

Prepared (also subject responsible if other) RT/EUS/TR/X Mark Douglas		No. EUS/TR/X-99:1038	
Approved EUS/TR/X Mark Douglas	Checked MGD	Date 1999-9-07	Rev A
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SAR Assessment Measurements

Test Report

for the

Ericsson R250d

Triple Mode Telephone

Electromagnetic Near Field and Radio Frequency Dosimetry Laboratory

Research Triangle Park, NC, USA

Test Equipment:

<u>Description</u>	<u>Asset Number</u>	<u>Due Date</u>
DASY3 DAE V1	s/n 345	9911
E-field probe ETDV5	s/n 1337	0003
Dielectric probe kit HP 85070B	s/n US33020390	0002
Network analyzer HP 8752C	inv. 57248	0007
Power meter HP 437B	s/n 3125U13481	9912
Power sensor HP 8482H	s/n 3318A07097	0002
Radio Comm. Analyzer Anritsu MT8801B	s/n MB12477	9911
Dipole Validation Kit, D900V2	s/n 035	0003
Dipole Validation Kit, D1800V2	s/n 217	0001

Test approved:
Mark Douglas, Ph.D.

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1. Introduction

In this test report, Specific Absorption Rate (SAR) measurements for the Ericsson R250d portable telephone are presented. The measurements were conducted at the dosimetry laboratory at Ericsson, Inc. in Research Triangle Park, North Carolina, USA. The report describes the test procedures that were used and the test results that were recorded.

2. Device Under Test (D.U.T.)

2.1 Antenna Description

Type	40mm dual band stub	
Location	Back and left	
Dimensions	length	40 mm
	diameter at base	12 mm
Configuration	Fixed helix	

2.2 Portable Telephone Description

Device name	R250d		
Serial number	UA2011QBN1		
Certification Number	AXATR-399-A2		
Mode	AMPS	D-AMPS 800	D-AMPS 1900
Multiple Access Scheme	FDMA	TDMA	TDMA
Duty Cycle	1	1 / 3	1 / 3
Peak Power Nominal	26.0 dBm	26.0 dBm	26.0 dBm
Center Frequency	837 MHz	837 MHz	1880 MHz

3. Brain tissue simulating liquid data

The electrical data used for the brain tissue simulating liquid are given in next table:

f (MHz)	835	1800
ϵ_r	44.3	40.4
σ (S/m)	0.78	1.78

The depth of the brain tissue simulating liquid was 15.5cm. The SAR measurements were performed at a room temperature of 22.0 °C.

4. Validation

Immediately before measuring the SAR of the device under test, the measurement system was validated by measuring the SAR of a standard dipole antenna located a set distance underneath a flat phantom. The measured results are compared with expected values that are recorded in reference documents. The results are given below.

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Dipole	Output Power (W)	1 gram averaged SAR (W/kg)		difference (%)
		Expected	Measured	
D900V2	1	9.52	9.82	3.1
D1800V2	1	12.90	13.21	2.4

5. Test Results

The conducted output power and the SAR values for the low, middle and high frequencies of each mode are shown below. Results are presented for the worst-case between the right hand phantom and the left hand phantom according to [I]. The conducted output power was measured with a power meter. The SAR results shown are maximum SAR values averaged over 1 g of tissue. These SAR values are within the FCC limits for the uncontrolled RF exposure environment.

Mode	f (MHz)	Output Power (dBm)	SAR(1g) (W/kg)
AMPS	824	27.1	1.35
	837	26.2	1.25
	849	24.8	0.794
D-AMPS 800	824	26.8	0.491
	837	26.4	0.431
	849	25.7	0.256
D-AMPS 1900	1850	26.1	0.201
	1880	26.2	0.198
	1910	25.3	0.152

SAR measurement results for the Ericsson R250d telephone at maximum rated output power.

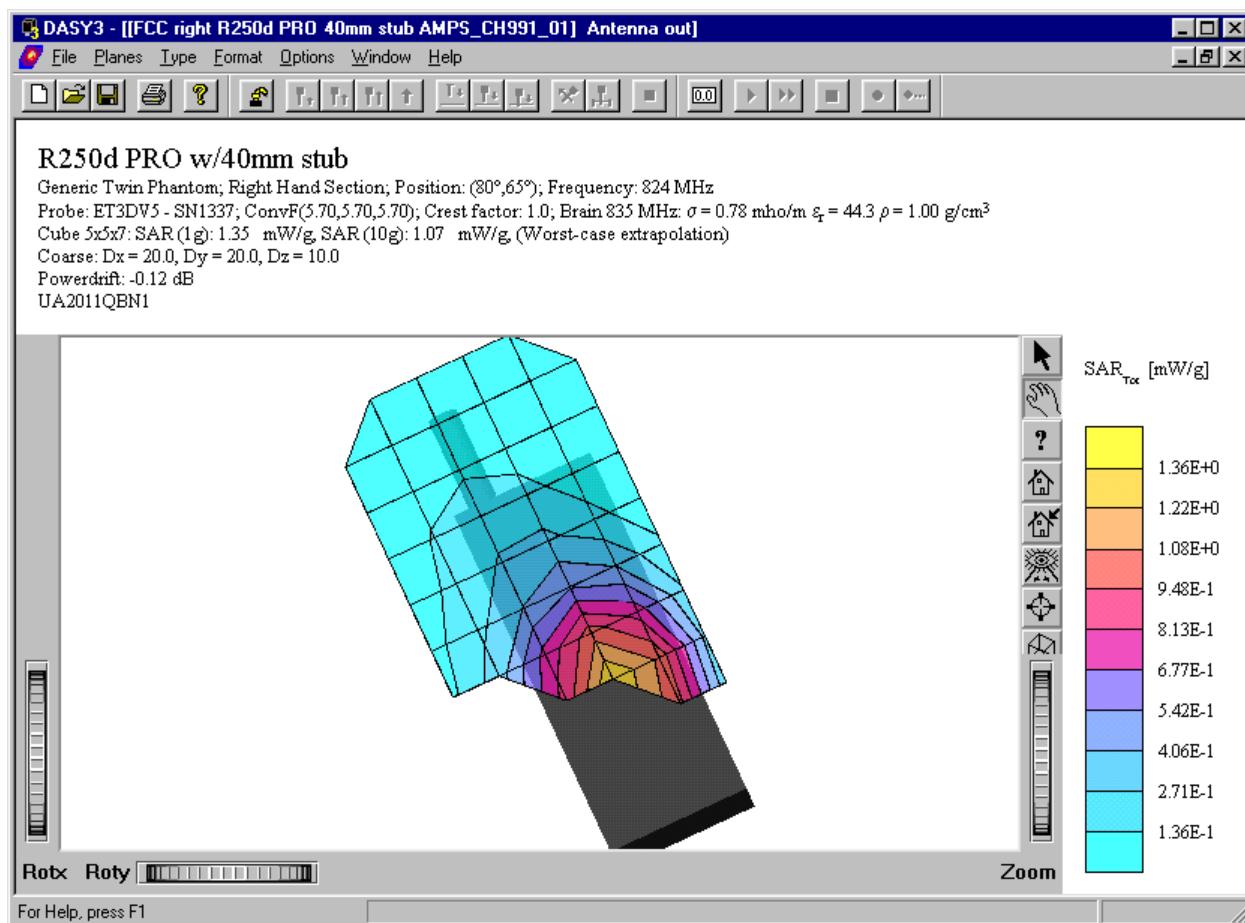
Reference

[I] "Ericsson SAR Measurement Specification", C.Törnevik, M.Siegbahn, T.Persson, M.Douglas, R.Plicanic, February 1999.

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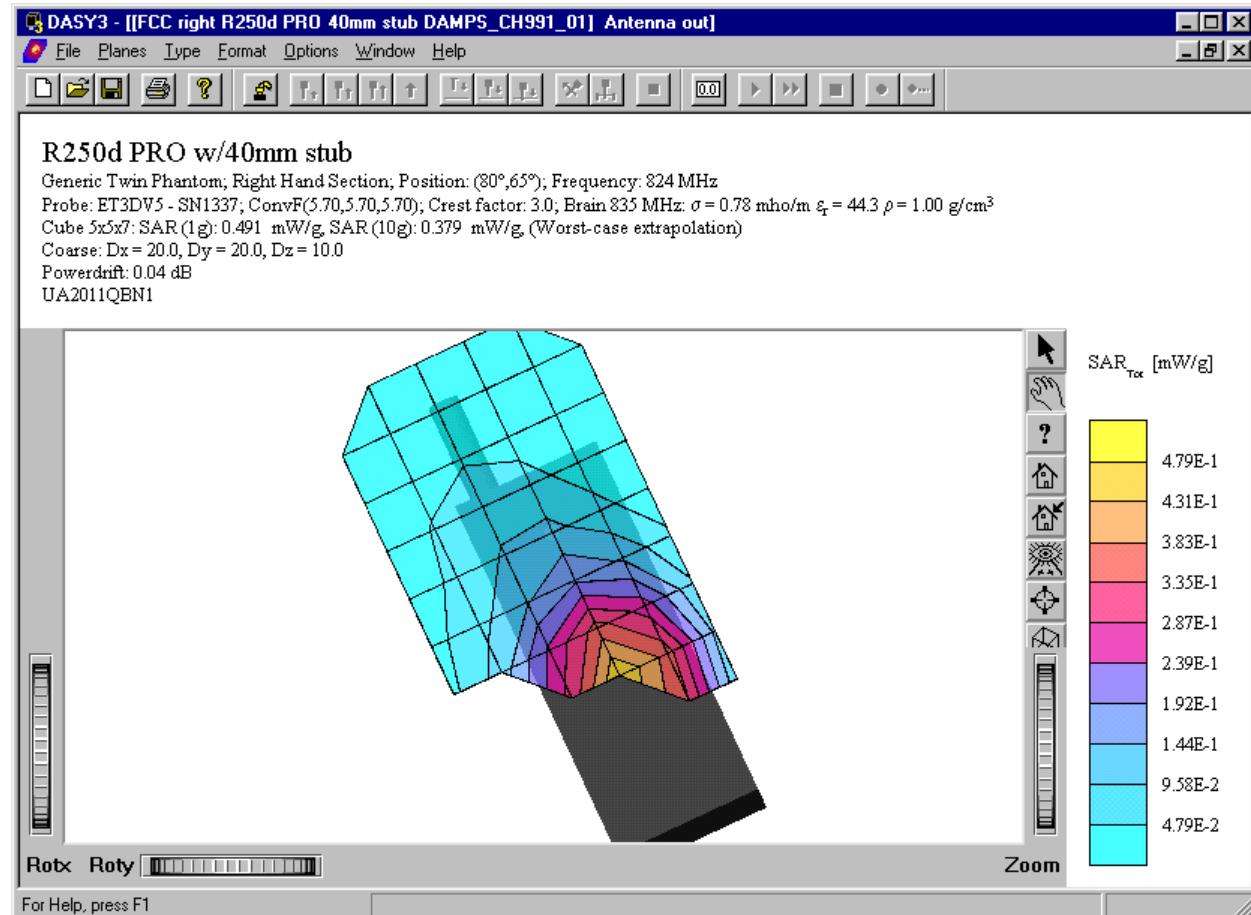
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Appendix 1: SAR distribution plots



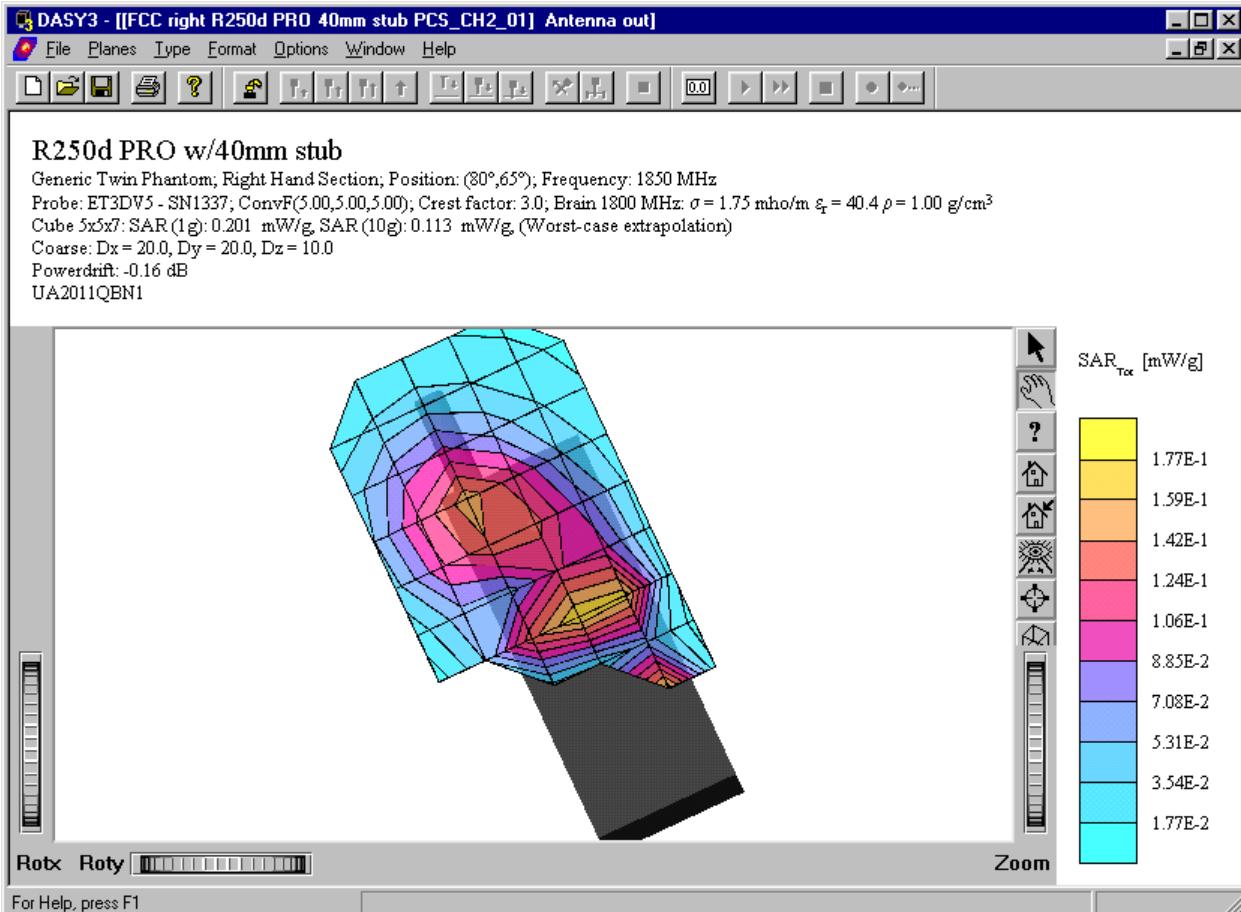
Distribution of worst-case SAR in AMPS mode.

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Distribution of worst-case SAR in D-AMPS 800 mode.

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Distribution of worst-case SAR in D-AMPS 1900 mode.

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Appendix 2: Photographs of the device under test



Front view of device.

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**Side view of device.**

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Appendix 3: Position of device on Generic Twin Phantom

