



**Underwriters  
Laboratories UL Japan, Inc.**

Test report No. : 28AE0298-HO-D-R1  
Page : 1 of 38  
Issued date : September 1, 2007  
Revised date : September 5, 2007  
FCC ID : AK8CBEH1000

# RADIO TEST REPORT

## Test Report No.: 28AE0298-HO-D-R1

**Applicant** : Sony Computer Entertainment Inc.  
**Type of Equipment** : PLAYSTATION®3  
**Model No.** : CECHG01  
**FCC ID** : AK8CBEH1000  
**Test standard** : FCC Part 15 Subpart C 2007  
Section 15.207, Section 15.247  
(Conducted Emission, Maximum Peak Output  
Power and Radiated Emission tests only)  
**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.
5. Original test report number of this test report is 28AE0298-HO-D.

**Date of test:** August 27 to September 5, 2007

**Tested by:**

*T. Shimada*

Takumi Shimada  
EMC Services

**Approved  
by :**

*H. Shimoji*

Hironobu Shimoji  
Assistant Manager of EMC Services

**NVLAP**<sup>®</sup>  
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  
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\*As for the range of Accreditation in NVLAP, you may  
refer to the WEB address, <http://uljapan.co.jp/emc/nvlap.htm>

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## **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	CECHG01
Serial No	1040181
Rating	AC 120V, 60Hz
Country of Manufacture	JAPAN/CHINA
Receipt Date of Sample	June 18, 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: CECHG01, 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).

As for the differences between Model: CECHG01 and the original model: CECHA01, please see "Point of Difference".

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**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: 3.83dBi (max)	ANT2: 4.92 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: 0.69dBi (max)	ANT1: -0.26dBi (max)
Antenna Connector Type	ANT0: U.FL	ANT1: N/A

For IEEE802.11b/g WLAN part, please see UL Japan, Inc. Test Report Number: 28AE0298-HO-A-R1.

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## **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	ANSI C63.4:2003 7. AC powerline conducted emission measurements	Section 15.207	-	N/A	13.5dB 0.20792MHz AV, N	Complied
2	Maximum Peak Output Power	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(b)(1)	Radiated	N/A	See data	Complied
3	Radiation Emission	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(d)	Radiated	*1)	[Tx] 5.7dB 64.2MHz, Hor. [Rx] 3.4dB 63.9MHz, Hor.	Complied

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

\*1) After preliminary check, Band edges, Carrier level, and the worst level of Spurious Emission were only tested.

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

### **3.3 Uncertainty**

#### Conducted Emission

The measurement uncertainty for this test is  $\pm 2.66$ dB.

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

#### Spurious Emission (Radiated)

The measurement uncertainty (with a 95% confidence level) for this test using Biconical antenna is  $\pm 4.59$ dB(3m).

The measurement uncertainty (with a 95% confidence level) for this test using Logperiodic antenna is  $\pm 4.62$ dB(3m).

The measurement uncertainty (with a 95% confidence level) for this test using Horn antenna is  $\pm 5.27$ dB.

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

[Rx] The data listed in this report meets the limits unless the uncertainty is taken into consideration.

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### 3.4 Test Location

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	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.

### 3.5 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

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

### **4.1 Operating Modes**

The mode used for test : [Bluetooth : FHSS]

1. Transmitting mode: GFSK (Packet size DH5, Data packet: PRBS9)
  - Low Channel : 2402MHz
  - Mid Channel : 2441MHz
  - High Channel : 2480MHz
2. Transmitting mode: 8DPSK (Packet size 3-DH5, Data packet: PRBS9)
  - Low Channel : 2402MHz
  - Mid Channel : 2441MHz
  - High Channel : 2480MHz
3. Receiving mode (for Conducted Emission test only)
  - Mid Channel : 2441MHz

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#### 4.2 Configuration and peripherals

This part has been submitted for a separate exhibit.

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## **SECTION 5: Conducted Emission**

### **Test Procedure and conditions**

EUT was placed on a wooden table of nominal size, 1.0m 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.

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

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## **SECTION 6: 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.

Step 1 All bit rates were measured.

Step 2 It was measured by maximum value rate in the above-mentioned.

<b>Test data</b>	: APPENDIX 2
<b>Test result</b>	: Pass

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## SECTION 7: Radiated Spurious Emission

### [Radiated]

#### Test Procedure

EUT was placed on a urethane platform of nominal size, 1m 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).**

(\*frequencies at which the margin is below the site uncertainty described in Section 3.4)

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.

#### - Dwell time factor

(FCC Public Notice DA 00-705 : Released March 30, 2000

Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems )

As the carrier frequency may occupy each channel twice for a period of 100ms when AFH functions and the number of Hopping channel is reduced to minimum 20, the following equation was used.

- Duty cycle correction factor =  $20\log [Dwell\ time(ms)^2 / 100(ms)]$

**Test data** : APPENDIX 2  
**Test result** : Pass

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