SAR TEST REPORT (FCC)

RF EXPOSURE EVALUATION — SPECIFIC ABSORPTION RATE

APPLICANT	KENWOOD USA CORPORATION			
DEVICE UNDER TEST (DUT)	PORTABLE UHF PTT RADIO TRANSCEIVER (ANALOG/DIGITAL)			
DEVICE MODEL(S)	NX-300-K	NX-300-K3	TK-5320-K	TK-5320-K3
DEVICE IDENTIFIER(S)	FCC ID: ALH378500			
APPLICATION TYPE	Class II Permissive Change			
STANDARD(S) APPLIED	FCC 47 CFR §2.1093			
PROCEDURE(S) APPLIED	FCC OET Bulletin 65, Supplement C (01-01)			
	IEEE 1528-2003			
FCC DEVICE CLASSIFICATION	Licensed Non-Broadcast Transmitter Held to Face (TNF)			
RF EXPOSURE CATEGORY	Occupational / Controlled			
RF EXPOSURE EVALUATION	Face-held & Body-worn			
DATE(S) OF EVALUATION(S)	May 01, 27-28 & July 25, 2008			
TEST REPORT SERIAL NO.	043008ALH-T900-S90U			
TEST REPORT REVISION NO.	Revision 1.0	Initial Release	July 25, 2008	
TEST REPORT SIGNATORIES	Testing Performed By		Test Report Prepared By	
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TEST LAB AND LOCATION	Celltech Compliance Testing and Engineering Lab			
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TEST LAB ACCREDITATION(S)	ilac-MRA A2LA ACCREDITED Test Lab Certificate No. 2470.01			

DECLARATION OF COMPLIANCE
SAR RF EXPOSURE EVALUATION

Test Lab Information	**Name**	**CELLTECH LABS INC.**				
	Address	21-364 Lougheed Road, Kelowna, British Columbia V1X 7R8 Canada				
Applicant Information	**Name**	**KENWOOD USA CORPORATION**				
	Address	3975 John Creek Court, Suite 300, Suwanee, GA 30024 United States				
Standard(s) Applied	**FCC**	47 CFR §2.1093				
Procedure(s) Applied	**FCC**	OET Bulletin 65, Supplement C (Edition 01-01)				
	IEEE	1528-2003				
Device Classification(s)	**FCC**	Licensed Non-Broadcast Transmitter Held to Face (TNF)				
Device RF Exposure Category	**Portable**	Occupational / Controlled Environment				
Device Identifier(s)	**FCC ID:**	ALH378500				
	Model(s)	NX-300-K	NX-300-K3	TK-5320-K	TK-5320-K3	
	Serial No.	90650029 (Identical Prototype)		U_15S No. 71 (Identical Prototype)		
Device Description	Portable UHF Push-to-Talk (PTT) Radio Transceiver with Speaker-Microphone Antenna Type					
Application Type	Class II Permissive Change - add Speaker-Microphone Antenna Type and Ni-MH Battery					
Transmit Frequency Range(s)	450.05 - 519.95 MHz					
Modulation Type(s)	Analog (FM) / Digital (FSK)					
Max. RF Output Power Tested	450.05 MHz	Low Channel	5.2 Watts (Radio)	3.5 Watts (SMA)	Conducted	
	485.05 MHz	Mid Channel	5.1 Watts (Radio)	3.6 Watts (SMA)	Conducted	
	519.95 MHz	High Channel	5.0 Watts (Radio)	3.8 Watts (SMA)	Conducted	
Antenna Type(s) Tested	Stubby	440 - 490 MHz	Length: 84 mm	P/N: KRA-23M		
	Stubby	470 - 520 MHz	Length: 84 mm	P/N: KRA-23M2		
	Whip	440 - 490 MHz	Length: 153 mm	P/N: KRA-27M		
	Whip	470 - 520 MHz	Length: 143 mm	P/N: KRA-27M2		
Battery Type(s) Tested	Ni-MH	7.2 V	2150 mAh	P/N: KNB-50NC		
Body-worn Accessories Tested	Belt-Clip (Radio)	Contains Metal	1.9 cm Spacing	P/N: J29-0730>PC<1		
	Lapel-Clip (SMA)	Contains Metal	1.4 cm Spacing	P/N: none		
Audio Accessories Tested	Speaker-Microphone			P/N: KMC-41		
	Speaker-Microphone Antenna Type			P/N: KMC-40		
Max. SAR Level(s) Evaluated	Face-held	**2.17 W/kg**	1g	50% duty cycle	**FCC SAR Limit**	8.0 W/kg 1g
	Body-worn	**4.51 W/kg**	1g	50% duty cycle	**FCC SAR Limit**	8.0 W/kg 1g

Celltech Labs Inc. declares under its sole responsibility that this wireless portable device has demonstrated compliance with the Specific Absorption Rate (SAR) RF exposure requirements specified in FCC 47 CFR §2.1093 for the Occupational / Controlled Exposure environment. The device was tested in accordance with the measurement standards and procedures specified in FCC OET Bulletin 65, Supplement C (Edition 01-01) and IEEE 1528-2003. All measurements were performed in accordance with the SAR system manufacturer recommendations.

I attest to the accuracy of data. All measurements were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

The results and statements contained in this report pertain only to the device(s) evaluated.

This test report shall not be reproduced partially, or in full, without the prior written approval of Celltech Labs Inc.

Test Report Approved By	Sean Johnston	**Celltech Labs Inc.**

TABLE OF CONTENTS

1.0 INTRODUCTION

This measurement report demonstrates that the Kenwood USA Corporation Model(s): NX-300-K, NX-300-K3, TK-5320-K, TK-5320-K3 Portable UHF PTT Radio Transceiver, with the Class II Permissive Change(s) described in this report, complies with the SAR (Specific Absorption Rate) RF exposure requirements specified in FCC 47 CFR §2.1093 (see reference [1]) for the Occupational / Controlled Exposure environment. The test procedures described in FCC OET Bulletin 65, Supplement C, Edition 01-01 (see reference [2]) and IEEE 1528-2003 (see reference [3]) were employed. A description of the device, operating configuration, detailed summary of the test results, methodology and procedures used in the evaluation, equipment used, and the various provisions of the rules are included within this test report.

2.0 SAR MEASUREMENT SYSTEM

Celltech Labs Inc. SAR measurement facility utilizes the Dosimetric Assessment System (DASY™) manufactured by Schmid & Partner Engineering AG (SPEAG™) of Zurich, Switzerland. The DASY4 measurement system is comprised of the measurement server, robot controller, computer, near-field probe, probe alignment sensor, specific anthropomorphic mannequin (SAM) phantom, and various planar phantoms for brain and/or body SAR evaluations. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF). A cell controller system contains the power supply, robot controller, teach pendant (Joystick), and remote control, is used to drive the robot motors. The Staubli robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the DASY4 measurement server. The DAE4 utilizes a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16-bit AD-converter and a command decoder and control logic unit. Transmission to the DASY4 measurement server is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe-mounting device includes two different sensor systems for frontal and sidewise probe contacts. The sensor systems are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer.

DASY4 SAR System with Plexiglas validation phantom

DASY4 SAR System with Plexiglas side planar phantom

3.0 MEASUREMENT SUMMARY

SAR EVALUATION RESULTS

Test Type	Test Date	Freq.	Ch.	Test Mode	Antenna Part No.	Batt. Type	Accessory Type(s)		DUT Spacing to Planar Phantom	Conducted Power Before Test		Measured SAR 1g (W/kg)		SAR Drift During Test	Scaled SAR with droop 1g (W/kg)	
							Body-worn	Audio		Watts		Duty Cycle			Duty Cycle	
		MHz							cm	DUT	SMA	100%	50%	dB	100%	50%
Face	May 27	485.05	Mid	CW	KRA-23M2	NiMH	n/a	n/a	2.5	5.1	-	3.68	1.84	-0.722	4.35	**2.17**
Face	May 27	485.05	Mid	CW	KRA-23M	NiMH	n/a	SMA	2.5	5.1	3.6	1.32	0.660	-0.606	1.52	0.759
Face	May 27	485.05	Mid	CW	KRA-23M2	NiMH	n/a	SMA	2.5	5.1	3.6	1.30	0.650	-0.338	1.41	0.703
Face	May 27	485.05	Mid	CW	KRA-27M	NiMH	n/a	SMA	2.5	5.1	3.6	1.29	0.645	-0.469	1.44	0.719
Face	July 25	485.05	Mid	CW	KRA-27M2	NiMH	n/a	SMA	2.5	5.1	3.6	0.895	0.448	-0.581	1.02	0.512
Body	May 01	485.05	Mid	CW	KRA-23M2	NiMH	Belt-Clip	SM	1.9	5.1	-	7.19	3.60	-0.986	9.02	**4.51**
Body	May 28	485.05	Mid	CW	KRA-23M	NiMH	Lapel-Clip	SMA	1.4	5.1	3.6	2.26	1.13	-0.612	2.60	1.30
Body	May 01	485.05	Mid	CW	KRA-23M2	NiMH	Lapel-Clip	SMA	1.4	5.1	3.6	1.23	0.615	-1.05	1.57	0.783
Body	May 28	485.05	Mid	CW	KRA-27M	NiMH	Lapel-Clip	SMA	1.4	5.1	3.6	1.41	0.705	-0.684	1.65	0.825
Body	July 25	485.05	Mid	CW	KRA-27M2	NiMH	Lapel-Clip	SMA	1.4	5.1	3.6	1.16	0.580	-0.653	1.35	0.674
Body	May 28	450.05	Low	CW	KRA-23M	NiMH	Lapel-Clip	SMA	1.4	5.2	3.5	0.734	0.367	-0.305	0.787	0.394
Body	May 28	519.95	High	CW	KRA-23M2	NiMH	Lapel-Clip	SMA	1.4	5.0	3.8	5.17	2.59	-0.794	6.21	3.10

SAR LIMIT(S)	HEAD / BODY	SPATIAL PEAK	RF EXPOSURE CATEGORY
FCC Rule Part 2.1093	8.0 W/kg	averaged over 1 gram	Occupational / Controlled

Fluid Type	480 MHz Brain				480 MHz Body			
	IEEE Target	Date	Meas.	Dev.	IEEE Target	Date	Meas.	Dev.
Dielectric Constant ε_r	43.3 ±5%	05/27	43.9	+1.4%	56.6 ±5%	05/01	57.8	+2.1%
		07/25	43.7	+1.0%		05/28	59.0	+4.3%
						07/25	57.2	+1.1%
Conductivity σ (mho/m)	0.87 ±5%	05/27	0.90	+3.5%	0.94 ±5%	05/01	0.97	+3.2%
		07/25	0.91	+4.6%		05/28	0.96	+2.2%
						07/25	0.98	+4.3%

Test Date	05/01	05/27	05/28	07/25	Unit
Atmospheric Pressure	101.1	100.9	101.1	100.9	kPa
Relative Humidity	35	30	31	31	%
Ambient Temperature	22.5	24.8	24.5	24.1	°C
Fluid Temperature	21.5	22.7	22.7	23.1	°C
Fluid Depth	≥ 15	≥ 15	≥ 15	≥ 15	cm
ρ (Kg/m^3)	1000				

Notes

1.	Detailed measurement data and plots showing the maximum SAR location of the DUT are reported in Appendix A.
2.	If the scaled SAR levels evaluated at the mid channel (50% duty cycle) were ≥ 3 dB below the SAR limit, SAR evaluation for the low and high channels was optional (per FCC OET Bulletin 65, Supplement C, Edition 01-01 - see reference [2]).
3.	The SAR evaluations for the Radio Transceiver (without Speaker-Microphone-Antenna accessory) were performed in the worst-case antenna configuration evaluated during the original FCC certification testing (TRSN: 060807ALH-T834-S90U).
4.	The power droop of the DUT measured by the DASY4 system for the duration of the SAR evaluations was added to the measured SAR level to report scaled SAR results as shown in the above test data table.
5.	A SAR-versus-Time power droop evaluation was performed in the test configuration that reported the maximum-scaled SAR level. See Appendix A (SAR Test Plots) for SAR-versus-Time power droop evaluation plot.
6.	The area scan evaluation was performed with a fully charged battery. After the area scan was completed the radio was cooled down and the battery was replaced with a fully charged battery prior to the zoom scan evaluation.
7.	The fluid temperature was measured prior to and after the SAR evaluations to ensure the temperature remained within +/-2°C of the fluid temperature reported during the dielectric parameter measurements.
8.	The dielectric parameters of the simulated tissue mixtures were measured prior to the SAR evaluations using a Dielectric Probe Kit and a Network Analyzer (see Appendix C).
9.	The SAR evaluations were performed within 24 hours of the system performance check.
10.	SM = Speaker-Microphone; SMA = Speaker-Microphone Antenna Type

4.0 DETAILS OF SAR EVALUATION

The Kenwood USA Corporation Model(s): NX-300-K, NX-300-K3, TK-5320-K, TK-5320-K3 Portable UHF PTT Radio Transceiver, with the Class II Permissive Change(s) described in this report, was compliant for localized Specific Absorption Rate (Occupational / Controlled Exposure) based on the test provisions and conditions described below. Detailed photographs of the test setup are shown in Appendix D.

Test Configuration(s)

1. The Radio Transceiver was evaluated in a face-held configuration with the front of the DUT placed parallel to the outer surface of the planar phantom. A 2.5 cm spacing was maintained between the front side of the DUT and the outer surface of the planar phantom.
2. The Speaker-Microphone Antenna Type was evaluated in a face-held configuration with the front of the DUT placed parallel to the outer surface of the planar phantom. A 2.5 cm spacing was maintained between the front side of the DUT and the outer surface of the planar phantom. The Speaker-Microphone Antenna Type was connected to the audio port of the Radio Transceiver and the antenna connector on the Radio Transceiver was terminated.
3. The Radio Transceiver was evaluated in a body-worn configuration with the back of the DUT placed parallel to the outer surface of the planar phantom. The attached belt-clip accessory was touching the planar phantom and provided a 1.9 cm spacing from the back of the DUT to the outer surface of the planar phantom. The DUT was evaluated for body-worn SAR with the customer-supplied speaker-microphone accessory connected to the audio port.
4. The Speaker-Microphone Antenna Type was evaluated in a body-worn configuration with the back of the DUT placed parallel to the outer surface of the planar phantom. The attached lapel-clip was touching the planar phantom and provided a 1.4 cm spacing from the back of the DUT to the outer surface of the planar phantom. The Speaker-Microphone Antenna Type was connected to the audio port of the Radio Transceiver and the antenna connector on the Radio Transceiver was terminated.

Test Mode & Output Power

5. The DUT was tested in unmodulated continuous transmit operation (Continuous Wave mode at 100% duty cycle) with the transmit key constantly depressed. For a push-to-talk device the 50% duty cycle compensation reported assumes a transmit/receive cycle of equal time base.
6. The RF conducted output power levels were measured prior to the SAR evaluations at the antenna connector of the DUT using a Gigatronics 8652A Universal Power Meter according to the procedures described in FCC §2.1046.

5.0 EVALUATION PROCEDURES

a. (i) The evaluation was performed in the applicable area of the phantom depending on the type of device being tested. For devices held to the ear during normal operation, both the left and right ear positions were evaluated using the SAM phantom.
(ii) For body-worn and face-held devices a planar phantom was used.

b. The SAR was determined by a pre-defined procedure within the DASY4 software. Upon completion of a reference and optical surface check, the exposed region of the phantom was scanned near the inner surface with a grid spacing of 15mm x 15mm.
An area scan was determined as follows:

c. Based on the defined area scan grid, a more detailed grid is created to increase the points by a factor of 10. The interpolation function then evaluates all field values between corresponding measurement points.

d. A linear search is applied to find all the candidate maxima. Subsequently, all maxima are removed that are >2 dB from the global maximum. The remaining maxima are then used to position the cube scans.
A 1g and 10g spatial peak SAR was determined as follows:

e. Extrapolation is used to find the points between the dipole center of the probe and the surface of the phantom. This data cannot be measured, since the center of the dipoles is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.4 mm (see probe calibration document in Appendix F). The extrapolation was based on trivariate quadratics computed from the previously calculated 3D interpolated points nearest the phantom surface.

f. Interpolated data is used to calculate the average SAR over 1g and 10g cubes by spatially discretizing the entire measured cube. The volume used to determine the averaged SAR is a 1mm grid (42875 interpolated points).

g. A zoom scan volume of 32 mm x 32 mm x 30 mm (5 x 5 x 7 points) centered at the peak SAR location determined from the area scan is used for all zoom scans for devices with a transmit frequency < 800 MHz. Zoom scans for frequencies ≥ 800 MHz are determined with a scan volume of 30 mm x 30 mm x 30 mm (7 x 7 x 7) to ensure complete capture of the peak spatial-average SAR.

6.0 SYSTEM PERFORMANCE CHECK

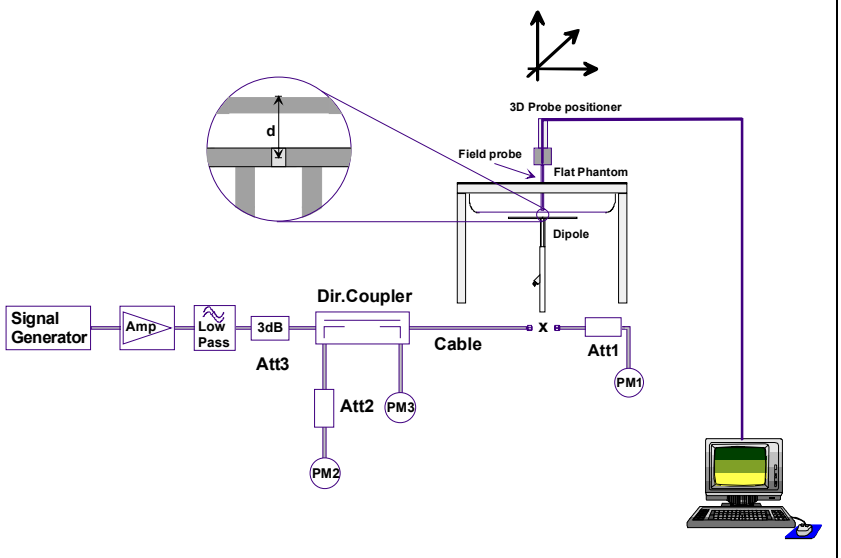
Prior to the SAR evaluations a system check was performed using a Plexiglas planar phantom and 450 MHz dipole (see Appendix B for system performance check test plot). The dielectric parameters of the simulated tissue mixture were measured prior to the system performance check using a Dielectric Probe Kit and a Network Analyzer (see Appendix C for measured fluid dielectric parameters). A forward power of 250 mW was applied to the dipole and the system was verified to a tolerance of ±10% from the system validation target SAR value (see Appendix E for system validation procedures).

SYSTEM PERFORMANCE CHECK EVALUATIONS

Test Date	Equiv. Tissue	SAR 1g (W/kg)			Dielectric Constant ε_r			Conductivity σ (mho/m)			ρ (Kg/m^3)	Amb. Temp. (°C)	Fluid Temp. (°C)	Fluid Depth (cm)	Humid. (%)	Barom. Press. (kPa)
	Freq. MHz	Sys. Val Target	Meas.	Dev.	Sys. Val Target	Meas.	Dev.	Sys. Val Target	Meas.	Dev.						
May 01	Brain 450	1.19 ±10%	1.19	0.0%	43.6 ±5%	43.6	0.0%	0.86 ±5%	0.86	0.0%	1000	22.5	21.5	≥ 15	35	101.1
May 27	Brain 450	1.19 ±10%	1.22	+2.6%	43.6 ±5%	44.4	+1.8%	0.86 ±5%	0.88	+2.4%	1000	24.8	22.7	≥ 15	30	100.9
July 25	Brain 450	1.18 ±10%	1.18	0.0%	43.4 ±5%	43.4	0.0%	0.89 ±5%	0.89	0.0%	1000	24.1	23.1	≥ 15	31	100.9

Note(s)

1. The target SAR value is referenced from the System Validation procedure performed by Celltech Labs Inc. (see Appendix E).
2. The target dielectric parameters are referenced from the System Validation procedure performed by Celltech Labs Inc. (see Appendix E).
3. The fluid temperature was measured prior to and after the system performance check to ensure the temperature remained within +/-2°C of the fluid temperature reported during the dielectric parameter measurements.
4. The SAR evaluations were performed within 24 hours of the system performance check.



System Performance Check Measurement Setup Diagram

450 MHz Validation Dipole Setup

7.0 SIMULATED EQUIVALENT TISSUES

The simulated tissue mixtures consisted of a viscous gel using hydroxethylcellulose (HEC) gelling agent and saline solution. Preservation with a bactericide was added and visual inspection made to ensure air bubbles were not trapped during the mixing process. The fluid was prepared according to standardized procedures and measured for dielectric parameters (permittivity and conductivity).

SIMULATED TISSUE MIXTURES		
INGREDIENT	450 MHz Brain	450 MHz Body
	System Check & DUT Evaluation	DUT Evaluation
Water	38.56 %	52.00 %
Sugar	56.32 %	45.65 %
Salt	3.95 %	1.75 %
HEC	0.98 %	0.50 %
Bactericide	0.19 %	0.10 %

8.0 SAR LIMITS

SAR RF EXPOSURE LIMITS		
FCC 47 CFR 2.1093	(General Population / Uncontrolled Exposure)	(Occupational / Controlled Exposure)
Spatial Average (averaged over the whole body)	0.08 W/kg	0.4 W/kg
Spatial Peak (averaged over any 1 g of tissue)	1.6 W/kg	**8.0 W/kg**
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)	4.0 W/kg	20.0 W/kg
The Spatial Average value of the SAR averaged over the whole body.		
The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.		
The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.		
Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.		
Controlled environments are defined as locations where there is potential exposure of individuals who have knowledge of their potential exposure and can exercise control over their exposure.		

9.0 ROBOT SYSTEM SPECIFICATIONS

Specifications	
Positioner	Stäubli Unimation Corp. Robot Model: RX60L
Repeatability	0.02 mm
No. of axis	6
Data Acquisition Electronic (DAE) System	
Cell Controller	
Processor	AMD Athlon XP 2400+
Clock Speed	2.0 GHz
Operating System	Windows XP Professional
Data Converter	
Features	Signal Amplifier, multiplexer, A/D converter, and control logic
Software	Measurement Software: DASY4, V4.7 Build 44
	Postprocessing Software: SEMCAD, V1.8 Build 171
Connecting Lines	Optical downlink for data and status info., Optical uplink for commands and clock
DASY4 Measurement Server	
Function	Real-time data evaluation for field measurements and surface detection
Hardware	PC/104 166MHz Pentium CPU; 32 MB chipdisk; 64 MB RAM
Connections	COM1, COM2, DAE, Robot, Ethernet, Service Interface
E-Field Probe	
Model	ET3DV6
Serial No.(s)	1387, 1590
Construction	Triangular core fiber optic detection system
Frequency	10 MHz to 6 GHz
Linearity	±0.2 dB (30 MHz to 3 GHz)
Evaluation Phantom	
Type	Side Planar Phantom
Shell Material	Plexiglas
Bottom Thickness	2.0 mm ± 0.1 mm
Outer Dimensions	75.0 cm (L) x 22.5 cm (W) x 20.5 cm (H); Back Plane: 25.7 cm (H)
Validation Phantom (≤ 450MHz)	
Type	Planar Phantom
Shell Material	Plexiglas
Bottom Thickness	6.2 mm ± 0.1 mm
Outer Dimensions	86.0 cm (L) x 39.5 cm (W) x 21.8 cm (H)

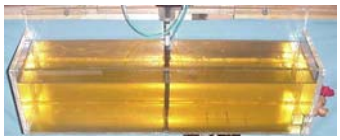
10.0 PROBE SPECIFICATION (ET3DV6)

Construction:	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, glycol)
Calibration:	In air from 10 MHz to 2.5 GHz In brain simulating tissue at frequencies of 900 MHz and 1.8 GHz (accuracy ± 8%)
Frequency:	10 MHz to > 6 GHz; Linearity: ± 0.2 dB (30 MHz to 3 GHz)
Directivity:	± 0.2 dB in brain tissue (rotation around probe axis) ± 0.4 dB in brain tissue (rotation normal to probe axis)
Dynamic Range:	5 μW/g to > 100 mW/g; Linearity: ± 0.2 dB
Surface Detect:	± 0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces
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 phone

ET3DV6 E-Field Probe

11.0 SIDE PLANAR PHANTOM

The side planar phantom is constructed of Plexiglas material with a 2.0 mm shell thickness for face-held and body-worn SAR evaluations of portable radio transceivers. The side planar phantom is mounted on the side of the DASY4 compact system table.



Plexiglas Side Planar Phantom

12.0 VALIDATION PLANAR PHANTOM

The validation planar phantom is constructed of Plexiglas material with a 6.0 mm shell thickness for system validations at 450MHz and below. The validation planar phantom is mounted to the table of the DASY4 compact system.

Plexiglas Validation Planar Phantom

13.0 DEVICE HOLDER

The DASY4 device holder has two scales for device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The plane between the ear openings and the mouth tip has a rotation angle of 65°. The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections.

Device Holder

14.0 TEST EQUIPMENT LIST

TEST EQUIPMENT			ASSET NO.	SERIAL NO.	DATE CALIBRATED		CALIBRATION DUE DATE
USED	DESCRIPTION						
x	Schmid & Partner DASY4 System		-	-	-		-
x	-DASY4 Measurement Server		00158	1078	NA		NA
x	-Robot		00046	599396-01	NA		NA
x	-DAE4		00019	353	22Apr08		22Apr09
x	-ET3DV6 E-Field Probe		00016	1387	22Apr08		22Apr09
x	-ET3DV6 E-Field Probe		00017	1590	21Jul08		21Jul09
	-300 MHz Validation Dipole		00023	135	30Apr08		30Apr09
x	-450 MHz Validation Dipole		00024	136	01May08		01May09
					25Jul08		25Jul09
	-835 MHz Validation Dipole		00022	411	**Body**	02May08	02May09
	-900 MHz Validation Dipole		00020	054	**Body**	20May08	20May09
	-1800 MHz Validation Dipole		00021	247	**Body**	22May08	22May09
	-1900 MHz Validation Dipole		00032	151	**Body**	14May08	14May09
	-2450 MHz Validation Dipole		00025	150	**Body**	16Jun08	16Jun09
	5GHz Validation Dipole	-5200 MHz	00126	1031	**Body**	21Apr08	21Apr09
		-5500 MHz			**Body**	21Apr08	21Apr09
		-5800 MHz			**Brain**	21Apr08	21Apr09
					Body	21Apr08	21Apr09
	-SAM Phantom V4.0C		00154	1033	NA		NA
	-Barski Planar Phantom		00155	03-01	NA		NA
x	-Plexiglas Side Planar Phantom		00156	161	NA		NA
x	-Plexiglas Validation Planar Phantom		00157	137	NA		NA
	ALS-PR-DIEL Dielectric Probe Kit		00160	260-00953	NA		NA
x	HP 85070C Dielectric Probe Kit		00033	US39240170	NA		NA
x	Gigatronics 8652A Power Meter		00007	1835272	23Apr08		23Apr09
x	Gigatronics 80701A Power Sensor		00014	1833699	23Apr08		23Apr09
x	HP 8753ET Network Analyzer		00134	US39170292	28Apr08		28Apr09
x	Rohde & Schwarz SMR20 Signal Generator		00006	100104	23Apr08		23Apr09
x	Amplifier Research 5S1G4 Power Amplifier		00106	26235	NR		NR
	Amplifier Research 10W1000C Power Amplifier		00041	27887	NR		NR
	Nextec NB00383 Microwave Amplifier		00151	0535	NR		NR
Notes	NA = Not Applicable						
	NR = Not Required						

15.0 MEASUREMENT UNCERTAINTIES

UNCERTAINTY BUDGET FOR DEVICE EVALUATION						
Error Description	**Uncertainty Value ±%**	**Probability Distribution**	**Divisor**	**ci 1g**	**Uncertainty Value ±% (1g)**	**V_i or V_{eff}**
Measurement System						
Probe calibration (450 MHz)	6.65	Normal	1	1	6.65	∞
Axial isotropy of the probe	4.7	Rectangular	1.732050808	0.7	1.9	∞
Spherical isotropy of the probe	9.6	Rectangular	1.732050808	0.7	3.9	∞
Spatial resolution	0	Rectangular	1.732050808	1	0.0	∞
Boundary effects	0.9	Rectangular	1.732050808	1	0.5	∞
Probe linearity	4.7	Rectangular	1.732050808	1	2.7	∞
Detection limit	1	Rectangular	1.732050808	1	0.6	∞
Readout electronics	0.3	Normal	1	1	0.3	∞
Response time	0.8	Rectangular	1.732050808	1	0.5	∞
Integration time	2.6	Rectangular	1.732050808	1	1.5	∞
RF ambient conditions	3	Rectangular	1.732050808	1	1.7	∞
Mech. constraints of robot	0.4	Rectangular	1.732050808	1	0.2	∞
Probe positioning	2.9	Rectangular	1.732050808	1	1.7	∞
Extrapolation & integration	1	Rectangular	1.732050808	1	0.6	∞
Test Sample Related						
Device positioning	2.9	Normal	1	1	2.9	12
Device holder uncertainty	3.6	Normal	1	1	3.6	8
Power drift	5	Rectangular	1.732050808	1	2.9	∞
Phantom and Setup						
Phantom uncertainty	4	Rectangular	1.732050808	1	2.3	∞
Liquid conductivity (target)	5	Rectangular	1.732050808	0.64	1.8	∞
Liquid conductivity (measured)	4.6	Normal	1	0.64	2.9	∞
Liquid permittivity (target)	5	Rectangular	1.732050808	0.6	1.7	∞
Liquid permittivity (measured)	4.3	Normal	1	0.6	2.6	∞
Combined Standard Uncertainty					**11.68**	
Expanded Uncertainty (k=2)					**23.36**	
Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003 (see reference [3])						

MEASUREMENT UNCERTAINTIES (CONT.)

UNCERTAINTY BUDGET FOR SYSTEM VALIDATION

Error Description	Uncertainty Value ±%	Probability Distribution	Divisor	ci 1g	Uncertainty Value ±% (1g)	V_i or V_{eff}
Measurement System						
Probe calibration (450 MHz)	6.65	Normal	1	1	6.65	∞
Axial isotropy of the probe	4.7	Rectangular	1.732050808	1	2.7	∞
Spherical isotropy of the probe	0	Rectangular	1.732050808	1	0.0	∞
Spatial resolution	0	Rectangular	1.732050808	1	0.0	∞
Boundary effects	0.9	Rectangular	1.732050808	1	0.5	∞
Probe linearity	4.7	Rectangular	1.732050808	1	2.7	∞
Detection limit	1	Rectangular	1.732050808	1	0.6	∞
Readout electronics	0.3	Normal	1	1	0.3	∞
Response time	0	Rectangular	1.732050808	1	0.0	∞
Integration time	0	Rectangular	1.732050808	1	0.0	∞
RF ambient conditions	3	Rectangular	1.732050808	1	1.7	∞
Mech. constraints of robot	0.4	Rectangular	1.732050808	1	0.2	∞
Probe positioning	2.9	Rectangular	1.732050808	1	1.7	∞
Extrapolation & integration	1	Rectangular	1.732050808	1	0.6	∞
Dipole						
Dipole Positioning	2	Normal	1.732050808	1	1.2	∞
Power & Power Drift	4.7	Normal	1.732050808	1	2.7	∞
Phantom and Setup						
Phantom uncertainty	4	Rectangular	1.732050808	1	2.3	∞
Liquid conductivity (target)	5	Rectangular	1.732050808	0.64	1.8	∞
Liquid conductivity (measured)	2.4	Normal	1	0.64	1.5	∞
Liquid permittivity (target)	5	Rectangular	1.732050808	0.6	1.7	∞
Liquid permittivity (measured)	1.8	Normal	1	0.6	1.1	∞
Combined Standard Uncertainty					**9.48**	
Expanded Uncertainty (k=2)					**18.95**	

Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003 (see reference [3])

16.0 REFERENCES

[1] Federal Communications Commission - “Radiofrequency radiation exposure evaluation: portable devices”, Rule Part 47 CFR §2.1093.

[2] Federal Communications Commission - “Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields”, OET Bulletin 65, Supplement C (Edition 01-01), FCC, Washington, D.C.: June 2001.

[3] IEEE Standard 1528-2003 - “Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”: December 2003.

APPENDIX A - SAR MEASUREMENT DATA

Date Tested: 05/27/2008

Face-held SAR - Radio - Stubby Antenna (P/N: KRA-23M2) - Mid Channel - 460.0 MHz

DUT: Kenwood NX-300-K; Type: Portable UHF PTT Radio Transceiver; Serial: 90650029

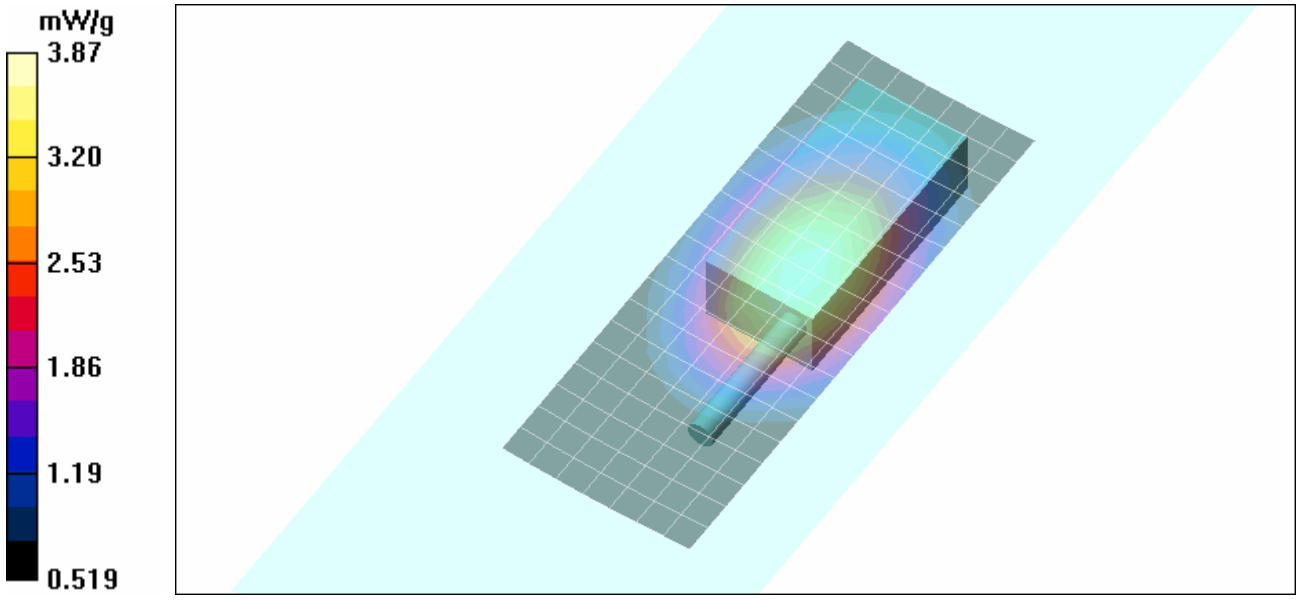
Ambient Temp: 24.8ºC; Fluid Temp: 22.7ºC; Barometric Pressure: 100.9 kPa; Humidity: 30%

Communication System: UHF (CW)
Frequency: 485.05 MHz; Duty Cycle: 1:1
RF Output Power: 5.1 Watts (Conducted)
Power Source: 7.2V, 2150mAh Ni-MH Battery
Medium: HSL450 Medium parameters used: f = 485.05 MHz; σ = 0.90 mho/m; ε_r = 43.9; ρ = 1000 kg/m^3

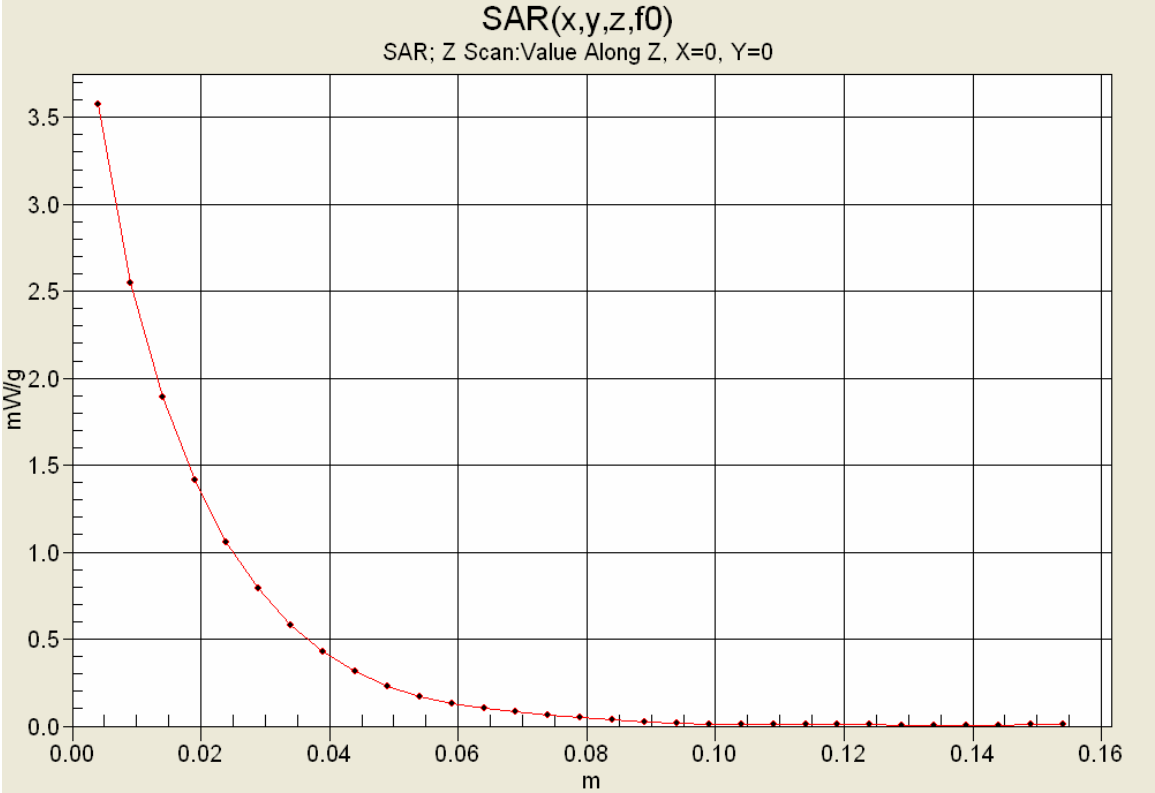
- Probe: ET3DV6 - SN1387; ConvF(7.32, 7.32, 7.32); Calibrated: 22/04/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Face-held SAR - 2.5 cm Spacing from Front of Radio to Planar Phantom
Area Scan (8x20x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 3.87 mW/g

Face-held SAR - 2.5 cm Spacing from Front of Radio to Planar Phantom
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 67.2 V/m; Power Drift = -0.722 dB
Peak SAR (extrapolated) = 5.22 W/kg
SAR(1 g) = 3.68 mW/g; SAR(10 g) = 2.67 mW/g



Z-Axis Scan



Date Tested: 05/27/2008

Face-held SAR - Speaker-Mic-Ant. - Stubby Antenna (P/N: KRA-23M) - Mid Channel - 485.05 MHz

DUT: Kenwood NX-300-K; Type: Portable UHF PTT Radio Transceiver with Speaker-Mic-Antenna; Serial: 90650029

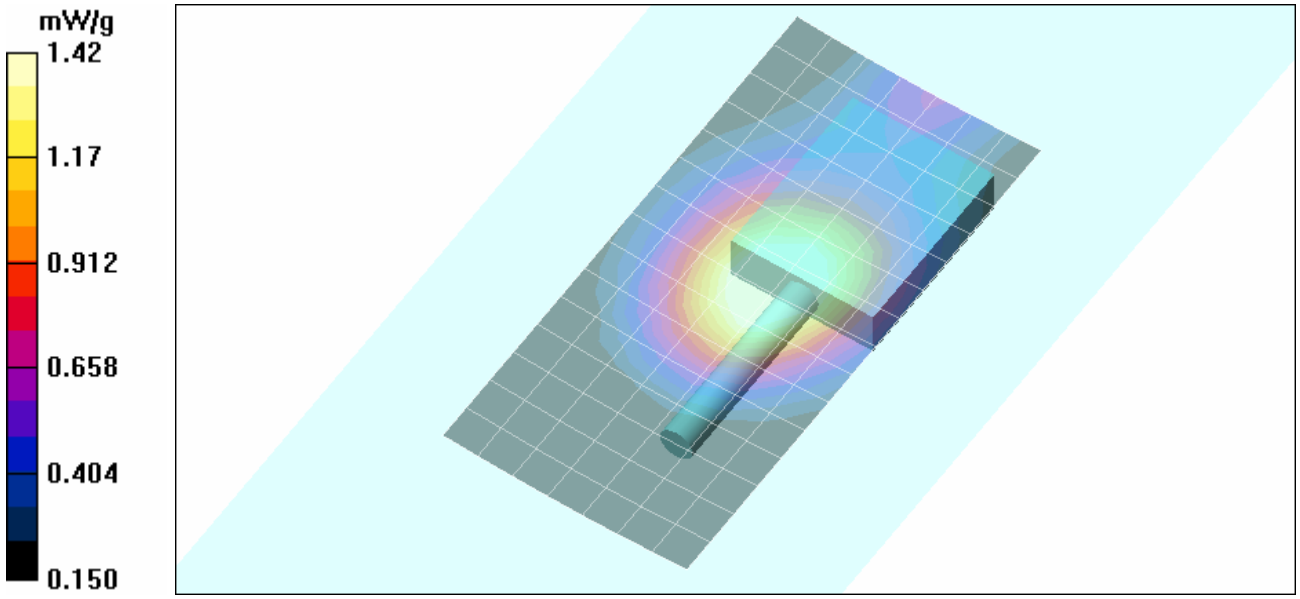
Ambient Temp: 24.8ºC; Fluid Temp: 22.7ºC; Barometric Pressure: 100.9 kPa; Humidity: 30%

Communication System: UHF (CW)
Frequency: 485.05 MHz; Duty Cycle: 1:1
RF Output Power: 5.1 Watts (Conducted)
Power Source: 7.2V, 2150mAh Ni-MH Battery
Medium: HSL450 Medium parameters used: f = 485.05 MHz; σ = 0.90 mho/m; ε_r = 43.9; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1387; ConvF(7.32, 7.32, 7.32); Calibrated: 22/04/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Face-held SAR - 2.5 cm Spacing from Front of Speaker-Mic-Antenna Accessory to Planar Phantom
Area Scan (8x16x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.71 mW/g

Face-held SAR - 2.5 cm Spacing from Front of Speaker-Mic-Antenna Accessory to Planar Phantom
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 37.6 V/m; Power Drift = -0.606 dB
Peak SAR (extrapolated) = 2.05 W/kg
SAR(1 g) = 1.32 mW/g; SAR(10 g) = 0.909 mW/g
Maximum value of SAR (measured) = 1.42 mW/g



Date Tested: 05/27/2008

Face-held SAR - Speaker-Mic-Ant - Stubby Antenna (P/N: KRA-23M2) - Mid Channel - 485.05 MHz

DUT: Kenwood NX-300-K; Type: Portable UHF PTT Radio Transceiver with Speaker-Mic-Antenna; Serial: 90650029

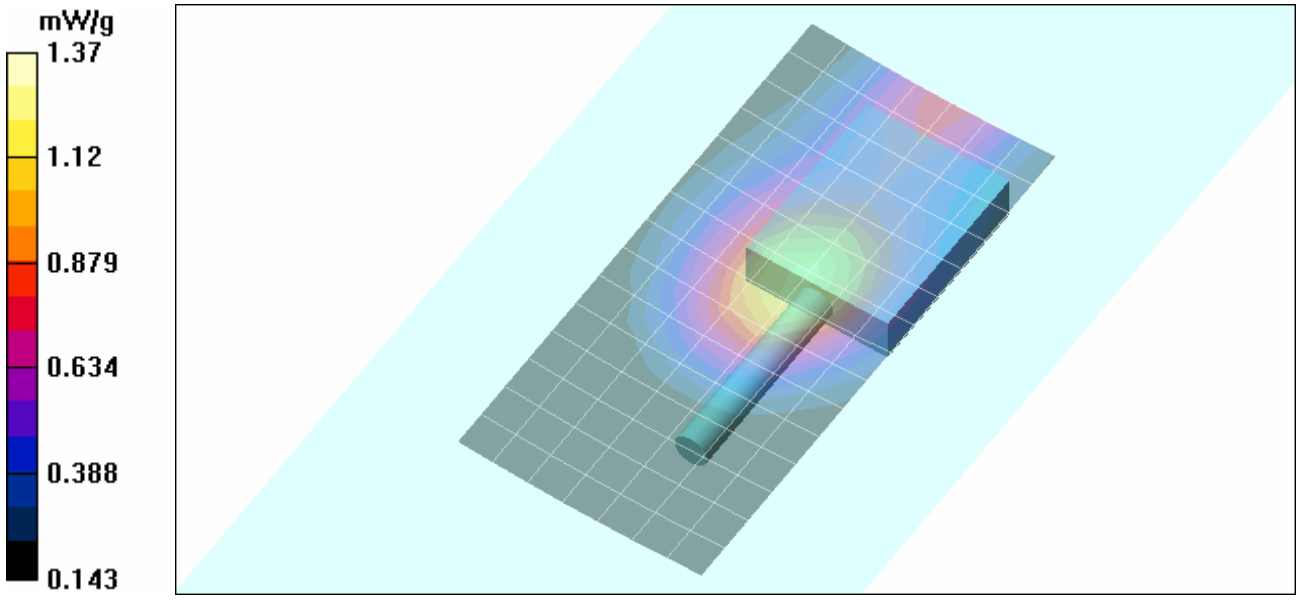
Ambient Temp: 24.8ºC; Fluid Temp: 22.7ºC; Barometric Pressure: 100.9 kPa; Humidity: 30%

Communication System: UHF (CW)
Frequency: 485.05 MHz; Duty Cycle: 1:1
RF Output Power: 5.1 Watts (Conducted)
Power Source: 7.2V, 2150mAh Ni-MH Battery
Medium: HSL450 Medium parameters used: f = 485.05 MHz; σ = 0.90 mho/m; ε_r = 43.9; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1387; ConvF(7.32, 7.32, 7.32); Calibrated: 22/04/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Face-held SAR - 2.5 cm Spacing from Front of Speaker-Mic-Antenna Accessory to Planar Phantom
Area Scan (8x16x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.18 mW/g

Face-held SAR - 2.5 cm Spacing from Front of Speaker-Mic-Antenna Accessory to Planar Phantom
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 36.0 V/m; Power Drift = -0.338 dB
Peak SAR (extrapolated) = 1.93 W/kg
SAR(1 g) = 1.3 mW/g; SAR(10 g) = 0.894 mW/g
Maximum value of SAR (measured) = 1.37 mW/g



Date Tested: 05/27/2008

Face-held SAR - Speaker-Mic-Ant. - Whip Antenna (P/N: KRA-27M) - Mid Channel - 485.05 MHz

DUT: Kenwood NX-300-K; Type: Portable UHF PTT Radio Transceiver with Speaker-Mic-Antenna; Serial: 90650029

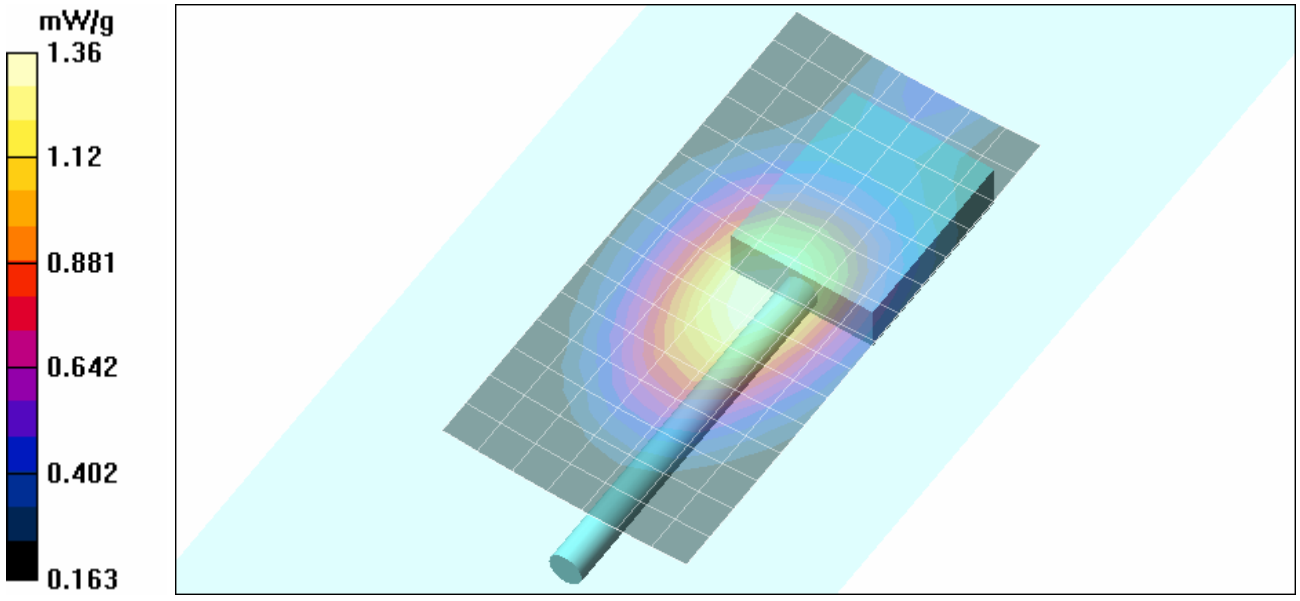
Ambient Temp: 24.8ºC; Fluid Temp: 22.7ºC; Barometric Pressure: 100.9 kPa; Humidity: 30%

Communication System: UHF (CW)
Frequency: 485.05 MHz; Duty Cycle: 1:1
RF Output Power: 5.1 Watts (Conducted)
Power Source: 7.2V, 2150mAh Ni-MH Battery
Medium: HSL450 Medium parameters used: f = 485.05 MHz; σ = 0.90 mho/m; ε_r = 43.9; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1387; ConvF(7.32, 7.32, 7.32); Calibrated: 22/04/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Face-held SAR - 2.5 cm Spacing from Front of Speaker-Mic-Antenna Accessory to Planar Phantom
Area Scan (8x16x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.40 mW/g

Face-held SAR - 2.5 cm Spacing from Front of Speaker-Mic-Antenna Accessory to Planar Phantom
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 33.9 V/m; Power Drift = -0.469 dB
Peak SAR (extrapolated) = 1.90 W/kg
SAR(1 g) = 1.29 mW/g; SAR(10 g) = 0.903 mW/g
Maximum value of SAR (measured) = 1.36 mW/g



Date Tested: 07/25/2008

Face-held SAR - Speaker-Mic-Ant. - Whip Antenna (P/N: KRA-27M2) - Mid Channel - 485.05 MHz

DUT: Kenwood NX-300-K; Type: Portable UHF PTT Radio Transceiver with Speaker-Mic-Antenna; Serial: 90650029

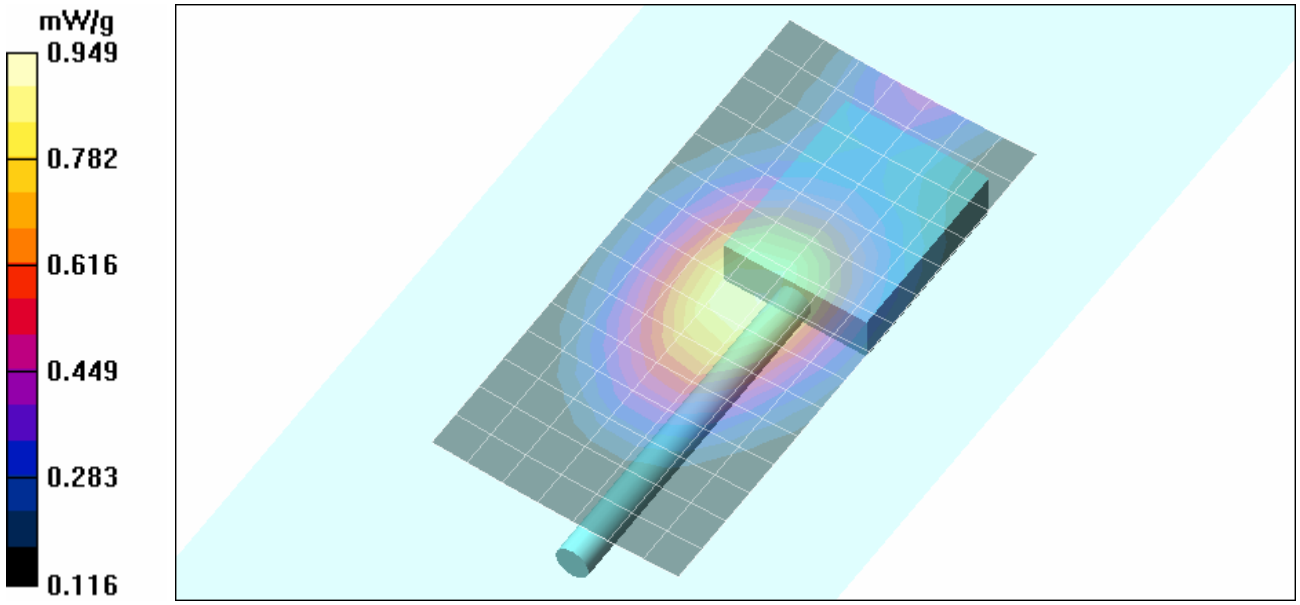
Ambient Temp: 24.1°C; Fluid Temp: 23.1°C; Barometric Pressure: 100.9 kPa; Humidity: 31%

Communication System: UHF (CW)
Frequency: 485.05 MHz; Duty Cycle: 1:1
RF Output Power: 5.1 Watts (Conducted)
Power Source: 7.2V, 2150mAh Ni-MH Battery
Medium: HSL450 Medium parameters used: f = 485.05 MHz; σ = 0.91 mho/m; ε_r = 43.7; ρ = 1000 kg/m^3

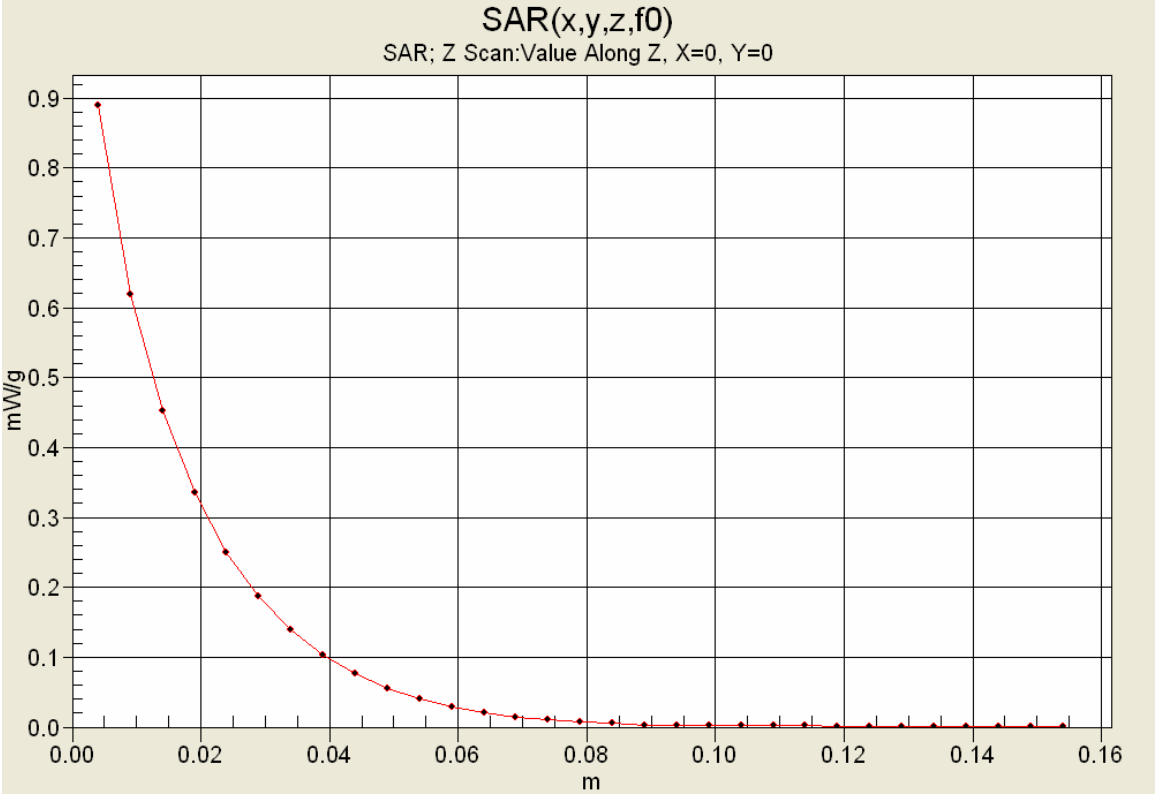
- Probe: ET3DV6 - SN1590; ConvF(7.66, 7.66, 7.66); Calibrated: 21/07/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Face-held SAR - 2.5 cm Spacing from Front of Speaker-Mic-Antenna Accessory to Planar Phantom
Area Scan (8x16x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.904 mW/g

Face-held SAR - 2.5 cm Spacing from Front of Speaker-Mic-Antenna Accessory to Planar Phantom
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 28.4 V/m; Power Drift = -0.581 dB
Peak SAR (extrapolated) = 1.31 W/kg
SAR(1 g) = 0.895 mW/g; SAR(10 g) = 0.631 mW/g
Maximum value of SAR (measured) = 0.949 mW/g



Z-Axis Scan



Date Tested: 05/01/2008

Body-worn SAR - Radio - Stubby Antenna (P/N: KRA-23M2) - Mid Channel - 485.05 MHz

DUT: Kenwood NX-300-K; Type: Portable UHF PTT Radio Transceiver; Serial: U_15S No. 71

Body-worn Accessory: Belt-Clip (P/N: J29-0730>PC<1); Audio Accessory: Speaker-Microphone (P/N: KMC-41)

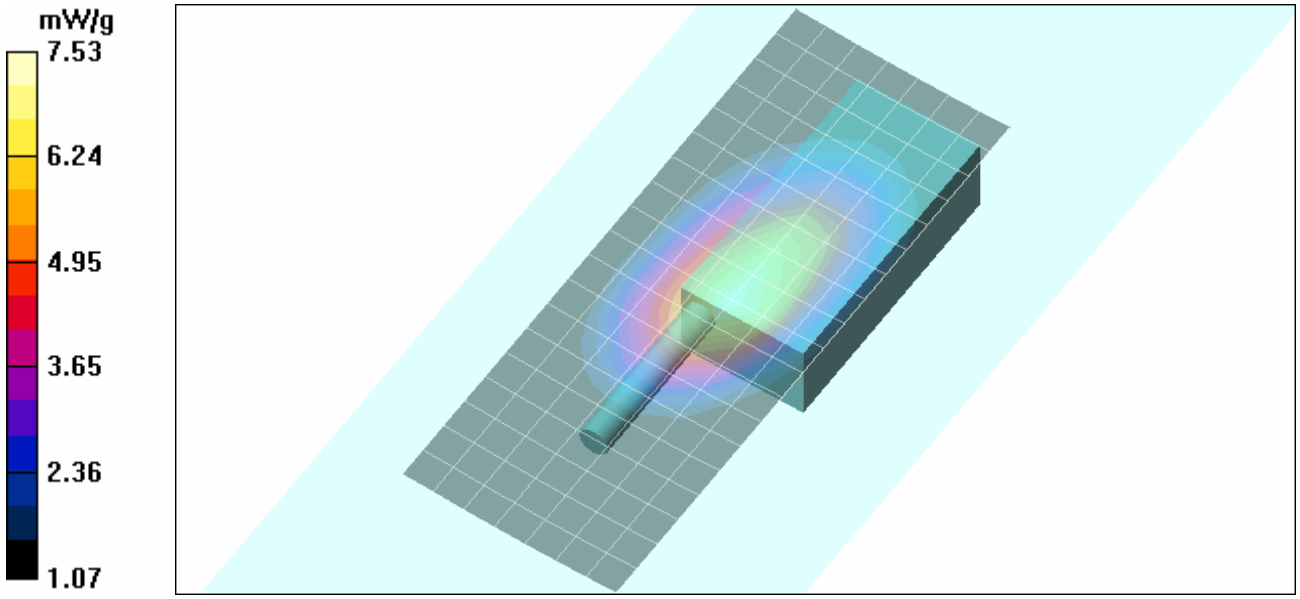
Ambient Temp: 22.5ºC; Fluid Temp: 21.5ºC; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: UHF (CW)
Frequency: 485.05 MHz; Duty Cycle: 1:1
RF Output Power: 5.1 Watts (Conducted)
Power Source: 7.2V, 2150mAh Ni-MH Battery
Medium: M450 Medium parameters used: f = 485.05 MHz; σ = 0.97 mho/m; ε_r = 57.8; ρ = 1000 kg/m^3

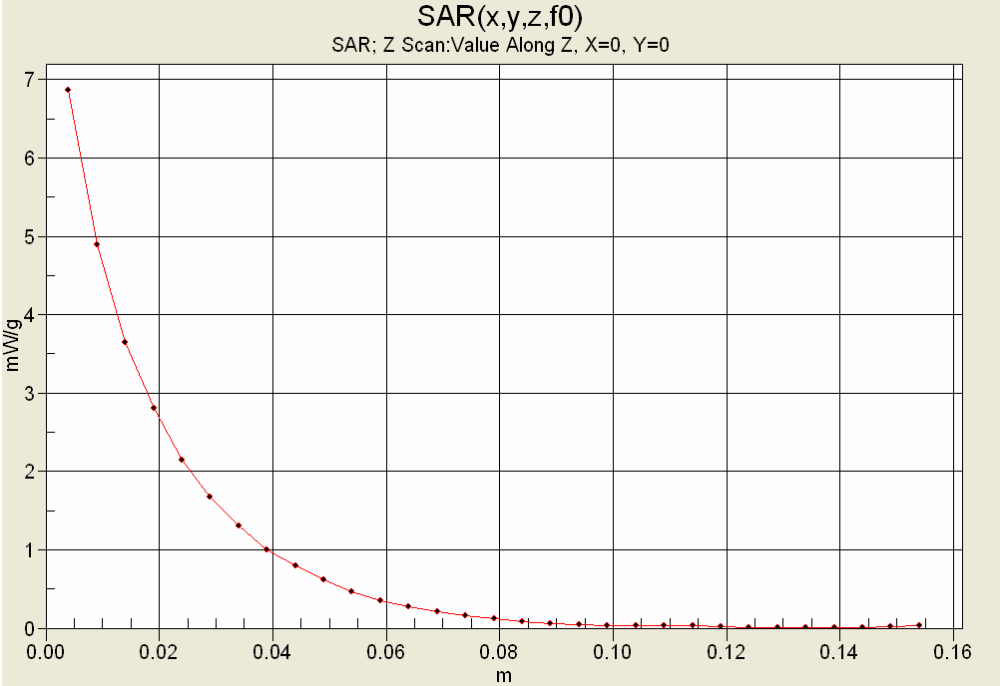
- Probe: ET3DV6 - SN1387; ConvF(7.76, 7.76, 7.76); Calibrated: 22/04/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-worn SAR - 1.9 cm Belt-Clip Spacing from Back of Radio to Planar Phantom
Area Scan (8x20x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 7.45 mW/g

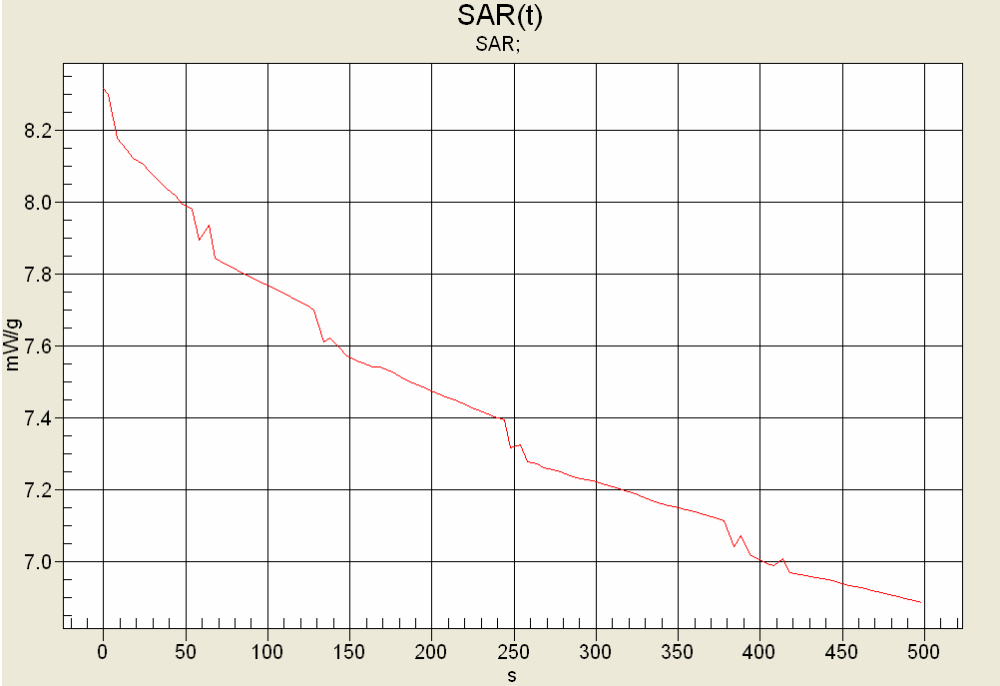
Body-worn SAR - 1.9 cm Belt-Clip Spacing from Back of Radio to Planar Phantom
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 93.3 V/m; Power Drift = -0.986 dB
Peak SAR (extrapolated) = 10.6 W/kg
SAR(1 g) = 7.19 mW/g; SAR(10 g) = 5.05 mW/g
Maximum value of SAR (measured) = 7.53 mW/g



Z-Axis Scan



SAR-versus-Time Power Droop Evaluation
Body-worn Configuration
Mid Channel - 485.05 MHz
KRA-23M2 Antenna



Max SAR: 8.32 mW/g
Low SAR: 6.89 mW/g (-0.819 dB)
SAR after 340s: 7.16 mW/g (-0.652 dB)
(340s = Zoom Scan Duration)

Date Tested: 05/28/2008

Body-worn SAR - Speaker-Mic-Ant. - Stubby Antenna (P/N: KRA-23M) - Mid Channel - 485.05 MHz

DUT: Kenwood NX-300-K; Type: Portable UHF PTT Radio Transceiver with Speaker-Mic-Antenna; Serial: 90650029

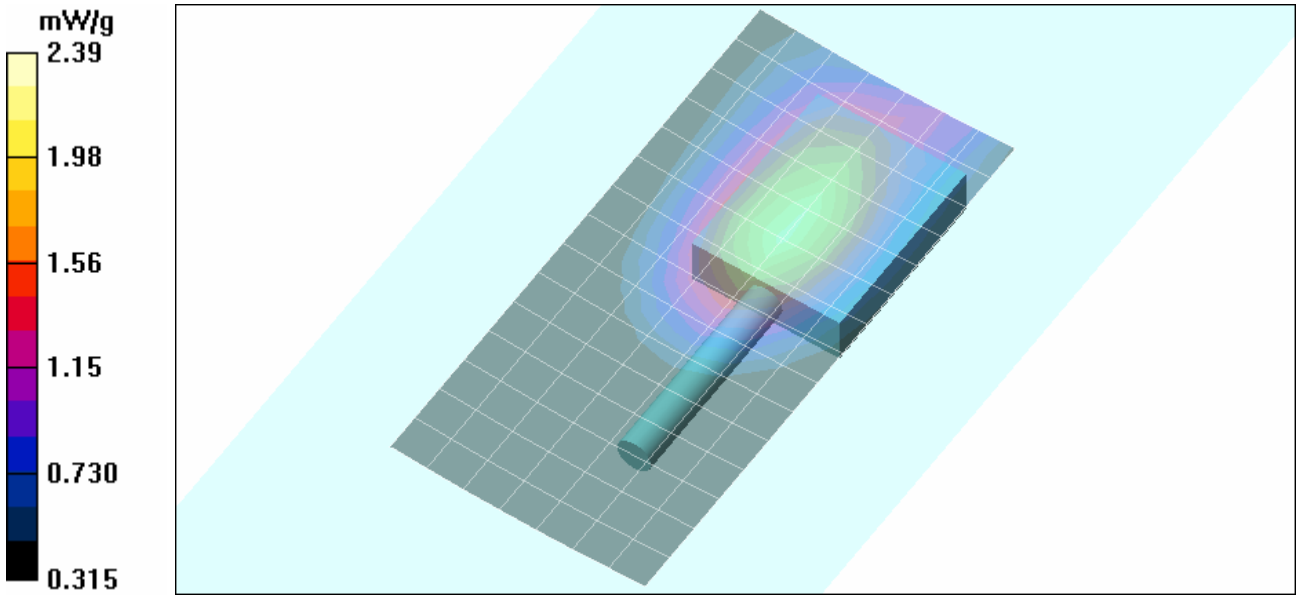
Ambient Temp: 24.5ºC; Fluid Temp: 22.7ºC; Barometric Pressure: 101.1 kPa; Humidity: 31%

Communication System: UHF (CW)
Frequency: 485.05 MHz; Duty Cycle: 1:1
RF Output Power: 5.1 Watts (Conducted)
Power Source: 7.2V, 2150mAh Ni-MH Battery
Medium: M450 Medium parameters used: f = 485.05 MHz; σ = 0.96 mho/m; ε_r = 59.0; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1387; ConvF(7.76, 7.76, 7.76); Calibrated: 22/04/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-worn SAR - 1.4 cm Lapel-Clip Spacing from Back of Speaker-Mic-Antenna Accessory to Planar Phantom
Area Scan (8x16x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.18 mW/g

Body-worn SAR - 1.4 cm Lapel-Clip Spacing from Back of Speaker-Mic-Antenna Accessory to Planar Phantom
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 51.4 V/m; Power Drift = -0.612 dB
Peak SAR (extrapolated) = 3.39 W/kg
SAR(1 g) = 2.26 mW/g; SAR(10 g) = 1.58 mW/g
Maximum value of SAR (measured) = 2.39 mW/g



Date Tested: 05/01/2008

Body-worn SAR - Speaker-Mic-Ant. - Stubby Antenna (P/N: KRA-23M2) - Mid Channel - 485.05 MHz

DUT: Kenwood NX-300-K; Type: Portable UHF PTT Radio Transceiver with Speaker-Mic-Antenna; Serial: U_15S No. 71

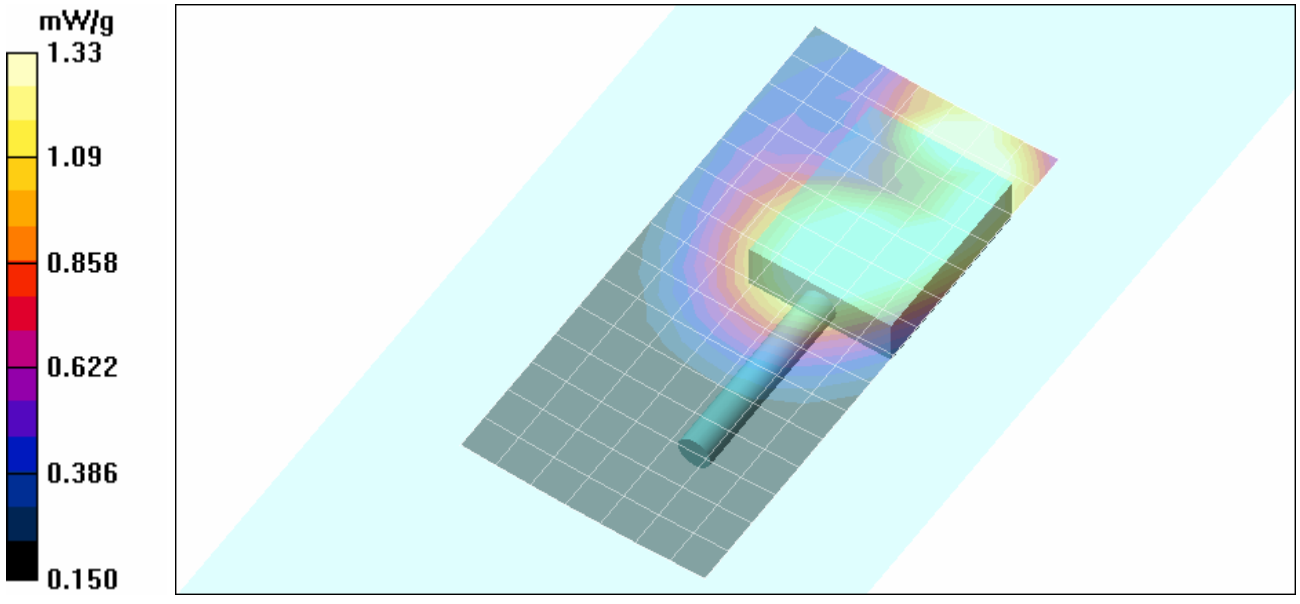
Ambient Temp: 22.5ºC; Fluid Temp: 21.5ºC; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: UHF (CW)
Frequency: 485.05 MHz; Duty Cycle: 1:1
RF Output Power: 5.1 Watts (Conducted)
Power Source: 7.2V, 2150mAh Ni-MH Battery
Medium: M450 Medium parameters used: f = 485.05 MHz; σ = 0.97 mho/m; ε_r = 57.8; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1387; ConvF(7.76, 7.76, 7.76); Calibrated: 22/04/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-worn SAR - 1.4 cm Lapel-Clip Spacing from Back of Speaker-Mic-Antenna Accessory to Planar Phantom
Area Scan (8x16x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.54 mW/g

Body-worn SAR - 1.4 cm Lapel-Clip Spacing from Back of Speaker-Mic-Antenna Accessory to Planar Phantom
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 37.9 V/m; Power Drift = -1.05 dB
Peak SAR (extrapolated) = 2.09 W/kg
SAR(1 g) = 1.23 mW/g; SAR(10 g) = 0.819 mW/g
Maximum value of SAR (measured) = 1.33 mW/g



Date Tested: 05/28/2008

Body-worn SAR - Speaker-Mic-Ant. - Whip Antenna (P/N: KRA-27M) - Mid Channel - 485.05 MHz

DUT: Kenwood NX-300-K; Type: Portable UHF PTT Radio Transceiver with Speaker-Mic-Antenna; Serial: 90650029

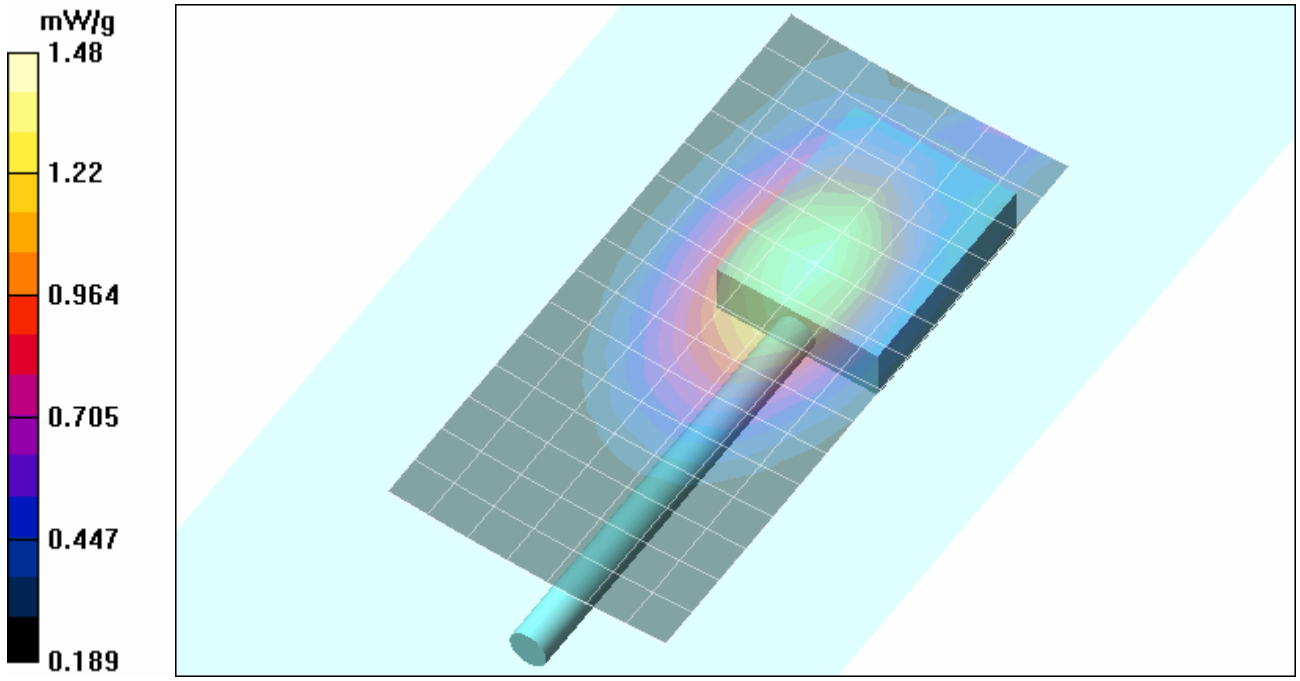
Ambient Temp: 24.5ºC; Fluid Temp: 22.7ºC; Barometric Pressure: 101.1 kPa; Humidity: 31%

Communication System: UHF (CW)
Frequency: 485.05 MHz; Duty Cycle: 1:1
RF Output Power: 5.1 Watts (Conducted)
Power Source: 7.2V, 2150mAh Ni-MH Battery
Medium: M450 Medium parameters used: f = 485.05 MHz; σ = 0.96 mho/m; ε_r = 59.0; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1387; ConvF(7.76, 7.76, 7.76); Calibrated: 22/04/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-worn SAR - 1.4 cm Lapel-Clip Spacing from Back of Speaker-Mic-Antenna Accessory to Planar Phantom
Area Scan (8x16x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.43 mW/g

Body-worn SAR - 1.4 cm Lapel-Clip Spacing from Back of Speaker-Mic-Antenna Accessory to Planar Phantom
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 41.7 V/m; Power Drift = -0.684 dB
Peak SAR (extrapolated) = 2.12 W/kg
SAR(1 g) = 1.41 mW/g; SAR(10 g) = 0.989 mW/g
Maximum value of SAR (measured) = 1.48 mW/g



Date Tested: 07/25/2008

Body-worn SAR - Speaker-Mic-Ant. - Whip Antenna (P/N: KRA-27M2) - Mid Channel - 485.05 MHz

DUT: Kenwood NX-300-K; Type: Portable UHF PTT Radio Transceiver with Speaker-Mic-Antenna; Serial: 90650029

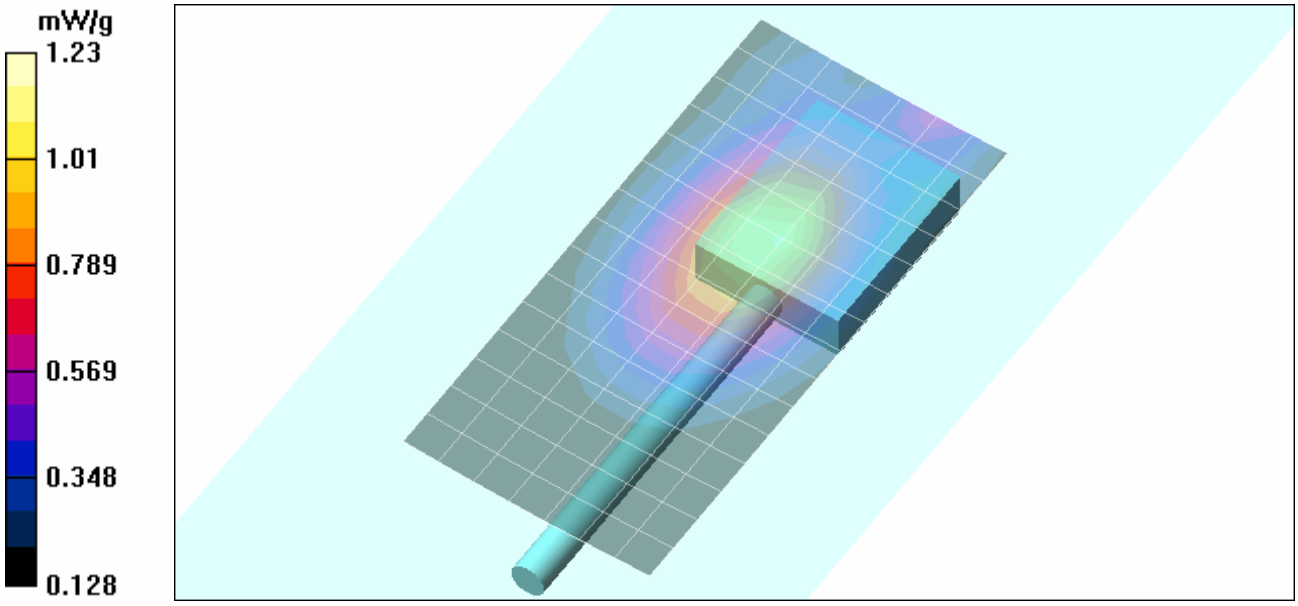
Ambient Temp: 24.1°C; Fluid Temp: 23.1°C; Barometric Pressure: 100.9 kPa; Humidity: 31%

Communication System: UHF (CW)
Frequency: 485.05 MHz; Duty Cycle: 1:1
RF Output Power: 5.1 Watts (Conducted)
Power Source: 7.2V, 2150mAh Ni-MH Battery
Medium: M450 Medium parameters used: f = 485.05 MHz; σ = 0.98 mho/m; ε_r = 57.2; ρ = 1000 kg/m^3

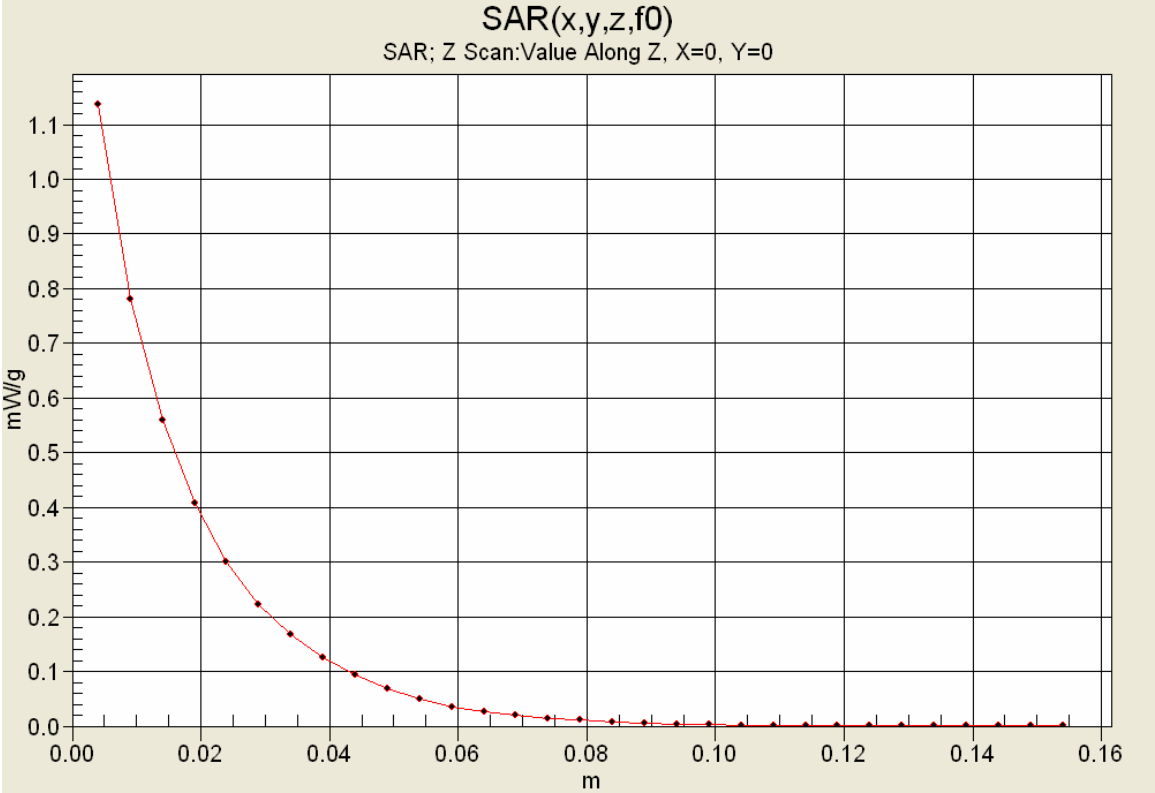
- Probe: ET3DV6 - SN1590; ConvF(8.27, 8.27, 8.27); Calibrated: 21/07/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-worn SAR - 1.4 cm Lapel-Clip Spacing from Back of Speaker-Mic-Antenna Accessory to Planar Phantom
Area Scan (8x16x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.10 mW/g

Body-worn SAR - 1.4 cm Lapel-Clip Spacing from Back of Speaker-Mic-Antenna Accessory to Planar Phantom
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 37.8 V/m; Power Drift = -0.653 dB
Peak SAR (extrapolated) = 1.80 W/kg
SAR(1 g) = 1.16 mW/g; SAR(10 g) = 0.789 mW/g
Maximum value of SAR (measured) = 1.23 mW/g



Z-Axis Scan



Date Tested: 05/28/2008

Body-worn SAR - Speaker-Mic-Ant. - Stubby Antenna (P/N: KRA-23M) - Low Channel - 450.05 MHz

DUT: Kenwood NX-300-K; Type: Portable UHF PTT Radio Transceiver with Speaker-Mic-Antenna; Serial: 90650029

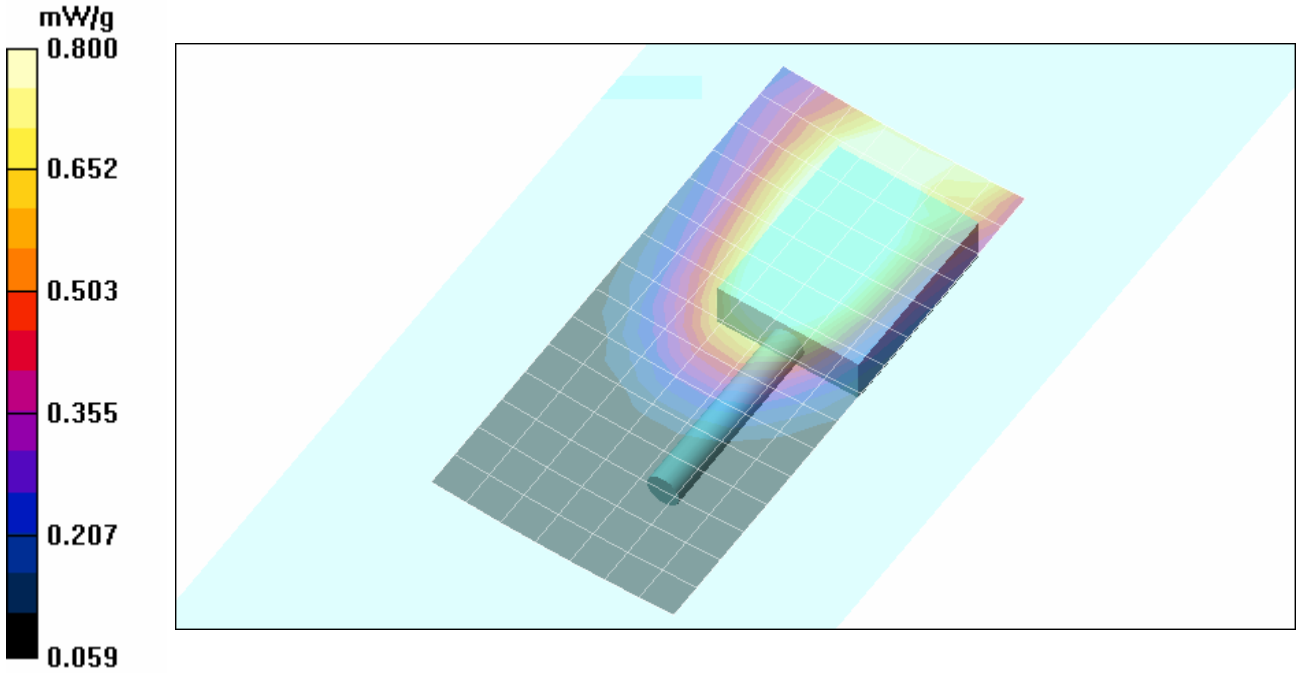
Ambient Temp: 24.5ºC; Fluid Temp: 22.7ºC; Barometric Pressure: 101.1 kPa; Humidity: 31%

Communication System: UHF (CW)
Frequency: 450.05 MHz; Duty Cycle: 1:1
RF Output Power: 5.2 Watts (Conducted)
Power Source: 7.2V, 2150mAh Ni-MH Battery
Medium: M450 Medium parameters used: f = 450.05 MHz; σ = 0.96 mho/m; ε_r = 59.0; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1387; ConvF(7.76, 7.76, 7.76); Calibrated: 22/04/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-worn SAR - 1.4 cm Lapel-Clip Spacing from Back of Speaker-Mic-Antenna Accessory to Planar Phantom
Area Scan (8x16x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.14 mW/g

Body-worn SAR - 1.4 cm Lapel-Clip Spacing from Back of Speaker-Mic-Antenna Accessory to Planar Phantom
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 30.1 V/m; Power Drift = -0.305 dB
Peak SAR (extrapolated) = 1.09 W/kg
SAR(1 g) = 0.734 mW/g; SAR(10 g) = 0.495 mW/g
Maximum value of SAR (measured) = 0.800 mW/g



Date Tested: 05/28/2008

Body-worn SAR - Speaker-Mic-Ant. - Stubby Antenna (P/N: KRA-23M2) - High Channel - 519.95 MHz

DUT: Kenwood NX-300-K; Type: Portable UHF PTT Radio Transceiver with Speaker-Mic-Antenna; Serial: 90650029

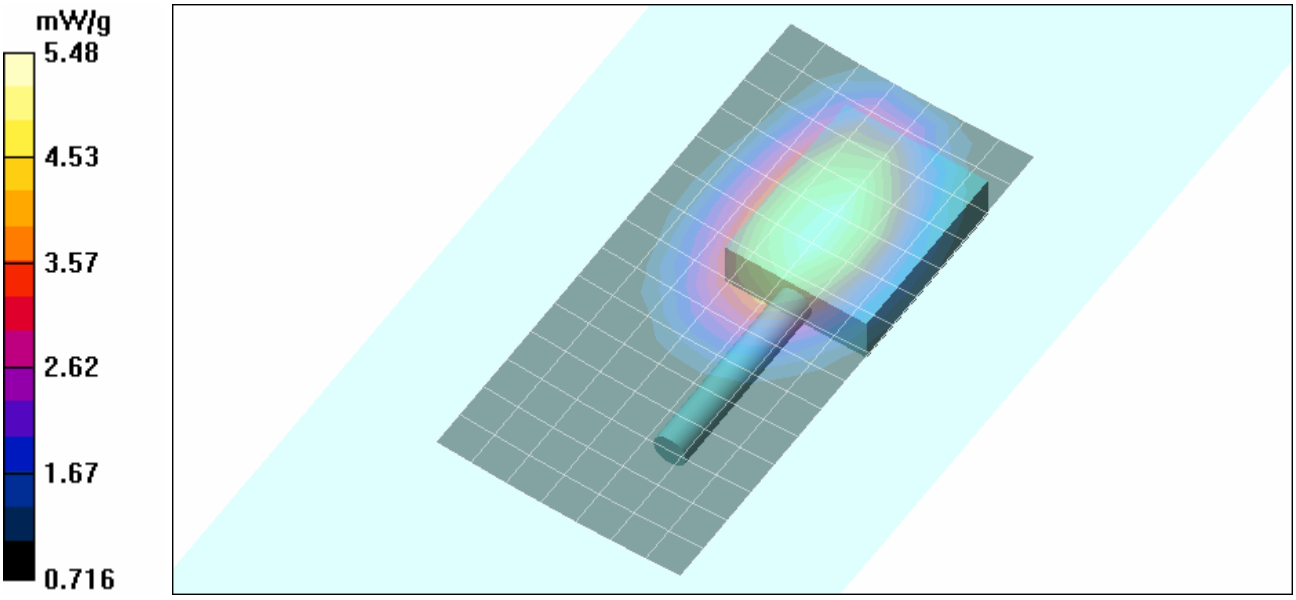
Ambient Temp: 24.5ºC; Fluid Temp: 22.7ºC; Barometric Pressure: 101.1 kPa; Humidity: 31%

Communication System: UHF (CW)
Frequency: 519.95 MHz; Duty Cycle: 1:1
RF Output Power: 5.0 Watts (Conducted)
Power Source: 7.2V, 2150mAh Ni-MH Battery
Medium: M450 Medium parameters used: f = 519.95 MHz; σ = 0.96 mho/m; ε_r = 59.0; ρ = 1000 kg/m^3

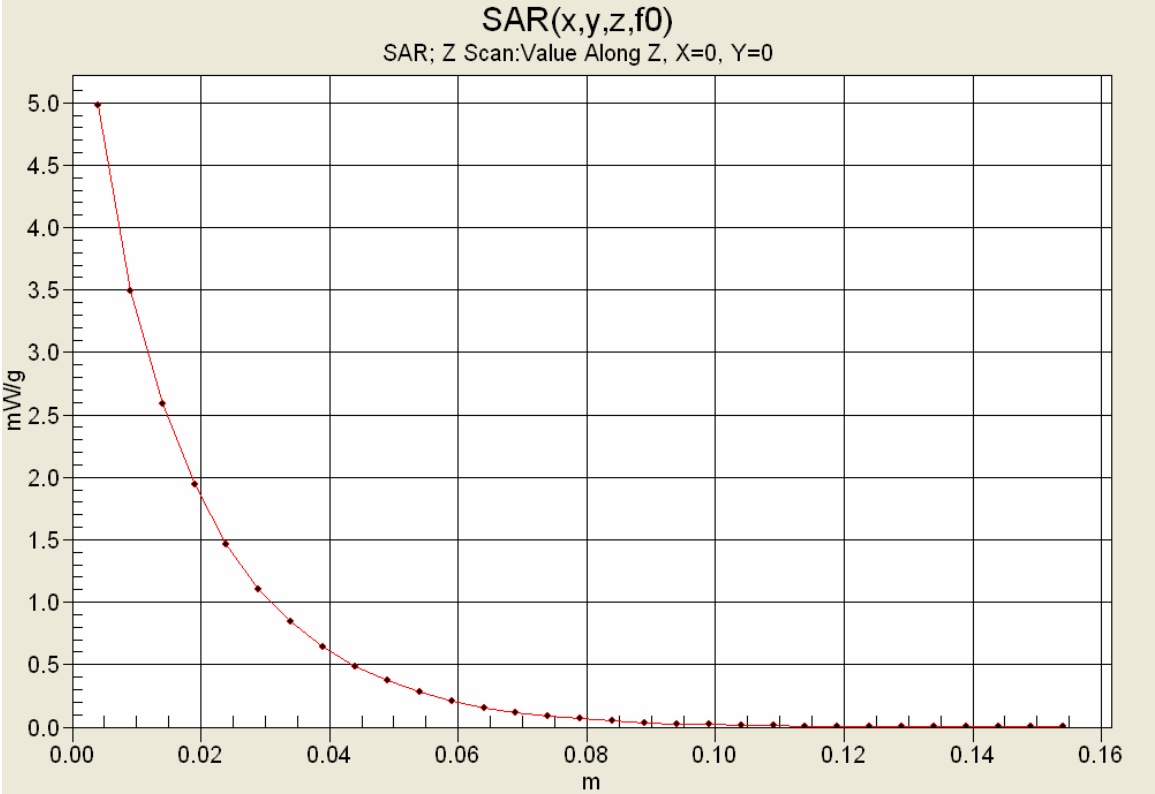
- Probe: ET3DV6 - SN1387; ConvF(7.76, 7.76, 7.76); Calibrated: 22/04/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-worn SAR - 1.4 cm Lapel-Clip Spacing from Back of Speaker-Mic-Antenna Accessory to Planar Phantom
Area Scan (8x16x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 5.51 mW/g

Body-worn SAR - 1.4 cm Lapel-Clip Spacing from Back of Speaker-Mic-Antenna Accessory to Planar Phantom
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 79.6 V/m; Power Drift = -0.794 dB
Peak SAR (extrapolated) = 7.63 W/kg
SAR(1 g) = 5.17 mW/g; SAR(10 g) = 3.62 mW/g
Maximum value of SAR (measured) = 5.48 mW/g



Z-Axis Scan



APPENDIX B - SYSTEM PERFORMANCE CHECK DATA

Date Tested: 05/01/2008

System Performance Check - 450 MHz Dipole - HSL

DUT: Dipole 450 MHz; Asset: 00024; Serial: 136; Validation: 05/01/2008

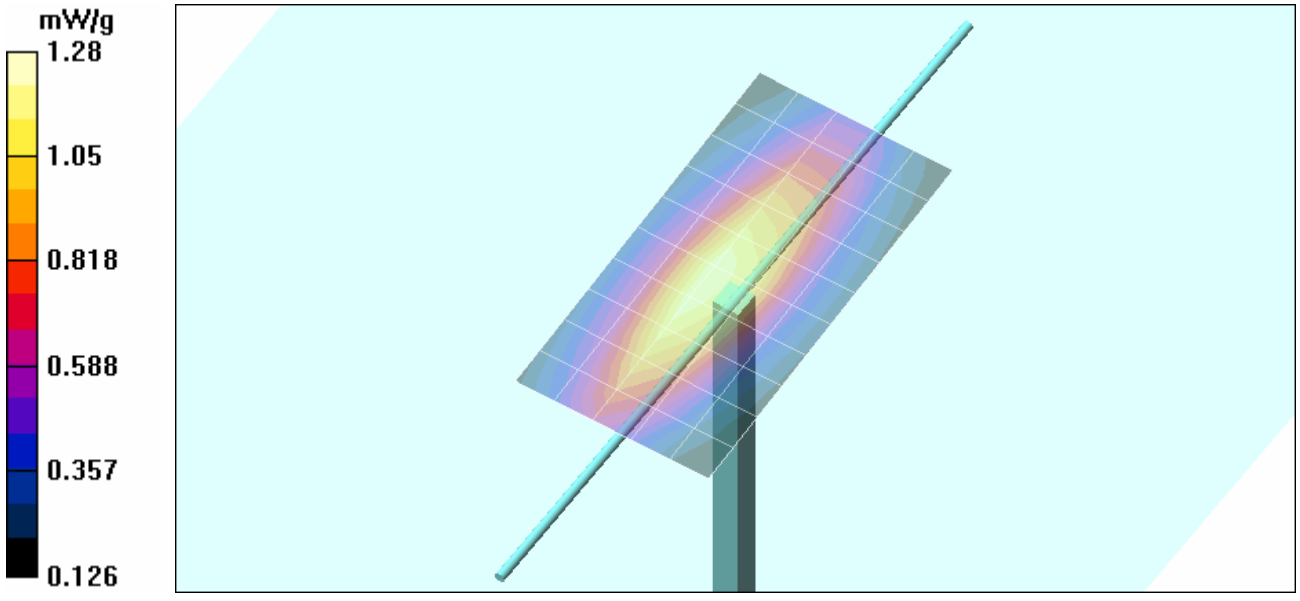
Ambient Temp: 22.5°C; Fluid Temp: 21.5°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: CW
Forward Conducted Power: 250 mW
Frequency: 450 MHz; Duty Cycle: 1:1
Medium: HSL450 Medium parameters used: f = 450 MHz; σ = 0.86 mho/m; ε_r = 43.6; ρ = 1000 kg/m^3

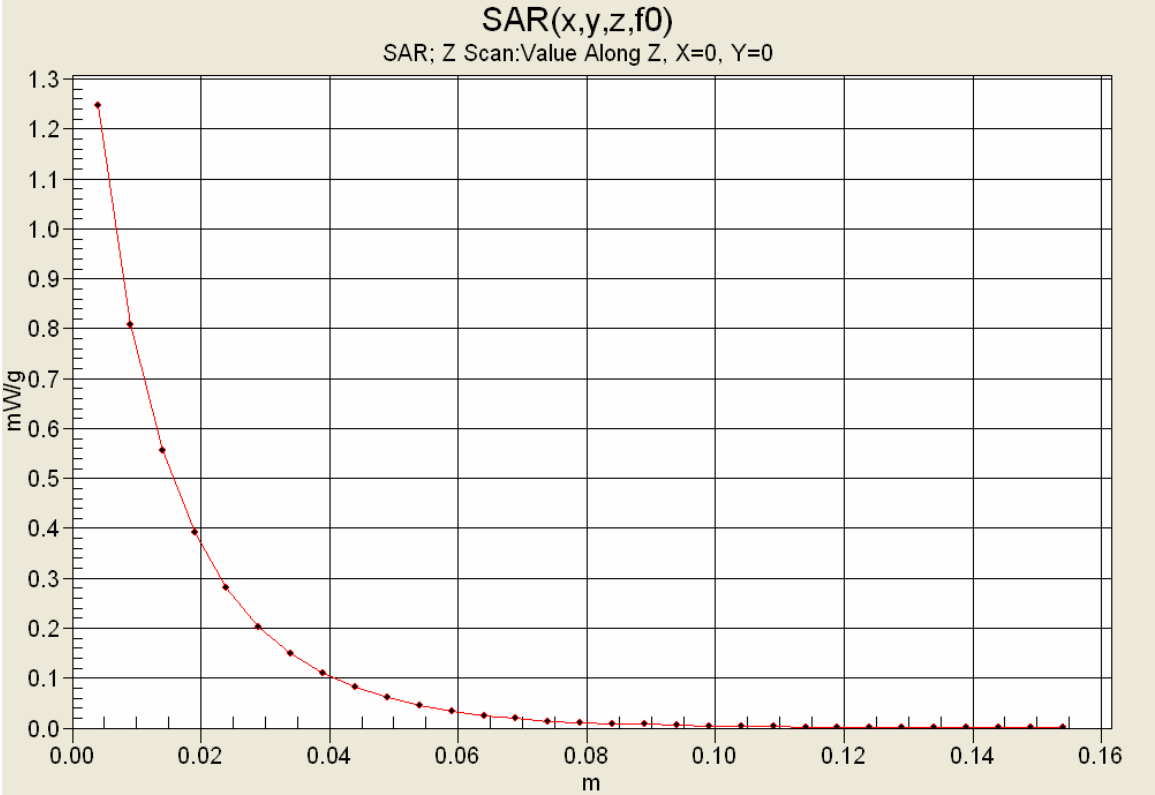
- Probe: ET3DV6 - SN1387; ConvF(7.32, 7.32, 7.32); Calibrated: 22/04/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Validation Planar; Type: Plexiglas; Serial: TE#137
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

450 MHz Dipole - System Performance Check
Area Scan (6x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.21 mW/g

450 MHz Dipole - System Performance Check
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 38.9 V/m; Power Drift = 0.008 dB
Peak SAR (extrapolated) = 1.90 W/kg
SAR(1 g) = 1.19 mW/g; SAR(10 g) = 0.776 mW/g
Maximum value of SAR (measured) = 1.28 mW/g



Z-Axis Scan



Date Tested: 05/27/2008

System Performance Check - 450 MHz Dipole - HSL

DUT: Dipole 450 MHz; Asset: 00024; Serial: 136; Validation: 05/01/2008

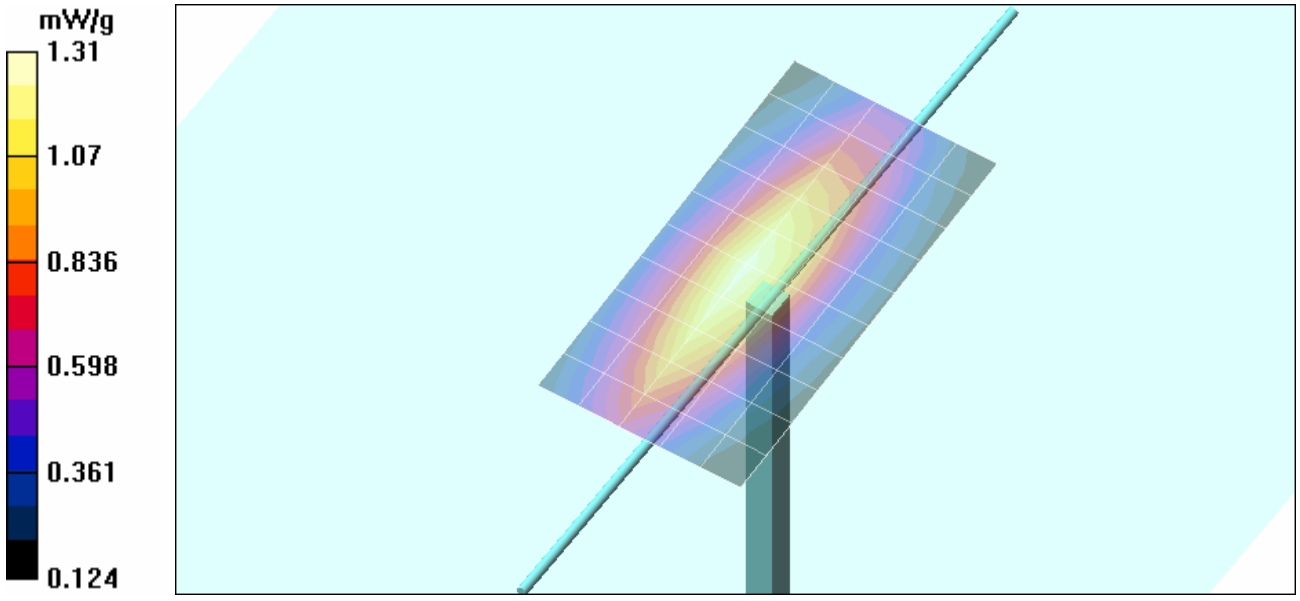
Ambient Temp: 24.8ºC; Fluid Temp: 22.7ºC; Barometric Pressure: 100.9 kPa; Humidity: 30%

Communication System: CW
Forward Conducted Power: 250 mW
Frequency: 450 MHz; Duty Cycle: 1:1
Medium: HSL450 Medium parameters used: f = 450 MHz; σ = 0.88 mho/m; ε_r = 44.4; ρ = 1000 kg/m^3

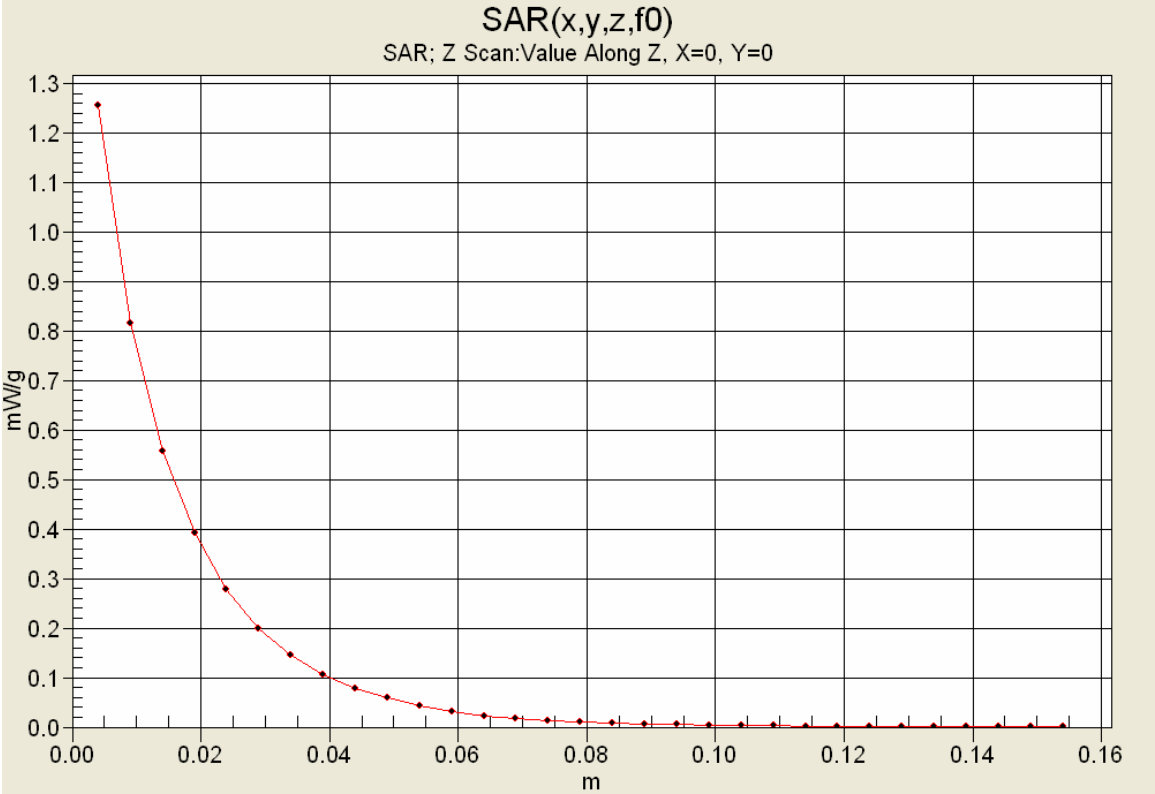
- Probe: ET3DV6 - SN1387; ConvF(7.32, 7.32, 7.32); Calibrated: 22/04/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Validation Planar; Type: Plexiglas; Serial: TE#137
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

450 MHz Dipole - System Performance Check
Area Scan (6x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.28 mW/g

450 MHz Dipole - System Performance Check
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 38.7 V/m; Power Drift = 0.039 dB
Peak SAR (extrapolated) = 1.96 W/kg
SAR(1 g) = 1.22 mW/g; SAR(10 g) = 0.792 mW/g
Maximum value of SAR (measured) = 1.31 mW/g



Z-Axis Scan



Date Tested: 07/25/2008

System Performance Check - 450 MHz Dipole - HSL

DUT: Dipole 450 MHz; Asset: 00024; Serial: 136; Validation: 07/25/2008

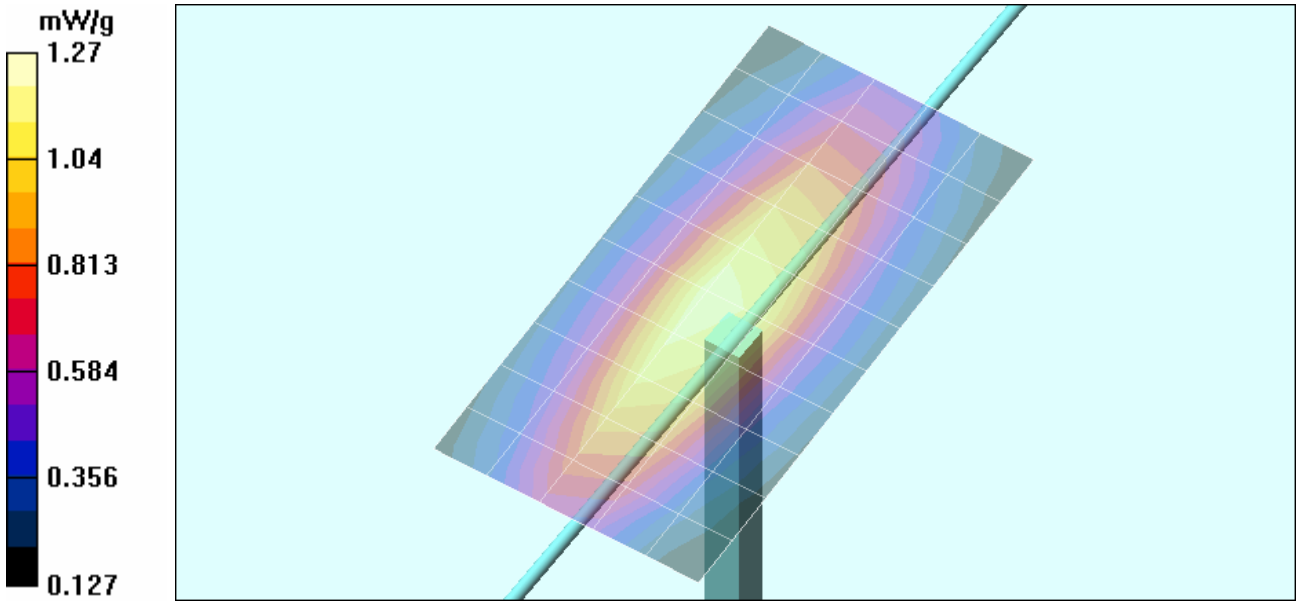
Ambient Temp: 24.1°C; Fluid Temp: 23.1°C; Barometric Pressure: 100.9 kPa; Humidity: 31%

Communication System: CW
Forward Conducted Power: 250 mW
Frequency: 450 MHz; Duty Cycle: 1:1
Medium: HSL450 Medium parameters used: f = 450 MHz; σ = 0.89 mho/m; ε_r = 43.4; ρ = 1000 kg/m^3

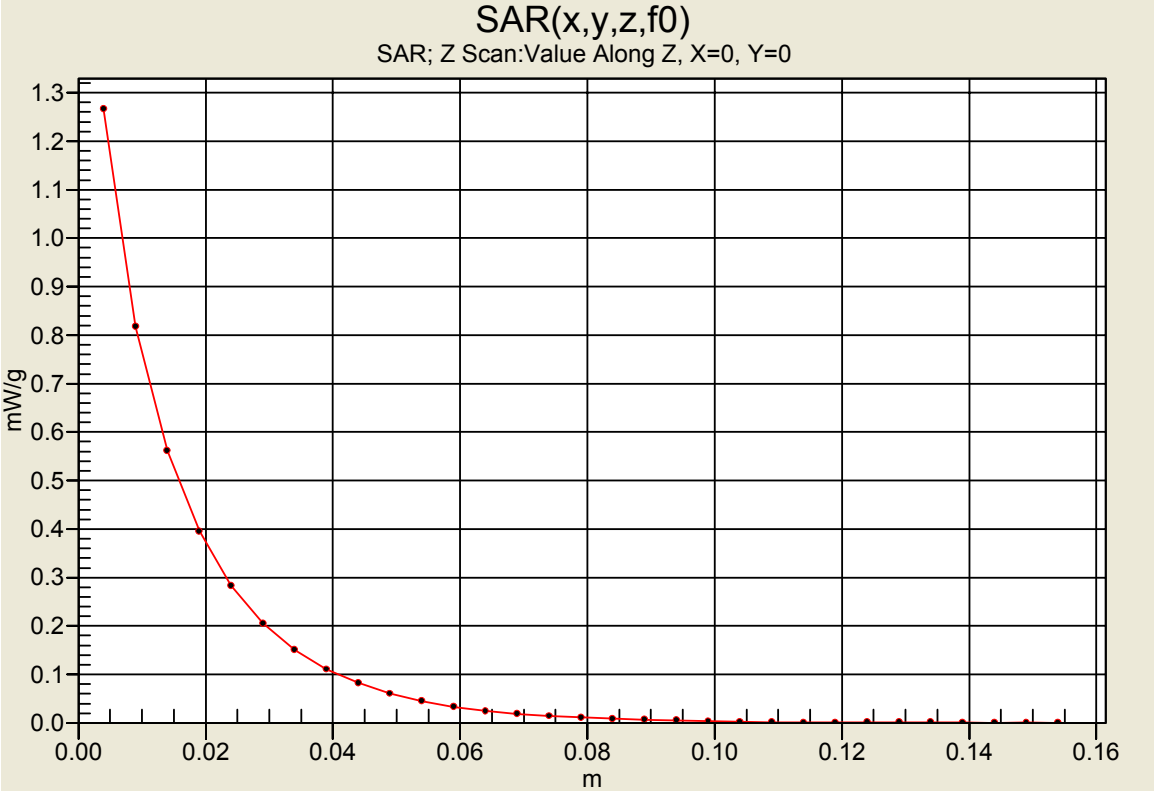
- Probe: ET3DV6 - SN1590; ConvF(7.66, 7.66, 7.66); Calibrated: 21/07/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Validation Planar; Type: Plexiglas; Serial: TE#137
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

450 MHz Dipole - System Performance Check
Area Scan (6x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.18 mW/g

450 MHz Dipole - System Performance Check
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 38.3 V/m; Power Drift = 0.000 dB
Peak SAR (extrapolated) = 1.88 W/kg
SAR(1 g) = 1.18 mW/g; SAR(10 g) = 0.775 mW/g
Maximum value of SAR (measured) = 1.27 mW/g



Z-Axis Scan



APPENDIX C - MEASURED FLUID DIELECTRIC PARAMETERS

450 MHz System Performance Check (Brain)

****

Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
01/May/2008
Frequency (GHz)
FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM

****

Freq	FCC_eH	FCC_sH	Test_e	Test_s
0.3500	44.70	0.87	45.98	0.79
0.3600	44.58	0.87	46.26	0.79
0.3700	44.46	0.87	45.44	0.79
0.3800	44.34	0.87	45.32	0.80
0.3900	44.22	0.87	45.29	0.82
0.4000	44.10	0.87	44.75	0.83
0.4100	43.98	0.87	44.32	0.83
0.4200	43.86	0.87	44.49	0.85
0.4300	43.74	0.87	43.85	0.86
0.4400	43.62	0.87	44.09	0.85
0.4500	43.50	0.87	43.63	0.86
0.4600	43.45	0.87	42.89	0.87
0.4700	43.40	0.87	43.20	0.89
0.4800	43.34	0.87	43.31	0.90
0.4900	43.29	0.87	42.86	0.91
0.5000	43.24	0.87	42.42	0.91
0.5100	43.19	0.87	42.44	0.92
0.5200	43.14	0.88	42.03	0.92
0.5300	43.08	0.88	41.88	0.92
0.5400	43.03	0.88	41.95	0.94
0.5500	42.98	0.88	41.64	0.93

480 MHz DUT Evaluation (Body)

****

Celltech Labs Inc,
Test Result for UIM Dielectric Parameter
01/May/2008
Frequency (GHz)
FCC_eB FCC Limits for Body Epsilon
FCC_sB FCC Limits for Body Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM

****

Freq	FCC_eB	FCC_sB	Test_e	Test_s
0.3500	57.70	0.93	60.27	0.87
0.3600	57.60	0.93	59.32	0.87
0.3700	57.50	0.93	59.34	0.90
0.3800	57.40	0.93	59.30	0.90
0.3900	57.30	0.93	59.14	0.91
0.4000	57.20	0.93	59.12	0.90
0.4100	57.10	0.93	59.30	0.92
0.4200	57.00	0.94	59.31	0.91
0.4300	56.90	0.94	58.60	0.92
0.4400	56.80	0.94	59.06	0.94
0.4500	56.70	0.94	58.66	0.95
0.4600	56.66	0.94	58.58	0.95
0.4700	56.62	0.94	58.35	0.97
0.4800	56.58	0.94	57.78	0.97
0.4900	56.54	0.94	58.25	0.97
0.5000	56.51	0.94	57.65	0.98
0.5100	56.47	0.94	58.08	0.98
0.5200	56.43	0.95	57.63	0.99
0.5300	56.39	0.95	57.23	1.00
0.5400	56.35	0.95	57.42	1.02
0.5500	56.31	0.95	56.94	1.03

450 MHz System Performance Check & 480 MHz DUT Evaluation (Brain)

****

Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
27/May/2008
Frequency (GHz)
FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM

****

Freq	FCC_eH	FCC_sH	Test_e	Test_s
0.3500	44.70	0.87	47.24	0.81
0.3600	44.58	0.87	47.28	0.81
0.3700	44.46	0.87	45.66	0.82
0.3800	44.34	0.87	46.89	0.83
0.3900	44.22	0.87	46.20	0.84
0.4000	44.10	0.87	45.43	0.86
0.4100	43.98	0.87	45.65	0.85
0.4200	43.86	0.87	45.14	0.85
0.4300	43.74	0.87	45.04	0.87
0.4400	43.62	0.87	44.54	0.88
0.4500	43.50	0.87	44.42	0.88
0.4600	43.45	0.87	44.08	0.89
0.4700	43.40	0.87	43.84	0.90
0.4800	43.34	0.87	43.87	0.90
0.4900	43.29	0.87	43.13	0.92
0.5000	43.24	0.87	43.60	0.93
0.5100	43.19	0.87	43.39	0.94
0.5200	43.14	0.88	42.95	0.96
0.5300	43.08	0.88	43.11	0.95
0.5400	43.03	0.88	42.79	0.95
0.5500	42.98	0.88	42.94	0.97

480 MHz DUT Evaluation (Body)

****

Celltech Labs Inc,
Test Result for UIM Dielectric Parameter
28/May/2008
Frequency (GHz)
FCC_eH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Sigma
FCC_eB FCC Limits for Body Epsilon
FCC_sB FCC Limits for Body Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM

****

Freq	FCC_eB	FCC_sB	Test_e	Test_s
0.3500	57.70	0.93	59.41	0.89
0.3600	57.60	0.93	59.23	0.89
0.3700	57.50	0.93	59.40	0.89
0.3800	57.40	0.93	60.01	0.91
0.3900	57.30	0.93	58.62	0.90
0.4000	57.20	0.93	58.86	0.92
0.4100	57.10	0.93	59.32	0.93
0.4200	57.00	0.94	59.16	0.92
0.4300	56.90	0.94	59.11	0.92
0.4400	56.80	0.94	58.33	0.94
0.4500	56.70	0.94	58.31	0.94
0.4600	56.66	0.94	58.11	0.95
0.4700	56.62	0.94	58.99	0.97
0.4800	56.58	0.94	59.01	0.96
0.4900	56.54	0.94	59.15	0.98
0.5000	56.51	0.94	58.05	1.00
0.5100	56.47	0.94	58.67	1.00
0.5200	56.43	0.95	58.05	0.99
0.5300	56.39	0.95	57.90	1.00
0.5400	56.35	0.95	57.33	1.01
0.5500	56.31	0.95	57.41	1.02

450 MHz System Performance Check & 480 MHz DUT Evaluation (Brain)

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Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
25/Jul/2008
Frequency (GHz)
FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM

****

Freq	FCC_eH	FCC_sH	Test_e	Test_s
0.3500	44.70	0.87	46.31	0.80
0.3600	44.58	0.87	45.65	0.82
0.3700	44.46	0.87	45.27	0.82
0.3800	44.34	0.87	45.47	0.83
0.3900	44.22	0.87	44.76	0.84
0.4000	44.10	0.87	44.57	0.87
0.4100	43.98	0.87	44.63	0.86
0.4200	43.86	0.87	44.66	0.86
0.4300	43.74	0.87	43.79	0.89
0.4400	43.62	0.87	43.68	0.87
0.4500	43.50	0.87	43.44	0.89
0.4600	43.45	0.87	43.27	0.90
0.4700	43.40	0.87	43.17	0.90
0.4800	43.34	0.87	43.66	0.91
0.4900	43.29	0.87	42.68	0.92
0.5000	43.24	0.87	42.39	0.95
0.5100	43.19	0.87	42.24	0.94
0.5200	43.14	0.88	41.96	0.95
0.5300	43.08	0.88	42.42	0.95
0.5400	43.03	0.88	41.99	0.97
0.5500	42.98	0.88	41.92	0.98

480 MHz DUT Evaluation (Body)

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Celltech Labs Inc,
Test Result for UIM Dielectric Parameter
25/Jul/2008
Frequency (GHz)
FCC_eH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Sigma
FCC_eB FCC Limits for Body Epsilon
FCC_sB FCC Limits for Body Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM

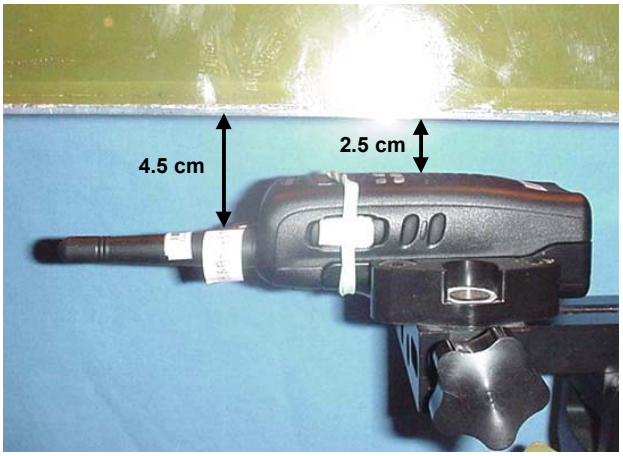
****

Freq	FCC_eB	FCC_sB	Test_e	Test_s
0.3500	57.70	0.93	58.89	0.87
0.3600	57.60	0.93	58.73	0.89
0.3700	57.50	0.93	58.69	0.91
0.3800	57.40	0.93	58.33	0.89
0.3900	57.30	0.93	58.38	0.91
0.4000	57.20	0.93	57.89	0.93
0.4100	57.10	0.93	57.42	0.94
0.4200	57.00	0.94	57.34	0.94
0.4300	56.90	0.94	56.65	0.94
0.4400	56.80	0.94	56.78	0.93
0.4500	56.70	0.94	57.20	0.96
0.4600	56.66	0.94	56.40	0.97
0.4700	56.62	0.94	56.44	0.98
0.4800	56.58	0.94	57.17	0.98
0.4900	56.54	0.94	56.67	0.99
0.5000	56.51	0.94	56.74	1.02
0.5100	56.47	0.94	56.43	1.01
0.5200	56.43	0.95	56.17	1.03
0.5300	56.39	0.95	56.15	1.02
0.5400	56.35	0.95	56.18	1.05
0.5500	56.31	0.95	56.11	1.05

APPENDIX D - SAR TEST SETUP & DUT PHOTOGRAPHS

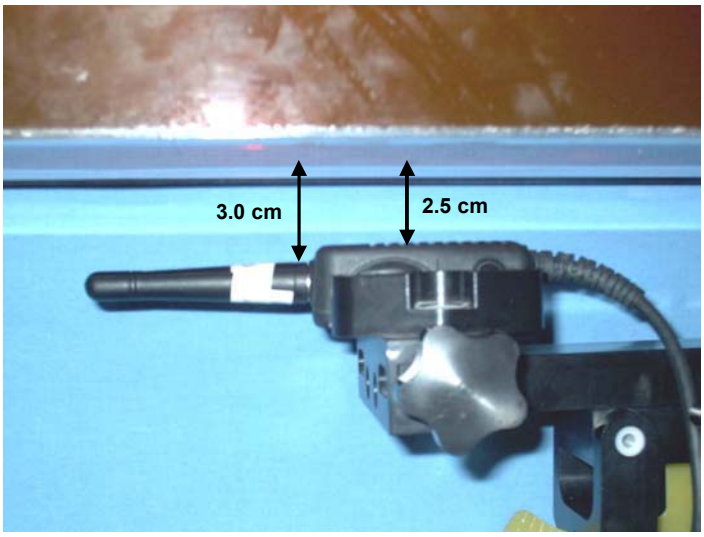
FACE-HELD SAR TEST SETUP PHOTOGRAPHS

2.5 cm Spacing from Front Side of DUT to Planar Phantom
Radio Transceiver with KRA-23M2 Antenna & NiMH Battery



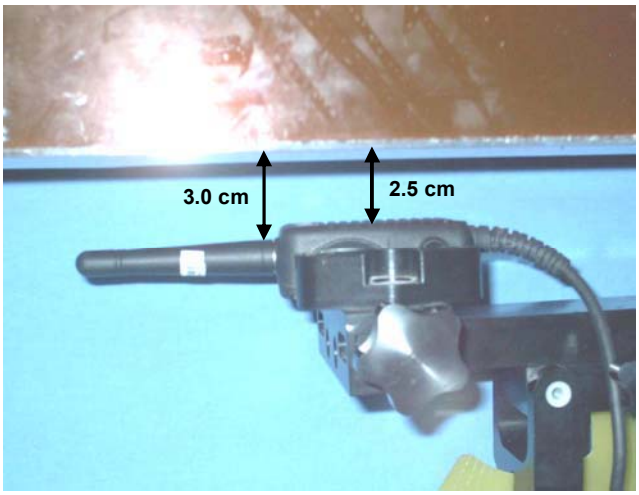
FACE-HELD SAR TEST SETUP PHOTOGRAPHS

2.5 cm Spacing from Front Side of DUT to Planar Phantom
Speaker-Microphone Antenna Type with KRA-23M Stubby Antenna



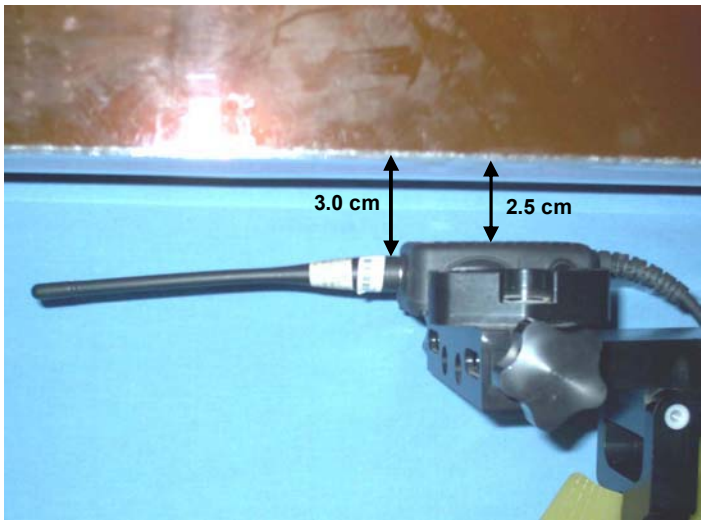
FACE-HELD SAR TEST SETUP PHOTOGRAPHS

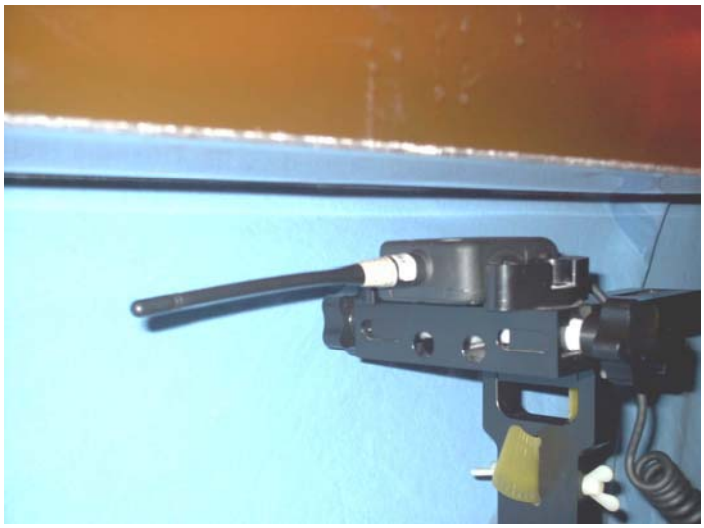
2.5 cm Spacing from Front Side of DUT to Planar Phantom
Speaker-Microphone Antenna Type with KRA-23M2 Stubby Antenna



FACE-HELD SAR TEST SETUP PHOTOGRAPHS

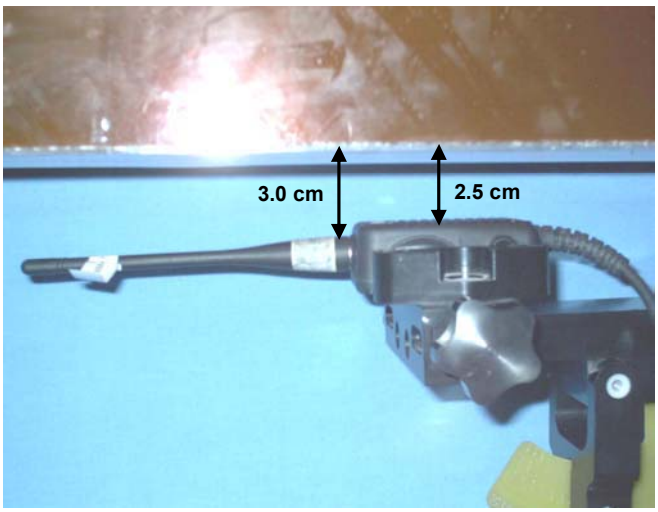
2.5 cm Spacing from Front Side of DUT to Planar Phantom
Speaker-Microphone Antenna Type with KRA-27M Whip Antenna

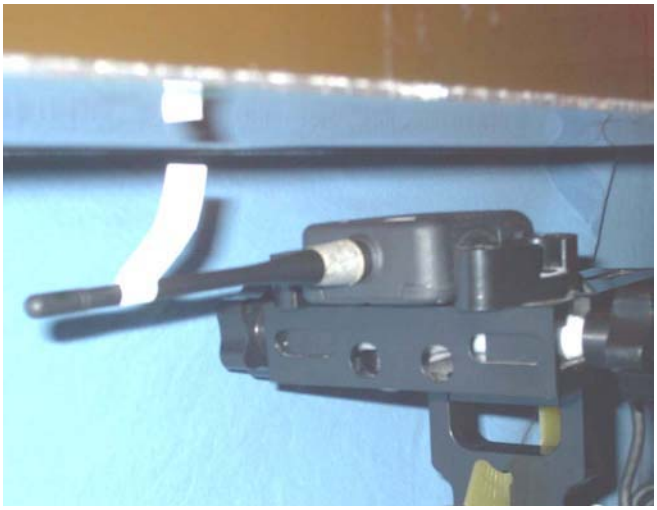




FACE-HELD SAR TEST SETUP PHOTOGRAPHS

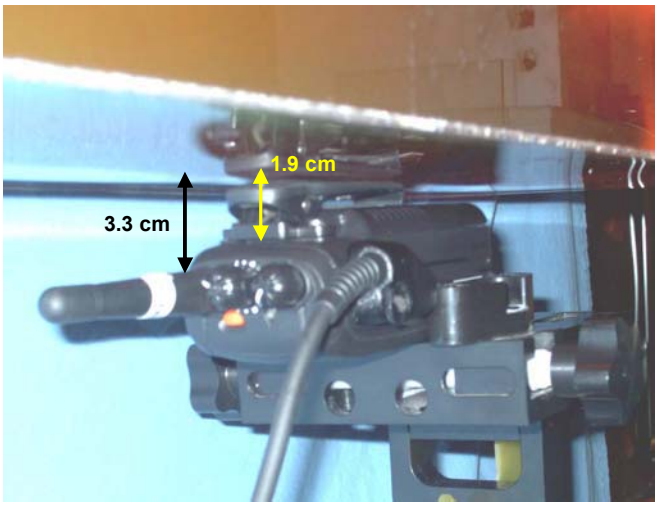
2.5 cm Spacing from Front Side of DUT to Planar Phantom
Speaker-Microphone Antenna Type with KRA-27M2 Whip Antenna





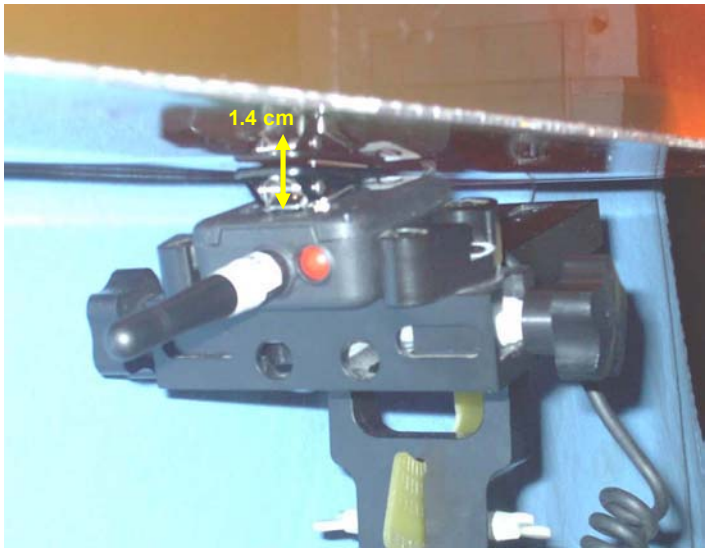
BODY-WORN SAR TEST SETUP PHOTOGRAPHS

1.9 cm Belt-Clip Spacing from Back of DUT to Planar Phantom
Radio Transceiver with KRA-23M2 Stubby Antenna & Speaker-Microphone



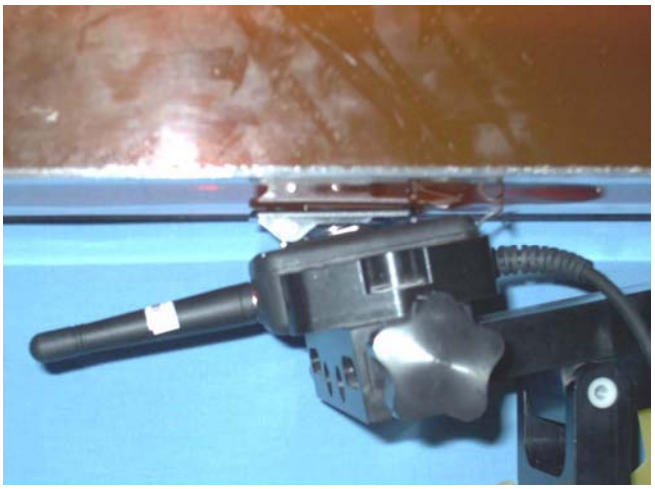
BODY-WORN SAR TEST SETUP PHOTOGRAPHS

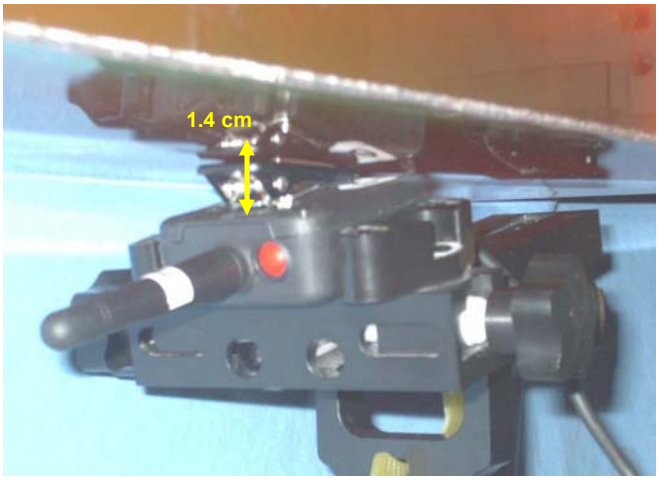
1.4 cm Lapel-Clip Spacing from Back of DUT to Planar Phantom
Speaker-Microphone Antenna Type with KRA-23M Stubby Antenna



BODY-WORN SAR TEST SETUP PHOTOGRAPHS

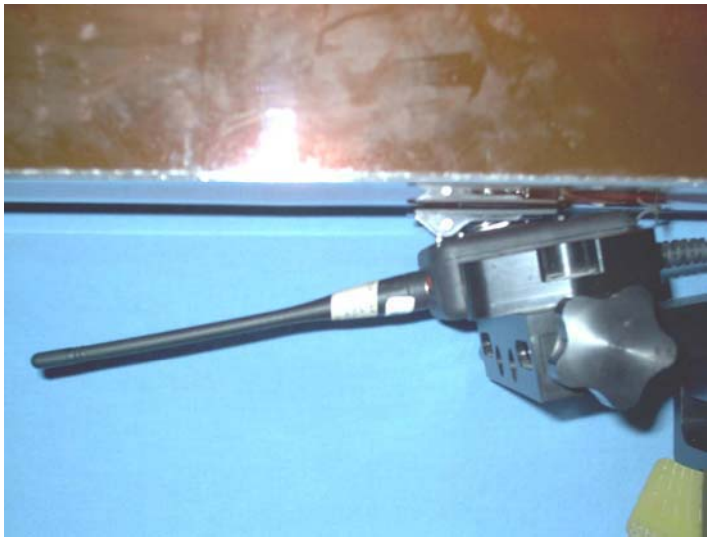
1.4 cm Lapel-Clip Spacing from Back of DUT to Planar Phantom
Speaker-Microphone Antenna Type with KRA-23M2 Stubby Antenna

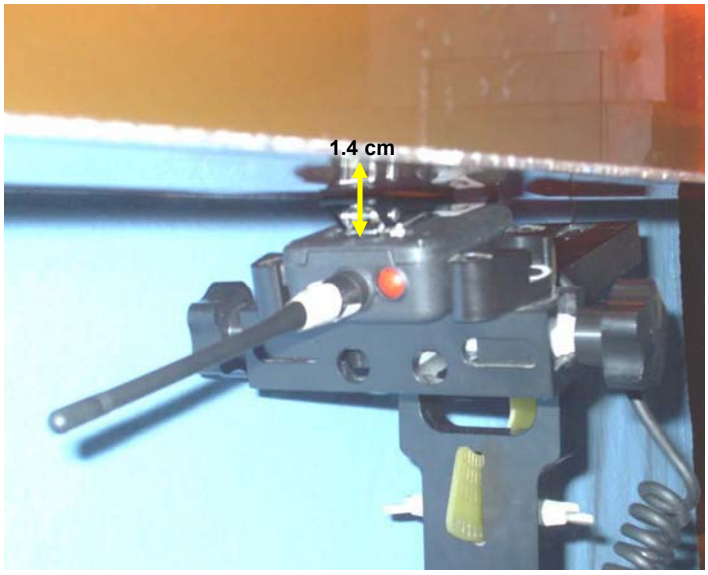




BODY-WORN SAR TEST SETUP PHOTOGRAPHS

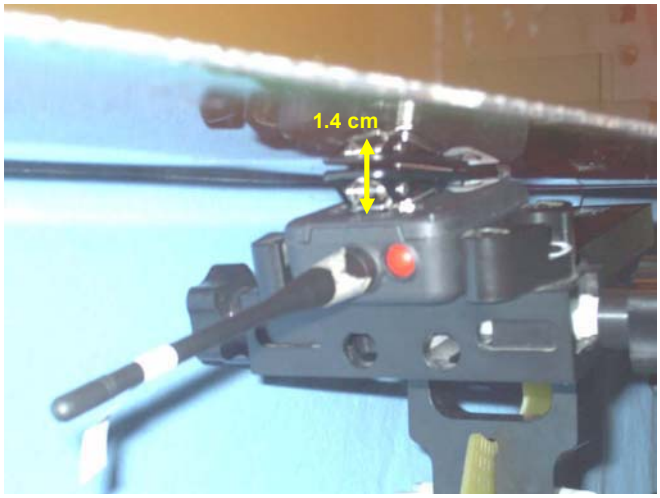
1.4 cm Lapel-Clip Spacing from Back of DUT to Planar Phantom
Speaker-Microphone Antenna Type with KRA-27M Whip Antenna





BODY-WORN SAR TEST SETUP PHOTOGRAPHS

1.4 cm Lapel-Clip Spacing from Back of DUT to Planar Phantom
Speaker-Microphone Antenna Type with KRA-27M2 Whip Antenna



DUT PHOTOGRAPHS

DUT and Speaker-Microphone with KRA-23M Antenna

DUT and Speaker-Microphone with KRA-23M2 Antenna

DUT and Speaker-Microphone with KRA-27M Antenna

DUT and Speaker-Microphone with KRA-27M2 Antenna

DUT PHOTOGRAPHS

Left Side of Radio Transceiver with Belt-Clip (P/N: J29-0730>PC<1) and Ni-MH Battery (P/N: KNB-50NC)

Right Side of Radio Transceiver with Belt-Clip (P/N: J29-0730>PC<1) and Ni-MH Battery (P/N: KNB-50NC)

Bottom end of Radio Transceiver

Top end of Radio Transceiver

Ni-MH Battery P/N: KNB-50NC

DUT PHOTOGRAPHS

Top end view of Speaker-Microphone Antenna Type (P/N: KMC-40)

Back view with KRA-23M Stubby Antenna

Side view of Speaker-Microphone Antenna Type (P/N: KMC-40)

Bottom end view of Speaker-Microphone Antenna Type (P/N: KMC-40)

Back view with KRA-27M Whip Antenna

DUT PHOTOGRAPHS

Speaker-Microphone with KRA-23M Antenna (Side View)

Speaker-Microphone with KRA-23M2 Antenna (Side View)

Speaker-Microphone with KRA-27M Antenna (Side View)

Speaker-Microphone with KRA-27M2 Antenna (Side View)

DUT PHOTOGRAPHS

Front of Speaker-Mic Antenna Type

Back of Speaker-Mic Antenna Type

Lapel-Clip on Speaker-Mic-Antenna Type

Front of Radio Transceiver

Back of Radio Transceiver

Radio S/N: 90650029

Radio S/N: U_15S No. 71