

	Test Report Serial No.:	100605MQO-T682-S15W	Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005	Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

RF EXPOSURE EVALUATION

SPECIFIC ABSORPTION RATE

SAR TEST REPORT

FOR THE

VOCOLLECT INC.

MODEL: HERCULES

**WAIST-WORN TERMINAL
WITH
802.11b WLAN & BLUETOOTH**

FCC ID: MQOTT700-10000

IC: 2570A-TT700100

Test Report Serial Number

**100605MQO-T682-S15W
Revision 0**

Test Report Issue Date

October 21, 2005

**Celltech Compliance Testing & Engineering Lab
(Celltech Labs Inc.)
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Applicant:	Vocollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

DECLARATION OF COMPLIANCE SAR RF EXPOSURE EVALUATION

<u>Test Lab</u> CELLTECH LABS INC. Testing and Engineering Services 1955 Moss Court Kelowna, B.C. Canada V1Y 9L3 Phone: 250 - 448-7047 Fax: 250 - 448-7046 e-mail: info@celltechlabs.com web site: www.celltechlabs.com		<u>Applicant Information</u> VOCOLLECT INC. 703 Rodi Road Pittsburgh, PA 15235 United States	
FCC IDENTIFIER: IC IDENTIFIER: Model(s):		MQOTT700-10000 2570A-TT7001000 Hercules	
Rule Part(s): Test Procedure(s): Device Classification: Device Description: Internal Transmitter(s): Modulation Type(s):		FCC §2.1093; IC RSS-102 Issue 1 (Provisional) FCC OET Bulletin 65 Supplement C (01-01) Digital Transmission System (DTS) Waist-Worn Terminal USI WM-BB-AG-01 802.11b / Bluetooth Combination Direct Sequence Spread Spectrum (DSSS) - 802.11b WLAN Frequency Hopping Spread Spectrum (FHSS) - Bluetooth	
Tx Frequency Range(s): Max. RF Conducted Power Measured: Battery Type(s) Tested: Antenna Type(s) Tested:		2412 - 2462 MHz (802.11b WLAN) 2402 - 2480 MHz (Bluetooth) 36.77 mW (15.65 dBm) Peak (WLAN) 2437 MHz 1.74 mW (2.4 dBm) Peak (Bluetooth) 2441 MHz Lithium-ion 3.6 V 4400 mAh (Model: 730022) WLAN: Internal / Bluetooth: Internal	
Body-Worn Accessories Tested: Audio Accessories Tested:		Belt with Belt-Clip (P/N: BL-700-4) Headset-Microphone (P/N: HD-700-1)	
Max. SAR Level(s) Measured:		Body-worn: 0.471 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 and Health Canada's Safety Code 6. The device was tested in accordance with the measurement standards and procedures specified in FCC OET Bulletin 65, Supplement C (Edition 01-01) and Industry Canada RSS-102 Issue 1 (Provisional) for the General Population / Uncontrolled Exposure environment. 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.

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Tested By:  Sean Johnston Compliance Technologist Celltech Labs Inc.	Reviewed By:  Spencer Watson Senior Compliance Technologist Celltech Labs Inc.
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Applicant:	Vocollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

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1.0 INTRODUCTION

This measurement report demonstrates that the VOCOLLECT INC. Model: Hercules Waist-Worn Terminal with internal 802.11b/Bluetooth Combination FCC ID: MQOTT700-10000 complies with the SAR (Specific Absorption Rate) RF exposure requirements specified in FCC 47 CFR §2.1093 (see reference [1]) for the General Population / Uncontrolled Exposure environment and Health Canada Safety Code 6 (see reference [2]). The test procedures described in FCC OET Bulletin 65, Supplement C, Edition 01-01 (see reference [3]) and IC RSS-102 Issue 1 (Provisional) (see reference [4]), were employed. A description of the product and 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 DESCRIPTION of DEVICE UNDER TEST (DUT)

FCC Rule Part(s)	47 CFR §2.1093		
IC Rule Part(s)	RSS-102 Issue 1 (Provisional)		
Test Procedure(s)	FCC OET Bulletin 65, Supplement C (01-01)		
FCC Device Classification	Digital Transmission System (DTS)		15C
IC Device Classification	Low Power License-Exempt Radiocommunication Device: Category 1 Equipment		RSS-210 Issue 6
Device Description	Waist-Worn Terminal		
Internal Transmitters	USI WM-BB-AG-01 802.11b / Bluetooth Combination		
Co-located Transmit Operation	802.11b WLAN and Bluetooth transmitters can transmit simultaneously		
FCC IDENTIFIER	MQOTT700-10000		
IC IDENTIFIER	2570A-TT700100		
Model(s)	Hercules		
Test Sample Serial No.	188	Production Unit	
Mode(s) of Operation	802.11b WLAN	DSSS	Direct Sequence Spread Spectrum
	Bluetooth	FHSS	Frequency Hopping Spread Spectrum
Modulation Type(s)	802.11b WLAN	DBPSK, DQPSK, CCK	
Tx Frequency Range(s)	2412 - 2462 MHz		802.11b WLAN
	2402 - 2480 MHz		Bluetooth
Max. RF Peak Conducted Output Power Measured	30.39 mW	14.83 dBm	2412 MHz
	36.77 mW	15.65 dBm	2437 MHz
	33.23 mW	15.22 dBm	2462 MHz
	1.74 mW	2.4 dBm	2441 MHz
Battery Type(s) Tested	Lithium-ion	3.6 V	4400 mAh Model: 730022
Antenna Type(s) Tested	Internal		802.11b WLAN
	Internal		Bluetooth
Body-Worn Accessories Tested	Belt with Belt-Clip		P/N: BL-700-4
Audio Accessories Tested	Headset-Microphone		P/N: HD-700-1

Applicant:	Vocollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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3.0 SAR MEASUREMENT SYSTEM

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



DASY4 SAR Measurement System with planar phantom



DASY4 SAR Measurement System with planar phantom

Applicant:	Voccollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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4.0 MEASUREMENT SUMMARY

BODY-WORN SAR MEASUREMENT RESULTS

Transmitter	Test Mode	Freq. (MHz)	Chan.	Data Rate	Battery Type	Accessories		DUT Position to Planar Phantom	Separ. Distance to Planar Phantom (cm)	Cond. Power Before Test (dBm)	SAR Drift During Test (dB)	Measured SAR 1g (W/kg)	
						Body-Worn	Audio						
802.11b WLAN	DSSS	2437	6	1 Mbps	Li-ion	Belt with Belt-Clip	Headset Mic	Front Side (Battery Side)	0.0	15.65	-0.111	0.471	
802.11b WLAN	DSSS	2437	6	1 Mbps	Li-ion	Belt with Belt-Clip	Headset Mic	Back Side (Belt-Clip Side)	0.0	15.65	0.146	0.0239	
802.11b WLAN	DSSS	2437	6	1 Mbps	Li-ion	Belt with Belt-Clip	Headset Mic	Top Side (Button Side)	0.0	15.65	-0.0443	0.0363	
802.11b WLAN	DSSS	2437	6	1 Mbps	Li-ion	Belt with Belt-Clip	Headset Mic	Bottom Side	0.0	15.65	-0.215	0.0383	
802.11b WLAN	DSSS	2437	6	1 Mbps	Li-ion	Belt with Belt-Clip	Headset Mic	Front Side (Battery Side)	0.0	15.65	-0.117	0.444	
Bluetooth	Modulated Fixed Freq.	2441	39	n/a						2.4			
ANSI / IEEE C95.1 1999 - SAFETY LIMIT					BODY: 1.6 W/kg (averaged over 1 gram)			Spatial Peak Uncontrolled Exposure / General Population					
Test Date(s)			October 13, 2005					Relative Humidity		32		%	
Measured Fluid Type			2450 MHz Body					Atmospheric Pressure		101.9		kPa	
Dielectric Constant ε _r			IEEE Target		Measured	Deviation	Ambient Temperature		23.2		°C		
			52.7	±5%	50.6	-4.0%	Fluid Temperature		22.2		°C		
Conductivity σ (mho/m)			IEEE Target		Measured	Deviation	Fluid Depth		≥ 15		Cm		
			1.95	±5%	1.93	-1.0%	ρ (Kg/m ³)		1000				

Note(s):

1. The measurement results were obtained with the DUT tested in the conditions described in this report. 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 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 power drifts measured by the DASY4 system for the duration of the SAR evaluations were $\leq 5\%$ from the start power.
4. The maximum SAR level configuration for single-transmit operation was subsequently re-evaluated with both the 802.11b WLAN and Bluetooth transmitters enabled to report a SAR result for simultaneous transmit operation.
5. The DUT battery was fully charged prior to each SAR evaluation.
6. The ambient and fluid temperatures were measured prior to, and during, the fluid dielectric parameter check and the SAR evaluations. The temperatures reported were consistent for all measurement periods.
7. The dielectric parameters of the simulated tissue mixture were measured prior to the SAR evaluations using an ALS-PR-DIEL Dielectric Probe Kit and an HP 8753ET Network Analyzer (see Appendix C).
8. The SAR evaluations were performed within 24 hours of the system performance check.

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5.0 DETAILS OF SAR EVALUATION

The VOCOLLECT INC. Model: Hercules Waist-Worn Terminal with internal 802.11b / Bluetooth Combination FCC ID: MQOTT700-10000 was determined to be compliant for localized Specific Absorption Rate based on the test provisions and conditions described below. Detailed test setup photographs are shown in Appendix D.

SAR Test Configurations

1. The DUT was tested for body-worn SAR with the back side (belt-clip side) of the device placed parallel to, and touching, the outer surface of the planar phantom.
2. The DUT was tested for body-worn SAR with the front side (battery side) of the device placed parallel to, and touching, the outer surface of the planar phantom.
3. The DUT was tested for body-worn SAR with the top side (button side) of the device placed parallel to, and touching, the outer surface of the planar phantom.
4. The DUT was tested for body-worn SAR with the bottom side of the device placed parallel to, and touching, the outer surface of the planar phantom.
5. The belt-clip, belt, and headset-microphone accessories were attached to the DUT for the duration of the tests.
6. The SAR evaluations were performed within 24 hours of the daily system performance check.

Test Modes & Power Settings

7. The peak conducted power levels were measured prior to the SAR evaluations using the Agilent E4408B spectrum analyzer and a 30 dB attenuator according to the procedures described in FCC 47 CFR §2.1046.
8. The DUT was placed into test mode using an executable test software program controlled from a PC connected to the DUT via serial cable.
9. The 802.11b WLAN was tested at maximum power in modulated DSSS continuous transmit mode at 100% duty cycle. For the co-located simultaneous transmit SAR evaluation, the Bluetooth transmitter was tested in continuous transmit mode with a modulated signal on a fixed frequency (frequency hopping disabled).
10. The power drifts measured by the DASY4 system for the duration of the SAR evaluations were $\leq 5\%$ from the start power.
11. The DUT battery was fully charged prior to each SAR evaluation.

6.0 EVALUATION PROCEDURES

- (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 D). 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.

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7.0 SYSTEM PERFORMANCE CHECK

Prior to the SAR evaluations a system check was performed using a planar phantom with a 2450MHz dipole (see Appendix E for system validation procedures). The dielectric parameters of the simulated tissue mixture were measured prior to the system performance check using an ALS-PR-DIEL Dielectric Probe Kit and an HP 8753ET Network Analyzer (see Appendix C). A forward power of 250 mW was applied to the dipole and the system was verified to a tolerance of $\pm 10\%$ (see Appendix B). See Table 1 below for the SAR system manufacturer's reference body SAR values from the DASY4 Operation Manual (see reference [6]).

SYSTEM PERFORMANCE CHECK EVALUATION

Test Date	2450MHz 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)
		IEEE Target	Meas.	Dev.	IEEE Target	Meas.	Dev.	IEEE Target	Meas.	Dev.						
10/13/05	Body	12.8 $\pm 10\%$	14.0	+9.4%	52.7 $\pm 5\%$	50.6	-4.0%	1.95 $\pm 5\%$	1.93	-1.0%	1000	22.8	22.2	≥ 15	32	101.9

Note(s):

1. The ambient and fluid temperatures were measured prior to, and during, the fluid dielectric parameter check and the system performance check. The temperatures listed in the table above were consistent for all measurement periods.

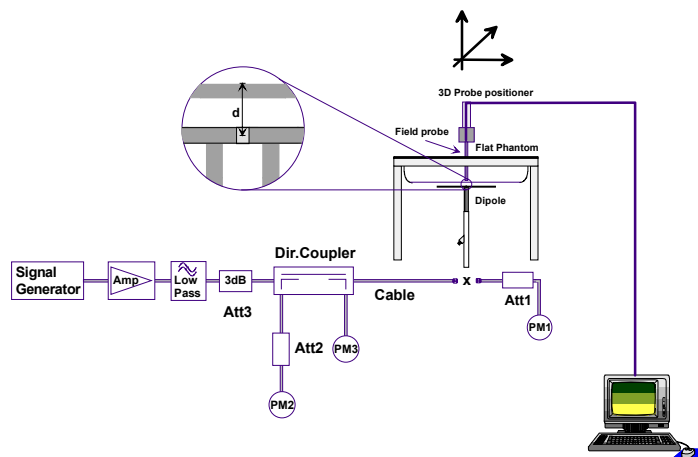


Figure 1. System Performance Check Measurement Setup

Dipole Type	Distance [mm]	Frequency [MHz]	SAR (1g) [W/kg]	SAR (10g) [W/kg]	SAR (peak) [W/kg]
D300V2	15	300	3.02	2.06	4.36
D450V2	15	450	5.01	3.36	7.22
D835V2	15	835	9.71	6.38	14.1
D900V2	15	900	11.1	7.17	16.3
D1450V2	10	1450	29.6	16.6	49.8
D1500V2	10	1500	30.8	17.1	52.1
D1640V2	10	1640	34.4	18.7	59.4
D1800V2	10	1800	38.5	20.3	67.5
D1900V2	10	1900	39.8	20.8	69.6
D2000V2	10	2000	40.9	21.2	71.5
D2450V2	10	2450	51.2	23.7	97.6
D3000V2	10	3000	61.9	24.8	136.7

Table 32.1: Numerical reference SAR values for SPEAG dipoles and flat phantom filled with body-tissue simulating liquid. Note: All SAR values normalized to 1 W forward power.

Table 1. SAR system manufacturer's reference body SAR values



2450MHz Dipole Setup

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Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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8.0 SIMULATED EQUIVALENT TISSUES

The 2450MHz simulated tissue mixtures consist of Glycol-monobutyl, water, and salt. The fluids were prepared according to standardized procedures and measured for dielectric parameters (permittivity and conductivity).

SIMULATED TISSUE MIXTURES		
INGREDIENT	2450 MHz Body	2450 MHz Body
	System Performance Check	DUT Evaluation
Water	69.98 %	69.98 %
Glycol Monobutyl	30.00 %	30.00 %
Salt	0.02 %	0.02 %

9.0 SAR SAFETY LIMITS

EXPOSURE LIMITS	SAR (W/Kg)	
	(General Population / Uncontrolled Exposure Environment)	(Occupational / Controlled Exposure Environment)
Spatial Average (averaged over the whole body)	0.08	0.4
Spatial Peak (averaged over any 1 g of tissue)	1.60	8.0
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)	4.0	20.0

Notes:

1. Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.
2. 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.

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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: DASY4 software
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.: 1387
Construction: Triangular core fiber optic detection system
Frequency: 10 MHz to 6 GHz
Linearity: ± 0.2 dB (30 MHz to 3 GHz)

Phantom(s)

Type: Planar Phantom
Shell Material: Fiberglass
Thickness: 2.0 ± 0.1 mm
Volume: Approx. 72 liters

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11.0 PROBE SPECIFICATION (ET3DV6)

Construction:	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g. 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 $\pm 8\%$)
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 μ W/g to >100 mW/g; Linearity: ± 0.2 dB
Surface Detection:	± 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 portable devices



ET3DV6 E-Field Probe

12.0 PLANAR PHANTOM

The planar phantom is a fiberglass shell phantom with a 2.0 mm (± 0.2 mm) 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 planar phantom is integrated in a wooden table (see Appendix G for dimensions and specifications of the planar phantom).



Planar Phantom

13.0 DEVICE HOLDER

The DASY4 device holder has two scales for device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The plane between the ear openings and the mouth tip has a rotation angle of 65° . The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. For evaluations of larger devices such as Laptop and Tablet PCs, a Plexiglas platform is attached to the device holder.



Device Holder

Applicant:	Voccollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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	Test Report Serial No.:	100605MQO-T682-S15W	Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005	Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

14.0 TEST EQUIPMENT LIST

TEST EQUIPMENT		ASSET NO.	SERIAL NO.	DATE CALIBRATED		CALIBRATION DUE DATE
USED	DESCRIPTION					
x	Schmid & Partner DASY4 System	-	-	-		-
x	-DASY4 Measurement Server	00158	1078	N/A		N/A
x	-Robot	00046	599396-01	N/A		N/A
x	-DAE4	00019	353	15Jun05		15Jun06
	-DAE3	00018	370	25Jan05		25Jan06
x	-ET3DV6 E-Field Probe	00016	1387	18Mar05		18Mar06
	-ET3DV6 E-Field Probe	00017	1590	20May05		20May06
	-EX3DV4 E-Field Probe	00125	3547	21Jan05		21Jan06
	-300MHz Validation Dipole	00023	135	26Oct04		26Oct05
	-450MHz Validation Dipole	00024	136	04Nov04		04Nov05
	-835MHz Validation Dipole	00022	411	Brain	30Mar05	30Mar06
				Body	12Apr05	12Apr06
	-900MHz Validation Dipole	00020	054	Brain	10Jun05	10Jun06
				Body	10Jun05	10Jun06
	-1800MHz Validation Dipole	00021	247	Brain	14Jun05	14Jun06
				Body	14Jun05	14Jun06
	-1900MHz Validation Dipole	00032	151	Brain	17Jun05	17Jun06
				Body	22Apr05	22Apr06
	-2450MHz Validation Dipole	00025	150	Brain	20Sep05	20Sep06
x				Body	22Apr05	22Apr06
	-5000MHz Validation Dipole	00126	1031	Brain	11Jan05	11Jan06
				Body	11Jan05	11Jan06
	-SAM Phantom V4.0C	00154	1033	N/A		N/A
x	-Barski Planar Phantom	00155	03-01	N/A		N/A
	-Plexiglas Planar Phantom	00156	161	N/A		N/A
	-Validation Planar Phantom	00157	137	N/A		N/A
	HP 85070C Dielectric Probe Kit	00033	N/A	N/A		N/A
x	ALS-PR-DIEL Dielectric Probe Kit	00160	260-00953	N/A		N/A
x	HP/Agilent E4408B Spectrum Analyzer	00015	US39240170	24Jan05		24Jan06
x	Pasternack PE7014-30 30 dB Attenuator	00076	none	01Nov04		01Nov05
x	Gigatronics 8652A Power Meter	00110	1835801	16Apr05		16Apr06
x	Gigatronics 80701A Power Sensor	00012	1834350	12Sep05		12Sep06
x	Gigatronics 80701A Power Sensor	00014	1833699	07Sep05		07Sep06
	Gigatronics 80701A Power Sensor	00109	1834366	16Apr05		16Apr06
x	HP 8753ET Network Analyzer	00134	US39170292	04May05		04May06
x	HP 8648D Signal Generator	00005	3847A00611	29Apr05		29Apr06
	Rohde & Schwarz SMR40 Signal Generator	00006	100104	12Apr05		12Apr06
x	Amplifier Research 5S1G4 Power Amplifier	00106	26235	N/A		N/A

Applicant:	Voccollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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	Test Report Serial No.:	100605MQO-T682-S15W	Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005	Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

15.0 MEASUREMENT UNCERTAINTIES

UNCERTAINTY BUDGET FOR DEVICE EVALUATION						
Error Description	Uncertainty Value ±%	Probability Distribution	Divisor	ci 1g	Uncertainty Value ±% (1g)	V _i or V _{eff}
Measurement System						
Probe calibration	5.9	Normal	1	1	5.9	∞
Axial isotropy of the probe	4.7	Rectangular	1.732050808	0.7	1.9	∞
Spherical isotropy of the probe	9.6	Rectangular	1.732050808	0.7	3.9	∞
Spatial resolution	0	Rectangular	1.732050808	1	0.0	∞
Boundary effects	1	Rectangular	1.732050808	1	0.6	∞
Probe linearity	4.7	Rectangular	1.732050808	1	2.7	∞
Detection limit	1	Rectangular	1.732050808	1	0.6	∞
Readout electronics	0.3	Normal	1	1	0.3	∞
Response time	0.8	Rectangular	1.732050808	1	0.5	∞
Integration time	2.6	Rectangular	1.732050808	1	1.5	∞
RF ambient conditions	3	Rectangular	1.732050808	1	1.7	∞
Mech. constraints of robot	0.4	Rectangular	1.732050808	1	0.2	∞
Probe positioning	2.9	Rectangular	1.732050808	1	1.7	∞
Extrapolation & integration	1	Rectangular	1.732050808	1	0.6	∞
Test Sample Related						
Device positioning	2.9	Normal	1	1	2.9	12
Device holder uncertainty	3.6	Normal	1	1	3.6	8
Power drift	5	Rectangular	1.732050808	1	2.9	∞
Phantom and Setup						
Phantom uncertainty	4	Rectangular	1.732050808	1	2.3	∞
Liquid conductivity (target)	5	Rectangular	1.732050808	0.64	1.8	∞
Liquid conductivity (measured)	2.5	Normal	1	0.64	1.6	∞
Liquid permittivity (target)	5	Rectangular	1.732050808	0.6	1.7	∞
Liquid permittivity (measured)	2.5	Normal	1	0.6	1.5	∞
Combined Standard Uncertainty					10.79	
Expanded Uncertainty (k=2)					21.59	

Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003 (see reference [5])

Applicant:	Voccollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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	Test Report Serial No.:	100605MQO-T682-S15W	Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005	Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

MEASUREMENT UNCERTAINTIES (Cont.)

UNCERTAINTY BUDGET FOR SYSTEM VALIDATION						
Error Description	Uncertainty Value ±%	Probability Distribution	Divisor	ci 1g	Uncertainty Value ±% (1g)	V _i or V _{eff}
Measurement System						
Probe calibration	5.9	Normal	1	1	5.9	∞
Axial isotropy of the probe	4.7	Rectangular	1.732050808	1	2.7	∞
Spherical isotropy of the probe	0	Rectangular	1.732050808	1	0.0	∞
Spatial resolution	0	Rectangular	1.732050808	1	0.0	∞
Boundary effects	1	Rectangular	1.732050808	1	0.6	∞
Probe linearity	4.7	Rectangular	1.732050808	1	2.7	∞
Detection limit	1	Rectangular	1.732050808	1	0.6	∞
Readout electronics	0.3	Normal	1	1	0.3	∞
Response time	0	Rectangular	1.732050808	1	0.0	∞
Integration time	0	Rectangular	1.732050808	1	0.0	∞
RF ambient conditions	3	Rectangular	1.732050808	1	1.7	∞
Mech. constraints of robot	0.4	Rectangular	1.732050808	1	0.2	∞
Probe positioning	2.9	Rectangular	1.732050808	1	1.7	∞
Extrapolation & integration	1	Rectangular	1.732050808	1	0.6	∞
Test Sample Related						
Dipole Positioning	2	Normal	1.732050808	1	1.2	∞
Power & Power Drift	4.7	Normal	1.732050808	1	2.7	∞
Phantom and Setup						
Phantom uncertainty	4	Rectangular	1.732050808	1	2.3	∞
Liquid conductivity (target)	5	Rectangular	1.732050808	0.64	1.8	∞
Liquid conductivity (measured)	2.5	Normal	1	0.64	1.6	∞
Liquid permittivity (target)	5	Rectangular	1.732050808	0.6	1.7	∞
Liquid permittivity (measured)	2.5	Normal	1	0.6	1.5	∞
Combined Standard Uncertainty					9.04	
Expanded Uncertainty (k=2)					18.08	

Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003 (see reference [5])

Applicant:	Voccollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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	Test Report Serial No.:	100605MQO-T682-S15W	Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005	Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

16.0 REFERENCES

- [1] Federal Communications Commission, "Radiofrequency radiation exposure evaluation: portable devices", Rule Part 47 CFR §2.1093: 1999.
- [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, "Evaluation Procedure for Mobile and Portable Radio Transmitters with respect to Health Canada's Safety Code 6 for Exposure of Humans to Radio Frequency Fields", Radio Standards Specification RSS-102 Issue 1 (Provisional): September 1999.
- [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] Schmid & Partner Engineering AG, "DASY4 Manual", V4.5: March 2005.

Applicant:	Vocollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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	Test Report Serial No.:	100605MQO-T682-S15W	Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005	Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

APPENDIX A - SAR MEASUREMENT DATA

Applicant:	Vocollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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	Test Report Serial No.:	100605MQO-T682-S15W	Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005	Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

Date Tested: 10/13/2005

Body-Worn SAR - 802.11b WLAN - Front Side of DUT (Battery Side) - 0.0 cm Spacing

DUT: Vocollect Model: Hercules; Type: Waist-Worn Terminal with 802.11b/Bluetooth Combination; Serial: 188

Ambient Temp: 23.2 °C; Fluid Temp: 22.2 °C; Barometric Pressure: 101.9 kPa; Humidity: 32%

Body-Worn Accessories: Belt with Belt-Clip (P/N: BL-700-4); Audio Accessories: Headset-Microphone (P/N: HD-700-1)

Communication System: DSSS WLAN

RF Output Power: 15.65 dBm (Peak Conducted)

Frequency: 2437 MHz; Channel 6; Duty Cycle: 1:1

3.6V 4400mAh Li-ion Battery Pack (Model: 730022)

Medium: M2450 ($\sigma = 1.93 \text{ mho/m}$; $\epsilon_r = 50.6$; $\rho = 1000 \text{ kg/m}^3$)

- Probe: ET3DV6 - SN1387; ConvF(4.3, 4.3, 4.3); Calibrated: 18/03/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 15/06/2005
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

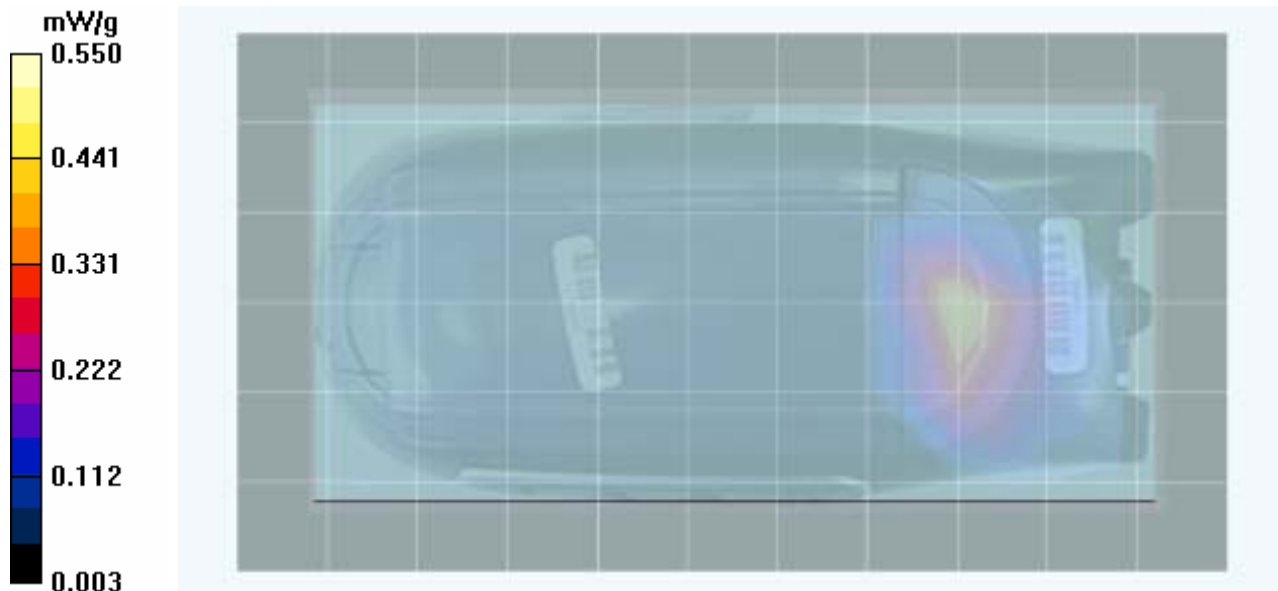
Body-Worn SAR - 802.11b - 0.0 cm Separation Distance from Front Side of DUT to Planar Phantom - Mid Channel Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

Body-Worn SAR - 802.11b - 0.0 cm Separation Distance from Front Side of DUT to Planar Phantom - Mid Channel Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 15.3 V/m; Power Drift = -0.111 dB

Peak SAR (extrapolated) = 1.17 W/kg

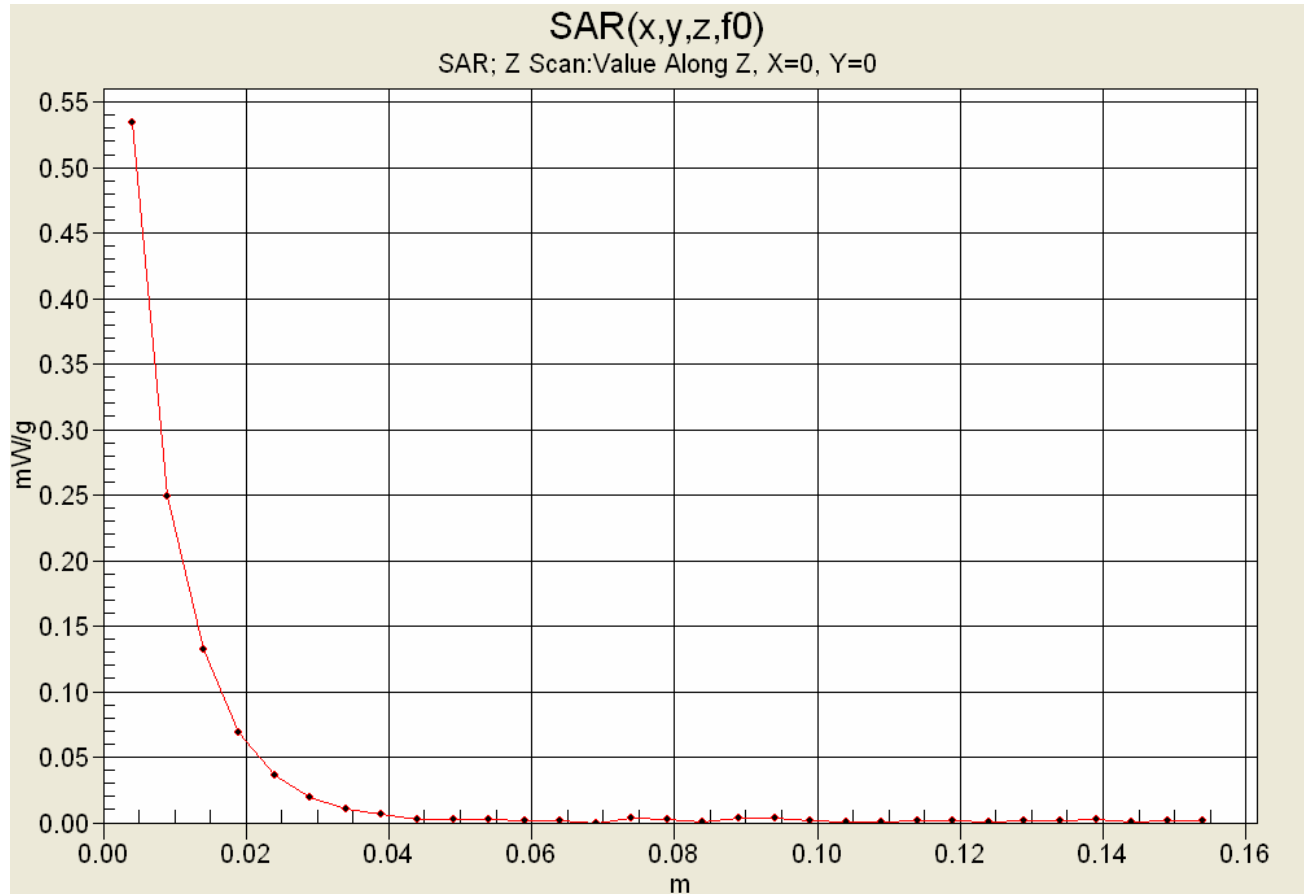
SAR(1 g) = 0.471 mW/g; SAR(10 g) = 0.192 mW/g



Applicant:	Vocollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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	Test Report Serial No.:	100605MQO-T682-S15W	Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005	Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

Z-Axis Scan



Applicant:	Voccollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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	Test Report Serial No.:	100605MQO-T682-S15W	Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005	Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

Date Tested: 10/13/2005

Body-Worn SAR - 802.11b WLAN - Back Side of DUT (Belt-Clip Side) - 0.0 cm Spacing

DUT: Vocollect Model: Hercules; Type: Waist-Worn Terminal with 802.11b/Bluetooth Combination; Serial: 188

Ambient Temp: 23.2 °C; Fluid Temp: 22.2 °C; Barometric Pressure: 101.9 kPa; Humidity: 32%

Body-Worn Accessories: Belt with Belt-Clip (P/N: BL-700-4); Audio Accessories: Headset-Microphone (P/N: HD-700-1)

Communication System: DSSS WLAN

RF Output Power: 15.65 dBm (Peak Conducted)

Frequency: 2437 MHz; Channel 6; Duty Cycle: 1:1

3.6V 4400mAh Li-ion Battery Pack (Model: 730022)

Medium: M2450 ($\sigma = 1.93 \text{ mho/m}$; $\epsilon_r = 50.6$; $\rho = 1000 \text{ kg/m}^3$)

- Probe: ET3DV6 - SN1387; ConvF(4.3, 4.3, 4.3); Calibrated: 18/03/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 15/06/2005
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

Body-Worn SAR - 802.11b - 0.0 cm Separation Distance from Back Side of DUT to Planar Phantom - Mid Channel Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

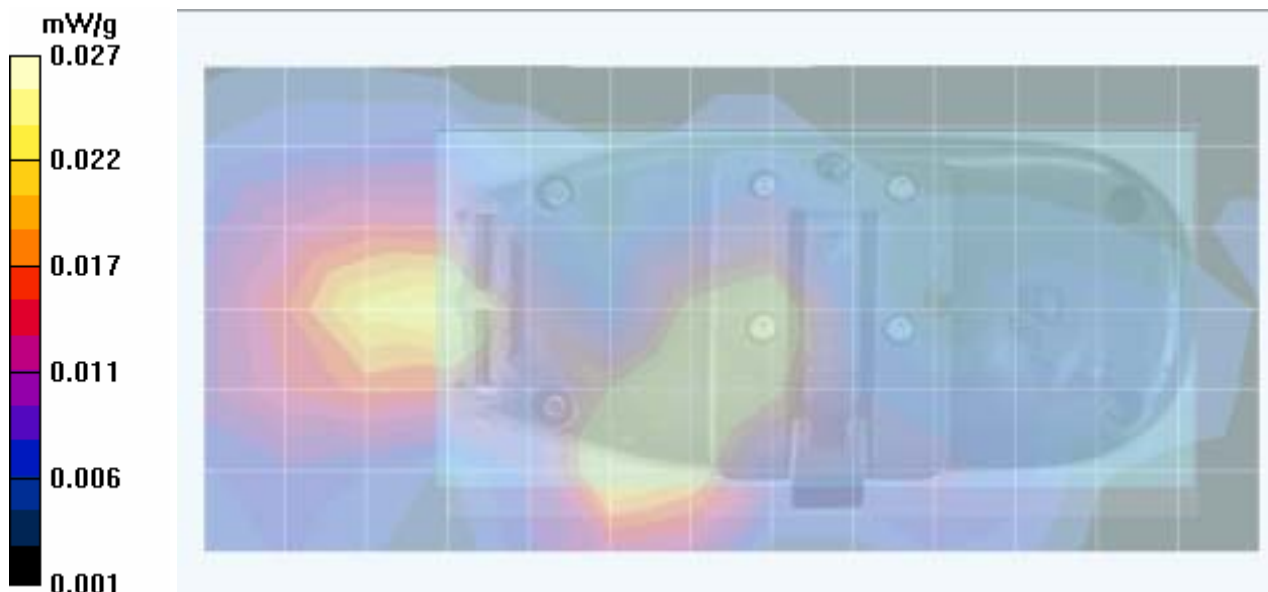
Body-Worn SAR - 802.11b - 0.0 cm Separation Distance from Back Side of DUT to Planar Phantom - Mid Channel

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.66 V/m; Power Drift = 0.146 dB

Peak SAR (extrapolated) = 0.047 W/kg

SAR(1 g) = 0.0239 mW/g; SAR(10 g) = 0.014 mW/g



Applicant:	Vocollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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	Test Report Serial No.:	100605MQO-T682-S15W	Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005	Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

Date Tested: 10/13/2005

Body-Worn SAR - 802.11b WLAN - Top Side of DUT (Button Side) - 0.0 cm Spacing

DUT: Vocollect Model: Hercules; Type: Waist-Worn Terminal with 802.11b/Bluetooth Combination; Serial: 188

Ambient Temp: 23.2 °C; Fluid Temp: 22.2 °C; Barometric Pressure: 101.9 kPa; Humidity: 32%

Body-Worn Accessories: Belt with Belt-Clip (P/N: BL-700-4); Audio Accessories: Headset-Microphone (P/N: HD-700-1)

Communication System: DSSS WLAN

RF Output Power: 15.65 dBm (Peak Conducted)

Frequency: 2437 MHz; Channel 6; Duty Cycle: 1:1

3.6V 4400mAh Li-ion Battery Pack (Model: 730022)

Medium: M2450 ($\sigma = 1.93 \text{ mho/m}$; $\epsilon_r = 50.6$; $\rho = 1000 \text{ kg/m}^3$)

- Probe: ET3DV6 - SN1387; ConvF(4.3, 4.3, 4.3); Calibrated: 18/03/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 15/06/2005
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

Body-Worn SAR - 802.11b - 0.0 cm Separation Distance from Top Side of DUT to Planar Phantom - Mid Channel Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

Body-Worn SAR - 802.11b - 0.0 cm Separation Distance from Top Side of DUT to Planar Phantom - Mid Channel Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.68 V/m; Power Drift = -0.0443 dB

Peak SAR (extrapolated) = 0.068 W/kg

SAR(1 g) = 0.0363 mW/g; SAR(10 g) = 0.022 mW/g



Applicant:	Vocollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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	Test Report Serial No.:	100605MQO-T682-S15W	Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005	Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

Date Tested: 10/13/2005

Body-Worn SAR - 802.11b WLAN - Bottom Side of DUT - 0.0 cm Spacing

DUT: Vocollect Model: Hercules; Type: Waist-Worn Terminal with 802.11b/Bluetooth Combination; Serial: 188

Ambient Temp: 23.2 °C; Fluid Temp: 22.2 °C; Barometric Pressure: 101.9 kPa; Humidity: 32%

Body-Worn Accessories: Belt with Belt-Clip (P/N: BL-700-4); Audio Accessories: Headset-Microphone (P/N: HD-700-1)

Communication System: DSSS WLAN

RF Output Power: 15.65 dBm (Peak Conducted)

Frequency: 2437 MHz; Channel 6; Duty Cycle: 1:1

3.6V 4400mAh Li-Ion Battery Pack (Model: 730022)

Medium: M2450 ($\sigma = 1.93 \text{ mho/m}$; $\epsilon_r = 50.6$; $\rho = 1000 \text{ kg/m}^3$)

- Probe: ET3DV6 - SN1387; ConvF(4.3, 4.3, 4.3); Calibrated: 18/03/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 15/06/2005
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

Body-Worn SAR - 802.11b - 0.0 cm Separation Distance from Bottom Side of DUT to Planar Phantom - Mid Channel Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

Body-Worn SAR - 802.11b - 0.0 cm Separation Distance from Bottom Side of DUT to Planar Phantom - Mid Channel Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.84 V/m; Power Drift = -0.215 dB

Peak SAR (extrapolated) = 0.068 W/kg

SAR(1 g) = 0.0383 mW/g; SAR(10 g) = 0.022 mW/g



Applicant:	Vocollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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	Test Report Serial No.:	100605MQO-T682-S15W	Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005	Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure	SAR	FCC §2.1093 IC RSS-102

Date Tested: 10/13/2005

Body-Worn SAR - 802.11b WLAN - Front Side of DUT (Battery Side) - 0.0 cm Spacing Simultaneous Transmit with Co-Located Bluetooth

DUT: Vocollect Model: Hercules; Type: Waist-Worn Terminal with 802.11b/Bluetooth Combination; Serial: 188

Ambient Temp: 23.2 °C; Fluid Temp: 22.2 °C; Barometric Pressure: 101.9 kPa; Humidity: 32%

Body-Worn Accessories: Belt with Belt-Clip (P/N: BL-700-4); Audio Accessories: Headset-Microphone (P/N: HD-700-1)

Communication System: DSSS WLAN

RF Output Power: 15.65 dBm (Peak Conducted)

Frequency: 2437 MHz; Channel 6; Duty Cycle: 1:1

3.6V 4400mAh Li-ion Battery Pack (Model: 730022)

Communication System: Modulated Fixed Frequency (Bluetooth)

RF Output Power: 2.4 dBm (Peak Conducted)

Frequency: 2441 MHz; Channel 39; Duty Cycle: 1:1

Medium: M2450 ($\sigma = 1.93$ mho/m; $\epsilon_r = 50.6$; $\rho = 1000$ kg/m³)

- Probe: ET3DV6 - SN1387; ConvF(4.3, 4.3, 4.3); Calibrated: 18/03/2005

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE4 Sn353; Calibrated: 15/06/2005

- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01

- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

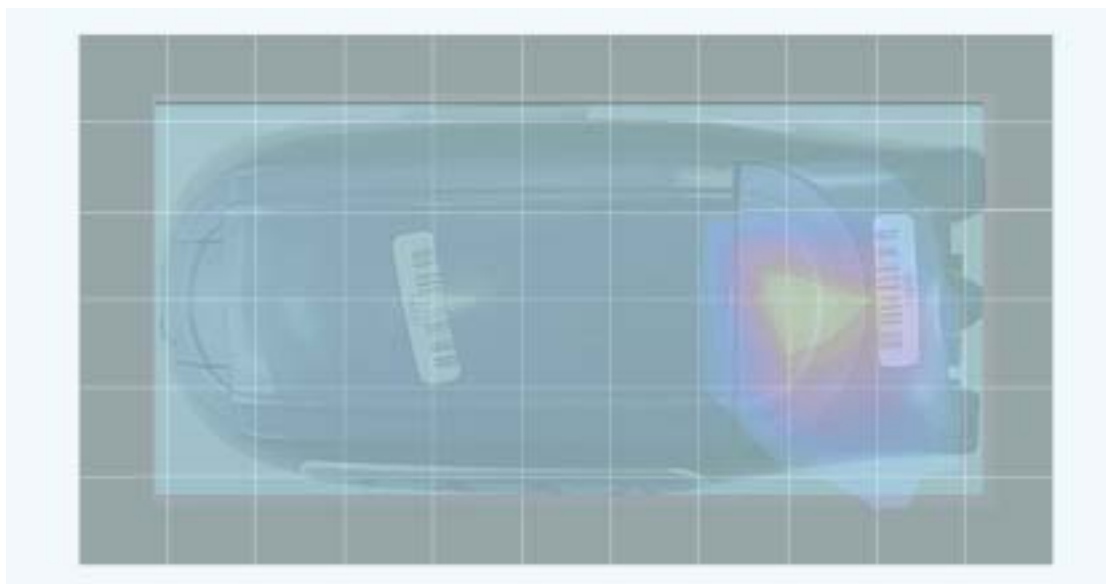
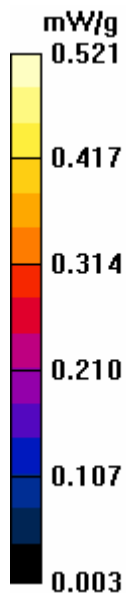
**Body-Worn SAR - 802.11b with Bluetooth - 0.0 cm Separation Distance from Front Side of DUT to Planar Phantom - Mid Channel
Area Scan (7x12x1):** Measurement grid: dx=15mm, dy=15mm

**Body-Worn SAR - 802.11b with Bluetooth - 0.0 cm Separation Distance from Front Side of DUT to Planar Phantom - Mid Channel
Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 13.4 V/m; Power Drift = -0.117 dB

Peak SAR (extrapolated) = 1.11 W/kg

SAR(1 g) = 0.444 mW/g; SAR(10 g) = 0.182 mW/g



Applicant:	Vocollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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	Test Report Serial No.:	100605MQO-T682-S15W	Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005	Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

APPENDIX B - SYSTEM PERFORMANCE CHECK DATA

Applicant:	Voccollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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	Test Report Serial No.:	100605MQO-T682-S15W	Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005	Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

Date Tested: 10/13/2005

System Performance Check (Body) - 2450 MHz Dipole

DUT: Dipole 2450 MHz; Model: D2450V2; Type: System Performance Check; Serial: 150; Calibrated: 04/22/2005

Ambient Temp: 22.8 °C; Fluid Temp: 22.2 °C; Barometric Pressure: 101.9 kPa; Humidity: 32%

Communication System: CW

Forward Conducted Power: 250 mW

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: M2450 ($\sigma = 1.93$ mho/m; $\epsilon_r = 50.6$; $\rho = 1000$ kg/m³)

- Probe: ET3DV6 - SN1387; ConvF(4.3, 4.3, 4.3); Calibrated: 18/03/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 15/06/2005
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

2450 MHz Dipole - System Performance Check/Area Scan (6x10x1):

Measurement grid: dx=10mm, dy=10mm

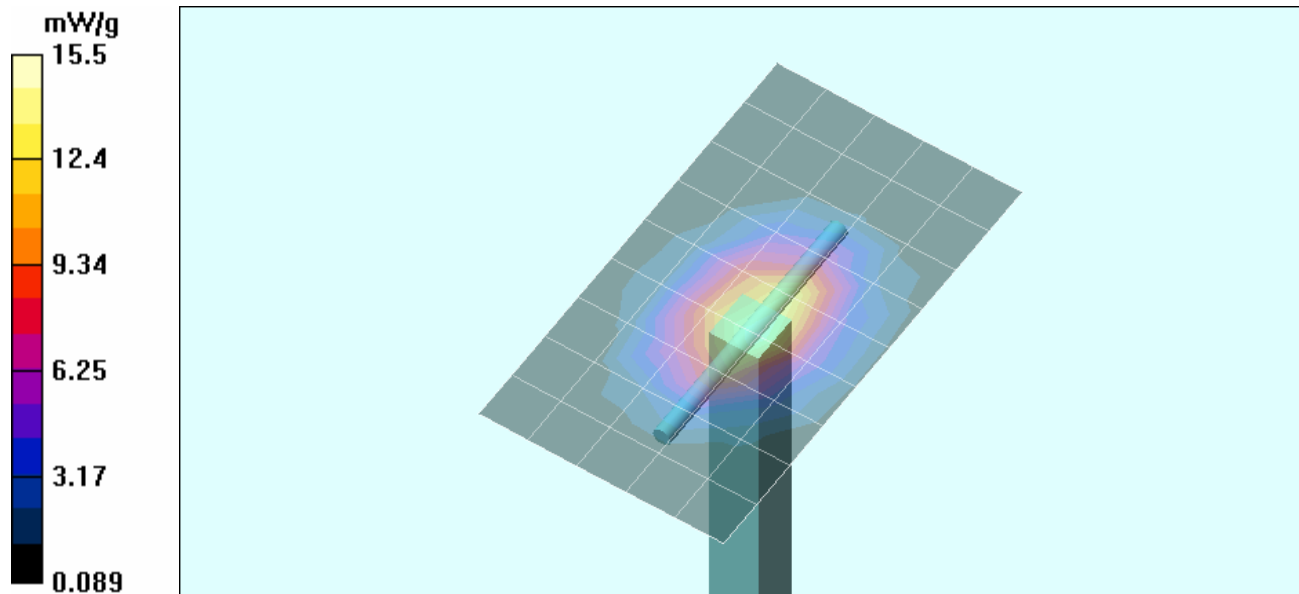
2450 MHz Dipole - System Performance Check/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 91.0 V/m; Power Drift = 0.010 dB

Peak SAR (extrapolated) = 32.3 W/kg

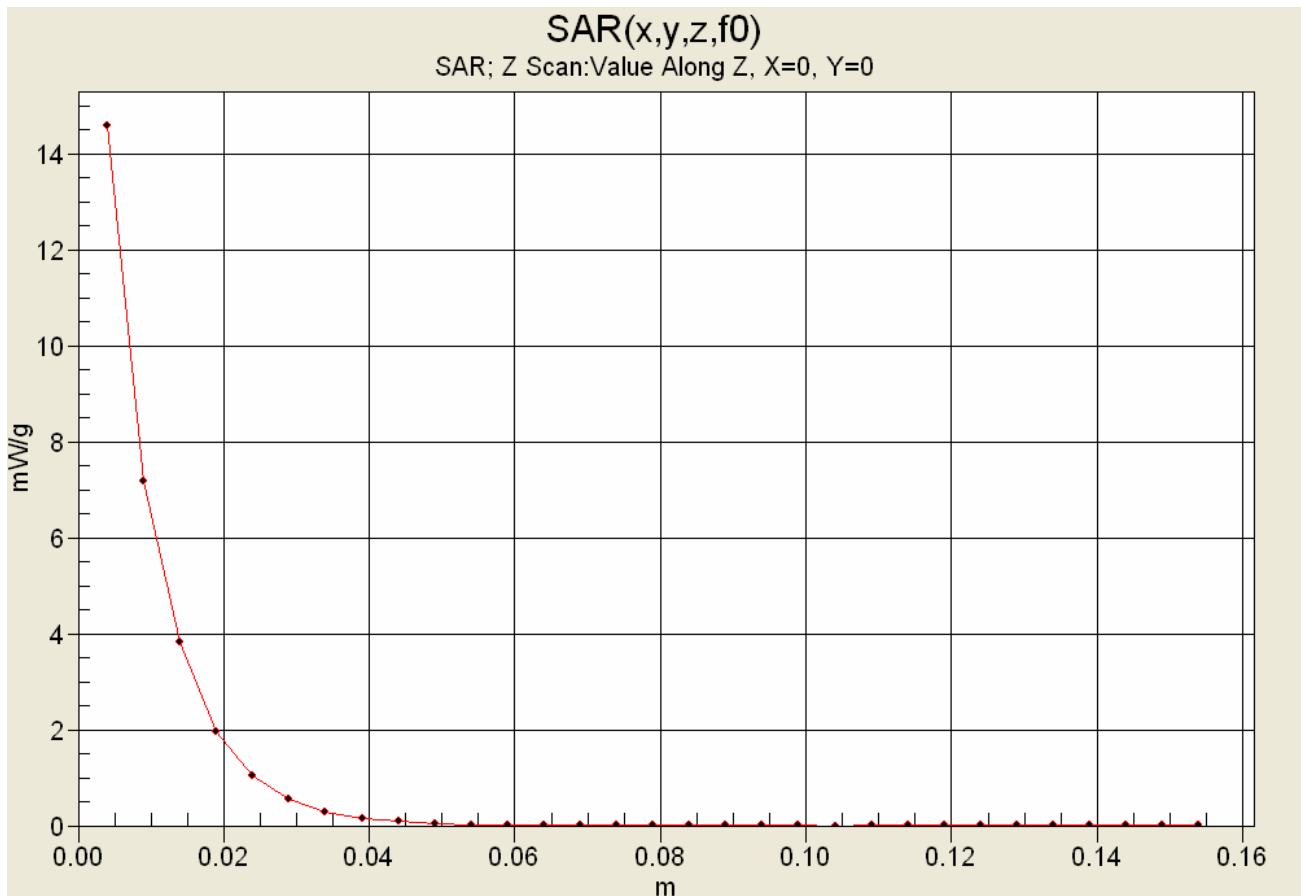
SAR(1 g) = 14.0 mW/g; SAR(10 g) = 6.28 mW/g



Applicant:	Voccollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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	Test Report Serial No.:	100605MQO-T682-S15W	Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005	Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

Z-Axis Scan



Applicant:	Vocollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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	Test Report Serial No.:	100605MQO-T682-S15W	Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005	Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

APPENDIX C - MEASURED FLUID DIELECTRIC PARAMETERS

Applicant:	Voccollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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	Test Report Serial No.:	100605MQO-T682-S15W	Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005	Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

2450 MHz System Performance Check & DUT Evaluation (Body)

Celltech Labs Inc.

Test Result for UIM Dielectric Parameter

Thu 13/Oct/2005

Frequency(GHz)

FCC_eHFCC Bulletin 65 Supplement C (June 2001) Limits for Head Epsilon

FCC_sHFCC 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
2.3500	52.83	1.85	50.77	1.827
2.3600	52.82	1.86	50.73	1.838
2.3700	52.81	1.87	50.88	1.872
2.3800	52.79	1.88	50.88	1.892
2.3900	52.78	1.89	51.07	1.919
2.4000	52.77	1.90	51.00	1.927
2.4100	52.75	1.91	50.97	1.913
2.4200	52.74	1.92	50.92	1.921
2.4300	52.73	1.93	50.71	1.911
2.4400	52.71	1.94	50.68	1.920
2.4500	52.70	1.95	50.56	1.925
2.4600	52.69	1.96	50.42	1.967
2.4700	52.67	1.98	50.52	2.007
2.4800	52.66	1.99	50.49	2.023
2.4900	52.65	2.01	50.76	2.059
2.5000	52.64	2.02	50.76	2.080
2.5100	52.62	2.04	50.85	2.085
2.5200	52.61	2.05	50.74	2.091
2.5300	52.60	2.06	50.72	2.090
2.5400	52.59	2.08	50.42	2.073
2.5500	52.57	2.09	50.38	2.085

Applicant:	Voccollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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	Test Report Serial No.:	100605MQO-T682-S15W		Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005		Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure	SAR	FCC §2.1093	IC RSS-102

APPENDIX D - SAR TEST SETUP PHOTOGRAPHS

Applicant:	Vocollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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SAR TEST SETUP PHOTOGRAPHS

0.0 cm Separation Distance from Front Side (Battery Side) of DUT to Planar Phantom
With Belt, Belt-Clip, & Headset-Microphone Accessories



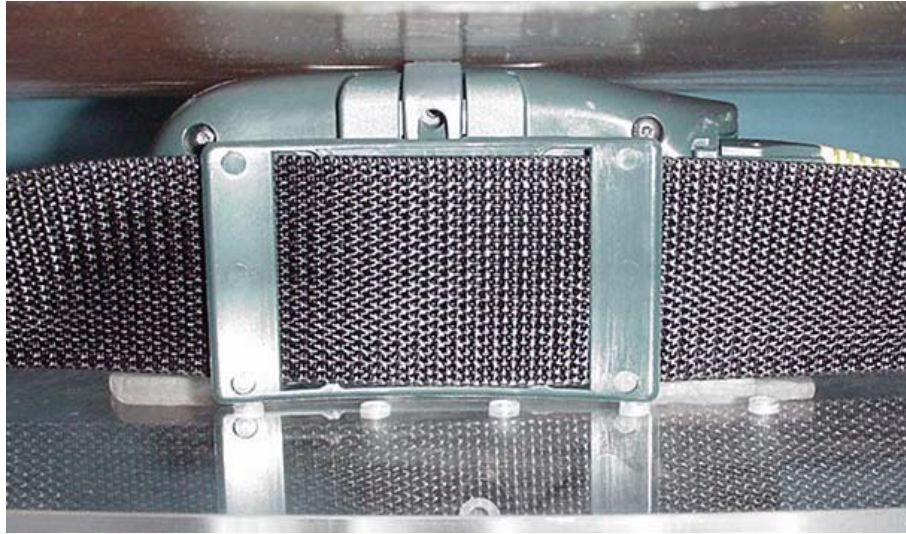
SAR TEST SETUP PHOTOGRAPHS

0.0 cm Separation Distance from Back Side (Belt-Clip Side) of DUT to Planar Phantom
With Belt, Belt-Clip, & Headset-Microphone Accessories



SAR TEST SETUP PHOTOGRAPHS

0.0 cm Separation Distance from Top Side (Button Side) of DUT to Planar Phantom
With Belt, Belt-Clip, & Headset-Microphone Accessories



SAR TEST SETUP PHOTOGRAPHS

0.0 cm Separation Distance from Bottom Side of DUT to Planar Phantom
With Belt, Belt-Clip, & Headset-Microphone Accessories



	Test Report Serial No.:	100605MQO-T682-S15W	Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005	Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

DUT PHOTOGRAPHS



Front Side of DUT



Back Side of DUT

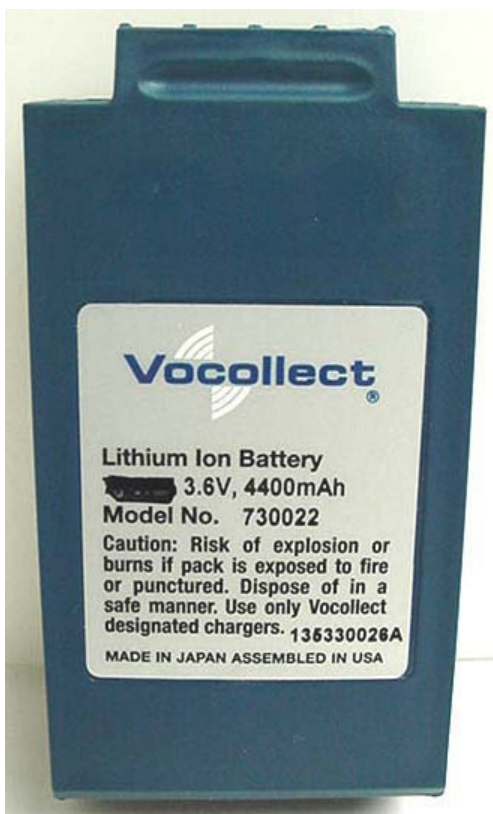
Applicant:	Vocollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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	Test Report Serial No.:	100605MQO-T682-S15W	Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005	Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

DUT PHOTOGRAPHS



DUT Battery Compartment



Lithium-ion Battery

Applicant:	Vocollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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	Test Report Serial No.:	100605MQO-T682-S15W	Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005	Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

DUT PHOTOGRAPHS



DUT with Belt & Belt-Clip Accessory (P/N: BL-700-4)



DUT with Belt & Belt-Clip Accessory (P/N: BL-700-4)



DUT with Headset-Microphone Accessory (P/N: HD-700-1)

Applicant:	Voccollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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	Test Report Serial No.:	100605MQO-T682-S15W	Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005	Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

DUT PHOTOGRAPHS



Top Side of DUT



Bottom Side of DUT



Battery Latch end



Plug-in Accessory end

Applicant:	Vocollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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	Test Report Serial No.:	100605MQO-T682-S15W	Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005	Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

APPENDIX E - SYSTEM VALIDATION

Applicant:	Voccollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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2450 MHz SYSTEM VALIDATION DIPOLE

Type:

2450 MHz Validation Dipole

Serial Number:

150

Place of Calibration:

Celltech Labs Inc.

Date of Calibration:

April 22, 2005

Celltech Labs Inc. hereby certifies that this device has been calibrated on the date indicated above.

Calibrated by:



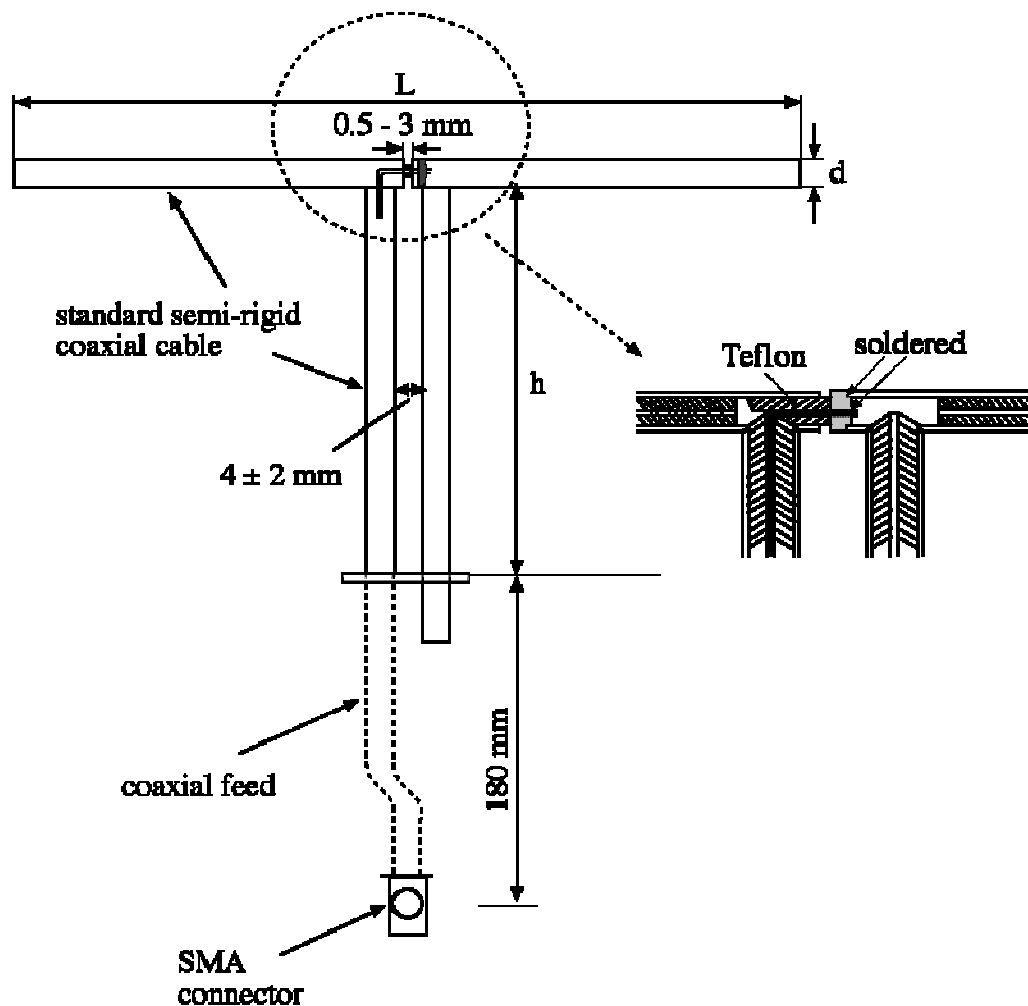
Approved by:



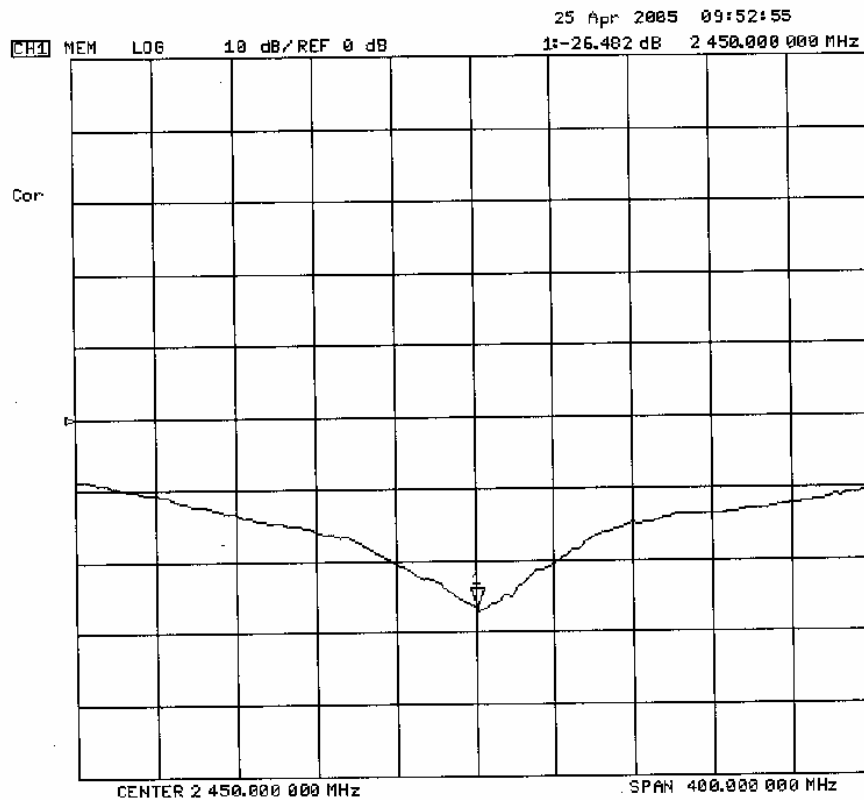
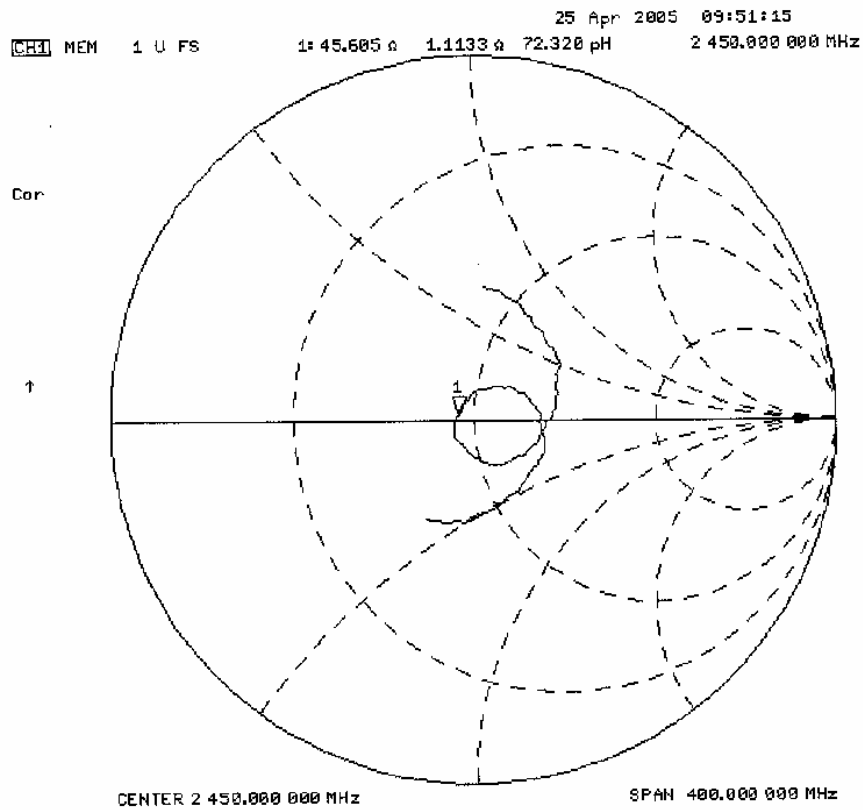
1. Dipole Construction & Electrical Characteristics

The validation dipole was constructed in accordance with the IEEE Std "Recommended Practice for Determining the Spatial-Peak Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques". The electrical properties were measured using an HP 8753E Network Analyzer. The network analyzer was calibrated to the validation dipole N-type connector feed point using an HP85032E Type N calibration kit. The dipole was placed parallel to a planar phantom at a separation distance of 10.0mm from the simulating fluid using a loss-less dielectric spacer. The measured input impedance is:

Feed point impedance at 2450 MHz	$\text{Re}\{Z\} = 45.605\Omega$ $\text{Im}\{Z\} = 1.1133\Omega$
Return Loss at 2450 MHz	-26.482 dB



2. Validation Dipole VSWR Data



3. Validation Dipole Dimensions

Frequency (MHz)	L (mm)	H (mm)	D (mm)
300	420.0	250.0	6.2
450	288.0	167.0	6.2
835	161.0	89.8	3.6
900	149.0	83.3	3.6
1450	89.1	51.7	3.6
1800	72.0	41.7	3.6
1900	68.0	39.5	3.6
2000	64.5	37.5	3.6
2450	51.8	30.6	3.6
3000	41.5	25.0	3.6

4. Validation Phantom

The validation phantom is a Fiberglass shell planar phantom manufactured by Barski Industries Ltd. The phantom is in conformance with the requirements defined by IEEE SCC34-SC2 for the dosimetric evaluations of body-worn and lap-held operating configurations. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids.

Shell Thickness: 2.0 ± 0.2 mm
Filling Volume: Approx. 55 liters
Dimensions: 44 cm (W) x 94 cm (L)

5. 2450 MHz System Validation Setup



6. 2450 MHz Dipole Setup



7. Measurement Conditions

The phantom was filled with 2450 MHz Body simulating tissue:

Relative Permittivity: 50.2
 Conductivity: 1.97 mho/m
 Fluid Temperature: 23.9 °C
 Fluid Depth: ≥ 15.0 cm

Environmental Conditions:

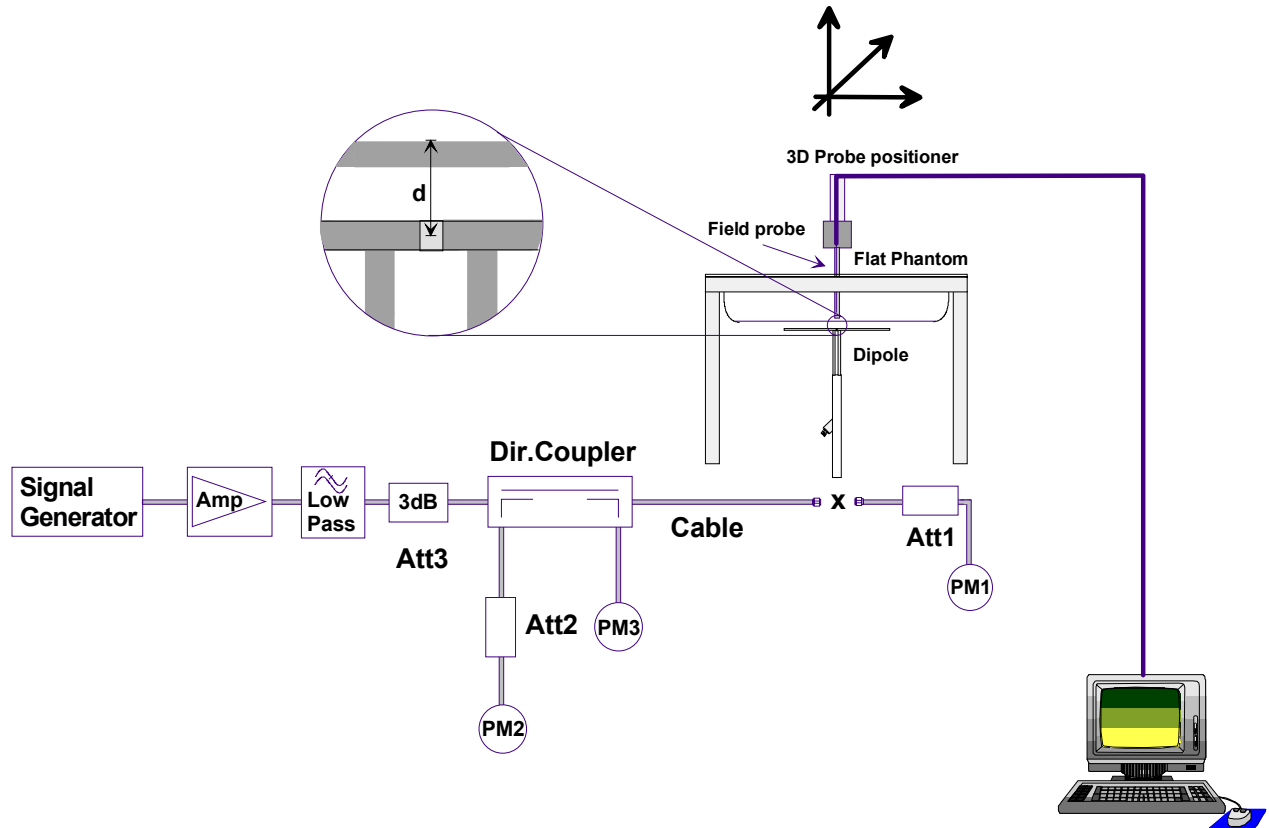
Ambient Temperature: 25.7 °C
 Humidity: 30 %
 Barometric Pressure: 102.6 kPa

The 2450 MHz simulated Body tissue mixture consists of the following ingredients:

Ingredient	Percentage by weight
Water	69.98%
Glycol Monobutyl	30.00%
Salt	0.02%
Target Dielectric Parameters at 22°C	$\epsilon_r = 52.7$ (+/-5%) $\sigma = 1.95$ S/m (+/-5%)

8. SAR Measurement

The SAR measurement was performed with the E-field probe in mechanical detection mode only. The setup and determination of the forward power into the dipole was performed using the following procedures.



First the power meter PM1 (including attenuator Att1) is connected to the cable to measure the forward power at the location of the dipole connector (X). The signal generator is adjusted for the desired forward power at the dipole connector (taking into account the attenuation of Att1) as read by power meter PM2. After connecting the cable to the dipole, the signal generator is readjusted for the same reading at power meter PM2. If the signal generator does not allow adjustment in 0.01dB steps, the remaining difference at PM2 must be taken into consideration. PM3 records the reflected power from the dipole to ensure that the value is not changed from the previous value. The reflected power should be 20dB below the forward power.

9. Validation Dipole SAR Test Results

Ten SAR measurements were performed in order to achieve repeatability and to establish an average target value.

Validation Measurement	SAR @ 0.25W Input averaged over 1g	SAR @ 1W Input averaged over 1g	SAR @ 0.25W Input averaged over 10g	SAR @ 1W Input averaged over 10g	Peak SAR @ 0.25W Input
Test 1	12.6	50.4	5.86	23.44	27.7
Test 2	12.6	50.4	5.86	23.44	27.4
Test 3	12.6	50.4	5.87	23.48	27.4
Test 4	12.6	50.4	5.86	23.44	27.3
Test 5	12.6	50.4	5.86	23.44	27.4
Test 6	12.6	50.4	5.87	23.48	27.8
Test 7	12.7	50.8	5.88	23.52	27.7
Test 8	12.7	50.8	5.88	23.52	27.8
Test 9	12.6	50.4	5.87	23.48	27.6
Test10	12.7	50.8	5.88	23.52	27.7
Average Value	12.63	50.52	5.869	23.48	27.58

The results have been normalized to 1W (forward power) into the dipole.

Target SAR @ 1 Watt Input averaged over 1 gram (W/kg)		Measured SAR @ 1 Watt Input averaged over 1 gram (W/kg)	Deviation from Target (%)	Target SAR @ 1 Watt Input averaged over 10 grams (W/kg)		Measured SAR @ 1 Watt Input averaged over 10 grams (W/kg)	Deviation from Target (%)
51.2	+/- 10%	50.52	- 1.3	23.7	+/- 10%	23.48	- 0.93

Dipole Type	Distance [mm]	Frequency [MHz]	SAR (1g) [W/kg]	SAR (10g) [W/kg]	SAR (peak) [W/kg]
D300V2	15	300	3.02	2.06	4.36
D450V2	15	450	5.01	3.36	7.22
D835V2	15	835	9.71	6.38	14.1
D900V2	15	900	11.1	7.17	16.3
D1450V2	10	1450	29.6	16.6	49.8
D1500V2	10	1500	30.8	17.1	52.1
D1640V2	10	1640	34.4	18.7	59.4
D1800V2	10	1800	38.5	20.3	67.5
D1900V2	10	1900	39.8	20.8	69.6
D2000V2	10	2000	40.9	21.2	71.5
D2450V2	10	2450	51.2	23.7	97.6
D3000V2	10	3000	61.9	24.8	136.7

Table 32.1: Numerical reference SAR values for SPEAG dipoles and flat phantom filled with body-tissue simulating liquid. Note: All SAR values normalized to 1 W forward power.

2450 MHz System Validation - April 22, 2005

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 150; Calibrated: 04/22/2005
 Ambient Temp: 25.7 °C; Fluid Temp: 23.9 °C; Barometric Pressure: 102.6 kPa; Humidity: 30%
 Communication System: CW
 Frequency: 2450 MHz; Duty Cycle: 1:1
 Medium: M2450 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.97$ mho/m; $\epsilon_r = 50.2$; $\rho = 1000$ kg/m³
 - Probe: ET3DV6 - SN1590; ConvF(4.22, 4.22, 4.22); Calibrated: 24/05/2004
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn353; Calibrated: 06/07/2004
 - Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
 - Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

2450 MHz System Validation/Area Scan (6x10x1): Measurement grid: dx=10mm, dy=10mm

2450 MHz System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 88.7 V/m; Power Drift = -0.010 dB
 Peak SAR (extrapolated) = 27.7 W/kg
SAR(1 g) = 12.6 mW/g; SAR(10 g) = 5.86 mW/g

2450 MHz System Validation/Zoom Scan 2 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 89.1 V/m; Power Drift = 0.00 dB
 Peak SAR (extrapolated) = 27.4 W/kg
SAR(1 g) = 12.6 mW/g; SAR(10 g) = 5.86 mW/g

2450 MHz System Validation/Zoom Scan 3 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 89.0 V/m; Power Drift = 0.015 dB
 Peak SAR (extrapolated) = 27.4 W/kg
SAR(1 g) = 12.6 mW/g; SAR(10 g) = 5.87 mW/g

2450 MHz System Validation/Zoom Scan 4 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 89.9 V/m; Power Drift = 0.00 dB
 Peak SAR (extrapolated) = 27.3 W/kg
SAR(1 g) = 12.6 mW/g; SAR(10 g) = 5.86 mW/g

2450 MHz System Validation/Zoom Scan 5 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 89.5 V/m; Power Drift = 0.010 dB
 Peak SAR (extrapolated) = 27.4 W/kg
SAR(1 g) = 12.6 mW/g; SAR(10 g) = 5.86 mW/g

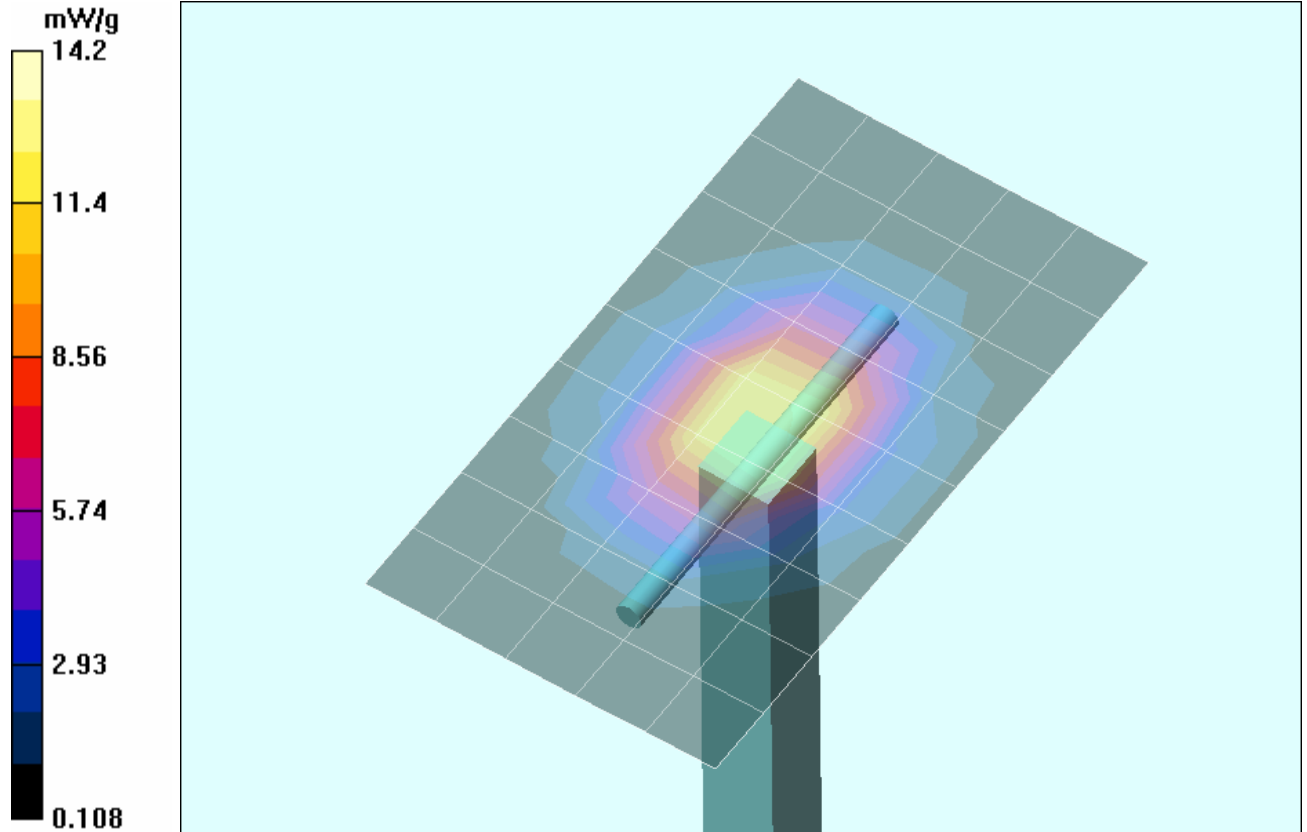
2450 MHz System Validation/Zoom Scan 6 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 89.0 V/m; Power Drift = -0.042 dB
 Peak SAR (extrapolated) = 27.8 W/kg
SAR(1 g) = 12.6 mW/g; SAR(10 g) = 5.87 mW/g

2450 MHz System Validation/Zoom Scan 7 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 89.7 V/m; Power Drift = 0.01 dB
 Peak SAR (extrapolated) = 27.7 W/kg
SAR(1 g) = 12.7 mW/g; SAR(10 g) = 5.88 mW/g

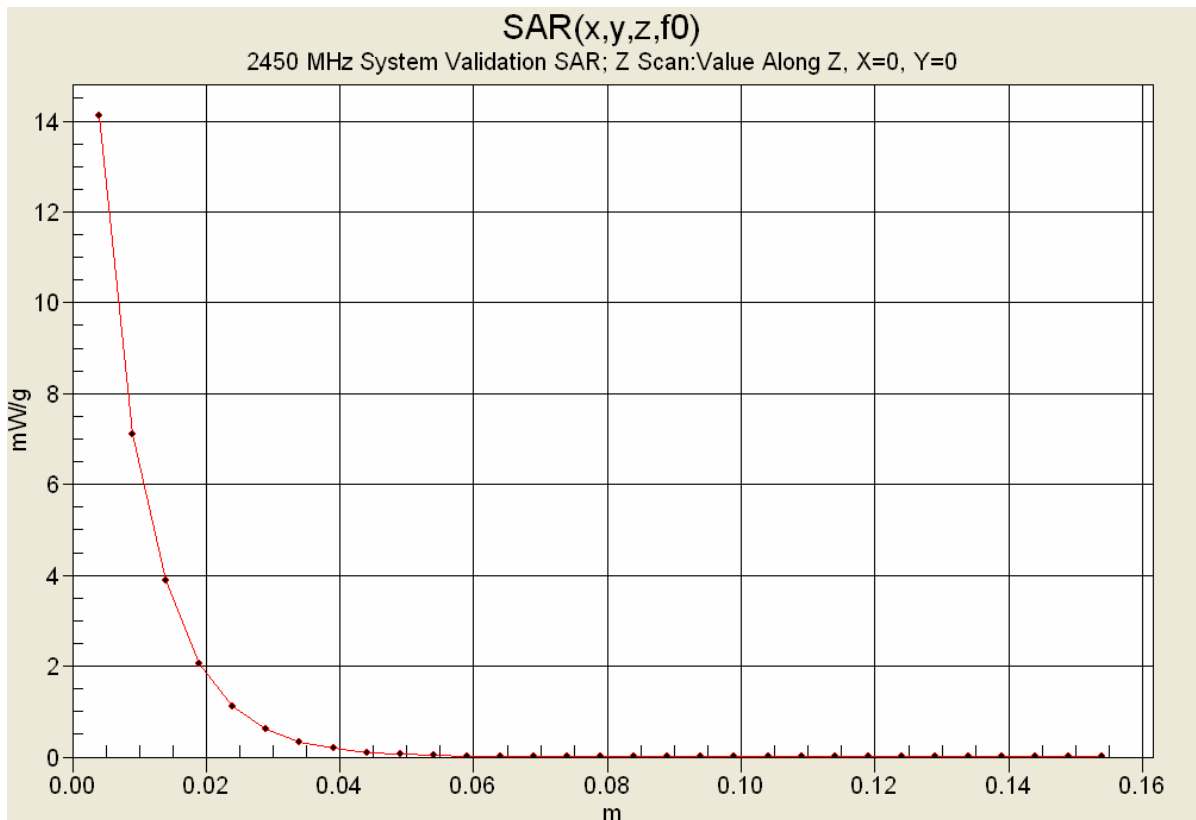
2450 MHz System Validation/Zoom Scan 8 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 89.4 V/m; Power Drift = -0.01 dB
 Peak SAR (extrapolated) = 27.8 W/kg
SAR(1 g) = 12.7 mW/g; SAR(10 g) = 5.88 mW/g

2450 MHz System Validation/Zoom Scan 9 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 89.3 V/m; Power Drift = -0.00 dB
 Peak SAR (extrapolated) = 27.6 W/kg
SAR(1 g) = 12.6 mW/g; SAR(10 g) = 5.87 mW/g

2450 MHz System Validation/Zoom Scan 10 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 89.6 V/m; Power Drift = -0.025 dB
 Peak SAR (extrapolated) = 27.7 W/kg
SAR(1 g) = 12.7 mW/g; SAR(10 g) = 5.88 mW/g



1 g average of 10 measurements: 12.63 mW/g
10 g average of 10 measurements: 5.869 mW/g



10. Measured Fluid Dielectric Parameters

System Validation - 2450 MHz Dipole

Measured Fluid Dielectric Parameters (Muscle)

April 22, 2005

Frequency	ϵ'	ϵ''
2.350000000 GHz	50.4884	14.1016
2.360000000 GHz	50.4542	14.1475
2.370000000 GHz	50.4295	14.1756
2.380000000 GHz	50.4094	14.2063
2.390000000 GHz	50.3750	14.2541
2.400000000 GHz	50.3395	14.2965
2.410000000 GHz	50.2961	14.3310
2.420000000 GHz	50.2408	14.3481
2.430000000 GHz	50.2047	14.3861
2.440000000 GHz	50.1822	14.4193
2.450000000 GHz	50.1500	14.4611
2.460000000 GHz	50.1035	14.5137
2.470000000 GHz	50.0825	14.5504
2.480000000 GHz	50.0515	14.6073
2.490000000 GHz	50.0191	14.6410
2.500000000 GHz	49.9867	14.6647
2.510000000 GHz	49.9442	14.7231
2.520000000 GHz	49.9042	14.7502
2.530000000 GHz	49.8769	14.7804
2.540000000 GHz	49.8259	14.8081
2.550000000 GHz	49.7900	14.8467

	Test Report Serial No.:	100605MQO-T682-S15W	Report Issue Date:	Oct. 21, 2005
	Date(s) of Evaluation:	October 13, 2005	Report Rev. No.:	Revision 0
	Description of Tests:	RF Exposure SAR	FCC §2.1093	IC RSS-102

APPENDIX G - PLANAR PHANTOM CERTIFICATE OF CONFORMITY

Applicant:	Vocollect Inc.	FCC ID:	MQOTT700-10000	IC ID:	2570A-TT700100	
Model(s):	Hercules	DUT Type:	Waist-Worn Terminal with internal 802.11b/Bluetooth			
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2378 Westlake Road
Kelowna, B.C. Canada
V1Z-2V2



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: _____

A handwritten signature in black ink, appearing to read 'Daniel Chailier', is written over a horizontal line.

Daniel Chailier



Fiberglass Planar Phantom - Top View



Fiberglass Planar Phantom - Front View



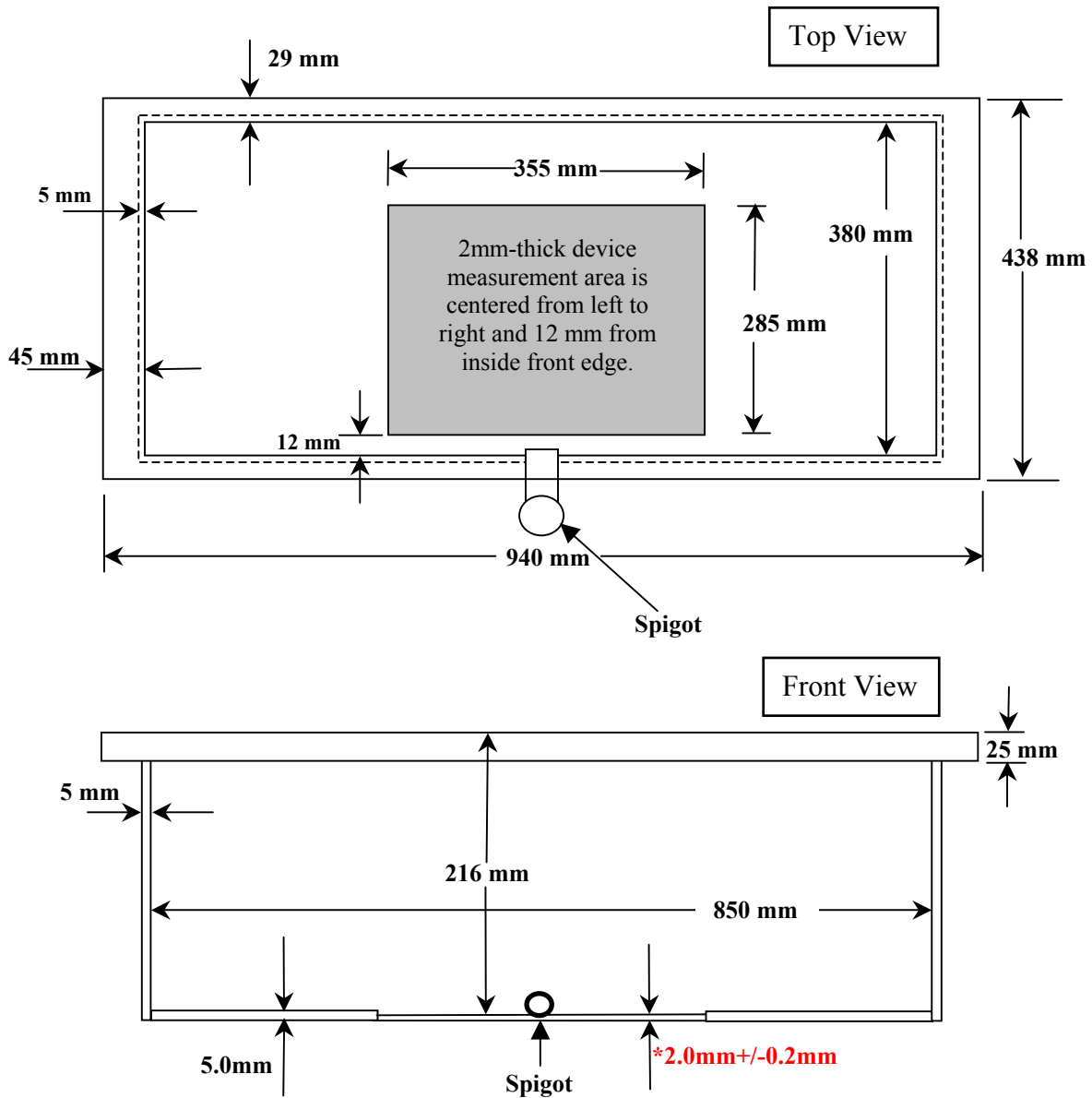
Fiberglass Planar Phantom - Back View



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.**