This document was generated in response to a request for additional technical information by Frank Coperich in regards to the type approval of the QCP-2760. The information included is related to the two specific topics discussed in the following email received by John Forrester on September 21, 1999:

To: John Forrester, Qualcomm Inc.
From: Frank Coperich
fcoperic@fcc.gov
FCC Application Processing Branch

Re: FCC ID	J9CQCP-2760
Applicant:	Qualcomm Incorporated
Correspondence Reference Number:	9722
731 Confirmation Number:	EA94691
Date of Original E-Mail:	09/21/1999

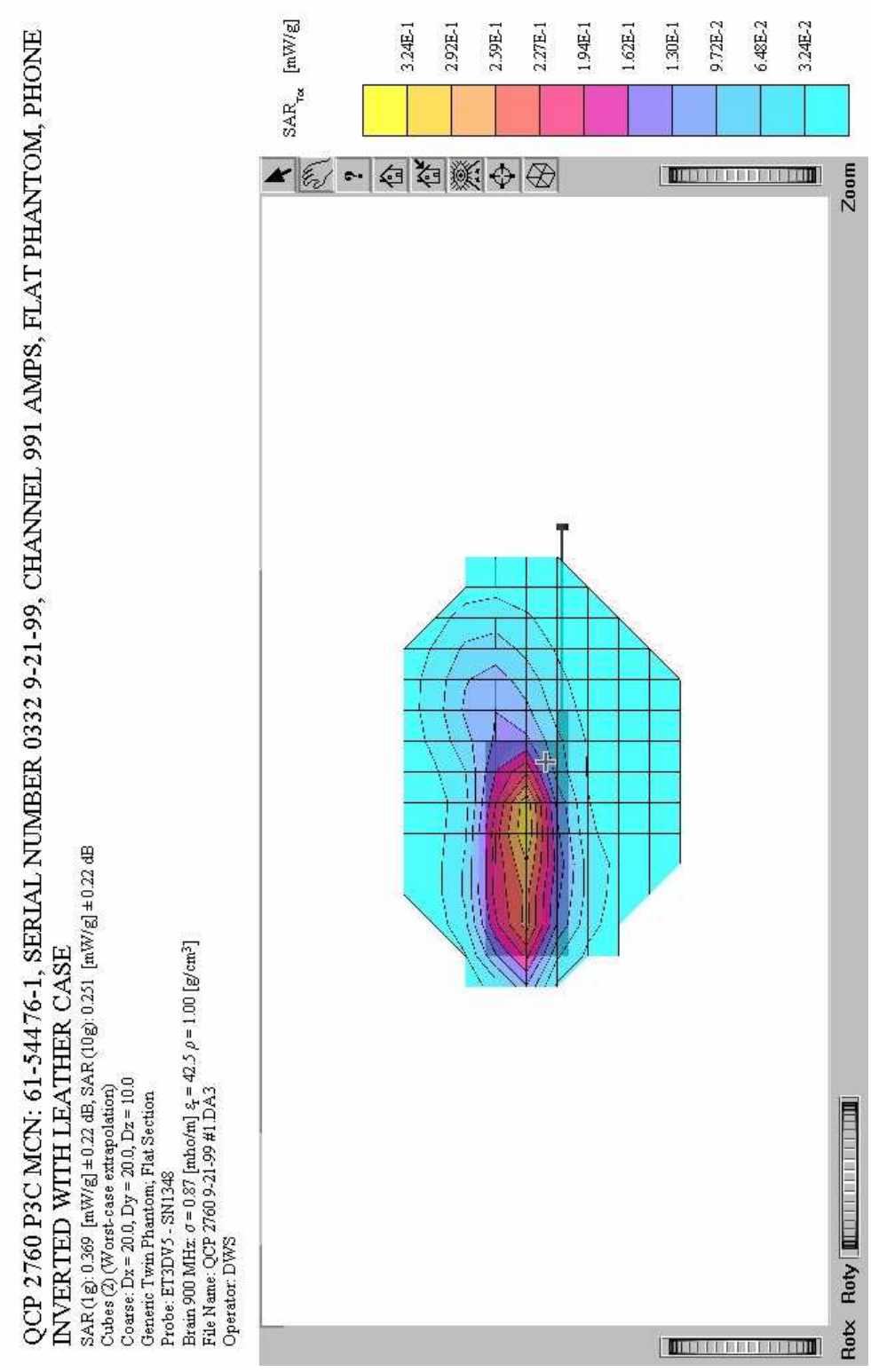
1.) Brain equivalent tissue properties were used for testing body-worn SAR. Compliance will be determined by adjusting the existing SAR numbers to the corresponding muscle equivalent tissue properties. The numbers will be somewhat higher (10-15%) but compliant. Body-mount conditions were test with the antenna retracted. With the antenna extended in body-worn conditions, it may have higher coupling to the body tissue (somewhat different than next to the side of the head where the antenna extends beyond the head). Please confirm that retracted antenna position for body-mount use, as indicated in the response, represent worst case SAR for body-mount conditions after taking into account muscle parameters and antenna extended conditions.

2.) Please indicate what power levels were the dipole validations for 900 MHz and 1800 MHz performed at and also provide original manufacturer data for the 1800 MHz dipole validation (SAR numbers, dielectric properties and power level) for comparison; only 900 MHz was submitted.

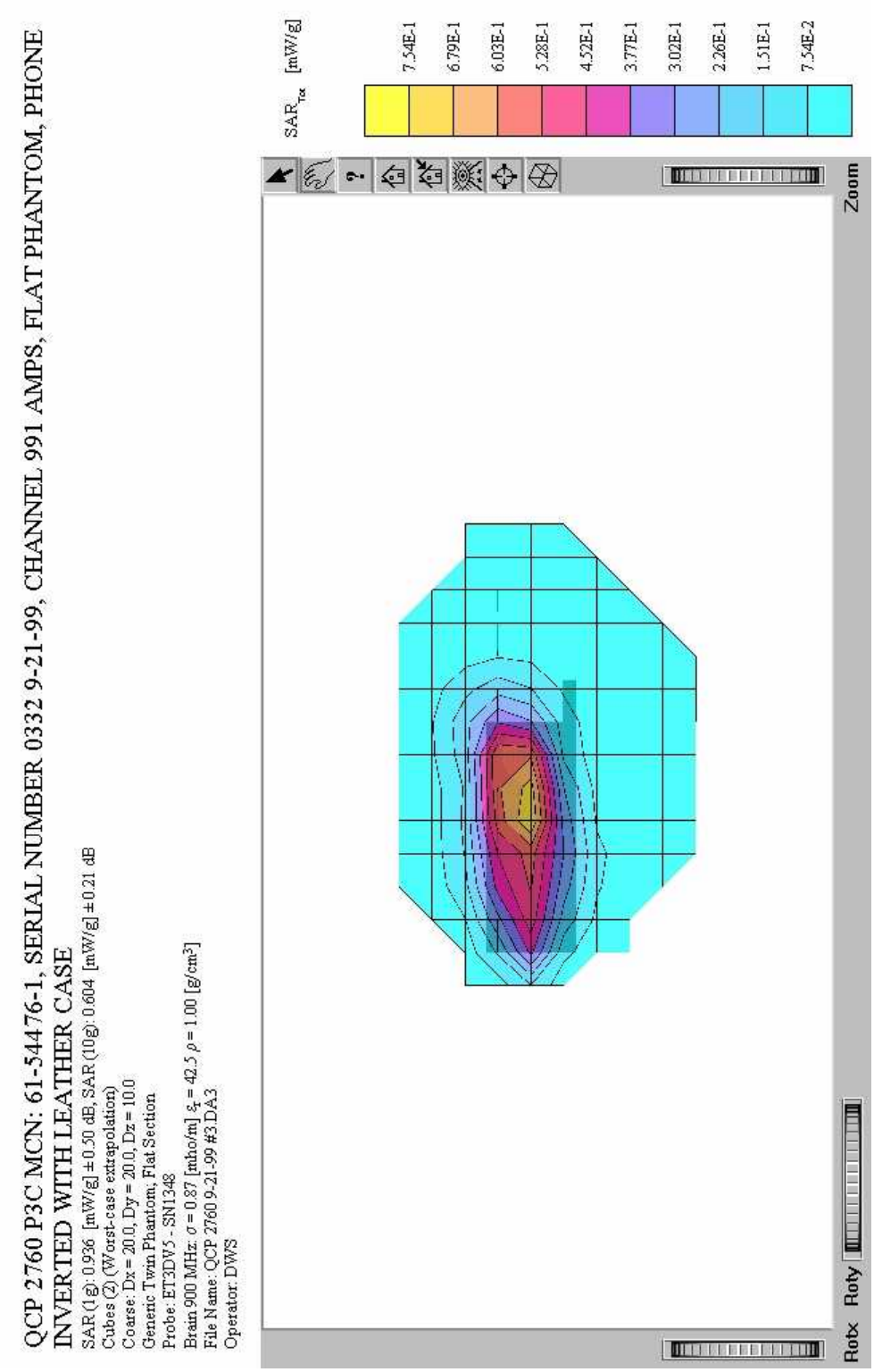
1) Confirmation that retracted antenna position is worst case SAR for body-mount conditions

The following pages contain data confirming that the antenna retracted position is the worst case position for body-mount use of the phone. The SAR test showed that with the antenna extended, the SAR level dropped to 0.369 mW/g. The phone was tested again with the antenna retracted to verify that the SAR level reported in earlier tests was repeatable. These tests confirm that the “antenna retracted” position is indeed the worst case position.

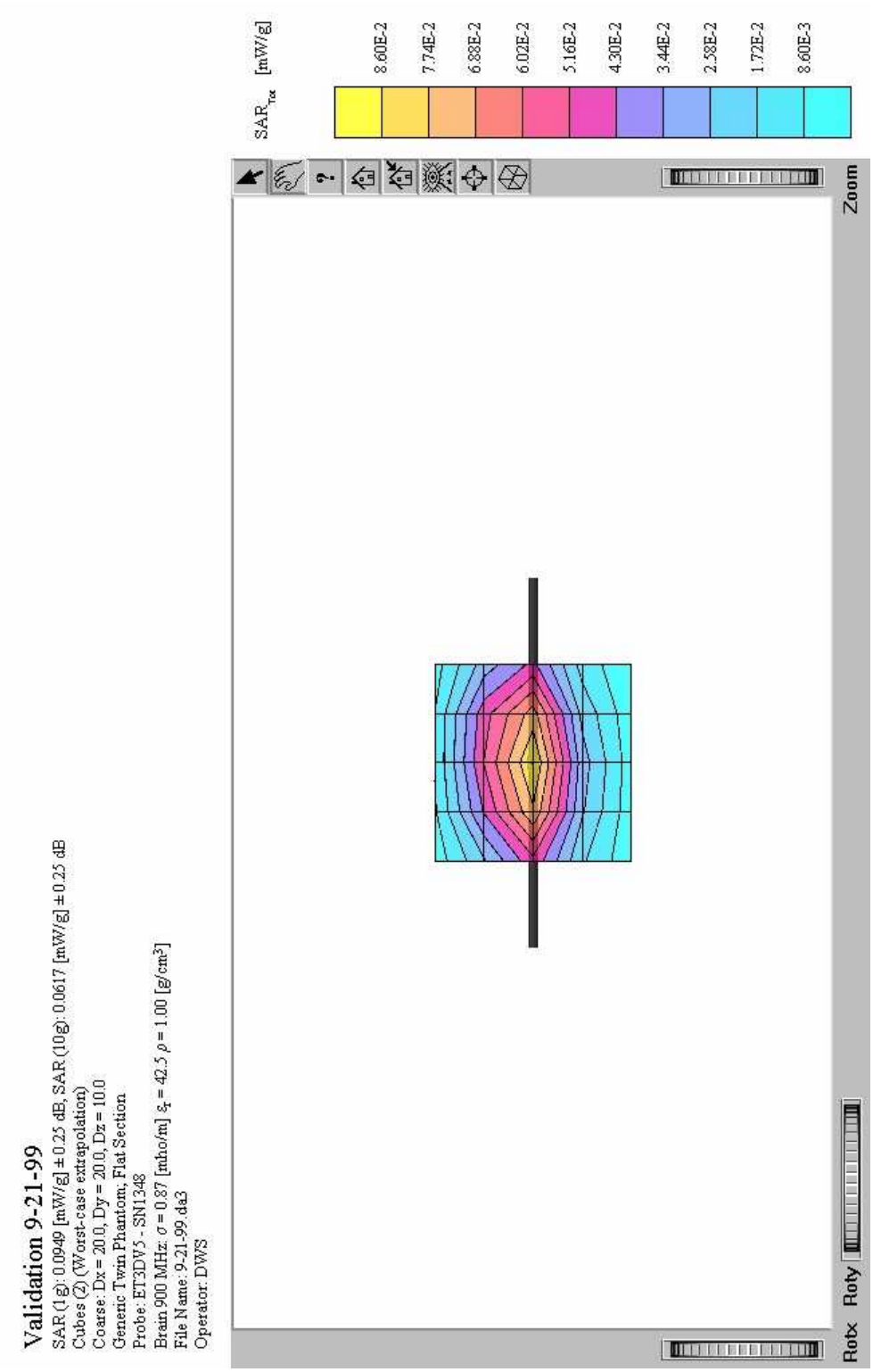
Antenna in Extended Position



Antenna in Retracted Position



Validation 9-21-99



2) Power levels for dipole validations and manufacturer data for 1800 MHz dipole.

The power level used for both 900 MHz and 1800 MHz dipole validations is 10 dBm (conducted power).

The manufacturer data for the 1800 MHz dipole is in the following pages.

Schmid & Partner
Engineering AG

Staffelstrasse 8, 8045 Zurich, Switzerland, Telefon +41 1 280 08 60, Fax +41 1 280 08 64

DASY3

Dipole Validation Kit

Type: D1800V2

Serial: 220

Manufactured: December 1997
Calibrated: January 1998

1. Measurement Conditions

The measurements were performed in the flat section of the new generic twin phantom (shell thickness 2mm) filled with brain simulating sugar solution of the following electrical parameters at 1800 MHz:

Relative Dielectricity	**39.5**	± 5%
Conductivity	**1.70 mho/m**	± 10%

The DASY3 System (Software version 3.0b) with a dosimetric E-field probe ET3DV4 (SN:1302, conversion factor 4.6) was used for the measurements.

The dipole feedpoint was positioned below the centre marking and oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10mm from dipole centre 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 5x5x7 fine cube was chosen for cube integration. Probe isotropy errors were cancelled by measuring the SAR with normal and 90° turned probe orientations and averaging. The dipole input power (forward power) was 250mW ± 3 %. The results are normalised to 1W input power.

2. SAR Measurement

Standard SAR-measurements were performed with the head phantom according to the measurement conditions described in section 1. The results (see figure) have been normalised to a dipole input power of 1W (forward power). The resulting averaged SAR-values are:

averaged over 1 cm^3 (1 g) of tissue:	**39.9 mW/g**
averaged over 10 cm^3 (10 g) of tissue:	**20.1 mW/g**

Note: If the liquid parameters for validation are slightly different from the ones used for initial calibration, the SAR-values will be different as well. The estimated sensitivities of SAR-values and penetration depths to the liquid parameters are listed in the DASY Application Note 4: 'SAR Sensitivities'.

3. Dipole Impedanc and return loss

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

Electrical delay:	**1.178 ns**	(one direction)
Transmission factor:	**0.993**	(voltage transmission, one direction)

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

Feedpoint impedance at 1800 MHz:	Re{Z} = **49.5 Ω**
	Im {Z} = **0.6 Ω**
Return Loss at 1800 MHz	**- 42.1 dB**

4. Handling

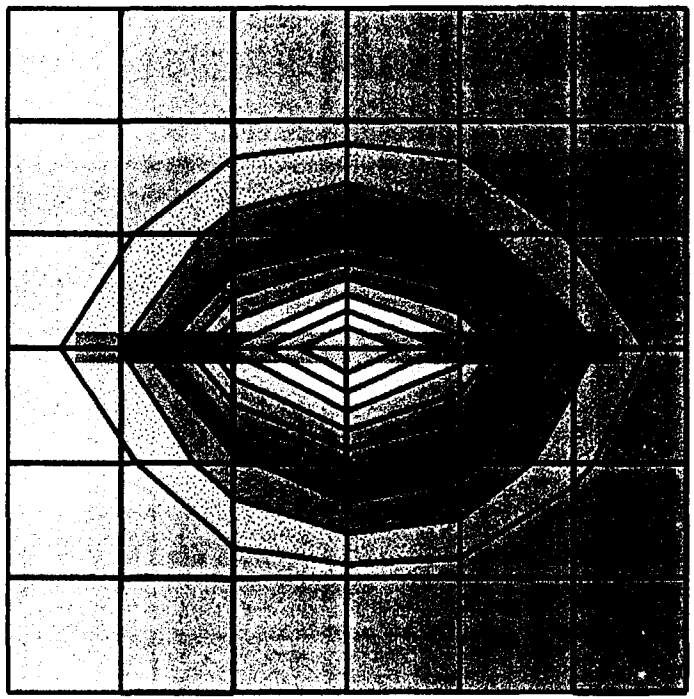
The dipole is made of standard semirigid coaxial cable. The centre conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

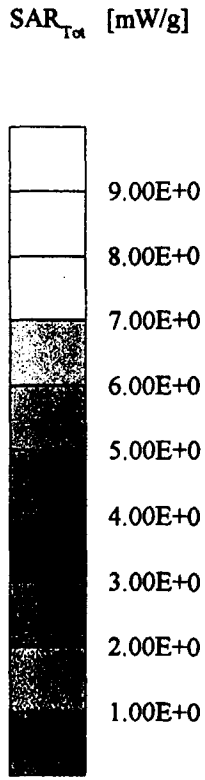
Do not apply excessive force to the dipole arms, because they might bend. If the dipole arms have to be bent back, take care to release stress to the soldered connections near the feedpoint; they might come off.

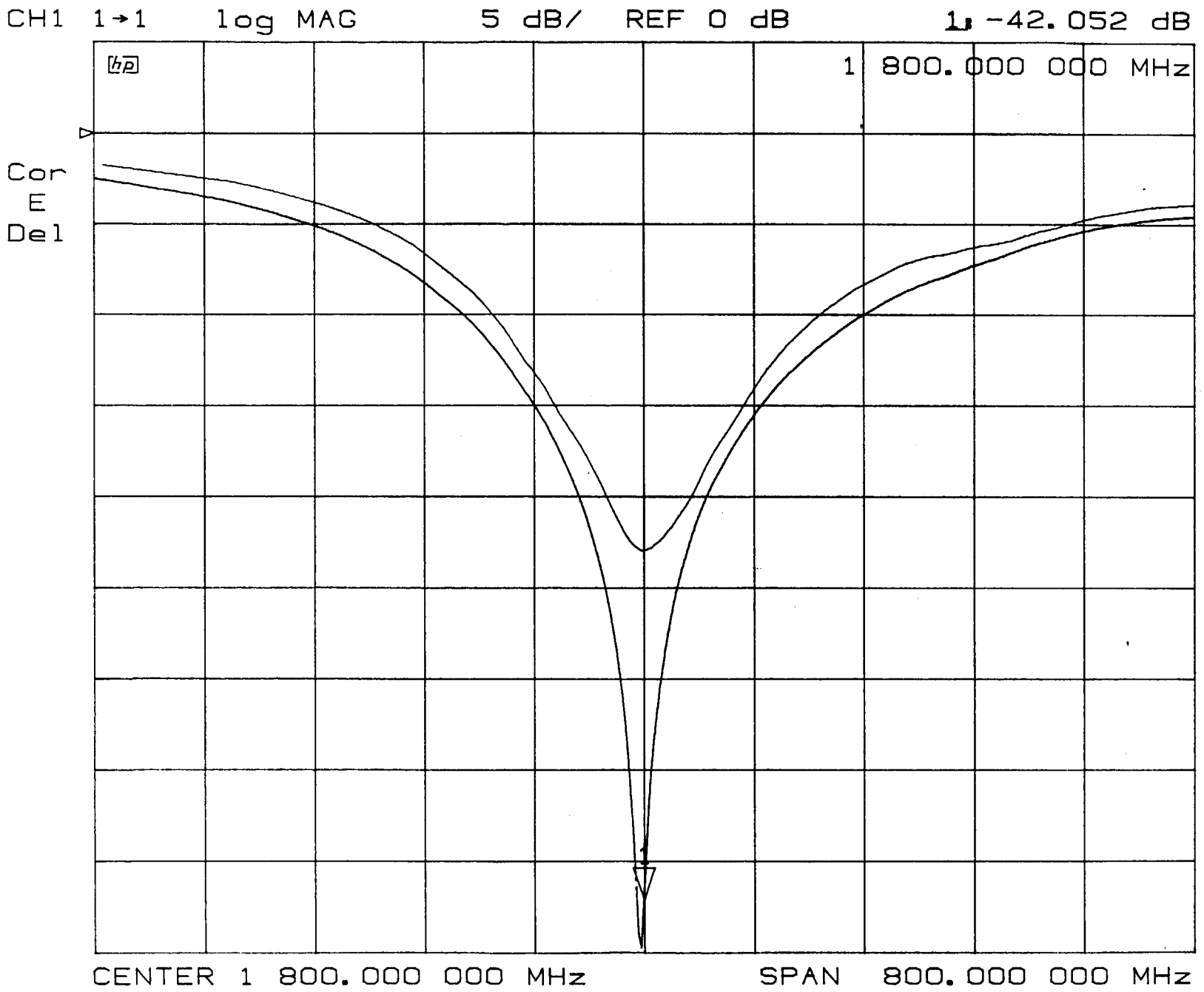
After prolonged use with 40W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

Validation Dipole D1800V2 SN:220, d = 10mm

Frequency: 1800 [MHz]; Antanna Input Power: 250 [mW]
Generic Twin Phantom; Flat Section; Grid Spacing: Dx = 15.0, Dy = 15.0, Dz = 10.0 [mm]
Probe: ET3DV5 - SN1302 DAE3; ConvF(4.60,4.60,4.60); Crest factor: 1.0; }: σ = 1.70 [mho/m] ε_r = 39.5 ρ = 1.00 [g/cm^3]
Cubes (2): Peak: 19.2 [mW/g] ± 0.06 dB, SAR (1g): 9.97 [mW/g] ± 0.05 dB, SAR (10g): 5.02 [mW/g] ± 0.04 dB, (Worst-case extrapolation)
Penetration depth: 7.4 (7.2, 8.0) [mm]
Powerdrift: 0.03 dB







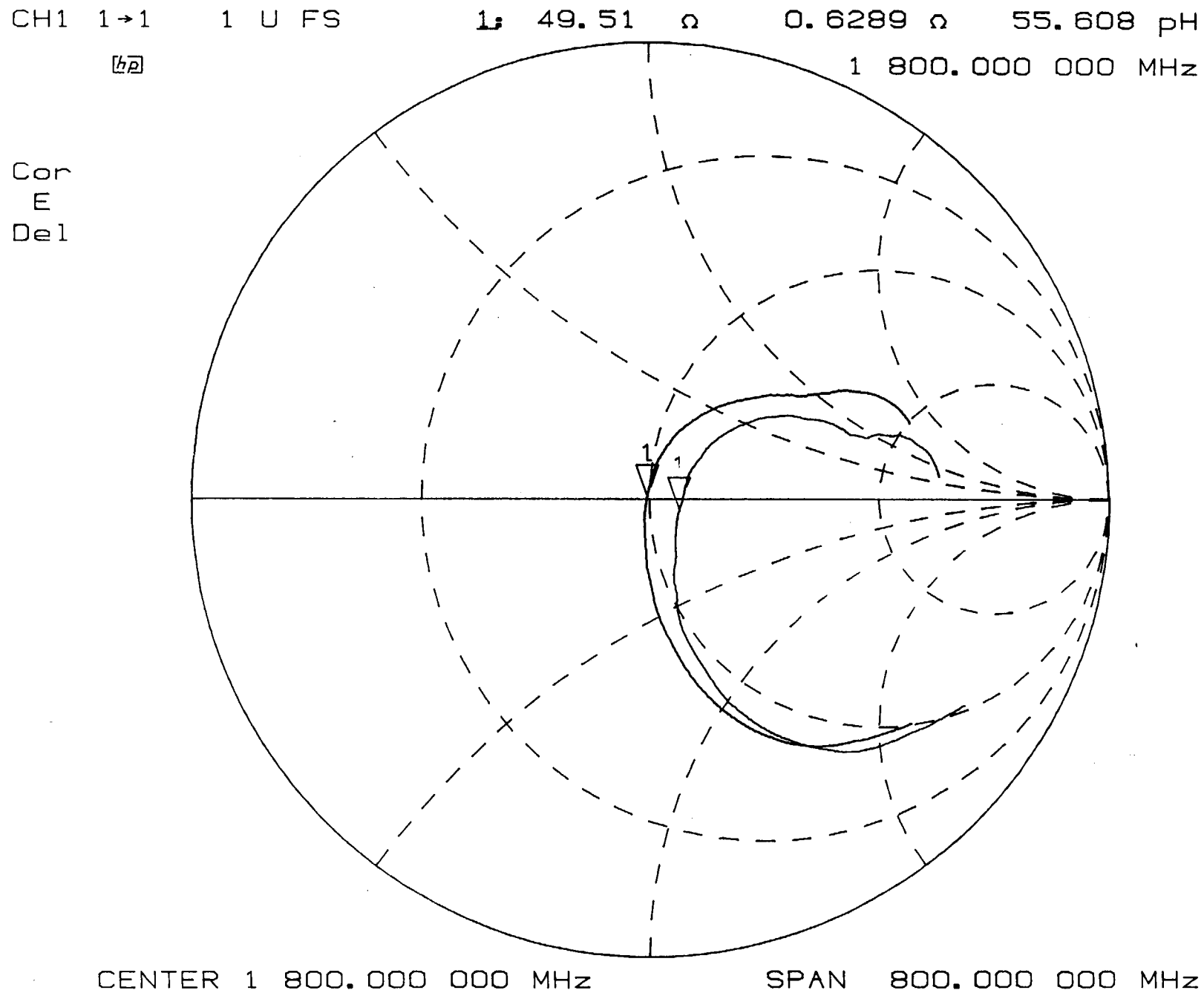
D1800V2 SN:220

S11

Flat phantom with brain simulating solution

blk: d = 10mm
red: d = 20mm

(distance from dipole center to solution)



D1800V2 SN:220

S11

Flat phantom with brain simulating solution

blk: d = 10mm
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(distance from dipole center to solution)