TCC
Copenhagen

DANAK
Reg. Nr. 416

SAR Compliance Test Report

Test Report no.:	DTX07784-EN	**Date of Report:**	3rd September 2003
Number of pages:	21	**Contact person:**	Anders S. Nielsen
		Responsible Test engineer:	Ruben Chr. Hansen

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Tel. + 49-731-1754-0
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Tested device: FCC ID: PPIRH-50, Model 3100b, HW: 571 SW: 1.31
(Detailed information for each device is listed in section 1).

Supplement reports:

Testing has been Carried out in Accordance with:

47CFR §2.1093
Radiofrequency Radiation Exposure Evaluation: Portable Devices

IEEE P1528-200X Draft 6.4
Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques

FCC OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01)
Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields

Documentation: The documentation of the testing performed on the tested devices is archived for 15 years at Test & Certification Center, Copenhagen

Test Results: The tested device complies with the requirements in respect of all parameters subject to the test.
The test results and statements relate only to the items tested.
The test report shall not be reproduced except in full, without written approval of the laboratory.

Date and signatures: 09/03/2003
For the contents:

Svend Bøgsted
TCC Manager

Ruben Chr. Hansen
SAR Test Engineer

CONTENTS

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1. SUMMARY FOR SAR TEST REPORT

Date of test	06/30/2003 – 08/28/2003
Contact person	Anders S Nielsen
FCC ID	PPIRH-50
SN, HW, SW and DUT numbers of tested device	ESN: 06A004859, IMEI: 004400/22/167310/4, HW 571, SW 1.31, DUT # 232784
Accessories used in testing	Active Cover CC-63D DUT#232800, Mono Headset HS-5, DUT# 232798, Camera Headset HS-1C, DUT# 232799, Battery BL-5C, DUT# 232786 and 232787
Document code	DTX 07784-EN
Responsible test engineer	Ruben Chr. Hansen
Measurement performed by	Leif F. Klysner and Chr. Andersen

1.1 Maximum Results Found during SAR Evaluation

The equipment is deemed to fulfil the requirements if the measured values are less than or equal to the limit. Maximum found results are reported per operating band.

1.1.1 Head Configuration

Mode of Operation	Channel	Power ERP [dBm]	Position	Limit [mW/g]	Measured [mW/g]	Result
GSM 850	247	25.2	Touch, right hand, standard cover	1.6	0.98	**PASSED**

1.1.2 Body Worn Configuration, GPRS Mode

Mode of Operation	Channel	Power ERP [dBm]	Item(s)	Limit [mW/g]	Measured [mW/g]	Result
GSM 850	132	25.3	Headset HS-1C and active cover	1.6	0.71	**PASSED**

During the Body SAR measurements the separation distance was 22 mm, and the DUT's antenna was facing towards the phantom.

1.1.3 Measurement Uncertainty

Combined Standard Uncertainty	**± 14.5%**
Expanded Standard Uncertainty (k=2)	**± 29.1%**

1.2 ERP & EIRP Measurements

The measurement of the EIRP from the PPIRH-50 was performed at test laboratory Cetecom GmBh

CETECOM GmbH

Im Teelbruch 122
D-45219 Essen
Germany

Phone +49(0) 2054951900

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ERP values were taken for GSM 850 and EIRP values for GSM 1900.

Description of TESTED Device

1.3 Device description

FCC ID Number:	PPIRH-50			
IMEI:	004400/22/167310/4			
Mode(s) of operation	GSM 850	GSM 1900	GPRS 850	GPRS 1900
Duty Cycle	1/8	1/8	2/8	2/8
Modulation Mode(s)	GMSK*	GMSK*	GMSK*	GMSK*
Maximum Device Rating	Power Class 4	Power Class 1	Power Class 4	Power Class 1
Transmitting Frequency Range [MHz]	824.2 – 848.8	1850.2 – 1909.8	824.2 – 848.8	1850.2 – 1909.8
Production Unit or Identical Prototype (47 CFR. § 2.908)	Identical Prototype			
Device Category	Portable			
RF Exposure Limits	General Population / Uncontrolled			

* Gaussian Minimum Shift Keying
Outside of USA, the transmitter of the tested device is capable of transmitting in GSM 1800 mode, which is not part of this filing.

1.4 Picture of Phone

PPIRH-50 with standard cover

PPIRH-50 with Active Cover

1.5 Description of the Antenna

The PPIRH-50 cellular phone has an integral patch antenna.

1.6 Battery

There is only one battery type available for tested device.

1.7 Body Worn Accessories

PPIRH-50 was measured without any body worn accessories, using separation distance from the flat phantom.

2. TEST CONDITIONS

2.1 Ambient Conditions

Ambient temperature (°C)	22 ±1
Tissue simulating liquid temperature (°C)	22 ±1
Humidity % r.h.	45 ±10

2.2 Test Signal, Frequencies, and Output Power

The device was controlled by using a radio tester. Communication between the device and the tester was established by air link.

The phone was set to maximum power level during all the tests and at the beginning of the each test the battery was fully charged.

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DASY3 system measures the phones output power drift during SAR testing by comparing the radiated e-field in a reference point at the beginning and at the end of measurement. These measurements were used to monitor stability of power output (drift).

3. DESCRIPTION OF THE TEST EQUIPMENT

The measurements were performed with an automated near-field scanning system, DASY3, manufactured by Schmid & Partner Engineering AG (SPEAG) in Switzerland.

Test Equipment	Serial Number	Due Date
DASY3 DAE V1	339	04/09/2004
E-field Probe ET3DV6R	1431	04/16/2004
Dipole Validation Kit, D835V2	476	04/07/2004
Dipole Validation Kit, D1800V2	230	10/25/2003
Dipole Validation Kit, D1900V2	5d026	04/08/2004

E-field probe calibration records are presented in Appendix C.

Additional equipment needed in validation

Test Equipment	Model	Serial Number	Due Date
Signal Generator	R&S SMIQ 03	826046/034	08/18/2003
Amplifier	MiniCircuits ZHL-42W	D091395-1	-
Power Meter	R&S NRVD	840297/008	09/06/2003
Power Sensor	R&S NRV-Z51	100184	10/14/2003
Power Sensor	R&S NRV-Z51	848327/025	09/25/2003
Thermometer	LUFFT CAN	5620.03	10/07/2003
Vector Network Analyzer	Agilent 8753ES	MY 4000 1091	08/08/2003
Transmission Line Dielectric Probe	HP 85070B	US 33020403	-

3.1 System Accuracy Verification

The SAR measurements were verified using a dipole antenna placed under the flat section of the SAM phantom. A power level of 250 mW supplied to the dipole antenna was used for the verification. The results are normalised to 1 W input power. The power level was controlled during verification, using a directional coupler and a power meter. A SAR measurement was performed to verify that the measured SAR was within ± 10% from the target value indicated in the dipole(s) calibration certificate. These tests were done at 835 MHz and 1900 MHz. The tests were performed every morning before measurements of the DUT. The liquid depth was 15.0 cm ±0.5 cm.

Liquid	Date	Frequency [MHz]	Description	SAR averaged over 1g [mW/g]	Dielectric Parameters ε_r	σ [S/m]
Head	07/15/03	1900	Measured	42.4	39.4	1.45
			Reference	41.6	38.6	1.46
	07/17/03	835	Measured	9.68	40.9	0.89
			Reference	9.64	41.5	0.89
	08/27/03	835	Measured	9.4	40.2	0.88
			Reference	9.64	41.5	0.89
	08/28/03	1900	Measured	42.4	38.7	1.44
			Reference	41.6	38.6	1.46

Liquid	Date	Frequency [MHz]	Description	SAR averaged over 1g [mW/g]	Dielectric Parameters ε_r	σ [S/m]
Body	07/04/03	1900	Measured	42.4	51.2	1.56
			Reference	42.4	51.2	1.59
	07/09/03	835	Measured	9.64	53.4	0.93
			Reference	10.12	54.0	0.96
	07/10/03	835	Measured	9.48	53.4	0.93
			Reference	10.12	54.0	0.96
	07/30/03	1900	Measured	41.2	51.1	1.53
			Reference	42.4	51.2	1.59
	07/31/03	1900	Measured	42	50.9	1.54
			Reference	42.4	51.2	1.59
	08/01/03	835	Measured	9.6	53.4	0.93
			Reference	10.12	54.0	0.96

3.2 Tissue Simulants

All dielectric parameters of tissue simulants were measured within 24 hours of SAR measurements. The depth of the tissue simulant in the ear reference point of the phantom was 15cm ± 5mm during all the tests. Volume for each tissue simulant was 26 liters.

3.2.1 Head Tissue Simulant

The composition of the brain tissue simulating liquid for 835MHz is

58.31% Sugar
39.74% De-Ionized Water
1.55% Salt
0.25% HEC
0.15% Bactericide

And for 1900MHz

44.91% 2-(2-butoxyethoxy) Ethanol
54.88% De-Ionized Water
0.21% Salt

Date	Frequency [MHz]	Description	ε_r Relative permittivity	σ [S/m] Conductivity
07/15/03	1880	Measured	39.4	1.45
		Recommended	40.0	1.40
07/17/03	835	Measured	40.9	0.89
		Recommended	41.5	0.90
08/27/03	835	Measured	40.2	0.88
		Recommended	41.5	0.90
08/28/03	1880	Measured	38.7	1.44
		Recommended	40.0	1.40

Recommended values are adopted from OET Bulletin 65 (97-01) Supplement C (01-01).

3.2.2 Muscle Tissue Simulant

The composition of the muscle tissue simulating liquid for 835 MHz is

55.97% De-Ionized Water
41.76% Sugar
1.21% HEC
0.79% Salt
0.27% Preservative

And for 1900MHz

69.02% De-Ionized Water
30.76% Diethylene Glycol Monobutyl Ether
0.22% Salt

Frequency band [MHz]		Description	ε_r Relative permittivity	σ [S/m] Conductivity
07/04/03	1880	Measured	51.2	1.56
		Recommended	53.5	1.52
07/09/03	835	Measured	53.4	0.93
		Recommended	55.2	0.97
07/10/03	835	Measured	53.4	0.93
		Recommended	55.2	0.97
07/30/03	1880	Measured	51.1	1.53
		Recommended	53.5	1.52
07/31/03	1880	Measured	50.9	1.54
		Recommended	53.5	1.52
08/01/03	835	Measured	53.4	0.93
		Recommended	55.2	0.97

Recommended values are adopted from OET Bulletin 65 (97-01) Supplement C (01-01).

3.3 Phantoms

The “SAM v4.0” phantom", manufactured by SPEAG, was used during the measurement. It has fiberglass shell integrated in a wooden table. The shape of the shell corresponds to the phantom defined by SCC34-SC2. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot.

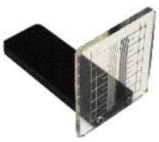
The thickness of phantom shell is 2 mm except for the ear, where an integrated ear spacer provides a 6 mm spacing from the tissue boundary. Manufacturer reports tolerance in shell thickness to be ±0.1mm.

3.4 Isotropic E-Field Probe ET3DV6R

Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection system Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., glycolether)
Calibration	Calibration ceritifcate in Appendix C
Frequency	10 MHz to 3 GHz (dosimetry); Linearity: ± 0.2 dB (30 MHz to 3 GHz)
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.4 dB in HSL (rotation normal to probe axis)
Dynamic Range	5 µW/g to > 100 mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 330 mm Tip length: 16 mm Body diameter: 12 mm Tip diameter: 6.8 mm Distance from probe tip to dipole centers: 2.7 mm
Application	General dosimetry up to 3 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms

4. DESCRIPTION OF THE TEST PROCEDURE

4.1 Test Positions



The device was placed in holder using a special positioning tool, which aligns the bottom of the device with holder and ensures that holder contacts only to the sides of the device. After positioning is done, tool is removed. This method provides standard positioning and separation, and also ensures free space for antenna.

Device holder was provided by SPEAG together with DASY3.

4.1.1 Against Phantom Head

Measurements were made on both the "left hand" and "right hand" side of the phantom.

The device was positioned against phantom according to OET Bulletin 65 (97-01) Supplement C (01-01) . Definitions of terms used in aligning the device to a head phantom are available in IEEE Draft Standard P1528-2001 "Recommended Practice for Determining the Spatial-Peak Specific Absorption

Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques"

4.1.1.1 Initial Ear Position

The device was initially positioned with the earpiece region pressed against the ear spacer of a head phantom parallel to the "Neck-Front" line defined along the base of the ear spacer that contains the "ear reference point". The "test device reference point" is aligned to the "ear reference point" on the head phantom and the "vertical centerline" is aligned to the "phantom reference plane".

4.1.1.2 Cheek Position

"Initial ear position" alignments are maintained and the device is brought toward the mouth of the head phantom by pivoting along the "Neck-Front" line until any point on the display, keypad or mouthpiece portions of the handset is in contact with the phantom or when any portion of a foldout, sliding or similar keypad cover opened to its intended self-adjusting normal use position is in contact with the cheek or mouth of the phantom.

4.1.1.3 Tilt Position

In the "Cheek Position", if the earpiece of the device is not in full contact with the phantom's ear spacer and the peak SAR location for the "cheek position" is located at the ear spacer region or corresponds to the earpiece region of the handset, the device is returned to the "initial ear position" by rotating it away from the mouth until the earpiece is in full contact with the ear spacer. Otherwise, the device is moved away from the cheek perpendicular to the line passes through both "ear reference points" for approximate 2-3 cm. While it is in this position, the device is tilted away from the mouth with respect to the "test device reference point" by 15°. After the tilt, it is then moved back toward the head perpendicular to the line passes through both "ear reference points" until the device touches the phantom or the ear spacer. If the antenna touches the head first, the positioning process is repeated with a tilt angle less than 15° so that the device and its antenna would touch the phantom simultaneously.

4.2 Scan Procedures

First coarse scans are used for quick determination of the field distribution. Next a cube scan, 5x5x7 points; spacing between each point 8x8x5 mm, is performed around the highest E-field value to determine the averaged SAR-distribution over 1g.

4.3 SAR Averaging Methods

The maximum SAR value is averaged over its volume using interpolation and extrapolation.

The interpolation of the points is done with a 3d-Spline. The 3d-Spline is composed of three one-dimensional splines with the "Not a knot" -condition [W. Gander, Computermathematik, p. 141-150] (x, y and z -directions) [Numerical Recipes in C, Second Edition, p 123].

The extrapolation is based on least square algorithm [W. Gander, Computermathematik, p.168-180]. Through the points in the first 30 mm in all z-axis, polynomials of order four are calculated. This polynomial is then used to evaluate the points between the surface and the probe tip. The points, calculated from the surface, have a distance of 1mm from one another.

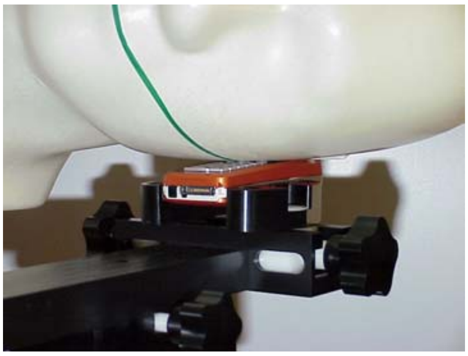
5. MEASUREMENT UNCERTAINTY

a	b	c	d	e = f(d,k)	F	h = c x f / e	k
Uncertainty Component	**Section in P1528.**	**Tol. (%)**	**Prob. Dist.**	**Div.**	c_i	u_i (%)	v_i
Measurement System							
Probe Calibration	E2.1	±4.8	N	1	1	±4.8	∞
Axial Isotropy	E2.2	±4.7	R	√3	$(1-cp)^{1/2}$	±1.9	∞
Hemispherical Isotropy	E2.2	±9.6	R	√3	$\sqrt{c_p}$	±3.9	∞
Boundary Effect	E2.3	±8.3	R	√3	1	±4.8	∞
Linearity	E2.4	±4.7	R	√3	1	±2.7	∞
System Detection Limits	E2.5	±1.0	R	√3	1	±0.6	∞
Readout Electronics	E2.6	±1.0	N	1	1	±1.0	∞
Response Time	E2.7	±0.8	R	√3	1	±0.5	∞
Integration Time	E2.8	±2.6	R	√3	1	±1.5	∞
RF Ambient Conditions - Noise	E6.1	±3.0	R	√3	1	±1.7	∞
RF Ambient Conditions - Reflections	E6.1	±3.0	R	√3	1	±1.7	∞
Probe Positioner Mechanical Tolerance	E6.2	±0.4	R	√3	1	±0.2	∞
Probe Positioning with respect to Phantom Shell	E6.3	±2.9	R	√3	1	±1.7	∞
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	E5.2	±3.9	R	√3	1	±2.3	∞
Test sample Related							
Test Sample Positioning	E4.2.1	±6.0	N	1	1	±6.0	11
Device Holder Uncertainty	E4.1.1	±5.0	N	1	1	±5.0	7
Output Power Variation - SAR drift measurement	6.6.3	±10.0	R	√3	1	±5.8	∞
Phantom and Tissue Parameters							
Phantom Uncertainty (shape and thickness tolerances)	E3.1	±4.0	R	√3	1	±2.3	∞
Liquid Conductivity Target - tolerance	E3.2	±5.0	R	√3	0.64	±1.8	∞
Liquid Conductivity - measurement uncertainty	E3.3	±5.5	N	1	0.64	±3.5	5
Liquid Permittivity Target tolerance	E3.2	±5.0	R	√3	0.6	±1.7	∞
Liquid Permittivity - measurement uncertainty	E3.3	±2.9	N	1	0.6	±1.7	5
Combined Standard Uncertainty						**±14.5**	208
Expanded Uncertainty (95% CONFIDENCE INTERVAL)						**±29.1**	

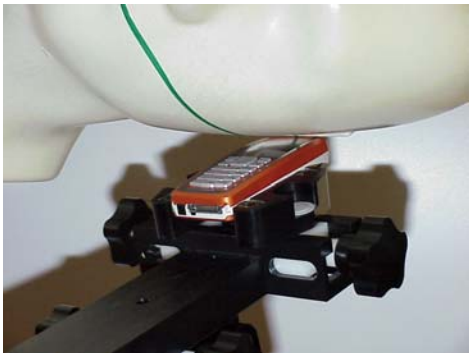
6. RESULTS AND CONFIGURATION

Corresponding SAR distribution printouts of maximum results in every operating mode and position are shown in Appendix B. The SAR distributions are substantially similar or equivalent to the plots submitted regardless of used channel in each mode and position. The coarse scans used in the head configuration measurements cover the whole head region.

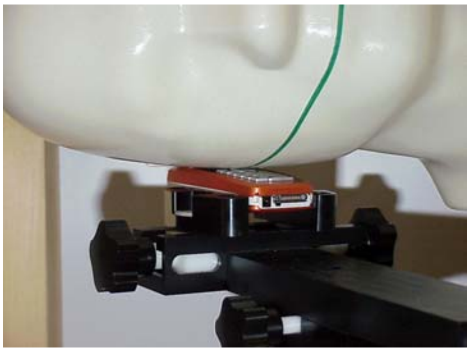
6.1 Head Configuration



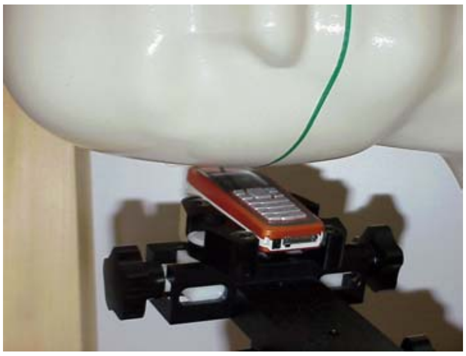
Touch, Left Side.



Tilted, Left Side.



Touch, Right Side.



Tilted, Right Side.

6.2 Body Worn Configuration

PPIRH-50 with 22 mm distance spacer before measurements

PPIRH-50 with HS-5 Headset connected

6.3 Results, Head and Body

6.3.1 PPIRH-50, GSM 850

Head	GSM 850					
	Power [dBm] ERP					
	25.3		25.5		25.2	
	CHANNEL					
	132		190		247	
	1g	**Drift**	**1g**	**Drift**	**1g**	**Drift**
Touch, left hand	0.838	0.07	0.829	-0.06	0.845	-0.06
Tilted, left hand	0.496	0.04	0.463	0.02	0.469	0.06
Touch, right hand	0.864	0.09	0.924	-0.07	**0.975**	-0.03
Tilted, right hand	0.429	-0.04	0.480	0.02	0.550	0.00
Position with highest values repeated with Active Cover	0.712	-0.04	0.765	0.01	0.747	0.16

Body	GSM 850, GPRS Mode, Spacing 22 mm					
	Power [dBm] ERP					
	25.3		25.5		25.2	
	CHANNEL					
	132		190		247	
	1g	**Drift**	**1g**	**Drift**	**1g**	**Drift**
Antenna towards body + HS-1C	0.533	-0.22	0.635	-0.05	0.595	-0.31
Antenna towards body + HS-5	0.509	-0.07	0.555	-0.02	0.571	-0.21
Antenna towards body, Active Cover + HS-1C	0.710	0.02	0.677	-0.20	0.612	-0.19
Antenna towards body, Active Cover + HS-5	0.561	-0.04	0.699	-0.19	0.620	-0.09

6.3.2 PPIRH-50, GSM 1900

Head	GSM 1900					
	Power [dBm] EIRP					
	29.67		29.37		29.53	
	CHANNEL					
	518		661		804	
	1g	**Drift**	**1g**	**Drift**	**1g**	**Drift**
Touch, left hand	0.338	0.02	0.371	0.03	0.384	-0.07
Tilted, left hand	0.358	-0.05	0.395	-0.04	0.400	-0.08
Touch, right hand	0.514	0.25	0.588	-0.01	0.639	0.01
Tilted, right hand	0.471	0.00	0.532	-0.01	0.566	-0.01
Position with highest values repeated with Active Cover	0.426	-0.03	0.492	0.00	0.536	-0.23

Body	GSM 1900, GPRS Mode, Spacing 22 mm					
	Power [dBm] EIRP					
	29.67		29.37		29.53	
	CHANNEL					
	518		661		804	
	1g	**Drift**	**1g**	**Drift**	**1g**	**Drift**
Antenna towards body + HS-1C	0.391	0.09	0.433	0.00	0.447	-0.03
Antenna towards body + HS-5	0.382	-0.34	0.454	-0.03	0.492	0.03
Antenna towards body, Active Cover + HS-1C	0.409	0.02	0.431	0.11	0.458	-0.12
Antenna towards body, Active Cover + HS-5	0.430	0.02	0.456	0.05	0.487	-0.06

APPENDIX A.

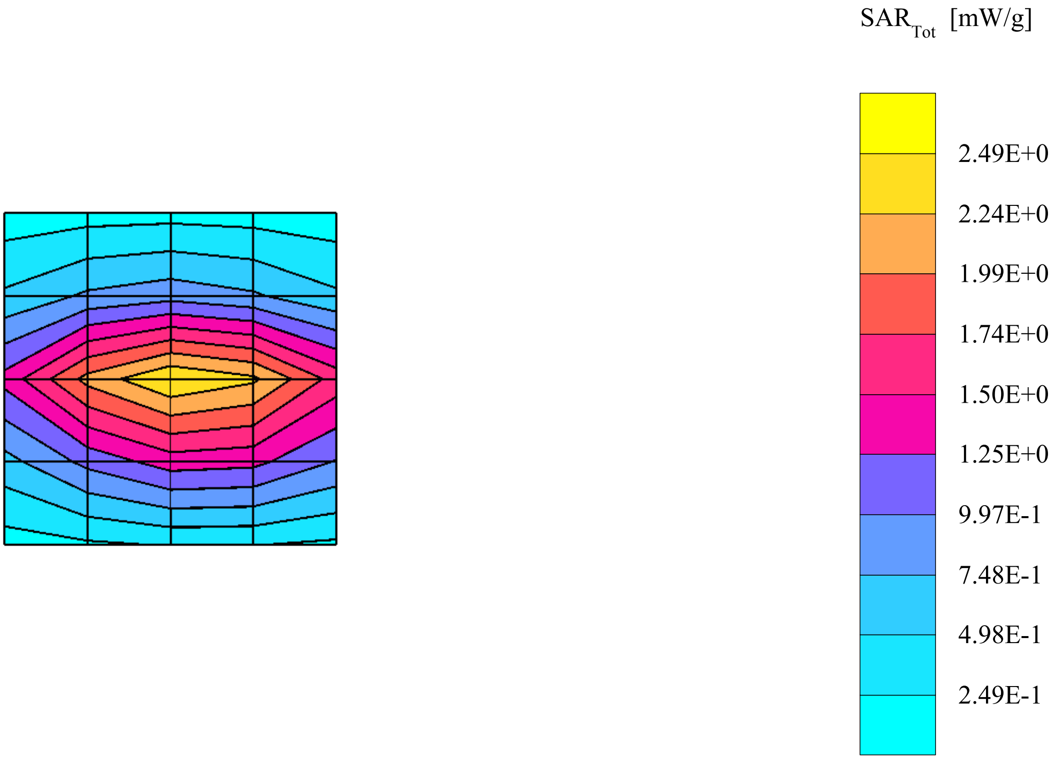
Validation Test Printouts

Dipole 1900 MHz

SAM High Band Phantom; Section; Position: ; horinzontal angle until touching head (80°-90°)
; body- 04; Probe: ET3DV6R - SN1431; ConvF(4.40,4.40,4.40); Crest factor: 1.0; Body 1900 MHz (SAM): σ = 1.56 mho/m ε_r = 51.2 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 10.6 mW/g, SAR (10g): 5.62 mW/g, (Advanced extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.10 dB

Dipole 835 MHz

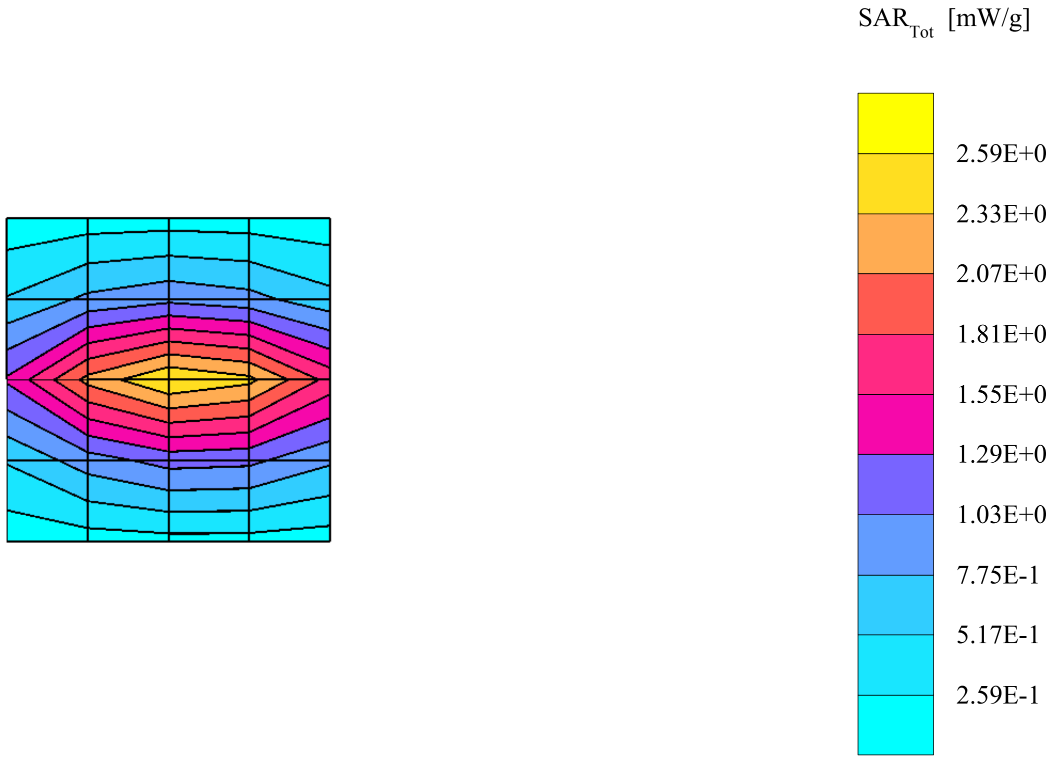
SAM Low Band Phantom; Section; Position: ; horinzontal angle until touching head (80°-90°)
; Head - 27; Probe: ET3DV6R - SN1431; ConvF(6.20,6.20,6.20); Crest factor: 1.0; Head 835 MHz (SAM): σ = 0.88 mho/m ε_r = 40.2 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 2.35   mW/g, SAR (10g): 1.54   mW/g, (Advanced extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.16 dB



08/01/03 Temp = 22° ±1° C

Dipole 835 MHz

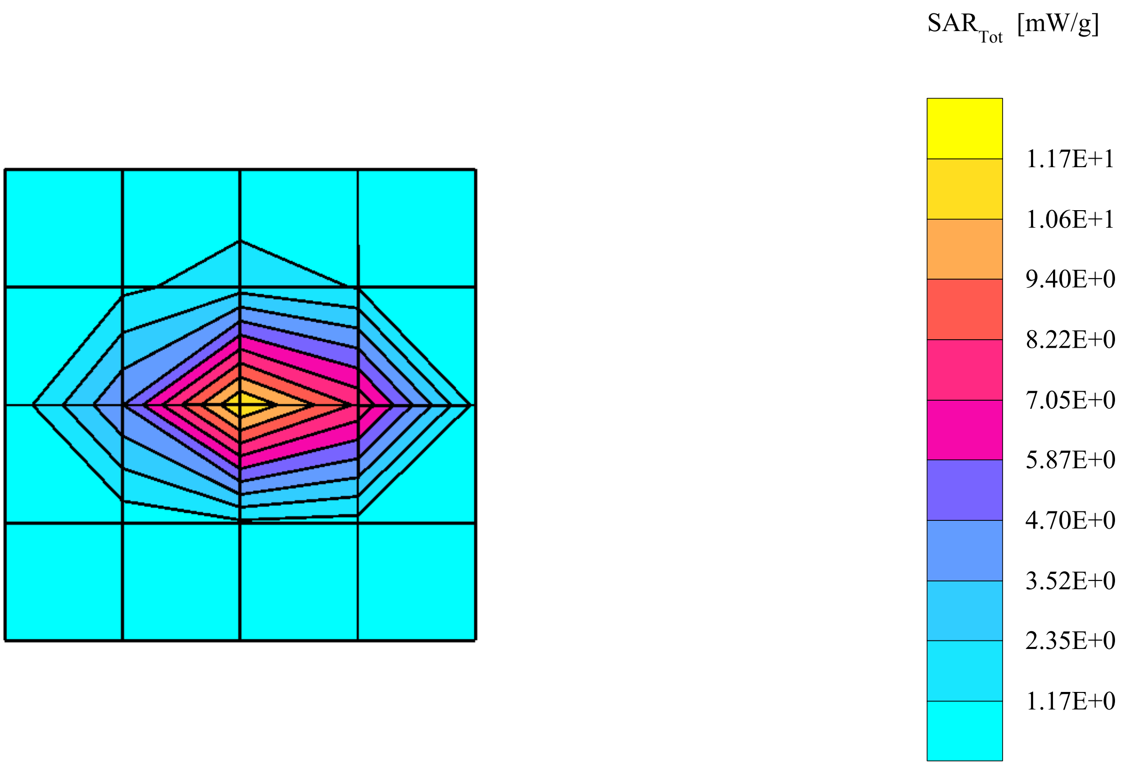
SAM Low Band Phantom; Section; Position: ; horinzontal angle until touching head (80°-90°)
; Body - 01; Probe: ET3DV6R - SN1431; ConvF(6.00,6.00,6.00); Crest factor: 1.0; Body 835 MHz (SAM): σ = 0.93 mho/m ε_r = 53.4 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 2.40   mW/g, SAR (10g): 1.60   mW/g, (Advanced extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.02 dB



07/31/03 Temp = 22° ±1° C

Dipole 1900 MHz

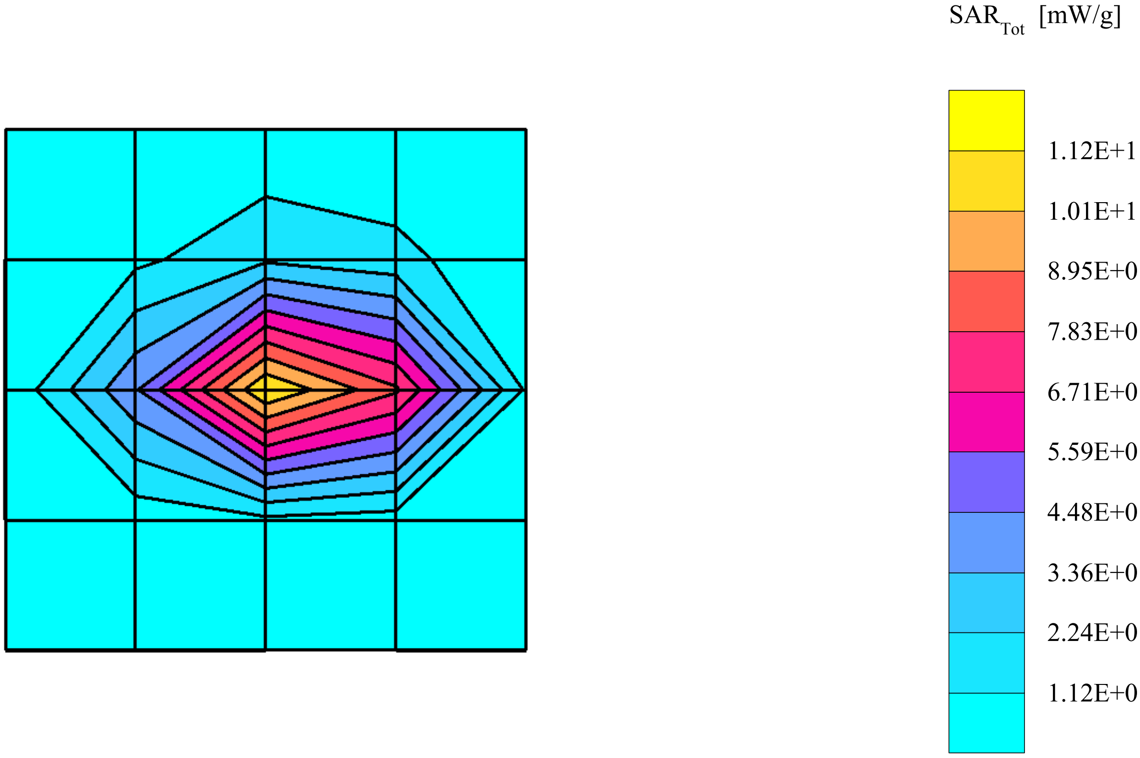
SAM High Band Phantom; Section; Position: ; horinzontal angle until touching head (80°-90°)
; Body 31; Probe: ET3DV6R - SN1431; ConvF(4.40,4.40,4.40); Crest factor: 1.0; Body 1900 MHz (SAM): σ = 1.54 mho/m ε_r = 50.9 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 10.5 mW/g, SAR (10g): 5.54 mW/g, (Advanced extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.15 dB



07/30/03 Temp = 22° ±1° C

Dipole 1900 MHz

SAM High Band Phantom; Section; Position: ; horinzontal angle until touching head (80°-90°)
; Body 30; Probe: ET3DV6R - SN1431; ConvF(4.40,4.40,4.40); Crest factor: 1.0; Body 1900 MHz (SAM): σ = 1.53 mho/m ε_r = 51.1 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 10.3   mW/g, SAR (10g): 5.45   mW/g, (Advanced extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.12 dB



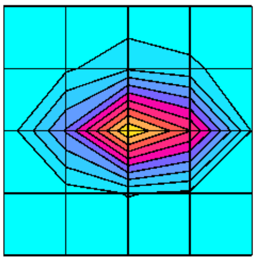
07/17/03 Temp = 22° ±1° C

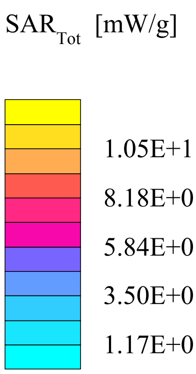
Dipole 835 MHz

SAM Low Band Phantom; Section; Position: ; horinzontal angle until touching head (80°-90°)
; Head- 17; Probe: ET3DV6R - SN1431; ConvF(6.20,6.20,6.20); Crest factor: 1.0; Head 835 MHz (SAM): σ = 0.89 mho/m ε_r = 40.9 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 2.42   mW/g, SAR (10g): 1.58   mW/g, (Advanced extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.04 dB

Dipole 1900 MHz

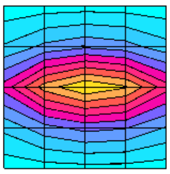
SAM High Band Phantom; Section; Position: ; horinzontal angle until touching head (80°-90°)
; Head - 15; Probe: ET3DV6R - SN1431; ConvF(4.70,4.70,4.70); Crest factor: 1.0; Head 1900 MHz (SAM): σ = 1.45 mho/m ε_r = 39.4 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 10.6 mW/g, SAR (10g): 5.53 mW/g, (Advanced extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.08 dB

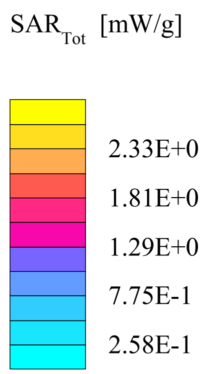




Dipole 835 MHz

SAM Low Band Phantom; Section; Position: ; horinzontal angle until touching head (80°-90°)
; Body - 10; Probe: ET3DV6R - SN1431; ConvF(6.00,6.00,6.00); Crest factor: 1.0; Body 835 MHz (SAM): σ = 0.93 mho/m ε_r = 53.4 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 2.37   mW/g, SAR (10g): 1.58   mW/g, (Advanced extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.07 dB





07/09/03 Temp = 22° ±1° C

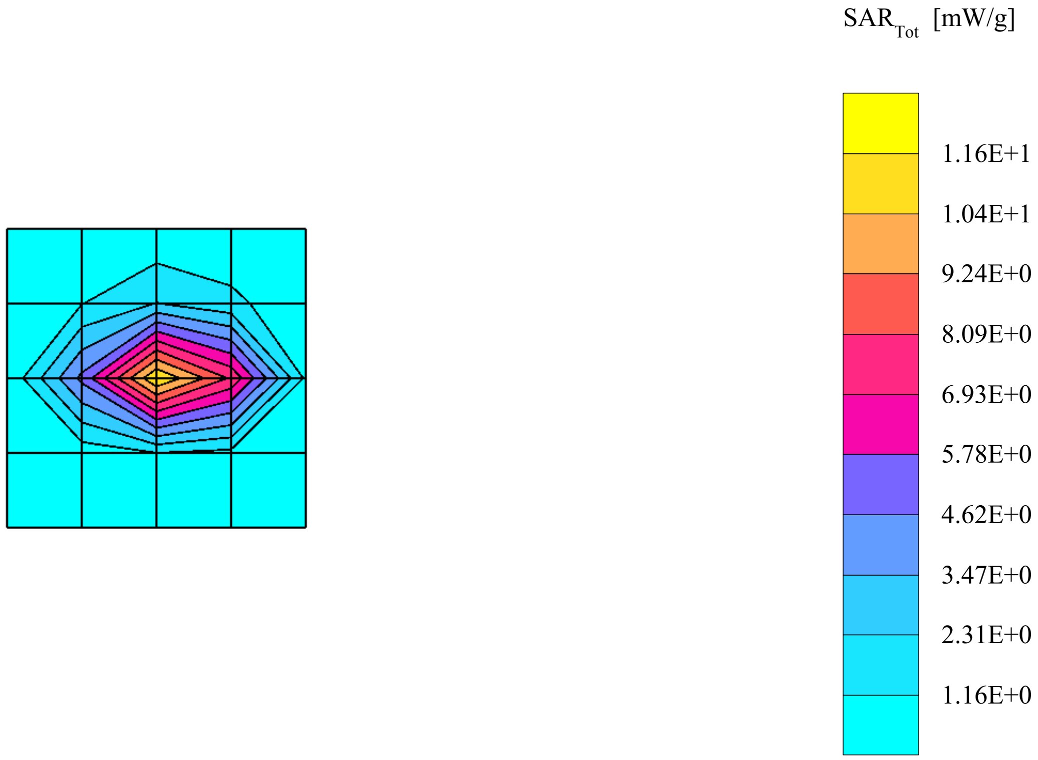
Dipole 835 MHz

SAM Low Band Phantom; Section; Position: ; horinzontal angle until touching head (80°-90°)
; Body - 09; Probe: ET3DV6R - SN1431; ConvF(6.00,6.00,6.00); Crest factor: 1.0; Body 835 MHz (SAM): σ = 0.93 mho/m ε_r = 53.4 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 2.41 mW/g, SAR (10g): 1.61 mW/g, (Advanced extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.03 dB

08/28/03 Temp = 22° ±1° C

Dipole 1900 MHz

SAM High Band Phantom; Section; Position: ; horinzontal angle until touching head (80°-90°)
; Head - 28; Probe: ET3DV6R - SN1431; ConvF(4.70,4.70,4.70); Crest factor: 1.0; Head 1900 MHz (SAM): σ = 1.44 mho/m ε_r = 38.7 ρ = 1.00 g/cm³
Cube 5x5x7: SAR (1g): 10.6 mW/g, SAR (10g): 5.53 mW/g, (Advanced extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.09 dB



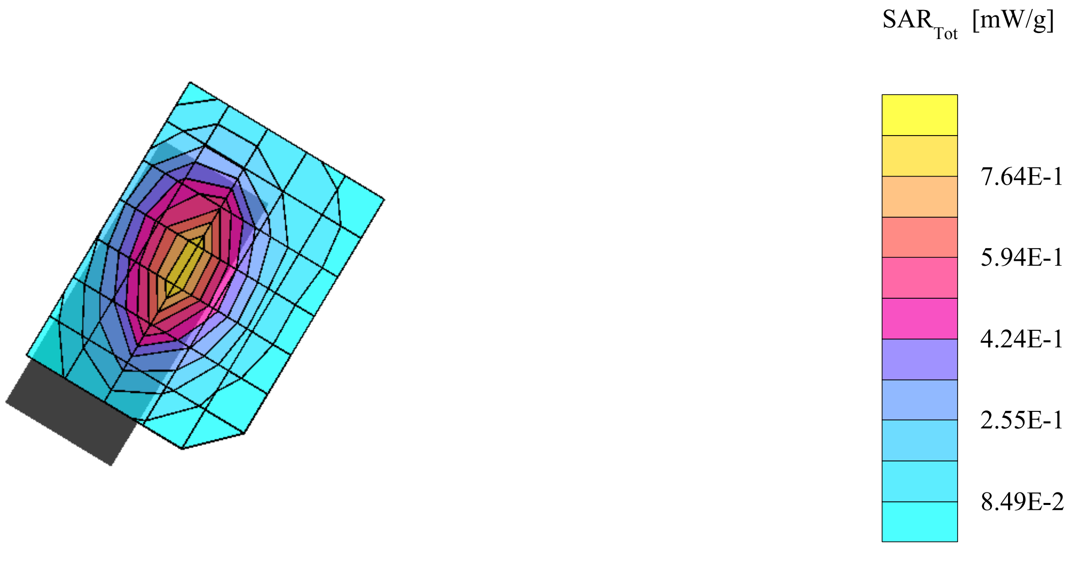
APPENDIX B.

SAR Distribution Printouts

07/17/03 Temp = 22° ±1° C

PPIRH-50

SAM Low Band Phantom; Left Hand Section; Position: (90°,59°); horinzontal angle until touching head (80°-90°)
; SAM touch left 850 MHz Ant; Probe: ET3DV6R - SN1431; ConvF(6.20,6.20,6.20); Crest factor: 8.0; Head 835 MHz (SAM): $\sigma = 0.89$ mho/m $\varepsilon_r = 40.9$ $\rho = 1.00$ g/cm^3
Cube 5x5x7: SAR (1g): 0.845 mW/g, SAR (10g): 0.555 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: -0.06 dB



PPIRH-50

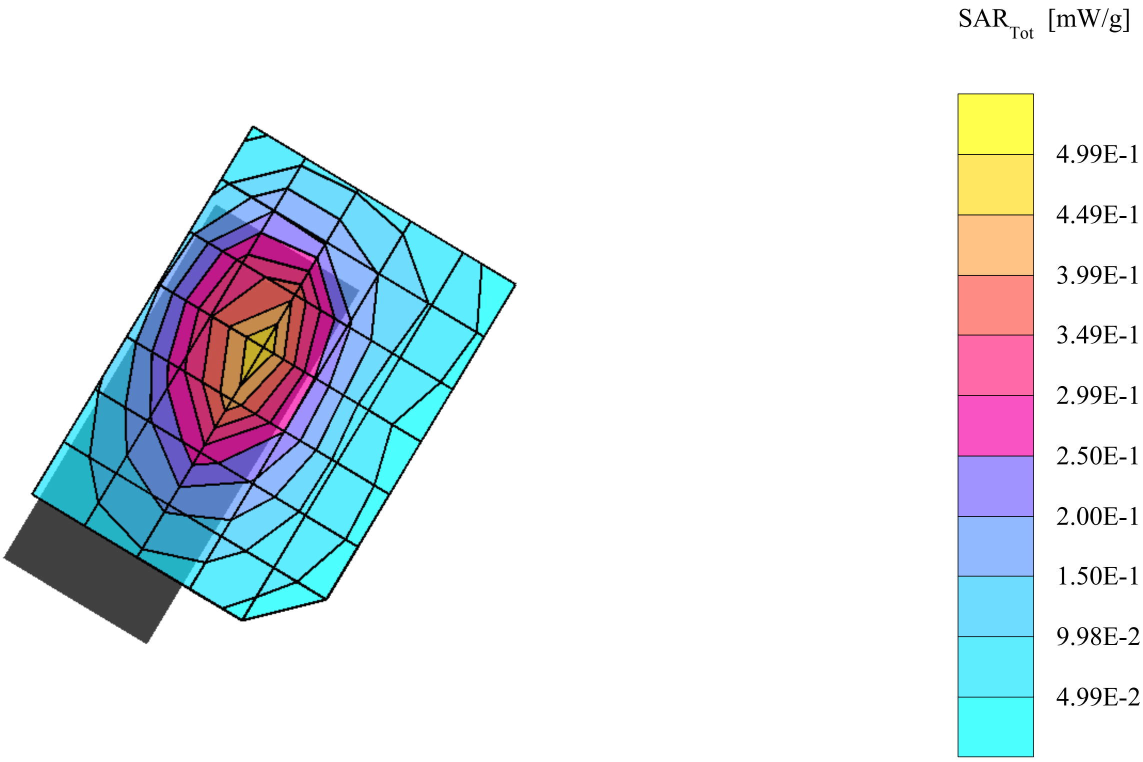
SAM Low Band Phantom; Left Hand Section; Position: (90°,59°); horinzontal angle : touch + 15°

; SAM plus15° left 850 MHz Ant; Probe: ET3DV6R - SN1431; ConvF(6.20,6.20,6.20); Crest factor: 8.0; Head 835 MHz (SAM): σ = 0.89 mho/m ε_r = 40.9 ρ = 1.00 g/cm³

Cube 5x5x7: SAR (1g): 0.496 mW/g, SAR (10g): 0.320 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Powerdrift: 0.04 dB



07/17/03 Temp = 22° ±1° C

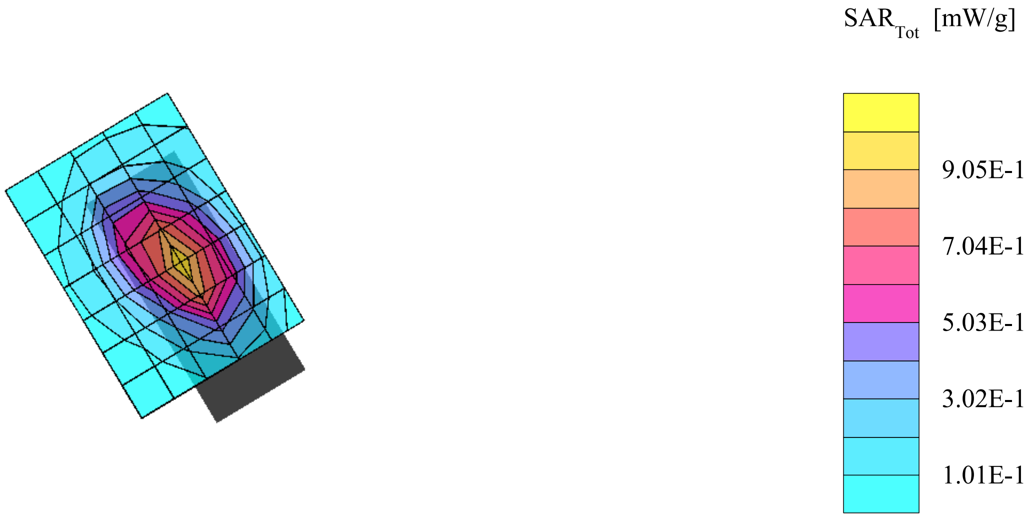
PPIRH-50

SAM Low Band Phantom; Righ Hand Section; Position: (90°,301°); horinzontal angle until touching head (80°-90°)
; SAM touch right 850 MHz Ant; Probe: ET3DV6R - SN1431; ConvF(6.20,6.20,6.20); Crest factor: 8.0; Head 835 MHz (SAM): $\sigma = 0.89$ mho/m $\varepsilon_r = 40.9$ $\rho = 1.00$ g/cm^3

Cube 5x5x7: SAR (1g): 0.975 mW/g, SAR (10g): 0.629 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

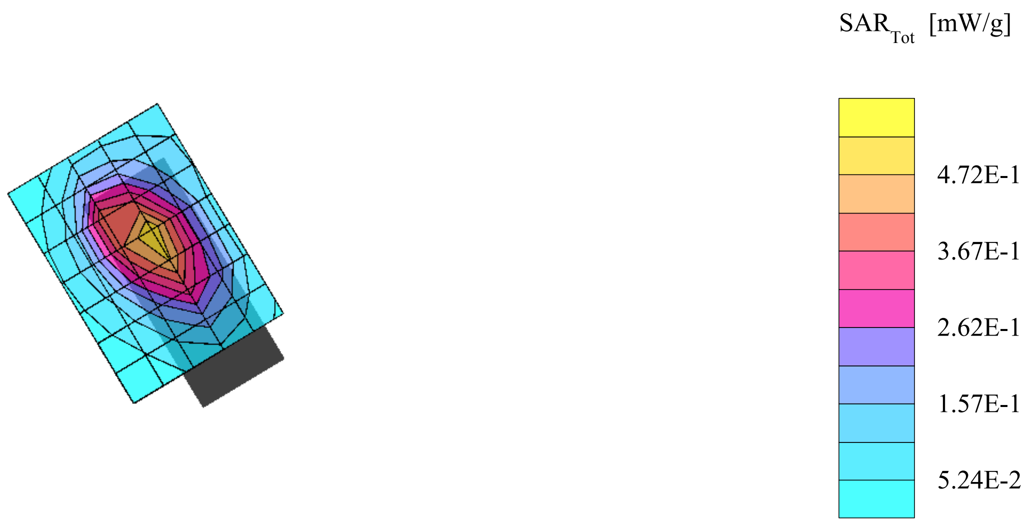
Powerdrift: -0.03 dB



07/17/03 Temp = 22° ±1° C

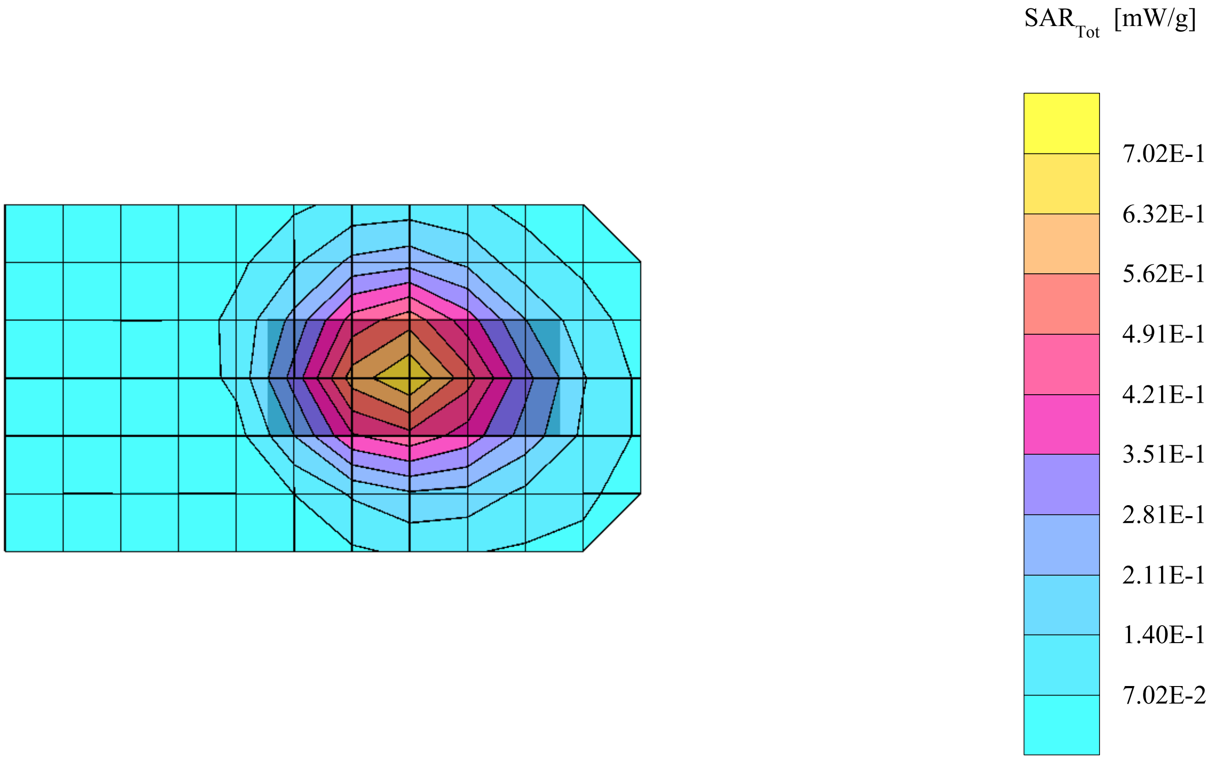
PPIRH-50

SAM Low Band Phantom; Righ Hand Section; Position: (90°,301°); horinzontal angle : touch + 15°
; SAM plus15° right 850 MHz Ant; Probe: ET3DV6R - SN1431; ConvF(6.20,6.20,6.20); Crest factor: 8.0; Head 835 MHz (SAM): $\sigma = 0.89$ mho/m $\varepsilon_r = 40.9$ $\rho = 1.00$ g/cm^3
Cube 5x5x7: SAR (1g): 0.550 mW/g, SAR (10g): 0.341 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: 0.00 dB



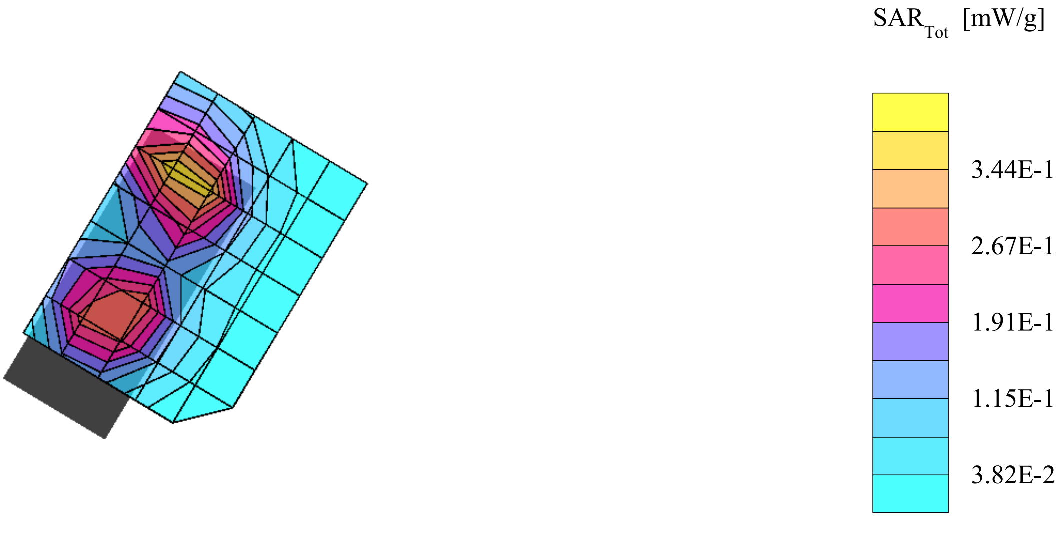
PPIRH-50

SAM Low Band Phantom; Flat Section; Position: (90°,270°); horinzontal angle until touching head (80°-90°)
; SAM Body, Ant; Probe: ET3DV6R - SN1431; ConvF(6.00,6.00,6.00); Crest factor: 4.0; Body 835 MHz (SAM): σ = 0.93 mho/m ε_r = 53.4 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 0.710 mW/g, SAR (10g): 0.500 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.02 dB



PPIRH-50

SAM High Band Phantom; Left Hand Section; Position: (90°,59°); Mode: GSM
; SAM touch left 1900 MHz Ant; Probe: ET3DV6R - SN1431; ConvF(4.70,4.70,4.70); Crest factor: 8.0; Head 1900 MHz (SAM): σ = 1.45 mho/m ε_r = 39.4 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 0.384 mW/g, SAR (10g): 0.219 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: -0.07 dB



07/15/03 Temp = 22° ±1° C

PPIRH-50

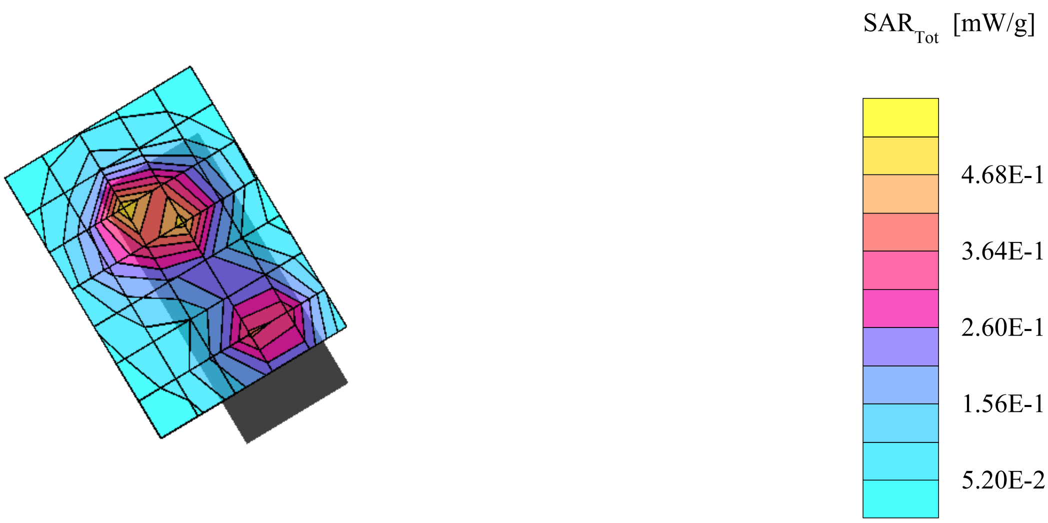
SAM High Band Phantom; Righ Hand Section; Position: (90°,301°); Mode: GSM

; SAM touch right 1900 MHz Ant; Probe: ET3DV6R - SN1431; ConvF(4.70,4.70,4.70); Crest factor: 8.0; Head 1900 MHz (SAM): σ = 1.45 mho/m ε_r = 39.4 ρ = 1.00 g/cm^3

Cube 5x5x7: SAR (1g): 0.639 mW/g, SAR (10g): 0.326 mW/g, (Worst-case extrapolation)

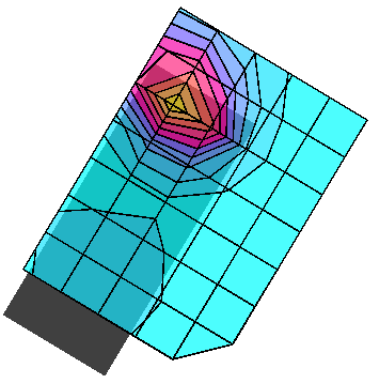
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

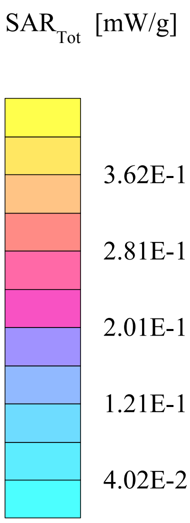
Powerdrift: 0.01 dB



PPIRH-50

SAM High Band Phantom; Left Hand Section; Position: (90°,59°); Mode: GSM
; SAM plus15° left 1900 MHz Ant; Probe: ET3DV6R - SN1431; ConvF(4.70,4.70,4.70); Crest factor: 8.0; Head 1900 MHz (SAM): $\sigma = 1.45$ mho/m $\varepsilon_r = 39.4$ $\rho = 1.00$ g/cm^3
Cube 5x5x7: SAR (1g): 0.400 mW/g, SAR (10g): 0.217 mW/g, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: -0.08 dB





PPIRH-50

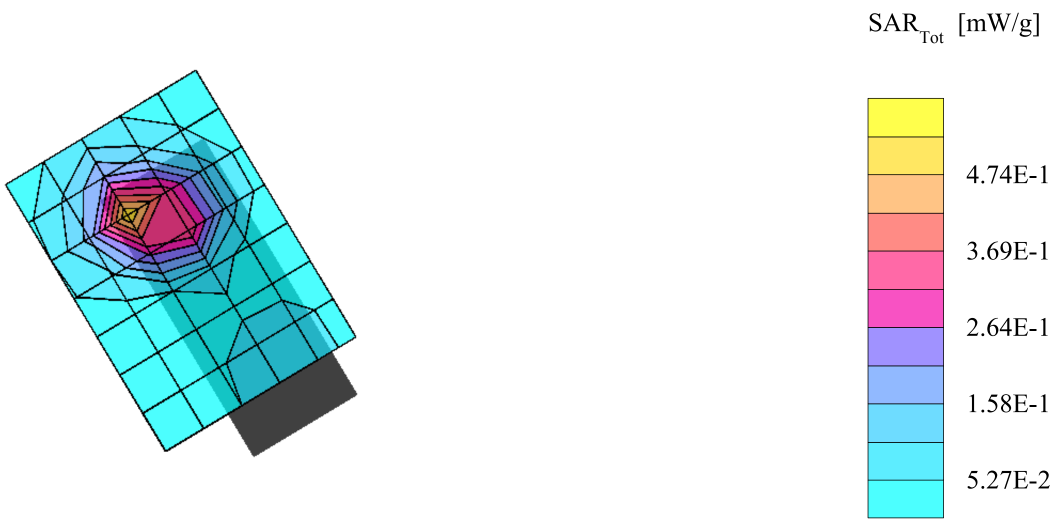
SAM High Band Phantom; Righ Hand Section; Position: (90°,301°); Mode: GSM

; SAM plus15° right 1900 MHz Ant; Probe: ET3DV6R - SN1431; ConvF(4.70,4.70,4.70); Crest factor: 8.0; Head 1900 MHz (SAM): σ = 1.45 mho/m ε_r = 39.4 ρ = 1.00 g/cm³

Cube 5x5x7: SAR (1g): 0.566 mW/g, SAR (10g): 0.286 mW/g * Max outside, (Worst-case extrapolation)

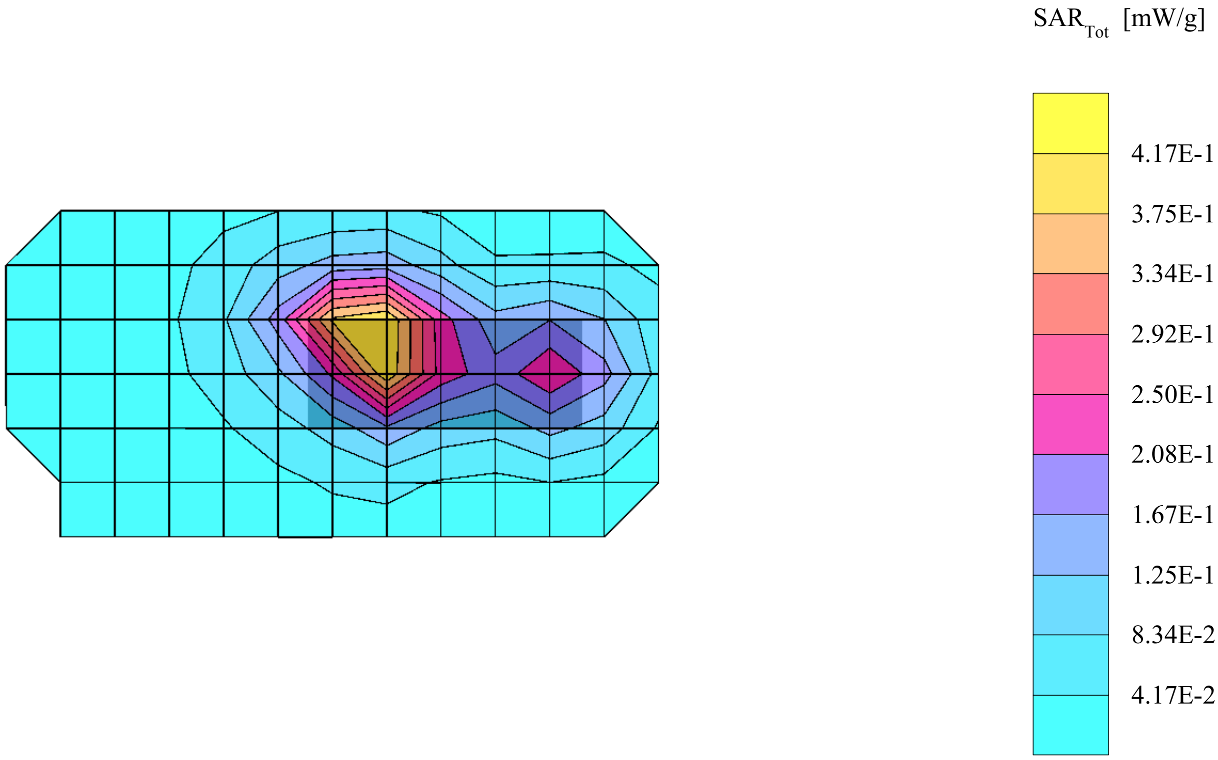
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Powerdrift: -0.01 dB



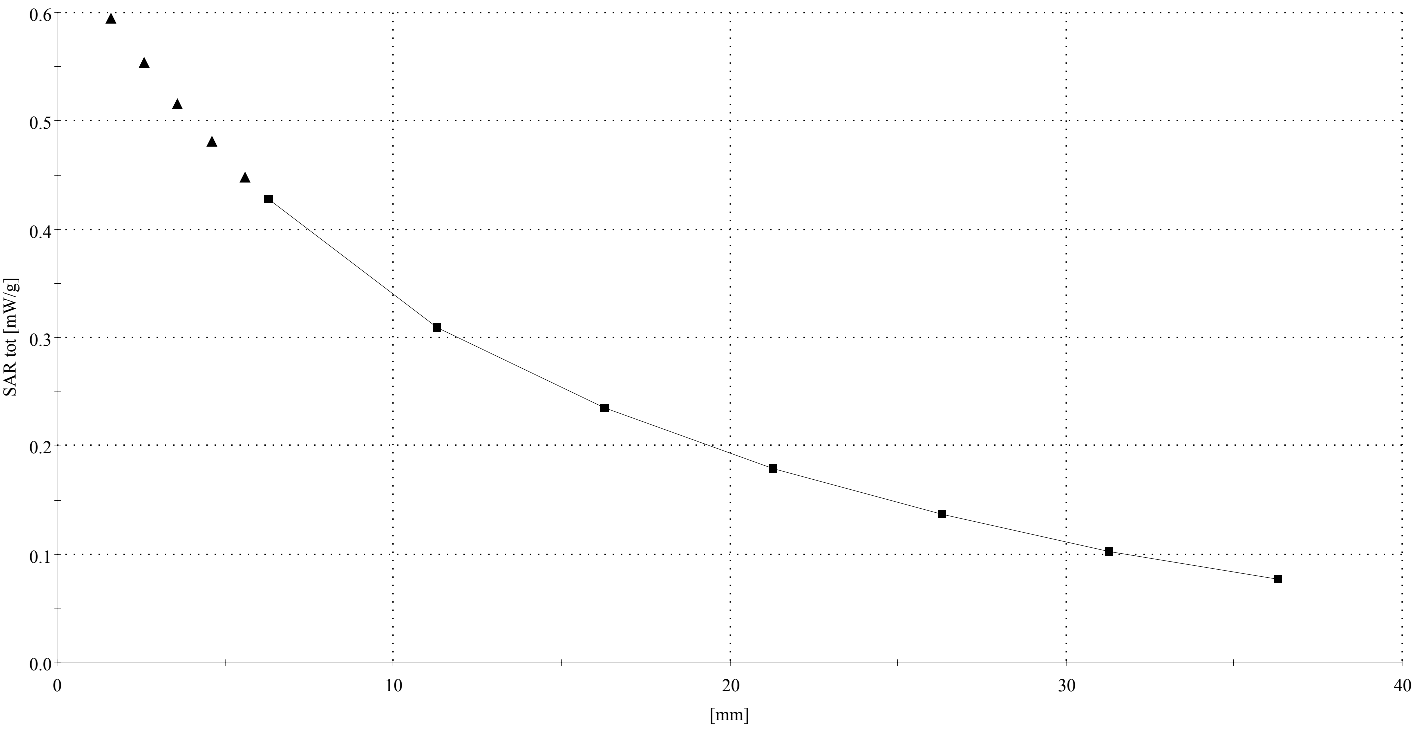
PPIRH-50

SAM High Band Phantom; Flat Section; Position: (90°,270°); Mode: GSM
; SAM Body, Ant; Probe: ET3DV6R - SN1431; ConvF(4.40,4.40,4.40); Crest factor: 4.0; Body 1900 MHz (SAM): σ = 1.53 mho/m ε_r = 51.1 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 0.492 mW/g, SAR (10g): 0.289 mW/g, (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.03 dB



PPIRH-50

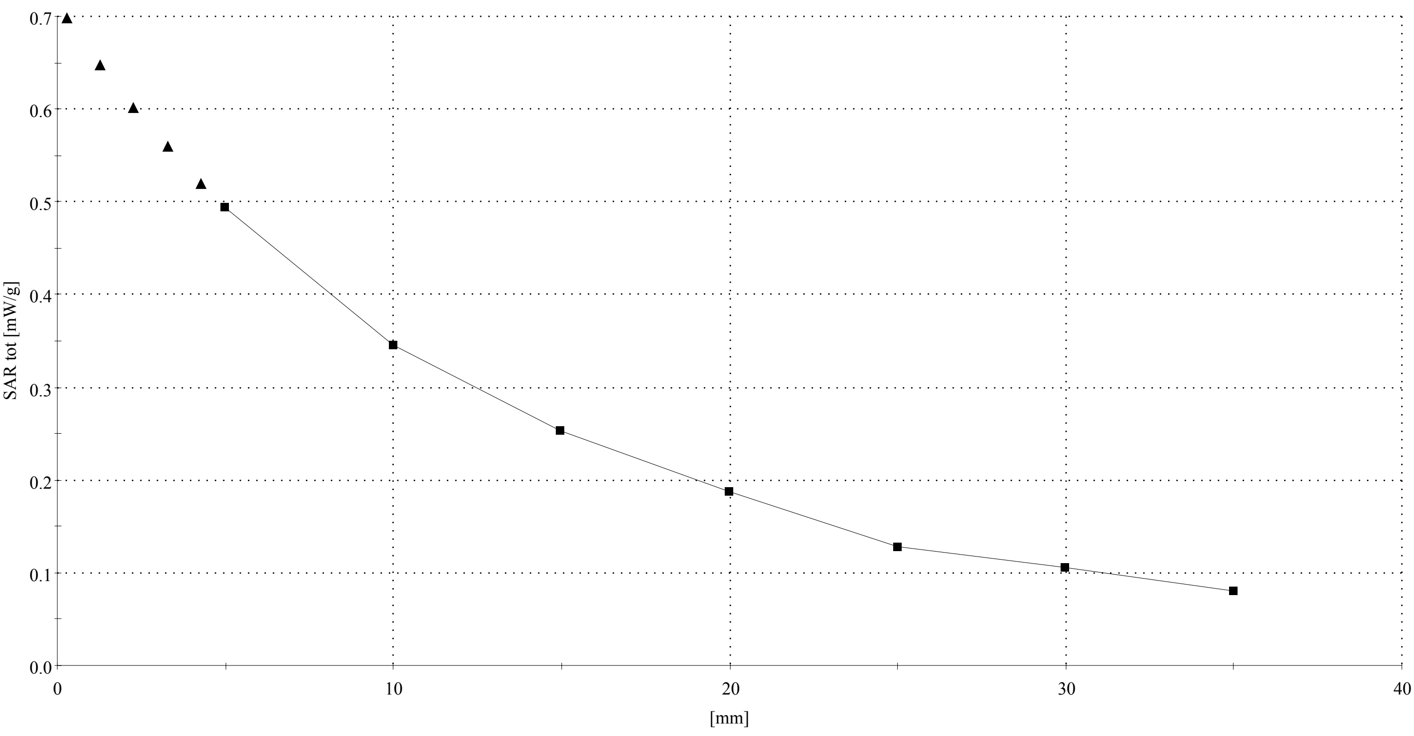
SAM Low Band Phantom; Righ Hand Section; Position: (90°,270°); horinzontal angle until touching head (80°-90°)
; SAM touch right 850 MHz Ant; Probe: ET3DV6R - SN1431; ConvF(6.20,6.20,6.20); Crest factor: 8.0; Head 835 MHz (SAM): $\sigma = 0.89$ mho/m $\varepsilon_r = 40.9$ $\rho = 1.00$ g/cm^3
Cube 5x5x7: SAR (1g): 0.975 mW/g, SAR (10g): 0.629 mW/g, (Worst-case extrapolation)
Cube 5x5x7: Dx = 8.0, Dy = 8.0, Dz = 5.0



08/01/03 Temp = 22° ±1° C

PPIRH-50

SAM Low Band Phantom; Flat Section; Position: (90°,270°); horinzontal angle until touching head (80°-90°)
; SAM Body, Ant; Probe: ET3DV6R - SN1431; ConvF(6.00,6.00,6.00); Crest factor: 4.0; Body 835 MHz (SAM): σ = 0.93 mho/m ε_r = 53.4 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 0.710 mW/g, SAR (10g): 0.500 mW/g, (Worst-case extrapolation)
Cube 5x5x7: Dx = 8.0, Dy = 8.0, Dz = 5.0



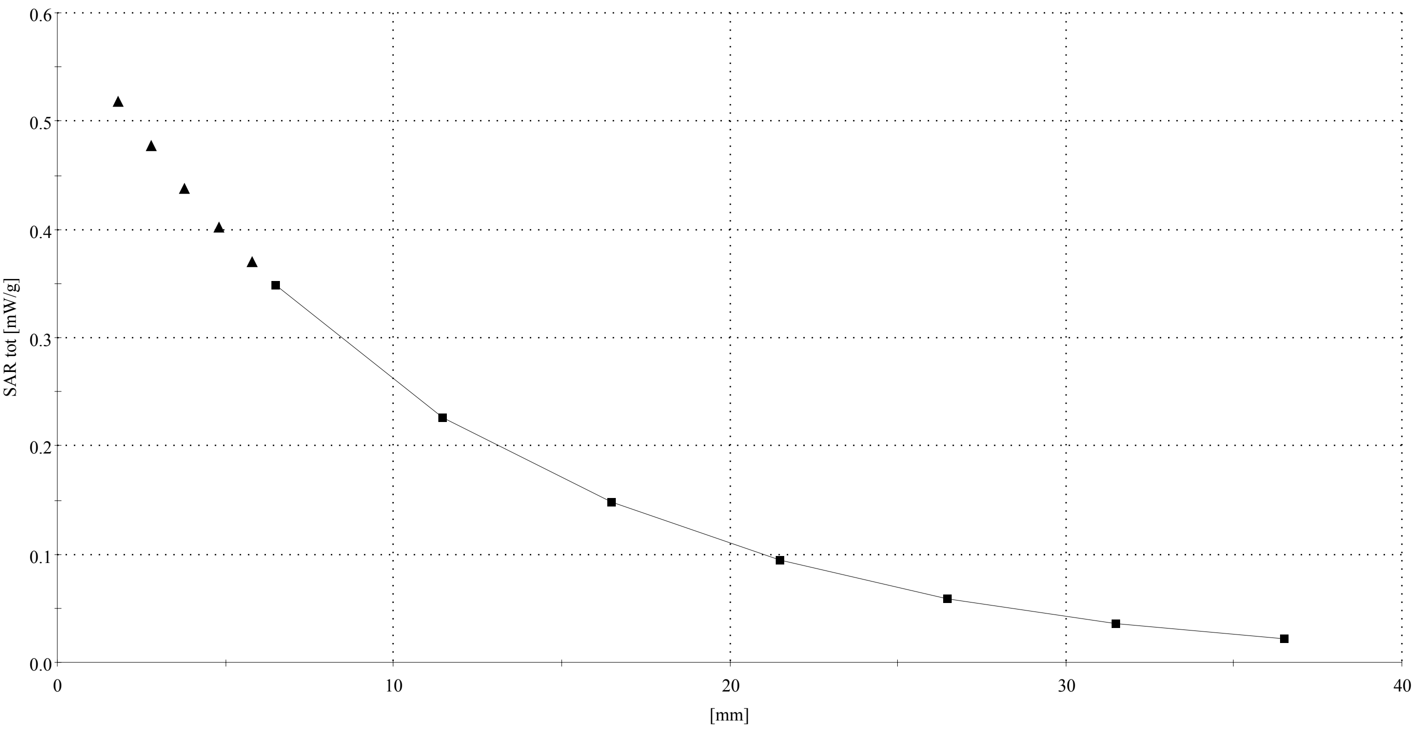
PPIRH-50

SAM High Band Phantom; Righ Hand Section; Position: (90°,270°); Mode: GSM

; SAM touch right 1900 MHz Ant; Probe: ET3DV6R - SN1431; ConvF(4.70,4.70,4.70); Crest factor: 8.0; Head 1900 MHz (SAM): $\sigma = 1.45$ mho/m $\varepsilon_r = 39.4$ $\rho = 1.00$ g/cm³

Cube 5x5x7: SAR (1g): 0.639 mW/g, SAR (10g): 0.326 mW/g, (Worst-case extrapolation)

Cube 5x5x7: Dx = 8.0, Dy = 8.0, Dz = 5.0



PPIRH-50

SAM High Band Phantom; Flat Section; Position: (90°,270°); Mode: GSM
; SAM Body, Ant; Probe: ET3DV6R - SN1431; ConvF(4.40,4.40,4.40); Crest factor: 4.0; Body 1900 MHz (SAM): σ = 1.53 mho/m ε_r = 51.1 ρ = 1.00 g/cm^3
Cube 5x5x7: SAR (1g): 0.492 mW/g, SAR (10g): 0.289 mW/g, (Worst-case extrapolation)
Cube 5x5x7: Dx = 8.0, Dy = 8.0, Dz = 5.0