



# RADIO TEST REPORT

Test Report No.: 29CE0264-HO-01-F

Applicant : SHARP CORPORATION  
Type of Equipment : W-CDMA / GSM Mobile Phone  
Model No. : PV300  
Test regulation : FCC Part 22 Subpart H: 2006  
FCC ID : APYNAR0065  
Test Result : Complied

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

Date of test: December 8 to 25, 2008

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## **SECTION 1: Customer information**

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Brand name : SHARP  
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Contact Person : Juri Sugiyama

## **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, P3-263, P3-040  
Rating : Battery DC 3.7 - DC 4.2V  
(AC Adapter: Input 100 - 240V, 50/60Hz, Output DC 5V)  
Receipt Date of Sample : December 5, 2008  
Country of Mass-production : Japan  
Condition of EUT : Engineering prototype  
Modification of EUT : No Modification by the test lab

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**Head Office EMC Lab.**

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## 2.2 Product Description

**This page has been submitted for a separate exhibit.**

### SECTION 3: Test specification, procedures & results

#### 3.1 Test Specification

Test Specification : FCC Part 22 Subpart H: 2006, final revised on November 29, 2006  
Title : FCC 47CFR Part 22 Subpart H  
Cellular Radiotelephone Service

#### 3.2 Procedures and results

| Item  | Test Procedure                            | Specification        | Remarks                | Deviation | Worst margin  | Results  |
|---|---|----------------------|------------------------|-----------|---|----------|
| Peak Output Power                           | FCC Part2<br>Section 2.1046               | Section 22.913(a)(2) | Conducted/<br>Radiated | N/A       | [Conducted]<br>5.8dB<br>824.2MHz<br>(GSM Mode/GPRS Mode)<br>[Radiated]<br>10.6dB<br>824.20MHz, Vertical<br>(GSM mode) | Complied |
| Emission Bandwidth, 99% Occupied Bandwidth  | FCC Part2<br>Section 2.1049               | Section 22.917       | Conducted              | N/A       | -   | Complied |
| Band-Edge                                   | FCC Part2<br>Section 2.1049               | Section 22.917(a)(b) | Conducted/<br>Radiated | N/A       | [Conducted]<br>0.9dB<br>849.018MHz<br>(GSM mode)<br>[Radiated]<br>1.4dB<br>823.99MHz, Vertical<br>(GSM + BT Mode)     | Complied |
| Spurious Emission (Conducted)               | FCC Part2<br>Section 2.1051               | Section 22.917(a)(b) | Conducted              | N/A       | -   | Complied |
| Spurious Emission (Radiated)                | FCC Part2<br>Section 2.1053               | Section 22.917(a)(b) | Radiated               | N/A       | 16.6dB<br>2472.60MHz, Horizontal<br>(GSM Mode)  | Complied |
| Frequency Stability (Temperature Variation) | FCC Part2<br>Section 2.1055(a)(1) and (b) | Section 22.355       | Conducted              | N/A       | -   | Complied |
| Frequency Stability (Voltage Variation)     | FCC Part2<br>Section 2.1055(d)(1) and (2) | Section 22.355       | Conducted              | N/A       | -   | Complied |

Note: UL Japan's EMI Work Procedures No. QPM05

\*These tests were also referred to ANSI/TIA 603-C-2004 "Land Mobile FM or PM Communications Equipment Measurement and Performance Standards."

\*These tests were performed without any deviations from test procedure except for additions or exclusions.

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### 3.3 Uncertainty

#### EMI

##### Transmitter Spurious Emissions (Radiated)

The measurement uncertainty for this test is 4.62dB(30-1000MHz) and 5.06dB(Above 1GHz).

The data listed in this report meets the limits unless the uncertainty is taken into consideration.

##### Frequency Stability

The measurement uncertainty for this test is  $1 \times 10^{-5}$ .

##### Other test except Spurious Emission (Radiated) and Frequency Stability

The measurement uncertainty for this test is 3.0dB.

### 3.4 Test Location

UL Japan, Inc. Head Office EMC Lab. \*NVLAP Lab. code: 200572-0

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|                            | FCC Registration Number | IC Registration Number | Width x Depth x Height (m) | Size of reference ground plane (m) / horizontal conducting plane | Other rooms            |
|----------------------------|-------------------------|------------------------|----------------------------|--|------------------------|
| No.1 semi-anechoic chamber | 313583                  | 2973C-1                | 19.2 x 11.2 x 7.7m         | 7.0 x 6.0m   | No.1 Power source room |
| No.2 semi-anechoic chamber | 655103                  | 2973C-2                | 7.5 x 5.8 x 5.2m           | 4.0 x 4.0m   | -                      |
| No.3 semi-anechoic chamber | 148738                  | 2973C-3                | 12.0 x 8.5 x 5.9m          | 6.8 x 5.75m  | No.3 Preparation room  |
| No.3 shielded room         | -                       | -                      | 4.0 x 6.0 x 2.7m           | N/A  | -                      |
| No.4 semi-anechoic chamber | 134570                  | 2973C-4                | 12.0 x 8.5 x 5.9m          | 6.8 x 5.75m  | No.4 Preparation room  |
| No.4 shielded room         | -                       | -                      | 4.0 x 6.0 x 2.7m           | N/A  | -                      |
| No.5 semi-anechoic chamber | -                       | -                      | 6.0 x 6.0 x 3.9m           | 6.0 x 6.0m   | -                      |
| No.6 shielded room         | -                       | -                      | 4.0 x 4.5 x 2.7m           | 4.75 x 5.4 m   | -                      |
| No.6 measurement room      | -                       | -                      | 4.75 x 5.4 x 3.0m          | 4.75 x 4.15 m  | -                      |
| No.7 shielded room         | -                       | -                      | 4.7 x 7.5 x 2.7m           | 4.7 x 7.5m   | -                      |
| No.8 measurement room      | -                       | -                      | 3.1 x 5.0 x 2.7m           | N/A  | -                      |
| No.9 measurement room      | -                       | -                      | 8.0 x 4.5 x 2.8m           | 2.0 x 2.0m   | -                      |
| No.10 measurement room     | -                       | -                      | 2.6 x 2.8 x 2.5m           | 2.4 x 2.4m   | -                      |
| No.11 measurement room     | -                       | -                      | 3.1 x 3.4 x 3.0m           | 2.4 x 3.4m   | -                      |

\* Size of vertical conducting plane (for Conducted Emission test): 2.0 x 2.0m for No.1, No.2, No.3, and No.4 semi-anechoic chambers and No.3 and No.4 shielded rooms.

### 3.5 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

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

### **4.1 Operating Modes**

<GSM850>

| <b>Test</b>  | <b>Operating mode</b>   | <b>Power control</b> | <b>Tested frequency</b>          | <b>Channel</b>    |
|--|---|----------------------|----------------------------------|-------------------|
| Peak output Power (Radiated), Emission Bandwidth, 99% Occupied bandwidth, Spurious Emission (Conducted/Radiated) | Transmitting (Tx) (GSM, GMSK)<br>Transmitting (Tx) (EGPRS, 8PSK),<br>Multi slot   | Max                  | 824.2MHz<br>836.6MHz<br>848.8MHz | 128<br>190<br>251 |
| Peak output Power (Conducted)  | Transmitting (Tx) (GSM, GMSK)<br>Transmitting (Tx) (GPRS, GMSK),<br>Single slot<br>Transmitting (Tx) (EGPRS, 8PSK),<br>Multi slot | Max                  | 824.2MHz<br>836.6MHz<br>848.8MHz | 128<br>190<br>251 |
| Band Edge (Conducted/Radiated)   | Transmitting (Tx) (GSM, GMSK),<br>Transmitting (Tx) (EGPRS, 8PSK),<br>Transmitting (Tx) (GSM, GMSK + BT)                          | Max                  | 824.2MHz<br>848.8MHz             | 128<br>251        |
| Frequency Stability (Temperature/Voltage Variation)  | Transmitting (Tx) (GSM, GMSK)<br>Transmitting (Tx) (EGPRS, 8PSK)  | Max                  | 836.6MHz                         | 190               |

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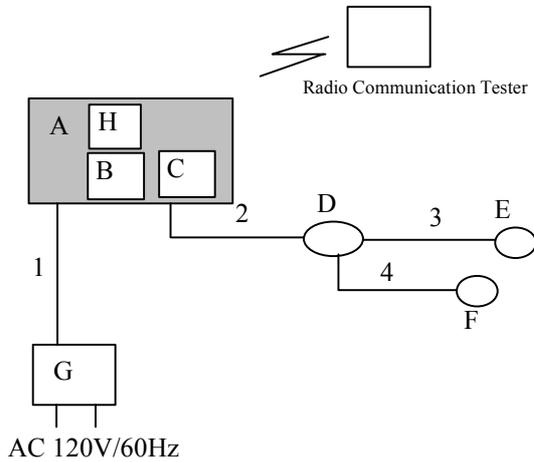
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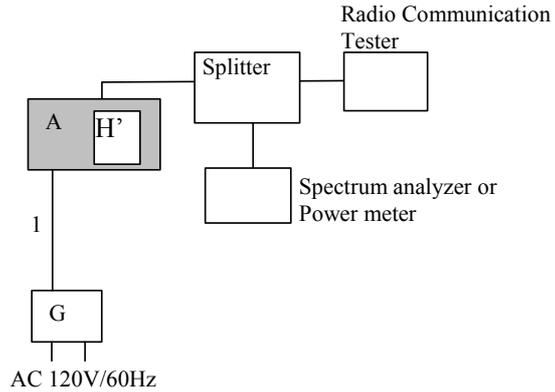
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## 4.2 Configuration and peripherals

<Radiated Emission test>



<Antenna terminal conducted tests>



\* Cabling and setup(s) were taken into consideration and test data was taken under worse case conditions.

### Description of EUT and Support equipment

| No. | Item                      | Model number | Serial number                            | Manufacturer         | Remarks |
|-----|---------------------------|--------------|--|----------------------|---------|
| A   | W-CDMA / GSM Mobile Phone | PV300        | P3-240 *1),<br>P3-263 *2),<br>P3-040 *3) | SHARP                | EUT     |
| B   | Battery                   | PV-BL51      | -  | SHARP                | -       |
| C   | Micro SD card (1GB)       | -            | -  | SanDisk              | -       |
| D   | Microphone & Switch       | -            | -  | SHARP                | -       |
| E   | Earphone(R)               |              |  |                      |         |
| F   | Earphone(L)               |              |  |                      |         |
| G   | AC Adapter                | PV-AC41      | RADPA1046YCPZ                            | SHARP                | -       |
| H   | TEST USIM Card            | -            | -  | Agilent Technologies | -       |
| H'  | TEST USIM Card            | -            | -  | Rohde & Schwarz      | -       |

\*1) Used for Peak output Power (Conducted) test

\*2) Used for Peak output Power (Radiated), Band-Edge (Radiated), Emission Bandwidth, and Spurious emission (Radiated) tests

\*3) Used for Emission Bandwidth, Band-Edge (Conducted), Spurious emission (Conducted) and Frequency Stability tests

### List of cables used

| No. | Name                        | Length (m) | Shield     |            |
|-----|-----------------------------|------------|------------|------------|
|     |                             |            | Cable      | Connector  |
| 1   | DC cable                    | 1.5        | Shielded   | Shielded   |
| 2   | Microphone & Earphone cable | 1.0        | Unshielded | Unshielded |
| 3   | Earphone cable              | 0.5        | Unshielded | Unshielded |
| 4   | Earphone cable              | 0.2        | Unshielded | Unshielded |

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## **SECTION 5: Peak Output Power (Conducted/Radiated)**

[Conducted]

### **Test Procedure**

The peak output power (conducted) was measured with a power meter and an attenuator at the antenna port.

**Test data** : **APPENDIX 2**  
**Test result** : **Pass**

[Radiated]

### **Test Procedure**

- 1) EUT was placed on a platform of nominal size, 1.0 m by 0.5m, raised 80cm above the conducting ground plane. Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The Radiated Electric Field Strength intensity has been measured in a semi anechoic chamber with a ground plane and at a distance of 3m (for the Peak Output Power for the Radiated). The measuring antenna height varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.
- 2) Exchanged the EUT to the Substitution Antenna, the antenna was set for the same height as EUT on the table. The frequency below 1GHz of the Substitution Antenna was used as the Half wave dipole Antenna, which is harmonized with the measured frequency in 1). The Substitution Antenna was connected with the Signal Generator, and the polarized electromagnetic radiation of the Substitution Antenna was matched with the one of the measuring Antenna, which was set with the Signal Generator to the measured frequency in 1). Then, we set with the Output power (CW) of the Signal Generator where the measuring electromagnetic field is equal to the measured value in 1). The measuring antenna height varied between 1 and 4m to obtain the maximum receiving level. Its Output power of Signal Generator was recorded.
- 3) Effective radiated power was calculated by subtracting the cable loss and the attenuator loss connected between the Signal Generator and the Substitution Antenna from the Output power of the Signal Generator recorded in 2).

**Test data** : **APPENDIX 2**  
**Test result** : **Pass**

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## **SECTION 6: Bandwidth and Band-Edge (Conducted)**

### **Test Procedure**

The Emission Bandwidth, 99% Occupied Bandwidth and Band-Edge was measured with a spectrum analyzer and attenuator connected to the antenna port.

Test data : APPENDIX 2  
Test result : Pass

## **SECTION 7: Spurious Emission (Conducted)**

### **Test Procedure**

The Spurious Emission was measured with a spectrum analyzer and attenuator connected to the antenna port.

Test data : APPENDIX 2  
Test result : Pass

## **SECTION 8: Spurious Radiation and Band-Edge (Radiated)**

### **Test Procedure**

- 1) EUT was placed on a platform of nominal size, 1.0m by 0.5m, raised 80cm above the conducting ground plane. Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The Radiated Electric Field Strength intensity has been measured in a semi anechoic chamber with a ground plane and at a distance of 3m. The measuring antenna height varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.
- 2) Exchanged the EUT to the Substitution Antenna, the antenna was set for the same height as EUT on the table. The frequency below 1GHz of the Substitution antenna was used as the Half wave dipole antenna and Shorted dipole antenna calibrated with the Half wave dipole antenna, which is harmonized with the measured frequency in 1). The frequency above 1GHz of the Substitution antenna was used with Horn antenna calibrated with the Half wave dipole antenna. The Substitution antenna was connected with the Signal Generator, and the polarized electromagnetic radiation of the Substitution antenna was matched with the one of the measuring antenna, which was set with the Signal Generator to the measured frequency in 1). Then, we set with the Output power (CW) of the Signal Generator where the measuring electromagnetic field is equal to the measured value in 1). The measuring antenna height varied between 1 and 4m to obtain the maximum receiving level. Its Output power of Signal Generator was recorded.
- 3) Effective radiated power was calculated by subtracting the cable loss and the attenuator loss connected between the Signal Generator and the Substitution Antenna from the Output power of the Signal Generator recorded in 2). For the usage of the antenna (Shorted dipole and Horn antenna) except for the Half wave dipole antenna (2.15dBi) for the Substitution antenna, the Effective radiated power was calculated by compensating the finite difference in the antenna gain of the Half wave dipole antenna, and Substitution antenna.

Test data : APPENDIX 2  
Test result : Pass

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## **SECTION 9: Frequency Stability**

### **Test Procedure**

The Frequency Stability was measured with a spectrum analyzer and attenuator connected to the antenna port. The Frequency Drift was measured with the 10 deg. C. steps from -30 deg. C. to 50 deg. C., and it is presented as the ppm unit. The Frequency Drift was measured with the normal temperature (20 deg. C.) and Voltage tolerance (DC3.7V to DC4.2V), and it is presented as the ppm unit.

Temperature : -30deg.C to +50deg.C (10 deg. C. step)  
Voltage : Vnom:DC 3.9V, Vmin:DC 3.7V, Vmax:DC 4.2V : Operating voltage range of EUT \*

\*The voltage supply beyond DC 4.2V exceeds the operating voltage range of EUT.  
In case of the voltage supply below DC 3.7V, the EUT stops operation by "low battery detection function."  
Therefore, Frequency Stability test was performed under the above condition.

**Test data** : **APPENDIX 2**  
**Test result** : **Pass**

**APPENDIX 1: Photographs of test setup**

**Spurious Emission**

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**Worst Case Position (Horizontal:X-axis:/ Vertical: Z-axis)**

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