

# AIR-AP1242AG-A-K9 Cisco Aironet 1242AG Series IEEE 802.11a/b/g Access Point

Against the following Specifications : CFR47 Parts 15.407 RSS-210

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



Certificate Number : 1178-01

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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 CFR47 Part 15.407 RSS-210

#### Notes:

- 1) Where a specification listed on the front cover of this report has deviations from the basic standards listed above, the additional technical requirements of the specification were also assessed.
- 2) Where appropriate, Cisco may have substituted a later revision of a basic standard to those referenced in the specification on the front sheet of this test report. This decision was based upon improved test methodology and repeatability and/or where the newer revision represented a more stringent test.
- 3) Where relevant, testing has been carried out to the requirements of both EN and IEC Specifications. This was possible because of the similarities of the test methods involved and the Cisco EMC test procedures.
- 4) For Radiated and Conducted emissions results refer to section 2.9 for measurement uncertainty considerations
  5) Where applicable, details of the precise distance used when performing radiated immunity measurements can be found in Cisco document EDCS-221012.
- 6) Where testing has been performed to EN61000-4-3, additional measurements were conducted to establish the field strength at a 40cm height in both the horizontal and vertical antenna polarities (applies to floor standing EUT's only). This field strength data can be found in Cisco document ENG-72588.



## 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.

This report must not be used to claim product certification, approval, or endorsement by A2LA, NIST, or any agency of the federal Government.

This report may contain data that are not covered by the A2LA accreditation (Certificate number 1178-01). Please refer to Appendix F for further details.

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

- 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\*%

\*[Where applicable] For ESD testing the humidity limits used were 30% to 60% and for EFT/B tests the humidity limits used were 25% to 75%.

- All AC testing was performed at one or more of the following supply voltages: 110V (+/-10%) 60Hz
   220V (+/-10%) 50 or 60Hz
- f) Cisco Systems Inc., are accredited by the American Association for Laboratory Accreditation (A2LA). For the specific scope of accreditation under certificate number 1178-01.see appendix F for further details.

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## 2.2 Date of start of testing

25-Apr-2005

## 2.3 Report Issue Date

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#### 2.4 Testing facilities

This assessment was performed by:

#### **Testing Laboratory**

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

#### **Test Engineers**

James Nicholson

## 2.5 Equipment Assessed (EUT)

AIR-AP1242AG-x-K9 Cisco Aironet 1242AG Series IEEE 802.11a/b/g Access Point

#### 2.6 EUT Description

The AIR-AP1242AG-x-K9 access point operates simultaneously in both the 2.4 and 5 GHz spectrum, to provide data rates up to 54 Mbps in each band in accordance with IEEE 802.11a and 802.11g standards, including backwards compatibility to 802.11b. AIR-AP1242AG-x-K9 supports both inline power and local power, and ships with a power supply brick.

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#### 2.7 Scope of Assessment

Tests have been performed in accordance with the relevant Test and Assessment Plan (TAP), a copy of which is contained in Appendix H of this report, and the relevant Cisco EMC compliance test procedures (ENG-23438). This test report may not cover all of the tests highlighted in the test plan.

#### 2.8 Units of Measurement

The units of measurements defined in the appendices are reported in specific terms, these are test dependent. Where radiated measurements are concerned these are defined at a particular distance. Basic voltage measurements are defined in dBuV and current in dBuA.

As an example, the basic calculation for all measurements is as follows:

Emission level [dBuV] = Indicated voltage level [dBuV] + Cable Loss [dB] + Other correction factors [dB]

The components of factors are dependent upon the exact test configurations [see test equipment lists for further details] and may include:-

Antenna Factors, Pre Amplifier Gain, LISN Loss, Pulse Limiter Loss, Current Probe Factors.

Note: to convert the results from dBuV/m to uV/m use the following formula:-

Level in uV/m = Common Antilogarithm [(X dBuV/m)/20] = Y uV/m

#### 2.9 Measurement Uncertainty

Where relevant measurement uncertainty levels have been estimated for tests performed on the apparatus. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Radiated emissions (expanded uncertainty, confidence interval 95%)

10kHz - 30 MHz	+/- 2.8 dB ( E Field)
10kHz - 30 MHz	+/- 2.8 dB ( H Field)
30 MHz - 300 MHz	+/- 3.8 dB
300 MHz - 1000 MHz	+/- 4.3 dB
1 GHz - 10 GHz	+/- 4.0 dB
10 GHz - 18GHz	+/- 8.2 dB
18GHz - 26.5GHz	+/- 4.1 dB
26.5GHz - 40GHz	+/- 3.9 dB

Conducted emissions (expanded uncertainty, confidence interval 95%)

4 kHz - 30 MHz	+/- 2.2 dB (using Current Probe)
9 kHz - 150 kHz	+/- 4.1 dB (using LISN)
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10 kHz - 30 MHz	+/- 2.6 dB (using Current Probe)
150 kHz - 30 MHz	+/- 3.7 dB (using LISN)
150 kHz - 30 MHz	+/- 3.1 dB (using CDN)
150 kHz - 30 MHz	Under Consideration (Using CVP-1)

Conducted Immunity (expanded uncertainty, confidence interval 95%)

10 kHz - 30 MHz

+/- 0.9 dB (using bulk current injection)

Radiated Immunity (expanded uncertainty, confidence interval 95%)

10 kHz - 30 MHz	+/- 2.0 dB
30 MHz - 80 MHz	+/- 2.8 dB
80 MHz - 1000 MHz	+/- 2.9 dB
1 GHz - 10.0 GHz	+/- 4.1 dB

#### ESD, EFT/B and Surge tests

The tests are performed within the tolerance specified by IEC61000-4-2, IEC61000-4-3 and IEC61000-4-5 respectively

A product is considered to comply with a requirement if the nominal measured value is below the limit line. The product is considered to not be in compliance in case the nominal measured value is above the limit line. For further explanation refer to Cisco Systems Inc Measurement Uncertainty Document: ENG-4001 8

## 2.10 Report Template Revision No.

Revision: CRA 12.0

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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. Please also refer to the "Justification for worst Case test Configuration" section of this report for further details on the selection of EUT samples.

## 3.1 Sample Details

Sample Number	Equipment Details	Serial Number	Part Number
S01	AIR-AP1242AG-A-K9	FHH0916W088	
S02	AIR-ANT2410Y-R		
S05	AIR-ANT5195P-R		
S06	AIR-ANT5160V-R		
S07	34-1977-03		

The following antennas are included in this filing:

AIR-ANT2410Y-R	2.4 GHz 10.0 dBi Yagi
AIR-ANT5135D-R	5 GHz 3.5 dBi Omnidirectional
AIR-ANT5145V-R	5 GHz 4.5 dBi Diversity Omnidirectional
AIR-ANT5160V-R	5 GHz 6.0 dBi Diversity Omnidirectional
AIR-ANT5170P-R	5 GHz 7.0 dBi Diversity Patch
AIR-ANT5195P-R	5 GHz 9.5 dBi Patch

## 3.2 System Details

System #	Description	Samples
1	AIR-AP1242AG-A-K9 with 2.4GHz 10dBi Yagi Antenna	S01, S02 and S07
4	AIR-AP1242AG-A-K9 with 5GHz 9.5dBi Patch Antenna	S01, S05 and S07
5	AIR-AP1242AG-A-K9 with 5GHz 6dBi Omnidirectional Antenna	S01, S06 and S07
6	AIR-AP1242AG-A-K9 with 2.4GHz 10dBi Yagi and 5GHz 9.5dBi Patch Antennas	S01, S02, S05 and S07
7	AIR-AP1242AG-A-K9	S01 and S07

#### 3.3 Mode of Operation Details

Mode#	Description	Comments
3	Colocation Tests	Colocation tests on primary 2.4GHz transmitter with secondary 5GHz transmitter
4	5GHz Band Edge	5GHz Band Edge Tests
5	5GHz Spurious	5GHz Spurious Emissions Tests
6	Conducted Tests	Radio parameter conducted tests

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## Appendix A: Formal Emission Test Results

# 5GHz Average Output Power

Test Number: 16402				
Basic Standard	Applied to	Class	Freq Range	Test Details / Comments
FCC Average Output Power	RF Ports	N/A	5150-5350MHz 5725-5825MHz	Average Output Power
Operating Mode	Mode: 6, Conducted Tests			
Power Input	110v (+/-10%), 60Hz			
Overall Result	Pass			
Comments	No further comments			
Deviation	There were no deviations from the specification			

System Number	Description	Samples	System under test	Support equipment
7	AIR-AP1242AG-A-K9	S01 and S07	Z	

Subtest Number: 16402	2 - 1 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, Shield Room 1
Subtest Results	
Line Under Test	Average Power, 5180MHz, 54Mbps, 11dBm
Transducer	Direct
Subtest Result	Pass
Comments on the above Test Results	Actual Average Power - 11.3dBm

Subtest Number: 16402	- 2 Subtest Date: 12-May-2005					
Engineer	James Nicholson					
Lab Information	Building P, Shield Room 1					
Subtest Results						
Line Under Test	Average Power, 5260MHz, 54Mbps, 17dBm					
Transducer	Direct					
Subtest Result	Pass					
Comments on the above Test Results	Actual Average Power - 17.1dBm					

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Subtest Number: 16402	- 3 Subtest Date: 12-May-2005					
Engineer	James Nicholson					
Lab Information	Building P, Shield Room 1					
Subtest Results						
Line Under Test	Average Power, 5320MHz, 54Mbps, 11dBm					
Transducer	Direct					
Subtest Result	Pass					
Comments on the above Test Results	Actual Average Power - 10.7dBm					

Subtest Number: 16402	2 - 4 Subtest Date: 12-May-2005					
Engineer	James Nicholson					
Lab Information	Building P, Shield Room 1					
Subtest Results	•					
Line Under Test	Average Power, 5745MHz, 54Mbps, 17dBm					
Transducer	Direct					
Subtest Result	Pass					
Comments on the above Test Results	Actual Average Power - 17.1dBm					

Subtest Number: 16402	- 5 <b>Subtest Date:</b> 12-May-2005					
Engineer	James Nicholson					
Lab Information	Building P, Shield Room 1					
Subtest Results						
Line Under Test	Average Power, 5785MHz, 54Mbps, 14dBm					
Transducer	Direct					
Subtest Result	Pass					
Comments on the above Test Results	Actual Average Power - 13.8dBm					

Subtest Number: 16402	- 6 Subtest Date: 12-May-2005					
Engineer	James Nicholson					
Lab Information	Building P, Shield Room 1					
Subtest Results						
Line Under Test	Average Power, 5805MHz, 54Mbps, 11dBm					
Transducer	Direct					
Subtest Result	Pass					
Comments on the above Test Results	Actual Average Power - 10.7dBm					

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## 5GHz 26dB Bandwidth

Test Number: 16413								
Basic Standard	Applied to	oplied to Class Freq Range		Test Details / Comments				
CFR47 Part 15.403	RF Ports N/A 5150-5350MHz 26dB bandwidth							
Operating Mode	Mode: 6, Conduct	Mode: 6, Conducted Tests						
Power Input	110v (+/-10%), 60Hz							
Overall Result	Pass							
Comments	No further comments							
Deviation	There were no deviations from the specification							

System Number	Description	Samples	System under test	Support equipment
7	AIR-AP1242AG-A-K9	S01 and S07	$\checkmark$	

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3 - 1 Subtest Date: 12-May-200	5						
James Nicholson							
Building P, Shield Room 1							
26dB Bandwidth, 5180MHz, 54Mbps, 11dBm							
Direct							
Pass							
5205.0							
5155.0							
No further comments							
Vasona by EMiSoft	09 May 05 08:30 [1] Pk Swp 5.0001s Ref 20dBm Att 30dB VBw 1000kHz RBw 300kHz 10 Frequency: MHz 52050						
	3 - 1 Subtest Date: 12-May-200 James Nicholson Building P, Shield Room 1  26dB Bandwidth, 5180MHz, 54Mbps, 11dBm Direct Pass 5205.0 5155.0 No further comments Vasona by EMiSoft 028kHz						

Frequenc	Raw	Cable	Factors	Level	Measurem	26dB Bw	Line	Limit	Margin	Pass	Comments
y MHz	dBm	Loss	dB	dBm	ent Type	kHz		kHz	kHz	/Fail	
5180	4	0.8	0	4.8	26dB BW	19028	RF	500	-18528	Pass	at 5180.`

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Subtest Number: 16413	3 - 2 Subtest Date: 12-May-2005						
Engineer	James Nicholson						
Lab Information	Building P, Shield Room 1						
Subtest Results							
Line Under Test	26dB Bandwidth, 5260MHz, 54Mbps, 17dBm						
Transducer	Direct						
Subtest Result	Pass						
Highest Frequency	5285.0						
Lowest Frequency	5235.0						
Comments on the above Test Results	No further comments						



Frequenc y MHz	Raw dBm	Cable Loss	Factors dB	Level dBm	Measurem ent Type	26dB Bw kHz	Line	Limit kHz	Margin kHz	Pass /Fail	Comments
5260	9.4	0.9	0	10.2	26dB BW	19059	RF	500	-18559	Pass	at 5260.`

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Subtest Number: 16413	B - 3 Subtest Date: 12-May-2005						
Engineer	James Nicholson						
Lab Information	Building P, Shield Room 1						
Subtest Results							
Line Under Test	26dB Bandwidth, 5320MHz, 54Mbps, 11dBm						
Transducer	Direct						
Subtest Result	Pass						
Highest Frequency	5345.0						
Lowest Frequency	5295.0						
Comments on the above Test Results	No further comments						



Frequenc y MHz	Raw dBm	Cable Loss	Factors dB	Level dBm	Measurem ent Type	26dB Bw kHz	Line	Limit kHz	Margin kHz	Pass /Fail	Comments
5320	4.1	0.9	0	5	26dB BW	18841	RF	500	-18341	Pass	at 5320.`

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Subtest Number: 16413	B - 4 Subtest Date: 12-May-2005				
Engineer	James Nicholson				
Lab Information	Building P, Shield Room 1				
Subtest Results					
Line Under Test 26dB Bandwidth, 5745MHz, 54Mbps, 17dBm					
Transducer	Direct				
Subtest Result	Pass				
Highest Frequency	5770.0				
Lowest Frequency	5720.0				
Comments on the above Test Results	No further comments				



Frequenc y MHz	Raw dBm	Cable Loss	Factors dB	Level dBm	Measurem ent Type	26dB Bw kHz	Line	Limit kHz	Margin kHz	Pass /Fail	Comments
5745	10.5	0.9	0	11.4	26dB BW	19496	RF	500	-18996	Pass	at 5745.`

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Subtest Number: 16413	B - 5 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, Shield Room 1
Subtest Results	
Line Under Test	26dB Bandwidth, 5785MHz, 54Mbps, 14dBm
Transducer	Direct
Subtest Result	Pass
Highest Frequency	5810.0
Lowest Frequency	5760.0
Comments on the above Test Results	No further comments



Frequenc y MHz	Raw dBm	Cable Loss	Factors dB	Level dBm	Measurem ent Type	26dB Bw kHz	Line	Limit kHz	Margin kHz	Pass /Fail	Comments
5785	7.2	0.9	0	8.1	26dB BW	19589	RF	500	-19089	Pass	at 5785.`

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Subtest Number: 16413	B - 6 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, Shield Room 1
Subtest Results	
Line Under Test	26dB Bandwidth, 5805MHz, 54Mbps, 11dBm
Transducer	Direct
Subtest Result	Pass
Highest Frequency	5830.0
Lowest Frequency	5780.0
Comments on the above Test Results	No further comments



Frequenc	Raw dBm	Cable	Factors	Level dBm	Measurem	26dB Bw kHz	Line	Limit kHz	Margin kHz	Pass /Fail	Comments
y IVII IZ	ubiii	L033	uВ	ubm	ені туре	KI IZ			KI IZ	/1 all	
5805	3.6	0.9	0	4.6	26dB BW	19620	RF	500	-19120	Pass	at 5805.`

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## 5GHz Peak Transmit Power

Test Number: 2	16435					
Basic Standard	Applied to	Class	Freq Range	Test Details / Comments		
CFR47 Part 15.407	RF Ports	N/A	5150-5350MHz 5725-5825MHz	For the band 5.15-5.25 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10logB, where B is the 26- dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. For the 5.25-5.35 GHz band, the peak transmit power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10log B, where B is the 26 dB emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that the directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. For the band 5.725-5.825 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 1 W or 17 dBm + 10logB, where B is the 26-dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.		
Operating Mode	Mode : 6, Conducted Tests					
Power Input	110v (+/-10%), 60Hz					
Overall Result	Pass					
Comments	No further commer	nts				
Deviation	There were no dev	iations from th	e specification			

System Number	Description	Samples	System under test	Support equipment
7	AIR-AP1242AG-A-K9	S01 and S07	N	



Subtest Number: 16435	- 1 Subtest Date: 13-May-2005
Engineer	James Nicholson
Lab Information	Building P, Shield Room 1
Subtest Results	
Line Under Test	Peak Transmit Power, 5180MHz, 54Mbps, 11dBm
Transducer	Direct
Subtest Result	Pass
Highest Frequency	5194.452
Lowest Frequency	5165.549
Comments on the above Test Results	Peak Transmit Power Limit =4dBm+10*log(19MHz)-(9dBi-6dBi)=13.8dBm



Frequenc y MHz	Peak Op Pwr dBm	Measurement Type	e 26dB Bw kHz	Line	Limit dBm	Margin dBm	Pass /Fail	Comments
5177.89	10.98	Peak Op	18903	RF	17	-6	Pass	at 5180.`

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Subtest Number: 16435	5 - 2 Subtest Date: 13-May-2005		
Engineer	James Nicholson		
Lab Information	Building P, Shield Room 1		
Subtest Results			
Line Under Test         Peak Transmit Power, 5260MHz, 54Mbps, 17dBm			
Transducer	Direct		
Subtest Result	Pass		
Highest Frequency	5274.452		
Lowest Frequency	5245.549		
Comments on the above Test Results	Peak Transmit Power Limit =11dBm+10*log(19MHz)-(9dBi-6dBi)=20.8dBm		



Ī	Frequenc	Peak Op	Measurement 7	Туре	26dB Bw	Line	Limit	Margin	Pass	Comments
ľ	y MHz	Pwr dBm			kHz		dBm	dBm	/Fail	
ſ	5257.96	16.45	Peak Op		18903	RF	24	-7.6	Pass	at 5260.`

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Subtest Number: 16435	5 - 3 Subtest Date: 13-May-2005		
Engineer	James Nicholson		
Lab Information	Building P, Shield Room 1		
Subtest Results			
Line Under Test Peak Transmit Power, 5320MHz, 54Mbps, 11dBm			
Transducer	Direct		
Subtest Result	Pass		
Highest Frequency	5334.467		
Lowest Frequency	5305.533		
Comments on the above Test Results	Peak Transmit Power Limit =11dBm+10*log(19MHz)-(9dBi-6dBi)=20.8dBm		



Frequenc	Peak Op	Measurement <sup>-</sup>	Туре	26dB Bw	Line	Limit	Margin	Pass	Comments
y MHz	Pwr dBm			kHz		dBm	dBm	/Fail	
5314.25	11.05	Peak Op		18934	RF	24	-13	Pass	at 5320.`

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Subtest Number: 16435	5 - 4 Subtest Date: 13-May-2005					
Engineer	James Nicholson					
Lab Information	Building P, Shield Room 1					
Subtest Results						
Line Under Test         Peak Transmit Power, 5745MHz, 54Mbps, 17dBm						
Transducer	Direct					
Subtest Result	Pass					
Highest Frequency	5759.748					
Lowest Frequency	5730.252					
Comments on the above Test Results	Peak Transmit Power Limit =17dBm+10*log(19MHz)-(9dBi-6dBi)=26.8dBm					



Frequenc	Peak Op	Measurement <sup>·</sup>	Туре	26dB Bw	Line	Limit	Margin	Pass	Comments
y MHz	Pwr dBm			kHz		dBm	dBm	/Fail	
5742.96	17.60	Peak Op		19496	RF	30	-12.4	Pass	at 5745.`

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Subtest Number: 16435	- 5 Subtest Date: 13-May-2005		
Engineer	James Nicholson		
Lab Information	Building P, Shield Room 1		
Subtest Results			
Line Under Test         Peak Transmit Power, 5785MHz, 54Mbps, 14dBm			
Transducer	Direct		
Subtest Result	Pass		
Highest Frequency	5799.81		
Lowest Frequency	5770.19		
Comments on the above Test Results	Peak Transmit Power Limit =17dBm+10*log(19MHz)-(9dBi-6dBi)=26.8dBm		



Frequenc	Peak Op	Measurement T	уре	26dB Bw	Line	Limit	Margin	Pass	Comments
y MHz	Pwr dBm			kHz		dBm	dBm	/Fail	
5782.86	13.96	Peak Op		19620	RF	30	-16	Pass	at 5785.`

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Subtest Number: 16435	- 6 Subtest Date: 13-May-2005		
Engineer	James Nicholson		
Lab Information	Building P, Shield Room 1		
Subtest Results			
Line Under Test         Peak Transmit Power, 5805MHz, 54Mbps, 11dBm			
Transducer	Direct		
Subtest Result	Pass		
Highest Frequency	5819.826		
Lowest Frequency	5790.174		
Comments on the above Test Results	Peak Transmit Power Limit =17dBm+10*log(19MHz)-(9dBi-6dBi)=26.8dBm		



	Peak Op	Measurement T	Гуре	26dB Bw	Line	Limit dBm	Margin	Pass /Eail	Comments
y ivii iz						ubiii	ubiii	/1 all	
5799.21	11.17	Peak Op		19652	RF	30	-18.8	Pass	at 5805.`

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# 5GHz Peak Power Spectral Density

Test Number: 16436							
Basic Standard	Applied to	Class	Freq Range	Test Details / Comments			
CFR47 Part 15.407	RF Ports	N/A	5150-5350MHz 5725-5825MHz	For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. For the 5.25-5.35 GHz, the peak power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. For the band 5.725-5.825 GHz, the peak power spectral density shall not exceed 17 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.			
Operating Mode	Mode: 6, Conduct	ted Tests					
Power Input	110v (+/-10%), 60	Hz					
Overall Result	Pass						
Comments	No further commer	nts					
Deviation	There were no dev	iations from th	e specification				

System Number	Description	Samples	System under test	Support equipment
7	AIR-AP1242AG-A-K9	S01 and S07	Z	

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Subtest Number: 16436	5 - 1 Subtest Date: 13-May-2005		
Engineer	James Nicholson		
Lab Information	Building P, Shield Room 1		
Subtest Results			
Line Under Test         Peak Power Spectral Density, 5180MHz, 54Mbps, 11dBm			
Transducer	Direct		
Subtest Result	Pass		
Highest Frequency	5192.396		
Lowest Frequency	5163.524		
Comments on the above Test Results	PPSD Limit =4dBm-(9dBi-6dBi)=1dBm		



Ī	Frequenc	Raw	Cable	Factors	Level	Measurement Type	Line	Limit	Margin	Pass	Comments
ì	y MHz	dBm	Loss	dB	dBm			dBm	dB	/Fail	
ſ	5177.68	0.1	0.8	0	0.9	Peak PSD	RF	1	-0.1	Pass	at 5180.`

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Subtest Number: 16436	5 - 2 Subtest Date: 13-May-2005						
Engineer	James Nicholson						
Lab Information	Building P, Shield Room 1						
Subtest Results							
Line Under Test	eak Power Spectral Density, 5260MHz, 54Mbps, 17dBm						
Transducer	Direct						
Subtest Result	Pass						
Highest Frequency	5272.382						
Lowest Frequency	5243.479						
Comments on the above Test Results	) Limit =11dBm-(9dBi-6dBi)=8dBm						



Frequenc y MHz	Raw dBm	Cable Loss	Factors dB	Level dBm	Measurement Type	Line	Limit dBm	Margin dB	Pass /Fail	Comments
5257.51	6.1	0.9	0	6.9	Peak PSD	RF	8	-1.1	Pass	at 5260.`

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Subtest Number: 16436	5 - 3 Subtest Date: 13-May-2005						
Engineer	James Nicholson						
Lab Information	Building P, Shield Room 1						
Subtest Results							
Line Under Test	eak Power Spectral Density, 5320MHz, 54Mbps, 11dBm						
Transducer	Direct						
Subtest Result	Pass						
Highest Frequency	5328.733						
Lowest Frequency	5299.768						
Comments on the above Test Results	PPSD Limit =11dBm-(9dBi-6dBi)=8dBm						



Frequenc y MHz	Raw dBm	Cable Loss	Factors dB	Level dBm	Measurement Type	Line	Limit dBm	Margin dB	Pass /Fail	Comments
5317.46	-0.4	0.9	0	0.4	Peak PSD	RF	8	-7.6	Pass	at 5320.`

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Subtest Number: 16436	5 - 4 Subtest Date: 13-May-2005						
Engineer	James Nicholson						
Lab Information	Building P, Shield Room 1						
Subtest Results							
Line Under Test	Peak Power Spectral Density, 5745MHz, 54Mbps, 17dBm						
Transducer	Direct						
Subtest Result	Pass						
Highest Frequency	5754.075						
Lowest Frequency	5724.486						
Comments on the above Test Results	PPSD Limit =17dBm-(9dBi-6dBi)=14dBm						



Frequenc y MHz	Raw dBm	Cable Loss	Factors dB	Level dBm	Measurement Type	Line	Limit dBm	Margin dB	Pass /Fail	Comments
5746.29	6.4	0.9	0	7.3	Peak PSD	RF	14	-6.7	Pass	at 5745.`

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Subtest Number: 16436	5 - 5 Subtest Date: 13-May-2005						
Engineer	James Nicholson						
Lab Information	Building P, Shield Room 1						
Subtest Results							
Line Under Test	eak Power Spectral Density, 5785MHz, 54Mbps, 14dBm						
Transducer	Direct						
Subtest Result	Pass						
Highest Frequency	5797.739						
Lowest Frequency	5768.181						
Comments on the above Test Results	PPSD Limit =17dBm-(9dBi-6dBi)=14dBm						



Frequenc y MHz	Raw dBm	Cable Loss	Factors dB	Level dBm	Measurement Type	Line	Limit dBm	Margin dB	Pass /Fail	Comments
5778.99	2.3	0.9	0	3.2	Peak PSD	RF	14	-10.8	Pass	at 5785.`

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Subtest Number: 16436	6 - 6 Subtest Date: 13-May-2005						
Engineer	James Nicholson						
Lab Information	Building P, Shield Room 1						
Subtest Results							
Line Under Test	eak Power Spectral Density, 5805MHz, 54Mbps, 11dBm						
Transducer	Direct						
Subtest Result	Pass						
Highest Frequency	5817.816						
Lowest Frequency	5788.164						
Comments on the above Test Results	PPSD Limit =17dBm-(9dBi-6dBi)=14dBm						



Frequenc y MHz	Raw dBm	Cable Loss	Factors dB	Level dBm	Measurement Type	Line	Limit dBm	Margin dB	Pass /Fail	Comments
5806.51	-0.1	0.9	0	0.8	Peak PSD	RF	14	-13.2	Pass	at 5805.`

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## **5GHz Peak Excursion**

Test Number: 16437										
Basic Standard	Applied to	Class	Freq Range	Test Details / Comments						
CFR47 Part 15.407	RF Ports	N/A	5150-5350MHz 5725-5825MHz	The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified in this paragraph) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.						
Operating Mode	Mode: 6, Conduct	ed Tests								
Power Input	110v (+/-10%), 60	Hz								
Overall Result	Pass									
Comments	No further commer	No further comments								
Deviation	There were no dev	iations from th	e specification							

System Number	Description	Samples	System under test	Support equipment
7	AIR-AP1242AG-A-K9	S01 and S07	N	

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Subtest Number: 16437	7 - 1 Subtest Date: 13-May-2005
Engineer	James Nicholson
Lab Information	Building P, Shield Room 1
Subtest Results	
Line Under Test	Peak Excursion, 5180MHz, 54Mbps, 11dBm
Transducer	Direct
Subtest Result	Pass
Highest Frequency	5194.452
Lowest Frequency	5165.549
Comments on the above Test Results	No further comments



Frequenc v MHz	Peak Ex dBm	Measurement Type	26dB Bw kHz	Line	Limit dB	Margin dB	Pass /Fail	Comments
5177.99	6.77	Peak Excursion	18903	RF	13	-6.2	Pass	at 5180.`

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Subtest Number: 16437	7 - 2 Subtest Date: 13-May-2005
Engineer	James Nicholson
Lab Information	Building P, Shield Room 1
Subtest Results	
Line Under Test	Peak Excursion, 5260MHz, 54Mbps, 17dBm
Transducer	Direct
Subtest Result	Pass
Highest Frequency	5274.452
Lowest Frequency	5245.549
Comments on the above Test Results	No further comments



Frequenc	Peak Ex	Measurement Type	26dB Bw	Line	Limit	Margin	Pass	Comments
y MHz	dBm		kHz		dB	dB	/Fail	
5257.99	6.63	Peak Excursion	18903	RF	13	-6.4	Pass	at 5260.`

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Subtest Number: 16437	7 - 3 Subtest Date: 13-May-2005
Engineer	James Nicholson
Lab Information	Building P, Shield Room 1
Subtest Results	
Line Under Test	Peak Excursion, 5320MHz, 54Mbps, 11dBm
Transducer	Direct
Subtest Result	Pass
Highest Frequency	5334.452
Lowest Frequency	5305.549
Comments on the above Test Results	No further comments



Frequenc	Peak Ex	Measurement Type	26dB Bw	Line	Limit	Margin	Pass	Comments
y MHz	dBm		kHz		dB	dB	/Fail	
5314.25	7.25	Peak Excursion	18903	RF	13	-5.8	Pass	at 5320.`

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Subtest Number: 16437	7 - 4 Subtest	Date: 13-May-2005				
Engineer	James Nicholson					
Lab Information	Building P, Shield Room 1					
Subtest Results						
Line Under Test	Peak Excursion, 5745MHz, 54Mbps, 17dBm					
Transducer	Direct					
Subtest Result	Pass					
Highest Frequency	5759.842					
Lowest Frequency	5730.159					
Comments on the above Test Results	No further comments					



Frequenc	Peak Ex	Measurement Type	26dB Bw	Line	Limit	Margin	Pass	Comments
y MHz	dBm		kHz		dB	dB	/Fail	
5739.21	7.05	Peak Excursion	19683	RF	13	-6	Pass	at 5745.`

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Subtest Number: 16437	7 - 5 Subtest Date: 13-May-2005					
Engineer	James Nicholson					
Lab Information	Building P, Shield Room 1					
Subtest Results						
Line Under Test	Peak Excursion, 5785MHz, 54Mbps, 14dBm					
Transducer	Direct					
Subtest Result	Pass					
Highest Frequency	5799.779					
Lowest Frequency	5770.221					
Comments on the above Test Results	No further comments					



Frequenc	Peak Ex	Measurement Type	26dB Bw	Line	Limit	Margin	Pass	Comments
y MHz	dBm		kHz		dB	dB	/Fail	
5782.99	6.57	Peak Excursion	19558	RF	13	-6.4	Pass	at 5785.`

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Subtest Number: 16437	7 - 6 Subtest Date: 13-May-2005					
Engineer	James Nicholson					
Lab Information	Building P, Shield Room 1					
Subtest Results						
Line Under Test	Peak Excursion, 5805MHz, 54Mbps, 11dBm					
Transducer	Direct					
Subtest Result	Pass					
Highest Frequency	5819.826					
Lowest Frequency	5790.174					
Comments on the above Test Results	No further comments					



Frequenc	Peak Ex	Measurement Type	26dB Bw	Line	Limit	Margin	Pass	Comments
y MHz	dBm		kHz		dB	dB	/Fail	
5799.25	6.89	Peak Excursion	19652	RF	13	-6.1	Pass	at 5805.`

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# 5GHz Conducted Spurious Emissions

Test Number: 16439									
Basic Standard	Applied to	Class	Freq Range	Test Details / Comments					
CFR47 Part 15.407	RF Ports	N/A	1GHz- 40GHz	All emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. For transmitters operating in the 5.725- 5.825 GHz band, all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/MHz					
Operating Mode	Mode: 6, Condu	cted Tests							
Power Input	110v (+/-10%), 6	0Hz							
Overall Result	Pass								
Comments	No further comme	ents							
Deviation	There were no de	viations from	the specification						

System Number	Description	Samples	System under test	Support equipment	
7	AIR-AP1242AG-A-K9	S01 and S07	$\mathbf{\nabla}$		

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Subtest Number: 16439	9 - 1 Subtest Date: 13-May-2005					
Engineer	James Nicholson					
Lab Information	Building P, Shield Room 1					
Subtest Results						
Line Under Test	st Conducted Spurious Emissions, 5180MHz, 54Mbps, 11dBm					
Transducer	Direct					
Subtest Result	Pass					
Highest Frequency	40000.0					
Lowest Frequency	30.0					
Comments on the above Test Results	No further comments					



Frequenc	Raw	Cable	Factors	Level	Measuremen	Line	Limit	Margin	Pass	Comments
y MHz	dBm	Loss	dB	dBm	t Type		dBm	dB	/Fail	
5149.99	-45.4	0.8	0	-44.5	Peak(Scan)	RF	-27	-17.5	Pass	
10353.2	-43.5	1.2	0	-42.2	Peak(Scan)	RF	-27	-15.2	Pass	

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Subtest Number: 16439	9 - 2 Subtest Date: 13-May-2005				
Engineer	James Nicholson				
Lab Information	Building P, Shield Room 1				
Subtest Results					
Line Under Test   Conducted Spurious Emissions, 5260MHz, 54Mbps, 17dBm					
Transducer	Direct				
Subtest Result	Pass				
Highest Frequency	40000.0				
Lowest Frequency	30.0				
Comments on the above Test Results	No further comments				



Frequenc	Raw	Cable	Factors	Level	Measurement Type	Line	Limit	Margin	Pass	Comments
y MHz	dBm	Loss	dB	dBm			dBm	dB	/Fail	
10520.1	-47.2	1.2	0	-46	Peak(Scan)	RF	-27	-19	Pass	
15776.4	-41.6	1.6	0	-40	Peak(Scan)	RF	-27	-13	Pass	

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Subtest Number: 16439	9 - 3 Subtest Date: 13-May-2005
Engineer	James Nicholson
Lab Information	Building P, Shield Room 1
Subtest Results	
Line Under Test	Conducted Spurious Emissions, 5320MHz, 54Mbps, 11dBm
Transducer	Direct
Subtest Result	Pass
Highest Frequency	40000.0
Lowest Frequency	30.0
Comments on the above Test Results	No further comments



Frequenc y MHz	Raw dBm	Cable Loss	Factors dB	Level dBm	Measuremen t Type	Line	Limit dBm	Margin dB	Pass /Fail	Comments
5349.99	-52.9	0.9	0	-52.1	Peak(Scan)	RF	-27	-25.1	Pass	
10642	-51.6	1.3	0	-50.4	Peak(Scan)	RF	-27	-23.4	Pass	
15953.5	-46.6	1.6	0	-45	Peak(Scan)	RF	-27	-18	Pass	

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Subtest Number: 16439	9 - 4 Subtest Date: 13-May-2005						
Engineer	James Nicholson						
Lab Information   Building P, Shield Room 1							
Subtest Results							
Line Under Test	Conducted Spurious Emissions, 5745MHz, 54Mbps, 17dBm						
Transducer	Direct						
Subtest Result	Pass						
Highest Frequency	40000.0						
Lowest Frequency	30.0						
Comments on the above Test Results	No further comments						



Frequenc y MHz	Raw dBm	Cable Loss	Factors dB	Level dBm	Measuremen t Type	Line	Limit dBm	Margin dB	Pass /Fail	Comments
5724.99	-21	0.9	0	-20.1	Peak(Scan)	RF	-17	-3.1	Pass	
11492.6	-47.8	1.3	0	-46.5	Peak(Scan)	RF	-27	-19.5	Pass	
17228.1	-35.8	1.7	0	-34.1	Peak(Scan)	RF	-27	-7.1	Pass	

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Subtest Number: 16439	9 - 5 Subtest Date: 13-May-2005
Engineer	James Nicholson
Lab Information	Building P, Shield Room 1
Subtest Results	
Line Under Test	Conducted Spurious Emissions, 5785MHz, 54Mbps, 14dBm
Transducer	Direct
Subtest Result	Pass
Highest Frequency	40000.0
Lowest Frequency	30.0
Comments on the above Test Results	No further comments



ľ	Frequenc	Raw	Cable	Factors	Level	Measuremen	Line	Limit	Margin	Pass	Comments
ł	y MHz	dBm	Loss	dB	dBm	t Type		dBm	dB	/Fail	
I	11568.2	-50.6	1.3	0	-49.2	Peak(Scan)	RF	-27	-22.2	Pass	
I	17352	-43.2	1.7	0	-41.5	Peak(Scan)	RF	-27	-14.5	Pass	

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Subtest Number: 16439	9 - 6 Subtest Date: 13-May-2005
Engineer	James Nicholson
Lab Information	Building P, Shield Room 1
Subtest Results	
Line Under Test	Conducted Spurious Emissions, 5805MHz, 54Mbps, 11dBm
Transducer	Direct
Subtest Result	Pass
Highest Frequency	40000.0
Lowest Frequency	30.0
Comments on the above Test Results	No further comments



Frequenc	Raw	Cable	Factors	Level	Measurement Type	Line	Limit	Margin	Pass	Comments
y MHz	dBm	Loss	dB	dBm			dBm	dB	/Fail	
5824.99	-35.7	0.9	0	-34.8	Peak(Scan)	RF	-17	-17.8	Pass	
11610.2	-52.7	1.3	0	-51.4	Peak(Scan)	RF	-27	-24.4	Pass	
17412.1	-46.9	1.7	0	-45.2	Peak(Scan)	RF	-27	-18.2	Pass	

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Test Number:	16317					
Basic Standard	Applied to	Class	Freq Range	Test Details / Comments		
CFR47 Part 15.407	Enclosure	N/A	1GHz - 40GHz	The peak emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits: The provisions of Sec. 15.205 apply to intentional radiators operating under this section. When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency block edges as the design of the equipment permits.		
Operating Mode	Mode: 4, 5GHz E	Band Edge				
Power Input	110v (+/-10%), 50	0Hz				
Overall Result	Pass					
Comments	No further comme	ents				
Deviation	There were no de	viations from th	he specification			

# 5GHz Radiated Bandedge Emissions with 9.5dBi Patch Antenna

System Number	Description	Samples	System under test	Support equipment
4	AIR-AP1242AG-A-K9 with 5GHz 9.5dBi Patch Antenna	S01, S05 and S07	Ŋ	

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Subtest Number: 16317	7 - 1 Subtest Date: 09-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Bandedge, 5180MHz, 54Mbps, 11dBm, 9.5dBi Patch Antenna
Subtest Result	Pass
Highest Frequency	5180.0
Lowest Frequency	4500.0
Comments on the above Test Results	No further comments



ſ	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
ľ	y MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
I	5149.99	25.4	27.6	-3.9	49.1	Peak(Scan)	V	148	280	54	-4.9	Pass	
I	5149.99	24.1	27.6	-3.9	47.8	Peak(Scan)	Н	148	280	54	-6.2	Pass	

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Subtest Number: 16317	7 - 2 Subtest Date: 09-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Peak Bandedge, 5180MHz, 54Mbps, 11dBm, 9.5dBi Patch Antenna
Subtest Result	Pass
Highest Frequency	5180.0
Lowest Frequency	4500.0
Comments on the above Test Results	No further comments



ſ	Frequenc	Raw	Cable	AF dE	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
	y MHz	dBuV	Loss		dB			cm	Deg	dB	dB	/Fail	
	5149.99	43.3	27.6	-3.	9 67	Peak(Scan)	) V	148	280	74	-7	Pass	
	5149.99	42.4	27.6	-3	9 66.1	Peak(Scan)	H	148	280	74	-7.9	Pass	

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Subtest Number: 16317	- 3 Subtest Date: 09-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Bandedge, 5320MHz, 54Mbps, 11dBm, 9.5dBi Patch Antenna
Subtest Result	Pass
Highest Frequency	5460.0
Lowest Frequency	5320.0
Comments on the above Test Results	No further comments



Ī	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
	y MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
ſ	5349.99	24.9	27.7	-3.8	48.7	Peak(Scan)	V	148	280	54	-5.3	Pass	
Ī	5349.99	24	27.7	-3.8	3 47.9	Peak(Scan)	Н	148	280	54	-6.1	Pass	

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Subtest Number: 16317	7 - 4 Subtest Date: 09-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Peak Bandedge, 5320MHz, 54Mbps, 11dBm, 9.5dBi Patch Antenna
Subtest Result	Pass
Highest Frequency	5460.0
Lowest Frequency	5320.0
Comments on the above Test Results	No further comments



ſ	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
	y MHz	dBuV	Loss		dB			cm	Deg	dB	dB	/Fail	
	5349.99	43.9	27.7	-3.8	67.8	Peak(Scan)	V	148	280	74	-6.2	Pass	
	5349.99	40.9	27.7	-3.8	64.8	Peak(Scan)	Н	148	280	74	-9.2	Pass	

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Subtest Number: 16317	- 5 Subtest Date: 09-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Bandedge, 5745MHz, 54Mbps, 17dBm, 9.5dBi Patch Antenna
Subtest Result	Pass
Highest Frequency	5745.0
Lowest Frequency	5350.0
Comments on the	No further comments
above Test Results	



Ī	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
2	y MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
	5440.08	28.1	27.8	-3.	7 52.2	Peak(Scan)	V	161	280	54	-1.8	Pass	
	5439.28	24.3	27.8	-3.	7 48.3	Peak(Scan)	H	161	280	54	-5.7	Pass	

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Subtest Number: 16317	7 - 6 Subtest Date: 09-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Peak Bandedge, 5745MHz, 54Mbps, 17dBm, 9.5dBi Patch Antenna
Subtest Result	Pass
Highest Frequency	5745.0
Lowest Frequency	5350.0
Comments on the above Test Results	No further comments



Ī	Frequenc	Raw	Cable	AF dE	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
	y MHz	dBuV	Loss		dB			cm	Deg	dB	dB	/Fail	
ſ	5440.08	40.7	27.8	-3.	7 64.8	Peak(Scan)	) V	161	280	74	-9.2	Pass	
Ī	5440.08	40.7	27.8	-3	7 64.7	Peak(Scan)	F	161	280	74	-9.3	Pass	

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Subtest Number: 16317	7 - 7 Subtest Date: 09-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Bandedge, 5805MHz, 54Mbps, 11dBm, 9.5dBi Patch Antenna
Subtest Result	Pass
Highest Frequency	6000.0
Lowest Frequency	5805.0
Comments on the above Test Results	No further comments



ſ	Frequenc	Raw	Cable	AF	dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
ľ	y MHz	dBuV	Loss			dBuV			cm	Deg	dBuV	dB	/Fail	
I	5921.83	25.9	28.1		-4.1	49.9	Peak(Scan)	V	161	280	54	-4.1	Pass	
I	5921.83	23.7	28.1		-4.1	47.7	Peak(Scan)	Н	161	280	54	-6.3	Pass	

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Subtest Number: 16317	7 - 8 Subtest Date: 09-May-2005							
Engineer	James Nicholson							
Lab Information	Building P, 5m Anechoic							
Subtest Results								
Subtest Title	Peak Bandedge, 5805MHz, 54Mbps, 11dBm, 9.5dBi Patch Antenna							
Subtest Result	Pass							
Highest Frequency	6000.0							
Lowest Frequency	5805.0							
Comments on the above Test Results	No further comments							



ſ	Frequenc	Raw	Cable	AF (	dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
ľ	y MHz	dBuV	Loss			dB			cm	Deg	dB	dB	/Fail	
I	5922.26	43.6	28.1	-	-4.1	67.6	Peak(Scan)	V	161	280	74	-6.4	Pass	
ľ	5922.26	42.7	28.1	-	-4.1	66.7	Peak(Scan)	Н	161	280	74	-7.3	Pass	

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Test Number:	Test Number: 16318											
Basic Standard	Applied to	Class	Freq Range	Test Details / Comments								
CFR47 Part 15.407	Enclosure	N/A	1GHz - 40GHz	The peak emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits: The provisions of Sec. 15.205 apply to intentional radiators operating under this section. When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency block edges as the design of the equipment nermite								
Operating Mode	Mode: 4, 5GHz B	3and Edge										
Power Input	110v (+/-10%), 6	0Hz										
Overall Result	Pass											
Comments	No further comme	ents										
Deviation	There were no de	viations from	the specification									

# 5GHz Radiated Bandedge with 6dBi Omnidirectional Antenna

System Number	Description	Samples	System under test	Support equipment
5	AIR-AP1242AG-A-K9 with 5GHz 6dBi Omnidirectional Antenna	S01, S06 and S07	R	

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Subtest Number: 16318	3 - 1 Subtest Date: 09-May-2005							
Engineer	James Nicholson							
Lab Information	Building P, 5m Anechoic							
Subtest Results								
Subtest Title	Average Bandedge, 5180MHz, 54Mbps, 11dBm, 6dBi Omni Antenna							
Subtest Result	Pass							
Highest Frequency	5180.0							
Lowest Frequency	4500.0							
Comments on the above Test Results	No further comments							



Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
y MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
5149.99	24.7	27.6	-3.9	48.4	Peak(Scan)	V	189	250	54	-5.6	Pass	
5149.99	24.1	27.6	-3.9	47.8	Peak(Scan)	Н	189	250	54	-6.2	Pass	

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Subtest Number: 16318	B - 2 Subtest Date: 09-May-2005							
Engineer	James Nicholson							
Lab Information	Building P, 5m Anechoic							
Subtest Results								
Subtest Title	Peak Bandedge, 5180MHz, 54Mbps, 11dBm, 6dBi Omni Antenna							
Subtest Result	Pass							
Highest Frequency	5180.0							
Lowest Frequency	4500.0							
Comments on the above Test Results	No further comments							



ſ	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
	y MHz	dBuV	Loss		dB			cm	Deg	dB	dB	/Fail	
	5149.99	43	27.6	-3.9	66.7	Peak(Scan)	V	189	250	74	-7.3	Pass	
	5149.99	42	27.6	-3.9	65.7	Peak(Scan)	H	189	250	74	-8.3	Pass	

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Subtest Number: 16318	B - 3 Subtest Date: 09-May-2005							
Engineer	James Nicholson							
Lab Information	Building P, 5m Anechoic							
Subtest Results								
Subtest Title	Average Bandedge, 5320MHz, 54Mbps, 11dBm, 6dBi Omni Antenna							
Subtest Result	Pass							
Highest Frequency	5460.0							
Lowest Frequency	5320.0							
Comments on the above Test Results	No further comments							



ſ	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
ľ	y MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
I	5349.99	24.4	27.7	-3.8	48.3	Peak(Scan)	V	189	250	54	-5.7	Pass	
ľ	5349.98	24	27.7	-3.8	47.8	Peak(Scan)	H	189	250	54	-6.2	Pass	

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Subtest Number: 16318	S - 4 Subtest Date: 09-May-2005							
Engineer	James Nicholson							
Lab Information	Building P, 5m Anechoic							
Subtest Results								
Subtest Title	Peak Bandedge, 5320MHz, 54Mbps, 11dBm, 6dBi Omni Antenna							
Subtest Result	Pass							
Highest Frequency	5460.0							
Lowest Frequency	5320.0							
Comments on the above Test Results	No further comments							



ſ	Frequenc	Raw	Cable	AF dE	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
ľ	y MHz	dBuV	Loss		dB			cm	Deg	dB	dB	/Fail	
I	5349.99	42.7	27.7	-3.	8 66.6	Peak(Scan)	V	189	250	74	-7.4	Pass	
	5349.99	41.7	27.7	-3	8 65.5	Peak(Scan)	H	189	250	74	-8.5	Pass	

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Subtest Number: 16318	- 5 Subtest Date: 09-May-2005								
Engineer	James Nicholson								
Lab Information	Building P, 5m Anechoic								
Subtest Results									
Subtest Title	Average Bandedge, 5745MHz, 54Mbps, 17dBm, 6dBi Omni Antenna								
Subtest Result	Pass								
Highest Frequency	5745.0								
Lowest Frequency	5350.0								
Comments on the above Test Results	No further comments								



Ī	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
	y MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
ſ	5439.98	26.7	27.8	-3.	7 50.7	Peak(Scan)	V	189	250	54	-3.3	Pass	
ľ	5442.08	24.2	27.8	-3.	7 48.2	Peak(Scan)	F	189	250	54	-5.8	Pass	

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Subtest Number: 16318	- 6 Subtest Date: 09-May-2005								
Engineer	James Nicholson								
Lab Information	Building P, 5m Anechoic								
Subtest Results									
Subtest Title	Peak Bandedge, 5745MHz, 54Mbps, 17dBm, 6dBi Omni Antenna								
Subtest Result	Pass								
Highest Frequency	5745.0								
Lowest Frequency	5350.0								
Comments on the above Test Results	No further comments								



ſ	Frequenc	Raw	Cable	AF d	1B L	evel	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
ľ	y MHz	dBuV	Loss		c	dB			cm	Deg	dB	dB	/Fail	
I	5439.98	43.8	27.8	-:	3.7	67.9	Peak(Scan)	V	189	250	74	-6.1	Pass	
I	5439.98	42.1	27.8	-	3.7	66.2	Peak(Scan)	Н	189	250	74	-7.8	Pass	

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Subtest Number: 16318	8 - 7 Subtest Date: 09-May-2005								
Engineer	James Nicholson								
Lab Information	Building P, 5m Anechoic								
Subtest Results									
Subtest Title	Average Bandedge, 5805MHz, 54Mbps, 11dBm, 6dBi Omni Antenna								
Subtest Result	Pass								
Highest Frequency	6000.0								
Lowest Frequency	5805.0								
Comments on the above Test Results	No further comments								



Ī	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
2	y MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
I	5824.99	27.7	28	-4.3	3 51.4	Peak(Scan)	V	189	250	54	-2.6	Pass	
	5824.98	24.2	28	-4.3	3 48	Peak(Scan)	Н	189	250	54	-6	Pass	

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Subtest Number: 16318	- 8 Subtest Date: 09-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Peak Bandedge, 5805MHz, 54Mbps, 11dBm, 6dBi Omni Antenna
Subtest Result	Pass
Highest Frequency	6000.0
Lowest Frequency	5805.0
Comments on the above Test Results	No further comments



I	requenc	Raw	Cable	AF dE	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
2	/ MHz	dBuV	Loss		dB			cm	Deg	dB	dB	/Fail	
Ī	5824.99	44.5	28	-4.	3 68.3	Peak(Scan)	V	189	250	74	-5.7	Pass	
ľ	5824.99	43.6	28	-4.	3 67.4	Peak(Scan)	Н	189	250	74	-6.6	Pass	

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Test Number:	16385											
Basic Standard	Applied to	Class	Test Details / Comments									
CFR47 Part 15.407	rt Enclosure N/A 1GHz - 40GHz The provisions of Sec. 15.205 apply intentional radiators operating under section.											
Operating Mode	Mode: 5, 5GHz S	Mode : 5, 5GHz Spurious										
Power Input	110v (+/-10%), 60	Hz										
Overall Result	Pass											
Comments	No further commer	nts										
Deviation	There were no dev	iations from th	e specification									

# 5GHz Radiated Spurs and Harmonics with 9.5dBi Patch Antenna

System Number	Description	Samples	System under test	Support equipment
4	AIR-AP1242AG-A-K9 with 5GHz 9.5dBi Patch Antenna	S01, S05 and S07	Ø	

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Subtest Number: 16385	- 1 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Spurs/Harmonics, 5180MHz, 54Mbps, 11dBm, 9.5dBi Patch Antenna
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



_													
F	requenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
)	/ MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
	4409.96	25.3	7.3	-4	28.6	Av	Н	147	272	54	-25.4	Pass	
	4410.01	33.6	7.3	-4	36.9	Av	V	147	272	54	-17.1	Pass	
	4999.87	32.1	8	-3.9	36.3	Av	V	147	272	54	-17.7	Pass	
	5178.18	37	8	-3.9	41.2	Av	V	147	272	54	-12.8	Pass	; ;
	5515.11	40.5	8.6	-3.9	45.2	Av	V	147	272	54	-8.8	Pass	
	5529.727	24.6	8.6	-4	29.2	Av	Н	147	272	54	-24.8	Pass	
	6000.01	41.5	9.3	-3.8	8 47	Av	V	147	272	54	-7	Pass	
	10358.1	19.8	11.5	4.5	35.7	Av	Н	147	272	54	-18.3	Pass	
ſ	10361.31	32.3	11.5	4.5	48.3	Av	V	147	272	54	-5.7	Pass	

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Subtest Number: 16385	5 - 2 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Peak Spurs/Harmonics, 5180MHz, 54Mbps, 11dBm, 9.5dBi Patch Antenna
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



I	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
2	y MHz	dBuV	Loss		dB			cm	Deg	dB	dB	/Fail	
	5015.84	42.9	8	-3.9	46.9	Pk	V	147	272	74	-27.1	Pass	
	5024.13	39.5	7.9	-3.9	43.5	Pk	H	147	272	74	-30.5	Pass	
	5586.78	48	9	-4	53.1	Pk	H	147	272	74	-20.9	Pass	
	5614.5	47.7	9.1	-3.9	52.8	Pk	V	147	272	74	-21.2	Pass	
	10356.5	35.6	11.5	4.5	51.6	Pk	H	147	272	74	-22.4	Pass	
	10356.7	44.1	11.5	4.5	60.1	Pk	V	147	272	74	-13.9	Pass	

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Subtest Number: 16385	5 - 3 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Spurs/Harmonics, 5260MHz, 54Mbps, 17dBm, 9.5dBi Patch Antenna
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



_													
F	requenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
y	MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
	4490.03	35.5	7.4	-4.2	38.7	Av	V	147	272	54	-15.3	Pass	
	4490.04	23.9	7.4	-4.2	27.2	Av	Н	147	272	54	-26.8	Pass	
	5021.6	23.9	7.9	-3.9	27.9	Av	Н	147	272	54	-26.1	Pass	
	5050.13	35.7	8	-3.9	39.8	Av	V	147	272	54	-14.2	Pass	; ;
	5615.04	40.9	9.1	-3.9	46.1	Av	V	147	272	54	-7.9	Pass	
	5638.511	24.5	9.1	-4	29.6	Av	Н	147	272	54	-24.4	Pass	; ;
	6000.08	39.9	9.3	-3.8	45.4	Av	V	147	272	54	-8.6	Pass	
	10521.5	27.2	11.6	4.8	43.6	Av	V	147	272	54	-10.4	Pass	
	10545.03 4	19.3	11.6	4.8	35.7	Av	Н	147	272	54	-18.3	Pass	

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Subtest Number: 16385	5 - 4 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Peak Spurs/Harmonics, 5260MHz, 54Mbps, 17dBm, 9.5dBi Patch Antenna
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



-													
Ī	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
	y MHz	dBuV	Loss		dB			cm	Deg	dB	dB	/Fail	
	4490.02	42	7.4	-4.2	45.3	Pk	V	147	272	74	-28.7	Pass	
	4490.08	34.7	7.4	-4.2	37.9	Pk	Н	147	272	74	-36.1	Pass	
I	5021.284	45.9	7.9	-3.9	49.9	Pk	V	147	272	74	-24.1	Pass	; ;
	5045.662	42.6	8	-3.9	46.7	Pk	H	147	272	74	-27.3	Pass	
	5551.575	51	8.9	-3.8	56.2	Pk	V	147	272	74	-17.8	Pass	
	5573.81	49.2	9	-4	54.3	Pk	H	147	272	74	-19.7	Pass	
	10521.4	37.9	11.6	4.8	54.3	Pk	V	147	272	74	-19.7	Pass	
	10526.16	33.9	11.6	4.8	50.3	Pk	H	147	272	74	-23.7	Pass	

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Subtest Number: 16385	5 - 5 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Spurs/Harmonics, 5320MHz, 54Mbps, 11dBm, 9.5dBi Patch Antenna
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
y MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
4550.01	27.6	7.5	-4.1	30.9	Av	Н	147	272	54	-23.1	Pass	
4977.9	25.3	7.9	-3.8	29.3	Av	Н	147	272	54	-24.7	Pass	
5023.093	32.5	7.9	-3.9	36.5	Av	V	147	272	54	-17.5	Pass	
5684.87	42.4	9.1	-4.1	47.4	Av	V	147	272	54	-6.6	Pass	
5703.757	25.3	9.1	-4.1	30.3	Av	Н	147	272	54	-23.7	Pass	
5999.93	40.3	9.3	-3.8	45.8	Av	V	147	272	54	-8.2	Pass	
10638.98	23.7	11.7	4.8	40.2	Av	V	147	272	54	-13.8	Pass	
10673.39 7	19.8 ,	11.7	4.7	36.2	Av	Н	147	272	54	-17.8	Pass	

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Subtest Number: 16385	- 6 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Peak Spurs/Harmonics, 5320MHz, 54Mbps, 11dBm, 9.5dBi Patch Antenna
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



Frequenc y MHz   Raw dBuV   Cable Loss   AF   dB   Level dB   Type   Pol cm   Hgt Deg   Azt Deg   Limit dB   Margin dB   Pass /Fail   Comments     5024.902   42.2   7.9   -3.9   46.2   Pk   V   147   272   74   -27.8   Pass     5046.049   38.5   8   -3.9   42.6   Pk   H   147   272   74   -31.4   Pass     5684.56   49.4   9.1   -4.1   54.4   Pk   V   147   272   74   -19.6   Pass     5689.578   48   9.1   -4.1   53   Pk   H   147   272   74   -21   Pass     5999.93   43.2   9.3   -3.8   48.7   Pk   V   147   272   74   -21   Pass	1.0													
y   MHz   dBuV   Loss   dB   cm   Deg   dB   dB   /Fail     5024.902   42.2   7.9   -3.9   46.2   Pk   V   147   272   74   -27.8   Pass     5046.049   38.5   8   -3.9   42.6   Pk   H   147   272   74   -31.4   Pass     5684.56   49.4   9.1   -4.1   54.4   Pk   V   147   272   74   -19.6   Pass     5689.578   48   9.1   -4.1   53   Pk   H   147   272   74   -21   Pass     5999.93   43.2   9.3   -3.8   48.7   Pk   V   147   272   74   -21   Pass		Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
5024.902 42.2 7.9 -3.9 46.2 Pk V 147 272 74 -27.8 Pass   5046.049 38.5 8 -3.9 42.6 Pk H 147 272 74 -31.4 Pass   5684.56 49.4 9.1 -4.1 54.4 Pk V 147 272 74 -19.6 Pass   5689.578 48 9.1 -4.1 53 Pk H 147 272 74 -21 Pass   5999.93 43.2 9.3 -3.8 48.7 Pk V 147 272 74 -25.3 Pass		y MHz	dBuV	Loss		dB			cm	Deg	dB	dB	/Fail	
5046.049 38.5 8 -3.9 42.6 Pk H 147 272 74 -31.4 Pass   5684.56 49.4 9.1 -4.1 54.4 Pk V 147 272 74 -19.6 Pass   5689.578 48 9.1 -4.1 53 Pk H 147 272 74 -21 Pass   5999.93 43.2 9.3 -3.8 48.7 Pk V 147 272 74 -25.3 Pass		5024.902	42.2	7.9	-3.9	46.2	Pk	V	147	272	74	-27.8	Pass	
5684.56   49.4   9.1   -4.1   54.4   Pk   V   147   272   74   -19.6   Pass     5689.578   48   9.1   -4.1   53   Pk   H   147   272   74   -21   Pass     5999.93   43.2   9.3   -3.8   48.7   Pk   V   147   272   74   -25.3   Pass		5046.049	38.5	6 8	-3.9	42.6	Pk	Н	147	272	74	-31.4	Pass	
5689.578   48   9.1   -4.1   53   Pk   H   147   272   74   -21   Pass     5999.93   43.2   9.3   -3.8   48.7   Pk   V   147   272   74   -21   Pass		5684.56	49.4	9.1	-4.1	54.4	Pk	V	147	272	74	-19.6	Pass	
5999.93 43.2 9.3 -3.8 48.7 Pk V 147 272 74 -25.3 Pass		5689.578	48	9.1	-4.1	53	Pk	Н	147	272	74	-21	Pass	
		5999.93	43.2	9.3	-3.8	48.7	Pk	V	147	272	74	-25.3	Pass	

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Subtest Number: 16385	5 - 7 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Spurs/Harmonics, 5745MHz, 54Mbps, 17dBm, 9.5dBi Patch Antenna
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



-													
F	requenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
у	/ MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
	4343.14	26.7	7.3	-4	30	Av	H	147	272	54	-24	Pass	
	4343.28	30.8	7.3	-4	34	Av	V	147	272	54	-20	Pass	
	5319.86	48.8	8.2	-3.9	53.1	Av	V	147	272	54	-0.9	Pass	
	5981.33	25.7	9.3	-3.9	31.2	Av	Н	147	272	54	-22.8	Pass	
	5999.99	38.6	9.3	-3.8	8 44.1	Av	V	147	272	54	-9.9	Pass	
	11491.3	21.8	12.2	4.6	38.5	Av	Н	147	272	54	-15.5	Pass	
	11491.5	28.1	12.2	4.6	6 44.9	Av	V	147	272	54	-9.1	Pass	
	17232.2	20.9	14.2	5.4	40.5	Av	V	147	272	54	-13.5	Pass	
Γ	17269.1	18.7	14.2	5.7	38.6	Av	H	147	272	54	-15.4	Pass	

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Subtest Number: 16385	- 8 Subtest Date: 12-May-2005							
Engineer	James Nicholson							
Lab Information   Building P, 5m Anechoic								
Subtest Results								
Subtest Title	eak Spurs/Harmonics, 5745MHz, 54Mbps, 17dBm, 9.5dBi Patch Antenna							
Subtest Result	Pass							
Highest Frequency	18000.0							
Lowest Frequency	1000.0							
Comments on the above Test Results	No further comments							



F	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
2	/ MHz	dBuV	Loss		dB			cm	Deg	dB	dB	/Fail	
	5439.53	58.2	8.4	-3.7	62.9	Pk	V	147	272	74	-11.1	Pass	
	5448.46	56.9	8.4	-3.8	61.6	Pk	Н	147	272	74	-12.4	Pass	
	5997.12	40.8	9.3	-3.8	46.3	Pk	Н	147	272	74	-27.7	Pass	
	5999.75	43	9.3	-3.8	48.5	Pk	V	147	272	74	-25.5	Pass	
	11490.8	37.5	12.2	4.6	54.3	Pk	V	147	272	74	-19.7	Pass	
	11498.8	36.3	12.2	4.6	53.1	Pk	Н	147	272	74	-20.9	Pass	

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Subtest Number: 16385	5 - 9 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Spurs/Harmonics, 5785MHz, 54Mbps, 14dBm, 9.5dBi Patch Antenna
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



I	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
ľ	y MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
	5314.35	49	8.2	-4	53.2	Av	V	147	272	54	-0.8	Pass	
	5425.89	25.8	8.4	-3.7	30.4	Av	Н	147	272	54	-23.6	Pass	
	5980.76	25.9	9.3	-3.9	31.3	Av	Н	147	272	54	-22.7	Pass	
	5999.99	39.6	9.3	-3.8	3 45.1	Av	V	147	272	54	-8.9	Pass	

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Subtest Number: 16385	5 - 10 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Peak Spurs/Harmonics, 5785MHz, 54Mbps, 14dBm, 9.5dBi Patch Antenna
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



ſ	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
ľ	y MHz	dBuV	Loss		dB			cm	Deg	dB	dB	/Fail	
	5302.79	61.1	8.1	-3.	65.3	Pk	V	147	272	74	-8.7	Pass	
	5356.11	58.2	8.2	-3.	62.6	Pk	Н	147	272	74	-11.4	Pass	
	5982.5	41.5	9.3	-3.	9 47	Pk	Н	147	272	74	-27	Pass	
	6000.09	44.8	9.3	-3.	3 50.3	Pk	V	147	272	74	-23.7	Pass	

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Subtest Number: 16385	5 - 11 Subtest Date: 12-May-2005							
Engineer	James Nicholson							
Lab Information	Building P, 5m Anechoic							
Subtest Results								
Subtest Title	Average Spurs/Harmonics, 5805MHz, 54Mbps, 11dBm, 9.5dBi Patch Antenna							
Subtest Result	Pass							
Highest Frequency	18000.0							
Lowest Frequency	1000.0							
Comments on the above Test Results	No further comments							



ſ	Frequenc	Raw	Cable	AF dE	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
ľ	y MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
	5319.66	47.4	8.2	-3	9 51.7	Y Av	V	147	272	54	-2.3	Pass	
	5425.21	25.4	8.4	-3	7 30	) Av	H	147	272	54	-24	Pass	
	5983.65	25.7	9.3	-3	9 31.1	Av	H	147	272	54	-22.9	Pass	
	6000	40.1	9.3	-3	8 45.6	6 Av	V	147	272	54	-8.4	Pass	

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Subtest Number: 16385	5 - 12 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Peak Spurs/Harmonics, 5805MHz, 54Mbps, 11dBm, 9.5dBi Patch Antenna
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



ſ	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
ľ	y MHz	dBuV	Loss		dB			cm	Deg	dB	dB	/Fail	
	5319.98	57.5	8.2	-3.	9 61.8	Pk	V	147	272	74	-12.2	Pass	
	5337.54	54.6	8.2	-3.	9 58.9	Pk	Н	147	272	74	-15.1	Pass	
I	5992.3	41.2	9.3	-3.	9 46.7	Pk	Н	147	272	74	-27.3	Pass	
	6000.1	45.8	9.3	-3.	3 51.3	Pk	V	147	272	74	-22.7	Pass	

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# 5GHz Radiated Spurs and Harmonics with 6dBi Omnidirectional Antenna

Test Number: 16386												
Basic Standard	Applied to	Class	Freq Range	Test Details / Comments								
CFR47 Part 15.407	The provisions of Sec. 15.205 apply to intentional radiators operating under this section.											
Operating Mode	Mode: 5, 5GHz S	Mode : 5, 5GHz Spurious										
Power Input	110v (+/-10%), 60	Hz										
Overall Result	Pass											
Comments	No further commen	nts										
Deviation	There were no dev	iations from th	ne specification									

System Number	Description	Samples	System under test	Support equipment
5	AIR-AP1242AG-A-K9 with 5GHz 6dBi Omnidirectional Antenna	S01, S06 and S07	Ø	

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Subtest Number: 16386	- 1 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Spurs/Harmonics, 5180MHz, 54Mbps, 11dBm, 6dBi Omnidirectional Antenna
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



_													
F	requenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
)	/ MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
	4409.96	25.3	7.3	-4	28.6	Av	Н	147	272	54	-25.4	Pass	
	4410.01	33.6	7.3	-4	36.9	Av	V	147	272	54	-17.1	Pass	
	4999.87	32.1	8	-3.9	36.3	Av	V	147	272	54	-17.7	Pass	
	5178.18	37	8	-3.9	41.2	Av	V	147	272	54	-12.8	Pass	; ;
	5515.11	40.5	8.6	-3.9	45.2	Av	V	147	272	54	-8.8	Pass	
	5529.727	24.6	8.6	-4	29.2	Av	Н	147	272	54	-24.8	Pass	
	6000.01	41.5	9.3	-3.8	8 47	Av	V	147	272	54	-7	Pass	
	10358.1	19.8	11.5	4.5	35.7	Av	Н	147	272	54	-18.3	Pass	
ſ	10361.31	32.3	11.5	4.5	48.3	Av	V	147	272	54	-5.7	Pass	

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Subtest Number: 16386	5 - 2 Subtest Date: 12-May-2005								
Engineer	James Nicholson								
Lab Information	Building P, 5m Anechoic								
Subtest Results									
Subtest Title	Peak Spurs/Harmonics, 5180MHz, 54Mbps, 11dBm, 6dBi Omnidirectional Antenna								
Subtest Result	Pass								
Highest Frequency	18000.0								
Lowest Frequency	1000.0								
Comments on the above Test Results	No further comments								



I	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
2	y MHz	dBuV	Loss		dB			cm	Deg	dB	dB	/Fail	
	5015.84	42.9	8	-3.9	46.9	Pk	V	147	272	74	-27.1	Pass	
	5024.13	39.5	7.9	-3.9	43.5	Pk	Н	147	272	74	-30.5	Pass	
	5586.78	48	9	-4	53.1	Pk	Н	147	272	74	-20.9	Pass	
	5614.5	47.7	9.1	-3.9	52.8	Pk	V	147	272	74	-21.2	Pass	
	10356.5	35.6	11.5	4.5	51.6	Pk	Н	147	272	74	-22.4	Pass	
	10356.7	44.1	11.5	4.5	60.1	Pk	V	147	272	74	-13.9	Pass	

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Subtest Number: 16386	5 - 3 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Spurs/Harmonics, 5260MHz, 54Mbps, 17dBm, 6dBi Omnidirectional Antenna
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



_													
F	requenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
у	MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
	4490.03	35.5	7.4	-4.2	38.7	Av	V	147	272	54	-15.3	Pass	
	4490.04	23.9	7.4	-4.2	27.2	Av	H	147	272	54	-26.8	Pass	
	5021.6	23.9	7.9	-3.9	27.9	Av	Н	147	272	54	-26.1	Pass	; ;
	5050.13	35.7	8	-3.9	39.8	Av	V	147	272	54	-14.2	Pass	; ;
	5615.04	40.9	9.1	-3.9	46.1	Av	V	147	272	54	-7.9	Pass	
	5638.511	24.5	9.1	-4	29.6	Av	H	147	272	54	-24.4	Pass	
	6000.08	39.9	9.3	-3.8	45.4	Av	V	147	272	54	-8.6	Pass	; ;
	10521.5	27.2	11.6	4.8	43.6	Av	V	147	272	54	-10.4	Pass	
	10545.03 4	19.3	11.6	4.8	35.7	Av	Н	147	272	54	-18.3	Pass	

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Subtest Number: 16386	5 - 4 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Peak Spurs/Harmonics, 5260MHz, 54Mbps, 17dBm, 6dBi Omnidirectional Antenna
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



I	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
ľ	y MHz	dBuV	Loss		dB			cm	Deg	dB	dB	/Fail	
	4490.02	42	7.4	-4.2	45.3	Pk	V	147	272	74	-28.7	Pass	; ;
	4490.08	34.7	7.4	-4.2	37.9	Pk	Н	147	272	74	-36.1	Pass	
	5021.284	45.9	7.9	-3.9	49.9	Pk	V	147	272	74	-24.1	Pass	
	5045.662	42.6	8	-3.9	46.7	Pk	H	147	272	74	-27.3	Pass	
	5551.575	51	8.9	-3.8	56.2	Pk	V	147	272	74	-17.8	Pass	
	5573.81	49.2	9	-4	54.3	Pk	H	147	272	74	-19.7	Pass	
	10521.4	37.9	11.6	4.8	54.3	Pk	V	147	272	74	-19.7	Pass	
	10526.16	33.9	11.6	4.8	50.3	Pk	Н	147	272	74	-23.7	Pass	

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Subtest Number: 16386	5 - 5 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Spurs/Harmonics, 5320MHz, 54Mbps, 11dBm, 6dBi Omnidirectional Antenna
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
y MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
4550.01	27.6	7.5	-4.1	30.9	Av	Н	147	272	54	-23.1	Pass	; ;
4977.9	25.3	7.9	-3.8	29.3	Av	H	147	272	54	-24.7	Pass	
5023.093	32.5	7.9	-3.9	36.5	Av	· V	147	272	54	-17.5	Pass	
5684.87	42.4	9.1	-4.1	47.4	Av	V	147	272	54	-6.6	Pass	; ;
5703.757	25.3	9.1	-4.1	30.3	Av	H	147	272	54	-23.7	Pass	
5999.93	40.3	9.3	-3.8	45.8	Av	· V	147	272	54	-8.2	Pass	
10638.98	23.7	11.7	4.8	40.2	Av	V	147	272	54	-13.8	Pass	
10673.39	19.8	11.7	4.7	36.2	Av	H	147	272	54	-17.8	Pass	
7												

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Subtest Number: 16386	6 - 6 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Peak Spurs/Harmonics, 5320MHz, 54Mbps, 11dBm, 6dBi Omnidirectional Antenna
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



Frequenc y MHz   Raw dBuV   Cable Loss   AF   dB   Level dB   Type   Pol cm   Hgt Deg   Azt Deg   Limit dB   Margin dB   Pass /Fail   Comments     5024.902   42.2   7.9   -3.9   46.2   Pk   V   147   272   74   -27.8   Pass     5046.049   38.5   8   -3.9   42.6   Pk   H   147   272   74   -31.4   Pass     5684.56   49.4   9.1   -4.1   54.4   Pk   V   147   272   74   -19.6   Pass     5689.578   48   9.1   -4.1   53   Pk   H   147   272   74   -21   Pass     5689.578   48   9.1   -4.1   53   Pk   H   147   272   74   -21   Pass     5999.93   43.2   9.3   -3.8   48.7   Pk   V   147   272   74   -21   Pass	1.0													
y   MHz   dBuV   Loss   dB   cm   Deg   dB   dB   /Fail     5024.902   42.2   7.9   -3.9   46.2   Pk   V   147   272   74   -27.8   Pass     5046.049   38.5   8   -3.9   42.6   Pk   H   147   272   74   -31.4   Pass     5684.56   49.4   9.1   -4.1   54.4   Pk   V   147   272   74   -19.6   Pass     5689.578   48   9.1   -4.1   53   Pk   H   147   272   74   -21   Pass     5999.93   43.2   9.3   -3.8   48.7   Pk   V   147   272   74   -21   Pass		Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
5024.902 42.2 7.9 -3.9 46.2 Pk V 147 272 74 -27.8 Pass   5046.049 38.5 8 -3.9 42.6 Pk H 147 272 74 -31.4 Pass   5684.56 49.4 9.1 -4.1 54.4 Pk V 147 272 74 -19.6 Pass   5689.578 48 9.1 -4.1 53 Pk H 147 272 74 -21 Pass   5999.93 43.2 9.3 -3.8 48.7 Pk V 147 272 74 -25.3 Pass		y MHz	dBuV	Loss		dB			cm	Deg	dB	dB	/Fail	
5046.049 38.5 8 -3.9 42.6 Pk H 147 272 74 -31.4 Pass   5684.56 49.4 9.1 -4.1 54.4 Pk V 147 272 74 -19.6 Pass   5689.578 48 9.1 -4.1 53 Pk H 147 272 74 -21 Pass   5999.93 43.2 9.3 -3.8 48.7 Pk V 147 272 74 -25.3 Pass		5024.902	42.2	2. 7.9	-3.9	46.2	Pk	V	147	272	74	-27.8	Pass	
5684.56   49.4   9.1   -4.1   54.4   Pk   V   147   272   74   -19.6   Pass     5689.578   48   9.1   -4.1   53   Pk   H   147   272   74   -21   Pass     5999.93   43.2   9.3   -3.8   48.7   Pk   V   147   272   74   -21   Pass		5046.049	38.5	6 8	-3.9	42.6	Pk	Н	147	272	74	-31.4	Pass	
5689.578   48   9.1   -4.1   53   Pk   H   147   272   74   -21   Pass     5999.93   43.2   9.3   -3.8   48.7   Pk   V   147   272   74   -21   Pass		5684.56	49.4	9.1	-4.1	54.4	Pk	V	147	272	74	-19.6	Pass	
5999.93 43.2 9.3 -3.8 48.7 Pk V 147 272 74 -25.3 Pass		5689.578	48	9.1	-4.1	53	Pk	Н	147	272	74	-21	Pass	
		5999.93	43.2	9.3	-3.8	48.7	Pk	V	147	272	74	-25.3	Pass	

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Subtest Number: 16386	5 - 7 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Spurs/Harmonics, 5745MHz, 54Mbps, 17dBm, 6dBi Omnidirectional Antenna
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



_													
F	requenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
y	/ MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
	4343.14	26.7	7.3	-4	4 30	Av	Н	147	272	54	-24	Pass	
	4343.28	30.8	7.3	-4	4 34	Av	V	147	272	54	-20	Pass	
	5319.86	48.8	8.2	-3.9	53.1	Av	V	147	272	54	-0.9	Pass	
	5981.33	25.7	9.3	-3.9	31.2	Av	Н	147	272	54	-22.8	Pass	
	5999.99	38.6	9.3	-3.8	3 44.1	Av	V	147	272	54	-9.9	Pass	
	11491.3	21.8	12.2	4.6	38.5	Av	Н	147	272	54	-15.5	Pass	
	11491.5	28.1	12.2	4.6	6 44.9	Av	V	147	272	54	-9.1	Pass	
	17232.2	20.9	14.2	5.4	40.5	Av	V	147	272	54	-13.5	Pass	
	17269.1	18.7	14.2	5.7	38.6	Av	Н	147	272	54	-15.4	Pass	; ;

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Subtest Number: 16386	5 - 8 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Peak Spurs/Harmonics, 5745MHz, 54Mbps, 17dBm, 6dBi Omnidirectional Antenna
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



F	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
2	/ MHz	dBuV	Loss		dB			cm	Deg	dB	dB	/Fail	
	5439.53	58.2	8.4	-3.7	62.9	Pk	V	147	272	74	-11.1	Pass	
	5448.46	56.9	8.4	-3.8	61.6	Pk	Н	147	272	74	-12.4	Pass	
	5997.12	40.8	9.3	-3.8	46.3	Pk	Н	147	272	74	-27.7	Pass	
	5999.75	43	9.3	-3.8	48.5	Pk	V	147	272	74	-25.5	Pass	
	11490.8	37.5	12.2	4.6	54.3	Pk	V	147	272	74	-19.7	Pass	
	11498.8	36.3	12.2	4.6	53.1	Pk	Н	147	272	74	-20.9	Pass	

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Subtest Number: 16386	5 - 9 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Spurs/Harmonics, 5785MHz, 54Mbps, 14dBm, 6dBi Omnidirectional Antenna
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



ſ	Frequenc	Raw	Cable	AF dE	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
	y MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
	5314.35	49	8.2	-	4 53.2	2 Av	v V	147	272	54	-0.8	Pass	
	5425.89	25.8	8.4	-3	7 30.4	∔ Av	' H	147	272	54	-23.6	Pass	
	5980.76	25.9	9.3	-3.	9 31.3	3 Av	' H	147	272	54	-22.7	Pass	
	5999.99	39.6	9.3	-3.	8 45.1	I Av	v V	147	272	54	-8.9	Pass	

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Subtest Number: 16386	5 - 10 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Peak Spurs/Harmonics, 5785MHz, 54Mbps, 14dBm, 6dBi Omnidirectional Antenna
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



I	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
2	y MHz	dBuV	Loss		dB			cm	Deg	dB	dB	/Fail	
ſ	5302.79	61.1	8.1	-3.9	65.3	Pk	V	147	272	74	-8.7	Pass	
ſ	5356.11	58.2	8.2	-3.8	62.6	Pk	Н	147	272	74	-11.4	Pass	
ſ	5982.5	41.5	9.3	-3.9	47	Pk	Н	147	272	74	-27	Pass	
	6000.09	44.8	9.3	-3.8	50.3	Pk	V	147	272	74	-23.7	Pass	

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Subtest Number: 16386	- 11 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Spurs/Harmonics, 5805MHz, 54Mbps, 11dBm, 6dBi Omnidirectional Antenna
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



ſ	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
	y MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
	5319.66	47.4	8.2	-3.9	51.7	Av	V	147	272	54	-2.3	Pass	
	5425.21	25.4	8.4	-3.7	30	Av	Н	147	272	54	-24	Pass	
ĺ	5983.65	25.7	9.3	-3.9	31.1	Av	Н	147	272	54	-22.9	Pass	
	6000	40.1	9.3	-3.8	45.6	Av	V	147	272	54	-8.4	Pass	

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Subtest Number: 16386	5 - 12 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Peak Spurs/Harmonics, 5805MHz, 54Mbps, 11dBm, 6dBi Omnidirectional Antenna
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



ſ	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
ľ	y MHz	dBuV	Loss		dB			cm	Deg	dB	dB	/Fail	
	5319.98	57.5	8.2	-3.	9 61.8	Pk	V	147	272	74	-12.2	Pass	
	5337.54	54.6	8.2	-3.	9 58.9	Pk	Н	147	272	74	-15.1	Pass	
I	5992.3	41.2	9.3	-3.	9 46.7	Pk	Н	147	272	74	-27.3	Pass	
	6000.1	45.8	9.3	-3.	3 51.3	Pk	V	147	272	74	-22.7	Pass	

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5GHz 18-40GHz Radiated Emissions with 9.5dBi Patch Antenna	

Test Number: 16388								
Basic Standard	Applied to	Class	Freq Range	Test Details / Comments				
CFR47 Part 15.407	Enclosure   N/A   18GHz - 40GHz   The provisions of Sec. 15.205 apply intentional radiators operating under section.							
Operating Mode	Mode : 5, 5GHz S	Mode: 5, 5GHz Spurious						
Power Input	110v (+/-10%), 60	Hz						
Overall Result	Pass							
Comments	No further comments							
Deviation	There were no deviations from the specification							
	•							

System Number	Description	Samples	System under test	Support equipment
4	AIR-AP1242AG-A-K9 with 5GHz 9.5dBi Patch Antenna	S01, S05 and S07	Ŋ	

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Subtest Number: 16388	- 1 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Spurs/Harmonics, 5745MHz, 54Mbps, 17dBm, 9.5dBi Patch Antenna
Subtest Result	Pass
Highest Frequency	40000.0
Lowest Frequency	18000.0
Comments on the above Test Results	Results shown were identical at 5180, 5260, 5320, 5785, and 5805MHz; and with the 6dBi Omni antenna.



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Subtest Number: 16388	- 2 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Peak Spurs/Harmonics, 5745MHz, 54Mbps, 17dBm, 9.5dBi Patch Antenna
Subtest Result	Pass
Highest Frequency	40000.0
Lowest Frequency	18000.0
Comments on the above Test Results	Results shown were identical at 5180, 5260, 5320, 5785, and 5805MHz; and with the 6dBi Omni antenna.



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# Co-Located Radiated Emissions with 2.4GHz 10dBi Yagi and 5GHz 9.5dBi Patch Antennas

Test Number: 16391									
Basic Standard	Applied to	Class	Freq Range	Test Details / Comments					
Co-Located Transmitters	Enclosure	N/A	2400-2483.5MHz	Compliance based upon meeting the emission levels for radiated spurious emissions as stated in RSS-210 and FCC part 15.209.					
Operating Mode	Mode: 3, Colocatio	Mode : 3, Colocation Tests							
Power Input	110v (+/-10%), 60	Hz							
Overall Result	Pass	Pass							
Comments	No further commer	No further comments							
Deviation	There were no dev	ations from the	e specification						

System Number	Description	Samples	System under test	Support equipment
6	AIR-AP1242AG-A-K9 with 2.4GHz 10dBi Yagi and 5GHz 9.5dBi Patch Antennas	S01, S02, S05 and S07	Ø	

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Subtest Number: 16391	- 1 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Bandedge, 2412MHz, 11Mbps, 20dBm, 10dBi Yagi Antenna with 5745MHz, 54Mbps, 17dBm, 9.5dBi Pat
Subtest Result	Pass
Highest Frequency	2412.0
Lowest Frequency	2310.0
Comments on the above Test Results	No further comments



Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
y MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
2389.8	23.3	25.1	-5.8	3 42.7	Peak(Scan)	V	182	271	54	-11.3	Pass	
2357.21	23.3	25.1	-5.	42.6	Peak(Scan)	н	182	271	54	-11.4	Pass	

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Subtest Number: 16391	- 2 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Peak Bandedge, 2412MHz, 11Mbps, 20dBm, 10dBi Yagi Antenna with 5745MHz, 54Mbps, 17dBm, 9.5dBi Patch
Subtest Result	Pass
Highest Frequency	2412.0
Lowest Frequency	2310.0
Comments on the above Test Results	No further comments



I	Frequenc	Raw	Cable	AF di	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
	y MHz	dBuV	Loss		dB			cm	Deg	dB	dB	/Fail	
ľ	2389.25	37.2	25.1	-5	8 56.6	Peak(Scan)	) V	182	271	74	-17.4	Pass	
	2370.89	36.6	25.1	-5	8 55.9	Peak(Scan)	H	182	271	74	-18.1	Pass	

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Subtest Number: 16391	- 3 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Bandedge, 2412MHz, 54Mbps, 17dBm, 10dBi Yagi Antenna with 5745MHz, 54Mbps, 17dBm, 9.5dBi Pat
Subtest Result	Pass
Highest Frequency	2412.0
Lowest Frequency	2310.0
Comments on the above Test Results	No further comments



ſ	Frequenc	Raw	Cable	AF d	3 Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
	y MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
ľ	2390	24.3	25.1	-!	.8 43	7 Peak(Scan	) \	/ 182	271	54	-10.3	Pass	
	2358.61	23.2	25.1	-{	.7 42	6 Peak(Scan	) ト	182	271	54	-11.4	Pass	

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Subtest Number: 16391	- 4 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Peak Bandedge, 2412MHz, 54Mbps, 17dBm, 10dBi Yagi Antenna with 5745MHz, 54Mbps, 17dBm, 9.5dBi Patch
Subtest Result	Pass
Highest Frequency	2412.0
Lowest Frequency	2310.0
Comments on the above Test Results	No further comments



I	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
	y MHz	dBuV	Loss		dB			cm	Deg	dB	dB	/Fail	
I	2389.55	43.4	25.1	-5.	62.7	Peak(Scan)	V	182	271	74	-11.3	Pass	
	2380.32	37.6	25.1	-5.	56.8	Peak(Scan)	Н	182	271	74	-17.2	Pass	

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Subtest Number: 16391	- 5 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Bandedge, 2462MHz, 11Mbps, 20dBm, 10dBi Yagi Antenna with 5745MHz, 54Mbps, 17dBm, 9.5dBi Pat
Subtest Result	Pass
Highest Frequency	2500.0
Lowest Frequency	2462.0
Comments on the above Test Results	No further comments



ľ	requenc	Raw	Cable	AF c	dB I	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
1	/ MHz	dBuV	Loss		C	dBuV			cm	Deg	dBuV	dB	/Fail	
I	2484.89	23.4	25.2	-	5.7	42.9	Peak(Scan)	V	182	271	54	-11.1	Pass	
I	2497.07	23.4	25.2	-	5.6	43	Peak(Scan)	Н	182	271	54	-11	Pass	

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Subtest Number: 16391	- 6 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Peak Bandedge, 2462MHz, 11Mbps, 20dBm, 10dBi Yagi Antenna with 5745MHz, 54Mbps, 17dBm, 9.5dBi Patch
Subtest Result	Pass
Highest Frequency	2500.0
Lowest Frequency	2462.0
Comments on the above Test Results	No further comments



I	Frequenc	Raw	Cable	AF	dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
ł	y MHz	dBuV	Loss			dB			cm	Deg	dB	dB	/Fail	
ľ	2483.98	36.9	25.2	-	-5.7	56.4	Peak(Scan)	V	182	271	74	-17.6	Pass	
	2484.52	37.6	25.2		-5.7	57.1	Peak(Scan)	Н	182	271	74	-16.9	Pass	

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Subtest Number: 16391	- 7 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Bandedge, 2462MHz, 54Mbps, 17dBm, 10dBi Yagi Antenna with 5745MHz, 54Mbps, 17dBm, 9.5dBi Pat
Subtest Result	Pass
Highest Frequency	2500.0
Lowest Frequency	2462.0
Comments on the above Test Results	No further comments



ľ	Frequenc	Raw	Cable	AF (	dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
1	y MHz	dBuV	Loss			dBuV			cm	Deg	dBuV	dB	/Fail	
I	2483.51	25.9	25.2	-	-5.7	45.4	Peak(Scan)	V	182	271	54	-8.6	Pass	
I	2496.17	23.4	25.2	-	-5.6	42.9	Peak(Scan)	Н	182	271	54	-11.1	Pass	

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Subtest Number: 16391	- 8 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Peak Bandedge, 2462MHz, 54Mbps, 17dBm, 10dBi Yagi Antenna with 5745MHz, 54Mbps, 17dBm, 9.5dBi Patch
Subtest Result	Pass
Highest Frequency	2500.0
Lowest Frequency	2462.0
Comments on the above Test Results	No further comments



I	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
	y MHz	dBuV	Loss		dB			cm	Deg	dB	dB	/Fail	
ľ	2483.52	46.1	25.2	-5.7	65.6	Peak(Scan)	V	182	271	74	-8.4	Pass	
	2486.15	36.7	25.2	-5.7	56.2	Peak(Scan)	Н	182	271	74	-17.8	Pass	

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Subtest Number: 16391	- 9 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Harmonics, 2412MHz, 11Mbps, 20dBm, 10dBi Yagi Antenna with 5745MHz, 54Mbps, 17dBm, 9.5dBi Pa
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



				-										
F	requenc	Raw	Cable	AF	dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
y	′ MHz	dBuV	Loss			dBuV			cm	Deg	dBuV	dB	/Fail	
	4242.62	25.7	7.2		-4	28.9	Av	Н	146	269	54	-25.1	Pass	
	4242.71	28.6	7.2		-4	31.8	Av	V	146	269	54	-22.2	Pass	
	4343.34	29.4	7.3		-4	32.7	Av	V	146	269	54	-21.3	Pass	
	4343.38	25.8	7.3		-4	29.1	Av	Н	146	269	54	-24.9	Pass	
	5114.89	35.9	8		-3.8	40.1	Av	V	146	269	54	-13.9	Pass	
	5336.99	48.5	8.2		-3.9	52.8	Av	V	146	269	54	-1.2	Pass	
	5426.33	25.3	8.4		-3.7	30	Av	Н	146	269	54	-24	Pass	
	5977.45	26	9.3		-3.9	31.4	Av	Н	146	269	54	-22.6	Pass	
	6000.08	38.2	9.3		-3.8	43.7	Av	V	146	269	54	-10.3	Pass	

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Frequ	uenc	Raw	Cable	AF	dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
y ivir	ΠZ	авих	LOSS			aBuv			cm	Deg	aBuv	aв	/Fall	
72	35.12	22.6	9.2		0.5	32.4	Av	H	146	269	54	-21.6	Pass	
72	37.63	23.7	9.2		0.5	33.5	Av	V	146	269	54	-20.5	Pass	
11	492.4	22.6	12.2		4.6	39.4	Av	V	146	269	54	-14.6	Pass	
11	518.2	20.4	12.2		4.6	37.2	Av	H	146	269	54	-16.8	Pass	
17:	233.5	21.8	14.2		5.4	41.4	Av	V	146	269	54	-12.6	Pass	
173	315.7	18.4	14.3		5.7	38.3	Av	Н	146	269	54	-15.7	Pass	

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Subtest Number: 16391	- 10 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Peak Harmonics, 2412MHz, 11Mbps, 20dBm, 10dBi Yagi Antenna with 5745MHz, 54Mbps, 17dBm, 9.5dBi Patch
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



F	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
2	y MHz	dBuV	Loss		dB			cm	Deg	dB	dB	/Fail	
	1184.59	38.4	4.1	-	8 34.5	6 Pk	V	146	269	74	-39.5	Pass	
	1239.64	35	4.2	-7.	9 31.2	Pk	H	146	269	74	-42.8	Pass	
ſ	5450.13	36.4	8.4	-3.	8 41	Pk	H	146	269	74	-33	Pass	
	5521.3	58.4	8.6	-	4 63.1	Pk	V	146	269	74	-10.9	Pass	
	5970.72	36	9.3	-3.	9 41.4	Pk	H	146	269	74	-32.6	Pass	
	6000.34	43.6	9.3	-3.	8 49.1	Pk	V	146	269	74	-24.9	Pass	

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Subtest Number: 16391	- 11 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Harmonics, 2412MHz, 54Mbps, 17dBm, 10dBi Yagi Antenna with 5745MHz, 54Mbps, 17dBm, 9.5dBi Pa
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
y MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
1880.112	41.8	5.4	-6.1	41.1	Av	V	146	269	54	-12.9	Pass	
1899.636	23.8	5.4	-6	23.2	Av	H	146	269	54	-30.8	Pass	
5319.71	48.6	8.2	-3.9	52.9	Av	V	146	269	54	-1.1	Pass	
5521.073	25.5	8.6	-4	30.2	Av	H	146	269	54	-23.8	Pass	
5987.41	25.8	9.3	-3.9	31.2	Av	H	146	269	54	-22.8	Pass	
5999.98	38.6	9.3	-3.8	44.1	Av	V	146	269	54	-9.9	Pass	
11491.9	22.7	12.2	4.6	39.5	Av	V	146	269	54	-14.5	Pass	
11527.1	20.3	12.3	4.6	37.2	Av	H	146	269	54	-16.8	Pass	
17236.7	21.8	14.2	5.4	41.4	Av	V	146	269	54	-12.6	Pass	
17298.2	18.7	14.3	5.4	38.4	Av	Н	146	269	54	-15.6	Pass	

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Subtest Number: 16391	- 12 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Peak Harmonics, 2412MHz, 54Mbps, 17dBm, 10dBi Yagi Antenna with 5745MHz, 54Mbps, 17dBm, 9.5dBi Patch
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



F	requenc	Raw	Cable	AF	dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
Ŋ	/ MHz	dBuV	Loss			dB			cm	Deg	dB	dB	/Fail	
Γ	5335.79	56.5	8.2		-3.9	60.8	Pk	H	146	269	74	-13.2	Pass	
Γ	5349.54	57.4	8.2		-3.8	61.8	Pk	V	146	269	74	-12.2	Pass	
	6078.07	41.9	9.1		-3.5	47.4	Pk	V	146	269	74	-26.6	Pass	
	6091.07	39.3	9.1		-3.5	44.9	Pk	Н	146	269	74	-29.1	Pass	
	7232.07	33.4	9.2		0.5	43.1	Pk	H	146	269	74	-30.9	Pass	
	7232.4	40.9	9.2		0.5	50.6	Pk	V	146	269	74	-23.4	Pass	
	17239.6	33.2	14.2		5.4	52.9	Pk	V	146	269	74	-21.1	Pass	
	17270.3	29.9	14.2		5.8	49.8	Pk	H	146	269	74	-24.2	Pass	

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Subtest Number: 16391	- 13 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Harmonics, 2437MHz, 11Mbps, 20dBm, 10dBi Yagi Antenna with 5745MHz, 54Mbps, 17dBm, 9.5dBi Pa
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



_													
F	requenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
y	MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
	4276.01	29.2	7.2		4 32.5	Av	V	146	269	54	-21.5	Pass	
Γ	4276.27	24.7	7.2	-	4 28	Av	Н	146	269	54	-26	Pass	
	4343.27	26.9	7.3	,	4 30.2	Av	Н	146	269	54	-23.8	Pass	
	4343.33	29.6	7.3	- i	4 32.8	Av	V	146	269	54	-21.2	Pass	
	5335.42	48.7	8.2	-3.	9 53	Av	V	146	269	54	-1	Pass	; ;
	5428.32	25.7	8.4	-3.	7 30.4	Av	Н	146	269	54	-23.6	Pass	
	5979.84	25.8	9.3	-3.	31.2	Av	Н	146	269	54	-22.8	Pass	
Γ	6000.002	38.5	9.3	-3.	3 44	Av	V	146	269	54	-10	Pass	
	7310.237	27.4	9.3		1 37.6	Av	V	146	269	54	-16.4	Pass	
	7310.71	24.5	9.3		34.8	Av	Н	146	269	54	-19.2	Pass	
	9748.2	20	11		4 35	Av	Н	146	269	54	-19	Pass	
_													

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F y	requenc MHz	Raw dBuV	Cable Loss	AF dE	Level dBuV	Туре	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
	9748.23	22.6	11		4 37.0	6 Av	V V	146	269	54	-16.4	Pass	
	11492.1	22.5	12.2	4	6 39.2	2 Av	v V	146	269	54	-14.8	Pass	
	11525.5	20.4	12.3	4	6 37.2	2 Av	' H	146	269	54	-16.8	Pass	
	17235.5	21.7	14.2	5	4 41.3	3 Av	v V	146	269	54	-12.7	Pass	
	17293.8	18.6	14.2	5	5 38.4	1 Av	' H	146	269	54	-15.6	Pass	

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Subtest Number: 16391	- 14 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Peak Harmonics, 2437MHz, 11Mbps, 20dBm, 10dBi Yagi Antenna with 5745MHz, 54Mbps, 17dBm, 9.5dBi Patch
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



I	Frequenc	Raw	Cable	AF	dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
2	y MHz	dBuV	Loss			dB			cm	Deg	dB	dB	/Fail	
	1177.6	38	4.2		-8.1	34.1	Pk	Н	146	269	74	-39.9	Pass	
	1184.56	39	4.1		-8	35.1	Pk	V	146	269	74	-38.9	Pass	
	5347.42	55.2	8.2		-3.8	59.5	Pk	Н	146	269	74	-14.5	Pass	
	5354.09	57.4	8.2		-3.8	61.8	Pk	V	146	269	74	-12.2	Pass	
	6115.02	41.3	9		-3.6	46.8	Pk	V	146	269	74	-27.2	Pass	
	6129.97	39.6	9		-3.6	45	Pk	Н	146	269	74	-29	Pass	

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Subtest Number: 16391	- 15 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Harmonics, 2437MHz, 54Mbps, 17dBm, 10dBi Yagi Antenna with 5745MHz, 54Mbps, 17dBm, 9.5dBi Pa
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



Ī	Frequenc	Raw	Cable	AF	dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
1	y MHz	dBuV	Loss			dBuV			cm	Deg	dBuV	dB	/Fail	
ſ	5320.24	48.7	8.2		-3.9	52.9	Av	V	146	269	54	-1.1	Pass	
ſ	5425.97	25.7	8.4		-3.7	30.4	Av	Н	146	269	54	-23.6	Pass	
	5985.14	25.9	9.3		-3.9	31.3	Av	Н	146	269	54	-22.7	Pass	
	5999.9	37.9	9.3		-3.8	43.4	Av	V	146	269	54	-10.6	Pass	
	11492.7	22	12.2		4.6	38.8	Av	V	146	269	54	-15.2	Pass	
	11516.9	20.4	12.2		4.6	37.3	Av	Н	146	269	54	-16.7	Pass	
	17233.8	20.6	14.2		5.4	40.3	Av	V	146	269	54	-13.7	Pass	
	17285.2	18.5	14.2		5.8	38.4	Av	Н	146	269	54	-15.6	Pass	

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Subtest Number: 16391	- 16 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Peak Harmonics, 2437MHz, 54Mbps, 17dBm, 10dBi Yagi Antenna with 5745MHz, 54Mbps, 17dBm, 9.5dBi Patch
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



- 14													
	Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
	y MHz	dBuV	Loss		dB			cm	Deg	dB	dB	/Fail	
	5342.72	57.4	8.2	-3.9	61.8	Pk	Н	146	269	74	-12.2	Pass	
	5346.5	59.1	8.2	-3.8	63.5	Pk	V	146	269	74	-10.5	Pass	
	5983.96	42.5	9.3	-3.9	47.9	Pk	Н	146	269	74	-26.1	Pass	
	6000.05	43.1	9.3	-3.8	48.6	Pk	V	146	269	74	-25.4	Pass	



Subtest Number: 16391	- 17 Subtest Date: 12-May-2005
Engineer	James Nicholson
Lab Information	Building P, 5m Anechoic
Subtest Results	
Subtest Title	Average Harmonics, 2462MHz, 11Mbps, 20dBm, 10dBi Yagi Antenna with 5745MHz, 54Mbps, 17dBm, 9.5dBi Pa
Subtest Result	Pass
Highest Frequency	18000.0
Lowest Frequency	1000.0
Comments on the above Test Results	No further comments



F	requenc	Raw	Cable	AF	dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
y	MHz	dBuV	Loss			dBuV			cm	Deg	dBuV	dB	/Fail	
	4343.2	29.1	7.3		-4	32.4	Av	V	146	269	54	-21.6	Pass	
	4343.46	26	7.3		-4	29.2	Av	Н	146	269	54	-24.8	Pass	
	5319.69	48.6	8.2		-3.9	52.9	Av	V	146	269	54	-1.1	Pass	
	5520.35	25.3	8.6		-3.9	30	Av	Н	146	269	54	-24	Pass	
	5985.7	25.2	9.3		-3.9	30.6	Av	Н	146	269	54	-23.4	Pass	
	5999.95	37.9	9.3		-3.8	43.4	Av	V	146	269	54	-10.6	Pass	
	7386.61	26.4	9.3		1.3	37	Av	Н	146	269	54	-17	Pass	
	7387.33	25.6	9.3		1.3	36.2	Av	V	146	269	54	-17.8	Pass	
	11490	20.4	12.2		4.6	37.2	Av	Н	146	269	54	-16.8	Pass	

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Frequenc y MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Туре	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
11491.3	22.6	12.2	4.6	39.4	Av	V	146	269	54	-14.6	Pass	
17231.3	21.4	14.2	5.4	41	Av	V	146	269	54	-13	Pass	
17296.9	18.7	14.3	5.5	38.5	Av	Н	146	269	54	-15.5	Pass	

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Subtest Number: 16391	- 18 Subtest Date: 12-May-2005							
Engineer	James Nicholson							
Lab Information	Building P, 5m Anechoic							
Subtest Results								
Subtest Title	Peak Harmonics, 2462MHz, 11Mbps, 20dBm, 10dBi Yagi Antenna with 5745MHz, 54Mbps, 17dBm, 9.5dBi Patch							
Subtest Result	Pass							
Highest Frequency	18000.0							
Lowest Frequency	1000.0							
Comments on the above Test Results	No further comments							



					_									
Ī	Frequenc	Raw	Cable	AF d	В	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
1	y MHz	dBuV	Loss			dB			cm	Deg	dB	dB	/Fail	
	1882.78	46.2	5.4	-6	6.1	45.4	Pk	V	146	269	74	-28.6	Pass	
	1903.01	33	5.4		-6	32.4	Pk	H	146	269	74	-41.6	Pass	
I	5311.07	58.7	8.2	, r	3.9	62.9	Pk	V	146	269	74	-11.1	Pass	
	5336.64	55.1	8.2	, i	3.9	59.4	Pk	Н	146	269	74	-14.6	Pass	
	6072.73	41	9.1	-3	3.6	46.5	Pk	H	146	269	74	-27.5	Pass	
	6107.04	42	9.1	-3	3.5	47.5	Pk	V	146	269	74	-26.5	Pass	

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Subtest Number: 16391	- 19 Subtest Date: 12-May-2005					
Engineer	James Nicholson					
Lab Information         Building P, 5m Anechoic						
Subtest Results						
Subtest Title Average Harmonics, 2462MHz, 54Mbps, 17dBm, 10dBi Yagi Antenna with 5745M 54Mbps, 17dBm, 9.5dBi Pa						
Subtest Result	Pass					
Highest Frequency	18000.0					
Lowest Frequency	1000.0					
Comments on the above Test Results	No further comments					



ſ	Frequenc	Raw	Cable	AF	dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
	y MHz	dBuV	Loss			dBuV			cm	Deg	dBuV	dB	/Fail	
	5321.65	48.7	8.2		-3.9	52.9	Av	V	146	269	54	-1.1	Pass	
	5429.89	25.5	8.4		-3.7	30.2	Av	Н	146	269	54	-23.8	Pass	
	5975.87	26	9.3		-3.9	31.4	Av	Н	146	269	54	-22.6	Pass	
	6000.191	38.5	9.3		-3.8	44	Av	V	146	269	54	-10	Pass	
	11490.7	22.2	12.2		4.6	39	Av	V	146	269	54	-15	Pass	
	11548.7	20.1	12.3		4.7	37.1	Av	Н	146	269	54	-16.9	Pass	
	17235.2	21.7	14.2		5.4	41.3	Av	V	146	269	54	-12.7	Pass	
	17313.8	19	14.3		5.7	38.9	Av	Н	146	269	54	-15.1	Pass	

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Subtest Number: 16391	- 20 Subtest Date: 12-May-2005					
Engineer	James Nicholson					
Lab Information	Building P, 5m Anechoic					
Subtest Results						
Subtest Title Peak Harmonics, 2462MHz, 54Mbps, 17dBm, 10dBi Yagi Antenna with 5745MHz 54Mbps, 17dBm, 9.5dBi Patch						
Subtest Result	Pass					
Highest Frequency	18000.0					
Lowest Frequency	1000.0					
Comments on the above Test Results	No further comments					



F	Frequenc	Raw dBuV	Cable Loss	AF dB	Level dB	Туре	Pol	Hgt cm	Azt Dea	Limit dB	Margin dB	Pass /Fail	Comments
ľ	5290.95	57.2	8.1	-3.8	61.6	Pk	Н	146	269	74	-12.4	Pass	
	5315.2	58.7	8.2	-4	62.9	Pk	V	146	269	74	-11.1	Pass	
	5995.17	44.2	9.3	-3.9	49.7	Pk	Н	146	269	74	-24.3	Pass	
	5999.95	43.4	9.3	-3.8	48.9	Pk	V	146	269	74	-25.1	Pass	
	7377.28	40.6	9.3	1.2	51.2	Pk	Н	146	269	74	-22.8	Pass	
	7385.97	36.7	9.3	1.3	47.3	Pk	V	146	269	74	-26.7	Pass	

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# Maximum Permissible Exposure (MPE) Calculations

# Given

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

where

E=Field Strength in Volts/meter P=Power in Watts G=Numeric Antenna Gain d=Distance in meters S=Power Density in mW/cm^2

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: P(mW)=P(W)/1000

d(cm) = 100\*d(m)

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/cm<sup>2</sup>

Substituting the logarithmic form of power and gain using:

 $P(mW)=10^{(P(dBm)/10)}$ 

G(numeric)=10<sup>(G(dBi)/10)</sup>

vields

d=0.282\*10^((P+G)/20)/√S

where

d=MPE distance in cm P=Power in dBm G=Antenna Gain in dBi S=Power Density in mW/cm<sup>2</sup> Equation (1)

Equation (1) and the measured peak power is 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/cm<sup>2</sup> maximum. The highest 2.4GHz antenna gain supported is 10 dBi, and the highest 5 GHz antenna gain is 9.5 dBi. Using the peak power levels recorded in the test report along with Equation 1 above, the MPE distances are calculated as follows.

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			Peak				
		Power	Transmit	Antenna	MPE		
Frequency	Bit Rate	Density	Power	Gain	Distance	Limit	Margin
(MHz)	(Mbps)	(mW/cm^2)	(dBm)	(dBi)	(cm)	(cm)	(cm)
2412	11	1	20	10	8.92	20	11.08
2437	11	1	20	10	8.92	20	11.08
2462	11	1	20	10	8.92	20	11.08
2412	54	1	17	10	6.31	20	13.69
2437	54	1	17	10	6.31	20	13.69
2462	54	1	17	10	6.31	20	13.69

2.4GHz MPE Calculations

Frequency (MHz)	Bit Rate (Mbps)	Power Density (mW/cm^2)	Peak Transmit Power (dBm)	Antenna Gain (dBi)	MPE Distance (cm)	Limit (cm)	Margin (cm)
5180	54	1	11	9.5	2.99	20	17.01
5260	54	1	17	9.5	5.96	20	14.04
5320	54	1	11	9.5	2.99	20	17.01
5745	54	1	17	9.5	5.96	20	14.04
5785	54	1	14	9.5	4.22	20	15.78
5805	54	1	11	9.5	2.99	20	17.01

**5GHz MPE Calculations** 

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# Radiated Emissions 30-1000MHz

Test Number:	Test Number: 16441									
Basic Standard Applied to		Class	Freq Range	Test Details / Comments						
CFR47 Part 15.209	Enclosure	В	30MHz-1.0GHz	Radiated emissions which fall in the restricted bands, as defined in Sec. 15.205(a), must also comply with the radiated emission limits specified in Sec. 15.209(a).						
Operating Mode	Mode: 3, Colocati	on Tests								
Power Input	110v (+/-10%), 60	Hz								
Overall Result	Pass									
Comments	No further commer	nts								
Deviation	There were no dev	iations from th	e specification							

System Number	Description	Samples	System under test	Support equipment
6	AIR-AP1242AG-A-K9 with 2.4GHz 10dBi Yagi and 5GHz 9.5dBi Patch Antennas	S01, S02, S05 and S07	Ø	

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Subtest Number: 16441	- 1 Subtest Date: 13-May-2005						
Engineer	James Nicholson						
Lab Information         Building P, 10m Anechoic							
Subtest Results							
Subtest Title         30MHz-1GHz Radiated Emissions							
Subtest Result	Pass						
Highest Frequency	1000.0						
Lowest Frequency	30.0						
Comments on the above Test Results	No further comments						

### **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**

-												
Frequenc	Raw	Cable	AF dB	Level	Туре	Pol	Hgt	Azt	Limit	Margin	Pass	Comments
y MHz	dBuV	Loss		dBuV			cm	Deg	dBuV	dB	/Fail	
17	5 24.5	i 1.3	11.	9 37.8	Qp	V	98	246	40.5	-2.7	Pass	
152.49	6 22.5	5 1.3	13.	2 37	Qp	V	98	244	40.5	-3.5	Pass	
69.02	2 26.5	0.9	8.	5 35.8	Qp	V	98	191	40.5	-4.6	Pass	; ;
208.32	2 20.9	1.5	12.	6 34.9	Qp	V	117	226	40.5	-5.6	Pass	; ;
66.28	5 25.8	0.9	8.	1 34.8	Qp	V	118	142	40.5	-5.7	Pass	
206.51	3 19.7	1.5	12.	7 33.9	Qp	Н	112	122	40.5	-6.6	Pass	
39.4	5 18.1	0.7	14.	2 33	Qp	V	106	244	40.5	-7.5	Pass	

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# AC Mains Conducted emissions

Test Number:	Test Number: 16440									
Basic Standard	Applied to	Class	Freq Range	Test Details / Comments						
CFR47 Part 15.207	AC Power Line	В	0.150-30MHz	AC Mains Conducted Emissions						
Operating Mode	Mode : 3, Colocation Tests									
Power Input	110v (+/-10%), 60	Hz								
Overall Result	Pass	Pass								
Comments	No further commer	nts								
Deviation	There were no deviations from the specification									

System Number	Description	Samples	System under test	Support equipment
6	AIR-AP1242AG-A-K9 with 2.4GHz 10dBi Yagi and 5GHz 9.5dBi Patch Antennas	S01, S02, S05 and S07		

Subtest Number: 16440 - 1		ubtest Date: 13-May-2005
Engineer	James Nicholson	
Lab Information	Building B, Shield Room	
Subtest Results		
Line Under Test	AC Mains	
Transducer	LISN	
Subtest Result	Pass	
Highest Frequency	30.0	
Lowest Frequency	0.15	
Comments on the above Test Results	No further comments	

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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**

Fre	quenc	Raw dBuV	Cable	Factors	Level dBuV	Туре	Line	Limit dBuV	Margin dB	Pass /Fail	Comments
<u>y 1</u>	0.656	28.3	19.9	0.1	48.3	Qp	N	56	-7.7	Pass	
	0.397	19.1	20	0.1	39.2	Av	L	47.9	-8.8	Pass	
	0.397	27.7	20	0.1	47.7	Qp	L	57.9	-10.2	Pass	
	0.262	30.2	20.1	0.1	50.4	Qp	L	61.4	-11	Pass	
	0.262	19.8	20.1	0.1	40	Av	L	51.4	-11.3	Pass	
	0.656	14.7	19.9	0.1	34.6	Av	N	46	-11.4	Pass	
	4.356	23.7	20	0.1	43.8	Qp	N	56	-12.2	Pass	
	3.993	23.2	20	0.1	43.2	Qp	N	56	-12.8	Pass	
	1.61	22.8	19.9	0.1	42.8	Qp	N	56	-13.2	Pass	
	2.065	22.8	19.9	0.1	42.7	Qp	N	56	-13.3	Pass	
	3.274	21.9	20	0.1	42	Qp	N	56	-14	Pass	
	2.959	21.9	20	0.1	41.9	Qp	N	56	-14.1	Pass	
	2.623	21.3	19.9	0.1	41.3	Qp	N	56	-14.7	Pass	
	1.61	6.3	19.9	0.1	26.2	Av	N	46	-19.8	Pass	
	4.356	5	20	0.1	25	Av	N	46	-21	Pass	
	3.993	4	20	0.1	24	Av	N	46	-22	Pass	
	2.065	4	19.9	0.1	24	Av	N	46	-22	Pass	
	3.274	2.3	20	0.1	22.4	Av	N	46	-23.6	Pass	
	2.959	1.5	20	0.1	21.5	Av	N	46	-24.5	Pass	
	2.623	0.5	19.9	0.1	20.5	Av	N	46	-25.5	Pass	

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# Appendix C: Abbreviation Key and Definitions

The following table defines abbreviations used within this test report.

Abbreviation	Description	Abbreviation	Description
EMC	Electro Magnetic Compatibility	°F	Degrees Fahrenheit
EMI	Electro Magnetic Interference	°C	Degrees Celsius
EUT	Equipment Under Test	Temp	Temperature
ITE	Information Technology Equipment	S/N	Serial Number
TAP	Test Assessment Schedule	Qty	Quantity
ESD	Electro Static Discharge	emf	Electromotive force
EFT	Electric Fast Transient	RMS	Root mean square
EDCS	Engineering Document Control System	Qp	Quasi Peak
Config	Configuration	Av	Average
CIS#	Cisco Number (unique identification number for Cisco test equipment)	Pk	Peak
Cal	Calibration	kHz	Kilohertz (1x10 <sup>3</sup> )
EN	European Norm	MHz	MegaHertz (1x10 <sup>6</sup> )
IEC	International Electro technical	GHz	Gigahertz (1x10 <sup>9</sup> )
	Commission		
CISPR	International Special Committee on Radio Interference	Н	Horizontal
CDN	Coupling/Decoupling Network	V	Vertical
LISN	Line Impedance Stabilization	dB	decibel
PE	Protective Earth	V	Volt
GND	Ground	kV	Kilovolt (1x10 <sup>3</sup> )
L1	Line 1	μV	Microvolt (1x10 <sup>-6</sup> )
L2	Line2	A	Amp
L3	Line 3	μA	Micro Amp (1x10 <sup>-6</sup> )
DC	Direct Current	mS	Milli Second (1x10 <sup>-3</sup> )
RAW	Uncorrected measurement value, as indicated by the measuring device	μS	Micro Second (1x10 <sup>-6</sup> )
RF	Radio Frequency	μS	Micro Second (1x10 <sup>-6</sup> )
SLCE	Signal Line Conducted Emissions	m	Meter
Meas dist	Measurement distance	Spec dist	Specification distance
N/A or NA	Not Applicable	SL	Signal Line (or Telecom Line)
Р	Power Line	L	Live Line
Ν	Neutral Line	R	Return
S	Supply	AC	Alternating Current



# Appendix D: Radiated Emissions Test Procedure

The following is a summary of the actual test procedure used by Cisco Systems (Doc No: ENG-36583)

### **Pre-Assessment**

The object of the Pre-Assessment Testing is to identify emissions that must be evaluated against the specification limit, under conditions called out in the applicable specification. During this type of testing the repeatability of the test setup and the worst-case layout of the EUT are also determined..

- 1. Arrange the EUT in the chamber as defined in the configuration section of ENG-36583, the TAP and the appropriate specification.
- 2. Where the EUT cannot be configured in accordance with the specification then carry out the following:
  - i. Set the equipment up as close as possible to the requirements.
  - ii. Note within the logbook any deviations from the ard.
  - iii. Use only non-metallic supports.
  - iv. Ensure that the set up used is repeatable.
  - v. Evaluate the effect of the configuration upon the test results.
- 3. Set the antenna to EUT distance to the appropriate test distance.
- 4. An initial scan of the frequency ranges should be undertaken to ensure that all emissions emanate from the EUT and are not ambient (from mobile phones, support equipment etc).
- 5. The EUT should be evaluated in the mode(s) of operation defined in the TAP.
- 6. Measure the emissions profile of the EUT over the required frequency range using the Automated test software
- 7. Once an initial preview scan has been performed the emissions profile of the EUT should be maximized in accordance with the specification.
- 8. Repeat the preview scan after maximizing (unless the overhead cable rack has been utilized). Compare the results with the initial scan to ensure that the worst-case profile has been obtained. \*IMPORTANT\* If the obtained profiles are considerably different an investigation should be undertaken to ensure that there is not an intermittent problem with the EUT or its cabling.
- 9. If the obtained profiles are similar all emissions within 6dB of the test specification should be identified for formal measurements. If the test software is used to do this then the results must be confirmed manually. Where there are <6 emissions within 6dB of the specification, the worst six emissions should be identified.</p>
- 10. Where the frequencies of emissions are close together care must be taken to ensure that the actual worst case emission has been chosen for the formal measurement. This can usually only be confirmed by

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maximizing the emission profile. If in doubt identify both (or all) suspect emissions near the center frequency identified by the preview software.

- 11. During testing the overload indicator of the test Rx should be monitored to ensure that the testing is valid. Where an overload condition is suspected this can normally be confirmed by the use of an external attenuator or the Rx linearity function.
- 12. If no signals are within 20dB of the specification limit no formal measurements are required. If this happens the equipment setup should be re-checked to ensure that that it has not developed a fault. When testing to CNS13438 the worst 6 emissions should be recorded regardless
- 13. Repeat the preceding for the remaining Modes and Configurations defined by the TAP or until a worst-case configuration has been obtained. Plots must be made of the worst case emission profile for inclusion in the test report. Plots may also be taken of other representative profiles.

### Formal Testing:

The object of Formal/Final measurements is to formally measure the emissions highlighted during the preassessment phase against the appropriate specification limits. Maximization of the configuration of the EUT should not be performed during this phase as maximizing the profile at one frequency may change the profile at another and as such invalidate the preview results

- 1. In the **worst case configuration** each emission identified in the pre-assessment phase should be measured against the appropriate specification limit with the appropriate detector:
  - i. Quasi-Peak detector for emissions from 30 MHz to 1GHz
  - ii. Peak detector and average detector for emissions above 1GHz
- 2. Fine Tune the frequency of the emission.
- 3. The emissions should be observed for a sufficient period of time to allow the EUT to undergo a full exercising routine.
- 4. Maximize the amplitude of the emission by rotating the EUT, changing the antenna polarity and scanning the receive antenna height.
- If the emission varies in amplitude with respect to the specification limit, the emission should be observed for at least 15 seconds and the highest reading shall be recorded, with the exception of any brief isolated high reading.
- During testing the overload indicator of the test Rx should be monitored to ensure that the testing is valid., where an overload condition is suspected this can normally be confirmed by the use of external attenuation or the Rx linearity function.
- 7. If the EUT fails to meet the specification, investigations should be undertaken to ensure that the EUT has sufficient isolation from its support equipment and/ or ambient interference.
- 8. Above 1GHz Emissions that do not meet the average specification limit with a peak detector should be compared against the peak limit and re-measured with an Average detector.

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- 9. Repeat steps 2 to 8 on the remaining emissions identified in the pre-assessment phase.
- 10. Record all relevant data in the eRAT.

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# Appendix E: Conducted Emissions Test Procedure

The following is a summary of the actual test procedure used by Cisco Systems (Doc No: ENG-36541)

### **Pre-Assessment**

The object of the Pre-Assessment Testing is to identify emissions that must be evaluated against the specification limit, under conditions called out in the applicable standard. During this type of testing the repeatability of the test setup and the worst-case layout of the EUT are also determined..

- 1. Arrange the EUT in the chamber as defined in the configuration section of ENG-36541, the TAP and the appropriate Specification
- 2. If drive/support equipment is located outside of the shielded enclosure, care must be taken to adequately filter cables coming into the chamber to reduce any potential ambient noise.
- 3. An initial investigation should be undertaken to ensure that ambient interference from external sources or support equipment are not affecting the measured results of the EUT.
- 4. The EUT should be connected to the LISN via an appropriate length of mains power cord as defined in the Specification.
- 5. Investigations should be made to assess possible effects of I/O cables on the measured emission profile. Such investigations should remain within the boundaries of acceptable configurations defined in the Specification. The main purpose of this investigation is to check for cabling problems and for repeatability. I/O cables should not come within 80cm of the LISN (AMN) This information should be recorded in JLS.
- 6. Ensure that there is a pulse limiter in the measurement path to the input of the spectrum analyzer. Ensure that unused ports of the LISN are terminated in 50 ohms.
- 7. The emission profile of the EUT should be measured across the required frequency range.
- Maximize the emission profile of the EUT over the entire frequency range. The following issues should be considered during the maximization process:

   Cable placement and EUT location (within the boundaries of the Specification)
   EUT operating modes (allow for full EUT Cycle times)
- 9. Once the maximum configuration has been discovered, the emission profile should be compared with the most stringent limit from the appropriate Specification.
- 10. If no signals are within 20dB of the Specification limit no formal measurements are required. If this happens the equipment setup should be re-checked to ensure that that it has not developed a fault. When testing to CNS13438 the worst 6 emissions should be recorded regardless.
- 11. Make a Plot of the entire emission profile.
- 12. Repeat steps 9 to 11on the remaining lines.
- 13. Identify all emissions that fail to meet the most stringent limit. These emissions should be formally measured.

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14. Where the emission profile meets the most stringent limit, the six worst-case emissions should be identified for formal measurements. If the emission profile is broadband in Nature (i.e. switch mode PSU noise) it may be necessary to identify more than 6 emissions to adequately assess the EUT.

### Formal Testing:

The object of Formal/Final measurements is to formally measure the emissions highlighted during the preassessment phase against the appropriate Specification limits.

- 1. Each emission identified in the pre-assessment phase should be measured against the appropriate Specification limit with a Quasi-Peak detector.
- 2. The emissions should be observed for a sufficient period of time to allow the EUT to undergo a full exercising routine.
- 3. Where the emission varies in amplitude with respect to the Specification limit the emission should be observed for an extended time period (normally 15 seconds). The highest level observed within this 15 second period should be recorded with the exception of any brief isolated transients.
- 4. If the EUT meets the most stringent limit (e.g. the average limit) with the Quasi-Peak detector, measurements with an average detector are not necessary.
- 5. If the EUT fails to meet the most stringent limit with the Quasi-Peak detector the emission should be measured with an Average detector.
- 6. Repeat the measurements on all available power supply conductors.
- 7. If the results are within 3dB of the Specification when measured at 120V 60HZ AC measurements should also be performed at 100V 60/50Hz AC to satisfy VCCI requirements.
- 8. If the EUT fails to meet the Specification, investigations should be undertaken to ensure that the EUT has sufficient isolation from its support equipment and/ or ambient interference.
- 9. If the EUT fails to meet the CFR47 limit, investigations should be undertaken to determine if the emission is a broadband in nature. If the difference between the results obtained with the average detector and the results obtained with quasi peak detector are >6dB the emission is deemed to be broadband and the quasi peak reading can be reduced by a factor of 13dB.



# Appendix F: Scope of Accreditation: A2LA certificate number 1178-01

The Cisco Systems Scope of Accreditation for EMC testing can be found on the following web page:

### http://www.a2la2.net/scopepdf/1178-01.pdf

Summary:	
EMC/EMI	

Building P:	GR1089, Issue 2 (1999): Sections 2 to 4 (excluding sections 4.5.11-16, 4.6) GR1089, Issue 3 (2002): Sections 2 to 4 (excluding sections 4.6.7.1, 4.6.10- 17, 4.8) CISPR 22 EN 55022 CNS 13438 AS/NZS 3548 CFR 47, Part 15 using ANSI C63.4-2001 IEC 61000-4-2 IEC 61000-4-4
Building 16:	GR1089, Issue 2 (1999): Sections 2 to 4 (excluding sections 3.2.2, 4.5.11-16, 4.6, radiated emissions below 30 MHz) GR1089, Issue 3 (2002): Sections 2 to 4 (excluding sections 3.2.1.2, 4.6.7.1, 4.6.10-17, 4.8) CISPR 22 EN 55022 CNS 13438 AS/NZS 3548 CFR 47, Part 15 using ANSI C63.4-2001 IEC 61000-4-2 IEC 61000-4-4
Building N: Building I: Building 7:	GR1089, Issue 2 (1999): Sections 2 to 4 (excluding sections 3.2.2, 3.3.1-2, 4.5.11-16, 4.6, radiated emissions below 30 MHz) GR1089, Issue 3 (2002): Sections 2 to 4 (excluding sections 3.2.1.2, 3.3.1-2, 4.6.7.1, 4.6.10-17 & 4.8) CISPR 22 EN 55022 CNS 13438 AS/NZS 3548 CFR 47, Part 15 using ANSI C63.4-2001 IEC 61000-4-2 IEC 61000-4-4
Building B:	GR1089, Issue 2 (1999): Sections 2 to 4 (excluding sections 3.2.1-2, 3.3.1-2, 4.5.11-16, 4.6, radiated emissions below 30 MHz) GR1089, Issue 3 (2002): Sections 2 to 4 (excluding sections 3.2.1, 3.3.1, <b>Page No:</b> 130 of 137



4.6.7.1, 4.6.10-17 & 4.8) CISPR 22 EN 55022 CNS 13438 AS/NZS 3548 CFR 47, Part 15 using ANSI C63.4-2001 IEC 61000-4-2 IEC 61000-4-4

On the following products or types of products :

Information Technology Equipment (ITE), Telecommunications Network Equipment (TNE)

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Equip#	Manufacturer/	Description	Last Cal	Next Due	Test
	Model				Number(s)
000513	Gigatronics/	Universal Power Meter	21-JAN-2005	21-JAN-2006	[16395],
	8542C				[16402]
000514	Gigatronics/	Power Sensor, 0.01-18GHz	11-JAN-2005	11-JAN-2006	[16395],
000570	80420A				[16402]
000579	Megaphase/	RF Coaxial Cable, to 26GHZ,	15-FEB-2005	15-FEB-2006	[16405],
	3F20 3131 30	3011			[16409],
					[16410],
					[16412]
					[16413],
					[16435],
					[16436],
					[16437],
					[16439]
000590	Agilent/	Spectrum Analyzer	02-FEB-2005	02-FEB-2006	[16405],
	E4448A				[16409],
					[16410],
					[16412]
					[16413].
					[16435],
					[16436],
					[16437],
					[16439]
000599	Weinschel Corp./	20dB Attenuator	20-DEC-2004	20-DEC-	[16395],
001000	69-20-12			2005	[16402]
001229	HP/ 85460A	RF Filter Section	06-DEC-2004	00-DEC-	[16441]
001230	00400A	EMI Receiver RE Section	06-DEC-2004	2003 06-DEC-	[16441]
001200	85462A		00 02004	2005	[10441]
003003	HP/	Synthesized Signal	21-JAN-2005	21-JAN-2006	[16387],
	83731B	Generator			[16388]
004883	EMC Test Systems/	Double Ridged Guide Horn	11-APR-2005	11-APR-2006	[16118],
	3115	Antenna			[16140],
					[16145],
					[16317],
					[10318],
					[16367]
					[16368].
					[16385].
					[16386],
					[16391]
005685	HP/	EMI Receiver RF Section	07-JUN-2004	07-JUN-2005	[16441]
	85462A		1	1	

Appendix G: Test Equipment Used to perform the test

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005691	Miteq/ NSP1800-25-S1	Broadband Preamplifier (1- 18GHz)	07-OCT-2004	07-OCT- 2005	[16118], [16140], [16145], [16317], [16366], [16366], [16367], [16385], [16386], [16386], [16391]
007036	HP/ E7401A	Spectrum Analyzer	23-JUL-2004	23-JUL-2005	[16440]
007221	EMC Test Systems/ 3115	Double Ridged Guide Horn Antenna	Cal Not Required	N/A	[16118], [16140], [16145], [16317], [16318], [16366], [16367], [16368], [16385], [16386], [16391]
008097	Huber + Suhner/ RG-223	RG-233 Cable 9m	29-JUL-2004	29-JUL-2005	[16440]
008123	Huber + Suhner/ SF106A	1m Sucoflex Cable	03-SEP-2004	03-SEP-2005	[16118], [16140], [16145], [16317], [16318], [16366], [16366], [16368], [16385], [16386], [16391]
008166	HP/ 8491B Opt 010	10dB Attenuator	19-JAN-2005	19-JAN-2006	[16118], [16140], [16145], [16317], [16318], [16391]
008168	HP/ 8491B Opt 010	10dB Attenuator	19-JAN-2005	19-JAN-2006	[16118], [16140], [16145], [16317], [16318], [16391]
008188	Fischer Custom Communications/ FCC-450B-2.4-N	Instrumentation Limiter	07-JUL-2004	07-JUL-2005	[16440]
008189	Fischer Custom Communications/ FCC-450B-2.4-N	Instrumentation Limiter	07-JUL-2004	07-JUL-2005	[16440]
008197	TTE/ H613-150K-50- 21378	Hi Pass Filter - 150KHz cutoff	29-MAR- 2005	29-MAR- 2006	[16440]

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000447	0:	NOA 40m Obamban	04 14 14 0005	04 14 14 00000	[40444]
008447	NSA 10m Chamber	NSA 10m Champer	21-JAN-2005	21-JAN-2006	[16441]
008448	Cisco/ NSA 5m Chamber	NSA 5m Chamber	03-JAN-2005	03-JAN-2006	[16317], [16318], [16366], [16367], [16368], [16385], [16386], [16387], [16388], [16391]
018719	Rohde & Schwarz/ ESCS 30	EMI Test Receiver, 9kHz- 2.75GHz	13-SEP-2004	13-SEP-2005	[16440]
019630	Rohde & Schwarz/ ESI 40	EMI Test Receiver, 20Hz - 40GHz	21-OCT-2004	21-OCT- 2005	[16387], [16388]
020666	EMC Test Systems/ 3160-10	Standard Gain Horn Antenna, 26.5-40GHz	Cal Not Required	N/A	[16387], [16388]
020821	Micro-Coax/ UFB142A-1-1572- 200200	RF Coaxial Cable, to 40GHz, 157.2 in	23-SEP-2004	23-SEP-2005	[16387], [16388]
020975	Micro-Coax/ UFB311A-0-1344- 520520	RF Coaxial Cable, to 18GHz, 134.4 in	28-MAR- 2005	28-MAR- 2006	[16441]
021117	Micro-Coax/ UFB311A-0-2484- 520520	RF Coaxial Cable, to 18GHz, 248.4 in	19-AUG- 2004	19-AUG- 2005	[16118], [16140], [16145], [16317], [16318], [16366], [16366], [16368], [16385], [16386], [16386], [16391]
021382	Solar Electronics Company/ 9252-50-24-BNC	LISN	26-APR-2005	26-APR-2006	[16440]
025654	Micro-Coax/ UFB311A-1-0840- 504504	RF Coaxial Cable, to 18GHz, 84 in	28-MAR- 2005	28-MAR- 2006	[16441]
025657	Micro-Coax/ UFB311A-1-0840- 504504	RF Coaxial Cable, to 18GHz, 84 in	19-AUG- 2004	19-AUG- 2005	[16118], [16140], [16145], [16317], [16318], [16366], [16366], [16368], [16385], [16386], [16391]
025666	Micro-Coax/ UFB142A-1-0720- 200504	RF Coaxial Cable, to 40GHz, 72 in	23-SEP-2004	23-SEP-2005	[16387], [16388]
026860	Cisco/ 1840	18-40GHz EMI Test Head/Verification Fixture	23-SEP-2004	23-SEP-2005	[ <mark>1638</mark> 7], [16388]

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14						
	030265	Agilent/ 11713A	Attenuator/Switch Driver	Cal Not Required	N/A	[16118], [16140], [16145], [16317], [16318], [16366], [16367], [16386], [16386], [16386], [16391]
	030495	Agilent/ 8761B	SPDT RF Switch, to 18GHz	28-MAR- 2005	28-MAR- 2006	[16441]
	030498	Agilent/ 8761B	SPDT RF Switch, to 18GHz	07-APR-2005	07-APR-2006	[16118], [16140], [16145], [16317], [16318], [16366], [16366], [16368], [16385], [16386], [16391]
	030560	Micro-Coax/ UFB311A-1-0950- 504504	RF Coaxial Cable, to 18GHz	28-MAR- 2005	28-MAR- 2006	[16441]
	030562	Micro-Coax/ UFB311A-1-0950- 504504	RF Coaxial Cable, to 18GHz	19-AUG- 2004	19-AUG- 2005	[16118], [16140], [16145], [16317], [16368], [16366], [16367], [16388], [16385], [16386], [16391]
	030563	Micro-Coax/ UFB311A-1-0950- 504504	RF Coaxial Cable, to 18GHz	28-MAR- 2005	28-MAR- 2006	[16441]
	030569	Micro-Coax/ UFB311A-1-3510- 504504	RF Coaxial Cable, to 18GHz	28-MAR- 2005	28-MAR- 2006	[16441]
	030652	Sunol Sciences/ JB1	Combination Antenna, 30MHz-2GHz	25-JUN-2004	25-JUN-2005	[16441]
	031700	Micro-Tronics/ BRC50705	Notch Filter, SB:5.725- 5.875GHz, to 12 GHz	06-OCT-2004	06-OCT- 2005	[16366], [16367], [16368], [16385], [16386], [16391]



1.2						
	033599	Midwest Microwave/ CSY-NMNM-80- 273001	RF Coaxial Cable, 27ft. to 18GHz	09-MAY- 2005	09-AUG- 2005	[16118], [16140], [16145], [16317], [16368], [16366], [16367], [16388], [16385], [16386], [16391]
	033599	Midwest Microwave/ CSY-NMNM-80- 273001	RF Coaxial Cable, 27ft. to 18GHz	10-FEB-2005	09-AUG- 2005	[16118], [16140], [16145], [16317], [16368], [16366], [16367], [16386], [16386], [16391]
	034064	Micro-Coax/ UFB293C-2-0840- 300504	RF Coaxial Cable, 7ft to 18GHz	28-OCT-2004	28-OCT- 2005	[16118], [16140], [16145], [16317], [16366], [16366], [16367], [16386], [16386], [16386], [16391]
	034075	Schaffner/ RSG 2000	Reference Spectrum Generator, 1-18GHz	12-AUG- 2004	12-AUG- 2005	[16118], [16140], [16145], [16317], [16368], [16367], [16368], [16385], [16386], [16391]
	034188	Micro-Tronics/ BRC50703-02	Notch Filter, SB:5.150- 5.350GHz, to 11GHz	26-APR-2005	26-APR-2006	[16366], [16367], [16368], [16385], [16386]
	034189	Micro-Tronics/ BRC50704-02	Notch Filter, SB:5.470- 5.725GHz, to 12GHz	26-APR-2005	26-APR-2006	[16366], [16367], [16368], [16385], [16386]

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034304	Micro-Tronics/ BRM50702-02	Band Reject Filter	26-APR-2005	26-APR-2006	[16366], [16367], [16368], [16385], [16386], [16396],
035040	Micro-Tronics/ HPM50112-02	Hi Pass Filter	26-APR-2005	26-APR-2006	[16366], [16367], [16368], [16385], [16386]
035268	Agilent/ E4440A	Precision Spectrum Analyzer	12-APR-2005	12-APR-2006	[16118], [16140], [16145], [16317], [16318], [16366], [16367], [16368], [16385], [16386], [16391]

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