



SAR TEST REPORT

Test Report No. : 28FE0117-HO-01-D

Applicant : Sony Computer Entertainment Inc.
Type of Equipment : PSP
Model No. : PSP-2001
FCC ID : AK8PSP2001
Test regulation : FCC47CFR 2.1093
FCC OET BULLETIN 65, SUPPLEMENT C
Test Result : Complied
Max. SAR Value : 0.256W/kg (Body, 2462MHz)

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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 limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
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Date of test:

February 13, 2008

Tested by:

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Approved by :

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NVLAP LAB CODE: 200572-0

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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	+81-3-6483-8625
Facsimile Number	+81-3-6483-8626
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-2001	
Serial No.	03-TSP1220H-0000650-PSPXXXX	
Country of Manufacture	Japan	
Condition of EUT	Production prototype (Not for sale: This sample is equivalent to mass-produced items.)	
Receipt Date of Sample	January 18, 2008	
Battery *	Type	Li-ion Battery
	Model name	PSP-S110
	Rating	DC3.6V/1200mAh
	Manufacturer	SONY
Option Battery 1	Type	Li-ion Battery
	Model name	PSP-110
	Rating	DC3.6V/1800mAh
	Manufacturer	SONY
Option Battery 2	Type	Li-ion Battery
	Model name	PSP-110
	Rating	DC3.6V/1800mAh
	Manufacturer	Matsushita
Option Battery 3	Type	Li-ion Battery
	Model name	PSP-280
	Rating	DC3.6V/2200mAh
	Manufacturer	SONY
Category Identified	Portable device	
Accessories	Earphone, USB cable	

* It was used for SAR testing.

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	HFS36-SO01
Antenna type	Inverted F antenna
Antenna Gain	+3.5 dBi (Max.)

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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.

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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 = 0.256 W/kg

Note: UL Japan, Inc. 's SAR Work Procedures QPM46 and QPM47

Result of Max. SAR value

Max. SAR Value (IEEE 802.11b) : 0.256W/kg (Body 2462MHz)

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

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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 at EMC test
EMC power was measured for EMC test sample (S/N: 03-TSP1220H-0000661 PSPXXXX).
- Peak power at SAR test
SAR power was measured for SAR test sample (S/N: 03-TSP1220H-0000650 PSPXXXX).

3.6 Confirmation after SAR testing

It was checked that the power drift is within $\pm 5\%$ in the evaluation procedure of SAR testing.

The result is shown in APPENDIX 2.

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3.7 Measurement procedure

1. IEEE 802.11b

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.

Change distance between EUT and SAM Twin Phantom

Step3. Change separation

The measurement was performed with the distance, 5mm,10mm and 15mm to check if the shortest distance may not have the worst value at the conditions of the highest SAR value.

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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 section of SAM Twin phantom.

(2) Rear :

The test was performed in touch with Rear surface of the EUT to the flat section of SAM Twin phantom.

(3) Left Side :

The test was performed in touch with Left Side surface of the EUT to the flat section of SAM Twin phantom.

(4) Bottom :

The test was performed in touch with Bottom surface of the EUT to the flat section of SAM Twin phantom.

(5) Top :

The test was performed in touch with Top surface of the EUT to the flat section of SAM Twin phantom.

(6) Front (5mm) :

The measurement opened 5mm distance between the EUT and flat section of SAM Twin Phantom.

(7) Front (10mm) :

The measurement opened 10mm distance between the EUT and flat section of SAM Twin Phantom.

(8) Front (15mm) :

The measurement opened 15mm distance between the EUT and flat section of SAM Twin Phantom.

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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 is shown as a following.

1. IEEE 802.11b mode
 - Tx frequency band : 2412-2462MHz
 - Channel : 1ch(2412MHz),6ch(2437MHz),11ch(2462MHz)
 - Modulation : DSSS (CCK)
 - Crest factor : 1
 - Battery* : M/N : PSP-S110
Rating : DC3.6V/1200mAh
Manufacturer : SONY

* The SAR test was performed in the worst battery based on the result of UL Japan, Test Report No. 27JE0092-HO-D-R1 for SAR testing.

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	±4.8	Normal	1	1	±4.8	∞
Axial isotropy of the probe	±4.7	Rectangular	√3	(1-cp) ^{1/2}	±1.9	∞
Spherical isotropy of the probe	±9.6	Rectangular	√3	(cp) ^{1/2}	±3.9	∞
Boundary effects	±1.0	Rectangular	√3	1	±0.6	∞
Probe linearity	±4.7	Rectangular	√3	1	±2.7	∞
Detection limit	±1.0	Rectangular	√3	1	±0.6	∞
Readout electronics	±1.0	Normal	1	1	±1.0	∞
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	±0.4	Rectangular	√3	1	±0.2	∞
Probe positioning	±2.9	Rectangular	√3	1	±1.7	∞
Max.SAR Eval.	±1.0	Rectangular	√3	1	±0.6	∞
Test Sample Related						
Device positioning	±2.9	Normal	1	1	±2.9	9
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					±12.17	
Expanded Uncertainty (k=2)					±24.34	

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SECTION 6 : Confirmation before/after testing

6.1 Conducted power before

6.1.1 Correlation of EMC power and SAR power

This data is reference data of EMC test. (Report No. 28FE0117-HO-01-A)

Date of test: January 23, 2008

IEEE802.11b , 11Mbps

Ch	Freq. [MHz]	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm]	[mW]
Low	2412.0	1.35	1.10	10.00	12.45	17.58
Mid	2437.0	0.91	1.10	10.00	12.01	15.89
High	2462.0	0.27	1.10	10.00	11.37	13.71

Sample Calculation:

Result = Reading + Cable Loss (supplied by customer) + Attenuator

This data is confirmation before SAR test.

Date of test: February 13, 2008

IEEE802.11b , 11Mbps

Ch	Freq. [MHz]	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm]	[mW]
Low	2412.0	1.35	1.10	10.00	12.45	17.58
Mid	2437.0	1.11	1.10	10.00	12.21	16.63
High	2462.0	0.47	1.10	10.00	11.57	14.35

Sample Calculation:

Result = Reading + Cable Loss (supplied by customer) + Attenuator

6.1.2 Reference data of SAR test (Data rate determination)

February 13, 2008

[IEEE802.11b] Rate check (Peak power)

Modulation	Data rate	Freq. [MHz]	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
						[dBm]	[mW]
DBPSK	1	2437.0	1.01	1.10	10.00	12.11	16.26
DQPSK	2	2437.0	1.02	1.10	10.00	12.12	16.29
CCK	5.5	2437.0	0.60	1.10	10.00	11.70	14.79
	11	2437.0	1.11	1.10	10.00	12.21	16.63

Sample Calculation:

Result = Reading + Cable Loss (supplied by customer) + Attenuator

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