**MOTOROLA**

**Certificate Number: 1449-01**

## FCC ID: AZ489FT5837
## 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:** | October 11, 2005 |
| **Report Revision:** | Rev. O |
| **Report ID:** | FCC rpt_ATS2500_Rev O_051011 |
| | SR2859_60 |

| | |
|---|---|
| **Responsible Engineer:** | Deanna Zakharia (Elect. Principle Staff Eng.) |
| **Date/s Tested:** | 9/16/2005 – 9/30/2005 |
| **Manufacturer/Location:** | Motorola, Penang |
| **Sector/Group/Div.:** | GEMS |
| **Date submitted for test:** | 9/7/2005 |
| **DUT Description:** | Portable transceiver 800MHz 2.5W; POP & Pref KP; 1.5PPM |
| **Test TX mode(s):** | CW |
| **Max. Power output:** | 2.95W (806-824MHz band); 2.40W (851-870MHz band) |
| **Nominal Power:** | 2.5W (806-824MHz band); 2.0W (851-870MHz band) |
| **Tx Frequency Bands:** | 806-824MHz;  851-870MHz |
| **Signaling type:** | FM |
| **Model(s) Tested:** | PMUF1063B & PMUF1064B |
| **Model(s) Certified:** | PMUF1063B & PMUF1064B |
| **Serial Number(s):** | 921HFN4312, 921HFN4298, 921HFN4333(PMUF1064B) |
| **Classification:** | Occupational/Controlled |
| **Rule Part(s):** | 90 |

**Approved Accessories:**
**Antenna(s):**
PMAF4000A (Whip 806-870MHz ½ wave; -3.0dBd); PMAF4001A (Stubby 806-941MHz ¼ wave)
**Battery(ies):**
HNN9008A (NiMH High Cap.), HNN9009A (NiMH Ultra High Cap.), HNN9010A (NiMH Ultra High Cap. FM), HNN9011A (NiCd High Cap. FM), HNN9012A (NiCd High Cap), HNN9013B (Li Ion High Cap.), HNN9013D (Li Ion High Cap.), PMNN4045BR (NiMH MAGONE)
**Body worn accessory:**
HLN9652A (Short, plain, belt loop, thin bat.), HLN9665A (Short, Plain, belt loop, std bat.), HLN9670A (Short, Plain, swivel, thin bat), HLN9676A (Short, Plain, swivel, Std bat.), HLN9677A (Short, DTMF, belt loop, thin bat.), HLN9689A (Short, DTMF, belt loop, std. bat), HLN9690A (Short, DTMF, swivel, thin bat.), HLN9694A (Short, DTMF, swivel, std. bat.), HLN9701B (Short, Plain, belt loop, thin bat), NTN8039B (Belt swivel 2.5"), HLN9714A (Spring belt clip for 2.5" belt width), HLN9844A (Spring belt clip for 1.5" belt width), HLN9945A (Limited keypad, hard leather, w/ belt loop, thin bat.), HLN9946A (Limited keypad, hard leather, w/ belt loop, std. bat.), HLN9955A (Limited keypad, hard leather, w/ swivel, thin bat), HLN9998A (Limited keypad, hard leather, w/ swivel, std. bat.), NTN5243A (Carry strap), RLN4815A (Fanny pack carry acc., Universal radio pack), PMLN4280A (Carry case, Full thin leather), HLN9952A (Belt clip carry holder)
**Audio Accessories**
See section 3.0 for list of approved audio acc.

### Max. Calc. 1-g/10-g Avg. SAR: 4.79/3.51 mW/g (Body-worn)
### Max. Calc. 1-g/10-g Avg. SAR: 1.83/1.33 mW/g (Face)

**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.**

Signature on file – Ken Enger

**Ken Enger CGISS EME Lab Senior Resource Manager,**
**Laboratory Director,**

**Approval Date: 10/12/2005**

**Certification Date:**    10/12/2005

**Certification No.:**    L1051012 & L1051013

# 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<br>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 | |
| Approved by: | Katja Pokovic | Laboratory Director | |
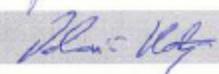
Date issued: August 25, 2004

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 half size flat phantom filled with **head simulating solution** of the following electrical parameters at 900 MHz:

Relative Dielectricity        **41.0    ± 5%**
Conductivity                  **0.97 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 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:        **11.0 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: | **1.392 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: | $Re\{Z\} =$  **48.8 Ω** |
| | $Im\{Z\} =$ **-6.6 Ω** |
| Return Loss at 900 MHz | **-22.7 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 - 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; $\varepsilon_r$ = 41; $\rho$ = 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: 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



0 dB = 2.97mW/g
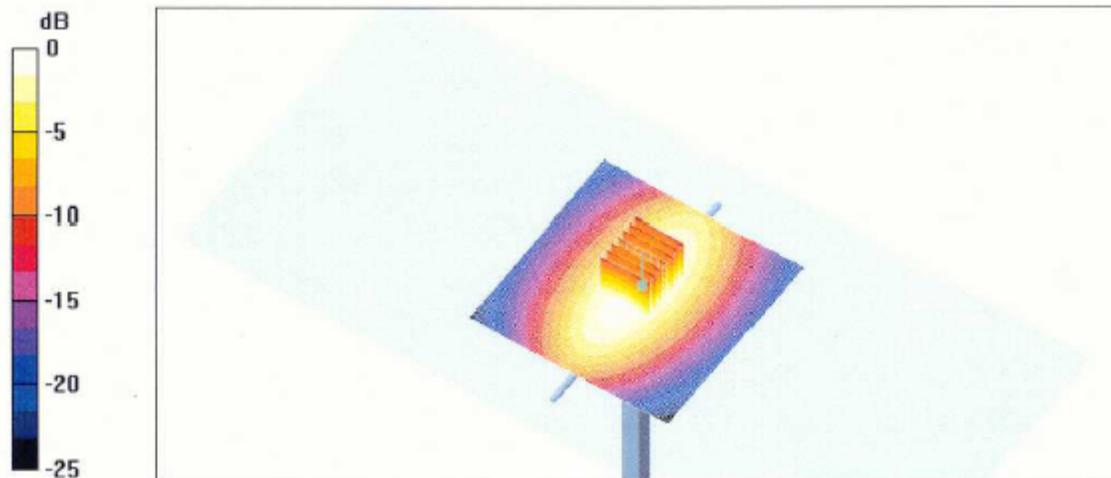
# Appendix D
# Test System Verification Scans

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.

**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 9/16/05**
**Motorola GEMS EME Lab**
Run #: ErC-SYSP-900B-050916-01
Sim.Tissue Temp: 21.7 (C)
TX Freq: 900(MHz) Start power: 250 (mW)

Target: 11.41 mW/g for 1g SAR 7.43 mW/g for 10g SAR
11.87 mW/g calculated 1g-SAR; 4.05 % from target (including drift)
7.75 mW/g calculated 10g-SAR; 4.29 % 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: $\sigma = 1.06$ mho/m, $\varepsilon r = 53.4$; $\rho = 1000$ 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 = 57.7 V/m; Power Drift = 0.0173 dB
Peak SAR (extrapolated) = 4.38 W/kg
**SAR(1 g) = 2.97 mW/g; SAR(10 g) = 1.91 mW/g**
Maximum value of SAR (measured) = 3.24 mW/g
**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:
dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 57.7 V/m; Power Drift = 0.0173 dB
Peak SAR (extrapolated) = 4.52 W/kg
**SAR(1 g) = 3.04 mW/g; SAR(10 g) = 1.95 mW/g**
Maximum value of SAR (measured) = 3.30 mW/g
**System Performance Check/Dipole Area Scan (5x9x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 3.23 mW/g
**System Performance Check/Z-Axis Scan (1x1x17):** Measurement grid: dx=20mm, dy=20mm,
dz=10mm
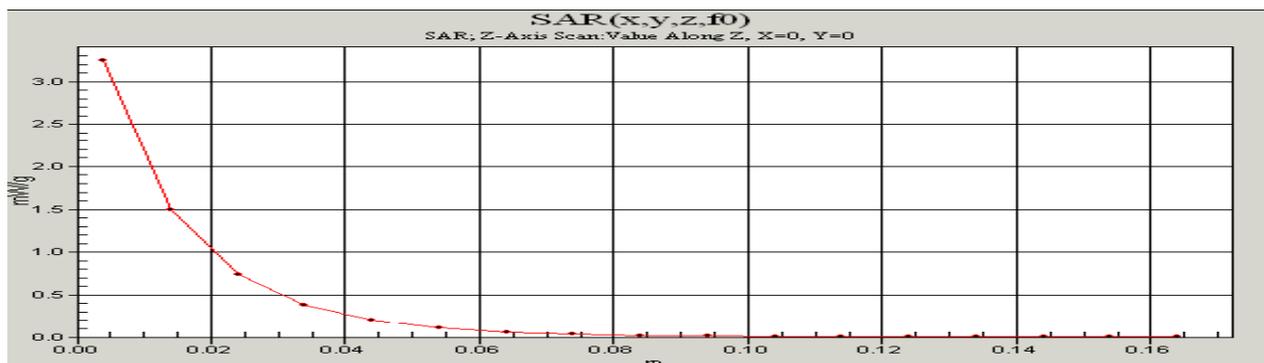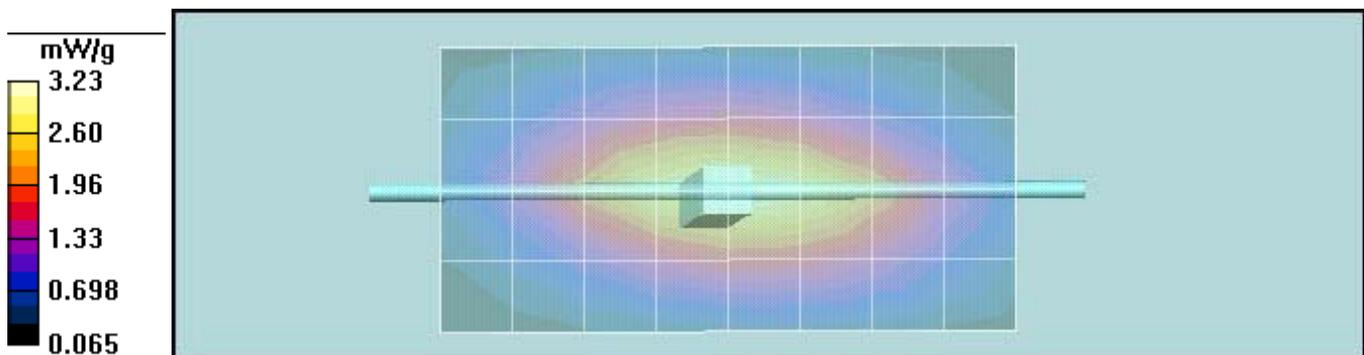
**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 9/19/05**
**Motorola GEMS EME Lab**
Run #: ErC-SYSP-900B-050919-01
Sim.Tissue Temp: 21.6 (C)
TX Freq: 900(MHz) Start power: 250 (mW)


Target: 11.41 mW/g for 1g SAR 7.43 mW/g for 10g SAR
11.73 mW/g calculated 1g-SAR; 2.08 % from target (including drift)
7.56 mW/g calculated 10g-SAR; 1.79 % 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, $\varepsilon r$ = 53.2; $\rho$ = 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 = 55.0 V/m; Power Drift = 0.0554 dB
Peak SAR (extrapolated) = 4.33 W/kg
**SAR(1 g) = 2.95 mW/g; SAR(10 g) = 1.9 mW/g**
Maximum value of SAR (measured) = 3.23 mW/g
**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:
dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 55.0 V/m; Power Drift = 0.0554 dB
Peak SAR (extrapolated) = 4.38 W/kg
**SAR(1 g) = 2.99 mW/g; SAR(10 g) = 1.93 mW/g**
Maximum value of SAR (measured) = 3.21 mW/g
**System Performance Check/Dipole Area Scan (5x9x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.93 mW/g
**System Performance Check/Z-Axis Scan (1x1x17):** Measurement grid: dx=20mm, dy=20mm,
dz=10mm
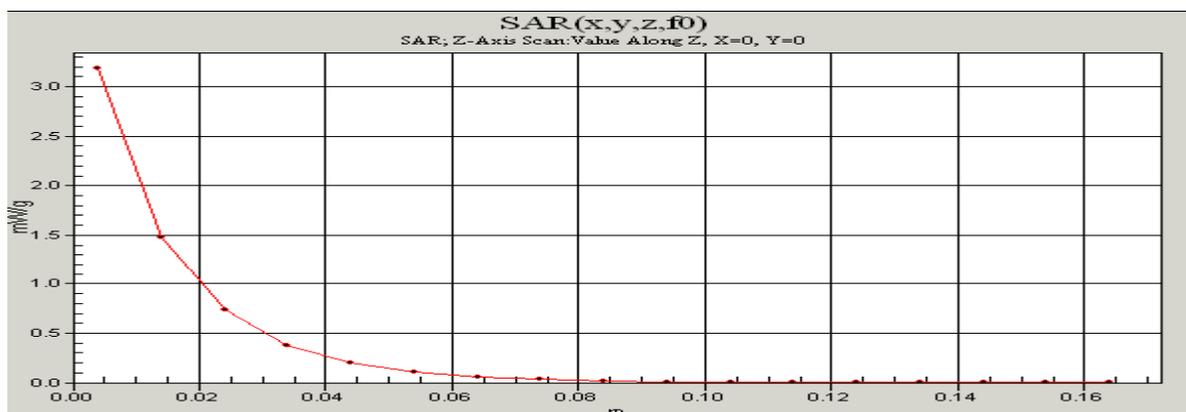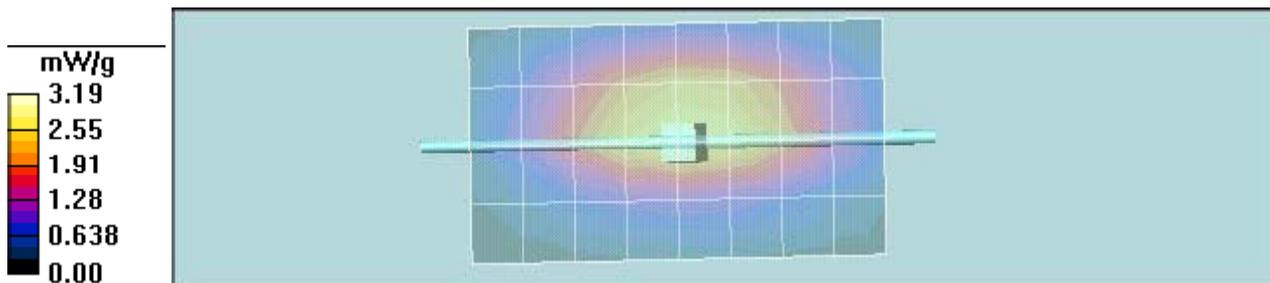
**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 9/21/05**
**Motorola GEMS EME Lab**
Run #: ErC-SYSP-900B-050921-01
Sim.Tissue Temp: 21.1 (C)
TX Freq: 900(MHz) Start power: 250 (mW)

Target: 11.41 mW/g for 1g SAR 7.43 mW/g for 10g SAR
11.81 mW/g calculated 1g-SAR; 3.54 % from target (including drift)
7.59 mW/g calculated 10g-SAR; 2.18 % 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, $\varepsilon r = 53.3$; $\rho = 1000$ 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 = 55.6 V/m; Power Drift = 0.0388 dB
Peak SAR (extrapolated) = 4.36 W/kg
**SAR(1 g) = 2.96 mW/g; SAR(10 g) = 1.9 mW/g**
Maximum value of SAR (measured) = 3.23 mW/g
**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:
dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 55.6 V/m; Power Drift = 0.0388 dB
Peak SAR (extrapolated) = 4.39 W/kg
**SAR(1 g) = 3 mW/g; SAR(10 g) = 1.93 mW/g**
Maximum value of SAR (measured) = 3.25 mW/g
**System Performance Check/Dipole Area Scan (5x9x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 3.00 mW/g
**System Performance Check/Z-Axis Scan (1x1x17):** Measurement grid: dx=20mm, dy=20mm,
dz=10mm
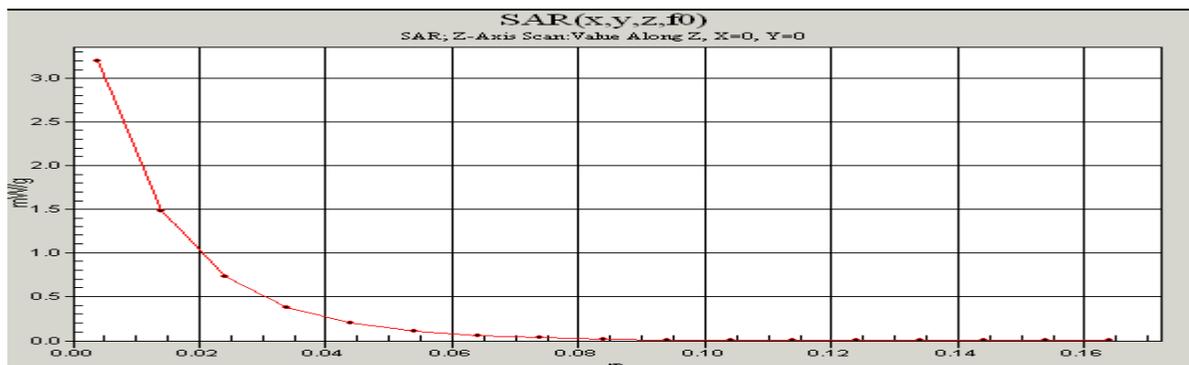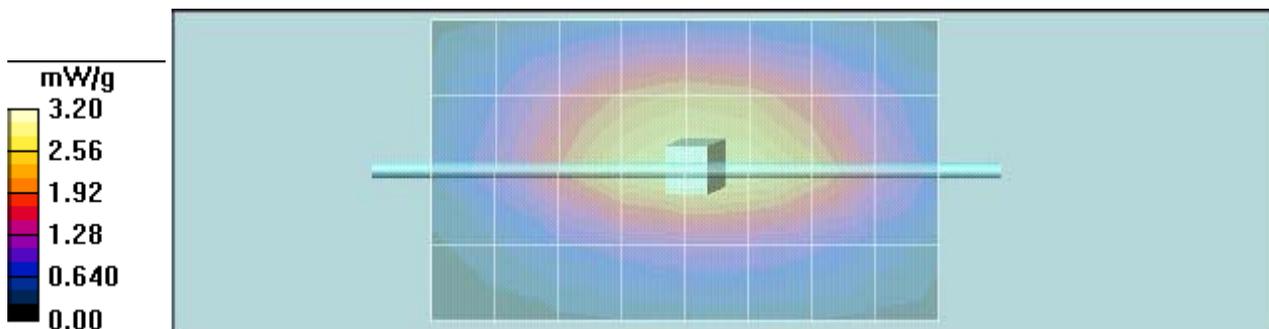
**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 9/22/05**
**Motorola GEMS EME Lab**
Run #: ErC-SYSP-900B-050922-01
Sim.Tissue Temp: 20.9 (C)
TX Freq: 900(MHz) Start power: 250 (mW)

Target: 11.41 mW/g for 1g SAR 7.43 mW/g for 10g SAR
11.81 mW/g calculated 1g-SAR; 3.51 % from target (including drift)
7.62 mW/g calculated 10g-SAR; 2.49 % 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, $\varepsilon r = 52.6$; $\rho = 1000$ 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 = 55.5 V/m; Power Drift = 0.0255 dB
Peak SAR (extrapolated) = 4.33 W/kg
**SAR(1 g) = 2.95 mW/g; SAR(10 g) = 1.9 mW/g**
Maximum value of SAR (measured) = 3.22 mW/g
**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:
dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 55.5 V/m; Power Drift = 0.0255 dB
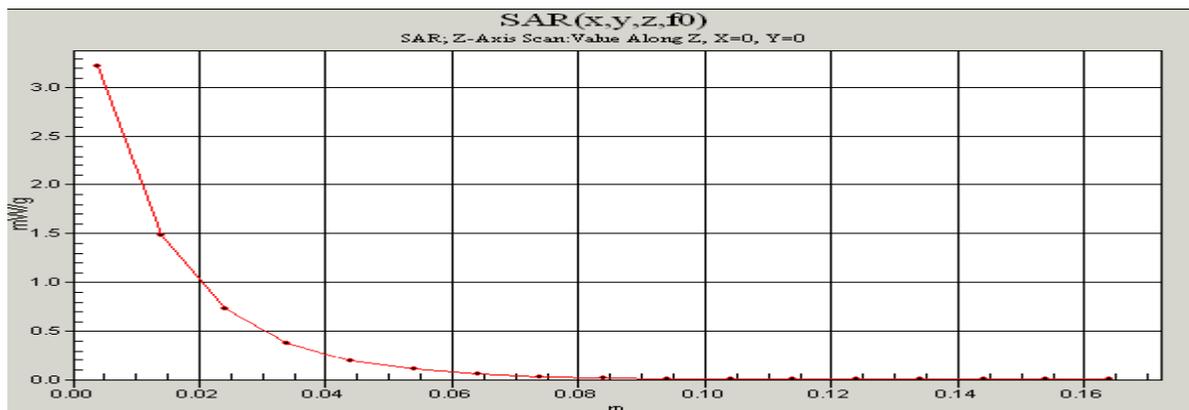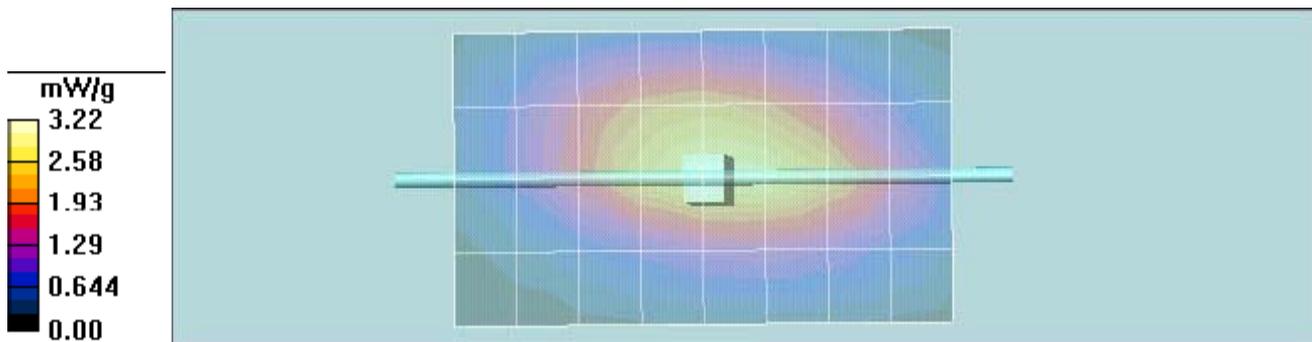Peak SAR (extrapolated) = 4.38 W/kg
**SAR(1 g) = 2.99 mW/g; SAR(10 g) = 1.93 mW/g**
Maximum value of SAR (measured) = 3.25 mW/g
**System Performance Check/Dipole Area Scan (5x9x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.99 mW/g
**System Performance Check/Z-Axis Scan (1x1x17):** Measurement grid: dx=20mm, dy=20mm,
dz=10mm

**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 9/23/05**
**Motorola GEMS EME Lab**
Run #: ErC-SYSP-900B-050923-01
Sim.Tissue Temp: 20.8 (C)
TX Freq: 900(MHz) Start power: 250 (mW)

Target: 11.41 mW/g for 1g SAR 7.43 mW/g for 10g SAR
11.86 mW/g calculated 1g-SAR; 3.98 % from target (including drift)
7.62 mW/g calculated 10g-SAR; 2.54 % 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, $\varepsilon r$ = 52.4; $\rho$ = 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 = 55.4 V/m; Power Drift = 0.0348 dB
Peak SAR (extrapolated) = 4.36 W/kg
**SAR(1 g) = 2.97 mW/g; SAR(10 g) = 1.91 mW/g**
Maximum value of SAR (measured) = 3.23 mW/g
**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:
dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 55.4 V/m; Power Drift = 0.0348 dB
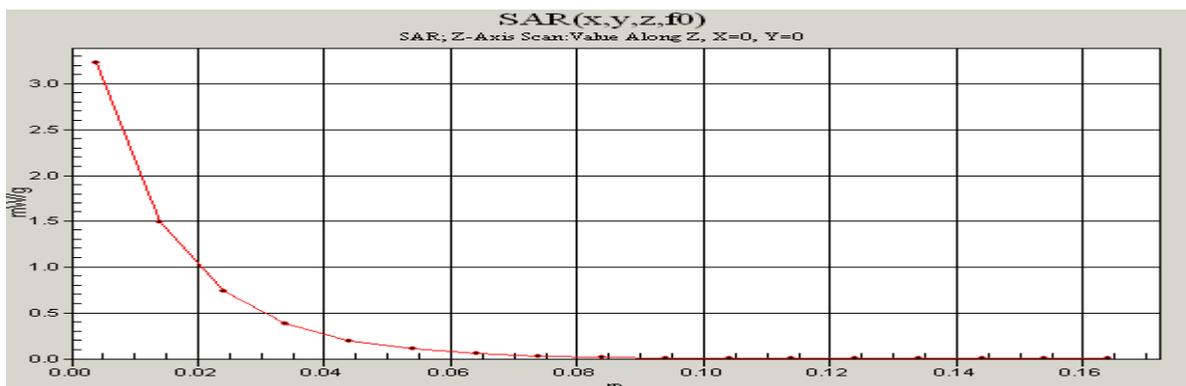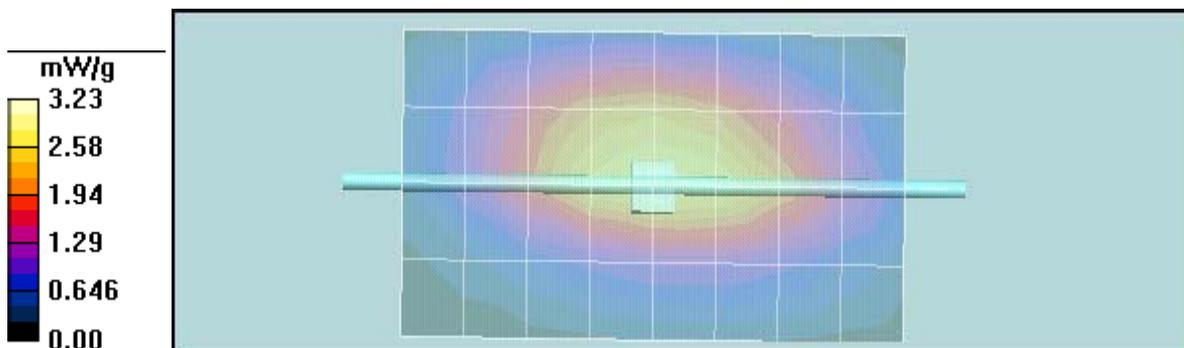Peak SAR (extrapolated) = 4.43 W/kg
**SAR(1 g) = 3.01 mW/g; SAR(10 g) = 1.93 mW/g**
Maximum value of SAR (measured) = 3.29 mW/g
**System Performance Check/Dipole Area Scan (5x9x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.97 mW/g
**System Performance Check/Z-Axis Scan (1x1x17):** Measurement grid: dx=20mm, dy=20mm,
dz=10mm

**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 9/24/05**
**Motorola GEMS EME Lab**
Run #: ErC-SYSP-900B-050924-01
Sim.Tissue Temp: 20.6 (C)
TX Freq: 900(MHz) Start power: 250 (mW)


Target: 11.41 mW/g for 1g SAR 7.43 mW/g for 10g SAR
11.97 mW/g calculated 1g-SAR; 4.94 % from target (including drift)
7.69 mW/g calculated 10g-SAR; 3.48 % 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, $\varepsilon r$ = 52.9; $\rho$ = 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 = 55.6 V/m; Power Drift = -0.00478 dB
Peak SAR (extrapolated) = 4.38 W/kg
**SAR(1 g) = 2.97 mW/g; SAR(10 g) = 1.91 mW/g**
Maximum value of SAR (measured) = 3.25 mW/g
**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:
dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 55.6 V/m; Power Drift = -0.00478 dB
Peak SAR (extrapolated) = 4.41 W/kg
**SAR(1 g) = 3.01 mW/g; SAR(10 g) = 1.93 mW/g**
Maximum value of SAR (measured) = 3.23 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 Scan (1x1x17):** Measurement grid: dx=20mm, dy=20mm,
dz=10mm
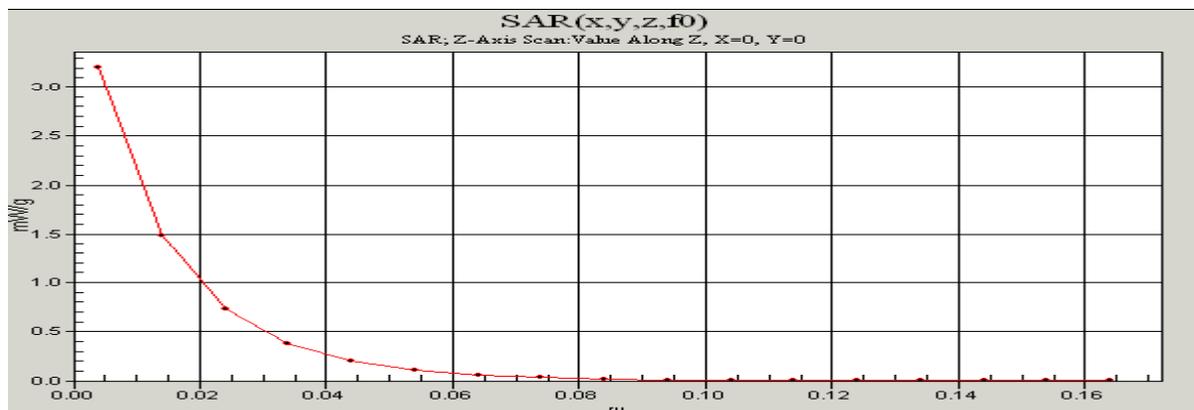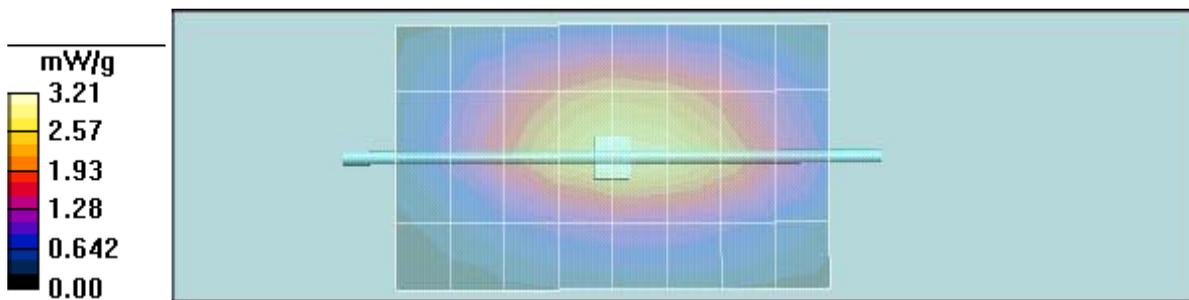
**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 9/25/05**
**Motorola GEMS EME Lab**
Run #: ErC-SYSP-900B-050925-01
Sim.Tissue Temp: 20.6 (C)
TX Freq: 900(MHz) Start power: 250 (mW)

Target: 11.41 mW/g for 1g SAR 7.43 mW/g for 10g SAR
11.80 mW/g calculated 1g-SAR; 3.39 % from target (including drift)
7.59 mW/g calculated 10g-SAR; 2.09 % 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, $\varepsilon$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 = 55.1 V/m; Power Drift = 0.0084 dB
Peak SAR (extrapolated) = 4.29 W/kg
**SAR(1 g) = 2.93 mW/g; SAR(10 g) = 1.89 mW/g**
Maximum value of SAR (measured) = 3.18 mW/g
**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:
dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 55.1 V/m; Power Drift = 0.0084 dB
Peak SAR (extrapolated) = 4.35 W/kg
**SAR(1 g) = 2.98 mW/g; SAR(10 g) = 1.91 mW/g**
Maximum value of SAR (measured) = 3.23 mW/g
**System Performance Check/Dipole Area Scan (5x9x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.95 mW/g
**System Performance Check/Z-Axis Scan (1x1x17):** Measurement grid: dx=20mm, dy=20mm,
dz=10mm
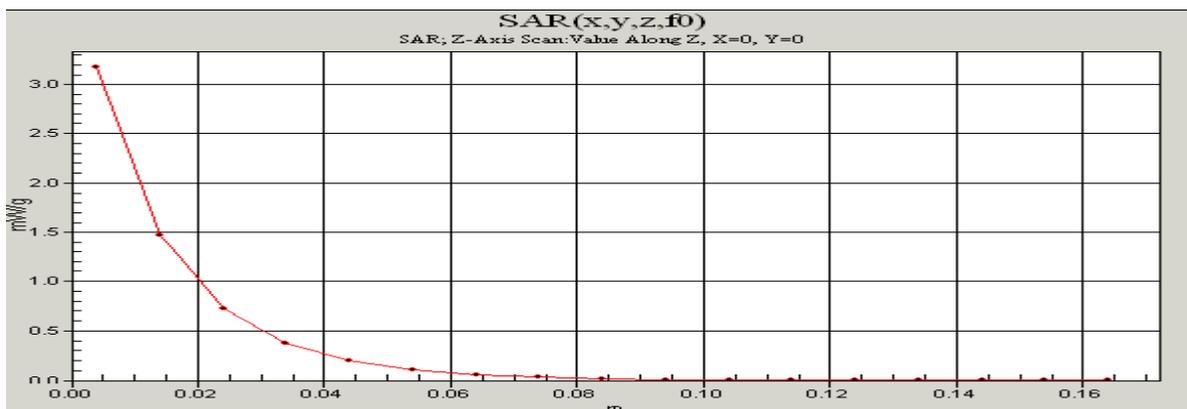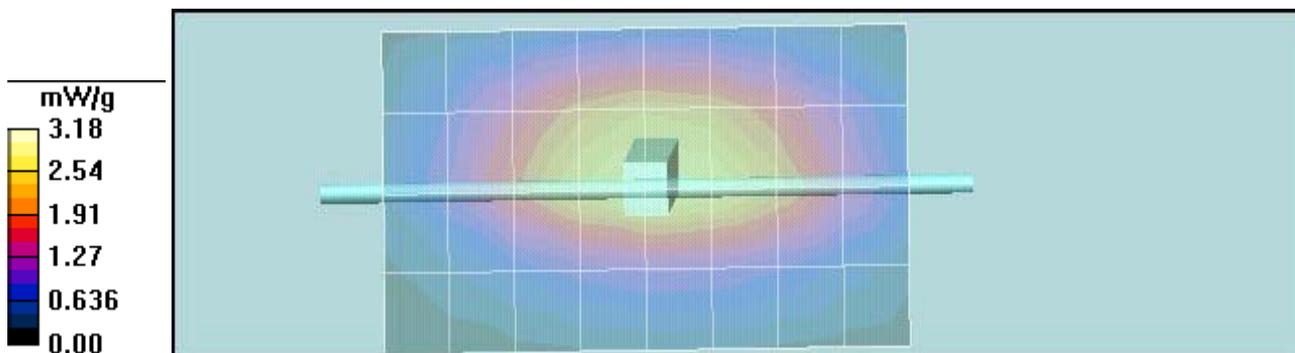
**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 9/26/05**
**Motorola GEMS EME Lab**
Run #: ErC-SYSP-900H-050926-01
Sim.Tissue Temp: 20.9 (C)
TX Freq: 900(MHz) Start power: 250 (mW)

Target: 11.26 mW/g for 1g SAR 7.21 mW/g for 10g SAR
11.59 mW/g calculated 1g-SAR; 2.91 % from target (including drift)
7.37 mW/g calculated 10g-SAR; 2.20 % 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, $\varepsilon$r = 40.8; $\rho$ = 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 = 57.0 V/m; Power Drift = -0.0407 dB
Peak SAR (extrapolated) = 4.32 W/kg
**SAR(1 g) = 2.86 mW/g; SAR(10 g) = 1.82 mW/g**
Maximum value of SAR (measured) = 3.10 mW/g
**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:
dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 57.0 V/m; Power Drift = -0.0407 dB
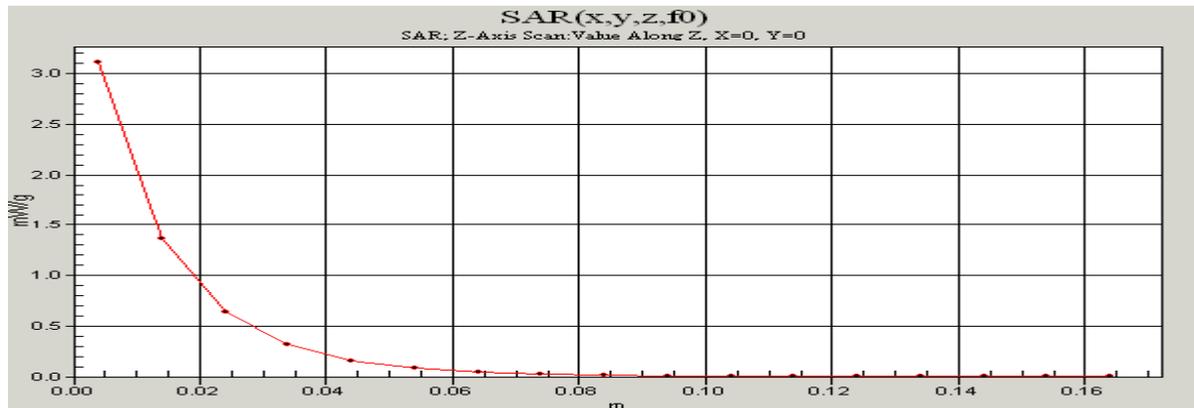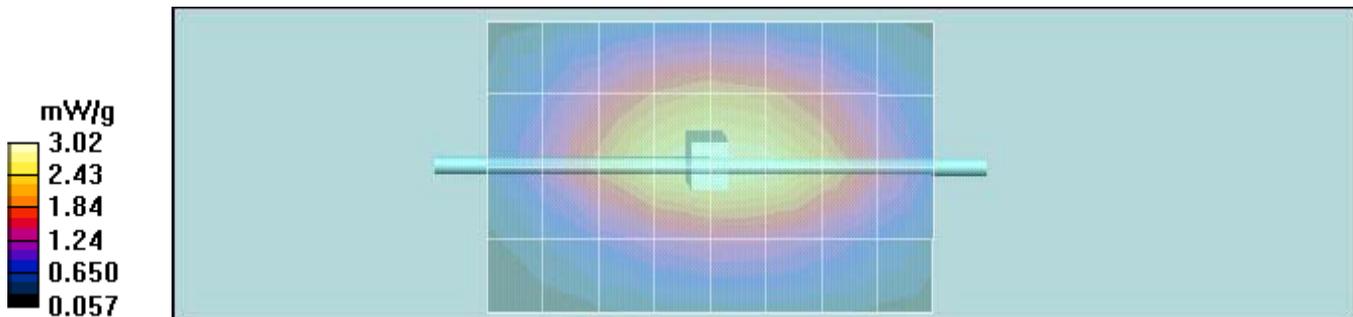Peak SAR (extrapolated) = 4.38 W/kg
**SAR(1 g) = 2.88 mW/g; SAR(10 g) = 1.83 mW/g**
Maximum value of SAR (measured) = 3.12 mW/g
**System Performance Check/Dipole Area Scan (5x9x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 3.02 mW/g
**System Performance Check/Z-Axis Scan (1x1x17):** Measurement grid: dx=20mm, dy=20mm,
dz=10mm

**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 9/28/05**
**Motorola GEMS EME Lab**
Run #: ErC-SYSP-900B-050928-01
Sim.Tissue Temp: 20.6 (C)
TX Freq: 900(MHz) Start power: 250 (mW)


Target: 11.41 mW/g for 1g SAR 7.43 mW/g for 10g SAR
11.88 mW/g calculated 1g-SAR; 4.10 % from target (including drift)
7.68 mW/g calculated 10g-SAR; 3.34 % 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, $\varepsilon r$ = 52.3; $\rho$ = 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 = 56.3 V/m; Power Drift = 0.000844 dB
Peak SAR (extrapolated) = 4.26 W/kg
**SAR(1 g) = 2.94 mW/g; SAR(10 g) = 1.9 mW/g**
Maximum value of SAR (measured) = 3.19 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 = 0.000844 dB
Peak SAR (extrapolated) = 4.34 W/kg
**SAR(1 g) = 3 mW/g; SAR(10 g) = 1.94 mW/g**
Maximum value of SAR (measured) = 3.25 mW/g
**System Performance Check/Dipole Area Scan (5x9x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 3.03 mW/g
**System Performance Check/Z-Axis Scan (1x1x17):** Measurement grid: dx=20mm, dy=20mm,
dz=10mm
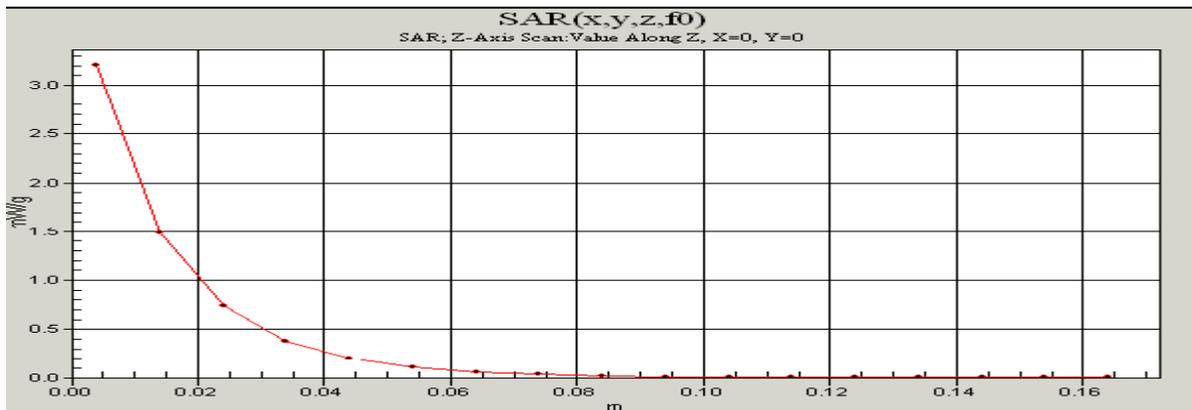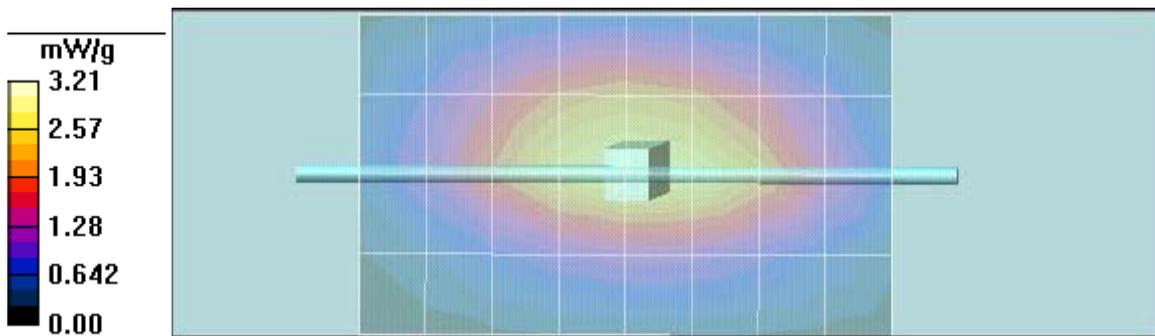
**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 9/29/05**
**Motorola GEMS EME Lab**
Run #: ErC-SYSP-900H-050929-01
Sim.Tissue Temp: 21.3 (C)
TX Freq: 900(MHz) Start power: 250 (mW)


Target: 11.26 mW/g for 1g SAR 7.21 mW/g for 10g SAR
11.64 mW/g calculated 1g-SAR; 3.37 % from target (including drift)
7.60 mW/g calculated 10g-SAR; 5.38 % 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 mho/m, $\varepsilon$r = 40.6; $\rho$ = 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 = 55.4 V/m; Power Drift = -0.0447 dB
Peak SAR (extrapolated) = 4.33 W/kg
**SAR(1 g) = 2.86 mW/g; SAR(10 g) = 1.82 mW/g**
Maximum value of SAR (measured) = 3.11 mW/g
**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:
dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 55.4 V/m; Power Drift = -0.0447 dB
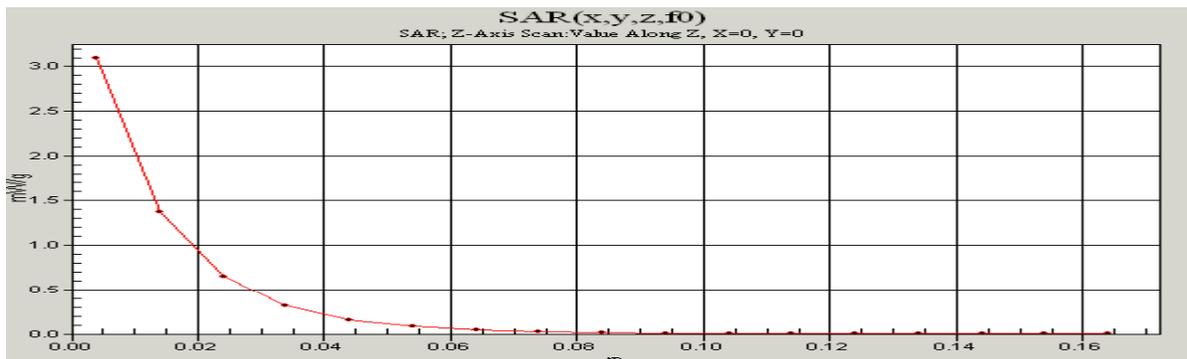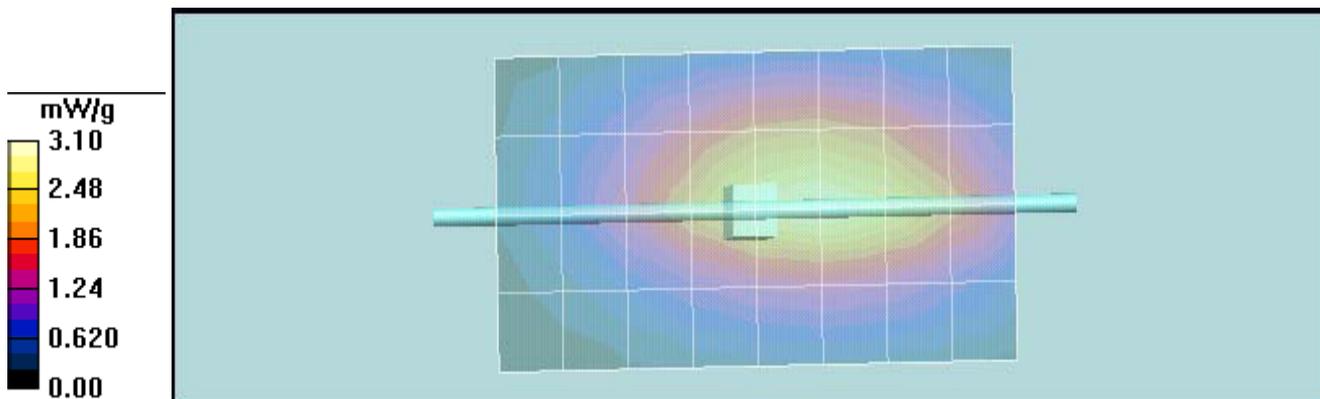Peak SAR (extrapolated) = 4.40 W/kg
**SAR(1 g) = 2.9 mW/g; SAR(10 g) = 1.84 mW/g**
Maximum value of SAR (measured) = 3.14 mW/g
**System Performance Check/Dipole Area Scan (5x9x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 3.05 mW/g
**System Performance Check/Z-Axis Scan (1x1x17):** Measurement grid: dx=20mm, dy=20mm,
dz=10mm

**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 9/30/05**
**Motorola GEMS EME Lab**
Run #: ErC-SYSP-900H-050930-01
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
11.71 mW/g calculated 1g-SAR; 4.02 % from target (including drift)
7.43 mW/g calculated 10g-SAR; 3.10 % 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, $\varepsilon r$ = 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 = 57.7 V/m; Power Drift = -0.0195 dB
Peak SAR (extrapolated) = 4.40 W/kg
**SAR(1 g) = 2.9 mW/g; SAR(10 g) = 1.84 mW/g**
Maximum value of SAR (measured) = 3.15 mW/g
**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:
dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 57.7 V/m; Power Drift = -0.0195 dB
Peak SAR (extrapolated) = 4.43 W/kg
**SAR(1 g) = 2.93 mW/g; SAR(10 g) = 1.86 mW/g**
Maximum value of SAR (measured) = 3.13 mW/g
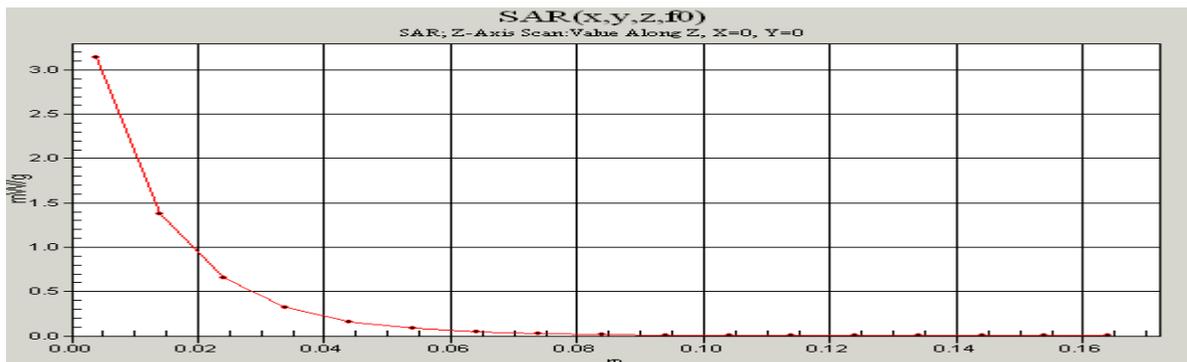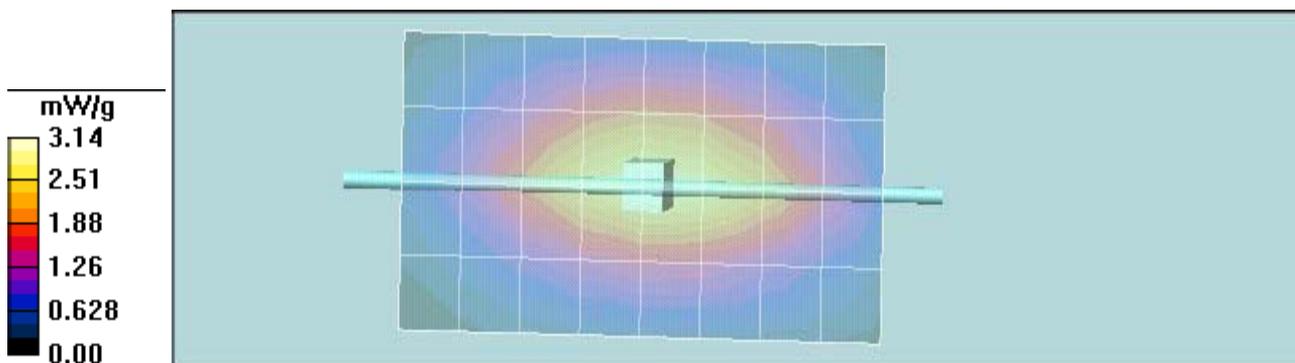**System Performance Check/Dipole Area Scan (5x9x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 3.11 mW/g
**System Performance Check/Z-Axis Scan (1x1x17):** Measurement grid: dx=20mm, dy=20mm,
dz=10mm

## 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
Permitivity:             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, $\varepsilon_r = 52.9$; $\rho = 1000$ 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 = 56.3 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
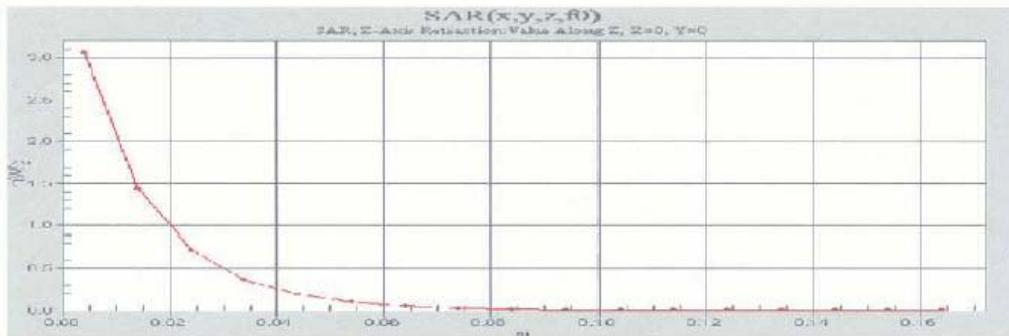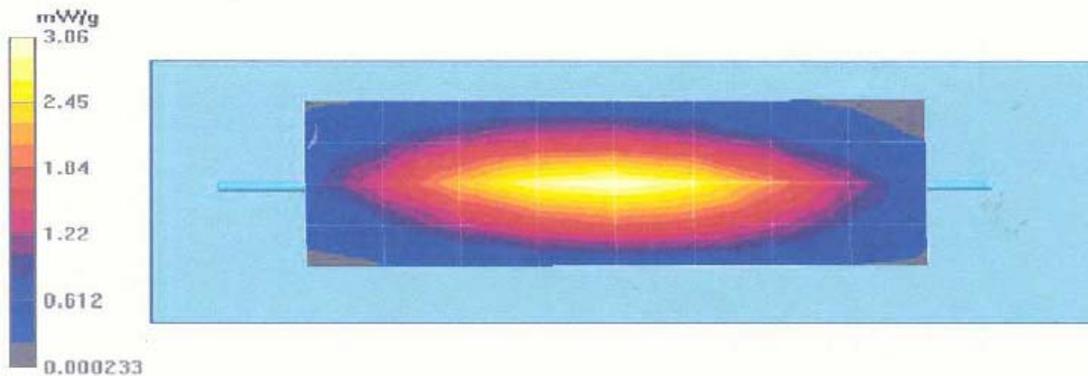Reference Value = 56.3 V/m; Power Drift = 0.003 dB
Peak SAR (extrapolated) = 4.1 W/kg
**SAR(1 g) = 2.88 mW/g; SAR(10 g) = 1.88 mW/g**
Maximum value of SAR (measured) = 3.14 mW/g

### 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

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, $\varepsilon_r$ = 52.9; $\rho$ = 1000 kg/m$^3$
Electronics: DAE3 Sn406, Calibrated: 11/17/2004


## System Performance Check/Zoom Scan (4x4x7)/Cube 0: Measurement grid: dx=10mm, dy=10mm, dz=5mm
Reference Value = 56.3 V/m; Power Drift = not measured
Maximum value of SAR (measured) = 0.00112 mW/g
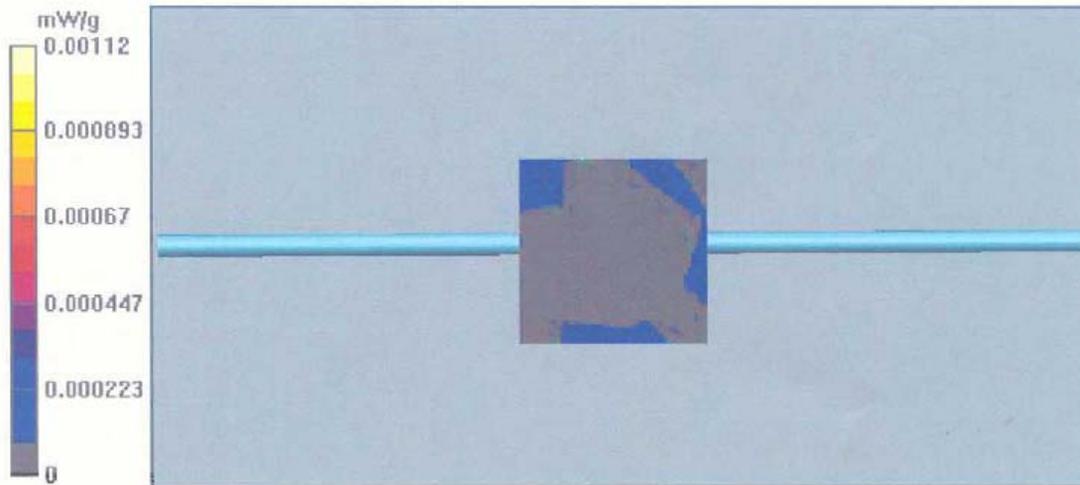
## SYSTEM VALIDATION

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
Permitivity:           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,  7.21  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:

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: $\sigma = 1$; mho/m, $\varepsilon_r = 41.6$; $\rho = 1000$ kg/m$^3$
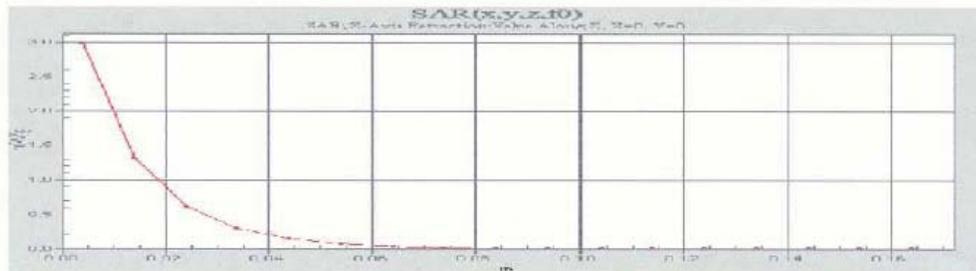Electronics: DAE3 Sn406, Calibrated: 11/17/2004

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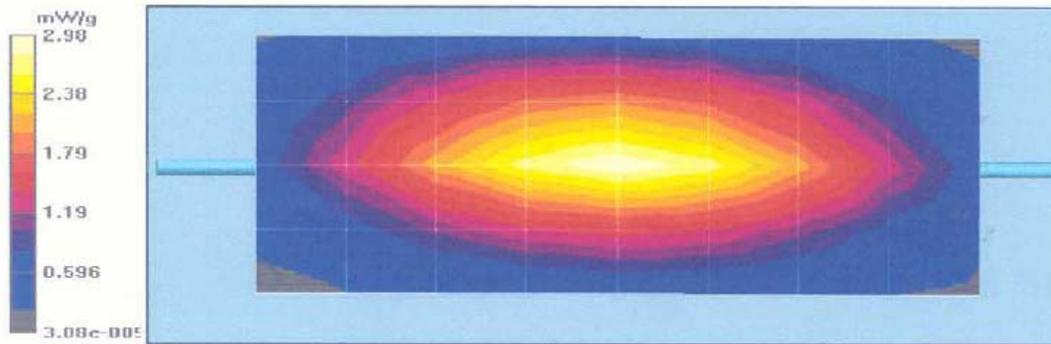Maximum value of SAR (measured) = 2.98 mW/g

### 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

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: $\sigma = 1$; mho/m, $\varepsilon_r = 41.6$; $\rho = 1000$ kg/m$^3$
Electronics: DAE3 Sn406, Calibrated: 11/17/2004

## System Performance Check/Zoom Scan (4x4x7)/Cube 0: Measurement grid: dx=10mm, dy=10mm, dz=5mm
Reference Value = 56.7 V/m; Power Drift = not measured
Maximum value of SAR (measured) = 0.00027 mW/g