



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

**FOR**

**BLUETOOTH TRANSCEIVER MODULE**

**MODEL NUMBER: BCM92046MD\_MINI**

**REPORT NUMBER: 08U11678-6**

**ISSUE DATE: APRIL 1, 2008**

*Prepared for*

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**NVLAP LAB CODE 200065-0**

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
<u>--</u>	<u>4-1-08</u>	<u>Initial Issue</u>	<u>Sunny Shih</u>

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# 1. ATTESTATION OF TEST RESULTS

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

**EUT DESCRIPTION:** Bluetooth Transceiver Module

**MODEL:** BCM92046MD\_MINI

**DATE TESTED:** March 26 – April 02, 2008

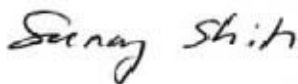
APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART B	Pass

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:



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SUNNY SHIH  
EMC SUPERVISOR  
COMPLIANCE CERTIFICATION SERVICES

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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.

The radio module is manufactured by Universal Scientific Industrial (Shanghai) Co., Ltd.

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
Printer	HP	7850	MY56K1304B	DoC
AC Adapter	HP	0957-2084	5715480604	N/A
Telephone Line Simulator	Telephone Corp	TLS3	CCS# 0993	N/A

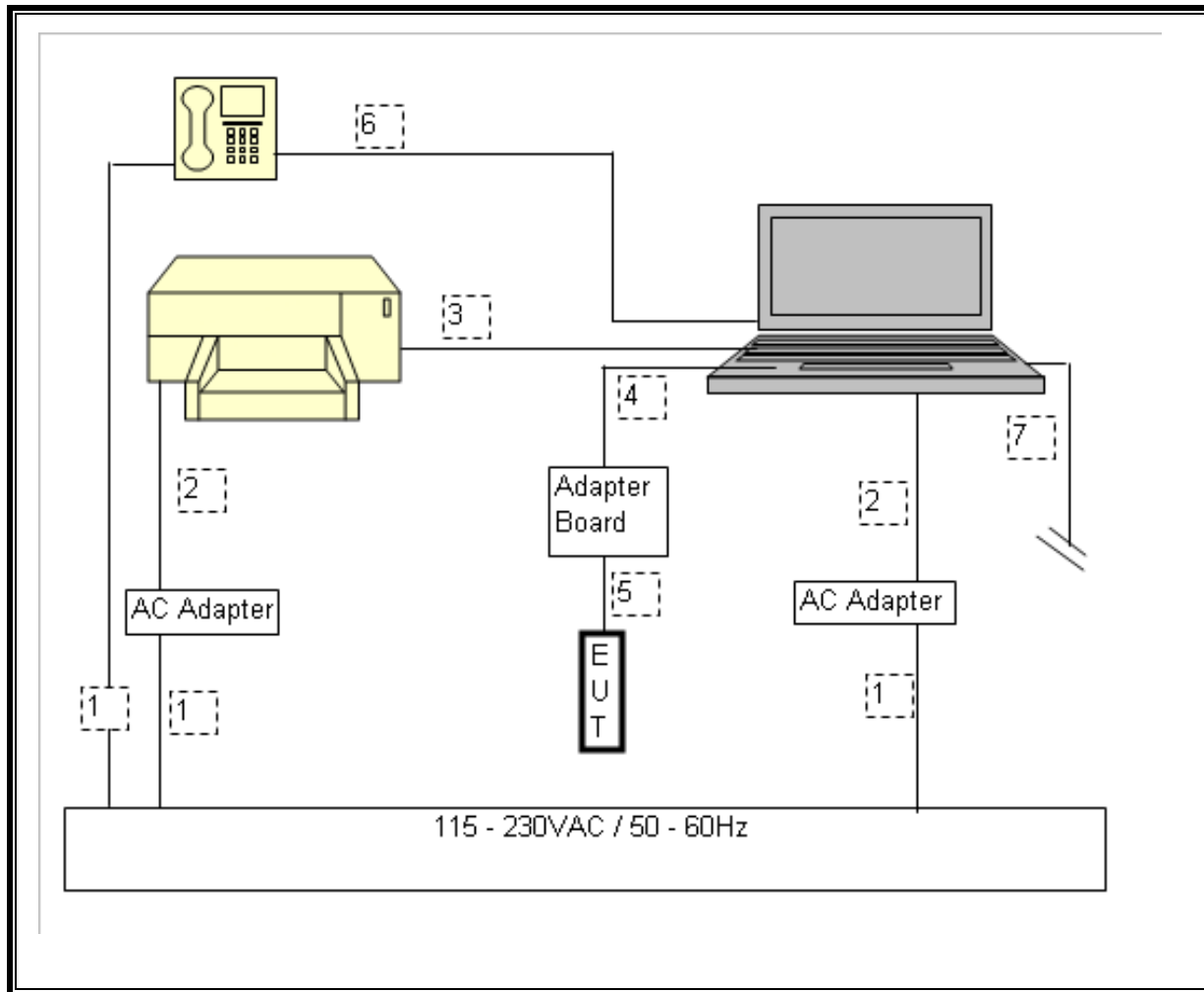
### I/O CABLES

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	Shielded	1.3m	Laptop / Printer
4	USB	1	USB	Shielded	1.3m	Laptop / Adapter Board
5	Ribbon Cable	1	Ribbon Cable	Unshielded	.15m	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
Bilog Antenna	Sunol Sciences	JB1	C01016	10/13/2007	10/13/2008
Preamplifier, 1300 MHz	Agilent / HP	8447D	C01064	5/9/2007	5/9/2008
RF Filter Section, 2.9 GHz	Agilent / HP	85420E	C00958	2/6/2007	6/12/2008
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	10/16/2007	1/27/2009
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	N02481	9/15/2006	9/15/2008
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	9/15/2006	9/15/2008

## 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 2480 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 $\mu$ 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)**



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Data#: 22 File#: 08U11678\_15B.EMI Date: 03-27-2008 Time: 11:11:01

Condition: FCC CLASS-B HORIZONTAL  
Test Operator:: Vien tran  
Project #: : 08U11678  
Company: : Broadcom  
Configuration:: EUT and minimal peripherals  
Mode : : EMC Test  
Target: : FCC Class B  
: Part 15B\_Digital Device

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	Freq	Read	Factor	Level	Limit	Over	Remark
	MHz	Level	dB	dBuV/m	Line	Limit	
		dBuV			dBuV/m	dB	
1	36.790	44.99	-13.53	31.46	40.00	-8.54	Peak
2	125.060	49.13	-16.45	32.69	43.50	-10.82	Peak
3	259.890	56.71	-17.35	39.36	46.00	-6.64	Peak
4	356.890	52.63	-14.24	38.39	46.00	-7.61	Peak
5	450.980	49.65	-12.21	37.44	46.00	-8.56	Peak
6	967.990	38.96	-3.41	35.55	54.00	-18.45	Peak

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



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Data#: 25 File#: 08U11678\_15B.EMI Date: 03-27-2008 Time: 11:26:13

Condition: FCC CLASS-B VERTICAL  
Test Operator:: Vien tran  
Project #: : 08U11678  
Company: : Broadcom  
Configuration:: EUT and minimal peripherals  
Mode : : BMC Test  
Target: : FCC Class B  
: Part 15B\_Digital Device

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	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	80.440	58.65	-22.83	35.82	40.00	-4.18	Peak
2	104.690	52.00	-19.60	32.40	43.50	-11.11	Peak
3	259.890	54.29	-17.35	36.94	46.00	-9.06	Peak
4	712.880	46.40	-8.23	38.17	46.00	-7.83	Peak
5	967.990	34.53	-3.41	31.12	54.00	-22.88	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  $\mu$ H/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 (dB $\mu$ V)	
	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**

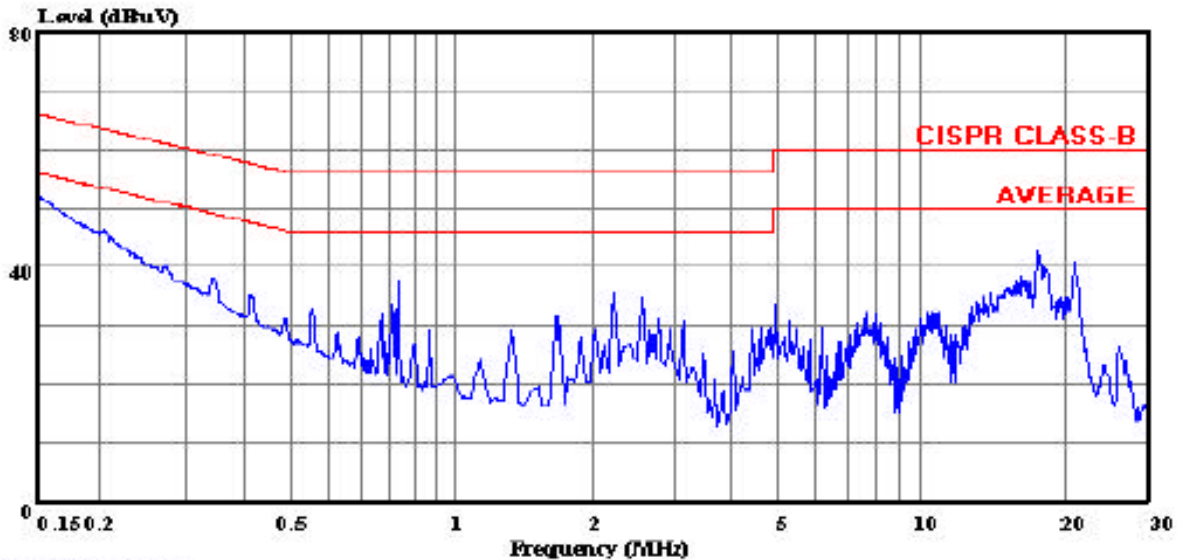
CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	FCC_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.15	52.10	--	--	0.00	66.00	56.00	-13.90	-3.90	L1
0.83	37.65	--	--	0.00	56.00	46.00	-18.35	-8.35	L1
17.57	42.52	--	--	0.00	60.00	50.00	-17.48	-7.48	L1
0.15	49.54	--	--	0.00	66.00	56.00	-16.46	-6.46	L2
0.56	40.18	--	--	0.00	56.00	46.00	-15.82	-5.82	L2
20.92	39.75	--	--	0.00	60.00	50.00	-20.25	-10.25	L2
6 Worst Data									

**LINE 1 RESULTS**



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Data#: 7 File#: 08U11678 LC.EMI Date: 03-31-2008 Time: 08:48:59



(Line Conduction)

Trace:

Ref Trace:

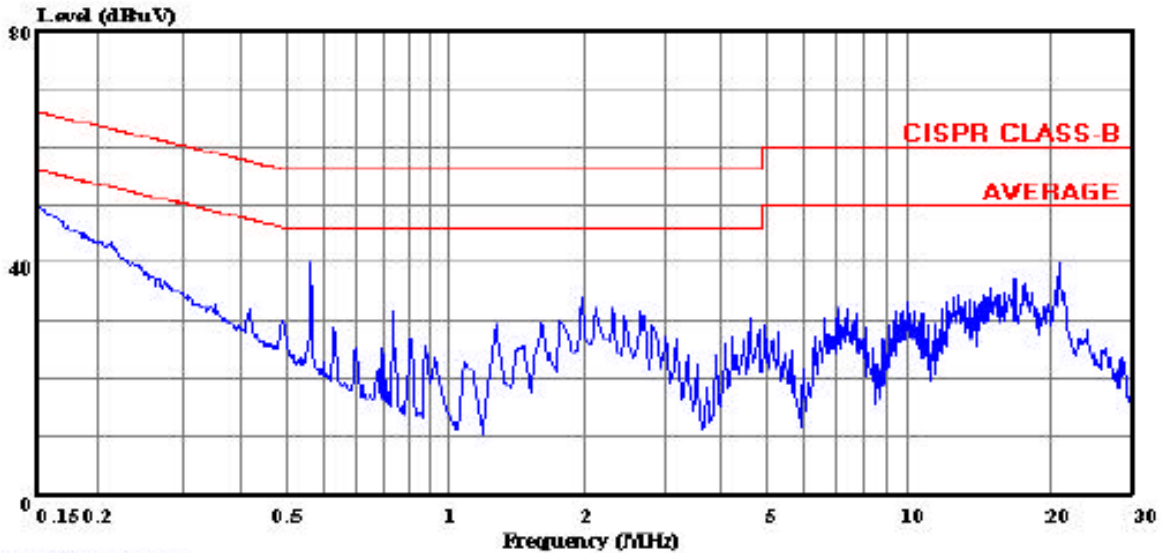
Condition: CISPR CLASS-B  
Test Operator:: Vien Tran  
Project #: : 08U11678  
Company: : Broadcom  
Configuration:: EUT & Support Equipments  
Mode: : Normal  
Target: : FCC Class B  
Voltage: : 115VAC / 60Hz  
: Line 1: Peak (Blue)

**LINE 2 RESULTS**



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Data#: 23 File#: 08U11678 LC.BMI Date: 03-31-2008 Time: 09:23:26



(Line Conduction)

Trace:

Ref Trace:

Condition: CISPR CLASS-B  
Test Operator:: Vien Tran  
Project #: : 08U11678  
Company: : Broadcom  
Configuration:: EUT & Support Equipments  
Mode: : Normal  
Target: : FCC Class B  
Voltage: : 115VAC / 60Hz  
: Line 2: Peak (Blue)