FCC SAR TEST REPORT

RF EXPOSURE EVALUATION | SPECIFIC ABSORPTION RATE

APPLICANT / MANUFACTURER	LAW ENFORCEMENT ASSOCIATES, INC.		
DEVICE UNDER TEST (DUT)	WIRELESS BODY-WORN DIGITAL VOICE TRANSMITTER (VHF)		
DEVICE MODEL(S)	PDT-500BW		
TRANSMIT FREQUENCY RANGE	150.8 - 173.4 MHz (VHF Band)		
MANUF. RATED OUTPUT POWER	27.4 dBm	550 mW	Conducted
MODULATION TYPE(S)	4-Level FSK		
BIT RATE(S)	4800 bits/second		
ANTENNA TYPE(S)	Wire Antenna		
POWER SOURCE	9V Battery		
DEVICE IDENTIFIER(S)	FCC ID:KAVPDT500		
APPLICATION TYPE	FCC TCB Certification		
APPLICABLE RULE PART(S)	FCC Part 90		
STANDARD(S) APPLIED	FCC 47 CFR §2.1093		
PROCEDURE(S) APPLIED	FCC OET Bulletin 65, Supplement C (01-01)		
	FCC KDB 447498 D01v04		
	IEEE 1528-2003		
FCC DEVICE CLASSIFICATION	Licensed Non-Broadcast Transmitter Worn on Body (TNT)		
RF EXPOSURE LIMIT(S) APPLIED	Controlled / Occupational		
RF EXPOSURE EVALUATION(S)	Body-worn		
DATE OF SAMPLE RECEIPT	April 23, 2010		
DATE(S) OF EVALUATION	June 09, 2010		
TEST REPORT SERIAL NO.	042310KAV-T1015-S90V		
TEST REPORT REVISION NO.	Revision 1.0	Initial Release	June 21, 2010
TEST REPORT SIGNATORIES	Testing Performed By	Test Report Prepared By	
	Sean Johnston - Celltech Labs	Jon Hughes - Celltech Labs	
TEST LAB AND LOCATION	Celltech Compliance Testing and Engineering Laboratory		
	21-364 Lougheed Road, Kelowna, B.C. V1X 7R8 Canada		
TEST LAB CONTACT INFO.	Tel.: 250-765-7650	Fax: 250-765-7645	
	info@celltechlabs.com	www.celltechlabs.com	
TEST LAB ACCREDITATION(S)	ISO/IEC 17025:2005 (A2LA Test Lab Certificate No. 2470.01)		

DECLARATION OF COMPLIANCE - SAR RF EXPOSURE EVALUATION (FCC)

Test Lab Information	**Name**	**CELLTECH LABS INC.**				
	Address	21-364 Lougheed Road, Kelowna, B.C. V1X 7R8 Canada				
Applicant Information	**Name**	**LAW ENFORCEMENT ASSOCIATES, INC.**				
	Address	2609 Discovery Drive, Suite 125, Raleigh, NC 27616 United States				
Standard(s) Applied	**FCC**	47 CFR §2.1093				
Procedure(s) Applied	**FCC**	OET Bulletin 65, Supplement C				
	FCC	KDB 447498 D01v04				
	IEEE	1528-2003				
Device Classification(s)	**FCC**	Licensed Non-Broadcast Transmitter Worn on Body (TNT) - Part 90				
Device Identifier(s)	**FCC ID:**	KAVPDT500				
Device Description	Wireless Body-worn Digital Voice Transmitter (VHF)					
Device Model(s)	PDT-500BW					
Test Sample Serial No.	None (Identical Prototype)					
Transmitter Box Dimensions	2.8" L x 2.64" L x .77" D					
DUT Modulation Type(s)	4-Level FSK					
DUT Bit Rate(s)	4800 bits/second					
Transmitter Frequency Range	150.8 - 173.4 MHz (VHF Band)					

RF Output Power Levels Tested	Antenna Band	Freq. (MHz)	Nc=3 / Antenna	dBm	mW	Method
	150-162 MHz	150.8	1	26.4	440	Conducted
		156.4	2	26.6	460	Conducted
		162.0	3	26.6	460	Conducted
	162-174 MHz	162.0	1	26.6	460	Conducted
		167.7	2	26.6	460	Conducted
		173.4	3	27.4	550	Conducted

Antenna Type(s) Tested	Wire Antenna	150 - 162 MHz	Length = 47 cm	P/N: 91204P
	Wire Antenna	162 - 174 MHz	Length = 45 cm	P/N: 91204P
Battery Type(s) Tested	9V Lithium (UltraLife)		9V Alkaline (Duracell)	
Body-worn Accessory Tested	None (Touch Position)			
Audio Accessory Tested	Electret Microphone P/N: 91304			

Max. SAR Level(s) Evaluated	Body-worn	**0.548 W/kg**	1g average	Occupational / Controlled Exposure
FCC Spatial Peak SAR Limit	Body-worn	8.0 W/kg	1g average	

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 Controlled / Occupational Exposure environment. The device was tested in accordance with the measurement procedures specified in FCC OET Bulletin 65, Supplement C (Edition 01-01) and IEEE Standard 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**	**Lab Manager**	**Celltech Labs Inc.**

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REVISION HISTORY			
REVISION NO.	**DESCRIPTION**	**IMPLEMENTED BY**	**RELEASE DATE**
1.0	Initial Release	Jon Hughes	June 21, 2010

1.0 INTRODUCTION

This measurement report demonstrates that the Law Enforcement Associates Inc. Model: PDT-500BW Wireless Body-worn Digital Voice Transmitter complies with the SAR (Specific Absorption Rate) RF exposure requirements specified in FCC 47 CFR §2.1093 (see reference [1]) under the General Population / Uncontrolled Exposure limit. The measurement procedures described in FCC OET Bulletin 65, Supplement C 01-01 (see reference [2]) and IEEE Standard 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 head 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 a controller with a built in VME-bus computer.

3.0 RF CONDUCTED OUTPUT POWER MEASUREMENTS

MEASURED RF CONDUCTED OUTPUT POWER LEVELS

Antenna Band	Test Freq.	Nc=3 / Antenna	dBm	mW
150 - 162 MHz	150.8 MHz	1	26.4	440
	156.4 MHz	2	26.6	460
	162.0 MHz	3	26.6	460
162 - 174 MHz	162.0 MHz	1	26.6	460
	167.7 MHz	2	26.6	460
	173.4 MHz	3	27.4	550

Notes

1. The RF conducted output power levels of the DUT were measured by Celltech prior to the SAR evaluations using a Gigatronics 8652A Universal Power Meter.
2. The number of test channels was determined by the antenna band per IEEE 1528-2003.

4.0 SAR PROBE CALIBRATION & MEASUREMENT FREQUENCIES

The following procedures are recommended for measurements at 150 MHz - 3 GHz to minimize probe calibration and tissue dielectric parameter discrepancies. In general, SAR measurements below 300 MHz should be within ±50 MHz of the probe calibration frequency. At 300 MHz to 3 GHz, measurements should be within ±100 MHz of the probe calibration frequency. Measurements exceeding 50% of these intervals, ±25 MHz < 300 MHz and ±50 MHz ≥300 MHz, require additional steps (per FCC KDB 450824 D01 v01r01, SAR Probe Calibration and System Verification Considerations for Measurements at 150 MHz - 3 GHz - see reference [5]).

Probe Calibration Freq.	Device Measurement Freq.	Frequency Interval	±50 MHz ≥ 300 MHz
150 MHz	150.8 MHz	0.8 MHz	< 50 MHz
	156.4 MHz	6.4 MHz	< 50 MHz
	162.0 MHz	12 MHz	< 50 MHz
	167.7 MHz	17.7 MHz	< 50 MHz
	173.4 MHz	23.4 MHz	< 50 MHz
The probe calibration and measurement frequency interval is < 50 MHz; therefore the additional steps are not required.			

5.0 SIMULATED EQUIVALENT TISSUES

The simulated equivalent tissue recipes in the table below are derived from the SAR system manufacturer's suggested recipes in the DASY4 manual (see references [6] and [7]) in accordance with the procedures and requirements specified in IEEE Standard 1528-2003 (see reference [3]). The ingredient percentage may have been adjusted minimally in order to achieve the appropriate target dielectric parameters within the specified tolerance.

SIMULATED TISSUE MIXTURES							
INGREDIENT	Water	300 MHz Head Tissue Mixture	37.56 %	150 MHz Head Tissue Mixture	38.35 %	150 MHz Body Tissue Mixture	46.6 %
	Sugar		55.32 %		55.5%		49.7 %
	Salt		5.95 %		5.15%		2.6 %
	HEC		0.98 %		0.9%		1.0 %
	Bactericide		0.19 %		0.1%		0.1 %

6.0 SAR LIMITS

SAR RF EXPOSURE LIMITS			
FCC 47 CFR 2.1093	Health Canada Safety Code 6	(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.			

7.0 SAR MEASUREMENT SUMMARY

BODY SAR MEASUREMENT SUMMARY

Test Date	Freq.	Antenna Band	Test Mode	Battery Type	Audio Accessory	Body-worn Accessory	Transmitter Position to Planar Phantom	Antenna Distance to Planar Phantom	Cond. Power Before Test	SAR Drift During Test	Measured SAR
	MHz	MHz							dBm	dB	1g average
June 9	150.8	150-162	Mod. FSK	Lithium 9V	Microphone	None	Back Touch	Touch	26.4	0.012	0.546
June 9	156.4		Mod. FSK						26.6	0.026	0.391
June 9	162.0		Mod. FSK						26.6	-0.013	0.232
June 9	162.0	162-174	Mod. FSK						26.6	-0.121	0.319
June 9	167.7		Mod. FSK						26.6	-0.038	0.219
June 9	173.4		Mod. FSK						27.4	-0.030	0.197
June 9	150.8	150-162	Mod. FSK	Alkaline 9V	Microphone	None	Back Touch	Touch	26.4	-0.055	0.548
June 9	156.4		Mod. FSK						26.6	-0.055	0.411
June 9	162.0		Mod. FSK						26.6	-0.057	0.250
June 9	162.0	162-174	Mod. FSK						26.6	-0.071	0.316
June 9	167.7		Mod. FSK						26.6	-0.044	0.211
June 9	173.4		Mod. FSK						27.4	-0.018	0.221

SAR LIMIT(S)	BODY	SPATIAL PEAK	RF EXPOSURE CATEGORY
FCC 47 CFR 2.1093	8.0 W/kg	averaged over 1 gram	Occupational / Controlled

Fluid Type	150 MHz BODY				Evaluation Date	June 09, 2010	Unit
Fluid Dielectric Parameters	IEEE Target	Permittivity	61.9	±5%	Ambient Temperature	24.0	°C
		Conductivity	0.80	±5%	Fluid Temperature	23.0	°C
	Test Frequency	Date	Measured	Deviation	Fluid Depth	≥ 15	cm
Dielectric Constant ε_r	150 MHz	Jun-9	61.1	-1.3%	Relative Humidity	35	%
	160 MHz	Jun-9	62.0	+0.2%	Atmospheric Pressure	101.1	kPa
	170 MHz	Jun-9	62.8	+1.4%	ρ (Kg/m^3)	1000	
Conductivity σ (mho/m)	150 MHz	Jun-9	0.80	0.0%			
	160 MHz	Jun-9	0.78	-2.5%			
	170 MHz	Jun-9	0.79	-1.3%			

8.0 DETAILS OF SAR EVALUATION

1. Detailed measurement data and plots showing the maximum SAR location of the DUT are reported in Appendix A.
2. Photographs of the test setup are shown in Appendix D.
3. The DUT can be worn next-to-body (taped on to the torso) for covert operations. The SAR evaluations performed and reported herein are representative of this body-worn configuration.
4. The DUT can also be body-worn utilizing the Elastic Midriff Pouch accessory. This accessory is designed to be worn around the user's waist and is made from elastic stretch material. The accessory does not contain any metallic components and provides a 0.050" spacing (material thickness) from the DUT to the user's body. The accessory does not house the antenna and therefore in the accessory configuration the antenna would still be taped to the user's body. This accessory configuration was not tested due to no metallic components and the additional spacing.
5. The DUT was tested for body-worn SAR with the back side of the DUT (battery housing) touching the outer surface of the planar phantom and the low-band wire antenna (150-162 MHz) touching the outer surface of the planar phantom.
6. The DUT was tested for body-worn SAR with the back side of the DUT (battery housing) touching the outer surface of the planar phantom and the high-band wire antenna (162-174 MHz) touching the outer surface of the planar phantom.
7. The microphone audio accessory was connected to the DUT for the duration of the SAR evaluations.
8. The SAR evaluations were performed with a fully charged Lithium 9V battery and a new Alkaline 9V battery installed in the DUT consecutively.
9. The conducted output power levels of the DUT were measured at the external antenna connector prior to the SAR evaluations using a Gigatronics 8652A Universal Power Meter in accordance with the procedures described in FCC 47 CFR §2.1046.
10. The SAR drift of the DUT measured by the DASY4 system during the SAR evaluations was < 5% from the start SAR.
11. The DUT was evaluated for SAR at the maximum output power level preset by the manufacturer.
12. The DUT was evaluated for SAR with a modulated FSK signal at 100% duty cycle using proprietary software provided by customer.
13. The fluid temperature was measured prior to and after the SAR evaluations and the temperature remained within +/- 2°C of the fluid temperature reported during the dielectric parameter measurements.
14. 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).

9.0 SAR 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.

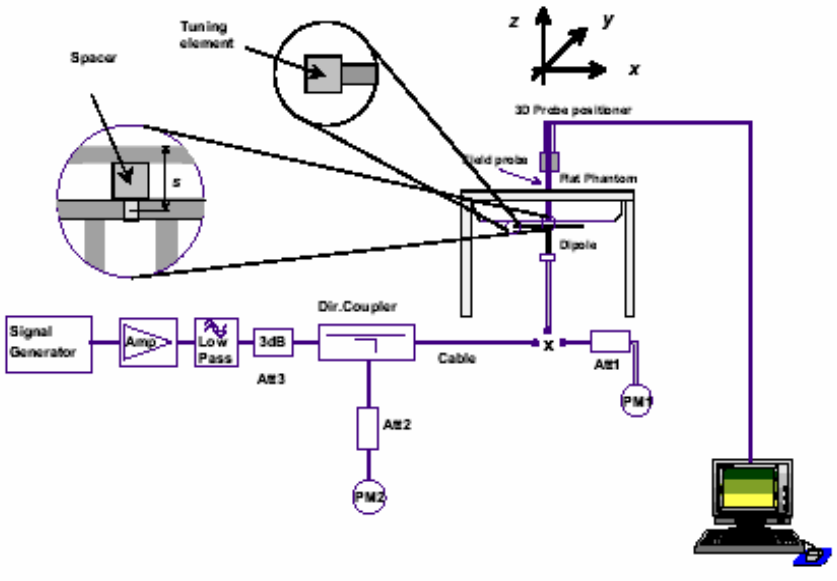
10.0 SYSTEM PERFORMANCE CHECK

Prior to the SAR evaluations a daily system check was performed with a planar phantom and 300 MHz SPEAG dipole (see Appendix B for system performance check test plot) in accordance with the procedures described in IEEE Standard 1528-2003 (see reference [5]). 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 398 mW was applied to the dipole and the system was verified to a tolerance of ±10% from the system manufacturer's dipole calibration target SAR value (see Appendix E for system manufacturer's dipole calibration procedures).

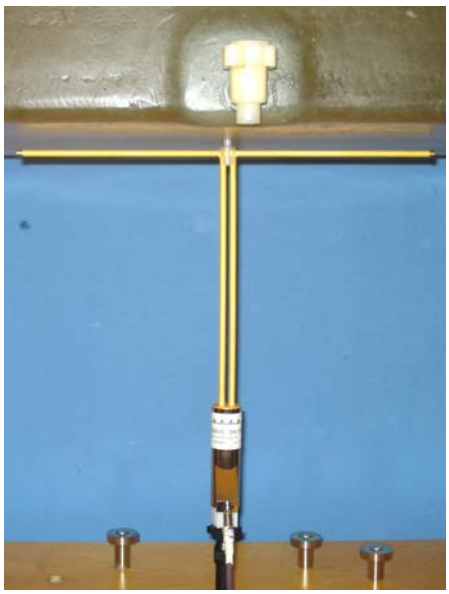
SYSTEM PERFORMANCE CHECK EVALUATION

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)	SPEAG Target	Meas.	Dev.	SPEAG Target	Meas.	Dev.	SPEAG Target	Meas.	Dev.						
June 9	Head 300	1.14 ±10%	1.23	+7.9%	45.3 ±5%	46.1	+1.8%	0.87 ±5%	0.90	+3.4%	1000	23.8	22.7	≥ 15	35	101.1

Notes		
	1.	The target SAR values are the measured values from the dipole calibration performed by SPEAG (see Appendix E).
	2.	The target dielectric parameters are the measured values from the dipole calibration performed by SPEAG (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 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).



System Performance Check Measurement Setup (IEEE Standard 1528-2003)



300 MHz Validation Dipole Setup

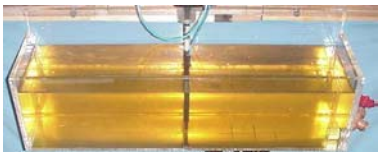
11.0 PROBE SPECIFICATION (ET3DV6)

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 head 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 head tissue (rotation around probe axis) ± 0.4 dB in head 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

12.0 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

13.0 VALIDATION PLANAR PHANTOM

The Barski planar phantom is a fiberglass shell phantom with a 2.0 mm (+/-0.2mm) thick device measurement area at the center of the phantom for SAR evaluations of devices with a larger surface area than the planar section of the SAM phantom. The Barski planar phantom is integrated in a wooden table. The Barski planar phantom is utilized for DUT SAR evaluations with larger surface areas and system performance check evaluations. See Appendix G for dimensions and specifications of the Barski planar phantom.

Validation Planar Phantom

14.0 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

15.0 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.	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
Inner Dimensions	72.6 cm (L) x 20.3 cm (W) x 20.3 cm (H)
Validation Phantom	
Type	Barski Planar Phantom
Shell Material	Fiberglass
Bottom Thickness	2.0 ±0.1 mm
Inner Dimensions	Approx. 70 liters

16.0 TEST EQUIPMENT LIST

TEST EQUIPMENT		ASSET NO.	SERIAL NO.	DATE CALIBRATED	CALIBRATION INTERVAL
USED	DESCRIPTION				
x	Schmid & Partner DASY4 System	-	-	-	-
x	-DASY4 Measurement Server	00158	1078	CNR	CNR
x	-Robot	00046	599396-01	CNR	CNR
x	-DAE4	00019	353	27Apr10	Annual
x	-ET3DV6 E-Field Probe	00017	1590	16Jul09	Annual
x	-SPEAG D300V3 Validation Dipole	000216	1009	18Jan10	Biennial
x	-Plexiglas Side Planar Phantom	00156	161	CNR	CNR
x	-Barski Planar Phantom	00155	03-01	CNR	CNR
x	HP 85070C Dielectric Probe Kit	00033	none	CNR	CNR
x	Gigatronics 8652A Power Meter	00007	1835272	04May10	Biennial
x	Gigatronics 80701A Power Sensor	00014	1833699	04May10	Biennial
x	HP 8753ET Network Analyzer	00134	US39170292	04May10	Biennial
x	Rohde & Schwarz SMR20 Signal Generator	00006	100104	CNR	CNR
x	Amplifier Research 5S1G4 Power Amplifier	00106	26235	CNR	CNR
Abbr.	CNR = Calibration Not Required				

17.0 MEASUREMENT UNCERTAINTIES

UNCERTAINTY BUDGET FOR DEVICE EVALUATION

Uncertainty Component	IEEE 1528 Section	Uncertainty Value ±%	Probability Distribution	Divisor	ci 1g	ci 10g	Uncertainty Value ±% (1g)	Uncertainty Value ±% (10g)	V_i or V_{eff}
Measurement System									
Probe Calibration (150 MHz)	E.2.1	10.0	Normal	1	1	1	10.0	10	∞
Axial Isotropy	E.2.2	4.7	Rectangular	1.732050808	0.7	0.7	1.9	1.9	∞
Hemispherical Isotropy	E.2.2	9.6	Rectangular	1.732050808	0.7	0.7	3.9	3.9	∞
Boundary Effect	E.2.3	2.5	Rectangular	1.732050808	1	1	1.4	1.4	∞
Linearity	E.2.4	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	0.3	Normal	1	1	1	0.3	0.3	∞
Response Time	E.2.7	0.8	Rectangular	1.732050808	1	1	0.5	0.5	∞
Integration Time	E.2.8	2.6	Rectangular	1.732050808	1	1	1.5	1.5	∞
RF Ambient Conditions	E.6.1	3	Rectangular	1.732050808	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.4	Rectangular	1.732050808	1	1	0.2	0.2	∞
Probe Positioning wrt Phantom Shell	E.6.3	2.9	Rectangular	1.732050808	1	1	1.7	1.7	∞
Extrapolation, interpolation & integration algorithms for max. SAR evaluation	E.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Test Sample Related									
Test Sample Positioning	E.4.2	2.9	Normal	1	1	1	2.9	2.9	12
Device Holder Uncertainty	E.4.1	3.6	Normal	1	1	1	3.6	3.6	8
SAR Drift Measurement	6.6.2	5	Rectangular	1.732050808	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									
Phantom Uncertainty	E.3.1	4	Rectangular	1.732050808	1	1	2.3	2.3	∞
Liquid Conductivity (target)	E.3.2	5	Rectangular	1.732050808	0.64	0.43	1.8	1.2	∞
Liquid Conductivity (measured)	E.3.3	2.5	Normal	1	0.64	0.43	1.6	1.1	∞
Liquid Permittivity (target)	E.3.2	5	Rectangular	1.732050808	0.6	0.49	1.7	1.4	∞
Liquid Permittivity (measured)	E.3.3	1.4	Normal	1	0.6	0.49	0.8	0.7	∞
Combined Standard Uncertainty			**RSS**				**13.49**	**13.32**	
Expanded Uncertainty (95% Confidence Interval)			**k=2**				**26.97**	**26.64**	

Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003

18.0 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.

[4] Federal Communications Commission, Office of Engineering and Technology - “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”; KDB 447498 D01v04: November 2009.

[5] Federal Communications Commission, Office of Engineering and Technology - “Application Note: SAR Probe Calibration and System Verification Considerations for Measurements at 150 MHz - 3 GHz”; KDB 450824 D01 v01r01: January 2007.

[6] Schmid & Partner Engineering AG - DASY4 Manual V4.6, Chapter 16 Application Note, Head Tissue Recipe: Sept. 2005.

[7] Schmid & Partner Engineering AG - DASY4 Manual V4.6, Chapter 17 Application Note, Body Tissue Recipe: Sept. 2005.

[8] ISO/IEC 17025 - “General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:2005).”

APPENDIX A - SAR MEASUREMENT DATA

Date Tested: 06/09/2010

Body-worn SAR - Back of DUT - Lithium Battery - Low-Band Antenna - 150.8 MHz

DUT: LEA PDT-500BW; Type: Wireless Body-worn Digital Voice Transmitter; Serial: None

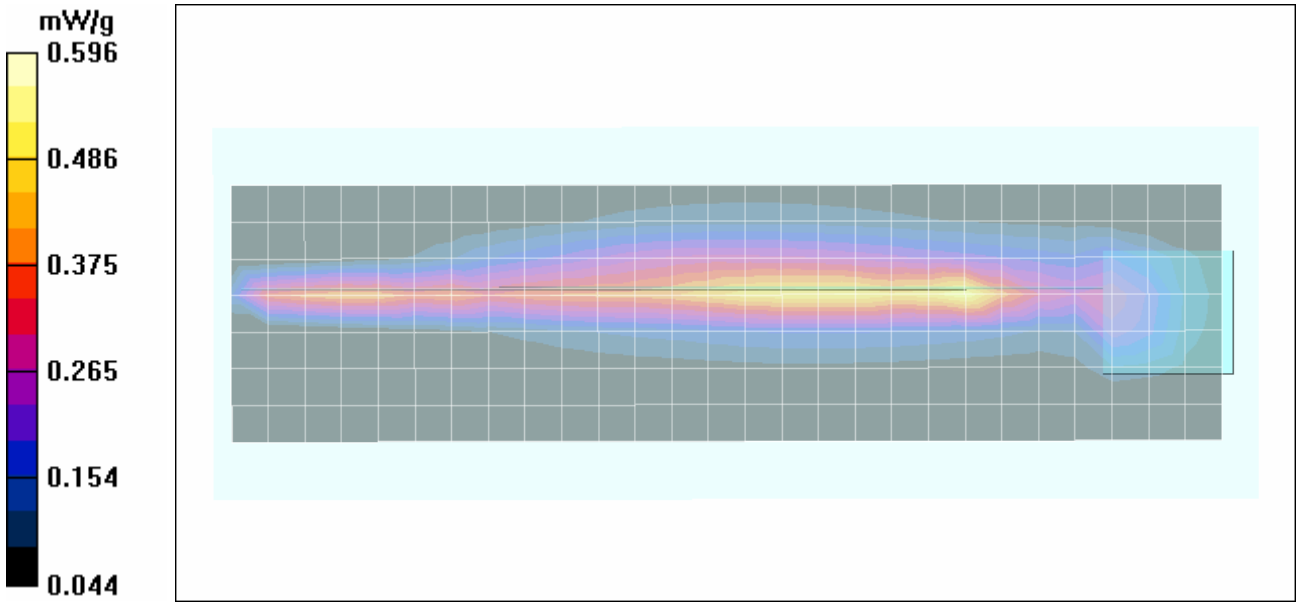
Body-worn Accessory: None; Audio Accessory: Electret Microphone P/N: 91304

Ambient Temp: 24.0°C; Fluid Temp: 23.0°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: Modul. FSK
Frequency: 150.8 MHz; Duty Cycle: 1:1
Medium: M150 Medium parameters used: f = 150.8 MHz; σ = 0.8 mho/m; ε_r = 61.1; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1590; ConvF(8.8, 8.8, 8.8); Calibrated: 16/07/2009
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-worn SAR - Back of DUT Touching Planar Phantom - Wire Antenna Touching Planar Phantom
Area Scan (8x29x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.526 mW/g
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.2 V/m; Power Drift = 0.012 dB
Peak SAR (extrapolated) = 1.42 W/kg
SAR(1 g) = 0.546 mW/g; SAR(10 g) = 0.294 mW/g
Maximum value of SAR (measured) = 0.596 mW/g



Date Tested: 06/09/2010

Body-worn SAR - Back of DUT - Lithium Battery - Low-Band Antenna - 156.4 MHz

DUT: LEA PDT-500BW; Type: Wireless Body-worn Digital Voice Transmitter; Serial: None

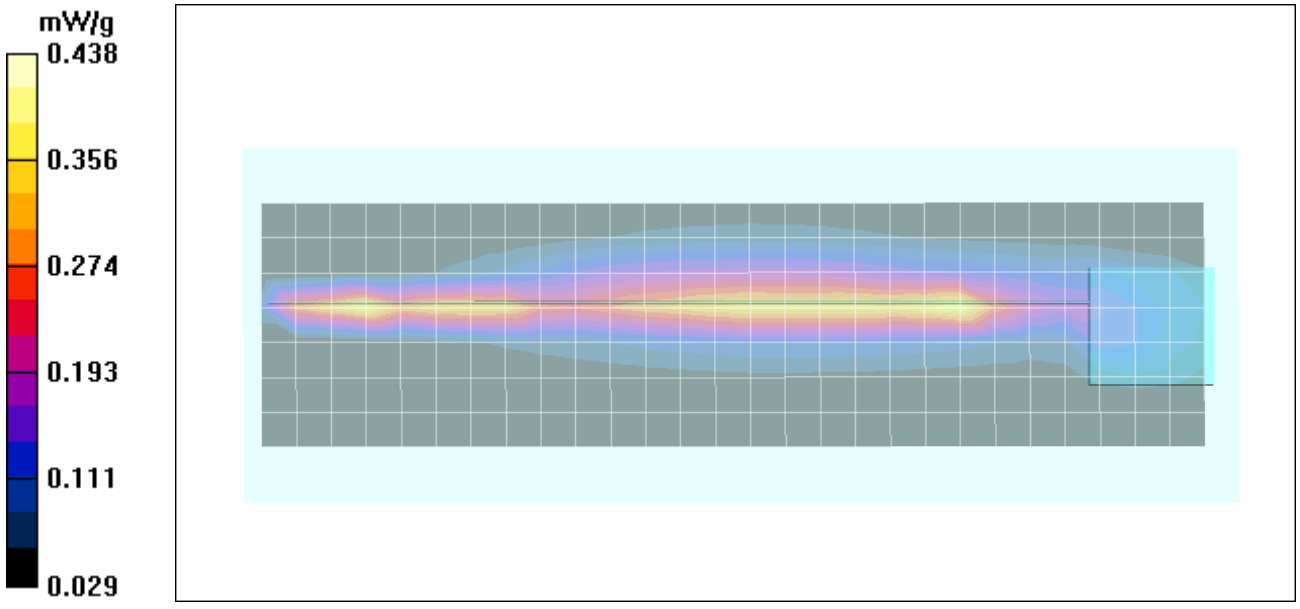
Body-worn Accessory: None; Audio Accessory: Electret Microphone P/N: 91304

Ambient Temp: 24.0°C; Fluid Temp: 23.0°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: Modul. FSK
Frequency: 156.4 MHz; Duty Cycle: 1:1
Medium: M150 Medium parameters used: f = 156.4 MHz; σ = 0.78 mho/m; ε_r = 62; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1590; ConvF(8.8, 8.8, 8.8); Calibrated: 16/07/2009
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-worn SAR - Back of DUT Touching Planar Phantom - Wire Antenna Touching Planar Phantom
Area Scan (8x29x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.383 mW/g
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.9 V/m; Power Drift = 0.026 dB
Peak SAR (extrapolated) = 1.09 W/kg
SAR(1 g) = 0.391 mW/g; SAR(10 g) = 0.203 mW/g
Maximum value of SAR (measured) = 0.438 mW/g



Date Tested: 06/09/2010

Body-worn SAR - Back of DUT - Lithium Battery - Low-Band Antenna - 162.0 MHz

DUT: LEA PDT-500BW; Type: Wireless Body-worn Digital Voice Transmitter; Serial: None

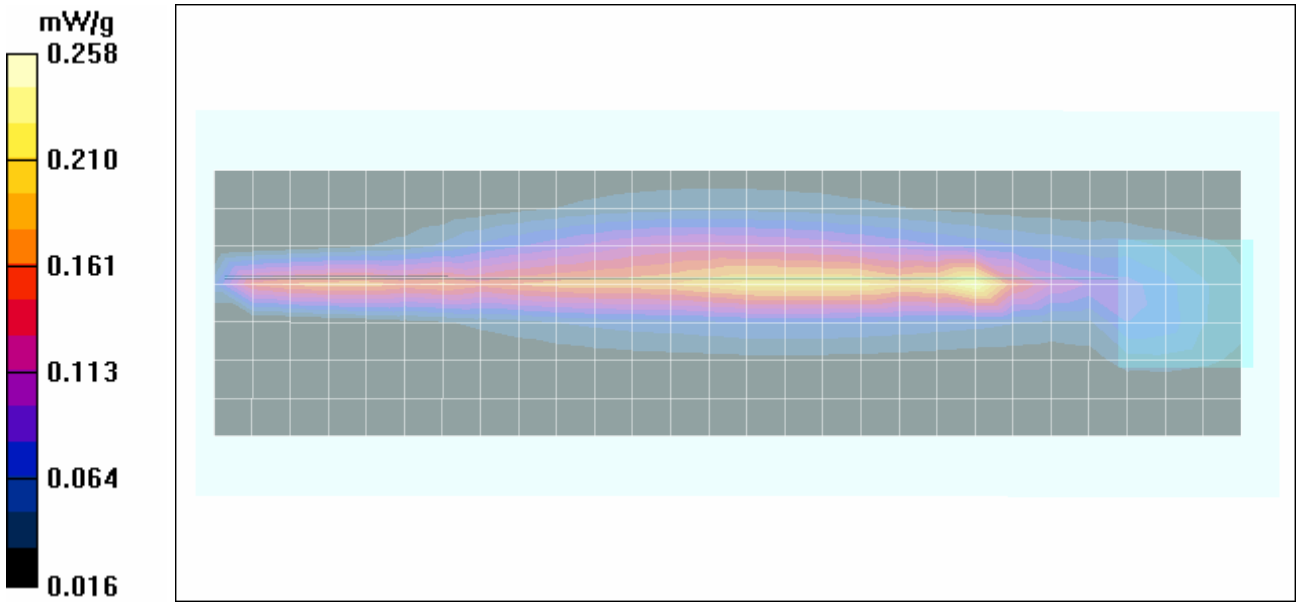
Body-worn Accessory: None; Audio Accessory: Electret Microphone P/N: 91304

Ambient Temp: 24.0°C; Fluid Temp: 23.0°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: Modul. FSK
Frequency: 162 MHz; Duty Cycle: 1:1
Medium: M150 Medium parameters used: f = 162 MHz; σ = 0.78 mho/m; ε_r = 62; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1590; ConvF(8.8, 8.8, 8.8); Calibrated: 16/07/2009
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-worn SAR - Back of DUT Touching Planar Phantom - Wire Antenna Touching Planar Phantom
Area Scan (8x29x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.231 mW/g
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.1 V/m; Power Drift = -0.013 dB
Peak SAR (extrapolated) = 0.696 W/kg
SAR(1 g) = 0.232 mW/g; SAR(10 g) = 0.117 mW/g
Maximum value of SAR (measured) = 0.258 mW/g



Date Tested: 06/09/2010

Body-worn SAR - Back of DUT - Lithium Battery - High-Band Antenna - 162.0 MHz

DUT: LEA PDT-500BW; Type: Wireless Body-worn Digital Voice Transmitter; Serial: None

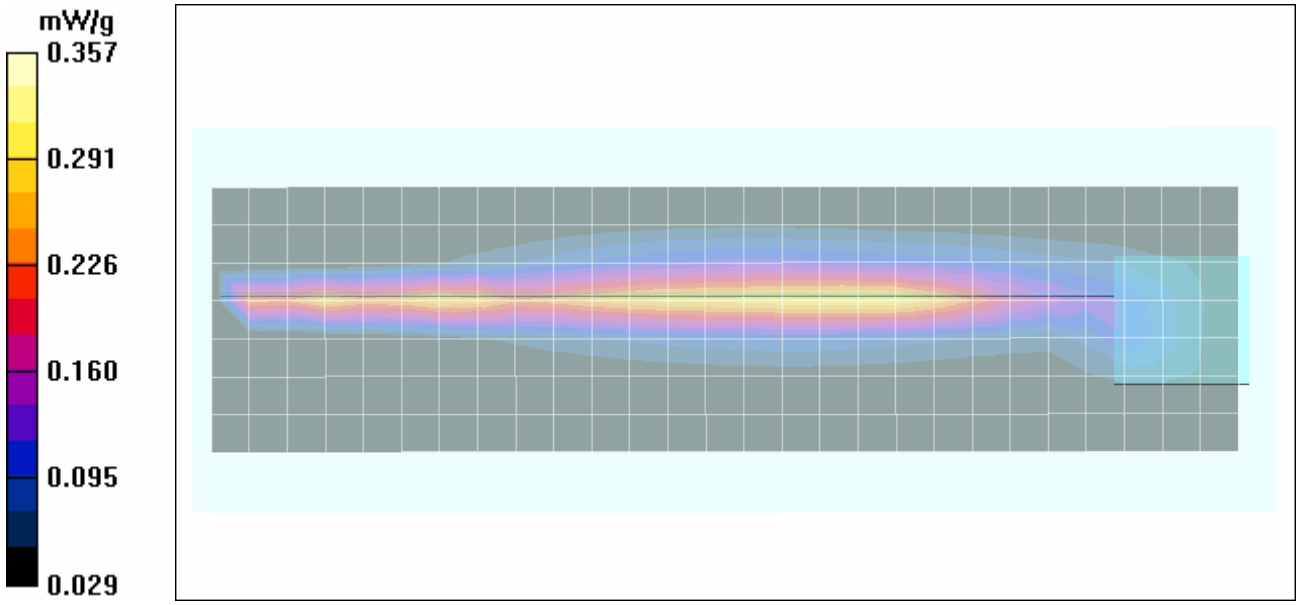
Body-worn Accessory: None; Audio Accessory: Electret Microphone P/N: 91304

Ambient Temp: 24.0°C; Fluid Temp: 23.0°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: Modul. FSK
Frequency: 162 MHz; Duty Cycle: 1:1
Medium: M150 Medium parameters used: f = 162 MHz; σ = 0.78 mho/m; ε_r = 62; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1590; ConvF(8.8, 8.8, 8.8); Calibrated: 16/07/2009
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-worn SAR - Back of DUT Touching Planar Phantom - Wire Antenna Touching Planar Phantom
Area Scan (8x29x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.299 mW/g
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.8 V/m; Power Drift = -0.121 dB
Peak SAR (extrapolated) = 0.751 W/kg
SAR(1 g) = 0.319 mW/g; SAR(10 g) = 0.181 mW/g
Maximum value of SAR (measured) = 0.357 mW/g



Date Tested: 06/09/2010

Body-worn SAR - Back of DUT - Lithium Battery - High-Band Antenna - 167.7 MHz

DUT: LEA PDT-500BW; Type: Wireless Body-worn Digital Voice Transmitter; Serial: None

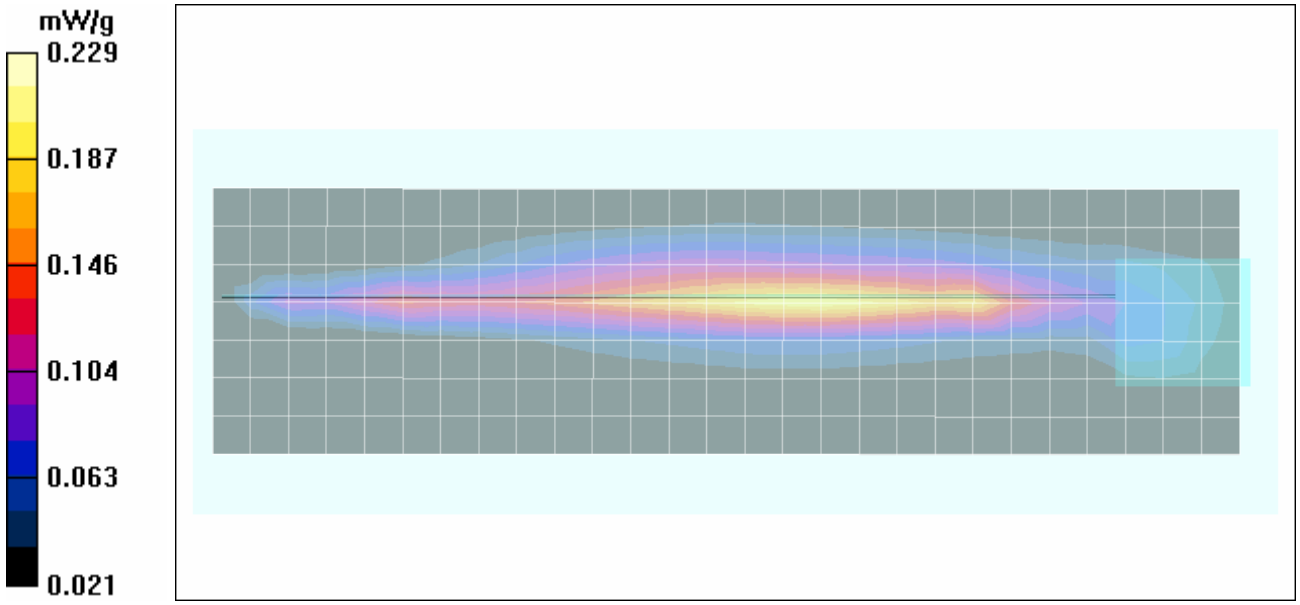
Body-worn Accessory: None; Audio Accessory: Electret Microphone P/N: 91304

Ambient Temp: 24.0°C; Fluid Temp: 23.0°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: Modul. FSK
Frequency: 167.7 MHz; Duty Cycle: 1:1
Medium: M150 Medium parameters used: f = 167.7 MHz; σ = 0.79 mho/m; ε_r = 62.8; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1590; ConvF(8.8, 8.8, 8.8); Calibrated: 16/07/2009
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-worn SAR - Back of DUT Touching Planar Phantom - Wire Antenna Touching Planar Phantom
Area Scan (8x29x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.201 mW/g
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.8 V/m; Power Drift = -0.038 dB
Peak SAR (extrapolated) = 0.474 W/kg
SAR(1 g) = 0.219 mW/g; SAR(10 g) = 0.127 mW/g
Maximum value of SAR (measured) = 0.229 mW/g



Date Tested: 06/09/2010

Body-worn SAR - Back of DUT - Lithium Battery - High-Band Antenna - 173.4 MHz

DUT: LEA PDT-500BW; Type: Wireless Body-worn Digital Voice Transmitter; Serial: None

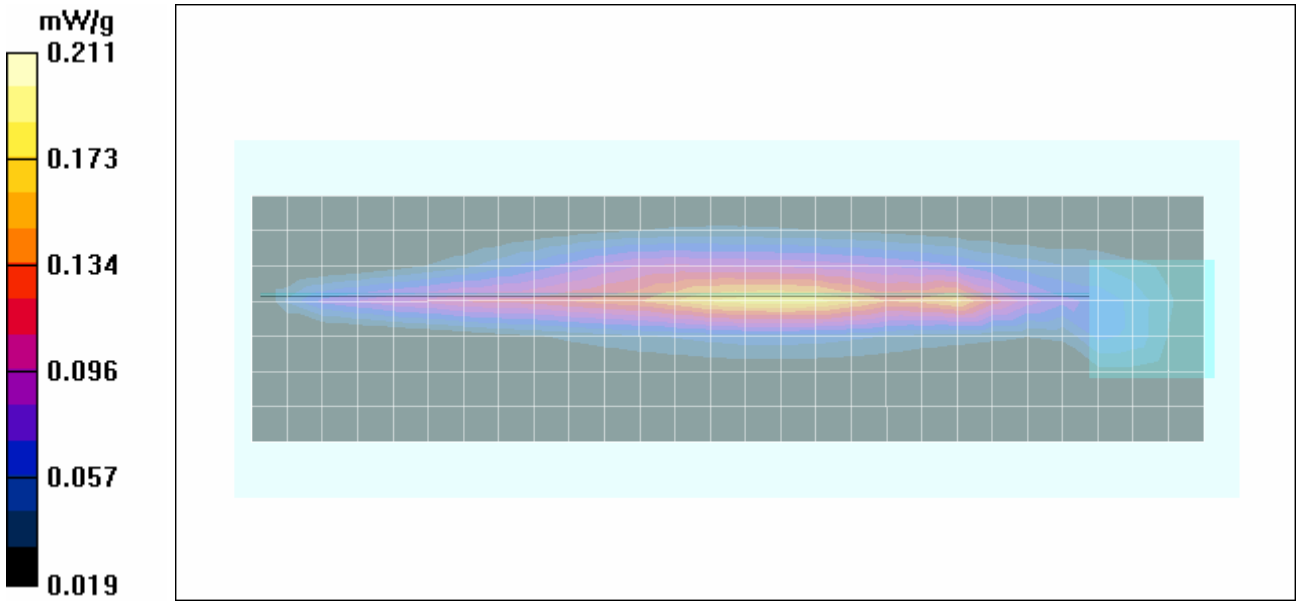
Body-worn Accessory: None; Audio Accessory: Electret Microphone P/N: 91304

Ambient Temp: 24.0°C; Fluid Temp: 23.0°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: Modul. FSK
Frequency: 173.4 MHz; Duty Cycle: 1:1
Medium: M150 Medium parameters used: f = 173.4 MHz; σ = 0.79 mho/m; ε_r = 62.8; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1590; ConvF(8.8, 8.8, 8.8); Calibrated: 16/07/2009
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-worn SAR - Back of DUT Touching Planar Phantom - Wire Antenna Touching Planar Phantom
Area Scan (8x29x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.170 mW/g
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.9 V/m; Power Drift = -0.030 dB
Peak SAR (extrapolated) = 0.427 W/kg
SAR(1 g) = 0.197 mW/g; SAR(10 g) = 0.133 mW/g
Maximum value of SAR (measured) = 0.211 mW/g



Date Tested: 06/09/2010

Body-worn SAR - Back of DUT - Alkaline Battery - Low-Band Antenna - 150.8 MHz

DUT: LEA PDT-500BW; Type: Wireless Body-worn Digital Voice Transmitter; Serial: None

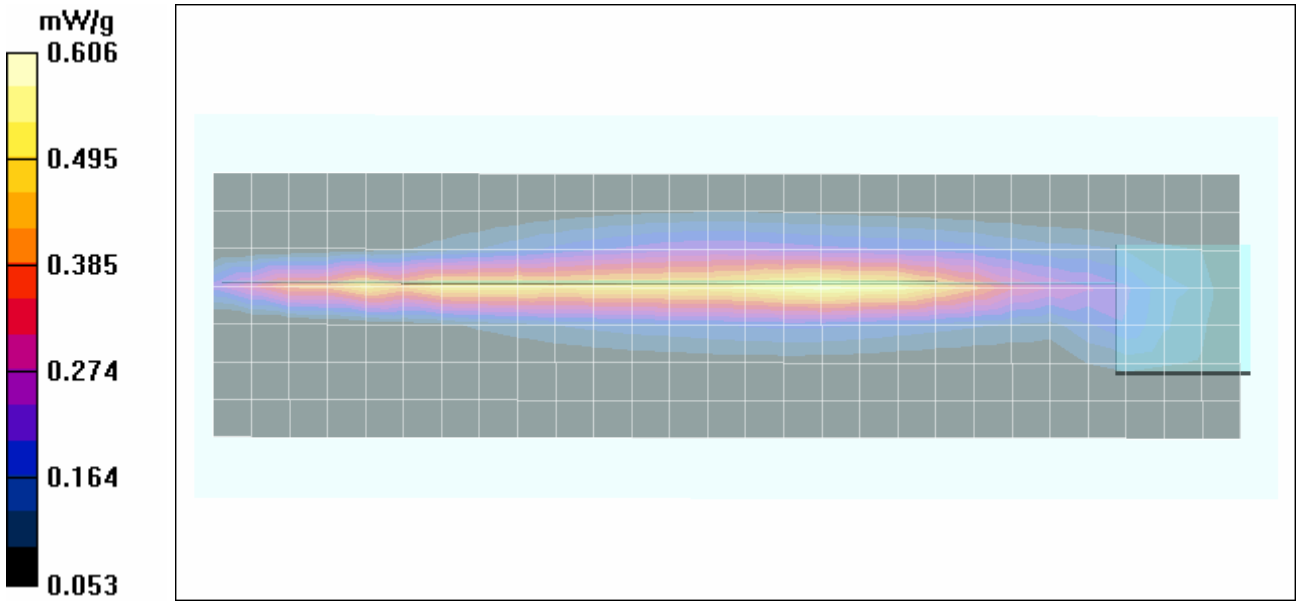
Body-worn Accessory: None; Audio Accessory: Electret Microphone P/N: 91304

Ambient Temp: 24.0°C; Fluid Temp: 23.0°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

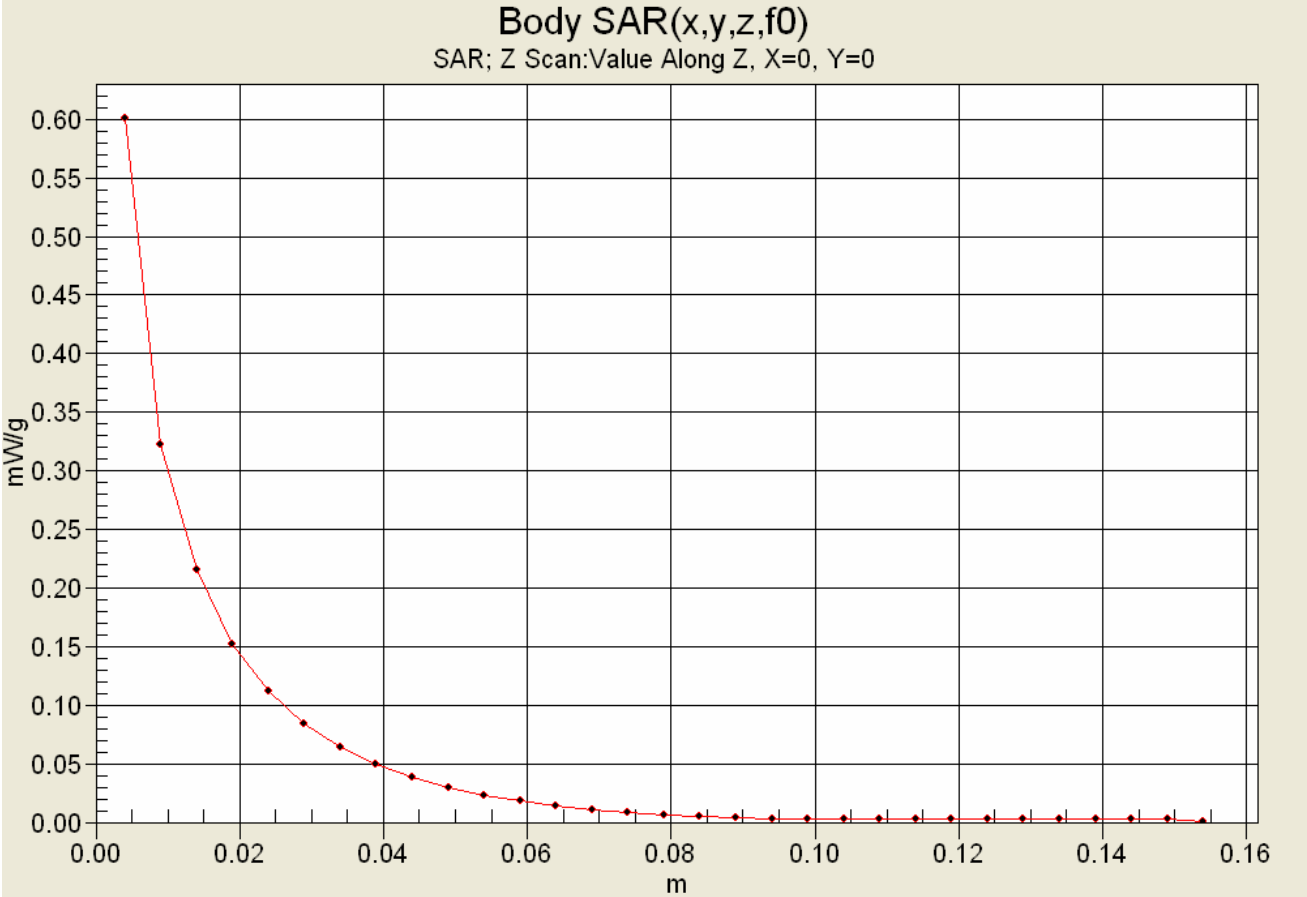
Communication System: Modul. FSK
Frequency: 150.8 MHz; Duty Cycle: 1:1
Medium: M150 Medium parameters used: f = 150.8 MHz; σ = 0.8 mho/m; ε_r = 61.1; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1590; ConvF(8.8, 8.8, 8.8); Calibrated: 16/07/2009
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-worn SAR - Back of DUT Touching Planar Phantom - Wire Antenna Touching Planar Phantom
Area Scan (8x29x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.554 mW/g
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.5 V/m; Power Drift = -0.055 dB
Peak SAR (extrapolated) = 1.22 W/kg
SAR(1 g) = 0.548 mW/g; SAR(10 g) = 0.317 mW/g
Maximum value of SAR (measured) = 0.606 mW/g



Z-Axis Scan



Date Tested: 06/09/2010

Body-worn SAR - Back of DUT - Alkaline Battery - Low-Band Antenna - 156.4 MHz

DUT: LEA PDT-500BW; Type: Wireless Body-worn Digital Voice Transmitter; Serial: None

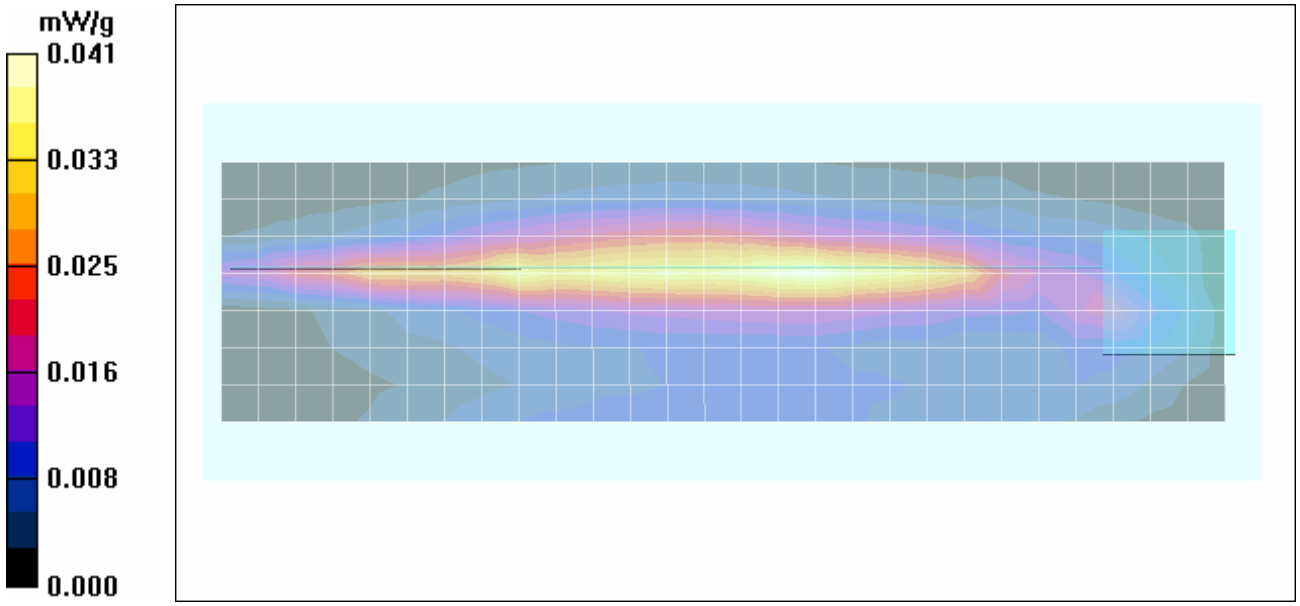
Body-worn Accessory: None; Audio Accessory: Electret Microphone P/N: 91304

Ambient Temp: 24.0°C; Fluid Temp: 23.0°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: Modul. FSK
Frequency: 156.4 MHz; Duty Cycle: 1:1
Medium: M150 Medium parameters used: f = 156.4 MHz; σ = 0.78 mho/m; ε_r = 62; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1590; ConvF(8.8, 8.8, 8.8); Calibrated: 16/07/2009
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-worn SAR - Back of DUT Touching Planar Phantom - Wire Antenna Touching Planar Phantom
Area Scan (8x29x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.041 mW/g
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.8 V/m; Power Drift = -0.055 dB
Peak SAR (extrapolated) = 0.918 W/kg
SAR(1 g) = 0.411 mW/g; SAR(10 g) = 0.234 mW/g
Maximum value of SAR (measured) = 0.443 mW/g



Date Tested: 06/09/2010

Body-worn SAR - Back of DUT - Alkaline Battery - Low-Band Antenna - 162.0 MHz

DUT: LEA PDT-500BW; Type: Wireless Body-worn Digital Voice Transmitter; Serial: None

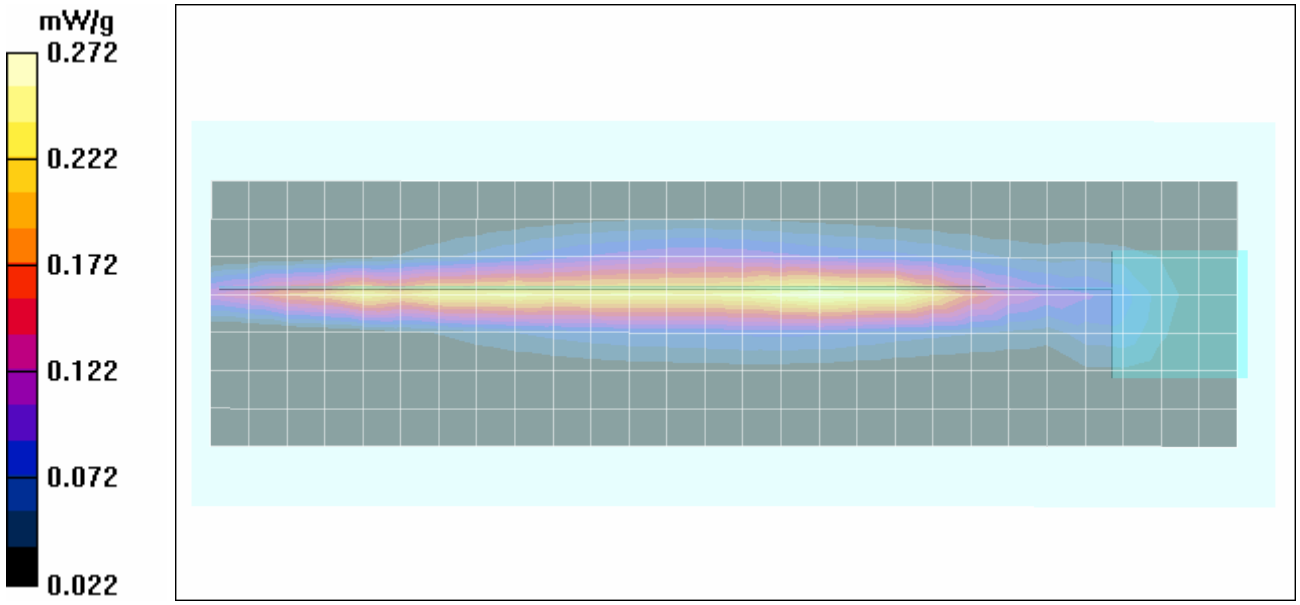
Body-worn Accessory: None; Audio Accessory: Electret Microphone P/N: 91304

Ambient Temp: 24.0°C; Fluid Temp: 23.0°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: Modul. FSK
Frequency: 162 MHz; Duty Cycle: 1:1
Medium: M150 Medium parameters used: f = 162 MHz; σ = 0.78 mho/m; ε_r = 62; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1590; ConvF(8.8, 8.8, 8.8); Calibrated: 16/07/2009
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-worn SAR - Back of DUT Touching Planar Phantom - Wire Antenna Touching Planar Phantom
Area Scan (8x29x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.258 mW/g
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.3 V/m; Power Drift = -0.057 dB
Peak SAR (extrapolated) = 0.588 W/kg
SAR(1 g) = 0.250 mW/g; SAR(10 g) = 0.140 mW/g
Maximum value of SAR (measured) = 0.272 mW/g



Date Tested: 06/09/2010

Body-worn SAR - Back of DUT - Alkaline Battery - High-Band Antenna - 162.0 MHz

DUT: LEA PDT-500BW; Type: Wireless Body-worn Digital Voice Transmitter; Serial: None

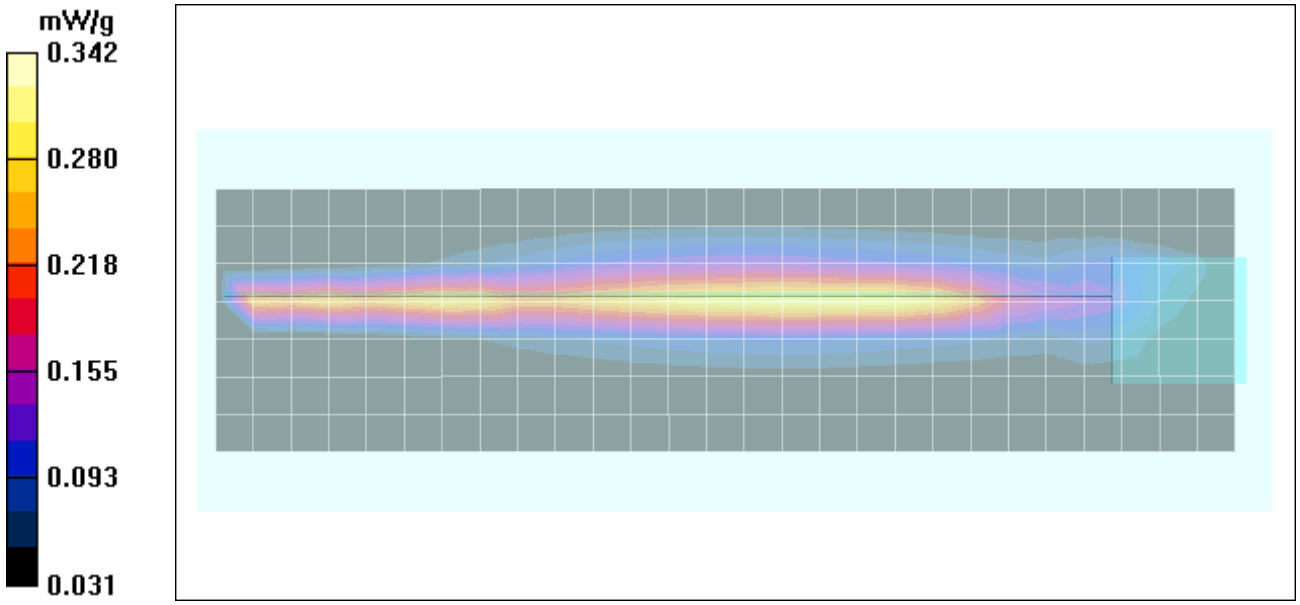
Body-worn Accessory: None; Audio Accessory: Electret Microphone P/N: 91304

Ambient Temp: 24.0°C; Fluid Temp: 23.0°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: Modul. FSK
Frequency: 162 MHz; Duty Cycle: 1:1
Medium: M150 Medium parameters used: f = 162 MHz; σ = 0.78 mho/m; ε_r = 62; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1590; ConvF(8.8, 8.8, 8.8); Calibrated: 16/07/2009
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-worn SAR - Back of DUT Touching Planar Phantom - Wire Antenna Touching Planar Phantom
Area Scan (8x29x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.306 mW/g
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.1 V/m; Power Drift = -0.071 dB
Peak SAR (extrapolated) = 0.666 W/kg
SAR(1 g) = 0.316 mW/g; SAR(10 g) = 0.184 mW/g
Maximum value of SAR (measured) = 0.342 mW/g



Date Tested: 06/09/2010

Body-worn SAR - Back of DUT - Alkaline Battery - High-Band Antenna - 167.7 MHz

DUT: LEA PDT-500BW; Type: Wireless Body-worn Digital Voice Transmitter; Serial: None

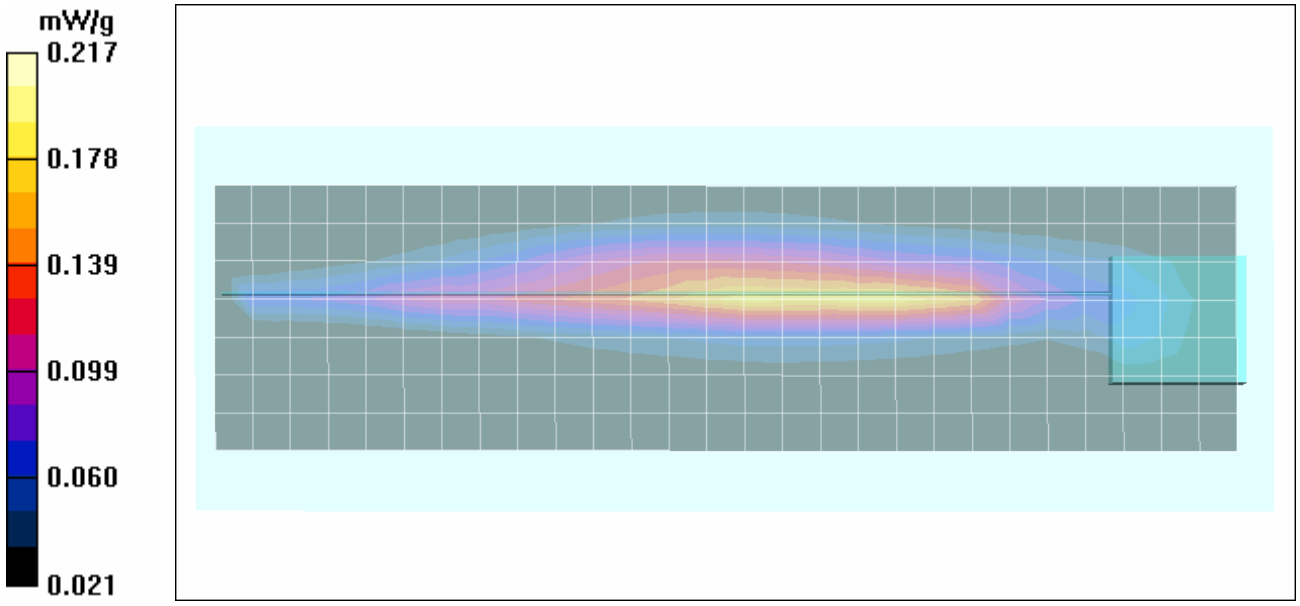
Body-worn Accessory: None; Audio Accessory: Electret Microphone P/N: 91304

Ambient Temp: 24.0°C; Fluid Temp: 23.0°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: Modul. FSK
Frequency: 167.7 MHz; Duty Cycle: 1:1
Medium: M150 Medium parameters used: f = 167.7 MHz; σ = 0.79 mho/m; ε_r = 62.8; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1590; ConvF(8.8, 8.8, 8.8); Calibrated: 16/07/2009
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-worn SAR - Back of DUT Touching Planar Phantom - Wire Antenna Touching Planar Phantom
Area Scan (8x29x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.174 mW/g
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.1 V/m; Power Drift = -0.044 dB
Peak SAR (extrapolated) = 0.432 W/kg
SAR(1 g) = 0.211 mW/g; SAR(10 g) = 0.124 mW/g
Maximum value of SAR (measured) = 0.217 mW/g



Date Tested: 06/09/2010

Body-worn SAR - Back of DUT - Alkaline Battery - High-Band Antenna - 173.4 MHz

DUT: LEA PDT-500BW; Type: Wireless Body-worn Digital Voice Transmitter; Serial: None

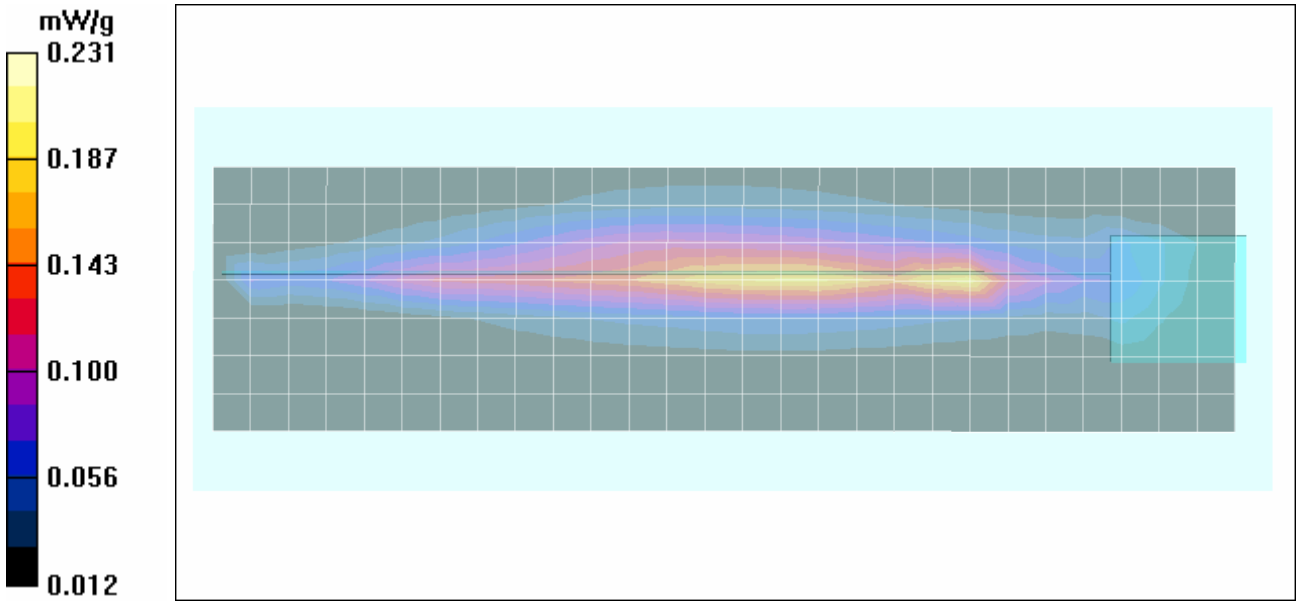
Body-worn Accessory: None; Audio Accessory: Electret Microphone P/N: 91304

Ambient Temp: 24.0°C; Fluid Temp: 23.0°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: Modul. FSK
Frequency: 173.4 MHz; Duty Cycle: 1:1
Medium: M150 Medium parameters used: f = 173.4 MHz; σ = 0.79 mho/m; ε_r = 62.8; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1590; ConvF(8.8, 8.8, 8.8); Calibrated: 16/07/2009
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-worn SAR - Back of DUT Touching Planar Phantom - Wire Antenna Touching Planar Phantom
Area Scan (8x29x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.184 mW/g
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.1 V/m; Power Drift = -0.018 dB
Peak SAR (extrapolated) = 0.696 W/kg
SAR(1 g) = 0.211 mW/g; SAR(10 g) = 0.107 mW/g
Maximum value of SAR (measured) = 0.231 mW/g



APPENDIX B - SYSTEM PERFORMANCE CHECK

Date Tested: 06/09/2010

System Performance Check - 300 MHz Dipole - HSL

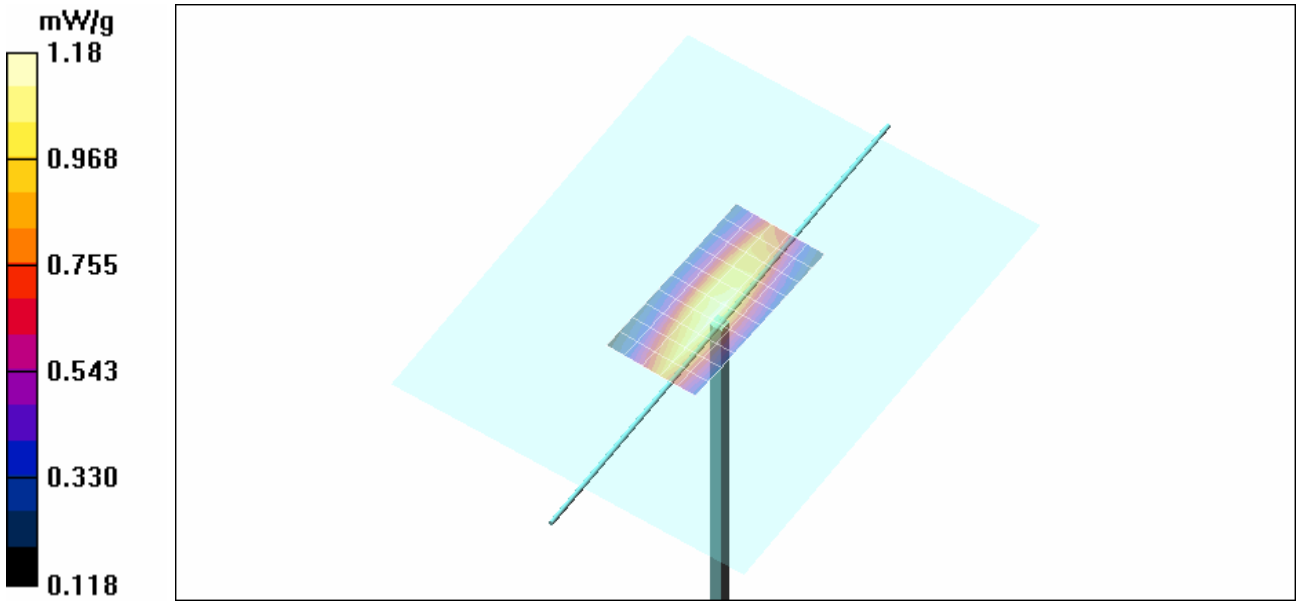
DUT: Dipole 300 MHz; Type: D300V2; Serial: 135; Calibrated: 26/01/2009

Ambient Temp: 23.8°C; Fluid Temp: 22.7°C; Barometric Pressure: 101.1 kPa; Humidity: 35%

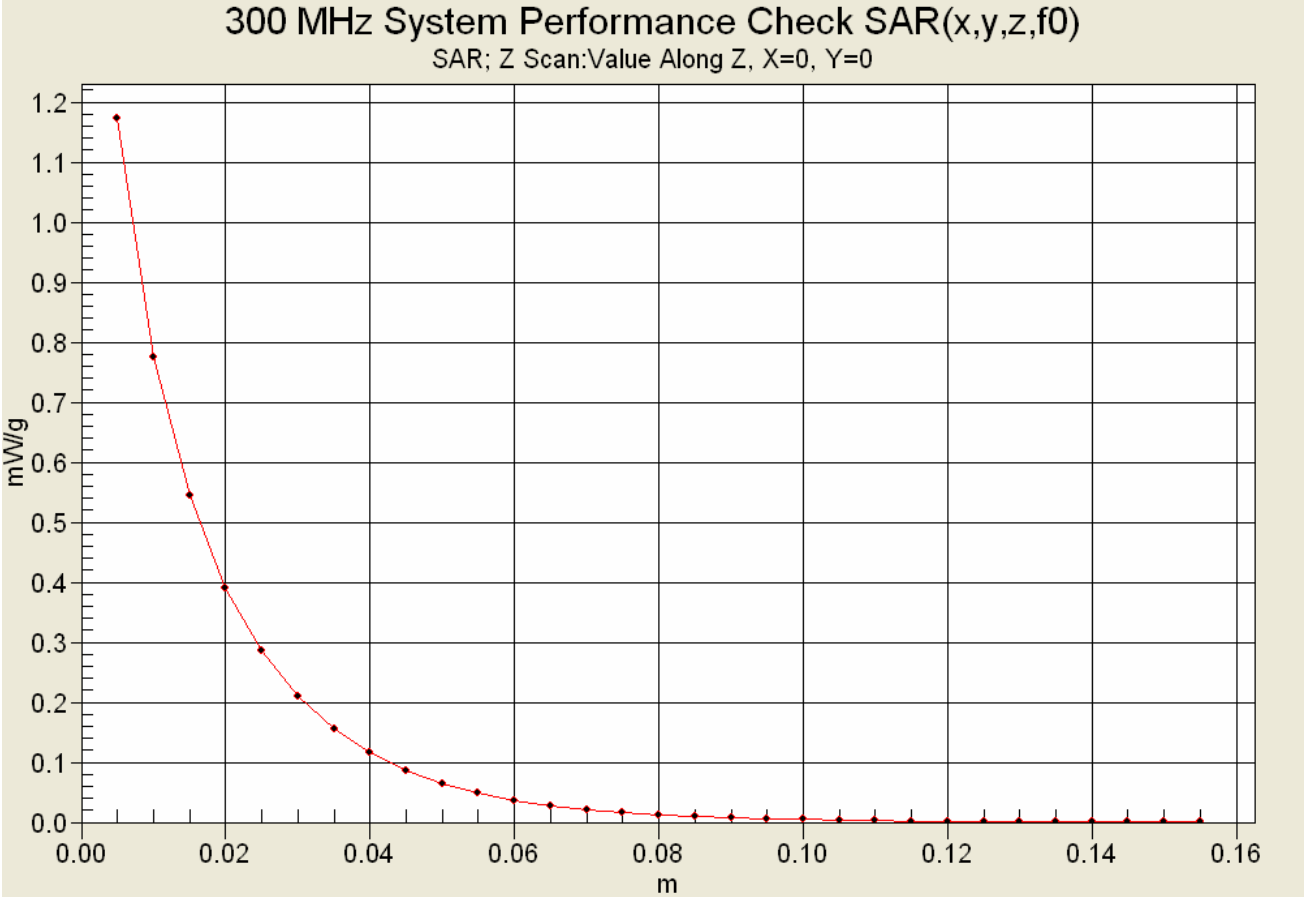
Communication System: CW
Forward Conducted Power: 398 mW
Frequency: 300 MHz; Duty Cycle: 1:1
Medium: 300 HSL Medium parameters used: f = 300 MHz; σ = 0.9 mho/m; ε_r = 46.1; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1590; ConvF(8.2, 8.2, 8.2); Calibrated: 16/07/2009
- Sensor-Surface: 5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 27/04/2010
- Phantom: Barski Industries; Type: Fiberglas Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

System Performance Check - 300 MHz Dipole
Area Scan (6x11x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.14 mW/g
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 36.2 V/m; Power Drift = -0.031 dB
Peak SAR (extrapolated) = 1.97 W/kg
SAR(1 g) = 1.23 mW/g; SAR(10 g) = 0.799 mW/g
Maximum value of SAR (measured) = 1.18 mW/g



Z-Axis Scan



APPENDIX C - MEASURED FLUID DIELECTRIC PARAMETERS

300 MHz System Performance Check (Head)

****

Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
09/Jun/2010
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
0.2000	49.97	0.80	50.45	0.83
0.2100	49.50	0.80	50.62	0.85
0.2200	49.03	0.81	49.76	0.86
0.2300	48.57	0.82	49.02	0.89
0.2400	48.10	0.83	48.66	0.90
0.2500	47.63	0.83	48.10	0.89
0.2600	47.17	0.84	47.49	0.89
0.2700	46.70	0.85	47.08	0.88
0.2800	46.23	0.86	46.60	0.89
0.2900	45.77	0.86	45.63	0.88
0.3000	45.30	0.87	46.12	0.90
0.3100	45.18	0.87	45.27	0.93
0.3200	45.06	0.87	46.12	0.94
0.3300	44.94	0.87	45.89	0.96
0.3400	44.82	0.87	45.72	0.99
0.3500	44.70	0.87	46.04	0.98
0.3600	44.58	0.87	45.16	0.97
0.3700	44.46	0.87	44.42	0.99
0.3800	44.34	0.87	44.06	0.97
0.3900	44.22	0.87	42.82	0.97
0.4000	44.10	0.87	42.96	0.99

150/160/170 MHz DUT Evaluation (Body)

****

Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
09/Jun/2010
Frequency (GHz)
FCC_eH FCC Bulletin 65 Supplement C (June 2001) Limits for Body Epsilon
FCC_sH FCC Bulletin 65 Supplement C (June 2001) Limits for Body 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

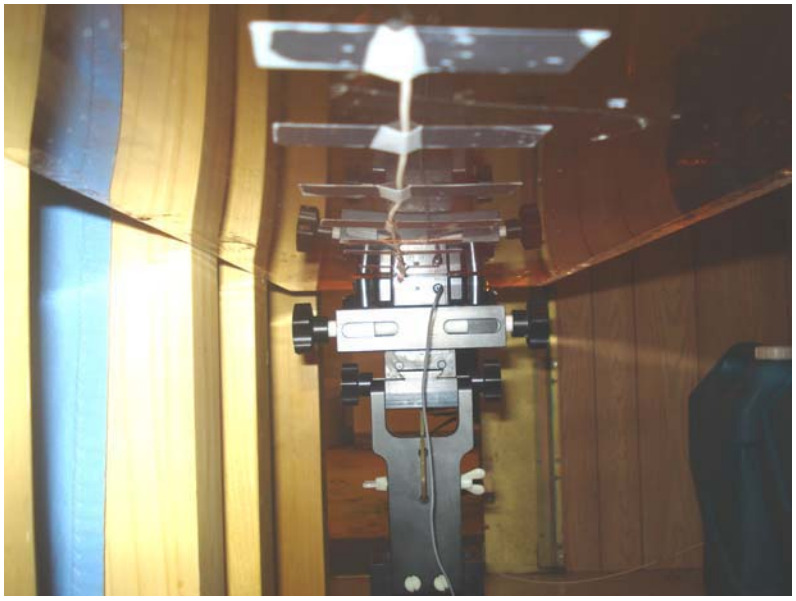
****

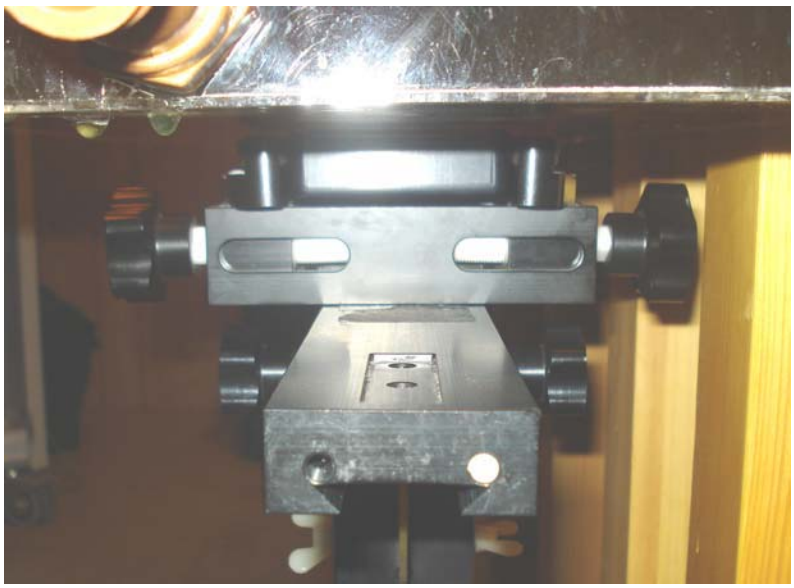
Freq	FCC_eB	FCC_sB	Test_e	Test_s
0.0500	64.37	0.72	62.07	0.71
0.0600	64.12	0.73	50.48	0.71
0.0700	63.87	0.74	62.17	0.72
0.0800	63.63	0.74	61.89	0.74
0.0900	63.38	0.75	64.94	0.77
0.1000	63.13	0.76	59.14	0.74
0.1100	62.89	0.77	62.70	0.77
0.1200	62.64	0.78	62.38	0.76
0.1300	62.39	0.78	62.44	0.76
0.1400	62.15	0.79	58.94	0.78
0.1500	61.90	0.80	61.14	0.80
0.1600	61.65	0.81	61.98	0.78
0.1700	61.41	0.82	62.76	0.79
0.1800	61.16	0.82	61.00	0.79
0.1900	60.91	0.83	61.33	0.80
0.2000	60.67	0.84	60.18	0.81
0.2100	60.42	0.85	59.57	0.81
0.2200	60.17	0.86	60.90	0.83
0.2300	59.93	0.86	59.80	0.85
0.2400	59.68	0.87	59.47	0.82
0.2500	59.43	0.88	60.18	0.85

APPENDIX D - SAR TEST SETUP & DUT PHOTOGRAPHS

BODY-WORN SAR TEST SETUP PHOTOGRAPHS

Back of DUT Touching Planar Phantom - Wire Antenna Touching Planar Phantom





Note: The test setup photographs are representative of both antenna band configurations.

DUT PHOTOGRAPHS

Front Side of DUT

DUT PHOTOGRAPHS

Back Side of DUT

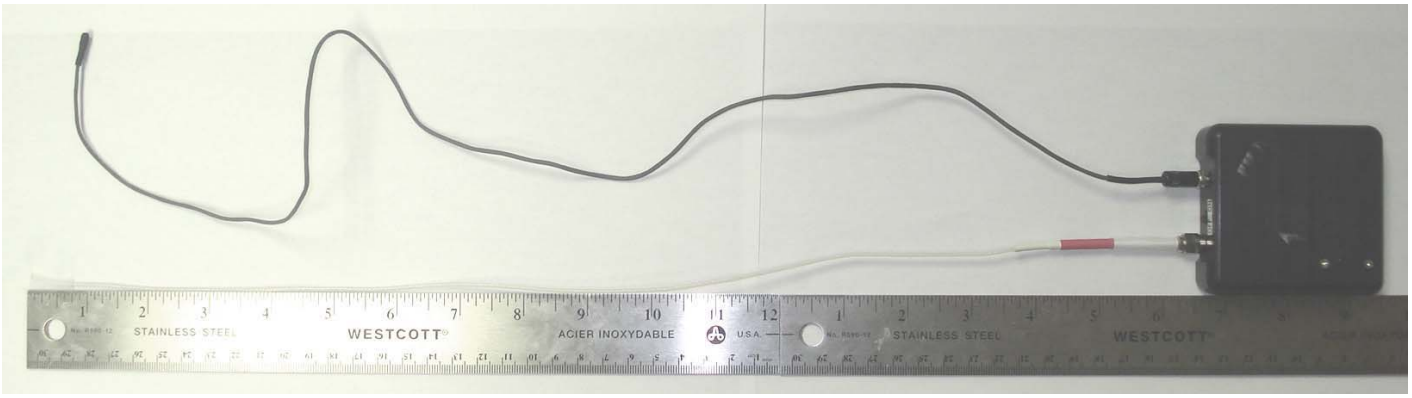
DUT PHOTOGRAPHS

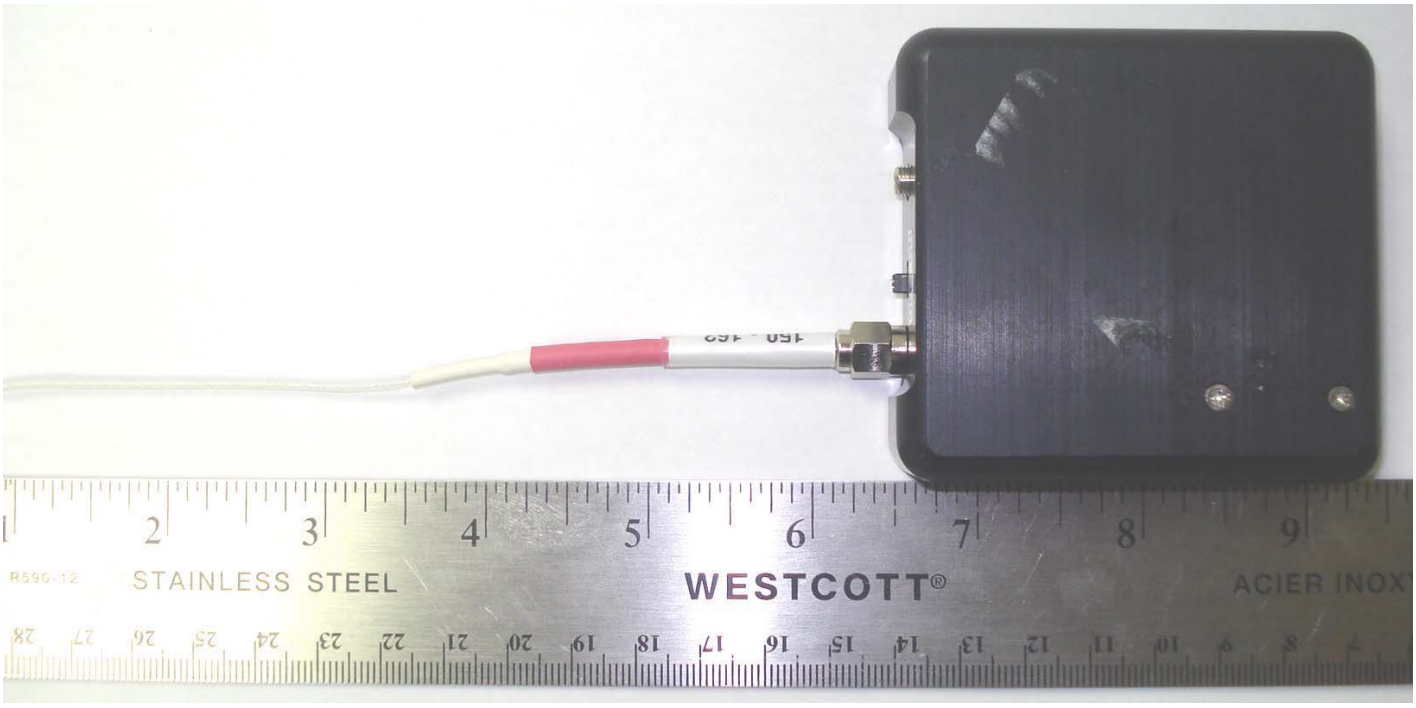
DUT Battery Housing

DUT PHOTOGRAPHS

Side Edges of DUT

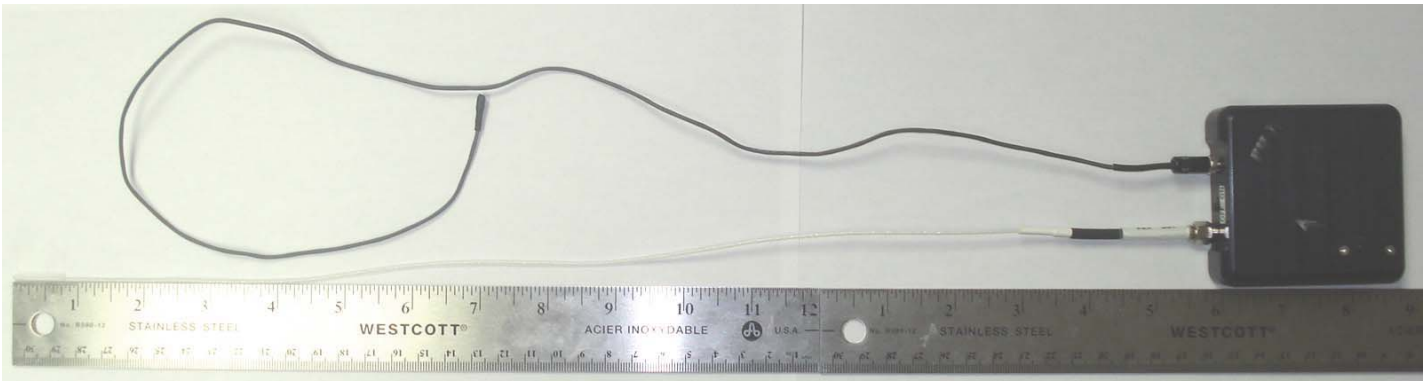
DUT PHOTOGRAPHS





DUT with Wire Antenna (150-162 MHz) and Wire Microphone audio accessory

DUT PHOTOGRAPHS



DUT with Wire Antenna (162-174 MHz) and Wire Microphone audio accessory

APPENDIX E - DIPOLE CALIBRATION

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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Accreditation No.: SCS 108

Client **Celitech**

Certificate No: D300V3-1009_Jan10

CALIBRATION CERTIFICATE

Object **D300V3 - SN: 1009**

Calibration procedure(s) **QA CAL-15.v5**
Calibration Procedure for dipole validation kits below 800 MHz

Calibration date: **January 18, 2010**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41495277	1-Apr-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41498087	1-Apr-09 (No. 217-01030)	Apr-10
Reference 3 dB Attenuator	SN: S5054 (3c)	31-Mar-09 (No. 217-01026)	Mar-10
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-09 (No. 217-01028)	Mar-10
Type-N mismatch combination	SN: 5047.2 / 06327	31-Mar-09 (No. 217-01029)	Mar-10
Reference Probe ET3DV6 (LF)	SN: 1507	03-Jul-09 (No. ET3-1507_Jul09)	Jul-10
DAE4	SN: 654	04-May-09 (No. DAE4-654_May09)	May-10

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	04-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-09)	In house check: Oct-10

	Name	Function	Signature
Calibrated by:	**Jeton Kastrati**	**Laboratory Technician**	i.V.
Approved by:	**Katja Pokovic**	**Technical Manager**	

Issued: January 20, 2010

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
ConF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V5.2
Extrapolation	Advanced Extrapolation	
Phantom	ELI4 Flat Phantom	Shell thickness: 2 ± 0.2 mm
Distance Dipole Center - TSL	15 mm	with Spacer
Area Scan Resolution	dx, dy = 15 mm	
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	300 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	45.3	0.87 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	45.8 ± 6 %	0.84 mho/m ± 6 %
Head TSL temperature during test	(22.0 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	condition	
SAR measured	398 mW input power	1.14 mW / g
SAR normalized	normalized to 1W	2.86 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**2.95 mW / g ± 18.1 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	398 mW input power	0.76 mW / g
SAR normalized	normalized to 1W	1.92 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**1.97 mW / g ± 17.6 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	56.3 Ω - 8.5 jΩ
Return Loss	- 20.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.747 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	February 26, 2009

DASY5 Validation Report for Head TSL

Date/Time: 1/18/2010 2:57:54 PM

DUT: Dipole 300 MHz; Type: D300V3; Serial: D300V3 - SN:1009

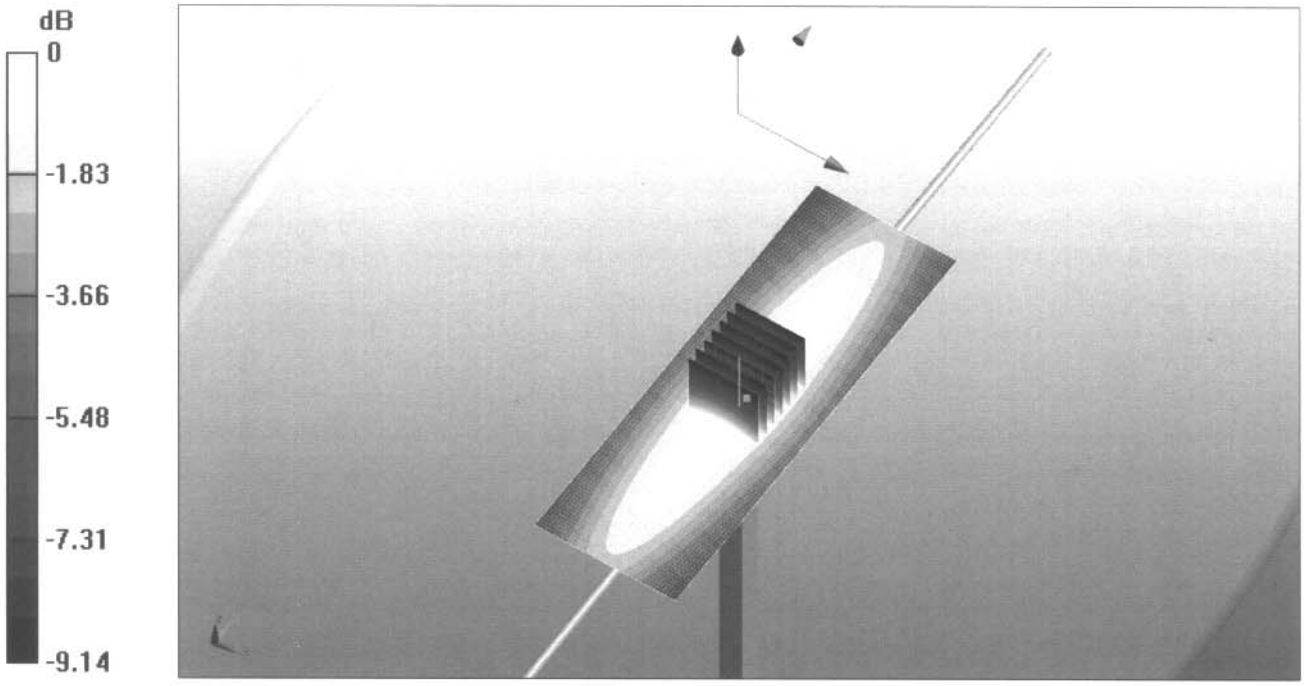
Communication System: CW; Frequency: 300 MHz; Duty Cycle: 1:1
Medium: HSL300
Medium parameters used: f = 300 MHz; σ = 0.84 mho/m; ε_r = 45.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ET3DV6 - SN1507 (LF); ConvF(7.5, 7.5, 7.5); Calibrated: 7/3/2009
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn654; Calibrated: 5/4/2009
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1003
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 57

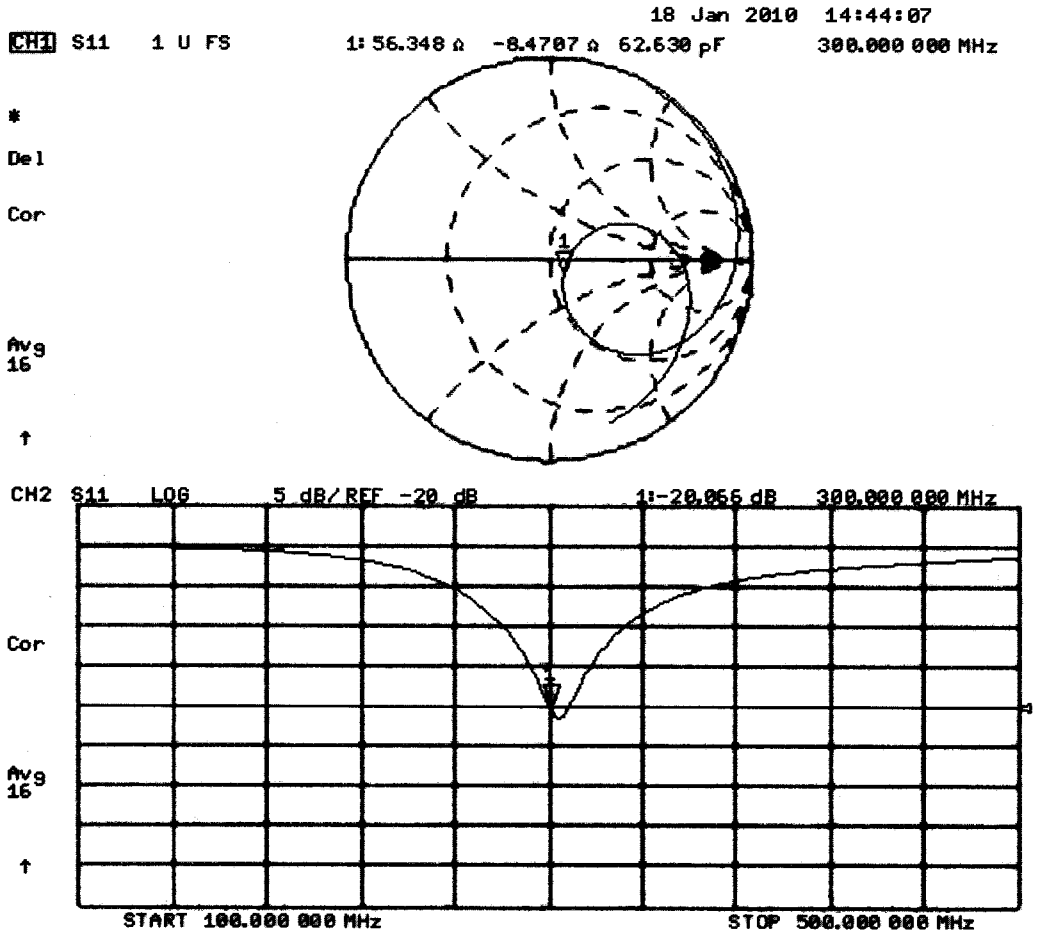
Head/d=15mm, Pin=398mW/Area Scan (41x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.2 mW/g

Head/d=15mm, Pin=398mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 38.7 V/m; Power Drift = 0.00736 dB
Peak SAR (extrapolated) = 1.85 W/kg
SAR(1 g) = 1.14 mW/g; SAR(10 g) = 0.763 mW/g
Maximum value of SAR (measured) = 1.21 mW/g



0 dB = 1.21mW/g

Impedance Measurement Plot for Head TSL



APPENDIX F - PROBE CALIBRATION

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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Accreditation No.: SCS 108

Client **Celltech**

Certificate No: ET3-1590_Jul09

CALIBRATION CERTIFICATE

Object	ET3DV6 - SN:1590
Calibration procedure(s)	QA CAL-01.v6, QA CAL-12.v5, QA CAL-23.v3 and QA CAL-25.v2 Calibration procedure for dosimetric E-field probes
Calibration date:	July 16, 2009
Condition of the calibrated item	In Tolerance

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41495277	1-Apr-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41498087	1-Apr-09 (No. 217-01030)	Apr-10
Reference 3 dB Attenuator	SN: S5054 (3c)	31-Mar-09 (No. 217-01026)	Mar-10
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-09 (No. 217-01028)	Mar-10
Reference 30 dB Attenuator	SN: S5129 (30b)	31-Mar-09 (No. 217-01027)	Mar-10
Reference Probe ES3DV2	SN: 3013	2-Jan-09 (No. ES3-3013_Jan09)	Jan-10
DAE4	SN: 660	9-Sep-08 (No. DAE4-660_Sep08)	Sep-09

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-08)	In house check: Oct-09

	Name	Function	Signature
Calibrated by:	Marcel Fehr	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: July 16, 2009

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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Accreditation No.: SCS 108
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Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not effect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Probe ET3DV6

SN:1590

Manufactured:	March 19, 2001
Last calibrated:	July 21, 2008
Recalibrated:	July 16, 2009

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: ET3DV6 SN:1590

Sensitivity in Free Space[A]

NormX	**1.83** ± 10.1%	$\mu V/(V/m)^2$	DCP X	**90** mV
NormY	**2.02** ± 10.1%	$\mu V/(V/m)^2$	DCP Y	**95** mV
NormZ	**1.73** ± 10.1%	$\mu V/(V/m)^2$	DCP Z	**85** mV

Diode Compression[B]

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL **835 MHz** **Typical SAR gradient: 5 % per mm**

Sensor Center to Phantom Surface Distance		**3.7 mm**	**4.7 mm**
SAR_{be} [%]	Without Correction Algorithm	9.9	6.3
SAR_{be} [%]	With Correction Algorithm	0.9	0.6

Sensor Offset

Probe Tip to Sensor Center	**2.7** mm

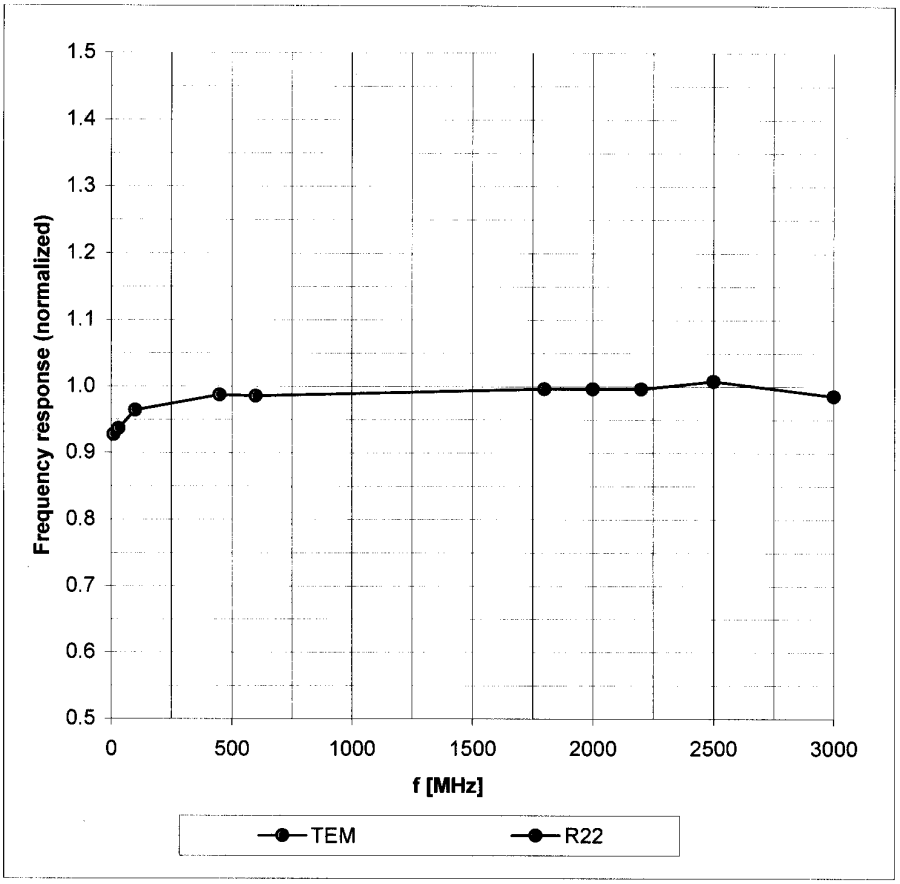
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Page 8).

[B] Numerical linearization parameter: uncertainty not required.

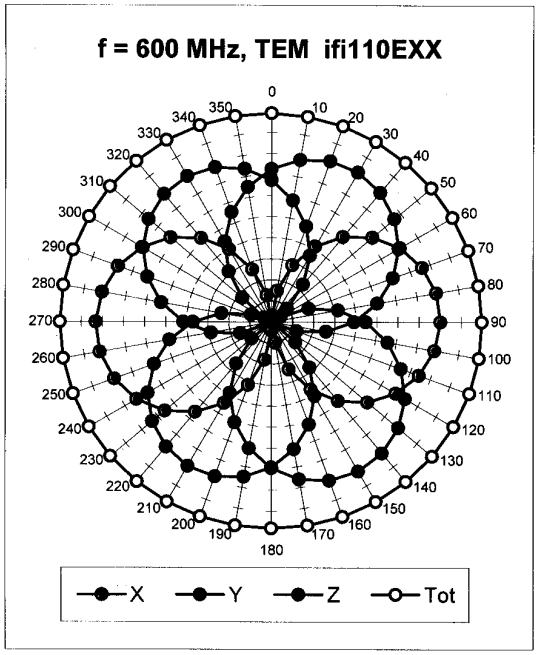
Frequency Response of E-Field

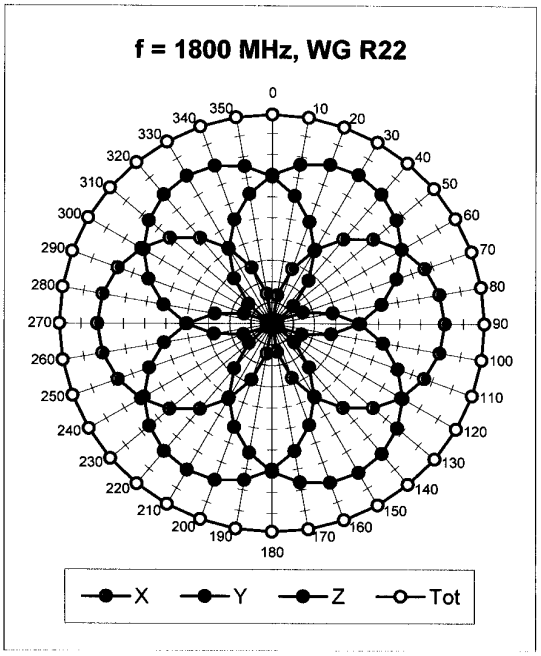
(TEM-Cell:ifi110 EXX, Waveguide: R22)

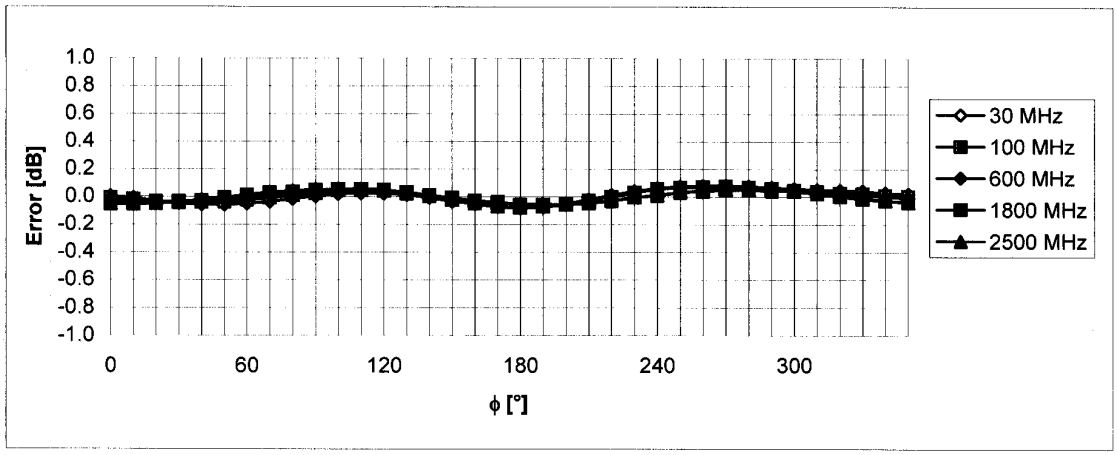


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Receiving Pattern (ϕ), ϑ = 0°



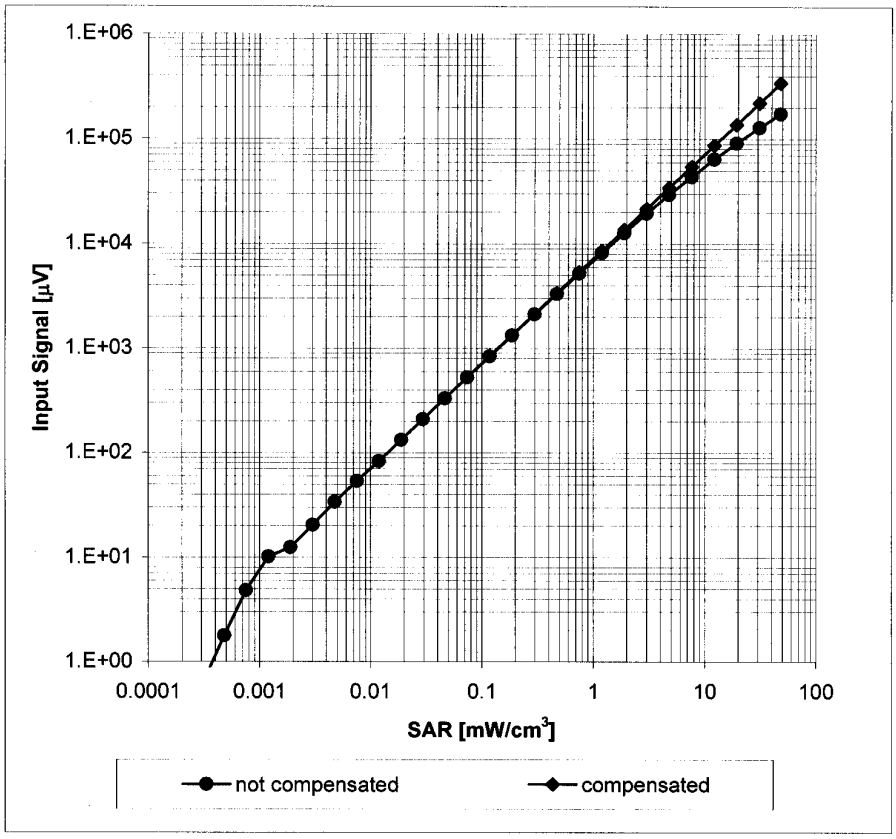


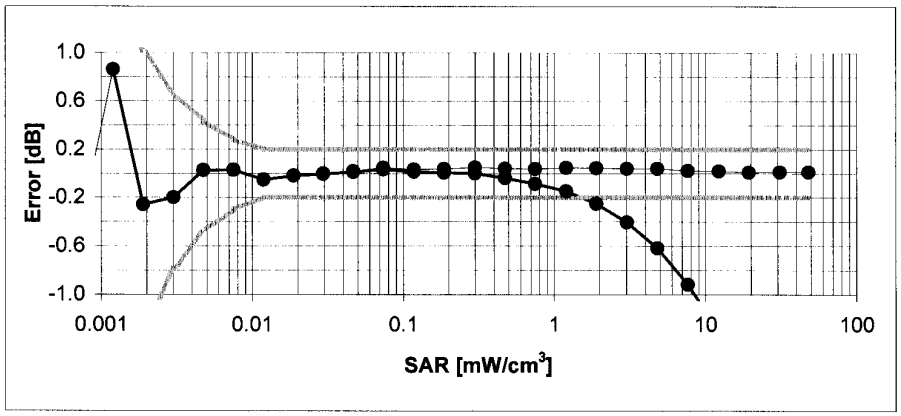


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})

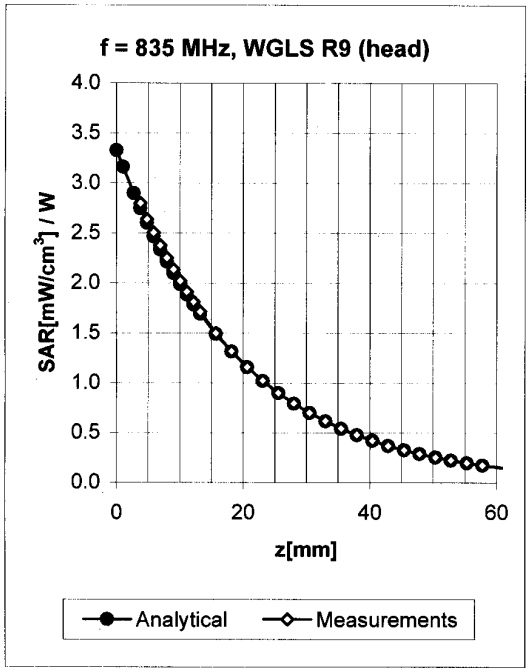
(Waveguide R22, f = 1800 MHz)

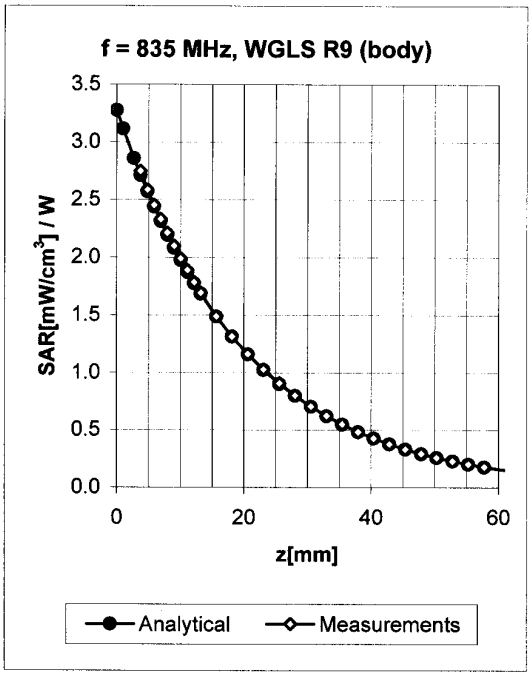




Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment



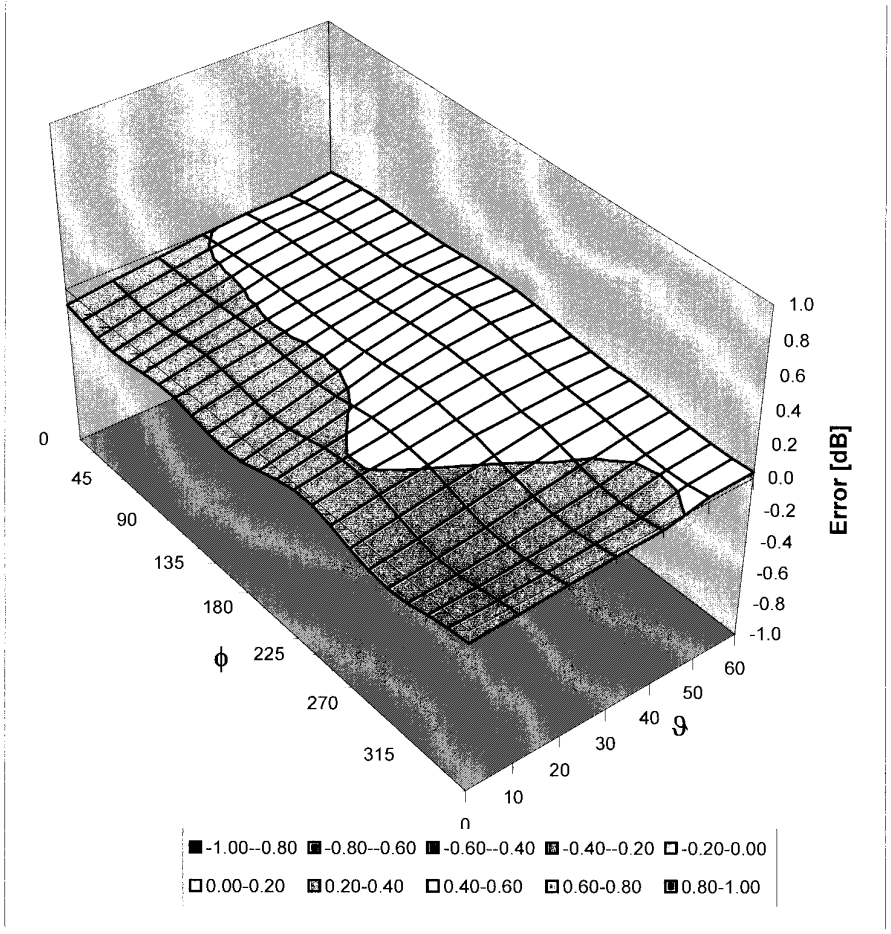


f [MHz]	Validity [MHz][c]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
450	± 50 / ± 100	Head	43.5 ± 5%	0.87 ± 5%	0.29	1.90	7.34 ± 13.3% (k=2)
835	± 50 / ± 100	Head	41.5 ± 5%	0.90 ± 5%	0.37	2.32	6.59 ± 11.0% (k=2)
450	± 50 / ± 100	Body	56.7 ± 5%	0.94 ± 5%	0.22	1.91	7.34 ± 13.3% (k=2)
835	± 50 / ± 100	Body	55.2 ± 5%	0.97 ± 5%	0.30	2.77	6.34 ± 11.0% (k=2)

[c] **The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.**

Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

Schmid & Partner Engineering AG

s p e a g

Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 44 245 9700, Fax +41 44 245 9779
info@speag.com, http://www.speag.com

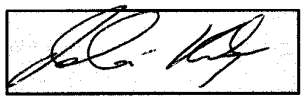
Additional Conversion Factors

for Dosimetric E-Field Probe

Type:	**ET3DV6**
Serial Number:	**1590**
Place of Assessment:	**Zurich**
Date of Assessment:	**July 21, 2009**
Probe Calibration Date:	**July 16, 2009**

Schmid & Partner Engineering AG hereby certifies that conversion factor(s) of this probe have been evaluated on the date indicated above. The assessment was performed using the FDTD numerical code SEMCAD of Schmid & Partner Engineering AG. Since the evaluation is coupled with measured conversion factors, it has to be recalculated yearly, i.e., following the re-calibration schedule of the probe. The uncertainty of the numerical assessment is based on the extrapolation from measured value at 450 and 835 MHz.

Assessed by:



Schmid & Partner Engineering AG

s p e a g

Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 44 245 9700, Fax +41 44 245 9779
info@speag.com, http://www.speag.com

Dosimetric E-Field Probe ET3DV6 SN:1590

Conversion factor (± standard deviation)

150 MHz	*ConvF*	**9.2 ± 10%**	**ε_r = 52.3** **σ = 0.76 mho/m** (head tissue)
300 MHz	*ConvF*	**8.2 ± 9%**	**ε_r = 45.3** **σ = 0.87 mho/m** (head tissue)
150 MHz	*ConvF*	**8.8 ± 10%**	**ε_r = 61.9** **σ = 0.80 mho/m** (body tissue)

Important Note:

For numerically assessed probe conversion factors, parameters Alpha and Delta in the DASY software must have the following entries: Alpha = 0 and Delta = 1.

Please see also Section 4.7 of the DASY4 Manual.

APPENDIX G - PLANAR PHANTOM CERTIFICATE OF CONFORMITY

2378 Westlake Road
Kelowna, B.C. Canada
V1Z-2V2

BARSKI INDUSTRIES (1985) LTD.

Ph. # 250-769-6848
Fax # 250-769-6334
E-mail: barskiind@shaw.ca
Web: www.bcfiberglass.com

FIBERGLASS FABRICATORS

Certificate of Conformity

Item : Flat Planar Phantom Unit # 03-01
Date: June 16, 2003
Manufacturer: Barski Industries (1985 Ltd)

Test	Requirement	Details
Shape	Compliance to geometry according to drawing	Supplied CAD drawing
Material Thickness	Compliant with the requirements	2mm +/- 0.2mm in measurement area
Material Parameters	Dielectric parameters for required frequencies Based on Dow Chemical technical data	100 MHz-5 GHz Relative permittivity<5 Loss Tangent<0.05

Conformity

Based on the above information, we certify this product to be compliant to the requirements specified.

Signature: _____

Daniel Chailler

Fiberglass Planar Phantom - Top View

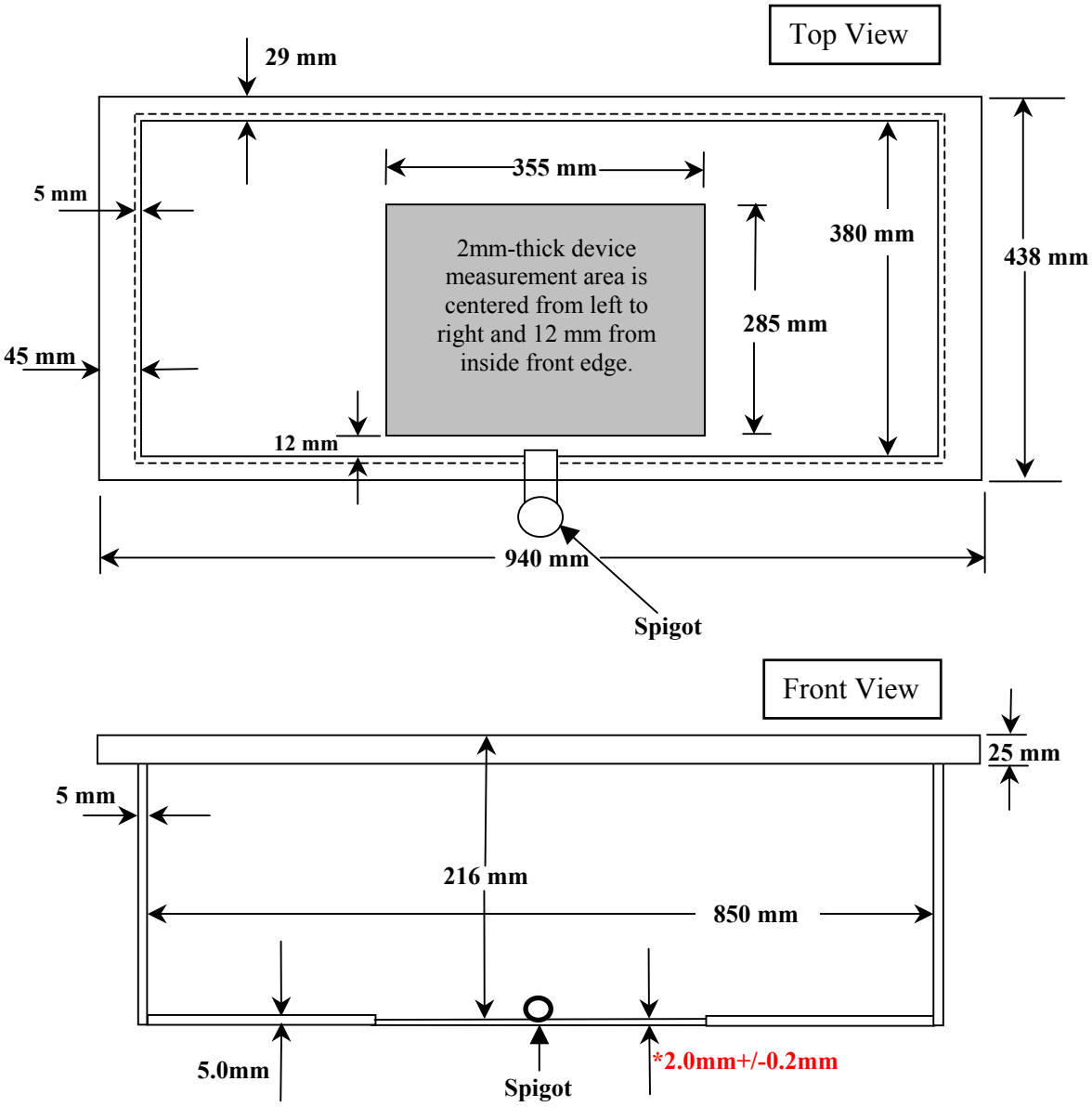
Fiberglass Planar Phantom - Front View

Fiberglass Planar Phantom - Back View

Fiberglass Planar Phantom - Bottom View

Dimensions of Fiberglass Planar Phantom

(Manufactured by Barski Industries Ltd. - Unit# 03-01)



Note: Measurements that aren't repeated for the opposite sides are the same as the side measured. This drawing is not to scale.

APPENDIX H - FCC KDB INQUIRY TRACKING NO. 780019

Jon Hughes

From: oetech@fccsun27w.fcc.gov
Sent: Friday, May 21, 2010 10:59 AM
To: jon.hughes@celltechlabs.com
Subject: Response to Inquiry to FCC (Tracking Number 780019)

Office of Engineering and Technology

Inquiry:
Please review the following submitted attachments (confidential):

Celltech KDB Inquiry Cover Letter - CONFIDENTIAL
Device Photos - CONFIDENTIAL
Transmitter Installation Examples - CONFIDENTIAL
LEA PDT500 Functional Description - CONFIDENTIAL
IM95300 INSTRUCTION MANUAL DIGITAL TX - CONFIDENTIAL

Celltech's KDB inquiry question to the Commission:

1. Is SAR evaluation required for Part 90 Certification of this device?

Thank you.

Response:
5/21/10
First category: Radio Frequency Exposure - MPE; SAR
Second category: Specific Absorption Rate
Third category: Non-handset SAR
Subject: SAR Evaluation for VHF Body-worn Audio Transmitter

further to KDB pub 447498 items 1) and 9) c), OET Lab does request SAR test results as part of an equipment authorization application to demonstrate compliance with FCC RF exposure levels

Do not reply to this message. Please select the Reply to an Inquiry Response link from the OET Inquiry System to add any additional information pertaining to this inquiry.