

TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS

To: FCC Part 15.247: 2006 (Subpart C)

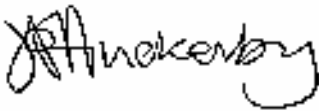
Test Report Serial No:
RFI/RPTE1/RP48734JD01A

**This Test Report Is Issued Under The Authority
Of Andrew Brown, Operations Manager:**

pp.

A handwritten signature in blue ink, appearing to read 'A. Brown', enclosed within a faint blue oval.

Tested By: Jamie Huckerby

A handwritten signature in black ink, appearing to read 'J. Huckerby', enclosed within a faint black oval.

Checked By: Michael Derby

A handwritten signature in blue ink, appearing to read 'M. Derby', enclosed within a faint blue oval.

Report Copy No: PDF01

Issue Date: 08 January 2007

Test Dates: 27 November 2006 to 12 December 2006

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This report may be copied in full. The results in this report apply only to the sample(s) tested.

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Registered in England and Wales. Company number: 2117901

Test of: Zinwave Ltd

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Test of: Zinwave Ltd
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1. Client Information

Company Name:	Zinwave Ltd
Address:	Harston Mill Harston Cambridge CB2 5GG UK
Contact Name:	Mr J Ure

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2. Equipment Under Test (EUT)

The following information (with the exception of the Date of Receipt) has been supplied by the client:

2.1. Identification of Equipment Under Test (EUT)

Description:	Hub Unit
Brand Name:	Zinwave
Model Name or Number:	2700 DAS
Unique Type Identification:	None Stated
Serial Number:	0005256380
Hardware Revision:	1.6
Software Revision:	1.5
FCC ID Number:	UPO2700
Country of Manufacture:	UK
Date of Receipt:	27 November 2006

Description:	AU Unit
Brand Name:	Zinwave
Model Name or Number:	2700 DAS
Unique Type Identification:	AU1
Serial Number:	0005256272
Hardware Revision:	1.8
Software Revision:	1.5
FCC ID Number:	UPO2760
Country of Manufacture:	UK
Date of Receipt:	27 November 2006

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Identification of Equipment Under Test (EUT) (Continued)

Description:	AU Unit
Brand Name:	Zinwave
Model Name or Number:	2700 DAS
Unique Type Identification:	AU3
Serial Number:	0005256326
Hardware Revision:	1.8
Software Revision:	1.8
FCC ID Number:	UPO2760
Country of Manufacture:	UK
Date of Receipt:	27 November 2006

Description:	Antenna Unit
Brand Name:	Zinwave
Model Name or Number:	2700 DAS
Unique Type Identification:	AU2
Serial Number:	0005256368
Hardware Revision:	1.8
Software Revision:	1.8
FCC ID Number:	UPO2760
Country of Manufacture:	UK
Date of Receipt:	27 November 2006

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Identification of Equipment Under Test (EUT) (Continued)

Description:	AU Unit (s)
Brand Name:	Zinwave
Model Name or Number:	2700 DAS
Unique Type Identification:	AU 4
Serial Number:	0005256344
Hardware Revision:	1.8
Software Revision:	1.8
FCC ID Number:	UPO2760
Country of Manufacture:	UK
Date of Receipt:	27 November 2006

Description:	AU Unit (s)
Brand Name:	Zinwave
Model Name or Number:	2700 DAS
Unique Type Identification:	AU 5
Serial Number:	0005256317
Hardware Revision:	1.8
Software Revision:	1.8
FCC ID Number:	UPO2760
Country of Manufacture:	UK
Date of Receipt:	27 November 2006

Description:	AU Unit (s)
Brand Name:	Zinwave
Model Name or Number:	2700 DAS
Unique Type Identification:	AU 6
Serial Number:	0005256327
Hardware Revision:	1.8
Software Revision:	1.8
FCC ID Number:	UPO2760
Country of Manufacture:	UK
Date of Receipt:	27 November 2006

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Identification of Equipment Under Test (EUT) (Continued)

Description:	AU Unit (s)
Brand Name:	Zinwave
Model Name or Number:	2700 DAS
Unique Type Identification:	AU 8
Serial Number:	0005256279
Hardware Revision:	1.8
Software Revision:	1.8
FCC ID Number:	UPO2760
Country of Manufacture:	UK
Date of Receipt:	27 November 2006

Description:	AU Unit (s)
Brand Name:	Zinwave
Model Name or Number:	2700 DAS
Unique Type Identification:	AU 10
Serial Number:	0005256346
Hardware Revision:	1.8
Software Revision:	1.8
FCC ID Number:	UPO2760
Country of Manufacture:	UK
Date of Receipt:	27 November 2006

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Identification of Equipment Under Test (EUT) (Continued)

Description:	WiFi Access Point
Brand Name:	Cisco
Model Name or Number:	Aironet 1200
Unique Type Identification:	None Stated
Serial Number:	FTX1037R0AJ
Hardware Revision:	None Stated
Software Revision:	None Stated
FCC ID Number:	LDK102054
Country of Manufacture:	USA
Date of Receipt:	27 November 2006

Description:	WiFi Access Point
Brand Name:	Cisco
Model Name or Number:	Aironet 1200
Unique Type Identification:	None Stated
Serial Number:	FTX1037E0DG
Hardware Revision:	None Stated
Software Revision:	None Stated
FCC ID Number:	LDK102054
Country of Manufacture:	USA
Date of Receipt:	27 November 2006

Description:	WiFi Access Point
Brand Name:	Cisco
Model Name or Number:	Aironet 1200
Unique Type Identification:	None Stated
Serial Number:	FTX1037E0DD
Hardware Revision:	None Stated
Software Revision:	None Stated
FCC ID Number:	LDK102054
Country of Manufacture:	USA
Date of Receipt:	27 November 2006

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2.2. Accessories

No accessories were supplied with the EUT.

2.3. Description of EUT

The equipment under test is an 802.11g Access Point and a Distributed Antenna System (DAS). The DAS can handle a multitude of technologies, in this instance the technology is an 802.11g signal. The focus of the testing was for the Access Point and DAS to work solely over the frequency range of 2.4 GHz to 2.4835 GHz which covers the 802.11g band.

For reference purposes only, a GSM 850 downlink signal has been included in this report to simulate further loading of the DAS.

2.4. Modifications Incorporated in EUT

During testing, it was discovered that Antenna Unit (AU) 9 (S/N: 0005256371) was faulty as it was producing an inter-modulation product at 1.5 GHz. This AU was replaced by an identical unit (AU 10 S/N: 0005256346) and was used for the remainder of the testing. At the time the fault was discovered, only radiated emissions had been performed up to 2 GHz, the compliant parts of this testing were then repeated with the new AU to confirm the compliant results.

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2.5. Additional Information Related to Testing

Power Supply Requirement:	Nominal 115 V, 60 Hz AC Mains Supply		
Intended Operating Environment:	Residential Commercial Light Industry Heavy Industry		
Equipment Category:	Wireless LAN Access Point with Distributed Antenna System (DAS)		
Type of Unit:	Base Station (Fixed Use)		
Transmit Frequency Range:	2400 MHz to 2483.5 MHz		
Transmit Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	1	2412
	Middle	7	2442
	Top	11	2462
Receive Frequency Range:	2400 MHz to 2483.5 MHz		
Receive Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	1	2412
	Middle	7	2442
	Top	11	2462
Maximum Peak Power Output (EIRP)	+14.1 dBm (measured)		

2.6. Port Identification

Port	Description
1	4 x RF Input Ports
2	4 x RF Output Ports
3	8 x Fibre I/O ports
4	1 x Ethernet Port
5	1 x Serial Port

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2.7. Support Equipment

The following support equipment was used to exercise the EUT during testing:

Description:	Laptop
Brand Name:	Dell
Model Name or Number:	Inspiron 1300
Serial Number:	CN-0RJ272-70166-67M
Cable Length and Type:	N/A – Uses 802.11g wireless link
Connected to Port:	RF antenna

Description:	Laptop
Brand Name:	Dell
Model Name or Number:	Inspiron 1300
Serial Number:	CN-0RJ272-70166-67M-06MU
Cable Length and Type:	N/A – Uses 802.11g wireless link
Connected to Port:	RF antenna

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3. Test Specification, Methods and Procedures

3.1. Test Specification

Reference:	FCC Part 15.247: 2006 Subpart C
Title:	Code of Federal Regulations, Part 15.247 (47CFR15) (Intentional Radiators operating within the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz)

3.2. Methods and Procedures

The methods and procedures used were as detailed in:

ANSI C63.2 (1987)

Title: American National Standard for Instrumentation - Electromagnetic noise and field strength.

ANSI C63.4 (2003)

Title: American National Standard Methods of Measurement of Electromagnetic Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

ANSI C63.5 (1988)

Title: American National Standard for the Calibration of antennas used for Radiated Emission measurements in Electromagnetic Interference (EMI) control.

ANSI C63.7 (1988)

Title: American National Standard Guide for Construction of Open Area Test Sites for performing Radiated Emission Measurements.

CISPR 16-1: (1999)

Title: Specification For Radio Disturbance and Immunity Measuring Apparatus and Methods. Part 1: Radio Disturbance and Immunity Measuring Apparatus.

3.3. Definition of Measurement Equipment

The measurement equipment used complied with the requirements of the standards referenced in the methods & procedures section above. Appendix 1 contains a list of the test equipment used.

4. Deviations from the Test Specification

None.

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5. Operation of the EUT during Testing

5.1. Operating Modes

The EUT was tested in the following operating modes, unless otherwise stated:

Operating at maximum output power with all gain settings set to maximum.

5.2. Configuration and Peripherals

The EUT was tested in the following configurations:

- 1- Running 2x4 configuration with 1x802.11g signal – For all test cases
- 2- Running 2x4 configuration with 3x802.11g signals – For Conducted Emissions testing only
- 3- Running 2x4 configuration with 3x802.11g signals and a transmitter GSM850 signal – For Radiated and Conducted Emissions testing only

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6. Summary of Test Results

Range of Measurements	Specification Reference	Port Type	Compliance Status
Idle Mode AC Conducted Emissions (150 kHz to 30 MHz)	Section 15.107	AC Mains	Complied
Idle Mode Radiated Spurious Emissions	Section 15.109	Antenna	Complied
Transmitter AC Conducted Emissions (150 kHz to 30 MHz)	Section 15.207	AC Mains	Complied
Transmitter Minimum 6 dB Bandwidth	Section 15.247(a)(2)	Antenna Terminals	Complied
Transmitter 20 dB Bandwidth	Section 2.1049	Antenna Terminals	Complied
Transmitter Peak Power Spectral Density	Section 15.247(e)	Antenna Terminals	Complied
Transmitter Maximum Peak Output Power	Section 15.247(b)(3)	Antenna Terminals	Complied
Transmitter Conducted Emissions	Section 15.247 (d)	Antenna Terminals	Complied
Transmitter Radiated Emissions	Sections 15.247(d) & 15.209(a)	Antenna	Complied
Transmitter Band Edge Conducted Emissions	Section 15.247(d)	Antenna Terminals	Complied
Transmitter Band Edge Radiated Emissions	Sections 15.247(d) & 15.209(a)	Antenna	Complied

6.1. Location of Tests

All the measurements described in this report were performed at the premises of RFI Global Services Ltd, Ewhurst Park, Ramsdell, Basingstoke, Hampshire, RG26 5RQ.

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7. Measurements, Examinations and Derived Results

7.1. General Comments

This section contains test results only.

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to section 8 for details of measurement uncertainties.

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7.2. Test Results

7.2.1. Receiver AC Conducted Spurious Emissions: Section 15.107

The EUT was configured for ac conducted emission measurements, as described in section 9 of this report. Tests were performed to identify the maximum emission levels present on the ac mains line of the EUT.

Results: AU PSU Rx Mode

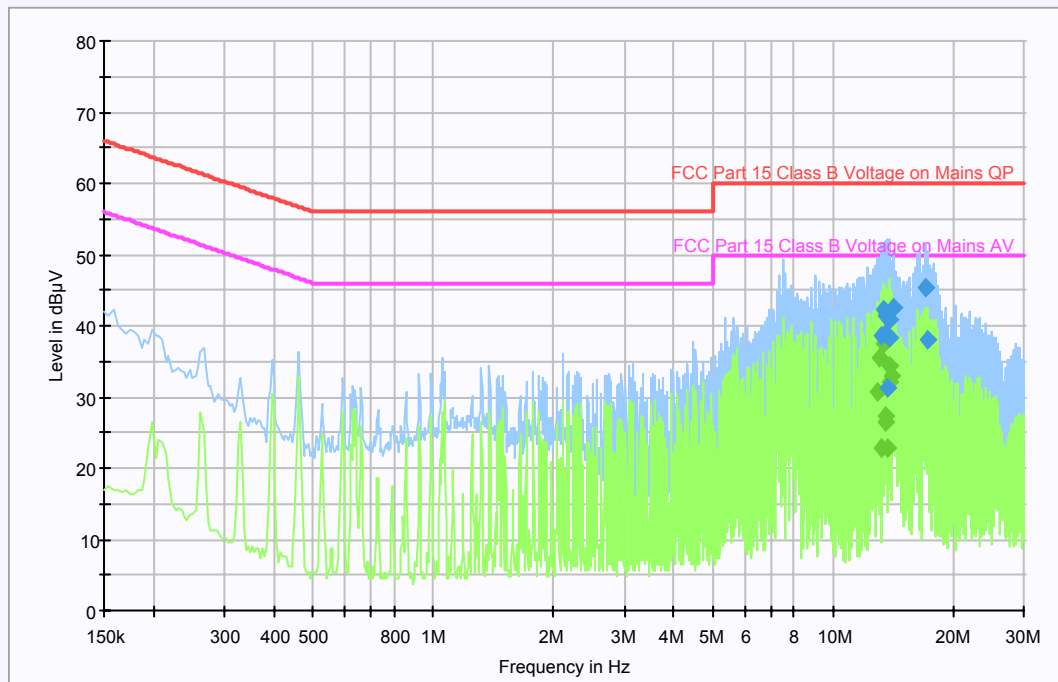
Quasi-Peak Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
13.242	Live	38.7	60.0	21.3	Complied
13.374	Neutral	42.3	60.0	17.7	Complied
13.490	Live	41.3	60.0	18.7	Complied
13.558	Live	38.8	60.0	21.2	Complied
13.670	Neutral	31.3	60.0	28.7	Complied
13.794	Live	38.4	60.0	21.6	Complied
13.910	Neutral	40.8	60.0	19.2	Complied
14.226	Live	42.6	60.0	17.4	Complied
17.034	Live	45.3	60.0	14.7	Complied
17.246	Live	38.0	60.0	22.0	Complied

Average Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
12.946	Live	30.6	50.0	19.4	Complied
13.078	Neutral	35.4	50.0	14.6	Complied
13.250	Live	22.9	50.0	27.1	Complied
13.374	Neutral	37.4	50.0	12.6	Complied
13.494	Live	26.6	50.0	23.4	Complied
13.550	Live	27.4	50.0	22.6	Complied
13.674	Neutral	22.9	50.0	27.1	Complied
13.802	Live	32.3	50.0	17.7	Complied
13.914	Neutral	34.3	50.0	15.7	Complied
13.986	Neutral	32.8	50.0	17.2	Complied

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Receiver AC Conducted Spurious Emissions: Section 15.107 (Continued)

Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying tables.

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Receiver AC Conducted Spurious Emissions: Section 15.107 (Continued)

The EUT was configured for ac conducted emission measurements, as described in section 9 of this report. Tests were performed to identify the maximum emission levels present on the ac mains line of the EUT.

Results: HU PSU Rx Mode

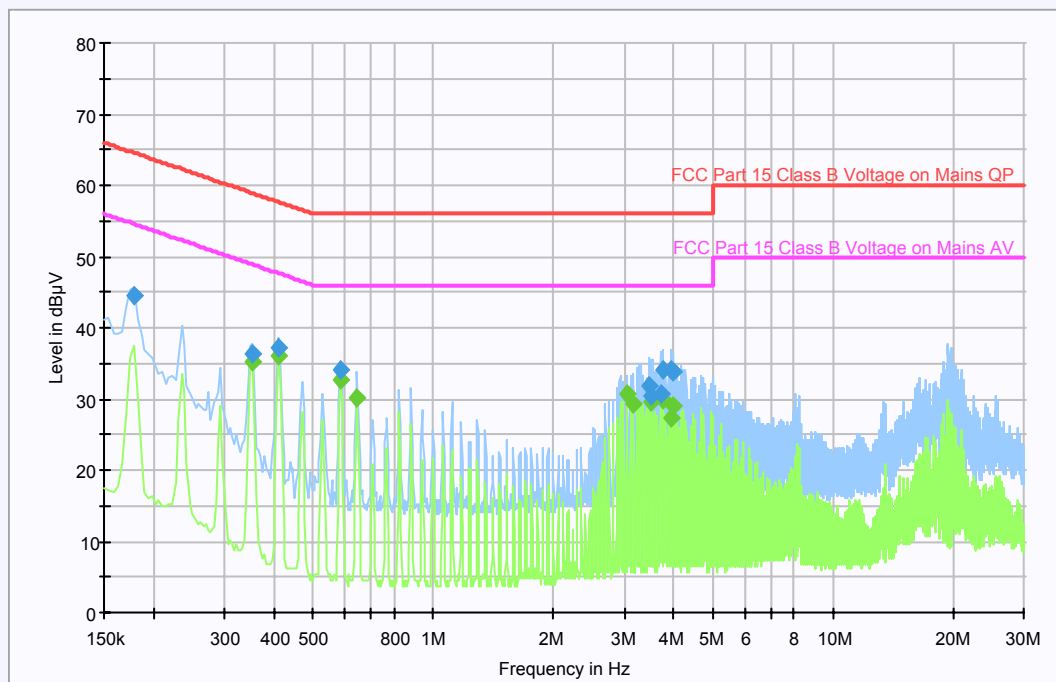
Quasi-Peak Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.178	Neutral	44.4	64.6	20.2	Complied
0.354	Neutral	36.4	58.9	22.5	Complied
0.410	Neutral	37.1	57.6	20.5	Complied
0.586	Neutral	34.0	56.0	22.0	Complied
3.462	Live	31.9	56.0	24.1	Complied
3.522	Live	30.4	56.0	25.6	Complied
3.698	Live	30.8	56.0	25.2	Complied
3.754	Live	34.1	56.0	21.9	Complied
3.930	Neutral	34.0	56.0	22.0	Complied
3.990	Neutral	33.7	56.0	22.3	Complied

Average Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.354	Neutral	35.3	48.9	13.6	Complied
0.410	Neutral	36.1	47.6	11.5	Complied
0.586	Neutral	32.8	46.0	13.2	Complied
0.646	Neutral	30.1	46.0	15.9	Complied
3.050	Live	30.7	46.0	15.3	Complied
3.170	Live	29.4	46.0	16.6	Complied
3.518	Live	29.7	46.0	16.3	Complied
3.754	Neutral	29.8	46.0	16.2	Complied
3.930	Neutral	27.4	46.0	18.6	Complied
3.990	Neutral	29.1	46.0	16.9	Complied

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Receiver AC Conducted Spurious Emissions: Section 15.107 (Continued)

Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying tables.

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7.2.2. Receiver Radiated Spurious Emissions: Section 15.109

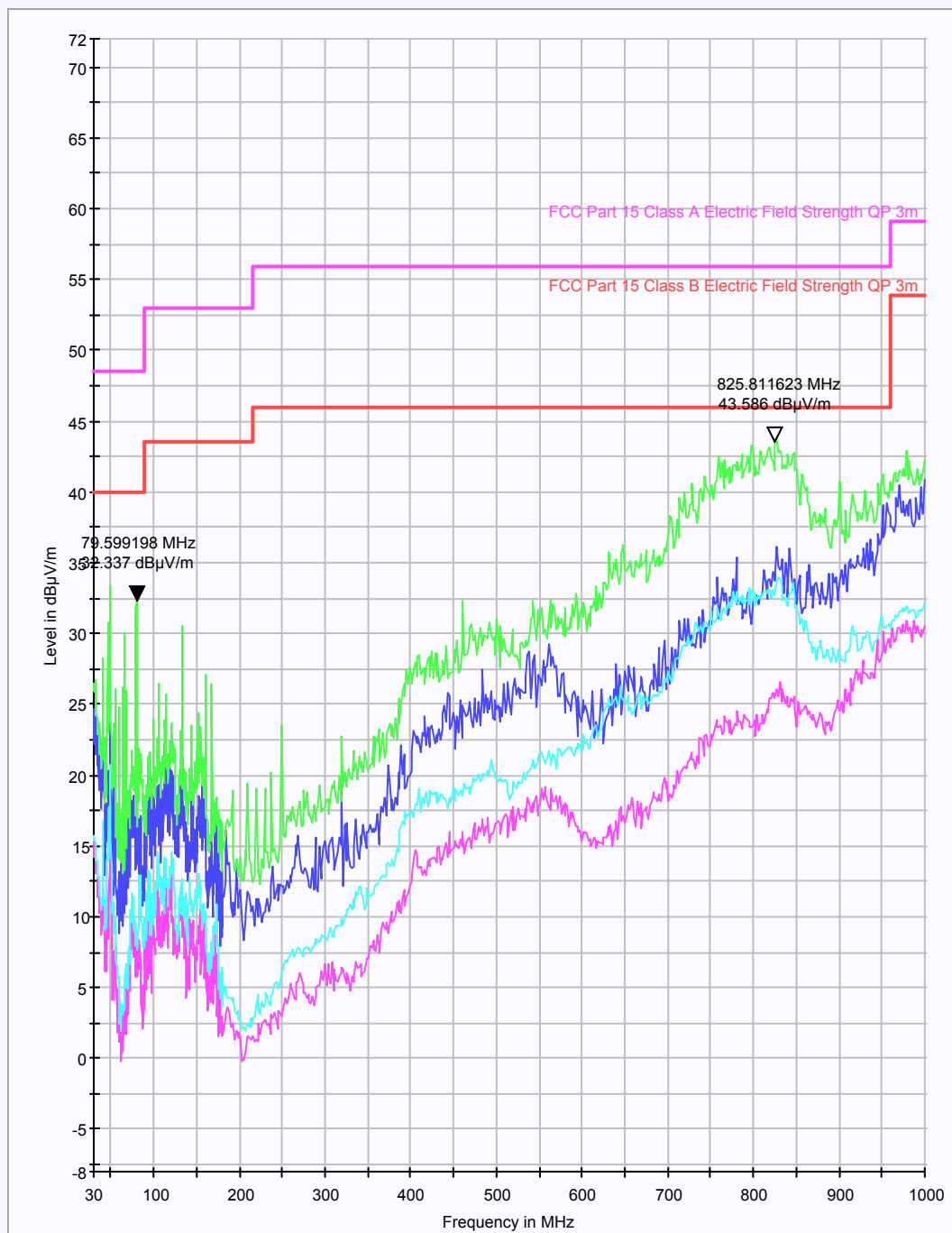
The EUT was configured for radiated emission testing, as described in section 9 of this report.

Tests were performed to identify the maximum receiver or standby radiated emission levels.

Results:**Electric Field Strength Measurements (Frequency Range: 30 MHz to 1000 MHz)**

Frequency (MHz)	Antenna Polarity	Q-P Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
48.938	Horizontal	22.9	40.0	17.1	Complied
79.299	Horizontal	23.5	40.0	16.5	Complied
133.106	Vertical	28.6	43.5	14.9	Complied
461.002	Vertical	41.6	46.0	4.4	Complied
825.020	Vertical	21.6	46.0	24.4	Complied

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Receiver Radiated Spurious Emissions: Section 15.109 (Continued)

Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying tables.

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7.2.3. Receiver Radiated Spurious Emissions: Section 15.109**Results:****Electric Field Strength Measurements (Frequency Range: 1 GHz to 12.75 GHz)****Highest Peak Level:**

Frequency (GHz)	Antenna Polarity	Detector Level (dB μ V)	Transducer Factor (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2.5456	Horizontal	43.8	-11.0	32.8	74.0	41.2	Complied

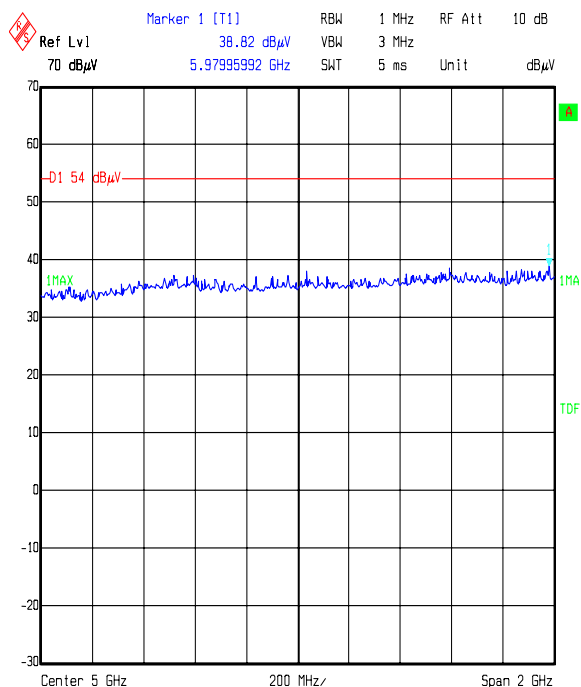
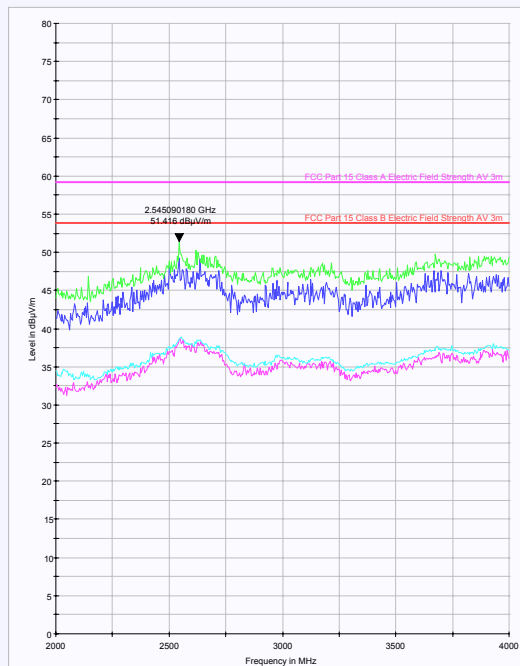
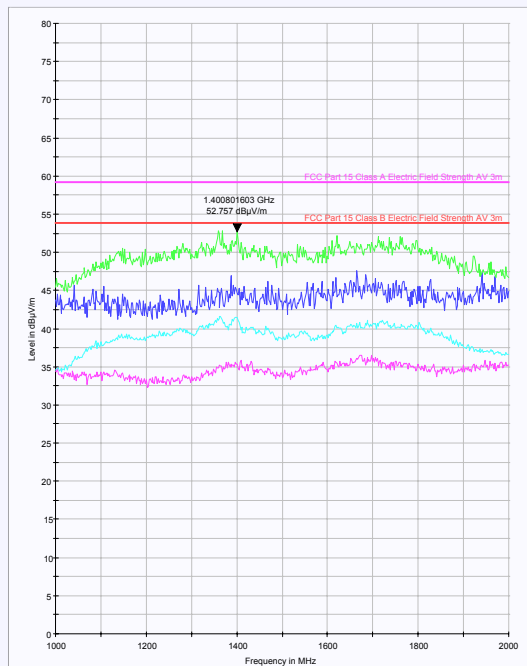
Highest Average Level:

Frequency (GHz)	Antenna Polarity	Detector Level (dB μ V)	Transducer Factor (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2.5456	Horizontal	43.8	-11.0	32.8	54.0	21.2	Complied

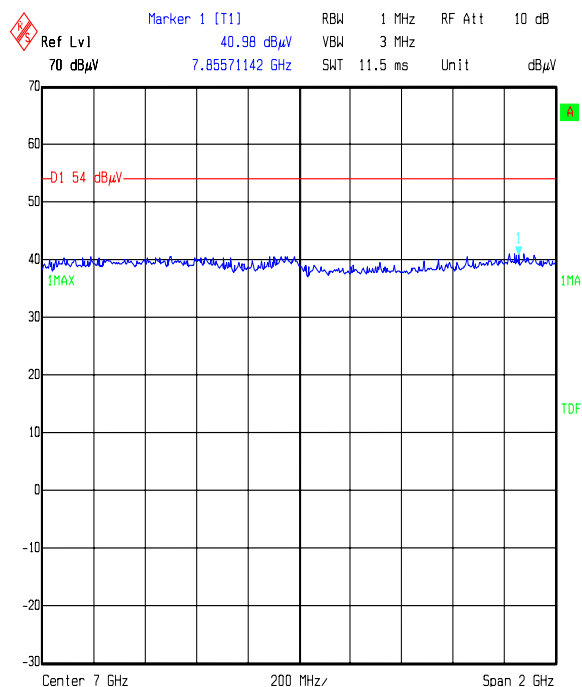
Note(s):

1. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above. The peak level was compared to the average limit as opposed to being compared to the peak limit because this is the more onerous limit.

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Receiver Radiated Spurious Emissions: Section 15.109 (Continued)

Comment A: Standby Mode
Date: 05.DEC.2006 13:08:55



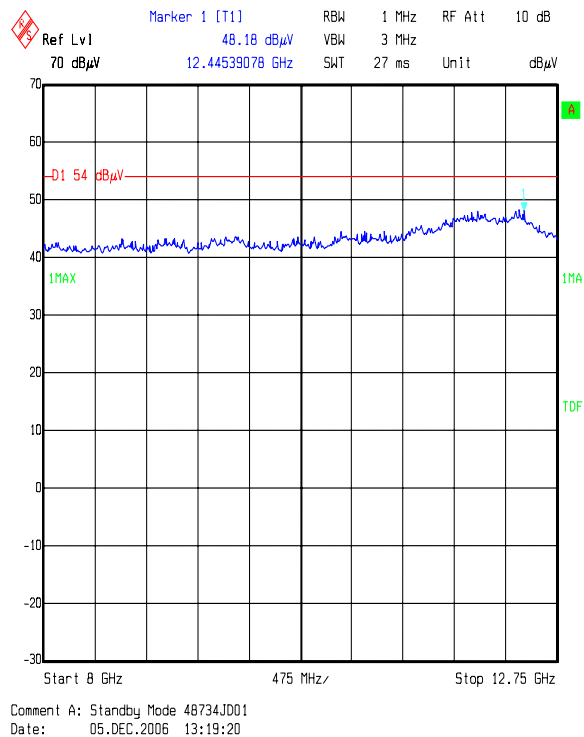
Comment A: Standby Mode
Date: 05.DEC.2006 13:13:13

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

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Receiver Radiated Spurious Emissions: Section 15.109 (Continued)

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

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7.2.4. Transmitter AC Conducted Spurious Emissions: Section 15.207

The EUT was configured for ac conducted emission measurements, as described in section 9 of this report.

Tests were performed to identify the maximum emission levels present on the ac mains line of the EUT.

Results: HU PSU Tx Mode

Quasi-Peak Detector Measurements on Live and Neutral Lines

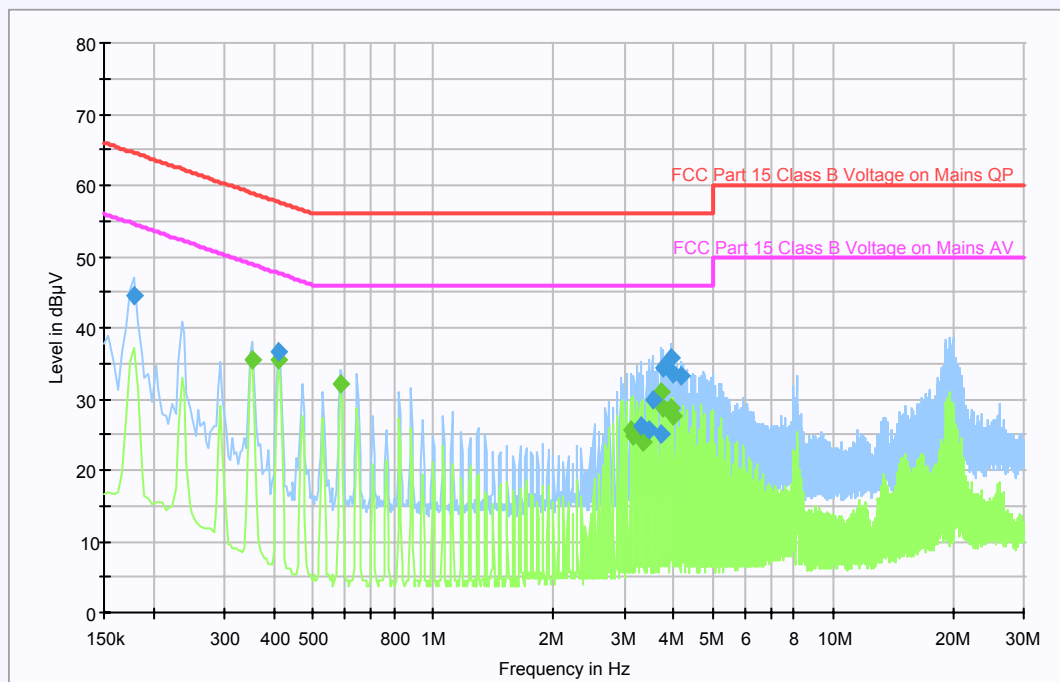
Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.178	Neutral	44.6	64.6	20.0	Complied
0.410	Neutral	36.5	57.6	21.1	Complied
3.294	Neutral	26.2	56.0	29.8	Complied
3.470	Neutral	25.7	56.0	30.3	Complied
3.526	Neutral	30.0	56.0	26.0	Complied
3.706	Neutral	25.2	56.0	30.8	Complied
3.758	Neutral	34.3	56.0	21.7	Complied
3.934	Neutral	35.9	56.0	20.1	Complied
3.994	Live	33.5	56.0	22.5	Complied
4.170	Neutral	33.3	56.0	22.7	Complied

Average Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.354	Neutral	35.4	48.9	13.5	Complied
0.410	Neutral	35.6	47.6	12.0	Complied
0.586	Neutral	32.3	46.0	13.8	Complied
3.114	Neutral	25.7	46.0	20.3	Complied
3.174	Live	24.7	46.0	21.3	Complied
3.350	Live	23.9	46.0	22.1	Complied
3.698	Neutral	30.9	46.0	15.1	Complied
3.758	Neutral	28.9	46.0	17.1	Complied
3.934	Neutral	28.9	46.0	17.1	Complied
3.994	Neutral	27.6	46.0	18.4	Complied

Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

Transmitter AC Conducted Spurious Emissions: Section 15.207 (Continued)



Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying tables.

Test of: Zinwave Ltd
 Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
 To: FCC Part 15.247: 2006 (Subpart C)

7.2.5. Transmitter AC Conducted Spurious Emissions: Section 15.207 (Continued)

The EUT was configured for ac conducted emission measurements, as described in section 9 of this report.

Tests were performed to identify the maximum emission levels present on the ac mains line of the EUT.

Results: AU PSU Tx Mode

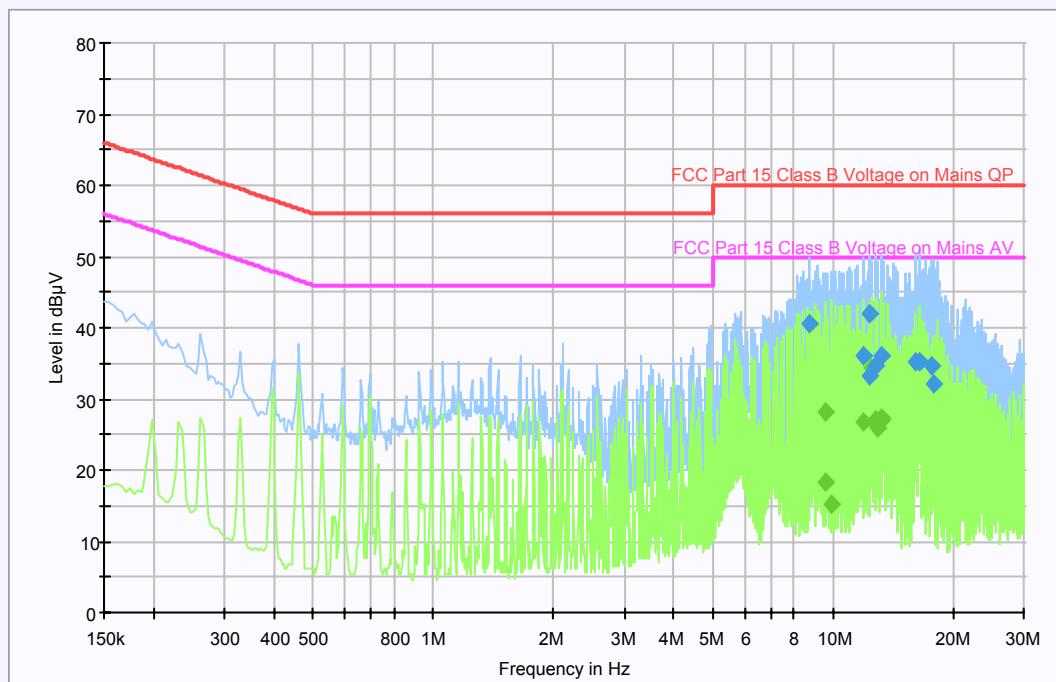
Quasi-Peak Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
8.710	Neutral	40.5	60.0	19.5	Complied
11.966	Neutral	36.2	60.0	23.8	Complied
12.270	Live	41.9	60.0	18.1	Complied
12.322	Live	33.3	60.0	26.7	Complied
12.790	Neutral	34.7	60.0	25.3	Complied
13.190	Neutral	35.9	60.0	24.1	Complied
16.050	Live	35.2	60.0	24.8	Complied
16.462	Neutral	35.3	60.0	24.7	Complied
17.594	Live	34.8	60.0	25.2	Complied
17.830	Neutral	32.0	60.0	28.0	Complied

Average Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
9.530	Live	28.2	50.0	21.8	Complied
9.614	Neutral	18.4	50.0	31.6	Complied
9.954	Neutral	15.3	50.0	34.7	Complied
11.858	Neutral	26.7	50.0	23.3	Complied
12.434	Neutral	34.3	50.0	15.7	Complied
12.738	Neutral	26.9	50.0	23.1	Complied
12.790	Neutral	26.6	50.0	23.4	Complied
12.906	Neutral	26.0	50.0	24.0	Complied
13.202	Neutral	27.0	50.0	23.0	Complied
13.258	Live	27.4	50.0	22.6	Complied

Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

Receiver AC Conducted Spurious Emissions: Section 15.107 (Continued)

Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying tables.

Test of: Zinwave Ltd
 Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
 To: FCC Part 15.247: 2006 (Subpart C)

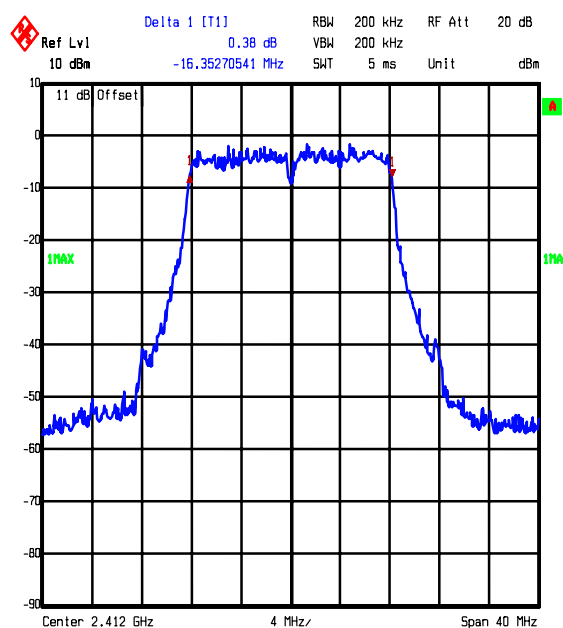
7.2.6. Transmitter Minimum 6 dB Bandwidth: Section 15.247(a)(2)

The EUT was configured for 6 dB bandwidth measurements, as described in section 9 of this report.

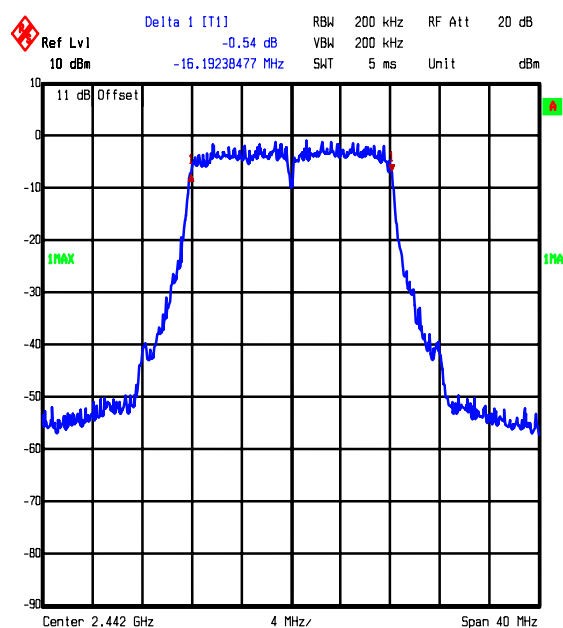
Tests were performed to identify the 6 dB bandwidth.

Results:

Channel	Transmitter 6 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
Bottom	16.353	≥ 0.5	15.853	Complied
Middle	16.192	≥ 0.5	15.692	Complied
Top	16.032	≥ 0.5	15.532	Complied



Date: 05.JAN.2007 10:10:30

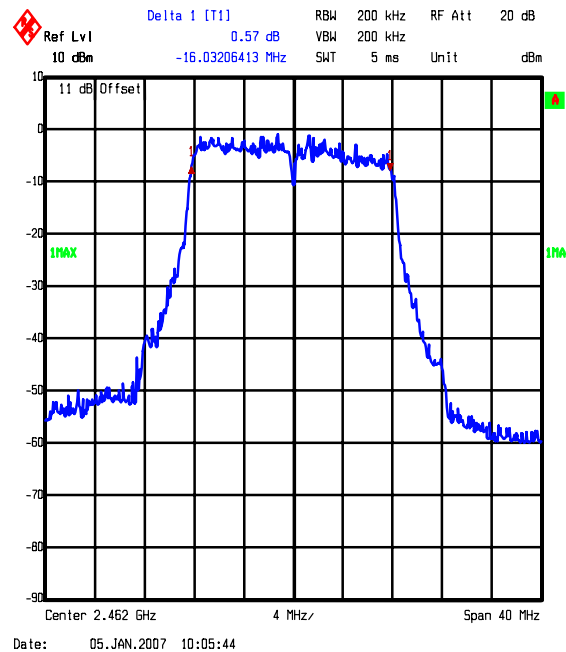


Date: 05.JAN.2007 10:08:12

Test of: Zinwave Ltd

Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS

To: FCC Part 15.247: 2006 (Subpart C)

Transmitter Minimum 6 dB Bandwidth: Section 15.247(a)(2) (Continued)

Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

7.2.7. Transmitter 20 dB Bandwidth: Section 2.1049

The EUT was configured for 20 dB bandwidth measurements, as described in section 9 of this report.

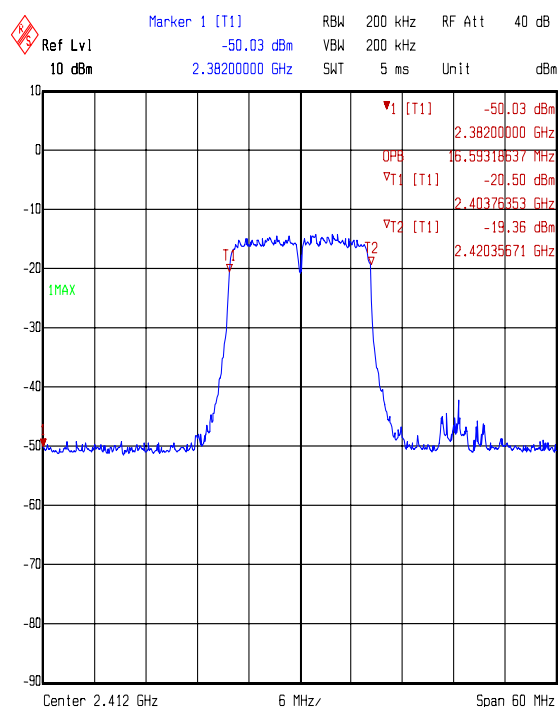
Tests were performed to identify the 20 dB bandwidth.

The final occupied bandwidth of the system is the measurement after the DAS. For information, a measurement is included of the access point output, before input to the DAS.

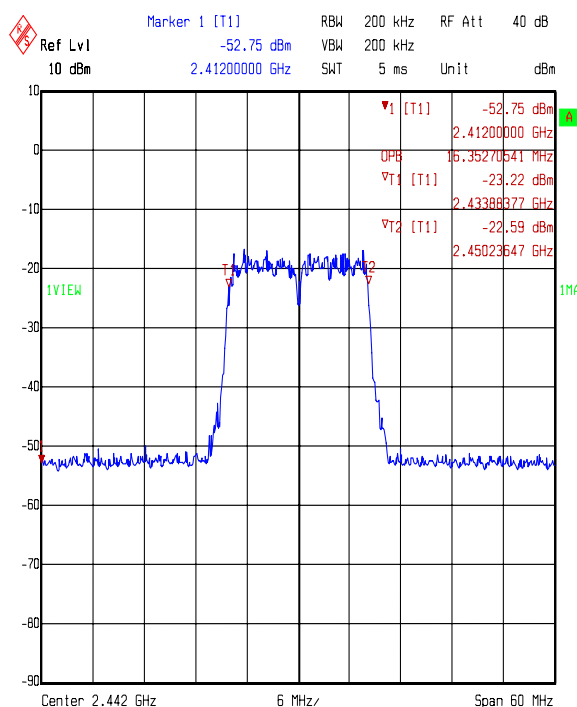
Results:

Channel	Transmitter 20 dB Bandwidth (kHz) (Output of AP, before DAS)	Transmitter 20 dB Bandwidth (kHz) (After DAS)
Bottom	16353	16593
Middle	16353	16353
Top	16353	16353

Output of DAS:



Date: 11.DEC.2006 17:09:54



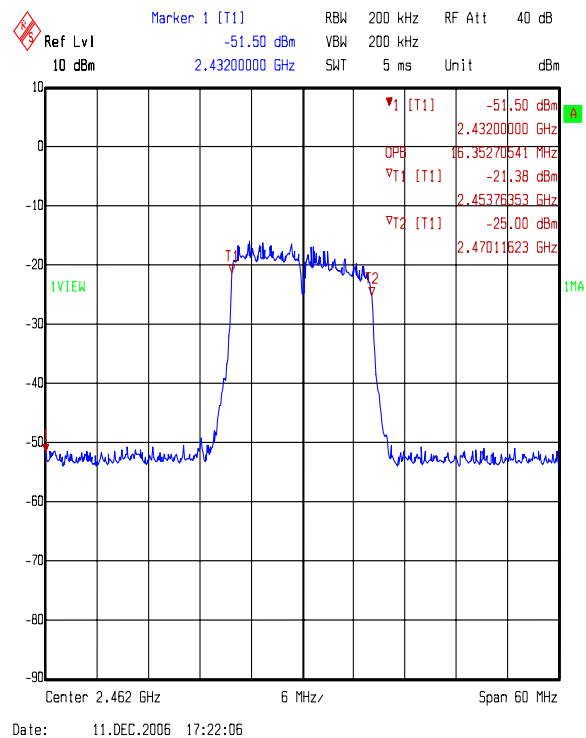
Date: 11.DEC.2006 17:20:02

Test of: **Zinwave Ltd**

Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS

To: FCC Part 15.247: 2006 (Subpart C)

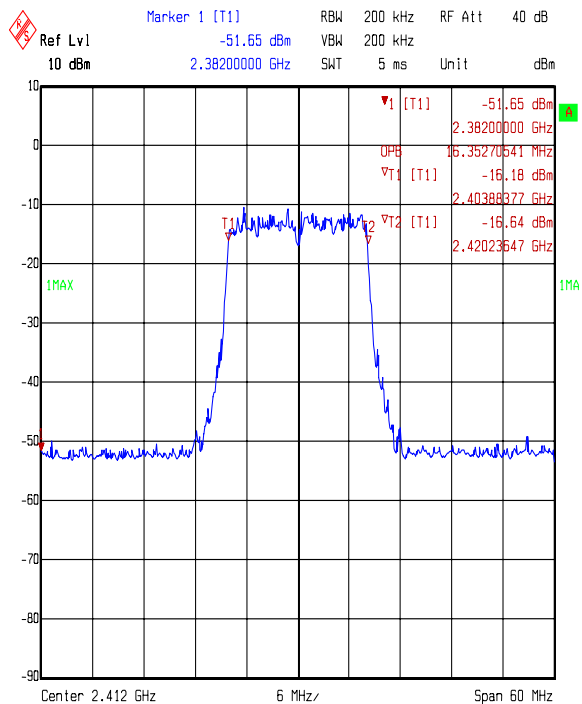
Transmitter 20 dB Bandwidth: Section 2.1049 (Continued)



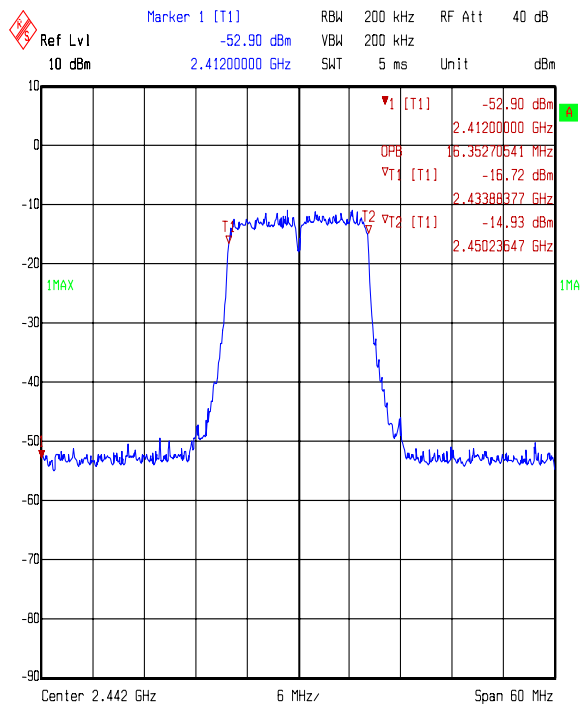
Test of: Zinwave Ltd

Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS

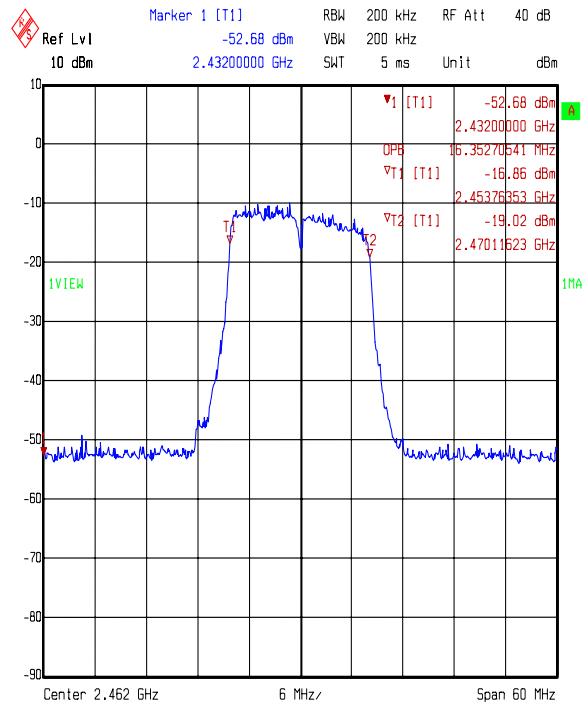
To: FCC Part 15.247: 2006 (Subpart C)

Transmitter 20 dB Bandwidth: Section 2.1049 (Continued)**Output of Access Point, before DAS:**

Date: 11.DEC.2006 17:12:50



Date: 11.DEC.2006 17:17:11



Date: 11.DEC.2006 17:23:52

Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

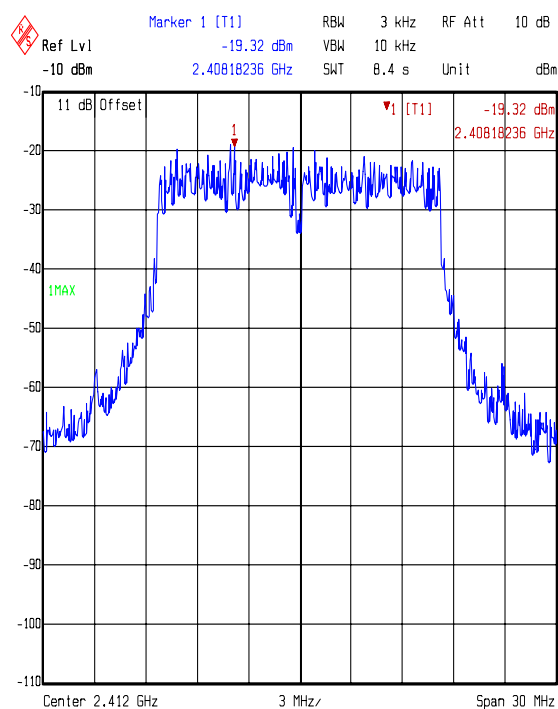
7.2.8. Transmitter Peak Power Spectral Density: Section 15.247(e)

The EUT was configured for transmitter peak power spectral density measurements, as described in section 9 of this report.

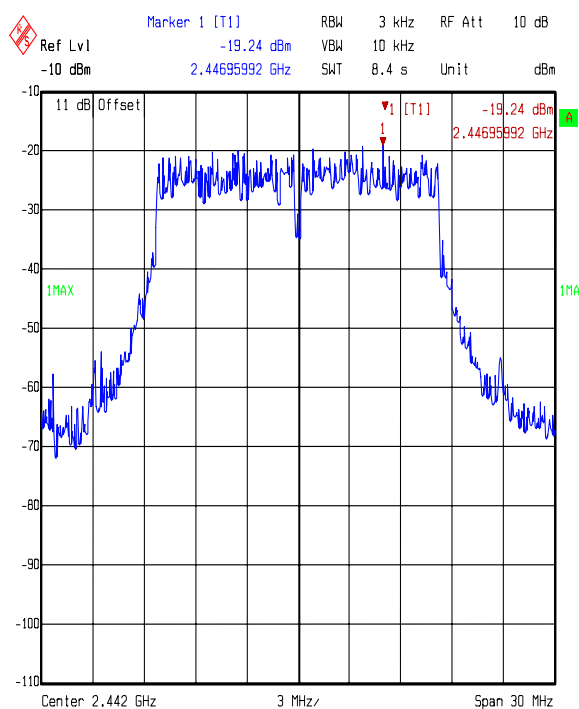
Tests were performed to identify the transmitter peak power spectral density.

Results:

Channel	Output Power (dBm/3 kHz)	Limit (dBm/3 kHz)	Margin (dB)	Result
Bottom	-19.32	8.0	27.32	Complied
Middle	-19.24	8.0	27.24	Complied
Top	-19.11	8.0	27.11	Complied

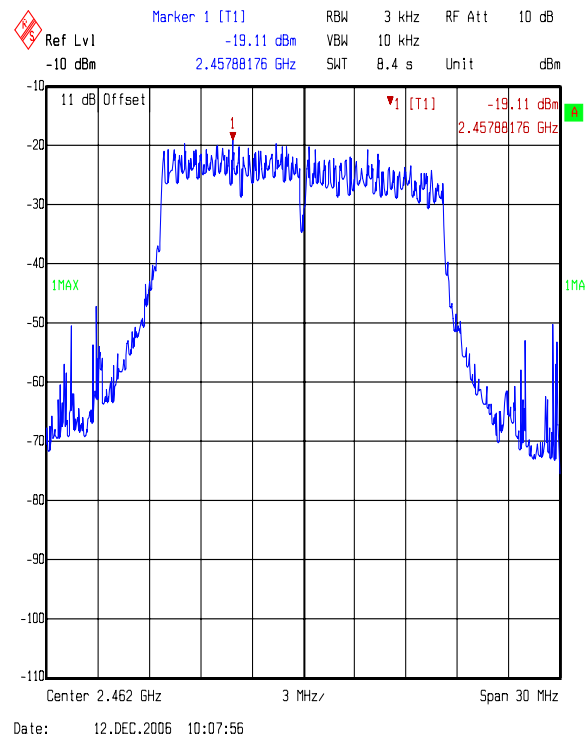


Date: 12.DEC.2006 10:12:06



Date: 12.DEC.2006 10:10:43

Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

Transmitter Peak Power Spectral Density: Section 15.247(e) (Continued)

Test of: Zinwave Ltd
 Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
 To: FCC Part 15.247: 2006 (Subpart C)

7.2.9. Transmitter Maximum Peak Output Power: Section 15.247(b)(3)

The EUT was configured for transmitter peak output power measurements, as described in section 9 of this report.

Tests were performed to identify the transmitter maximum peak output power (ERP) of the EUT.

Results:

AC Powered Devices

Channel	Input Voltage (AC)	Conducted RF O/P Power (dBm)	Stated Antenna Gain (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	93.50	+6.0	8.0	+14.0	30.0	16.0	Complied
Bottom	110.00	+6.1	8.0	+14.1	30.0	15.9	Complied
Bottom	126.50	+6.0	8.0	+14.0	30.0	16.0	Complied
Middle	93.50	+6.0	8.0	+14.0	30.0	16.0	Complied
Middle	110.00	+6.0	8.0	+14.0	30.0	16.0	Complied
Middle	126.50	+6.1	8.0	+14.1	30.0	15.9	Complied
Top	93.50	+6.1	8.0	+14.1	30.0	15.9	Complied
Top	110.00	+6.0	8.0	+14.0	30.0	16.0	Complied
Top	126.50	+6.0	8.0	+14.0	30.0	16.0	Complied

Note(s):

- As per the method stated in section 15.247(b)(3), the standard antenna gain of the EUT is 8 dBi which, added to the highest (worst case) measured conducted output power of +6.1 dBm (from the table above) gives a de facto EIRP of +14.1 dBm. This is in compliance with the requirements of section 15.247(b)(3) for de facto EIRP limitation, i.e. 1 Watt (30 dBm).

Test of: Zinwave Ltd
 Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
 To: FCC Part 15.247: 2006 (Subpart C)

7.2.10. Transmitter Conducted Emissions: Section 15.247(d) – 2x4 Configuration
3 x Access Point on dependant channel, 1 x GSM 850

The EUT was configured for transmitter conducted emissions measurements, as described in section 9 of this report.

Tests were performed to identify the maximum transmitter conducted emission levels.

The limit lines shown in the plots below are set to a level 20 below the measured highest fundamental peak.

Results: Standalone System

Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
615.9	-53.0	-13.0	40.0	Complied
3287.0	-39.2	-13.0	26.2	Complied

Middle Channel

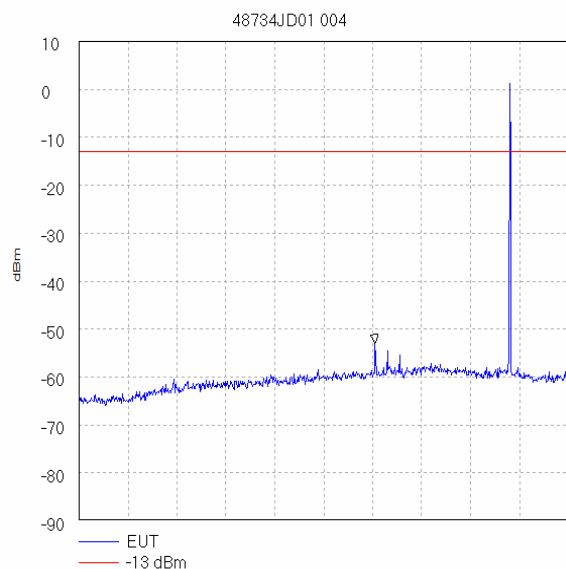
Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
616.85	-52.3	-13.0	39.3	Complied
3327.0	-40.0	-13.0	27.0	Complied

Top Channel

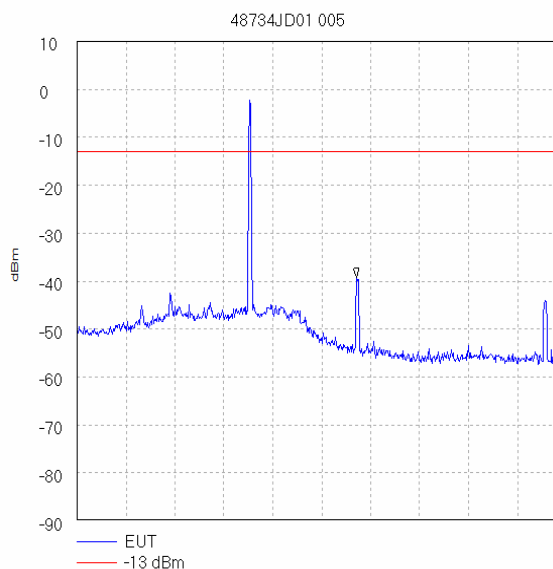
Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
641.10	-53.0	-13.0	40.0	Complied
3340.0	-37.0	-13.0	24.0	Complied

Note: The emissions plots show a signal at 850 MHz. This is because while the access point was operating at 2.4 GHz, the DAS was also operating with a separate 850 MHz GSM signal. The DAS has been separately tested with a range of GSM and other signals, to FCC parts 22, 24 and 90. The GSM 850 MHz signal was added to ensure no inter-modulation products were generated.

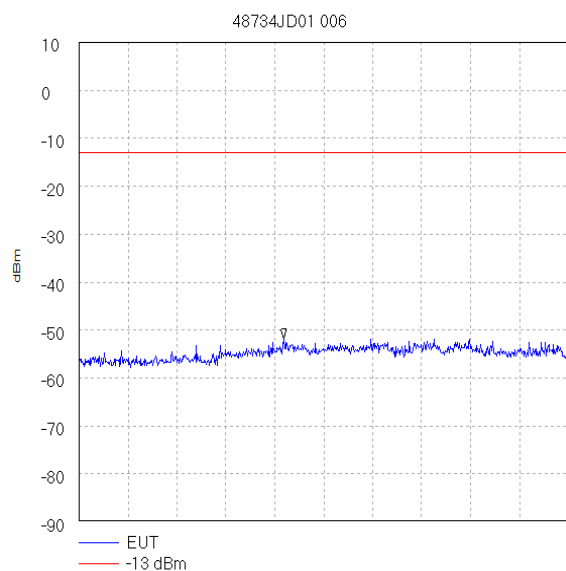
Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

Transmitter Conducted Emissions: Section 15.247(d) (Continued)

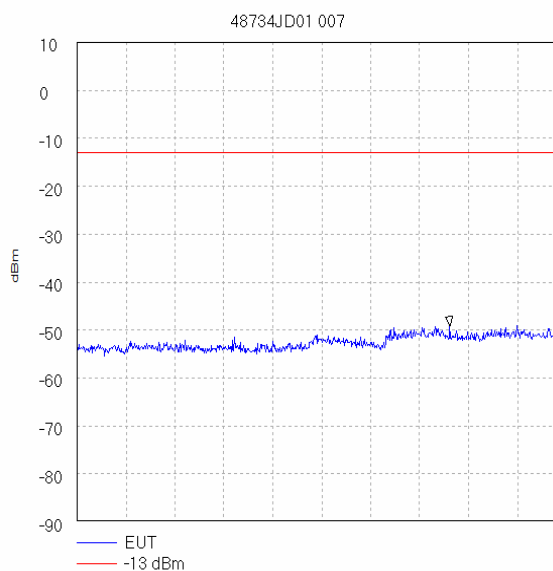
Start 30.0 MHz; Stop 1.0 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 250.0 mS
Marker 616.85 MHz, -53.0 dBm
Display Line: -13 dBm;
Tested by jph 11/12/2006 10:01:40



Start 1.0 GHz; Stop 5.0 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 80.0 mS
Marker 3.287 GHz, -39.17 dBm
Display Line: -13 dBm;
Tested by jph 11/12/2006 10:02:38



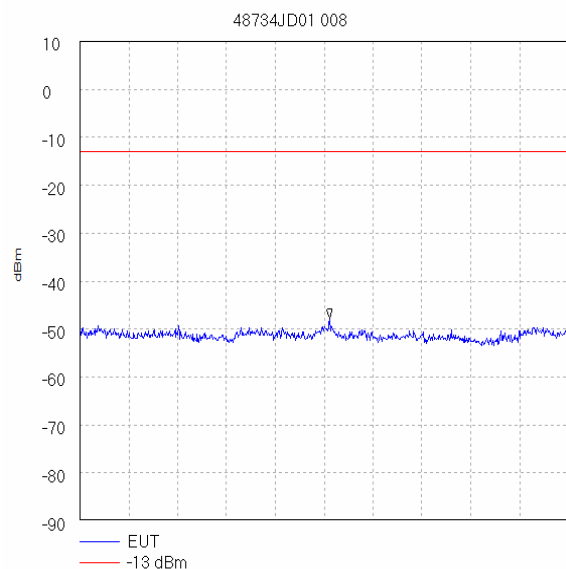
Start 5.0 GHz; Stop 10.0 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 7.092 GHz, -51.83 dBm
Display Line: -13 dBm;
Tested by jph 11/12/2006 10:03:22



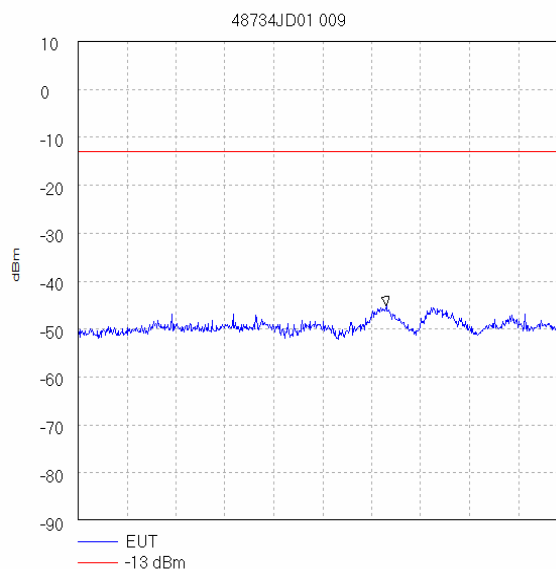
Start 10.0 GHz; Stop 15.0 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 13.808 GHz, -49.17 dBm
Display Line: -13 dBm;
Tested by jph 11/12/2006 10:03:48

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

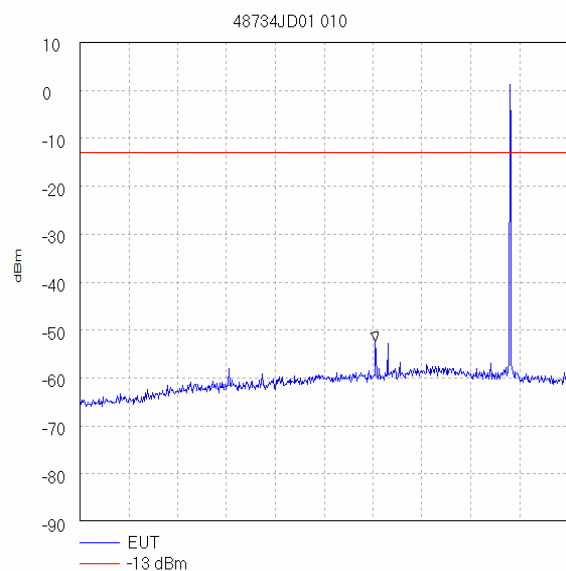
Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

Transmitter Conducted Emissions: Section 15.247(d) (Continued)

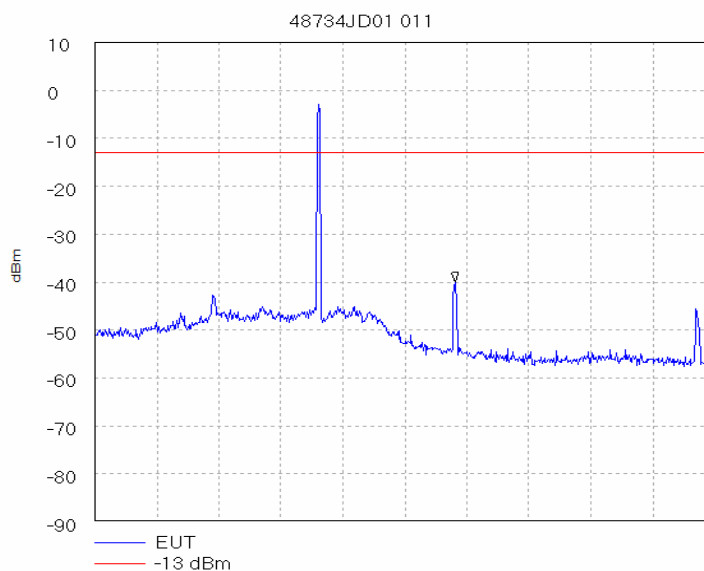
Start 15.0 GHz; Stop 20.0 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 17.558 GHz, -47.83 dBm
Display Line: -13 dBm;
Tested by jph 11/12/2006 10:04:09



Start 20.0 GHz; Stop 26.5 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 130.0 mS
Peak 24.095 GHz, -45.17 dBm
Display Line: -13 dBm;
Tested by jph 11/12/2006 10:04:34



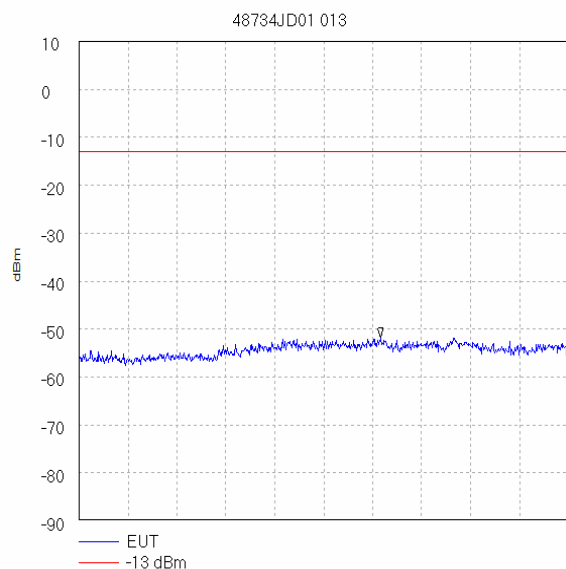
Start 30.0 MHz; Stop 1.0 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 250.0 mS
Marker 616.85 MHz, -52.33 dBm
Display Line: -13 dBm;
Tested by jph 11/12/2006 10:08:40



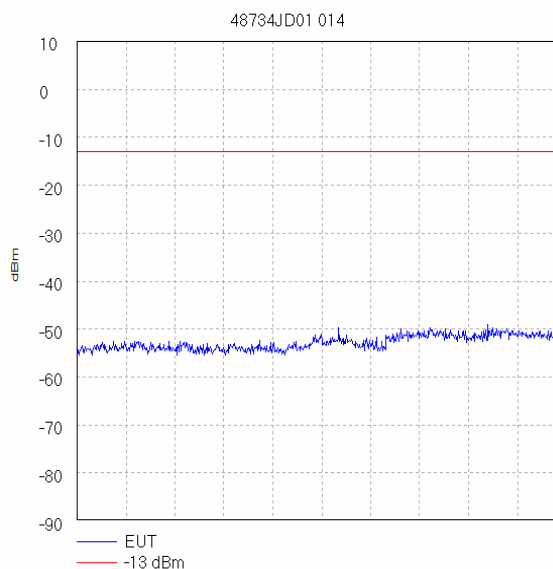
Start 1.0 GHz; Stop 5.0 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 80.0 mS
Marker 3.327 GHz, -40.0 dBm
Display Line: -13 dBm;
Tested by jph 11/12/2006 10:09:30

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

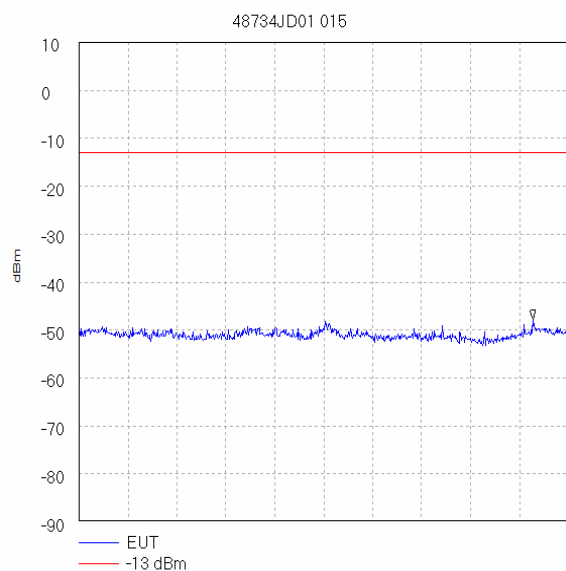
Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

Transmitter Conducted Emissions: Section 15.247(d) (Continued)

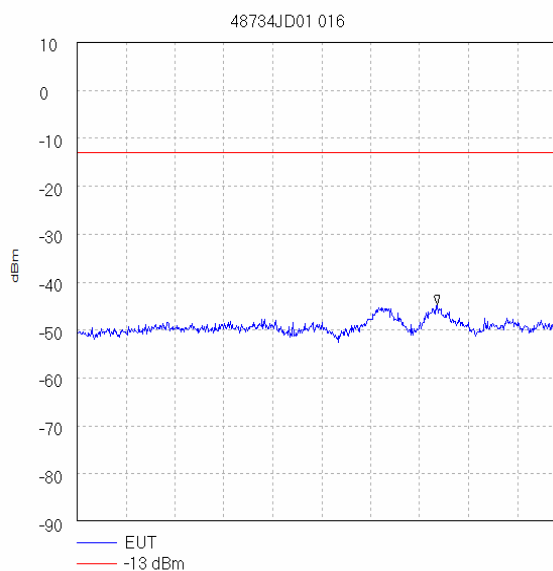
Start 5.0 GHz; Stop 10.0 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 8.083 GHz, -51.83 dBm
Display Line: -13 dBm;
Tested by jph 11/12/2006 10:11:03



Start 10.0 GHz; Stop 15.0 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 14.95 GHz, -49.0 dBm
Display Line: -13 dBm;
Tested by jph 11/12/2006 10:11:22



Start 15.0 GHz; Stop 20.0 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 19.642 GHz, -47.83 dBm
Display Line: -13 dBm;
Tested by jph 11/12/2006 10:11:54

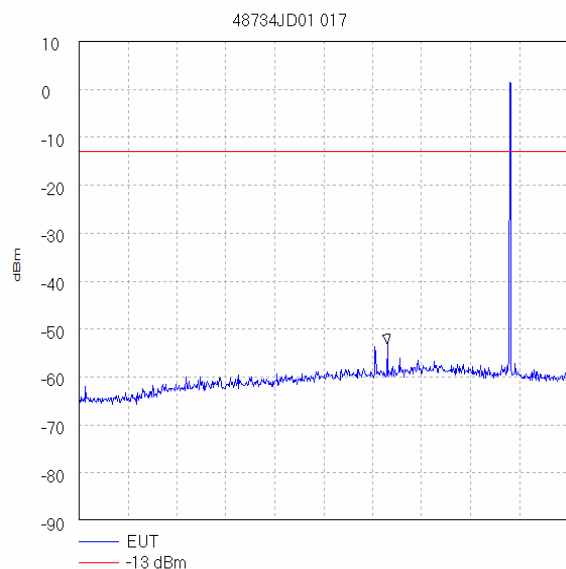


Start 20.0 GHz; Stop 26.5 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 130.0 mS
Peak 24.788 GHz, -44.67 dBm
Display Line: -13 dBm;
Tested by jph 11/12/2006 10:12:15

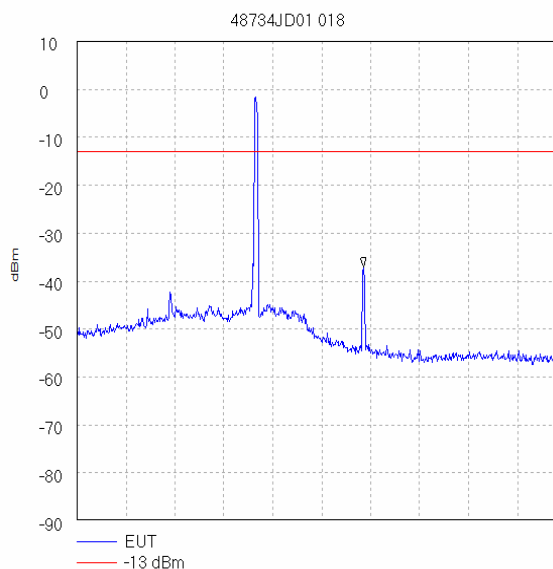
Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Test of: Zinwave Ltd
 Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
 To: FCC Part 15.247: 2006 (Subpart C)

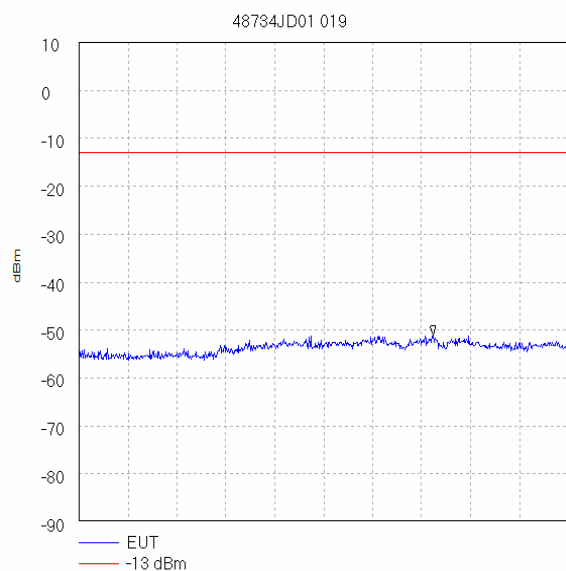
Transmitter Conducted Emissions: Section 15.247(d) (Continued)



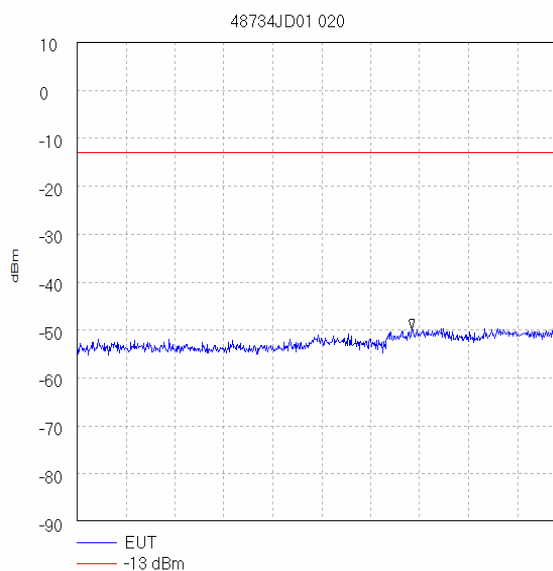
Start 30.0 MHz; Stop 1.0 GHz
 Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
 RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 250.0 mS
 Marker 641.1 MHz, -53.0 dBm
 Display Line: -13 dBm;
 Tested by jph 11/12/2006 10:13:56



Start 1.0 GHz; Stop 5.0 GHz
 Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
 RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 80.0 mS
 Marker 3.34 GHz, -37.0 dBm
 Display Line: -13 dBm;
 Tested by jph 11/12/2006 10:14:46



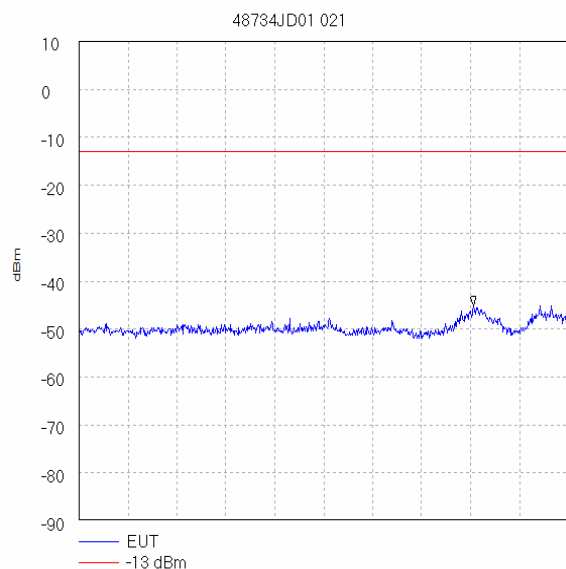
Start 5.0 GHz; Stop 10.0 GHz
 Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
 RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
 Peak 8.617 GHz, -51.0 dBm
 Display Line: -13 dBm;
 Tested by jph 11/12/2006 10:16:39



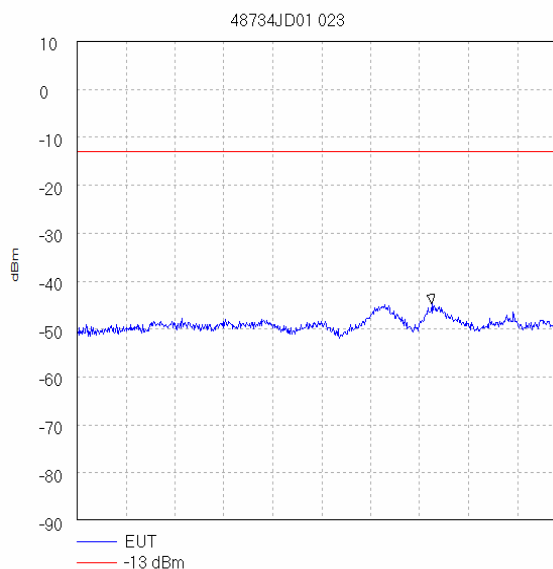
Start 10.0 GHz; Stop 15.0 GHz
 Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
 RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
 Peak 13.425 GHz, -49.83 dBm
 Display Line: -13 dBm;
 Tested by jph 11/12/2006 10:16:58

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

Transmitter Conducted Emissions: Section 15.247(d) (Continued)

Start 15.0 GHz; Stop 20.0 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 19.033 GHz, -45.17 dBm
Display Line: -13 dBm
Tested by jph 11/12/2006 10:17:23



Start 20.0 GHz; Stop 26.5 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 130.0 mS
Peak 24.713 GHz, -44.67 dBm
Display Line: -13 dBm
Tested by jph 11/12/2006 10:18:15

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Test of: Zinwave Ltd
 Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
 To: FCC Part 15.247: 2006 (Subpart C)

**7.2.11. Transmitter Conducted Emissions: Section 15.247(d) (Continued) – 1x2 Configuration
 1 x Access Point on dependant channel**

The EUT was configured for transmitter conducted emissions measurements, as described in section 9 of this report.

Tests were performed to identify the maximum transmitter conducted emission levels.

The limit lines shown in the plots below are set to a level 20 below the measured fundamental peak.

Results: Standalone System

Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
616.85	-53.3	-59.3	-20.0	39.3	Complied
4827.00	-45.5	-51.5	-20.0	31.5	Complied

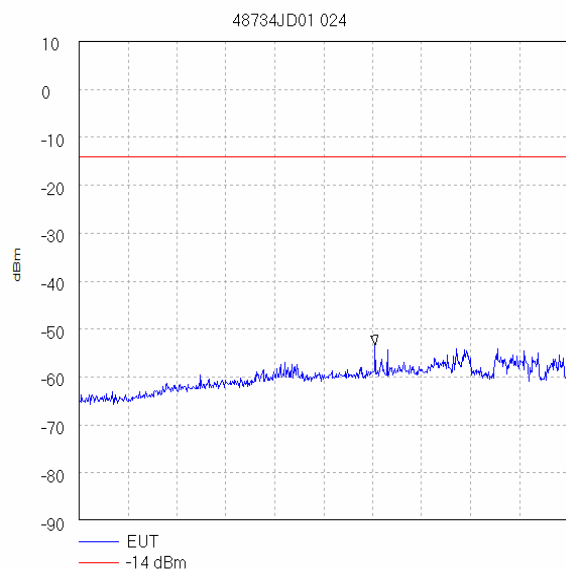
Middle Channel

Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
641.10	-53.3	-59.3	-20.0	39.3	Complied
4887.00	-46.8	-52.8	-20.0	32.8	Complied

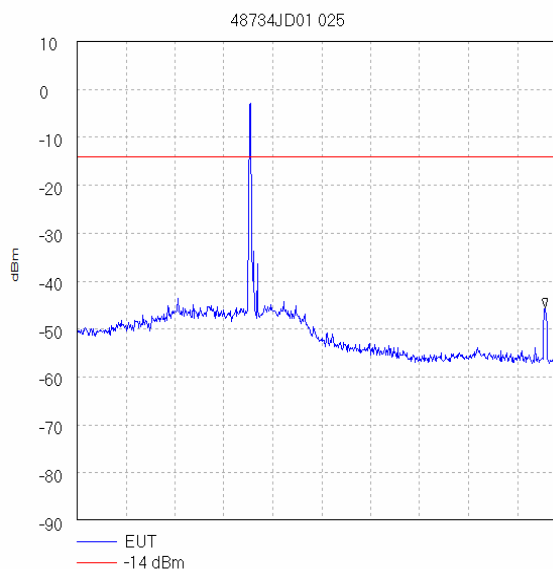
Top Channel

Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
616.85	-53.7	-59.7	-20.0	39.7	Complied
4927.00	-49.0	-55.0	-20.0	35.0	Complied

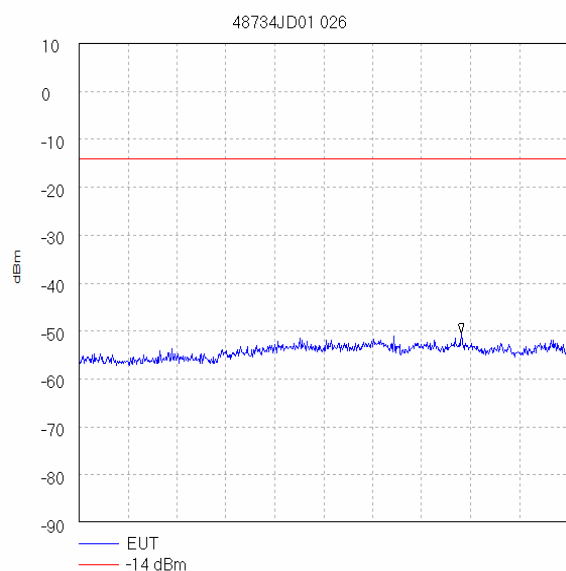
Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

Transmitter Conducted Emissions: Section 15.247(d) (Continued)

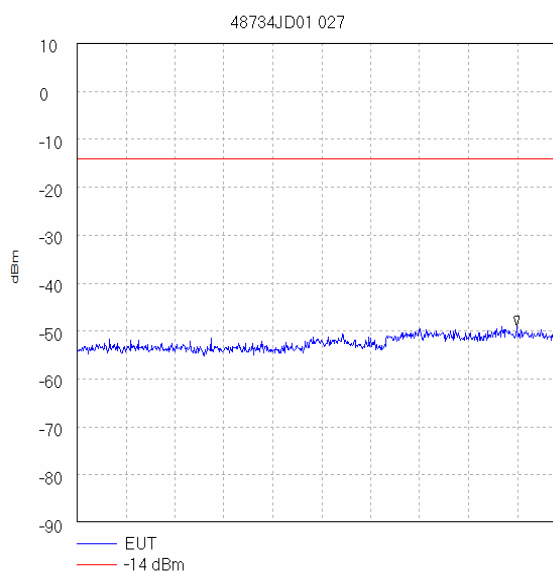
Start 30.0 MHz; Stop 1.0 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 250.0 mS
Peak 616.85 MHz, -53.33 dBm
Display Line: -14 dBm
Tested by jph 11/12/2006 11:03:06



Start 1.0 GHz; Stop 5.0 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 80.0 mS
Marker 4.827 GHz, -45.5 dBm
Display Line: -14 dBm
Tested by jph 11/12/2006 11:04:45



Start 5.0 GHz; Stop 10.0 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 8.908 GHz, -50.5 dBm
Display Line: -14 dBm
Tested by jph 11/12/2006 11:05:30



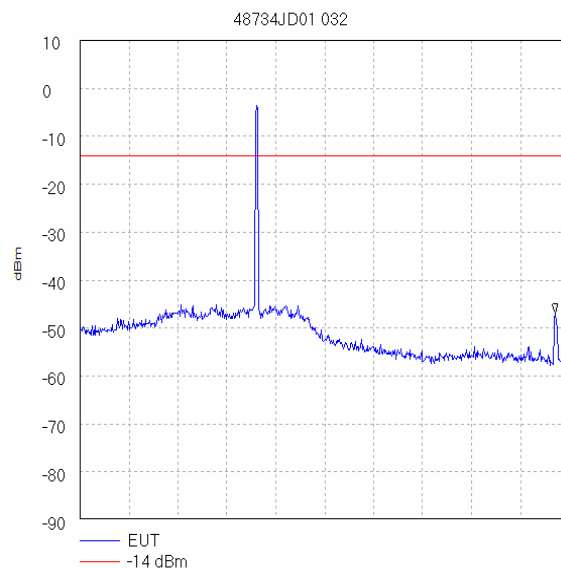
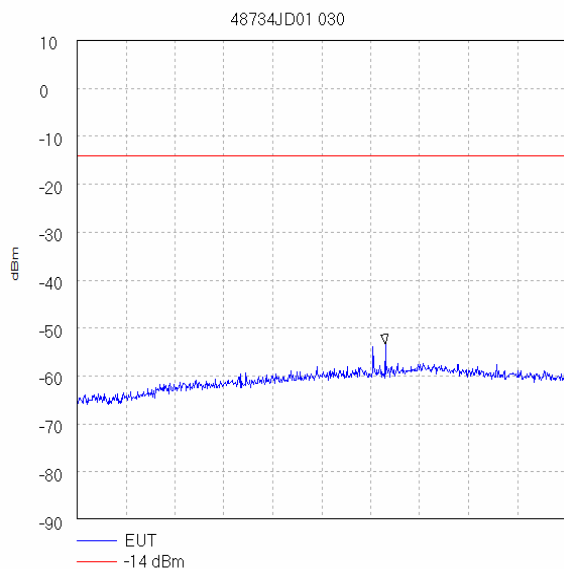
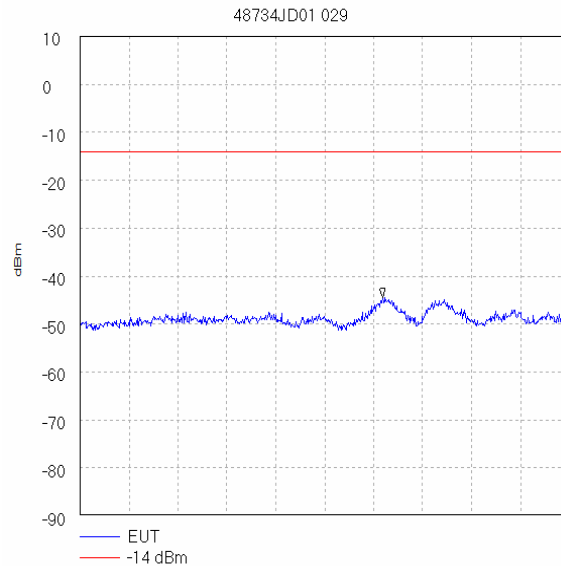
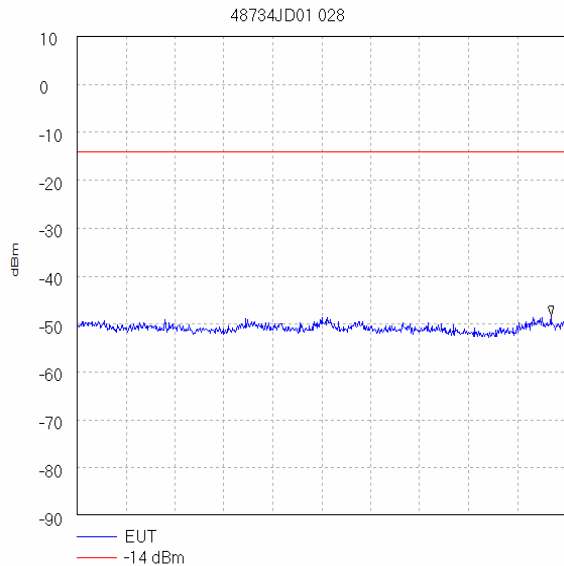
Start 10.0 GHz; Stop 15.0 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 14.492 GHz, -49.0 dBm
Display Line: -14 dBm
Tested by jph 11/12/2006 11:05:55

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Test of: Zinwave Ltd

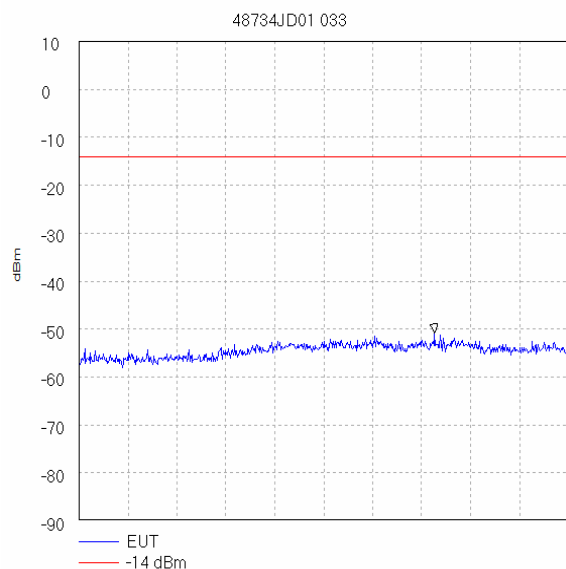
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS

To: FCC Part 15.247: 2006 (Subpart C)

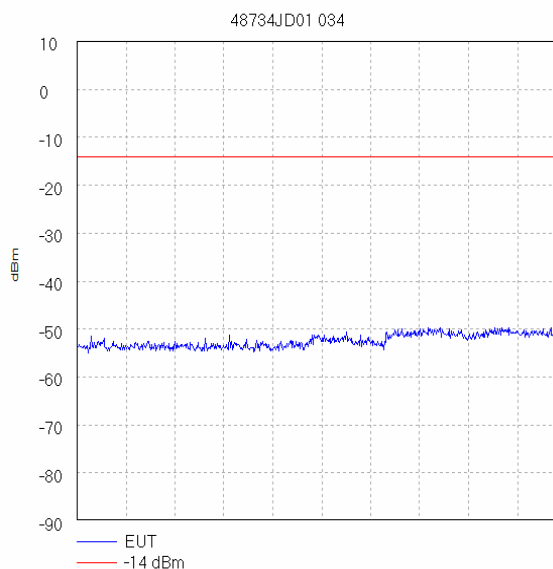
Transmitter Conducted Emissions: Section 15.247(d) (Continued)

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

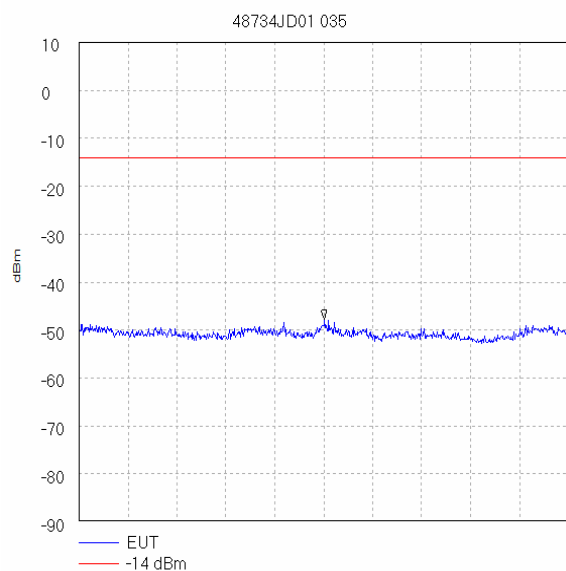
Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

Transmitter Conducted Emissions: Section 15.247(d) (Continued)

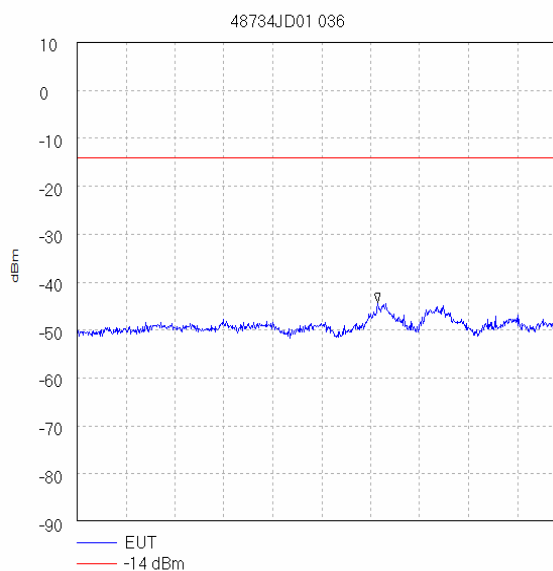
Start 5.0 GHz; Stop 10.0 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 8.633 GHz, -50.83 dBm
Display Line: -14 dBm;
Tested by jph 11/12/2006 11:10:35



Start 10.0 GHz; Stop 15.0 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 14.975 GHz, -49.5 dBm
Display Line: -14 dBm;
Tested by jph 11/12/2006 11:11:12



Start 15.0 GHz; Stop 20.0 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 17.508 GHz, -47.83 dBm
Display Line: -14 dBm;
Tested by jph 11/12/2006 11:11:48



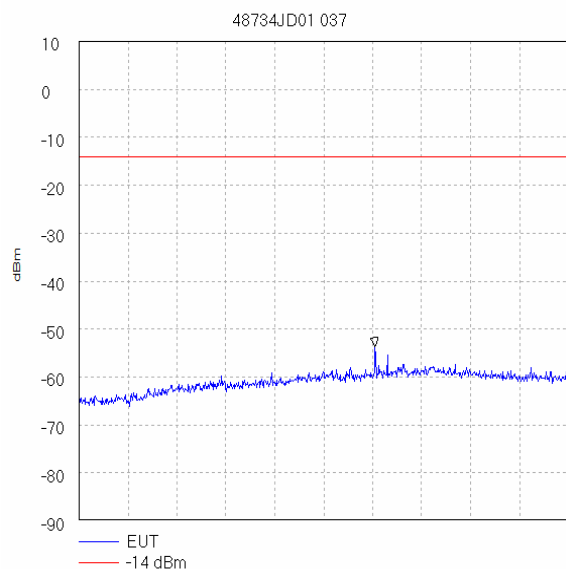
Start 20.0 GHz; Stop 26.5 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 130.0 mS
Peak 23.998 GHz, -44.33 dBm
Display Line: -14 dBm;
Tested by jph 11/12/2006 11:12:11

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

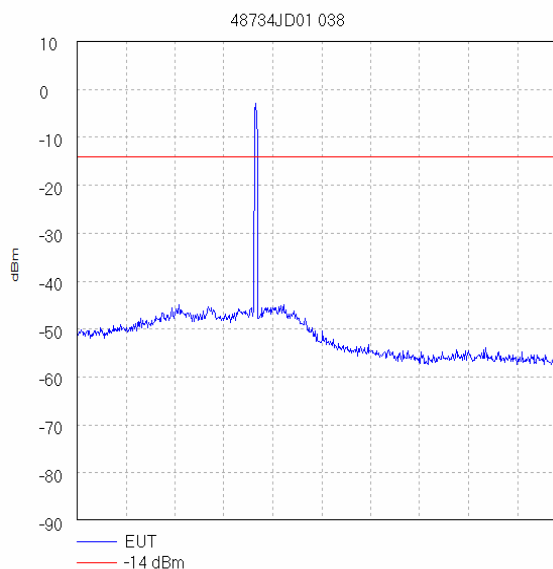
Test of: Zinwave Ltd

Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS

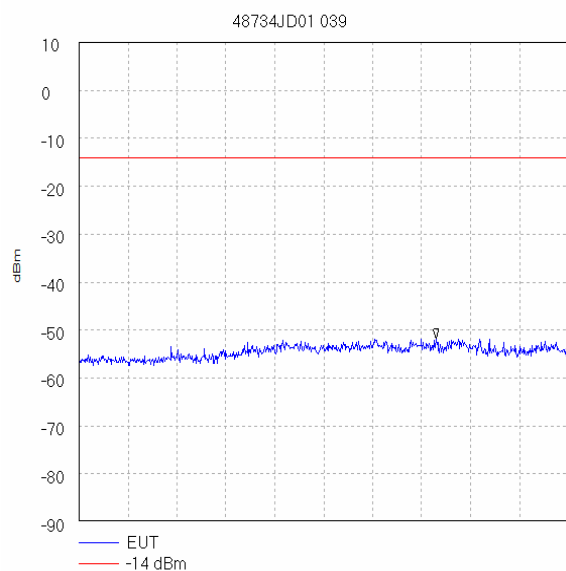
To: FCC Part 15.247: 2006 (Subpart C)

Transmitter Conducted Emissions: Section 15.247(d) (Continued)

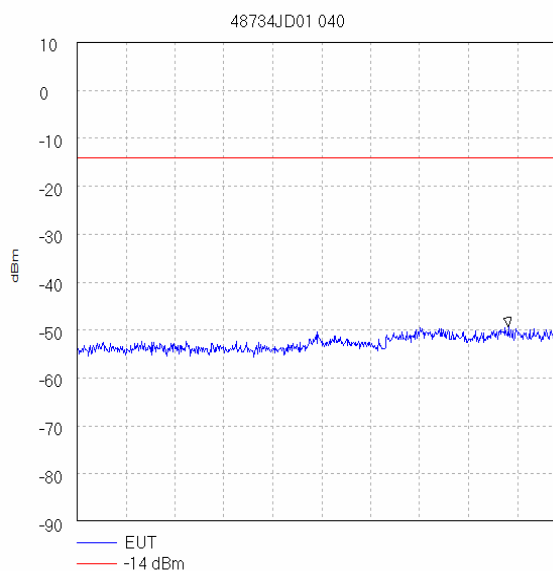
Start 30.0 MHz; Stop 1.0 GHz
 Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
 RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 250.0 mS
 Peak 616.85 MHz, -53.67 dBm
 Display Line: -14 dBm;
 Tested by jph 11/12/2006 11:13:23



Start 1.0 GHz; Stop 5.0 GHz
 Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
 RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 80.0 mS
 Marker 4.927 GHz, -49.0 dBm
 Display Line: -14 dBm;
 Tested by jph 11/12/2006 11:14:02



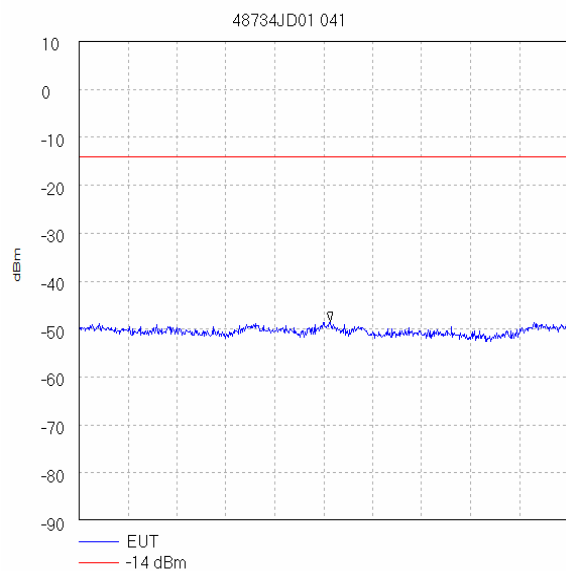
Start 5.0 GHz; Stop 10.0 GHz
 Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
 RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
 Peak 8.65 GHz, -51.83 dBm
 Display Line: -14 dBm;
 Tested by jph 11/12/2006 11:14:49



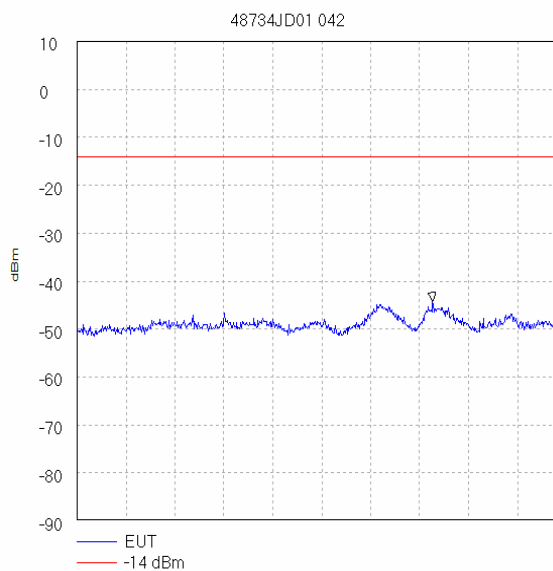
Start 10.0 GHz; Stop 15.0 GHz
 Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
 RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
 Peak 14.408 GHz, -49.33 dBm
 Display Line: -14 dBm;
 Tested by jph 11/12/2006 11:15:09

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

Transmitter Conducted Emissions: Section 15.247(d) (Continued)

Start 15.0 GHz; Stop 20.0 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 17.567 GHz, -48.5 dBm
Display Line: -14 dBm
Tested by jph 11/12/2006 11:16:09



Start 20.0 GHz; Stop 26.5 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 130.0 mS
Peak 24.723 GHz, -44.33 dBm
Display Line: -14 dBm
Tested by jph 11/12/2006 11:16:39

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables

Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

7.2.12. Transmitter Conducted Emissions: Section 15.247(d) – 2x4 Configuration 3 x Access Point with 1 on dependant channel

The EUT was configured for transmitter conducted emissions measurements as described in section 9 of this report.

Tests were performed to identify the maximum transmitter conducted emission levels.

The limit lines shown in the plots below are set to a level 20 dB below the measured fundamental peak.

Results: Standalone System

Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
616.85	-57.3	-63.3	-20.0	43.3	Complied
4827.00	-42.0	-48.0	-20.0	28.0	Complied

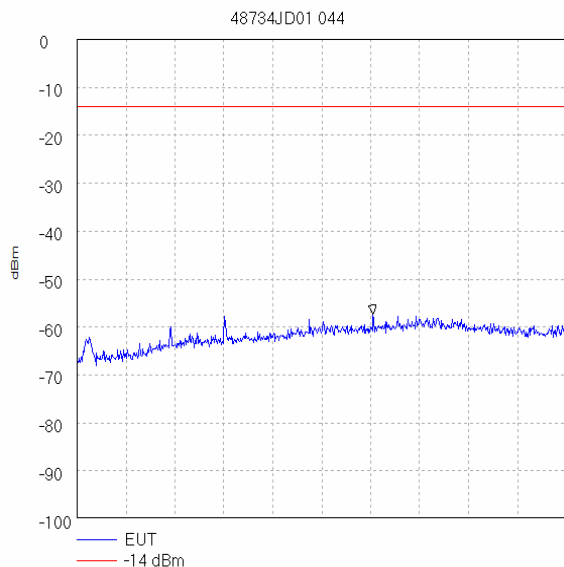
Middle Channel

Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
616.85	-56.5	-62.5	-20.0	42.5	Complied
4907.0	-40.8	-46.8	-20.0	26.8	Complied

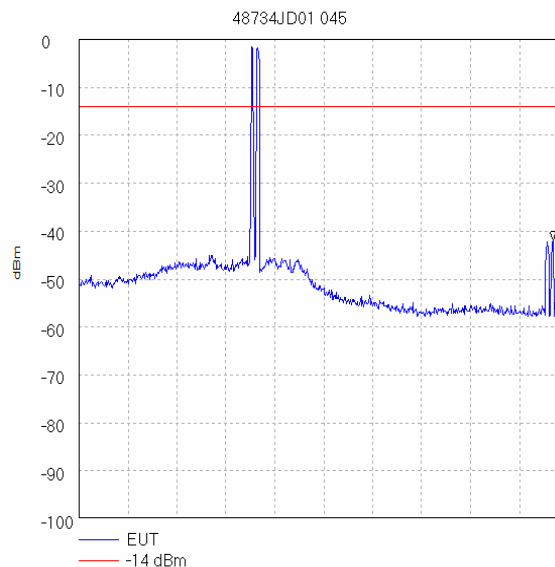
Top Channel

Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
322.617	-56.8	-62.8	-20.0	42.8	Complied
4893.0	-40.0	-46.0	-20.0	26.0	Complied

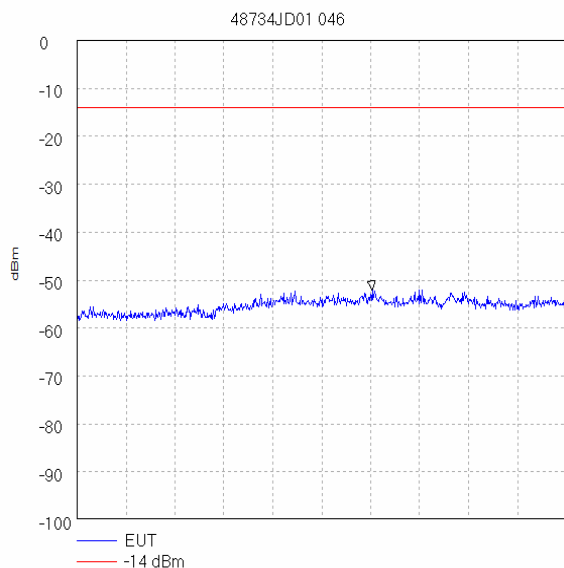
Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

Transmitter Conducted Emissions: Section 15.247(d) (Continued)

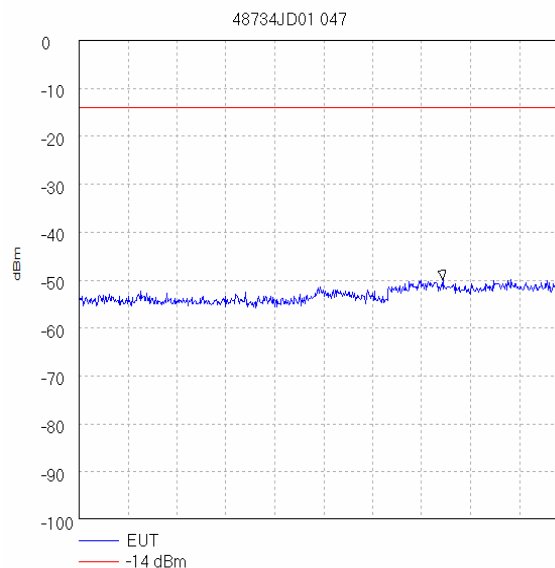
Start 30.0 MHz; Stop 1.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 250.0 mS
Peak 616.85 MHz, -57.33 dBm
Display Line: -14 dBm;
Tested by JXH 11/12/2006 13:17:25



Start 1.0 GHz; Stop 5.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 80.0 mS
Marker 4.873 GHz, -42.0 dBm
Display Line: -14 dBm;
Tested by JXH 11/12/2006 13:18:12



Start 5.0 GHz; Stop 10.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 8.017 GHz, -52.0 dBm
Display Line: -14 dBm;
Tested by JXH 11/12/2006 13:19:53

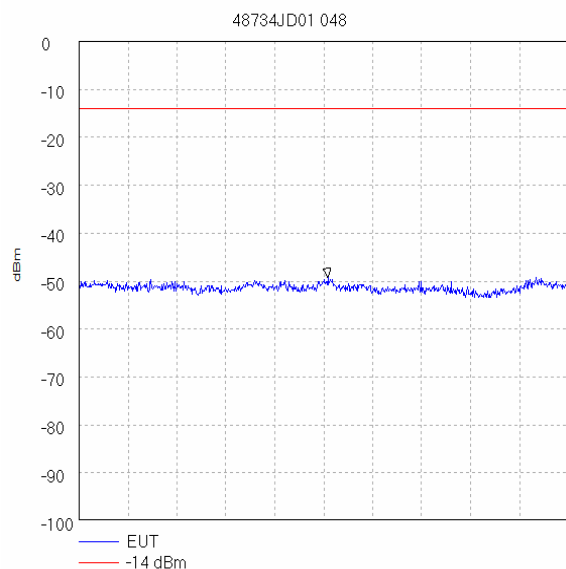


Start 10.0 GHz; Stop 15.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 13.717 GHz, -49.83 dBm
Display Line: -14 dBm;
Tested by JXH 11/12/2006 13:20:09

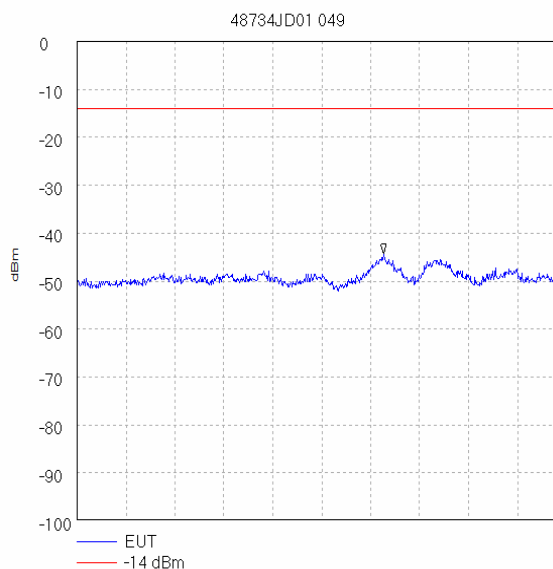
Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Test of: **Zinwave Ltd**
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
 To: **FCC Part 15.247: 2006 (Subpart C)**

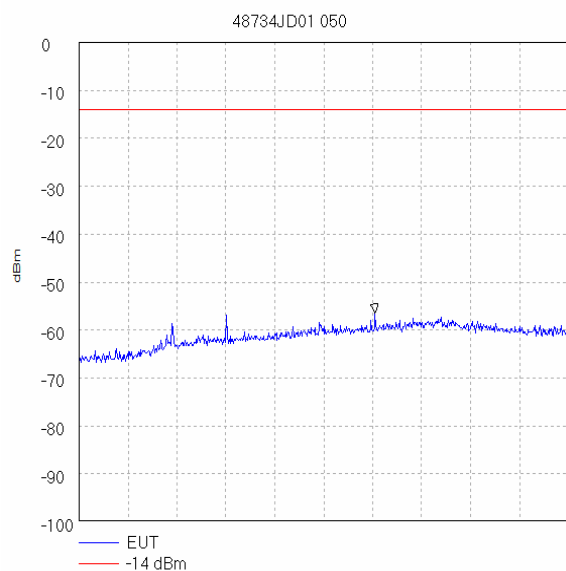
Transmitter Conducted Emissions: Section 15.247(d) (Continued)



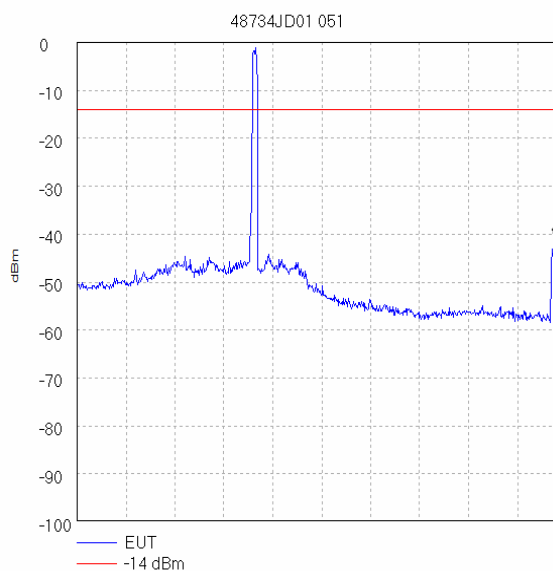
Start 15.0 GHz; Stop 20.0 GHz
 Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
 RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
 Peak 17.542 GHz, -49.17 dBm
 Display Line: -14 dBm;
 Tested by JXH 11/12/2006 13:20:30



Start 20.0 GHz; Stop 26.5 GHz
 Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
 RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 130.0 mS
 Peak 24.073 GHz, -44.33 dBm
 Display Line: -14 dBm;
 Tested by JXH 11/12/2006 13:20:59



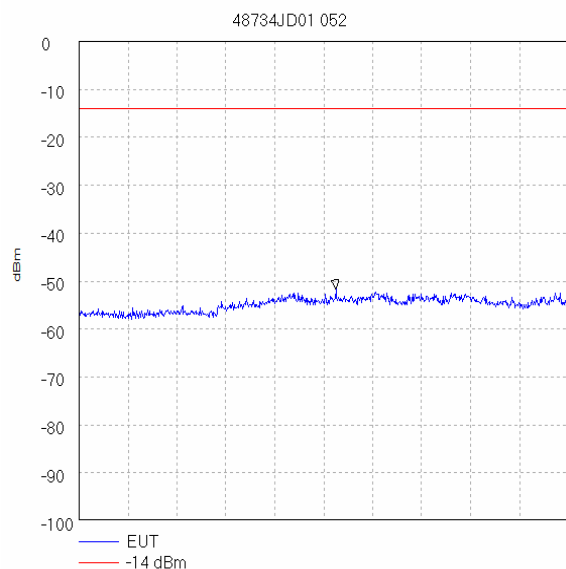
Start 30.0 MHz; Stop 1.0 GHz
 Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
 RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 250.0 mS
 Peak 616.85 MHz, -56.5 dBm
 Display Line: -14 dBm;
 Tested by JXH 11/12/2006 13:23:28



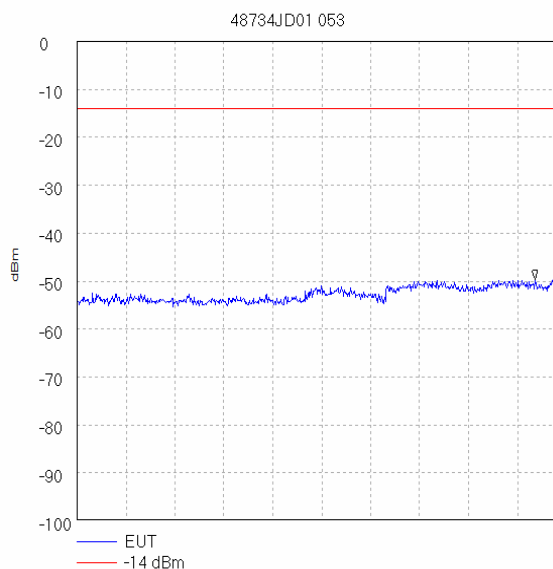
Start 1.0 GHz; Stop 5.0 GHz
 Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
 RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 80.0 mS
 Marker 4.907 GHz, -40.83 dBm
 Display Line: -14 dBm;
 Tested by JXH 11/12/2006 13:24:11

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

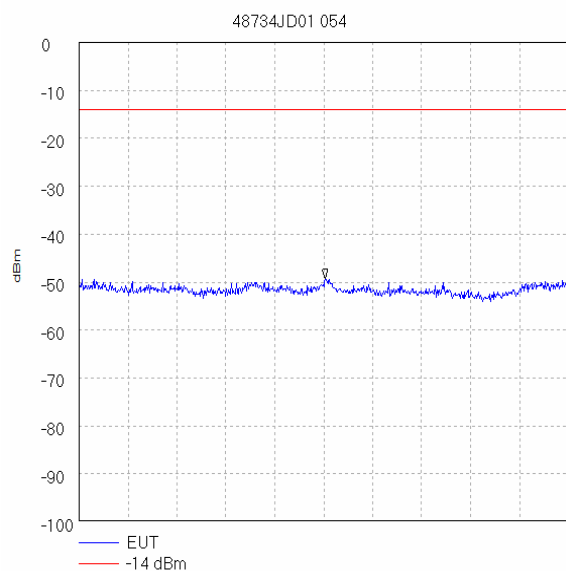
Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

Transmitter Conducted Emissions: Section 15.247(d) (Continued)

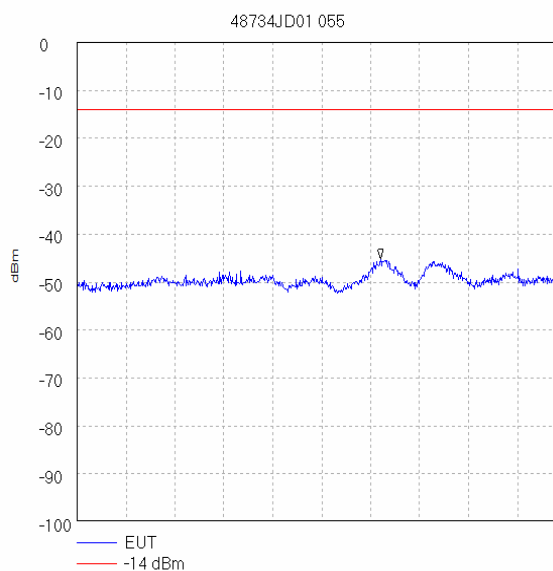
Start 5.0 GHz; Stop 10.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 7.625 GHz, -51.67 dBm
Display Line: -14 dBm;
Tested by JXH 11/12/2006 13:25:13



Start 10.0 GHz; Stop 15.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 14.683 GHz, -49.67 dBm
Display Line: -14 dBm;
Tested by JXH 11/12/2006 13:25:57



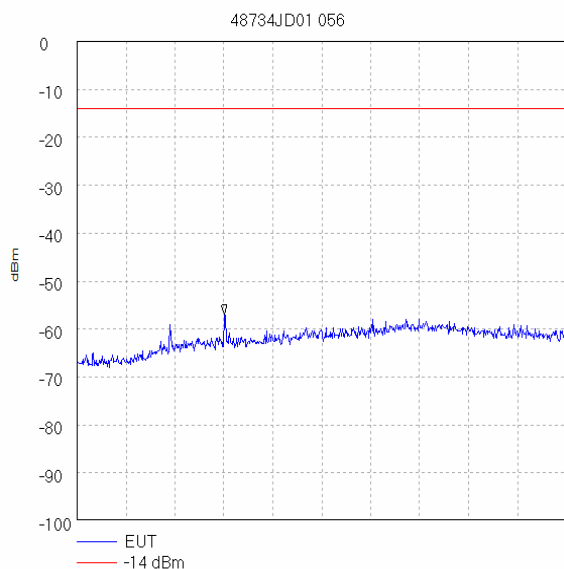
Start 15.0 GHz; Stop 20.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 17.517 GHz, -49.33 dBm
Display Line: -14 dBm;
Tested by JXH 11/12/2006 13:26:14



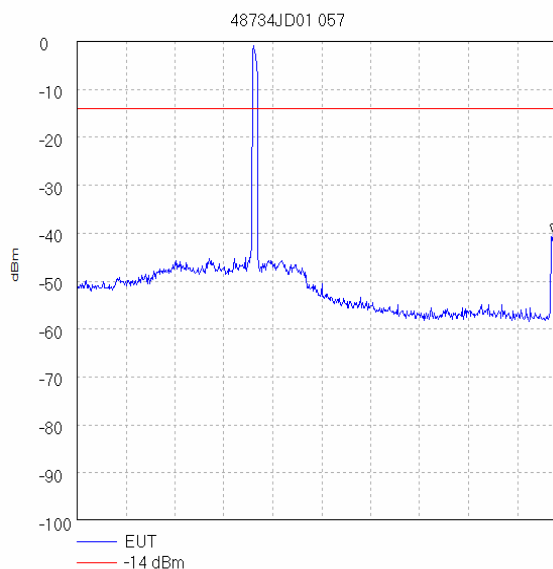
Start 20.0 GHz; Stop 26.5 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 130.0 mS
Peak 24.03 GHz, -45.17 dBm
Display Line: -14 dBm;
Tested by JXH 11/12/2006 13:26:35

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

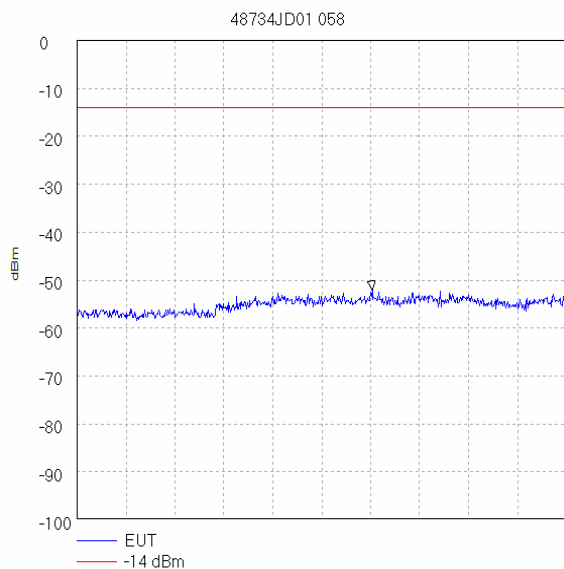
Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

Transmitter Conducted Emissions: Section 15.247(d) (Continued)

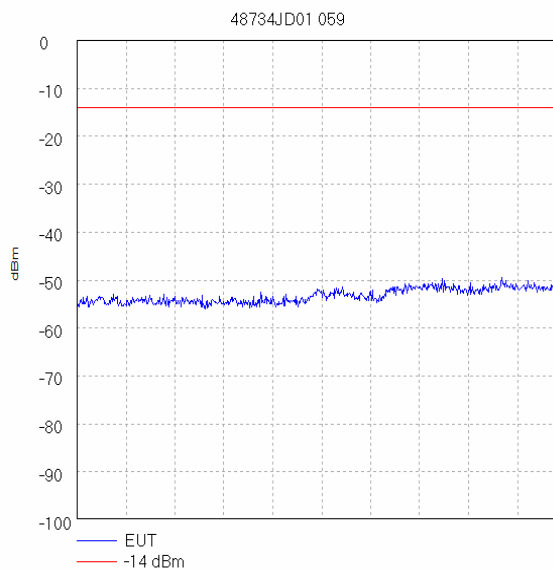
Start 30.0 MHz; Stop 1.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 250.0 mS
Peak 322.617 MHz, -56.83 dBm
Display Line: -14 dBm;
Tested by JXH 11/12/2006 13:28:34



Start 1.0 GHz; Stop 5.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 80.0 mS
Marker 4.893 GHz, -40.0 dBm
Display Line: -14 dBm;
Tested by JXH 11/12/2006 13:29:17



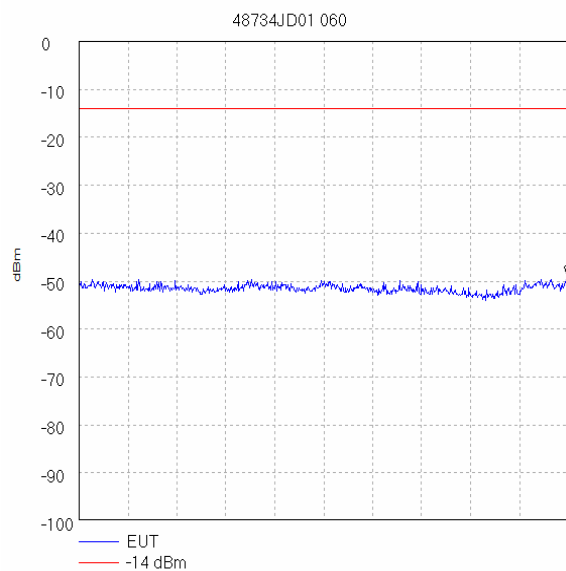
Start 5.0 GHz; Stop 10.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 8.017 GHz, -52.0 dBm
Display Line: -14 dBm;
Tested by JXH 11/12/2006 13:30:02



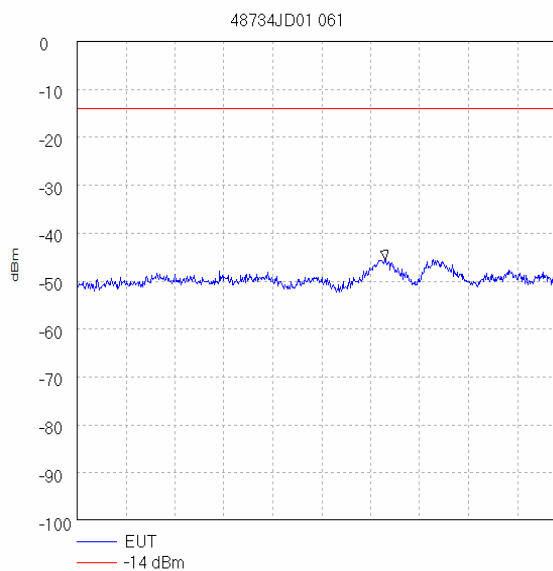
Start 10.0 GHz; Stop 15.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 14.917 GHz, -49.33 dBm
Display Line: -14 dBm;
Tested by JXH 11/12/2006 13:30:18

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

Transmitter Conducted Emissions: Section 15.247(d) (Continued)

Start 15.0 GHz; Stop 20.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 19.992 GHz, -48.83 dBm
Display Line: -14 dBm;
Tested by JXH 11/12/2006 13:30:35



Start 20.0 GHz; Stop 26.5 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 130.0 mS
Peak 24.095 GHz, -45.5 dBm
Display Line: -14 dBm;
Tested by JXH 11/12/2006 13:30:56

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables

Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

7.2.13. Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a)

The EUT was configured for radiated emission testing, as described in section 9 of this report.

Tests were performed to identify the maximum transmitter radiated emission levels.

Results:**Electric Field Strength Measurements: 30 MHz to 1000 MHz
(emissions occurring in the restricted bands)****Top Channel**

Frequency (MHz)	Antenna Polarity	Q-P Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
249.840	Vertical	32.1	43.5	11.4	Complied
324.950	Vertical	38.4	46.0	7.6	Complied
399.980	Vertical	37.5	46.0	8.5	Complied

Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

7.2.14. Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a)

The EUT was configured for radiated emission testing, as described in section 9 of this report.

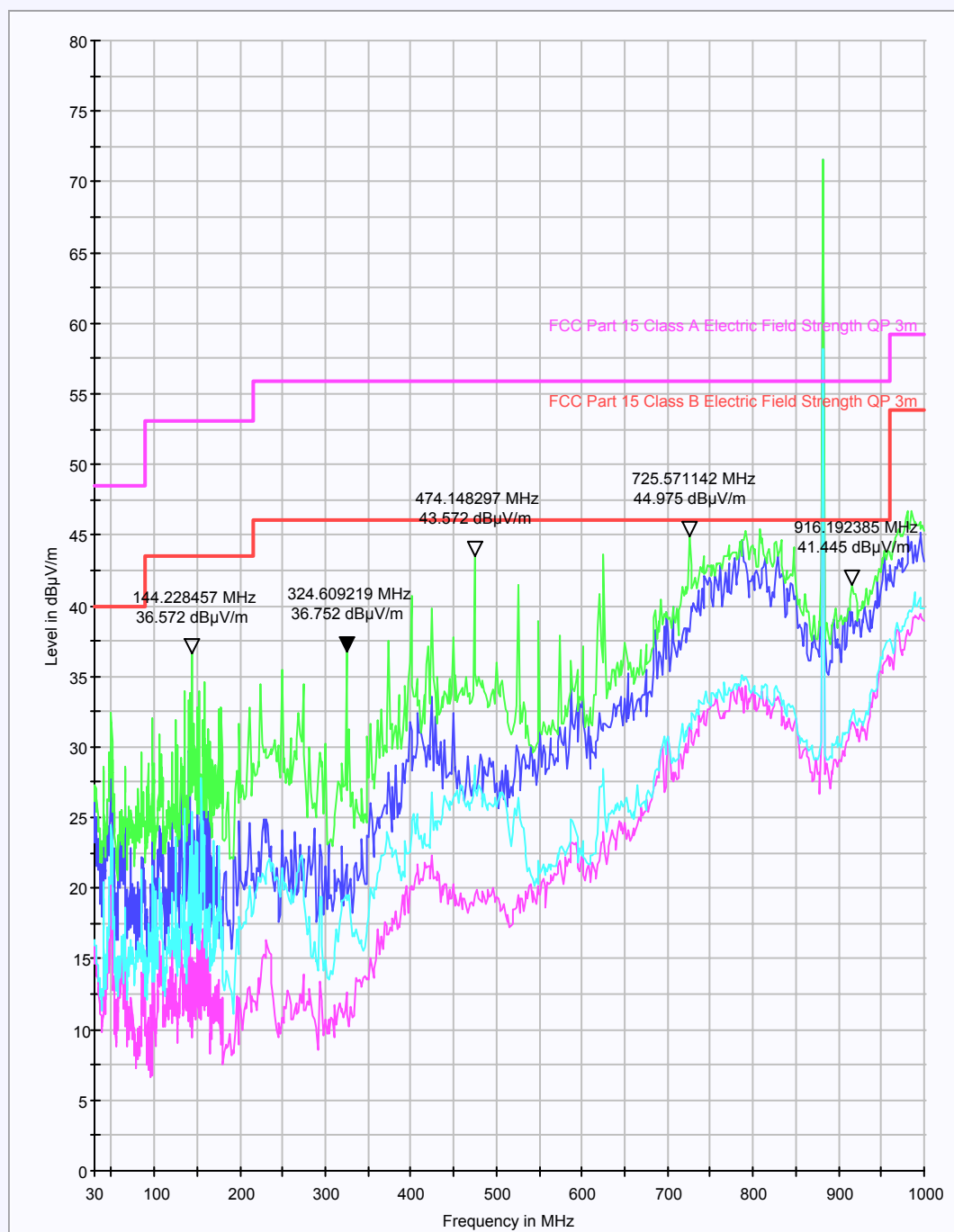
Tests were performed to identify the maximum transmitter radiated emission levels.

Results:**Electric Field Strength Measurements: 30 MHz to 1000 MHz
(emissions outside the restricted bands)****Top Channel**

Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	-20 dBc Limit (dB μ V/m)	Margin (dB)	Result
49.899	Vertical	31.8	89.3	57.5	Complied
144.168	Vertical	31.5	89.3	57.8	Complied
475.010	Vertical	41.0	89.3	48.3	Complied
624.980	Horizontal	55.3	89.3	34.0	Complied
724.950	Vertical	38.9	89.3	50.4	Complied
790.521	Vertical	42.2	89.3	47.1	Complied
806.994	Horizontal	37.1	89.3	52.2	Complied
832.124	Horizontal	58.3	89.3	31.0	Complied
847.154	Horizontal	45.3	89.3	44.0	Complied
916.533	Horizontal	41.1	89.3	48.2	Complied

Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a) (Continued)



Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Test of: Zinwave Ltd
 Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
 To: FCC Part 15.247: 2006 (Subpart C)

7.2.15. Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a)

The EUT was configured for radiated emission testing, as described in section 9 of this report.

Tests were performed to identify the maximum transmitter radiated emission levels.

Results:

Electric Field Strength Measurements (Frequency Range: 1 GHz to 26.5 GHz) (emissions occurring in the restricted bands)

Highest Peak Level: Bottom Channel

Frequency (GHz)	Antenna Polarity	Detector Level (dB μ V)	Transducer Factor (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
1.5647	Horizontal	45.7	-12.8	32.9	74.0	41.1	Complied

Highest Average Level: Bottom Channel

Frequency (GHz)	Antenna Polarity	Detector Level (dB μ V)	Transducer Factor (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
1.5647	Horizontal	35.7	-12.8	22.9	54.0	31.1	Complied

Highest Peak Level: Middle Channel

Frequency (GHz)	Antenna Polarity	Detector Level (dB μ V)	Transducer Factor (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
1.5921	Vertical	45.4	-12.8	32.6	74.0	41.4	Complied

Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a) (Continued)**Highest Average Level: Middle Channel**

Frequency (GHz)	Antenna Polarity	Detector Level (dB μ V)	Transducer Factor (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
1.5921	Vertical	43.2	-12.8	30.4	54.0	23.6	Complied

Highest Peak Level: Top Channel

Frequency (GHz)	Antenna Polarity	Detector Level (dB μ V)	Transducer Factor (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
1.3152	Horizontal	44.8	-12.4	32.4	74.0	41.6	Complied
1.3956	Vertical	42.4	-11.9	30.5	74.0	43.5	Complied
3.3462	Vertical	45.1	-11.0	34.1	74.0	39.9	Complied

Highest Average Level: Top Channel

Frequency (GHz)	Antenna Polarity	Detector Level (dB μ V)	Transducer Factor (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
1.3152	Horizontal	42.5	-12.4	30.1	54.0	23.9	Complied
1.3956	Vertical	40.9	-11.9	29.0	54.0	25.0	Complied
3.3462	Vertical	34.3	-11.0	23.3	54.0	30.7	Complied

Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

7.2.16. Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a)

The EUT was configured for radiated emission testing, as described in section 9 of this report.

Tests were performed to identify the maximum transmitter radiated emission levels.

Results:**Electric Field Strength Measurements (Frequency Range: 1 GHz to 26.5 GHz)
(emissions outside the restricted bands)****Highest Peak: Bottom Channel**

Frequency (GHz)	Antenna Polarity	Detector Level (dB μ V)	Transducer Factor (dB)	Actual Level (dB μ V/m)	-20 dBc Limit (dB μ V/m)	Margin (dB)	Result
1.7621	Vertical	53.5	-11.8	41.7	89.3	47.6	Complied
4.3006	Vertical	50.9	-8.5	42.4	89.3	46.9	Complied
4.8778	Vertical	55.4	-7.7	47.7	89.3	41.6	Complied

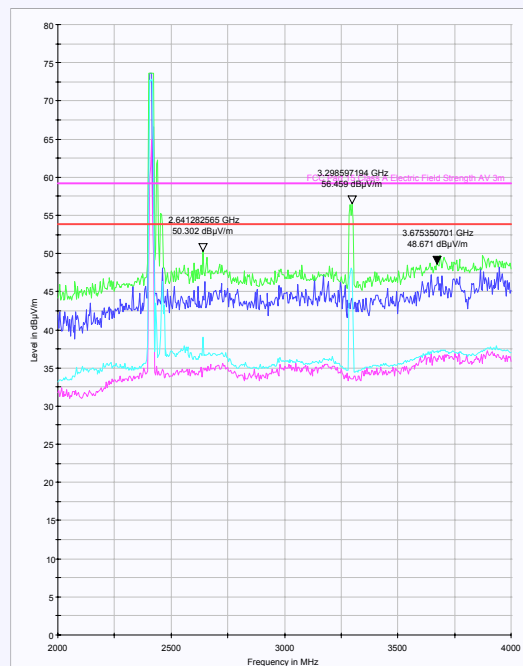
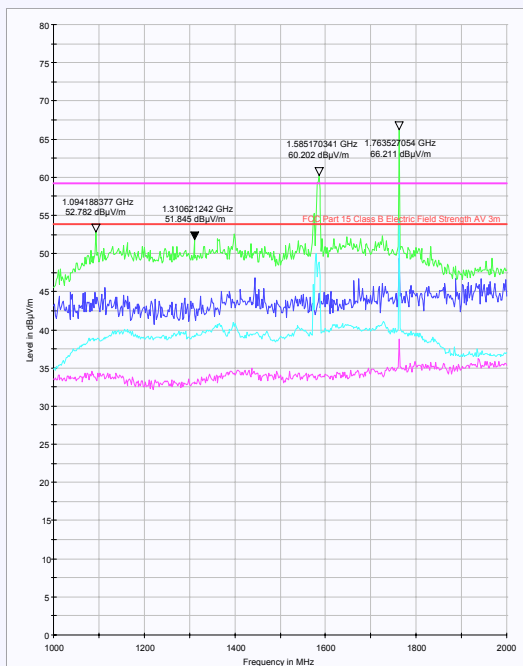
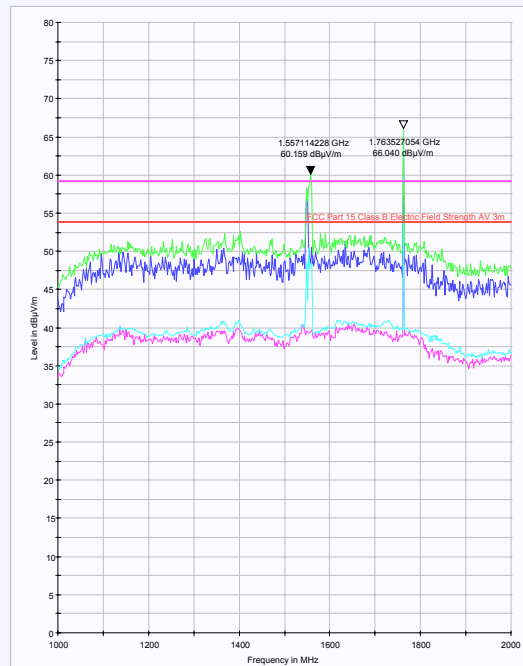
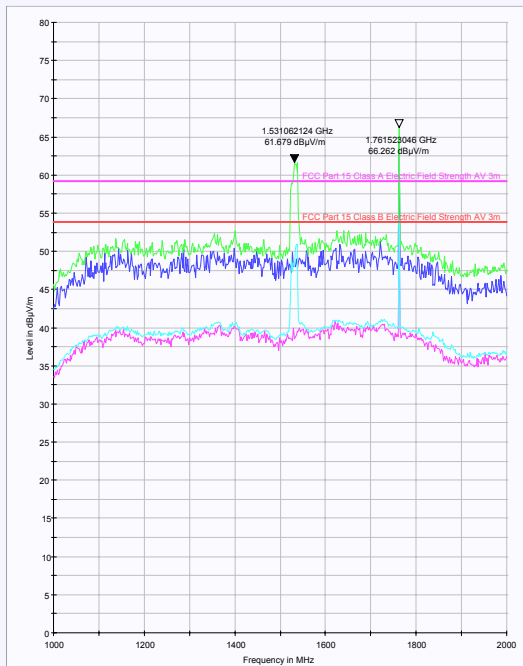
Highest Peak: Middle Channel

Frequency (GHz)	Antenna Polarity	Detector Level (dB μ V)	Transducer Factor (dB)	Actual Level (dB μ V/m)	-20 dBc Limit (dB μ V/m)	Margin (dB)	Result
1.7621	Vertical	52.6	-11.8	40.8	89.3	48.5	Complied
4.0321	Vertical	49.5	-9.4	40.1	89.3	49.2	Complied
4.8899	Vertical	59.6	-8.3	51.3	89.3	38.0	Complied
5.0341	Vertical	50.4	-7.4	43.0	89.3	46.3	Complied

Highest Peak: Top Channel

Frequency (GHz)	Antenna Polarity	Detector Level (dB μ V)	Transducer Factor (dB)	Actual Level (dB μ V/m)	-20 dBc Limit (dB μ V/m)	Margin (dB)	Result
1.7620	Vertical	53.1	-11.8	41.3	89.3	48.0	Complied
2.4166	Vertical	50.7	-11.4	39.3	89.3	50.0	Complied
4.2164	Vertical	50.3	-8.9	41.4	89.3	47.9	Complied
4.9138	Vertical	55.6	-7.7	47.9	89.3	41.4	Complied

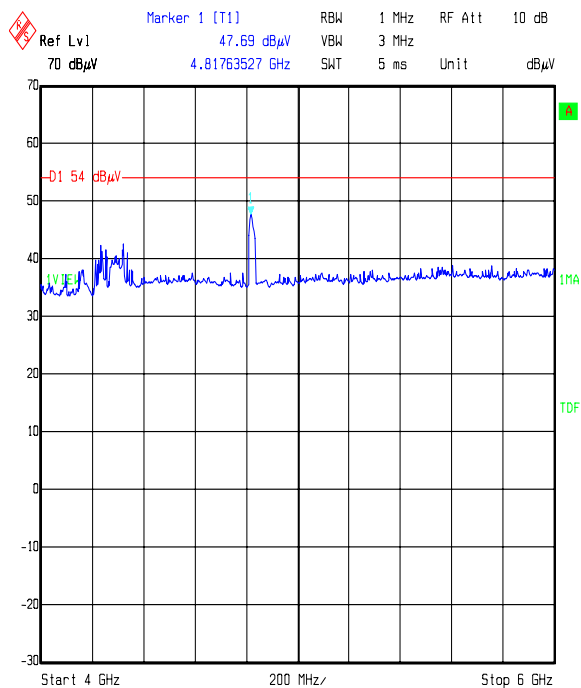
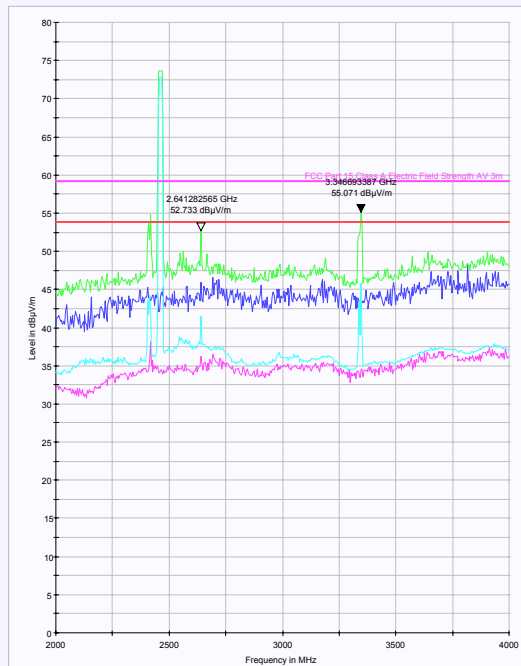
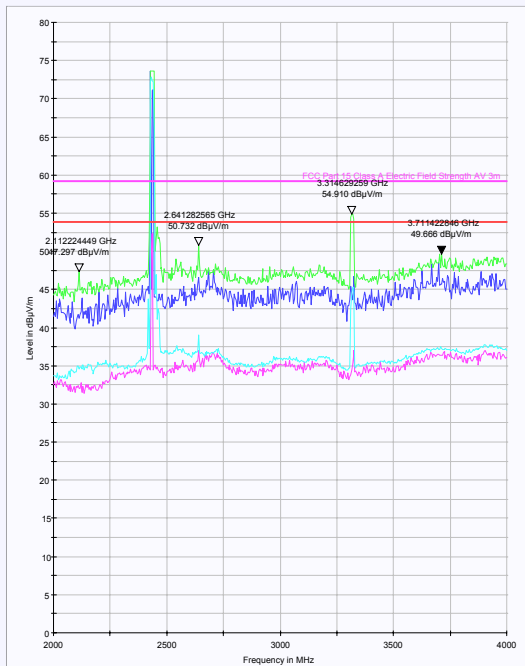
Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a) (Continued)

Test of: Zinwave Ltd

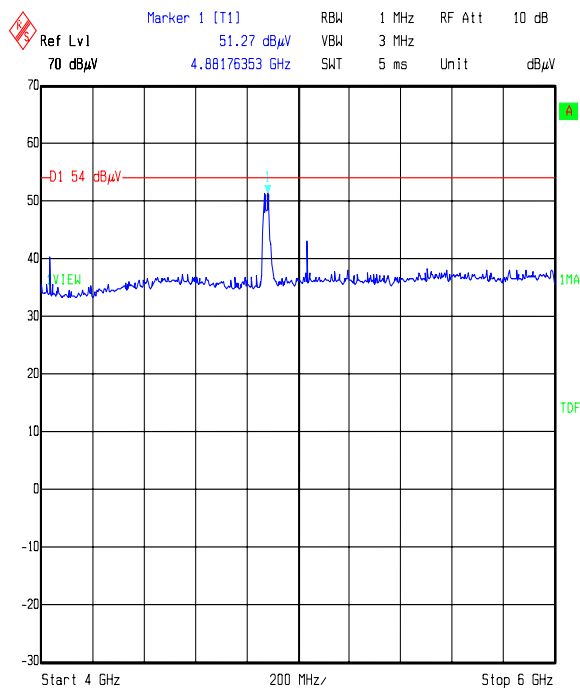
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS

To: FCC Part 15.247: 2006 (Subpart C)

Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a) (Continued)

Comment A: Tx Mode Bottom Channel 48734JD01

Date: 05.DEC.2006 16:20:27



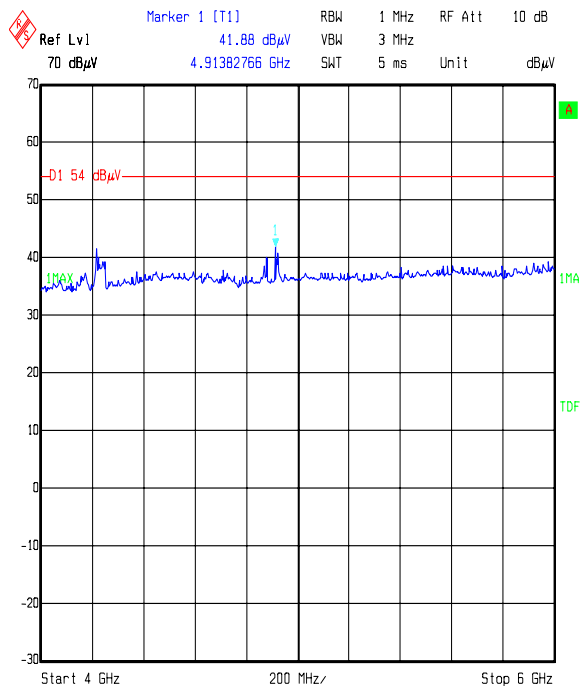
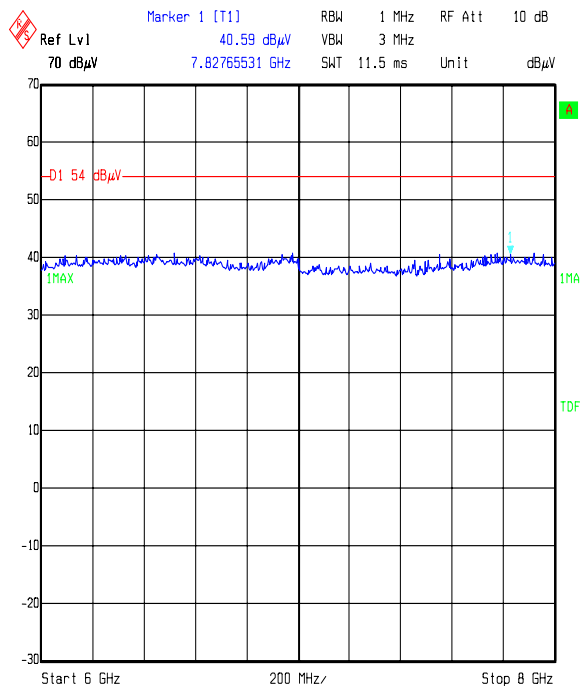
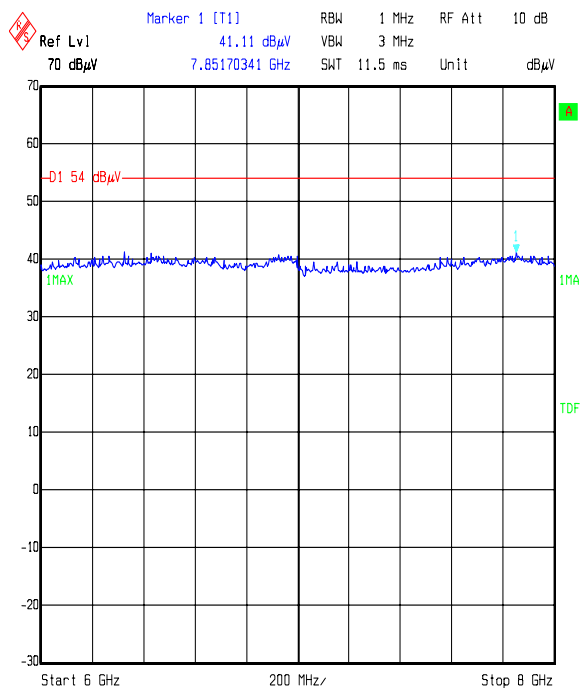
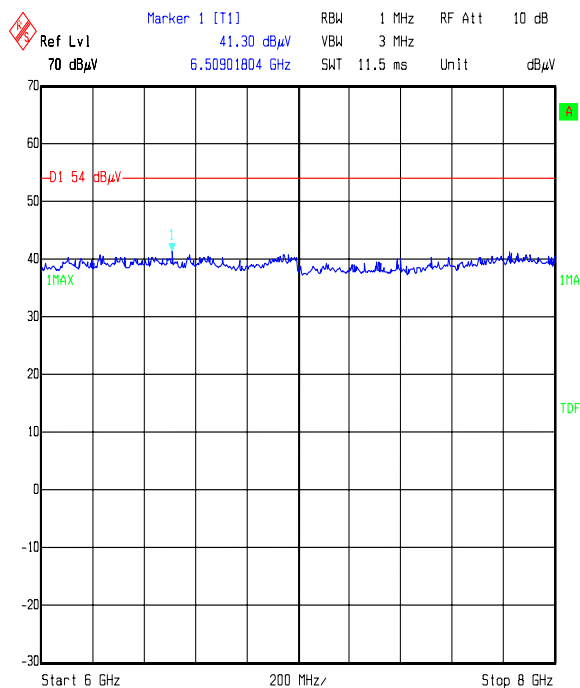
Comment A: Tx Mode Middle Channel 48734JD01

Date: 05.DEC.2006 16:08:59

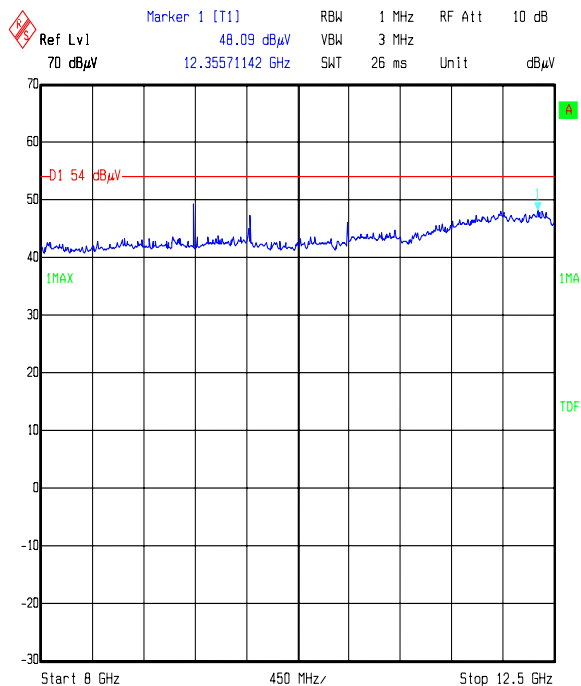
Test of: Zinwave Ltd

Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS

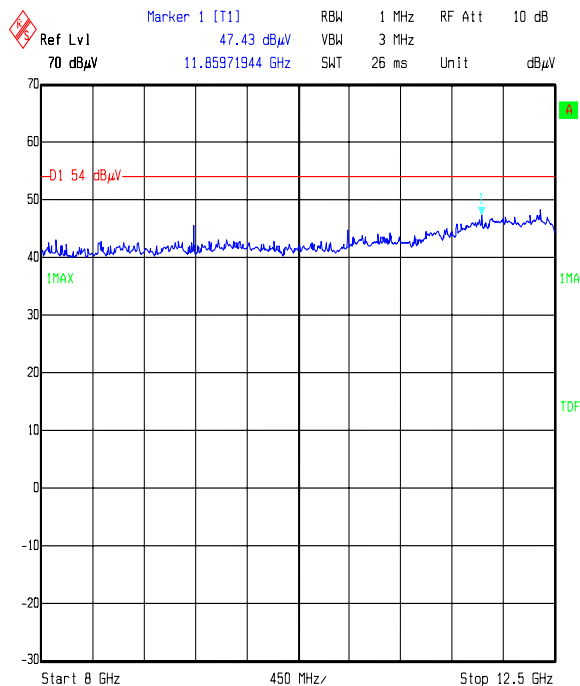
To: FCC Part 15.247: 2006 (Subpart C)

Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a) (Continued)Comment A: Tx Mode Top Channel 48734JD01
Date: 05.DEC.2006 15:10:03Comment A: Tx Mode Bottom Channel 48734JD01
Date: 05.DEC.2006 16:40:05Comment A: Tx Mode Middle Channel 48734JD01
Date: 05.DEC.2006 16:00:12Comment A: Tx Mode Top Channel 48734JD01
Date: 05.DEC.2006 15:20:05

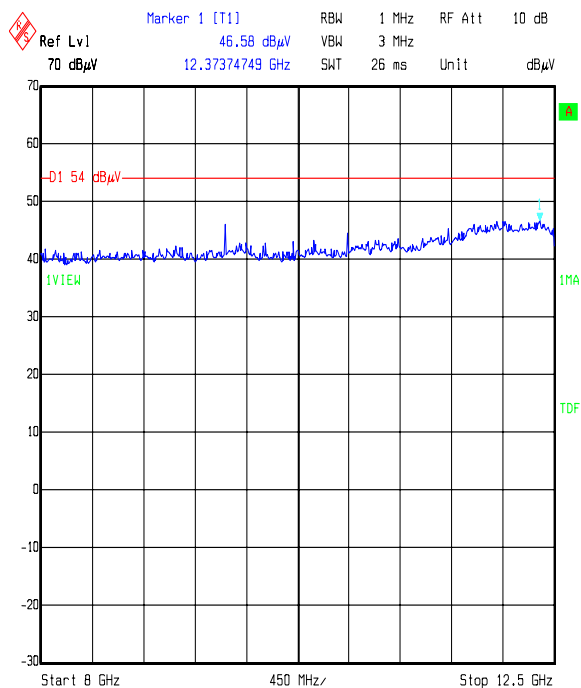
Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a) (Continued)

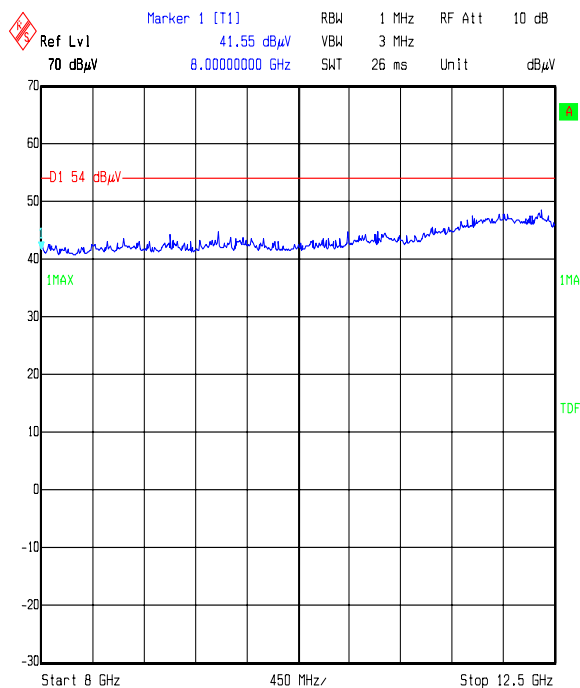
Comment A: Tx Mode Bottom Channel 48734JD01
Date: 05.DEC.2006 16:44:25



Comment A: Tx Mode Middle Channel 48734JD01
Date: 05.DEC.2006 16:01:23

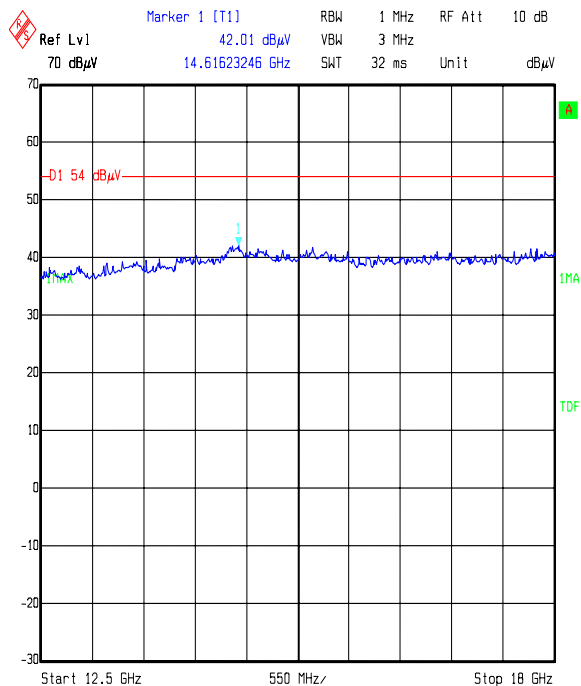


Comment A: Tx Mode Top Channel 48734JD01
Date: 05.DEC.2006 15:47:59

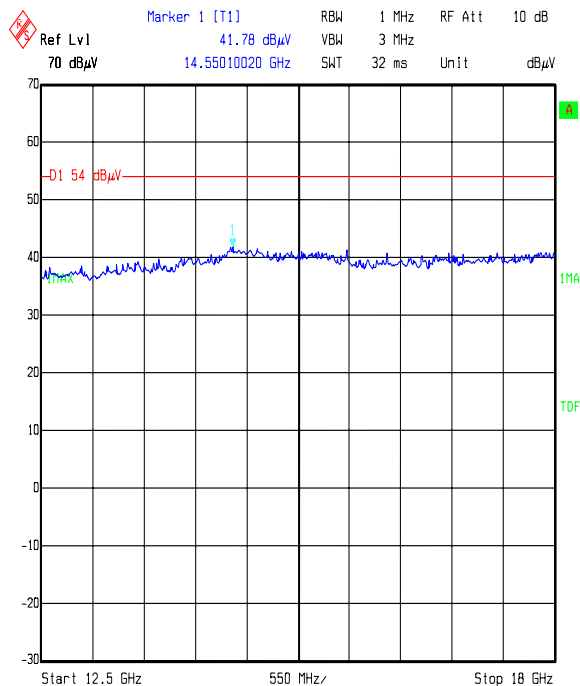


Comment A: Tx Mode Top Channel 48734JD01
Date: 05.DEC.2006 15:42:29

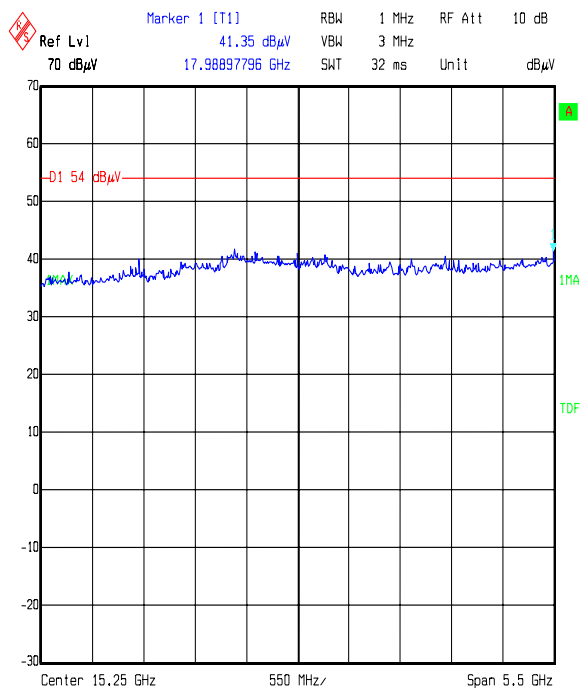
Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a) (Continued)

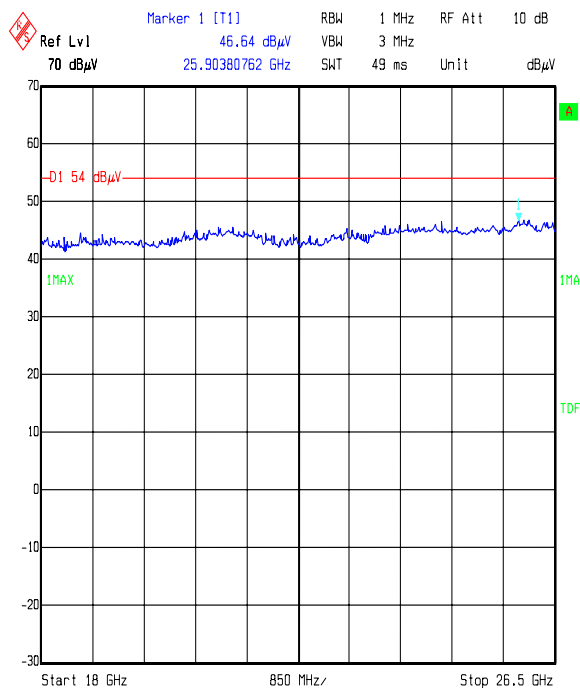
Comment A: Tx Mode Bottom Channel 48734JD01
Date: 05.DEC.2006 16:51:23



Comment A: Tx Mode Middle Channel 48734JD01
Date: 05.DEC.2006 17:08:05

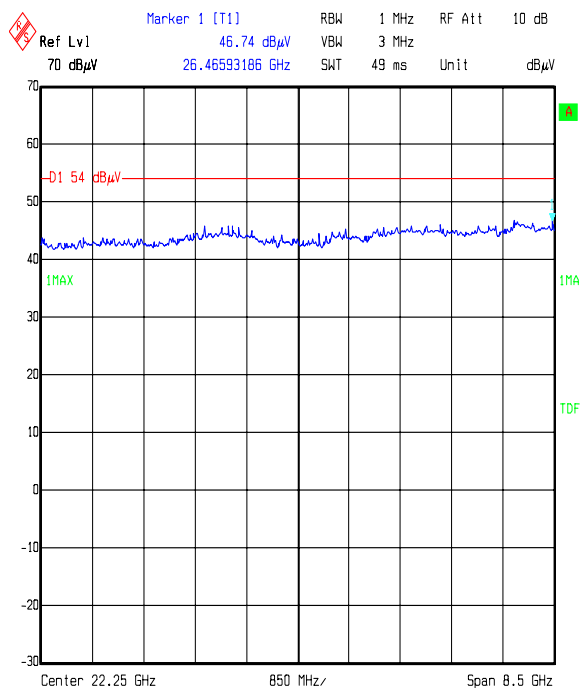


Comment A: Tx Mode Top Channel 48734JD01
Date: 05.DEC.2006 17:10:09

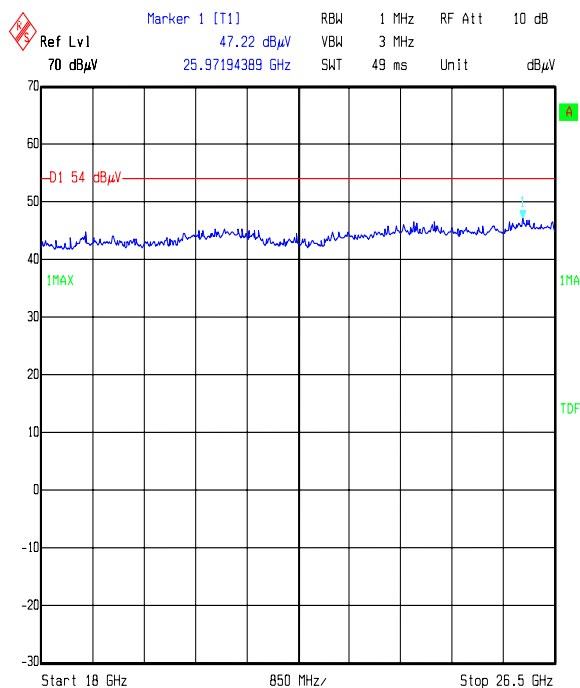


Comment A: Tx Mode Bottom Channel 48734JD01
Date: 05.DEC.2006 16:56:43

Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a) (Continued)

Comment A: Tx Mode Middle Channel 48734JD01
Date: 05.DEC.2006 17:01:36



Comment A: Tx Mode Top Channel 48734JD01
Date: 05.DEC.2006 17:14:03

Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

7.2.17. Transmitter Band Edge Conducted Emissions: Section 15.247(d)

The EUT was configured for transmitter conducted emissions measurements, as described in section 9 of this report.

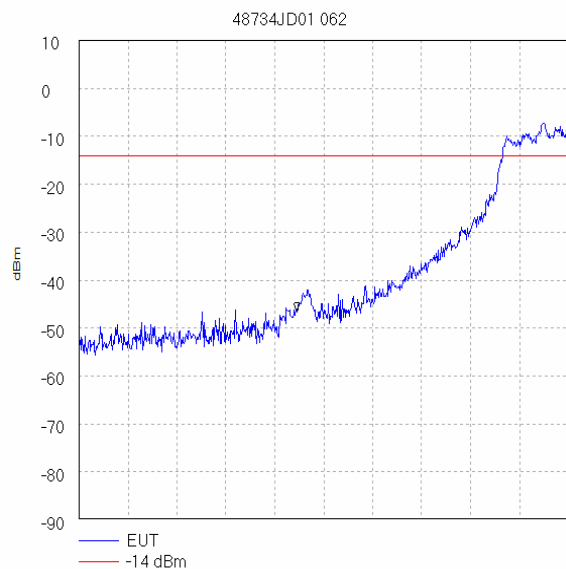
Tests were performed to identify the maximum conducted band edge emission levels.

The limit lines shown in the plots below are set to a level 20 dB below the measured fundamental peak power. The values in the table below are referenced to the highest level measured in 100 kHz bandwidth.

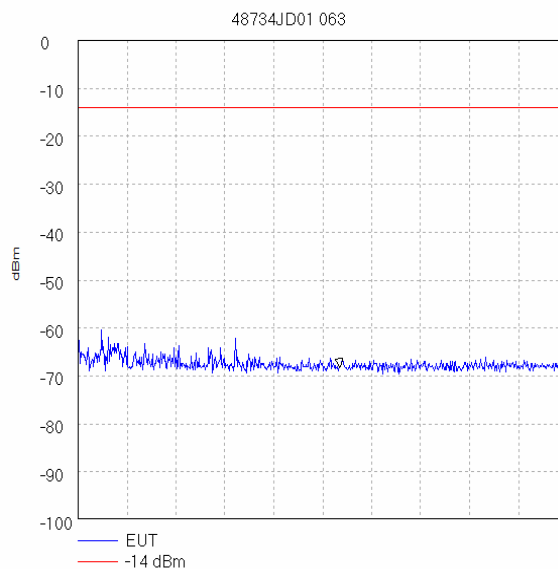
Results:**Peak Power Level:**

Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
2400.0	-46.7	-39.7	-20.0	19.7	Complied
2483.5	-68.3	-61.3	-20.0	41.3	Complied

Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

Transmitter Band Edge Conducted Emissions: Section 15.247(d) (Continued)

Start 2.396 GHz; Stop 2.405 GHz
Ref 10 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 50.0 mS
Marker 2.4 GHz, -46.67 dBm
Display Line: -14 dBm;
Tested by JXH 11/12/2006 14:23:11



Start 2.476 GHz; Stop 2.49 GHz
Ref 0 dBm; Ref Offset 0.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 50.0 mS
Marker 2.483 GHz, -68.33 dBm
Display Line: -14 dBm;
Tested by JXH 11/12/2006 14:27:13

Note: The limit line on the screen shows 20 dBc with respect to the conducted power of +6 dBm. The measurements on the previous page refer to 20 dBc of the highest level of signal measured in 100 kHz, which was -7 dBm.

Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
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7.2.18. Transmitter Band Edge Radiated Emissions: Section 15.247(d) & 15.209(a)

The EUT was configured for band edge compliance of radiated emission measurements as described in section 9 of this report.

Tests were performed to identify the maximum radiated band edge emissions.

Results:**Electric Field Strength Measurements****Peak Power Level:**

Frequency (GHz)	Antenna Polarity	Detector Level (dB μ V)	Transducer Factor (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2.4000	Vertical	60.2	-11.4	48.8	67.7*	18.9	Complied
2.4835	Vertical	68.1	-11.4	56.7	74.0	17.3	Complied

Note(s):

* -20 dBc limit.

Peak measurements were performed on the band edge frequency 2.4835 GHz and compared to the general limits of 15.209 because it lies within a restricted band.

Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
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7.2.19. Transmitter Band Edge Radiated Emissions: Section 15.247(d) & 15.209(a)

The EUT was configured for band edge compliance of radiated emission measurements as described in section 9 of this report.

Tests were performed to identify the average radiated band edge emissions.

Results:**Average Power Level Static Mode:**

Frequency (GHz)	Antenna Polarity	Detector Level (dB μ V)	Transducer Factor (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2.4835	Vertical	56.1	-11.4	44.7	54.0	9.3	Complied

Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
To: FCC Part 15.247: 2006 (Subpart C)

8. Measurement Uncertainty

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently, the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor, such that a confidence level of approximately 95% is maintained. For the purposes of this document “approximately” is interpreted as meaning “effectively” or “for most practical purposes”.

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
AC Conducted Spurious Emissions	0.15 MHz to 30 MHz	95%	±3.72 dB
Transmitter Maximum Peak Output Power	Not applicable	95%	±2.94 dB
Conducted Emissions Antenna Port	30 MHz to 40 GHz	95%	±0.28 dB
Spectral Power Density	Not applicable	95%	±0.27 dB
6 dB/20 dB Bandwidth	Not applicable	95%	±11.4 ppm
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	±4.64 dB
Radiated Spurious Emissions	1 GHz to 40 GHz	95%	±2.94 dB

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty, the published guidance of the appropriate accreditation body is followed.

Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
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9. Measurement Methods

9.1. AC Mains Conducted Emissions

AC mains conducted emissions measurements were performed in accordance with the standard, against appropriate limits for each detector function.

The test was performed in a shielded enclosure with the equipment arranged as detailed in the standard on a wooden bench using the floor of the screened enclosure as the ground reference plane. The EUT was powered with 110V 60 Hz ac mains supplied via a line impedance stabilisation network (LISN).

Initial measurements in the form of swept scans covering the entire measurement band were performed in order to identify frequencies on which the EUT was generating interference. In order to minimise the time taken for these swept measurements, a peak detector was used in conjunction with the appropriate detector IF measuring bandwidths (see table below). Repetitive scans were performed to allow for emissions with low repetition rates, and the duty cycle of the EUT. The test configuration was the same for the initial scans as for the final measurements.

Following the initial scans, a graph was produced giving an overview of the emissions from the EUT plotted against the appropriate specification limit. A tolerance line was set 6 dB below the specification limit and levels above the tolerance line were re-tested (at individual frequencies) using the appropriate detector function.

The test equipment settings for conducted emissions measurements were as follows:

Receiver Function	Initial Scan	Final Measurements
Detector Type:	Peak	Quasi-Peak (CISPR)/Average
Mode:	Max Hold	Not applicable
Bandwidth:	10 kHz	9 kHz
Amplitude Range:	60 dB	20 dB
Measurement Time:	Not applicable	>1 s
Observation Time:	Not applicable	>15 s
Step Size:	Continuous sweep	Not applicable
Sweep Time:	Coupled	Not applicable

Test of: Zinwave Ltd
Cisco Aironet 1200 802.11g Access Point and Zinwave 2700 DAS
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9.2. Radiated Emissions

Radiated emissions measurements were performed in accordance with the standard, against appropriate limits for each detector function.

Initial measurements covering the entire measurement band in the form of swept scans in a shielded enclosure were performed in order to identify frequencies on which the EUT was generating interference. This determined the frequencies on which the EUT should be re-measured in full on the open area test site. In order to minimise the time taken for the swept measurements, a peak detector was used in conjunction with the appropriate detector IF measuring bandwidth (see table below). Repetitive scans were performed to allow for emissions with low repetition rates.

The initial scans were performed using an antenna height of 1.5 m and a measurement distance of 3 m. Following the initial scans, graphs were produced giving an overview of the emissions from the EUT plotted against the appropriate specification limit. Any emission within 20 dB of the limit were then measured on the open area test site, except in cases where the noise floor was within 20 dB of the limit, in these cases the highest point of the noise floor was measured.

Where an emission fell inside a restricted band, measurements were made at the appropriate test distance using a measuring receiver with a quasi peak detector for measurements below 1000 MHz and an average and peak detector for measurements above 1000 MHz. A peak detector was used for all other measurements.

For the final measurements the EUT was arranged on a non-conducting turn table on a standard test site compliant with ANSI C63.4 – 2003 Clause 5.4.

All measurements on the open area test site were performed using broadband antennas in both vertical and horizontal polarisations.

On the open area test site, at each frequency where a signal was to be measured, the trace was maximised by rotating a turntable through 360°. The angle at which the maximum signal was observed was locked out. For frequencies below 1000 MHz the test antenna was varied in height between 1 m and 4 m in order to further maximise the target emission.

For frequencies above 1000 MHz where a horn antenna was used, height searching was performed to locate the optimal height of the horn with respect to the EUT. At this point the horn was locked off and the turntable was again rotated through 360° to maximise the target signal. It should be noted that the received signal from the EUT would diminish very quickly after it exits the beam width of the horn antenna, for this reason it may not be necessary to fully height search with the horns.

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Radiated Emissions (Continued)

At this point, any signals found to be between the limit and a level 6 dB below it were further maximised by changing the configuration of the EUT, e.g. re-routing cables to peripherals and moving peripherals with respect to the EUT.

Scans were performed to the upper frequency limits as stated in section 15.33

The final field strength was determined as the indicated level in dB μ V plus cable loss and antenna factor.

The test equipment settings for radiated emissions measurements were as follows:

Receiver Function	Initial Scan	Final Measurements <1 GHz	Final Measurements ≥1 GHz
Detector Type:	Peak	Quasi-Peak (CISPR)	Peak / Average
Mode:	Max Hold	Not applicable	Max Hold
Bandwidth:	(120 kHz <1 GHz) (1 MHz ≥1 GHz)	120 kHz	1 MHz
Amplitude Range:	100 dB	100 dB	100 dB
Step Size:	Continuous sweep	Not applicable	Not applicable
Sweep Time:	Coupled	Not applicable	Not applicable

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9.3. Conducted Antenna Port Emissions

Conducted antenna port emissions measurements were performed using a 100 kHz bandwidth in accordance with the standard against the appropriate limits.

Prior to testing being performed a suitable RF attenuator and cable, were calibrated for the required frequency range. For each measurement range the calibrated level of the attenuator and cable were entered as an offset into the spectrum analyser to compensate for the losses in the measurement set up.

Initial measurements covering the entire measurement band in the form of swept scans were performed in order to identify frequencies on which the EUT was generating interference. This determined the frequencies on which final measurements were necessary. To make the final measurements a peak detector was used in conjunction with the appropriate detector IF measuring bandwidth.

Repetitive scans were performed to allow for emissions with low repetition rates.

Scans were performed to the upper frequency limits as stated in 15.33(a)(1)

9.4. Minimum 6 dB Bandwidth

The EUT and spectrum analyser were configured as for conducted antenna port emissions.

Prior to testing being performed a suitable RF attenuator and cables were calibrated for the required frequencies. For each frequency the calibrated level of the attenuator and cable were entered as an offset into the spectrum analyser to compensate for the losses in the measurement set up.

To determine the 6 dB bandwidth, a resolution bandwidth of 200 kHz was used. A video bandwidth of 200 kHz was used. The analyser was set to a span of greater than twice the 6 dB bandwidth and for a maximum hold scan to capture the profile of the signal. The peak level was then determined, and a reference established 6 dB below the peak level. The bandwidth was determined at the points where the 6 dB reference crossed the profile of the emission.

9.5. Transmitter 20 dB Bandwidth

The EUT and spectrum analyser was configured as for transmitter conducted antenna port emissions.

The occupied bandwidth was measured using the built in occupied bandwidth function of the Rohde and Schwarz FSEB or ESIB spectrum analyser. It was set to measure the bandwidth where 99% of the signal power was contained. The analyser settings were set as per those outlined in the spectrum analyser user manual for this measurement, i.e. RBW $\geq 1\%$ of occupied bandwidth. A value of 200 kHz was used.

9.6. Spectral Power Density

The EUT and spectrum analyser were configured as for conducted antenna port emissions measurements.

Prior to testing being performed a suitable RF attenuator and cables were calibrated for the required frequencies. For each frequency the calibrated level of the attenuator and cable were entered as an offset into the spectrum analyser to compensate for the losses in the measurement set up.

Prior to the measurement being taken the spectrum analyser was tuned to the fundamental frequency of the EUT.

A resolution bandwidth of 3 kHz was selected and the analyser was set to a span greater than twice the 6 dB bandwidth. The trace was max held and a reading was taken at the peak point of the trace.

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9.7. Peak Output Power

The EUT and spectrum analyser were configured as for conducted antenna port emissions measurements.

Prior to testing being performed a suitable RF attenuator and cables were calibrated for the required frequencies. For each frequency to be measured, the calibrated level of the attenuator and cable were entered as an offset into a spectrum analyser to compensate for the measurement set up.

To determine the transmitter output power, the EUT was operated at maximum power and a result was obtained using a wideband peak power meter.

9.8. Band Edge Compliance of RF Radiated Emissions

The EUT and spectrum analyser were configured as for radiated measurements.

To determine band edge compliance, the analyser resolution bandwidth was set to $\geq 1\%$ of the analyser span. The video bandwidth was set to be $\geq$ to the resolution bandwidth. The sweep was set to auto and the detector to peak. The trace was set to max hold and a trace was produced.

A plot of the lower band edge of the allocated frequency band was produced. A marker was set to the level of the highest in band emission with a limit line set to 20 dB below this. The marker was then placed on the highest out of band emission (the specification states that either the band edge level must be measured or the highest out of band emission, whichever is the greater). The plots show that the highest out of band emission complies with the 20 dBc Limit.

The above procedure was then repeated for the upper band edge except that, as the upper band edge fell on a restricted band edge (as defined in section 15.205(a)), the limit for the restricted band was applied instead of the 20 dBc limit, i.e. the general limits defined in section 15.209(a).

Final measurements were performed on the worst-case configuration as described in part 15.31(i).

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Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval
A027	1-2 GHz Horn Antenna	Eaton	9188-2	301	08 Jun 06	36
A1069	Single Phase LISN	Rohde & Schwarz	ESH3-Z5	837469/012	31 Jan 06	12
A1362	2.3 - 4.4GHz Horn Antenna	Stoddart Aircraft Radio Co., Inc.	91889-1	N/A	08 Jun 06	12
A1423	6dB Pad	Atlantic	A40-06	N/A	28 Apr 06	12
A259	30 to 1000 MHz, 50 W	Chase	CBL6111A	1513	03 March 2006	12
C1083	Cable	Rosenberger	001	2799	16 Sept 2006	12
C1088	5m Cable	Rosenberger	FA210A10 50005050	1	22 Sept 2006	12
C1109	1.0m coax with two 40GHz connectors.	Semflex, Inc.	X116BFSX 10040	None	05 May 2006	12
C1156	Rosenberger Cable	Rosenberger	FA210A10 15005G5G	2205 42448-2	19 Aug 2006	12
C1165	2m N-type Cable	Rosenberger Micro-Coax	FA210A10 20007070	43189-1	Cal before use	-
C363	3m	Rosenberger	RG142	None	29 Jan 2006	12
G011	SMGU Signal Generator	Rohde & Schwarz	SMGU	894 054/004	18 Jan 2005	24
M1009	RF Power Meter	Hewlett Packard	437B	3125U13706	30 Oct 2006	12

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Test Equipment Used (Continued)

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval
M1010	RF Power Sensor 50MHz-26.5GHz - 30dBm to +20dBm	Hewlett Packard	8485A	3318A12380	29 Jun 2006	12
M1252	40 GHz Signal Generator	HP	83640A	3119A00489	18 Aug 2006	12
M1253	40 GHz Spectrum Analyser	HP	8564E	3442A00262	30 Oct 2006	12
M1263	EMI Test Receiver	Rohde & Schwarz	ESIB7	100265	12 Jan 2006	12
M127	20 Hz to 7 GHz.	Rohde & Schwarz	FSEB 30	842 659/016	07 Aug 2006	12
M166	Temperature, humidity and pressure	EuroCom	None	None	23 Oct 2006	12
M211	Digital Multimeter	Fluke	70 Series 3	71210457	16 Mar 2006	12
S205	Anechoic Chamber	RFI	5		07 Mar 2006	12
S209	Emissions Screened Room	RFI	9		29 May 2006	12
S212	Emissions Screened Room	RFI	12		N/A	-
S216	Microwave Lab.	RFI	16	None	N/A	-

NB In accordance with UKAS requirements, all the measurement equipment is on a calibration schedule.

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Appendix 2. Test Configuration Drawings

This appendix contains the following drawings:

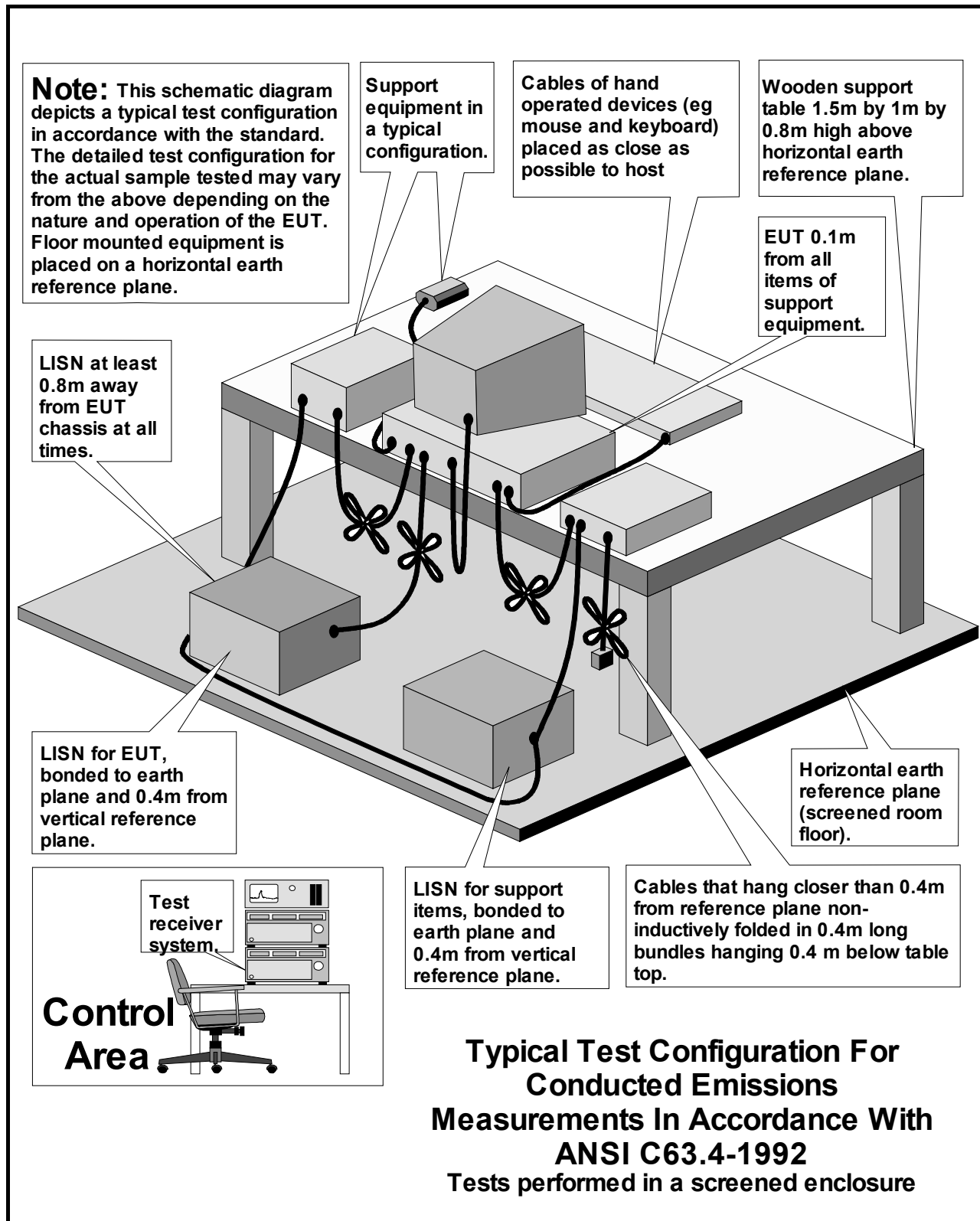
Drawing Reference Number	Title
DRG\48734JD01\EMICON	Test configuration for measurement of conducted emissions.
DRG\48734JD01\EMIRAD	Test configuration for measurement of radiated emissions.

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DRG\48734JD01\EMICON



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DRG\48734JD01\EMIRAD

