



SAR TEST REPORT

Test Report No. : 29CE0264-HO-01-L-R1

Applicant : SHARP CORPORATION

Type of Equipment : W-CDMA / GSM Mobile Phone

Model No. : PV300

FCC ID : APYNAR0065

Test regulation : FCC47CFR 2.1093
FCC OET Bulletin 65, Supplement C

Test Result : Complied

Max. SAR Measured :

GSM 850 : Head 0.328W/kg
Body 0.445W/kg

PCS 1900 : Head 0.400W/kg
Body 0.466W/kg

WCDMA IV : Head 0.847 W/kg
Body 0.486W/kg

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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.
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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.
6. Original test report number of this report is 29CE0264-HO-01-L.

Date of test: December 11, 2008 to January 30, 2009

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SECTION 1: Client information

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

2.1 Identification of E.U.T.

Type of Equipment : W-CDMA / GSM Mobile Phone
Model No. : PV300
Serial No. : P3-240
Battery Model Name : PV-BL51(Rechargeable Lithium-ion battery)
Rating : DC3.7V/1250mAh
Manufacture : SHARP
Option Battery : N/A
Accessories : Earphone
Size : W:130mm D:60mm H:15.9mm
Receipt Date of Sample : December 5, 2008
Modification of EUT : No modification by the test lab
Country of Manufacture : Japan
Condition of EUT : Engineering prototype
(Not for Sale: This sample is not mass-produced items.)

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2.2 Product Description

This page has been submitted for a separate exhibit.

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

Test result for GSM850 and PCS 1900 mode

The operation frequencies of a device test was used over +/- 50MHz frequency of the probe calibration frequency. Therefore, according to the KDB450824, the measured 1-g SAR be compensated with respect to +5% tolerances in ϵ_r and -5% tolerances in σ , computed according to valid SAR sensitivity data (below table), to reduce SAR underestimation and maintain conservativeness. Please refer to the probe calibration data for probe conversion factor, frequency response and probe calibration uncertainty.

SAR sensitivity to Small Change in Tissue Dielectric Properties

	$\Delta\text{SAR}(\Delta\epsilon_r)$			$\Delta\text{SAR}(\Delta\sigma)$		
	Peak	1g	10g	Peak	1g	10g
300	-0.41	-0.33	-0.26	+0.48	+0.28	+0.09
450	-0.56	-0.46	-0.37	+0.67	+0.43	+0.22
800	-0.70	-0.57	-0.45	+0.86	+0.59	+0.35
900	-0.69	-0.55	-0.44	+0.86	+0.57	+0.32
1450	-0.73	-0.55	-0.42	+0.91	+0.55	+0.27
1800	-0.73	-0.52	-0.38	+0.92	+0.51	+0.21
1900	-0.73	-0.53	-0.39	+0.93	+0.51	+0.22
2000	-0.74	-0.53	-0.39	+0.94	+0.52	+0.22
2450	-0.74	-0.49	-0.34	+0.93	+0.41	+0.12
3000	-0.75	-0.45	-0.32	+0.90	+0.28	+0.02

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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 QPM46 and QPM47						

Result of Max. SAR value**GSM850**

Tested SAR : Head 0.308 W/kg
Body 0.425W/kg

Computed SAR value according to valid SAR sensitivity data : Head 0.328W/kg
Body 0.445W/kg

In the case 800MHz , $\Delta 1g SAR(\Delta\epsilon_r)$: -0.57, $\Delta 1g SAR(\Delta\sigma)$:+0.59
Calculation: Computed SAR = Tested SAR + $\Delta 1g SAR(\Delta\epsilon_r)$ + $\Delta 1g SAR(\Delta\sigma)$

PCS1900

Max. SAR Measured : Head 0.420 W/kg
Body 0.486W/kg

Computed SAR value according to valid SAR sensitivity data : Head 0.400W/kg
Body 0.466W/kg

In the case 1900MHz , $\Delta 1g SAR(\Delta\epsilon_r)$: -0.53, $\Delta 1g SAR(\Delta\sigma)$:+0.51
Calculation: Computed SAR = Tested SAR + $\Delta 1g SAR(\Delta\epsilon_r)$ + $\Delta 1g SAR(\Delta\sigma)$

WCDMA IV

Max. SAR Measured : Head 0.847W/kg
Body 0.486W/kg

<Simultaneous Procedure>

This EUT has the Bluetooth unlicensed transmitter.

Step1. WCDMA/GSM antenna is <2.5cm form Bluetooth antenna

Step2. Bluetooth power < Pref (=1/2 *60/f_[GHz]).

Step3. No standalone SAR

Step4. No simultaneous transmission SAR

However, BT stand-alone SAR(Body) was tested as reference DATA.

The maximum SAR value of EUT is calculated by adding maximum SAR values of WCDMA or GSM and Bluetooth as shown below:

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

Max. SAR Measured (GSM 850 + Bluetooth) 0.426W/kg

=0.425(from GSM850 body test) + 0.000955 (Bluetooth)

=0.425955

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

Max. SAR Measured (PCS1900 + Bluetooth) 0.487W/kg

=0.486(from PCS1900 body test) + 0.000955W/kg (Bluetooth)

=0.486955

Max. SAR value = Max. SAR value (WCDMA IV) + Max. SAR value (Bluetooth)

Max. SAR Measured (WCDMA IV + Bluetooth) 0.487W/kg

=0.486(from WCDMA IV body test) + 0.000955W/kg (Bluetooth)

=0.486955

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**

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3.4 Test Location

*Shielded room for SAR testings

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3.5 Confirmation before SAR testing

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.

Correlation of Output Power between EMC and SAR tests

It was checked that the antenna port power was correlated within 0~+5% (FCC requirements)

- Power at EMC test
EMC power was measured for EMC test sample (S/N: P3-240).
- Power at SAR test
SAR power was measured for SAR test sample (S/N: P3-240).

The result is shown in Section 6.1.

3.6 Confirmation after SAR testing

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

DASY4 system calculation Power drift value[dB] = $20\log(E_a)/(E_b)$

Before SAR testing : E_b [V/m]

After SAR testing : E_a [V/m]

Limit of power drift[W] = $\pm 5\%$

$X[\text{dB}] = 10\log[P] = 10\log(1.05/1) = 10\log(1.05) - 10\log(1) = 0.212\text{dB}$

from E-field relations with power.

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

Therefore, The correlation of power and the E-field

$X_{\text{dB}} = 10\log(P) = 10\log(E)^2 = 20\log(E)$

Therefore,

The calculated power drift of DASY4 System must be the less than $\pm 0.212\text{dB}$.

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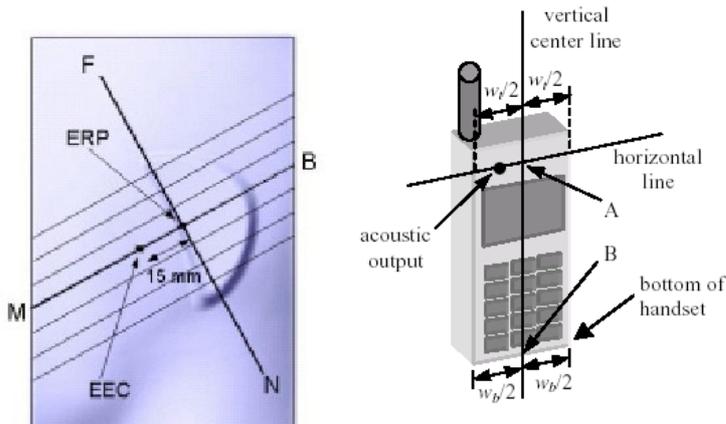
3.7 Description of the head test setup

According to the OET 65, 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.

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”.

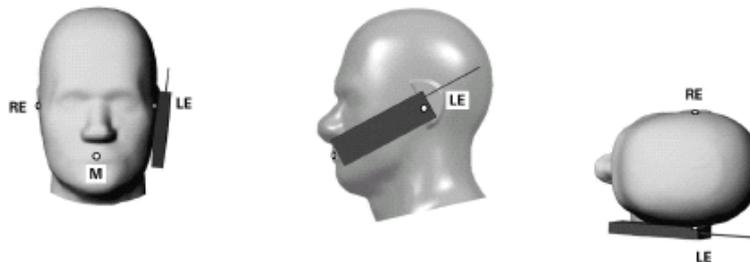


Cheek position

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.



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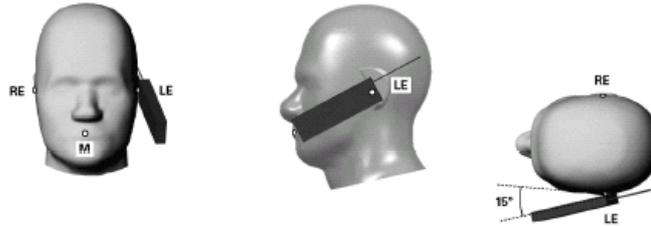
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Tilt position

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.



<Antenna position>

The antenna of this EUT was built-in antenna.

3.8 Method of measurement (Head SAR)

<GSM mode>

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.

<WCDMA mode>

Step1. The searching for the worst position
The test was performed in the 12.2kbps RMC.

Step2. The changing to the Low and High channels
The test was performed at the worst position of Step1.

Note: The SAR test for 12.2k bps AMR with a 3.4kbps SRB

The body SAR is not required for handset with AMR mode because the maximum average output power with AMR is less than 1/4dB higher than that measured using 12.2kbps RMC. Refer to the result of power in the Section 6.

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3.9 Description of the Body-worn setup

The tests were performed in the EUT with the earphone. (Refer to the Appendix1)

(1) Front (15mm) :

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

(2) Back (15mm) :

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

3.10 Method of measurement (Body-worn SAR)

<GSM mode>

Step1. The searching for the worst position
The test was performed in the GSM mode.

Step2. The changing to the Multi slot of DATA transmitter mode (GPRS/EGPRS)
The test was performed at the worst position of Step1.

Step3. The changing to the Low and High channels
The test was performed at the worst condition of from Step1 to Step2.

<WCDMA mode>

Step1. The searching for the worst position
The test was performed in the 12.2kbps RMC without HSPA.

Step2. The changing to the Low and High channels
The test was performed at the worst condition of from Step1.

Note: The SAR test for the HSPA mode

The body SAR is not required for handset with HSPA(HSDPA/HSUPA) because the maximum average output power with HSPA active is less than 1/4dB higher than that measured without HSPA using 12.2kbps RMC.

<Reference>

Bluetooth mode

Step1. The comparison between BDR(GFSK) and EDR(8DPSK) of BTmode

Step2. The searching for the worst position.
The test was performed at the worst modulation

Step3. The changing to the Low and High channels
The test was performed at the worst position of Step2.

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

4.1 Operating modes

communication link was set up with the Wireless Communications Test Set.
The EUT was command to operate at maximum transmit power.
The frequency band and the modulation used in this test are shown as a following.

1. GSM850 (Power level 5 / Multi-slot class 12)

Frequency band : UP Link 824.2MHz – 848.8MHz / Down Link 869.2MHz – 893.8MHz
Channel : 128ch(UP Link: 824.2MHz)
190ch(UP Link: 836.6MHz)
251ch(UP Link: 848.8MHz)
Modulation : GSM,GPRS(GMSK),EGPRS(GMSK)
Crest factor (PAR) : following the table

Mode	Frequency [MHz]	PK Power [dBm]	PK Power [mW]	AVG Power [dBm]	AVG Power [mW]	Crest factor (PAR)
GSM	824.2	32.7	1862.1	23.3	211.8	8.8
GSM	836.6	32.5	1778.3	23.1	201.8	8.8
GSM	848.8	32.2	1659.6	22.8	190.1	8.7
GPRS 1slot	836.6	32.41	1741.8	22.9	195.0	8.9
GPRS 2slot	836.6	28.9	776.2	22.5	177.8	4.4
GPRS 3slot	836.6	27.14	517.6	22.5	178.6	2.9
GPRS 4slot	836.6	26.23	419.8	22.9	194.1	2.2
GPRS 4slot	824.2	26.13	410.2	22.8	190.5	2.2
GPRS 4slot	848.8	25.83	382.8	22.5	179.1	2.1
EGPRS 1slot	836.6	32.18	1652.0	22.7	187.1	8.8
EGPRS 2slot	836.6	28.9	776.2	22.6	180.3	4.3
EGPRS 3slot	836.6	27.13	516.4	22.5	178.6	2.9
EGPRS 4slot	836.6	26.45	441.6	23.1	204.2	2.2

Crest factor (PAR) = PK power [mW] / AVG power[mW]

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2. PCS1900 (Power level 0 / Multi-slot class 12)

Frequency band : UP Link 1850.2MHz – 1909.8MHz / Down Link 1930.2MHz – 1989.8MHz
 Channel : 512ch(UP Link: 1850.2MHz)
 661ch(UP Link: 1880.0MHz)
 810ch(UP Link: 1909.8MHz)
 Modulation : GSM,GPRS(GMSK),EGPRS(GMSK)
 Crest factor (PAR) : following the table

Mode	Frequency [MHz]	PK Power [dBm]	PK Power [mW]	AVG Power [dBm]	AVG Power [mW]	Crest factor (PAR)
GSM	1850.2	29.11	814.7	19.68	92.9	8.8
GSM	1880	29.32	855.1	19.84	96.4	8.9
GSM	1909.8	29.52	895.4	19.99	99.8	9.0
GPRS 1slot	1880	29.20	831.8	19.75	94.4	8.8
GPRS 2slot	1880	29.11	814.7	22.78	189.7	4.3
GPRS 3slot	1880	26.08	405.5	21.46	140.0	2.9
GPRS 4slot	1880	23.13	205.6	19.79	95.3	2.2
GPRS 2slot	1850.2	29.02	798.0	22.68	185.4	4.3
GPRS 2slot	1909.8	29.24	839.5	22.94	196.8	4.3
EGPRS 1slot	1880	29.15	822.2	19.70	93.3	8.8
EGPRS 2slot	1880	29.13	818.5	22.79	190.1	4.3
EGPRS 3slot	1880	26.09	406.4	21.46	140.0	2.9
EGPRS 4slot	1880	23.12	205.1	19.79	95.3	2.2

Crest factor (PAR) = PK power [mW] / AVG power[mW]

3. WCDMA IV (TPC all ones)

Frequency band : UP Link 1712.4MHz – 1752.6MHz / Down Link 2112.4MHz – 2152.6MHz
 Channel : 1312ch(1712.4MHz)
 1413ch(1732.6MHz)
 1513ch(1752.6MHz)
 Modulation : QPSK
 Crest factor : following the table

Mode	Frequency [MHz]	PK Power [dBm]	PK Power [mW]	AVG Power [dBm]	AVG Power [mW]	Crest factor (PAR)
RMC 12.2k	1712.4	26.6	457.09	23.02	200.45	2.3
RMC 12.2k	1732.6	26.4	436.52	23.01	199.99	2.2
RMC 12.2k	1752.6	26.6	457.09	22.91	195.43	2.3

<Reference DATA>

4. Bluetooth

Frequency band : 2402MHz – 2480MHz
Channel : 1ch(2402MHz)
 41ch(2441MHz)
 79ch(2480MHz)
Modulation : GFSK (BDR),8DPSK(EDR)
Crest factor : following the table

Frequency [MHz]	PK Power [dBm]	PK Power [mW]	AVG Power [dBm]	AVG Power [mW]	Crest factor (PAR)
2402	1.28	1.34	1.01	1.26	1
2441	0.7	1.17	0.75	1.19	1
2480	-1.75	0.67	-1.98	0.63	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 \pm %	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	$\sqrt{3}$	$(1-c_p)^{1/2}$	± 1.9	∞
Spherical isotropy of the probe	± 9.6	Rectangular	$\sqrt{3}$	$(c_p)^{1/2}$	± 3.9	∞
Boundary effects	± 2.0	Rectangular	$\sqrt{3}$	1	± 1.2	∞
Probe linearity	± 4.7	Rectangular	$\sqrt{3}$	1	± 2.7	∞
Detection limit	± 1.0	Rectangular	$\sqrt{3}$	1	± 0.6	∞
Readout electronics	± 0.3	Normal	1	1	± 0.3	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	± 0.5	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	± 1.5	∞
RF ambient Noise	± 3.0	Rectangular	$\sqrt{3}$	1	± 1.7	∞
RF ambient Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	± 1.7	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	± 0.5	∞
Probe positioning	± 9.9	Rectangular	$\sqrt{3}$	1	± 5.7	∞
Max.SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	± 2.3	∞
Test Sample Related						
Device positioning	± 2.9	Normal	1	1	± 2.9	54
Device holder uncertainty	± 3.6	Normal	1	1	± 3.6	5
Power drift	± 5.0	Rectangular	$\sqrt{3}$	1	± 2.9	∞
Phantom and Setup						
Phantom uncertainty	± 4.0	Rectangular	$\sqrt{3}$	1	± 2.3	∞
Liquid conductivity (target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	± 1.8	∞
Liquid conductivity (meas.)	± 5.0	Rectangular	1	0.64	± 3.2	∞
Liquid permittivity (target)	± 5.0	Rectangular	$\sqrt{3}$	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 6 : Confirmation before testing**6.1 Output Power Measurement results****6.1.1 GSM 850**

This data is reference data of EMC test. (Report No. 29CE0264-HO-01-F)

Date of test: December 9 and 19, 2008

GSM850 EMC Power						
Mode	Ch	Frequency [MHz]	P/M Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]
GSM (GMSK/1slot)	Low	824.2	8.6	20.0	4.1	32.7
	Mid	836.6	8.4	20.0	4.1	32.5
	High	848.8	8.1	20.0	4.1	32.2
GPRS (GMSK/1slot)	Low	824.2	8.6	20.0	4.1	32.7
	Mid	836.6	8.3	20.0	4.1	32.4
	High	848.8	8.1	20.0	4.1	32.2
EDGE (8PSK/4slots)	Low	824.2	2.6	20.0	4.1	26.7
	Mid	836.6	2.5	20.0	4.1	26.6
	High	848.8	2.3	20.0	4.1	26.4

Results = P/M Reading + Atten.Loss + Cable Loss

This DATA is a result of execution in before SAR testing.

GSM850 SAR Power										
Mode	Ch	Frequency [MHz]	P/M Reading [dBm]		Atten. [dB]	Cable Loss [dB]	Result [dBm]			
			PK	AVG			PK	AVG		
GSM (GMSK/1slot)	Low	824.2	12.32	2.86	20.0	0.4	32.72	23.26		
	Mid	836.6	12.12	2.65	20.0	0.4	32.52	23.05		
	High	848.8	12.01	2.39	20.0	0.4	32.41	22.79		
GPRS	1slot	Mid	836.6	12.01	2.50	20.0	0.4	32.41	22.90	
		2slots	Mid	836.6	8.50	2.16	20.0	0.4	28.90	22.56
		3slots	Mid	836.6	6.74	2.12	20.0	0.4	27.14	22.52
	4slots	Mid	836.6	5.83	2.48	20.0	0.4	26.23	22.88	
		Low	824.2	5.73	2.40	20.0	0.4	26.13	22.80	
		High	848.8	5.43	2.13	20.0	0.4	25.83	22.53	
EGPRS (GMSK /MC4)	1slot	Mid	836.6	11.78	2.32	20.0	0.4	32.18	22.72	
	2slots	Mid	836.6	8.50	2.16	20.0	0.4	28.90	22.56	
	3slots	Mid	836.6	6.73	2.12	20.0	0.4	27.13	22.52	
	4slots	Mid	836.6	6.05	2.70	20.0	0.4	26.45	23.10	

Results = P/M Reading + Atten.Loss + Cable Loss

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<PCS1900>

This data is reference data of EMC test. (Report No. 29CE0264-HO-01-H)

Date of test: December 9 and 19, 2008

PCS1900 EMC Power							
Mode	Ch	Frequency [MHz]	P/M		Atten. [dB]	Cable Loss [dB]	Result [dBm]
			Reading [dBm]				
GSM (GMSK/1slot)	Low	1850.2	5.1		20.0	4.0	29.1
	Mid	1880.0	5.3		20.0	4.0	29.3
	High	1909.8	5.5		20.0	4.0	29.5
GPRS (GMSK/1slot)	Low	1850.2	5.1		20.0	4.0	29.1
	Mid	1880.0	5.2		20.0	4.0	29.2
	High	1909.8	5.5		20.0	4.0	29.5
EDGE (8PSK/4slots)	Low	1850.2	2.3		20.0	4.0	26.3
	Mid	1880.0	2.4		20.0	4.0	26.4
	High	1909.8	2.6		20.0	4.0	26.6

Results = P/M Reading + Atten.Loss + Cable Loss

This DATA is a result of execution in before SAR testing.

PCS1900 SAR Power										
Mode	Ch	Frequency [MHz]	P/M		Atten. [dB]	Cable Loss [dB]	Result [dBm]			
			Reading [dBm]				PK	AVG		
GSM (GMSK/1slot)	Low	1850.2	8.51	-0.92	20.0	0.6	29.11	19.68		
	Mid	1880.0	8.72	-0.76	20.0	0.6	29.32	19.84		
	High	1909.8	8.92	-0.61	20.0	0.6	29.52	19.99		
GPRS	1slot	Mid	1880.0	8.60	-0.85	20.0	0.6	29.20	19.75	
		2slots	Mid	1880.0	8.51	2.18	20.0	0.6	29.11	22.78
		3slots	Mid	1880.0	5.48	0.86	20.0	0.6	26.08	21.46
	2slots	Mid	1880.0	2.53	-0.81	20.0	0.6	23.13	19.79	
		Low	1850.2	8.42	2.08	20.0	0.6	29.02	22.68	
		High	1909.8	8.64	2.34	20.0	0.6	29.24	22.94	
EGPRS (GMSK /MC4)	1slot	Mid	1880.0	8.55	-0.90	20.0	0.6	29.15	19.70	
	2slots	Mid	1880.0	8.53	2.19	20.0	0.6	29.13	22.79	
	3slots	Mid	1880.0	5.49	0.86	20.0	0.6	26.09	21.46	
	4slots	Mid	1880.0	2.52	-0.81	20.0	0.6	23.12	19.79	

Results = P/M Reading + Atten.Loss + Cable Loss

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<WCDMA IV band>

This data is reference data of EMC test. (Report No. 29CE0264-HO-01-J-R1)

Date of test: December 8, 19, 2008 and March 24, 2009

WCDMA IV band							
Mode	Ch	Frequency [MHz]	P/M		Atten. [dB]	Cable Loss [dB]	Result [dBm]
			Reading [dBm]				
RMC 12.2kbps	Low	1712.4	8.8		10.0	4.2	23.0
	Mid	1732.6	8.8		10.0	4.2	23.0
	High	1752.6	8.7		10.0	4.2	22.9
AMR	Low	1712.4	8.7		10.0	4.2	22.9
	Mid	1732.6	8.6		10.0	4.2	22.8
	High	1752.6	8.5		10.0	4.2	22.7
HSDPA Subtest1	Low	1712.4	8.7		10.0	4.2	22.9
	Mid	1732.6	8.7		10.0	4.2	22.9
	High	1752.6	8.6		10.0	4.2	22.8
HSDPA Subtest2	Low	1712.4	8.6		10.0	4.2	22.8
	Mid	1732.6	8.6		10.0	4.2	22.8
	High	1752.6	8.5		10.0	4.2	22.7
HSDPA Subtest3	Low	1712.4	8.7		10.0	4.2	22.9
	Mid	1732.6	8.7		10.0	4.2	22.9
	High	1752.6	8.6		10.0	4.2	22.8
HSDPA Subtest4	Low	1712.4	8.2		10.0	4.2	22.4
	Mid	1732.6	8.2		10.0	4.2	22.4
	High	1752.6	8.2		10.0	4.2	22.4
HSUPA Subtest1	Low	1712.4	8.3		10.0	4.2	22.5
	Mid	1732.6	8.6		10.0	4.2	22.8
	High	1752.6	8.6		10.0	4.2	22.8
HSUPA Subtest2	Low	1712.4	6.9		10.0	4.2	21.1
	Mid	1732.6	6.9		10.0	4.2	21.1
	High	1752.6	6.9		10.0	4.2	21.1
HSUPA Subtest3	Low	1712.4	7.7		10.0	4.2	21.9
	Mid	1732.6	7.9		10.0	4.2	22.1
	High	1752.6	7.8		10.0	4.2	22.0
HSUPA Subtest4	Low	1712.4	7.4		10.0	4.2	21.6
	Mid	1732.6	7.4		10.0	4.2	21.6
	High	1752.6	7.4		10.0	4.2	21.6
HSUPA Subtest5	Low	1712.4	8.5		10.0	4.2	22.7
	Mid	1732.6	8.6		10.0	4.2	22.8
	High	1752.6	8.6		10.0	4.2	22.8

Results = P/M Reading + Atten.Loss + Cable Loss

Note: HSDPA category 8 / HSUPA category 5

This DATA is a result of execution in before SAR testing.

WCDMA V band SAR Power								
Mode	Ch	Frequency [MHz]	P/M		Atten. [dB]	Cable Loss [dB]	Result [dBm]	
			Reading [dBm]				PK	AVG
RMC 12.2kbps	Low	1712.4	12.40	8.82	10.0	4.2	26.60	23.02
	Mid	1732.6	12.20	8.81	10.0	4.2	26.40	23.01
	High	1752.6	12.40	8.71	10.0	4.2	26.60	22.91

Results = P/M Reading + Atten.Loss + Cable Loss

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<Bluetooth>

This data is reference data of EMC test. (Report No. 29CE0264-HO-01-A)

Date of test: December 12 and 15, 2008

Bluetooth EMC Power						
Mode	Ch	Frequency [MHz]	P/M Reading [dBm]	Atten. [dB]	Cable Loss [dB]	Result [dBm]
BDR	Low	2402.0	-13.81	9.98	5.05	1.22
	Mid	2441.0	-14.37	9.98	5.06	0.67
	High	2480.0	-16.84	9.98	5.08	-1.78
EDR	Low	2402.0	-16.29	9.98	5.05	-1.26
	Mid	2442.0	-16.76	9.98	5.06	-1.72
	High	2480.0	-18.77	9.98	5.08	-3.71

Sample Calculation:

Result = Reading + Cable Loss+ Attenuator Loss

Bluetooth SAR Power								
Mode	Ch	Frequency [MHz]	P/M Reading [dBm]		Atten. [dB]	Cable Loss [dB]	Result [dBm]	
			PK	AVG			PK	AVG
BDR	Low	2402.0	-13.75	-14.02	9.98	5.05	1.28	1.01
	Mid	2441.0	-14.34	-14.29	9.98	5.06	0.70	0.75
	High	2480.0	-16.81	-17.04	9.98	5.08	-1.75	-1.98
EDR	Mid	2441.0	-16.71	-17.01	9.98	5.06	-1.67	-1.97

Results = P/M Reading + Atten.Loss + Cable Loss

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SECTION 7 : Measurement results**7.1 Head GSM 850MHz SAR**

Liquid Depth (cm)	: 15.0	Model	: PV300
Parameters	: $\epsilon_r = 41.4, \sigma = 0.88$	Serial No.	: P3-240
Ambient temperature (deg.c.)	: 24.5	Modulation	: GSM
Relative Humidity (%)	: 40	Crest factor	: Refer to Section 4.1
Date	: December 12, 2008	Measured By	: Miyo Kishimoto

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	Fixed	Cheek	22.5	22.5	0.291
Mid	836.6	GSM	Left	Fixed	Tilt	22.5	22.5	0.186
Mid	836.6	GSM	Right	Fixed	Cheek	22.5	22.5	0.308
Mid	836.6	GSM	Right	Fixed	Tilt	22.5	22.5	0.170
Step 2. Change to the Low and High channels								
Low	824.2	GSM	Right	Fixed	Cheek	22.5	22.5	0.307
High	848.8	GSM	Right	Fixed	Cheek	22.5	22.5	0.300

7.2 Body-worn GSM 850MHz SAR

Liquid Depth (cm)	: 15.0	Model	: PV300
Parameters	: $\epsilon_r = 55.6, \sigma = 0.99$	Serial No.	: P3-240
Ambient temperature (deg.c.)	: 24.5	Modulation	: GSM,GPRS,EGPRS
Relative Humidity (%)	: 38	Crest factor	: Refer to Section 4.1
Date	: December 16, 2008	Measured By	: Hisayoshi Sato

BODY SAR MEASUREMENT RESULTS									
Frequency		Modulation	Phantom Section	EUT Set-up Conditions			Liquid Temp.[deg.c]		SAR(1g) [W/kg]
Channel	[MHz]			Antenna	Position	Separation [mm]	Before	After	Maximum of multi-peak
Step 1. Search for the worst position									
Mid	836.6	GSM	Flat	Fixed	Front	15	22.5	22.5	0.300
Mid	836.6	GSM	Flat	Fixed	Back	15	22.5	22.5	0.356
Step 2. Search for the worst modulation									
Mid	836.6	GPRS (1UP)	Flat	Fixed	Back	15	22.5	22.5	0.338
Mid	836.6	GPRS (2UP)	Flat	Fixed	Back	15	22.0	22.0	0.323
Mid	836.6	GPRS (3UP)	Flat	Fixed	Back	15	22.0	22.0	0.385
Mid	836.6	GPRS (4UP)	Flat	Fixed	Back	15	22.0	22.0	0.389
Mid	836.6	EGPRS (1UP)	Flat	Fixed	Back	15	22.0	22.0	0.323
Mid	836.6	EGPRS (2UP)	Flat	Fixed	Back	15	22.0	22.0	0.371
Mid	836.6	EGPRS (3UP)	Flat	Fixed	Back	15	22.0	22.0	0.377
Mid	836.6	EGPRS (4UP)	Flat	Fixed	Back	15	22.0	22.0	0.384
Step 3. Change to the Low and High channels									
Low	824.2	GPRS (4UP)	Flat	Fixed	Back	15	22.0	22.0	0.425
High	848.8	GPRS (4UP)	Flat	Fixed	Back	15	22.0	22.0	0.394

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7.3 Head PCS 1900MHz SAR

Liquid Depth (cm) : 15.0 Model : PV300
 Parameters : $\epsilon_r = 39, \sigma = 1.47$ Serial No. : P3-240
 Ambient temperature (deg.c.) : 24.5 Modulation : GSM
 Relative Humidity (%) : 38 Crest factor : Refer to Section 4.1
 Date : December 11, 2008 Measured By : Miyo Kishimoto

HEAD SAR MEASUREMENT RESULTS								
Frequency		Modulation	Phantom Section	EUT Set-up Conditions		Liquid Temp.[deg.c]		SAR(1g)
Channel	[MHz]			Antenna	Position	Before	After	Maximum value of multi-peak
Step 1. Search for the worst position								
Mid	1880	GSM	Left	Fixed	Cheek	23.0	23.0	0.306
Mid	1880	GSM	Left	Fixed	Tilt	23.0	23.0	0.159
Mid	1880	GSM	Right	Fixed	Cheek	23.0	23.0	0.360
Mid	1880	GSM	Right	Fixed	Tilt	23.0	23.1	0.116
Step 2. Change to the Low and High channels								
Low	1850.2	GSM	Right	Fixed	Cheek	23.1	23.2	0.335
High	1909.8	GSM	Right	Fixed	Cheek	23.2	23.2	0.420

7.4 Body-worn PCS 1900MHz SAR

Liquid Depth (cm) : 15.0 Model : PV300
 Parameters : $\epsilon_r = 54.2, \sigma = 1.59$ Serial No. : P3-240
 Ambient temperature (deg.c.) : 24.5 Modulation : GSM,GPRS,EGPRS
 Relative Humidity (%) : 38 Crest factor : Refer to Section 4.1
 Date : December 15,2008 Measured By : Hisayoshi Sato

BODY SAR MEASUREMENT RESULTS									
Frequency		Modulation	Phantom Section	EUT Set-up Conditions			Liquid Temp.[deg.c]		SAR(1g)
Channel	[MHz]			Antenna	Position	Separation [mm]	Before	After	Maximum of multi-peak
Step 1. Search for the worst position									
Mid	1880.0	GSM	Flat	Fixed	Front	15	23.5	23.5	0.124
Mid	1880.0	GSM	Flat	Fixed	Back	15	23.5	23.5	0.178
Step 2. Search for the worst modulation									
Mid	1880.0	GPRS (1UP)	Flat	Fixed	Back	15	24.1	24.1	0.242
Mid	1880.0	GPRS (2UP)	Flat	Fixed	Back	15	24.1	24.1	0.486
Mid	1880.0	GPRS (3UP)	Flat	Fixed	Back	15	24.1	24.1	0.479
Mid	1880.0	GPRS (4UP)	Flat	Fixed	Back	15	24.1	24.1	0.249
Mid	1880.0	EGPRS (1UP)	Flat	Fixed	Back	15	24.1	24.1	0.190
Mid	1880.0	EGPRS (2UP)	Flat	Fixed	Back	15	24.1	24.1	0.447
Mid	1880.0	EGPRS (3UP)	Flat	Fixed	Back	15	24.1	24.1	0.311
Mid	1880.0	EGPRS (4UP)	Flat	Fixed	Back	15	24.1	24.1	0.188
Step 2. Change to the Low and High channels									
Low	1850.2	GPRS (2UP)	Flat	Fixed	Back	15	24.1	24.1	0.374
High	1909.8	GPRS (2UP)	Flat	Fixed	Back	15	24.1	24.1	0.438

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7.5 Head WCDMA IV band SAR

Liquid Depth (cm) : 15.0 Model : PV300
 Parameters : $\epsilon_r = 40, \sigma = 1.34$ Serial No. : P3-240
 Ambient temperature (deg.c.) : 24.0 Modulation : QPSK
 Relative Humidity (%) : 42 Crest factor : Refer to Section 4.1
 Date : January 30, 2009 Measured By : Miyo Kishimoto

HEAD SAR MEASUREMENT RESULTS									
Frequency		Mode	Phantom Section	EUT Set-up Conditions			Liquid Temp.[deg.c]		SAR(1g) [W/kg]
Channel	[MHz]			Antenna	Position	Separation	Before	After	Maximum of multi-peak
Step1. Position search									
Mid	1732.6	RMC 12.2k	Left	Fixed	Cheek		22.3	22.3	0.560
Mid	1732.6	RMC 12.2k	Left	Fixed	Tilt		22.3	22.3	0.212
Mid	1732.6	RMC 12.2k	Right	Fixed	Cheek		22.3	22.3	0.847
Mid	1732.6	RMC 12.2k	Right	Fixed	Tilt		22.3	22.3	0.308
Step 2. Change to the Low and High channels									
Low	1712.4	RMC 12.2k	Right	Fixed	Cheek		22.3	22.3	0.779
High	1752.6	RMC 12.2k	Right	Fixed	Cheek		22.3	22.3	0.691

7.6 Body-worn WCDMA IV band SAR

Liquid Depth (cm) : 15.0 Model : PV300
 Parameters : $\epsilon_r = 54.5, \sigma = 1.45$ Serial No. : P3-240
 Ambient temperature (deg.c.) : 24.0 Modulation : QPSK
 Relative Humidity (%) : 40 Crest factor : Refer to Section 4.1
 Date : January 29, 2009 Measured By : Miyo Kishimoto

BODY SAR MEASUREMENT RESULTS									
Frequency		Mode	Phantom Section	EUT Set-up Conditions			Liquid Temp.[deg.c]		SAR(1g) [W/kg]
Channel	[MHz]			Antenna	Position	Separation [mm]	Before	After	Maximum of multi-peak
Step 1. Search for the worst position									
Mid	1732.6	RMC 12.2k	Flat	Fixed	Front	15	22.0	22.0	0.375
Mid	1732.6	RMC 12.2k	Flat	Fixed	Back	15	22.0	22.0	0.446
Step 2. Change to the Low and High channels									
Low	1712.4	RMC 12.2k	Flat	Fixed	Back	15	22.0	22.0	0.445
High	1752.6	RMC 12.2k	Flat	Fixed	Back	15	22.0	22.0	0.486

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7.7 Reference DATA of Body-worn Bluetooth 2450MHz SAR

Liquid Depth (cm) : 15.0 Model : PV300
 Parameters : $\epsilon_r = 50.6, \sigma = 2.03$ Serial No. : P3-240
 Ambient temperature (deg.c.) : 24.5 Modulation : GFSK(BDR),8DPSK(EDR)
 Relative Humidity (%) : 39 Crest factor : 1
 Date : December 17, 2008 Measured By : Miyo Kishimoto

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	Step 1. Search for the modulation								
	Mid	2441.0	GFSK	Flat	Fixed	Back	23.5	23.5	0.000144
	Mid	2441.0	GFSK	Flat	Fixed	Back	23.5	23.5	0.0000405
	Step 2. Search for the worst position								
	Mid	2441.0	GFSK	Flat	Fixed	Front	23.5	23.5	0.000341
	Step 3. Change to the Low and High channels								
	Low	2402.0	GFSK	Flat	Fixed	Back	23.4	23.4	0.000148
High	2480.0	GFSK	Flat	Fixed	Back	23.4	23.5	0.000955	

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