

 MOTOROLA	 Certificate Number: 2518.01								
FCC ID: AZ489FT5853 DECLARATION OF COMPLIANCE SAR ASSESSMENT part 2 of 3									
Networks & Enterprise EME Test Laboratory 8000 West Sunrise Blvd Fort Lauderdale, FL. 33322	Date of Report: 8/15/06 Report Revision: Rev O Report ID: i880_i885 060815 SR4122_4112								
<table border="0"> <tr> <td style="vertical-align: top;"> Responsible Engineer: Michael Sailsman (Sr. Staff EME Engineer) Date/s Tested: 7/11/06-8/10/06 Manufacturer/Location: Motorola – Plantation Sector/Group/Div.: iDEN Subscriber Date submitted for test: 6/23/06 DUT Description: i880 & i885; TDMA: 236:310 WiDEN (75%); 81:120, 2:6, 1:12, and 1:6; 64 QAM, 16 QAM, and QSPK Modulations; 0.6 W Pulse Avg. MOTotalk (114:120 8FSK; 0.85 W nominal); GPS and Bluetooth capable 1:3, 1:6, 114:120, 236:310, 81:120 Test TX mode(s): Mototalk - 0.891 W, iDEN/WiDEN - 0.640 W; Bluetooth – 2.5 mW Max. Power output: MOTotalk - 0.85 W; iDEN/WiDEN - 0.60 W; Bluetooth – 1.0 mW Nominal Power: MOTotalk - 902-928 MHz, iDEN/WiDEN – 806-825, 896-902 MHz Tx Frequency Bands: TDMA: iDEN; WiDEN, MOTotalk - (FHSS 8FSK) Model(s) Tested: i880-H94XAH6RR4AN/NWF0004A, i885-H94XAH6RR4AN/NWF1193A Model(s) Certified: i880-H94XAH6RR4AN/NWF0004A, i885-H94XAH6RR4AN/NWF1193A Serial Number(s): 364VGGGJW5, 364VGGGJY8 & 364VGGGJWM (i880); 364VGGGFX0 (i885) Classification: General Population/Uncontrolled Rule Part(s): 15, 90 </td> <td style="vertical-align: top; text-align: center;">  </td> </tr> </table> Approved Accessories: Antenna(s): 8571042L01(i880 - retractable ¼ wave antenna: 806-825MHz , -0.6dBd; 896-902MHz , -0.9dBd; 902-928MHz , -0.9dBd) 8516836H01 (i885 - retractable ¼ Wave antenna: 806-825MHz , -0.7dBd; 896-902MHz , -1.2dBd; 902-928MHz , -1.2dBd) Battery(ies): SNN5782B (i880 & i885 - BT60 High performance Li Ion), NTN2359AXXX (High performance battery door); SNN5759A (i880 – BT90 Maximum capacity Li Ion), NTN2360AXXX (max capacity battery door) Body worn accessory(ies): NNTN6785A (i880 - Swivel carry holster); NNTN4747A (i880 & i885 belt clip) Audio/Data cable accessory(ies): NNTN5211A(Surveillance earpiece); NNTN5004A(PTT headset); NNTN5005A(PTT headset); NNTN5006A(PTT headset); NNTN5330A(PTT headset); NNTN5774A(PTT stereo headset); NNTN5751A(Stereo mixing headset w/ PTT); NNTN5752A(Stereo mixing headset); NNTN6312A(3-wire surveillance earpiece); NNTN5405A(USB data cable w/ charging); NNTN5406A(RS232 data cable w/ charging); NTN2074A (Qwerty keyboard: NNTN5491A/NNTN5863A/NNTN5496A/NNTN5715A) <table border="0" style="width: 100%;"> <tr> <td>Max. Calc. : 1-g Avg. SAR: 1.57 W/kg (Body);</td> <td>10-g Avg. SAR: 1.13 W/kg (Body)</td> </tr> <tr> <td>Max. Calc. : 1-g Avg. SAR: 0.77 W/kg (Face);</td> <td>10-g Avg. SAR: 0.54 W/kg (Face)</td> </tr> <tr> <td>Max. Calc. : 1-g Avg. SAR: 1.30 W/kg (Head);</td> <td>10-g Avg. SAR: 0.87 W/kg (Head)</td> </tr> </table>		Responsible Engineer: Michael Sailsman (Sr. Staff EME Engineer) Date/s Tested: 7/11/06-8/10/06 Manufacturer/Location: Motorola – Plantation Sector/Group/Div.: iDEN Subscriber Date submitted for test: 6/23/06 DUT Description: i880 & i885; TDMA: 236:310 WiDEN (75%); 81:120, 2:6, 1:12, and 1:6; 64 QAM, 16 QAM, and QSPK Modulations; 0.6 W Pulse Avg. MOTotalk (114:120 8FSK; 0.85 W nominal); GPS and Bluetooth capable 1:3, 1:6, 114:120, 236:310, 81:120 Test TX mode(s): Mototalk - 0.891 W, iDEN/WiDEN - 0.640 W; Bluetooth – 2.5 mW Max. Power output: MOTotalk - 0.85 W; iDEN/WiDEN - 0.60 W; Bluetooth – 1.0 mW Nominal Power: MOTotalk - 902-928 MHz, iDEN/WiDEN – 806-825, 896-902 MHz Tx Frequency Bands: TDMA: iDEN; WiDEN, MOTotalk - (FHSS 8FSK) Model(s) Tested: i880-H94XAH6RR4AN/NWF0004A, i885-H94XAH6RR4AN/NWF1193A Model(s) Certified: i880-H94XAH6RR4AN/NWF0004A, i885-H94XAH6RR4AN/NWF1193A Serial Number(s): 364VGGGJW5, 364VGGGJY8 & 364VGGGJWM (i880); 364VGGGFX0 (i885) Classification: General Population/Uncontrolled Rule Part(s): 15, 90		Max. Calc. : 1-g Avg. SAR: 1.57 W/kg (Body);	10-g Avg. SAR: 1.13 W/kg (Body)	Max. Calc. : 1-g Avg. SAR: 0.77 W/kg (Face);	10-g Avg. SAR: 0.54 W/kg (Face)	Max. Calc. : 1-g Avg. SAR: 1.30 W/kg (Head);	10-g Avg. SAR: 0.87 W/kg (Head)
Responsible Engineer: Michael Sailsman (Sr. Staff EME Engineer) Date/s Tested: 7/11/06-8/10/06 Manufacturer/Location: Motorola – Plantation Sector/Group/Div.: iDEN Subscriber Date submitted for test: 6/23/06 DUT Description: i880 & i885; TDMA: 236:310 WiDEN (75%); 81:120, 2:6, 1:12, and 1:6; 64 QAM, 16 QAM, and QSPK Modulations; 0.6 W Pulse Avg. MOTotalk (114:120 8FSK; 0.85 W nominal); GPS and Bluetooth capable 1:3, 1:6, 114:120, 236:310, 81:120 Test TX mode(s): Mototalk - 0.891 W, iDEN/WiDEN - 0.640 W; Bluetooth – 2.5 mW Max. Power output: MOTotalk - 0.85 W; iDEN/WiDEN - 0.60 W; Bluetooth – 1.0 mW Nominal Power: MOTotalk - 902-928 MHz, iDEN/WiDEN – 806-825, 896-902 MHz Tx Frequency Bands: TDMA: iDEN; WiDEN, MOTotalk - (FHSS 8FSK) Model(s) Tested: i880-H94XAH6RR4AN/NWF0004A, i885-H94XAH6RR4AN/NWF1193A Model(s) Certified: i880-H94XAH6RR4AN/NWF0004A, i885-H94XAH6RR4AN/NWF1193A Serial Number(s): 364VGGGJW5, 364VGGGJY8 & 364VGGGJWM (i880); 364VGGGFX0 (i885) Classification: General Population/Uncontrolled Rule Part(s): 15, 90									
Max. Calc. : 1-g Avg. SAR: 1.57 W/kg (Body);	10-g Avg. SAR: 1.13 W/kg (Body)								
Max. Calc. : 1-g Avg. SAR: 0.77 W/kg (Face);	10-g Avg. SAR: 0.54 W/kg (Face)								
Max. Calc. : 1-g Avg. SAR: 1.30 W/kg (Head);	10-g Avg. SAR: 0.87 W/kg (Head)								

| Based on the information and the testing results provided herein, the undersigned certifies that when used as stated in the operating instructions supplied, said product complies with the national and international reference standards and guidelines listed in section 2.0 of this report. This report shall not be reproduced without written approval from an officially designated representative of the Motorola EME Laboratory. This reporting format is consistent with the test report guidelines of the TIA TSB-150 December 2004 The results and statements contained in this report pertain only to the device(s) evaluated. | |
| Signature on file **Ken Enger NE EME Lab Senior Resource Manager,** **Laboratory Director,** **Approval Date:** 8/16/06 | **Certification Date:** 8/16/06 **Certification No.:** L1060817P/L1060818P |

APPENDIX A

Measurement Uncertainty

Uncertainty Budget for Device Under Test, for 30 MHz to 3 GHz

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e = f(d,k)</i>	<i>f</i>	<i>g</i>	<i>h = c x f / e</i>	<i>i = c x g / e</i>	<i>k</i>
	IEEE 1528 section	Tol. (± %)	Prob Dist		<i>c_i</i> (1 g)	<i>c_i</i> (10 g)	1 g <i>u_i</i> (±%)	10 g <i>u_i</i> (±%)	
Uncertainty Component				Div.					<i>v_i</i>
Measurement System									
Probe Calibration	E.2.1	5.9	N	1.00	1	1	5.9	5.9	∞
Axial Isotropy	E.2.2	4.7	R	1.73	0.707	0.707	1.9	1.9	∞
Hemispherical Isotropy	E.2.2	9.6	R	1.73	0.707	0.707	3.9	3.9	∞
Boundary Effect	E.2.3	1.0	R	1.73	1	1	0.6	0.6	∞
Linearity	E.2.4	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1.0	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	0.3	N	1.00	1	1	0.3	0.3	∞
Response Time	E.2.7	1.1	R	1.73	1	1	0.6	0.6	∞
Integration Time	E.2.8	1.1	R	1.73	1	1	0.6	0.6	∞
RF Ambient Conditions - Noise	E.6.1	3.0	R	1.73	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	0.0	R	1.73	1	1	0.0	0.0	∞
Probe Positioner Mech. Tolerance	E.6.2	0.4	R	1.73	1	1	0.2	0.2	∞
Probe Positioning w.r.t Phantom	E.6.3	1.4	R	1.73	1	1	0.8	0.8	∞
Max. SAR Evaluation (ext., int., avg.)	E.5	3.4	R	1.73	1	1	2.0	2.0	∞
Test sample Related									
Test Sample Positioning	E.4.2	3.2	N	1.00	1	1	3.2	3.2	29
Device Holder Uncertainty	E.4.1	4.0	N	1.00	1	1	4.0	4.0	8
SAR drift	6.6.2	5.0	R	1.73	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									
Phantom Uncertainty	E.3.1	4.0	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity (target)	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity (measurement)	E.3.3	3.3	N	1.00	0.64	0.43	2.1	1.4	∞
Liquid Permittivity (target)	E.3.2	5.0	R	1.73	0.6	0.49	1.7	1.4	∞
Liquid Permittivity (measurement)	E.3.3	1.9	N	1.00	0.6	0.49	1.1	0.9	∞
Combined Standard Uncertainty			RSS				11	11	411
Expanded Uncertainty (95% CONFIDENCE LEVEL)			<i>k</i> =2				22	22	

Uncertainty Budget for System Validation (dipole & flat phantom) for 30 MHz to 3 GHz

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e = f(d,k)</i>	<i>f</i>	<i>g</i>	<i>h = c x f / e</i>	<i>i = c x g / e</i>	<i>k</i>
Uncertainty Component	IEEE 1528 section	Tol. (± %)	Prob. Dist.	Div.	<i>c_i</i> (1 g)	<i>c_i</i> (10 g)	1 g <i>u_i</i> (±%)	10 g <i>u_i</i> (±%)	<i>v_i</i>
Measurement System									
Probe Calibration	E.2.1	5.9	N	1.00	1	1	5.9	5.9	∞
Axial Isotropy	E.2.2	4.7	R	1.73	1	1	2.7	2.7	∞
Spherical Isotropy	E.2.2	9.6	R	1.73	0	0	0.0	0.0	∞
Boundary Effect	E.2.3	1.0	R	1.73	1	1	0.6	0.6	∞
Linearity	E.2.4	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1.0	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	0.3	N	1.00	1	1	0.3	0.3	∞
Response Time	E.2.7	1.1	R	1.73	1	1	0.6	0.6	∞
Integration Time	E.2.8	0.0	R	1.73	1	1	0.0	0.0	∞
RF Ambient Conditions - Noise	E.6.1	3.0	R	1.73	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	0.0	R	1.73	1	1	0.0	0.0	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.4	R	1.73	1	1	0.2	0.2	∞
Probe Positioning w.r.t. Phantom	E.6.3	1.4	R	1.73	1	1	0.8	0.8	∞
Max. SAR Evaluation (ext., int., avg.)	E.5	3.4	R	1.73	1	1	2.0	2.0	∞
Dipole									
Dipole Axis to Liquid Distance	8, E.4.2	2.0	R	1.73	1	1	1.2	1.2	∞
Input Power and SAR Drift Measurement	8, 6.6.2	5.0	R	1.73	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									
Phantom Uncertainty	E.3.1	4.0	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity (target)	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity (measurement)	E.3.3	3.3	R	1.73	0.64	0.43	1.2	0.8	∞
Liquid Permittivity (target)	E.3.2	5.0	R	1.73	0.6	0.49	1.7	1.4	∞
Liquid Permittivity (measurement)	E.3.3	1.9	R	1.73	0.6	0.49	0.6	0.5	∞
Combined Standard Uncertainty			RSS				9	9	99999
Expanded Uncertainty (95% CONFIDENCE LEVEL)			<i>k</i> =2				18	17	

Notes for Tables 1 and 2

- a) Column headings *a-k* are given for reference.
- b) Tol. - tolerance in influence quantity.
- c) Prob. Dist. – Probability distribution
- d) N, R - normal, rectangular probability distributions
- e) Div. - divisor used to translate tolerance into normally distributed standard uncertainty
- f) *c_i* - sensitivity coefficient that should be applied to convert the variability of the uncertainty component into a variability of SAR.
- g) *u_i* – SAR uncertainty
- h) *v_i* - degrees of freedom for standard uncertainty and effective degrees of freedom for the expanded uncertainty.

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
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Federal Office of Metrology and Accreditation
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: **ET3-1545_Oct05**

CALIBRATION CERTIFICATE

Object **ET3DV6R - SN:1545**

Calibration procedure(s) **QA CAL-01.v5 and QA CAL-12.v4
Calibration procedure for dosimetric E-field probes**

Calibration date: **October 25, 2005**

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 $(22 \pm 3)^\circ\text{C}$ 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	3-May-05 (METAS, No. 251-00466)	May-06
Power sensor E4412A	MY41495277	3-May-05 (METAS, No. 251-00466)	May-06
Power sensor E4412A	MY41498087	3-May-05 (METAS, No. 251-00466)	May-06
Reference 3 dB Attenuator	SN: S5054 (3c)	11-Aug-05 (METAS, No. 251-00499)	Aug-06
Reference 20 dB Attenuator	SN: S5086 (20b)	3-May-05 (METAS, No. 251-00467)	May-06
Reference 30 dB Attenuator	SN: S5129 (30b)	11-Aug-05 (METAS, No. 251-00500)	Aug-06
Reference Probe ES3DV2	SN: 3013	7-Jan-05 (SPEAG, No. ES3-3013_Jan05)	Jan-06
DAE4	SN: 654	29-Nov-04 (SPEAG, No. DAE4-654_Nov04)	Nov-05

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Dec-03)	In house check: Dec-05
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Nov-04)	In house check: Nov 05

	Name	Function	Signature
Calibrated by:	Nico Vetterli	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: October 25, 2005

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

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 Federal Office of Metrology and Accreditation
 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
NORM _{x,y,z}	sensitivity in free space
ConF	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
- CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001

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 E^2 -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.

ET3DV6R SN:1545

October 25, 2005

DASY - Parameters of Probe: ET3DV6R SN:1545**Sensitivity in Free Space^A****Diode Compression^B**

NormX	2.12 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP X	94 mV
NormY	2.21 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Y	94 mV
NormZ	1.86 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	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		3.7 mm	4.7 mm
SAR _{be} [%]	Without Correction Algorithm	8.7	4.5
SAR _{be} [%]	With Correction Algorithm	0.1	0.2

TSL 1810 MHz Typical SAR gradient: 10 % per mm

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR _{be} [%]	Without Correction Algorithm	13.6	9.1
SAR _{be} [%]	With Correction Algorithm	0.8	0.1

Sensor Offset

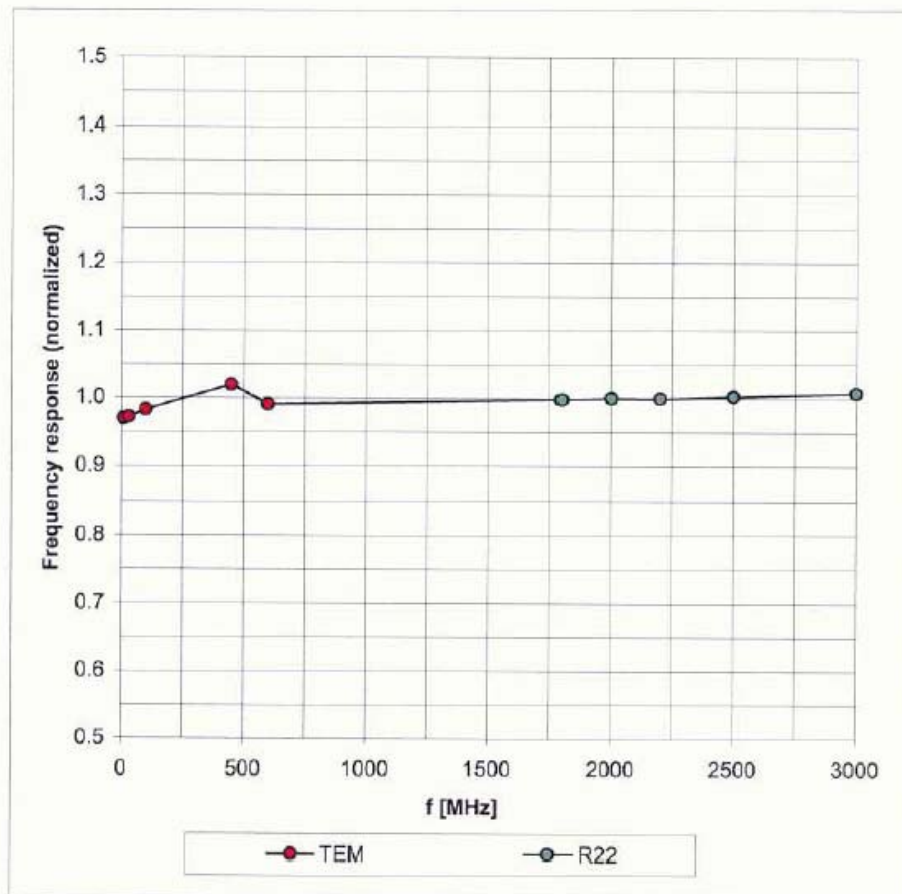
Probe Tip to Sensor Center	2.7 mm
----------------------------	--------

ET3DV6R SN:1545

October 25, 2005

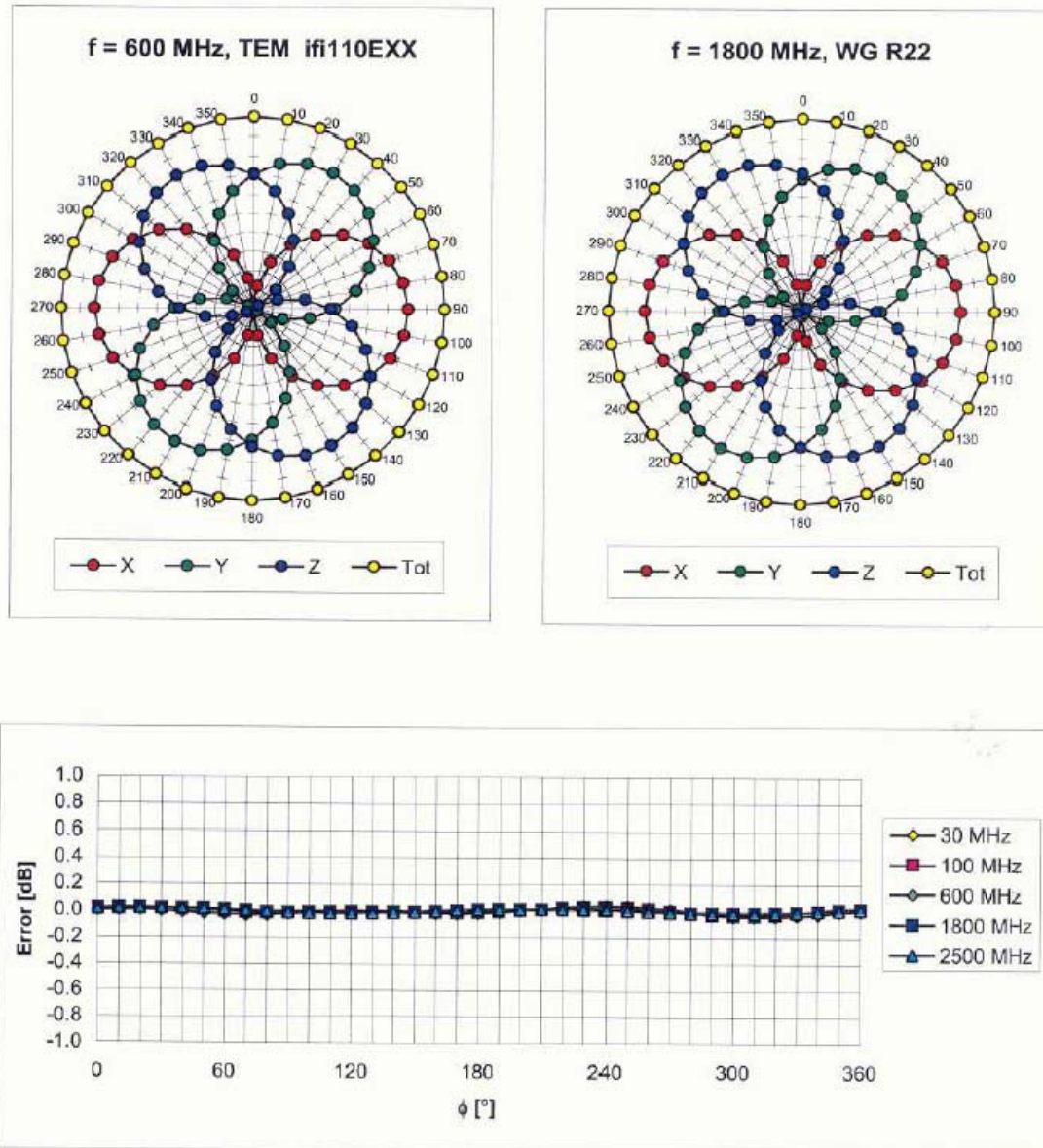
Frequency Response of E-Field

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

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

ET3DV6R SN:1545

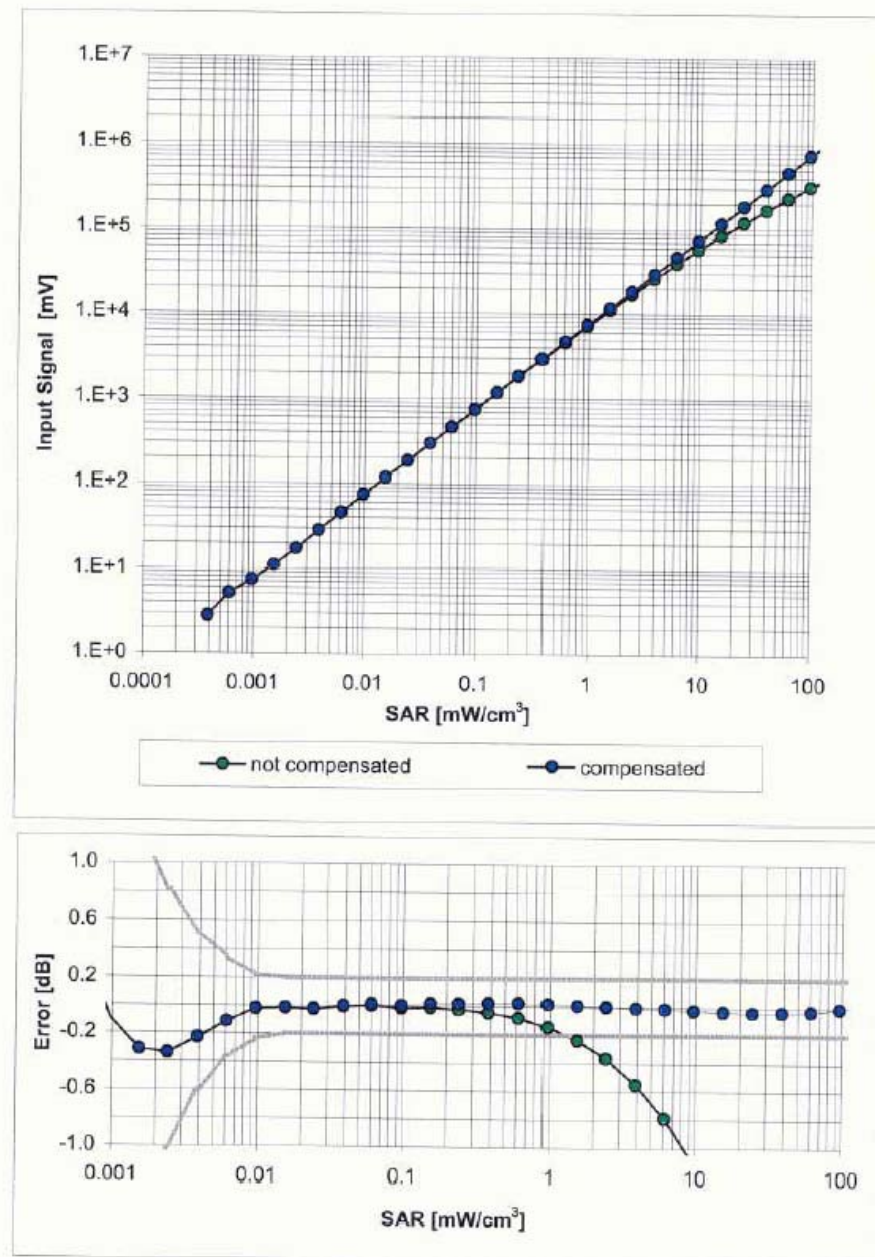
October 25, 2005

Receiving Pattern (ϕ), $\vartheta = 0^\circ$ Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

ET3DV6R SN:1545

October 25, 2005

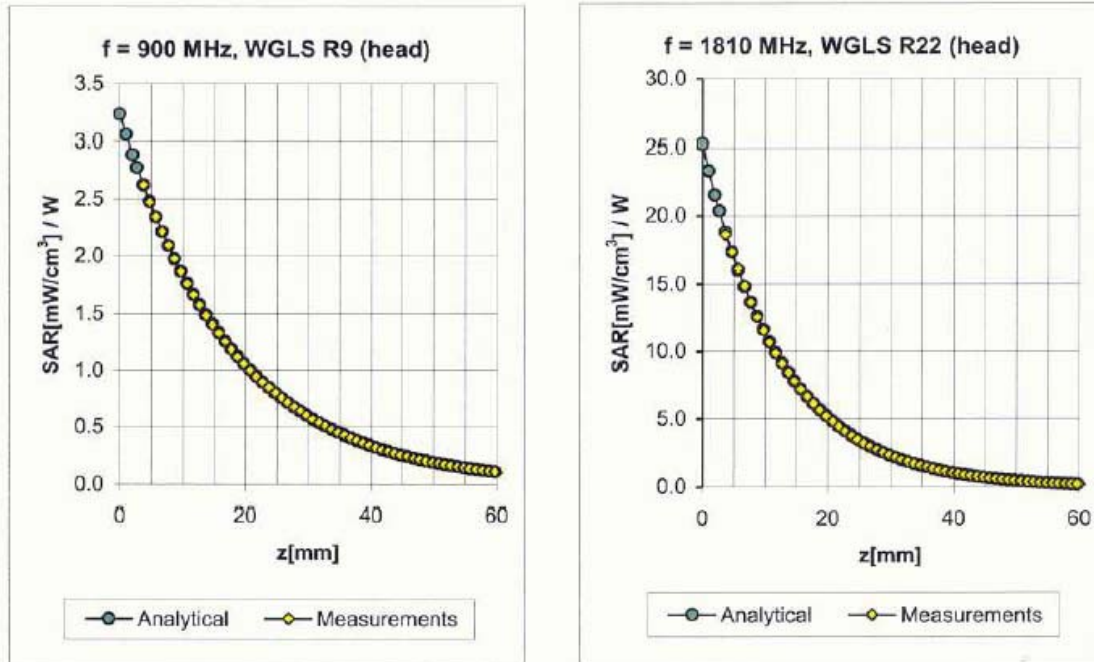
Dynamic Range $f(\text{SAR}_{\text{head}})$ (Waveguide R22, $f = 1800 \text{ MHz}$)

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

ET3DV6R SN:1545

October 25, 2005

Conversion Factor Assessment



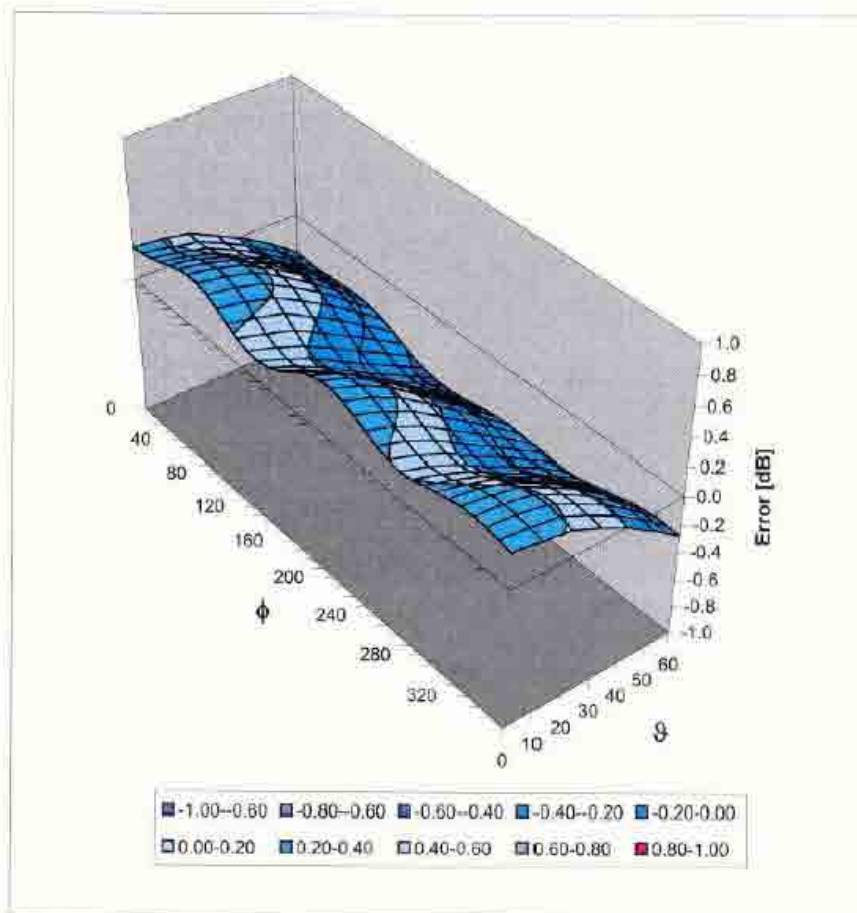
f [MHz]	Validity [MHz] ^c	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
450	± 50 / ± 100	Head	43.5 ± 5%	0.87 ± 5%	0.04	2.40	6.38 ± 13.3% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.62	1.80	5.68 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.65	2.27	4.72 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.80	2.02	3.99 ± 11.8% (k=2)
450	± 50 / ± 100	Body	56.7 ± 5%	0.94 ± 5%	0.02	2.60	6.68 ± 13.3% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.53	2.03	5.57 ± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.64	2.47	4.17 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.91	1.73	3.96 ± 11.8% (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.

ET3DV6R SN:1545

October 25, 2005

Deviation from Isotropy in HSL

Error (ϕ , θ), $f = 900$ MHzUncertainty of Spherical Isotropy Assessment: $\pm 2.6\%$ ($k=2$)

Appendix C

Dipole Calibration Certificates

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

Client **Motorola CGISS**

CALIBRATION CERTIFICATE

Object(s) D900V2 - SN:085

Calibration procedure(s) QA CAL-05.v2
Calibration procedure for dipole validation kits

Calibration date: August 19, 2004

Condition of the calibrated item In Tolerance (according to the specific calibration document)

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
 The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature 22 ± 2 degrees Celsius and humidity $< 75\%$.

Calibration Equipment used (M&TE critical for calibration)

Model Type	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM E442	GB37480704	6-Nov-03 (METAS, No. 252-0254)	Nov-04
Power sensor HP 8481A	US37292783	6-Nov-03 (METAS, No. 252-0254)	Nov-04
Power sensor HP 8481A	MY41092317	18-Oct-02 (Agilent, No. 20021018)	Oct-04
RF generator R&S SML-03	100698	27-Mar-2002 (R&S, No. 20-82389)	In house check: Mar-05
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Nov-03)	In house check: Oct 05

	Name	Function	Signature
Calibrated by:	Judith Mueller	Technician	
Approved by:	Katja Pokovic	Laboratory Director	

Date issued: August 25, 2004

This calibration certificate is issued as an intermediate solution until the accreditation process (based on ISO/IEC 17025 International Standard) for Calibration Laboratory of Schmid & Partner Engineering AG is completed.

1. Measurement Conditions

The measurements were performed in the half size flat phantom filled with **head simulating solution** of the following electrical parameters at 900 MHz:

Relative Dielectricity	41.0 $\pm 5\%$
Conductivity	0.97 mho/m $\pm 5\%$

The DASY4 System with a dosimetric E-field probe ET3DV6 (SN:1507, Conversion factor 6.18 at 900 MHz) was used for the measurements.

The dipole was mounted on the small tripod so that the dipole feedpoint was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 15mm from dipole center to the solution surface. The included distance spacer was used during measurements for accurate distance positioning.

The coarse grid with a grid spacing of 15mm was aligned with the dipole. The 7x7x7 fine cube was chosen for cube integration.

The dipole input power (forward power) was $250\text{mW} \pm 3\%$. The results are normalized to 1W input power.

2. SAR Measurement with DASY4 System

Standard SAR-measurements were performed according to the measurement conditions described in section 1. The results (see figure supplied) have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR-values measured with the dosimetric probe ET3DV6 SN:1507 and applying the advanced extrapolation are:

averaged over 1 cm^3 (1 g) of tissue:	11.0 mW/g $\pm 16.8\%$ ($k=2$) ¹
averaged over 10 cm^3 (10 g) of tissue:	7.04 mW/g $\pm 16.2\%$ ($k=2$) ¹

3. Dipole Impedance and Return Loss

The impedance was measured at the SMA-connector with a network analyzer and numerically transformed to the dipole feedpoint. The transformation parameters from the SMA-connector to the dipole feedpoint are:

Electrical delay:	1.392 ns	(one direction)
Transmission factor:	0.987	(voltage transmission, one direction)

The dipole was positioned at the flat phantom sections according to section 1 and the distance spacer was in place during impedance measurements.

Feedpoint impedance at 900 MHz:	$\text{Re}\{Z\} = 48.8 \Omega$
	$\text{Im}\{Z\} = -6.6 \Omega$
Return Loss at 900 MHz	-22.7 dB

4. Handling

Do not apply excessive force to the dipole arms, because they might bend. Bending of the dipole arms stresses the soldered connections near the feedpoint leading to a damage of the dipole.

5. Design

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

6. Power Test

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN085

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

Medium: HSL 900 MHz;

Medium parameters used: $f = 900$ MHz; $\sigma = 0.97$ mho/m; $\epsilon_r = 41$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(6.18, 6.18, 6.18); Calibrated: 1/23/2004
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 7/22/2004
- Phantom: Flat Phantom half size; Type: QD000P49AA; Serial: SN:1001;
- Measurement SW: DASY4, V4.3 Build 16; Postprocessing SW: SEMCAD, V1.8 Build 123

Pin = 250 mW; d = 15 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.93 mW/g

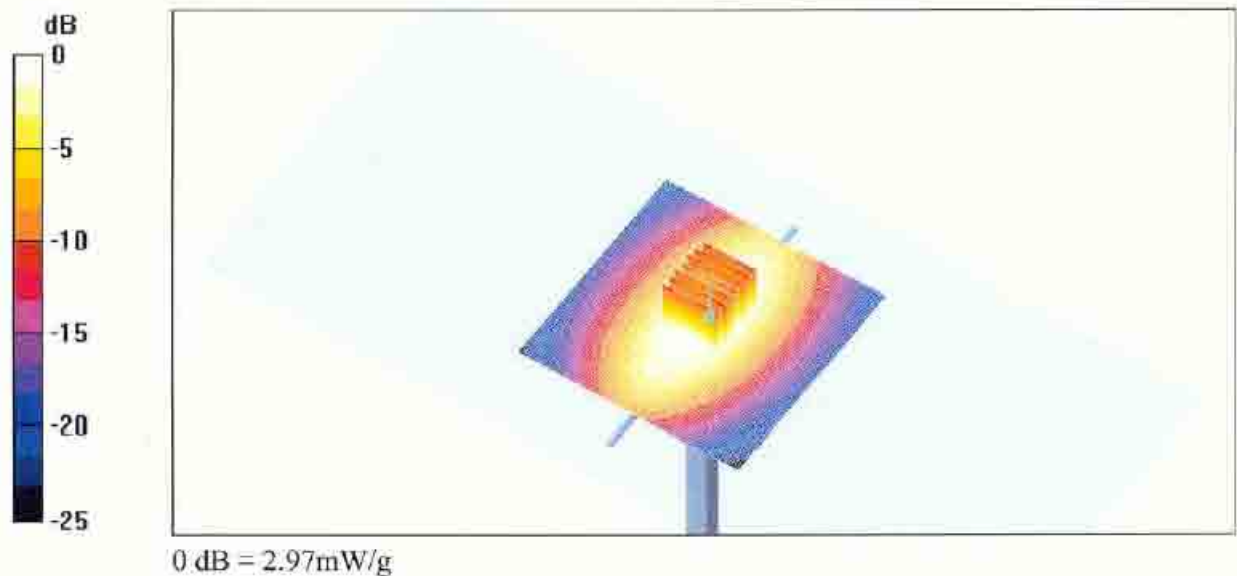
Pin = 250 mW; d = 15 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 57.2 V/m; Power Drift = -0.0 dB

Peak SAR (extrapolated) = 4.11 W/kg

SAR(1 g) = 2.74 mW/g; SAR(10 g) = 1.76 mW/g

Maximum value of SAR (measured) = 2.97 mW/g



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 Federal Office of Metrology and Accreditation
 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: **D900V2-084_Apr06**

CALIBRATION CERTIFICATE

Object **D900V2 - SN: 084**

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

Calibration date: **April 21, 2006**

Condition of the calibrated item **In Tolerance**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
 The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature $(22 \pm 3)^\circ\text{C}$ and humidity $< 70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	04-Oct-05 (METAS, No. 251-00516)	Oct-06
Power sensor HP 8481A	US37292783	04-Oct-05 (METAS, No. 251-00516)	Oct-06
Reference 20 dB Attenuator	SN: 5086 (20g)	11-Aug-05 (METAS, No 251-00498)	Aug-06
Reference 10 dB Attenuator	SN: 5047.2 (10r)	11-Aug-05 (METAS, No 251-00498)	Aug-06
Reference Probe ET3DV6	SN 1507	28-Oct-05 (SPEAG, No. ET3-1507_Oct05)	Oct-06
DAE4	SN 601	15-Dec-05 (SPEAG, No. DAE4-601_Jan05)	Dec-06
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-05)	In house check: Oct-07
RF generator Agilent E4421B	MY41000675	11-May-05 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Nov-05)	In house check: Nov-06

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

Issued: April 21, 2006

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

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 Federal Office of Metrology and Accreditation
 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
 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
- CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
- 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 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY4	V4.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V4.9	
Distance Dipole Center - TSL	15 mm	with Spacer
Area Scan resolution	dx, dy = 15 mm	
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	900 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

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

SAR result with Head TSL

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

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

Appendix

Antenna Parameters with Head TSL

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

General Antenna Parameters and Design

Electrical Delay (one direction)	1.388 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	September 20, 2000

DASY4 Validation Report for Head TSL

Date/Time: 21.04.2006 14:29:27

Test Laboratory: SPEAG, Zurich, Switzerland

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

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

Medium: HSL U10 BB;

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

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

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

Pin = 250 mW; d = 10 mm/Area Scan (71x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 2.94 mW/g

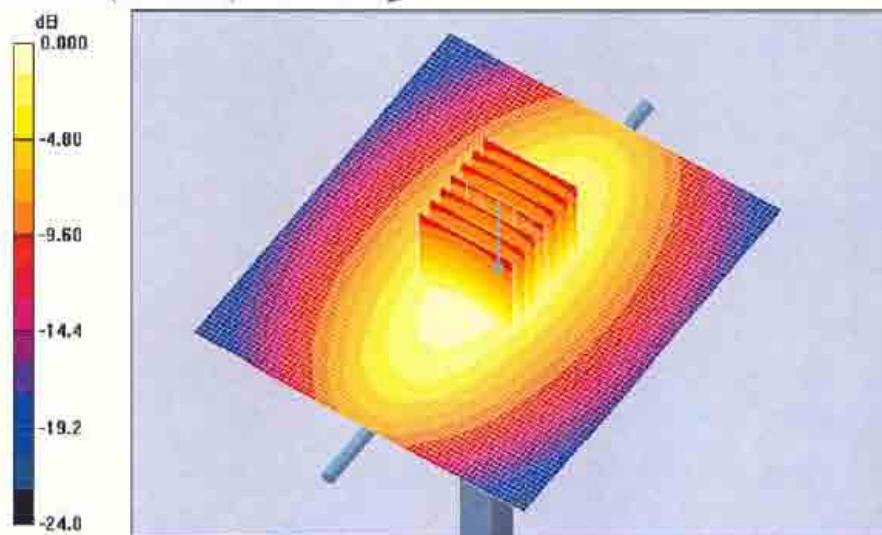
Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

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

Peak SAR (extrapolated) = 4.09 W/kg

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

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



0 dB = 2.92mW/g

Appendix D

Test System Verification Scans

Dipole validation scans at the head from SPEAG are provided in APPENDIX C. Historically NE's EME lab validated its' dipole(s) to the applicable IEEE system performance targets. Within 24 hours system validation was performed using FCC body tissue parameters to generate the system performance target values for body at the applicable frequency. The results of the system performance validation for dipole S/N 85 using this methodology are provided herein.

To assess the isotropic characteristics of the measurement probe, two system performance zoom scans (0 and 90 degrees) were measured. The results were averaged together and adjusted to account for the power drift in order to obtain the final calculated 1 and 10 gram results.

Note: For dipole S/N # 084 multiple probes were measured using the isotropic assessment procedure mentioned above. The results obtained from each probe were then averaged together to determine the new measured SAR target.

Motorola NE EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 7/11/06**

Run #: JsT-SYSP-900H-060711-01 Sim.Tissue Temp: 21.1 (C)

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

Target: 12.23 mW/g for 1g SAR 7.76 mW/g for 10g SAR

12.09 mW/g calculated 1g-SAR; -1.14% from target (including drift)

7.71 mW/g calculated 10g-SAR; -0.59% from target (including drift)

Probe: ET3DV6R - SN1545, Calibrated: 10/25/2005, ConvF(5.68, 5.68, 5.68)

Duty Cycle: 1:1, Medium: 900 MHz Head, Medium parameters used: $f = 900$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 41.4$; $\rho = 1000$ kg/m³; Electronics: DAE3 Sn363, Calibrated: 5/17/2006**System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 59.3 V/m; Power Drift = 0.00319 dB

Peak SAR (extrapolated) = 4.66 W/kg

SAR(1 g) = 3.06 mW/g; SAR(10 g) = 1.95 mW/g

Maximum value of SAR (measured) = 3.32 mW/g

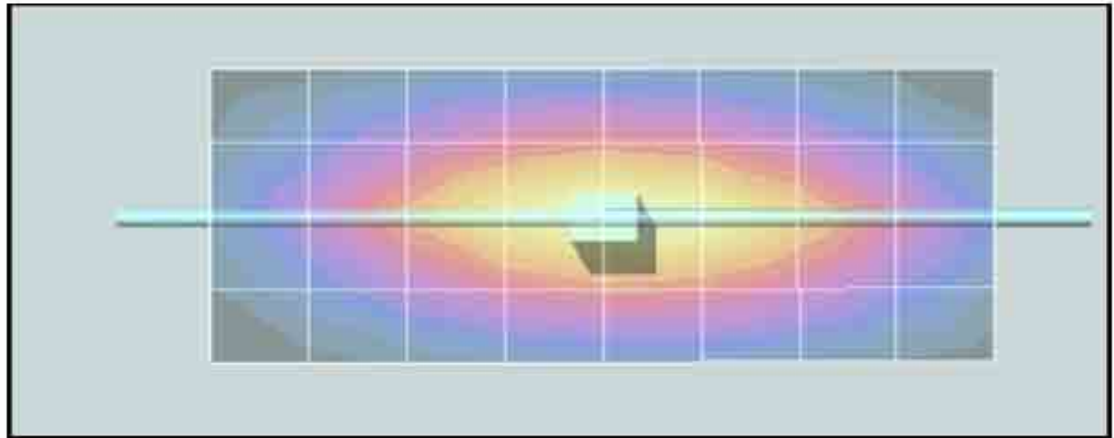
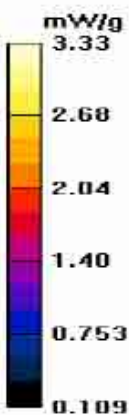
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 59.3 V/m; Power Drift = 0.00319 dB

Peak SAR (extrapolated) = 4.55 W/kg

SAR(1 g) = 2.99 mW/g; SAR(10 g) = 1.91 mW/g

Maximum value of SAR (measured) = 3.25 mW/g



Motorola NE EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 7/12/06**

Run #: JsT-SYSP-900H-060712-01 Sim.Tissue Temp: 21.1 (C)

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

Target: 12.23 mW/g for 1g SAR 7.76 mW/g for 10g SAR

11.89 mW/g calculated 1g-SAR; -2.77% from target (including drift)

7.59 mW/g calculated 10g-SAR; -2.14% from target (including drift)

Probe: ET3DV6R - SN1545, Calibrated: 10/25/2005, ConvF(5.68, 5.68, 5.68)

Duty Cycle: 1:1, Medium: 900 MHz Head, Medium parameters used: $f = 900$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 41.9$; $\rho = 1000$ kg/m³; Electronics: DAE3 Sn363, Calibrated: 5/17/2006**System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 58.7 V/m; Power Drift = 0.00337 dB

Peak SAR (extrapolated) = 4.58 W/kg

SAR(1 g) = 3.01 mW/g; SAR(10 g) = 1.92 mW/g

Maximum value of SAR (measured) = 3.26 mW/g

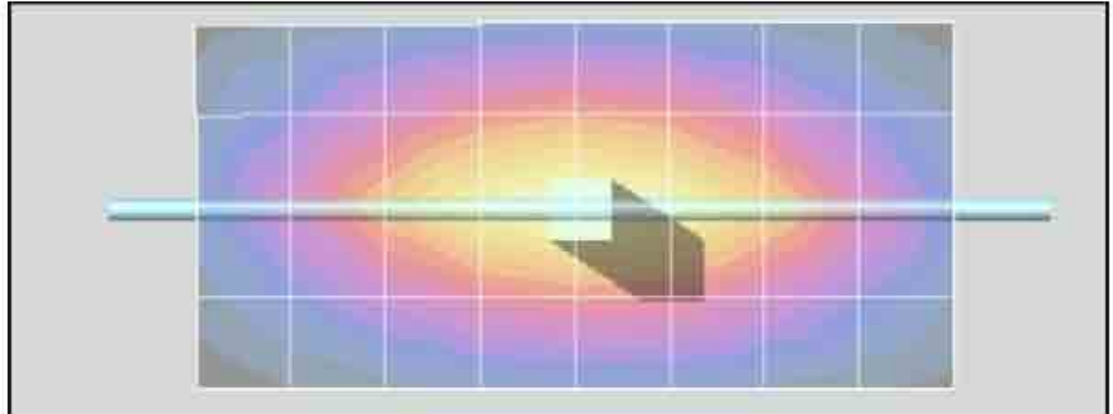
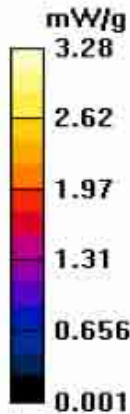
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 58.7 V/m; Power Drift = 0.00337 dB

Peak SAR (extrapolated) = 4.48 W/kg

SAR(1 g) = 2.94 mW/g; SAR(10 g) = 1.88 mW/g

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



Motorola NE EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 7/13/06**

Run #: JsT-SYSP-900H-060713-01 Sim.Tissue Temp: 21.5 (C)

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

Target: 12.23 mW/g for 1g SAR 7.76 mW/g for 10g SAR

12.22 mW/g calculated 1g-SAR; -0.11% from target (including drift)

7.78 mW/g calculated 10g-SAR; 0.26% from target (including drift)

Probe: ET3DV6R - SN1545, Calibrated: 10/25/2005, ConvF(5.68, 5.68, 5.68)

Duty Cycle: 1:1, Medium: 900 MHz Head, Medium parameters used: $f = 900$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 40.8$; $\rho = 1000$ kg/m³; Electronics: DAE3 Sn363, Calibrated: 5/17/2006**System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 59.3 V/m; Power Drift = -0.0562 dB

Peak SAR (extrapolated) = 4.68 W/kg

SAR(1 g) = 3.05 mW/g; SAR(10 g) = 1.94 mW/g

Maximum value of SAR (measured) = 3.31 mW/g

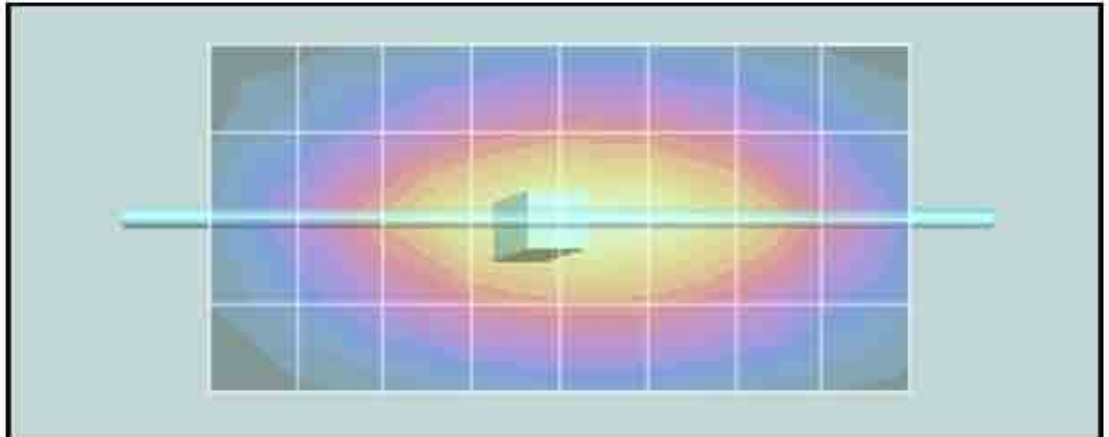
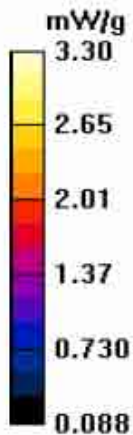
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 59.3 V/m; Power Drift = -0.0562 dB

Peak SAR (extrapolated) = 4.57 W/kg

SAR(1 g) = 2.98 mW/g; SAR(10 g) = 1.9 mW/g

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



Motorola NE EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 7/14/06**

Run #: JsT-SYSP-900H-060714-01 Sim.Tissue Temp: 21.4 (C)

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

Target: 12.23 mW/g for 1g SAR 7.76 mW/g for 10g SAR

12.12 mW/g calculated 1g-SAR; -0.87% from target (including drift)

7.71 mW/g calculated 10g-SAR; -0.70% from target (including drift)

Probe: ET3DV6R - SN1545, Calibrated: 10/25/2005, ConvF(5.68, 5.68, 5.68)

Duty Cycle: 1:1, Medium: 900 MHz Head, Medium parameters used: $f = 900$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 40.8$; $\rho = 1000$ kg/m³; Electronics: DAE3 Sn363, Calibrated: 5/17/2006**System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 59.2 V/m; Power Drift = -0.0371 dB

Peak SAR (extrapolated) = 4.67 W/kg

SAR(1 g) = 3.04 mW/g; SAR(10 g) = 1.93 mW/g

Maximum value of SAR (measured) = 3.31 mW/g

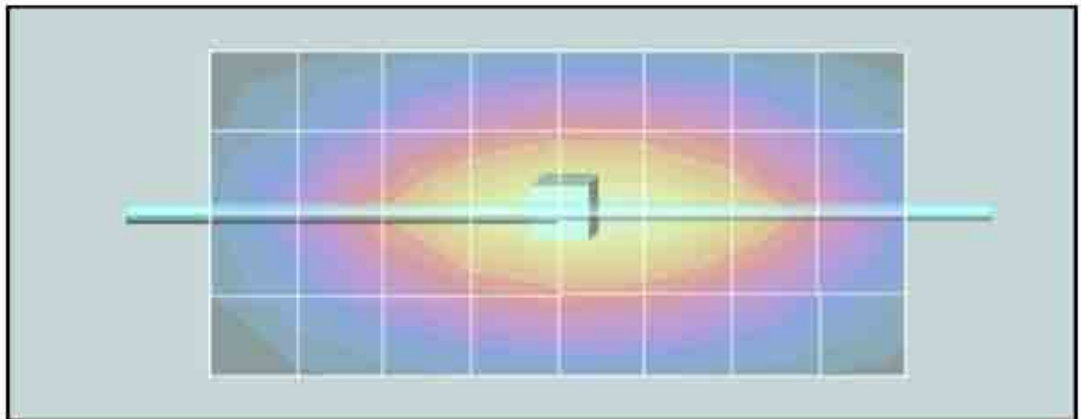
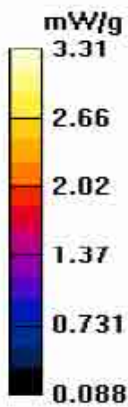
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 59.2 V/m; Power Drift = -0.0371 dB

Peak SAR (extrapolated) = 4.56 W/kg

SAR(1 g) = 2.97 mW/g; SAR(10 g) = 1.89 mW/g

Maximum value of SAR (measured) = 3.23 mW/g



Motorola NE EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 7/15/06**

Run #: CM-SYSP-900H-060715-01 Sim.Tissue Temp: 21.9 (C)

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

Target: 12.23 mW/g for 1g SAR 7.76 mW/g for 10g SAR

12.42 mW/g calculated 1g-SAR; 1.54 % from target (including drift)

7.90 mW/g calculated 10g-SAR; 1.74 % from target (including drift)

Probe: ET3DV6R - SN1545, Calibrated: 10/25/2005, ConvF(5.68, 5.68, 5.68)

Duty Cycle: 1:1, Medium: 900 MHz Head, Medium parameters used: $f = 900$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 40.6$; $\rho = 1000$ kg/m³; Electronics: DAE3 Sn363, Calibrated: 5/17/2006**System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 59.9 V/m; Power Drift = -0.0415 dB

Peak SAR (extrapolated) = 4.81 W/kg

SAR(1 g) = 3.12 mW/g; SAR(10 g) = 1.98 mW/g

Maximum value of SAR (measured) = 3.37 mW/g

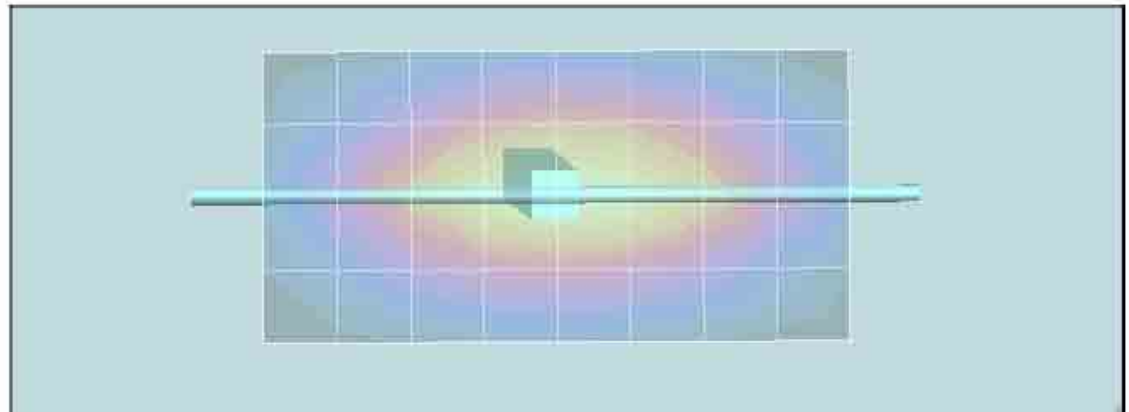
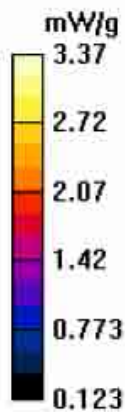
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 59.9 V/m; Power Drift = -0.0415 dB

Peak SAR (extrapolated) = 4.64 W/kg

SAR(1 g) = 3.03 mW/g; SAR(10 g) = 1.93 mW/g

Maximum value of SAR (measured) = 3.29 mW/g



Motorola NE EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 7/16/06**

Run #: MeC-SYSP-900B-060716-01 Sim.Tissue Temp: 20.6 (C)

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

Target: 12.13 mW/g for 1g SAR 7.81 mW/g for 10g SAR

12.07 mW/g calculated 1g-SAR; -0.49 % from target (including drift)

7.77 mW/g calculated 10g-SAR; -0.57 % from target (including drift)

Probe: ET3DV6R - SN1545, Calibrated: 10/25/2005, ConvF(5.57, 5.57, 5.57)

Duty Cycle: 1:1, Medium: 900 MHz FCC Body, Medium parameters used: $f = 900 \text{ MHz}$; $\sigma = 1.07 \text{ mho/m}$; $\epsilon_r = 53.6$; $\rho =$ 1000 kg/m³; Electronics: DAE3 Sn363, Calibrated: 5/17/2006**System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 57.8 V/m; Power Drift = -0.0254 dB

Peak SAR (extrapolated) = 4.50 W/kg

SAR(1 g) = 3.04 mW/g; SAR(10 g) = 1.95 mW/g

Maximum value of SAR (measured) = 3.32 mW/g

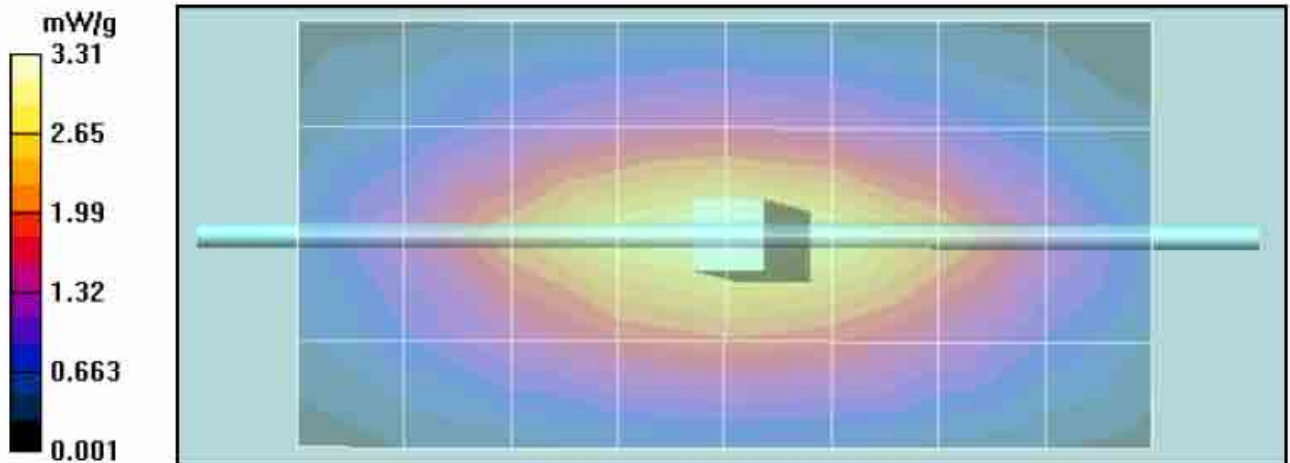
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 57.8 V/m; Power Drift = -0.0254 dB

Peak SAR (extrapolated) = 4.38 W/kg

SAR(1 g) = 2.96 mW/g; SAR(10 g) = 1.91 mW/g

Maximum value of SAR (measured) = 3.24 mW/g



Motorola NE EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN 085; Test Date: 7/17/06**

Run #: ErC-SYSP-900B-060717-01 Sim.Tissue Temp: 20.8 (C)

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

Target: 12.13 mW/g for 1g SAR 7.81 mW/g for 10g SAR

12.58 mW/g calculated 1g-SAR; 3.74 % from target (including drift)

8.10 mW/g calculated 10g-SAR; 3.65 % from target (including drift)

Probe: ET3DV6R - SN1545, Calibrated: 10/25/2005, ConvF(5.57, 5.57, 5.57)

Duty Cycle: 1:1, Medium: 900 MHz FCC Body, Medium parameters used: $f = 900$ MHz; $\sigma = 1.06$ mho/m; $\epsilon_r = 53.4$; $\rho =$ 1000 kg/m³; Electronics: DAE3 Sn363, Calibrated: 5/17/2006**System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 59.1 V/m; Power Drift = -0.00824 dB

Peak SAR (extrapolated) = 4.67 W/kg

SAR(1 g) = 3.17 mW/g; SAR(10 g) = 2.04 mW/g

Maximum value of SAR (measured) = 3.43 mW/g

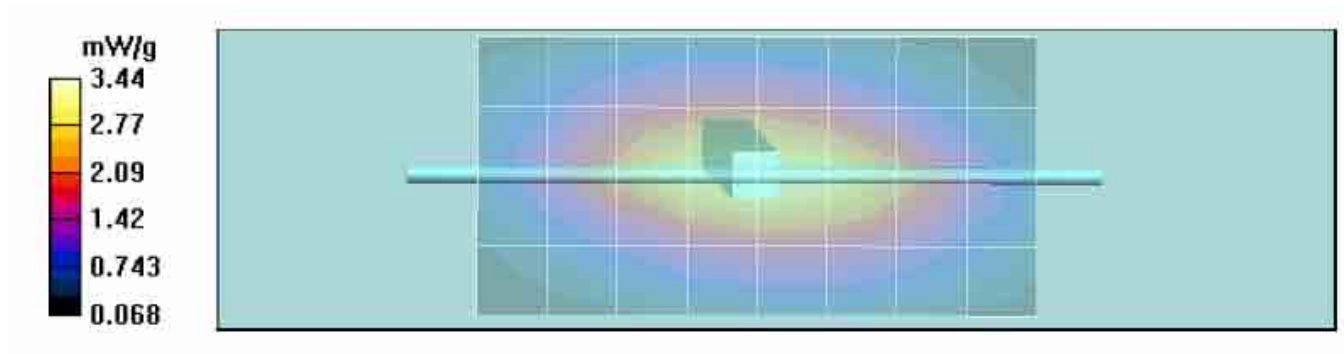
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 59.1 V/m; Power Drift = -0.00824 dB

Peak SAR (extrapolated) = 4.58 W/kg

SAR(1 g) = 3.11 mW/g; SAR(10 g) = 2 mW/g

Maximum value of SAR (measured) = 3.39 mW/g



Motorola NE EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN 85; Test Date: 7/18/06**

Run #: JsT-SYSP-900B-060718-01 Sim.Tissue Temp: 21.1 (C)

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

Target: 12.13 mW/g for 1g SAR 7.81 mW/g for 10g SAR

12.19 mW/g calculated 1g-SAR; 0.49% from target (including drift)

7.83 mW/g calculated 10g-SAR; 0.28% from target (including drift)

Probe: ET3DV6R - SN1545, Calibrated: 10/25/2005, ConvF(5.57, 5.57, 5.57)

Duty Cycle: 1:1, Medium: 900 MHz FCC Body, Medium parameters used: $f = 900 \text{ MHz}$; $\sigma = 1.06 \text{ mho/m}$; $\epsilon_r = 53.2$; $\rho =$ 1000 kg/m³; Electronics: DAE3 Sn363, Calibrated: 5/17/2006**System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 58.1 V/m; Power Drift = -0.0177 dB

Peak SAR (extrapolated) = 4.55 W/kg

SAR(1 g) = 3.07 mW/g; SAR(10 g) = 1.97 mW/g

Maximum value of SAR (measured) = 3.34 mW/g

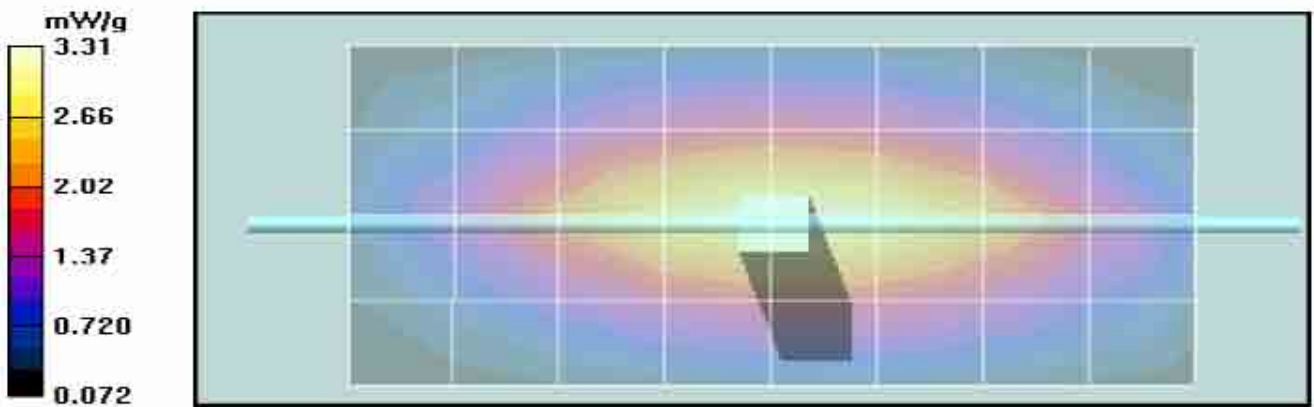
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 58.1 V/m; Power Drift = -0.0177 dB

Peak SAR (extrapolated) = 4.43 W/kg

SAR(1 g) = 3 mW/g; SAR(10 g) = 1.93 mW/g

Maximum value of SAR (measured) = 3.25 mW/g



Motorola NE EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN 84; Test Date: 7/19/06**

Run #: JsT-SYSP-900B-060719-01 Sim.Tissue Temp: 21.4 (C)

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

Target: 11.52 mW/g for 1g SAR 7.42 mW/g for 10g SAR

11.50 mW/g calculated 1g-SAR; -0.20 % from target (including drift)

7.43 mW/g calculated 10g-SAR; 0.15 % from target (including drift)

Probe: ET3DV6R - SN1545, Calibrated: 10/25/2005, ConvF(5.57, 5.57, 5.57)

Duty Cycle: 1:1, Medium: 900 MHz FCC Body, Medium parameters used: $f = 900$ MHz; $\sigma = 1.04$ mho/m; $\epsilon_r = 52.9$; $\rho =$ 1000 kg/m³; Electronics: DAE3 Sn363, Calibrated: 5/17/2006**System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 57.2 V/m; Power Drift = -0.00636 dB

Peak SAR (extrapolated) = 4.24 W/kg

SAR(1 g) = 2.9 mW/g; SAR(10 g) = 1.87 mW/g

Maximum value of SAR (measured) = 3.15 mW/g

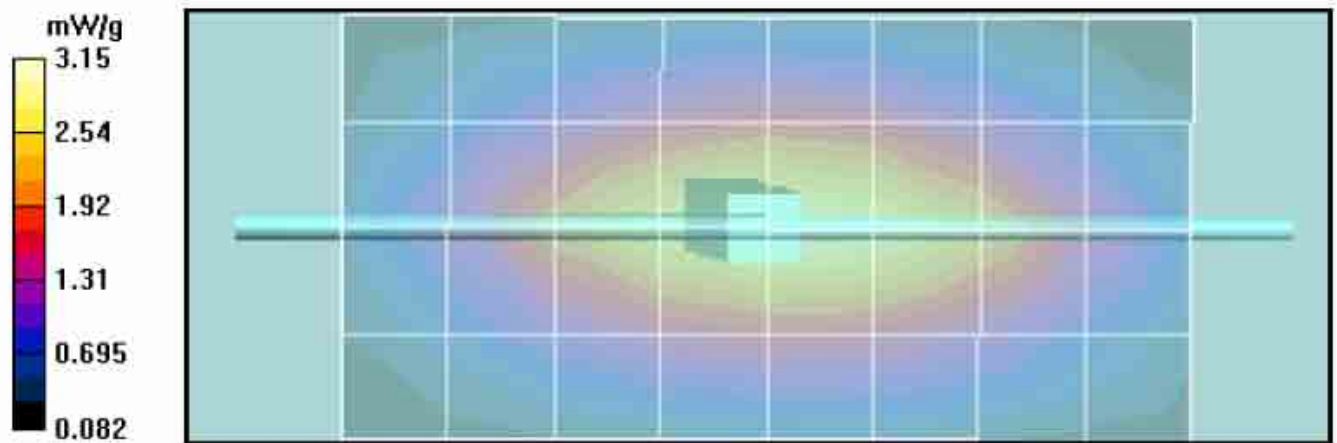
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 57.2 V/m; Power Drift = -0.00636 dB

Peak SAR (extrapolated) = 4.18 W/kg

SAR(1 g) = 2.84 mW/g; SAR(10 g) = 1.84 mW/g

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



Motorola NE EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN 84; Test Date: 7/20/06**

Run #: JsT-SYSP-900B-060720-01 Sim.Tissue Temp: 21.4 (C)

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

Target: 11.52 mW/g for 1g SAR 7.42 mW/g for 10g SAR

11.68 mW/g calculated 1g-SAR; 1.37% from target (including drift)

7.42 mW/g calculated 10g-SAR; -0.06% from target (including drift)

Probe: ET3DV6R - SN1545, Calibrated: 10/25/2005, ConvF(5.57, 5.57, 5.57)

Duty Cycle: 1:1, Medium: 900 MHz FCC Body, Medium parameters used: $f = 900$ MHz; $\sigma = 1.04$ mho/m; $\epsilon_r = 53.1$; ρ = 1000 kg/m³; Electronics: DAE3 Sn363, Calibrated: 5/17/2006**System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 57.8 V/m; Power Drift = 0.0378 dB

Peak SAR (extrapolated) = 4.44 W/kg

SAR(1 g) = 2.99 mW/g; SAR(10 g) = 1.92 mW/g

Maximum value of SAR (measured) = 3.26 mW/g

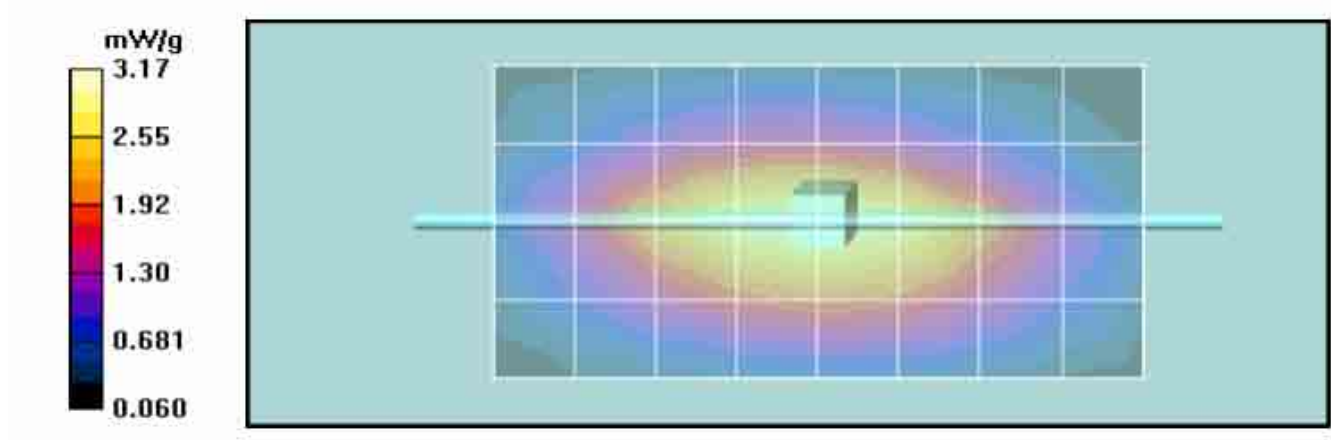
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 57.8 V/m; Power Drift = 0.0378 dB

Peak SAR (extrapolated) = 4.27 W/kg

SAR(1 g) = 2.9 mW/g; SAR(10 g) = 1.87 mW/g

Maximum value of SAR (measured) = 3.13 mW/g



Motorola NE EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN 84; Test Date: 7/25/06**

Run #: JsT-SYSP-900B-060725-01 Sim.Tissue Temp: 21.4 (C)

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

Target: 11.52 mW/g for 1g SAR 7.42 mW/g for 10g SAR

12.16 mW/g calculated 1g-SAR; 5.59% from target (including drift)

7.84 mW/g calculated 10g-SAR; 5.69% from target (including drift)

Probe: ET3DV6R - SN1545, Calibrated: 10/25/2005, ConvF(5.57, 5.57, 5.57)

Duty Cycle: 1:1, Medium: 900 MHz FCC Body, Medium parameters used: $f = 900$ MHz; $\sigma = 1.05$ mho/m; $\epsilon_r = 52.7$; ρ = 1000 kg/m³; Electronics: DAE3 Sn363, Calibrated: 5/17/2006**System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 58.2 V/m; Power Drift = -0.00123 dB

Peak SAR (extrapolated) = 4.51 W/kg

SAR(1 g) = 3.07 mW/g; SAR(10 g) = 1.98 mW/g

Maximum value of SAR (measured) = 3.32 mW/g

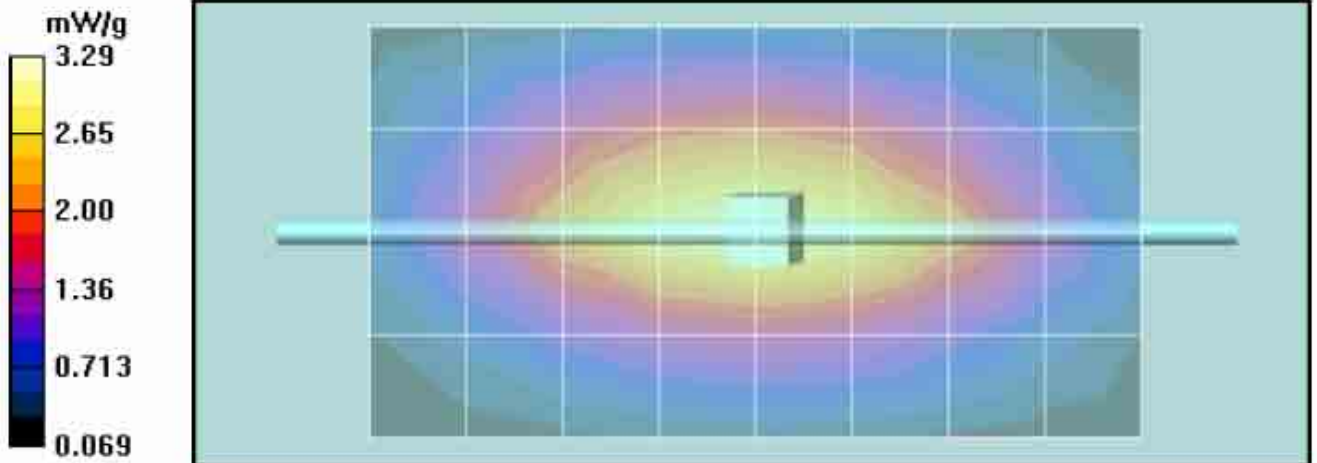
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 58.2 V/m; Power Drift = -0.00123 dB

Peak SAR (extrapolated) = 4.43 W/kg

SAR(1 g) = 3.01 mW/g; SAR(10 g) = 1.94 mW/g

Maximum value of SAR (measured) = 3.21 mW/g



Motorola NE EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN84; Test Date: 7/26/06**

Run #: JsT-SYSP-900H-060726-01 Sim.Tissue Temp: 21.5 (C)

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

Target: 11.35 mW/g for 1g SAR 7.21 mW/g for 10g SAR

11.82 mW/g calculated 1g-SAR; 4.12% from target (including drift)

7.54 mW/g calculated 10g-SAR; 4.55% from target (including drift)

Probe: ET3DV6R - SN1545, Calibrated: 10/25/2005, ConvF(5.68, 5.68, 5.68)

Duty Cycle: 1:1, Medium: 900 MHz Head, Medium parameters used: $f = 900$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 42.1$; $\rho = 1000$

kg/m3 Electronics: DAE3 Sn363, Calibrated: 5/17/2006

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

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 58.8 V/m; Power Drift = 0.0809 dB

Peak SAR (extrapolated) = 4.59 W/kg

SAR(1 g) = 3.02 mW/g; SAR(10 g) = 1.93 mW/g

Maximum value of SAR (measured) = 3.28 mW/g

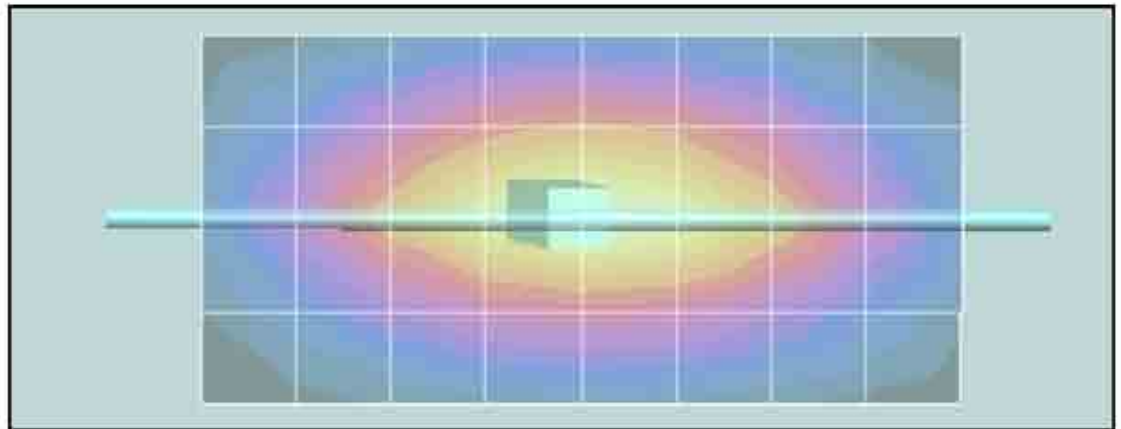
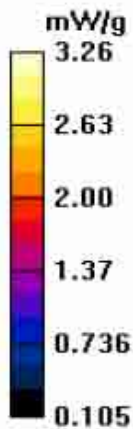
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 58.8 V/m; Power Drift = 0.0809 dB

Peak SAR (extrapolated) = 4.59 W/kg

SAR(1 g) = 3 mW/g; SAR(10 g) = 1.91 mW/g

Maximum value of SAR (measured) = 3.24 mW/g



Motorola NE EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN84 ; Test Date: 7/30/06**

Run #: MeC-SYSP-900B-060730-01 Sim.Tissue Temp: 21.7 (C)

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

Target: 11.52 mW/g for 1g SAR 7.42 mW/g for 10g SAR

12.22 mW/g calculated 1g-SAR; 6.09 % from target (including drift)

7.86 mW/g calculated 10g-SAR; 5.88 % from target (including drift)

Probe: ET3DV6R - SN1545, Calibrated: 10/25/2005, ConvF(5.57, 5.57, 5.57)

Duty Cycle: 1:1, Medium: 900 MHz FCC Body, Medium parameters used: $f = 900$ MHz; $\sigma = 1.04$ mho/m; $\epsilon_r = 52.7$; $\rho =$ 1000 kg/m³; Electronics: DAE3 Sn363, Calibrated: 5/17/2006**System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 59.2 V/m; Power Drift = -0.0649 dB

Peak SAR (extrapolated) = 4.51 W/kg

SAR(1 g) = 3.06 mW/g; SAR(10 g) = 1.97 mW/g

Maximum value of SAR (measured) = 3.34 mW/g

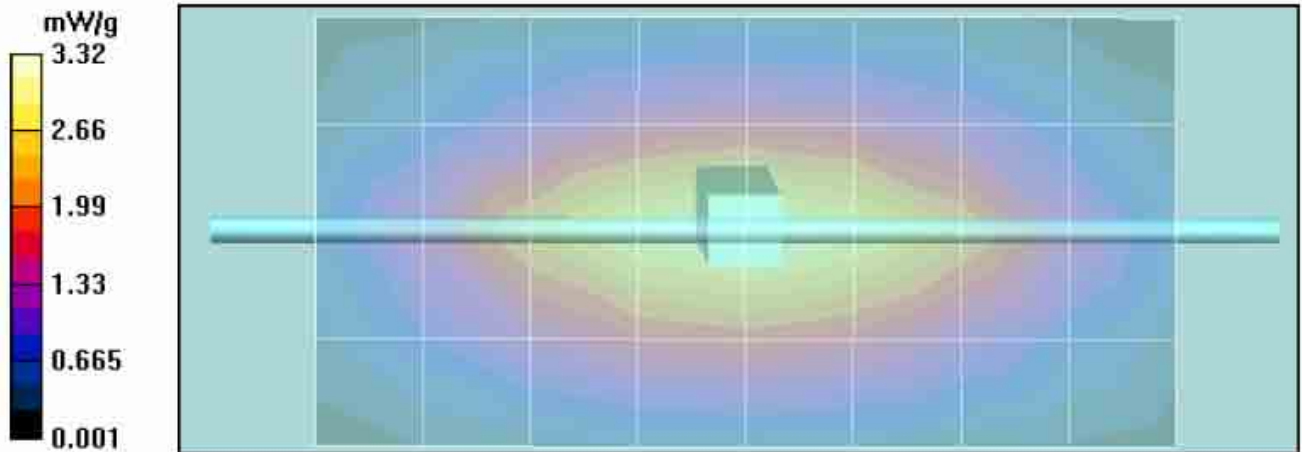
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 59.2 V/m; Power Drift = -0.0649 dB

Peak SAR (extrapolated) = 4.36 W/kg

SAR(1 g) = 2.96 mW/g; SAR(10 g) = 1.9 mW/g

Maximum value of SAR (measured) = 3.21 mW/g



Motorola NE EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN84 ; Test Date: 7/31/06**

Run #: JsT-SYSP-900B-060731-01 Sim.Tissue Temp: 22.1 (C)

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

Target: 11.52 mW/g for 1g SAR 7.42 mW/g for 10g SAR

11.90 mW/g calculated 1g-SAR; 3.30% from target (including drift)

7.66 mW/g calculated 10g-SAR; 3.23% from target (including drift)

Probe: ET3DV6R - SN1545, Calibrated: 10/25/2005, ConvF(5.57, 5.57, 5.57)

Duty Cycle: 1:1, Medium: 900 MHz FCC Body, Medium parameters used: $f = 900$ MHz; $\sigma = 1.05$ mho/m; $\epsilon_r = 53.2$; $\rho =$ 1000 kg/m³; Electronics: DAE3 Sn363, Calibrated: 5/17/2006**System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 57.5 V/m; Power Drift = 0.000 dB

Peak SAR (extrapolated) = 4.45 W/kg

SAR(1 g) = 3.02 mW/g; SAR(10 g) = 1.94 mW/g

Maximum value of SAR (measured) = 3.30 mW/g

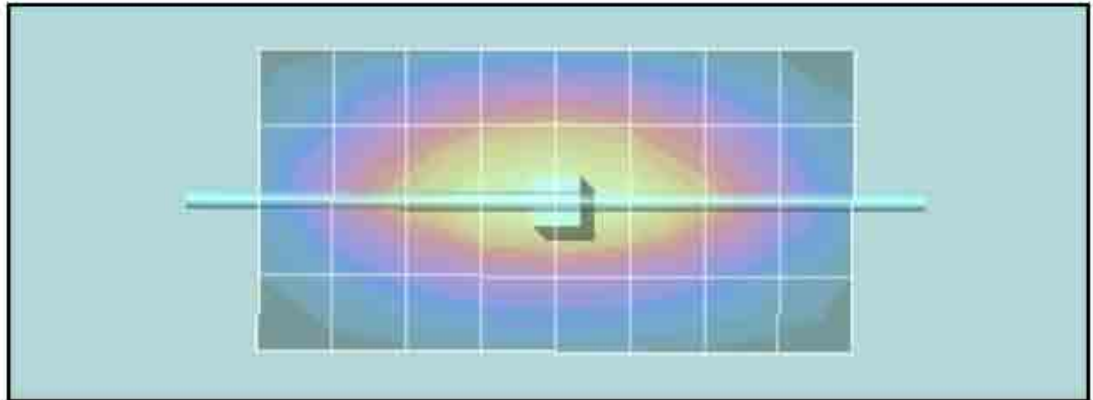
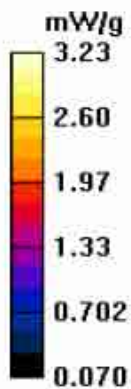
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 57.5 V/m; Power Drift = 0.000 dB

Peak SAR (extrapolated) = 4.30 W/kg

SAR(1 g) = 2.93 mW/g; SAR(10 g) = 1.89 mW/g

Maximum value of SAR (measured) = 3.18 mW/g



Motorola NE EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN84 ; Test Date: 8/1/06**

Run #: JsT-SYSP-900B-060801-01 Sim.Tissue Temp: 21.7 (C)

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

Target: 11.52 mW/g for 1g SAR 7.42 mW/g for 10g SAR

11.95 mW/g calculated 1g-SAR; 3.73% from target (including drift)

7.70 mW/g calculated 10g-SAR; 3.79% from target (including drift)

Probe: ET3DV6R - SN1545, Calibrated: 10/25/2005, ConvF(5.57, 5.57, 5.57)

Duty Cycle: 1:1, Medium: 900 MHz FCC Body, Medium parameters used: $f = 900$ MHz; $\sigma = 1.05$ mho/m; $\epsilon_r = 53.2$; $\rho =$ 1000 kg/m³; Electronics: DAE3 Sn363, Calibrated: 5/17/2006**System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 58.0 V/m; Power Drift = 0.0329 dB

Peak SAR (extrapolated) = 4.47 W/kg

SAR(1 g) = 3.04 mW/g; SAR(10 g) = 1.96 mW/g

Maximum value of SAR (measured) = 3.32 mW/g

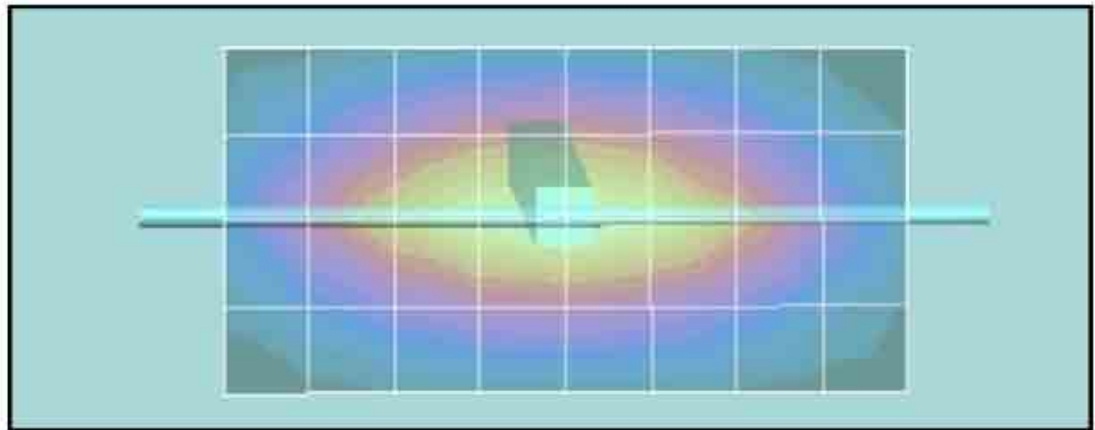
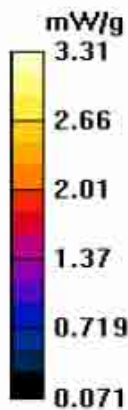
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 58.0 V/m; Power Drift = 0.0329 dB

Peak SAR (extrapolated) = 4.40 W/kg

SAR(1 g) = 2.98 mW/g; SAR(10 g) = 1.92 mW/g

Maximum value of SAR (measured) = 3.25 mW/g



Motorola NE EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN84 ; Test Date: 8/3/06**

Run #: JsT-SYSP-900B-060803-02 Sim.Tissue Temp: 20.5 (C)

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

Target: 11.52 mW/g for 1g SAR 7.42 mW/g for 10g SAR

12.45 mW/g calculated 1g-SAR; 8.09% from target (including drift)

8.03 mW/g calculated 10g-SAR; 8.20% from target (including drift)

Probe: ET3DV6R - SN1545, Calibrated: 10/25/2005, ConvF(5.57, 5.57, 5.57)

Duty Cycle: 1:1, Medium: 900 MHz FCC Body, Medium parameters used: $f = 900$ MHz; $\sigma = 1.05$ mho/m; $\epsilon_r = 52.8$; $\rho =$ 1000 kg/m³; Electronics: DAE3 Sn363, Calibrated: 5/17/2006**System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 59.3 V/m; Power Drift = 0.0169 dB

Peak SAR (extrapolated) = 4.59 W/kg

SAR(1 g) = 3.15 mW/g; SAR(10 g) = 2.03 mW/g

Maximum value of SAR (measured) = 3.43 mW/g

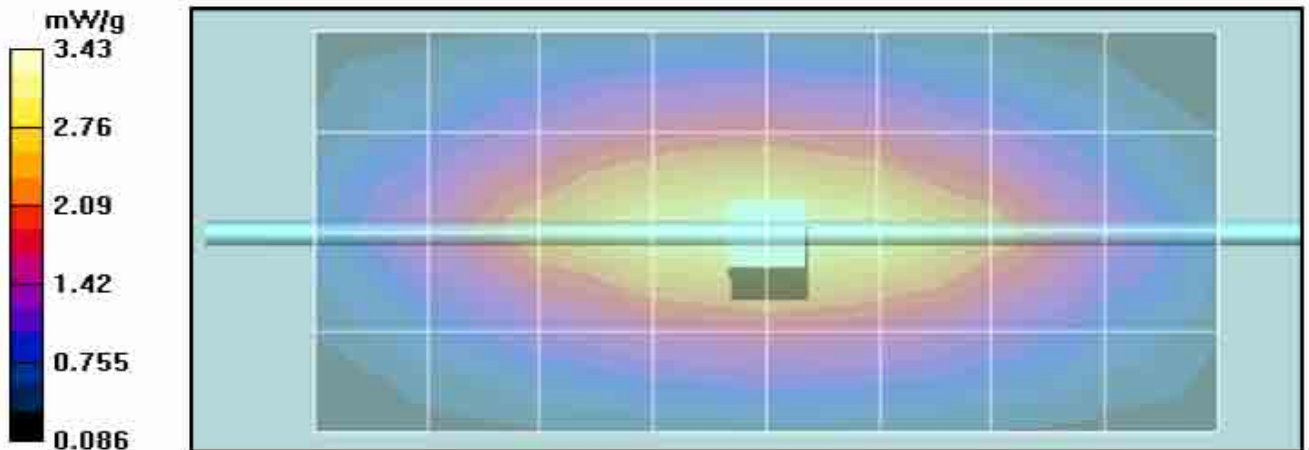
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 59.3 V/m; Power Drift = 0.0169 dB

Peak SAR (extrapolated) = 4.57 W/kg

SAR(1 g) = 3.1 mW/g; SAR(10 g) = 2 mW/g

Maximum value of SAR (measured) = 3.31 mW/g



Motorola NE EME Lab**SPEAG 900 MHz Dipole; Model D900V2, SN84 ; Test Date: 8/10/06**

Run #: HvH-SYSP-900B-060810-02 Sim.Tissue Temp: 21.4 (C)

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

Target: 11.52 mW/g for 1g SAR 7.42 mW/g for 10g SAR

11.97 mW/g calculated 1g-SAR; 3.88 % from target (including drift)

7.71 mW/g calculated 10g-SAR; 3.89 % from target (including drift)

Probe: ET3DV6R - SN1545, Calibrated: 10/25/2005, ConvF(5.57, 5.57, 5.57)

Duty Cycle: 1:1, Medium: 900 MHz FCC Body, Medium parameters used: $f = 900 \text{ MHz}$; $\sigma = 1.05 \text{ mho/m}$; $\epsilon_r = 53$; $\rho = 1000$ kg/m³; Electronics: DAE3 Sn363, Calibrated: 5/17/2006**System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 57.7 V/m; Power Drift = -0.039 dB

Peak SAR (extrapolated) = 4.38 W/kg

SAR(1 g) = 2.99 mW/g; SAR(10 g) = 1.93 mW/g

Maximum value of SAR (measured) = 3.26 mW/g

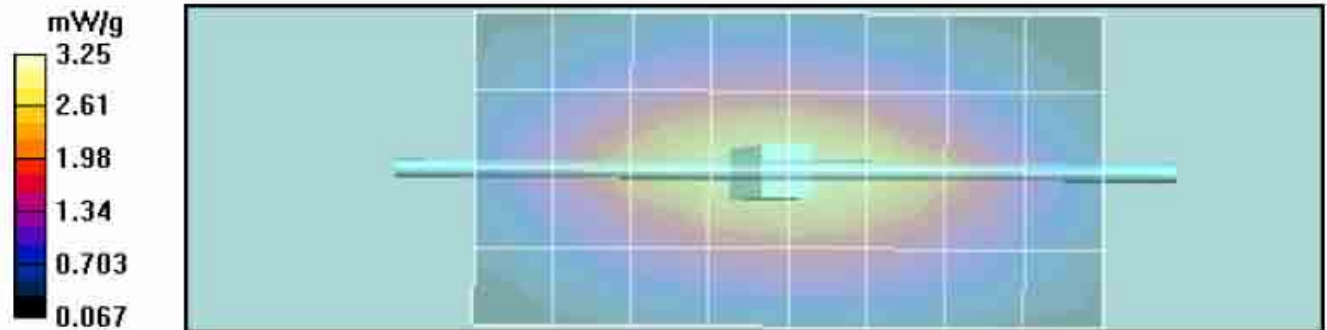
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 57.7 V/m; Power Drift = -0.039 dB

Peak SAR (extrapolated) = 4.34 W/kg

SAR(1 g) = 2.94 mW/g; SAR(10 g) = 1.89 mW/g

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



SYSTEM PERFORMANCE CHECK TARGET SAR

Date:	3/28/2006	Frequency (MHz):	900
Lab Location:	GEMS EME	Mixture Type:	FCC Body
Robot System:	GEMS-2	Ambient Temp.(°C):	22.4
Probe Serial #:	1547	Tissue Temp.(°C):	21.8
DAE Serial #:	401		

Tissue Characteristics

Permittivity:	53.4	Phantom Type/SN:	80302002A-S7
Conductivity:	1.05	Distance (mm):	15

Reference Source:	Dipole	(Dipole)
Reference SN:	85	

Power to Dipole: 250 mW

Measured SAR Value:	<u>3.03</u> mW/g,	<u>1.95</u> mW/g (10g avg.)
Power Drift:	<u>-0.0028</u> dB	

New Target/Measured

SAR Value:	12.13 mW/g,	7.81 mW/g (10g avg.)
------------	--------------------	-----------------------------

(normalized to 1.0 W, including drift)

Test performed by: **Ed Church** Initial: E.C.

DUT: Dipole 900 MHz;

Run #: ErC-VAL-900B-060328- 03

Robot #: GEMS-2

Model #: D900V2

TX Freq: 900 (MHz)

New Targets: 12.13 mW/g for 1g SAR

12.13 mW/g calculated 1g-SAR 0 % from target (including drift)

7.81 mW/g calculated 10g-SAR 0 % from target (including drift)

Sim.Tissue Temp: 21.8 (C)

Phantom #: 80302002A-S7

S/N: 085

Start power: 250 (mW)

7.81 mW/g for 10g SAR

Probe: ET3DV6 - SN1547, Calibrated: 10/25/2005, ConvF(5.82, 5.82, 5.82),

Duty Cycle: 1:1, Medium: 900 MHz FCC Body, Medium parameters used: $f = 900$ MHz; $\sigma = 1.05$ mho/m; $\epsilon_r = 53.4$; $\rho = 1000$ kg/m³ ;

Electronics: DAE3 Sn401, Calibrated: 8/18/2005

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

Reference Value = 57.8 V/m; Power Drift = -0.0028 dB

Peak SAR (extrapolated) = 4.46 W/kg

SAR(1 g) = 3.02 mW/g; SAR(10 g) = 1.94 mW/g

Maximum value of SAR (measured) = 3.29 mW/g

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

Reference Value = 57.8 V/m; Power Drift = -0.0028 dB

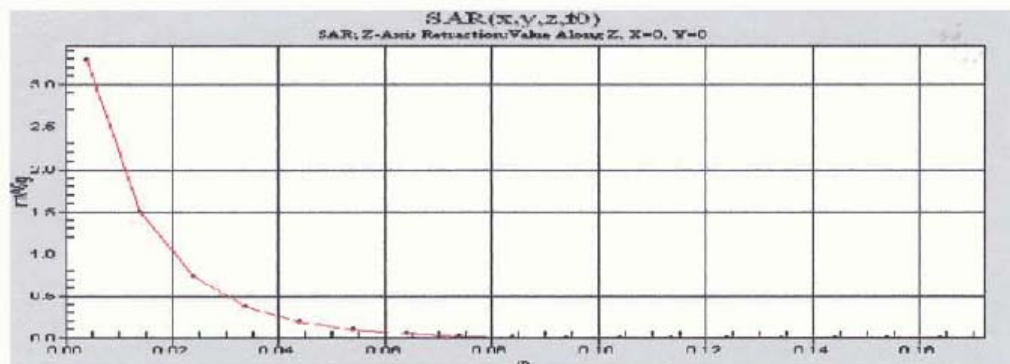
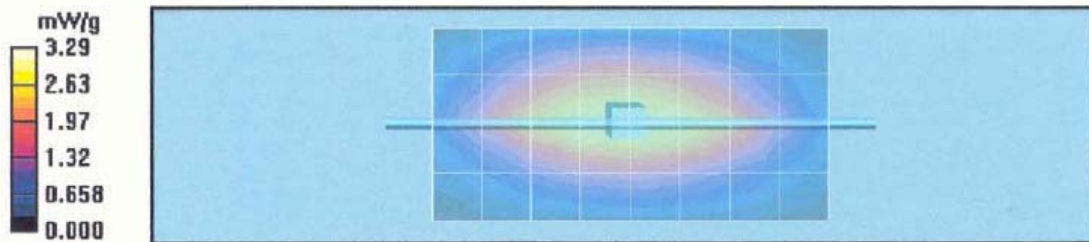
Peak SAR (extrapolated) = 4.46 W/kg

SAR(1 g) = 3.04 mW/g; SAR(10 g) = 1.96 mW/g

Maximum value of SAR (measured) = 3.30 mW/g

Validation/Dipole Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 3.25 mW/g

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

SYSTEM VALIDATION

Date:	<u>3/28/2006</u>	Frequency (MHz):	<u>900</u>
Lab Location:	<u>GEMS EME</u>	Mixture Type:	<u>IEEE Head</u>
Robot System:	<u>GEMS-2</u>	Ambient Temp.(°C):	<u>22.3</u>
Probe Serial #:	<u>1547</u>	Tissue Temp.(°C):	<u>21.1</u>
DAE Serial #:	<u>401</u>		

Tissue Characteristics

Permittivity:	<u>40.6</u>	Phantom Type/SN:	<u>SAMTP1209</u>
Conductivity:	<u>1.00</u>	Distance (mm):	<u>15</u>

Reference Source:	<u>Dipole</u>	(Dipole)
Reference SN:	<u>85</u>	

Power to Dipole:	<u>250</u>	mW
Power Output (radio):	<u>n/a</u>	mW

Target SAR Value:	<u>10.80</u>	mW/g,	<u>6.90</u>	mW/g (10g avg.)
(normalized to 1.0 W)				

Measured SAR Value:	<u>3.05</u>	mW/g,	<u>1.935</u>	mW/g (10g avg.)
Power Drift:	<u>-0.0115</u>	dB		

Measured SAR Value:	<u>12.23</u>	mW/g,	<u>7.76</u>	mW/g (10g avg.)
(normalized to 1.0 W, including drift)				

Percent Difference From Target (MUST be within System Uncertainty K=2):	<u>13.26%</u>	(1g ave)
	<u>12.47%</u>	(10g ave)

Test performed by:	<u>Ed Church</u>	Initial:	<u>EC</u>
--------------------	------------------	----------	-----------

DUT: Dipole 900 MHz;

Run #: ErC-VAL-900H-060328- 02

Robot #: GEMS-2

Model #: D900V2

TX Freq: 900 (MHz)

New Targets: 12.23 mW/g for 1g SAR

12.23 mW/g calculated 1g-SAR 0 % from target (including drift)

7.76 mW/g calculated 10g-SAR 0 % from target (including drift)

Sim.Tissue Temp: 21.1 (C)

Phantom #: SAMTP1209

S/N: 085

Start power: 250 (mW)

7.76 mW/g for 10g SAR

Probe: ET3DV6 - SN1547, Calibrated: 10/25/2005, ConvF(5.92, 5.92, 5.92),

Duty Cycle: 1:1, Medium: 900 MHz IEEE Head, Medium parameters used: $f = 900$ MHz; $\sigma = 1$ mho/m; $\epsilon_r = 40.6$; $\rho = 1000$ kg/m³ ;

Electronics: DAE3 Sn401, Calibrated: 8/18/2005

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

Reference Value = 59.5 V/m; Power Drift = -0.0115 dB

Peak SAR (extrapolated) = 4.67 W/kg

SAR(1 g) = 3.04 mW/g; SAR(10 g) = 1.93 mW/g

Maximum value of SAR (measured) = 3.31 mW/g

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

Reference Value = 59.5 V/m; Power Drift = -0.0115 dB

Peak SAR (extrapolated) = 4.68 W/kg

SAR(1 g) = 3.06 mW/g; SAR(10 g) = 1.94 mW/g

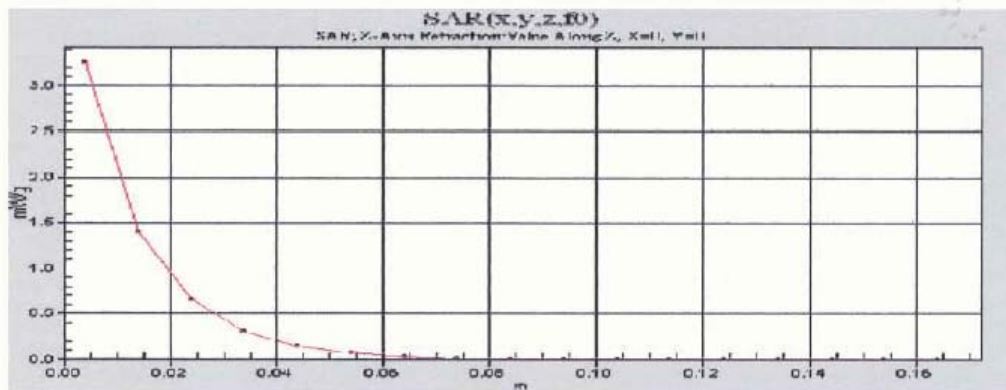
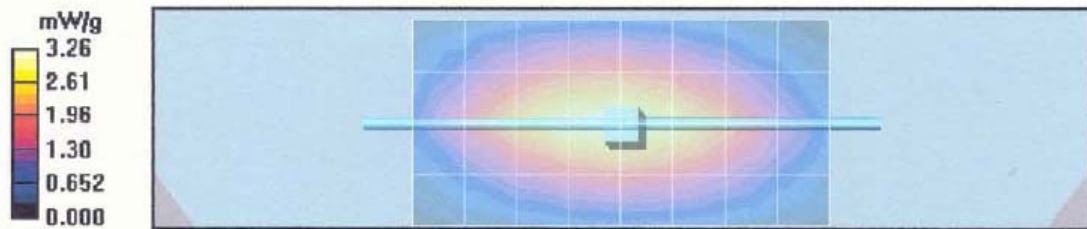
Maximum value of SAR (measured) = 3.33 mW/g

Validation/Dipole Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 3.29 mW/g

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

Maximum value of SAR (measured) = 3.26 mW/g



DIPOLE SAR TARGET - BODY

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

Tissue Characteristics

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

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

New Target:

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

Test performed by: Ed Church Initial: E.C

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

DIPOLE SAR TARGET - HEAD

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

Tissue Characteristics

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

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

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

New Target:

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

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

Test performed by: Ed Church Initial: E.C.

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