FCC CFR47 PART 15 SUBPART C CERTIFICATION

TEST REPORT

FOR

802.11a ACCESS POINT

MODEL NUMBER: AP48

FCC ID: LXC-AR5BAP-00048

REPORT NUMBER: 04U2761-2

ISSUE DATE: JULY 9, 2004

Prepared for
DENSO INTERNATIONAL AMERICA, INC.
3252 BUSINESS PARK DRIVE
VISTA, CA 92081, USA

Prepared by
COMPLIANCE CERTIFICATION SERVICES
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1. TEST RESULT CERTIFICATION

COMPANY NAME: Denso International America, Inc.
3252 Business Park Drive
Vista, CA, 92081, USA

EUT DESCRIPTION: 802.11a Access Point

MODEL: AP48

DATE TESTED: JUNE 21 - 24, 2004

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART B	NO NON-COMPLIANCE NOTED
FCC PART 15 SUBPART C	NO NON-COMPLIANCE NOTED

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: This document reports conditions under which testing was conducted and results of tests performed. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document.

Approved & Released For CCS By:

MIKE HECKROTTE
ENGINEERING MANAGER
COMPLIANCE CERTIFICATION SERVICES

Tested By:

BEN DU
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. EUT DESCRIPTION

The EUT is an 802.11a transceiver integrated with an access point, operating in the 5250 to 5350 MHz and 5725 to 5850 MHz bands. It is intended to be used in automotive research applications.

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

Frequency Band (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5745 - 5825	802.11a	26.93	493.17

The radio utilizes two identical external antennas for diversity, each with a maximum gain of 6.75 dBi.

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4/2001, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

4. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

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

No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government.

5. CALIBRATION AND UNCERTAINTY

5.1. MEASURING INSTRUMENT CALIBRATION

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

5.2. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Power Line Conducted Emission	+/- 2.9 dB

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

5.3. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**Cal Due**
Antenna, Horn 1 ~ 18 GHz	**EMCO**	**3117**	**29301**	**12/26/2004**
Preamplifier, 1 ~ 26 GHz	**Miteq**	**NSP10023988**	**646456**	**4/25/2005**
EMI Test Receiver	**R & S**	**ESIB40**	**100192**	**11/21/2004**
pectrum Analyzer 20 Hz ~ 44 GH	**Agilent**	**E4446A**	**US42070220**	**4/1/2005**
Peak Power Meter	**Agilent**	**E4416A**	**GB41291160**	**11/7/2004**
Peak / Average Power Sensor	**Agilent**	**E9327A**	**US40440755**	**11/7/2004**
30MHz---- 2Ghz	**Sunol Sciences**	**JB1 Antenna**	**A121003**	**12/22/2004**
EMI Receiver, 9 kHz ~ 2.9 GHz	**HP**	**8542E**	**3942A00286**	**11/21/2004**
RF Filter Section	**HP**	**85420E**	**3705A00256**	**11/21/2004**
LISN, 10 kHz ~ 30 MHz	**FCC**	**50/250-25-2**	**114**	**10/13/2004**
LISN, 10 kHz ~ 30 MHz	**Solar**	**8012-50-R-24-BNC**	**8379443**	**10/13/2004**
EMI Test Receiver	**R & S**	**ESHS 20**	**827129/006**	**7/17/2004**
ite A Line Stabilizer / Conditione	**Tripplite**	**LC-1800a**	**A0051681**	**CNR**

6. SETUP OF EQUIPMENT UNDER TEST

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Laptop PC	HP	ze4101	CN24600011	CRVSA-02T1-75

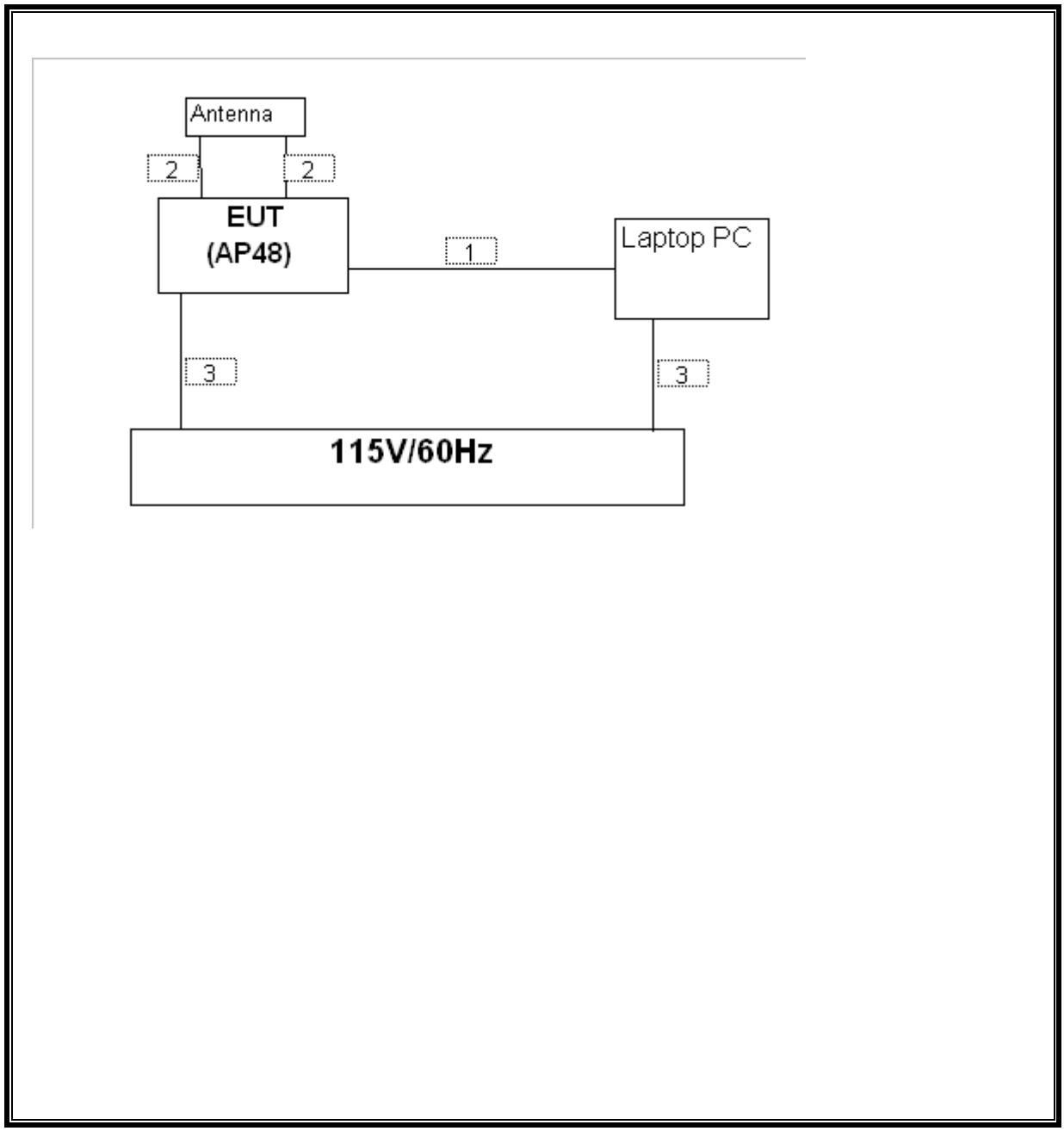
I/O CABLES

Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	I/O	1	RJ45	Un-Shielded	3m	N/A
2	Antenna	2	SMA	Shield	0.3m	to Antenna
3	AC Power	2	US 115V/60Hz	Un-Shielded	2m	

TEST SETUP

The EUT is controlled remotely by a host laptop computer via an ethernet connection. The laptop computer is placed outside the test site. The antennas are mounted on a ground plane to simulate the roof of an automobile. Test software exercised the radio card. All final measurements were made at the lowest data rate, which was determined to be the worst-case during preliminary tests.

SETUP DIAGRAM FOR TESTS



7. APPLICABLE LIMITS AND TEST RESULTS

7.1. 6 dB BANDWIDTH

LIMIT

§15.247 (a) (2) For direct sequence systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

RESULTS

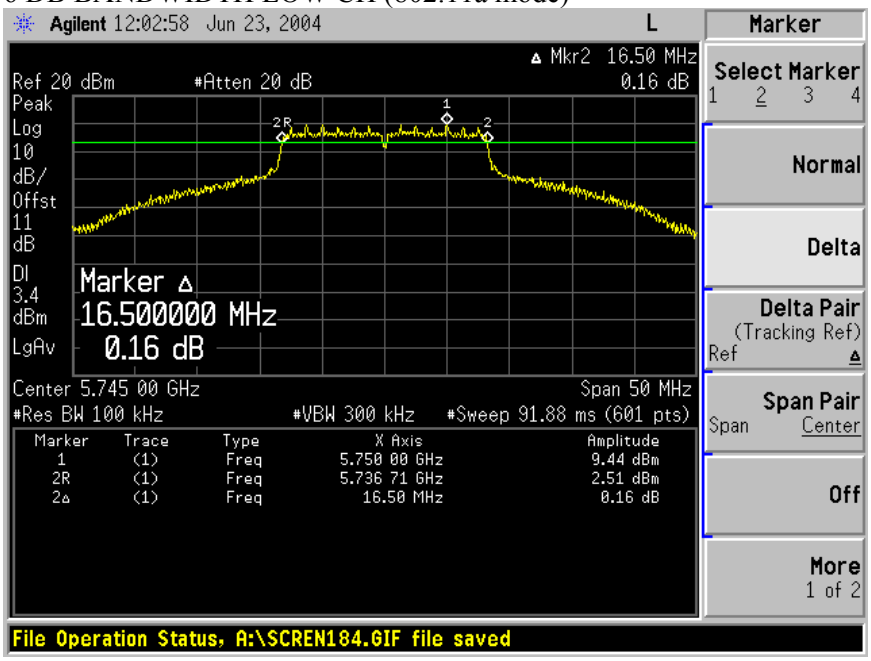
No non-compliance noted:

802.11a Mode

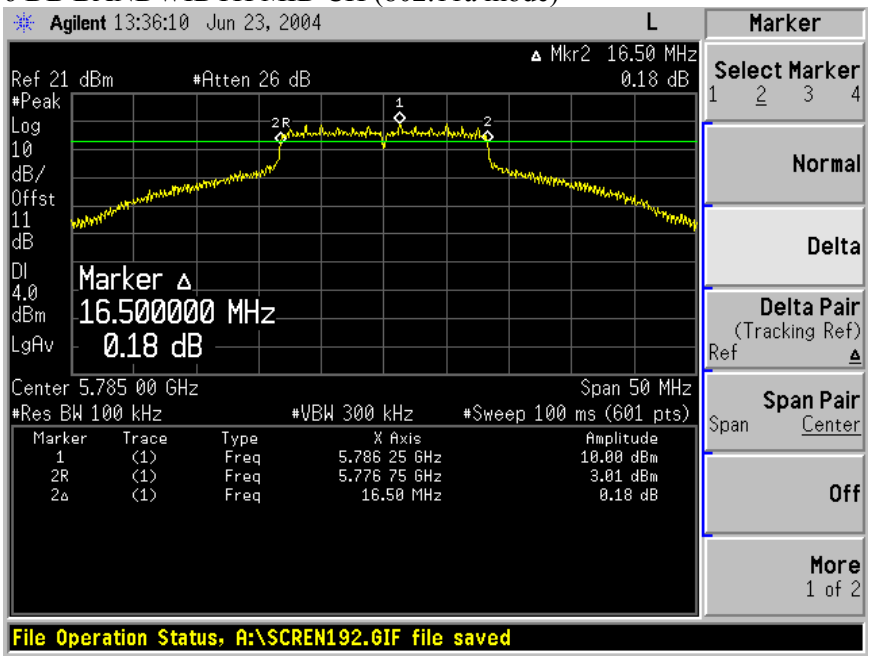
Channel	Frequency (MHz)	6 dB Bandwidth (kHz)	Minimum Limit (kHz)	Margin (kHz)
Low	5745	16500	500	16000
Middle	5785	16500	500	16000
High	5825	16500	500	16000

6 dB BANDWIDTH (802.11a MODE)

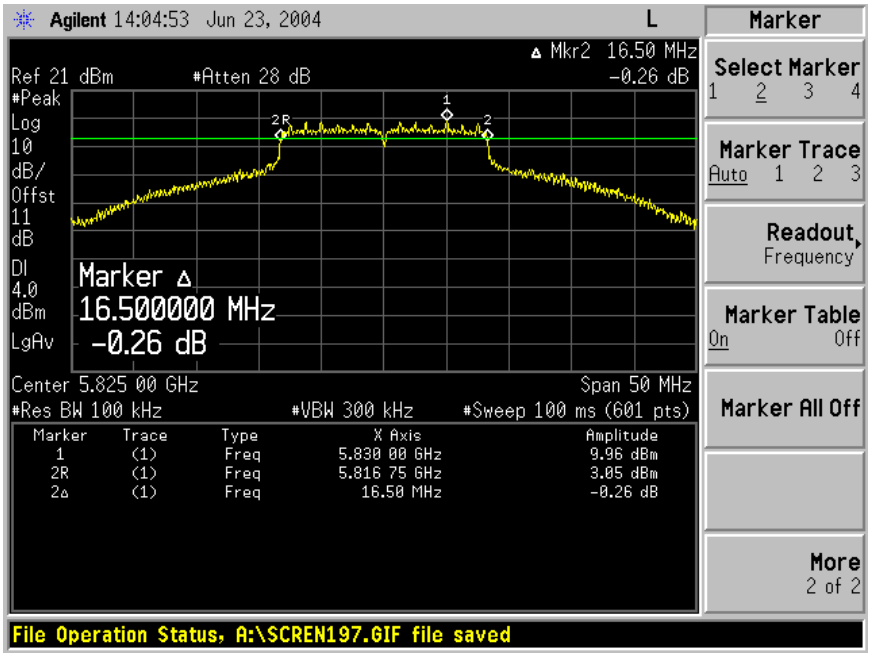
6 DB BANDWIDTH LOW CH (802.11a mode)



6 DB BANDWIDTH MID CH (802.11a mode)



6 DB BANDWIDTH HIGH CH (802.11a mode)



7.2. 99% BANDWIDTH

LIMIT

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

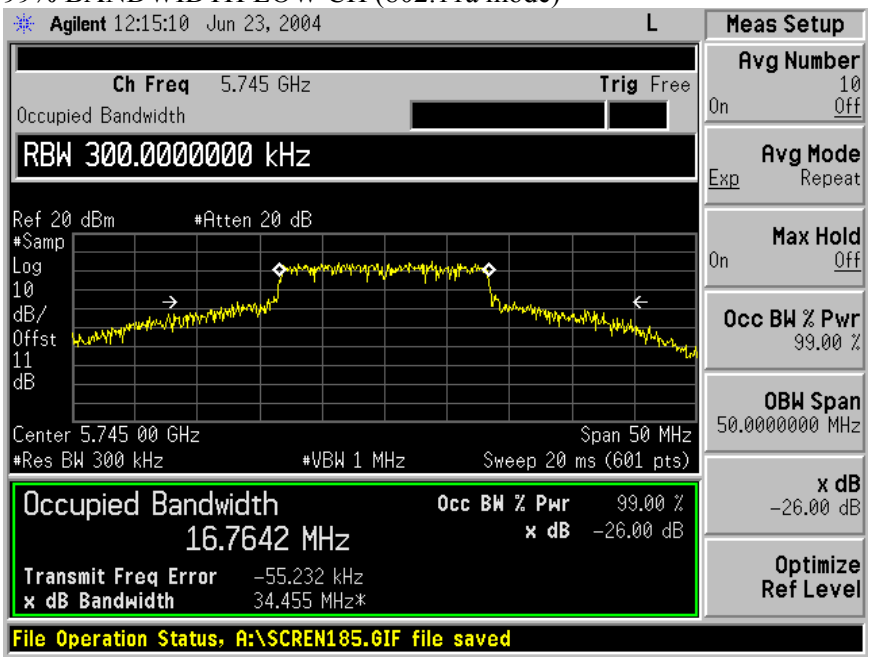
No non-compliance noted:

802.11a Mode

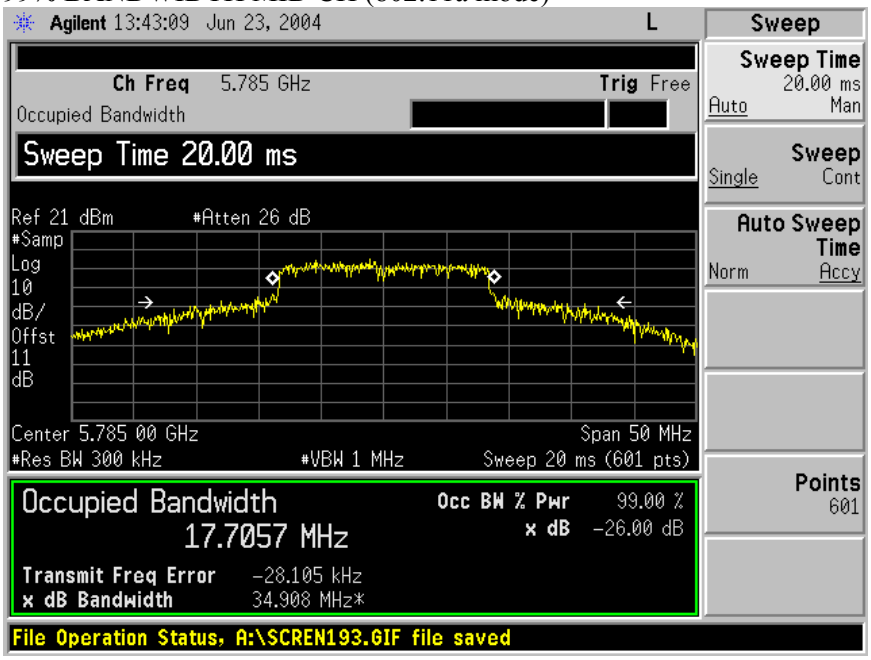
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5745	16.7642
Middle	5785	17.7057
High	5825	17.956

99% BANDWIDTH (802.11a MODE)

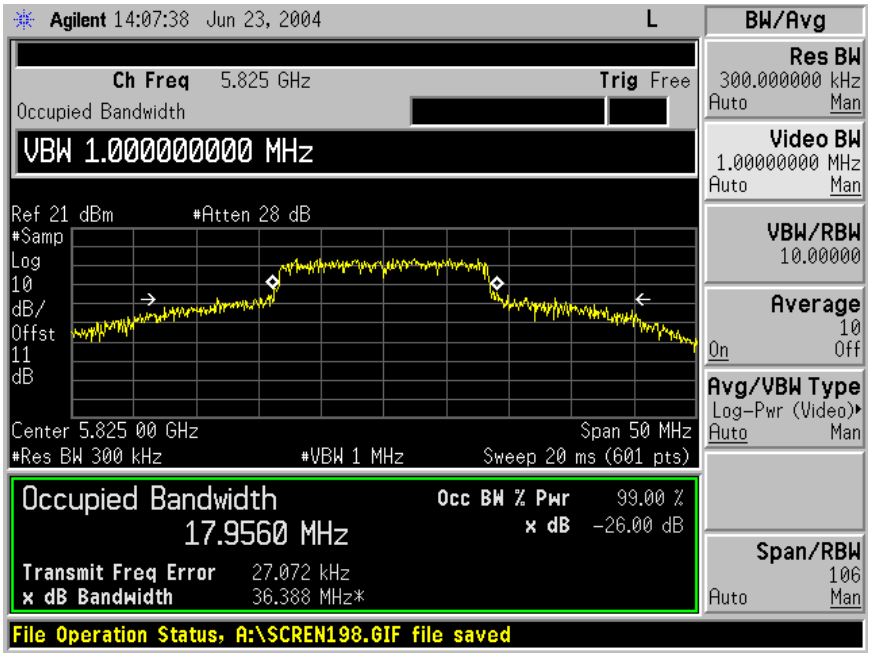
99% BANDWIDTH LOW CH (802.11a mode)



99% BANDWIDTH MID CH (802.11a mode)



99% BANDWIDTH HIGH CH (802.11a mode)



7.3. PEAK OUTPUT POWER

PEAK POWER LIMIT

§15.247 (b) The maximum peak output power of the intentional radiator shall not exceed the following:

§15.247 (b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz , and 5725-5850 MHz bands: 1 watt.

§15.247 (b) (4) Except as shown in paragraphs (b)(3) (i), (ii) and (iii) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The maximum antenna gain is 6.75 dBi, therefore the limit is 29.25 dBm.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer and the analyzer's internal channel power integration function is used to integrate the power over a bandwidth greater than or equal to the 99% bandwidth.

RESULTS

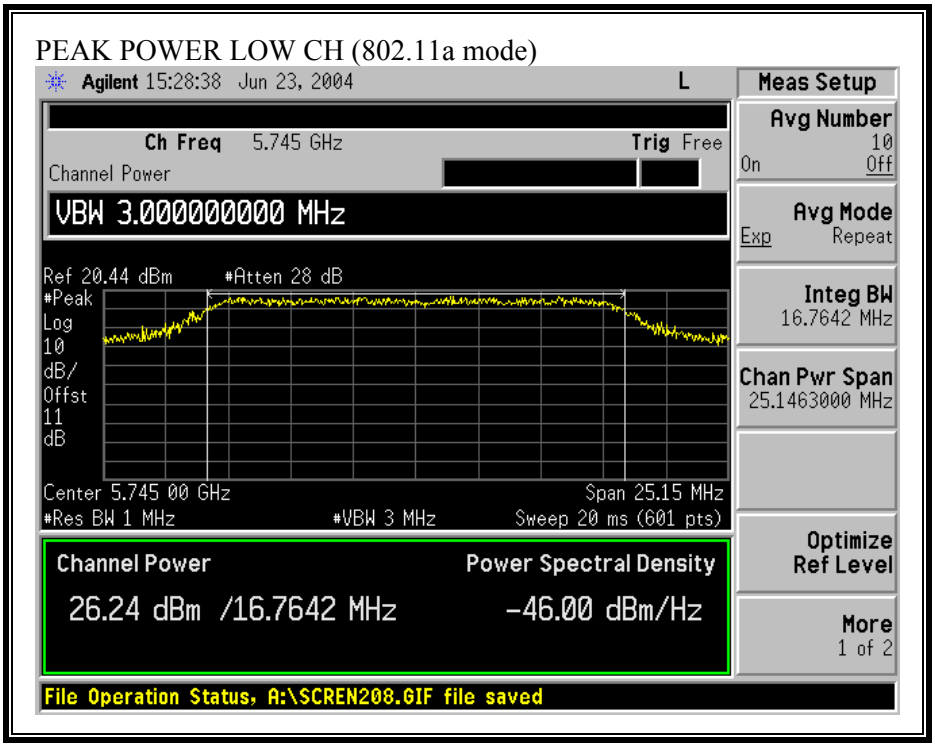
No non-compliance noted:

802.11a Mode

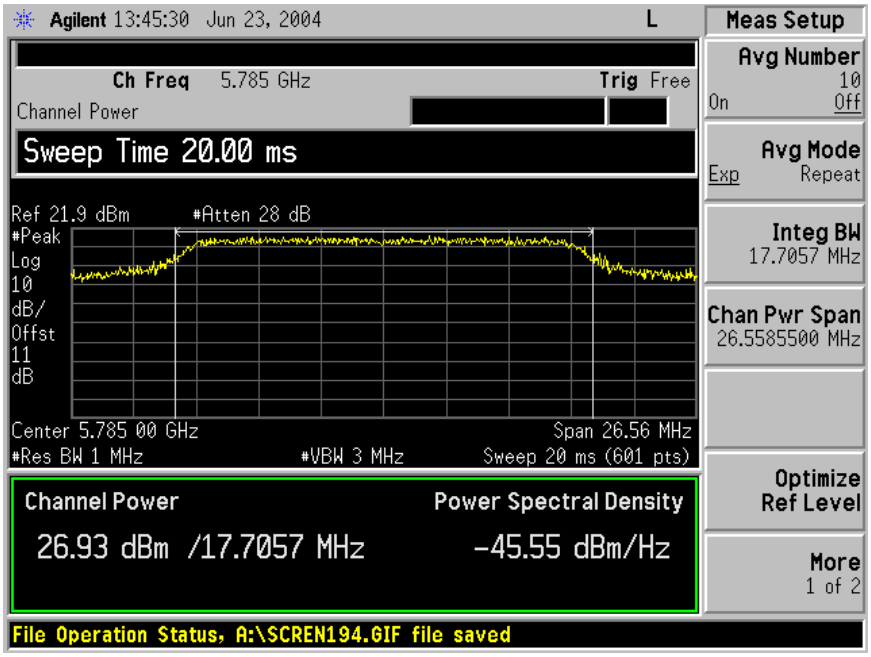
Channel	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
Low	5745	26.24	29.25	-3.01
Middle	5785	26.93	29.25	-2.32
High	5825	26.88	29.25	-2.37

OUTPUT POWER (802.11a MODE)

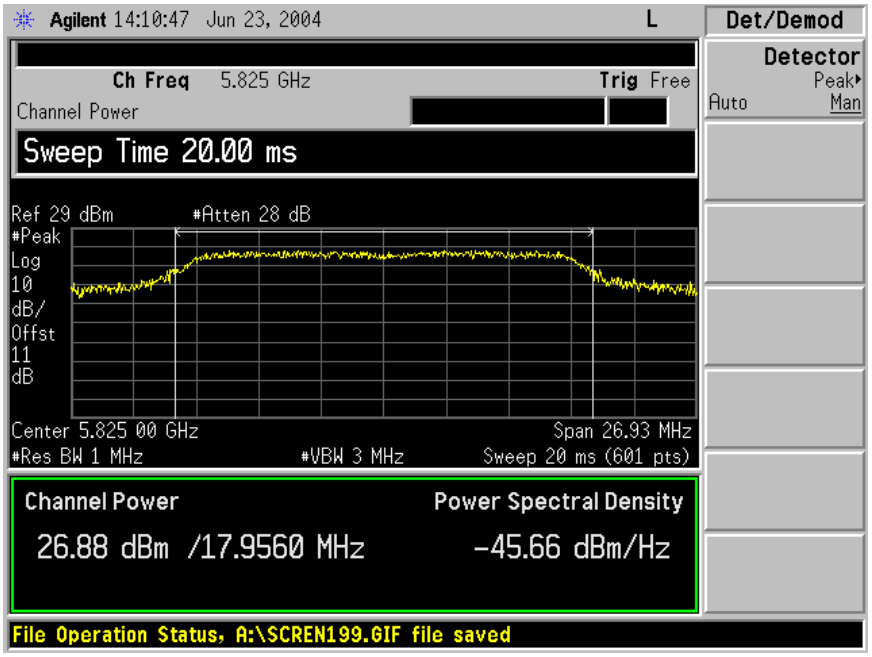
PEAK POWER LOW CH (802.11a mode)



PEAK POWER MID CH (802.11a mode)



PEAK POWER HIGH CH (802.11a mode)



7.4. AVERAGE POWER

AVERAGE POWER LIMIT

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

No non-compliance noted:

The cable assembly insertion loss of 11 dB (including 10 dB pad and 1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

802.11a Mode

Channel	Frequency (MHz)	Average Power (dBm)
Low	5745	19.81
Middle	5785	20.22
High	5825	19.93

7.5. PEAK POWER SPECTRAL DENSITY

LIMIT

§15.247 (d) For direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer, the maximum level in a 3 kHz bandwidth is measured with the spectrum analyzer using RBW = 3 kHz and VBW > 3 kHz, sweep time = span / 3 kHz, and video averaging is turned off. The PPSD is the highest level found across the emission in any 3 kHz band.

RESULTS

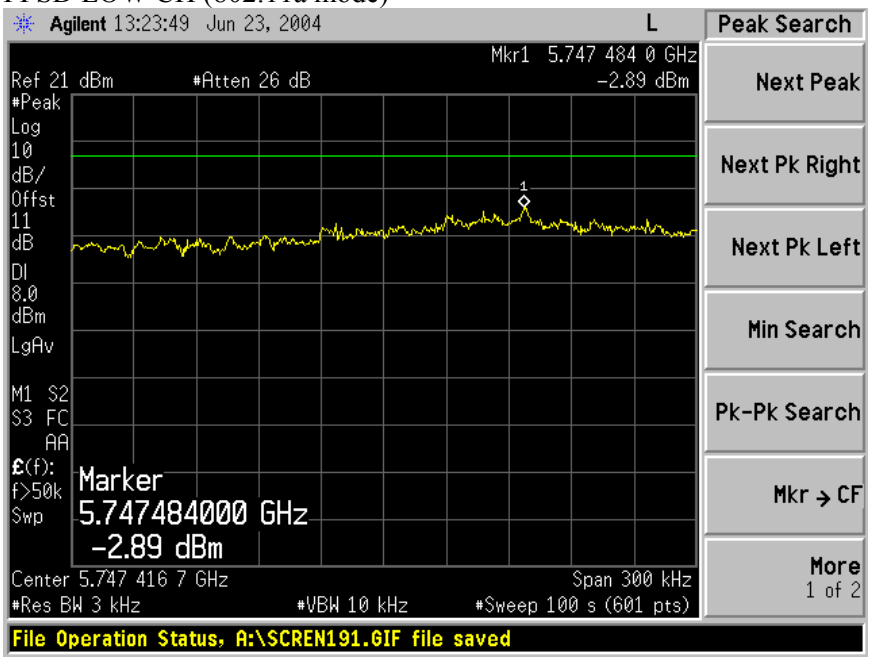
No non-compliance noted:

802.11a Mode

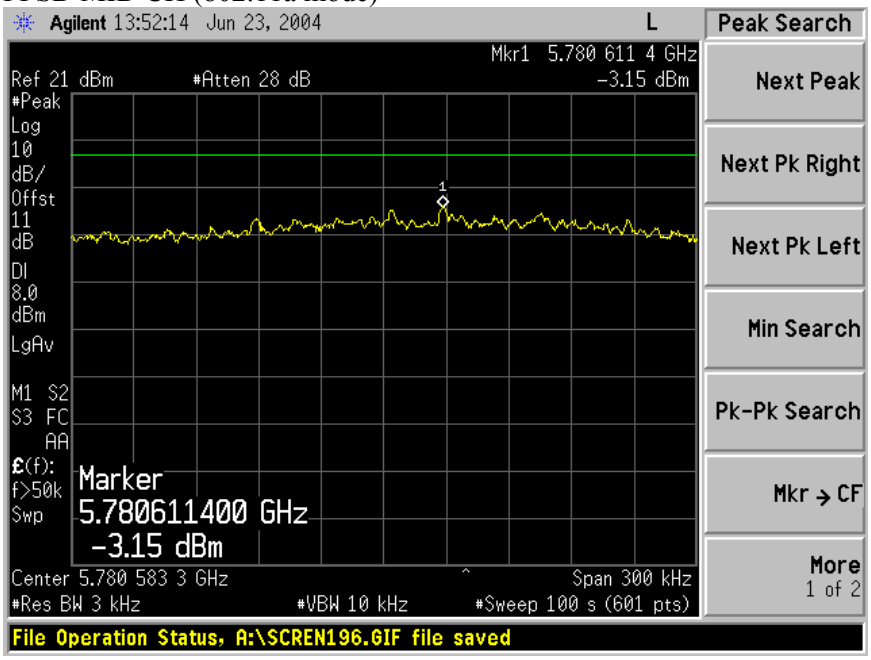
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5745	-2.89	8	-10.89
Middle	5785	-3.15	8	-11.15
High	5825	-4.77	8	-12.77

PEAK POWER SPECTRAL DENSITY (802.11a MODE)

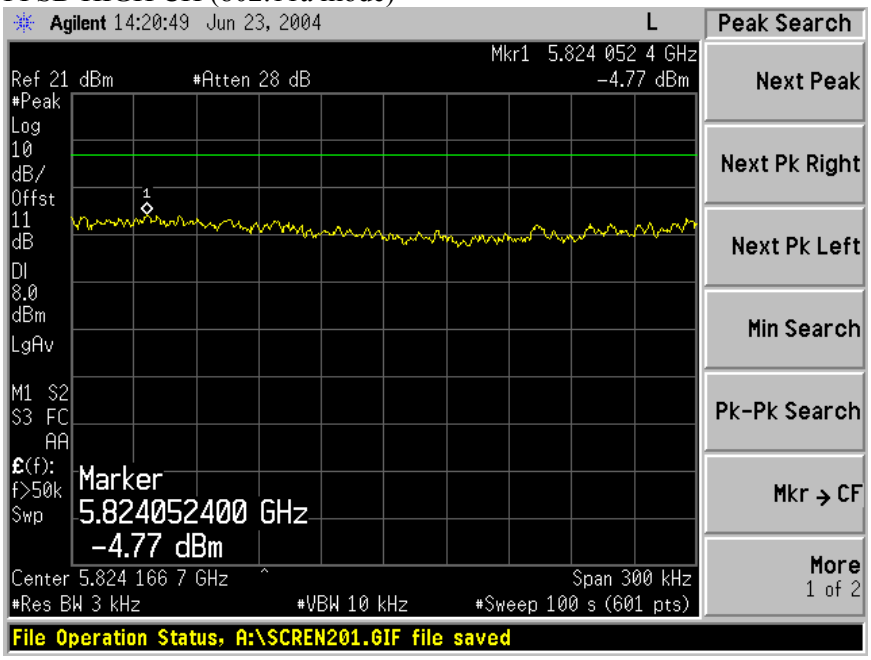
PPSD LOW CH (802.11a mode)



PPSD MID CH (802.11a mode)



PPSD HIGH CH (802.11a mode)



7.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

§15.247 (c) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in§15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

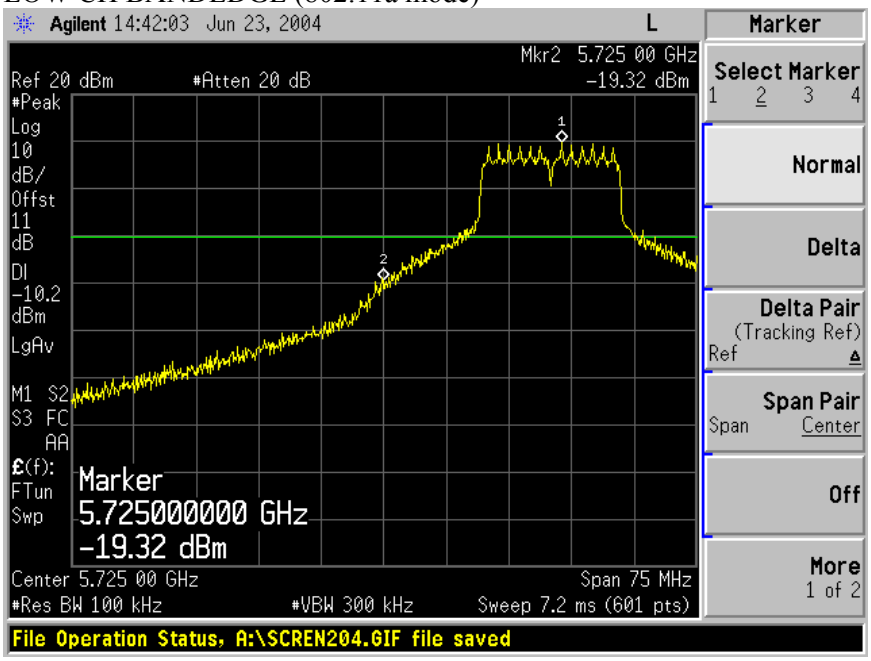
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

RESULTS

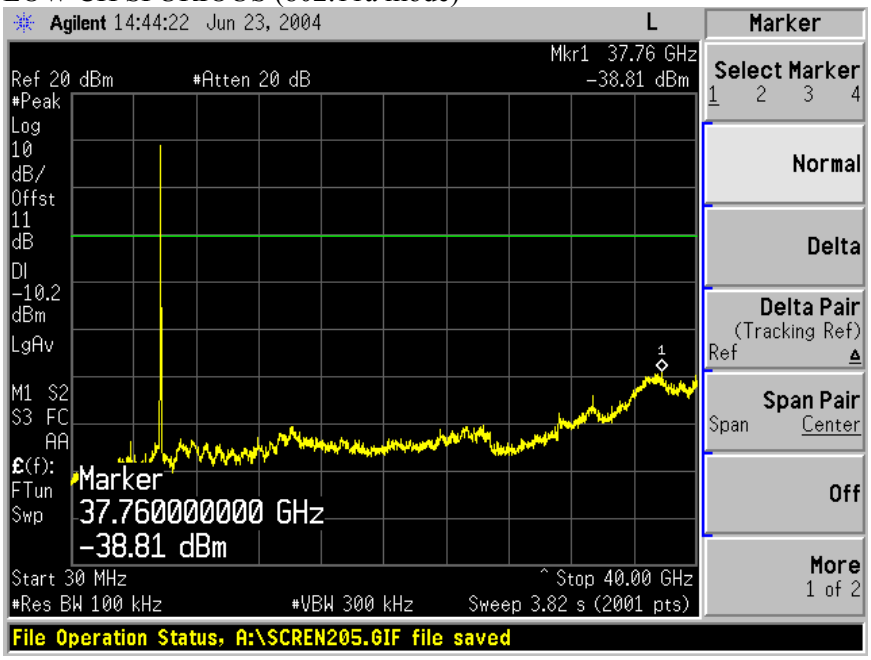
No non-compliance noted:

IOUS EMISSIONS, LOW CHANNEL (802.11a MODE)

LOW CH BANDEDGE (802.11a mode)

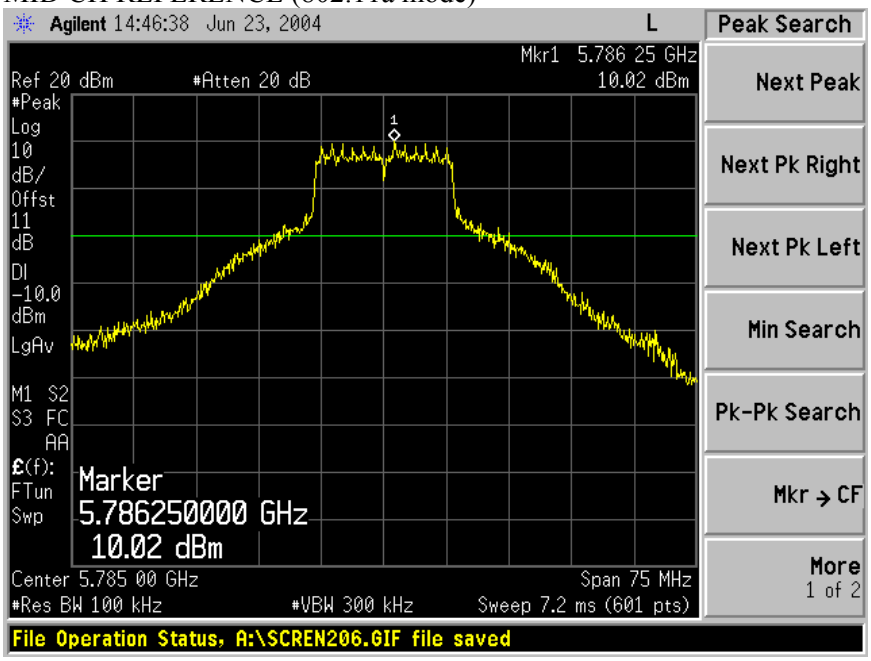


LOW CH SPURIOUS (802.11a mode)

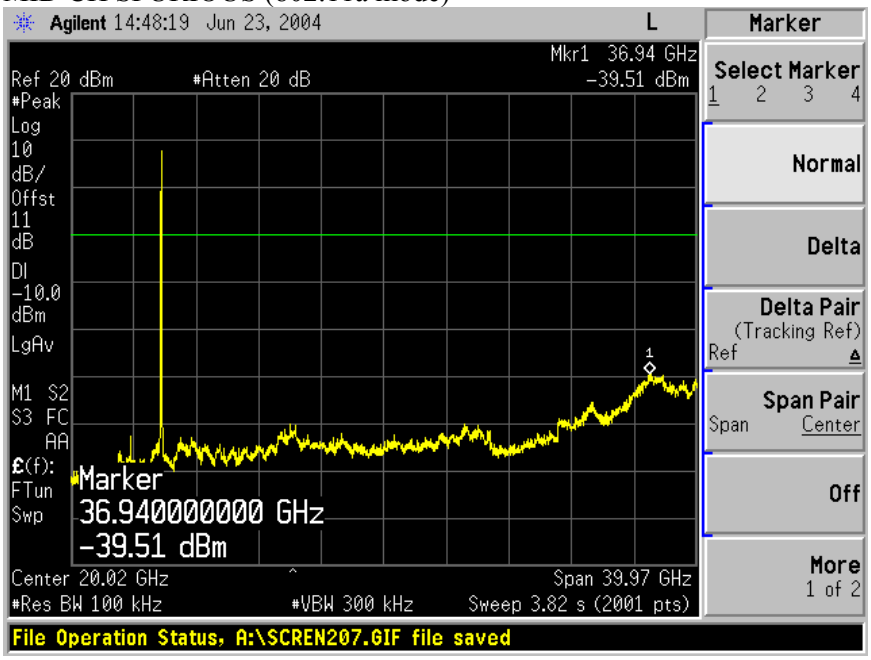


SPURIOUS EMISSIONS, MID CHANNEL (802.11a MODE)

MID CH REFERENCE (802.11a mode)

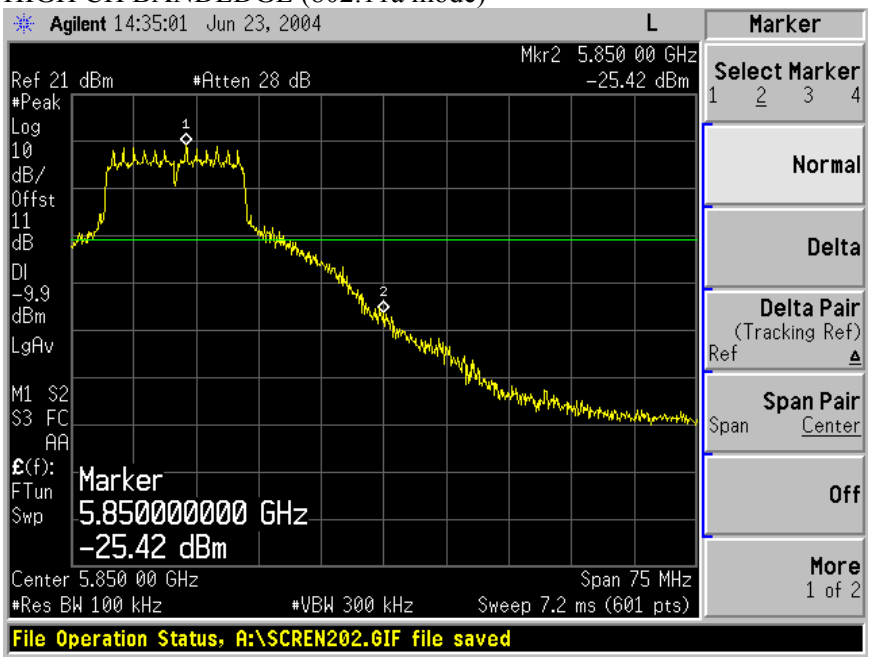


MID CH SPURIOUS (802.11a mode)

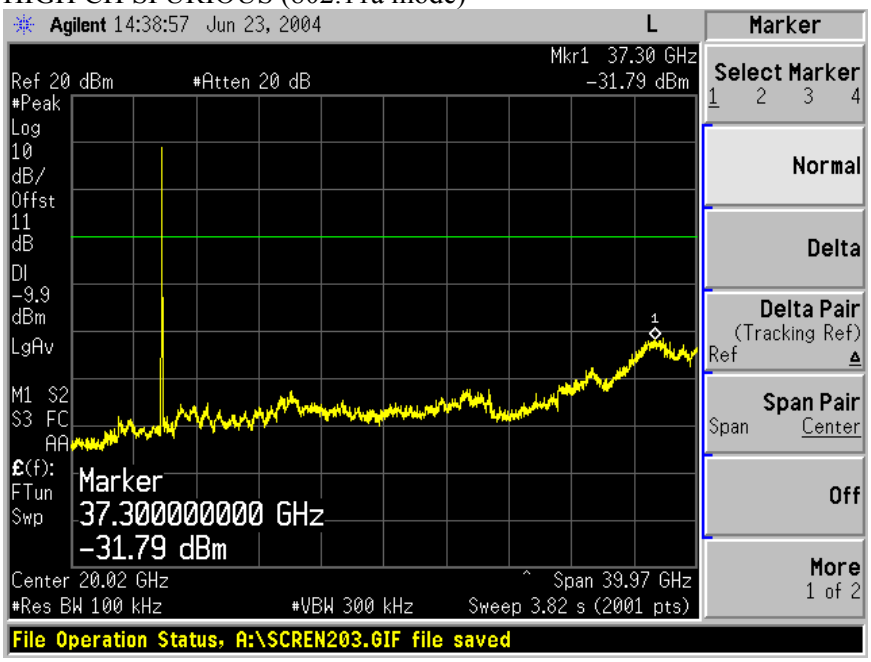


SPURIOUS EMISSIONS, HIGH CHANNEL (802.11a MODE)

HIGH CH BANDEDGE (802.11a mode)



HIGH CH SPURIOUS (802.11a mode)



7.7. RADIATED EMISSIONS

7.7.1. TRANSMITTER RADIATED SPURIOUS EMISSIONS

LIMITS

§15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2] Above 38.6

§15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

§15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

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

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

RESULTS

No non-compliance noted:

7.7.2. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHZ

HARMONICS AND SPURIOUS EMISSIONS (a MODE)

06/21/04 **High Frequency Measurement**
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr:Ben Du
Project #:04U2761-2 DTS
Company: DENSO
EUT Descrip.:11a AP
EUT M/N:AP48
Test Target:FCC 15 205
Mode Oper:tx w/ anta.

Test Equipment:

EMCO Horn 1-18GHz	Spectrum Analyzer	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz
T119; S/N: 29301 @3m	Agilent E4446A Analyzer	T63 Miteq 646456		

Hi Frequency Cables: ☐ (2 ft) ☐ (2 ~ 3 ft) ☑ (4 ~ 6 ft) ☑ (12 ft)

Peak Measurements:
1 MHz Resolution Bandwidth
1MHz Video Bandwidth

Average Measurements:
1 MHz Resolution Bandwidth
10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
5745 MHz Low Ch															
11.478	9.8	45.0	32.5	39.1	5.3	-34.2	0.0	2.0	57.3	44.7	74.0	54.0	-16.7	-9.3	V
4.342	9.8	50.8	35.8	34.6	2.9	-35.4	0.0	2.0	54.9	39.8	74.0	54.0	-19.1	-14.2	V
4.322	9.8	51.2	33.6	34.6	2.9	-35.4	0.0	2.0	55.2	37.6	74.0	54.0	-18.8	-16.4	H
11.502	9.8	46.8	33.7	39.2	5.3	-34.2	0.0	2.0	59.1	45.9	74.0	54.0	-14.9	-8.1	H
5785 MHz Mid Ch															
11.643	9.8	45.9	35.5	39.3	5.4	-34.4	0.0	2.0	58.1	47.8	74.0	54.0	-15.9	-6.2	V
11.731	9.8	45.9	33.9	39.4	5.4	-34.5	0.0	2.0	58.1	46.1	74.0	54.0	-15.9	-7.9	H
5825 MHz High Ch															
11.753	9.8	46.3	34.2	39.4	5.4	-34.5	0.0	2.0	58.5	46.4	74.0	54.0	-15.5	-7.6	V
11.759	9.8	48.4	35.2	39.4	5.4	-34.5	0.0	2.0	60.7	47.4	74.0	54.0	-13.3	-6.6	H

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

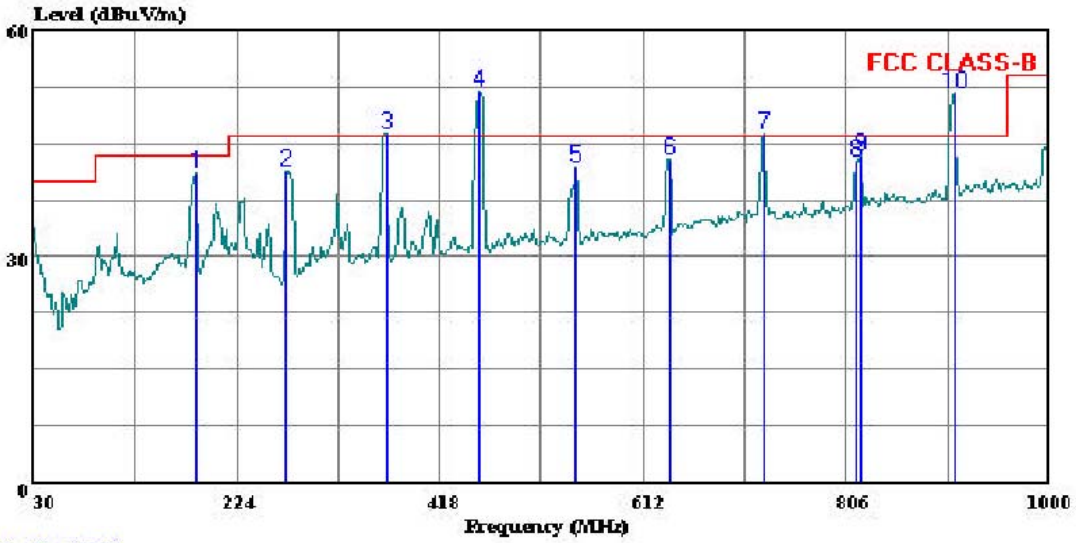
7.7.3. WORST-CASE TRANSMITTER RADIATED EMISSIONS BELOW 1 GHz

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

HORIZONTAL PLOT

COMPLIANCE Engineering Services, Inc.
561F Monterey Road
San Jose, CA 95131
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 14 File#: 04u2761.emi Date: 06-22-2004 Time: 15:56:38



(Audix ATC)

Trace: 5 Ref Trace:

Condition: 3m HORIZONTAL
Test Operator: : Ben Du
Project #: : 04U2761
Company: : Denso
EUT: : 11a AP
Model No: : AP48
Configuration: : EUT w/IBM Laptop
Target of Test: : FCC Class B
Mode of Operation: TX.
: Emissions 3, 4, 7, & 10 are not from the
: radio.These are from the digital device.

HORIZONTAL DATA

	Freq	Remark	Read Level	Factor	Level	Limit Line	Over Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	184.230	Peak	27.97	12.94	40.91	43.50	-2.59
2	271.530	Peak	26.10	15.15	41.25	46.00	-4.75
5	547.980	Peak	20.75	20.95	41.70	46.00	-4.30
6	638.190	Peak	20.36	22.61	42.97	46.00	-3.03

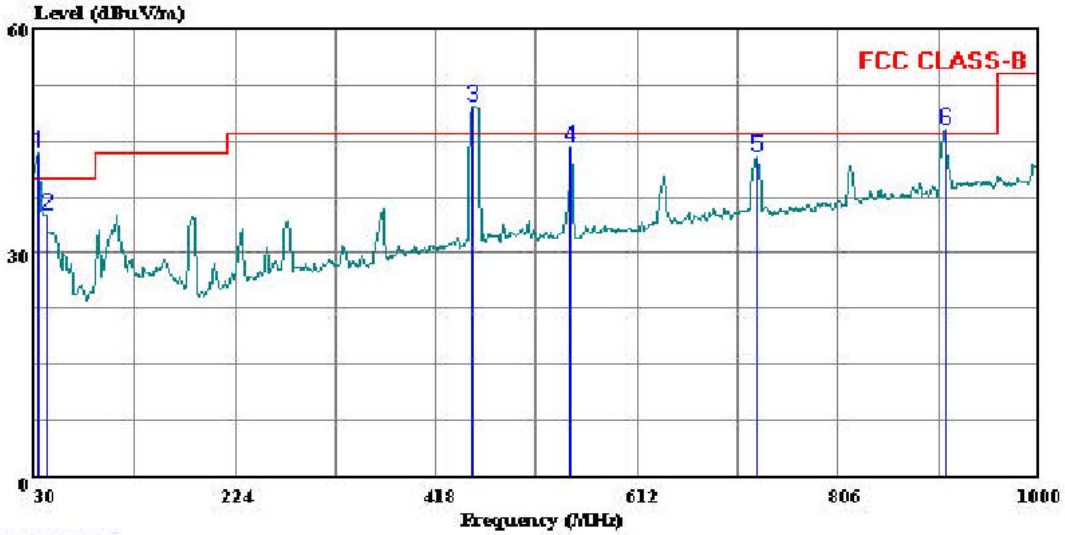
	Freq	Remark	Read Level	Factor	Level	Limit Line	Over Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
8	814.730	Peak	17.45	25.14	42.59	46.00	-3.41
9	819.580	Peak	18.26	25.19	43.45	46.00	-2.55

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

VERTICAL PLOT

COMPLIANCE Engineering Service, Inc.
561F Monterey Road
San Jose, CA 95131
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 15 File#: 04u2761.emi Date: 06-22-2004 Time: 16:03:25



Trace: 16 Ref Trace:

Condition: 3m VERTICAL
Test Operator: : Ben Du
Project #: : 04U2761
Company: : Denso
EUT: : 11a AP
Model No: : AP48
Configuration: : EUT w/IBM Laptop
Target of Test: : FCC Class B
Mode of Operation: TX.
: Emissions 1, 3 & 6 are not from the
: radio.These are from the digital device.

VERTICAL DATA

	Freq	Remark	Read Level	Factor	Level	Limit Line	Over Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
2	41.640	Peak	19.35	15.74	35.09	40.00	-4.91
4	547.980	Peak	23.13	20.95	44.08	46.00	-1.92
5	727.430	Peak	18.61	24.22	42.83	46.00	-3.17

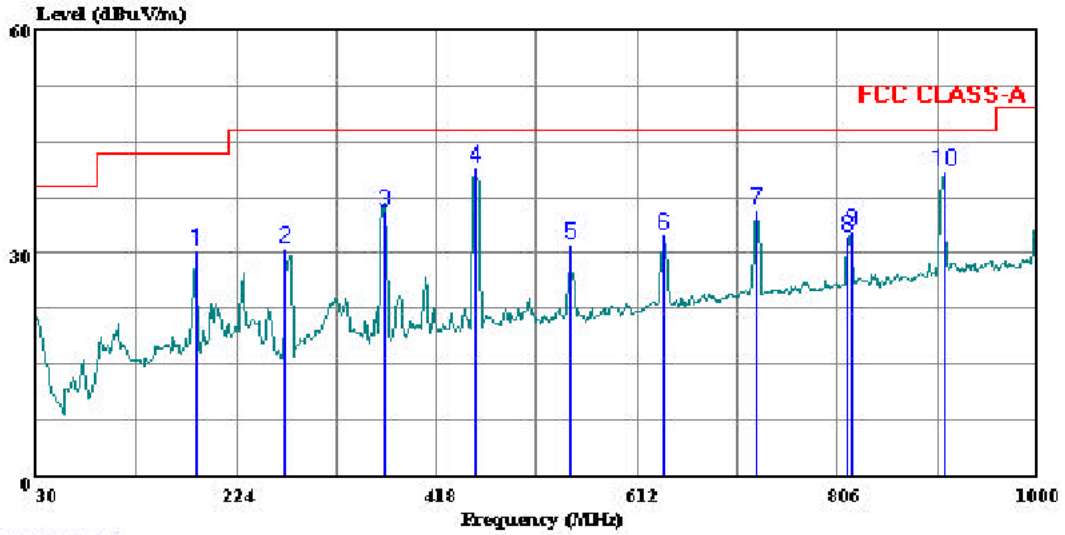
7.7.4. WORST-CASE DIGITAL DEVICE RADIATED EMISSIONS

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

HORIZONTAL PLOT

561F Monterey Road
San Jose, CA 95131
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 18 File#: 04u2761.emi Date: 06-22-2004 Time: 15:56:38



(Audix ATC)

Trace: 17 Ref Trace:

Condition: 3m HORIZONTAL
Test Operator: : Ben Du
Project #: : 04U2761
Company: : Denso
EUT: : 11a AP
Model No: : AP48
Configuration: : EUT w/IBM Laptop
Target of Test: : FCC Class A
Mode of Operation: Access Point

HORIZONTAL DATA

	Freq	Remark	Read Level	Factor	Level	Limit Line	Over Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	184.230	Peak	17.47	12.94	30.41	43.50	-13.09
2	271.530	Peak	15.60	15.15	30.75	46.40	-15.65
3	366.590	Peak	18.27	17.35	35.62	46.40	-10.78
4	455.830	Peak	21.87	19.59	41.46	46.40	-4.94
5	547.980	Peak	10.25	20.95	31.20	46.40	-15.20
6	638.190	Peak	9.86	22.61	32.47	46.40	-13.93
7	727.430	Peak	11.54	24.22	35.76	46.40	-10.64
8	814.730	Peak	6.95	25.14	32.09	46.40	-14.31

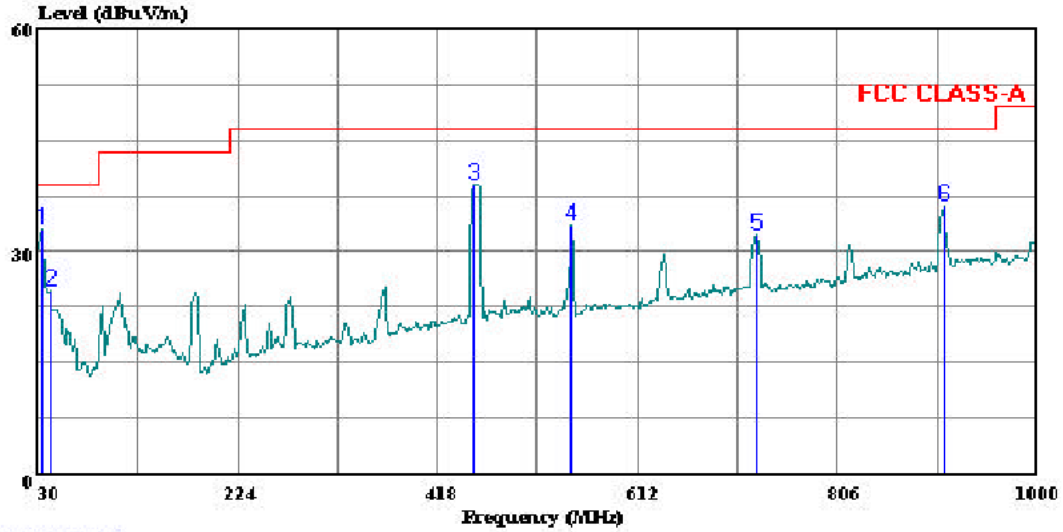
	Freq	Remark	Read Level	Factor	Level	Limit Line	Over Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
9	819.580	Peak	7.76	25.19	32.95	46.40	-13.45
10	909.790	Peak	14.71	26.42	41.13	46.40	-5.27

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

VERTICAL PLOT

COMPLIANCE Engineering Service, Inc.
561F Monterey Road
San Jose, CA 95131
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 19 File#: 04u2761.emi Date: 06-22-2004 Time: 16:03:25



(Audix A TC)

Trace: 20 Ref Trace:

Condition: 3m VERTICAL
Test Operator: : Ben Du
Project #: : 04U2761
Company: : Denso
EUT: : 11a AP
Model No: : AP48
Configuration: : EUT w/IBM Laptop
Target of Test: : FCC Class A
Mode of Operation: Access Point

VERTICAL DATA

	Freq	Remark	Read Level	Factor	Level	Limit Line	Over Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	33.880	Peak	12.20	20.70	32.90	39.00	-6.10
2	41.640	Peak	8.85	15.74	24.59	39.00	-14.41
3	453.890	Peak	19.54	19.52	39.06	46.40	-7.34
4	547.980	Peak	12.63	20.95	33.58	46.40	-12.82
5	727.430	Peak	8.11	24.22	32.33	46.40	-14.07
6	909.790	Peak	9.61	26.42	36.03	46.40	-10.38

7.8. POWERLINE CONDUCTED EMISSIONS

LIMIT

§15.207 (a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The resolution bandwidth is set to 9 kHz for both peak detection and quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

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

RESULTS

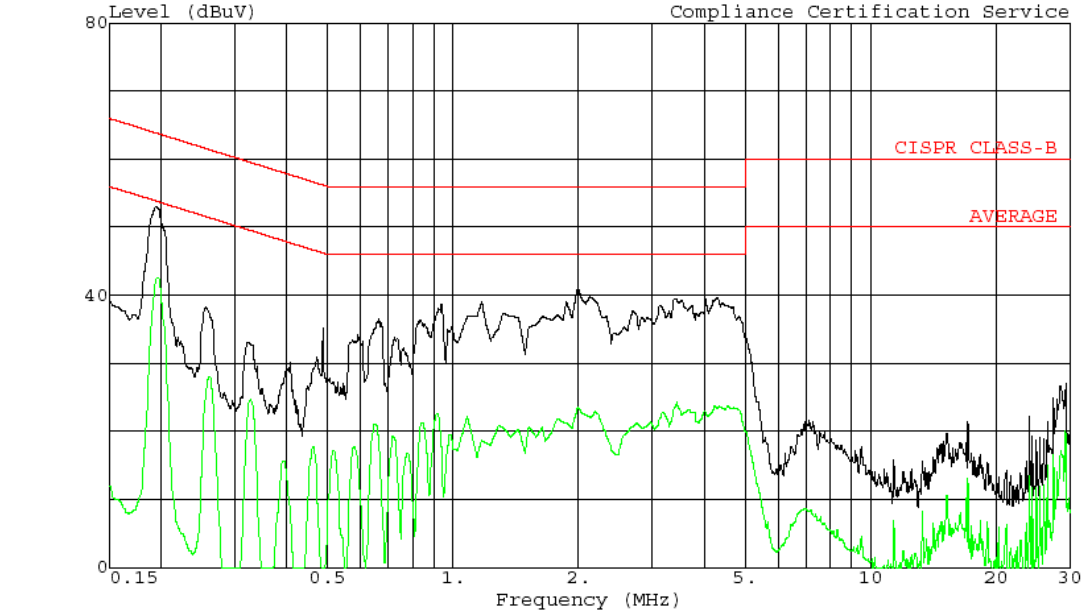
No non-compliance noted:

6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	EN_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.20	52.68	--	--	0.00	64.63	54.63	-11.95	-1.95	L1
1.99	41.22	--	--	0.00	56.00	46.00	-14.78	-4.78	L1
4.29	39.66	--	--	0.00	56.00	46.00	-16.34	-6.34	L1
0.19	54.72	--	42.90	0.00	64.91	54.91	-10.19	-12.01	L2
0.91	42.18	--	32.11	0.00	56.00	46.00	-13.82	-13.89	L2
2.13	43.94	--	28.35	0.00	56.00	46.00	-12.06	-17.65	L2
6 Worst Data									

LINE 1 RESULTS

561F Monterey Road,
Morgan Hill, CA 95037 USA
Tel: (408) 463-0885
Fax: (408) 463-0888

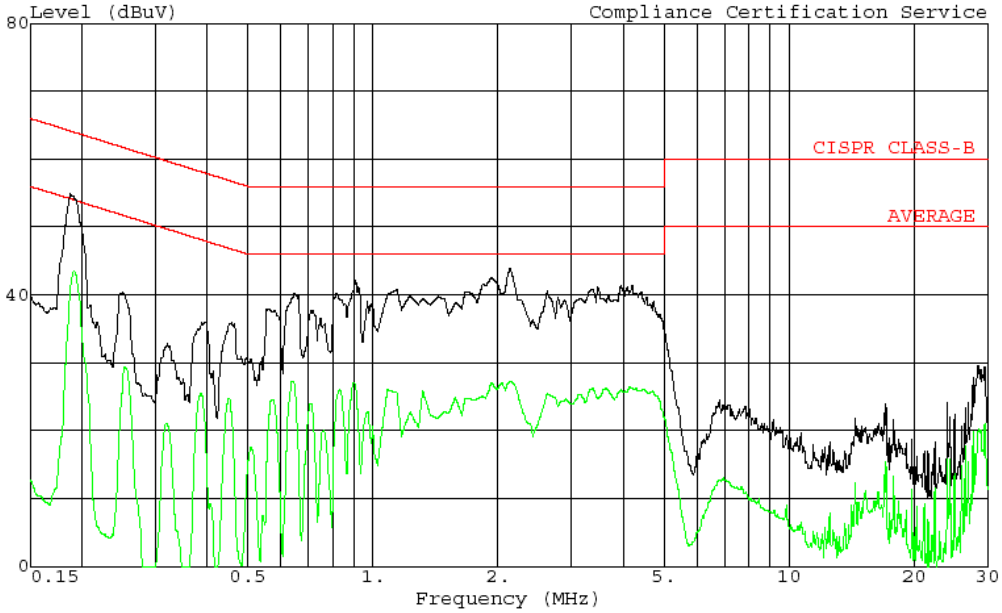


Trace: 5 Ref Trace:
Project # : 04U2761
Test Operator : Ben Du
Company : Denso
EUT : 11a Access Point
Model : AP48
Configuration : EUT/HP Laptop PC
Mode of Operation: Tx
Target of Test : FCC Class B
Voltage : 115VAC/60Hz
: L1: Peak (Black), Avg (Green)

LINE 2 RESULTS

561F Monterey Road,
Morgan Hill, CA 95037 USA
Tel: (408) 463-0885
Fax: (408) 463-0888

Data#: 14 File#: 04U2761.EMI Date: 06-24-2004 Time: 14:19:23

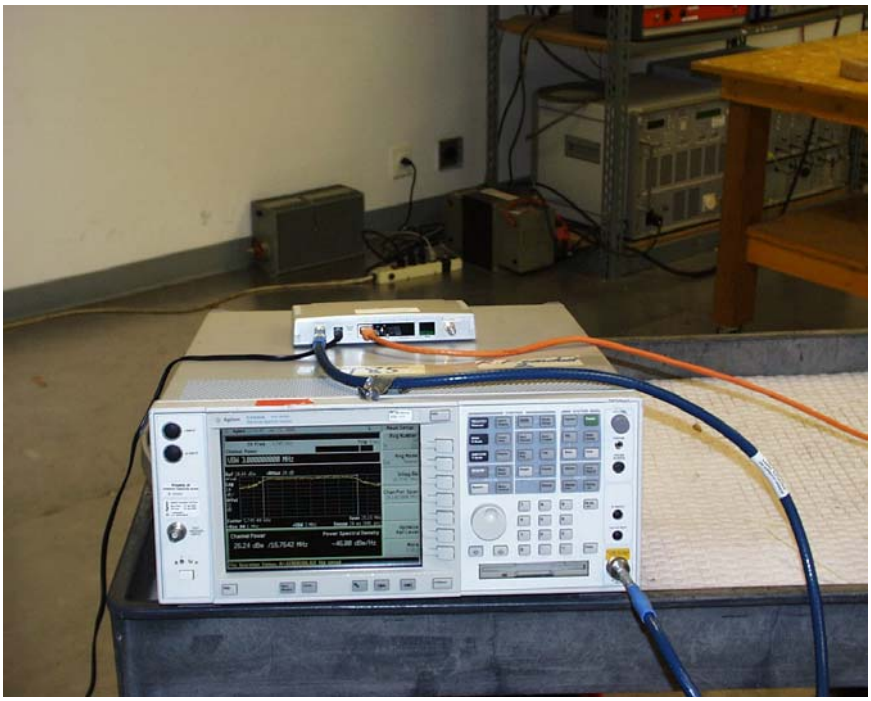


Trace: 12 Ref Trace:
Project # : 04U2761
Test Operator : Ben Du
Company : Denso
EUT : 11a Access Point
Model : AP48
Configuration : EUT/HP Laptop PC
Mode of Operation: Tx
Target of Test : FCC Class B
Voltage : 115VAC/60Hz
: L2: Peak (Black), Avg (Green)

8. SETUP PHOTOS

ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP

ANTENNA PORT CONDUCTED PHOTO



RADIATED RF MEASUREMENT SETUP

RADIATED FRONT PHOTO

RADIATED BACK PHOTO

POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP

LINE CONDUCTED FRONT PHOTO

LINE CONDUCTED BACK PHOTO

END OF REPORT