TEST REPORT

Equipment Under Test	**:** FOP 210 0000
FCC ID	**:** SJE13EASJE
Model No.	**:** owasys 22C
Applicant	**:** Owasys SLL
Address of Applicant	**:** Parque Tecnologico 207B, Zamudio, Spain
Date of Receipt	**:** 2004.09.17
Date of Test(s)	**:** 2004.09.21-2004.09.22
Date of Issue	**:** 2004.09.29

Standards:

FCC OET Bulletin 65 supplement C,
ANSI / IEEE C95.1 , C95.3
IEEE 1528 2002

In the configuration tested, the EUT complied with the standards specified above.

Remarks:

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS Taiwan E&E Services or testing done by SGS Taiwan E&E Services in connection with distribution or use of the product described in this report must be approved by SGS Taiwan E&E Services in writing.

Tested by : Dikin Yang **Date : 2004.09.29**

Approved by : Robert Chang **Date : 2004.09.29**

Contents

1. General Information

1.1 Testing Laboratory

SGS Taiwan Ltd.
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Telephone : +886-2-2299-3279
Fax : +886-2-2298-2698
Internet : http://www.sgs.com.tw

1.2 Details of Applicant

Name : Owasys SLL
V.A.T : B95218095
Address : Parque Tecnologico 207B
City : Zamudio
Postal code : 48170
Country : Spain
Telephone : 946025344
Contact Person : Antonio Martínez Riberas
E-mail : antonio.martinez@owasys.com

1.3 Description of EUT(s)

EUT Type	FOP 210 0000
Model	owasys 22C
Mode of Operation	GSM 1900
FCC ID	SJE13EASJE
Modulation Mode	GMSK
Maximum RF Conducted Power	30 dbm
Duty Cycle	8.3
TX Frequency range	1850-1910 MHz
Antenna Type	PIFA

Antenna Gain	2 dbi
Battery Type	3.7V Lithium-Ion
Exposure environment	Uncontrolled exposure
Max. SAR Measured (1g)	0.723 W/kg (at Left-Tilt Channel 810) 0.26 W/kg (at Body-worn Channel 661)

1.4 Test Environment

Ambient temperature : 21.9° C

Tissue Simulating Liquid : 21.8° C

Relative Humidity : 60 %

1.5 Operation description

The device was controlled by using a Universal Radio Communication Tester (CMU 200). Communication between the device and the tester was established by air link. Measurements were performed on the lowest, middle and highest channels of the operating band. The phone was set to maximum power level during all tests and at the beginning of each test the battery was fully charged.
The DASY4 system measures power drift during SAR testing by comparing e-field in the same location at the beginning and at the end of measurement.

1.6 The SAR Measurement System

A photograph of the SAR measurement System is given in Fig. a. This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (Speag Dasy 4 professional system). A Model ET3DV6 1760E-field probe is used to determine the internal electric fields. The SAR can be obtained from the equation SAR= $\sigma (|Ei|^2)/ \rho$ where σ and ρ are the conductivity and mass density of the tissue-simulant.
The DASY4 system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot (Stabile RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in

tissue simulating liquid. The probe is equipped with an optical surface detector system.

- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.

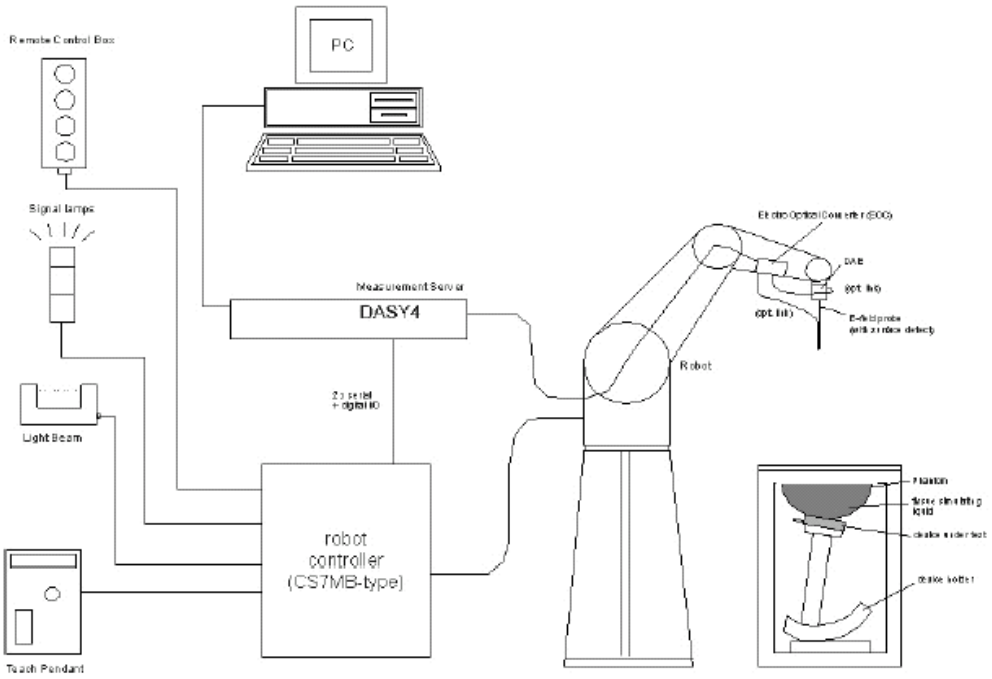


Fig. a The microwave circuit arrangement used for SAR system verification

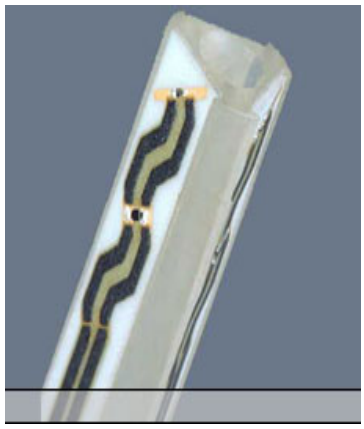
- The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to the DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows 2000 or Windows XP.
- DASY4 software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.

- The SAM twin phantom enabling testing left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- Validation dipole kits allowing to validate the proper functioning of the system.

1.7 System Components

ET3DV6 E-Field Probe

Construction:	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g. glycol)
Calibration:	In air from 10 MHz to 2.5 GHz In brain simulating tissue at frequencies of 1900 MHz (accuracy ± 8%)
Frequency:	10 MHz to >6 GHz; Linearity: ±0.2 dB (30 MHz to 3 GHz)



ET3DV6 E-Field Probe

Directivity:	±0.2 dB in brain tissue (rotation around probe axis) ±0.4 dB in brain tissue (rotation normal to probe axis)
Dynamic Range:	5 µW/g to >100 mW/g; Linearity: ±0.2 dB
Surface. Detect:	±0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces
Dimensions:	Overall length: 330 mm Tip length: 16 mm Body diameter: 12 mm Tip diameter: 6.8 mm Distance from probe tip to dipole centers: 2.7 mm
Application:	General dosimetry up to 3 GHz Compliance tests of mobile phone

SAM PHANTOM V4.0C

Construction:	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528-200X, CENELEC 50361 and IEC 62209. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents

evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points with the robot.

Shell Thickness:	2 ± 0.2 mm
Filling Volume:	Approx. 25 liters
Dimensions:	Height: 810 mm; Length: 1000 mm; Width: 500 mm

DEVICE HOLDER

Construction	In combination with the Twin SAM Phantom V4.0/V4.0C or Twin SAM, the Mounting Device (made from POM) enables the rotation of the mounted transmitter in spherical coordinates, whereby the rotation point is the ear opening. The devices can be easily and accurately positioned according to IEC, IEEE, CENELEC, FCC or other specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom).

Device Holder

1.8 SAR System Verification

The microwave circuit arrangement for system verification is sketched in Fig. b. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% from the target SAR values. These tests were done at 1900MHz. The tests were conducted on the same days as the measurement of the DUT. The obtained results from the system accuracy verification are displayed in the table 1 (SAR values are normalized to 1W forward power delivered to the dipole). During the tests, the ambient temperature of the laboratory was in the range 21.9°C, the relative humidity was in the range 60% and the liquid depth above the ear reference points was above 15 cm in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.

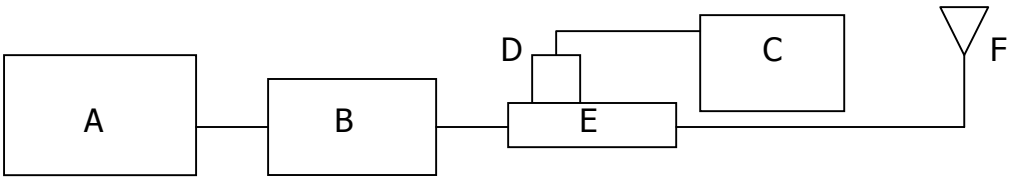
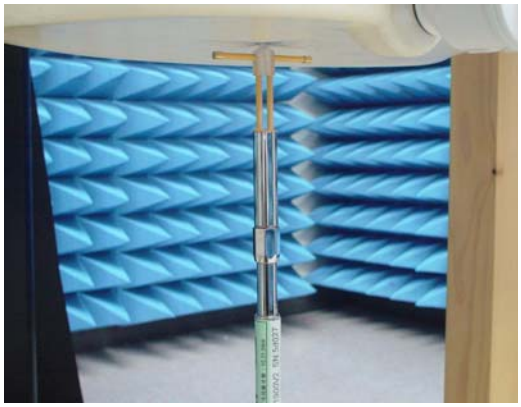


Fig.b The microwave circuit arrangement used for SAR system verification

A. Agilent Model 8648D Signal Generator
B. Mini circuits Model ZHL-42 Amplifier
C. Agilent Model E4416A Power Meter
D. Agilent Model 8481H Power Sensor
E. Agilent Model 777D(1900MHz)
   Dual directional coupling
F. Reference dipole antenna



Photograph of the 1900MHz dipole Antenna

Validation Kit	Frequency	Target SAR 1g (250mW)	Target SAR 10g (250mW)	Measured SAR 1g (250mW)	Measured SAR 10g (250mW)	Measured date
DT3DV6 S/N :1760	1900 MHz (Head)	10.5 m W/g	5.44 m W/g	10 m W/g	5.21 m W/g	2004-09-21
DT3DV6 S/N :1760	1900 MHz (Body)	10.7 m W/g	5.6 m W/g	10.2 m W/g	5.31 m W/g	2004-09-22

Table 1. Results system validation

1.9 Tissue Simulant Fluid for the Frequency Band

The dielectric properties for this body-simulant fluid were measured by using the HP Model 85070D Dielectric Probe (rates frequence band 200 MHz to 20 GHz) in conjuncation with HP 8753D Network Analyzer(30 KHz-6000 MHz) by using a procedure detailed in Section V.

F (Mhz)	Tissue type	Limits/ Measured	Dielectric Parameters		
			ρ	σ (S/m)	Simulated Tissue Temp(° C)
1900	Head	Measured, 2004.09.21	39.58	1.44	21.6
		Recommended Limits	38-42	1.33-1.47	20-24
	Body	Measured, 2004.09.22	53.19	1.557	21.6
		Recommended Limits	50.6-56	1.44-1.6	20-24

Table 2. Dielectric Parameters of Tissue Simulant Fluid

All dielectric parameters of tissue simulates were measured within 24 hours of SAR measurements. The depth of the tissue simulant in the ear reference point of the phantom was 15cm±5mm during all tests. (Fig .2 & Fig.3)
The composition of the brain tissue simulating liquid for 1900 MHz is:

Ingredient	1900Mhz(Head)	1900Mhz(Body)
DGMBE	444.52 g	300.67
Water	552.42 g	716.56
Sale	3.06 g	4.0
Total amount	1 L (1.0kg)	1 L (1.0kg)

Table 3. Recipes for 1900MHz tissue simulating liquid

1.10 Test Standards and Limits

According to FCC 47CFR §2.1093(d) The limits to be used for evaluation are based generally on criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate ("SAR") in Section 4.2 of "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," ANSI/IEEE C95.1–1992, Copyright 1992 by the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017. These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in "Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," NCRP Report No. 86, Section 17.4.5. Copyright NCRP, 1986, Bethesda, Maryland 20814. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards. The criteria to be used are specified in paragraphs (d)(1) and (d)(2) of this section and shall apply for portable devices transmitting in the frequency range from 100 kHz to 6 GHz. Portable devices that transmit at frequencies above 6 GHz are to be evaluated in terms of the MPE limits specified in § 1.1310 of this chapter. Measurements and calculations to demonstrate compliance with MPE field strength or power density limits for devices operating above 6 GHz should be made at a minimum distance of 5 cm from the radiating source.
(1) Limits for Occupational/Controlled exposure: 0.4 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 8 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 20 W/kg, as averaged over an 10 grams of tissue (defined as a tissue volume in the shape of a cube).

Occupational/Controlled limits apply when persons are exposed as a consequence of their employment provided these persons are fully aware of and exercise control over their exposure. Awareness of exposure can be accomplished by use of warning labels or by specific training or education through appropriate means, such as an RF safety program in a work environment.

(2) Limits for General Population/Uncontrolled exposure: 0.08 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 1.6 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). General Population/Uncontrolled limits apply when the general public may be exposed, or when persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or do not exercise control over their exposure. Warning labels placed on consumer devices such as cellular telephones will not be sufficient reason to allow these devices to be evaluated subject to limits for occupational/controlled exposure in paragraph (d)(1) of this section.(Table .4)

Human Exposure	**Uncontrolled Environment General Population**	**Controlled Environment Occupational**
Spatial Peak SAR (Brain)	1.60 m W/g	8.00 m W/g
Spatial Average SAR (Whole Body)	0.08 m W/g	0.40 m W/g
Spatial Peak SAR (Hands/Feet/Ankle/Wrist)	4.00 m W/g	20.00 m W/g

Table .4 RF exposure limits

Notes:

1. Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.
2. Controlled environments are defined as locations where there is potential exposure of individuals who have knowledge of their potential exposure and can exercise control over their exposure.

2.Summary of Results

Right Head (Cheek Position)						
Frequency	Channel	MHz	Conducted Output Power(Peak)	Measured(W/kg) 1g/10g	Amb. Temp[˚C]	Liquid Temp[˚C]
1900 MHz	512	1850.2	30 dbm	0.42/0.249	21.9	21.6
	661	1880	30 dbm	0.321/0.191	21.9	21.6
	810	1909.8	30 dbm	0.433/0.251	21.9	21.6
Left Head (Cheek Position)						
Frequency	Channel	MHz	Conducted Output Power(Peak)	Measured(W/kg) 1g/10g	Amb. Temp[˚C]	Liquid Temp[˚C]
1900 MHz	512	1850.2	30 dbm	0.555/0.321	21.9	21.6
	661	1880	30 dbm	0.622/0.356	21.9	21.5
	810	1909.8	30 dbm	0.625/0.354	21.9	21.6
Right Head (15° Tilt Position)						
Frequency	Channel	MHz	Conducted Output Power(Peak)	Measured(W/kg) 1g/10g	Amb. Temp[˚C]	Liquid Temp[˚C]
1900 MHz	512	1850.2	30 dbm	0.551/0.306	21.9	21.6
	661	1880	30 dbm	0.556/0.308	22.0	21.7
	810	1909.8	30 dbm	0.555/0.3	22.0	21.7
Left Head (15° Tilt Position)						
Frequency	Channel	MHz	Conducted Output Power(Peak)	Measured(W/kg) 1g/10g	Amb. Temp[˚C]	Liquid Temp[˚C]
1900 MHz	512	1850.2	30 dbm	0.666/0.366	21.9	21.6
	661	1880	30 dbm	0.74/0.403	21.9	21.6
	810	1909.8	30 dbm	0.723/0.392	21.9	21.5
Body Worn for Headset						
Frequency	Channel	MHz	Conducted Output Power(Peak)	Measured(W/kg) 1g/10g	Amb. Temp[˚C]	Liquid Temp[˚C]
1900 MHz	512	1850.2	30 dbm	0.247/0.151	21.9	21.6
	661	1880	30 dbm	0.26/0.157	21.9	21.6
	810	1909.8	30 dbm	0.257/0.154	21.9	21.6

Note:

SAR measurement results for the FOP 210 0000 Mobile Phone at maximum output power.

3. Instruments List

Manufacturer	Device	Type	IMEI number	Date of last calibration
Schmid & Partner Engineering AG	Dosimetric E-Field Probe	ET3DV6	1760	Feb.17.2004
Schmid & Partner Engineering AG	1900 MHz System Validation Dipole	D1900V2	5d027	Feb.17.2004
Schmid & Partner Engineering AG	Data acquisition Electronics	DAE3	547	Feb.10.2004
Schmid & Partner Engineering AG	Software	DASY 4 V4.1c Build 47	---	Calibration isn't necessary
Schmid & Partner Engineering AG	Phantom	SAM	---	Calibration isn't necessary
Agilent	Network Analyzer	8753D	3410A05547	Jun.03.2004
Agilent	Dielectric Probe Kit	85070D	US01440168	Calibration isn't necessary
Agilent	Dual-directional coupler	777D 778D	50114 50313	Jul.27.2004 Jul.27.2004
Agilent	RF Signal Generator	8648D	3847M00432	Feb.09.2004
Agilent	Power Sensor	8481H	MY41091361	May.24.2004

4.Measurements

Right-Head Cheek CH512

Date/Time: 09/21/04 13:38:05

DUT: FOP 210 0000; Type: Embeded; IMEI: 351873000001086
Program: GSM 1900MHZ

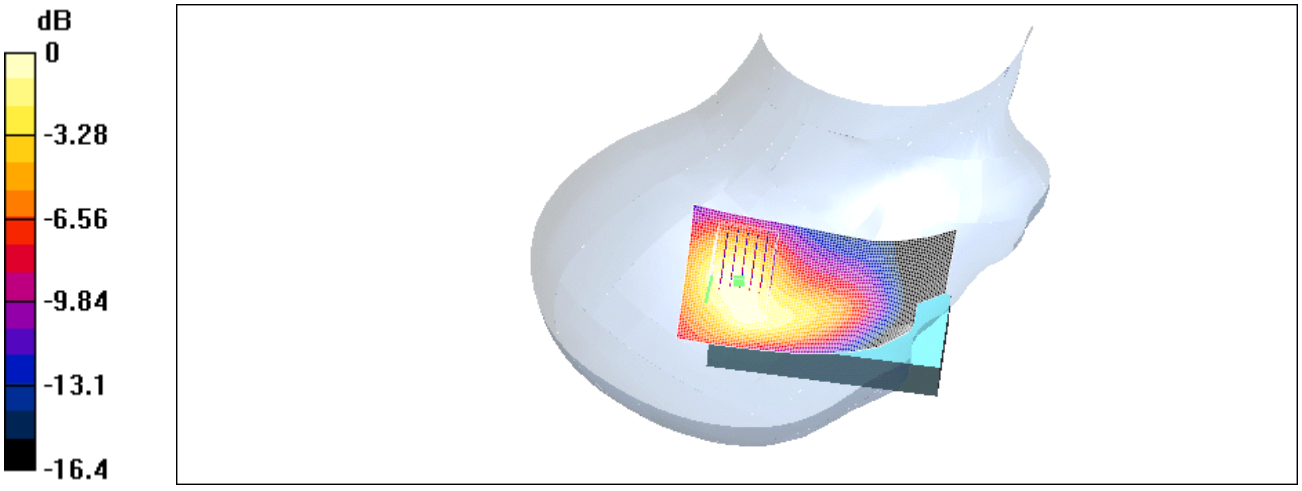
Communication System: GSM 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium: Head 1900MHz (σ = 1.3647 mho/m, ε_r = 39.1801, ρ = 1000 kg/m^3)
Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(5.13, 5.13, 5.13); Calibrated: 2004/2/17
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn547; Calibrated: 2004/2/10
- Phantom: SAM 12; Type: SAM 4.0; Serial: TP:1150
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Right-cheek/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 18.3 V/m
Power Drift = 0.07 dB
Maximum value of SAR = 0.467 mW/g

Right-cheek/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.67 W/kg
SAR(1 g) = 0.42 mW/g; SAR(10 g) = 0.249 mW/g
Reference Value = 18.3 V/m
Power Drift = 0.07 dB
Maximum value of SAR = 0.456 mW/g



0 dB = 0.456mW/g

Right-Head Cheek CH661

Date/Time: 09/21/04 12:04:30

DUT: FOP 210 0000; Type: Embeded; IMEI: 351873000001086
Program: GSM 1900MHZ

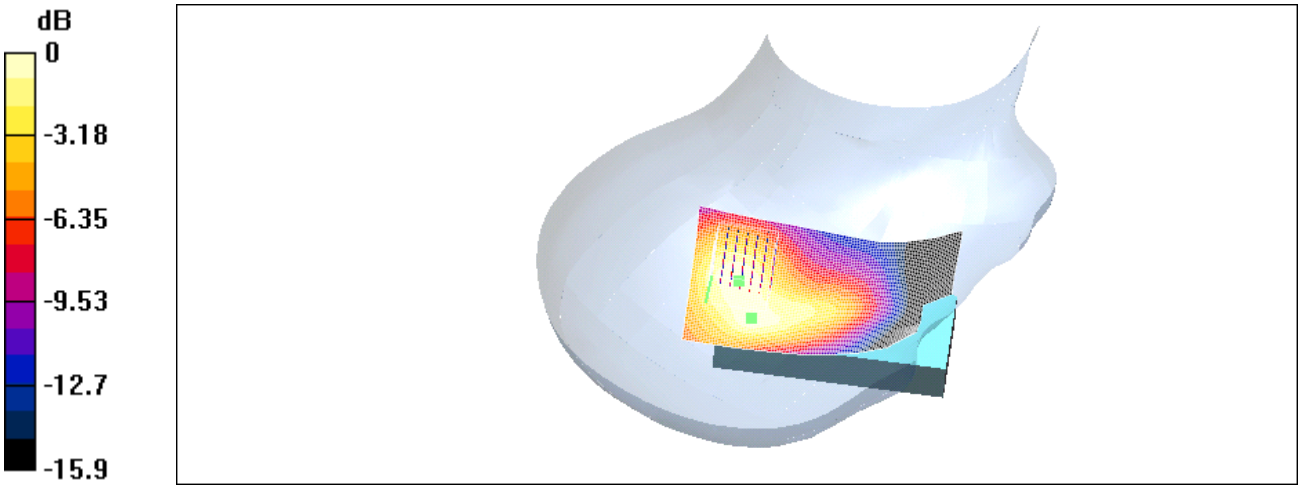
Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: Head 1900MHz (σ = 1.42002 mho/m, ε_r = 39.2947, ρ = 1000 kg/m^3)
Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(5.13, 5.13, 5.13); Calibrated: 2004/2/17
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn547; Calibrated: 2004/2/10
- Phantom: SAM 12; Type: SAM 4.0; Serial: TP:1150
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Right-cheek/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 11.7 V/m
Power Drift = 2 dB
Maximum value of SAR = 0.348 mW/g

Right-cheek/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.52 W/kg
SAR(1 g) = 0.321 mW/g; SAR(10 g) = 0.191 mW/g
Reference Value = 11.7 V/m
Power Drift = 2 dB
Maximum value of SAR = 0.349 mW/g



0 dB = 0.349mW/g

Right-Head Cheek CH810

Date/Time: 09/21/04 13:09:48

DUT: FOP 210 0000; Type: Embeded; IMEI: 351873000001086
Program: GSM 1900MHZ

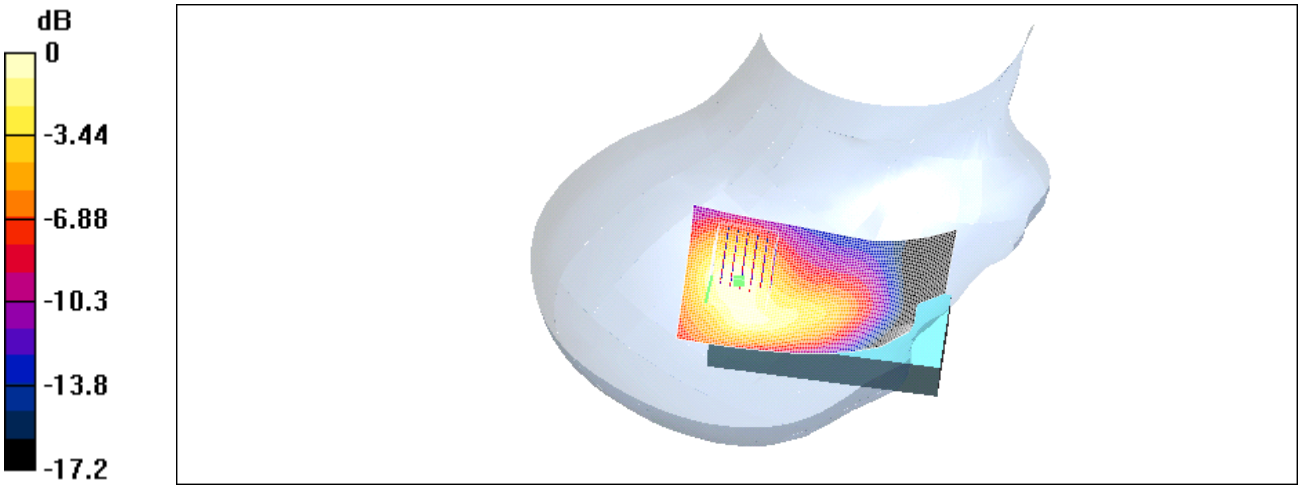
Communication System: GSM 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: Head 1900MHz (σ = 1.45412 mho/m, ε_r = 39.4901, ρ = 1000 kg/m^3)
Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(5.1, 5.1, 5.1); Calibrated: 2004/2/17
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn547; Calibrated: 2004/2/10
- Phantom: SAM 12; Type: SAM 4.0; Serial: TP:1150
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Right-cheek/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 17.7 V/m
Power Drift = 0.07 dB
Maximum value of SAR = 0.475 mW/g

Right-cheek/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.711 W/kg
SAR(1 g) = 0.433 mW/g; SAR(10 g) = 0.251 mW/g
Reference Value = 17.7 V/m
Power Drift = 0.07 dB
Maximum value of SAR = 0.468 mW/g



0 dB = 0.468mW/g

Left-Head Cheek CH512

Date/Time: 09/21/04 16:53:11

DUT: FOP 210 0000; Type: Embeded; IMEI: 351873000001086
Program: GSM 1900MHZ

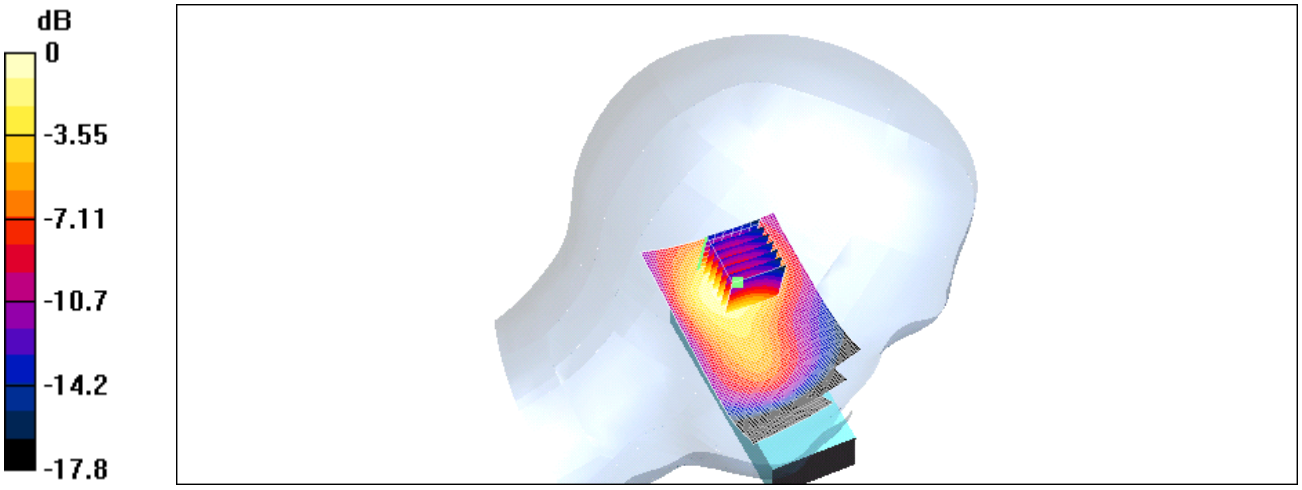
Communication System: GSM 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium: Head 1900MHz (σ = 1.3647 mho/m, ε_r = 39.1801, ρ = 1000 kg/m^3)
Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(5.13, 5.13, 5.13); Calibrated: 2004/2/17
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn547; Calibrated: 2004/2/10
- Phantom: SAM 12; Type: SAM 4.0; Serial: TP:1150
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Left-Cheek/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 21.9 V/m
Power Drift = -0.05 dB
Maximum value of SAR = 0.609 mW/g

Left-Cheek/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.863 W/kg
SAR(1 g) = 0.555 mW/g; SAR(10 g) = 0.321 mW/g
Reference Value = 21.9 V/m
Power Drift = -0.05 dB
Maximum value of SAR = 0.609 mW/g



0 dB = 0.609mW/g

Left-Head Cheek CH661

Date/Time: 09/21/04 15:57:35

DUT: FOP 210 0000; Type: Embeded; IMEI: 351873000001086
Program: GSM 1900MHZ

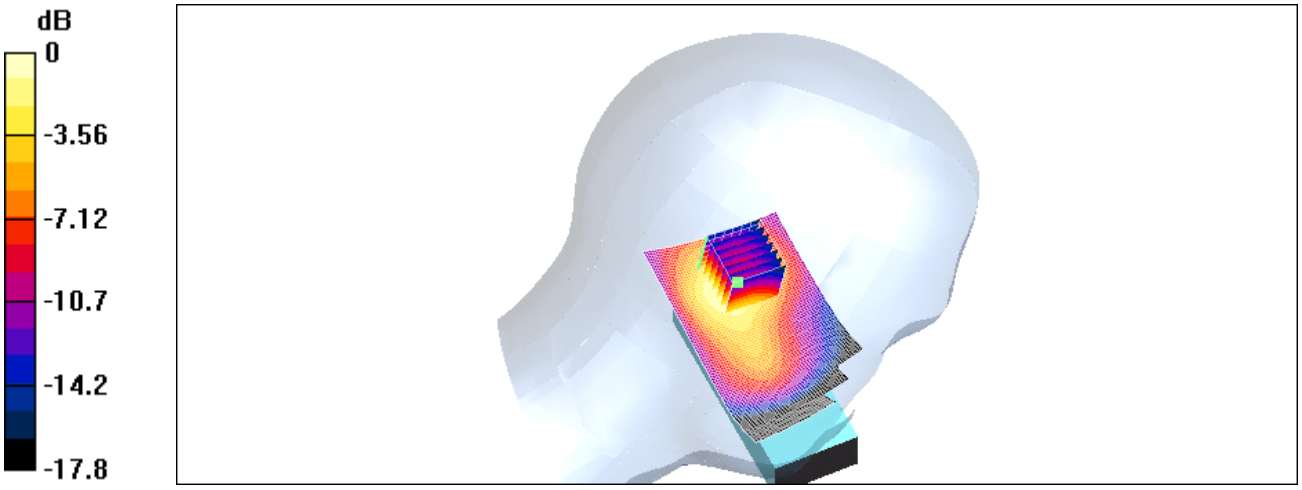
Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: Head 1900MHz (σ = 1.42002 mho/m, ε_r = 39.2947, ρ = 1000 kg/m^3)
Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(5.13, 5.13, 5.13); Calibrated: 2004/2/17
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn547; Calibrated: 2004/2/10
- Phantom: SAM 12; Type: SAM 4.0; Serial: TP:1150
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Left-Cheek/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 22.6 V/m
Power Drift = -0.03 dB
Maximum value of SAR = 0.673 mW/g

Left-Cheek/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.971 W/kg
SAR(1 g) = 0.622 mW/g; SAR(10 g) = 0.356 mW/g
Reference Value = 22.6 V/m
Power Drift = -0.03 dB
Maximum value of SAR = 0.688 mW/g



0 dB = 0.688mW/g

Left-Head Cheek CH810

Date/Time: 09/21/04 16:26:02

DUT: FOP 210 0000; Type: Embeded; IMEI: 351873000001086
Program: GSM 1900MHZ

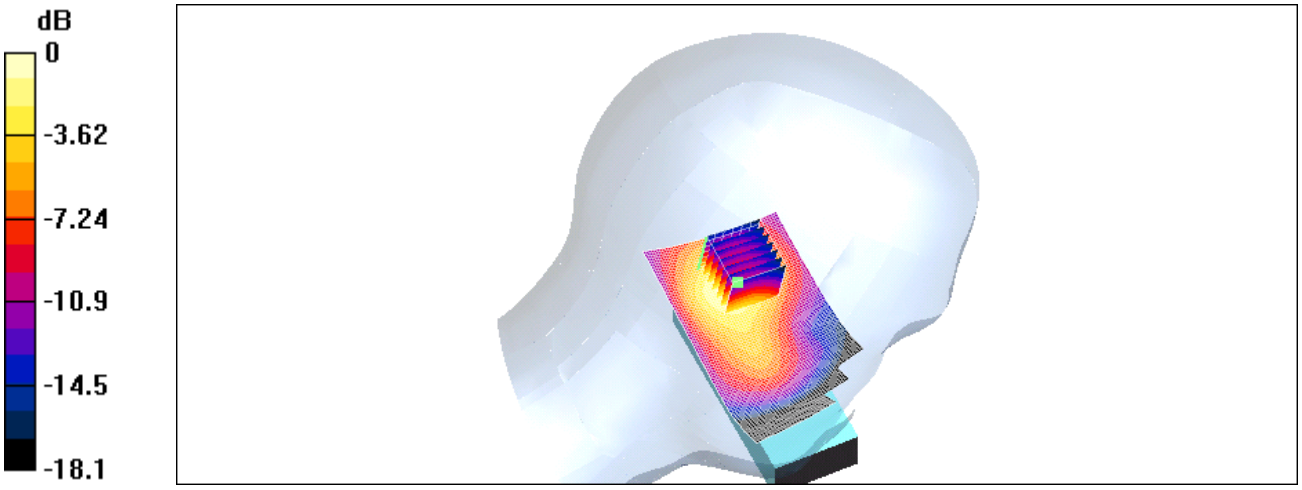
Communication System: GSM 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: Head 1900MHz (σ = 1.45412 mho/m, ε_r = 39.4901, ρ = 1000 kg/m^3)
Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(5.1, 5.1, 5.1); Calibrated: 2004/2/17
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn547; Calibrated: 2004/2/10
- Phantom: SAM 12; Type: SAM 4.0; Serial: TP:1150
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Left-Cheek/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 22.5 V/m
Power Drift = 0.05 dB
Maximum value of SAR = 0.685 mW/g

Left-Cheek/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.991 W/kg
SAR(1 g) = 0.625 mW/g; SAR(10 g) = 0.354 mW/g
Reference Value = 22.5 V/m
Power Drift = 0.05 dB
Maximum value of SAR = 0.694 mW/g



0 dB = 0.694mW/g

Right-Head Tilt CH512

Date/Time: 09/21/04 14:03:21

DUT: FOP 210 0000; Type: Embeded; IMEI: 351873000001086
Program: GSM 1900MHZ

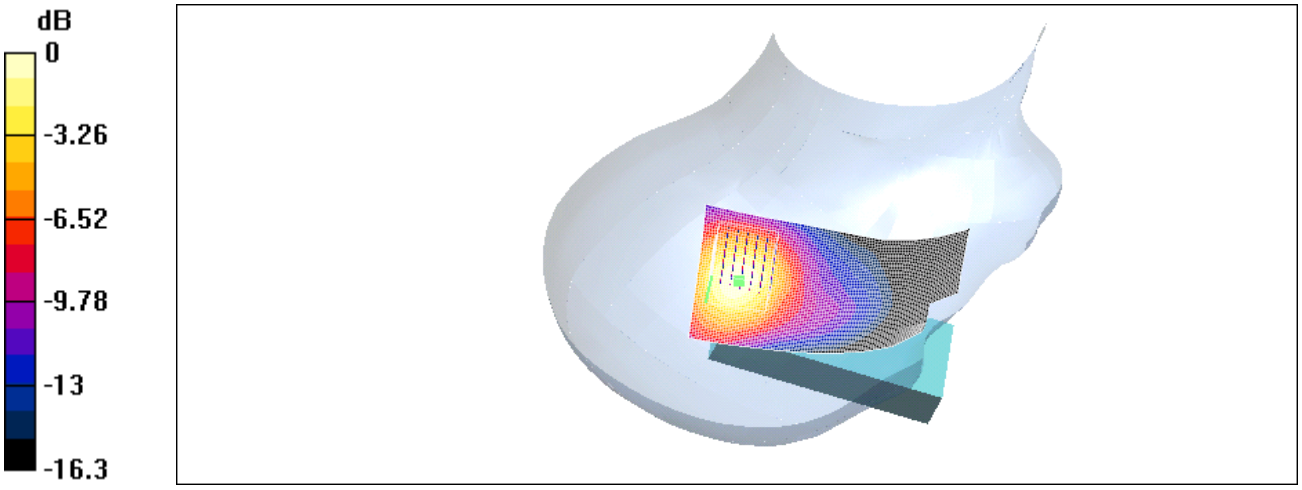
Communication System: GSM 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium: Head 1900MHz (σ = 1.3647 mho/m, ε_r = 39.1801, ρ = 1000 kg/m^3)
Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(5.13, 5.13, 5.13); Calibrated: 2004/2/17
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn547; Calibrated: 2004/2/10
- Phantom: SAM 12; Type: SAM 4.0; Serial: TP:1150
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Right-Tilt/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 18.3 V/m
Power Drift = -0.004 dB
Maximum value of SAR = 0.597 mW/g

Right-Tilt/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.894 W/kg
SAR(1 g) = 0.551 mW/g; SAR(10 g) = 0.306 mW/g
Reference Value = 18.3 V/m
Power Drift = -0.004 dB
Maximum value of SAR = 0.609 mW/g



0 dB = 0.609mW/g

Right-Head Tilt CH661

Date/Time: 09/21/04 14:27:50

DUT: FOP 210 0000; Type: Embeded; IMEI: 351873000001086
Program: GSM 1900MHZ

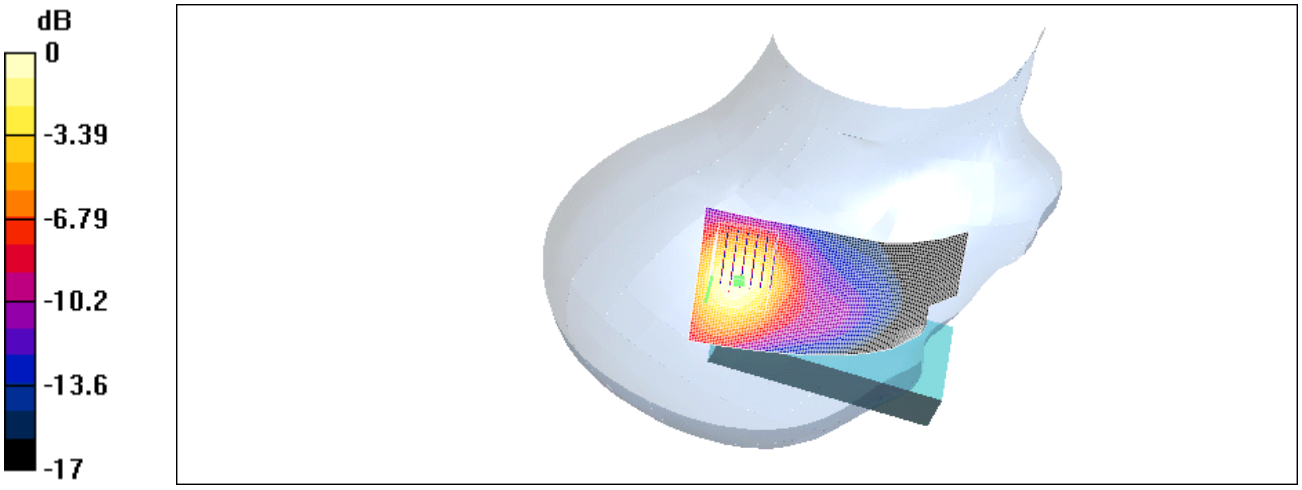
Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: Head 1900MHz (σ = 1.42002 mho/m, ε_r = 39.2947, ρ = 1000 kg/m^3)
Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(5.13, 5.13, 5.13); Calibrated: 2004/2/17
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn547; Calibrated: 2004/2/10
- Phantom: SAM 12; Type: SAM 4.0; Serial: TP:1150
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Right-Tilt/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 18.1 V/m
Power Drift = 0.01 dB
Maximum value of SAR = 0.607 mW/g

Right-Tilt/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.909 W/kg
SAR(1 g) = 0.556 mW/g; SAR(10 g) = 0.308 mW/g
Reference Value = 18.1 V/m
Power Drift = 0.01 dB
Maximum value of SAR = 0.618 mW/g



0 dB = 0.618mW/g

Right-Head Tilt CH810

Date/Time: 09/21/04 14:52:22

DUT: FOP 210 0000; Type: Embeded; IMEI: 351873000001086
Program: GSM 1900MHZ

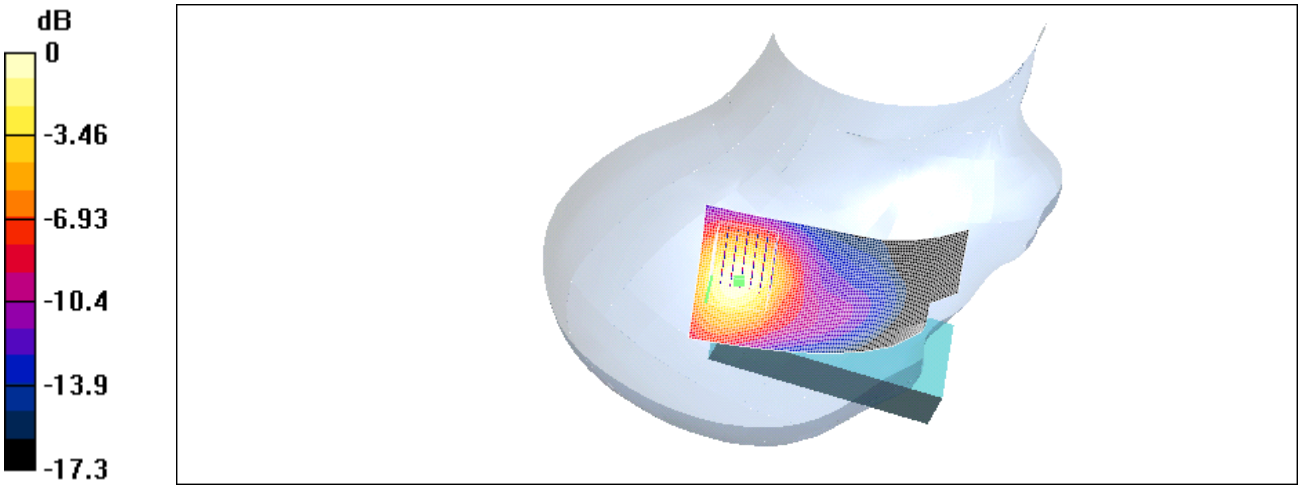
Communication System: GSM 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: Head 1900MHz (σ = 1.45412 mho/m, ε_r = 39.4901, ρ = 1000 kg/m^3)
Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(5.1, 5.1, 5.1); Calibrated: 2004/2/17
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn547; Calibrated: 2004/2/10
- Phantom: SAM 12; Type: SAM 4.0; Serial: TP:1150
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Right-Tilt/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 17.8 V/m
Power Drift = 0.02 dB
Maximum value of SAR = 0.601 mW/g

Right-Tilt/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.926 W/kg
SAR(1 g) = 0.555 mW/g; SAR(10 g) = 0.3 mW/g
Reference Value = 17.8 V/m
Power Drift = 0.02 dB
Maximum value of SAR = 0.608 mW/g



0 dB = 0.608mW/g

Left-Head Tilt CH512

Date/Time: 09/21/04 17:55:23

DUT: FOP 210 0000; Type: Embeded; IMEI: 351873000001086
Program: GSM 1900MHZ

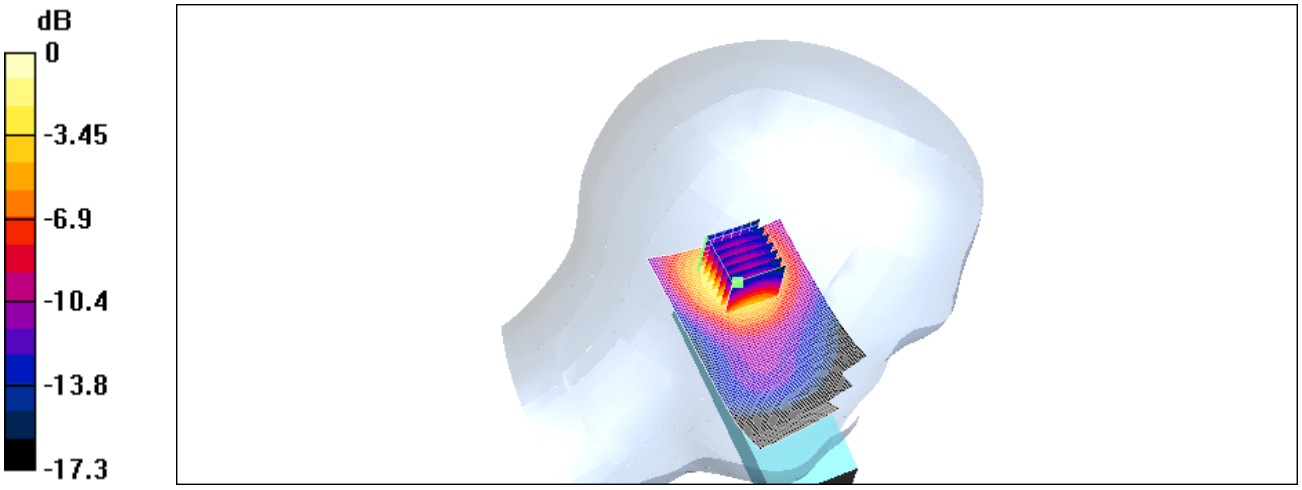
Communication System: GSM 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium: Head 1900MHz (σ = 1.3647 mho/m, ε_r = 39.1801, ρ = 1000 kg/m^3)
Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(5.13, 5.13, 5.13); Calibrated: 2004/2/17
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn547; Calibrated: 2004/2/10
- Phantom: SAM 12; Type: SAM 4.0; Serial: TP:1150
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Left-Tilt/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 22.5 V/m
Power Drift = 0.06 dB
Maximum value of SAR = 0.738 mW/g

Left-Tilt/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 1.05 W/kg
SAR(1 g) = 0.666 mW/g; SAR(10 g) = 0.366 mW/g
Reference Value = 22.5 V/m
Power Drift = 0.06 dB
Maximum value of SAR = 0.737 mW/g



0 dB = 0.737mW/g

Left -Head Tilt CH661

Date/Time: 09/21/04 18:20:52

DUT: FOP 210 0000; Type: Embeded; IMEI: 351873000001086
Program: GSM 1900MHZ

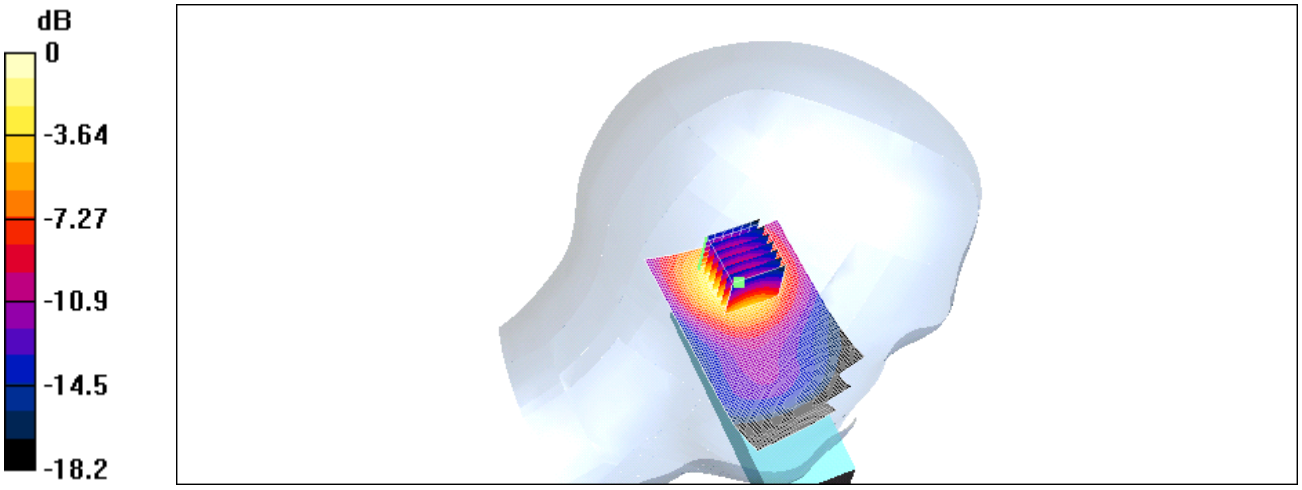
Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: Head 1900MHz (σ = 1.42002 mho/m, ε_r = 39.2947, ρ = 1000 kg/m^3)
Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(5.13, 5.13, 5.13); Calibrated: 2004/2/17
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn547; Calibrated: 2004/2/10
- Phantom: SAM 12; Type: SAM 4.0; Serial: TP:1150
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Left-Tilt/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 23.5 V/m
Power Drift = 0.07 dB
Maximum value of SAR = 0.82 mW/g

Left-Tilt/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 1.21 W/kg
SAR(1 g) = 0.74 mW/g; SAR(10 g) = 0.403 mW/g
Reference Value = 23.5 V/m
Power Drift = 0.07 dB
Maximum value of SAR = 0.819 mW/g



0 dB = 0.819mW/g

Left -Head Tilt CH810

Date/Time: 09/21/04 20:00:39

DUT: FOP 210 0000; Type: Embeded; IMEI: 351873000001086
Program: GSM 1900MHZ

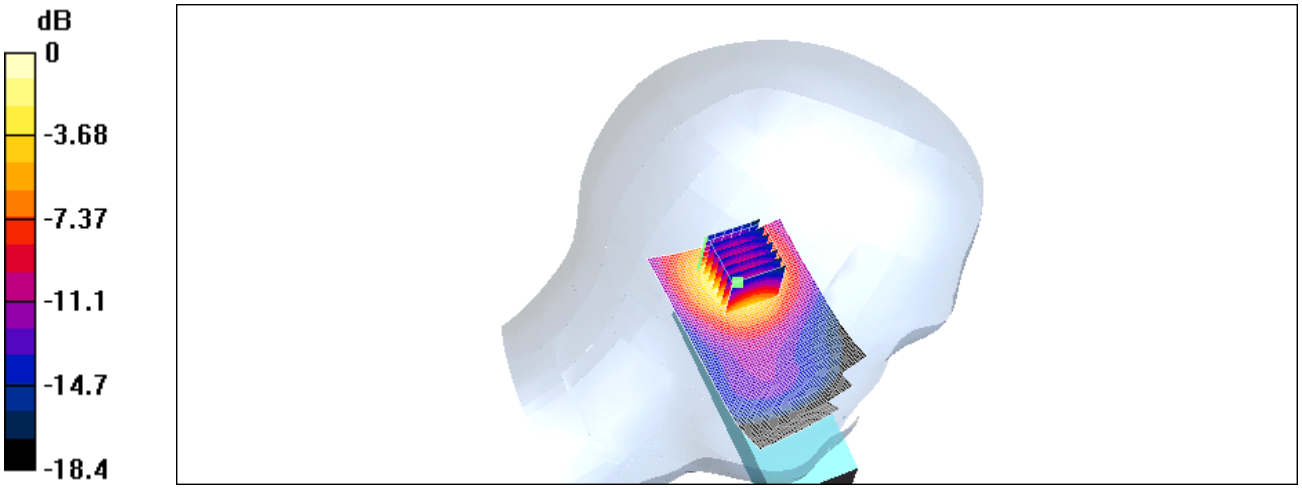
Communication System: GSM 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: Head 1900MHz (σ = 1.45412 mho/m, ε_r = 39.4901, ρ = 1000 kg/m^3)
Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(5.1, 5.1, 5.1); Calibrated: 2004/2/17
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn547; Calibrated: 2004/2/10
- Phantom: SAM 12; Type: SAM 4.0; Serial: TP:1150
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Left-Tilt/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 23.2 V/m
Power Drift = -0.01 dB
Maximum value of SAR = 0.797 mW/g

Left-Tilt/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 1.17 W/kg
SAR(1 g) = 0.723 mW/g; SAR(10 g) = 0.392 mW/g
Reference Value = 23.2 V/m
Power Drift = -0.01 dB
Maximum value of SAR = 0.803 mW/g



0 dB = 0.803mW/g

Body-Worn CH512

Date/Time: 09/22/04 17:59:21

DUT: FOP 210 0000; Type: Embeded; IMEI: 351873000001086
Program: GSM 1900MHZ

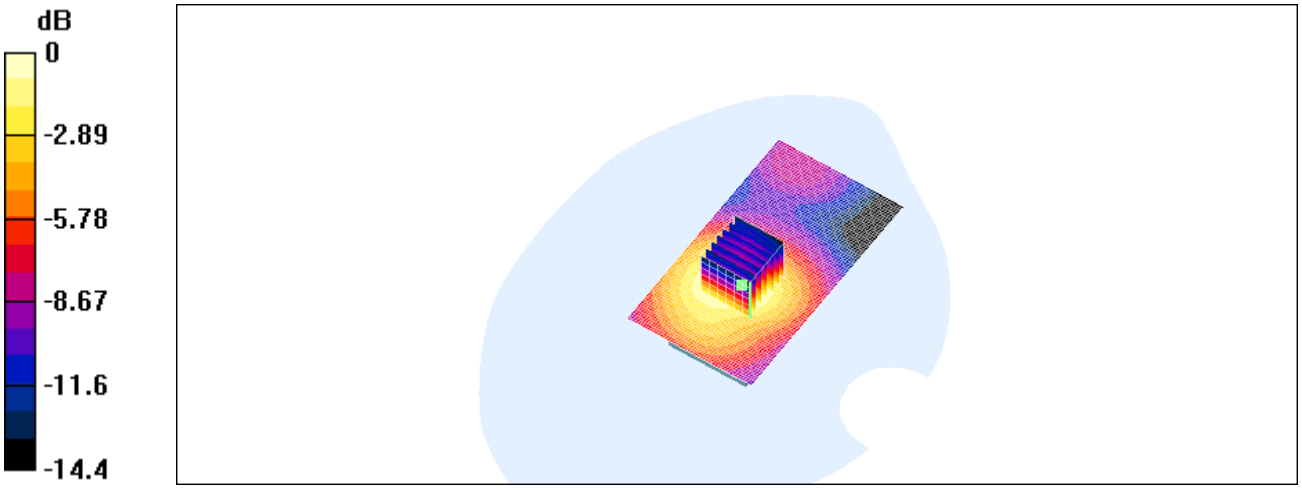
Communication System: GSM 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium: M1800 & 1900 (σ = 1.52427 mho/m, ε_r = 53.3828, ρ = 1000 kg/m^3)
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(4.56, 4.56, 4.56); Calibrated: 2004/2/17
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn547; Calibrated: 2004/2/10
- Phantom: SAM 12; Type: SAM 4.0; Serial: TP:1150
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Body/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 11.1 V/m
Power Drift = -0.01 dB
Maximum value of SAR = 0.256 mW/g

Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.371 W/kg
SAR(1 g) = 0.247 mW/g; SAR(10 g) = 0.151 mW/g
Reference Value = 11.1 V/m
Power Drift = -0.01 dB
Maximum value of SAR = 0.268 mW/g



0 dB = 0.268mW/g

Body-Worn CH661

Date/Time: 09/22/04 18:22:30

DUT: FOP 210 0000; Type: Embeded; IMEI: 351873000001086
Program: GSM 1900MHZ

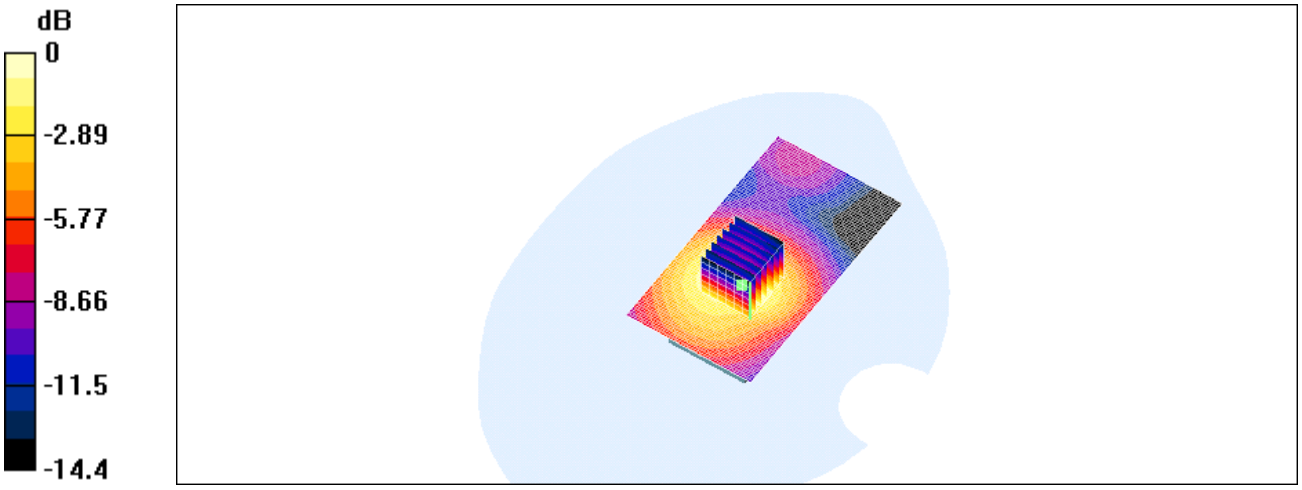
Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: M1800 & 1900 (σ = 1.54797 mho/m, ε_r = 53.127, ρ = 1000 kg/m^3)
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(4.56, 4.56, 4.56); Calibrated: 2004/2/17
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn547; Calibrated: 2004/2/10
- Phantom: SAM 12; Type: SAM 4.0; Serial: TP:1150
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Body/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 10.8 V/m
Power Drift = 0.03 dB
Maximum value of SAR = 0.27 mW/g

Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.395 W/kg
SAR(1 g) = 0.26 mW/g; SAR(10 g) = 0.157 mW/g
Reference Value = 10.8 V/m
Power Drift = 0.03 dB
Maximum value of SAR = 0.279 mW/g



0 dB = 0.279mW/g

Body-Worn CH810

Date/Time: 09/22/04 18:49:19

DUT: FOP 210 0000; Type: Embeded; IMEI: 351873000001086
Program: GSM 1900MHZ

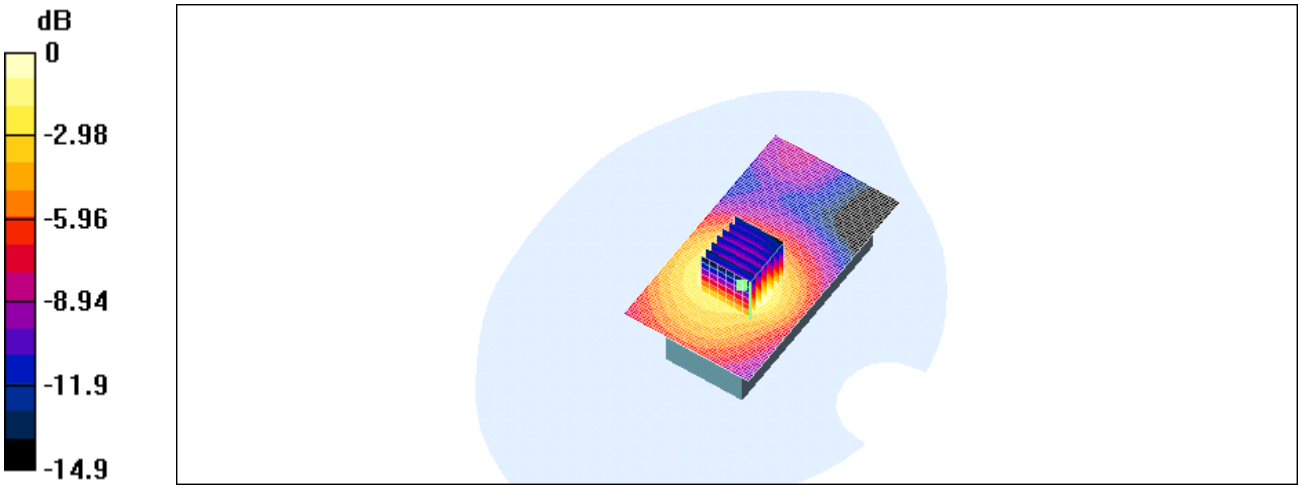
Communication System: GSM 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: M1800 & 1900 (σ = 1.57022 mho/m, ε_r = 53.1146, ρ = 1000 kg/m^3)
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(4.43, 4.43, 4.43); Calibrated: 2004/2/17
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn547; Calibrated: 2004/2/10
- Phantom: SAM 12; Type: SAM 4.0; Serial: TP:1150
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Body/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 10.4 V/m
Power Drift = 0.06 dB
Maximum value of SAR = 0.27 mW/g

Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.394 W/kg
SAR(1 g) = 0.257 mW/g; SAR(10 g) = 0.154 mW/g
Reference Value = 10.4 V/m
Power Drift = 0.06 dB
Maximum value of SAR = 0.275 mW/g



0 dB = 0.275mW/g

SAR System Performance Verification

Date/Time: 09/21/04 08:40:12

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d027
Program: 20040921

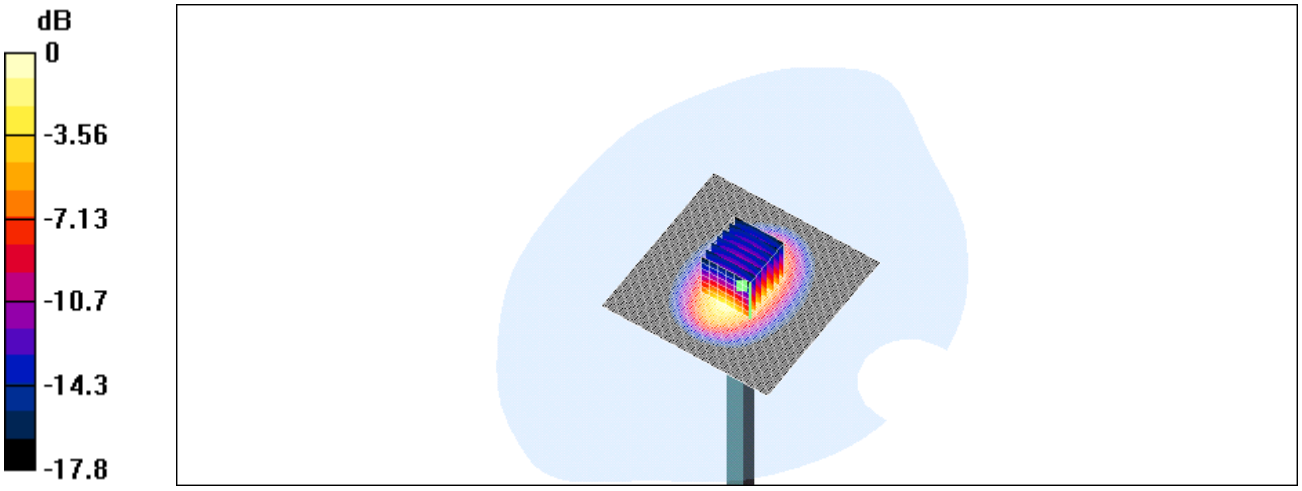
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: Head 1900MHz (σ = 1.4395 mho/m, ε_r = 39.5797, ρ = 1000 kg/m^3)
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(5.1, 5.1, 5.1); Calibrated: 2004/2/17
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn547; Calibrated: 2004/2/10
- Phantom: SAM 12; Type: SAM 4.0; Serial: TP:1150
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Pin=250mw/Area Scan (101x101x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 92.7 V/m
Power Drift = 0.01 dB
Maximum value of SAR = 11.4 mW/g

Pin=250mw/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 18.3 W/kg
SAR(1 g) = 10 mW/g; SAR(10 g) = 5.21 mW/g
Reference Value = 92.7 V/m
Power Drift = 0.01 dB
Maximum value of SAR = 11.5 mW/g



0 dB = 11.5mW/g

SAR System Performance Verification

Date/Time: 09/22/04 14:55:12

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d027
Program: 20040922

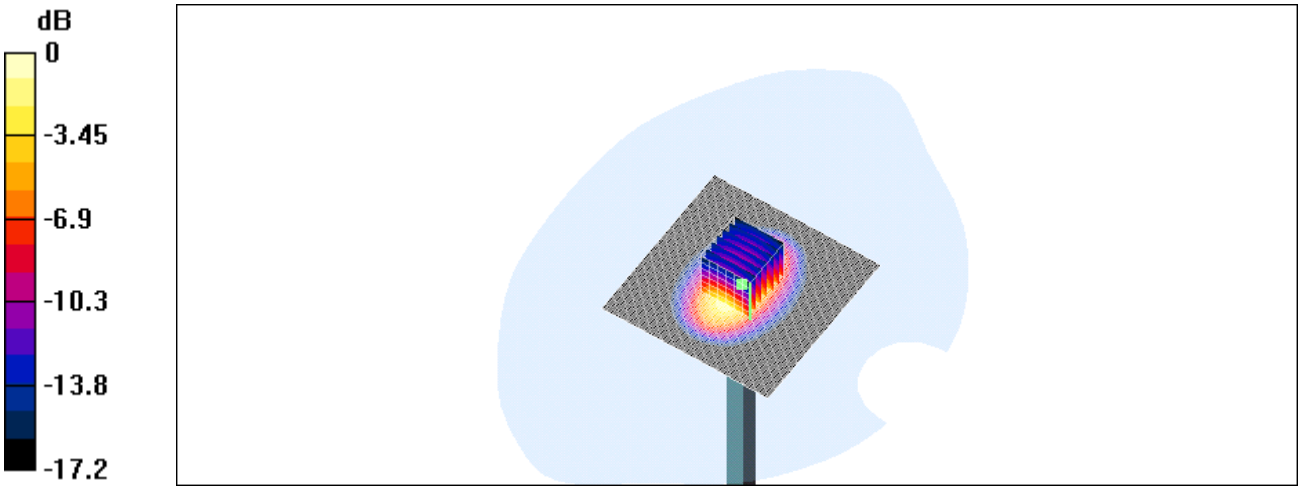
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: M1800 & 1900 (σ = 1.55653 mho/m, ε_r = 53.1851, ρ = 1000 kg/m^3)
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1760; ConvF(4.43, 4.43, 4.43); Calibrated: 2004/2/17
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn547; Calibrated: 2004/2/10
- Phantom: SAM 12; Type: SAM 4.0; IMEI: TP:1150
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Pin=250mw/Area Scan (101x101x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 92.9 V/m
Power Drift = -0.0007 dB
Maximum value of SAR = 11.7 mW/g

Pin=250mw/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 17.8 W/kg
SAR(1 g) = 10.2 mW/g; SAR(10 g) = 5.31 mW/g
Reference Value = 92.9 V/m
Power Drift = -0.0007 dB
Maximum value of SAR = 11.6 mW/g



0 dB = 11.6mW/g

Appendix
Photographs of Test Setup

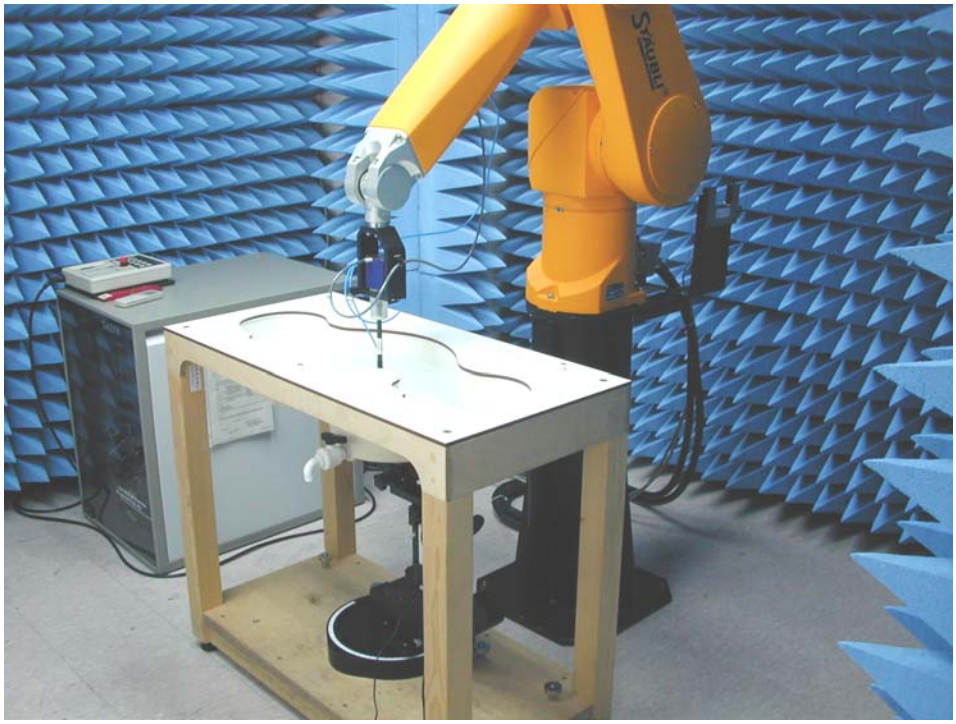


Fig.1 Photograph of the SAR measurement System

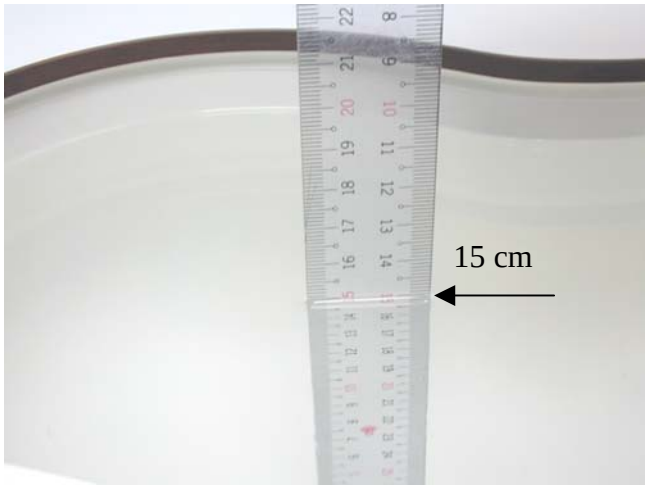


Fig.2 Photograph of the Tissue Simulant Fluid liquid depth 15cm for Right-head Side

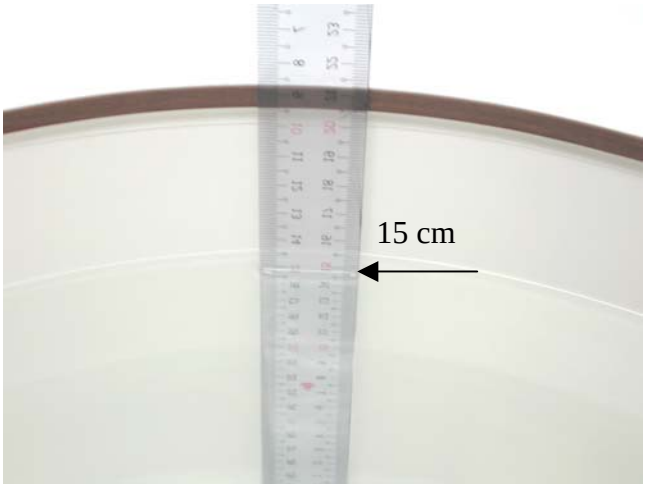
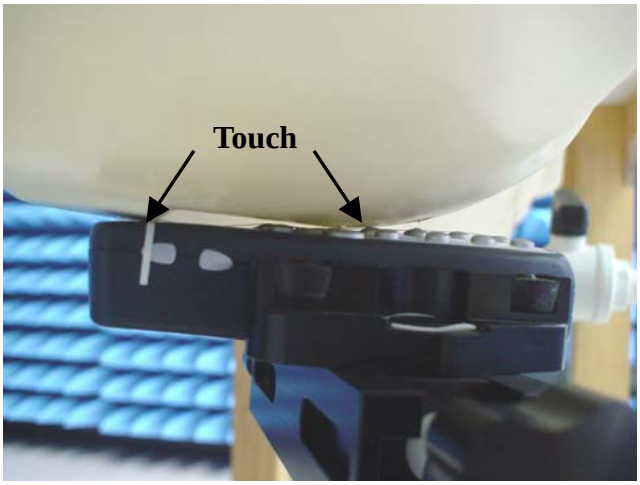


Fig.3 Photograph of the Tissue Simulant Fluid liquid depth 15cm for Flat (Body)



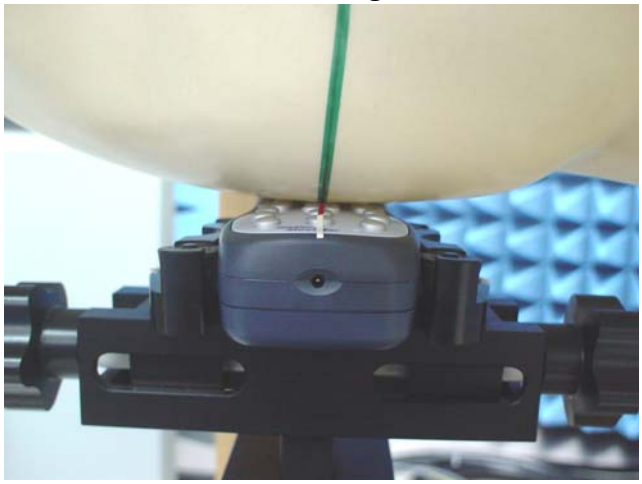
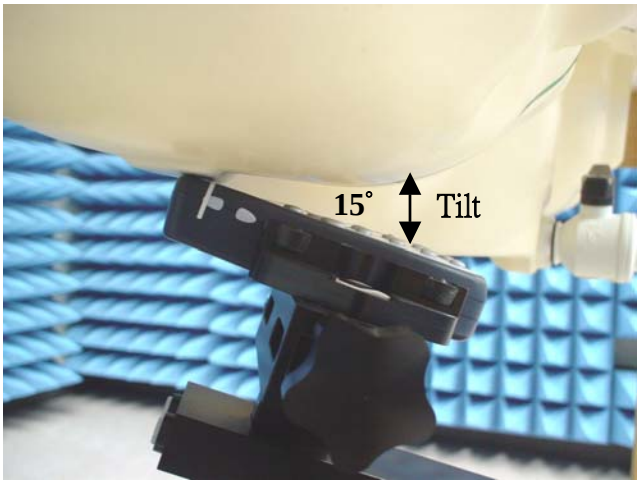


Fig.4 Right Head Section / Cheek-Touch Position



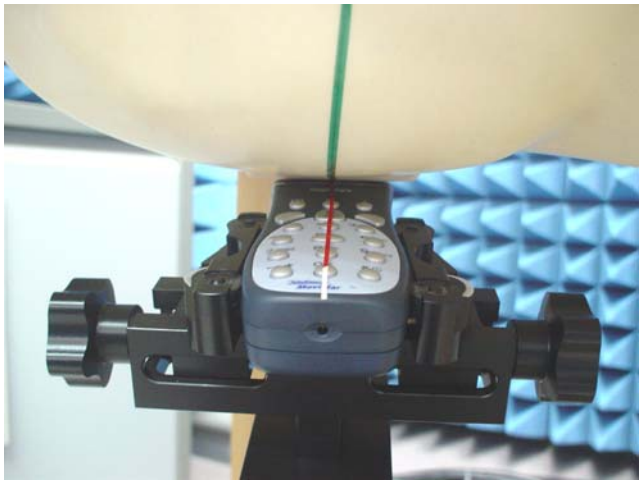
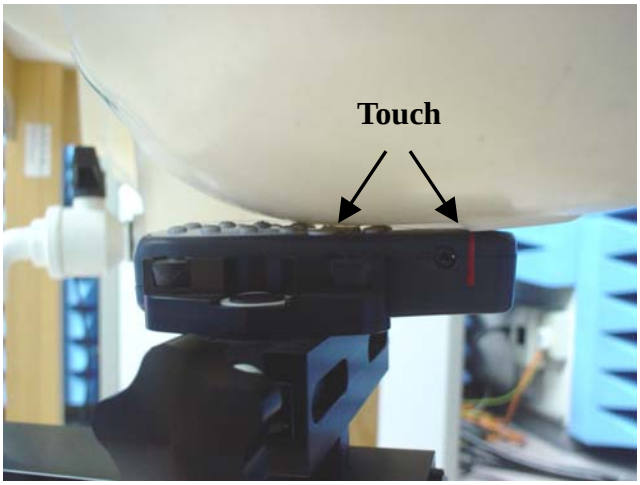


Fig.5 Right Head Section / Ear-Tilt Position(15°)



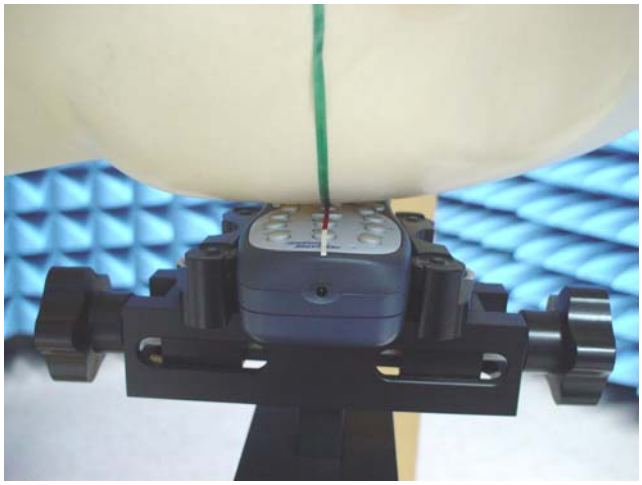
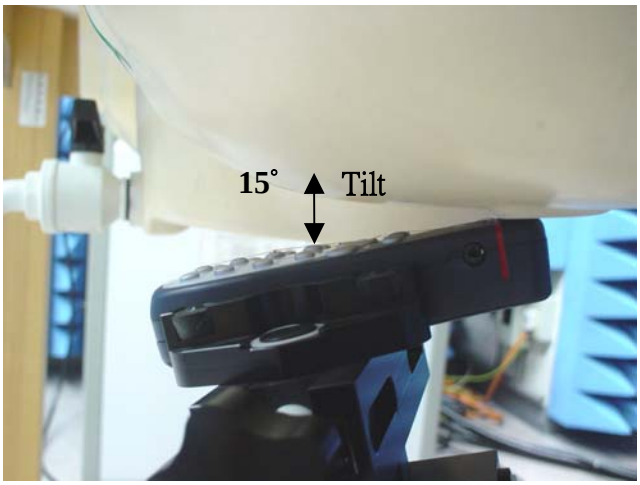


Fig.6 Left Head Section / Cheek-Touch Position



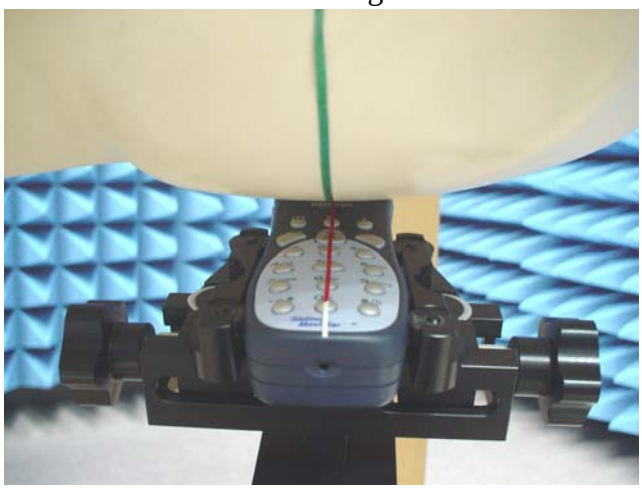
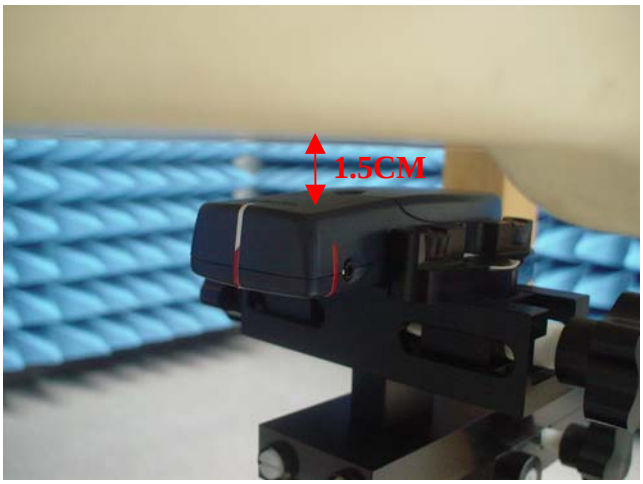


Fig.7 Left Head Section / Ear-Tilt Position(15°)



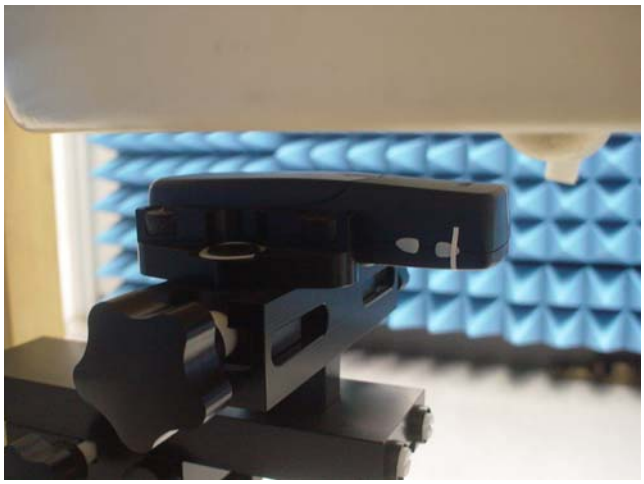


Fig.8 Body Worn with Headset Position

Photographs of the EUT

Fig.9 Front view of device

Fig.10 Back view of device

Fig.11 Front view of the Phone connect with Charger

Photographs of the Battery

Fig.12 Front view of Battery

Fig.13 Black view of Battery

Probe Calibration certificate

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

Client **SGS Taiwan (Auden)**

CALIBRATION CERTIFICATE

Object(s)	ET3DV6 - SN:1760
Calibration procedure(s)	QA CAL-01.v2 Calibration procedure for dosimetric E-field probes
Calibration date:	February 17, 2004
Condition of the calibrated item	In Tolerance (according to the specific calibration document)

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

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 (SPEAG, in house check Oct-03)	In house check: Oct 05
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 (SPEAG, in house check Oct-03)	In house check: Oct 05

	Name	Function	Signature
Calibrated by:	Katja Pokovic	Laboratory Director	
Approved by:	Niels Kuster	Quality Manager	

Date issued: February 17, 2004

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.

Probe ET3DV6

SN:1760

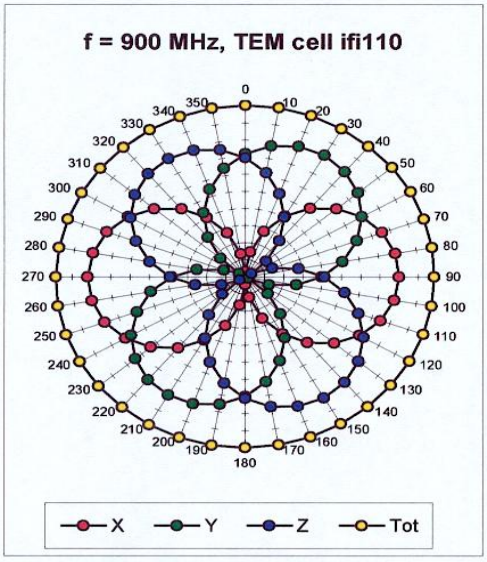
Manufactured:	November 12, 2002
Last calibrated:	March 7, 2003
Recalibrated:	February 17, 2004

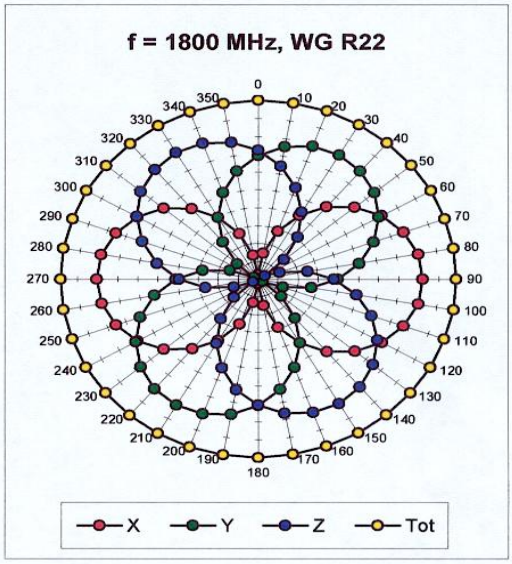
Calibrated for DASY Systems

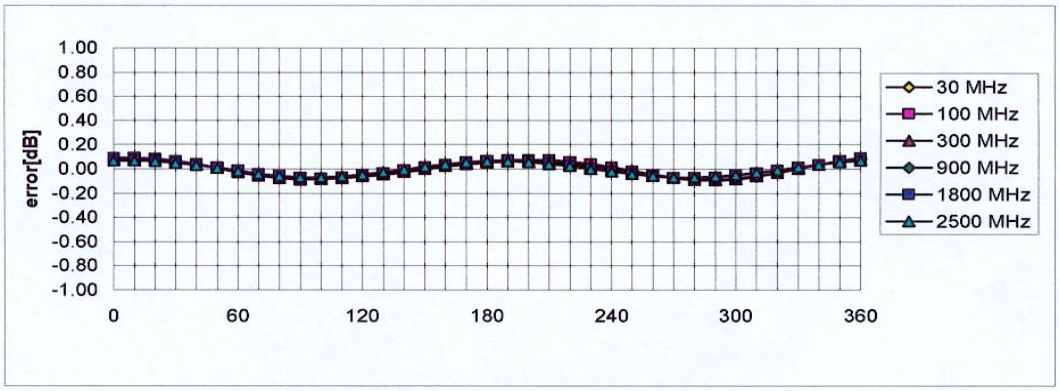
(Note: non-compatible with DASY2 system!)

ET3DV6 SN:1760 **February 17, 2004**

Receiving Pattern (ϕ) , θ = 0°



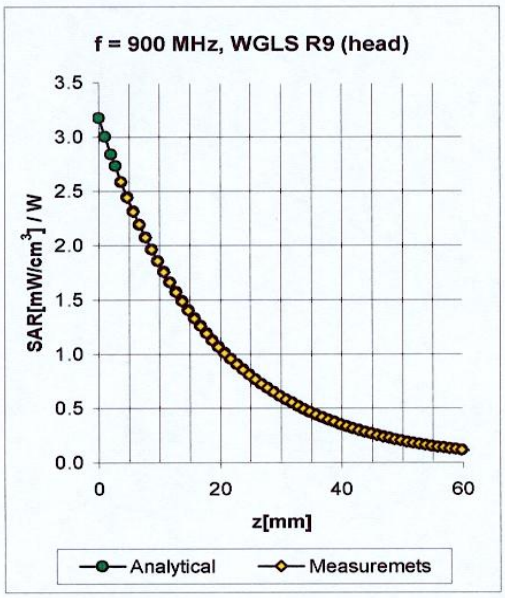


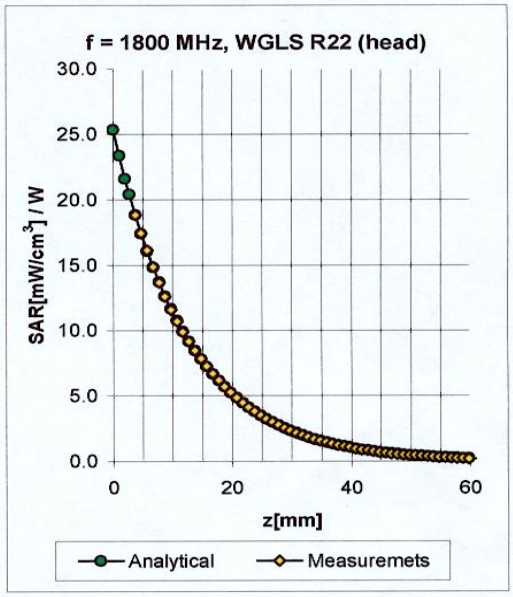


Axial Isotropy Error < ± 0.2 dB

ET3DV6 SN:1760 **February 17, 2004**

Conversion Factor Assessment





f [MHz]	Validity [MHz][B]	Tissue	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
900	800-1000	Head	41.5 ± 5%	0.97 ± 5%	0.51	1.96	6.34 ± 11.3% (k=2)
1800	1710-1890	Head	40.0 ± 5%	1.40 ± 5%	0.52	2.36	5.13 ± 10.9% (k=2)
1900	1805-1995	Head	40.0 ± 5%	1.40 ± 5%	0.54	2.42	5.10 ± 11.1% (k=2)
900	800-1000	Body	55.0 ± 5%	1.05 ± 5%	0.43	2.21	6.04 ± 11.3% (k=2)
1800	1710-1890	Body	53.3 ± 5%	1.52 ± 5%	0.60	2.56	4.56 ± 10.9% (k=2)
1900	1805-1995	Body	53.3 ± 5%	1.52 ± 5%	0.59	2.76	4.43 ± 11.1% (k=2)
2450	2400-2500	Body	52.7 ± 5%	1.95 ± 5%	1.47	1.45	4.18 ± 9.7% (k=2)

[B] The total standard uncertainty is calculated as root-sum-square of standard uncertainty of the Conversion Factor at calibration frequency and the standard uncertainty for the indicated frequency band.

Uncertainty Analysis

DASY4 Uncertainty Budget
According to IEEE P1528 [1]

Error Description	Uncertainty value	Prob. Dist.	Div.	(c_i) 1g	(c_i) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(v_i) v_{eff}
Measurement System								
Probe Calibration	±4.8 %	N	1	1	1	±4.8 %	±4.8 %	∞
Axial Isotropy	±4.7 %	R	$\sqrt{3}$	0.7	0.7	±1.9 %	±1.9 %	∞
Hemispherical Isotropy	±9.6 %	R	$\sqrt{3}$	0.7	0.7	±3.9 %	±3.9 %	∞
Boundary Effects	±1.0 %	R	$\sqrt{3}$	1	1	±0.6 %	±0.6 %	∞
Linearity	±4.7 %	R	$\sqrt{3}$	1	1	±2.7 %	±2.7 %	∞
System Detection Limits	±1.0 %	R	$\sqrt{3}$	1	1	±0.6 %	±0.6 %	∞
Readout Electronics	±1.0 %	N	1	1	1	±1.0 %	±1.0 %	∞
Response Time	±0.8 %	R	$\sqrt{3}$	1	1	±0.5 %	±0.5 %	∞
Integration Time	±2.6 %	R	$\sqrt{3}$	1	1	±1.5 %	±1.5 %	∞
RF Ambient Conditions	±3.0 %	R	$\sqrt{3}$	1	1	±1.7 %	±1.7 %	∞
Probe Positioner	±0.4 %	R	$\sqrt{3}$	1	1	±0.2 %	±0.2 %	∞
Probe Positioning	±2.9 %	R	$\sqrt{3}$	1	1	±1.7 %	±1.7 %	∞
Max. SAR Eval.	±1.0 %	R	$\sqrt{3}$	1	1	±0.6 %	±0.6 %	∞
Test Sample Related								
Device Positioning	±2.9 %	N	1	1	1	±2.9 %	±2.9 %	875
Device Holder	±3.6 %	N	1	1	1	±3.6 %	±3.6 %	5
Power Drift	±5.0 %	R	$\sqrt{3}$	1	1	±2.9 %	±2.9 %	∞
Phantom and Setup								
Phantom Uncertainty	±4.0 %	R	$\sqrt{3}$	1	1	±2.3 %	±2.3 %	∞
Liquid Conductivity (target)	±5.0 %	R	$\sqrt{3}$	0.64	0.43	±1.8 %	±1.2 %	∞
Liquid Conductivity (meas.)	±2.5 %	N	1	0.64	0.43	±1.6 %	±1.1 %	∞
Liquid Permittivity (target)	±5.0 %	R	$\sqrt{3}$	0.6	0.49	±1.7 %	±1.4 %	∞
Liquid Permittivity (meas.)	±2.5 %	N	1	0.6	0.49	±1.5 %	±1.2 %	∞
Combined Std. Uncertainty						±10.3 %	±10.0 %	331
Expanded STD Uncertainty						**±20.6 %**	**±20.1 %**	

Phantom description

Schmid & Partner Engineering AG

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

Certificate of conformity / First Article Inspection

Item	SAM Twin Phantom V4.0
Type No	QD 000 P40 CA
Series No	TP-1150 and higher
Manufacturer / Origin	Untersee Composites Hauptstr. 69 CH-8559 Fruthwilen Switzerland

Tests

The series production process used allows the limitation to test of first articles.
Complete tests were made on the pre-series Type No. QD 000 P40 AA, Serial No. TP-1001 and on the series first article Type No. QD 000 P40 BA, Serial No. TP-1006. Certain parameters have been retested using further series units (called samples).

Test	Requirement	Details	Units tested
Shape	Compliance with the geometry according to the CAD model.	IT'IS CAD File (*)	First article, Samples
Material thickness	Compliant with the requirements according to the standards	2mm +/- 0.2mm in specific areas	First article, Samples
Material parameters	Dielectric parameters for required frequencies	200 MHz – 3 GHz Relative permittivity < 5 Loss tangent < 0.05.	Material sample TP 104-5
Material resistivity	The material has been tested to be compatible with the liquids defined in the standards	Liquid type HSL 1800 and others according to the standard.	Pre-series, First article

Standards

[1] CENELEC EN 50361
[2] IEEE P1528-200x draft 6.5
[3] IEC PT 62209 draft 0.9
(*) The IT'IS CAD file is derived from [2] and is also within the tolerance requirements of the shapes of [1] and [3].

Conformity

Based on the sample tests above, we certify that this item is in compliance with the uncertainty requirements of SAR measurements specified in standard [1] and draft standards [2] and [3].

Date 28.02.2002

Signature / Stamp

Schmid & Partner Engineering AG
Zeughausstrasse 43, CH-8004 Zurich
Tel. +41 1 245 97 00, Fax +41 1 245 97 79

System Validation from Original equipment supplier SPEAG Schmid & Partner of GSM 1900 HSL & Muscle

Date/Time: 02/17/04 13:19:33

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN5d027

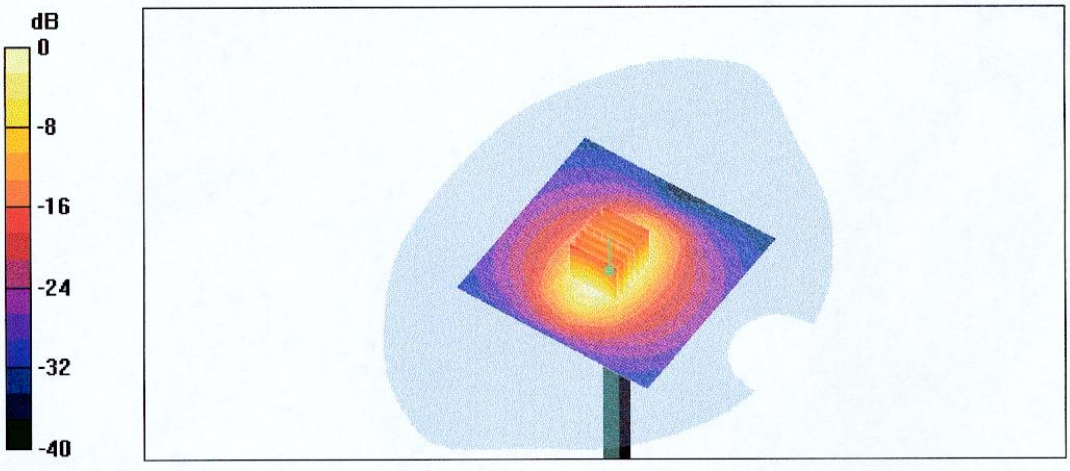
Communication System: CW-1900; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL 1900 MHz;
Medium parameters used: f = 1900 MHz; σ = 1.47 mho/m; ε_r = 38.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(4.96, 4.96, 4.96); Calibrated: 1/23/2004
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn411; Calibrated: 1/16/2003
- Phantom: SAM with CRP - TP1006; Type: SAM 4.0; Serial: TP:1006;
- Measurement SW: DASY4, V4.2 Build 30; Postprocessing SW: SEMCAD, V1.8 Build 101

Pin = 250 mW; d = 10 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 93 V/m; Power Drift = 0.0 dB
Maximum value of SAR (interpolated) = 11.9 mW/g

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93 V/m; Power Drift = 0.0 dB
Maximum value of SAR (measured) = 11.9 mW/g
Peak SAR (extrapolated) = 18.8 W/kg
SAR(1 g) = 10.5 mW/g; SAR(10 g) = 5.44 mW/g



0 dB = 11.9mW/g

Date/Time: 02/09/04 15:12:27

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN5d027

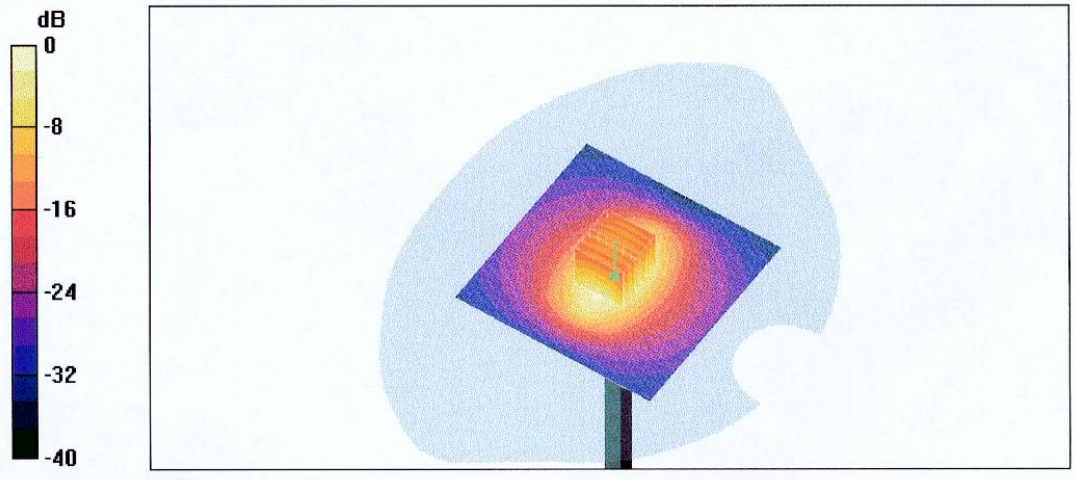
Communication System: CW-1900; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: Muscle 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.58 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(4.57, 4.57, 4.57); Calibrated: 1/23/2004
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 - SN411; Calibrated: 1/16/2003
- Phantom: SAM with CRP - TP1006; Type: SAM 4.0; Serial: TP:1006
- Measurement SW: DASY4, V4.2 Build 25; Postprocessing SW: SEMCAD, V2.0 Build 19

Pin = 250 mW; d = 10 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 92.5 V/m
Power Drift = 0.002 dB
Maximum value of SAR = 12.1 mW/g

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 19.3 W/kg
SAR(1 g) = 10.7 mW/g; SAR(10 g) = 5.6 mW/g
Reference Value = 92.5 V/m
Power Drift = 0.002 dB
Maximum value of SAR = 12.1 mW/g



0 dB = 12.1mW/g