

	<u>Date(s) of Evaluation</u> June 25 & July 17, 2007	<u>Test Report Serial No.</u> 061807QGZ-T838-S15W	<u>Test Report Revision No.</u> Revision 1.0	
	<u>Test Report Issue Date</u> August 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Certificate No. 2470.01

SAR TEST REPORT

RF EXPOSURE EVALUATION		SPECIFIC ABSORPTION RATE			
APPLICANT	VOCERA COMMUNICATIONS INC.				
PRODUCT	BODY-WORN COMMUNICATIONS BADGE WITH 802.11B/G WLAN				
MODEL	B2000				
IDENTIFIER(S)	FCC ID:	QGZB2000	IC ID:	4362A-B2000	
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 OET SAR Measurement Procedures for 802.11a/b/g Transmitters				
	Industry Canada RSS-102 Issue 2				
FCC DEVICE CLASSIFICATION	Digital Transmission System (DTS) - §15C				
IC DEVICE CLASSIFICATION	Low Power License-Exempt Radiocommunication Device (RSS-210)				
RF EXPOSURE CATEGORY	General Population / Uncontrolled Exposure				
TEST REPORT SERIAL NO.	061807QGZ-T838-S15W				
TEST REPORT REVISION NO.	Revision 1.0 (Initial Release)				
TEST REPORT ISSUE DATE	August 20, 2007				
TEST REPORT SIGNATORIES	Testing and Report By		Report Reviewed By		
	Cheri Frangiadakis Celltech Labs Inc.		Jonathan Hughes Celltech Labs Inc.		
TEST LAB AND LOCATION	Celltech Compliance Testing & Engineering Lab				
	21-364 Lougheed Road, Kelowna, B.C. V1X 7R8 Canada				
TEST LAB CONTACT INFO.	Tel.: 250-765-7650		Fax: 250-765-7645		
	info@celltechlabs.com		www.celltechlabs.com		
TEST LAB ACCREDITATION(S)	 Certificate No. 2470.01				

Company:	Vocera Communications		FCC ID:	QGZB2000	IC ID:	4362A-B2000	vocera®
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN				
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DECLARATION OF COMPLIANCE SAR RF EXPOSURE EVALUATION

Test Lab Information:	Name	CELLTECH LABS INC.			Address	21-364 Lougheed Road, Kelowna B.C. V1X 7R8		
Applicant Information:	Name	VOCERA COMMUNICATIONS INC.			Address	20600 Lazaneo Drive, 3 rd Floor Cupertino, CA 95014 USA		
Standard(s) Applied:	FCC	47 CFR §2.1093; §15 Subpart C			IC	Health Canada Safety Code 6		
Procedure(s) Applied:	FCC	OET Bulletin 65, Supplement C (Edition 01-01)						
		SAR Measurement Procedures for 802.11a/b/g Transmitters						
	IC	RSS-210 Issue 7; RSS-102 Issue 2						
Device Classification(s):	FCC	Digital Transmission System			IC	Low Power License-Exempt Radiocommunication Device		
Device Description:	Portable Body-worn Wireless Communications Badge with 802.11b/g WLAN							
Device Model(s):	B2000			Serial No.:		A1DE07F7AFC3		Pre-production
Modulation Type(s):	802.11b	DBPSK (1 Mbps), DQPSK (2 Mbps), CCK (5.5, 11 Mbps)						
	802.11g	OFDM (6, 9, 12, 24, 36, 48, 54 Mbps)						
Transmit Frequency Range(s):	2412 - 2462 MHz			No. of Channels:		11		
Max. RF Output Power Tested:	Transmit Mode	Frequency	Channel	Data Rate	Conducted Power			
		MHz			Average		Peak	
	802.11b	2412	1	1	12.2 dBm	16.6 mW	16.0 dBm	39.8 mW
		2442	7	1	13.8 dBm	24.0 mW	18.5 dBm	70.8 mW
		2462	11	1	13.2 dBm	20.9 mW	17.4 dBm	55.0 mW
	Conducted average output power levels at the higher data rates and 802.11g mode were also measured and the results were not 0.25 dB > conducted average power levels measured at the lowest data rate in 802.11b mode.							
Antenna Type(s) Tested:	Internal							
Battery Type(s) Tested:	Standard Battery		Lithium-ion		3.7V		Model: 00531	
	Extended Battery		Lithium-ion		3.7V		Model: 00532	
Body-worn Accessories Tested:	Lanyard		P/N: 200-01044				Nylon neck-strap with plastic clip	
	Universal Clip		P/N: 200-01045				Plastic with metal lapel spring-clip	
	Pocket Clip		P/N: 200-01046				Plastic with some internal metal	
	Holster & Belt-Clip		P/N: 230-00537				Plastic belt-clip with metal spring	
Audio Accessories Tested:	Generic Headset							
Max. SAR Level(s) Evaluated:	Body	802.11b	0.0359 W/kg	1g average	SAR Limit:	1.6 W/kg	1g average	

Celltech Labs Inc. declares under its sole responsibility that this wireless portable device was compliant 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 General Population / Uncontrolled Exposure environment. The device was tested in accordance with the measurement standards and procedures specified in FCC OET Bulletin 65, Supplement C (Edition 01-01), FCC OET SAR Measurement Procedures for 802.11a/b/g Transmitters and Industry Canada RSS-102 Issue 2. 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.

This test report shall not be reproduced partially, or in full, without the prior written approval of Celltech Labs Inc. The results and statements contained in this report pertain only to the device(s) evaluated.

Test Report Approved By:

Sean Johnston

Celltech Labs Inc.



Company:	Vocera Communications		FCC ID:	QGZB2000	IC ID:	4362A-B2000	vocera®
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN				
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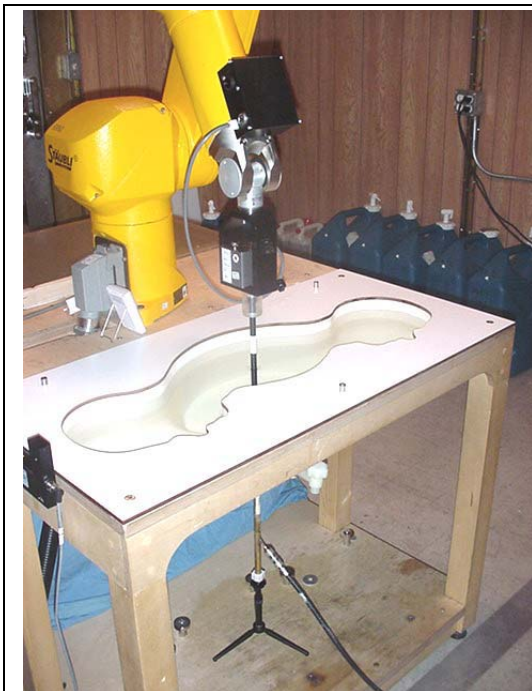
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1.0 INTRODUCTION

This measurement report demonstrates that the VOCERA COMMUNICATIONS Model: B2000 Portable Body-worn Communications Badge with 802.11b/g WLAN 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 General Population / Uncontrolled Exposure environment. The test procedures described in FCC OET Bulletin 65, Supplement C, Edition 01-01 (see reference [3]), FCC OET SAR Measurement Procedures for 802.11a/b/g Transmitters (see reference [7]) and IC RSS-102 Issue 2 (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 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 System with SAM Phantom and validation dipole



DASY4 System with SAM Phantom and device holder

Company:	Vocera Communications		FCC ID:	QGZB2000	IC ID:	4362A-B2000	vocera®
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN				
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4.0 DETAILS OF SAR EVALUATION

The VOCERA COMMUNICATIONS Model: B2000 Portable Body-worn Communications Badge with 802.11b/g WLAN was compliant for localized Specific Absorption Rate (Uncontrolled Exposure) based on the test provisions and conditions described below. The SAR test setup photographs are shown in Appendix D.

Test Configuration(s)

1. The DUT was evaluated for body-worn SAR with the Lanyard accessory. The back side of the DUT (LCD side) was placed parallel to and touching the outer surface of the SAM phantom (planar section).
2. The DUT was evaluated for body-worn SAR with the Universal Clip accessory. The back side of the DUT (LCD side) was placed parallel to and touching the outer surface of the SAM phantom (planar section).
3. The DUT was evaluated for body-worn SAR with the Pocket Clip accessory. The back side of the DUT (LCD side) was placed parallel to and touching the outer surface of the SAM phantom (planar section).
4. The DUT was evaluated for body-worn SAR with the Holster and Belt-Clip accessory. The back side of the DUT (LCD side) was placed parallel to the outer surface of the SAM phantom (planar section). The Holster and Belt-Clip accessory provided a 2.0 cm spacing from the back of the DUT to the outer surface of the SAM phantom (planar section). A generic headset accessory was connected to the audio port of the DUT for the duration of the test.

Test Mode(s) & Power Setting(s)

5. The DUT was placed into test mode using the customer's internal test mode software controlled by the keypad.
6. The DUT was tested with a maximum power setting of 14 in continuous transmit operation with a modulated DSSS signal in 802.11b mode.
7. The average and peak conducted output power levels of the DUT were measured prior to the SAR evaluations using a spectrum analyzer according to 15.247(b) (KDB Publication #558074 - Power Output Option 2, Method 1). The RBW was set to 1 MHz and the VBW was set to 3 MHz.
8. The DUT battery was fully charged prior to the SAR evaluations.

5.0 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.
- 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:
 - 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.
 - 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:
 - Extrapolation is used to determine the values between the dipole center of the probe and the surface of the phantom. This data cannot be measured because the center of the dipole sensors is 1.0 mm away from the probe tip and the distance between the probe and the boundary must be larger than 25% of the probe diameter. The probe diameter is 2.4 mm. In the DASY4 software, the distance between the sensor center and phantom surface is set to 2.0 mm. This provides a distance of 1.0 mm between the probe tip and the surface. The extrapolation of the values between the dipole center and the surface of the phantom was based on trivariate quadratics computed from the previously calculated 3D interpolated points nearest the phantom surface.
 - 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 1 mm grid (42875 interpolated points).
 - A zoom scan volume of 24 mm x 24 mm x 20 mm (7x7x9 points) centered at the peak SAR location determined from the area scan was used and a zoom scan resolution of 4 mm x 4 mm x 2.5 mm was used.

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6.0 SYSTEM PERFORMANCE CHECK

Prior to the SAR evaluations, system checks were performed at the planar section of the SAM phantom with a 2450 MHz validation dipole (see Appendix E for system validation procedures). The dielectric parameters of the simulated tissue mixtures 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 $\pm 10\%$ from the system validation target SAR value (see Appendix B for system performance check test plots).

SYSTEM PERFORMANCE CHECK EVALUATION

Test Date	Equiv. Tissue	SAR 1g (W/kg)			Dielectric Constant ϵ_r			Conductivity σ (mho/m)			ρ (Kg/m ³)	Amb. Temp. (°C)	Fluid Temp. (°C)	Fluid Depth (cm)	Humid. (%)	Barom. Press. (kPa)
		Sys. Val. Target	Meas.	Dev.	Sys. Val. Target	Meas.	Dev.	Sys. Val. Target	Meas.	Dev.						
Jun-25	Brain	14.3 $\pm 10\%$	13.7	-4.2%	37.4 $\pm 5\%$	37.4	0.0%	1.89 $\pm 5\%$	1.89	0.0%	1000	22.9	22.8	≥ 15	31	101.1
Jul-17	Body	13.4 $\pm 10\%$	12.3	-8.2%	50.1 $\pm 5\%$	50.5	+0.8%	1.99 $\pm 5\%$	2.00	+0.5%	1000	25.3	23.8	≥ 15	34	101.2
Note(s)		1. The target SAR values are referenced from the System Validation procedures performed by Celltech Labs Inc. (see Appendix E).														
		2. The target dielectric parameters are referenced from the System Validation procedures 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 $\pm 2^\circ\text{C}$ of the fluid temperature reported during the dielectric parameter measurements.														
		4. The SAR evaluations were performed within 24 hours of the system performance checks.														

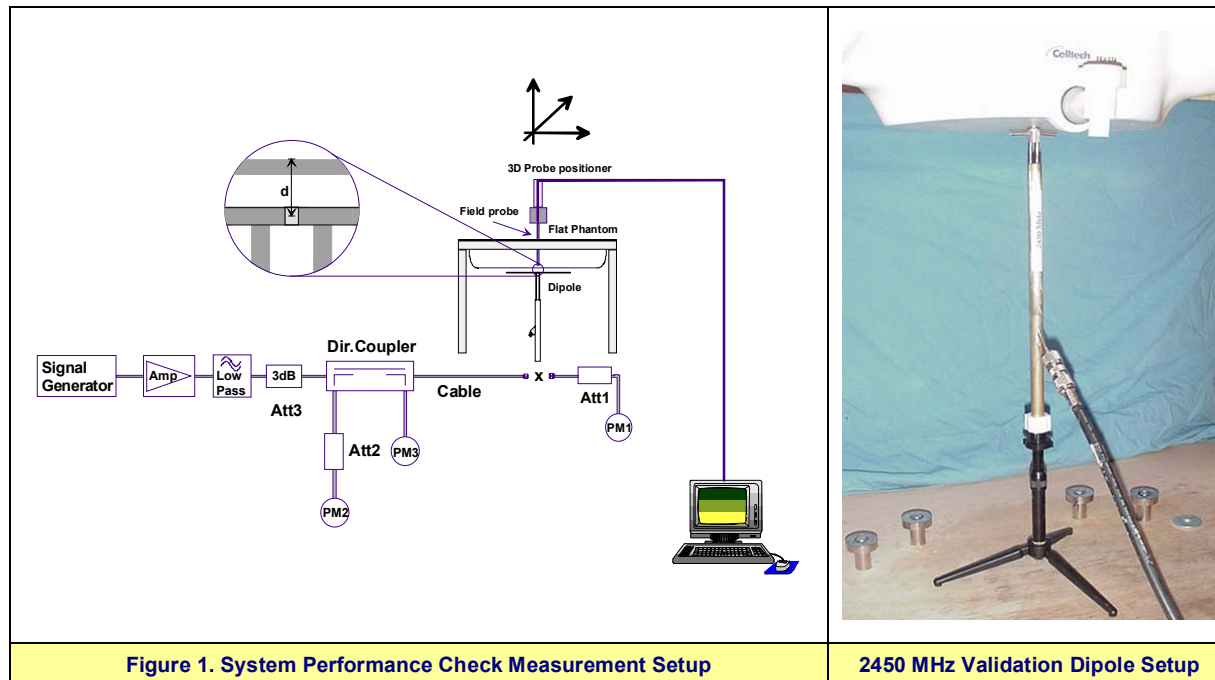


Figure 1. System Performance Check Measurement Setup

2450 MHz Validation Dipole Setup

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7.0 SIMULATED EQUIVALENT TISSUES

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

SIMULATED TISSUE MIXTURES		
INGREDIENT	2450 MHz Brain	2450 MHz Body
Water	52.00 %	69.98 %
Glycol Monobutyl	48.00 %	30.00 %
Salt	-	0.02 %

8.0 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
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.		

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9.0 ROBOT SYSTEM SPECIFICATIONS

<u>Specifications</u>	
Positioner	Stäubli Unimation Corp. Robot Model: RX60L
Repeatability	0.02 mm
No. of axis	6
<u>Data Acquisition Electronic (DAE) System</u>	
<u>Cell Controller</u>	
Processor	AMD Athlon XP 2400+
Clock Speed	2.0 GHz
Operating System	Windows XP Professional
<u>Data Converter</u>	
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
<u>DASY4 Measurement Server</u>	
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
<u>E-Field Probe</u>	
Model	EX3DV4
Serial No.	3600
Construction	Symmetrical design with triangular core
Frequency	10 MHz to 6 GHz
Linearity	±0.2 dB (30 MHz to 3 GHz)
<u>Phantom(s)</u>	
Type	SAM V4.0C
Shell Material	Fiberglass
Thickness	2.0 ±0.1 mm
Volume	Approx. 25 liters

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10.0 PROBE SPECIFICATION (EX3DV4)

Construction: Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g. DGBE) Calibration: Basic Broadband Calibration in air: 10-3000 MHz Conversion Factors (CF) for HSL 900 and HSL 1750 Frequency: 10 MHz to >6 GHz; Linearity: ± 0.2 dB (30 MHz to 3 GHz) Directivity: ± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis) Dynamic Range: 10 μW/g to >100 mW/g; Linearity: ± 0.2 dB (noise: typically < 1 μW/g) Dimensions: Overall length: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1.0 mm Application: High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better than 30%.	 EX3DV4 E-Field Probe
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11.0 SAM PHANTOM V4.0C

The SAM phantom V4.0C is a fiberglass shell phantom with a 2.0 mm (+/-0.2 mm) shell thickness for left and right head and flat planar area integrated in a wooden table. The shape of the fiberglass shell corresponds to the phantom defined by SCC34-SC2. The device holder positions are adjusted to the standard measurement positions in the three sections (see Appendix G for specifications of the SAM phantom V4.0C).	 SAM Phantom V4.0C
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12.0 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
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13.0 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	N/A
x	-Robot	00046	599396-01	N/A	N/A	N/A
	-DAE4	00019	353	10Jul07	10Jul08	10Jul08
x	-DAE3	00018	370	13Mar07	13Mar08	13Mar08
	-ET3DV6 E-Field Probe	00016	1387	16Mar07	16Mar08	16Mar08
x	-EX3DV4 E-Field Probe	00213	3600	24Jan07	24Jan08	24Jan08
	-300 MHz Validation Dipole	00023	135	08Jun07	08Jun08	08Jun08
	-450 MHz Validation Dipole	00024	136	07Jun07	07Jun08	07Jun08
	-835 MHz Validation Dipole	00022	411	Brain	07Jun07	07Jun08
				Body	07Jun07	07Jun08
	-900 MHz Validation Dipole	00020	054	Brain	07Jun07	07Jun08
				Body	07Jun07	07Jun08
	-1800 MHz Validation Dipole	00021	247	Brain	06Jun07	06Jun08
				Body	06Jun07	06Jun08
	-1900 MHz Validation Dipole	00032	151	Brain	06Jun07	06Jun08
				Body	06Jun07	06Jun08
x	-2450 MHz Validation Dipole	00025	150	Brain	08Jun07	08Jun08
x				Body	08Jun07	08Jun08
	5GHz Validation Dipole	00126	1031	Body	18May07	18May08
				Body	22May07	22May08
				Brain	09May07	09May08
				Body	10May07	10May08
x	-SAM Phantom V4.0C	00154	1033	N/A	N/A	N/A
	-Barski Planar Phantom	00155	03-01	N/A	N/A	N/A
	-Plexiglas Side Planar Phantom	00156	161	N/A	N/A	N/A
	-Plexiglas Validation Planar Phantom	00157	137	N/A	N/A	N/A
x	ALS-PR-DIEL Dielectric Probe Kit	00160	260-00953	N/A	N/A	N/A
x	Gigatronics 8652A Power Meter	00007	1835272	26Mar07	26Mar08	26Mar08
	Gigatronics 8652A Power Meter	00008	1835267	22Jan07	22Jan08	22Jan08
	Gigatronics 80701A Power Sensor	00012	1834350	22Jan07	22Jan08	22Jan08
x	Gigatronics 80701A Power Sensor	00014	1833699	22Jan07	22Jan08	22Jan08
x	Gigatronics 80701A Power Sensor	00109	1834366	26Mar07	26Mar08	26Mar08
x	HP 8753ET Network Analyzer	00134	US39170292	20Apr07	20Apr08	20Apr08
x	HP 8648D Signal Generator	00005	3847A00611	NCR	NCR	NCR
	Rohde & Schwarz SMR20 Signal Generator	00006	100104	NCR	NCR	NCR
x	Amplifier Research 5S1G4 Power Amplifier	00106	26235	NCR	NCR	NCR
	Amplifier Research 10W1000C Power Amplifier	00041	27887	NCR	NCR	NCR
	Nextec NB00383 Microwave Amplifier	00151	0535	NCR	NCR	NCR
x	HP E4408B Spectrum Analyzer	00015	US39240170	05Feb07	05Feb08	05Feb08

Company:	Vocera Communications		FCC ID:	QGZB2000	IC ID:	4362A-B2000	vocera®
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN				
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	<u>Test Report Issue Date</u> August 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	
Certificate No. 2470.01				

14.0 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 (2450 MHz)	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)	5	Normal	1	0.64	3.2	∞
Liquid permittivity (target)	5	Rectangular	1.732050808	0.6	1.7	∞
Liquid permittivity (measured)	5	Normal	1	0.6	3.0	∞
Combined Standard Uncertainty					11.44	
Expanded Uncertainty (k=2)					22.89	
Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003 (see reference [5])						

Company:	Vocera Communications	FCC ID:	QGZB2000	IC ID:	4362A-B2000	vocera®
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN			
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	<u>Test Report Issue Date</u> August 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	
Certificate No. 2470.01				

MEASUREMENT UNCERTAINTIES (Cont.)

UNCERTAINTY BUDGET FOR SYSTEM VALIDATION						
Error Description	Uncertainty Value ±%	Probability Distribution	Divisor	ci 1g	Uncertainty Value ±% (1g)	V _i or V _{off}
Measurement System						
Probe calibration (2450 MHz)	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	∞
Dipole						
Dipole Positioning	2	Normal	1.732050808	1	1.2	∞
Power & Power Drift	4.7	Normal	1.732050808	1	2.7	∞
Phantom and Setup						
Phantom uncertainty	4	Rectangular	1.732050808	1	2.3	∞
Liquid conductivity (target)	5	Rectangular	1.732050808	0.64	1.8	∞
Liquid conductivity (measured)	5	Normal	1	0.64	3.2	∞
Liquid permittivity (target)	5	Rectangular	1.732050808	0.6	1.7	∞
Liquid permittivity (measured)	5	Normal	1	0.6	3.0	∞
Combined Standard Uncertainty					9.81	
Expanded Uncertainty (k=2)					19.61	
Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003 (see reference [5])						

Company:	Vocera Communications		FCC ID:	QGZB2000	IC ID:	4362A-B2000	vocera®
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN				
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	<u>Test Report Issue Date</u> August 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

15.0 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 - "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] ANSI/IEEE C95.1-2005 - "American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 3 kHz to 300 GHz", New York: IEEE, April 2006.
- [7] Federal Communication Commission - "SAR Measurement Procedures for 802.11a/b/g Transmitters": October 2006 (Rev 1.1).

Company:	Vocera Communications		FCC ID:	QGZB2000	IC ID:	4362A-B2000	vocera®
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN				
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	<u>Test Report Issue Date</u> August 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

APPENDIX A - SAR MEASUREMENT DATA

Company:	Vocera Communications	FCC ID:	QGZB2000	IC ID:	4362A-B2000	vocera®
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN			
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	<u>Test Report Issue Date</u> August 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 06/25/2007

Body-Worn SAR - 802.11b - 1 Mbps - Back Side of DUT - Lanyard Accessory - 2442 MHz

DUT: Vocera B2000; Type: Body-Worn Wireless Communications Badge with 802.11b/g; Serial: A1DE07F7AFC3

Body-Worn Accessory: Lanyard (P/N: 200-01044); Audio Accessory (None)

Ambient Temp: 23.2°C; Fluid Temp: 22.5°C; Barometric Pressure: 101.1 kPa; Humidity: 30%

3.7V Extended Battery (Model: 00532)

Communication System: DSSS WLAN

RF Output Power: 13.8 dBm (Conducted)

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2442 \text{ MHz}$; $\sigma = 2.03 \text{ mho/m}$; $\epsilon_r = 50.1$; $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3600; ConvF(6.31, 6.31, 6.31); Calibrated: 24/01/2007
- Sensor-Surface: 2 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 13/03/2007
- Phantom: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-Worn SAR - Back Side of DUT Touching SAM Phantom (Planar Section) - Mid Channel

Area Scan (7x13x1):

Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (measured) = 0.038 mW/g

Body-Worn SAR - Back Side of DUT Touching SAM Phantom (Planar Section) - Mid Channel

Zoom Scan (5x5x7)/Cube 0:

Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 4.12 V/m; Power Drift = -0.340 dB

Peak SAR (extrapolated) = 0.059 W/kg

SAR(1 g) = 0.0309 mW/g; SAR(10 g) = 0.016 mW/g

Maximum value of SAR (measured) = 0.034 mW/g



Company:	Vocera Communications	FCC ID:	QGZB2000	IC ID:	4362A-B2000	vocera®
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN			
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	<u>Date(s) of Evaluation</u> June 25 & July 17, 2007	<u>Test Report Serial No.</u> 061807QGZ-T838-S15W	<u>Test Report Revision No.</u> Revision 1.0	 Certificate No. 2470.01
	<u>Test Report Issue Date</u> August 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 06/25/2007

Body-Worn SAR - 802.11b - 1 Mbps - Back Side of DUT - Universal Clip Accessory - 2442 MHz

DUT: Vocera B2000; Type: Body-Worn Wireless Communications Badge with 802.11b/g; Serial: A1DE07F7AFC3

Body-Worn Accessory: Universal Clip (P/N: 200-01045); Audio Accessory (None)

Ambient Temp: 23.2°C; Fluid Temp: 22.5°C; Barometric Pressure: 101.1 kPa; Humidity: 30%

3.7V Extended Battery (Model: 00532)

Communication System: DSSS WLAN

RF Output Power: 13.8 dBm (Conducted)

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2442 \text{ MHz}$; $\sigma = 2.03 \text{ mho/m}$; $\epsilon_r = 50.1$; $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3600; ConvF(6.31, 6.31, 6.31); Calibrated: 24/01/2007
- Sensor-Surface: 2 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 13/03/2007
- Phantom: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-Worn SAR - Back Side of DUT Touching SAM Phantom (Planar Section) - Mid Channel

Area Scan (7x13x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (measured) = 0.050 mW/g

Body-Worn SAR - Back Side of DUT Touching SAM Phantom (Planar Section) - Mid Channel

Zoom Scan (5x5x7)/Cube 0:

Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 4.21 V/m; Power Drift = 0.148 dB

Peak SAR (extrapolated) = 0.069 W/kg

SAR(1 g) = 0.0359 mW/g; SAR(10 g) = 0.018 mW/g

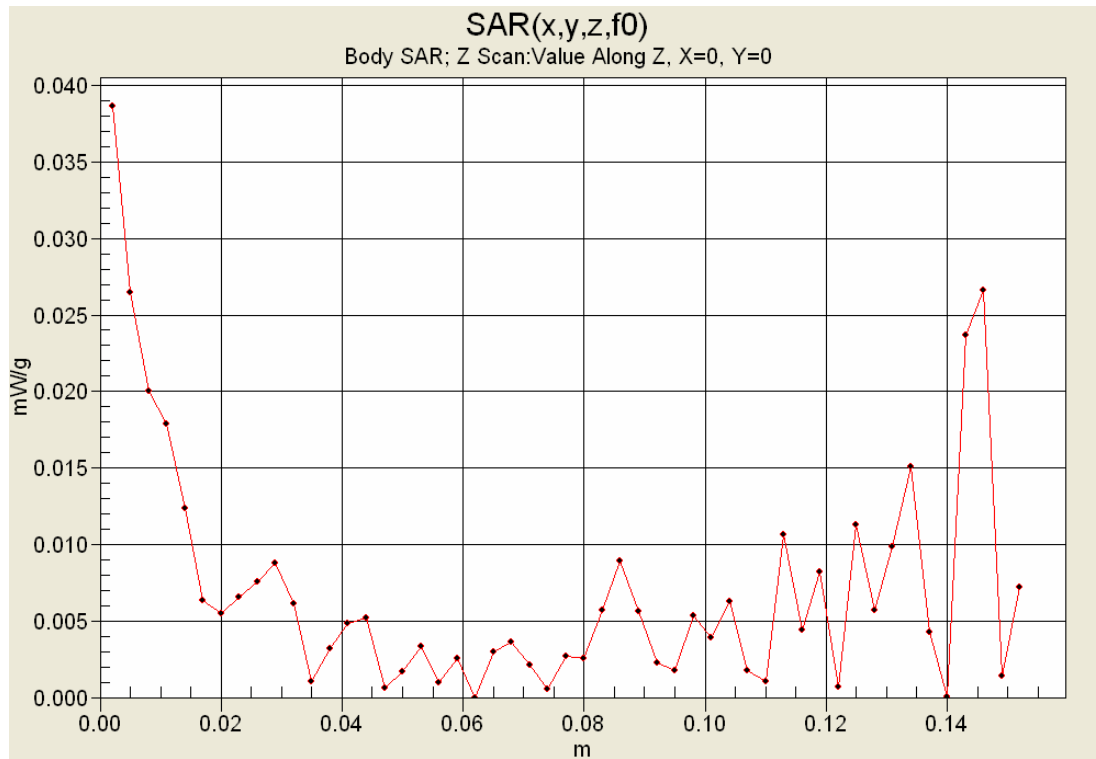
Maximum value of SAR (measured) = 0.039 mW/g



Company:	Vocera Communications		FCC ID:	QGZB2000	IC ID:	4362A-B2000	
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN				
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	<u>Date(s) of Evaluation</u> June 25 & July 17, 2007	<u>Test Report Serial No.</u> 061807QGZ-T838-S15W	<u>Test Report Revision No.</u> Revision 1.0	 Certificate No. 2470.01
	<u>Test Report Issue Date</u> August 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Z-Axis Scan



Due to the very low SAR level measured in this configuration the Z-axis scan is only reporting noise. The DASY4 software adjusts the scale according to the measured SAR level, which for this evaluation is close to the measurement noise floor.

Fluid Depth ($\geq 15\text{cm}$)



Company:	Vocera Communications	FCC ID:	QGZB2000	IC ID:	4362A-B2000	vocera®
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN			
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	<u>Test Report Issue Date</u> August 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 06/25/2007

Body-Worn SAR - 802.11b - 1 Mbps - Back Side of DUT - Pocket Clip Accessory - 2442 MHz

DUT: Vocera B2000; Type: Body-Worn Wireless Communications Badge with 802.11b/g; Serial: A1DE07F7AFC3

Body-Worn Accessory: Pocket Clip (P/N: 200-01046); Audio Accessory (None)

Ambient Temp: 23.2°C; Fluid Temp: 22.5°C; Barometric Pressure: 101.1 kPa; Humidity: 30%

3.7V Extended Battery (Model: 00532)

Communication System: DSSS WLAN

RF Output Power: 13.8 dBm (Conducted)

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2442 \text{ MHz}$; $\sigma = 2.03 \text{ mho/m}$; $\epsilon_r = 50.1$; $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3600; ConvF(6.31, 6.31, 6.31); Calibrated: 24/01/2007
- Sensor-Surface: 2 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 13/03/2007
- Phantom: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-Worn SAR - Back Side of DUT Touching SAM Phantom (Planar Section) - Mid Channel

Area Scan (7x13x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (measured) = 0.042 mW/g

Body-Worn SAR - Back Side of DUT Touching SAM Phantom (Planar Section) - Mid Channel

Zoom Scan (5x5x7)/Cube 0:

Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 4.11 V/m; Power Drift = 0.0795 dB

Peak SAR (extrapolated) = 0.050 W/kg

SAR(1 g) = 0.0268 mW/g; SAR(10 g) = 0.014 mW/g

Maximum value of SAR (measured) = 0.033 mW/g



Company:	Vocera Communications		FCC ID:	QGZB2000	IC ID:	4362A-B2000	vocera®
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN				
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	<u>Test Report Issue Date</u> August 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 06/25/2007

Body-Worn SAR - 802.11b - 1 Mbps - Back Side of DUT - Holster & Belt-Clip Accessory - 2442 MHz

DUT: Vocera B2000; Type: Body-Worn Wireless Communications Badge with 802.11b/g; Serial: A1DE07F7AFC3

Body-Worn Accessory: Holster & Belt-Clip (P/N: 230-00537); Audio Accessory: Generic Headset

Ambient Temp: 23.2°C; Fluid Temp: 22.5°C; Barometric Pressure: 101.1 kPa; Humidity: 30%

3.7V Extended Battery (Model: 00532)

Communication System: DSSS WLAN

RF Output Power: 13.8 dBm (Conducted)

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2442 \text{ MHz}$; $\sigma = 2.03 \text{ mho/m}$; $\epsilon_r = 50.1$; $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3600; ConvF(6.31, 6.31, 6.31); Calibrated: 24/01/2007
- Sensor-Surface: 2 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 13/03/2007
- Phantom: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-Worn SAR - 2.0 cm Belt-Clip Spacing from Back of DUT to SAM Phantom (Planar Section) - Mid Channel

Area Scan (7x13x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (measured) = 0.011 mW/g

Body-Worn SAR - 2.0 cm Belt-Clip Spacing from Back of DUT to SAM Phantom (Planar Section) - Mid Channel

Zoom Scan (5x5x7)/Cube 0:

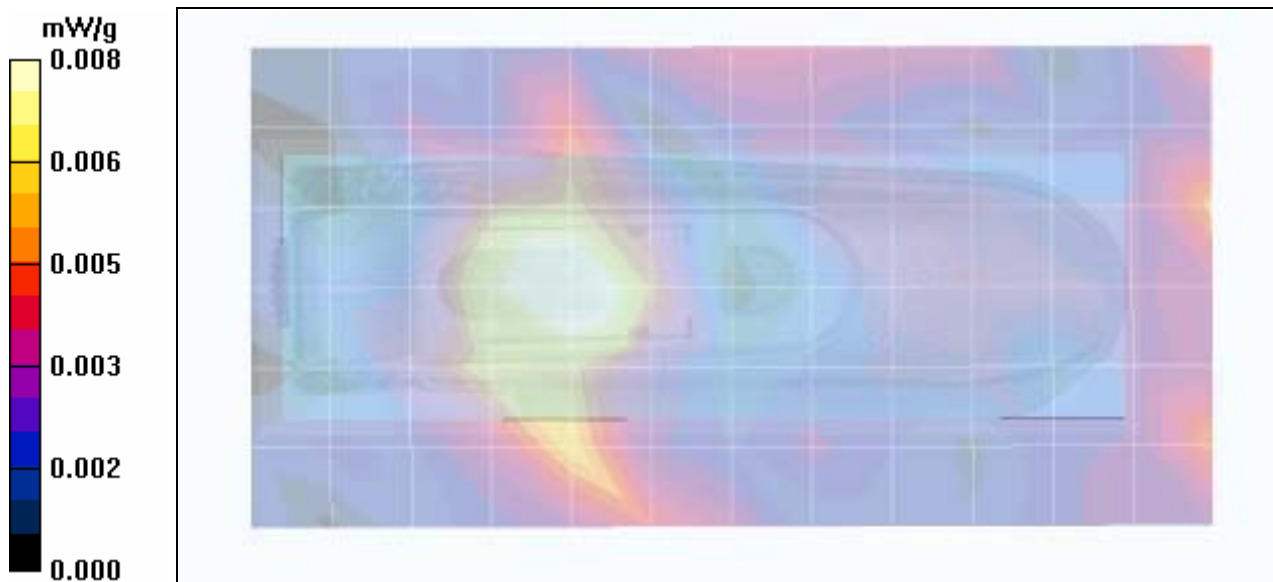
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 2.06 V/m; Power Drift = 0.922 dB

Peak SAR (extrapolated) = 0.012 W/kg

SAR(1 g) = 0.00638 mW/g; SAR(10 g) = 0.00236 mW/g

Maximum value of SAR (measured) = 0.008 mW/g



Company:	Vocera Communications		FCC ID:	QGZB2000	IC ID:	4362A-B2000	vocera®
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN				
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	<u>Test Report Issue Date</u> August 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 07/17/2007

Body-Worn SAR - 802.11b - 1 Mbps - Back Side of DUT – Universal Clip Accessory - 2442 MHz

DUT: Vocera B2000; Type: Body-Worn Wireless Communications Badge with 802.11b/g; Serial: A1DE07F7AFC3

Body-Worn Accessory: Universal Clip (P/N: 200-01045); Audio Accessory (None)

Ambient Temp: 25.3°C; Fluid Temp: 23.8°C; Barometric Pressure: 101.2 kPa; Humidity: 34%

3.7V Standard Battery (Model: 00531)

Communication System: DSSS WLAN

RF Output Power: 13.8 dBm (Conducted)

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2442 \text{ MHz}$; $\sigma = 2.00 \text{ mho/m}$; $\epsilon_r = 50.5$; $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3600; ConvF(6.31, 6.31, 6.31); Calibrated: 24/01/2007
- Sensor-Surface: 2 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 13/03/2007
- Phantom: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-Worn SAR - Back Side of DUT Touching SAM Phantom (Planar Section) - Mid Channel

Area Scan (7x13x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (measured) = 0.041 mW/g

Body-Worn SAR - Back Side of DUT Touching SAM Phantom (Planar Section) - Mid Channel

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 3.98 V/m; Power Drift = 0.338 dB

Peak SAR (extrapolated) = 0.119 W/kg

SAR(1 g) = 0.0339 mW/g; SAR(10 g) = 0.013 mW/g

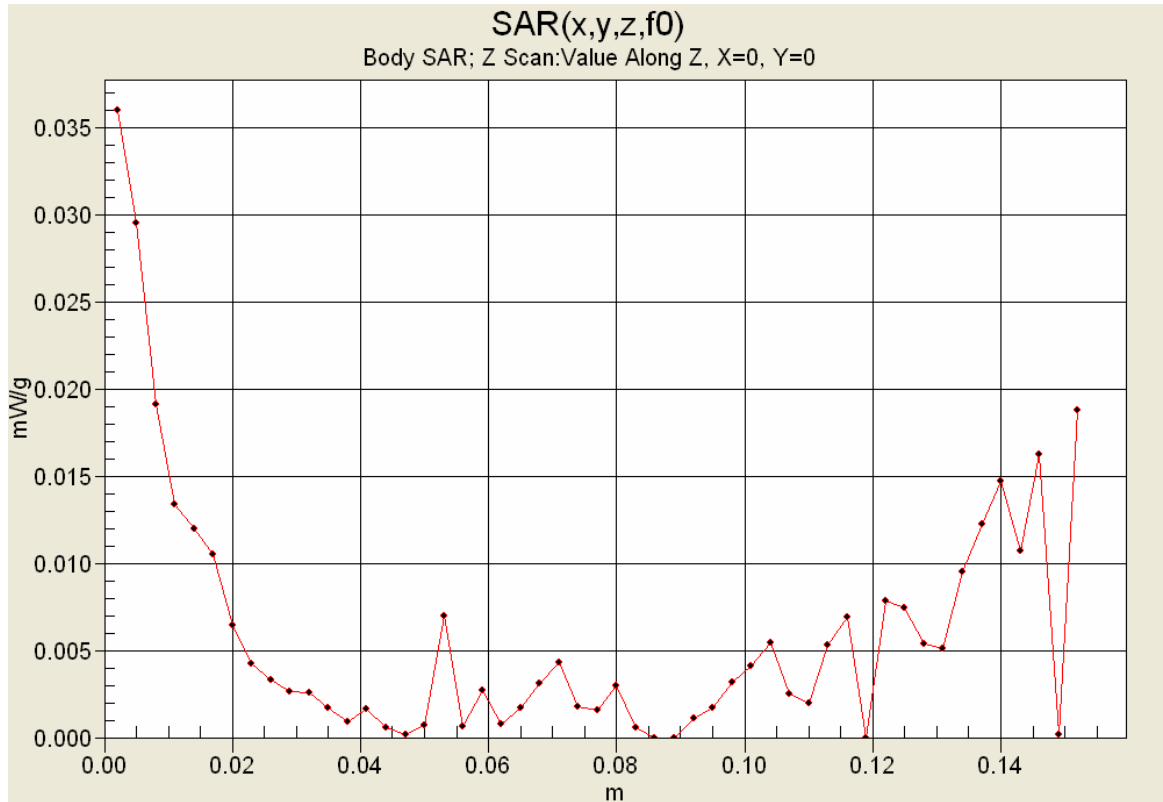
Maximum value of SAR (measured) = 0.034 mW/g



Company:	Vocera Communications		FCC ID:	QGZB2000	IC ID:	4362A-B2000	vocera®
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN				
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	<u>Date(s) of Evaluation</u> June 25 & July 17, 2007	<u>Test Report Serial No.</u> 061807QGZ-T838-S15W	<u>Test Report Revision No.</u> Revision 1.0	 Certificate No. 2470.01
	<u>Test Report Issue Date</u> August 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Z-Axis Scan



Due to the very low SAR level measured in this configuration the Z-axis scan is only reporting noise. The DASY4 software adjusts the scale according to the measured SAR level, which for this evaluation is close to the measurement noise floor.

Company:	Vocera Communications	FCC ID:	QGZB2000	IC ID:	4362A-B2000	vocera®
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN			
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	<u>Date(s) of Evaluation</u> June 25 & July 17, 2007	<u>Test Report Serial No.</u> 061807QGZ-T838-S15W	<u>Test Report Revision No.</u> Revision 1.0	 Certificate No. 2470.01
	<u>Test Report Issue Date</u> August 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

APPENDIX B - SYSTEM PERFORMANCE CHECK DATA

Company:	Vocera Communications	FCC ID:	QGZB2000	IC ID:	4362A-B2000	vocera®
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN			
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	<u>Date(s) of Evaluation</u> June 25 & July 17, 2007	<u>Test Report Serial No.</u> 061807QGZ-T838-S15W	<u>Test Report Revision No.</u> Revision 1.0	
	<u>Test Report Issue Date</u> August 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 06/25/2007

System Performance Check - 2450 MHz Dipole

DUT: Dipole 2450 MHz; Asset: 00025; Serial: 150; Validation: 06/08/2007

Ambient Temp: 22.9°C; Fluid Temp: 22.8°C; Barometric Pressure: 101.1 kPa; Humidity: 31%

Communication System: CW

Forward Conducted Power: 250 mW

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: HSL2450 Medium parameters used: $f = 2450 \text{ MHz}$; $\sigma = 1.89 \text{ mho/m}$; $\epsilon_r = 37.4$; $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3600; ConvF(6.37, 6.37, 6.37); Calibrated: 24/01/2007
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 13/03/2007
- Phantom: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

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

Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (measured) = 12.6 mW/g

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

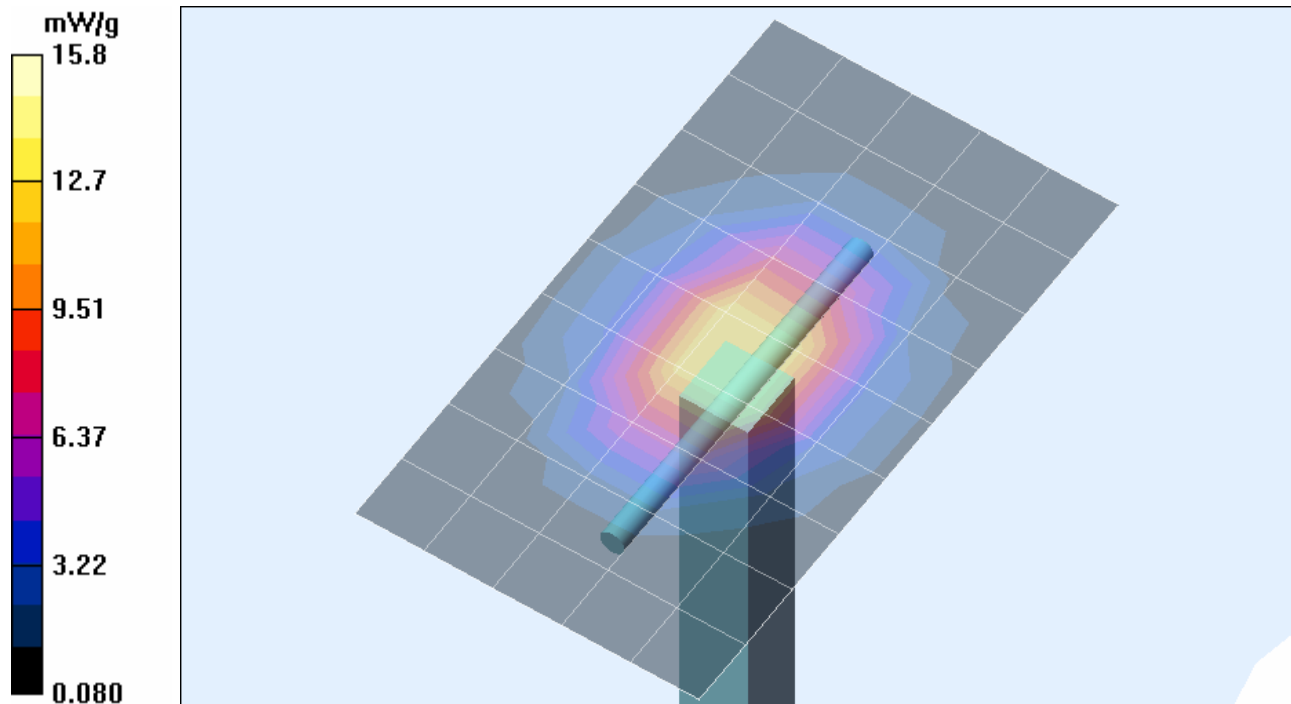
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 91.2 V/m; Power Drift = -0.009 dB

Peak SAR (extrapolated) = 30.0 W/kg

SAR(1 g) = 13.7 mW/g; SAR(10 g) = 6.2 mW/g

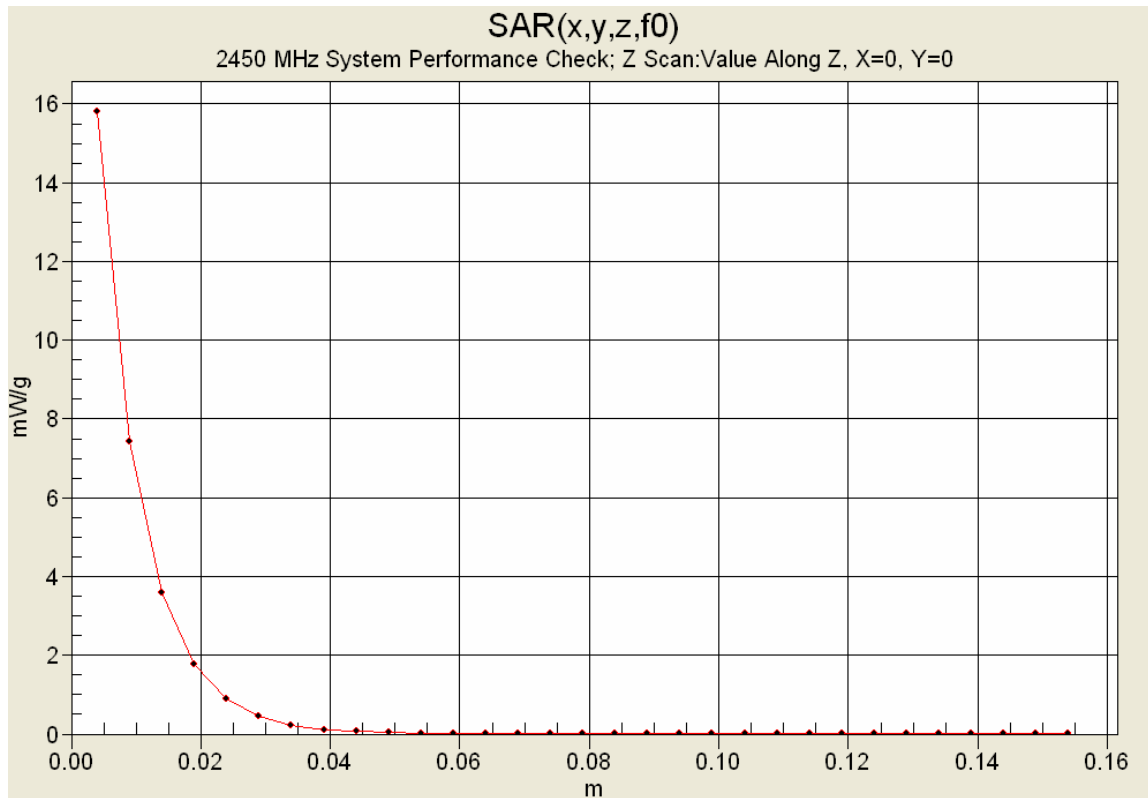
Maximum value of SAR (measured) = 15.8 mW/g



Company:	Vocera Communications		FCC ID:	QGZB2000	IC ID:	4362A-B2000	vocera®
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN				
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	<u>Date(s) of Evaluation</u> June 25 & July 17, 2007	<u>Test Report Serial No.</u> 061807QGZ-T838-S15W	<u>Test Report Revision No.</u> Revision 1.0	 Certificate No. 2470.01
	<u>Test Report Issue Date</u> August 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Z-Axis Scan



Company:	Vocera Communications	FCC ID:	QGZB2000	IC ID:	4362A-B2000	vocera®
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN			
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	<u>Date(s) of Evaluation</u> June 25 & July 17, 2007	<u>Test Report Serial No.</u> 061807QGZ-T838-S15W	<u>Test Report Revision No.</u> Revision 1.0	
	<u>Test Report Issue Date</u> August 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 07/17/2007

System Performance Check - 2450 MHz Dipole

DUT: Dipole 2450 MHz; Asset: 00025; Serial: 150; Validation: 06/08/2007

Ambient Temp: 25.3°C; Fluid Temp: 23.8°C; Barometric Pressure: 101.2 kPa; Humidity: 34%

Communication System: CW

Forward Conducted Power: 250 mW

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2450 \text{ MHz}$; $\sigma = 2.00 \text{ mho/m}$; $\epsilon_r = 50.5$; $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3600; ConvF(6.31, 6.31, 6.31); Calibrated: 24/01/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 13/03/2007
- Phantom: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

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

Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (measured) = 11.7 mW/g

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

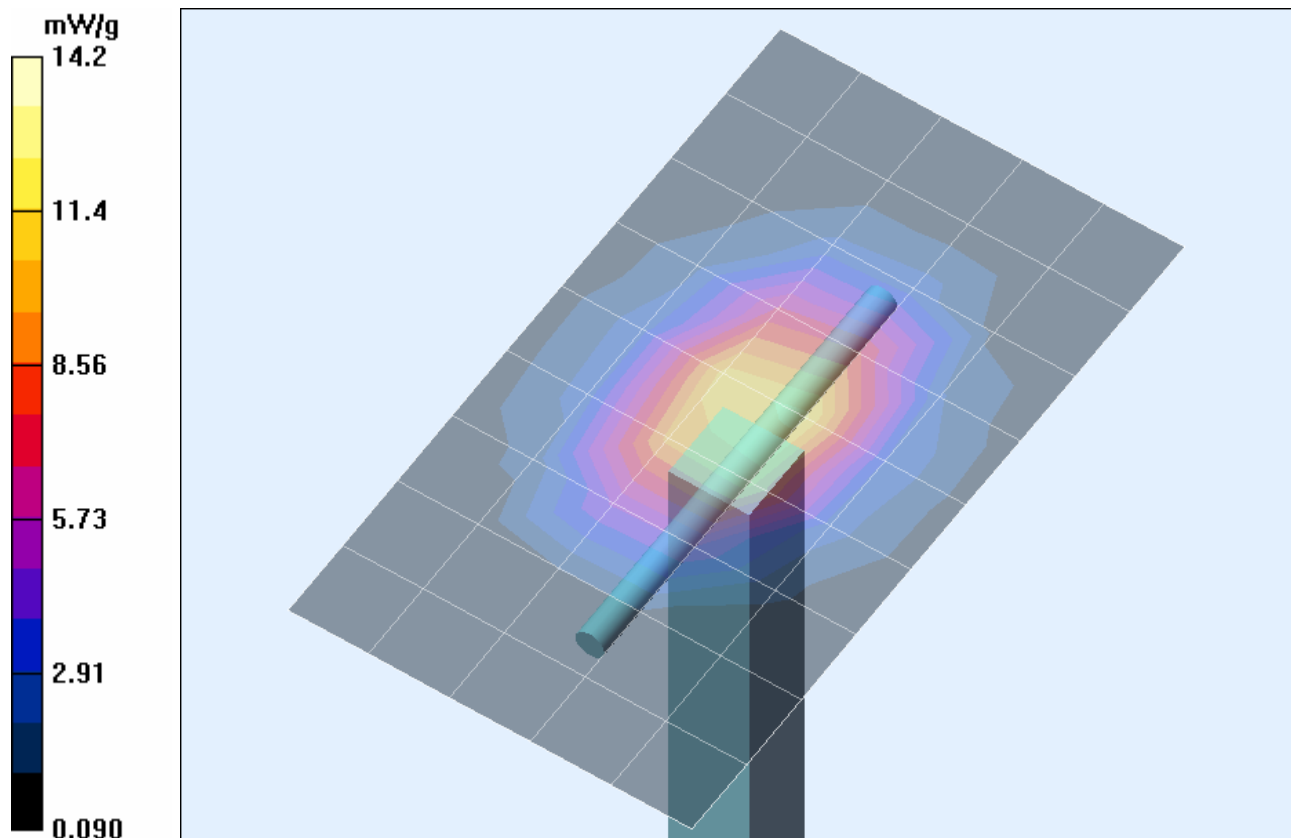
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 83.8 V/m; Power Drift = 0.008 dB

Peak SAR (extrapolated) = 25.5 W/kg

SAR(1 g) = 12.3 mW/g; SAR(10 g) = 5.6 mW/g

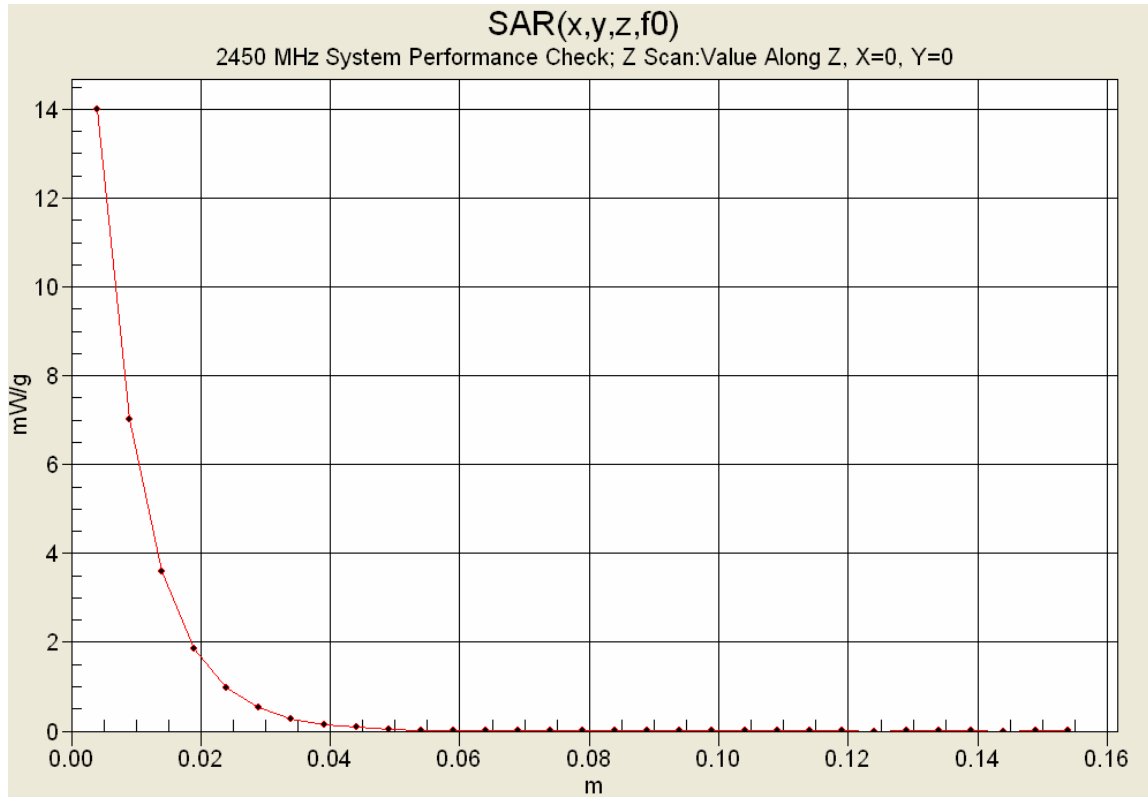
Maximum value of SAR (measured) = 14.2 mW/g



Company:	Vocera Communications		FCC ID:	QGZB2000	IC ID:	4362A-B2000	vocera®
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN				
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	<u>Test Report Issue Date</u> August 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Z-Axis Scan



Company:	Vocera Communications		FCC ID:	QGZB2000	IC ID:	4362A-B2000	vocera®
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN				
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	<u>Test Report Issue Date</u> August 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

APPENDIX C - MEASURED FLUID DIELECTRIC PARAMETERS

Company:	Vocera Communications		FCC ID:	QGZB2000	IC ID:	4362A-B2000	vocera®
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN				
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	<u>Date(s) of Evaluation</u> June 25 & July 17, 2007	<u>Test Report Serial No.</u> 061807QGZ-T838-S15W	<u>Test Report Revision No.</u> Revision 1.0	
	<u>Test Report Issue Date</u> August 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Certificate No. 2470.01

2450 MHz System Performance Check (Brain)

Celltech Labs Inc.

Test Result for UIM Dielectric Parameter

Mon 25/Jun/2007

Frequency (GHz)

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

FCC_sHFCC OET 65 Supplement C (June 2001) Limits for Head Sigma

Test_e Epsilon of UIM

Test_s Sigma of UIM

Freq	FCC_eHFCC_sH	Test_e	Test_s
2.3500	39.38 1.71	37.88	1.80
2.3600	39.36 1.72	37.81	1.81
2.3700	39.34 1.73	37.75	1.82
2.3800	39.32 1.74	37.71	1.83
2.3900	39.31 1.75	37.65	1.84
2.4000	39.29 1.76	37.66	1.85
2.4100	39.27 1.76	37.57	1.85
2.4200	39.25 1.77	37.51	1.87
2.4300	39.24 1.78	37.49	1.88
2.4400	39.22 1.79	37.49	1.89
2.4500	39.20 1.80	37.40	1.89
2.4600	39.19 1.81	37.44	1.91
2.4700	39.17 1.82	37.38	1.93
2.4800	39.16 1.83	37.32	1.93
2.4900	39.15 1.84	37.27	1.95
2.5000	39.14 1.85	37.21	1.97
2.5100	39.12 1.87	37.18	1.97
2.5200	39.11 1.88	37.15	1.98
2.5300	39.10 1.89	37.10	2.00
2.5400	39.09 1.90	37.07	2.01
2.5500	39.07 1.91	36.96	2.02

Company:	Vocera Communications		FCC ID:	QGZB2000	IC ID:	4362A-B2000	vocera®
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN				
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	<u>Date(s) of Evaluation</u> June 25 & July 17, 2007	<u>Test Report Serial No.</u> 061807QGZ-T838-S15W	<u>Test Report Revision No.</u> Revision 1.0	
	<u>Test Report Issue Date</u> August 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

2450 MHz DUT Evaluation (Body)

Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
Mon 25/Jun/2007
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	50.66	1.91
2.3600	52.82	1.86	50.55	1.92
2.3700	52.81	1.87	50.47	1.93
2.3800	52.79	1.88	50.41	1.94
2.3900	52.78	1.89	50.36	1.94
2.4000	52.77	1.90	50.24	1.97
2.4100	52.75	1.91	50.20	1.98
2.4200	52.74	1.92	50.20	2.00
2.4300	52.73	1.93	50.17	2.02
2.4400	52.71	1.94	50.12	2.02
2.4500	52.70	1.95	50.10	2.03
2.4600	52.69	1.96	50.09	2.03
2.4700	52.67	1.98	50.06	2.06
2.4800	52.66	1.99	49.88	2.06
2.4900	52.65	2.01	49.83	2.08
2.5000	52.64	2.02	49.84	2.11
2.5100	52.62	2.04	49.75	2.12
2.5200	52.61	2.05	49.66	2.13
2.5300	52.60	2.06	49.68	2.15
2.5400	52.59	2.08	49.69	2.17
2.5500	52.57	2.09	49.61	2.18

Company:	Vocera Communications		FCC ID:	QGZB2000	IC ID:	4362A-B2000	vocera®
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN				
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	<u>Date(s) of Evaluation</u> June 25 & July 17, 2007	<u>Test Report Serial No.</u> 061807QGZ-T838-S15W	<u>Test Report Revision No.</u> Revision 1.0	
	<u>Test Report Issue Date</u> August 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

2450 MHz System Performance Check & DUT Evaluation (Body)

Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
Tue 17/Jul/2007
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	50.81	1.87
2.3600	52.82	1.86	50.77	1.88
2.3700	52.81	1.87	50.73	1.90
2.3800	52.79	1.88	50.72	1.90
2.3900	52.78	1.89	50.64	1.93
2.4000	52.77	1.90	50.60	1.94
2.4100	52.75	1.91	50.56	1.95
2.4200	52.74	1.92	50.59	1.96
2.4300	52.73	1.93	50.45	1.98
2.4400	52.71	1.94	50.54	1.98
2.4500	52.70	1.95	50.48	2.00
2.4600	52.69	1.96	50.46	2.02
2.4700	52.67	1.98	50.47	2.03
2.4800	52.66	1.99	50.46	2.04
2.4900	52.65	2.01	50.49	2.06
2.5000	52.64	2.02	50.38	2.07
2.5100	52.62	2.04	50.31	2.08
2.5200	52.61	2.05	50.30	2.11
2.5300	52.60	2.06	50.32	2.11
2.5400	52.59	2.08	50.22	2.12
2.5500	52.57	2.09	50.25	2.15

Company:	Vocera Communications		FCC ID:	QGZB2000	IC ID:	4362A-B2000	
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN				
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	<u>Test Report Issue Date</u> August 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

APPENDIX G - SAM PHANTOM CERTIFICATE OF CONFORMITY

Company:	Vocera Communications	FCC ID:	QGZB2000	IC ID:	4362A-B2000	vocera®
Model(s):	B2000	DUT Type:	Portable Body-worn Communications Badge with 802.11b/g WLAN			
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Schmid & Partner Engineering AG

Zeughausstrasse 43, 8004 Zurich, Switzerland, Phone +41 1 245 97 00, Fax +41 1 245 97 79

Certificate of conformity / First Article Inspection

Item	SAM Twin Phantom V4.0
Type No	QD 000 P40 BA
Series No	TP-1002 and higher
Manufacturer / Origin	Untersee Composites Hauptstr. 69 CH-8559 Fruthwilen Switzerland

Tests

The series production process used allows the limitation to test of first articles.
Complete tests were made on the pre-series Type No. QD 000 P40 AA, Serial No. TP-1001 and on the series first article Type No. QD 000 P40 BA, Serial No. TP-1006. Certain parameters have been retested using further series units (called samples).

Test	Requirement	Details	Units tested
Shape	Compliance with the geometry according to the CAD model.	IT'IS CAD File (*)	First article, Samples
Material thickness	Compliant with the requirements according to the standards	2mm +/- 0.2mm in specific areas	First article, Samples
Material parameters	Dielectric parameters for required frequencies	200 MHz – 3 GHz Relative permittivity < 5 Loss tangent < 0.05.	Material sample TP 104-5
Material resistivity	The material has been tested to be compatible with the liquids defined in the standards	Liquid type HSL 1800 and others according to the standard.	Pre-series, First article

Standards

- [1] CENELEC EN 50361
- [2] IEEE P1528-200x draft 6.5
- [3] IEC PT 62209 draft 0.9

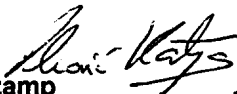
(*) The IT'IS CAD file is derived from [2] and is also within the tolerance requirements of the shapes of [1] and [3].

Conformity

Based on the sample tests above, we certify that this item is in compliance with the uncertainty requirements of SAR measurements specified in standard [1] and draft standards [2] and [3].

Date 18.11.2001

Signature / Stamp



**Schmid & Partner
Engineering AG**



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Tel. +41 1 245 97 00, Fax +41 1 245 97 79