

TEST REPORT



Your Ref:

Date: 15 April 2003

Our Ref: 56S030241/01

Page: 1 of 46

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FORMAL REPORT ON TESTING IN ACCORDANCE WITH
SAR (SPECIFIC ABSORPTION RATE) REQUIREMENTS

**Supplement C (Edition 01-01)
FCC OET Bulletin 65 (Edition 97-01)**

OF A

**MOBILE PHONE come with CDMA_2000 1x (800MHz) & Amps
[Model: QB04]**

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JOB NUMBER 56S030241

TEST PERIOD 25 March 2003 - 10 April 2003

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Your product quality and safety mark



LA-2001-0212-A
LA-2001-0213-F
LA-2001-0214-E
LA-2001-0215-B
LA-2001-0216-G
LA-2001-0217-G

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TEST SUMMARY

PRODUCT DESCRIPTION

TEST RESULTS

ANNEX A	- TEST INSTRUMENTATION & GENERAL PROCEDURES
ANNEX B	- EUT PHOTOGRAPHS / DIAGRAMS Test Setup EUT Photographs
ANNEX C	- TISSUE SIMULANT DATA SHEETS
ANNEX D	- SAR VALIDATION RESULTS
ANNEX E	- SAR PROBE CALIBRATION CERTIFICATES
ANNEX F	- REFERENCES

The product was tested in accordance with the following standards.

Test Results Summary

Test Standards	Description	Pass / Fail
<ul style="list-style-type: none"> • Supplement C (Edition 01-01) to FCC OET Bulletin 65 (Edition 97-01) • ANSI/IEEE Standard C95.1-1993 	SAR Measurement (AMPS Mode) Device at head phantom	Pass *
	SAR Measurement (CDMA Mode) Device at head phantom	Pass *
	SAR Measurement (AMPS Mode) Body Worn Configuration Only	Pass *
	SAR Measurement (CDMA Mode) Body Worn Configuration Only	Pass *

Note:

1. The worst-case SAR value was found to be **1.480W/kg** which is lower than the maximum limit of 1.60 W/kg, over 1g of tissue.
- * Based on spatial peak uncontrolled exposure / general population level:
 Head: 1.60 W/kg, over 1g of tissue.
 Body: 1.60 W/kg, over 1g of tissue.

Modifications

No modifications were made.

DEVICE DESCRIPTION

Description	Mobile Phone comes with CDMA_2000 1x (800MHz) & Amps
Device Category	Portable Device
Exposure Environment	General Population/Uncontrolled exposure
Test Device Type	Pre-Pilot Unit
Model	QB04
Brand Name	Flextronics
Serial Numbers	PB100300254
FCC ID	Q3OODM-QB04

DEVICE OPERATING CONFIGURATION

Operating Frequencies	AMPS Mode	CDMA Mode
	Channel 991 (824.04Mhz) Channel 384 (836.52Mhz) Channel 799 (848.97Mhz)	Channel 1013 (824.70Mhz) Channel 384 (836.52Mhz) Channel 777 (848.31Mhz)
Operating Temperature Tolerance	-30 ~ +60 Degree Celsius	
Operating Voltage Tolerance	3.6 V ~ 4.2 V Volt DC	
Continuous Transmission Tolerance	The EUT shall cause no problem after transmitting for 110 minutes under maximum transmitting power rate.	
Rated Output Power	25.0 dBm ± 0.5dBm, Maximum (AMPS Phone) 23.8 dBm ± 0.2dBm, Maximum (CDMA Phone)	
Antenna Type	Integrated Antenna	
Duty Cycle	1.0	
Input Power	Lithium Ion Integrated Battery, 3.7V 750mAh.	
Accessories	1) Charger 2) Belt Clip 3) Headset with Mic. and Speaker	

MANUFACTURER

Manufacturer Address	Rod. Sen. Jose Ermirio De de Moraes, KM11 Vila Aparecidinha-Sorocaba 18087-090-Sao Paulo Brasil
DID	55-15-235 6284
Fax	55-15-3325 1351

DEVICE OPERATING CONDITION

The EUT was put into operation by a radio test set. Communication between the EUT and the Agilent wireless communication tester was established by air link. For every SAR measurement, the EUT was set to maximum output power level using fully charged battery.

DASY4 system measures power drift during SAR test by comparing E-field in the same location at the beginning and end of measurement. These records were used to monitor the stability of the device output power.

TEMPERATURE AND HUMIDITY

Ambient Temperature: $22 \pm 1^{\circ}\text{C}$
Tissue Temperature: $23 \pm 1^{\circ}\text{C}$
Humidity: 50% to 56%

Measurement Uncertainty

All test measurement carried out are traceable to national standards. The uncertainty of measurement at a confidence level of 95%, with a coverage of 2, is $\pm 20.9\%$.

Error Description	Uncertainty Value $\pm \%$	Probability Distribution	Divisor	ci 1g	Standard Unc.(1g)	Vi or Veff
Measurement System						
Probe Calibration	± 4.8	normal	1	1	± 4.8	∞
Axial isotropy	± 4.7	rectangular	$\sqrt{3}$	$(1-cp)^{1/2}$	± 1.9	∞
Hemispherical Isotropy	± 9.6	rectangular	$\sqrt{3}$	$(cp)^{1/2}$	± 3.9	∞
Spatial resolution	± 0.0	rectangular	$\sqrt{3}$	1	± 0.0	∞
Boundary effects	± 1.0	rectangular	$\sqrt{3}$	1	± 0.6	∞
Linearity	± 4.7	rectangular	$\sqrt{3}$	1	± 2.7	∞
System Detection limit	± 1.0	rectangular	$\sqrt{3}$	1	± 0.6	∞
Readout electronics	± 1.0	normal	1	1	± 1.0	∞
Response time	± 0.8	rectangular	$\sqrt{3}$	1	± 0.5	∞
Integration time	± 2.6	rectangular	$\sqrt{3}$	1	± 1.5	∞
RF ambient conditions	± 3.0	rectangular	$\sqrt{3}$	1	± 1.7	∞
Probe Positioning Mechanical Tolerance	± 0.4	rectangular	$\sqrt{3}$	1	± 0.2	∞
Probe Positioning with respect to Phantom Shell	± 2.9	rectangular	$\sqrt{3}$	1	± 1.7	∞
Extrapolation, Interpolation and Integration Algorithms for Max. SAR Evaluation	± 1.0	rectangular	$\sqrt{3}$	1	± 0.6	∞
Test Sample Related						
Device positioning	± 2.9	normal	1	1	± 2.9	145
Device holder uncertainty	± 3.6	normal	1	1	± 3.6	5
Power drift	± 5.0	rectangular	$\sqrt{3}$	1	± 2.9	∞
Phantom and Tissue Parameters						
Phantom uncertainty	± 4.0	rectangular	$\sqrt{3}$	1	± 2.3	∞
Liquid conductivity (target)	± 5.0	rectangular	$\sqrt{3}$	0.64	± 1.8	∞
Liquid conductivity (meas)	± 3.7	normal	1	0.64	± 2.3	∞
Liquid permittivity (target)	± 5.0	rectangular	$\sqrt{3}$	0.6	± 1.7	∞
Liquid permittivity (meas)	± 2.8	normal	1	0.6	± 1.7	∞
Combined Standard Uncertainty					± 10.5	330
Coverage Factor for 95%		k=2				
Extended Standard Uncertainty					± 20.9	

The measurement results were obtained with the EUT tested in the conditions described in this report (Annex A).

Table 1 - SAR Test Results (AMPS Mode) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	SAR (W/kg), over 1g Tissue Device Test Channel & Frequency		
			Channel: 991 824.04MHz	Channel: 384 836.52MHz	Channel: 799 848.97MHz
Left Side of Head	Cheek / Touch	fixed	1.260	1.310	1.060
	Ear / Tilt	fixed	0.855	0.862	0.660
Right Side of Head	Cheek / Touch	fixed	1.220	1.250	1.020
	Ear / Tilt	fixed	0.967	1.020	0.746
Output Power (dBm) Before Test			25.7	25.6	25.5
Output Power (dBm) After Test			25.6	25.5	25.4

Table 2 - SAR Test Results (CDMA Mode) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	SAR (W/kg), over 1g Tissue Device Test Channel & Frequency		
			Channel: 1013 824.70MHz	Channel: 384 836.52MHz	Channel: 777 848.31MHz
Left Side of Head	Cheek / Touch	fixed	0.869	0.883	0.815
	Ear / Tilt	fixed	0.569	0.586	0.500
Right Side of Head	Cheek / Touch	fixed	0.735	0.983	0.720
	Ear / Tilt	fixed	0.633	0.695	0.533
Output Power (dBm) Before Test			24.1	24.1	24.0
Output Power (dBm) After Test			24.0	24.0	23.9

Remarks:

1. All modes of operations were investigated and the worst-case SAR levels are reported.
2. A fully charged Battery was used for each mode of operation.
3. For the **AMPS Mode**, the worst-case SAR value was found to be **1.310W/Kg** (over a 1g tissue) at **Channel 384** which is lower than the maximum limit of 1.60 W/Kg, please refer to the above table.
4. For **CDMA Mode**, the worst-case SAR value were found to be **0.983W/Kg** (over a 1g tissue) at **Channel 384** which is lower than the maximum limit of 1.60 W/Kg, please refer to the above table.
5. The SAR limit of 1.60W/Kg (Spatial Peak level for Uncontrolled Exposure / General Population) is based on the Test Standards:
 - a) Supplement C (Edition 01-01) to FCC OET Bulletin 65 (Edition 97-01)
 - b) ANSI/IEEE Standard C95.1-1993

The measurement results were obtained with the EUT tested in the conditions described in this report (Annex A).

Table 3 – Body Worn Position SAR Test Results (AMPS Mode), device with belt clip(9mm spacing).

Phantom Configuration	Device Test Positions	Antenna Position	SAR (W/kg), over 1g Tissue Device Test Channel & Frequency		
			Channel: 991 824.04MHz	Channel: 384 836.52MHz	Channel: 799 848.97MHz
Flat Phantom	EUT Rear To Phantom	fixed	1.370	1.480	1.320
Output Power (dBm) Before Test			25.7	25.6	25.5
Output Power (dBm) After Test			25.6	25.5	25.4

Table 4 – Body Worn Position SAR Test Results (AMPS Mode), device Front Touching.

Phantom Configuration	Device Test Positions	Antenna Position	SAR (W/kg), over 1g Tissue Device Test Channel & Frequency		
			Channel: 991 824.04MHz	Channel: 384 836.52MHz	Channel: 799 848.97MHz
Flat Phantom	EUT Front Touched Phantom	fixed	0.894	0.918	0.727
Output Power (dBm) Before Test			25.7	25.6	25.5
Output Power (dBm) After Test			25.6	25.5	25.4

Remarks:

1. All modes of operations were investigated and the worst-case SAR levels are reported.
2. A fully charged Battery was used for each mode of operation.
3. For the **AMPS Mode**, the worst-case SAR value was found to be **1.480W/Kg** (over a 1g tissue) at **Channel 384** which is lower than the maximum limit of 1.60 W/Kg, please refer to the above table.
4. The SAR limit of 1.60W/Kg (Spatial Peak level for Uncontrolled Exposure / General Population) is based on the Test Standards:
 - a) Supplement C (Edition 01-01) to FCC OET Bulletin 65 (Edition 97-01)
 - b) ANSI/IEEE Standard C95.1-1993

The measurement results were obtained with the EUT tested in the conditions described in this report (Annex A).

Table 5 – Body Worn Position SAR Test Results (CDMA Mode), device with belt clip(9mm spacing).

Phantom Configuration	Device Test Positions	Antenna Position	SAR (W/kg), over 1g Tissue Device Test Channel & Frequency		
			Channel: 1013 824.70MHz	Channel: 384 836.52MHz	Channel: 777 848.31MHz
Flat Phantom	EUT Rear To Phantom	fixed	0.877	0.968	0.968
Output Power (dBm) Before Test			24.1	24.1	24.0
Output Power (dBm) After Test			24.0	24.0	23.9

Table 6 – Body Worn Position SAR Test Results (CDMA Mode), device Front Touching.

Phantom Configuration	Device Test Positions	Antenna Position	SAR (W/kg), over 1g Tissue Device Test Channel & Frequency		
			Channel: 1013 824.70MHz	Channel: 384 836.52MHz	Channel: 777 848.31MHz
Flat Phantom	EUT Front Touched Phantom	fixed	0.628	0.622	0.532
Output Power (dBm) Before Test			24.1	24.1	24.0
Output Power (dBm) After Test			24.0	24.0	23.9

Remarks:

1. All modes of operations were investigated and the worst-case SAR levels are reported.
2. A fully charged Battery was used for each mode of operation.
3. For the **CDMA Mode**, the worst-case SAR value was found to be **0.968W/Kg** (over a 1g tissue) at **Channel 384 and Channel 777** which is lower than the maximum limit of 1.60 W/Kg, please refer to the above table.
4. The SAR limit of 1.60W/Kg (Spatial Peak level for Uncontrolled Exposure / General Population) is based on the Test Standards:
 - a) Supplement C (Edition 01-01) to FCC OET Bulletin 65 (Edition 97-01)
 - b) ANSI/IEEE Standard C95.1-1993

Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 1: SAR Test Distribution Plot (AMPS Mode) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Left Side of Head	Cheek / Touch	Fixed	Channel: 991 824.04MHz	1.260

Date: 04/09/2003

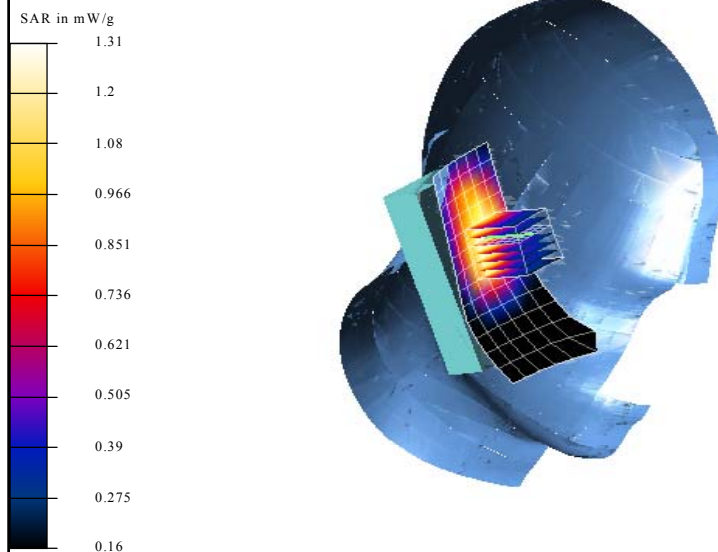
Test Laboratory: Telecom & EMC Testing Group
 File Name: AMPS_Doumen P4_Left Head_0deg_CH991_Data13.da4

DUT: Flextronics_CDMA_AMPS phone Type & Serial Number: Nil
 Program: AMPS_P4; AMPS_Doumen P4_Left Head_0deg_CH991_Data13

Communication System: CDMA 835; Frequency: 848.97 MHz; Duty Cycle: 1:1
 Medium: 835Head Tissue ($\sigma = 0.868 \text{ mho/m}$, $\epsilon = 41.066$, $\rho = 1000 \text{ kg/m}^3$)
 Phantom section: LeftSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.6, 6.6, 6.6); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

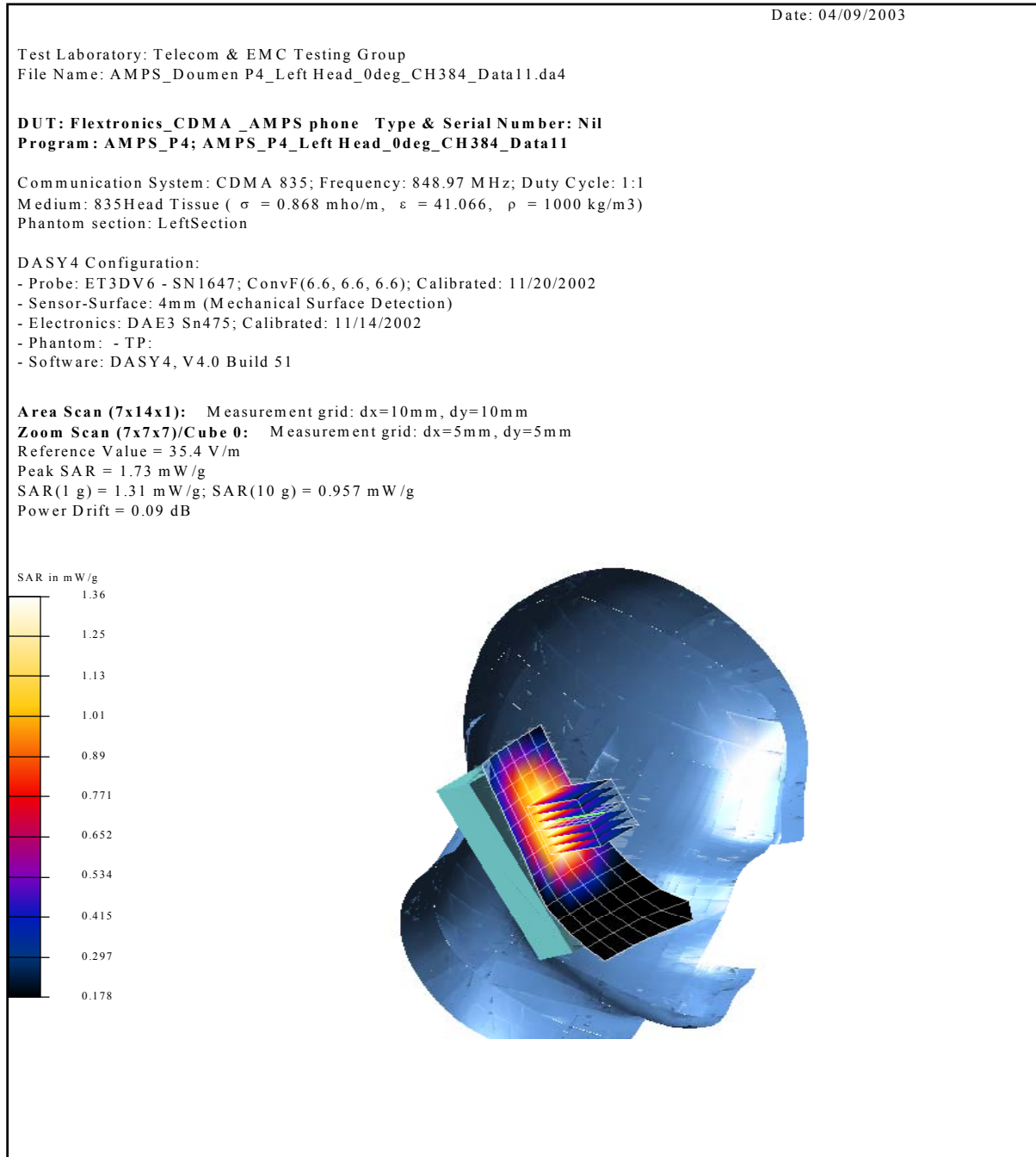
Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm
 Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 35.2 V/m
 Peak SAR = 1.68 mW/g
 SAR(1 g) = 1.26 mW/g; SAR(10 g) = 0.918 mW/g
 Power Drift = -0.1 dB



Ambient Temperature: $22 \pm 1^{\circ}\text{C}$
Tissue Temperature: $23 \pm 1^{\circ}\text{C}$
Humidity: 50% to 56%

Figure 2: SAR Test Distribution Plot (AMPS Mode) – Device at head phantom

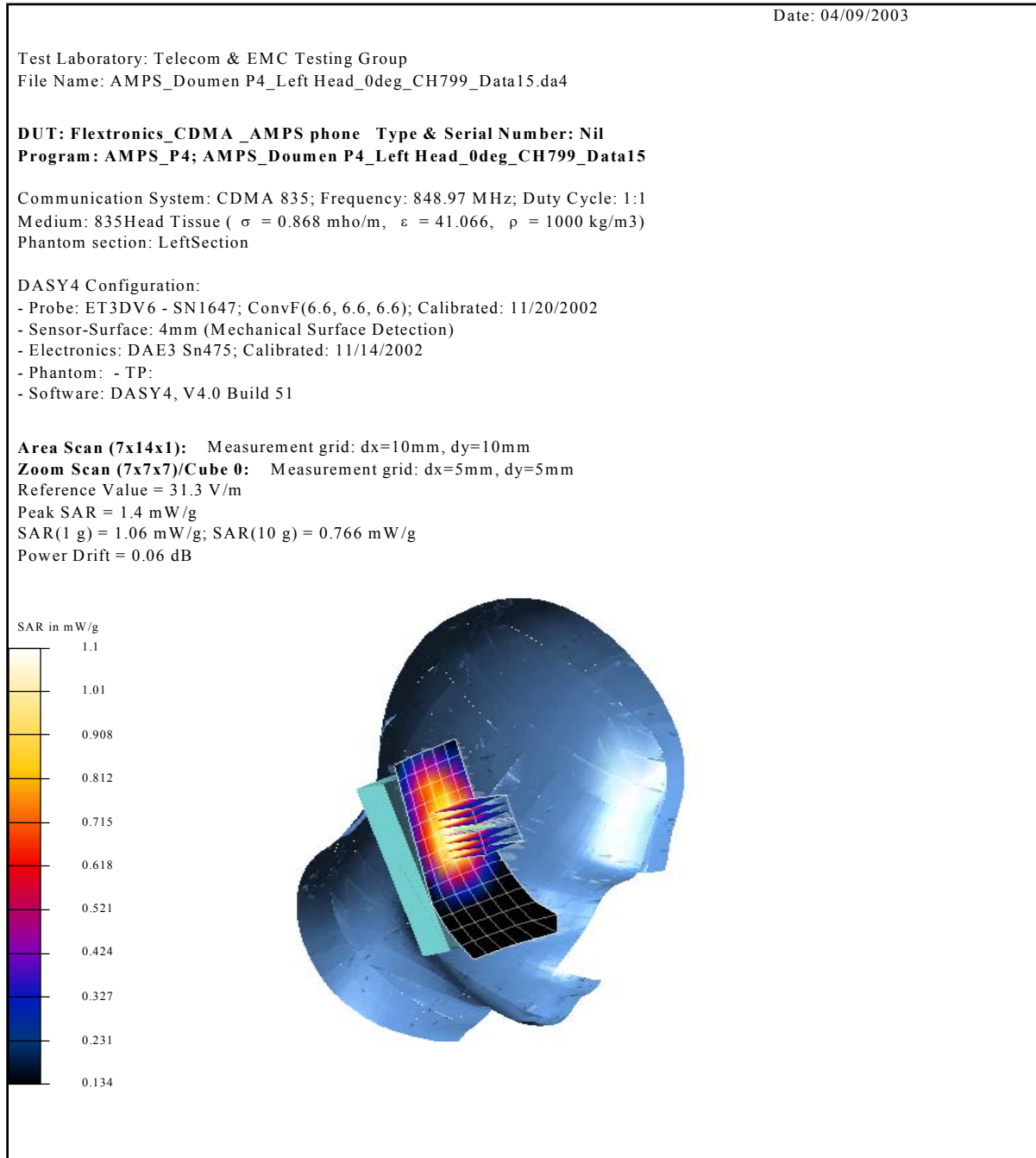
Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Left Side of Head	Cheek / Touch	Fixed	Channel: 384 836.52MHz	1.310



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 3: SAR Test Distribution Plot (AMPS Mode) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Left Side of Head	Cheek / Touch	Fixed	Channel: 799 848.97MHz	1.060



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 4: SAR Test Distribution Plot (AMPS Mode) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Left Side of Head	Ear / Tilt	Fixed	Channel: 991 824.04MHz	0.855

Date: 04/09/2003

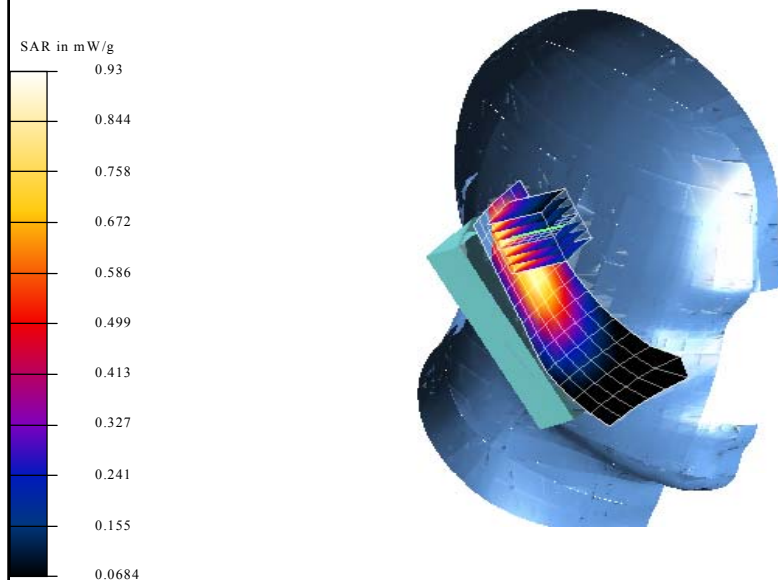
Test Laboratory: Telecom & EMC Testing Group
 File Name: AMPS_Doumen P4_Left Head_15deg_CH991_Data14.da4

DUT: Flextronics_CDMA_AMPS phone Type & Serial Number: Nil
 Program: AMPS_P4; AMPS_Doumen P4_Left Head_15deg_CH991_Data14

Communication System: CDMA 835; Frequency: 824.04 MHz; Duty Cycle: 1:1
 Medium: 835Head Tissue ($\sigma = 0.868 \text{ mho/m}$, $\epsilon = 41.066$, $\rho = 1000 \text{ kg/m}^3$)
 Phantom section: LeftSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.6, 6.6, 6.6); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

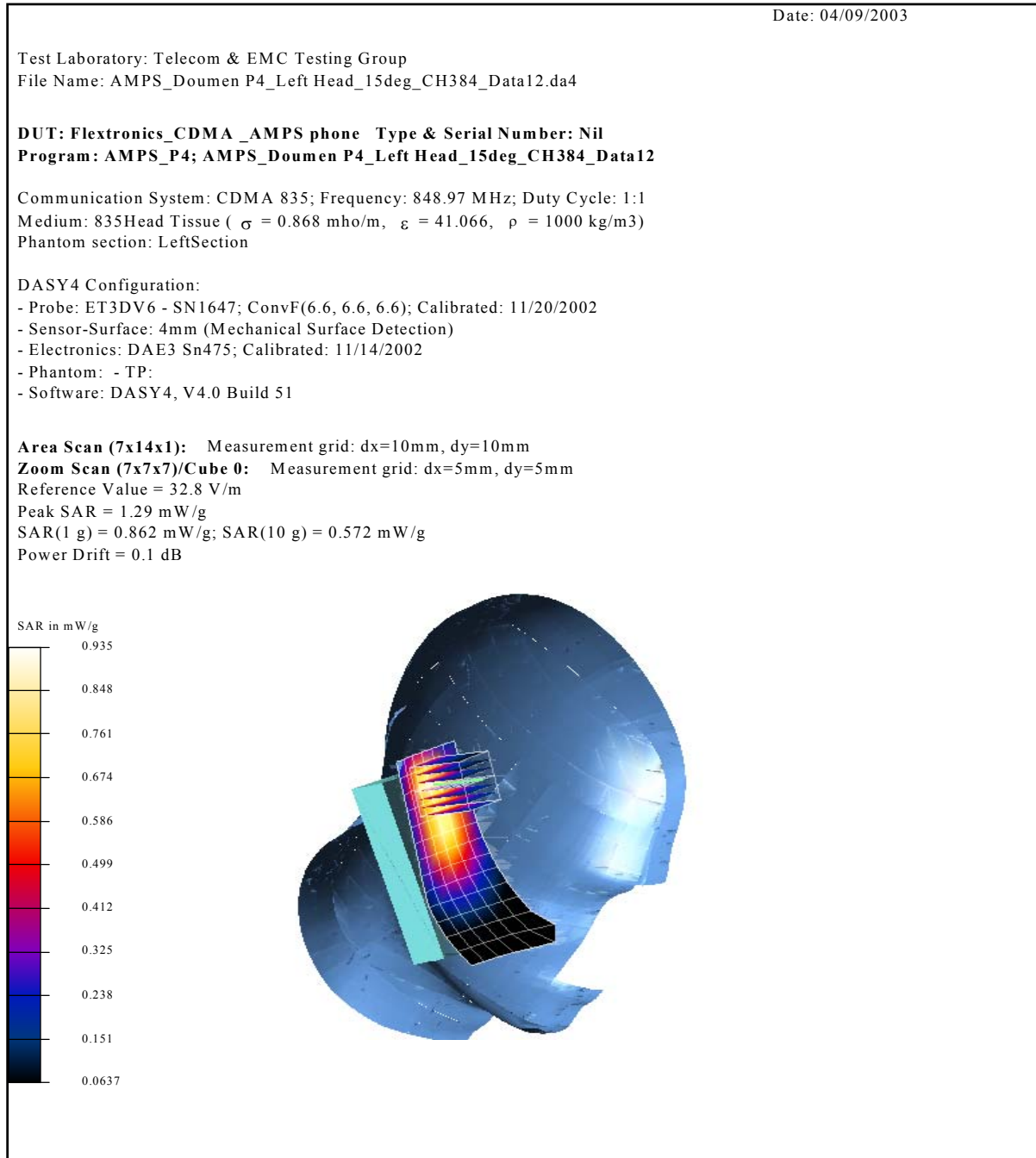
Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm
 Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 33 V/m
 Peak SAR = 1.3 mW/g
 SAR(1 g) = 0.855 mW/g; SAR(10 g) = 0.567 mW/g
 Power Drift = 0.01 dB



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 5: SAR Test Distribution Plot (AMPS Mode) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Left Side of Head	Ear / Tilt	Fixed	Channel: 384 836.52MHz	0.862



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 6: SAR Test Distribution Plot (AMPS Mode) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Left Side of Head	Ear / Tilt	Fixed	Channel: 799 848.97MHz	0.660

Date: 04/09/2003

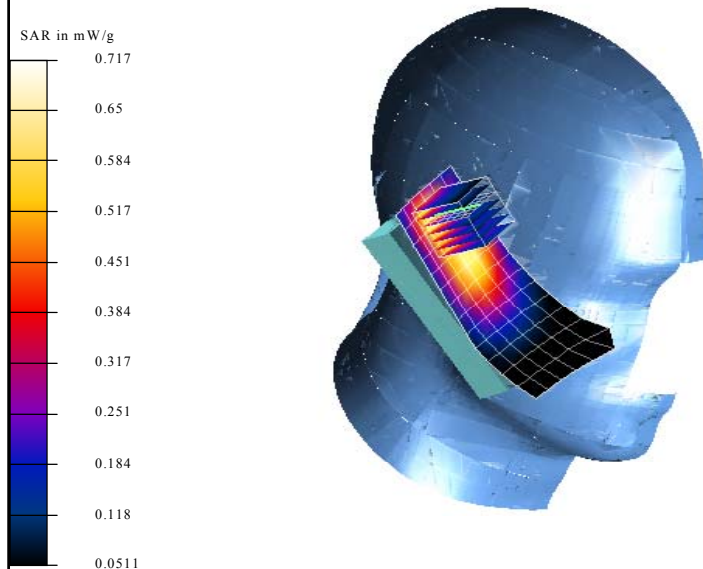
Test Laboratory: Telecom & EMC Testing Group
 File Name: AMPS_Doumen P4_Left Head_15deg_CH799_Data16.da4

DUT: Flextronics_CDMA_AMPS phone Type & Serial Number: Nil
 Program: AMPS_P4; AMPS_Doumen P4_Left Head_15deg_CH799_Data16

Communication System: CDMA 835; Frequency: 848.97 MHz; Duty Cycle: 1:1
 Medium: 835Head Tissue ($\sigma = 0.868 \text{ mho/m}$, $\epsilon = 41.066$, $\rho = 1000 \text{ kg/m}^3$)
 Phantom section: LeftSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.6, 6.6, 6.6); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm
 Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 28.2 V/m
 Peak SAR = 1.01 mW/g
 SAR(1 g) = 0.66 mW/g; SAR(10 g) = 0.432 mW/g
 Power Drift = 0.1 dB



Ambient Temperature: $22 \pm 1^{\circ}\text{C}$
 Tissue Temperature: $23 \pm 1^{\circ}\text{C}$
 Humidity: 50% to 56%

Figure 7: SAR Test Distribution Plot (AMPS Mode) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Right Side of Head	Cheek / Touch	Fixed	Channel: 991 824.04MHz	1.220

Date: 04/09/2003

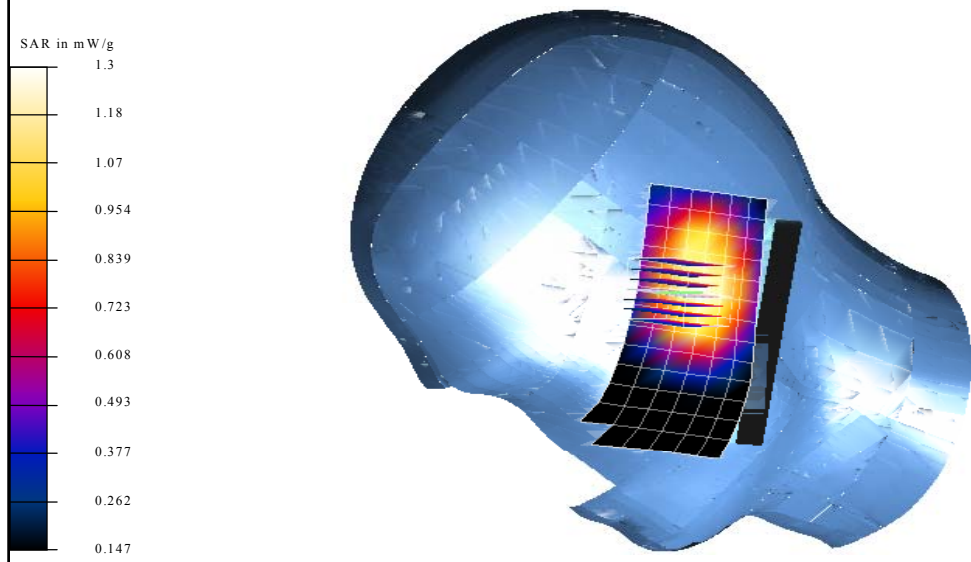
Test Laboratory: Telecom & EMC Testing Group
 File Name: AMPS_Doumen P4_Right Head_0deg_CH991_Data7.da4

DUT: Flextronics_P4 Phone Type & Serial Number: Nil
Program: Flextronics_P4 Phone; AMPS_Doumen P4_Right Head_0deg_CH991_Data7

Communication System: AMPS 835; Frequency: 824.04 MHz; Duty Cycle: 1:1
 Medium: 835Head Tissue ($\sigma = 0.868$ mho/m, $\epsilon = 41.066$, $\rho = 1000$ kg/m³)
 Phantom section: RightSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.6, 6.6, 6.6); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 37.5 V/m
 Peak SAR = 1.56 mW/g
 SAR(1 g) = 1.22 mW/g; SAR(10 g) = 0.902 mW/g
 Power Drift = -0.03 dB



Ambient Temperature: $22 \pm 1^{\circ}\text{C}$
 Tissue Temperature: $23 \pm 1^{\circ}\text{C}$
 Humidity: 50% to 56%

Figure 8: SAR Test Distribution Plot (AMPS Mode) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Right Side of Head	Cheek / Touch	Fixed	Channel: 384 836.52MHz	1.250

Date: 04/09/2003

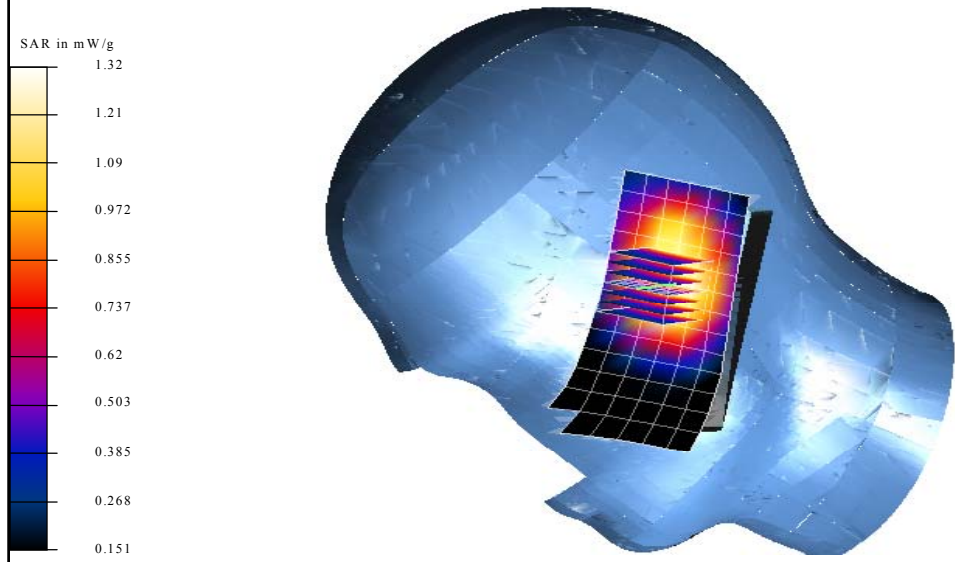
Test Laboratory: Telecom & EMC Testing Group
 File Name: AMPS_Doumen P4_Right Head_0deg_CH384_Data5.da4

DUT: Flextronics_P4 Phone Type & Serial Number: Nil
Program: Flextronics_P4 Phone; AMPS_Doumen P4_Right Head_0deg_CH384_Data5

Communication System: AMPS 835; Frequency: 836.52 MHz; Duty Cycle: 1:1
 Medium: 835Head Tissue ($\sigma = 0.868$ mho/m, $\epsilon = 41.066$, $\rho = 1000$ kg/m³)
 Phantom section: RightSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.6, 6.6, 6.6); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 37.2 V/m
 Peak SAR = 1.58 mW/g
 SAR(1 g) = 1.25 mW/g; SAR(10 g) = 0.929 mW/g
 Power Drift = 0.05 dB



Ambient Temperature: $22 \pm 1^{\circ}\text{C}$
 Tissue Temperature: $23 \pm 1^{\circ}\text{C}$
 Humidity: 50% to 56%

Figure 9: SAR Test Distribution Plot (AMPS Mode) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Right Side of Head	Cheek / Touch	Fixed	Channel: 799 848.97MHz	1.020

Date: 04/09/2003

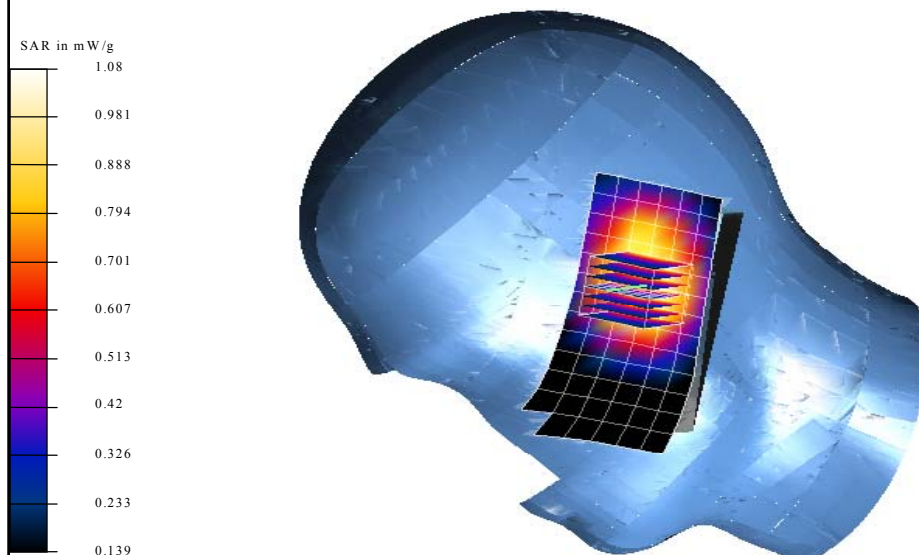
Test Laboratory: Telecom & EMC Testing Group
 File Name: AMPS_Doumen P4_Right Head_0deg_CH799_Data9.da4

DUT: Flextronics_CDMA_AMPS phone Type & Serial Number: Nil
 Program: AMPS_Doumen P4; AMPS_Doumen P4_Right Head_0deg_CH799_Data9

Communication System: CDMA 835; Frequency: 848.97 MHz; Duty Cycle: 1:1
 Medium: 835Head Tissue ($\sigma = 0.868$ mho/m, $\epsilon = 41.066$, $\rho = 1000$ kg/m³)
 Phantom section: RightSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.6, 6.6, 6.6); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

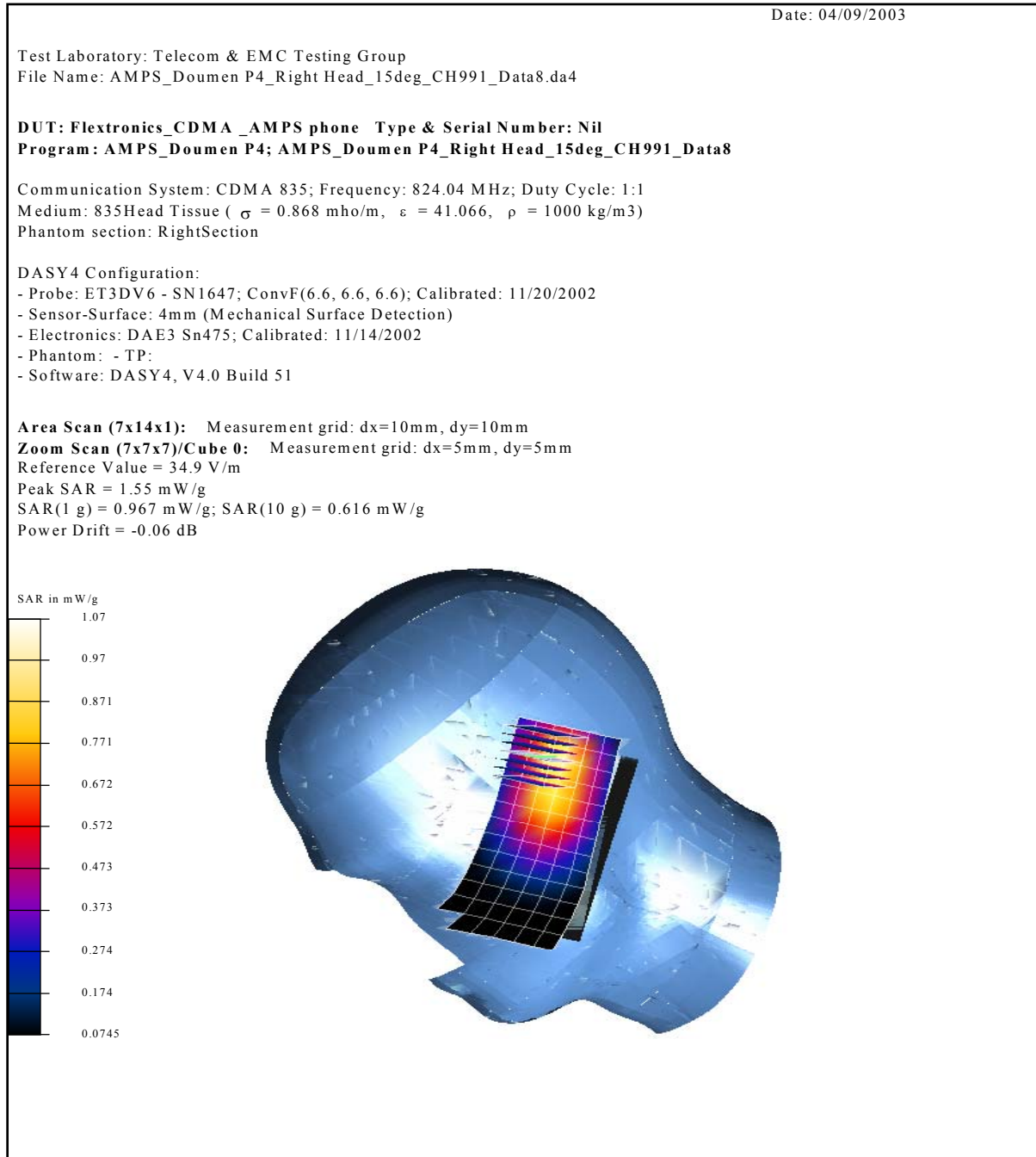
Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm
 Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 32.6 V/m
 Peak SAR = 1.34 mW/g
 SAR(1 g) = 1.02 mW/g; SAR(10 g) = 0.76 mW/g
 Power Drift = 0.2 dB



Ambient Temperature: $22 \pm 1^{\circ}\text{C}$
 Tissue Temperature: $23 \pm 1^{\circ}\text{C}$
 Humidity: 50% to 56%

Figure 10: SAR Test Distribution Plot (AMPS Mode) – Device at head phantom

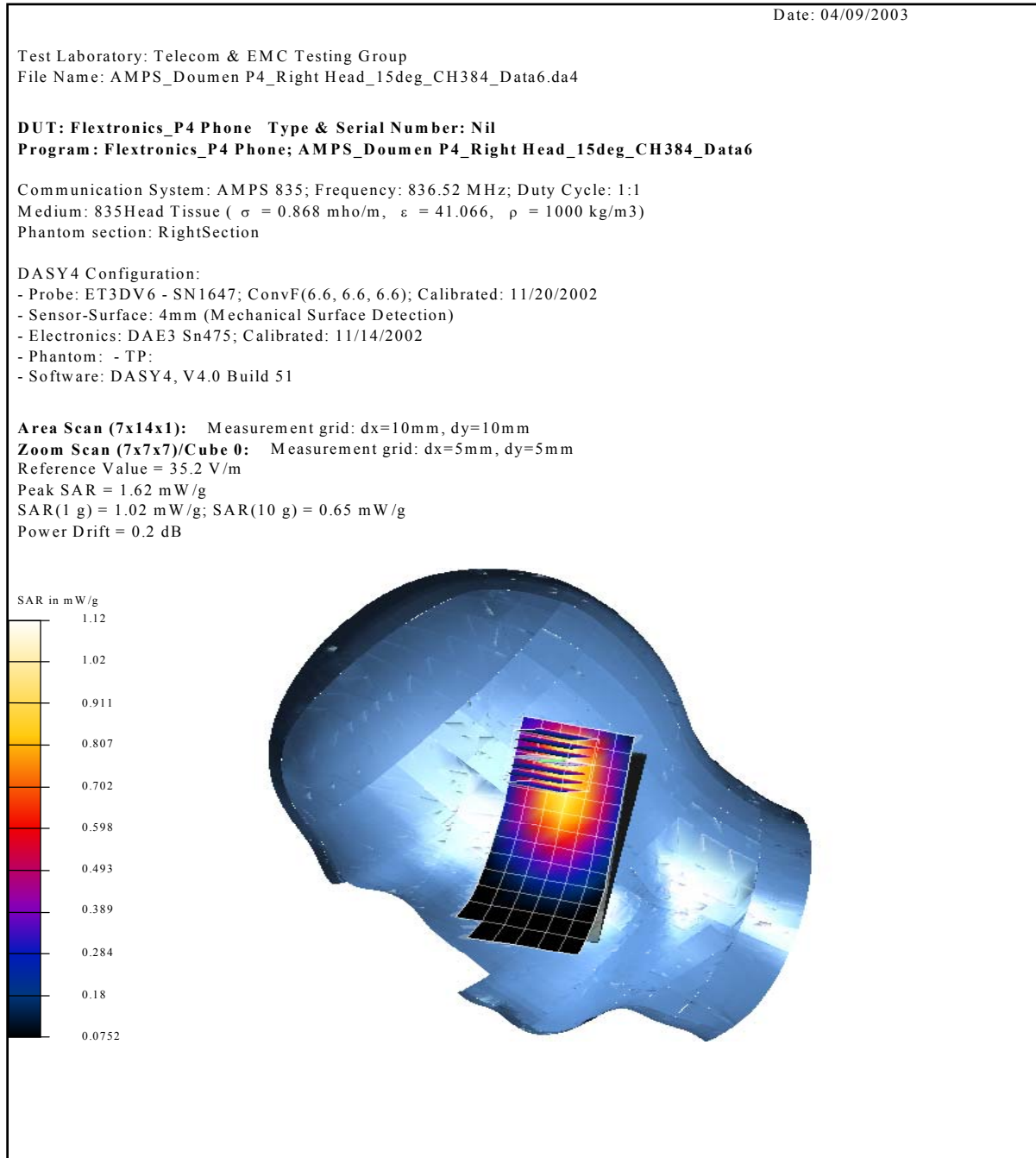
Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Right Side of Head	Ear / Tilt	Fixed	Channel: 991 824.04MHz	0.967



Ambient Temperature: $22 \pm 1^{\circ}\text{C}$
 Tissue Temperature: $23 \pm 1^{\circ}\text{C}$
 Humidity: 50% to 56%

Figure 11: SAR Test Distribution Plot (AMPS Mode) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Right Side of Head	Ear / Tilt	Fixed	Channel: 384 836.52MHz	1.020



Ambient Temperature: $22 \pm 1^{\circ}\text{C}$
 Tissue Temperature: $23 \pm 1^{\circ}\text{C}$
 Humidity: 50% to 56%

Figure 12: SAR Test Distribution Plot (AMPS Mode) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Right Side of Head	Ear / Tilt	Fixed	Channel: 799 848.97MHz	0.746

Date: 04/09/2003

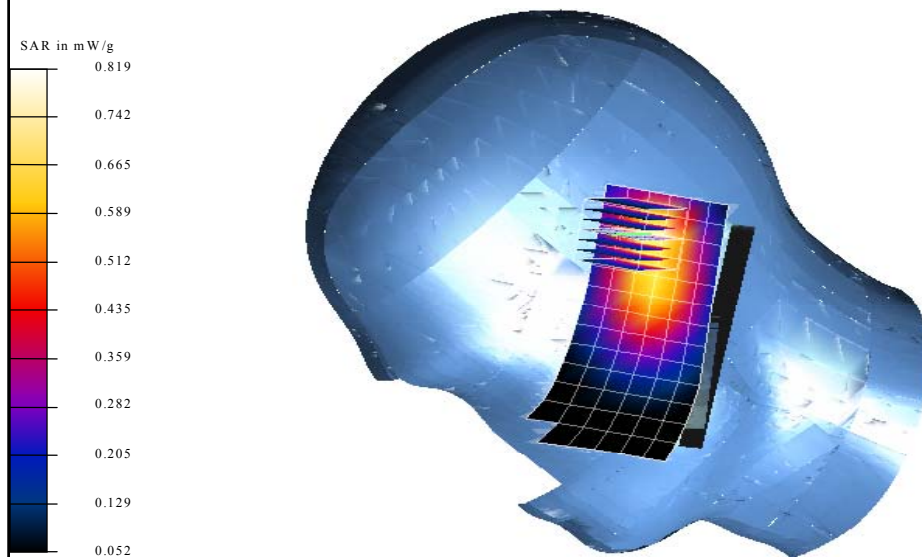
Test Laboratory: Telecom & EMC Testing Group
 File Name: AMPS_Doumen P4_Right Head_15deg_CH799_Data10.da4

DUT: Flextronics_CDMA_AMPS phone Type & Serial Number: Nil
 Program: AMPS_Doumen P4; AMPS_Doumen P4_Right Head_15deg_CH799_Data10

Communication System: CDMA 835; Frequency: 848.97 MHz; Duty Cycle: 1:1
 Medium: 835Head Tissue ($\sigma = 0.868$ mho/m, $\epsilon = 41.066$, $\rho = 1000$ kg/m³)
 Phantom section: RightSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.6, 6.6, 6.6); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm
 Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 29.9 V/m
 Peak SAR = 1.19 mW/g
 SAR(1 g) = 0.746 mW/g; SAR(10 g) = 0.477 mW/g
 Power Drift = 0.2 dB



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 13: SAR Test Distribution Plot (CDMA Mode) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Left Side of Head	Cheek / Touch	Fixed	Channel: 1013 824.70MHz	0.869

Date: 04/09/2003

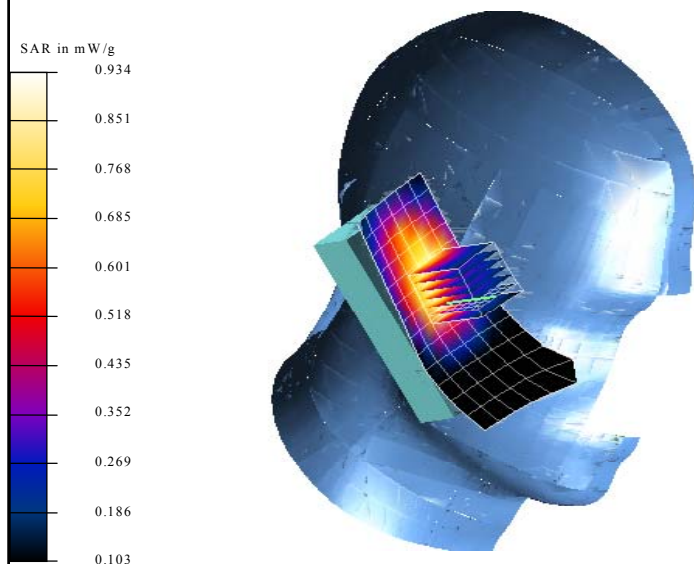
Test Laboratory: Telecom & EMC Testing Group
 File Name: CDMA_Doumen P4_Left Head_0deg_CH1013_Data20.da4

DUT: Flextronics_P4 Phone Type & Serial Number: Nil
 Program: CDMA_P4; CDMA_Doumen P4_Left Head_0deg_CH1013_Data20

Communication System: CDMA 835; Frequency: 824.7 MHz; Duty Cycle: 1:1
 Medium: 835Head Tissue ($\sigma = 0.868 \text{ mho/m}$, $\epsilon = 41.066$, $\rho = 1000 \text{ kg/m}^3$)
 Phantom section: LeftSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.6, 6.6, 6.6); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

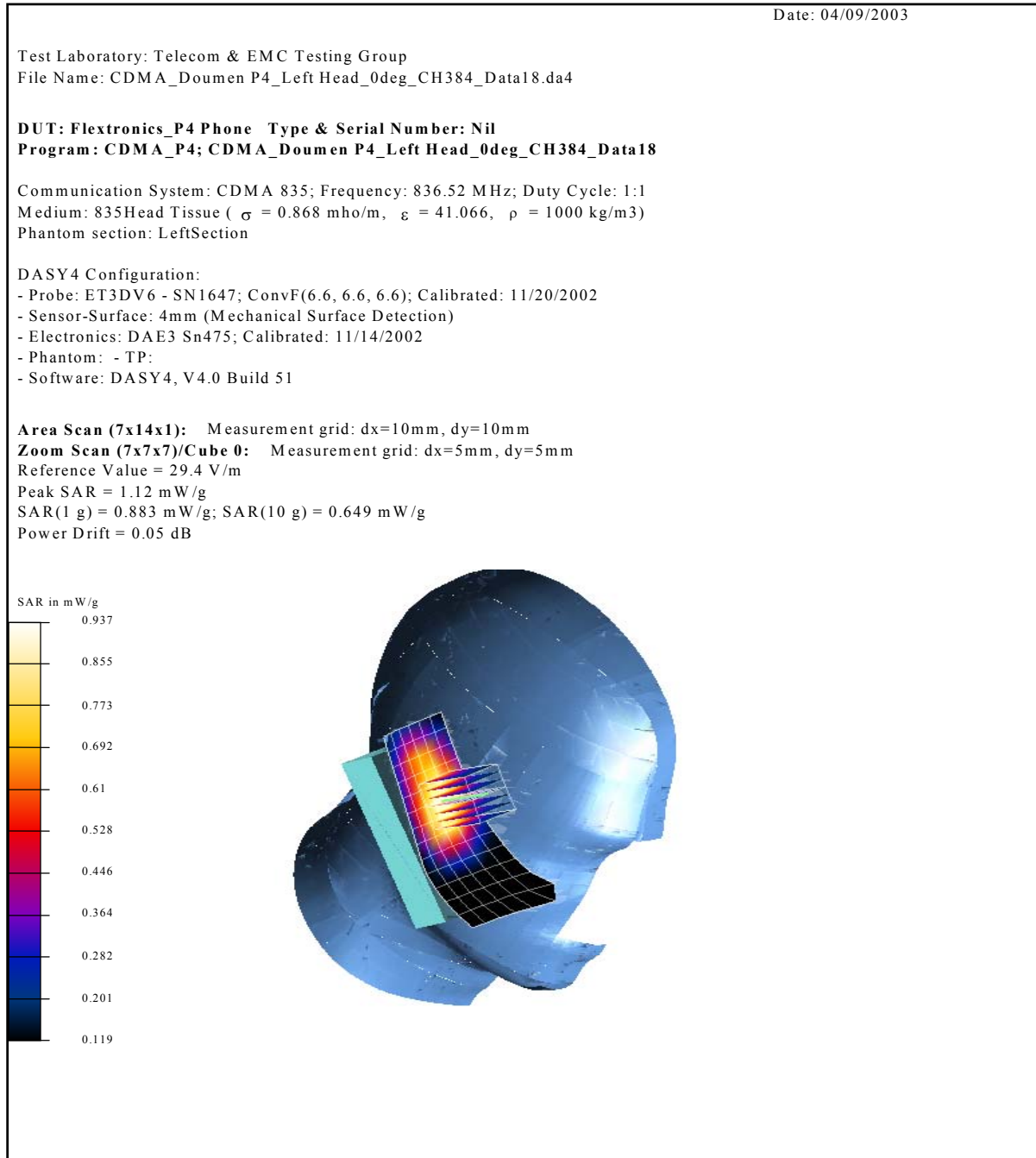
Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm
 Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 28.5 V/m
 Peak SAR = 1.22 mW/g
 SAR(1 g) = 0.869 mW/g; SAR(10 g) = 0.632 mW/g
 Power Drift = 0.04 dB



Ambient Temperature: $22 \pm 1^{\circ}\text{C}$
 Tissue Temperature: $23 \pm 1^{\circ}\text{C}$
 Humidity: 50% to 56%

Figure 14: SAR Test Distribution Plot (CDMA Mode) – Device at head phantom

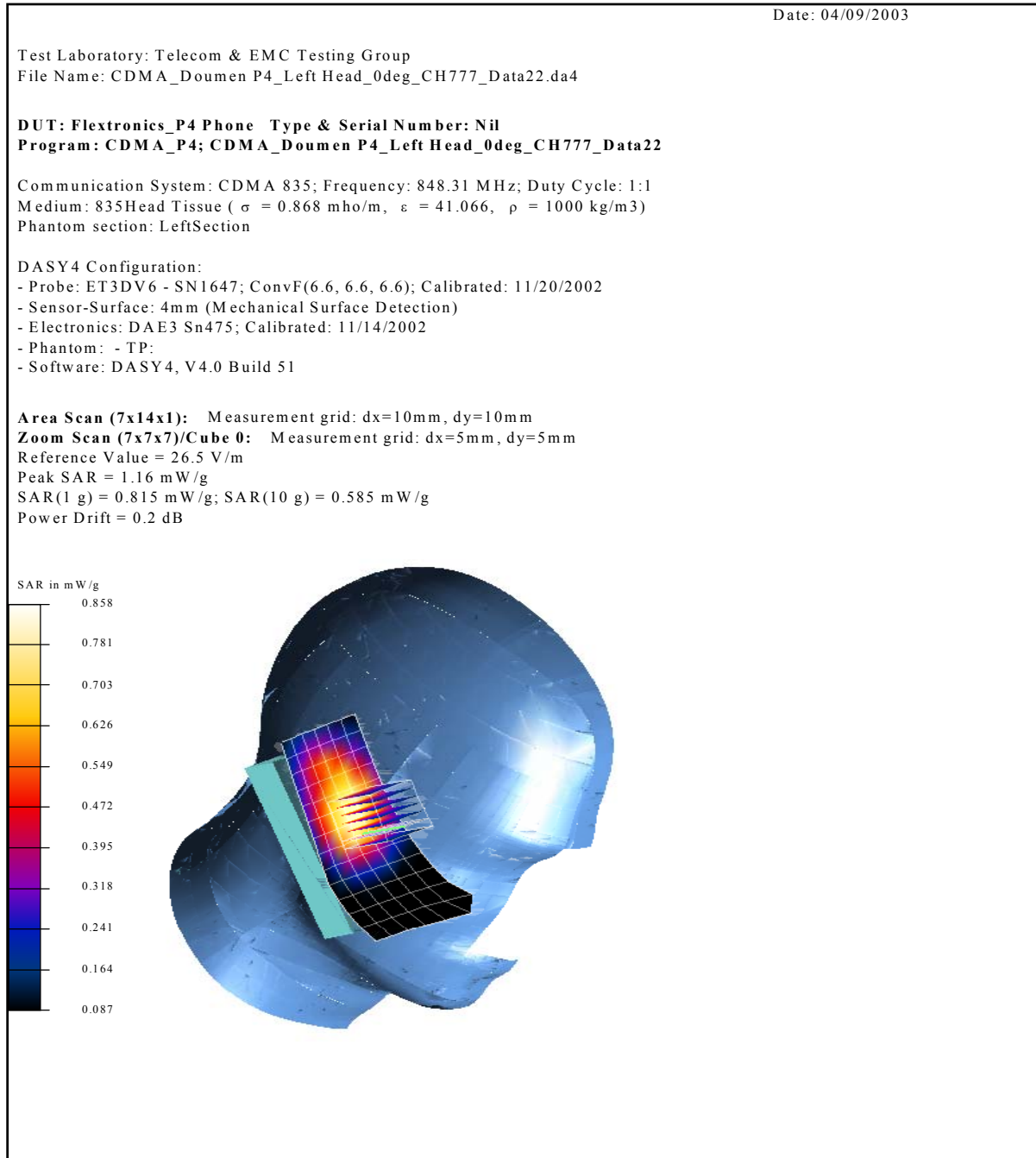
Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Left Side of Head	Cheek / Touch	Fixed	Channel: 384 836.52MHz	0.883



Ambient Temperature: $22 \pm 1^{\circ}\text{C}$
 Tissue Temperature: $23 \pm 1^{\circ}\text{C}$
 Humidity: 50% to 56%

Figure 15: SAR Test Distribution Plot (CDMA Mode) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Left Side of Head	Cheek / Touch	Fixed	Channel: 777 848.31MHz	0.815



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 16: SAR Test Distribution Plot (CDMA Mode) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Left Side of Head	Ear / Tilt	Fixed	Channel: 1013 824.70MHz	0.569

Date: 04/09/2003

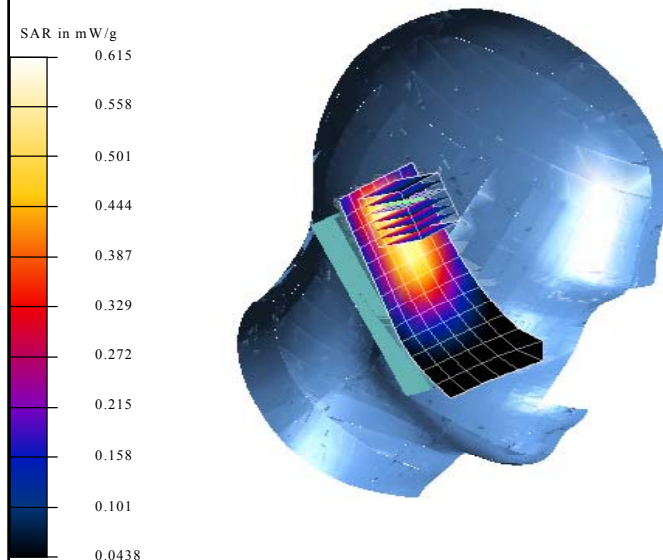
Test Laboratory: Telecom & EMC Testing Group
 File Name: CDMA_Doumen P4_Left Head_15deg_CH1013_Data21.da4

DUT: Flextronics_P4 Phone Type & Serial Number: Nil
 Program: CDMA_P4; CDMA_Doumen P4_Left Head_15deg_CH1013_Data21

Communication System: CDMA 835; Frequency: 824.7 MHz; Duty Cycle: 1:1
 Medium: 835Head Tissue ($\sigma = 0.868 \text{ mho/m}$, $\epsilon = 41.066$, $\rho = 1000 \text{ kg/m}^3$)
 Phantom section: LeftSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.6, 6.6, 6.6); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm
 Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 26.4 V/m
 Peak SAR = 0.872 mW/g
 SAR(1 g) = 0.569 mW/g; SAR(10 g) = 0.374 mW/g
 Power Drift = 0.1 dB



Ambient Temperature: $22 \pm 1^{\circ}\text{C}$
 Tissue Temperature: $23 \pm 1^{\circ}\text{C}$
 Humidity: 50% to 56%

Figure 17: SAR Test Distribution Plot (CDMA Mode) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Left Side of Head	Ear / Tilt	Fixed	Channel: 384 836.52MHz	0.586

Date: 04/09/2003

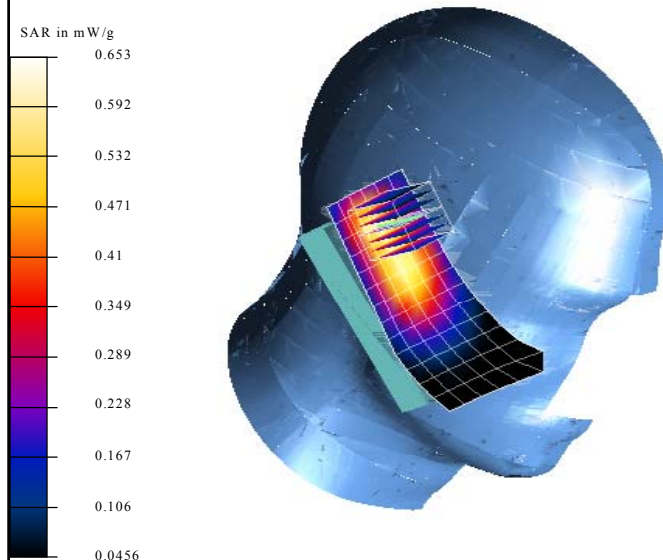
Test Laboratory: Telecom & EMC Testing Group
 File Name: CDMA_Doumen P4_Left Head_15deg_CH384_Data19.da4

DUT: Flextronics_P4 Phone Type & Serial Number: Nil
 Program: CDMA_P4; CDMA_Doumen P4_Left Head_15deg_CH384_Data19

Communication System: CDMA 835; Frequency: 836.52 MHz; Duty Cycle: 1:1
 Medium: 835Head Tissue ($\sigma = 0.868$ mho/m, $\epsilon = 41.066$, $\rho = 1000$ kg/m³)
 Phantom section: LeftSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.6, 6.6, 6.6); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm
 Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 27.3 V/m
 Peak SAR = 0.855 mW/g
 SAR(1 g) = 0.586 mW/g; SAR(10 g) = 0.394 mW/g
 Power Drift = 0.1 dB



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 18: SAR Test Distribution Plot (CDMA Mode) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Left Side of Head	Ear / Tilt	Fixed	Channel: 777 848.31MHz	0.500

Date: 04/09/2003

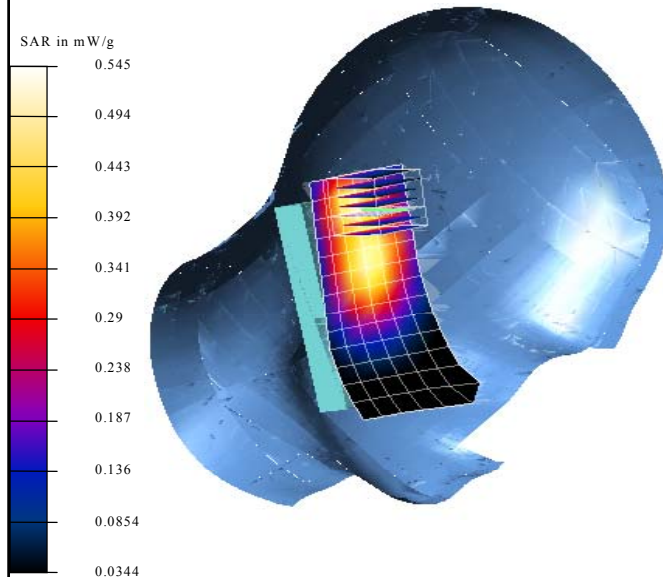
Test Laboratory: Telecom & EMC Testing Group
 File Name: CDMA_Doumen P4_Left Head_15deg_CH777_Data23.da4

DUT: Flextronics_P4 Phone Type & Serial Number: Nil
 Program: CDMA_P4; CDMA_Doumen P4_Left Head_15deg_CH777_Data23

Communication System: CDMA 835; Frequency: 848.31 MHz; Duty Cycle: 1:1
 Medium: 835Head Tissue ($\sigma = 0.868 \text{ mho/m}$, $\epsilon = 41.066$, $\rho = 1000 \text{ kg/m}^3$)
 Phantom section: LeftSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.6, 6.6, 6.6); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm
 Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 24.5 V/m
 Peak SAR = 0.738 mW/g
 SAR(1 g) = 0.5 mW/g; SAR(10 g) = 0.324 mW/g
 Power Drift = 0.3 dB



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 19: SAR Test Distribution Plot (CDMA Mode) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Right Side of Head	Cheek / Touch	Fixed	Channel: 1013 824.70MHz	0.735

Date: 04/09/2003

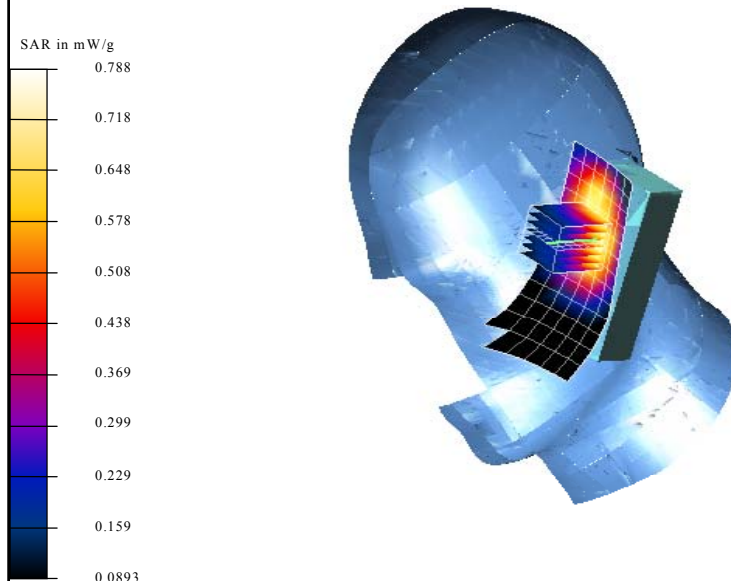
Test Laboratory: Telecom & EMC Testing Group
 File Name: CDMA_Doumen P4_Right Head_0deg_CH1013_Data26.da4

DUT: Flextronics_P4 Phone Type & Serial Number: Nil
 Program: CDMA P4; CDMA_Doumen P4_Right Head_0deg_CH1013_Data26

Communication System: CDMA 835; Frequency: 824.7 MHz; Duty Cycle: 1:1
 Medium: 835Head Tissue ($\sigma = 0.868 \text{ mho/m}$, $\epsilon = 41.066$, $\rho = 1000 \text{ kg/m}^3$)
 Phantom section: RightSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.6, 6.6, 6.6); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm
 Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 29.7 V/m
 Peak SAR = 0.946 mW/g
 SAR(1 g) = 0.735 mW/g; SAR(10 g) = 0.55 mW/g
 Power Drift = -0.1 dB



Ambient Temperature: $22 \pm 1^{\circ}\text{C}$
 Tissue Temperature: $23 \pm 1^{\circ}\text{C}$
 Humidity: 50% to 56%

Figure 20: SAR Test Distribution Plot (CDMA Mode) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Right Side of Head	Cheek / Touch	Fixed	Channel: 384 836.52MHz	0.983

Date: 04/09/2003

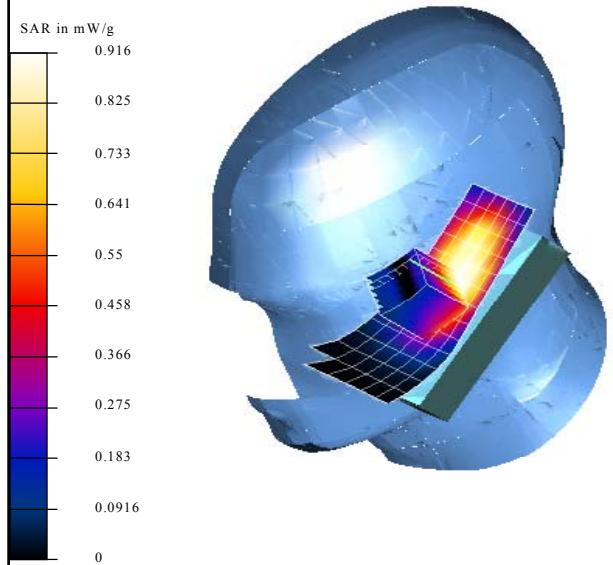
Test Laboratory: Telecom & EMC Testing Group
 File Name: CDMA_Doumen P4_Right Head_0deg_CH384_Data24.da4

DUT: Flextronics_P4 Phone Type & Serial Number: Nil
 Program: CDMA P4; CDMA_Doumen P4_Right Head_0deg_CH384_Data24

Communication System: CDMA 835; Frequency: 836.52 MHz; Duty Cycle: 1:1
 Medium: 835Head Tissue ($\sigma = 0.868$ mho/m, $\epsilon = 41.066$, $\rho = 1000$ kg/m³)
 Phantom section: RightSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.6, 6.6, 6.6); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm
 Zoom Scan 2 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 31.5 V/m
 Peak SAR = 3.63 mW/g
 SAR(1 g) = 0.983 mW/g; SAR(10 g) = 0.401 mW/g
 Power Drift = 0.002 dB



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 21: SAR Test Distribution Plot (CDMA Mode) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Right Side of Head	Cheek / Touch	Fixed	Channel: 777 848.31MHz	0.720

Date: 04/09/2003

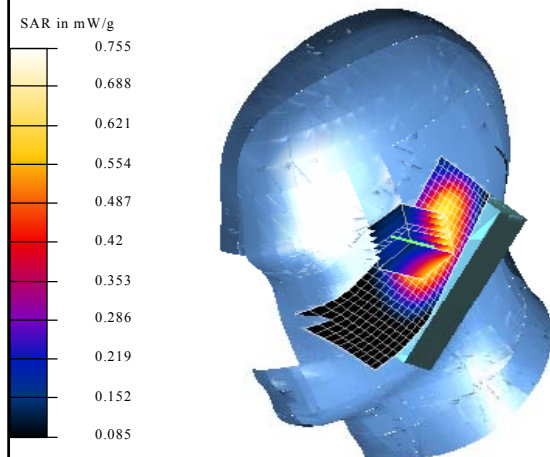
Test Laboratory: Telecom & EMC Testing Group
 File Name: CDMA_Doumen P4_Right Head_0deg_CH777_Data33.da4

DUT: Flextronics_P4 Phone Type & Serial Number: Nil
 Program: CDMA P4; CDMA_Doumen P4_Right Head_0deg_CH777_Data33

Communication System: CDMA 835; Frequency: 848.31 MHz; Duty Cycle: 1:1
 Medium: 835Head Tissue ($\sigma = 0.868 \text{ mho/m}$, $\epsilon = 41.066$, $\rho = 1000 \text{ kg/m}^3$)
 Phantom section: RightSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.6, 6.6, 6.6); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

Area Scan (13x27x1): Measurement grid: dx=5mm, dy=5mm
 Zoom Scan 2 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 26.8 V/m
 Peak SAR = 0.966 mW/g
 SAR(1 g) = 0.72 mW/g; SAR(10 g) = 0.539 mW/g
 Power Drift = 0.4 dB



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 22: SAR Test Distribution Plot (CDMA Mode) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Right Side of Head	Ear / Tilt	Fixed	Channel: 1013 824.70MHz	0.633

Date: 04/09/2003

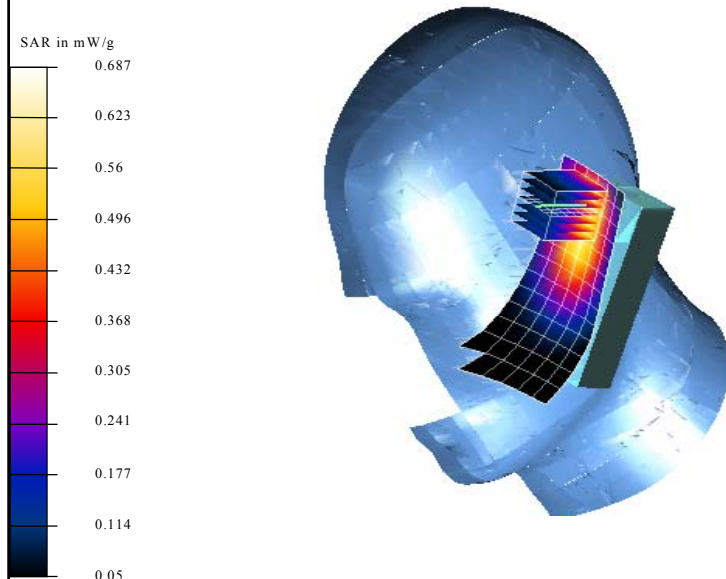
Test Laboratory: Telecom & EMC Testing Group
 File Name: CDMA_Doumen P4_Right Head_15deg_CH1013_Data27.da4

DUT: Flextronics_P4 Phone Type & Serial Number: Nil
 Program: CDMA P4; CDMA_Doumen P4_Right Head_15deg_CH1013_Data27

Communication System: CDMA 835; Frequency: 824.7 MHz; Duty Cycle: 1:1
 Medium: 835Head Tissue ($\sigma = 0.868 \text{ mho/m}$, $\epsilon = 41.066$, $\rho = 1000 \text{ kg/m}^3$)
 Phantom section: RightSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.6, 6.6, 6.6); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm
 Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 28.5 V/m
 Peak SAR = 1 mW/g
 SAR(1 g) = 0.633 mW/g; SAR(10 g) = 0.408 mW/g
 Power Drift = -0.02 dB



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 23: SAR Test Distribution Plot (CDMA Mode) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Right Side of Head	Ear / Tilt	Fixed	Channel: 384 836.52MHz	0.695

Date: 04/09/2003

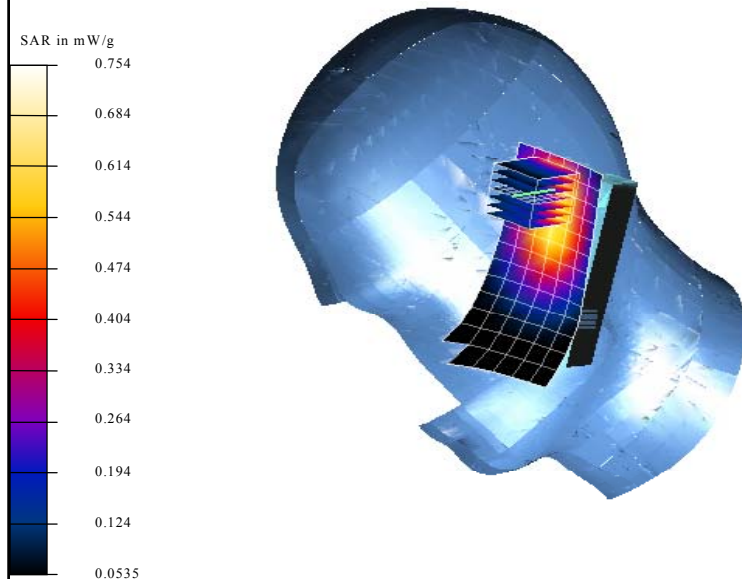
Test Laboratory: Telecom & EMC Testing Group
 File Name: CDMA_Doumen P4_Right Head_15deg_CH384_Data30_retest data25.da4

DUT: Flextronics_P4 Phone Type & Serial Number: Nil
 Program: CDMA P4; CDMA_Doumen P4_Right Head_15deg_CH384_Data30

Communication System: CDMA 835; Frequency: 836.52 MHz; Duty Cycle: 1:1
 Medium: 835Head Tissue ($\sigma = 0.868 \text{ mho/m}$, $\epsilon = 41.066$, $\rho = 1000 \text{ kg/m}^3$)
 Phantom section: RightSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.6, 6.6, 6.6); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm
 Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 29.6 V/m
 Peak SAR = 1.08 mW/g
 SAR(1 g) = 0.695 mW/g; SAR(10 g) = 0.451 mW/g
 Power Drift = 0.06 dB



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 24: SAR Test Distribution Plot (CDMA Mode) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Right Side of Head	Ear / Tilt	Fixed	Channel: 777 848.31MHz	0.533

Date: 04/09/2003

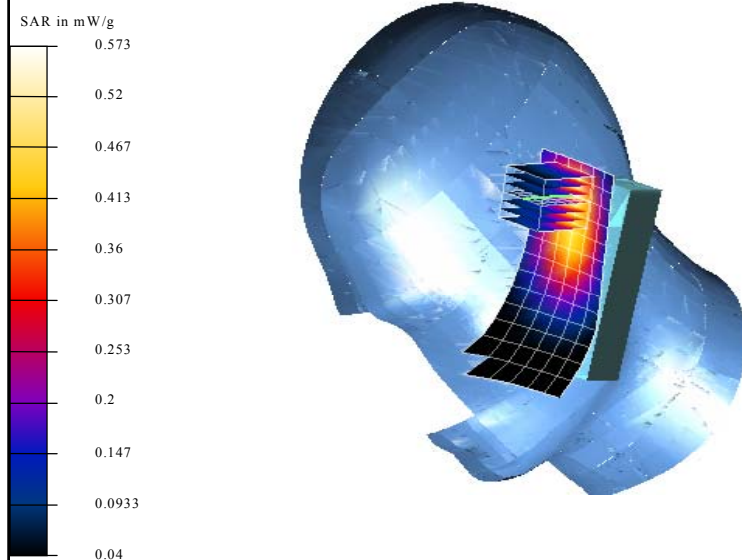
Test Laboratory: Telecom & EMC Testing Group
 File Name: CDMA_Doumen P4_Right Head_0deg_CH777_Data28.da4

DUT: Flextronics_P4 Phone Type & Serial Number: Nil
 Program: CDMA P4; CDMA_Doumen P4_Right Head_15deg_CH777_Data29

Communication System: CDMA 835; Frequency: 848.31 MHz; Duty Cycle: 1:1
 Medium: 835Head Tissue ($\sigma = 0.868 \text{ mho/m}$, $\epsilon = 41.066$, $\rho = 1000 \text{ kg/m}^3$)
 Phantom section: RightSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.6, 6.6, 6.6); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm
 Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 24.8 V/m
 Peak SAR = 0.86 mW/g
 SAR(1 g) = 0.533 mW/g; SAR(10 g) = 0.339 mW/g
 Power Drift = 0.3 dB



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 25: SAR Test Distribution Plot (AMPS Mode)
 Body Worn Position SAR Test Results (AMPS Mode), device with belt clip(9mm spacing).

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Flat Phantom	EUT Rear To Phantom	Fixed	Channel: 991 824.04MHz	1.370

Date: 04/09/2003

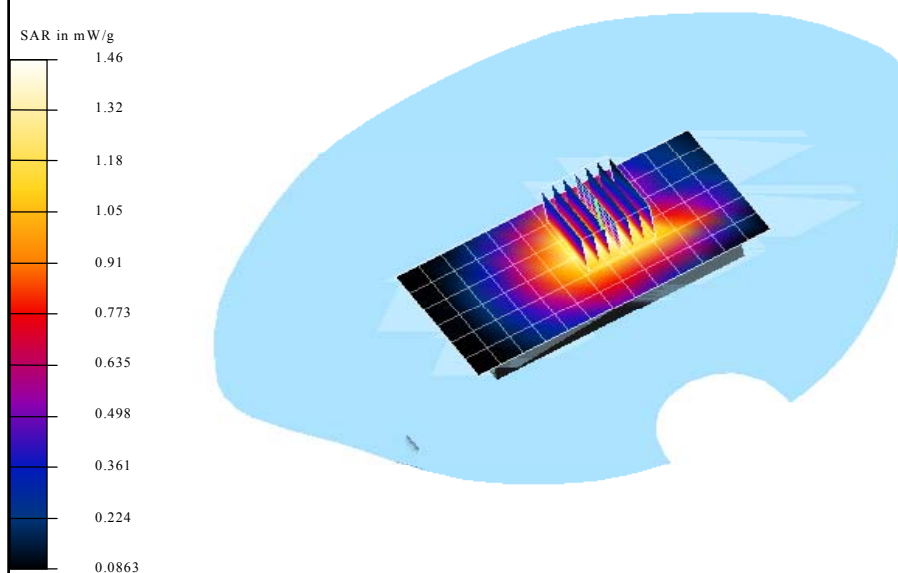
Test Laboratory: Telecom & EMC Testing Group
 File Name: AMPS_Doumen P4_EUT with belt clip_Flat Phantom_CH991_Data44.da4

DUT: Flextronics_P4 Phone Type & Serial Number: Nil
 Program: AMPS_P4; AMPS_Doumen P4_EUT with belt clip_Flat Phantom_CH991_Data44

Communication System: AMPS 835; Frequency: 824.04 MHz; Duty Cycle: 1:1
 Medium: 835Body Tissue ($\sigma = 0.986 \text{ mho/m}$, $\epsilon = 56.764$, $\rho = 1000 \text{ kg/m}^3$)
 Phantom section: FlatSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.3, 6.3, 6.3); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm
 Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 37.9 V/m
 Peak SAR = 1.88 mW/g
 SAR(1 g) = 1.37 mW/g; SAR(10 g) = 0.953 mW/g
 Power Drift = 0.07 dB



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 26: SAR Test Distribution Plot (AMPS Mode)
Body Worn Position SAR Test Results (AMPS Mode), device with belt clip(9mm spacing).

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Flat Phantom	EUT Rear To Phantom	Fixed	Channel: 384 836.52MHz	1.480

Date: 04/09/2003

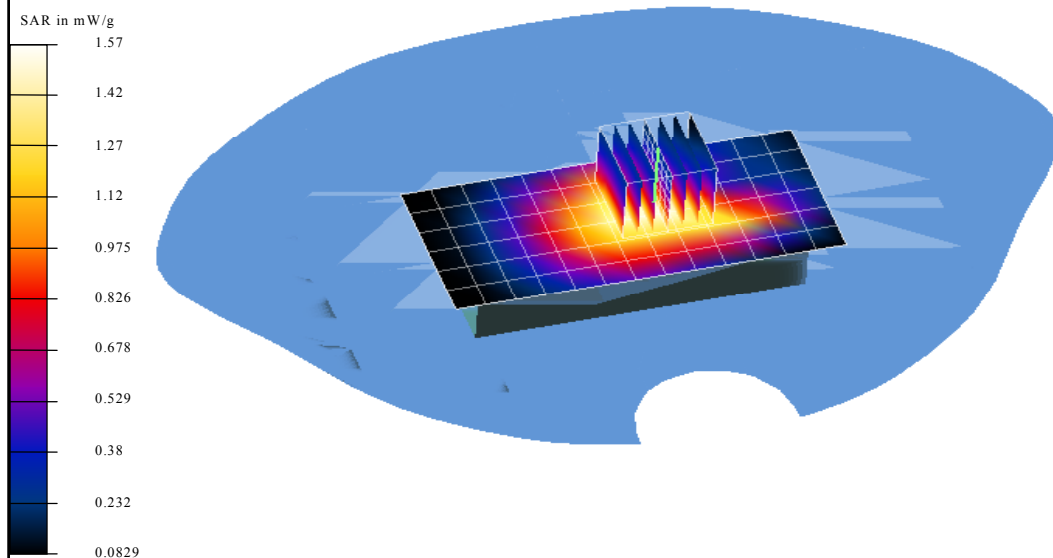
Test Laboratory: Telecom & EMC Testing Group
 File Name: AMPS_Doumen P4_EUT with belt clip_Flat Phantom_CH384_Data43.da4

DUT: Flextronics_P4 Phone Type & Serial Number: Nil
Program: AMPS_P4; AMPS_Doumen P4_EUT with belt clip_Flat Phantom_CH384_Data43

Communication System: AMPS 835; Frequency: 836.52 MHz; Duty Cycle: 1:1
 Medium: 835Body Tissue ($\sigma = 0.986 \text{ mho/m}$, $\epsilon = 56.764$, $\rho = 1000 \text{ kg/m}^3$)
 Phantom section: FlatSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.3, 6.3, 6.3); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 39.9 V/m
 Peak SAR = 2.05 mW/g
 SAR(1 g) = 1.48 mW/g; SAR(10 g) = 1.02 mW/g
 Power Drift = 0.02 dB



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 27: SAR Test Distribution Plot (AMPS Mode)
Body Worn Position SAR Test Results (AMPS Mode), device with belt clip(9mm spacing).

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Flat Phantom	EUT Rear To Phantom	Fixed	Channel: 799 848.97MHz	1.320

Date: 04/09/2003

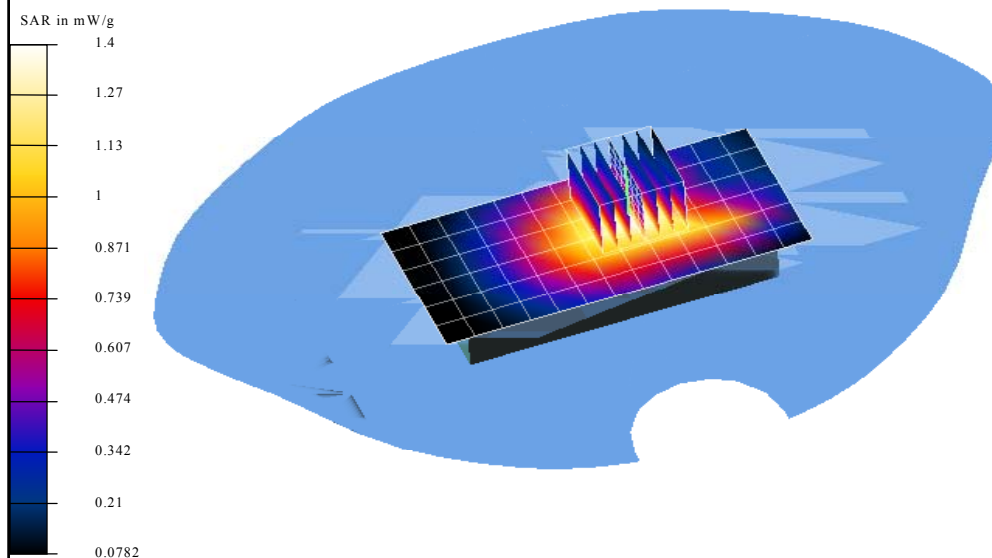
Test Laboratory: Telecom & EMC Testing Group
 File Name: AMPS_Doumen P4_EUT with belt clip_Flat Phantom_CH799_Data45.da4

DUT: Flextronics_P4 Phone Type & Serial Number: Nil
Program: AMPS_P4; AMPS_Doumen P4_EUT with belt clip_Flat Phantom_CH799_Data45

Communication System: AMPS 835; Frequency: 848.97 MHz; Duty Cycle: 1:1
 Medium: 835Body Tissue ($\sigma = 0.986 \text{ mho/m}$, $\epsilon = 56.764$, $\rho = 1000 \text{ kg/m}^3$)
 Phantom section: FlatSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.3, 6.3, 6.3); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 36.8 V/m
 Peak SAR = 1.87 mW/g
 SAR(1 g) = 1.32 mW/g; SAR(10 g) = 0.906 mW/g
 Power Drift = -0.03 dB



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 28: SAR Test Distribution Plot (AMPS Mode)
Body Worn Position SAR Test Results (AMPS Mode), device Front Touching.

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Flat Phantom	EUT Front Touched Phantom	Fixed	Channel: 991 824.04MHz	0.894

Date: 04/09/2003

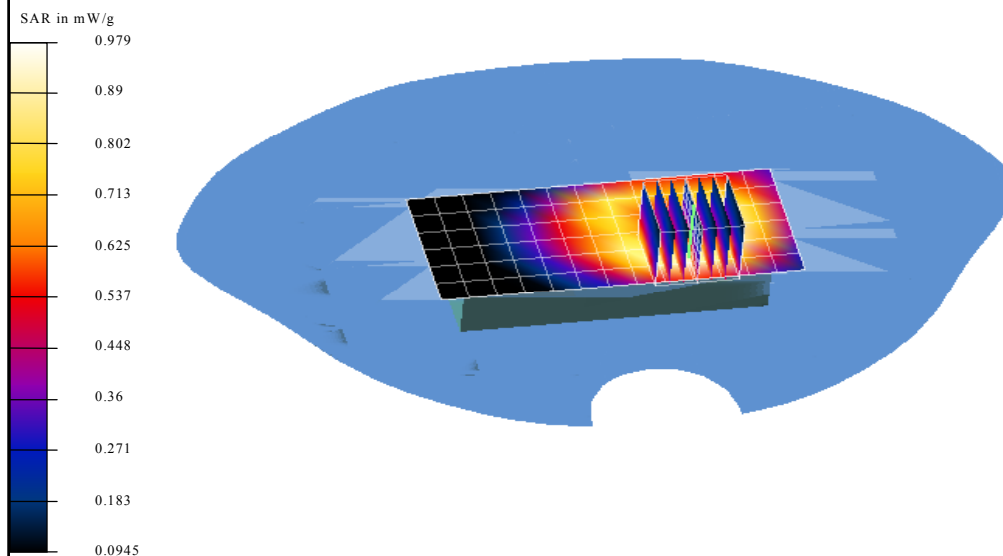
Test Laboratory: Telecom & EMC Testing Group
 File Name: AMPS_Doumen P4_EUT Front Touch_Flat Phantom_CH991_Data38.da4

DUT: Flextronics_P4 Phone Type & Serial Number: Nil
Program: AMPS_P4; AMPS_Doumen P4_EUT Front Touch_Flat Phantom_CH991_Data38

Communication System: AMPS 835; Frequency: 824.04 MHz; Duty Cycle: 1:1
 Medium: 835Body Tissue ($\sigma = 0.986 \text{ mho/m}$, $\epsilon = 56.764$, $\rho = 1000 \text{ kg/m}^3$)
 Phantom section: FlatSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.3, 6.3, 6.3); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

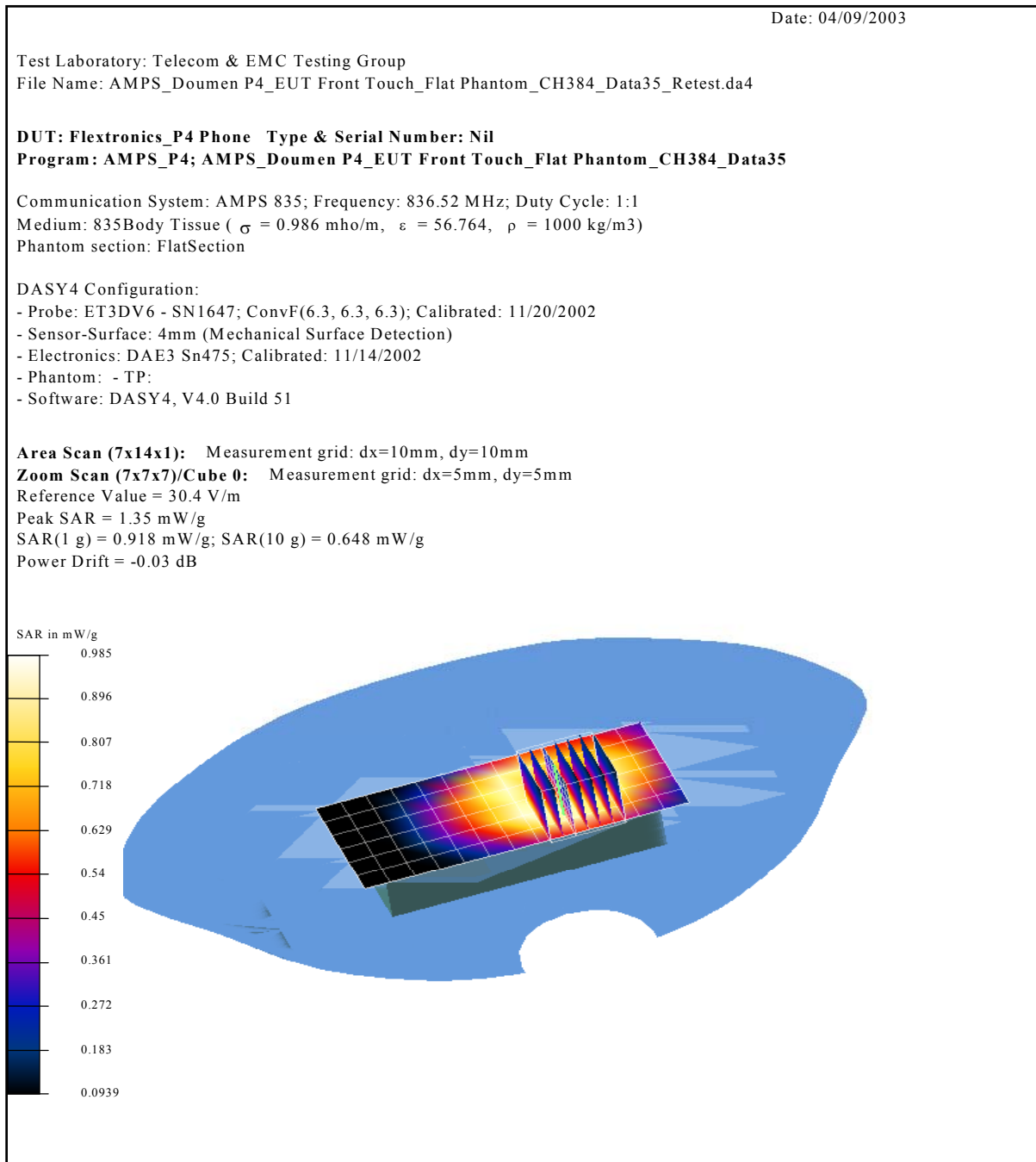
Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 28.3 V/m
 Peak SAR = 1.38 mW/g
 SAR(1 g) = 0.894 mW/g; SAR(10 g) = 0.608 mW/g
 Power Drift = -0.04 dB



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 29: SAR Test Distribution Plot (AMPS Mode)
Body Worn Position SAR Test Results (AMPS Mode), device Front Touching.

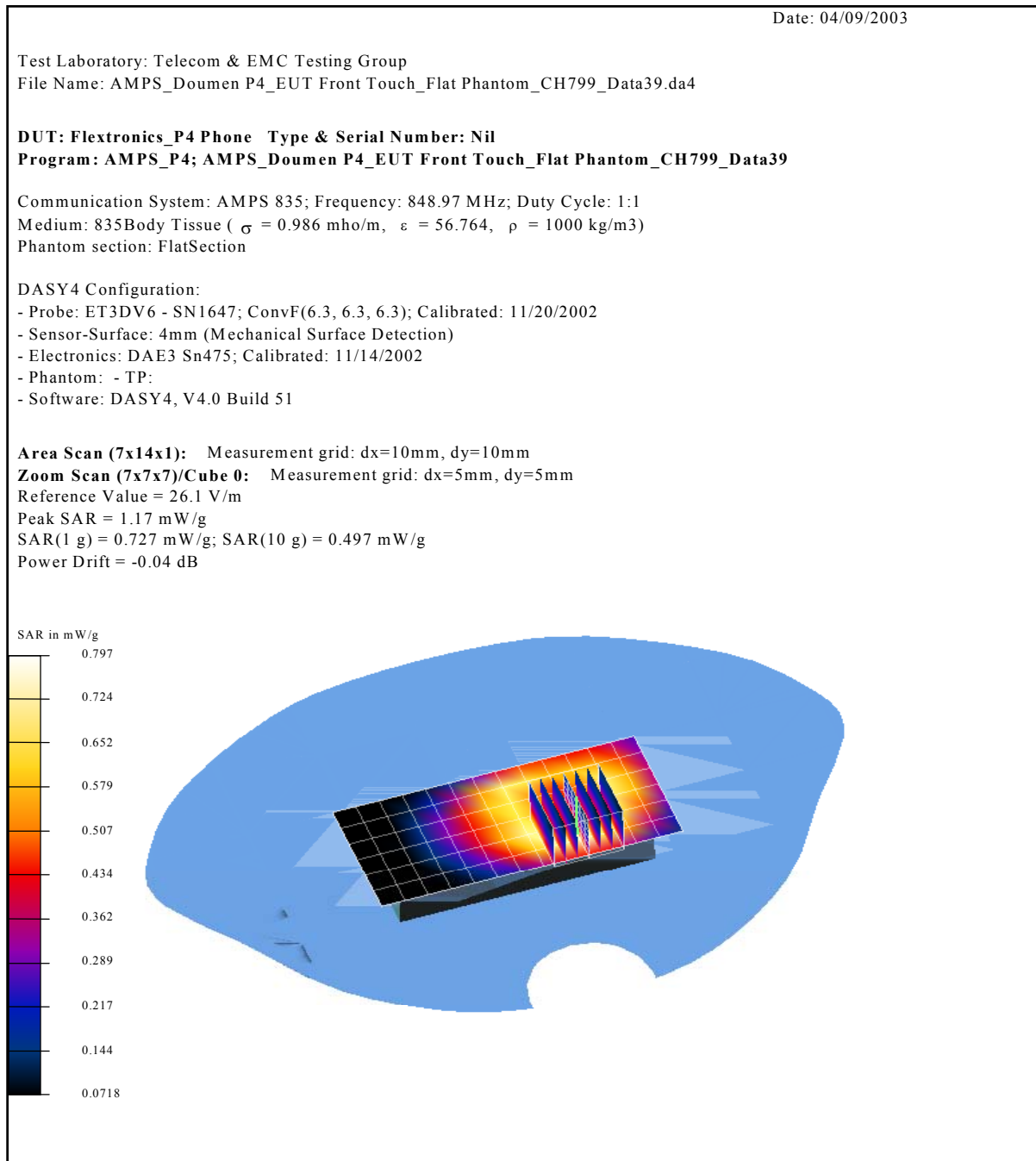
Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Flat Phantom	EUT Front Touched Phantom	Fixed	Channel: 384 836.52MHz	0.918



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 30: SAR Test Distribution Plot (AMPS Mode)
Body Worn Position SAR Test Results (AMPS Mode), device Front Touching.

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Flat Phantom	EUT Front Touched Phantom	Fixed	Channel: 799 848.97MHz	0.727



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 31: SAR Test Distribution Plot (CDMA Mode)
Body Worn Position SAR Test Results (CDMA Mode), device with belt clip(9mm spacing).

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Flat Phantom	EUT Rear To Phantom	Fixed	Channel: 1013 824.70MHz	0.877

Date: 04/09/2003

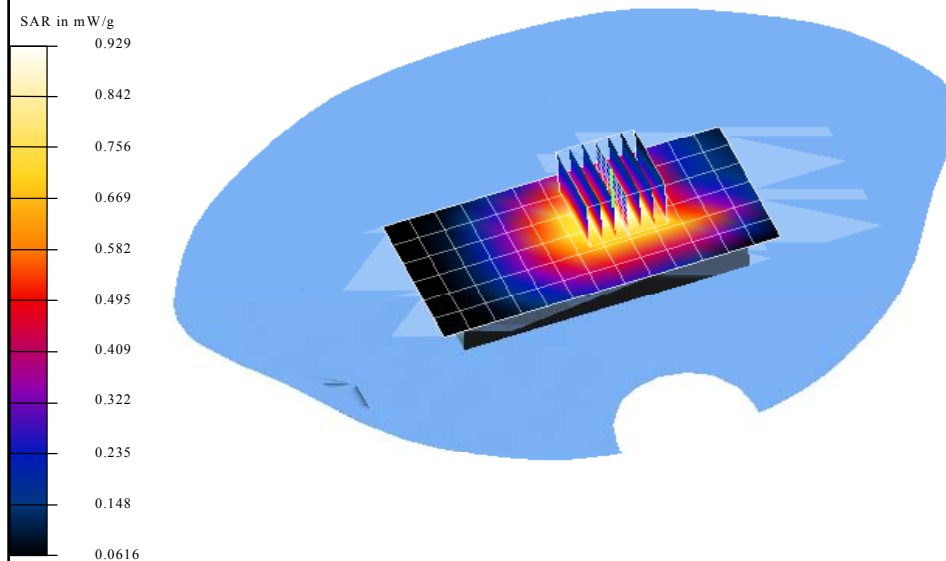
Test Laboratory: Telecom & EMC Testing Group
 File Name: CDMA_Doumen P4_EUT with belt clip_Flat Phantom_CH1013_Data47.da4

DUT: Flextronics_P4 Phone Type & Serial Number: Nil
Program: CDMA_P4; CDMA_Doumen P4_EUT with belt clip_Flat Phantom_CH1013_Data47

Communication System: CDMA 835; Frequency: 824.7 MHz; Duty Cycle: 1:1
 Medium: 835Body Tissue ($\sigma = 0.986 \text{ mho/m}$, $\epsilon = 56.764$, $\rho = 1000 \text{ kg/m}^3$)
 Phantom section: FlatSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.3, 6.3, 6.3); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 29.5 V/m
 Peak SAR = 1.24 mW/g
 SAR(1 g) = 0.877 mW/g; SAR(10 g) = 0.607 mW/g
 Power Drift = 0.1 dB



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 32: SAR Test Distribution Plot (CDMA Mode)
Body Worn Position SAR Test Results (CDMA Mode), device with belt clip(9mm spacing).

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Flat Phantom	EUT Rear To Phantom	Fixed	Channel: 384 836.52MHz	0.968

Date: 04/09/2003

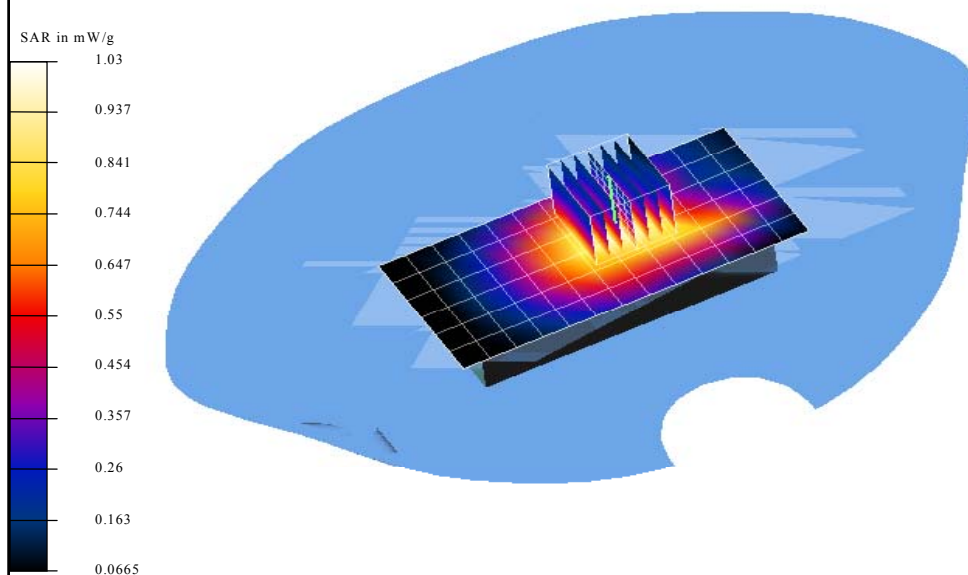
Test Laboratory: Telecom & EMC Testing Group
 File Name: CDMA_Doumen P4_EUT with belt clip_Flat Phantom_CH384_Data46.da4

DUT: Flextronics_P4 Phone Type & Serial Number: Nil
Program: CDMA_P4; CDMA_Doumen P4_EUT with belt clip_Flat Phantom_CH384_Data46

Communication System: CDMA 835; Frequency: 836.52 MHz; Duty Cycle: 1:1
 Medium: 835Body Tissue ($\sigma = 0.986 \text{ mho/m}$, $\epsilon = 56.764$, $\rho = 1000 \text{ kg/m}^3$)
 Phantom section: FlatSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.3, 6.3, 6.3); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 31.1 V/m
 Peak SAR = 1.37 mW/g
 SAR(1 g) = 0.968 mW/g; SAR(10 g) = 0.673 mW/g
 Power Drift = 0.2 dB



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 33: SAR Test Distribution Plot (CDMA Mode)
Body Worn Position SAR Test Results (CDMA Mode), device with belt clip(9mm spacing).

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Flat Phantom	EUT Rear To Phantom	Fixed	Channel: 777 848.31MHz	0.968

Date: 04/09/2003

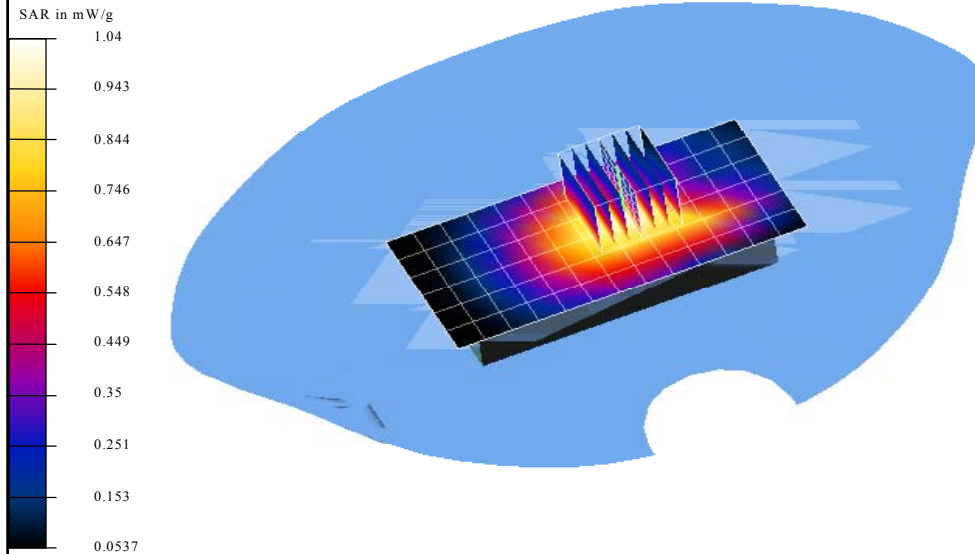
Test Laboratory: Telecom & EMC Testing Group
 File Name: CDMA_Doumen P4_EUT with belt clip_Flat Phantom_CH777_Data48.da4

DUT: Flextronics_P4 Phone Type & Serial Number: Nil
Program: CDMA_P4; CDMA_Doumen P4_EUT with belt clip_Flat Phantom_CH777_Data48

Communication System: CDMA 835; Frequency: 848.31 MHz; Duty Cycle: 1:1
 Medium: 835Body Tissue ($\sigma = 0.986 \text{ mho/m}$, $\epsilon = 56.764$, $\rho = 1000 \text{ kg/m}^3$)
 Phantom section: FlatSection

DASY4 Configuration:
 - Probe: ET3DV6 - SN1647; ConvF(6.3, 6.3, 6.3); Calibrated: 11/20/2002
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn475; Calibrated: 11/14/2002
 - Phantom: - TP:
 - Software: DASY4, V4.0 Build 51

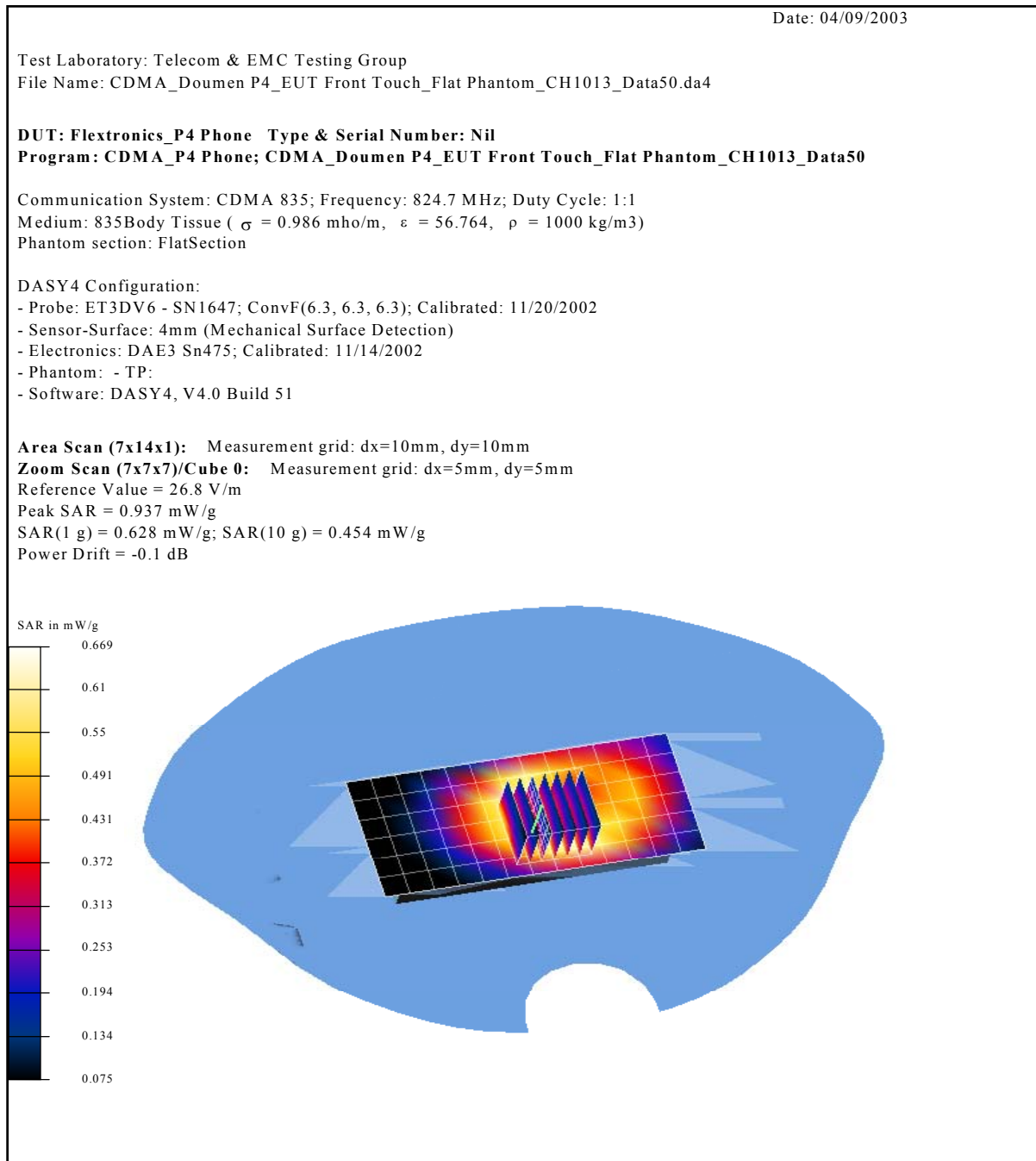
Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
 Reference Value = 31.8 V/m
 Peak SAR = 1.41 mW/g
 SAR(1 g) = 0.968 mW/g; SAR(10 g) = 0.669 mW/g
 Power Drift = 0.1 dB



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 34: SAR Test Distribution Plot (CDMA Mode)
Body Worn Position SAR Test Results (CDMA Mode), device Front Touching.

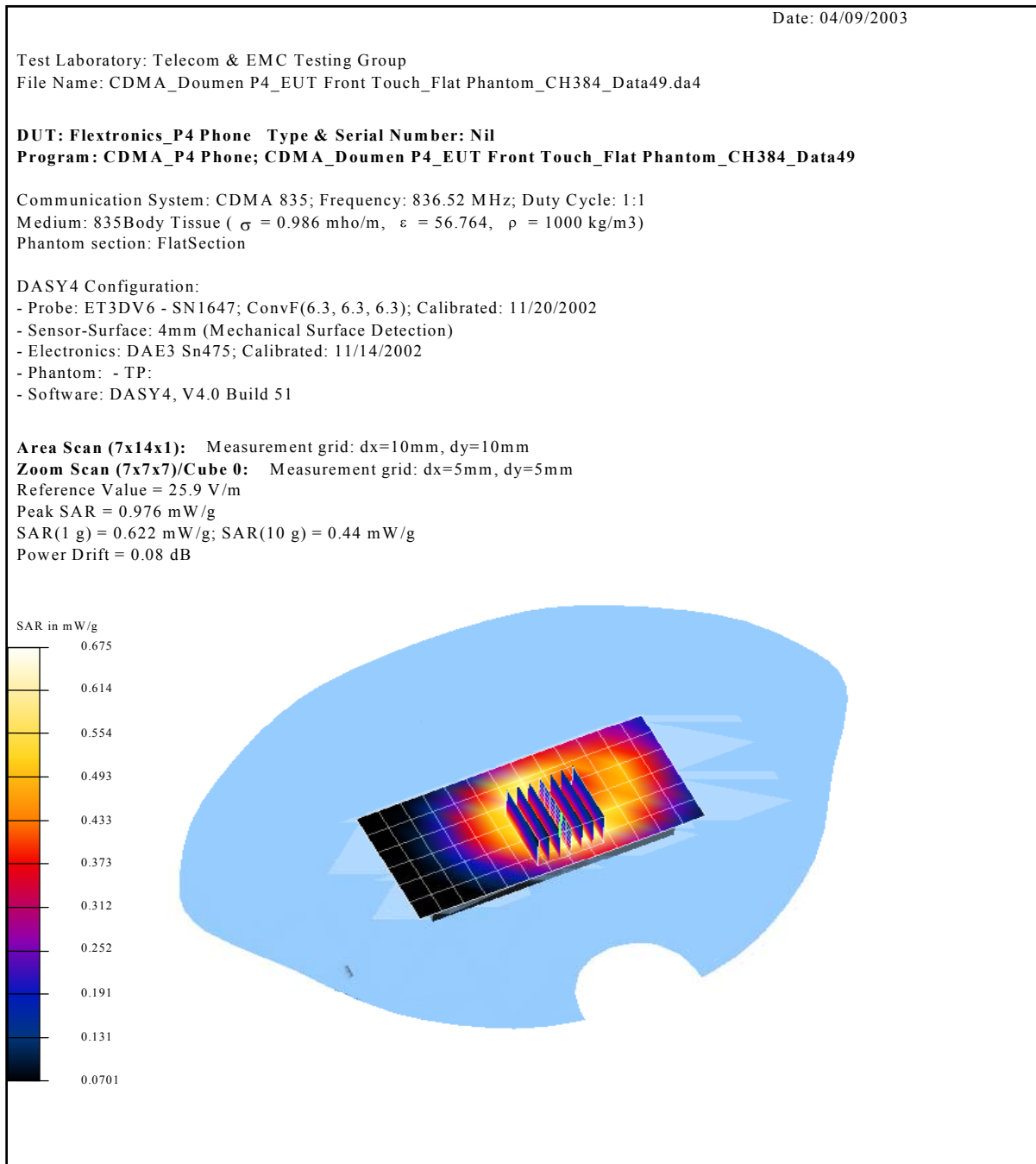
Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Flat Phantom	EUT Front Touched Phantom	Fixed	Channel: 1013 824.70MHz	0.628



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 35: SAR Test Distribution Plot (CDMA Mode)
Body Worn Position SAR Test Results (CDMA Mode), device Front Touching.

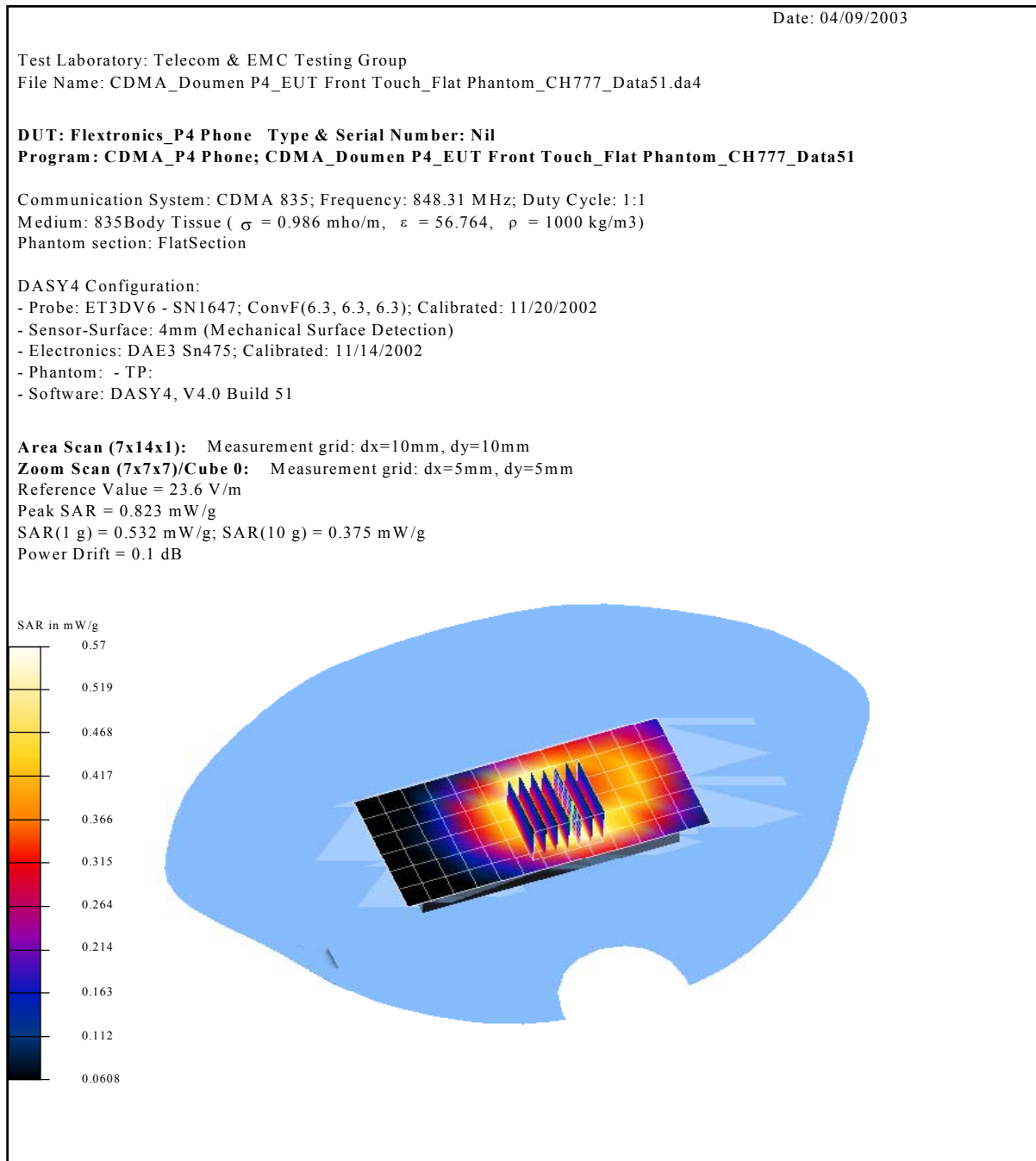
Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Flat Phantom	EUT Front Touched Phantom	Fixed	Channel: 384 836.52MHz	0.622



Ambient Temperature: $22 \pm 1^{\circ} \text{C}$
 Tissue Temperature: $23 \pm 1^{\circ} \text{C}$
 Humidity: 50% to 56%

Figure 36: SAR Test Distribution Plot (CDMA Mode)
Body Worn Position SAR Test Results (CDMA Mode), device Front Touching.

Phantom Configuration	Device Test Positions	Antenna Position	Channel	SAR (W/kg), over 1g Tissue
Flat Phantom	EUT Front Touched Phantom	Fixed	Channel: 777 848.31MHz	0.532



ANNEX A

**TEST INSTRUMENTATION
&
GENERAL PROCEDURE**

A.1 General Test Procedure

In the SAR measurement, the positioning of the probes must be performed with sufficient accuracy to obtain repeatable measurements in the presence of rapid spatial attenuation phenomena. The accurate positioning of the E-field probe is accomplished by using a high precision robot. The robot can be taught to position the probe sensor following a specific pattern of points. In a first sweep, the sensor is positioned as close as possible to the interface, with the sensor enclosure touching the inside of the fiberglass shell. The SAR is measured on a grid of points, which covers the curved surface of the phantom in an area larger than the size of the DUT. After the initial scan, a high- resolution grid is used to locate the absolute maximum measured energy point. At this location, attenuation versus depth scan will be accomplished by the measurement system to calculate the SAR value.

A.2 SAR Test Instrumentation**SAR Measurement System****• Positioning Equipment**

Type: High Precision Industrial Robot, RX90.
Precision: High precision (repeatability 0.02mm)
Reliability: High reliability (industrial design)

• Compaq Computer

Type: 2.4GHz Pentium
Memory: 512MB SDRAM
Operating System: Windows 2000
Dell Monitor: 17" LCD

• Dosimetric E-Field Probe

Type: ET3DV6
Isotropy Error (\varnothing): ± 0.25 dB
Dynamic Range: 0.01 – 100 W/kg

• Phantom & Tissue

Phantom: "SAM v4.0 Phantom", manufactured by SPEAG
Tissue: Simulated Tissue with electrical characteristics similar to those of the human at normal body temperature ($23 \pm 1^\circ\text{C}$)
Shell: Fiberglass shell phantom with 2mm thickness
Dimension: A100cm x 50cm x 85cm (L x W x H)

A.3 Test Setup

Phantom



The “SAM v4.0 Phantom”, manufactured by SPEAG is a fiberglass shell phantom with 2 mm shell thickness. It has three measurement areas:

- Left hand
- Right hand
- Flat phantom

The phantom table comes in the sizes: A 100x50x85 cm (LxWxH) table for use with free standing robots.

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. Only one device holder is necessary if two phantoms are used (e.g., for different solutions).

Simulated tissue

Simulated Tissue: Suggested in a paper by George Hartsgrove and colleagues in University of Ottawa Ref.: Bioelectromagnetics 8:29-36 (1987)

This simulated tissue is mainly composed of water, sugar and salt. At higher frequencies, in order to achieve the proper conductivity, the solution does not contain salt. Also, at these frequencies, D.I. water and alcohol is preferred.

Tissue Density : Approximately 1.25 g/cm^3

- **Preparation**

The ingredients (i.e. water, sugar, salt, etc) required to prepare the simulated tissue are carefully weighed and poured into a clean container for mixing. A stirring paddle, that is attached to a hand drill is used to stir the solution for a duration of about 30 minutes or more. When the ingredients are completely dissolved, the solution is left in the container for the air bubbles to disappear.

- **Measurement of Electrical Characteristics of Simulated Tissue**

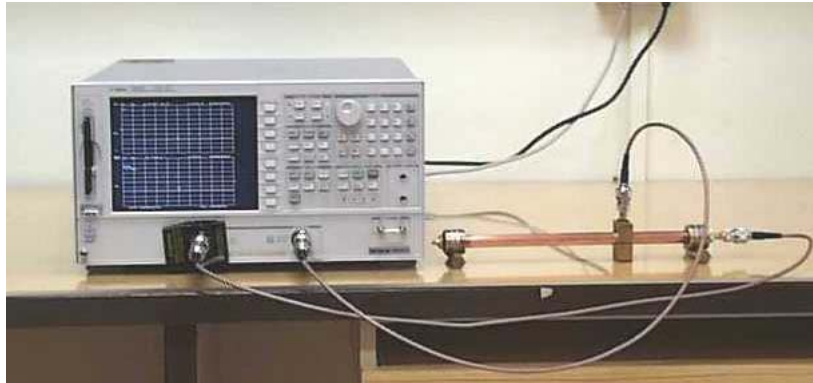
- 1) S-PARAMETER Network Analyzer, Agilent 8753ES (30kHz – 6GHz)
- 2) Slotted Coaxial Waveguide

- **Description of the slotted coaxial waveguide**

The cylindrical waveguide is constructed with copper tube of about 30 to 40 cm of length, generally 12.5 mm diameter, with connectors at both ends. Inside of this tube, a conductive rod about 6.3 mm is coaxial supported by the two ends connectors (radiator). A slot 3 mm wide start at the beginning of the tube to almost the two third of the tube length. The outer edge of the slotted tube is marked in centimeters. For frequency below 1GHz, 1 centimeter per step. For higher frequency above 1 GHz, 0.5 centimeter per step. A saddle piece containing the sampling probe is inserted in the slot so the tip of the probe is close but not in contact with the inner conductor (radiator).

To measure the electrical characteristics of the liquid simulated tissue, which fill the coaxial waveguide, select CW frequency and measure amplitude and phase with the Network Analyzer for every point in the slot (typically 11). An effort is made to keep the results dielectric constant and conductivity within 5 % of published data.

ELECTRICAL CHARACTERISTIC MEASUREMENT SETUP



Determining Relative Dielectric Constant and Effective Conductivity

$$c = 3 \cdot 10^8 (m/s)$$

$$A = \frac{\Delta A}{20} \cdot \ln(10)$$

$$\theta = \frac{\Delta \theta \cdot 2 \cdot \pi}{360}$$

$$\lambda = \frac{c}{f} \cdot \frac{100}{2.54} (\text{inches})$$

$$\epsilon_{re} = (A^2 + \theta^2) \cdot \frac{\lambda^2}{(4 \cdot \pi)^2}$$

$$\theta = \left(\left| A \right| \cdot \frac{\lambda}{4 \cdot \pi \cdot \sqrt{\epsilon_{re}}} \right)$$

$$S = \tan(2 \cdot \theta^2)$$

Where:

ΔA is the amplitude attenuation in dB

$\Delta \theta$ is the phase change in degrees for 5 cm of wave propagation in the slotted line

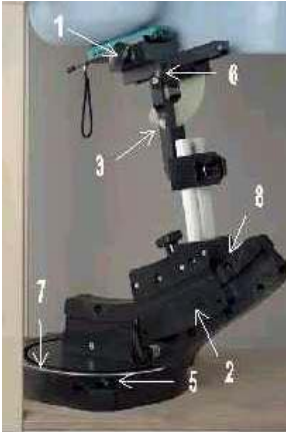
f is the frequency of interest in Hz

ϵ_{re} is the real part of the complex dielectric constant

$$\epsilon_r = \frac{\epsilon_{re}}{\sqrt{1 + S^2}}$$

$$\sigma = S \cdot 2 \cdot \pi \cdot f \cdot 8.854 \cdot 10^{-12} \cdot \epsilon_r (S/m)$$

The results: ϵ_r is the relative dielectric constant and σ is the conductivity in S/m.

Positioning of EUT

The **DASY4 holder** is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The plane between the ear openings and the mouth tip has a rotation angle of 65°. The intended use position in the CENELEC document is has a rotation angle of 65° and an inclination angle of 80°. The rotation centers for both scales is the ear opening. Thus the device needs no repositioning when changing the angles. The device rotation around the device axis is not changed in the holder. In the CENELEC standard it is always 0°. If the standard changes, a support will be provided with the new angle.

1. **“Cheek/Touch Position”** – the device is brought toward the mouth of the head phantom by pivoting against the “ear reference point” or along the “N-F” line for the SCC-34/SC-2 head phantom. This test position is established:
 - i) When any point on the display, keypad or mouthpiece portions of the handset is in contact with the phantom.
 - ii) (Or) When any portion of a foldout, sliding or similar keypad cover opened to its intended self-adjusting normal use position is in contact with the cheek or mouth of the phantom.

For existing head phantoms – when the handset loses contact with the phantom at the pivoting point, rotation should continue until the device touches the cheek of the phantom or breaks its last contact from the ear spacer.

2. **“Ear/Tilt Position”** – With the handset aligned in the “Cheek/Touch Position”:
 - i) If the earpiece of the handset is not in full contact with the phantom’s ear spacer (in the “Cheek/Touch position”) and the peak SAR location for the “Cheek/Touch” position is located at the ear spacer region or corresponds to the earpiece region of the handset, the device should be returned to the “initial ear position” by rotating it away from the mouth until the earpiece is in full contact with the ear spacer.
 - ii) (Otherwise) The handset should be moved (translated) away from the cheek perpendicular to the line passes through both “ear reference points” (note: one of these ear reference points may not physically exist on a split head model) for approximate 2-3 cm. While it is in this position, the handset is tilted away from the mouth with respect to the “test device reference point” by 15°. After the tilt, it is then moved (translated) back toward the head perpendicular to the line passes through both “ear reference points” until the device touches the phantom or the ear spacer. If the antenna touches the head first, the positioning process should be repeated with a tilt angle less than 15° so that the device and its antenna would touch the phantom simultaneously. This test position may require a device holder or positioner to achieve the translation and tilting with acceptable positioning repeatability.

3. **Body Worn Configuration**

All body worn accessories are tested for the FCC RF exposure compliance. The phone is positioned into carrying case (if available) and placed below of the flat phantom. Headset or ear piece (if available) is connected during measurements.

TEST INSTRUMENTATION & GENERAL PROCEDURES

ANNEX A

<u>Instrument</u>	<u>Model</u>	<u>S/No</u>	<u>Cal Due Date</u>	
Boonton RF Power Meter (Dual Channel)	4532	72901	31 Aug 2003	×
Boonton Peak Power Sensor	56218-S/1	1417	31 Aug 2003	
Boonton Power Sensor	51075	32079	31 Aug 2003	×
Boonton Power Sensor	51075	51075	31 Aug 2003	×
Agilent Spectrum Analyzer (30Hz – 40GHz)	8564E	3846A09953	4 Aug 2003	×
S-Parameter Network Analyzer (30kHz – 3GHz)	HP8753ES	US37390533	17 Sep 2003	×
Anritsu RF Signal Generator (10MHz – 20GHz)	68347C	04306	22 Apr 2003	×
Amplifier Research Power Amplifier (1MHz – 1000MHz)	25W1000B	27225	-	
Amplifier Research Power Amplifier (800MHz – 4.2GHz)	25S1G4A	29346	-	×
Agilent Dual Directional Coupler	HP778D	18289	-	×
Radio Test Set	2967	296501/331	-	
R&S Universal Radio Communication Tester	CMU-200	837587/068	18 Sep 2003	
450MHz System Validation Dipole	D450V2	1004	4 Apr 2003	
835MHz System Validation Dipole	D835V2	447	12 Nov 2003	×
900MHz System Validation Dipole	D900V2	134	11 Nov 2002	
1800MHz System Validation Dipole	D1800V2	2d019	11 Nov 2002	
1900MHz System Validation Dipole	D1900V2	546	25 Nov 2002	
Data Acquisition Electronics (DAE)	DAE3V1	475	11 Nov 2003	×
Dosimetric E-field Probe	ET3DV6	1645	25 Nov 2002	
Dosimetric E-field Probe	ET3DV6	1646	25 Nov 2002	
Dosimetric E-field Probe	ET3DV6	1647	20 Nov 2003	×
Isotropic H-field Probe	H3DV6	6115	6 Mar 2003	
Agilent Wireless Communication Tester	8960	US40300307	20 Jan 2004	×

ANNEX B

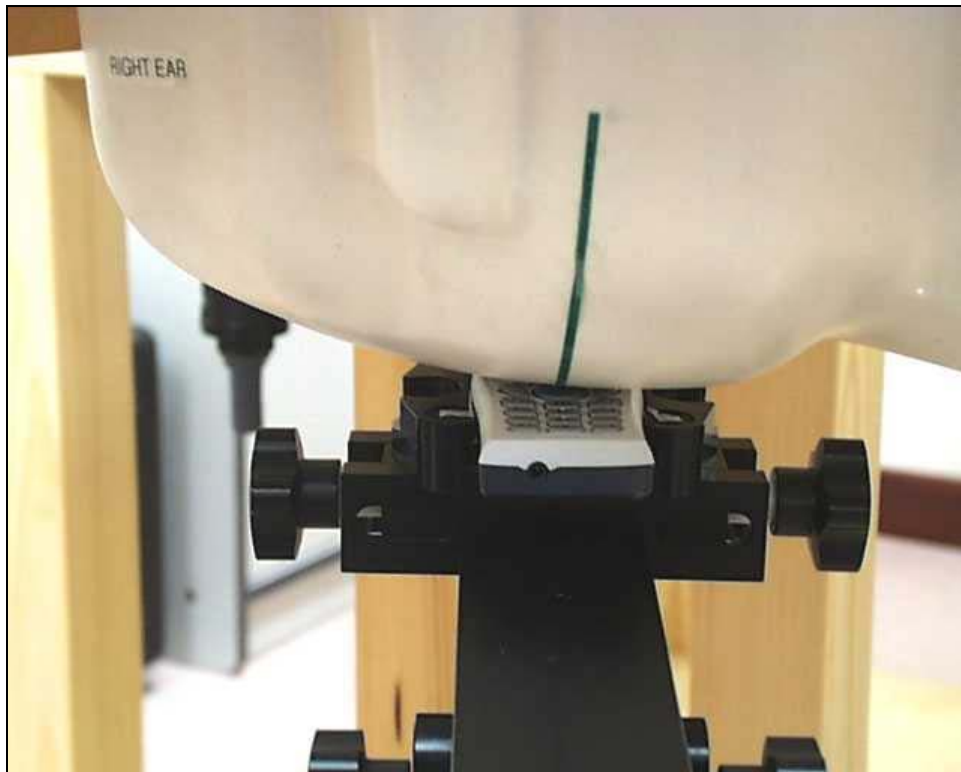
TEST SETUP PHOTOGRAPHS

SAR Test Setup Photographs



SAR Test Setup (Device at head phantom) – Far View

SAR Test Setup Photographs

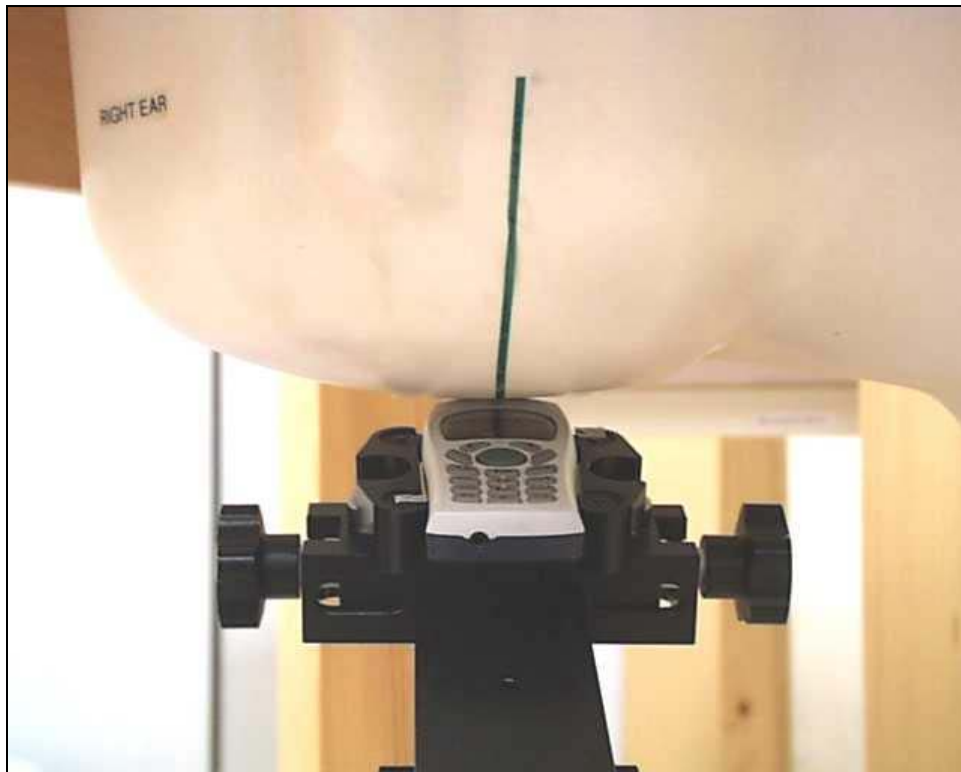


SAR Test Setup (Device at head phantom) – Closer Front View (Cheek/Touch)



SAR Test Setup (Device at head phantom) – Closer Front View (Cheek/Touch)

SAR Test Setup Photographs



SAR Test Setup (Device at head phantom) – Closer Front View (Ear/Tilt)



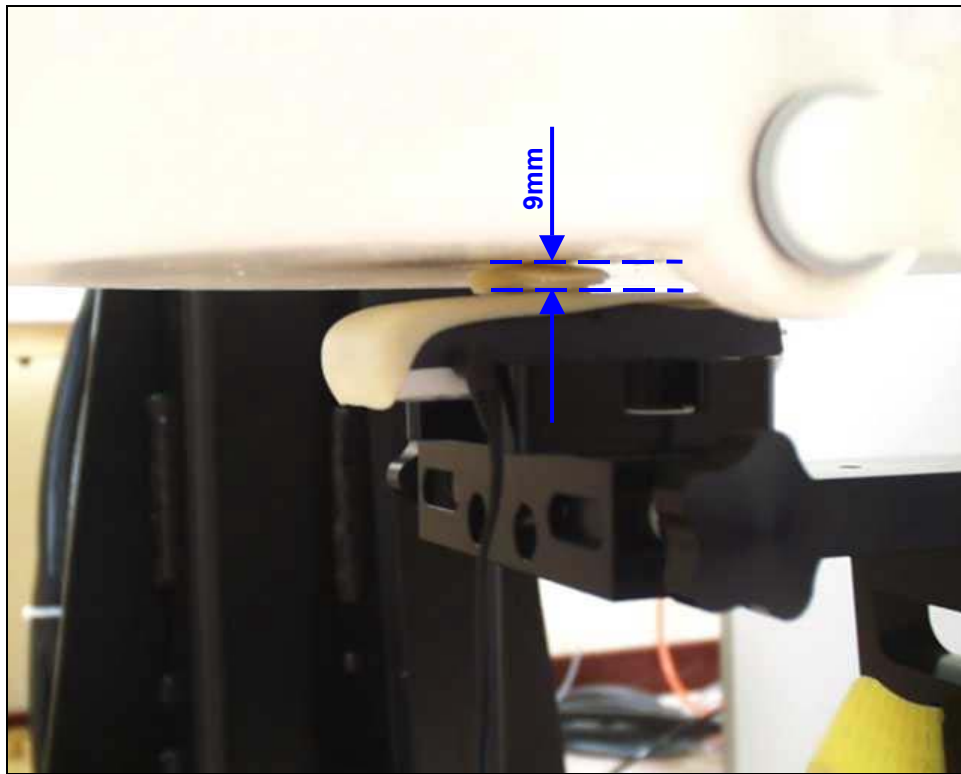
SAR Test Setup (Device at head phantom) – Closer Front View (Ear/Tilt)

SAR Test Setup Photographs

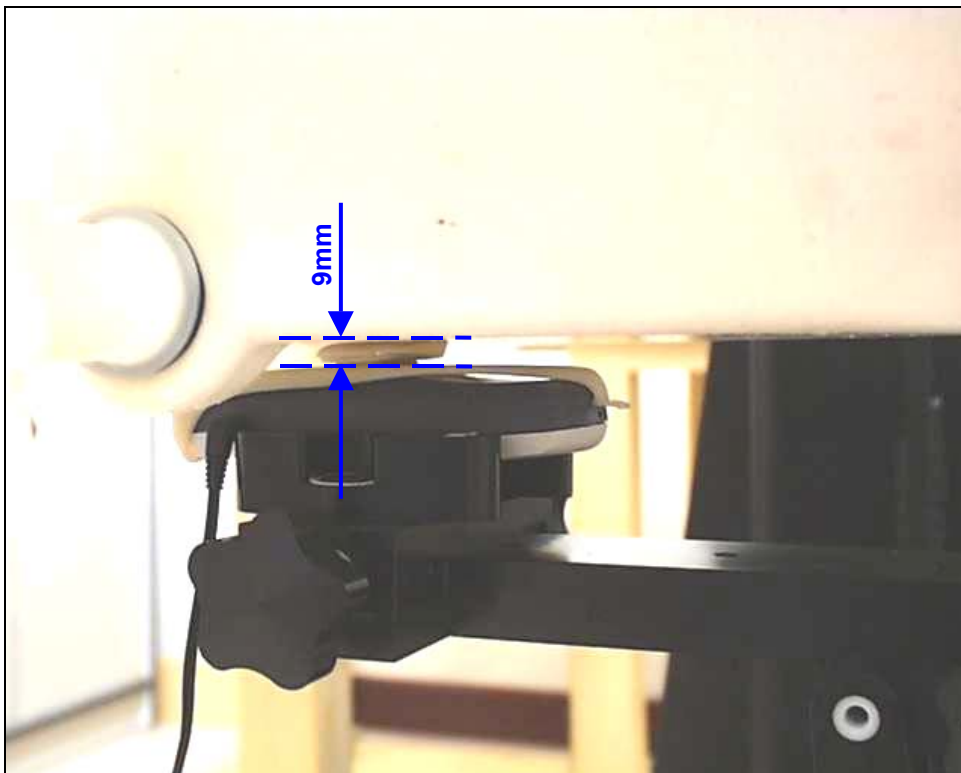


SAR Test Setup At Flat Phantom – Far View

SAR Test Setup Photographs

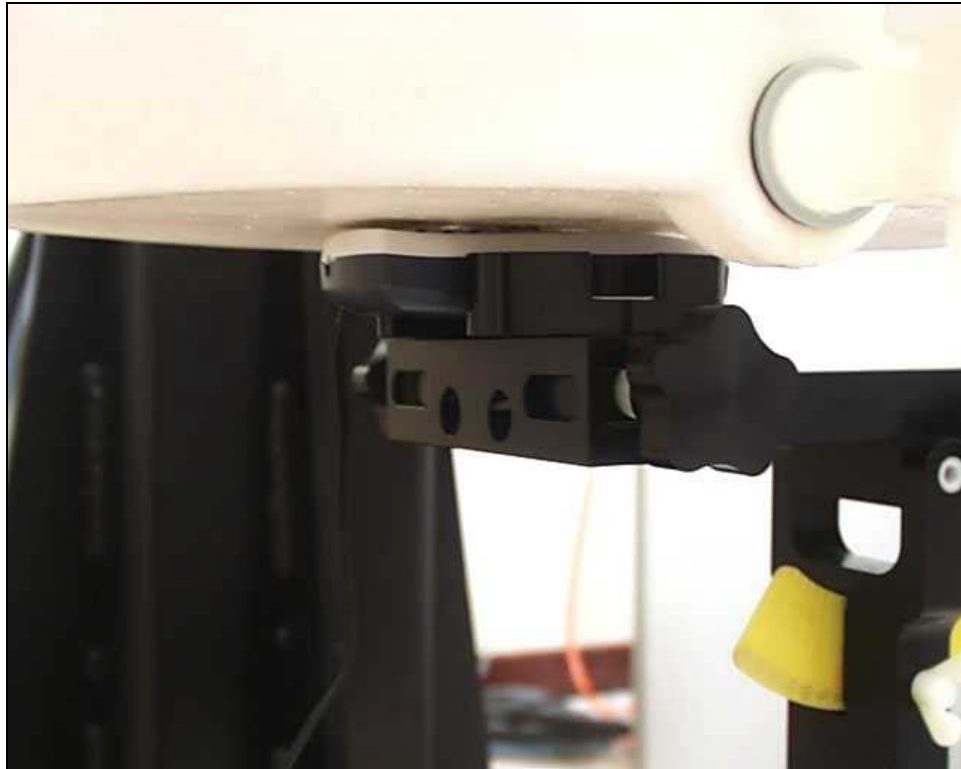


SAR Test Setup At Flat Phantom – Closer View (EUT Rear To Phantom)

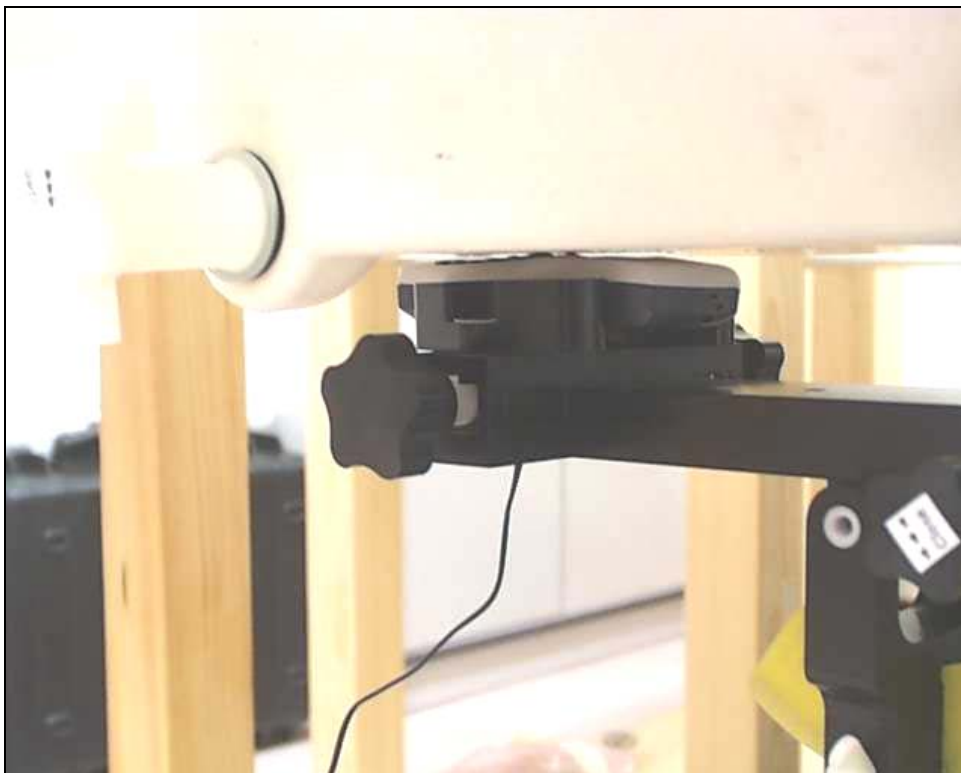


SAR Test Setup At Flat Phantom – Closer View (EUT Rear To Phantom)

SAR Test Setup Photographs

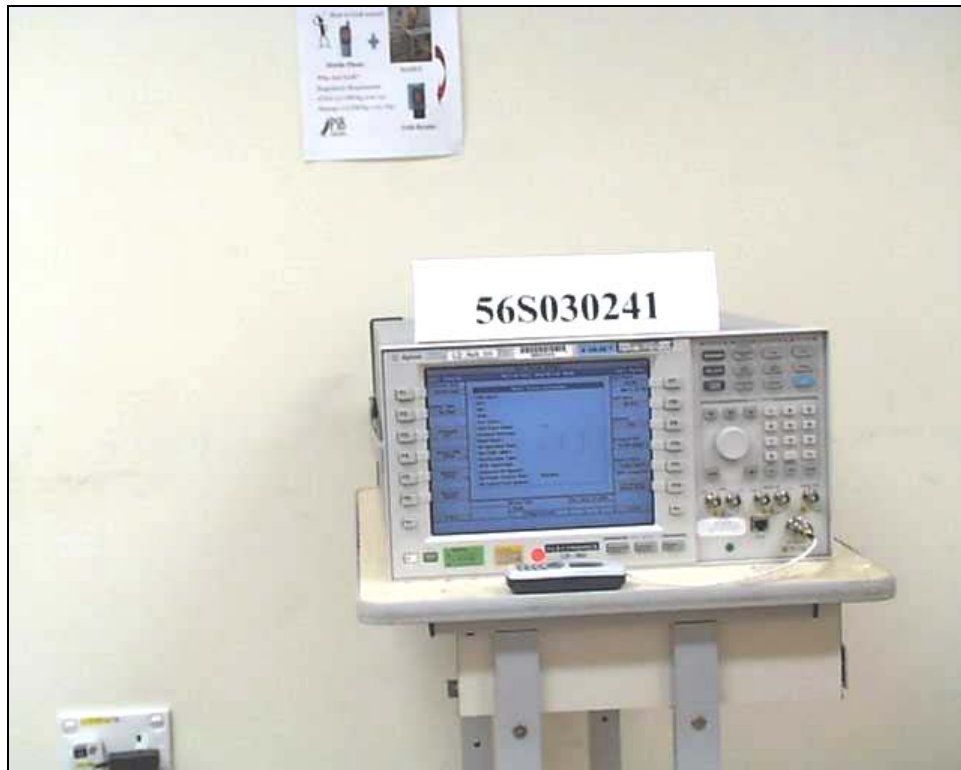


SAR Test Setup At Flat Phantom – Closer View (EUT Front Touched Phantom)



SAR Test Setup At Flat Phantom – Closer View (EUT Front Touched Phantom)

Conducted Power Measurement Test Setup



Conducted Power Measurement Test Setup

EUT PHOTOGRAPHS



Front of EUT



Rear of EUT

EUT PHOTOGRAPHS



EUT with Accessories

ANNEX C
TISSUE SIMULANT DATA SHEETS

TISSUE SIMULANT DATA SHEETS

ANNEX C

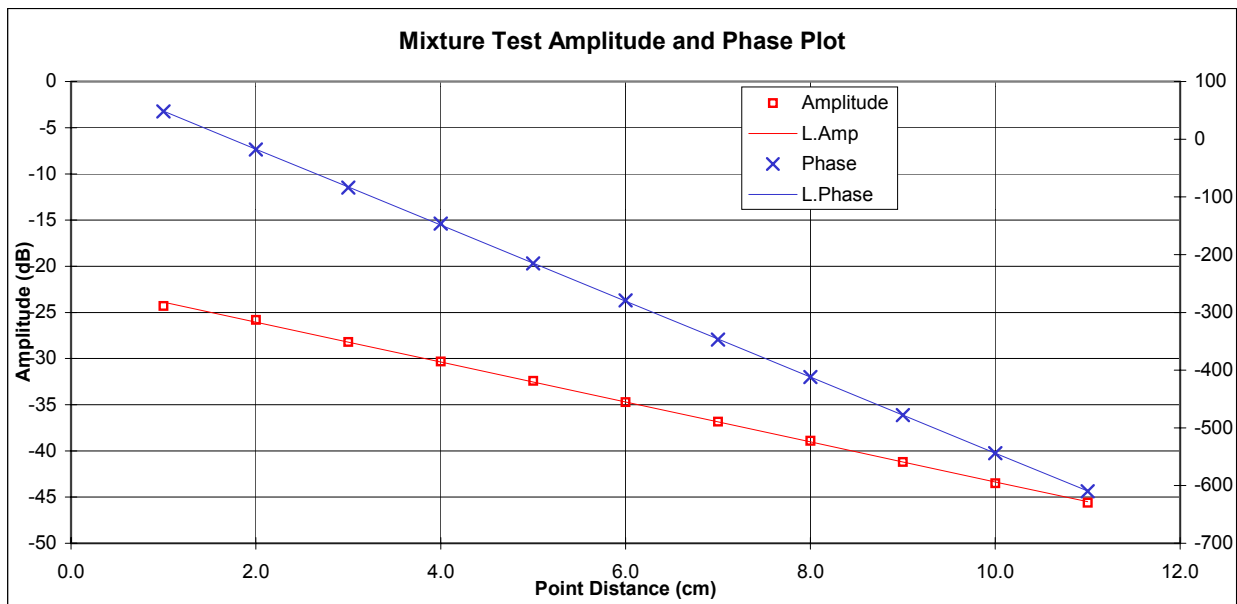
Type of Tissue	Head	Body
Target Frequency (MHz)	835MHz	835MHz
Target Dielectric Constant	41.5	55.2
Target Conductivity (S/m)	0.90	0.97
Composition (by weight)	Water (40.68%) Ethanol (0%) Sugar (58.34%) Salt (0.92%) HEC (0%) Bactericide (0.06%)	Water (55.18%) Ethanol (0%) Sugar (43.91%) Salt (0.84%) HEC (0%) Bactericide (0.07%)
Measured Dielectric Constant	41.066	56.764
Measured Conductivity (S/m)	0.868	0.986
Probe Name	Dosimetric E-field Probe ET3DV6	Dosimetric E-field Probe ET3DV6
Probe Serial Number	1647	1647
Sensor Offset (mm)	2.7	2.7
Conversion Factor	6.6 ± 9.5%	6.3 ± 9.5%
Calibration Date (DD/MM/YY)	31 st Mar 2003	31 st Mar 2003

TISSUE SIMULANT DATA SHEETS

ANNEX C

Head Tissue at 835MHz

Tested By:	Gary Ng Ah Chye				Date:	31st Mar 03		
Frequency:	835	MHz	Composition					
			Tap Water	DI Water	Sugar	Salt	HEC	Bactericide
			13700.00 g	0.00 g	19645.00 g	310.20 g	0.00 g	20.00 g
Mixture:	Head Tissue		40.68 %	0.00 %	58.34 %	0.92 %	0.00 %	0.06 %
# of Points:	11		Point Dist:	1.0	cm	Temperature:	23	°C
Point	Amplitude	Phase						
						-49.9		
1	-24.30	48.00				-51.6	-2.162727273	
2	-25.80	-18.00				-53.5	-21.72363636	
3	-28.20	-84.00				-55.3	-65.81818182	
4	-30.30	-146.00				-56.9	114.4545455	
5	-32.40	145.00						
6	-34.70	81.00						
7	-36.80	13.00				Omega:	5246459731 rad/sec	
8	-38.90	-52.00				Epsilon 0:	8.85E-14 F/m	
9	-41.20	-118.00				mu:	1.26E-08 H/m	
10	-43.50	176.00				alpha avg:	-0.248993179 Np/cm	
11	-45.60	110.00				beta avg:	-1.14874398 rad/cm	
Results:		Target	Low Limit	High Limit	% Off Target			
D. Const:	41.066	41.50	39.43	43.58	-1.05			
Cond:	0.868	0.90	0.86	0.95	-3.65			

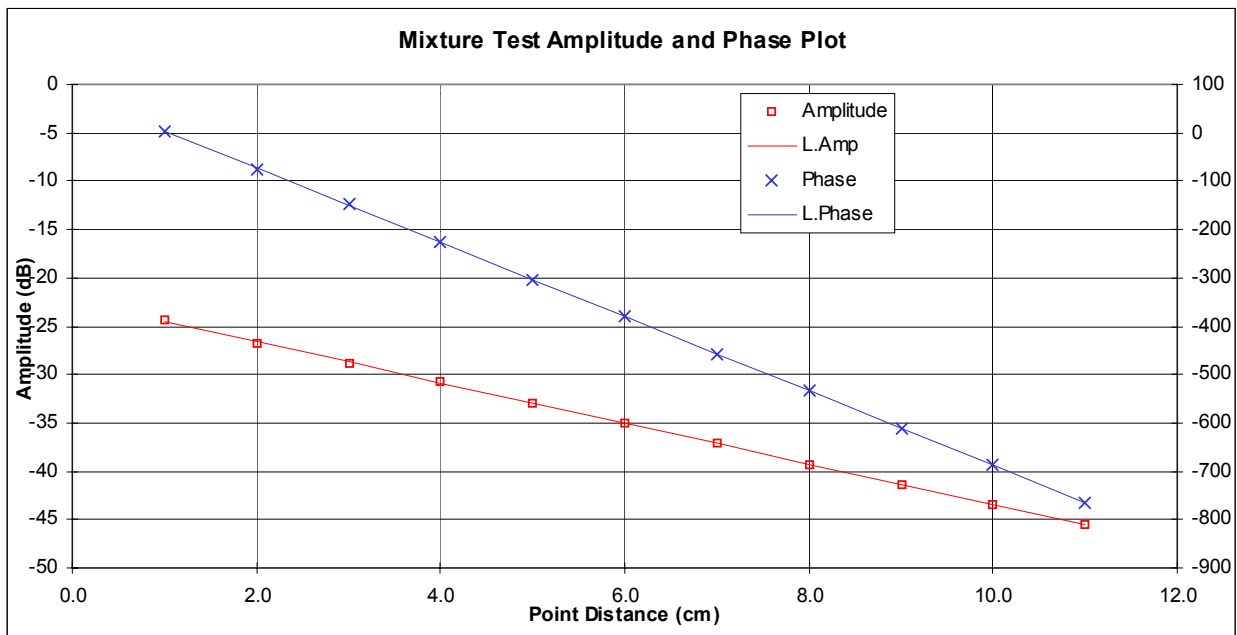


TISSUE SIMULANT DATA SHEETS

ANNEX C

Body Tissue at 835MHz

Tested By:	Gary Ng Ah Chye				Date:	31st Mar 03		
Frequency:	835	MHz	Composition					
			Tap Water	DI Water	Sugar	Salt	HEC	Bactericide
			22920.00 g	0.00 g	18240.00 g	348.00 g	0.00 g	30.00 g
Mixture:	Body Tissue		55.18 %	0.00 %	43.91 %	0.84 %	0.00 %	0.07 %
# of Points:	11		Point Dist:	1.0	cm	Temperature:	23	°C
Point	Amplitude	Phase						
						-49.9		
1	-24.40	3.00				-51.6	-2.105454545	
2	-26.70	-75.00				-53.5	-22.39454545	
3	-28.80	-147.00				-55.3	-76.80909091	
4	-30.80	134.00				-56.9	80.67272727	
5	-32.90	57.00						
6	-35.00	-20.00				Omega:	5246459731	rad/sec
7	-37.00	-97.00				Epsilon 0:	8.85E-14	F/m
8	-39.30	-174.00				mu:	1.26E-08	H/m
9	-41.40	109.00				alpha avg:	-0.242399413	Np/cm
10	-43.50	32.00				beta avg:	-1.340571532	rad/cm
11	-45.50	-44.00						
Results:		Target	Low Limit	High Limit	% Off Target			
D. Const:	56.764	55.20	52.44	57.96	2.79			
Cond:	0.986	0.97	0.92	1.02	1.62			



ANNEX D

SAR VALIDATION RESULTS

SAR Validation – Head Tissue at 835MHz

Date: 04/09/2003

Test Laboratory: Telecom & EMC Testing Group
File Name: 835MHz Head_Dipole_Validation.da4

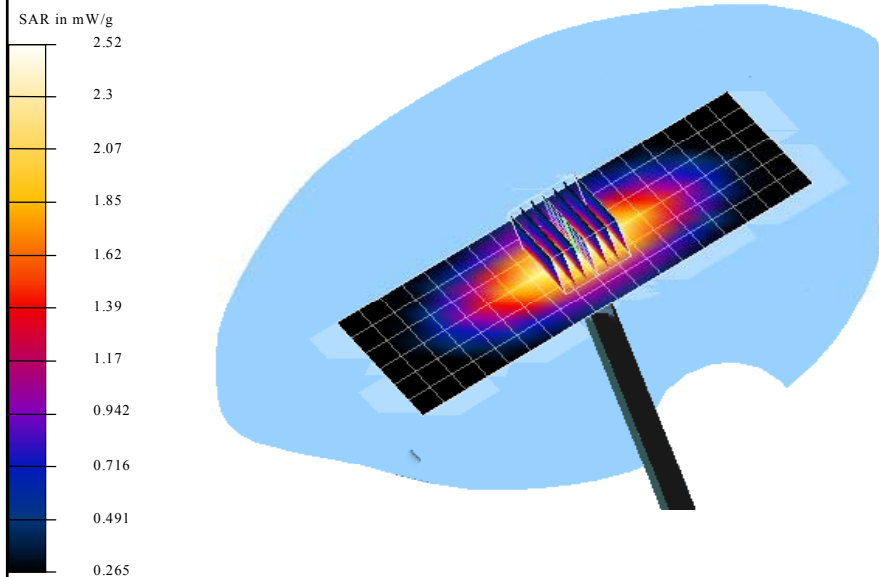
DUT: Dipole 835MHz Type & Serial Number: 447
Program: 835MHz Head_Dipole_Validation; 835MHz Head_Dipole_Validation

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835Head Tissue ($\sigma = 0.868$ mho/m, $\epsilon = 41.066$, $\rho = 1000$ kg/m³)
Phantom section: FlatSection

DASY4 Configuration:

- Probe: ET3DV6 - SN1647; ConvF(6.6, 6.6, 6.6); Calibrated: 11/20/2002
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn475; Calibrated: 11/14/2002
- Phantom: - TP:
- Software: DASY4, V4.0 Build 51

Area Scan (7x19x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
Reference Value = 56.3 V/m
Peak SAR = 3.4 mW/g
SAR(1 g) = 2.34 mW/g; SAR(10 g) = 1.53 mW/g
Power Drift = 0.01 dB



SAR Validation – Body Tissue at 835MHz

Date: 04/09/2003

Test Laboratory: Telecom & EMC Testing Group
File Name: 835MHz Body_Dipole Validation.da4

DUT: Dipole 835MHz Type & Serial Number: 447

Program: 835MHz Body_Dipole Validation; 835MHz Body_Dipole Validation

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835MHz Body Tissue ($\sigma = 0.986$ mho/m, $\epsilon = 56.764$, $\rho = 1000$ kg/m³)
Phantom section: FlatSection

DASY4 Configuration:

- Probe: ET3DV6 - SN1647; ConvF(6.3, 6.3, 6.3); Calibrated: 11/20/2002
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn475; Calibrated: 11/14/2002
- Phantom: - TP:
- Software: DASY4, V4.0 Build 51

Area Scan (7x17x1): Measurement grid: dx=10mm, dy=10mm

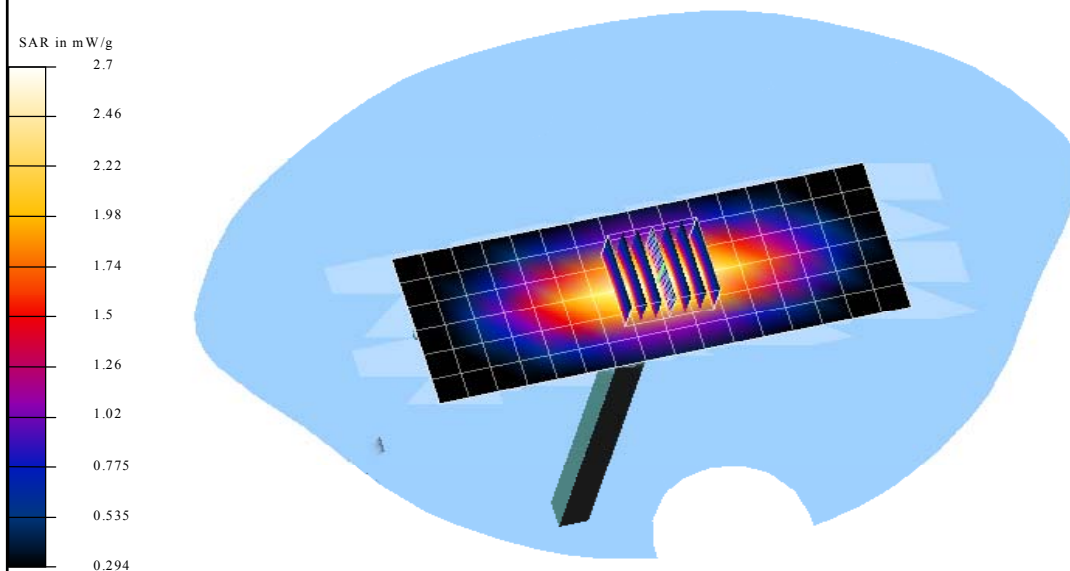
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm

Reference Value = 54.6 V/m

Peak SAR = 3.55 mW/g

SAR(1 g) = 2.49 mW/g; SAR(10 g) = 1.64 mW/g

Power Drift = 0.003 dB



ANNEX E

SAR PROBE CALIBRATION CERTIFICATES

**Schmid & Partner
Engineering AG**

Zeughausstrasse 43, 8004 Zurich, Switzerland, Phone +41 1 245 97 00, Fax +41 1 245 97 79

Calibration Certificate**Dosimetric E-Field Probe**

Type:

ET3DV6

Serial Number:

1647

Place of Calibration:

Zurich

Date of Calibration:

November 20, 2002

Calibration Interval:

12 months

Schmid & Partner Engineering AG hereby certifies, that this device has been calibrated on the date indicated above. The calibration was performed in accordance with specifications and procedures of Schmid & Partner Engineering AG.

Wherever applicable, the standards used in the calibration process are traceable to international standards. In all other cases the standards of the Laboratory for EMF and Microwave Electronics at the Swiss Federal Institute of Technology (ETH) in Zurich, Switzerland have been applied.

Calibrated by:



Approved by:



**Schmid & Partner
Engineering AG**

Zeughausstrasse 43, 8004 Zurich, Switzerland, Telephone +41 1 245 97 00, Fax +41 1 245 97 79

Probe ET3DV6

SN:1647

Manufactured:	November 7, 2001
Last calibration:	November 26, 2001
Recalibrated:	November 20, 2002

Calibrated for DASYS Systems

(Note: non-compatible with DASYS2 system!)

ET3DV6 SN:1647

November 20, 2002

DASY - Parameters of Probe: ET3DV6 SN:1647

Sensitivity in Free Space

Diode Compression

NormX	1.70 $\mu V/(V/m)^2$	DCP X	96	mV
NormY	1.64 $\mu V/(V/m)^2$	DCP Y	96	mV
NormZ	1.70 $\mu V/(V/m)^2$	DCP Z	96	mV

Sensitivity in Tissue Simulating Liquid

Head	900 MHz	$\epsilon_r = 41.5 \pm 5\%$	$\sigma = 0.97 \pm 5\% \text{ mho/m}$
Head	835 MHz	$\epsilon_r = 41.5 \pm 5\%$	$\sigma = 0.90 \pm 5\% \text{ mho/m}$
ConvF X	6.6 $\pm 9.5\%$ (k=2)	Boundary effect:	
ConvF Y	6.6 $\pm 9.5\%$ (k=2)	Alpha	0.41
ConvF Z	6.6 $\pm 9.5\%$ (k=2)	Depth	2.40
Head	1800 MHz	$\epsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\% \text{ mho/m}$
ConvF X	5.4 $\pm 8.9\%$ (k=2)	Boundary effect:	
ConvF Y	5.4 $\pm 8.9\%$ (k=2)	Alpha	0.51
ConvF Z	5.4 $\pm 8.9\%$ (k=2)	Depth	2.40

Boundary Effect

Head	900 MHz	Typical SAR gradient: 5 % per mm		
	Probe Tip to Boundary	1 mm	2 mm	
	SAR _{be} [%] Without Correction Algorithm	9.8	5.5	
	SAR _{be} [%] With Correction Algorithm	0.3	0.5	
Head	1800 MHz	Typical SAR gradient: 10 % per mm		
	Probe Tip to Boundary	1 mm	2 mm	
	SAR _{be} [%] Without Correction Algorithm	12.0	7.9	
	SAR _{be} [%] With Correction Algorithm	0.2	0.2	

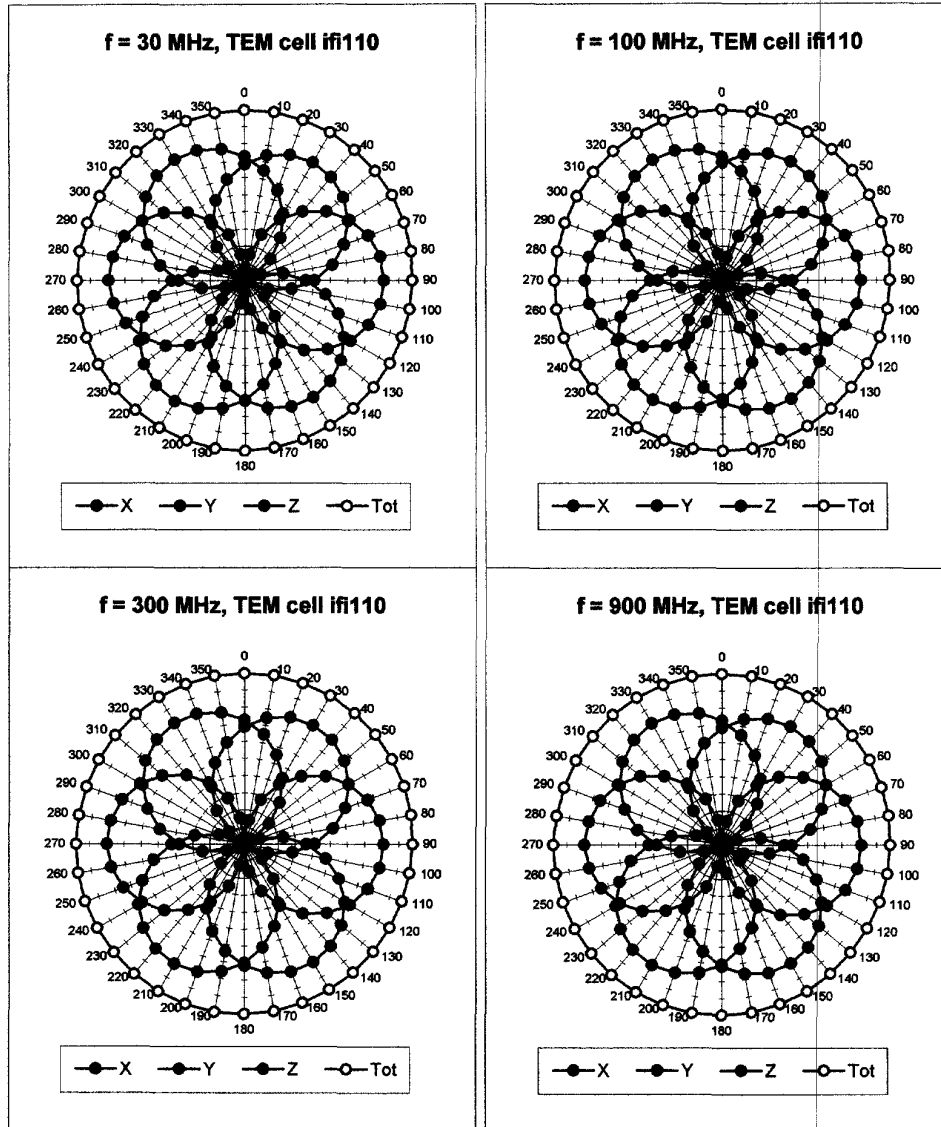
Sensor Offset

Probe Tip to Sensor Center	2.7	mm
Optical Surface Detection	1.2 \pm 0.2	mm

ET3DV6 SN:1647

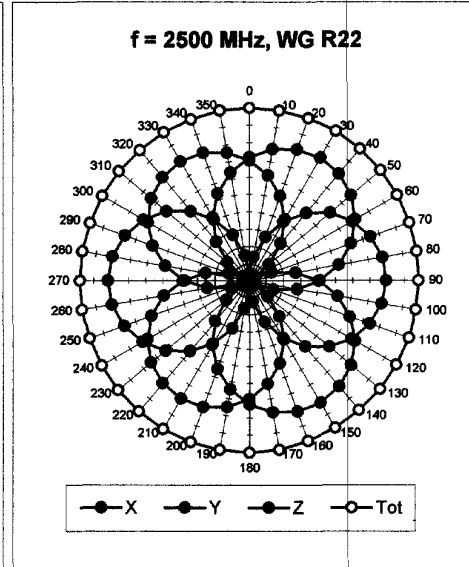
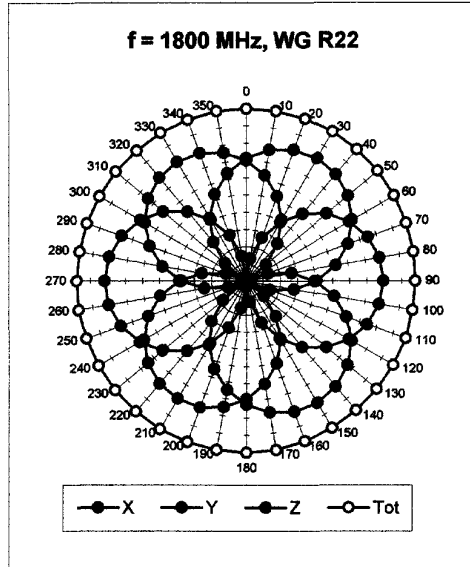
November 20, 2002

Receiving Pattern (ϕ), $\theta = 0^\circ$

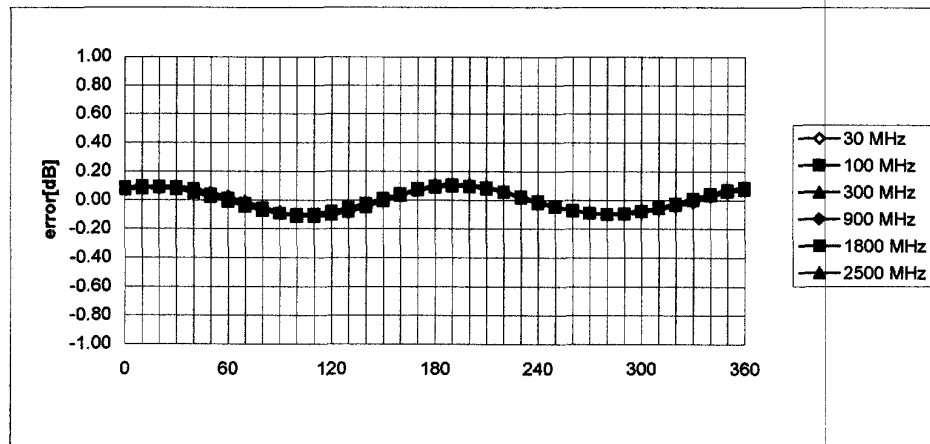


ET3DV6 SN:1647

November 20, 2002



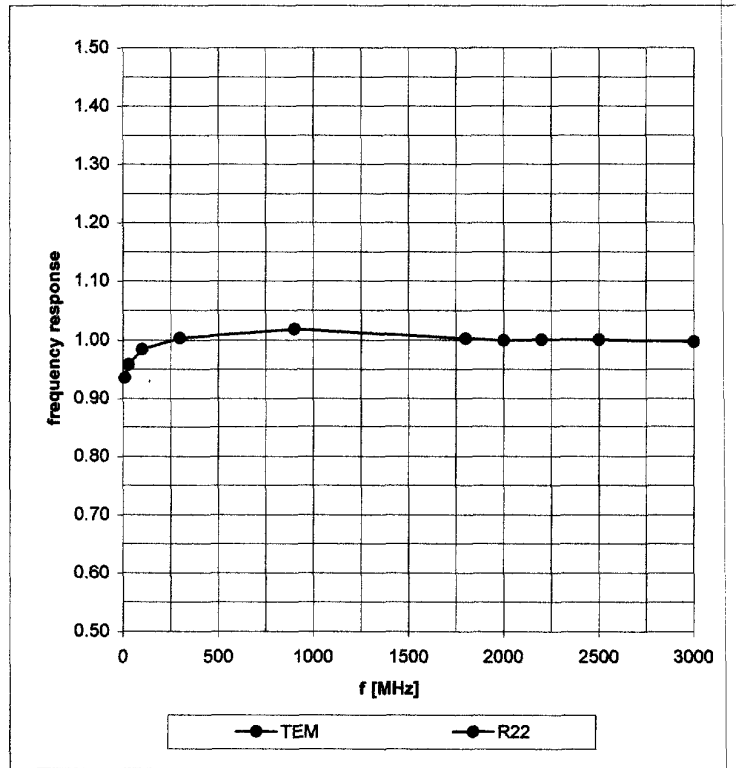
Isotropy Error (ϕ), $\theta = 0^\circ$



ET3DV6 SN:1647

November 20, 2002

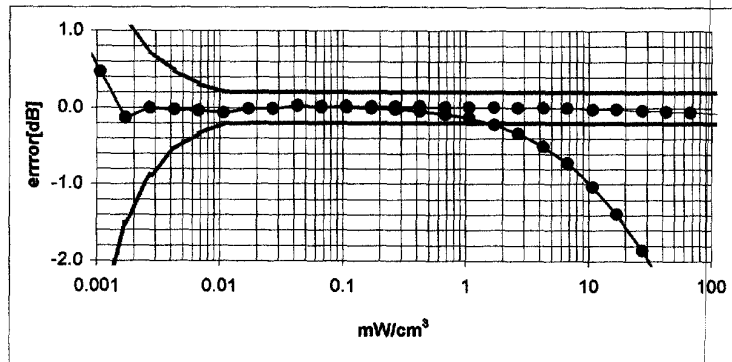
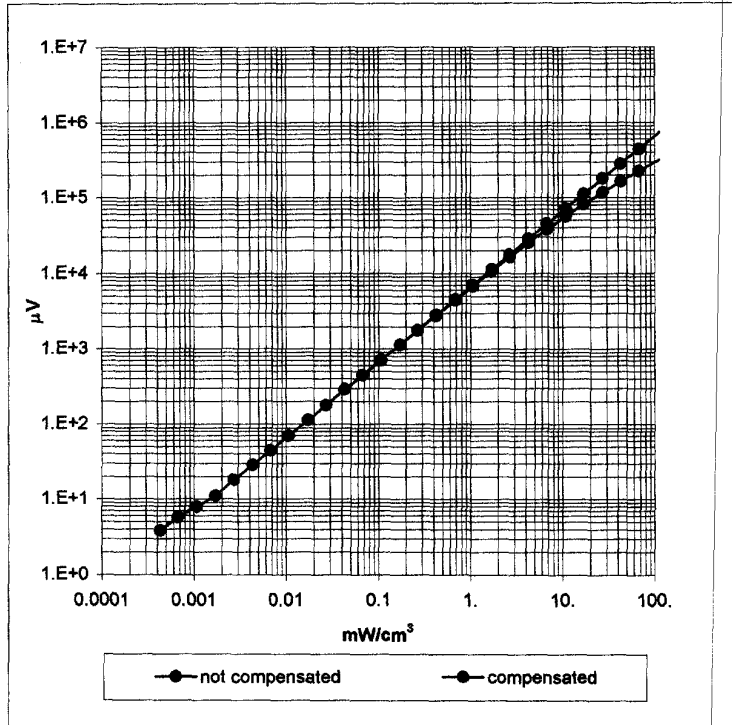
Frequency Response of E-Field
 (TEM-Cell:ifi110, Waveguide R22)



ET3DV6 SN:1647

November 20, 2002

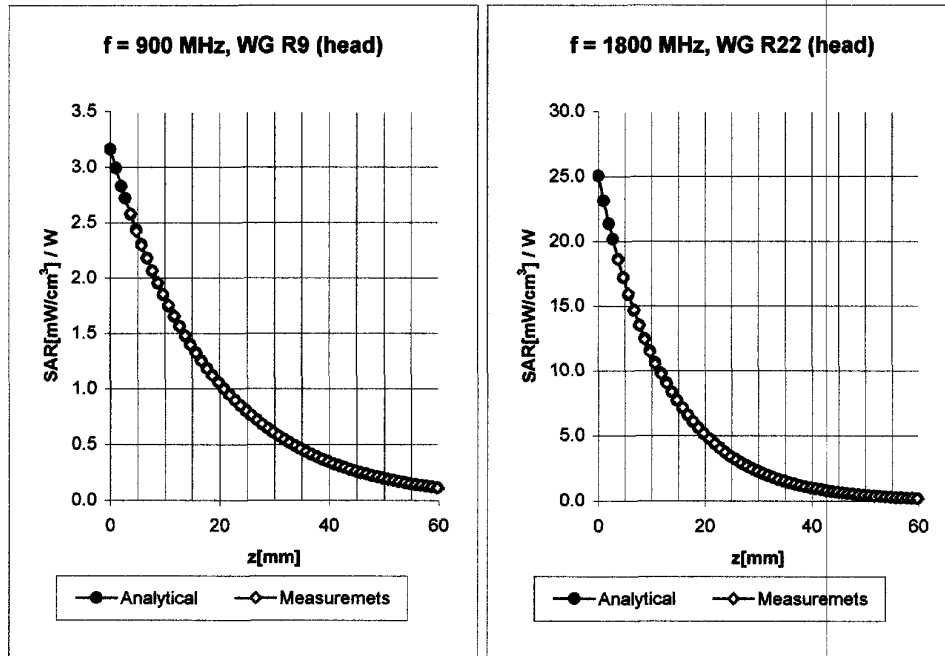
Dynamic Range $f(SAR_{brain})$
(Waveguide R22)



ET3DV6 SN:1647

November 20, 2002

Conversion Factor Assessment

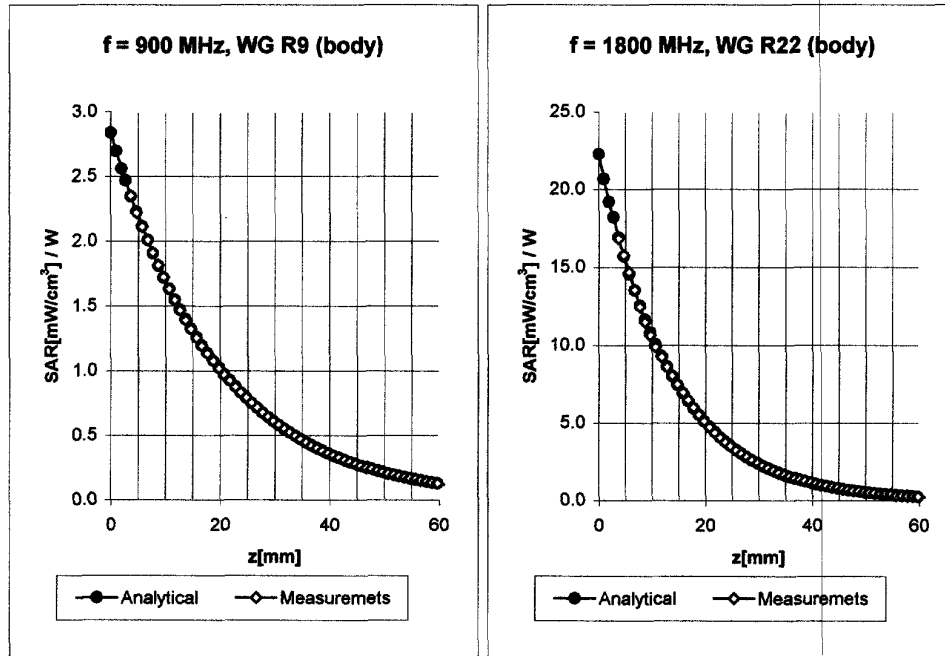


Head	900 MHz	$\epsilon_r = 41.5 \pm 5\%$	$\sigma = 0.97 \pm 5\%$ mho/m	
Head	835 MHz	$\epsilon_r = 41.5 \pm 5\%$	$\sigma = 0.90 \pm 5\%$ mho/m	
	ConvF X	6.6 \pm 9.5% (k=2)	Boundary effect:	
	ConvF Y	6.6 \pm 9.5% (k=2)	Alpha	0.41
	ConvF Z	6.6 \pm 9.5% (k=2)	Depth	2.40
Head	1800 MHz	$\epsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\%$ mho/m	
	ConvF X	5.4 \pm 8.9% (k=2)	Boundary effect:	
	ConvF Y	5.4 \pm 8.9% (k=2)	Alpha	0.51
	ConvF Z	5.4 \pm 8.9% (k=2)	Depth	2.40

ET3DV6 SN:1647

November 20, 2002

Conversion Factor Assessment

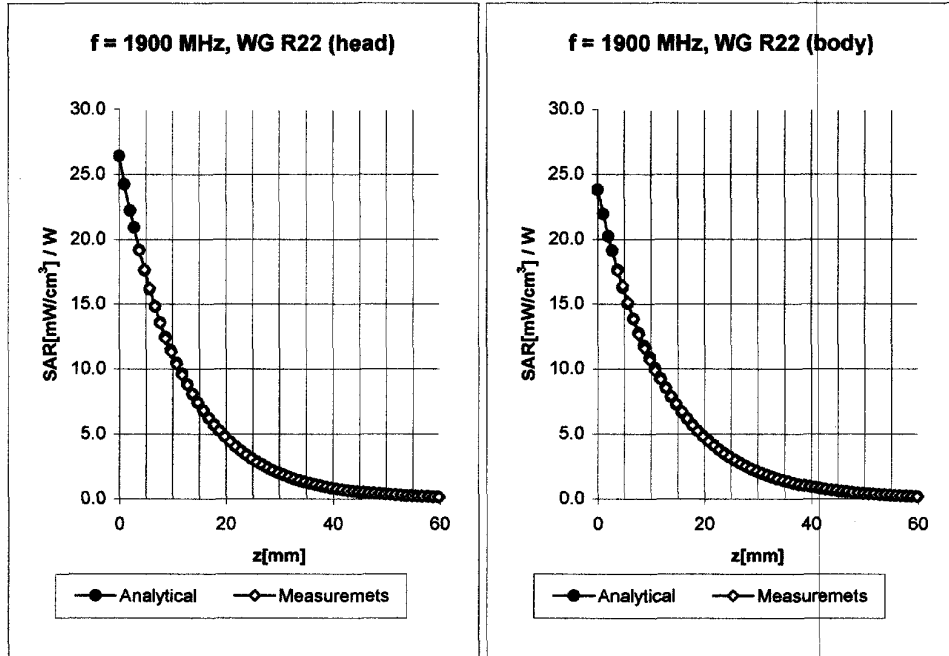


Body	900 MHz	$\epsilon_r = 55.0 \pm 5\%$	$\sigma = 1.05 \pm 5\%$ mho/m
Body	835 MHz	$\epsilon_r = 55.2 \pm 5\%$	$\sigma = 0.97 \pm 5\%$ mho/m
	ConvF X	6.3 $\pm 9.5\%$ (k=2)	Boundary effect:
	ConvF Y	6.3 $\pm 9.5\%$ (k=2)	Alpha 0.42
	ConvF Z	6.3 $\pm 9.5\%$ (k=2)	Depth 2.39
Body	1800 MHz	$\epsilon_r = 53.3 \pm 5\%$	$\sigma = 1.52 \pm 5\%$ mho/m
	ConvF X	5.1 $\pm 8.9\%$ (k=2)	Boundary effect:
	ConvF Y	5.1 $\pm 8.9\%$ (k=2)	Alpha 0.63
	ConvF Z	5.1 $\pm 8.9\%$ (k=2)	Depth 2.26

ET3DV6 SN:1647

November 20, 2002

Conversion Factor Assessment

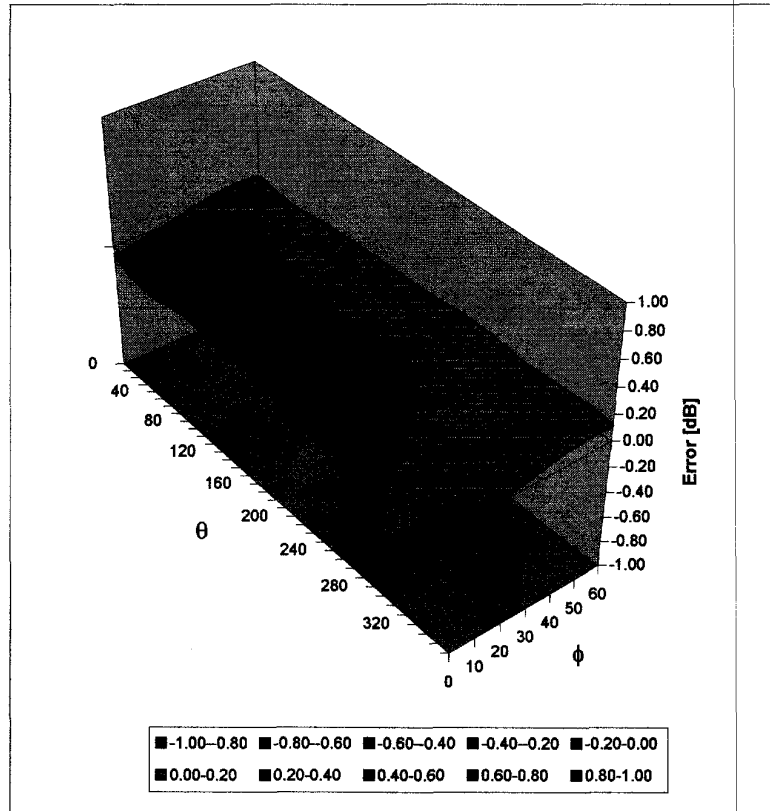


Head	1900 MHz	$\epsilon_r = 40.0 \pm 5\%$	$\sigma = 1.40 \pm 5\% \text{ mho/m}$
	ConvF X	5.3 $\pm 8.9\%$ (k=2)	Boundary effect:
	ConvF Y	5.3 $\pm 8.9\%$ (k=2)	Alpha 0.55
	ConvF Z	5.3 $\pm 8.9\%$ (k=2)	Depth 2.32
Body	1900 MHz	$\epsilon_r = 53.3 \pm 5\%$	$\sigma = 1.52 \pm 5\% \text{ mho/m}$
	ConvF X	5.0 $\pm 8.9\%$ (k=2)	Boundary effect:
	ConvF Y	5.0 $\pm 8.9\%$ (k=2)	Alpha 0.76
	ConvF Z	5.0 $\pm 8.9\%$ (k=2)	Depth 2.06

ET3DV6 SN:1647

November 20, 2002

Deviation from Isotropy in HSL
 Error (θ, ϕ), $f = 900$ MHz



ANNEX F
REFERENCES

The methods and procedures used for the measurements contained in this report are details in the following reference standards:

Publications	Year	Title
Supplement C (Edition 01-01) to FCC OET Bulletin 65 (Edition 97-01)	2001	"Evaluating Compliance with FCC Guidelines for Human Exposure to radio Frequency Fields"
IEEE Standard 1528-200X	2000	"Product Performance Standards Relative to the safe Use of Electromagnetic Energy"
ANSI/IEEE C95.3	1992	"Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave"
ANSI/IEEE C95.1	1992	"Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3kHz to 300GHz"
ACA, Radio Communications (EMR Human Exposure)	2000 (No.2)	"Radiocommunication (Electromagnetic Radiation – Human Exposure)"
EN50360	2001	Product Standard to demonstrate the compliance of mobile phones with the basic restrictions related to human exposure to electromagnetic fields (300MHz – 3GHz)
EN50361	2001	Basic Standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phone (300MHz – 3GHz)