ITS Intertek Testing Services
ETL SEMKO

# *Specific Absorption Rate (SAR) Test Report*

for

**Sharp Labs of America**

on the

**Tri-Mode Cellular Phone**

**Model: SHARP TQ-CX1**

**FCC ID: APYHRO00022**

Test Report: 20466371

Date of Report: June 7, 2001

Job #: J20046637

Date of Test April 25 to June 6, 2001

Total number of pages in report: 88 + Data Sheets

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| | | |
|---|---|---|
| Tested by: *(signature)* | Suresh Kondapalli | Review Date: 6/29/01 |
| Reviewed by: David Chernomordik | David Chernomordik, Ph.D. Technical Manager | Review Date: 6/29/01 |



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## 1.0 JOB DESCRIPTION

1.1 Client Information

The EUT has been tested at the request of:

**Company:** Sharp Labs of America.
**Address:** 5750 NW Pacific Rim Blvd
Camas WA 98607
USA
**Name of contact:** Mr. Tom Potten
**Telephone:** (360) 817-8536
**Fax:** (360) 834-8696

1.2 Equipment under test (EUT)

**Product Descriptions:**

| **Equipment** | Tri-Mode Cellular Phone | | |
|---|---|---|---|
| Trade Name | Sharp Labs of America | Model No: | SHARP TQ-CX1 |
| FCC ID | APYHRO00022 | S/N No. | Not Labeled |
| Category | Portable | RF Exposure | Uncontrolled Environment |
| Frequency Band | 824 – 849 MHz - AMPS<br>824 – 849 MHz - CDMA<br>1850 – 1910 MHz - CDMA | System | AMPS, CDMA |
| **EUT Antenna Descriptions** | | | |
| Antenna Type:<br>Gain: | Monopole<br>0 dBi | | |

**Use of Product :** Wireless Voice/Data communications

**Manufacturer:** Sharp Labs of America

**Production is planned** [X ] Yes, [ ] No

**EUT receive date:** March 19, 2001

**EUT received condition:** Prototype in good condition.

**Test start date:** April 25, 2001

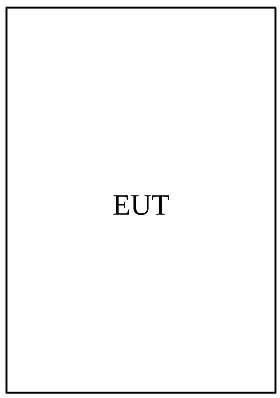
**Test end date:** April 28, 2001

1.3 Test plan reference

FCC rule part 2.1093, FCC Docket 96-326 & Supplement C to OET Bulletin 65

1.4 System test configuration
1.4.1 System block diagram & Support equipment

The EUT was tested without the need for support equipment.



1.4.2 Test Position for Brain

The SHARP TQ-CX1 was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in C95.1 (1992) and Supplement C of OET 65 (1998). The SHARP TQ-CX1 was placed in the intended use position, i.e. CENELEC 80$^{o}$ position. This position is defined by a reference plane and a line. The reference plane of the head is given by three points, the auditory canal opening of both ears and center of the closed mouth. The reference line of the SHARP TQ-CX1 is defined by the line, which connects the center of the ear piece with the center of the bottom of the case and lies on the surface of the case facing the phantom. The reference line of the SHARP TQ-CX1 lies in the reference plane of the head. The center of the ear-piece of the SHARP TQ-CX1 is placed at the entry of the auditory canal. The angle between the reference line of the phone and the line connecting both auditory canal openings is 80$^{o}$. Please refer to figure 1 below for the position details:

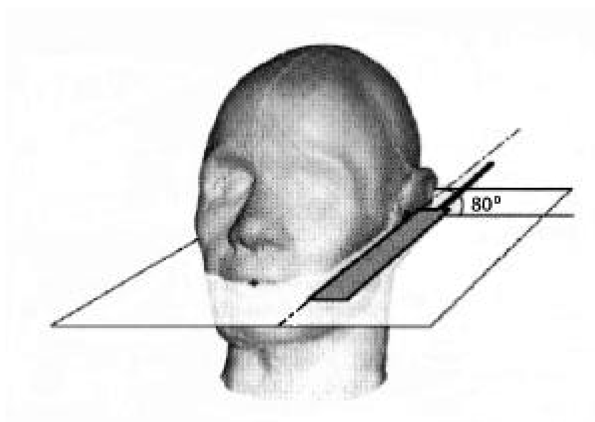



Figure 1: Intended use position for Brain

Additionally, the SHARP TQ-CX1 was tested in a second position from the normal 80$^{o}$ angle between the reference line of the phone and the line connecting both auditory canal openings. The center of the ear piece of the SHARP TQ-CX1 is placed at the entry of the auditory canal. The angle between the reference line of the phone and the line connecting both auditory canal openings was adjusted from 80$^{o}$ to the angle where two points of the phone were in contact with the phantom (ear hole and cheek). This position is called two touch.

Data pages indicate the position of the SHARP TQ-CX1 during testing. The 80$^{o}$ test position has data pages labeled ‘one touch’. The two touch position has data pages labeled ‘two touch’.

1.4.3 Test Position for Muscle

The SHARP TQ-CX1 was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in C95.1 (1992) and Supplement C of OET 65 (1998). Please refer to figure 2 below for the position details:

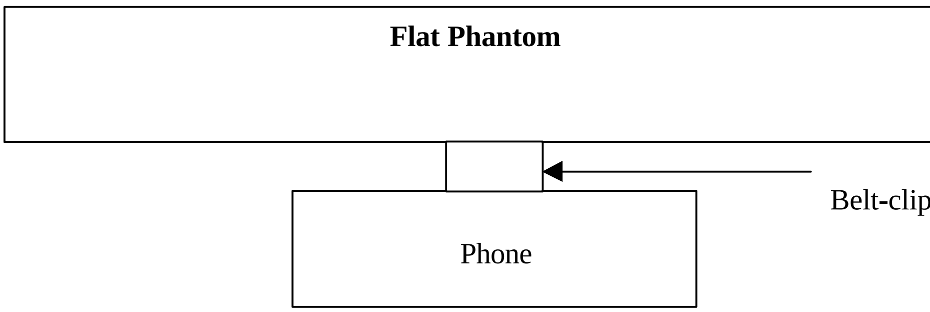



Figure 2: Intended use position for Muscle SAR (Body Worn)

Data pages indicate the position of the SHARP TQ-Cx1 during testing. The muscle test position has data pages labeled ‘with Belt Clip’.

1.4.4 Test Condition

During tests, the worst case data (max. RF coupling) was determined with following conditions:

| | | | |
|---|---|---|---|
| EUT Antenna | Internal | Orientation | 80 Degrees (Brain)<br>One Point Touch (Brain)<br>Two Point Touch (Brain)<br>Flat (Muscle) |
| Usage | Right Hand<br>Left Hand<br>Body worn | Distance between antenna axis at the joint and the phantom surface: | One Point Touch (Brain) 14.4 mm<br>Two Point Touch (Brain) 19.6 mm<br>Belt-Clip (Body) 41.3 mm* |
| Simulating human hand | Not Used | EUT Battery | Fully Charged |
| Power output (conducted) | 24.4 dBm 824 – 849 MHz (AMPS)<br>27.0 dBm 824 – 849 MHz ( CDMA)<br>24.4 dBm 1850 – 1910 MHz ( CDMA) | | |

* Belt-Clip is 14.2 mm thick

The spatial peak SAR values were accessed for lowest, middle and highest operating channels defined by the manufacturer.

1.5 Modifications required for compliance

No modifications were implemented by Intertek Testing Services.

## 1.6 Additions, deviations and exclusions from standards

No additions, deviations or exclusions have been made from standard.

## 2.0 SAR EVALUATION

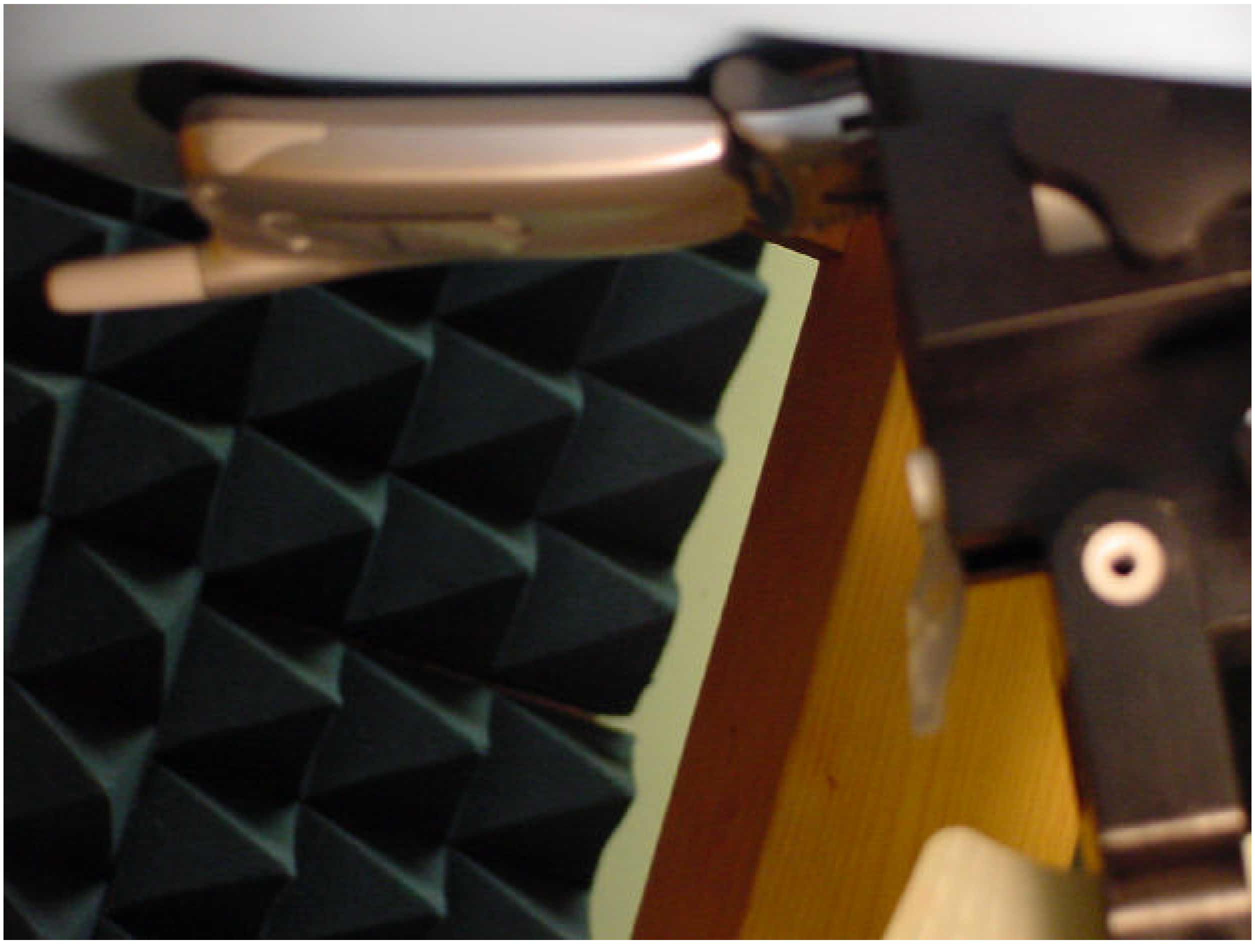
2.1 SAR Limits

The following FCC limits for SAR apply to devices operate in General Population/Uncontrolled Exposure environment:

| **EXPOSURE**<br>**(General Population/Uncontrolled Exposure environment)** | **SAR**<br>**(W/kg)** |
|---|---|
| Average over the whole body | 0.08 |
| Spatial Peak (1g) | 1.60 |
| Spatial Peak for hands, wrists, feet and ankles (10g) | 4.00 |

2.2 Configuration Photographs

**SAR measurement Test Setup**

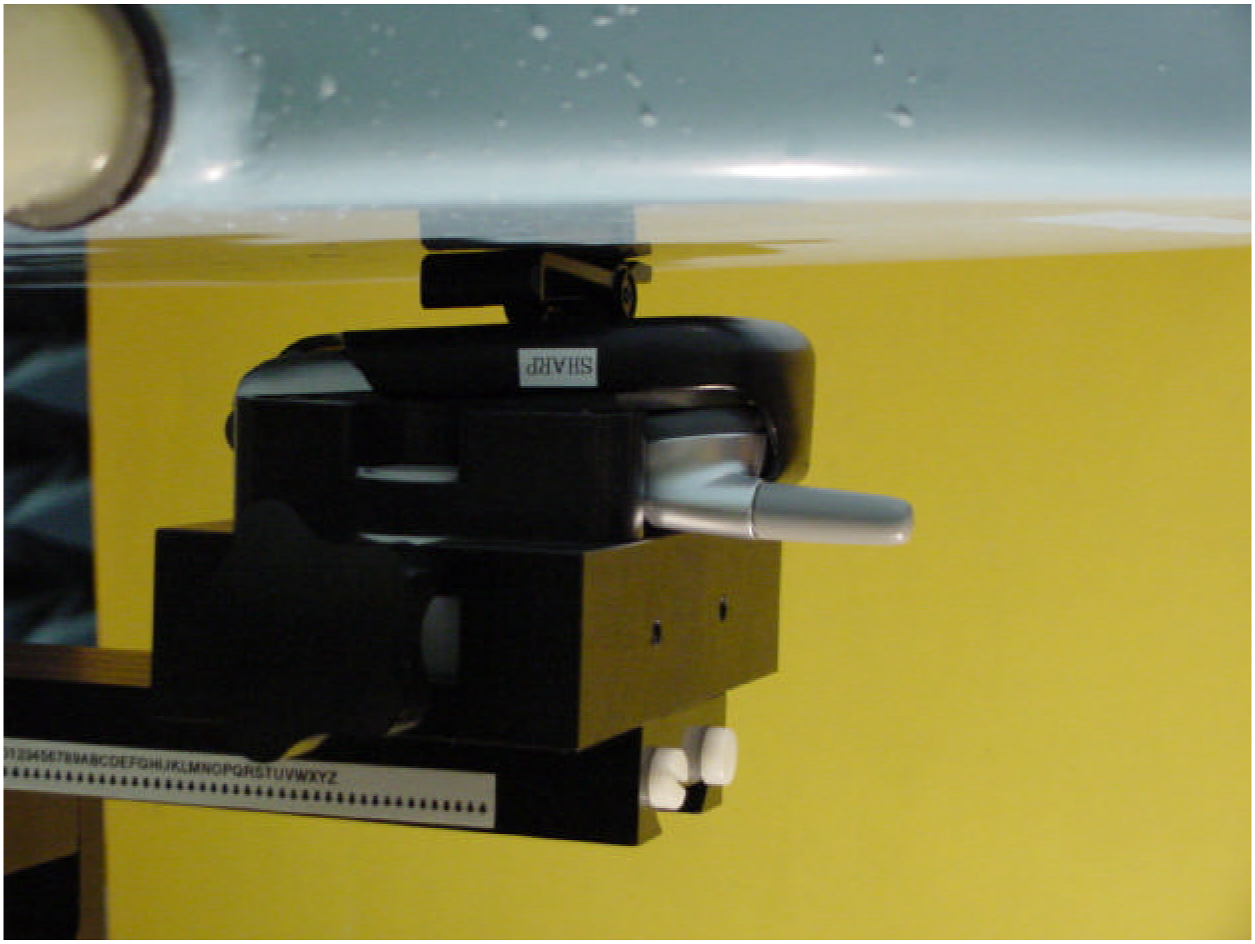


2.2 Configuration Photographs Continued

**SAR Measurement Test Setup**

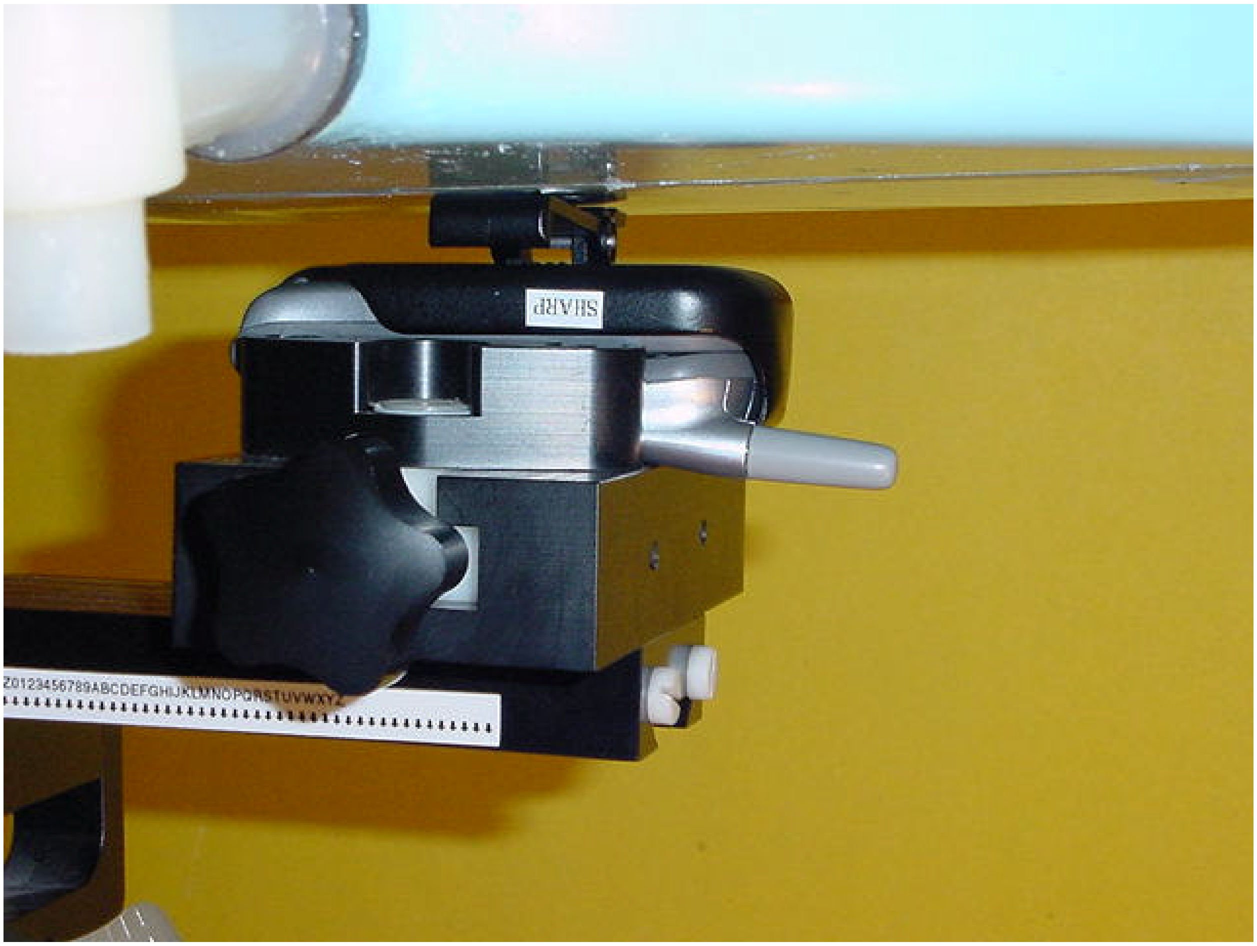
2.2 Configuration Photographs – Continued

**SAR Measurement Test Setup**



2.2 Configuration Photographs – Continued

**SAR Measurement Test Setup**



2.2 Configuration Photographs – Continued

**EUT Photo**

2.2 Configuration Photographs – Continued

**EUT Photo**

2.2 Configuration Photographs – Continued

**EUT Photo**

2.2 Configuration Photographs – Continued

**EUT Photo**

2.2 Configuration Photographs – Continued

**EUT Photo**

2.2 Configuration Photographs – Continued

**EUT Photo**

## 2.3 System Verification

Prior to the assessment, the system was verified to the ±5% of the specifications by using the system validation kit. The validation was performed at 900 MHz.

| Validation kit | Targeted $SAR_{1g}$ (mW/g) | Measured $SAR_{1g}$ (mW/g) |
|---|---|---|
| D900V2, S/N #: 013 | 3.92 | 3.89 |

## 2.4 Evaluation Procedures

The SAR evaluation was performed with the following procedures:

a. SAR was measured at a fixed location above the ear point and used as a reference value for the assessing the power drop.

b. The SAR distribution at the exposed side of the head was measured at a distance of 4.0 mm from the inner surface of the shell. The area covered the entire dimension of the head and the horizontal grid spacing was 20 mm x 20 mm. Based on this data, the area of the maximum absorption was determined by spline interpolation.

c. Around this point, a volume of 32 mm x 32 mm x 34 mm was assessed by measuring 5 x 5 x 7 points. Based on this data set, the spatial peak SAR value was evaluated with the following procedure:

   I) The data at the surface were extrapolated, since the center of the dipoles is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measurement point is 1.6 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in Z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.

   ii) The maximum interpolated value was searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1g or 10g) were computed using the 3-D spline interpolation algorithm. The 3-D spline is composed of three one-dimensional splines with the “Not a knot” condition (in x, y and z directions). The volume was integrated with the trapezoidal algorithm. 1000 points (10 x 10 x 10) were interpolated to calculate the average.

   iii) All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

d. Re-measurement of the SAR value at the same location as in step a. above. If the value changed by more than 5 %, the evaluation was repeated.

## 2.5 Test Results

The following pages contain data tables with the test results obtained when the device was tested in the condition described in this report. Detailed measurement plots, which reveal information about the location of the maximum SAR with respect to the device, are reported in Appendix A.

| **Trade Name:** | Sharp Labs of America | **Model No.:** | SHARP TQ-CX1 |
|---|---|---|---|
| **Serial No.:** | Not Labeled | **Test Engineer:** | Suresh Kondapalli |

| **TEST CONDITIONS** | | | |
|---|---|---|---|
| Ambient Temperature | 23 $^{o}$C | Relative Humidity | 55 % |
| Test Signal Source | Test Mode | Signal Modulation | CW |
| Output Power Before SAR Test | 824 – 849 MHz, AMPS 24.4 dBm<br>824 – 849 MHz, CDMA 27.0 dBm<br>1850 – 1910 MHz, CDMA 24.4 dBm | Output Power After SAR Test | 824 – 849 MHz, AMPS 24.4 dBm<br>824 – 849 MHz, CDMA 27.0 dBm<br>1850 – 1910 MHz, CDMA 24.4 dBm |
| Test Duration | 23 Min. | Number of Battery Change | Every Scan |

## AMPS DATA TABLE

| **Brain<br>EUT Position: Right Hand, 80 Deg** | | | | |
|---|---|---|---|---|
| Channel MHz | Operating Mode | Duty Cycle ratio | Measured $SAR_{1g}$ (mW/g) | Plot Number |
| 824 | AMPS | 1 | 0.802 | 1 |
| 835 | AMPS | 1 | 0.865 | 2 |
| 849 | AMPS | 1 | 0.692 | 3 |

| **Brain<br>EUT Position: Right Hand, Two Points Touching Phantom** | | | | |
|---|---|---|---|---|
| Channel MHz | Operating Mode | Duty Cycle ratio | Measured $SAR_{1g}$ (mW/g) | Plot Number |
| 824 | AMPS | 1 | 0.814 | 4 |
| 835 | AMPS | 1 | 0.898 | 5 |
| 849 | AMPS | 1 | 0.692 | 6 |

| **Brain<br>EUT Position: Left Hand, 80 Deg** | | | | |
|---|---|---|---|---|
| Channel MHz | Operating Mode | Duty Cycle ratio | Measured $SAR_{1g}$ (mW/g) | Plot Number |
| 824 | AMPS | 1 | 0.958 | 7 |

| | | | | |
|---|---|---|---|---|
| 835 | AMPS | 1 | 1.13 | 8 |
| 849 | AMPS | 1 | 0.873 | 9 |

| **Brain<br>EUT Position: Left Hand, Two Points Touching Phantom** | | | | |
|---|---|---|---|---|
| Channel MHz | Operating Mode | Duty Cycle ratio | Measured $SAR_{1g}$ (mW/g) | Plot Number |
| 824 | AMPS | 1 | 1.06 | 10 |
| 835 | AMPS | 1 | 1.29 | 11 |
| 849 | AMPS | 1 | 0.892 | 12 |

**CDMA DATA TABLE**

| **Brain<br>EUT Position: Left Hand, 80 Deg** | | | | |
|---|---|---|---|---|
| Channel MHz | Operating Mode | Duty Cycle ratio | Measured $SAR_{1g}$ (mW/g) | Plot Number |
| 824 | CDMA | 1 | 0.165 | 13 |
| 835 | CDMA | 1 | 0.409 | 14 |
| 849 | CDMA | 1 | 0.446 | 15 |

| **Brain<br>EUT Position: Left Hand, Two Points Touching Phantom** | | | | |
|---|---|---|---|---|
| Channel MHz | Operating Mode | Duty Cycle ratio | Measured $SAR_{1g}$ (mW/g) | Plot Number |
| 824 | CDMA | 1 | 0.630 | 16 |
| 835 | CDMA | 1 | 0.458 | 17 |
| 849 | CDMA | 1 | 0.366 | 18 |

| **Brain<br>EUT Position: Right Hand, 80 Deg** | | | | |
|---|---|---|---|---|
| Channel MHz | Operating Mode | Duty Cycle ratio | Measured $SAR_{1g}$ (mW/g) | Plot Number |
| 824 | CDMA | 1 | 0.496 | 19 |
| 835 | CDMA | 1 | 0.463 | 20 |
| 849 | CDMA | 1 | 0.341 | 21 |

| **Brain<br>EUT Position: Right Hand, Two Points Touching Phantom** | | | | |
|---|---|---|---|---|
| Channel MHz | Operating Mode | Duty Cycle ratio | Measured $SAR_{1g}$ (mW/g) | Plot Number |
| 824 | CDMA | 1 | 0.509 | 22 |
| 835 | CDMA | 1 | 0.556 | 23 |
| 849 | CDMA | 1 | 0.358 | 24 |

| **Muscle<br>EUT Position: With Belt-Clip Touching Phantom** | | | | |
|---|---|---|---|---|
| Channel MHz | Operating Mode | Duty Cycle ratio | Measured $SAR_{1g}$ (mW/g) | Plot Number |
| 824 | AMPS | 1 | 0.329 | 25 |
| 835 | AMPS | 1 | 0.379 | 26 |
| 849 | AMPS | 1 | 0.300 | 27 |
| 824 | CDMA | 1 | 0.172 | 28 |
| 835 | CDMA | 1 | 0.271 | 29 |
| 849 | CDMA | 1 | 0.300 | 30 |

## PCS BAND DATA TABLE

| **Brain<br>EUT Position: Left Hand, 80°** | | | | |
|---|---|---|---|---|
| Channel MHz | Operating Mode | Duty Cycle ratio | Measured $SAR_{1g}$ (mW/g) | Plot Number |
| 1850 | CDMA | 1 | 0.667 | 31 |
| 1880 | CDMA | 1 | 0.655 | 32 |
| 1909 | CDMA | 1 | 0.851 | 33 |

| **Brain<br>EUT Position: Left Hand, Two Point Touching Phantom** | | | | |
|---|---|---|---|---|
| Channel MHz | Operating Mode | Duty Cycle ratio | Measured $SAR_{1g}$ (mW/g) | Plot Number |
| 1850 | CDMA | 1 | 0.859 | 34 |
| 1880 | CDMA | 1 | 0.825 | 35 |
| 1909 | CDMA | 1 | 0.934 | 36 |

| **Brain<br>EUT Position: Right Hand, 80°** | | | | |
|---|---|---|---|---|
| Channel MHz | Operating Mode | Duty Cycle ratio | Measured $SAR_{1g}$ (mW/g) | Plot Number |
| 1850 | CDMA | 1 | 1.12 | 37 |
| 1880 | CDMA | 1 | 1.14 | 38 |
| 1909 | CDMA | 1 | 1.01 | 39 |

| **Brain<br>EUT Position: Right Hand, Two Point Touching Phantom** | | | | |
|---|---|---|---|---|
| Channel MHz | Operating Mode | Duty Cycle ratio | Measured $SAR_{1g}$ (mW/g) | Plot Number |
| 1850 | CDMA | 1 | 1.18 | 40 |
| 1880 | CDMA | 1 | 1.09 | 41 |
| 1909 | CDMA | 1 | 1.03 | 42 |

| **Muscle** | | | | |
|---|---|---|---|---|
| Channel MHz | Operating Mode | Duty Cycle ratio | Measured $SAR_{1g}$ (mW/g) | Plot Number |
| 1850 | CDMA | 1 | 0.212 | 43 |
| 1880 | CDMA | 1 | 0.198 | 44 |
| 1909 | CDMA | 1 | 0.217 | 45 |

Notes: a) Worst case data were reported
b) Duty cycle factor included in the measured SAR data
c) Uncertainty of the system is not included

# 3.0 EQUIPMENT

## 3.1 Equipment List

The Specific Absorption Rate (SAR) tests were performed with the SPEAG model DASY 3 automated near-field scanning system, which is a package, optimized for dosimetric evaluation of mobile radios [3].

The following major equipment/components were used for the SAR evaluations:

| SAR Measurement System | | | |
|---|---|---|---|
| EQUIPMENT | SPECIFICATIONS | S/N # | LAST CAL. DATE |
| Robot | **Stäubi RX60L** | 597412-01 | N/A |
| | Repeatability: ± 0.025mm<br>Accuracy: $0.806x10^{-3}$ degree<br>Number of Axes: 6 | | |
| E-Field Probe | **ET3DV5** | 1333 | 04/13/01 |
| | Frequency Range: 10 MHz to 6 GHz<br>Linearity: ± 0.2 dB<br>Directivity: ± 0.1 dB in brain tissue | | |
| Data Acquisition | **DAE3** | 317 | N/A |
| | Measurement Range: 1µV to >200mV<br>Input offset Voltage: < 1µV (with auto zero)<br>Input Resistance: 200 M | | |
| Phantom | **Generic Twin V3.0** | N/A | N/A |
| | Type: Generic Twin, Homogenous<br>Shell Material: Fiberglass<br>Thickness: 2 ± 0.1 mm<br>Capacity: 20 liter<br>Ear spacer: 4 mm (between EUT ear piece and tissue simulating liquid) | | |
| Simulated Tissue | **Mixture** | N/A | 04/26/01 |
| | Please see section 6.2 for details | | |
| Power Meter | **HP 8900D** w/ 84811A sensor | 3607U00673 | 08/01/00 |
| | Frequency Range: 100kHz to 18 GHz<br>Power Range: 300µW to 3W | | |

3.1 Tissue Simulating Liquid

| **Ingredient** | **Frequency** (800 – 900 MHz) |
|---|---|
| Water | 40.3 % |
| Sugar | 56.0 % |
| Salt | 2.5 % |
| HEC | 1.0 % |
| Bactericide | 0.2 % |

The dielectric parameters were verified prior to assessment using the HP 85070A dielectric probe kit and the HP 8753C network Analyzer. The dielectric parameters were:

| Frequency (MHZ) | $\varepsilon_r$ * | σ*(mho/m) | ρ**(kg/m$^{3)}$ |
|---|---|---|---|
| 835 | 46.6± 5% | 0.77 ± 10% | 1000 |

* *worst case uncertainty of the HP 85070A dielectric probe kit*
** *worst case assumption*

| Muscle | |
|---|---|
| **Ingredient** | **Frequency** (800 – 900 MHz) |
| Water | 54.05 % |
| Sugar | 45.05 % |
| Salt | 0.1 % |
| Bactericide | 0.8% |

The dielectric parameters were verified prior to assessment using the HP 85070A dielectric probe kit and the HP 8753C network Analyzer. The dielectric parameters were:

| Frequency (MHz) | $\varepsilon_r$ * | σ*(mho/m) | ρ**(kg/m$^{3)}$ |
|---|---|---|---|
| 835 | 56.5 ± 5% | 0.95 ± 10% | 1000 |

* *worst case uncertainty of the HP 85070A dielectric probe kit*
** *worst case assumption*

| Brain | |
|---|---|
| **Ingredient** | **Frequency** (1880 MHz) |
| Water | 53.93 % |
| Sugar | 44.97 % |
| Salt | 0 % |
| HEC | 1.0 % |
| Bactericide | 0.1 % |

The dielectric parameters were verified prior to assessment using the HP 85070A dielectric probe kit and the HP 8753C network Analyzer. The dielectric parameters were:

| Frequency (MHz) | $\varepsilon_r$* | σ *(mho/m) | ρ **(kg/m$^{3)}$ |
|---|---|---|---|
| 1880 | 42.5 ± 5% | 1.77 ± 10% | 1000 |

* *Worst case uncertainty of the HP 85070A, dielectric probe kit*
** *Worst case assumption*

Note: The amount of each ingredient specified in the tables is not the exact amounts of the final test solution. The final test solution was adjusted by adding small amounts of water, sugar, and/or salt to calibrate the solution to meet the proper dielectric parameters.

| Muscle | |
|---|---|
| **Ingredient** | **Frequency** (1880 MHz) |
| Water | 55.5 % |
| Sugar | 43.5 % |
| Salt | 0 % |
| Cellulose | 1.0 % |

The dielectric parameters were verified prior to assessment using the HP 85070A dielectric probe kit and the HP 8753C network Analyzer. The dielectric parameters were:

| **Frequency (MHz)** | $\varepsilon_r$* | **σ *(mho/m)** | **ρ **(kg/m3)** |
|---|---|---|---|
| 1880 | 52.2 ± 5% | 1.65 ± 10% | 1000 |

* *Worst case uncertainty of the HP 85070A, dielectric probe kit*
** *Worst case assumption*

Note: The amount of each ingredient specified in the tables is not the exact amounts of the final test solution. The final test solution was adjusted by adding small amounts of water, sugar, and/or salt to calibrate the solution to meet the proper dielectric parameters.

## 3.3 E-Field Probe Calibration

Probes were calibrated by the manufacturer in an IFI Model 110 TEM Cell. To ensure consistency, a strict protocol was followed. The conversion factor (ConF) between this calibration and the measurement in the tissue simulation solution was performed by comparison with temperature measurement and computer simulations. Probe calibration factors are included in Appendix B.

## 3.4 Measurement Uncertainty

The uncertainty budget has been determined for the DASY3 measurement system according to the NIS81 [5] and the NIST 1297 [6] documents and is given in the following table. The extended uncertainty (K=2) was assessed to be 23.5 %

| UNCERTAINTY BUDGET | | | | |
|---|---|---|---|---|
| **Uncertainty Description** | **Error** | **Distrib.** | **Weight** | **Std.Dev.** |
| Probe Uncertainty | | | | |
| Axial isotropy | ±0.2 dB | U-shape | 0.5 | ±2.4 % |
| Spherical isotropy | ±0.4 dB | U-shape | 0.5 | ±4.8 % |
| Isotropy from gradient | ±0.5 dB | U-shape | 0 | |
| Spatial resolution | ±0.5 % | Normal | 1 | ±0.5 % |
| Linearity error | ±0.2 dB | Rectang. | 1 | ±2.7 % |
| Calibration error | ±3.3 % | Normal | 1 | ±3.3 % |
| SAR Evaluation Uncertainty | | | | |
| Data acquisition error | ±1 % | Rectang. | 1 | ±0.6 % |
| ELF and RF disturbances | ±0.25 % | Normal | 1 | ±0.25 % |
| Conductivity assessment | ±10 % | Rectang. | 1 | ±5.8 % |
| Spatial Peak SAR Evaluation Uncertainty | | | | |
| Extrapol boundary effect | ±3 % | Normal | 1 | ±3 % |
| Probe positioning error | ±0.1 mm | Normal | 1 | ±1 % |
| Integrat. And cube orient | ±3 % | Normal | 1 | ±3 % |
| Cube shape inaccuracies | ±2 % | Rectang. | 1 | ±1.2 % |
| Device positioning | ±6 % | Normal | 1 | ±6 % |
| Combined Uncertanties | | | | **±11.7 %** |

## 3.5 Measurement Traceability

All measurements described in this report are traceable to National Institute of Standards and Technology (NIST) standards or appropriate national standards.

## 4.0 WARNING LABEL INFORMATION - USA

See attached users manual.

## 5.0 REFERENCES

[1] ANSI, ANSI/IEEE C95.1-1991: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3kHz to 300 Ghz, The Institute of electrical and Electronics Engineers, Inc., New York, NY 10017, 1992

[2] Federal Communications Commission, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields", OET Bulletin 65, FCC, Washington, D.C. 20554, 1997

[3] Thomas Schmid, Oliver Egger, and Niels Kuster, "Automated E-field scanning system for dosimetric assessments", *IEEE Transaction on Microwave Theory and Techniques*, vol. 44, pp. 105-113, Jan. 1996.

[4] Niels Kuster, Ralph Kastle, and Thomas Schmid, "Dosimetic evaluation of mobile communications equipment with know precision", IEICE Transactions on Communications, vol. E80-B, no. 5, pp.645-652, May 1997.

[5] NIS81, NAMAS, "The treatment of uncertainty in EMC measurement", Tech. Rep., NAMAS Executive, National Physical Laboratory, Teddinton, Middlesex, England, 1994.

[6] Barry N. Tayor and Chris E. Kuyatt, "Guidelines for evaluating and expressing the uncertainty of NIST measurement results", Tech. Rep., National Institude of Standards and Technology, 1994.

## 6.0 Document History

| Revision/ Job Number | Writer Initials | Date | Change |
|---|---|---|---|
| 1.0 / J20046637 | SS | June 7, 2001 | Original document |
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