MOTOROLA

ACCREDITED
Certificate Number: 1449-01

FCC ID: AZ489FT7010
DECLARATION OF COMPLIANCE SAR ASSESSMENT Part 2 of 3

Government & Enterprise Mobility Solutions
EME Test Laboratory
8000 West Sunrise Blvd
Fort Lauderdale, FL. 33322

Date of Report: March 21, 2005
Report Revision: Rev. O
Report ID: FCC rpt_X-Pad F4423A_Rev O_050321 SR2011

Responsible Engineer:	Deanna Zakharia (Elect. Principle Staff Eng.)
Date/s Tested:	2/14/05 – 3/11/05
Manufacturer/Location:	Motorola South-Arad Israel
Sector/Group/Div.:	MCIL Israel
Date submitted for test:	2/07/05
DUT Description:	Handheld data terminal with GPRS, Bluetooth, and WLAN capability
Test TX mode(s):	CW, 1:8
Max. Power output:	GSM850 0.757W, PCS1900 0.971W, BT 2mW, WLAN 100mW
Nominal Power:	GSM850 0.631W, PCS1900 0.809W, BT 1mW, WLAN 16mW
Tx Frequency Bands:	GSM: 824.2-848.8 MHz, PCS1900:1850.2-1909.8MHz, BT: 2.402-2.48GHz, WLAN: 2.412-2.462GHz
Signaling type:	TDMA: GPRS, GSM, WLAN, Bluetooth
Model(s) Tested:	F4423A
Model(s) Certified:	F4423A
Serial Number(s):	PNX5020066
Classification:	General Population/Uncontrolled
Rule Part(s):	15; Class B Digital Device

Approved Accessories:

Antenna(s):
8587526V07 (Quad band GSM 850/900 ½ wave 0.5dBi and PCS 1800/1900 ¼ wave 2.0dBi); 8508851K37 (Monopole BT 2.4-2.48GHz ¼ wave 2.5dBi); 8508851K38 (Dipole couple folded WLAN 2.4-2.48GHz ½ wave 3.2x1.6 2.7dBi)
Battery(ies):
FTN6032B (7.2V 1800mAh rechargeable Li Ion battery)
Body worn accessory:
FHN6498A (Holster)

Max Calc. 1-g/10-g Avg. SAR: 0.02/0.01 W/kg (Face)
Max. Calc. 1-g/10-g Avg. SAR: 0.47/0.27 W/kg (Body);
Max Calc. 10-g Avg. SAR: 2.30 W/kg (Hand)

Based on the information and the testing results provided herein, the undersigned certifies that when used as stated in the operating instructions supplied, said product complies with the national and international reference standards and guidelines listed in section 2.0 of this report.
This report shall not be reproduced without written approval from an officially designated representative of the Motorola EME Laboratory.

This reporting format is consistent with the test report guidelines of the TIA TSB-150 December 2004
The results and statements contained in this report pertain only to the device(s) evaluated.

Stephen Whalen's signature on file for Ken Enger
Ken Enger, GEMS EME Lab Senior Resource Manager,
Laboratory Director,

3/21/05
Approval Date

Certification Date: 3/21/05

Certification No.: L1050308P

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:084

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

Calibration date: March 22, 2004

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 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	
Approved by:	Katja Pokovic	Laboratory Director	

Date issued: March 23, 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 flat section of the SAM twin phantom filled with **head simulating solution** of the following electrical parameters at 900 MHz:

Relative Dielectricity	**41.4**	± 5%
Conductivity	**0.95 mho/m**	± 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 mW ± 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:	**10.9 mW/g** ± 16.8 % (k=2)[1]
averaged over 10 cm^3 (10 g) of tissue:	**7.04 mW/g** ± 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:	**1.388 ns**	(one direction)
Transmission factor:	**0.989**	(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:	Re{Z} = **52.6 Ω**
	Im {Z} = **-3.4 Ω**
Return Loss at 900 MHz	**-27.7 dB**

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.

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN084

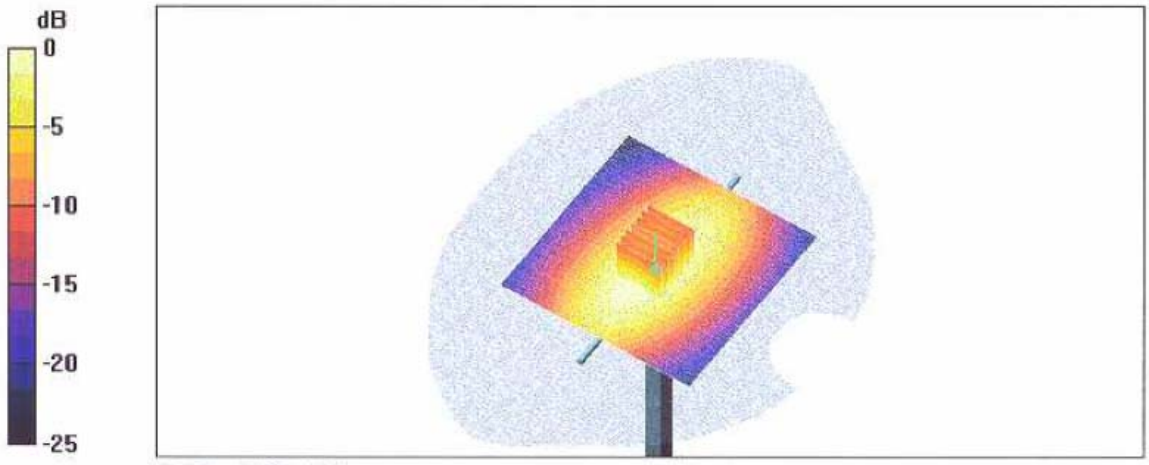
Communication System: CW-900; Frequency: 900 MHz;Duty Cycle: 1:1
Medium: HSL 900 MHz;
Medium parameters used: f = 900 MHz; σ = 0.95 mho/m; ε_r = 41.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(6.18, 6.18, 6.18); Calibrated: 1/23/2004
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn411; Calibrated: 11/6/2003
- Phantom: SAM with CRP - TP1006; Type: SAM 4.0; Serial: TP:1006;
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Pin = 250 mW; d = 15 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 57 V/m; Power Drift = 0.0 dB
Maximum value of SAR (interpolated) = 2.92 mW/g

Pin = 250 mW; d = 15 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57 V/m; Power Drift = 0.0 dB
Maximum value of SAR (measured) = 2.95 mW/g
Peak SAR (extrapolated) = 4.11 W/kg
SAR(1 g) = 2.73 mW/g; SAR(10 g) = 1.76 mW/g



0 dB = 2.95mW/g

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

Client **Motorola CGISS**

CALIBRATION CERTIFICATE

Object(s)	D1900V2 - SN:522
Calibration procedure(s)	QA CAL-05.v2 Calibration procedure for dipole validation kits
Calibration date:	August 25, 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	
Approved by:	Katja Pokovic	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 quarter size flat phantom filled with **head simulating liquid** of the following electrical parameters at 1900 MHz:

Relative Dielectricity	**39.4**	± 5%
Conductivity	**1.44 mho/m**	± 5%

The DASY4 System with a dosimetric E-field probe ET3DV6 (SN:1507, Conversion factor 4.96 at 1900 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 quarter size flat phantom and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10mm 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 250mW ± 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:	**37.6 mW/g** ± 16.8 % (k=2)[1]
averaged over 10 cm^3 (10 g) of tissue:	**19.6 mW/g** ± 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:	**1.182 ns**	(one direction)
Transmission factor:	**0.982**	(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 1900 MHz:	Re{Z} = **48.2 Ω**
	Im {Z} = **-8.9 Ω**
Return Loss at 1900 MHz	**-20.6 dB**

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.

Small end caps have been added to the dipole arms in order to improve matching when loaded according to the position as explained in Section 1. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

6. Power Test

After long term use with 40W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN522

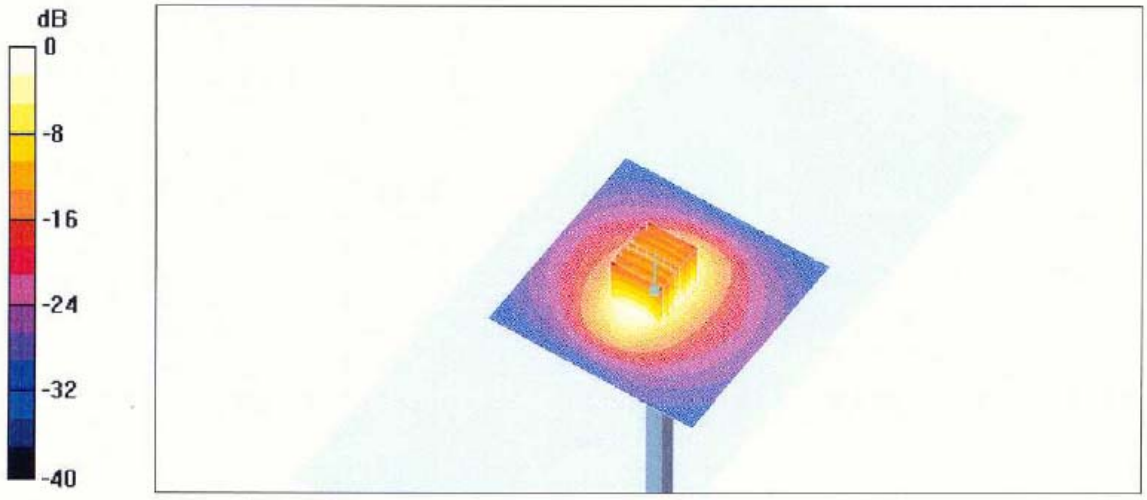
Communication System: CW-1900; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL 1900 MHz;
Medium parameters used: f = 1900 MHz; σ = 1.44 mho/m; ε_r = 39.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(4.96, 4.96, 4.96); Calibrated: 1/23/2004
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 7/22/2004
- Phantom: Flat Phantom quarter size; Type: QD000P50AA; Serial: SN:1001;
- Measurement SW: DASY4, V4.3 Build 17; Postprocessing SW: SEMCAD, V1.8 Build 124

Pin = 250 mW; d = 10 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 10.6 mW/g

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.9 V/m; Power Drift = 0.0 dB
Peak SAR (extrapolated) = 16.6 W/kg
SAR(1 g) = 9.39 mW/g; SAR(10 g) = 4.9 mW/g
Maximum value of SAR (measured) = 10.7 mW/g



0 dB = 10.7mW/g

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

704

Accredited by the Swiss Federal Office of Metrology and Accreditation
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client Motorola CGISS

Certificate No: D2450V2-704_Nov04

CALIBRATION CERTIFICATE

Object	D2450V2 - SN: 704
Calibration procedure(s)	QA CAL-05.v6 Calibration procedure for dipole validation kits
Calibration date:	November 15, 2004
Condition of the calibrated item	In Tolerance

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 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM E442	GB37480704	12-Oct-04 (METAS, No. 251-00412)	Oct-05
Power sensor HP 8481A	US37292783	12-Oct-01 (METAS, No. 251-00412)	Oct-05
Reference 20 dB Attenuator	SN: 5086 (20g)	10-Aug-04 (METAS, No 251-00402)	Aug-05
Reference 10 dB Attenuator	SN: 5047.2 (10r)	10-Aug-04 (METAS, No 251-00402)	Aug-05
Reference Probe ES3DV2	SN 3025	29-Oct-04 (SPEAG, No. ES3-3025_Oct04)	Oct-05
DAE4	SN 601	6-Nov-03 (SPEAG, No. DAE4-601_Jul04)	Jul-05

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-03)	In house check: Oct-05
RF generator R&S SML-03	100698	27-Mar-02 (SPEAG, in house check Dec-03)	In house check: Dec-05
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Nov-03)	In house check: Nov 04

	Name	Function	Signature
Calibrated by:	Judith Mueller	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: November 24, 2004

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

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The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY4	V4.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Area Scan resolution	dx, dy = 15 mm	
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(23.0 ± 0.2) °C	38.3 ± 6 %	1.86 mho/m ± 6 %
Head TSL temperature during test	(23.0 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	condition	
SAR measured	250 mW input power	13.8 mW / g
SAR normalized	normalized to 1W	55.2 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**53.9 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.26 mW / g
SAR normalized	normalized to 1W	25.0 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**24.4 mW / g ± 16.5 % (k=2)**

[1] Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.7 Ω + j1.9 Ω
Return Loss	- 29.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.151 ns

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

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.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 22, 2001

DASY4 Validation Report for Head TSL

Date/Time: 11/15/04 16:19:49

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN704

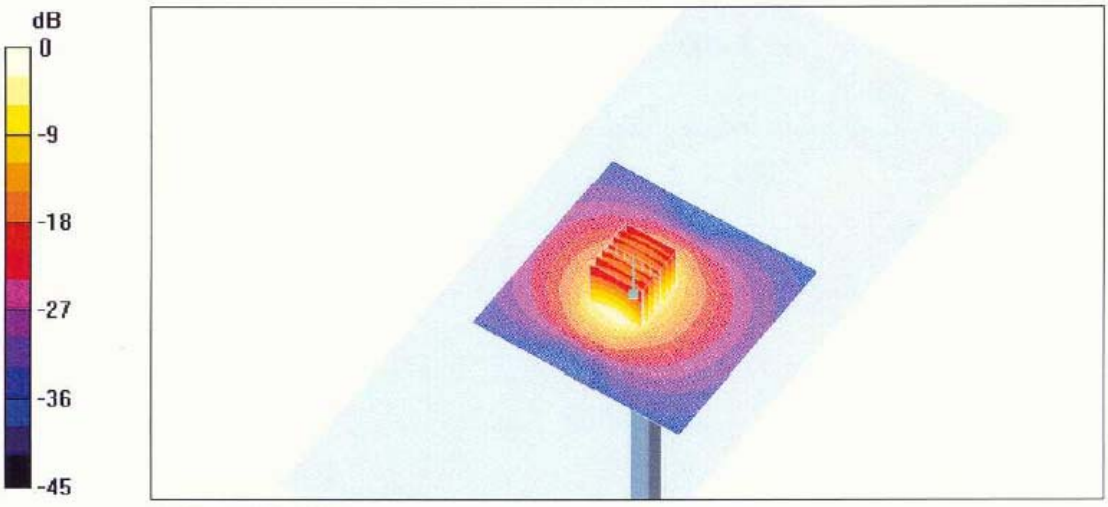
Communication System: CW-2450; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL 2450 MHz;
Medium parameters used: f = 2450 MHz; σ = 1.86 mho/m; ε_r = 38.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV2 - SN3025; ConvF(4.4, 4.4, 4.4); Calibrated: 29.10.2004
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 22.07.2004
- Phantom: Flat Phantom quarter size -SN:1001; Type: QD000P50AA; Serial: SN:1001;
- Measurement SW: DASY4, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

Pin = 250 mW; d = 10 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 15.9 mW/g

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 79.9 V/m; Power Drift = 0.1 dB
Peak SAR (extrapolated) = 29.8 W/kg
SAR(1 g) = 13.8 mW/g; SAR(10 g) = 6.26 mW/g
Maximum value of SAR (measured) = 15.8 mW/g



0 dB = 15.8 mW/g

Appendix D
Test System Verification Scans

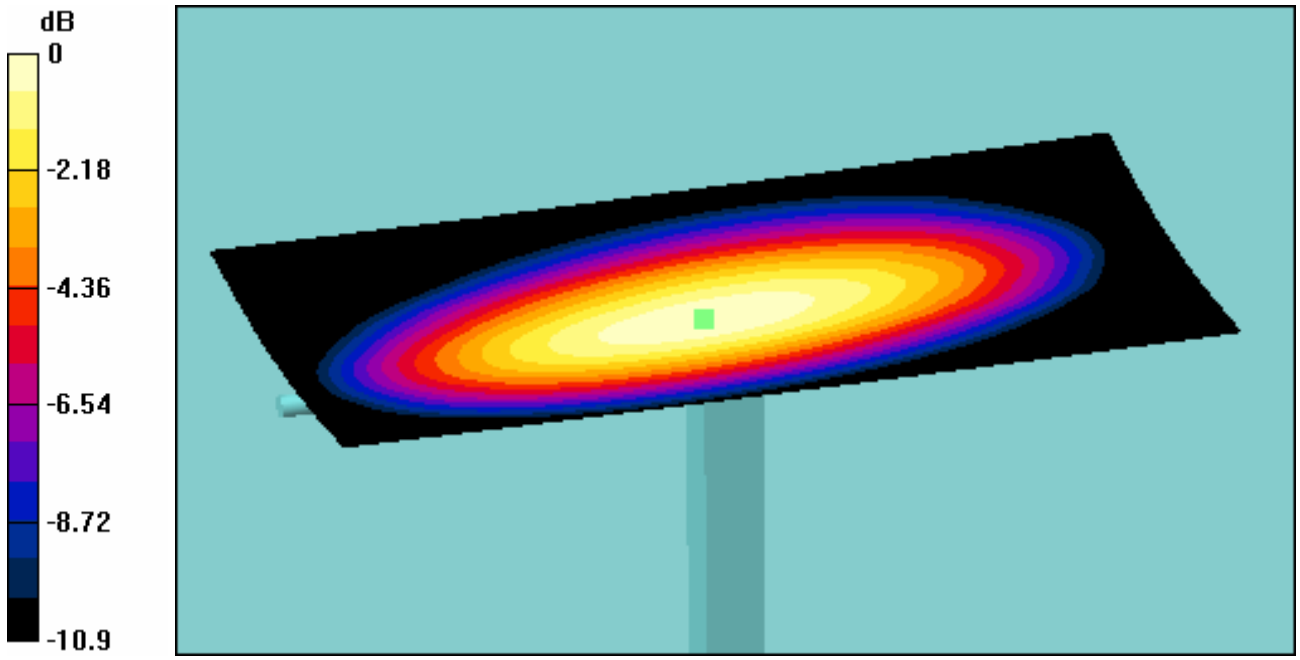
Note: Dipole validation scans at the head from SPEAG are provided in APPENDIX D. The GEMS EME lab validated the dipole to the applicable IEEE system performance targets. Within the same day system validation was performed using FCC body tissue parameters to generate the system performance target values 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 084; Test Date: 2/14/05
Run #: 050214-01 Test operator: E. Church
Sim Tissue Temp: 20.7 (C)
TX Freq: 900 MHz; Start power: 250 mW

Target 11.75 mW/g for 1g SAR; 7.47 mW/g for 10g SAR
SAR calculated 1g is 11.07 mW/g; -5.81 % from target (including drift)
SAR calculated 10g is 7.15 mW/g; -4.33 % from target (including drift)

Probe: ET3DV6 - SN1545, Calibrated: 9/1/2004, ConvF(5.56, 5.56, 5.56)
Duty Cycle: 1:1, Medium: FCC Body 900 MHz, Medium parameters used: σ = 1.05; mho/m, ε_r = 55.5; ρ = 1000 kg/m^3
Electronics: DAE3 Sn401, Calibrated: 8/25/2004

Sys Performance 900 MHz Body/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Sys Performance 900 MHz Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 54.7 V/m; Power Drift = 0.021 dB; Peak SAR (extrapolated) = 3.95 W/kg
SAR(1 g) = 2.73 mW/g; SAR(10 g) = 1.76 mW/g
Sys Performance 900 MHz Body/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 54.7 V/m; Power Drift = 0.021 dB; Peak SAR (extrapolated) = 4.09 W/kg
SAR(1 g) = 2.83 mW/g; SAR(10 g) = 1.83 mW/g

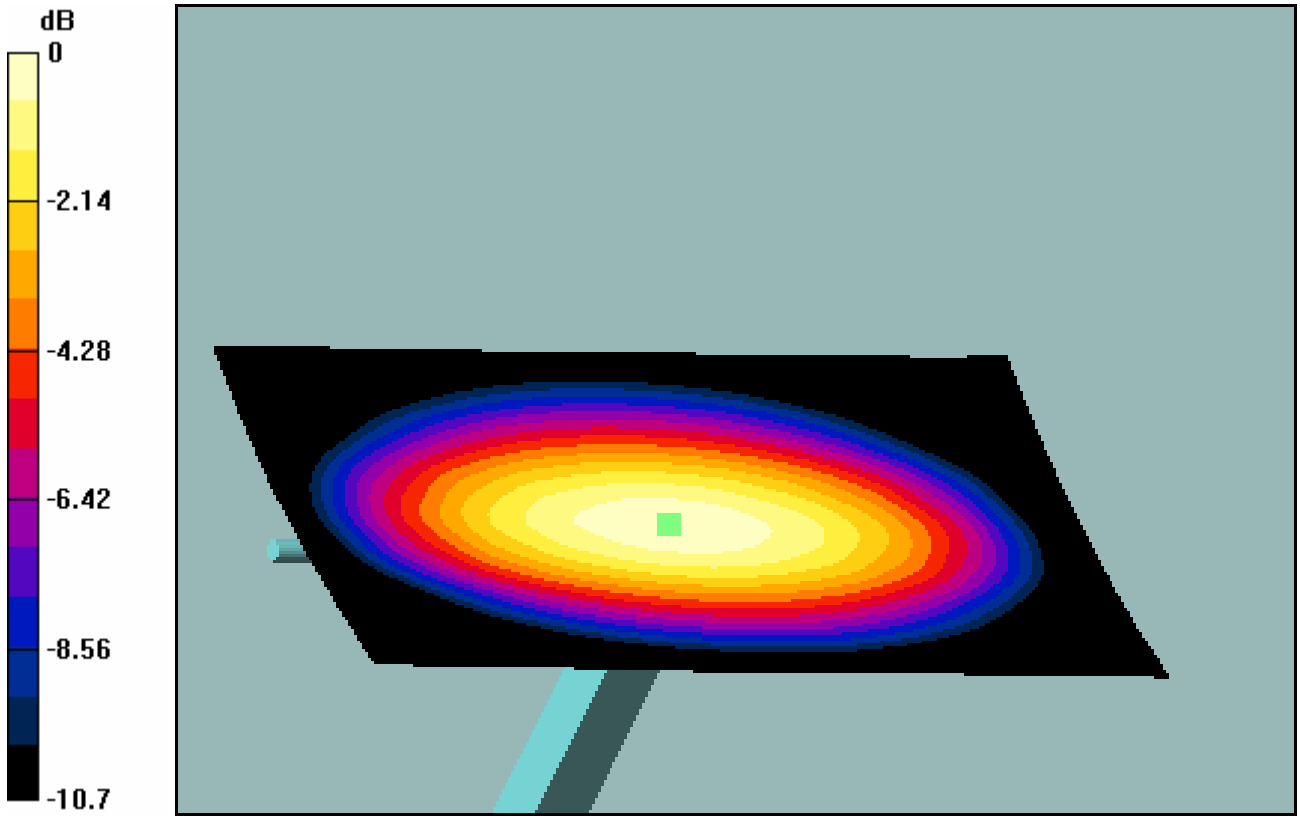


Motorola GEMS EME Lab
SPEAG 900 MHz Dipole; Model D900V2, SN 084; Test Date: 2/15/05
Run #: 050215-01 Test operator: E. Church
Sim Tissue Temp: 21.6 (C)
TX Freq: 900 MHz; Start power: 250 mW

Target: 11.75 mW/g for 1g SAR 7.47 mW/g for 10g SAR
SAR calculated 1g is 11.04 mW/g; -6.02 % from target (including drift)
SAR calculated 10g is 7.13 mW/g; -4.57 % from target (including drift)

Probe: ET3DV6 - SN1545, Calibrated: 9/1/2004, ConvF(5.56, 5.56, 5.56)
Duty Cycle: 1:1, Medium: FCC Body 900 MHz, Medium parameters used: σ = 1.05; mho/m, ε_r = 55.6; ρ = 1000 kg/m^3
Electronics: DAE3 Sn401, Calibrated: 8/25/2004

Sys Performance 900 MHz Body/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Sys Performance 900 MHz Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 55.2 V/m; Power Drift = 0.007 dB; Peak SAR (extrapolated) = 3.97 W/kg
SAR(1 g) = 2.73 mW/g; SAR(10 g) = 1.76 mW/g
Sys Performance 900 MHz Body/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 55.2 V/m; Power Drift = 0.007 dB; Peak SAR (extrapolated) = 4.05 W/kg
SAR(1 g) = 2.8 mW/g; SAR(10 g) = 1.81 mW/g

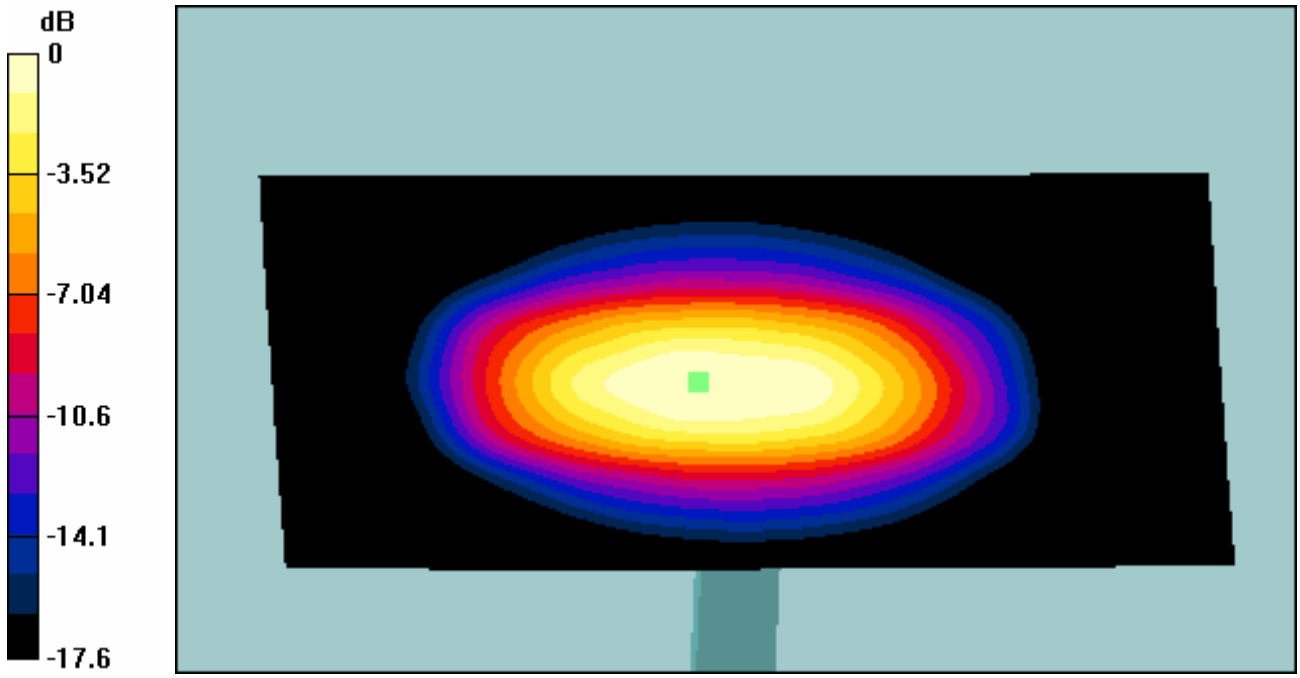


Motorola GEMS EME Lab
SPEAG 1900 MHz Dipole; Model D1900V2, SN 522; Test Date: 2/15/05
Run #: 050215-12 Test operator: E. Church
Sim Tissue Temp: 20.9 (C)
TX Freq: 1900 MHz; Start power: 250 mW

Target: 38.21 mW/g for 1g SAR 20.15 mW/g for 10g SAR
SAR calculated 1g is 38.69 mW/g; 1.25 % from target (including drift)
SAR calculated 10g is 20.48 mW/g; 1.65 % from target (including drift)

Probe: ET3DV6 - SN1545, Calibrated: 9/1/2004, ConvF(4.2, 4.2, 4.2)
Duty Cycle: 1:1, Medium: FCC Body 1900 MHz, Medium parameters used: f = 1900 MHz; σ = 1.58 mho/m; ε_r = 51.3; ρ = 1000 kg/m^3 Electronics: DAE3 Sn401, Calibrated: 8/25/2004

Sys Performance 1900 MHz Body/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Sys Performance 1900 MHz Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 88.2 V/m; Power Drift = 0.03 dB; Peak SAR (extrapolated) = 16 W/kg
SAR(1 g) = 9.58 mW/g; SAR(10 g) = 5.07 mW/g
Sys Performance 1900 MHz Body/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 88.2 V/m; Power Drift = 0.03 dB; Peak SAR (extrapolated) = 16.6 W/kg
SAR(1 g) = 9.89 mW/g; SAR(10 g) = 5.22 mW/g

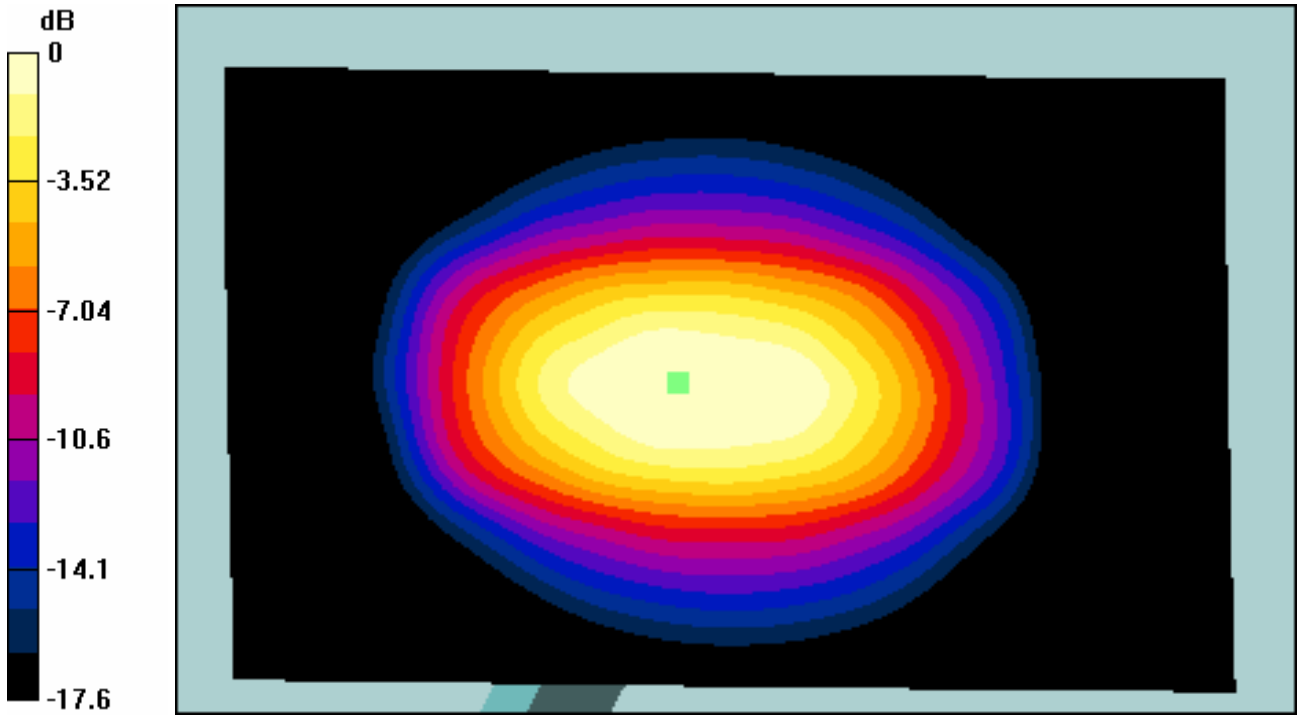


Motorola GEMS EME Lab
SPEAG 1900 MHz Dipole; Model D1900V2, SN 522; Test Date: 2/16/05
Run #: 050216-01 Test operator: E. Church
Sim Tissue Temp: 21.7 (C)
Model #: D1900V2 SN: 522
TX Freq: 1900 MHz; Start power: 250 mW

Target: 38.21 mW/g for 1g SAR 20.15 mW/g for 10g SAR
SAR calculated 1g is 38.75 mW/g; 1.41 % from target (including drift)
SAR calculated 10g is 20.63 mW/g; 2.36 % from target (including drift)

Probe: ET3DV6 - SN1545, Calibrated: 9/1/2004, ConvF(4.2, 4.2, 4.2)
Duty Cycle: 1:1, Medium: FCC Body 1900 MHz, Medium parameters used: f = 1900 MHz; σ = 1.58 mho/m; ε_r = 51.3; ρ = 1000 kg/m^3 Electronics: DAE3 Sn401, Calibrated: 8/25/2004

Sys Performance 1900 MHz Body/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Sys Performance 1900 MHz Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 88.2 V/m; Power Drift = -0.005 dB; Peak SAR (extrapolated) = 15.9 W/kg
SAR(1 g) = 9.55 mW/g; SAR(10 g) = 5.08 mW/g
Sys Performance 1900 MHz Body/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 88.2 V/m; Power Drift = -0.005 dB; Peak SAR (extrapolated) = 16.3 W/kg
SAR(1 g) = 9.8 mW/g; SAR(10 g) = 5.22 mW/g

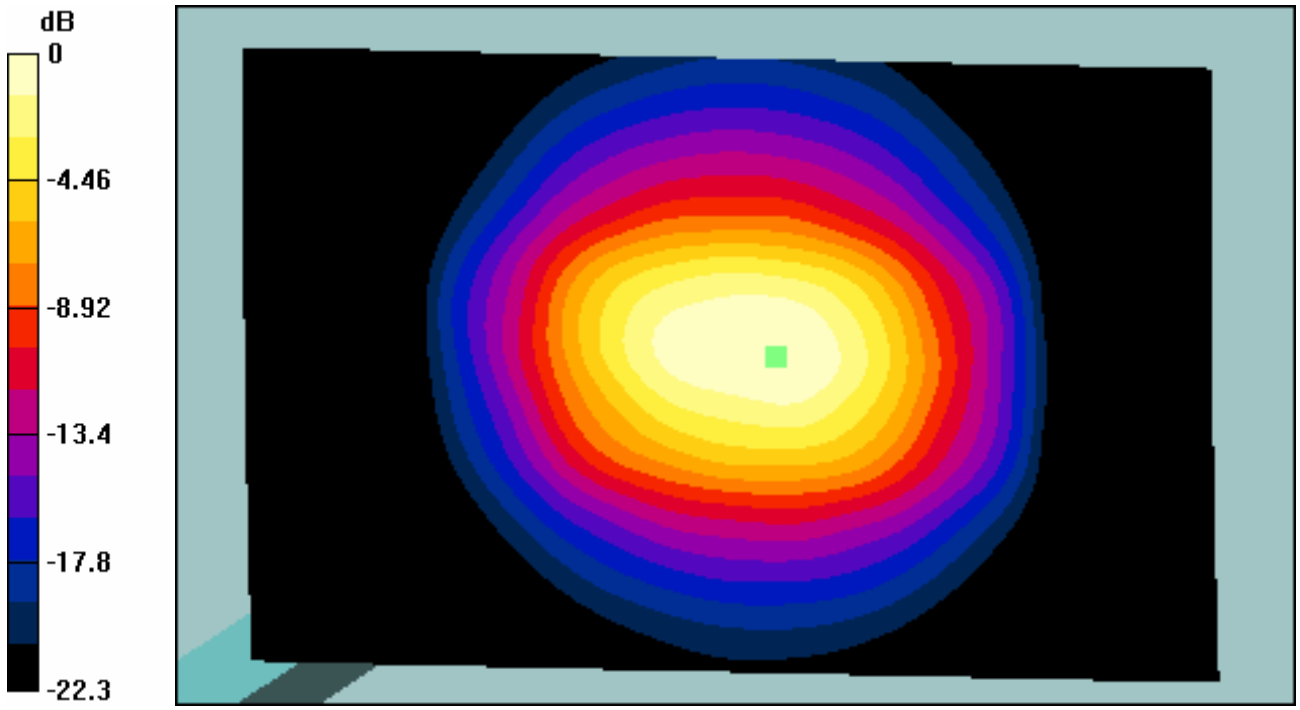


Motorola GEMS EME Lab
SPEAG 2450 MHz Dipole; Model D2450V2, SN 704; Test Date: 2/18/05
Run #: 050218-01 Test operator: E. Church
Sim Tissue Temp: 20.9 (C)
TX Freq: 2450; Start power: 250 mW

Target: 51.74 mW/g for 1g SAR 24.67 mW/g for 10g SAR
SAR calculated 1g is 52.18 mW/g; .85 % from target (including drift)
SAR calculated 10g is 24.26 mW/g; -1.65 % from target (including drift)

Probe: ET3DV6 - SN1545, Calibrated: 9/1/2004, ConvF(3.95, 3.95, 3.95)
Duty Cycle: 1:1, Medium: Body 2450 , Medium parameters used: $\sigma = 2$; mho/m, $\varepsilon_r = 50.8$; $\rho = 1000$ kg/m^3
Electronics: DAE3 Sn401, Calibrated: 8/25/2004

Sys Performance Body 2450 MHz/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Sys Performance Body 2450 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 86.4 V/m; Power Drift = 0.02 dB; Peak SAR (extrapolated) = 28.4 W/kg
SAR(1 g) = 12.9 mW/g; SAR(10 g) = 6 mW/g
Sys Performance Body 2450 MHz/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 86.4 V/m; Power Drift = 0.02 dB; Peak SAR (extrapolated) = 29.2 W/kg
SAR(1 g) = 13.3 mW/g; SAR(10 g) = 6.18 mW/g

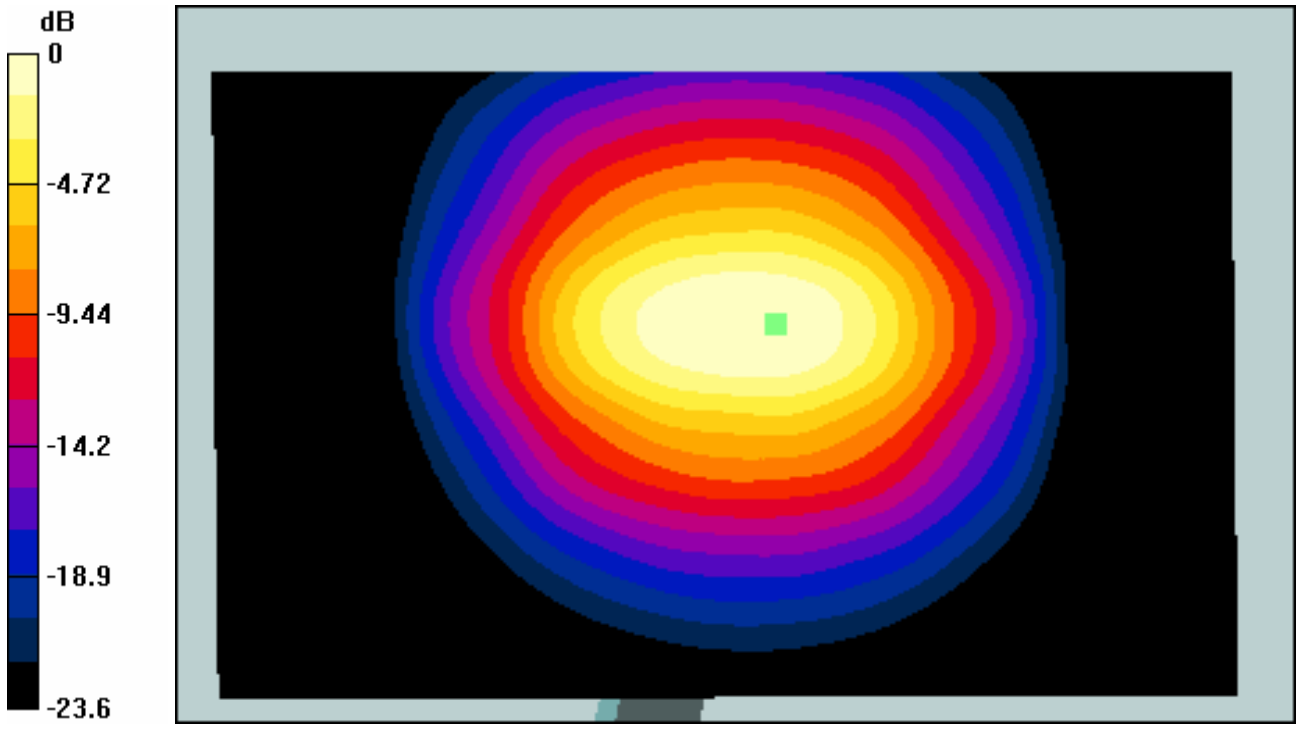


Motorola GEMS EME Lab
SPEAG 2450 MHz Dipole; Model D2450V2, SN 704; Test Date: 2/19/05
Run #: 050219-01 Test operator: E. Church
Sim Tissue Temp: 21.9 (C)
TX Freq: 2450; Start power: 250 mW

Target: 51.74 mW/g for 1g SAR; 24.67 mW/g for 10g SAR
SAR calculated 1g is 51.48 mW/g; - .50 % from target (including drift)
SAR calculated 10g is 23.93 mW/g; -2.99 % from target (including drift)

Probe: ET3DV6 - SN1545, Calibrated: 9/1/2004, ConvF(3.95, 3.95, 3.95)
Duty Cycle: 1:1, Medium: Body 2450 , Medium parameters used: $\sigma = 1.97$; mho/m, $\varepsilon_r = 50.7$; $\rho = 1000$ kg/m^3
Electronics: DAE3 Sn401, Calibrated: 8/25/2004

Sys Performance Body 2450 MHz/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Sys Performance Body 2450 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 70.2 V/m; Power Drift = 0.08 dB; Peak SAR (extrapolated) = 28.7 W/kg
SAR(1 g) = 12.9 mW/g; SAR(10 g) = 6.01 mW/g
Sys Performance Body 2450 MHz/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 70.2 V/m; Power Drift = 0.08 dB; Peak SAR (extrapolated) = 29.4 W/kg
SAR(1 g) = 13.3 mW/g; SAR(10 g) = 6.17 mW/g

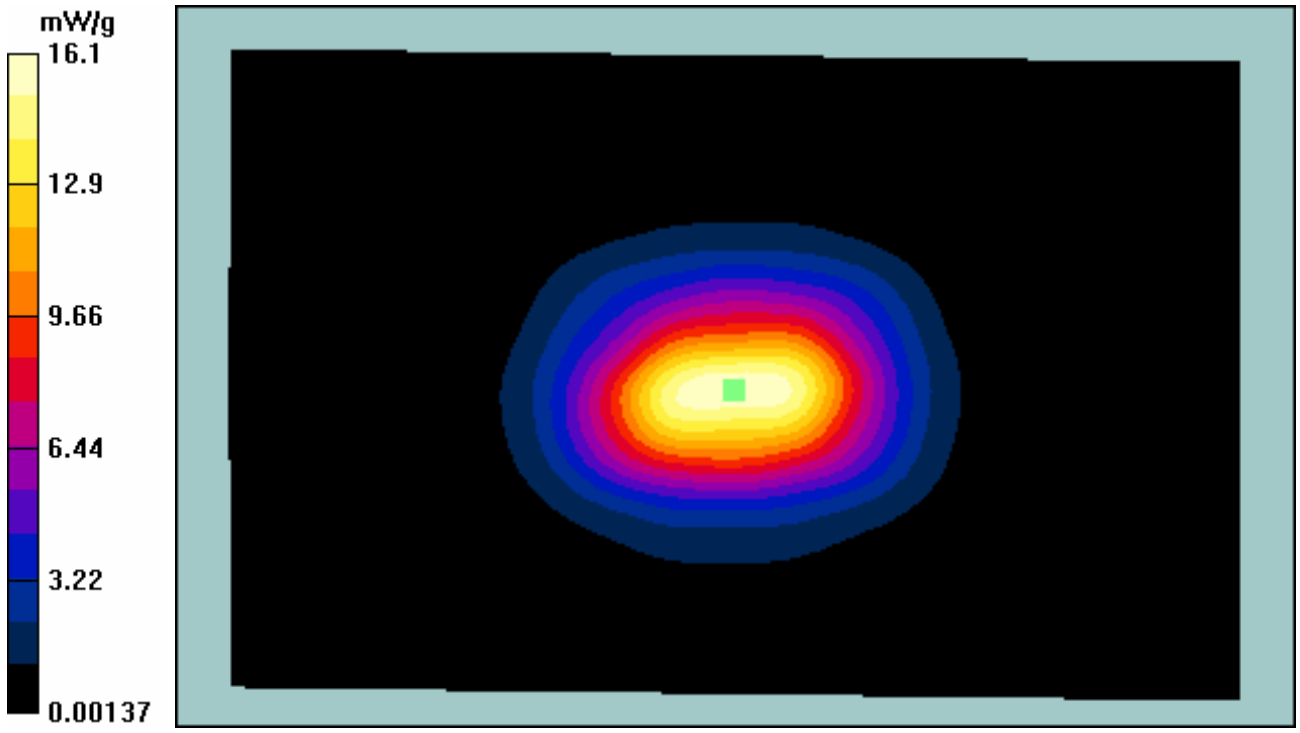


Motorola GEMS EME Lab
SPEAG 2450 MHz Dipole; Model D2450V2, SN 704; Test Date: 2/21/05
Run #: 050221-01 Test operator: E. Church
Sim Tissue Temp: 20.9 (C)
Model #: D2450V2 SN: 704
TX Freq: 2450; Start power: 250 mW

Target: 51.74 mW/g for 1g SAR 24.67 mW/g for 10g SAR
SAR calculated 1g is 54.39 mW/g; 5.11 % from target (including drift)
SAR calculated 10g is 24.67 mW/g; 1.64 % from target (including drift)

Probe: ET3DV6 - SN1545, Calibrated: 9/1/2004, ConvF(3.95, 3.95, 3.95)
Duty Cycle: 1:1, Medium: Body 2450 , Medium parameters used: σ = 2.02; mho/m, ε_r = 50.7; ρ = 1000 kg/m^3
Electronics: DAE3 Sn401, Calibrated: 8/25/2004

Sys Performance Body 2450 MHz/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Sys Performance Body 2450 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mmReference Value = 88.8 V/m; Power Drift = 0.001 dB; Peak SAR (extrapolated) = 29.8 W/kg
SAR(1 g) = 13.4 mW/g; SAR(10 g) = 6.19 mW/g
Sys Performance Body 2450 MHz/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 88.8 V/m; Power Drift = 0.001 dB; Peak SAR (extrapolated) = 30.6 W/kg
SAR(1 g) = 13.8 mW/g; SAR(10 g) = 6.35 mW/g

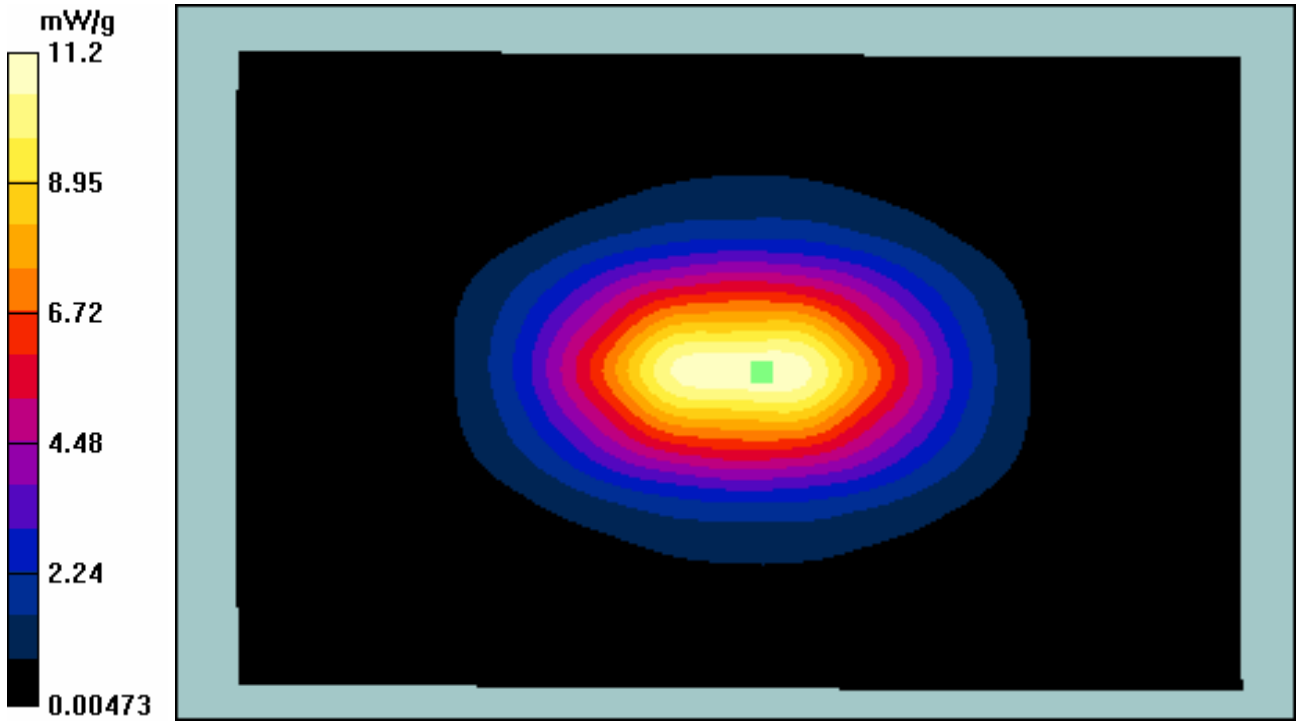


Motorola GEMS EME Lab
SPEAG 1900 MHz Dipole; Model D1900V2, SN 522; Test Date: 2/22/05
Run #: 050222-03 Test operator: E. Church
Sim Tissue Temp: 21.5 (C)
TX Freq: 1900MHz; Start power: 250 mW

Target: 38.21 mW/g for 1g SAR; 20.15 mW/g for 10g SAR
SAR calculated 1g is 35.57 mW/g; - 6.91 % from target (including drift)
SAR calculated 10g is 19.60 mW/g; - 2.75 % from target (including drift)

Probe: ET3DV6 - SN1545, Calibrated: 9/1/2004, ConvF(4.2, 4.2, 4.2)
Duty Cycle: 1:1, Medium: FCC Body 1900 MHz, Medium parameters used: σ = 1.51; mho/m, ε_r = 52.3; ρ = 1000 kg/m^3
Electronics: DAE3 Sn401, Calibrated: 8/25/2004

Sys Performance 1900 MHz Body/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Sys Performance 1900 MHz Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 87.7 V/m; Power Drift = 0.023 dB; Peak SAR (extrapolated) = 14.4 W/kg
SAR(1 g) = 8.86 mW/g; SAR(10 g) = 4.86 mW/g
Sys Performance 1900 MHz Body/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 87.7 V/m; Power Drift = 0.023 dB; Peak SAR (extrapolated) = 14.7 W/kg
SAR(1 g) = 9.12 mW/g; SAR(10 g) = 4.99 mW/g

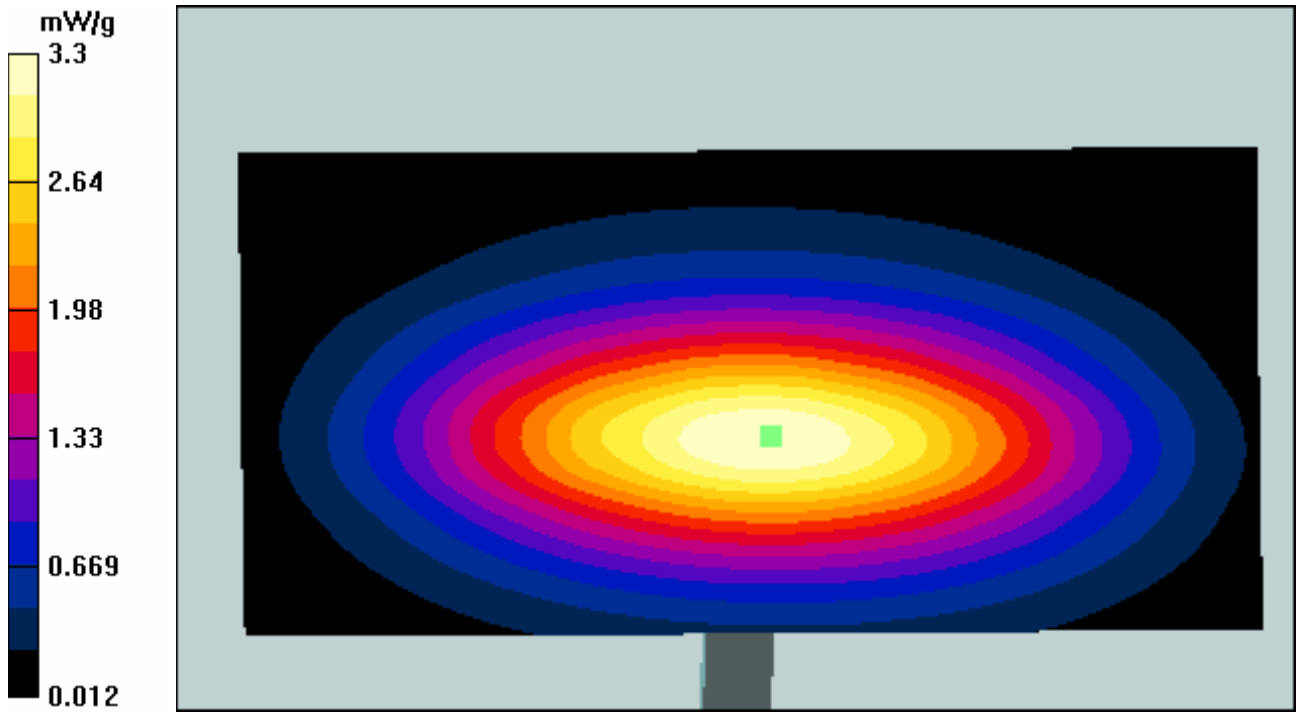


Motorola GEMS EME Lab
SPEAG 900 MHz Dipole; Model D900V2, SN 084; Test Date: 2/22/05
Run #: 050222-08 Test operator: E. Church
Sim Tissue Temp: 20.9 (C)
TX Freq: 900; Start power: 250 mW

Target: 11.75 mW/g for 1g SAR; 7.47 mW/g for 10g SAR
SAR calculated 1g is 11.66 mW/g; - .80 % from target (including drift)
SAR calculated 10g is 7.53 mW/g; +.86 % from target (including drift)

Probe: ET3DV6 - SN1545, Calibrated: 9/1/2004, ConvF(5.56, 5.56, 5.56)
Duty Cycle: 1:1, Medium: FCC Body 900 MHz, Medium parameters used: σ = 1.05; mho/m, ε_r = 53; ρ = 1000 kg/m^3
Electronics: DAE3 Sn401, Calibrated: 8/25/2004

Sys Performance 900 MHz Body/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Sys Performance 900 MHz Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 54.6 V/m; Power Drift = 0.184 dB; Peak SAR (extrapolated) = 4.37 W/kg
SAR(1 g) = 3 mW/g; SAR(10 g) = 1.94 mW/g
Sys Performance 900 MHz Body/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 54.6 V/m; Power Drift = 0.184 dB; Peak SAR (extrapolated) = 4.47 W/kg
SAR(1 g) = 3.08 mW/g; SAR(10 g) = 1.99 mW/g



SYSTEM PERFORMANCE CHECK TARGET SAR

Date:	4/14/2004	Frequency (MHz):	900
Lab Location:	CGISS	Mixture Type:	FCC Body
Robot System:	3	Ambient Temp.(°C):	23
Probe Serial #:	1545	Tissue Temp.(°C):	20.5
DAE Serial #:	406		
Tissue Characteristics			
Permitivity:	53.3	Phantom Type/SN:	80302002A/S8
Conductivity:	1.05	Distance (mm):	15 (tissue/dipole cnt)
Reference Source:	D900V2	(Dipole)	
Reference SN:	84		

Power to Dipole: 250 mW

Measured SAR Value:	2.91	mW/g,	1.85	mW/g (10g avg.)
Power Drift:	-0.04	dB		
New Target/Measured SAR Value: (normalized to 1.0 W, including drift)	11.75	mW/g,	7.47	mW/g (10g avg.)

Test performed by: C. Miller Initial:

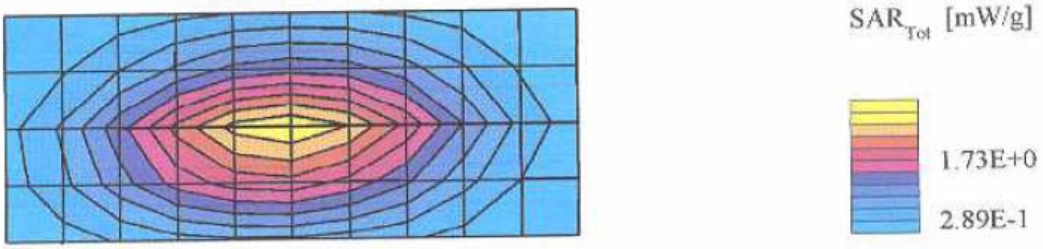
SPEAG DIPOLE D900V2; Test date:04/14/04

Run #: Sys Perf-040414-09
Model #: D900 V2
Robot: CGISS-3
TX Freq: 900 MHz
Start Power; 250 mW
DAE3: 401
- Comments-

Phantom #: 80302002A/S8
SN: 084
Tester: C. Miller
900 MHz Sim Tissue Temp: 20.5 (Celsius)

DAE Cal Date: 08/21/2003

SAR calculated at 1W is 11.75 mW/g (1g avg).
SAR calculated at 1W is 7.47 mW/g (10g avg).
Flat; Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(5.82,5.82,5.82); Crest factor: 1.0; FCC Body 900MHz: $\sigma = 1.05$ mho/m $\varepsilon_r = 53.3$ $\rho = 1.00$ g/cm^3
Cubes (2): Peak: 4.56 mW/g ± 0.03 dB, SAR (1g): 2.91 mW/g ± 0.03 dB, SAR (10g): 1.85 mW/g ± 0.03 dB, (Worst-case extrapolation)
Penetration depth: 12.0 (11.1, 13.3) [mm]
Powerdrift: -0.04 dB



SYSTEM VALIDATION

Date:	2/10/2005	Frequency (MHz):	1900
Lab Location:	CGISS	Mixture Type:	1900-FCC Body
Robot System:	CGISS-3	Ambient Temp.(°C):	22.1
Probe Serial #:	1545	Tissue Temp.(°C):	21.3
DAE Serial #:	DAE3V1 SN401		

Tissue Characteristics		Phantom Type/SN:	40302002A
Permitivity:	51.2	Distance (mm):	10
Conductivity:	1.58		

Reference Source: Dipole (Dipole/Handset)
Reference SN: 522

Power to Dipole: 250 mW
Power Output (radio): _____ mW

Target SAR Value: 38.21 mW/g, 20.15 mW/g (10g avg.)
(normalized to 1.0 W)

Measured SAR Value: 9.775 mW/g, 5.155 mW/g (10g avg.)
Power Drift: 0.1 dB

Measured SAR Value: 38.21 mW/g, 20.15 mW/g (10g avg.)
(normalized to 1.0 W,
with drift compensation)

Percent Difference From Target (must be within System Uncertainty): 0.00 % (1g avg)
0.00 % (10g avg)

Test performed by: C. Miller Initial: CMW

DUT: Dipole 1900 MHz

Run #: 050210-04 Test operator: C. Miller
Robot: CGISS-3 Phantom #: 40302002B/S10 Sim Tissue Temp: 21.3 (C)
Model #: D1900V2 SN: 522
TX Freq: 1900 MHz Start power: 250 mW

Target

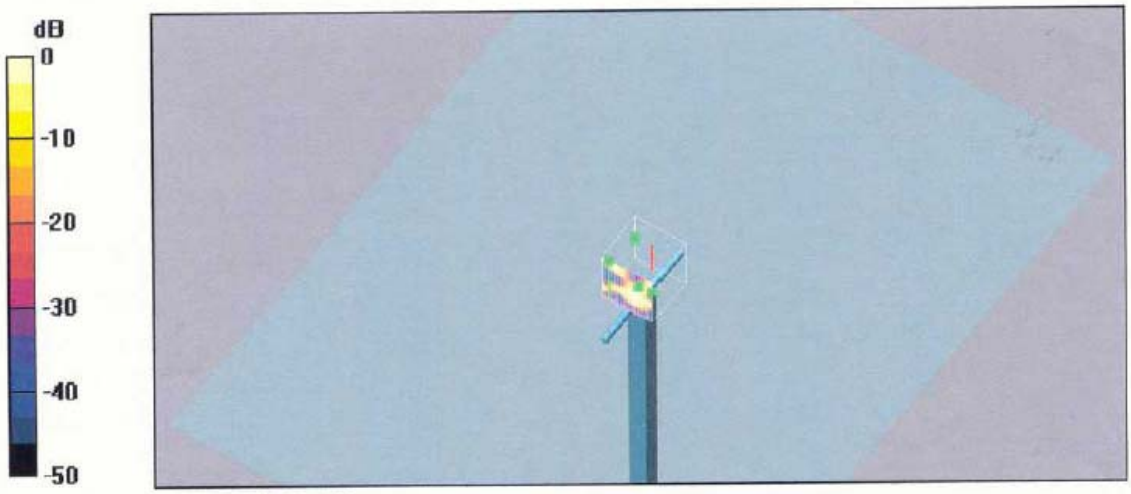
38.21 mW/g for 1g SAR **20.15 mW/g for 10g SAR**

SAR calculated 1g is 38.21 mW/g; % from target (including drift) is 0.00
SAR calculated 10g is 20.15 mW/g; % from target (including drift) is 0.00

Probe: ET3DV6 - SN1545, Calibrated: 9/1/2004, ConvF(4.2, 4.2, 4.2),
Duty Cycle: 1:1, Medium: Body 1900, Medium parameters used: $\sigma = 1.58$; mho/m, $\varepsilon_r = 51.2$; $\rho = 1000$ kg/m^3 ;
Electronics: DAE3 Sn401, Calibrated: 8/25/2004

Sys Performance 1900 MHz Body/Zoom Scan 3 (16x16x36)/Cube 0: Measurement grid:
dx=10mm, dy=10mm, dz=5mm
Reference Value = 89.6 V/m; Power Drift = not measured
Peak SAR (extrapolated) = 0.013 W/kg
Motorola Fast SAR: SAR(1 g) = n.a. ; SAR(10 g) = n.a.

Warning: Maximum averaged SAR over 1 g is located on the boundary of the measurement cube. This cube might not incorporate the absolute averaged SAR. Please consider a refinement of the Area Scan measurement. Maximum averaged SAR over 10 g is located on the boundary of the measurement cube. This cube might not incorporate the absolute averaged SAR. Please consider a refinement of the Area Scan measurement.
Maximum value of SAR (interpolated) = 0.013 mW/g



0 dB = 0.013mW/g

SYSTEM PERFORMANCE CHECK TARGET SAR

Date:	2/17/2005	Frequency (MHz):	2450
Lab Location:	CGISS	Mixture Type:	FCC Body
Robot System:	CGISS-3	Ambient Temp.(°C):	22.1
Probe Serial #:	1545	Tissue Temp.(°C):	21.7
DAE Serial #:	401		

Tissue Characteristics			
Permitivity:	51.1	Phantom Type/SN:	40302002A-S6
Conductivity:	2.01	Distance (mm):	10

Reference Source:	Dipole	(Dipole/Handset)
Reference SN:	704	

Power to Dipole: 250 mW

Measured SAR Value:	12.95 mW/g,	6.175	mW/g (10g avg.)
Power Drift:	0.00514 dB		

New Target/Measured SAR Value: (normalized to 1.0 W, including drift)	51.74 mW/g,	24.67	mW/g (10g avg.)

Test performed by: E. Church Initial: E. C

DUT: Dipole 2450 MHz

Run #:	050217-02	Test operator:	E. Church	
Robot:	CGISS-3	Phantom #:	40302002A-S6	Sim Tissue Temp: 21.5 (C)
Model #:	D2450V2	SN:	704	
TX Freq:	2450 MHz	Start power:	250 mW	

Target

	51.74 mW/g for 1g SAR	**24.67 mW/g for 10g SAR**
SAR calculated 1g is	12.95 mW/g;	0 % from target (including drift)
SAR calculated 10g is	6.175 mW/g;	0 % from target (including drift)

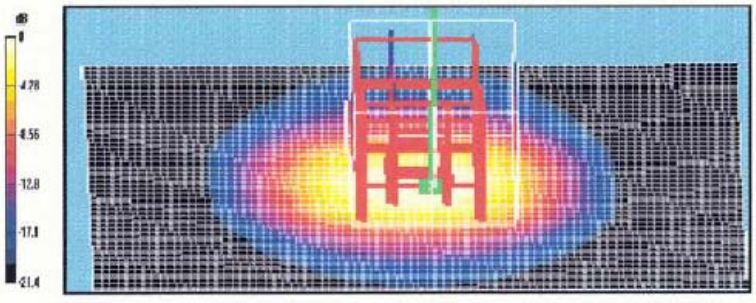
Probe: ET3DV6 - SN1545, Calibrated: 9/1/2004, ConvF(3.95, 3.95, 3.95),
Duty Cycle: 1:1, Medium: Body 2450 , Medium parameters used: σ = 2.01; mho/m, ε_r = 51.1; ρ = 1000 kg/m^3 ;
Electronics: DAE3 Sn401, Calibrated: 8/25/2004

Sys Validation Body 2450 MHz/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 89 V/m; Power Drift = 0.00514 dB
Motorola Fast SAR: SAR(1 g) = 13 mW/g; SAR(10 g) = 5.74 mW/g
Maximum value of SAR (interpolated) = 16.4 mW/g

Sys Validation Body 2450 MHz/Z Scan (1x1x16): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 14.3 mW/g

Sys Validation Body 2450 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 89 V/m; Power Drift = 0.00514 dB
Peak SAR (extrapolated) = 28.3 W/kg
SAR(1 g) = 12.9 mW/g; SAR(10 g) = 6.09 mW/g
Maximum value of SAR (measured) = 14.2 mW/g

Sys Validation Body 2450 MHz/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 89 V/m; Power Drift = 0.00514 dB
Peak SAR (extrapolated) = 29.1 W/kg
SAR(1 g) = 13.4 mW/g; SAR(10 g) = 6.26 mW/g
Maximum value of SAR (measured) = 14.7 mW/g

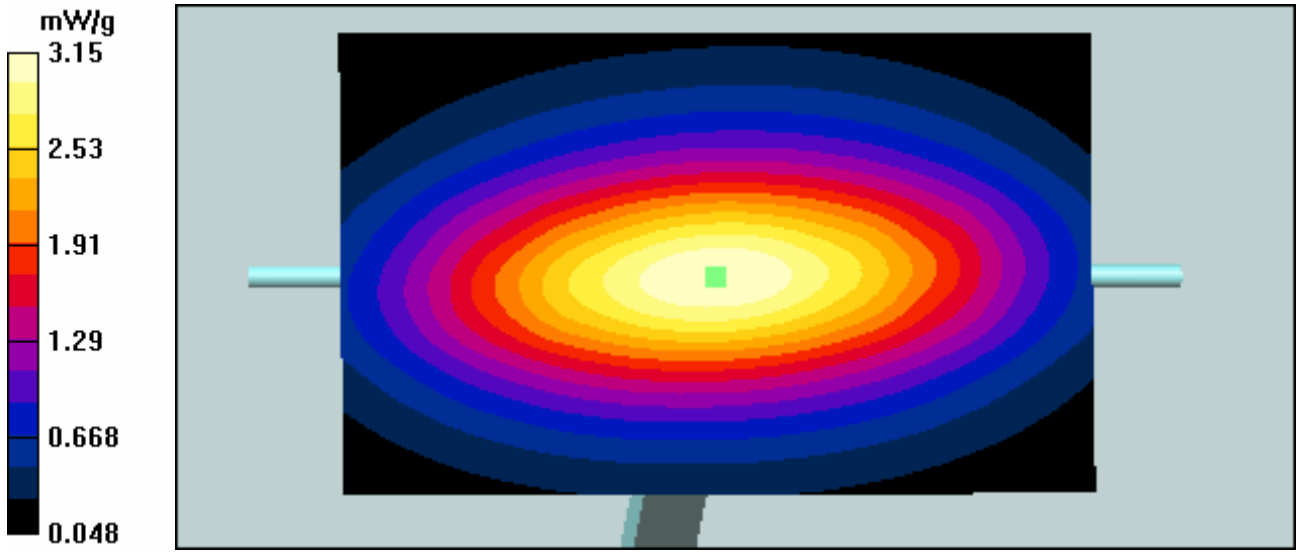


0 dB = 14.7mW/g

Motorola GEMS EME Lab
SPEAG 900 MHz Dipole; Model D900V2, SN 084; Test Date: 3/10/05
Run #: 050310-06 Test operator: E. Church
Tissue Temp: 19.5 (C)
TX Freq: 900 (MHz) Start power: 250 (mW)

Target: 11.15mW/g for 1g SAR; 6.98mW/g for 10g SAR
11.77mW/g calculated 1g-SAR; + 5.52% from target (including drift)
7.43mW/g calculated 10g-SAR; + 6.39% from target (including drift)

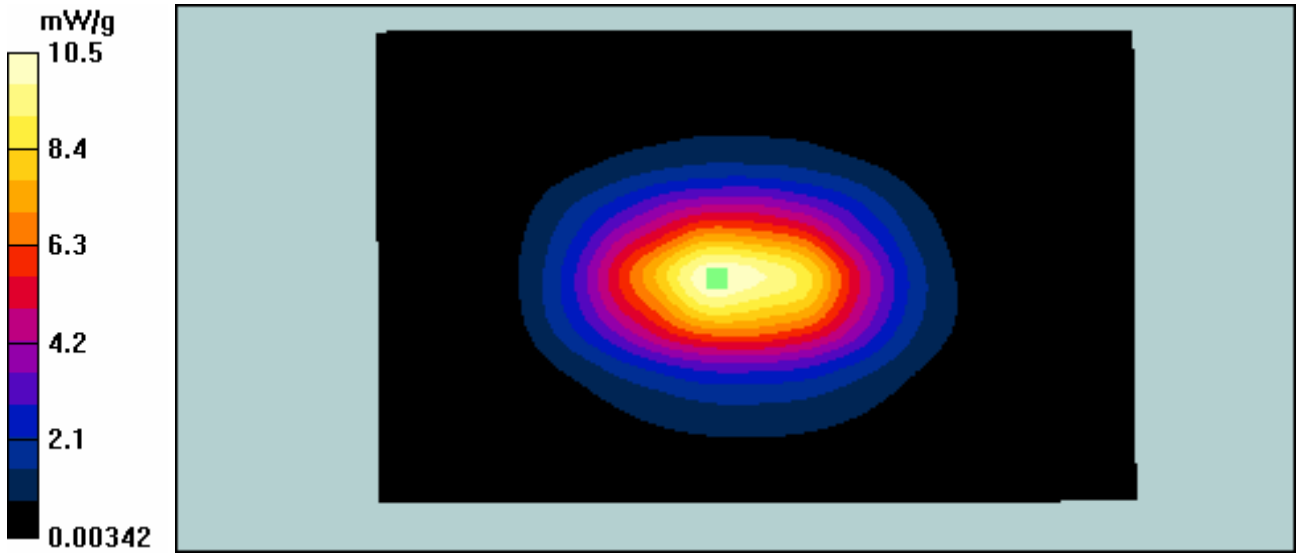
Probe: ET3DV6 - SN1545, Calibrated: 9/1/2004, ConvF(5.83, 5.83, 5.83)
Duty Cycle: 1:1, Medium: 900 MHz IEEE Head, Medium parameters used: $\sigma = 1$; mho/m, $\varepsilon_r = 39.7$; $\rho = 1000$ kg/m^3
Electronics: DAE3 Sn401, Calibrated: 8/25/2004
Sys Performance 900 MHz Head/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Sys Performance 900 MHz Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 58.3 V/m; Power Drift = 0.02 dB; Peak SAR (extrapolated) = 4.45 W/kg
SAR(1 g) = 2.91 mW/g; SAR(10 g) = 1.84 mW/g
Sys Performance 900 MHz Head/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 58.3 V/m; Power Drift = 0.02 dB; Peak SAR (extrapolated) = 4.56 W/kg
SAR(1 g) = 3 mW/g; SAR(10 g) = 1.89 mW/g



Motorola GEMS EME Lab
SPEAG 1900 MHz Dipole; Model D1900V2, SN 522; Test Date: 3/10/05
Run #: 050310-01 Test operator: E. Church
Tissue Temp: 20.0 (C)
TX Freq: 1900 (MHz) Start power: 250 (mW)

Target: 37.66 mW/g for 1g SAR; 19.82 mW/g for 10g SAR
34.03 mW/g calculated 1g-SAR; - 9.63% from target (including drift)
18.44 mW/g calculated 10g-SAR; - 6.96% from target (including drift)

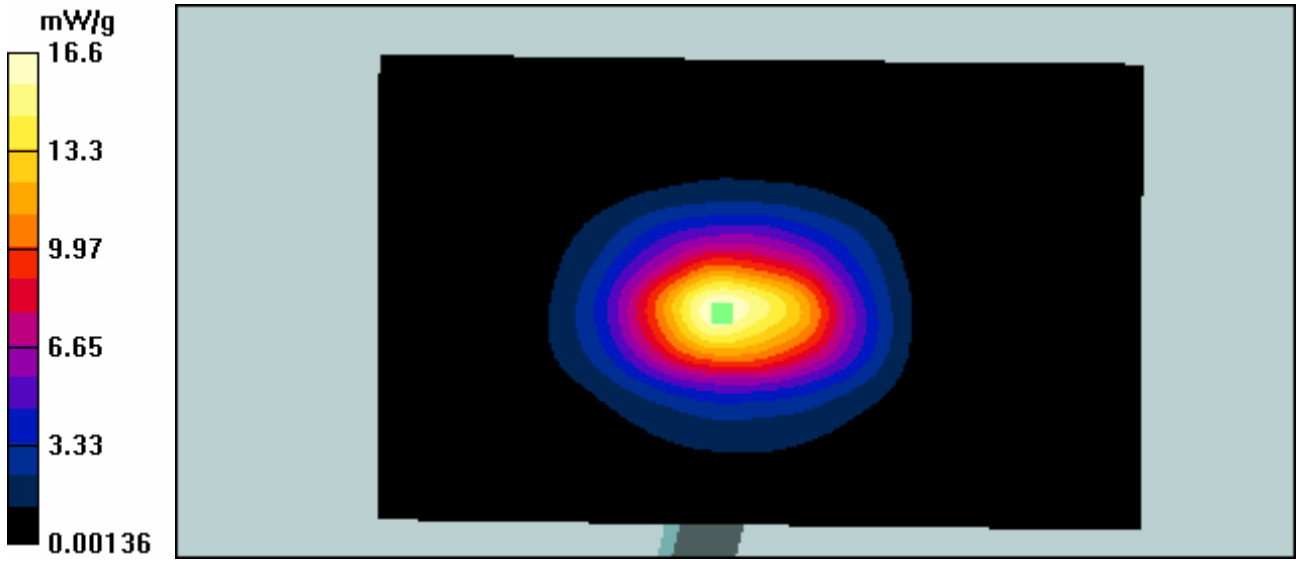
Probe: ET3DV6 - SN1545, Calibrated: 9/1/2004, ConvF(4.69, 4.69, 4.69)
Duty Cycle: 1:1, Medium: 1900 MHz Head, Medium parameters used: σ = 1.38; mho/m, ε_r = 40.7; ρ = 1000 kg/m^3
Electronics: DAE3 Sn401, Calibrated: 8/25/2004
Sys Performance 1900 MHz Body/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Sys Performance 1900 MHz Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 86.9 V/m; Power Drift = 0.0 dB; Peak SAR (extrapolated) = 13.9 W/kg
SAR(1 g) = 8.46 mW/g; SAR(10 g) = 4.58 mW/g
Sys Performance 1900 MHz Body/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 86.9 V/m; Power Drift = 0.0 dB; Peak SAR (extrapolated) = 14.1 W/kg
SAR(1 g) = 8.65 mW/g; SAR(10 g) = 4.68 mW/g



Motorola GEMS EME Lab
SPEAG 2450 MHz Dipole; Model D2450V2, SN 704; Test Date: 3/11/05
Run #: 050311-01 Test operator: E. Church
Tissue Temp: 21.3 (C)
TX Freq: 2450 (MHz) Start power: 250 (mW)

Target: 54.95mW/g for 1g SAR; 25.62mW/g for 10g SAR
SAR calculated 1g is 52.96 mW/g; - 3.63 % from target (including drift)
SAR calculated 10g is 24.64mW/g; - 3.83 % from target (including drift)

Probe: ET3DV6 - SN1545, Calibrated: 9/1/2004, ConvF(4.12, 4.12, 4.12)
Duty Cycle: 1:1, Medium: 2450 MHz Head, Medium parameters used: σ = 1.87; mho/m, ε_r = 38; ρ = 1000 kg/m^3
Electronics: DAE3 Sn401, Calibrated: 8/25/2004
Sys Performance Head 2450 MHz/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Sys Performance Head 2450 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 89.7 V/m; Power Drift = 0.004 dB; Peak SAR (extrapolated) = 27.6 W/kg
SAR(1 g) = 13 mW/g; SAR(10 g) = 6.09 mW/g
Sys Performance Head 2450 MHz/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 89.7 V/m; Power Drift = 0.004 dB; Peak SAR (extrapolated) = 28.5 W/kg
SAR(1 g) = 13.5 mW/g; SAR(10 g) = 6.26 mW/g



SYSTEM VALIDATION

Date:	4/14/2004	Frequency (MHz):	900
Lab Location:	CGISS	Mixture Type:	IEEE-Head
Robot System:	3	Ambient Temp.(°C):	23
Probe Serial #:	1383	Tissue Temp.(°C):	21
DAE Serial #:	406		

Tissue Characteristics			
Permitivity:	41.2	Phantom Type/SN:	SAMTP1022
Conductivity:	1.00	Distance (mm):	15 (tissue/dipole cnt)

Reference Source:	D900V2	(Dipole)
Reference SN:	84	

Power to Dipole:	250	mW
Power Output (radio):	n/a	mW

Target SAR Value: (normalized to 1.0 W)	10.8	mW/g,	6.9	mW/g (10g avg.)
Measured SAR Value:	2.78	mW/g,	1.74	mW/g (10g avg.)
Power Drift:	-0.01	dB		
Measured SAR Value: (normalized to 1.0 W, including drift)	11.15	mW/g,	6.98	mW/g (10g avg.)

Percent Difference From Target (MUST be within System Uncertainty): 3.20 % (1g ave)
1.10 % (10g ave)

Test performed by: C. Miller Initial:

SYSTEM PERFORMANCE CHECK TARGET SAR

Date:	4/14/2004	Frequency (MHz):	900
Lab Location:	CGISS	Mixture Type:	IEEE - Head
Robot System:	3	Ambient Temp.(°C):	23
Probe Serial #:	1383	Tissue Temp.(°C):	21
DAE Serial #:	401		
Tissue Characteristics			
Permitivity:	41.2	Phantom Type/SN:	SAMTP1022
Conductivity:	1.00	Distance (mm):	15 (tissue/dipole cnt)
Reference Source:	D900V2	(Dipole)	
Reference SN:	84		
Power to Dipole:	250 mW		
Measured SAR Value:	2.78 mW/g,	1.74 mW/g (10g avg.)	
Power Drift:	-0.01 dB		
New Target/Measured SAR Value: (normalized to 1.0 W, including drift)	11.15 mW/g,	6.98 mW/g (10g avg.)	
Test performed by:	C. Miller	Initial:	

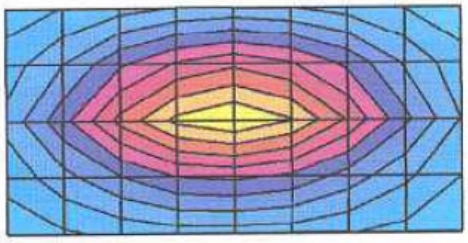
SPEAG DIPOLE D900V2; Test date:04/14/04

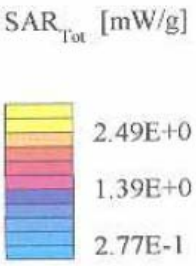
Run #: Sys Perf-040414-08
Model #: D900 V2
Robot: CGISS-3
TX Freq: 900 MHz
Start Power; 250 mW
DAE3: 401
- Comments-

Phantom #: SAMTP1022
SN: 084
Tester: C. Miller
900 MHz Sim Tissue Temp: 21.0 (Celsius)

DAE Cal Date: 08/21/2003

SAR calculated at 1W is 11.15 mW/g (1g avg).
SAR calculated at 1W is 6.98 mW/g (10g avg).
SAM; Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(6.30,6.30,6.30); Crest factor: 1.0; IEEE
Head 900: $\sigma = 1.00$ mho/m $\varepsilon_r = 41.2$ $\rho = 1.00$ g/cm^3
Cubes (2): Peak: 4.44 mW/g ± 0.01 dB, SAR (1g): 2.78 mW/g ± 0.02 dB, SAR (10g): 1.74 mW/g ± 0.03 dB, (Worst-case extrapolation)
Penetration depth: 11.2 (10.4, 12.4) [mm]
Powerdrift: -0.01 dB





SYSTEM VALIDATION

Date:	2/10/2005	Frequency (MHz):	1900
Lab Location:	CGISS	Mixture Type:	1900-IEEE Head
Robot System:	CGISS-3	Ambient Temp.(°C):	22.1
Probe Serial #:	1545	Tissue Temp.(°C):	21.1
DAE Serial #:	DAE3V1 SN401		

Tissue Characteristics		Phantom Type/SN:	40302002A
Permitivity:	38.0	Distance (mm):	10
Conductivity:	1.47		

Reference Source: Dipole (Dipole/Handset)
Reference SN: 522

Power to Dipole: 250 mW
Power Output (radio): _____ mW

Target SAR Value: 39.7 mW/g, 20.5 mW/g (10g avg.)
(normalized to 1.0 W)

Measured SAR Value: 9.415 mW/g, 4.955 mW/g (10g avg.)
Power Drift: 0 dB

Measured SAR Value: 37.66 mW/g, 19.82 mW/g (10g avg.)
(normalized to 1.0 W,
with drift compensation)

Percent Difference From Target (must be within System Uncertainty): -5.14 % (1g avg)
-3.32 % (10g avg)

Test performed by: C. Miller Initial: 

DUT: Dipole 1900 MHz

Run #: 050210-01
Robot: CGISS-3
Model #: D1900V2
TX Freq: 1900 MHz

Test operator: C. Miller
Phantom #: 40302002A/S12
SN: 522
Start power: 250 mW

Sim Tissue Temp: 21.1 (C)

Target
37.66 mW/g for 1g SAR **19.82 mW/g for 10g SAR**
SAR calculated 1g is 37.66 mW/g; % from target (including drift) is 0.0
SAR calculated 10g is 19.82 mW/g; % from target (including drift) is 0.0

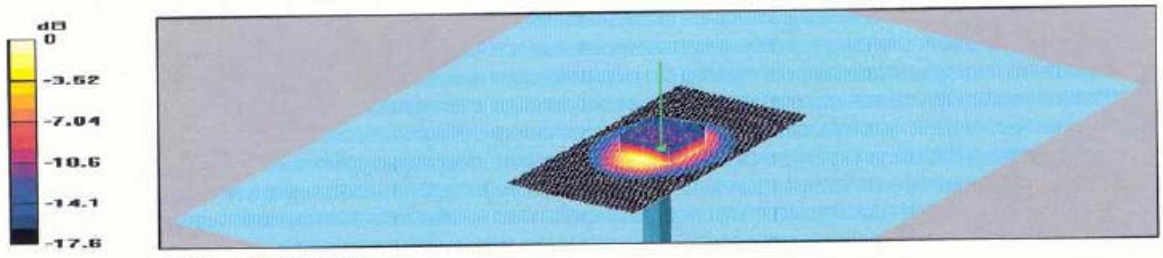
Probe: ET3DV6 - SN1545, Calibrated: 9/1/2004, ConvF(4.69, 4.69, 4.69),
Duty Cycle: 1:1, Medium: HSL 1900, Medium parameters used: σ = 1.47; mho/m, ε_r = 38; ρ = 1000 kg/m^3 ;
Electronics: DAE3 Sn401, Calibrated: 8/25/2004

Sys Performance 1900 MHz Head/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 90.1 V/m; Power Drift = 0.0 dB
Motorola Fast SAR: SAR(1 g) = 9.79 mW/g; SAR(10 g) = 5.12 mW/g
Maximum value of SAR (interpolated) = 11.8 mW/g

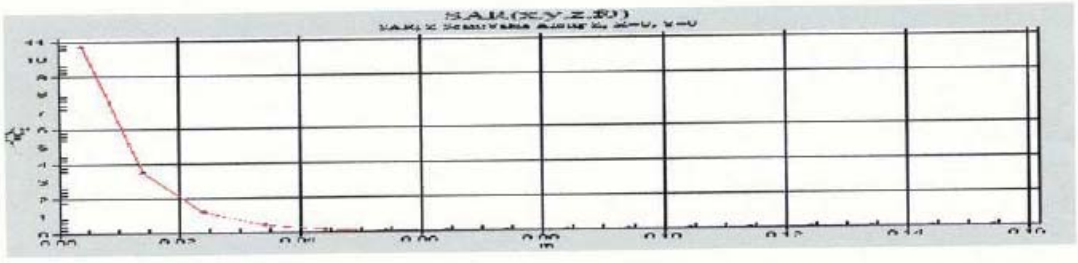
Sys Performance 1900 MHz Head/Z Scan (1x1x16): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 10.7 mW/g

Sys Performance 1900 MHz Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 90.1 V/m; Power Drift = 0.0 dB
Peak SAR (extrapolated) = 16 W/kg
SAR(1 g) = 9.39 mW/g; SAR(10 g) = 4.95 mW/g
Maximum value of SAR (measured) = 10.6 mW/g

Sys Performance 1900 MHz Head/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 90.1 V/m; Power Drift = 0.0 dB
Peak SAR (extrapolated) = 16.2 W/kg
SAR(1 g) = 9.44 mW/g; SAR(10 g) = 4.96 mW/g



0 dB = 10.7mW/g



SYSTEM VALIDATION

Date:	2/17/2005	Frequency (MHz):	2450
Lab Location:	CGISS	Mixture Type:	IEEE Head
Robot System:	CGISS-3	Ambient Temp.(°C):	22.1
Probe Serial #:	1545	Tissue Temp.(°C):	21.6
DAE Serial #:	401		

Tissue Characteristics

Permitivity:	37.9	Phantom Type/SN:	40302002B-S10
Conductivity:	1.89	Distance (mm):	10

Reference Source: Diploe (Dipole/Handset)
Reference SN: 704

Power to Dipole: 250 mW
Power Output (radio): _____ mW

Target SAR Value: 52.4 mW/g, 24 mW/g (10g avg.)
(normalized to 1.0 W)

Measured SAR Value: 13.8 mW/g, 6.435 mW/g (10g avg.)
Power Drift: 0.0199 dB

Measured SAR Value: 54.95 mW/g, 25.62 mW/g (10g avg.)
(normalized to 1.0 W, including drift)

Percent Difference From Target (MUST be within System Uncertainty): 4.86 % (1g ave)
6.76 % (10g ave)

Test performed by: E. Church Initial: E. C

DUT: Dipole 2450 MHz

Run #:	050217-03	Test operator:	E. Church	
Robot:	CGISS-3	Phantom #:	40302002B-S10	Sim Tissue Temp: 21.6 (C)
Model #:	D2450V2	SN:	704	
TX Freq:	2450 MHz	Start power:	250 mW	

Target

	54.95 mW/g for 1g SAR	**25.62 mW/g for 10g SAR**
SAR calculated 1g is	13.8 mW/g;	0 % from target (including drift)
SAR calculated 10g is	6.435 mW/g;	0 % from target (including drift)

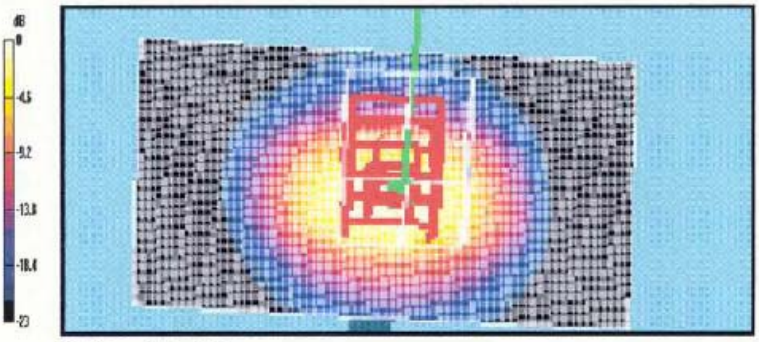
Probe: ET3DV6 - SN1545, Calibrated: 9/1/2004, ConvF(4.12, 4.12, 4.12),
Duty Cycle: 1:1, Medium: 2450 Head, Medium parameters used: σ = 1.89; mho/m, ε_r = 37.9; ρ = 1000 kg/m^3 ;
Electronics: DAE3 Sn401, Calibrated: 8/25/2004

Sys Validation Head 2450 MHz/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 92.3 V/m; Power Drift = 0.0199 dB
Motorola Fast SAR: SAR(1 g) = 13.6 mW/g; SAR(10 g) = 6.06 mW/g
Maximum value of SAR (interpolated) = 16.8 mW/g

Sys Validation Head 2450 MHz/Z Scan (1x1x16): Measurement grid: dx=20mm, dy=20mm, dz=10mm
Maximum value of SAR (measured) = 14.9 mW/g

Sys Validation Head 2450 MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 92.3 V/m; Power Drift = 0.0199 dB
Peak SAR (extrapolated) = 28.2 W/kg
SAR(1 g) = 13.6 mW/g; SAR(10 g) = 6.35 mW/g
Maximum value of SAR (measured) = 15 mW/g

Sys Validation Head 2450 MHz/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 92.3 V/m; Power Drift = 0.0199 dB
Peak SAR (extrapolated) = 28.9 W/kg
SAR(1 g) = 14 mW/g; SAR(10 g) = 6.53 mW/g



0 dB = 15mW/g