



**FCC CFR47 PART 15 SUBPART B
DECLARATION OF CONFORMITY TEST REPORT**

FOR

BLUETOOTH TRANSCEIVER MODULE

MODEL NUMBER: BCM92070MD_REF

REPORT NUMBER: 08U12247-2

ISSUE DATE: DECEMBER 08, 2008

Prepared for

**BROADCOM CORPORATION
190 MATHILDA PLACE
SUNNYVALE, CA 94086, U.S.A**

Prepared by

**COMPLIANCE CERTIFICATION SERVICES
47173 BENICIA STREET
FREMONT, CA 94538, U.S.A.
TEL: (510) 771-1000
FAX: (510) 661-0888**



NVLAP LAB CODE 200065-0

Revision History

| <u>Rev.</u> | <u>Issue Date</u> | <u>Revisions</u> | <u>Revised By</u> |
|-------------|-------------------|------------------|-------------------|
| -- | 12-8-08 | Initial Issue | Sunny Shih |

TABLE OF CONTENTS

| | |
|---|-----------|
| 1. ATTESTATION OF TEST RESULTS | 4 |
| 2. TEST METHODOLOGY | 5 |
| 3. FACILITIES AND ACCREDITATION | 5 |
| 4. CALIBRATION AND UNCERTAINTY | 5 |
| 4.1. <i>MEASURING INSTRUMENT CALIBRATION</i> | 5 |
| 4.2. <i>MEASUREMENT UNCERTAINTY</i> | 5 |
| 5. EQUIPMENT UNDER TEST | 6 |
| 5.1. <i>DESCRIPTION OF EUT</i> | 6 |
| 5.2. <i>PRELIMINARY TEST CONFIGURATIONS</i> | 6 |
| 5.3. <i>MODE(S) OF OPERATION</i> | 6 |
| 5.4. <i>SOFTWARE AND FIRMWARE</i> | 6 |
| 5.5. <i>MODIFICATIONS</i> | 6 |
| 5.6. <i>DETAILS OF TESTED SYSTEM</i> | 7 |
| 6. TEST AND MEASUREMENT EQUIPMENT | 9 |
| 7. APPLICABLE LIMITS AND TEST RESULTS | 10 |
| 7.1. <i>RADIATED EMISSIONS</i> | 10 |
| 7.2. <i>AC MAINS LINE CONDUCTED EMISSIONS</i> | 13 |
| 8. SETUP PHOTOS | 16 |

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: BROADCOM CORPORATION
190 MATHILDA PLACE
SUNNYVALE, CA 94086, U.S.A

EUT DESCRIPTION: BLUETOOTH TRANSCEIVER MODULE

MODEL: BCM92070MD_REF

SERIAL NUMBER: 150217

DATE TESTED: NOVEMBER 22 – DECEMBER 03, 2008

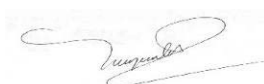
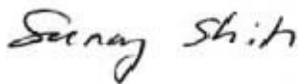
| APPLICABLE STANDARDS | |
|-----------------------|--------------|
| STANDARD | TEST RESULTS |
| FCC PART 15 SUBPART B | Pass |

Compliance Certification Services, Inc. (CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All expressions of Pass/Fail in this report are opinions expressed by CCS based on interpretations of the test results. 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 CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by CCS 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:

Tested By:



SUNNY SHIH
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

VIEN TRAN
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003.

3. FACILITIES AND ACCREDITATION

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

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 |
|-------------------------------|-------------|
| Power Line Conducted Emission | +/- 2.3 dB |
| Radiated Emission | +/- 3.4 dB |

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a Bluetooth transceiver module.

The radio module is manufactured by Broadcom Corp.

The model number was changed after testing commenced. All data in this report is applicable to the model number documented in Section 1 above.

5.2. PRELIMINARY TEST CONFIGURATIONS

The following configurations were investigated during preliminary testing:

| EUT Configuration | Description |
|-----------------------|--|
| Minimum Configuration | The Notebook connects to printer, telephone line simulator, and Ethernet cable (terminated). |

5.3. MODE(S) OF OPERATION

| Mode | Description |
|----------|---|
| EMC test | Scrolling H Pattern, Video Display on the screen. |

5.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was EMI Test Software.

5.5. MODIFICATIONS

No modifications were made during testing.

5.6. DETAILS OF TESTED SYSTEM

SUPPORT EQUIPMENT & PERIPHERALS

| PERIPHERAL SUPPORT EQUIPMENT LIST | | | | |
|-----------------------------------|----------------|-----------|---------------|--------|
| Description | Manufacturer | Model | Serial Number | FCC ID |
| AC Adapter | HP | 0957-2084 | 5715480604 | N/A |
| Telephone Line Simulator | Telephone Corp | TLS3 | CCS# 0993 | N/A |
| Printer | HP | 7850 | MY56K1304B | DoC |

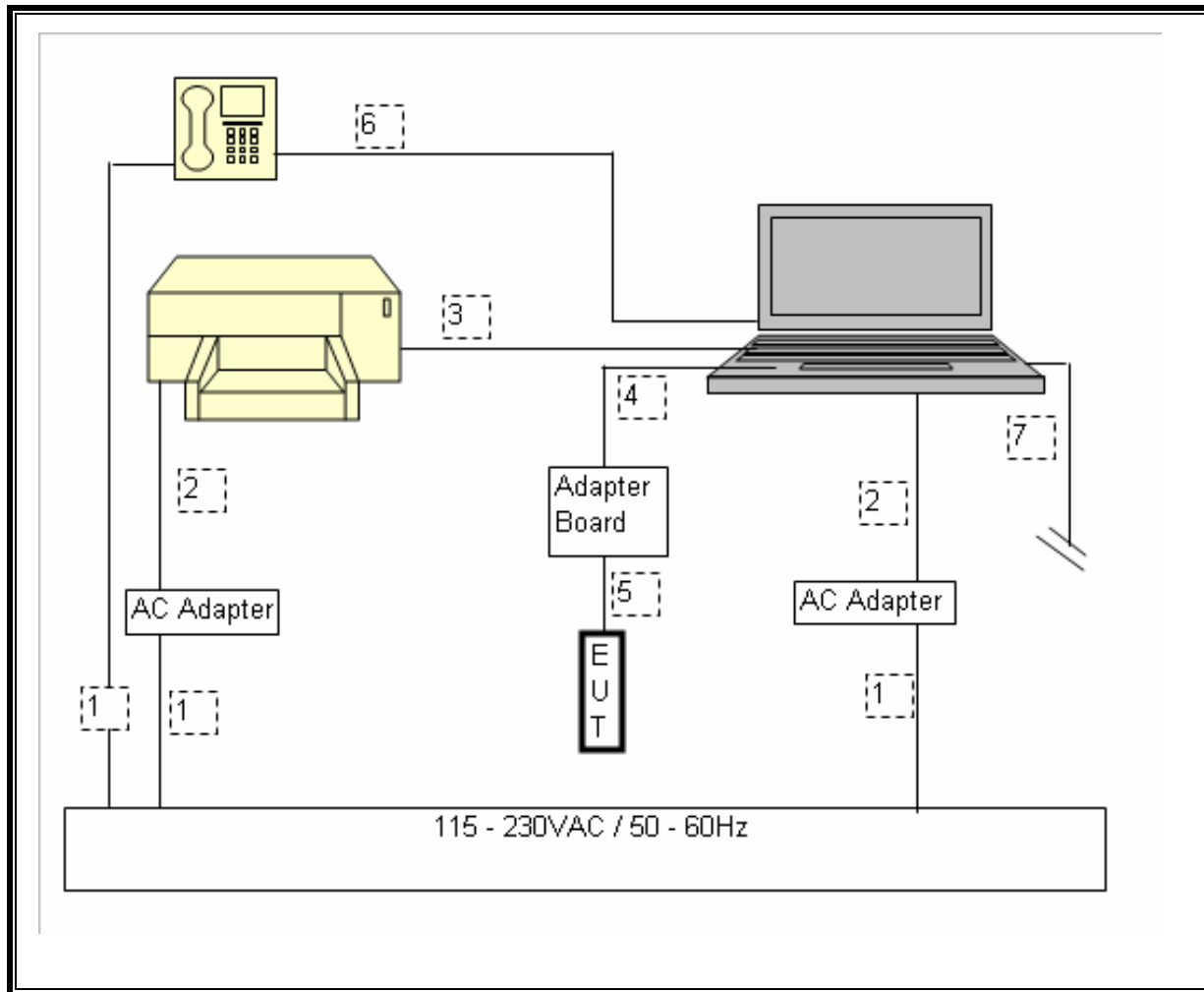
I/O CABLES

| I/O CABLE LIST | | | | | | |
|----------------|--------------|----------------------|----------------|------------|--------------|-----------------------------------|
| Cable No. | Port | # of Identical Ports | Connector Type | Cable Type | Cable Length | Remarks |
| 1 | AC | 3 | US115V | Shielded | 2.0m | |
| 2 | DC | 2 | DC | Unshielded | 1.8m | |
| 3 | USB | 1 | USB | Unshielded | 1.3m | Laptop / Printer |
| 4 | USB | 1 | USB | Unshielded | .6m | Adapter Board / Laptop |
| 5 | Ribbon Cable | 1 | Ribbon Cable | Unshielded | .2m | Adapter Board / EUT |
| 6 | Telephone | 1 | RJ11 | Unshielded | 2.0m | Laptop / Telephone Line Simulator |
| 7 | Ethernet | 1 | RJ45 | Unshielded | 2.0m | Terminated |

TEST SETUP

The EUT is installed in a typical configuration. Test software exercised the EUT.

TEST SETUP DIAGRAM



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 | Asset | Cal Date | Cal Due |
| Preamplifier, 1300 MHz | Agilent / HP | 8447D | C01064 | 05/09/08 | 05/09/09 |
| RF Filter Section, 2.9 GHz | Agilent / HP | 85420E | C00958 | 02/06/08 | 06/12/09 |
| EMI Test Receiver, 30 MHz | R & S | ESHS 20 | N02396 | 10/16/07 | 01/27/09 |
| LISN, 10 kHz ~ 30 MHz | Solar | 8012-50-R-24-BNC | N02481 | 09/15/07 | 09/15/09 |
| LISN, 30 MHz | FCC | LISN-50/250-25-2 | N02625 | 09/15/07 | 09/15/09 |
| Bilog Antenna | Sunol Sciences | JB1 | C01016 | 10/13/08 | 10/13/09 |

7. APPLICABLE LIMITS AND TEST RESULTS

7.1. RADIATED EMISSIONS

TEST PROCEDURE

ANSI C63.4

The highest clock frequency generated or used in the EUT is 40 MHz; therefore the frequency range was investigated from 30 MHz to 1000 MHz.

LIMIT

§15.109 (a) except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

| Limits for radiated disturbance of Class B ITE at measuring distance of 3 m | |
|---|----------------------------------|
| Frequency range (MHz) | Quasi-peak limits (dB μ V/m) |
| 30 to 88 | 40 |
| 88 to 216 | 43.5 |
| 216 to 960 | 46 |
| Above 960 MHz | 54 |

Note: The lower limit shall apply at the transition frequency.

RESULTS

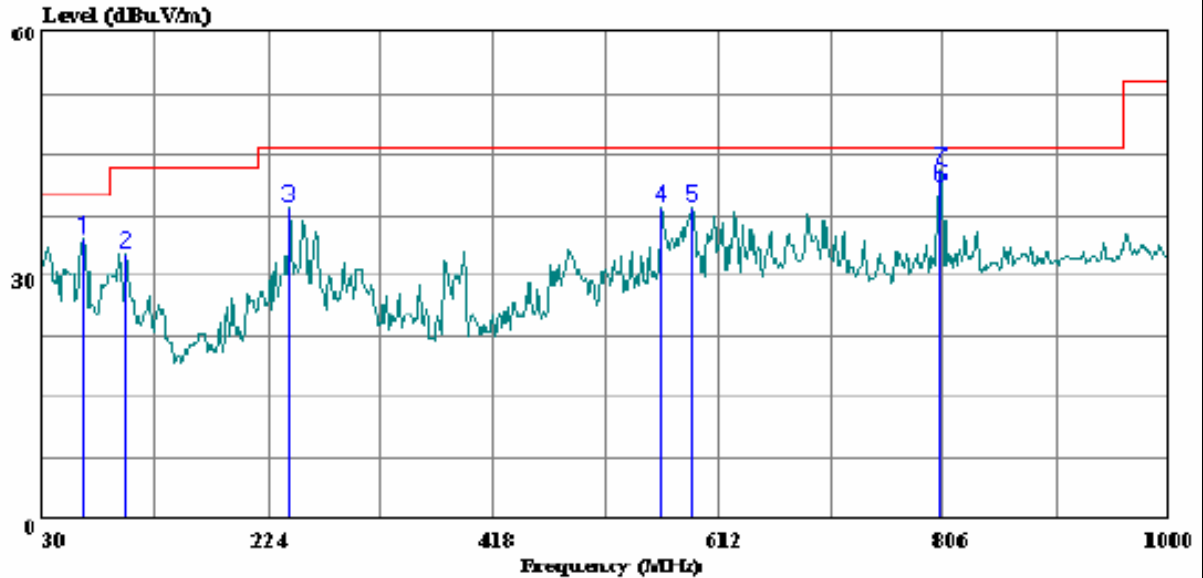
No non-compliance noted:

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



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

Data#: 21 File#: 08U12247_Part B.EMI Date: 11-24-2008 Time: 09:19:45



Trace: 3

Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
 Test Operator:: Vien Tran
 Project #: : 08U12247
 Company: : Broadcom
 Configuration: EUT and minimal peripherals
 Mode : : Normal
 Target: : FCC Class B
 : Part 15B Digital Device
 : With 5 VDC Test JIG
 : Ferrites on both end of USB cable
 : (from laptop to test JIG)

Page: 1

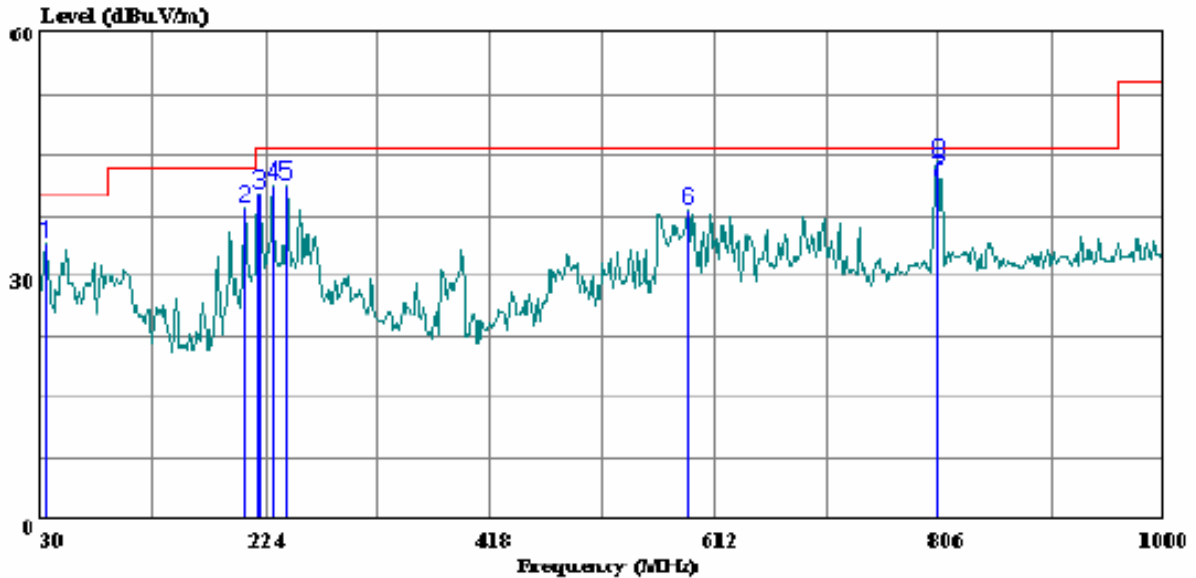
| | Read Freq | Read Level | Factor | Level | Limit Line | Over Limit | Remark |
|---|-----------|------------|--------|--------|------------|------------|--------|
| | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | |
| 1 | 65.890 | 53.85 | -19.34 | 34.51 | 40.00 | -5.49 | Peak |
| 2 | 101.780 | 49.23 | -16.41 | 32.82 | 43.50 | -10.68 | Peak |
| 3 | 242.430 | 51.62 | -13.23 | 38.39 | 46.00 | -7.61 | Peak |
| 4 | 562.530 | 42.00 | -3.59 | 38.41 | 46.00 | -7.59 | Peak |
| 5 | 589.690 | 41.35 | -3.03 | 38.32 | 46.00 | -7.68 | Peak |
| 6 | 803.090 | 40.18 | 0.90 | 41.08 | 46.00 | -4.92 | QP |
| 7 | 803.090 | 42.23 | 0.90 | 43.13 | 46.00 | -2.87 | Peak |

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



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

Data#: 11 File#: 08U12247_Part B.EMI Date: 11-21-2008 Time: 17:16:32



Trace: 7

Ref Trace:

Condition: FCC CLASS-B VERTICAL
 Test Operator:: Vien Tran
 Project #: : 08U12247
 Company: : Broadcom
 Configuration:: EUT and minimal peripherals
 Mode : : Normal
 Target: : FCC Class B
 : Part 15B Digital Device
 : With 5 VDC Test JIG
 : Ferrites on both end of USB cable
 : (from laptop to test JIG)

Page: 1

| | Read Freq | Read Level | Factor | Limit Level | Over Limit | Remark |
|---|-----------|------------|--------|-------------|------------|------------|
| | MHz | dBuV | dB | dBuV/m | dBuV/m | dB |
| 1 | 33.880 | 43.40 | -9.49 | 33.91 | 40.00 | -6.09 Peak |
| 2 | 206.540 | 51.38 | -13.03 | 38.35 | 43.50 | -5.15 Peak |
| 3 | 218.180 | 53.49 | -13.11 | 40.38 | 46.00 | -5.62 Peak |
| 4 | 230.790 | 54.47 | -13.17 | 41.30 | 46.00 | -4.70 Peak |
| 5 | 242.430 | 54.41 | -13.23 | 41.18 | 46.00 | -4.82 Peak |
| 6 | 589.690 | 41.25 | -3.03 | 38.22 | 46.00 | -7.78 Peak |
| 7 | 805.030 | 40.94 | 0.91 | 41.85 | 46.00 | -4.15 QP |
| 8 | 805.030 | 43.14 | 0.92 | 44.06 | 46.00 | -1.94 Peak |

7.2. AC MAINS LINE CONDUCTED EMISSIONS

TEST PROCEDURE

ANSI C63.4

LIMIT

§15.107 (a) Except for Class A digital devices, for equipment 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 band edges.

| Frequency range (MHz) | Limits (dBµV) | |
|--------------------------|---------------|----------|
| | Quasi-peak | Average |
| 0.15 to 0.50 | 66 to 56 | 56 to 46 |
| 0.50 to 5 | 56 | 46 |
| 5 to 30 | 60 | 50 |

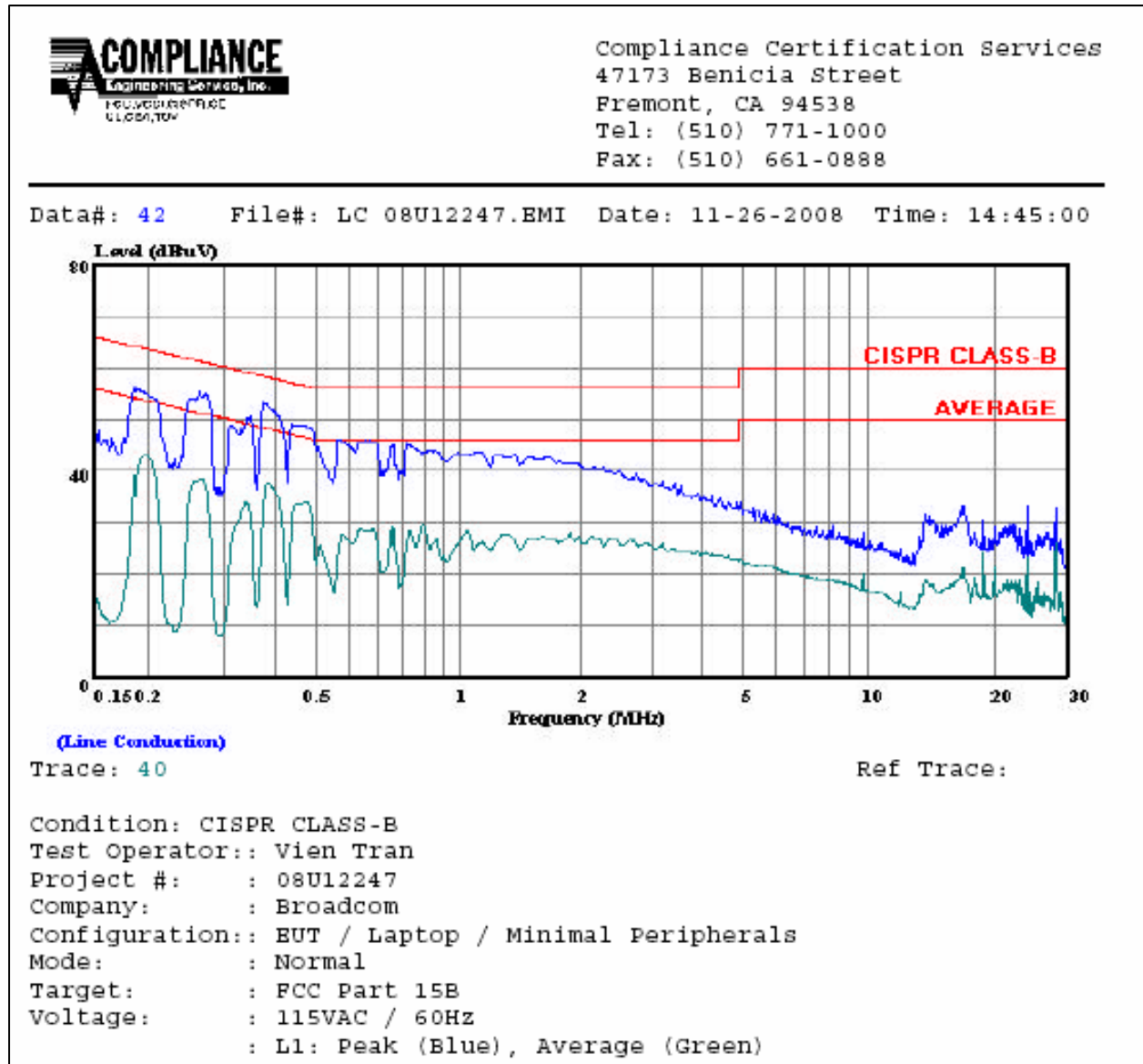
Notes:
 1. The lower limit shall apply at the transition frequencies
 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

RESULTS

6 WORST EMISSIONS

| CONDUCTED EMISSIONS DATA (115VAC 60Hz) | | | | | | | | | | |
|--|-----------|-----------|-----------|---------------|-------------|-------|---------|---------|----|-------------------|
| Freq. (MHz) | Reading | | | Class (dB) | Limit QP | FCC B | | Margin | | Remark L1 / L2 |
| | PK (dBuV) | QP (dBuV) | AV (dBuV) | | | AV | QP (dB) | AV (dB) | | |
| 0.19 | 55.88 | -- | 42.92 | 0.00 | 64.12 | 54.12 | -8.24 | -11.20 | L1 | |
| 0.28 | 55.04 | -- | 38.24 | 0.00 | 60.94 | 50.94 | -5.90 | -12.70 | L1 | |
| 0.38 | 53.04 | -- | 37.60 | 0.00 | 58.35 | 48.35 | -5.31 | -10.75 | L1 | |
| 0.19 | 56.09 | -- | 42.77 | 0.00 | 64.12 | 54.12 | -8.03 | -11.35 | L2 | |
| 0.28 | 54.80 | -- | 37.70 | 0.00 | 60.94 | 50.94 | -6.14 | -13.24 | L2 | |
| 0.38 | 53.30 | -- | 38.40 | 0.00 | 58.35 | 48.35 | -5.05 | -9.95 | L2 | |
| 6 Worst Data | | | | | | | | | | |

LINE 1 RESULTS

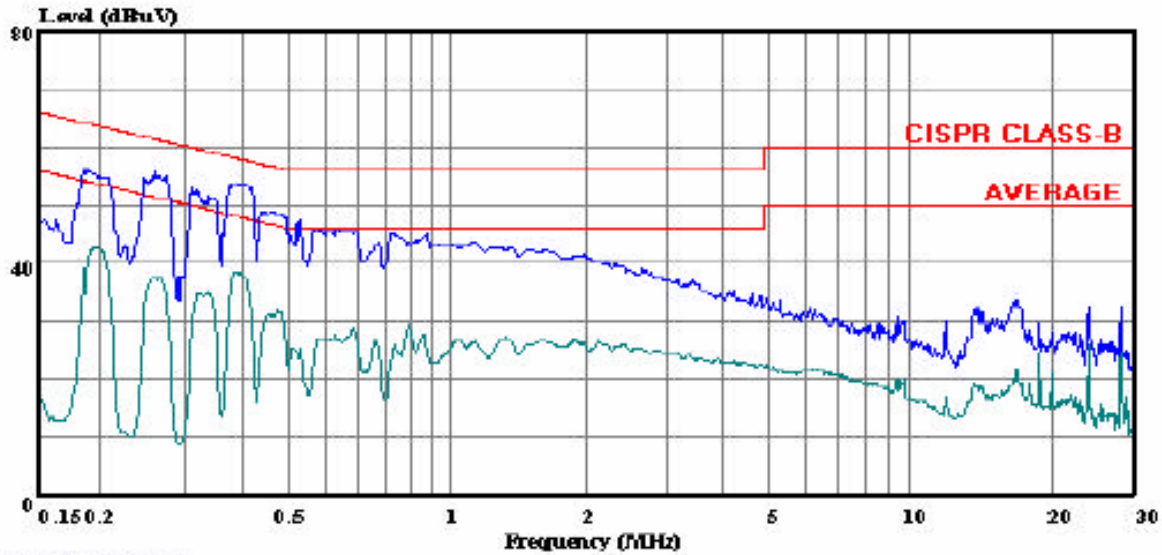


LINE 2 RESULTS



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

Data#: 49 File#: LC 08U12247.EMI Date: 11-26-2008 Time: 14:59:29



(Line Conduction)

Trace: 47

Ref Trace:

Condition: CISPR CLASS-B
Test Operator:: Vien Tran
Project #: : 08U12247
Company: : Broadcom
Configuration:: BUT / Laptop / Minimal Peripherals
Mode: : Normal
Target: : FCC Part 15B
Voltage: : 115VAC / 60Hz
: L2: Peak (Blue), Average (Green)