SAR TEST REPORT

Test Report No. : 30JE0235-HO-01-C

Applicant	:	**Sony Computer Entertainment Inc.**
Type of Equipment	:	**PSP**
Model No.	:	**PSP-3001**
FCC ID	:	**AK8PSP3001C**
Test regulation	:	**FCC47CFR 2.1093** **FCC OET BULLETIN 65, SUPPLEMENT C**
Test Result	:	**Complied**
Max. SAR Value	:	**0.188W/kg (Body, 2437MHz)**

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 limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Date of test: June 4, 2010

Tested by:

Hisayoshi Sato
Engineer of EMC Service

Approved by :

Mitsuru Fujimura
Manager of EMC Service

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

CONTENTS PAGE

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 1: Customer information

Company Name	Sony Computer Entertainment Inc.
Brand name	Sony
Address	2-6-21 Minami-Aoyama, Minato-ku, Tokyo, 107-0062, Japan
Telephone Number	+81-3-6483-8023
Facsimile Number	+81-3-6483-8642
Contact Person	Tatsuya Suzuki

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

2.1 Identification of E.U.T.

Type of Equipment		PSP
Model No.		PSP-3001
Serial No.		03-TSP1500H-0000106-PSPXXXX
Country of Manufacture		China
Condition of EUT		Production prototype (Not for sale: This sample is equivalent to mass-produced items.)
Receipt Date of Sample		May 31, 2010
Normal Battery	Type	Li-ion Battery
	Model name	PSP-S110 (PSP-S110 B)
	Rating	DC3.6V/1200mAh
	Manufacturer	SONY
Category Identified		Portable device
Accessories		Earphone, USB cable

2.2 Product Description

Radio Specification

Wireless LAN Module (IEEE802.11b)

Equipment Type	Transceiver
Frequency of Operation	2412-2462 MHz
Clock Frequency	40MHz
ITU Code	G1D
Type of Modulation	DSSS
Method of frequency generation	Crystal
Antenna model	HBS01-SO01
Antenna type	Inverted F antenna
Antenna Gain	+3.5 dBi (Max.)

SECTION 3 : Test standard information

3.1 Requirements for compliance testing defined by the FCC

The US Federal Communications Commission has released the report and order “Guidelines for Evaluating the Environmental Effects of RF Radiation", ET Docket No. 93-62 in August 1996. The order requires routine SAR evaluation prior to equipment authorization of portable transmitter devices, including portable telephones. For consumer products, the applicable limit is 1.6 mW/g for an uncontrolled environment and 8.0 mW/g for an occupational/controlled environment as recommended by the ANSI/IEEE standard C95.1-1992. According to the Supplement C of OET Bulletin 65 “Evaluating Compliance with FCC Guide-lines for Human Exposure to Radio frequency Electromagnetic Fields", released on Jun 29, 2001 by the FCC, the device should be evaluated at
maximum output power (radiated from the antenna) under “worst-case” conditions for normal or intended use, incorporating normal antenna operating positions, device peak performance frequencies and positions for maximum RF energy coupling.

1 Specific Absorption Rate (SAR) is a measure of the rate of energy absorption due to exposure to an RF transmitting source (wireless portable device).
2 IEEE/ANSI Std. C95.1-1992 limits are used to determine compliance with FCC ET Docket 93-62.

3.2 Procedure and result

No.	Item	Test Procedure	Limit	Remarks	Exclusion	Result
1	Human Exposure	FCC OET BULLETIN 65, SUPPLEMENT C	FCC47CFR 2.1093	SAR Measurement	N/A	Complied Max.SAR = 0.188 W/kg
Note: UL Japan, Inc. 's SAR Work Procedures QPM46 and QPM47						

Result of Max. SAR value

Max. SAR Value: 0.188W/kg (Body, 2437MHz)

3.3 Exposure limit

(A) Limits for Occupational/Controlled Exposure (W/kg)

Spatial Average (averaged over the whole body)	Spatial Peak (averaged over any 1g of tissue)	Spatial Peak (hands/wrists/feet/ankles averaged over 10g)
0.4	8.0	20.0

(B) Limits for General population/Uncontrolled Exposure (W/kg)

Spatial Average (averaged over the whole body	Spatial Peak (averaged over any 1g of tissue)	Spatial Peak (hands/wrists/feet/ankles averaged over 10g)
0.08	1.6	4.0

Occupational/Controlled Environments: are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure, (i.e. as a result of employment or occupation).

General Population/Uncontrolled Environments: are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

NOTE:GENERAL POPULATION/UNCONTROLLED EXPOSURE
SPATIAL PEAK(averaged over any 1g of tissue) LIMIT
1.6 W/kg

3.4 Test Location

*Shielded room for SAR testings
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

3.5 Confirmation before SAR testing

Correlation of Output Power between EMC and SAR tests (WLAN IEEE802.11b)
It was checked that the antenna port power was correlated within 0~+5% (FCC requirements)
The result is shown in Section 6.1.

- **Peak power in EMC test (May 31, 2010)**
  EMC power was measured for SAR test sample (S/N: 03-TSP1500H-0000106-PSPXXXX)

- **Peak and Average power in SAR test (June 4, 2010)**
  SAR power was measured for SAR test sample (S/N: 03-TSP1500H-0000106-PSPXXXX).
  Confirmation of Data rate
  The average power by the data rate was checked in the middle channel (2437 MHz.)

3.6 Confirmation after SAR testing

It was checked that the power drift [W] is within ±5%.The verification of power drift during the SAR test is that DASY4 system calculates the power drift by measureing the e-filed at the same location at beginning and the end of the scan measurement for each test position.

DASY4 system calucation Power drift value[dB] =20log(Ea)/(Eb)
Before SAR testing : Eb[V/m]
After SAR testing : Ea[V/m]

Limit of power drift[W] =+/-5%
X[dB]=10log[P]=10log(1.05/1)=10log(1.05)-10log(1)=0.212dB

from E-filed relations with power.
S=E*H=E^2/ η =P/4 π r^2 (η : Space impedance)
P=E^2*4 π r^2/η
Therefore, The correlation of power and the E-filed
XdB=10log(P)=10log(E)^2=20log(E)

From the above mentioned,
The calculated power drift of DASY4 System must be the less than +/-0.212dB.

3.7 Measurement procedure

IEEE 802.11b(Radiated power is always monitored by Spectrum Analyzer.)
The 11b (DSSS) mode test was performed on the CCK[11Mbps] modulation, because it was the highest peak power and data rate.

Step1. The searching for the worst position

Step2. Change to the Low and High channels
This test was performed at the worst position of Step 1.

Step3. Change to the separation
The measurement was performed with the distance, 5mm and 10mm to check if the shortest distance may not have the worst value at the conditions of the highest SAR value.

3.8 Test setup of EUT

When users operate or carry the EUT, it could be considered to touch or get close to their bodies. In order to assume this situation, we performed the test at the following positions. Please refer to "APPENDIX 1" for more details.

(1) Front:
The test was performed in touch with front surface of the EUT to the flat phantom.

(2) Rear :
The test was performed in touch with rear surface of the EUT to the flat phantom.

(3) Top :
The test was performed in touch with top edge of the EUT to the flat phantom.

(4) Bottom :
The test was performed in touch with bottom edge of the EUT to the flat phantom.

(5) Left side :
The test was performed in touch with left side of the EUT to the flat phantom.

(6) Right side :
The test was performed in touch with right side of the EUT to the flat phantom.

(7) Front (5mm) :
The measurement opened 5mm distance between the EUT and flat phantom.

(8) Front (10mm) :
The measurement opened 10mm distance between the EUT and flat phantom.

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

4.1 Operating modes for SAR testing

4.1.1 Setting of EUT

This EUT has IEEE.802.11b continuous transmitting modes.
The frequency band and the modulation used in the testing of IEEE.802.11b are shown as a following.

1. IEEE 802.11b mode

Tx frequency band : 2412-2462MHz
Channel : 1ch(2412MHz),6ch(2437MHz),11ch(2462MHz)
Modulation : DSSS (CCK)
Duty : 100%
Crest factor : 1

SECTION 5 : Test surrounding

5.1 Measurement uncertainty

The uncertainty budget has been determined for the DASY4 measurement system according to the SPEAG documents[6][7] and is given in the following Table.

Error Description	Uncertainty value ± %	Probability distribution	divisor	(ci) 1g	Standard Uncertainty (1g)	vi or veff
Measurement System						
Probe calibration	±6.8	Normal	1	1	±6.8	∞
Axial isotropy of the probe	±4.7	Rectangular	√3	$(1\text{-cp})^{1/2}$	±1.9	∞
Spherical isotropy of the probe	±9.6	Rectangular	√3	$(cp)^{1/2}$	±3.9	∞
Boundary effects	±2.0	Rectangular	√3	1	±1.2	∞
Probe linearity	±4.7	Rectangular	√3	1	±2.7	∞
Detection limit	±1.0	Rectangular	√3	1	±0.6	∞
Readout electronics	±0.3	Normal	1	1	±0.3	∞
Response time	±0.8	Rectangular	√3	1	±0.5	∞
Integration time	±2.6	Rectangular	√3	1	±1.5	∞
RF ambient Noise	±3.0	Rectangular	√3	1	±1.7	∞
RF ambient Reflections	±3.0	Rectangular	√3	1	±1.7	∞
Probe Positioner	±0.8	Rectangular	√3	1	±0.5	∞
Probe positioning	±9.9	Rectangular	√3	1	±5.7	∞
Max.SAR Eval.	±4.0	Rectangular	√3	1	±2.3	∞
Test Sample Related						
Device positioning	±2.9	Normal	1	1	±2.9	10
Device holder uncertainty	±3.6	Normal	1	1	±3.6	7
Power drift	±5.0	Rectangular	√3	1	±5.8	∞
Phantom and Setup						
Phantom uncertainty	±4.0	Rectangular	√3	1	±2.3	∞
Liquid conductivity (target)	±5.0	Rectangular	√3	0.64	±1.8	∞
Liquid conductivity (meas.)	±5.0	Rectangular	1	0.64	±3.2	∞
Liquid permittivity (target)	±5.0	Rectangular	√3	0.6	±1.7	∞
Liquid permittivity (meas.)	±5.0	Rectangular	1	0.6	±3.0	∞
Combined Standard Uncertainty					**±14.360**	
Expanded Uncertainty (k=2)					**±28.7**	

SECTION 6 : Confirmation before testing

6.1 Correlation of EMC power and SAR power

6.1.1 EMC power

This data is reference data of EMC test(Report No. 30JE0235-HO-01-A).
Date of test: May 31, 2010

IEEE802.11b , 11Mbps

Ch	Frequency	P/M Reading	Cable Loss	Atten.	Result	
					[dBm]	[mW]
	[MHz]	PK	[dB]	[dB]	PK	PK
Low	2412.0	0.93	1.10	10.00	12.03	15.96
Mid	2437.0	1.57	1.10	10.00	12.67	18.49
High	2462.0	0.96	1.10	10.00	12.06	16.07

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

6.1.2 SAR power

Date of test: June 4, 2010

IEEE802.11b , 11Mbps

Ch	Frequency	P/M Reading [dBm]		Cable Loss	Atten.	Result [dBm]		Result [mW]	
	[MHz]	PK	AVG	[dB]	[dB]	PK	AVG	PK	AVG
Low	2412.0	0.95	-1.51	1.10	10.00	12.05	9.59	16.03	9.10
Mid	2437.0	1.61	-0.93	1.10	10.00	12.71	10.17	18.66	10.40
High	2462.0	1.02	-1.48	1.10	10.00	12.12	9.62	16.29	9.16

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

6.1.3 Reference data of SAR test (Data rate determination)

Date of test: June 4, 2010

IEEE802.11b

Modulation	Data rate	Frequency	P/M Reading [dBm]		Cable Loss	Atten.	Result [dBm]		Result [mW]	
	[Mbps]	[MHz]	PK	AVG	[dB]	[dB]	PK	AVG	PK	AVG
DBPSK	1	2437.0	1.45	-0.99	1.10	10.00	12.55	10.11	17.99	10.26
DQPSK	2	2437.0	1.14	-0.95	1.10	10.00	12.24	10.15	16.75	10.35
CCK	5.5	2437.0	1.09	-0.99	1.10	10.00	12.19	10.11	16.56	10.26
	11	2437.0	1.57	-0.93	1.10	10.00	12.67	10.17	18.49	10.40

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

SECTION 7 : Measurement results

7.1 Body SAR 2450MHz

Liquid Depth (cm)	: **15.0**	Model	: **PSP-3001**
Parameters	: **εr =51.8, σ =1.99**	Serial No.	: **03-TSP1500H-0000106-PSPXXXX**
Ambient temperature(deg.c.)	: **23.5**	Modulation	: **DSSS**
Relative Humidity (%)	: **51**	Crest factor	: **1**
Date	: **June 4, 2010**	Measured By	: **Hisayoshi Sato**

BODY SAR RESULT

Frequency			Modulation	Phantom Section	EUT Set-up Conditions			Liquid Temp.[deg.c]		SAR(1g) [W/kg]
Band	Channel	[MHz]			Antenna	Position	Separatio [mm]	Before	After	Maximum value of multi-peak
11b	**Step 1. Search for the worst position**									
	6	2437	CCK(11Mbps)	Flat	Fixed	Front	0	23.0	23.0	**0.187**
	6	2437	CCK(11Mbps)	Flat	Fixed	Rear	0	23.0	23.0	**0.188**
	6	2437	CCK(11Mbps)	Flat	Fixed	Top	0	23.0	23.0	**0.078**
	6	2437	CCK(11Mbps)	Flat	Fixed	Bottom	0	23.0	23.0	**0.036**
	6	2437	CCK(11Mbps)	Flat	Fixed	Left side	0	23.0	23.0	**0.086**
	6	2437	CCK(11Mbps)	Flat	Fixed	Right Side	0	23.0	23.0	**0.00483**
	Step 2. Change to the channels									
	1	2412	CCK(11Mbps)	Flat	Fixed	Rear	0	23.0	23.0	**0.181**
	11	2462	CCK(11Mbps)	Flat	Fixed	Rear	0	23.0	23.0	**0.171**
	Step3. Change to the separation									
	6	2437	CCK(11Mbps)	Flat	Fixed	Rear	5	23.0	23.0	**0.065**
	6	2437	CCK(11Mbps)	Flat	Fixed	Rear	10	23.0	23.0	**0.037**