



SAR TEST REPORT

Test Report No. : 27JE0086-HO-F-R1

Applicant : SHARP CORPORATION
Type of Equipment : Wireless PDA
Model No. : PV250
FCC ID : APYNAR0063
Test standard : FCC47CFR 2.1093
FCC OET Bulletin 65, Supplement C
Test Result : Complied
Max. SAR Measured :
GSM 850 : Head 0.889W/kg (824.2MHz)
Body 1.32W/kg (824.2MHz)
PCS 1900 : Head 0.888W/kg (1880.0MHz)
Body 0.449W/kg (1880.0MHz)
Bluetooth : Body 0.00125 W/kg (2480MHz)
Colocation evaluation :
GSM850 + Bluetooth : 1.34 W/kg
PCS1900 + Bluetooth : 0.462 W/kg

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.

Date of test: June 5- June 19,2007

Tested by:

H. Sato

Hisayoshi Sato
EMC Services

M. Ikuta

Miyo Ikuta
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

MF060b (18.06.07)

SECTION 1: Client information	3
SECTION 2: Equipment under test (E.U.T.)	3
2.1 Identification of E.U.T.	3
SECTION 3 : Test standard information	4
3.1 Requirements for compliance testing defined by the FCC	4
3.2 Exposure limit	5
SECTION 4 : Test result	6
4.1 Result of Max. SAR value.....	6
4.2 Test Location.....	6
SECTION 5 : Operation of E.U.T. during testing	7
5.1 Operating modes	7
5.2 Description of the head test setup.....	8
5.3 Method of measurement (Head SAR)	9
5.4 Description of the Body-worn test setup and Method	9
SECTION 6 : Test surrounding	10
6.1 Measurement uncertainty	10
SECTION 7 : Confirmation before testing	11
7.1 Output Power Measurement results.....	11
SECTION 8 : Measurement results	16
8.1 Head 850MHz SAR	16
8.2 Body-worn 850MHz SAR.....	17
8.3 Head 1900MHz SAR	18
8.4 Body-worn 1900MHz SAR.....	19
8.5 Body-worn 2450MHz SAR.....	20
APPENDIX 1 : Photographs of test setup	21
APPENDIX 2 : SAR Measurement data	29
1. Evaluation procedure.....	30
2. Measurement data (GSM 850).....	31
3. Measurement data (PCS1900)	50
4. Measurement data (Bluetooth).....	69
APPENDIX 3 : Test instruments	72
1. Equipment used	73
2. Dosimetry assessment setup	74
3. Configuration and peripherals	75
4. System components	76
5. Test system specifications	78
6. 900MHz Simulated Tissues Composition.....	79
7. 900MHz Validation Measurement.....	79
8. 900MHz System validation data.....	80
9. 900MHz Validation Measurement data	81
10. 1800MHz Simulated Tissues Composition.....	83
11. 1800MHz Validation Measurement.....	83
12. 1800MHz System validation data.....	84
13. 1800MHz Validation Measurement data	85
14. 2450MHz Simulated Tissues Composition.....	87
15. 2450MHz Validation Measurement.....	87
16. 2450MHz System validation data.....	88
17. 2450MHz Validation Measurement data	89
18. Validation uncertainty	90
19. System Validation Dipole (D900V2,S/N: 155)	91
20. System Validation Dipole (D1800V2,S/N: 2d040)	100
21. System Validation Dipole (D2450V2,S/N: 713)	109
22. Dosimetric E-Field Probe Calibration (EX3DV4,S/N: 3540).....	118
23. References	127

SECTION 1: Client information

Company Name : SHARP CORPORATION
Address : 492 Minosho-cho, Yamatokoriyama-city, NARA 639-1186,
JAPAN
Telephone Number : +81-743-55-4022
Facsimile Number : +81-743-55-2553
Contact Person : Takahiro Inoue

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

2.1 Identification of E.U.T.

Type of Equipment : Wireless PDA
Model No. : PV250
Serial No. : 5 (GSM850,PCS1900)
: 001(Bluetooth)
Country of Manufacture : Japan
Battery Model Name : PV-BL31(Rechargeable Lithium-ion battery)
Rating : DC3.7V/1540mAh
Manufacture : SHARP
Option Battery : N/A
Accessories : Carrying case and Earphone
Size : W:130mm D:61mm H:17.9mm
Receipt Date of Sample : May 26, 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 No: PV250 (referred to as the EUT in this report) is the Wireless PDA.

Radio Specification

	GSM850	PCS1900	Bluetooth
Equipment Type	Transceiver	Transceiver	Transceiver
Tx frequency	824.20 – 848.8MHz	1850.2MHz - 1909.8MHz	2402-2480MHz
Type of Modulation	GMSK,8PSK	GMSK,8PSK	FHSS
Bandwidth	340kHz	345kHz	79MHz
Channel Spacing	200kHz	200kHz	1MHz
Channel Number	124	299	79
Antenna Type	PIFA (Type 15)	PIFA (Type 15)	PIFA (LANGF1062YCZZ)
Antenna Connector Type	Pin Contact	PinContact	Pin Contact
Antenna Gain	-5.4dBi max	-3.6dBi max	-5.0dBi
Max. Transmit Power tested (Antenna port peak power)	32.47dBm (1.77W)	30.67dBm (1.17W)	-1.15dBm(0.767mW)
Power Supply	DC 3.7 – 4.2V	DC 3.7 – 4.2V	DC 2.8V

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 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 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**

SECTION 4 : Test result

4.1 Result of Max. SAR value

4.1.1 GSM850

Max. SAR Measured : Head 0.889 W/kg
Body 1.32W/kg

4.1.2 PCS1900

Max. SAR Measured : Head 0.888 W/kg
Body 0.449W/kg

4.1.3 Bluetooth

Max. SAR Measured : Body 0.0125W/kg

4.2 Colocation of SAR value

As the colocation evaluation, the maximum SAR value of EUT is calculated by adding maximum SAR values of GSM and Bluetooth as shown below:

Max. SAR value = Max. SAR value (GSM850) + Max. SAR value (Bluetooth)

Max. SAR Measured (GSM 850 + Bluetooth) 1.34W/kg

=1.32(from GSM850 body test) + 0.0125(Bluetooth)

=1.3325

Max. SAR value = Max. SAR value (PCS1900) + Max. SAR value (Bluetooth)

Max. SAR Measured (PCS1900 + Bluetooth) 0.462W/kg

=0.449(from PCS1900 body test) + 0.0125W/kg (Bluetooth)

=0.4615

4.2 Test Location

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 5 : Operation of E.U.T. during testing

5.1 Operating modes

A communication link was set up with the Wireless Communications Test Set from Agilent.
The EUT was command to operate at maximum transmit power.
(Maximum transmit power :GSM850 <Power level : 5> / PCS1900 <Power level : 0>)
The frequency band and the modulation used in this test are shown as a following.

1. GSM850 (Power level 5)

Frequency band : 824.2MHz – 848.8MHz
Channel : 125ch(824.2MHz)
 190ch(836.6MHz)
 251ch(848.8MHz)
Modulation : GSM,GPRS,EGPRS(GMSK),EGPRS(8PSK)
Crest factor : 8.3(GSM),4.2(GPRS,EGPRS)

2. PCS1900 (Power level 0)

Frequency band : 1850.2MHz – 1909.8MHz
Channel : 512ch(1850.2MHz)
 661ch(1880.0MHz)
 810ch(1909.8MHz)
Modulation : GSM,GPRS, EGPRS(GMSK),EGPRS(8PSK)
Crest factor : 8.3(GSM),4.2(GPRS,EGPRS)

*The detail of base-station simulator

Item : Wireless Communications Test Set
Model Number : E5515C
Serial Number : GB47050683
Manufacture : Agilent

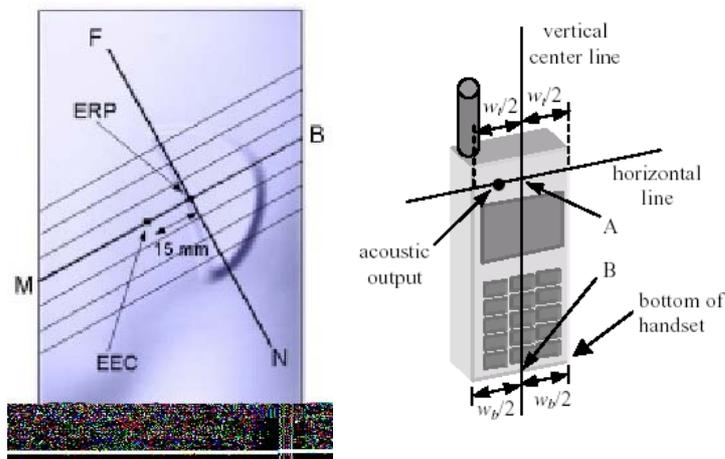
5.2 Description of the head test setup

According to the OET 65, IEEE1528, and IEC62209-1 this EUT was tested on the “Cheek/Touch” and “Ear/Tilt” positions at the left head and right head section of the SAM phantom.

5.2.1 Initial ear position

A handset should be initially positioned with the earpiece region pressed against the ear spacer of a head phantom.

The device should be positioned parallel to the “N-F” line defined along the base of the ear spacer that contains the “ear reference point”. The “test device reference point” is aligned to the “ear reference point” on the head phantom and the “vertical centerline” is aligned to the “phantom reference plane”.

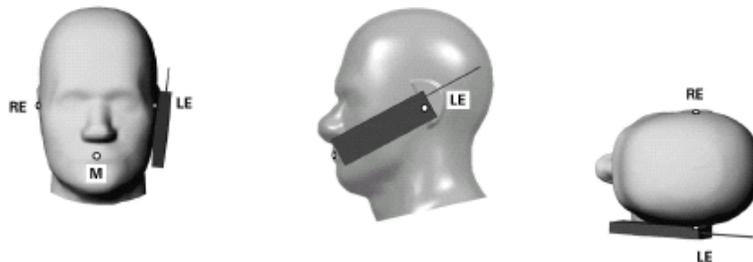


5.2.2 Cheek position

The device is brought toward the mouth of the head phantom by pivoting against the “ear reference point” or along the “N-F” line.

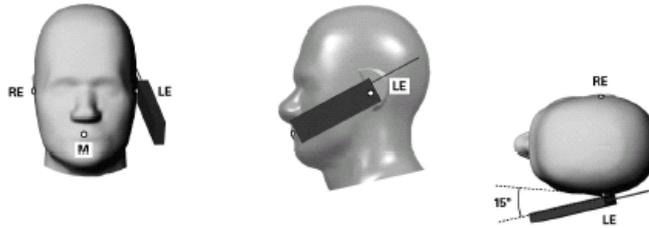
This test position is established:

- i) When any point on the display, keypad or mouthpiece portions of the handset is in contact with the phantom.
- ii) (or) When any portion of a foldout, sliding or similar keypad cover opened to its intended self-adjusting normal use position is in contact with the cheek or mouth of the phantom.



5.2.3 Tilt position

If the earpiece of the handset is not in full contact with the phantom's ear spacer and the peak SAR location for the "Cheek/Touch" position is located at the ear spacer region or corresponds to the earpiece region of the handset, the device should be returned to the "initial ear position" by rotating it away from the mouth until the earpiece is in full contact with the ear spacer. Otherwise the handset should be moved away from the cheek perpendicular to the line passes through both "ear reference points" for approximate 2-3 cm. While it is in this position, the handset is tilted away from the mouth with respect to the "test device reference point" by 15°. After the tilt, it is then moved back toward the head perpendicular to the line passes through both "ear reference points" until the device touches the phantom or the ear spacer. If the antenna touches the head first, the positioning process should be repeated with a tilt angle less than 15° so that the device and its antenna would touch the phantom simultaneously.



5.2.4 Antenna position

The antenna of this EUT was built-in antenna.

5.3 Method of measurement (Head SAR)

Step1. The searching for the worst position

Step2. The changing to the Low and High channels

The test was performed at the worst position of Step1.

5.4 Description of the Body-worn test setup and Method

The tests were performed in the EUT with the carrying case and ear phone. (Refer to the Appendix1)

This EUT was tested on the "Rear" position at the flat section of SAM phantom.

In addition, the tests were performed in the Low, Mid, and the High channels and the modulations were performed in each GSM ,GPRS ,EGPRS(GMSK) and EGPRS(8PSK).

SECTION 6 : Test surrounding

6.1 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-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	23
Device holder uncertainty	±3.6	Normal	1	1	±3.6	4
Power drift	±5.0	Rectangular	√3	1	±2.9	∞
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					±13.453	
Expanded Uncertainty (k=2)					±26.9	

SECTION 7 : Confirmation before testing

7.1 Output Power Measurement results

<GSM850>

Model : PV250
Modulation : GSM
Serial No. : 5
Ambient temperature (deg.c.) : 24.6
Relative Humidity (%) : 44
Date : June 5, 2007
Measured By : Hisayoshi sato

GSM850 GSM mode						
Ch	Frequency [MHz]	P/M Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Convert [mW]
Low	824.2	12.12	19.90	0.37	32.39	1733.8
Mid	836.6	11.90	19.90	0.38	32.18	1652.0
High	848.8	11.74	19.90	0.38	32.02	1592.2

Sample Calculation:

Result = Reading + Cable Loss (client's cable) + Attenuator Loss

Model : PV250
 Modulation : GSM, GPRS, EGPRS(GMSK),EGPRS(8PSK)
 Serial No. : 5
 Ambient temperature (deg.c.) : 24.7
 Relative Humidity (%) : 47
 Date : June 12, 2007
 Measured By : Hisayoshi sato

Ch	Frequency [MHz]	P/M Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Convert [mW]
Low	824.2	12.19	19.90	0.37	32.46	1762.0
Mid	836.6	11.99	19.90	0.38	32.27	1686.6
High	848.8	11.81	19.90	0.38	32.09	1618.1

GSM850 GPRS mode

Ch	Frequency [MHz]	P/M Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Convert [mW]
Low	824.2	12.20	19.90	0.37	32.47	1766.0
Mid	836.6	12.01	19.90	0.38	32.29	1694.3
High	848.8	11.82	19.90	0.38	32.10	1621.8

GSM850 EGPRS(GMSK) mode

Ch	Frequency [MHz]	P/M Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Convert [mW]
Low	824.2	12.19	19.90	0.37	32.46	1762.0
Mid	836.6	12.01	19.90	0.38	32.29	1694.3
High	848.8	11.81	19.90	0.38	32.09	1618.1

GSM850 EGPRS(8PSK) mode

Ch	Frequency [MHz]	P/M Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Convert [mW]
Low	824.2	8.96	19.90	0.37	29.23	837.5
Mid	836.6	8.83	19.90	0.38	29.11	814.7
High	848.8	8.74	19.90	0.38	29.02	798.0

Sample Calculation:

Result = Reading + Cable Loss (client's cable) + Attenuator Loss

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

<PCS1900>

Model : PV250
Modulation : GSM
Serial No. : 5
Ambient temperature (deg.c.) : 24.5
Relative Humidity (%) : 45
Date : June 7, 2007
Measured By : Hisayoshi Sato

PCS1900 GSM mode						
Ch	Frequency [MHz]	P/M Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Convert [mW]
Low	1850.2	10.35	19.70	0.57	30.62	1153.5
Mid	1880.0	10.21	19.70	0.57	30.48	1116.9
High	1909.8	9.69	19.70	0.59	29.98	995.4

Sample Calculation:

Result = Reading + Cable Loss (client's cable) + Attenuator Loss

Model : PV250
 Modulation : GSM, GPRS, EGPRS(GMSK),EGPRS(8PSK)
 Serial No. : 5
 Ambient temperature (deg.c.) : 24.5
 Relative Humidity (%) : 43
 Date : June 18, 2007
 Measured By : Miyo Ikuta

PCS1900 GSM mode						
Ch	Frequency [MHz]	P/M Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Convert [mW]
Low	1850.2	10.40	19.70	0.57	30.67	1166.8
Mid	1880.0	10.26	19.70	0.57	30.53	1129.8
High	1909.8	9.77	19.70	0.59	30.06	1013.9

PCS1900 GPRS mode						
Ch	Frequency [MHz]	P/M Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Convert [mW]
Low	1850.2	10.26	19.70	0.57	30.53	1129.8
Mid	1880.0	10.06	19.70	0.57	30.33	1078.9
High	1909.8	9.66	19.70	0.59	29.95	988.6

PCS1900 EGPRS(GMSK) mode						
Ch	Frequency [MHz]	P/M Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Convert [mW]
Low	1850.2	10.26	19.70	0.57	30.53	1129.8
Mid	1880.0	10.06	19.70	0.57	30.33	1078.9
High	1909.8	9.65	19.70	0.59	29.94	986.3

PCS1900 EGPRS(8PSK) mode						
Ch	Frequency [MHz]	P/M Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Convert [mW]
Low	1850.2	7.40	19.70	0.57	27.67	584.8
Mid	1880.0	7.22	19.70	0.57	27.49	561.0
High	1909.8	7.04	19.70	0.59	27.33	540.8

Sample Calculation:

Result = Reading + Cable Loss (client's cable) + Attenuator Loss

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

<Bluetooth>

Model : PV250
Modulation : GFSK
Serial No. : 001
Ambient temperature (deg.c.) : 24
Relative Humidity (%) : 51
Date : June 19, 2007
Measured By : Miyo Ikuta

Bluetooth mode						
Ch	Frequency [MHz]	P/M Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]	Convert [mW]
Low	2402.0	-12.81	1.65	10.02	-1.14	0.769
Mid	2442.0	-12.82	1.65	10.02	-1.15	0.767
High	2480.0	-12.89	1.65	10.02	-1.22	0.755

Sample Calculation:

Result = Reading + Cable Loss (client's cable) + Attenuator Loss

SECTION 8 : Measurement results**8.1 Head 850MHz SAR**

Liquid Depth (cm)	: 15.0	Model	: PV250
Parameters	: $\epsilon_r = 42.3, \sigma = 0.88$	Serial No.	: 5
Ambient temperature (deg.c.)	: 24.6	Modulation	: GSM
Relative Humidity (%)	: 44	Crest factor	: 8.3
Date	: June 5, 2007	Measured By	: Hisayoshi Sato

HEAD SAR MEASUREMENT RESULTS								
Frequency		Modulation	Phantom Section	EUT Set-up Conditions		Liquid Temp.[deg.c]		SAR(1g) [W/kg]
Channel	[MHz]			Antenna	Position	Before	After	Maximum of multi-peak
Step1. Position search								
Mid	836.6	GSM	Left head	Fixed	Cheek	24.4	24.4	0.548
Mid	836.6	GSM	Left head	Fixed	Tilt	24.3	24.3	0.284
Mid	836.6	GSM	Right head	Fixed	Cheek	24.4	24.4	0.674
Mid	836.6	GSM	Right head	Fixed	Tilt	24.3	24.3	0.498
Step2. Frequency Change								
Low	824.2	GSM	Right head	Fixed	Tilt	24.3	24.3	0.889
High	848.8	GSM	Right head	Fixed	Tilt	24.4	24.4	0.552
ANSI / IEEE C95.1 1992 - SAFETY LIMIT						Head SAR: 1.6 W/kg		
Spatial Peak Uncontrolled Exposure / General Population						(averaged over 1 gram)		

*See Appendix 3 for measurement data plots.

8.2 Body-worn 850MHz SAR

Liquid Depth (cm) : **15.0** Model : **PV250**
Parameters : $\epsilon_r = 53.4$ $\sigma = 1.01$ Serial No. : **5**
Ambient temperature (deg.c.) : **24.7** Modulation : **GSM**
Relative Humidity (%) : **47** Crest factor : **8.3 or 4.2**
Date : **June 12, 2007** Measured By : **Hisayoshi Sato**

BODY SAR MEASUREMENT RESULTS									
Frequency			Modulation	Phantom Section	EUT Set-up Conditions		Liquid Temp.[deg.c]		SAR(1g) [W/kg]
Mode	Channel	[MHz]			Antenna	Position	Before	After	Maximum value of multi-peak
GSM	125	824.2	GSM	Flat	Fixed	Rear	24.4	24.4	0.491
	190	836.6	GSM	Flat	Fixed	Rear	24.4	24.4	0.401
	251	848.8	GSM	Flat	Fixed	Rear	24.4	24.4	0.347
GPRS	125	824.2	GMSK	Flat	Fixed	Rear	24.4	24.4	1.32
	190	836.6	GMSK	Flat	Fixed	Rear	24.4	24.4	0.933
	251	848.8	GMSK	Flat	Fixed	Rear	24.4	24.4	0.720
EGPRS (GMSK)	125	824.2	GMSK	Flat	Fixed	Rear	24.4	24.4	1.21
	190	836.6	GMSK	Flat	Fixed	Rear	24.4	24.4	0.949
	251	848.8	GMSK	Flat	Fixed	Rear	24.4	24.4	0.710
EGPRS (8PSK)	125	824.2	8PSK	Flat	Fixed	Rear	24.2	24.2	0.271
	190	836.6	8PSK	Flat	Fixed	Rear	24.4	24.4	0.212
	251	848.8	8PSK	Flat	Fixed	Rear	24.4	24.4	0.198

* See Appendix 3 for measurement data plots.

8.3 Head 1900MHz SAR

Liquid Depth (cm) : **15.0** Model : **PV250**
Parameters : $\epsilon_r = 40.6, \sigma = 1.37$ Serial No. : **5**
Ambient temperature (deg.c.) : **24.5** Modulation : **GSM**
Relative Humidity (%) : **45** Crest factor : **8.3**
Date : **June 7, 2007** Measured By : **Hisayoshi Sato**

HEAD SAR MEASUREMENT RESULTS								
Frequency		Modulation	Phantom Section	EUT Set-up Conditions		Liquid Temp.[deg.c]		SAR(1g) [W/kg]
Channel	[MHz]			Antenna	Position	Before	After	Maximum of multi-peak
Step1. Position search								
Mid	1880.0	GSM	Left head	Fixed	Cheek	24.4	24.4	0.888
Mid	1880.0	GSM	Left head	Fixed	Tilt	24.4	24.4	0.246
Mid	1880.0	GSM	Right head	Fixed	Cheek	24.4	24.4	0.719
Mid	1880.0	GSM	Right head	Fixed	Tilt	24.4	24.4	0.297
Step2. Frequency Change								
Low	1850.2	GSM	Left head	Fixed	Tilt	24.3	24.3	0.761
High	1909.2	GSM	Left head	Fixed	Tilt	24.4	24.4	0.564
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure / General Population						Head SAR: 1.6 W/kg (averaged over 1 gram)		

*See Appendix 3 for measurement data plots.

8.4 Body-worn 1900MHz SAR

Liquid Depth (cm) : **15.0** Model : **PV250**
Parameters : $\epsilon_r = 53.1, \sigma = 1.53$ Serial No. : **5**
Ambient temperature (deg.c.) : **24.5** Modulation : **GSM,GPRS,EGPRS**
Relative Humidity (%) : **43** Crest factor : **8.3 or 4.2**
Date : **June 18, 2007** Measured By : **Miyo Ikuta**

BODY SAR MEASUREMENT RESULTS									
Frequency			Modulation	Phantom Section	EUT Set-up Conditions		Liquid Temp.[deg.c]		SAR(1g) [W/kg]
Mode	Channel	[MHz]			Antenna	Position	Before	After	Maximum value of multi-peak
GSM	512	1850.2	GSM	Flat	Fixed	Rear	24.2	24.2	0.232
	661	1880.0	GSM	Flat	Fixed	Rear	24.2	24.1	0.230
	810	1909.8	GSM	Flat	Fixed	Rear	24.1	24.0	0.209
GPRS	512	1850.2	GMSK	Flat	Fixed	Rear	24.3	24.3	0.445
	661	1880.0	GMSK	Flat	Fixed	Rear	24.3	24.3	0.449
	810	1909.8	GMSK	Flat	Fixed	Rear	24.3	24.3	0.396
EGPRS (GMSK)	512	1850.2	GMSK	Flat	Fixed	Rear	24.3	24.3	0.356
	661	1880.0	GMSK	Flat	Fixed	Rear	24.3	24.3	0.350
	810	1909.8	GMSK	Flat	Fixed	Rear	24.3	24.2	0.320
EGPRS (8PSK)	512	1850.2	8PSK	Flat	Fixed	Rear	24.2	24.2	0.091
	661	1880.0	8PSK	Flat	Fixed	Rear	24.2	24.2	0.088
	810	1909.8	8PSK	Flat	Fixed	Rear	24.2	24.2	0.090

* See Appendix 3 for measurement data plots.

8.5 Body-worn 2450MHz SAR

Liquid Depth (cm) : **15.0** Model : **PV250**
Parameters : $\epsilon_r = 51.3, \sigma = 2.04$ Serial No. : **001**
Ambient temperature (deg.c.) : **24.5** Modulation : **GFSK**
Relative Humidity (%) : **52** Crest factor : **1**
Date : **June 19, 2007** Measured By : **Miyo Ikuta**

BODY SAR MEASUREMENT RESULTS									
Frequency			Modulation	Phantom Section	EUT Set-up Conditions		Liquid Temp.[deg.c]		SAR(1g) [W/kg]
Mode	Channel	[MHz]			Antenna	Position	Before	After	Maximum value of multi-peak
BT	1	2402.0	GFSK	Flat	Fixed	Rear	24.5	24.5	0.00120
	41	2442.0	GFSK	Flat	Fixed	Rear	24.5	24.5	0.00119
	79	2480.0	GFSK	Flat	Fixed	Rear	24.5	24.5	0.00125