MOTOROLA

ACCREDITED
TESTING CERT # 2518.01

FCC ID: AZ489FT4886
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: 10/16/09
Report Revision: O
Report ID: SAR rpt_H97TGD9PW1AN (WITH QA00570AA AND QA00575AA)_Rev O_091016_SR7715

Responsible Engineer:	Stephen C. Whalen (Principal Staff Eng.)
Report Author:	Stephen C. Whalen (Principal Staff Eng.)
Date/s Tested:	09/16/09-09/22/09, 9/24/09-9/26/09, 9/30/09, 10/07/09, 10/08/09 10/12/09, 10/14/09
Manufacturer/Location:	Penang
Sector/Group/Div.:	EMS
Date submitted for test:	09/21/09
DUT Description:	380-470 MHz 1-5W, 136-174 MHz 1-6W, 6.25 kHz / 12.5 kHz / 25 kHz, Basic 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), 6.6W (VHF)
Nominal Power:	5.0W (UHF1), 6.0W (VHF)
Tx Frequency Bands:	380-470 MHz (UHF1) & 136-174 MHz (VHF)
Signaling type:	FM and TDMA
Model(s) Tested:	H97TGD9PW1AN (WITH QA00570AA AND QA00575AA)
Model(s) Certified:	H97TGD9PW1AN (WITH QA00570AA AND QA00575AA)
Serial Number(s):	Q0FKL039
Classification:	Occupational/Controlled
Rule Part(s):	90 (406.1-470MHz, 150.8-173.4MHz)

DUT Photo
(Refer to Exhibit 7B)

Max. Calc. : 1-g Avg. SAR: 7.27 W/kg (Body); 10-g Avg. SAR: 4.97 W/kg (Body)
Max. Calc. : 1-g Avg. SAR: 4.21 W/kg (Face); 10-g Avg. SAR: 3.16 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 10grams 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: 10/16/09

Certification Date:

Certification No.:

APPENDIX B
Probe Calibration Certificates

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
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S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client **Motorola Plantation EME Lab**

Certificate No: ES3-3007_Mar09

CALIBRATION CERTIFICATE

Object	ES3DV2 - SN:3007
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:	March 12, 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:	Fin Bomholt	R&D Director	

Issued: March 16, 2009

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

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S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
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Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,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., ϑ = 0 is normal to probe axis

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) 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:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not effect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,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*.
- *DCPx,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 ≤ 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 *NORMx,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.

Probe ES3DV2

SN:3007

Manufactured:	October 22, 1999
Last calibrated:	April 23, 2008
Recalibrated:	March 12, 2009

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

ES3DV2 SN:3007 March 12, 2009

DASY - Parameters of Probe: ES3DV2 SN:3007

Sensitivity in Free Space[A] Diode Compression[B]

NormX	1.74 ± 10.1%	$\mu V/(V/m)^2$	DCP X	91 mV
NormY	1.81 ± 10.1%	$\mu V/(V/m)^2$	DCP Y	92 mV
NormZ	1.25 ± 10.1%	$\mu V/(V/m)^2$	DCP Z	94 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	7.5	4.6
SAR_{be} [%]	With Correction Algorithm	0.8	0.3

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	9.7	7.1
SAR_{be} [%]	With Correction Algorithm	0.9	0.5

Sensor Offset

Probe Tip to Sensor Center	2.7 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%.

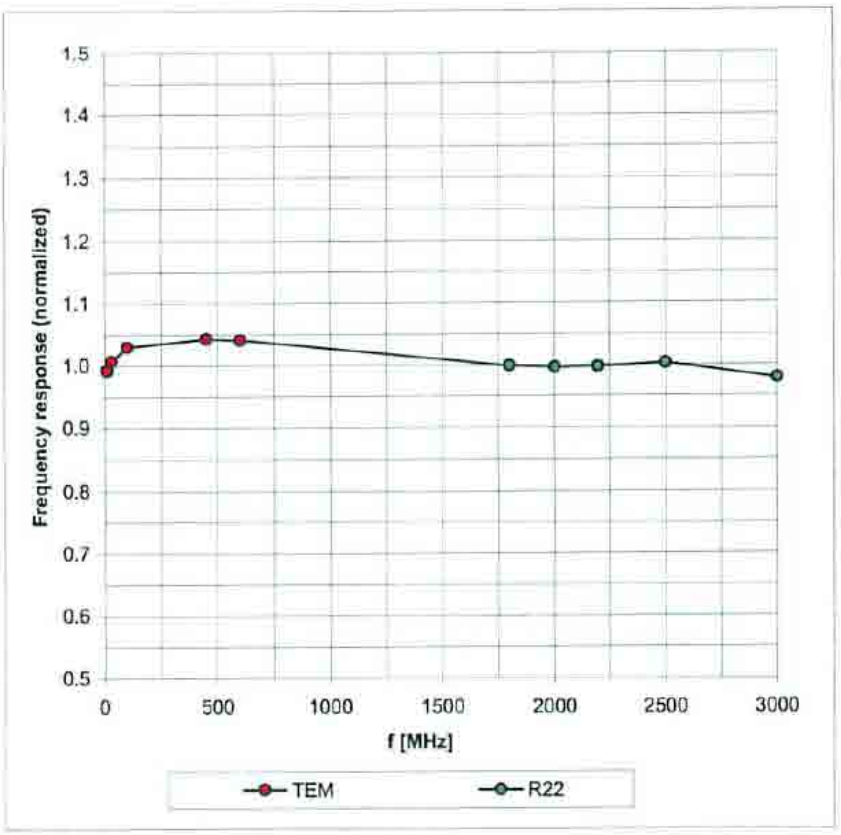
[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Page 8).

[B] Numerical linearization parameter: uncertainty not required.

ES3DV2 SN:3007 March 12, 2009

Frequency Response of E-Field

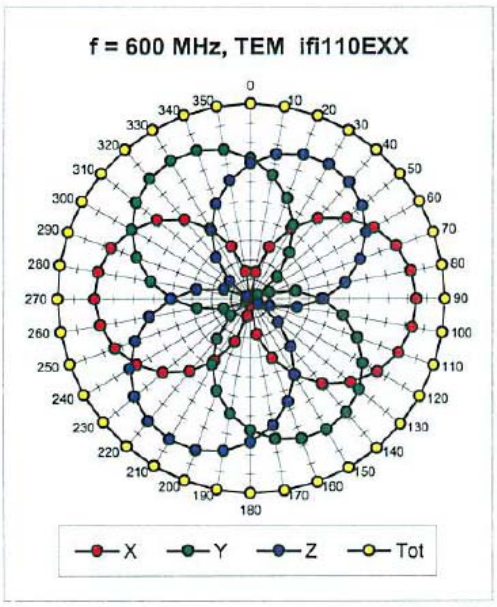
(TEM-Cell:ifi110 EXX, Waveguide: R22)

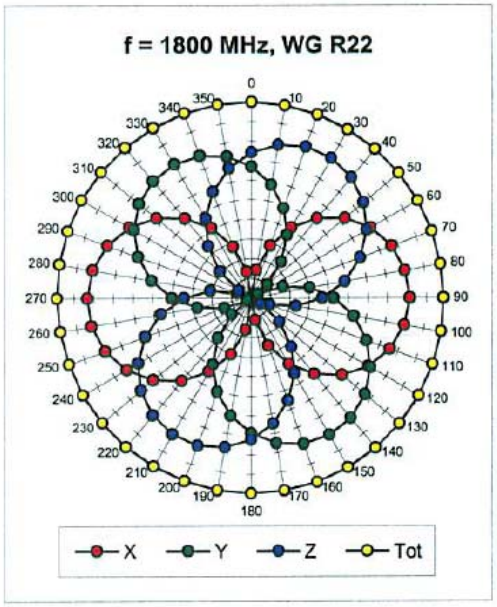


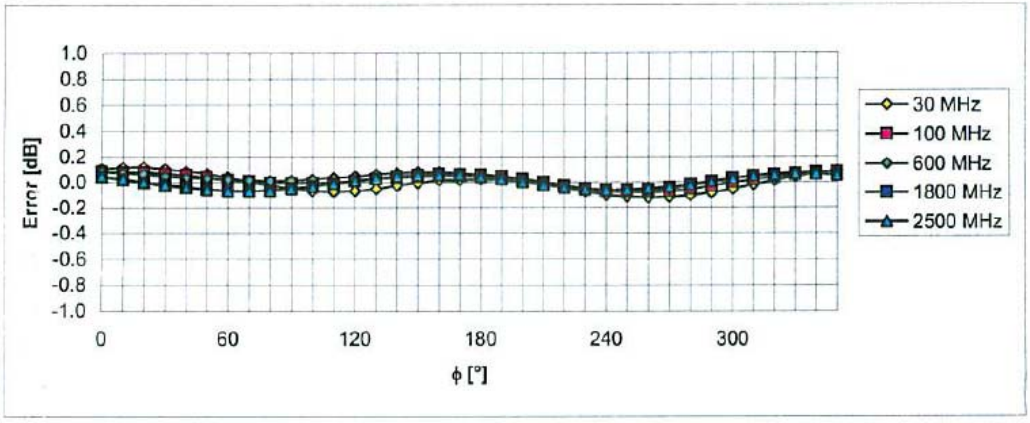
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

ES3DV2 SN:3007 **March 12, 2009**

Receiving Pattern (ϕ), ϑ = 0°





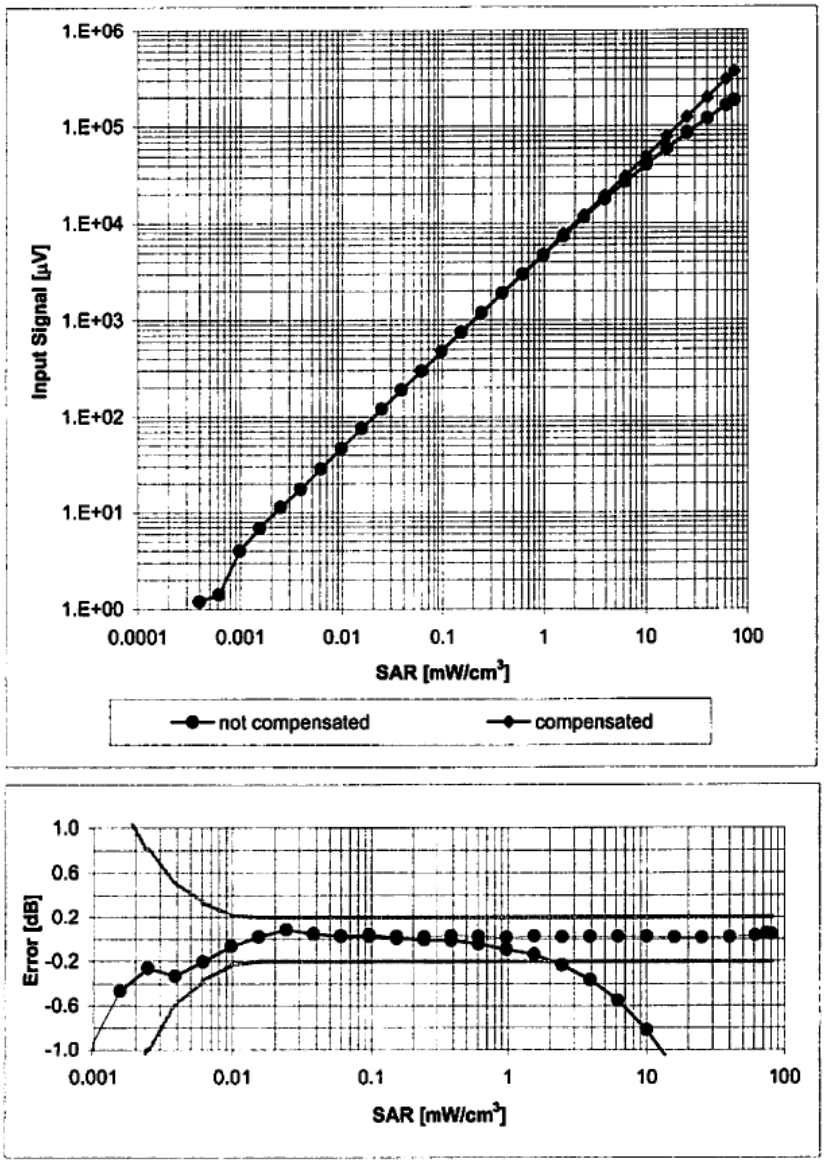


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

ES3DV2 SN:3007 March 12, 2009

Dynamic Range f(SAR_{head})

(Waveguide R22, f = 1800 MHz)



Uncertainty of Linearity Assessment: ± 0.6% (k=2)

ES3DV2 SN:3007 March 12, 2009

Conversion Factor Assessment

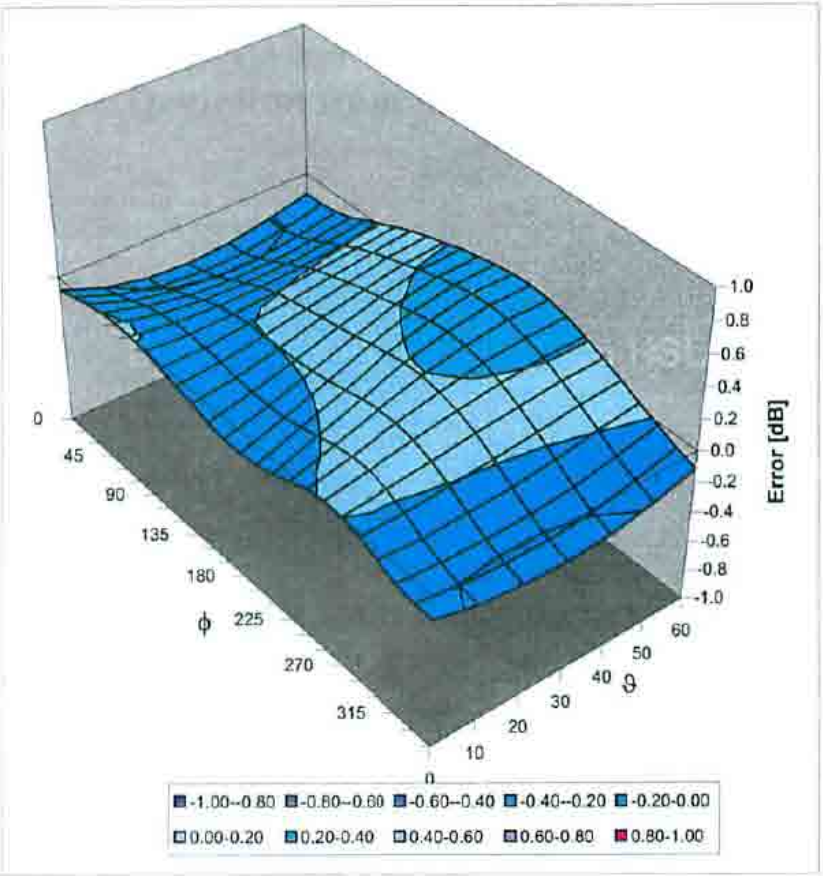
f [MHz]	Validity [MHz][C]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
450	± 50 / ± 100	Head	43.5 ± 5%	0.87 ± 5%	0.31	1.61	6.76 ± 13.3% (k=2)
750	± 50 / ± 100	Head	41.9 ± 5%	0.89 ± 5%	0.97	1.23	6.29 ± 11.0% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.57	1.49	6.04 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.26	2.57	5.13 ± 11.0% (k=2)
1950	± 50 / ± 102	Head	40.0 ± 5%	1.40 ± 5%	0.40	1.95	4.93 ± 11.0% (k=2)
2300	± 50 / ± 105	Head	39.4 ± 5%	1.71 ± 5%	0.36	2.14	4.80 ± 11.0% (k=2)
2450	± 50 / ± 106	Head	39.2 ± 5%	1.80 ± 5%	0.36	2.15	4.52 ± 11.0% (k=2)
2600	± 50 / ± 107	Head	39.0 ± 5%	1.96 ± 5%	0.50	1.88	4.43 ± 11.0% (k=2)
3500	± 50 / ± 108	Head	37.9 ± 5%	2.91 ± 5%	0.80	1.40	3.88 ± 13.1% (k=2)
3700	± 50 / ± 109	Head	37.7 ± 5%	3.12 ± 5%	0.80	1.40	3.53 ± 13.1% (k=2)
450	± 50 / ± 100	Body	56.7 ± 5%	0.94 ± 5%	0.22	1.53	7.19 ± 13.3% (k=2)
750	± 50 / ± 100	Body	55.5 ± 5%	0.96 ± 5%	0.87	1.26	6.10 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.95	1.27	6.02 ± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.92	1.28	4.82 ± 11.0% (k=2)
1950	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.70	1.48	4.73 ± 11.0% (k=2)
2300	± 50 / ± 100	Body	52.8 ± 5%	1.85 ± 5%	0.99	1.35	4.22 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.99	1.22	4.02 ± 11.0% (k=2)
2600	± 50 / ± 100	Body	52.5 ± 5%	2.16 ± 5%	0.99	1.27	3.90 ± 11.0% (k=2)
3500	± 50 / ± 100	Body	51.3 ± 5%	3.31 ± 5%	0.80	1.50	3.37 ± 13.1% (k=2)
3700	± 50 / ± 100	Body	51.0 ± 5%	3.55 ± 5%	0.80	1.60	3.10 ± 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.

ES3DV2 SN:3007 **March 12, 2009**

Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

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info@speag.com, http://www.speag.com

s p e a g

Additional Conversion Factors

for Dosimetric E-Field Probe

Type:	**ES3DV2**
Serial Number:	**3007**
Place of Assessment:	**Zurich**
Date of Assessment:	**March 16, 2009**
Probe Calibration Date:	**March 12, 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

s p e a g

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Dosimetric E-Field Probe ES3DV2 SN:3007

Conversion factor (± standard deviation)

150 MHz	*ConvF*	**8.2 ± 10%**	ε_r = 52.3 σ = 0.76 mho/m (head tissue)
250 MHz	*ConvF*	**7.5 ± 10%**	ε_r = 47.6 σ = 0.83 mho/m (head tissue)
300 MHz	*ConvF*	**7.4 ± 9%**	ε_r = 45.3 σ = 0.87 mho/m (head tissue)
150 MHz	*ConvF*	**7.9± 10%**	ε_r = 61.9 σ = 0.80 mho/m (body tissue)
250 MHz	*ConvF*	**7.5 ± 10%**	ε_r = 59.4 σ = 0.88 mho/m (body tissue)
300 MHz	*ConvF*	**7.4 ± 9%**	ε_r = 58.2 σ = 0.92 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.

APPENDIX C
Dipole Calibration Certificates

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

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

Accreditation No.: **SCS 108**

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

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

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

Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
ConF	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) 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
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) DASY4/5 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 ± 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 ± 6 %	0.83 mho/m ± 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 ± 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 ± 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

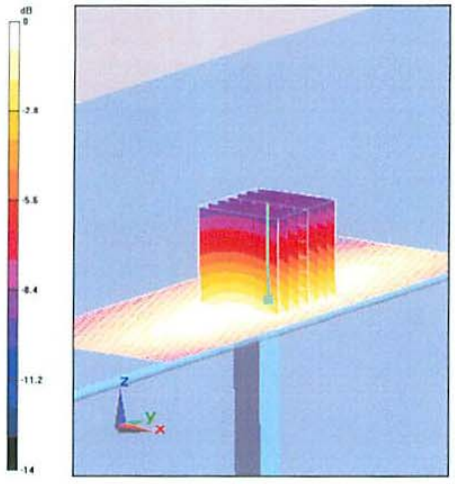
Communication System: CW; Frequency: 450 MHz; Duty Cycle: 1:1
Medium: HSL450
Medium parameters used: f = 450 MHz; σ = 0.83 mho/m; ε_r = 43.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

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

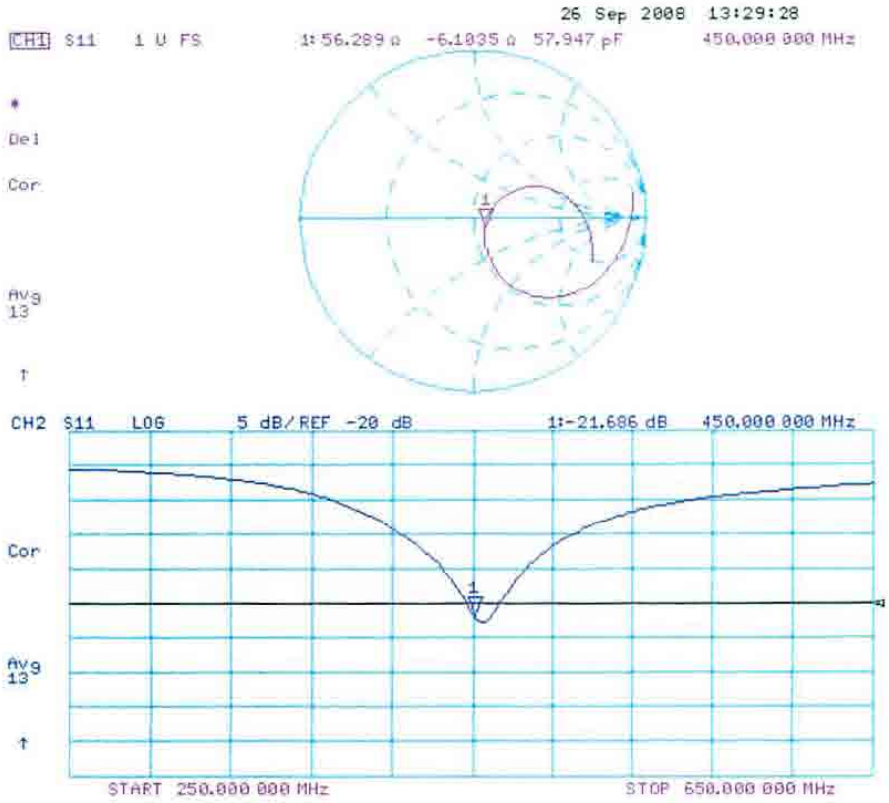
d=15mm, Pin=398mW/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.09 mW/g

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
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client Motorola CGISS

Certificate No: D300V2-1002_Jan08

CALIBRATION CERTIFICATE

Object	D300V2 - SN: 1002
Calibration procedure(s)	QA CAL-15.v4 Calibration Procedure for dipole validation kits below 800 MHz
Calibration date:	January 25, 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	29-Mar-07 (METAS, No. 217-00670)	Mar-08
Power sensor E4412A	MY41495277	29-Mar-07 (METAS, No. 217-00670)	Mar-08
Power sensor E4412A	MY41498087	29-Mar-07 (METAS, No. 217-00670)	Mar-08
Reference 3 dB Attenuator	SN: S5054 (3c)	08-Aug-07 (METAS, No. 217-00719)	Aug-08
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-07 (METAS, No. 217-00671)	Mar-08
Reference Probe ET3DV6 (LF)	SN 1507	11-Jul-07 (SPEAG, No. ET3-1507_Jul07)	Jul-08
DAE4	SN 601	3-Jan-08 (SPEAG, No. DAE4-601_Jan08)	Jan-09

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	30-Aug-99 (SPEAG, In house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585	19-Oct-01 (SPEAG, In house check Oct-07)	In house check: Oct-08

	Name	Function	Signature
Calibrated by:	Marcel Fehr	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 31, 2008

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

S Schweizerischer Kalibrierdienst
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S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
ConF	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) 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
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	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	300 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	45.3	0.87 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	44.3 ± 6 %	0.87 mho/m ± 6 %
Head TSL temperature during test	(23.2 ± 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	1.14 mW / g
SAR normalized	normalized to 1W	2.86 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**2.87 mW / g ± 18.1 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	398 mW input power	0.76 mW / g
SAR normalized	normalized to 1W	1.90 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**1.90 mW / g ± 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	50.7 Ω - 18.8 jΩ
Return Loss	- 14.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.740 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	August 26, 2002

DASY4 Validation Report for Head TSL

Date/Time: 25.01.2008 13:37:15

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 300 MHz; Type: D300V2; Serial: D300V2 - SN:1002

Communication System: CW; Frequency: 300 MHz;Duty Cycle: 1:1
Medium: HSL300;
Medium parameters used: f = 300 MHz; σ = 0.84 mho/m; ε_r = 44.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

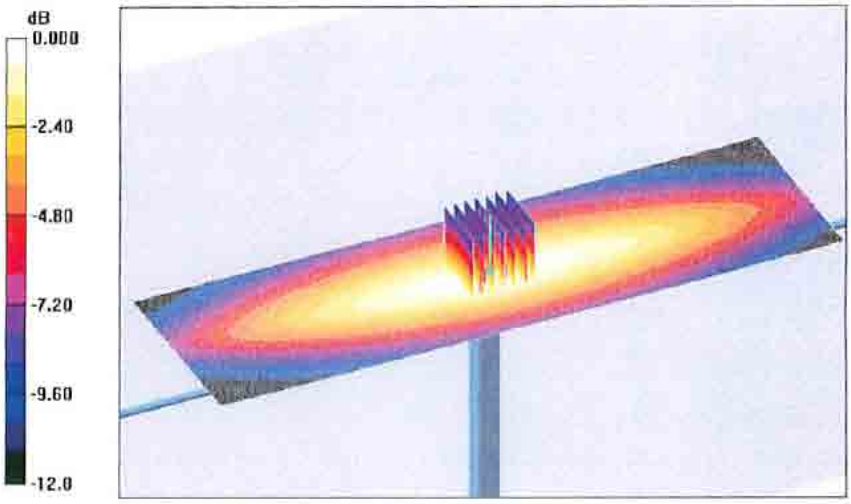
- Probe: ET3DV6 - SN1507 (LF); ConvF(7.51, 7.51, 7.51); Calibrated: 11.07.2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 03.01.2008
- Phantom: Flat Phantom 4.4; Type: Flat Phantom 4.4; ;
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

d=15mm, Pin=398mW/Area Scan (61x201x1):

Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.21 mW/g

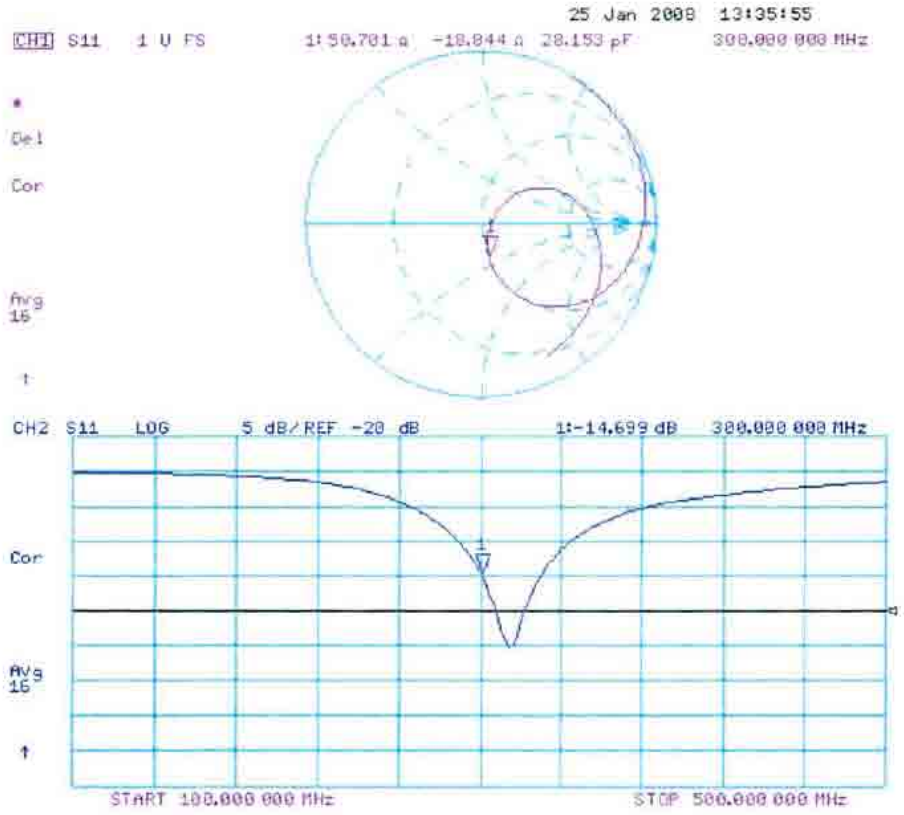
d=15mm, Pin=398mW/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 37.8 V/m; Power Drift = -0.027 dB
Peak SAR (extrapolated) = 1.79 W/kg
SAR(1 g) = 1.14 mW/g; SAR(10 g) = 0.757 mW/g
Maximum value of SAR (measured) = 1.21 mW/g



0 dB = 1.21mW/g

Impedance Measurement Plot for Head TSL



Appendix D
Test System Verification Scans

The SAR result indicated on the Manufacture's Calibrated certificates for dipoles D450V2 S/N 1002 and D300V2 S/N 1002 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 2.87 +/-18.1% at k=2 for the D300V2 S/N 1002).

-- The allowed tolerance for the probes is also higher than +/- 10% (e.g. 13.3% at k=2 at 450MHz and 18.0% at k=2 at 300MHz 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 10.1% for 300 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: 9/16/2009 10:00:13 AM

Robot# / Run#: DASY4-FL-1 / HvH-SYSP-450B-090916-01
Phantom# / Tissue Temp.: OVAL1016 / 19.7 (C)
Dipole Model# / Serial#: D450V2 / 1002
TX Freq. / Start power: 450 (MHz) / 250 (mW)

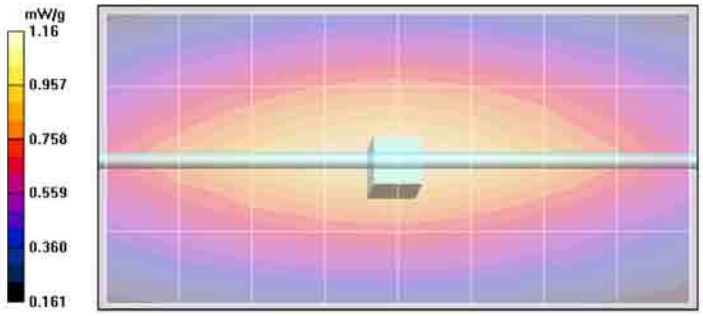
Target: 4.52 mW/g (1g)
Calculated: 4.32 mW/g (1g)
Percent from Target (+/-): 4.40 % (1g)
Rotation (1D): .089 dB

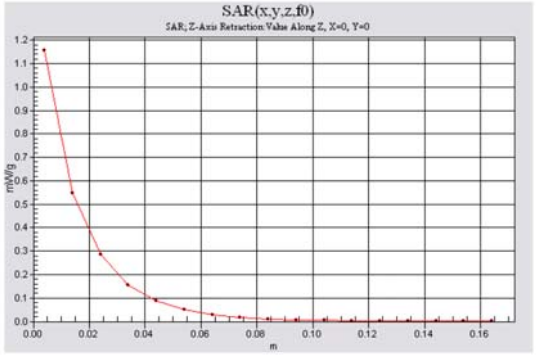
Comments:
Probe: ES3DV2 - SN3007, Calibrated: 3/12/2009, ConvF(7.19, 7.19, 7.19)
Electronics: DAE4 Sn850, Calibrated: 2/10/2009
Duty Cycle: 1:1, Medium parameters used: f = 450 MHz; σ = 0.93 mho/m; ε_r = 54.6; ρ = 1000 kg/m3

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 35.4 V/m; Power Drift = -0.00267 dB
Peak SAR (extrapolated) = 1.63 W/kg
SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.723 mW/g

System Performance Check/Dipole Area Scan 2 (41x81x1): 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: 9/17/2009 7:17:30 AM

Robot# / Run#: DASY4-FL-1 / JsT-SYSP-450B-090917-01
Phantom# / Tissue Temp.: OVAL1016 / 20.1 (C)
Dipole Model# / Serial#: D450V2 / 1002
TX Freq. / Start power: 450 (MHz) / 250 (mW)

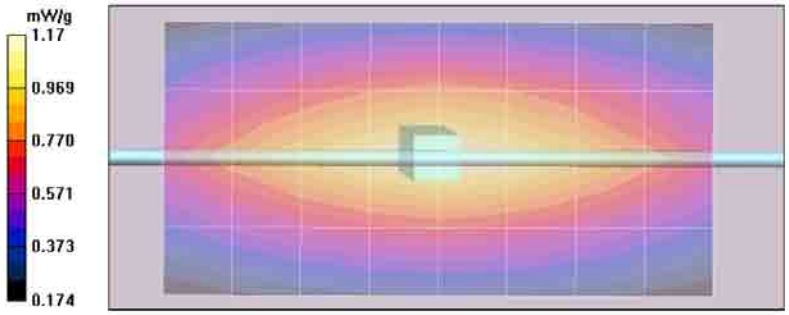
Target: 4.52 mW/g (1g)
Calculated: 4.36 mW/g (1g)
Percent from Target (+/-): 3.5 % (1g)
Rotation (1D): 0.09 dB

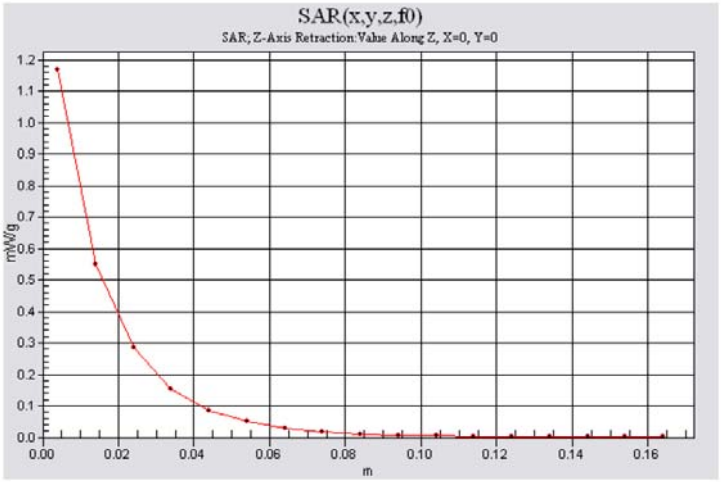
Comments:
Probe: ES3DV2 - SN3007, Calibrated: 3/12/2009, ConvF(7.19, 7.19, 7.19)
Electronics: DAE4 Sn850, Calibrated: 2/10/2009
Duty Cycle: 1:1, Medium parameters used: f = 450 MHz; σ = 0.93 mho/m; ε_r = 54.3; ρ = 1000 kg/m3

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 35.7 V/m; Power Drift = -0.00791 dB
Peak SAR (extrapolated) = 1.66 W/kg
SAR(1 g) = 1.09 mW/g; SAR(10 g) = 0.730 mW/g
Maximum value of SAR (measured) = 1.17 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: 9/18/2009 7:37:05 AM

Robot# / Run#: DASY4-FL-1 / JsT-SYSP-450B-090918-01
Phantom# / Tissue Temp.: OVAL1016 / 20.1 (C)
Dipole Model# / Serial#: D450V2 / 1002
TX Freq. / Start power: 450 (MHz) / 250 (mW)

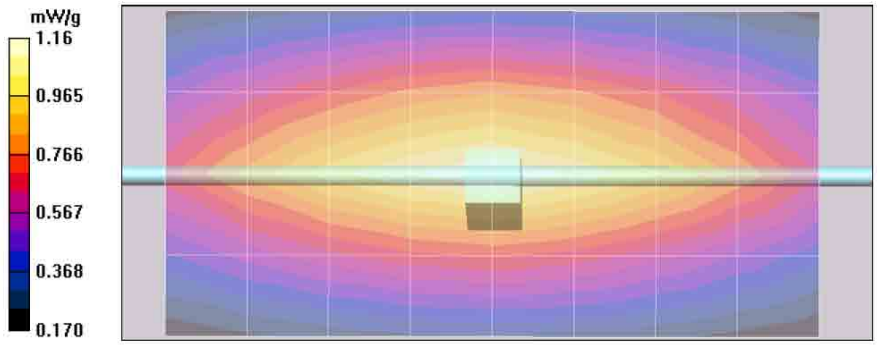
Target: 4.52 mW/g (1g)
Calculated: 4.36 mW/g (1g)
Percent from Target (+/-): 3.5 % (1g)
Rotation (1D): 0.093 dB

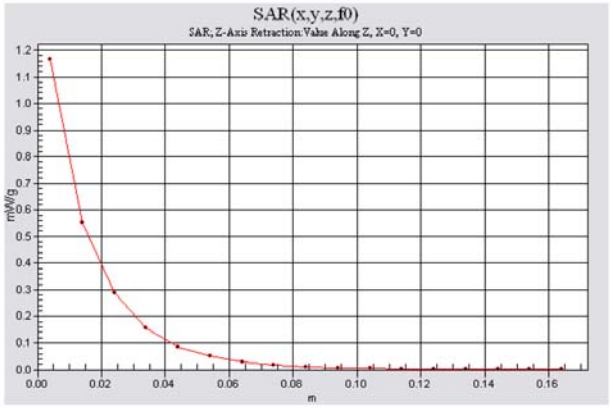
Comments:
Probe: ES3DV2 - SN3007, Calibrated: 3/12/2009, ConvF(7.19, 7.19, 7.19)
Electronics: DAE4 Sn850, Calibrated: 2/10/2009
Duty Cycle: 1:1, Medium parameters used: f = 450 MHz; σ = 0.93 mho/m; ε_r = 54; ρ = 1000 kg/m3

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 35.6 V/m; Power Drift = -0.00632 dB
Peak SAR (extrapolated) = 1.66 W/kg
SAR(1 g) = 1.09 mW/g; SAR(10 g) = 0.731 mW/g
Maximum value of SAR (measured) = 1.17 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: 9/19/2009 7:05:19 AM

Robot# / Run#: DASY4-FL-1 / HvH-SYSP-450B-090919-01
Phantom# / Tissue Temp.: OVAL1016 / 21.3 (C)
Dipole Model# / Serial#: D450V2 / 1002
TX Freq. / Start power: 450 (MHz) / 250 (mW)

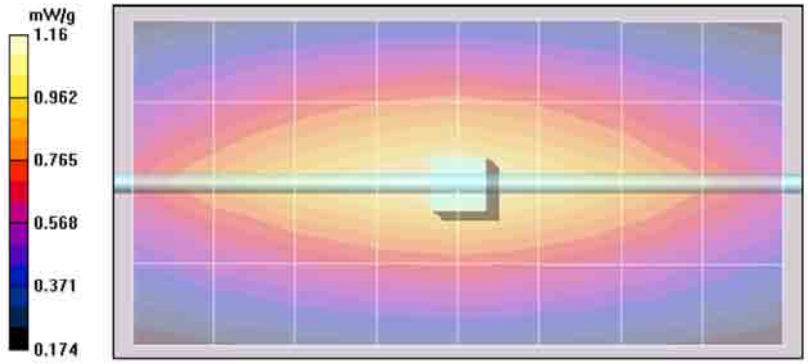
Target: 4.52 mW/g (1g)
Calculated: 4.32 mW/g (1g)
Percent from Target (+/-): 4.4 % (1g)
Rotation (1D): 0.09 dB

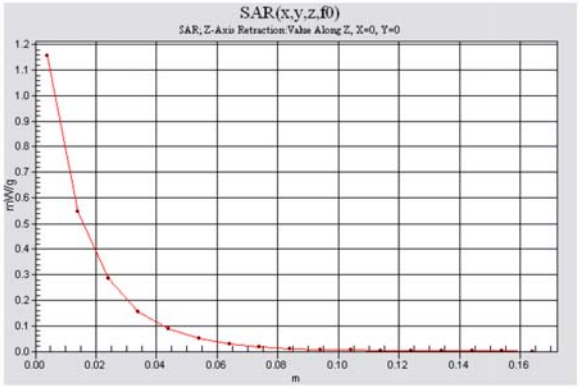
Comments:
Probe: ES3DV2 - SN3007, Calibrated: 3/12/2009, ConvF(7.19, 7.19, 7.19)
Electronics: DAE4 Sn850, Calibrated: 2/10/2009
Duty Cycle: 1:1, Medium parameters used: f = 450 MHz; σ = 0.91 mho/m; ε_r = 54.1; ρ = 1000 kg/m3

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 35.8 V/m; Power Drift = -0.00549 dB
Peak SAR (extrapolated) = 1.64 W/kg
SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.722 mW/g
Maximum value of SAR (measured) = 1.16 mW/g

System Performance Check/Dipole Area Scan 2 (41x81x1): 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: 9/20/2009 5:38:46 AM

Robot# / Run#: DASY4-FL-1 / HvH-SYSP-450H-090920-01
Phantom# / Tissue Temp.: OVAL1011 / 20.7 (C)
Dipole Model# / Serial#: D450V2 / 1002
TX Freq. / Start power: 450 (MHz) / 250 (mW)

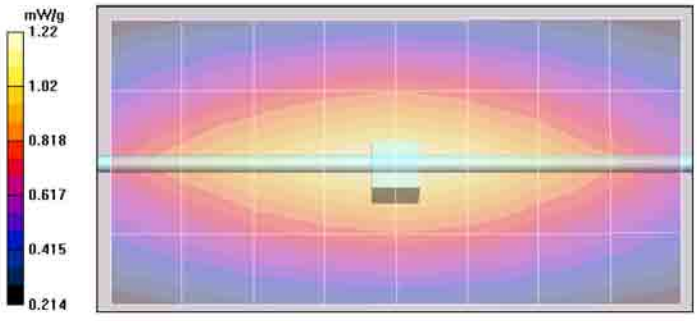
Target: 4.68 mW/g (1g)
Calculated: 4.60 mW/g (1g)
Percent from Target (+/-): 1.7 % (1g)
Rotation (1D): 0.091 dB

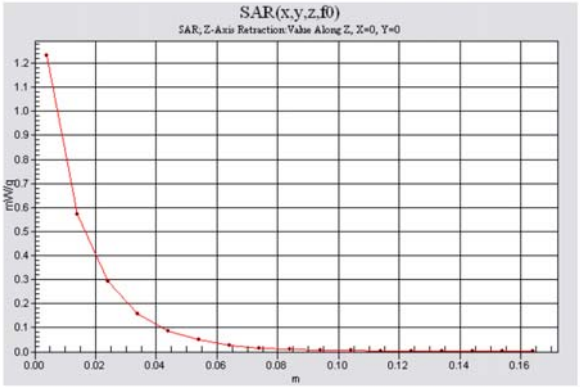
Comments:
Probe: ES3DV2 - SN3007, Calibrated: 3/12/2009, ConvF(6.76, 6.76, 6.76)
Electronics: DAE4 Sn850, Calibrated: 2/10/2009
Duty Cycle: 1:1, Medium parameters used: f = 450 MHz; σ = 0.85 mho/m; ε_r = 41.8; ρ = 1000 kg/m3

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 38.4 V/m; Power Drift = -0.0177 dB
Peak SAR (extrapolated) = 1.73 W/kg
SAR(1 g) = 1.15 mW/g; SAR(10 g) = 0.764 mW/g
Maximum value of SAR (measured) = 1.23 mW/g

System Performance Check/Dipole Area Scan 2 (41x81x1): 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: 9/20/2009 1:38:08 PM

Robot# / Run#: DASY4-FL-1 / HvH-SYSP-300H-090920-13
Phantom# / Tissue Temp.: OVAL1020 / 20.3 (C)
Dipole Model# / Serial#: D300V2 / 1002
TX Freq. / Start power: 300 (MHz) / 250 (mW)

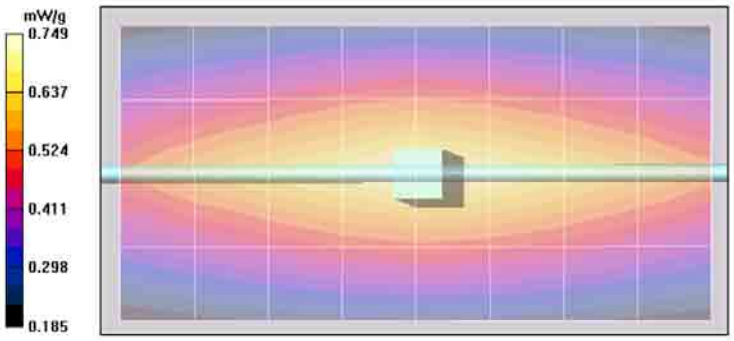
Target: 2.58 mW/g (1g)
Calculated: 2.81 mW/g (1g)
Percent from Target (+/-): 9.0 % (1g)
Rotation (1D): 0.086 dB

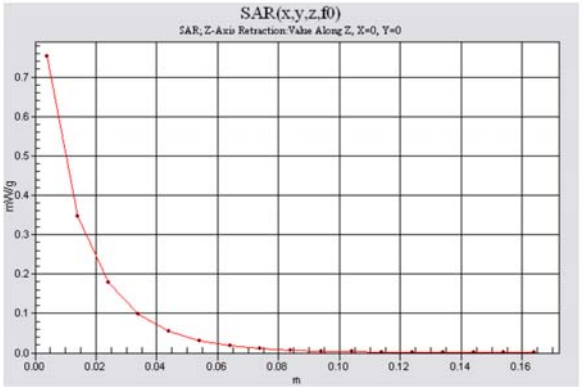
Comments:
Probe: ES3DV2 - SN3007, Calibrated: 3/12/2009, ConvF(7.4, 7.4, 7.4)
Electronics: DAE4 Sn850, Calibrated: 2/10/2009
Duty Cycle: 1:1, Medium parameters used: f = 300 MHz; σ = 0.89 mho/m; ε_r = 44.5; ρ = 1000 kg/m3

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 28.9 V/m; Power Drift = 0.00149 dB
Peak SAR (extrapolated) = 1.11 W/kg
SAR(1 g) = 0.703 mW/g; SAR(10 g) = 0.469 mW/g
Maximum value of SAR (measured) = 0.749 mW/g

System Performance Check/Dipole Area Scan 2 (41x81x1): 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: 9/21/2009 7:53:51 AM

Robot# / Run#: DASY4-FL-1 / JsT-SYSP-300H-090921-01
Phantom# / Tissue Temp.: OVAL1020 / 20.7 (C)
Dipole Model# / Serial#: D300V2 / 1002
TX Freq. / Start power: 300 (MHz) / 250 (mW)

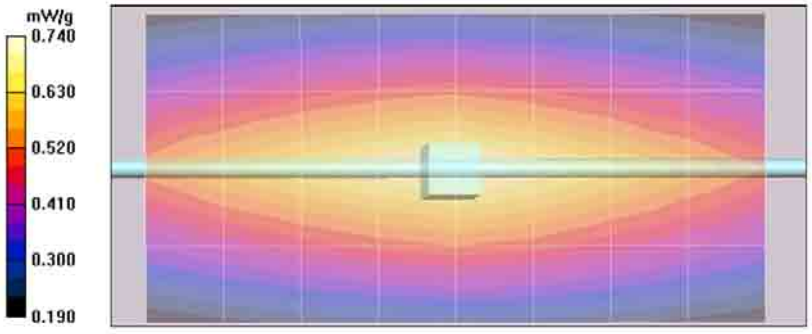
Target: 2.58 mW/g (1g)
Calculated: 2.78 mW/g (1g)
Percent from Target (+/-): 7.6 % (1g)
Rotation (1D): 0.087 dB

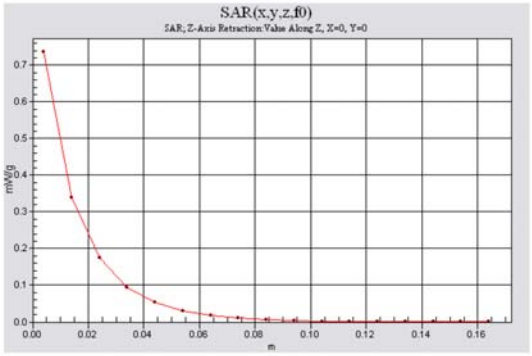
Comments:
Probe: ES3DV2 - SN3007, Calibrated: 3/12/2009, ConvF(7.4, 7.4, 7.4)
Electronics: DAE4 Sn850, Calibrated: 2/10/2009
Duty Cycle: 1:1, Medium parameters used: f = 300 MHz; σ = 0.88 mho/m; ε_r = 44.1; ρ = 1000 kg/m3

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 28.9 V/m; Power Drift = -0.0261 dB
Peak SAR (extrapolated) = 1.10 W/kg
SAR(1 g) = 0.694 mW/g; SAR(10 g) = 0.462 mW/g
Maximum value of SAR (measured) = 0.740 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: 9/22/2009 8:18:59 AM

Robot# / Run#: DASY4-FL-1 / JsT-SYSP-300H-090922-01
Phantom# / Tissue Temp.: OVAL1020 / 20.7 (C)
Dipole Model# / Serial#: D300V2 / 1002
TX Freq. / Start power: 300 (MHz) / 250 (mW)

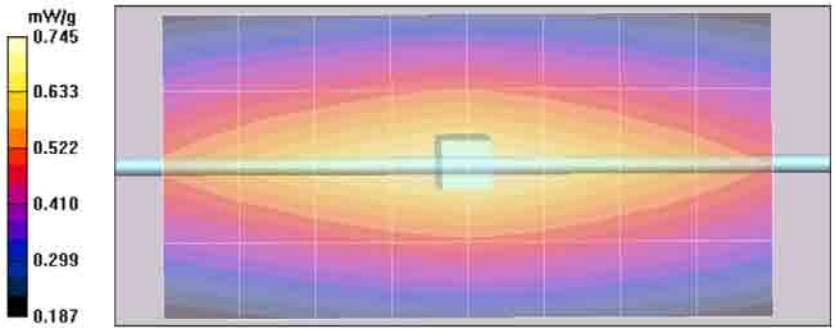
Target: 2.58 mW/g (1g)
Calculated: 2.80 mW/g (1g)
Percent from Target (+/-): 8.5 % (1g)
Rotation (1D): 0.085 dB

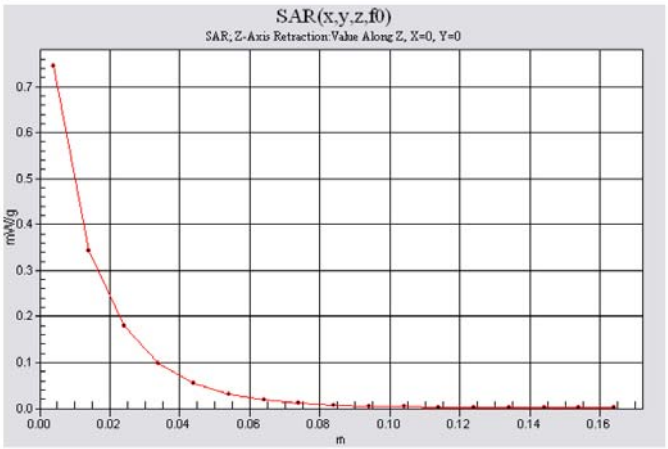
Comments:
Probe: ES3DV2 - SN3007, Calibrated: 3/12/2009, ConvF(7.4, 7.4, 7.4)
Electronics: DAE4 Sn850, Calibrated: 2/10/2009
Duty Cycle: 1:1, Medium parameters used: f = 300 MHz; σ = 0.89 mho/m; ε_r = 44.2; ρ = 1000 kg/m3

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 28.9 V/m; Power Drift = -0.0125 dB
Peak SAR (extrapolated) = 1.11 W/kg
SAR(1 g) = 0.700 mW/g; SAR(10 g) = 0.466 mW/g
Maximum value of SAR (measured) = 0.748 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: 9/24/2009 8:29:18 AM

Robot# / Run#: DASY4-FL-1 / JsT-SYSP-300H-090924-02
Phantom# / Tissue Temp.: OVAL1020 / 20.8 (C)
Dipole Model# / Serial#: D300V2 / 1002
TX Freq. / Start power: 300 (MHz) / 250 (mW)

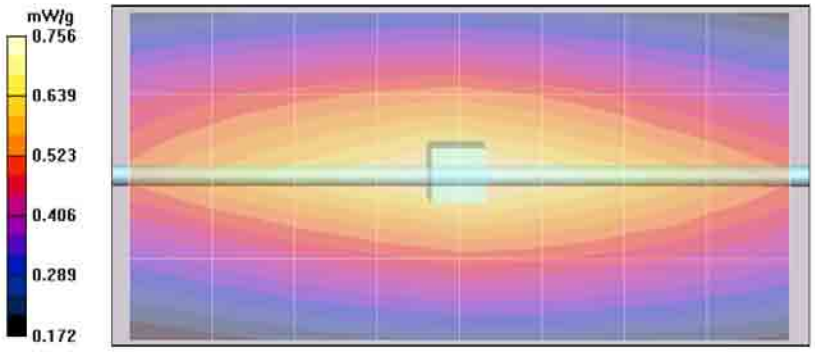
Target: 2.58 mW/g (1g)
Calculated: 2.82 mW/g (1g)
Percent from Target (+/-): 9.3 % (1g)
Rotation (1D): 0.096 dB

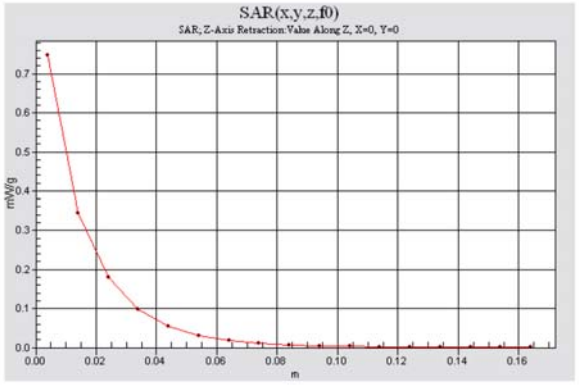
Comments:
Probe: ES3DV2 - SN3007, Calibrated: 3/12/2009, ConvF(7.4, 7.4, 7.4)
Electronics: DAE4 Sn850, Calibrated: 2/10/2009
Duty Cycle: 1:1, Medium parameters used: f = 300 MHz; σ = 0.89 mho/m; ε_r = 44.2; ρ = 1000 kg/m3

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 28.9 V/m; Power Drift = -0.0167 dB
Peak SAR (extrapolated) = 1.12 W/kg
SAR(1 g) = 0.705 mW/g; SAR(10 g) = 0.472 mW/g
Maximum value of SAR (measured) = 0.748 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: 9/25/2009 7:30:05 AM

Robot# / Run#: DASY4-FL-1 / JsT-SYSP-300H-090925-01
Phantom# / Tissue Temp.: OVAL1020 / 20.7 (C)
Dipole Model# / Serial#: D300V2 / 1002
TX Freq. / Start power: 300 (MHz) / 250 (mW)

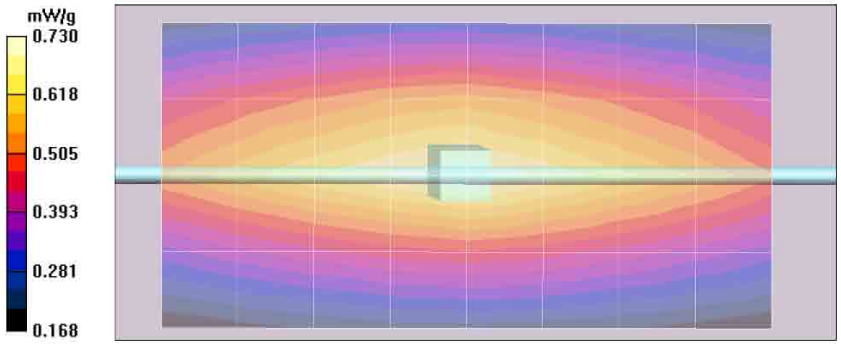
Target: 2.58 mW/g (1g)
Calculated: 2.76 mW/g (1g)
Percent from Target (+/-): 7.0 % (1g)
Rotation (1D): 0.092 dB

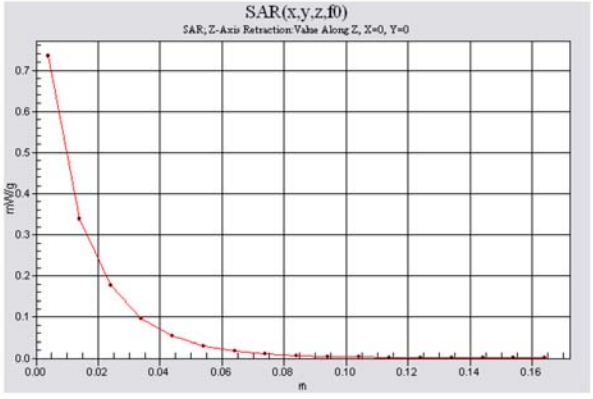
Comments:
Probe: ES3DV2 - SN3007, Calibrated: 3/12/2009, ConvF(7.4, 7.4, 7.4)
Electronics: DAE4 Sn850, Calibrated: 2/10/2009
Duty Cycle: 1:1, Medium parameters used: f = 300 MHz; σ = 0.87 mho/m; ε_r = 44.1; ρ = 1000 kg/m3

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 29.1 V/m; Power Drift = -0.0182 dB
Peak SAR (extrapolated) = 1.09 W/kg
SAR(1 g) = 0.690 mW/g; SAR(10 g) = 0.461 mW/g
Maximum value of SAR (measured) = 0.736 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: 9/26/2009 12:20:38 PM

Robot# / Run#: DASY4-FL-1 / HvH-SYSP-450H-090926-11
Phantom# / Tissue Temp.: OVAL1011 / 19.7 (C)
Dipole Model# / Serial#: D450V2 / 1002
TX Freq. / Start power: 450 (MHz) / 250 (mW)

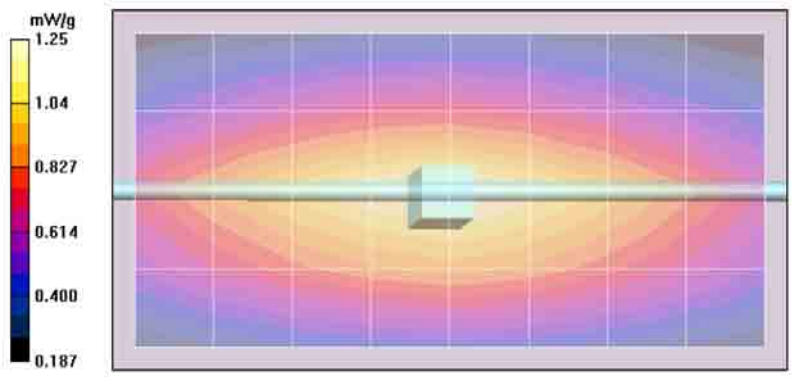
Target: 4.68 mW/g (1g)
Calculated: 4.72 mW/g (1g)
Percent from Target (+/-): 0.9 % (1g)
Rotation (1D): 0.089 dB

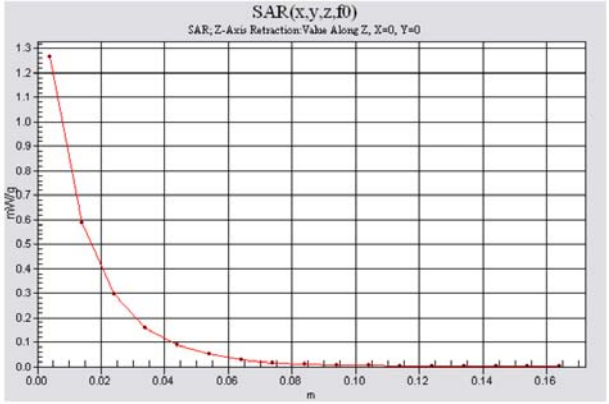
Comments:
Probe: ES3DV2 - SN3007, Calibrated: 3/12/2009, ConvF(6.76, 6.76, 6.76)
Electronics: DAE4 Sn850, Calibrated: 2/10/2009
Duty Cycle: 1:1, Medium parameters used: f = 450 MHz; σ = 0.88 mho/m; ε_r = 42.9; ρ = 1000 kg/m3

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 38.2 V/m; Power Drift = -0.0341 dB
Peak SAR (extrapolated) = 1.79 W/kg
SAR(1 g) = 1.18 mW/g; SAR(10 g) = 0.786 mW/g
Maximum value of SAR (measured) = 1.27 mW/g

System Performance Check/Dipole Area Scan 2 (41x81x1): 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: 9/30/2009 4:52:00 PM

Robot# / Run#: DASY4-FL-1 / MeC-SYSP-300H-090930-01
Phantom# / Tissue Temp.: OVAL1020 / 20.5 (C)
Dipole Model# / Serial#: D300V2 / 1002
TX Freq. / Start power: 300 (MHz) / 250 (mW)

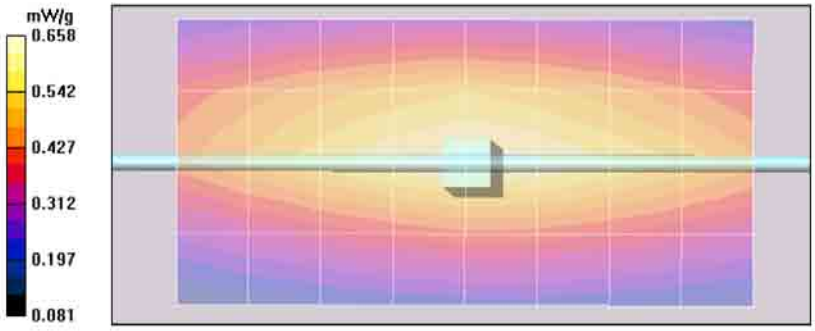
Target: 2.58 mW/g (1g)
Calculated: 2.48 mW/g (1g)
Percent from Target (+/-): 3.7 % (1g)
Rotation (1D): 0.09 dB

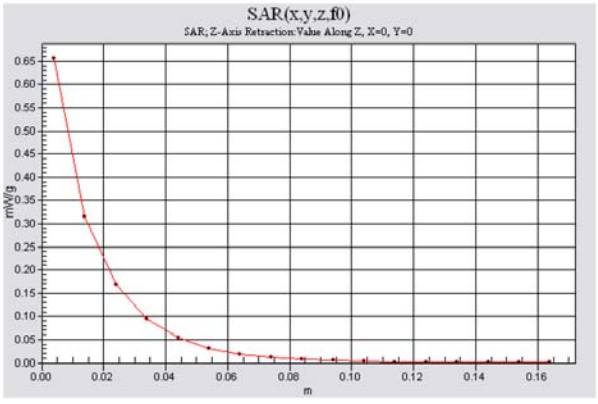
Comments:
Probe: ES3DV2 - SN3007, Calibrated: 3/12/2009, ConvF(7.4, 7.4, 7.4)
Electronics: DAE4 Sn850, Calibrated: 2/10/2009
Duty Cycle: 1:1, Medium parameters used: f = 300 MHz; σ = 0.86 mho/m; ε_r = 44.8; ρ = 1000 kg/m3

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 27.8 V/m; Power Drift = -0.00875 dB
Peak SAR (extrapolated) = 0.958 W/kg
SAR(1 g) = 0.621 mW/g; SAR(10 g) = 0.423 mW/g
Maximum value of SAR (measured) = 0.658 mW/g

System Performance Check/Dipole Area Scan 2 (41x81x1): 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: 10/7/2009 1:56:48 PM

Robot# / Run#: DASY4-FL-1 / HvH-SYSP-450B-091007-01
Phantom# / Tissue Temp.: OVAL1016 / 21.0 (C)
Dipole Model# / Serial#: D450V2 / 1002
TX Freq. / Start power: 450 (MHz) / 250 (mW)

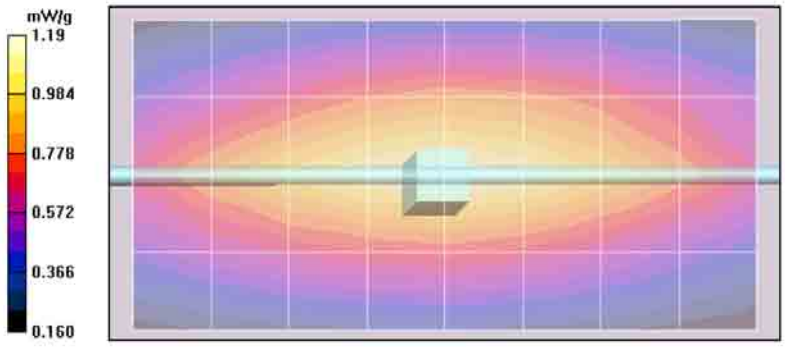
Target: 4.52 mW/g (1g)
Calculated: 4.48 mW/g (1g)
Percent from Target (+/-): 0.9 % (1g)
Rotation (1D): 0.086 dB

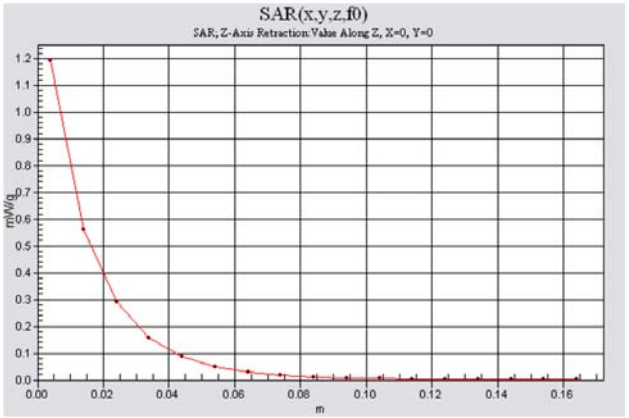
Comments:
Probe: ES3DV2 - SN3007, Calibrated: 3/12/2009, ConvF(7.19, 7.19, 7.19)
Electronics: DAE4 Sn850, Calibrated: 2/10/2009
Duty Cycle: 1:1, Medium parameters used: f = 450 MHz; σ = 0.98 mho/m; ε_r = 55.9; ρ = 1000 kg/m3

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 = -0.0174 dB
Peak SAR (extrapolated) = 1.70 W/kg
SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.745 mW/g
Maximum value of SAR (measured) = 1.19 mW/g

System Performance Check/Dipole Area Scan 2 (41x81x1): 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: 10/8/2009 6:36:26 AM

Robot# / Run#: DASY4-FL-1 / JsT-SYSP-450B-091008-01
Phantom# / Tissue Temp.: OVAL1016 / 20.0 (C)
Dipole Model# / Serial#: D450V2 / 1002
TX Freq. / Start power: 450 (MHz) / 250 (mW)

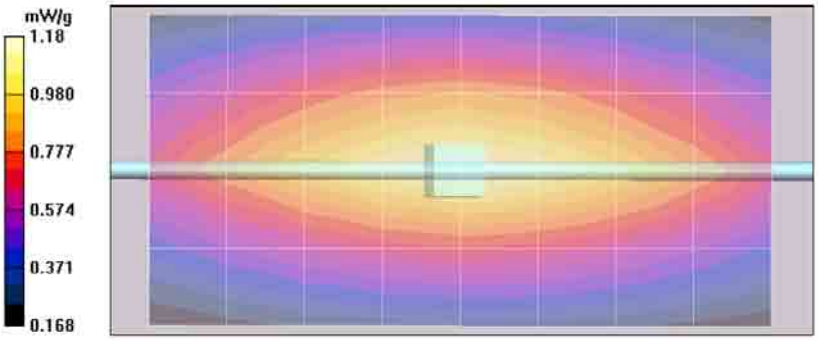
Target: 4.52 mW/g (1g)
Calculated: 4.44 mW/g (1g)
Percent from Target (+/-): 1.8 % (1g)
Rotation (1D): 0.09 dB

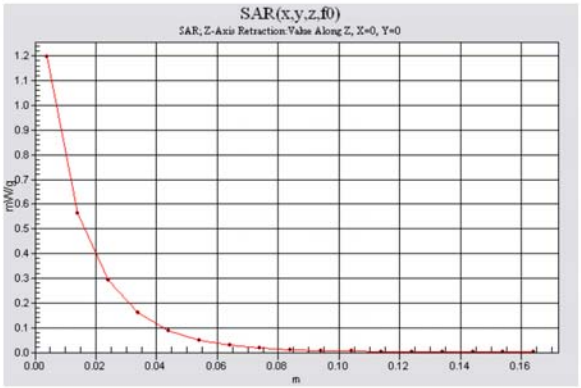
Comments:
Probe: ES3DV2 - SN3007, Calibrated: 3/12/2009, ConvF(7.19, 7.19, 7.19)
Electronics: DAE4 Sn850, Calibrated: 2/10/2009
Duty Cycle: 1:1, Medium parameters used: f = 450 MHz; σ = 0.97 mho/m; ε_r = 55.6; ρ = 1000 kg/m3

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 = -0.00165 dB
Peak SAR (extrapolated) = 1.69 W/kg
SAR(1 g) = 1.11 mW/g; SAR(10 g) = 0.742 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

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





Motorola Enterprise Mobility Solutions EME Laboratory

Date/Time: 10/12/2009 1:00:08 PM

Robot# / Run#: DASY4-FL-1 / HvH-SYSP-300H-091012-01
Phantom# / Tissue Temp.: OVAL1020 / 20.5 (C)
Dipole Model# / Serial#: D300V2 / 1002
TX Freq. / Start power: 300 (MHz) / 250 (mW)

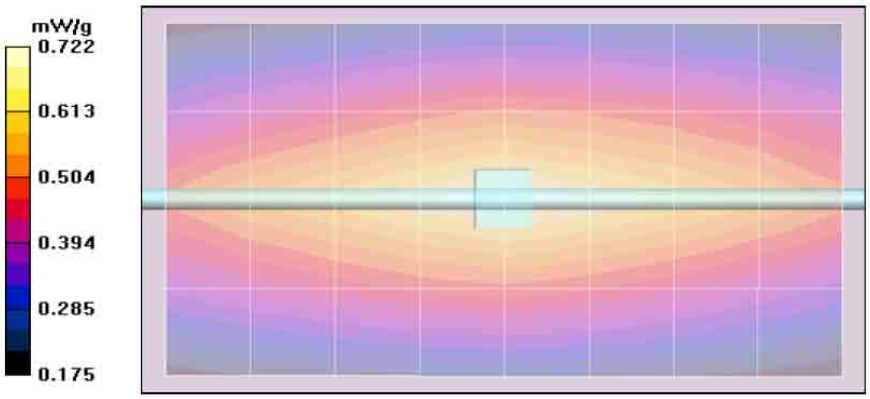
Target: 2.58 mW/g (1g)
Calculated: 2.71 mW/g (1g)
Percent from Target (+/-): 5.0 % (1g)
Rotation (1D): 0.09 dB

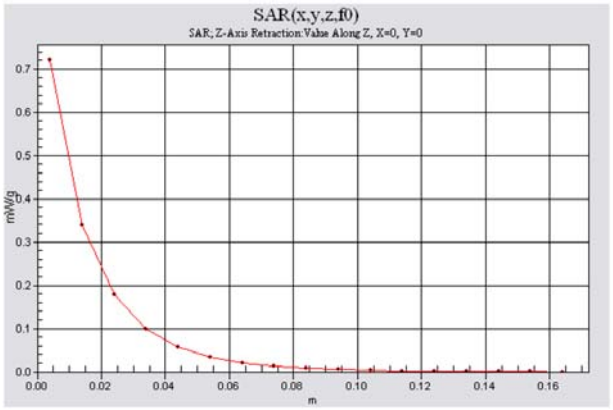
Comments:
Probe: ES3DV2 - SN3007, Calibrated: 3/12/2009, ConvF(7.4, 7.4, 7.4)
Electronics: DAE4 Sn850, Calibrated: 2/10/2009
Duty Cycle: 1:1, Medium parameters used: f = 300 MHz; σ = 0.86 mho/m; ε_r = 44.2; ρ = 1000 kg/m3

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 28.9 V/m; Power Drift = -0.0124 dB
Peak SAR (extrapolated) = 1.06 W/kg
SAR(1 g) = 0.677 mW/g; SAR(10 g) = 0.455 mW/g
Maximum value of SAR (measured) = 0.721 mW/g

System Performance Check/Dipole Area Scan 2 (41x81x1): 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: 10/14/2009 8:19:24 AM

Robot# / Run#: DASY4-FL-1 / ErC-SYSP-300H-091014-01
Phantom# / Tissue Temp.: OVAL1020 / 20.4 (C)
Dipole Model# / Serial#: D300V2 / 1002
TX Freq. / Start power: 300 (MHz) / 250 (mW)

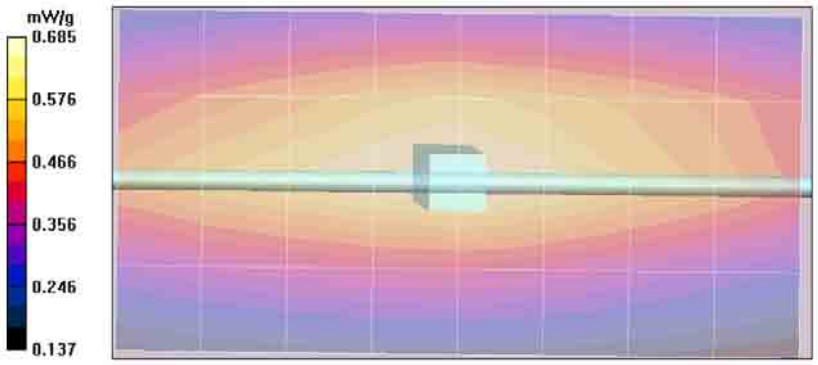
Target: 2.58 mW/g (1g)
Calculated: 2.68 mW/g (1g)
Percent from Target (+/-): 3.7 % (1g)
Rotation (1D): 0.1 dB

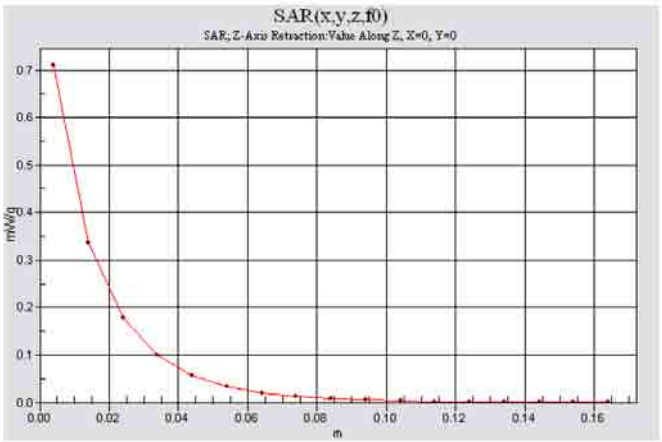
Comments:
Probe: ES3DV2 - SN3007, Calibrated: 3/12/2009, ConvF(7.4, 7.4, 7.4)
Electronics: DAE4 Sn850, Calibrated: 2/10/2009
Duty Cycle: 1:1, Medium parameters used: f = 300 MHz; σ = 0.85 mho/m; ε_r = 44; ρ = 1000 kg/m3

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 28.9 V/m; Power Drift = -0.015 dB
Peak SAR (extrapolated) = 1.05 W/kg
SAR(1 g) = 0.669 mW/g; SAR(10 g) = 0.450 mW/g
Maximum value of SAR (measured) = 0.713 mW/g

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

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





DIPOLE SAR TARGET - HEAD

Date:	**12/03/08**	Frequency (MHz):	**450**
Lab Location:	(FL08)-G&PS	Mixture Type:	**IEEE Head**
DAE Serial #:	805	Ambient Temp.(°C):	22.5
Tissue Characteristics			
Permitivity:	42.9	Phantom Type/SN:	OVAL 1019
Conductivity:	0.88	Distance (mm):	15
Tissue Temp.(°C):	20.7		
Reference Source:	Dipole	Power to Dipole:	250 mW
Reference SN:	**1002**		

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: E, C

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

Permitivity:	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(1g 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:	**03/10/09**	Frequency (MHz):	**300**
Lab Location:	FL08-G&PS	Mixture Type:	**IEEE Head**
DAE Serial #:	363	Ambient Temp.(°C):	21.3

Tissue Characteristics			
Permitivity:	45.4	Phantom Type/SN:	OVAL1021
Conductivity:	0.90	Distance (mm):	15
Tissue Temp.(°C):	21.1		

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

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

2.85

Difference from Target

-9.65%	**(1g-SAR)**

New Target:

Average 1g-SAR Value (mW/g):	**2.58**

Passes K=2

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

Probe SN #s	1g-SAR (Cube)	Diff from Ave	Robot
3185	2.59	0.6%	R2
3147	2.56	-0.6%	R2
N/A	N/A	#VALUE!	N/A
N/A	N/A	#VALUE!	N/A
N/A	N/A	#VALUE!	N/A
Average	**2.5750**	New Measured SAR Value	

(normalized to 1.0 W)

Test performed by: J. Turco Initial:

DIPOLE SAR TARGET - BODY

Date:	03/10/09	Frequency (MHz):	300
Lab Location:	FL08-G&PS	Mixture Type:	FCC Body
DAE Serial #:	363	Ambient Temp.(°C):	21.2

Tissue Characteristics

Permitivity:	57.4	Phantom Type/SN:	OVAL1020
Conductivity:	0.88	Distance (mm):	15
Tissue Temp.(°C):	20.9		

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

New Target:
Average Measured SAR Value: **2.34** mW/g(1g avg.),

Probe SN #s	1-G Cube	Diff from Ave	Robot
3185	2.36	0.9%	R2
3147	2.32	-0.9%	R2
N/A	N/A	#VALUE!	N/A
N/A	N/A	#VALUE!	N/A
N/A	N/A	#VALUE!	N/A
Average	**2.3400**	New Measured SAR Value	

(normalized to 1.0 W)

Test performed by: **J. Turco** Initial: