**PCTEST ENGINEERING LABORATORY, INC.**
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# CERTIFICATE OF COMPLIANCE (SAR EVALUATION)

**APPLICANT NAME & ADDRESS:**
Samsung Electronics Co., Ltd.
416 Maetan-3 Dong, Paldal-Ku
Suwon City Kyungki-Do
441-742, KOREA
Attn: Wallace Oh

**DATE & LOCATION OF TESTING:**
Dates of Tests: Feb. 20 - Mar.1, 2002
Test Report S/N: SAR.220219075.A3L
Test Site: PCTEST Lab, Columbia, MD USA

| | |
|---|---|
| **FCC ID:** | **A3LSCHA310** |
| **APPLICANT:** | **Samsung Electronics Co., Ltd.** |

| | |
|---|---|
| **EUT Type:** | **Tri-Mode Dual-Band Analog/PCS Phone (AMPS/CDMA)** |
| **Tx Frequency:** | **824.04 – 848.97 MHz (AMPS) / 824.70 – 848.31 MHz (CDMA)**<br>**1851.25 – 1908.75 MHz (PCS CDMA)** |
| **Rx Frequency:** | **869.04 – 893.97 MHz (AMPS) / 869.70 – 893.31 MHz (CDMA)**<br>**1931.25 – 1988.75 MHz (PCS CDMA)** |
| **Max. RF Output Power:** | **0.400W ERP AMPS (26.023dBm);**<br>**0.315W ERP Cellular CDMA (24.983dBm);**<br>**0.285W EIRP PCS CDMA (24.551dBm)** |
| **Max. SAR Measurement:** | **1.361mW/g AMPS Head SAR; 0.731mW/g AMPS Body SAR;**<br>**0.989mW/g Cell. CDMA Head SAR; 0.35mW/g Cell. CDMA Body SAR;**<br>**1.357mW/g PCS CDMA Head SAR; 1.030mW/g PCS CDMA Body SAR** |
| **Trade Name/Model(s):** | ***SCH-A310*** |
| **FCC Classification:** | **Licensed Portable Transmitter Held to Ear (PCE)** |
| **FCC Rule Part(s):** | **§2.1093; FCC/OET Bulletin 65 Supplement C [July 2001]** |
| **Application Type:** | **Certification** |
| **Test Device Serial No.:** | ***Identical* prototype** |

**This wireless portable device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in ANSI/IEEE Std. C95.1-1992 and had been tested in accordance with the measurement procedures specified in ANSI/IEEE Std. C95.3-1992 and IEEE Std. 1528-200X (Draft 6.4, July 2001).**

**I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.**

*PCTEST certifies that no party to this application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 862.*

Randy Ortanez
President

# 12. SYSTEM VERIFICATION

## Tissue Verification

**Table 12.1 Simulated Tissue Verification**

| MEASURED TISSUE PARAMETERS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date(s) | 02/18/02 | 835MHz Brain | | 835MHz Muscle | | 1900MHz Brain | | 1900MHz Muscle | |
| Liquid Temperature (°C) | 23.5 | Target | Measured | Target | Measured | Target | Measured | Target | Measured |
| Dielectric Constant: ε | | 41.50 | 43.44 | 55.20 | 55.54 | 40.00 | 40.29 | 53.30 | 53.95 |
| Conductivity: σ | | 0.900 | 0.87 | 0.970 | 0.990 | 1.400 | 1.44 | 1.520 | 1.56 |

## Test System Validation

Prior to assessment, the system is verified to the ±10% of the specifications at 835MHz and 1900MHz by using the system validation kit(s). (Graphic Plots Attached)

**Table 12.2 System Validation**

| Date(s) | 02/20/02 | SYSTEM DIPOLE VALIDATION TARGET & MEASURED | | | |
|---|---|---|---|---|---|
| Liquid Temperature (°C) | 23.0 | | | | |
| System Validation Kit: D-835S, S/N: 103 | | 835MHz Brain | Targeted $SAR_{1g}$ (mW/g) 2.375 | Measured $SAR_{1g}$ (mW/g) **2.56** | Deviation (%) **+ 7.2** |
| System Validation Kit: D-1900S, S/N: 104 | | 1900MHz Brain | Targeted $SAR_{1g}$ (mW/g) 9.925 | Measured $SAR_{1g}$ (mW/g) **10.72** | Deviation (%) **+ 7.4** |

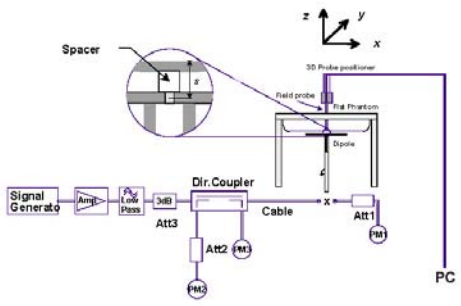



**Figure 12.1 Dipole Validation Test Setup**

# 13. SAR TEST DATA SUMMARY

## See Measurement Result Data Pages

## Procedures Used To Establish Test Signal

The handset was placed into simulated call mode (AMPS, Cellular CDMA & PCS CDMA modes) using manufacturers test codes. Such test signals offer a consistent means for testing SAR and are recommended for evaluating SAR [4]. When test modes are not available or inappropriate for testing a handset, the actual transmission is activated through a base station simulator or similar equipment. See data pages for actual procedure used in measurement.

## Device Test Conditions

The handset is battery operated. Each SAR measurement was taken with a fully charged battery. In order to verify that the device was tested at full power, conducted output power measurements were performed before and after each SAR measurement to confirm the output power. If a conducted power deviation of more than 5% occurred, the test was repeated.

## EUT Handset Reference Points

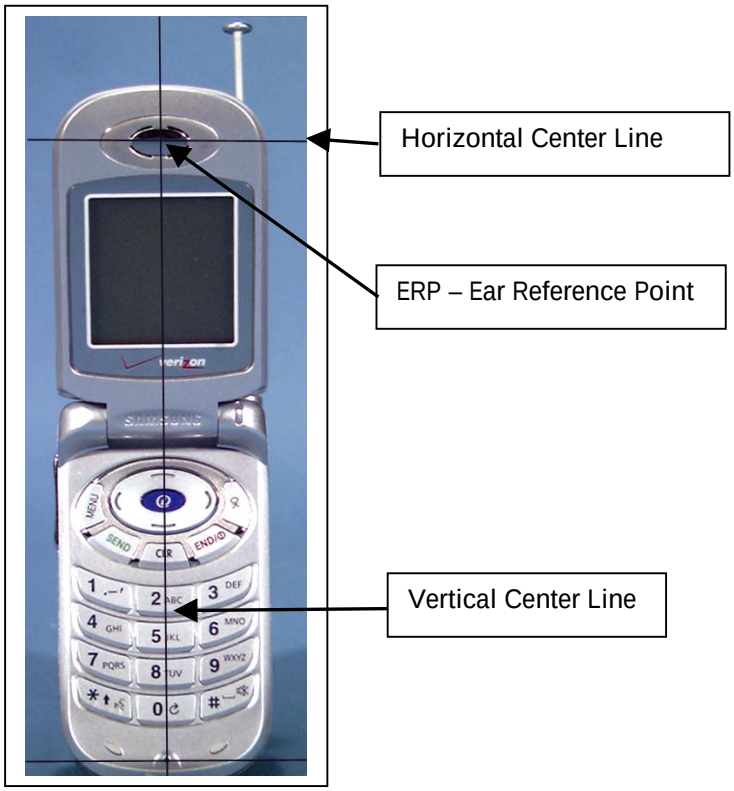



**Figure 13.1 Handset Reference Points**

# SAR DATA SUMMARY

Mixture Type: 835MHz Brain

Dielectric Constant: 43.44

Conductivity: 0.87

## 14.1 MEASUREMENT RESULTS (AMPS Right Head SAR – Touch)

| FREQUENCY | | Modulation | Begin / End POWER‡ | | | Device Test Position | Antenna Position | SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|
| MHz | Ch. | | (dBm) | | Battery | | | |
| 824.04 | 0991 | AMPS | 27.0 | 27.0 | Extended | Cheek / Touch | In | **1.3378** |
| 824.04 | 0991 | AMPS | 27.0 | 27.0 | Extended | Cheek / Touch | Out | **1.0746** |
| 836.49 | 0383 | AMPS | 27.0 | 27.0 | Extended | Cheek / Touch | In | **0.9055** |
| 836.49 | 0383 | AMPS | 27.0 | 27.0 | Extended | Cheek / Touch | Out | **0.7923** |
| 848.97 | 0799 | AMPS | 27.0 | 27.0 | Extended | Cheek / Touch | In | **0.9325** |
| 848.97 | 0799 | AMPS | 27.0 | 27.0 | Extended | Cheek / Touch | Out | **0.8065** |
| **ANSI / IEEE C95.1 1992 - SAFETY LIMIT<br>Spatial Peak<br>Uncontrolled Exposure/General Population** | | | | | | **Brain<br>1.6 W/kg (mW/g)<br>averaged over 1 gram** | | |

**NOTES:**

1. The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supp.C [July 2001].
2. All modes of operation were investigated, and worst-case results are reported.
3. Battery is fully charged for all readings. *Standard & Extended Batteries are options.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ‡Power Measured | ☒ | Conducted | ☐ | ERP | ☐ | EIRP | |
| 4. SAR Measurement System | ☐ | DASY3 | ☒ | IDX | ☐ | | |
| Phantom Configuration | ☐ | Left Head | ☐ | Flat Phantom | ☒ | Right Head | |
| 5. SAR Configuration | ☒ | Head | ☐ | Body | ☐ | Hand | |
| 6. Test Signal Call Mode | ☒ | Manu. Test Codes | ☐ | Base Station Simulator | | | |

Randy Ortanez
President

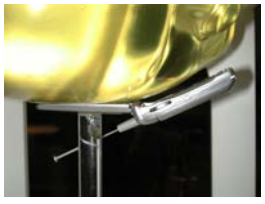


**Figure 14.1 Right Head SAR Test Setup**
**-- Cheek / Touch Position --**

# SAR DATA SUMMARY (Continued)

| | |
|---|---|
| Mixture Type: | 835MHz Brain |
| Dielectric Constant: | 43.44 |
| Conductivity: | 0.87 |

## 14.2 MEASUREMENT RESULTS (AMPS Right Head SAR – Tilt)

| FREQUENCY | | Modulation | Begin / End POWER‡ | | | Device Test Position | Antenna Position | SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|
| MHz | Ch. | | (dBm) | | Battery | | | |
| 824.04 | 0991 | AMPS | 27.0 | 27.0 | Extended | Ear / 15° Tilt | In | **0.4513** |
| 824.04 | 0991 | AMPS | 27.0 | 27.0 | Extended | Ear / 15° Tilt | Out | **0.2924** |
| **ANSI / IEEE C95.1 1992 - SAFETY LIMIT<br>Spatial Peak<br>Uncontrolled Exposure/General Population** | | | | | | **Brain<br>1.6 W/kg (mW/g)**<br>averaged over 1 gram | | |

**NOTES:**

1. The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supp.C [July 2001].
2. All modes of operation were investigated, and worst-case results are reported.
3. Battery is fully charged for all readings. *Standard & Extended Batteries are options.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | ‡Power Measured | ☒ | Conducted | ☐ | ERP | ☐ | EIRP |
| 4. | SAR Measurement System | ☐ | DASY3 | ☒ | IDX | ☐ | |
| | Phantom Configuration | ☐ | Left Head | ☐ | Flat Phantom | ☒ | Right Head |
| 5. | SAR Configuration | ☒ | Head | ☐ | Body | ☐ | Hand |
| 6. | Test Signal Call Mode | ☒ | Manu. Test Codes | ☐ | Base Station Simulator | | |

Randy Ortanez
President

**Figure 14.2 Right Head SAR Test Setup -- Ear / 15° Tilt Position --**

# SAR DATA SUMMARY (Continued)

Mixture Type: 835MHz Brain

Dielectric Constant: 43.44

Conductivity: 0.87

## 14.3 MEASUREMENT RESULTS (AMPS Left Head SAR - Touch)

| FREQUENCY | | Modulation | Begin / End POWER‡ | | | Device Test Position | Antenna Position | SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|
| MHz | Ch. | | (dBm) | | Battery | | | |
| 824.04 | 0991 | AMPS | 27.0 | 27.0 | Extended | Cheek / Touch | In | **1.3615** |
| 824.04 | 0991 | AMPS | 27.0 | 27.0 | Extended | Cheek / Touch | Out | **1.1698** |
| 836.49 | 0383 | AMPS | 27.0 | 27.0 | Extended | Cheek / Touch | In | **0.8810** |
| 836.49 | 0383 | AMPS | 27.0 | 27.0 | Extended | Cheek / Touch | Out | **0.9482** |
| 848.97 | 0799 | AMPS | 27.0 | 27.0 | Extended | Cheek / Touch | In | **1.0542** |
| 848.97 | 0799 | AMPS | 27.0 | 27.0 | Extended | Cheek / Touch | Out | **1.1915** |
| 824.04 | 0991 | AMPS | 27.0 | 27.0 | Standard | Cheek / Touch | In | **1.3416** |
| **ANSI / IEEE C95.1 1992 - SAFETY LIMIT<br>Spatial Peak<br>Uncontrolled Exposure/General Population** | | | | | | **Brain<br>1.6 W/kg (mW/g)<br>**averaged over 1 gram | | |

**NOTES:**

1. The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supp.C [July 2001].
2. All modes of operation were investigated, and worst-case results are reported.
3. Battery is fully charged for all readings. *Standard & Extended Batteries are options.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | ‡Power Measured | ☒ | Conducted | ☐ | ERP | ☐ | EIRP |
| 4. | SAR Measurement System | ☐ | DASY3 | ☒ | IDX | ☐ | |
| | Phantom Configuration | ☒ | Left Head | ☐ | Flat Phantom | ☐ | Right Head |
| 5. | SAR Configuration | ☒ | Head | ☐ | Body | ☐ | Hand |
| 6. | Test Signal Call Mode | ☒ | Manu. Test Codes | ☐ | Base Station Simulator | | |

Randy Ortanez
President

**Figure 14.3 Left Head SAR Test Setup -- Cheek / Touch Position --**

# SAR DATA SUMMARY (Continued)

| | |
|---|---|
| Mixture Type: | 835MHz Brain |
| Dielectric Constant: | 43.44 |
| Conductivity: | 0.87 |

## 14.4 MEASUREMENT RESULTS (AMPS Left Head SAR – Tilt)

| FREQUENCY | | Modulation | Begin / End POWER‡ | | | Device Test Position | Antenna Position | SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|
| MHz | Ch. | | (dBm) | | Battery | | | |
| 824.04 | 0991 | AMPS | 27.0 | 27.0 | Extended | Ear / 15° Tilt | In | **0.4030** |
| 824.04 | 0991 | AMPS | 27.0 | 27.0 | Extended | Ear / 15° Tilt | Out | **0.2915** |
| **ANSI / IEEE C95.1 1992 - SAFETY LIMIT<br>Spatial Peak<br>Uncontrolled Exposure/General Population** | | | | | | **Brain<br>1.6 W/kg (mW/g)<br>**averaged over 1 gram | | |

**NOTES:**

1. The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supp.C [July 2001].
2. All modes of operation were investigated, and worst-case results are reported.
3. Battery is fully charged for all readings. *Standard & Extended Batteries are options.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | ‡Power Measured | ☒ | Conducted | ☐ | ERP | ☐ | EIRP |
| 4. | SAR Measurement System | ☐ | DASY3 | ☒ | IDX | ☐ | |
| | Phantom Configuration | ☒ | Left Head | ☐ | Flat Phantom | ☐ | Right Head |
| 5. | SAR Configuration | ☒ | Head | ☐ | Body | ☐ | Hand |
| 6. | Test Signal Call Mode | ☒ | Manu. Test Codes | ☐ | Base Station Simulator | | |

Randy Ortanez
President

**Figure 14.4 Left Head SAR Test Setup -- Ear / 15° Tilt Position --**

# SAR DATA SUMMARY (Continued)

| | |
|---|---|
| Mixture Type: | 835MHz Brain |
| Dielectric Constant: | 43.44 |
| Conductivity: | 0.87 |

## 14.5 MEASUREMENT RESULTS (CELLULAR CDMA Left Head SAR – Touch)

| FREQUENCY | | Modulation | Begin / End POWER‡ | | | Device Test Position | Antenna Position | SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|
| MHz | Ch. | | (dBm) | | Battery | | | |
| 824.70 | 1013 | CDMA | 26.0 | 26.0 | Extended | Cheek / Touch | In | **0.9887** |
| 824.70 | 1013 | CDMA | 26.0 | 26.0 | Extended | Cheek / Touch | Out | **0.8502** |
| **ANSI / IEEE C95.1 1992 - SAFETY LIMIT<br>Spatial Peak<br>Uncontrolled Exposure/General Population** | | | | | | **Brain<br>1.6 W/kg (mW/g)<br>**averaged over 1 gram | | |

**NOTES:**

1. The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supp.C [July 2001].
2. All modes of operation were investigated, and worst-case results are reported.
3. Battery is fully charged for all readings. *Standard & Extended Batteries are options.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | ‡Power Measured | ☒ | Conducted | ☐ | ERP | ☐ | EIRP |
| 4. | SAR Measurement System | ☐ | DASY3 | ☒ | IDX | ☐ | |
| | Phantom Configuration | ☒ | Left Head | ☐ | Flat Phantom | ☐ | Right Head |
| 5. | SAR Configuration | ☒ | Head | ☐ | Body | ☐ | Hand |
| 6. | Test Signal Call Mode | ☒ | Manu. Test Codes | ☐ | Base Station Simulator | | |

Randy Ortanez
President

**Figure 14.5 Left Head SAR Test Setup**
**-- Cheek / Touch Position --**

# SAR DATA SUMMARY (Continued)

Mixture Type: 835MHz Brain

Dielectric Constant: 43.44

Conductivity: 0.87

## 14.6 MEASUREMENT RESULTS (CELLULAR CDMA Left Head SAR – Tilt)

| FREQUENCY | | Modulation | Begin / End POWER‡ | | | Device Test Position | Antenna Position | SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|
| MHz | Ch. | | (dBm) | | Battery | | | |
| 824.70 | 1013 | CDMA | 26.0 | 26.0 | Extended | Ear / 15° Tilt | In | **0.3041** |
| 824.70 | 1013 | CDMA | 26.0 | 26.0 | Extended | Ear / 15° Tilt | Out | **0.2106** |
| **ANSI / IEEE C95.1 1992 - SAFETY LIMIT<br>Spatial Peak<br>Uncontrolled Exposure/General Population** | | | | | | **Brain<br>1.6 W/kg (mW/g)<br>averaged over 1 gram** | | |

**NOTES:**

1. The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supp.C [July 2001].
2. All modes of operation were investigated, and worst-case results are reported.
3. Battery is fully charged for all readings. *Standard & Extended Batteries are options.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | ‡Power Measured | ☒ | Conducted | ☐ | ERP | ☐ | EIRP |
| 4. | SAR Measurement System | ☐ | DASY3 | ☒ | IDX | ☐ | |
| | Phantom Configuration | ☒ | Left Head | ☐ | Flat Phantom | ☐ | Right Head |
| 5. | SAR Configuration | ☒ | Head | ☐ | Body | ☐ | Hand |
| 6. | Test Signal Call Mode | ☒ | Manu. Test Codes | ☐ | Base Station Simulator | | |

Randy Ortanez
President

**Figure 14.6 Left Head SAR Test Setup**
**-- Ear / 15° Tilt Position --**

# SAR DATA SUMMARY (Continued)

Mixture Type: 1900MHz Brain

Dielectric Constant: 40.29

Conductivity: 1.44

## 14.7 MEASUREMENT RESULTS (PCS CDMA Right Head SAR – Touch)

| FREQUENCY | | Modulation | Begin / End POWER‡ | | | Device Test Position | Antenna Position | SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|
| MHz | Ch. | | (dBm) | | Battery | | | |
| 0025 | 1851.25 | PCS CDMA | 26.0 | 26.0 | Extended | Cheek / Touch | In | **1.1355** |
| 0025 | 1851.25 | PCS CDMA | 26.0 | 26.0 | Extended | Cheek / Touch | Out | **0.1807** |
| 0600 | 1880.00 | PCS CDMA | 26.0 | 26.0 | Extended | Cheek / Touch | In | **1.2745** |
| 0600 | 1880.00 | PCS CDMA | 26.0 | 26.0 | Extended | Cheek / Touch | Out | **0.2595** |
| 1175 | 1908.75 | PCS CDMA | 26.0 | 26.0 | Extended | Cheek / Touch | In | **0.7117** |
| 1175 | 1908.75 | PCS CDMA | 26.0 | 26.0 | Extended | Cheek / Touch | Out | **0.1354** |
| **ANSI / IEEE C95.1 1992 - SAFETY LIMIT<br>Spatial Peak<br>Uncontrolled Exposure/General Population** | | | | | | **Brain<br>1.6 W/kg (mW/g)<br>averaged over 1 gram** | | |

**NOTES:**

1. The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supp.C [July 2001].
2. All modes of operation were investigated, and worst-case results are reported.
3. Battery is fully charged for all readings. *Standard & Extended Batteries are options.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | ‡Power Measured | ☒ | Conducted | ☐ | ERP | ☐ | EIRP |
| 4. | SAR Measurement System | ☐ | DASY3 | ☒ | IDX | ☐ | |
| | Phantom Configuration | ☐ | Left Head | ☐ | Flat Phantom | ☒ | Right Head |
| 5. | SAR Configuration | ☒ | Head | ☐ | Body | ☐ | Hand |
| 6. | Test Signal Call Mode | ☒ | Manu. Test Codes | ☐ | Base Station Simulator | | |

Randy Ortanez
President

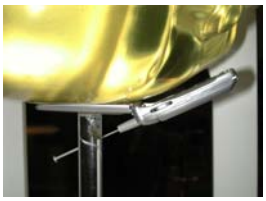


**Figure 14.7 Right Head SAR Test Setup -- Cheek / Touch Position --**

# SAR DATA SUMMARY (Continued)

| | |
|---|---|
| Mixture Type: | 1900MHz Brain |
| Dielectric Constant: | 40.29 |
| Conductivity: | 1.44 |

## 14.8 MEASUREMENT RESULTS (PCS CDMA Right Head SAR – Tilt)

| FREQUENCY | | Modulation | Begin / End POWER‡ | | | Device Test Position | Antenna Position | SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|
| MHz | Ch. | | (dBm) | | Battery | | | |
| 0600 | 1880.00 | PCS CDMA | 26.0 | 26.0 | Extended | Ear / 15° Tilt | In | **0.07** |
| 0600 | 1880.00 | PCS CDMA | 26.0 | 26.0 | Extended | Ear / 15° Tilt | Out | **0.09** |
| **ANSI / IEEE C95.1 1992 - SAFETY LIMIT<br>Spatial Peak<br>Uncontrolled Exposure/General Population** | | | | | | **Brain<br>1.6 W/kg (mW/g)<br>averaged over 1 gram** | | |

**NOTES:**

1. The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supp.C [July 2001].
2. All modes of operation were investigated, and worst-case results are reported.
3. Battery is fully charged for all readings. *Standard & Extended Batteries are options.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | ‡Power Measured | ☒ | Conducted | ☐ | ERP | ☐ | EIRP |
| 4. | SAR Measurement System | ☐ | DASY3 | ☒ | IDX | ☐ | |
| | Phantom Configuration | ☐ | Left Head | ☐ | Flat Phantom | ☒ | Right Head |
| 5. | SAR Configuration | ☒ | Head | ☐ | Body | ☐ | Hand |
| 6. | Test Signal Call Mode | ☒ | Manu. Test Codes | ☐ | Base Station Simulator | | |

Randy Ortanez
President

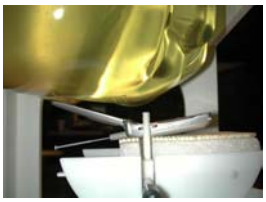


**Figure 14.8 Right Head SAR Test Setup -- Ear / Tilt Position --**

# SAR DATA SUMMARY (Continued)

Mixture Type: 1900MHz Brain

Dielectric Constant: 40.29

Conductivity: 1.44

## 14.9 MEASUREMENT RESULTS (PCS CDMA Left Head SAR – Touch)

| FREQUENCY | | Modulation | Begin / End POWER‡ | | | Device Test Position | Antenna Position | SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|
| MHz | Ch. | | (dBm) | | Battery | | | |
| 0025 | 1851.25 | PCS CDMA | 26.0 | 26.0 | Extended | Cheek / Touch | In | **1.2116** |
| 0025 | 1851.25 | PCS CDMA | 26.0 | 26.0 | Extended | Cheek / Touch | Out | **0.2921** |
| 0600 | 1880.00 | PCS CDMA | 26.0 | 26.0 | Extended | Cheek / Touch | In | **1.1195** |
| 0600 | 1880.00 | PCS CDMA | 26.0 | 26.0 | Extended | Cheek / Touch | Out | **0.2006** |
| 1175 | 1908.75 | PCS CDMA | 26.0 | 26.0 | Extended | Cheek / Touch | In | **1.3572** |
| 1175 | 1908.75 | PCS CDMA | 26.0 | 26.0 | Extended | Cheek / Touch | Out | **0.2126** |
| 1175 | 1908.75 | PCS CDMA | 26.0 | 26.0 | Standard | Cheek / Touch | In | **1.3540** |
| **ANSI / IEEE C95.1 1992 - SAFETY LIMIT<br>Spatial Peak<br>Uncontrolled Exposure/General Population** | | | | | | **Brain<br>1.6 W/kg (mW/g)<br>averaged over 1 gram** | | |

**NOTES:**

1. The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supp.C [July 2001].
2. All modes of operation were investigated, and worst-case results are reported.
3. Battery is fully charged for all readings. *Standard & Extended Batteries are options.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | ‡Power Measured | ☒ | Conducted | ☐ | ERP | ☐ | EIRP |
| 4. | SAR Measurement System | ☐ | DASY3 | ☒ | IDX | ☐ | |
| | Phantom Configuration | ☒ | Left Head | ☐ | Flat Phantom | ☐ | Right Head |
| 5. | SAR Configuration | ☒ | Head | ☐ | Body | ☐ | Hand |
| 6. | Test Signal Call Mode | ☒ | Manu. Test Codes | ☐ | Base Station Simulator | | |

Randy Ortanez
President

**Figure 14.9 Left Head SAR Test Setup**
**-- Cheek / Touch Position --**

# SAR DATA SUMMARY (Continued)

| | |
|---|---|
| Mixture Type: | 1900MHz Brain |
| Dielectric Constant: | 40.29 |
| Conductivity: | 1.44 |

## 14.10 MEASUREMENT RESULTS (PCS CDMA Left Head SAR – Tilt)

| FREQUENCY | | Modulation | Begin / End POWER‡ | | | Device Test Position | Antenna Position | SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|
| MHz | Ch. | | (dBm) | | Battery | | | |
| 1175 | 1908.75 | PCS CDMA | 26.0 | 26.0 | Extended | Ear / 15° Tilt | In | **0.18** |
| **ANSI / IEEE C95.1 1992 - SAFETY LIMIT<br>Spatial Peak<br>Uncontrolled Exposure/General Population** | | | | | | **Brain<br>1.6 W/kg (mW/g)<br>**averaged over 1 gram | | |

**NOTES:**

1. The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supp.C [July 2001].
2. All modes of operation were investigated, and worst-case results are reported.
3. Battery is fully charged for all readings. *Standard & Extended Batteries are options.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | ‡Power Measured | ☒ | Conducted | ☐ | ERP | ☐ | EIRP |
| 4. | SAR Measurement System | ☐ | DASY3 | ☒ | IDX | ☐ | |
| | Phantom Configuration | ☒ | Left Head | ☐ | Flat Phantom | ☐ | Right Head |
| 5. | SAR Configuration | ☒ | Head | ☐ | Body | ☐ | Hand |
| 6. | Test Signal Call Mode | ☒ | Manu. Test Codes | ☐ | Base Station Simulator | | |

Randy Ortanez
President

**Figure 14.10 Left Head SAR Test Setup -- Ear / Tilt Position --**

# SAR DATA SUMMARY (Continued)

Mixture Type: 835MHz Muscle

Dielectric Constant: 55.54

Conductivity: 0.9955

## 14.11 MEASUREMENT RESULTS (AMPS Body SAR w/o Holster)

| FREQUENCY | | Modulation | Begin / End POWER‡ | | | Separation Distance (cm) ‡‡ | Antenna Position | SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|
| MHz | Ch. | | (dBm) | | Battery | | | |
| 824.04 | 0991 | AMPS | 27.0 | 27.0 | Standard | 1.5 [w/o Holster] | In | **0.6483** |
| 824.04 | 0991 | AMPS | 27.0 | 27.0 | Standard | 1.5 [w/o Holster] | Out | **0.4929** |
| 836.49 | 0383 | AMPS | 27.0 | 27.0 | Standard | 1.5 [w/o Holster] | In | **0.5392** |
| 836.49 | 0383 | AMPS | 27.0 | 27.0 | Standard | 1.5 [w/o Holster] | Out | **0.5103** |
| 848.97 | 0799 | AMPS | 27.0 | 27.0 | Standard | 1.5 [w/o Holster] | In | **0.6270** |
| 848.97 | 0799 | AMPS | 27.0 | 27.0 | Standard | 1.5 [w/o Holster] | Out | **0.7312** |
| **ANSI / IEEE C95.1 1992 - SAFETY LIMIT<br>Spatial Peak<br>Uncontrolled Exposure/General Population** | | | | | | **Muscle<br>1.6 W/kg (mW/g)**<br>averaged over 1 gram | | |

**NOTES:**

1. The test data reported are the worst-case SAR value with the antenna-head position set in atypical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supp.C [July 2001].
2. All modes of operation were investigated, and worst-case results are reported.
3. Battery is fully charged for all readings. *Standard & Extended Batteries are options.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | ‡Power Measured | ☒ | Conducted | ☐ | ERP | ☐ | EIRP |
| 4. | SAR Measurement System | ☐ | DASY3 | ☒ | IDX | ☐ | |
| | Phantom Configuration | ☐ | Left Head | ☒ | Flat Phantom | ☐ | Right Head |
| 5. | SAR Configuration | ☐ | Head | ☒ | Body | ☐ | Hand |
| 6. | Test Signal Call Mode | ☒ | Manu. Test Codes | ☐ | Base Station Simulator | | |
| 7. | ‡‡Test Configuration | ☐ | With Holster | ☒ | Without Holster | | |

8. Both sides of the phone were tested and the worst-case side is reported.

Randy Ortanez
President

**Figure 14.11 Body SAR Test Setup**
**-- w/o Holster --**

# SAR DATA SUMMARY (Continued)

| | |
|---|---|
| Mixture Type: | 835MHz Muscle |
| Dielectric Constant: | 55.54 |
| Conductivity: | 0.9955 |

## 14.12 MEASUREMENT RESULTS (CELLULAR CDMA Body SAR w/o Holster)

| FREQUENCY | | Modulation | Begin / End POWER‡ | | | Separation Distance (cm) ‡‡ | Antenna Position | SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|
| MHz | Ch. | | (dBm) | | Battery | | | |
| 848.31 | 0777 | CDMA | 26.0 | 26.0 | Standard | 1.5 [w/o Holster] | In | **0.35** |
| 848.31 | 0777 | CDMA | 26.0 | 26.0 | Standard | 1.5 [w/o Holster] | Out | **0.31** |
| **ANSI / IEEE C95.1 1992 - SAFETY LIMIT<br>Spatial Peak<br>Uncontrolled Exposure/General Population** | | | | | | **Muscle<br>1.6 W/kg (mW/g)<br>**averaged over 1 gram | | |

**NOTES:**

1. The test data reported are the worst-case SAR value with the antenna-head position set in atypical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supp.C [July 2001].
2. All modes of operation were investigated, and worst-case results are reported.
3. Battery is fully charged for all readings. *Standard & Extended Batteries are options.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ‡Power Measured | ☒ | Conducted | ☐ | ERP | ☐ | EIRP | |
| 4. SAR Measurement System | ☐ | DASY3 | ☒ | IDX | ☐ | | |
| Phantom Configuration | ☐ | Left Head | ☒ | Flat Phantom | ☐ | Right Head | |
| 5. SAR Configuration | ☐ | Head | ☒ | Body | ☐ | Hand | |
| 6. Test Signal Call Mode | ☒ | Manu. Test Codes | ☐ | Base Station Simulator | | | |
| 7. ‡‡Test Configuration | ☐ | With Holster | ☒ | Without Holster | | | |

8. Both sides of the phone were tested and the worst-case side is reported.

Randy Ortanez
President

**Figure 14.12 Body SAR Test Setup**
**-- w/o Holster --**

# SAR DATA SUMMARY (Continued)

Mixture Type: 1900MHz Muscle

Dielectric Constant: 53.95

Conductivity: 1.56

## 14.13 MEASUREMENT RESULTS (PCS CDMA Body SAR w/o Holster)

| FREQUENCY | | Modulation | Begin / End POWER‡ | | | Separation Distance (cm) ‡‡ | Antenna Position | SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|
| MHz | Ch. | | (dBm) | | Battery | | | |
| 0025 | 1851.25 | PCS CDMA | 26.0 | 26.0 | Standard | 1.5 [w/o Holster] | In | **0.86** |
| 0025 | 1851.25 | PCS CDMA | 26.0 | 26.0 | Standard | 1.5 [w/o Holster] | Out | **0.88** |
| 0600 | 1880.00 | PCS CDMA | 26.0 | 26.0 | Standard | 1.5 [w/o Holster] | In | **1.03** |
| 0600 | 1880.00 | PCS CDMA | 26.0 | 26.0 | Standard | 1.5 [w/o Holster] | Out | **0.83** |
| 1175 | 1908.75 | PCS CDMA | 26.0 | 26.0 | Standard | 1.5 [w/o Holster] | In | **0.80** |
| 1175 | 1908.75 | PCS CDMA | 26.0 | 26.0 | Standard | 1.5 [w/o Holster] | Out | **0.88** |
| 0600 | 1880.00 | PCS CDMA | 26.0 | 26.0 | Extended | 1.5 [w/o Holster] | Out | **1.01** |
| **ANSI / IEEE C95.1 1992 - SAFETY LIMIT<br>Spatial Peak<br>Uncontrolled Exposure/General Population** | | | | | | **Muscle<br>1.6 W/kg (mW/g)<br>averaged over 1 gram** | | |

**NOTES:**

1. The test data reported are the worst-case SAR value with the antenna-head position set in atypical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supp.C [July 2001].
2. All modes of operation were investigated, and worst-case results are reported.
3. Battery is fully charged for all readings. *Standard & Extended Batteries are options.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | ‡Power Measured | ☒ | Conducted | ☐ | ERP | ☐ | EIRP |
| 4. | SAR Measurement System | ☐ | DASY3 | ☒ | IDX | ☐ | |
| | Phantom Configuration | ☐ | Left Head | ☒ | Flat Phantom | ☐ | Right Head |
| 5. | SAR Configuration | ☐ | Head | ☒ | Body | ☐ | Hand |
| 6. | Test Signal Call Mode | ☒ | Manu. Test Codes | ☐ | Base Station Simulator | | |
| 7. | ‡‡Test Configuration | ☐ | With Holster | ☒ | Without Holster | | |

8. Both sides of the phone were tested and the worst-case side is reported.

Randy Ortanez
President

**Figure 14.13 Body SAR Test Setup**
**-- w/o Holster --**

# 15. SAR TEST EQUIPMENT

## Equipment Calibration

**Table 15.1 Test Equipment Calibration**

| EQUIPMENT SPECIFICATIONS | | |
|---|---|---|
| **Type** | **Calibration Date** | **Serial Number** |
| CRS Robot F3 | February 2002 | RAF0134133 |
| CRS C500C Motion Controller | February 2002 | RCB0003303 |
| CRS Teach Pendant (Joystick) | February 2002 | STP0132231 |
| DELL Computer, Pentium 4 1.6 GHz, Windows 2000™ | February 2002 | |
| E-Field Probe E-010 | February 2002 | PCT001 |
| Right Ear SAM Phantom (P-SAM-R) | February 2002 | |
| Left Ear SAM Phantom (P-SAM-L) | February 2002 | |
| IDX Robot End Effector (EE-103-C) | February 2002 | 07111223 |
| IDX Probe Amplifier | February 2002 | 07111113 |
| Validation Dipole D-835S | February 2002 | PCT640 |
| Validation Dipole D-1900S | February 2002 | PCT639 |
| Brain Equivalent Matter (835MHz) | February 2002 | PCTBEM101 |
| Brain Equivalent Matter (1900MHz) | February 2002 | PCTBEM301 |
| Muscle Equivalent Matter (835MHz) | February 2002 | PCTMEM201 |
| Muscle Equivalent Matter (1900MHz) | February 2002 | PCTMEM401 |
| Microwave Amp. Model: 5S1G4, (800MHz - 4.2GHz) | January 2002 | 22332 |
| Gigatronics 8651A Power Meter | January 2002 | 1835299 |
| HP-8648D (9kHz ~ 4GHz) Signal Generator | January 2002 | PCT530 |
| Amplifier Research 5S1G4 Power Amp | January 2002 | PCT540 |
| HP-8753E (30kHz ~ 3GHz) Network Analyzer | January 2002 | PCT552 |
| HP85070B Dielectric Probe Kit | January 2002 | PCT501 |
| Ambient Noise/Reflection, etc. | <12mW/kg/<3%of SAR | January 2002 |
| | | |

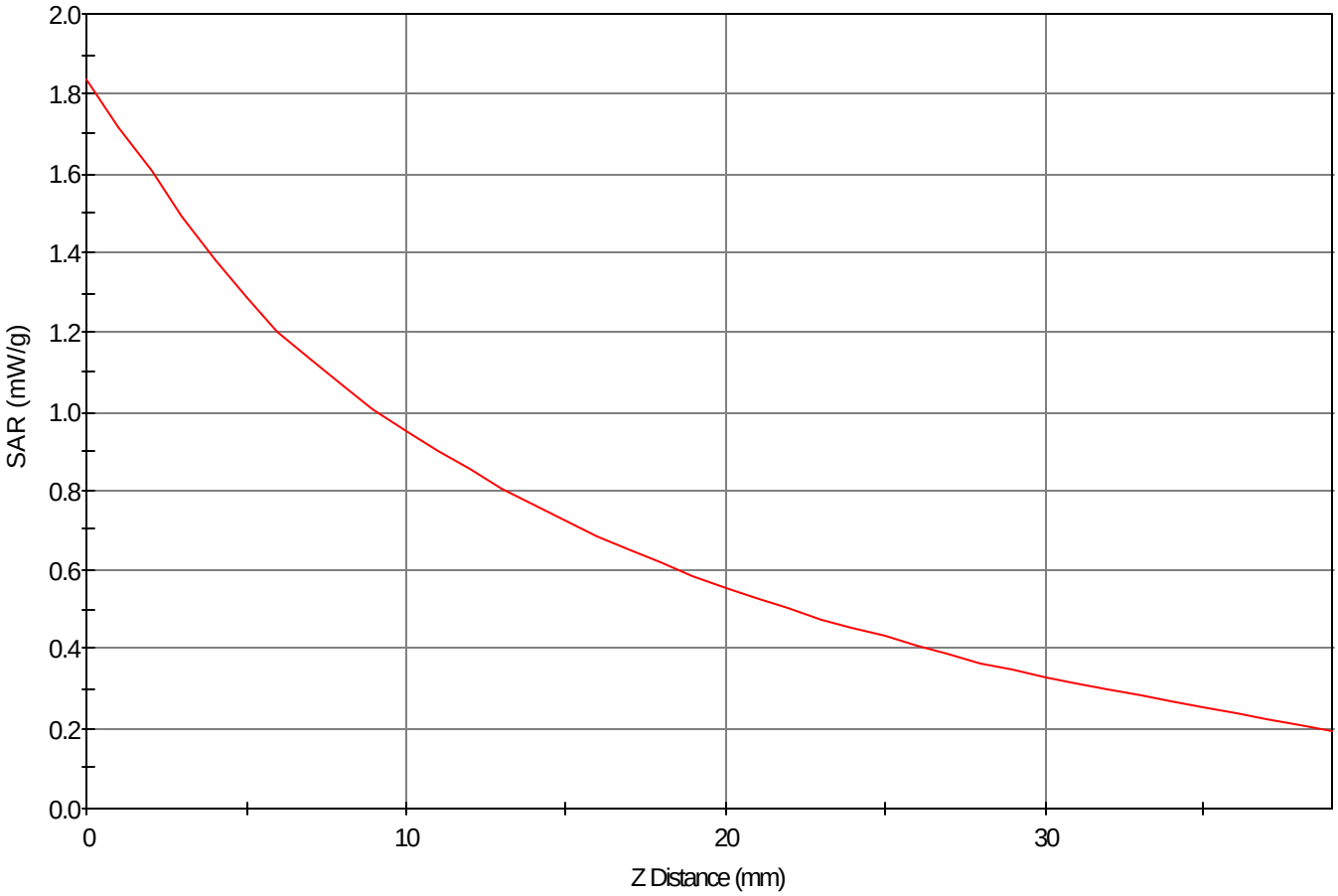
NOTE:

The E-field probe was calibrated by IDX, by temperature measurement procedure. Dipole Validation measurement is performed by PCTEST Lab. before each test. The brain simulating material is calibrated by PCTEST using the dielectric probe system and network analyzer to determine the conductivity and permittivity (dielectric constant) of the brain-equivalent material.

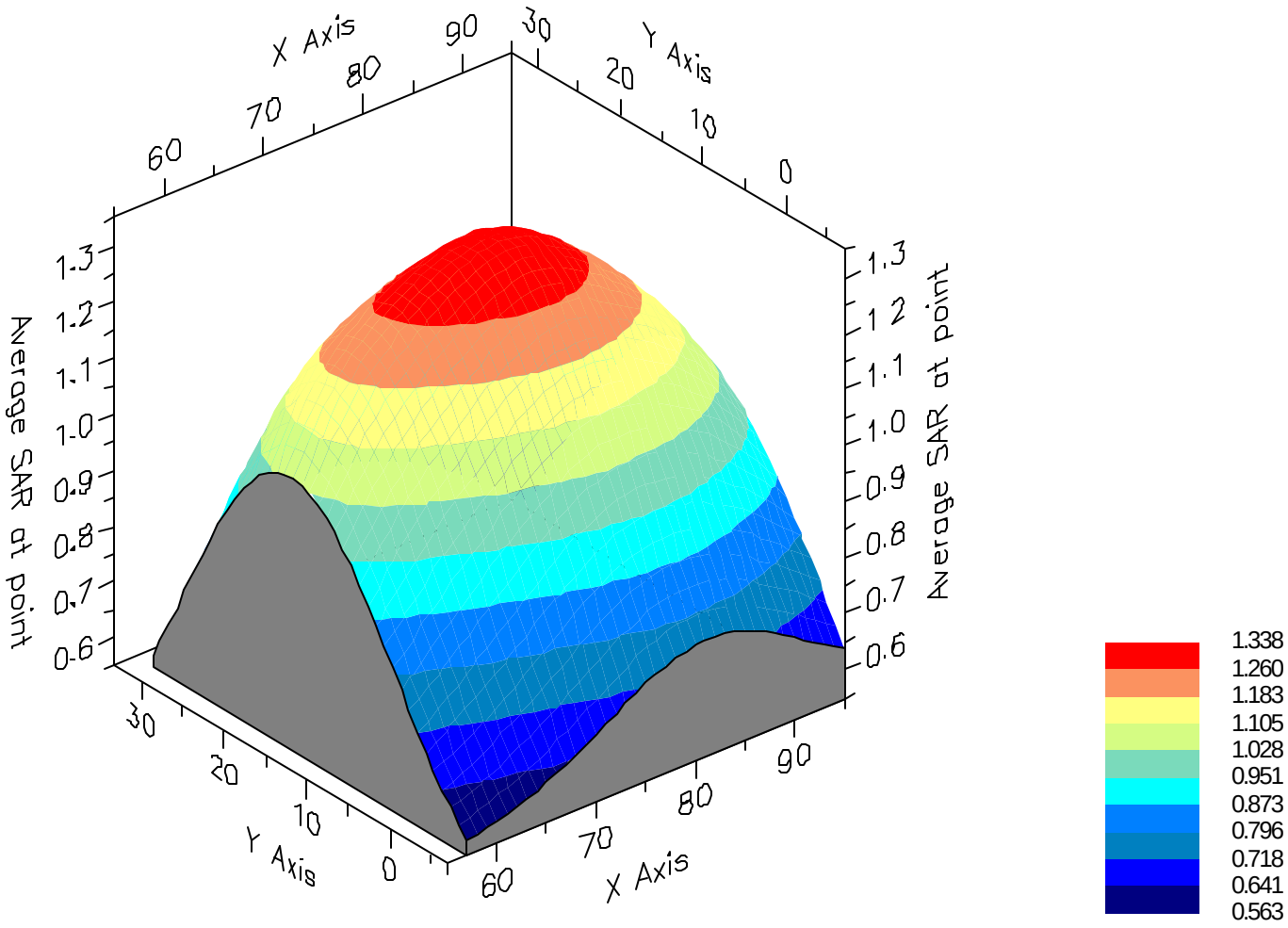
SAR Data Report 02022005

```
  Start        : 20-Feb-02 12:30:23 pm
  End          : 20-Feb-02 12:45:15 pm
  Code Version : 4.03
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SCH-A310
  Serial Number    : 1
  Frequency        : 824.04
  Peak Trans. Pwr  : 0.500 W
  Start Trans. Pwr : 0.500 W
  Antenna Type     : Helical
  Antenna Posn.    : In

Scan Data:
  Phantom Name         : SAM-R
  Phantom Type         : Right Ear
  Mixture Type         : Brain
  Mixture Dielectric   : 43.440
  Mixture Conductivity : 0.870
  Mixture Density      : 1.000
  Robot Name           : CRS

Probe Data:
  Probe Name              : PCT001
  Probe Type              : E Fld Triangle
  Frequency               : 835
  Mixture Type            : Brain
  Calibrated Dielectric   : 40.700
  Calibrated Conductivity :  0.890
  Calibrated Density      :  1.000
  Probe Offset            :  2.400 mm
  Conversion Factor       :  5.800
  Probe Sensitivity :  3.597   3.474   3.049
  Amplifier Gains   :  20.00   20.00   20.00

Sample:
  Rate:         6000 Samples/Sec
  Count:        100 Samples
  NIDAQ Gain:   5

Comments:
  AMPS Mode CH-991
  Touch
  CF=1; Amb. Temp.= 22.3'C; Liq. Temp.= 22.0'C



Area Scan - Max Peak SAR Value at 76.0 12.0 = 1.296928

Zoom Scan - Max Peak SAR Value at 75.0 12.0 0.0 = 1.839945

Max 1g SAR at 76.0 13.0 0.0 = 1.337845

Max 10g SAR at 76.0 13.0 0.0 = 0.918980
```

SAR - Z Axis
at Hotspot x:75.0 y:12.0



1g SAR Values

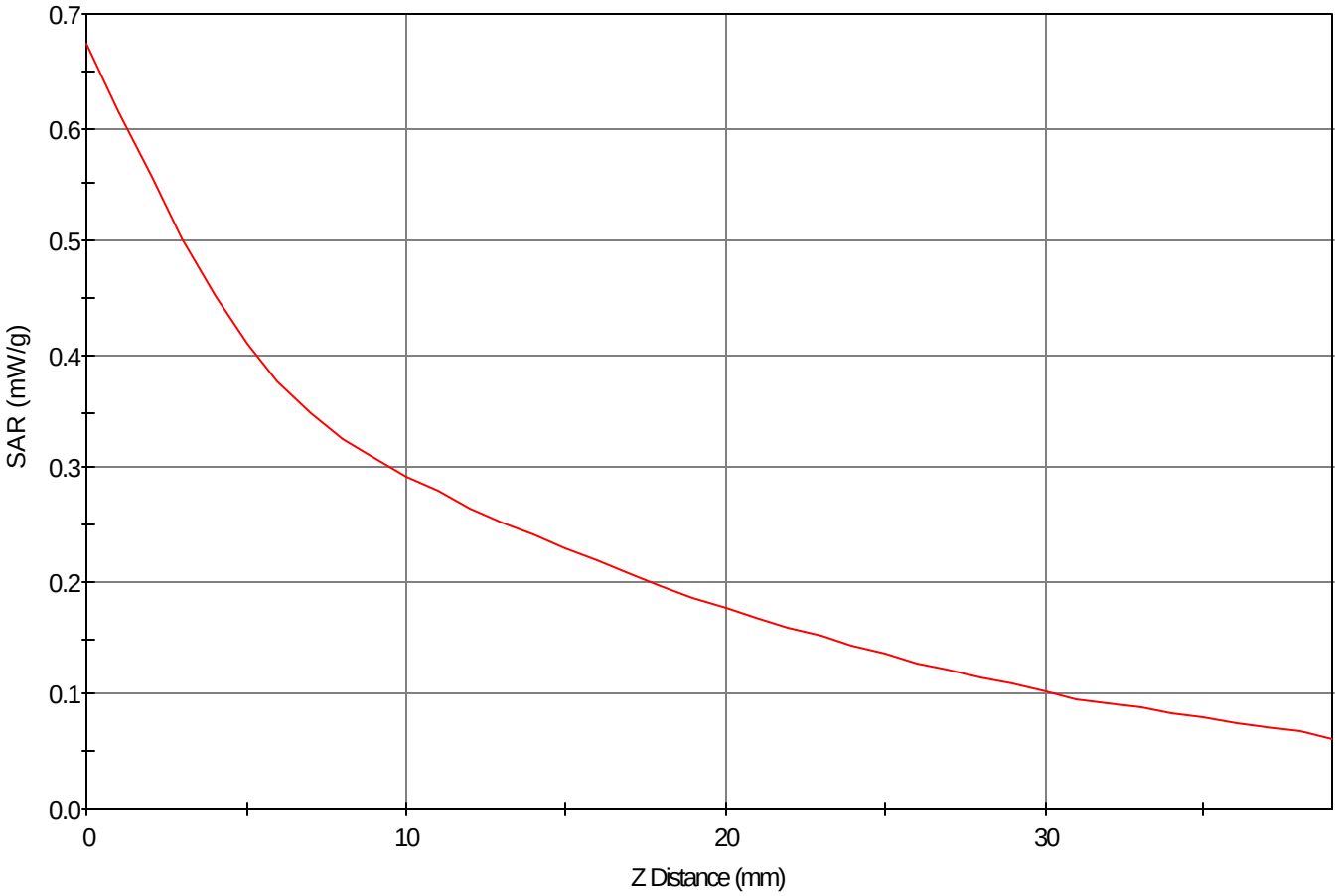



2 ABC
3
4 GHI
5 JKL
6 MNO
7 PQRS
8 TUV
9 WXYZ
0
#

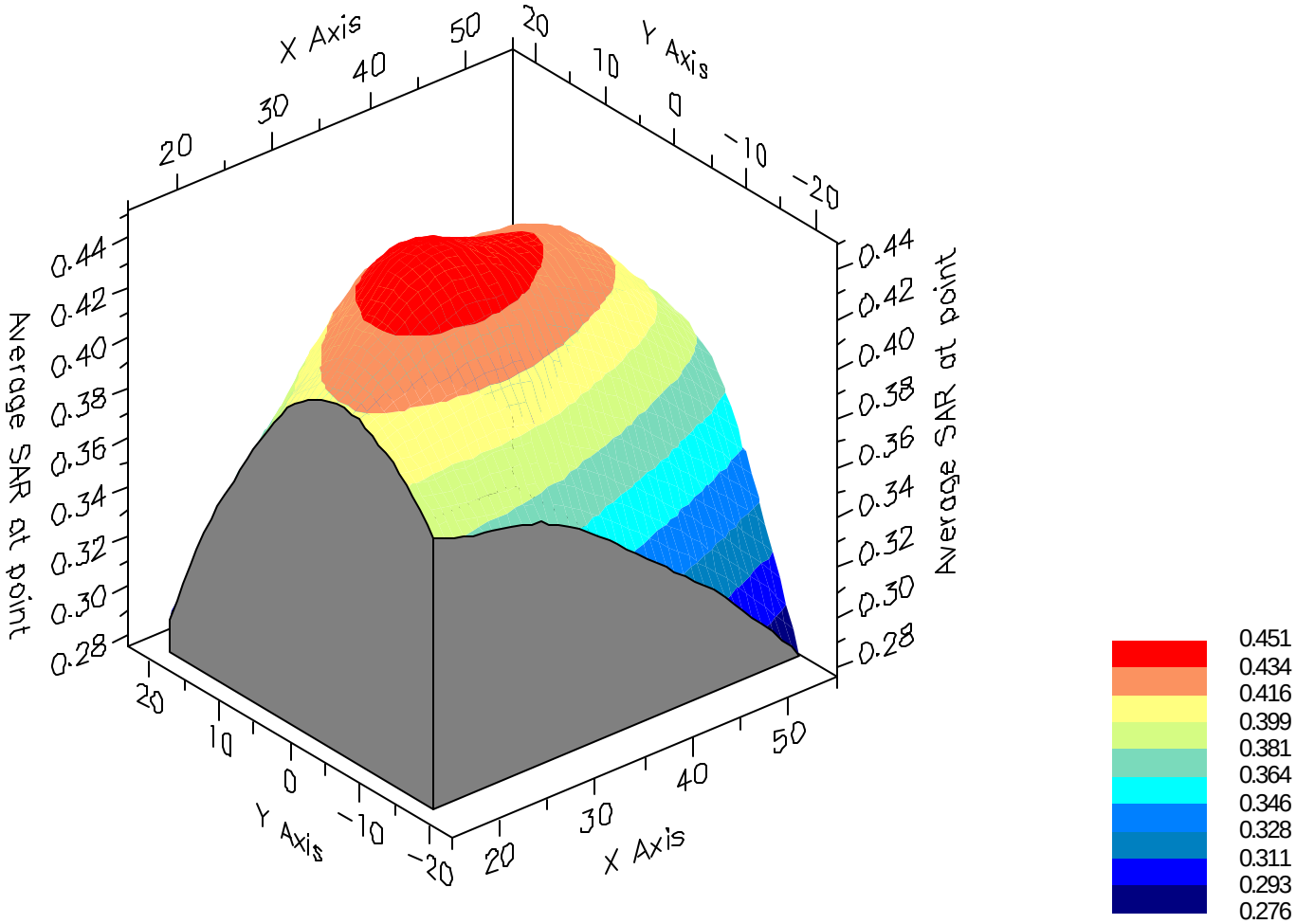
SAR Data Report 02022118

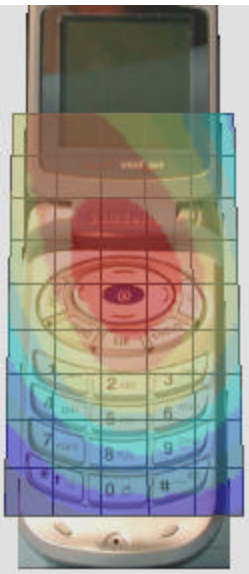
```
  Start        : 21-Feb-02 02:12:22 pm
  End          : 21-Feb-02 02:24:45 pm
  Code Version : 4.03
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SCH-A310
  Serial Number    : 1
  Frequency        : 824.04
  Peak Trans. Pwr  : 0.500 W
  Start Trans. Pwr : 0.500 W
  Antenna Type     : Helical
  Antenna Posn.    : In

Scan Data:
  Phantom Name         : SAM-R
  Phantom Type         : Right Ear
  Mixture Type         : Brain
  Mixture Dielectric   : 43.440
  Mixture Conductivity : 0.870
  Mixture Density      : 1.000
  Robot Name           : CRS

Probe Data:
  Probe Name              : PCT001
  Probe Type              : E Fld Triangle
  Frequency               : 835
  Mixture Type            : Brain
  Calibrated Dielectric   : 40.700
  Calibrated Conductivity :  0.890
  Calibrated Density      :  1.000
  Probe Offset            :  2.400 mm
  Conversion Factor       :  5.800
  Probe Sensitivity :  3.597   3.474   3.049
  Amplifier Gains   :  20.00   20.00   20.00

Sample:
  Rate:         6000 Samples/Sec
  Count:        100 Samples
  NIDAQ Gain:   5

Comments:
  AMPS Mode CH-991
  Tilt
  CF=1; Amb. Temp.= 22.2'C; Liq. Temp.= 22.0'C



Area Scan - Max Peak SAR Value at 36.0 1.0 = 0.424214

Zoom Scan - Max Peak SAR Value at 27.0 2.0 0.0 = 0.674316

Max 1g SAR at 29.0 0.0 0.0 = 0.451274

Max 10g SAR at 35.0 0.0 0.0 = 0.322812
```

SAR - Z Axis
at Hotspot x:27.0 y:2.0



1g SAR Values

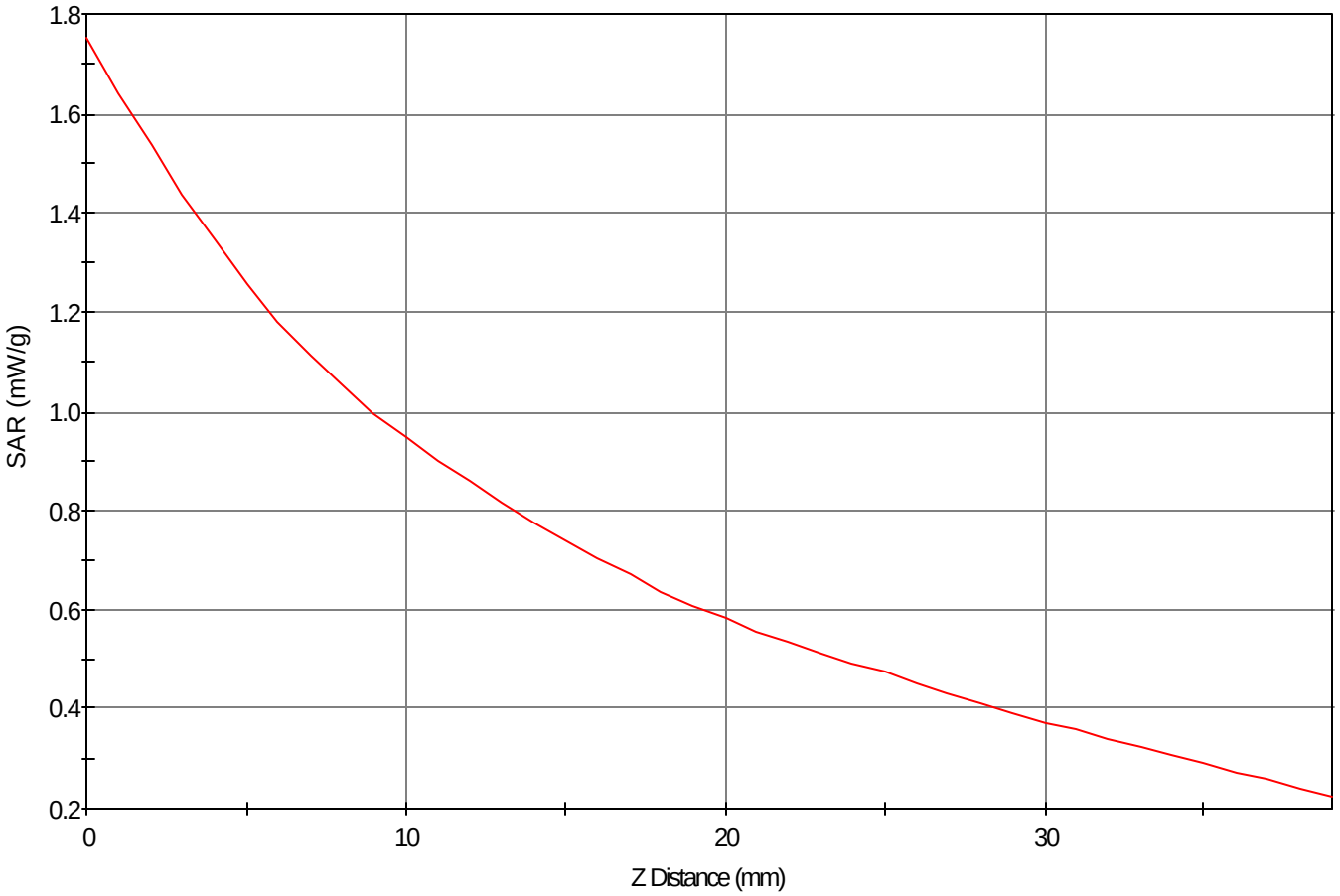




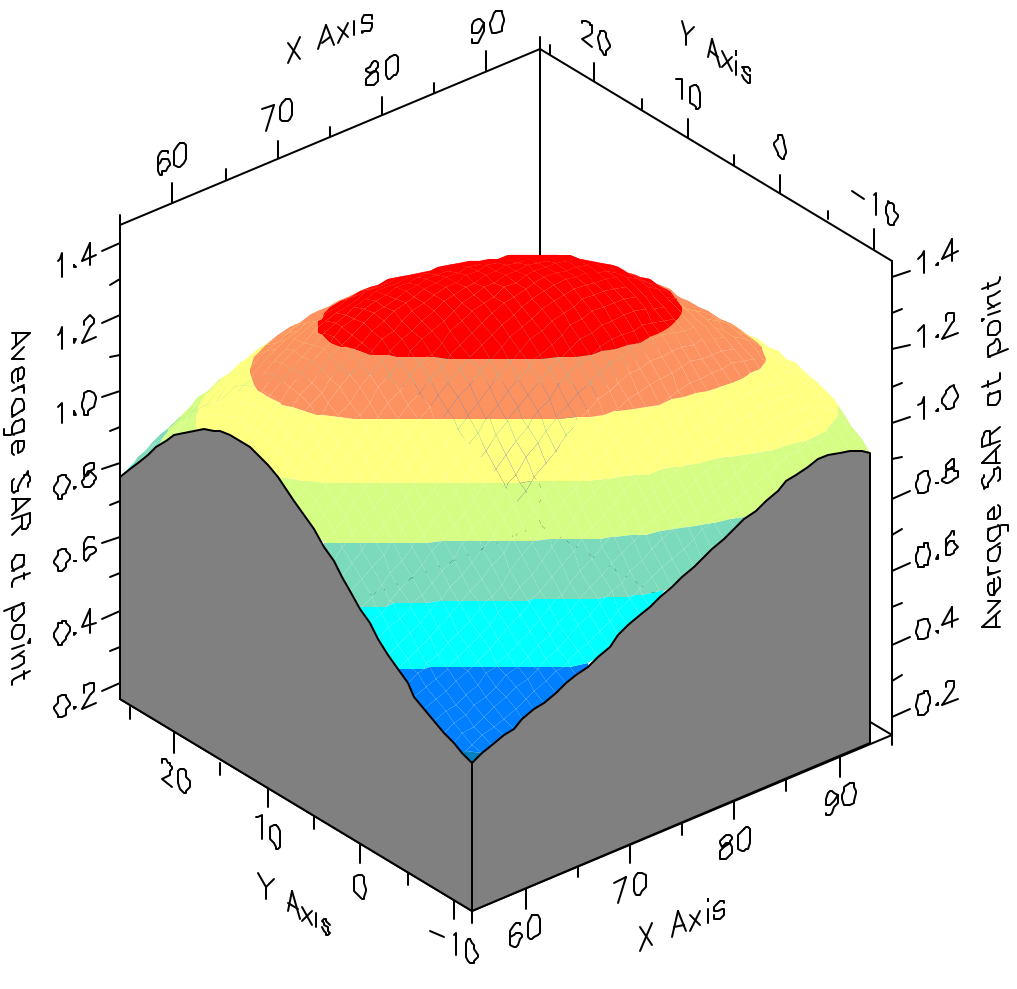
SAR Data Report 02022001

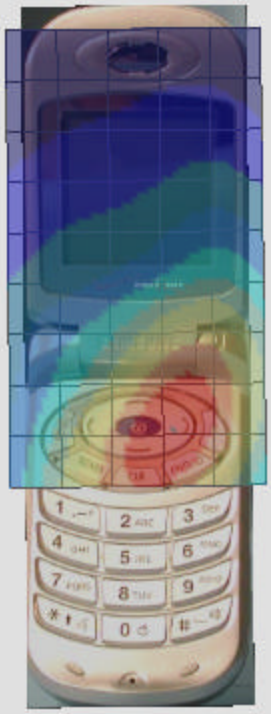
```
  Start        : 20-Feb-02 09:20:56 am
  End          : 20-Feb-02 09:40:04 am
  Code Version : 4.03
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SCH-A310
  Serial Number    : 1
  Frequency        : 824.04
  Peak Trans. Pwr  : 0.500 W
  Start Trans. Pwr : 0.500 W
  Antenna Type     : Helical
  Antenna Posn.    : In

Scan Data:
  Phantom Name         : SAM-L
  Phantom Type         : Left Ear
  Mixture Type         : Brain
  Mixture Dielectric   : 43.440
  Mixture Conductivity : 0.870
  Mixture Density      : 1.000
  Robot Name           : CRS

Probe Data:
  Probe Name              : PCT001
  Probe Type              : E Fld Triangle
  Frequency               : 835
  Mixture Type            : Brain
  Calibrated Dielectric   : 40.700
  Calibrated Conductivity :  0.890
  Calibrated Density      :  1.000
  Probe Offset            :  2.400 mm
  Conversion Factor       :  5.800
  Probe Sensitivity :  3.597   3.474   3.049
  Amplifier Gains   :  20.00   20.00   20.00

Sample:
  Rate:         6000 Samples/Sec
  Count:        100 Samples
  NIDAQ Gain:   5

Comments:
  AMPS Mode CH-991
  Touch
  CF=1; Amb. Temp.= 22.3'C; Liq. Temp.= 22.0'C



Area Scan - Max Peak SAR Value at 74.0 7.0 = 1.348322

Zoom Scan - Max Peak SAR Value at 66.0 12.0 0.0 = 1.751287

Max 1g SAR at 77.0 6.0 0.0 = 1.361516

Max 10g SAR at 76.0 6.0 0.0 = 0.975719
```

SAR - Z Axis
at Hotspot x:66.0 y:12.0



1g SAR Values

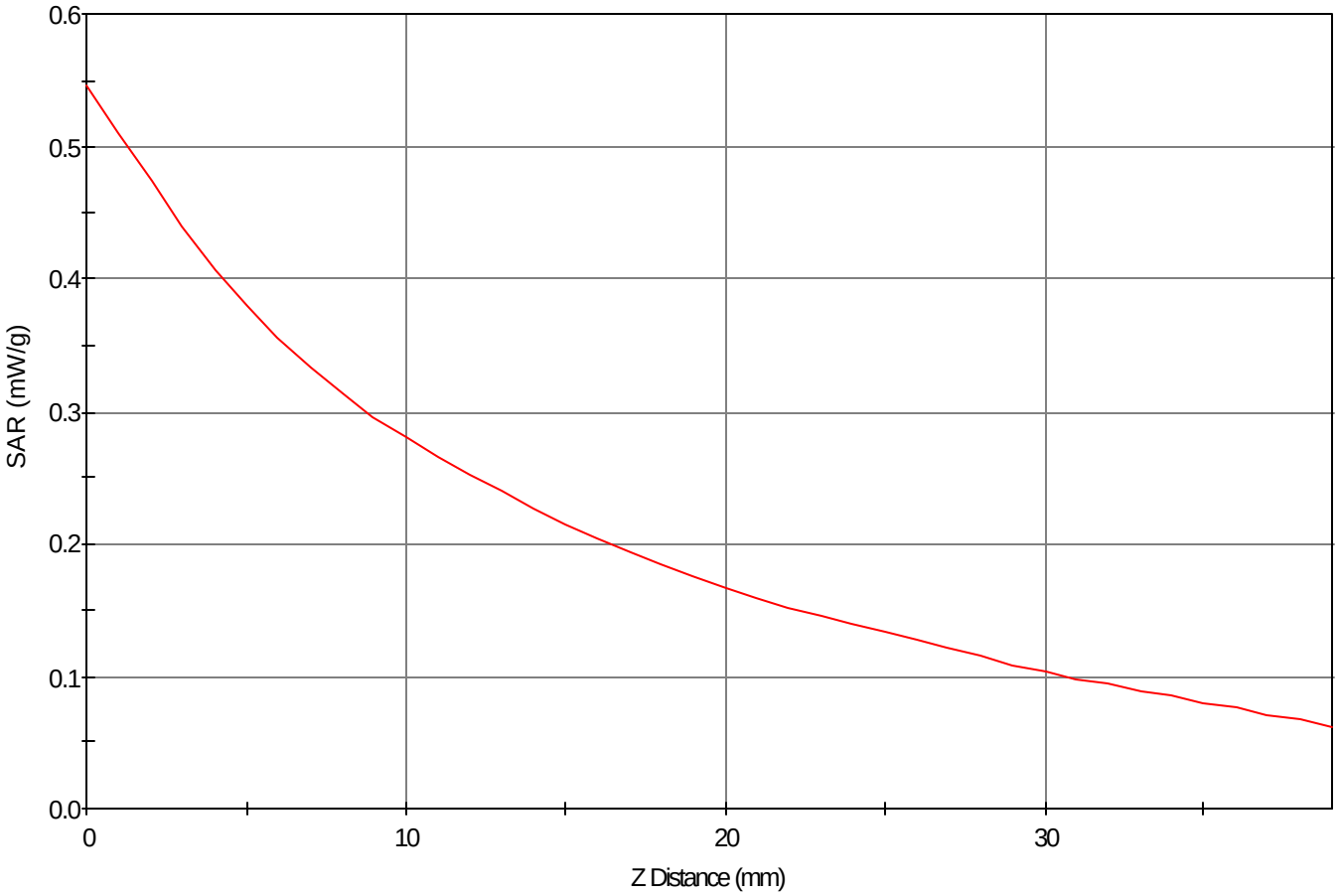




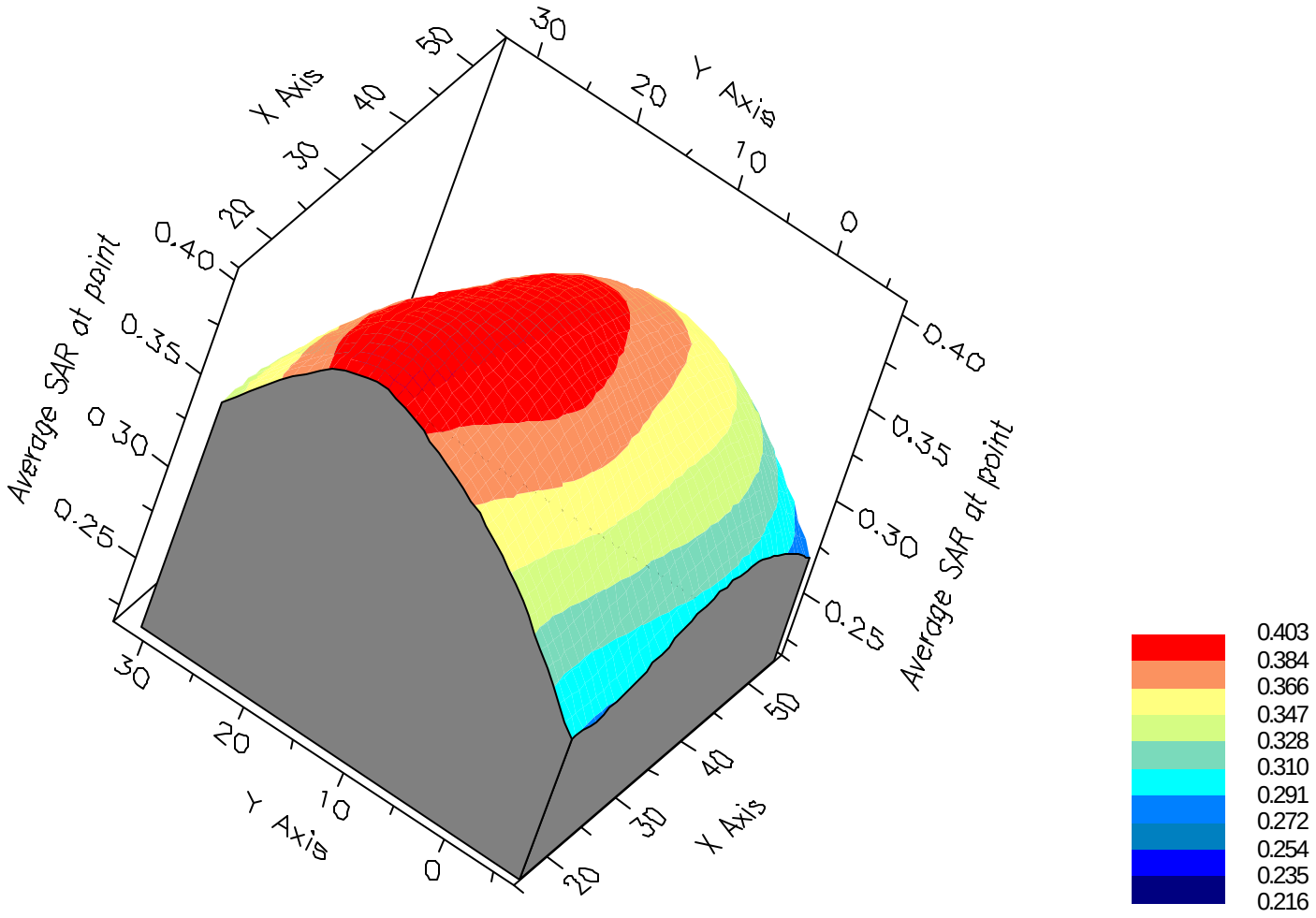
SAR Data Report 02022112

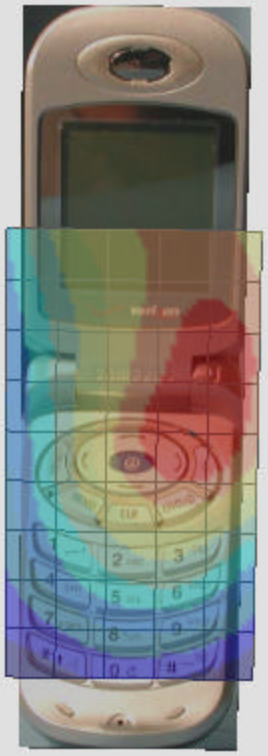
```
  Start        : 21-Feb-02 12:49:51 pm
  End          : 21-Feb-02 01:07:46 pm
  Code Version : 4.03
  Robot Version: 4.07

Product Data:
  Type             : SAMSUNG
  Model Number     : SCH-A310
  Serial Number    : 2
  Frequency        : 824.04
  Peak Trans. Pwr  : 0.500 W
  Start Trans. Pwr : 0.500 W
  Antenna Type     : Helical
  Antenna Posn.    : In

Scan Data:
  Phantom Name         : SAM-L
  Phantom Type         : Left Ear
  Mixture Type         : Brain
  Mixture Dielectric   : 43.440
  Mixture Conductivity : 0.870
  Mixture Density      : 1.000
  Robot Name           : CRS

Probe Data:
  Probe Name              : PCT001
  Probe Type              : E Fld Triangle
  Frequency               : 835
  Mixture Type            : Brain
  Calibrated Dielectric   : 40.700
  Calibrated Conductivity :  0.890
  Calibrated Density      :  1.000
  Probe Offset            :  2.400 mm
  Conversion Factor       :  5.800
  Probe Sensitivity :  3.597   3.474   3.049
  Amplifier Gains   :  20.00   20.00   20.00

Sample:
  Rate:         6000 Samples/Sec
  Count:        100 Samples
  NIDAQ Gain:   5

Comments:
  AMPS Mode CH-991
  Touch
  CF=1; Amb. Temp.= 22.2'C; Liq. Temp.= 22.0'C



Area Scan - Max Peak SAR Value at 73.0 4.0 = 1.330328

Zoom Scan - Max Peak SAR Value at 66.0 6.0 0.0 = 1.862162

Max 1g SAR at 72.0 5.0 0.0 = 1.341596

Max 10g SAR at 73.0 4.0 0.0 = 0.949407
```

SAR - Z Axis
at Hotspot x:20.0 y:21.0



1g SAR Values

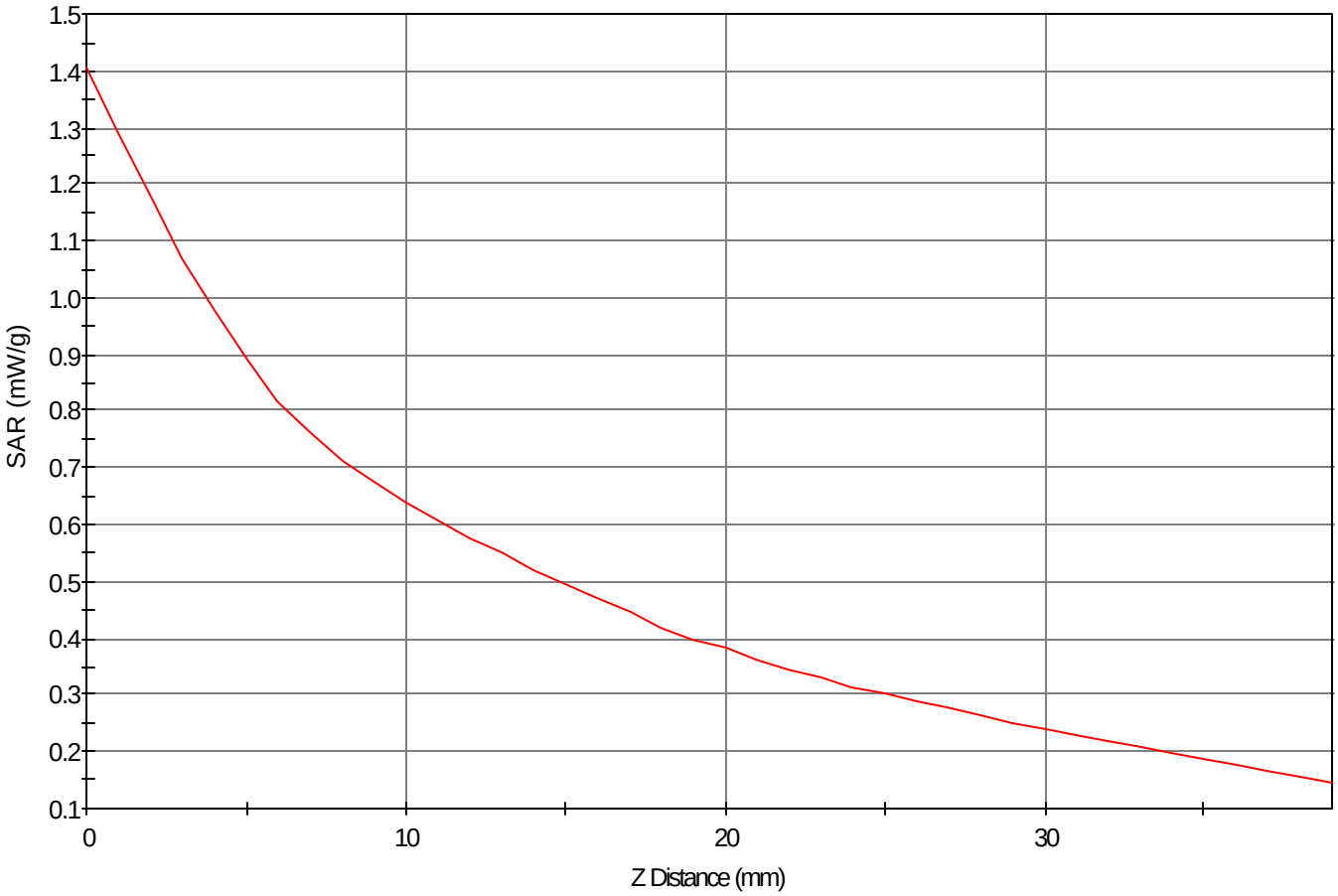




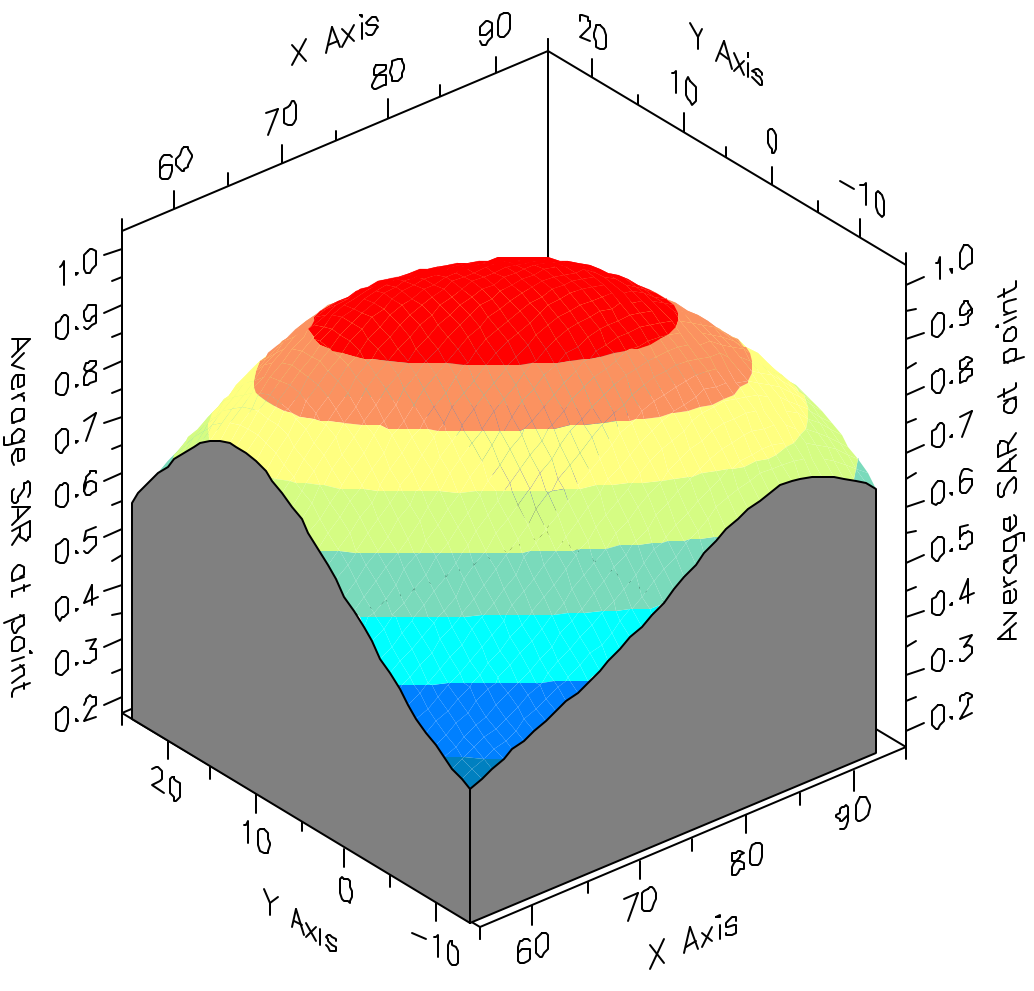
SAR Data Report 02022102

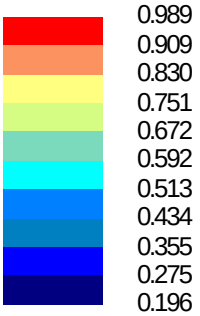
```
  Start        : 21-Feb-02 09:31:51 am
  End          : 21-Feb-02 09:50:53 am
  Code Version : 4.03
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SCH-A310
  Serial Number    : 1
  Frequency        : 824.70
  Peak Trans. Pwr  : 0.400 W
  Start Trans. Pwr : 0.400 W
  Antenna Type     : Helical
  Antenna Posn.    : In

Scan Data:
  Phantom Name         : SAM-L
  Phantom Type         : Left Ear
  Mixture Type         : Brain
  Mixture Dielectric   : 43.440
  Mixture Conductivity : 0.870
  Mixture Density      : 1.000
  Robot Name           : CRS

Probe Data:
  Probe Name              : PCT001
  Probe Type              : E Fld Triangle
  Frequency               : 835
  Mixture Type            : Brain
  Calibrated Dielectric   : 40.700
  Calibrated Conductivity :  0.890
  Calibrated Density      :  1.000
  Probe Offset            :  2.400 mm
  Conversion Factor       :  5.800
  Probe Sensitivity :  3.597   3.474   3.049
  Amplifier Gains   :  20.00   20.00   20.00

Sample:
  Rate:         6000 Samples/Sec
  Count:        100 Samples
  NIDAQ Gain:   5

Comments:
  CDMA Mode CH-1013
  Touch
  CF=1; Amb. Temp.=22.4'C; Liq. Temp.=22.1'C



Area Scan - Max Peak SAR Value at 74.0 5.0 = 0.986132

Zoom Scan - Max Peak SAR Value at 65.0 11.0 0.0 = 1.407363

Max 1g SAR at 75.0 5.0 0.0 = 0.988741

Max 10g SAR at 75.0 4.0 0.0 = 0.692466
```

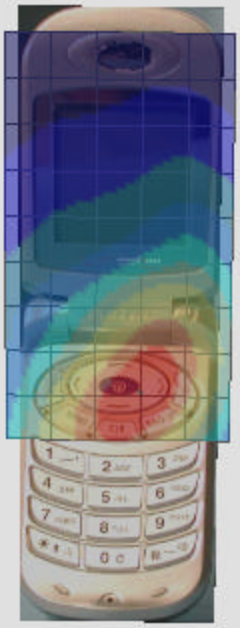
SAR - Z Axis
at Hotspot x:65.0 y:11.0



1g SAR Values



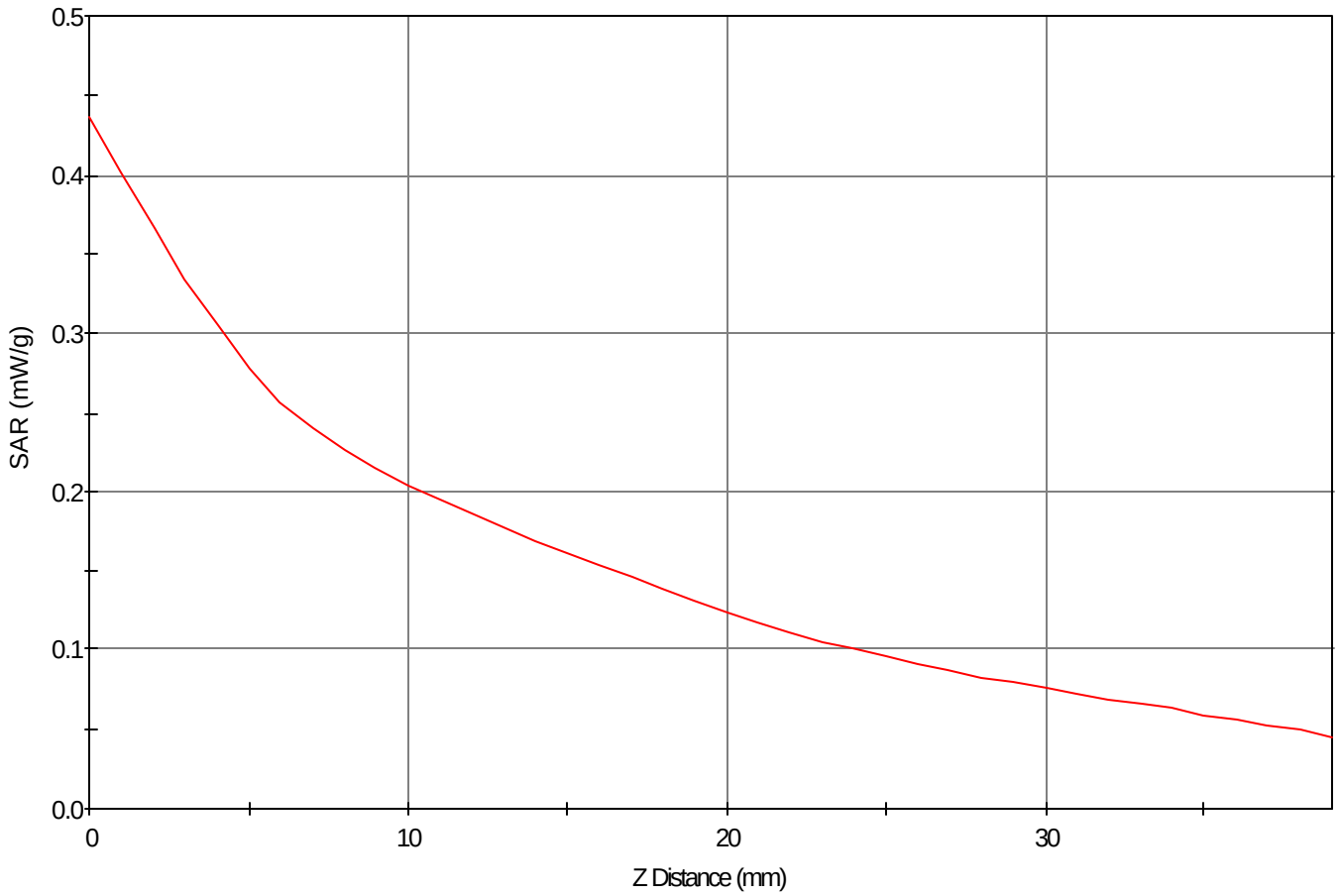



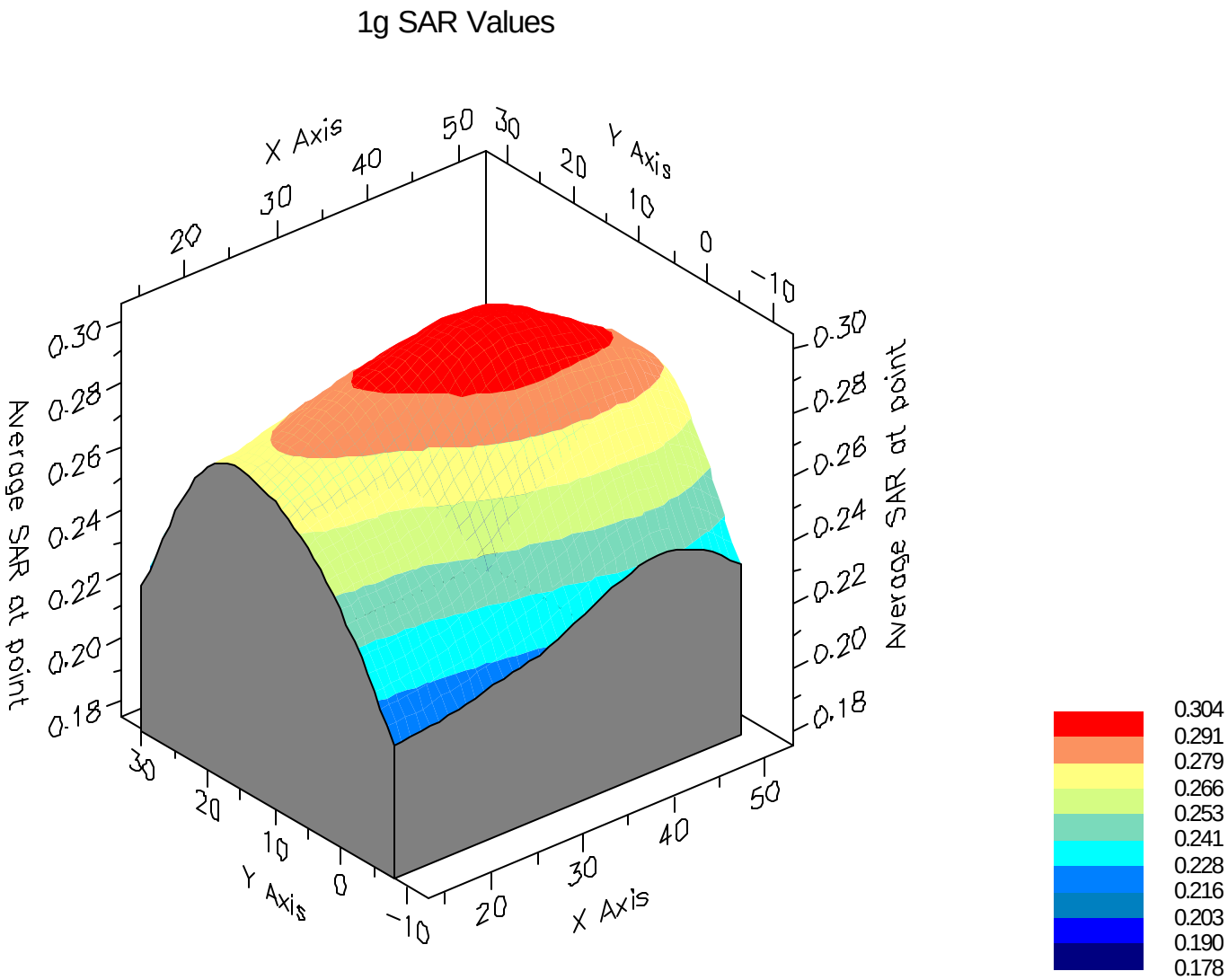


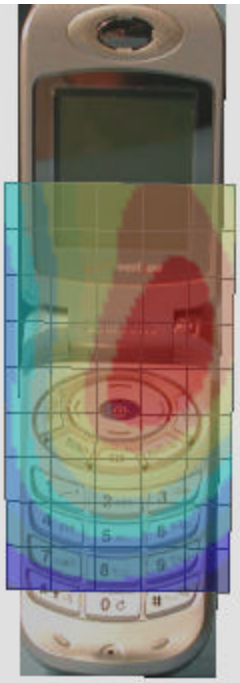
SAR Data Report 02022110

```
  Start        : 21-Feb-02 12:17:58 pm
  End          : 21-Feb-02 12:30:33 pm
  Code Version : 4.03
  Robot Version: 4.07

Product Data:
  Type             : SAMSUNG
  Model Number     : SCH-A310
  Serial Number    : 1
  Frequency        : 824.70
  Peak Trans. Pwr  : 0.400 W
  Start Trans. Pwr : 0.400 W
  Antenna Type     : Helical
  Antenna Posn.    : In

Scan Data:
  Phantom Name         : SAM-L
  Phantom Type         : Left Ear
  Mixture Type         : Brain
  Mixture Dielectric   : 43.440
  Mixture Conductivity : 0.870
  Mixture Density      : 1.000
  Robot Name           : CRS

Probe Data:
  Probe Name              : PCT001
  Probe Type              : E Fld Triangle
  Frequency               : 835
  Mixture Type            : Brain
  Calibrated Dielectric   : 40.700
  Calibrated Conductivity :  0.890
  Calibrated Density      :  1.000
  Probe Offset            :  2.400 mm
  Conversion Factor       :  5.800
  Probe Sensitivity :  3.597   3.474   3.049
  Amplifier Gains   :  20.00   20.00   20.00

Sample:
  Rate:         6000 Samples/Sec
  Count:        100 Samples
  NIDAQ Gain:   5

Comments:
  CDMA Mode CH-1013
  Tilt
  CF=1; Amb. Temp.=22.4'C; Liq. Temp.=22.1'C



Area Scan - Max Peak SAR Value at 32.0 11.0 = 0.300548

Zoom Scan - Max Peak SAR Value at 33.0 5.0 0.0 = 0.436993

Max 1g SAR at 36.0 9.0 0.0 = 0.304101

Max 10g SAR at 34.0 10.0 0.0 = 0.215689
```

SAR - Z Axis
at Hotspot x:33.0 y:5.0



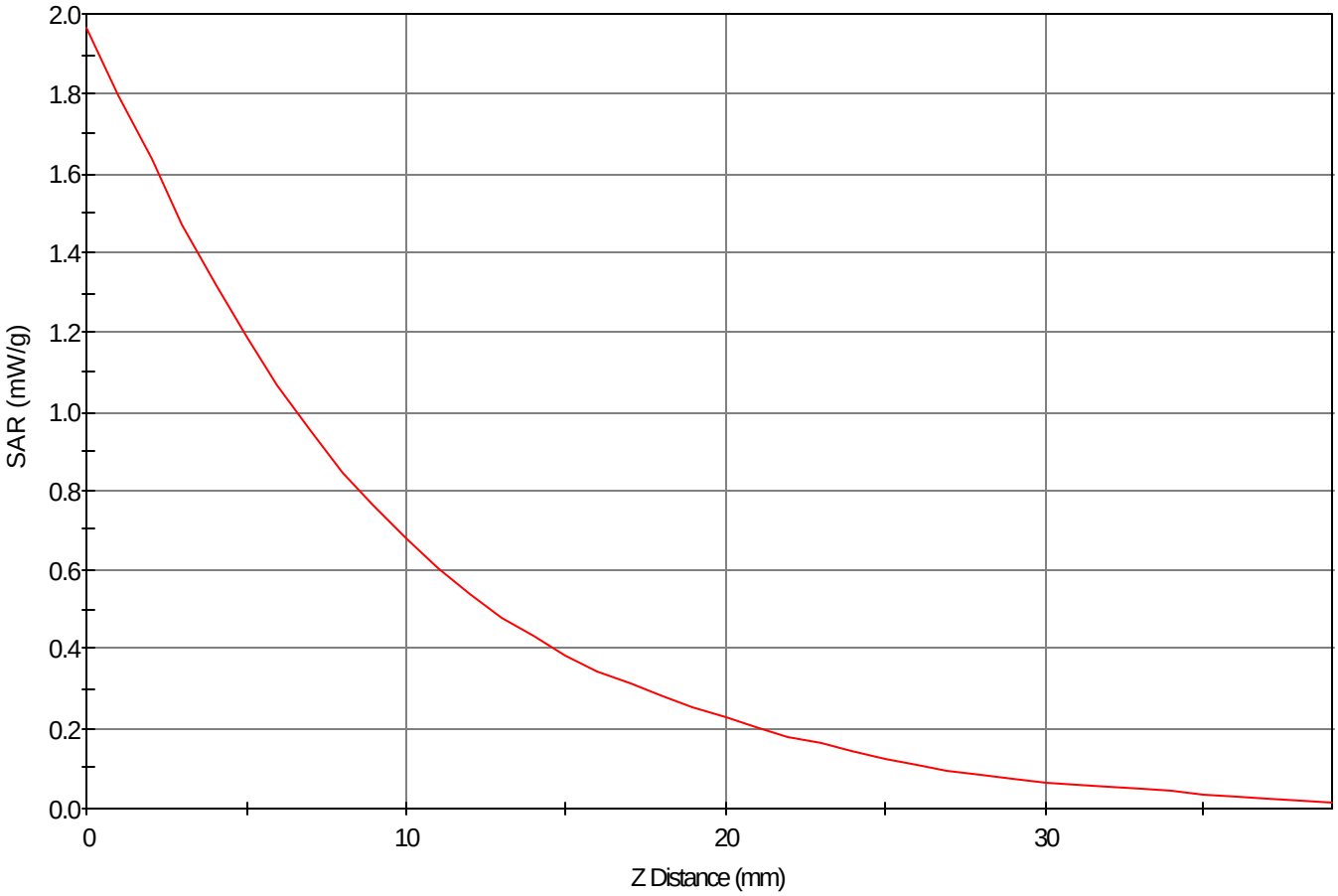

1g SAR Values
X Axis
Y Axis
Average SAR at point
0.30
0.28
0.26
0.24
0.22
0.20
0.18
0.304
0.291
0.279
0.266
0.253
0.241
0.228
0.216
0.203
0.190
0.178



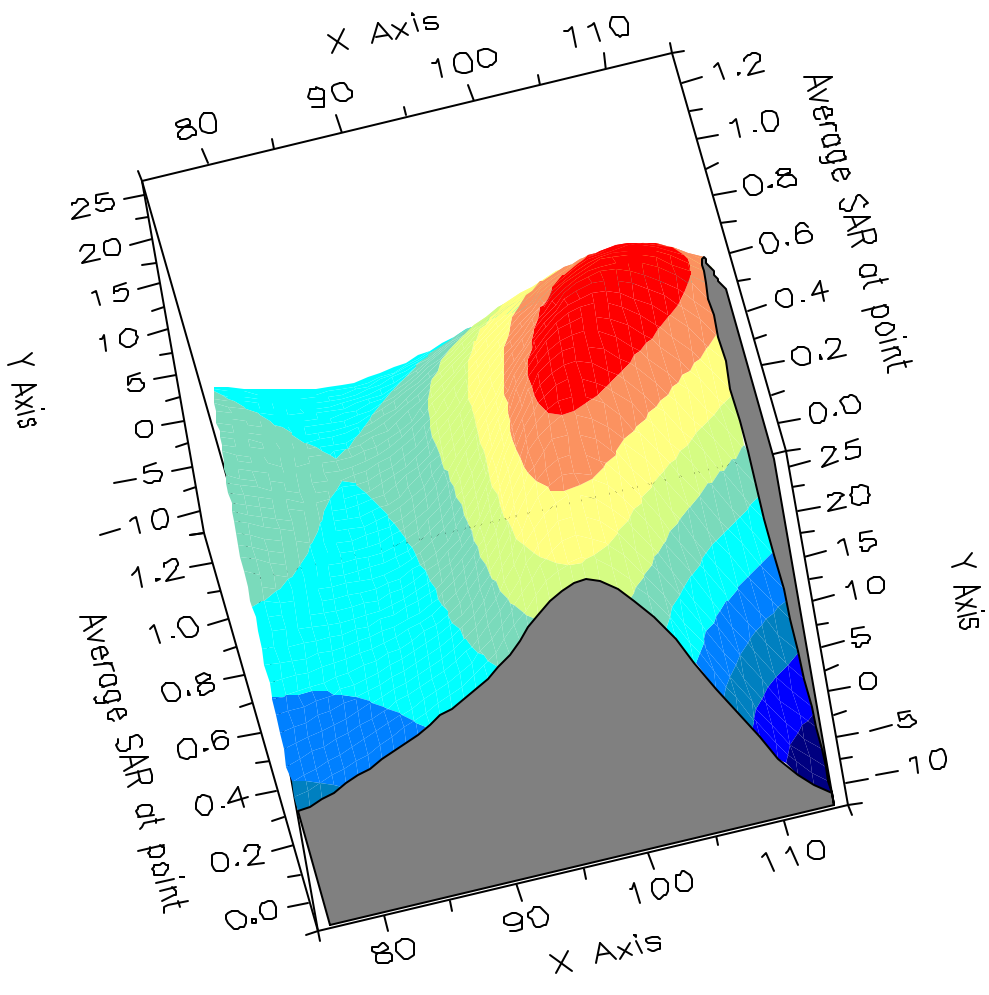
SAR Data Report 02022207

```
  Start        : 22-Feb-02 10:28:53 am
  End          : 22-Feb-02 10:47:21 am
  Code Version : 4.03
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SCH-A310
  Serial Number    : 1
  Frequency        : 1880.00
  Peak Trans. Pwr  : 0.400 W
  Start Trans. Pwr : 0.400 W
  Antenna Type     : Helical
  Antenna Posn.    : In

Scan Data:
  Phantom Name         : SAM-R
  Phantom Type         : Right Ear
  Mixture Type         : Brain
  Mixture Dielectric   : 40.290
  Mixture Conductivity : 1.440
  Mixture Density      : 1.000
  Robot Name           : CRS

Probe Data:
  Probe Name              : PCT001
  Probe Type              : E Fld Triangle
  Frequency               : 1900
  Mixture Type            : Brain
  Calibrated Dielectric   : 40.200
  Calibrated Conductivity :  1.410
  Calibrated Density      :  1.000
  Probe Offset            :  2.400 mm
  Conversion Factor       :  4.700
  Probe Sensitivity :  3.000   2.995   2.653
  Amplifier Gains   :  20.00   20.00   20.00

Sample:
  Rate:         6000 Samples/Sec
  Count:        100 Samples
  NIDAQ Gain:   5

Comments:
  PCS Mode  CH-600
  Touch
  CF=1; Amb. Temp.=22.3'C; Liq. Temp.=21.8'C



Area Scan - Max Peak SAR Value at 95.0 7.0 = 0.913148

Zoom Scan - Max Peak SAR Value at 111.0 7.0 0.0 = 1.962922

Max 1g SAR at 106.0 4.0 0.0 = 1.274482

Max 10g SAR at 103.0 7.0 0.0 = 0.743071
```

SAR - Z Axis
at Hotspot x:111.0 y:7.0



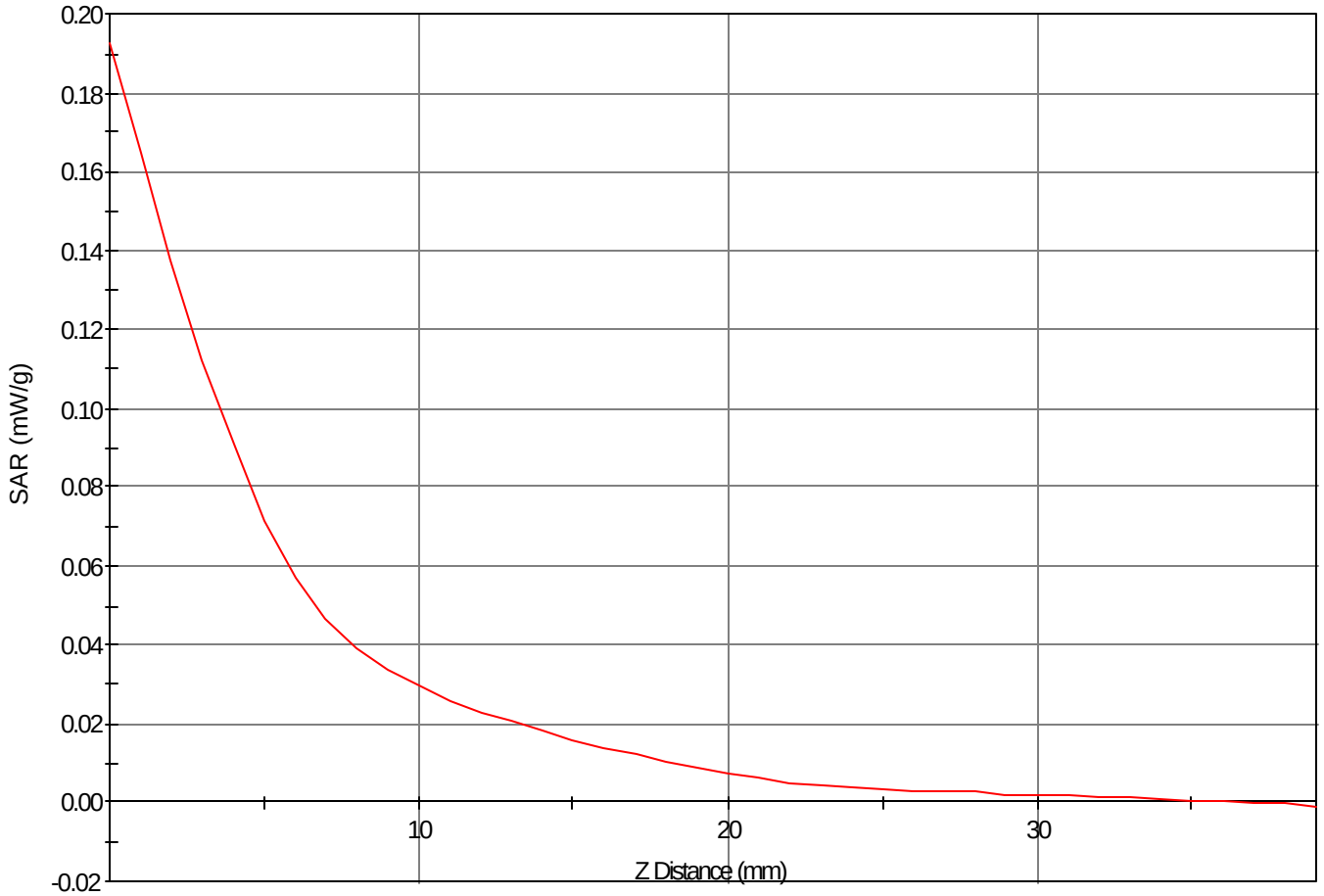
1g SAR Values



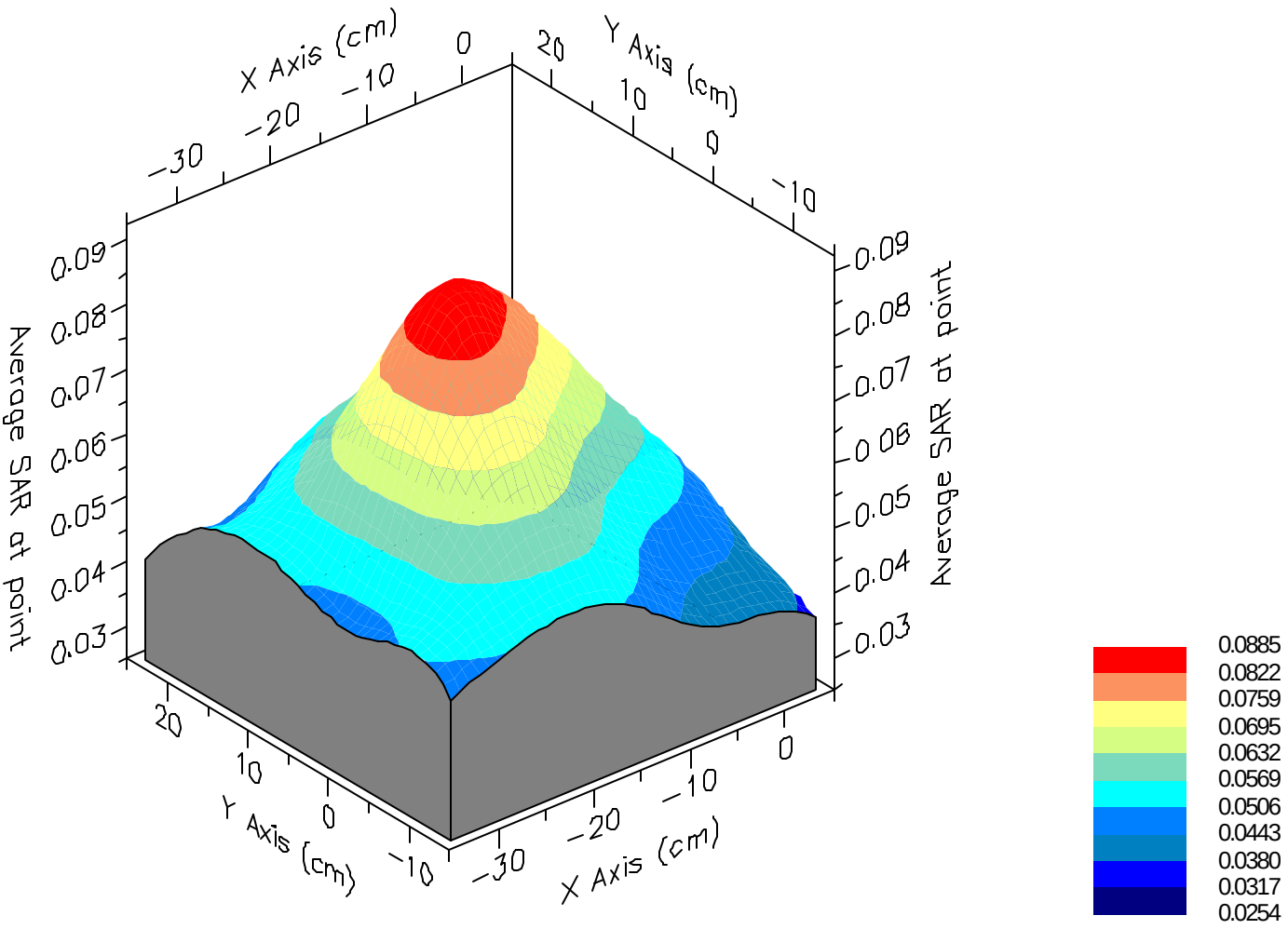
SAR Data Report 02031416

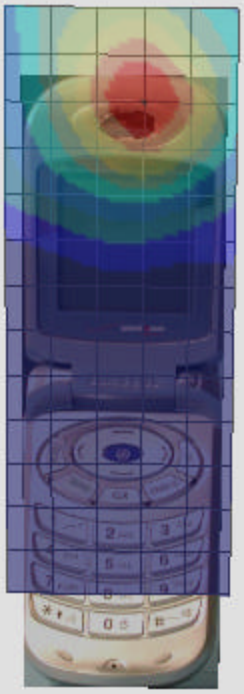
```
  Start        : 14-Mar-02 02:52:26 pm
  End          : 14-Mar-02 03:04:34 pm
  Code Version : 4.08
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SCH-A310
  Serial Number    : 1
  Frequency        : 1880.00 MHz
  Transmit Pwr     : 0.400 W
  Antenna Type     : Helical
  Antenna Posn.    : Out

Measurement Data:
  Phantom Name        : SAM-R
  Phantom Type        : Right Ear
  Tissue Type         : Brain
  Tissue Dielectric   : 40.290
  Tissue Conductivity : 1.440
  Tissue Density      : 1.000
  Robot Name          : CRS

Probe Data:
  Probe Name              : PCT001
  Probe Type              : E Fld Triangle
  Frequency               : 1900 MHz
  Tissue Type             : Brain
  Calibrated Dielectric   : 40.200
  Calibrated Conductivity :  1.410
  Calibrated Density      :  1.000
  Probe Offset            :  2.400 mm
  Conversion Factor       :  4.700
  Probe Sensitivity :  3.000   2.995   2.653   mV/(mW/cm^2)
  Amplifier Gains   :  20.00   20.00   20.00

Sample:
  Rate:         6000 Samples/Sec
  Count:        100 Samples
  NIDAQ Gain:   5

Comments:
  PCS Mode  CH-600
  Tilt
  CF=1; Amb. Temp.=23.1'C; Liq. Temp.=22.8'C




Area Scan - Max Peak SAR Value at x=-15.0 y=5.0 = 0.08 W/kg

Zoom Scan - Max Peak SAR Value at x=-21.0 y=2.0 z=0.0 = 0.19 W/kg

Max 1g SAR at x=-19.0 y=4.0 z=0.0 = 0.09 W/kg

Max 10g SAR at x=-15.0 y=5.0 z=0.0 = 0.04 W/kg
```

SAR - Z Axis
at Hotspot x:-21.0 y:2.0



1g SAR Values

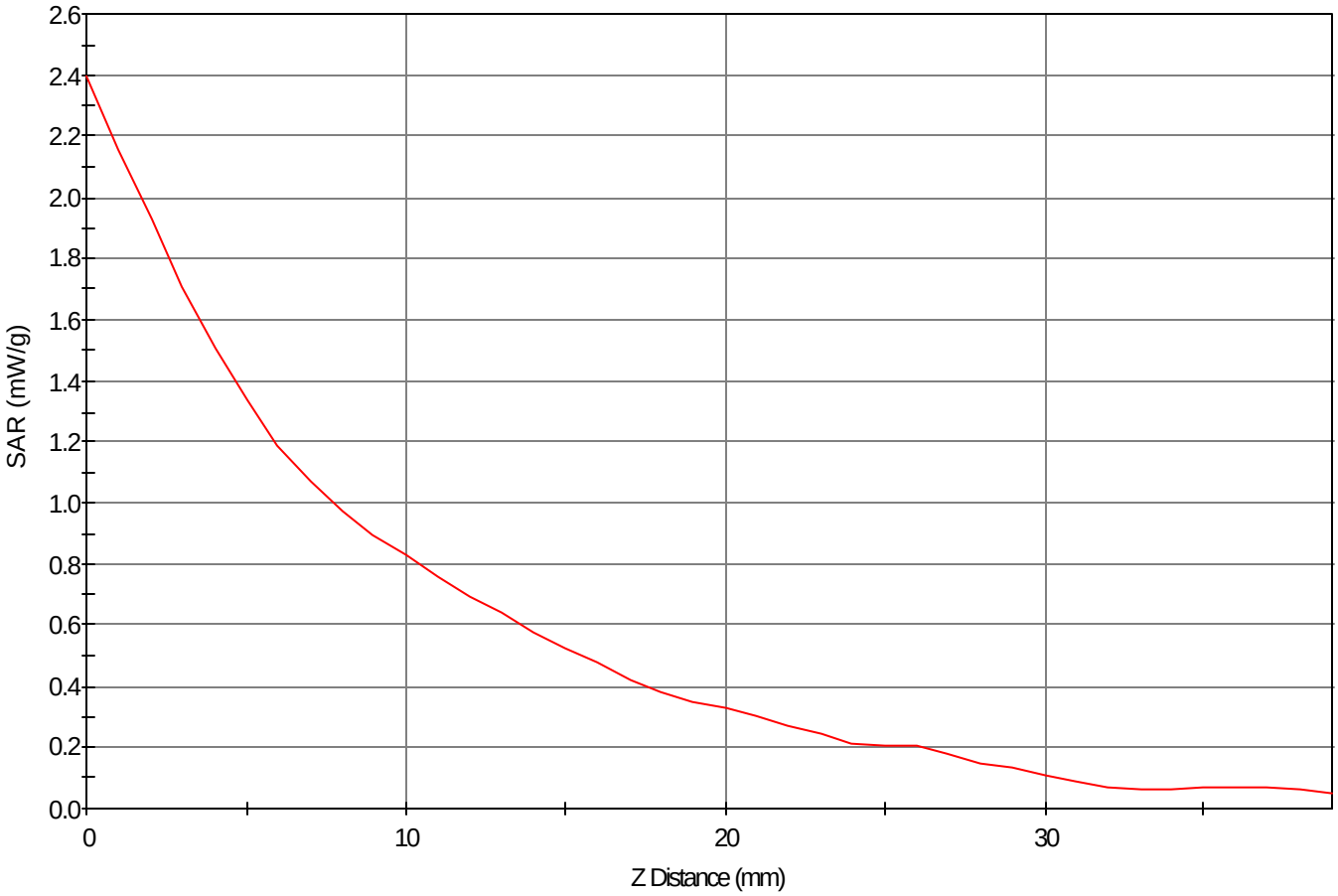




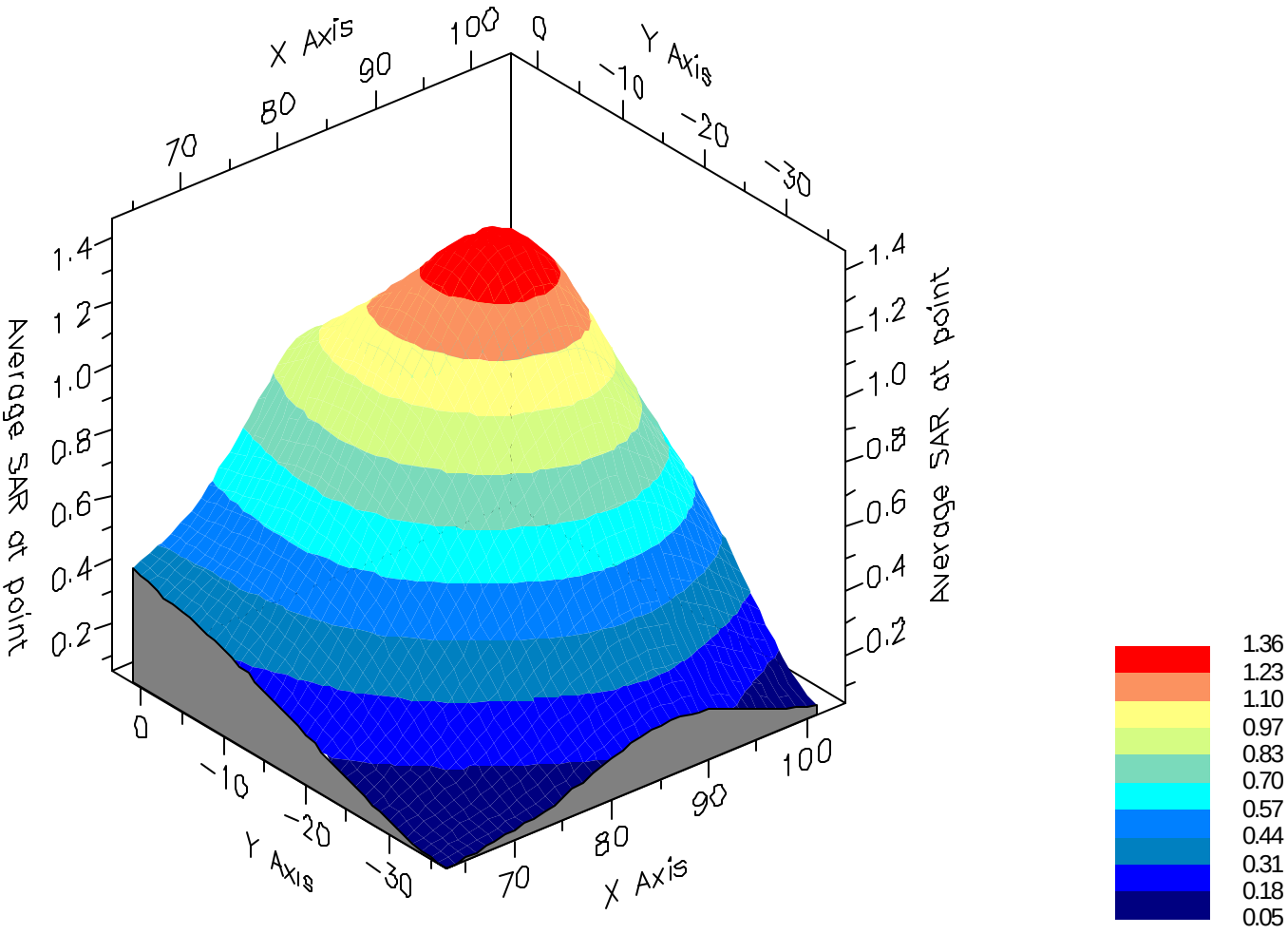
SAR Data Report 02022226

```
  Start        : 22-Feb-02 03:00:34 pm
  End          : 22-Feb-02 03:13:55 pm
  Code Version : 4.03
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SCH-A310
  Serial Number    : 1
  Frequency        : 1908.75
  Peak Trans. Pwr  : 0.400 W
  Start Trans. Pwr : 0.400 W
  Antenna Type     : Helical
  Antenna Posn.    : In

Scan Data:
  Phantom Name         : SAM-L
  Phantom Type         : Left Ear
  Mixture Type         : Brain
  Mixture Dielectric   : 40.290
  Mixture Conductivity : 1.440
  Mixture Density      : 1.000
  Robot Name           : CRS

Probe Data:
  Probe Name              : PCT001
  Probe Type              : E Fld Triangle
  Frequency               : 1900
  Mixture Type            : Brain
  Calibrated Dielectric   : 40.200
  Calibrated Conductivity :  1.410
  Calibrated Density      :  1.000
  Probe Offset            :  2.400 mm
  Conversion Factor       :  4.700
  Probe Sensitivity :  3.000   2.995   2.653
  Amplifier Gains   :  20.00   20.00   20.00

Sample:
  Rate:         6000 Samples/Sec
  Count:        100 Samples
  NIDAQ Gain:   5

Comments:
  PCS Mode  CH-1175
  Touch
  CF=1; Amb. Temp.=22.3'C; Liq. Temp.=21.8'C



Zoom Scan - Max Peak SAR Value at 88.0 -15.0 0.0 = 2.385864

Max 1g SAR at 88.0 -14.0 0.0 = 1.357163

Max 10g SAR at 86.0 -12.0 0.0 = 0.628033
```

SAR - Z Axis
at Hotspot x:88.0 y:-15.0



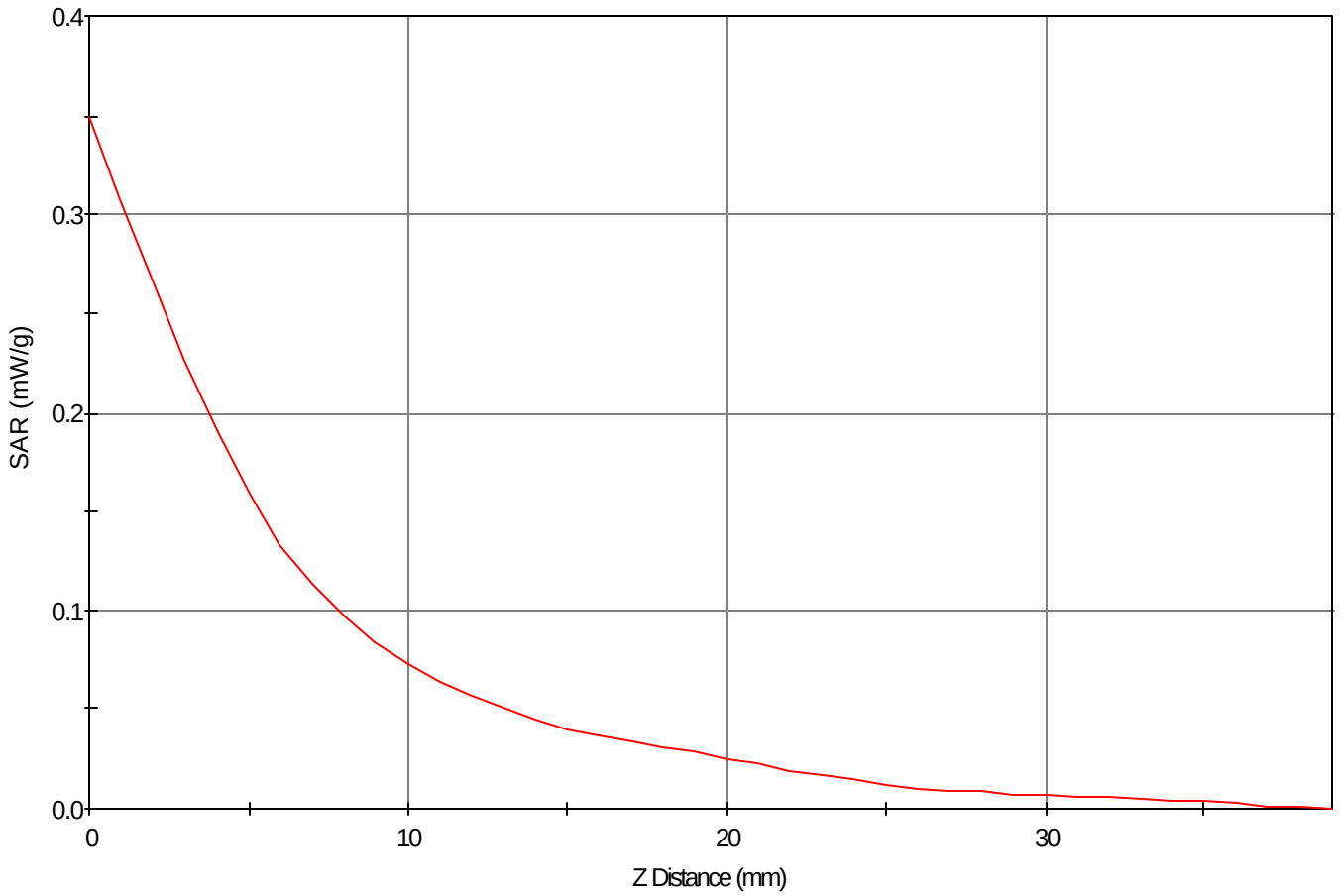
1g SAR Values



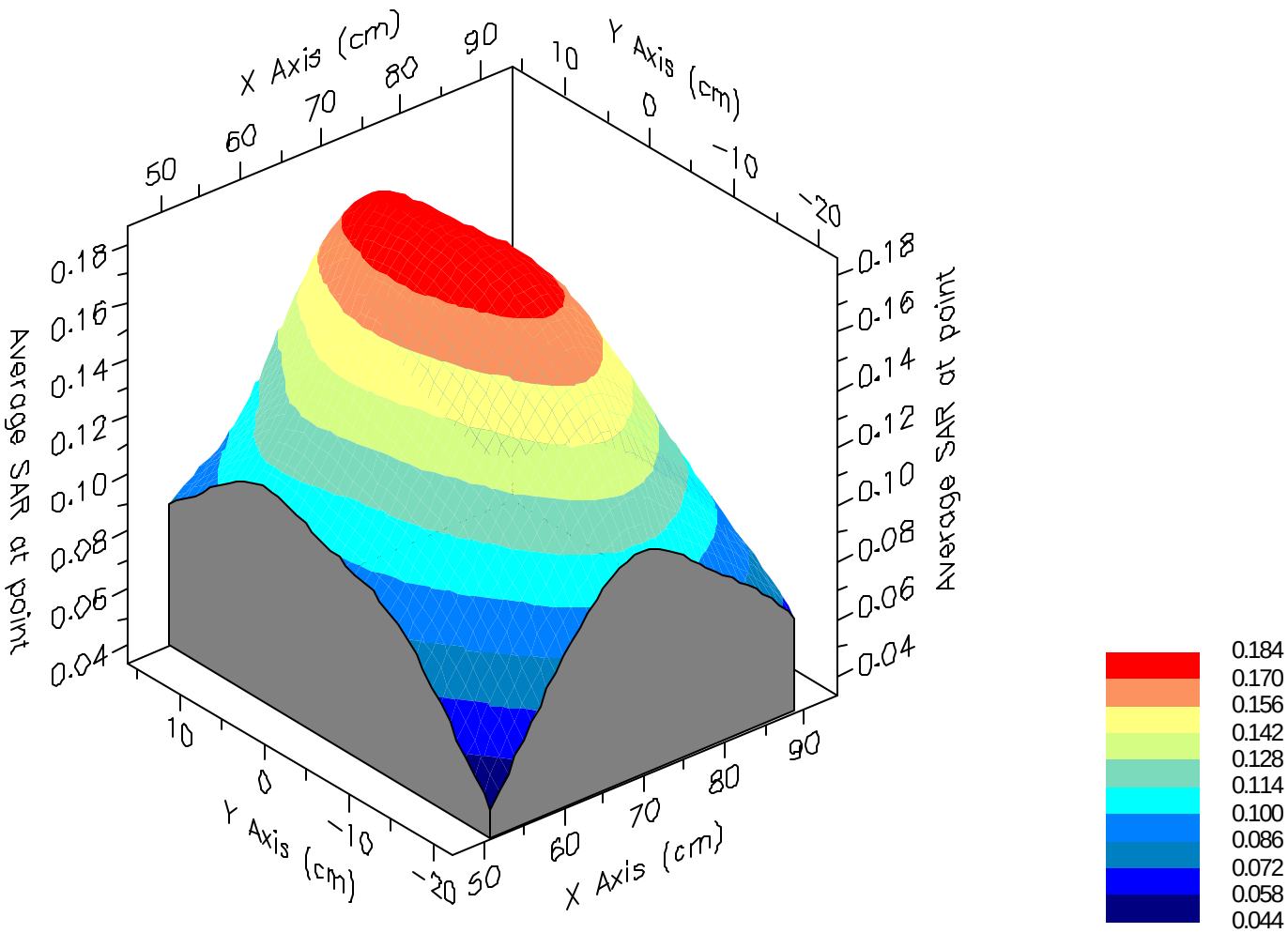
SAR Data Report 02031405

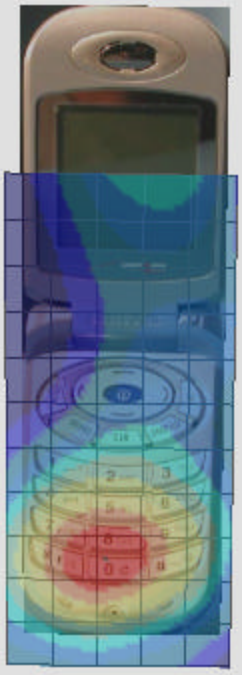
```
  Start        : 14-Mar-02 01:11:07 pm
  End          : 14-Mar-02 01:28:04 pm
  Code Version : 4.08
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SCH-A310
  Serial Number    : 1
  Frequency        : 1908.75 MHz
  Transmit Pwr     : 0.400 W
  Antenna Type     : Helical
  Antenna Posn.    : In

Measurement Data:
  Phantom Name        : SAM-L
  Phantom Type        : Left Ear
  Tissue Type         : Brain
  Tissue Dielectric   : 40.290
  Tissue Conductivity : 1.440
  Tissue Density      : 1.000
  Robot Name          : CRS

Probe Data:
  Probe Name              : PCT001
  Probe Type              : E Fld Triangle
  Frequency               : 1900 MHz
  Tissue Type             : Brain
  Calibrated Dielectric   : 40.200
  Calibrated Conductivity :  1.410
  Calibrated Density      :  1.000
  Probe Offset            :  2.400 mm
  Conversion Factor       :  4.700
  Probe Sensitivity :  3.000   2.995   2.653   mV/(mW/cm^2)
  Amplifier Gains   :  20.00   20.00   20.00

Sample:
  Rate:         6000 Samples/Sec
  Count:        100 Samples
  NIDAQ Gain:   5

Comments:
  PCS Mode  CH-1175
  Tilt
  CF=1; Amb. Temp.=23.1'C; Liq. Temp.=22.8'C



Area Scan - Max Peak SAR Value at x=70.0 y=-3.0 = 0.16 W/kg

Zoom Scan - Max Peak SAR Value at x=70.0 y=11.0 z=0.0 = 0.35 W/kg

Max 1g SAR at x=70.0 y=6.0 z=0.0 = 0.18 W/kg

Max 10g SAR at x=70.0 y=0.0 z=0.0 = 0.10 W/kg
```

SAR - Z Axis
at Hotspot x:70.0 y:11.0



1g SAR Values

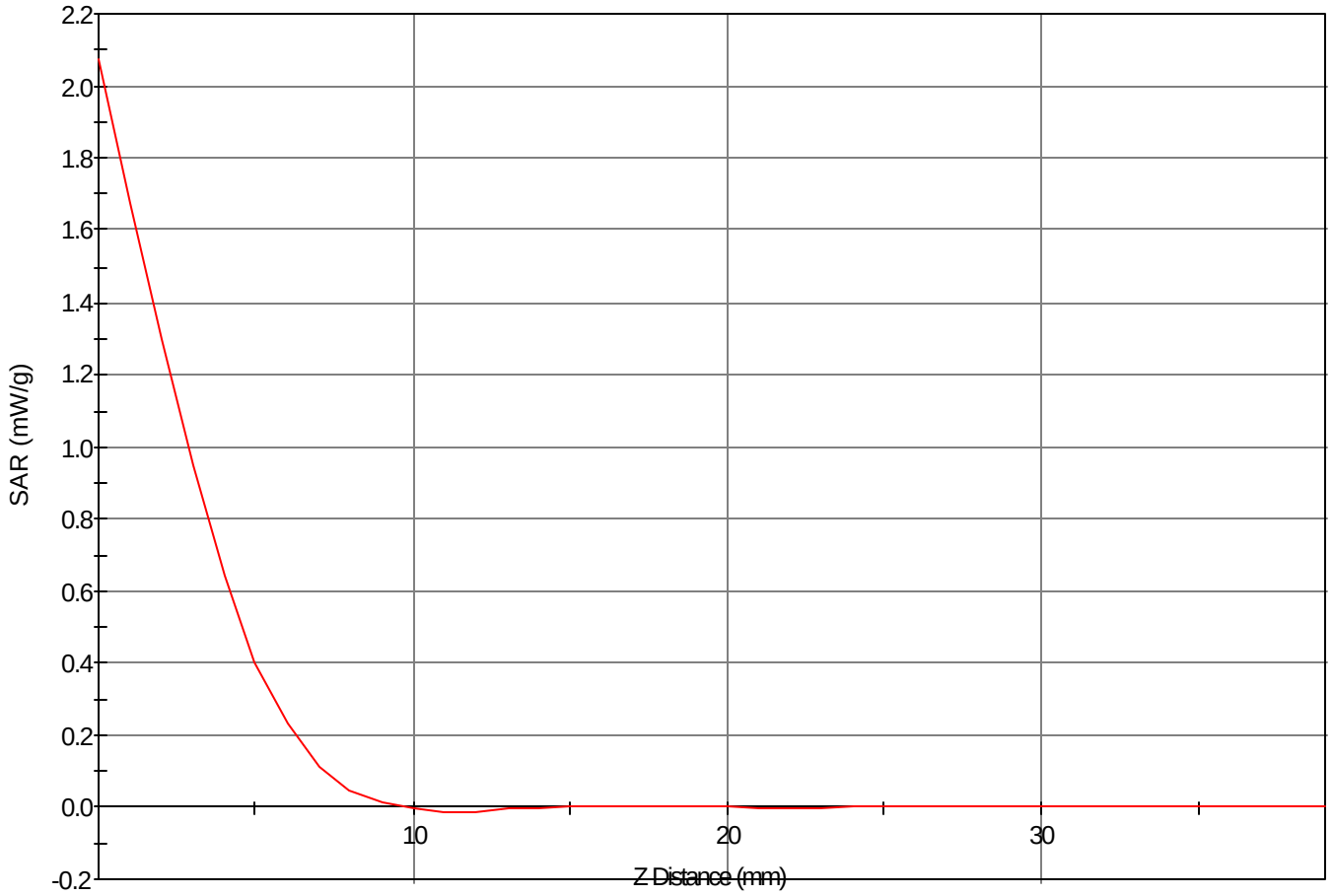




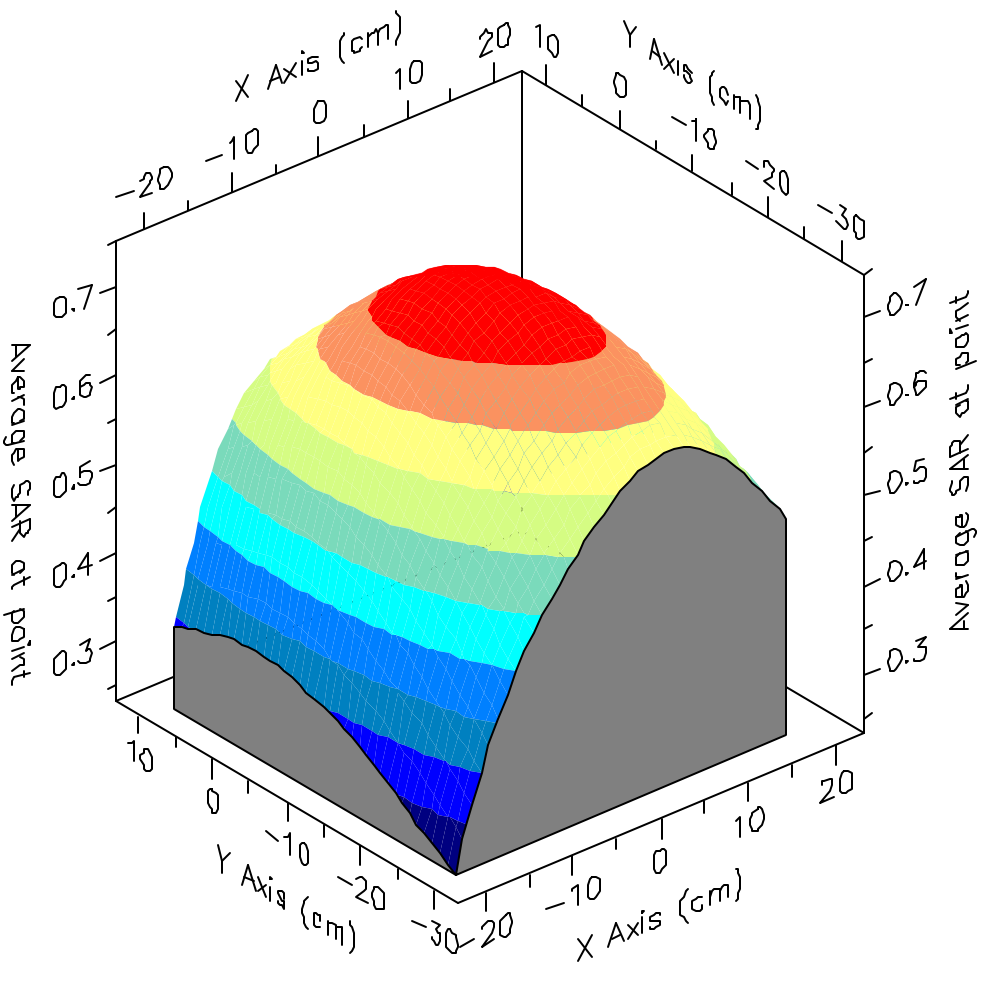
SAR Data Report 02022616

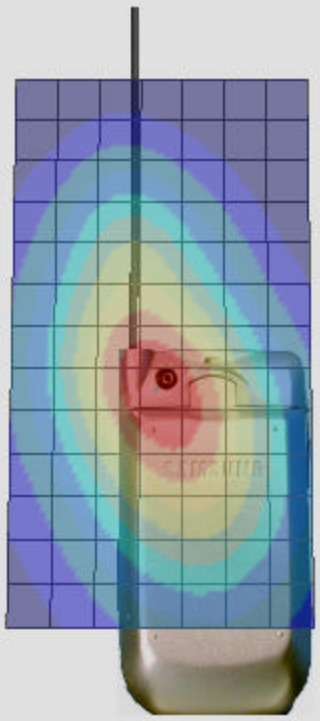
```
  Start        : 26-Feb-02 05:13:07 pm
  End          : 26-Feb-02 05:25:52 pm
  Code Version : 4.07
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SCH-A310
  Serial Number    : 1
  Frequency        : 836.49 MHz
  Peak Trans. Pwr  : 0.500 W
  Start Trans. Pwr : 0.500 W
  Antenna Type     : Helical
  Antenna Posn.    : Out

Measurement Data:
  Phantom Name         : SAM-FLAT
  Phantom Type         : Uniphantom
  Tissue Type         : Muscle
  Tissue Dielectric   : 55.540
  Tissue Conductivity : 0.990
  Tissue Density      : 1.000
  Robot Name           : CRS

Probe Data:
  Probe Name              : PCT001
  Probe Type              : E Fld Triangle
  Frequency               : 835 MHz
  Tissue Type            : Muscle
  Calibrated Dielectric   : 55.700
  Calibrated Conductivity :  0.990
  Calibrated Density      :  1.000
  Probe Offset            :  2.400 mm
  Conversion Factor       :  4.900
  Probe Sensitivity :  3.597   3.474   3.049   mV/(mW/cm^2)
  Amplifier Gains   :  20.00   20.00   20.00

Sample:
  Rate:         6000 Samples/Sec
  Count:        100 Samples
  NIDAQ Gain:   5

Comments:
  AMPS Mode CH-383
  Body
  CF=1; Amb. Temp.=23.0'C; Liq. Temp.=22.9'C



Area Scan - Max Peak SAR Value at x=-1.0 y=-9.0 = 0.47 W/kg

Zoom Scan - Max Peak SAR Value at x=-2.0 y=-10.0 z=0.0 = 0.75 W/kg

Max 1g SAR at x=-1.0 y=-9.0 z=0.0 = 0.5102663.2 W/kg

Max 10g SAR at x=1.0 y=-10.0 z=0.0 = 0.34 W/kg
```

SAR - Z Axis
at Hotspot x:-1.0 y:-10.0



1g SAR Values

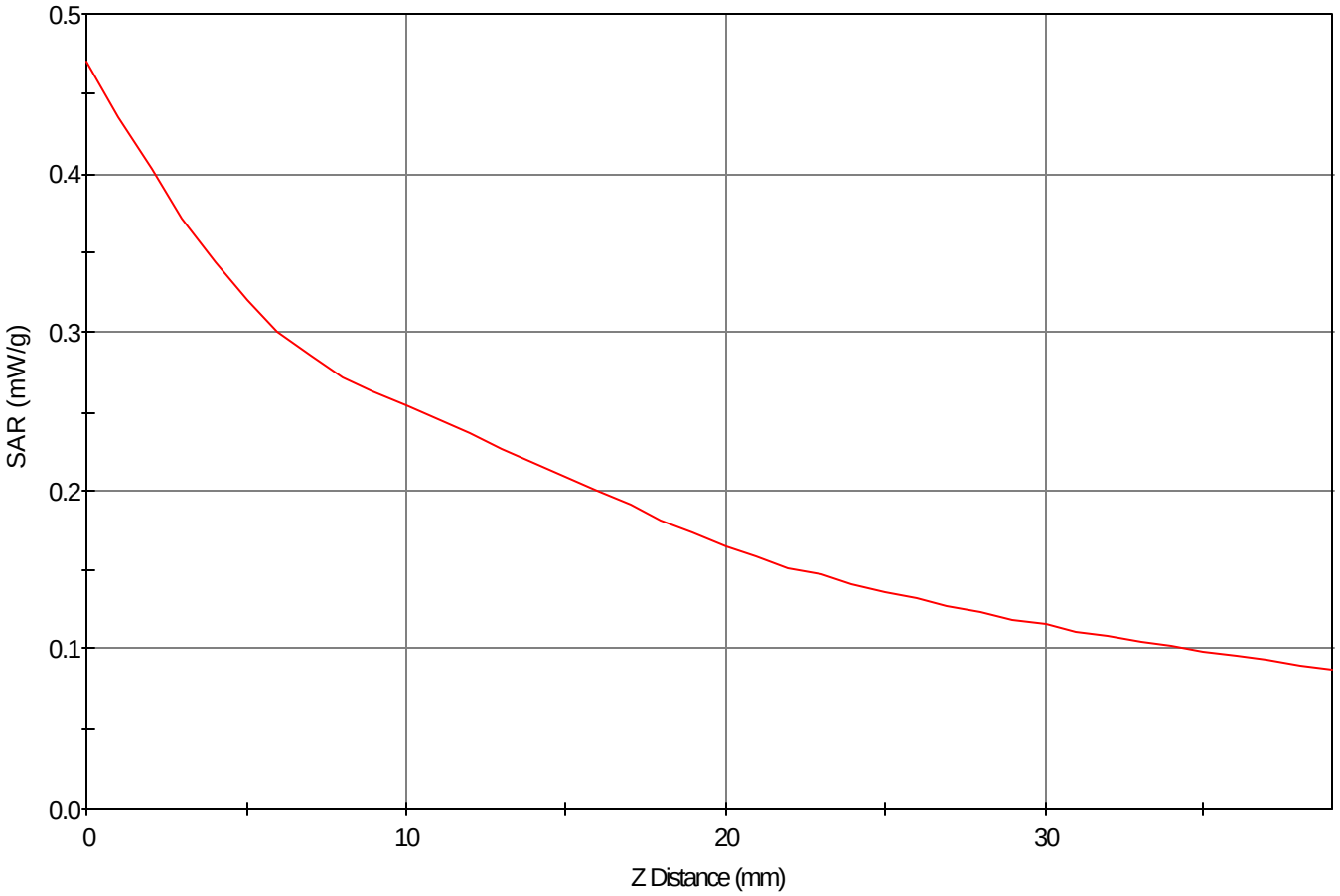




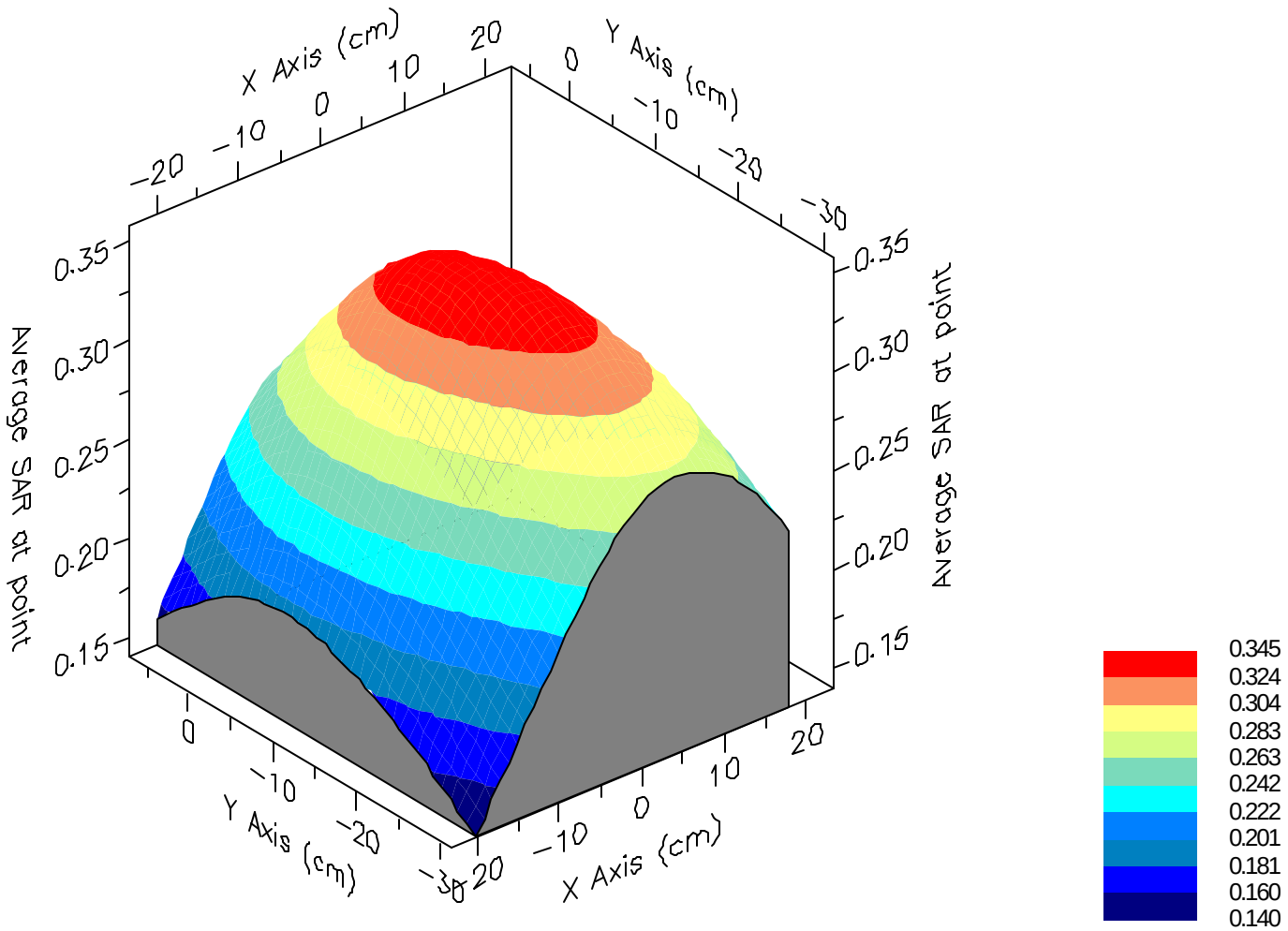
SAR Data Report 02030404

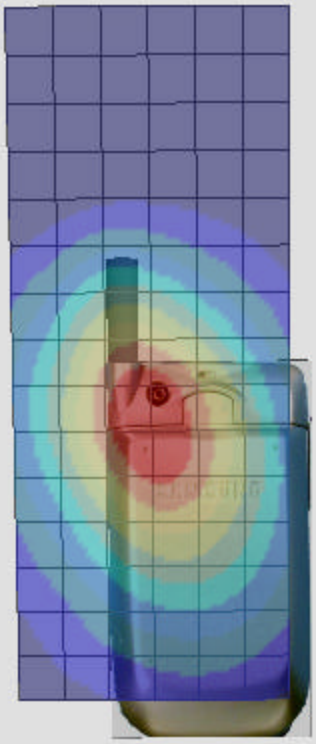
```
  Start        :  4-Mar-02 09:41:25 am
  End          :  4-Mar-02 09:54:10 am
  Code Version : 4.08
  Robot Version: 0.00

Product Data:
  Type             : SAMSUNG
  Model Number     : SCH-A310
  Serial Number    : 1
  Frequency        : 848.31 MHz
  Transmit Pwr     : 0.400 W
  Antenna Type     : Helical
  Antenna Posn.    : In

Measurement Data:
  Phantom Name        : SAM-FLAT
  Phantom Type        : Uniphantom
  Tissue Type         : Muscle
  Tissue Dielectric   : 55.540
  Tissue Conductivity : 0.990
  Tissue Density      : 1.000
  Robot Name          : CRS

Probe Data:
  Probe Name              : PCT001
  Probe Type              : E Fld Triangle
  Frequency               : 835 MHz
  Tissue Type             : Muscle
  Calibrated Dielectric   : 55.700
  Calibrated Conductivity :  0.990
  Calibrated Density      :  1.000
  Probe Offset            :  2.400 mm
  Conversion Factor       :  4.900
  Probe Sensitivity :  3.597   3.474   3.049   mV/(mW/cm^2)
  Amplifier Gains   :  20.00   20.00   20.00

Sample:
  Rate:         6000 Samples/Sec
  Count:        100 Samples
  NIDAQ Gain:   5

Comments:
  CDMA Mode CH-1013
  Body
  CF=1; Amb. Temp.= 22.9'C; Liq. Temp.=22.5'C



Area Scan - Max Peak SAR Value at x=-1.0 y=-12.0 = 0.34 W/kg

Zoom Scan - Max Peak SAR Value at x=-2.0 y=-6.0 z=0.0 = 0.47 W/kg

Max 1g SAR at x=0.0 y=-11.0 z=0.0 = 0.35 W/kg

Max 10g SAR at x=1.0 y=-14.0 z=0.0 = 0.26 W/kg
```

SAR - Z Axis
at Hotspot x:-2.0 y:-6.0



1g SAR Values

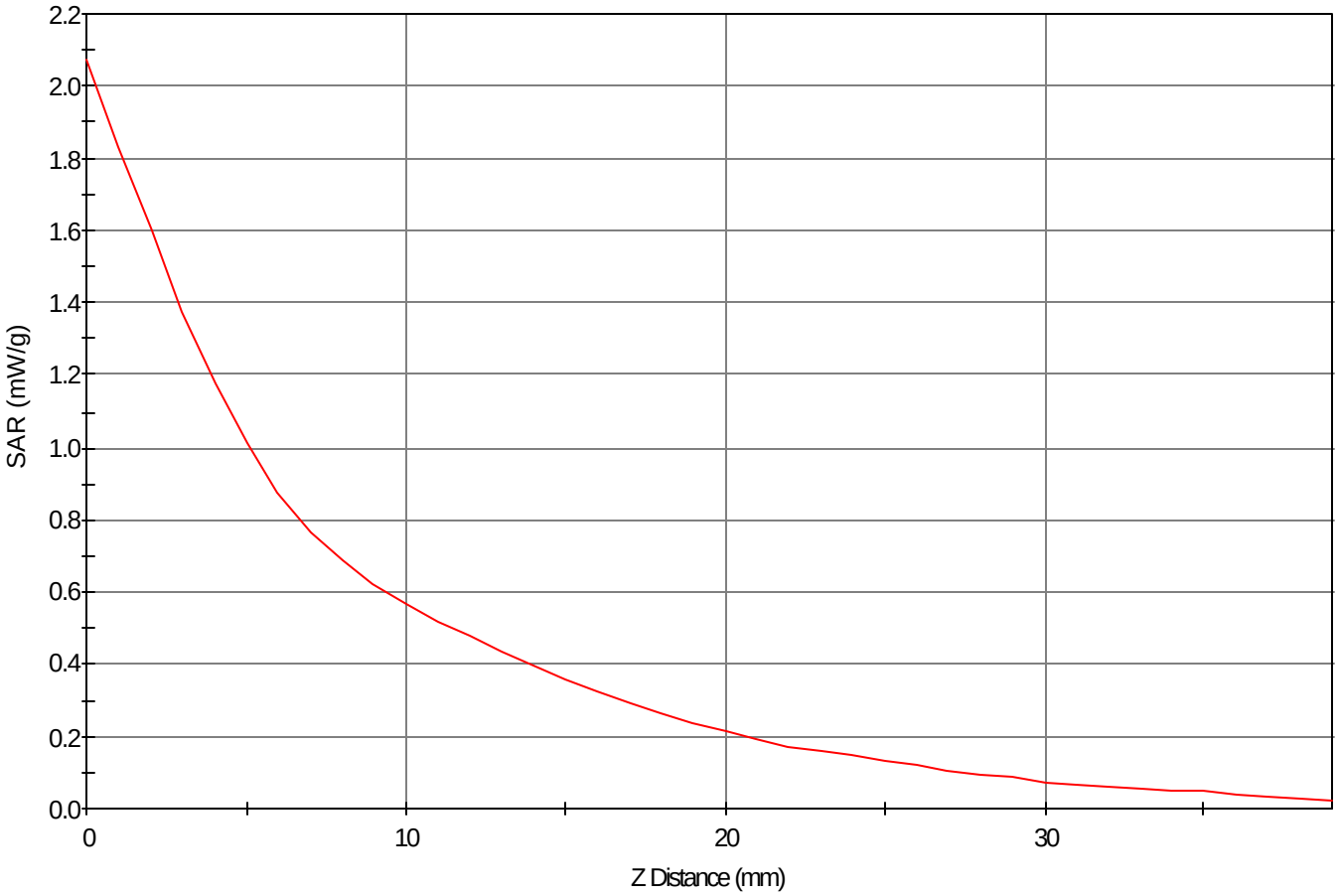




SAR Data Report 02030124

```
  Start        :  1-Mar-02 03:57:29 pm
  End          :  1-Mar-02 04:10:13 pm
  Code Version : 4.08
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SCH-A310
  Serial Number    : 1
  Frequency        : 1880.00 MHz
  Transmit Pwr     : 0.400 W
  Antenna Type     : Helical
  Antenna Posn.    : In

Measurement Data:
  Phantom Name        : SAM-FLAT
  Phantom Type        : Uniphantom
  Tissue Type         : Muscle
  Tissue Dielectric   : 53.950
  Tissue Conductivity : 1.560
  Tissue Density      : 1.000
  Robot Name          : CRS

Probe Data:
  Probe Name              : PCT001
  Probe Type              : E Fld Triangle
  Frequency               : 1900 MHz
  Tissue Type             : Muscle
  Calibrated Dielectric   : 53.900
  Calibrated Conductivity :  1.480
  Calibrated Density      :  1.000
  Probe Offset            :  2.400 mm
  Conversion Factor       :  5.000
  Probe Sensitivity :  3.000   2.995   2.653   mV/(mW/cm^2)
  Amplifier Gains   :  20.00   20.00   20.00

Sample:
  Rate:         6000 Samples/Sec
  Count:        100 Samples
  NIDAQ Gain:   5

Comments:
  PCS Mode  CH-600
  Body
  CF=1; Amb. Temp.= 22.4'C; Liq. Temp.= 22.1'C



Area Scan - Max Peak SAR Value at x=0.0 y=0.0 = 1.04 W/kg

Zoom Scan - Max Peak SAR Value at x=-1.0 y=0.0 z=0.0 = 2.07 W/kg

Max 1g SAR at x=0.0 y=0.0 z=0.0 = 1.16 W/kg

Max 10g SAR at x=3.0 y=-2.0 z=0.0 = 0.64 W/kg
```

SAR - Z Axis
at Hotspot x:-1.0 y:0.0



1g SAR Values