



APPENDIX C: RELEVANT PAGES FROM PROBE CALIBRATION REPORT(S)

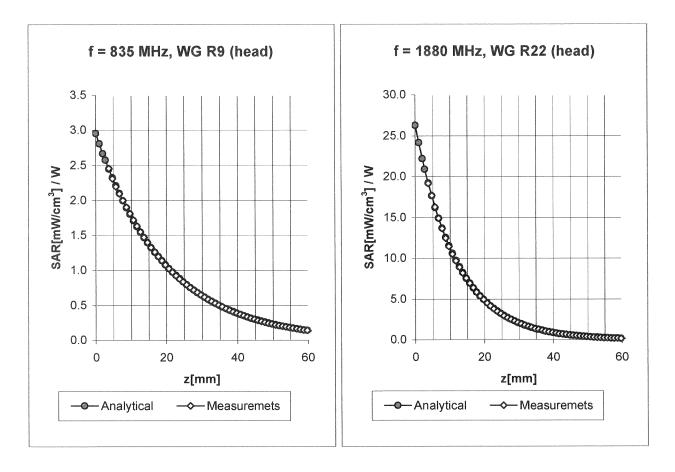
Client

Nokia Inc. TX

CALIBRATION C	ERTIFICAT	E			
Object(s)	ET3DV6 - SN:1	504			
Calibration procedure(s)	QA CAL-01.v2 Calibration procedure for dosimetric E-field probes				
Calibration date:	December 18, 2	003			
Condition of the calibrated item	In Tolerance (ad	ccording 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)					
Mandal Truca	10.4				
Model Type Power meter EPM E4419B	ID # GB41293874	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration		
Power sensor E4412A	MY41495277	2-Apr-03 (METAS, No 252-0250) 2-Apr-03 (METAS, No 252-0250)	Apr-04 Apr-04		
Reference 20 dB Attenuator	SN: 5086 (20b)	3-Apr-03 (METAS, 10 232-0230)	Apr-04 Apr-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		
Calibrated by:	Name Nico Vetterli	Function Technician	Signature		
			N. Venuer		
Approved by:	Katja Pokovic	Laboratory Director	plais Katys		
			Date issued: December 18, 2003		
This calibration certificate is issued Calibration Laboratory of Schmid &		n until the accreditation process (based on ISO/IEC s completed.	2 17025 International Standard) for		

DASY - Parameters of Probe: ET3DV6 SN:1504

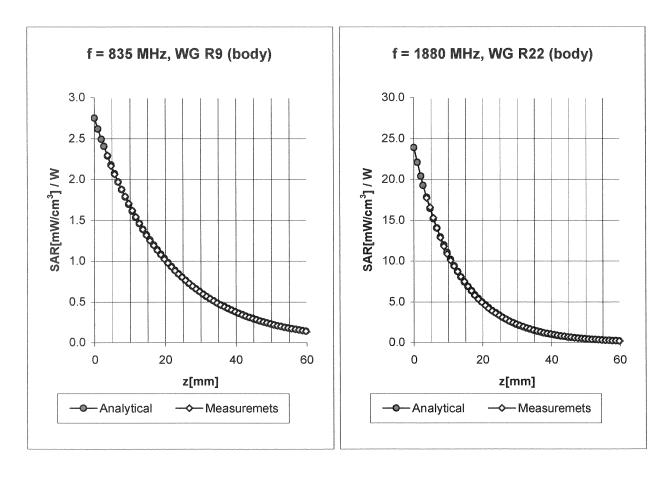
Sensitiv	vity in Free	e Space		Diode C	Compress	sion	
	NormX	2.20	μV/(V/m) ²		DCP X	93	mV
	NormY		$\mu V/(V/m)^2$		DCP Y	93	mV
	NormZ		$\mu V/(V/m)^2$		DCP Z	93	mV
•	e, e ragone	<u>.</u>					
Sensitiv	ity in Lise	sue Simi	ulating Liquid				
Head		MHz	ε <mark>r = 41.5 ± 5%</mark>				
Valid for f=	750-950 MHz	with Head T	issue Simulating Liquid	according to	EN 50361, P	1528-200X	
	ConvF X	6.2	± 9.5% (k=2)		Boundary e	effect:	
	ConvF Y	6.2	2 ± 9.5% (k=2)		Alpha	0.35	
	ConvF Z	6.2	± 9.5% (k=2)		Depth	2.67	
Head	1880	MHz	ε _r = 40.0 ± 5%	σ=	1.40 ± 5%	mho/m	
Valid for f=	1800-2000 MH	Iz with Head	Tissue Simulating Liqu	id according	to EN 50361	, P1528-200	x
	ConvF X	5.0	± 9.5% (k=2)		Boundary e	effect:	
	ConvF Y	5.0	± 9.5% (k=2)		Alpha	0.53	
	ConvF Z	5.0	± 9.5% (k=2)		Depth	2.49	
Bounda	ary Effect						
Head	835	MHz	Typical SAR gradie	nt: 5 % per I	mm		
	Probe Tip to	o Boundary			1 mm	2 mm	
	•		orrection Algorithm		10.1	5.8	
	SAR _{be} [%]	With Corre	ection Algorithm		0.4	0.6	
Head	1880	MHz	Typical SAR gradie	nt: 10 % per	mm		
	Probe Tip to	o Boundary			1 mm	2 mm	
	SAR _{be} [%]	Without C	orrection Algorithm		13.4	8.9	
	SAR _{be} [%]	With Corre	ection Algorithm		0.2	0.2	
Sensor	Offset						
	Probe Tip to	o Sensor C	enter	2.7		mm	
	Optical Sur			1.4 ± 0.2) 	mm	



Conversion Factor Assessment

Head	835 MHz		ε _r = 41.5 ± 5%	σ = 0 .	.90 ± 5% mho/m	
Valid for f	=750-950 MHz with He	ead Tis	ssue Simulating Liquid acc	cording to EN	N 50361, P1528-200>	(
	ConvF X	6.2	± 9.5% (k=2)	В	oundary effect:	
	ConvF Y	6.2	± 9.5% (k=2)	A	lpha 0.3	35
	ConvF Z	6.2	± 9.5% (k=2)	D	epth 2.6	}7
Head	1880 MHz		ε _r = 40.0 ± 5%	σ = 1	.40 ± 5% mho/m	
Valid for f=1800-2000 MHz with Head Tissue Simulating Liquid according to EN 50361, P1528-200X						
	ConvF X	5.0	± 9.5% (k=2)	В	oundary effect:	

ConvF X	5.0 ± 9.5% (k=2)	Boundary effec	t:
ConvF Y	5.0 ± 9.5% (k=2)	Alpha	0.53
ConvF Z	5.0 ± 9.5% (k=2)	Depth	2.49



Conversion Factor Assessment

Body	835 MHz		ε _r = 55.2 ± 5%	σ=	0.97 ± 5% mho	/m
Valid for f=	=750-950 MHz with Bo	ody Ti	ssue Simulating Liquid accord	ling to	OET 65 Suppl. C	
	ConvF X	6.2	± 9.5% (k=2)		Boundary effect	t:
	ConvF Y	6.2	± 9.5% (k=2)		Alpha	0.42
	ConvF Z	6.2	± 9.5% (k=2)		Depth	2.41
Body	1880 MHz		ε _r = 53.3 ± 5%	σ=	1.52 ± 5% mho	/m
Valid for f=	=1800-2000 MHz with	Body	Tissue Simulating Liquid acco	ording	to OET 65 Suppl.	С

oay

ConvF X	4.5 ± 9.5% (k=2)	Boundary effec	t:
ConvF Y	4.5 ± 9.5% (k=2)	Alpha	0.65
ConvF Z	4.5 ± 9.5% (k=2)	Depth	2.47





APPENDIX D: RELEVANT PAGES FROM DIPOLE VALIDATION KIT REPORT(S)

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

Client

Nokia Inc. Texas

bject(s)	D835V2 - SN	·486	
<i>Jeo(</i> (3)	2000/2-01	.700	
alibration procedure(s)	QA CAL-05.v		
	Calibration p	rocedure for dipole validation kits	
alibration date:	May 26, 2003	8	
ondition of the calibrated item	In Tolerance	(according to the specific calibrati	ion document)
his calibration statement docum ternational standard.	ents traceability of M&TE	used in the calibration procedures and ∞ nformity o	f the procedures with the ISO/IEC 17(
Il calibrations have been conduc	ted in the closed laborate	ory facility: environment temperature 22 +/- 2 degrees	Celeius and humidity $< 75\%$
			S Celsius and Huminity ~ 75%,
alibration Equipment used (M&			o ocisius and numarily < 75%.
alibration Equipment used (M& ⁻		Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
alibration Equipment used (M& ⁻ odel Type	TE critical for calibration)		
alibration Equipment used (M& odel Type F generator R&S SML-03	TE critical for calibration)	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
alibration Equipment used (M& ⁻ odel Type F generator R&S SML-03 ower sensor HP 8481A	TE critical for calibration) ID # 100698	Cal Date (Calibrated by, Certificate No.) 27-Mar-2002 (R&S, No. 20-92389)	Scheduled Calibration In house check: Mar-05
alibration Equipment used (M& ⁻ odel Type F generator R&S SML-03 ower sensor HP 8481A ower sensor HP 8481A	TE critical for calibration) ID # 100698 MY41092317	Cal Date (Calibrated by, Certificate No.) 27-Mar-2002 (R&S, No. 20-92389) 18-Oct-02 (Agilent, No. 20021018)	Scheduled Calibration In house check: Mar-05 Oct-04
	TE critical for calibration) ID # 100698 MY41092317 US37292783	Cal Date (Calibrated by, Certificate No.) 27-Mar-2002 (R&S, No. 20-92389) 18-Oct-02 (Agilent, No. 20021018) 30-Oct-02 (METAS, No. 252-0236)	Scheduled Calibration In house check: Mar-05 Oct-04 Oct-03
alibration Equipment used (M& ⁻ lodel Type F generator R&S SML-03 ower sensor HP 8481A ower sensor HP 8481A ower meter EPM E442	TE critical for calibration) ID # 100698 MY41092317 US37292783 GB37480704	Cal Date (Calibrated by, Certificate No.) 27-Mar-2002 (R&S, No. 20-92389) 18-Oct-02 (Agilent, No. 20021018) 30-Oct-02 (METAS, No. 252-0236) 30-Oct-02 (METAS, No. 252-0236)	Scheduled Calibration In house check: Mar-05 Oct-04 Oct-03 Oct-03
alibration Equipment used (M& ⁻ lodel Type F generator R&S SML-03 ower sensor HP 8481A ower sensor HP 8481A ower meter EPM E442	TE critical for calibration) ID # 100698 MY41092317 US37292783 GB37480704 US38432426	Cal Date (Calibrated by, Certificate No.) 27-Mar-2002 (R&S, No. 20-92389) 18-Oct-02 (Agilent, No. 20021018) 30-Oct-02 (METAS, No. 252-0236) 30-Oct-02 (METAS, No. 252-0236) 3-May-00 (Agilent, No. 8702K064602)	Scheduled Calibration In house check: Mar-05 Oct-04 Oct-03 Oct-03 In house check: May 03
alibration Equipment used (M& ⁻ odel Type F generator R&S SML-03 ower sensor HP 8481A ower sensor HP 8481A ower meter EPM E442 etwork Analyzer HP 8753E	TE critical for calibration) ID # 100698 MY41092317 US37292783 GB37480704 US38432426 Name	Cal Date (Calibrated by, Certificate No.) 27-Mar-2002 (R&S, No. 20-92389) 18-Oct-02 (Agilent, No. 20021018) 30-Oct-02 (METAS, No. 252-0236) 30-Oct-02 (METAS, No. 252-0236) 3-May-00 (Agilent, No. 8702K064602) Function Technician	Scheduled Calibration In house check: Mar-05 Oct-04 Oct-03 Oct-03 In house check: May 03 Signature
alibration Equipment used (M& odel Type F generator R&S SML-03 ower sensor HP 8481A ower sensor HP 8481A ower meter EPM E442 etwork Analyzer HP 8753E	TE critical for calibration) ID # 100698 MY41092317 US37292783 GB37480704 US38432426 Name Judith Mueller	Cal Date (Calibrated by, Certificate No.) 27-Mar-2002 (R&S, No. 20-92389) 18-Oct-02 (Agilent, No. 20021018) 30-Oct-02 (METAS, No. 252-0236) 30-Oct-02 (METAS, No. 252-0236) 3-May-00 (Agilent, No. 8702K064602) Function Technician	Scheduled Calibration In house check: Mar-05 Oct-04 Oct-03 Oct-03 In house check: May 03

Date/Time: 05/26/03 17:23:08

Test Laboratory: SPEAG, Zurich, Switzerland File Name: <u>SN486_SN1507_HSL835_260503.da4</u>

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN486 Program: Dipole Calibration

Communication System: CW-835; Frequency: 835 MHz;Duty Cycle: 1:1 Medium: HSL 835 MHz ($\sigma = 0.89$ mho/m, $\varepsilon_r = 42.8$, $\rho = 1000$ kg/m³) Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

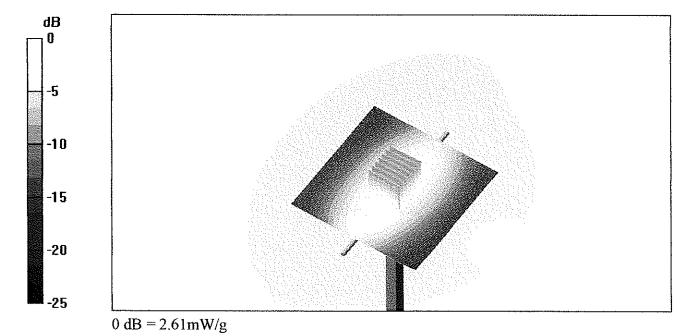
DASY4 Configuration:

- Probe: ET3DV6 SN1507; ConvF(6.7, 6.7, 6.7); Calibrated: 1/18/2003
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 SN411; Calibrated: 1/16/2003
- Phantom: SAM with CRP TP1006; Type: SAM 4.0; Serial: TP:1006
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Pin = 250 mW; d = 15 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm Reference Value = 56.8 V/m Power Drift = -0.004 dB Maximum value of SAR = 2.61 mW/g

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

Peak SAR (extrapolated) = 3.56 W/kgSAR(1 g) = 2.45 mW/g; SAR(10 g) = 1.6 mW/gReference Value = 56.8 V/mPower Drift = -0.004 dBMaximum value of SAR = 2.61 mW/g



Client Nokia Inc., Texas

CALIBRATION CERTIFICATE D835V2 - SN:486 Object(s) QA CAL-05.v2 Calibration procedure(s) Calibration procedure for dipole validation kits October 2, 2003 Calibration date: 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 sensor HP 8481A MY41092317 18-Oct-02 (Agilent, No. 20021018) Oct-04 Power sensor HP 8481A US37292783 30-Oct-02 (METAS, No. 252-0236) Oct-03 Power meter EPM E442 GB37480704 30-Oct-02 (METAS, No. 252-0236) Oct-03 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 (Agilent, No. 24BR1033101) In house check: Oct 03

	Name	Function	Signature
Calibrated by:	Judith Mueller	Technician	pruttik
Approved by:	Katja Pokovic	Laboratory Director	Polici Reto
			Date issued: October 9, 2003
	s issued as an intermediate solution ι Schmid & Partner Engineering AG is c	i (SO/IEC 17025 International Standard) for

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN486

Communication System: CW-835; Frequency: 835 MHz;Duty Cycle: 1:1 Medium: Muscle 835 MHz ($\sigma = 0.98$ mho/m, $\varepsilon_r = 54.98$, $\rho = 1000$ kg/m³) Phantom section: Flat Section Measurement Standard: DASY4 (High Precision Assessment)

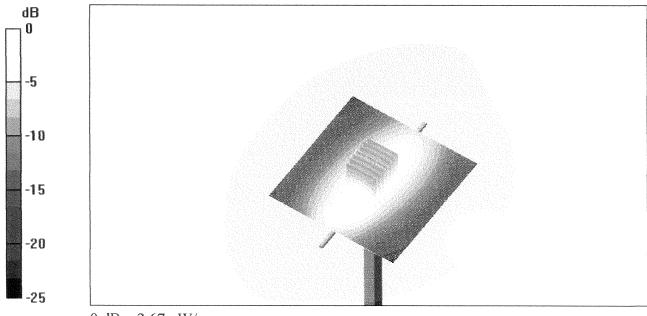
DASY4 Configuration:

- Probe: ET3DV6 SN1507; ConvF(6.3, 6.3, 6.3); Calibrated: 1/18/2003
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 SN411; Calibrated: 1/16/2003
- Phantom: SAM with CRP TP1006; Type: SAM 4.0; Serial: TP:1006
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.8 Build 60

Pin = 250 mW; d = 15 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm Reference Value = 54.4 V/m Power Drift = 0.003 dB Maximum value of SAR = 2.66 mW/g

Pin = 250 mW; d = 15 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mmPeak SAR (extrapolated) = 3.57 W/kg

Peak SAR (extrapolated) = 3.57 W/kgSAR(1 g) = 2.47 mW/g; SAR(10 g) = 1.63 mW/gReference Value = 54.4 V/mPower Drift = 0.003 dBMaximum value of SAR = 2.67 mW/g



 $0 \, dB = 2.67 mW/g$

Client

Nokia Inc. Texas

CALIBRATION	CERTIFICA	TE	
Object(s)	D1900V2 - SI	N :504	
Calibration procedure(s)	QA CAL-05.v. Calibration pr	2 ocedure for dipole validation kits	
Calibration date:	July 16, 2003		
Condition of the calibrated item	In Tolerance I	according to the specific calibration	on document)
This calibration statement docume 17025 international standard.	ents traceability of M&TE	e used in the calibration procedures and conformity	of the procedures with the ISO/IEC
All calibrations have been conduct	ted in the closed laborate	ory facility: environment temperature 22 +/- 2 degre	es Celsius and humidity < 75%.
Calibration Equipment used (M&T	E critical for calibration)		
Model Type	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
RF generator R&S SML-03	100698	27-Mar-2002 (R&S, No. 20-92389)	In house check: Mar-05
Power sensor HP 8481A	MY41092317	18-Oct-02 (Agilent, No. 20021018)	Oct-04
Power sensor HP 8481A	US37292783	30-Oct-02 (METAS, No. 252-0236)	Oct-03
Power meter EPM E442	GB37480704	30-Oct-02 (METAS, No. 252-0236)	Oct-03
Network Analyzer HP 8753E	US37390585	18-Oct-01 (Agilent, No. 24BR1033101)	In house check: Oct 03
	Name	Function	Signature
Calibrated by:	Judith Mueller		MUTUR
Approved by:	Katja Pokovic	Laboratory Director	John Hat-
			Date issued: July 17, 2003
This calibration certificate is issued Calibration Laboratory of Schmid		ution until the accreditation process (based on ISO/I G is completed.	EC 17025 International Standard) for

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Date/Time: 07/16/03 17:31:56

Test Laboratory: SPEAG, Zurich, Switzerland File Name: <u>SN504_SN1507_HSL1900_160703.da4</u>

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN504 Program: Dipole Calibration

Communication System: CW-1900; Frequency: 1900 MHz; Duty Cycle: 1:1 Medium: HSL 1900 MHz ($\sigma = 1.46$ mho/m, $\epsilon_r = 40.17$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section Measurement Standard: DASY4 (High Precision Assessment)

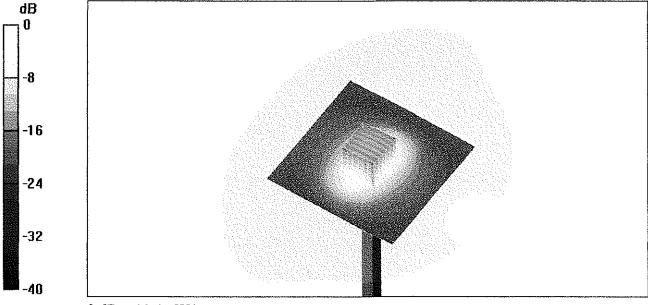
DASY4 Configuration:

- Probe: ET3DV6 SN1507; ConvF(5.2, 5.2, 5.2); Calibrated: 1/18/2003
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 SN411; Calibrated: 1/16/2003
- Phantom: SAM with CRP TP1006; Type: SAM 4.0; Serial: TP:1006
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Pin = 250 mW; d = 10 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm Reference Value = 93.5 V/m Power Drift = -0.02 dB Maximum value of SAR = 11.4 mW/g

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

Peak SAR (extrapolated) = 17.6 W/kg SAR(1 g) = 10.2 mW/g; SAR(10 g) = 5.29 mW/g Reference Value = 93.5 V/m Power Drift = -0.02 dB Maximum value of SAR = 11.4 mW/g



 $0 \, dB = 11.4 \, mW/g$

Date/Time: 07/16/03 11:37:18

Test Laboratory: SPEAG, Zurich, Switzerland File Name: <u>SN504_SN1507_M1900_160703.da4</u>

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN504 Program: Dipole Calibration

Communication System: CW-1900; Frequency: 1900 MHz;Duty Cycle: 1:1 Medium: Muscle 1900 MHz ($\sigma = 1.6$ mho/m, $\varepsilon_r = 50.87$, $\rho = 1000$ kg/m³) Phantom section: Flat Section Measurement Standard: DASY4 (High Precision Assessment)

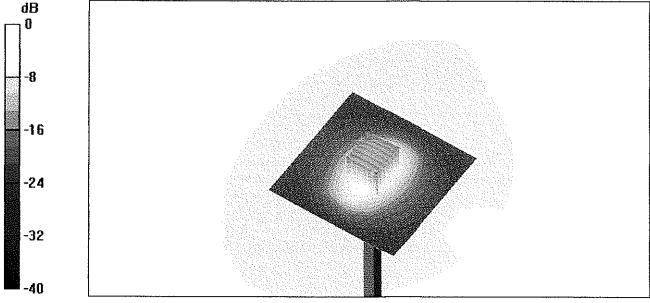
DASY4 Configuration:

- Probe: ET3DV6 SN1507; ConvF(4.8, 4.8, 4.8); Calibrated: 1/18/2003
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 SN411; Calibrated: 1/16/2003
- Phantom: SAM with CRP TP1006; Type: SAM 4.0; Serial: TP:1006
- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Pin = 250 mW; d = 10 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm Reference Value = 92 V/m Power Drift = 0.02 dB Maximum value of SAR = 11.7 mW/g

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm Peak SAR (extrapolated) = 18.2 W/kg

SAR (extrapolated) = 18.2 W/kgSAR(1 g) = 10.5 mW/g; SAR(10 g) = 5.45 mW/gReference Value = 92 V/mPower Drift = 0.02 dBMaximum value of SAR = 11.8 mW/g



 $0 \, dB = 11.8 \, mW/g$