PCTEST ENGINEERING LABORATORY, INC.

6660 – B Dobbin Road • Columbia, MD 21045 • USA
Telephone 410.290.6652 / Fax 410.290.6654
http://www.pctestlab.com (email: randy@pctestlab.com)

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, Engineering Manager

DATE & LOCATION OF TESTING:
Dates of Tests: Feb. 27 - Mar. 1, 2002
Test Report S/N: SAR.220131009.A3L
Test Site: PCTEST Lab, Columbia, MD USA

FCC ID:	**A3LSPHA460**
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)** **1851.25 – 1908.75 MHz (PCS CDMA)**
Rx Frequency:	**869.04 – 893.97 MHz (AMPS) / 869.70 – 893.31 MHz (CDMA)** **1931.25 – 1988.75 MHz (PCS CDMA)**
Max. RF Output Power:	**0.388W ERP AMPS (25.883dBm);** **0.349W ERP Cellular CDMA (25.423dBm);** **0.510W EIRP PCS CDMA (27.071dBm)**
Max. SAR Measurement:	**1.320mW/g AMPS Head SAR; 0.450mW/g AMPS Body SAR;** **1.210mW/g Cell. CDMA Head SAR; 0.380mW/g Cell. CDMA Body SAR;** **1.440mW/g PCS CDMA Head SAR; 0.980mW/g PCS CDMA Body SAR**
Trade Name/Model(s):	***SPH-A460***
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 FCC/OET Bulletin 65 Supplement C (2001) and IEEE Std. 1528-200X (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

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12. SYSTEM VERIFICATION

Tissue Verification

Table 12.1 Simulated Tissue Verification

MEASURED TISSUE PARAMETERS									
Date(s)	02/25/02	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)	02/25/02	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) **2.53**	Deviation (%) **6.1**
System Validation Kit: D-1900S, S/N: 104		1900MHz Brain	Targeted SAR_{1g} (mW/g) 9.925	Measured SAR_{1g} (mW/g) **10.64**	Deviation (%) **6.7**

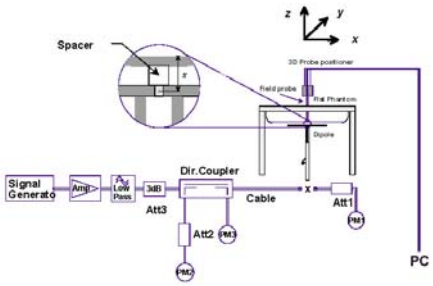

Figure 12.1 Dipole Validation Test Setup

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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

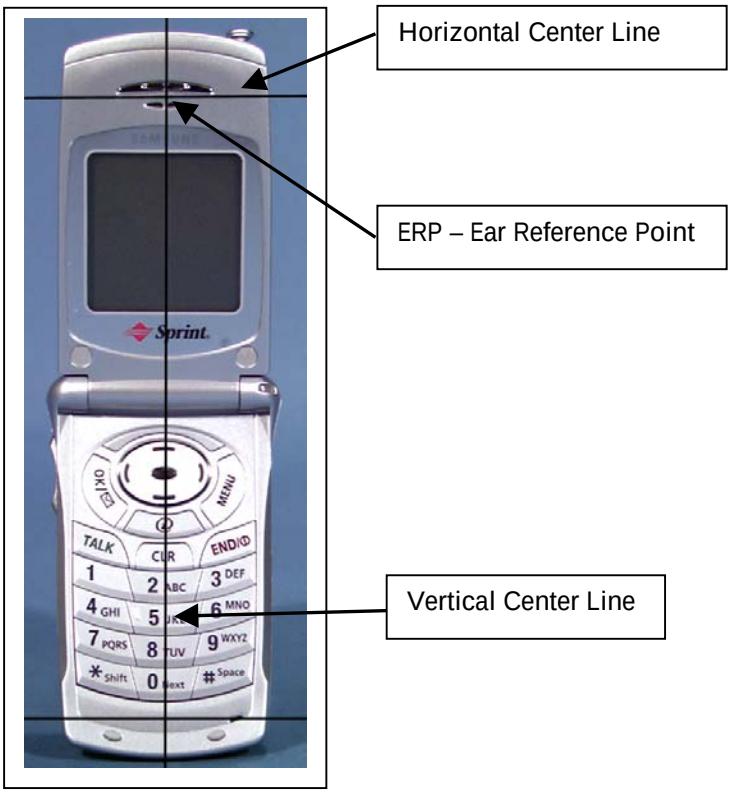

Figure 13.1 Handset Reference Points

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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	26.0	26.0	Standard	Cheek / Touch	In	**0.95**
824.04	0991	AMPS	26.0	26.0	Standard	Cheek / Touch	Out	**0.43**
836.49	0383	AMPS	26.0	26.0	Standard	Cheek / Touch	In	**1.05**
836.49	0383	AMPS	26.0	26.0	Standard	Cheek / Touch	Out	**0.46**
848.97	0799	AMPS	26.0	26.0	Standard	Cheek / Touch	In	**1.32**
848.97	0799	AMPS	26.0	26.0	Standard	Cheek / Touch	Out	**0.87**
848.97	0799	AMPS	26.0	26.0	Extended	Cheek / Touch	In	**1.18**
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**Brain 1.6 W/kg (mW/g)** 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.

	‡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		

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President

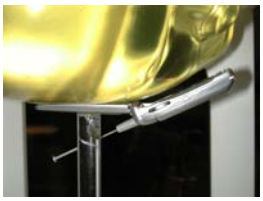

Figure 14.1 Right Head SAR Test Setup
-- Cheek / Touch Position --

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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			
848.97	0799	AMPS	26.0	26.0	Standard	Ear / 15° Tilt	In	**0.45**
848.97	0799	AMPS	26.0	26.0	Standard	Ear / 15° Tilt	Out	**0.38**
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**Brain 1.6 W/kg (mW/g)** 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.

	‡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	

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President

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

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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	26.0	26.0	Standard	Cheek / Touch	In	**1.03**
824.04	0991	AMPS	26.0	26.0	Standard	Cheek / Touch	Out	**0.39**
836.49	0383	AMPS	26.0	26.0	Standard	Cheek / Touch	In	**1.20**
836.49	0383	AMPS	26.0	26.0	Standard	Cheek / Touch	Out	**0.49**
848.97	0799	AMPS	26.0	26.0	Standard	Cheek / Touch	In	**1.31**
848.97	0799	AMPS	26.0	26.0	Standard	Cheek / Touch	Out	**0.76**
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**Brain 1.6 W/kg (mW/g)** 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.

‡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

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President

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

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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			
848.97	0799	AMPS	26.0	26.0	Standard	Ear / 15° Tilt	In	**0.47**
848.97	0799	AMPS	26.0	26.0	Standard	Ear / 15° Tilt	Out	**0.15**
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**Brain 1.6 W/kg (mW/g)** 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.

‡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		

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

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SAR DATA SUMMARY (Continued)

Mixture Type: 835MHz Brain

Dielectric Constant: 43.44

Conductivity: 0.87

14.5 MEASUREMENT RESULTS (CELLULAR CDMA Right Head SAR – Touch)

FREQUENCY		Modulation	Begin / End POWER‡			Device Test Position	Antenna Position	SAR (W/kg)
MHz	Ch.		(dBm)		Battery			
848.31	0777	CDMA	25.5	25.5	Standard	Cheek / Touch	In	**1.11**
848.31	0777	CDMA	25.5	25.5	Standard	Cheek / Touch	Out	**0.68**
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**Brain 1.6 W/kg (mW/g)** 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.

	‡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

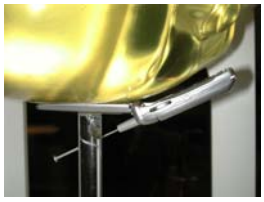

Figure 14.5 Right Head SAR Test Setup
-- Cheek / Touch Position --

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SAR DATA SUMMARY (Continued)

Mixture Type: 835MHz Brain

Dielectric Constant: 43.44

Conductivity: 0.87

14.6 MEASUREMENT RESULTS (CELLULAR CDMA Right Head SAR – Tilt)

FREQUENCY		Modulation	Begin / End POWER‡			Device Test Position	Antenna Position	SAR (W/kg)
MHz	Ch.		(dBm)		Battery			
848.31	0777	CDMA	25.5	25.5	Standard	Ear / 15° Tilt	In	**0.37**
848.31	0777	CDMA	25.5	25.5	Standard	Ear / 15° Tilt	Out	**0.35**
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**Brain 1.6 W/kg (mW/g)** 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.

‡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		

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President

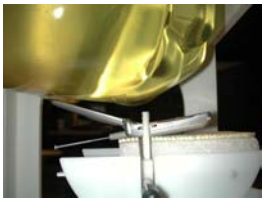

Figure 14.6 Right Head SAR Test Setup
-- Ear / 15° Tilt Position --

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SAR DATA SUMMARY (Continued)

Mixture Type: 835MHz Brain

Dielectric Constant: 43.44

Conductivity: 0.87

14.7 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			
848.31	0777	CDMA	25.5	25.5	Standard	Cheek / Touch	In	**1.21**
848.31	0777	CDMA	25.5	25.5	Standard	Cheek / Touch	Out	**0.54**
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**Brain 1.6 W/kg (mW/g)** 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.

‡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		

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President

Figure 14.7 Left Head SAR Test Setup
-- Cheek / Touch Position --

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SAR DATA SUMMARY (Continued)

Mixture Type: 1900MHz Brain

Dielectric Constant: 40.29

Conductivity: 1.44

14.8 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			
1851.25	0025	CDMA	25.0	25.0	Standard	Cheek / Touch	In	**0.87**
1851.25	0025	CDMA	25.0	25.0	Standard	Cheek / Touch	Out	**0.47**
1880.00	0600	CDMA	25.0	25.0	Standard	Cheek / Touch	In	**1.03**
1880.00	0600	CDMA	25.0	25.0	Standard	Cheek / Touch	Out	**0.60**
1908.75	1175	CDMA	25.0	25.0	Standard	Cheek / Touch	In	**1.44**
1908.75	1175	CDMA	25.0	25.0	Standard	Cheek / Touch	Out	**0.64**
1908.75	1175	CDMA	25.0	25.0	Extended	Cheek / Touch	In	**1.32**
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**Brain 1.6 W/kg (mW/g)** 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.

‡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		

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President

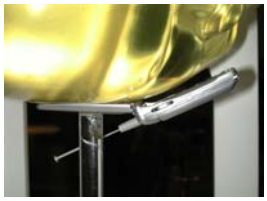

Figure 14.8 Right Head SAR Test Setup -- Cheek / Touch Position --

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SAR DATA SUMMARY (Continued)

Mixture Type: 1900MHz Brain

Dielectric Constant: 40.29

Conductivity: 1.44

14.9 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			
1908.75	1175	CDMA	25.0	25.0	Standard	Ear / 15° Tilt	In	**0.38**
1908.75	1175	CDMA	25.0	25.0	Standard	Ear / 15° Tilt	Out	**0.10**
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**Brain 1.6 W/kg (mW/g)** 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.

‡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		

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President

Figure 14.9 Right Head SAR Test Setup -- Ear / Tilt Position --

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SAR DATA SUMMARY (Continued)

Mixture Type: 1900MHz Brain

Dielectric Constant: 40.29

Conductivity: 1.44

14.10 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			
1851.25	0025	CDMA	25.0	25.0	Standard	Cheek / Touch	In	**1.00**
1851.25	0025	CDMA	25.0	25.0	Standard	Cheek / Touch	Out	**0.45**
1880.00	0600	CDMA	25.0	25.0	Standard	Cheek / Touch	In	**1.09**
1880.00	0600	CDMA	25.0	25.0	Standard	Cheek / Touch	Out	**0.57**
1908.75	1175	CDMA	25.0	25.0	Standard	Cheek / Touch	In	**1.40**
1908.75	1175	CDMA	25.0	25.0	Standard	Cheek / Touch	Out	**0.57**
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**Brain 1.6 W/kg (mW/g)** 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.

	‡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		

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President

Figure 14.10 Left Head SAR Test Setup
-- Cheek / Touch Position --

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SAR DATA SUMMARY (Continued)

Mixture Type: 1900MHz Brain

Dielectric Constant: 40.29

Conductivity: 1.44

14.11 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			
1908.75	1175	CDMA	25.0	25.0	Standard	Ear / 15° Tilt	In	**0.20**
1908.75	1175	CDMA	25.0	25.0	Standard	Ear / 15° Tilt	Out	**0.09**
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**Brain 1.6 W/kg (mW/g)** 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.

‡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		

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President

Figure 14.11 Left Head SAR Test Setup
-- Ear / Tilt Position --

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SAR DATA SUMMARY (Continued)

Mixture Type: 835MHz Muscle

Dielectric Constant: 55.54

Conductivity: 0.9955

14.12 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	26.0	26.0	Standard	1.5 [w/o Holster]	In	**0.29**
824.04	0991	AMPS	26.0	26.0	Standard	1.5 [w/o Holster]	Out	**0.13**
836.49	0383	AMPS	26.0	26.0	Standard	1.5 [w/o Holster]	In	**0.37**
836.49	0383	AMPS	26.0	26.0	Standard	1.5 [w/o Holster]	Out	**0.20**
848.97	0799	AMPS	26.0	26.0	Standard	1.5 [w/o Holster]	In	**0.45**
848.97	0799	AMPS	26.0	26.0	Standard	1.5 [w/o Holster]	Out	**0.26**
848.97	0799	AMPS	26.0	26.0	Extended	1.5 [w/o Holster]	In	**0.39**
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**Muscle 1.6 W/kg (mW/g)** 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.

	‡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

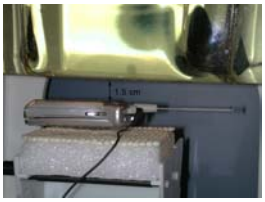

Figure 14.12 Body SAR Test Setup
-- w/o Holster --

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SAR DATA SUMMARY (Continued)

Mixture Type: 835MHz Muscle

Dielectric Constant: 55.54

Conductivity: 0.9955

14.13 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	25.5	25.5	Standard	1.5 [w/o Holster]	In	**0.38**
848.31	0777	CDMA	25.5	25.5	Standard	1.5 [w/o Holster]	Out	**0.21**
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**Muscle 1.6 W/kg (mW/g)** averaged over 1 gram		

ENVIRONMENTAL AND TISSUE CONDITIONS			
Mixture Type	835MHz Muscle	Ambient TEMPERATURE (°C)	23.0
Conductivity	0.99	Relative HUMIDITY (%)	60.8
Permittivity	56.5	Atmospheric PRESSURE (kPa)	99.9
Measured Depth of Simulating Tissue	15.0 cm	Measured Tissue TEMPERATURE (°C)	22.7

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 Battery is the Only Battery option.*

‡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

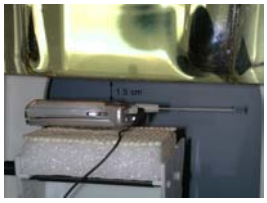

Figure 14.13 Body SAR Test Setup
-- w/o Holster --

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SAR DATA SUMMARY (Continued)

Mixture Type: 1900MHz Muscle

Dielectric Constant: 53.95

Conductivity: 1.56

14.14 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			
1851.25	0025	CDMA	25.0	25.0	Standard	1.5 [w/o Holster]	In	**0.38**
1851.25	0025	CDMA	25.0	25.0	Standard	1.5 [w/o Holster]	Out	**0.53**
1880.00	0600	CDMA	25.0	25.0	Standard	1.5 [w/o Holster]	In	**0.34**
1880.00	0600	CDMA	25.0	25.0	Standard	1.5 [w/o Holster]	Out	**0.85**
1908.75	1175	CDMA	25.0	25.0	Standard	1.5 [w/o Holster]	In	**0.52**
1908.75	1175	CDMA	25.0	25.0	Standard	1.5 [w/o Holster]	Out	**0.98**
1908.75	1175	CDMA	25.0	25.0	Extended	1.5 [w/o Holster]	Out	**0.81**
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						**Muscle 1.6 W/kg (mW/g)** 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 Battery is the Only Battery option.*

	‡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 14.14 Body SAR Test Setup -- w/o Holster --

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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.

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SAR Data Report 02022730

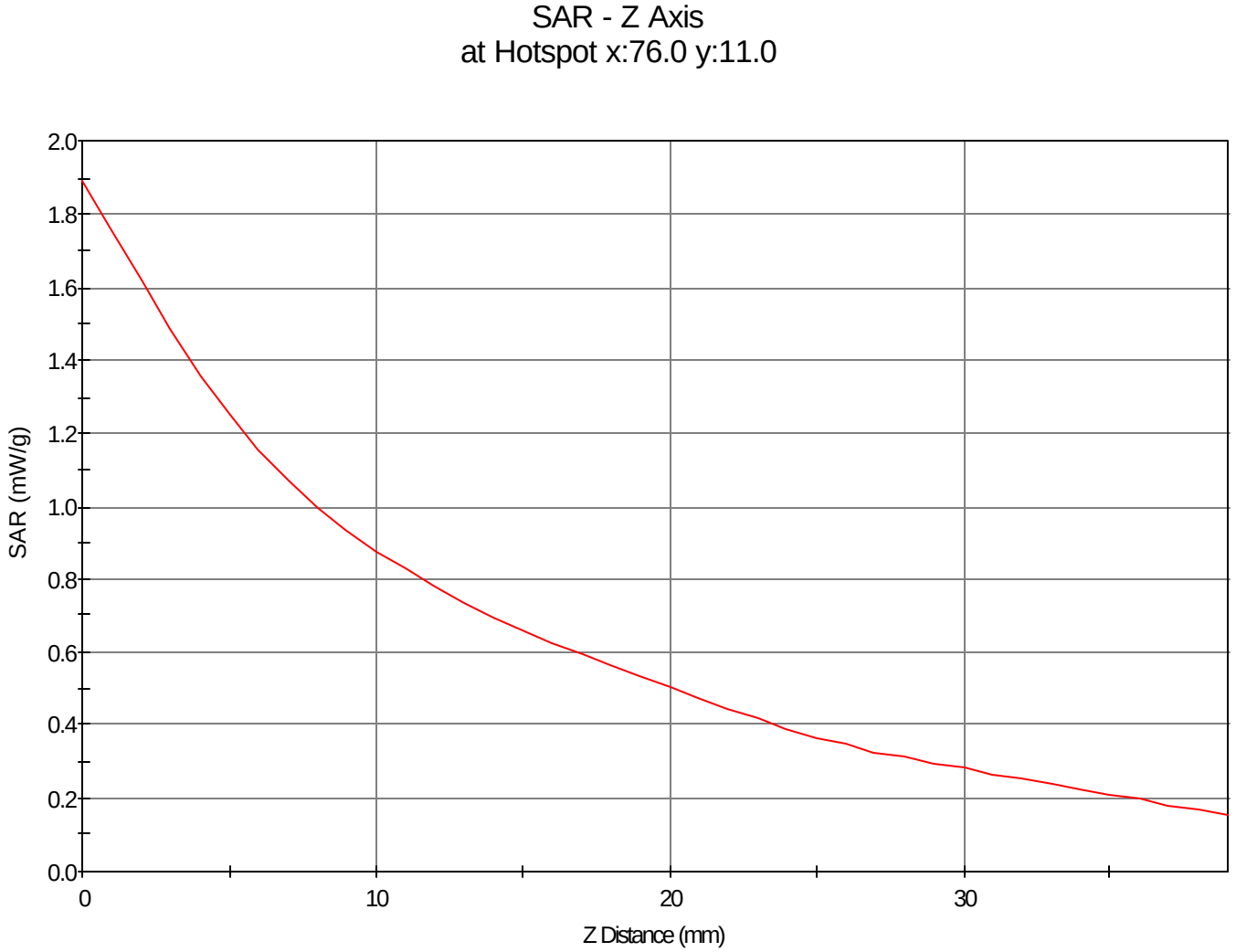
```
  Start        : 27-Feb-02 04:25:24 pm
  End          : 27-Feb-02 04:37:10 pm
  Code Version : 4.07
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SPH-A460
  Serial Number    : 3
  Frequency        : 848.97 MHz
  Peak Trans. Pwr  : 0.400 W
  Start Trans. Pwr : 0.400 W
  Antenna Type     : Helical
  Antenna Posn.    : In

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

Probe Data:
  Probe Name              : PCT001
  Probe Type              : E Fld Triangle
  Frequency               : 835 MHz
  Tissue 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   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  CH-799
  Cheek
  CF=1; Amb. Temp.=23.4'C; Liq. Temp.=23.3'C
```

Area Scan - Max Peak SAR Value at x=74.0 y=10.0 = 1.28 W/kg

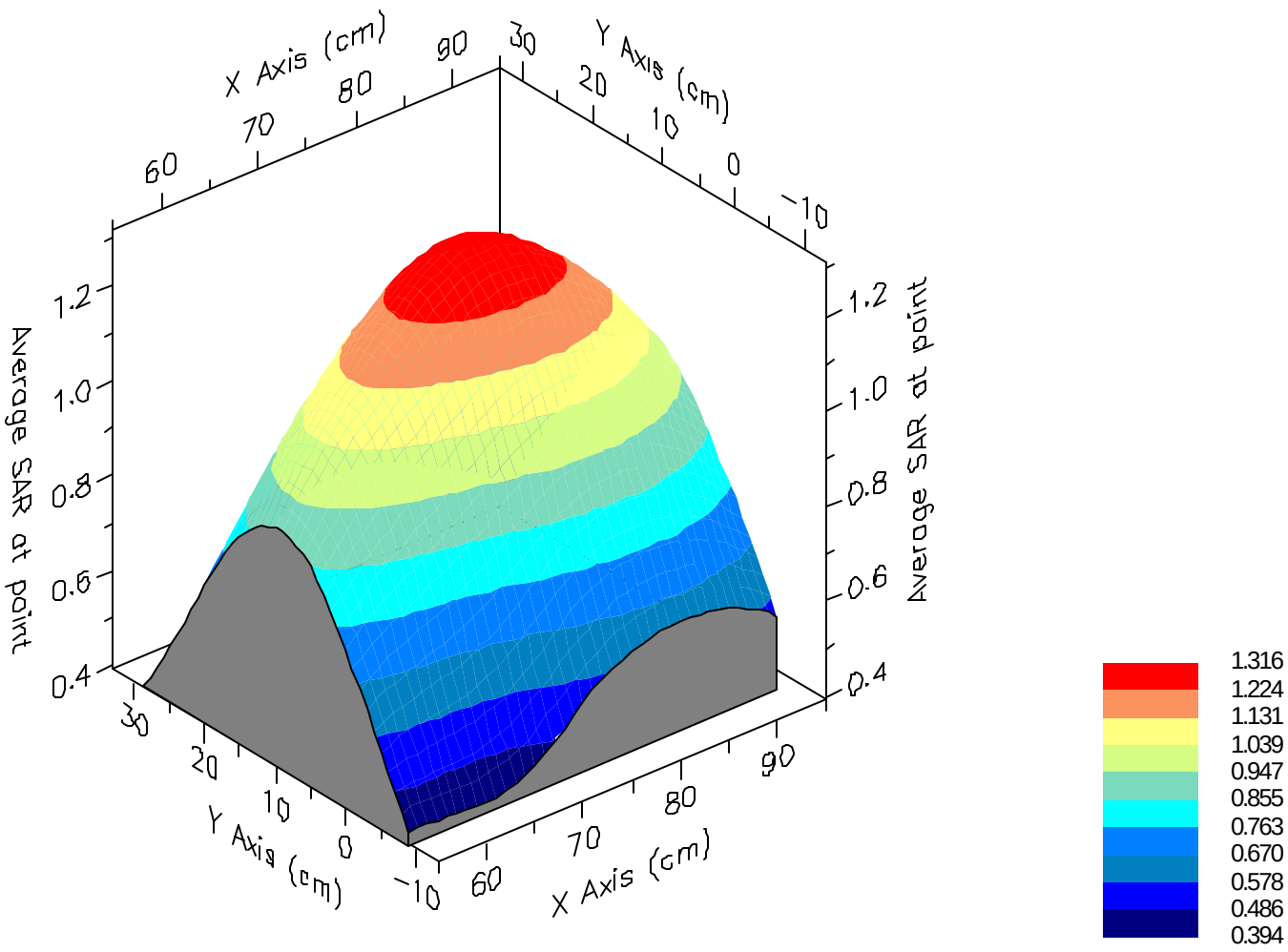
Zoom Scan - Max Peak SAR Value at x=76.0 y=11.0 z=0.0 = 1.89 W/kg

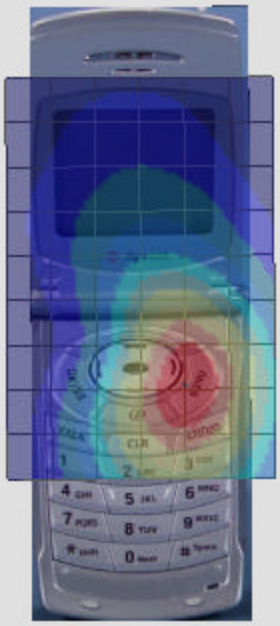
Max 1g SAR at x=76.0 y=11.0 z=0.0 = 1.32 W/kg

Max 10g SAR at x=76.0 y=10.0 z=0.0 = 0.86 W/kg


SAR - Z Axis
at Hotspot x:76.0 y:11.0
SAR (mW/g)
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
10
20
30
Z Distance (mm)

1g SAR Values





SAR Data Report 02022809

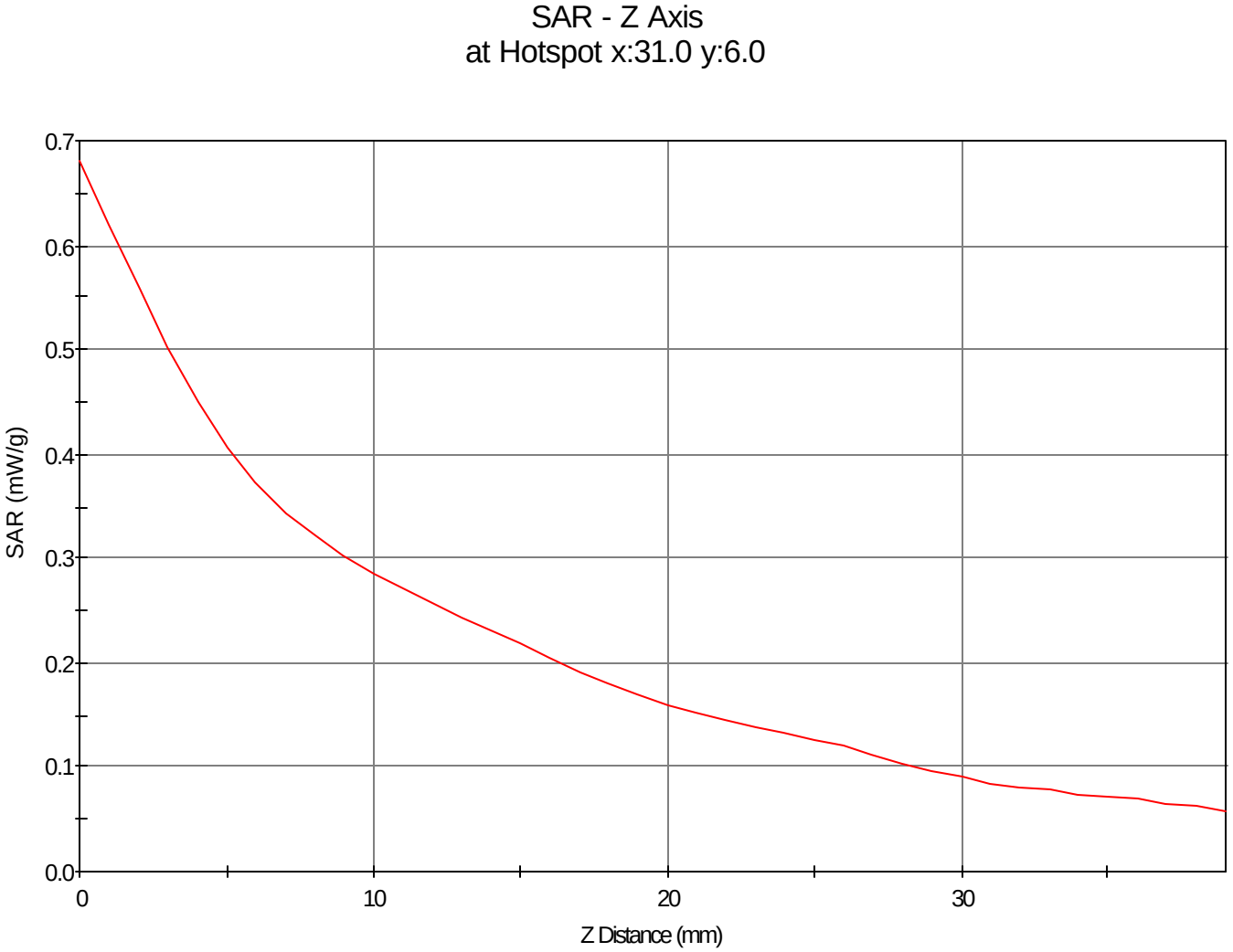
```
  Start        : 28-Feb-02 10:47:57 am
  End          : 28-Feb-02 11:01:00 am
  Code Version : 4.08
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SPH-A460
  Serial Number    : 3
  Frequency        : 848.79 MHz
  Transmit Pwr     : 0.400 W
  Antenna Type     : Helical
  Antenna Posn.    : In

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

Probe Data:
  Probe Name              : PCT001
  Probe Type              : E Fld Triangle
  Frequency               : 835 MHz
  Tissue 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   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  CH-799
  Tilt
  CF=1; Amb. Temp.=23.4'C; Liq. Temp.=23.3'C
```

Area Scan - Max Peak SAR Value at x=40.0 y=6.0 = 0.44 W/kg

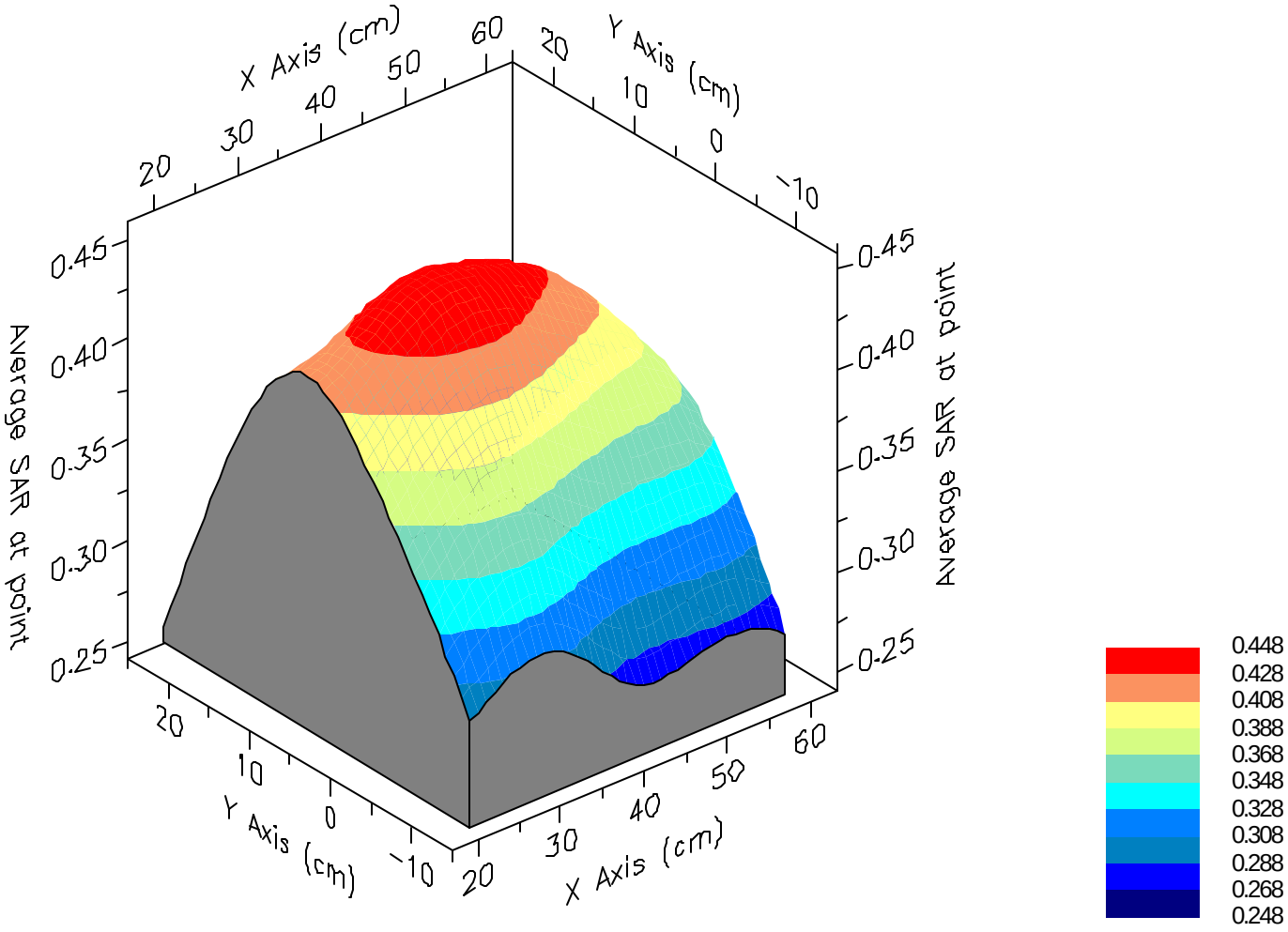
Zoom Scan - Max Peak SAR Value at x=31.0 y=6.0 z=0.0 = 0.68 W/kg

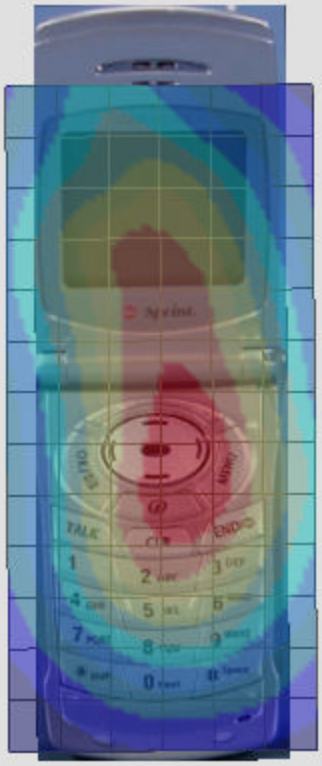
Max 1g SAR at x=34.0 y=5.0 z=0.0 = 0.45 W/kg

Max 10g SAR at x=39.0 y=5.0 z=0.0 = 0.31 W/kg


SAR - Z Axis
at Hotspot x:31.0 y:6.0
SAR (mW/g)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0
10
20
30
Z Distance (mm)

1g SAR Values




TALK
END
1
2
3
4
5
6
7
8
9
0

SAR Data Report 02022810

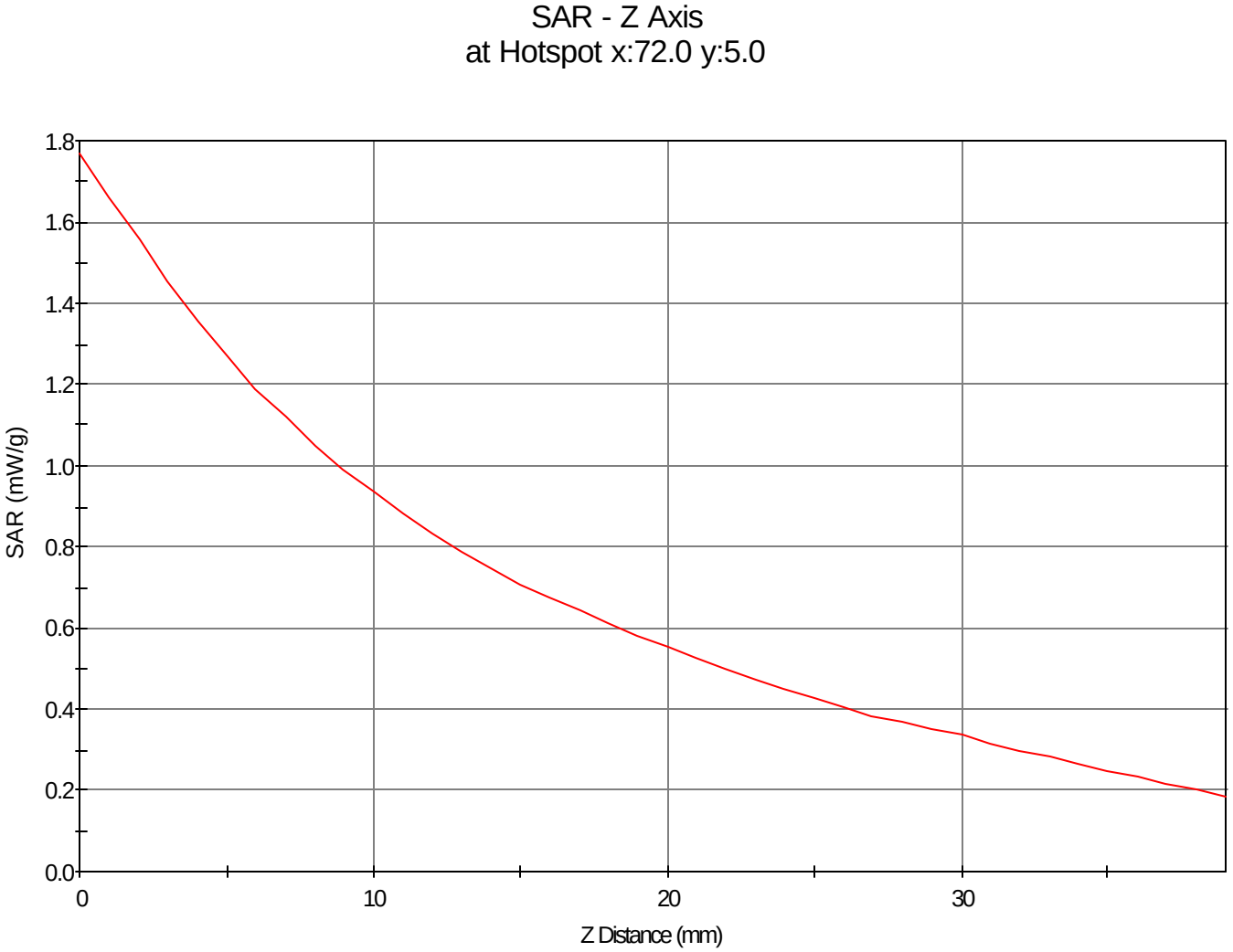
```
  Start        : 28-Feb-02 11:13:38 am
  End          : 28-Feb-02 11:40:23 am
  Code Version : 4.08
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SPH-A460
  Serial Number    : 3
  Frequency        : 848.97 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   : 43.440
  Tissue Conductivity : 0.870
  Tissue Density      : 1.000
  Robot Name          : CRS

Probe Data:
  Probe Name              : PCT001
  Probe Type              : E Fld Triangle
  Frequency               : 835 MHz
  Tissue 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   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-799
  Cheek
  CF=1; Amb. Temp.=23.4'C; Liq. Temp.=23.3'C
```

Area Scan - Max Peak SAR Value at x=74.0 y=4.0 = 1.29 W/kg

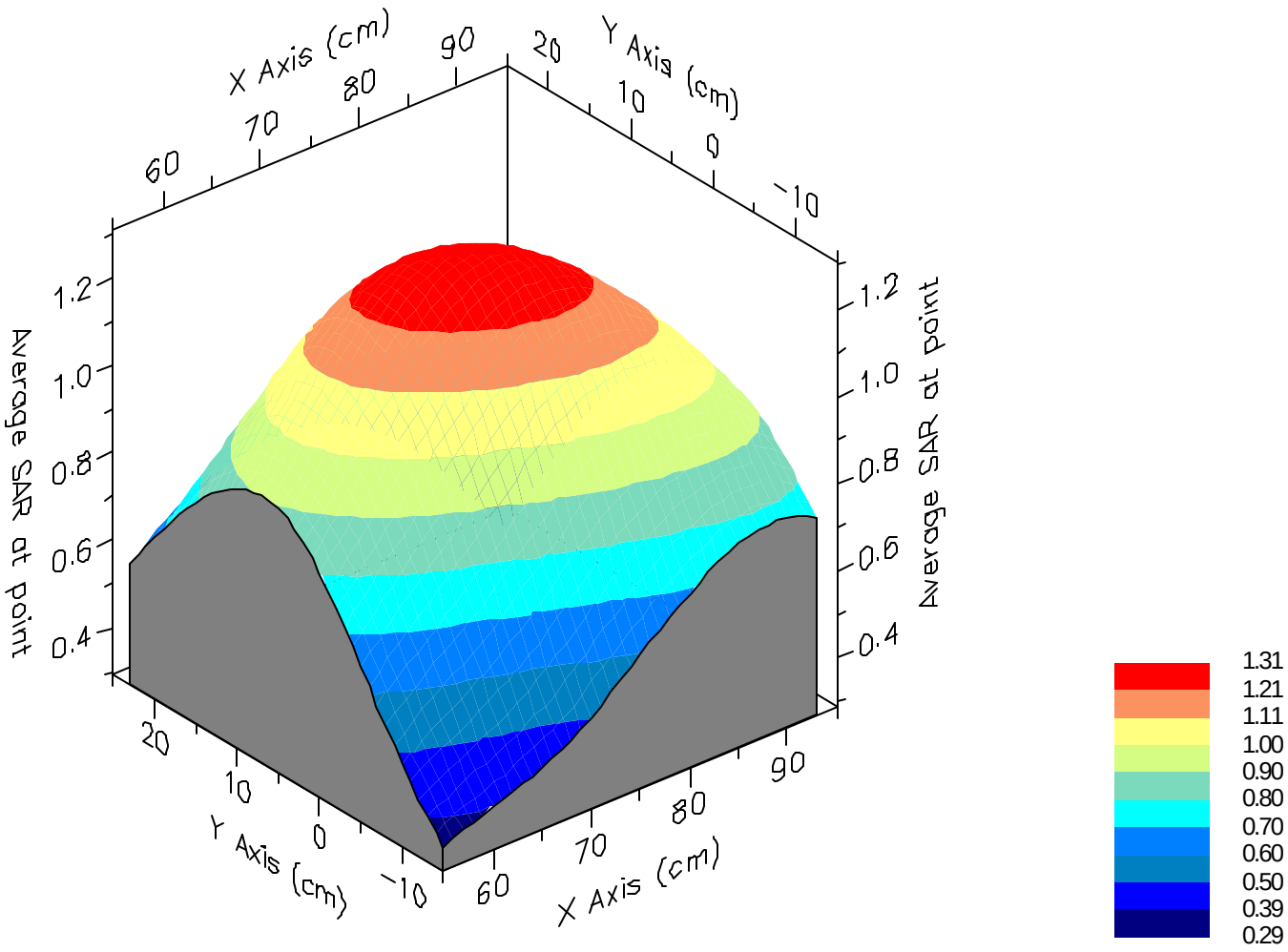
Zoom Scan - Max Peak SAR Value at x=72.0 y=5.0 z=0.0 = 1.76 W/kg

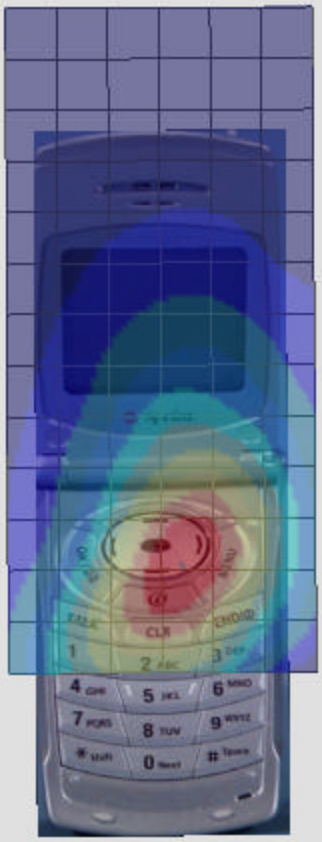
Max 1g SAR at x=74.0 y=5.0 z=0.0 = 1.31 W/kg

Max 10g SAR at x=75.0 y=4.0 z=0.0 = 0.89 W/kg


SAR - Z Axis
at Hotspot x:72.0 y:5.0
SAR (mW/g)
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
10
20
30
Z Distance (mm)

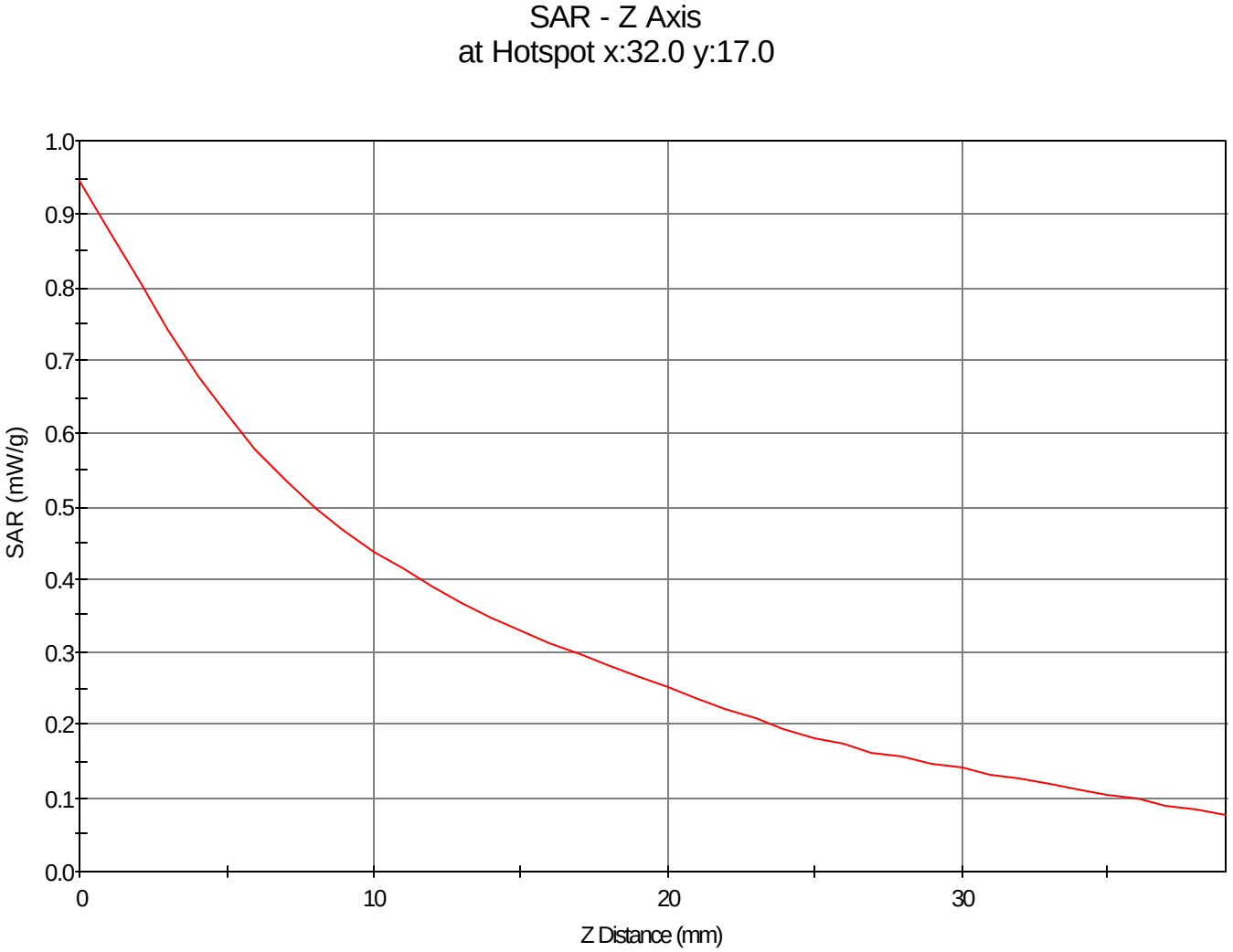
1g SAR Values



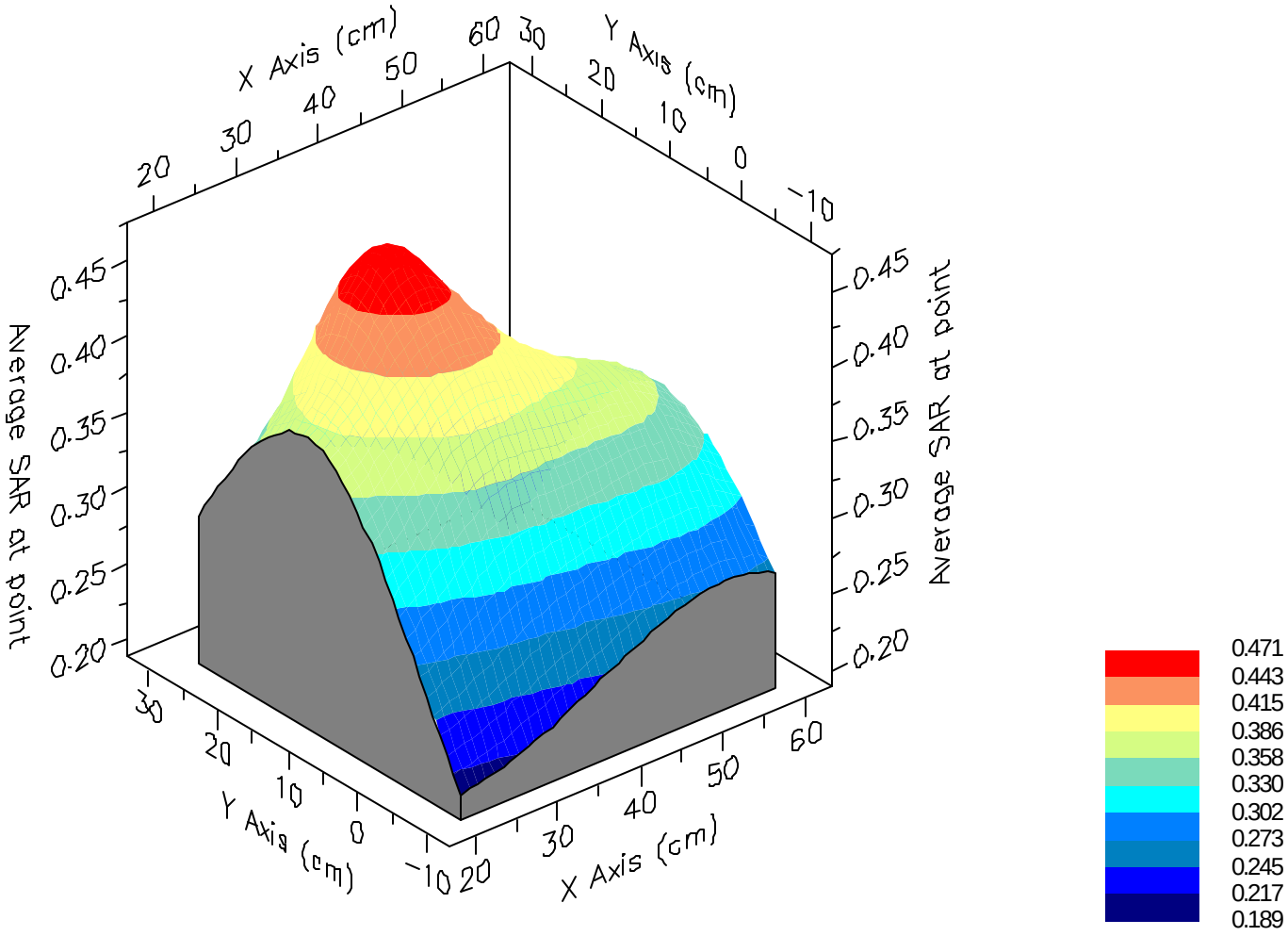

CLR
1
2 ABC
3 DEF
4 GHI
5 JKL
6 MNO
7 PQRS
8 TUV
9 WXYZ
* shift
0 Next
Space

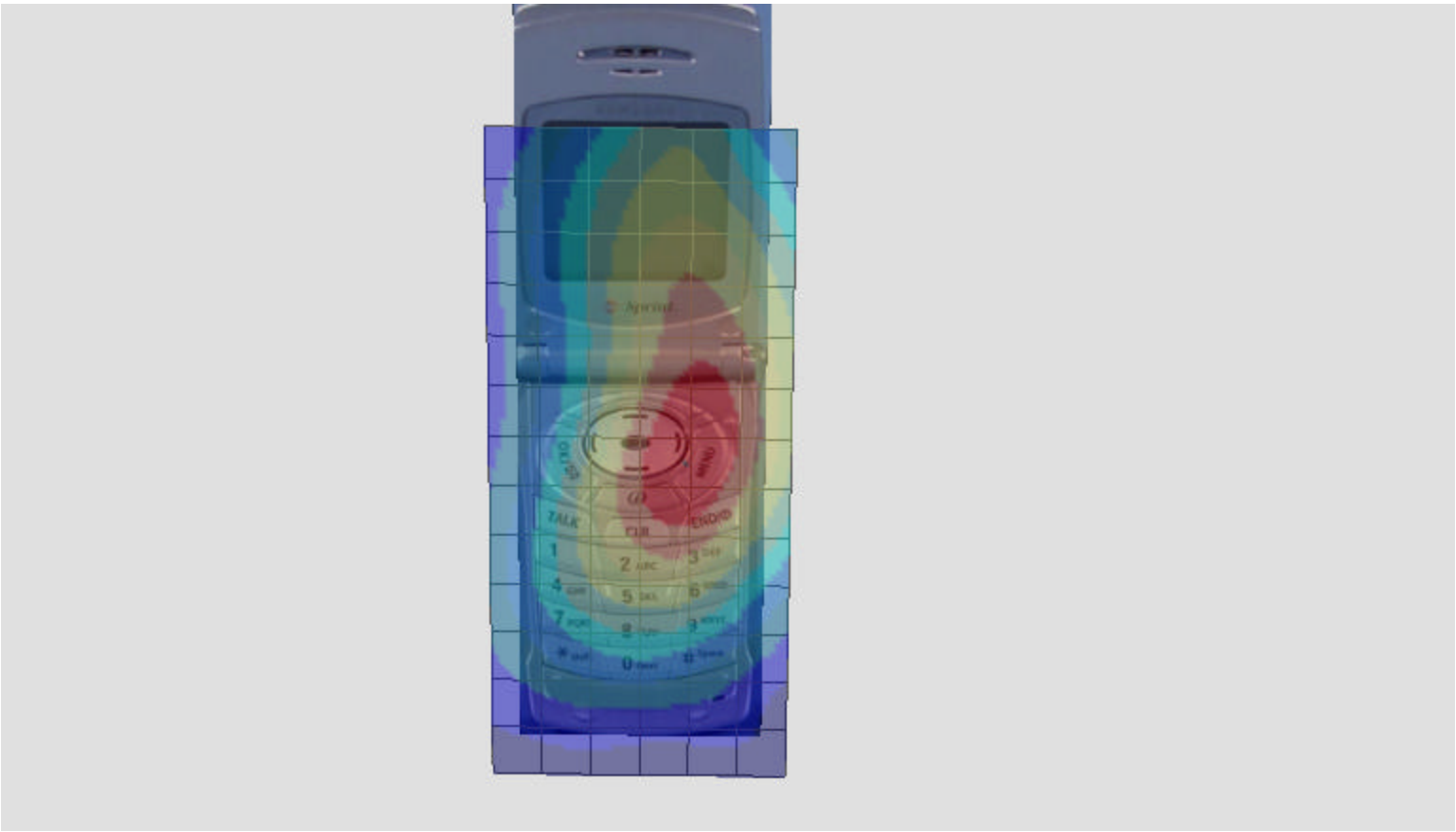
SAR Data Report 02022818

```
  Start        : 28-Feb-02 03:03:23 pm
  End          : 28-Feb-02 03:17:32 pm
  Code Version : 4.08
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SPH-A460
  Serial Number    : 3
  Frequency        : 848.97 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   : 43.440
  Tissue Conductivity : 0.870
  Tissue Density      : 1.000
  Robot Name          : CRS

Probe Data:
  Probe Name              : PCT001
  Probe Type              : E Fld Triangle
  Frequency               : 835 MHz
  Tissue 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   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-799
  Tilt
  CF=1; Amb. Temp.=23.4'C; Liq. Temp.=23.3'C



Area Scan - Max Peak SAR Value at x=40.0 y=9.0 = 0.41 W/kg

Zoom Scan - Max Peak SAR Value at x=32.0 y=17.0 z=0.0 = 0.95 W/kg

Max 1g SAR at x=33.0 y=15.0 z=0.0 = 0.47 W/kg

Max 10g SAR at x=35.0 y=11.0 z=0.0 = 0.30 W/kg
```


SAR - Z Axis
at Hotspot x:32.0 y:17.0
SAR (mW/g)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0
10
20
30
Z Distance (mm)

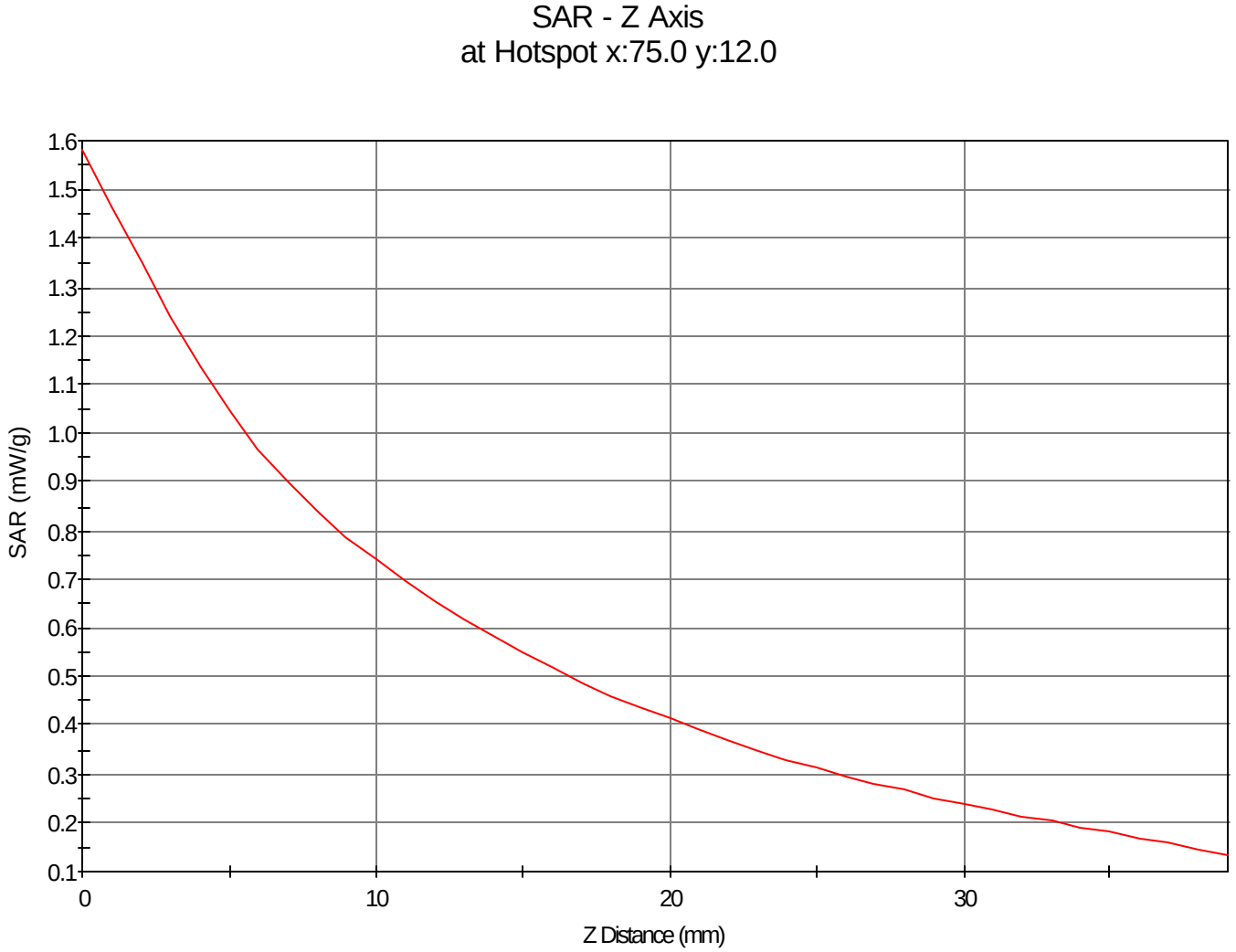
1g SAR Values



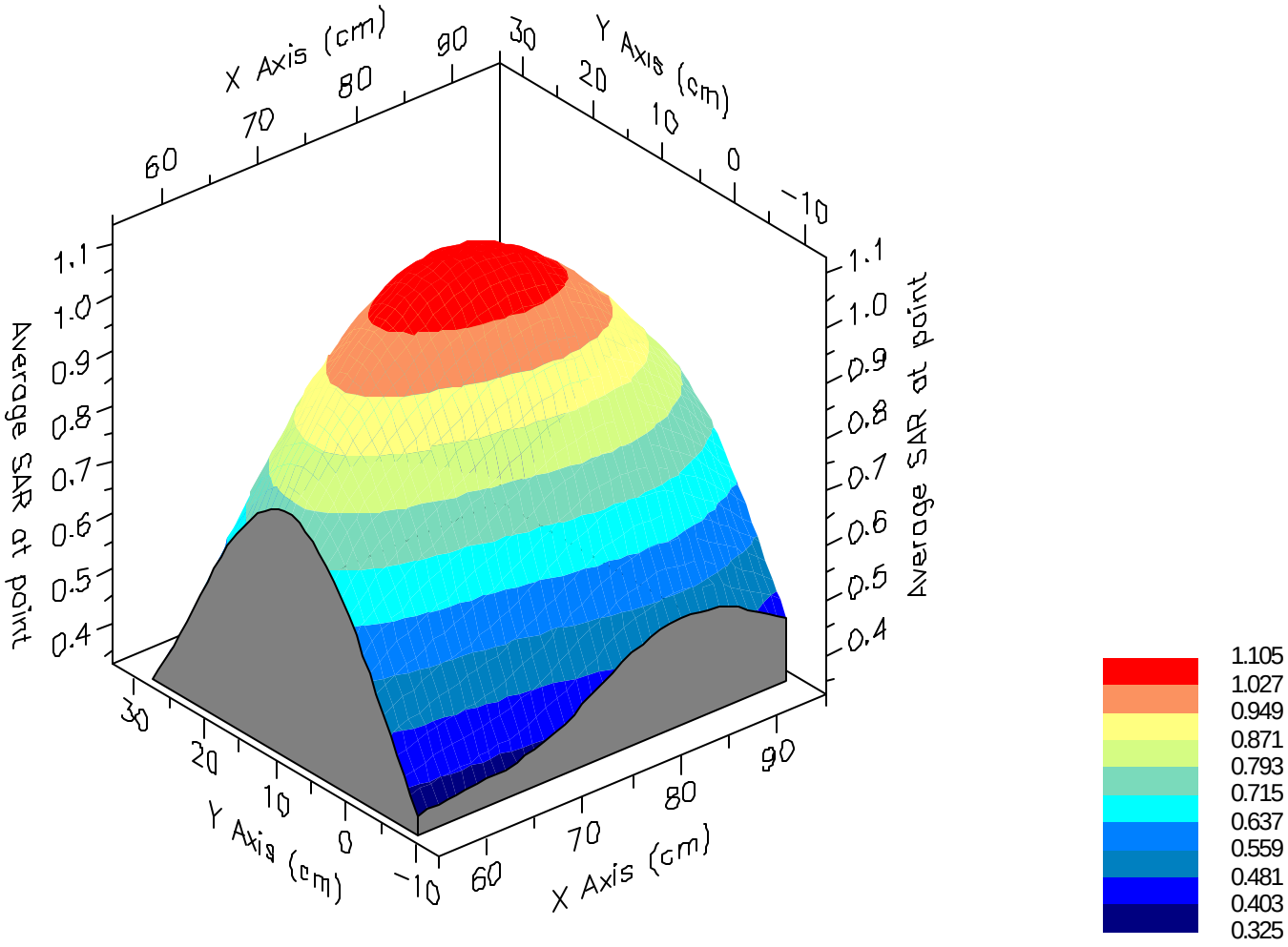


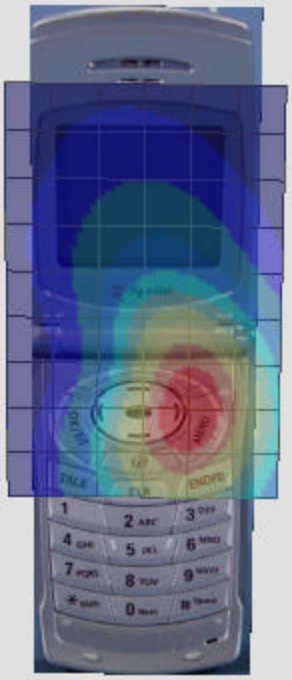
SAR Data Report 02022803

```
  Start        : 28-Feb-02 09:18:22 am
  End          : 28-Feb-02 09:30:35 am
  Code Version : 4.08
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SPH-A460
  Serial Number    : 3
  Frequency        : 848.31 MHz
  Antenna Type     : Helical
  Antenna Posn.    : In

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

Probe Data:
  Probe Name              : PCT001
  Probe Type              : E Fld Triangle
  Frequency               : 835 MHz
  Tissue 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   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-777
  Cheek   0.360W Cond.
  CF=1; Amb. Temp.=23.4'C; Liq. Temp.=23.3'C



Area Scan - Max Peak SAR Value at x=75.0 y=10.0 = 1.08 W/kg

Zoom Scan - Max Peak SAR Value at x=75.0 y=12.0 z=0.0 = 1.58 W/kg

Max 1g SAR at x=75.0 y=11.0 z=0.0 = 1.11 W/kg

Max 10g SAR at x=76.0 y=11.0 z=0.0 = 0.72 W/kg
```


SAR - Z Axis
at Hotspot x:75.0 y:12.0
SAR (mW/g)
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
10
20
30
Z Distance (mm)

1g SAR Values




TALK
CLR
END/PWR
1
2 ABC
3 DEF
4 GHI
5 JKL
6 MNO
7 PQRS
8 TUV
9 WXYZ
* SHIFT
0 Next
Space

SAR Data Report 02022805

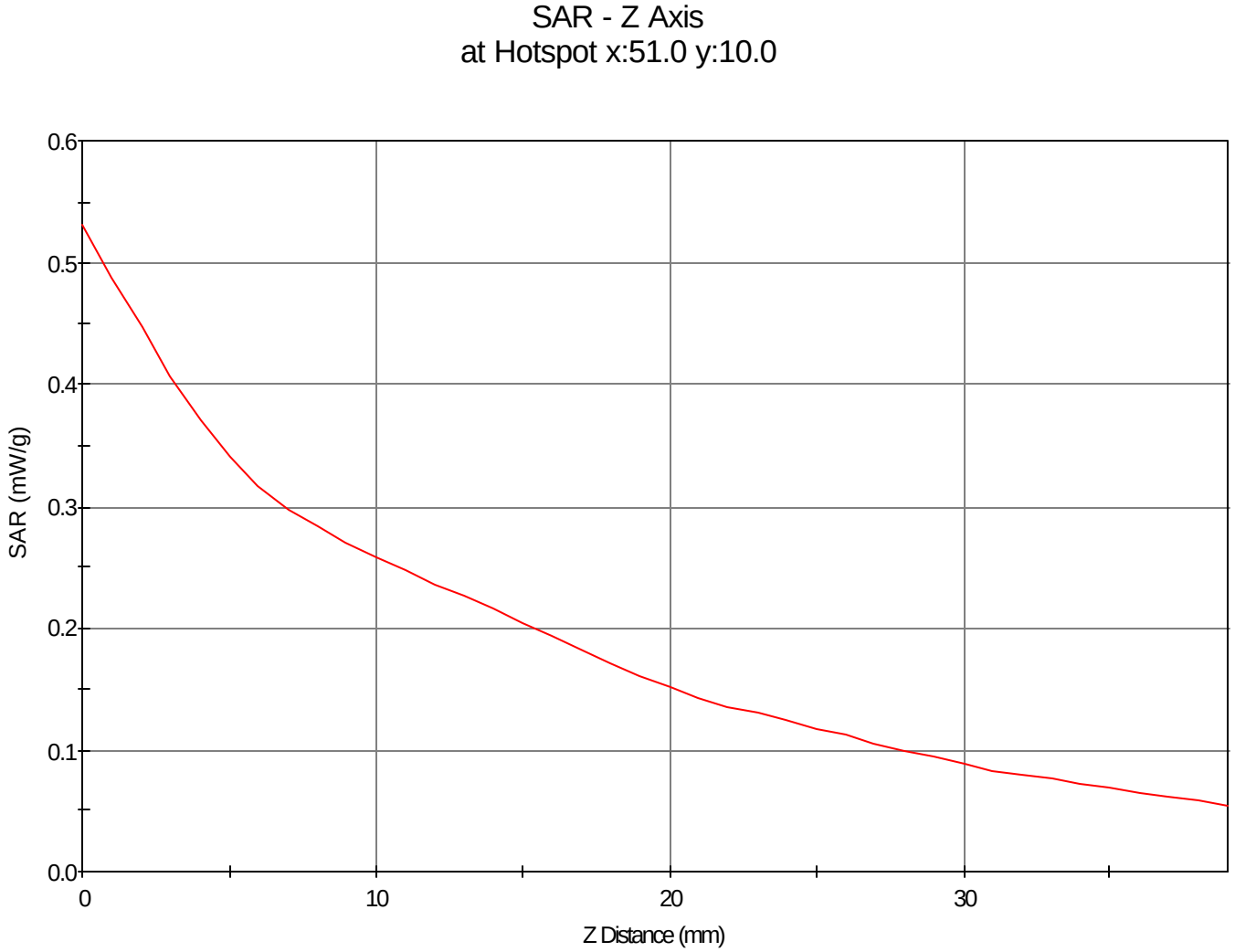
```
  Start        : 28-Feb-02 09:47:18 am
  End          : 28-Feb-02 09:59:36 am
  Code Version : 4.08
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SPH-A460
  Serial Number    : 3
  Frequency        : 848.31 MHz
  Antenna Type     : Helical
  Antenna Posn.    : In

Measurement Data:
  Phantom Name        : SAM-R
  Phantom Type        : Right Ear
  Tissue Type         : Brain
  Tissue Dielectric   : 41.500
  Tissue Conductivity : 0.900
  Tissue Density      : 1.000
  Robot Name          : CRS

Probe Data:
  Probe Name              : PCT001
  Probe Type              : E Fld Triangle
  Frequency               : 835 MHz
  Tissue 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   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-777
  Tilt  0.360W  Cond.
  CF=1; Amb. Temp.=23.4'C; Liq. Temp.=23.3'C
```

Area Scan - Max Peak SAR Value at x=42.0 y=8.0 = 0.36 W/kg

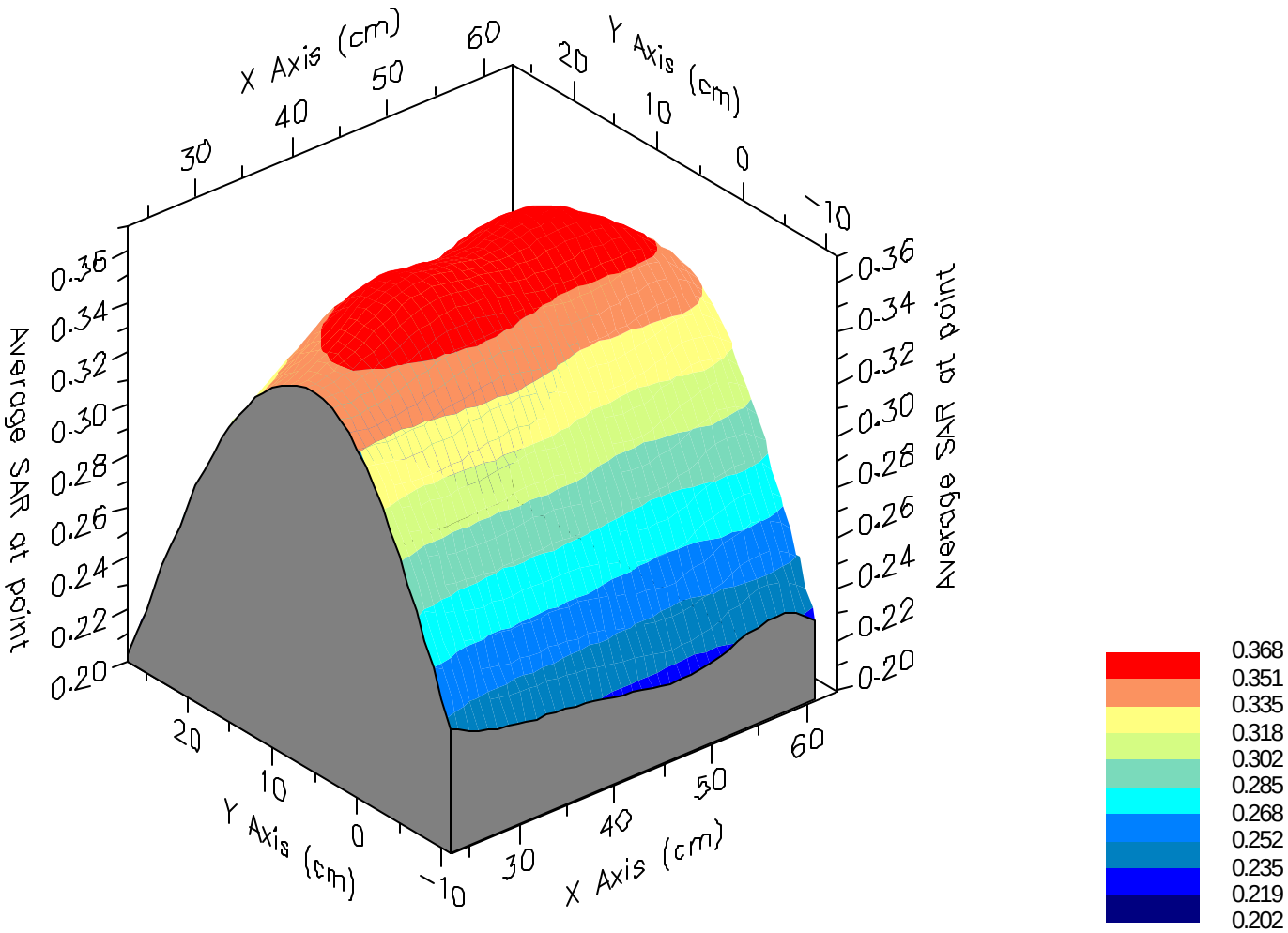
Zoom Scan - Max Peak SAR Value at x=51.0 y=10.0 z=0.0 = 0.53 W/kg

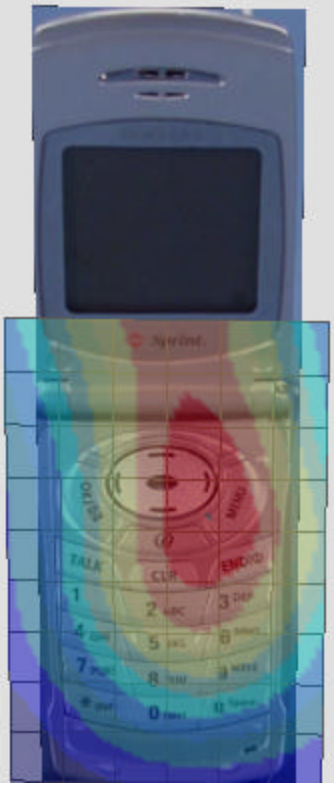
Max 1g SAR at x=36.0 y=8.0 z=0.0 = 0.37 W/kg

Max 10g SAR at x=45.0 y=8.0 z=0.0 = 0.26 W/kg


SAR - Z Axis
at Hotspot x:51.0 y:10.0
SAR (mW/g)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0
10
20
30
Z Distance (mm)

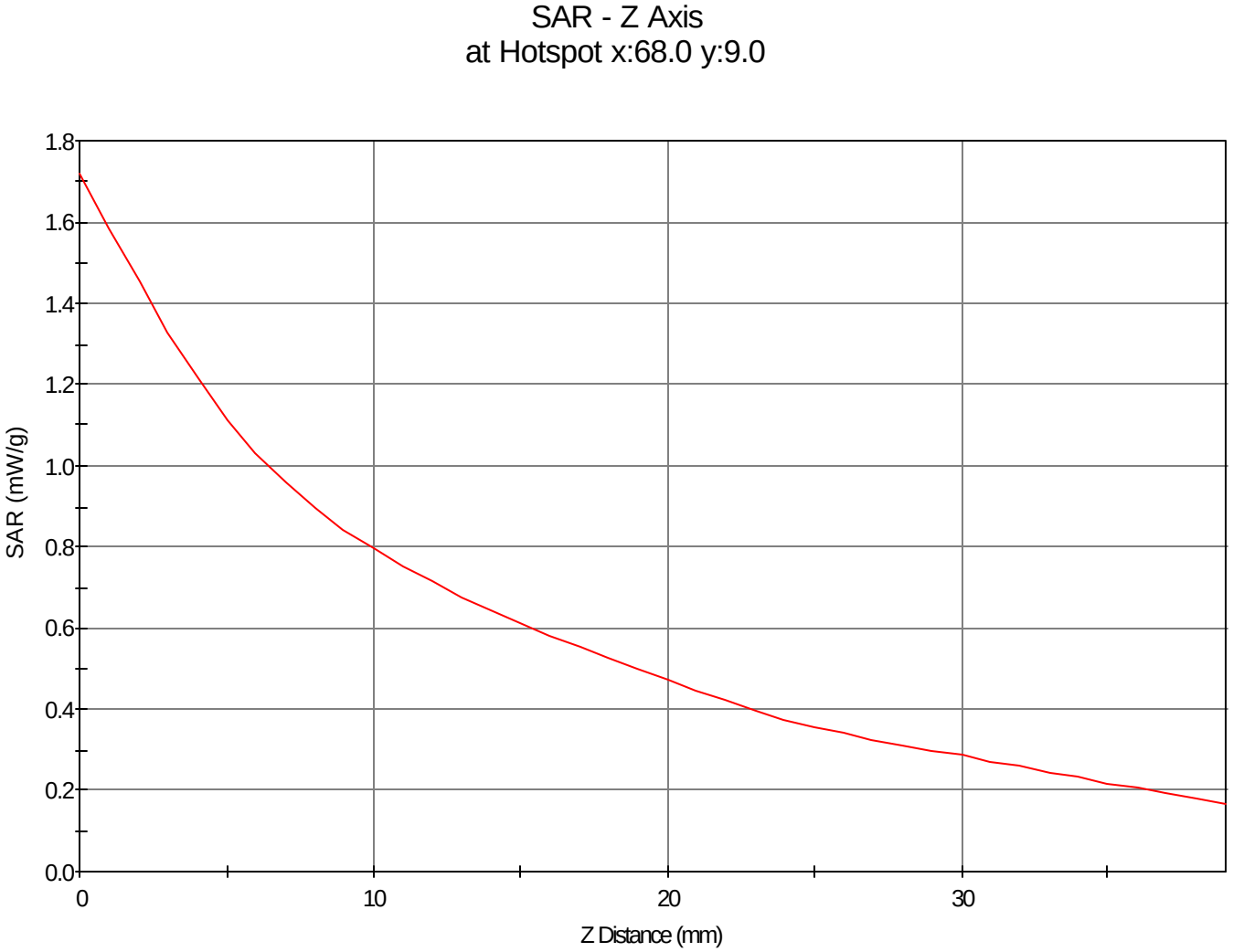
1g SAR Values



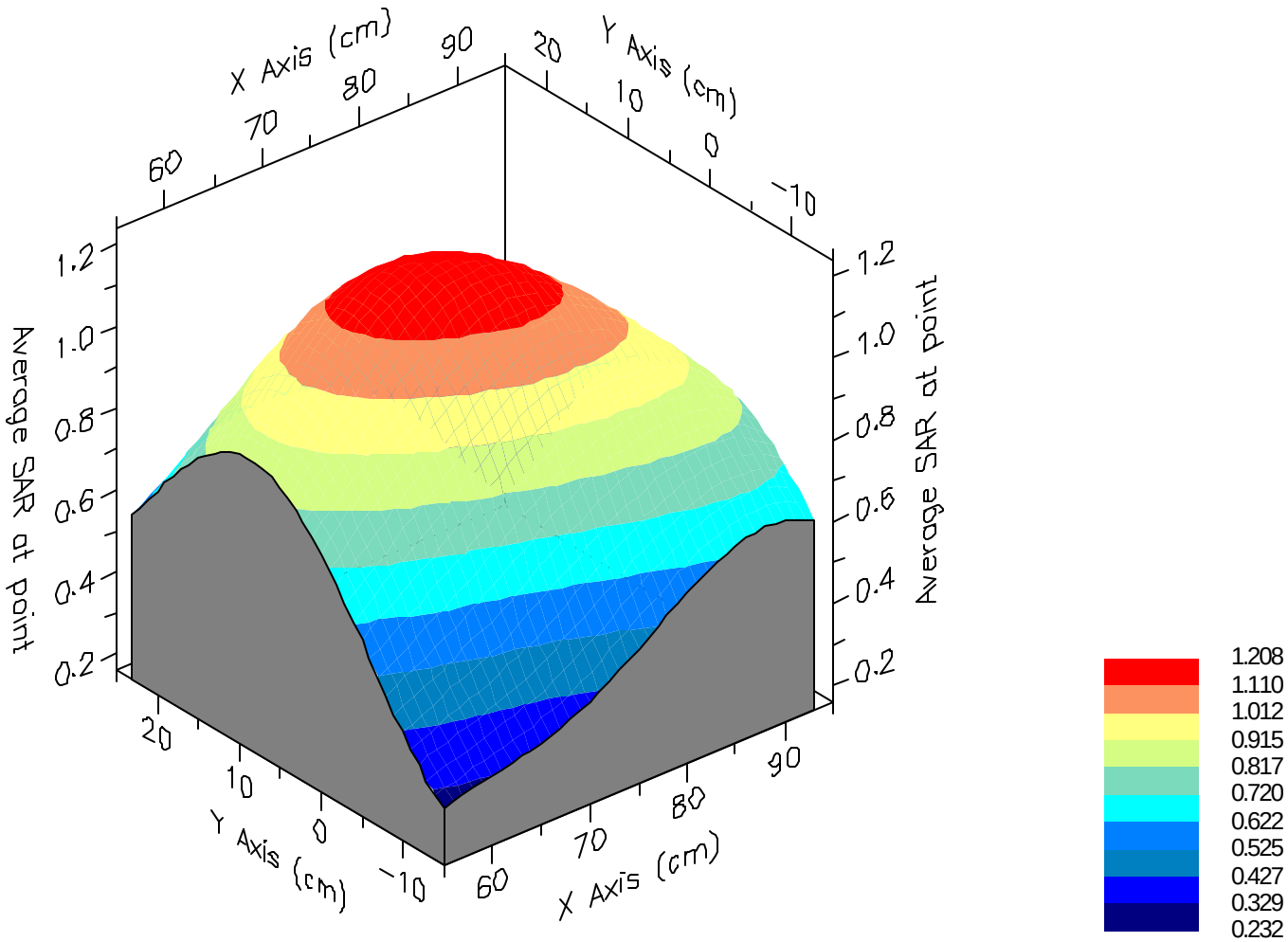

TALK
CLR
END
MENU
1
2
3
4
5
6
7
8
9
0

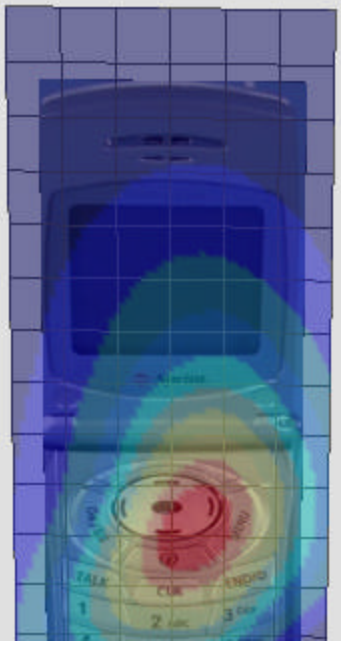
SAR Data Report 02022820

```
  Start        : 28-Feb-02 03:39:14 pm
  End          : 28-Feb-02 04:06:14 pm
  Code Version : 4.08
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SPH-A460
  Serial Number    : 3
  Frequency        : 848.31 MHz
  Transmit Pwr     : 0.360 W
  Antenna Type     : Helical
  Antenna Posn.    : In

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

Probe Data:
  Probe Name              : PCT001
  Probe Type              : E Fld Triangle
  Frequency               : 835 MHz
  Tissue 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   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-777
  Cheek
  CF=1; Amb. Temp.=23.4'C; Liq. Temp.=23.3'C



Area Scan - Max Peak SAR Value at x=74.0 y=4.0 = 1.22 W/kg

Zoom Scan - Max Peak SAR Value at x=68.0 y=9.0 z=0.0 = 1.72 W/kg

Max 1g SAR at x=73.0 y=6.0 z=0.0 = 1.21 W/kg

Max 10g SAR at x=73.0 y=6.0 z=0.0 = 0.80 W/kg
```


SAR - Z Axis
at Hotspot x:68.0 y:9.0
SAR (mW/g)
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
10
20
30
Z Distance (mm)

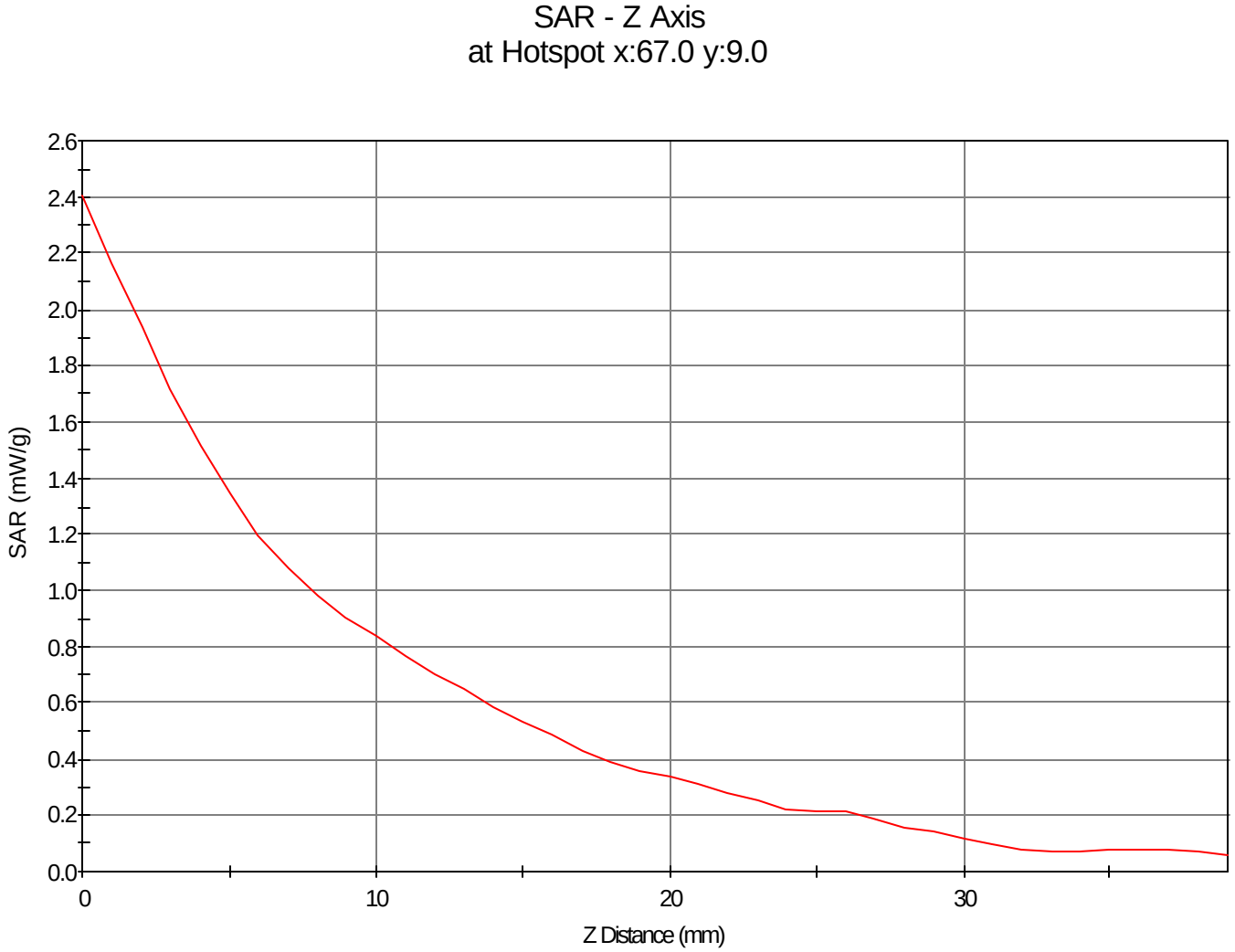
1g SAR Values



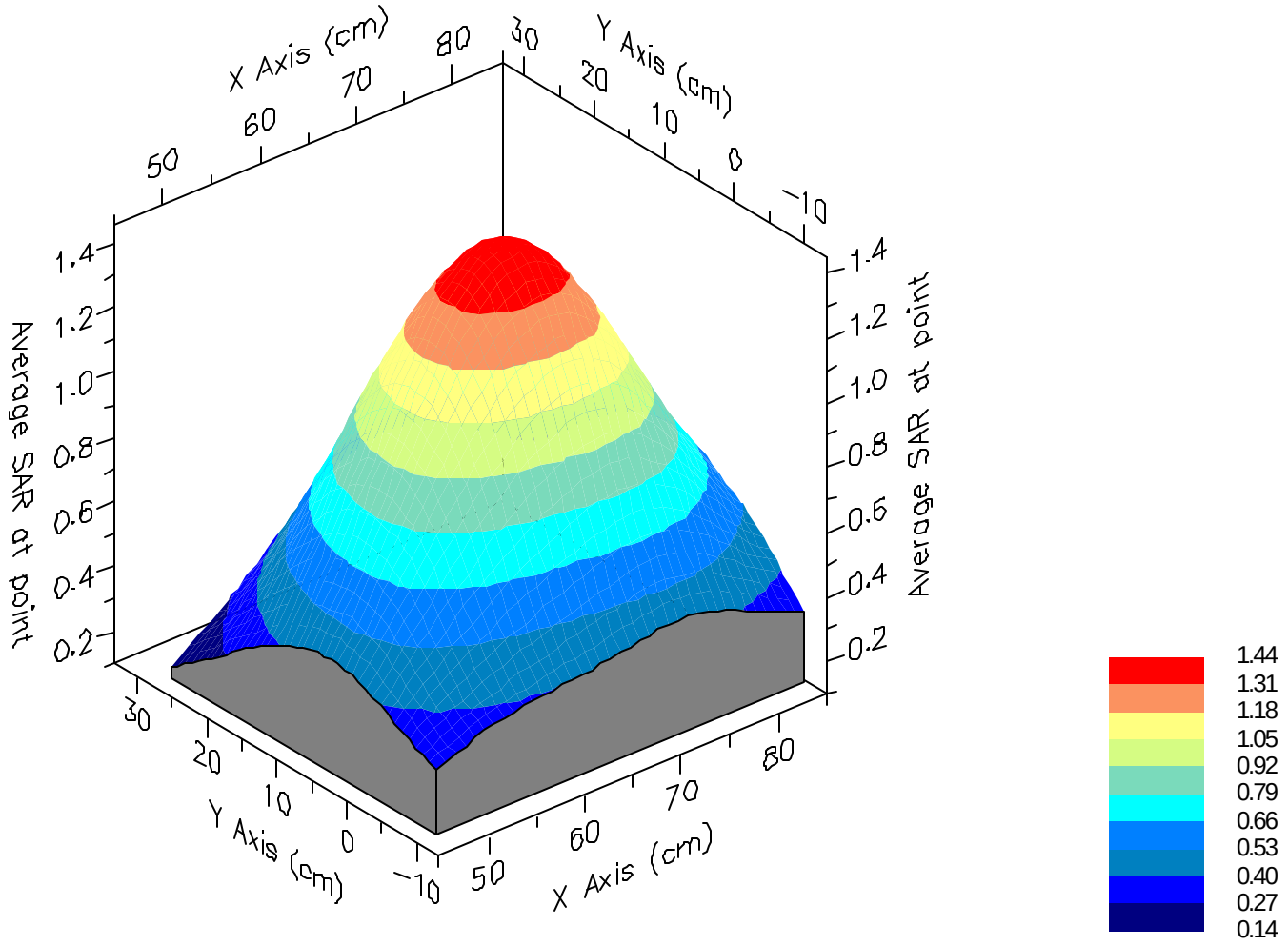


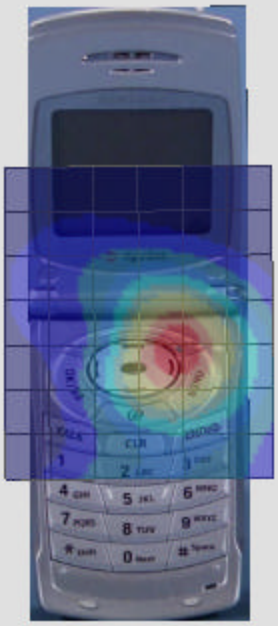
SAR Data Report 02022705

```
  Start        : 27-Feb-02 10:22:08 am
  End          : 27-Feb-02 10:33:37 am
  Code Version : 4.07
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SPH-A460
  Serial Number    : 3
  Frequency        : 1908.75 MHz
  Peak Trans. Pwr  : 0.320 W
  Start Trans. Pwr : 0.320 W
  Antenna Type     : Helical
  Antenna Posn.    : In

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-175
  Cheek
  CF=1; Amb. Temp.=23.4'C; Liq. Temp.=23.3'C



Area Scan - Max Peak SAR Value at x=66.0 y=9.0 = 1.40 W/kg

Zoom Scan - Max Peak SAR Value at x=67.0 y=9.0 z=0.0 = 2.40 W/kg

Max 1g SAR at x=67.0 y=9.0 z=0.0 = 1.44 W/kg

Max 10g SAR at x=67.0 y=9.0 z=0.0 = 0.76 W/kg
```


SAR - Z Axis
at Hotspot x:67.0 y:9.0
SAR (mW/g)
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
10
20
30
Z Distance (mm)

1g SAR Values

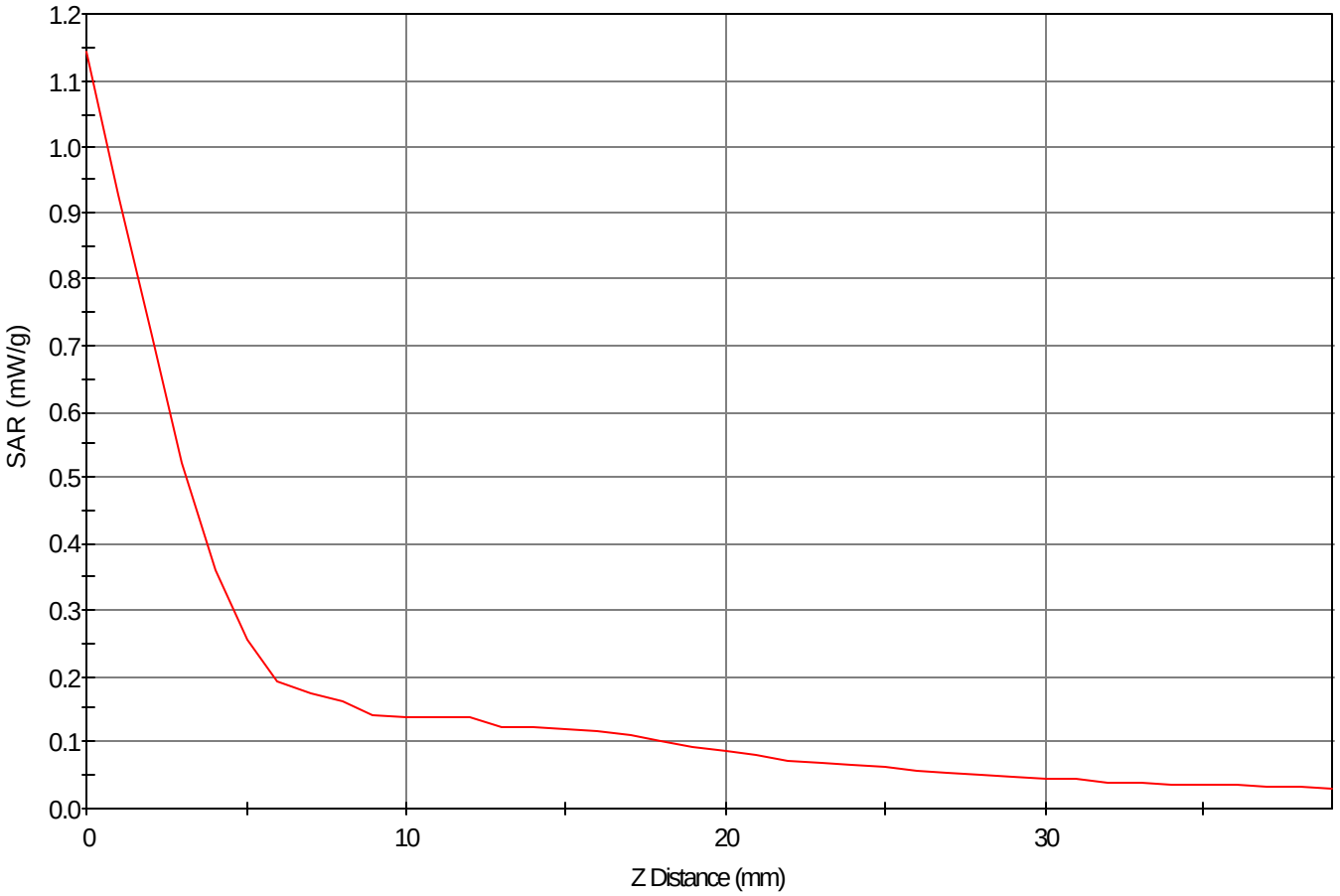




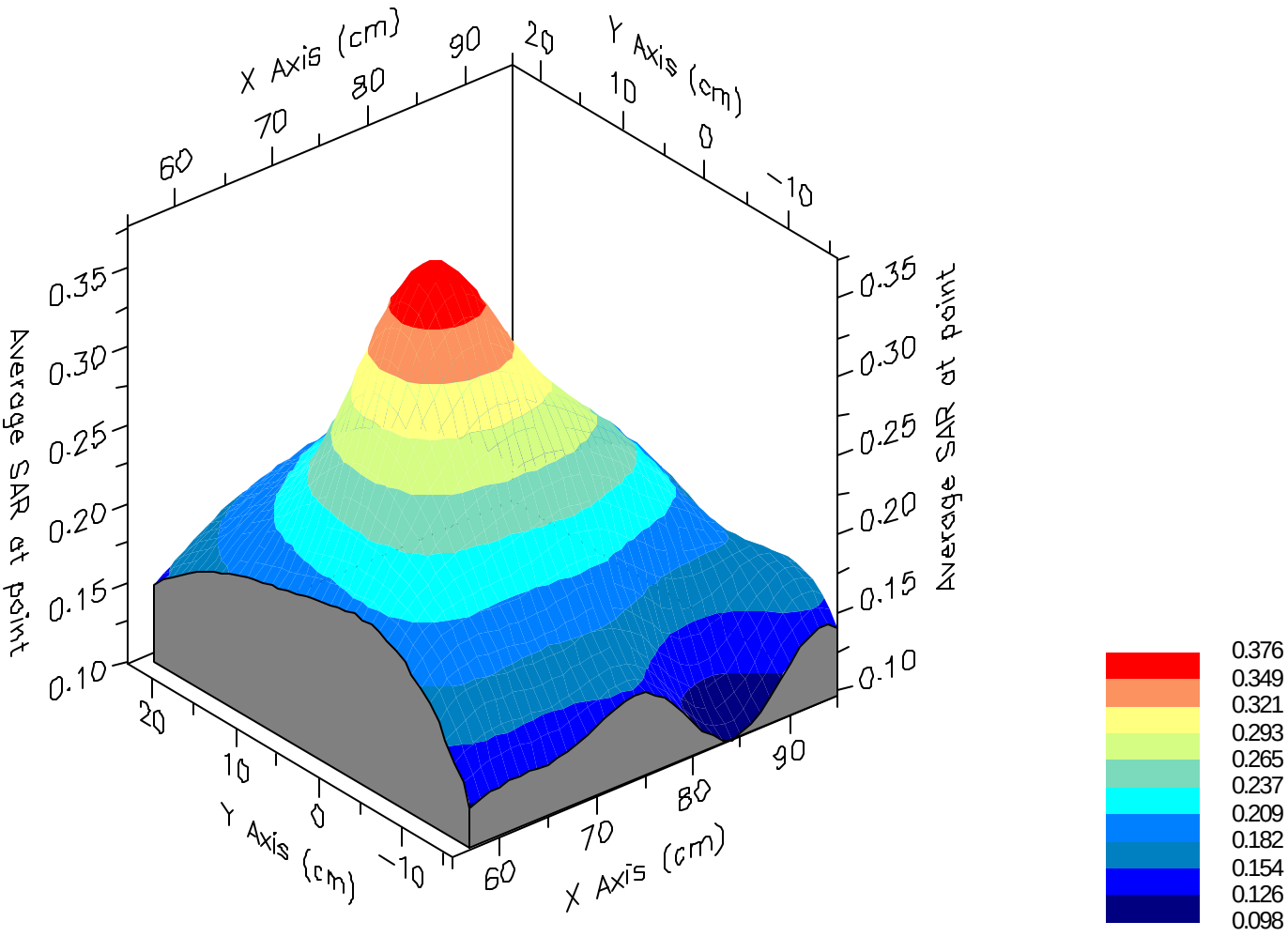
SAR Data Report 02022712

```
  Start        : 27-Feb-02 12:04:01 pm
  End          : 27-Feb-02 12:20:21 pm
  Code Version : 4.07
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SPH-A460
  Serial Number    : 3
  Frequency        : 1908.75 MHz
  Peak Trans. Pwr  : 0.320 W
  Start Trans. Pwr : 0.320 W
  Antenna Type     : Helical
  Antenna Posn.    : In

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-1175
  Tilt
  CF=1; Amb. Temp.=23.4'C; Liq. Temp.=23.3'C



Area Scan - Max Peak SAR Value at x=76.0 y=3.0 = 0.28 W/kg

Zoom Scan - Max Peak SAR Value at x=68.0 y=3.0 z=0.0 = 1.14 W/kg

Max 1g SAR at x=70.0 y=3.0 z=0.0 = 0.38 W/kg

Max 10g SAR at x=73.0 y=4.0 z=0.0 = 0.19 W/kg
```

SAR - Z Axis
at Hotspot x:68.0 y:3.0



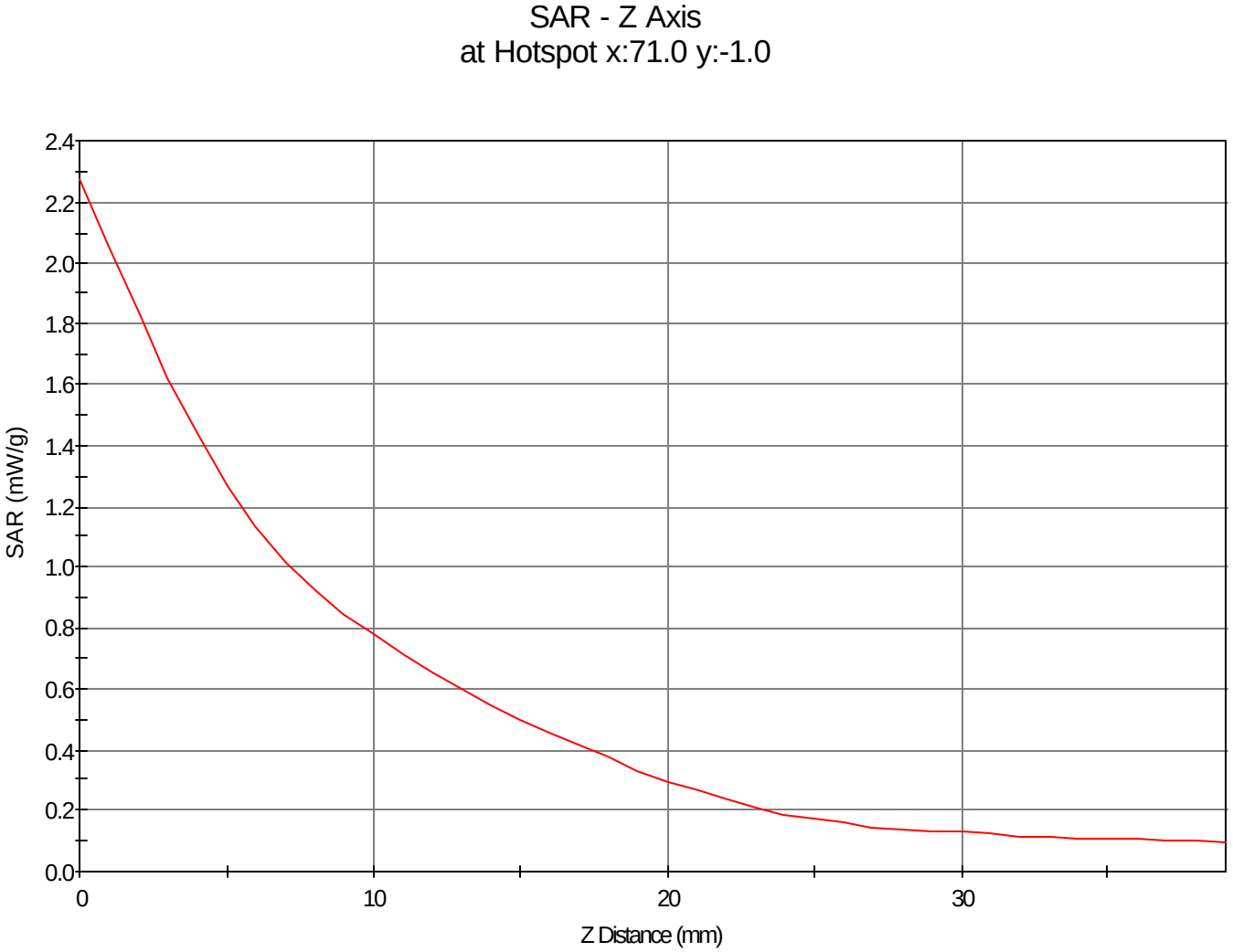
1g SAR Values



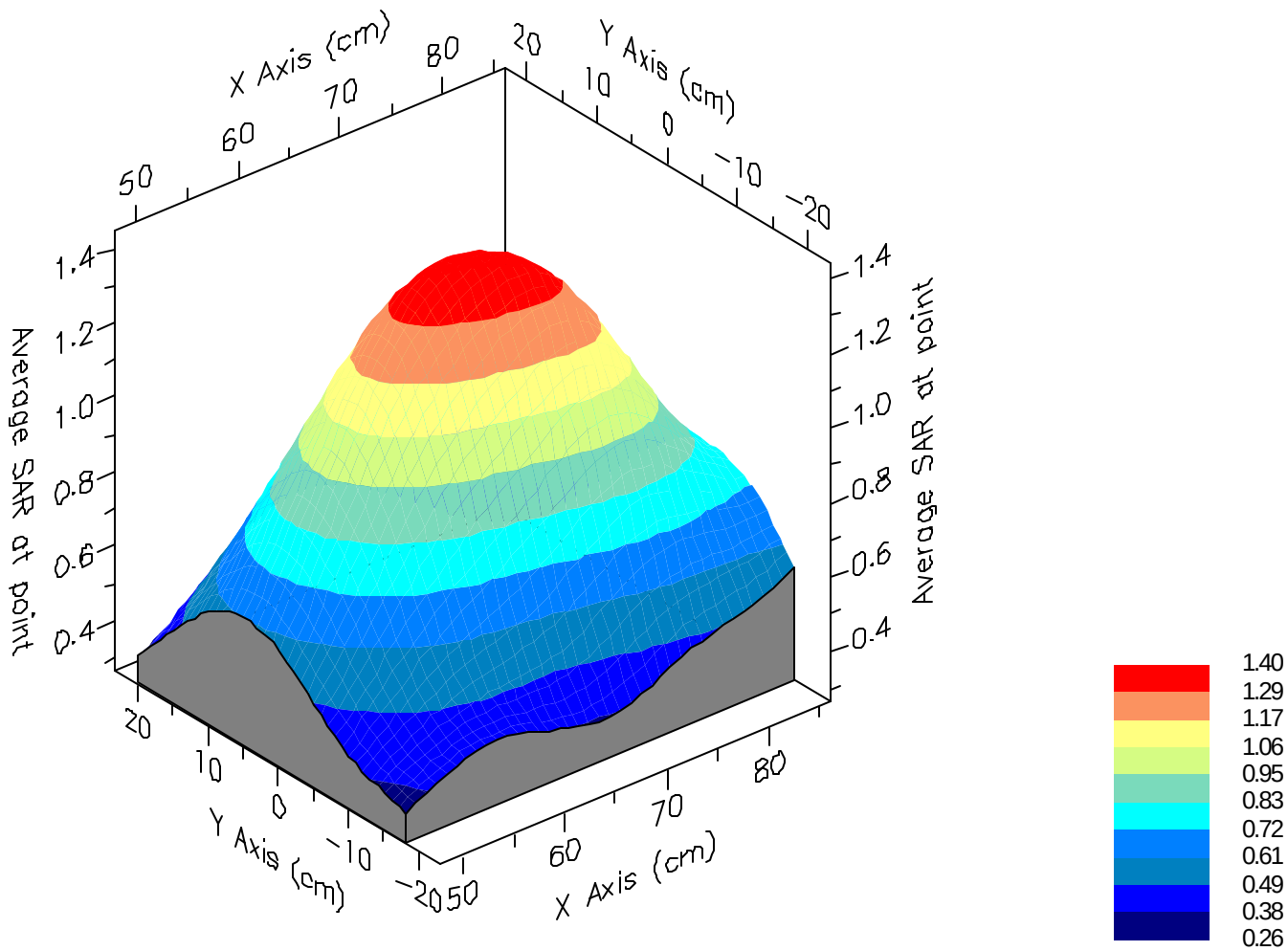
Sprint
TALK
CLR
SEND

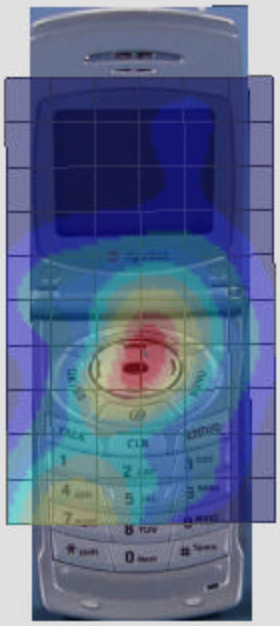
SAR Data Report 02022718

```
  Start        : 27-Feb-02 01:33:47 pm
  End          : 27-Feb-02 01:51:33 pm
  Code Version : 4.07
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SPH-A460
  Serial Number    : 3
  Frequency        : 1908.75 MHz
  Peak Trans. Pwr  : 0.320 W
  Start Trans. Pwr : 0.320 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
  Cheek
  CF=1; Amb. Temp.=23.4'C; Liq. Temp.=23.3'C



Area Scan - Max Peak SAR Value at x=67.0 y=1.0 = 1.36 W/kg

Zoom Scan - Max Peak SAR Value at x=71.0 y=-1.0 z=0.0 = 2.28 W/kg

Max 1g SAR at x=68.0 y=1.0 z=0.0 = 1.40 W/kg

Max 10g SAR at x=67.0 y=2.0 z=0.0 = 0.76 W/kg
```


SAR - Z Axis
at Hotspot x:71.0 y:-1.0
SAR (mW/g)
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
10
20
30
Z Distance (mm)

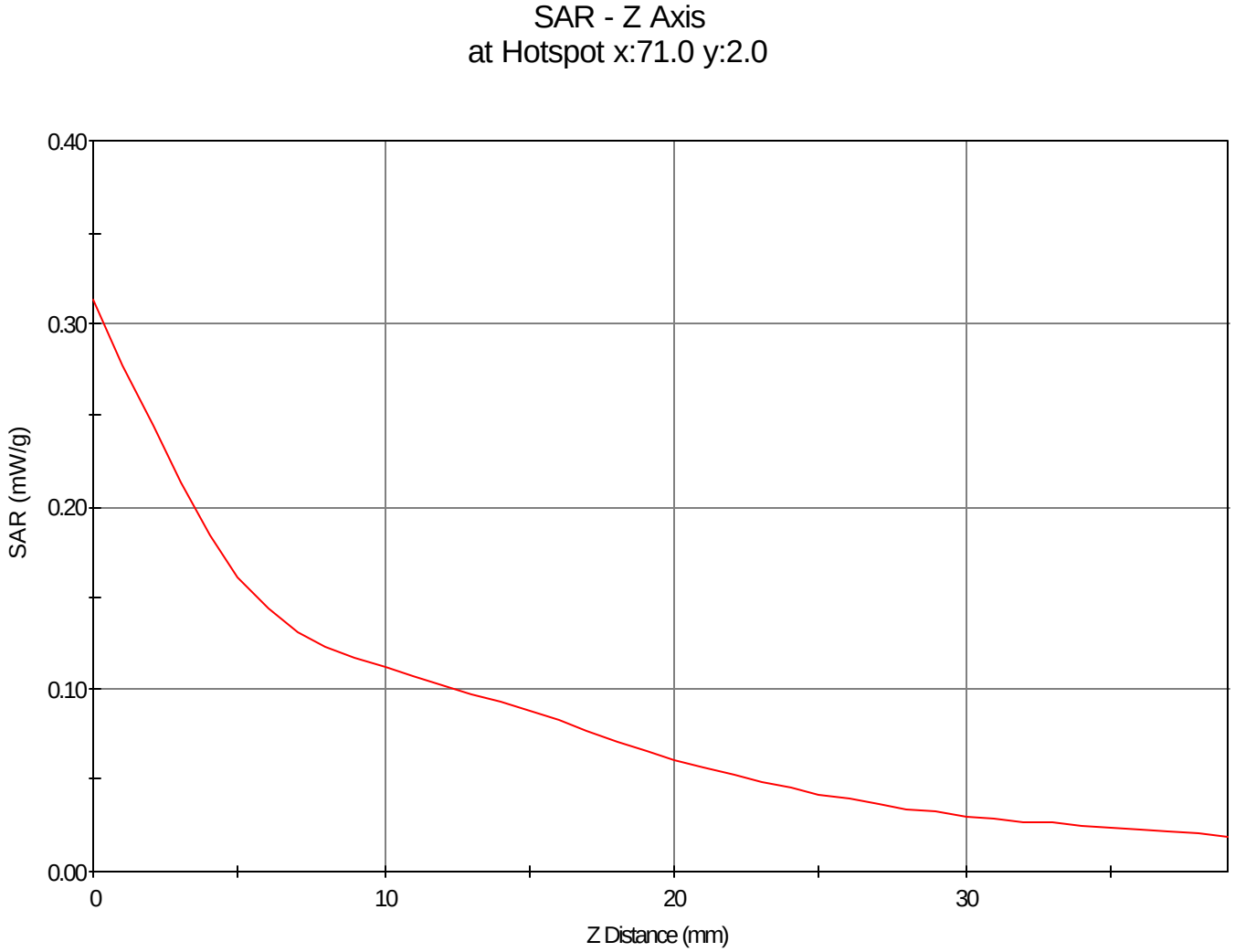
1g SAR Values



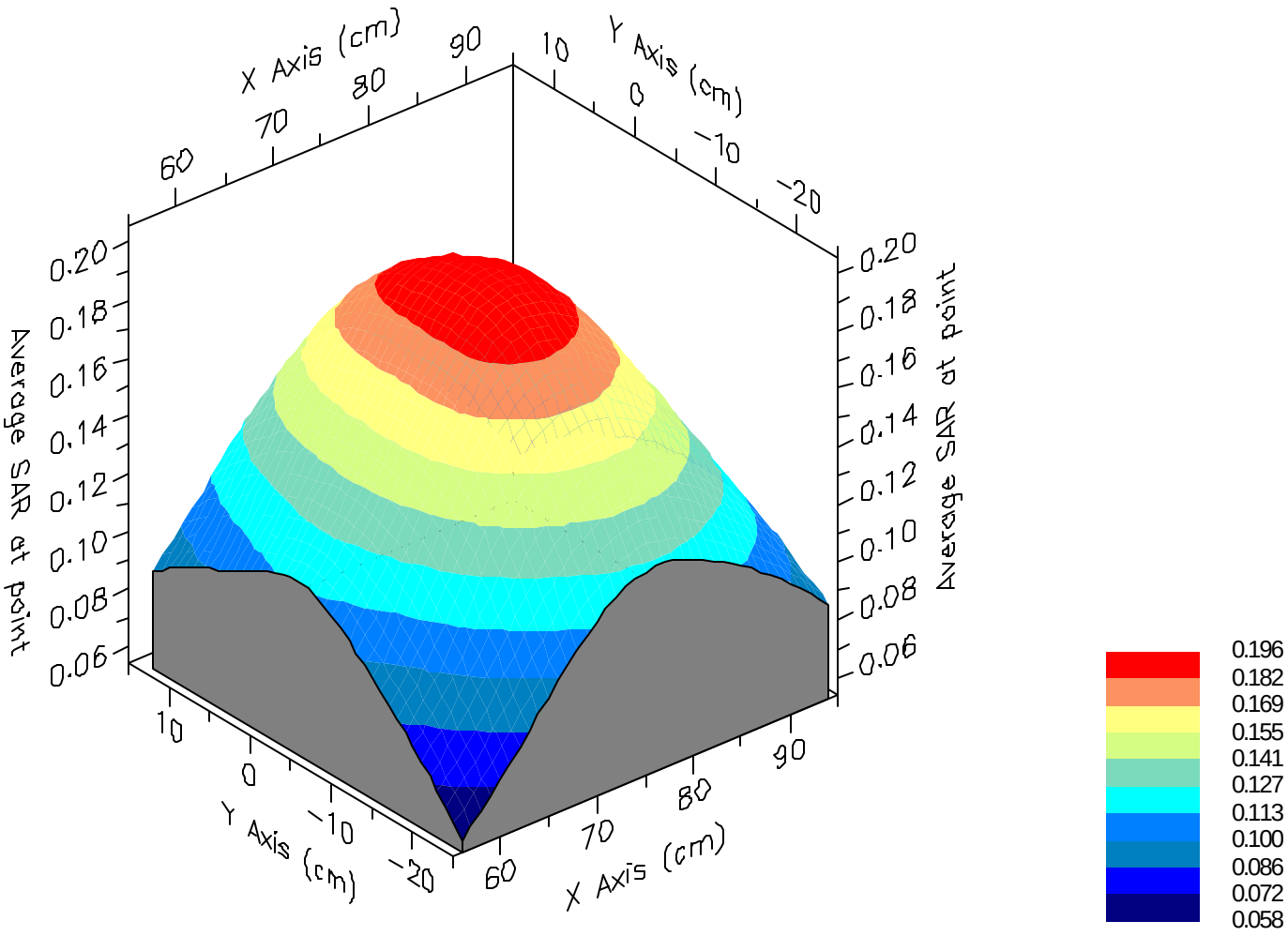


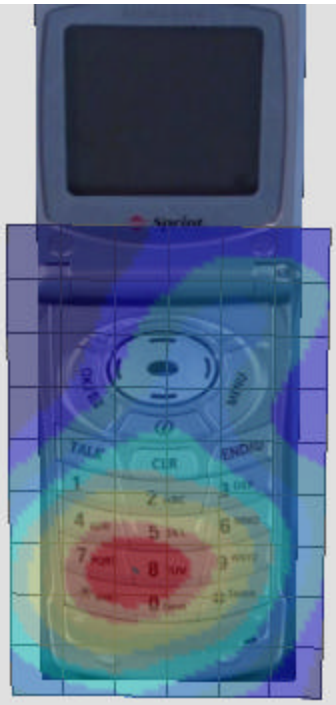
SAR Data Report 02022725

```
  Start        : 27-Feb-02 03:38:07 pm
  End          : 27-Feb-02 03:56:51 pm
  Code Version : 4.07
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SPH-A460
  Serial Number    : 3
  Frequency        : 1908.75 MHz
  Peak Trans. Pwr  : 0.320 W
  Start Trans. Pwr : 0.320 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.=23.4'C; Liq. Temp.=23.3'C



Area Scan - Max Peak SAR Value at x=75.0 y=-6.0 = 0.19 W/kg

Zoom Scan - Max Peak SAR Value at x=71.0 y=2.0 z=0.0 = 0.31 W/kg

Max 1g SAR at x=75.0 y=-5.0 z=0.0 = 0.20 W/kg

Max 10g SAR at x=74.0 y=-5.0 z=0.0 = 0.12 W/kg
```


SAR - Z Axis
at Hotspot x:71.0 y:2.0
0.40
0.30
0.20
0.10
0.00
SAR (mW/g)
0
10
20
30
Z Distance (mm)

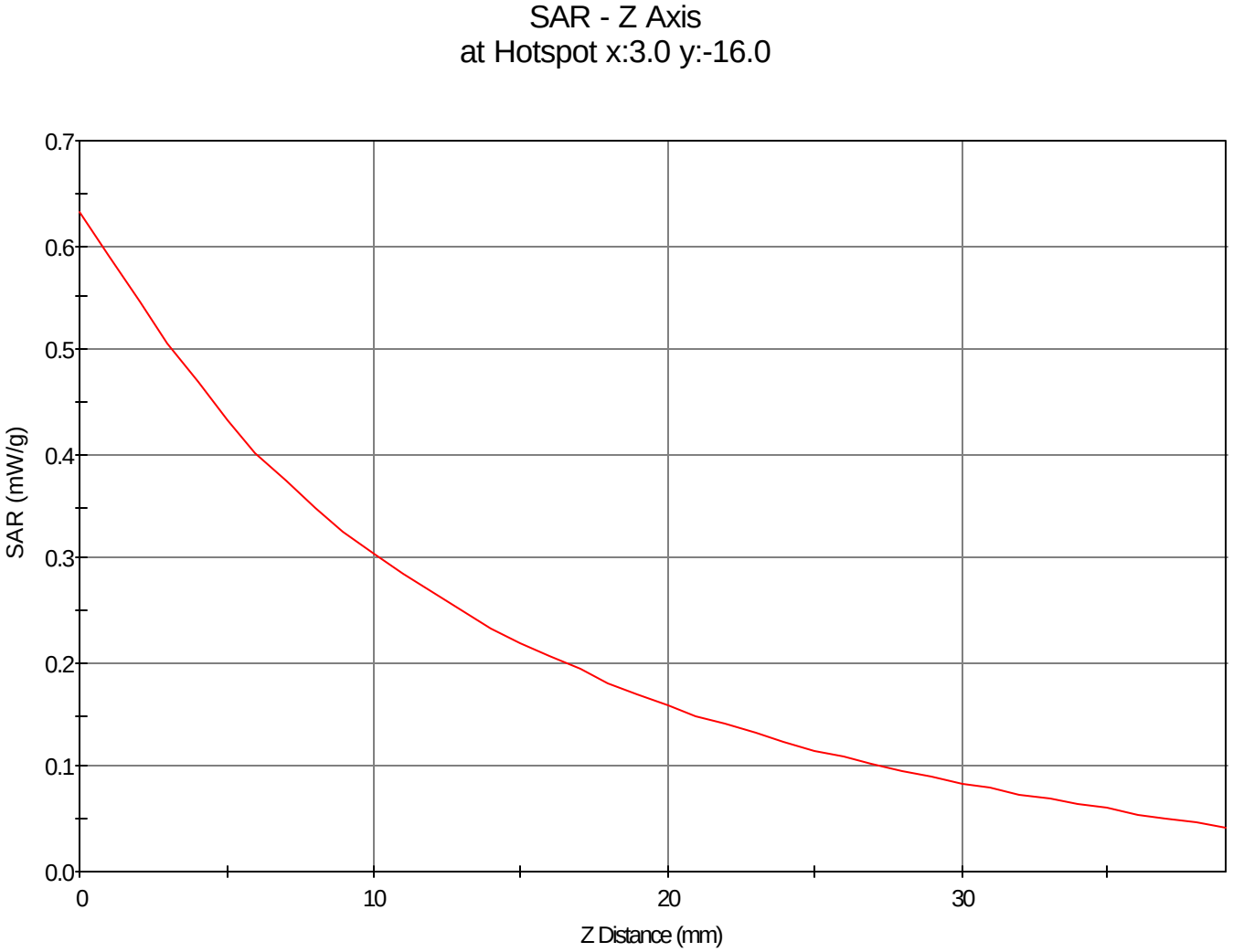
1g SAR Values



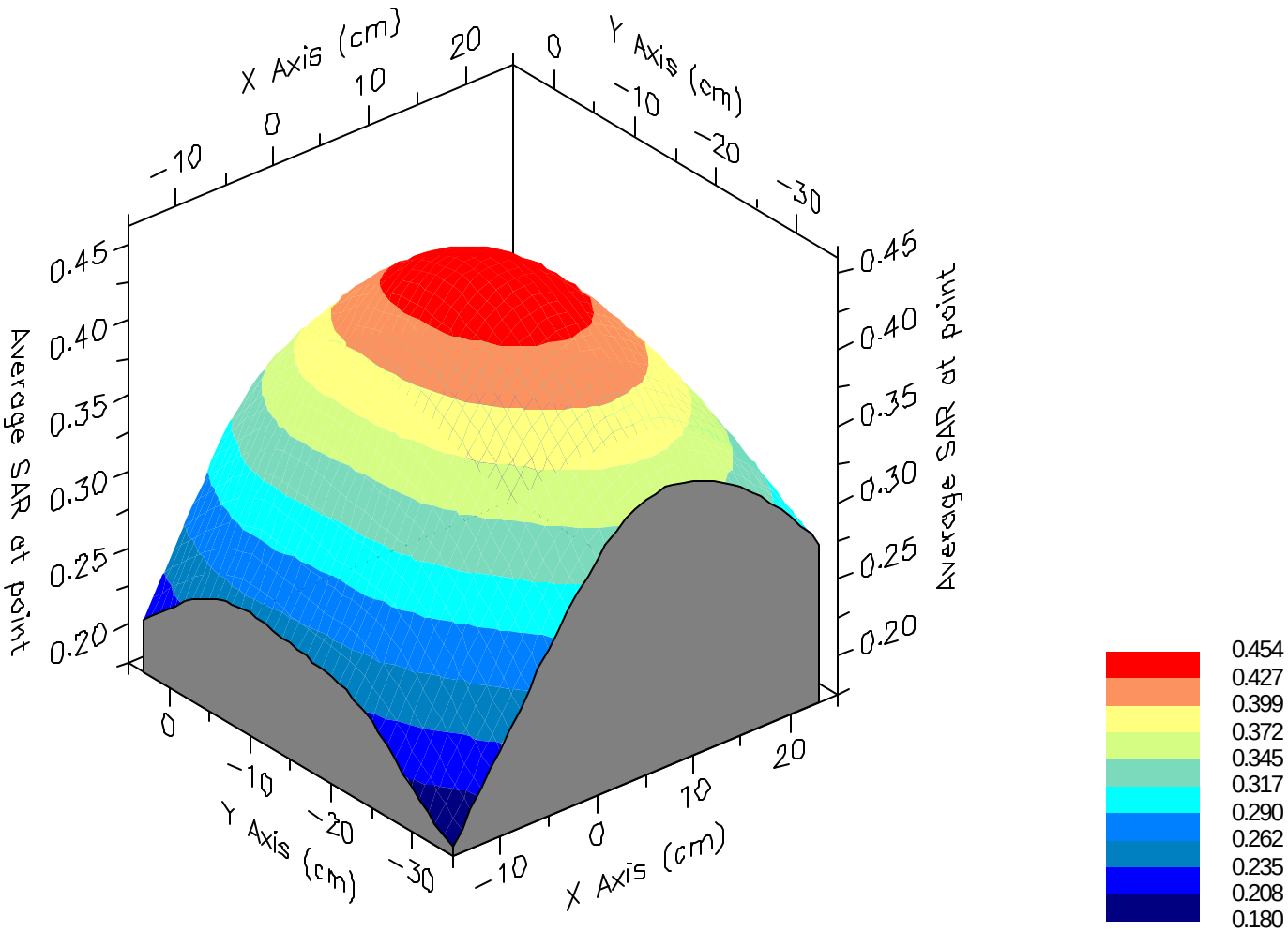

TALK
CLR
SEND
1
2
3
4
5
6
7
8
9
0

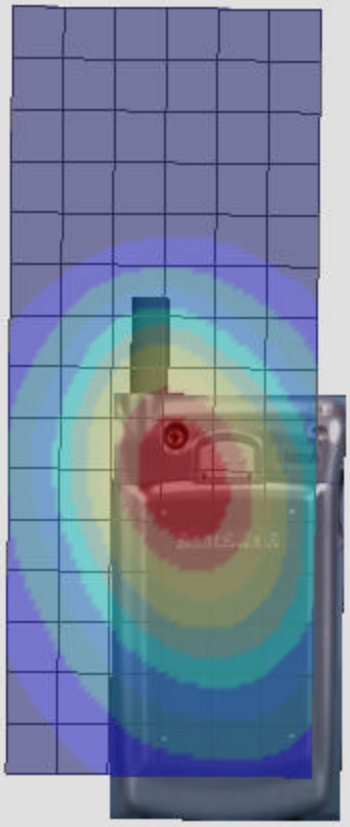
SAR Data Report 02030110

```
  Start        :  1-Mar-02 11:17:45 am
  End          :  1-Mar-02 11:30:34 am
  Code Version : 4.08
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SPH-A460
  Serial Number    : 3
  Frequency        : 848.97 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:
  AMPS Mode  CH-799
  BODY
  CF=1; Amb. Temp.=23.0'C; Liq. Temp.=22.7'C



Area Scan - Max Peak SAR Value at x=4.0 y=-16.0 = 0.44 W/kg

Zoom Scan - Max Peak SAR Value at x=3.0 y=-16.0 z=0.0 = 0.63 W/kg

Max 1g SAR at x=5.0 y=-16.0 z=0.0 = 0.45 W/kg

Max 10g SAR at x=5.0 y=-17.0 z=0.0 = 0.30 W/kg
```


SAR - Z Axis
at Hotspot x:3.0 y:-16.0
SAR (mW/g)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0
10
20
30
Z Distance (mm)

1g SAR Values





SAR Data Report 02030108

```
  Start        :  1-Mar-02 10:51:42 am
  End          :  1-Mar-02 11:04:22 am
  Code Version : 4.08
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SPH-A460
  Serial Number    : 3
  Frequency        : 848.31 MHz
  Transmit Pwr     : 0.360 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:
  Body
  Ch 777
  CF=1; Amb. Temp.=23.0'C; Liq. Temp.=22.7'C
```

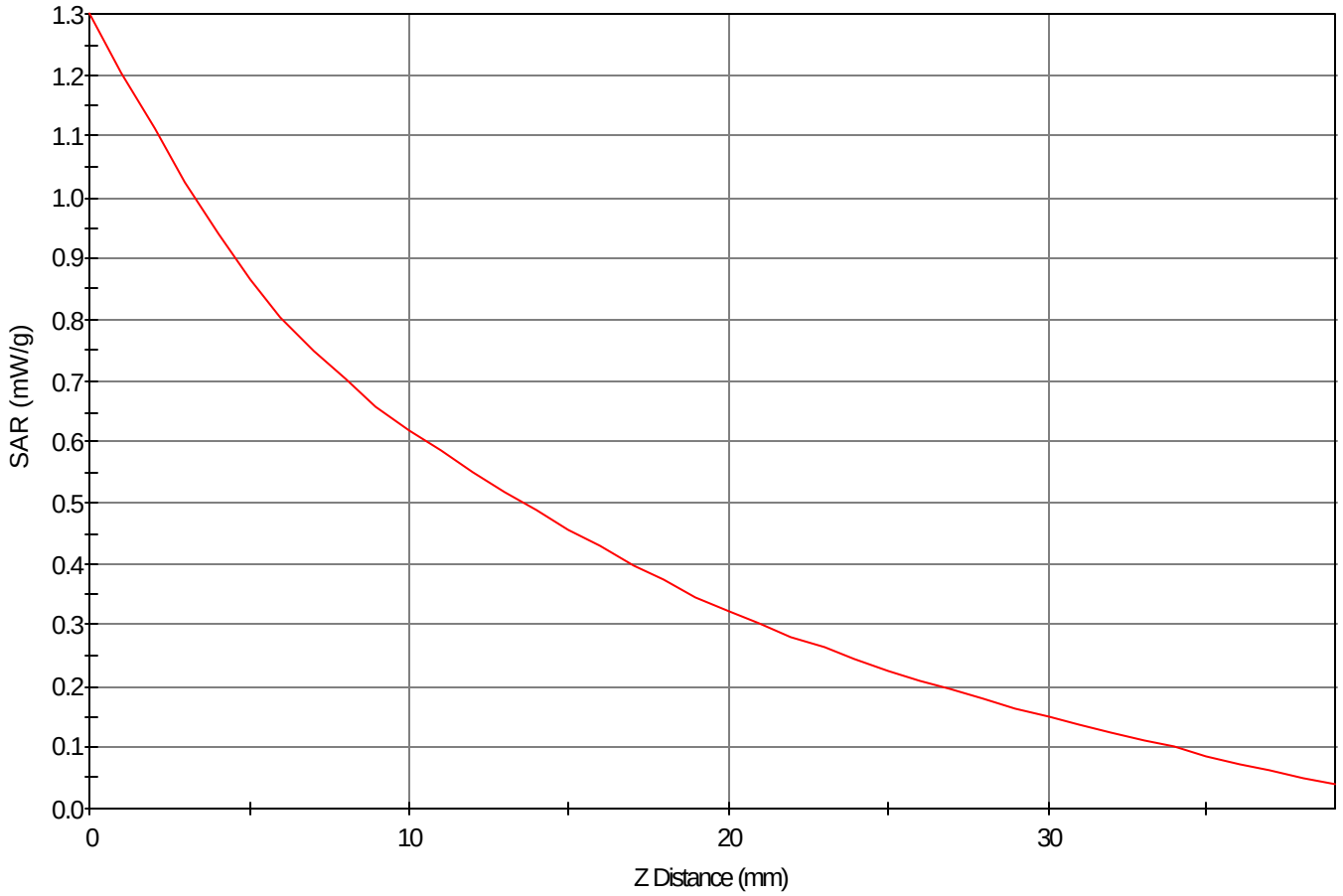
Area Scan - Max Peak SAR Value at x=3.0 y=-15.0 = 0.33 W/kg

Zoom Scan - Max Peak SAR Value at x=19.0 y=-7.0 z=0.0 = 1.31 W/kg

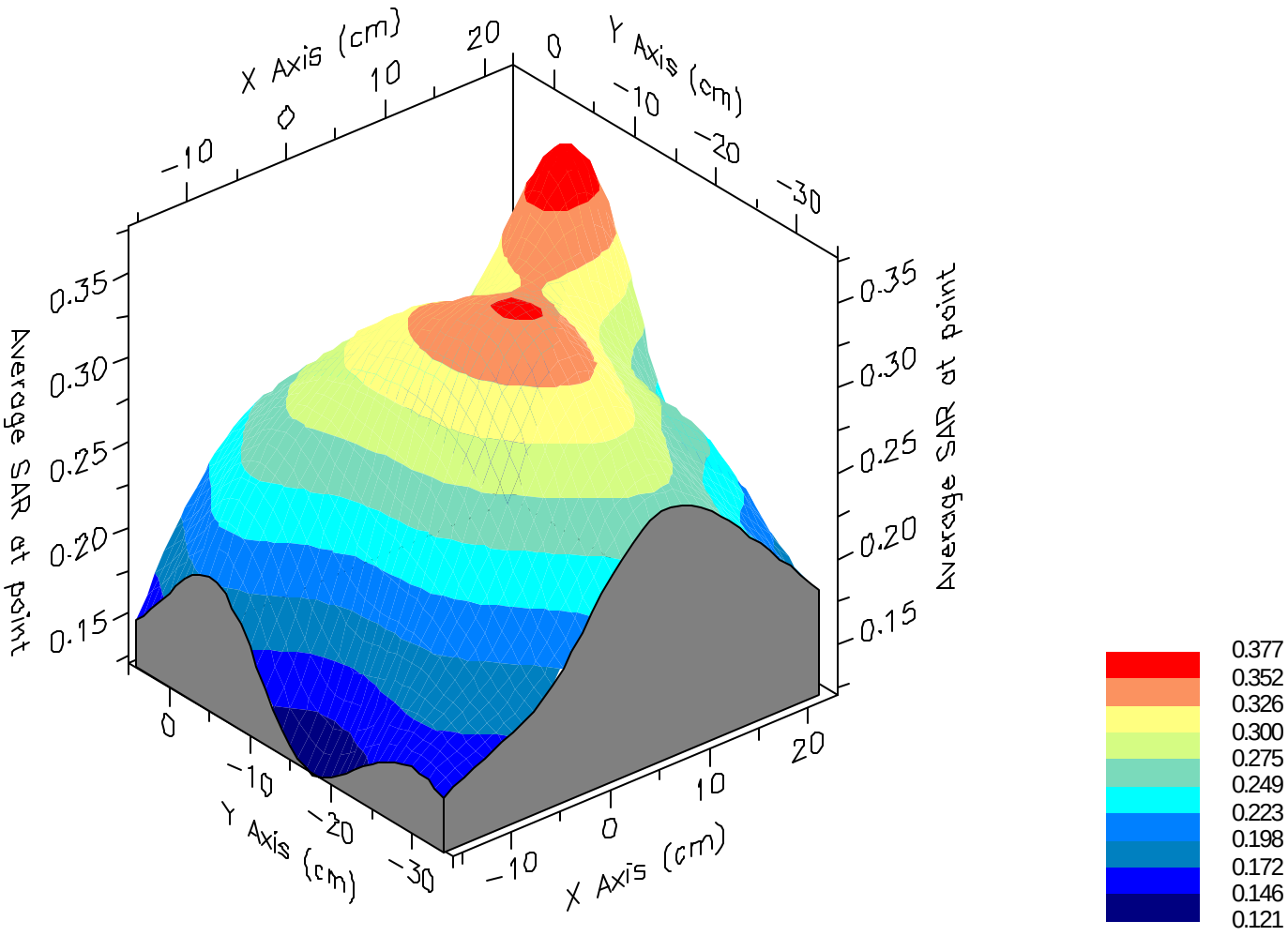
Max 1g SAR at x=18.0 y=-7.0 z=0.0 = 0.38 W/kg

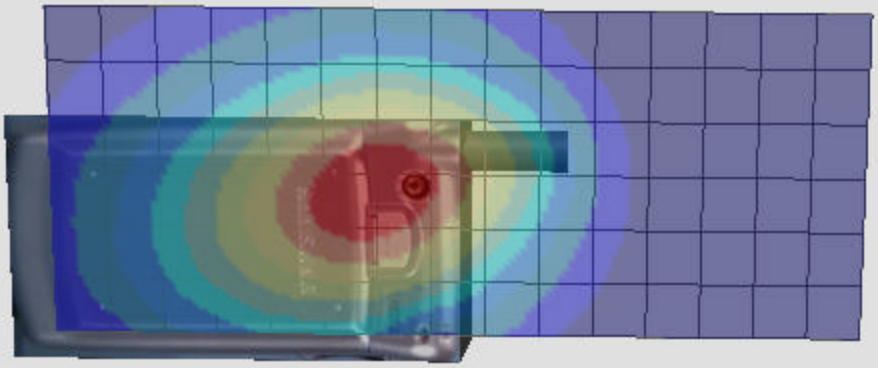
Max 10g SAR at x=8.0 y=-15.0 z=0.0 = 0.23 W/kg

SAR - Z Axis
at Hotspot x:19.0 y:-7.0



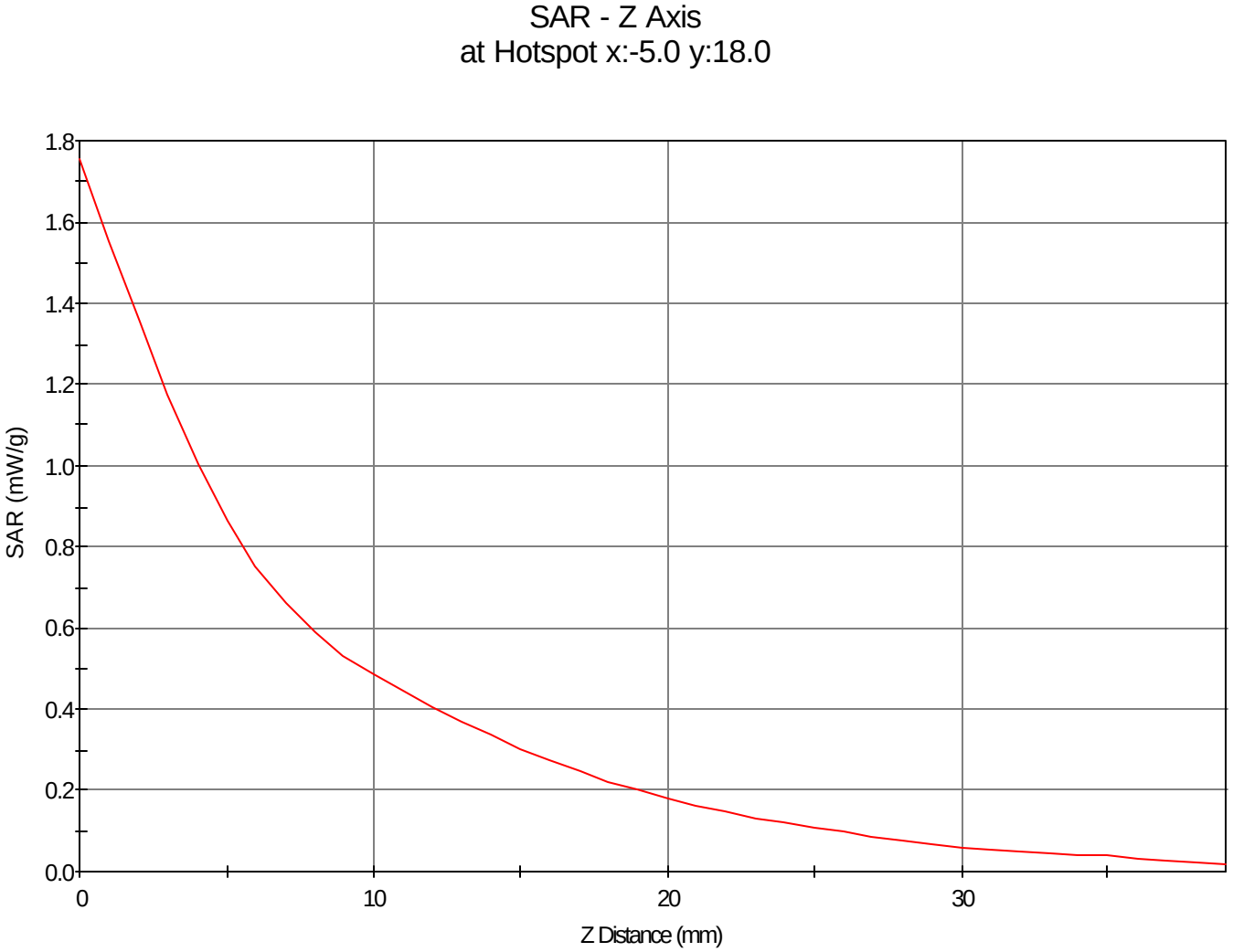
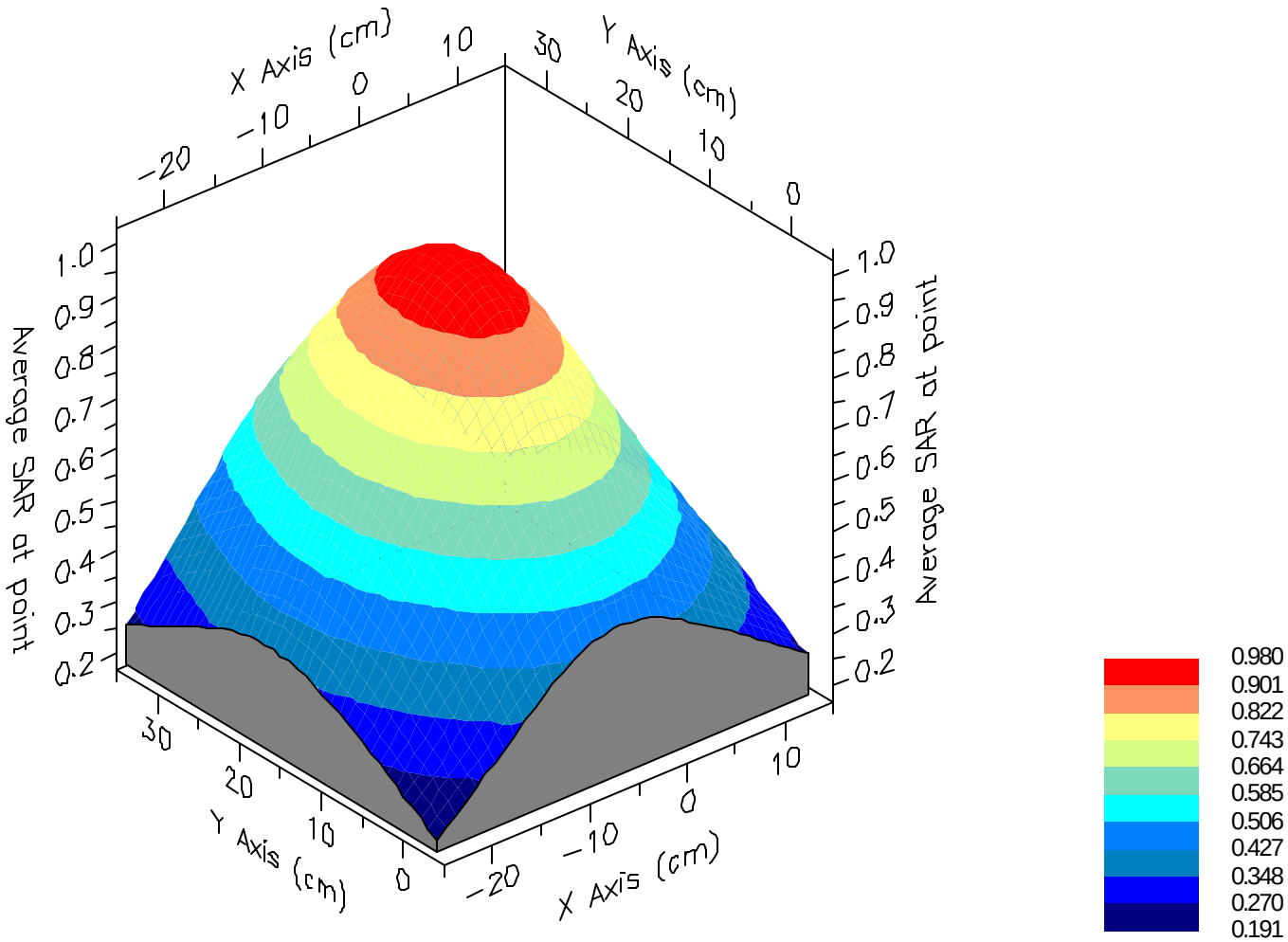
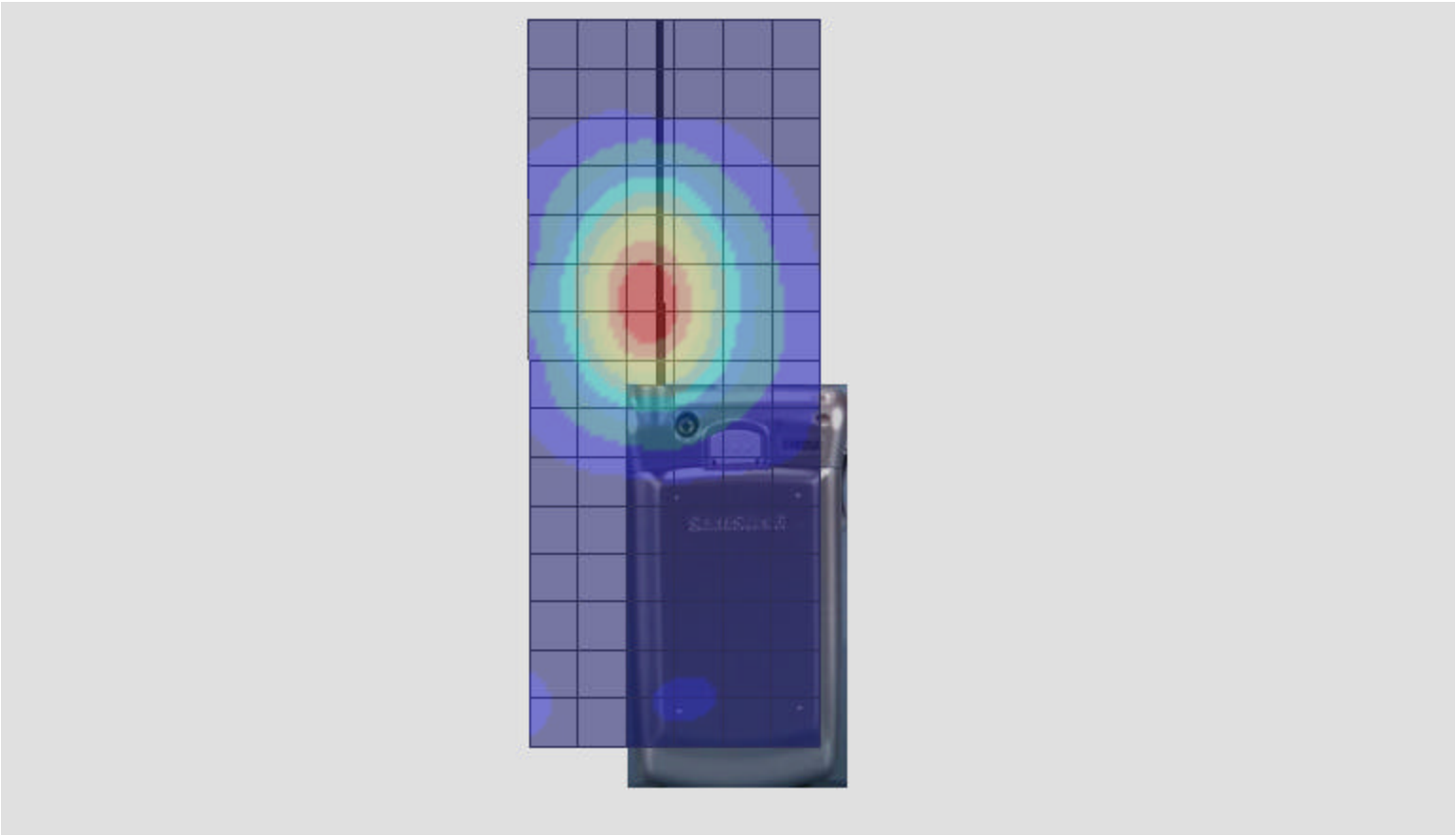
1g SAR Values





SAR Data Report 02030114

```
  Start        :  1-Mar-02 12:25:15 pm
  End          :  1-Mar-02 12:37:57 pm
  Code Version : 4.08
  Robot Version: 4.08

Product Data:
  Type             : SAMSUNG
  Model Number     : SPH-A460
  Serial Number    : 3
  Frequency        : 1908.75 MHz
  Transmit Pwr     : 0.320 W
  Antenna Type     : Helical
  Antenna Posn.    : Out

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-1175
  BODY
  CF=1; Amb. Temp.=23.0'C; Liq. Temp.=22.8'C



Area Scan - Max Peak SAR Value at x=-5.0 y=16.0 = 0.87 W/kg

Zoom Scan - Max Peak SAR Value at x=-5.0 y=18.0 z=0.0 = 1.75 W/kg

Max 1g SAR at x=-5.0 y=18.0 z=0.0 = 0.98 W/kg

Max 10g SAR at x=-5.0 y=18.0 z=0.0 = 0.53 W/kg
```


SAR - Z Axis
at Hotspot x:-5.0 y:18.0
SAR (mW/g)
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
10
20
30
Z Distance (mm)

1g SAR Values