TEST REPORT

Your Ref:

Date: 2 Sep 2004

Our Ref: 56S040679/03

DID: +65-6885 1476

Fax: +65-6774 1459

NOTE: This report is issued subject to PSB Corporation's "Terms and Conditions Governing Technical Services". The terms and conditions governing the issue of this report are set out as attached within this report.

COMPLIANCE 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

DUAL BAND MOBILE PHONE
[Model: S361]

TEST FACILITY Telecoms & EMC, Testing Group, PSB Corporation
1 Science Park Drive, Singapore 118221

PREPARED FOR Sendo Singapore Pte Ltd
180 Clemenceau Avenue
#02-02 Haw Par Centre
Singapore 239922

Tel : +65 65577145 Fax : +65 63373466

JOB NUMBER 56S040679

TEST PERIOD 24 Aug 2004 ~ 30 Aug 2004

PREPARED BY	APPROVED BY
Gary Ng Ah Chye	Daniel Yeo
Associate Engineer	Senior Engineer

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ISO 9001
JQA-QMA 10040

ACCREDITED LABORATORY
SAC-SINGLAS

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

The results reported herein have been performed in accordance with the laboratory's terms of accreditation under the Singapore Accreditation Council - Singapore Laboratory Accreditation Scheme

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The product was tested in accordance with the following standards.

Test Results Summary

Test Standards	Description	Pass / Fail
• Supplement C (Edition 01-01) to FCC OET Bulletin 65 (Edition 97-01) • ANSI/IEEE Standard C95.1-1993	SAR Measurement (GSM 850) Device at head phantom	Pass *
	SAR Measurement (PCS 1900) Device at head phantom	Pass *
	SAR Measurement (GSM 850) Body Worn Configuration Only	Pass *
	SAR Measurement (PCS 1900) Body Worn Configuration Only	Pass *

Note:

1. The worst-case SAR value was found to be **0.500W/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	The Equipment Under Test (EUT) is a **DUAL BAND MOBILE PHONE.**
Device Category	Portable Device
Exposure Environment	General Population/Uncontrolled exposure
Test Device Type	Production Unit
Model Number	S361
Brand Name	Sendo
IMEI Numbers	004400008000927
FCC ID	NIL

DEVICE OPERATING CONFIGURATION

Operating Frequencies	GSM 850	PCS 1900
	Channel 128 (824.20Mhz) Channel 189 (836.40Mhz) Channel 251 (848.80Mhz)	Channel 512 (1850.2Mhz) Channel 661 (1880.0Mhz) Channel 810 (1909.8Mhz)
Operating Temperature Tolerance	-10 ~ +55 Degree Celsius	
Operating Voltage Tolerance	(3.5 – 4.2) Volt DC	
Continuous Transmission Tolerance	The EUT shall cause no problem after transmitting for 120 minutes under maximum power transmitting rate.	
Rated Output Power	29dBm Maximum (GSM 850) 30dBm Maximum (PCS 1900)	
Antenna Type	Integrated Antenna	
EUT Crest Factor	8.3	
Input Power	Li-ion Battery, 3.7V 800mAH.	
Accessories	1) Charger	

MANUFACTURER

Manufacturer Address	Sendo (UK) Sendo Base Station Hatchford Way, Birmingham B26 3RZ, United Kingdom
DID	44(0)-121 251 5000
Fax	44(0)-121 251 5001

DEVICE OPERATING CONDITION

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

TEMPERATURE AND HUMIDITY

GSM 850 (Head)

Ambient Temperature:	24 ± 1^0 C
Tissue Temperature:	24 ± 1^0 C
Humidity:	57% to 61%

PCS 1900 (Head)

Ambient Temperature:	23 ± 1^0 C
Tissue Temperature:	23 ± 1^0 C
Humidity:	54% to 60%

GSM 850 and PCS 1900 (Body)

Ambient Temperature:	24 ± 1^0 C
Tissue Temperature:	24 ± 1^0 C
Humidity:	58% to 62%

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

Table 1 - SAR Test Results (GSM 850) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	SAR (W/kg), over 1g Tissue Device Test Channel & Frequency		
			Channel: 128 824.2MHz	Channel: 189 836.4MHz	Channel: 251 848.8MHz
Left Side of Head	Cheek / Touch	fixed	0.482	0.439	0.482
	Ear / Tilt	fixed	0.262	0.260	0.254
Right Side of Head	Cheek / Touch	fixed	0.500	0.443	0.490
	Ear / Tilt	fixed	0.257	0.229	0.257
Output Power (dBm) Before Test			29.8	29.8	29.8
Output Power (dBm) After Test			29.7	29.6	29.6

Table 2 - SAR Test Results (DCS 1900) – Device at head phantom

Phantom Configuration	Device Test Positions	Antenna Position	SAR (W/kg), over 1g Tissue Device Test Channel & Frequency		
			Channel: 512 1850.2MHz	Channel: 661 1880.0MHz	Channel: 810 1909.8MHz
Left Side of Head	Cheek / Touch	fixed	0.194	0.185	0.235
	Ear / Tilt	fixed	0.160	0.142	0.195
Right Side of Head	Cheek / Touch	fixed	0.246	0.237	0.273
	Ear / Tilt	fixed	0.168	0.175	0.220
Output Power (dBm) Before Test			30.1	29.9	29.7
Output Power (dBm) After Test			30.0	29.7	29.6

Remarks:

1. All modes of operations were investigated and the worst-case SAR levels are reported.
2. A fully charged **Li-ion Battery, 3.7V DC 800mAH,** was used for each mode of operation.
3. For **GSM 850**, the worst-case SAR value was found to be **0.500W/Kg** (over a 1g tissue) at **Channel 128** which is lower than the maximum limit of 1.60 W/Kg, please refer to the above table.
4. For **PCS 1900**, the worst-case SAR value was found to be **0.273W/Kg** (over a 1g tissue) at **Channel 810** 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 (GSM 850), device without belt clip(15mm spacing).

Phantom Configuration	Device Test Positions	Antenna Position	SAR (W/kg), over 1g Tissue Device Test Channel & Frequency		
			Channel: 128 824.2MHz	Channel: 189 836.4MHz	Channel: 251 848.8MHz
Flat Phantom	EUT **Rear** To Phantom	fixed	0.250	0.232	0.246
Output Power (dBm) Before Test			29.8	29.8	29.8
Output Power (dBm) After Test			29.7	29.6	29.6

Table 4 – Body Worn Position SAR Test Results (GSM 850), device without belt clip(Touching).

Phantom Configuration	Device Test Positions	Antenna Position	SAR (W/kg), over 1g Tissue Device Test Channel & Frequency		
			Channel: 128 824.2MHz	Channel: 189 836.4MHz	Channel: 251 848.8MHz
Flat Phantom	EUT **Front** Touched Phantom	fixed	0.391	0.387	0.397
Output Power (dBm) Before Test			29.8	29.8	29.8
Output Power (dBm) After Test			29.7	29.6	29.6

Remarks:

1. All modes of operations were investigated and the worst-case SAR levels are reported.
2. A fully charged **Li-ion Battery, 3.7V DC 800mAH,** was used for each mode of operation.
3. For **GSM 850**, the worst-case SAR value was found to be **0.397W/Kg** (over a 1g tissue) at **Channel 251** 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 (PCS 1900), device with belt clip(15mm spacing).

Phantom Configuration	Device Test Positions	Antenna Position	SAR (W/kg), over 1g Tissue Device Test Channel & Frequency		
			Channel: 512 1850.2MHz	Channel: 661 1880.0MHz	Channel: 810 1909.8MHz
Flat Phantom	EUT **Rear** To Phantom	fixed	0.246	0.231	0.323
Output Power (dBm) Before Test			30.1	29.9	29.7
Output Power (dBm) After Test			30.0	29.7	29.6

Table 6 – Body Worn Position SAR Test Results (PCS 1900), device without belt clip(Touching).

Phantom Configuration	Device Test Positions	Antenna Position	SAR (W/kg), over 1g Tissue Device Test Channel & Frequency		
			Channel: 512 1850.2MHz	Channel: 661 1880.0MHz	Channel: 810 1909.8MHz
Flat Phantom	EUT **Front** Touched Phantom	fixed	0.236	0.228	0.296
Output Power (dBm) Before Test			30.1	29.9	29.7
Output Power (dBm) After Test			30.0	29.7	29.6

Remarks:

1. All modes of operations were investigated and the worst-case SAR levels are reported.
2. A fully charged **Li-ion Battery, 3.7V DC 800mAH,** was used for each mode of operation.
3. For **PCS 1900**, the worst-case SAR value was found to be **0.323W/Kg** (over a 1g tissue) at **Channel 810** 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: **24 ± 1^0 C**
Tissue Temperature: **24 ± 1^0 C**
Humidity: **57% to 61%**

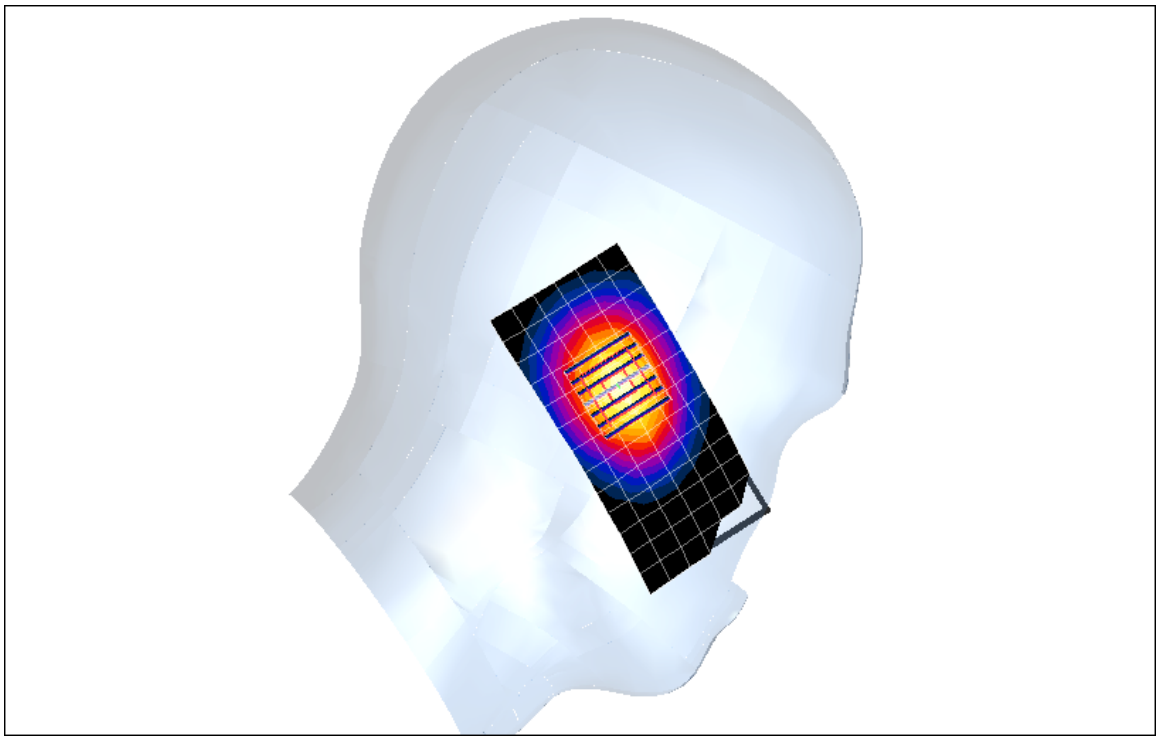
Test Laboratory: Telecom & EMC Testing Group **Date: 08/24/04**
File Name: 850_Left Head_0 Deg_128_D42.da4
Program Name: 56S040679
Phantom section: Left Section
DUT: Sendo_Bobby Phone
Communication System: GSM 850
Frequency: 869.2 MHz
Duty Cycle: 1:8.3
Medium: 850MHz Head TissueMedium parameters used: σ = 0.9476; mho/m, ε_r = 42.91; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(6.6, 6.6, 6.6) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

850_Left Head_0 Deg_Ch128_D42/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 17.4 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.520 mW/g

850_Left Head_0 Deg_Ch128_D42/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.4 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.516 mW/g
Peak SAR (extrapolated) = 0.622 W/kg
SAR(1 g) = 0.482 mW/g; SAR(10 g) = 0.335 mW/g



Ambient Temperature: **24 ± 1^0 C**
Tissue Temperature: **24 ± 1^0 C**
Humidity: **57% to 61%**

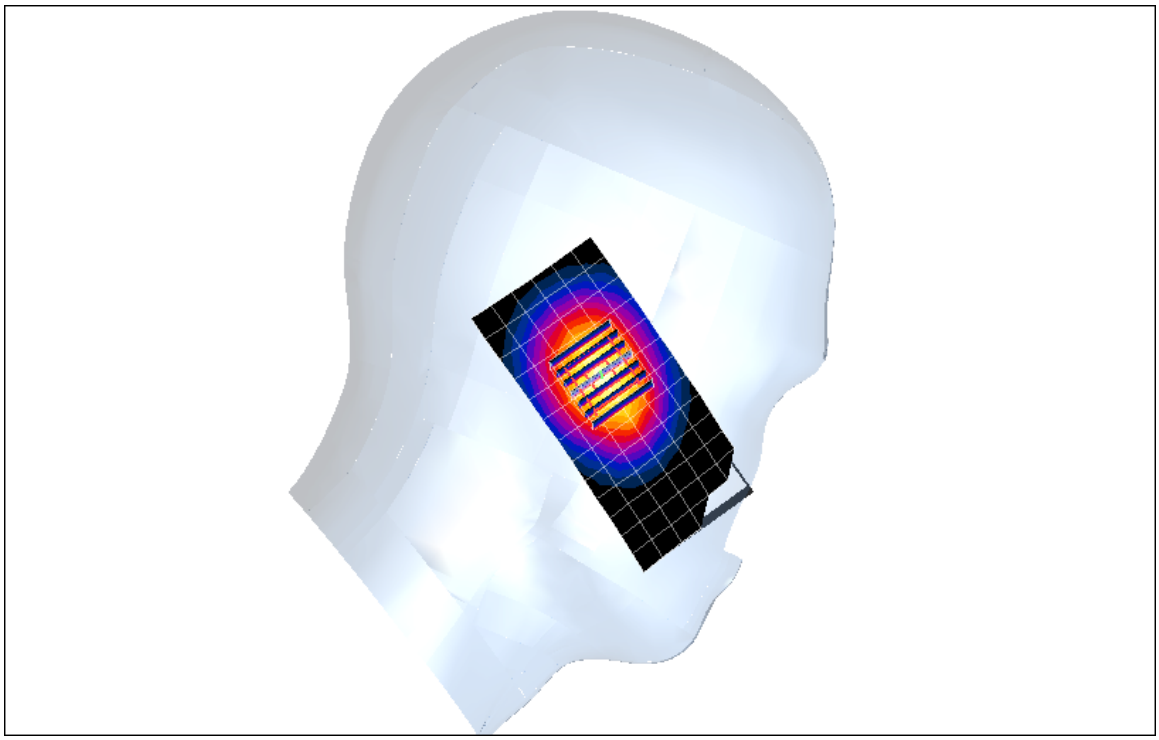
Test Laboratory: Telecom & EMC Testing Group **Date: 08/24/04**
File Name: 850_Left Head_0 Deg_190_D43.da4
Program Name: 56S040679
Phantom section: Left Section
DUT: Sendo_Bobby Phone
Communication System: GSM 850
Frequency: 881.6 MHz
Duty Cycle: 1:8.3
Medium: 850MHz Head TissueMedium parameters used: σ = 0.9476; mho/m, ε_r = 42.91; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(6.6, 6.6, 6.6) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

850_Left Head_0 Deg_190_D43/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 16.3 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.469 mW/g

850_Left Head_0 Deg_190_D43/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.3 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.470 mW/g
Peak SAR (extrapolated) = 0.570 W/kg
SAR(1 g) = 0.439 mW/g; SAR(10 g) = 0.302 mW/g



Ambient Temperature: **24 ± 1^0 C**
Tissue Temperature: **24 ± 1^0 C**
Humidity: **57% to 61%**

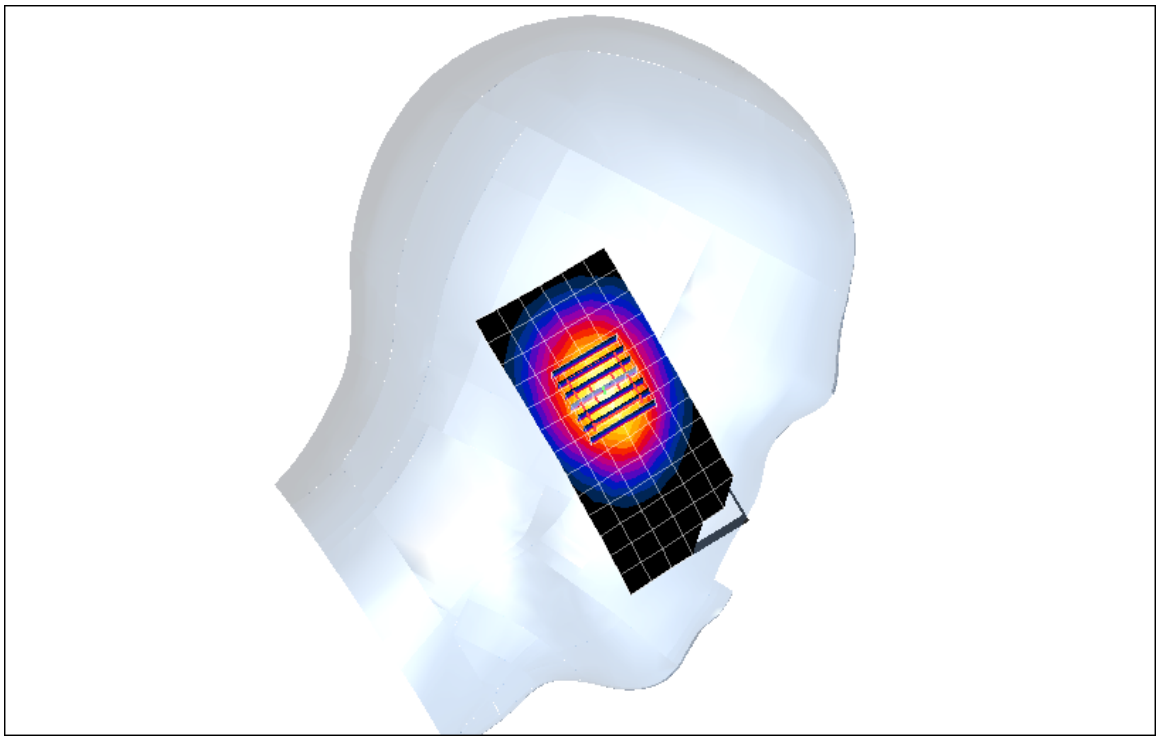
Test Laboratory: Telecom & EMC Testing Group **Date: 08/24/04**
File Name: 850_Left Head_0 Deg_251_D44.da4
Program Name: 56S040679
Phantom section: Left Section
DUT: Sendo_Bobby Phone
Communication System: GSM 850
Frequency: 893.8 MHz
Duty Cycle: 1:8.3
Medium: 850MHz Head TissueMedium parameters used: σ = 0.9476; mho/m, ε_r = 42.91; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(6.6, 6.6, 6.6) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

850_Left Head_0 Deg_251_D44/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 16.9 V/m; Power Drift = -0.0 dB
Maximum value of SAR (measured) = 0.519 mW/g

850_Left Head_0 Deg_251_D44/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.9 V/m; Power Drift = -0.0 dB
Maximum value of SAR (measured) = 0.511 mW/g
Peak SAR (extrapolated) = 0.642 W/kg
SAR(1 g) = 0.482 mW/g; SAR(10 g) = 0.332 mW/g



Ambient Temperature: **24 ± 1^0 C**
Tissue Temperature: **24 ± 1^0 C**
Humidity: **57% to 61%**

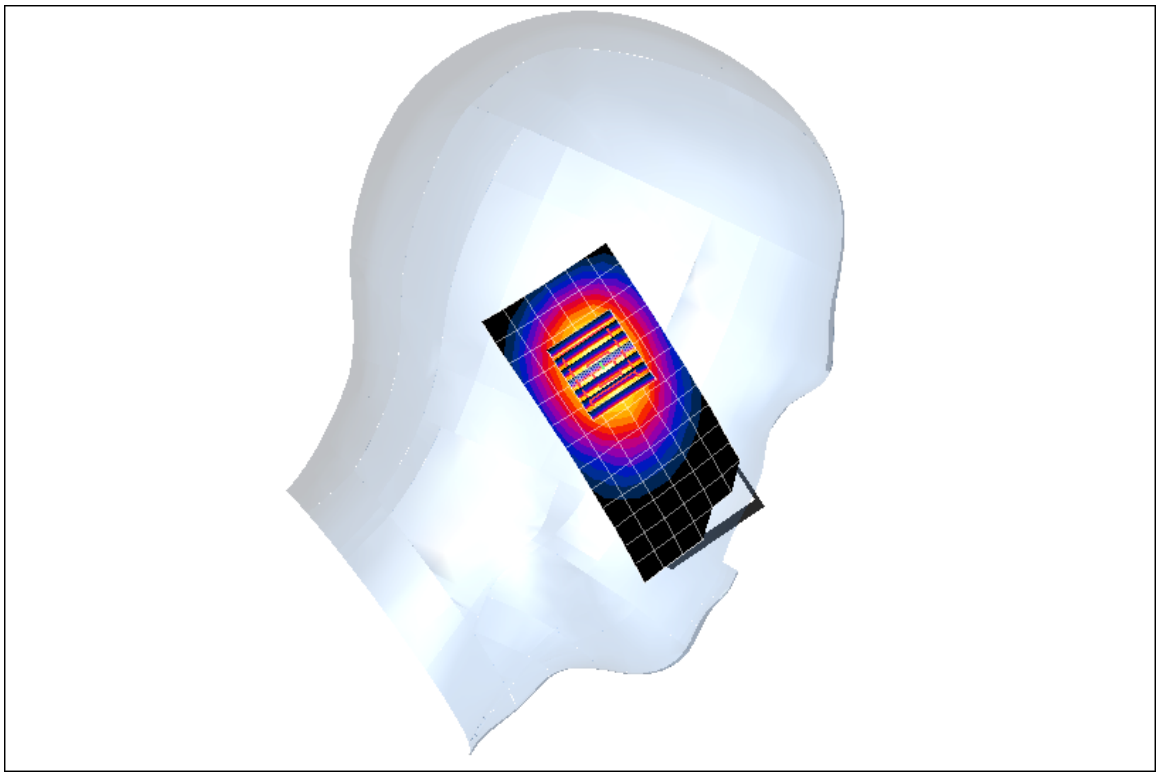
Test Laboratory: Telecom & EMC Testing Group **Date: 08/24/04**
File Name: 850_Left Head_15 Deg_128_D45.da4
Program Name: 56S040679
Phantom section: Left Section
DUT: Sendo_Bobby Phone
Communication System: GSM 850
Frequency: 869.2 MHz
Duty Cycle: 1:8.3
Medium: 850MHz Head TissueMedium parameters used: σ = 0.9476; mho/m, ε_r = 42.91; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(6.6, 6.6, 6.6) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

850_Left Head_15 Deg_128_D45/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 15.3 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.277 mW/g

850_Left Head_15 Deg_128_D45/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.3 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.279 mW/g
Peak SAR (extrapolated) = 0.345 W/kg
SAR(1 g) = 0.262 mW/g; SAR(10 g) = 0.185 mW/g



Ambient Temperature: **24 ± 1^0 C**
Tissue Temperature: **24 ± 1^0 C**
Humidity: **57% to 61%**

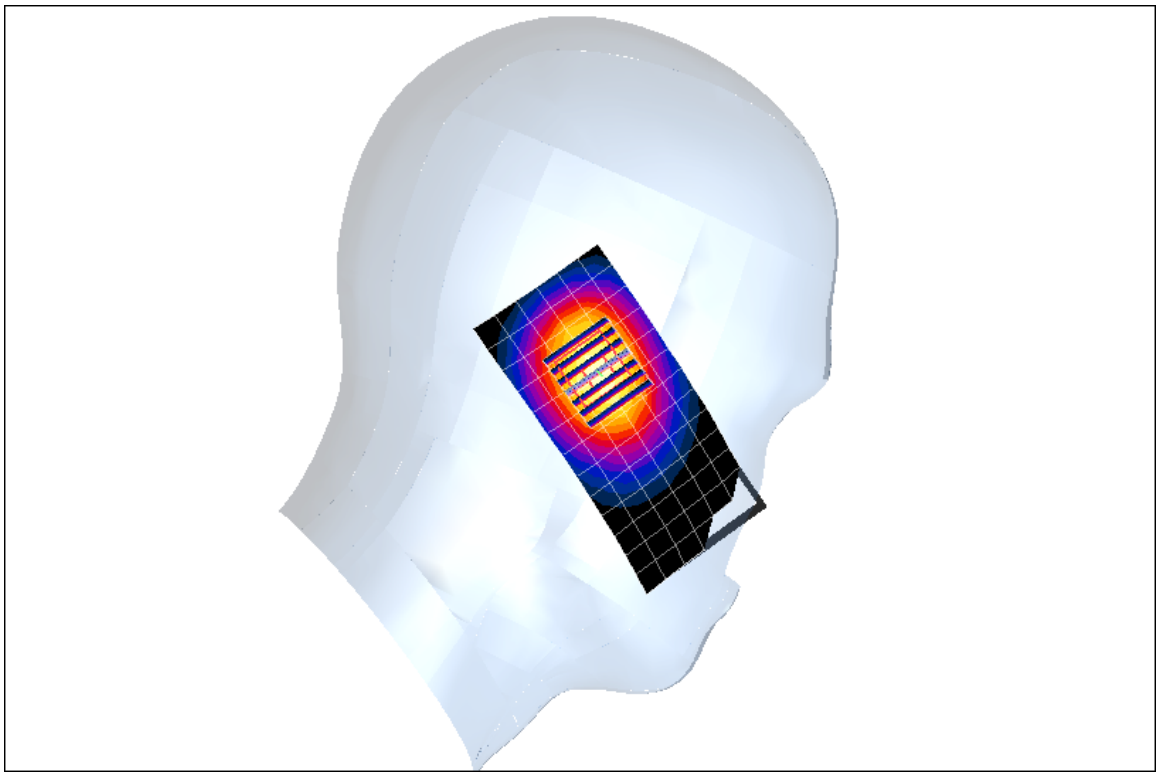
Test Laboratory: Telecom & EMC Testing Group **Date: 08/24/04**
File Name: 850_Left Head_15 Deg_190_D46.da4
Program Name: 56S040679
Phantom section: Left Section
DUT: Sendo_Bobby Phone
Communication System: GSM 850
Frequency: 836.4 MHz
Duty Cycle: 1:8.3
Medium: 850MHz Head TissueMedium parameters used: σ = 0.9476; mho/m, ε_r = 42.91; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(6.6, 6.6, 6.6) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

850_Left Head_15 Deg_190_D46/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 15.3 V/m; Power Drift = -0.0 dB
Maximum value of SAR (measured) = 0.278 mW/g

850_Left Head_15 Deg_190_D46/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.3 V/m; Power Drift = -0.0 dB
Maximum value of SAR (measured) = 0.274 mW/g
Peak SAR (extrapolated) = 0.338 W/kg
SAR(1 g) = 0.260 mW/g; SAR(10 g) = 0.184 mW/g



Ambient Temperature: **24 ± 1^0 C**
Tissue Temperature: **24 ± 1^0 C**
Humidity: **57% to 61%**

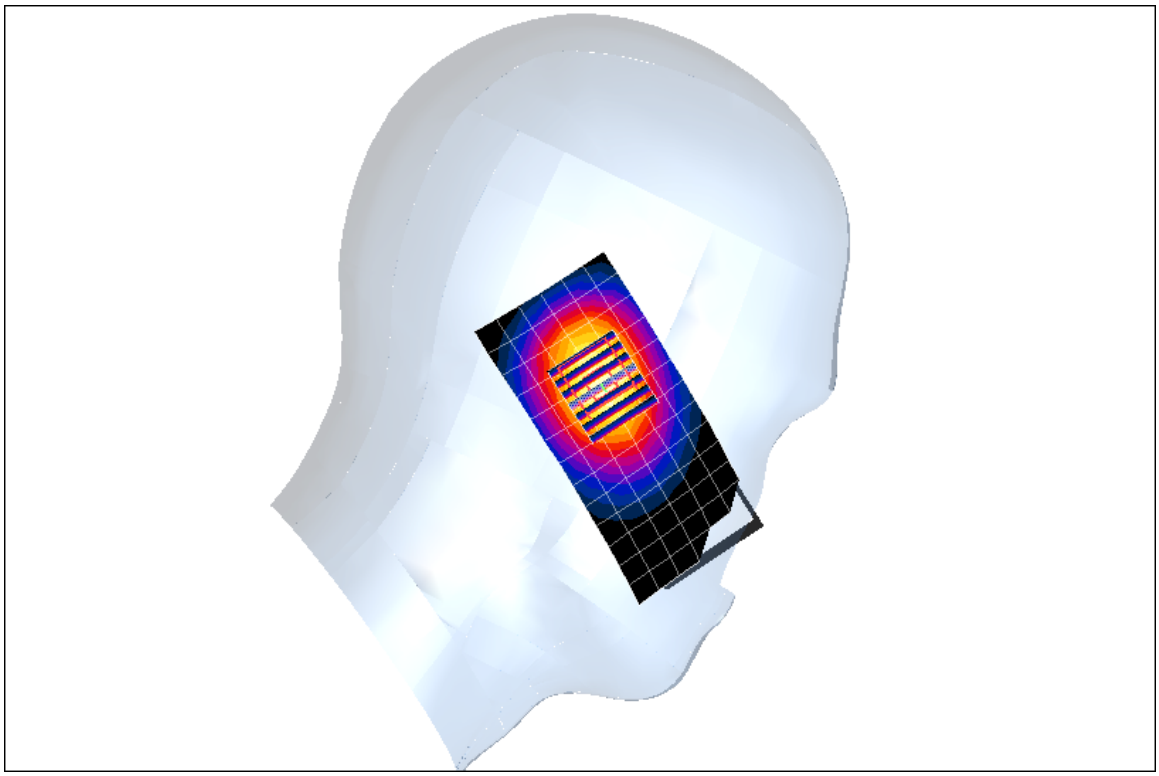
Test Laboratory: Telecom & EMC Testing Group **Date: 08/24/04**
File Name: 850_Left Head_15 Deg_251_D47.da4
Program Name: 56S040679
Phantom section: Left Section
DUT: Sendo_Bobby Phone
Communication System: GSM 850
Frequency: 848.8 MHz
Duty Cycle: 1:8.3
Medium: 850MHz Head TissueMedium parameters used: σ = 0.9476; mho/m, ε_r = 42.91; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(6.6, 6.6, 6.6) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

850_Left Head_15 Deg_251_D47/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 14.9 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.268 mW/g

850_Left Head_15 Deg_251_D47/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.9 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.270 mW/g
Peak SAR (extrapolated) = 0.335 W/kg
SAR(1 g) = 0.254 mW/g; SAR(10 g) = 0.179 mW/g



Ambient Temperature: **24 ± 1^0 C**
Tissue Temperature: **24 ± 1^0 C**
Humidity: **57% to 61%**

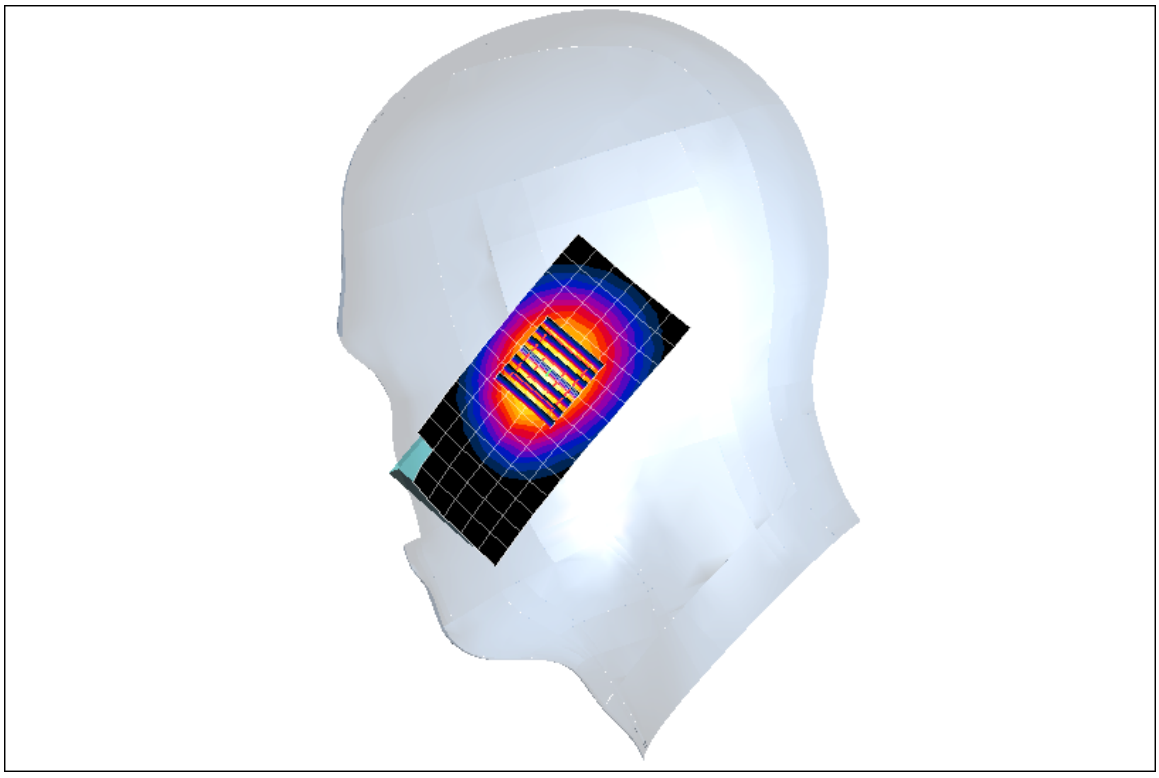
Test Laboratory: Telecom & EMC Testing Group **Date: 08/24/04**
File Name: 850_Right Head_0 Deg_128_D48.da4
Program Name: 56S040679
Phantom section: Right Section
DUT: Sendo_Bobby Phone
Communication System: GSM 850
Frequency: 824.2 MHz
Duty Cycle: 1:8.3
Medium: 850MHz Head TissueMedium parameters used: σ = 0.9476; mho/m, ε_r = 42.91; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(6.6, 6.6, 6.6) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

850_Right Head_0 Deg_128_D48/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 17.6 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.533 mW/g

850_Right Head_0 Deg_128_D48/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.6 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.538 mW/g
Peak SAR (extrapolated) = 0.923 W/kg
SAR(1 g) = 0.500 mW/g; SAR(10 g) = 0.348 mW/g



Ambient Temperature: **24 ± 1^0 C**
Tissue Temperature: **24 ± 1^0 C**
Humidity: **57% to 61%**

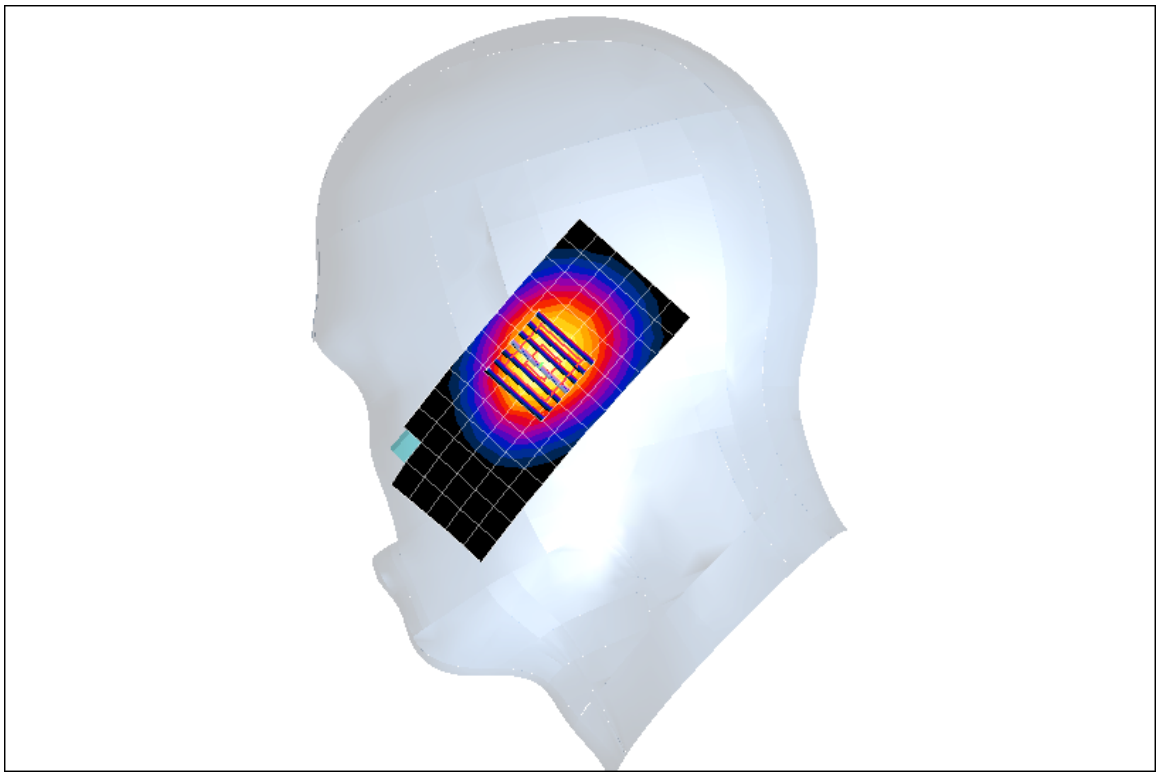
Test Laboratory: Telecom & EMC Testing Group **Date: 08/24/04**
File Name: 850_Right Head_0 Deg_190_D49.da4
Program Name: 56S040679
Phantom section: Right Section
DUT: Sendo_Bobby Phone
Communication System: GSM 850
Frequency: 836.4 MHz
Duty Cycle: 1:8.3
Medium: 850MHz Head TissueMedium parameters used: σ = 0.9476; mho/m, ε_r = 42.91; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(6.6, 6.6, 6.6) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

850_Right Head_0 Deg_190_D49/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 16.4 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.470 mW/g

850_Right Head_0 Deg_190_D49/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.4 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.475 mW/g
Peak SAR (extrapolated) = 0.629 W/kg
SAR(1 g) = 0.443 mW/g; SAR(10 g) = 0.308 mW/g



Ambient Temperature: **24 ± 1^0 C**
Tissue Temperature: **24 ± 1^0 C**
Humidity: **57% to 61%**

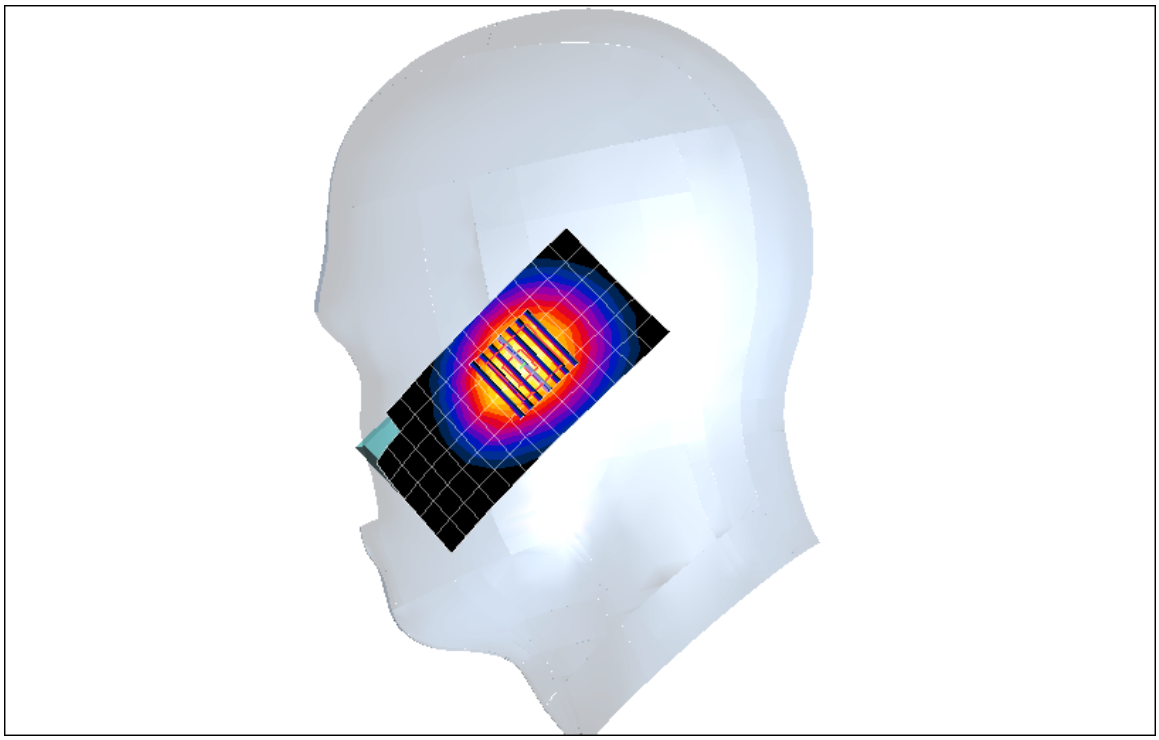
Test Laboratory: Telecom & EMC Testing Group **Date: 08/24/04**
File Name: 850_Right Head_0 Deg_251_D50.da4
Program Name: 56S040679
Phantom section: Right Section
DUT: Sendo_Bobby Phone
Communication System: GSM 850
Frequency: 848.8 MHz
Duty Cycle: 1:8.3
Medium: 850MHz Head TissueMedium parameters used: σ = 0.9476; mho/m, ε_r = 42.91; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(6.6, 6.6, 6.6) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

850_Right Head_0 Deg_251_D50/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 17.1 V/m; Power Drift = -0.0 dB
Maximum value of SAR (measured) = 0.514 mW/g

850_Right Head_0 Deg_251_D50/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.1 V/m; Power Drift = -0.0 dB
Maximum value of SAR (measured) = 0.526 mW/g
Peak SAR (extrapolated) = 0.815 W/kg
SAR(1 g) = 0.490 mW/g; SAR(10 g) = 0.338 mW/g



Ambient Temperature: **23 ± 1^0 C**
Tissue Temperature: **23 ± 1^0 C**
Humidity: **54% to 60%**

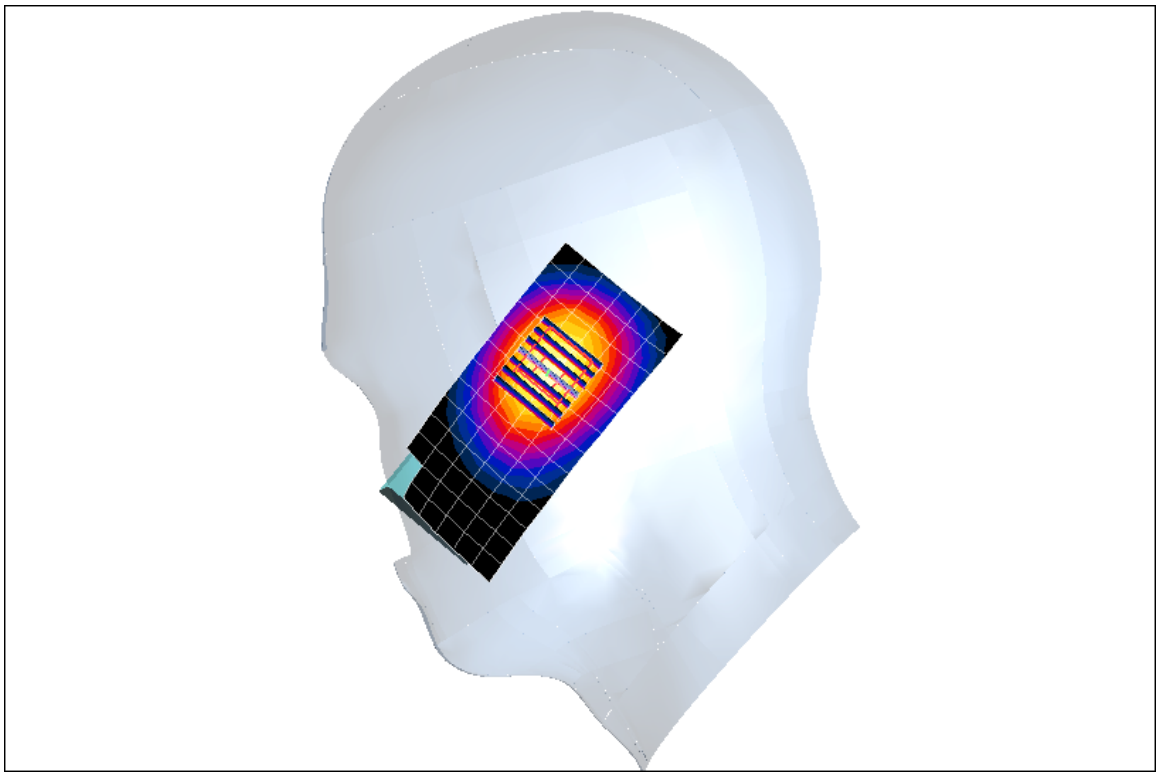
Test Laboratory: Telecom & EMC Testing Group **Date: 08/24/04**
File Name: 850_Right Head_15 Deg_128_D51.da4
Program Name: 56S040679
Phantom section: Right Section
DUT: Sendo_Bobby Phone
Communication System: GSM 850
Frequency: 824.2 MHz
Duty Cycle: 1:8.3
Medium: 850MHz Head TissueMedium parameters used: σ = 0.9476; mho/m, ε_r = 42.91; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(6.6, 6.6, 6.6) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

850_Right Head_15 Deg_128_D51/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 15.2 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.270 mW/g

850_Right Head_15 Deg_128_D51/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.2 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.274 mW/g
Peak SAR (extrapolated) = 0.330 W/kg
SAR(1 g) = 0.257 mW/g; SAR(10 g) = 0.185 mW/g



Ambient Temperature: 23 ± 1^0 C
Tissue Temperature: 23 ± 1^0 C
Humidity: 54% to 60%

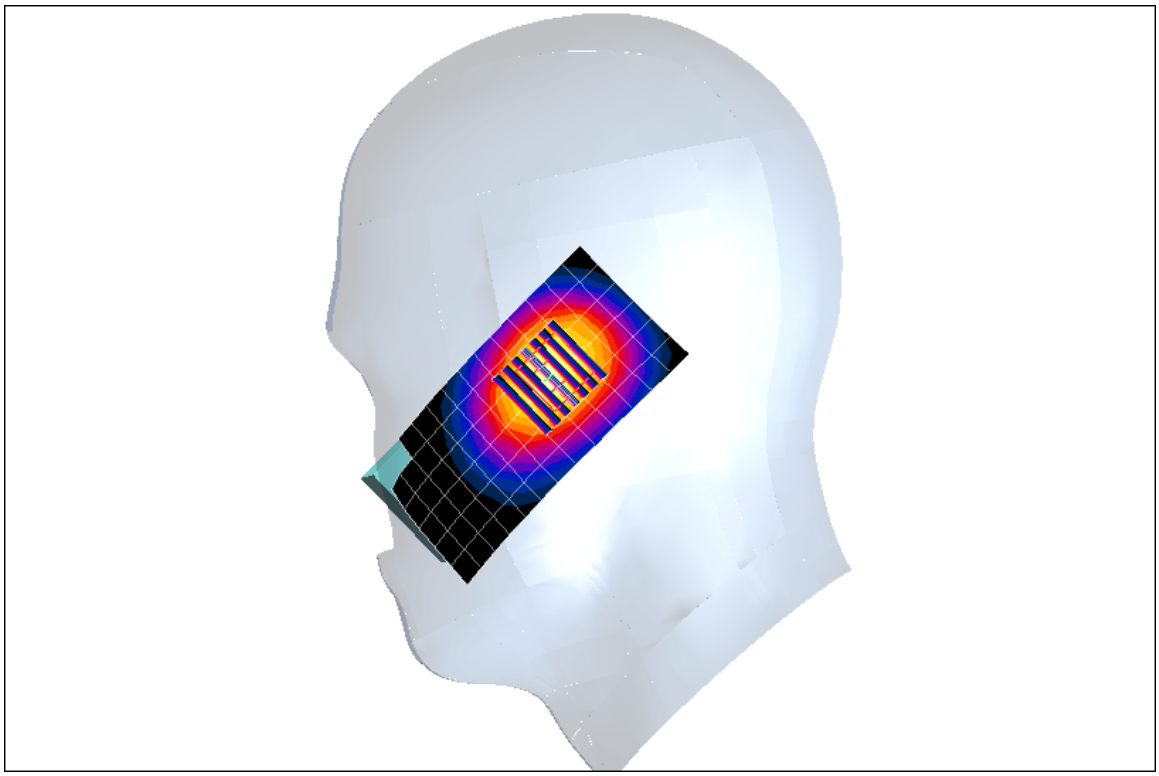
Test Laboratory: Telecom & EMC Testing Group **Date: 08/24/04**
File Name: 850_Right Head_15 Deg_190_D52.da4
Program Name: 56S040679
Phantom section: Right Section
DUT: Sendo_Bobby Phone
Communication System: GSM 850
Frequency: 836.4 MHz
Duty Cycle: 1:8.3
Medium: 850MHz Head TissueMedium parameters used: σ = 0.9476; mho/m, ε_r = 42.91; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(6.6, 6.6, 6.6) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

850_Right Head_15 Deg_190_D52/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 14.1 V/m; Power Drift = -0.002 dB
Maximum value of SAR (measured) = 0.239 mW/g

850_Right Head_15 Deg_190_D52/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.1 V/m; Power Drift = -0.002 dB
Maximum value of SAR (measured) = 0.244 mW/g
Peak SAR (extrapolated) = 0.296 W/kg
SAR(1 g) = 0.229 mW/g; SAR(10 g) = 0.163 mW/g



Ambient Temperature: 23 ± 1^0 C
Tissue Temperature: 23 ± 1^0 C
Humidity: 54% to 60%

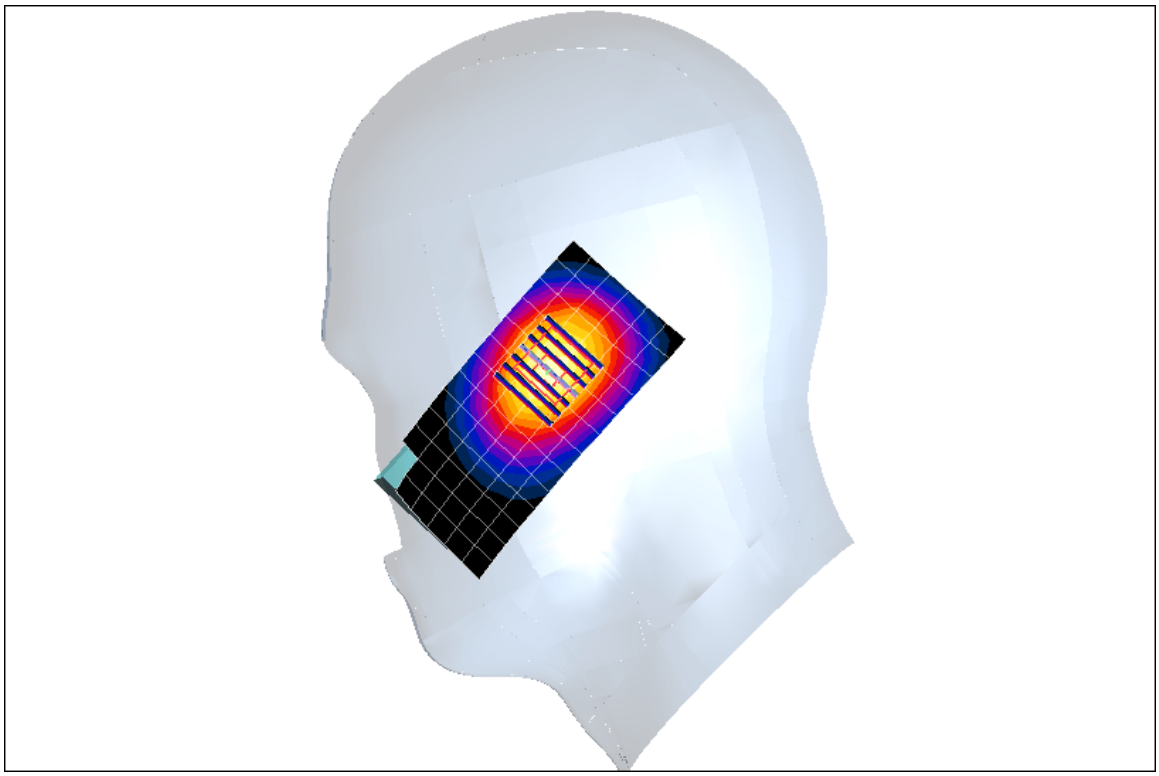
Test Laboratory: Telecom & EMC Testing Group **Date: 08/24/04**
File Name: 850_Right Head_15 Deg_251_D53.da4
Program Name: 56S040679
Phantom section: Right Section
DUT: Sendo_Bobby Phone
Communication System: GSM 850
Frequency: 848.8 MHz
Duty Cycle: 1:8.3
Medium: 850MHz Head TissueMedium parameters used: σ = 0.9476; mho/m, ε_r = 42.91; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(6.6, 6.6, 6.6) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

850_Right Head_15 Deg_251_D53/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 14.9 V/m; Power Drift = -0.0 dB
Maximum value of SAR (measured) = 0.270 mW/g

850_Right Head_15 Deg_251_D53/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.9 V/m; Power Drift = -0.0 dB
Maximum value of SAR (measured) = 0.272 mW/g
Peak SAR (extrapolated) = 0.337 W/kg
SAR(1 g) = 0.257 mW/g; SAR(10 g) = 0.183 mW/g



Ambient Temperature: **23 ± 1^0 C**
Tissue Temperature: **23 ± 1^0 C**
Humidity: **54% to 60%**

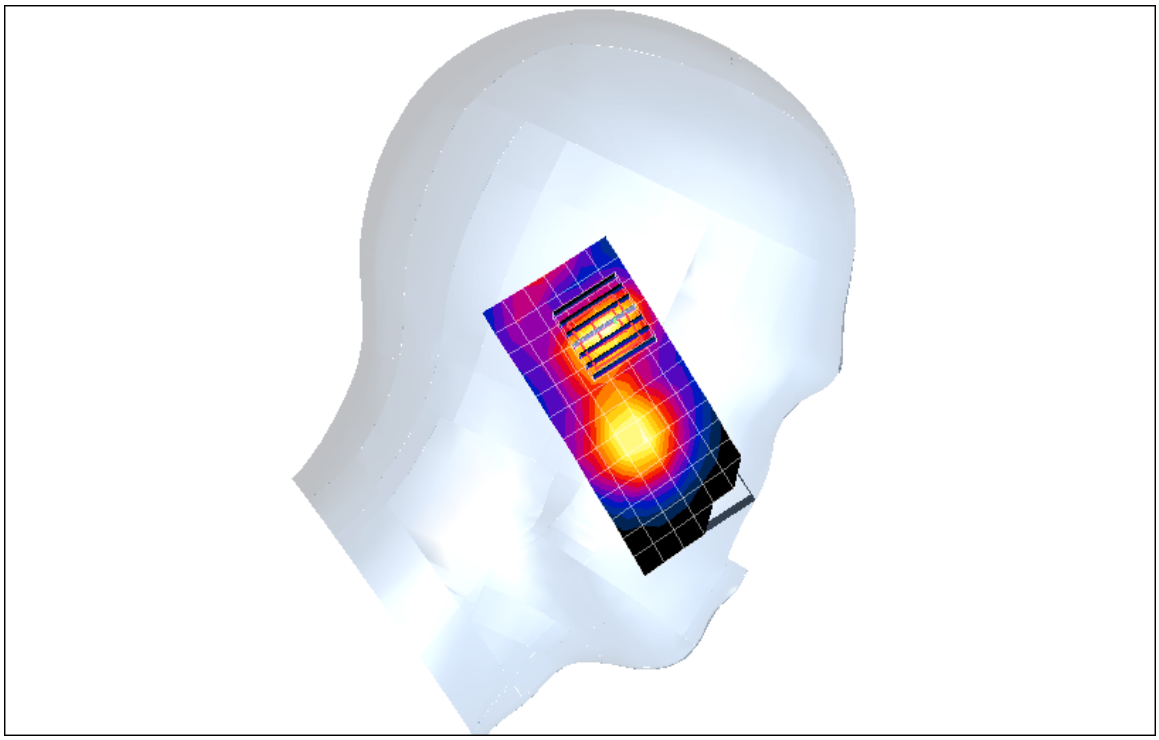
Test Laboratory: Telecom & EMC Testing Group **Date: 08/26/04**
File Name: 1900_Left Head_0 Deg_512_Data 61.da4
Program Name: 56S040679
Phantom section: Left Section
DUT: Sendo_Bobby Phone
Communication System: PSC 1900
Frequency: 1850.2 MHz
Duty Cycle: 1:8.3
Medium: 1900MHz Head TissueMedium parameters used: σ = 1.4477; mho/m, ε_r = 38.75; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(5.3, 5.3, 5.3) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

1900_Left Head_0 Deg_512_Data 61/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 8.49 V/m; Power Drift = -0.2 dB
Maximum value of SAR (measured) = 0.216 mW/g

1900_Left Head_0 Deg_512_Data 61/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.49 V/m; Power Drift = -0.2 dB
Maximum value of SAR (measured) = 0.213 mW/g
Peak SAR (extrapolated) = 0.290 W/kg
SAR(1 g) = 0.194 mW/g; SAR(10 g) = 0.116 mW/g



Ambient Temperature: **23 ± 1^0 C**
Tissue Temperature: **23 ± 1^0 C**
Humidity: **54% to 60%**

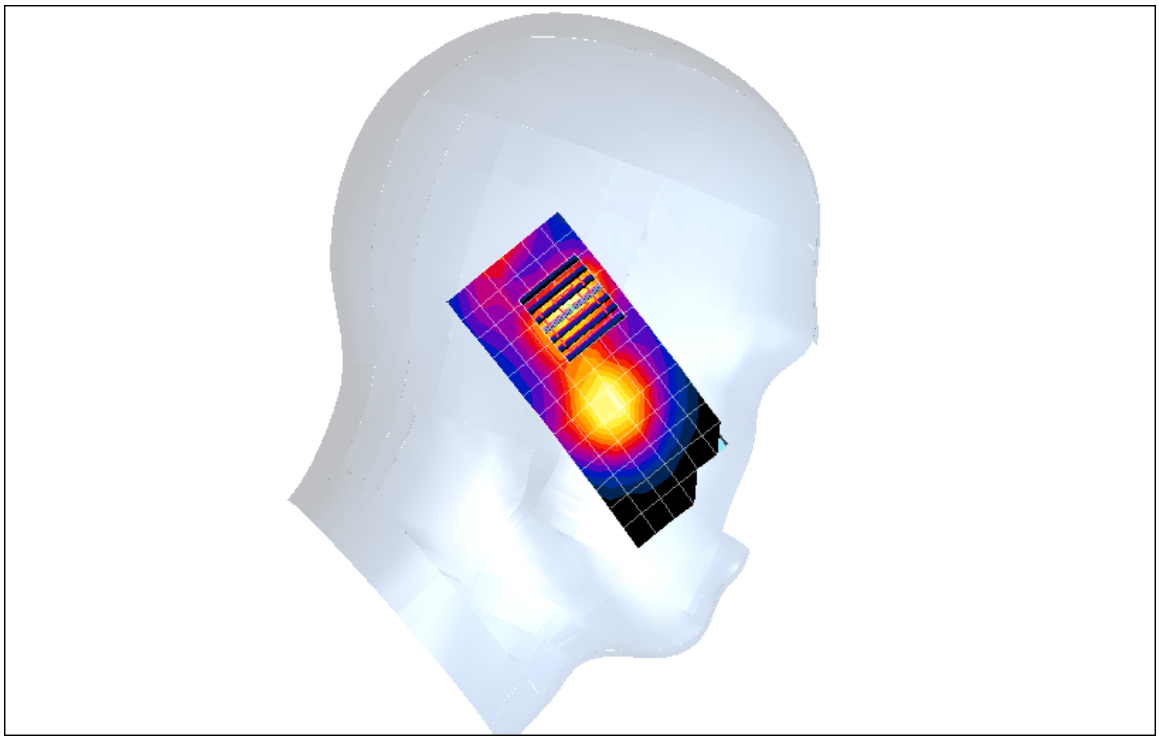
Test Laboratory: Telecom & EMC Testing Group **Date: 08/26/04**
File Name: 1900_Left Head_0 Deg_661_Data 62.da4
Program Name: 56S040679
Phantom section: Left Section
DUT: Sendo_Bobby Phone
Communication System: PSC 1900
Frequency: 1880 MHz
Duty Cycle: 1:8.3
Medium: 1900MHz Head TissueMedium parameters used: σ = 1.4477; mho/m, ε_r = 38.75; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(5.3, 5.3, 5.3) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

1900_Left Head_0 Deg_661_Data 62/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 8.27 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.200 mW/g

1900_Left Head_0 Deg_661_Data 62/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.27 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.203 mW/g
Peak SAR (extrapolated) = 0.276 W/kg
SAR(1 g) = 0.185 mW/g; SAR(10 g) = 0.111 mW/g



Ambient Temperature: **23 ± 1^0 C**
Tissue Temperature: **23 ± 1^0 C**
Humidity: **54% to 60%**

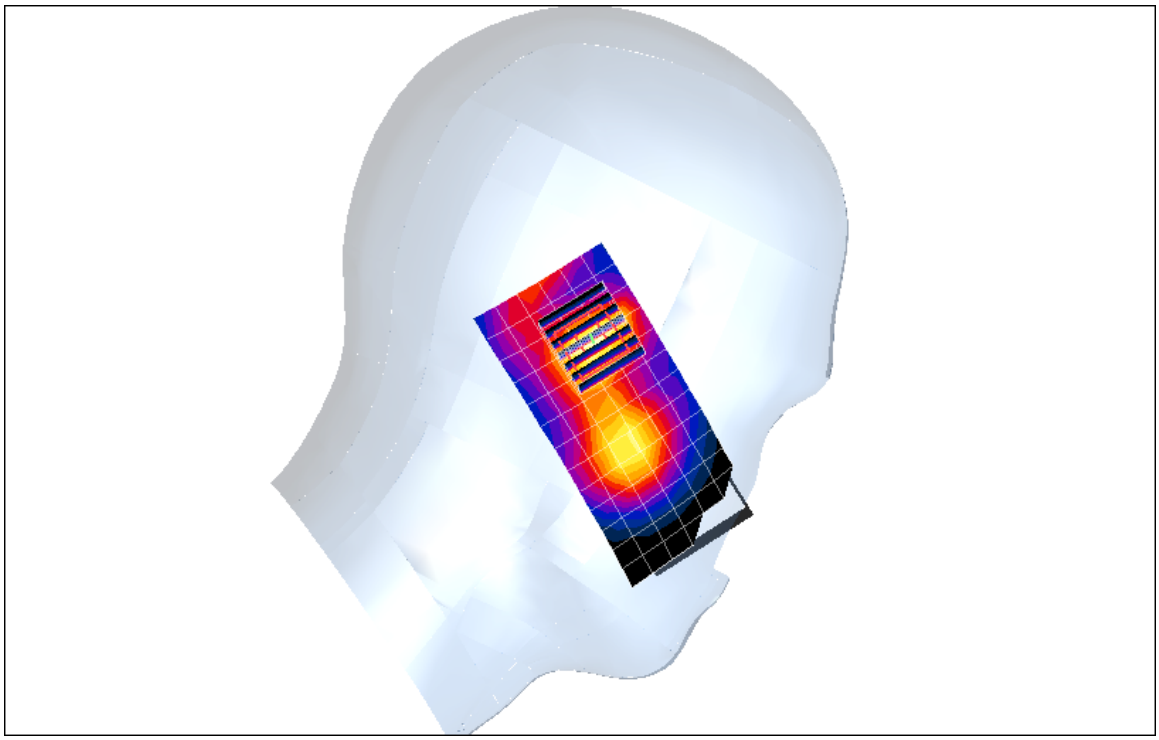
Test Laboratory: Telecom & EMC Testing Group **Date/: 08/26/04**
File Name: 1900_Left Head_0 Deg_810_Data 63.da4
Program Name: 56S040679
Phantom section: Left Section
DUT: Sendo_Bobby Phone
Communication System: PSC 1900
Frequency: 1909.8 MHz
Duty Cycle: 1:8.3
Medium: 1900MHz Head TissueMedium parameters used: σ = 1.4477; mho/m, ε_r = 38.75; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(5.1, 5.1, 5.1) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

1900_Left Head_0 Deg_810_Data 63/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 10.5 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.256 mW/g

1900_Left Head_0 Deg_810_Data 63/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.5 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.259 mW/g
Peak SAR (extrapolated) = 0.337 W/kg
SAR(1 g) = 0.235 mW/g; SAR(10 g) = 0.143 mW/g



Ambient Temperature: **23 ± 1^0 C**
Tissue Temperature: **23 ± 1^0 C**
Humidity: **54% to 60%**

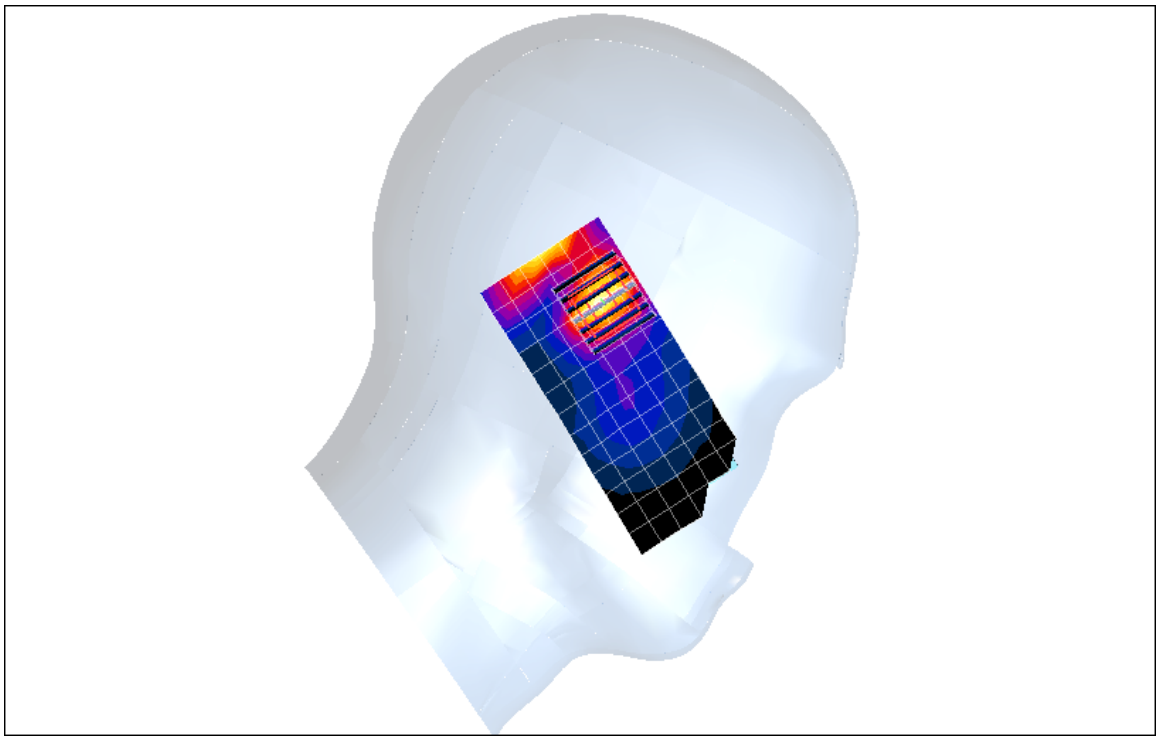
Test Laboratory: Telecom & EMC Testing Group **Date: 08/26/04**
File Name: 1900_Left Head_15 Deg_512_Data 64.da4
Program Name: 56S040679
Phantom section: Left Section
DUT: Sendo_Bobby Phone
Communication System: PSC 1900
Frequency: 1850.2 MHz
Duty Cycle: 1:8.3
Medium: 1900MHz Head TissueMedium parameters used: σ = 1.4477; mho/m, ε_r = 38.75; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(5.3, 5.3, 5.3) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

1900_Left Head_15 Deg_512_Data 64/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 6.6 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.170 mW/g

1900_Left Head_15 Deg_512_Data 64/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.6 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.171 mW/g
Peak SAR (extrapolated) = 0.235 W/kg
SAR(1 g) = 0.160 mW/g; SAR(10 g) = 0.087 mW/g



Ambient Temperature: **23 ± 1^0 C**
Tissue Temperature: **23 ± 1^0 C**
Humidity: **54% to 60%**

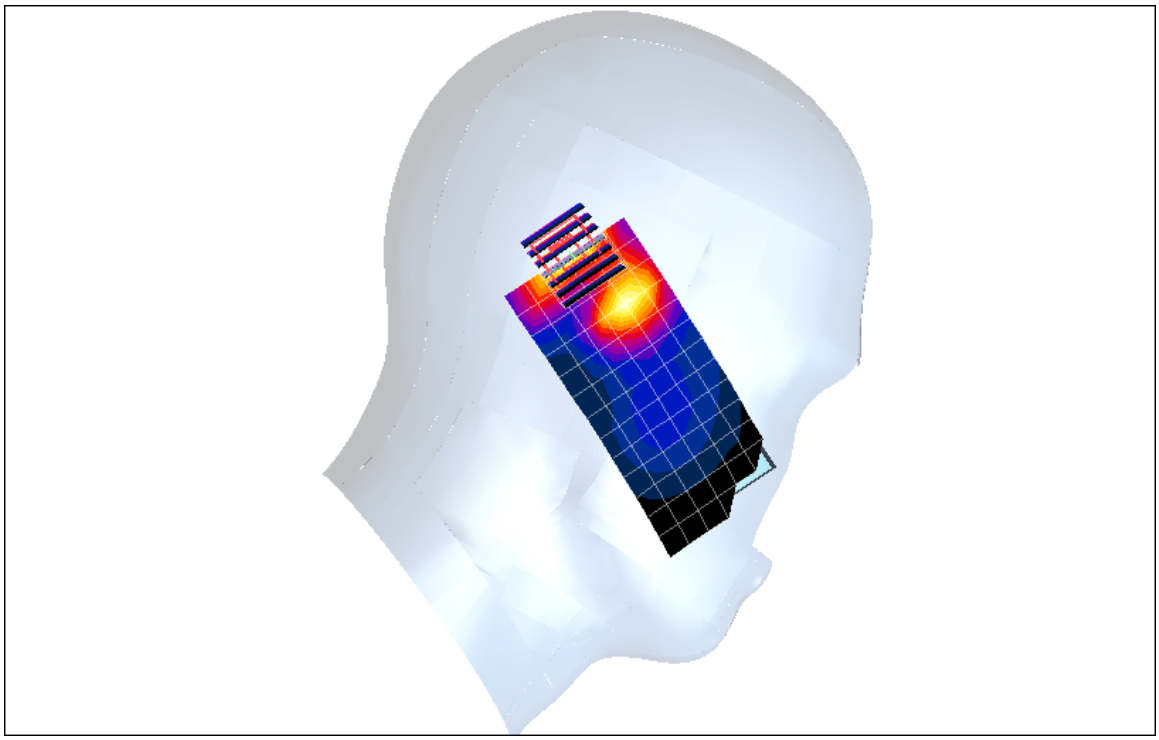
Test Laboratory: Telecom & EMC Testing Group **Date: 08/26/04**
File Name: 1900_Left Head_15 Deg_661_Data 65.da4
Program Name: 56S040679
Phantom section: Left Section
DUT: Sendo_Bobby Phone
Communication System: PSC 1900
Frequency: 1880 MHz
Duty Cycle: 1:8.3
Medium: 1900MHz Head TissueMedium parameters used: σ = 1.4477; mho/m, ε_r = 38.75; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(5.3, 5.3, 5.3) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

1900_Left Head_15 Deg_661_Data 65/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 6.89 V/m; Power Drift = 0.0 dB
Maximum value of SAR (measured) = 0.161 mW/g

1900_Left Head_15 Deg_661_Data 65/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.89 V/m; Power Drift = 0.0 dB
Maximum value of SAR (measured) = 0.159 mW/g
Peak SAR (extrapolated) = 0.236 W/kg
SAR(1 g) = 0.142 mW/g; SAR(10 g) = 0.078 mW/g



Ambient Temperature: **23 ± 1^0 C**
Tissue Temperature: **23 ± 1^0 C**
Humidity: **54% to 60%**

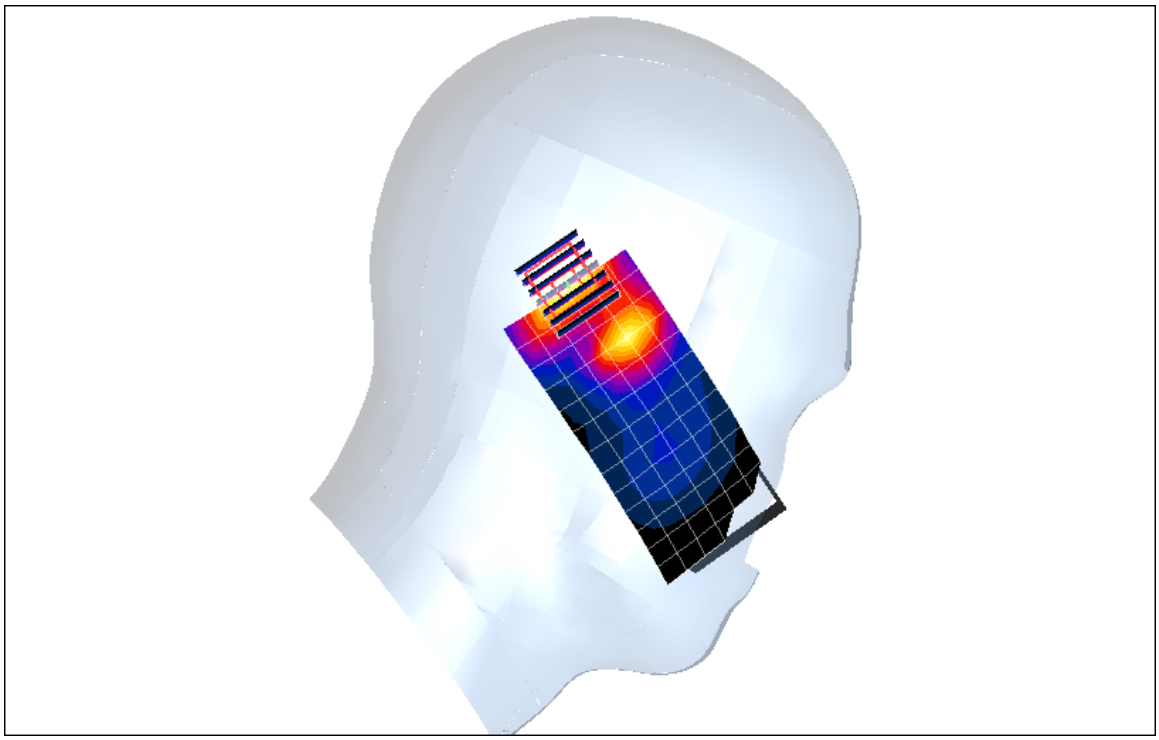
Test Laboratory: Telecom & EMC Testing Group **Date: 08/26/04**
File Name: 1900_Left Head_15 Deg_810_Data 66.da4
Program Name: 56S040679
Phantom section: Left Section
DUT: Sendo_Bobby Phone
Communication System: PSC 1900
Frequency: 1909.8 MHz
Duty Cycle: 1:8.3
Medium: 1900MHz Head TissueMedium parameters used: σ = 1.4477; mho/m, ε_r = 38.75; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(5.1, 5.1, 5.1) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

1900_Left Head_15 Deg_810_Data 66/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 8.67 V/m; Power Drift = -0.2 dB
Maximum value of SAR (measured) = 0.218 mW/g

1900_Left Head_15 Deg_810_Data 66/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.67 V/m; Power Drift = -0.2 dB
Maximum value of SAR (measured) = 0.222 mW/g
Peak SAR (extrapolated) = 0.334 W/kg
SAR(1 g) = 0.195 mW/g; SAR(10 g) = 0.109 mW/g



Ambient Temperature: **23 ± 1^0 C**
Tissue Temperature: **23 ± 1^0 C**
Humidity: **54% to 60%**

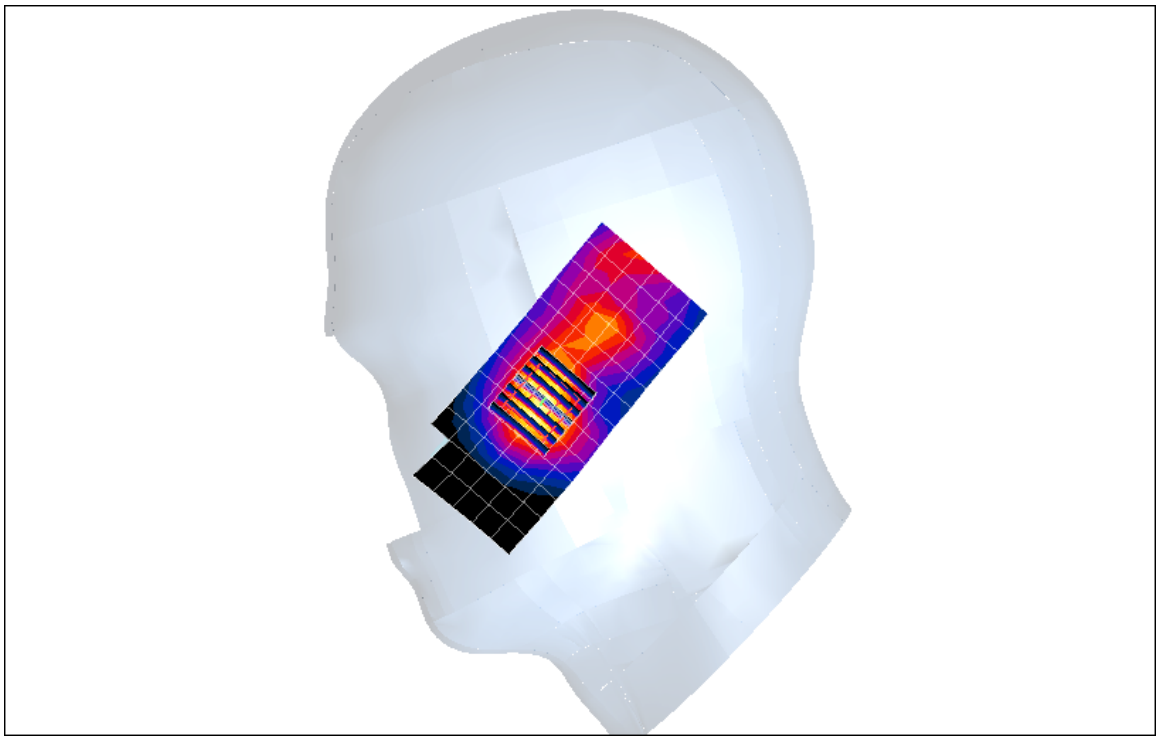
Test Laboratory: Telecom & EMC Testing Group **Date: 08/26/04**
File Name: 1900_Right Head_0 Deg_512_Data 54.da4
Program Name: 56S040520
Phantom section: Right Section
DUT: Sendo_Bobby Phone
Communication System: PSC 1900
Frequency: 1850.2 MHz
Duty Cycle: 1:8.3
Medium: 1900MHz Head TissueMedium parameters used: σ = 1.4477; mho/m, ε_r = 38.75; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(5.3, 5.3, 5.3) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

1900_Right Head_0 Deg_512_Data 54/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 9.77 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.263 mW/g

1900_Right Head_0 Deg_512_Data 54/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.77 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.271 mW/g
Peak SAR (extrapolated) = 0.333 W/kg
SAR(1 g) = 0.246 mW/g; SAR(10 g) = 0.154 mW/g



Ambient Temperature: **23 ± 1^0 C**
Tissue Temperature: **23 ± 1^0 C**
Humidity: **54% to 60%**

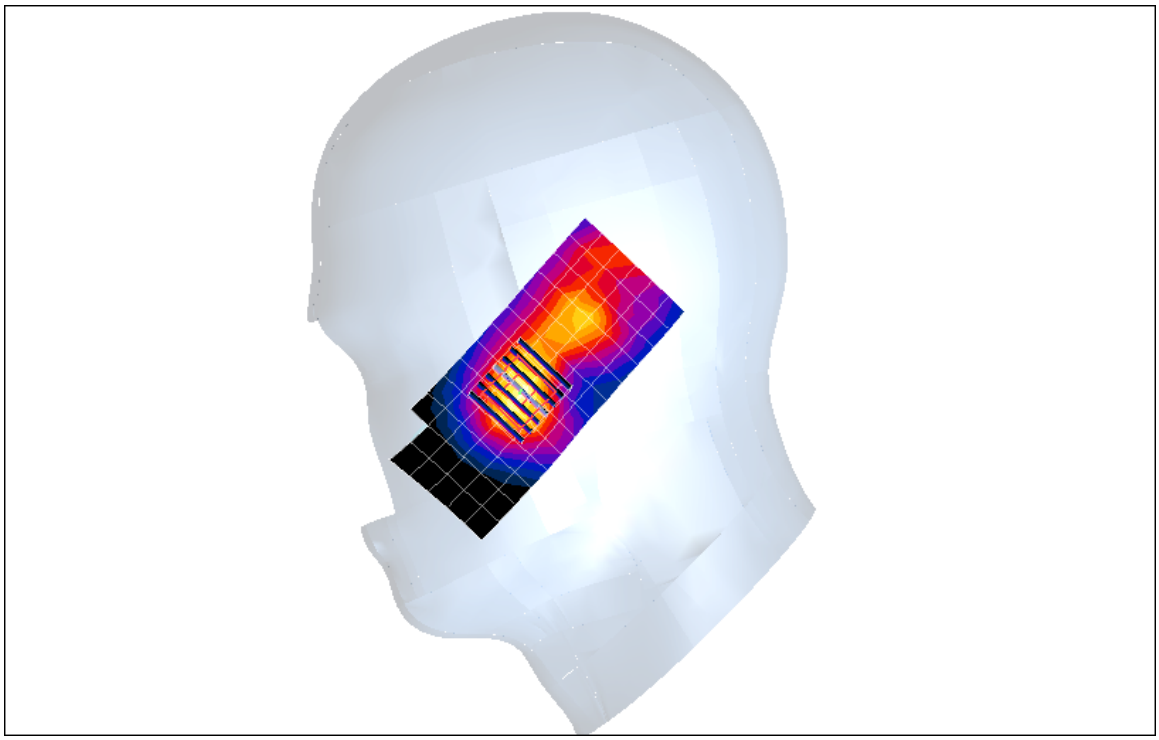
Test Laboratory: Telecom & EMC Testing Group **Date: 08/26/04**
File Name: 1900_Right Head_0 Deg_661_Data 55.da4
Program Name: 56S040520
Phantom section: Right Section
DUT: Sendo_Bobby Phone
Communication System: PSC 1900
Frequency: 1880 MHz
Duty Cycle: 1:8.3
Medium: 1900MHz Head TissueMedium parameters used: σ = 1.4477; mho/m, ε_r = 38.75; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(5.3, 5.3, 5.3) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

1900_Right Head_0 Deg_661_Data 55/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 10.5 V/m; Power Drift = -0.0 dB
Maximum value of SAR (measured) = 0.251 mW/g

1900_Right Head_0 Deg_661_Data 55/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.5 V/m; Power Drift = -0.0 dB
Maximum value of SAR (measured) = 0.259 mW/g
Peak SAR (extrapolated) = 0.398 W/kg
SAR(1 g) = 0.237 mW/g; SAR(10 g) = 0.148 mW/g



Ambient Temperature: **23 ± 1^0 C**
Tissue Temperature: **23 ± 1^0 C**
Humidity: **54% to 60%**

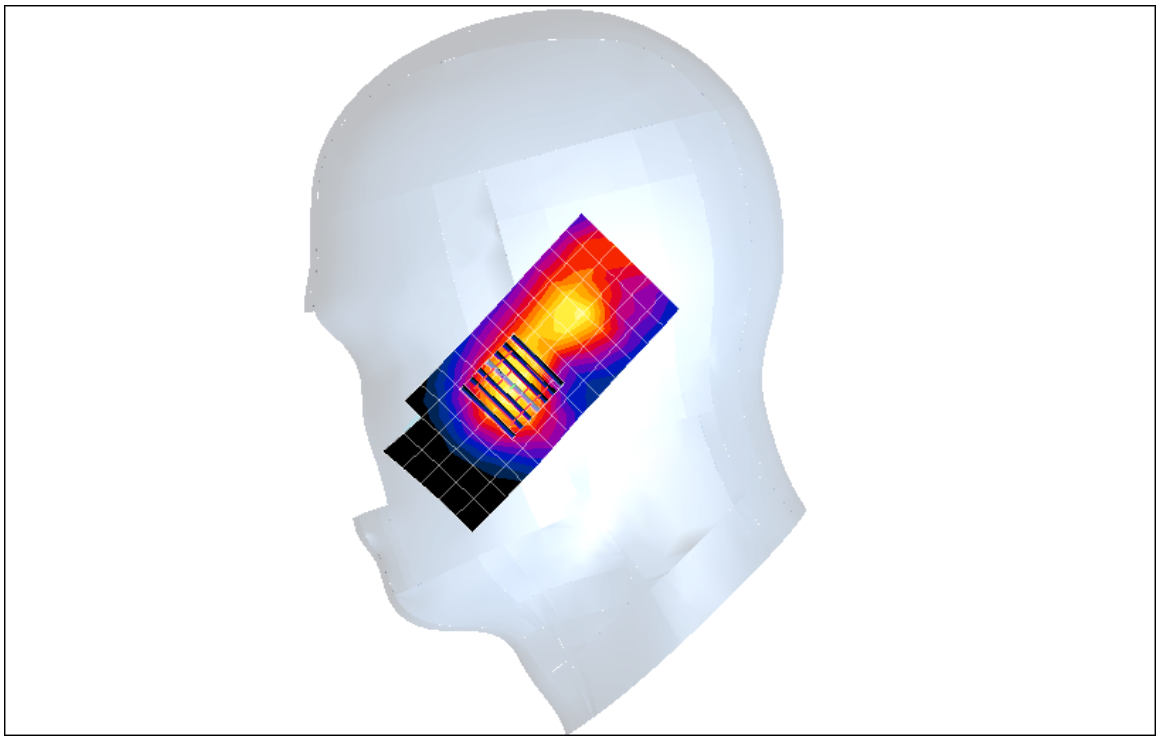
Test Laboratory: Telecom & EMC Testing Group **Date: 08/26/04**
File Name: 1900_Right Head_0 Deg_810_Data 56.da4
Program Name: 56S040520
Phantom section: Right Section
DUT: Sendo_Bobby Phone
Communication System: PSC 1900
Frequency: 1909.8 MHz
Duty Cycle: 1:8.3
Medium: 1900MHz Head TissueMedium parameters used: σ = 1.4477; mho/m, ε_r = 38.75; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(5.1, 5.1, 5.1) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

1900_Right Head_0 Deg_810_Data 56/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 12.1 V/m; Power Drift = -0.0 dB
Maximum value of SAR (measured) = 0.289 mW/g

1900_Right Head_0 Deg_810_Data 56/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.1 V/m; Power Drift = -0.0 dB
Maximum value of SAR (measured) = 0.302 mW/g
Peak SAR (extrapolated) = 0.408 W/kg
SAR(1 g) = 0.273 mW/g; SAR(10 g) = 0.171 mW/g



Ambient Temperature: 23 ± 1^0 C
Tissue Temperature: 23 ± 1^0 C
Humidity: 54% to 60%

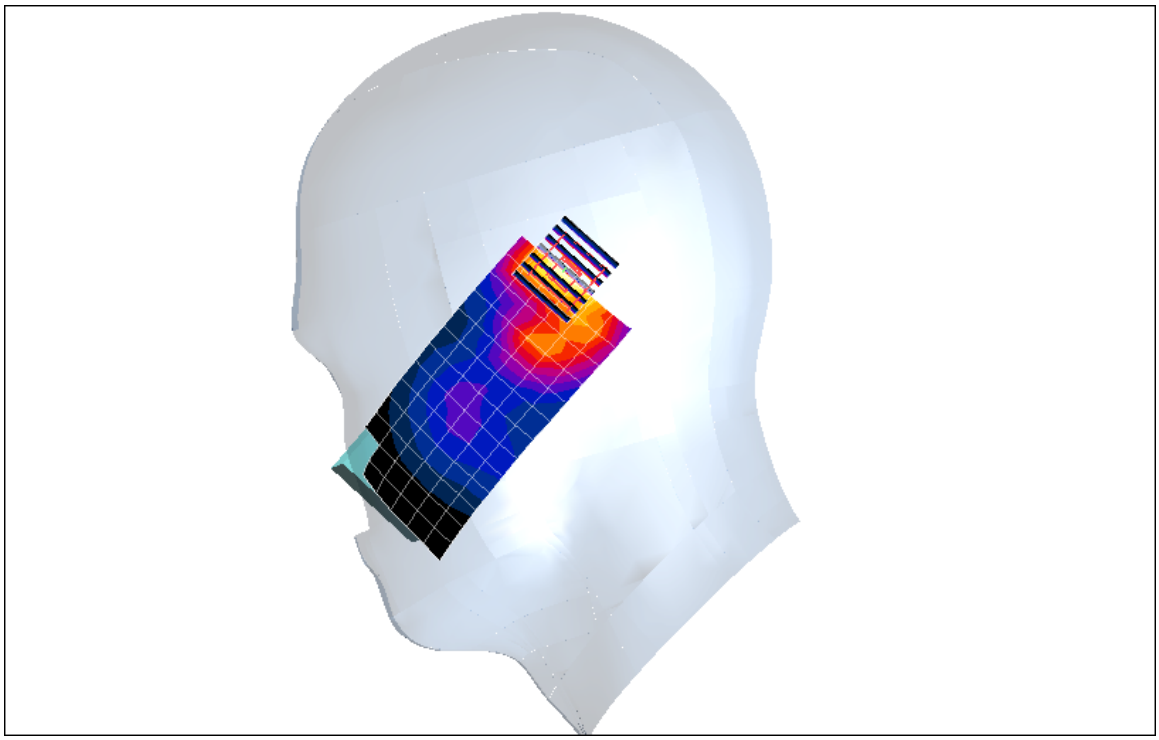
Test Laboratory: Telecom & EMC Testing Group **Date: 08/26/04**
File Name: 1900_Right Head_15 Deg_512_Data 57.da4
Program Name: 56S040520
Phantom section: Right Section
DUT: Sendo_Bobby Phone
Communication System: PSC 1900
Frequency: 1850.2 MHz
Duty Cycle: 1:8.3
Medium: 1900MHz Head TissueMedium parameters used: σ = 1.4477; mho/m, ε_r = 38.75; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(5.3, 5.3, 5.3) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

1900_Right Head_15 Deg_512_Data 57/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 8.62 V/m; Power Drift = 0.0 dB
Maximum value of SAR (measured) = 0.185 mW/g

1900_Right Head_15 Deg_512_Data 57/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.62 V/m; Power Drift = 0.0 dB
Maximum value of SAR (measured) = 0.185 mW/g
Peak SAR (extrapolated) = 0.279 W/kg
SAR(1 g) = 0.168 mW/g; SAR(10 g) = 0.094 mW/g



Ambient Temperature: **23 ± 1^0 C**
Tissue Temperature: **23 ± 1^0 C**
Humidity: **54% to 60%**

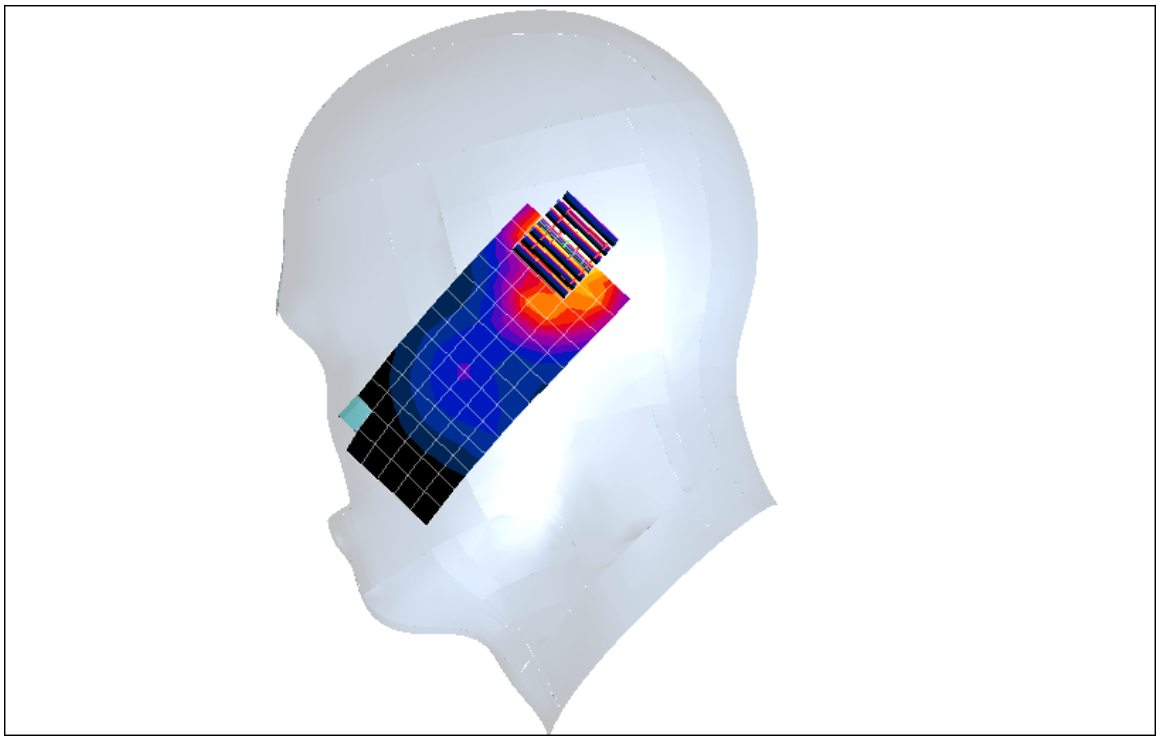
Test Laboratory: Telecom & EMC Testing Group **Date: 08/26/04**
File Name: 1900_Right Head_15 Deg_661_Data 58.da4
Program Name: 56S040520
Phantom section: Right Section
DUT: Sendo_Bobby Phone
Communication System: PSC 1900
Frequency: 1880 MHz
Duty Cycle: 1:8.3
Medium: 1900MHz Head TissueMedium parameters used: σ = 1.4477; mho/m, ε_r = 38.75; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(5.3, 5.3, 5.3) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

1900_Right Head_15 Deg_661_Data 58/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 9.24 V/m; Power Drift = 0.1 dB
Maximum value of SAR (measured) = 0.187 mW/g

1900_Right Head_15 Deg_661_Data 58/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.24 V/m; Power Drift = 0.1 dB
Maximum value of SAR (measured) = 0.193 mW/g
Peak SAR (extrapolated) = 0.293 W/kg
SAR(1 g) = 0.175 mW/g; SAR(10 g) = 0.098 mW/g



Ambient Temperature: 23 ± 1^0 C
Tissue Temperature: 23 ± 1^0 C
Humidity: 54% to 60%

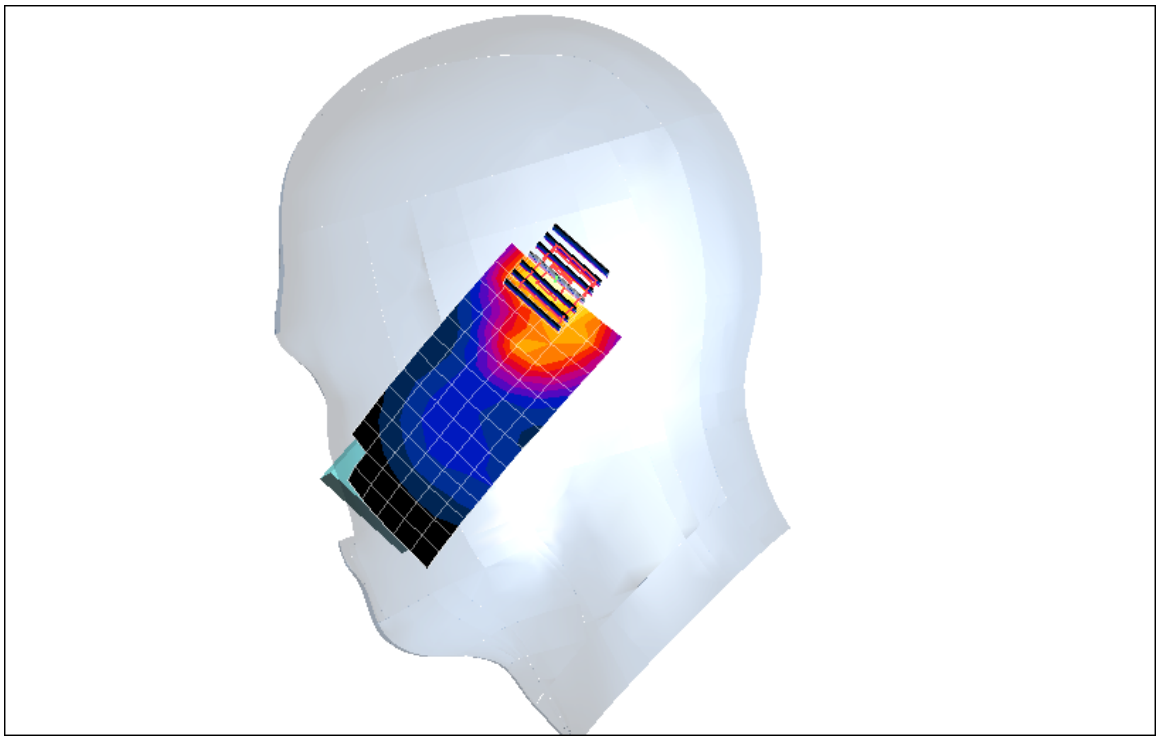
Test Laboratory: Telecom & EMC Testing Group **Date: 08/26/04**
File Name: 1900_Right Head_15 Deg_810_Data 59.da4
Program Name: 56S040520
Phantom section: Right Section
DUT: Sendo_Bobby Phone
Communication System: PSC 1900
Frequency: 1909.8 MHz
Duty Cycle: 1:8.3
Medium: 1900MHz Head TissueMedium parameters used: σ = 1.4477; mho/m, ε_r = 38.75; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(5.1, 5.1, 5.1) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

1900_Right Head_15 Deg_810_Data 59/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 10.9 V/m; Power Drift = 0.0 dB
Maximum value of SAR (measured) = 0.237 mW/g

1900_Right Head_15 Deg_810_Data 59/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.9 V/m; Power Drift = 0.0 dB
Maximum value of SAR (measured) = 0.241 mW/g
Peak SAR (extrapolated) = 0.370 W/kg
SAR(1 g) = 0.220 mW/g; SAR(10 g) = 0.124 mW/g



Ambient Temperature: **24 ± 1^0 C**
Tissue Temperature: **24 ± 1^0 C**
Humidity: **58% to 62%**

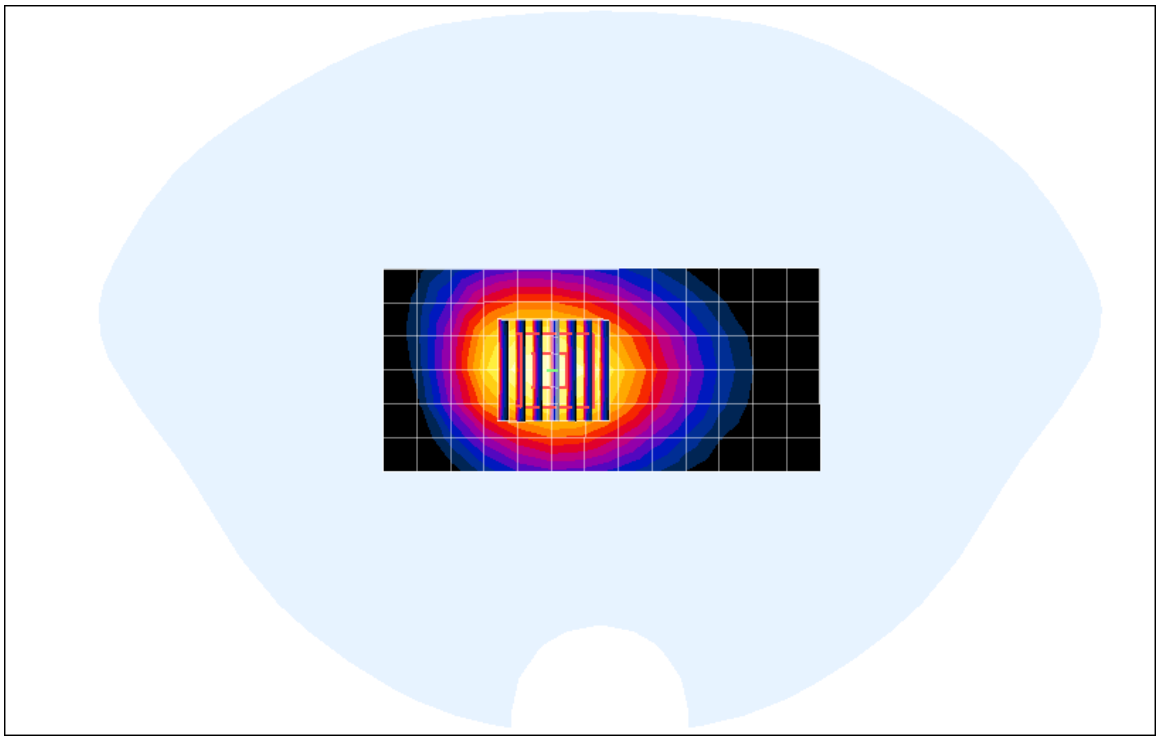
Test Laboratory: Telecom & EMC Testing Group **Date: 08/30/04**
File Name: 850_EUT Rear 15mm Gap_Ch 128_D76.da4
Program Name: 56S040520
Phantom section: Flat Section
DUT: Sendo_Bobby Phone
Communication System: GSM 850
Frequency: 824.2 MHz
Duty Cycle: 1:8.3
Medium: 850MHz Body TissueMedium parameters used: σ = 0.992; mho/m, ε_r = 55.17; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(6.4, 6.4, 6.4) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

850_EUT Rear 15mm Gap_Ch 128_D76/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 16.2 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.267 mW/g

850_EUT Rear 15mm Gap_Ch 128_D76/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.2 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.267 mW/g
Peak SAR (extrapolated) = 0.316 W/kg
SAR(1 g) = 0.250 mW/g; SAR(10 g) = 0.183 mW/g



Ambient Temperature: **24 ± 1^0 C**
Tissue Temperature: **24 ± 1^0 C**
Humidity: **58% to 62%**

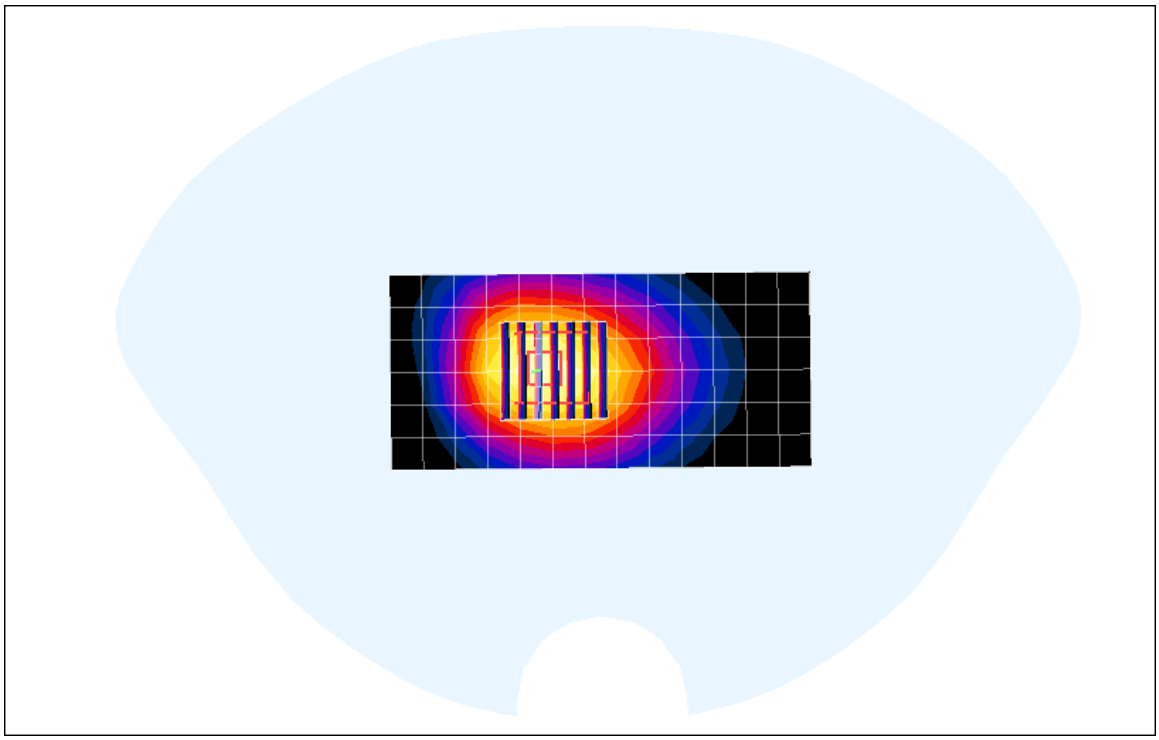
Test Laboratory: Telecom & EMC Testing Group **Date: 08/30/04**
File Name: 850_EUT Rear 15mm Gap_Ch 189_D77.da4
Program Name: 56S040520
Phantom section: Flat Section
DUT: Sendo_Bobby Phone
Communication System: GSM 850
Frequency: 836.4 MHz
Duty Cycle: 1:8.3
Medium: 850MHz Body TissueMedium parameters used: σ = 0.992; mho/m, ε_r = 55.17; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(6.4, 6.4, 6.4) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

850_EUT Rear 15mm Gap_Ch 189_D77/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 15.4 V/m; Power Drift = -0.002 dB
Maximum value of SAR (measured) = 0.245 mW/g

850_EUT Rear 15mm Gap_Ch 189_D77/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.4 V/m; Power Drift = -0.002 dB
Maximum value of SAR (measured) = 0.246 mW/g
Peak SAR (extrapolated) = 0.293 W/kg
SAR(1 g) = 0.232 mW/g; SAR(10 g) = 0.169 mW/g



Ambient Temperature: **24 ± 1^0 C**
Tissue Temperature: **24 ± 1^0 C**
Humidity: **58% to 62%**

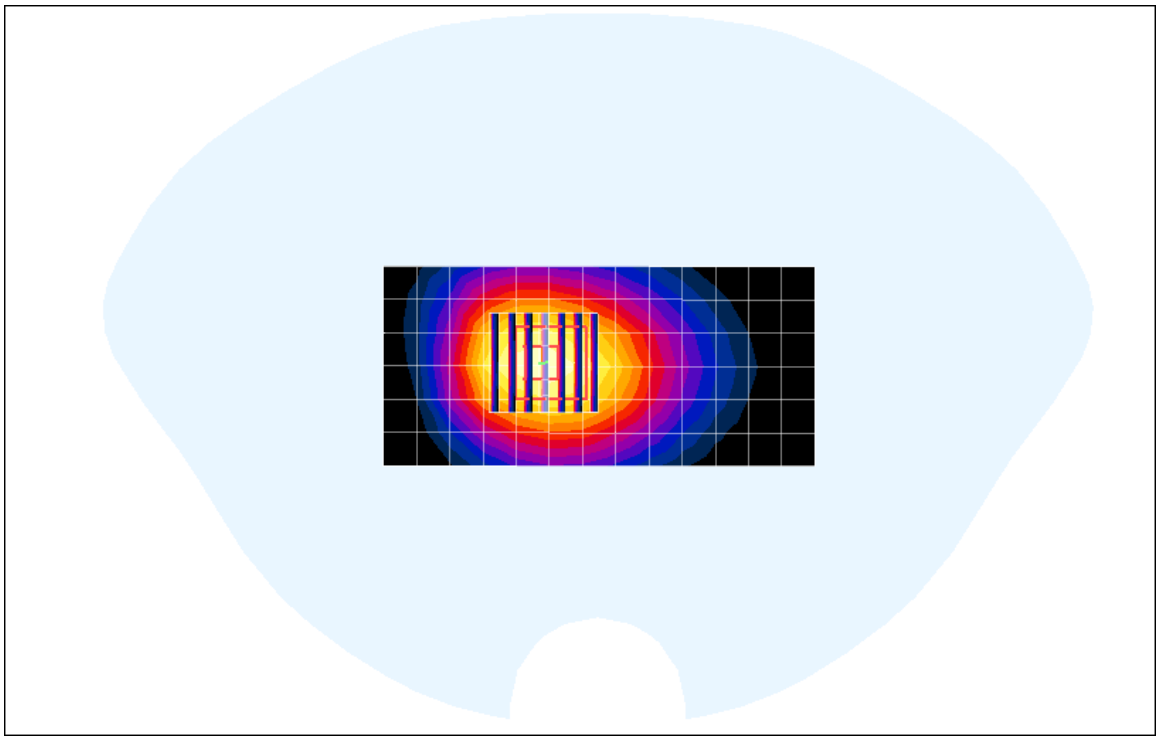
Test Laboratory: Telecom & EMC Testing Group **Date: 08/30/04**
File Name: 850_EUT Rear 15mm Gap_Ch 251_D78.da4
Program Name: 56S040520
Phantom section: Flat Section
DUT: Sendo_Bobby Phone
Communication System: GSM 850
Frequency: 848.8 MHz
Duty Cycle: 1:8.3
Medium: 850MHz Body TissueMedium parameters used: σ = 0.992; mho/m, ε_r = 55.17; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(6.4, 6.4, 6.4) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

850_EUT Rear 15mm Gap_Ch 251_D78/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 15.9 V/m; Power Drift = -0.006 dB
Maximum value of SAR (measured) = 0.262 mW/g

850_EUT Rear 15mm Gap_Ch 251_D78/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.9 V/m; Power Drift = -0.006 dB
Maximum value of SAR (measured) = 0.262 mW/g
Peak SAR (extrapolated) = 0.313 W/kg
SAR(1 g) = 0.246 mW/g; SAR(10 g) = 0.178 mW/g



Ambient Temperature: **24 ± 1^0 C**
Tissue Temperature: **24 ± 1^0 C**
Humidity: **58% to 62%**

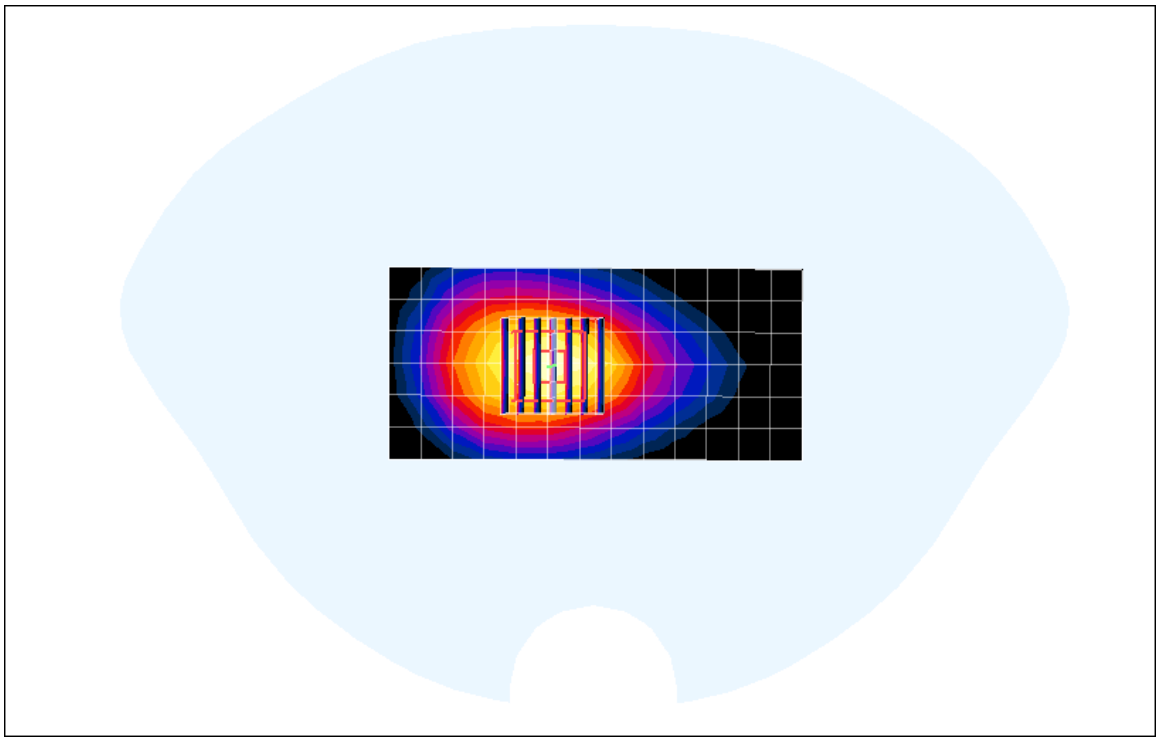
Test Laboratory: Telecom & EMC Testing Group **Date: 08/30/04**
File Name: 850_EUT Front Touched_Ch 128_D70.da4
Program Name: 56S040520
Phantom section: Flat Section
DUT: Sendo_Bobby Phone
Communication System: GSM 850
Frequency: 824.2 MHz
Duty Cycle: 1:8.3
Medium: 850MHz Body TissueMedium parameters used: σ = 0.992; mho/m, ε_r = 55.17; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(6.4, 6.4, 6.4) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

850_EUT Front Touched_Ch 128_D70/Area Scan (7x14x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 20.5 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.416 mW/g

850_EUT Front Touched_Ch 128_D70/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.5 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.417 mW/g
Peak SAR (extrapolated) = 0.493 W/kg
SAR(1 g) = 0.391 mW/g; SAR(10 g) = 0.280 mW/g



Ambient Temperature: **24 ± 1^0 C**
Tissue Temperature: **24 ± 1^0 C**
Humidity: **58% to 62%**

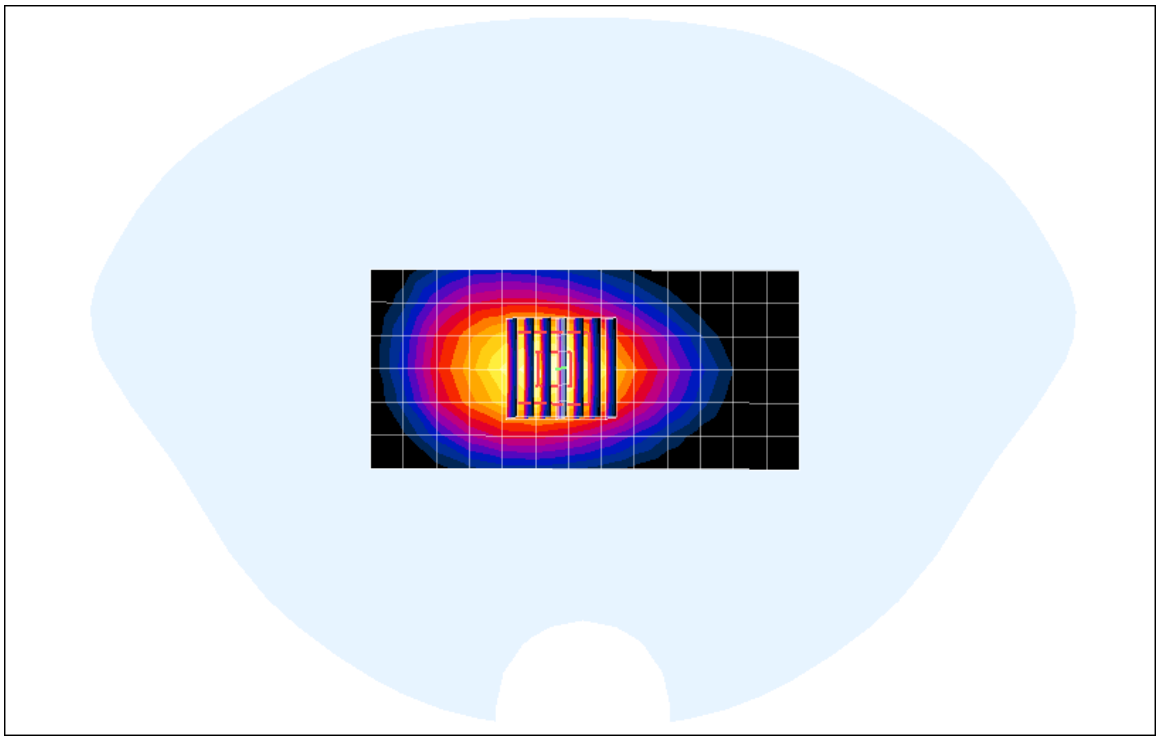
Test Laboratory: Telecom & EMC Testing Group **Date: 08/30/04**
File Name: 850_EUT Front Touched_Ch 189_D71.da4
Program Name: 56S040520
Phantom section: Flat Section
DUT: Sendo_Bobby Phone
Communication System: GSM 850
Frequency: 836.4 MHz
Duty Cycle: 1:8.3
Medium: 850MHz Body TissueMedium parameters used: σ = 0.992; mho/m, ε_r = 55.17; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(6.4, 6.4, 6.4) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

850_EUT Front Touched_Ch 189_D71/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 20.8 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.411 mW/g

850_EUT Front Touched_Ch 189_D71/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.8 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.414 mW/g
Peak SAR (extrapolated) = 0.503 W/kg
SAR(1 g) = 0.387 mW/g; SAR(10 g) = 0.276 mW/g



Ambient Temperature: **24 ± 1^0 C**
Tissue Temperature: **24 ± 1^0 C**
Humidity: **58% to 62%**

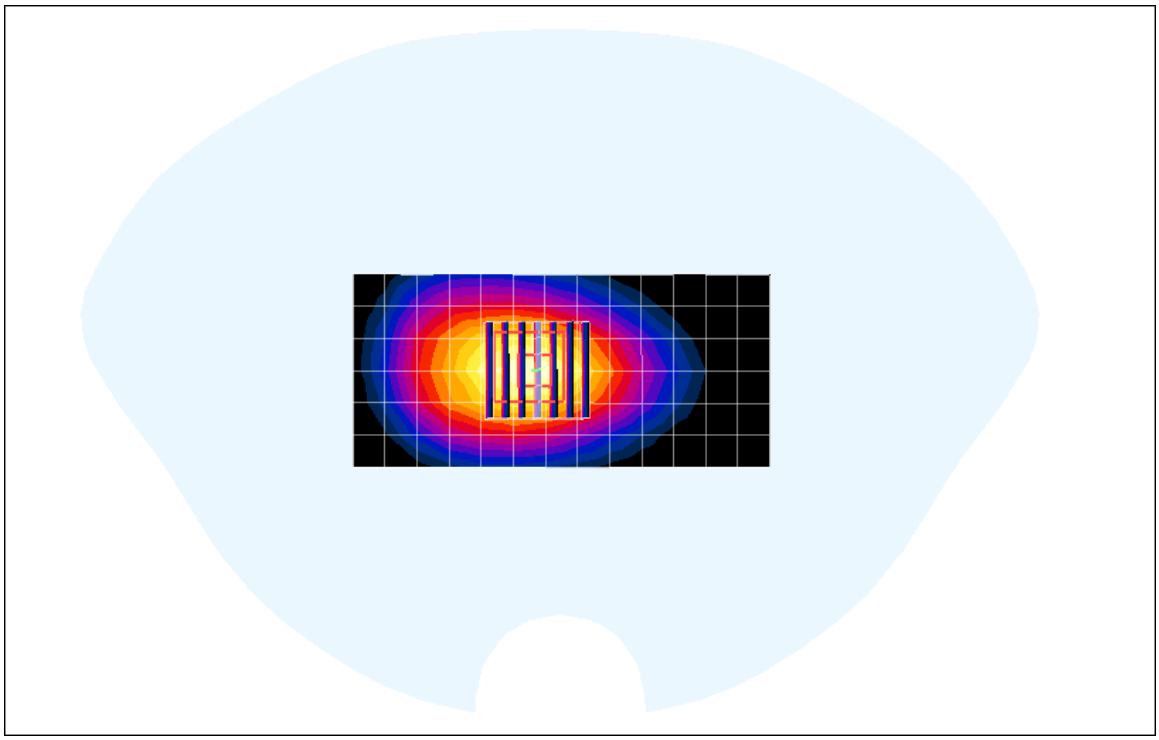
Test Laboratory: Telecom & EMC Testing Group **Date: 08/30/04**
File Name: 850_EUT Front Touched_Ch 251_D72.da4
Program Name: 56S040520
Phantom section: Flat Section
DUT: Sendo_Bobby Phone
Communication System: GSM 850
Frequency: 848.8 MHz
Duty Cycle: 1:8.3
Medium: 850MHz Body TissueMedium parameters used: σ = 0.992; mho/m, ε_r = 55.17; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(6.4, 6.4, 6.4) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

850_EUT Front Touched_Ch 251_D72/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 21 V/m; Power Drift = 0.5 dB
Maximum value of SAR (measured) = 0.418 mW/g

850_EUT Front Touched_Ch 251_D72/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 21 V/m; Power Drift = 0.5 dB
Maximum value of SAR (measured) = 0.422 mW/g
Peak SAR (extrapolated) = 0.520 W/kg
SAR(1 g) = 0.397 mW/g; SAR(10 g) = 0.285 mW/g



Ambient Temperature: **24 ± 1^0 C**
Tissue Temperature: **24 ± 1^0 C**
Humidity: **58% to 62%**

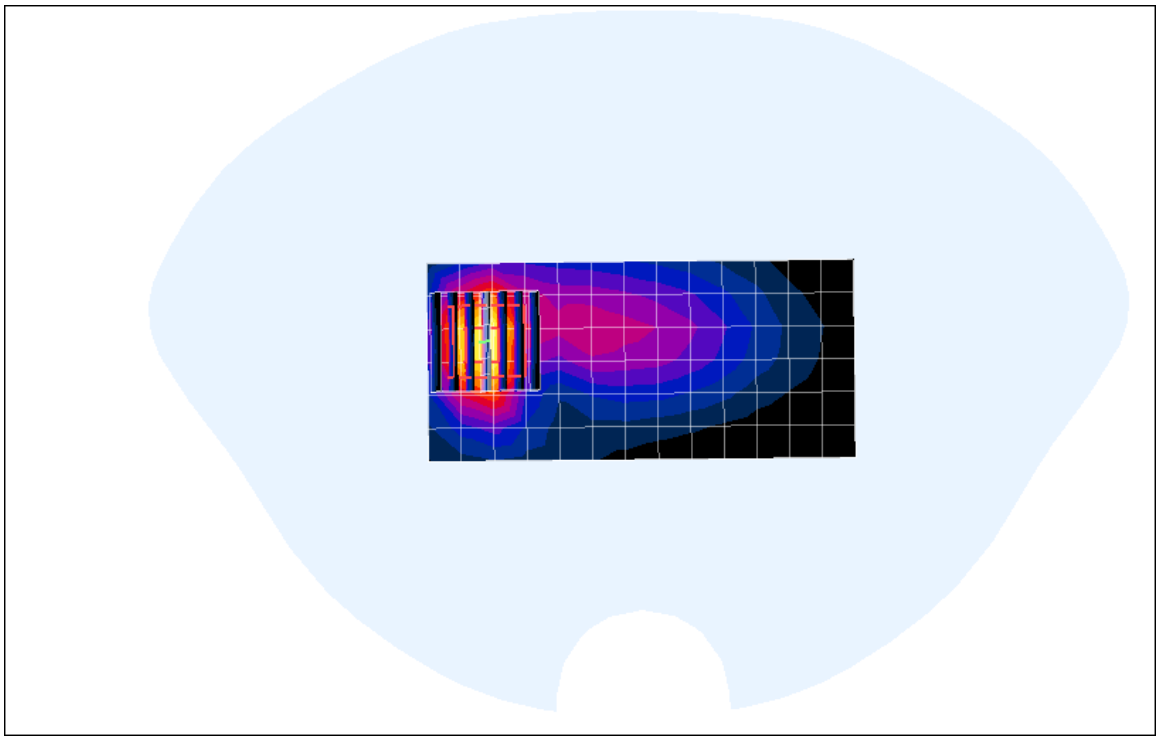
Test Laboratory: Telecom & EMC Testing Group **Date: 08/30/04**
File Name: 1900_EUT Rear 15mm Gap_Ch 512_D80.da4
Program Name: 56S040679
Phantom section: Flat Section
DUT: Sendo_Bobby Phone
Communication System: PSC 1900
Frequency: 1850.2 MHz
Duty Cycle: 1:8.3
Medium: 1900MHz Body TissueMedium parameters used: σ = 1.496; mho/m, ε_r = 53.37; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(5, 5, 5) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

1900_EUT Rear 15mm Gap_Ch 512_D80/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 9.17 V/m; Power Drift = 0.0 dB
Maximum value of SAR (measured) = 0.252 mW/g

1900_EUT Rear 15mm Gap_Ch 512_D80/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.17 V/m; Power Drift = 0.0 dB
Maximum value of SAR (measured) = 0.277 mW/g
Peak SAR (extrapolated) = 0.381 W/kg
SAR(1 g) = 0.246 mW/g; SAR(10 g) = 0.142 mW/g



Ambient Temperature: **24 ± 1^0 C**
Tissue Temperature: **24 ± 1^0 C**
Humidity: **58% to 62%**

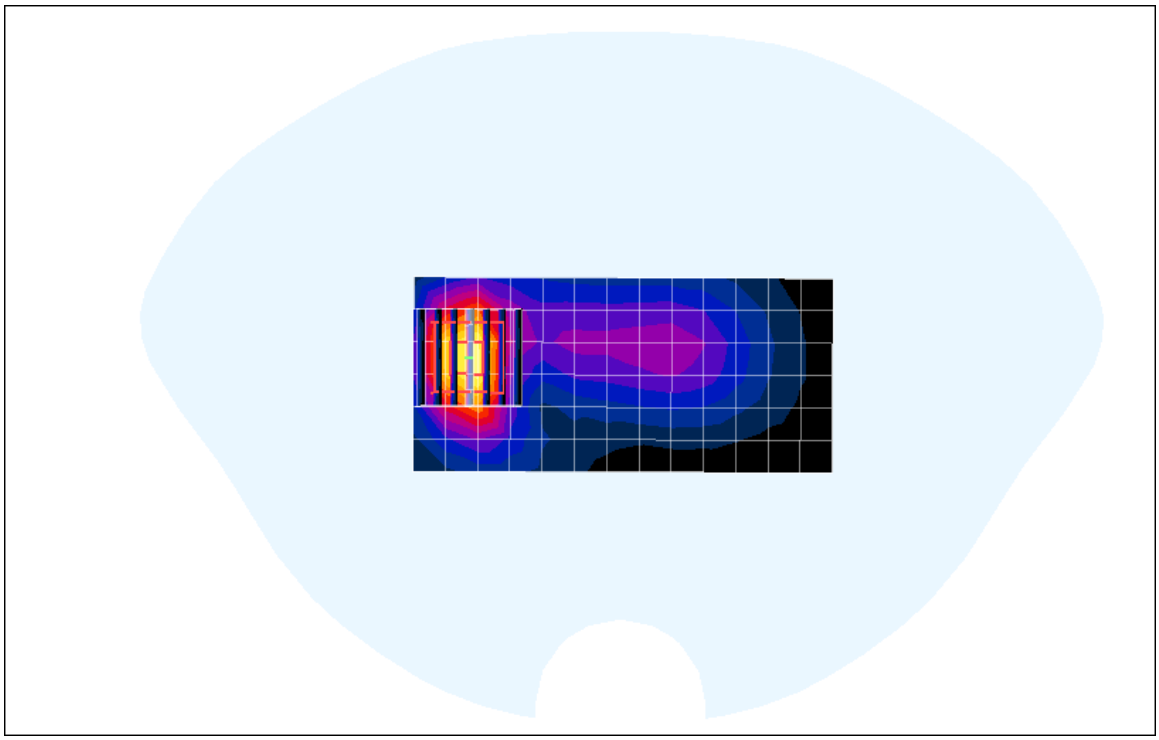
Test Laboratory: Telecom & EMC Testing Group **Date: 08/30/04**
File Name: 1900_EUT Rear 15mm Gap_Ch 661_D81.da4
Program Name: 56S040679
Phantom section: Flat Section
DUT: Sendo_Bobby Phone
Communication System: PSC 1900
Frequency: 1880 MHz
Duty Cycle: 1:8.3
Medium: 1900MHz Body TissueMedium parameters used: σ = 1.496; mho/m, ε_r = 53.37; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(5, 5, 5) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

1900_EUT Rear 15mm Gap_Ch 661_D81/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 8.14 V/m; Power Drift = -0.01 dB
Maximum value of SAR (measured) = 0.234 mW/g

1900_EUT Rear 15mm Gap_Ch 661_D81/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.14 V/m; Power Drift = -0.01 dB
Maximum value of SAR (measured) = 0.258 mW/g
Peak SAR (extrapolated) = 0.357 W/kg
SAR(1 g) = 0.231 mW/g; SAR(10 g) = 0.133 mW/g



Ambient Temperature: **24 ± 1^0 C**
Tissue Temperature: **24 ± 1^0 C**
Humidity: **58% to 62%**

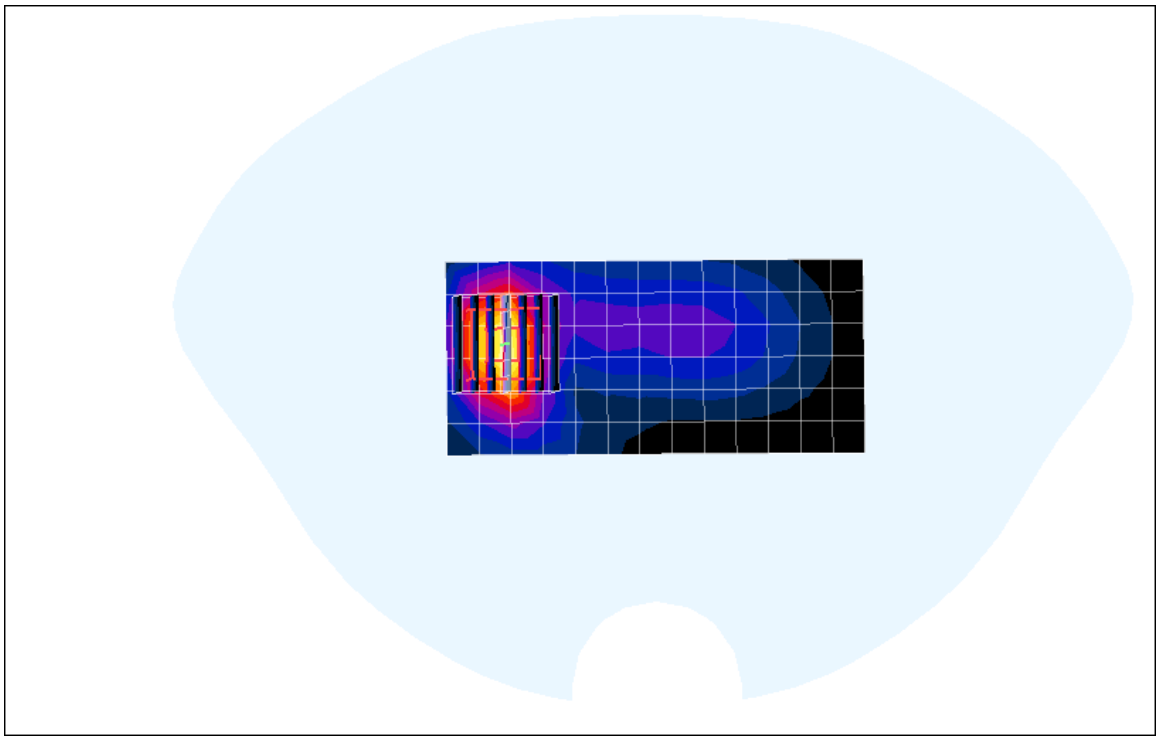
Test Laboratory: Telecom & EMC Testing Group **Date: 08/30/04**
File Name: 1900_EUT Rear 15mm Gap_Ch 810_D82.da4
Program Name: 56S040679
Phantom section: Flat Section
DUT: Sendo_Bobby Phone
Communication System: PSC 1900
Frequency: 1909.8 MHz
Duty Cycle: 1:8.3
Medium: 1900MHz Body TissueMedium parameters used: σ = 1.496; mho/m, ε_r = 53.37; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(4.8, 4.8, 4.8) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

1900_EUT Rear 15mm Gap_Ch 810_D82/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 8.91 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.340 mW/g

1900_EUT Rear 15mm Gap_Ch 810_D82/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.91 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.363 mW/g
Peak SAR (extrapolated) = 0.508 W/kg
SAR(1 g) = 0.323 mW/g; SAR(10 g) = 0.185 mW/g



Ambient Temperature: **24 ± 1^0 C**
Tissue Temperature: **24 ± 1^0 C**
Humidity: **58% to 62%**

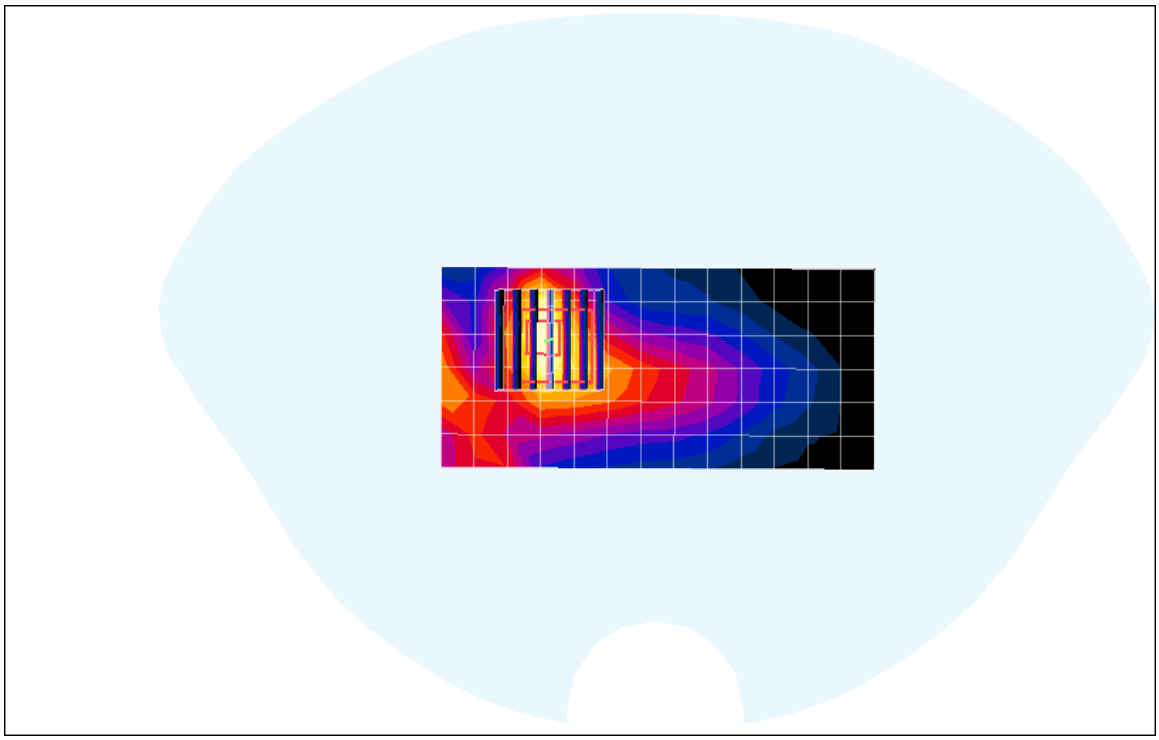
Test Laboratory: Telecom & EMC Testing Group **Date: 08/30/04**
File Name: 1900_EUT Front Touched_Ch 512_D83.da4
Program Name: 56S040679
Phantom section: Flat Section
DUT: Sendo_Bobby Phone
Communication System: PSC 1900
Frequency: 1850.2 MHz
Duty Cycle: 1:8.3
Medium: 1900MHz Body TissueMedium parameters used: σ = 1.496; mho/m, ε_r = 53.37; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(5, 5, 5) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

1900_EUT Front Touched_Ch 512_D83/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 10.8 V/m; Power Drift = -0.5 dB
Maximum value of SAR (measured) = 0.263 mW/g

1900_EUT Front Touched_Ch 512_D83/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.8 V/m; Power Drift = -0.5 dB
Maximum value of SAR (measured) = 0.254 mW/g
Peak SAR (extrapolated) = 0.336 W/kg
SAR(1 g) = 0.236 mW/g; SAR(10 g) = 0.149 mW/g



Ambient Temperature: **24 ± 1^0 C**
Tissue Temperature: **24 ± 1^0 C**
Humidity: **58% to 62%**

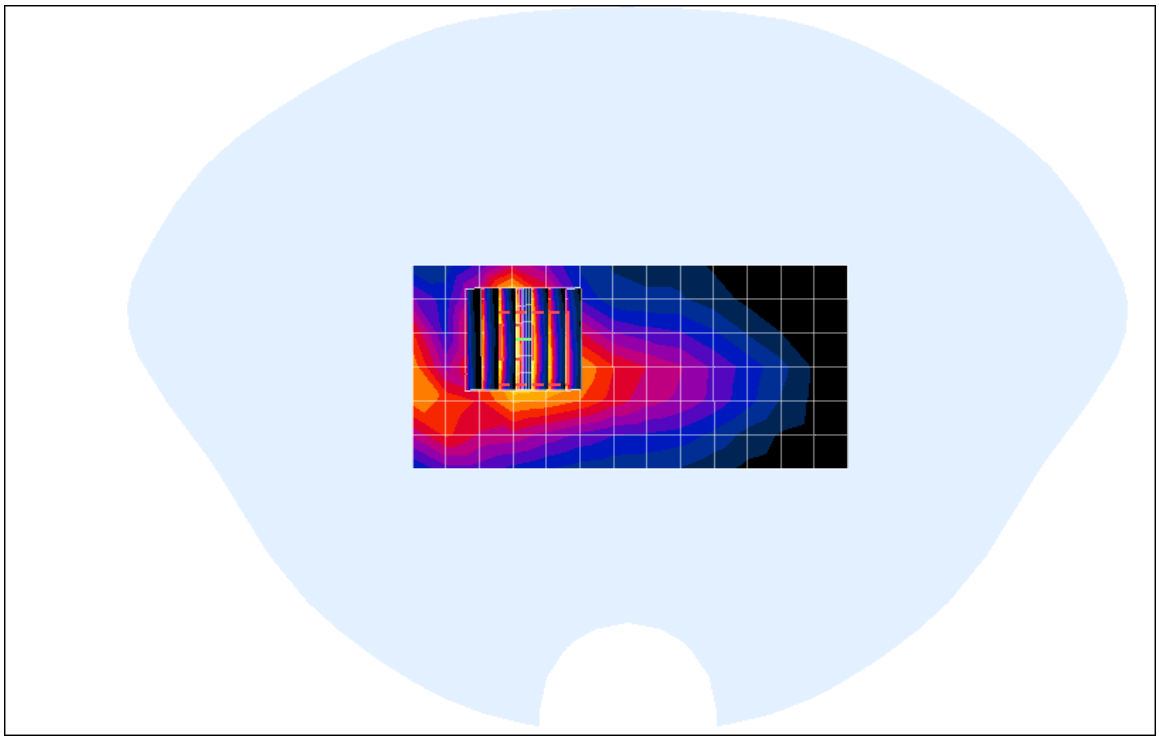
Test Laboratory: Telecom & EMC Testing Group **Date: 08/30/04**
File Name: 1900_EUT Front Touched_Ch 661_D84.da4
Program Name: 56S040679
Phantom section: Flat Section
DUT: Sendo_Bobby Phone
Communication System: PSC 1900
Frequency: 1880 MHz
Duty Cycle: 1:8.3
Medium: 1900MHz Body TissueMedium parameters used: σ = 1.496; mho/m, ε_r = 53.37; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(5, 5, 5) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

1900_EUT Front Touched_Ch 661_D84/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 9.86 V/m; Power Drift = -0.0 dB
Maximum value of SAR (measured) = 0.248 mW/g

1900_EUT Front Touched_Ch 661_D84/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.86 V/m; Power Drift = -0.0 dB
Maximum value of SAR (measured) = 0.246 mW/g
Peak SAR (extrapolated) = 0.323 W/kg
SAR(1 g) = 0.228 mW/g; SAR(10 g) = 0.145 mW/g



Ambient Temperature: **24 ± 1^0 C**
Tissue Temperature: **24 ± 1^0 C**
Humidity: **58% to 62%**

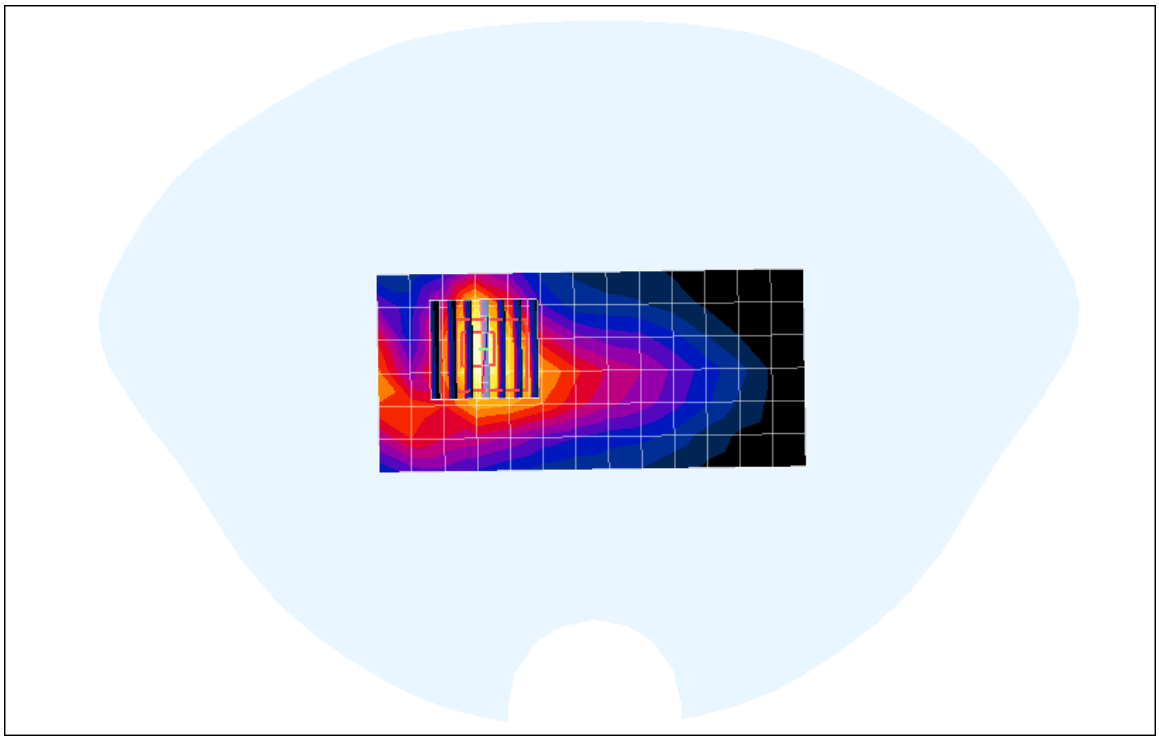
Test Laboratory: Telecom & EMC Testing Group **Date: 08/30/04**
File Name: 1900_EUT Front Touched_Ch 810_D85.da4
Program Name: 56S040679
Phantom section: Flat Section
DUT: Sendo_Bobby Phone
Communication System: PSC 1900
Frequency: 1909.8 MHz
Duty Cycle: 1:8.3
Medium: 1900MHz Body TissueMedium parameters used: σ = 1.496; mho/m, ε_r = 53.37; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(4.8, 4.8, 4.8) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

1900_EUT Front Touched_Ch 810_D85/Area Scan (7x14x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 11.3 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.324 mW/g

1900_EUT Front Touched_Ch 810_D85/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.3 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.322 mW/g
Peak SAR (extrapolated) = 0.406 W/kg
SAR(1 g) = 0.296 mW/g; SAR(10 g) = 0.188 mW/g



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2. Unless otherwise requested, a report shall contain only technical results. Analysis and interpretation of the results and professional opinion and recommendations expressed thereupon, if required, shall be clearly indicated and additional fee paid for, by the Client.

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June 2004

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 EUT. 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 (∅): ±0.25dB
  Dynamic Range: 0.01 – 100 W/kg

- **Phantom & Tissue**
  Phantom: “Phantom SAM 12”, manufactured by SPEAG
  Tissue: Simulated Tissue with electrical characteristics similar to those of the human at normal body temperature (23 ± 1°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 "Phantom SAM 12", 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) Agilent 85070D Dielectric Probe Kit

ELECTRICAL CHARACTERISTIC MEASUREMENT SETUP

- **Description of the Agilent 85070D Dielectric Probe Kit**

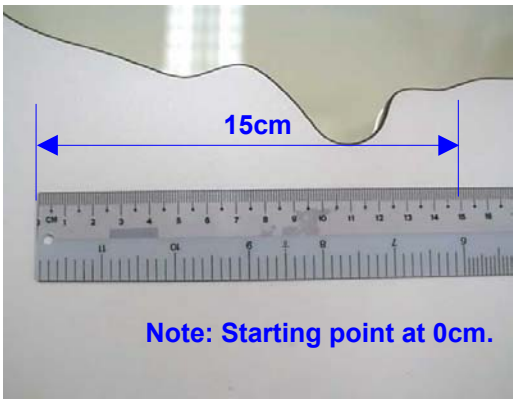
  The 85070D is a dielectric probe that is used to measure the intrinsic electrical properties of materials in the RF and microwave frequency bands. The 85070D software allows you to measure the complex dielectric constant (also called permittivity) of liquids and semi-solids, incuding the dielectric loss factor of loss tangent.

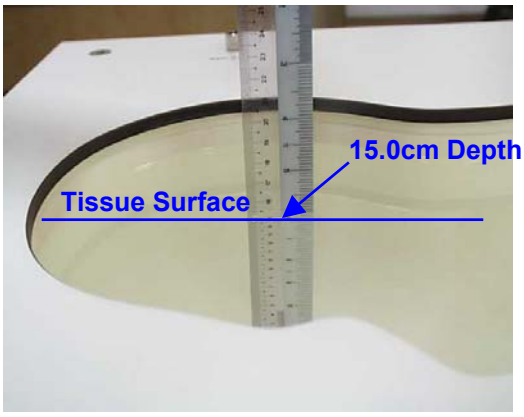
  To obtain data at hundreds of frequencies in seconds, simply immerse the probe into liquids or semi-solids - no special fixtures or containers are required. The 85070D must be used in conjunction with an Agilent network analyzer. The network analyzer provides the high frequency stimulus, and measures the reflected response.

  The probe transmits a signal into the material under test (MUT). The measured reflected response from the materials is then related to its dielectric properties. A computer controls the system, and runs software that guides the user through a measurement sequence. An effort is made to keep the results dielectric constant and conductivity within 5 % of published data.

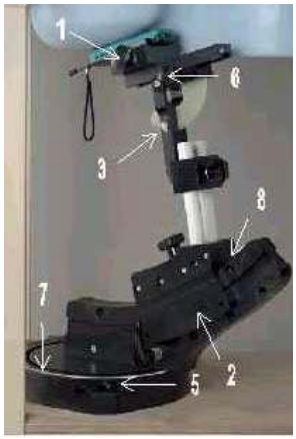
Liquid Depth

The liquid depth at the head of the Phantom SAM 12 is approximately Tissue Depth is approximately 15cm ±0.5cm.





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 65º. The intended use position in the CENELEC document is has a rotation angle of 65º and an inclination angle of 80º. 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 0º. 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 pivotingpoint, 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**

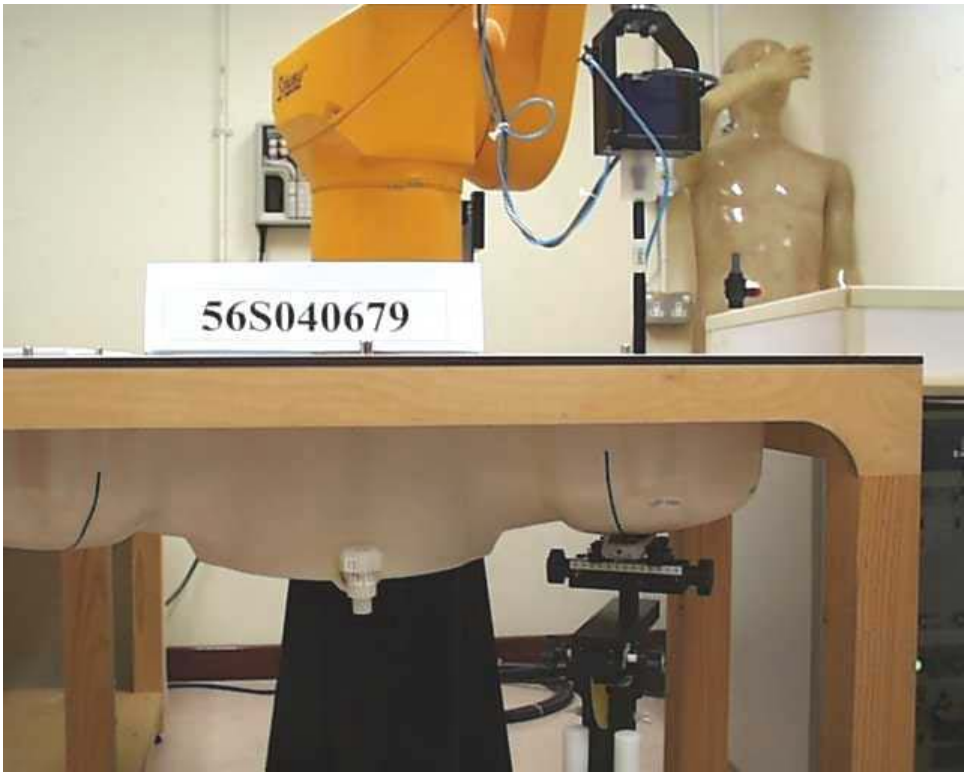
All body worn accessories are tested for the FCC RF exposure compliance. The phone is positioned into carrying case (if available) and placed below of the flat phantom. Headset or ear piece (if available) is connected during measurements.

Instrument	Model	S/No	Cal Due Date	
Boonton RF Power Meter (Dual Channel)	4532	97701	-	✓
Boonton Peak Power Sensor	56218-S/1	1417	31 Aug 2003	
Boonton Power Sensor	51075	31534	-	✓
Boonton Power Sensor	51075	32002	17 Sept 2004	✓
HP Spectrum Analyzer	8593E	3831u02087	1 Sept 2004	✓
S-Parameter Network Analyzer (30kHz – 6GHz)	8753ES	MY40001026	3 Oct 2004	✓
Agilent 85070D Dielectric Probe Kit	85075D	21356	-	✓
Anritsu RF Signal Generator (10MHz – 20GHz)	68347C	04306	-	✓
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	22 Mar 2005	✓
450MHz System Validation Dipole	D450V2	1004	13 Mar 2006	
835MHz System Validation Dipole	D835V2	447	12 Nov 2003	✓
900MHz System Validation Dipole	D900V2	134	11 Nov 2003	
1800MHz System Validation Dipole	D1800V2	2d019	11 Nov 2003	
1900MHz System Validation Dipole	D1900V2	546	25 Nov 2003	✓
2450MHz System Validation Dipole	D2450V2	715	25 Sept 2004	
Data Acquisition Electronics (DAE)	DAE3V1	475	13 Nov 2004	✓
Dosimetric E-field Probe	ET3DV6	1645	9 Oct 2004	✓

ANNEX B

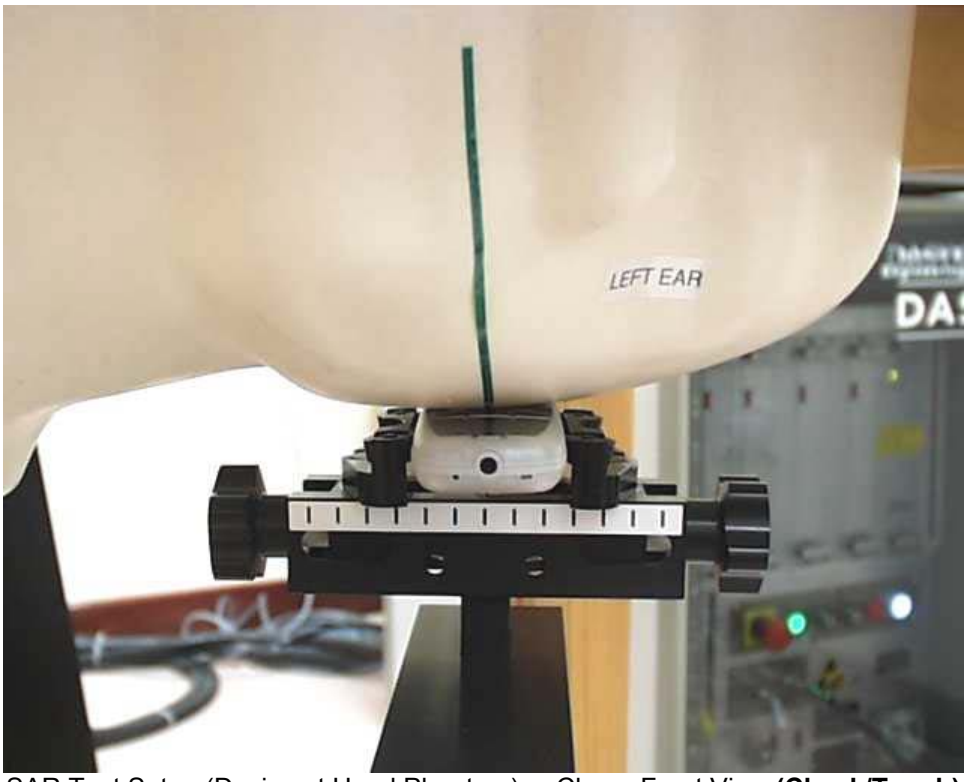
TEST SETUP PHOTOGRAPHS

SAR Test Setup Photographs



SAR Test Setup (Device at Head Phantom)

SAR Test Setup Photographs



SAR Test Setup (Device at Head Phantom) – Closer Front View **(Cheek/Touch)**

SAR Test Setup (Device at Head Phantom) – Closer Side View **(Cheek/Touch)**

SAR Test Setup Photographs

SAR Test Setup (Device at Head Phantom) – Closer Front View **(Ear/Tilt)**

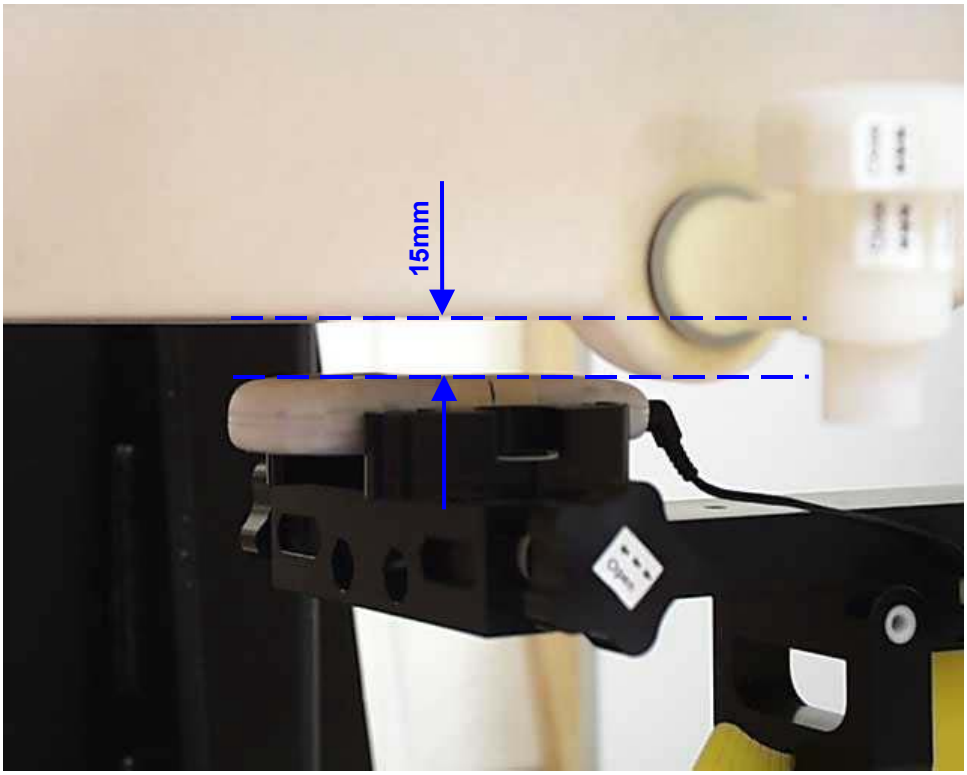
SAR Test Setup (Device at Head Phantom) – Closer Side View **(Ear/Tilt)**

SAR Test Setup Photographs

SAR Test Setup At Flat 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 **Rear** To Phantom)

Conducted Power Measurement Setup

Conducted Power Measurement Setup – Far View

EUT PHOTOGRAPHS

Front of EUT

Rear of EUT

ANNEX C

TISSUE SIMULANT DATA SHEETS

Type of Tissue	Head	Body
Target Frequency (MHz)	850	850
Target Dielectric Constant	42.48	56.10
Target Conductivity (S/m)	0.98	0.95
Composition (by weight)	Water (40.14%) Glycol (0%) Sugar (57.56%) Salt (1.51%) HEC (0%) Preventol D7 (0.80%)	Water (54.74%) Glycol (0%) Sugar (43.56%) Salt (0.83%) HEC (0%) Preventol D7 (0.87%)
Measured Dielectric Constant	42.91	55.17
Measured Conductivity (S/m)	0.9476	0.9920

Probe Name	Dosimetric E-field Probe ET3DV6	Dosimetric E-field Probe ET3DV6
Probe Serial Number	1645	1645
Sensor Offset (mm)	2.7	2.7
Conversion Factor	6.6 ± 9.5%	6.4 ± 9.5%
Probe Calibration Due Date (DD/MM/YY)	9 Oct 2004	9 Oct 2004

Type of Tissue	Head	Body
Target Frequency (MHz)	1900	1900
Target Dielectric Constant	40.0	53.3
Target Conductivity (S/m)	1.40	1.52
Composition (by weight)	Ultra Pure Water (55.24%) Glycol (44.46%) Sugar (0%) Salt (0.30%) HEC (0%) Preventol D7 (0%)	Ultra Pure Water (70.20%) Glycol (29.45%) Sugar (0%) Salt (0.35%) HEC (0%) Preventol D7 (0%)
Measured Dielectric Constant	38.75	53.37
Measured Conductivity (S/m)	1.4477	1.4960

Probe Name	Dosimetric E-field Probe ET3DV6	Dosimetric E-field Probe ET3DV6
Probe Serial Number	1645	1645
Sensor Offset (mm)	2.7	2.7
Conversion Factor	5.1 ± 9.5%	4.8 ± 9.5%
Probe Calibration Due Date (DD/MM/YY)	9 Oct 2004	9 Oct 2004

Head Tissue at 850MHz

Frequency	e'	e''	Conductivity
825000000	43.23	20.13	0.9228
826000000	43.22	20.12	0.9235
827000000	43.21	20.12	0.9244
828000000	43.18	20.14	0.9262
829000000	43.16	20.17	0.9288
830000000	43.18	20.12	0.9276
831000000	43.16	20.13	0.9292
832000000	43.12	20.15	0.9312
833000000	43.12	20.12	0.9312
834000000	43.13	20.12	0.9324
835000000	43.13	20.14	0.9342
836000000	43.07	20.11	0.9340
837000000	43.05	20.11	0.9350
838000000	43.06	20.13	0.9371
839000000	43.05	20.13	0.9380
840000000	43.01	20.11	0.9384
841000000	43.01	20.12	0.9401
842000000	43.01	20.11	0.9405
843000000	43.00	20.10	0.9413
844000000	42.97	20.10	0.9425
845000000	42.96	20.08	0.9427
846000000	42.93	20.07	0.9431
847000000	42.94	20.08	0.9450
848000000	42.92	20.07	0.9455
849000000	42.90	20.06	0.9461
850000000	**42.91**	**20.07**	**0.9476**
851000000	42.88	20.08	0.9492
852000000	42.86	20.07	0.9500
853000000	42.85	20.05	0.9501
854000000	42.83	20.06	0.9519
855000000	42.84	20.07	0.9534
856000000	42.81	20.06	0.9538
857000000	42.81	20.03	0.9536
858000000	42.79	20.03	0.9549
859000000	42.78	20.07	0.9577
860000000	42.77	20.06	0.9582
861000000	42.76	20.04	0.9587
862000000	42.74	20.04	0.9596
863000000	42.73	20.04	0.9608
864000000	42.72	20.02	0.9608
865000000	42.71	20.04	0.9629

(e' = Dielectric Constant)
(e'' = Loss Factor)

Tested by: NAC
Date : 24th Aug 2004
Frequency: 850MHz
Mixture: Head Tissue
Tissue temp: 24°C

Composition		
Tap Water	15000.0g	40.14%
Ultra Pure Water	0.0g	0.00%
Sugar	21510.0g	57.56%
Glyco	0.0g	0.00%
Salt	562.5g	1.51%
Preventol D7	300.0g	0.80%
Total Weight	37372.5g	100.0%

Result (FCC)	Dielectric Constant	Conductivity
Measured	42.91	0.9476
Target (FCC)	42.48	0.98
Low Limit	40.356	0.931
High Limit	44.604	1.029
% Off Target	1.00	-3.31

Body Tissue at 850MHz

Frequency	e'	e"	Conductivity
825000000	55.40	21.10	0.9672
826000000	55.39	21.10	0.9681
827000000	55.37	21.07	0.9680
828000000	55.35	21.07	0.9692
829000000	55.34	21.08	0.9709
830000000	55.32	21.08	0.9718
831000000	55.34	21.08	0.9733
832000000	55.32	21.06	0.9735
833000000	55.33	21.07	0.9748
834000000	55.32	21.03	0.9744
835000000	**55.31**	**21.06**	**0.9768**
836000000	55.27	21.05	0.9775
837000000	55.27	21.05	0.9789
838000000	55.27	21.06	0.9803
839000000	55.26	21.04	0.9808
840000000	55.23	21.05	0.9823
841000000	55.23	21.04	0.9831
842000000	55.22	21.02	0.9835
843000000	55.20	21.00	0.9836
844000000	55.21	21.02	0.9855
845000000	55.19	21.02	0.9866
846000000	55.17	21.00	0.9871
847000000	55.16	20.98	0.9874
848000000	55.18	21.01	0.9900
849000000	55.15	20.99	0.9902
850000000	55.17	21.01	0.9920
851000000	55.12	21.02	0.9940
852000000	55.11	20.99	0.9937
853000000	55.12	21.00	0.9951
854000000	55.13	21.03	0.9978
855000000	55.11	21.01	0.9978
856000000	55.10	20.99	0.9980
857000000	55.10	21.00	0.9999
858000000	55.07	20.98	1.0003
859000000	55.04	21.00	1.0023
860000000	55.05	21.00	1.0035
861000000	55.03	20.97	1.0032
862000000	55.02	20.95	1.0034
863000000	55.02	20.97	1.0054
864000000	55.01	20.98	1.0069
865000000	55.01	20.96	1.0071

(e' = Dielectric Constant)
(e" = Loss Factor)

Tested by: NAC
Date : 30th Aug 2004
Frequency: 850MHz
Mixture: Body Tissue
Tissue temp: 24°C

Composition		
Tap Water	19500.0g	54.74%
Ultra Pure Water	0.0g	0.00%
Sugar	15518.0g	43.56%
Glyco	0.0g	0.00%
Salt	296.1g	0.83%
Preventol D7	310.0g	0.87%
Total Weight	35624.1g	100.0%

Result (FCC)	Dielectric Constant	Conductivity
Measured	55.17	0.9920
Target (FCC)	56.1	0.95
Low Limit	53.295	0.9025
High Limit	58.905	0.9975
% Off Target	-1.67	4.43

Head Tissue at 1900MHz

Frequency	e'	e''	Conductivity
1890000000	38.81	13.69	1.4374
1891000000	38.81	13.69	1.4387
1892000000	38.80	13.70	1.4399
1893000000	38.79	13.69	1.4399
1894000000	38.79	13.70	1.4420
1895000000	38.78	13.69	1.4415
1896000000	38.78	13.70	1.4427
1897000000	38.77	13.71	1.4446
1898000000	38.77	13.71	1.4455
1899000000	38.76	13.72	1.4470
1900000000	**38.75**	**13.71**	**1.4477**
1901000000	38.75	13.71	1.4480
1902000000	38.74	13.72	1.4498
1903000000	38.74	13.74	1.4526
1904000000	38.72	13.73	1.4523
1905000000	38.72	13.73	1.4535
1906000000	38.72	13.73	1.4536
1907000000	38.71	13.73	1.4544
1908000000	38.72	13.74	1.4568
1909000000	38.69	13.75	1.4580
1910000000	38.70	13.73	1.4567
1911000000	38.69	13.74	1.4584
1912000000	38.69	13.74	1.4595
1913000000	38.69	13.75	1.4609
1914000000	38.68	13.74	1.4614
1915000000	38.68	13.73	1.4605
1916000000	38.67	13.75	1.4640
1917000000	38.66	13.75	1.4649
1918000000	38.66	13.75	1.4651
1919000000	38.66	13.76	1.4673
1920000000	38.66	13.76	1.4679
1921000000	38.67	13.76	1.4684
1922000000	38.65	13.76	1.4695
1923000000	38.66	13.75	1.4694
1924000000	38.65	13.76	1.4708
1925000000	38.63	13.75	1.4709
1926000000	38.65	13.77	1.4732
1927000000	38.64	13.78	1.4754
1928000000	38.64	13.76	1.4744
1929000000	38.65	13.77	1.4761
1930000000	38.62	13.78	1.4780

(e' = Dielectric Constant)
(e'' = Loss Factor)

Tested by: NAC
Date : 26th Aug 2004
Frequency: 1900MHz
Mixture: Head Tissue
Tissue temp: 23°C

Composition		
Tap Water	0.0g	0.00%
Ultra Pure Water	19500.0g	55.24%
Sugar	0.0g	0.00%
Glyco	15694.0g	44.46%
Salt	105.9g	0.30%
Preventol D7	0.0g	0.00%
Total Weight	35299.9g	100.0%

Result (FCC)	Dielectric Constant	Conductivity
Measured	38.75	1.4477
Target (FCC)	40	1.4
Low Limit	38	1.33
High Limit	42	1.47
% Off Target	-3.12	3.40

Body Tissue at 1900MHz

Frequency	e'	e''	Conductivity
1890000000	53.42	14.14	1.4844
1891000000	53.40	14.14	1.4853
1892000000	53.41	14.15	1.4877
1893000000	53.41	14.15	1.4883
1894000000	53.39	14.17	1.4908
1895000000	53.40	14.15	1.4901
1896000000	53.38	14.15	1.4907
1897000000	53.38	14.17	1.4937
1898000000	53.38	14.17	1.4945
1899000000	53.38	14.17	1.4952
1900000000	**53.37**	**14.17**	**1.4960**
1901000000	53.37	14.19	1.4987
1902000000	53.38	14.19	1.4993
1903000000	53.36	14.20	1.5012
1904000000	53.36	14.18	1.5004
1905000000	53.37	14.20	1.5024
1906000000	53.35	14.20	1.5034
1907000000	53.35	14.20	1.5040
1908000000	53.34	14.20	1.5054
1909000000	53.34	14.20	1.5065
1910000000	53.35	14.20	1.5073
1911000000	53.34	14.21	1.5090
1912000000	53.33	14.20	1.5085
1913000000	53.33	14.22	1.5108
1914000000	53.31	14.21	1.5115
1915000000	53.33	14.21	1.5120
1916000000	53.32	14.23	1.5144
1917000000	53.30	14.22	1.5147
1918000000	53.31	14.24	1.5170
1919000000	53.30	14.24	1.5182
1920000000	53.31	14.24	1.5189
1921000000	53.32	14.23	1.5190
1922000000	53.29	14.23	1.5198
1923000000	53.32	14.23	1.5203
1924000000	53.29	14.26	1.5238
1925000000	53.28	14.23	1.5216
1926000000	53.30	14.25	1.5246
1927000000	53.28	14.26	1.5264
1928000000	53.28	14.25	1.5267
1929000000	53.31	14.26	1.5287
1930000000	53.29	14.28	1.5308

(e' = Dielectric Constant)
(e'' = Loss Factor)

Tested by: NAC
Date : 30th Aug 2004
Frequency: 1900MHz
Mixture: Body Tissue
Tissue temp: 24°C

Composition		
Tap Water	25000.0g	70.20%
Ultra Pure Water	0.0g	0.00%
Sugar	0.0g	0.00%
Glyco	10487.0g	29.45%
Salt	125.6g	0.35%
Preventol D7	0.0g	0.00%
Total Weight	35612.6g	100.0%

Result (FCC)	Dielectric Constant	Conductivity
Measured	53.37	1.4960
Target (FCC)	53.3	1.52
Low Limit	50.635	1.444
High Limit	55.965	1.596
% Off Target	0.13	-1.58

ANNEX D

SAR VALIDATION RESULTS

SAR Validation – Head Tissue at 850MHz (Dipole forward power = 250mW)

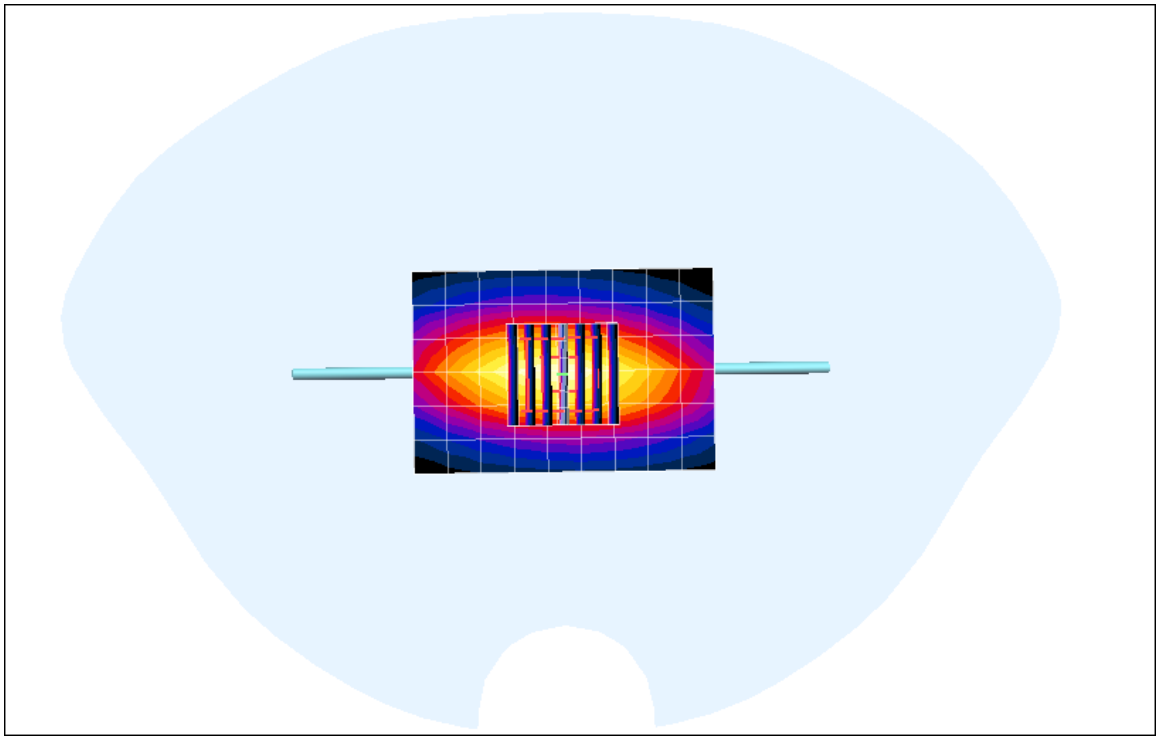
Test Laboratory: Telecom & EMC Testing Group **Date: 08/24/04**
File Name: 850MHz Head_System Validation.da4
Program Name: Job Nos.: 56S040679
Phantom section: Flat Section
DUT: Dipole 835MHz
Communication System: CW
Frequency: 835 MHz
Duty Cycle: 1:1
Medium: 850MHz Head TissueMedium parameters used: σ = 0.9476; mho/m, ε_r = 42.91; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(6.6, 6.6, 6.6) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

850MHz Head_System Validation/Area Scan (7x10x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 55.4 V/m; Power Drift = -0.04 dB
Maximum value of SAR (measured) = 2.66 mW/g

850MHz Head_System Validation/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.4 V/m; Power Drift = -0.04 dB
Maximum value of SAR (measured) = 2.67 mW/g
Peak SAR (extrapolated) = 3.59 W/kg
SAR(1 g) = 2.46 mW/g; SAR(10 g) = 1.6 mW/g

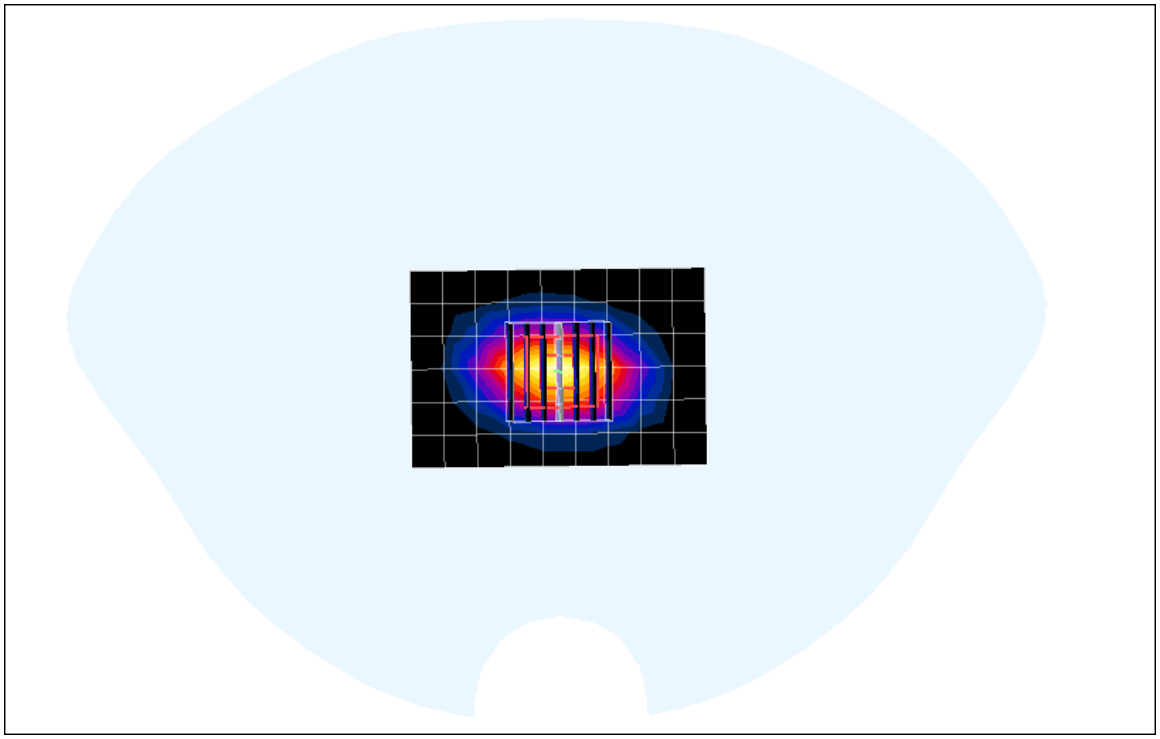


SAR Validation – Head Tissue at 1900MHz (Dipole forward power = 250mW)

Test Laboratory: Telecom & EMC Testing Group **Date: 08/26/04**
File Name: 1900MHz Head_System Validation.da4
Program Name: Job Nos.: 56S040679
Phantom section: Flat Section
DUT: Dipole 1900MHz
Communication System: CW
Frequency: 1900 MHz
Duty Cycle: 1:1
Medium: 1900MHz Head TissueMedium parameters used: σ = 1.4477; mho/m, ε_r = 38.75; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(5.1, 5.1, 5.1) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

1900MHz Head_System Validation/Area Scan (7x10x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 98.2 V/m; Power Drift = -0.01 dB
Maximum value of SAR (measured) = 11.7 mW/g

1900MHz Head_System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 98.2 V/m; Power Drift = -0.01 dB
Maximum value of SAR (measured) = 12.2 mW/g
Peak SAR (extrapolated) = 18.4 W/kg
SAR(1 g) = 10.7 mW/g; SAR(10 g) = 5.59 mW/g



SAR Validation – Body Tissue at 850MHz (Dipole forward power = 250mW)

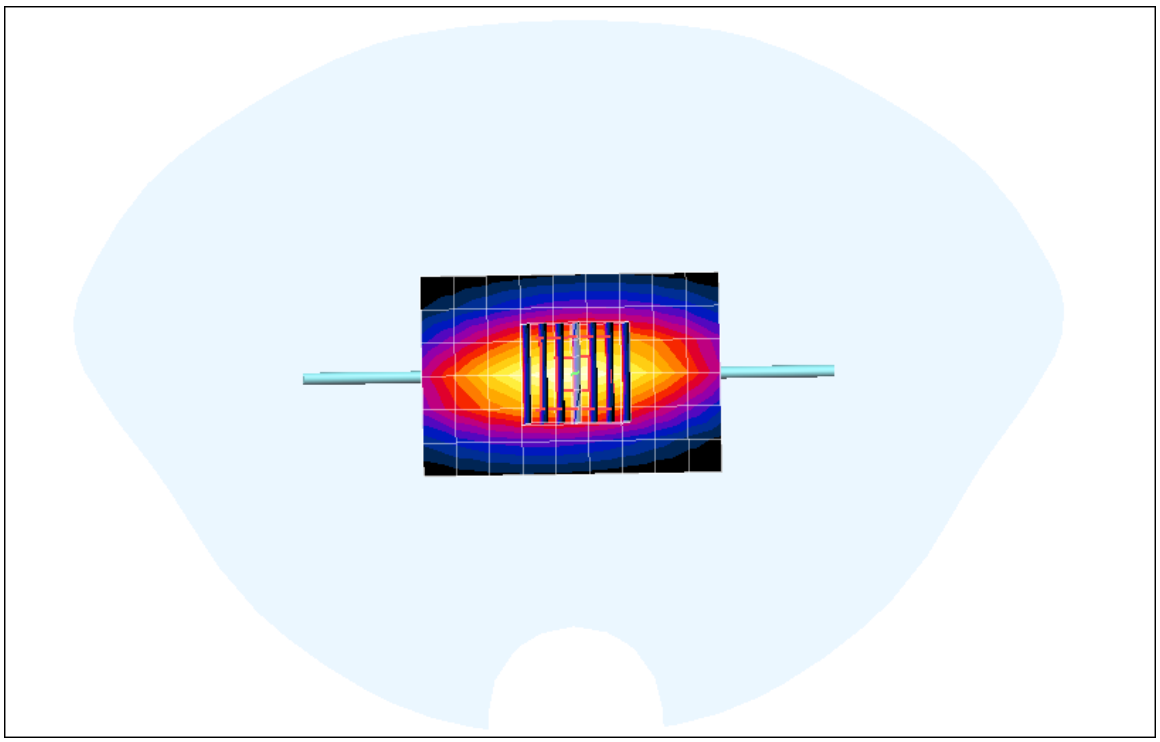
Test Laboratory: Telecom & EMC Testing Group **Date: 08/30/04**
File Name: 850MHz Body_System Validation.da4
Program Name: Job Nos.: 56S040679
Phantom section: Flat Section
DUT: Dipole 835MHz
Communication System: CW
Frequency: 835 MHz
Duty Cycle: 1:1
Medium: 850MHz Body TissueMedium parameters used: σ = 0.992; mho/m, ε_r = 55.17; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(6.4, 6.4, 6.4) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

850MHz Body_System Validation/Area Scan (7x10x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 54.9 V/m; Power Drift = -0.07 dB
Maximum value of SAR (measured) = 2.71 mW/g

850MHz Body_System Validation/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.9 V/m; Power Drift = -0.07 dB
Maximum value of SAR (measured) = 2.73 mW/g
Peak SAR (extrapolated) = 3.55 W/kg
SAR(1 g) = 2.52 mW/g; SAR(10 g) = 1.67 mW/g



SAR Validation – Body Tissue at 1900MHz (Dipole forward power = 250mW)

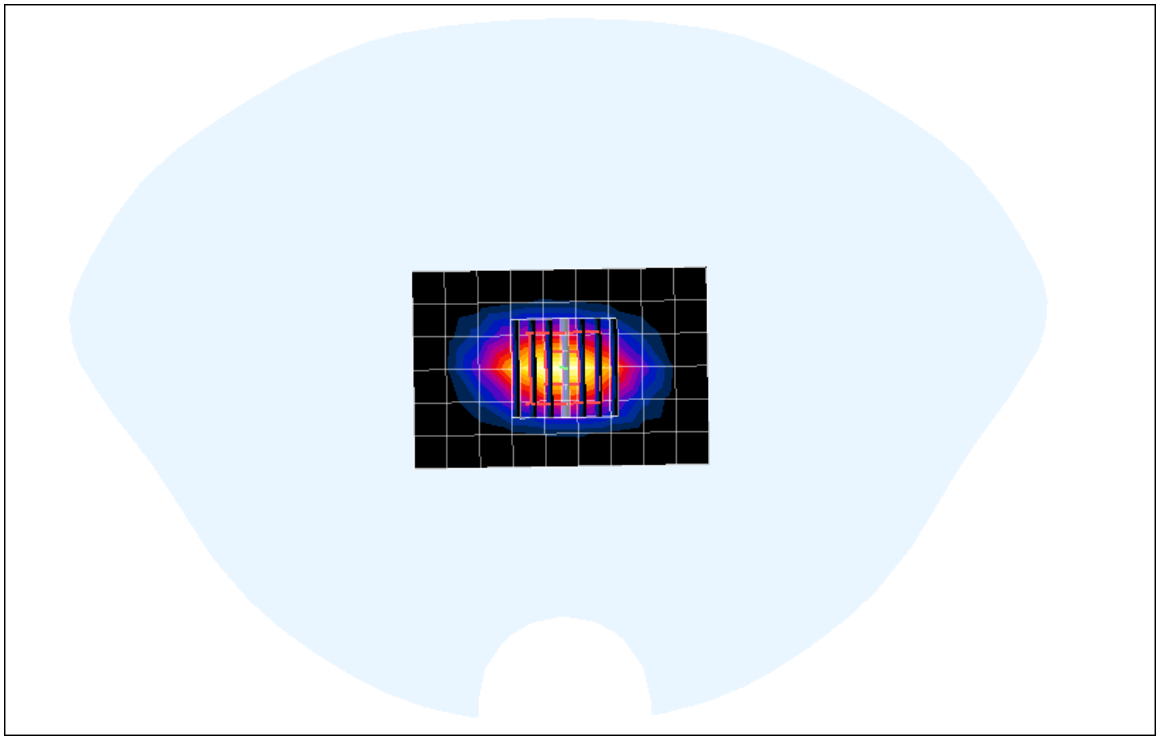
Test Laboratory: Telecom & EMC Testing Group **Date: 08/30/04**
File Name: 1900MHz Body_System Validation.da4
Program Name: Job Nos.: 56S040679
Phantom section: Flat Section
DUT: Dipole 1900MHz
Communication System: CW
Frequency: 1900 MHz
Duty Cycle: 1:1
Medium: 1900MHz Body TissueMedium parameters used: σ = 1.496; mho/m, ε_r = 53.37; ρ = 1000 kg/m^3
DASY4 Configuration:
Electronics: DAE3 Sn475 Calibrated: 13/Nov/2003
Phantom: SAM 12 Measurement SW: DASY4, V4.2 Build 37
Probe: ET3DV6 - SN1645 ConvF(4.8, 4.8, 4.8) Calibrated: 09/Oct/2003
Postprocessing SW: SEMCAD, V1.8 Build 109
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

1900MHz Body_System Validation/Area Scan (7x10x1):

Measurement grid: dx=10mm, dy=10mm
Reference Value = 95 V/m; Power Drift = 0.02 dB
Maximum value of SAR (measured) = 11.3 mW/g

1900MHz Body_System Validation/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95 V/m; Power Drift = 0.02 dB
Maximum value of SAR (measured) = 11.5 mW/g
Peak SAR (extrapolated) = 17.1 W/kg
SAR(1 g) = 10.1 mW/g; SAR(10 g) = 5.4 mW/g



ANNEX E

MEASUREMENT UNCERTAINTY

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 ± **21.2%.**

Error Description	Uncertainty Value ± %	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	√3	(1-cp)^1/2	± 1.9	∞
Hemispherical Isotropy	± 9.6	rectangular	√3	(cp)^1/2	± 3.9	∞
Spatial resolution	± 0.0	rectangular	√3	1	± 0.0	∞
Boundary effects	± 1.0	rectangular	√3	1	± 0.6	∞
Linearity	± 4.7	rectangular	√3	1	± 2.7	∞
System Detection limit	± 1.0	rectangular	√3	1	± 0.6	∞
Readout electronics	± 1.0	normal	1	1	± 1.0	∞
Response time	± 0.8	rectangular	√3	1	± 0.5	∞
Integration time	± 2.6	rectangular	√3	1	± 1.5	∞
RF ambient conditions	± 3.0	rectangular	√3	1	± 1.7	∞
Probe Positioning Mechanical Tolerance	± 0.4	rectangular	√3	1	± 0.2	∞
Probe Positioning with respect to Phantom Shell	± 2.9	rectangular	√3	1	± 1.7	∞
Extrapolation, Interpolation and Integration Algorithms for Max. SAR Evaluation	± 1.0	rectangular	√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	√3	1	± 2.9	∞
Phantom and Tissue Parameters						
Phantom uncertainty	± 4.0	rectangular	√3	1	± 2.3	∞
Liquid conductivity (target)	± 5.0	rectangular	√3	0.64	± 1.8	∞
Liquid conductivity (meas)	± 4.4	normal	1	0.64	± 2.8	∞
Liquid permittivity (target)	± 5.0	rectangular	√3	0.6	± 1.7	∞
Liquid permittivity (meas)	± 3.1	normal	1	0.6	± 1.9	∞
Combined Standard Uncertainty					± 10.6	330
Coverage Factor for 95%		**k=2**				
Extended Standard Uncertainty					± 21.2	

ANNEX F

SAR PROBE CALIBRATION CERTIFICATES

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

Client PSB

CALIBRATION CERTIFICATE

Object(s)	ET3DV6 - SN:1645
Calibration procedure(s)	QA CAL-01.v2 Calibration procedure for dosimetric E-field probes
Calibration date:	October 9, 2003
Condition of the calibrated item	In Tolerance (according to the specific calibration document)

This calibration statement documents traceability of M&TE used in the calibration procedures and conformity of the procedures with the ISO/IEC 17025 international standard.

All calibrations have been conducted in the closed laboratory facility: environment temperature 22 +/- 2 degrees Celsius and humidity < 75%.

Calibration Equipment used (M&TE critical for calibration)

Model Type	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM E4419B	GB41293874	2-Apr-03 (METAS, No 252-0250)	Apr-04
Power sensor E4412A	MY41495277	2-Apr-03 (METAS, No 252-0250)	Apr-04
Reference 20 dB Attenuator	SN: 5086 (20b)	3-Apr-03 (METAS No. 251-0340	Apr-04
Fluke Process Calibrator Type 702	SN: 6295803	8-Sep-03 (Sintrel SCS No. E-030020)	Sep-04
Power sensor HP 8481A	MY41092180	18-Sep-02 (Agilent, No. 20020918)	In house check: Oct 03
RF generator HP 8684C	US3642U01700	4-Aug-99 (SPEAG, in house check Aug-02)	In house check: Aug-05
Network Analyzer HP 8753E	US37390585	18-Oct-01 (Agilent, No. 24BR1033101)	In house check: Oct 03

	Name	Function	Signature
Calibrated by:	Nico Vetterli	Technician	
Approved by:	Katja Pokovic	Laboratory Director	

Date issued: October 9, 2003

This calibration certificate is issued as an intermediate solution until the accreditation process (based on ISO/IEC 17025 International Standard) for Calibration Laboratory of Schmid & Partner Engineering AG is completed.

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Schmid & Partner Engineering AG

s p e a g

Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 1 245 9700, Fax +41 1 245 9779
info@speag.com, http://www.speag.com

Probe ET3DV6

SN:1645

Manufactured:	November 7, 2001
Last calibration:	November 20, 2002
Recalibrated:	October 9, 2003

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

ET3DV6 SN:1645 October 9, 2003

DASY - Parameters of Probe: ET3DV6 SN:1645

Sensitivity in Free Space

NormX	**1.67**	$\mu V/(V/m)^2$
NormY	**1.79**	$\mu V/(V/m)^2$
NormZ	**1.74**	$\mu V/(V/m)^2$

Diode Compression

DCP X	**95**	mV
DCP Y	**95**	mV
DCP Z	**95**	mV

Sensitivity in Tissue Simulating Liquid

Head 900 MHz ε_r = 41.5 ± 5% σ = 0.97 ± 5% mho/m

Valid for f=800-1000 MHz with Head Tissue Simulating Liquid according to EN 50361, P1528-200X

ConvF X	**6.6**	± 9.5% (k=2)	Boundary effect:	
ConvF Y	**6.6**	± 9.5% (k=2)	Alpha	**0.33**
ConvF Z	**6.6**	± 9.5% (k=2)	Depth	**2.91**

Head 1800 MHz ε_r = 40.0 ± 5% σ = 1.40 ± 5% mho/m

Valid for f=1710-1890 MHz with Head Tissue Simulating Liquid according to EN 50361, P1528-200X

ConvF X	**5.3**	± 9.5% (k=2)	Boundary effect:	
ConvF Y	**5.3**	± 9.5% (k=2)	Alpha	**0.50**
ConvF Z	**5.3**	± 9.5% (k=2)	Depth	**2.73**

Boundary Effect

Head 900 MHz **Typical SAR gradient: 5 % per mm**

Probe Tip to Boundary		1 mm	2 mm
SAR_{be} [%]	Without Correction Algorithm	10.8	6.5
SAR_{be} [%]	With Correction Algorithm	0.4	0.6

Head 1800 MHz **Typical SAR gradient: 10 % per mm**

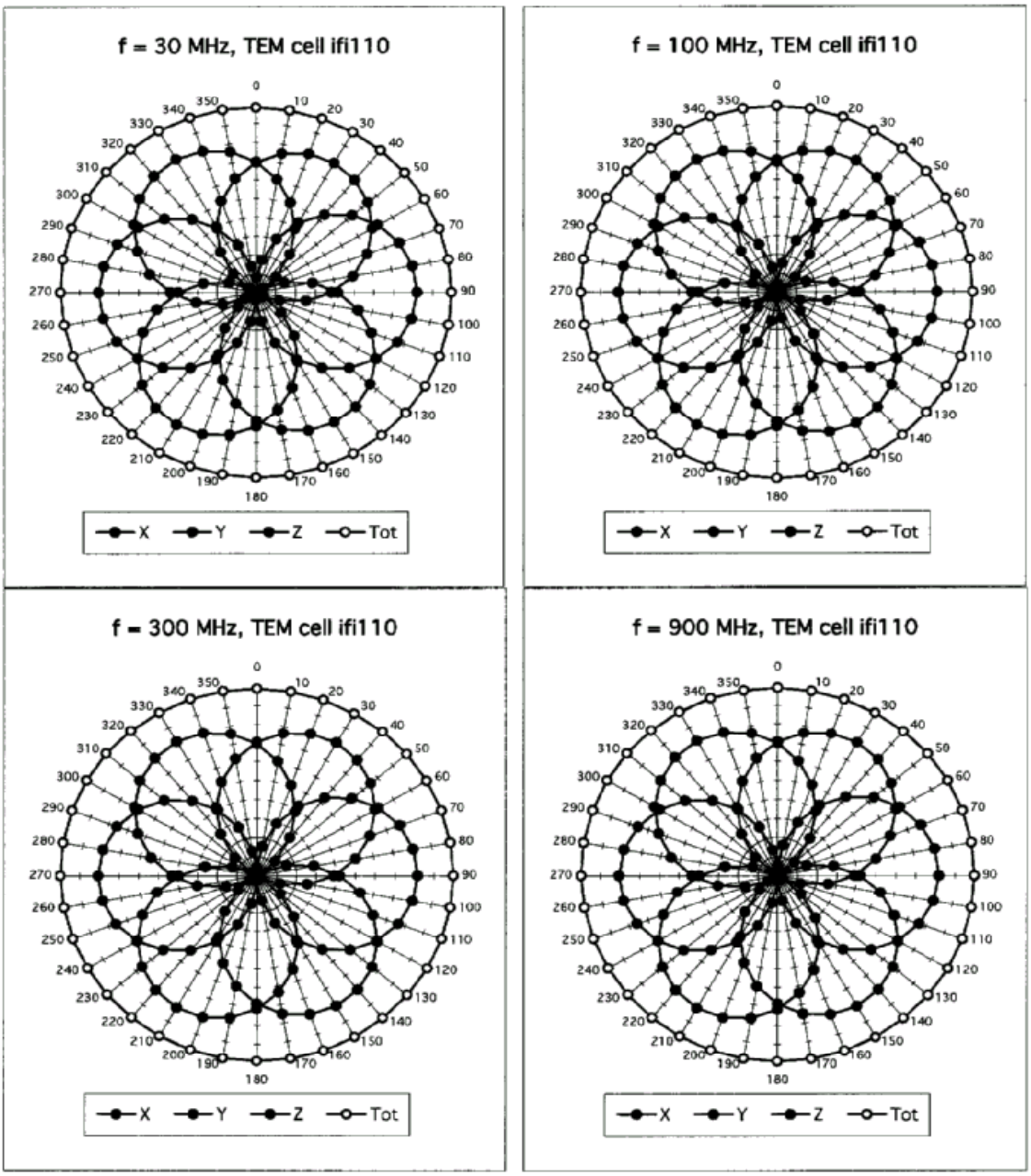
Probe Tip to Boundary		1 mm	2 mm
SAR_{be} [%]	Without Correction Algorithm	14.7	10.0
SAR_{be} [%]	With Correction Algorithm	0.2	0.1

Sensor Offset

Probe Tip to Sensor Center	**2.7**	mm
Optical Surface Detection	**1.4 ± 0.2**	mm

ET3DV6 SN:1645 **October 9, 2003**

Receiving Pattern (ϕ), θ = 0°



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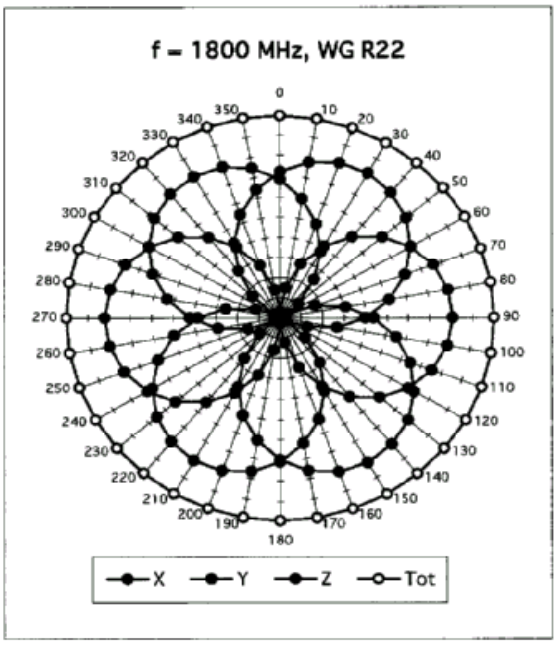
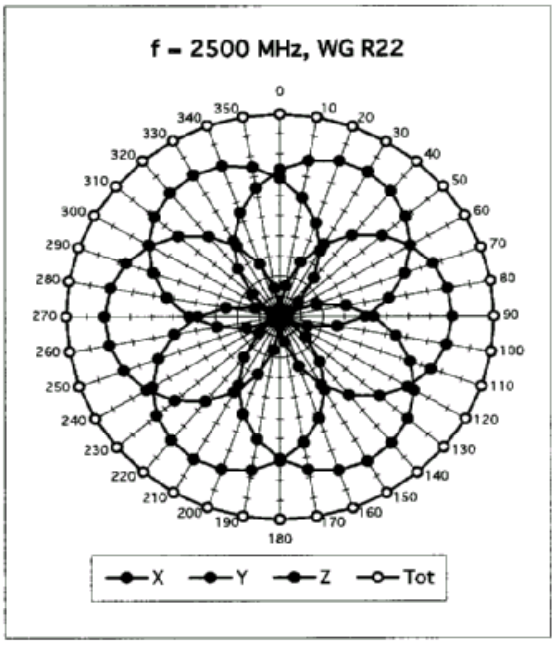
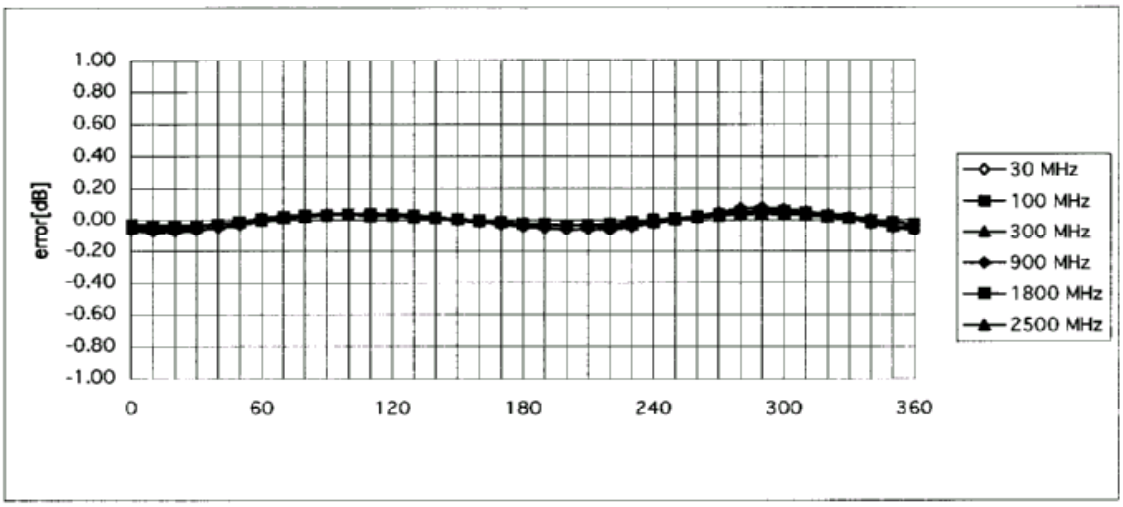
ET3DV6 SN:1645 **October 9, 2003**





Isotropy Error (ϕ), θ = 0°



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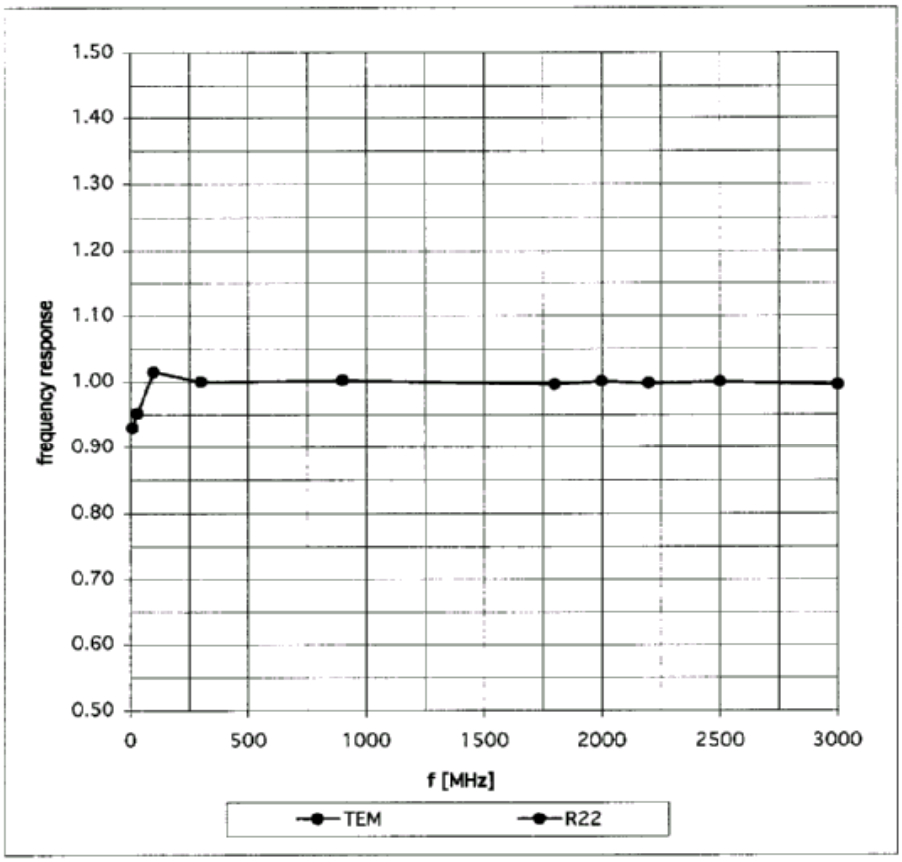
ET3DV6 SN:1645 **October 9, 2003**

Frequency Response of E-Field

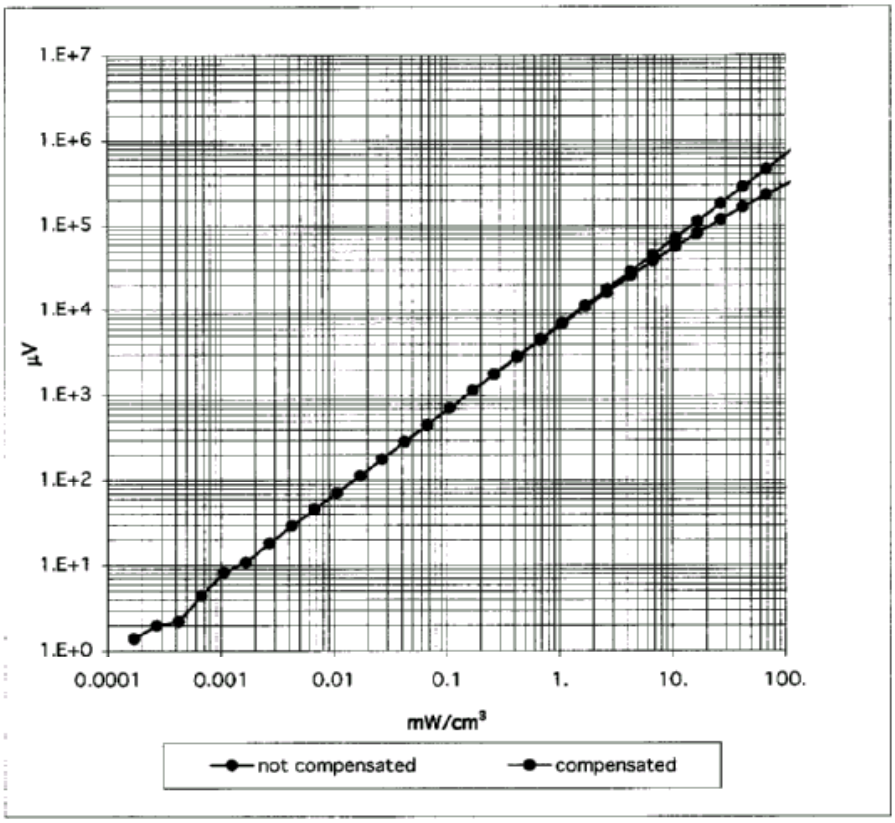
(TEM-Cell:ifi110, Waveguide R22)

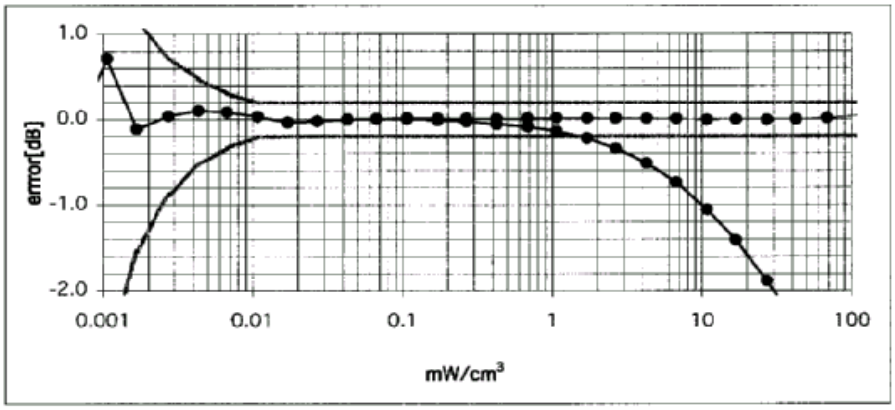


ET3DV6 SN:1645 October 9, 2003

Dynamic Range f(SARhead)

(Waveguide R22)





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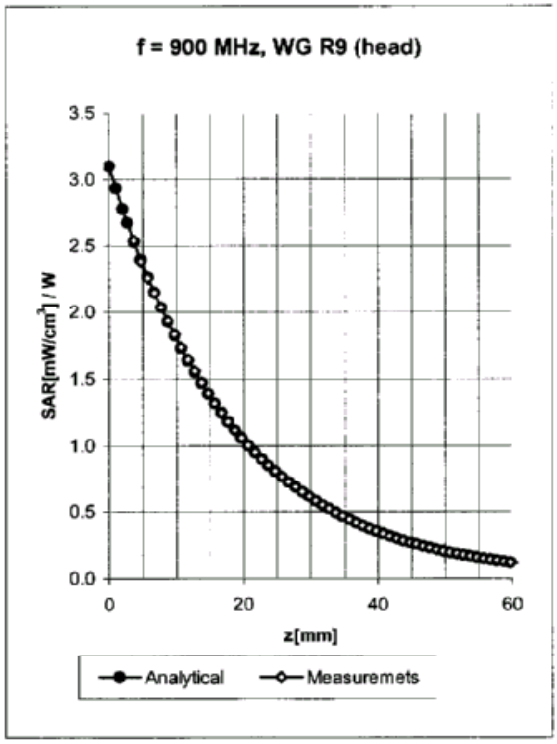
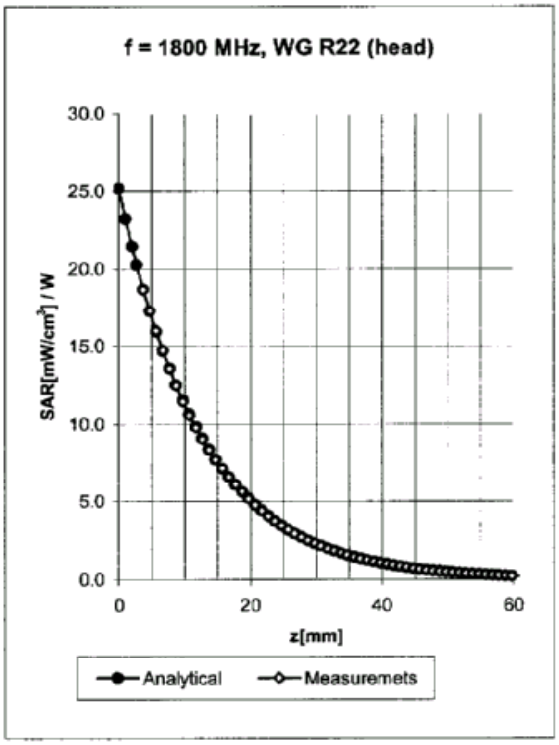
Conversion Factor Assessment





Head	900 MHz	ε_r = 41.5 ± 5%	σ = 0.97 ± 5% mho/m

Valid for f=800-1000 MHz with Head Tissue Simulating Liquid according to EN 50361, P1528-200X

ConvF X	6.6 ± 9.5% (k=2)	Boundary effect:	
ConvF Y	6.6 ± 9.5% (k=2)	Alpha	0.33
ConvF Z	6.6 ± 9.5% (k=2)	Depth	2.91

Head	1800 MHz	ε_r = 40.0 ± 5%	σ = 1.40 ± 5% mho/m

Valid for f=1710-1890 MHz with Head Tissue Simulating Liquid according to EN 50361, P1528-200X

ConvF X	5.3 ± 9.5% (k=2)	Boundary effect:	
ConvF Y	5.3 ± 9.5% (k=2)	Alpha	0.50
ConvF Z	5.3 ± 9.5% (k=2)	Depth	2.73

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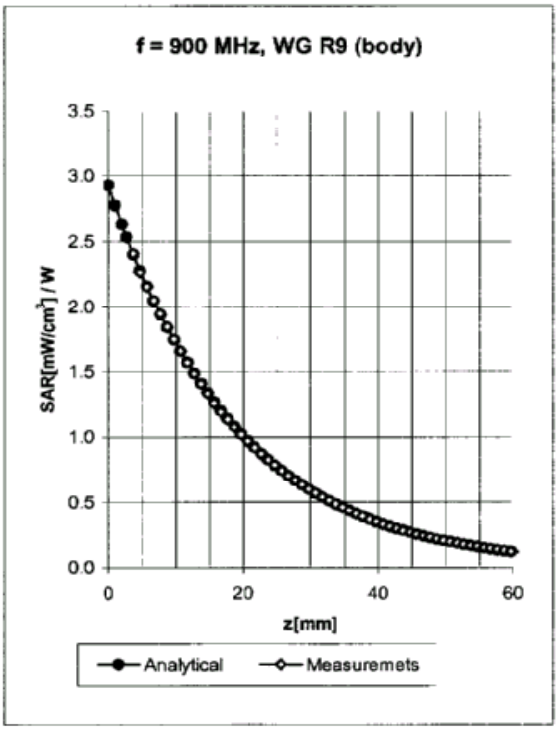
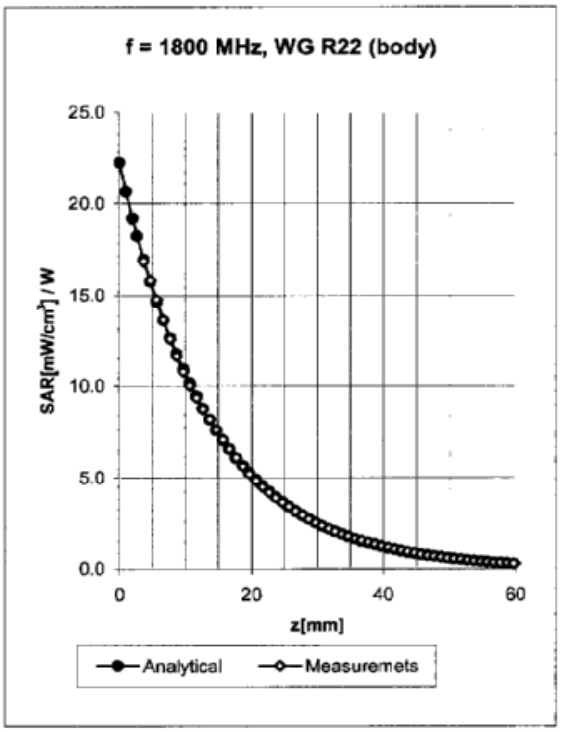
Conversion Factor Assessment





Body 900 MHz ε_r = 55.0 ± 5% σ = 1.05 ± 5% mho/m

Valid for f=800-1000 MHz with Body Tissue Simulating Liquid according to OET 65 Suppl. C

ConvF X	6.4 ± 9.5% (k=2)	Boundary effect:	
ConvF Y	6.4 ± 9.5% (k=2)	Alpha	**0.42**
ConvF Z	6.4 ± 9.5% (k=2)	Depth	**2.51**

Body 1800 MHz ε_r = 53.3 ± 5% σ = 1.52 ± 5% mho/m

Valid for f=1710-1890 MHz with Body Tissue Simulating Liquid according to OET 65 Suppl. C

ConvF X	5.0 ± 9.5% (k=2)	Boundary effect:	
ConvF Y	5.0 ± 9.5% (k=2)	Alpha	**0.59**
ConvF Z	5.0 ± 9.5% (k=2)	Depth	**2.68**

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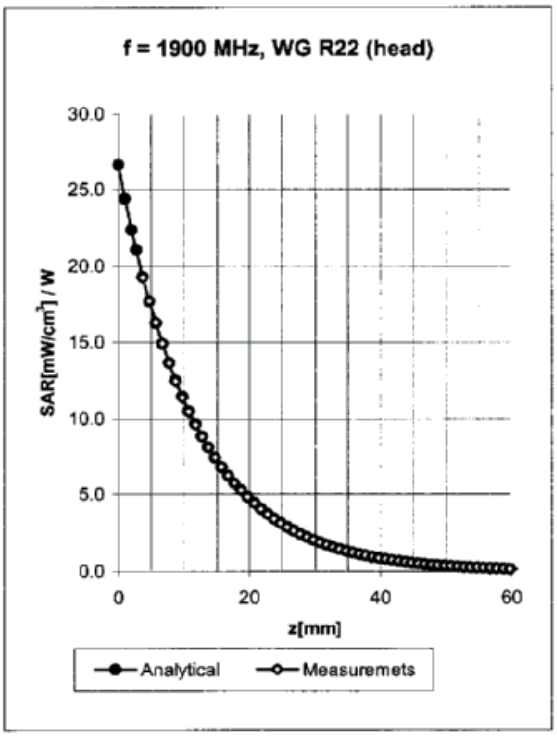
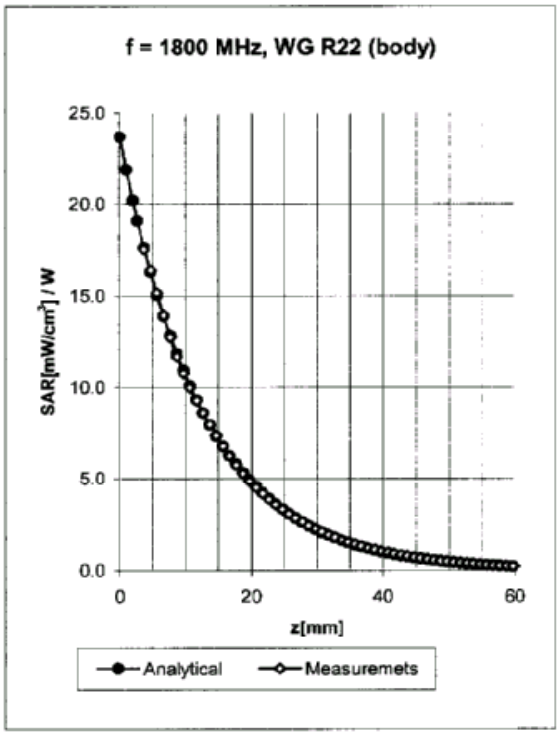
Conversion Factor Assessment





Head 1900 MHz ε_r = 40.0 ± 5% σ = 1.40 ± 5% mho/m

Valid for f=1805-1995 MHz with Head Tissue Simulating Liquid according to EN 50361, P1528-200X

ConvF X	**5.1** ± 9.5% (k=2)	Boundary effect:	
ConvF Y	**5.1** ± 9.5% (k=2)	Alpha	**0.50**
ConvF Z	**5.1** ± 9.5% (k=2)	Depth	**2.88**

Body 1900 MHz ε_r = 53.3 ± 5% σ = 1.52 ± 5% mho/m

Valid for f=1805-1995 MHz with Body Tissue Simulating Liquid according to OET 65 Suppl. C

ConvF X	**4.8** ± 9.5% (k=2)	Boundary effect:	
ConvF Y	**4.8** ± 9.5% (k=2)	Alpha	**0.66**
ConvF Z	**4.8** ± 9.5% (k=2)	Depth	**2.53**

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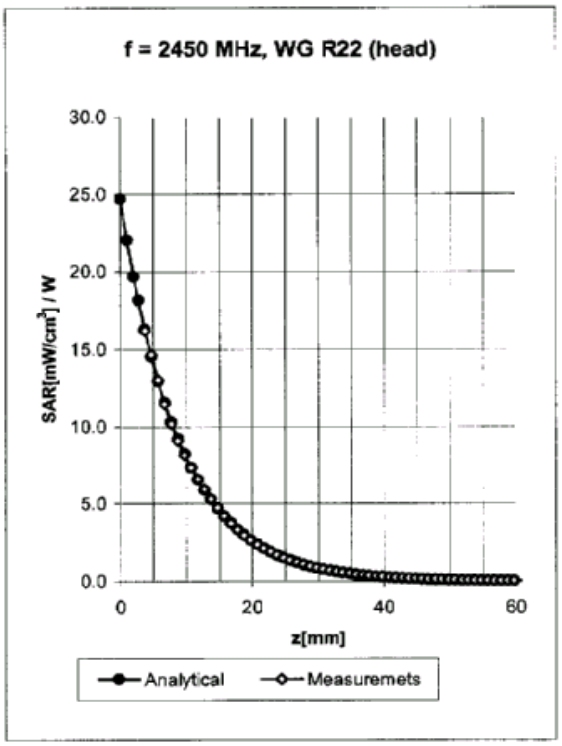
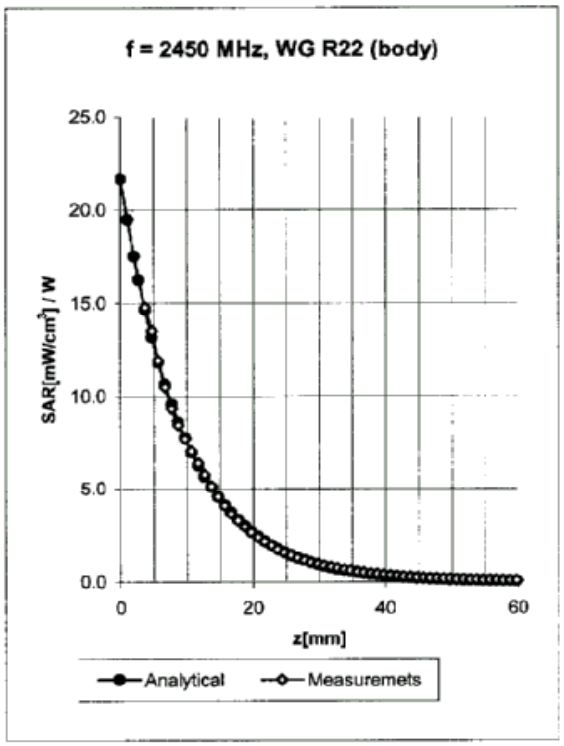
Conversion Factor Assessment





Head	2450	MHz	ε_r = 39.2 ± 5%	σ = 1.80 ± 5% mho/m

Valid for f=2400-2500 MHz with Head Tissue Simulating Liquid according to EN 50361, P1528-200X

ConvF X	5.1 ± 9.5% (k=2)	Boundary effect:	
ConvF Y	5.1 ± 9.5% (k=2)	Alpha	0.97
ConvF Z	5.1 ± 9.5% (k=2)	Depth	1.91

Body	2450	MHz	ε_r = 52.7 ± 5%	σ = 1.95 ± 5% mho/m

Valid for f=2400-2500 MHz with Body Tissue Simulating Liquid according to OET 65 Suppl. C

ConvF X	4.7 ± 9.5% (k=2)	Boundary effect:	
ConvF Y	4.7 ± 9.5% (k=2)	Alpha	1.25
ConvF Z	4.7 ± 9.5% (k=2)	Depth	1.65

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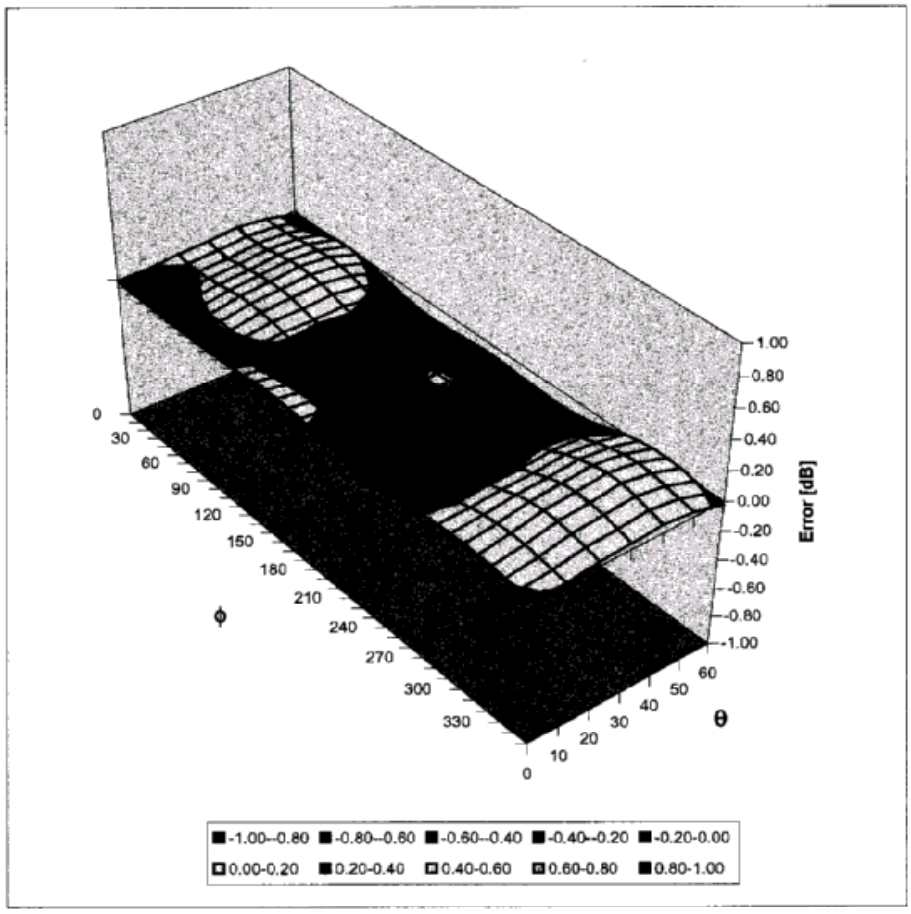
Deviation from Isotropy in HSL

Error (θ,ϕ), f = 900 MHz



ANNEX G

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)