



Test report No. : 31HE0013-HO-F-R1  
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FCC ID : AK8SGPT211US  
Issued date : May 23, 2011  
Revised date : May 31, 2011

# SAR TEST REPORT

Test Report No. : 31HE0013-HO-F-R1

Applicant : Sony Corporation  
Type of Equipment : Tablet Device  
Model No. : SGPT211US/S  
FCC ID : AK8SGPT211US  
Test regulation : FCC47CFR 2.1093  
FCC OET Bulletin 65, Supplement C (Edition 01-01)  
Test Result : Complied  
Max SAR Measured : GSM850 : 0.651 W/kg  
PCS1900 : 1.05 W/kg  
WCDMA Band V : 1.15 W/kg  
WCDMA Band II : 1.39 W/kg  
WLAN 11b : 0.189 W/kg  
Simultaneous transmission : Complied

## SAR result

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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 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.

This report is a revised version of 31HE0013-HO-F. 31HE0013-HO-F is replaced with this report.

### Date of test:

March 25 to April 25, 2011

### Representative test engineer:

Miyo Kishimoto  
Engineer of WiSE Japan,  
UL Verification Service

### Approved by :

Mitsuru Fujimura  
Leader of WiSE Japan  
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13-EM-F0429

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## SECTION 1: Customer information

Company Name : Sony Corporation  
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Telephone Number : +81-263-71-8272  
Facsimile Number : +81-263-71-8984  
Contact Person : Ryui Tatsumi

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

### 2.1 Identification of E.U.T.

Type of Equipment : Tablet Device  
Model No. : SGPT211US/S  
Serial No. : DVT102004000011  
Rating : Li-ion Battery (Model No.: SGPBP01)  
DC3.7V/ 3080mAh /12wh  
Option Battery : N/A  
Accessory : Ear phone (typical)  
Receipt Date of Sample : March 25, 2011  
Country of Mass-production : Japan  
Condition of EUT : Production prototype  
Modification of EUT : No Modification by the test lab

### 2.2 Product description

Model No: SGPT211US/S (referred to as the EUT in this report) is the Tablet Device.

Feature of EUT: This model is co-located with Wireless LAN(IEEE802.11b/g/n)/Bluetooth module and Wireless WAN module(GPRS/EDGE/HSPA/WCDMA). Each antenna is included in the equipment. This model can be co-operated Wireless WAN + Wireless LAN and Wireless WAN + Bluetooth. However, Wireless LAN and Bluetooth cannot be co-operated.

**Radio Specification****Bluetooth**

Equipment Type	Transceiver
Frequency of Operation	2402-2480MHz
Other Clock Frequency	26MHz, 38.4MHz, 32.768kHz
Type of Modulation	FHSS
Bandwidth & Channel spacing	1MHz & 1MHz
Antenna Type	Inverted-F
Antenna Gain	1.5dBi
Antenna Connector Type	N/A

**WLAN (IEEE802.11b/g/n-20)**

Equipment Type	Transceiver
Frequency of Operation	2412-2462MHz
Other Clock Frequency	26MHz, 38.4MHz, 32.768kHz
Type of Modulation	DSSS, OFDM
Bandwidth & Channel spacing	20MHz & 5MHz
Antenna Type	Inverted-F
Antenna Gain	1.5dBi
Antenna Connector Type	N/A

**GSM**

Equipment Type	Transceiver
Frequency of Operation	[Up Link] GSM850: 824 – 849MHz PCS: 1850 – 1910MHz [Down Link] GSM850: 869 – 894MHz PCS: 1930 – 1990MHz
Type of Modulation	GMSK , 8PSK
Bandwidth & Channel spacing	200kHz & 200kHz
Antenna Type	Inverted-F
Antenna Gain	2.5dBi
Antenna Connector Type	U.FL Compatible connector

**W-CDMA**

Equipment Type	Transceiver
Frequency of Operation	[Up Link] Band V: 824 – 849MHz Band II: 1850 – 1910MHz [Down Link] Band V: 869 – 894MHz Band II: 1930 – 1990MHz
Type of Modulation	QPSK
Bandwidth & Channel spacing	5MHz & 200kHz
Antenna Type	Inverted-F
Antenna Gain	2.5dBi
Antenna Connector Type	U.FL Compatible connector

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**GPS**

Equipment Type	Receiver
Receiving Frequency	1575.42MHz
Type of Modulation	Spread Spectrum modulation
Channel spacing	2.046MHz
Antenna Type	Internal
Antenna Connector Type	U.FL Compatible connector

## 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.

#### **Supplement C (Edition 01-01) to OET Bulletin 65 (Edition 97-01):**

Supplement C (Edition 01-01) - Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions  
OET Bulletin 65 (Edition 97-01) - Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields

#### **IEEE Std 1528-2003:**

IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques Supplement C

In additions;

KDB 447498 D01(v04):	Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies
KDB941225	SAR Measurement Procedures for 3G Devices 3GPP R6 HSPA and R7 HSPA+ SAR Guidance Recommended SAR Test Reduction Procedures for GSM/GPRS/EDGE
KDB 248227 (rev.1.2):	SAR Measurement Procedures for 802.11a/b/g Transmitters

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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

Note: UL Japan, Inc. 's SAR Work Procedures 13-EM-W0429 and 13-EM-W0430

#### 1. Stand-alone SAR result

##### Maximum 1g SAR

Mode	1g SAR [W/kg]
GSM850	0.651
PCS1900	1.05
WCDMA Band V	1.15
WCDMA Band II	1.39
WLAN 11b	0.189

#### 2. Simultaneous transmission SAR result

##### <Simultaneous Procedure>

This EUT has the unlicensed transmitter such as Wireless LAN (802.11b/g/n) & Bluetooth devices besides licensed transmitter (GSM/WCDMA), and the following simultaneous transmission is possible.

- a) GSM/WCDMA + Wireless LAN
- b) GSM/WCDMA + Bluetooth

\*The antennas of Wireless LAN and Bluetooth are shared.

##### a) GSM/WCDMA + Wireless LAN

Simultaneous transmitter evaluation based on the KDB447498 3) b) ii) (1)

Step1. WCDMA/GSM antenna is >5cm form Wireless LAN antenna

Step2. Wireless LAN power > 2Pref (=60/f<sub>[GHz]</sub>).

Step3. Stand-alone SAR for Wireless LAN

Step4. Simultaneous transmission is possible (GSM/WCDMA + Wireless LAN)

Step5.  $\sum$ 1g SAR (GSM/WCDMA + Wireless LAN) < 1.6W/kg

**Max. SAR Measured (GSM/WCDMA + WLAN) :1.58 W/kg**

=1.39(from WCDMA II band) + 0.189 (WLAN)

Step6. No simultaneous transmission SAR

##### b) GSM/WCDMA + Bluetooth

Simultaneous transmitter evaluation based on the KDB447498 3) b) ii) (1)

Step1. WCDMA/GSM antenna is >5cm form Wireless antenna

Step2. Bluetooth power < Pref (=1/2 \*60/f<sub>[GHz]</sub>).

Refer to the FCC15.247 test report (31HE0013-HO-C)

**Max.Power (BT) :-0.08dBm (0.98mW)**

Step3. No stand-alone SAR for Bluetooth

Step4. No simultaneous transmission SAR

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### **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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## SECTION4 : Description of the operating mode

### 4.1 Operating modes

Mode	Duty cycle or Multi class(GSM)	Packet DATA	Testing item
GSM850	Multi class 10	PN9	Power , SAR
PCS1900	Multi class 10	PN9	Power , SAR
WCDMA V	100%	PN9	Power , SAR
WCDMA II	100%	PN9	Power , SAR
IEEE 802.11b	100%	PN9	Power , SAR
IEEE 802.11g	100%	PN9	Power
IEEE 802.11n	100%	PN9	Power
<b>WWAN</b>			
The communication link was set up with the Wireless Communications Test Set (Agilent). The EUT was command to operate at maximum transmit power.			
<b>WLAN</b>			
*Power of the EUT was set by the software as follows; Power setting: 11b 13.0dBm, 11g 11.5dBm, 11n-20 11.5dBm Software/version: tcommand/SDK3.1 Build-187 *This setting of software is the worst case. Any conditions under the normal use do not exceed the condition of setting. In addition, end users cannot change the settings of the output power of the product.			

#### 4.2 SAR testing operating modes

The frequency band and the modulation used in this test are shown as a following.

##### Output power measurement

Maximum output power was verified on the high, middle and low channels according to the procedures described in section 5.2 of 3GPP TS 34.121 and "KDB 941225 document".

The WCDMA and HSPA modes of EUT were verified each channel and "sub-tests" according to Release-6 procedures in section 5.2 of 3GPP TS 34.121.

##### 1. GSM850 (Power level 5 / Multi-slot class 10)

Frequency band : UP Link 824.2MHz – 848.8MHz / Down Link 869.2MHz – 893.8MHz

Channel : 128ch(UP Link: 824.2MHz)

Modulation : GPRS(GMSK) Tx2slot

Crest factor : 4.2

\*The GPRS 2up mode was maximum time-based average power. The power of other mode was lower than GPRS 2up mode.

\*The other channels are measured if the SAR result at max. avg power channel will be above 0.8W/kg

GSM850 SAR Power										
Mode		Ch	Frequency [MHz]	Time-based AVG				Slotted-AVG		
				P/M Reading [dBm] Time-AVG	Atten. [dB]	Cable Loss [dB]	Result [dBm] Time-AVG	Agilent Reading [dBm] slotted AVG	Cable Loss [dB]	Result [dBm] Slotted AVG
				GPRS (CS1)	1slot	128	824.2	-0.77	23.40	0.61
	1slot	190	836.6	-1.49	23.40	0.61	22.52	27.81	4.63	32.44
	1slot	251	848.8	-2.07	23.40	0.61	21.94	27.14	4.63	31.77
	2slots	128	824.2	-0.30	23.40	0.61	23.71	26.03	4.63	30.66
	2slots	190	836.6	-1.11	23.40	0.61	22.90	25.25	4.63	29.88
	2slots	251	848.8	-1.64	23.40	0.61	22.37	24.57	4.63	29.20
EGPRS (MCS1)	1slot	128	824.2	-0.74	23.40	0.61	23.27	28.59	4.63	33.22
	1slot	190	836.6	-1.51	23.40	0.61	22.50	27.81	4.63	32.44
	1slot	251	848.8	-2.16	23.40	0.61	21.85	27.12	4.63	31.75
	2slots	128	824.2	-0.34	23.40	0.61	23.67	26.03	4.63	30.66
	2slots	190	836.6	-1.06	23.40	0.61	22.95	25.24	4.63	29.87
	2slots	251	848.8	-1.68	23.40	0.61	22.33	24.56	4.63	29.19
EGPRS (MCS5)	1slot	128	824.2	-5.05	23.40	0.61	18.96	23.15	4.63	27.78
	1slot	190	836.6	-5.73	23.40	0.61	18.28	23.36	4.63	27.99
	1slot	251	848.8	-6.69	23.40	0.61	17.32	21.65	4.63	26.28
	2slots	128	824.2	-3.20	23.40	0.61	20.81	23.08	4.63	27.71
	2slots	190	836.6	-3.96	23.40	0.61	20.05	22.33	4.63	26.96
	2slots	251	848.8	-4.49	23.40	0.61	19.52	21.64	4.63	26.27

Time based AVG Results = P/M Reading + Atten.Loss + Cable Loss

Slotted AVG Results = Agilent Reading + Cable Loss

23.71 :Maximum time based AVG power

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2. PCS 1900 (Power level 0 / Multi-slot class 10)

Frequency band : UP Link 1850.2MHz – 1909.8MHz / Down Link 1930.2MHz – 1989.8MHz  
 Channel : 810ch(UP Link: 1909.8MHz)  
 Modulation : GPRS(GMSK) Tx2slot  
 Crest factor : 4.2

\*The GPRS 2up mode was maximum time based average power. The power of other mode was lower than GPRS 2up mode.

\*The other channels are measured if the SAR result at max. avg power channel will be above 0.8W/kg

PCS1900 SAR Power										
Mode		Ch	Frequency [MHz]	Time-based AVG				Slotted-AVG		
				P/M Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Agilent Reading [dBm]	Cable Loss [dB]	Result [dBm]
				Time-AVG			Time-AVG	slotted AVG		Slotted AVG
GPRS (CS1)	1slot	512	1850.2	-5.50	23.40	1.05	18.95	23.57	5.30	28.87
	1slot	661	1880.0	-5.13	23.40	1.05	19.32	23.97	5.30	29.27
	1slot	810	1909.8	-4.21	23.40	1.05	20.24	24.83	5.30	30.13
	2slots	512	1850.2	-3.02	23.40	1.05	21.43	23.08	5.30	28.38
	2slots	661	1880.0	-2.65	23.40	1.05	21.80	23.42	5.30	28.72
	2slots	810	1909.8	-1.84	23.40	1.05	22.61	24.15	5.30	29.45
EGPRS (MCS1)	1slot	512	1850.2	-5.54	23.40	1.05	18.91	23.55	5.30	28.85
	1slot	661	1880.0	-5.12	23.40	1.05	19.33	23.96	5.30	29.26
	1slot	810	1909.8	-4.23	23.40	1.05	20.22	24.82	5.30	30.12
	2slots	512	1850.2	-3.03	23.40	1.05	21.42	23.07	5.30	28.37
	2slots	661	1880.0	-2.65	23.40	1.05	21.80	23.42	5.30	28.72
	2slots	810	1909.8	-1.87	23.40	1.05	22.58	24.15	5.30	29.45
EGPRS (MCS5)	1slot	512	1850.2	-8.13	23.40	1.05	16.32	20.17	5.30	25.47
	1slot	661	1880.0	-7.82	23.40	1.05	16.63	20.47	5.30	25.77
	1slot	810	1909.8	-6.92	23.40	1.05	17.53	21.18	5.30	26.48
	2slots	512	1850.2	-5.46	23.40	1.05	18.99	20.19	5.30	25.49
	2slots	661	1880.0	-5.32	23.40	1.05	19.13	20.49	5.30	25.79
	2slots	810	1909.8	-4.44	23.40	1.05	20.01	21.20	5.30	26.50

Time based AVG Results = P/M Reading + Atten.Loss + Cable Loss

Slotted AVG Results = Agilent Reading + Cable Loss

       :Maximum time based AVG power

## 3. WCDMA V (TPC all ones / Power class 3)

Frequency band : UP Link 826.4MHz – 846.6MHz / Down Link 871.4MHz – 891.6MHz

UP Link Channel : 4233ch(846.6MHz)

Modulation : QPSK

Crest factor : 1

\*The 12.2k RMC mode was maximum average power. The power of other mode was lower than 12.2k RMC mode.

\*The other channels are measured if the SAR result at max. avg power channel will be above 0.8W/kg

WCDMA Vband					
Mode	Ch	Frequency [MHz]	Reading AVG [dBm]	loss [dB]	Result [dBm]
RMC 12.2kbps	4132	826.4	0.51	24.01	24.52
	4183	836.6	0.43	24.01	24.44
	4233	846.6	0.64	24.01	24.65
HSDPA Subtest1	4132	826.4	-0.25	24.01	23.76
	4183	836.6	-0.37	24.01	23.64
	4233	846.6	-0.23	24.01	23.78
HSDPA Subtest2	4132	826.4	-0.32	24.01	23.69
	4183	836.6	-0.41	24.01	23.60
	4233	846.6	-0.29	24.01	23.72
HSDPA Subtest3	4132	826.4	-0.82	24.01	23.19
	4183	836.6	-0.94	24.01	23.07
	4233	846.6	-0.75	24.01	23.26
HSDPA Subtest4	4132	826.4	-0.83	24.01	23.18
	4183	836.6	-0.94	24.01	23.07
	4233	846.6	-0.76	24.01	23.25
HSUPA Subtest1	4132	826.4	-0.25	24.01	23.76
	4183	836.6	-0.36	24.01	23.65
	4233	846.6	-0.27	24.01	23.74
HSUPA Subtest2	4132	826.4	-2.24	24.01	21.77
	4183	836.6	-2.28	24.01	21.73
	4233	846.6	-2.26	24.01	21.75
HSUPA Subtest3	4132	826.4	-1.23	24.01	22.78
	4183	836.6	-1.40	24.01	22.61
	4233	846.6	-1.26	24.01	22.75
HSUPA Subtest4	4132	826.4	-2.27	24.01	21.74
	4183	836.6	-2.41	24.01	21.60
	4233	846.6	-2.28	24.01	21.73
HSUPA Subtest5	4132	826.4	-0.25	24.01	23.76
	4183	836.6	-0.35	24.01	23.66
	4233	846.6	-0.26	24.01	23.75

Results = Reading + Loss

: Maximum power

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## 4. WCDMA II (TPC all ones / Power class 3)

Frequency band : UP Link 1852.4MHz – 1907.6MHz / Down Link 1932.4MHz – 1987.6MHz

UP Link Channel : 9400ch(1880.0MHz)

Modulation : QPSK

Crest factor : 1

\*The 12.2k RMC mode was maximum average power. The power of other mode was lower than 12.2k RMC mode.

\*The other channels are measured if the SAR result at max. avg power channel will be above 0.8W/kg

WCDMA IIband					
Mode	Ch	Frequency [MHz]	Reading AVG [dBm]	loss [dB]	Result [dBm]
RMC 12.2kbps	9262	1852.4	-1.14	24.45	23.31
	9400	1880.0	-1.01	24.45	23.44
	9538	1907.6	-1.10	24.45	23.35
HSDPA Subtest1	9262	1852.4	-1.93	24.45	22.52
	9400	1880.0	-1.79	24.45	22.66
	9538	1907.6	-1.87	24.45	22.58
HSDPA Subtest2	9262	1852.4	-1.93	24.45	22.52
	9400	1880.0	-1.79	24.45	22.66
	9538	1907.6	-1.85	24.45	22.60
HSDPA Subtest3	9262	1852.4	-2.37	24.45	22.08
	9400	1880.0	-2.26	24.45	22.19
	9538	1907.6	-2.31	24.45	22.14
HSDPA Subtest4	9262	1852.4	-2.34	24.45	22.11
	9400	1880.0	-2.25	24.45	22.20
	9538	1907.6	-2.30	24.45	22.15
HSUPA Subtest1	9262	1852.4	-1.88	24.45	22.57
	9400	1880.0	-1.74	24.45	22.71
	9538	1907.6	-1.85	24.45	22.60
HSUPA Subtest2	9262	1852.4	-3.86	24.45	20.59
	9400	1880.0	-3.69	24.45	20.76
	9538	1907.6	-3.78	24.45	20.67
HSUPA Subtest3	9262	1852.4	-3.06	24.45	21.39
	9400	1880.0	-2.70	24.45	21.75
	9538	1907.6	-2.78	24.45	21.67
HSUPA Subtest4	9262	1852.4	-3.82	24.45	20.63
	9400	1880.0	-3.71	24.45	20.74
	9538	1907.6	-3.83	24.45	20.62
HSUPA Subtest5	9262	1852.4	-1.84	24.45	22.61
	9400	1880.0	-1.74	24.45	22.71
	9538	1907.6	-1.80	24.45	22.65

Results = Reading + Loss

: Maximum power

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## 5. IEEE802.11b

Frequency band : 2412MHz-2462MHz

Channel : 6ch(2437MHz)

Modulation : 11b DBPSK(1Mbps)

Crest factor : 1

\*The 11b DBPSK mode was maximum average power. The power of other mode (11g/n) was lower than 11b DBPSK mode.

**[IEEE802.11b] Rate Check**

Rate [Mbps]	Freq. [MHz]	P/M Reading [dBm]		Cable Loss [dB]	Atten. [dB]	Result			
		PK	AVG			[dBm]		[mW]	
1.0	2437	6.25	3.74	0.97	10.07	17.29	14.78	53.58	30.06
2.0	2437	6.24	3.69	0.97	10.07	17.28	14.73	53.46	29.72
5.5	2437	6.27	3.70	0.97	10.07	17.31	14.74	53.83	29.79
11.0	2437	6.26	3.63	0.97	10.07	17.30	14.67	53.70	29.31

**IEEE802.11b 1Mbps**

Ch	Frequency [MHz]	P/M Reading [dBm]		Cable Loss [dB]	Atten. [dB]	Result			
		PK	AVG			[dBm]		[mW]	
1	2412	5.95	3.52	0.97	10.07	16.99	14.56	50.00	28.58
6	2437	6.25	3.74	0.97	10.07	17.29	14.78	53.58	30.06
11	2462	5.95	3.47	0.97	10.07	16.99	14.51	50.00	28.25

:Maximum AVG power

**[IEEE802.11g] Rate Check**

Rate [Mbps]	Freq. [MHz]	P/M Reading [dBm]		Cable Loss [dB]	Atten. [dB]	Result			
		PK	AVG			[dBm]		[mW]	
6.0	2437	10.02	1.33	0.97	10.07	21.42	12.37	138.68	17.26
9.0	2437	9.76	1.33	0.97	10.07	21.16	12.37	130.62	17.26
12.0	2437	10.20	1.29	0.97	10.07	21.56	12.33	143.22	17.10
18.0	2437	9.68	1.31	0.97	10.07	21.06	12.35	127.64	17.18
24.0	2437	10.63	1.16	0.97	10.07	21.86	12.20	153.46	16.60
36.0	2437	10.27	1.09	0.97	10.07	21.43	12.13	139.00	16.33
48.0	2437	10.27	1.01	0.97	10.07	21.35	12.05	136.46	16.03
54.0	2437	8.95	-0.93	0.97	10.07	18.09	10.11	64.42	10.26

**IEEE802.11g 6Mbps**

Ch	Frequency [MHz]	P/M Reading [dBm]		Cable Loss [dB]	Atten. [dB]	Result			
		PK	AVG			[dBm]		[mW]	
1	2412	10.38	1.15	0.97	10.07	21.42	12.19	138.68	16.56
6	2437	10.02	1.33	0.97	10.07	21.06	12.37	127.64	17.26
11	2462	10.42	1.57	0.97	10.07	21.46	12.61	139.96	18.24

\*\*: SAR is not required for 802.11g channels when the maximum average output power is less than 1/4dB higher than that measured on the corresponding 802.11b channels.

Sample Calculation:

Result = Reading + Cable Loss (no used) + Attenuator

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**[IEEE802.11n 20Mband] Rate Check**

Rate [Mbps]	Freq. [MHz]	P/M Reading [dBm]		Cable Loss [dB]	Atten. [dB]	Result			
		PK	AVG			[dBm]		[mW]	
MCS0	2437	9.81	0.97	0.97	10.07	20.85	12.01	121.62	15.89
MCS1	2437	9.82	0.85	0.97	10.07	20.74	11.89	118.58	15.45
MCS2	2437	9.94	0.88	0.97	10.07	20.89	11.92	122.74	15.56
MCS3	2437	9.91	1.21	0.97	10.07	21.19	12.25	131.52	16.79
MCS4	2437	9.98	1.08	0.97	10.07	21.13	12.12	129.72	16.29
MCS5	2437	9.62	0.60	0.97	10.07	20.29	11.64	106.91	14.59
MCS6	2437	9.43	-1.09	0.97	10.07	18.41	9.95	69.34	9.89
MCS7	2437	7.10	-2.52	0.97	10.07	14.65	8.52	29.17	7.11

**IEEE802.11n MCS3**

Ch	Frequency [MHz]	P/M Reading [dBm]		Cable Loss [dB]	Atten. [dB]	Result			
		PK	AVG			[dBm]		[mW]	
1	2412	10.35	1.49	0.97	10.07	21.39	12.53	137.72	17.91
6	2437	9.91	1.21	0.97	10.07	20.95	12.25	124.45	16.79
11	2462	10.07	1.45	0.97	10.07	21.11	12.49	129.12	17.74

\*\* : SAR is not required for 802.11n channels when the maximum average output power is less than 1/4dB higher than that measured on the corresponding 802.11b channels.

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

**4.3 Confirmation before SAR testing****Correlation of Output Power between EMC and SAR tests**

It was checked that the antenna port power was correlated within 0~+5% (FCC requirements)  
SAR power is equal to DATA of EMC test. (March 25, 2011) based on the following reason.

- EMC and SAR tests are performed with the same test sample (S/N: DVT102004000011) under the same condition.
- EMC and SAR tests are performed at the same laboratory.

**4.4 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 DASY5 system calculates the power drift by measuring the e-filed at the same location at beginning and the end of the scan measurement for each test position.

DASY5 system calculation 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.

$p = E^2 / \eta = E^2 /$

Therefore, The correlation of power and the E-filed

XdB = 10log(P) = 10log(E)^2 = 20log(E)

Therefore,

The calculated power drift of DASY5 System must be the less than +/-0.212dB.

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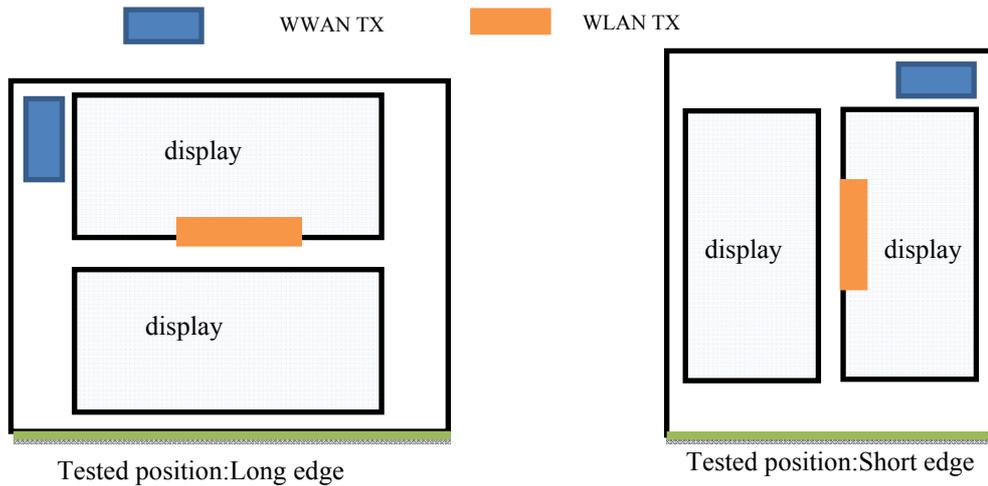
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## SECTION5 : Description of the Body setup

The body exposure configuration has two types for “opened lid” and “closed lid” since this EUT has dual displays of clamshell type.

### 5.1 Opened lid



### Procedure for SAR testing

-The tested distance were performed according to the KDB941225 D07 v01 (SAR Evaluation Procedures for UMPC Mini-Tablet Devices) & KDB inquiry tracking number 631754 (since Jan. 2011).

-The tested position was performed according to the KDB447498 4)b)ii) (B) two fixed display orientations & KDB inquiry 631754.

#### i) Test position

##### (1) Long edge :

The measurement separated 5mm distance between the long edge of opened lid EUT and Flat Phantom.

##### (2) Short edge :

The measurement separated 5mm distance between the short edge of opened lid EUT and Flat Phantom.

##### (3) Back :

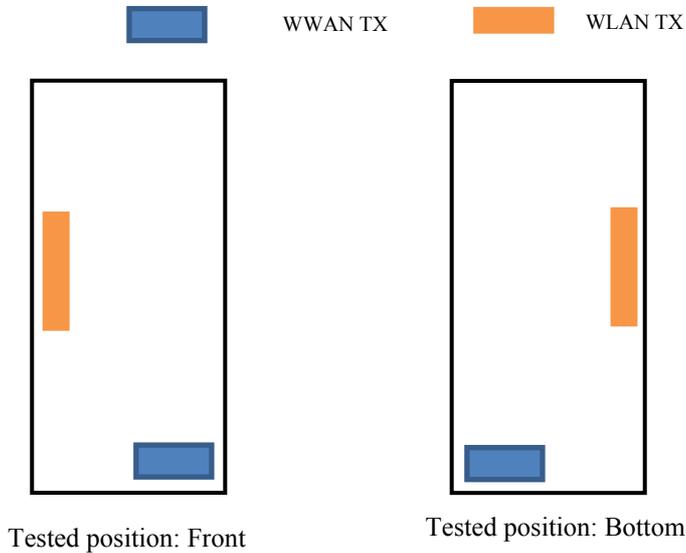
The measurement separated 5mm distance between the back of opened lid EUT and Flat Phantom.

##### (4) Display front

The measurement separated 5mm distance between the display front of opened lid EUT and Flat Phantom.

Refer to the Appendix 1.

## 5.2 Closed lid



### Procedure for SAR testing

-The tested distance was performed according to the KDB941225 D07 v01 (SAR Evaluation Procedures for UMPC Mini-Tablet Devices) & KDB inquiry 631754.

-The tested position was performed according to the KDB inquiry 631754.

#### i) Test position

(1) Front :

The measurement separated 5mm distance between the front of closed lid EUT and Flat Phantom.

(2) Bottom :

The measurement separated 5mm distance between the bottom of closed lid EUT and Flat Phantom.

## SECTION 6 : Test surrounding

### 6.1 Measurement uncertainty

The uncertainty budget has been determined for the DASY5 measurement system according to the SPEAG documents[6] and is given in the following Table.

Error Description	Uncertainty value $\pm$ %	Probability distribution	divisor	(ci) 1g	Standard Uncertainty (1g)	vi or veff
<b>Measurement System</b>						
Probe calibration	$\pm 6.55$	Normal	1	1	$\pm 6.55$	$\infty$
Axial isotropy of the probe	$\pm 4.7$	Rectangular	$\sqrt{3}$	0.7	$\pm 1.9$	$\infty$
Spherical isotropy of the probe	$\pm 9.6$	Rectangular	$\sqrt{3}$	0.7	$\pm 3.9$	$\infty$
Boundary effects	$\pm 2.0$	Rectangular	$\sqrt{3}$	1	$\pm 1.2$	$\infty$
Probe linearity	$\pm 4.7$	Rectangular	$\sqrt{3}$	1	$\pm 2.7$	$\infty$
Detection limit	$\pm 1.0$	Rectangular	$\sqrt{3}$	1	$\pm 0.6$	$\infty$
Readout electronics	$\pm 0.3$	Normal	1	1	$\pm 0.3$	$\infty$
Response time	$\pm 0.8$	Rectangular	$\sqrt{3}$	1	$\pm 0.5$	$\infty$
Integration time	$\pm 2.6$	Rectangular	$\sqrt{3}$	1	$\pm 1.5$	$\infty$
RF ambient Noise	$\pm 3.0$	Rectangular	$\sqrt{3}$	1	$\pm 1.7$	$\infty$
RF ambient Reflections	$\pm 3.0$	Rectangular	$\sqrt{3}$	1	$\pm 1.7$	$\infty$
Probe Positioner	$\pm 0.8$	Rectangular	$\sqrt{3}$	1	$\pm 0.5$	$\infty$
Probe positioning	$\pm 9.9$	Rectangular	$\sqrt{3}$	1	$\pm 5.7$	$\infty$
Max.SAR Eval.	$\pm 4.0$	Rectangular	$\sqrt{3}$	1	$\pm 2.3$	$\infty$
<b>Test Sample Related</b>						
Device positioning	$\pm 2.9$	Normal	1	1	$\pm 2.9$	39
Device holder uncertainty	$\pm 3.6$	Normal	1	1	$\pm 3.6$	4
Power drift	$\pm 5.0$	Rectangular	$\sqrt{3}$	1	$\pm 2.9$	$\infty$
<b>Phantom and Setup</b>						
Phantom uncertainty	$\pm 4.0$	Rectangular	$\sqrt{3}$	1	$\pm 2.3$	$\infty$
Liquid conductivity (target)	$\pm 5.0$	Rectangular	$\sqrt{3}$	0.64	$\pm 1.8$	$\infty$
Liquid conductivity (meas.)	$\pm 5.0$	Rectangular	1	0.64	$\pm 3.2$	$\infty$
Liquid permittivity (target)	$\pm 5.0$	Rectangular	$\sqrt{3}$	0.6	$\pm 1.7$	$\infty$
Liquid permittivity (meas.)	$\pm 5.0$	Rectangular	1	0.6	$\pm 3.0$	$\infty$
<b>Combined Standard Uncertainty</b>					<b><math>\pm 13.356</math></b>	
<b>Expanded Uncertainty (k=2)</b>					<b><math>\pm 26.7</math></b>	

## SECTION 7 : Measurement results

### 7.1 GSM 850MHz SAR

#### 1. Method of measurement

Step1. The searching for the worst position

The test was performed in mode of the maximum output power.

Note:

- The SAR is not required for EGPRS mode because the maximum average output power for EGPRS mode is less than 1/4dB higher than that measured GPR Smode.
- The GPRS 2up mode was maximum based time average power. The power of other mode was lower than GPRS 2up mode.
- The other channel was not required since max. AVG channel SAR value is less than 0.8W/kg.

#### 2. Results of SAR

Model	: SGPT211US/S	Modulation	: GMSK
Serial No.	: DVT102004000011	Crest factor	: 4.2
Date	: March 27, 2011	April 22, 2011	
Liquid Depth (cm)	: 15.0	15.0	
Parameters	: $\epsilon_r=54.5, \sigma=0.96$	$\epsilon_r=53.8, \sigma=0.96$	
Ambient temperature (deg.c.)	: 24.5	24.5	
Liquid temperature (deg.c.)	: 23.0	23.0	
Relative Humidity (%)	: 37	36	
Measured By	: Miyo Kishimoto	Miyo Kishimoto	

BODY SAR MEASUREMENT RESULTS							
Frequency		Modulation	Phantom Section	EUT Set-up Conditions			SAR(1g) [W/kg]
Channel	[MHz]			display	Position	Separation [mm]	Maximum value of multi-peak
<b>Step.1 Position searching</b>							
128	824.4	GPRS 2up	Flat	Opened	Longedge	5	<b>0.189</b>
128	824.4	GPRS 2up	Flat	Opened	Short edge	5	<b>0.040</b>
128	824.4	GPRS 2up	Flat	Opened	Back	5	<b>0.630</b>
128	824.4	GPRS 2up	Flat	Opened	Front	5	<b>0.651</b>
128	824.4	GPRS 2up	Flat	Closed	Front	5	<b>0.498</b>
128	824.4	GPRS 2up	Flat	Closed	Bottom	5	<b>0.059</b>

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## 7.2 PCS 1900MHz SAR

### 1. Method of measurement

Step1. The searching for the worst position

The test was performed in mode of the maximum output power.

Step2. The changing to the other channels

The test was executed at the position in which the SAR result had exceeded 0.8W/kg.

Note:

- The SAR is not required for EGPRS mode because the maximum average output power for EGPRS mode is less than 1/4dB higher than that measured GPRS mode.
- The GPRS 2up mode was maximum based time average power. The power of other mode was lower than GPRS 2up mode.

### 2 Results of SAR

Model	: SGPT211US/S	Modulation	: GMSK
Serial No.	: DVT102004000011	Crest factor	: 4.2
Date	: March 29, 2011	April 21, 2011	
Liquid Depth (cm)	: 15.0	15.0	
Parameters	: $\epsilon_r = 52.1, \sigma = 1.59$	$\epsilon_r = 53.4, \sigma = 1.59$	
Ambient temperature (deg.c.)	: 24.5	24.5	
Liquid temperature (deg.c.)	: 22.5	22.5	
Relative Humidity (%)	: 40	42	
Measured By	: Hisayoshi Sato	Miyo Kishimoto	

BODY SAR MEASUREMENT RESULTS							
Frequency		Modulation	Phantom Section	EUT Set-up Conditions			SAR(1g) [W/kg]
Channel	[MHz]			display	Position	Separation [mm]	Maximum value of multi-peak
<b>Step.1 Position searching</b>							
810	1909.8	GPRS 2up	Flat	Opened	Longedge	5	<b>0.081</b>
810	1909.8	GPRS 2up	Flat	Opened	Short edge	5	<b>0.104</b>
810	1909.8	GPRS 2up	Flat	Opened	Back	5	<b>0.861</b>
810	1909.8	GPRS 2up	Flat	Opened	Front	5	<b>1.05</b>
810	1909.8	GPRS 2up	Flat	Closed	Front	5	<b>0.561</b>
810	1909.8	GPRS 2up	Flat	Closed	Bottom	5	<b>0.080</b>
<b>Step.2 Other channel (Position above 0.8W/kg)</b>							
512	1850.2	GPRS 2up	Flat	Opened	Back	5	<b>0.596</b>
661	1880.0	GPRS 2up	Flat	Opened	Back	5	<b>0.716</b>
512	1850.2	GPRS 2up	Flat	Opened	Front	5	<b>0.892</b>
661	1880.0	GPRS 2up	Flat	Opened	Front	5	<b>1.05</b>

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**7.3 W-CDMA Band V SAR****1. Method of measurement**

Step1. The searching for the worst position

The test was performed in mode of the maximum output power.

Step2. The changing to the other channels

The test was executed at the position in which the SAR result had exceeded 0.8W/kg.

Note:

- The SAR is not required for HSPA mode because the maximum average output power for 12.2k RMC mode is less than 1/4dB higher than that measured HSPA mode.

**2. Results of SAR**

Model : SGPT211US/S Modulation : QPSK  
Serial No. : DVT102004000011 Crest factor : 1

Date	: March 28, 2011	April 22, 2011
Liquid Depth (cm)	: 15.0	15.0
Parameters	: $\epsilon_r = 55.1, \sigma = 0.96$	$\epsilon_r = 53.8, \sigma = 0.96$
Ambient temperature (deg.c.)	: 24.5	24.5
Liquid temperature (deg.c.)	: 23.0	23.0
Relative Humidity (%)	: 40	36
Measured By	: Miyo Kishimoto	Miyo Kishimoto

BODY SAR MEASUREMENT RESULTS							
Frequency		Mode	Phantom Section	EUT Set-up Conditions			SAR(1g) [W/kg]
Channel	[MHz]			display	Position	Separation [mm]	Maximum value of multi-peak
<b>Step.1 Position searching</b>							
4233	846.6	12.2k RMC	Flat	Opened	Longedge	5	<b>0.285</b>
4233	846.6	12.2k RMC	Flat	Opened	Short edge	5	<b>0.059</b>
4233	846.6	12.2k RMC	Flat	Opened	Back	5	<b>0.999</b>
4233	846.6	12.2k RMC	Flat	Opened	Front	5	<b>1.00</b>
4233	846.6	12.2k RMC	Flat	Closed	Front	5	<b>0.819</b>
4233	846.6	12.2k RMC	Flat	Closed	Bottom	5	<b>0.126</b>
<b>Step.2 Other channel (Position above 0.8W/kg)</b>							
4132	826.4	12.2k RMC	Flat	Opened	Back	5	<b>1.15</b>
4183	836.6	12.2k RMC	Flat	Opened	Back	5	<b>1.05</b>
4132	826.4	12.2k RMC	Flat	Opened	Front	5	<b>1.06</b>
4183	836.6	12.2k RMC	Flat	Opened	Front	5	<b>1.14</b>
4132	826.4	12.2k RMC	Flat	Closed	Front	5	<b>0.929</b>
4183	836.6	12.2k RMC	Flat	Closed	Front	5	<b>0.961</b>

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**7.4 W-CDMA Band II SAR****1. Method of measurement**

Step1. The searching for the worst position

The test was performed in mode of the maximum output power.

Step2. The changing to the other channels

The test was executed at the position in which the SAR result had exceeded 0.8W/kg.

Note:

- The SAR is not required for HSPA mode because the maximum average output power for 12.2k RMC mode is less than 1/4dB higher than that measured HSPA mode.

**2. Results of SAR**

Model : SGPT211US/S Modulation : QPSK  
Serial No. : DVT102004000011 Crest factor : 1

Date	: March 29, 2011	April 21, 2011
Liquid Depth (cm)	: 15.0	15.0
Parameters	: $\epsilon_r = 52.1, \sigma = 1.59$	$\epsilon_r = 53.4, \sigma = 1.59$
Ambient temperature (deg.c.)	: 24.5	24.5
Liquid temperature (deg.c.)	: 22.5	22.5
Relative Humidity (%)	: 40	42
Measured By	: Miyo Kishimoto	Miyo Kishimoto

BODY SAR MEASUREMENT RESULTS							
Frequency		Mode	Phantom Section	EUT Set-up Conditions			SAR(1g) [W/kg]
Channel	[MHz]			display	Position	Separation [mm]	Maximum value of multi-peak
<b>Step.1 Position searching</b>							
9400	1880.0	12.2k RMC	Flat	Opened	Longedge	5	<b>0.074</b>
9400	1880.0	12.2k RMC	Flat	Opened	Short edge	5	<b>0.065</b>
9400	1880.0	12.2k RMC	Flat	Opened	Back	5	<b>0.812</b>
9400	1880.0	12.2k RMC	Flat	Opened	Front	5	<b>1.32</b>
9400	1880.0	12.2k RMC	Flat	Closed	Front	5	<b>0.950</b>
9400	1880.0	12.2k RMC	Flat	Closed	Bottom	5	<b>0.104</b>
<b>Step.2 Other channel (Position above 0.8W/kg)</b>							
9262	1852.4	12.2k RMC	Flat	Opened	Back	5	<b>0.793</b>
9538	1907.6	12.2k RMC	Flat	Opened	Back	5	<b>0.848</b>
9262	1852.4	12.2k RMC	Flat	Opened	Front	5	<b>1.24</b>
9538	1907.6	12.2k RMC	Flat	Opened	Front	5	<b>1.39</b>
9262	1852.4	12.2k RMC	Flat	Closed	Front	5	<b>1.10</b>
9538	1907.6	12.2k RMC	Flat	Closed	Front	5	<b>0.749</b>

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**7.5 WLAN SAR****1. Method of measurement**

Step1. The searching for the worst position

The test was performed in mode of the maximum output power.

Step2. The changing to the other channels

The test was executed at the position in which the SAR result had exceeded 0.8W/kg.

Note:

1. The SAR is not required for 11g/n mode because the maximum average output power for 11b mode is less than 1/4dB higher than that measured 11g/n mode.
2. The other channel was not required since max. AVG channel SAR value is less than 0.8W/kg.

**2. Results of SAR**

Model	: SGPT211US/S	Modulation	: DSSS
Serial No.	: DVT102004000011	Crest factor	: 1
Date	: March 28, 2011	April 25, 2011	
Liquid Depth (cm)	: 15.0	15.0	
Parameters	: $\epsilon_r = 52.1, \sigma = 2.01$	$\epsilon_r = 51.4, \sigma = 1.95$	
Ambient temperature (deg.c.)	: 24.5	24.5	
Liquid temperature (deg.c.)	: 24.0	24.5	
Relative Humidity (%)	: 40	41	
Measured By	: Hisayoshi Sato	Miyo Kishimoto	

BODY SAR MEASUREMENT RESULTS							
Frequency		Modulation	Phantom Section	EUT Set-up Conditions			SAR(1g)
Channel	[MHz]			display	Position	Separation [mm]	Maximum value of multi-peak
<b>Step.1 Position searching</b>							
6	2437	11b DBPSK	Flat	Opened	Longedge	5	<b>0.00103</b>
6	2437	11b DBPSK	Flat	Opened	Short edge	5	<b>0.0011</b>
6	2437	11b DBPSK	Flat	Opened	Back	5	<b>0.189</b>
6	2437	11b DBPSK	Flat	Opened	Front	5	<b>0.00918</b>
6	2437	11b DBPSK	Flat	Closed	Front	5	<b>0.161</b>
6	2437	11b DBPSK	Flat	Closed	Bottom	5	<b>0.00587</b>

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