0.0 0.7 61.4 74.0 -12.6 V 3.0 43.1 38.4 11.4 -32.2 0.0 0.7 60.8 74.0 -13.2 H 3.0 42.8 38.1 11.4 -32.2 0.0 0.7 45.8 54.0 -8.2 V 5230 MHz 3.0 40.7 <td>Dist Read Analyzer Reading Ar Avg Average Field Strength @ 3 m Peak Field Strength Limit Margin vs. Average Limit AF Antenna Factor Cable Loss Peak HPF Peak HBF Calculated Peak Field Strength Margin vs. Average Limit Margin vs. Peak Limit 0 Object Peak HPF Calculated Peak Field Strength Margin vs. Peak Limit 0 ABuV dB dB dB dB dB 10 MBuV dB/m dB dB dB dB V/m 3.0 38.8 38.4 11.4 -32.2 0.0 0.7 57.1 74.0 -16.9 H 3.0 38.8 38.4 11.4 -32.2 0.0 0.7 44.3 54.0 -9.7 H A 3.0 43.1 38.4 11.4 -32.2 0.0 0.7 61.4 74.0 -12.6 V P 3.0 42.8 38.1 11.4 -32.2 0.0 0.7 60.8 74.0 -13.2 H P</td> <td>Dist Read Analyzer Reading Arf Avg Average Field Strength @ 3 m Peak Field Strength Limit Margin vs. Average Limit AF Antenna Factor CL Peak Calculated Peak Field Strength Ø and Margin vs. Peak Limit Margin vs. Average Limit Margin vs. Peak Calculated Peak Field Strength Ø and Margin vs. Peak Limit Margin vs. Peak Limit Dist CL Read dB AF CL Amp dB D Corr dB Filt Corr. Limit Margin vs. Peak Limit Ant. High P(A) 00 MHz 0 0 0.07 57.1 74.0 -16.9 H P 98.0 3.0 38.8 38.4 11.4 -32.2 0.0 0.7 44.3 54.0 -9.7 H A 98.0 3.0 26.0 38.4 11.4 -32.2 0.0 0.7 45.8 54.0 -8.2 V A 108.0 3.0 42.8 38.1 11.4 -32.2 0.0 0.7 60.8 74.0 -13.2 H P 98.0<td>Dist Read Analyzer Reading Antenna Factor D Corr Peak Distance Correct to 3 meters Avg Average Field Strength @ 3 m Calculated Peak Field Strength Peak Field Strength Limit Margin vs. Average Limit Dist CL Artenna Factor Cable Loss Peak HPF Corr HpF Filtr Corr HB Corr HB Limit Margin vs. Peak Limit Margin vs. Peak Limit Dist Cable Loss AF CL Amp D Corr Peak Filtr Galculated Peak Field Strength Margin vs. Peak Limit Ant High Table Angle Degree Dist (m) dBuV dB dB dB Corr B Limit dB Margin vs. Peak Limit 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 3.0 38.8 38.4 11.4 -32.2 0.0 0.7 61.4 74.0 -12.6 V P 108.0 173.0 3.0 27.5 38.1 11.4 -32.2 0.0 0.7 45.8 54.0 -3.2 V A 108.0 173.0 3.0 42.8 38.1 11.4 -32.2 0.0 <</td></td>	Dist Read Analyzer Reading Ar Avg Average Field Strength @ 3 m Peak Field Strength Limit Margin vs. Average Limit AF Antenna Factor Cable Loss Peak HPF Peak HBF Calculated Peak Field Strength Margin vs. Average Limit Margin vs. Peak Limit 0 Object Peak HPF Calculated Peak Field Strength Margin vs. Peak Limit 0 ABuV dB dB dB dB dB 10 MBuV dB/m dB dB dB dB V/m 3.0 38.8 38.4 11.4 -32.2 0.0 0.7 57.1 74.0 -16.9 H 3.0 38.8 38.4 11.4 -32.2 0.0 0.7 44.3 54.0 -9.7 H A 3.0 43.1 38.4 11.4 -32.2 0.0 0.7 61.4 74.0 -12.6 V P 3.0 42.8 38.1 11.4 -32.2 0.0 0.7 60.8 74.0 -13.2 H P	Dist Read Analyzer Reading Arf Avg Average Field Strength @ 3 m Peak Field Strength Limit Margin vs. Average Limit AF Antenna Factor CL Peak Calculated Peak Field Strength Ø and Margin vs. Peak Limit Margin vs. Average Limit Margin vs. Peak Calculated Peak Field Strength Ø and Margin vs. Peak Limit Margin vs. Peak Limit Dist CL Read dB AF CL Amp dB D Corr dB Filt Corr. Limit Margin vs. Peak Limit Ant. High P(A) 00 MHz 0 0 0.07 57.1 74.0 -16.9 H P 98.0 3.0 38.8 38.4 11.4 -32.2 0.0 0.7 44.3 54.0 -9.7 H A 98.0 3.0 26.0 38.4 11.4 -32.2 0.0 0.7 45.8 54.0 -8.2 V A 108.0 3.0 42.8 38.1 11.4 -32.2 0.0 0.7 60.8 74.0 -13.2 H P 98.0 <td>Dist Read Analyzer Reading Antenna Factor D Corr Peak Distance Correct to 3 meters Avg Average Field Strength @ 3 m Calculated Peak Field Strength Peak Field Strength Limit Margin vs. Average Limit Dist CL Artenna Factor Cable Loss Peak HPF Corr HpF Filtr Corr HB Corr HB Limit Margin vs. Peak Limit Margin vs. Peak Limit Dist Cable Loss AF CL Amp D Corr Peak Filtr Galculated Peak Field Strength Margin vs. Peak Limit Ant High Table Angle Degree Dist (m) dBuV dB dB dB Corr B Limit dB Margin vs. Peak Limit 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 3.0 38.8 38.4 11.4 -32.2 0.0 0.7 61.4 74.0 -12.6 V P 108.0 173.0 3.0 27.5 38.1 11.4 -32.2 0.0 0.7 45.8 54.0 -3.2 V A 108.0 173.0 3.0 42.8 38.1 11.4 -32.2 0.0 <</td>	Dist Read Analyzer Reading Antenna Factor D Corr Peak Distance Correct to 3 meters Avg Average Field Strength @ 3 m Calculated Peak Field Strength Peak Field Strength Limit Margin vs. Average Limit Dist CL Artenna Factor Cable Loss Peak HPF Corr HpF Filtr Corr HB Corr HB Limit Margin vs. Peak Limit Margin vs. Peak Limit Dist Cable Loss AF CL Amp D Corr Peak Filtr Galculated Peak Field Strength Margin vs. Peak Limit Ant High Table Angle Degree Dist (m) dBuV dB dB dB Corr B Limit dB Margin vs. Peak Limit 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 3.0 38.8 38.4 11.4 -32.2 0.0 0.7 61.4 74.0 -12.6 V P 108.0 173.0 3.0 27.5 38.1 11.4 -32.2 0.0 0.7 45.8 54.0 -3.2 V A 108.0 173.0 3.0 42.8 38.1 11.4 -32.2 0.0 <

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8.3. WORST-CASE BELOW 1 GHz

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



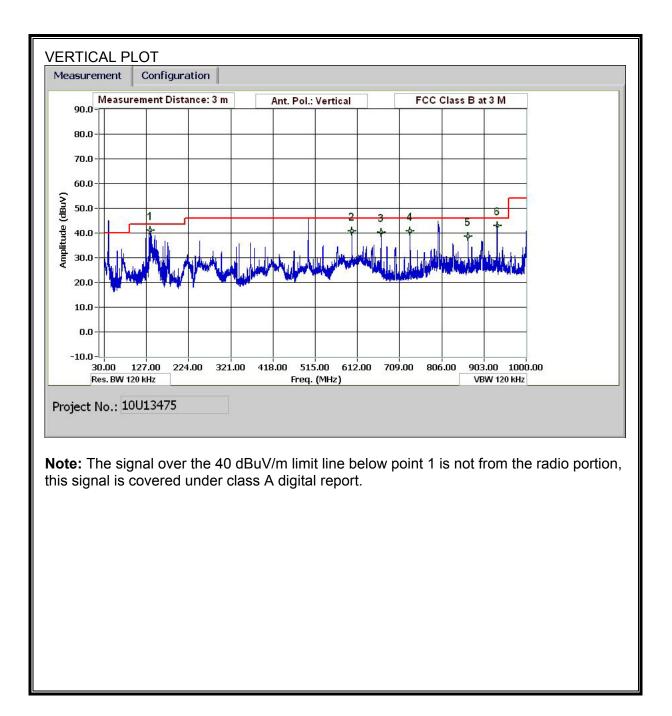
COMPLIANCE CERTIFICATION SERVICES FORM NO: CCSUP4701C 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of CCS.

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Test Engr: William Zhuang Date: 03/02/11 Project #: 10U13475 Company: Ruckus Wireless Test Target: FCC-B Mode Oper: Tx On, Worst Case														
f Dist Read AF CL	Measurem Distance t Analyzer I Antenna I Cable Los:	o Antenn Reading Factor		Amp D Corr Filter Corr. Limit	Preamp G Distance Filter Inse Calculated Field Stre:	Correct ert Loss 1 Field S			Margin	Margin vs.	Limit			
f Dist		AF	CL	Amp	D Corr	Pad	Согт.	Limit		Ant. Pol.	Det.		Table Angle	Notes
MHz (m)	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/QP	cm	Degree	
Horizontal 49.969 3.0	54.6	11.8	1.4	28.2	0.0	0.0	39.6	46.0	-6.4	н	Р	100.0	0 - 360	
99.939 <u>3.0</u>	53.0	16.7	2.0	27.8	0.0	0.0	43.9	46.0	-2.1	H	P	100.0	0 - 360	
24.985 3.0	45.2	18.7	2.3	27.4	0.0	0.0	38.8	46.0	-7.2	H	Р	100.0	0 - 360	
98.152 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	
66.675 3.0 74.955 3.0	45.1 41.4	21.6 21.6	2.8 2.8	27.7 27.7	0.0 0.0	0.0	41.8 38.1	46.0 46.0	-4.2 -7.9	H H	P P	100.0 100.0	0 - 360 0 - 360	

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



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Test Engr: William Zhuang Date: 03/02/11 Project #: 10U13475 Company: Ruckus Wireless Test Target: FCC-B Mode Oper: Tx On, Worst Case															
f Dis Re: AF CL	st ad	Measureme Distance to Analyzer F Antenna F Cable Loss	o Antenn Reading actor		Amp D Corr Filter Corr. Limit	Preamp C Distance Filter Inse Calculate Field Stre	Correct ert Loss d Field Si			Margin	Margin vs.	Limit			
	Dist	Read	AF	CL	Amp	D Corr	Pad	Согт.	Limit	Margin			Ant. High	Table Angle	Notes
	(m)	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/QP	cm	Degree	
Vertical	2.0	540	12.4	11	70 2	0.0	0.0	411	43.5	24	v	ъ	100.0	0 360	
	3.0 3.0	54.9 47.7	13.4 18.4	1.1 2.2	28.3 27.5	0.0 0.0	0.0	41.1 40.9	43.5 46.0	-2.4 -5.1	v V	P P	100.0	0 - 360 0 - 360	
	3.0 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	
	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	
	3.0 3.0	42.0 46.0	21.6 22.1	2.8 2.9	27.7 27.8	0.0 0.0	0.0 0.0	38.7	46.0 46.0	-7.3 -2.9	V V	P P	100.0 100.0	0 - 360 0 - 360	

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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.

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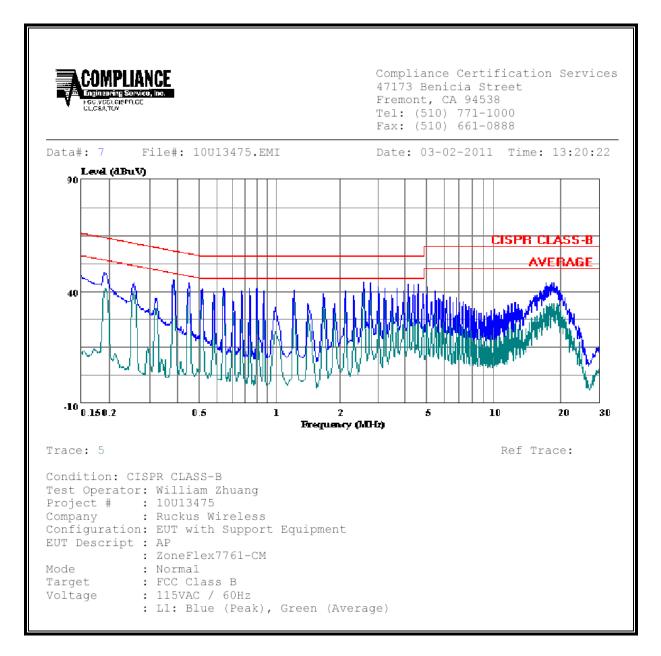
RESULTS

<u>6 WORST EMISSIONS</u>

	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	1									

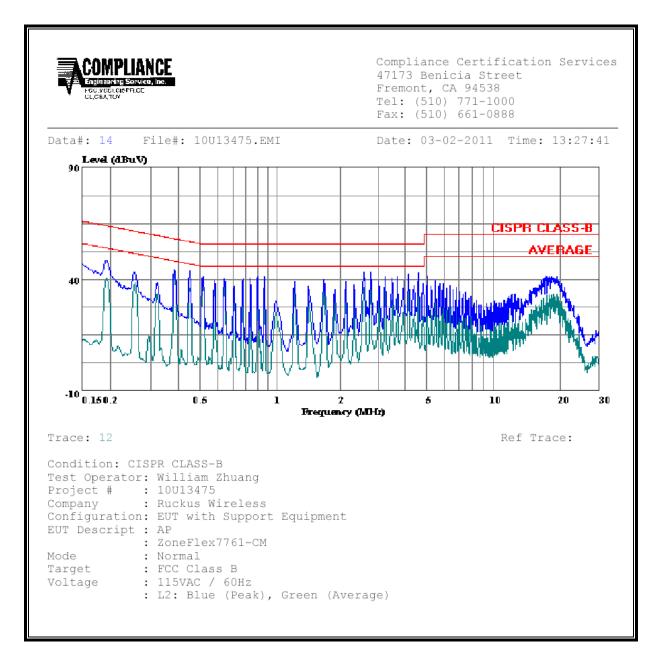
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LINE 1 RESULTS



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LINE 2 RESULTS



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10. MAXIMUM PERMISSIBLE EXPOSURE

FCC RULES

§1.1310 The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

Frequency range (MHz)	Electric field Magnetic field strength (V/m) (A/m)		Power density (mW/cm²)	Averaging time (minutes)					
(A) Limits for Occupational/Controlled Exposures									
0.3–3.0 3.0–30 30–300 300–1500 1500–100,000	614 1842/f 61.4	1.63 4.89/F 0.163	*(100) *(900/f²) 1.0 f/300 5	6 6 6 6					
(B) Limits for General Population/Uncontrolled Exposure									
0.3–1.34 1.34–30	614 824/f	1.63 2.19/f	*(100) *(180/f²)	30 30					

TABLE 1-LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

TABLE 1-LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)-Continued

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm²)	Averaging time (minutes)	
30–300 300–1500 1500–100.000	27.5	0.073	0.2 f/1500 1.0	30 30 30	

f = frequency in MHz

* = Plane-wave equivalent power density NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occu-tions where a transient through a location where occu-

pational/controlled limits apply provided he or she is made aware of the potential for exposure. NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be ex-posed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

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IC RULES

IC Safety Code 6, Section 2.2.1 (a) A person other than an RF and microwave exposed worker shall not be exposed to electromagnetic radiation in a frequency band listed in Column 1 of Table 5, if the field strength exceeds the value given in Column 2 or 3 of Table 5, when averaged spatially and over time, or if the power density exceeds the value given in Column 4 of Table 5, when averaged spatially and over time.

Table 5

Exposure Limits for Persons Not Classed As RF and Microwave Ex-
posed Workers (Including the General Public)

1 Frequency (MHz)	2 Electric Field Strength; rms (V/m)	3 Magnetic Field Strength; rms (A/m)	4 Power Density (W/m ²)	5 Averaging Time (min)
0.003–1	280	2.19		6
1–10	280/f	2.19/ <i>f</i>		6
10–30	28	2.19/ <i>f</i>		6
30–300	28	0.073	2*	6
300–1 500	1.585 <i>f</i> ^{0.5}	0.0042f ^{0.5}	f/150	6
1 500–15 000	61.4	0.163	10	6
15 000–150 000	61.4	0.163	10	616 000 /f ^{1.2}
150 000–300 000	0.158f ^{0.5}	4.21 x 10 ⁻⁴ f ^{0.5}	6.67 x 10 ⁻⁵ f	616 000 /f ^{1.2}

* Power density limit is applicable at frequencies greater than 100 MHz.

Notes: 1. Frequency, f, is in MHz.

- 2. A power density of 10 W/m^2 is equivalent to 1 mW/cm^2 .
- A magnetic field strength of 1 A/m corresponds to 1.257 microtesla (μT) or 12.57 milligauss (mG).

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EQUATIONS

Power density is given by:

S = EIRP / (4 * Pi * D^2)

where

S = Power density in W/m² EIRP = Equivalent Isotropic Radiated Power in W D = Separation distance in m

Power density in units of W/m² is converted to units of mWc/m² by dividing by 10.

Distance is given by:

D = SQRT (EIRP / (4 * Pi * S))

where

D = Separation distance in m EIRP = Equivalent Isotropic Radiated Power in W S = Power density in W/m²

For multiple colocated transmitters operating simultaneously in frequency bands where the limit is identical, the total power density is calculated using the total EIRP obtained by summing the Power * Gain product (in linear units) of each transmitter.

Total EIRP = (P1 * G1) + (P2 * G2) + ... + (Pn * Pn)

where

Px = Power of transmitter xGx = Numeric gain of antenna x

In the table(s) below, Power and Gain are entered in units of dBm and dBi respectively and conversions to linear forms are used for the calculations.

<u>LIMITS</u>

From FCC §1.1310 Table 1 (B), the maximum value of S = 1.0 mW/cm²

From IC Safety Code 6, Section 2.2 Table 5 Column 4, S = 10 W/m²

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RESULTS

Mode	Band	MPE	Output	Antenna	FCC Power	IC Power
		Distance	Power	Gain	Density	Density
		(cm)	(dBm)	(dBi)	(mW/cm^2)	(W/m^2)
WLAN, 11a, 20M	5.2 GHz	20.0	12.29	10.27	0.04	0.36
WLAN, 11n HT20	5.2 GHz	20.0	15.71	5.50	0.03	0.26
WLAN, 11n HT40	5.2 GHz	20.0	16.85	5.50	0.03	0.34

Notes:

Antenna Gain for 11a is the combined antenna gain for multiple chains. Antenna gain for HT20 and HT40 is the maximum antenna gain of multiple chains. Output power is the combined output power for multiple chains.

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