FCC CFR47 PART 15 SUBPART E
CERTIFICATION TEST REPORT
FOR

VoIP PHONE WITH AN 802.11a/b/g RADIO

MODEL NUMBER: CA5090

FCC ID: H9PCA5090

REPORT NUMBER: 07U10908-2

ISSUE DATE: MAY 02, 2007

Prepared for
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Prepared by
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Revision History

Rev.	Issue Date	Revisions	Revised By
--	05/02/07	Initial Issue	T. Chan

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SYMBOL TECHNOLOGIES, INC.
ONE SYMBOL PLAZA
HOLTSVILLE, NY 11742, USA

EUT DESCRIPTION: VoIP PHONE WITH AN 802.11a/b/g RADIO

MODEL: CA5090

SERIAL NUMBER: MXA2RH88 FOR RF CONDUCTED TEST &
MXA2RH78 FOR RADIATED EMISSION TEST

DATE TESTED: MARCH 26 TO MARCH 30, 1007

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART E	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: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. 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. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:

THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

Tested By:

THANH NGUYEN
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, 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.

4. CALIBRATION AND UNCERTAINTY

4.1. 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.

4.2. 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. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a VoIP device that operates in 802.11a/b/g modes and is manufactured by Symbol Technologies Inc.

5.2. MAXIMUM OUTPUT POWER

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

5150 to 5250 MHz Authorized Band

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5180 - 5250	802.11a	14.99	31.55

5250 to 5350 MHz Authorized Band

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5250 - 5320	802.11a	16.87	48.64

5470 to 5725 MHz Authorized Band

Frequency Band (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5500 - 5700	802.11a	15.98	39.63

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a Planar inverted F antenna with a gain of 0.4dBi for 5.2 GHz & 5.5 GHz bands.

5.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was "Remote Terminal Regulatory Tool", Version 1.0.2.1 "fusion".

ActiveSync Version 4.5.0 (Build 5096) was used to establish a connection between the EUT and a laptop PC.

5.5. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power. The highest measured output power was at 5320 MHz for 5.2 GHz band and 5500 MHz for 5.5 GHz band.

The worst-case data rate for this channel is determined to be 6 Mb/s for both 5.2 GHz and 5.5 GHz bands, based on previous experience with 802.11a WLAN product design architectures.

Thus all emissions tests were made in the 802.11a mode, 6 Mb/s, 5320 MHz, and 5500 MHz.

The EUT has been investigated at X, Y, Z and with battery charger cradle configuration. The worst case is determined to be with EUT with battery charger cradle @ Y-position by comparing the fundamental output power on both 2.4GHz and 5GHz Band

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMEN

I/O CABLE LIST						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**Remarks**
1	AC	2	AC	Unshielded	2.2m	N/A
2	DC	2	DC	Unshielded	1.8m	Ferrite on the cable (EUT side)
3	USB	1	USB	Unshielded	1.5m	N/A
4	Audio	1	Audio	Unshielded	0.5m	Ferrite on the cable (EUT side)

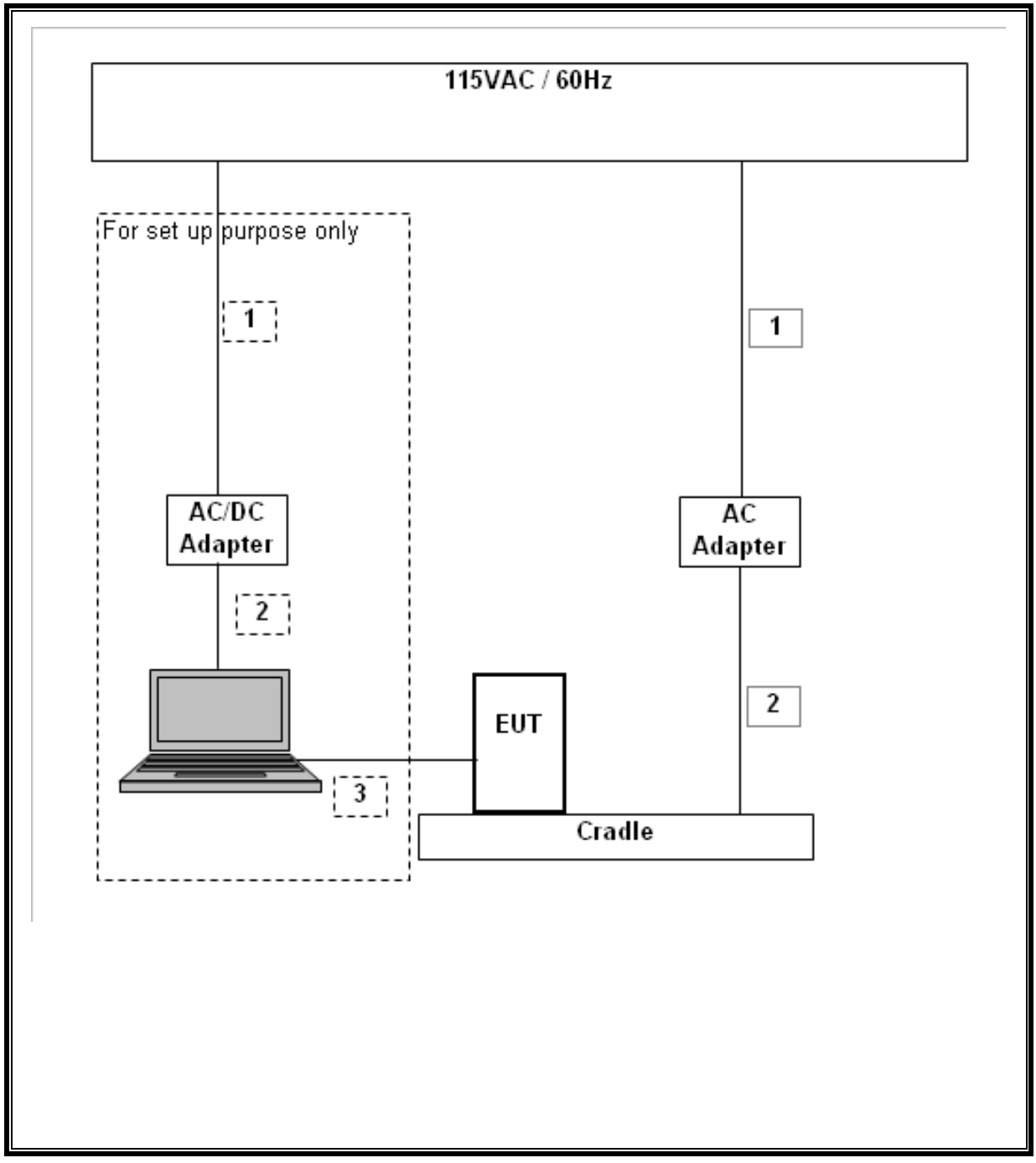
I/O CABLES

I/O CABLE LIST						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**Remarks**
1	AC	2	AC	Unshielded	2.2m	N/A
2	DC	2	DC	Unshielded	1.8m	Ferrite on the cable (EUT side)
3	USB	1	USB	Unshielded	1.5m	N/A

TEST SETUP

The EUT is connected to a host laptop computer via an USB cable, and its connection can be removed after the channel and power are set. Test software exercised the radio card.

SETUP DIAGRAM FOR TESTS



6. 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**
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent	E4446A	MY43360112	03/28/07
Antenna, Horn 1 ~ 18 GHz	ETS	3117	29301	04/22/08
Preamplifier, 1 ~ 26.5 GHz	HP	8449B	3008A00369	08/17/07
Band Reject Filter	MicroTronics	BRC13190	002	C.N.R
Power Meter	HP	438A	2822A05684	06/20/08
Power Sensor	HP	8481A	2349A36506	04/22/08
Preamplifier, 1300 MHz	Agilent / HP	8447D	1937A02062	01/23/08
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	JB1	A0022704	09/03/06
LISN, 10 kHz ~ 30 MHz	FCC	50/250-25-2	114	08/30/07
EMI Test Receiver	R & S	ESHS 20	827129/006	11/03/07
Quasi-Peak Adaptor	Agilent / HP	85650A	3145A01654	01/21/08
SA Display Section 2	Agilent / HP	85662A	2816A16696	04/07/08
SA RF Section, 1.5 GHz	Agilent / HP	85680B	2814A04227	01/07/08
7.6 GHz Highpass Filter	Micro-Tronics	HPM13195	1	CNR

7. LIMITS AND RESULTS

7.1. CHANNEL TESTS FOR THE 5150 TO 5350 MHz BAND

7.1.1. EMISSION BANDWIDTH

LIMIT

§15.403 (i) Emission bandwidth. For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Determination of the emissions bandwidth is based on the use of measurement instrumentation employing a peak detector function with an instrument resolutions bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 1% to 3% of the 26 dB bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled.

RESULTS

No non-compliance noted:

802.11a Mode

Channel	Frequency (MHz)	B (MHz)	10 Log B (dB)
Low	5180	27.16	14.34
Middle	5260	29.71	14.73
High	5320	32.34	15.10

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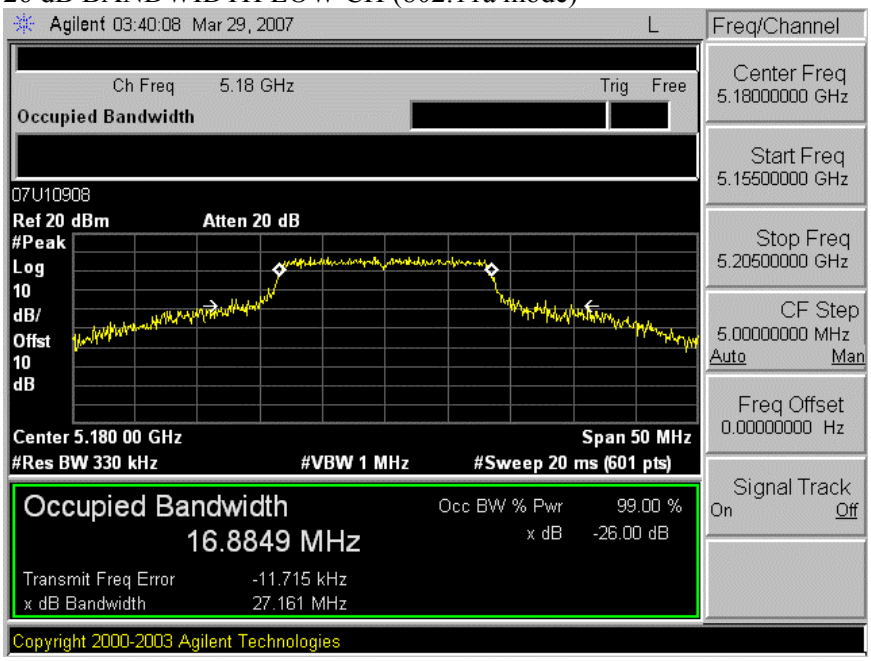
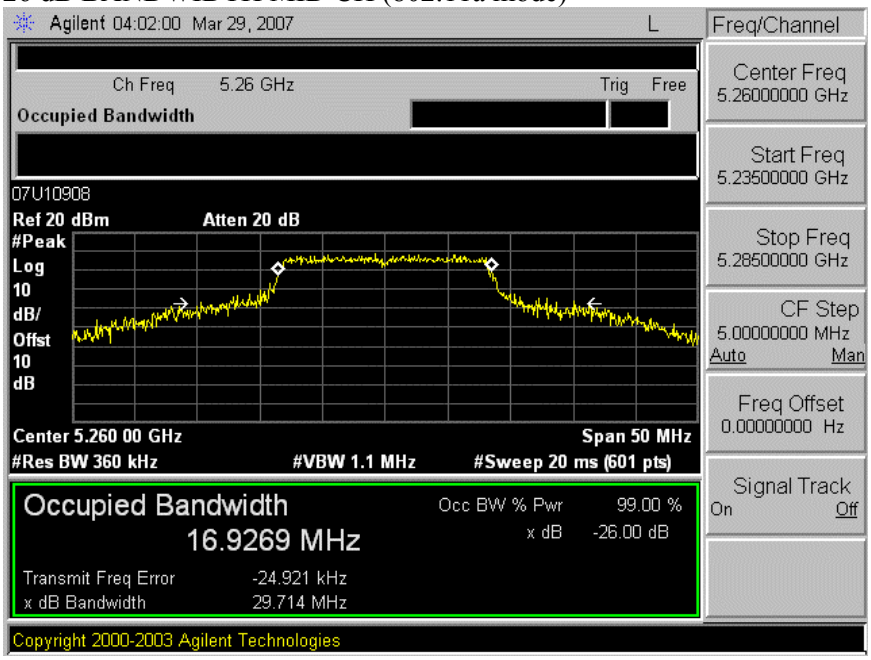
26 dB EMISSION BANDWIDTH (802.11a MODE)

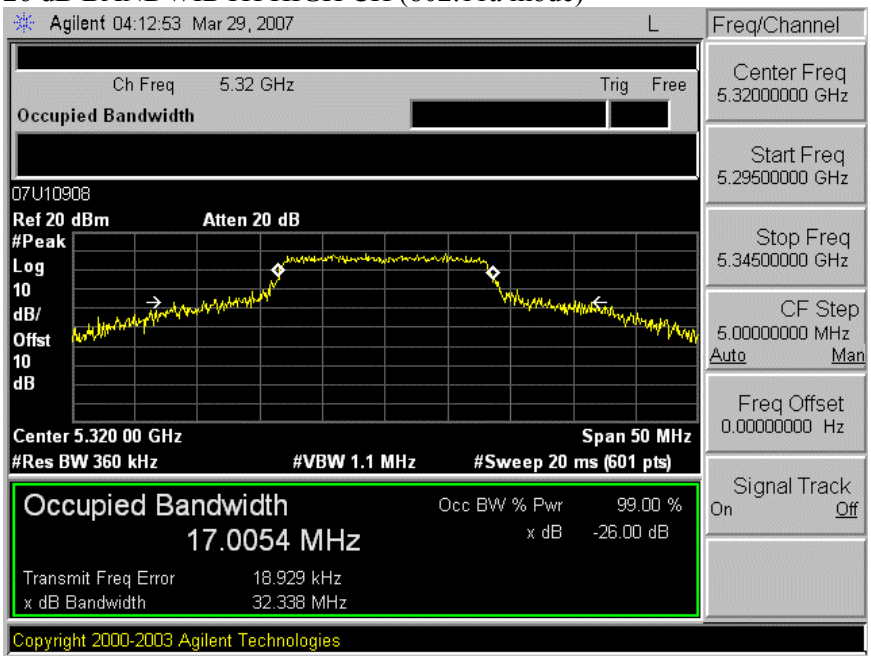
26 dB BANDWIDTH LOW CH (802.11a mode)



26 dB BANDWIDTH MID CH (802.11a mode)



26 dB BANDWIDTH HIGH CH (802.11a mode)



7.1.2. PEAK POWER

LIMIT

§15.407 (a) (1) For the band 5.15-5.25 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

§15.407 (a) (1) For the band 5.25-5.35 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

The transmitter output operates continuously therefore Method # 1 is used.

LIMITS AND RESULTS

No non-compliance noted:

Limit in 5150 to 5250 MHz Band

Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	4 + 10 Log B Limit (dBm)	Antenna Gain (dBi)	Limit (dBm)
Low	5180	17	27.16	18.34	0.40	17.00

Limit in 5250 to 5350 MHz Band

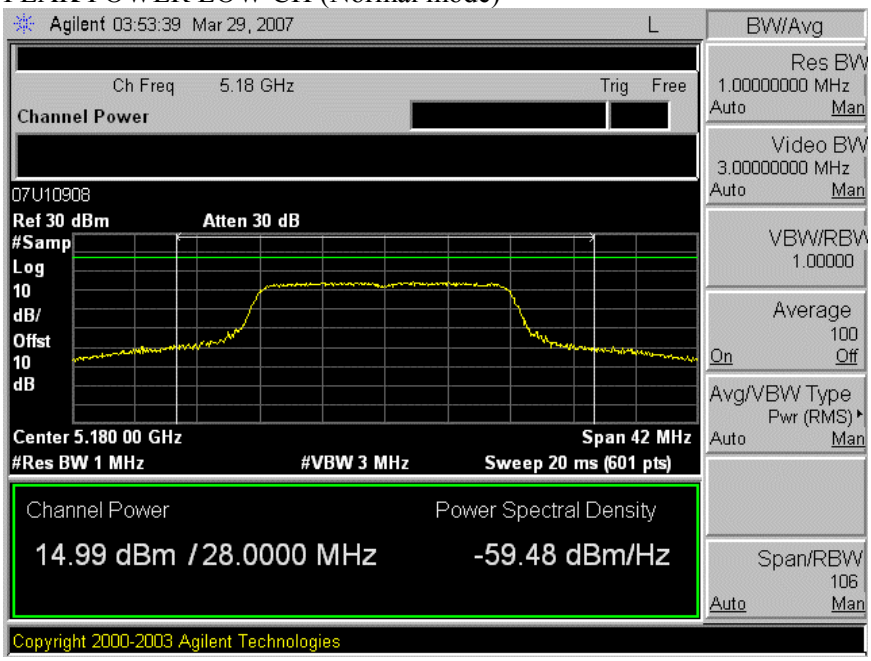
Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	11 + 10 Log B Limit (dBm)	Antenna Gain (dBi)	Limit (dBm)
Mid	5260	24	29.71	25.73	0.40	24.00
High	5320	24	32.34	26.10	0.40	24.00

Results

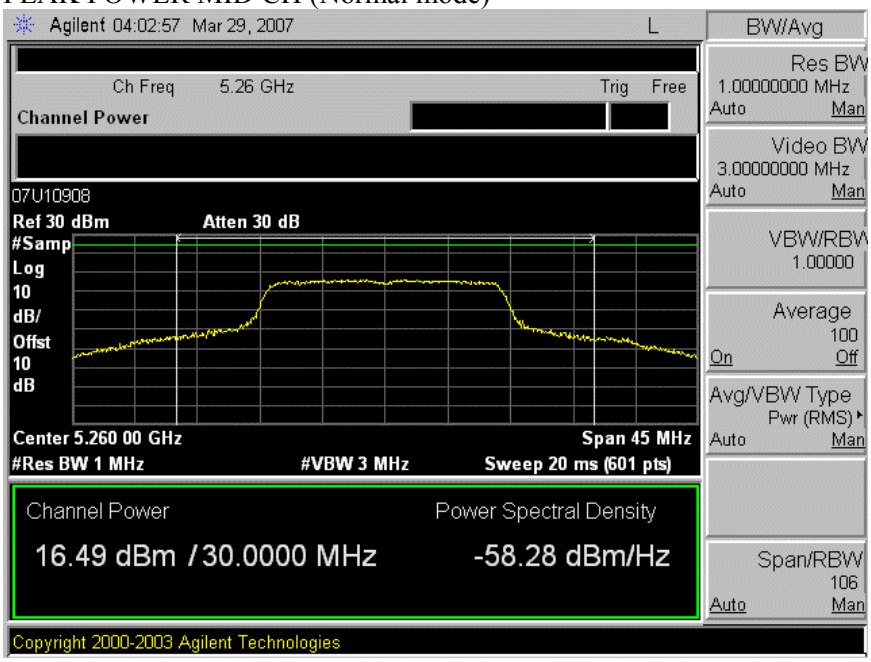
Channel	Frequency (MHz)	Power (dBm)	Limit (dBm)	Margin (dB)
Low	5180	14.99	17.00	-2.01
Mid	5260	16.49	24.00	-7.51
High	5320	16.87	24.00	-7.13

PEAK POWER (NORMAL MODE)

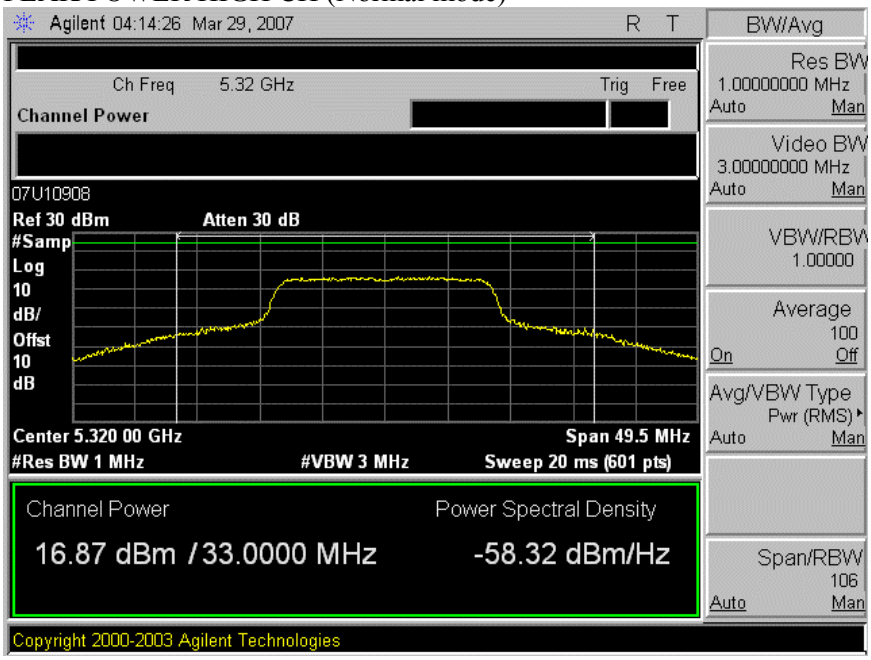
PEAK POWER LOW CH (Normal mode)



PEAK POWER MID CH (Normal mode)



PEAK POWER HIGH CH (Normal mode)



7.1.3. 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 dB 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	5180	15.05
Middle	5260	16.38
High	5320	16.78

7.1.4. PEAK POWER SPECTRAL DENSITY

LIMIT

RSS-210 A9.2 (2) For the band 5250-5350 MHz and 5470-5725 MHz, the power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1 MHz and the VBW is set to 3 MHz. The detector is set to sample. The sweep time is coupled. The span is set to the bin size. A single sweep is used, then the RMS value of the trace is calculated for each bin.

RESULTS

No non-compliance noted:

RESULTS

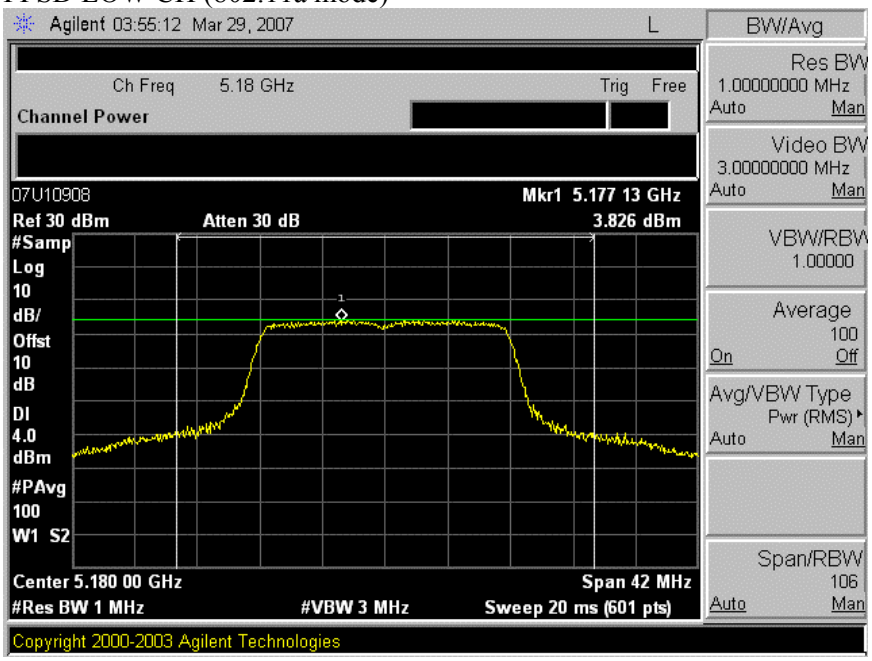
No non-compliance noted:

802.11a Mode

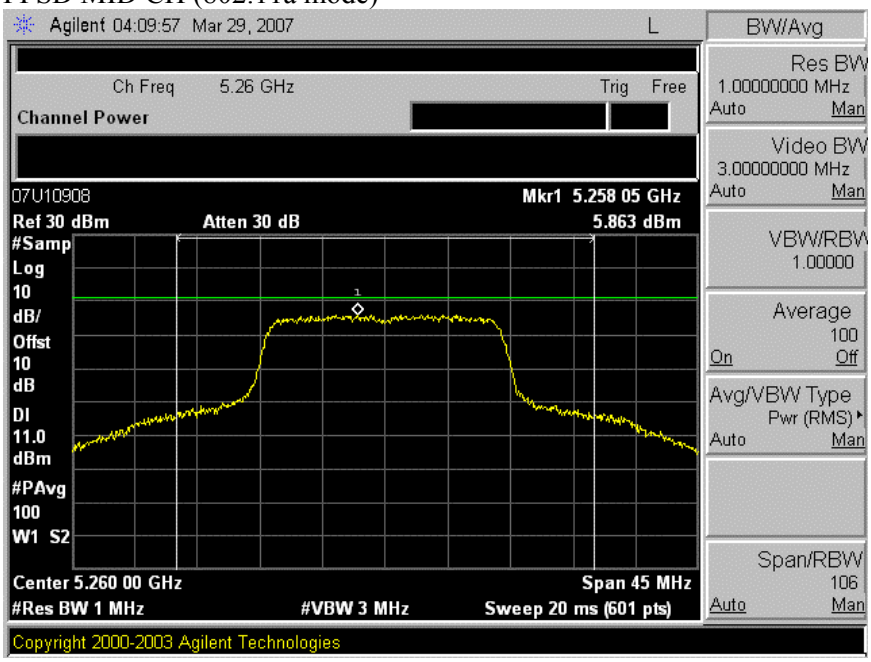
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5180	3.83	4.00	-0.17
Mid	5260	5.86	11.00	-5.14
High	5320	6.04	11.00	-4.96

PEAK POWER SPECTRAL DENSITY (802.11a MODE)

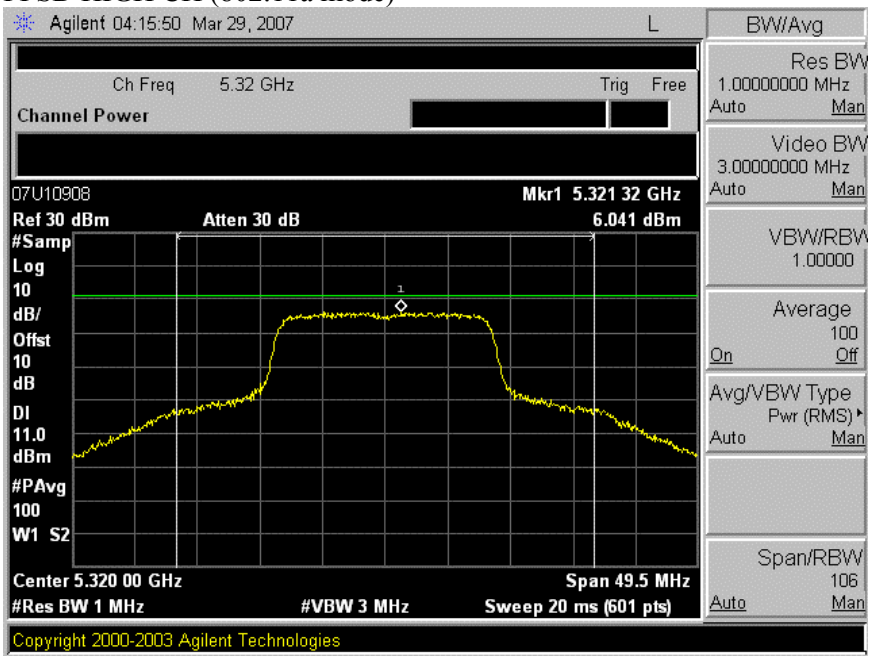
PPSD LOW CH (802.11a mode)



PPSD MID CH (802.11a mode)



PPSD HIGH CH (802.11a mode)



7.1.5. CONDUCTED SPURIOUS EMISSIONS

LIMITS

§15.407 (b) (1 & 2) For transmitters operating in the 5.15-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27dBm / MHz.

TEST PROCEDURE

Conducted RF measurements of the transmitter output are made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1 MHz. The video bandwidth is set to 1 MHz. Peak detection measurements are compared to the average EIRP limit, adjusted for the maximum antenna gain. If necessary, additional average detection measurements are made.

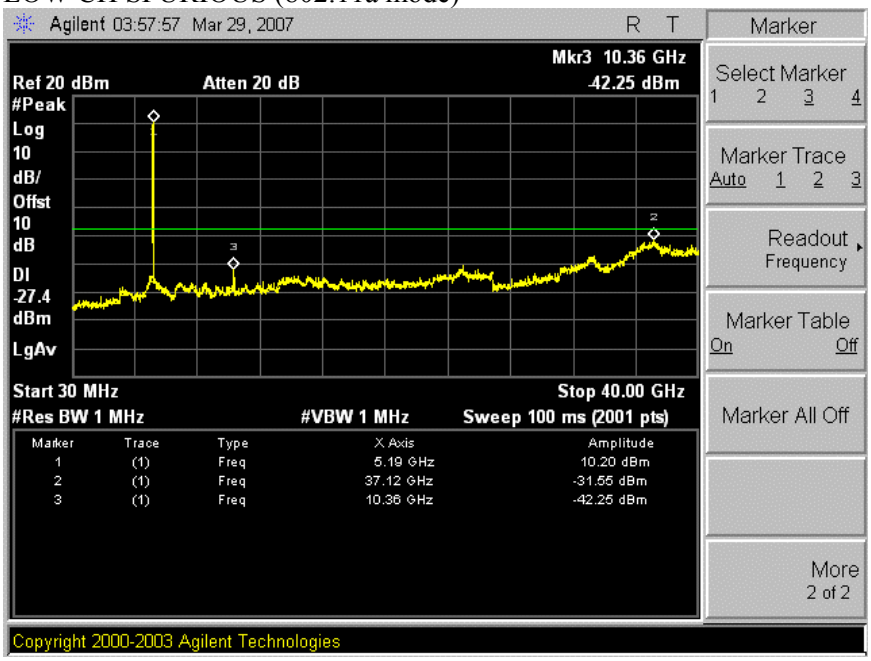
Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

RESULTS

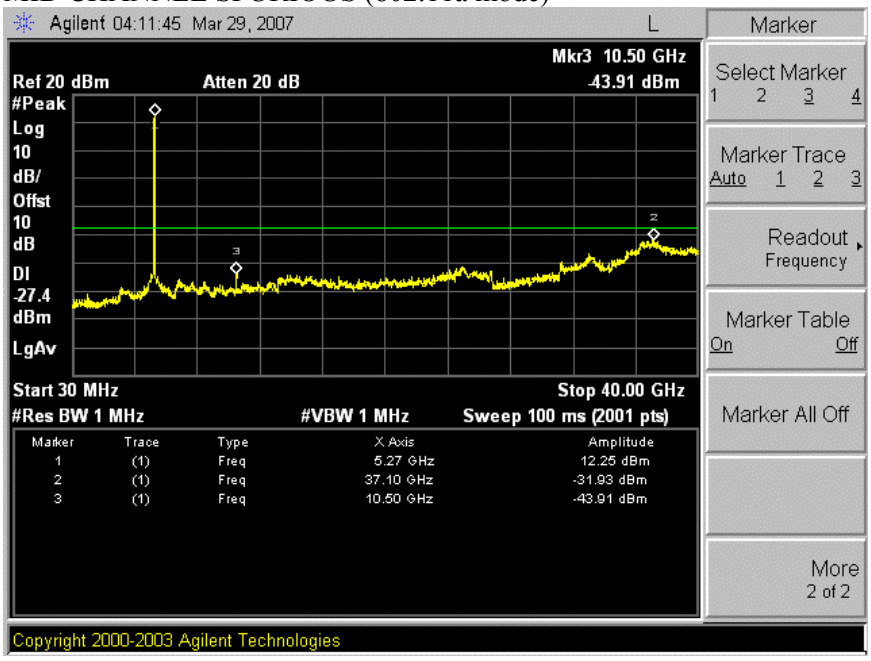
No non-compliance noted:

SPURIOUS EMISSIONS (802.11a MODE)

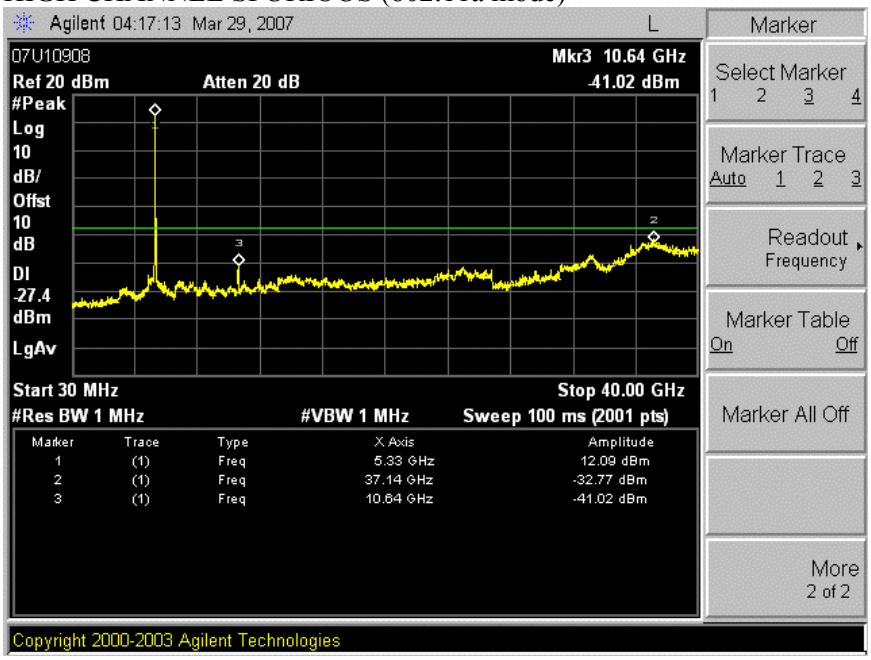
LOW CH SPURIOUS (802.11a mode)



MID CHANNEL SPURIOUS (802.11a mode)



HIGH CHANNEL SPURIOUS (802.11a mode)



7.2. CHANNEL TESTS FOR THE 5470 TO 5725 MHz BAND

7.2.1. EMISSION BANDWIDTH

LIMIT

§15.403 (i) Emission bandwidth. For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Determination of the emissions bandwidth is based on the use of measurement instrumentation employing a peak detector function with an instrument resolutions bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 1% to 3% of the 26 dB bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled.

RESULTS

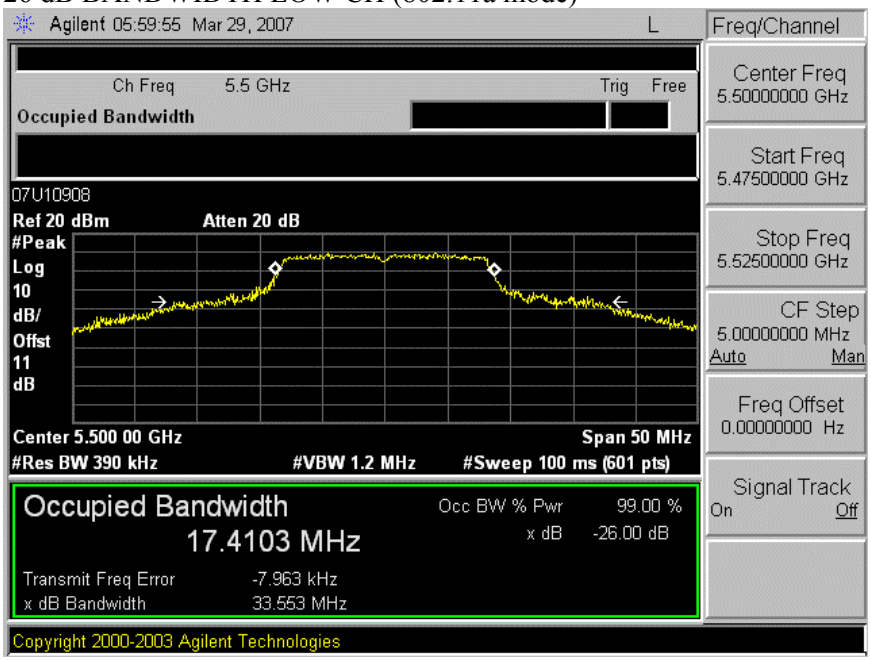
No non-compliance noted:

802.11a Mode

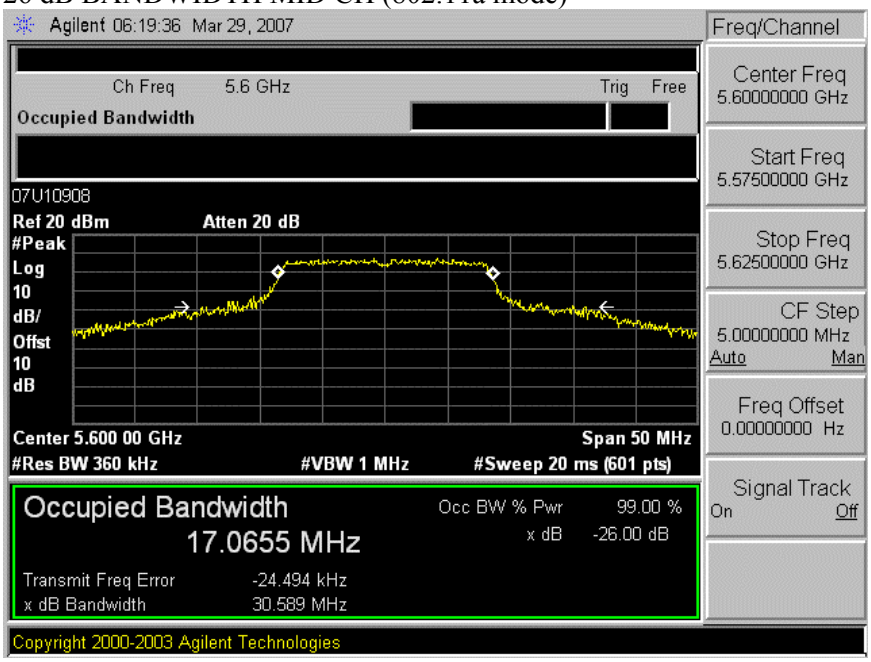
Channel	Frequency (MHz)	B (MHz)	10 Log B (dB)
Low	5500	33.55	15.26
Mid	5600	30.59	14.86
High	5700	29.59	14.71

26 dB EMISSION BANDWIDTH (802.11a MODE)

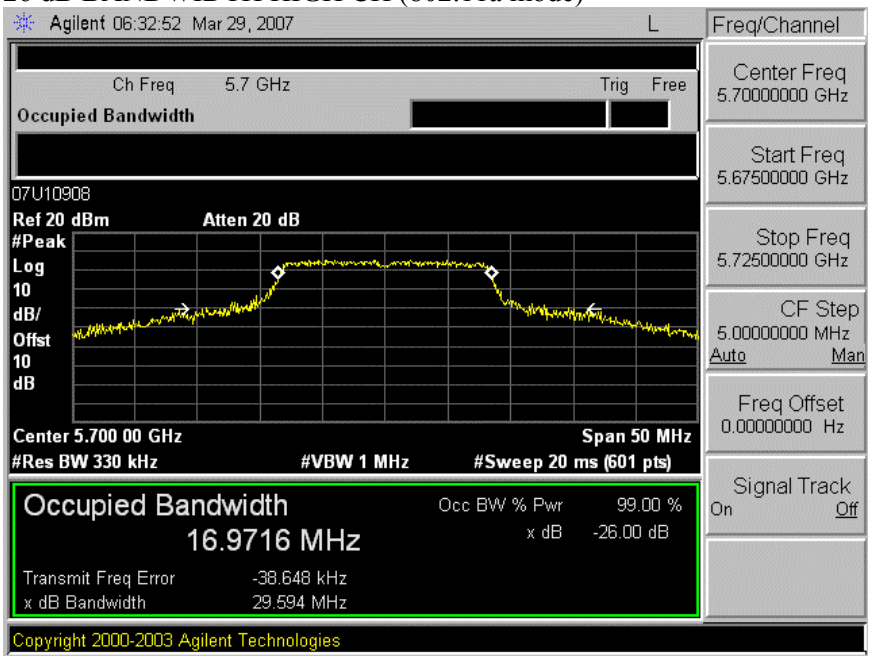
26 dB BANDWIDTH LOW CH (802.11a mode)



26 dB BANDWIDTH MID CH (802.11a mode)



26 dB BANDWIDTH HIGH CH (802.11a mode)



7.2.2. PEAK POWER

LIMIT

§15.407 (a) (2) For the 5.47–5.725 GHz band, the peak transmit power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

The transmitter output operates continuously therefore Method # 1 is used.

LIMITS AND RESULTS

No non-compliance noted:

Limit

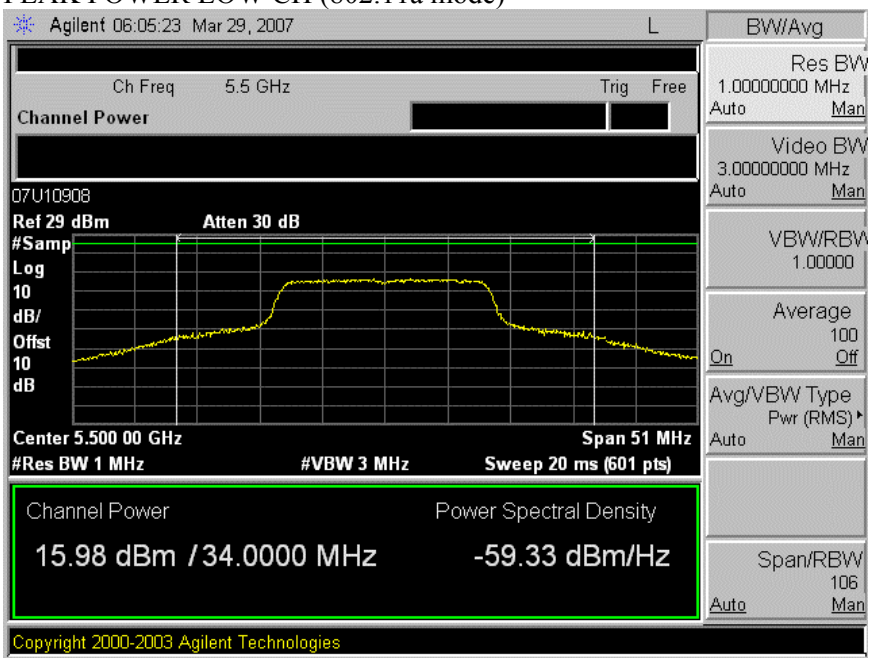
Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	11 + 10 Log B Limit (dBm)	Antenna Gain (dBi)	Limit (dBm)
Low	5500	24	33.553	26.26	0.40	24.00
Mid	5600	24	30.589	25.86	0.40	24.00
High	5700	24	29.584	25.71	0.40	24.00

Results

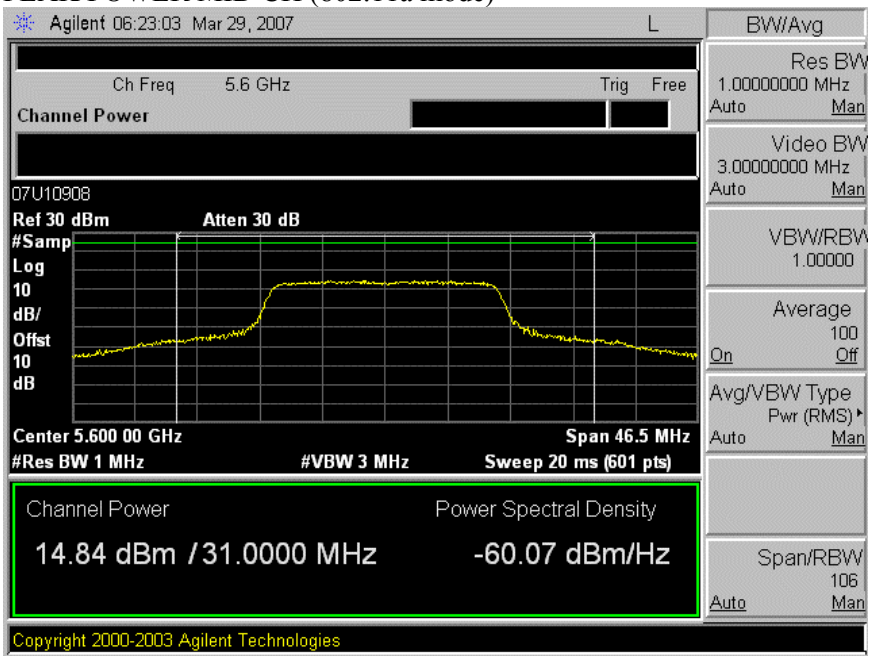
Channel	Frequency (MHz)	Power (dBm)	Limit (dBm)	Margin (dB)
Low	5500	15.98	24.00	-8.02
Mid	5600	14.84	24.00	-9.16
High	5700	13.79	24.00	-10.21

PEAK POWER (802.11a MODE)

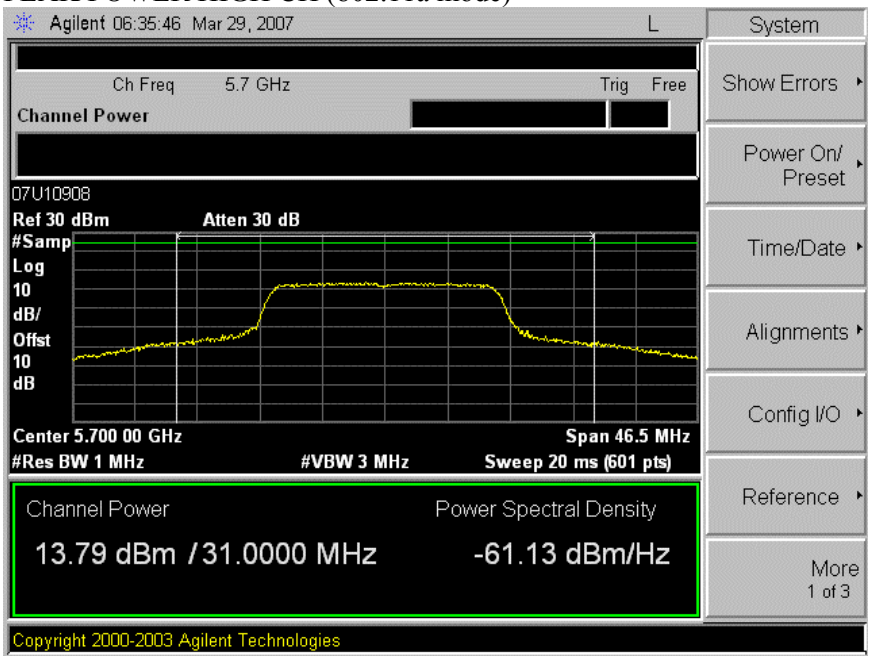
PEAK POWER LOW CH (802.11a mode)



PEAK POWER MID CH (802.11a mode)



PEAK POWER HIGH CH (802.11a mode)



7.2.3. 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 dB (including 10 dB) 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	5500	15.94
Mid	5600	14.68
High	5700	13.72

7.2.4. PEAK POWER SPECTRAL DENSITY

LIMIT

RSS-210 A9.2 (2) For the band 5250-5350 MHz and 5470-5725 MHz, the power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1 MHz and the VBW is set to 3 MHz. The detector is set to sample. The sweep time is coupled. The span is set to the bin size. A single sweep is used, then the RMS value of the trace is calculated for each bin.

RESULTS

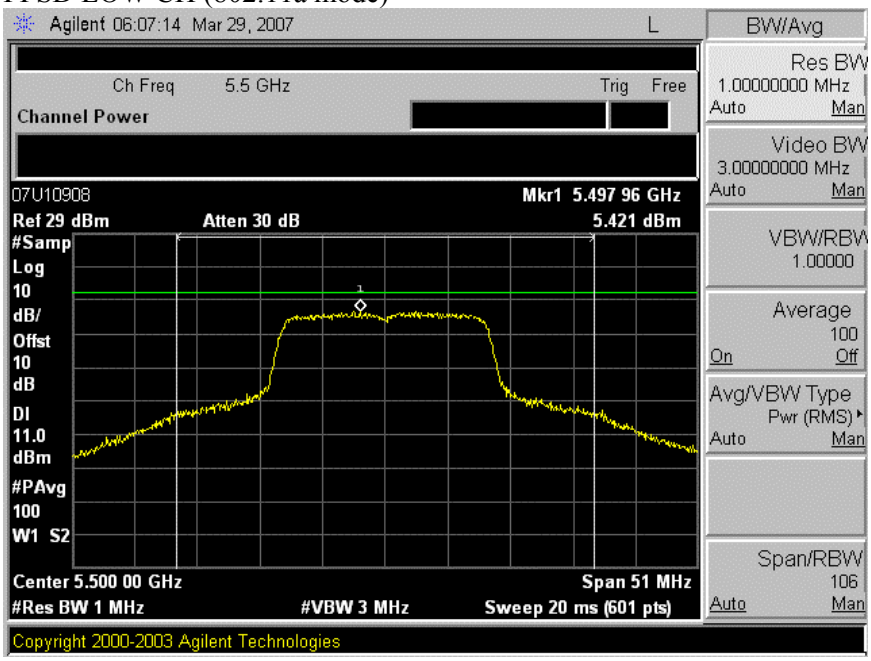
No non-compliance noted:

802.11a Mode

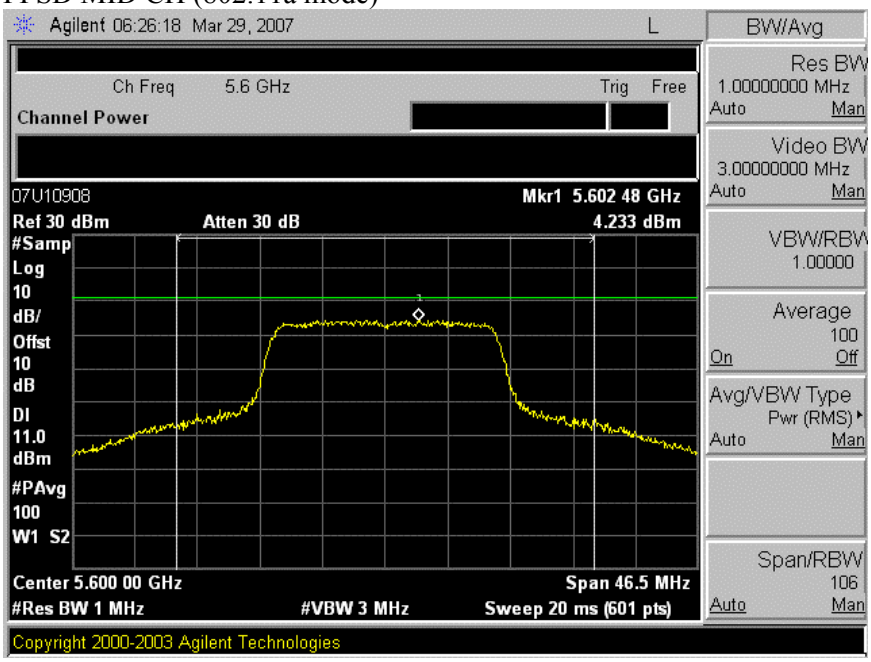
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5500	5.42	11.00	-5.58
Mid	5600	4.23	11.00	-6.77
High	5700	3.26	11.00	-7.74

PEAK POWER SPECTRAL DENSITY (802.11a MODE)

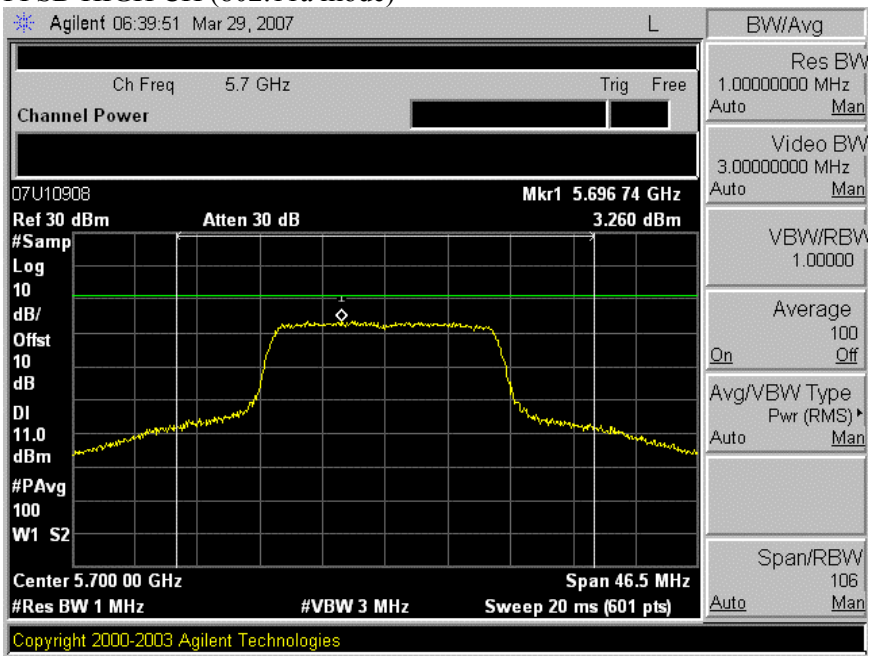
PPSD LOW CH (802.11a mode)



PPSD MID CH (802.11a mode)



PPSD HIGH CH (802.11a mode)



7.2.5. PEAK EXCURSION

LIMIT

§15.407 (a) (6) The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

Since Method # 1 was used for peak power measurements, Method # 1 settings are used for the second PPSD trace.

RESULTS

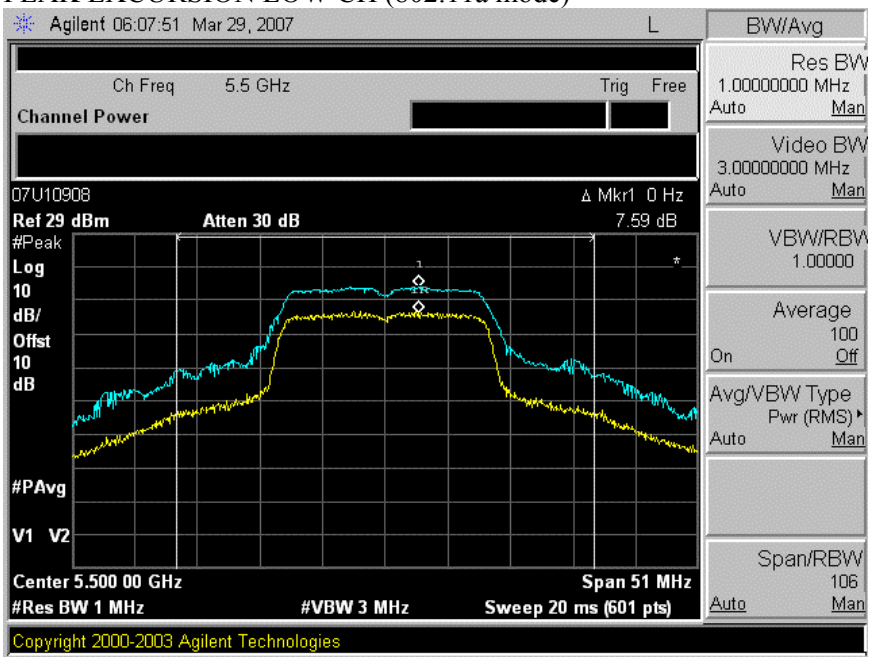
No non-compliance noted:

802.11a Mode

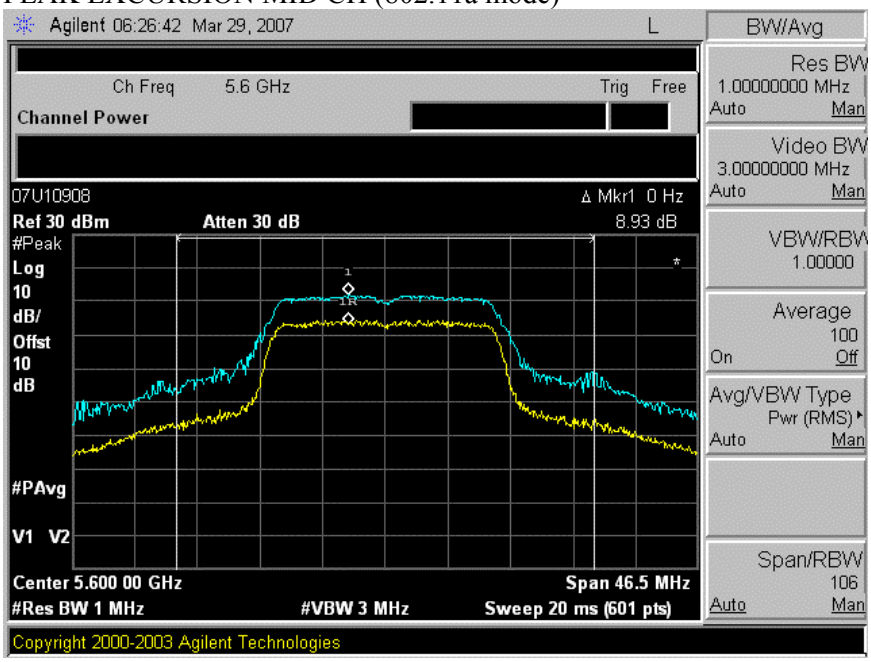
Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5500	7.59	13	-5.41
Mid	5600	8.93	13	-4.07
High	5700	8.82	13	-4.18

PEAK EXCURSION (802.11a MODE)

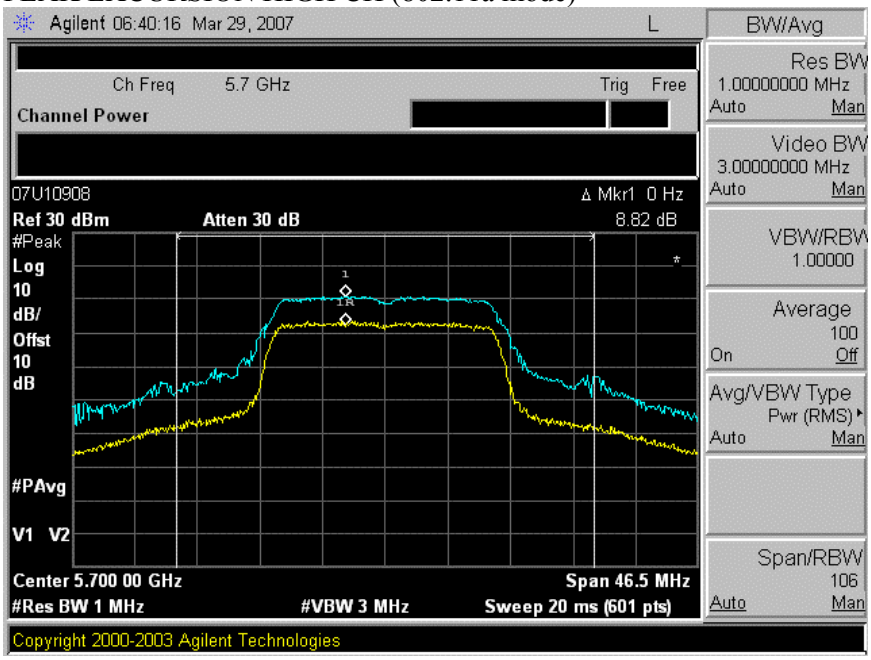
PEAK EXCURSION LOW CH (802.11a mode)



PEAK EXCURSION MID CH (802.11a mode)



PEAK EXCURSION HIGH CH (802.11a mode)



7.2.6. PEAK CONDUCTED SPURIOUS EMISSIONS

LIMITS

§15.407 (b) (3) For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of -27 dBm / MHz.

TEST PROCEDURE

Conducted RF measurements of the transmitter output are made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1 MHz. The video bandwidth is set to 1 MHz. Peak detection measurements are compared to the average EIRP limit, adjusted for the maximum antenna gain. If necessary, additional average detection measurements are made.

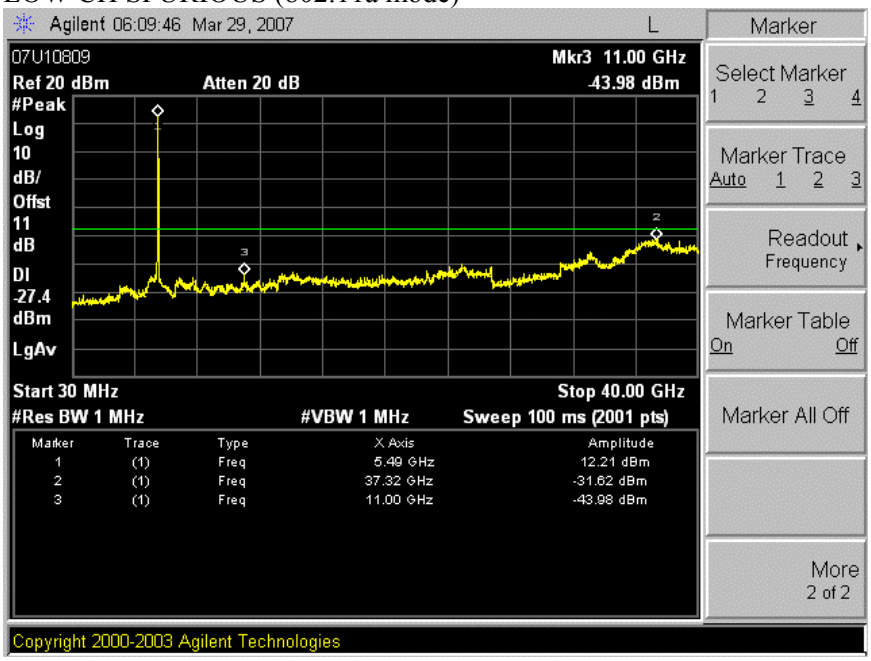
Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

RESULTS

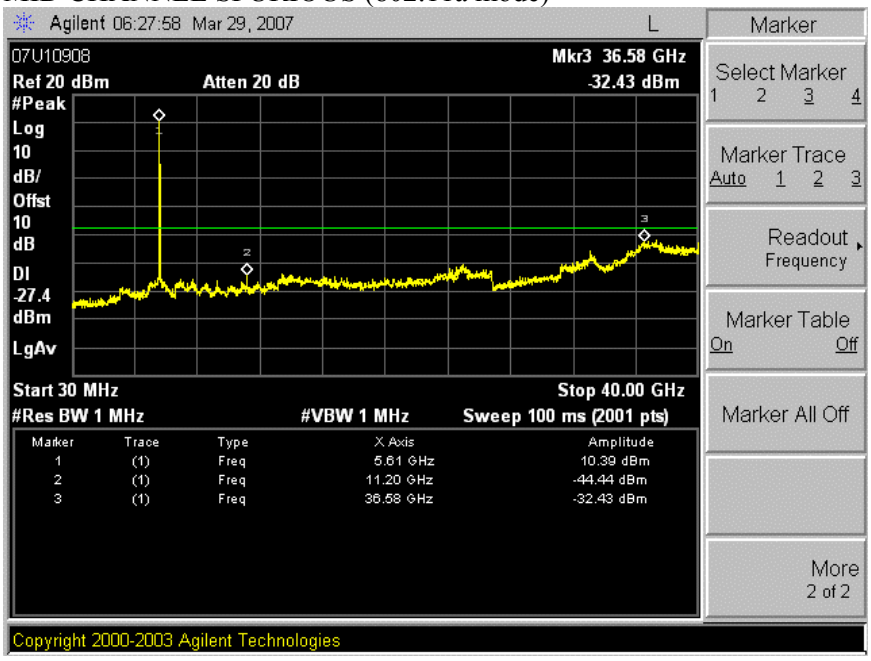
No non-compliance noted:

SPURIOUS EMISSIONS (802.11a MODE)

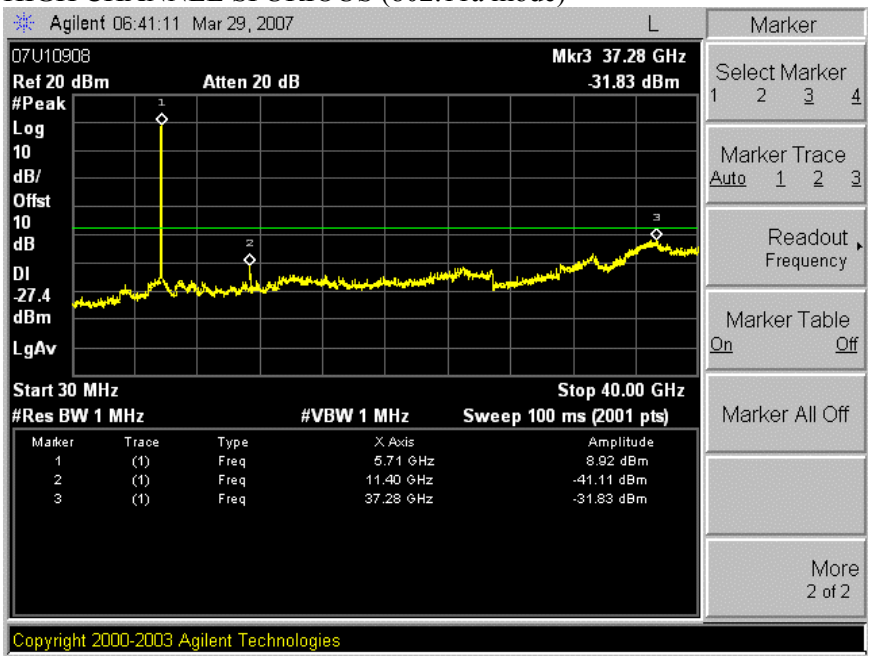
LOW CH SPURIOUS (802.11a mode)



MID CHANNEL SPURIOUS (802.11a mode)



HIGH CHANNEL SPURIOUS (802.11a mode)



7.2.7. MAXIMUM PERMISSIBLE EXPOSURE

LIMITS

§1.1310 The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f^2)	6
30–300	61.4	0.163	1.0	6
300–1500	.....	.....	f/300	6
1500–100,000	.....	.....	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f^2)	30

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)—Continued

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
30–300	27.5	0.073	0.2	30
300–1500	.....	.....	f/1500	30
1500–100,000	.....	.....	1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

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 Power to mW and Distance to 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

Substituting the logarithmic form of power and gain using:

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

yields

$d = 0.282 * 10 \wedge ((P + G) / 20) / \sqrt{S}$

where

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

Rearranging terms to calculate the power density at a specific distance yields

$S = 0.0795 * 10 \wedge ((P + G) / 10) / (d^2)$

LIMITS

From §1.1310 Table 1 (B), the maximum value of S = 1.0 mW/cm^2

RESULTS

Mode	MPE Distance (cm)	Output Power (dBm)	Antenna Gain (dBi)	Power Density (mW/cm^2)
5.2GHz	20.0	16.87	0.40	0.01
5.4GHz	20.0	15.98	0.40	0.01

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.

7.3. RADIATED EMISSIONS

7.3.1. 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.

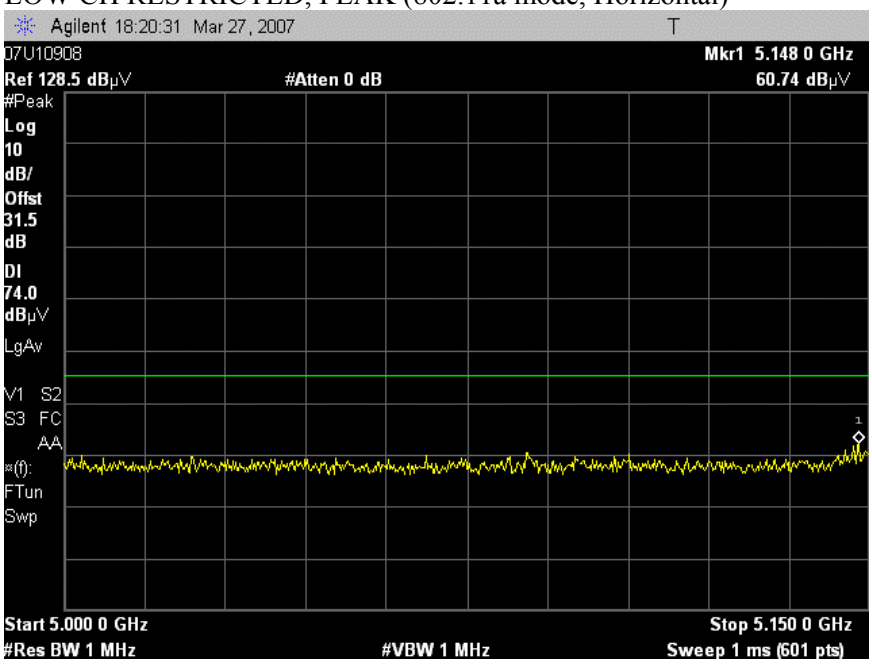
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each band.

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.

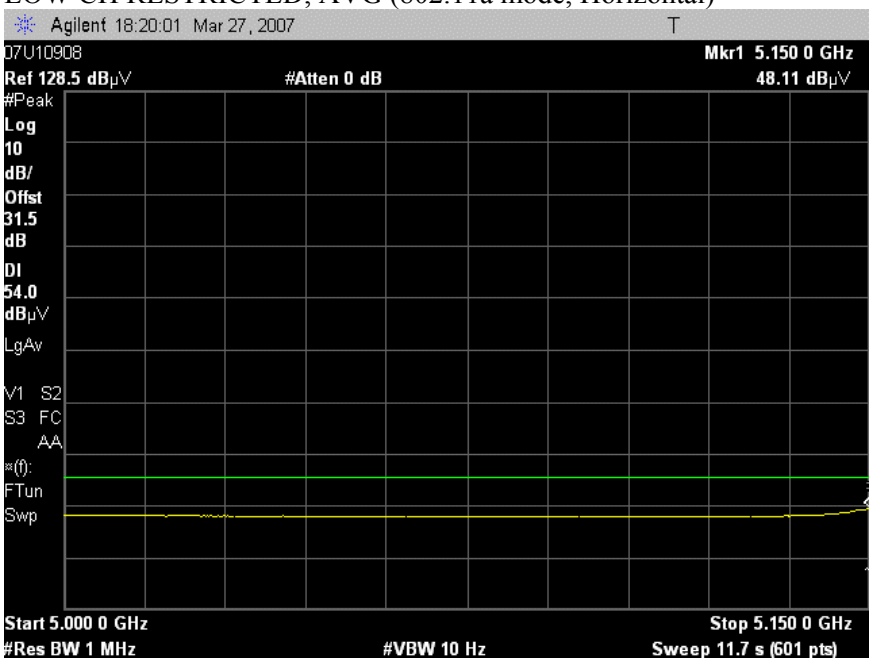
7.3.2. TRANSMITTER ABOVE 1 GHZ FOR 5150 TO 5350 MHz BAND

RESTRICTED BANDEDGE (802.11a MODE, LOW CHANNEL, HORIZONTAL)

LOW CH RESTRICTED, PEAK (802.11a mode, Horizontal)

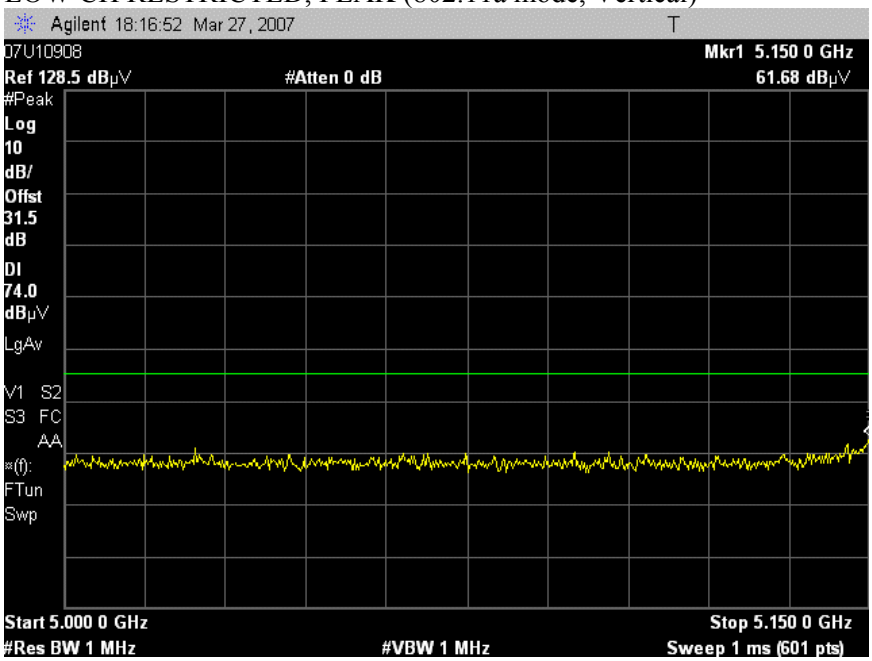


LOW CH RESTRICTED, AVG (802.11a mode, Horizontal)

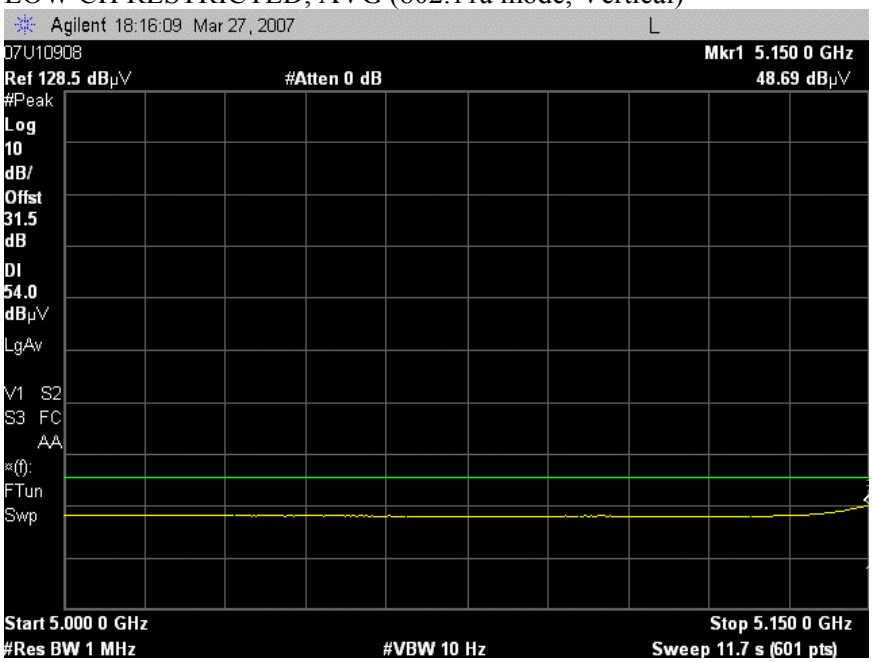


RESTRICTED BANDEDGE (802.11a MODE, LOW CHANNEL, VERTICAL)

LOW CH RESTRICTED, PEAK (802.11a mode, Vertical)

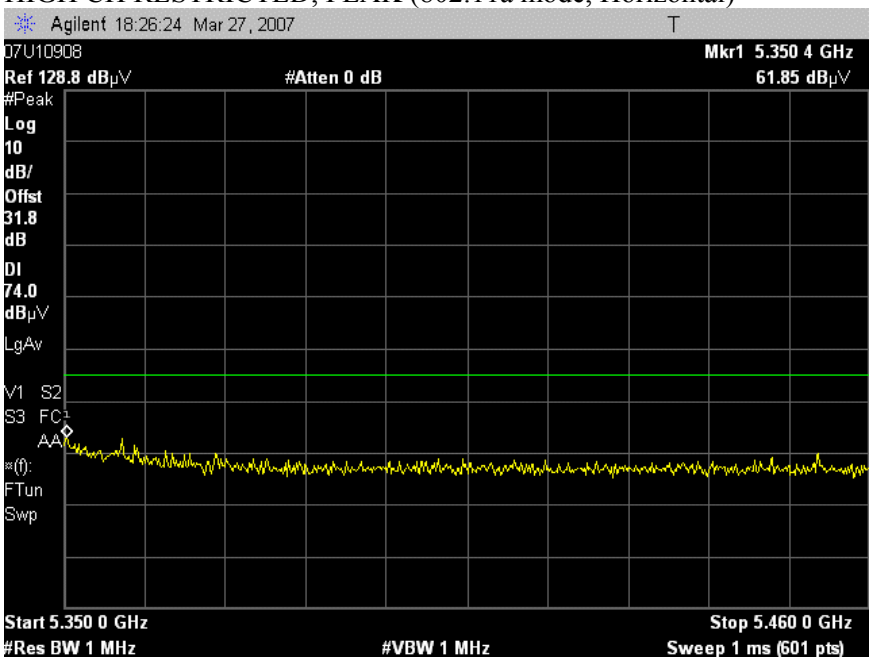


LOW CH RESTRICTED, AVG (802.11a mode, Vertical)

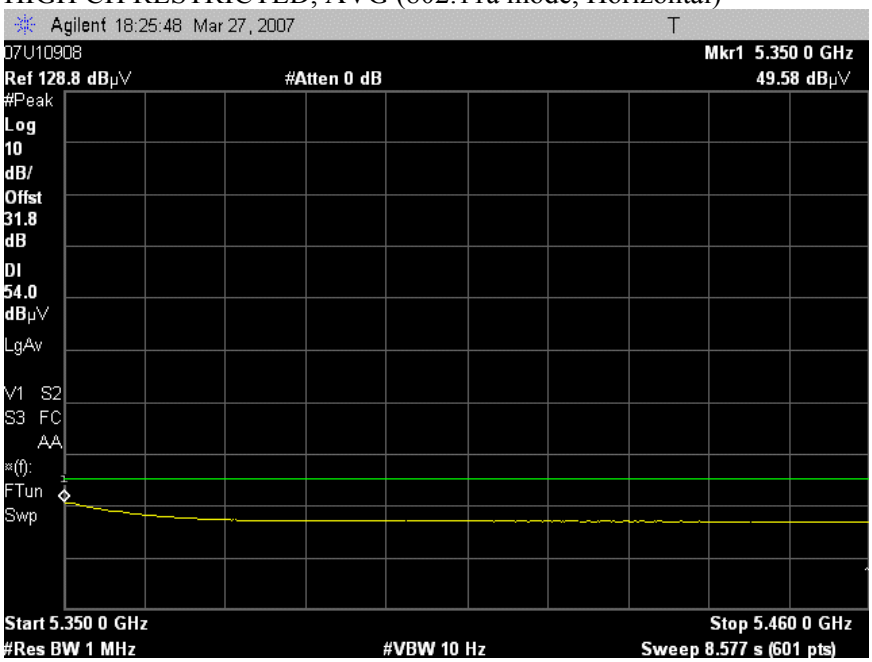


RESTRICTED BANDEDGE (802.11a MODE, HIGH CHANNEL, HORIZONTAL)

HIGH CH RESTRICTED, PEAK (802.11a mode, Horizontal)

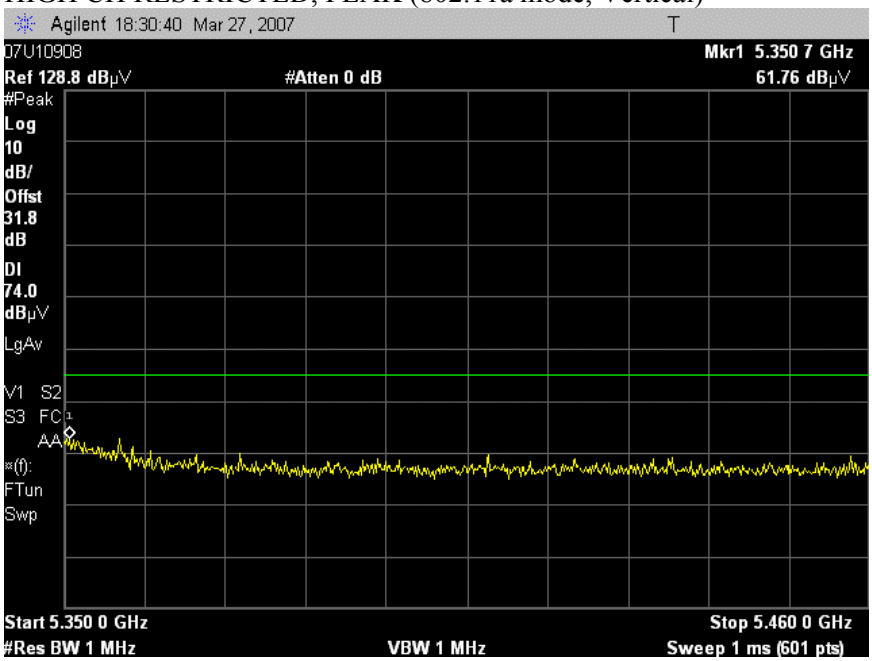


HIGH CH RESTRICTED, AVG (802.11a mode, Horizontal)

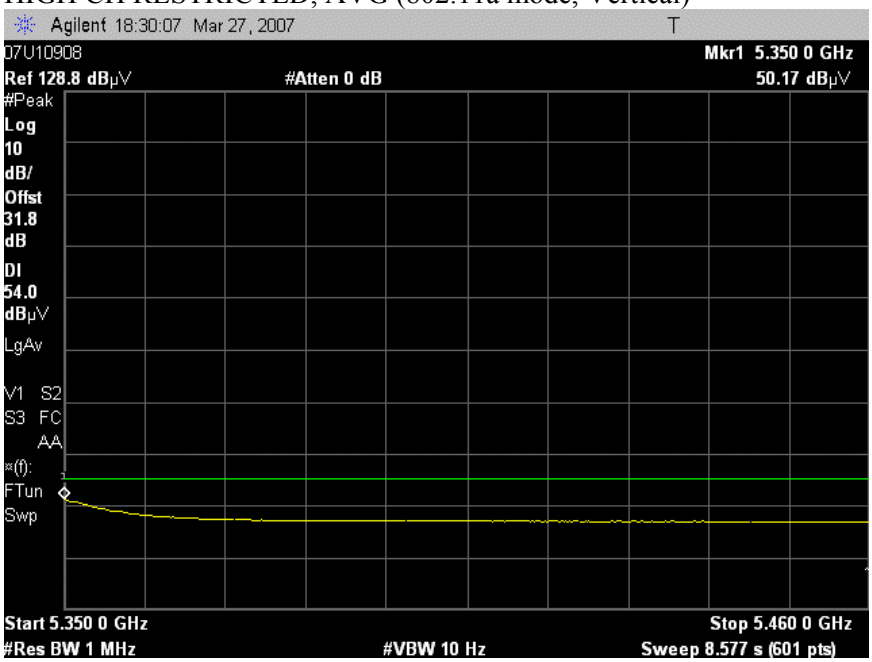


RESTRICTED BANDEDGE (802.11a MODE, HIGH CHANNEL, VERTICAL)

HIGH CH RESTRICTED, PEAK (802.11a mode, Vertical)



HIGH CH RESTRICTED, AVG (802.11a mode, Vertical)



HARMONICS AND SPURIOUS EMISSIONS (802.11a MODE)

High Frequency Measurement
Compliance Certification Services, Fremont, A-5m Chamber

Company:	Symbol
Project #:	07U10908
Date:	03/27/07
Test Engineer:	Frank Ibrahim
Configuration:	Stand-alone EUT
Mode:	TX ON, 6 Mbps OFDM, Modulation ON, Scrambling ON, closed loop (calibrated).
S/N:	MXA2RH78

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T119; S/N: 29301 @3m	T34 HP 8449B		T89; ARA 18-26GHz; S/N:1049	FCC 15.205

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		Gordon 203134001		R_002

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

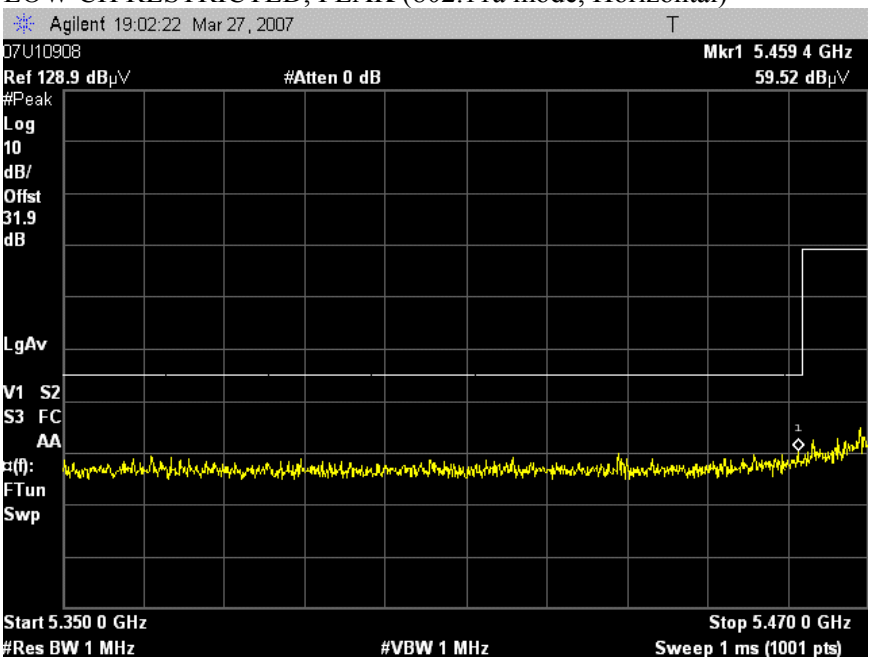
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Channel (5180 MHz)															
15.540	3.0	36.60	22.95	38.7	12.7	-32.2	0.0	0.0	55.80	42.15	74	54	-18.20	-11.85	V
15.540	3.0	39.05	26.93	38.7	12.7	-32.2	0.0	0.0	58.25	46.13	74	54	-15.75	-7.87	H
Mid Channel (5260 MHz)															
15.780	3.0	36.55	23.24	38.8	12.8	-32.2	0.0	0.0	55.94	42.63	74	54	-18.06	-11.37	V
15.780	3.0	37.35	24.53	38.8	12.8	-32.2	0.0	0.0	56.74	43.92	74	54	-17.26	-10.08	H
High Channel (5320 MHz)															
10.640	3.0	40.36	28.63	36.8	10.7	-32.6	0.0	0.0	55.32	43.59	74	54	-18.68	-10.41	V
15.960	3.0	40.29	28.00	38.8	12.8	-32.1	0.0	0.0	59.82	47.53	74	54	-14.18	-6.47	V
10.640	3.0	44.30	32.17	36.8	10.7	-32.6	0.0	0.0	59.26	47.13	74	54	-14.74	-6.87	H
15.960	3.0	40.21	28.23	38.8	12.8	-32.1	0.0	0.0	59.74	47.76	74	54	-14.26	-6.24	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		

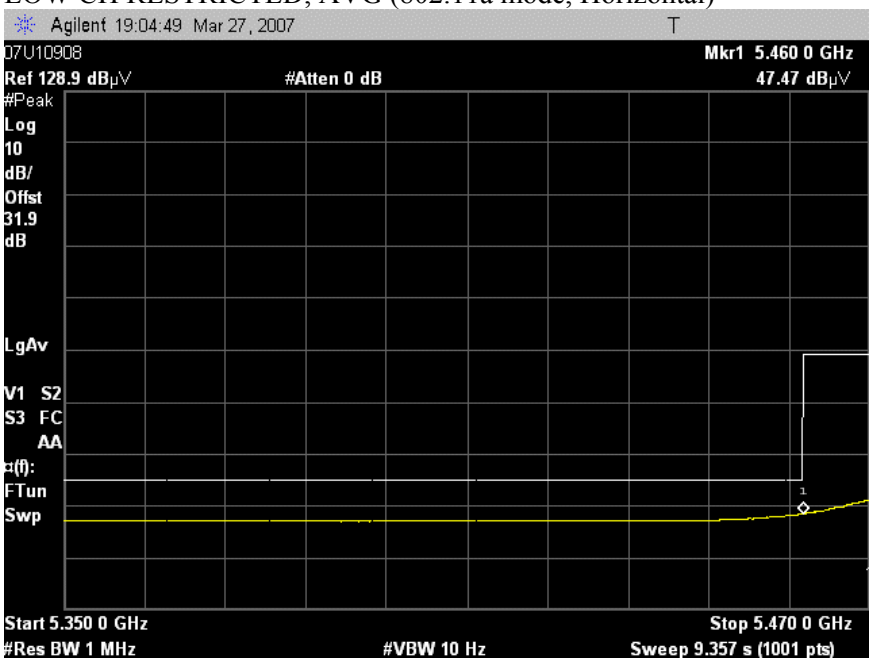
7.3.3. TRANSMITTER ABOVE 1 GHZ FOR 5470 TO 5725 MHz BAND

RESTRICTED BANDEDGE (802.11a MODE, LOW CHANNEL, HORIZONTAL)

LOW CH RESTRICTED, PEAK (802.11a mode, Horizontal)

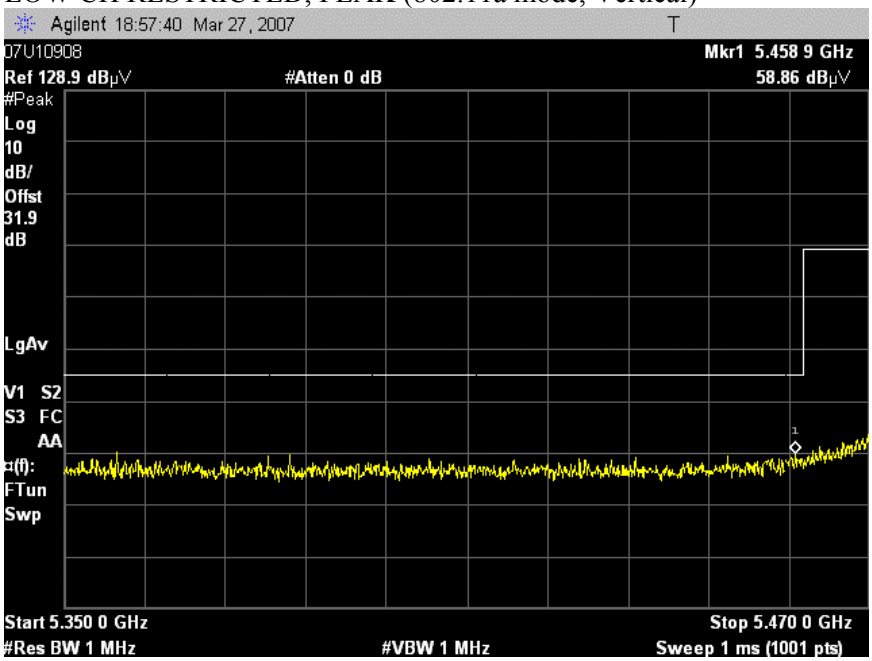


LOW CH RESTRICTED, AVG (802.11a mode, Horizontal)

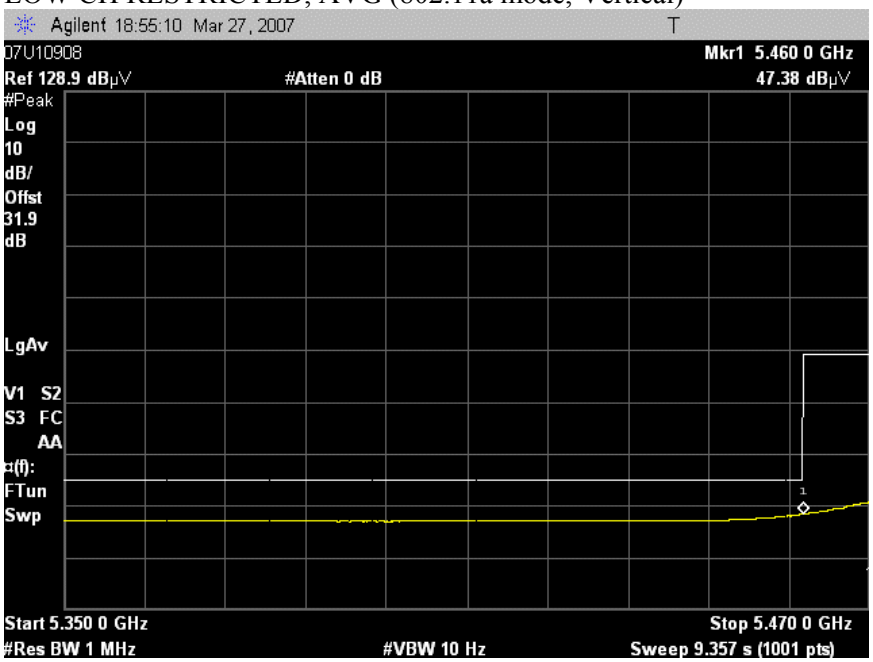


RESTRICTED BANDEDGE (802.11a MODE, LOW CHANNEL, VERTICAL)

LOW CH RESTRICTED, PEAK (802.11a mode, Vertical)

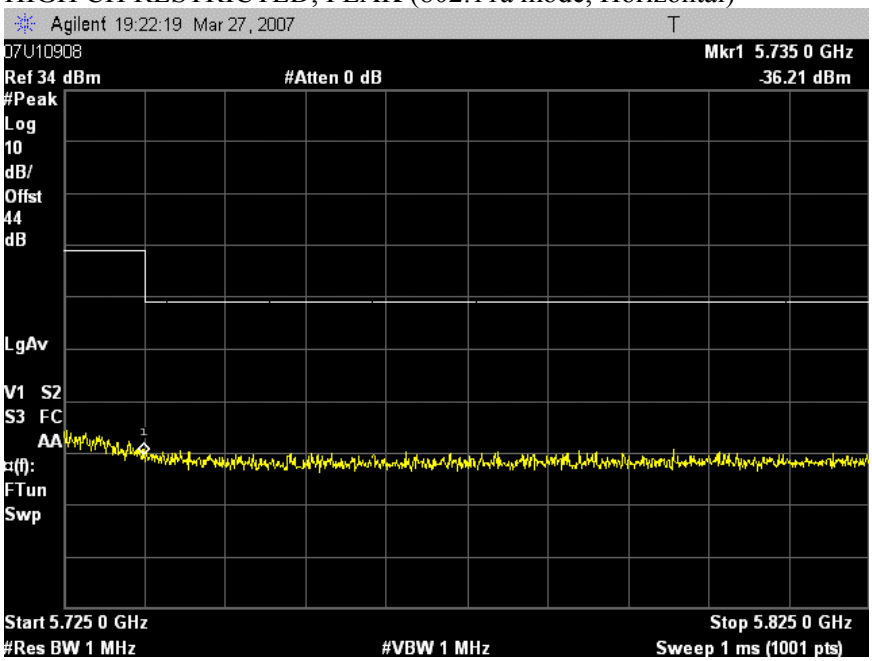


LOW CH RESTRICTED, AVG (802.11a mode, Vertical)

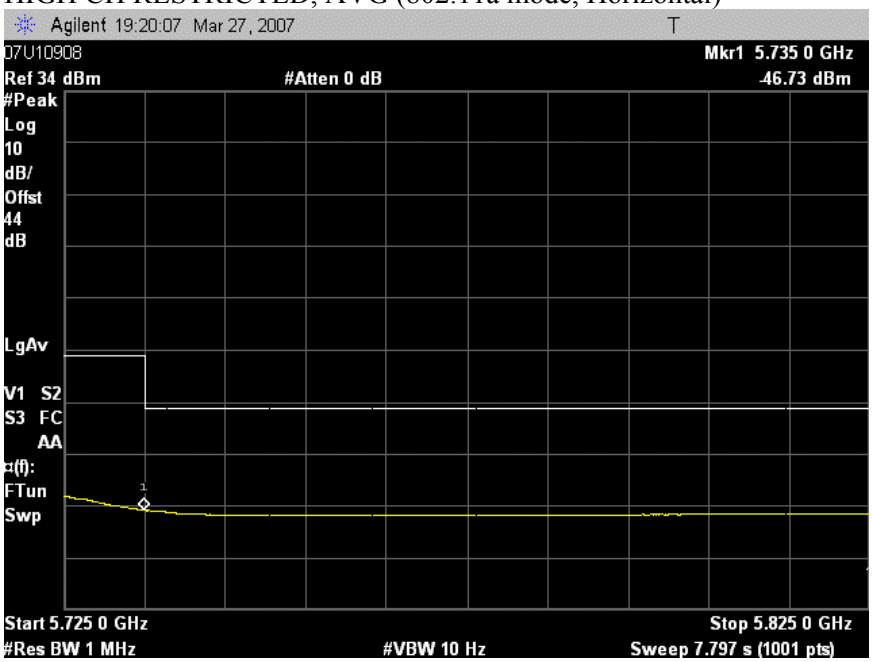


RESTRICTED BANDEDGE (802.11a MODE, HIGH CHANNEL, HORIZONTAL)

HIGH CH RESTRICTED, PEAK (802.11a mode, Horizontal)

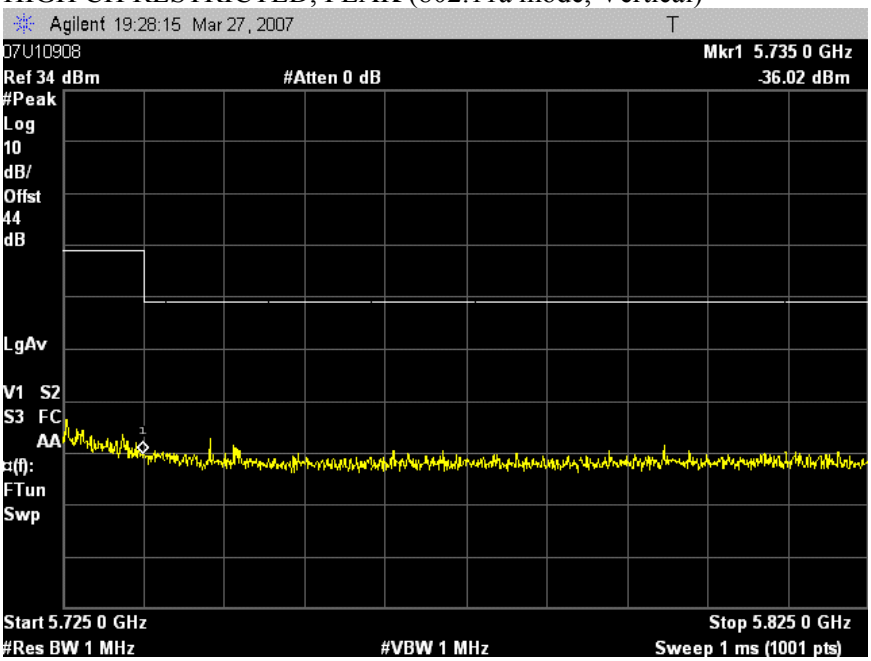


HIGH CH RESTRICTED, AVG (802.11a mode, Horizontal)

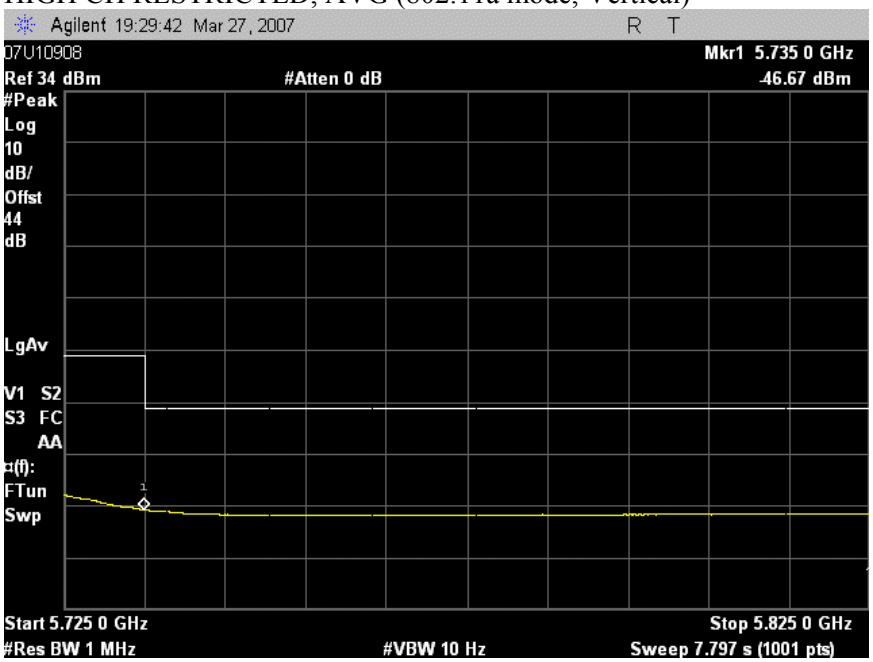


RESTRICTED BANDEDGE (802.11a MODE, HIGH CHANNEL, VERTICAL)

HIGH CH RESTRICTED, PEAK (802.11a mode, Vertical)



HIGH CH RESTRICTED, AVG (802.11a mode, Vertical)



HARMONICS AND SPURIOUS EMISSIONS (802.11a MODE)

High Frequency Measurement
Compliance Certification Services, Fremont, A-5m Chamber

Company:	Symbol
Project #:	07U10908
Date:	03/27/07
Test Engineer:	Frank Ibrahim
Configuration:	Stand-alone EUT
Mode:	TX ON, 6 Mbps OFDM, Modulation ON, Scrambling ON, closed loop (calibrated).
S/N:	MXA2RH78

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T119; S/N: 29301 @3m	T34 HP 8449B		T89; ARA 18-26GHz; S/N:1049	FCC 15.205

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		Gordon 203134001		R_002

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Channel (5500 MHz)															
11.000	3.0	40.02	28.53	37.0	11.1	-32.6	0.0	0.0	55.55	44.06	74	54	-18.45	-9.94	V
11.000	3.0	42.75	31.04	37.0	11.1	-32.6	0.0	0.0	58.28	46.57	74	54	-15.72	-7.43	H
Mid Channel (5600 MHz)															
11.200	3.0	40.61	29.14	37.1	11.3	-32.6	0.0	0.0	56.43	44.96	74	54	-17.57	-9.04	V
11.200	3.0	43.36	31.56	37.1	11.3	-32.6	0.0	0.0	59.18	47.38	74	54	-14.82	-6.62	H
High Channel (5700 MHz)															
1.127	3.0	53.13	41.76	28.2	3.2	-38.1	0.0	0.0	46.37	35.00	74	54	-27.63	-19.00	V
11.400	3.0	43.69	31.43	37.1	11.5	-32.5	0.0	0.0	59.81	47.55	74	54	-14.19	-6.45	V
1.325	3.0	51.66	35.80	28.9	3.4	-37.8	0.0	0.0	46.21	30.35	74	54	-27.79	-23.65	H
11.400	3.0	45.84	34.27	37.1	11.5	-32.5	0.0	0.0	61.96	50.39	74	54	-12.04	-3.61	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		

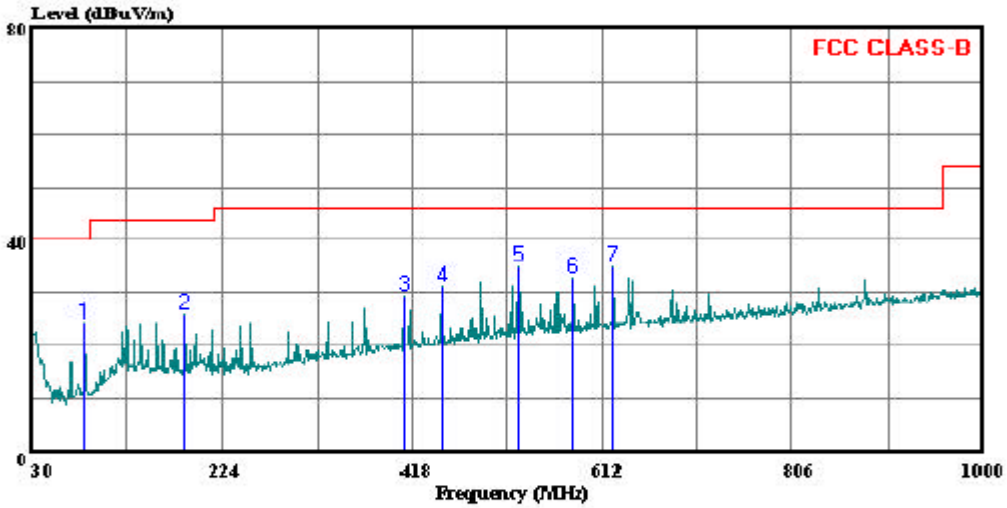
7.3.4. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (5 GHz BAND, WITH HEADPHONES, HORIZONTAL)

HORIZONTAL PLOT

COMPLIANCE Engineering Services, Inc.
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 14 File#: Symbol_emi.EMI Date: 03-28-2007 Time: 16:26:33



Trace: 13 Ref Trace:

Condition: FCC CLASS-B 3m A-5M CHAMBER 012007 HORIZONTAL
Test Operator: : Chin Pang
Company: : Symbol
Project #: : 07U10908
Configuration: : EUT/Headset
Mode of Operation:: TX,5GHz Band
Target: : FCC Class B

HORIZONTAL DATA

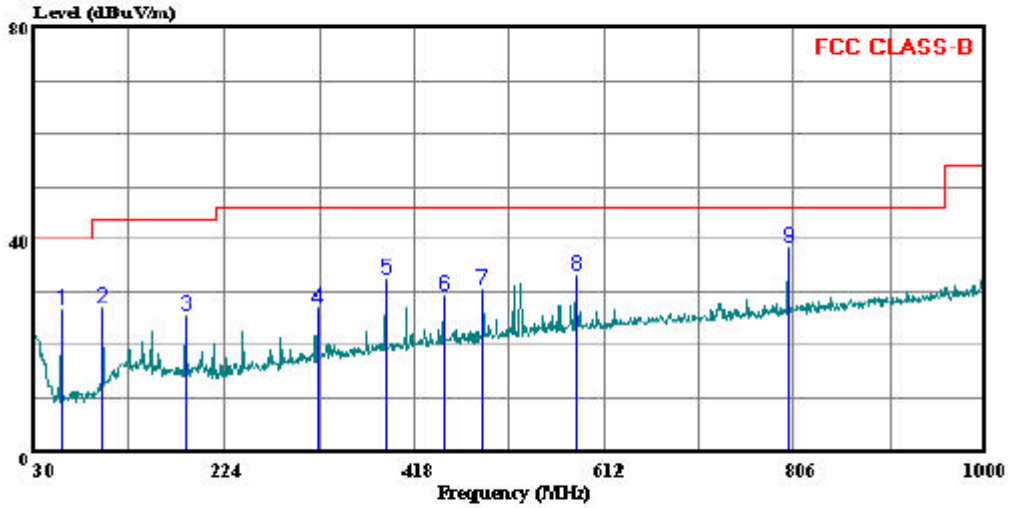
	Freq	Read Level	Probe Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB	
1	83.350	47.10	7.95	0.96	31.74	24.27	40.00	-15.73	Peak
2	185.200	44.60	11.78	1.43	31.75	26.06	43.50	-17.44	Peak
3	409.270	42.50	16.19	2.19	31.58	29.29	46.00	-16.71	Peak
4	448.070	43.50	17.00	2.32	31.71	31.10	46.00	-14.90	Peak
5	525.670	45.90	18.35	2.46	31.76	34.94	46.00	-11.06	Peak
6	581.930	43.00	19.06	2.68	31.83	32.91	46.00	-13.09	Peak
7	623.640	44.70	19.59	2.74	31.90	35.13	46.00	-10.87	Peak

SPURIOUS EMISSIONS 30 TO 1000 MHz (5 GHz BAND, WITH HEADPHONES, VERTICAL)

VERTICAL PLOT

47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 16 File#: Symbol_emi.EMI Date: 03-28-2007 Time: 16:31:00



Trace: 15 Ref Trace:

Condition: FCC CLASS-B 3m A-5M CHAMBER 012007 VERTICAL
Test Operator: : Chin Pang
Company: : Symbol
Project #: : 07U10908
Configuration: : EUT/Headset
Mode of Operation:: TX,5GHz Band
Target: : FCC Class B

VERTICAL DATA

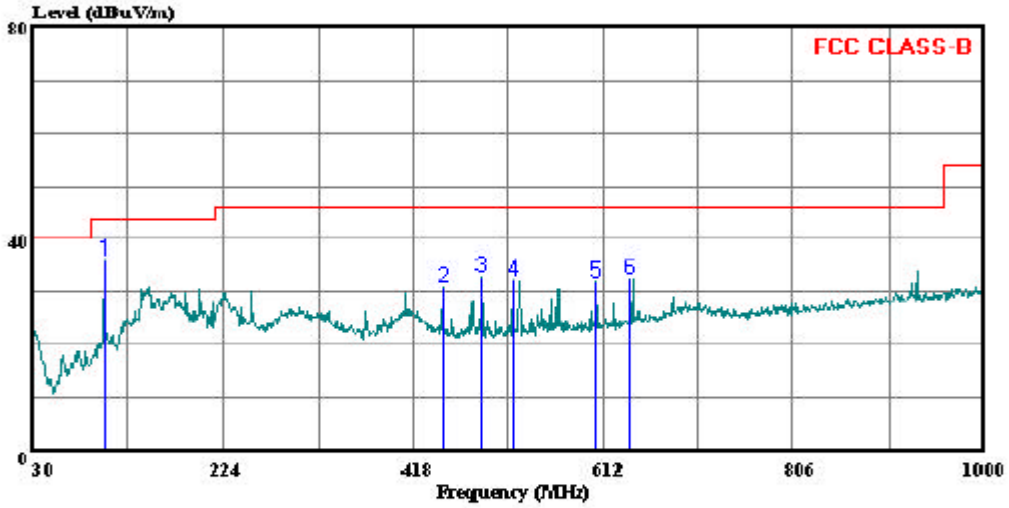
	Freq	Read Level	Probe Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB	
1	59.100	49.90	7.91	0.79	31.80	26.81	40.00	-13.19	Peak
2	99.840	47.70	10.03	1.03	31.81	26.95	43.50	-16.55	Peak
3	184.230	44.10	11.78	1.42	31.74	25.56	43.50	-17.94	Peak
4	318.090	42.30	14.32	1.90	31.54	26.98	46.00	-19.02	Peak
5	389.870	46.20	15.79	2.14	31.48	32.65	46.00	-13.35	Peak
6	448.070	41.90	17.00	2.32	31.71	29.50	46.00	-16.50	Peak
7	486.870	42.10	17.76	2.44	31.67	30.63	46.00	-15.37	Peak
8	582.900	43.20	19.08	2.68	31.84	33.12	46.00	-12.88	Peak
9	800.180	45.20	21.70	3.20	31.78	38.32	46.00	-7.68	Peak

SPURIOUS EMISSIONS 30 TO 1000 MHz (5 GHz BAND, WITH CRADLE, HORIZONTAL)

HORIZONTAL PLOT

47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 12 File#: Symbol_emi.EMI Date: 03-28-2007 Time: 16:21:36



Trace: 11 Ref Trace:

Condition: FCC CLASS-B 3m A-5M CHAMBER 012007 HORIZONTAL
Test Operator: : Chin Pang
Company: : Symbol
Project #: : 07U10908
Configuration: : EUT/Cradle
Mode of Operation:: TX,5GHz Band
Target: : FCC Class B

HORIZONTAL DATA

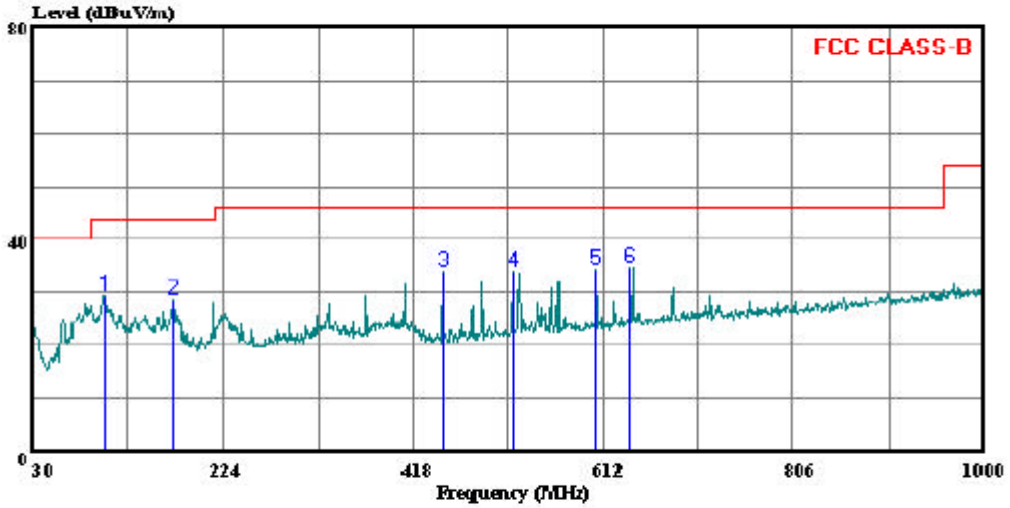
	Freq	Read Level	Probe Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB	
1	102.750	56.10	10.61	1.07	31.70	36.08	43.50	-7.42	Peak
2	448.070	43.20	17.00	2.32	31.71	30.80	46.00	-15.20	Peak
3	486.870	44.50	17.76	2.44	31.67	33.03	46.00	-12.97	Peak
4	519.850	43.10	18.26	2.52	31.81	32.07	46.00	-13.93	Peak
5	604.240	41.60	19.33	2.73	31.95	31.71	46.00	-14.29	Peak
6	640.130	41.90	19.81	2.81	31.99	32.53	46.00	-13.47	Peak

SPURIOUS EMISSIONS 30 TO 1000 MHz (5 GHz BAND, WITH CRADLE, VERTICAL)

VERTICAL PLOT

47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 10 File#: Symbol_emi.EMI Date: 03-28-2007 Time: 16:16:34



Trace: 9 Ref Trace:

Condition: FCC CLASS-B 3m A-5M CHAMBER 012007 VERTICAL
Test Operator: : Chin Pang
Company: : Symbol
Project #: : 07U10908
Configuration: : EUT/Cradle
Mode of Operation:: TX,5GHz Band
Target: : FCC Class B

VERTICAL DATA

	Freq	Read Level	Probe Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB	
1	102.750	49.50	10.61	1.07	31.70	29.48	43.50	-14.02	Peak
2	171.620	46.90	12.08	1.38	31.66	28.70	43.50	-14.80	Peak
3	448.070	46.20	17.00	2.32	31.71	33.80	46.00	-12.20	Peak
4	519.850	44.90	18.26	2.52	31.81	33.87	46.00	-12.13	Peak
5	604.240	44.00	19.33	2.73	31.95	34.11	46.00	-11.89	Peak
6	640.130	43.90	19.81	2.81	31.99	34.53	46.00	-11.47	Peak

7.4. 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

EUT WITH CRADLE

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
0.21	47.08	--	36.53	0.00	63.37	53.37	-16.29	-16.84	L1
0.31	39.19	--	28.52	0.00	59.97	49.97	-20.78	-21.45	L1
0.41	38.69	--	33.18	0.00	57.59	47.59	-18.90	-14.41	L1
0.21	48.26	--	36.19	0.00	63.37	53.37	-15.11	-17.18	L2
0.41	37.60	--	31.45	0.00	57.59	47.59	-19.99	-16.14	L2
0.41	36.72	--	30.92	0.00	57.59	47.59	-20.87	-16.67	L2
6 Worst Data									

6 WORST EMISSIONS (EUT IN USB)

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
0.18	50.86	--	35.37	0.00	64.63	54.63	-13.77	-19.26	L1
0.24	44.21	--	29.64	0.00	62.20	52.20	-17.99	-22.56	L1
29.06	39.29	--	34.32	0.00	60.00	50.00	-20.71	-15.68	L1
0.18	50.94	--	36.32	0.00	64.63	54.63	-13.69	-18.31	L2
19.74	4.42	--	32.24	0.00	60.00	50.00	-55.58	-17.76	L2
29.06	37.83	--	31.77	0.00	60.00	50.00	-22.17	-18.23	L2
6 Worst Data									

6 WORST EMISSIONS (BATTERY CHARGER)

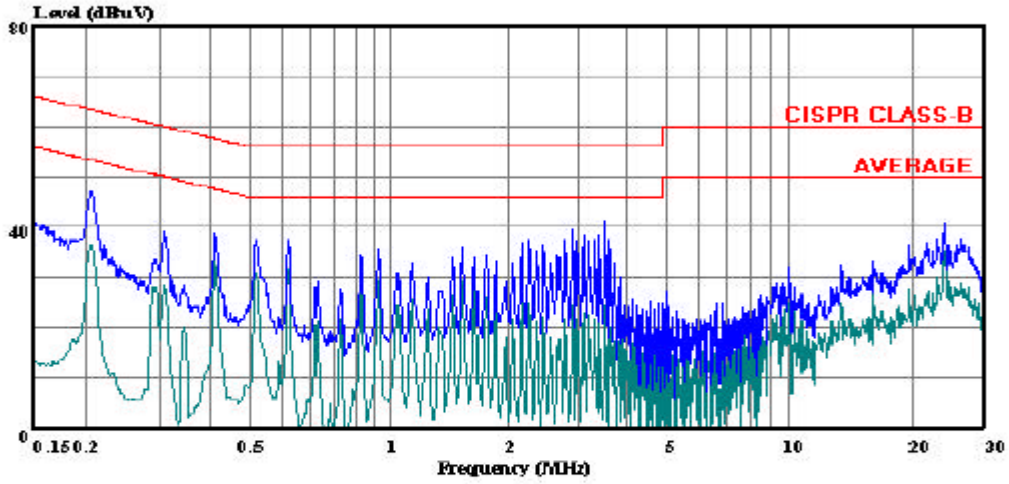
CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	EN_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.20	50.78	--	42.40	0.00	63.53	53.53	-12.75	-11.13	L1
0.31	41.74	--	31.78	0.00	60.11	50.11	-18.37	-18.33	L1
24.66	33.67	--	29.79	0.00	60.00	50.00	-26.33	-20.21	L1
0.20	48.95	--	42.41	0.00	63.49	53.49	-14.54	-11.08	L2
0.71	32.92	--	31.11	0.00	56.00	46.00	-23.08	-14.89	L2
12.45	34.21	--	25.44	0.00	60.00	50.00	-25.79	-24.56	L2
6 Worst Data									

EUT WITH CRADLE

LINE 1 RESULTS

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

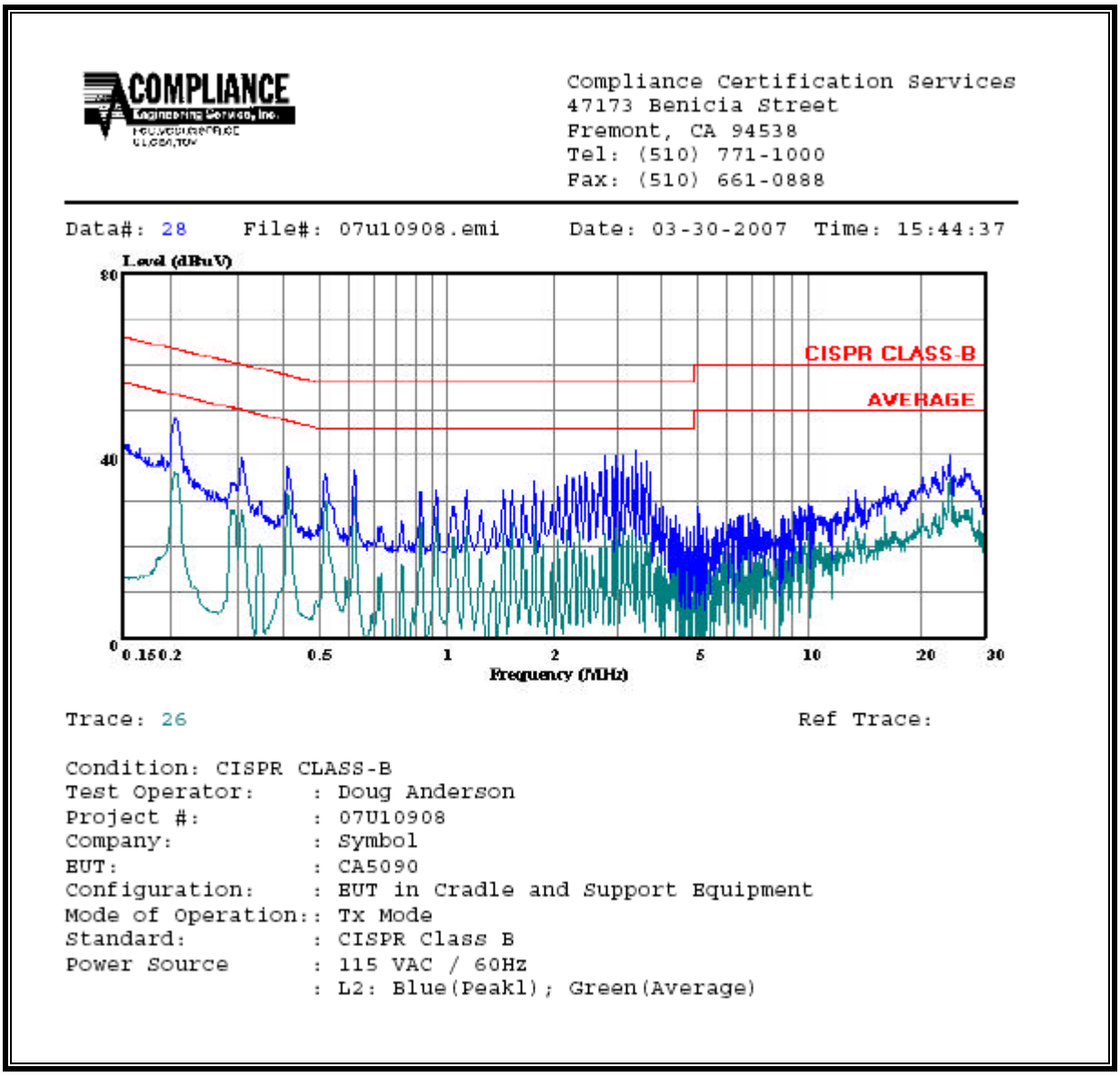
Data#: 21 File#: 07u10908.emi Date: 03-30-2007 Time: 15:25:40



Trace: 19 Ref Trace:

Condition: CISPR CLASS-B
Test Operator: : Doug Anderson
Project #: : 07U10908
Company: : Symbol
EUT: : CA5090
Configuration: : EUT in Cradle and Support Equipment
Mode of Operation:: Tx Mode
Standard: : CISPR Class B
Power Source : 115 VAC / 60Hz
: L1: Blue(Peakl); Green(Average)

LINE 2 RESULTS

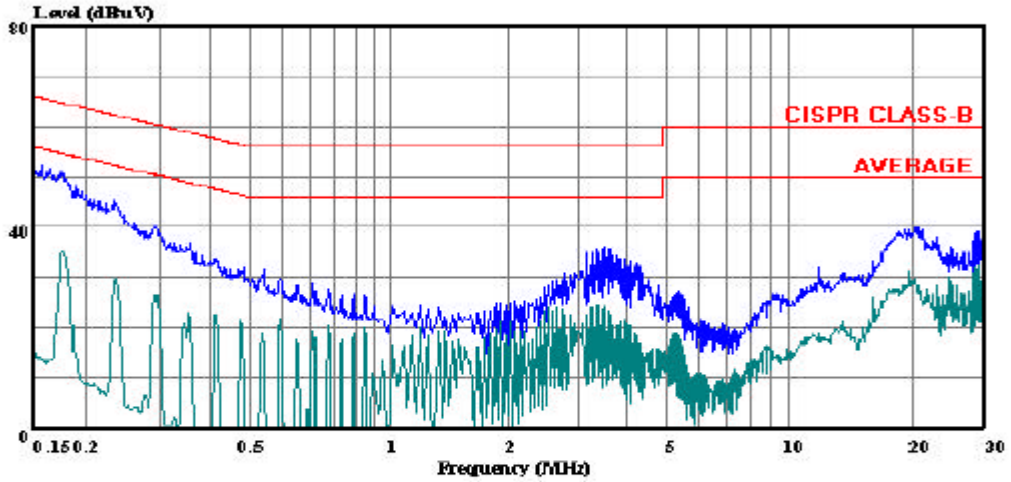


EUT IN USB CONFIGURTION

LINE 1 RESULTS

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

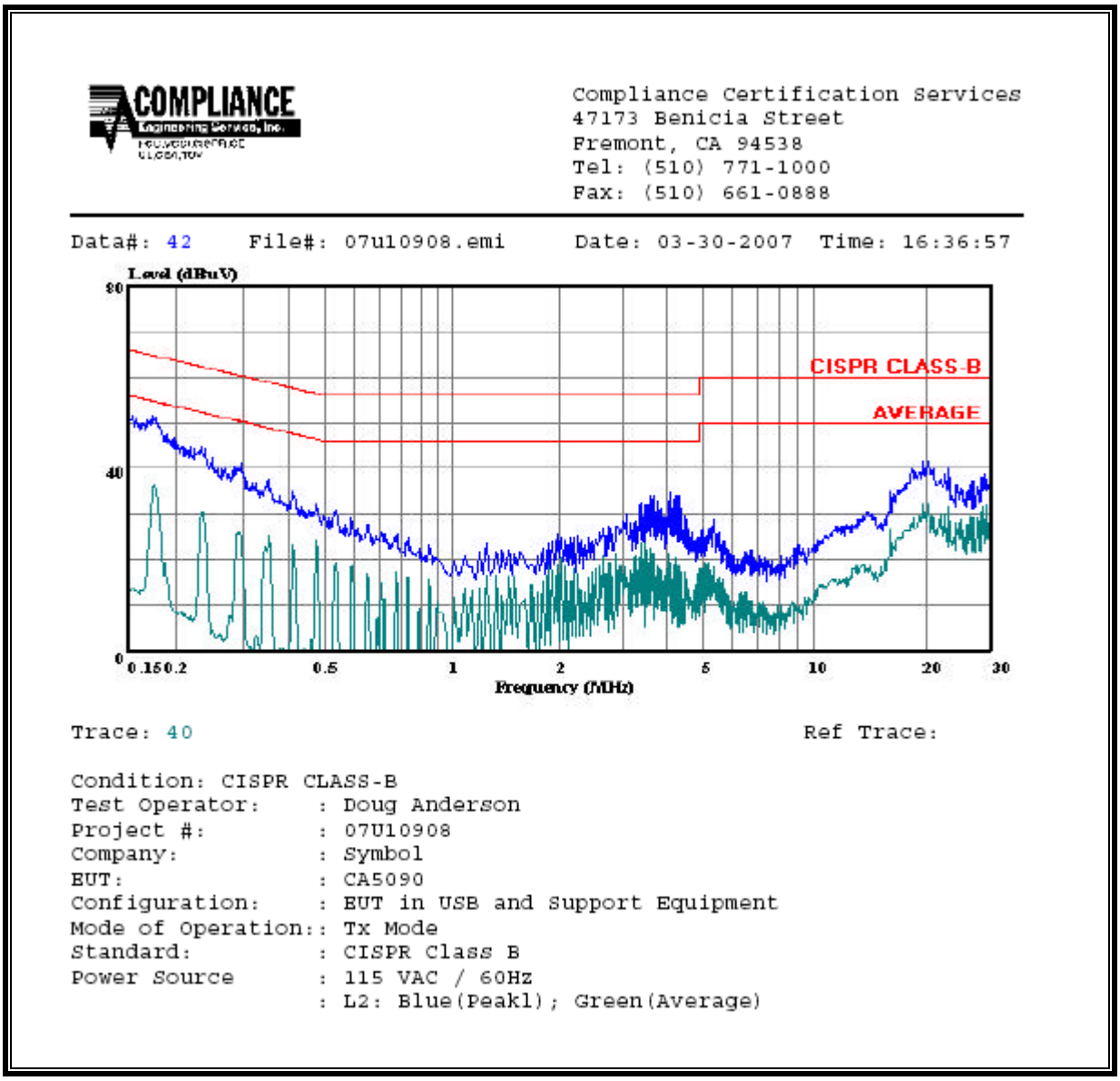
Data#: 35 File#: 07u10908.emi Date: 03-30-2007 Time: 16:06:12



Trace: 33 Ref Trace:

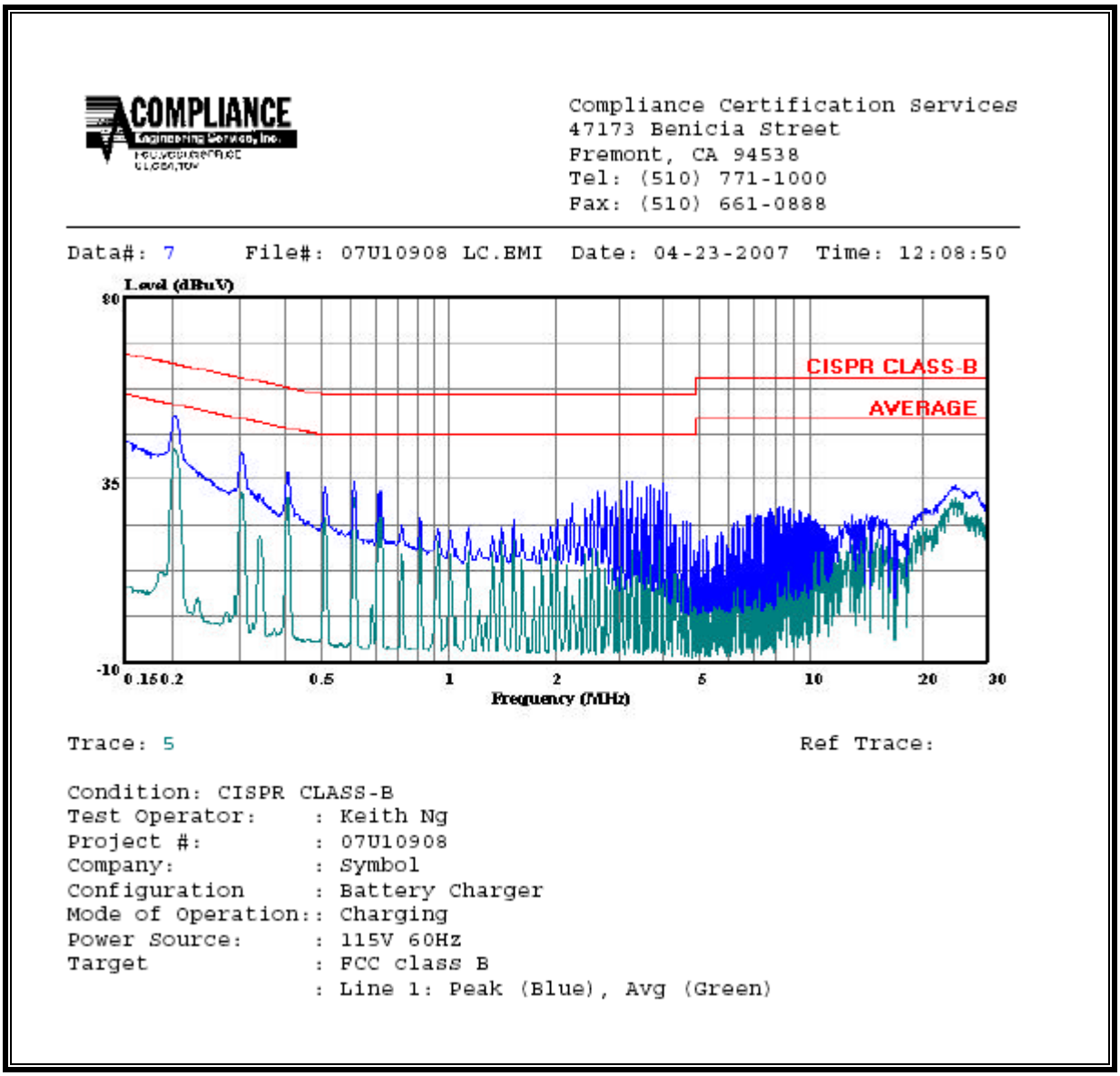
Condition: CISPR CLASS-B
Test Operator: : Doug Anderson
Project #: : 07U10908
Company: : Symbol
EUT: : CA5090
Configuration: : EUT in USB and Support Equipment
Mode of Operation:: Tx Mode
Standard: : CISPR Class B
Power Source : 115 VAC / 60Hz
: L1: Blue(Peakl); Green(Average)

LINE 2 RESULTS

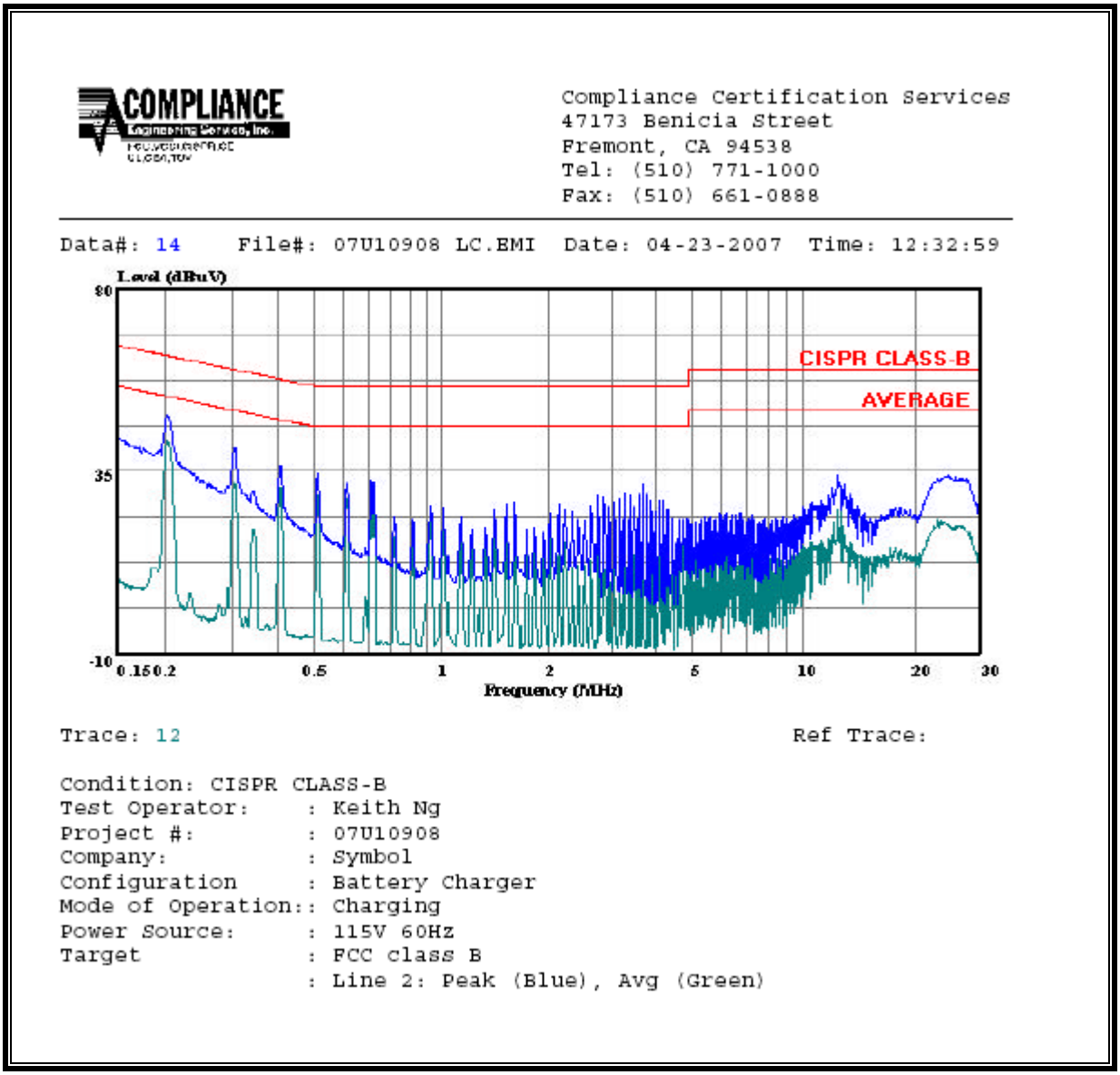


BATTERY CHARGER

LINE 1 RESULTS



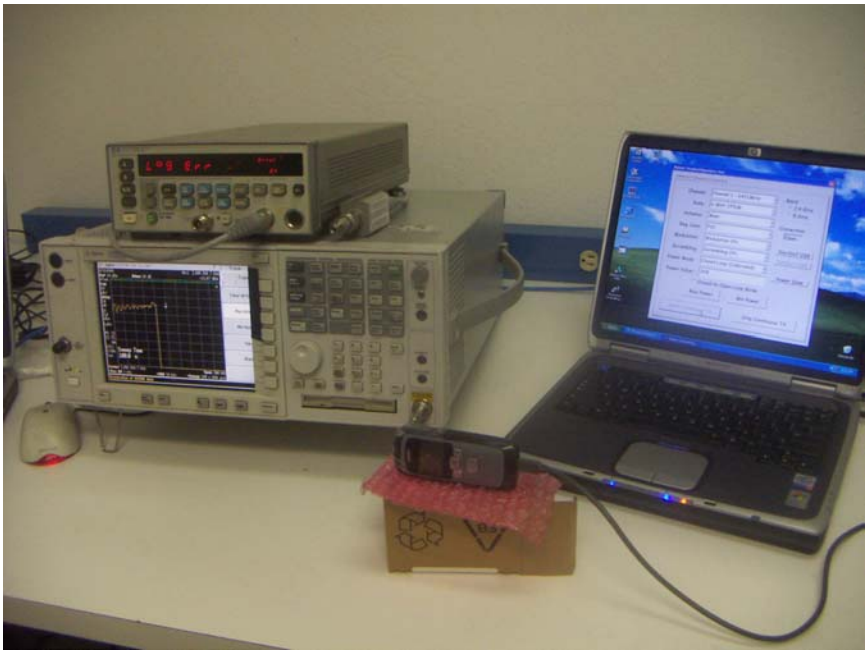
LINE 2 RESULTS



8. SETUP PHOTOS

ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP

ANTENNA PORT CONDUCTED PHOTO



RADIATED RF MEASUREMENT SETUP FOR PORTABLE CONFIGURATION

X-AXIS PHOTO

Y-AXIS PHOTO

Z-AXIS PHOTO

PHONE IN CRADLE FRONT PHOTO

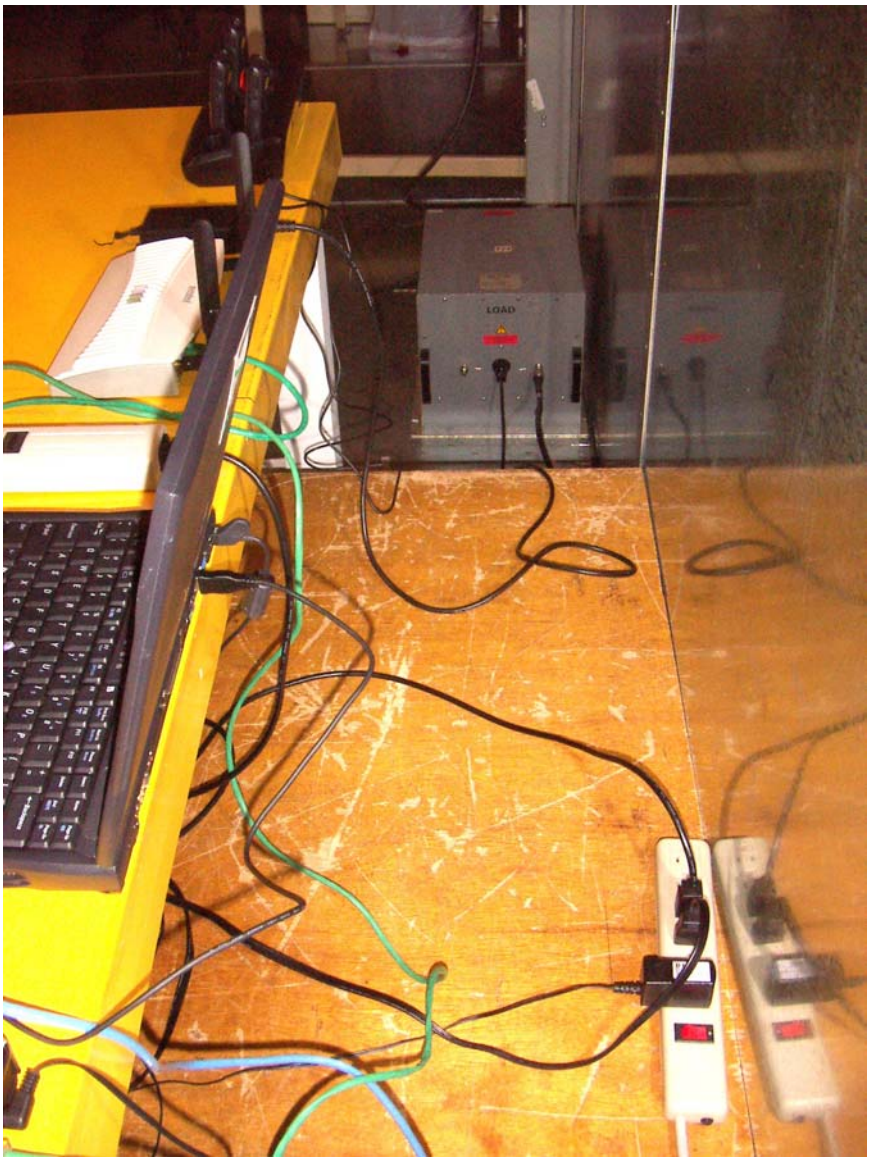
PHONE IN CRADLE BACK PHOTO

POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP

EUT WITH CRADLE

LINE CONDUCTED FRONT PHOTO

LINE CONDUCTED BACK PHOTO



EUT **IN USB CONFIGURATION**

LINE CONDUCTED FRONT PHOTO

LINE CONDUCTED BACK PHOTO

END OF REPORT