



RADIO TEST REPORT

Test Report No. : 28BE0065-HO-02-B

Applicant : Sony Computer Entertainment Inc.
Type of Equipment : PLAYSTATION®3
Model No. : CECHH01
FCC ID : AK8CBEH1300
Test standard : FCC Part 15 Subpart C 2007
Section 15.207, Section 15.247
Test Result : Complied

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above regulation.
4. The test results in this report are traceable to the national or international standards.

Date of test:

September 11 to 20, 2007

Tested by:

T. Shimada

Takumi Shimada
EMC Services

T. Sasagawa

Tomotaka Sasagawa
EMC Services

Approved by :

H. Shimoji

Hironobu Shimoji
Assistant Manager of
EMC Services

NVLAP®

NVLAP LAB CODE: 200572-0

This laboratory is accredited by the NVLAP LAB CODE 200572-0, U.S.A. The tests reported herein have been performed in accordance with its terms of accreditation.
*As for the range of Accreditation in NVLAP, you may refer to the WEB address, <http://uljapan.co.jp/emc/nvlap.htm>

UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b (18.06.07)

CONTENTS	PAGE
SECTION 1: Client information	3
SECTION 2: Equipment under test (E.U.T.).....	3
SECTION 3: Test specification, procedures & results.....	5
SECTION 4: Operation of E.U.T. during testing	9
SECTION 5: Conducted Emission.....	12
SECTION 6: Spurious Emission	13
SECTION 7: Bandwidth	14
SECTION 8: Maximum Peak Output Power	14
SECTION 9: Carrier Frequency Separation	14
SECTION 10: Number of Hopping Frequency	14
SECTION 11: Dwell time.....	14
APPENDIX 1: Photographs of test setup	15
Conducted Emission.....	15
Spurious Emission (Radiated).....	16
Worst Case Position (Horizontal: X-axis/ Vertical:Y-axis).....	17
APPENDIX 2: Data of EMI test.....	20
Conducted Emission.....	20
Carrier Frequency Separation	41
20dB Bandwidth	45
Number of Hopping Frequency	49
Dwell time.....	53
Maximum Peak Output Power	59
Radiated Spurious Emission (below 1GHz).....	61
Radiated Spurious Emission (above 1GHz).....	82
Conducted Spurious Emission	103
99% Occupied Bandwidth.....	112
APPENDIX 3:Test instruments	114

SECTION 1: Client information

Company Name	Sony Computer Entertainment Inc.
Brand Name	SONY
Address	2-6-21 Minamiaoyama, Minato-ku, Tokyo, 107-0062, Japan
Telephone Number	+81-3-6438-8023
Facsimile Number	+81-3-6438-8642
Contact Person	Akiko Tsukada

SECTION 2: Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment	PLAYSTATION®3
Model No	CECHH01
Serial No	1020135
Rating	AC 120V, 60Hz
Country of Manufacture	JAPAN/CHINA
Receipt Date of Sample	September 2, 2007
Condition of EUT	Engineering prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	No modification by the test lab.

2.2 Product Description

Model: CECHH01, referred to as the EUT in this report, is a PLAYSTATION®3.
The EUT contains Bluetooth (Ver. 2.0+EDR) module and IEEE802.11b/g WLAN module. Those modules do not transmit simultaneously.

Clock Frequencies are CPU: 3.2GHz(CPU), 66MHz(ATA), 133MHz(ATA), 33MHz(PCI), and 750MHz(SATA1).

UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

Bluetooth (Ver. 2.0+EDR)

Equipment Type	Transceiver	
Frequency of Operation	2402-2480MHz	
Type of Modulation	FHSS (GFSK, $\pi/4$ -DQPSK, 8DPSK)	
Bandwidth & Channel spacing	1MHz & 1MHz	
Power Supply (inner)	DC3.3V	
Antenna Type	ANT1: Reverse F Antenna (manufacturer: SMK / AMP)	ANT2: Dipole Antenna
Antenna Gain	ANT1: 1.85dBi (max)	ANT2: 1.13 dBi (max)
Antenna Connector Type	ANT1: N/A	ANT2: N/A

IEEE802.11b/g WLAN

Equipment Type	Transceiver	
Frequency of Operation	2412-2462MHz	
Type of Modulation	DSSS/OFDM	
Bandwidth & Channel spacing	20MHz & 5MHz	
Power Supply (inner)	DC 3.3V/DC1.3V	
Antenna Type	ANT0: Reverse F Antenna	ANT1: Reverse F Antenna
Antenna Gain	ANT0: 0.86dBi (max)	ANT1: 1.12dBi (max)
Antenna Connector Type	ANT0: U.FL	ANT1: N/A

For IEEE802.11b/g WLAN part, please see UL Japan, Inc. Test Report Number: 28BE0065-HO-02-A.

UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part15 Subpart C: 2007

Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits
Section 15.247 Operation within the bands 902-928MHz,
2400-2483.5MHz, and 5725-5850MHz

3.2 Procedures and results

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin	Results			
1	Conducted emission	FCC: ANSI C63.4:2003 7. AC powerline conducted emission measurements	FCC: Section 15.207	-	N/A	6.3dB 0.20185MHz, AV, N, ANT1(AMP) 0.20185MHz, AV, N, ANT1(SMK) 0.20440MHz, AV, N, ANT2	Complied			
		IC: RSS-Gen 7.2.2	IC: RSS-Gen 7.2.2							
2	Carrier Frequency Separation	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators	FCC: Section 15.247(a)(1)	Conducted	N/A	See data.	Complied			
		IC: -	IC: RSS-210 A8.1 (b)							
3	20dB Bandwidth	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators	FCC: Section 15.247(a)(1)	Conducted	N/A		See data.	Complied		
		IC: -	IC: RSS-210 A8.1 (a)							
4	Number of Hopping Frequency	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators	FCC: Section 15.247(a)(1)(iii)	Conducted	N/A			See data.	Complied	
		IC: -	IC: RSS-210 A8.1 (d)							
5	Dwell time	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators	FCC: Section 15.247(a)(1)(iii)	Conducted	N/A				See data.	Complied
		IC: -	IC: RSS-210 A8.1 (d)							
6	Maximum Peak Output Power	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators	FCC: Section 15.247(b)(1)	Conducted	N/A	See data.				Complied
		IC: RSS-Gen 4.8	IC: RSS-210 A8.4 (2)							
7	Band Edge Compliance	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators	FCC: Section 15.247(d)	Conducted	N/A		See data.			Complied
		IC: -	IC: RSS-210 A8.5							
8	Spurious Emission	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators	FCC: Section 15.247(d)	Conducted/ Radiated	N/A			See data.		Complied
		IC: RSS-Gen 4.9 RSS-Gen 4.10	IC: RSS-210 A8.5 RSS-Gen 7.2.1 and 7.2.3							

Note: UL Japan, Inc.'s EMI Work Procedures No.QPM05 and QPM15.

*These tests were also referred to FCC Public Notice DA 00-705 "Guidance on Measurement for Frequency Hopping Spread Spectrum Systems".

*These tests were performed without any deviations from test procedure except for additions or exclusions.

3.3 Addition to standards

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	99% Occupied Band Width	IC: RSS-Gen 4.6.1	IC: RSS-Gen 4.6.1	Conducted	N/A	N/A	N/A

3.4 Uncertainty

The following uncertainties have been calculated to provide a confidence level of 95% using a coverage factor k=2.

Conducted Emission

The measurement uncertainty for this test is ± 2.66 dB.

The data listed in this test report has enough margin, more than the site margin.

Spurious Emission (Radiated)

The measurement uncertainty for this test using Biconical antenna is ± 4.59 dB(3m).

The measurement uncertainty for this test using Logperiodic antenna is ± 4.62 dB(3m).

The measurement uncertainty for this test using Horn antenna is ± 5.27 dB.

The data listed in this test report has enough margin, more than the site margin.

Other test except Conducted Emission and Spurious Emission (Radiated)

The measurement uncertainty for this test is ± 3.0 dB.

UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

3.5 Test Location

UL Japan, Inc. Head Office EMC Lab. *NVLAP Lab. code: 200572-0
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone: +81 596 24 8116 Facsimile: +81 596 24 8124

	FCC Registration Number	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	313583	IC4247	19.2 x 11.2 x 7.7m	7.0 x 6.0m	No.1 Power source room
No.2 semi-anechoic chamber	655103	IC4247-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	148738	IC4247-3	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.3 Preparation room
No.3 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.4 semi-anechoic chamber	134570	IC4247-4	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.4 Preparation room
No.4 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.5 semi-anechoic chamber	-	-	6.0 x 6.0 x 3.9m	6.0 x 6.0m	-
No.6 shielded room	-	-	4.0 x 4.5 x 2.7m	4.75 x 5.4 m	-
No.6 measurement room	-	-	4.75 x 5.4 x 3.0m	4.75 x 4.15 m	-
No.7 shielded room	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.8 measurement room	-	-	3.1 x 5.0 x 2.7m	N/A	-

* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1, No.2, No.3, and No.4 semi-anechoic chambers and No.3 and No.4 shielded rooms.

3.6 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

SECTION 4: Operation of E.U.T. during testing

4.1 Operating Mode(s)

The mode used for test : [Bluetooth : FHSS]

Test	Mode	Tested frequency
Conducted Emission	Bluetooth Transmitting (Tx), DH5/3DH5	2402MHz 2441MHz 2480MHz
	Bluetooth Transmitting (Rx)	2441MHz
Carrier Frequency Separation	Bluetooth Transmitting (Tx) (Hopping ON)/Inquiry, DH5/3DH5	2402MHz 2441MHz 2480MHz
20dB Bandwidth	Bluetooth Transmitting (Tx) (Hopping Off)/Inquiry, DH5/3DH5	2402MHz 2441MHz 2480MHz
Number of Hopping Frequency	Bluetooth Transmitting (Tx) (Hopping ON)/Inquiry, DH5/3DH5	-
Dwell time	Bluetooth Transmitting (Tx) (Hopping ON)/Inquiry -DH1 -DH3 -DH5 -3DH1 -3DH3 -3DH5	-
Maximum Peak Output Power	Bluetooth Transmitting (Tx) (Hopping Off)/Inquiry -DH5 -2DH5 -3DH5	2402MHz 2441MHz 2480MHz
Spurious Emission (Conducted/Radiated)	Bluetooth Transmitting (Tx), DH5/3DH5	2402MHz 2441MHz 2480MHz
	Bluetooth Receiving (Rx), DH5	2441MHz
Band Edge Compliance (Conducted)	Bluetooth Transmitting (Tx), DH5/3DH5 -Hopping ON	2402MHz 2480MHz
	-Hopping OFF	
(Radiated)	Bluetooth Transmitting (Tx), DH5/3DH5	2402MHz 2480MHz
99% Occupied Bandwidth	Bluetooth Transmitting (Tx), DH5/3DH5 -Hopping ON -Hopping OFF	2402MHz 2441MHz 2480MHz

*As a result of preliminary check of output power with two antennas (ANT1 and ANT2), antenna terminal conducted test was performed with ANT2 only, which had the maximum peak output power.

UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

4.2 Configuration and peripherals

This page has been submitted for a separate exhibit.

This page has been submitted for a separate exhibit.

SECTION 5: Conducted Emission

Test Procedure and conditions

EUT was placed on a urethane platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80cm from a Line Impedance Stabilization Network (LISN)/ Artificial mains Network (AMN) and excess AC cable was bundled in center.

For the tests on EUT with other peripherals (as a whole system)

I/O cable and AC cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane. All unused 50ohm connectors of the LISN(AMN) were resistivity terminated in 50ohm when not connected to the measuring equipment.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Semi Anechoic Chamber or a Measurement Room.

The EUT was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

Detector : quasi-peak and average detector (IF BW 9 kHz)
Measurement range : 0.15-30MHz
Test data : APPENDIX 2
Test result : Pass

UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

SECTION 6: Spurious Emission

[Conducted]

Test Procedure

The Out of Band Emission was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 2

Test result : Pass

[Radiated]

Test Procedure

EUT was placed on a urethane platform of nominal size, 1.0m by 1.5m, raised 80cm above the conducting ground plane. The Radiated Electric Field Strength intensity has been measured in a Semi Anechoic Chamber with a ground plane and at a distance of 3m(Below 10GHz) and 1m(Upper 10GHz).

The height of the measuring varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer (in linear mode).

The test was made with the detector (RBW/VBW) in the following table.

When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

In any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement.

20dBc was applied to the frequency over the limit of FCC 15.209 / Table 2 of RSS-210 2.7 (IC) and outside the restricted band of FCC15.205 / Table 1 of RSS-210 2.7 (IC).

Frequency	Below 1GHz	Above 1GHz
Instrument used	Test Receiver / Spectrum Analyzer	Spectrum Analyzer
Detector	QP: BW 120kHz(T/R)	PK: RBW:1MHz/VBW: 1MHz
IF Bandwidth	20dBc : RBW: 100kHz VBW: 300kHz (S/A)	AV: RBW:1MHz/VBW:10Hz 20dBc : RBW:100kHz/VBW:300kHz

- The carrier level and noise levels were confirmed at each position of X and Y axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

Test data : APPENDIX 2

Test result : Pass

UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

SECTION 7: Bandwidth

Test Procedure

The bandwidth was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 2
Test result : Pass

SECTION 8: Maximum Peak Output Power

Test Procedure

The Maximum Peak Output Power was measured with a power meter (tested bandwidth: 50MHz) connected to the antenna port.

Test data : APPENDIX 2
Test result : Pass

SECTION 9: Carrier Frequency Separation

Test Procedure

The carrier frequency separation was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 2
Test result : Pass

SECTION 10: Number of Hopping Frequency

Test Procedure

The Number of Hopping Frequency was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 2
Test result : Pass

SECTION 11: Dwell time

Test Procedure

The Dwell time was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 2
Test result : Pass

UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124