MOTOROLA

ACCREDITED
Certificate Number: 1449-01

FCC ID: AZ489FT5832
DECLARATION OF COMPLIANCE SAR ASSESSMENT Part 2 of 3

GEMS EME Test Laboratory
8000 West Sunrise Blvd
Fort Lauderdale, FL. 33322

Date of Report: March 15, 2005
Report Revision: Rev. A
Report ID: FCC rpt_i275_Rev A_050315 SR1995

Responsible Engineer: Kim Uong (EME lead Eng.)
Date/s Tested: 3/02/05-3/4/05
Manufacturer/Location: Motorola - Plantation
Sector/Group/Div.: iDEN Subscriber
Date submitted for test: 2/07/05
DUT Description: Dual Mode iDEN (1:6, 2:6, 81:120, 1:12 TDMA; 64QAM, 16 QAM & QPSK Modulation; 0.6W Pulse Avg.
MOTOtalk (114:120 8FSK; 0.85 W nominal)
Test TX mode(s): 114:120
Max. Power output: 0.891W
Nominal Power: 0.85W
Tx Frequency Bands: 902-928MHz
Signaling type: iDEN; MOTOtalk – (FHSS 8FSK)
Model(s) Tested: H79XAN6RR4AN
Model(s) Certified: H79XAN6RR4AN
Serial Number(s): 364YFABY2J
Classification: General Population/Uncontrolled
Rule Part(s): 15

Approved Accessories:

Antenna(s):
8585424E01 (806-941MHz retractable Top helical ½ wave antenna -0.8dBd @ 915MHz)
Battery(ies):
SNN5705C (8-mm 950mAh); SNN5705B (Hi performance 750mAh Li Ion)
Body worn accessory(ies):
NNTN5821A (Holster)
Audio accessory(ies):
NSN6066A (Light duty RSM), NNTN5004A (PTT headset over ear), NNTN5005A (PTT headset over head), SYN8390B (Privacy earpiece), SYN8146C (Lightweight headset w/ boom mic), NTN8496A (Lightweight headset w/ mic), NNTN4033A (Privacy Earpiece/mic w/ PTT), NNTN5006A (Silver Earbud), SYN7875C (Hearing Aide Neckloop), NTN8513B (Lightweight headband), NNTN5330A (Ear bud accessory), NNTN4620A (Silver ear bud), NNTN5211A (Falcon Surveillance kit), NNTN5751A (Stereo phone audio mix headset PTT)

Max. Calc. 1-g/10-g Avg. SAR: 1.08/0.79 mW/g (Body)
Max. Calc. 1-g/10-g Avg. SAR: 0.83/0.59 mW/g (Face)

Based on the information and the testing results provided herein, the undersigned certifies that when used as stated in the operating instructions supplied, said product complies with the national and international reference standards and guidelines listed in section 2.0 of this report.
This report shall not be reproduced without written approval from an officially designated representative of the Motorola EME Laboratory.

This reporting format is consistent with the test report guidelines of the TIA TSB-150 December 2004
The results and statements contained in this report pertain only to the device(s) evaluated.

Signature on file
Ken Enger GEMS EME Lab Senior Resource Manager, Laboratory Director,

3/15/05
Approval Date:

Certification Date: 3/15/05

Certification No.: L1050337

APPENDIX A
Measurement Uncertainty

Table 1: Uncertainty Budget for Device Under Test: 75 – 3000 MHz

a	*b*	*c*	*d*	*e = f(d,k)*	*f*	*g*	*h = c x f / e*	*i = c x g / e*	*k*
Uncertainty Component	IEEE 1528 section	**Tol. (± %)**	**Prob Dist**	**Div.**	c_i **(1 g)**	c_i **(10 g)**	**1 g** u_i **(±%)**	**10 g** u_i **(±%)**	v_i
Measurement System									
Probe Calibration	E.2.1	4.8	N	1.00	1	1	4.8	4.8	∞
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	1.0	N	1.00	1	1	1.0	1.0	∞
Response Time	E.2.7	0.8	R	1.73	1	1	0.5	0.5	∞
Integration Time	E.2.8	1.3	R	1.73	1	1	0.8	0.8	∞
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	1.0	R	1.73	1	1	0.6	0.6	∞
Probe Positioning w.r.t Phantom	E.6.3	4.0	R	1.73	1	1	2.3	2.3	∞
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	3.4	N	1.00	1	1	3.4	3.4	29
Device Holder Uncertainty	E.4.1	3.8	N	1.00	1	1	3.8	3.8	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	6.5	N	1.00	0.64	0.43	4.2	2.8	∞
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	4.0	N	1.00	0.6	0.49	2.4	2.0	∞
Combined Standard Uncertainty			RSS				12	11	601
Expanded Uncertainty (95% CONFIDENCE LEVEL)			*k*=2				23	22	

Table 2: Uncertainty Budget for System Check: 75 – 3000 MHz

a	*b*	*c*	*d*	*e = f(d,k)*	*f*	*g*	*h = c x f / e*	*i = c x g / e*	*k*
Uncertainty Component	**IEEE 1528 section**	**Tol. (± %)**	**Prob. Dist.**	**Div.**	**c_i (1 g)**	**c_i (10 g)**	**1 g u_i (±%)**	**10 g u_i (±%)**	**v_i**
Measurement System									
Probe Calibration	E.2.1	4.8	N	1.00	1	1	4.8	4.8	∞
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	1.0	N	1.00	1	1	1.0	1.0	∞
Response Time	E.2.7	0.8	R	1.73	1	1	0.5	0.5	∞
Integration Time	E.2.8	1.3	R	1.73	1	1	0.8	0.8	∞
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	6.0	R	1.73	0.64	0.43	2.2	1.5	∞
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	6.0	R	1.73	0.6	0.49	2.1	1.7	∞
Combined Standard Uncertainty			RSS				9	8	99999
Expanded Uncertainty (95% CONFIDENCE LEVEL)			*k*=2				17	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) *ci* - sensitivity coefficient that should be applied to convert the variability of the uncertainty component into a variability of SAR.
g) *ui* – SAR uncertainty
h) *vi* - degrees of freedom for standard uncertainty and effective degrees of freedom for the expanded uncertainty.

Appendix B
Probe Calibration Certification

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

Client **Motorola CGISS**

CALIBRATION CERTIFICATE

Object(s)	ET3DV6 - SN:1393
Calibration procedure(s)	QA CAL-01.v2 Calibration procedure for dosimetric E-field probes
Calibration date:	April 28, 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
Fluke Process Calibrator Type 702	SN: 6295803	8-Sep-03 (Sintrel SCS No. E-030020)	Sep-04
Power sensor HP 8481A	MY41092180	18-Sep-02 (SPEAG, in house check Oct-03)	In house check: Oct 05
RF generator HP 8684C	US3642U01700	4-Aug-99 (SPEAG, in house check Aug-02)	In house check: Aug-05
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Oct-03)	In house check: Oct 05

	Name	Function	Signature
Calibrated by:	Nico Vetterli	Technician	F. Bomholt
Approved by:	Katja Pokovic	Laboratory Director	

Date issued: April 28, 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.

ET3DV6 SN:1393 April 28, 2004

DASY - Parameters of Probe: ET3DV6 SN:1393

Sensitivity in Free Space

Diode Compression[A]

NormX	1.87 $\mu V/(V/m)^2$	DCP X	94	mV
NormY	1.55 $\mu V/(V/m)^2$	DCP Y	94	mV
NormZ	1.86 $\mu V/(V/m)^2$	DCP Z	94	mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Plese see Page 7.

Boundary Effect

Head **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	8.8	4.8
SAR_{be} [%]	With Correction Algorithm	0.1	0.2

Head **1800 MHz** **Typical SAR gradient: 10 % per mm**

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR_{be} [%]	Without Correction Algorithm	12.5	8.6
SAR_{be} [%]	With Correction Algorithm	0.2	0.1

Sensor Offset

Probe Tip to Sensor Center	2.7 mm
Optical Surface Detection	**low but repeatable**

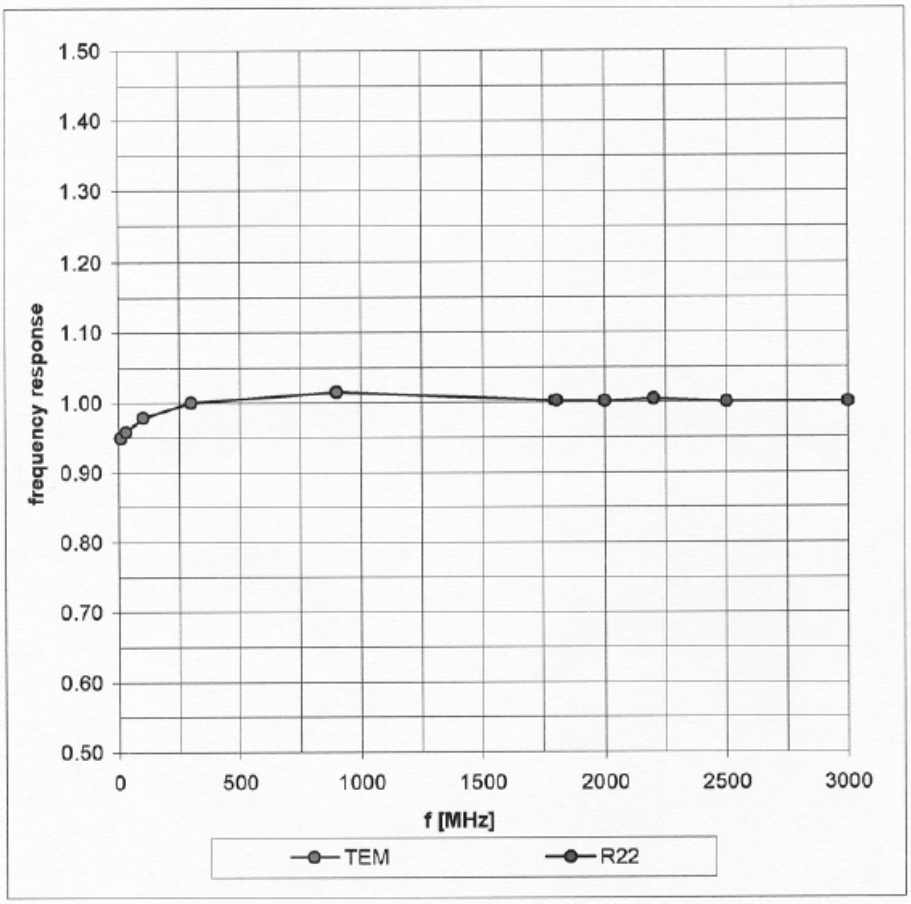
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] numerical linearization parameter: uncertainty not required

ET3DV6 SN:1393 **April 28, 2004**

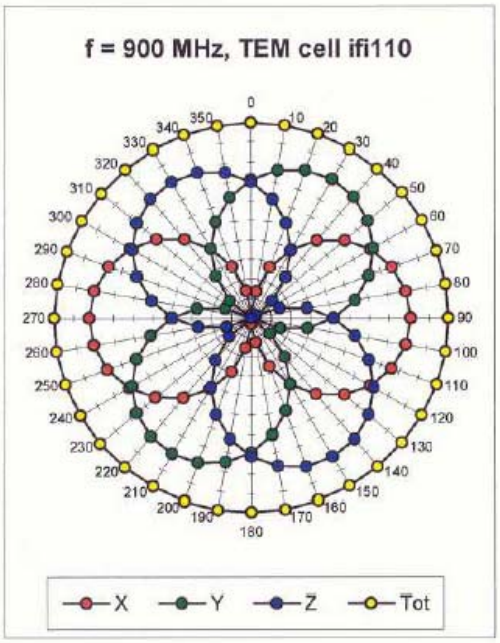
Frequency Response of E-Field

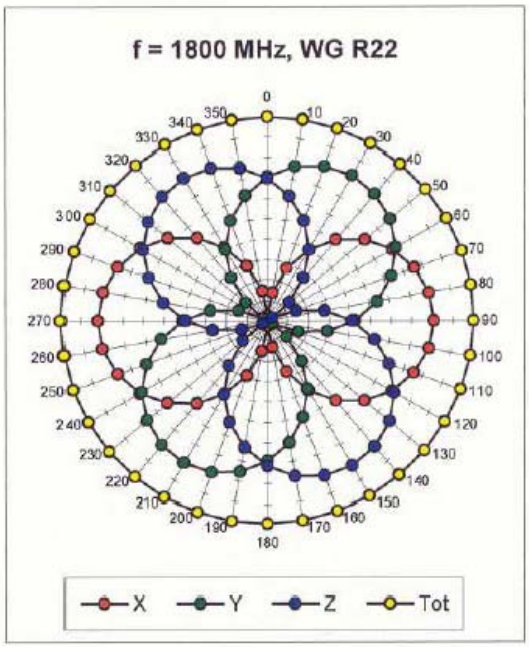
(TEM-Cell:ifi110, Waveguide R22)

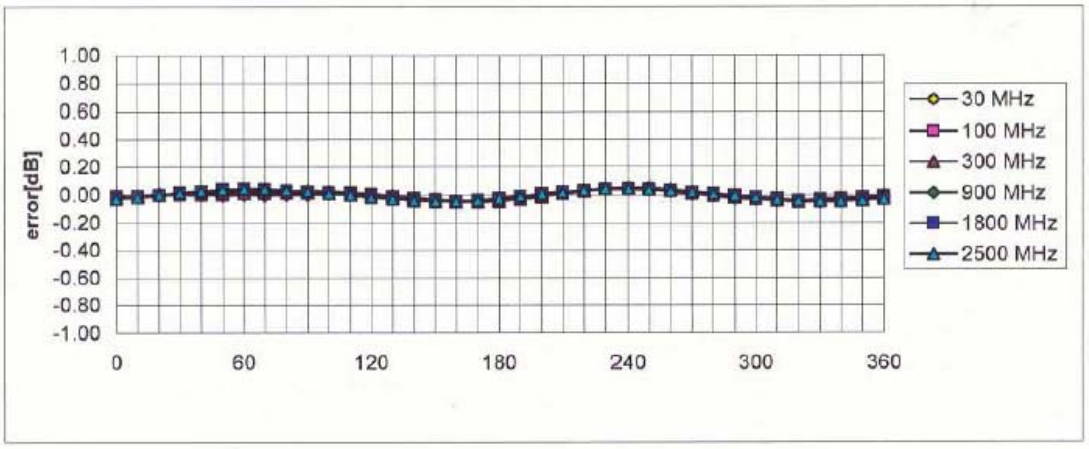


ET3DV6 SN:1393 **April 28, 2004**

Receiving Pattern (ϕ) , θ = 0°





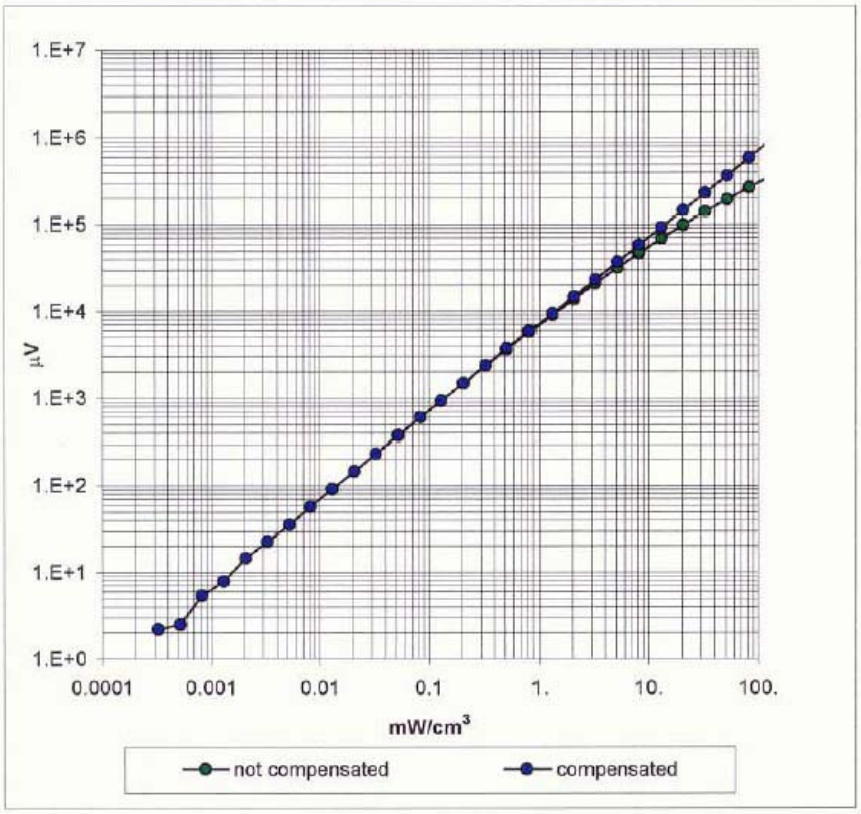


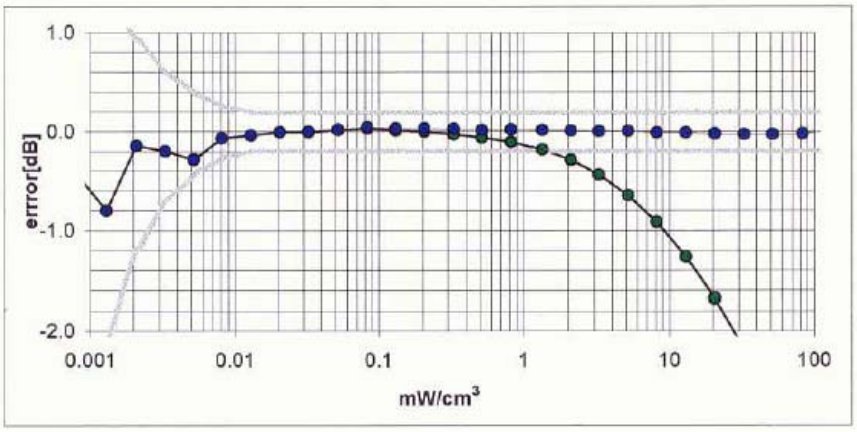
Axial Isotropy Error < ± 0.2 dB

ET3DV6 SN:1393 **April 28, 2004**

Dynamic Range f(SAR_{head})

(Waveguide R22)

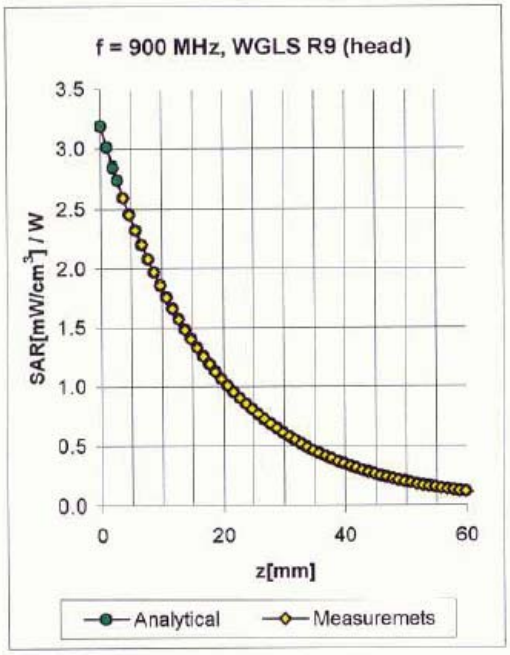


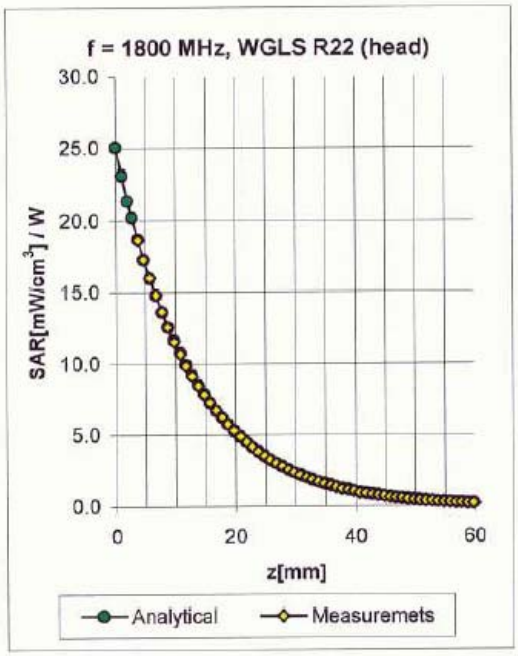


Probe Linearity < ± 0.2 dB

ET3DV6 SN:1393 **April 28, 2004**

Conversion Factor Assessment





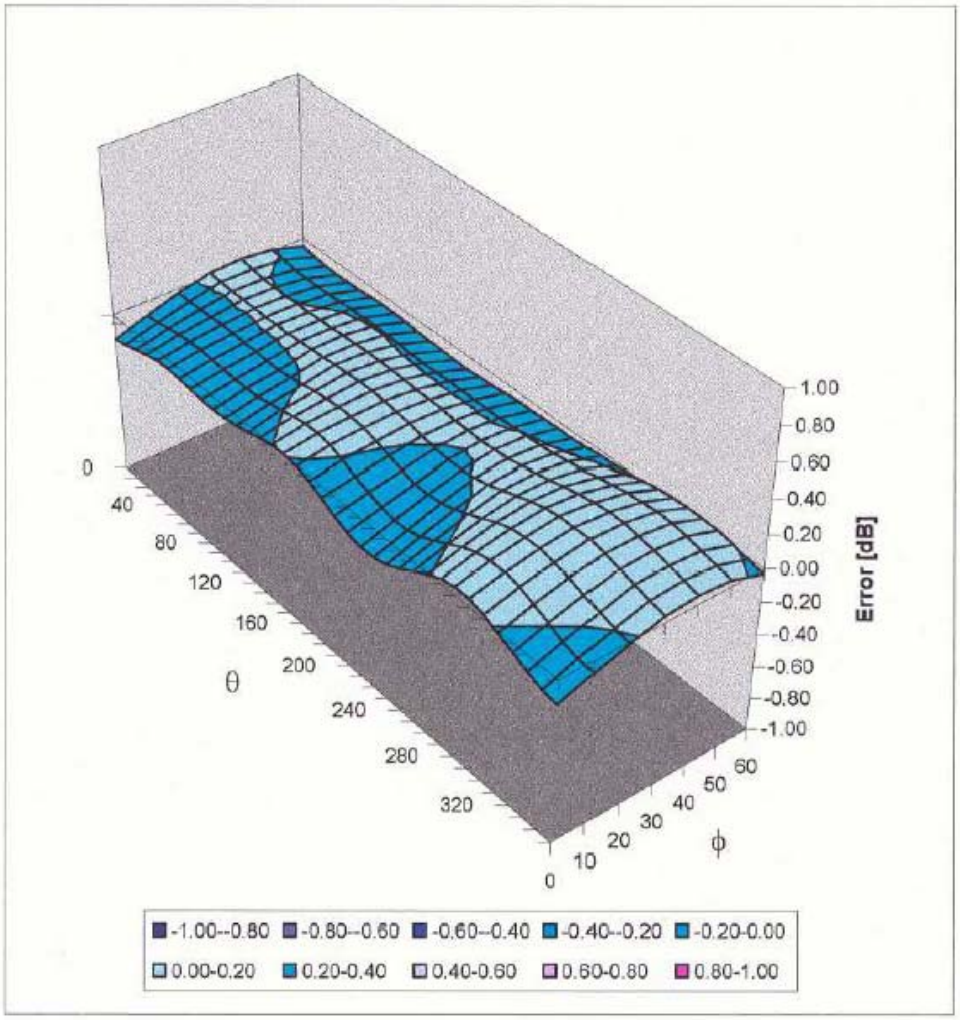
f [MHz]	Validity [MHz][B]	Tissue	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
900	800-1000	Head	41.5 ± 5%	0.97 ± 5%	0.54	1.95	6.73 ± 9.5% (k=2)
1450	1400-1500	Head	40.5 ± 5%	1.20 ± 5%	0.41	2.78	5.85 ± 9.5% (k=2)
1800	1710-1910	Head	40.0 ± 5%	1.40 ± 5%	0.42	2.79	5.29 ± 9.5% (k=2)
2450	2400-2500	Head	39.2 ± 5%	1.80 ± 5%	0.88	1.95	4.51 ± 9.5% (k=2)
900	800-1000	Body	55.0 ± 5%	1.05 ± 5%	0.45	2.27	6.35 ± 9.5% (k=2)
1450	1400-1500	Body	54.0 ± 5%	1.30 ± 5%	0.43	2.79	5.56 ± 9.5% (k=2)
1800	1710-1910	Body	53.3 ± 5%	1.52 ± 5%	0.51	2.82	4.83 ± 9.5% (k=2)
2450	2400-2500	Body	52.7 ± 5%	1.95 ± 5%	1.01	1.61	4.41 ± 9.5% (k=2)

[B] The stated uncertainty of calibration in according to P1528.

ET3DV6 SN:1393 **April 28, 2004**

Deviation from Isotropy in HSL

Error (θ,φ), f = 900 MHz



Spherical Isotropy Error < ± 0.4 dB

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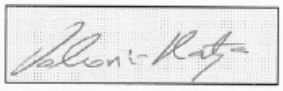
Additional Conversion Factors

for Dosimetric E-Field Probe

Type:	**ET3DV6**
Serial Number:	**1393**
Place of Assessment:	**Zurich**
Date of Assessment:	**May 3, 2004**
Probe Calibration Date:	**April 28, 2004**

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 1800 MHz.

Assessed by:



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Dosimetric E-Field Probe ET3DV6 SN:1393

Conversion factor (± standard deviation)

150 MHz	ConvF	**8.4 ± 8%**	ε_r = 61.9 σ = 0.80 mho/m (body tissue)
236 MHz	ConvF	**8.2 ± 8%**	ε_r = 59.8 σ = 0.87 mho/m (body tissue)
300 MHz	ConvF	**8.1 ± 8%**	ε_r = 58.2 σ = 0.92 mho/m (body tissue)
350 MHz	ConvF	**8.0 ± 8%**	ε_r = 57.7 σ = 0.93 mho/m (body tissue)
450 MHz	ConvF	**7.7 ± 8%**	ε_r = 56.7 σ = 0.94 mho/m (body tissue)
784 MHz	ConvF	**6.7 ± 8%**	ε_r = 55.4 σ = 0.97 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.

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Dosimetric E-Field Probe ET3DV6 SN:1393

Conversion factor (± standard deviation)

150 MHz	ConvF	**9.3 ± 8%**	ε_r = 52.3 σ = 0.76 mho/m (head tissue)
236 MHz	ConvF	**8.5 ± 8%**	ε_r = 48.3 σ = 0.82 mho/m (head tissue)
300 MHz	ConvF	**8.1 ± 8%**	ε_r = 45.3 σ = 0.87 mho/m (head tissue)
350 MHz	ConvF	**8.0 ± 8%**	ε_r = 44.7 σ = 0.87 mho/m (head tissue)
400 MHz	ConvF	**7.8 ± 8%**	ε_r = 44.4 σ = 0.87 mho/m (head tissue - CENELEC)
450 MHz	ConvF	**7.7 ± 8%**	ε_r = 43.5 σ = 0.87 mho/m (head tissue)
784 MHz	ConvF	**7.0 ± 8%**	ε_r = 41.8 σ = 0.90 mho/m (head 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

Client **Motorola CGISS**

CALIBRATION CERTIFICATE

Object(s) D900V2 - SN:084

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

Calibration date: March 22, 2004

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

This calibration statement documents traceability of M&TE used in the calibration procedures and conformity of the procedures with the ISO/IEC 17025 international standard.

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. 20-92389)	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: March 23, 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 flat section of the SAM twin phantom filled with **head simulating solution** of the following electrical parameters at 900 MHz:

Relative Dielectricity	**41.4**	± 5%
Conductivity	**0.95 mho/m**	± 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 mW ± 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:	**10.9 mW/g** ± 16.8 % (k=2)[1]
averaged over 10 cm^3 (10 g) of tissue:	**7.04 mW/g** ± 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:	**1.388 ns**	(one direction)
Transmission factor:	**0.989**	(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:	Re{Z} = **52.6 Ω**
	Im {Z} = **-3.4 Ω**
Return Loss at 900 MHz	**-27.7 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 - SN084

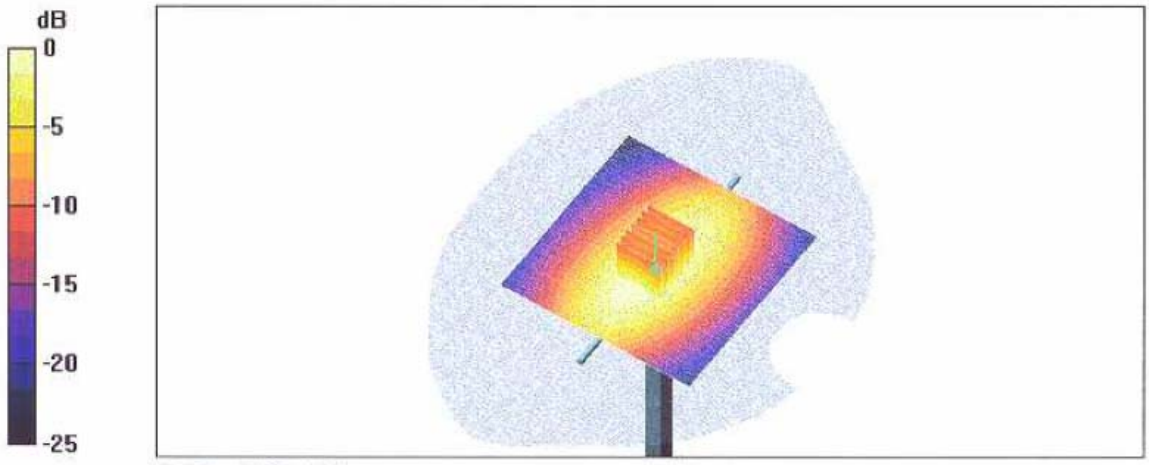
Communication System: CW-900; Frequency: 900 MHz;Duty Cycle: 1:1
Medium: HSL 900 MHz;
Medium parameters used: f = 900 MHz; σ = 0.95 mho/m; ε_r = 41.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(6.18, 6.18, 6.18); Calibrated: 1/23/2004
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn411; Calibrated: 11/6/2003
- Phantom: SAM with CRP - TP1006; Type: SAM 4.0; Serial: TP:1006;
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Pin = 250 mW; d = 15 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 57 V/m; Power Drift = 0.0 dB
Maximum value of SAR (interpolated) = 2.92 mW/g

Pin = 250 mW; d = 15 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57 V/m; Power Drift = 0.0 dB
Maximum value of SAR (measured) = 2.95 mW/g
Peak SAR (extrapolated) = 4.11 W/kg
SAR(1 g) = 2.73 mW/g; SAR(10 g) = 1.76 mW/g



0 dB = 2.95mW/g

Appendix D
Test System Verification Scans

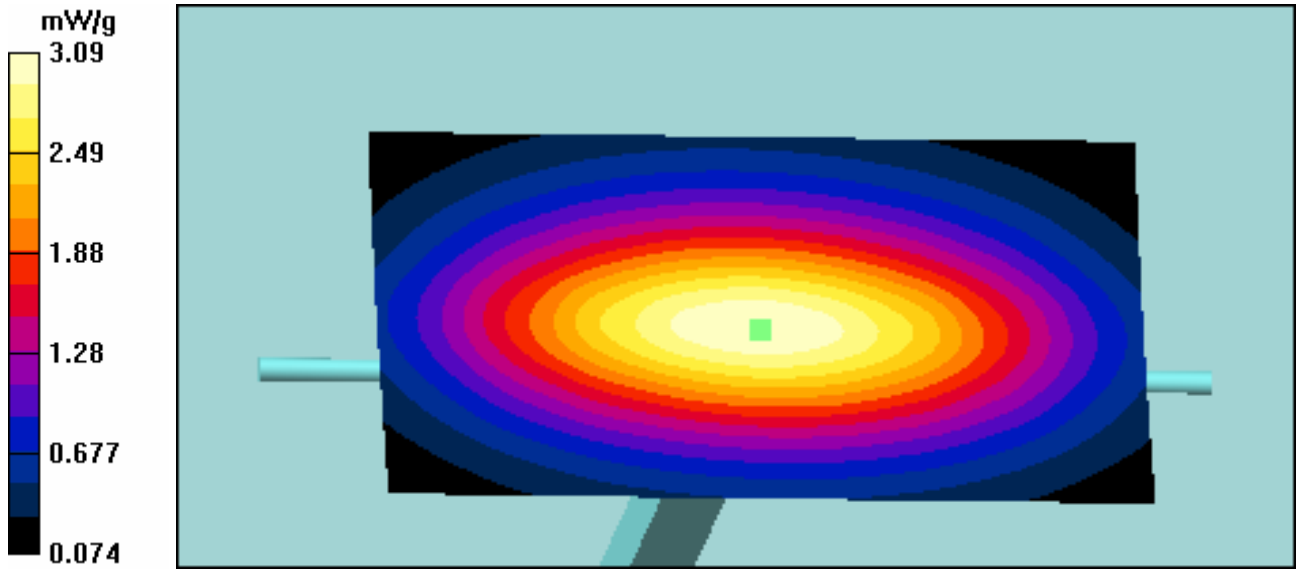
Note: Dipole validation scans at the head from SPEAG are provided in APPENDIX D. The GEMS EME lab validated the dipole to the applicable IEEE system performance targets. Within the same day system validation was performed using FCC body tissue parameters to generate the system performance target values for body at the applicable frequency. The results of the GEMS EME system performance validation are provided herein.

Motorola GEMS EME Lab
SPEAG 900 MHz Dipole; Model D900V2, SN 084; Test Date: 3/2/05
Run #: 050302-01 Test operator Clint Miller
TX Freq: 900(MHz) Start power: 250 (mW)
Tissue Temp: 21.3º C

Target: 11.75 mW/g for 1g SAR; 7.47 mW/g for 10g SAR
11.43 mW/g calculated 1g-SAR; -2.69 % from target (including drift)
7.44 mW/g calculated 10g-SAR; -0.45 % from target (including drift)

Probe: ET3DV6 - SN1393, Calibrated: 4/28/2004, ConvF(6.35, 6.35, 6.35)
Duty Cycle: 1:1, Medium: 900 MHz FCC Body, Medium parameters used: σ = 1.04; mho/m, ε_r = 55; ρ = 1000 kg/m^3
Electronics: DAE3 Sn374, Calibrated: 3/23/2004

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 56.7 V/m; Power Drift = 0.002 dB; Peak SAR (extrapolated) = 4.09 W/kg;
SAR(1 g) = 2.85 mW/g; SAR(10 g) = 1.85 mW/g
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 56.7 V/m; Power Drift = 0.002 dB; Peak SAR (extrapolated) = 4.1 W/kg;
SAR(1 g) = 2.87 mW/g; SAR(10 g) = 1.87 mW/g

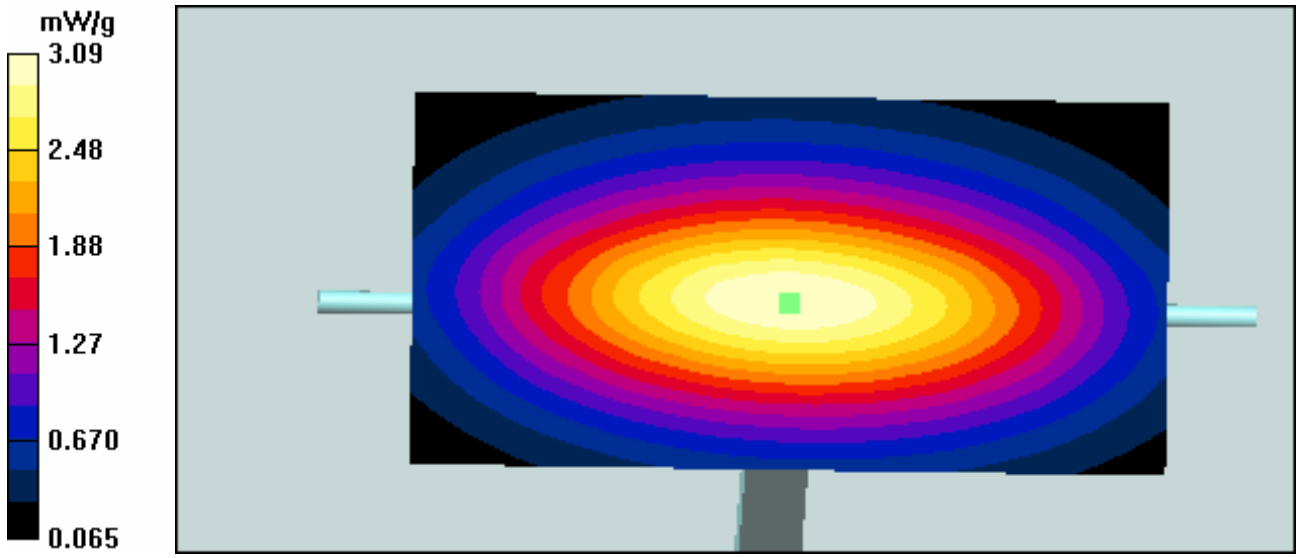


Motorola GEMS EME Lab
SPEAG 900 MHz Dipole; Model D900V2, SN 084; Test Date: 3/3/05
Run #: 050303-01 Test operator: K. Uong
TX Freq: 900(MHz) Start power: 250 (mW)
Tissue Temp: 21.4 ©

Target: 11.75 mW/g for 1g SAR; 7.47 mW/g for 10g SAR
11.37 mW/g calculated 1g-SAR;-3.27% from target (including drift)
7.39 mW/g calculated 10g-SAR; -1.14% from target (including drift)

Probe: ET3DV6 - SN1393, Calibrated: 4/28/2004, ConvF(6.35, 6.35, 6.35)
Duty Cycle: 1:1, Medium: 900 MHz FCC Body, Medium parameters used: σ = 1.05; mho/m, ε_r = 54.9; ρ = 1000 kg/m^3
Electronics: DAE3 Sn374, Calibrated: 3/23/2004

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 56 V/m; Power Drift = 0.0 dB; Peak SAR (extrapolated) = 4.12 W/kg;
SAR(1 g) = 2.85 mW/g; SAR(10 g) = 1.85 mW/g
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 56 V/m; Power Drift = 0.0 dB; Peak SAR (extrapolated) = 4.12 W/kg;
SAR(1 g) = 2.86 mW/g; SAR(10 g) = 1.86 mW/g;

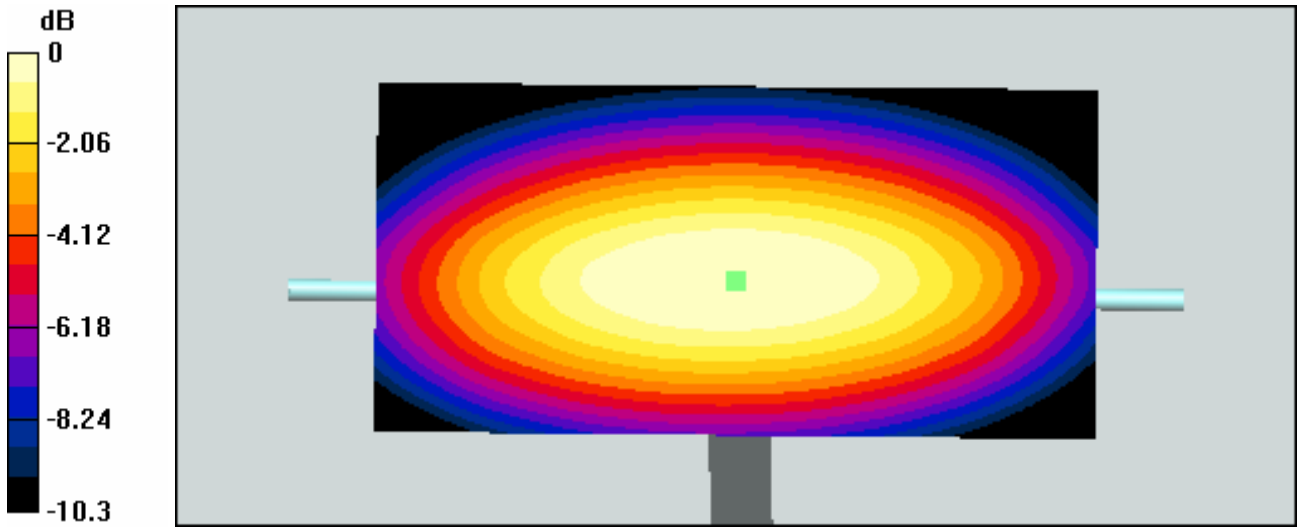


Motorola GEMS EME Lab
SPEAG 900 MHz Dipole; Model D900V2, SN 084; Test Date: 3/4/05
Run #: 050304-01 Test operator: A. GESSNER
Tissue Temp: 21.4 (C)
Model #: D900V2 S/N: 084
TX Freq: 900(MHz) Start power: 250 (mW)

Target:11.75 mW/g for 1g SAR; 7.47 mW/g for 10g SAR
11.28 mW/g calculated 1g-SAR; -3.96% from target (including drift)
7.33 mW/g calculated 10g-SAR; -1.87% from target (including drift)
Probe: ET3DV6 - SN1393, Calibrated: 4/28/2004, ConvF(6.35, 6.35, 6.35)

Duty Cycle: 1:1, Medium: 900 MHz FCC Body, Medium parameters used: $\sigma = 1.03$; mho/m, $\varepsilon_r = 54$; $\rho = 1000$ kg/m^3
Electronics: DAE3 Sn374, Calibrated: 3/23/2004

System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 56.1 V/m; Power Drift = 0.006 dB; Peak SAR (extrapolated) = 4.06 W/kg
SAR(1 g) = 2.82 mW/g; SAR(10 g) = 1.83 mW/g
System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 56.1 V/m; Power Drift = 0.006 dB; Peak SAR (extrapolated) = 4.04 W/kg
SAR(1 g) = 2.83 mW/g; SAR(10 g) = 1.84 mW/g



SYSTEM VALIDATION

Date:	4/14/2004	Frequency (MHz):	900
Lab Location:	CGISS	Mixture Type:	IEEE-Head
Robot System:	3	Ambient Temp.(°C):	23
Probe Serial #:	1383	Tissue Temp.(°C):	21
DAE Serial #:	406		

Tissue Characteristics			
Permitivity:	41.2	Phantom Type/SN:	SAMTP1022
Conductivity:	1.00	Distance (mm):	15 (tissue/dipole cnt)

Reference Source:	D900V2	(Dipole)
Reference SN:	84	

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

Target SAR Value: (normalized to 1.0 W)	10.8	mW/g,	6.9	mW/g (10g avg.)
Measured SAR Value:	2.78	mW/g,	1.74	mW/g (10g avg.)
Power Drift:	-0.01	dB		
Measured SAR Value: (normalized to 1.0 W, including drift)	11.15	mW/g,	6.98	mW/g (10g avg.)

Percent Difference From Target (MUST be within System Uncertainty): 3.20 % (1g ave)
1.10 % (10g ave)

Test performed by: C. Miller Initial:

SYSTEM PERFORMANCE CHECK TARGET SAR

Date:	4/14/2004	Frequency (MHz):	900
Lab Location:	CGISS	Mixture Type:	FCC Body
Robot System:	3	Ambient Temp.(°C):	23
Probe Serial #:	1545	Tissue Temp.(°C):	20.5
DAE Serial #:	406		
Tissue Characteristics			
Permitivity:	53.3	Phantom Type/SN:	80302002A/S8
Conductivity:	1.05	Distance (mm):	15 (tissue/dipole cnt)
Reference Source:	D900V2	(Dipole)	
Reference SN:	84		

Power to Dipole: 250 mW

Measured SAR Value:	2.91	mW/g,	1.85	mW/g (10g avg.)
Power Drift:	-0.04	dB		
New Target/Measured SAR Value: (normalized to 1.0 W, including drift)	11.75	mW/g,	7.47	mW/g (10g avg.)

Test performed by: C. Miller Initial:

SPEAG DIPOLE D900V2; Test date:04/14/04

Run #: Sys Perf-040414-08
Model #: D900 V2
Robot: CGISS-3
TX Freq: 900 MHz
Start Power; 250 mW
DAE3: 401
- Comments-

Phantom #: SAMTP1022
SN: 084
Tester: C. Miller
900 MHz Sim Tissue Temp: 21.0 (Celsius)

DAE Cal Date: 08/21/2003

SAR calculated at 1W is 11.15 mW/g (1g avg).
SAR calculated at 1W is 6.98 mW/g (10g avg).
SAM; Probe: ET3DV6 - SN1383(Cal Date 25 Feb 2004); ConvF(6.30,6.30,6.30); Crest factor: 1.0; IEEE
Head 900: σ = 1.00 mho/m ε_r = 41.2 ρ = 1.00 g/cm^3
Cubes (2): Peak: 4.44 mW/g ± 0.01 dB, SAR (1g): 2.78 mW/g ± 0.02 dB, SAR (10g): 1.74 mW/g ± 0.03 dB, (Worst-case extrapolation)
Penetration depth: 11.2 (10.4, 12.4) [mm]
Powerdrift: -0.01 dB