



**MOTOROLA**



Certificate Number: 1449-01

**FCC ID: AZ489FT3807  
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 15, 2006  
**Report Revision:** Rev. 0  
**Report ID:** PCII rpt\_XTS2500 VHF Submersible\_Rev 0\_060315  
SR3669\_3742

**Responsible Engineer:** Deanna Zakharia (Elect. Principle Staff Eng.)  
**Date/s Tested:** 3/1/2006-3/8/2006  
**Manufacturer/Location:** Motorola, Penang  
**Sector/Group/Div.:** GEMS  
**Date submitted for test:** 2/17/2006  
**DUT Description:** Portable Transceiver; 1-5W, Digital, 512 channels, 3x6 keypad, 6-line display, submersible and secure option & no display or keypad, submersible Non secured  
**Test TX mode(s):** CW  
**Max. Power output:** 5.7 Watts  
**Nominal Power:** 5.0 Watts  
**Tx Frequency Bands:** 136-174 MHz  
**Signaling type:** FM  
**Model(s) Tested:** PMUD2154A/H46KDH9PW7BN & PMUD2145A/H46KDC9PW5BN  
**Model(s) Certified:** PMUD2154A/H46KDH9PW7BN & PMUD2145A/H46KDC9PW5BN  
**Serial Number(s):** 407T000035 & 407T000004  
**Classification:** Occupational/Controlled  
**Rule Part(s):** 90



**Approved Accessories:**

**Antenna(s):**  
NAD6563A (Whip 136-174MHz ¼ wave; -10.0dBi); NAD6566A (136-150.8MHz ¼ wave; -9dBi);  
NAD6567A (150.8-162MHz ¼ wave; -8dBi); NAD6568A (162-174MHz ¼ wave; -7dBi)

**Battery(ies):**  
NNTN6263A (JedRay NiMH Impress FM Submersible.), NTN9857C (Nickel Metal Hydride Ultra-Hi Capacity Factory Mutual Intrinsicly Safe 1800 mAh), NTN9816A (NiCAD Hi Capacity Factory Mutual Intrinsicly Safe 1525 mAh), NTN9815B (NiCAD Hi Capacity 1525 mAh), NTN9858B (Nickel Metal Hydride Ultra-Hi Capacity 1800 mAh)

**Body worn accessory:**

NNTN4115A (Bonded case 3 inch loop with swivel), NNTN4116A (Bonded case 2.5 inch loop with swivel), NNTN4117A (Bonded case belt loop 3 inch), HLN9844A (2 inch belt clip), HLN6853A (2.25 inch belt clip), TDN9675B (Wrist strap for carrying radio), NLN6349A (Shoulder strap for carrying radio), NTN5243A (Shoulder strap for carrying radio)

**Audio Accessories**

See section 3.0 for list of approved audio acc.

**Max. Calc. 1-g/10-g Avg. SAR: 2.37/1.47 mW/g (Body-worn)**

**Max. Calc. 1-g/10-g Avg. SAR: 1.89/1.40 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: 3/16/2006**

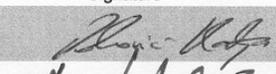
**Certification Date: 3/16/2006**

**Certification No.: L1060362 & L1060323**

**APPENDIX C**  
**Dipole Calibration Certificates**

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

**Client** **Motorola CGISS**

CALIBRATION CERTIFICATE																																			
Object(s)	D300V2 - SN:1002																																		
Calibration procedure(s)	QA CAL-15.v2 Calibration procedure for dipole validation kits below 800 MHz																																		
Calibration date:	May 29, 2004																																		
Condition of the calibrated item	In Tolerance (according to the specific calibration document)																																		
<p>This calibration statement documents traceability of M&amp;TE used in the calibration procedures and conformity of the procedures with the ISO/IEC 17025 international standard.</p> <p>All calibrations have been conducted in the closed laboratory facility: environment temperature 22 +/- 2 degrees Celsius and humidity &lt; 75%.</p> <p>Calibration Equipment used (M&amp;TE critical for calibration)</p> <table border="1"> <thead> <tr> <th>Model Type</th> <th>ID #</th> <th>Cal Date (Calibrated by, Certificate No.)</th> <th>Scheduled Calibration</th> </tr> </thead> <tbody> <tr> <td>Power meter EPM E4419B</td> <td>GB41293874</td> <td>5-May-04 (METAS, No 251-00388)</td> <td>May-05</td> </tr> <tr> <td>Power sensor E4412A</td> <td>MY41495277</td> <td>5-May-04 (METAS, No 251-00388)</td> <td>May-05</td> </tr> <tr> <td>Reference 20 dB Attenuator</td> <td>SN: 5086 (20b)</td> <td>3-May-04 (METAS, No 251-00389)</td> <td>May-05</td> </tr> <tr> <td>Fluke Process Calibrator Type 702</td> <td>SN: 6295803</td> <td>8-Sep-03 (Sintrel SCS No. E-030020)</td> <td>Sep-04</td> </tr> <tr> <td>Power sensor HP 8481A</td> <td>MY41092180</td> <td>18-Sep-02 (SPEAG, in house check Oct-03)</td> <td>In house check: Oct 05</td> </tr> <tr> <td>RF generator HP 8684C</td> <td>US3642U01700</td> <td>4-Aug-99 (SPEAG, in house check Aug-02)</td> <td>In house check: Aug-05</td> </tr> <tr> <td>Network Analyzer HP 8753E</td> <td>US37390585</td> <td>18-Oct-01 (SPEAG, in house check Oct-03)</td> <td>In house check: Oct 05</td> </tr> </tbody> </table>				Model Type	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration	Power meter EPM E4419B	GB41293874	5-May-04 (METAS, No 251-00388)	May-05	Power sensor E4412A	MY41495277	5-May-04 (METAS, No 251-00388)	May-05	Reference 20 dB Attenuator	SN: 5086 (20b)	3-May-04 (METAS, No 251-00389)	May-05	Fluke Process Calibrator Type 702	SN: 6295803	8-Sep-03 (Sintrel SCS No. E-030020)	Sep-04	Power sensor HP 8481A	MY41092180	18-Sep-02 (SPEAG, in house check Oct-03)	In house check: Oct 05	RF generator HP 8684C	US3642U01700	4-Aug-99 (SPEAG, in house check Aug-02)	In house check: Aug-05	Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Oct-03)	In house check: Oct 05
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Calibrated by:	Name Katja Pokovic	Function Laboratory Director	Signature 																																
Approved by:	Name Niels Kuster	Function Quality Manager	Signature 																																
Date issued: May 29, 2004																																			
<p>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 &amp; Partner Engineering AG is completed.</p>																																			

D300V2- SN:1002

**1. Measurement Conditions**

The measurements were performed in the 6mm thick flat phantom filled with **head** simulating liquid of the following electrical parameters at 300 MHz:

Relative Dielectricity	<b>45.8</b>	± 5%
Conductivity	<b>0.89 mho/m</b>	± 5%

The DASY4 System with a dosimetric E-field probe ET3DV6 (SN:1507, Conversion factor 8.75 at 300 MHz) was used for the measurements.

The dipole was mounted on the small tripod so that the dipole feedpoint was positioned below the center of the flat phantom and the dipole was oriented parallel to the longer side of the phantom. The standard measuring distance was 15mm from dipole center to the liquid surface including the 6mm thick phantom shell. 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 398 mW ± 3 %. The results are normalized to 1W input power.

**2. SAR Measurement with DASY 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 <sup>3</sup> (1 g) of tissue:	<b>2.81 mW/g ± 20.7 % (k=2)<sup>1</sup></b>
averaged over 10 cm <sup>3</sup> (10 g) of tissue:	<b>1.87 mW/g ± 20.2 % (k=2)<sup>1</sup></b>

<sup>1</sup> validation uncertainty

May 04



Test Laboratory: SPEAG, Zurich, Switzerland  
DUT: Dipole 300 MHz; Serial: D300V2 - SN:1002

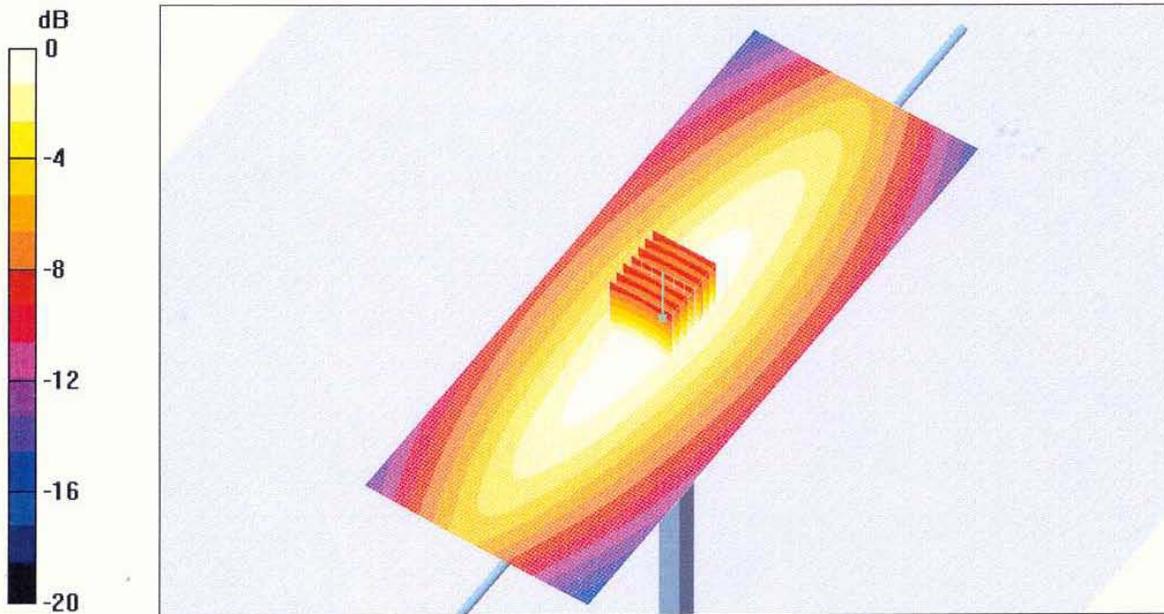
Communication System: CW; Duty Cycle: 1:1; Medium: HSL300  
Medium parameters used:  $f = 300 \text{ MHz}$ ;  $\sigma = 0.89 \text{ mho/m}$ ;  $\epsilon_r = 45.8$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom: Flat Phantom 4.4; Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ET3DV6 - SN1507 (low frequencies); ConvF(8.75, 8.75, 8.75);
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 600; Calibrated: 9/30/2003
- Measurement SW: DASY4, V4.2 Build 44;

**d=15mm, Pin=398mW/Area Scan (71x181x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Reference Value = 37.6 V/m; Power Drift = -0.2 dB  
Maximum value of SAR (interpolated) = 1.19 mW/g

**d=15mm, Pin=398mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$   
Reference Value = 37.6 V/m; Power Drift = -0.2 dB  
Maximum value of SAR (measured) = 1.19 mW/g  
Peak SAR (extrapolated) = 1.77 W/kg  
SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.744 mW/g



0 dB = 1.19mW/g

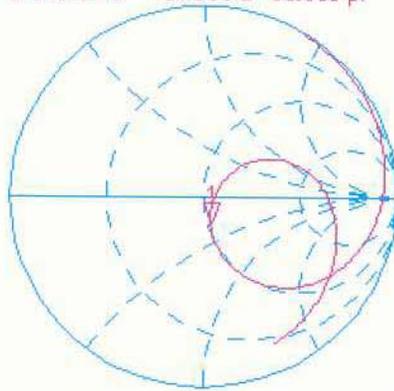
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Del

Cor

Avg  
16

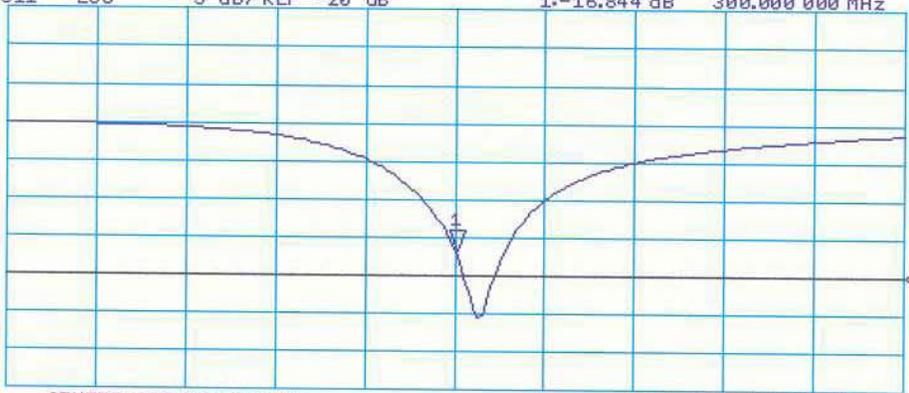
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CH2 S11 LOG 5 dB/REF -20 dB 1: -16.844 dB 300.000 000 MHz

Cor

↑



CENTER 300.000 000 MHz

SPAN 400.000 000 MHz

## **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 300 MHz Dipole; Model D300V2, SN 1002; Test Date: 3/1/06**

**Motorola GEMS EME Lab**

Run #: HvH-SYSP-300B-060301-02

Sim.Tissue Temp: 21.1 (C)

TX Freq: 300(MHz) Start power: 250 (mW)

Target: 2.79 mW/g for 1g SAR 1.83 mW/g for 10g SAR  
 2.69 mW/g calculated 1g-SAR; -3.60 % from target (including drift)  
 1.76 mW/g calculated 10g-SAR; -3.55 % from target (including drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/26/2005, ConvF(8, 8, 8)

Duty Cycle: 1:1, Medium: 300MHz FCC Body, Medium parameters used:  $f = 300$  MHz;  $\sigma = 0.91$  mho/m;  $\epsilon_r = 58.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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 = 27.6 V/m; Power Drift = -0.00238 dB

Peak SAR (extrapolated) = 1.16 W/kg

**SAR(1 g) = 0.664 mW/g; SAR(10 g) = 0.436 mW/g**

Maximum value of SAR (measured) = 0.698 mW/g

**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 27.6 V/m; Power Drift = -0.00238 dB

Peak SAR (extrapolated) = 1.19 W/kg

**SAR(1 g) = 0.680 mW/g; SAR(10 g) = 0.446 mW/g**

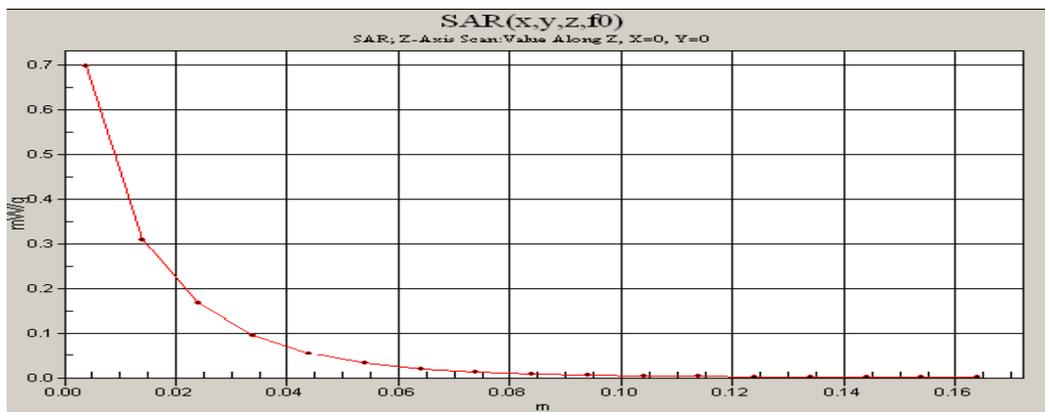
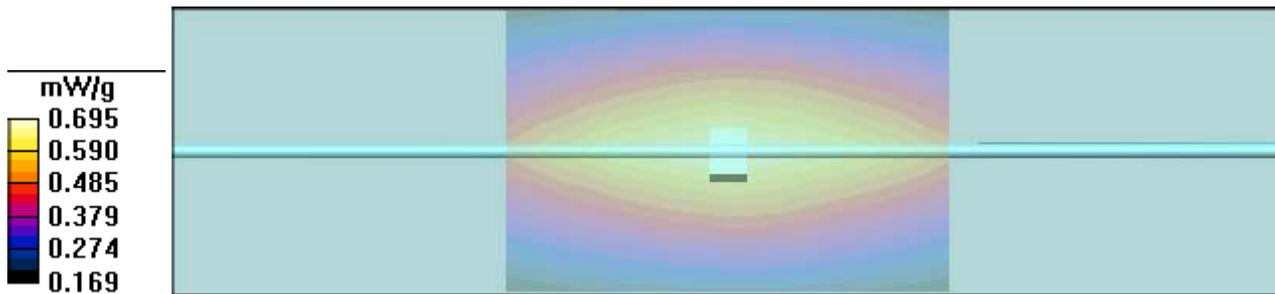
Maximum value of SAR (measured) = 0.711 mW/g

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

Maximum value of SAR (measured) = 0.695 mW/g

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

dz=10mm



**SPEAG 300 MHz Dipole; Model D300V2, SN 1002; Test Date: 3/2/06**

**Motorola GEMS EME Lab**

Run #: ErC-SYSP-300B-060302-01

Sim.Tissue Temp: 21.1 (C)

TX Freq: 300(MHz) Start power: 250 (mW)

Target: 2.79 mW/g for 1g SAR 1.83 mW/g for 10g SAR  
 2.74 mW/g calculated 1g-SAR; -1.75 % from target (including drift)  
 1.81 mW/g calculated 10g-SAR; -1.32 % from target (including drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/26/2005, ConvF(8, 8, 8),

Duty Cycle: 1:1, Medium: 300MHz FCC Body, Medium parameters used:  $f = 300$  MHz;  $\sigma = 0.93$  mho/m;  $\epsilon_r = 58.9$ ;  $\rho = 1000$  kg/m<sup>3</sup> ;

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 = 27.3 V/m; Power Drift = -0.00336 dB

Peak SAR (extrapolated) = 1.18 W/kg

**SAR(1 g) = 0.673 mW/g; SAR(10 g) = 0.443 mW/g**

Maximum value of SAR (measured) = 0.706 mW/g

**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 27.3 V/m; Power Drift = -0.00336 dB

Peak SAR (extrapolated) = 1.20 W/kg

**SAR(1 g) = 0.687 mW/g; SAR(10 g) = 0.452 mW/g**

Maximum value of SAR (measured) = 0.720 mW/g

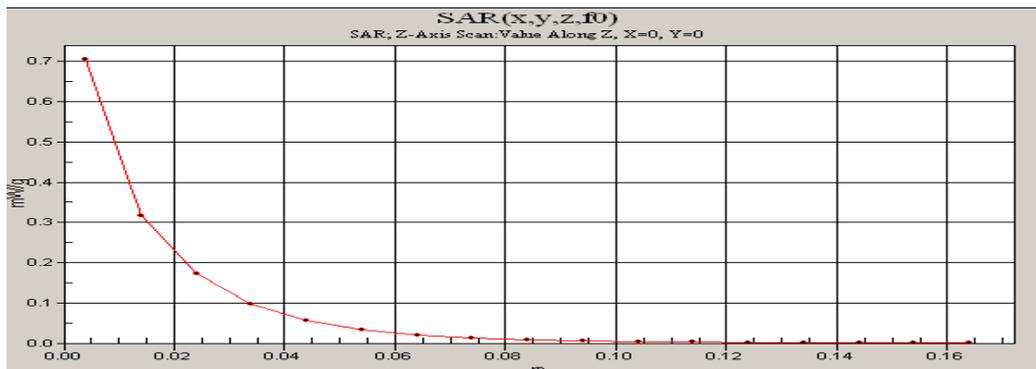
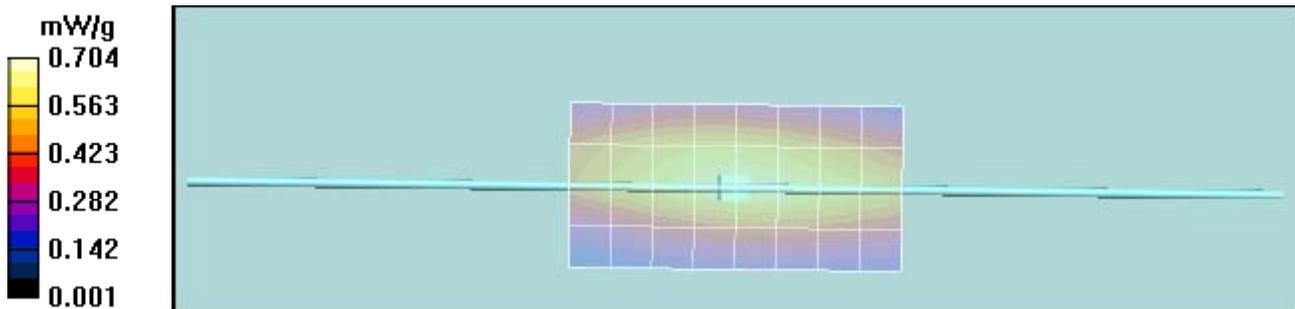
**System Performance Check/Dipole Area Scan (5x9x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.688 mW/g

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

dz=10mm

Maximum value of SAR (measured) = 0.704 mW/g



**SPEAG 300 MHz Dipole; Model D300V2, SN 1002; Test Date: 3/3/06**

**Motorola GEMS EME Lab**

Run #: ErC-SYSP-300B-060303-14

Sim.Tissue Temp: 20.9 (C)

TX Freq: 300(MHz) Start power: 250 (mW)

Target: 2.79 mW/g for 1g SAR 1.83 mW/g for 10g SAR  
 2.64 mW/g calculated 1g-SAR; -5.22 % from target (including drift)  
 1.74 mW/g calculated 10g-SAR; -4.70 % from target (including drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/26/2005, ConvF(8, 8, 8),

Duty Cycle: 1:1, Medium: 300MHz FCC Body, Medium parameters used:  $f = 300$  MHz;  $\sigma = 0.9$  mho/m;  $\epsilon_r = 58.2$ ;  $\rho = 1000$  kg/m<sup>3</sup> ;

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 = 27.6 V/m; Power Drift = -0.0602 dB

Peak SAR (extrapolated) = 1.12 W/kg

**SAR(1 g) = 0.644 mW/g; SAR(10 g) = 0.426 mW/g**

Maximum value of SAR (measured) = 0.674 mW/g

**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 27.6 V/m; Power Drift = -0.0602 dB

Peak SAR (extrapolated) = 1.16 W/kg

**SAR(1 g) = 0.660 mW/g; SAR(10 g) = 0.434 mW/g**

Maximum value of SAR (measured) = 0.692 mW/g

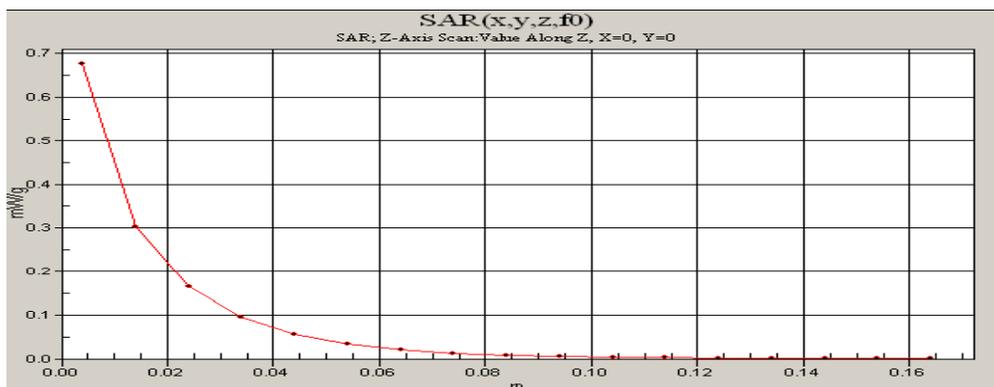
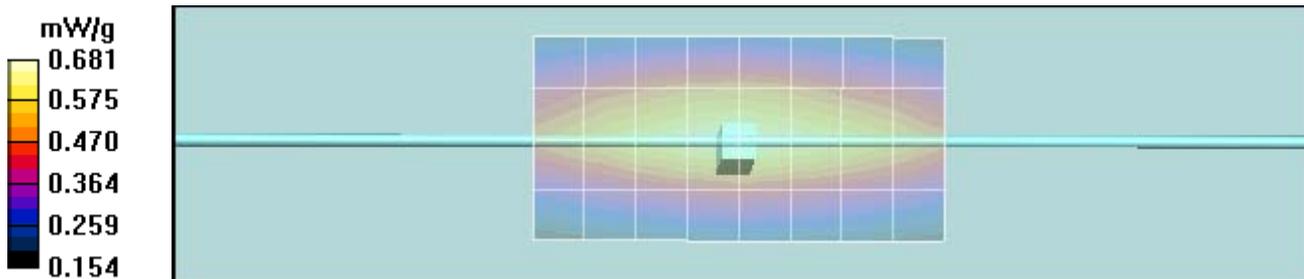
**System Performance Check/Dipole Area Scan (5x9x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.681 mW/g

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

dz=10mm

Maximum value of SAR (measured) = 0.677 mW/g



**SPEAG 300 MHz Dipole; Model D300V2, SN 1002; Test Date: 3/4/06**

**Motorola GEMS EME Lab**

Run #: JsT-SYSP-300H-060304-10

Sim.Tissue Temp: 20.9 (C)

TX Freq: 300(MHz) Start power: 250 (mW)

Target: 2.85 mW/g for 1g SAR 1.87 mW/g for 10g SAR  
 2.85 mW/g calculated 1g-SAR; 0.12 % from target (including drift)  
 1.86 mW/g calculated 10g-SAR; -0.48 % from target (including drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/26/2005, ConvF(8, 8, 8)

Duty Cycle: 1:1, Medium: 300 IEEE Head, Medium parameters used:  $f = 300$  MHz;  $\sigma = 0.88$  mho/m;  $\epsilon_r = 47.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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 = 28.9 V/m; Power Drift = 0.0161 dB

Peak SAR (extrapolated) = 1.25 W/kg

**SAR(1 g) = 0.709 mW/g; SAR(10 g) = 0.463 mW/g**

Maximum value of SAR (measured) = 0.747 mW/g

**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 28.9 V/m; Power Drift = 0.0161 dB

Peak SAR (extrapolated) = 1.27 W/kg

**SAR(1 g) = 0.722 mW/g; SAR(10 g) = 0.471 mW/g**

Maximum value of SAR (measured) = 0.756 mW/g

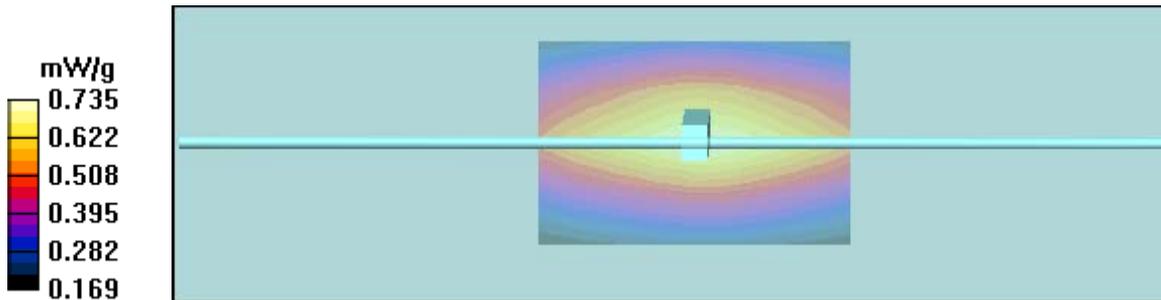
**System Performance Check/Dipole Area Scan (5x9x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.735 mW/g

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

dz=10mm

Maximum value of SAR (measured) = 0.746 mW/g



**SPEAG 300 MHz Dipole; Model D300V2, SN 1002; Test Date: 3/6/06**

**Motorola GEMS EME Lab**

Run #: ErC-SYSP-300H-060306-01

Sim.Tissue Temp: 21.4 (C)

TX Freq: 300(MHz) Start power: 250 (mW)

Target: 2.85 mW/g for 1g SAR 1.87 mW/g for 10g SAR  
 2.74 mW/g calculated 1g-SAR; -3.79 % from target (including drift)  
 1.81 mW/g calculated 10g-SAR; -2.96 % from target (including drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/26/2005, ConvF(8, 8, 8),

Duty Cycle: 1:1, Medium: 300 IEEE Head, Medium parameters used:  $f = 300$  MHz;  $\sigma = 0.87$  mho/m;  $\epsilon_r = 46.8$ ;  $\rho = 1000$  kg/m<sup>3</sup> ;

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 = 28.7 V/m; Power Drift = -0.0159 dB

Peak SAR (extrapolated) = 1.23 W/kg

**SAR(1 g) = 0.688 mW/g; SAR(10 g) = 0.448 mW/g**

Maximum value of SAR (measured) = 0.722 mW/g

**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 28.7 V/m; Power Drift = -0.016 dB

Peak SAR (extrapolated) = 1.24 W/kg

**SAR(1 g) = 0.700 mW/g; SAR(10 g) = 0.455 mW/g**

Maximum value of SAR (measured) = 0.734 mW/g

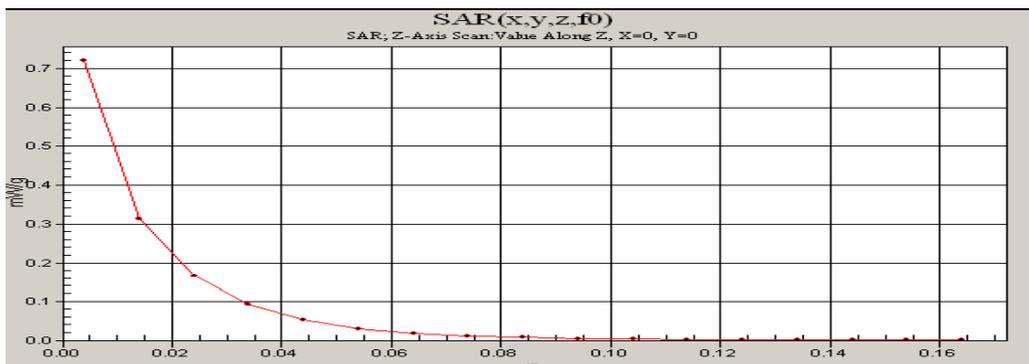
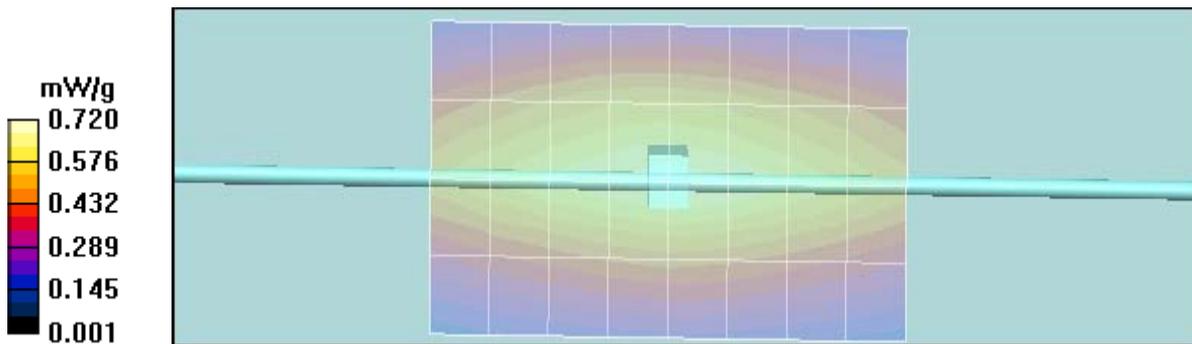
**System Performance Check/Dipole Area Scan (5x9x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.713 mW/g

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

dz=10mm

Maximum value of SAR (measured) = 0.720 mW/g



**SPEAG 300 MHz Dipole; Model D300V2, SN 1002; Test Date: 3/7/06**

**Motorola GEMS EME Lab**

Run #: ErC-SYSP-300B-060307-01

Sim.Tissue Temp: 20.6 (C)

TX Freq: 300(MHz) Start power: 250 (mW)

Target: 2.79 mW/g for 1g SAR 1.83 mW/g for 10g SAR  
 2.76 mW/g calculated 1g-SAR; -1.10 % from target (including drift)  
 1.82 mW/g calculated 10g-SAR; -0.80 % from target (including drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/26/2005, ConvF(8, 8, 8),

Duty Cycle: 1:1, Medium: 300MHz FCC Body, Medium parameters used:  $f = 300$  MHz;  $\sigma = 0.92$  mho/m;  $\epsilon_r = 59.1$ ;  $\rho = 1000$  kg/m<sup>3</sup> ;

Electronics: DAE3 Sn406, Calibrated: 11/21/2005

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

dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 27.6 V/m; Power Drift = -0.0177 dB

Peak SAR (extrapolated) = 1.20 W/kg

**SAR(1 g) = 0.681 mW/g; SAR(10 g) = 0.448 mW/g**

Maximum value of SAR (measured) = 0.717 mW/g

**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 27.6 V/m; Power Drift = -0.0177 dB

Peak SAR (extrapolated) = 1.22 W/kg

**SAR(1 g) = 0.693 mW/g; SAR(10 g) = 0.456 mW/g**

Maximum value of SAR (measured) = 0.727 mW/g

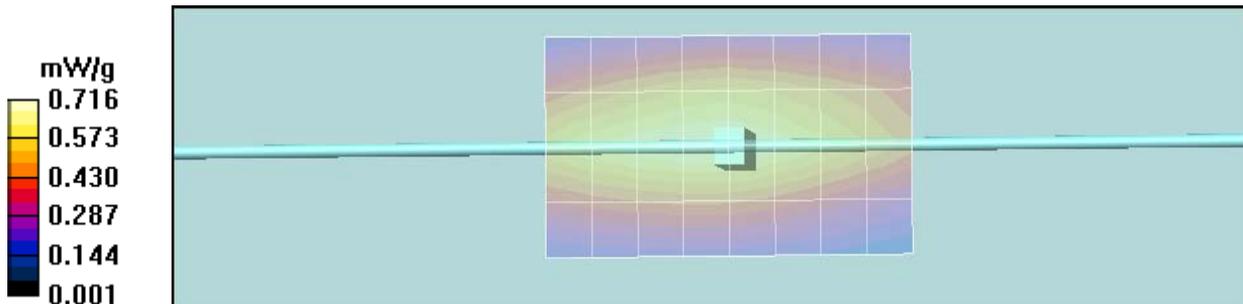
**System Performance Check/Dipole Area Scan (5x9x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.699 mW/g

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

dz=10mm

Maximum value of SAR (measured) = 0.716 mW/g



**SPEAG 300 MHz Dipole; Model D300V2, SN 1002; Test Date: 3/8/06**

**Motorola GEMS EME Lab**

Run #: ErC-SYSP-300B-060308-01

Sim.Tissue Temp: 20.7 (C)

TX Freq: 300(MHz) Start power: 250 (mW)

Target: 2.79 mW/g for 1g SAR 1.83 mW/g for 10g SAR  
2.63 mW/g calculated 1g-SAR; -5.82 % from target (including drift)  
1.73 mW/g calculated 10g-SAR; -5.67 % from target (including drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/26/2005, ConvF(8, 8, 8),

Duty Cycle: 1:1, Medium: 300MHz FCC Body, Medium parameters used: f = 300 MHz;  $\sigma = 0.89$  mho/m;  $\epsilon_r = 58.8$ ;  $\rho = 1000$  kg/m<sup>3</sup> ;

Electronics: DAE3 Sn406, Calibrated: 11/21/2005

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

dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 27.6 V/m; Power Drift = -0.0257 dB

Peak SAR (extrapolated) = 1.14 W/kg

**SAR(1 g) = 0.647 mW/g; SAR(10 g) = 0.425 mW/g**

Maximum value of SAR (measured) = 0.681 mW/g

**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 27.6 V/m; Power Drift = -0.0257 dB

Peak SAR (extrapolated) = 1.16 W/kg

**SAR(1 g) = 0.658 mW/g; SAR(10 g) = 0.433 mW/g**

Maximum value of SAR (measured) = 0.687 mW/g

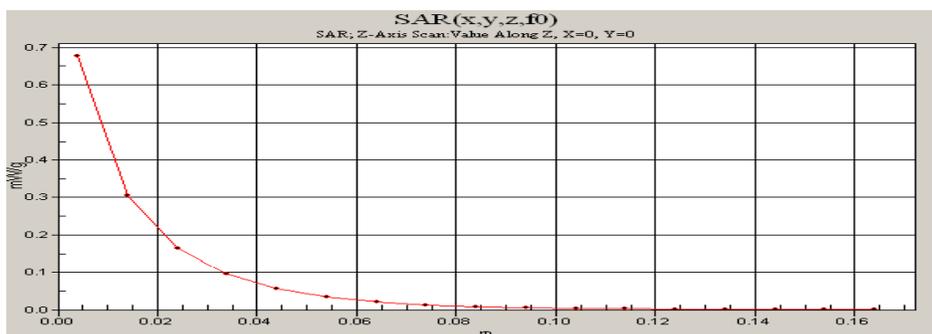
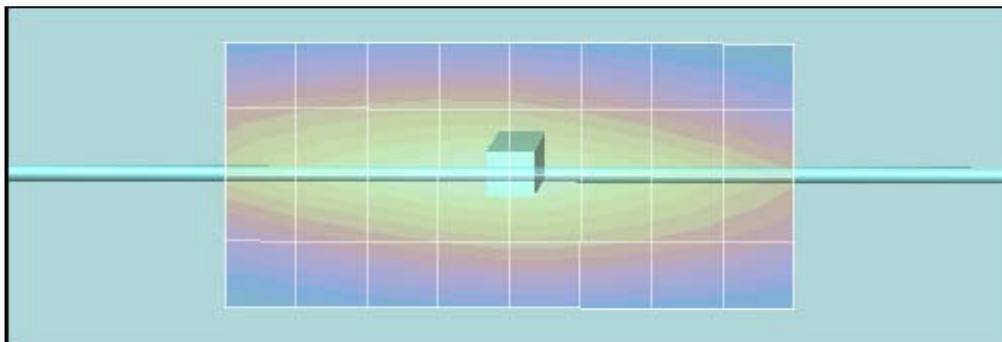
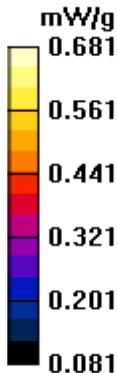
**System Performance Check/Dipole Area Scan (5x9x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.678 mW/g

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

dz=10mm

Maximum value of SAR (measured) = 0.677 mW/g



SYSTEM VALIDATION

Date:	<u>7/18/2005</u>	Frequency (MHz):	<u>300</u>
Lab Location:	<u>GEMS</u>	Mixture Type:	<u>IEEE Head</u>
Robot System:	<u>GEMS-2</u>	Ambient Temp.(°C):	<u>21.2</u>
Probe Serial #:	<u>1383</u>	Tissue Temp.(°C):	<u>22.1</u>
DAE Serial #:	<u>406</u>		

Tissue Characteristics

Permittivity:	<u>46.5</u>	Phantom Type/SN:	<u>80602002B</u>
Conductivity:	<u>0.88</u>	Distance (mm):	<u>15 (tissue/dipole cnt)</u>

Reference Source:	<u>300 MHz</u>	(Dipole)
Reference SN:	<u>1002</u>	

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

Target SAR Value:	<u>3</u>	mW/g,	<u>2</u>	mW/g (10g avg.)
(normalized to 1.0 W)				

Measured SAR Value:	<u>0.707</u>	mW/g,	<u>0.464</u>	mW/g (10g avg.)
Power Drift:	<u>-0.0353</u>	dB		

Measured SAR Value:	<u>2.85</u>	mW/g,	<u>1.87</u>	mW/g (10g avg.)
(normalized to 1.0 W, including drift)				

Percent Difference From Target (MUST be within System Uncertainty):	<u>5.00</u>	% (1g ave)
	<u>6.50</u>	% (10g ave)

Test performed by:	<u>C. Miller</u>	Initial:	<u>Signature on file</u>
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DUT: Dipole 300 MHz; Date/Time: 7/18/2005 4:36:32 PM Date/Time: 7/18/2005 4:42:15 PM Date/Time: 7/18/2005 4:32:19 PM Date/Time: 7/18/2005 4:48:19 PM

Run #: CM-SYSP-300H-050718-01  
Robot: GEMS-2  
Model #: D300V2  
TX Freq: 300 (MHz)

Sim.Tissue Temp: 22.1 (C)  
Phantom #: 80602002B-S13  
S/N: 1002  
Start power: 250 (mW)

Target: 2.85 mW/g for 1g SAR 1.87 mW/g for 10g SAR  
2.85 mW/g calculated 1g-SAR; 0.00 % from target (including drift)  
1.87 mW/g calculated 10g-SAR; 0.00 % from target (including drift)

Probe: ET3DV6 - SN1383, Calibrated: 2/24/2005, ConvF(7.96, 7.96, 7.96)  
Duty Cycle: 1:1, Medium: 300 IEEE Head, Medium parameters used:  $\sigma = 0.88$  mho/m,  $\epsilon_r = 46.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
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 = 29.3 V/m; Power Drift = -0.0353 dB  
Peak SAR (extrapolated) = 1.23 W/kg  
SAR(1 g) = 0.711 mW/g; SAR(10 g) = 0.466 mW/g  
Maximum value of SAR (measured) = 0.749 mW/g

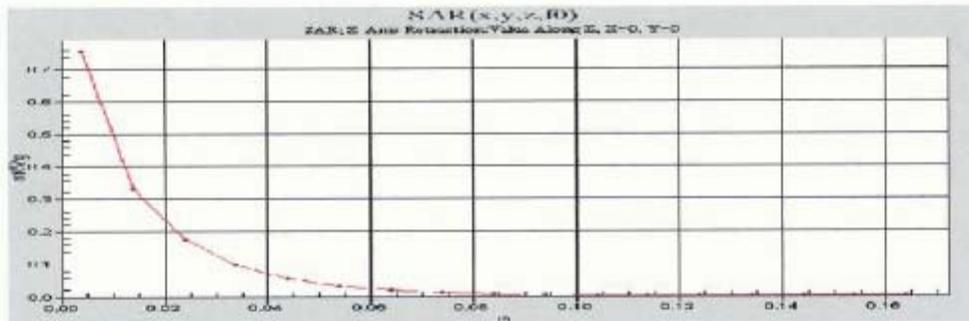
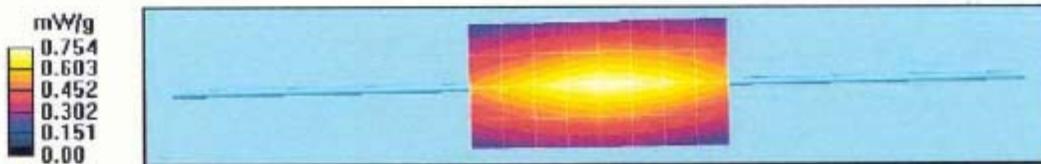
**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 29.3 V/m; Power Drift = -0.0353 dB  
Peak SAR (extrapolated) = 1.21 W/kg  
SAR(1 g) = 0.703 mW/g; SAR(10 g) = 0.461 mW/g  
Maximum value of SAR (measured) = 0.740 mW/g

**System Performance Check/Dipole Area Scan (41x81x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 29.3 V/m; Power Drift = -0.0353 dB  
Motorola Fast SAR: SAR(1 g) = 0.704 mW/g; SAR(10 g) = 0.512 mW/g  
Maximum value of SAR (interpolated) = 0.745 mW/g

**System Performance Check/Z-Axis Retraction (1x1x17):** Measurement grid: dx=20mm, dy=20mm, dz=10mm  
Maximum value of SAR (measured) = 0.754 mW/g



DUT: Dipole 300 MHz; Date/Time: 7/18/2005 4:53:42 PM  
 Run #: CM-SYSP-300H-050718-01 Sim.Tissue Temp: 22.1 (C)  
 Robot: GEMS-2 Phantom #: 80602002B-S13  
 Model #: D300V2 S/N: 1002  
 TX Freq: 300 (MHz) Start power: 250 (mW)  
 Target:

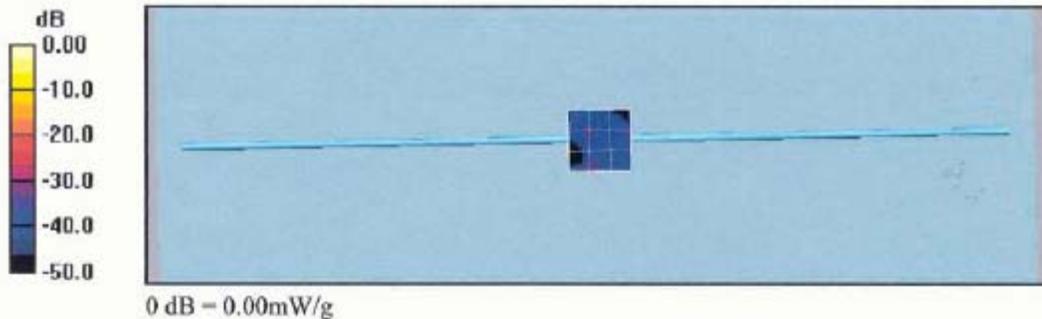
2.85 mW/g for 1g SAR 1.87 mW/g for 10g SAR  
 2.85 mW/g calculated 1g-SAR; 0.00 % from target (including drift)  
 1.87 mW/g calculated 10g-SAR; 0.00 % from target (including drift)

Probe: ET3DV6 - SN1383, Calibrated: 2/24/2005, ConvF(7.96, 7.96, 7.96)  
 Duty Cycle: 1:1, Medium: 300 IEEE Head, Medium parameters used:  $\sigma = 0.88$  mho/m,  $\epsilon_r = 46.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 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 = 29.3 V/m; Power Drift = not measured  
 Maximum value of SAR (measured) = 0.00 mW/g

**System Performance Check/Zoom Scan (4x4x7)/Cube 0:** Measurement grid: dx=10mm, dy=10mm, dz=5mm  
 Reference Value = 29.3 V/m; Power Drift = not measured  
 Peak SAR (extrapolated) = 0.00 W/kg  
 SAR(1 g) = 2.88e-005 mW/g; SAR(10 g) = 5.22e-006 mW/g

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.



SYSTEM PERFORMANCE CHECK TARGET SAR

Date:	<u>7/18/2005</u>	Frequency (MHz):	<u>300</u>
Lab Location:	<u>GEMS</u>	Mixture Type:	<u>FCC Body</u>
Robot System:	<u>GEMS-2</u>	Ambient Temp.(°C):	<u>21.4</u>
Probe Serial #:	<u>1383</u>	Tissue Temp.(°C):	<u>21.6</u>
DAE Serial #:	<u>406</u>		

Tissue Characteristics

Permittivity:	<u>58.4</u>	Phantom Type/SN:	<u>80602002C</u>
Conductivity:	<u>0.92</u>	Distance (mm):	<u>15 (tissue/dipole cnt)</u>

Reference Source: 300 MHz (Dipole)  
 Reference SN: 1002

Power to Dipole: 250 mW

Measured SAR Value: 0.695 mW/g, 0.457 mW/g (10g avg.)  
 Power Drift: -0.0115 dB

New Target/Measured SAR Value: 2.79 mW/g, 1.83 mW/g (10g avg.)  
 (normalized to 1.0 W, including drift)

Test performed by: C. Miller Initial: Signature on file

**DUT: Dipole 300 MHz;** Date/Time: 7/18/2005 7:29:17 PM Date/Time: 7/18/2005 7:35:22 PM Date/Time: 7/18/2005 7:24:12 PM Date/Time: 7/18/2005 7:42:20 PM

Run #: CM-SYSP-300B-050718-02 Sim. Tissue Temp: 21.6 (C)  
 Robot: GEMS-2 Phantom #: 80602002C-S3  
 Model #: D300V2 S/N: 1002  
 TX Freq: 300 (MHz) Start power: 250 (mW)  
 Target:

2.79 mW/g for 1g SAR 1.83 mW/g for 10g SAR  
 2.79 mW/g calculated 1g-SAR; 0.00 % from target (including drift)  
 1.83 mW/g calculated 10g-SAR; 0.00 % from target (including drift)

Probe: ET3DV6 - SN1383, Calibrated: 2/24/2005, ConvF(7.8, 7.8, 7.8)  
 Duty Cycle: 1:1, Medium: 300 Body, Medium parameters used:  $\sigma = 0.92$  mho/m,  $\epsilon_r = 58.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 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 = 28.0 V/m; Power Drift = -0.0115 dB  
 Peak SAR (extrapolated) = 1.23 W/kg  
 SAR(1 g) = 0.698 mW/g; SAR(10 g) = 0.459 mW/g  
 Maximum value of SAR (measured) = 0.732 mW/g

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

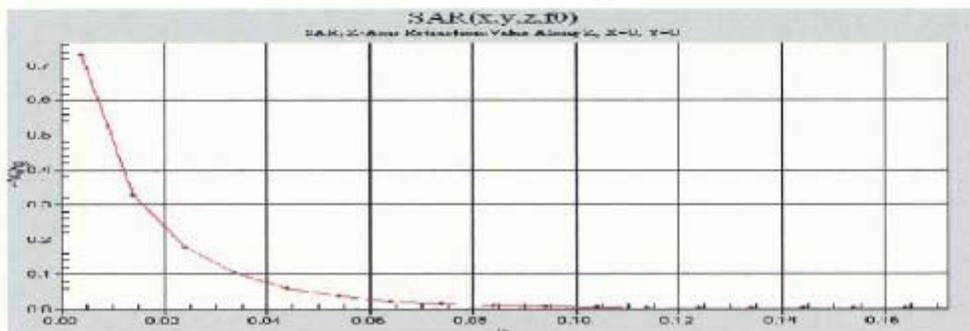
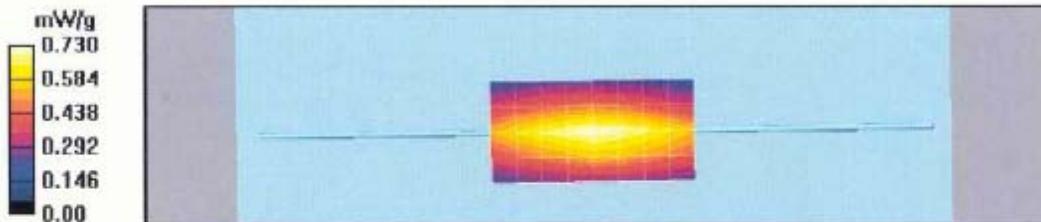
Reference Value = 28.0 V/m; Power Drift = -0.0115 dB  
 Peak SAR (extrapolated) = 1.21 W/kg  
 SAR(1 g) = 0.691 mW/g; SAR(10 g) = 0.455 mW/g  
 Maximum value of SAR (measured) = 0.724 mW/g

**System Performance Check/Dipole Area Scan (5x9x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (measured) = 0.720 mW/g

**System Performance Check/Dipole Area Scan (41x81x1):** Measurement grid: dx=15mm, dy=15mm  
 Reference Value = 28.0 V/m; Power Drift = -0.0115 dB

Motorola Fast SAR: SAR(1 g) = 0.685 mW/g; SAR(10 g) = 0.496 mW/g  
 Maximum value of SAR (interpolated) = 0.725 mW/g

**System Performance Check/Z-Axis Retraction (1x1x17):** Measurement grid: dx=20mm, dy=20mm, dz=10mm  
 Maximum value of SAR (measured) = 0.730 mW/g



**DUT: Dipole 300 MHz; Date/Time: 7/18/2005 7:45:35 PM**  
 Run #: CM-SYSP-300B-050718-02 Sim.Tissue Temp: 21.6 (C)  
 Robot: GEMS-2 Phantom #: 80602002C-S3  
 Model #: D300V2 S/N: 1002  
 TX Freq: 300 (MHz) Start power: 250 (mW)  
 Target:  
 2.79 mW/g for 1g SAR 1.83 mW/g for 10g SAR  
 2.79 mW/g calculated 1g-SAR; 0.00 % from target (including drift)  
 1.83 mW/g calculated 10g-SAR; 0.00 % from target (including drift)

Probe: ET3DV6 - SN1383, Calibrated: 2/24/2005, ConvF(7.8, 7.8, 7.8)  
 Duty Cycle: 1:1, Medium: 300 Body, Medium parameters used:  $\sigma = 0.92$  mho/m,  $\epsilon_r = 58.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 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 = 28.0 V/m; Power Drift = *not measured*  
 Maximum value of SAR (measured) = 0.00 mW/g

**System Performance Check/Zoom Scan (4x4x7)/Cube 0:** Measurement grid: dx=10mm, dy=10mm, dz=5mm  
 Reference Value = 28.0 V/m; Power Drift = *not measured*  
 Peak SAR (extrapolated) = 0.00 W/kg  
 SAR(1 g) = 0.000205 mW/g; SAR(10 g) = 3.57e-005 mW/g

*Warning: 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.*

