ERICSSON

To: Joe Dichoso
FCC Application Processing Branch

From: Jim Sponsler
Date: 5-11-99

Applicant:	Ericsson Inc
Re:	FCC ID AXATR-398-A2
Correspondence Reference Number:	7313
731 Confirmation Number:	EA93571
Date of Original E-Mail:	04/20/1999

This is in response to your query on April 20, 1999 regarding the AXATR-398-A2 submittal

This mobile can operate in satellite mode in Asia only. The communication to the mobile is through a geo-stationary satellite, thus it cannot operate in the USA. Even though the satellite mode is not functional in the USA, the 731 form was completed with the satellite operation noted since this is dual mode mobile. Mr. F. Coperich had requested that we provided the dual mode operation on the 731 form for a previous submittal even though the 900 band would not be employed in the USA.

The mobile is to be operated only when the antenna is in the 45, 90 or 135 degree positions. It is not to be used when the antenna is in the stowed position. All references in the User Manual indicate that the antenna is to be operated in one of the three ‘up’ positions noted above.

Attached is the additional SAR information you requyested.

If you have any questions regarding this filing, please feel free to contact me.

Jim Sponsler
Jim.sponsler@ericsson.com
919-472-6460

Prepared (also subject responsible if other)		No.		
RT/EUS/TR/X Mark Douglas 919-472-6334		EUS/VRC-99:1176		
Approved	Checked	Date	Rev	File
EUS/TR/X Mark Douglas	MGD	1999-05-05	B	C:\WINDOWS\TEMP\ACeS Addendum.doc

EN

Addendum to

"SAR Assessment Measurements Test Report

for the

Ericsson R190a Satellite

Dual Mode Telephone"

Electromagnetic Near Field and Radio Frequency Dosimetry Laboratory

Research Triangle Park, NC, USA

Test Equipment:

Description	Asset Number	Due Date
DASY3 DAE V1	s/n 345	9909
E-field probe ETDV5	s/n 1337	0003
Dielectric probe kit HP 85070B	inv. 55733	9908
Network analyzer HP 8752C	inv. 57248	9907
Power meter HP 437B	inv. 49292	9909
Power sensor HP 8482H	inv. 8210-3386	9909
Radio Comm. Analyzer Anritsu MT8801B	s/n MB12477	9909
Dipole Validation Kit, D900V2	s/n 035	0003

Test approved:
Mark Douglas, Ph.D.

1. Introduction

In this addendum, additional information is provided about SAR measurements of the Ericsson R190a Satellite portable telephone. This device has two modes: AMPS and Asian Cellular Satellite (R190a Satellite) mode. The R190a Satellite mode does not operate in North America, so SAR results for this mode are not reported. The measurements were conducted at the dosimetry laboratory at Ericsson, Inc. in Research Triangle Park, North Carolina, USA.

2. Measurement System

2.1 Brain tissue simulating liquid data

The electrical parameters of the brain tissue simulating liquid are measured at 23 °C by the HP 85070B dielectric probe kit from Hewlett Packard. The following values were measured for the relative permittivity (ε_r) and conductivity (σ) of the liquid that was used during the SAR measurements.

f (MHz)	835
ε_r	44.5
σ (S/m)	0.78

2.2 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 for a room temperature of 23 °C. As seen from the table, the difference between the expected and measured values is within the 5% tolerance.

Dipole	**Output Power (W)**	**1 gram averaged SAR (W/kg)**		**difference (%)**
		Expected	**Measured**	
D900V2	1	9.24	8.93	3.35

3. Test Results

Tables 1 and 2 show the measured SAR of the device. The antenna includes a swivel at its base that allows it to be rotated into four user positions. These four positions are labelled the stowed, left-hand user, 180°, and right-hand user positions, as shown in Appendix 2. The SAR was measured in each antenna position on each side of the head (left and right), and at the low, middle and high frequencies of the AMPS band. The conducted output power of the device was measured with a power meter and found to be 25.9 dBm at 824 MHz, 26.2 dBm at 837 MHz and 26.0 dBm at 849 MHz. Output power measurements were found to be very consistent over time. 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.

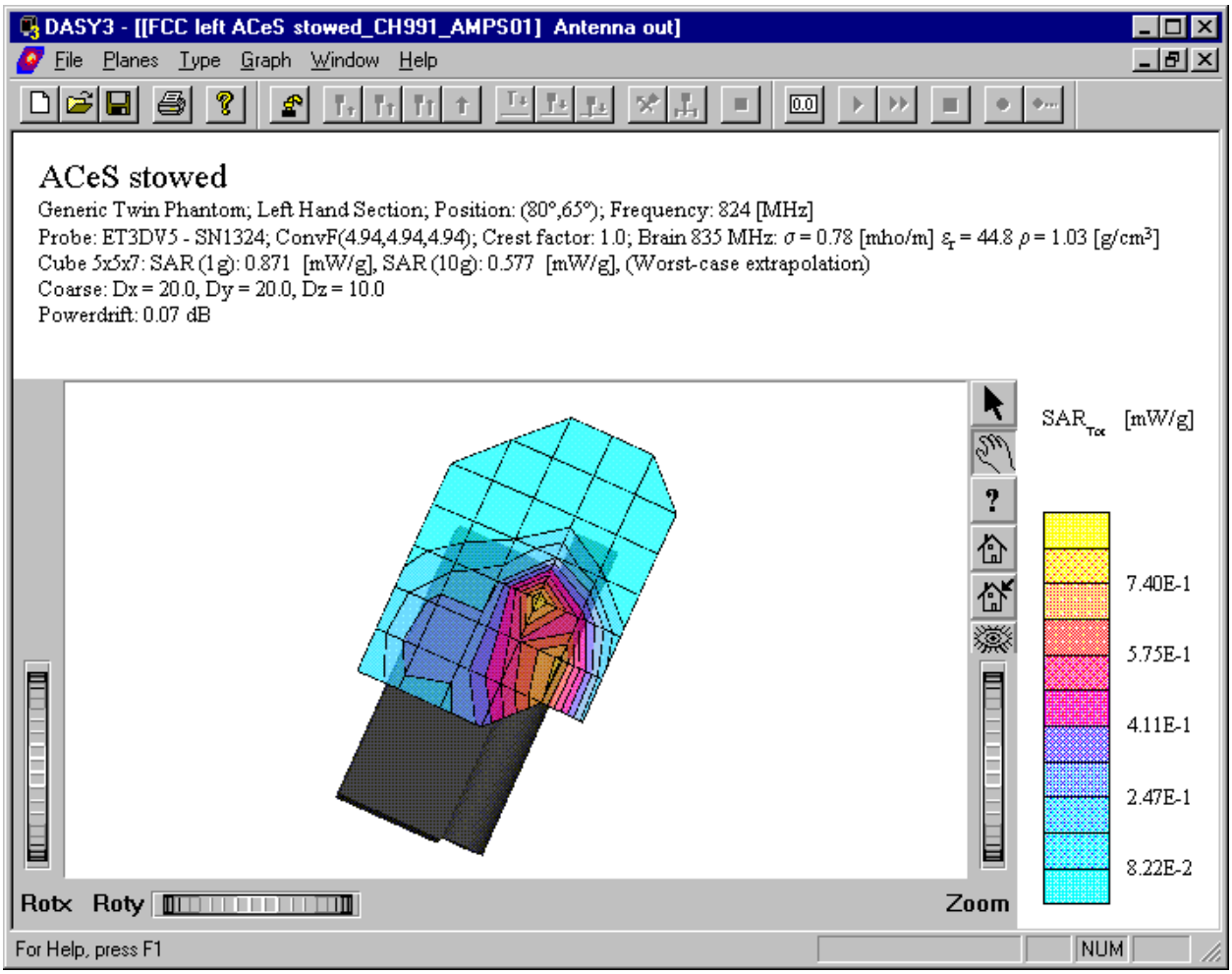
f (MHz)	**Stowed position**	**Left-hand user**	**180° position**	**Right-hand user**
824	**0.871**	0.364	**0.402**	0.310
837	0.621	**0.503**	0.322	0.207
849	0.523	0.440	0.264	0.218

Table 1: 1-gram averaged SAR measurement results (W/kg) for the Ericsson R190a Satellite telephone at maximum rated output power on the left side of the head.

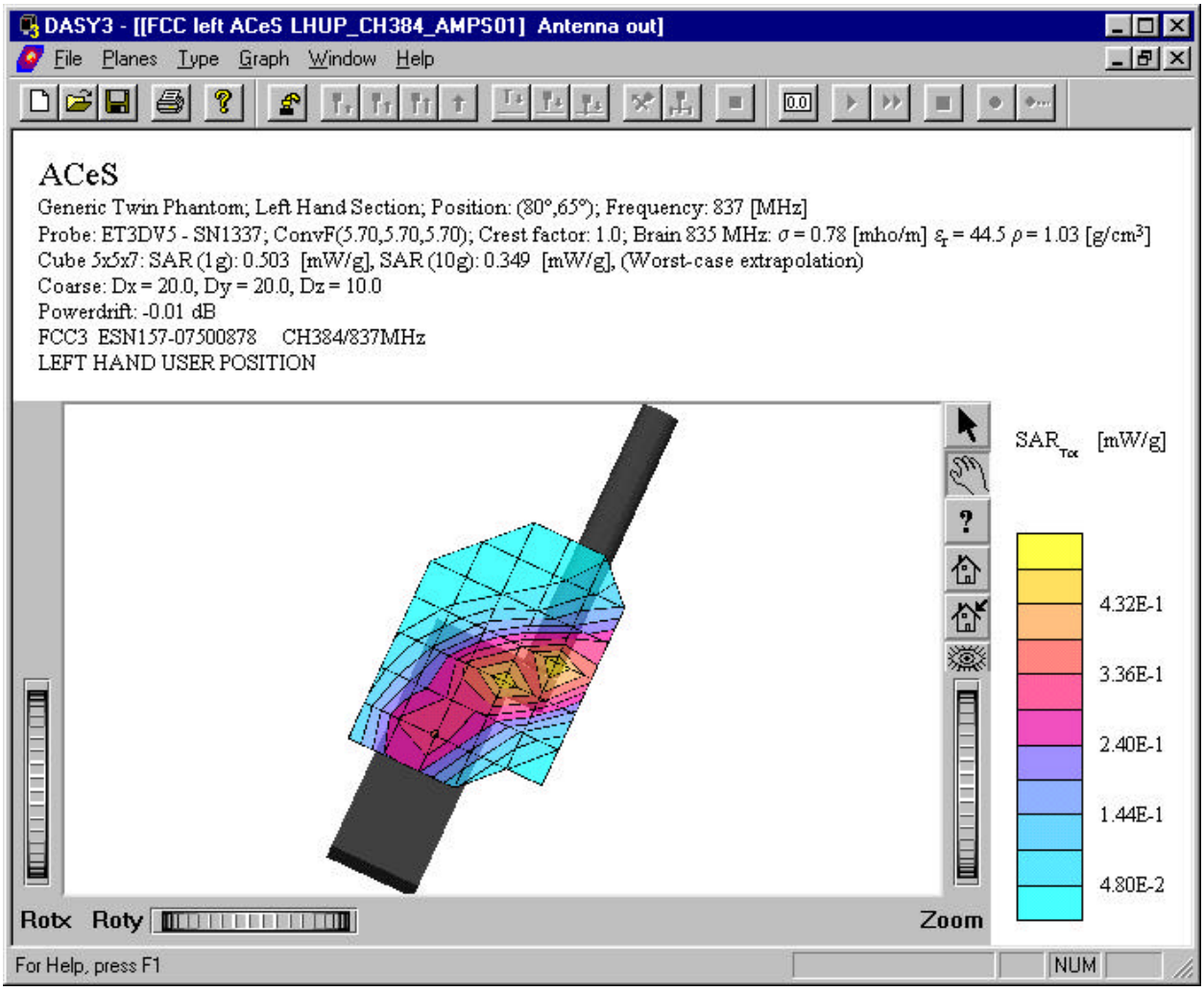
f (MHz)	Stowed position	Left-hand user	180° position	Right-hand user
824	0.782	0.247	0.366	**0.382**
837	0.545	0.348	0.250	0.239
849	0.434	0.219	0.202	0.254

Table 2: 1-gram averaged SAR measurement results (W/kg) for the Ericsson R190a Satellite telephone at maximum rated output power on the right side of the head.

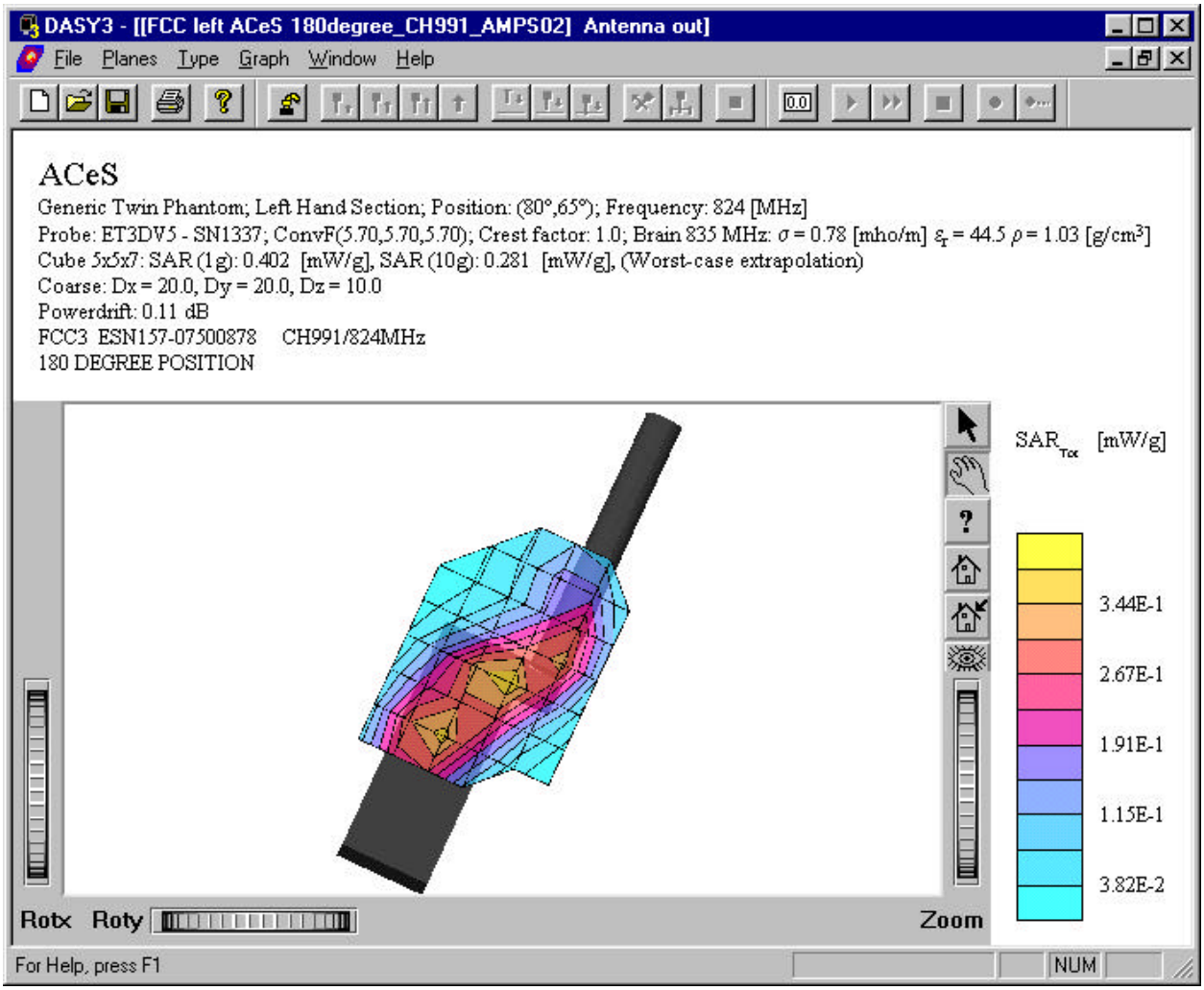
Appendix 1: SAR distribution plots



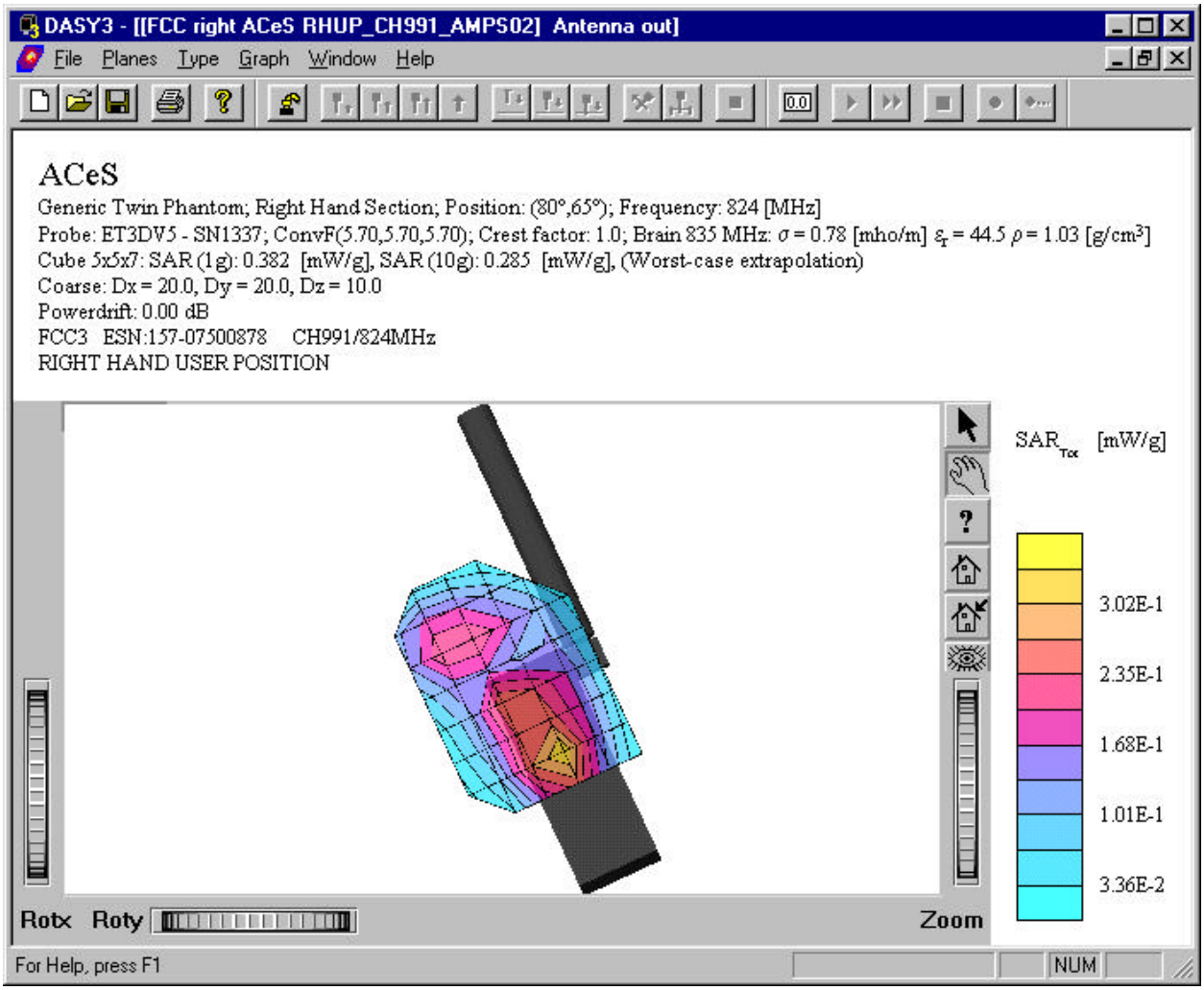
Distribution of worst-case SAR for stowed position of antenna.



Distribution of worst-case SAR for left-hand user position of antenna. Note that the antenna angle is not shown properly here due to limitations in the program graphics.

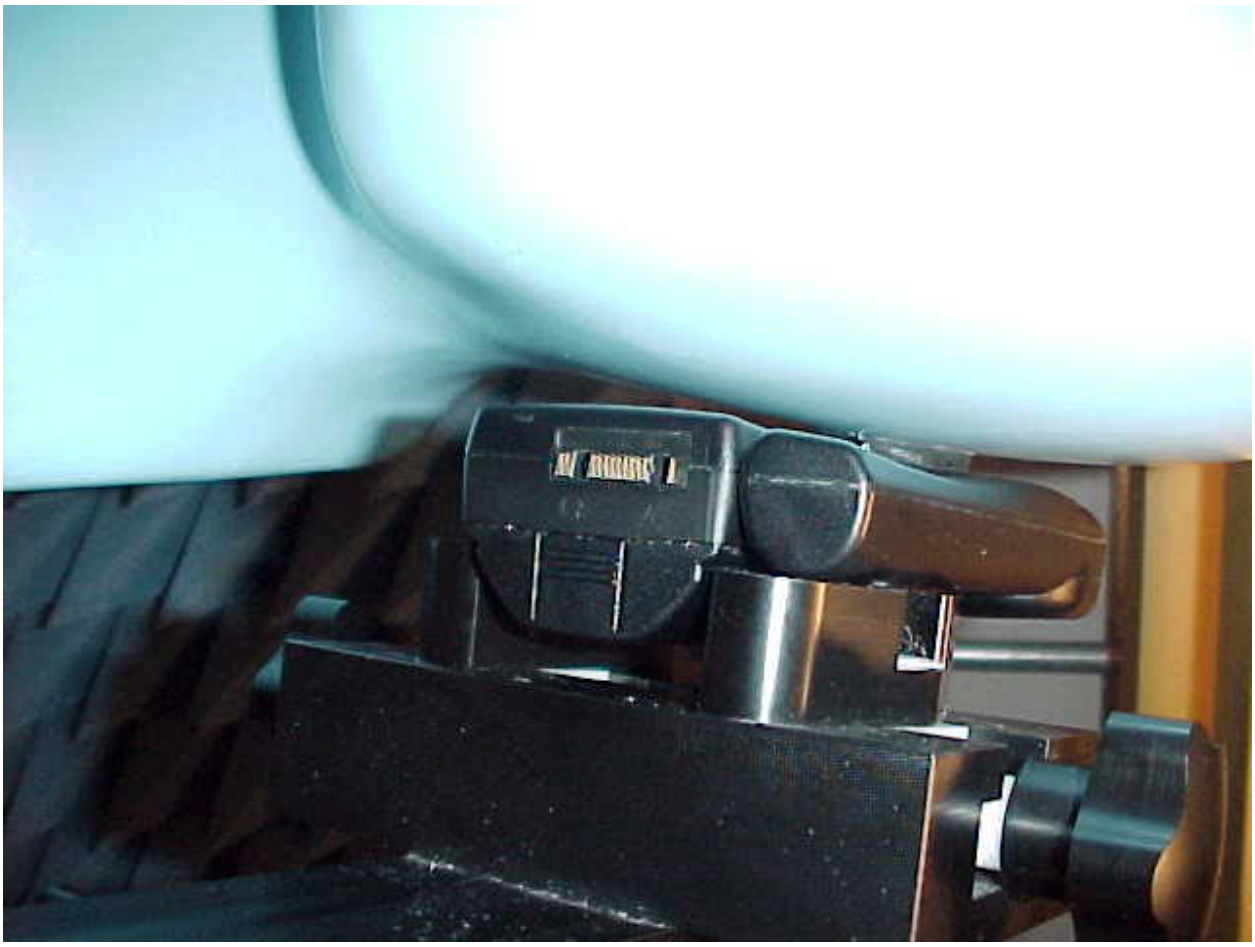


Distribution of worst-case SAR for 180° position of antenna.

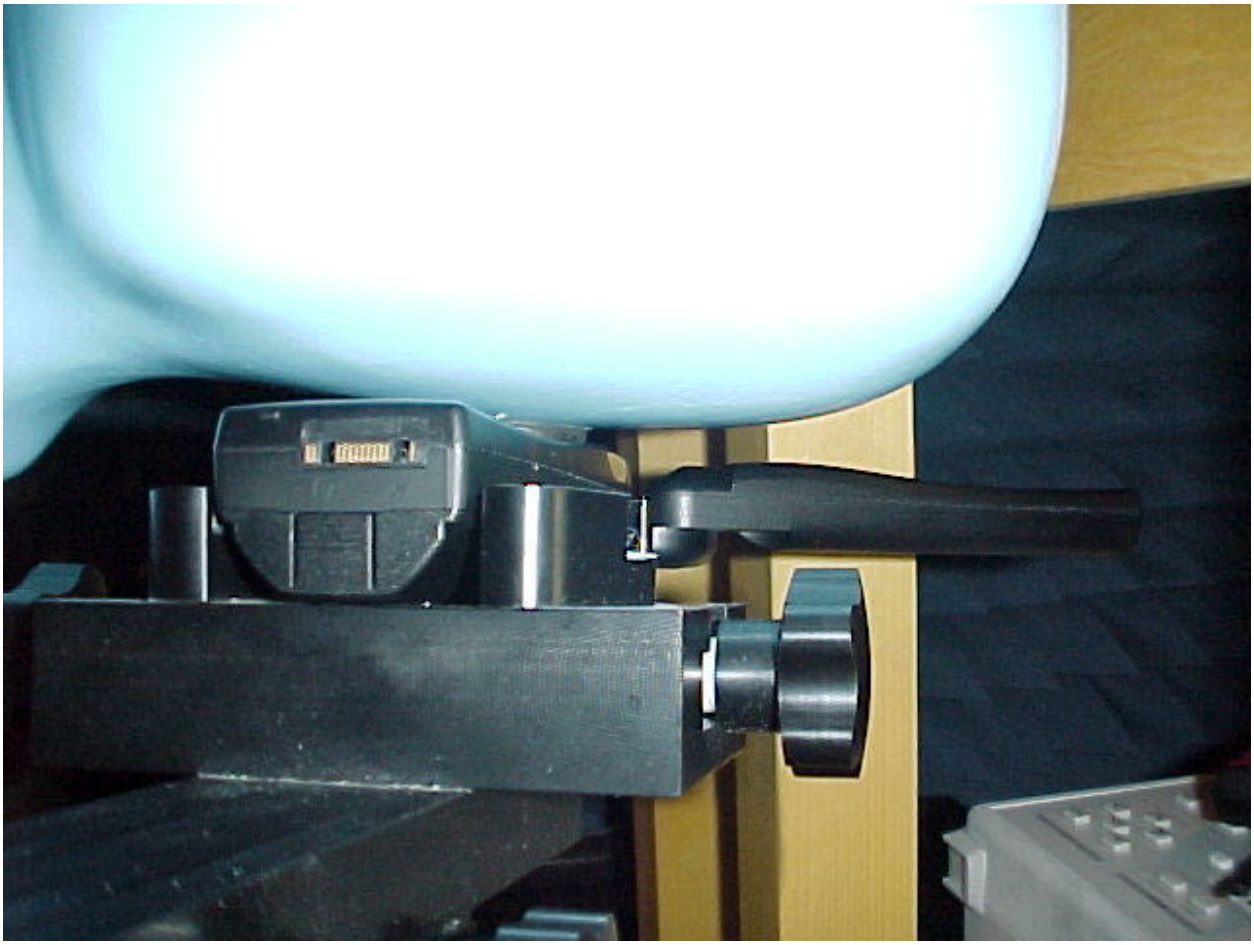


Distribution of worst-case SAR for right-hand user position of antenna. Note that the antenna angle is not shown properly here due to limitations in the program graphics.

Appendix 2: Position of device on Generic Twin Phantom



Stowed position.

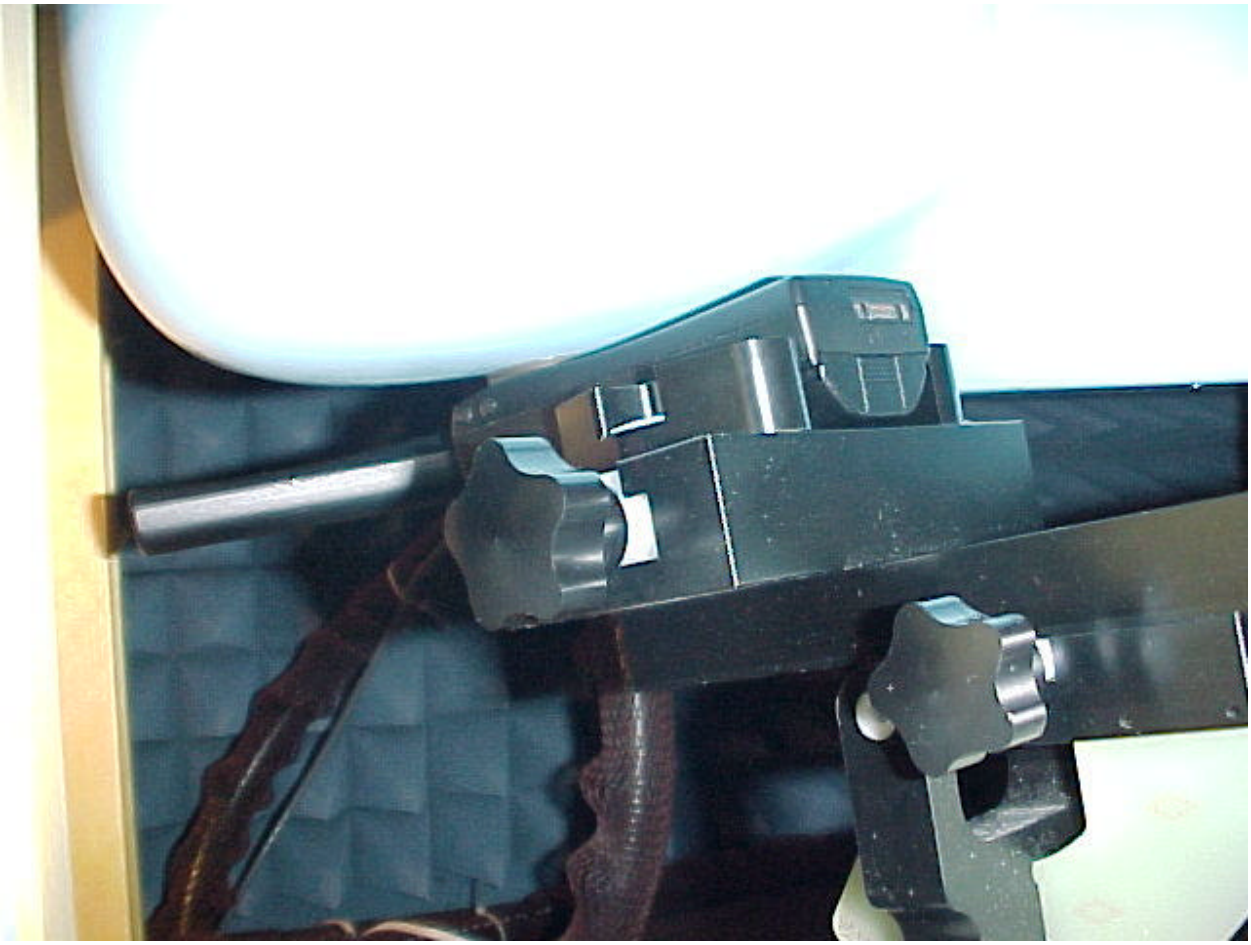


Left-hand user position.

Prepared (also subject responsible if other)		No.		
RT/EUS/TR/X Mark Douglas 919-472-6334		EUS/VRC-99:1176		
Approved	Checked	Date	Rev	File
EUS/TR/X Mark Douglas	MGD	1999-05-05	B	C:\WINDOWS\TEMP\ACeS Addendum.doc

EN

180 degree position.



Right-hand user position.