SAR TEST REPORT (FCC)

RF EXPOSURE EVALUATION — SPECIFIC ABSORPTION RATE

APPLICANT / MANUFACTURER	KANEMATSU USA INC.		
DEVICE UNDER TEST (DUT)	4W PORTABLE FM UHF PUSH-TO-TALK RADIO TRANSCEIVER		
DEVICE FREQUENCY RANGE	420 - 470 MHz		
DEVICE MODEL(S)	BSH16UM		
DEVICE IDENTIFIER(S)	FCC ID: IV9BSH16UM		
APPLICATION TYPE	New Certification		
STANDARD(S) APPLIED	FCC 47 CFR §2.1093		
	Health Canada Safety Code 6		
PROCEDURE(S) APPLIED	FCC OET Bulletin 65, Supplement C (01-01)		
	FCC Mobile & Portable RF Exp. Proc. (KDB 447498 D01 v03r03)		
	Industry Canada RSS-102 Issue 2		
	IEEE 1528-2003		
	IEC 62209-1:2005		
FCC DEVICE CLASSIFICATION	Licensed Non-Broadcast Transmitter Held to Face (TNF)		
IC DEVICE CLASSIFICATION	Land Mobile Radio Transmitter/Receiver (27.41-960 MHz)		
RF EXPOSURE CATEGORY	Occupational / Controlled		
RF EXPOSURE EVALUATION(S)	Face-held & Body-worn		
DATE(S) OF EVALUATION	January 20-21, 2009		
TEST REPORT SERIAL NO.	011909IV9-T949-S90U		
TEST REPORT REVISION NO.	Revision 1.0	Initial Release	February 13, 2009
TEST REPORT SIGNATORIES	Testing Performed By	Test Report Prepared By	
	Sean Johnston Celltech Labs Inc.	Jonathan Hughes Celltech Labs Inc.	
TEST LAB AND LOCATION	Celltech Compliance Testing and Engineering Lab		
	21-364 Lougheed Road, Kelowna, B.C. V1X 7R8 Canada		
TEST LAB CONTACT INFO.	Tel.: 250-765-7650	Fax: 250-765-7645	
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TEST LAB ACCREDITATION(S)	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, B.C. V1X 7R8 Canada				
Applicant Information	**Name**	**KANEMATSU USA INC.**				
	Address	543 West Algonquin Road, Arlington Heights, IL 60005 United States				
Standard(s) Applied	**FCC**	47 CFR §2.1093				
	IC	Health Canada Safety Code 6				
Procedure(s) Applied	**FCC**	OET Bulletin 65, Supplement C (Edition 01-01)				
	FCC	Mobile & Portable RF Exposure Procedures (KDB 447498 D01 v03r03)				
	IC	RSS-102 Issue 2				
	IEEE	1528-2003				
	IEC	62209-1:2005				
Application Type	**FCC**	New Certification				
Device Classification(s)	**FCC**	Licensed Non-Broadcast Transmitter Held to Face (TNF)				
	IC	Land Mobile Radio Transmitter/Receiver (27.41-960 MHz)				
Device RF Exposure Category	**Portable**	Occupational / Controlled Environment				
Device Identifier(s)	**FCC ID:**	IV9BSH16UM				
Device Model No.(s)	BSH16UM					
Test Sample Serial No.(s)	KG0849B0004 (Identical Prototype)					
Device Description	Portable FM UHF Push-To-Talk (PTT) Radio Transceiver					
Transmit Frequency Range(s)	420 - 470 MHz					
Max. RF Output Power Tested	4.0 Watts	36.0 dBm	Conducted	445 MHz	Mid Channel	
Antenna Type(s) Tested	Detachable Whip	420 - 450 MHz	P/N: PA023AA10	Length: 158 mm		
	Detachable Whip	440 - 470 MHz	P/N: PA024AA10	Length: 151 mm		
Battery Type(s) Tested	Lithium-ion	7.2 V	2000 mAh	P/N: TPB-AA-200		
Body-worn Accessories Tested	Belt-Clip	Contains Metal Components	P/N: PA0500A100			
Audio Accessories Tested	Speaker-Microphone P/N: TPB-AA-101					
Max. SAR Level(s) Evaluated	Face-held	**2.47 W/kg**	1g	50% duty cycle	Occupational / Controlled Exposure	
	Body-worn	**3.64 W/kg**	1g	50% duty cycle	Occupational / Controlled Exposure	
FCC/IC Spatial Peak SAR Limit	Head/Body	8.0 W/kg	1g	50% duty cycle	Occupational / Controlled Exposure	

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 and Health Canada's Safety Code 6 for the Occupational / Controlled Exposure environment. The device was tested in accordance with the measurement procedures specified in FCC OET Bulletin 65, Supplement C (Edition 01-01), Industry Canada RSS-102 Issue 2, IEEE Standard 1528-2003 and IEC International Standard 62209-1:2005. 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.**

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1.0 INTRODUCTION

This measurement report demonstrates that the Kanematsu USA Inc. Model: BSH16UM Portable FM UHF PTT Radio Transceiver complies with the SAR (Specific Absorption Rate) RF exposure requirements specified in FCC 47 CFR §2.1093 (see reference [1]) and Health Canada's Safety Code 6 (see reference [2]) for the Occupational / Controlled Exposure environment. The measurement procedures described in FCC OET Bulletin 65, Supplement C (Edition 01-01) (see reference [3]), IC RSS-102 Issue 2 (see reference [4]), IEEE Standard 1528-2003 (see reference [5]) and IEC International Standard 62209-1:2005 (see reference [6]) 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 a 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	Freq.	Ch.	Batt. Type	Antenna Part No.	Cond. Power Before Test	Accessory Type(s)		Device Distance to Planar Phantom		Measured SAR 1g (W/kg) Duty Cycle		SAR Drift During Test	Scaled SAR with droop 1g (W/kg) Duty Cycle	
	MHz				Watts	Body-worn	Audio	DUT	Antenna	100%	50%	dB	100%	50%
Face	445	Mid	Li-ion	PA023AA10	4.0	n/a	n/a	2.5 cm	4.0 cm	4.63	2.32	-0.248	4.90	2.45
Face	445	Mid	Li-ion	PA024AA10	4.0	n/a	n/a	2.5 cm	4.0 cm	4.67	2.34	-0.243	4.94	**2.47**
Body	445	Mid	Li-ion	PA023AA10	4.0	Belt-Clip	Spkr-Mic	1.5 cm	3.0 cm	6.45	3.23	-0.185	6.73	3.37
Body	445	Mid	Li-ion	PA024AA10	4.0	Belt-Clip	Spkr-Mic	1.5 cm	3.0 cm	6.67	3.34	-0.377	7.27	**3.64**

SAR LIMIT(S)		BRAIN & BODY	SPATIAL PEAK	RF EXPOSURE CATEGORY
FCC 47 CFR 2.1093	Health Canada Safety Code 6	8.0 W/kg	averaged over 1 gram	Occupational / Controlled

Test Date	January 21, 2009				January 20, 2009				Measured Fluid Type	Brain	Body	Unit
Fluid Type	450 MHz Brain				450 MHz Body				Atmospheric Pressure	101. 1	101.1	kPa
Dielectric Constant ε_r	IEEE Target		Meas.	Dev.	IEEE Target		Meas.	Dev.	Relative Humidity	33	33	%
	43.5	± 5%	44.1	+1.4%	56.7	± 5%	57.3	+1.1%	Ambient Temperature	22.8	23.0	°C
Fluid Type	450 MHz Brain				450 MHz Body				Fluid Temperature	21.5	22.0	°C
Conductivity σ (mho/m)	IEEE Target		Meas.	Dev.	IEEE Target		Meas.	Dev.	Fluid Depth	≥ 15	≥ 15	cm
	0.87	± 5%	0.85	-2.3%	0.94	± 5%	0.92	-2.1%	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 [3]).
3. The SAR 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.
4. The DUT was tested in unmodulated continuous transmit operation (Continuous Wave mode at 100% duty cycle) with PTT depressed.
5. SAR Evaluation Power Thresholds for PTT Devices, $f \leq 0.5$ GHz (FCC KDB 447498 D01 v03r03 Section 5)b)i) - Mobile & Portable RF Exp. Proc.)

Exposure Conditions	P mW (General Population)	P mW (Occupational)	Measured RF Conducted Output Power: 100% PTT Duty Cycle	50% PTT Duty Cycle
Held to face, $d \geq 2.5$ cm	250	1250	4.0 Watts	2.0 Watts
Body-worn, $d \geq 1.5$ cm	200	1000	4.0 Watts	2.0 Watts
Body-worn, $d \geq 1.0$ cm	150	750	n/a	n/a

1. The time-averaged output power, corresponding to the required PTT duty factor, is compared with these thresholds.
2. The closest distance between the user and the device or its antenna is used to determine the power thresholds.

4.0 DETAILS OF SAR EVALUATION

The Kanematsu USA Inc. Model: BSH16UM Portable FM UHF PTT Radio Transceiver 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.

1. The DUT was evaluated in a face-held configuration with the front of the radio 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 DUT was evaluated in a body-worn configuration with the back of the radio placed parallel to the outer surface of the planar phantom. The attached belt-clip accessory was touching the planar phantom and provided a 1.5 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.
3. The DUT was tested at maximum power 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.
4. The conducted output power levels referenced in this report were measured prior to the SAR evaluations at the antenna connector of the DUT using a Gigatronics 8652A Universal Power Meter in accordance with the specified requirements of FCC 47 CFR §2.1046 and IC RSS-Gen.
5. 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.
6. 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.
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).

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 E). 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.

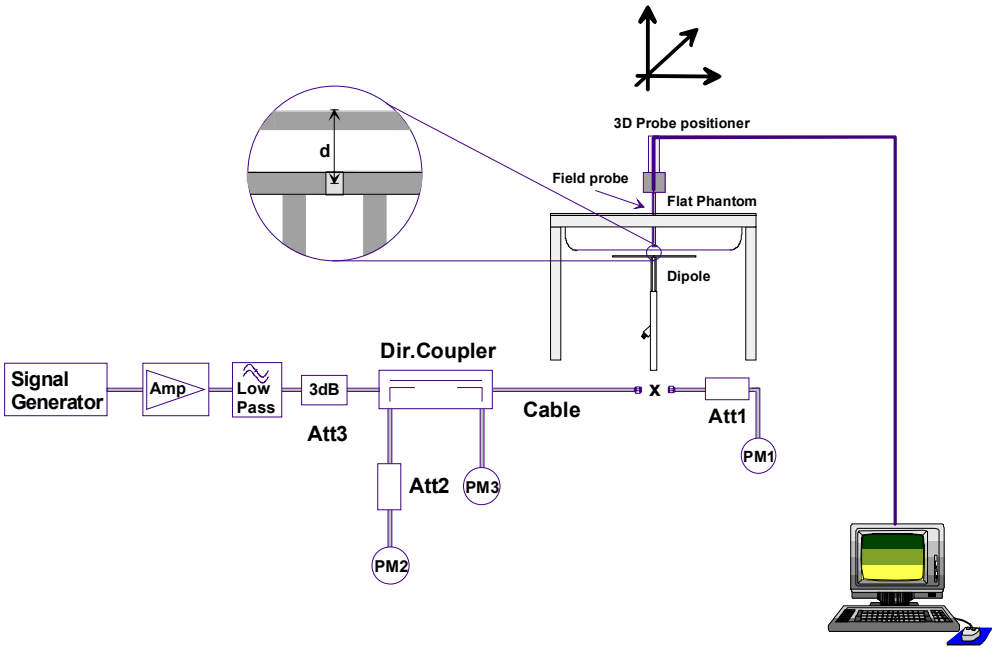
6.0 SYSTEM PERFORMANCE CHECK

Prior to the SAR evaluations a daily system check was performed using a Plexiglas planar phantom and 450 MHz dipole (see Appendix B for system performance check test plot) in accordance with the procedures described in IEEE Standard 1528-2003 (see reference [5]) and IEC International Standard 62209-1:2005 (see reference [6]). 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 target SAR value listed on page 10 of the dipole calibration report).

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.						
Jan-20	Brain 450	1.216 ±10%	1.24	+2.0%	43.8 ±5%	43.7	-0.2%	0.86 ±5%	0.88	+2.3%	1000	23.0	21.8	≥ 15	33	101.1
Jan-21	Brain 450	1.216 ±10%	1.21	-0.5%	43.8 ±5%	44.1	+0.7%	0.86 ±5%	0.85	-1.2%	1000	22.8	21.5	≥ 15	33	101.1

Notes		
	1.	The target SAR value is referenced from the System Validation performed by Celltech Labs Inc. (see Appendix E).
	2.	The target dielectric parameters are referenced from the System Validation 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 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 Diagram

450 MHz Validation Dipole Setup

7.0 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 [8]).

Probe Calibration Freq.	Device Measurement Freq.	Frequency Interval	±50 MHz ≥ 300 MHz
450 MHz	445 MHz	5 MHz	< 50 MHz
The probe calibration and measurement frequency interval is < 50 MHz; therefore the additional steps are not required.			

8.0 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	Water	450 MHz Brain Tissue Mixture	38.56 %	450 MHz Body Tissue Mixture	52.00 %
	Sugar		56.32 %		45.65 %
	Salt		3.95 %		1.75 %
	HEC		0.98 %		0.50 %
	Bactericide		0.19 %		0.10 %

9.0 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.			

10.0 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 (≤ 450MHz)	
Type	Planar Phantom
Shell Material	Plexiglas
Bottom Thickness	6 mm ± 0.1 mm
Inner Dimensions	83.5 cm (L) x 36.9 cm (W) x 21.8 cm (H)

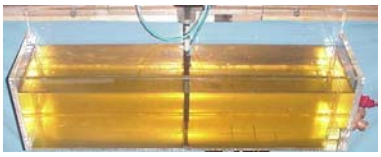
11.0 PROBE SPECIFICATION (ET3DV6)

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 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

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 validation planar phantom is constructed of Plexiglas material with a 6.0 mm shell thickness for system validations at 300 MHz and 450 MHz. The validation planar phantom is mounted to the table of the DASY4 compact system.

Plexiglas 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 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	CNR	CNR
x	-Robot	00046	599396-01	CNR	CNR
x	-DAE4	00019	353	22Apr08	22Apr09
x	-ET3DV6 E-Field Probe	00017	1590	21Jul08	21Jul09
x	-Celltech 450 MHz Validation Dipole	00024	136	19Jan09	19Jan10
x	-Plexiglas Side Planar Phantom	00156	161	CNR	CNR
x	-Plexiglas Validation Planar Phantom	00157	137	CNR	CNR
x	HP 85070C Dielectric Probe Kit	00033	US39240170	CNR	CNR
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	HP 8648D Signal Generator	00005	3847A00611	CNR	CNR
x	Amplifier Research 5S1G4 Power Amplifier	00106	26235	CNR	CNR
Abbr.	CNR = Calibration Not Required				

16.0 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 (450 MHz)	E.2.1	6.65	Normal	1	1	1	6.65	6.65	∞
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	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
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	2.3	Normal	1	0.64	0.43	1.5	1.0	∞
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**				**11.13**	**10.94**	
Expanded Uncertainty (95% Confidence Interval)			**k=2**				**22.27**	**21.88**	

Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003 and IEC International Standard 62209-1:2005

17.0 REFERENCES

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

[2] Health Canada - “Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz”, Safety Code 6: 1999.

[3] 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.

[4] Industry Canada - “Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)”, Radio Standards Specification RSS-102 Issue 2: November 2005.

[5] 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.

[6] IEC International Standard 62209-1:2005 - “Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures.”

[7] Federal Communications Commission, Office of Engineering and Technology - “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”; KDB 447498 D01 v03r03: January 2009.

[8] 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.

APPENDIX A - SAR MEASUREMENT DATA

Date Tested: 01/21/2009

Face-held SAR - Antenna P/N: PA023AA10 (420-450 MHz) - Mid Channel - 445 MHz

DUT: Vertex Model: BSH16UM; Type: Portable FM UHF PTT Radio Transceiver; Serial: KG0849B0004

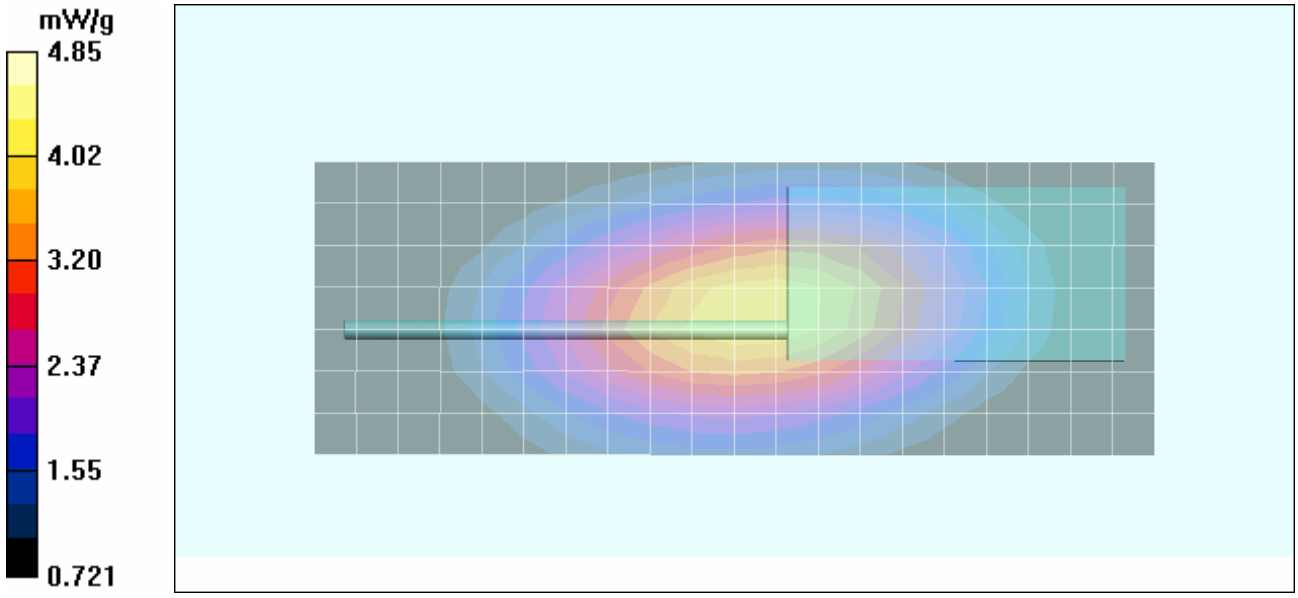
Ambient Temp: 22.8ºC; Fluid Temp: 21.5ºC; Barometric Pressure: 101.1kPa; Humidity: 33%

Frequency: 445 MHz; Duty Cycle: 1:1
Communication System: FM UHF (CW)
RF Output Power: 4.0 Watts (Conducted)
7.2V 2000mAh Lithium-ion Battery (P/N: TPB-AA-200)
Medium: HSL450 Medium parameters used: f = 445 MHz; σ = 0.85 mho/m; ε_r = 44.1; 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 Side of DUT to Planar Phantom
Area Scan (8x21x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 4.03 mW/g

Face-held SAR - 2.5 cm Spacing from Front Side of DUT to Planar Phantom
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 73.2 V/m; Power Drift = -0.248 dB
Peak SAR (extrapolated) = 6.39 W/kg
SAR(1 g) = 4.63 mW/g; SAR(10 g) = 3.4 mW/g
Maximum value of SAR (measured) = 4.85 mW/g



Date Tested: 01/21/2009

Face-held SAR - Antenna P/N: PA024AA10 (440-470 MHz) - Mid Channel - 445 MHz

DUT: Vertex Model: BSH16UM; Type: Portable FM UHF PTT Radio Transceiver; Serial: KG0849B0004

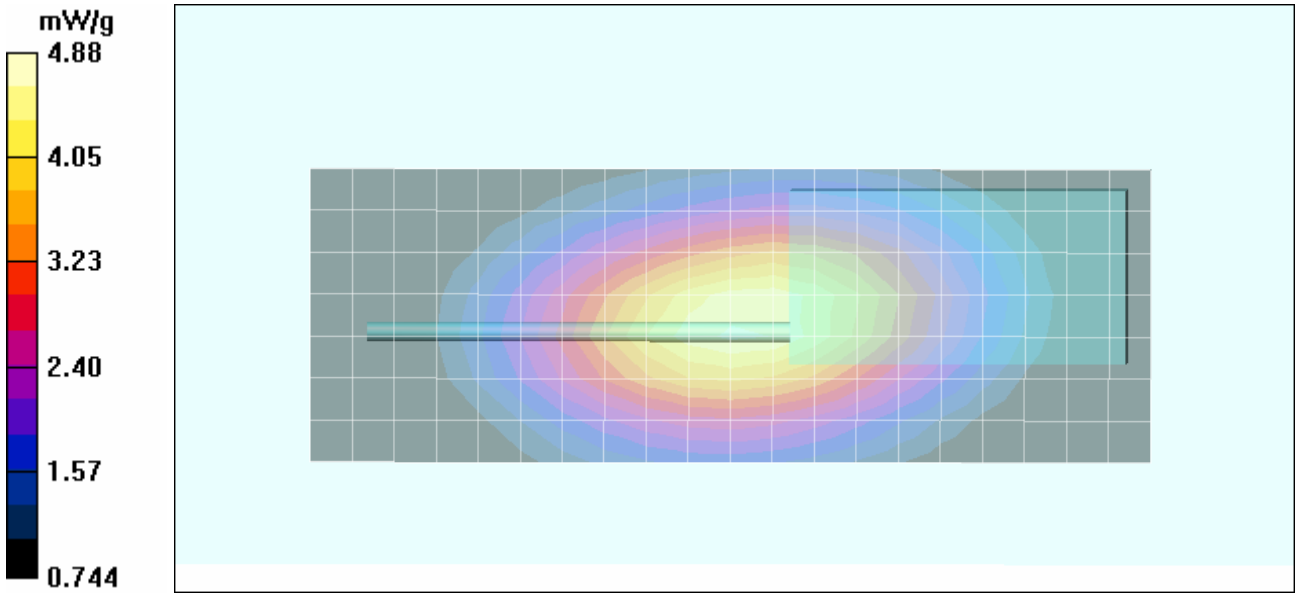
Ambient Temp: 22.8ºC; Fluid Temp: 21.5ºC; Barometric Pressure: 101.1kPa; Humidity: 33%

Frequency: 445 MHz; Duty Cycle: 1:1
Communication System: FM UHF (CW)
RF Output Power: 4.0 Watts (Conducted)
7.2V 2000mAh Lithium-ion Battery (P/N: TPB-AA-200)
Medium: HSL450 Medium parameters used: f = 445 MHz; σ = 0.85 mho/m; ε_r = 44.1; ρ = 1000 kg/m^3

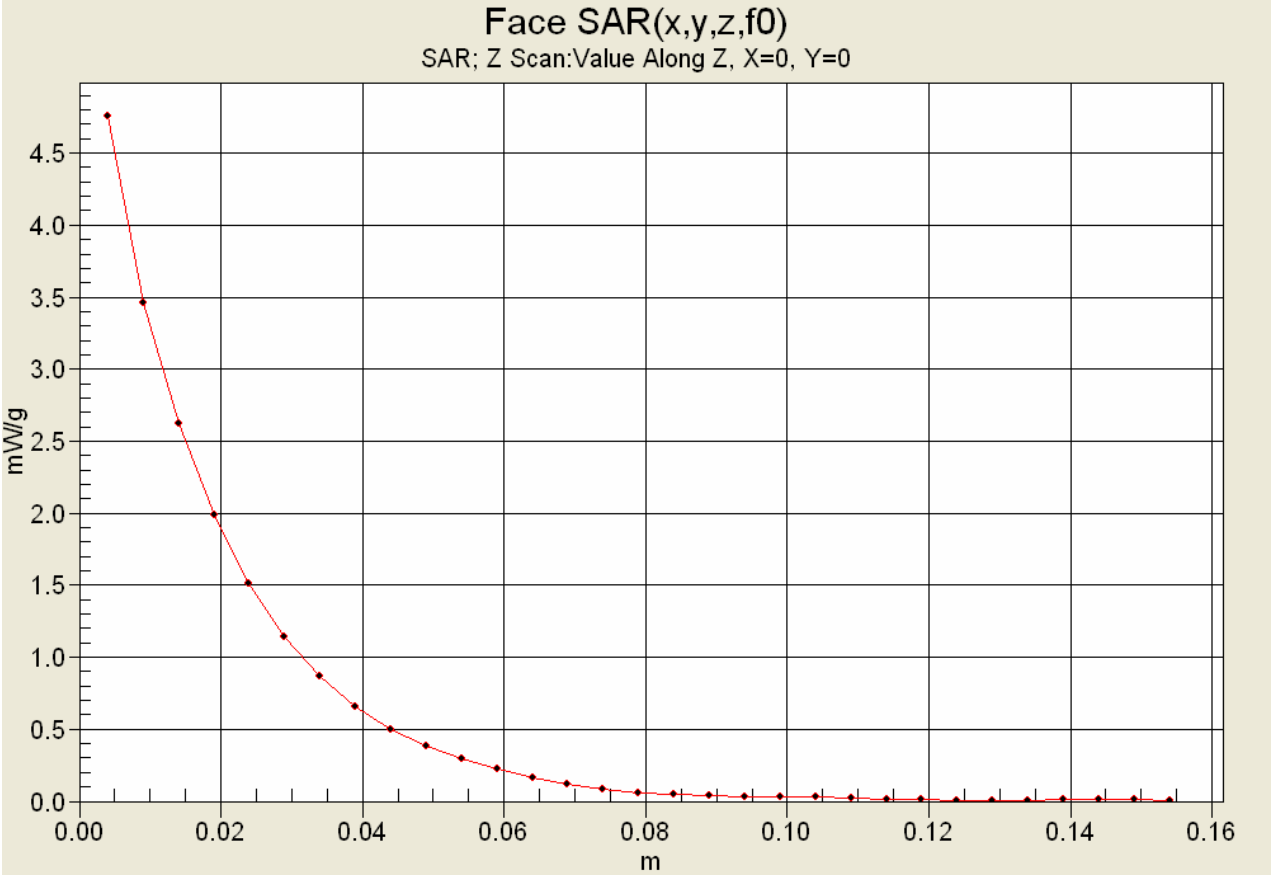
- Probe: ET3DV6 - SN1590; ConvF(7.66, 7.66, 7.66); Calibrated: 21/07/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8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

Face-held SAR - 2.5 cm Spacing from Front Side of DUT to Planar Phantom
Area Scan (8x21x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 4.67 mW/g

Face-held SAR - 2.5 cm Spacing from Front Side of DUT to Planar Phantom
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 73.5 V/m; Power Drift = -0.243 dB
Peak SAR (extrapolated) = 6.49 W/kg
SAR(1 g) = 4.67 mW/g; SAR(10 g) = 3.43 mW/g
Maximum value of SAR (measured) = 4.88 mW/g



Z-Axis Scan



Date Tested: 01/20/2009

Body-worn SAR - Antenna P/N: PA023AA10 (420-450 MHz) - Mid Channel - 445 MHz

DUT: Kanematsu Model: BSH16UM; Type: Portable FM UHF PTT Radio Transceiver; Serial: KG0849B0004

Body-worn Accessory: Belt-Clip (P/N: PA0500A100); Audio Accessory: Speaker-Microphone (P/N: TPB-AA-101)

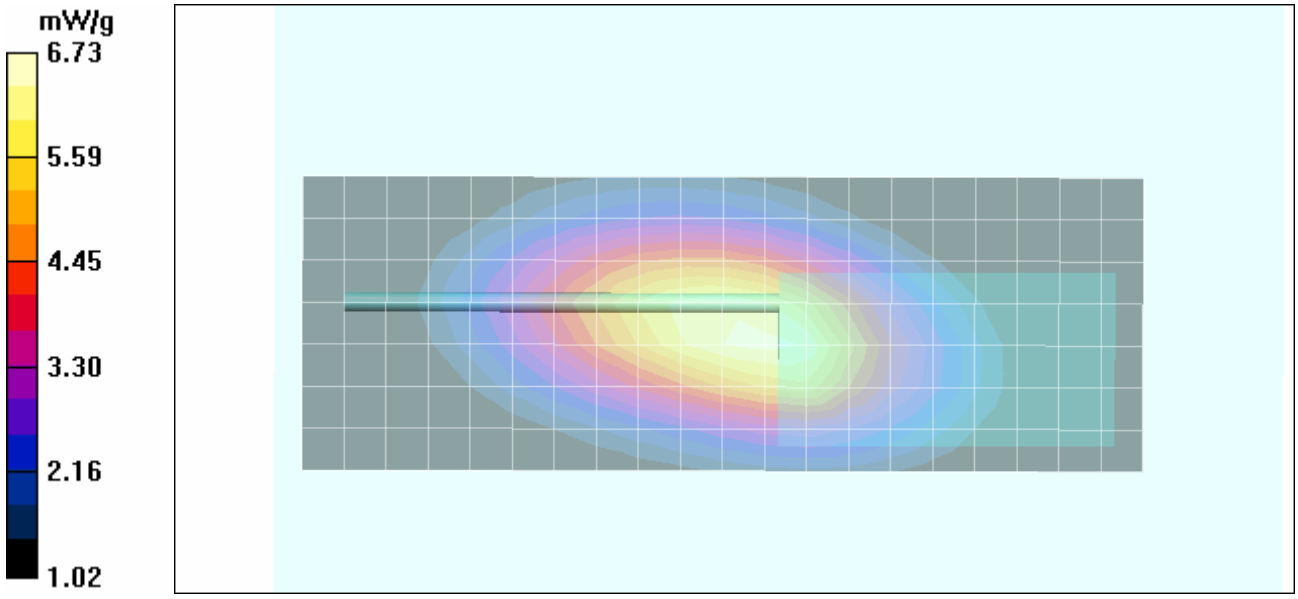
Ambient Temp: 23.0ºC; Fluid Temp: 22.0ºC; Barometric Pressure: 101.1 kPa; Humidity: 33%

Frequency: 445 MHz; Duty Cycle: 1:1
Communication System: FM UHF (CW)
RF Output Power: 4.0 Watts (Conducted)
7.2V 2000mAh Lithium-ion Battery (P/N: TPB-AA-200)
Medium: M450 Medium parameters used: f = 445 MHz; σ = 0.92 mho/m; ε_r = 57.3; 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 - 1.5 cm Belt-Clip Spacing from Back Side of DUT to Planar Phantom
Area Scan (8x21x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 6.49 mW/g

Body-worn SAR - 1.5 cm Belt-Clip Spacing from Back Side of DUT to Planar Phantom
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 85.8 V/m; Power Drift = -0.185 dB
Peak SAR (extrapolated) = 8.79 W/kg
SAR(1 g) = 6.45 mW/g; SAR(10 g) = 4.88 mW/g
Maximum value of SAR (measured) = 6.73 mW/g



Date Tested: 01/20/2009

Body-worn SAR - Antenna P/N: PA024AA10 (440-470 MHz) - Mid Channel - 445 MHz

DUT: Kanematsu Model: BSH16UM; Type: Portable FM UHF PTT Radio Transceiver; Serial: KG0849B0004

Body-worn Accessory: Belt-Clip (P/N: PA0500A100); Audio Accessory: Speaker-Microphone (P/N: TPB-AA-101)

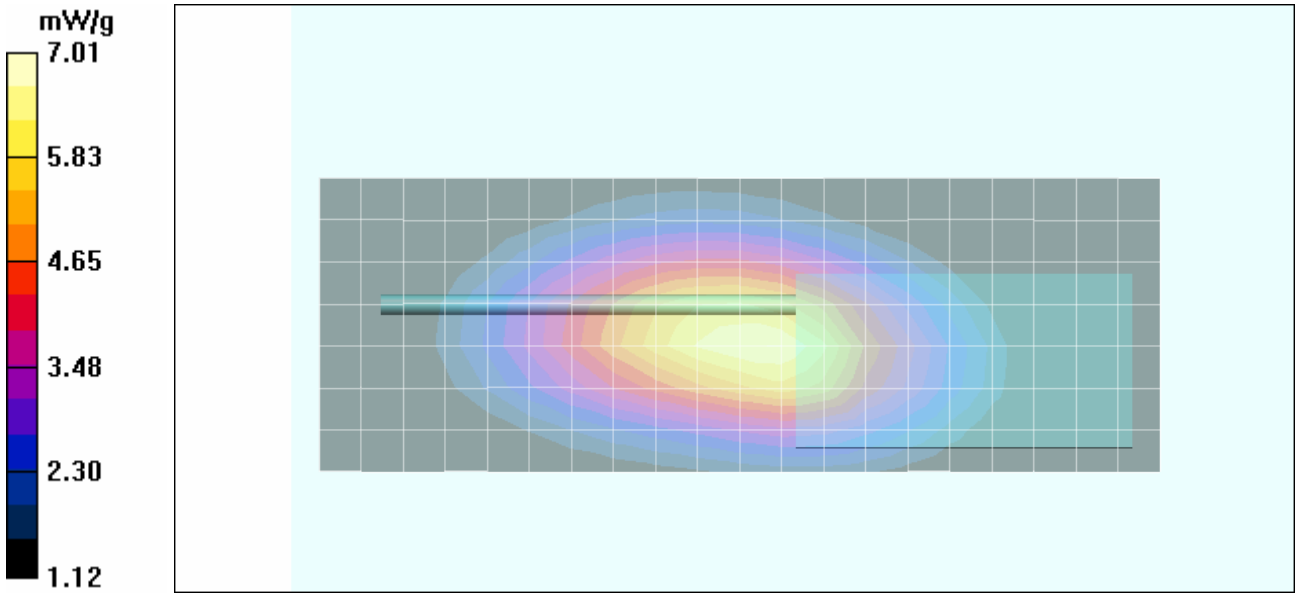
Ambient Temp: 23.0ºC; Fluid Temp: 22.0ºC; Barometric Pressure: 101.1 kPa; Humidity: 33%

Frequency: 445 MHz; Duty Cycle: 1:1
Communication System: FM UHF (CW)
RF Output Power: 4.0 Watts (Conducted)
7.2V 2000mAh Lithium-ion Battery (P/N: TPB-AA-200)
Medium: M450 Medium parameters used: f = 445 MHz; σ = 0.92 mho/m; ε_r = 57.3; ρ = 1000 kg/m^3

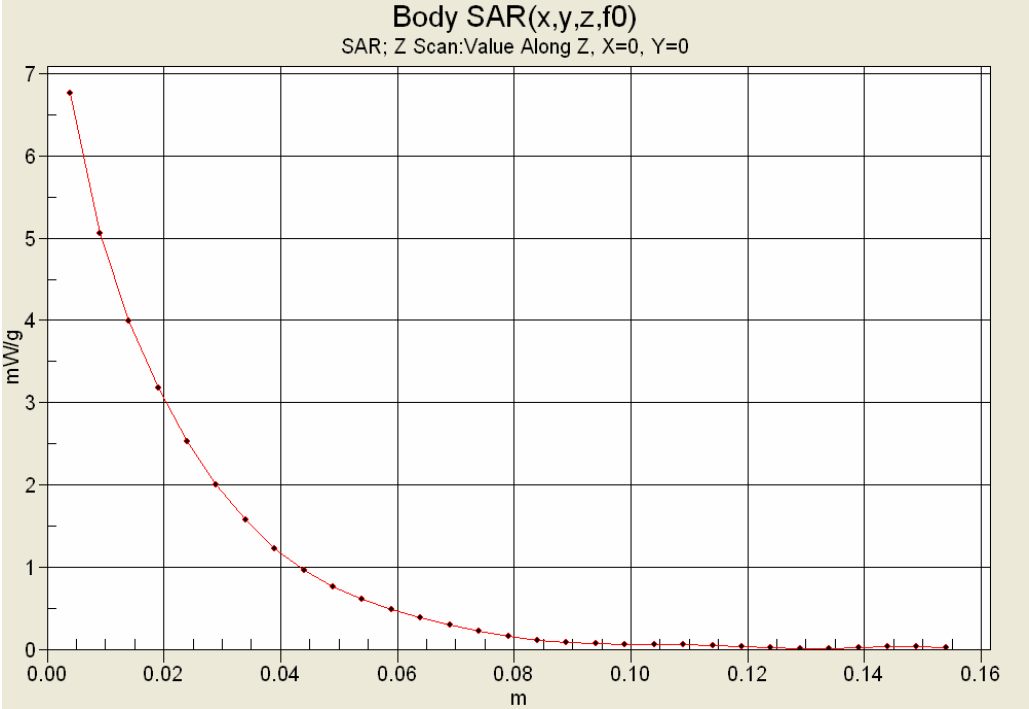
- Probe: ET3DV6 - SN1590; ConvF(8.27, 8.27, 8.27); Calibrated: 21/07/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8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

Body-worn SAR - 1.5 cm Belt-Clip Spacing from Back Side of DUT to Planar Phantom
Area Scan (8x21x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 6.63 mW/g

Body-worn SAR - 1.5 cm Belt-Clip Spacing from Back Side of DUT to Planar Phantom
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 89.0 V/m; Power Drift = -0.377 dB
Peak SAR (extrapolated) = 9.22 W/kg
SAR(1 g) = 6.67 mW/g; SAR(10 g) = 5.01 mW/g
Maximum value of SAR (measured) = 7.01 mW/g

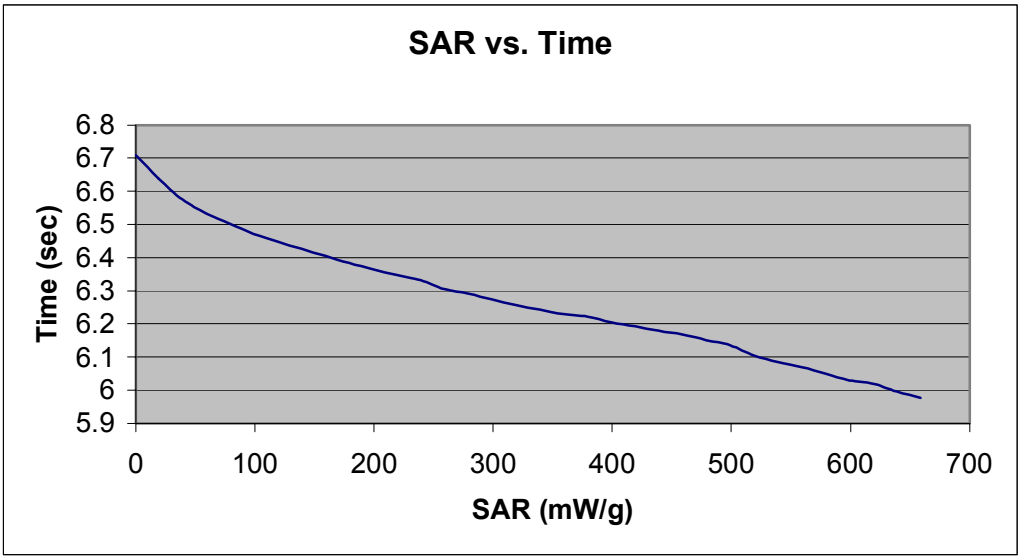


Z-Axis Scan



SAR-versus-Time Power Droop Evaluation

Body-worn Configuration
Mid Channel - 445 MHz
Antenna P/N: PA024AA10



Max SAR: 6.71 mW/g
End SAR: 5.95 mW/g (-0.522 dB)
SAR after 340s: 6.24 mW/g (-0.315 dB)
(340s = Zoom Scan Duration)
(680s = Area Scan Duration)

APPENDIX B - SYSTEM PERFORMANCE CHECK DATA

Date Tested: 01/20/2009

System Performance Check - 450 MHz Dipole - HSL

DUT: Dipole 450 MHz; Asset: 00024; Serial: 136; Calibration: 01/19/2009

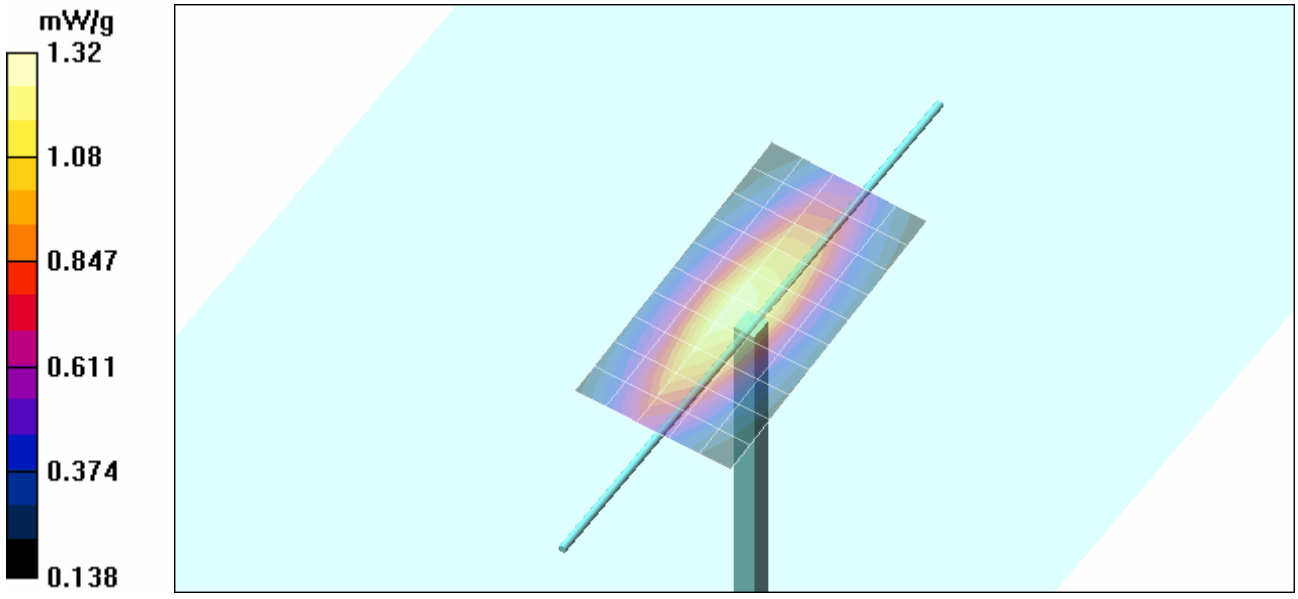
Ambient Temp: 23.0°C; Fluid Temp: 21.8°C; Barometric Pressure: 101.1 kPa; Humidity: 33%

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 = 43.7; ρ = 1000 kg/m^3

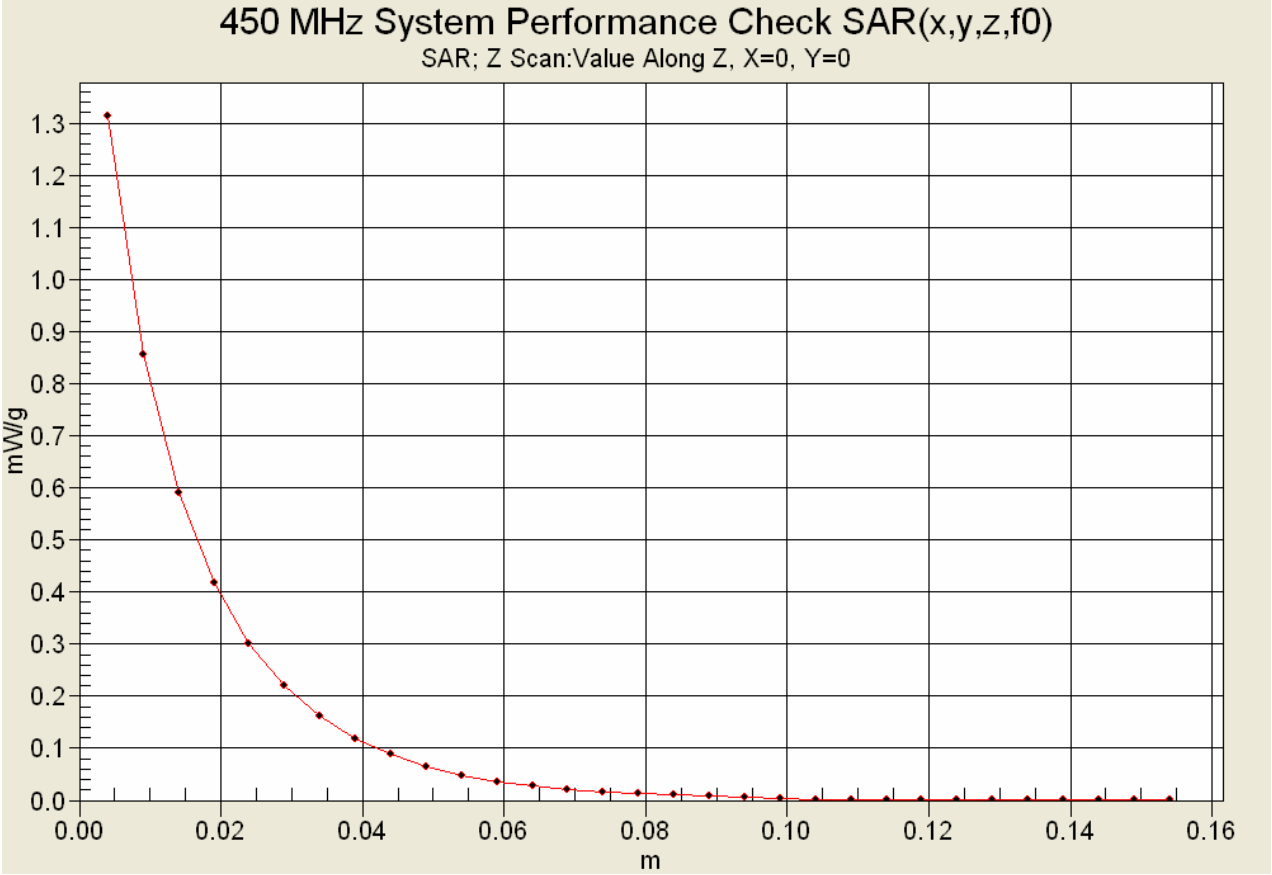
- Probe: ET3DV6 - SN1590; ConvF(7.66, 7.66, 7.66); Calibrated: 21/07/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Validation Planar; Type: Plexiglas; Serial: TE#137
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD,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

System Performance Check - 450 MHz Dipole
Area Scan (6x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.23 mW/g

System Performance Check - 450 MHz Dipole
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 39.3 V/m; Power Drift = 0.001 dB
Peak SAR (extrapolated) = 1.97 W/kg
SAR(1 g) = 1.24 mW/g; SAR(10 g) = 0.814 mW/g
Maximum value of SAR (measured) = 1.32 mW/g



Z-Axis Scan



Date Tested: 01/21/2009

System Performance Check - 450 MHz Dipole - HSL

DUT: Dipole 450 MHz; Asset: 00024; Serial: 136; Calibration: 01/19/2009

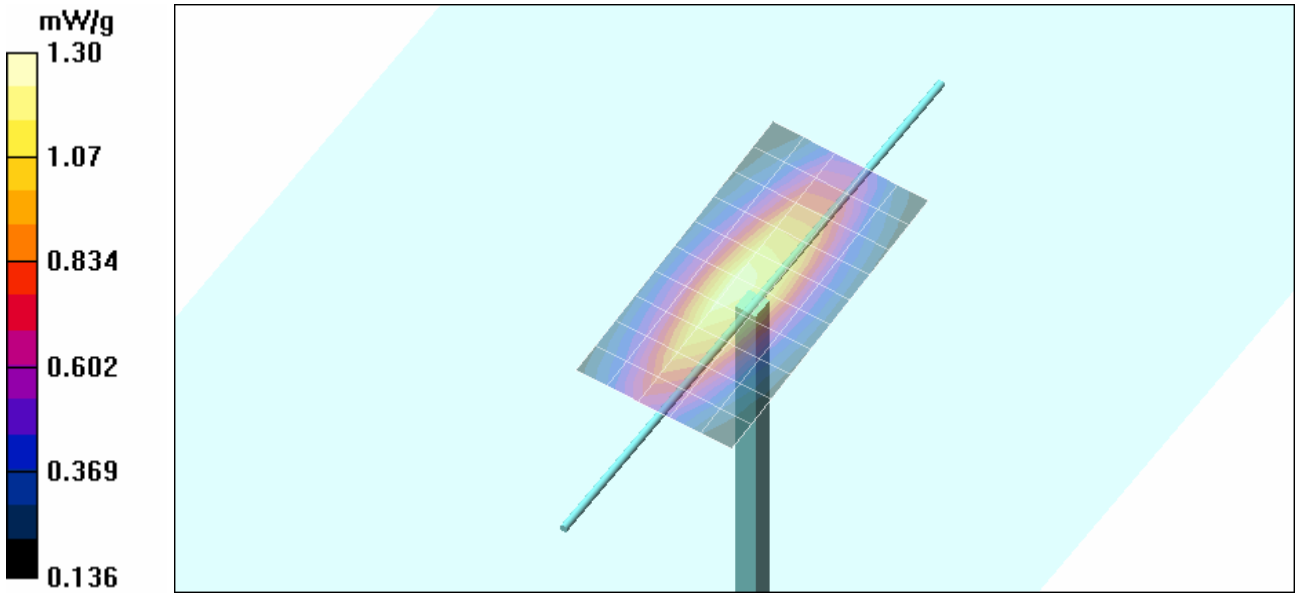
Ambient Temp: 22.8°C; Fluid Temp: 21.5°C; Barometric Pressure: 101.1 kPa; Humidity: 33%

Communication System: CW
Forward Conducted Power: 250 mW
Frequency: 450 MHz; Duty Cycle: 1:1
Medium: HSL450 Medium parameters used: f = 450 MHz; σ = 0.85 mho/m; ε_r = 44.1; ρ = 1000 kg/m^3

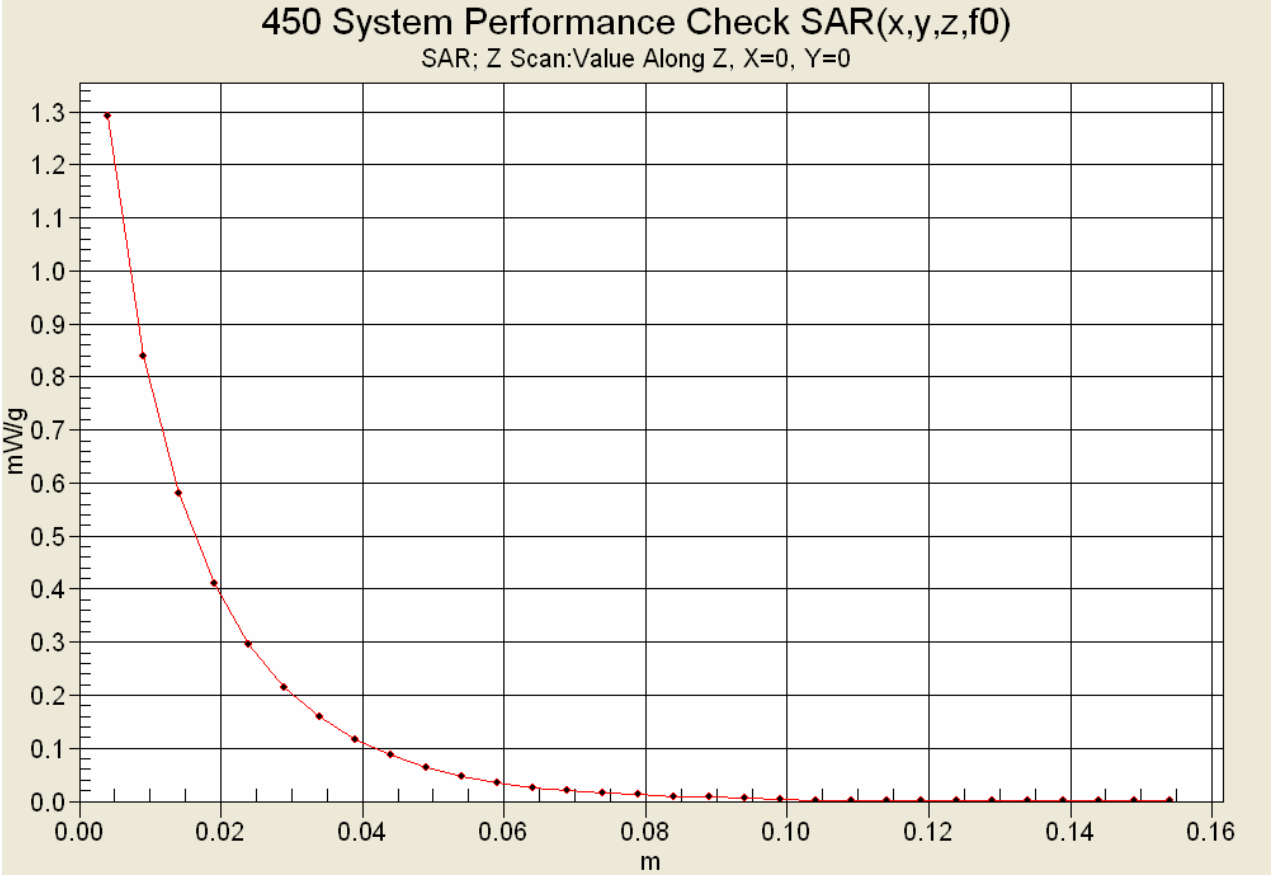
- Probe: ET3DV6 - SN1590; ConvF(7.66, 7.66, 7.66); Calibrated: 21/07/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 22/04/2008
- Phantom: Validation Planar; Type: Plexiglas; Serial: TE#137
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD,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

System Performance Check - 450 MHz Dipole
Area Scan (6x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.20 mW/g

System Performance Check - 450 MHz Dipole
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 39.6 V/m; Power Drift = -0.009 dB
Peak SAR (extrapolated) = 1.93 W/kg
SAR(1 g) = 1.21 mW/g; SAR(10 g) = 0.798 mW/g
Maximum value of SAR (measured) = 1.30 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
20/Jan/2009
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	45.83	0.79
0.3600	44.58	0.87	45.52	0.81
0.3700	44.46	0.87	45.04	0.81
0.3800	44.34	0.87	44.78	0.82
0.3900	44.22	0.87	44.49	0.83
0.4000	44.10	0.87	44.56	0.84
0.4100	43.98	0.87	44.19	0.85
0.4200	43.86	0.87	43.99	0.86
0.4300	43.74	0.87	43.82	0.86
0.4400	43.62	0.87	43.54	0.87
0.4500	43.50	0.87	43.70	0.88
0.4600	43.45	0.87	43.31	0.89
0.4700	43.40	0.87	43.01	0.89
0.4800	43.34	0.87	42.77	0.89
0.4900	43.29	0.87	42.60	0.91
0.5000	43.24	0.87	42.15	0.92
0.5100	43.19	0.87	42.31	0.93
0.5200	43.14	0.88	41.85	0.94
0.5300	43.08	0.88	41.68	0.94
0.5400	43.03	0.88	41.56	0.95
0.5500	42.98	0.88	41.33	0.96

450 MHz DUT Evaluation (Body)

****

Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
20/Jan/2009
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	58.58	0.84
0.3600	57.60	0.93	58.41	0.84
0.3700	57.50	0.93	58.15	0.86
0.3800	57.40	0.93	57.80	0.87
0.3900	57.30	0.93	57.89	0.87
0.4000	57.20	0.93	57.79	0.88
0.4100	57.10	0.93	57.54	0.89
0.4200	57.00	0.94	57.37	0.89
0.4300	56.90	0.94	56.97	0.91
0.4400	56.80	0.94	56.91	0.91
0.4500	56.70	0.94	57.28	0.92
0.4600	56.66	0.94	56.78	0.93
0.4700	56.62	0.94	56.71	0.94
0.4800	56.58	0.94	56.37	0.94
0.4900	56.54	0.94	56.38	0.95
0.5000	56.51	0.94	56.28	0.96
0.5100	56.47	0.94	56.17	0.97
0.5200	56.43	0.95	55.94	0.97
0.5300	56.39	0.95	55.81	0.99
0.5400	56.35	0.95	55.71	0.99
0.5500	56.31	0.95	55.66	0.99

450 MHz System Performance Check & DUT Evaluation (Brain)

****

Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
21/Jan/2009
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

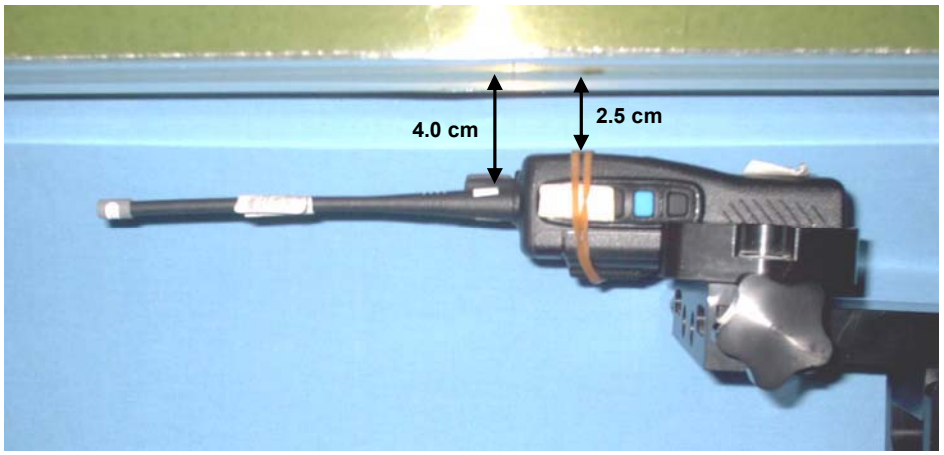
****

Freq	FCC_eH	FCC_sH	Test_e	Test_s
0.3500	44.70	0.87	46.18	0.78
0.3600	44.58	0.87	46.38	0.78
0.3700	44.46	0.87	46.20	0.78
0.3800	44.34	0.87	45.24	0.80
0.3900	44.22	0.87	45.39	0.81
0.4000	44.10	0.87	45.83	0.82
0.4100	43.98	0.87	44.79	0.83
0.4200	43.86	0.87	45.22	0.84
0.4300	43.74	0.87	44.87	0.84
0.4400	43.62	0.87	44.64	0.85
0.4500	43.50	0.87	44.13	0.85
0.4600	43.45	0.87	43.88	0.86
0.4700	43.40	0.87	43.58	0.88
0.4800	43.34	0.87	43.61	0.89
0.4900	43.29	0.87	43.55	0.90
0.5000	43.24	0.87	43.04	0.91
0.5100	43.19	0.87	42.52	0.91
0.5200	43.14	0.88	42.86	0.93
0.5300	43.08	0.88	42.73	0.93
0.5400	43.03	0.88	42.65	0.94
0.5500	42.98	0.88	42.02	0.95

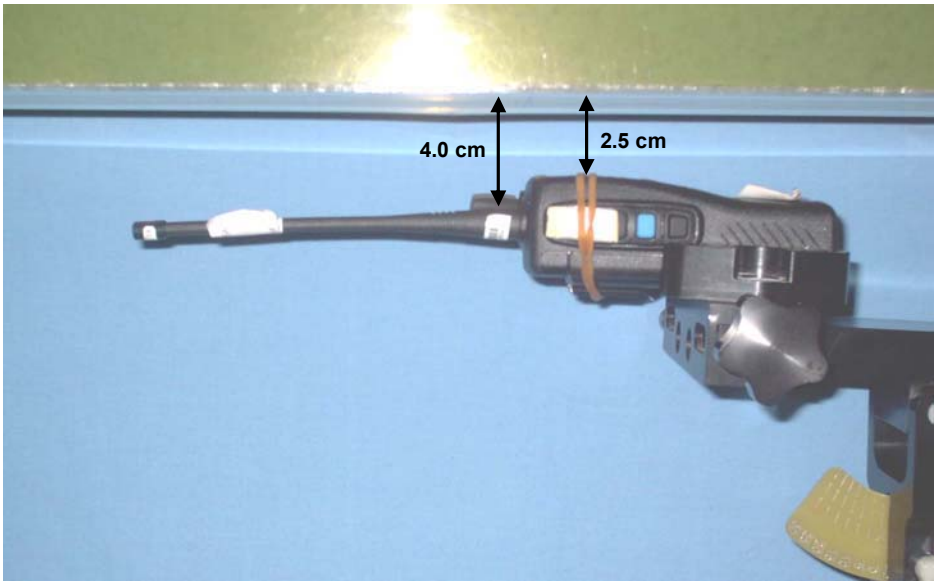
APPENDIX D - SAR TEST SETUP & DUT PHOTOGRAPHS

FACE-HELD SAR TEST SETUP PHOTOGRAPHS

2.5 cm Spacing from Front of DUT to Planar Phantom



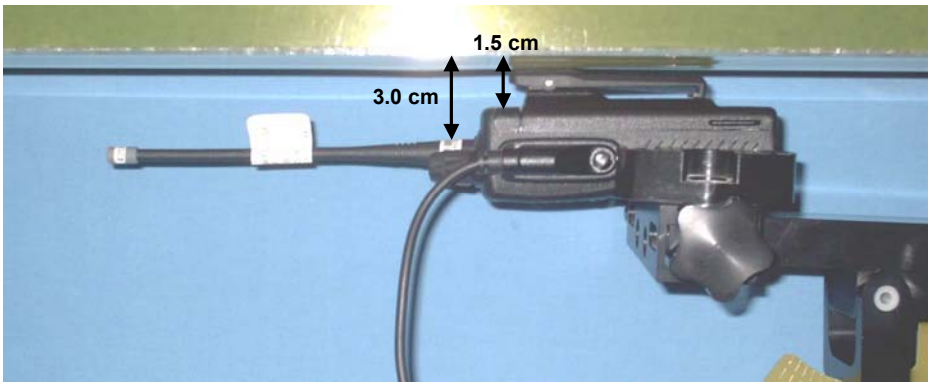
DUT with Antenna Part No. PA023AA10 (420-450 MHz)



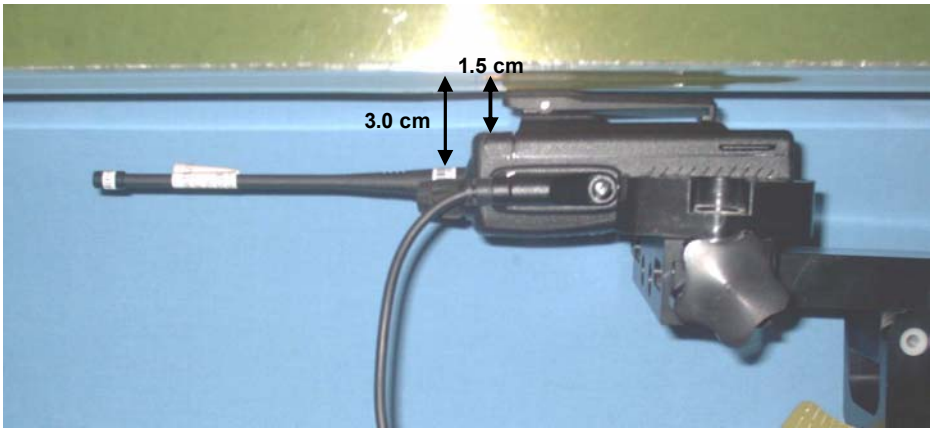
DUT with Antenna Part No. PA024AA10 (440-470 MHz)

BODY-WORN SAR TEST SETUP PHOTOGRAPHS

1.5 cm Belt-Clip Spacing from Back of DUT to Planar Phantom
DUT with Speaker-Microphone Audio Accessory



DUT with Antenna Part No. PA023AA10 (420-450 MHz)



DUT with Antenna Part No. PA024AA10 (440-470 MHz)

DUT PHOTOGRAPHS

Front & Back of DUT with Antenna Part No. PA023AA10	Front & Back of DUT with Antenna Part No. PA024AA10

Antenna Part No. PA023AA10 (420-450 MHz)

Antenna Part No. PA024AA10 (440-470 MHz)

DUT PHOTOGRAPHS

Back of DUT with Belt-Clip

Back of DUT without Belt-Clip

Bottom end of DUT

Left Side of DUT with Belt-Clip

Right Side of DUT with Belt-Clip

Top end of DUT

DUT PHOTOGRAPHS

Back of DUT with battery removed

Lithium-ion Battery Part No. TPB-BA-200

Belt-Clip body-worn accessory Part No. PA0500A100

DUT with Speaker-Microphone audio accessory