

 <b>MOTOROLA</b>	 <b>TESTING CERT: 2518.01</b>
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**FCC ID: IHDT56GP1**  
**DECLARATION OF COMPLIANCE SAR ASSESSMENT Part 2 of 3**

<b>Networks &amp; Enterprise</b> <b>EME Test Laboratory</b> <b>8000 West Sunrise Blvd</b> <b>Fort Lauderdale, FL. 33322</b>	<b>Date of Report:</b> January 10, 2007 <b>Report Revision:</b> O <b>Report ID:</b> ic902_Rev O_070110 SR4605
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<p><b>Responsible Engineer:</b> Stephen C. Whalen (EME Principle Staff Engineer)  <b>Date/s Tested:</b> 12/12/06-12/21/06  <b>Manufacturer/Location:</b> Motorola – Chandler, AZ  <b>Sector/Group/Div.:</b> iDEN Mobile Devices  <b>Date submitted for test:</b> 12/01/06  <b>DUT Description:</b> CDMA2000 / EV-DO signaling; TDMA, 1:6 iDEN, 16QAM Modulation; MOTotalk, FHSS, 114:120 8FSK; Bluetooth Class 2 and GPS capable  <b>Test TX mode(s):</b> CDMA2000 / EV-DO, iDEN 1:6, MOTotalk 114:120, Bluetooth CW  <b>Max. Power output:</b> CDMA – 295.1mW, iDEN – 640mW, MOTotalk – 891mW, Bluetooth – 2.5mW  <b>Nominal Power:</b> CDMA – 251.2mW (conducted), iDEN - 600mW (conducted), MOTotalk – 850mW (conducted), Bluetooth 1.0mW (conducted)  <b>Tx Frequency Bands:</b> CDMA2000 - 1851.250-1909.950MHz, iDEN– 806-825MHz, MOTotalk - 902-928MHz, Bluetooth 2.402-2.480GHz  <b>Signaling type:</b> CDMA2000 / EV-DO; iDEN TDMA; MOTotalk - (FHSS 8FSK), Bluetooth Class 2  <b>Model(s) Tested:</b> H93ZAH9JR7AN  <b>Model(s) Certified:</b> H93ZAH9JR7AN  <b>Serial Number(s):</b> 364AGW0262, 364AGW025D  <b>Classification:</b> General Population/Uncontrolled  <b>Rule Part(s):</b> 15C (MOTotalk and BT), 90 (iDEN) &amp; 24E (CDMA)</p> <p><b>Approved Accessories:</b>  <b>Antenna(s):</b> 8575175B01, Multi-band retractable (1850-1990MHz, ½ wave, -0.15dBd; 902-928MHz, ¼ wave, -1.55dBd; 806-870MHz, ¼ wave, -1.75dBd)</p> <p><b>Battery(ies):</b> SNN5782B (BT 70 High Capacity Battery, Li Ion), NTN2356NA (High Capacity Battery Cover) SNN5759A (BT 90 Maximum Capacity Battery, Li Ion), NTN2357NA (Maximum Capacity Battery Cover)</p> <p><b>Body worn accessory(ies):</b> NNTN6757A (Swivel carry holster)</p> <p><b>Audio/Data cable accessory(ies):</b> NNTN5330A (PTT headset, ear bud), NNTN5004A (PTT headset, over-the-ear), NNTN5005A (PTT headset, over-the-head), NNTN5006A (PTT headset, flexible ear wrap), NNTN5751A (Stereo mixing headset w/ PTT), NNTN5752A (Stereo mixing headset w/ PTT), NNTN5211A (2-wire surveillance headset w/ PTT), NNTN6312A (3-wire surveillance headset w/PTT), NNTN5774A (Stereo headset w/ PTT), NNTN6365A (Stereo headset adapter), NNTN6531A (USB data cable), SKN6371C (USB data cable)</p> <p style="text-align: center;"><b>Max. Calc. : 1-g Avg. SAR: 1.41 W/kg (Body); 10-g Avg. SAR: 1.01 W/kg (Body)</b>  <b>Max. Calc. : 1-g Avg. SAR: 0.72 W/kg (Face); 10-g Avg. SAR: 0.51 W/kg (Face)</b>  <b>Max. Calc. : 1-g Avg. SAR: 1.53 W/kg (Head); 10-g Avg. SAR: 0.75 W/kg (Head)</b></p>	
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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 <b>Deanna Zakharia N&amp;E EME Lab Senior Resource Manager,</b> <b>Laboratory Director,</b>  Approval Date: 1/10/07	<b>Certification Date:</b> <input type="checkbox"/>  <b>Certification No.:</b> <input type="checkbox"/>
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**Appendix C**  
**Dipole Calibration Certificates**

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



**S** Schweizerischer Kalibrierdienst  
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Accredited by the Swiss Federal Office of Metrology and Accreditation  
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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **Motorola CGISS**

Certificate No: **D1900V2-522\_Aug06**

**CALIBRATION CERTIFICATE**

Object **D1900V2 - SN: 522**

Calibration procedure(s) **QA CAL-05.v6  
Calibration procedure for dipole validation kits**

Calibration date: **August 16, 2006**

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-442A	GB37480704	04-Oct-05 (METAS, No. 251-00516)	Oct-06
Power sensor HP 8481A	US37292783	04-Oct-05 (METAS, No. 251-00516)	Oct-06
Reference 20 dB Attenuator	SN: 5086 (20g)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference 10 dB Attenuator	SN: 5047.2 (10r)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference Probe ET3DV6	SN: 1507	28-Oct-05 (SPEAG, No. ET3-1507_Oct05)	Oct-06
DAE4	SN: 601	15-Dec-05 (SPEAG, No. DAE4-601_Dec05)	Dec-06
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-05)	In house check: Oct-07
RF generator Agilent E4421B	MY41000675	11-May-05 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Nov-05)	In house check: Nov-06

Calibrated by:	Name <b>Claudio Leubler</b>	Function <b>Laboratory Technician</b>	Signature 
Approved by:	Name <b>Katja Pokovic</b>	Function <b>Technical Manager</b>	Signature 

Issued: August 17, 2006

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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.

<b>DASY Version</b>	DASY4	V4.7
<b>Extrapolation</b>	Advanced Extrapolation	
<b>Phantom</b>	Modular Flat Phantom V5.0	
<b>Distance Dipole Center - TSL</b>	10 mm	with Spacer
<b>Zoom Scan Resolution</b>	dx, dy, dz = 5 mm	
<b>Frequency</b>	1900 MHz ± 1 MHz	

**Head TSL parameters**

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Head TSL parameters</b>	22.0 °C	40.0	1.40 mho/m
<b>Measured Head TSL parameters</b>	(22.0 ± 0.2) °C	40.5 ± 6 %	1.42 mho/m ± 6 %
<b>Head TSL temperature during test</b>	(21.5 ± 0.2) °C	---	---

**SAR result with Head TSL**

<b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b>	condition	
SAR measured	250 mW input power	9.50 mW / g
SAR normalized	normalized to 1W	38.0 mW / g
SAR for nominal Head TSL parameters <sup>1</sup>	normalized to 1W	<b>38.0 mW / g ± 17.0 % (k=2)</b>

<b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b>	Condition	
SAR measured	250 mW input power	5.00 mW / g
SAR normalized	normalized to 1W	20.0 mW / g
SAR for nominal Head TSL parameters <sup>1</sup>	normalized to 1W	<b>20.0 mW / g ± 16.5 % (k=2)</b>

<sup>1</sup> Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

**Appendix**

**Antenna Parameters with Head TSL**

Impedance, transformed to feed point	48.8 $\Omega$ - 9.1 $\mu\Omega$
Return Loss	- 20.7 dB

**General Antenna Parameters and Design**

Electrical Delay (one direction)	1.185 ns
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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	September 20, 2000

**DASY4 Validation Report for Head TSL**

Date/Time: 16.08.2006 14:38:28

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:522**

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL U10 BB;

Medium parameters used:  $f = 1900 \text{ MHz}$ ;  $\sigma = 1.42 \text{ mho/m}$ ;  $\epsilon_r = 40.5$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

**DASY4 Configuration:**

- Probe: ET3DV6 - SN1507 (HF); ConvF(4.74, 4.74, 4.74); Calibrated: 28.10.2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; ;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

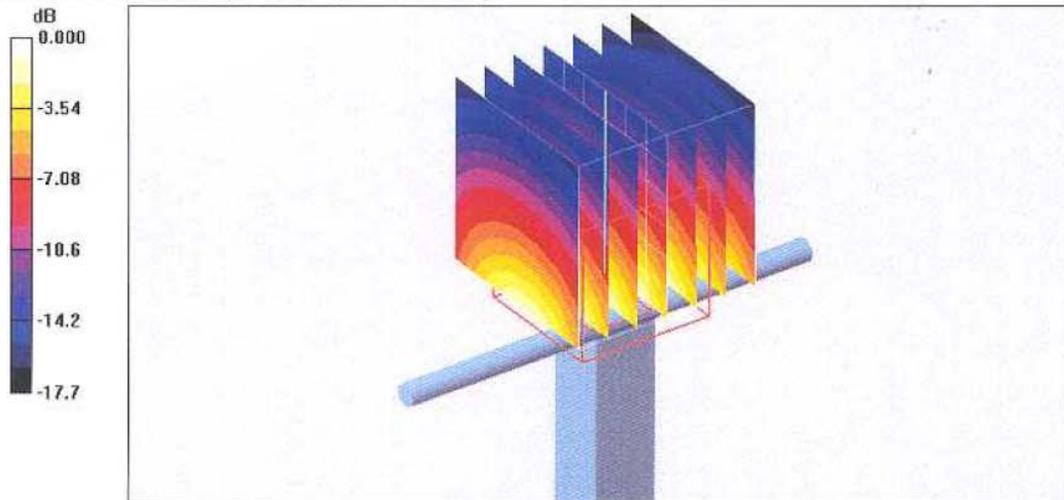
**Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 91.2 V/m; Power Drift = 0.034 dB

Peak SAR (extrapolated) = 16.3 W/kg

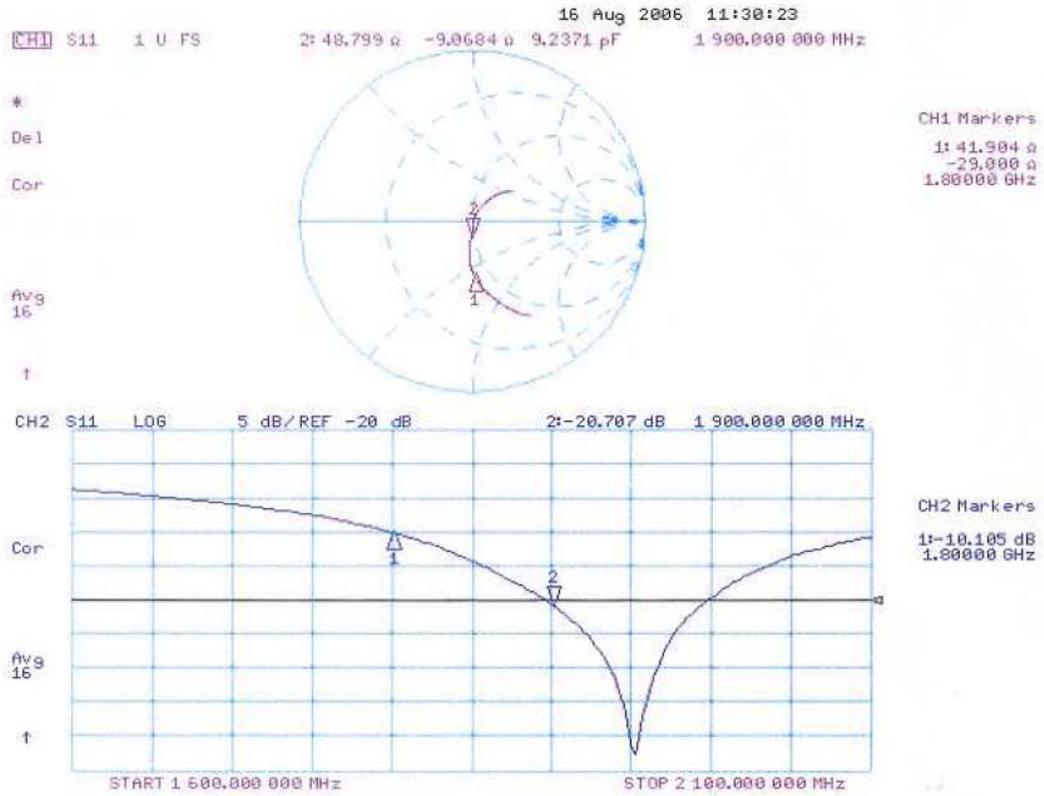
**SAR(1 g) = 9.5 mW/g; SAR(10 g) = 5 mW/g**

Maximum value of SAR (measured) = 10.4 mW/g



0 dB = 10.4mW/g

### Impedance Measurement Plot for Head TSL



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Accreditation No.: **SCS 108**

Client **Motorola CGISS**

Certificate No: **D900V2-084\_Apr06**

**CALIBRATION CERTIFICATE**

Object **D900V2 - SN: 084**

Calibration procedure(s) **QA CAL-05.v6  
Calibration procedure for dipole validation kits**

Calibration date: **April 21, 2006**

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-442A	GB37480704	04-Oct-05 (METAS, No. 251-00516)	Oct-06
Power sensor HP 8481A	US37292783	04-Oct-05 (METAS, No. 251-00516)	Oct-06
Reference 20 dB Attenuator	SN: 5086 (20g)	11-Aug-05 (METAS, No 251-00498)	Aug-06
Reference 10 dB Attenuator	SN: 5047.2 (10r)	11-Aug-05 (METAS, No 251-00498)	Aug-06
Reference Probe ET3DV6	SN 1507	28-Oct-05 (SPEAG, No. ET3-1507_Oct05)	Oct-06
DAE4	SN 601	15-Dec-05 (SPEAG, No. DAE4-601_Jan05)	Dec-06

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-05)	In house check: Oct-07
RF generator Agilent E4421B	MY41000675	11-May-05 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Nov-05)	In house check: Nov-06

Calibrated by:	Name <b>Marcel Fehr</b>	Function <b>Laboratory Technician</b>	Signature 
Approved by:	Name <b>Katja Pokovic</b>	Function <b>Technical Manager</b>	Signature 

Issued: April 21, 2006

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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	V4.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V4.9	
Distance Dipole Center - TSL	15 mm	with Spacer
Area Scan resolution	dx, dy = 15 mm	
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	900 MHz ± 1 MHz	

**Head TSL parameters**

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.97 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.8 ± 6 %	0.96 mho/m ± 6 %
Head TSL temperature during test	(21.5 ± 0.2) °C	---	---

**SAR result with Head TSL**

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	condition	
SAR measured	250 mW input power	2.71 mW / g
SAR normalized	normalized to 1W	10.8 mW / g
SAR for nominal Head TSL parameters <sup>1</sup>	normalized to 1W	<b>11.0 mW / g ± 17.0 % (k=2)</b>

SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.73 mW / g
SAR normalized	normalized to 1W	6.92 mW / g
SAR for nominal Head TSL parameters <sup>1</sup>	normalized to 1W	<b>6.97 mW / g ± 16.5 % (k=2)</b>

<sup>1</sup> Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

**Appendix**

**Antenna Parameters with Head TSL**

Impedance, transformed to feed point	50.1 $\Omega$ - 5.6 $j\Omega$
Return Loss	- 25.1 dB

**General Antenna Parameters and Design**

Electrical Delay (one direction)	1.388 ns
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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	September 20, 2000

**DASY4 Validation Report for Head TSL**

Date/Time: 21.04.2006 14:29:27

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN:084**

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

Medium: HSL U10 BB;

Medium parameters used:  $f = 900 \text{ MHz}$ ;  $\sigma = 0.954 \text{ mho/m}$ ;  $\epsilon_r = 41.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

**DASY4 Configuration:**

- Probe: ET3DV6 - SN1507 (HF); ConvF(5.8, 5.8, 5.8); Calibrated: 28.10.2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; ;
- Measurement SW: DASY4, V4.7 Build 16; Postprocessing SW: SEMCAD, V1.8 Build 161

**Pin = 250 mW; d = 10 mm/Area Scan (71x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (interpolated) = 2.94 mW/g

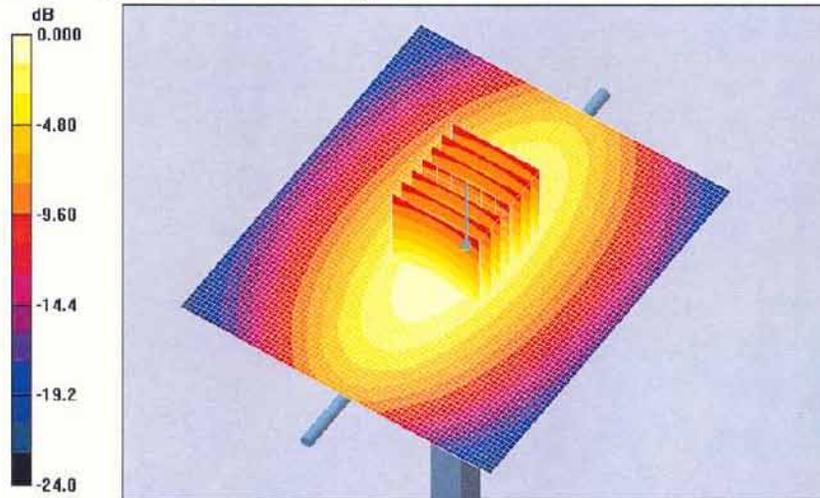
**Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 57.9 V/m; Power Drift = -0.037 dB

Peak SAR (extrapolated) = 4.09 W/kg

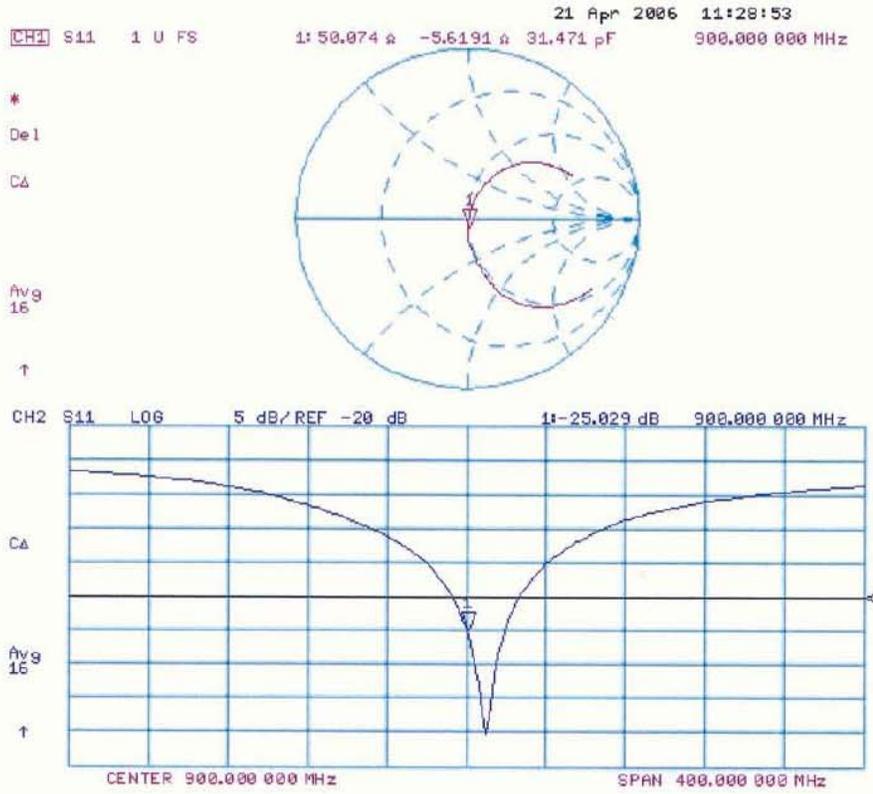
**SAR(1 g) = 2.71 mW/g; SAR(10 g) = 1.73 mW/g**

Maximum value of SAR (measured) = 2.92 mW/g



0 dB = 2.92mW/g

### Impedance Measurement Plot for Head TSL



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Accreditation No.: **SCS 108**

Client **Motorola CGISS**

Certificate No: **D2450V2-704\_Nov06**

**CALIBRATION CERTIFICATE**

Object **D2450V2 - SN: 704**

Calibration procedure(s) **QA CAL-05.v6  
Calibration procedure for dipole validation kits**

Calibration date: **November 10, 2006**

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-442A	GB37480704	03-Oct-06 (METAS, No. 217-00608)	Oct-07
Power sensor HP 8481A	US37292783	03-Oct-06 (METAS, No. 217-00608)	Oct-07
Reference 20 dB Attenuator	SN: 5086 (20g)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference 10 dB Attenuator	SN: 5047.2 (10r)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference Probe ES3DV2	SN 3025	19-Oct-06 (SPEAG, No. ES3-3025_Oct06)	Oct-07
DAE4	SN 601	15-Dec-05 (SPEAG, No. DAE4-601_Dec05)	Dec-06
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-05)	In house check: Oct-07
RF generator Agilent E4421B	MY41000675	11-May-05 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Oct-06)	In house check: Oct-07

Calibrated by: **Name** Marcel Fehr **Function** Laboratory Technician **Signature**

Approved by: **Name** Katja Pokovic **Function** Technical Manager **Signature**

Issued: November 14, 2006

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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	V4.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
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	(22.0 ± 0.2) °C	39.3 ± 6 %	1.78 mho/m ± 6 %
Head TSL temperature during test	(21.0 ± 0.2) °C	-----	-----

**SAR result with Head TSL**

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	condition	
SAR measured	250 mW input power	13.4 mW / g
SAR normalized	normalized to 1W	53.6 mW / g
SAR for nominal Head TSL parameters <sup>1</sup>	normalized to 1W	<b>53.9 mW / g ± 17.0 % (k=2)</b>

SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.23 mW / g
SAR normalized	normalized to 1W	24.9 mW / g
SAR for nominal Head TSL parameters <sup>1</sup>	normalized to 1W	<b>25.0 mW / g ± 16.5 % (k=2)</b>

<sup>1</sup> Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

**Appendix**

**Antenna Parameters with Head TSL**

Impedance, transformed to feed point	52.5 $\Omega$ + 2.4 j $\Omega$
Return Loss	- 29.4 dB

**General Antenna Parameters and Design**

Electrical Delay (one direction)	1.152 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: 10.11.2006 13:41:01

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 U10 BB\_060425;

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.77$  mho/m;  $\epsilon_r = 39.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ES3DV2 - SN3025 (HF); ConvF(4.5, 4.5, 4.5); Calibrated: 19.10.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; ;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:

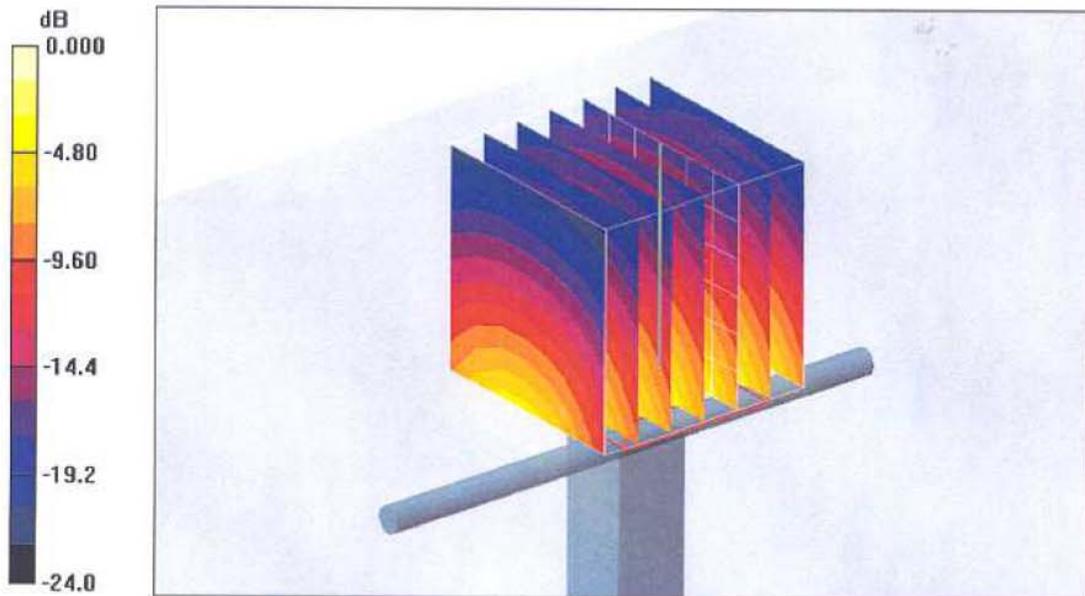
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 92.4 V/m; Power Drift = -0.041 dB

Peak SAR (extrapolated) = 27.9 W/kg

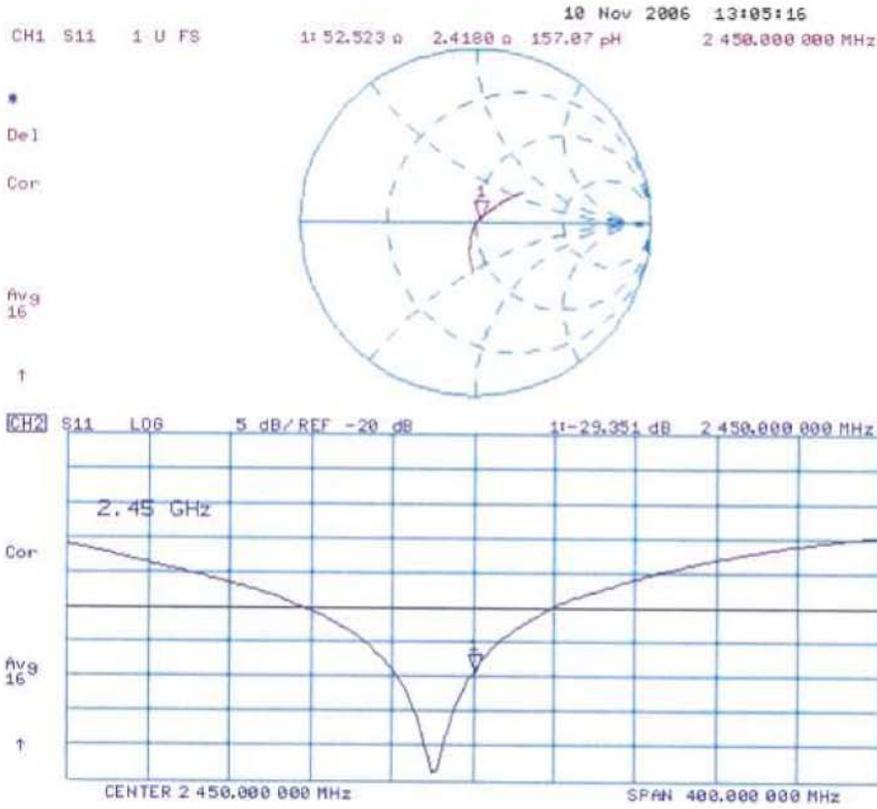
SAR(1 g) = 13.4 mW/g; SAR(10 g) = 6.23 mW/g

Maximum value of SAR (measured) = 14.9 mW/g



0 dB = 14.9mW/g

### Impedance Measurement Plot for Head TSL



## **Appendix D**

### **Test System Verification Scans**

Dipole validation scans at the head from SPEAG are provided in APPENDIX C. NE's EME lab validates its' dipole(s) to the applicable IEEE system performance targets. A system validation was performed using FCC body tissue parameters to generate the system performance target values for body at the applicable frequency. Dipoles are assessed using multiple probes and measurements were performed using the isotropic assessment procedure mentioned below.

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. The results obtained from each probe were then averaged together to determine the new measured SAR target.

**DIPOLE SAR TARGET - HEAD**

Date: 10/15/06 Frequency (MHz): 1900  
 Lab Location: NE Mixture Type: IEEE Head  
 DAE Serial #: 401 Ambient Temp.(°C): 21.1

Tissue Characteristics  
 Permittivity: 38.9 Phantom Type/SN: 40302002A-S11  
 Conductivity: 1.47 Distance (mm): 10  
 Tissue Temp.(°C): 20

Reference Source: Dipole Power to Dipole: 250 mW  
 Reference SN: 522

Target SAR Value: 39.7 mW/g (1g avg.), 20.5 mW/g (10g avg.)  
 (normalized to 1.0 W)

**New Target:**

Average Measured SAR Value: 39.99 mW/g (1g avg.), 20.67 mW/g (10g avg.)

Percent Difference From Target (MUST be within k=2 Uncertainty): 0.74% (1g ave)  
0.83% (10g ave)

Test performed by: Ed Church Initial: E, C

Probe SN #s	1-G Cube	Diff from Ave	10-G Cube	Diff from Ave	Robot
1383	40.99	2.50%	21.07	1.94%	R2
1384	39.90	-0.23%	20.59	-0.39%	R2
1393	39.41	-1.46%	20.43	-1.16%	R2
1545	39.79	-0.51%	20.61	-0.29%	R2
1547	39.87	-0.31%	20.65	-0.10%	R2
<b>Average</b>	<b>39.9920</b>		<b>20.6700</b>		<b>New Measured SAR Value</b>
(normalized to 1.0 W, including drift)					

**DIPOLE SAR TARGET - BODY**

Date: 10/15/06 Frequency (MHz): 1900  
 Lab Location: NE Mixture Type: FCC Body  
 DAE Serial #: 401 Ambient Temp.(°C): 22.1

Tissue Characteristics

Permittivity: 55.0 Phantom Type/SN: 40302002B-S12  
 Conductivity: 1.45 Distance (mm): 10  
 Tissue Temp.(°C): 20.7

Reference Source: Dipole Power to Dipole: 250 mW  
 Reference SN: 522

**New Target:**

Average Measured SAR Value: 36.39 mW/g(1g avg.), 19.53 mW/g (10g avg.)

Test performed by: Ed Church Initial: EC

Probe SN #s	1-G Cube	Diff from Ave	10-G Cube	Diff from Ave	Robot
1383	37.05	1.8%	19.77	1.2%	R2
1384	36.67	0.8%	19.64	0.6%	R2
1393	35.63	-2.1%	19.14	-2.0%	R2
1545	35.84	-1.5%	19.33	-1.0%	R2
1547	36.74	1.0%	19.77	1.2%	R2
<b>Average</b>	<b>36.3860</b>		<b>19.5300</b>	<b>New Measured SAR Value</b>	
(normalized to 1.0 W, including drift)					

**DIPOLE SAR TARGET - HEAD**

Date: 06/03/06 Frequency (MHz): 900  
 Lab Location: NE Mixture Type: IEEE Head  
 DAE Serial #: 374 Ambient Temp.(°C): 22.7

Tissue Characteristics  
 Permittivity: 41.0 Phantom Type/SN: 80302002A-S7  
 Conductivity: 0.99 Distance (mm): 15  
 Tissue Temp.(°C): 20.5

Reference Source: Dipole Power to Dipole: 250 mW  
 Reference SN: 84

Target SAR Value: 10.8 mW/g (1g avg.), 6.9 mW/g (10g avg.)  
 (normalized to 1.0 W)

**New Target:**

Average Measured SAR Value: 11.35 mW/g (1g avg.), 7.21 mW/g (10g avg.)

Percent Difference From Target (MUST be within k=2 Uncertainty): 5.07% (1g ave)  
4.46% (10g ave)

Test performed by: Ed Church Initial: E,C

Probe SN #s	1-G Cube	Diff from Ave	10-G Cube	Diff from Ave	Robot
1383	11.26	-0.77%	7.16	-0.66%	R3
1393	11.19	-1.39%	7.13	-1.08%	R3
1545	12.04	6.10%	7.61	5.58%	R3
1547	10.90	-3.94%	6.93	-3.85%	R3
		-100.00%		-100.00%	
<b>Average</b>	<b>11.3475</b>		<b>7.2075</b>	<b>New Measured SAR Value</b>	
(normalized to 1.0 W, including drift)					

**DIPOLE SAR TARGET - BODY**

Date: 06/03/06 Frequency (MHz): 900  
 Lab Location: NE Mixture Type: FCC Body  
 DAE Serial #: 374 Ambient Temp.(°C): 22.7

Tissue Characteristics

Permittivity: 54.1 Phantom Type/SN: 80302002D-S15  
 Conductivity: 1.05 Distance (mm): 15  
 Tissue Temp.(°C): 20.2

Reference Source: Dipole Power to Dipole: 250 mW  
 Reference SN: 84

**New Target:**

Average Measured SAR Value: 11.52 mW/g(1g avg.), 7.42 mW/g (10g avg.)

Test performed by: Ed Church Initial: E.C

Probe SN #s	1-G Cube	Diff from Ave	10-G Cube	Diff from Ave	Robot
1383	11.48	-0.3%	7.41	-0.1%	<b>R3</b>
1393	11.28	-2.0%	7.30	-1.6%	<b>R3</b>
1545	11.67	1.3%	7.50	1.1%	<b>R3</b>
1547	11.63	1.0%	7.47	0.7%	<b>R3</b>
		-100.0%		-100.0%	
<b>Average</b>	<b>11.5150</b>		<b>7.4200</b>	<b>New Measured SAR Value</b>	
(normalized to 1.0 W, including drift)					

DIPOLE SAR TARGET - HEAD

Date: 12/10/06 Frequency (MHz): 2450  
 Lab Location: NE Mixture Type: IEEE Head  
 DAE Serial #: 406 Ambient Temp.(°C): 22.3

Tissue Characteristics  
 Permittivity: 38.4 Phantom Type/SN: 40302002A-S11  
 Conductivity: 1.88 Distance (mm): 10  
 Tissue Temp.(°C): 20.5

Reference Source: Dipole Power to Dipole: 250 mW  
 Reference SN: 704

Target SAR Value: 52.4 mW/g (1g avg.), 24.0 mW/g (10g avg.)  
 (normalized to 1.0 W)

**New Target:**

Average Measured SAR Value: 56.98 mW/g (1g avg.), 25.93 mW/g (10g avg.)

Percent Difference From Target (MUST be within k=2 Uncertainty): 8.74% (1g ave)  
8.02% (10g ave)

Test performed by: Ed Church Initial: EC

Probe SN #s	1-G Cube	Diff from Ave	10-G Cube	Diff from Ave	Robot
1383	55.80	-2.07%	25.50	-1.64%	R1
1384	58.75	3.11%	26.59	2.56%	R1
1393	57.51	0.93%	26.30	1.44%	R1
1545	56.07	-1.59%	25.51	-1.60%	R1
1547	56.76	-0.38%	25.73	-0.76%	R1
<b>Average</b>	<b>56.9780</b>		<b>25.9260</b>		<b>New Measured SAR Value</b>
(normalized to 1.0 W, including drift)					

DIPOLE SAR TARGET - BODY

Date: 12/10/06 Frequency (MHz): 2450  
 Lab Location: NE Mixture Type: FCC Body  
 DAE Serial #: 406 Ambient Temp.(°C): 22.2

Tissue Characteristics

Permittivity: 50.3 Phantom Type/SN: 40302002B-S12  
 Conductivity: 2.02 Distance (mm): 10  
 Tissue Temp.(°C): 21.2

Reference Source: Dipole Power to Dipole: 250 mW  
 Reference SN: 704

**New Target:**

Average Measured SAR Value: 58.82 mW/g(1g avg.), 26.59 mW/g (10g avg.)

Test performed by: Ed Church Initial: EC

Probe SN #s	1-G Cube	Diff from Ave	10-G Cube	Diff from Ave	Robot
1383	57.97	-1.4%	26.32	-1.0%	R1
1384	57.43	-2.4%	26.04	-2.1%	R1
1393	59.03	0.4%	26.77	0.7%	R1
1545	59.58	1.3%	26.80	0.8%	R1
1547	60.09	2.2%	27.03	1.6%	R1
<b>Average</b>	<b>58.8200</b>		<b>26.5920</b>		<b>New Measured SAR Value</b>
(normalized to 1.0 W, including drift)					

### Motorola N&E EME Laboratory

**Date/Time: 12/12/2006 3:20:31 PM**

Robot# / Run#: DASY4-FL- 3 / MeC SYSP 1900H 061212-02

Phantom# / Tissue Temp.: SAMTP1234/ 20.9(C)

Dipole Model# / Serial#: D1900V2 / 522

TX Freq. / Start power: 1900 (MHz) / 250 (mW)

Target: 39.99 mW/g (1g); 20.67 mW/g (10g)

Calculated: 39.84 mW/g (1g); 20.77 mW/g (10g)

Percent from Target (+/-): 0.37% (1g); 0.47% (10g)

(Including Drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/30/2006, ConvF(5.11, 5.11, 5.11) Electronics: DAE3 Sn363, Calibrated: 5/17/2006

Duty Cycle: 1:1, Medium parameters used: f = 1900 MHz;  $\sigma = 1.45$  mho/m;  $\epsilon_r = 40.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

**System Performance/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm Reference Value = 92.6 V/m; Power Drift = -0.0816 dB Peak SAR (extrapolated) = 16.9 W/kg

**SAR(1 g) = 9.76 mW/g; SAR(10 g) = 5.11 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.

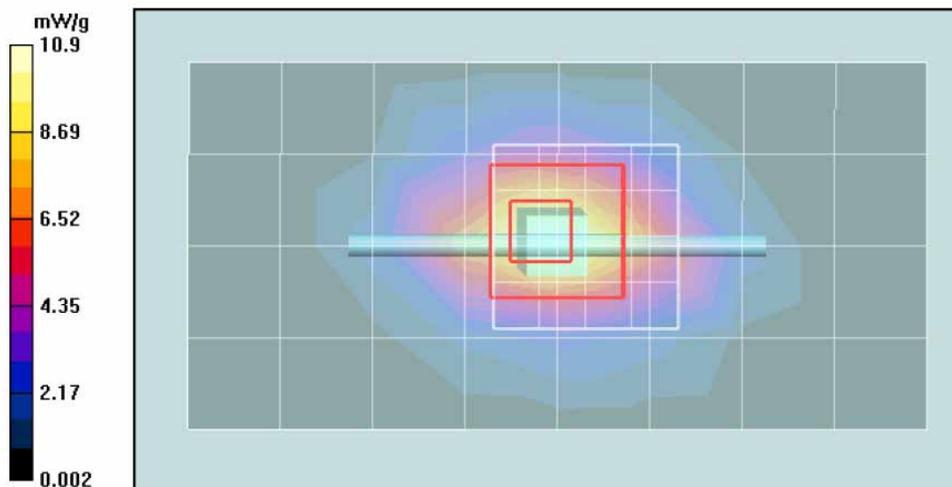
Maximum value of SAR (measured) = 10.8 mW/g

**System Performance/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm Reference Value = 92.6 V/m; Power Drift = -0.0816 dB Peak SAR (extrapolated) = 17.0 W/kg

**SAR(1 g) = 9.79 mW/g; SAR(10 g) = 5.08 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.

Maximum value of SAR (measured) = 10.9 mW/g



### Motorola N&E EME Laboratory

**Date/Time: 12/13/2006 9:38:56 AM**

Robot# / Run#: DASY4-FL-3 / JsT-SYSP-1900H-061213-01

Phantom# / Tissue Temp.: SAMTP1234 / 20.4 (C)

Dipole Model# / Serial#: D1900V2 / 522

TX Freq. / Start power: 1900 (MHz) / 250 (mW)

Target: 39.99 mW/g (1g); 20.67 mW/g (10g)

Calculated: 39.60 mW/g (1g); 20.73 mW/g (10g)

Percent from Target (+/-): 0.96% (1g); 0.29% (10g)  
(Including Drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/30/2006, ConvF(5.11, 5.11, 5.11)

Electronics: DAE3 Sn363, Calibrated: 5/17/2006

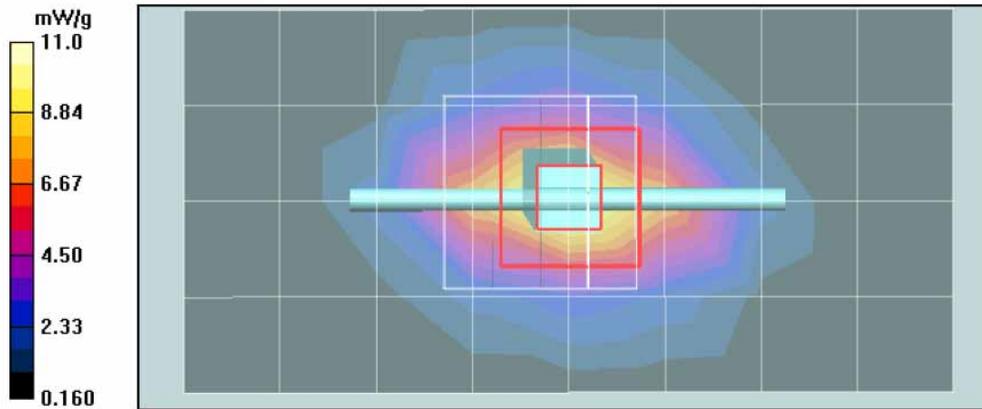
Duty Cycle: 1:1, Medium parameters used: f = 1900 MHz;  $\sigma = 1.44$  mho/m;  $\epsilon_r = 39.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

**System Performance/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm Reference Value = 94.0 V/m; Power Drift = 0.0105 dB Peak SAR (extrapolated) = 17.2 W/kg  
**SAR(1 g) = 9.89 mW/g; SAR(10 g) = 5.16 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.

Maximum value of SAR (measured) = 11.0 mW/g

**System Performance/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm Reference Value = 94.0 V/m; Power Drift = 0.0105 dB Peak SAR (extrapolated) = 17.2 W/kg  
**SAR(1 g) = 9.96 mW/g; SAR(10 g) = 5.23 mW/g**



### Motorola N&E EME Laboratory

**Date/Time: 12/14/2006 8:21:40 AM**

Robot# / Run#: DAS4-FL-3 / JsT-SYSP-1900H-061214-01

Phantom# / Tissue Temp.: SAMTP1234 / 21.4 (C)

Dipole Model# / Serial#: D1900V2 / 522

TX Freq. / Start power: 1900 (MHz) / 250 (mW)

Target: 39.99 mW/g (1g); 20.67 mW/g (10g)

Calculated: 39.79 mW/g (1g); 20.82 mW/g (10g)

Percent from Target (+/-): 0.49% (1g); 0.71% (10g)  
(Including Drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/30/2006, ConvF(5.11, 5.11, 5.11)

Electronics: DAE3 Sn363, Calibrated: 5/17/2006

Duty Cycle: 1:1, Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.44$  mho/m;  $\epsilon_r = 39.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

**System Performance/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm Reference Value = 94.3 V/m; Power Drift = 0.00499 dB Peak SAR (extrapolated) = 17.2 W/kg

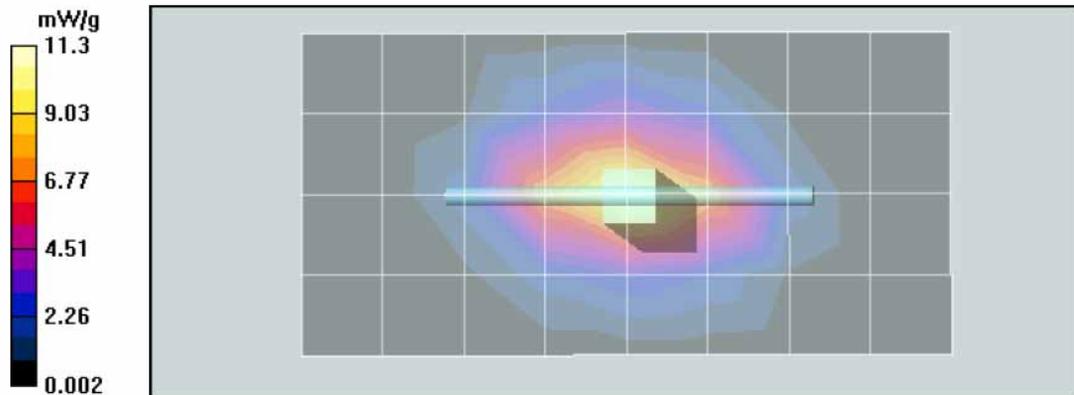
**SAR(1 g) = 9.93 mW/g; SAR(10 g) = 5.17 mW/g**

Maximum value of SAR (measured) = 11.3 mW/g

**System Performance/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm Reference Value = 94.3 V/m; Power Drift = 0.00499 dB Peak SAR (extrapolated) = 17.2 W/kg

**SAR(1 g) = 9.99 mW/g; SAR(10 g) = 5.25 mW/g**

Maximum value of SAR (measured) = 11.1 mW/g



### Motorola N&E EME Laboratory

**Date/Time: 12/15/2006 9:13:04 AM**

Robot# / Run#: DASY4-FL-3 / JsT-SYSP-1900H-061215-02

Phantom# / Tissue Temp.: SAMTP1234 / 21.3 (C)

Dipole Model# / Serial#: D1900V2 / 522

TX Freq. / Start power: 1900 (MHz) / 250 (mW)

Target: 39.99 mW/g (1g); 20.67 mW/g (10g)

Calculated: 41.26 mW/g (1g); 21.60 mW/g (10g)

Percent from Target (+/-): 3.18% (1g); 4.49% (10g)  
(Including Drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/30/2006, ConvF(5.11, 5.11, 5.11)

Electronics: DAE3 Sn363, Calibrated: 5/17/2006

Duty Cycle: 1:1, Medium parameters used: f = 1900 MHz;  $\sigma = 1.44$  mho/m;  $\epsilon_r = 39.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

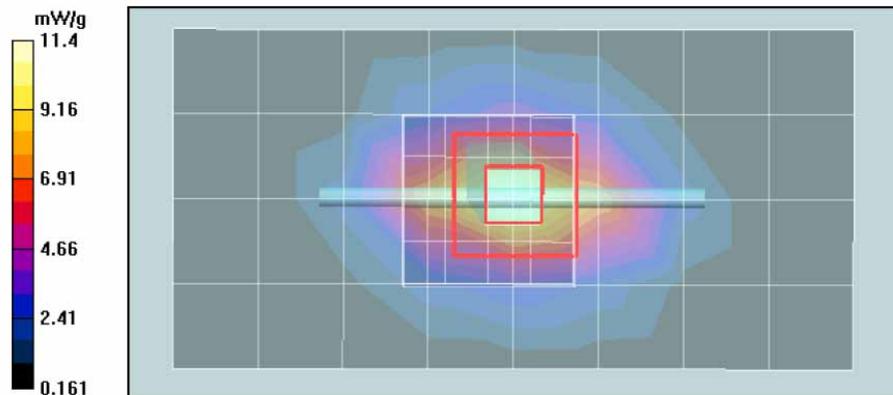
**System Performance/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm Reference Value = 95.6 V/m; Power Drift = -0.0278 dB Peak SAR (extrapolated) = 17.8 W/kg  
**SAR(1 g) = 10.2 mW/g; SAR(10 g) = 5.34 mW/g**

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.

Maximum value of SAR (measured) = 11.4 mW/g

**System Performance/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm Reference Value = 95.6 V/m; Power Drift = -0.0278 dB Peak SAR (extrapolated) = 17.7 W/kg  
**SAR(1 g) = 10.3 mW/g; SAR(10 g) = 5.39 mW/g**

Maximum value of SAR (measured) = 11.5 mW/g



### Motorola N&E EME Laboratory

**Date/Time: 12/16/2006 12:22:15 AM**

Robot# / Run#: DASY4-FL-3 / ErC-SYSP-1900H-061216-01

Phantom# / Tissue Temp.: SAMTP1234 / 21.6 (C)

Dipole Model# / Serial#: D1900V2 / 522

TX Freq. / Start power: 1900 (MHz) / 250 (mW)

Target: 39.99 mW/g (1g); 20.67 mW/g (10g)

Calculated: 40.16 mW/g (1g); 20.98 mW/g (10g)

Percent from Target (+/-): 0.43% (1g); 1.52% (10g)  
(Including Drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/30/2006, ConvF(5.11, 5.11, 5.11)

Electronics: DAE3 Sn363, Calibrated: 5/17/2006

Duty Cycle: 1:1, Medium parameters used: f = 1900 MHz;  $\sigma = 1.44$  mho/m;  $\epsilon_r = 39.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

**System Performance/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm Reference Value = 93.4 V/m; Power Drift = -0.0134 dB Peak SAR (extrapolated) = 16.9 W/kg

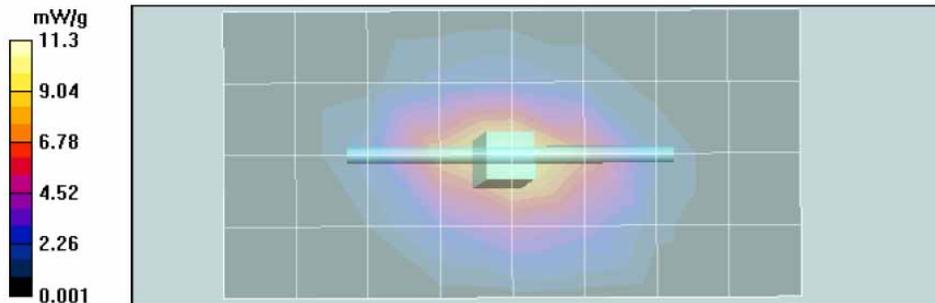
**SAR(1 g) = 9.92 mW/g; SAR(10 g) = 5.19 mW/g**

Maximum value of SAR (measured) = 11.3 mW/g

**System Performance/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm Reference Value = 93.4 V/m; Power Drift = -0.0134 dB Peak SAR (extrapolated) = 17.3 W/kg

**SAR(1 g) = 10.1 mW/g; SAR(10 g) = 5.27 mW/g**

Maximum value of SAR (measured) = 11.2 mW/g



### Motorola N&E EME Laboratory

**Date/Time: 12/16/2006 1:57:46 AM**

Robot# / Run#: DASY4-FL-3 / ErC-SYSP-900H-061216-02

Phantom# / Tissue Temp.: SAMTP1022 / 21.6 (C)

Dipole Model# / Serial#: D900V2 / 084

TX Freq. / Start power: 900 (MHz) / 250 (mW)

Target: 11.35 mW/g (1g); 7.21 mW/g (10g)

Calculated: 11.14 mW/g (1g); 7.07 mW/g (10g)

Percent from Target (+/-): 1.88% (1g); 1.88% (10g)  
(Including Drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/30/2006, ConvF(6.12, 6.12, 6.12)

Electronics: DAE3 Sn363, Calibrated: 5/17/2006

Duty Cycle: 1:1, Medium parameters used:  $f = 900$  MHz;  $\sigma = 0.99$  mho/m;  $\epsilon_r = 40.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

**System Performance/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm Reference Value = 56.8 V/m; Power Drift = 0.0401 dB Peak SAR (extrapolated) = 4.16 W/kg

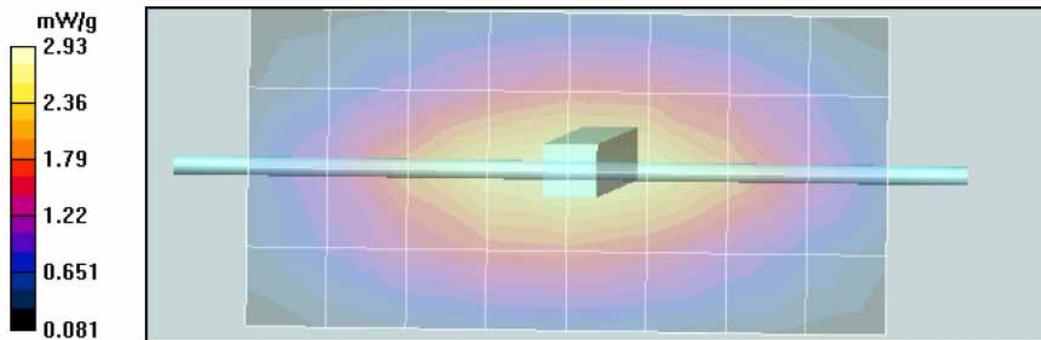
**SAR(1 g) = 2.72 mW/g; SAR(10 g) = 1.73 mW/g**

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

**System Performance/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm Reference Value = 56.8 V/m; Power Drift = 0.0401 dB Peak SAR (extrapolated) = 4.47 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



### Motorola N&E EME Laboratory

Date/Time: 12/17/2006 2:13:06 AM

Robot# / Run#: DASY4-FL-3 / ErC-SYSP-900H-061217-01

Phantom# / Tissue Temp.: SAMTP1022 / 20.9 (C)

Dipole Model# / Serial#: D900V2 / 084

TX Freq. / Start power: 900 (MHz) / 250 (mW)

Target: 11.35 mW/g (1g); 7.21 mW/g (10g)

Calculated: 11.09 mW/g (1g); 7.02 mW/g (10g)

Percent from Target (+/-): 2.30% (1g); 2.64% (10g)

(Including Drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/30/2006, ConvF(6.12, 6.12, 6.12)

Electronics: DAE3 Sn363, Calibrated: 5/17/2006

Duty Cycle: 1:1, Medium parameters used:  $f = 900$  MHz;  $\sigma = 1.01$  mho/m;  $\epsilon_r = 41$ ;  $\rho = 1000$  kg/m<sup>3</sup>

**System Performance/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm Reference Value = 56.4 V/m; Power Drift = 0.158 dB Peak SAR (extrapolated) = 4.33 W/kg

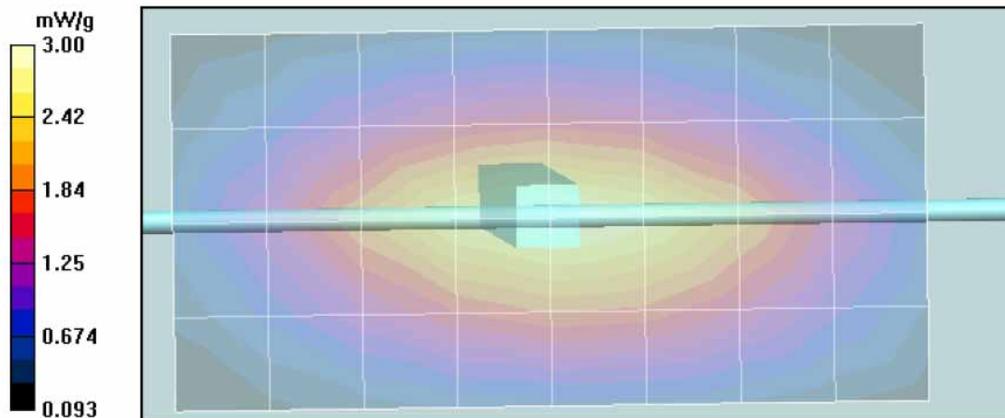
**SAR(1 g) = 2.82 mW/g; SAR(10 g) = 1.79 mW/g**

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

**System Performance/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm Reference Value = 56.4 V/m; Power Drift = 0.158 dB Peak SAR (extrapolated) = 4.51 W/kg

**SAR(1 g) = 2.93 mW/g; SAR(10 g) = 1.85 mW/g**

Maximum value of SAR (measured) = 3.17 mW/g



### Motorola N&E EME Laboratory

**Date/Time: 12/18/2006 6:54:05 AM**

Robot# / Run#: DASY4-FL-3 / ErC-SYSP-900H-061218-01

Phantom# / Tissue Temp.: SAMTP1022 / 21.5 (C)

Dipole Model# / Serial#: D900V2 / 084

TX Freq. / Start power: 900 (MHz) / 250 (mW)

Target: 11.35 mW/g (1g); 7.21 mW/g (10g)

Calculated: 10.85 mW/g (1g); 6.88 mW/g (10g)

Percent from Target (+/-): 4.43% (1g); 4.60% (10g)  
(Including Drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/30/2006, ConvF(6.12, 6.12, 6.12)

Electronics: DAE3 Sn363, Calibrated: 5/17/2006

Duty Cycle: 1:1, Medium parameters used:  $f = 900$  MHz;  $\sigma = 1$  mho/m;  $\epsilon_r = 40.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

**System Performance/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm Reference Value = 56.4 V/m; Power Drift = 0.162 dB Peak SAR (extrapolated) = 4.24 W/kg

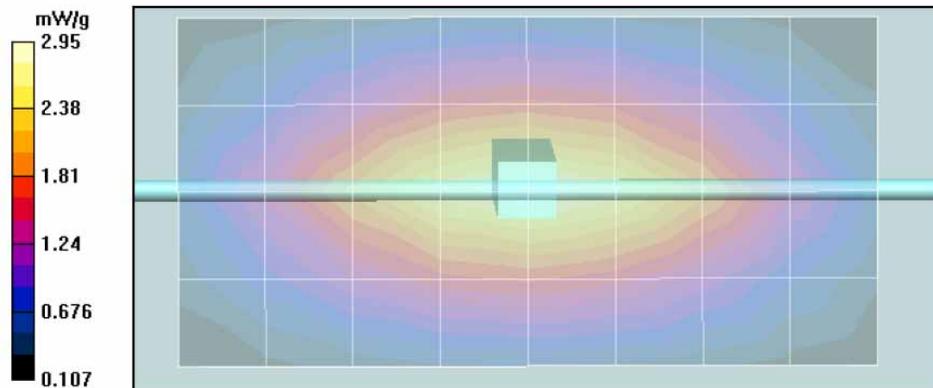
**SAR(1 g) = 2.78 mW/g; SAR(10 g) = 1.76 mW/g**

Maximum value of SAR (measured) = 3.02 mW/g

**System Performance/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm Reference Value = 56.4 V/m; Power Drift = 0.162 dB Peak SAR (extrapolated) = 4.39 W/kg

**SAR(1 g) = 2.85 mW/g; SAR(10 g) = 1.81 mW/g**

Maximum value of SAR (measured) = 3.09 mW/g



### Motorola N&E EME Laboratory

**Date/Time: 12/19/2006 8:26:56 AM**

Robot# / Run#: DASY4-FL-3 / JsT-SYSP-900H-061219-01

Phantom# / Tissue Temp.: SAMTP1022 / 21.5 (C)

Dipole Model# / Serial#: D900V2 / 084

TX Freq. / Start power: 900 (MHz) / 250 (mW)

Target: 11.35 mW/g (1g); 7.21 mW/g (10g)

Calculated: 11.12 mW/g (1g); 7.09 mW/g (10g)

Percent from Target (+/-): 2.03% (1g); 1.67% (10g)  
(Including Drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/30/2006, ConvF(6.12, 6.12, 6.12)

Electronics: DAE3 Sn363, Calibrated: 5/17/2006

Duty Cycle: 1:1, Medium parameters used:  $f = 900$  MHz;  $\sigma = 1.01$  mho/m;  $\epsilon_r = 40.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

**System Performance/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm Reference Value = 57.5 V/m; Power Drift = 0.221 dB Peak SAR (extrapolated) = 4.43 W/kg

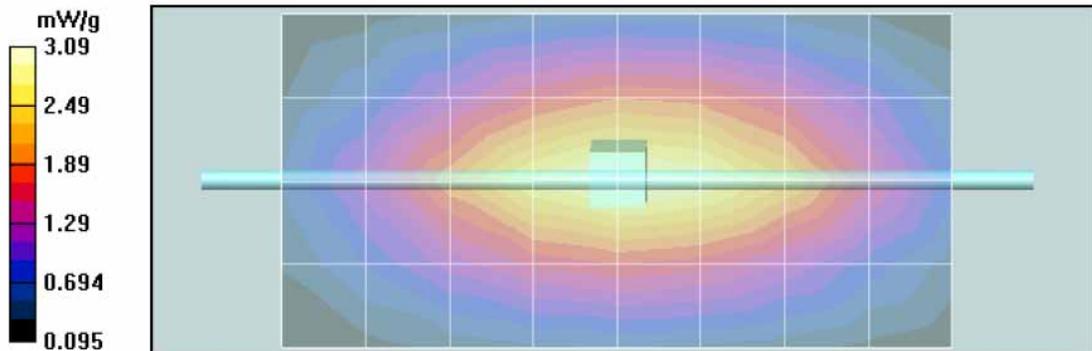
**SAR(1 g) = 2.9 mW/g; SAR(10 g) = 1.85 mW/g**

Maximum value of SAR (measured) = 3.12 mW/g

**System Performance/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm Reference Value = 57.5 V/m; Power Drift = 0.221 dB Peak SAR (extrapolated) = 4.49 W/kg

**SAR(1 g) = 2.95 mW/g; SAR(10 g) = 1.88 mW/g**

Maximum value of SAR (measured) = 3.19 mW/g



### Motorola N&E EME Laboratory

**Date/Time: 12/20/2006 3:50:18 PM**

Robot# / Run#: DASY4-FL-3 / JsT-SYSP-2450B-061220-03

Phantom# / Tissue Temp.: 40302002A-S11 / 20.3 (C)

Dipole Model# / Serial#: D2450V2 / 704

TX Freq. / Start power: 2450 (MHz) / 250 (mW)

Target: 58.82 mW/g (1g); 26.59 mW/g (10g)

Calculated: 54.70 mW/g (1g); 24.81 mW/g (10g)

Percent from Target (+/-): 7.00% (1g); 6.68% (10g)

(Including Drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/30/2006, ConvF(4.18, 4.18, 4.18)

Electronics: DAE3 Sn363, Calibrated: 5/17/2006

Duty Cycle: 1:1, Medium parameters used:  $f = 2450$  MHz;  $\sigma = 2.01$  mho/m;  $\epsilon_r = 50.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

**System Performance/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm Reference Value = 87.6 V/m; Power Drift = 0.0393 dB Peak SAR (extrapolated) = 32.1 W/kg

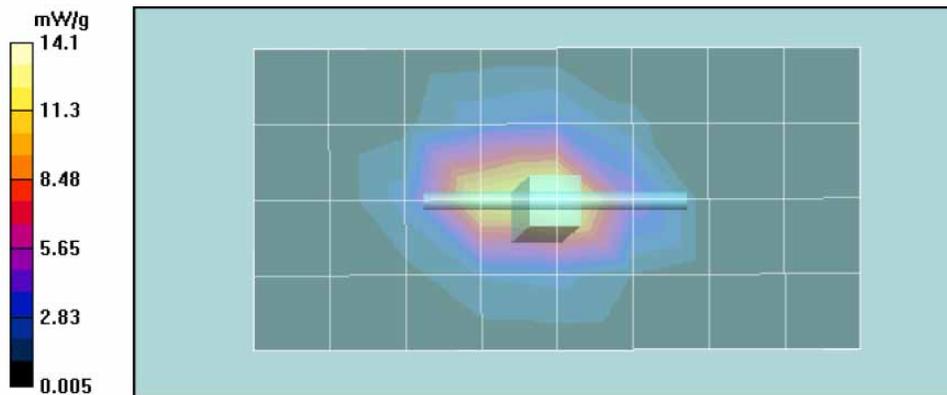
**SAR(1 g) = 13.7 mW/g; SAR(10 g) = 6.21 mW/g**

Maximum value of SAR (measured) = 15.1 mW/g

**System Performance/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm Reference Value = 87.6 V/m; Power Drift = 0.0393 dB Peak SAR (extrapolated) = 32.9 W/kg

**SAR(1 g) = 13.9 mW/g; SAR(10 g) = 6.31 mW/g**

Maximum value of SAR (measured) = 15.4 mW/g



### Motorola N&E EME Laboratory

**Date/Time: 12/21/2006 8:56:12 AM**

Robot# / Run#: DASY4-FL-3 / ErC-SYSP-2450B-061221-01

Phantom# / Tissue Temp.: 40302002A-S11 / 21.5 (C)

Dipole Model# / Serial#: D2450V2 / 704

TX Freq. / Start power: 2450 (MHz) / 250 (mW)

Target: 58.82 mW/g (1g); 26.59 mW/g (10g)

Calculated: 60.27 mW/g (1g); 27.45 mW/g (10g)

Percent from Target (+/-): 2.46% (1g); 3.24% (10g)  
(Including Drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/30/2006, ConvF(4.18, 4.18)

Electronics: DAE3 Sn363, Calibrated: 5/17/2006

Duty Cycle: 1:1, Medium parameters used:  $f = 2450$  MHz;  $\sigma = 2.04$  mho/m;  $\epsilon_r = 51.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

**System Performance/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm Reference Value = 86.2 V/m; Power Drift = -0.0338 dB Peak SAR (extrapolated) = 34.5 W/kg

**SAR(1 g) = 14.9 mW/g; SAR(10 g) = 6.81 mW/g**

Maximum value of SAR (measured) = 16.5 mW/g

**System Performance/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm Reference Value = 86.2 V/m; Power Drift = -0.0338 dB Peak SAR (extrapolated) = 34.6 W/kg

**SAR(1 g) = 15 mW/g; SAR(10 g) = 6.81 mW/g**

