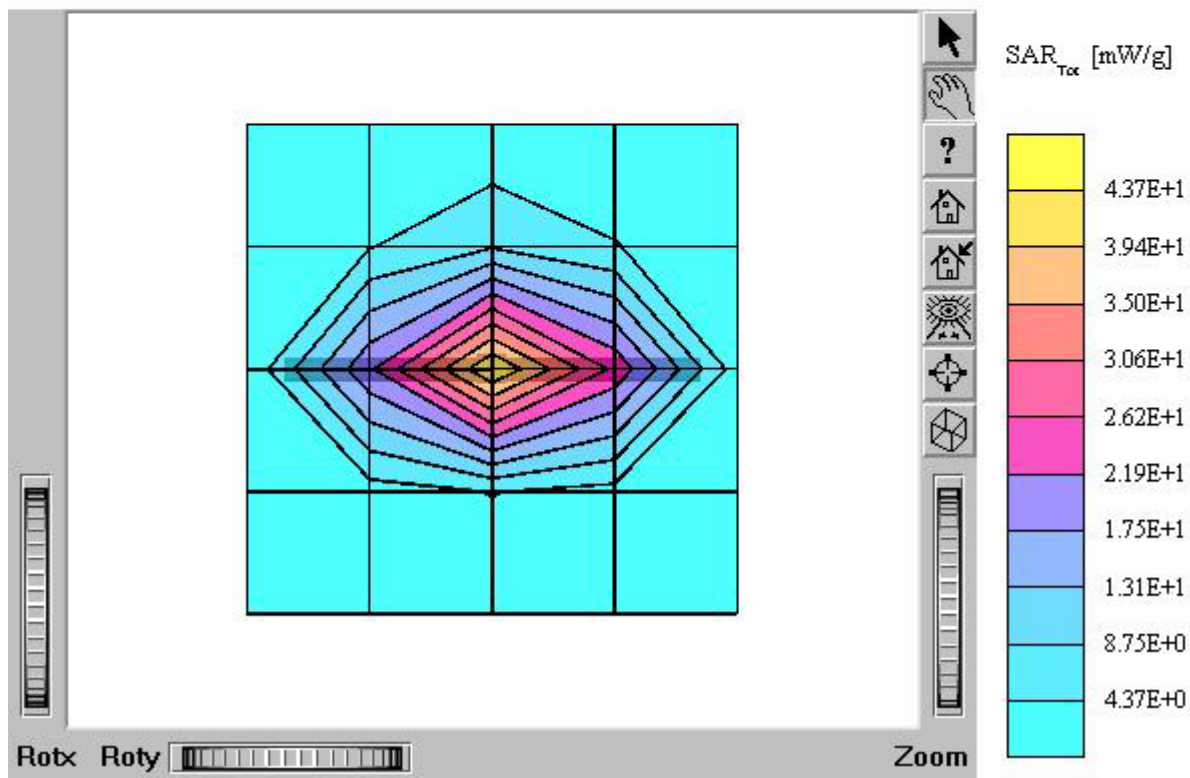


Validation Data (1900MHz Brain)

Dipole 1900 MHz

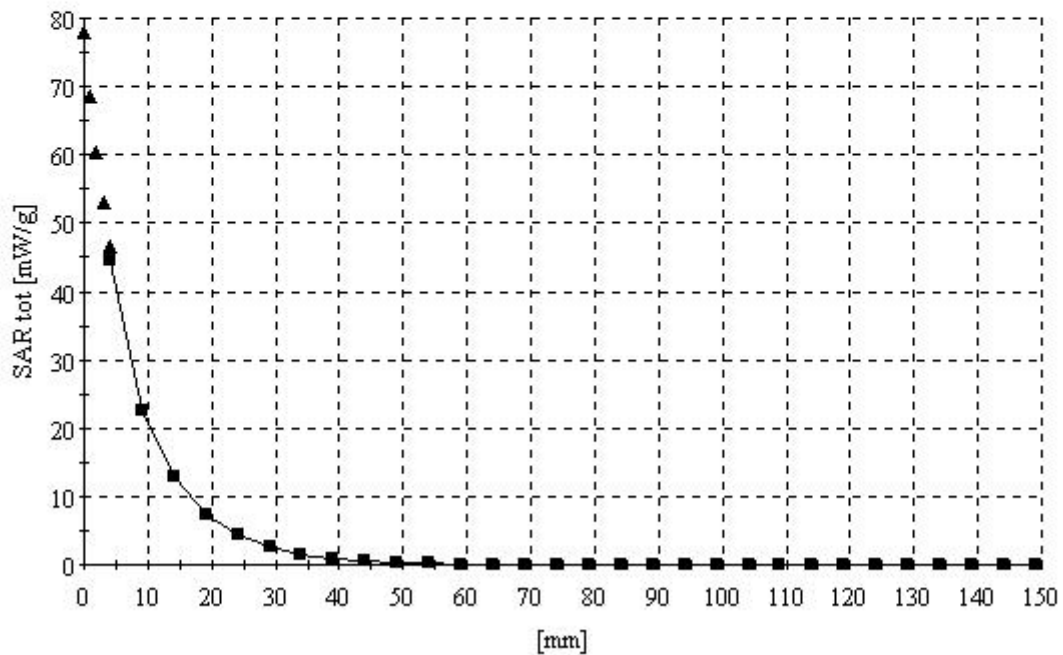
SAM II Phantom; Flat Section; Position: (90°,90°); Frequency: 1900 MHz
 Probe: ET3DV6 - SN1609; ConvF(5.34,5.34,5.34); Crest factor: 1.0; Brain 1900 MHz: $s = 1.42$
 $\text{mho/m } \epsilon_r = 39.6$ $\rho = 1.00 \text{ g/cm}^3$
 Cubes (2): SAR (1g): $41.8 \text{ mW/g} \pm 0.08 \text{ dB}$, SAR (10g): $21.2 \text{ mW/g} \pm 0.10 \text{ dB}$
 Coarse: $D_x = 20.0$, $D_y = 20.0$, $D_z = 10.0$
 Powerdrift: 0.01 dB
 Comment:
 1900 MHz Brain Dipole Validation (D1900V2/ S.N: 5d032)
 Antenna Input Power : 30 dBm (1W)
 HCT Co., Ltd. Brain Tissue Simulating Liquid
 Liquid Temperature : 21.3°C
 Date Tested : November 30, 2004



Dipole 1900 MHz

SAM II Phantom: Section: Position: ; Frequency: 1900 MHz
Probe: ET3DV6 - SN1609; ConvF(5.34,5.34,5.34); Crest factor: 1.0; Brain 1900 MHz: $s = 1.42$
 $\rho = 39.6$ $r = 1.00$ g/cm³
.
Z-Axis: Dx = 0.0, Dy = 0.0, Dz = 5.0

Comment:
1900 MHz Brain Dipole Validation (D1900V2/ S.N: 5d032)
Antenna Input Power : 30 dBm (1W)
HCT Co., Ltd. Brain Tissue Simulating Liquid
Liquid Temperature : 21.3 °C
Date Tested : November 30, 2004



■ Dielectric Parameter (1900MHz Brain)

Title : AXW-T1900

SubTitle : PCS Brain

November 30, 2004 09:16 AM

Frequency	e'	e''
1.800000000 GHz	39.9264	13.0270
1.806666667 GHz	39.8819	13.0685
1.813333333 GHz	39.8362	13.1018
1.820000000 GHz	39.8187	13.1601
1.826666667 GHz	39.8091	13.1861
1.833333333 GHz	39.8050	13.2540
1.840000000 GHz	39.8343	13.2918
1.846666667 GHz	39.8297	13.3566
1.853333333 GHz	39.8204	13.3789
1.860000000 GHz	39.8216	13.3885
1.866666667 GHz	39.7963	13.4267
1.873333333 GHz	39.8136	13.4080
1.880000000 GHz	39.7641	13.4346
1.886666667 GHz	39.6987	13.4446
1.893333333 GHz	39.6435	13.4275
1.900000000 GHz	39.5547	13.4084
1.906666667 GHz	39.4897	13.4162
1.913333333 GHz	39.4176	13.4258
1.920000000 GHz	39.3461	13.4354
1.926666667 GHz	39.3045	13.4673
1.933333333 GHz	39.2502	13.5016
1.940000000 GHz	39.2134	13.5572
1.946666667 GHz	39.1801	13.5899
1.953333333 GHz	39.1770	13.6589
1.960000000 GHz	39.1984	13.6970

■ Dielectric Parameter (1900MHz Body)

Title: AXW-T1900



SubTitle: PCS Body

November 30, 2004 01:41 PM

Frequency	e'	e''
1.700000000 GHz	53.9452	14.2514
1.710000000 GHz	53.8889	14.3086
1.720000000 GHz	53.8763	14.3037
1.730000000 GHz	53.8526	14.3453
1.740000000 GHz	53.7959	14.3628
1.750000000 GHz	53.8045	14.3588
1.760000000 GHz	53.7601	14.4035
1.770000000 GHz	53.6953	14.4216
1.780000000 GHz	53.6656	14.4395
1.790000000 GHz	53.6252	14.4854
1.800000000 GHz	53.5782	14.5337
1.810000000 GHz	53.5412	14.5699
1.820000000 GHz	53.5032	14.6109
1.830000000 GHz	53.4788	14.6439
1.840000000 GHz	53.4643	14.6940
1.850000000 GHz	53.4341	14.6995
1.860000000 GHz	53.4375	14.7484
1.870000000 GHz	53.3859	14.8031
1.880000000 GHz	53.2979	14.8436
1.890000000 GHz	53.2525	14.8681
1.900000000 GHz	53.2126	14.8806
1.910000000 GHz	53.1810	14.9079
1.920000000 GHz	53.1274	14.9450
1.930000000 GHz	53.0833	14.9628
1.940000000 GHz	53.0589	14.9955
1.950000000 GHz	53.0415	15.0220

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

Client **H-CT (Dymstec)**

CALIBRATION CERTIFICATE			
Object(s)	D1900V2 - SN:5d032		
Calibration procedure(s)	QA CAL-05.v2 Calibration procedure for dipole validation kits		
Calibration date:	April 26, 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
Calibrated by:	Name Judith Mueller	Function Technician	Signature 
Approved by:	Name Katja Pokovic	Function Laboratory Director	Signature 
Date issued: April 27, 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.			

Schmid & Partner Engineering AG

s p e a g

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DASY

Dipole Validation Kit

Type: D1900V2

Serial: 5d032

Manufactured: March 17, 2003

Calibrated: April 26, 2004

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 1900 MHz:

Relative Dielectricity	40.1	$\pm 5\%$
Conductivity	1.45 mho/m	$\pm 5\%$

The DASY4 System with a dosimetric E-field probe ET3DV6 (SN:1507, Conversion factor 4.96 at 1900 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 10mm 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 $\pm 3\%$. 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 cm³ (1 g) of tissue: **40.0 mW/g $\pm 16.8\%$ (k=2)¹**

averaged over 10 cm³ (10 g) of tissue: **21.0 mW/g $\pm 16.2\%$ (k=2)¹**

¹ validation uncertainty

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN5d032

Communication System: CW-1900; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL 1900 MHz;

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.45$ mho/m; $\epsilon_r = 40.1$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(4.96, 4.96, 4.96); 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: DASYS4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Pin = 250 mW; d = 10 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm

Reference Value = 92 V/m; Power Drift = 0.0 dB

Maximum value of SAR (interpolated) = 11.4 mW/g

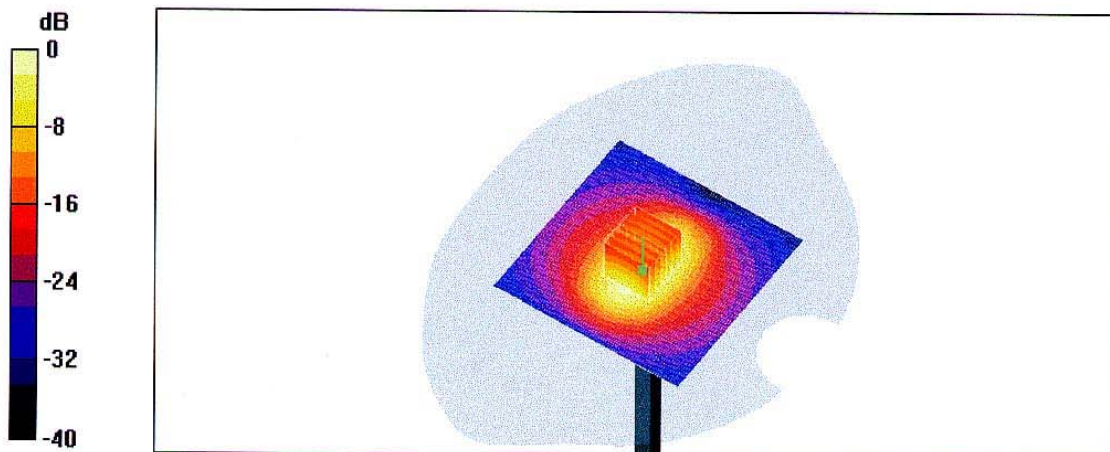
Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 92 V/m; Power Drift = 0.0 dB

Maximum value of SAR (measured) = 11.2 mW/g

Peak SAR (extrapolated) = 17.8 W/kg

SAR(1 g) = 10 mW/g; SAR(10 g) = 5.25 mW/g



0 dB = 11.2mW/g

5d032

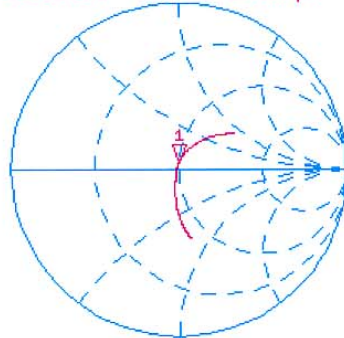
26 Apr 2004 11:14:31
[CH1] S11 1 U FS 1: 49.752 Ω 3.4277 Ω 287.13 pH 1 900.000 000 MHz

De1

Cor

Avg
16

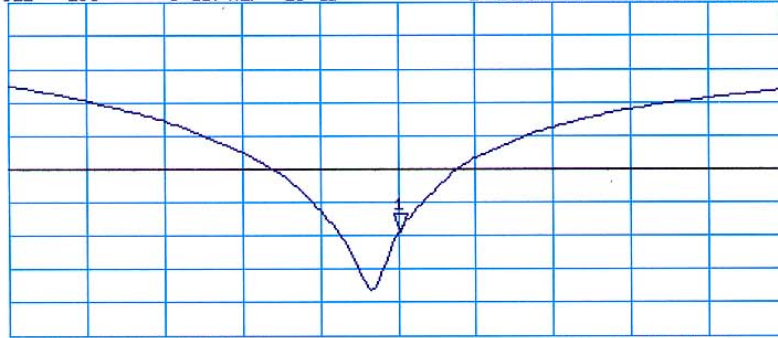
↑



CH2 S11 LOG 5 dB/REF -20 dB 1:-29.503 dB 1 900.000 000 MHz

Cor

↑



CENTER 1 900.000 000 MHz

SPAN 400.000 000 MHz