Hewlett-Packard Company

Regulatory Model # CRVSB-07BR

June 08, 2007

Report No. HEWP0011 Rev 02

Report Prepared By



www.nwemc.com 1-888-EMI-CERT

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22975 NW Evergreen Parkway Suite 400 Hillsboro, Oregon 97124

Certificate of Test

Issue Date: June 08, 2007 Hewlett-Packard Company Regulatory Model # CRVSB-07BR

Emissions							
Test Description	Specification	Test Method	Pass	Fail			
Radiated Emissions	FCC 15.109:2006 Class A	ANSI C63.4:2003	\boxtimes				
Spurious Radiated Emissions	FCC 15.247:2006 DTS	ANSI C63.4:2003, KDB No. 558074	\boxtimes				
AC Powerline Conducted Emissions	FCC 15.207:2006	ANSI C63.4:2003	\boxtimes				
Conducted Emissions	FCC 107:2006 Class B	ANSI C63.4:2003					

Modifications made to the product

See the Modifications section of this report

Test Facility

The measurement facility used to collect the data is located at:

Northwest EMC, Inc. 22975 NW Evergreen Parkway, Suite 400 Hillsboro, OR 97124

Phone: (503) 844-4066 Fax: 844-3826

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada.

Approved By:

Donald Facteau, IS Manager

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America.

Product compliance is the responsibility of the client, therefore the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. This Report may only be duplicated in its entirety. The results of this test pertain only to the sample(s) tested, the specific description is noted in each of the individual sections of the test report supporting this certificate of test.

Revision History

Revision 05/05/03

Revision Description	Date	Page Number
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01	Changed model name	12/12/07	All
02	Corrected attendee name on data sheets.	12/18/07	11, 14, 15, 17-20, 22-27

FCC: Accredited by NV/I AF

FCC: Accredited by NVLAP for performance of FCC radio, digital, and ISM device testing. Our Open Area Test Sites, certification chambers, and conducted measurement facilities have been fully described in reports filed with the FCC and accepted by the FCC in letters maintained in our files. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by the FCC as a Telecommunications Certification Body (TCB). This allows Northwest EMC to certify transmitters to FCC specifications in accordance with 47 CFR 2.960 and 2.962.





NVLAP: Northwest EMC, Inc. is accredited under the United States Department of Commerce, National Institute of Standards and Technology, and National Voluntary Laboratory Accreditation Program for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. The NVLAP accreditation encompasses Electromagnetic Compatibility Testing in accordance with the European Union EMC Directive 89/336/EEC, ANSI C63.4, MILSTD 461E, DO-160D and SAE J1113. Additionally, Northwest EMC is accredited by NVLAP to perform radio testing in accordance with the European Union R&TTE Directive 1999/5/EEC, the requirements of FCC, and the RSS radio standards for Industry Canada.



Industry Canada: Accredited by NVLAP for performance of Industry Canada RSS and ICES testing. Our Open Area Test Sites and certification chambers comply with RSS 212, Issue 1 (Provisional) and have been filed with Industry Canada and accepted. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by NIST and recognized by Industry Canada as a Certification Body (CB) per the APEC Mutual Recognition Arrangement (MRA). This allows Northwest EMC to certify transmitters to Industry Canada technical requirements.



CAB: Designated by NIST and validated by the European Commission as a Conformity Assessment Body (CAB) to conduct tests and approve products to the EMC directive and transmitters to the R&TTE directive, as described in the U.S. - EU Mutual Recognition Agreement.



TÜV Product Service: Included in TUV Product Service Group's Listing of Recognized Laboratories. It qualifies in connection with the TUV Certification after Recognition of Agent's Testing Program for the product categories and/or standards shown in TUV's current Listing of CARAT Laboratories, available from TUV. A certificate was issued to represent that this laboratory continues to meet TUV's CARAT Program requirements. Certificate No. USA0604C.



TÜV Rheinland: Authorized to carryout EMC tests by order and under supervision of TÜV Rheinland. This authorization is based on "Conditions for EMC-Subcontractors" of November 1992.



NEMKO: Assessed and accredited by NEMKO (Norwegian testing and certification body) for European emissions and immunity testing. As a result of NEMKO's laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification (Authorization No. ELA 119).



Australia/New Zealand: The National Association of Testing Authorities (NATA), Australia has been appointed by the ACA as an accreditation body to accredit test laboratories and competent bodies for EMC standards. Accredited test reports or assessments by competent bodies must carry the NATA logo. Test reports made by an overseas laboratory that has been accredited for the relevant standards by an overseas accreditation body that has a Mutual Recognition Agreement (MRA) with NATA are also accepted as technical grounds for product conformity. The report should be endorsed with the respective logo of the accreditation body (NVLAP).



VCCI: Accepted as an Associate Member to the VCCI, Acceptance No. 564. Conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. (Registration Numbers. - Hillsboro: C-1071, R-1025, C-2687, T-289, and R-2318, Irvine: R-1943, C-2766, and T-298, Sultan: R-871, C-1784, and T-294).



BSMI: Northwest EMC has been designated by NIST and validated by C-Taipei (BSMI) as a CAB to conduct tests as described in the APEC Mutual Recognition Agreement. License No.SL2-IN-E-1017.



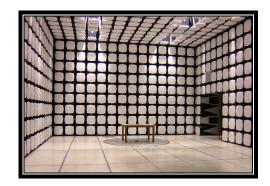
GOST: Northwest EMC, Inc. has been assessed and accredited by the Russian Certification bodies Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC, to perform EMC and Hygienic testing for Information Technology Products. As a result of their laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification



SCOPE

For details on the Scopes of our Accreditations, please visit: http://www.nwemc.com/scope.asp

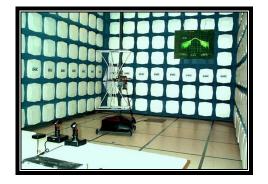




California – Orange County Facility Labs OC01 – OC13

41 Tesla Ave. Irvine, CA 92618 (888) 364-2378 Fax: (503) 844-3826





Oregon – Evergreen Facility Labs EV01 – EV11

22975 NW Evergreen Pkwy. Suite 400 Hillsboro, OR 97124 (503) 844-4066 Fax: (503) 844-3826





Washington – Sultan Facility Labs SU01 – SU07

14128 339th Ave. SE Sultan, WA 98294 (888) 364-2378

Rev 11/17/06

Party Requesting the Test

Company Name:	Hewlett-Packard Company
Address:	1000 NE Circle Blvd
City, State, Zip:	Corvallis, OR 97330
Test Requested By:	Peter Petersen
Model:	Regulatory Model #CRVSB-07BR
First Date of Test:	May 23, 2007
Last Date of Test:	May 24, 2007
Receipt Date of Samples:	May 23, 2007
Equipment Design Stage:	Prototype
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):

Digital Transmission System (DTS) radio with 32mW (15 dBm) output power.

Testing Objective:

802.11(b) radio operating at 2.4 GHz. Device imager scans barcode, 802.11b transmits, receives data, processor formats label, inkject cartridge prints label. Uses a Wireless Products WPANTFR4022A pcb antenna, 2.0 dBi typical. Seeking TCB certification under 15.247.



CONFIGURATION 1 HEWP0011

EUT							
Description	Manufacturer	Model/Part Number	Serial Number				
EUT	Hewlett-Packard	Regulatory Model # CRVSB-07BR	Unit 35 (high channel)				
EUT	Hewlett-Packard	Regulatory Model # CRVSB-07BR	Unit 30 (low, mid channel)				

Peripherals in test setup boundary					
Description Manufacturer Model/Part Number Serial Number					
Battery Pack	Hewlett-Packard	FA41001934	129		

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
USB	Yes	1.0m	No	EUT	Unterminated
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 2 HEWP0011

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
EUT	Hewlett-Packard	Regulatory Model # CRVSB- 07BR	Unit 34

Peripherals in test setup boundary						
Description Manufacturer Model/Part Number Serial Number						
Battery Charger	Cadex Electronicx, Inc.	Cadex Duro B5	Unknown			
AC Adapter	EDAC Power Elec.	EA11603	Unknown			
Battery Pack (x3)	Hewlett-Packard	18650 Series Li-Ion	Unknown			

Cables						
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2	
USB	Yes	1.0m	No	EUT	Unterminated	
DC	No	0.3m	No	EUT	Battery (in charger)	
DC	No	1.2m	No	Battery Charger	AC Adapter	
AC	No	2.0m	No	AC Adapter	AC Mains	
PA = Cabl	PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Revision 4/28/03

	Equipment modifications					
Item	Date	Test	Modification	Note	Disposition of EUT	
1	5/23/2007	AC Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.	
2	5/23/2007	Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.	
3	5/24/2007	Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.	
4	5/24/2007	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.	

RADIATED EMISSIONS

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

Normal operation

MODE USED FOR FINAL DATA

Normal operation

POWER SETTINGS INVESTIGATED

Battery

POWER SETTINGS USED FOR FINAL DATA

Battery

FREQUENCY RANGE INVESTIGATED

Start Frequency 30MHz Stop Frequency 1000MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT					
Description	Manufacturer	Model	ID	Last Cal.	Interval
EV11 cables a,b,c			EVL	5/1/2007	13
Pre-Amplifier	Miteq	AM-1551	AOY	5/1/2007	13
Antenna, Biconilog	EMCO	3142	AXB	12/28/2006	24
Spectrum Analyzer	Agilent	E4443A	AAS	12/7/2006	13

MEASUREMENT BANDWIDTHS													
	Frequency Range	Peak Data	Quasi-Peak Data	Average Data									
	(MHz)	(kHz)	(kHz)	(kHz)									
	0.01 - 0.15 1.0 0.2 0.2												
	0.15 - 30.0	10.0	9.0	9.0									
	30.0 - 1000	100.0	120.0	120.0									
	Above 1000 1000.0 N/A 1000.0												
N	Measurements were made using the bandwidths and detectors specified. No video filter was used.												

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, a final radiated emissions test was performed. The frequency range investigated (scanned), is also noted in this report. Radiated emissions measurements were made at the EUT azimuth and antenna height such that the maximum radiated emissions level will be detected. This requires the use of a turntable and an antenna positioner. The preferred method of a continuous azimuth search is utilized for frequency scans of the EUT field strength with both polarities of the measuring antenna. A calibrated, linearly polarized antenna was positioned at the specified distance from the periphery of the EUT.

Tests were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna was varied in height above the conducting ground plane to obtain the maximum signal strength. Though specified in the report, the measurement distance shall be 3 meters or 10 meters. At any measurement distance, the antenna height was varied from 1 meter to 4 meters. These height scans apply for both horizontal and vertical polarization, except that for vertical polarization the minimum height of the center of the antenna shall be increased so that the lowest point of the bottom of the antenna clears the ground surface by at least 25 cm.

NORTHWEST **RADIATED EMISSIONS DATA SHEET** EMI 2006.12.20 **EMC** EUT: Regulatory Model #CRVSB-07BR Work Order: HEWP0011 Serial Number: 34 Date: 05/24/07 **Customer: Hewlett-Packard Company** Temperature: 22 Attendees: Peter Petersen Humidity: 34% Project: None Barometric Pres.: 30.12 Tested by: David Divergigelis TEST SPECIFICATIONS Power: Battery Job Site: EV11 FCC 15.109:2006 Class A ANSI C63.4:2003 TEST PARAMETERS Test Distance (m) 10 Antenna Height(s) (m) 1 - 4 Scanning. TX and RX. Formatting and printing on strip printer at 10ips. Laptop under floor. Power supplies on. EUT is on. **EUT OPERATING MODES** Normal operation DEVIATIONS FROM TEST STANDARD No deviations. Run# 2 to a Suf E Configuration # 2 Results Pass Signature 80.0 70.0 60.0 50.0 dBuV/m 40.0 30.0 • • • •• 20.0 • 10.0 0.0 10.000 100.000 1000.000 MHz External Distance compared to Amplitude Factor Azimuth Heiaht Distance Polarity Adjusted Spec. Limit Frea Detector Attenuation Adjustmen Spec. (dBuV) (meters) (dB) (dB) dBuV/m dBuV/m (dB) (dB) (degrees) (meters) (MHz) V-Bilog QP 39.6 745.864 50.1 -10.5 254.0 2.5 10.0 0.0 0.0 47.0 -7 4 QΡ 866.236 46.2 -9.4 232.0 2.1 10.0 0.0 V-Bilog 0.0 36.8 47.0 -10.2 914.367 45.2 -8.7 239.0 1.7 10.0 0.0 V-Bilog QP 0.0 36.5 47.0 -10.5 769.960 46.5 -10.4 199.0 2.2 10.0 0.0 V-Bilog QΡ 0.0 36.1 47.0 -10.9 V-Bilog QΡ 47.0 842.090 45.1 -10.0 253.0 2.0 10.0 0.0 0.0 35.1 -11.9 V-Bilog 176.016 49.2 -24.0 74.0 1.0 10.0 QΡ 0.0 25.2 40.0 -14.8 0.0 V-Bilog 144 335 ΩP 496 -25.9 333.0 1.0 10.0 0.0 0.0 23.7 40.0 -16.3 V-Bilog QP 168.391 46.8 -24.3 131.0 1.5 10.0 0.0 0.0 22.5 40.0 -17.5157.610 47.4 -25.0 297.0 1.0 10.0 0.0 V-Bilog QP 0.0 22.4 40.0 -17.6 166.685 46.6 -24.3 -1.0 1.1 10.0 0.0 V-Bilog QP 0.0 22.3 40.0 -17.7 745.838 39.0 -10.5 141.0 1.3 10.0 H-Bilog QP 0.0 28.5 47.0 -18.5 0.0 QΡ 938.389 36.1 -8.4 6.0 2.1 10.0 0.0 V-Bilog 0.0 27.7 47.0 -19.3 V-Bilog 631.922 39.0 -12.3 231.0 3.5 10.0 0.0 PK 0.0 26.7 47.0 -20.3 V-Bilog PK 438.954 42.0 -16.1 353.0 25.9 -21.1 3.5 10.0 0.0 0.0 47.0 V-Bilog 77 036 45 1 345.0 ΩP 40.0 -27 4 1.9 10.0 0.0 0.0 177 -22.3V-Bilog QP 845.894 33.1 -9.9 359.0 2.0 10.0 0.0 0.0 23.2 47.0 -23.8783.153 33.4 -10.5 304.0 2.0 10.0 0.0 V-Bilog QP 0.0 22.9 47.0 -24.1 384.981 39.1 -16.8 58.0 1.1 10.0 0.0 V-Bilog QP 0.0 22.3 47.0 -24.7 850.527 -9.8 123.0 V-Bilog QP 47.0 32.0 1.5 10.0 0.0 0.0 22.2 -24.8

V-Bilog

V-Bilog

QΡ

PK

0.0

0.0

21.5

20.2

47.0

47.0

-25.5

-26.8

768.692

240.529

31.9

41.5

-10.4

-21.3

-1.0

360.0

1.8

1.1

10.0

10.0

0.0

0.0

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
93.070	39.6	-27.1	101.0	1.0	10.0	0.0	V-Bilog	QP	0.0	12.5	40.0	-27.5
87.986	38.0	-27.2	23.0	1.0	10.0	0.0	V-Bilog	PK	0.0	10.8	40.0	-29.2

CONDUCTED EMISSIONS

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

Receive mode, mid channel. Charging mode.

POWER SETTINGS INVESTIGATED

120V/60Hz

SAMPLE CALCULATIONS

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

TEST EQUIPMENT					
Description	Manufacturer	Model	ID	Last Cal.	Interval
LISN	Solar	9252-50-R-24-BNC	LIQ	12/20/2006	13
Receiver	Rohde & Schwartz	ESCI	ARG	12/7/2006	13
High Pass Filter	TTE	H97-100K-50-720B	HFX	8/22/2006	13
Attenuator	Tektronix	011-0059-02	ATC	12/27/2006	13

(kHz) 1.0	(kHz) 0.2	(kHz) 0.2									
1.0	0.2	0.2									
	V.=	0.2									
10.0	9.0	9.0									
100.0	120.0	120.0									
Above 1000 1000.0 N/A 1000.0											
	100.0 1000.0	100.0 120.0									

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50 Ω measuring port is terminated by a 50 Ω EMI meter or a 50 Ω resistive load. All 50 Ω measuring ports of the LISN are terminated by 50 Ω .

0.742

3.360

1.448

3.504

18.0

13.5

13.3

13.2

0.5

0.7

0.5

38.5

34.2

33.8

33.7

60.0

56.0

56.0

56.0

-21.5

-21.8

-22.2

13.860

0.742

3.360

1.448

3.504

18.0

13.5

13.3

13.2

0.5

0.7

0.5

38.5

33.8

33.7

50.0

46.0

46.0

46.0

-11.5

-11.8

-12.2

-12.3

-12.3

4.800

12.7

0.5

33.2

56.0

56.0

-22.8

2.840

4.800

2.904

12.7

0.5

33.2

33.1

46.0

46.0

-12.8

-12.9

-13.0

RADIATED SPURIOUS EMISSIONS

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

Transmitting Power output set to 0x29, low channel

Transmitting, Power output set to 0x29, mid channel

Transmitting, Power output set to 0x29, high channel

POWER SETTINGS INVESTIGATED

Battery

FREQUENCY RANGE IN\	/ESTIGATED		
Start Frequency	30 MHz	Stop Frequency	25 GHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT					
Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4446A	AAT	12/7/2006	13
High Pass Filter	Micro-Tronics	HPM50111	HFO	12/29/2006	13
Antenna, Horn	EMCO	3160-09	AHG	NCR	0
Antenna, Horn	EMCO	3160-08	AHK	NCR	0
Pre-Amplifier	Miteq	AMF-4D-005180-24-10P	APC	5/10/2007	13
Antenna, Horn	EMCO	3115	AHC	8/24/2006	12
Pre-Amplifier	Miteq	AM-1616-1000	AOL	12/29/2006	13
Antenna, Biconilog	EMCO	3141	AXE	12/28/2005	24
EV01 cables c,g, h			EVA	12/29/2006	13
EV01 cables g,h,j			EVB	5/10/2007	13
EV01 Cable D			EVD	3/30/2006	15
EV01 cables g,h,l			EVF	5/10/2007	13
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	3/23/2006	17

Frequency Range	Peak Data	Quasi-Peak Data	Average Data
(MHz)	(kHz)	(kHz)	(kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

MEASUREMENT UNCERTAINTY

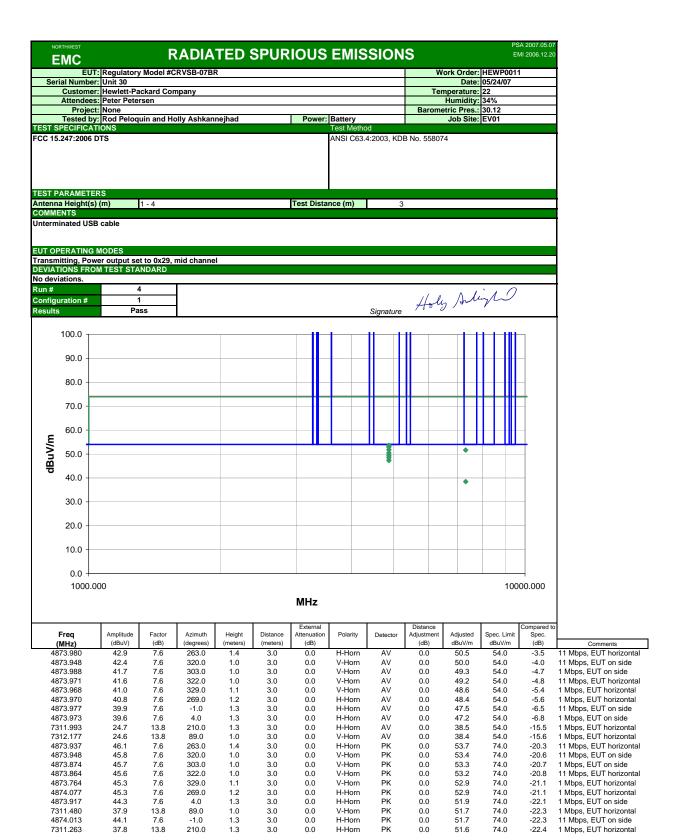
Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

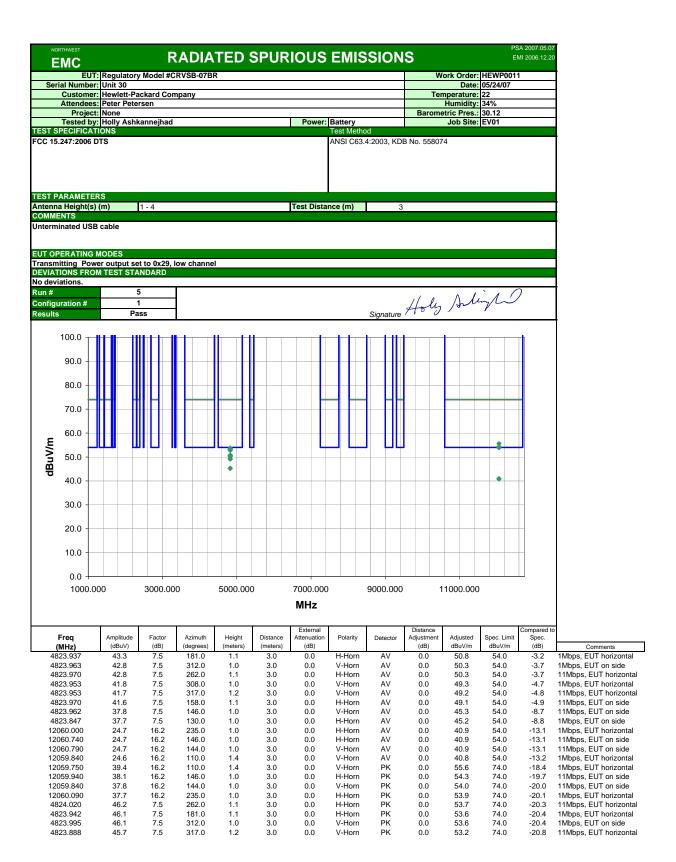
TEST DESCRIPTION

The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.4:2003). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

NORTHWEST					ŀ	R/	ΑD	Ν	TE	ΞD	S	P	UF	RIC	วเ	JS	E	ΕN	ΛIS	38	SIC	NC	S									2007.05.0 2006.12.2						
		Regula		Mod	lel#	CR۱	√SB-	07BI	₹																W	ork)11		7					
Serial Nur Custo		Unit 3: Hewlet		ckar	d Co	mn	anv																		Ter	nper			5/24	1/0/			-					
		Peter F																									nidit											
	oject:		-1												<u> </u>		. In							Bar	ome	etric							4					
TEST SPECIF		Rod Po	eioqi	ıın										_	Po	wer		atte est l	ery Meth	od						JO	b Sit	e: E	:001									
FCC 15.247:20																	_		C63		2003	, KD	B No	o. 5	5807	4							7					
TEST PARAM																	_																4					
Antenna Heigi COMMENTS	ht(s) (ı	m)		1 - 4				_						Te	est [Dista	anc	ce (n	n)			3											_					
Unterminated	USB o	cable																															7					
EUT OPERAT Transmitting,			ut se	t to	0x29). hie	ah c	hanr	el																								4					
DEVIATIONS	FROM					,	g.: c	- Carri	0.																								4					
No deviations Run #			2			Т																	-	2 /	1		_	7	0				┨					
Configuration	#		1			1																	14	rel	'n	le	火	eli	ing									
Results			Pas			1														S	igna	ture		C	/			6	/									
80.0																																_						
80.0															Ī																							
70.0							I																									Ţ						
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W//ngp						Н			Н					Н		Ш				_				+														
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0.0	Ш		\vdash						Н			\vdash			+				Н			+			4			Ц,				4						
1000	0.000	120	0.00	0	1400	0.00)0	1600	0.00	0	180	0.0	00	200	0.00	000	2	2200	0.00	0	240	0.00	00	26	00.	000	28	300.	000) 3	3000	0.000						
														Ν	/Н:	Z																						
			1			1					1				Exte		T			T				istan				- 1				ompared t	to					
Freq (MHz)		Amplitu (dBu)			ctor dB)		Azim (degre			leight neters			ance ters)	Α	ttenu dE)	ation 3)	1	Pola	arity		Dete	ctor	Ad	ljustn (dB)			justed uV/m		Spec. dBu	. Limi ıV/m		Spec. (dB)	-	С	ommer	nts		\neg
2483.192		25.7	7	C	1.4	-	186	6.0		2.0		3	.0		20	.0		Н-Н			A۱		1	0.0		4	6.1		54	1.0	- 1	-7.9		ps, El	UT or	its s		_
2483.018		25.6 25.6).4).4		264 181			1.4 2.0			.0 .0		20			V-H H-H			A'			0.0			6.0		54 54	1.0		-8.0 -8.0		Ibps, E ops, El				
2483.403 2483.442		25.6 25.6).4).4		185			2.0 1.4			.0		20.			H-H			A'			0.0			6.0			1.0 1.0		-8.0 -8.0		ops, Ei Ibps, E				
2483.917		25.6	3	C	.4		30.	.0		1.7		3	.0		20	.0		Н-Н	lorn		A١	V		0.0		4	6.0		54	1.0		-8.0	11 M	lbps, E	EUT c	n sid	de	
2483.603		25.5).4		40.			1.1			.0		20			V-H			A۱			0.0			5.9			1.0		-8.1		Ibps, E				l
2483.471 2483.476		25.4 25.4).4).4		123 313			1.4 1.7			.0 .0		20			V-H H-H			A' A'			0.0			5.8 5.8			1.0 1.0		-8.2 -8.2		ops, El Ibps, E				
2483.548		25.4			1.4		242			1.3			.0		20			H-H			A)			0.0			5.8			1.0		-8.2		ibps, i Ibps, i				ı
2484.093		25.3	3	C	1.4		188	3.0		1.4		3	.0		20	.0		V-H	lorn		A١	V		0.0		4	5.7		54	1.0		-8.3	1 Mb	ps, El	UT ho	rizor	ntal	
2483.963		40.1			1.4		264			1.4			.0		20			V-H			PI			0.0			0.5			1.0		-13.5		lbps, E				
2483.643		39.7			1.4		313			1.7			.0		20			H-H			PI			0.0			0.1			1.0		-13.9		1bps, E				
2484.028 2483.768		39.7 39.4).4).4		30. 181			1.7 2.0			.0 .0		20			H-H H-H			PI PI			0.0			0.1 9.8			1.0 1.0		-13.9 -14.2		1bps, E ops, El				
2483.683		39.4			1.4		185			1.4			.0		20			V-H			PI			0.0			9.5			1.0 1.0		-14.2		ops, ⊏i 1bps, E				
2483.838		39.			1.4		40.			1.1			.0		20			V-H			PI			0.0			9.5		74			-14.5		1bps, E				1
2484.203		39.1			.4		186			2.0			.0		20			Н-Н			PI			0.0			9.5			1.0		-14.5		pps, El				
2484.137		39.0			1.4		242			1.3			.0		20			Н-Н			PI			0.0			9.4			1.0		-14.6		Ibps, E				
2483.922		38.8).4		123			1.4			.0		20			V-H			PI			0.0			9.2			1.0		-14.8		pps, El				
2484.437		38.4	•	C).4		188			1.4		3	.0		20	.0		V-H	IOITI		PI	`		0.0		5	8.8		74	1.0		-15.2	ı IVID	ps, El	U I NC	n IZOI	ııdı	

NORTHWEST		F	RADIA	TED :	SPUR	IOUS	EMIS	SION	IS			SA 2007.05.07 EMI 2006.12.20	
EUT		y Model #0	CRVSB-07BI	₹					W		: HEWP00	11	1
Serial Number											: 05/24/07		
	: Hewlett-Pa		mpany							nperature Humidity			
Project	: None									tric Pres.	: 30.12		1
Tested by ST SPECIFICAT	Rod Peloc	uin				Power:	Battery Test Metho	nd .		Job Site	: EV01		4
C 15.247:2006 I									B No. 55807	4			
ST PARAMETE tenna Height(s)		1 - 4				Test Dista	ince (m)	3	3				ļ
MMENTS terminated USE													İ
T OPERATING	MODES												
nsmitting, Pow VIATIONS FRO			high chann	el									
deviations.			1										<u> </u>
1#		3 1	4						Rocky.	1. Po	lena		
figuration # ults		1 ISS	1					Signature	0				
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55.0												Ц	
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#/Angp 40.0					•								
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0.0													
3000.00	0 4000.0	00 500	0.000 60	00.000	7000.000	8000.00 MHz	00 9000.	000 100	00.000 11	000.000	12000.00	00	
Freq	Amplitude	Factor	Azimuth	Height	Distance	External Attenuation	Polarity	Detector	Distance Adjustment	Adjusted	Spec. Limit	Compared to	-
(MHz)	(dBuV)	(dB)	(degrees)	(meters)	(meters)	(dB)	,		(dB)	dBuV/m	dBuV/m	(dB)	Comments
4923.967	42.4	7.8	173.0	1.1	3.0	0.0	V-Horn	AV	0.0	50.2	54.0	-3.8	1 Mbps, EUT horizo
4923.960 4923.953	40.7 38.0	7.8 7.8	326.0 207.0	1.2 1.2	3.0 3.0	0.0 0.0	H-Horn H-Horn	AV AV	0.0 0.0	48.5 45.8	54.0 54.0	-5.5 -8.2	1 Mbps, EUT horizo 11 Mbps, EUT horiz
4923.967	37.9	7.8	322.0	1.0	3.0	0.0	H-Horn	AV	0.0	45.7	54.0	-8.3	1 Mbps, EUT on sid
4923.980	37.7	7.8	358.0	1.1	3.0	0.0	V-Horn	AV	0.0	45.5	54.0	-8.5	1 Mbps, EUT on sid 11 Mbps, EUT horiz
4923.963 4923.973	37.1 36.4	7.8 7.8	172.0 349.0	1.1 1.1	3.0 3.0	0.0 0.0	V-Horn V-Horn	AV AV	0.0 0.0	44.9 44.2	54.0 54.0	-9.1 -9.8	11 Mbps, EUT nonz 1 Mbps, EUT on sid
4923.970	35.0	7.8	346.0	1.2	3.0	0.0	H-Horn	AV	0.0	42.8	54.0	-11.2	1 Mbps, EUT on sid
4923.957	34.8	7.8	352.0	1.2	3.0	0.0	H-Horn	AV	0.0	42.6	54.0	-11.4	1 Mbps, EUT on sid
7384.343 7385.457	24.6 24.6	14.3 14.3	125.0 -2.0	1.0 2.0	3.0 3.0	0.0 0.0	V-Horn H-Horn	AV AV	0.0 0.0	38.9 38.9	54.0 54.0	-15.1 -15.1	1 Mbps, EUT horizo 11 Mbps, EUT horiz
7385.457	24.6	14.3	-2.0 359.0	2.0 1.8	3.0	0.0	V-Horn	AV	0.0	38.9	54.0 54.0	-15.1 -15.1	11 Mbps, EUT horiz
7386.260	24.6	14.3	284.0	1.6	3.0	0.0	H-Horn	AV	0.0	38.9	54.0	-15.1	1 Mbps, EUT horizo
4923.907	45.7	7.8	173.0	1.1	3.0	0.0	V-Horn	PK	0.0	53.5	74.0	-20.5	1 Mbps, EUT horizo
7385.137 7385.177	38.4 38.3	14.3 14.3	359.0 125.0	1.8 1.0	3.0 3.0	0.0 0.0	V-Horn V-Horn	PK PK	0.0 0.0	52.7 52.6	74.0 74.0	-21.3 -21.4	11 Mbps, EUT horiz 1 Mbps, EUT horizo
7385.130	38.2	14.3	-2.0	2.0	3.0	0.0	H-Horn	PK	0.0	52.5	74.0	-21.5	11 Mbps, EUT horiz
7386.770	38.1	14.3	284.0	1.6	3.0	0.0	H-Horn	PK	0.0	52.4	74.0	-21.6	1 Mbps, EUT horizo
4923.920	44.4 43.2	7.8 7.8	326.0 172.0	1.2	3.0	0.0	H-Horn V-Horn	PK	0.0	52.2 51.0	74.0	-21.8 -23.0	1 Mbps, EUT horizo
4923.690	43.2	7.8	172.0	1.1	3.0	0.0	V-Horn	PK	0.0	51.0	74.0	-23.0	11 Mbps, EUT horiz





AC Powerline Conducted Emissions

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

Transmitting high channel, 11Mbps. Charging mode.

Transmitting mid channel, 11Mbps. Charging mode.

Transmitting low channel, 11Mbps. Charging mode.

POWER SETTINGS INVESTIGATED

120V/60Hz

SAMPLE CALCULATIONS

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

TEST EQUIPMENT					
Description	Manufacturer	Model	ID	Last Cal.	Interval
LISN	Solar	9252-50-R-24-BNC	LIQ	12/20/2006	13
Receiver	Rohde & Schwartz	ESCI	ARG	12/7/2006	13
High Pass Filter	TTE	H97-100K-50-720B	HFX	8/22/2006	13
Attenuator	Tektronix	011-0059-02	ATC	12/27/2006	13

MEASUREMEN	T BANDWIDTHS												
	Frequency Range	Peak Data	Quasi-Peak Data	Average Data									
	(MHz)	(kHz)	(kHz)	(kHz)									
	0.01 - 0.15	1.0	0.2	0.2									
	0.15 - 30.0	10.0	9.0	9.0									
	30.0 - 1000	100.0	120.0	120.0									
	Above 1000 1000.0 N/A 1000.0												
	Measurements were made using the bandwidths and detectors specified. No video filter was used.												

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50 Ω measuring port is terminated by a 50 Ω EMI meter or a 50 Ω resistive load. All 50 Ω measuring ports of the LISN are terminated by 50 Ω .

3.032

3.112

2.672

15.2

15.1

14.5

14.0

0.5

0.5

0.7

35.7

35.6

35.0

34.7

56.0

56.0

56.0

56.0

-20.3

-20.4

-21.0

-21.3

2.936

3.032

3.112

2.672

15.2

15.1

14.5

14.0

13.8

0.5

0.5

0.5

0.7

35.7

35.6

35.0

34.7

46.0

46.0

46.0

46.0

46.0

-10.3

-10.4

-11.0

-11.3

-11.7 -11.9

14.960

3.128

3.408

2.864

0.740

13.610

2.728

2.808

2.824

15.3

19.0

14.6

14.0

13.7

13.5

17.6

13.5

13.4

0.5

0.5

0.5

0.5

0.5

0.7

0.5

0.5

35.8

39.5

35.1

34.5

34.2

34.2

38.1

33.9

56.0

60.0

56.0

56.0

56.0

56.0

60.0

56.0

56.0

-20.2

-20.5

-20.9

-21.5

-21.8

-21.8

-21.9

-22.0

-22.1

3.056

14.960

3.128

3.408

2.864

0.740

13.610

2.728

2.808

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15.3

19.0

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0.5

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0.5

0.5

0.7

0.5

0.5

35.8

39.5

35.1

34.5

34.2

34.2

38.1

33.9

46.0

50.0

46.0

46.0

46.0

46.0

50.0

46.0

46.0

46.0

-10.2

-10.5

-10.9

-11.5

-11.8

-11.8

-11.9

-12.0

-12.1

-12.2 -12.5

3.456

2.792

0.740

2.000

13.640

13.7

13.4

13.3

13.1

0.5

0.5

0.5

0.7

34.2

33.9

33.8

56.0

56.0

56.0

56.0

-21.8

-22.1

-22.2

2.264

3.456

2.792

0.740

2.000

13.7

13.4

13.3

13.1

13.0

16.7

0.5

0.5

0.5

0.7

34.2

33.9

33.8

46.0

46.0

46.0

46.0

46.0

-11.8

-12.1

-12.2

-12.2

-12.5

-12.8

3.112

2.968

3.344

0.748

14.2

14.2

14.1

0.5

0.5

34.7

34.7

34.6

56.0

56.0

56.0

-21.3

-21.4

2.448

3.112

2.968

3.344

0.748

14.2

14.2

14.1

13.8

0.5

0.5

34.7

34.7

34.6

46.0

46.0

46.0

46.0

-11.3

-11.3

-11.4

-11.4

2.952

2.928

2.864

2.480

0.740

15.3

15.1

15.0

14.7

14.3

0.5

0.5

0.5

0.5

35.8

35.6

35.5

34.8

34.7

56.0

56.0

56.0

56.0

56.0

-20.2

-20.4

-20.5

-21.2

3.328

2.952

2.928

2.864

2.480

0.740

15.3

15.1

15.0

14.7

14.3

13.8

0.5

0.5

0.5

0.5

0.5

35.8

35.6

35.5

35.2

34.8

46.0

46.0

46.0

46.0

46.0

46.0

-10.2

-10.4

-10.5

-10.8

-11.2

-11.3

AC Powerline Conducted Emissions HEWP0011 Holy Sligh Date: 05/23/07 Work Order: Temperature: 23 Project: None EV07 **Humidity**: Job Site: 33 Tested by: Holly Ashkannejhad Serial Number: Unit 34 **Barometric Pres.** 30.2 **EUT:** Regulatory Model #CRVSB-07BR Configuration: Customer Hewlett-Packard Company Attendees: Peter Petersen EUT Power: 120V/60Hz Transmitting low channel, 11Mbps. Charging mode. **Operating Mode Deviations** Comments **Test Specifications** Test Method FCC 15.207:2006 ANSI C63.4:2003 Run# Line: Neutral Ext. Attenuation: Results Pass 20 Quasi Peak Data - vs - Quasi Peak Limit Average Data - vs - Average Limit 100 100 90 90 80 70 70 60 60 dBuV 50 50 40 40 30 30 20 20 10 10 0.10

				Compared to							Compared to
Amplitude	Factor	Adjusted	Spec. Limit	Spec.		Freq	Amplitude	Factor	Adjusted	Spec. Limit	Spec.
(dBuV)	(dB)	dBuV	dBuV	(dB)		(MHz)	(dBuV)	(dB)	dBuV	dBuV	(dB)
10.7	0.5	31.2	56.0	-24.8	-	14.442	6.8	0.5	27.3	50.0	-22.7
12.5	0.5	33.0	60.0	-27.0		2.340	-2.3	0.5	18.2	46.0	-27.8
7.9	0.5	28.4	56.0	-27.6		3.028	-3.4	0.5	17.1	46.0	-28.9
7.1	0.5	27.6	56.0	-28.4		2.956	-3.9	0.5	16.6	46.0	-29.4
6.5	0.5	27.0	56.0	-29.0		3.364	-4.4	0.5	16.1	46.0	-29.9

MHz

Average Data - vs - Average Limit

MHz

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz) 3.028 14.442 2.956 3.364

2.340