

Client **C&C (Auden)**

CALIBRATION CERTIFICATE

Object(s) **D1800V2 - SN:2d062**

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

Calibration date: **April 1, 2003**

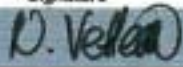

Condition of the calibrated item **In Tolerance (according to the specific calibration document)**

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	Scheduled Calibration
RF generator R&S SML-03	100698	27-Mar-2002	In house check: Mar-05
Power sensor HP 8481A	MY41092317	18-Oct-02	Oct-04
Power sensor HP 8481A	US37292783	30-Oct-02	Oct-03
Power meter EPM E442	GB37480704	30-Oct-02	Oct-03
Network Analyzer HP 8753E	US38432426	3-May-00	In house check: May 03

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

Date issued: April 2, 2003

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.

DASY

Dipole Validation Kit

Type: D1800V2

Serial: 2d062

Manufactured: January 28, 2003

Calibrated: April 1, 2003

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 1800 MHz:

Relative Dielectricity	39.2	$\pm 5\%$
Conductivity	1.36 mho/m	$\pm 5\%$

The DASY4 System with a dosimetric E-field probe ET3DV6 (SN:1507, Conversion factor 5.3 at 1800 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 holder 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 250mW $\pm 3\%$. 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:	39.2 mW/g $\pm 16.8\%$ (k=2)¹
averaged over 10 cm ³ (10 g) of tissue:	20.3 mW/g $\pm 16.2\%$ (k=2)¹

¹ validation uncertainty

Date/Time: 04/01/03 12:53:01

Test Laboratory: SPEAG, Zurich, Switzerland
File Name: SN2d062_SN1507_HSL1800_010403.da4

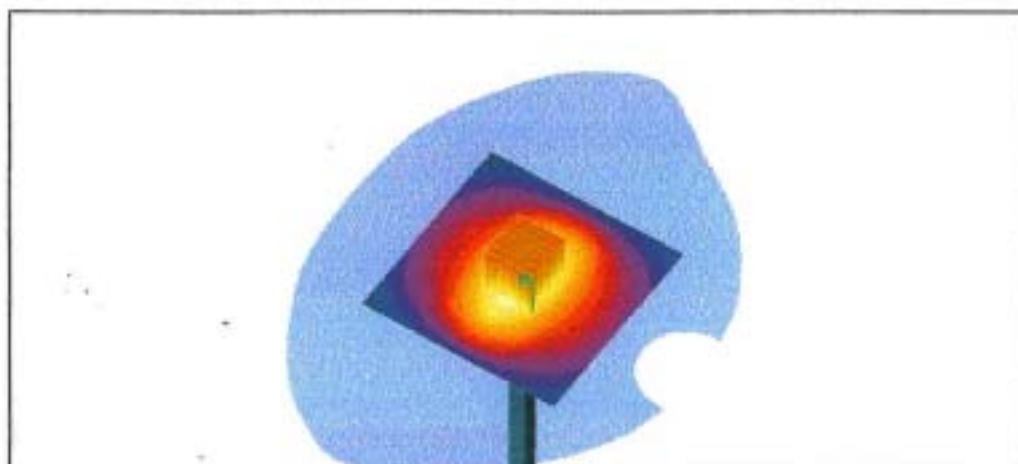
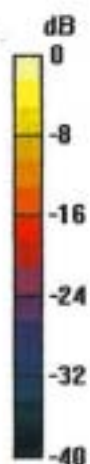
DUT: Dipole 1800 MHz; Serial: D1800V2 - SN2d062
Program: Dipole Calibration

Communication System: CW-1800; Frequency: 1800 MHz; Duty Cycle: 1:1
Medium: HSL 1800 MHz; ($\sigma = 1.36$ mho/m, $\epsilon_r = 39.22$, $\rho = 1000$ kg/m³)
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(5.3, 5.3, 5.3); 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 33; Postprocessing SW: SEMCAD, V1.6 Build 109

Pin = 250 mW; d = 10 mm/Area Scan (81x81x1); Measurement grid: dx=15mm, dy=15mm
Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0; Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93 V/m
Peak SAR = 16.2 W/kg
SAR(1 g) = 9.56 mW/g; SAR(10 g) = 5.08 mW/g
Power Drift = 0.007 dB



CH1 S11 1 U F9

1: 49.506 a -1.2878 a 73.254 pF

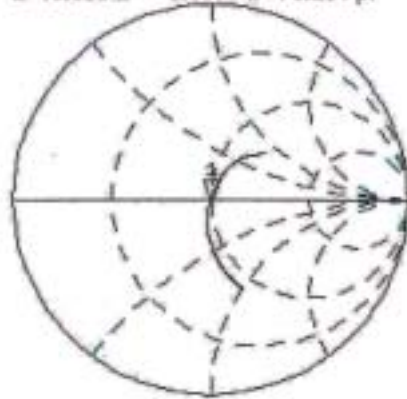
1 Apr 2003 09:07:09
1 000.000 000 MHz

2d1062

De1

PRa
Cor
Avg
15

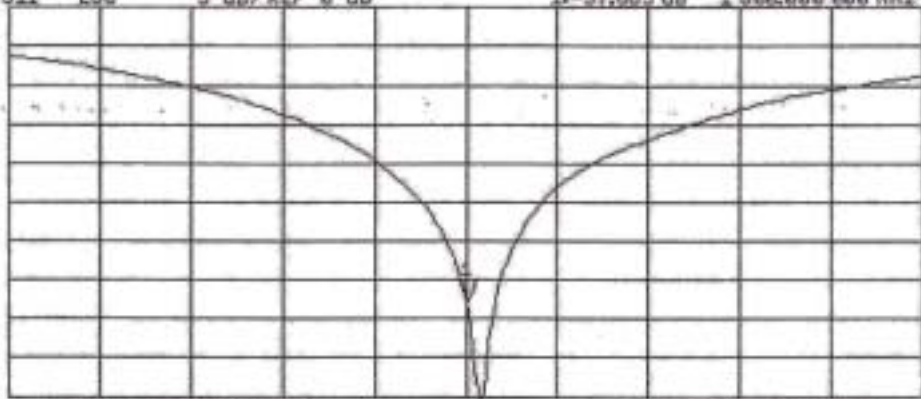
↑



CH2 S11 LOG 5 dB/REF 0 dB 1: -37.685 dB 1 000.000 000 MHz

PRa
Cor

↑



START 1 000.000 000 MHz

STOP 2 000.000 000 MHz