



MOTOROLA



TESTING CERT # 2518.01

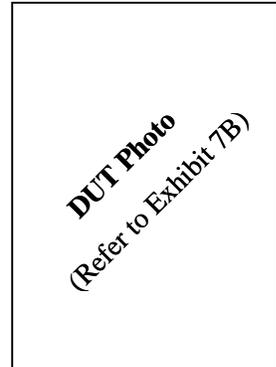
FCC ID: AZ489FT7040

DECLARATION OF COMPLIANCE SAR ASSESSMENT Part 2 of 3

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

Date of Report: 10/01/09
Report Revision: B
Report ID: SAR rpt_H97TGD9PW1AN (WITH QA00569AA AND QA00575AA)_Rev B_091001_SR7228

Responsible Engineer: Stephen C. Whalen (Principal Staff Eng.)
Report Author: Stephen C. Whalen (Principal Staff Eng.)
Date/s Tested: 04/01/09-05/04/09
Manufacturer/Location: Penang
Sector/Group/Div.: EMS
Date submitted for test: 3/31/09
DUT Description: 380-470 MHz 1-5W, 764-870 MHz 1-3W, 6.25 kHz / 12.5 kHz / 25 kHz, Basic Top Display Model W/GPS. Capable of digital and analog FM transmission. Also capable of TDMA transmission
Test TX mode(s): CW
Max. Power output: 5.7W (UHF1), 2.99W (700 MHz), 3.6W (800 MHz)
Nominal Power: 5.0W (UHF1), 2.5W (700 MHz), 3.0W (800 MHz)
Tx Frequency Bands: 380-470 MHz (UHF1) & 764-776 MHz, 794-806 MHz, 806-824 MHz, 851-870 MHz(7/800MHz)
Signaling type: FM and TDMA
Model(s) Tested: H97TGD9PW1AN (WITH QA00569AA AND QA00575AA)
Model(s) Certified: H97TGD9PW1AN (WITH QA00569AA AND QA00575AA)
Serial Number(s): Q02KK412, Q02KK40M
Classification: Occupational/Controlled
Rule Part(s): *90 (406.1-470MHz, 763-775MHz, 793-805MHz, 806-824MHz, 851-869MHz)



* SAR results outside of Part 90 are not applicable for FCC compliance demonstration.

Max. Calc. : 1-g Avg. SAR: 6.74 W/kg (Body); 10-g Avg. SAR: 4.42 W/kg (Body)
Max. Calc. : 1-g Avg. SAR: 4.63 W/kg (Face); 10-g Avg. SAR: 3.53 W/kg (Face)

The test results clearly demonstrate compliance with FCC Occupational/Controlled RF Exposure limits of 8 W/kg averaged over 1 gram per the requirements of 47 CFR 2.1093(d). The 10 grams results are not applicable to FCC filing. The test results clearly demonstrate compliance with ICNIRP (1998) Guidelines for limiting exposure in time-varying electric, magnetic, and electromagnetic fields (up to 300 GHz), Health Physics 74, 494-522 RF Exposure limits of 10 W/kg averaged over 10 grams of contiguous tissue.

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 3.0 of this report. This report shall not be reproduced without written approval from an officially designated representative of the Motorola EME Laboratory. I attest to the accuracy of the data and assume full responsibility for the completeness of these measurements. This reporting format is consistent with the suggested 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
Deanna Zakharia
EMS EME Lab Senior Resource Manager,
Laboratory Director

Approval Date: 10/01/09

Certification Date: 07/08/09

Certification No.: L1090626P

APPENDIX B
Probe Calibration Certificates

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



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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **Motorola CGISS**

Certificate No: **ES3-3147_Feb09**

CALIBRATION CERTIFICATE

Object: **ES3DV3 - SN:3147**

Calibration procedure(s): **QA CAL-01.v6, QA CAL-12.v5, QA CAL-14.v3 and QA CAL-23.v3
Calibration procedure for dosimetric E-field probes**

Calibration date: **February 13, 2009**

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 (Certificate No.) | Scheduled Calibration |
|----------------------------|-----------------|-------------------------------|-----------------------|
| Power meter E4419B | GB41293874 | 1-Apr-08 (No. 217-00788) | Apr-09 |
| Power sensor E4412A | MY41495277 | 1-Apr-08 (No. 217-00788) | Apr-09 |
| Power sensor E4412A | MY41498087 | 1-Apr-08 (No. 217-00788) | Apr-09 |
| Reference 3 dB Attenuator | SN: S5054 (3c) | 1-Jul-08 (No. 217-00865) | Jul-09 |
| Reference 20 dB Attenuator | SN: S5086 (20b) | 31-Mar-08 (No. 217-00787) | Apr-09 |
| Reference 30 dB Attenuator | SN: S5129 (30b) | 1-Jul-08 (No. 217-00866) | Jul-09 |
| Reference Probe ES3DV2 | SN: 3013 | 2-Jan-09 (No. ES3-3013_Jan09) | Jan-10 |
| DAE4 | SN: 660 | 9-Sep-08 (No. DAE4-660_Sep08) | Sep-09 |

| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
|---------------------------|--------------|-----------------------------------|------------------------|
| RF generator HP 8648C | US3642U01700 | 4-Aug-99 (in house check Oct-07) | In house check: Oct-09 |
| Network Analyzer HP 8753E | US37390585 | 18-Oct-01 (in house check Oct-08) | In house check: Oct-09 |

| | Name | Function | Signature |
|----------------|---------------|-------------------|-----------|
| Calibrated by: | Katja Pokovic | Technical Manager | |
| Approved by: | Nils Kuster | Quality Manager | |

Issued: February 16, 2009

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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Glossary:

| | |
|--------------------------|--|
| TSL | tissue simulating liquid |
| NORM _{x,y,z} | sensitivity in free space |
| ConvF | sensitivity in TSL / NORM _{x,y,z} |
| DCP | diode compression point |
| Polarization ϕ | ϕ rotation around probe axis |
| Polarization ϑ | ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis |

Calibration is Performed According to the Following Standards:

- 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
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not effect the E²-field uncertainty inside TSL (see below *ConvF*).
- NORM(f)_{x,y,z}** = NORM_{x,y,z} * *frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- DCP_{x,y,z}**: DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM_{x,y,z} * *ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

ES3DV3 SN:3147

February 13, 2009

Probe ES3DV3

SN:3147

| | |
|------------------|-------------------|
| Manufactured: | July 12, 2007 |
| Last calibrated: | August 18, 2008 |
| Recalibrated: | February 13, 2009 |

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

ES3DV3 SN:3147

February 13, 2009

DASY - Parameters of Probe: ES3DV3 SN:3147

| Sensitivity in Free Space ^A | | | Diode Compression ^B | |
|--|--------------|-----------------------|--------------------------------|-------|
| NormX | 1.25 ± 10.1% | μV/(V/m) ² | DCP X | 94 mV |
| NormY | 1.22 ± 10.1% | μV/(V/m) ² | DCP Y | 95 mV |
| NormZ | 1.20 ± 10.1% | μV/(V/m) ² | DCP Z | 93 mV |

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

| TSL | 900 MHz | Typical SAR gradient: 5 % per mm | |
|-----|--|----------------------------------|--------|
| | Sensor Center to Phantom Surface Distance | 3.0 mm | 4.0 mm |
| | SAR _{be} [%] Without Correction Algorithm | 9.5 | 5.4 |
| | SAR _{be} [%] With Correction Algorithm | 0.8 | 0.4 |

| TSL | 1810 MHz | Typical SAR gradient: 10 % per mm | |
|-----|--|-----------------------------------|--------|
| | Sensor Center to Phantom Surface Distance | 3.0 mm | 4.0 mm |
| | SAR _{be} [%] Without Correction Algorithm | 8.3 | 4.8 |
| | SAR _{be} [%] With Correction Algorithm | 0.9 | 0.5 |

Sensor Offset

Probe Tip to Sensor Center **2.0 mm**

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

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

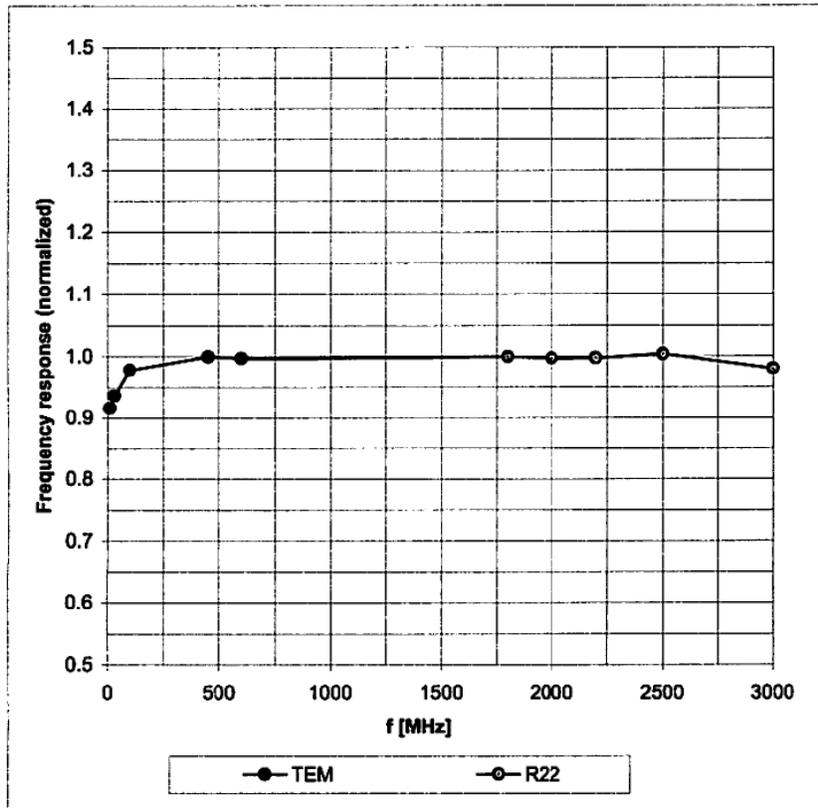
^B Numerical linearization parameter: uncertainty not required.

ES3DV3 SN:3147

February 13, 2009

Frequency Response of E-Field

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

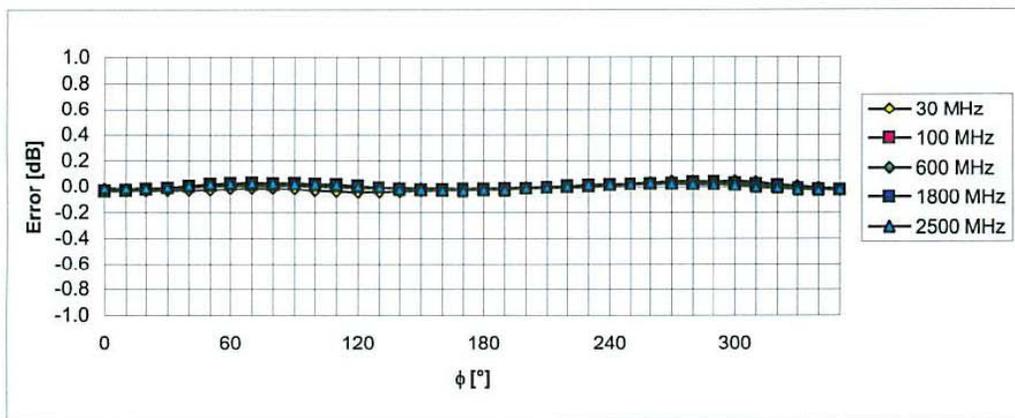
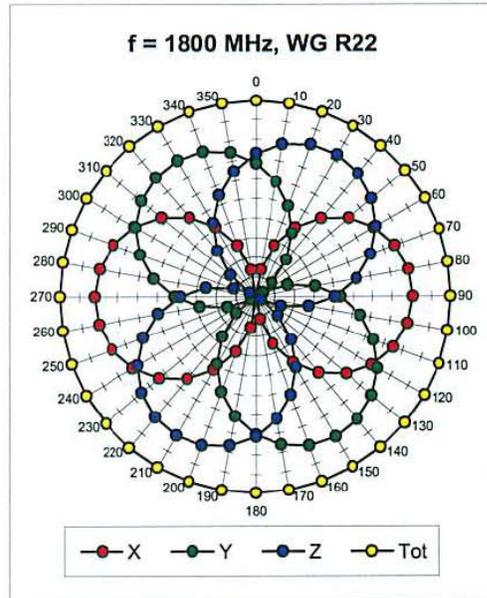
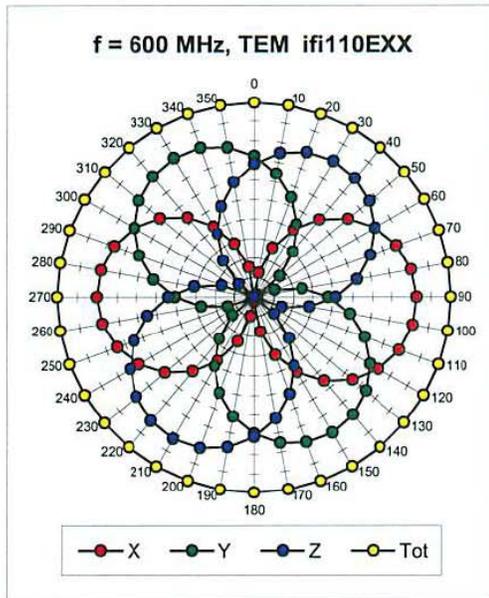


Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ (k=2)

ES3DV3 SN:3147

February 13, 2009

Receiving Pattern (ϕ), $\vartheta = 0^\circ$

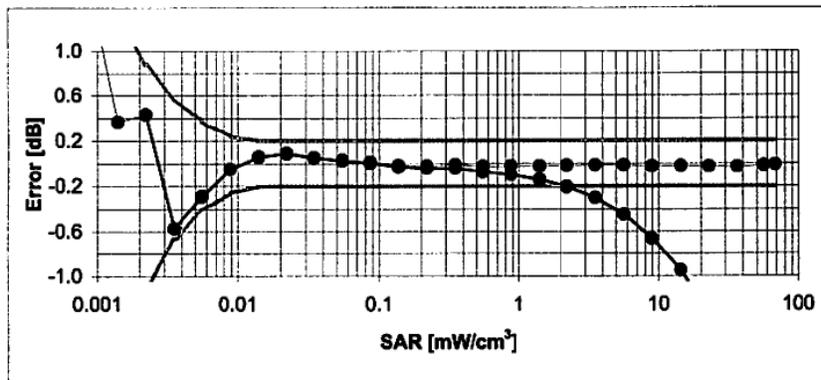
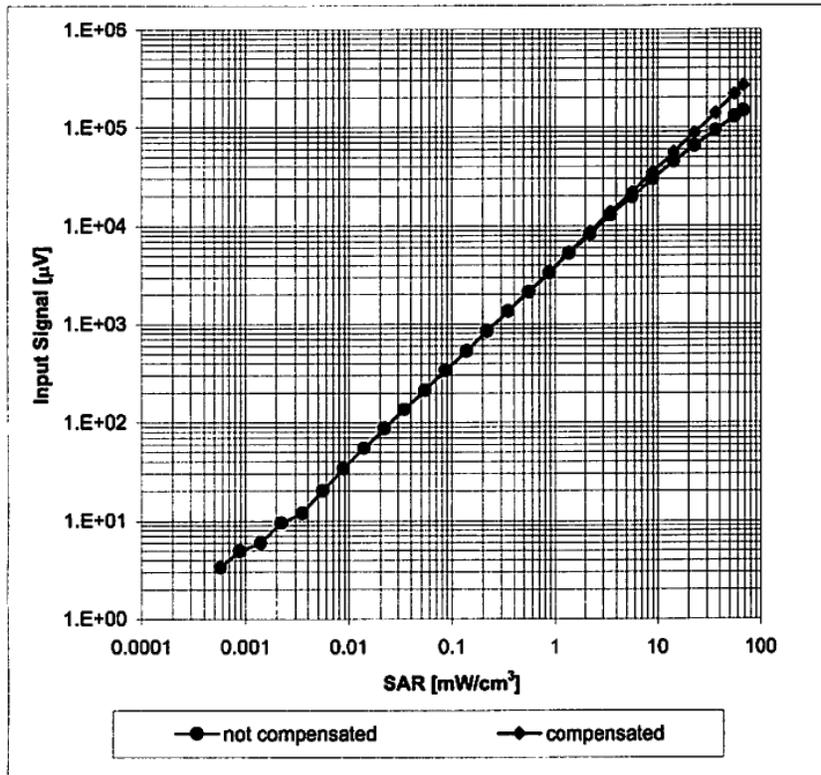


Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

ES3DV3 SN:3147

February 13, 2009

Dynamic Range $f(SAR_{head})$ (Waveguide R22, $f = 1800$ MHz)

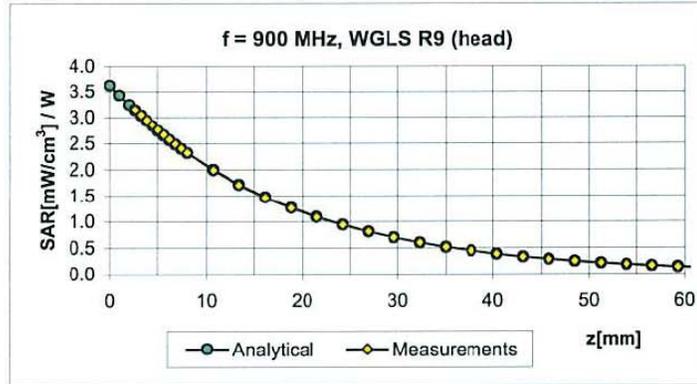


Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

ES3DV3 SN:3147

February 13, 2009

Conversion Factor Assessment

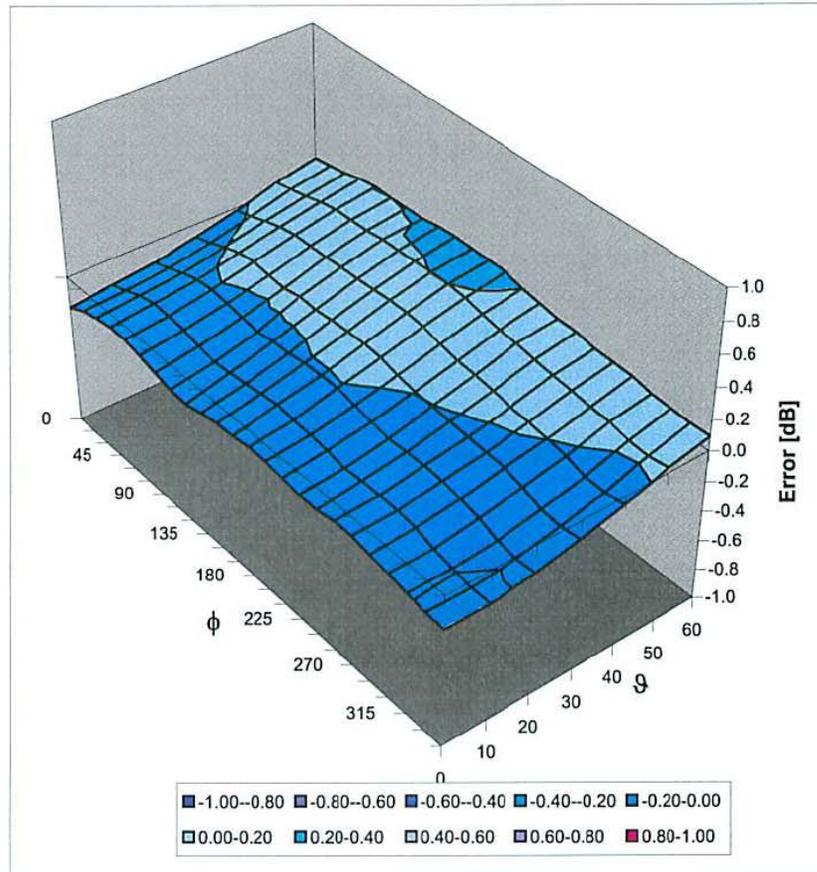


| f [MHz] | Validity [MHz] ^c | TSL | Permittivity | Conductivity | Alpha | Depth | ConvF Uncertainty |
|---------|-----------------------------|------|--------------|--------------|-------|-------|--------------------|
| 450 | ± 50 / ± 100 | Head | 43.5 ± 5% | 0.87 ± 5% | 0.31 | 1.51 | 6.31 ± 13.3% (k=2) |
| 900 | ± 50 / ± 100 | Head | 41.5 ± 5% | 0.97 ± 5% | 0.88 | 1.10 | 5.86 ± 11.0% (k=2) |
| 1810 | ± 50 / ± 100 | Head | 40.0 ± 5% | 1.40 ± 5% | 0.42 | 1.62 | 4.97 ± 11.0% (k=2) |
| 1950 | ± 50 / ± 100 | Head | 40.0 ± 5% | 1.40 ± 5% | 0.41 | 1.62 | 4.81 ± 11.0% (k=2) |
| 2300 | ± 50 / ± 100 | Head | 39.4 ± 5% | 1.71 ± 5% | 0.35 | 1.87 | 4.70 ± 11.0% (k=2) |
| 2450 | ± 50 / ± 100 | Head | 39.2 ± 5% | 1.80 ± 5% | 0.40 | 1.81 | 4.46 ± 11.0% (k=2) |
| 2600 | ± 50 / ± 100 | Head | 39.0 ± 5% | 1.96 ± 5% | 0.41 | 1.84 | 4.38 ± 11.0% (k=2) |
| 3500 | ± 50 / ± 100 | Head | 37.9 ± 5% | 2.91 ± 5% | 0.90 | 1.22 | 3.92 ± 13.1% (k=2) |
| 3700 | ± 50 / ± 100 | Head | 37.7 ± 5% | 3.12 ± 5% | 0.90 | 1.22 | 3.53 ± 13.1% (k=2) |
| 450 | ± 50 / ± 100 | Body | 56.7 ± 5% | 0.94 ± 5% | 0.24 | 1.33 | 6.69 ± 13.3% (k=2) |
| 900 | ± 50 / ± 100 | Body | 55.0 ± 5% | 1.05 ± 5% | 0.79 | 1.17 | 5.80 ± 11.0% (k=2) |
| 1810 | ± 50 / ± 100 | Body | 53.3 ± 5% | 1.52 ± 5% | 0.41 | 1.44 | 4.73 ± 11.0% (k=2) |
| 1950 | ± 50 / ± 100 | Body | 53.3 ± 5% | 1.52 ± 5% | 0.38 | 1.49 | 4.69 ± 11.0% (k=2) |
| 2300 | ± 50 / ± 100 | Body | 52.8 ± 5% | 1.85 ± 5% | 0.83 | 1.13 | 4.26 ± 11.0% (k=2) |
| 2450 | ± 50 / ± 100 | Body | 52.7 ± 5% | 1.95 ± 5% | 0.80 | 1.16 | 4.06 ± 11.0% (k=2) |
| 2600 | ± 50 / ± 100 | Body | 52.5 ± 5% | 2.16 ± 5% | 0.99 | 1.08 | 3.99 ± 11.0% (k=2) |
| 3500 | ± 50 / ± 100 | Body | 51.3 ± 5% | 3.31 ± 5% | 0.90 | 1.20 | 3.49 ± 13.1% (k=2) |
| 3700 | ± 50 / ± 100 | Body | 51.0 ± 5% | 3.55 ± 5% | 0.90 | 1.20 | 3.40 ± 13.1% (k=2) |

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

Deviation from Isotropy in HSL

Error (ϕ, ϑ), $f = 900$ MHz



Uncertainty of Spherical Isotropy Assessment: $\pm 2.6\%$ (k=2)

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Additional Conversion Factors for Dosimetric E-Field Probe

| | |
|-------------------------|-------------------|
| Type: | ES3DV3 |
| Serial Number: | 3147 |
| Place of Assessment: | Zurich |
| Date of Assessment: | February 17, 2009 |
| Probe Calibration Date: | February 13, 2009 |

Schmid & Partner Engineering AG hereby certifies that conversion factor(s) of this probe have been evaluated on the date indicated above. The assessment was performed using the FDTD numerical code SEMCAD of Schmid & Partner Engineering AG. Since the evaluation is coupled with measured conversion factors, it has to be recalculated yearly, i.e., following the re-calibration schedule of the probe. The uncertainty of the numerical assessment is based on the extrapolation from measured value at 900 MHz or at 1810 MHz.

Assessed by:



Schmid & Partner Engineering AG

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Dosimetric E-Field Probe ES3DV3 SN:3147

Conversion factor (\pm standard deviation)

| | | | |
|---------|--------------|---------------|---|
| 150 MHz | <i>ConvF</i> | 8.0 \pm 10% | $\epsilon_r = 52.3$ $\sigma = 0.76$ mho/m (head tissue) |
| 250 MHz | <i>ConvF</i> | 7.2 \pm 10% | $\epsilon_r = 47.6$ $\sigma = 0.83$ mho/m (head tissue) |
| 300 MHz | <i>ConvF</i> | 7.2 \pm 9% | $\epsilon_r = 45.3$ $\sigma = 0.87$ mho/m (head tissue) |
| 750 MHz | <i>ConvF</i> | 6.1 \pm 7% | $\epsilon_r = 41.9$ $\sigma = 0.89$ mho/m (head tissue) |
| 150 MHz | <i>ConvF</i> | 7.7 \pm 10% | $\epsilon_r = 61.9$ $\sigma = 0.80$ mho/m (body tissue) |
| 250 MHz | <i>ConvF</i> | 7.3 \pm 10% | $\epsilon_r = 59.4$ $\sigma = 0.88$ mho/m (body tissue) |
| 300 MHz | <i>ConvF</i> | 7.2 \pm 9% | $\epsilon_r = 58.2$ $\sigma = 0.92$ mho/m (body tissue) |
| 750 MHz | <i>ConvF</i> | 5.9 \pm 7% | $\epsilon_r = 55.5$ $\sigma = 0.96$ mho/m (body tissue) |

Important Note:

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

Please see also Section 4.7 of the DASY4 Manual.

Note: The standard deviation for each Conversion factor stated in above numerical assessments were taken at k = 1.

APPENDIX C
Dipole Calibration Certificates

**Calibration Laboratory of
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Accreditation No.: **SCS 108**

Client **Motorola CGISS**

Certificate No: **D450V2-1002_Sep08**

CALIBRATION CERTIFICATE

Object **D450V2 - SN: 1002**

Calibration procedure(s) **QA CAL-15.v5
Calibration Procedure for dipole validation kits below 800 MHz.**

Calibration date: **September 26, 2008**

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 E4419B | GB41293874 | 01-Apr-08 (No. 217-00788) | Apr-09 |
| Power sensor E4412A | MY41495277 | 01-Apr-08 (No. 217-00788) | Apr-09 |
| Power sensor E4412A | MY41498087 | 01-Apr-08 (No. 217-00788) | Apr-09 |
| Reference 3 dB Attenuator | SN: S5054 (3c) | 01-Jul-08 (No. 217-00865) | Jul-09 |
| Reference 20 dB Attenuator | SN: S5086 (20b) | 31-Mar-08 (No. 217-00787) | Mar-09 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 01-Jul-08 (No. 217-00867) | Jul-09 |
| Reference Probe ET3DV6 (LF) | SN: 1507 | 27-Jun-08 (No. ET3-1507_Jun08) | Jun-09 |
| DAE4 | SN: 601 | 14-Mar-08 (No. DAE4-601_Mar08) | Mar-09 |

| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
|---------------------------|--------------|-----------------------------------|------------------------|
| RF generator HP 8648C | US3642U01700 | 04-Aug-99 (in house check Oct-07) | In house check: Oct-09 |
| Network Analyzer HP 8753E | US37390585 | 19-Oct-01 (in house check Oct-07) | In house check: Oct-08 |

| | Name | Function | Signature |
|----------------|----------------|-----------------------|-----------|
| Calibrated by: | Jeton Kastrati | Laboratory Technician | |
| Approved by: | Katja Pokovic | Technical Manager | |

Issued: September 29, 2008

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Accreditation No.: **SCS 108**

Glossary:

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

Calibration is Performed According to the Following Standards:

- 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
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- 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:

- DASY4/5 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 | DASY5 | V5.0 |
| Extrapolation | Advanced Extrapolation | |
| Phantom | Flat Phantom V4.4 | Shell thickness: 6 ± 0.2 mm |
| Distance Dipole Center - TSL | 15 mm | with Spacer |
| Area Scan Resolution | dx, dy = 15 mm | |
| Zoom Scan Resolution | dx, dy, dz = 5 mm | |
| Frequency | 450 MHz \pm 1 MHz | |

Head TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---------------------|-----------------|-------------------------|
| Nominal Head TSL parameters | 22.0 °C | 43.5 | 0.87 mho/m |
| Measured Head TSL parameters | (22.0 ± 0.2) °C | $43.1 \pm 6 \%$ | 0.83 mho/m $\pm 6 \%$ |
| Head TSL temperature during test | (21.8 ± 0.2) °C | --- | --- |

SAR result with Head TSL

| SAR averaged over 1 cm³ (1 g) of Head TSL | condition | |
|---|--------------------|--|
| SAR measured | 398 mW input power | 1.97 mW / g |
| SAR normalized | normalized to 1W | 4.95 mW / g |
| SAR for nominal Head TSL parameters ¹ | normalized to 1W | 5.03 mW / g \pm 18.1 % (k=2) |

| SAR averaged over 10 cm³ (10 g) of Head TSL | condition | |
|---|--------------------|--|
| SAR measured | 398 mW input power | 1.33 mW / g |
| SAR normalized | normalized to 1W | 3.34 mW / g |
| SAR for nominal Head TSL parameters ¹ | normalized to 1W | 3.37 mW / g \pm 17.6 % (k=2) |

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

Appendix

Antenna Parameters with Head TSL

| | |
|--------------------------------------|-----------------|
| Impedance, transformed to feed point | 56.3 Ω - 6.1 jΩ |
| Return Loss | - 21.7 dB |

General Antenna Parameters and Design

| | |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.348 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, 2002 |

DASY5 Validation Report for Head TSL

Date/Time: 26.09.2008 13:21:17

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 450 MHz; Type: D450V2; Serial: D450V2 - SN:1002

Communication System: CW; Frequency: 450 MHz; Duty Cycle: 1:1

Medium: HSL450

Medium parameters used: $f = 450 \text{ MHz}$; $\sigma = 0.83 \text{ mho/m}$; $\epsilon_r = 43.1$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ET3DV6 - SN1507 (LF); ConvF(6.66, 6.66, 6.66); Calibrated: 27.06.2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 14.03.2008
- Phantom: Flat Phantom 4.4; Type: Flat Phantom 4.4
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

d=15mm, Pin=398mW/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 2.09 mW/g

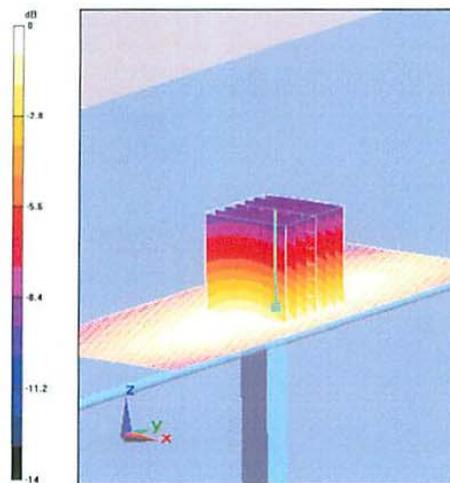
d=15mm, Pin=398mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 51.7 V/m; Power Drift = -0.034 dB

Peak SAR (extrapolated) = 2.92 W/kg

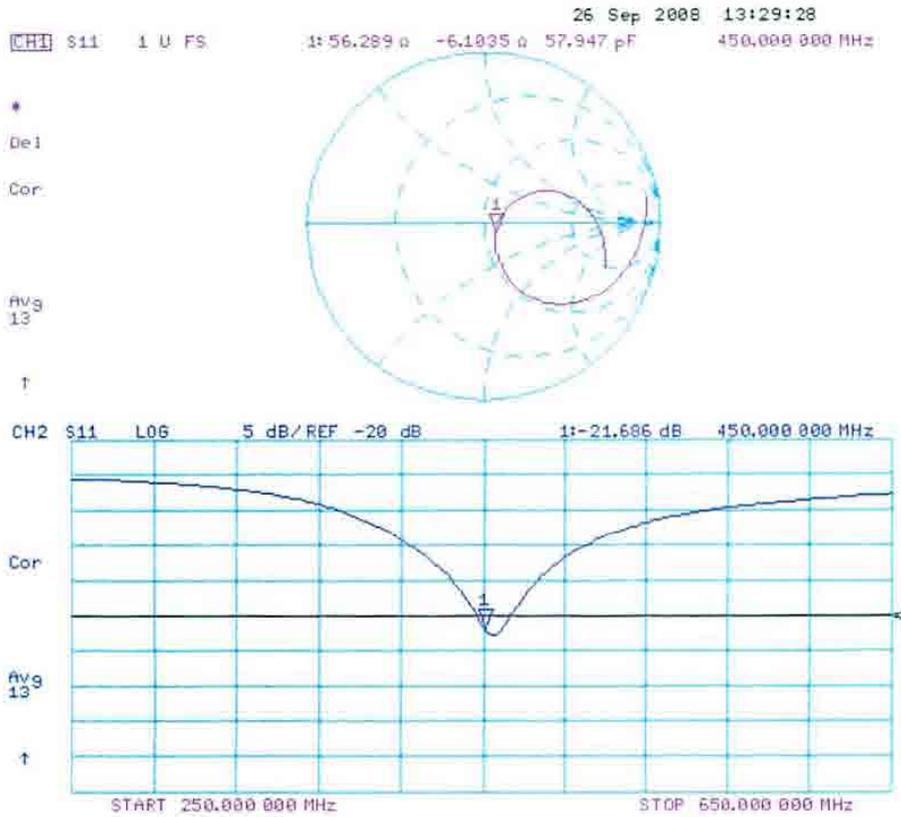
SAR(1 g) = 1.97 mW/g; SAR(10 g) = 1.33 mW/g

Maximum value of SAR (measured) = 2.12 mW/g



0 dB = 2.12mW/g

Impedance Measurement Plot for Head TSL



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



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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **Motorola CGISS**

Certificate No: **D835V2-435_Sep08**

CALIBRATION CERTIFICATE

Object: **D835V2 - SN: 435**

Calibration procedure(s): **QA CAL-05.v7
Calibration procedure for dipole validation kits**

Calibration date: **September 22, 2008**

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 (Certificate No.) | Scheduled Calibration |
|-----------------------------|--------------------|--------------------------------|-----------------------|
| Power meter EPM-442A | GB37480704 | 04-Oct-07 (No. 217-00736) | Oct-08 |
| Power sensor HP 8481A | US37292783 | 04-Oct-07 (No. 217-00736) | Oct-08 |
| Reference 20 dB Attenuator | SN: 5086 (20g) | 01-Jul-08 (No. 217-00864) | Jul-09 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 01-Jul-08 (No. 217-00867) | Jul-09 |
| Reference Probe ES3DV2 | SN: 3025 | 28-Apr-08 (No. ES3-3025_Apr08) | Apr-09 |
| DAE4 | SN: 601 | 14-Mar-08 (No. DAE4-601_Mar08) | Mar-09 |

| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
|---------------------------|------------------|-----------------------------------|------------------------|
| Power sensor HP 8481A | MY41092317 | 18-Oct-02 (in house check Oct-07) | In house check: Oct-09 |
| RF generator R&S SMT-06 | 100005 | 4-Aug-99 (in house check Oct-07) | In house check: Oct-09 |
| Network Analyzer HP 8753E | US37390585 S4206 | 18-Oct-01 (in house check Oct-07) | In house check: Oct-08 |

| | Name | Function | Signature |
|----------------|----------------|-----------------------|-----------|
| Calibrated by: | Jeton Kastrati | Laboratory Technician | |
| Approved by: | Katja Pokovic | Technical Manager | |

Issued: September 22, 2008

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

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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:

- 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
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- 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:

- DASY4/5 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 | DASY5 | V5.0 |
| Extrapolation | Advanced Extrapolation | |
| Phantom | Modular Flat Phantom V4.9 | |
| Distance Dipole Center - TSL | 15 mm | with Spacer |
| Zoom Scan Resolution | dx, dy, dz = 5 mm | |
| Frequency | 835 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 | 0.90 mho/m |
| Measured Head TSL parameters | (22.0 ± 0.2) °C | 40.2 ± 6 % | 0.88 mho/m ± 6 % |
| Head TSL temperature during test | (22.5 ± 0.2) °C | --- | --- |

SAR result with Head TSL

| SAR averaged over 1 cm³ (1 g) of Head TSL | Condition | |
|---|--------------------|---------------------------|
| SAR measured | 250 mW input power | 2.39 mW / g |
| SAR normalized | normalized to 1W | 9.56 mW / g |
| SAR for nominal Head TSL parameters ¹ | normalized to 1W | 9.51 mW /g ± 17.0 % (k=2) |

| SAR averaged over 10 cm³ (10 g) of Head TSL | condition | |
|---|--------------------|---------------------------|
| SAR measured | 250 mW input power | 1.57 mW / g |
| SAR normalized | normalized to 1W | 6.28 mW / g |
| SAR for nominal Head TSL parameters ¹ | normalized to 1W | 6.24 mW /g ± 16.5 % (k=2) |

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

Appendix

Antenna Parameters with Head TSL

| | |
|--------------------------------------|-------------------------------|
| Impedance, transformed to feed point | 50.0 Ω -8.9 j Ω |
| Return Loss | - 21.0 dB |

General Antenna Parameters and Design

| | |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.392 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 | December 15, 2000 |

DASY5 Validation Report for Head TSL

Date/Time: 22.09.2008 10:19:42

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:435

Communication System: CW-835; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL 900 MHz

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.901 \text{ mho/m}$; $\epsilon_r = 41.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV2 - SN3025; ConvF(5.97, 5.97, 5.97); Calibrated: 28.04.2008
- Sensor-Surface: 3.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 14.03.2008
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

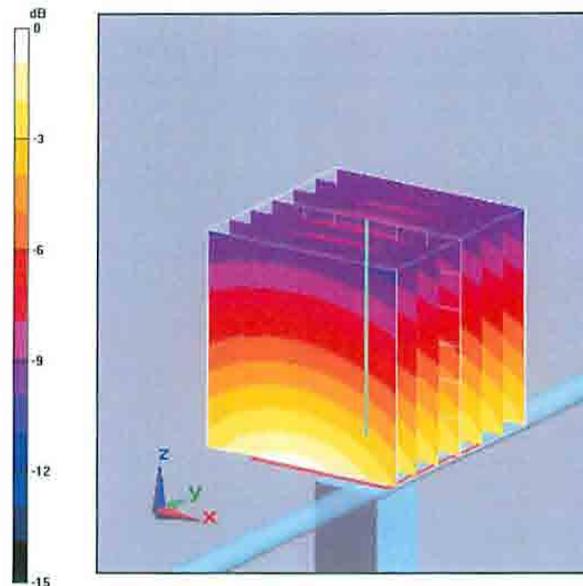
Pin=250mW; dip=15mm; dist=3.4mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 56 V/m; Power Drift = 0.020 dB

Peak SAR (extrapolated) = 3.48 W/kg

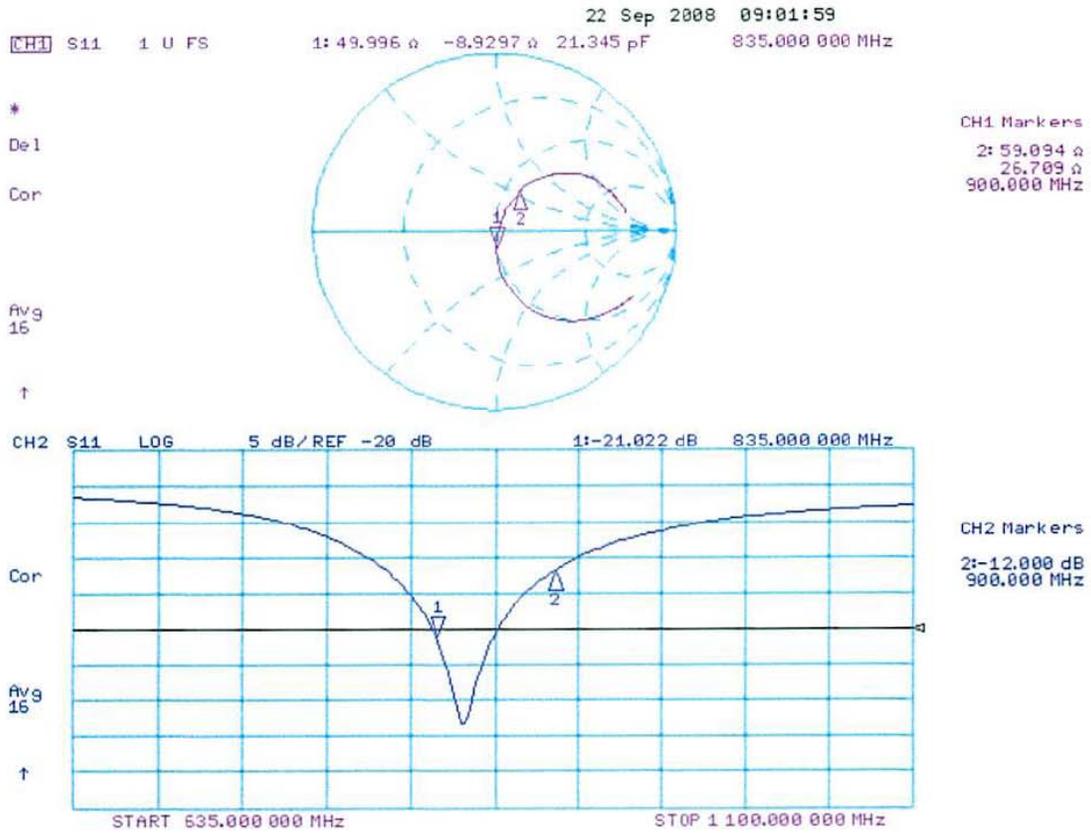
SAR(1 g) = 2.39 mW/g; SAR(10 g) = 1.57 mW/g

Maximum value of SAR (measured) = 2.69 mW/g



0 dB = 2.69mW/g

Impedance Measurement Plot for Head TSL



Appendix D Test System Verification Scans

The SAR result indicated on the Manufacture's Calibrated certificate for dipole D450V2 S/N 1002 and D835V2 S/N 435 were not used due to the following:

-- The IEEE1528-2003 and the FCC OET-65 Supplement C, System Verification section indicated that "The measured 1-g SAR should be within 10% of the expected target values specified for the specific phantom and RF source used in the system verification measurement."

-- SPEAG calibration certificate indicates that the allowed tolerance for this dipole is higher than +/- 10% (e.g. 5.03 +/-18.1% at k=2 for the D450V2 S/N 1002 and 9.51 +/-17.0% at k=2 for the D835V2 S/N 435).

-- The allowed tolerance for the probes is also higher than +/- 10% (e.g. 13.3% at k=2 at 450MHz and 11.0% at k=2 at 900MHz for the probe being used to assess this product).

Due to probe, dipole and system tolerances noted above, the lab averages dipole results across multiple probes to establish a set of averaged targets for each dipole using the following procedure:

- The System Validation was conducted per IEEE1528-2003 and the latest draft of IEC62209-2 (10/3/08) standards using the simulated head tissue and multiple probes that are available and applicable for the dipole under test to verify the System Validation. Results for this dipole are within the measurement system uncertainty of the reference SAR values indicated within the latest draft of IEC62209-2 (10/3/08) when using flat phantom with 2mm thickness is used. These results then are averaged and used as the target for the daily system performance check when the simulated head tissue is used.
- The dipole targets for the body are set immediately following the same process noted above. Since there is no standard referencing the SAR values for the System Validation using the simulated body tissue, the compliant System Validation results using the simulated head tissue are used to justify the use of the System Validation results using the simulated body tissue due to the same setup except for the simulated tissue type.

The targets set in this report were conducted following the above process.

Note that the targets set for the tested dipole, when using the simulated head tissue, meets the requirement for the system validation per IEEE1528-2003, the latest draft of IEC62209-2 (10/3/08) standards, and the difference between this result and the result from the manufacture's dipole calibration certificate is 7.0% for 450 dipole and 0.2% for 835 dipole which is well within the measurement uncertainty of the measurement system at k=2.

To assess the isotropic characteristics of the measurement probe, a probe rotation was performed using the "Rotation (1D)" function in the DASY software with a measured isotropy tolerance of +/- 0.5dB.

Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/1/2009 4:57:13 PM

Robot# / Run#: DASY4-FL-2 / CM-SYSP-450B-090401-01

Phantom# / Tissue Temp.: OVAL 1016 / 20.0 (C)

Dipole Model# / Serial#: D450V2 / 1002

TX Freq. / Start power: 450 (MHz) / 250 (mW)

Target: 4.52 mW/g (1g)

Calculated: 4.28 mW/g (1g)

Percent from Target (+/-): 5.3 % (1g)

Rotation (1D): 0.036 dB

Comments:

Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(6.69, 6.69, 6.69)

Electronics: DAE3 Sn374, Calibrated: 1/23/2009

Duty Cycle: 1:1, Medium parameters used: $f = 450$ MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 56.2$; $\rho = 1000$ kg/m³

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

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

Reference Value = 35.4 V/m; Power Drift = 0.00447 dB

Peak SAR (extrapolated) = 1.59 W/kg

SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.725 mW/g

Maximum value of SAR (measured) = 1.15 mW/g

System Performance Check/Dipole Area Scan 1 (41x51x1): Measurement grid: $dx=15$ mm,

$dy=15$ mm

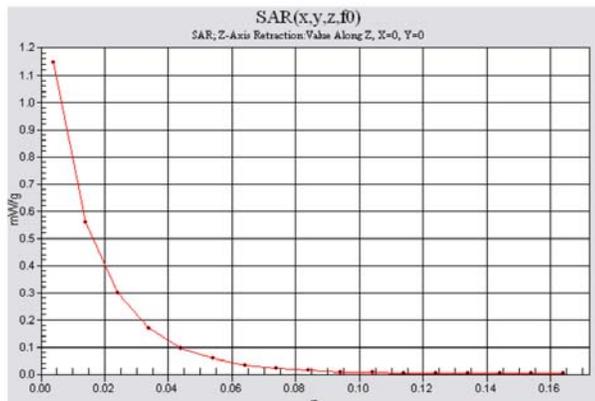
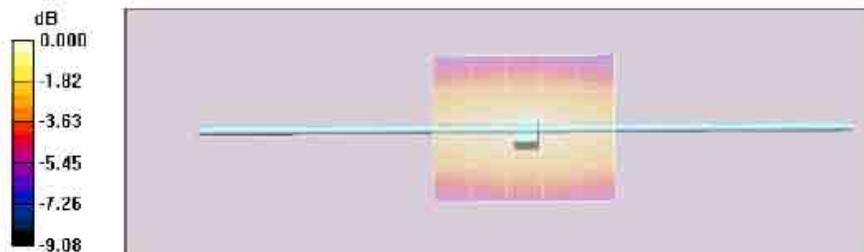
Reference Value = **not measured**; Power Drift = 0.00447 dB

Motorola Fast SAR: SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.772 mW/g

Maximum value of SAR (interpolated) = 1.14 mW/g

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

$dz=10$ mm



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/2/2009 6:43:00 AM

Robot# / Run#: DASY4-FL-2 / JsT-SYSP-450B-090402-01
Phantom# / Tissue Temp.: OVAL1016 / 21.0 (C)
Dipole Model# / Serial#: D450V2 / 1002
TX Freq. / Start power: 450 (MHz) / 250 (mW)

Target: 4.52 mW/g (1g)
Calculated: 4.28 mW/g (1g)
Percent from Target (+/-): 5.3 % (1g)
Rotation (1D): 0.027 dB

Comments:

Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(6.69, 6.69, 6.69)
Electronics: DAE3 Sn374, Calibrated: 1/23/2009
Duty Cycle: 1:1, Medium parameters used: $f = 450$ MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 57$; $\rho = 1000$ kg/m³

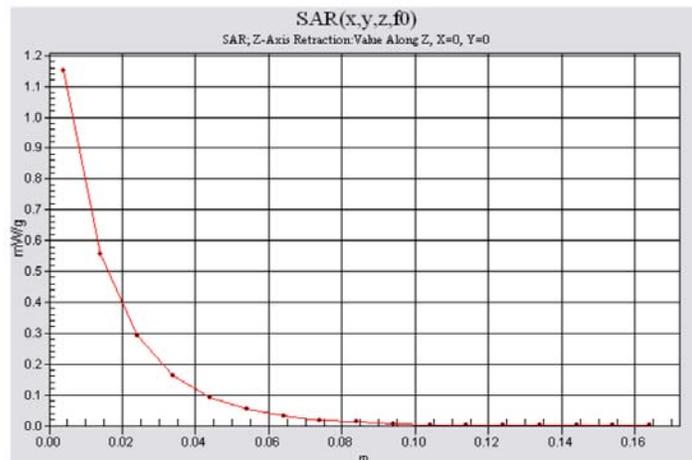
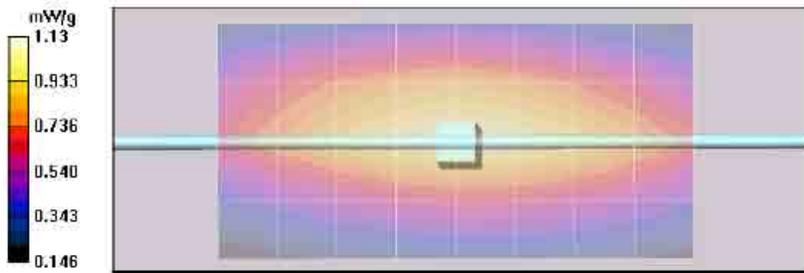
System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

$dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm
Reference Value = 35.4 V/m; Power Drift = -0.00492 dB
Peak SAR (extrapolated) = 1.60 W/kg
SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.723 mW/g
Maximum value of SAR (measured) = 1.15 mW/g

System Performance Check/Dipole Area Scan 2 (5x9x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (measured) = 1.13 mW/g

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



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/3/2009 6:42:51 AM

Robot# / Run#: DASY4-FL-2 / JsT-SYSP-450B-090403-01
Phantom# / Tissue Temp.: OVAL1016 / 21.3 (C)
Dipole Model# / Serial#: D450V2 / 1002
TX Freq. / Start power: 450 (MHz) / 250 (mW)

Target: 4.52 mW/g (1g)
Calculated: 4.32 mW/g (1g)
Percent from Target (+/-): 4.4 % (1g)
Rotation (1D): 0.035 dB

Comments:

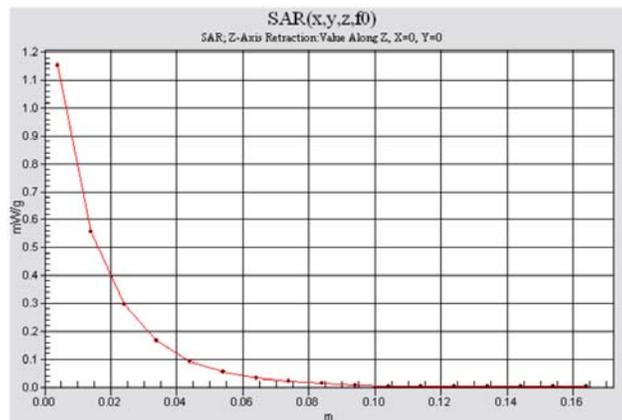
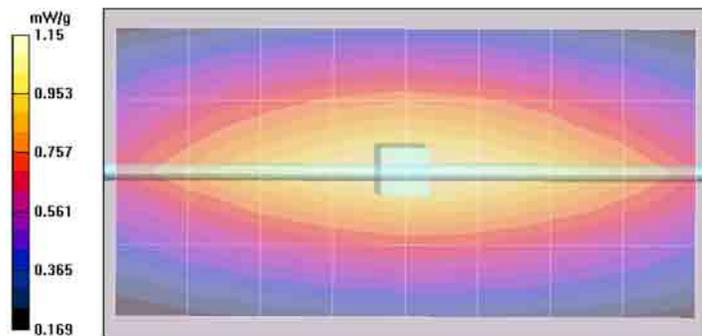
Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(6.69, 6.69, 6.69)
Electronics: DAE3 Sn374, Calibrated: 1/23/2009
Duty Cycle: 1:1, Medium parameters used: f = 450 MHz; $\sigma = 0.94$ mho/m; $\epsilon_r = 59.1$; $\rho = 1000$ kg/m3

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

dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 35.2 V/m; Power Drift = -0.00691 dB
Peak SAR (extrapolated) = 1.60 W/kg
SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.729 mW/g
Maximum value of SAR (measured) = 1.15 mW/g

System Performance Check/Dipole Area Scan 2 (5x9x1): Measurement grid: dx=15mm, dy=15mm

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



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/6/2009 1:22:21 PM

Robot# / Run#: DASY4-FL-2 / HvH-SYSP-450B-090406-02

Phantom# / Tissue Temp.: OVAL1016 / 21.2 (C)

Dipole Model# / Serial#: D450V2 / 1002

TX Freq. / Start power: 450 (MHz) / 250 (mW)

Target: 4.52 mW/g (1g)

Calculated: 4.24 mW/g (1g)

Percent from Target (+/-): 6.2 % (1g)

Rotation (1D): 0.034 dB

Comments:

Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(6.69, 6.69, 6.69)

Electronics: DAE3 Sn374, Calibrated: 1/23/2009

Duty Cycle: 1:1, Medium parameters used: $f = 450$ MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 58.8$; $\rho = 1000$ kg/m³

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

dx=7.5mm, dy=7.5mm,

dz=5mm

Reference Value = 35.2 V/m; Power Drift = -0.018 dB

Peak SAR (extrapolated) = 1.57 W/kg

SAR(1 g) = 1.06 mW/g; SAR(10 g) = 0.713 mW/g

Maximum value of SAR (measured) = 1.13 mW/g

System Performance Check/Dipole Area Scan 2 (41x81x1): Measurement grid: dx=15mm,

dy=15mm

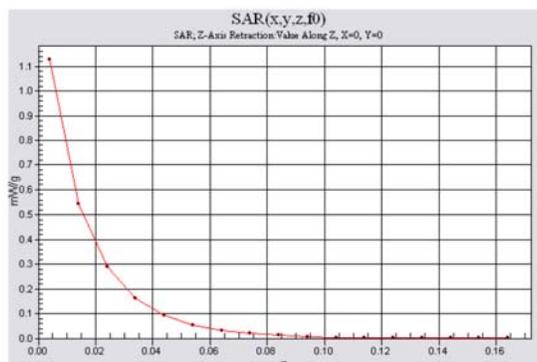
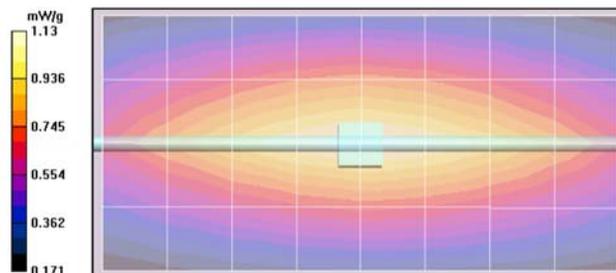
Reference Value = 35.2 V/m; Power Drift = -0.018 dB

Motorola Fast SAR: SAR(1 g) = 1.06 mW/g; SAR(10 g) = 0.755 mW/g

Maximum value of SAR (interpolated) = 1.13 mW/g

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

dz=10mm



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/7/2009 7:33:55 AM

Robot# / Run#: DASY4-FL-2 / ErC-SYSP-450B-090407-01

Phantom# / Tissue Temp.: OVAL1016 / 21.2 (C)

Dipole Model# / Serial#: D450V2 / 1002

TX Freq. / Start power: 450 (MHz) / 250 (mW)

Target: 4.52 mW/g (1g)

Calculated: 4.28 mW/g (1g)

Percent from Target (+/-): 5.3 % (1g)

Rotation (1D): 0.044 dB

Comments:

Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(6.69, 6.69, 6.69)

Electronics: DAE3 Sn374, Calibrated: 1/23/2009

Duty Cycle: 1:1, Medium parameters used: $f = 450$ MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 58.7$; $\rho = 1000$ kg/m³

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

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

Reference Value = 35.3 V/m; Power Drift = 0.00185 dB

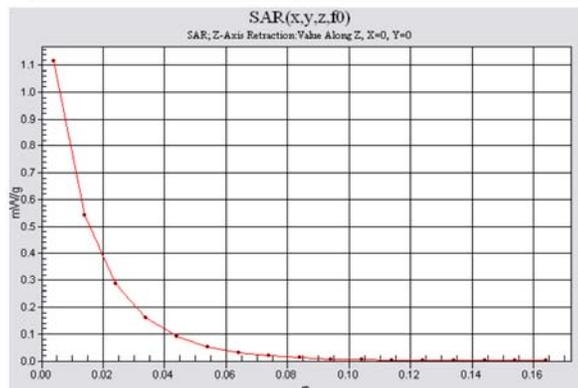
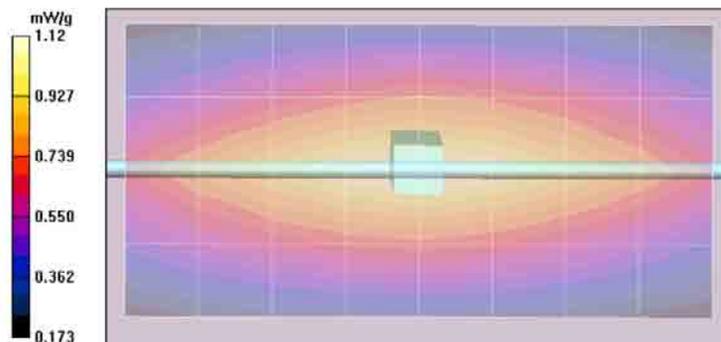
Peak SAR (extrapolated) = 1.56 W/kg

SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.721 mW/g

Maximum value of SAR (measured) = 1.12 mW/g

System Performance Check/Dipole Area Scan 2 (5x9x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

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



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/8/2009 7:06:11 AM

Robot# / Run#: DASY4-FL-2 / ErC-SYSP-450H-090408-01

Phantom# / Tissue Temp.: OVAL1011 / 20.9 (C)

Dipole Model# / Serial#: D450V2 / 1002

TX Freq. / Start power: 450 (MHz) / 250 (mW)

Target: 4.68 mW/g (1g)

Calculated: 4.48 mW/g (1g)

Percent from Target (+/-): 4.3 % (1g)

Rotation (1D): 0.035 dB

Comments:

Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(6.31, 6.31, 6.31)

Electronics: DAE3 Sn374, Calibrated: 1/23/2009

Duty Cycle: 1:1, Medium parameters used: f = 450 MHz; $\sigma = 0.86$ mho/m; $\epsilon_r = 44.4$; $\rho = 1000$ kg/m³

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

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

Reference Value = 37.8 V/m; Power Drift = 0.00692 dB

Peak SAR (extrapolated) = 1.63 W/kg

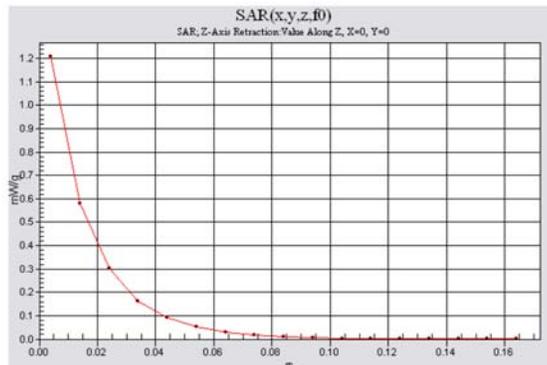
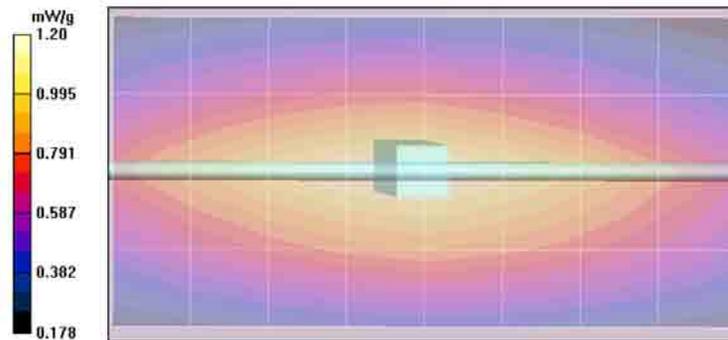
SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.756 mW/g

Maximum value of SAR (measured) = 1.19 mW/g

System Performance Check/Dipole Area Scan 2 (5x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.20 mW/g

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



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/9/2009 9:02:57 AM

Robot# / Run#: DASY4-FL-2 / HvH-SYSP-450B-090409-01

Phantom# / Tissue Temp.: OVAL1016 / 21.5 (C)

Dipole Model# / Serial#: D450V2 / 1002

TX Freq. / Start power: 450 (MHz) / 250 (mW)

Target: 4.52 mW/g (1g)

Calculated: 4.36 mW/g (1g)

Percent from Target (+/-): 3.5 % (1g)

Rotation (1D): 0.04 dB

Comments:

Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(6.69, 6.69, 6.69)

Electronics: DAE3 Sn374, Calibrated: 1/23/2009

Duty Cycle: 1:1, Medium parameters used: $f = 450$ MHz; $\sigma = 0.95$ mho/m; $\epsilon_r = 56.1$; $\rho = 1000$ kg/m³

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

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

Reference Value = 35.2 V/m; Power Drift = 0.0173 dB

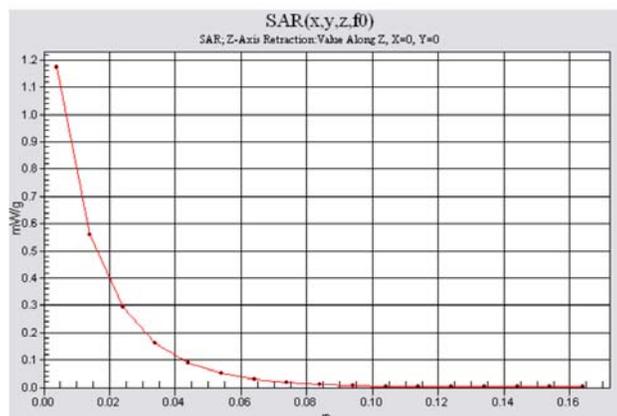
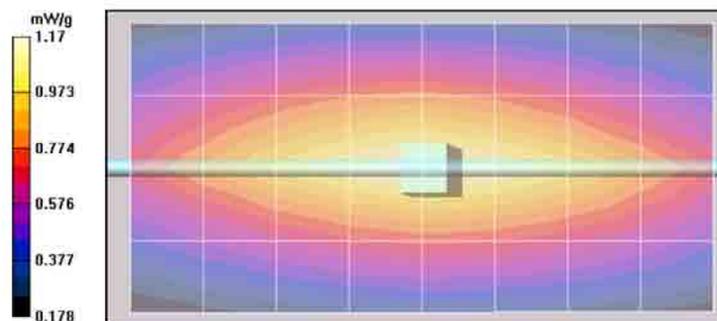
Peak SAR (extrapolated) = 1.63 W/kg

SAR(1 g) = 1.09 mW/g; SAR(10 g) = 0.736 mW/g

Maximum value of SAR (measured) = 1.17 mW/g

System Performance Check/Dipole Area Scan 2 (5x9x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

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



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/10/2009 1:01:01 PM

Robot# / Run#: DASY4-FL-2 / CM-SYSP-450B-090410-01

Phantom# / Tissue Temp.: OVAL1016 / 21.6 (C)

Dipole Model# / Serial#: D450V2 / 1002

TX Freq. / Start power: 450 (MHz) / 250 (mW)

Target: 4.52 mW/g (1g)

Calculated: 4.36 mW/g (1g)

Percent from Target (+/-): 3.5 % (1g)

Rotation (1D): 0.041 dB

Comments:

Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(6.69, 6.69, 6.69)

Electronics: DAE3 Sn374, Calibrated: 1/23/2009

Duty Cycle: 1:1, Medium parameters used: f = 450 MHz; $\sigma = 0.95$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

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

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

Reference Value = 35.3 V/m; Power Drift = 0.0041 dB

Peak SAR (extrapolated) = 1.61 W/kg

SAR(1 g) = 1.09 mW/g; SAR(10 g) = 0.736 mW/g

Maximum value of SAR (measured) = 1.15 mW/g

System Performance Check/Dipole Area Scan 2 (41x81x1): Measurement grid: dx=15mm,

dy=15mm

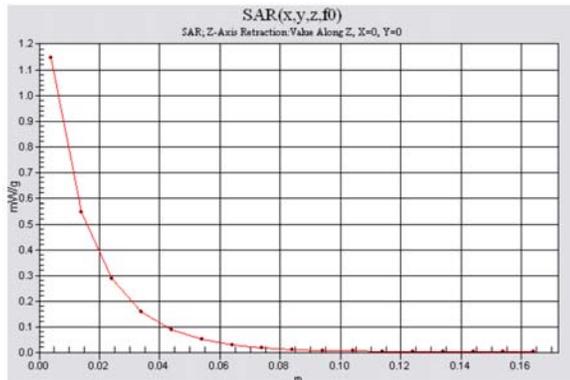
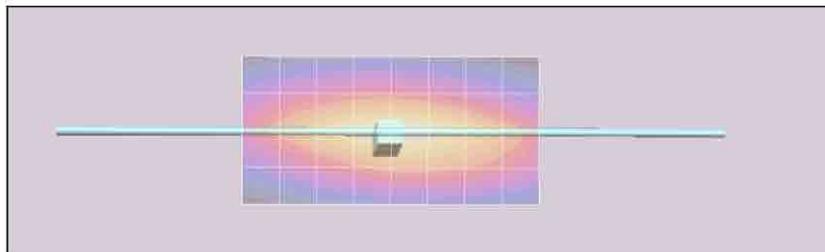
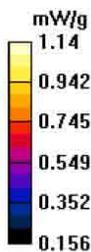
Reference Value = 35.3 V/m; Power Drift = 0.0041 dB

Motorola Fast SAR: SAR(1 g) = 1.10 mW/g; SAR(10 g) = 0.779 mW/g

Maximum value of SAR (interpolated) = 1.14 mW/g

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

dz=10mm



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/11/2009 6:21:04 AM

Robot# / Run#: DASY4-FL-2 / HvH-SYSP-835B-090411-03
 Phantom# / Tissue Temp.: OVAL1019 / 20.7 (C)
 Dipole Model# / Serial#: D835V2 / 435
 TX Freq. / Start power: 835 (MHz) / 250 (mW)
 Target: 9.8 mW/g (1g)
 Calculated: 9.6 mW/g (1g)
 Percent from Target (+/-): 2.0 % (1g)
 Rotation (1D): 0.055 dB

Comments:

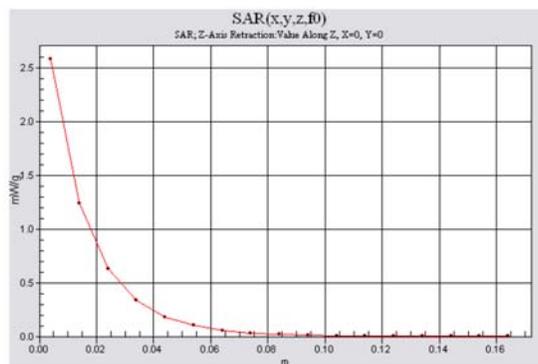
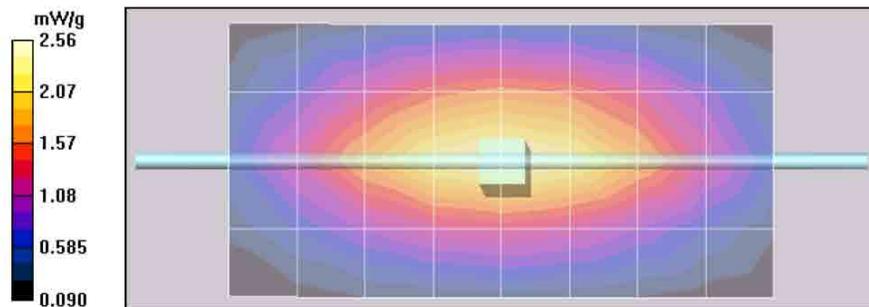
Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(5.8, 5.8, 5.8)
 Electronics: DAE3 Sn374, Calibrated: 1/23/2009
 Duty Cycle: 1:1, Medium parameters used: $f = 835$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 56.2$; $\rho = 1000$ kg/m³

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

Reference Value = 51.4 V/m; Power Drift = -0.00948 dB
 Peak SAR (extrapolated) = 3.51 W/kg
SAR(1 g) = 2.4 mW/g; SAR(10 g) = 1.58 mW/g
 Maximum value of SAR (measured) = 2.59 mW/g

System Performance Check/Dipole Area Scan 2 (5x9x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (measured) = 2.56 mW/g

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



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/13/2009 8:10:44 AM

Robot# / Run#: DASY4-FL-2 / ErC-SYSP-835B-090413-01

Phantom# / Tissue Temp.: OVAL1019 / 21.5 (C)

Dipole Model# / Serial#: D835V2 / 435

TX Freq. / Start power: 835 (MHz) / 250 (mW)

Target: 9.8 mW/g (1g)

Calculated: 9.76 mW/g (1g)

Percent from Target (+/-): 0.4 % (1g)

Rotation (1D): 0.037 dB

Comments:

Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(5.8, 5.8, 5.8)

Electronics: DAE3 Sn374, Calibrated: 1/23/2009

Duty Cycle: 1:1, Medium parameters used: $f = 835$ MHz; $\sigma = 1$ mho/m; $\epsilon_r = 53.4$; $\rho = 1000$ kg/m³

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

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

Reference Value = 52.1 V/m; Power Drift = 0.00553 dB

Peak SAR (extrapolated) = 3.55 W/kg

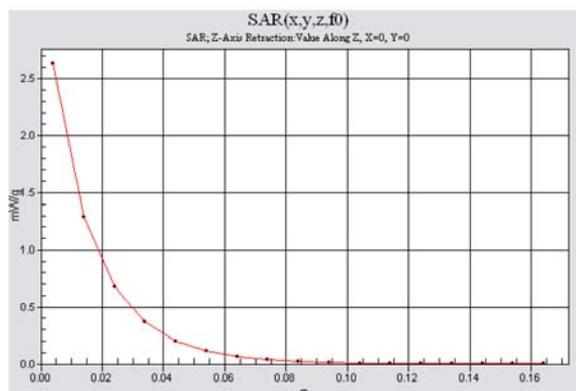
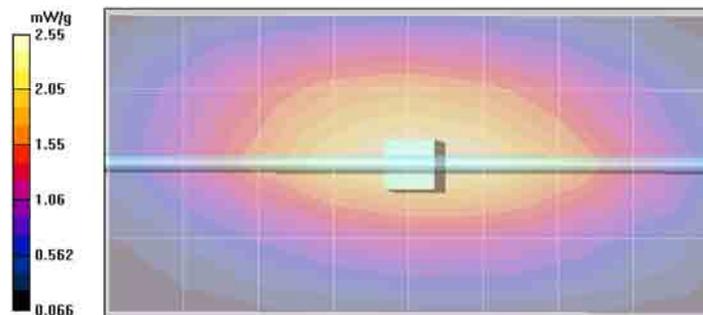
SAR(1 g) = 2.44 mW/g; SAR(10 g) = 1.63 mW/g

Maximum value of SAR (measured) = 2.63 mW/g

System Performance Check/Dipole Area Scan 2 (5x9x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (measured) = 2.55 mW/g

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



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/14/2009 6:17:42 AM

Robot# / Run#: DASY4-FL-2 / JsT-SYSP-835B-090414-01
 Phantom# / Tissue Temp.: OVAL1019 / 21.0 (C)
 Dipole Model# / Serial#: D835V2 / 435
 TX Freq. / Start power: 835 (MHz) / 250 (mW)
)
 Target: 9.80 mW/g (1g)
 Calculated: 9.52 mW/g (1g)
 Percent from Target (+/-): 2.9 % (1g)
 Rotation (1D): 0.034 dB

Comments:

Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(5.8, 5.8, 5.8)
 Electronics: DAE3 Sn374, Calibrated: 1/23/2009
 Duty Cycle: 1:1, Medium parameters used: $f = 835$ MHz; $\sigma = 0.98$ mho/m; $\epsilon_r = 56.2$; $\rho = 1000$ kg/m3

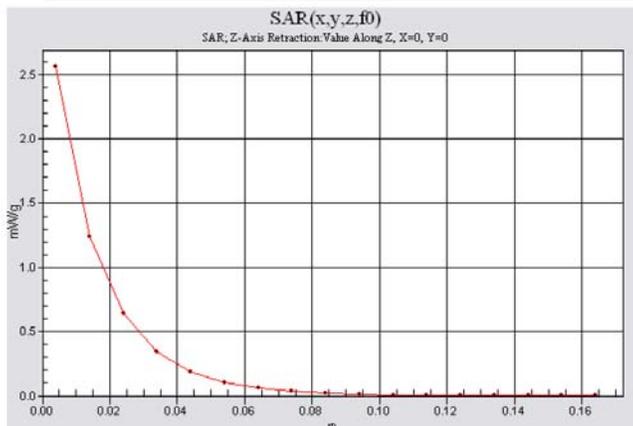
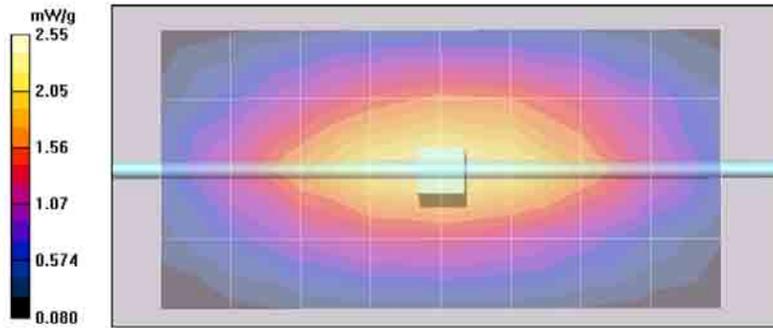
System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

$dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm
 Reference Value = 51.7 V/m; Power Drift = 0.00407 dB
 Peak SAR (extrapolated) = 3.47 W/kg
SAR(1 g) = 2.38 mW/g; SAR(10 g) = 1.58 mW/g
 Maximum value of SAR (measured) = 2.57 mW/g

System Performance Check/Dipole Area Scan 2 (5x9x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (measured) = 2.55 mW/g

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



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/15/2009 6:59:54 AM

Robot# / Run#: DASY4-FL-2 / JsT-SYSP-835B-090415-01
Phantom# / Tissue Temp.: OVAL1019 / 21.0 (C)
Dipole Model# / Serial#: D835V2 / 435
TX Freq. / Start power: 835 (MHz) / 250 (mW)

Target: 9.80 mW/g (1g)
Calculated: 9.44 mW/g (1g)
Percent from Target (+/-): 3.7 % (1g)
Rotation (1D): 0.04 dB

Comments:

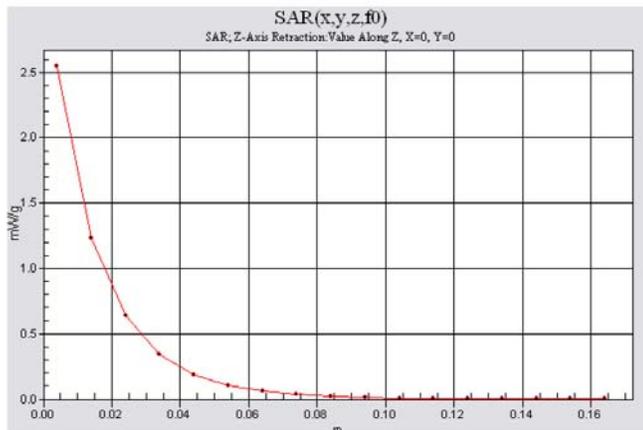
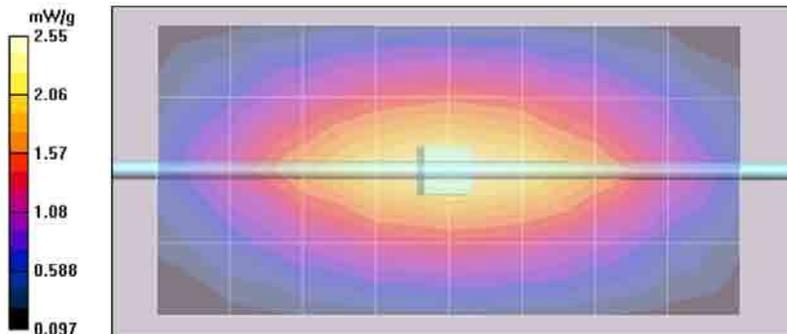
Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(5.8, 5.8, 5.8)
Electronics: DAE3 Sn374, Calibrated: 1/23/2009
Duty Cycle: 1:1, Medium parameters used: $f = 835$ MHz; $\sigma = 0.98$ mho/m; $\epsilon_r = 54$; $\rho = 1000$ kg/m³

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

$dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm
Reference Value = 51.5 V/m; Power Drift = 0.00341 dB
Peak SAR (extrapolated) = 3.44 W/kg
SAR(1 g) = 2.36 mW/g; SAR(10 g) = 1.56 mW/g
Maximum value of SAR (measured) = 2.55 mW/g

System Performance Check/Dipole Area Scan 2 (5x9x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

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



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/16/2009 6:23:26 AM

Robot# / Run#: DASY4-FL-2 / JsT-SYSP-835B-090416-01
Phantom# / Tissue Temp.: OVAL1019 / 21.0 (C)
Dipole Model# / Serial#: D835V2 / 435
TX Freq. / Start power: 835 (MHz) / 250 (mW)

Target: 9.80 mW/g (1g)
Calculated: 9.60 mW/g (1g)
Percent from Target (+/-): 2.0 % (1g)
Rotation (1D): 0.032 dB

Comments:

Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(5.8, 5.8, 5.8)
Electronics: DAE3 Sn374, Calibrated: 1/23/2009
Duty Cycle: 1:1, Medium parameters used: f = 835 MHz; $\sigma = 0.98$ mho/m; $\epsilon_r = 54$; $\rho = 1000$ kg/m³

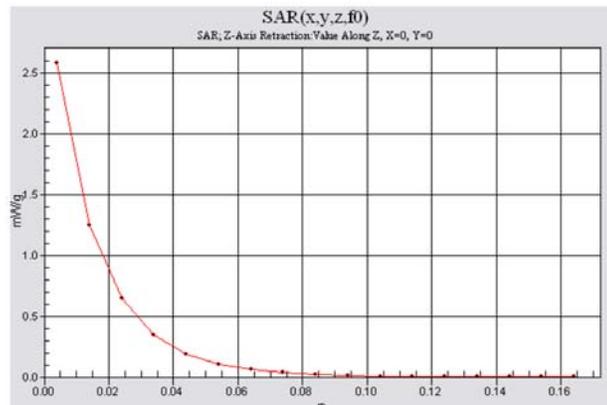
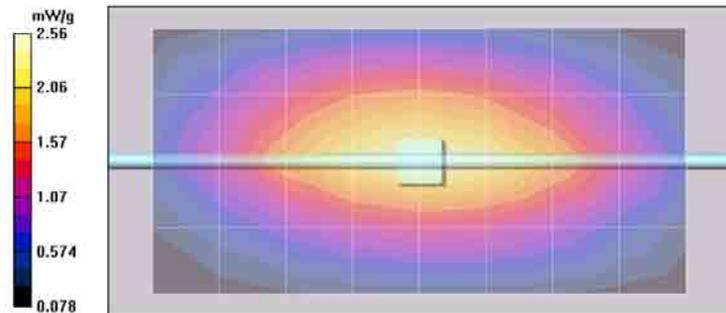
System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:
dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 52.0 V/m; Power Drift = -0.00455 dB
Peak SAR (extrapolated) = 3.49 W/kg

SAR(1 g) = 2.4 mW/g; SAR(10 g) = 1.59 mW/g
Maximum value of SAR (measured) = 2.59 mW/g

System Performance Check/Dipole Area Scan 2 (5x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.56 mW/g

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



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/17/2009 6:35:16 AM

Robot# / Run#: DASY4-FL-2 / JsT-SYSP-835B-090417-01
Phantom# / Tissue Temp.: OVAL1019 / 21.1 (C)
Dipole Model# / Serial#: D835V2 / 435
TX Freq. / Start power: 835 (MHz) / 250 (mW)

Target: 9.80 mW/g (1g)
Calculated: 9.48 mW/g (1g)
Percent from Target (+/-): 3.3 % (1g)
Rotation (1D): 0.031 dB

Comments:

Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(5.8, 5.8, 5.8)
Electronics: DAE3 Sn374, Calibrated: 1/23/2009
Duty Cycle: 1:1, Medium parameters used: $f = 835$ MHz; $\sigma = 0.98$ mho/m; $\epsilon_r = 54.4$; $\rho = 1000$ kg/m³

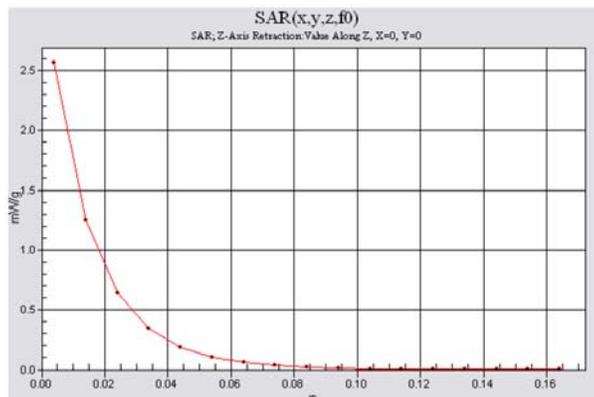
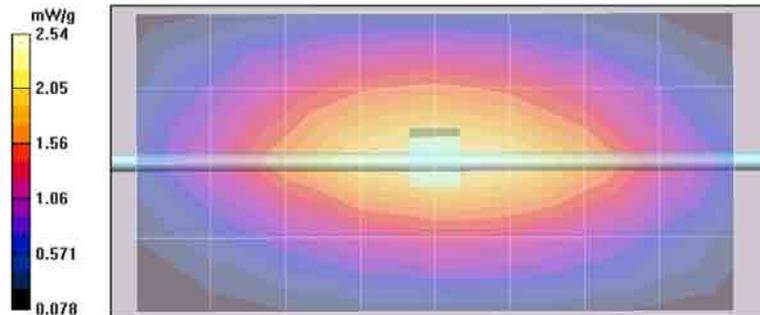
System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

$dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm
Reference Value = 51.7 V/m; Power Drift = 0.0121 dB
Peak SAR (extrapolated) = 3.46 W/kg
SAR(1 g) = 2.37 mW/g; SAR(10 g) = 1.57 mW/g
Maximum value of SAR (measured) = 2.57 mW/g

System Performance Check/Dipole Area Scan 2 (5x9x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (measured) = 2.54 mW/g

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



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/18/2009 4:38:39 AM

Robot# / Run#: DASY4-FL-2 / HvH-SYSP-835B-090418-01
Phantom# / Tissue Temp.: OVAL1019 / 21.0 (C)
Dipole Model# / Serial#: D835V2 / 435
TX Freq. / Start power: 835 (MHz) / 250 (mW)

Target: 9.8 mW/g (1g)
Calculated: 9.6 mW/g (1g)
Percent from Target (+/-): 2.0 % (1g)
Rotation (1D): 0.035 dB

Comments:

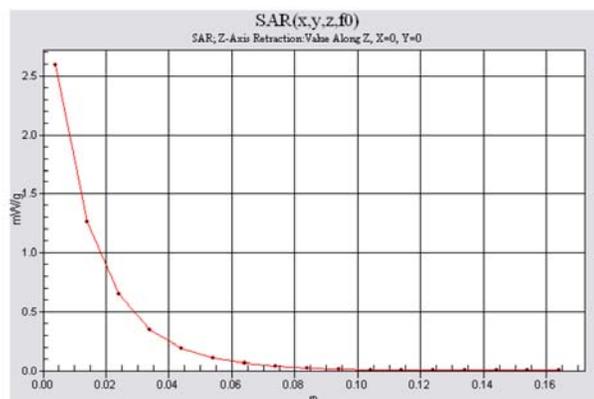
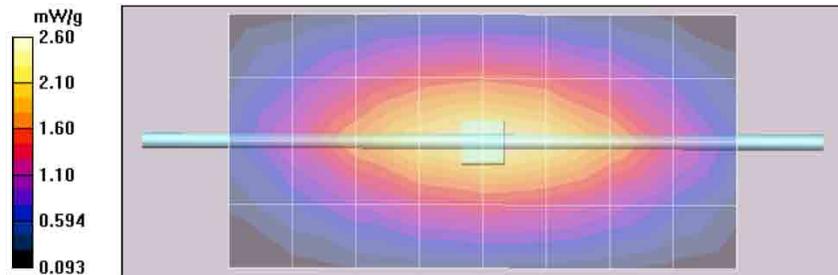
Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(5.8, 5.8, 5.8)
Electronics: DAE3 Sn401, Calibrated: 7/18/2008
Duty Cycle: 1:1, Medium parameters used: $f = 835$ MHz; $\sigma = 0.98$ mho/m; $\epsilon_r = 54$; $\rho = 1000$ kg/m³

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

$dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm
Reference Value = 52.0 V/m; Power Drift = 0.0118 dB
Peak SAR (extrapolated) = 3.49 W/kg
SAR(1 g) = 2.4 mW/g; SAR(10 g) = 1.59 mW/g
Maximum value of SAR (measured) = 2.60 mW/g

System Performance Check/Dipole Area Scan 2 (5x9x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

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



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/19/2009 4:31:15 AM

Robot# / Run#: DASY4-FL-2 / HvH-SYSP-835B-090419-01
Phantom# / Tissue Temp.: OVAL1019 / 21.3 (C)
Dipole Model# / Serial#: D835V2 / 435
TX Freq. / Start power: 835 (MHz) / 250 (mW)

Target: 9.80 mW/g (1g)
Calculated: 9.48 mW/g (1g)
Percent from Target (+/-): 3.3 % (1g)
Rotation (1D): 0.04 dB

Comments:

Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(5.8, 5.8, 5.8)
Electronics: DAE3 Sn374, Calibrated: 1/23/2009
Duty Cycle: 1:1, Medium parameters used: f = 835 MHz; $\sigma = 0.97$ mho/m; $\epsilon_r = 53.2$; $\rho = 1000$ kg/m³

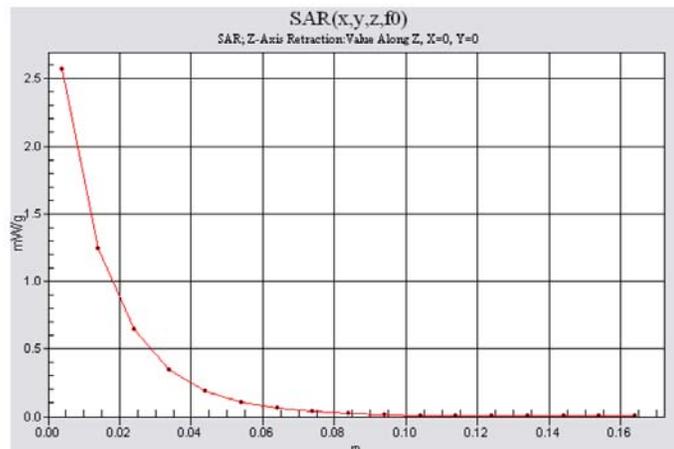
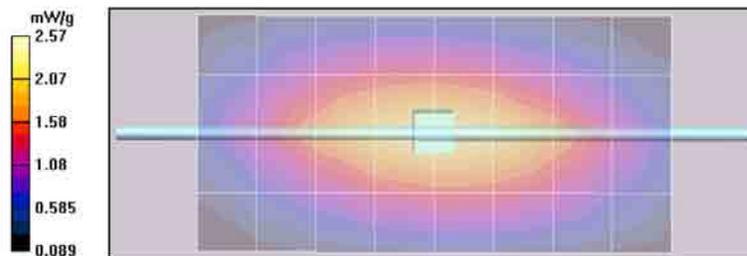
System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 51.9 V/m; Power Drift = 0.00739 dB
Peak SAR (extrapolated) = 3.45 W/kg
SAR(1 g) = 2.37 mW/g; SAR(10 g) = 1.57 mW/g
Maximum value of SAR (measured) = 2.56 mW/g

System Performance Check/Dipole Area Scan 2 (5x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 2.57 mW/g

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



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/20/2009 7:41:57 AM

Robot# / Run#: DASY4-FL-2 / JsT-SYSP-835B-090420-01
Phantom# / Tissue Temp.: OVAL1019 / 21.0 (C)
Dipole Model# / Serial#: D835V2 / 435
TX Freq. / Start power: 835 (MHz) / 250 (mW)

Target: 9.80 mW/g (1g)
Calculated: 9.48 mW/g (1g)
Percent from Target (+/-): 3.3 % (1g)
Rotation (1D): 0.036 dB

Comments:

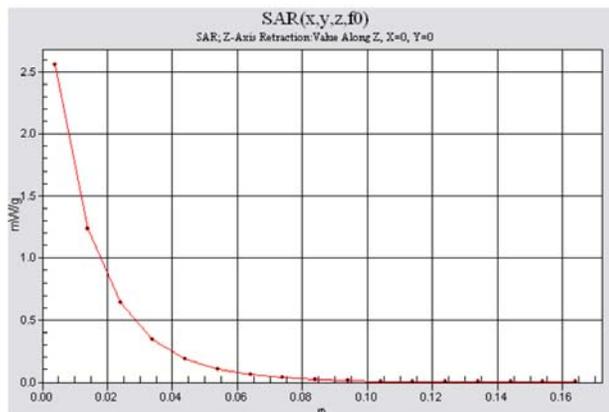
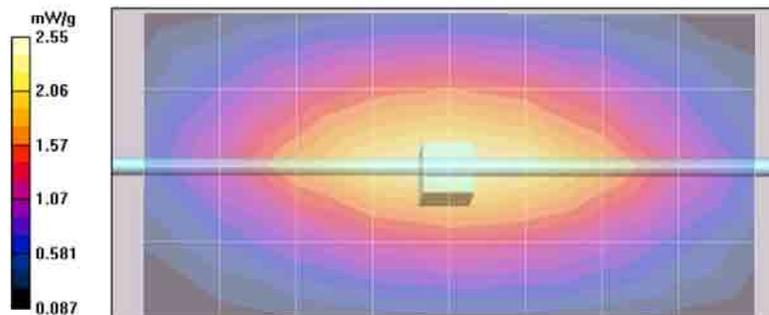
Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(5.8, 5.8, 5.8)
Electronics: DAE3 Sn374, Calibrated: 1/23/2009
Duty Cycle: 1:1, Medium parameters used: $f = 835$ MHz; $\sigma = 0.97$ mho/m; $\epsilon_r = 53.3$; $\rho = 1000$ kg/m³

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

$dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm
Reference Value = 51.8 V/m; Power Drift = 0.0104 dB
Peak SAR (extrapolated) = 3.45 W/kg
SAR(1 g) = 2.37 mW/g; SAR(10 g) = 1.57 mW/g
Maximum value of SAR (measured) = 2.55 mW/g

System Performance Check/Dipole Area Scan 2 (5x9x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

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



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/21/2009 7:22:06 AM

Robot# / Run#: DASY4-FL-2 / JsT-SYSP-835H-090421-01

Phantom# / Tissue Temp.: OVAL1018 / 20.9 (C)

Dipole Model# / Serial#: D835V2 / 435

TX Freq. / Start power: 835 (MHz) / 250 (mW)

Target: 9.53 mW/g (1g)

Calculated: 9.44 mW/g (1g)

Percent from Target (+/-): 0.9 % (1g)

Rotation (1D): 0.032 dB

Comments:

Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(5.86, 5.86, 5.86)

Electronics: DAE3 Sn357, Calibrated: 3/12/2009

Duty Cycle: 1:1, Medium parameters used: $f = 835$ MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 42.3$; $\rho = 1000$ kg/m³

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

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

Reference Value = 52.9 V/m; Power Drift = 0.00602 dB

Peak SAR (extrapolated) = 3.51 W/kg

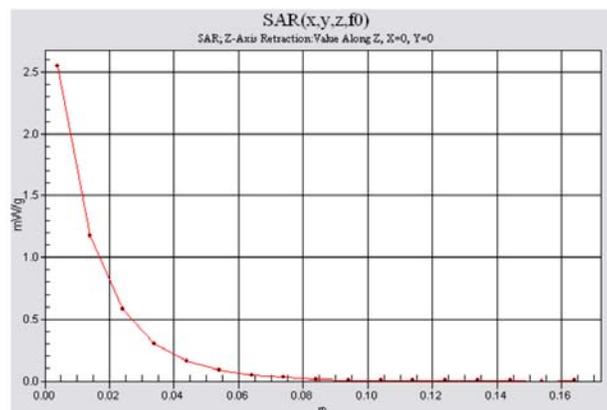
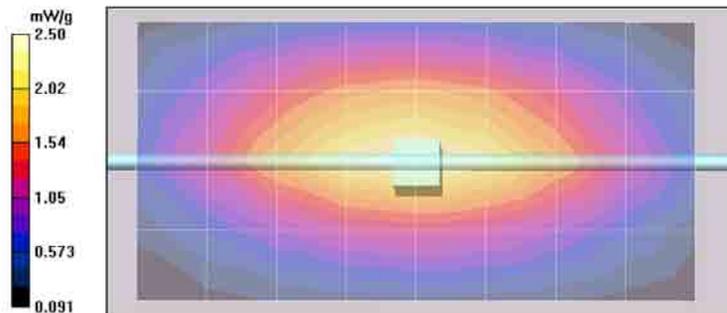
SAR(1 g) = 2.36 mW/g; SAR(10 g) = 1.54 mW/g

Maximum value of SAR (measured) = 2.55 mW/g

System Performance Check/Dipole Area Scan 2 (5x9x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (measured) = 2.50 mW/g

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



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/22/2009 6:52:29 AM

Robot# / Run#: DASY4-FL-2 / JsT-SYSP-835H-090422-01
Phantom# / Tissue Temp.: OVAL1018 / 20.6 (C)
Dipole Model# / Serial#: D835V2 / 435
TX Freq. / Start power: 835 (MHz) / 250 (mW)

Target: 9.53 mW/g (1g)
Calculated: 9.36 mW/g (1g)
Percent from Target (+/-): 1.8 % (1g)
Rotation (1D): 0.036 dB

Comments:

Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(5.86, 5.86, 5.86)
Electronics: DAE3 Sn357, Calibrated: 3/12/2009
Duty Cycle: 1:1, Medium parameters used: f = 835 MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 42.4$; $\rho = 1000$ kg/m³

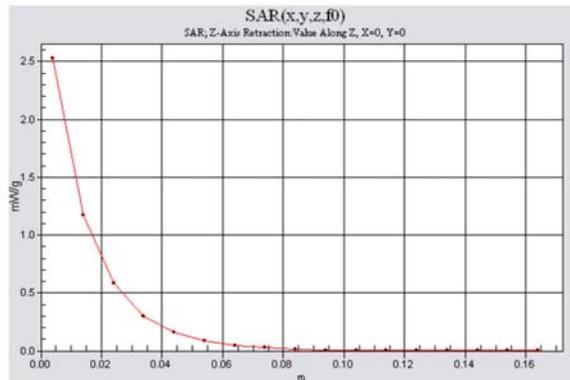
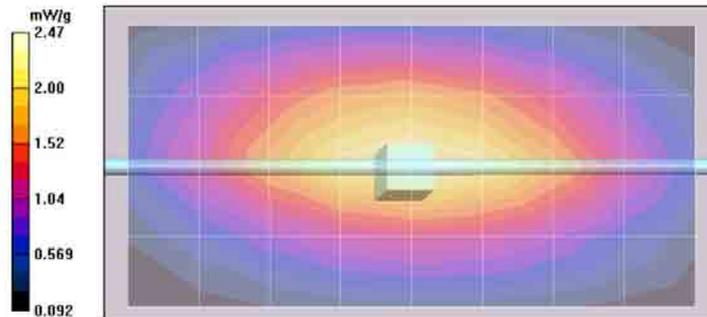
System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 52.9 V/m; Power Drift = -0.00826 dB
Peak SAR (extrapolated) = 3.49 W/kg
SAR(1 g) = 2.34 mW/g; SAR(10 g) = 1.53 mW/g
Maximum value of SAR (measured) = 2.54 mW/g

System Performance Check/Dipole Area Scan 2 (5x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 2.47 mW/g

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



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/23/2009 12:49:13 PM

Robot# / Run#: DASY4-FL-2 / HvH-SYSP-450H-090423-06

Phantom# / Tissue Temp.: OVAL1011 / 19.9 (C)

Dipole Model# / Serial#: D450V2 / 1002

TX Freq. / Start power: 450 (MHz) / 250 (mW)

Target: 4.68 mW/g (1g)

Calculated: 4.72 mW/g (1g)

Percent from Target (+/-): 0.90 % (1g)

Rotation (1D): 0.029 dB

Comments:

Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(6.31, 6.31, 6.31)

Electronics: DAE3 Sn357, Calibrated: 3/12/2009

Duty Cycle: 1:1, Medium parameters used: $f = 450$ MHz; $\sigma = 0.89$ mho/m; $\epsilon_r = 43.6$; $\rho = 1000$ kg/m³

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

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

Reference Value = 38.0 V/m; Power Drift = 0.0054 dB

Peak SAR (extrapolated) = 1.76 W/kg

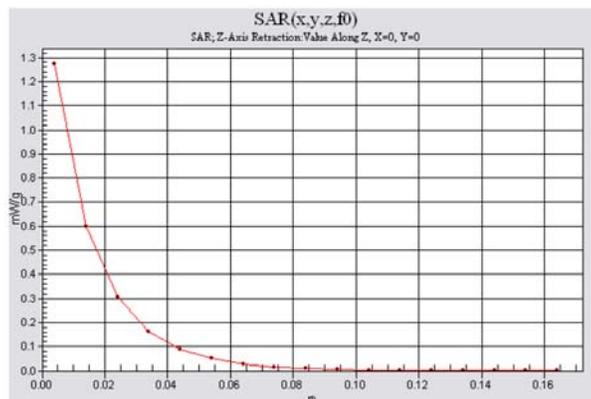
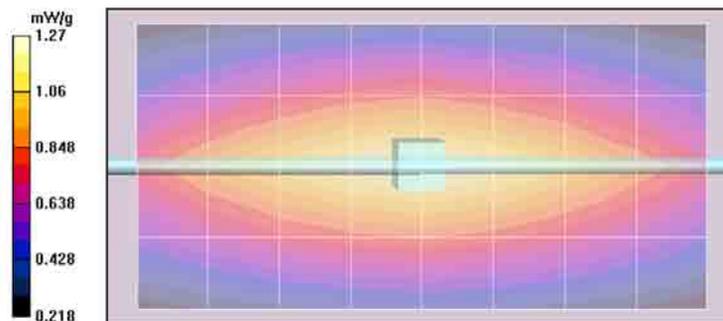
SAR(1 g) = 1.18 mW/g; SAR(10 g) = 0.793 mW/g

Maximum value of SAR (measured) = 1.27 mW/g

System Performance Check/Dipole Area Scan 2 (5x9x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (measured) = 1.27 mW/g

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



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/23/2009 7:03:14 AM

Robot# / Run#: DASY4-FL-2 / JsT-SYSP-835B-090423-01
Phantom# / Tissue Temp.: OVAL1019 / 20.5 (C)
Dipole Model# / Serial#: D835V2 / 435
TX Freq. / Start power: 835 (MHz) / 250 (mW)

Target: 9.80 mW/g (1g)
Calculated: 9.80 mW/g (1g)
Percent from Target (+/-): 0.0 % (1g)
Rotation (1D): 0.032 dB

Comments:

Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(5.8, 5.8, 5.8)
Electronics: DAE3 Sn357, Calibrated: 3/12/2009
Duty Cycle: 1:1, Medium parameters used: f = 835 MHz; $\sigma = 0.99$ mho/m; $\epsilon_r = 56.6$; $\rho = 1000$ kg/m3

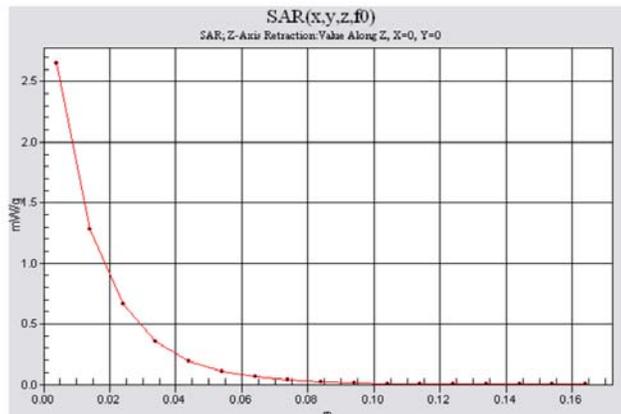
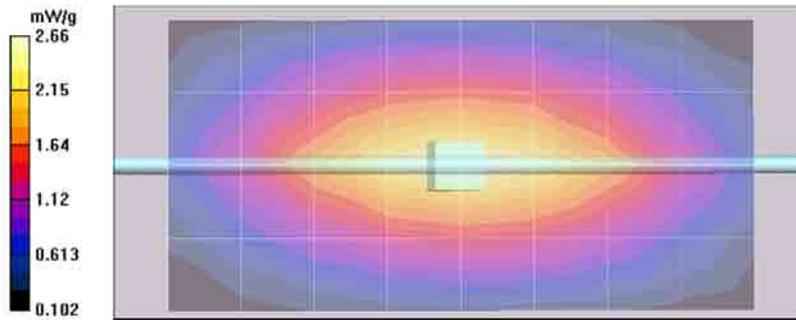
System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 52.3 V/m; Power Drift = 0.00863 dB
Peak SAR (extrapolated) = 3.57 W/kg
SAR(1 g) = 2.45 mW/g; SAR(10 g) = 1.63 mW/g
Maximum value of SAR (measured) = 2.65 mW/g

System Performance Check/Dipole Area Scan 2 (5x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 2.66 mW/g

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



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/24/2009 8:14:06 AM

Robot# / Run#: DASY4-FL-2 / JsT-SYSP-835H-090424-02

Phantom# / Tissue Temp.: OVAL1018 / 18.5 (C)

Dipole Model# / Serial#: D835V2 / 435

TX Freq. / Start power: 835 (MHz) / 250 (mW)

Target: 9.53 mW/g (1g)

Calculated: 9.40 mW/g (1g)

Percent from Target (+/-): 1.4 % (1g)

Rotation (1D): 0.041 dB

Comments:

Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(5.86, 5.86, 5.86)

Electronics: DAE3 Sn357, Calibrated: 3/12/2009

Duty Cycle: 1:1, Medium parameters used: f = 835 MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 42.5$; $\rho = 1000$ kg/m³

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

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

Reference Value = 52.9 V/m; Power Drift = -0.0208 dB

Peak SAR (extrapolated) = 3.48 W/kg

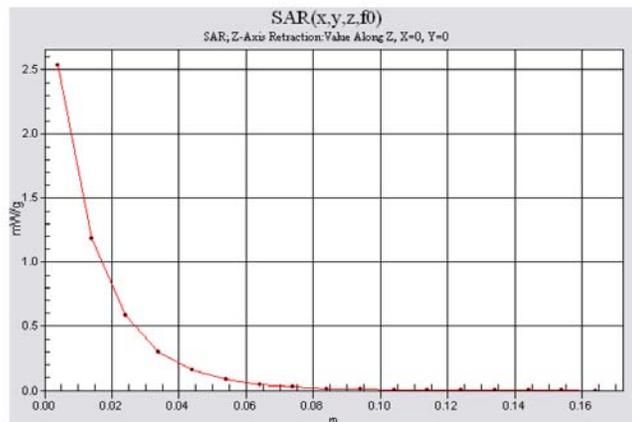
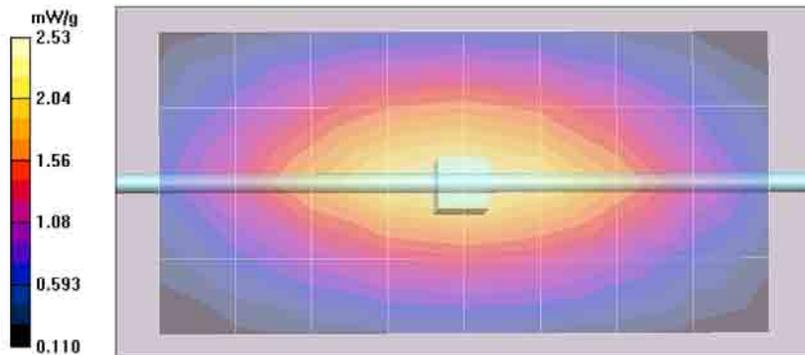
SAR(1 g) = 2.35 mW/g; SAR(10 g) = 1.54 mW/g

Maximum value of SAR (measured) = 2.54 mW/g

System Performance Check/Dipole Area Scan 2 (5x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 2.53 mW/g

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



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/27/2009 6:48:43 AM

Robot# / Run#: DASY4-FL-2 / ErC-SYSP-450B-090427-01

Phantom# / Tissue Temp.: OVAL1016 / 20.3 (C)

Dipole Model# / Serial#: D450V2 / 1002

TX Freq. / Start power: 450 (MHz) / 250 (mW)

Target: 4.52 mW/g (1g)

Calculated: 4.60 mW/g (1g)

Percent from Target (+/-): 1.8 % (1g)

Rotation (1D): 0.15 dB

Comments:

Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(6.69, 6.69, 6.69)

Electronics: DAE3 Sn357, Calibrated: 3/12/2009

Duty Cycle: 1:1, Medium parameters used: f = 450 MHz; $\sigma = 0.97$ mho/m; $\epsilon_r = 56.5$; $\rho = 1000$ kg/m³

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

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

Reference Value = 35.5 V/m; Power Drift = 0.00337 dB

Peak SAR (extrapolated) = 1.72 W/kg

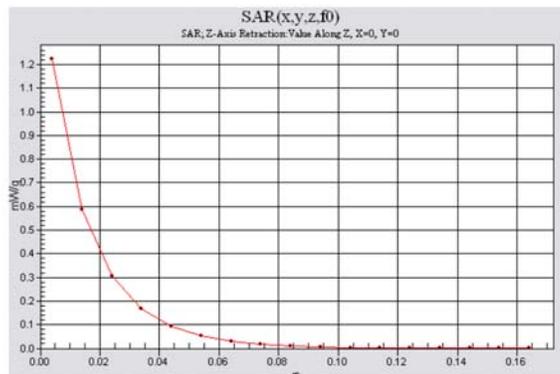
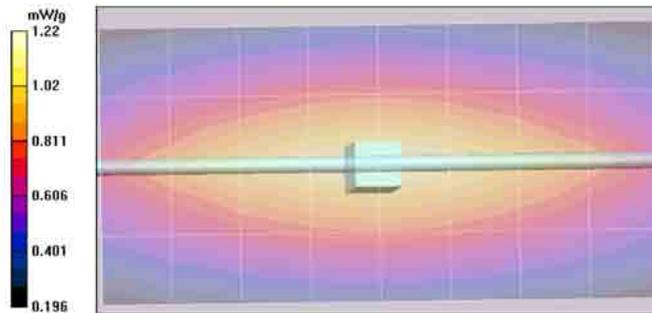
SAR(1 g) = 1.15 mW/g; SAR(10 g) = 0.768 mW/g

Maximum value of SAR (measured) = 1.23 mW/g

System Performance Check/Dipole Area Scan 2 (5x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.22 mW/g

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



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/27/2009 12:31:40 PM

Robot# / Run#: DASY4-FL-2 / HvH-SYSP-835B-090427-04
Phantom# / Tissue Temp.: OVAL1019 / 20.5 (C)
Dipole Model# / Serial#: D835V2 / 435
TX Freq. / Start power: 835 (MHz) / 250 (mW)

Target: 9.80 mW/g (1g)
Calculated: 9.68 mW/g (1g)
Percent from Target (+/-): 1.2 % (1g)
Rotation (1D): 0.13 dB

Comments:

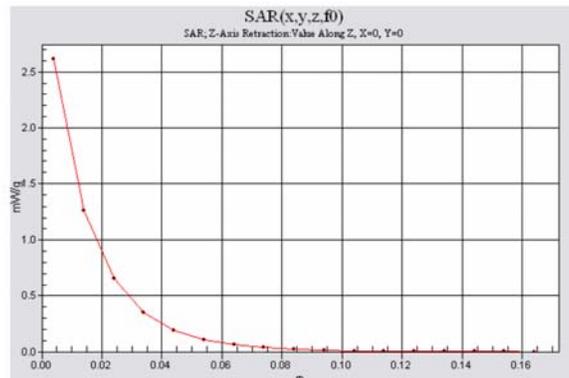
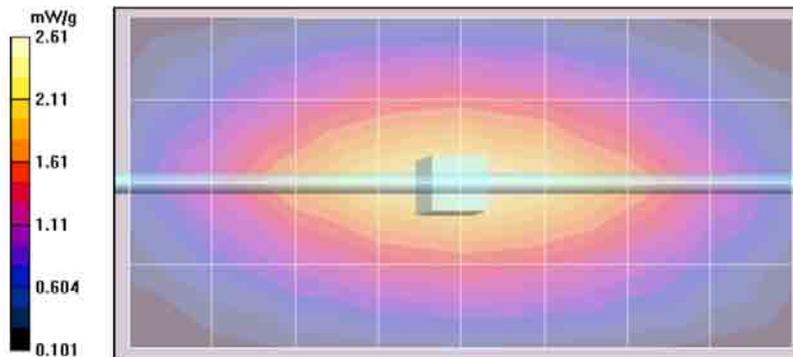
Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(5.8, 5.8, 5.8)
Electronics: DAE3 Sn357, Calibrated: 3/12/2009
Duty Cycle: 1:1, Medium parameters used: $f = 835$ MHz; $\sigma = 0.99$ mho/m; $\epsilon_r = 55.3$; $\rho = 1000$ kg/m³

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

$dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm
Reference Value = 51.8 V/m; Power Drift = 0.00622 dB
Peak SAR (extrapolated) = 3.52 W/kg
SAR(1 g) = 2.42 mW/g; SAR(10 g) = 1.6 mW/g
Maximum value of SAR (measured) = 2.61 mW/g

System Performance Check/Dipole Area Scan 2 (5x9x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

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



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 4/28/2009 6:29:27 AM

Robot# / Run#: DASY4-FL-2 / JsT-SYSP-835B-090428-01
Phantom# / Tissue Temp.: OVAL1019 / 20.4 (C)
Dipole Model# / Serial#: D835V2 / 435
TX Freq. / Start power: 835 (MHz) / 250 (mW)

Target: 9.80 mW/g (1g)
Calculated: 9.48 mW/g (1g)
Percent from Target (+/-): 3.3 % (1g)
Rotation (1D): 0.037 dB

Comments:

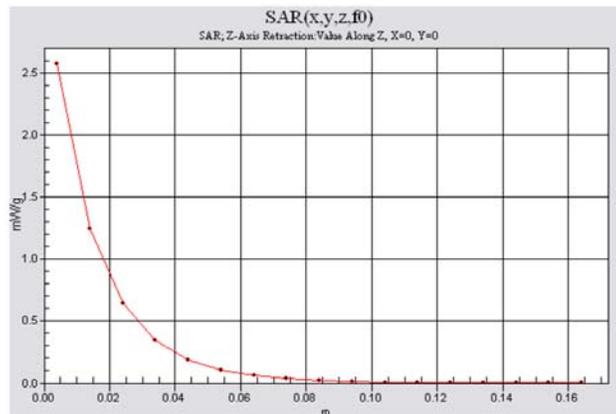
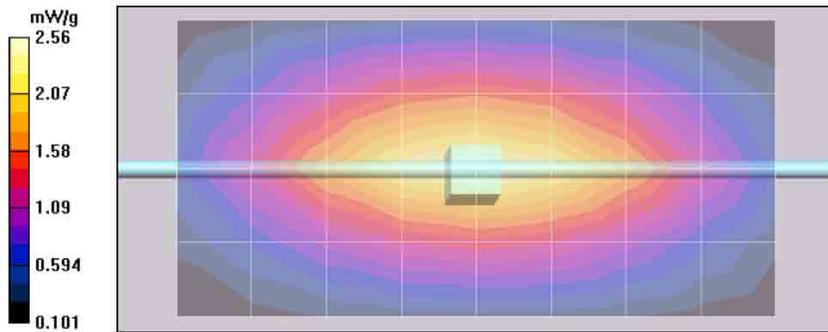
Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(5.8, 5.8, 5.8)
Electronics: DAE3 Sn357, Calibrated: 3/12/2009
Duty Cycle: 1:1, Medium parameters used: $f = 835$ MHz; $\sigma = 0.98$ mho/m; $\epsilon_r = 54.8$; $\rho = 1000$ kg/m³

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

$dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm
Reference Value = 51.7 V/m; Power Drift = -0.00482 dB
Peak SAR (extrapolated) = 3.46 W/kg
SAR(1 g) = 2.37 mW/g; SAR(10 g) = 1.57 mW/g
Maximum value of SAR (measured) = 2.56 mW/g

System Performance Check/Dipole Area Scan 2 (5x9x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

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



Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 5/4/2009 11:30:36 AM

Robot# / Run#: DASY4-FL-2 / ErC-SYSP-450H-090504-01

Phantom# / Tissue Temp.: OVAL1011 / 19.0 (C)

Dipole Model# / Serial#: D450V2 / 1002

TX Freq. / Start power: 450 (MHz) / 250 (mW)

Target: 4.68 mW/g (1g)

Calculated: 4.48 mW/g (1g)

Percent from Target (+/-): 4.3 % (1g)

Rotation (1D): 0.036 dB

Comments:

Probe: ES3DV3 - SN3147, Calibrated: 2/13/2009, ConvF(6.31, 6.31, 6.31)

Electronics: DAE3 Sn357, Calibrated: 3/12/2009

Duty Cycle: 1:1, Medium parameters used: $f = 450$ MHz; $\sigma = 0.84$ mho/m; $\epsilon_r = 45.2$; $\rho = 1000$ kg/m³

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

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

Reference Value = 38.3 V/m; Power Drift = -0.00408 dB

Peak SAR (extrapolated) = 1.67 W/kg

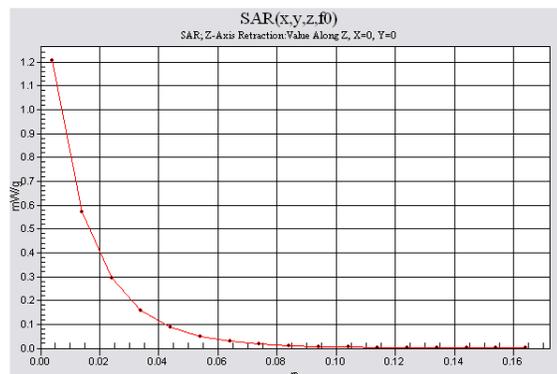
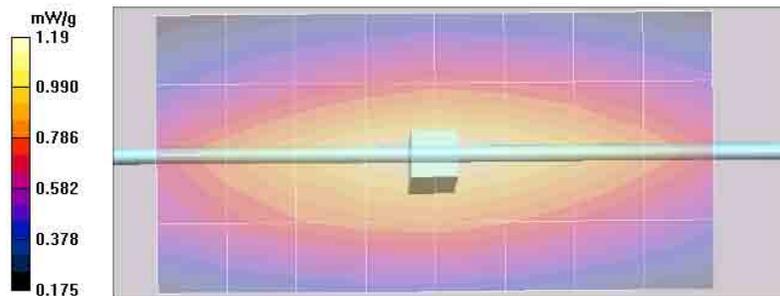
SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.754 mW/g

Maximum value of SAR (measured) = 1.20 mW/g

System Performance Check/Dipole Area Scan 2 (5x9x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (measured) = 1.19 mW/g

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



DIPOLE SAR TARGET - HEAD

| | | | |
|---------------|------------------------|--------------------|------------------|
| Date: | <u>12/03/08</u> | Frequency (MHz): | <u>450</u> |
| Lab Location: | <u>(FL08)-G&PS</u> | Mixture Type: | <u>IEEE Head</u> |
| DAE Serial #: | <u>805</u> | Ambient Temp.(°C): | <u>22.5</u> |

| | | | |
|------------------------|-------------|------------------|------------------|
| Tissue Characteristics | | Phantom Type/SN: | <u>OVAL 1019</u> |
| Permittivity: | <u>42.9</u> | Distance (mm): | <u>15</u> |
| Conductivity: | <u>0.88</u> | | |
| Tissue Temp.(°C): | <u>20.7</u> | | |

| | | | |
|-------------------|---------------|------------------|---------------|
| Reference Source: | <u>Dipole</u> | Power to Dipole: | <u>250</u> mW |
| Reference SN: | <u>1002</u> | | |

Target 1g-SAR Value (mW/g, normalized to 1.0 W):

| |
|-------------|
| 4.58 |
|-------------|

Difference from Target

| |
|----------------|
| 2.18% (1g-SAR) |
|----------------|

New Target:

| | |
|------------------------------|-------------|
| Average 1g-SAR Value (mW/g): | 4.68 |
|------------------------------|-------------|

| |
|------------|
| Passes K=2 |
|------------|

Percent Difference From Target (MUST be within k=2 Uncertainty):

| Probe SN #s | 1g-SAR (Cube) | Diff from Ave | Robot |
|----------------|---------------|-------------------------------|-------|
| 1393 | 4.96 | 5.6% | R2 |
| 1547 | 4.64 | -0.9% | R2 |
| 3185 | 4.44 | -5.4% | R2 |
| | | #DIV/0! | |
| | | #DIV/0! | |
| Average | 4.6800 | New Measured SAR Value | |

(normalized to 1.0 W)

Test performed by: Ed Church Initial: EJC

DIPOLE SAR TARGET - BODY

Date: 12/03/08 Frequency (MHz): 450
 Lab Location: (FL08)-G&PS Mixture Type: Body
 DAE Serial #: 805 Ambient Temp.(°C): 22.5

Tissue Characteristics
 Permittivity: 55.4 Phantom Type/SN: OVAL 1018
 Conductivity: 0.96 Distance (mm): 15
 Tissue Temp.(°C): 21

Reference Source: Dipole Power to Dipole: 250 mW
 Reference SN: 1002

New Target:
 Average Measured SAR Value: 4.52 mW/g(lg avg.),

| Probe SN #s | 1-G Cube | Diff from Ave | Robot |
|-------------|---------------|------------------------|-------|
| 3185 | 4.32 | -4.4% | R2 |
| 1393 | 4.60 | 1.8% | R2 |
| 1547 | 4.64 | 2.7% | R2 |
| | | -100.0% | |
| | | -100.0% | |
| Average | 4.5200 | New Measured SAR Value | |

(normalized to 1.0 W)

Test performed by: Ed Church Initial: E. C

DIPOLE SAR TARGET - HEAD

Date: 12/04/08 Frequency (MHz): 835
 Lab Location: (FL08)-G&PS Mixture Type: IEEE Head
 DAE Serial #: 805 Ambient Temp.(°C): 21.7

Tissue Characteristics
 Permittivity: 40.7 Phantom Type/SN: SAMTP1022
 Conductivity: 0.90 Distance (mm): 15
 Tissue Temp.(°C): 21.5

Reference Source: Dipole Power to Dipole: 250 mW
 Reference SN: 435

Target 1g-SAR Value (mW/g, normalized to 1.0 W):

9.56

Difference from Target

-0.28 % (1g-SAR)

New Target:

Average 1g-SAR value
 (mW/g): **9.53**

Passes K=2

Percent Difference From Target (MUST be within k=2 Uncertainty):

| Probe SN #s | 1g-SAR (Cube) | Diff from Ave | Robot |
|-------------|---------------|------------------------|-------|
| 1547 | 9.32 | -2.3% | R2 |
| 1384 | 9.72 | 1.9% | R2 |
| 3185 | 9.56 | 0.3% | R2 |
| | | #DIV/0! | |
| | | #DIV/0! | |
| Average | 9.5333 | New Measured SAR Value | |

(normalized to 1.0 W)

Test performed by: Ed Church Initial: ERC

DIPOLE SAR TARGET - BODY

Date: 12/04/08 Frequency (MHz): 835
 Lab Location: (FL08)-G&PS Mixture Type: Body
 DAE Serial #: 805 Ambient Temp.(°C): 21.8

Tissue Characteristics
 Permittivity: 53.2 Phantom Type/SN: OVAL1022
 Conductivity: 1.00 Distance (mm): 15
 Tissue Temp.(°C): 21.3

Reference Source: Dipole Power to Dipole: 250 mW
 Reference SN: 435

New Target:
 Average Measured SAR Value: 9.80 mW/g(1g avg.),

| Probe SN #s | 1-G Cube | Diff from Ave | Robot |
|-------------|---------------|------------------------|-------|
| 3185 | 9.92 | 1.2% | R2 |
| 1384 | 9.88 | 0.8% | R2 |
| 1547 | 9.60 | -2.0% | R2 |
| | | -100.0% | |
| | | -100.0% | |
| Average | 9.8000 | New Measured SAR Value | |

(normalized to 1.0 W)

Test performed by: Ed Church Initial: EC