FCC CFR47 PART 15 SUBPART C CERTIFICATION

TEST REPORT

FOR

DOWNSTREAM TRANSMITTER - OMNIDIRECTIONAL

MODEL NUMBER: AR2250

FCC ID: PLRAR225000

REPORT NUMBER: 03U2037-5

ISSUE DATE: OCTOBER 2, 2003

Prepared for
ARCWAVE INCORPORATED
910 CAMPISI WAY, #1C
CAMPBELL, CALIFORNIA 95008
U.S.A

Prepared by
COMPLIANCE CERTIFICATION SERVICES
561F MONTEREY ROAD,
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1. TEST RESULT CERTIFICATION

COMPANY NAME: ARCWAVE, INC.
910 CAMPISI WAY, #1C
CAMPBELL, CA 95008
U.S.A

EUT DESCRIPTION: DOWNSTREAM TRANSMITTER - OMNIDIRECTIONAL

MODEL: AR2250

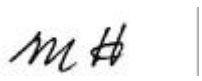
DATE TESTED: SEPTEMBER 15 – OCTOBER 2, 2003

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
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
CHIEF ENGINEER
COMPLIANCE CERTIFICATION SERVICES

Tested By:

NEELESH RAJ
EMC TECHNICIAN
COMPLIANCE CERTIFICATION SERVICES

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2. EUT DESCRIPTION

The EUT is a transmitter operating in the 5725 – 5850 MHz band.

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

Frequency Band (MHz)	Output Power (dBm)	Output Power (mW)
5729-5819	20.24	105.68

The radio utilizes an external omni antenna with a maximum gain of 13 dBi in the 5.8 GHz band.

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3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4/1992, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

4. FACILITIES AND ACCREDITATION

The open area test sites and conducted 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.

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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:

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%.

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5.3. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST

Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	9001-3245	2/4/2004
Preamplifier, 1 ~ 26 GHz	Miteq	NSP10023988	646456	4/25/2004
Spectrum Analyzer	HP	E4446A	US42510266	7/23/2004
Amplifier 1-26GHz	MITEQ	NSP2600-SP	924342	4/25/2004
Peak Power Meter	Agilent	E4416A	GB41291160	11/7/2004
Peak / Average Power Sensor	Agilent	E9327A	US40440755	11/7/2004
Spectrum Analyzer, 40 GHz	HP	8564E	3943A01643	6/4/2004
EMI Receiver, 9 kHz ~ 2.9 GHz	HP	8542E	3942A00286	11/20/2003
RF Filter Section	HP	85420E	3705A00256	11/20/2003
Antenna, Bicon/Log, 25 ~ 2000 MHz	ARA	LPB-2520/A	1185	3/6/2004
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	8379443	10/4/2003
Line Filter	Lindgren	LMF-3489	497	CNR
LISN, 10 kHz ~ 30 MHz	FCC	50/250-25-2	114	10/6/2003
EMI Test Receiver	R & S	ESHS 20	827129/006	7/17/2004
5.725-5.850 GHz Reject Filter	Micro-Tronics	BRC13192	1	N/A
Amplifier 1-26GHz	MITEQ	NSP2600-SP	924341	4/25/2004
10dB Attenuator	WEINSCHEL	56-10	K16148	N/A

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6. SETUP OF EQUIPMENT UNDER TEST

SUPPORT EQUIPMENT

TEST PERIPHERALS				
Device Type	Manufacturer	Model Number	Serial Number	FCC ID
LAPTOP	DELL	PP01L	N/A	DoC
CMTS	MOTOROLA	BSR1000	N/A	N/A
HUB 8 PORT	NETGEAR	DS108	N/A	N/A
DC POWER SUPPLY	AGILENT	E3620A	N/A	N/A

I/O CABLES

TEST I / O CABLES								
Cable No	I/O Port	# of I/O Port	Connector Type	Type of Cable	Cable Length	Data Traffic	Bundled	Remark
1	DATA	1	"F" TYPE	SHIELDED	3.73M	YES	NO	RG-6
2	DATA/PWR	1	"F" TYPE	SHIELDED	3.73M	YES	NO	RG-6
3	ETHERNET	1	RJ45	UNSHIELDED	2.48M	YES	YES	N/A
4	ETHERNET	1	RJ45	UNSHIELDED	2.48M	YES	YES	N/A
5	DC PWR	1	DC PWR	UNSHIELDED	1.86M	NO	YES	N/A
6	AC PWR	1	AC PWR	UNSHIELDED	1.86M	NO	NO	N/A
7	AC PWR	1	AC PWR	UNSHIELDED	1.86M	NO	NO	N/A
8	AC PWR	1	AC PWR	UNSHIELDED	1.86M	NO	NO	N/A
9	AC PWR	1	AC PWR	UNSHIELDED	1.86M	NO	NO	N/A

TEST SETUP

During the testing process the EUT was in continuous transmit mode.

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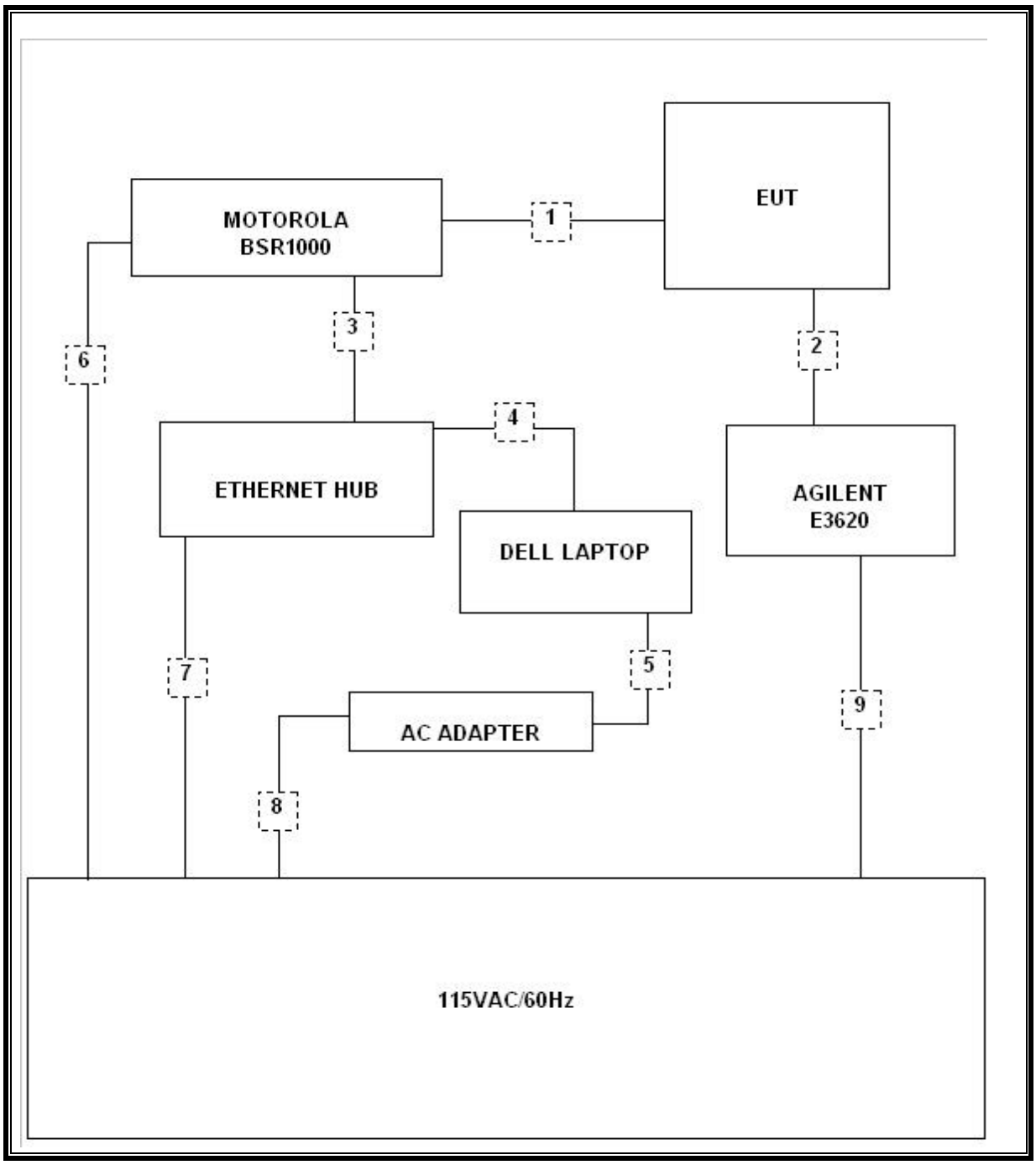
SETUP DIAGRAM FOR TESTS



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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 100 kHz. The sweep time is coupled.

RESULTS

No non-compliance noted:

Channel	Frequency (MHz)	6 dB Bandwidth (kHz)	Minimum Limit (kHz)	Margin (kHz)
Low	5729	5320	500	4820
Middle	5777	5300	500	4800
High	5819	5330	500	4830

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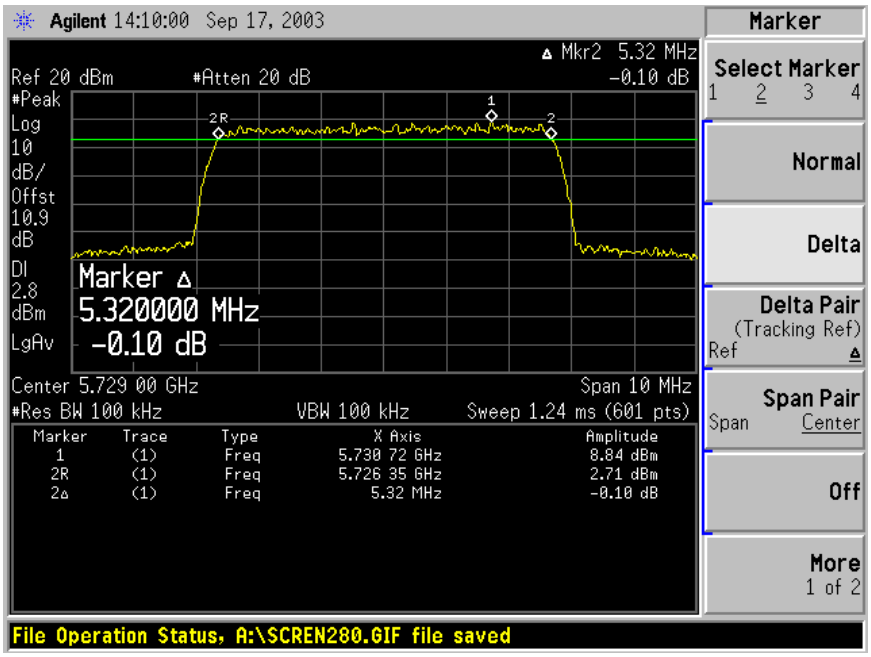
6 DB BANDWIDTH

6 DB BANDWIDTH LOW CH



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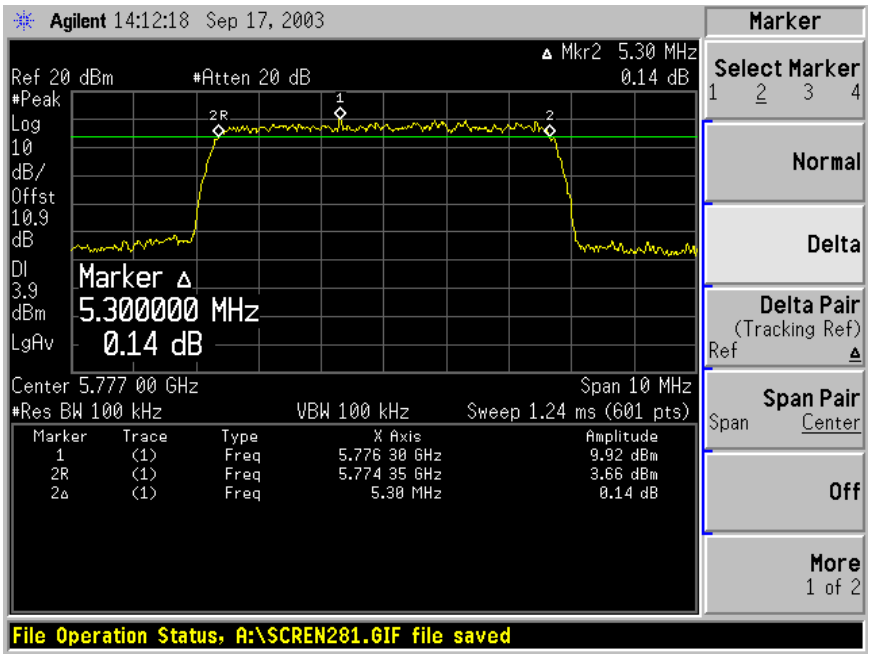
6 DB BANDWIDTH MID CH



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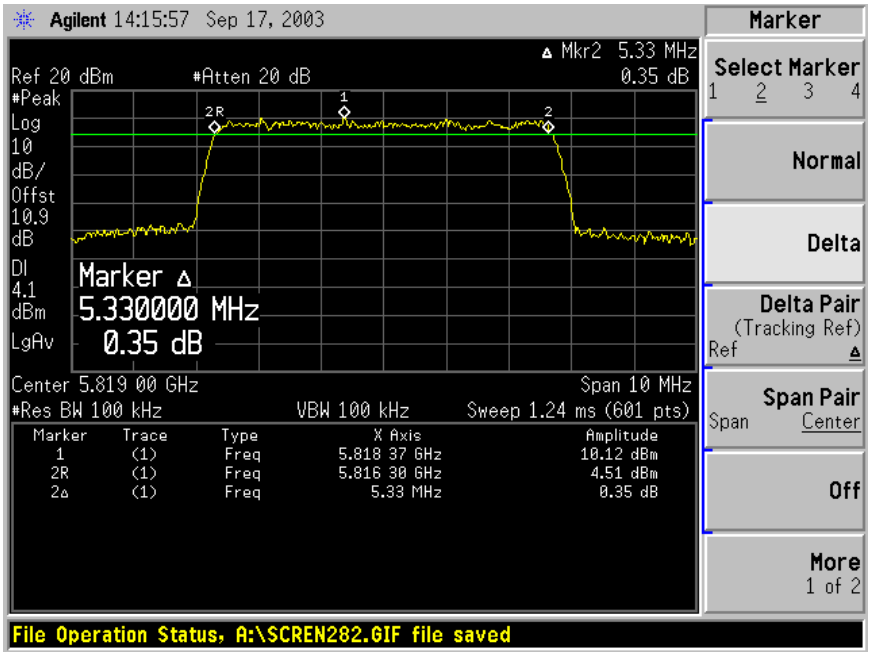
6 DB BANDWIDTH HIGH CH



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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:

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5729	5.4531
Middle	5777	5.3817
High	5819	5.3206

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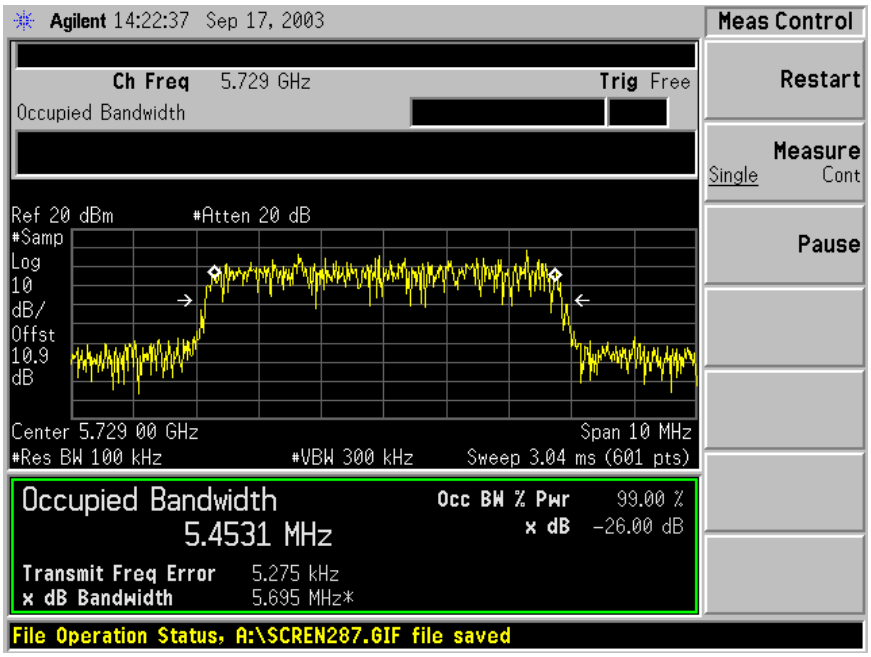
99% BANDWIDTH

99% BANDWIDTH LOW CH



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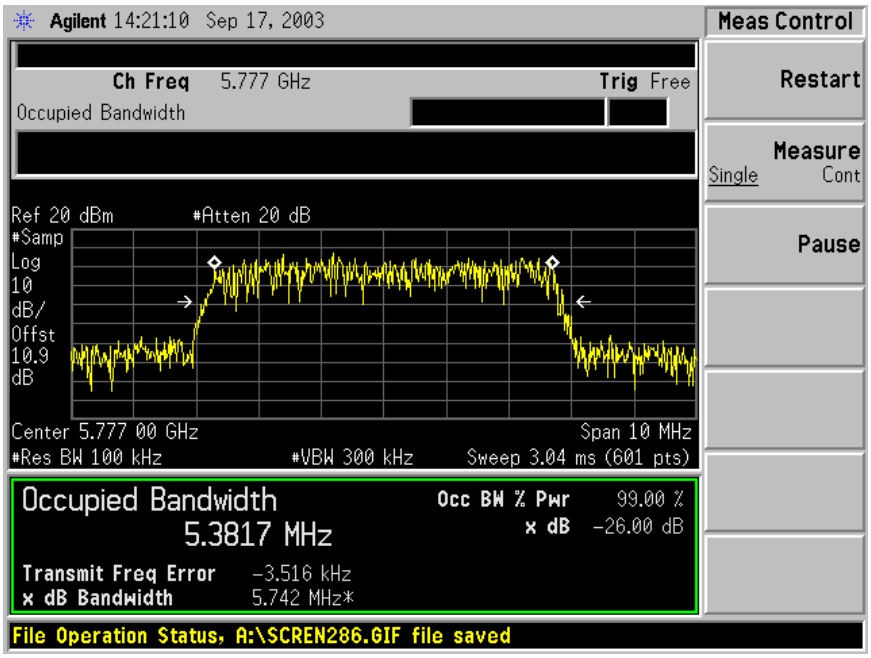
99% BANDWIDTH MID CH



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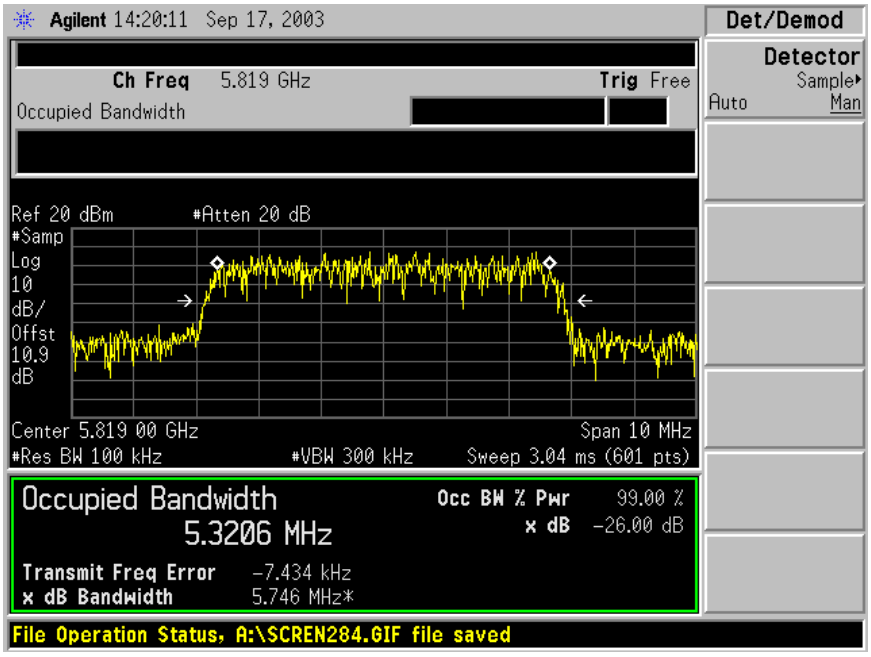
99% BANDWIDTH HIGH CH



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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 13 dBi, therefore the limit is 23 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

Channel	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
Low	5729	18.80	23	-4.20
Middle	5777	19.56	23	-3.44
High	5819	20.24	23	-2.76

No non-compliance noted:

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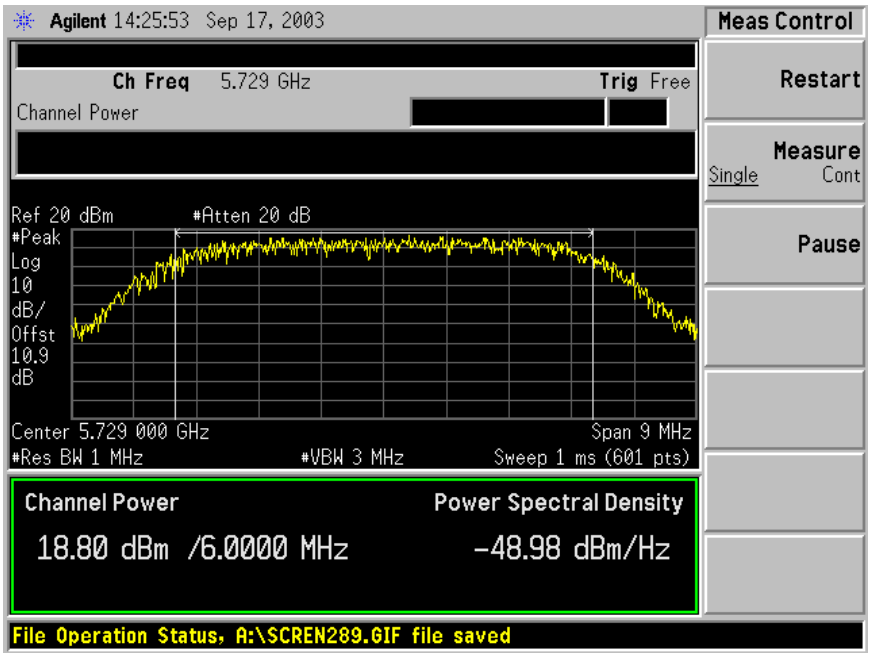
OUTPUT POWER

PEAK POWER LOW CH



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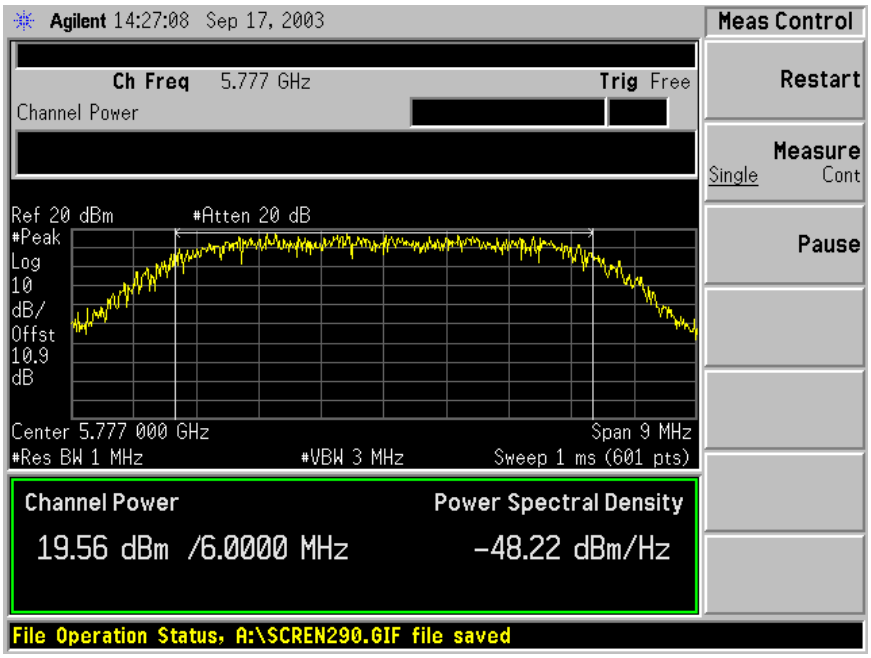
PEAK POWER MID CH



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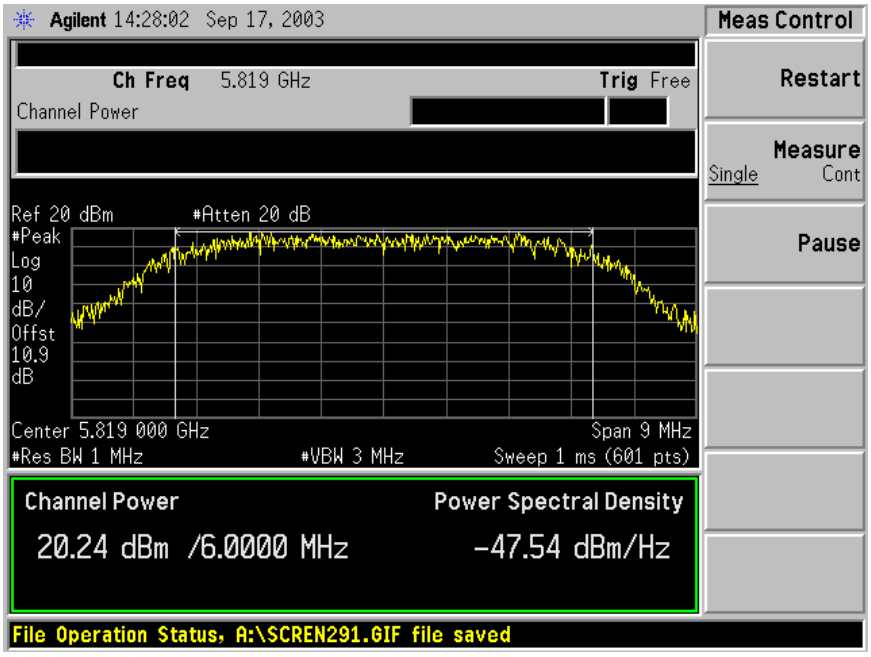
PEAK POWER HIGH CH



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7.4. MAXIMUM PERMISSIBLE EXPOSURE

LIMITS

§15.247 (b) (5) Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See §1.1307(b)(1) of this chapter.

CALCULATIONS

Given

$E = \sqrt{(30 * P * G)} / d$

and

$S = E \wedge 2 / 3770$

where

E = Field Strength in Volts / meter
P = Power in Watts
G = Numeric antenna gain
d = distance in meters
S = Power Density in milliwatts / square centimeter

Combining equations and rearranging the terms to express the distance as a function of the remaining variables yields:

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

Changing to units of mW and cm, using:

P (mW) = P (W) / 1000 and
d (cm) =100 * d (m)

yields

$d = 100 * \sqrt{((30 * (P / 1000) * G) / (3770 * S))}$

$d = 0.282 * \sqrt{(P * G / S)}$

where

d = distance in cm
P = Power in mW
G = Numeric antenna gain
S = Power Density in mW / cm^2

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Substituting the logarithmic form of power and gain using:

P (mW) = 10 ^ (P (dBm) / 10) and
G (numeric) = 10 ^ (G (dBi) / 10)

yields

$$d = 0.282 * 10 ^ ((P + G) / 20) / \sqrt{S} \qquad \text{Equation (1)}$$

where

d = MPE distance in cm
P = Power in dBm
G = Antenna Gain in dBi
S = Power Density Limit in mW / cm^2

Equation (1) and the measured peak power is used to calculate the MPE distance.

LIMITS

S = 1.0 mW / cm^2 from 1.1310 Table 1

Power Density Limit (mW/cm^2)	Output Power (dBm)	Antenna Gain (dBi)	MPE Distance (cm)
1.0	20.24	13.00	12.95

NOTE: For mobile or fixed location transmitters, the minimum separation distance is 20 cm, even if calculations indicate that the MPE distance would be less.

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7.5. 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 10.9 dB (including 10 dB pad and 0.9 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Average Power (dBm)
Low	5729	15.80
Middle	5777	17.00
High	5819	17.30

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7.6. 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:

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5729	-5.12	8	-13.12
Middle	5777	-4.97	8	-12.97
High	5819	-3.65	8	-11.65

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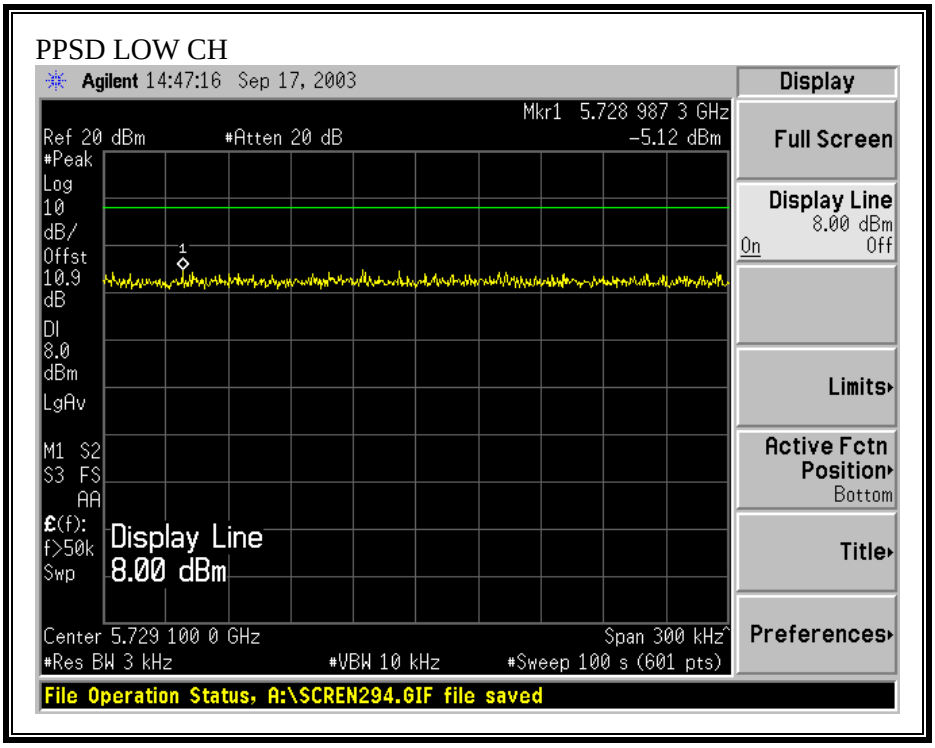
PEAK POWER SPECTRAL DENSITY

PPSD LOW CH



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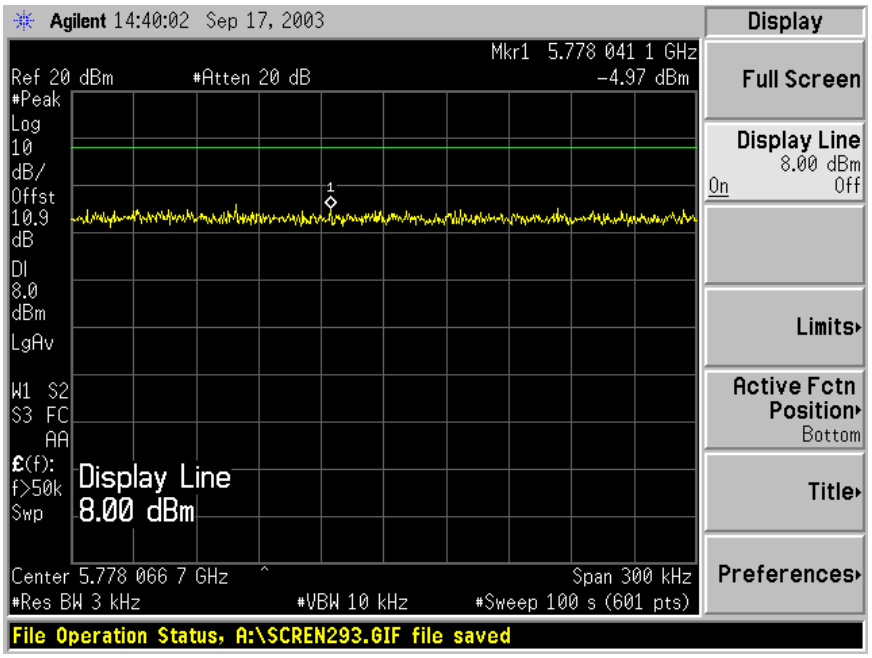
PPSD MID CH



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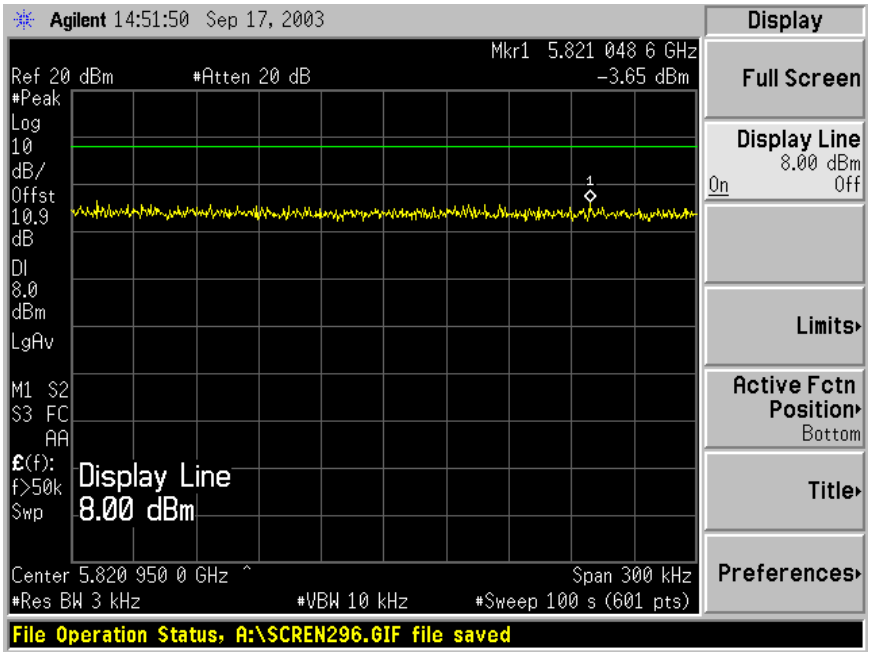
PPSD HIGH CH



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7.7. 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 100 kHz.

The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 5.8 GHz band.

RESULTS

No non-compliance noted:

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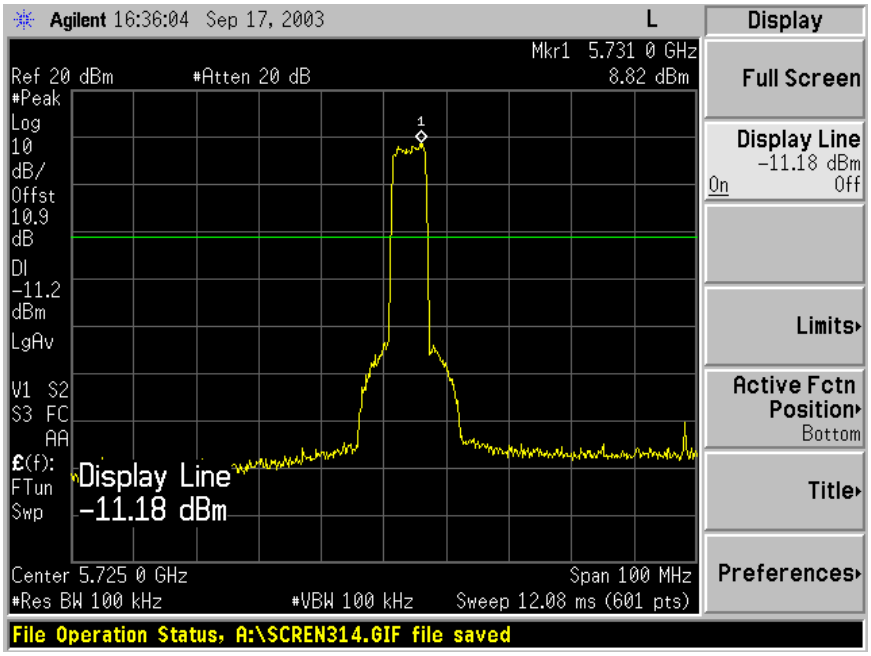
SPURIOUS EMISSIONS, LOW CHANNEL

LOW CH BANDEDGE



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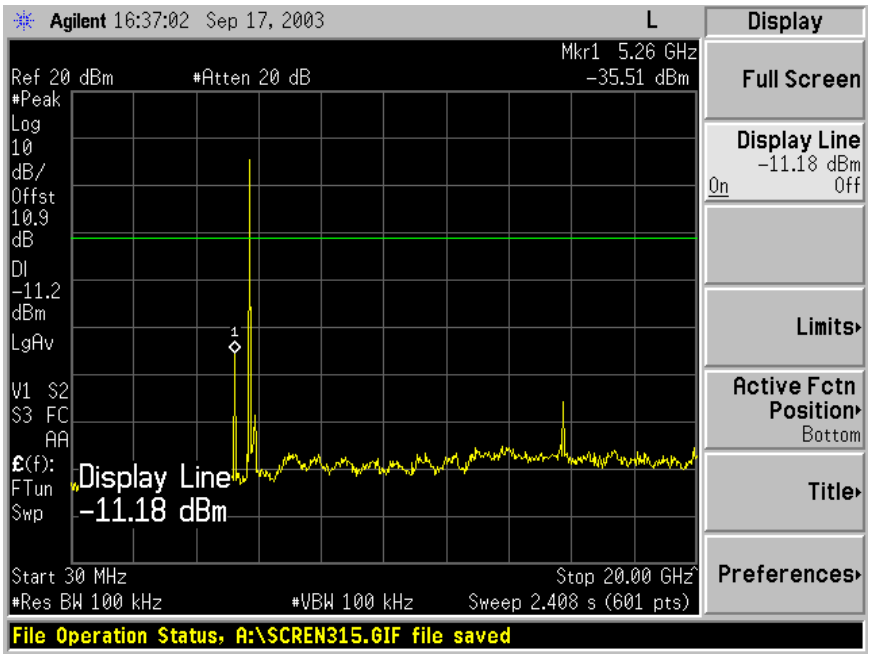
LOW CH SPURIOUS



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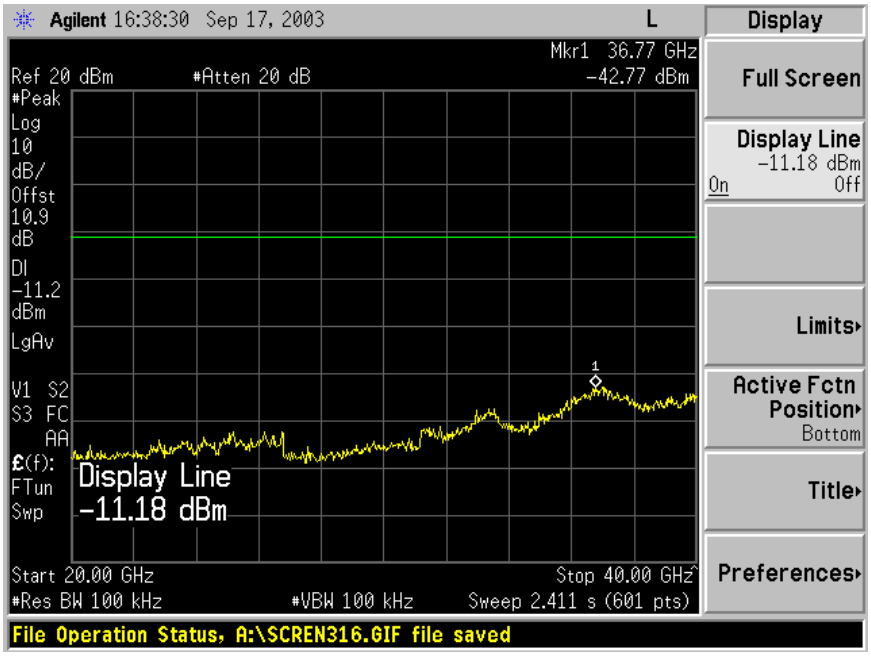
LOW CHANNEL SPURIOUS



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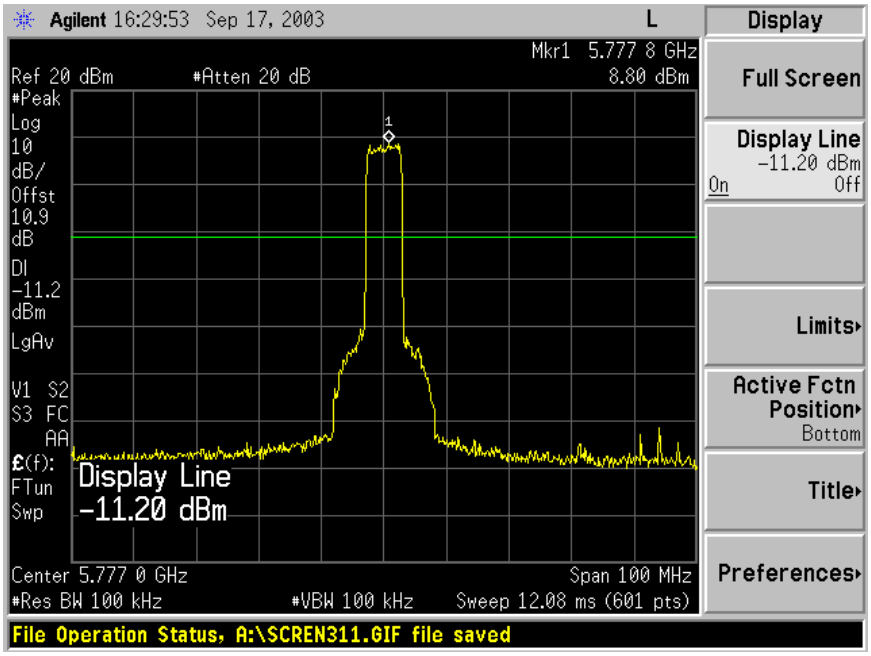
SPURIOUS EMISSIONS, MID CHANNEL

MID CH REFERENCE



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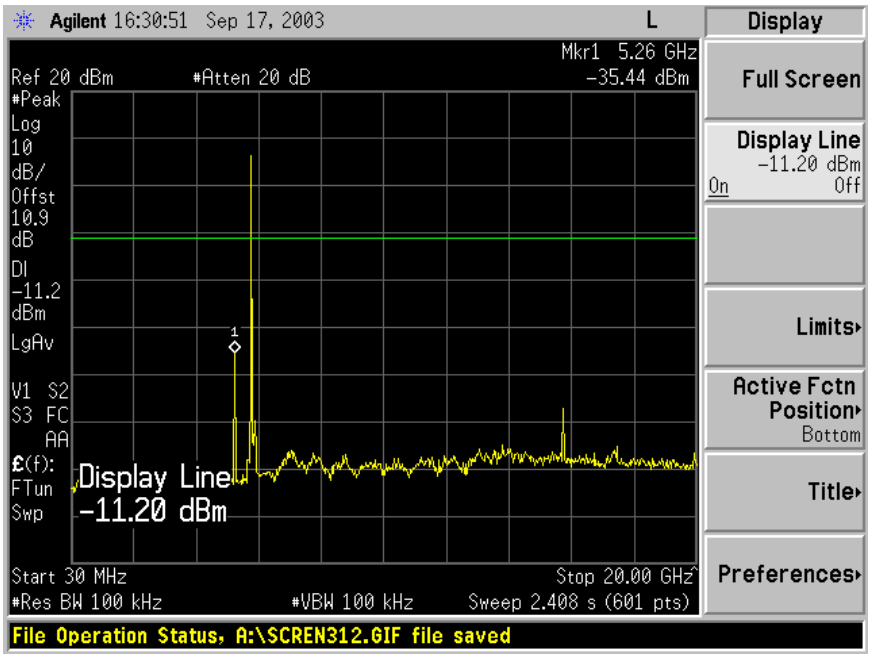
MID CH SPURIOUS



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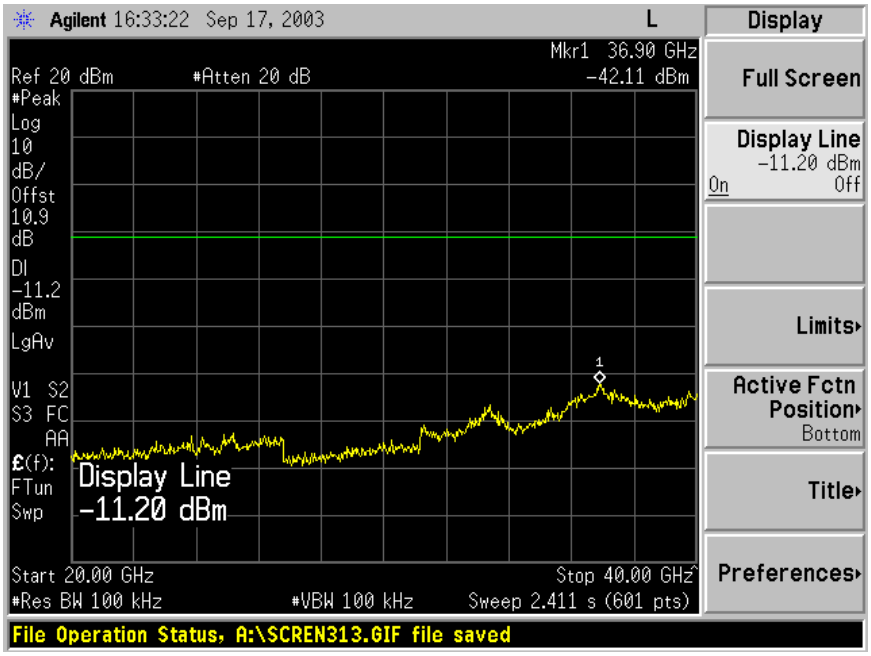
MID CHANNEL SPURIOUS



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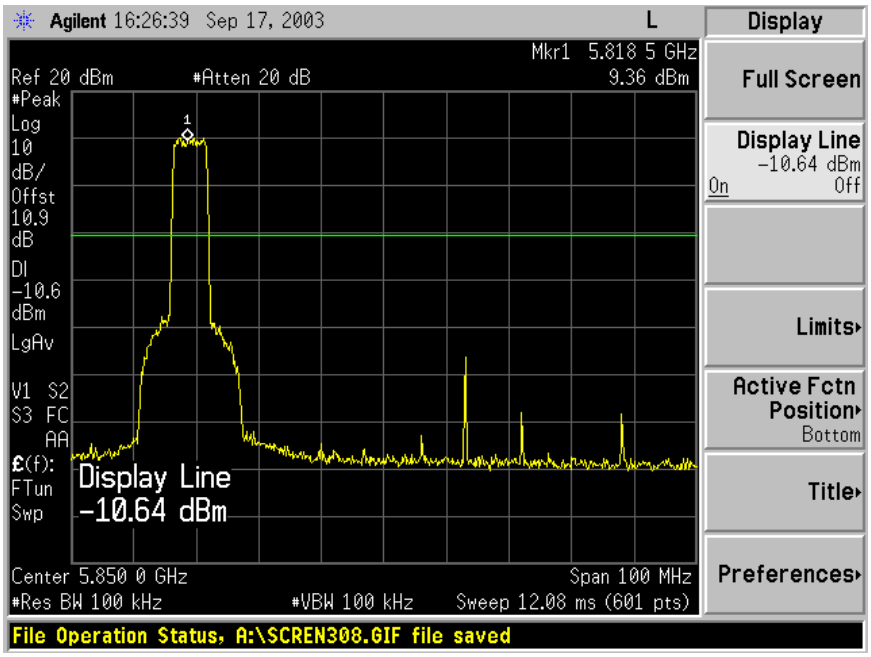
SPURIOUS EMISSIONS, HIGH CHANNEL

HIGH CH BANDEDGE



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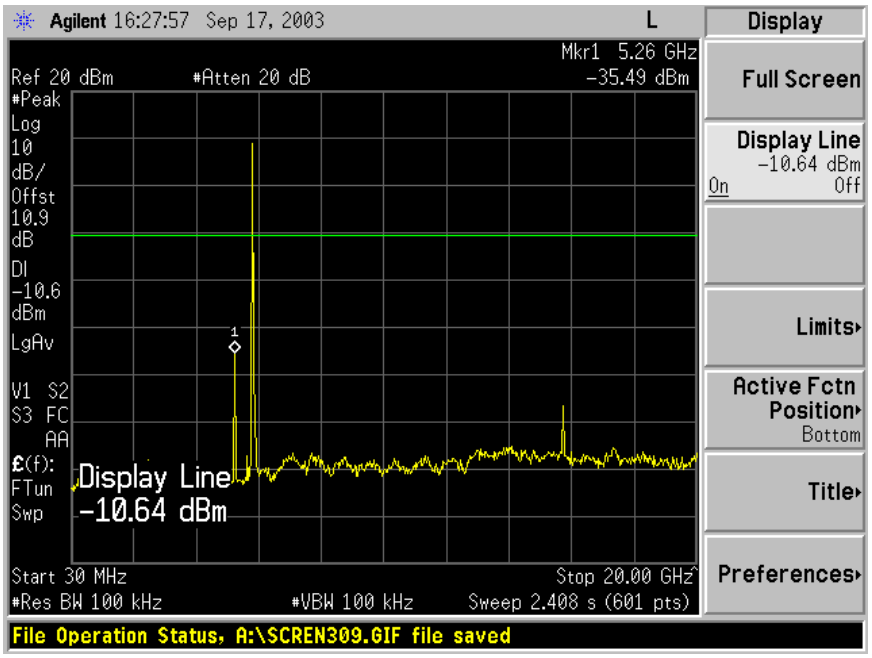
HIGH CH SPURIOUS



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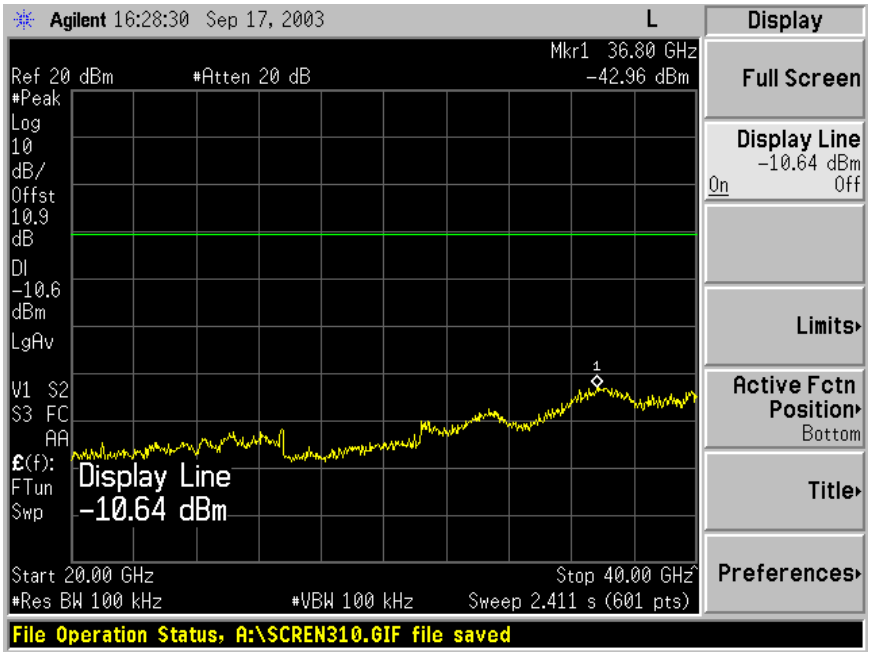
HIGH CHANNEL SPURIOUS



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7.8. RADIATED 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.

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§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.

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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 26 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:

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7.8.1. RADIATED EMISSIONS ABOVE 1 GHZ

HARMONICS AND SPURIOUS EMISSIONS (LOW, MIDDLE, AND HIGH CHANNELS)

09/29/03 High Frequency Measurement
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: NEELESH RAJ
Project #: 03U2037
Company: ARWAVE
EUT Descrip.:
EUT M/N: AR1230(ONMI)
Test Target: FCC
Mode Oper: TX

Test Equipment:

EMCO Horn 1-18GHz	Pre-amplifier 1-26GHz	Spectrum Analyzer	Horn > 18GHz	Limit
T59; S/N: 3245 @3m	T86 Miteq 924341	Agilent E4446A Analyzer		FCC 15.205

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

Peak Measurements: 1 MHz Resolution Bandwidth, 10Hz 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
LOW CHANNEL 5729MHz (HARMONICS)															
11.458	9.8	47.6	36.6	38.7	5.0	-44.5	0.0	1.0	47.6	36.7	74.0	54.0	-26.4	-17.3	V (NOISE FLOOR)
11.458	9.8	48.5	36.6	38.7	5.0	-44.5	0.0	1.0	48.6	36.7	74.0	54.0	-25.4	-17.3	H (NOISE FLOOR)
LOW CHANNEL (SPUR)															
15.744	9.8	48.6	41.0	39.1	6.1	-48.3	0.0	1.0	46.4	38.8	74.0	54.0	-27.6	-15.2	V
15.744	9.8	48.0	41.3	39.1	6.1	-48.3	0.0	1.0	45.8	39.1	74.0	54.0	-28.2	-14.9	H
MIDDLE CHANNEL 5777MHz (HARMONICS)															
11.554	9.8	45.5	36.8	38.8	5.0	-44.7	0.0	1.0	45.5	36.8	74.0	54.0	-28.5	-17.2	V (NOISE FLOOR)
11.554	9.8	45.6	36.9	38.8	5.0	-44.7	0.0	1.0	45.7	37.0	74.0	54.0	-28.3	-17.0	H (NOISE FLOOR)
MIDDLE CHANNEL(SPUR)															
15.744	9.8	45.5	36.7	39.1	6.1	-48.3	0.0	1.0	43.3	34.5	74.0	54.0	-30.7	-19.5	V
15.744	9.8	46.0	37.0	39.1	6.1	-48.3	0.0	1.0	43.8	34.8	74.0	54.0	-30.2	-19.2	H
HIGH CHANNEL 5819MHz (HARMONICS)															
11.638	9.8	43.4	35.5	38.9	5.0	-44.8	0.0	1.0	43.4	35.5	74.0	54.0	-30.6	-18.5	V (NOISE FLOOR)
11.638	9.8	44.0	36.5	38.9	5.0	-44.8	0.0	1.0	44.0	36.5	74.0	54.0	-30.0	-17.5	H (NOISE FLOOR)
HIGH CHANNEL (SPUR)															
15.744	9.8	47.6	41.0	39.1	6.1	-48.3	0.0	1.0	45.4	38.8	74.0	54.0	-28.6	-15.2	V
15.744	9.8	47.2	41.4	39.1	6.1	-48.3	0.0	1.0	45.0	39.2	74.0	54.0	-29.0	-14.8	H
NO OTHER SPURIOUS DETECTED WITHIN THE RESTRICTED BANDS -20dB OF THE LIMIT															

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		

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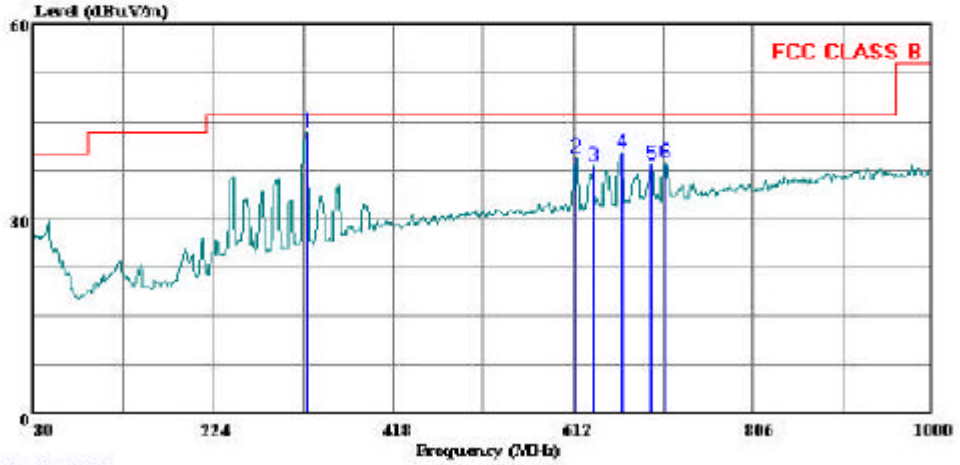
7.8.2. RADIATED EMISSIONS BELOW 1 GHZ

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

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

Data#: 4 File#: RUN1.EMI Date: 09-29-2003 Time: 19:45:25



Trace: 3 Ref Trace:

Condition: FCC CLASS B 3m CHAMBER 030306 1185 HORIZONTAL
Tester : NEELESH RAJ
Project # : 03U2037
Company : ARCWAVE
EUT :
Model No : AR2250 (OMNI)
Configuration : EUT/DC POWER SUPPLY/PC
Target of Test : FCC-B
Mode of Operation: TX (WORST CASE)

Page: 1

	Freq	Read Level	Probe Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV/m	dBuV/m	dB	
1	324.880	28.87	12.72	1.88	43.47	46.00	-2.53	Peak
2	613.940	19.10	17.82	2.53	39.45	46.00	-6.55	Peak
3	633.340	17.53	17.99	2.61	38.13	46.00	-7.87	Peak
4	664.380	19.37	18.26	2.68	40.31	46.00	-5.69	Peak
5	696.390	17.11	18.52	2.78	38.41	46.00	-7.59	Peak
6	710.940	17.25	18.70	2.78	38.73	46.00	-7.27	Peak

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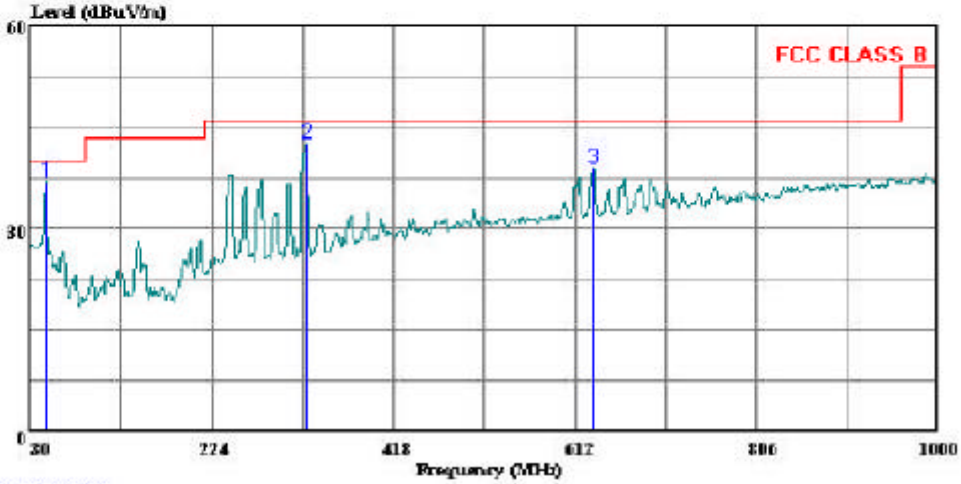
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

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

Data#: 2 File#: RUN1.EMI Date: 09-29-2003 Time: 19:37:49



(Audix ATC)
Trace: 1 Ref Trace:

Condition: FCC CLASS B 3m CHAMBER 030306 1185 VERTICAL
Tester : NEELESH RAJ
Project # : 03U2037
Company : ARCWAVE
EUT :
Model No : AR2250 (OMNI)
Configuration : EUT/DC POWER SUPPLY/PC
Target of Test : FCC-B
Mode of Operation: TX (WORST CASE)

Page: 1

	Freq	Read Level	Probe Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV/m	dBuV/m	dB	
1	46.490	20.33	15.91	0.65	36.90	40.00	-3.10	Peak
2	324.880	27.93	12.72	1.88	42.53	46.00	-3.47	Peak
3	630.430	18.39	17.97	2.61	38.97	46.00	-7.03	Peak

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7.9. 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:

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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
1.49	37.20	--	31.24	0.00	56.00	46.00	-18.80	-14.76	L1
0.15	34.70	--	2.55	0.00	66.00	56.00	-31.30	-53.45	L1
9.81	30.74	--	28.59	0.00	60.00	50.00	-29.26	-21.41	L1
0.15	34.42	--	2.11	0.00	66.00	56.00	-31.58	-53.89	L2
9.86	32.98	--	27.01	0.00	60.00	50.00	-27.02	-22.99	L2
1.49	32.48	--	31.38	0.00	56.00	46.00	-23.52	-14.62	L2
6 Worst Data									

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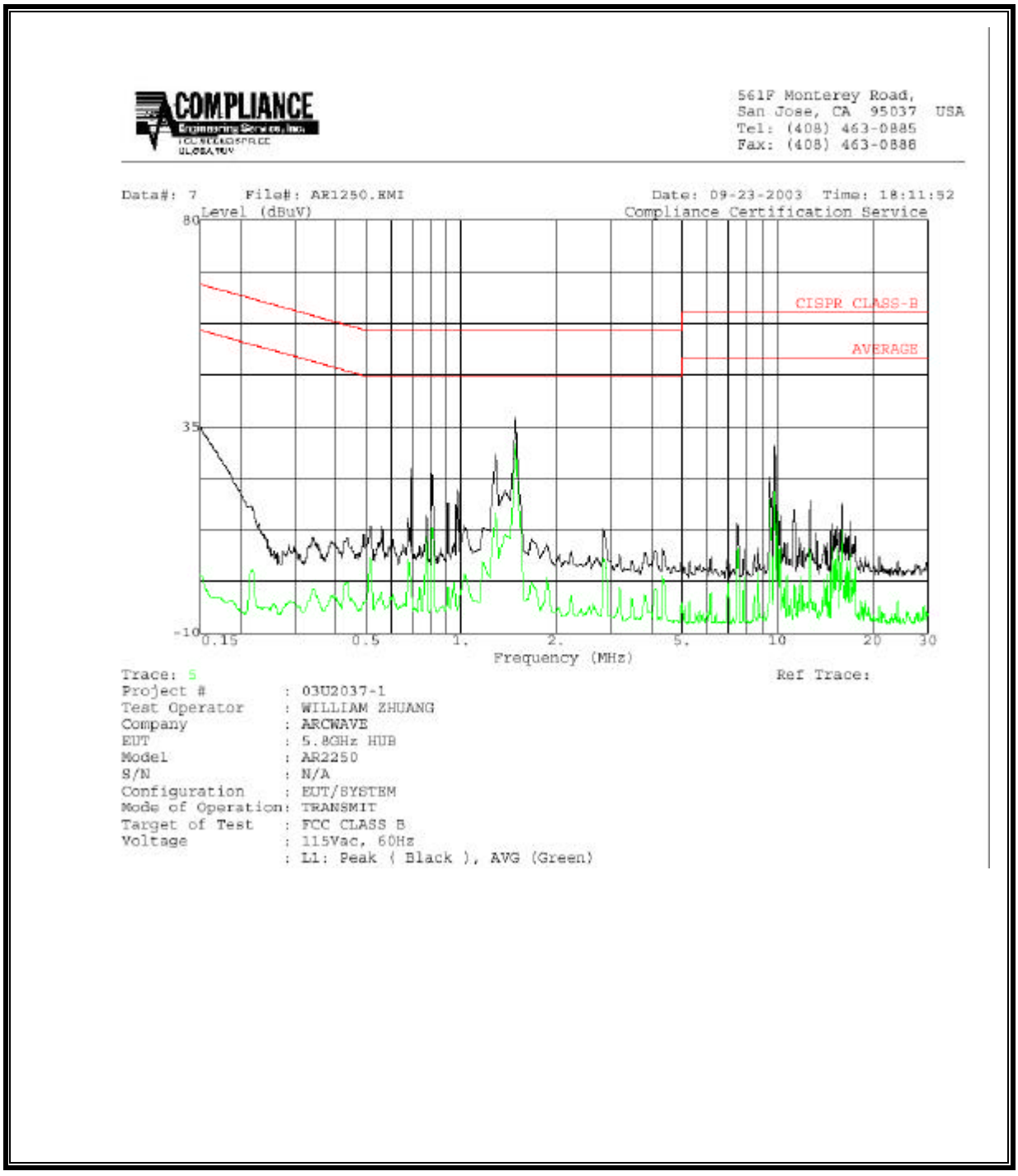
LINE 1 RESULTS



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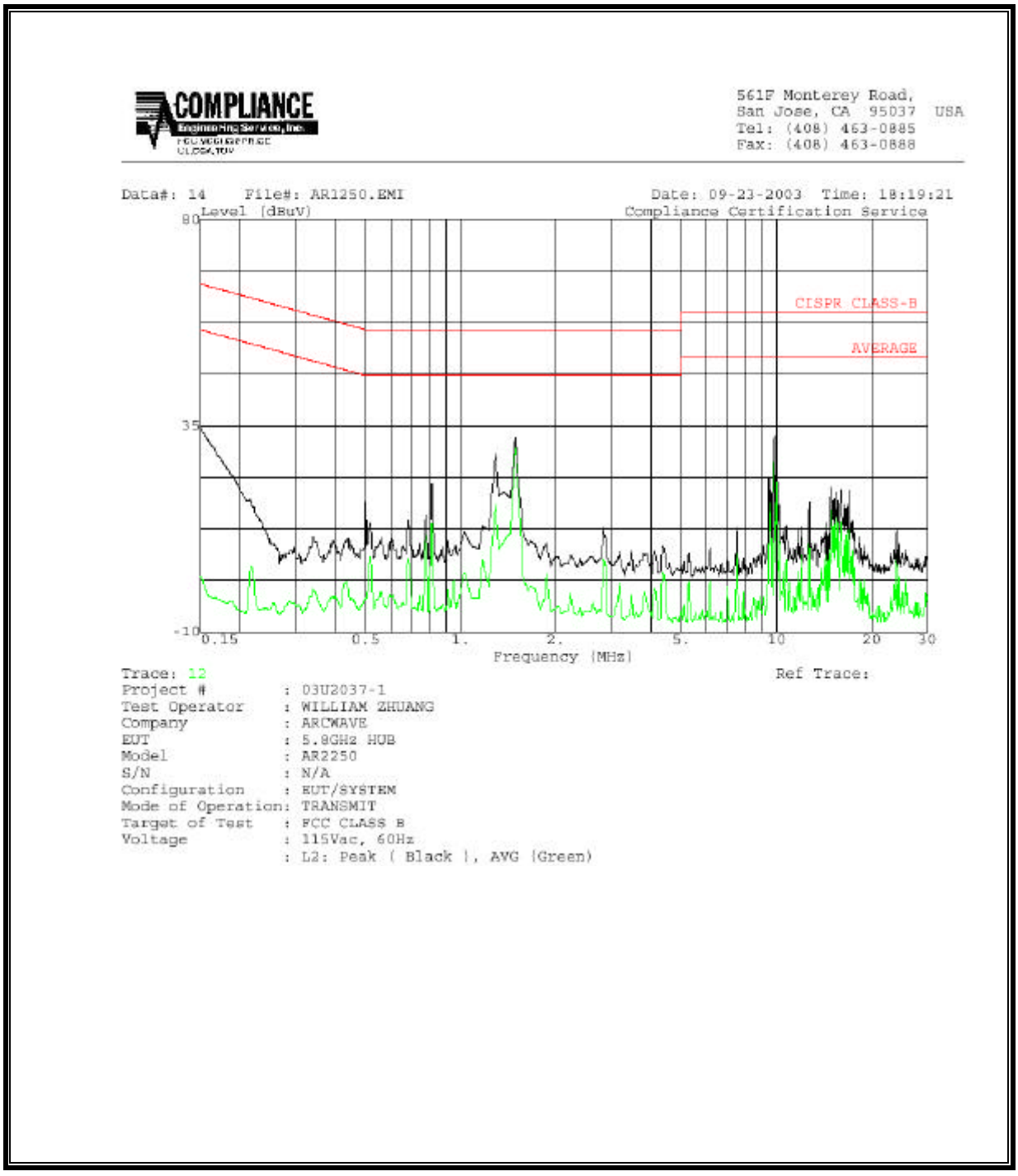
LINE 2 RESULTS



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8. SETUP PHOTOS

ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP

ANTENNA PORT CONDUCTED PHOTO

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RADIATED RF MEASUREMENT SETUP

RADIATED FRONT PHOTO

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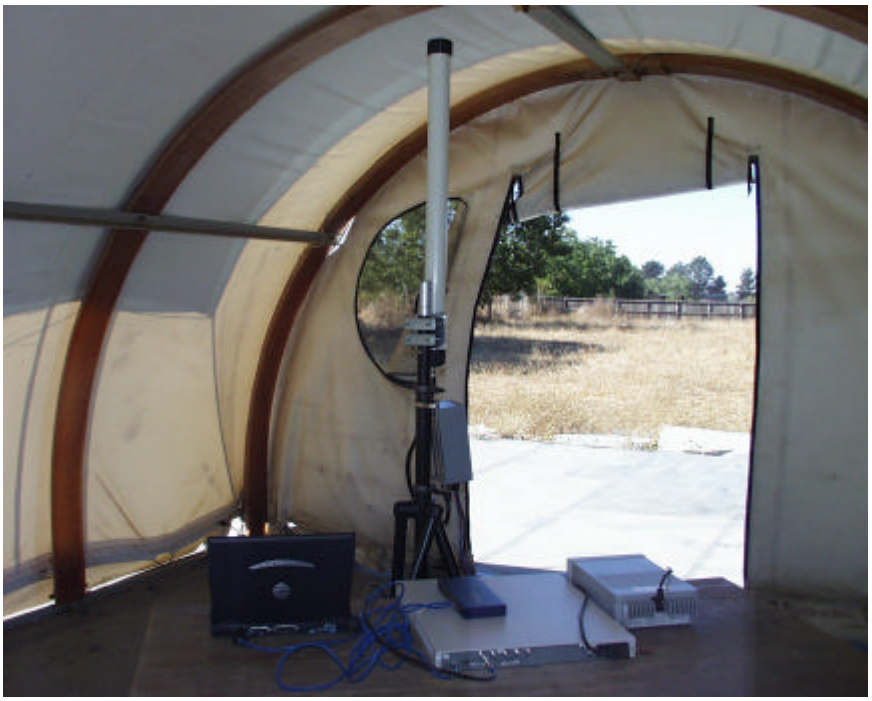
RADIATED BACK PHOTO



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POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP

LINE CONDUCTED FRONT PHOTO

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LINE CONDUCTED BACK PHOTO

END OF REPORT

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