

ET3DV6 SN:1384

May 26, 2005

DASY - Parameters of Probe: ET3DV6 SN:1384**Sensitivity in Free Space^A****Diode Compression^B**

NormX	1.78 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP X	92 mV
NormY	1.76 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Y	92 mV
NormZ	1.94 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Z	92 mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect**TSL 900 MHz Typical SAR gradient: 5 % per mm**

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR _{be} [%]	Without Correction Algorithm	10.1	5.1
SAR _{be} [%]	With Correction Algorithm	0.1	0.2

TSL 1810 MHz Typical SAR gradient: 10 % per mm

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR _{be} [%]	Without Correction Algorithm	14.5	9.5
SAR _{be} [%]	With Correction Algorithm	1.0	0.1

Sensor OffsetProbe Tip to Sensor Center **2.7 mm**

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

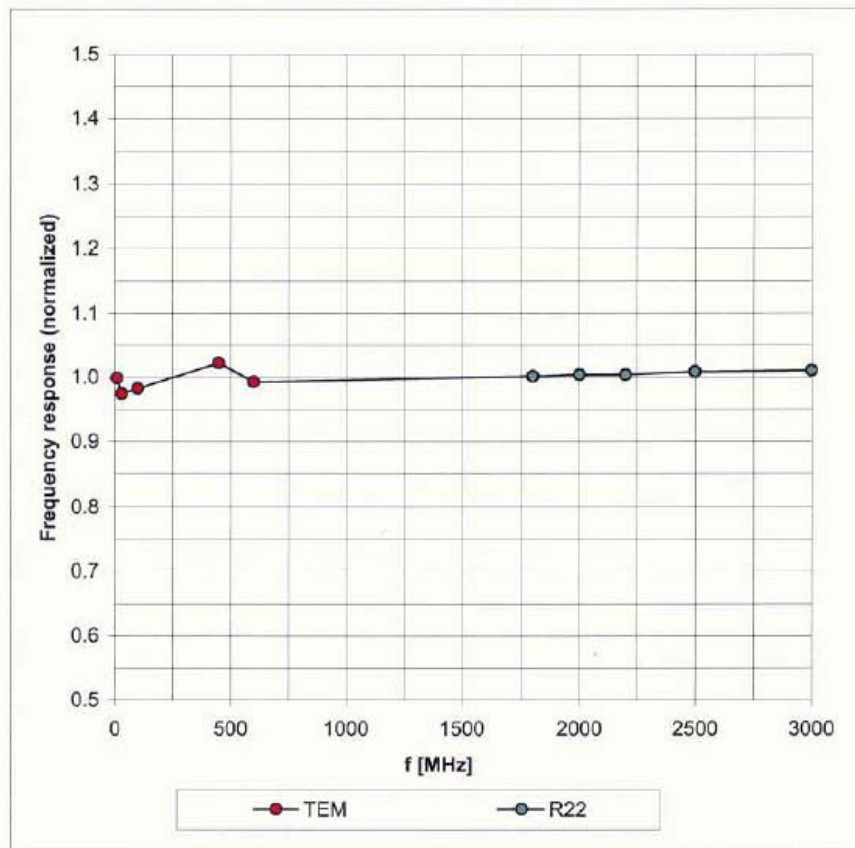
^A The uncertainties of NormX,Y,Z do not affect the E²-field uncertainty inside TSL (see Page 8).^B Numerical linearization parameter: uncertainty not required.

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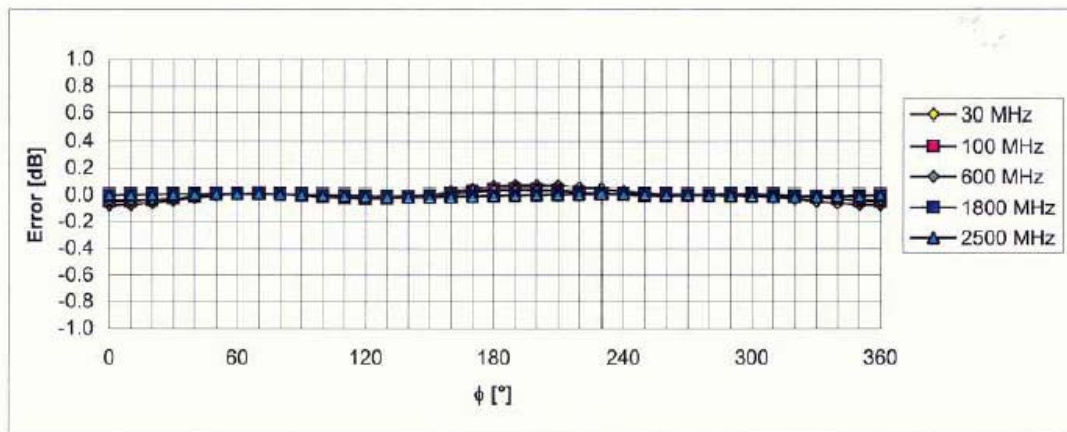
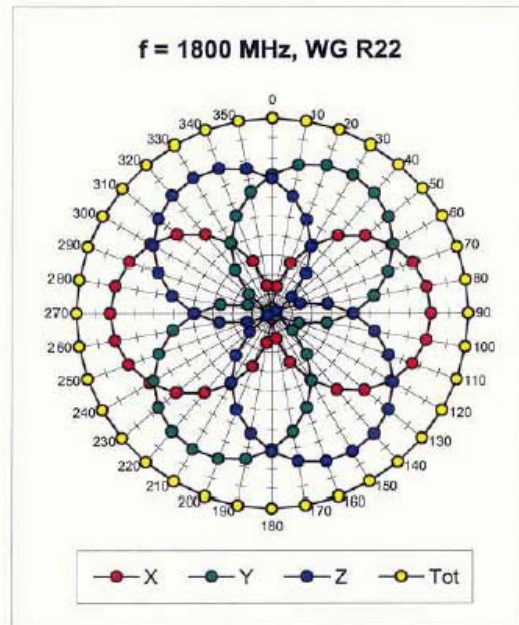
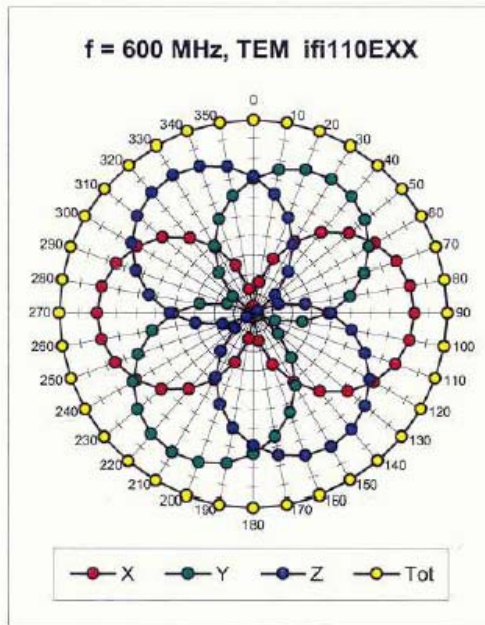
Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide: R22)

Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

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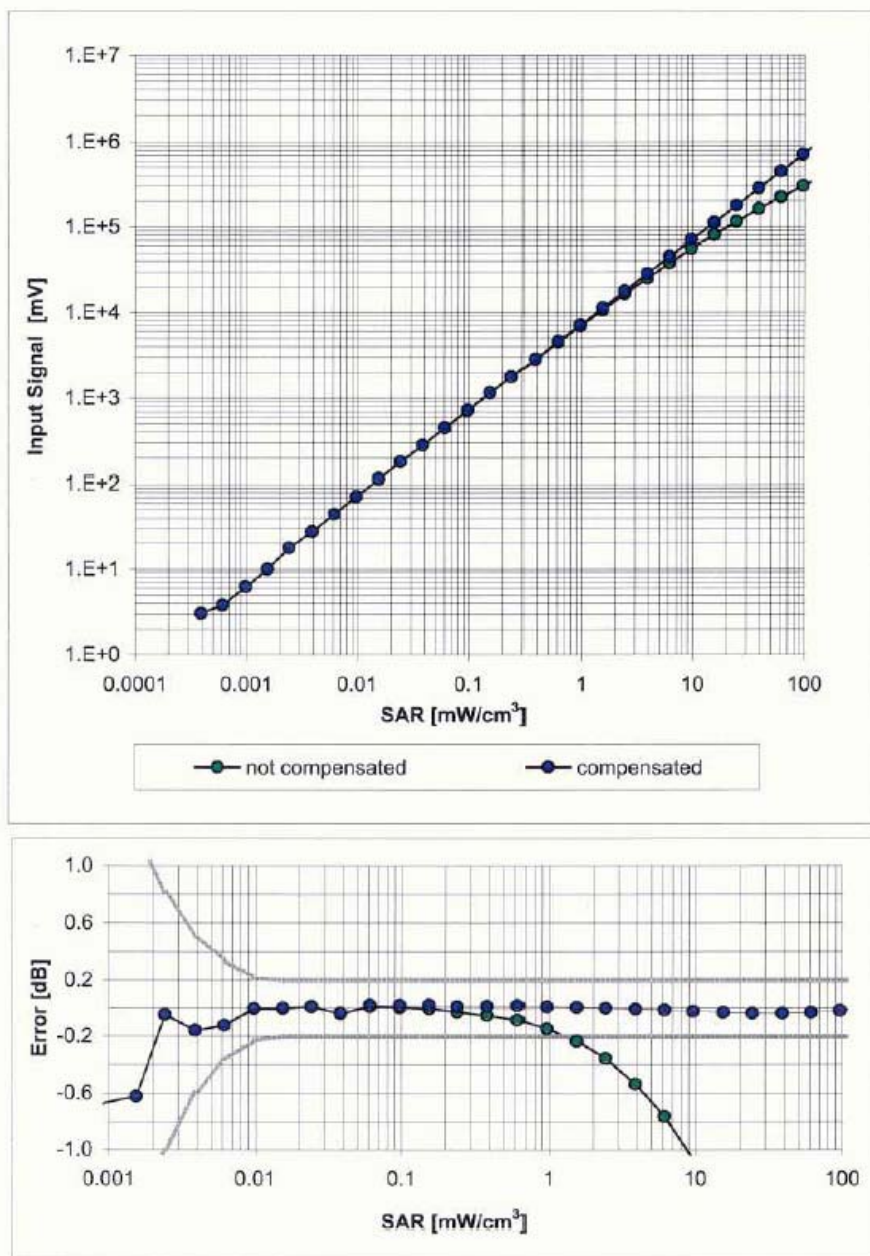
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Receiving Pattern (ϕ), $\theta = 0^\circ$ Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

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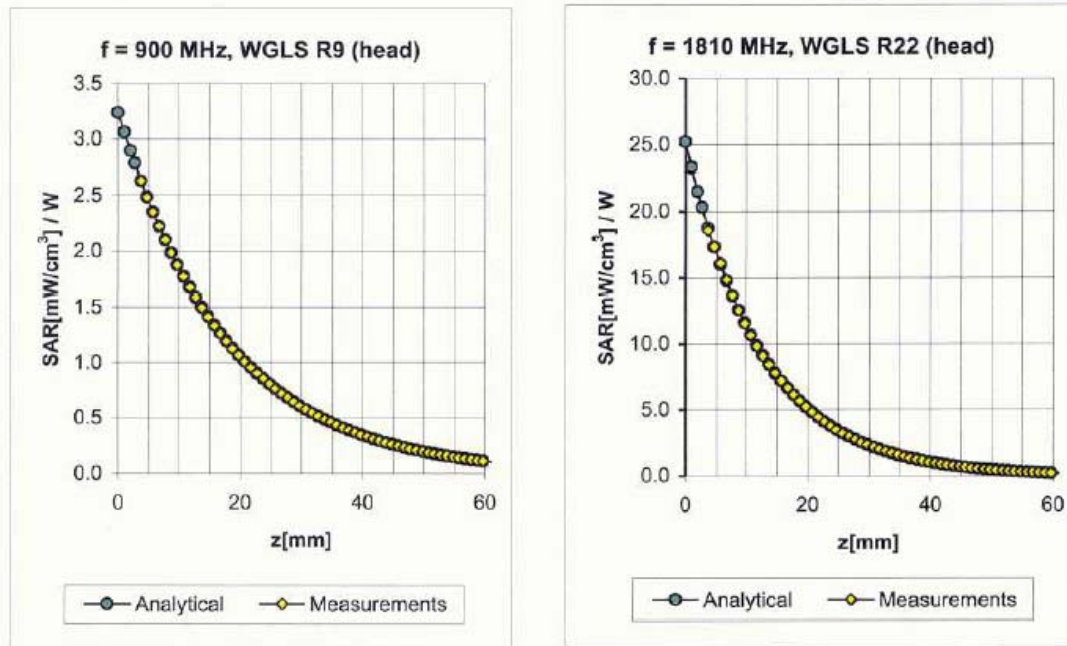
Dynamic Range $f(\text{SAR}_{\text{head}})$ (Waveguide R22, $f = 1800$ MHz)

Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

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Conversion Factor Assessment



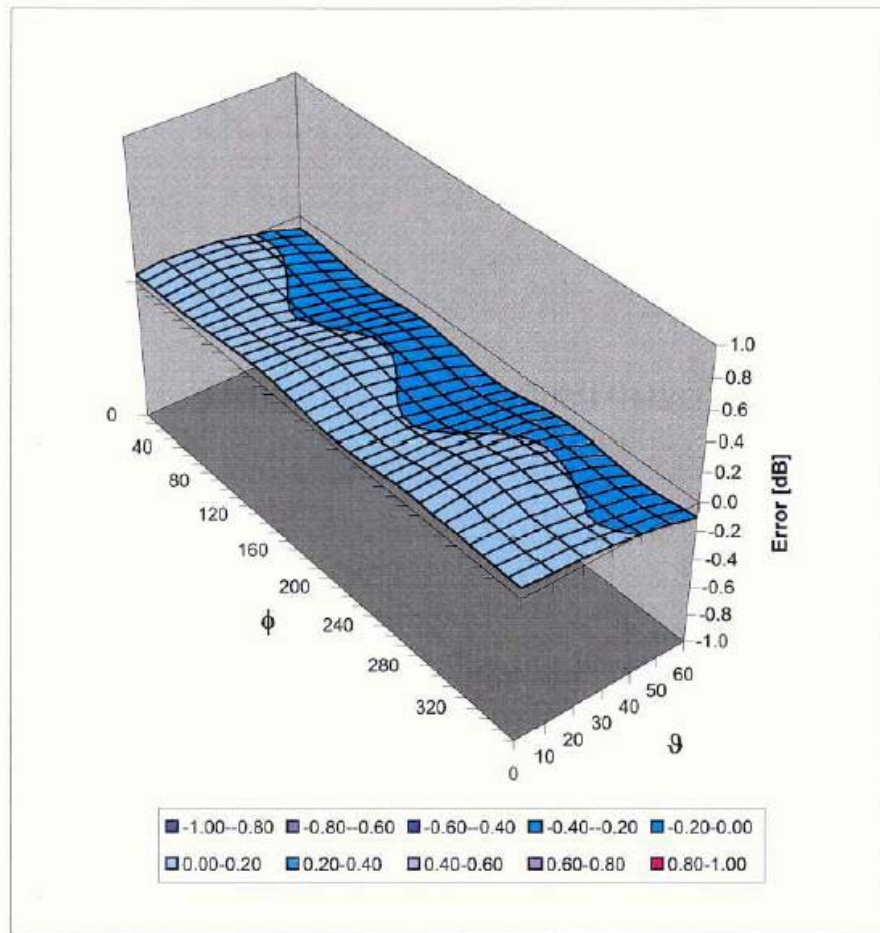
f [MHz]	Validity [MHz] ^c	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
450	± 50 / ± 100	Head	43.5 ± 5%	0.87 ± 5%	0.08	1.62	7.51 ± 13.3% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.84	1.67	6.53 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.73	2.19	5.31 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.81	2.05	4.71 ± 11.8% (k=2)
450	± 50 / ± 100	Body	56.7 ± 5%	0.94 ± 5%	0.10	1.75	7.10 ± 13.3% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.66	1.95	6.19 ± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.67	2.58	4.80 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.93	1.80	4.46 ± 11.8% (k=2)

^c The validity of ± 100 MHz only applies for DASy v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

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Deviation from Isotropy in HSL

Error (ϕ , θ), $f = 900$ MHzUncertainty of Spherical Isotropy Assessment: $\pm 2.6\%$ ($k=2$)

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info@speag.com, http://www.speag.com

Additional Conversion Factors

for Dosimetric E-Field Probe

Type:

ET3DV6

Serial Number:

1384

Place of Assessment:

Zurich

Date of Assessment:

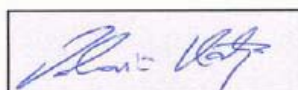
May 30, 2005

Probe Calibration Date:

May 26, 2005

Schmid & Partner Engineering AG hereby certifies that conversion factor(s) of this probe have been evaluated on the date indicated above. The assessment was performed using the FDTD numerical code SEMCAD of Schmid & Partner Engineering AG. Since the evaluation is coupled with measured conversion factors, it has to be recalculated yearly, i.e., following the re-calibration schedule of the probe. The uncertainty of the numerical assessment is based on the extrapolation from measured value at 900 MHz or at 1800 MHz.

Assessed by:



Schmid & Partner Engineering AG

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Dosimetric E-Field Probe ET3DV6 SN:1384Conversion factor (\pm standard deviation)

150 MHz	<i>ConvF</i>	$8.9 \pm 10\%$	$\epsilon_r = 52.3$ $\sigma = 0.76 \text{ mho/m}$ (head tissue)
250 MHz	<i>ConvF</i>	$8.1 \pm 10\%$	$\epsilon_r = 47.6$ $\sigma = 0.83 \text{ mho/m}$ (head tissue)
300 MHz	<i>ConvF</i>	$8.0 \pm 9\%$	$\epsilon_r = 45.3$ $\sigma = 0.87 \text{ mho/m}$ (head tissue)
750 MHz	<i>ConvF</i>	$6.8 \pm 7\%$	$\epsilon_r = 41.9$ $\sigma = 0.89 \text{ mho/m}$ (head tissue)
150 MHz	<i>ConvF</i>	$8.6 \pm 10\%$	$\epsilon_r = 61.9$ $\sigma = 0.80 \text{ mho/m}$ (body tissue)
250 MHz	<i>ConvF</i>	$8.1 \pm 10\%$	$\epsilon_r = 59.4$ $\sigma = 0.88 \text{ mho/m}$ (body tissue)
300 MHz	<i>ConvF</i>	$8.0 \pm 9\%$	$\epsilon_r = 58.2$ $\sigma = 0.92 \text{ mho/m}$ (body tissue)
750 MHz	<i>ConvF</i>	$6.6 \pm 7\%$	$\epsilon_r = 55.5$ $\sigma = 0.96 \text{ mho/m}$ (body tissue)

Important Note:

For numerically assessed probe conversion factors, parameters Alpha and Delta in the DASY software must have the following entries: Alpha = 0 and Delta = 1.

Please see also Section 4.7 of the DASY4 Manual.

Appendix C

Dipole Calibration Certificates

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

Client **Motorola CGISS**

CALIBRATION CERTIFICATE

Object(s) **D900V2 - SN:085**

Calibration procedure(s) **QA CAL-05.v2**
Calibration procedure for dipole validation kits

Calibration date: **August 19, 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 E442	GB37480704	6-Nov-03 (METAS, No. 252-0254)	Nov-04
Power sensor HP 8481A	US37292783	6-Nov-03 (METAS, No. 252-0254)	Nov-04
Power sensor HP 8481A	MY41092317	18-Oct-02 (Agilent, No. 20021018)	Oct-04
RF generator R&S SML-03	100698	27-Mar-2002 (R&S, No. 20-92389)	In house check: Mar-05
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Nov-03)	In house check: Oct 05

	Name	Function	Signature
Calibrated by:	Judith Mueller	Technician	

	Name	Function
Approved by:	Katja Pekovic	Laboratory Director

Date issued: August 25, 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.

1. Measurement Conditions

The measurements were performed in the half size flat phantom filled with **head simulating solution** of the following electrical parameters at 900 MHz:

Relative Dielectricity	41.0 $\pm 5\%$
Conductivity	0.97 mho/m $\pm 5\%$

The DASY4 System with a dosimetric E-field probe ET3DV6 (SN:1507, Conversion factor 6.18 at 900 MHz) was used for the measurements.

The dipole was mounted on the small tripod so that the dipole feedpoint was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 15mm from dipole center to the solution surface. The included distance spacer was used during measurements for accurate distance positioning.

The coarse grid with a grid spacing of 15mm was aligned with the dipole. The 7x7x7 fine cube was chosen for cube integration.

The dipole input power (forward power) was $250\text{mW} \pm 3\%$. The results are normalized to 1W input power.

2. SAR Measurement with DASY4 System

Standard SAR-measurements were performed according to the measurement conditions described in section 1. The results (see figure supplied) have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR-values measured with the dosimetric probe ET3DV6 SN:1507 and applying the advanced extrapolation are:

averaged over 1 cm^3 (1 g) of tissue:	11.0 mW/g $\pm 16.8\%$ ($k=2$) ¹
averaged over 10 cm^3 (10 g) of tissue:	7.04 mW/g $\pm 16.2\%$ ($k=2$) ¹

3. Dipole Impedance and Return Loss

The impedance was measured at the SMA-connector with a network analyzer and numerically transformed to the dipole feedpoint. The transformation parameters from the SMA-connector to the dipole feedpoint are:

Electrical delay:	1.392 ns	(one direction)
Transmission factor:	0.987	(voltage transmission, one direction)

The dipole was positioned at the flat phantom sections according to section 1 and the distance spacer was in place during impedance measurements.

Feedpoint impedance at 900 MHz:	$\text{Re}\{Z\} = 48.8 \, \Omega$
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	$\text{Im}\{Z\} = -6.6 \, \Omega$
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Return Loss at 900 MHz	-22.7 dB
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4. Handling

Do not apply excessive force to the dipole arms, because they might bend. Bending of the dipole arms stresses the soldered connections near the feedpoint leading to a damage of the dipole.

5. Design

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

6. Power Test

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

Date/Time: 08/19/04 15:25:59

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN085

Communication System: CW-900; Frequency: 900 MHz; Duty Cycle: 1:1

Medium: HSL 900 MHz;

Medium parameters used: $f = 900$ MHz; $\sigma = 0.97$ mho/m; $\epsilon_r = 41$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(6.18, 6.18, 6.18); Calibrated: 1/23/2004
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 7/22/2004
- Phantom: Flat Phantom half size; Type: QD000P49AA; Serial: SN:1001;
- Measurement SW: DASY4, V4.3 Build 16; Postprocessing SW: SEMCAD, V1.8 Build 123

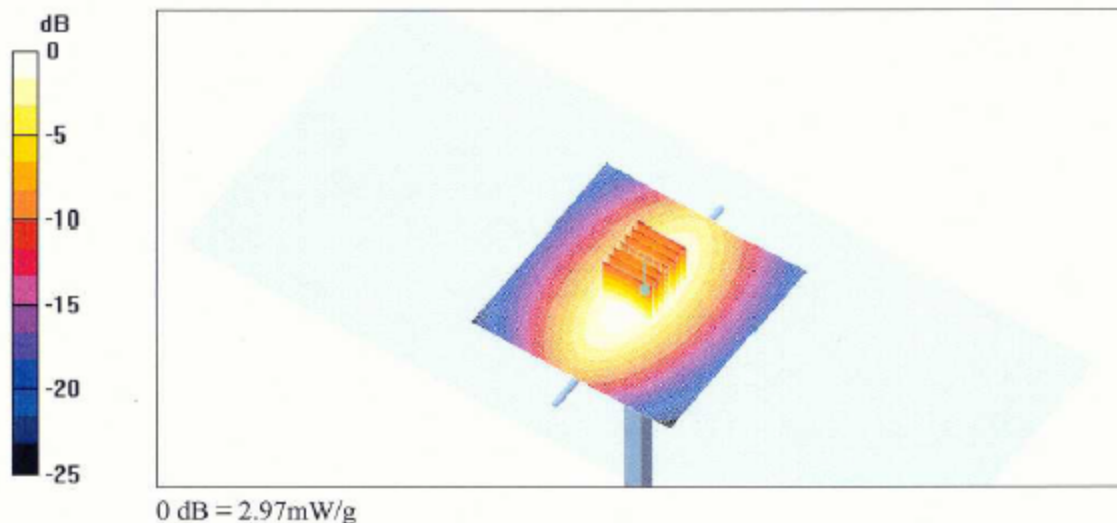
Pin = 250 mW; d = 15 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.93 mW/g**Pin = 250 mW; d = 15 mm/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 57.2 V/m; Power Drift = -0.0 dB

Peak SAR (extrapolated) = 4.11 W/kg

SAR(1 g) = 2.74 mW/g; SAR(10 g) = 1.76 mW/g

Maximum value of SAR (measured) = 2.97 mW/g



Appendix D

Test System Verification Scans

Note: Dipole validation scans at the head from SPEAG are provided in APPENDIX D. The GEMS EME lab validated the dipole to the applicable IEEE system performance targets. Within the same day system validation was performed using FCC body tissue parameters to generate the system performance target values for body at the applicable frequency. The results of the GEMS EME system performance validation are provided herein. To assess the isotropic characteristics of the measurement probe, two system performance zoom scans (0 and 90 degrees) were measured. The results were averaged together and adjusted to account for the power drift in order to obtain the final calculated 1 and 10 gram results.

Motorola GEMS EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 7/22/05**

Run #: ErC SYSP900H 050722-01

Sim.Tissue Temp: 20.8 (C)

TX Freq: 900(MHz)

Start power: 250 (mW)

Target:

11.26 mW/g for 1g SAR 7.21 mW/g for 10g SAR

11.52 mW/g calculated 1g-SAR; 2.29 % from target (including drift)

7.32 mW/g calculated 10g-SAR; 1.56 % from target (including drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/26/2005, ConvF(6.53, 6.53, 6.53),

Duty Cycle: 1:1, Medium: 900 MHz IEEE Head, Medium parameters used: $\sigma = 1.01$ mho/m, $\epsilon_r = 42.4$; $\rho = 1000$ kg/m³ ;

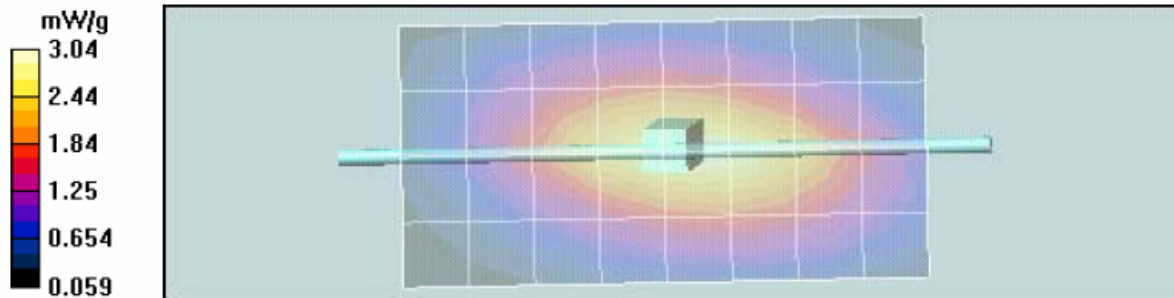
Electronics: DAE3 Sn374, Calibrated: 4/6/2005

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 57.1 V/m; Power Drift = -0.0371 dB

SAR(1 g) = 2.83 mW/g; SAR(10 g) = 1.8 mW/g**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 57.1 V/m; Power Drift = -0.0371 dB

SAR(1 g) = 2.88 mW/g; SAR(10 g) = 1.83 mW/g

Motorola GEMS EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 7/23/05**

Run #: ErC SYSP900H 050723-01

Sim.Tissue Temp: 20.8 (C)

TX Freq: 900(MHz)

Start power: 250 (mW)

Target:

11.26 mW/g for 1g SAR 7.21 mW/g for 10g SAR

11.48 mW/g calculated 1g-SAR; 1.91 % from target (including drift)

7.34 mW/g calculated 10g-SAR; 1.79 % from target (including drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/26/2005, ConvF(6.53, 6.53, 6.53),

Duty Cycle: 1:1, Medium: 900 MHz IEEE Head, Medium parameters used: $\sigma = 1.01$ mho/m, $\epsilon_r = 42.4$; $\rho = 1000$ kg/m³ ;

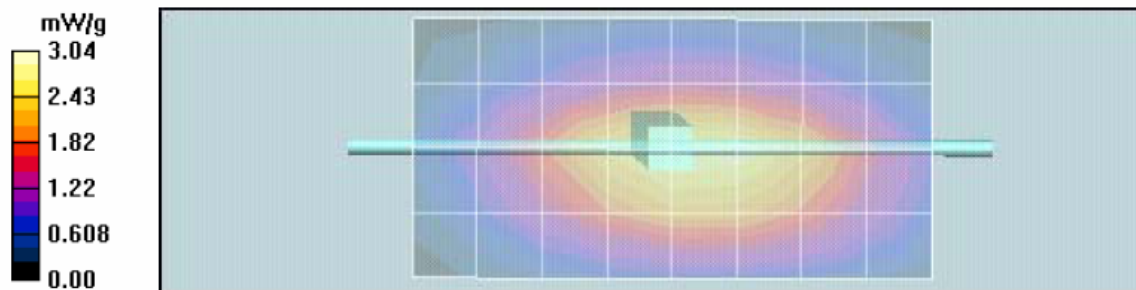
Electronics: DAE3 Sn374, Calibrated: 4/6/2005

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm, Reference Value = 55.9 V/m; Power Drift = -0.0591 dB

SAR(1 g) = 2.8 mW/g; SAR(10 g) = 1.79 mW/g**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 55.9 V/m; Power Drift = -0.0591 dB

SAR(1 g) = 2.86 mW/g; SAR(10 g) = 1.83 mW/g

Motorola GEMS EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 7/24/05**

Run #: ErC SYSP900H 050724-01

Sim.Tissue Temp: 20.9 (C)

TX Freq: 900(MHz)

Start power: 250 (mW)

Target:

11.26 mW/g for 1g SAR 7.21 mW/g for 10g SAR

11.43 mW/g calculated 1g-SAR; 1.48 % from target (including drift)

7.28 mW/g calculated 10g-SAR; 0.98 % from target (including drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/26/2005, ConvF(6.53, 6.53, 6.53),

Duty Cycle: 1:1, Medium: 900 MHz IEEE Head, Medium parameters used: $\sigma = 1.01$ mho/m, $\epsilon_r = 42.2$; $\rho = 1000$ kg/m³ ;

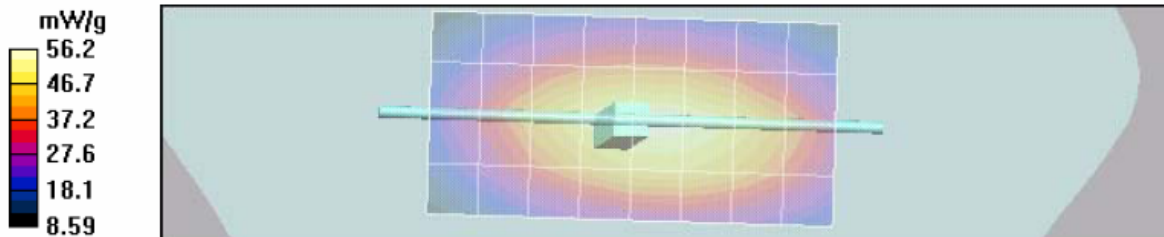
Electronics: DAE3 Sn374, Calibrated: 4/6/2005

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 55.9 V/m; Power Drift = -0.0484 dB

SAR(1 g) = 2.8 mW/g; SAR(10 g) = 1.78 mW/g**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 55.9 V/m; Power Drift = -0.0484 dB

SAR(1 g) = 2.85 mW/g; SAR(10 g) = 1.82 mW/g

Motorola GEMS EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 7/25/05**

Run#: JsT-SYSP-900B-050725-01 (for K. Uong)

Sim. Tissue Temp: 20.9 (C)

TX Freq: 900(MHz)

Start power: 250 (mW)

Target:

11.41 mW/g for 1g SAR 7.43 mW/g for 10g SAR

11.73 mW/g calculated 1g-SAR; 2.81% from target (including drift)

7.54 mW/g calculated 10g-SAR; 1.53% from target (including drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/26/2005, ConvF(6.19, 6.19, 6.19)

Duty Cycle: 1:1, Medium: 900 MHz FCC Body, Medium parameters used: $\sigma = 1.05$ mho/m, $\epsilon_r = 52.7$; $\rho = 1000$ kg/m³

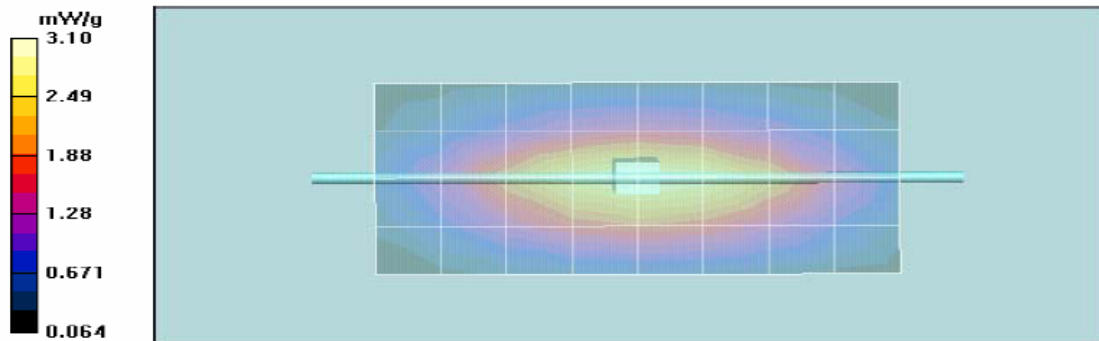
Electronics: DAE3 Sn374, Calibrated: 4/6/2005

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 56.9 V/m; Power Drift = -0.0486 dB

SAR(1 g) = 2.88 mW/g; SAR(10 g) = 1.85 mW/g**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 56.9 V/m; Power Drift = -0.0486 dB

SAR(1 g) = 2.92 mW/g; SAR(10 g) = 1.88 mW/g

Motorola GEMS EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 7/26/05**

Run#: ErC-SYSP-900B-050726-01

Sim. Tissue Temp: 21.3 (C)

TX Freq: 900(MHz)

Start power: 250 (mW)

Target:

11.41 mW/g for 1g SAR 7.43 mW/g for 10g SAR

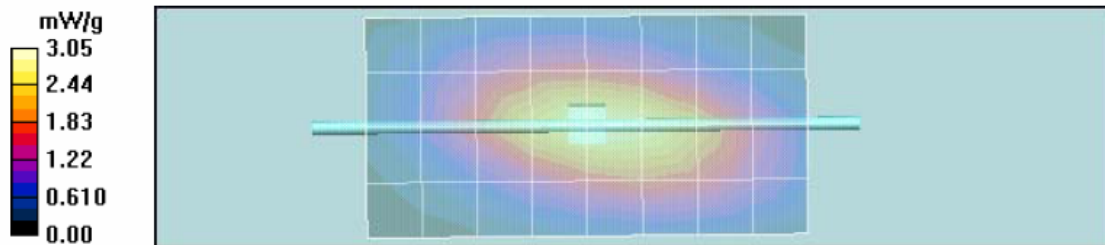
11.33 mW/g calculated 1g-SAR; - 0.69 % from target (including drift)

7.33 mW/g calculated 10g-SAR; - 1.31 % from target (including drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/26/2005, ConvF(6.19, 6.19, 6.19),

Duty Cycle: 1:1, Medium: 900 MHz FCC Body, Medium parameters used: $\sigma = 1.03$ mho/m, $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³ ;

Electronics: DAE3 Sn374, Calibrated: 4/6/2005

System Performance/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 56.5 V/m; Power Drift = -0.020 dB**SAR(1 g) = 2.8 mW/g; SAR(10 g) = 1.81 mW/g****System Performance/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 56.5 V/m; Power Drift = -0.020 dB**SAR(1 g) = 2.84 mW/g; SAR(10 g) = 1.84 mW/g**

Motorola GEMS EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 7/27/05**

Run#: KU-SYSP-900B-050727-01

Sim. Tissue Temp: 20.9 (C)

TX Freq: 900(MHz)

Start power: 250 (mW)

Target:

11.41 mW/g for 1g SAR 7.43 mW/g for 10g SAR

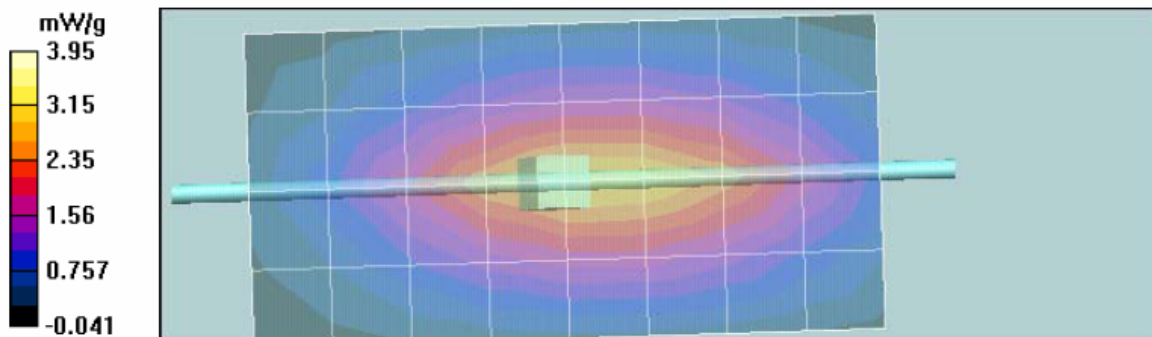
11.71 mW/g calculated 1g-SAR; 2.63 % from target (including drift)

7.56 mW/g calculated 10g-SAR; 1.74 % from target (including drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/26/2005, ConvF(6.19, 6.19, 6.19)

Duty Cycle: 1:1, Medium: 900 MHz FCC Body, Medium parameters used: $\sigma = 1.04$ mho/m, $\epsilon_r = 53.1$; $\rho = 1000$ kg/m³

Electronics: DAE3 Sn374, Calibrated: 4/6/2005

System Performance/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 56.7 V/m; Power Drift = -0.011 dB**SAR(1 g) = 2.89 mW/g; SAR(10 g) = 1.87 mW/g****System Performance/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 56.7 V/m; Power Drift = -0.011 dB**SAR(1 g) = 2.95 mW/g; SAR(10 g) = 1.9 mW/g**

Motorola GEMS EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 7/28/05**

Run#: JsT-SYSP-900B-050728-01 (for K. Uong)

Sim. Tissue Temp: 21.1 (C)

TX Freq: 900 (MHz)

Start power: 250 (mW)

Target:

11.41 mW/g for 1g SAR 7.43 mW/g for 10g SAR

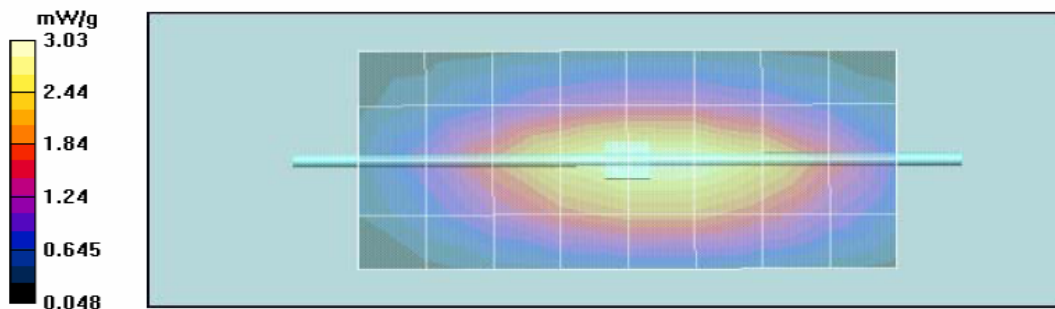
11.81 mW/g calculated 1g-SAR; 3.51% from target (including drift)

7.60 mW/g calculated 10g-SAR; 2.29% from target (including drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/26/2005, ConvF(6.19, 6.19, 6.19)

Duty Cycle: 1:1, Medium: 900 MHz FCC Body, Medium parameters used: $\sigma = 1.05$ mho/m, $\epsilon_r = 52.4$; $\rho = 1000$ kg/m³

Electronics: DAE3 Sn374, Calibrated: 4/6/2005

System Performance/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 56.6 V/m; Power Drift = -0.0114 dB**SAR(1 g) = 2.92 mW/g; SAR(10 g) = 1.88 mW/g****System Performance/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 56.6 V/m; Power Drift = -0.0114 dB**SAR(1 g) = 2.97 mW/g; SAR(10 g) = 1.91 mW/g**

Motorola GEMS EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 7/29/05**

Run#: JsT-SYSP-900B-050729-01 (for K. Uong)

Sim. Tissue Temp: 20.7 (C)

TX Freq: 900 (MHz)

Start power: 250 (mW)

Target:

11.41 mW/g for 1g SAR 7.43 mW/g for 10g SAR

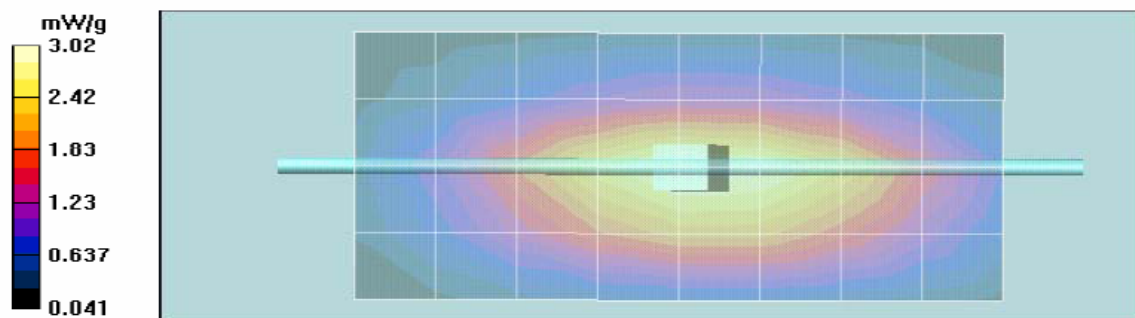
11.85 mW/g calculated 1g-SAR; 3.87% from target (including drift)

7.66mW/g calculated 10g-SAR; 3.09% from target (including drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/26/2005, ConvF(6.19, 6.19, 6.19)

Duty Cycle: 1:1, Medium: 900 MHz FCC Body, Medium parameters used: $\sigma = 1.06$ mho/m, $\epsilon_r = 53.2$; $\rho = 1000$ kg/m³

Electronics: DAE3 Sn374, Calibrated: 4/6/2005

System Performance/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 55.8 V/m; Power Drift = -0.0338 dB**SAR(1 g) = 2.91 mW/g; SAR(10 g) = 1.88 mW/g****System Performance/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 55.8 V/m; Power Drift = -0.0338 dB**SAR(1 g) = 2.97 mW/g; SAR(10 g) = 1.92 mW/g**

Motorola GEMS EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 8/01/05**

Run#: JsT-SYSP-900B-050801-01 (for K. Uong)

Sim. Tissue Temp: 21.3 (C)

TX Freq: 900 (MHz)

Start power: 250 (mW)

Target:

11.41 mW/g for 1g SAR 7.43 mW/g for 10g SAR

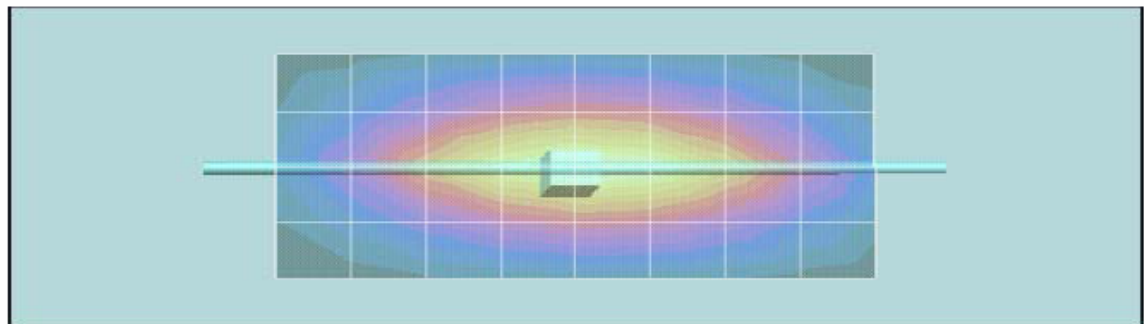
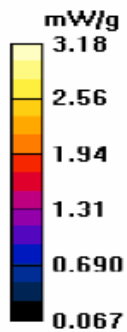
11.92 mW/g calculated 1g-SAR; 4.46% from target (including drift)

7.70mW/g calculated 10g-SAR; 3.63% from target (including drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/26/2005, ConvF(6.19, 6.19, 6.19)

Duty Cycle: 1:1, Medium: 900 MHz FCC Body, Medium parameters used: $\sigma = 1.06$ mho/m, $\epsilon_r = 53.3$; $\rho = 1000$ kg/m³

Electronics: DAE3 Sn374, Calibrated: 4/6/2005

System Performance/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 57.3 V/m; Power Drift = 0.000206 dB**SAR(1 g) = 2.95 mW/g; SAR(10 g) = 1.91 mW/g****System Performance/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 57.3 V/m; Power Drift = 0.000206 dB**SAR(1 g) = 3.01 mW/g; SAR(10 g) = 1.94 mW/g**

SYSTEM VALIDATION

Date: 03/25/05 Frequency (MHz): 900
Lab Location: GEMS-EME Mixture Type: 900-IEEE Head
Robot System: GEMS-EME -2 Ambient Temp.(°C): 22.0
Probe Serial #: 1393 Tissue Temp.(°C): 20.3
DAE Serial #: DAE3V1 SN406

Tissue Characteristics Phantom Type/SN: SAMTP1209
Permittivity: 41.6 Distance (mm): 15
Conductivity: 1.00

Reference Source: Dipole (Dipole/Handset)
Reference SN: 085

Power to Dipole: 250 mW
Power Output (radio): N/A mW

Target SAR Value: 10.8 mW/g, 6.9 mW/g (10g avg.)
(normalized to 1.0 W)

Measured SAR Value: 2.78 mW/g, 1.78 mW/g (10g avg.)
Power Drift: -0.0529 dB

Measured SAR Value: 11.26 mW/g, 7.26 mW/g (10g avg.)
(normalized to 1.0 W,
with drift compensation)

Percent Difference From Target (must be within System Uncertainty): 4.22 % (1g avg)
4.45 % (10g avg)

Test performed by: Dave Hopper Initial: DA

DUT: Dipole 900 MHz; Date/Time: 03/25/05 15:22:41
Run #: 050325-04 Test operator: Dave Hopper
Robot = GEMS-2 Phantom #: SAMTP1209 Sim.Tissue Temp: 20.9 (C)
Model #: D900V2 S/N: 085
TX Freq: 900(MHz) Start power: 250 (mW)
Target:

11.2 mW/g for 1g SAR 7.16 mW/g for 10g SAR
11.26 mW/g calculated 1g-SAR; 0.50 % from target (including drift)
7.21 mW/g calculated 10g-SAR; 1.23 % from target (including drift)

Probe: ET3DV6 - SN1393, Calibrated: 4/28/2004, ConvF(6.73, 6.73, 6.73)

Duty Cycle: 1:1, Medium: 900 MHz IEEE Head, Medium parameters used: $\sigma = 1$; rho/m, $\epsilon_r = 41.6$; $\rho = 1000 \text{ kg/m}^3$

Electronics: DAE3 Sn406, Calibrated: 11/17/2004

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 56.7 V/m; Power Drift = -0.0529 dB

Peak SAR (extrapolated) = 4.11 W/kg

SAR(1 g) = 2.75 mW/g; SAR(10 g) = 1.76 mW/g

Maximum value of SAR (measured) = 2.98 mW/g

System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 56.7 V/m; Power Drift = -0.0529 dB

Peak SAR (extrapolated) = 4.18 W/kg

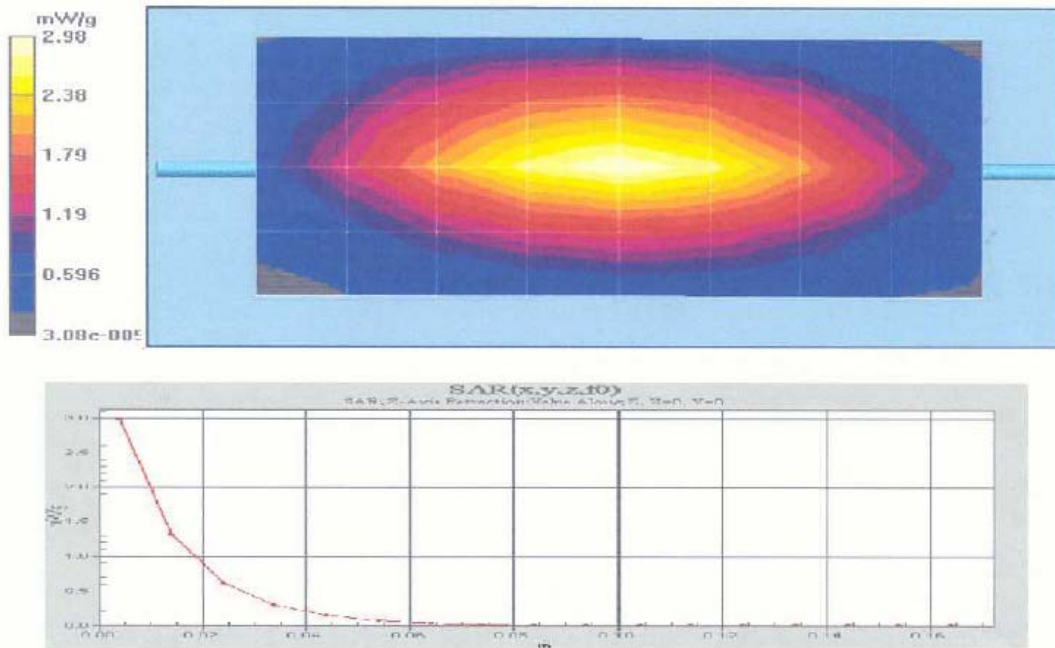
SAR(1 g) = 2.81 mW/g; SAR(10 g) = 1.8 mW/g

Maximum value of SAR (measured) = 3.05 mW/g

System Performance Check/Dipole Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 2.96 mW/g

System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm



SYSTEM PERFORMANCE TARGET CHECK

Date: 25 March 2005 Frequency (MHz): 900
Lab Location: GEMS-EME Mixture Type: 900-Body
Robot System: GEMS-EME -2 Ambient Temp.(°C): 22.0
Probe Serial #: 1393 Tissue Temp.(°C): 21.6
DAE Serial #: DAE3V1 SN406

Tissue Characteristics Phantom Type/SN: 80302002D-S14
Permittivity: 52.9 Distance (mm): 15
Conductivity: 1.04

Reference Source: Dipole (Dipole/Handset)
Reference SN: 085

Power to Dipole: 250 mW
Power Output (radio): N/A mW

Measured SAR Value: 2.855 mW/g, 1.86 mW/g (10g avg.)
Power Drift: -0.003 dB

Measured SAR Value: 11.41 mW/g, 7.43 mW/g (10g avg.)
(normalized to 1.0 W,
with drift compensation)

Test performed by: Dave Hopper Initial: 

DUT: Dipole 900 MHz; Date/Time: 03/25/05 17:01:42

Run #: 050325-05

Test operator: Dave Hopper

Robot = GEMS-2

Phantom #: 80302002D-S14

Sim.Tissue Temp: 21.6 (C)

Model #: D900V2

S/N: 085

TX Freq: 900(MHz)

Start power: 250 (mW)

Target:

Establishing New Body Targets

11.41 mW/g calculated 1g-SAR; 0 % from target (including drift)

7.43 mW/g calculated 10g-SAR; 0 % from target (including drift)

Probe: ET3DV6 - SN1393, Calibrated: 4/28/2004, ConvF(6.35, 6.35, 6.35)

Duty Cycle: 1:1, Medium: 900 MHz FCC Body, Medium parameters used: $\sigma = 1.04$; mho/m, $\epsilon_r = 52.9$; $\rho = 1000$ kg/m³

Electronics: DAE3 Sn406, Calibrated: 11/17/2004

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 56.3 V/m; Power Drift = 0.003 dB

Peak SAR (extrapolated) = 4.06 W/kg

SAR(1 g) = 2.83 mW/g; SAR(10 g) = 1.84 mW/g

Maximum value of SAR (measured) = 3.07 mW/g

System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 56.3 V/m; Power Drift = 0.003 dB

Peak SAR (extrapolated) = 4.1 W/kg

SAR(1 g) = 2.88 mW/g; SAR(10 g) = 1.88 mW/g

Maximum value of SAR (measured) = 3.14 mW/g

System Performance Check/Dipole Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 3.04 mW/g

System Performance Check/Z-Axis Retraction (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=10mm

Maximum value of SAR (measured) = 3.06 mW/g

