RADIO TEST REPORT

Test Report No. : 28BE0223-HO-01-A

Applicant	:	**Sony Computer Entertainment Inc.**
Type of Equipment	:	**WIRELESS CONTROLLER**
Model No.	:	**CECHZC2U**
FCC ID	:	**AK8CECHZC2**
Test standard	:	**FCC Part 15 Subpart C: 2007** **Section 15.207, Section 15.247**
Test Result	:	**Complied**

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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: October 1 to 9, 2007

Tested by: T. Shimada
Takumi Shimada
EMC Services

Approved by : H. Shimoji
Hironobu Shimoji
Assistant Manager of
EMC Services

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

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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	WIRELESS CONTROLLER
Model No	CECHZC2U
Serial No	1(Antenna Terminal Conducted test), 3(Radiated emission test)
Country of Manufacture	China
Receipt Date of Sample	September 19, 2007
Condition of EUT	Production 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 No: CECHZC2U is the WIRELESS CONTROLLER for game machine.

Product Specification

Clock frequency in the system	26MHz and 4MHz
Operating Temperature	5-35 deg. C
Power Supply	DC5V (USB Bus Power)
Battery Supply	DC3.7V
Size	93.7 x 157 x 62.3 mm
Weight	193 g

Radio Specification: Bluetooth (Ver. 2.0+EDR)

Equipment Type	Transceiver
Frequency of Operation	2402-2480MHz
Type of Modulation	FHSS (GFSK, π/4DQPSK, 8DPSK)
Bandwidth & Channel spacing	1MHz & 1MHz
Method of frequency generation	Synthesizer
Power Supply (inner)	DC2.8V
Antenna Type	lambda /4 Inverted F Type
Antenna Gain	-0.1dBi max

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

FCC 15.31 (e)
The stable voltage (DC2.8V) is constantly supplied to RF Module. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement
It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

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	N/A	N/A*1)
		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:** Section15.247(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:** Section15.247(a)(1)	Conducted	N/A		Complied
		IC: -	**IC:** RSS-210 A8.1 (a)				
4	Number of Hopping Frequency	**FCC:** ANSI C63.4:2003 13. Measurement of intentional radiators	**FCC:** Section15.247(a)(1)(iii)	Conducted	N/A		Complied
		IC: -	**IC:** RSS-210 A8.1 (d)				
5	Dwell time	**FCC:** ANSI C63.4:2003 13. Measurement of intentional radiators	**FCC:** Section15.247(a)(1)(iii)	Conducted	N/A		Complied
		IC: -	**IC:** RSS-210 A8.1 (d)				
6	Maximum Peak Output Power	**FCC:** ANSI C63.4:2003 13. Measurement of intentional radiators	**FCC:** Section15.247(b)(1)	Conducted	N/A		Complied
		IC: RSS-Gen 4.6	**IC:** RSS-210 A8.4 (2)				
7	Band Edge Compliance	**FCC:** ANSI C63.4:2003 13. Measurement of intentional radiators	**FCC:** Section15.247(d)	Conducted	N/A		Complied
		IC: -	**IC:** RSS-210 A8.5				
8	Spurious Emission	**FCC:** ANSI C63.4:2003 13. Measurement of intentional radiators	**FCC:** Section15.247(d)	Conducted/ Radiated	N/A	**[Tx]** 6.5dB, Horizontal, 84.088MHz **[Rx]** 7.3dB, Horizontal, 84.091MHz	Complied
		IC: RSS-Gen 4.7 RSS-Gen 4.8	**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.
*1) The test is not applicable since the EUT is not connected with AC power during wireless communication. The EUT is connected with AC power at standby and Movement of Dual Shock Motors and Charging Battery modes. Please see UL Japan Test Report No. 28BE0223-HO-01-C for the test data at those two modes

*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	RSS-Gen 4.6.1	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.

Spurious Emission (Radiated)
The measurement uncertainty for this test using Biconical antenna is ±4.88dB(3m).
The measurement uncertainty for this test using Logperiodic antenna is ±4.86dB(3m).
The measurement uncertainty for this test using Horn antenna is ±5.77dB.
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 ±3.0dB.

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 Modes

The mode used for test :

Test	Mode	Tested frequency
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)	2441MHz
Band Edge Compliance (Conducted)	Bluetooth Transmitting (Tx), DH5/3DH5 -Hopping ON -Hopping OFF	2402MHz 2480MHz
(Radiated)	Bluetooth Transmitting (Tx), DH5/3DH5	2402MHz 2480MHz
99% Occupied Bandwidth	Bluetooth Transmitting (Tx), DH5/3DH5 -Hopping ON -Hopping OFF	2402MHz 2441MHz 2480MHz

Remarks: Test was not performed at AFH mode, because the decrease of number of channel (min: 20ch) at AFH mode does not influence on the output power, bandwidth, and spurious emission of the EUT.
However, the limit level 125mW mode was used due to AFH and EDR mode.

4.2 Configuration and peripherals

This page has been submitted for a separate exhibit.

SECTION 5: 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 IF Bandwidth	QP: BW 120kHz(T/R) 20dBc : RBW: 100kHz VBW: 300kHz (S/A)	PK: RBW:1MHz/VBW: 1MHz AV: RBW:1MHz/VBW:10Hz 20dBc : RBW:100kHz/VBW:300kHz

- The carrier level and noise levels were confirmed at each position of X, Y and Z 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

SECTION 6: Bandwidth

Test Procedure

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

Test data : APPENDIX 2
Test result : Pass

SECTION 7: 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 8: 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 9: 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 10: 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