Test Report

CGR1240

Cisco Connected Grid Router w/ 802.11N Access Points

FCC ID: LDKALTMT0556 IC: 2461B-ALTMT0556

2400-2483.5 MHz

Against the following Specifications: CFR47 Part 15.247 RSS 210

> **Cisco Systems** EMC Laboratory 170 West Tasman Drive San Jose, CA 95134



Testing - Certificate Number : 1178-01

Author: Jose Aguirre Approved By: Shyam Pullela Title: Manager

This report replaces any previously entered test report under EDCS - 1104807

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Section 1: Overview

Test Summary

The samples were assessed against the tests detailed in section 3 under the requirements of the following standards:

Emissions:

CFR47 Part 15.247 RSS-210 RSS102

Notes:

 Measurements were made in accordance with FCC docket #:DA 02-2138, ET docket 96-8, KDB Publication No. 558074& measurement method of spurious emission tolerance to the International Telecommunication Union (ITU) Recommendation SM329.

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Section 2: Assessment Information

2.1 General

This report contains an assessment of an apparatus against Electromagnetic Compatibility Standards based upon tests carried out on the samples submitted. The testing was performed by and for the use of Cisco systems Inc:

With regard to this assessment, the following points should be noted:

- a) The results contained in this report relate only to the items tested and were obtained in the period between the date of the initial assessment and the date of issue of the report. Manufactured products will not necessarily give identical results due to production and measurement tolerances.
- b) The apparatus was set up and exercised using the configuration and modes of operation defined in this report only.
- c) Where relevant, the apparatus was only assessed using the susceptibility criteria defined in this report and the Test Assessment Plan (TAP).
- d) All testing was performed under the following environmental conditions:

Temperature 15°C to 35°C (54°F to 95°F)

 Atmospheric Pressure
 860mbar to 1060mbar (25.4" to 31.3")

 Humidity
 10% to 75*%

e) All AC testing was performed at one or more of the following supply voltages:
 110V 60 Hz (+/-20%)

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2.2 Date of testing

18-Oct-2011

2.3 Report Issue Date

Cisco uses an electronic system to issue, store and control the revision of test reports. This system is called the Engineering Document Control System (EDCS). The actual report issue date is embedded into the original file on EDCS. Any copies of this report, either electronic or paper, that are not on EDCS must be considered uncontrolled

2.4 Testing facilities

This assessment was performed by:

Testing Laboratory

Cisco Systems, Inc., 170 West Tasman Drive San Jose, CA 95134, USA

Registration Numbers for Industry Canada

0	i
Cisco System Site	Site Identifier
Building P, 10m Chamber	Company #: 2461N-2
Building P, 5m Chamber	Company #: 2461N-1
Building I, 5m Chamber	Company #: 2461M-1

Test Engineers

Jose Aguirre

2.5 Equipment Assessed (EUT) CGR1240, 802.11n 2.4GHz WLAN Access Point

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2.6 EUT Description

The Cisco CGR1240 802.11n Access Points support the following modes of operation. The modes are further defined in the radio Theory of Operation. The modes included in this report represent the worst case data for all modes.

802.11B, One Antenna, 1 to 11 Mbps 802.11G, One Antenna, 6 to 54 Mbps HT-20, One Antenna, M0 to M7

The following antennas are supported by this product series. The items in bold will be specifically tested and cover all others. The data included in this report represent the worst case data for all antennas.

Frequency	Part Number	Antenna Type	Antenna Gain (dBi)
2400MHz – 2483.5MHz	CPN 07-1156-01	dipole	4

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Section 3: Sample Details

Note: Each sample was evaluated to ensure that its condition was suitable to be used as a test sample prior to the commencement of testing.

3.1 Sample Details(Photographs of the test samples, where appropriate can be found in appendix H)

Sample	Equipment	Part	Manufacturer	Hardware	Firmware	Software	Serial
No.	Details	Number		Rev.	Rev.	Rev.	Number
S01	Altamont	CGR1240	Cisco Systems	TBD	TBD	TBD	TBD

3.2 System Details

System #	Description	Samples
1	Altamount WLAN FCC	S01

3.3 Mode of Operation Details

Mode#	Description	Comments
1	OFDM / CCK	802.11B, 802.11G & HT20
2	Receiver mode	802.11B, 802.11G & HT20

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Appendix A: Emission Test Results

Target Maximum Channel Power

The following table details the maximum supported Total Channel Power for all operating modes.

	Maximum Channel Power (dBm)		Power
	Frequency (MHz)		Hz)
Operating Mode	2412	2437	2462
802.11B, 1 to 11 Mbps	11	11	11
802.11G, 6 to 54 Mbps	8	8	8
HT-20, M0 to M7	7	7	7

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6dB Bandwidth

15.247: Systems using digital modulation techniques may operate in the 2400-2483.5MHz band. The minimum 6 dB bandwidth shall be at least 500 kHz.

Connect the antenna port(s) to the spectrum analyzer input. Using the spectrum analyzer Channel Bandwidth mode, configure the spectrum analyzer as shown below (enter all losses between the transmitter output and the spectrum analyzer).

Center Frequency:	Frequency from table below
Span:	2 x Nominal Bandwidth (e.g. 40MHz for a 20MHz channel)
Reference Level:	20 dBm
Attenuation:	10 dB
Sweep Time:	5 s
Resolution Bandwidth:	100 kHz
Video Bandwidth:	100 kHz
X dB Bandwidth:	6 dB
Detector:	Peak
Trace:	Single

Place the radio in continuous transmit mode. View the transmitter waveform on the spectrum analyzer, and record the pertinent measurements:

Data

		Rate	6dB BW	Limit	Margin
Frequency (MHz)	Mode	(Mbps)	(MHz)	(kHz)	(MHz)
	802.11B, 1-11 Mbps	1	7.6	>500	7.1
2412	802.11G, 6- 54 Mbps	6	15.1	>500	14.6
	HT20, M0 – M7	MO	15.1	>500	14.6
	802.11B, 1-11 Mbps	1	7.5	>500	7.0
2437	802.11G, 6- 54 Mbps	6	15.2	>500	14.7
	HT20, M0 – M7	MO	15.2	>500	14.7
	802.11B, 1-11 Mbps	1	7.6	>500	7.1
2462	802.11G, 6- 54 Mbps	6	15.1	>500	14.6
	HT20, M0 – M7	MO	15.2	>500	14.7

The worst case output is recorded.

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Agilent 13:21:39 Apr 4, 1973 R TS Measure Meas Off Ch Freq 2.412 GHz Trig Free Occupied Bandwidth Channel Power 22C, 2412MHz, 1Mbps, 802.11B Ref 4 dBm #Atten 14 dB #Peak Aure and ÷ Occupied BW ٥ Log 10 dB/ ACP Multi Carrier Power Center 2.412 00 GHz Span 40 MHz #Res BW 100 kHz #Sweep 5 s (1000 pts) #VBW 100 kHz **Power Stat** Occupied Bandwidth Occ BW % Pwr 99.00 % CCDF x dB -6.00 dB 11.5900 MHz More Transmit Freq Error 1.282 MHz 1 of 2 x dB Bandwidth 7.566 MHz* **Agilent Technologies** Copyright 2000-2008

6dB Bandwidth, 2412 MHz, 1 Mbps, 802.11B

6dB Bandwidth, 2412 MHz, 6 Mbps, 802.11G



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6dB Bandwidth, 2412 MHz, m0, HT20



6dB Bandwidth, 2437 MHz, 1 Mbps, 802.11B



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¥4-Agilent 12:58:14 Apr 4, 1973 R TS Measure Meas Off Ch Freq 2.437 GHz Trig Free Occupied Bandwidth Channel Power 22C, 2437MHz, 6Mbps, 802.11G Ref Ø dBm #Atten 10 dB #Peak × Occupied BW Log 10 dB/ ACP Multi Carrier Power Center 2.437 00 GHz Span 40 MHz #Sweep 5 s (1000 pts) #Res BW 100 kHz #VBW 100 kHz Power Stat Occupied Bandwidth Occ BW % Pwr 99.00 % CCDF x dB -6.00 dB 16.3578 MHz More Transmit Freg Error 19.742 kHz 1 of 2 x dB Bandwidth 15.153 MHz* Copyright 2000-2008 **Agilent Technologies**

6dB Bandwidth, 2437 MHz, 6 Mbps, 802.11G

6dB Bandwidth, 2437 MHz, m0, HT20



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6dB Bandwidth, 2462 MHz, 11 Mbps, 802.11B

6dB Bandwidth, 2462 MHz, 6 Mbps, 802.11G



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6dB Bandwidth, 2462 MHz, m0, HT20



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99% and 26dB Bandwidth

Connect the antenna port(s) to the spectrum analyzer input. Using the spectrum analyzer Channel Bandwidth mode, configure the spectrum analyzer as shown below (enter all losses between the transmitter output and the spectrum analyzer).

Center Frequency: Span: Reference Level: Attenuation:	Frequency from table below 2 x Nominal Bandwidth (e.g. 40MHz for a 20MHz channel) 20 dBm 10 dB
Sweep Time:	5 S
Resolution Bandwidth: Video Bandwidth: X dB Bandwidth:	1%-3% of 26 dB Bandwidth ≥Resolution Bandwidth 26 dB
Detector:	Peak
Trace:	Single

Place the radio in continuous transmit mode. View the transmitter waveform on the spectrum analyzer, and record the pertinent measurements:

The worst case output is recorded.

		Data Rate	26dB BW	99% BW
Frequency (MHz)	Mode	(Mbps)	(MHz)	(MHz)
	802.11B, 1-11 Mbps	1	14.6	11.7
2412	802.11G, 6- 54 Mbps	6	22.5	16.8
	HT20, M0 – M7	MO	23.8	17.8
	802.11B, 1-11 Mbps	1	14.6	11.7
2437	802.11G, 6- 54 Mbps	6	22.7	16.8
	HT20, M0 – M7	MO	22.8	17.8
	802.11B, 1-11 Mbps	1	14.9	11.7
2462	802.11G, 6- 54 Mbps	6	22.2	16.8
	HT20, M0 – M7	MO	22.8	17.9

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¥4. Agilent 13:21:27 Apr 4, 1973 R TS Measure Meas Off Ch Freq 2.412 GHz Trig Free Occupied Bandwidth Channel Power 22C, 2412MHz, 1Mbps, 802.11B Ref 4 dBm #Atten 14 dB #Peak Occupied BW ø Log ∕~ر< ÷ 10 dB/ ACP Multi Carrier Power Center 2.412 00 GHz Span 40 MHz #Sweep 5 s (1000 pts) #Res BW 300 kHz #VBW 620 kHz **Power Stat** Occupied Bandwidth Occ BW % Pwr 99.00 % CCDF x dB -26.00 dB 11.6511 MHz More Transmit Freg Error 1.281 MHz 1 of 2 x dB Bandwidth 14.575 MHz* Copyright 2000-2008 Agilent Technologies

26dB / 99% Bandwidth, 2412 MHz, 1 Mbps, 802.11B

26dB / 99% Bandwidth, 2412 MHz, 6 Mbps, 802.11G



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26dB / 99% Bandwidth, 2412 MHz, m0, HT20

26dB / 99% Bandwidth, 2437 MHz, 1 Mbps, 802.11B



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Agilent 12:58:02 Apr 4, 1973 R TS Measure Meas Off Ch Freq 2.437 GHz Trig Free Occupied Bandwidth Channel Power 22C, 2437MHz, 6Mbps, 802.11G Ref Ø dBm #Atten 10 dB #Peak Occupied BW Log 10 dB/ ACP Multi Carrier Power Center 2.437 00 GHz Span 40 MHz #Sweep 5 s (1000 pts) #Res BW 300 kHz #VBW 620 kHz **Power Stat** Occupied Bandwidth Occ BW % Pwr CCDF 99.00 % x dB -26.00 dB 16.7849 MHz More Transmit Freq Error 58.334 kHz 1 of 2 x dB Bandwidth 22.679 MHz* Copyright 2000-2008 Agilent Technologies

26dB / 99% Bandwidth, 2437 MHz, 6 Mbps, 802.11G

26dB / 99% Bandwidth, 2437 MHz, m0, HT20



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¥4. Agilent 13:40:50 Apr 4, 1973 R TS Measure Meas Off Ch Freq 2.462 GHz Trig Free Occupied Bandwidth Channel Power 22C, 2462MHz, 1Mbps, 802.11B Ref 4 dBm #Atten 14 dB #Peak Occupied BW MAO 1 Log ≻ w ← 10 dB/ ACP Multi Carrier Power Center 2.462 00 GHz Span 40 MHz #Sweep 5 s (1000 pts) #Res BW 300 kHz #VBW 620 kHz **Power Stat** Occupied Bandwidth Occ BW % Pwr 99.00 % CCDF x dB -26.00 dB 11.6939 MHz More Transmit Freg Error 1.268 MHz 1 of 2 x dB Bandwidth 14.925 MHz* Copyright 2000-2008 Agilent Technologies

26dB / 99% Bandwidth, 2462 MHz, 1 Mbps, 802.11B

26dB / 99% Bandwidth, 2462 MHz, 6 Mbps, 802.11G



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26dB / 99% Bandwidth, 2462 MHz, m0, HT20

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Peak Output Power

15.247: The maximum conducted output power of the intentional radiator for systems using digital modulation in the 2400-2483.5 MHz band shall not exceed 1 Watt (30dBm). If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The maximum supported antenna gain is 4dBi

Connect the antenna port(s) to the spectrum analyzer input. Place the radio in continuous transmit mode. Configure the spectrum analyzer as shown below.

Enable "Channel Power	" function of analyzer
Center Frequency:	Frequency from table below
Span:	20 MHz (must be greater than 26dB bandwidth, adjust as
necessary)	
Ref Level Offset:	Correct for attenuator and cable loss.
Reference Level:	20 dBm
Attenuation:	20 dB
Sweep Time:	100ms, Single sweep
Resolution Bandwidth:	1 MHz
Video Bandwidth:	3 MHz
Detector:	Sample
Trace:	Trace Average 100 traces in Power Averaging Mode
Integration BW:	=26 dB BW from 26 dB Bandwidth Data

After averaging 100 traces of the transmitter waveform on the spectrum analyzer, record the spectrum analyzer Channel Power.

The worst case output is recorded.

		Data Rate	Channel Power	Limit
Frequency (MHz)	Mode	(Mbps)	(dBm)	(dBm)
	802.11B, 1-11 Mbps	1	11.2	30
2412	802.11G, 6- 54 Mbps	6	8.1	30
	HT20, M0 – M7	MO	7.0	30
	802.11B, 1-11 Mbps	1	10.7	30
2437	802.11G, 6- 54 Mbps	6	7.8	30
	HT20, M0 – M7	MO	6.9	30
	802.11B, 1-11 Mbps	1	11.3	30
2462	802.11G, 6- 54 Mbps	6	8.2	30
	HT20, M0 – M7	MO	7.5	30

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Peak Output Power, 2412 MHz, 1 Mbps, 802.11B



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Peak Output Power, 2412 MHz, 6 Mbps, 802.11G



Peak Output Power, 2412 MHz, m0, HT20



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Peak Output Power, 2437 MHz, 1 Mbps, 802.11B



Peak Output Power, 2437 MHz, 6 Mbps, Non HT-20



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Peak Output Power, 2437 MHz, m0, HT20



Peak Output Power, 2462 MHz, 1 Mbps, 802.11B



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Peak Output Power, 2462 MHz, 6 Mbps, 802.11G



Peak Output Power, 2462 MHz, m0, HT20



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Power Spectral Density

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

Connect the antenna port(s) to the spectrum analyzer input. Place the radio in continuous transmit mode. Configure the spectrum analyzer as shown below.

Ref Level Offset:CorrectReference Level:20 dBnAttenuation:20 dBSweep Time:10sResolution Bandwidth:3 kHzVideo Bandwidth:10 kHzDetector:PeakTrace:SingleMarker:Peak S	Search
---	--------

Record the Marker value.

The worst case output is recorded.

		Data Rate	Total PSD	Limit
Frequency (MHz)	Mode	(Mbps)	(dBm/3kHz)	(dBm/3kHz)
	802.11B, 1-11 Mbps	1	-9.97	8
2412	802.11G, 6- 54 Mbps	6	-15.24	8
	HT20, M0 – M7	MO	-16.34	8
	802.11B, 1-11 Mbps	1	-8.72	8
2437	802.11G, 6- 54 Mbps	6	-15.81	8
	HT20, M0 – M7	MO	-16.55	8
	802.11B, 1-11 Mbps	1	-10.09	8
2462	802.11G, 6- 54 Mbps	6	-16.32	8
	HT20, M0 – M7	MO	-15.52	8

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🔆 Ag	jilent 13	3:19:18	Apr 4	, 1973					F	₹ TS	Peak Search
22C,2 Ref0 #Peak	412MHz dBm	z,1Mbp	s, 802. #Atten	11B 10 dB			Mł	<r1 2.4<="" td=""><td>414 627 -9.9</td><td>70GHz 97dBm</td><td>Next Peak</td></r1>	414 627 -9.9	70GHz 97dBm	Next Peak
Log 10 dB/	patrophysed, gated	₩ <i>₩≠≁≠</i> ₽₽ [₽] ₽₽	e-the-to-shares	ner service all has	ultinenterflitteret	e, Migraeyta	na annigit dh	¥4†∩ <i>n</i> ¥n,≁4	-flevtingt	1 ••••	Next Pk Right
											Next Pk Left
#PAvg											Min Search
W1 S2 S3 FS A AA											Pk-Pk Search
£ (f): f>50k Swp											Mkr → CF
Center #Res B	2.414 3W 3 kH	492 0 z	GHz	#V	BW 10	<hz< td=""><td>#Swe</td><td>ep 100</td><td>Span 3 s (100</td><td>00 kHz^ 00 pts)</td><td>More 1 of 2</td></hz<>	#Swe	ep 100	Span 3 s (100	00 kHz^ 00 pts)	More 1 of 2
Copyr	ight 20	000-20	008 Ag	ilent T	echnol	ogies					

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Power Spectral Density, 2412 MHz, 1 Mbps, 802.11B

Power Spectral Density, 2412 MHz, 6 Mbps, 802.11G

🔆 🔆 Ag	j ilent 12	2:56:14	Apr 4	, 1973					R	TS	Peak Search
22C,2 Ref0 #Peak	412MHz dBm	z, 6Mbp	is, 802. #Atten	11G 10 dB			Mł	(r1 2.4	12 317 -15.2	7 GHz 4 dBm	Next Peak
Log 10 dB/		. Mr.J.	where we have	n chanter b	and the second	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	And have	*****	-	·	Next Pk Right
	Ardiya/"										Next Pk Left
#PAvg											Min Search
W1 S2 S3 FS A AA											Pk-Pk Search
£ (f): f>50k Swp											Mkr → CF
Center #Res B	2.412 W 3 kH	270 0 z	GHz	#V{	3W 10	kHz	#Swe	ep 100	Span 30 s (100)0 kHz^ 0 pts)	More 1 of 2
Copyr	ight 20	000-20	008 Ag	ilent T	echnol	ogies					

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🔆 Aç	jilent 11	:51:37	Apr 4	, 1973					F	R TS	Peak Search
22C,2 Ref0 #Peak	412MHz dBm	z, 6Mbp	s, HT20 #Atten	0 MCS0 10 dB			Mł	kr1 2.4	10 707 -16.3	'4 GHz 4 dBm	Next Peak
Log 10 dB/	natile a sol	hubble albebra				an the life to a	4 ¹ 454 Majilay	harrown	May song Hiley	ter al anti-	Next Pk Right
											Next Pk Left
#PAvg											Min Search
W1 S2 S3 FS A AA											Pk-Pk Search
€(f): f>50k Swp											Mkr→CF
Center #Res E	· 2.410 3W 3 kH	729 0 z	GHz	#V	3W 10 k	(Hz	#Swe	ep 100	Span 3 s (100	00 kHz^ 0 pts)	More 1 of 2
Copyr	ight 20	000-20	008 Ag	ilent T	echnol	ogies					

Power Spectral Density, 2412 MHz, m0, HT20

Power Spectral Density, 2437 MHz, 1 Mbps, 802.11B

🔆 Ag	jilent 13	:34:14	Apr 4,	, 1973					R	T S	Peak Search
22C, 2 Ref 0 #Peak	437MHz dBm	, 1Mbp	is, 802.1 #Atten	11B 10 dB			Mł	kr1 2.4	138 781 -8.7	0 GHz 2 dBm	Next Peak
Log 10 dB/	M _{RIT-1} Herry of t	\$~^\$\$~Y	¢.ħ₩/₩4₩	mathingthe prov		and the news	°¢°lq [₩] ₽₽₹₽	yth i ghaffert bin	untratur de la composition de la compos	vi∳nt _a ra	Next Pk Right
											Next Pk Left
#PAvg											Min Search
W1 S2 S3 FS A AA											Pk-Pk Search
£ (f): f>50k Swp											Mkr → CF
Center #Res B	2.438 W 3 kH	792 0 z	GHz	#V[3W 10 K	<hz< td=""><td>#Swe</td><td>ep 100</td><td>Span 30 s (100</td><td>00 kHz^ 0 pts)</td><td>More 1 of 2</td></hz<>	#Swe	ep 100	Span 30 s (100	00 kHz^ 0 pts)	More 1 of 2
Copyr	ight 20	100-20	008 Ag	ilent T	echnol	ogies					

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22C, 2437MHz, 6Mbps, 802.116 Mkr1 2.438 552 0 GHz Ref 0 dBm *Atten 10 dB -15.81 dBm * *Peak * * * Next Peak Log * * * Next Pt Right dB/ * * Next Pt Right Next Pt Right *PAvg * * Next Pt Left Min Search #PAvg * * Pk-Pk Search Pk-Pk Search % (f): * * * Mkr + CF Center 2.438 652 0 GHz * * * *Res BW 3 kHz * * * * *	🔆 Aç	jilent 13	:04:13	Apr 4,	1973	RTS					Peak Search	
Image: Log 1 * 10 1 * IdB/ 1 * #PAvg 1 * #Pavg	22C,2 Ref0 #Pook	437MHz dBm	z, 6Mbp	s, 802. #Atten	11G 10 dB			Mł	kr1 2.4	38 552 -15.8	0 GHz 1 dBm	Next Peak
*PAvg Next Pk Left *PAvg Min Search M1 S2 S3 FS S3 FS S3 FS A AA Pk-Pk Search £(f): Mkr -> CF Center 2.438 652 0 GHz *VBW 10 kHz *Sweep 100 s (1000 pts)	+reak Log 10 dB/	son had		hakena	r,ruth _{utyre}	Maryeal.	and the second	t view	ar and a start	www.	*	Next Pk Right
#PAvg Min Search W1 S2 S3 FS A AA Pk-Pk Search £(f): f>50k Swp Mkr > CF Center 2.438 652 0 GHz #Res BW 3 kHz #VBW 10 kHz #Sweep 100 s (1000 pts)												Next Pk Left
W1 \$2 S3 FS Pk-Pk Search S3 FS A Pk-Pk Search A AA Max Max £(f): Mkr ÷ CF F>50k Mkr ÷ CF Swp Swp Center 2.438 652 0 GHz Span 300 kH2 *Res BW 3 kHz #VBW 10 kHz #Sweep 100 s (1000 pts)	#PAvg											Min Search
€(f): Mkr → CF f>50k Mkr → CF Swp Swp Center 2.438 652 0 GHz Span 300 kH2 +Res BW 3 kHz #VBW 10 kHz #Sweep 100 s (1000 pts)	W1 S2 S3 FS A AA											Pk-Pk Search
Center 2.438 652 0 GHz Span 300 kH2 More #Res BW 3 kHz #VBW 10 kHz #Sweep 100 s (1000 pts) 1 of 2	£ (†): f>50k Swp											Mkr → CF
	Center #Res E	· 2.438 3W 3 kH	652 0 z	GHz	#V	3W 10 K	(Hz	#Swe	ep 100	Span 3 s (100	00 kHź 0 pts)	More 1 of 2

Power Spectral Density, 2437 MHz, 6 Mbps, 802.11G

Power Spectral Density, 2437 MHz, m0, HT20

🔆 Aç	jilent 12	:00:57	Apr 4	, 1973					F	T S	Peak Search
22C,2 Ref0 #Peak	437MHz dBm	, 6Mbp	s, HT20 #Atten) MCS0 10 dB			Mł	kr1 2.4	36 349 -16.5	6 GHz 5 dBm	Next Peak
Log 10 dB/	Jugy W Jawa V	water of selection			aller white	www.	₩ [₩] ₩ [₩] ₩	yang terdenseya	به الدين الم	Martin and	Next Pk Right
											Next Pk Left
#PAvg											Min Search
W1 S2 S3 FS A AA											Pk-Pk Search
£ (f): f>50k Swp											Mkr → CF
Center #Res E	• 2.436 3W 3 kH	389 Ø z	GHz	#V	3W 10 k	:Hz	#Swe	ep 100	Span 3 s (100	00 kHz^ 0 pts)	More 1 of 2
Copyr	ight 20	00-20	008 Ag	ilent T	echnol	ogies					

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🔆 👫 Ag	gilent 13	3:40:33	Apr 4	, 1973					F	R TS	Peak Search
22C,2 Ref0 #Peak	2462MHz dBm	z, 1Mbp	s, 802. #Atten	11B 10 dB			Mł	kr1 2.4	164 642 -10.0	3 GHz 9 dBm	Next Peak
Log 10 dB/	فريه رجا المدار ميد	L ine and the second sec	v≠√¶v∔,∿	married and	the second states and second secon	a ,1 ⁴⁴ 1	MAR WINDOWN	₩ [₽] ₩₩₩₽ [₩] ₩₽	anghabhliannanna	mart frank	Next Pk Right
											Next Pk Left
#PAvg											Min Search
W1 S2 S3 FS A AA											Pk-Pk Search
£ (f): f>50k Swp											Mkr → CF
Center #Res E	- 2.464 3W 3 kH	492 0 z	GHz	#V	BW 10 P	<hz< td=""><td>#Swe</td><td>ep 100</td><td>Span 3 s (100</td><td>00 kHz^ 0 pts)</td><td>More 1 of 2</td></hz<>	#Swe	ep 100	Span 3 s (100	00 kHz^ 0 pts)	More 1 of 2
Copyr	ight 20	000-20	008 Ag	ilent T	echnol	ogies					

Power Spectral Density, 2462 MHz, 1 Mbps, 802.11B

Power Spectral Density, 2462 MHz, 6 Mbps, 802.11G

🔆 👫 Aç	jilent 13	:10:43	Apr 4	, 1973					F	R T S	Peak Search
22C,2 Ref0 #Peak	462MHz dBm	, 6Mbp	s, 802. #Atten	11G 10 dB			Mł	<r1 2.4<="" td=""><td>159 513 -16.3</td><td>6 GHz 2 dBm</td><td>Next Peak</td></r1>	159 513 -16.3	6 GHz 2 dBm	Next Peak
Log 10 dB/	197. Avent	~~** *** **	ryangent)	nar Maran	n and the second second		Murry	Mitter Appr	and the state of the	, March 1914	Next Pk Right
											Next Pk Left
#PAvg											Min Search
W1 S2 S3 FS A AA											Pk-Pk Search
£ (f): f>50k Swp											Mkr → CF
Center #Res E	- 2.459 3W 3 kH:	508 0 z	GHz	#V	BW 10 I	<hz< td=""><td>#Swe</td><td>ep 100</td><td>Span 3 s (100</td><td>00 kHz^ 0 pts)</td><td>More 1 of 2</td></hz<>	#Swe	ep 100	Span 3 s (100	00 kHz^ 0 pts)	More 1 of 2
Copyr	ight 20	00-20	008 Ag	ilent T	echnol	ogies					

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🔆 Agilent 12:4	4:18 Apr 4, 1973	, ,	RTS	Peak Search
22C, 2462MHz, 0 Ref 0 dBm #Peak	6Mbps, HT20 MCS0 #Atten 10 dB	Mł	r1 2.460 746 6 GHz -15.52 dBm	Next Peak
Log 10 dB/	Martin and a state of the state	Linge Art Antonia Starran Participanti	Hall White and the section of the se	Next Pk Right
				Next Pk Left
#PAvg				Min Search
W1 S2 S3 FS A AA				Pk-Pk Search
£(f): f>50k Swp				Mkr → CF
Center 2.460 70 #Res BW 3 kHz	09 0 GHz ∗VI	BW 10 kHz #Swe	Span 300 kHz^ ep 100 s (1000 pts)	More 1 of 2
Copyright 200	0-2008 Agilent T	echnologies		

rijuiju cisco

Power Spectral Density, 2462 MHz, m0, HT20

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Conducted Spurious Emissions

15.247: In any 100 kHz bandwidth outside the frequency band in which the digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Connect the antenna port(s) to the spectrum analyzer input. Place the radio in continuous transmit mode. Configure the spectrum analyzer as shown below (be sure to enter all losses between the transmitter output and the spectrum analyzer).

Span:	30 MHz-26 GHz
Reference Level:	20 dBm
Attenuation:	10 dB
Sweep Time:	Auto
Resolution Bandwidth:	100 kHz
Video Bandwidth:	300 kHz
Detector:	Peak
Trace:	Single
Marker:	Peak

Record the marker waveform peak to spur difference

The worst case	output is	recorded.
----------------	-----------	-----------

		Data Rate	Conducted Spur Delta		Margin		
Frequency (MHz)	Mode	(Mbps)	(dBc)	Limit (dBc)	(dB)		
2412	802.11B, 1-11 Mbps	1	57.4	30	27.4		
	802.11G, 6- 54 Mbps	6	56.6	30	26.6		
	HT20, M0 – M7	MO	55.8	30	25.8		
2437	802.11B, 1-11 Mbps	1	60.2	30	30.2		
	802.11G, 6- 54 Mbps	6	56.8	30	26.8		
	HT20, M0 – M7	MO	54.0	30	24		
2462	802.11B, 1-11 Mbps	1	63.4	30	33.4		
	802.11G, 6- 54 Mbps	6	56.5	30	26.5		
	HT20, M0 – M7	MO	57.7	30	27.7		

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Conducted Spurs, 2412 MHz, 1 Mbps, 802.11B

Conducted Spurs, 2412 MHz, 6 Mbps, 802.11G



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Conducted Spurs, 2412 MHz, m0, HT20

Conducted Spurs, 2437 MHz, 1 Mbps, 802.11B



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Conducted Spurs, 2437 MHz, m0, HT20



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Conducted Spurs, 2462 MHz, 1 Mbps, 802.11B

Conducted Spurs, 2462 MHz, 6 Mbps, 802.11G



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🔆 Agilent 14:06:28	Apr 4, 1973		R T	S Freq/Channel
22C, 2462MHz, 6Mbp Ref 0 dBm #Peak	bs, HT20 MCS0 #Atten 10 dB		Mkr1 2.455 GH -3.51 dBm	z Center Freq 13.0150000 GHz
10 10 dB/				Start Freq 30.0000000 MHz
	2 2 2 2 2 2 3 4 3 4 3 4 3 4 3 4 3 4 3 4	and a state of the	المرابع معادمة المراجع مراجع بالمرابع المرابع والمرابع ومن المراجع والمراجع والمراجع والمراجع والمراجع والمراجع	Stop Freq 26.0000000 GHz
-35.5 dBm LgAv				CF Step 2.59700000 GHz <u>Auto</u> Man
Start 30 MHz #Res BW 100 kHz Marker Trace	#VBW 301 Type	0 kHz #Sw X Axis	Stop 26.000 GHz eep 30 s (3000 pts) Amplitude	FreqOffset 0.00000000 Hz
$ \begin{array}{cccc} 1 & (1) \\ 2 & (1) \\ 3 & (1) \\ 4 & (1) \end{array} $	Freq Freq Freq Freq	2.455 GHz 4.924 GHz 7.386 GHz 9.848 GHz	-3.51 dBm -62.99 dBm -61.26 dBm -62.00 dBm	Signal Track On <u>Off</u>
	200 Avilant Territ			
Copyright 2000-2	ood Hglient Lechn	ulugies		

Conducted Spurs, 2462 MHz, m0, HT20

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Test Setup Photos - Conducted

See Test setup photo exibit

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Appendix B: Emission Test Results

Radiated Bandedge

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Using Vasona, configure the spectrum analyzer as shown below (be sure to enter all losses between the transmitter output and the spectrum analyzer). Place the radio in continuous transmit mode.

Reference Level:	110 dBuV
Attenuation:	20 dB
Sweep Time:	Coupled
Resolution Bandwidth:	1MHz
Video Bandwidth:	1 MHz for peak, 10 Hz for average
Detector:	Peak

Maximize Turntable (find worst case table angle), Maximize Antenna (find worst case height)

Save 2 plots: 1) Average Plot (Vertical and Horizontal), Limit= 54dBuV @3m 2) Peak plot (Vertical and Horizontal), Limit = 74dBuV @3m

Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands.

This report represents the worst case data for all supported operating modes.

Frequency (MHz)	Mode	Data Rate (Mbps)	Radiated Bandedge Level (dBuV/m)	Average Limit (dBuV/m)
	802.11B, 1-11 Mbps	1	50.25	54
2412	802.11G, 6- 54 Mbps	6	52.88	54
	HT20, M0 – M7	MO	52.95	54
	802.11B, 1-11 Mbps	1	50.27	54
2462	802.11G, 6- 54 Mbps	6	53.45	54
	HT20, M0 – M7	MO	53.28	54

Frequency (MHz)	Mode	Data Rate (Mbps)	Radiated Bandedge Level (dBuV/m)	Peak Limit (dBuV/m)
	802.11B, 1-11 Mbps	1	61.89	74
2412	802.11G, 6- 54 Mbps	6	67.21	74
	HT20, M0 – M7	MO	70.62	74
	802.11B, 1-11 Mbps	1	61.67	74
2462	802.11G, 6- 54 Mbps	6	72.31	74
	HT20, M0 – M7	MO	71.60	74

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🔆 Ag	ilent 15	5:41:45	Nov 20	0,2011				_	F	: Т	Ma	rker
EMiSof Ref 10	t Vason 9 dB µ ∖	a: EMi E /	mission #Atten	Softwa 12 dB	are			Mkr2	2.333 52.48	97 GHz dB µ V	Selec	t Marker
#Peak										$ \land$	<u> </u>	J 4
Log 10 dB/											Marke <u>Auto</u>	er Trace 1 2 3
ח			_2 					1 \$	\sim	/	F	eadout,
54.0 dB µ V											Mark	er Table
#LgAv											<u>0n</u>	Off
Start 2	2.310 0	0 GHz						Stop	2.412 (00 GHz		
#Res B	W 1 MH	z		#V	BW 10	Hz	#Swe	eep 10	s (160	1 pts)	Marke	er All Off
Mark 1	er T	race (1)	Type Frea		X 2.390	Axis 00 GHz			Amplit 50.25 dl	ude 3uV		
2		(1)	Freq		2.333	97 GHz			52.48 dl	ĴμŲ		
												More 2 of 2

Radiated Bandedge, 2412 MHz, 1 Mbps, 802.11B, Average , Vertical

Radiated Bandedge, 2412 MHz, 1 Mbps, 802.11B, Average, Horizontal



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🔆 Ag	jilent 16	:22:50	Nov 20), 2011		,	,		R	: Т	Mari	ker
EMiSoft Ref 10	t Vason 17 dB µ \	a:EMiE	mission #Atten	Softwa 10 dB	ire			Mkr2	2.333 49.55	97 GH dB µ \	z Select	Marker 3 4
#Реак Log 10 dB/										\int		Normal
DI			_2								-	Delta
54.0 dB µ V #LgAv											De l (Track Ref	l ta Pair ing Ref) ▲
Start 2 #Res B Mark	2.310 0 W 1 MH	0 GHz z race	Туре	#V	BW 10 x	Hz Axis	#Swe	Stop eep 10	2.412 (s (160 Amplitu	00 GH: 1 pts) ude	2 î Sp an	an Pair <u>Center</u>
1 2		(1) (1)	Freq Freq		2.390 2.333	00 GHz 97 GHz			52.88 dl 49.55 dl	3µV 3µV		Off
						_						More 1 of 2

Radiated Bandedge, 2412 MHz, 6 Mbps, 802.11G, Average, Vertical

Radiated Bandedge, 2412 MHz, 6 Mbps, 802.11G, Average, Horizontal



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🔆 🔆 Agile	nt 16:42:15	∣ Nov 20, 20)11		RT	Marker
EMiSoft V Ref 107 #Peak	/asona: EMi dBµV	Emission Sof #Atten 10 d	tware IB	Mkr2	2.333 84 GHz 49.33 dBµV	Select Marker
Log 10 dB/						Normal
DI		2 				Delta
54.0 dB µ V — #LgAv —						Delta Pair (Tracking Ref) Ref △
Start 2.3 #Res BW	10 00 GHz 1 MHz	Tupo	#VBW 10 Hz	Stop #Sweep 10	2.412 00 GHz [*] s (1601 pts)	Span Pair Span <u>Center</u>
1 2	(1) (1)	Freq Freq	2.390 00 GHz 2.333 84 GHz		1mpnCdde 52.95 dBµV 49.33 dBµV	Off
		000 0				More 1 of 2

Radiated Bandedge, 2412 MHz, m0, HT20, Average, Vertical

Radiated Bandedge, 2412 MHz, m0, HT20 , Average , Horizontal



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🔆 Ag	jilent 18	:18:44	Nov 20	0,2011						RT	Sv	/eep
EMiSoft Ref 10	t Vason Ø dB µ \	a:EMiE	mission #Atten	Softwa 10 dB	are			Mkr1	2.483 5 50.2	500 GHz 7 dB µ V	Swe	eep Time 10.00 s
#Peak Ing		\mathbb{N}									Auto	<u>Man</u>
10 dB/											<u>Single</u>	Sweep Cont
											Aut	o Sweep
DI 54.0			5	\sim							<u>Norm</u>	Time Accy
dB µ V				/	\sim	1						Gate
#LgAv											On	<u>Off</u>
W1 S2 S3 FS A AA											Gat	e Setup•
£ (f):												Points
Flun Swn												1601
Start 2	2.462 0	00 GHz						Stop 2	2.500 0	100 GHzî		
#Res B	3W 1 MH	Z		#\	'BW 10	Hz	#Sw	eep 10	s (160	01 pts)		
Copyr	Copyright 2000–2008 Agilent Technologies											

Radiated Bandedge, 2462 MHz, 1 Mbps, 802.11B, Average , Vertical

Radiated Bandedge, 2462 MHz, 1 Mbps, 802.11B, Average , Horizontal



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🔆 Ag	jilent 18	:10:26	Nov 2	0,2011					F	₹ T	Display
EMiSoft Ref 10	t Vason 0 dB µ \	a: EMi I	Emissio #Atten	n Softwa 10 dB	are			Mkr1 :	2.483 5 53.45	00 GHz 6 dB µ V	Full Screen
#Peak Log 10											Display Line
ab7											<u>On</u> Öff
DI 54 0						1					
dB µ V #LaAv						~~~					Limits⊦
₩L9/10 Ш1 52											Active Fctn
S3 FS											Position Bottom
€(f): FTun Swp											Title
Stort /	462.0	00 CU-						Stop 2		00 CU-1	Preferences
#Res B	2.402 0 3W 1 MH	Z		#\	/BW 10	Hz	#Sw	eep 10	s (160	00 6H2 1 pts)	
copyr	ignt 24	100-20	008 H	ment i	ecnnol	ogies					

Radiated Bandedge, 2462 MHz, 6 Mbps, 802.11G, Average, Vertical

Radiated Bandedge, 2462 MHz, 6 Mbps, 802.11G, Average , Horizontal



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🔆 Ag	ilent 17	':25:2 ⁸	Nov 20	0,2011					F	₹ T	Marker
EMiSofi Ref 10 #Peak	t Vason 0 dB µ \	a: EMi (/	Emission #Atten	Softwa 10 dB	are			Mkr1	2.483 5 53.28	00 GHz dB µ V	Select Marker <u>1</u> 234
Log 10 dB/											Normal
DI											Delta
54.0 dBµV #LgAv											Delta Pair (Tracking Ref) Ref <u>▲</u>
W1 S2 S3 FS A AA											Span Pair Span <u>Center</u>
£(†): FTun Swp											Off
Start 2 #Res B	2.462 0 W 1 MH	00 GHz Iz		#V	BW 10	Hz	#Sn	Stop Veep 10	2.500 0 0 s (160	00 GHz^ 1 pts)	More 1 of 2
Copyr	ight 24	000-20	008 Hg	lient i	ecnnol	ogles					

Radiated Bandedge, 2462 MHz, m0, HT20, Average, Vertical

Radiated Bandedge, 2462 MHz, m0, HT20 , Average , Horizontal

🔆 Agilent 17:52:26	Nov 20, 2011			RT	Display
EMiSoft Vasona: EMi E Ref 100 dB µ V #Peak	Emission Softwar #Atten 10 dB	e	Mkr1 2.483 48.4	500 GHz 5 dB µ V	Full Screen
Log 10 dB/					Display Line 54.00 dBµV <u>On</u> Off
DI					
dBµV #LgAv					Limits
W1 S2 S3 FS A AA					Active Fctn Position> Bottom
£(f): FTun Swp					Title⊦
Start 2.462 000 GHz #Res BW 1 MHz	#VB	W 10 Hz +	Stop 2.500 (Sweep 10 s (16	000 GHz^ 01 pts)	Preferences
Copyright 2000-20	108 Agilent Te	chnologies			

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🔆 Agilen	nt 15:43:29	Nov 20, 20	1				F	? T	Display
EMiSoft V: Ref 109 c #Poak	asona: EMi E dBµV	mission Soft #Atten 12 dl	ware 3			Mkr2	2.333 62.76	97 GHz dB µ V	Full Screen
Log 10 dB/		2						/	Display Line 74.00 dBµV <u>On</u> Off
DI	an a a chuir ing sei dhe daya ba		ha i ya welatata e	- an defension of the state	in j mart de Vin m	<u>.</u>	-adarter		
74.0 dB µ V #LgAv									Limits≀
Start 2.31 #Res BW 1	10 00 GHz 1 MHz		ŧVBW 1 M	1Hz	#Swe	Stop eep 10	2.412 (s (160	00 GHz^ 1 pts)	Active Fctn Position•
Marker 1 2	Trace (1) (1)	Type Freq Freq	> 2.390 2.333	(Axis 00 GHz 97 GHz			Amplit 61.89 dl 62.76 dl	ude BµV BµV	Bottom
	+ 0000 00								Preferences

Radiated Bandedge, 2412 MHz, 1 Mbps, 802.11B, Peak, Vertical

Radiated Bandedge, 2412 MHz, 1 Mbps, 802.11B, Peak, Horizontal



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Radiated Bandedge, 2412 MHz, 6 Mbps, 802.11G, Peak , Vertical

Radiated Bandedge, 2412 MHz, 6 Mbps, 802.11G, Peak , Horizontal



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Radiated Bandedge, 2412 MHz, m0, HT20, Peak, Vertical

Radiated Bandedge, 2412 MHz, m0, HT20 , Peak , Horizontal



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Radiated Bandedge, 2462 MHz, 1 Mbps, 802.11B, Peak, Vertical

Radiated Bandedge, 2462 MHz, 1 Mbps, 802.11B, Peak, Horizontal



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🔆 Ag	ilent 18	3:08:30	Nov 20	0,2011		,	,		F	₹ T	Sw	eep
EMiSofi Ref 10	t Vason 0 dB µ \	a: EMi E /	Emission #Atten	Softwa 10 dB	are			Mkr1	2.483 5 72.31	00 GHz dB µ V	Swe	ep Time 10.00 s
#Peak Log			N .								Auto	<u>Man</u>
10 dB/				William Balance	n ±11						<u>Single</u>	Sweep Cont
							al .				Auto	o Sweep
DI 74.й							a a a a a a a a a a a a a a a a a a a	-levilie it	-	mut desiri kyr	<u>Norm</u>	Time Accy
dB µ V											~	Gate
#LgAv											Un	
W1 S2 S3 FS A AA											Gat	e Setup⊧
£ (f):												Points
Swp												1601
Start 2	2.462 0	00 GHz						Stop 2	2.500 00	00 GHz^		
#Res B	W 1 MH	Z		#V	BM 1 M	Hz	#Sw	eep 10	s (160	1 pts)		
Copyr	ight 20	000-20)08 Ag	ilent T	echnol	ogies						

Radiated Bandedge, 2462 MHz, 6 Mbps, 802.11G, Peak, Vertical

Radiated Bandedge, 2462 MHz, 6 Mbps, 802.11G, Peak , Horizontal



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Radiated Bandedge, 2462 MHz, m0, HT20 , Peak , Vertical

Radiated Bandedge, 2462 MHz, m0, HT20 , Peak , Horizontal



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Radiated Spurious Emissions

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Using Vasona, configure the spectrum analyzer as shown below (be sure to enter all losses between the transmitter output and the spectrum analyzer). Place the radio in continuous transmit mode.

Span:	1GHz – 18 GHz
Reference Level:	80 dBuV
Attenuation:	10 dB
Sweep Time:	Coupled
Resolution Bandwidth:	1MHz
Video Bandwidth:	1 MHz for peak, 10 Hz for average
Detector:	Peak

Maximize Turntable (find worst case table angle), Maximize Antenna (find worst case height)

Save 2 plots:	1) Average Plot (Vertical and Horizontal), Limit= 54dBuV @3m
	2) Peak plot (Vertical and Horizontal), Limit = 74dBuV @3m

This report represents the worst case data for all supported operating modes. There are no measurable emissions above 18 GHz.

		Data Rate	Radiated Level	Average Limit
Frequency (MHz)	Mode	(Mbps)	(dBuV/m)	(dBuV/m)
	802.11B, 1-11 Mbps	1	41.4	54
2412	802.11G, 6- 54 Mbps	6	38.0	54
	HT20, M0 – M7	MO	37.2	54
	802.11B, 1-11 Mbps	1	36.3	54
2437	802.11G, 6- 54 Mbps	6	35.5	54
	HT20, M0 – M7	MO	34.7	54
	802.11B, 1-11 Mbps	1	35.8	54
2462	802.11G, 6- 54 Mbps	6	35.9	54
	HT20, M0 – M7	MO	35.4	54

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Radiated Spurious Emissions Average

Test Number: 71127 Spec ID: 647											
Basic Standard	Applied to	Freq Range	Test Details / Comments								
15.109 15.247, RSS-210, LP0002 HKTA1039	Enclosure	30MHz - 26.5GHz	Radiated Spurious Emissions Average Measurements								
Operating Mode	Mode: 1, OFDM /	Mode: 1, OFDM / CCK									
Power Input	110, 60Hz (+/-20%)									
Overall Result	Pass	Pass									
Comments	No further commer	nts									
Deviation	There were no dev	iations from the specification									

System Number	Description	Samples	System under test	Support equipment	
1	Altamount WLAN FCC	S01	R		

Subtest Number	Subtest Number: 71127 - 1									
Engineer		Jose Aguirre	9							
Lab Informatio	n	Building P, 5	ōm .	Anechoic						
Subtest Title		802.11B ch	1 A	erage 1-10GHz						
Subtest Result		Pass								
Highest Freque	ency	10000.0								
Lowest Freque	ency	1000.0								
Environmental	Conditi	ons:								
Temperature: (5	59 to 95)	F		68F						
Humidity: (10 to	o 75)%:			55%						
Equipment use	ed:									
Equipment No	Manufa	acturer	Μ	odel	Description					
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber					
CIS021117	Micro-0	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in					
CIS030564	Micro-0	Coax	U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in					
CIS034304	Micro-	Fronics	Bl	RM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz					
CIS038371	CIS038371 Cisco		Tŀ	10118	Mast Mount Preamplifier Array, 1-18GHz					
CIS042015 ETS-Lindgren		31	17	Double Ridged Waveguide Horn Antenna						
CIS047280	Huber	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector					
CIS047314	Huber	Suhner	Sı	ucoflex 106PAQ	N Type RF Antenna Cable					

Graphical Test Results

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Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fail	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
2170	46.5	4.5	-9.6	41.4	Av	v	150	42	54	-12.6	Pass	
2412.92	54.4	4.7	-9.2	49.9	Av	V	100	42	54	-4.1	Pass	Channel 1
3214	42.1	5.6	-7.7	40	Av	V	100	42	54	-14	Pass	
4824.001	39.3	7	-6.1	40.2	Av	V	200	42	54	-13.8	Pass	
7236.95	27.2	8.5	-3.4	32.4	Av	V	100	42	54	-21.6	Pass	
9648.221	24.9	10.6	-2.1	33.3	Av	V	100	42	54	-20.7	Pass	

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Subtest Numb	Subtest Number: 71127 - 3										
Engineer		Jose Aguirre									
Lab Informatio	n	Building P, 5	m /	Anechoic							
Subtest Title 802.11B ch6 Average 1-10GHz											
Subtest Result Pass											
Highest Freque	ency	10000.0									
Lowest Frequency 1000.0											
Environmental Conditions:											
Temperature: (5	59 to 95)	F		68F							
Humidity: (10 to 75)%: 55%											
Equipment used:											
Equipment No	Manufa	acturer	M	odel	Description						
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber						
CIS021117	Micro-C	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS030564	Micro-0	Coax	U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS034304	Micro-7	Fronics	B	RM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz						
CIS038371	Cisco		TH	10118	Mast Mount Preamplifier Array, 1-18GHz						
CIS042015	ETS-Li	ndgren	31	17	Double Ridged Waveguide Horn Antenna						
CIS047280	Huber	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector						
CIS047314	Huber+	-Suhner	Sı	ucoflex 106PAQ	N Type RF Antenna Cable						



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fail	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
2435.5	50.5	4.8	-9.2	46.1	Av	V	100	214	54	-7.9	Pass	Channel 6
2156.5	43.3	4.5	-9.8	38	Av	V	150	214	54	-16	Pass	
4874.5	36.5	7	-6.3	37.2	Av	V	150	214	54	-16.8	Pass	
7311.661	27.7	8.6	-3.2	33.1	Av	V	100	214	54	-20.9	Pass	
9748.331	24.9	10.6	-1.6	34	Av	V	100	214	54	-20	Pass	

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Subtest Number	Subtest Number: 71127 - 5										
Engineer		Jose Aguirre	•								
Lab Informatio	n	Building P, 5	im /	Anechoic							
Subtest Title 802.11B ch11 Average 1-10GHz											
Subtest Result Pass											
Highest Freque	ency	10000.0									
Lowest Frequency 1000.0											
Environmental Conditions:											
Temperature: (5	59 to 95)	F		68F							
Humidity: (10 to 75)%: 55%											
Equipment used:											
Equipment No	Manufa	acturer	M	odel	Description						
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber						
CIS021117	Micro-C	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS030564	Micro-0	Coax	U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS034304	Micro-7	Fronics	B	RM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz						
CIS038371	S038371 Cisco		Tŀ	10118	Mast Mount Preamplifier Array, 1-18GHz						
CIS042015	ETS-Li	ndgren	31	17	Double Ridged Waveguide Horn Antenna						
CIS047280	Huber	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector						
CIS047314	Huber+	-Suhner	Sı	ucoflex 106PAQ	N Type RF Antenna Cable						

Graphical Test Results



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fail	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
2462.5	47.8	4.8	-9.1	43.5	Av	V	100	154	54	-10.5	Pass	Channel 11
2192.5	42.1	4.5	-9.5	37.2	Av	V	150	154	54	-16.8	Pass	
4924	36.2	7	-6.4	36.9	Av	V	150	154	54	-17.1	Pass	
7386.133	27.3	8.7	-3.4	32.6	Av	V	100	152	54	-21.4	Pass	
9848.032	24.8	10.7	-1.8	33.7	Av	V	100	152	54	-20.3	Pass	

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Subtest Number	er: 7112	r: 71127 - 7										
Engineer		Jose Aguirre)									
Lab Informatio	n	Building P, 5	im /	Anechoic								
Subtest Title		802.11G ch'	1 A	verage 1-10GHz								
Subtest Result		Pass										
Highest Freque	ency	10000.0										
Lowest Freque	ency	1000.0										
Environmental	Conditi	conditions:										
Temperature: (5	emperature: (59 to 95)F 68F											
Humidity: (10 to	Humidity: (10 to 75)%: 55%											
Equipment use	ed:											
Equipment No	Manufa	acturer	M	odel	Description							
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber							
CIS021117	Micro-C	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in							
CIS030564	Micro-C	Coax	U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in							
CIS034304	Micro-7	ronics	B	RM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz							
CIS038371	Cisco TH0118 Mast Mount Preamplifier Array, 1-18GHz											
CIS042015	ETS-Li	ndgren	31	17	Double Ridged Waveguide Horn Antenna							
CIS047280	Huber ·	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector							
CIS047314	Huber+Suhner Sucoflex 106PAQ N Type RF Antenna Cable											



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fail	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
2411.106	49.4	4.7	-9.2	44.9	Av	V	100	143	54	-9.1	Pass	Channel 1
2161	41.5	4.5	-9.7	36.3	Av	V	150	143	54	-17.7	Pass	
3214.397	35.5	5.6	-7.7	33.3	Av	V	100	143	54	-20.7	Pass	
4824.11	30.6	7	-6.1	31.5	Av	V	100	143	54	-22.5	Pass	
7236.981	26.9	8.5	-3.4	32.1	Av	V	100	143	54	-21.9	Pass	
9648.07	25	10.6	-2.1	33.4	Av	V	100	143	54	-20.6	Pass	

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Subtest Numb	er: 7112	:: 71127 - 9										
Engineer		Jose Aguirre	•									
Lab Informatio	n	Building P, 5	im /	Anechoic								
Subtest Title		802.11G ch	6 A	verage 1-10GHz								
Subtest Result		Pass										
Highest Freque	ency	10000.0										
Lowest Freque	ncy	1000.0										
Environmental	Conditi	Conditions:										
Temperature: (5	ature: (59 to 95)F 68F											
Humidity: (10 to	lumidity: (10 to 75)%: 55%											
Equipment use	ed:											
Equipment No	Manufa	acturer	M	odel	Description							
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber							
CIS021117	Micro-C	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in							
CIS030564	Micro-0	Coax	U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in							
CIS034304	Micro-7	Fronics	B	RM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz							
CIS038371	Cisco TH0118 Mast Mount Preamplifier Array, 1-18GHz											
CIS042015	ETS-Li	ndgren	31	17	Double Ridged Waveguide Horn Antenna							
CIS047280	Huber	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector							
CIS047314	Huber+Suhner Sucoflex 106PAQ N Type RF Antenna Cable											



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fail	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
2437.65	45	4.8	-9.2	40.6	Av	V	100	206	54	-13.4	Pass	Channel 6
2066.5	41.4	4.4	-10.3	35.5	Av	V	150	206	54	-18.5	Pass	
3249.942	33.7	5.6	-7.9	31.4	Av	V	100	206	54	-22.6	Pass	
4874.537	30.2	7	-6.3	30.9	Av	V	100	206	54	-23.1	Pass	
7311.391	26.8	8.6	-3.2	32.2	Av	V	100	206	54	-21.8	Pass	
9749.43	25.1	10.6	-1.6	34.1	Av	V	100	206	54	-19.9	Pass	

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Subtest Numb	er: 7112	: 71127 - 11										
Engineer		Jose Aguirre)									
Lab Informatio	n	Building P, 5	im /	Anechoic								
Subtest Title		802.11G ch	11 /	Average 1-10GHz								
Subtest Result		Pass										
Highest Freque	requency 10000.0											
Lowest Freque	ency	1000.0										
Environmental	I Conditions:											
Temperature: (5	perature: (59 to 95)F 68F											
Humidity: (10 to	Humidity: (10 to 75)%: 55%											
Equipment use	ed:											
Equipment No	Manufa	acturer	M	odel	Description							
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber							
CIS021117	Micro-0	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in							
CIS030564	Micro-0	Coax	U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in							
CIS034304	Micro-7	Fronics	B	RM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz							
CIS038371	Cisco TH0118 Mast Mount Preamplifier Array, 1-18GHz											
CIS042015	ETS-Li	ndgren	31	17	Double Ridged Waveguide Horn Antenna							
CIS047280	Huber	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector							
CIS047314	Huber+Suhner Sucoflex 106PAQ N Type RF Antenna Cable											



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fail	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
2461.256	41.9	4.8	-9.1	37.6	Av	V	100	141	54	-16.4	Pass	Channel 11
2086.3	40.6	4.4	-10.3	34.7	Av	V	150	206	54	-19.3	Pass	
4924.832	30.3	7	-6.4	30.9	Av	V	100	141	54	-23.1	Pass	
7386	26.4	8.7	-3.4	31.7	Av	V	100	141	54	-22.3	Pass	
9848	24.4	10.7	-1.8	33.3	Av	V	100	141	54	-20.7	Pass	

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Subtest Numb	er: 71127 - 13										
Engineer		Jose Aguirre	•								
Lab Informatio	n	Building P, 5	im /	Anechoic							
Subtest Title		HT20 ch1 A	ver	age 1-10GHz							
Subtest Result	:	Pass									
Highest Freque	ency	10000.0									
Lowest Freque	ency	1000.0									
Environmental	al Conditions:										
Temperature: (5	Temperature: (59 to 95)F 68F										
Humidity: (10 to 75)%: 55%											
Equipment use	ed:										
Equipment No	Manufa	acturer	M	odel	Description						
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber						
CIS021117	Micro-C	Coax	U	FB311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS030564	Micro-0	Coax	U	FB311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS034304	Micro-7	Fronics	B	RM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz						
CIS038371	Cisco TH0118 Mast Mount Preamplifier Array, 1-18GHz										
CIS042015	ETS-Li	ndgren	31	17	Double Ridged Waveguide Horn Antenna						
CIS047280	Huber	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector						
CIS047314	Huber+Suhner Sucoflex 106PAQ N Type RF Antenna Cable										

Graphical Test Results



Test Results Table

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measureme nt Type	Pol	Hgt cm	Azt Dea	Limit dBuV/m	Margin dB	Pass /Fail	Comments
2411.113	48	4.7	-9.2	43.6	Av	V	100	142	54	-10.4	Pass	Channel 1
3214	37.9	5.6	-7.7	35.8	Av	V	100	142	54	-18.2	Pass	
2161	40.4	4.5	-9.7	35.1	Av	V	150	142	54	-18.9	Pass	
4824	29.9	7	-6.1	30.8	Av	V	100	142	54	-23.2	Pass	

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Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measureme nt Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /FailComments
7236	25.9	8.5	-3.4	31	Av	V	100	142	54	-23	Pass
9648	24.6	10.6	-2.1	33.1	Av	V	100	142	54	-20.9	Pass

Subtest Number	er: 7112	r: 71127 - 15										
Engineer		Jose Aguirre	•									
Lab Informatio	n	Building P, 5	im .	Anechoic								
Subtest Title		HT20 ch6 A	ver	age 1-10GHz								
Subtest Result												
Highest Freque	ency											
Lowest Freque	ency	1000.0										
Environmental	Conditi	ons:										
Temperature: (5	Temperature: (59 to 95)F 68F											
Humidity: (10 to 75)%: 55%												
Equipment use	ed:											
Equipment No	Manufa	acturer	Μ	odel	Description							
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber							
CIS021117	Micro-0	Coax	U	FB311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in							
CIS030564	Micro-0	Coax	U	FB311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in							
CIS034304	Micro-	Fronics	Bl	RM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz							
CIS038371	Cisco		Tŀ	H0118	Mast Mount Preamplifier Array, 1-18GHz							
CIS042015	ETS-Li	ndgren	31	117	Double Ridged Waveguide Horn Antenna							
CIS047280	Huber	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector							
CIS047314	Huber	-Suhner	Sı	ucoflex 106PAQ	N Type RF Antenna Cable							

Graphical Test Results



Test Results Table

Frequency	Raw	Cable	AF dB		Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fail	Comments
IVIHZ	aBuv	LOSS		aBuv/m	nt Type		cm	Deg	aBuv/m	aв		
2437.674	43.8	4.8	-9.2	39.4	AV	V	100	142	54	-14.6	Pass	Channel 6
2161	41.1	4.5	-9.7	35.9	AV	V	150	142	54	-18.1	Pass	

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Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measureme nt Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
4874	29.1	7	-6.3	29.8	AV	V	100	143	54	-24.2	Pass	
7311	26.5	8.6	-3.2	31.9	AV	V	100	143	54	-22.1	Pass	
9748	24.8	10.6	-1.6	33.8	AV	V	100	143	54	-20.2	Pass	

Subtest Number	Subtest Number: 71127 - 17										
Engineer		Jose Aguirre	Э								
Lab Informatio	n	Building P, 5	ōm .	Anechoic							
Subtest Results											
Subtest Title HT20 ch11 Average 1-10GHz											
Subtest Result	:	Pass									
Highest Freque	ency	10000.0									
Lowest Freque	ency	1000.0									
Environmental Conditions:											
Temperature: (59 to 95)F 68F											
Humidity: (10 to 75)%: 55%											
Equipment use	ed:										
Equipment No	Manufa	acturer	Μ	odel	Description						
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber						
CIS021117	Micro-0	Coax	U	FB311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS030564	Micro-0	Coax	U	FB311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS034304	Micro-7	Fronics	B	RM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz						
CIS038371 Cisco				H0118	Mast Mount Preamplifier Array, 1-18GHz						
CIS042015 ETS-Lindgren 3				17	Double Ridged Waveguide Horn Antenna						
CIS047280 Huber + Suhner Su			S	ucoflex 102E	40GHz Cable K Connector						
CIS047314	Huber+	-Suhner	S	ucoflex 106PAQ	N Type RF Antenna Cable						

Graphical Test Results



Test Results Table

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Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt Dog	Limit	Margin	Pass /Fail	Comments
IVINZ	авих	LOSS		ави v/m	пі туре		CIII	Deg	ави v/m	αв		
2462.956	40.8	4.8	-9.1	36.5	AV	V	100	206	54	-17.5	Pass	Channel 11
2017	41.3	4.3	-10.3	35.4	AV	V	200	206	54	-18.6	Pass	
4924	30.9	7	-6.4	31.6	AV	V	100	206	54	-22.4	Pass	
9848	24.7	10.7	-1.8	33.6	AV	V	100	206	54	-20.4	Pass	
3281.592	35.2	5.6	-7.9	33	AV	V	100	206	54	-21	Pass	

rijuiju cisco

Subtest Number: 71127 - 2										
Engineer		Jose Aguirre	;							
Lab Informatio	n	Building P, 5	im .	Anechoic						
Subtest Title	Subtest Title 802.11B ch1 Average 10-18GHz									
Subtest Result Pass										
Highest Frequency 18000.0										
Lowest Frequency 10000.0										
Environmental	Environmental Conditions:									
Temperature: (59 to 95)	F		68F						
Humidity: (10 to	Humidity: (10 to 75)%: 55%									
Equipment use	ed:									
Equipment No	Manufa	acturer	Μ	odel	Description					
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber					
CIS021117	Micro-0	Coax	U	FB311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in					
CIS030564	Micro-0	Coax	U	FB311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in					
CIS034304	Micro-	Fronics	В	RM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz					
CIS038371	Cisco		Tł	H0118	Mast Mount Preamplifier Array, 1-18GHz					
CIS042015	ETS-Li	ndgren	31	117	Double Ridged Waveguide Horn Antenna					
CIS047280 Huber + Suhner S				ucoflex 102E	40GHz Cable K Connector					
CIS047314	Huber	Suhner	S	ucoflex 106PAQ	N Type RF Antenna Cable					

Graphical Test Results



Test Results Table

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Frequency MHz	Raw dBuV	Cable Loss	AF c	зВ	Level dBuV/m	Measureme nt Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
16884	28.9	16.2		-8.4	36.7	Av	V	100	42	54	-17.3	Pass	
12060.001	29.4	12.2		-9.3	32.3	Av	V	100	42	54	-21.7	Pass	
14472	29.5	13.6		-9.7	33.4	Av	V	100	42	54	-20.6	Pass	

No emissions seen. The above readings are noise floor.

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Subtest Numb	Subtest Number: 71127 - 4										
Engineer		Jose Aguirre	1								
Lab Informatio	n	Building P, 5	m /	Anechoic							
Subtest Title	Subtest Title 802.11B ch6 Average 10-18GHz										
Subtest Result Pass											
Highest Frequency 18000.0											
Lowest Frequency 10000.0											
Environmental	Conditi	ons:									
Temperature: (5	59 to 95)	F		68F							
Humidity: (10 to 75)%: 55%											
Equipment use	ed:										
Equipment No	Manufa	acturer	M	odel	Description						
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber						
CIS021117	Micro-C	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS030564	Micro-0	Coax	U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS035618	Micro-7	Fronics	H	PM50112-02	High pass Filter, 6.4-18GHz						
CIS038371 Cisco 1				10118	Mast Mount Preamplifier Array, 1-18GHz						
CIS042015 ETS-Lindgren 3			31	17	Double Ridged Waveguide Horn Antenna						
CIS047280 Huber + Suhner S		Sucoflex 102E		40GHz Cable K Connector							
CIS047314	Huber+	-Suhner	Sı	ucoflex 106PAQ	N Type RF Antenna Cable						

Graphical Test Results



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fai	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
12185.001	28.9	12.2	-9	32.1	Av	V	100	214	54	-21.9	Pass	
14622	29.5	13.7	-9.5	33.7	Av	V	100	214	54	-20.3	Pass	\$
17059	29	16.3	-9	36.3	Av	V	100	214	54	-17.7	Pass	

No emissions seen. The above readings are noise floor.

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Subtest Numb	Subtest Number: 71127 - 6										
Engineer		Jose Aguirre									
Lab Informatio	n	Building P, 5	m /	Anechoic							
Subtest Title	btest Title 802.11B ch11 Average 10-18GHz										
Subtest Result Pass											
Highest Frequency 18000.0											
Lowest Frequency 10000.0											
Environmental	Conditi	ons:									
Temperature: (5	59 to 95)	F		68F							
Humidity: (10 to 75)%: 55%											
Equipment use	ed:										
Equipment No	Manufa	acturer	M	odel	Description						
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber						
CIS021117	Micro-0	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS030564	Micro-C	Coax	U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS035618	Micro-7	Fronics	H	PM50112-02	High pass Filter, 6.4-18GHz						
CIS038371	Cisco		TH	10118	Mast Mount Preamplifier Array, 1-18GHz						
CIS042015 ETS-Lindgren 3				17	Double Ridged Waveguide Horn Antenna						
CIS047280 Huber + Suhner S			Sı	ucoflex 102E	40GHz Cable K Connector						
CIS047314	Huber+	-Suhner	Sı	ucoflex 106PAQ	N Type RF Antenna Cable						

Graphical Test Results



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fail	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
12310.001	29.1	12.3	-9.2	32.2	Av	V	100	154	54	-21.8	Pass	
14772	28.9	13.9	-9.8	33	Av	V	100	154	54	-21	Pass	
17234	28.7	16.5	-8.4	36.7	Av	V	100	154	54	-17.3	Pass	

No emissions seen. The above readings are noise floor.

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Subtest Numb	Subtest Number: 71127 - 8										
Engineer		Jose Aguirre									
Lab Informatio	n	Building P, 5	m /	Anechoic							
Subtest Title	Subtest Title 802.11G ch1 Average 10-18GHz										
Subtest Result Pass											
Highest Frequency 18000.0											
Lowest Frequency 10000.0											
Environmental	Conditi	ons:									
Temperature: (5	59 to 95)	F		68F							
Humidity: (10 to 75)%: 55%											
Equipment use	ed:										
Equipment No	Manufa	acturer	M	odel	Description						
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber						
CIS021117	Micro-0	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS030564	Micro-C	Coax	U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS035618	Micro-7	Fronics	H	PM50112-02	High pass Filter, 6.4-18GHz						
CIS038371	Cisco		TH	10118	Mast Mount Preamplifier Array, 1-18GHz						
CIS042015 ETS-Lindgren 3			31	17	Double Ridged Waveguide Horn Antenna						
CIS047280 Huber + Suhner S			Sı	ucoflex 102E	40GHz Cable K Connector						
CIS047314	Huber+	-Suhner	Sı	ucoflex 106PAQ	N Type RF Antenna Cable						

Graphical Test Results



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fai	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
12060.001	29.1	12.2	-9.3	32	Av	V	100	141	54	-22	Pass	
14472	28.9	13.6	-9.7	32.8	Av	V	100	141	54	-21.2	Pass	
16884	28.9	16.2	-8.4	36.7	Av	V	100	141	54	-17.3	Pass	

No emissions seen. The above readings are noise floor.

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Subtest Numb	Subtest Number: 71127 - 10										
Engineer		Jose Aguirre)								
Lab Informatio	n	Building P, 5	im /	Anechoic							
Subtest Title	t Title 802.11G ch6 Average 10-18GHz										
Subtest Result Pass											
Highest Frequency 18000.0											
Lowest Freque	Lowest Frequency 10000.0										
Environmental	Conditi	ons:									
Temperature: (5	59 to 95)	F		68F							
Humidity: (10 to 75)%: 55%											
Equipment use	ed:										
Equipment No	Manufa	acturer	M	odel	Description						
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber						
CIS021117	Micro-C	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS030564	Micro-0	Coax	U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS035618	Micro-7	ronics	H	PM50112-02	High pass Filter, 6.4-18GHz						
CIS038371	Cisco		Tŀ	10118	Mast Mount Preamplifier Array, 1-18GHz						
CIS042015 ETS-Lindgren 3				17	Double Ridged Waveguide Horn Antenna						
CIS047280 Huber + Suhner S			Sı	ucoflex 102E	40GHz Cable K Connector						
CIS047314	Huber+	N Type RF Antenna Cable									

Graphical Test Results



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fail	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
12185.001	28.8	12.2	-9	32	Av	V	100	206	54	-22	Pass	Noise floor
14622	29.3	13.7	-9.5	33.5	Av	V	100	206	54	-20.5	Pass	Noise Floor
17059	28.8	16.3	-9	36.1	Av	V	100	206	54	-17.9	Pass	Noise floor

No emissions seen. The above readings are noise floor.

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Subtest Number: 71127 - 12										
Engineer		Jose Aguirre								
Lab Information Building P, 5m Anechoic										
Subtest Title		802.11G ch11	Average 10-18GHz							
Subtest Result		Pass								
Highest Freque	ency	18000.0								
Lowest Freque	ency	10000.0								
Environmental	Conditi	ons:								
Temperature: (59 to 95)F 68F										
Humidity: (10 to 75)%: 55%										
Equipment used:										
Equipment No	Manufa	acturer N	Model	Description						
CIS008448	Cisco	1	NSA 5m Chamber	NSA 5m Chamber						
CIS021117	Micro-C	Coax l	JFB311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS030564	Micro-C	Coax l	JFB311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS035618	Micro-7	ronics H	HPM50112-02	High pass Filter, 6.4-18GHz						
CIS038371	Cisco	1	FH0118	Mast Mount Preamplifier Array, 1-18GHz						
CIS042015	CIS042015 ETS-Lindgren		3117	Double Ridged Waveguide Horn Antenna						
CIS047280	Huber ·	+ Suhner S	Sucoflex 102E	40GHz Cable K Connector						
CIS047314	Huber+	Suhner S	Sucoflex 106PAQ	N Type RF Antenna Cable						

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Graphical Test Results



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fail	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
12310.001	28.7	12.3	-9.2	31.8	Av	V	100	142	54	-22.2	Pass	Noise Floor
14772	28.9	13.9	-9.8	33	Av	V	100	142	54	-21	Pass	Noise Floor
17234	28.7	16.5	-8.4	36.8	Av	V	100	142	54	-17.2	Pass	Noise Floor

No emissions seen. The above readings are noise floor.

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Subtest Number: 71127 - 14										
Engineer		Jose Aguirre								
Lab Information Building P, 5m Anechoic										
Subtest Title		HT20 ch1 Average 10-18GHz								
Subtest Result	:	Pass								
Highest Freque	ency	18000.0								
Lowest Freque	ency	10000.0								
Environmental	Conditi	ons:								
Temperature: (59 to 95)F 68F										
Humidity: (10 to 75)%: 55%										
Equipment used:										
Equipment No	Manufacturer			odel	Description					
CIS008448	Cisco		NSA 5m Chamber		NSA 5m Chamber					
CIS021117	Micro-0	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in					
CIS030564	Micro-0	Coax	U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in					
CIS035618	Micro-7	Fronics	H	PM50112-02	High pass Filter, 6.4-18GHz					
CIS038371	CIS038371 Cisco			10118	Mast Mount Preamplifier Array, 1-18GHz					
CIS042015	2015 ETS-Lindgren		31	17	Double Ridged Waveguide Horn Antenna					
CIS047280	Huber	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector					
CIS047314 Huber+Suh		-Suhner	Sı	ucoflex 106PAQ	N Type RF Antenna Cable					

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Graphical Test Results



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fail	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
12060.001	28.9	12.2	-9.3	31.8	Av	V	100	142	54	-22.2	Pass	Noise Floor
14472	29.3	13.6	-9.7	33.2	Av	V	100	142	54	-20.8	Pass	Noise Floor
16884	28.7	16.2	-8.4	36.5	Av	V	100	142	54	-17.5	Pass	Noise Floor

No emissions seen. The above readings are noise floor.

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Subtest Number: 71127 - 16										
Engineer	Engineer Jose Aguirre									
Lab Information Building P, 5m Anechoic										
Subtest Title		HT20 ch6 A	ver	age 10-18GHz						
Subtest Result	:	Pass								
Highest Freque	ency	18000.0								
Lowest Freque	ency	10000.0								
Environmental	Conditi	ons:								
Temperature: (59 to 95)F 68F										
Humidity: (10 to 75)%: 55%										
Equipment used:										
Equipment No	Manufacturer			odel	Description					
CIS008448	Cisco		NSA 5m Chamber		NSA 5m Chamber					
CIS021117	Micro-0	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in					
CIS030564	Micro-C	Coax	U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in					
CIS035618	Micro-7	Fronics	H	PM50112-02	High pass Filter, 6.4-18GHz					
CIS038371	Cisco		TH	10118	Mast Mount Preamplifier Array, 1-18GHz					
CIS042015	ETS-Li	ndgren	31	17	Double Ridged Waveguide Horn Antenna					
CIS047280	Huber	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector					
CIS047314	-Suhner	Sı	ucoflex 106PAQ	N Type RF Antenna Cable						

Graphical Test Results



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fail	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
12185	29.9	12.2	-9	33.1	Av	V	100	142	54	-20.9	Pass	Noise Floor
14622	30.1	13.7	-9.5	34.3	Av	V	100	142	54	-19.7	Pass	Noise Floor
17059	29.6	16.3	-9	36.9	Av	V	100	142	54	-17.1	Pass	Noise Floor

No Emissions seen. The readings above are Noise floor

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Subtest Numb	btest Number: 71127 - 18											
Engineer		Jose Aguirre	•									
Lab Informatio	n	Building P, 5m Anechoic										
Subtest Title	HT20 ch11 Average 10-18GHz											
Subtest Result Pass												
Highest Frequency 18000.0												
Lowest Frequency 10000.0												
Environmental	Conditi	ons:										
Temperature: (5	59 to 95)	F		68F								
Humidity: (10 to	o 75)%:			55%								
Equipment use	ed:											
Equipment No	Manufa	acturer	Μ	odel	Description							
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber							
CIS021117	Micro-0	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in							
CIS030564	Micro-C	Coax	U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in							
CIS035618	Micro-7	Fronics	H	PM50112-02	High pass Filter, 6.4-18GHz							
CIS038371	Cisco		Tŀ	10118	Mast Mount Preamplifier Array, 1-18GHz							
CIS042015	ETS-Li	ndgren	31	17	Double Ridged Waveguide Horn Antenna							
CIS047280	Huber	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector							
CIS047314	Huber+	-Suhner	Sı	ucoflex 106PAQ	N Type RF Antenna Cable							

Graphical Test Results



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fail	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
12310.001	28.9	12.3	-9.2	32	AV	V	100	206	54	-22	Pass	Noise Floor
14772	29.2	13.9	-9.8	33.3	AV	V	100	206	54	-20.7	Pass	Noise Floor
17234	29.2	16.5	-8.4	37.2	AV	V	100	206	54	-16.8	Pass	Noise Floor

No Emissions seen. The readings above are Noise floor

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Radiated emissions Peak Measurements

Test Number: 71026 Spec ID: 647										
Applied to	Class	Freq Range	Test Details / Comments							
Enclosure	В	30MHz - 26.5GHz	Radiated emissions Peak Measurements							
Mode: 1, OFDM /	ССК									
110, 60Hz (+/-20%)									
Pass										
Peak Measuremer	nts									
There were no dev	iations from the	e specification								
	P1026 Spec ID: Applied to Enclosure Mode : 1, OFDM / 110, 60Hz (+/-20%) Pass Peak Measurement There were no device Past	Y1026 Spec ID: 647 Applied to Class Applied to B Enclosure B Mode : 1, OFDM / CCK 110, 60Hz (+/-20%) Pass Peak Measurements There were no deviations from the	Applied to Class Freq Range Applied to B 30MHz - 26.5GHz Enclosure B 30MHz - 26.5GHz Mode : 1, OFDM / CCK 110, 60Hz (+/-20%) V Pass Peak Measurements V There were no devisions from the specification V							

System Number	Description	Samples	System under test	Support equipment
1	Altamount WLAN FCC	S01	N	

Subtest Numb	er: 7102	6 - 1								
Engineer		Jose Aguirre								
Lab Informatio	tion Building P, 5m Anechoic									
Subtest Title	test Title 802.11B channel 1(1-10GHz)									
Subtest Result Pass										
Highest Frequency 10000.0										
Lowest Frequency 1000.0										
Environmental	Conditi	ons:								
Temperature: (5	59 to 95)	F		68F						
Humidity: (10 to	o 75)%:			55%						
Equipment use	ed:									
Equipment No	Manufa	acturer I	Mo	odel	Description					
CIS008448	Cisco	1	NS	SA 5m Chamber	NSA 5m Chamber					
CIS021117	Micro-C	Coax l	UF	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in					
CIS030564	Micro-C	Coax l	UF	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in					
CIS034304	Micro-7	Fronics E	BF	RM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz					
CIS038371	Mast Mount Preamplifier Array, 1-18GHz									
CIS042015	ETS-Li	ndgren	31	17	Double Ridged Waveguide Horn Antenna					
CIS047280	Huber	+ Suhner	Sι	icoflex 102E	40GHz Cable K Connector					
CIS047314	Huber+	-Suhner	Sι	coflex 106PAQ	N Type RF Antenna Cable					

Graphical Test Results

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Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fail	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
2412.754	57.5	4.7	-9.2	53	Peak(Scan)	V	100	-1	74	-21	Pass	
4824.945	45.8	7	-6.1	46.7	Peak(Scan)	V	100	-1	74	-27.3	Pass	
7235.191	38.1	8.5	-3.4	43.3	Peak(Scan)	V	100	-1	74	-30.7	Pass	
9648.326	36.5	10.6	-2.1	45	Peak(Scan)	V	100	-1	74	-29	Pass	
2175.204	53.1	4.5	-9.5	48	Peak(Scan)	V	100	-1	74	-26	Pass	

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Subtest Numb	er: 7102	6 - 2									
Engineer		Jose Aguirre									
Lab Informatio	n	Building P, 5	m /	Anechoic							
Subtest Title		802.11B channel 6(1-10GHz)									
Subtest Result Pass											
Highest Frequency10000.0											
Lowest Frequency 1000.0											
Environmental	Conditi	ons:									
Temperature: (5	59 to 95)	F		68F							
Humidity: (10 to	o 75)%:			55%							
Equipment use	ed:										
Equipment No	Manufa	acturer	M	odel	Description						
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber						
CIS021117	Micro-C	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS030564	Micro-C	Coax	U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS034304	Micro-T	ronics	BF	RM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz						
CIS038371 Cisco TH0118 Mast Mount Preamplifier Array, 1-18GHz											
CIS042015 ETS-Lindgren 3117 Double Ridged Waveguide Horn Antenna											
CIS047280	Huber ·	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector						
CIS047314	Huber+	Suhner	Sı	ucoflex 106PAQ	N Type RF Antenna Cable						

Graphical Test Results



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fail	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
2437.1	53.4	4.8	-9.2	49	Peak(Scan)	V	100	-2	74	-25	Pass	
4875.746	42.8	7	-6.3	43.5	Peak(Scan)	V	100	-2	74	-30.5	Pass	
7311.195	38	8.6	-3.2	43.4	Peak(Scan)	V	100	-2	74	-30.6	Pass	
9748.051	35.5	10.6	-1.6	44.6	Peak(Scan)	V	100	-2	74	-29.4	Pass	
2175.204	52.6	4.5	-9.5	47.5	Peak(Scan)	V	100	-2	74	-26.5	Pass	

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Subtest Number	er: 7102	6 - 3									
Engineer		Jose Aguirre									
Lab Informatio	n	Building P, 5m Anechoic									
Subtest Title	btest Title 802.11B channel 11 (1-10GHz)										
Subtest Result Pass											
Highest Frequency 10000.0											
Lowest Frequency 1000.0											
Environmental	Conditi	ons:									
Temperature: (5	59 to 95)	F	68F								
Humidity: (10 to	o 75)%:		55%								
Equipment use	ed:		-								
Equipment No	Manufa	acturer	Vodel	Description							
CIS008448	Cisco		NSA 5m Chamber	NSA 5m Chamber							
CIS021117	Micro-C	Coax	JFB311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in							
CIS030564	Micro-0	Coax	JFB311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in							
CIS034304	Micro-7	Fronics I	BRM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz							
CIS038371 Cisco TH0118 Mast Mount Preamplifier Array, 1-18GHz											
CIS042015	ETS-Li	ndgren	3117	Double Ridged Waveguide Horn Antenna							
CIS047280	Huber	+ Suhner	Sucoflex 102E	40GHz Cable K Connector							
CIS047314	Huber+	-Suhner	Sucoflex 106PAQ	N Type RF Antenna Cable							

Graphical Test Results



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fail	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
2462.207	50.4	4.8	-9.1	46.1	Peak(Scan)	V	100	-1	74	-27.9	Pass	
4923.57	43.9	7	-6.4	44.6	Peak(Scan)	V	100	-1	74	-29.4	Pass	
7386.163	37.3	8.7	-3.4	42.6	Peak(Scan)	V	100	-1	74	-31.4	Pass	
9847.999	35.5	10.7	-1.8	44.4	Peak(Scan)	V	100	-1	74	-29.6	Pass	

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Subtest Numb	er: 7102	6 - 4								
Engineer		Jose Aguirre								
Lab Informatio	n	Building P, 5	m /	Anechoic						
Subtest Title	Title 802.11G channel 1 (1-10GHz)									
Subtest Result Pass										
Highest Frequency 10000.0										
Lowest Frequency 1000.0										
Environmental	Conditi	ons:								
Temperature: (5	59 to 95)	F		68F						
Humidity: (10 to	o 75)%:			55%						
Equipment use	ed:									
Equipment No	Manufa	acturer	M	odel	Description					
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber					
CIS021117	Micro-0	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in					
CIS030564	Micro-0	Coax	U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in					
CIS034304	Micro-7	ronics	BF	RM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz					
CIS038371	Cisco		Tŀ	10118	Mast Mount Preamplifier Array, 1-18GHz					
CIS042015	ETS-Li	ndgren	31	17	Double Ridged Waveguide Horn Antenna					
CIS047280	Huber	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector					
CIS047314	Huber+	Suhner	Sı	ucoflex 106PAQ	N Type RF Antenna Cable					

Graphical Test Results



Test Results Table

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measureme nt Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
2147.5	52.1	4.4	-9.8	46.7	Pk	V	150	153	74	-27.3	Pass	
2413	56.1	4.8	-9.2	51.7	Pk	V	100	153	74	-22.3	Pass	Channel 1
4827.867	42.4	7	-6.1	43.3	Pk	V	100	153	74	-30.7	Pass	
6301	42.4	7.9	-3.8	46.4	Pk	V	150	153	74	-27.6	Pass	
9648	36.5	10.6	-2.1	45	Pk	V	100	153	74	-29	Pass	

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Subtest Number	: Number: 71026 - 5										
Engineer		Jose Aguirre)								
Lab Informatio	n	Building P, 5	im /	Anechoic							
Subtest Title 802.11G channel 6 (1-10GHz)											
Subtest Result Pass											
Highest Freque	ency	10000.0									
Lowest Frequency 1000.0											
Environmental Conditions:											
Temperature: (59 to 95)F68F											
Humidity: (10 to 75)%: 55%											
Equipment used:											
Equipment No	Manufa	acturer	M	odel	Description						
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber						
CIS021117	Micro-0	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS030564	Micro-0	Coax	U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS034304	Micro-7	Fronics	BF	RM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz						
CIS038371	Cisco		Tŀ	10118	Mast Mount Preamplifier Array, 1-18GHz						
CIS042015 ETS-Lindgren 3			31	17	Double Ridged Waveguide Horn Antenna						
CIS047280	Huber	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector						
CIS047314 Huber+Suhner				ucoflex 106PAQ	N Type RF Antenna Cable						

Graphical Test Results



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fail	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
2012.5	51.2	4.3	-10.3	45.2	Peak(Scan)	V	200	206	54	-8.8	Pass	
2437.663	52.8	4.8	-9.2	48.4	Peak(Scan)	V	100	206	54	-5.6	Pass	
4874	38.8	7	-6.3	39.5	Peak(Scan)	V	100	206	54	-14.5	Pass	
7311.391	36.5	8.6	-3.2	41.9	Peak(Scan)	V	100	206	54	-12.1	Pass	
9748.678	36	10.6	-1.6	45	Peak(Scan)	V	100	206	54	-9	Pass	

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Subtest Numb	est Number: 71026 - 6										
Engineer		Jose Aguirre									
Lab Informatio	n	Building P, 5	m /	Anechoic							
Subtest Title 802.11G channel 11 (1-10GHz)											
Subtest Result Pass											
Highest Frequency 10000.0											
Lowest Frequency 1000.0											
Environmental Conditions:											
Temperature: (59 to 95)F 68F											
Humidity: (10 to 75)%: 55%											
Equipment used:											
Equipment No	Manufa	acturer	M	odel	Description						
CIS008448	Cisco		NSA 5m Chamber		NSA 5m Chamber						
CIS021117	Micro-C	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS030564	Micro-0	Coax	U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS034304	CIS034304 Micro-Tronics E			RM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz						
CIS038371	Cisco		TH	10118	Mast Mount Preamplifier Array, 1-18GHz						
CIS042015 ETS-Lindgren			31	17	Double Ridged Waveguide Horn Antenna						
CIS047280	Huber	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector						
CIS047314 Huber+Suhner				ucoflex 106PAQ	N Type RF Antenna Cable						

Graphical Test Results



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fail	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
2461.388	50.1	4.8	-9.1	45.8	Pk	V	100	141	74	-28.2	Pass	
2175.204	47.5	4.5	-9.5	42.4	Pk	V	100	141	74	-31.6	Pass	
4924.063	40	7	-6.4	40.7	Pk	V	100	141	74	-33.3	Pass	
7386.071	38.1	8.7	-3.4	43.3	Pk	V	100	141	74	-30.7	Pass	
9848.41	35	10.7	-1.8	43.9	Pk	V	100	141	74	-30.1	Pass	

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Subtest Number	test Number: 71026 - 7										
Engineer		Jose Aguirre	•								
Lab Informatio	n	Building P, 5	im /	Anechoic							
Subtest Title HT20 channel 1 (1-10GHz)											
Subtest Result Pass											
Highest Frequency 10000.0											
Lowest Frequency 1000.0											
Environmental Conditions:											
Temperature: (59 to 95)F 68F											
Humidity: (10 to 75)%: 55%											
Equipment use	ed:										
Equipment No	Manufa	acturer	M	odel	Description						
CIS008448	Cisco		NSA 5m Chamber		NSA 5m Chamber						
CIS021117	Micro-0	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS030564	Micro-0	Coax	U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS034304	Micro-7	Fronics	BF	RM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz						
CIS038371	Cisco		Tŀ	10118	Mast Mount Preamplifier Array, 1-18GHz						
CIS042015 ETS-Lindgren			31	17	Double Ridged Waveguide Horn Antenna						
CIS047280	Huber	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector						
CIS047314 Huber+Suhner				ucoflex 106PAQ	N Type RF Antenna Cable						

Graphical Test Results



Test Results Table

Frequency	Raw dBuV	Cable	AF dB	Level dBuV/m	Measureme	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
2161	51.2	4.5	-9.7	45.9	Pk	V	150	153	74	-28.1	Pass	
2412.619	55.2	4.7	-9.2	50.8	Pk	V	100	153	74	-23.2	Pass	
4824.898	42.1	7	-6.1	43	Pk	V	100	153	74	-31	Pass	
7236.682	37	8.5	-3.4	42.2	Pk	V	100	153	74	-31.8	Pass	
9648.701	35.4	10.6	-2.1	43.8	Pk	V	100	153	74	-30.2	Pass	

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Subtest Number	Subtest Number: 71026 - 8										
Engineer		Jose Aguirre)								
Lab Informatio	n	Building P, 5	im /	Anechoic							
Subtest Title HT20 channel 6 (1-10GHz)											
Subtest Result Pass											
Highest Freque	ency	10000.0									
Lowest Frequency 1000.0											
Environmental Conditions:											
Temperature: (59 to 95)F 68F											
Humidity: (10 to 75)%: 55%											
Equipment use	ed:										
Equipment No	Manufa	acturer	M	odel	Description						
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber						
CIS021117	Micro-C	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS030564	Micro-C	Coax	U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS034304	Micro-7	ronics	BF	RM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz						
CIS038371 Cisco				10118	Mast Mount Preamplifier Array, 1-18GHz						
CIS042015 ETS-Lindgren 3			31	17	Double Ridged Waveguide Horn Antenna						
CIS047280 Huber + Suhner Su		Sı	ucoflex 102E	40GHz Cable K Connector							
CIS047314	Huber+	Suhner	Sı	ucoflex 106PAQ	N Type RF Antenna Cable						

Graphical Test Results



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fail	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
2057.5	51.1	4.3	-10.3	45.2	Pk	V	150	206	74	-28.8	Pass	
2435.5	52.9	4.8	-9.2	48.5	Pk	V	100	206	74	-25.5	Pass	Channel 6
4874.942	40.6	7	-6.3	41.3	Pk	V	100	206	74	-32.7	Pass	
6301.038	41.3	7.9	-3.8	45.4	Pk	V	100	206	74	-28.6	Pass	
7311.391	36.6	8.6	-3.2	42	Pk	V	100	206	74	-32	Pass	
9748.253	35	10.6	-1.6	44.1	Pk	V	100	206	74	-29.9	Pass	

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Subtest Number	st Number: 71026 - 9										
Engineer		Jose Aguirre									
Lab Informatio	n	Building P, 5	m /	Anechoic							
Subtest Title HT20 channel 11 (1-10GHz)											
Subtest Result Pass											
Highest Frequency 10000.0											
Lowest Frequency 1000.0											
Environmental Conditions:											
Temperature: (59 to 95)F 68F											
Humidity: (10 to 75)%: 55%											
Equipment use	ed:										
Equipment No	Manufa	acturer	M	odel	Description						
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber						
CIS021117	Micro-C	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS030564	CIS030564 Micro-Coax I		U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS034304	CIS034304 Micro-Tronics E			RM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz						
CIS038371	Cisco		TH	10118	Mast Mount Preamplifier Array, 1-18GHz						
CIS042015 ETS-Lindgren 3			31	17	Double Ridged Waveguide Horn Antenna						
CIS047280	Huber ·	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector						
CIS047314	Huber+	-Suhner	Sı	ucoflex 106PAQ	N Type RF Antenna Cable						

Graphical Test Results



Test Results Table

		1	1		1			1				
Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fail	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
2462.5	49.3	4.8	-9.1	45	Pk	V	100	141	74	-29	Pass	
2183.5	48.7	4.5	-9.5	43.7	Pk	V	150	141	74	-30.3	Pass	
4924.063	40.1	7	-6.4	40.8	Pk	V	100	141	74	-33.2	Pass	
7386.093	36.5	8.7	-3.4	41.8	Pk	V	100	141	74	-32.2	Pass	
9848.108	35.1	10.7	-1.8	44	Pk	V	100	141	74	-30	Pass	

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Subtest Number	btest Number: 71026 - 10										
Engineer		Jose Aguirre									
Lab Informatio	n	Building P, 5m	Anechoic								
Subtest Title	Subtest Title 802.11B channel 1 (10-18GHz)										
Subtest Result											
Highest Freque	ency	18000.0									
Lowest Freque	ency	10000.0									
Environmental Conditions:											
Temperature: (59 to 95)F 68F											
Humidity: (10 to 75)%: 55%											
Equipment use	ed:										
Equipment No	Manufa	acturer N	lodel	Description							
CIS008448	Cisco	Ν	ISA 5m Chamber	NSA 5m Chamber							
CIS021117	Micro-0	Coax L	JFB311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in							
CIS030564	Micro-C	Coax L	JFB311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in							
CIS034304	Micro-7	Fronics E	RM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz							
CIS038371	Cisco	Т	H0118	Mast Mount Preamplifier Array, 1-18GHz							
CIS042015	ETS-Li	ndgren 3	117	Double Ridged Waveguide Horn Antenna							
CIS047280	Huber	+ Suhner S	Sucoflex 102E	40GHz Cable K Connector							
CIS047314	Huber+	-Suhner S	Sucoflex 106PAQ	N Type RF Antenna Cable							

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Graphical Test Results

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fail	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
12060.001	41.8	12.2	-9.3	44.7	Pk	V	100	42	74	-29.3	Pass	Noise Floor
14472	41.6	13.6	-9.7	45.5	Pk	V	100	42	74	-28.5	Pass	Noise Floor
16884	41	16.2	-8.4	48.8	Pk	V	100	42	74	-25.2	Pass	Noise Floor

No emissions seen. Measurements take are of Noise floor

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Subtest Numb	ubtest Number: 71026 - 11										
Engineer		Jose Aguirre	;								
Lab Informatio	n	Building P, 5	im .	Anechoic							
Subtest Title		802.11B cha	ann	el 6 (10-18GHz)							
Subtest Result		Pass									
Highest Freque	ency	18000.0									
Lowest Freque	ency	10000.0									
Environmental	Conditi	ons:									
Temperature: (5	59 to 95)	F		68F							
Humidity: (10 to	o 75)%:			55%							
Equipment use	ed:										
Equipment No	Manufa	acturer	Μ	odel	Description						
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber						
CIS021117	Micro-0	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS030564	Micro-0	Coax	U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS034304	Micro-7	Fronics	B	RM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz						
CIS038371	Cisco		Tŀ	10118	Mast Mount Preamplifier Array, 1-18GHz						
CIS042015	ETS-Li	ndgren	31	17	Double Ridged Waveguide Horn Antenna						
CIS047280	Huber	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector						
CIS047314	Huber+	-Suhner	Sı	ucoflex 106PAQ	N Type RF Antenna Cable						

Graphical Test Results

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



Test Results Table

Frec	quency	Raw	Cable	AF	dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /	/Fail	Comments
MHz	2	dBuV	Loss			dBuV/m	nt Type		cm	Deg	dBuV/m	dB			
12	2185.001	41.6	12.2		-9	44.8	Pk	V	100	214	74	-29.2	F	ass	Noise Floor
	14622	42	13.7		-9.5	46.2	Pk	V	100	214	74	-27.8	F	ass	Noise Floor
	17059	41.2	16.3		-9	48.5	Pk	V	100	214	74	-25.5	F	ass	Noise Floor

No emissions seen. Measurements take are of Noise floor

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Subtest Numb	mber: 71026 - 12										
Engineer		Jose Aguirre	;								
Lab Informatio	n	Building P, 5	Sm .	Anechoic							
Subtest Title		802.11B cha	ann	nel 11 (10-18GHz)							
Subtest Result		Pass									
Highest Freque	ency	18000.0									
Lowest Freque	ncy	10000.0									
Environmental	Conditi	ons:									
Temperature: (5	59 to 95)	F		68F							
Humidity: (10 to	o 75)%:			55%							
Equipment use	ed:										
Equipment No	Manufa	acturer	Μ	odel	Description						
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber						
CIS021117	Micro-C	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS030564	Micro-0	Coax	U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS034304	Micro-7	Fronics	B	RM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz						
CIS038371	Cisco		Tŀ	10118	Mast Mount Preamplifier Array, 1-18GHz						
CIS042015	ETS-Li	ndgren	31	17	Double Ridged Waveguide Horn Antenna						
CIS047280	Huber	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector						
CIS047314	Huber+	-Suhner	Sı	ucoflex 106PAQ	N Type RF Antenna Cable						

Graphical Test Results

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /F	ail Comments		
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB				
12310.00	1 41.2	12.3	-9.2	2 44.3	Pk	V	100	154	74	-29.7	Pa	^{ss} Noise Floor		
14772	2 41.4	13.9	-9.8	3 45.5	Pk	V	100	154	74	-28.5	Pa	^{ss} Noise Floor		
17234	4 39.5	16.5	-8.4	47.6	Pk	V	100	154	74	-26.4	Pa	^{ss} Noise Floor		

No emissions seen. Measurements take are of Noise floor

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Subtest Numb	ubtest Number: 71026 - 13										
Engineer		Jose Aguirre	;								
Lab Informatio	n	Building P, 5	5m	Anechoic							
Subtest Title		HT20 chann	nel	1 (10-18GHz)							
Subtest Result		Pass									
Highest Freque	ency	18000.0									
Lowest Freque											
Comments on	Comments on the HT20 channel 1 (10-18GHz)										
above Test Re											
Environmental	Conditi	ons:									
Temperature: (5	59 to 95)	F		68F							
Humidity: (10 to	o 75)%:			54%							
Equipment use	ed:										
Equipment No	Manufa	acturer	Μ	odel	Description						
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber						
CIS021117	Micro-0	Coax	U	FB311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS030564	Micro-0	Coax	U	FB311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS035618	Micro-	Fronics	H	PM50112-02	High pass Filter, 6.4-18GHz						
CIS038371	Cisco		Tŀ	H0118	Mast Mount Preamplifier Array, 1-18GHz						
CIS042015	ETS-Li	ndgren	31	17	Double Ridged Waveguide Horn Antenna						
CIS047280	Huber	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector						
CIS047314	Huber	Suhner	Sı	ucoflex 106PAQ	N Type RF Antenna Cable						

Graphical Test Results

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fa	ilComments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
12060.002	39.6	12.2	-9.3	42.5	Pk	V	100	142	74	-31.5	Pas	^s Noise Floor
14472	38.6	13.6	-9.7	42.5	Pk	V	100	142	74	-31.5	Pas	s _{Noise Floor}
16884	39.1	16.2	-8.4	46.9	Pk	V	100	142	74	-27.1	Pas	^s Noise Floor

No emissions seen. Measurements take are of Noise floor

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Subtest Number	t Number: 71026 - 14										
Engineer		Jose Aguirre									
Lab Informatio	n	Building P, 5n	n /	Anechoic							
Subtest Title		HT20 channe	el (6 (10-18GHz)							
Subtest Result		Pass									
Highest Freque	ency	18000.0									
Lowest Freque	ency	10000.0									
Environmental	Conditi	ons:									
Temperature: (5	59 to 95)	F		68F							
Humidity: (10 to	o 75)%:		54%								
Equipment use	ed:										
Equipment No	Manufa	acturer	Mo	odel	Description						
CIS008448	Cisco		NS	SA 5m Chamber	NSA 5m Chamber						
CIS021117	Micro-C	Coax	UF	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS030564	Micro-C	Coax	UF	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS035618	Micro-T	ronics	HF	PM50112-02	High pass Filter, 6.4-18GHz						
CIS038371	Cisco		T٢	10118	Mast Mount Preamplifier Array, 1-18GHz						
CIS042015	ETS-Li	ndgren	31	17	Double Ridged Waveguide Horn Antenna						
CIS047280	Huber ·	+ Suhner	Sι	coflex 102E	40GHz Cable K Connector						
CIS047314	Huber+	Suhner	Sι	coflex 106PAQ	N Type RF Antenna Cable						

Graphical Test Results

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



Test Results Table

1														
	Frequency	Raw	Cable	AF d	B	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /F	ailComments
	MHz	dBuV	Loss			dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
	12185.001	40	12.2		-9	43.2	Pk	V	100	142	74	-30.8	Pa	^{ISS} Noise Floor
	14622	40.4	13.7		-9.5	44.6	Pk	V	100	142	74	-29.4	Pa	^{iss} Noise Floor
	17059	40.9	16.3		-9	48.2	Pk	V	100	142	74	-25.8	Pa	^{ISS} Noise Floor

No emissions seen. Measurements take are of Noise floor

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Subtest Numb	ubtest Number: 71026 - 15											
Engineer		Jose Aguirre										
Lab Informatio	n	Building P, 5	m /	Anechoic								
Subtest Title		HT20 chann	el	11 (10-18GHz)								
Subtest Result		Pass										
Highest Freque	ency	18000.0										
Lowest Freque	ency	10000.0										
Environmental	Conditi	ons:										
Temperature: (5	59 to 95)	F		68F								
Humidity: (10 to	o 75)%:			54%								
Equipment use	ed:											
Equipment No	Manufa	acturer	M	odel	Description							
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber							
CIS021117	Micro-0	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in							
CIS030564	Micro-0	Coax	U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in							
CIS035618	Micro-7	Fronics	H	PM50112-02	High pass Filter, 6.4-18GHz							
CIS038371	Cisco		Tŀ	10118	Mast Mount Preamplifier Array, 1-18GHz							
CIS042015	ETS-Li	ndgren	31	17	Double Ridged Waveguide Horn Antenna							
CIS047280	Huber	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector							
CIS047314	N Type RF Antenna Cable											

Graphical Test Results

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



Test Results Table

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measureme nt Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /F	ailComments
12310.001	38.4	12.3	-9.	2 41.5	Pk	V	100	206	74	-32.5	Pa	^{ss} Noise Floor
14772	37.5	13.9	-9.	8 41.7	Pk	V	100	206	74	-32.3	Pa	^{ss} Noise Floor
17234	38.3	16.5	-8.	4 46.3	Pk	V	100	206	74	-27.7	Pa	^{ss} Noise Floor

No emissions seen. Measurements take are of Noise floor

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Subtest Number	otest Number: 71026 - 16										
Engineer		Jose Aguirre	;								
Lab Informatio	n	Building P, 5	im .	Anechoic							
Subtest Result											
Subtest Title 802G channel 11 (10-18GHz)											
Subtest Result Pass											
Highest Frequency 18000.0											
Lowest Freque	ncy	10000.0									
Environmental	Conditi	ons:									
Temperature: (5	59 to 95)	F		68F							
Humidity: (10 to	o 75)%:			54%							
Equipment use	ed:										
Equipment No	Manufa	acturer	Μ	odel	Description						
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber						
CIS021117	Micro-0	Coax	U	FB311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS030564	Micro-0	Coax	U	FB311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS035618	Micro-7	Fronics	H	PM50112-02	High pass Filter, 6.4-18GHz						
CIS038371	Cisco		Tŀ	H0118	Mast Mount Preamplifier Array, 1-18GHz						
CIS042015	ETS-Li	ndgren	31	17	Double Ridged Waveguide Horn Antenna						
CIS047280	Huber	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector						
CIS047314	Huber+	-Suhner	Sı	ucoflex 106PAQ	N Type RF Antenna Cable						

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Graphical Test Results

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass	/Fail	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB			
12310.001	40.7	12.3	-9.2	43.8	Pk	V	100	141	74	-30.2	F	Pass	Noise Floor
14772	. 41.2	13.9	-9.8	45.3	Pk	V	100	141	74	-28.7	F	Pass	Noise Floor
17234	39.7	16.5	-8.4	47.8	Pk	V	100	141	74	-26.2	F	bass	Noise Floor

No emissions seen. Measurements take are of Noise floor

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Subtest Numb	er: 7102	6 - 17							
Engineer		Jose Aguirre	;						
Lab Informatio	n	Building P, 5	im ,	Anechoic					
Subtest Title		802G chanr	el	1 (10-18GHz)					
Subtest Result									
Highest Frequency 18000.0									
Lowest Frequency 10000.0									
Environmental	Conditi	ons:							
Temperature: (8	59 to 95)	F		68F					
Humidity: (10 to	o 75)%:			54%					
Equipment use	ed:								
Equipment No	Manufa	acturer	Μ	odel	Description				
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber				
CIS021117	Micro-0	Coax	U	B311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in				
CIS030564	Micro-C	Coax	U	B311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in				
CIS035618	Micro-7	Tronics	H	PM50112-02	High pass Filter, 6.4-18GHz				
CIS038371	Cisco		Tŀ	10118	Mast Mount Preamplifier Array, 1-18GHz				
CIS042015	ETS-Li	ndgren	31	17	Double Ridged Waveguide Horn Antenna				
CIS047280	Huber	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector				
CIS047314	N Type RF Antenna Cable								

Graphical Test Results

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



Test Results Table

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measureme nt Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /	Fail	Comments
12060.001	41.8	12.2		9.3 44.7	'Pk	V	100	42	74	-29.3	P	ass	Noise Floor
14472	41.6	13.6	-	9.7 45.5	5 Pk	V	100	42	74	-28.5	Р	ass	Noise Floor
16884	41	16.2	-	3.4 48.8	B Pk	V	100	42	74	-25.2	Р	ass	Noise Floor

No emissions seen. Measurements take are of Noise floor

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Subtest Numb	Number: 71026 - 18										
Engineer	Jose Aguirre										
Lab Informatio	n	Building P, 5	ōm .	Anechoic							
Subtest Title	Subtest Title 802G channel 6 (10-18GHz										
Subtest Result	:	Pass									
Highest Frequency 18000.0											
Lowest Frequency 10000.0											
Environmental	Conditi	ons:									
Temperature: (5	59 to 95)	F		68F							
Humidity: (10 to	o 75)%:			54%							
Equipment use	ed:										
Equipment No	Manufa	acturer	Μ	odel	Description						
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber						
CIS021117	Micro-0	Coax	U	FB311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS030564	Micro-0	Coax	U	FB311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS034075	Schaffr	ner	R	SG 2000	Reference Spectrum Generator, 1-18GHz						
CIS035618	Micro-	Tronics	Η	PM50112-02	High pass Filter, 6.4-18GHz						
CIS038371	Cisco		Tŀ	H0118	Mast Mount Preamplifier Array, 1-18GHz						
CIS042015	ETS-Li	ndgren	31	17	Double Ridged Waveguide Horn Antenna						
CIS047280	Huber	+ Suhner	S	ucoflex 102E	40GHz Cable K Connector						
CIS047314	Huber	-Suhner	S	ucoflex 106PAQ	N Type RF Antenna Cable						

Graphical Test Results

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass	/Fail	Comments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB			
12185.001	40	12.2	-(43.2	Pk	V	100	142	74	-30.8		Dass	Noise Floor
14622	40.4	13.7	-9.8	5 44.6	Pk	V	100	142	74	-29.4		Dass	Noise Floor
17059	40.9	16.3	 	48.2	Pk	V	100	142	74	-25.8		Dass	Noise Floor

No emissions seen. Measurements take are of Noise floor

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Radiated Emissions 30MHz to 1GHz

Subtest Number: 71026 - 21											
Engineer		Jose Aguirr	e								
Lab Informatio	n	Building P,	5m	Anechoic							
Subtest Title		802.11B ch	anı	annel 6 (30Mhz to 1GHz)							
Subtest Result	:	Pass									
Highest Freque	ency	1000.0									
Lowest Freque	ency	30.0									
Environmental	Conditio	ons:									
Temperature: (5	59 to 95)F	-		71F							
Humidity: (10 to	o 75)%:			44%							
Equipment use	ed:										
Equipment No	Manufa	cturer	М	odel	Description						
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber						
CIS021117	Micro-C	oax	U	FB311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS027236	York		С	NE V	Comparison Noise Emitter						
CIS030654	Sunol S	ciences	JE	31	Combination Antenna, 30MHz-2GHz						
CIS030564	Micro-C	oax	U	FB311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS035248 Stanley				3-696	5 Meter Tape Measure						
CIS040641 Rohde & Schwarz E				SU26	EMI Test Receiver						
CIS041935 Newport iB				THP-5-DB9	5 inch Temp/RH/Press Sensor w/20ft cable						
CIS047316 Huber+Suhner S				ucoflex 106PA	N Type RF Atenna Cable 8.5m						

Graphical Test Results

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



Test Results Table

Fre	equency	Raw	Cable	AF dB	Level	Measurem	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
M	Hz	dBuV	Loss		dBuV/m	ent Type		cm	Deg	dBuV/m	dB	/Fail	
	133.944	25.6	1.1	13.4	5 40.3	Qp	V	101	281	43.5	-3.2	Pass	

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Frequency	Raw	Cable	AF dB	Level	Measurem	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
MHz	dBuV	Loss		dBuV/m	ent Type		cm	Deg	dBuV/m	dB	/Fail	
37.92	18.1	0.6	15	33.8	Qp	v	131	344	40	-6.2	Pass	
82.018	23.6	0.8	7.3	31.7	Qp	v	143	52	40	-8.3	Pass	
170.126	14.4	1.2	12	27.6	Qp	Н	131	92	43.5	-15.9	Pass	
47.356	16.5	0.6	8.6	25.8	Qp	v	139	86	40	-14.2	Pass	
150.074	13.2	1.1	12.4	26.7	Qp	v	106	256	43.5	-16.8	Pass	

The above test results represent the worst case emissions for all 3 channels (ch1, ch6, ch11) for the 802.11B mode. Channel 6 measured the highest readings of the three channels. All emissions seen were broadband in nature and coming from the power supply cable.

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Subtest Numb	er: 71026	6 - 22						
Engineer		Jose Aguirr	е					
Lab Informatio	n	Building P,	5m	Anechoic				
Subtest Title 802.11G channel 11 (30Mhz to 1GHz)								
Subtest Result	:	Pass						
Highest Freque	ency	1000.0						
Lowest Freque	ency	30.0						
Environmental	Conditio	ons:						
Temperature: (5	59 to 95)F			71F				
Humidity: (10 to	o 75)%:			44%				
Equipment use	ed:							
Equipment No	Manufa	cturer	Μ	odel	Description			
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber			
CIS021117	Micro-C	oax	U	FB311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in			
CIS027236	York		С	NE V	Comparison Noise Emitter			
CIS030654	Sunol S	ciences	JE	31	Combination Antenna, 30MHz-2GHz			
CIS030564	Micro-C	oax	U	FB311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in			
CIS035248	Stanley		33	3-696	5 Meter Tape Measure			
CIS040641	Rohde	& Schwarz	E	SU26	EMI Test Receiver			
CIS041935 Newport iBTH				THP-5-DB9	5 inch Temp/RH/Press Sensor w/20ft cable			
CIS047316 Huber+Suhner Sucoflex 106PA N Type R					N Type RF Atenna Cable 8.5m			

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Graphical Test Results

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measurem	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
MHz	dBuV	Loss		dBuV/m	ent Type		cm	Deg	dBuV/m	dB	/Fail	

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Frequency	Raw	Cable	AF dB	Level	Measurem	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
MHz	dBuV	Loss		dBuV/m	ent Type		cm	Deg	dBuV/m	dB	/Fail	
133.305	21.1	1.1	13.7	35.9	Qp	v	158	116	43.5	-7.6	Pass	
35.82	16	0.6	16.6	33.2	Qp	v	135	52	40	-6.8	Pass	
81.895	23.4	0.8	7.3	31.5	Qp	v	102	-6	40	-8.5	Pass	
47.46	17.3	0.6	8.5	26.5	Qp	v	113	175	40	-13.5	Pass	
171.62	14.2	1.2	11.9	27.3	Qp	v	170	222	43.5	-16.2	Pass	
155.615	13.7	1.1	12.3	27.1	Qp	v	108	141	43.5	-16.4	Pass	

The above test results represent the worst case emissions for all 3 channels (ch1, ch6, ch11) for the 802.11G mode. Channel 11 measured the highest readings of the three channels. All emissions seen were broadband in nature and coming from the power supply cable.

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Subtest Number	Subtest Number: 71026 - 26									
Engineer		Jose Aguirr	е							
Lab Informatio	n	Building P,	5m	Anechoic						
Subtest Title HT20 channel 6 (30MHz to 1GHz)										
Subtest Result	:	Pass								
Highest Freque	ency	1000.0								
Lowest Freque	ency	30.0								
Environmental	Conditio	ons:								
Temperature: (5	59 to 95)F	-		71F						
Humidity: (10 to	o 75)%:			44%						
Equipment use	ed:									
Equipment No	Manufa	cturer	Μ	odel	Description					
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber					
CIS021117	Micro-C	coax	U	FB311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in					
CIS027236	York		CI	NE V	Comparison Noise Emitter					
CIS030654	Sunol S	ciences	JE	31	Combination Antenna, 30MHz-2GHz					
CIS030564	Micro-C	oax	U	FB311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in					
CIS035248	Stanley		33	3-696	5 Meter Tape Measure					
CIS040641	Rohde	& Schwarz	E	SU26	EMI Test Receiver					
CIS041935	Newpor	t	iВ	THP-5-DB9	5 inch Temp/RH/Press Sensor w/20ft cable					
CIS047316 Huber+Suhner Sucoflex 106PA N Type RF Atenna Cable 8.5m										

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Graphical Test Results

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measurem	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
MHz	dBuV	Loss		dBuV/m	ent Type		cm	Deg	dBuV/m	dB	/Fail	
133.596	24.8	1.1	13.7	39.6	Qp	v	100	300	43.5	-3.9	Pass	

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Frequency	Raw	Cable	AF dB	Level	Measurem	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
MHz	dBuV	Loss		dBuV/m	ent Type		cm	Deg	dBuV/m	dB	/Fail	
35.656	16.2	0.6	16.7	33.4	Qp	V	125	137	40	-6.6	Pass	
82.044	23.8	0.8	7.3	31.9	Qp	V	153	-6	40	-8.1	Pass	
171.783	17.3	1.2	11.9	30.4	Qp	н	128	270	43.5	-13.1	Pass	
47.284	16.1	0.6	8.6	25.4	Qp	v	165	36	40	-14.6	Pass	
148.973	12.1	1.1	12.5	25.7	Qp	v	132	66	43.5	-17.8	Pass	

The above test results represent the worst case emissions for all 3 channels (ch1, ch6, ch11) for the HT20 mode. Channel 6 measured the highest readings of the three channels. All emissions seen were broadband in nature and coming from the power supply cable.

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Receiver Spurious Emissions

Receiver spurious emissions which as defined in RSS GEN Section 4.10, must also comply with the radiated emission limits specified in Section section 6.10 table2.

Using Vasona, configure the spectrum analyzer as shown below (be sure to enter all losses between the transmitter output and the spectrum analyzer). Place the radio in continuous transmit mode.

Span:	1GHz – 18 GHz
Reference Level:	80 dBuV
Attenuation:	10 dB
Sweep Time:	Coupled
Resolution Bandwidth:	1MHz
Video Bandwidth:	10 Hz for average
Detector:	Average on formal, Peak on the prescan
Span:	30MHz - 1GHz
Span: Reference Level:	30MHz - 1GHz 70 dBuV
Span: Reference Level: Attenuation:	30MHz - 1GHz 70 dBuV 10 dB
Span: Reference Level: Attenuation: Sweep Time:	30MHz - 1GHz 70 dBuV 10 dB Coupled
Span: Reference Level: Attenuation: Sweep Time: Resolution Bandwidth:	30MHz - 1GHz 70 dBuV 10 dB Coupled 120kHz
Span: Reference Level: Attenuation: Sweep Time: Resolution Bandwidth: Video Bandwidth:	30MHz - 1GHz 70 dBuV 10 dB Coupled 120kHz 300kHz

This report represents the worst case data for all supported operating modes. There are no measurable emissions above 18 GHz.

		Data	Radiated	Average
Frequency (MHz)	Mada	Rate	Level	Limit
Frequency (MHZ)	wode	(adam)	(ави v/m)	(авиула)
133.819	802.11B, 1-11 Mbps	1	39.4	43.5
133.727	802.11G, 6- 54 Mbps	6	38.0	43.5
133.548	HT20, M0 – M7	MO	39.4	43.5

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Test Number:	Test Number: 71251 Spec ID: 1552												
Basic Standard	Applied to	Freq Range	Test Details / Comments										
RSS GEN RSS 210	Enclosure 30MHz - 26.5GHz Receiver Spurious Emissions												
Operating Mode	Mode: 2, Receive	Mode : 2, Receiver mode											
Power Input	110, 60Hz (+/-20%)											
Overall Result	Pass												
Comments	No observable emissions seen above 18GHz												
Deviation	There were no dev	iations from the specification											

System Number	Description	Samples	System under test	Support equipment
1	Altamount WLAN FCC	S01	R	

Subtest Number	er: 7125	1 - 12										
Engineer	Engineer Jose Aguirre											
Lab Informatio	Lab Information Building P, 5m Anechoic											
Subtest Title 802.11B Rx 30MHz to 1GHz												
Subtest Result		Pass										
Highest Freque	ency	1000.0										
Lowest Freque	ency	30.0										
Environmental	Conditi	ons:										
Temperature: (5	59 to 95)	F		68F								
Humidity: (10 to 75)%: 50%												
Equipment use	ed:											
Equipment No	Manufa	acturer	Μ	odel	Description							
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber							
CIS021117	Micro-0	Coax	U	FB311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in							
CIS027236	York		С	NE V	Comparison Noise Emitter							
CIS030564	Micro-0	Coax	U	FB311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in							
CIS038404	Sunol S	Sciences	JE	31	Combination Antenna							
CIS040641	Rohde	& Schwarz	E	SU26	EMI Test Receiver							
CIS041935	Newpo	rt	iB	THP-5-DB9	5 inch Temp/RH/Press Sensor w/20ft cable							
CIS047280 Huber + Suhner			S	ucoflex 102E	40GHz Cable K Connector							
CIS047314	Huber	Suhner	S	ucoflex 106PAQ	N Type RF Antenna Cable							

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements

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Test Results Table

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measureme nt Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /FailC	Comments
133.819	24.7	1.1	13.6	39.4	Qp	V	111	277	43.5	-4.1	Pass	
37.72	17.5	0.6	15.2	33.2	Qp	V	127	11	40	-6.8	Pass	
81.616	24	0.8	7.3	32.2	Qp	V	128	60	40	-7.8	Pass	
47.465	16.7	0.7	8.5	25.9	Qp	V	166	88	40	-14.1	Pass	
172.298	17.2	1.2	11.9	30.3	Qp	н	115	291	43.5	-13.2	Pass	
155.945	12.4	1.1	12.3	25.8	Qp	V	127	182	43.5	-17.7	Pass	

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Subtest Numbe	er: 7125	1 - 11									
Engineer Jose Aguirre											
Lab Information Building P, 5m Anechoic											
Subtest Title 802.11G Rx 30MHz to 1GHz											
Subtest Result Pass											
Highest Freque	ency	1000.0									
Lowest Freque	ncy	30.0									
Environmental	Conditi	ons:									
Temperature: (5	59 to 95)	F		68F							
Humidity: (10 to	o 75)%:			50%							
Equipment use	ed:										
Equipment No	Manufa	acturer	Μ	odel	Description						
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber						
CIS021117	Micro-C	Coax	U	FB311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS030564	Micro-0	Coax	U	FB311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS038404	CIS038404 Sunol Sciences JB1 Combination Antenna										
CIS040641 Rohde & Schwarz ESU26 EMI Test Receiver											
CIS047280	Huber	+ Suhner	Sı	ucoflex 102E	40GHz Cable K Connector						
CIS047314	Huber+	Suhner	Sı	ucoflex 106PAQ	N Type RF Antenna Cable						

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



Test Results Table

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measureme nt Type	Pol	Hgt cm	Azt Deq	Limit dBuV/m	Margin dB	Pass /Fail0	Comments
133.727	23.3	1.1	13.6	38	Qp	v	154	261	43.5	-5.5	Pass	
37.952	18.2	0.6	15	33.8	Qp	v	105	328	40	-6.2	Pass	
81.987	22.9	0.8	7.3	31	Qp	v	131	75	40	-9	Pass	
172.03	16.2	1.2	11.9	29.3	Qp	н	100	296	43.5	-14.2	Pass	
47.546	17.1	0.6	8.5	26.2	Qp	v	155	80	40	-13.8	Pass	

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Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measureme nt Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
155.948	9.2	1.1	12.3	22.7	Qp	V	131	191	43.5	-20.8	Pass	

Subtest Numb	er: 7125	1 - 10									
Engineer	Engineer Jose Aguirre										
Lab Information Building P, 5m Anechoic											
Subtest Title HT20 Rx 30MHz to 1GHz											
Subtest Result	:	Pass									
Highest Freque	ency	1000.0									
Lowest Freque	ency	30.0									
Environmental	Conditi	ons:									
Temperature: (5	59 to 95)	F		68F							
Humidity: (10 to	o 75)%:			50%							
Equipment use	ed:										
Equipment No	Manufa	acturer	Μ	odel	Description						
CIS008448	Cisco		N	SA 5m Chamber	NSA 5m Chamber						
CIS021117	Micro-0	Coax	U	FB311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in						
CIS030564	Micro-0	Coax	U	FB311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS038404 Sunol Sciences JB1 Combination Antenna											
CIS040641	CIS040641 Rohde & Schwarz ESU26 EMI Test Receiver										
CIS047280	Huber	+ Suhner	S	ucoflex 102E	40GHz Cable K Connector						
CIS047314	Huber	Suhner	S	ucoflex 106PAQ	N Type RF Antenna Cable						

Graphical Test Results

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /FailCo	omments
MHz	dBuV	Loss		dBuV/m	nt Type		cm	Deg	dBuV/m	dB		
133.548	24.6	1.1	13.7	39.4	Qp	V	115	109	43.5	-4.1	Pass	
37.917	17	0.6	15	32.6	Qp	v	114	201	40	-7.4	Pass	

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Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measureme nt Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /FailComments
82.024	24	0.8	7.3	32.1	Qp	v	104	214	40	-7.9	Pass
171.838	18	1.2	11.9	31.2	Qp	н	163	315	43.5	-12.3	Pass
47.382	16.8	0.6	8.6	26	Qp	v	148	29	40	-14	Pass
156.187	13.9	1.1	12.3	27.3	Qp	v	100	141	43.5	-16.2	Pass

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Subtest Number: 71251 - 15											
Engineer Jose Aguirre											
Lab Information Building P, 5m Anechoic											
Subtest Title 802.11B Rx 1-18GHz (Average)											
Subtest Result		Pass	Pass								
Highest Freque	ency	18000.0	18000.0								
Lowest Freque	ency	1000.0									
Environmental	Conditi	ons:									
Temperature: (59 to 95)F 68F											
Humidity: (10 to 75)%: 49%											
Equipment used:											
Equipment No	Manufa	acturer	Μ	odel	Description						
CIS042015	EMC T	est Systems	3117		Double Ridged Guide Horn Antenna						
CIS005568	HP		8449B		PreAmplifier (1-26.5GHz)						
CIS008448	Cisco		NSA 5m Chamber		NSA 5m Chamber						
CIS021117	Micro-0	Coax	U	FB311A-0-1344-520520	RF Coaxial Cable, to 18GHz, 134.4 in						
CIS030564 Micro-Coax				FB311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS040503 Agilent			E	4440A	Precision Spectrum Analyzer						
CIS041935	Newpo	rt	iΒ	THP-5-DB9	5 inch Temp/RH/Press Sensor w/20ft cable						
CIS047316	Huber	+ Suhner	Sı	ucoflex 106PA	Sucoflex N Type Black 7ft cable						



Test Results Table

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measureme nt Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
2434.451	33.6	5.1	-4.2	34.4	Av	v	100	344	54	-19.6	Pass	
1350.667	32.2	3.7	-7.1	28.8	Av	Н	100	0	54	-25.2	Pass	noise floor
1935.663	31.5	4.5	-5.1	30.9	Av	v	100	0	54	-23.1	Pass	noise floor
4086.182	29.9	6.7	-2.8	33.8	Av	v	100	0	54	-20.2	Pass	noise floor
8164.987	29.2	10	-0.6	38.5	Av	н	100	0	54	-15.5	Pass	noise floor
13404.00	26.9	13.3	5.2	45.4	Av	V	100	0	54	-8.6	Pass	noise floor

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Subtest Number: 71251 - 14											
Engineer Jose Aguirre											
Lab Information Building P, 5m Anechoic											
Subtest Title 802.11G Rx 1-18GHz Average											
Subtest Result		Pass	Pass								
Highest Freque	ency	18000.0	18000.0								
Lowest Freque	ency	1000.0									
Environmental	Conditi	ons:									
Temperature: (59 to 95)F 68F											
Humidity: (10 to 75)%: 49%											
Equipment used:											
Equipment No	Manufa	acturer	Μ	odel	Description						
CIS042015	EMC T	est Systems	3117		Double Ridged Guide Horn Antenna						
CIS005568	HP		8449B		PreAmplifier (1-26.5GHz)						
CIS008448	Cisco		NSA 5m Chamber		NSA 5m Chamber						
CIS021117	CIS021117 Micro-Coax			FB311A-0-1344-520520	RF Coaxial Cable, to 18GHz, 134.4 in						
CIS030564 Micro-Coax				FB311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in						
CIS040503 Agilent			E	4440A	Precision Spectrum Analyzer						
CIS041935	CIS041935 Newport		iВ	THP-5-DB9	5 inch Temp/RH/Press Sensor w/20ft cable						
CIS047316	Huber	+ Suhner	Sı	ucoflex 106PA	Sucoflex N Type Black 7ft cable						



Test Results Table

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measureme nt Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
2435.568	32.4	5	-4.2	33.2	Av	v	100	340	54	-20.8	Pass	
1325.528	32.6	3.7	-7.1	29.2	Av	v	100	0	54	-24.8	Pass	noise floor
6825.407	29	8.7	-0.7	37	Av	v	100	0	54	-17	Pass	noise floor
13658.22	27.4	13.3	4.8	45.4	Av	v	100	0	54	-8.6	Pass	noise floor
18000	27	16.3	6.4	49.6	Av	v	100	0	54	-4.4	Pass	noise floor
4859.166	28.9	7.4	-1.9	34.3	Av	v	100	0	54	-19.7	Pass	nosie floor

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Subtest Number: 71251 - 13										
Engineer Jose Aguirre										
Lab Information Building P, 5m Anechoic										
Subtest Title HT20 Rx 1-18GHz Average										
Subtest Result		Pass								
Highest Freque	ency	18000.0								
Lowest Freque	ency	1000.0								
Environmental	Conditi	ons:								
Temperature: (59 to 95)F 68F										
Humidity: (10 to 75)%: 49%										
Equipment used:										
Equipment No	Manufa	acturer	Μ	odel	Description					
CIS042015	EMC T	est Systems	3117		Double Ridged Guide Horn Antenna					
CIS005568	HP		8449B		PreAmplifier (1-26.5GHz)					
CIS008448	Cisco		NSA 5m Chamber		NSA 5m Chamber					
CIS021117	Micro-0	Coax	U	FB311A-0-1344-520520	RF Coaxial Cable, to 18GHz, 134.4 in					
CIS030564 Micro-Coax				FB311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in					
CIS040503 Agilent			E	4440A	Precision Spectrum Analyzer					
CIS041935	Newpo	rt	iB	THP-5-DB9	5 inch Temp/RH/Press Sensor w/20ft cable					
CIS047316	+ Suhner	S	ucoflex 106PA	Sucoflex N Type Black 7ft cable						



Test Results Table

Frequency	Raw	Cable	AF dB	Level	Measureme	Pol	Hgt	Azt	Limit	Margin	Pass /Fai	Comments
MHZ	aBuv	LOSS		aBuv/m	nt Type		cm	Deg	aBuv/m	aв		
2432.004	32.9	5	-4.2	33.8	Av	V	100	341	54	-20.2	Pass	
1289.627	32.4	3.6	-7	29	Av	н	100	0	54	-25	Pass	noise floor
3091.604	31.2	5.8	-3.8	33.2	Av	v	100	0	54	-20.8	Pass	noise floor
4667.951	29.1	7.2	-2.3	34	Av	v	100	0	54	-20	Pass	noise floor
8024.608	29.5	9.9	-0.7	38.7	Av	н	100	0	54	-15.3	Pass	noise floor
13520.74	27	13.4	5	45.4	Av	V	100	0	54	-8.6	Pass	noise floor

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Radiated Setup Photos

See test setup photo exhibit

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Test Number:	Test Number: 71286 Spec ID: 484						
Basic Standard	Applied to	Class	Freq Range	Test Details / Comments			
CFR47 Part 15.207 (RSS210)	AC Power Line	В	0.150MHz - 30MHz	Also complies with HKTA1039			
Operating Mode	Mode: 1, OFDM /	Mode: 1, OFDM / CCK					
Power Input	110, 60Hz (+/-20%)					
Overall Result	Pass						
Comments	No further comments						
Deviation	There were no dev	There were no deviations from the specification					

Conducted Emissions – AC Mains

System Number	Description	Samples	System under test	Support equipment
1	Altamount WLAN FCC	S01	R	

Subtest Numb	er: 7128	6 - 2					
Engineer		Jose Aguirre	;				
Lab Informatio	n	Building P, 1	0m	Anechoic			
Subtest Result	s						
Line Under Tes	st	[B] AC powe	er				
Transducer		LISN					
Subtest Result	t	Pass					
Highest Freque	ency	30.0					
Lowest Freque	ency	0.15					
Comments on above Test Re	the sults	the test data	is	representative worst case	for all modes tested		
Environmental	Conditi	ons:					
Temperature: (59 to 95)F				68F			
Humidity: (10 to	o 75)%:			50%			
Comments:							
Equipment use	ed:						
Equipment No	Manufa	acturer	Μ	odel	Description		
CIS001399	Fluke		77	7	Multimeter		
CIS019206	TTE		Н	613-150K-50-21378	Hi Pass Filter - 150KHz cutoff		
CIS008370	Andrev	V	F	1A-PNMNM	49 ft Heliax Cable		
CIS005707	Fischer Comm	r Custom unications	F(CC-LISN-50-50	LISN		
CIS008591	Fischer Comm	Fischer Custom F Communications		CC-RFM2F-520R	LISN AC Adaptor - Std 120V outlet		
CIS030559	Micro-C	Coax	U	FB311A-1-0950-504504	RF Coaxial Cable, to 18GHz, 95 in		
CIS033648	Midwes Microw	st ave	С	SY-NMNM-14-010-FS	RF Coaxial Cable, RG-214, 10ft		
				Page No: 109 of 11			

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ł	C	5	5	C	l	D	

CIS041929	Newport	iBTHP-5-DB9	5 inch Temp/RH/Press Sensor w/20ft cable
CIS040641	Rohde & Schwarz	ESU26	EMI Test Receiver

Graphical Test Results

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



Test Results Table

Frequency	Raw	Cable	Factors	Level	Measurem	Line	Limit	Margin	Pass	Comments
MHz	dBuV	Loss	dB	dBuV	ent Type		dBuV	dB	/Fail	
2.288	17	20.1	0.1	37.3	Qp	L	56	-18.7	Pass	
5.393	23.5	20.3	0.1	43.9	Qp	L	60	-16.1	Pass	
1.311	18.1	20.1	0.1	38.3	Qp	L	56	-17.7	Pass	
0.599573	21.4	20.1	0.1	41.6	Qp	L	56	-14.4	Pass	
0.861887	18.2	20.1	0.1	38.4	Qp	L	56	-17.6	Pass	
0.675234	22.6	20.1	0.1	42.8	Qp	L	56	-13.2	Pass	
5.392	26.7	20.3	0.1	47.1	Qp	N	60	-12.9	Pass	
0.601666	6.4	20.1	0.1	26.6	Qp	N	56	-29.4	Pass	
1.309	5.4	20.1	0.1	25.6	Qp	N	56	-30.4	Pass	
0.673478	16.7	20.1	0.1	36.9	Qp	N	56	-19.1	Pass	
2.282	10.8	20.1	0.1	31	Qp	N	56	-25	Pass	
0.860176	10.6	20.1	0.1	30.8	Qp	N	56	-25.2	Pass	
2.288	11.4	20.1	0.1	31.6	Av	L	46	-14.4	Pass	
5.393	19.3	20.3	0.1	39.7	Av	L	50	-10.3	Pass	
1.311	14	20.1	0.1	34.2	Av	L	46	-11.8	Pass	
0.599573	17.3	20.1	0.1	37.4	Av	L	46	-8.6	Pass	
0.861887	14.1	20.1	0.1	34.3	Av	L	46	-11.7	Pass	
0.675234	18.6	20.1	0.1	38.7	Av	L	46	-7.3	Pass	
5.392	22.6	20.3	0.1	43	Av	N	50	-7	Pass	
0.601666	2	20.1	0.1	22.1	Av	N	46	-23.9	Pass	
1.309	0.9	20.1	0.1	21.1	Av	N	46	-24.9	Pass	
0.673478	12.7	20.1	0.1	32.8	Av	N	46	-13.2	Pass	

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Frequency	Raw	Cable	Factors	Level	Measurem	Line	Limit	Margin	Pass	Comments
MHz	dBuV	Loss	dB	dBuV	ent Type		dBuV	dB	/Fail	
2.282	5.8	20.1	0.1	26	Av	N	46	-20	Pass	
0.860176	6.4	20.1	0.1	26.6	Av	N	46	-19.4	Pass	

uluilu cisco

Physical Test arrangement Photograph:

See Test Setup photo exhibit

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Maximum Permissible Exposure (MPE) Calculations

15.247: U-NII devices are subject to the radio frequency radiation exposure requirements specified in Sec. 1.1307(b), Sec. 2.1091 and Sec. 2.1093 of this chapter, as appropriate. All equipment shall be considered to operate in a ``general population/uncontrolled" environment. Applications for equipment authorization of devices operating under this section must contain a statement confirming compliance with these requirements for both fundamental emissions and unwanted emissions. Technical information showing the basis for this statement must be submitted to the Commission upon request.

Given

S=E^{2/3770} $E=\sqrt{(30^{*}P^{*}G)/d}$ and

where

E=Field Strength in Volts/meter P=Power in Watts G=Numeric Antenna Gain d=Distance in meters S=Power Density in mW/cm²

Combine equations and rearrange the terms to express the distance as a function of the remaining variables:

```
d=√((30*P*G)/(3770*S))
```

Changing to units of power in mW and distance in cm, using: d(cm) = 100*d(m)

P(mW)=P(W)/1000

vields

d=100*√((30*(P/1000)*G)/(3770*S)) d=0.282*√(P*G/S)

where

d=Distance in cm P=Power in mW G=Numerica Antenna Gain S=Power Density in mW/cm²

```
Substituting the logarithmic form of power and gain using:
                                              G(numeric)=10<sup>(G(dBi)/10)</sup>
         P(mW)=10<sup>(P(dBm)/10)</sup>
yields
         d=0.282*10<sup>((P+G)/20)</sup>/√S
                                                                                     Equation (1)
and
         s=((0.282*10^{((P+G)/20)})/d)^2
                                                                                     Equation (2)
where
         d=MPE distance in cm
         P=Power in dBm
         G=Antenna Gain in dBi
         S=Power Density in mW/cm<sup>2</sup>
```

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Equation (1) and the measured peak power are used to calculate the MPE distance. Note that for mobile or fixed location transmitters such as an access point, the minimum separation distance is 20 cm even if the calculations indicate that the MPE distance may be less.

S=1mW/cm² maximum. The highest supported antenna gain is 4 dBi. Using the peak power levels recorded in the test report along with Equation 1 above, the MPE distances are calculated as follows.

Frequency (MHz)	Bit Rate (Mbps)	Power Density (mW/cm²)	Peak Transmit Power (dBm)	Antenna Gain (dBi)	MPE Distance (cm)	Limit (cm)	Margin (cm)
2412	1	1	11.2	4	1.62	20	-18.38
2437	1	1	10.67	4	1.53	20	-18.47
2462	1	1	11.28	4	1.64	20	-18.36
2412	6	1	8.08	4	1.13	20	-18.87
2437	6	1	7.82	4	1.10	20	-18.90
2462	6	1	8.24	4	1.15	20	-18.85
2412	6.5	1	7.01	4	1.00	20	-19.00
2437	6.5	1	6.9	4	0.99	20	-19.01
2462	6.5	1	7.47	4	1.06	20	-18.94

MPE Calculations

To maintain compliance, installations will assure a separation distance of at least 20cm.

Using Equation 2, the MPE levels (s) at 20 cm are calculated as follows:

Frequency (MHz)	Bit Rate (Mbps)	MPE Distance (cm)	Peak Transmit Power (dBm)	Antenna Gain (dBi)	Power Density (mW/cm ²)	Limit (mW/cm ²)	Margin (mW/cm ²)
2412	1	20	11.2	4	0.007	1	-0.993
2437	1	20	10.67	4	0.006	1	-0.994
2462	1	20	11.28	4	0.007	1	-0.993
2412	6	20	8.08	4	0.003	1	-0.997
2437	6	20	7.82	4	0.003	1	-0.997
2462	6	20	8.24	4	0.003	1	-0.997
2412	6.5	20	7.01	4	0.003	1	-0.997
2437	6.5	20	6.9	4	0.002	1	-0.998
2462	6.5	20	7.47	4	0.003	1	-0.997

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Appendix C: Test Equipment/Software Used to perform the test

Equip#	Manufacturer/ Model	Description	Last Cal	Next Due
001399	Fluke/ 77 II	Multimeter	17-JUN-11	17-JUN-12
003003	HP/ 83731B	Synthesized Signal Generator	14-MAR-11	14-MAR-12
004882	EMC Test Systems/ 3115	Double Ridged Guide Horn Antenna	26-MAY-11	26-MAY-12
005568	HP/ 8449B	PreAmplifier (1-26.5GHz)	28-SEP-11	28-SEP-12
005707	Fischer Custom Communications/ FCC-LISN-50-50	LISN	06-APR-11	06-APR-12
006088	HP/ 8447D	PreAmplifier (.1-1GHz)	01-FEB-11	01-FEB-12
008195	TTE/ H613-150K-50-213 78	Hi Pass Filter - 150KHz cutoff	04-JAN-11	04-JAN-12
008370	Andrew/ F4A-PNMNM	49 ft Heliax Cable	16-APR-11	16-APR-12
008376	Andrew/ F4A-PNMNM	30 ft Heliax Cable	21-JUN-11	21-JUN-12
008447	Cisco/ NSA 10m Chamber	NSA 10m Chamber	18-OCT-11	18-OCT-12
008448	Cisco/ NSA 5m Chamber	NSA 5m Chamber	07-OCT-11	07-OCT-12
008591	Fischer Custom Communications/ FCC-RFM2F-520R	LISN AC Adaptor - Std 120V outlet	06-APR-11	06-APR-12
019206	TTE/ H785-150K-50-213 78	High Pas Filter,Fo=150kHz	20-SEP-11	20-SEP-12
020975	Micro-Coax/ UFB311A-0-1344-5 20520	RF Coaxial Cable, to 18GHz, 134.4 in	24-FEB-11	24-FEB-12
021117	Micro-Coax/ UFB311A-0-2484-5 20520	RF Coaxial Cable, to 18GHz, 248.4 in	24-AUG-11	24-AUG-12
027236	York/ CNE V	Comparison Noise Emitter	Cal Not Required	N/A
030559	Micro-Coax/ UFB311A-1-0950-5 04504	RF Coaxial Cable, to 18GHz, 95 in	24-FEB-11	24-FEB-12
030564	Micro-Coax/ UFB311A-1-0950-5 04504	RF Coaxial Cable, to 18GHz, 95 in	24-AUG-11	24-AUG-12
030654	Sunol Sciences/ JB1	Combination Antenna, 30MHz-2GHz	04-OCT-11	04-OCT-12
033648	Midwest Microwave/ CSY-NMNM-14-010 -FS	RF Coaxial Cable, RG-214, 10ft	16-APR-11	16-APR-12
033988	Agilent/ E4446A	PSA Spectrum Analyzer	18-NOV-201 1	18-NOV-201 2

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034075	Schaffner/ RSG 2000	Reference Spectrum Generator, 1-18GHz	Cal Not Required	N/A
034304	Micro-Tronics/ BRM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz	07-JUL-11	07-JUL-12
034972	Midwest Microwave/ ATT-0640-20-29M- 02	Attenuator, 20dB, DC-40GHz	16-MAY-11	16-MAY-12
035248	Stanley/ 33-696	5 Meter Tape Measure	12-MAY-11	12-MAY-12
035618	Micro-Tronics/ HPM50112-02	High pass Filter, 6.4-18GHz	07-JUL-11	07-JUL-12
037236	JFW/ 50CB-015	Control Box, GPIB	Cal Not Required	N/A
038371	Cisco/ TH0118	Mast Mount Preamplifier Array, 1-18GHz	17-NOV-11	17-NOV-12
038404	Sunol Sciences/ JB1	Combination Antenna	15-JUN-11	15-JUN-12
040503	Agilent/ E4440A	Precision Spectrum Analyzer	28-OCT-11	28-OCT-12
040603	Agilent/ E4440A	Spectrum Analyzer	05-AUG-11	05-AUG-12
040641	Rohde & Schwarz/ ESU26	EMI Test Receiver	02-JUN-11	02-JUN-12
041929	Newport/ iBTHP-5-DB9	5 inch Temp/RH/Press Sensor w/20ft cable	09-DEC-11	09-DEC-12
041935	Newport/ iBTHP-5-DB9	5 inch Temp/RH/Press Sensor w/20ft cable	04-MAR-11	04-MAR-12
041979	Cisco/ 1840	18-40GHz EMI Test Head/Verification Fixture	13-JUL-11	13-JUL-12
042015	ETS-Lindgren/ 3117	Double Ridged Waveguide Horn Antenna	03-FEB-11	03-FEB-12
043116	Huber + Suhner/ Sucoflex 104PE	N & SMA RF cable	14-DEC-11	14-DEC-12
044940	Rohde & Schwarz/ ESU40	EMI Test Receiver, 20Hz-40GHz	05-MAY-11	05-MAY-12
045050	Rohde & Schwarz/ ESCI	EMI Test Receiver	26-OCT-11	26-OCT-12
045084	American Reliance Inc./ SPS80-558-K022	Power Supply	Cal Not Required	N/A
045085	Rohde & Schwarz/ NRP	Power Meter	16-MAR-11	16-MAR-12
045086	Rohde & Schwarz/ NRP-Z21	Power Sensor	16-MAR-11	16-MAR-12
046379	Micro-Tronics/ BRC16306	Band Reject Filter	02-SEP-11	02-SEP-12
046385	Micro-Tronics/ HPM16310	Highpass Filter	11-JUL-11	11-JUL-12
047280	Huber + Suhner/ Sucoflex 102E	40GHz Cable K Connector	02-JUN-11	02-JUN-12
047314	Huber+Suhner/ Sucoflex 106PAQ	N Type RF Antenna Cable	18-AUG-11	18-AUG-12
047315	Huber+Suhner/ Sucoflex 106PA	N Type RF Antenna Cable	18-AUG-11	18-AUG-12
047316	Huber+Suhner/ Sucoflex 106PA	N Type RF Atenna Cable 8.5m	18-AUG-11	18-AUG-12

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Software used in the tests

Vasona File Version	Used in Subtests
5.071	[71251 - 1, 71251 - 2, 71251 - 3]
5.073	[71026 - 1, 71026 - 2, 71026 - 3, 71026 - 4, 71026 - 5, 71026 - 6, 71026 - 7, 71026 - 8, 71026 - 9, 71026 - 10, 71026 - 11, 71026 - 12, 71026 - 13, 71026 - 14, 71026 - 15, 71026 - 16, 71026 - 17, 71026 - 18, 71127 - 1, 71127 - 2, 71127 - 3, 71127 - 4, 71127 - 5, 71127 - 6, 71127 - 7, 71127 - 8, 71127 - 9, 71127 - 10, 71127 - 11, 71127 - 12, 71127 - 13, 71127 - 14, 71127 - 15, 71127 - 16, 71127 - 16, 71127 - 17, 71127 - 18, 71286 - 1, 71251 - 4, 71251 - 5, 71251 - 6, 71251 - 7, 71251 - 8, 71251 - 9]

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