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|-------------------------|---------------------|---------------------------|--------------------|
| Test Report Serial No.: | 070406LUB-T762-S15W | Test Report Issue Date:   | July 17, 2006      |
| Date(s) of Evaluation:  | July 06, 2006       | Test Report Revision No.: | Revision 1.1       |
| Description of Tests:   | RF Exposure         | SAR                       | FCC 47 CFR §2.1093 |

## **RF EXPOSURE EVALUATION**

## SPECIFIC ABSORPTION RATE

# SAR TEST REPORT

**FOR**

# SOCKET COMMUNICATIONS, INC.

## 802.11b/g WLAN Compact Flash Card for PDAs

|              |         |
|--------------|---------|
| Model Name   | GoWi-Fi |
| Model Number | P500    |

FCC ID: LUB80211GCF

## (OET Bulletin 65, Supplement C)

IC: 2529A-80211GCF

## **(RSS-102 Issue 2)**

### Test Report Serial No.

070406LUB-T762-S15W

## Test Report Revision No.

Revision 1.1 - 2nd Release  
(minor typographical change only)

## Test Location

**Celltech Compliance Testing & Engineering Lab  
(Celltech Labs Inc.)  
1955 Moss Court  
Kelowna, BC  
Canada  
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|  |  |
|--|--|
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|--|--|

|                         |                             |  |          |                |  |               |                |   |
|-------------------------|-----------------------------|--|----------|----------------|--|---------------|----------------|---|
| <b>Company:</b>         | Socket Communications, Inc. |  |          | <b>FCC ID:</b> | LUB80211GCF                                | <b>IC ID:</b> | 2529A-80211GCF |  |
| <b>Model(s):</b>        | P500                        | Name:  | GoWi-Fi! | DUT Type:      | 802.11b/g WLAN Compact Flash Card for PDAs |               |                |   |
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|   | Description of Tests:   | RF Exposure         | SAR                       | FCC 47 CFR §2.1093 |

## DECLARATION OF COMPLIANCE SAR RF EXPOSURE EVALUATION

## Test Location

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## Company Information

**SOCKET COMMUNICATIONS, INC.**  
37400 Central Court  
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United States

**FCC IDENTIFIER:** LUB80211GCF  
**IC IDENTIFIER:** 2529A-80211GCF  
**Model Name:** GoWi-Fi!  
**Model Number:** P500

|                               |   |
|-------------------------------|---|
| <b>Test Requirement(s):</b>   | FCC 47 CFR §2.1093; Health Canada Safety Code 6   |
| <b>Test Procedure(s):</b>     | FCC OET Bulletin 65, Supplement C (Edition 01-01)<br>Industry Canada RSS-102 Issue 2                            |
| <b>Device Classification:</b> | Digital Transmission System (DTS)   |
| <b>Device Description:</b>    | 802.11b/g WLAN Compact Flash Card for PDAs  |
| <b>Modulation Type(s):</b>    | DSSS (Direct Sequence Spread Spectrum) - 802.11b<br>OFDM (Orthogonal Frequency Division Multiplexing) - 802.11g |

|  |   |
|--|---|
| <b>Transmit Frequency Range(s):</b>    | 2412 - 2462 MHz   |
| <b>Max. RF Conducted Power Tested:</b> | 66.1 mW (18.2 dBm) Average (2437 MHz, 802.11b, 1 Mbps)                              |
| <b>Data Rate(s) Supported:</b>         | 802.11b: 1 / 2 / 5.5 / 11 Mbps<br>802.11g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps |
| <b>Antenna Type(s) Tested:</b>         | Internal (Top End of Compact Flash Card)  |
| <b>Power Source(s) Tested:</b>         | Host PDA Battery (Li-ion 3.7 V, 900mAh)   |
| <b>Host PDA Tested:</b>                | HP iPAQ Pocket PC   |

**Body-Worn Accessories Tested:** None (1.0 cm air-gap spacing from CF Card)  
**Audio Accessories Tested:** None (not applicable)

**Max. SAR Level(s) Measured:** Body: 0.587 W/kg (1g average) - 802.11b, 1 Mbps

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 2 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.

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**  
Compliance Technologist  
Celltech Labs Inc.





|                         |                      |                           |                    |
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| Date(s) of Evaluation:  | July 06, 2006        | Test Report Revision No.: | Revision 1.1       |
| Description of Tests:   | RF Exposure      SAR | FCC 47 CFR §2.1093        | IC RSS-102 Issue 2 |

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|                         |                     |     |                           |                    |  |
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| Date(s) of Evaluation:  | July 06, 2006       |     | Test Report Revision No.: | Revision 1.1       |  |
| Description of Tests:   | RF Exposure         | SAR | FCC 47 CFR §2.1093        | IC RSS-102 Issue 2 |  |

## 1.0 INTRODUCTION

This measurement report demonstrates that the SOCKET COMMUNICATIONS, INC. Model: P500 802.11b/g WLAN Compact Flash Card FCC ID: LUB80211GCF for PDAs complies with the SAR (Specific Absorption Rate) RF exposure requirements specified in FCC 47 CFR §2.1093 (see reference [1]) and Health Canada 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]) 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 DESCRIPTION of DEVICE UNDER TEST (DUT)

|  |  |   |  |  |                 |                              |                               |  |  |  |
|--|--|---|--|--|-----------------|------------------------------|-------------------------------|--|--|--|
| Test Requirement(s)                        | FCC Rule Part 47 CFR §2.1093   |   |  | Health Canada Safety Code 6                |                 |                              |                               |  |  |  |
| Test Procedure(s)                          | FCC OET Bulletin 65, Supplement C (01-01)                                |   |  | Industry Canada RSS-102 Issue 2            |                 |                              |                               |  |  |  |
| FCC Device Classification                  | Digital Transmission System (DTS)  |   |  |  | 47 CFR §15C     |                              |                               |  |  |  |
| IC Device Classification                   | Low Power License-Exempt Radiocommunication Device: Category 1 Equipment |   |  |  | RSS-210 Issue 6 |                              |                               |  |  |  |
| Device Description                         | 802.11b/g WLAN Compact Flash Card for PDAs                               |   |  |  |                 |                              |                               |  |  |  |
| RF Exposure Category                       | General Population / Uncontrolled Exposure                               |   |  |  |                 |                              |                               |  |  |  |
| FCC IDENTIFIER                             | LUB80211GCF  |   | IC IDENTIFIER  | 2529A-80211GCF                             |                 |                              |                               |  |  |  |
| Model Name                                 | GoWi-Fi!   |   | Model Number   | P500                                       |                 |                              |                               |  |  |  |
| Test Sample Serial No.                     | 0606001343   |   |  | Production Unit                            |                 |                              |                               |  |  |  |
| Mode(s) of Operation                       | 802.11b  |   | DSSS   | Direct Sequence Spread Spectrum            |                 |                              |                               |  |  |  |
|  | 802.11g  |   | OFDM   | Orthogonal Frequency Division Multiplexing |                 |                              |                               |  |  |  |
| Transmit Frequency Range(s)                | 2412 - 2462 MHz  |   |  |  |                 |                              |                               |  |  |  |
| Maximum RF Conducted Output Power Measured | Transmit Mode  | Frequency   | Channel  | Data Rate                                  | Conducted Power |                              |                               |  |  |  |
|  |  |   |  |  | Average         |                              | Peak                          |  |  |  |
|  | 802.11b  | 2412 MHz  | 1  | 1 Mbps                                     | 66.1 mW         | 18.2 dBm                     | 63.1 mW                       |  |  |  |
|  |  | 2437 MHz  | 6  | 1 Mbps                                     | 66.1 mW         | 18.2 dBm                     | 61.7 mW                       |  |  |  |
|  |  | 2462 MHz  | 11   | 1 Mbps                                     | 58.9 mW         | 17.7 dBm                     | 57.5 mW                       |  |  |  |
|  |  | 2437 MHz  | 6  | 2 Mbps                                     | 63.1 mW         | 18.0 dBm                     | -                             |  |  |  |
|  |  | 2437 MHz  | 6  | 5.5 Mbps                                   | 61.7 mW         | 17.9 dBm                     | -                             |  |  |  |
|  |  | 2437 MHz  | 6  | 11 Mbps                                    | 58.9 mW         | 17.7 dBm                     | 75.9 mW                       |  |  |  |
|  | 802.11g  | 2412 MHz  | 1  | 6 Mbps                                     | 25.7 mW         | 14.1 dBm                     | -                             |  |  |  |
|  |  | 2437 MHz  | 6  | 6 Mbps                                     | 24.0 mW         | 13.8 dBm                     | -                             |  |  |  |
|  |  | 2462 MHz  | 11   | 6 Mbps                                     | 20.4 mW         | 13.1 dBm                     | -                             |  |  |  |
|  |  | 2412 MHz  | 1  | 54 Mbps                                    | 7.9 mW          | 9.0 dBm                      | -                             |  |  |  |
|  |  | 2437 MHz  | 6  | 54 Mbps                                    | 7.4 mW          | 8.7 dBm                      | -                             |  |  |  |
|  |  | 2462 MHz  | 11   | 54 Mbps                                    | 6.9 mW          | 8.4 dBm                      | -                             |  |  |  |
|  |  | Note: Peak power levels reported above to show comparison between measured peak levels in the EMC report. |  |  |                 |                              |                               |  |  |  |
| Antenna Type(s) Tested                     | Internal   |   |  | Top End of Compact Flash Card              |                 |                              |                               |  |  |  |
| Power Source(s) Tested                     | Host PDA Battery   |   | Lithium-ion  |  | 3.7 V, 900mAh   | P/N: 310798-B21              |                               |  |  |  |
| Host PDA Tested                            | Manufacturer / Model   |   | Serial No.   | Slot Location                              |                 | Card Distance to Back of PDA | Card Distance to Front of PDA |  |  |  |
|  | HP IPAQ Pocket PC  |   | TWC32609HQ   | Top End of PDA                             |                 | 2 mm                         | 10 mm                         |  |  |  |
| Body-Worn Accessories                      | None   |   | Tested with 1.0 cm Air-Gap Spacing from CF Card (Front and Back sides) |  |                 |                              |                               |  |  |  |
| Audio Accessories                          | None   |   | not applicable   |  |                 |                              |                               |  |  |  |

|           |                             |       |          |           |  |        |                |  |
|-----------|-----------------------------|-------|----------|-----------|--|--------|----------------|--|
| Company:  | Socket Communications, Inc. |       |          | FCC ID:   | LUB80211GCF                                | IC ID: | 2529A-80211GCF |  |
| Model(s): | P500                        | Name: | GoWi-Fi! | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |        |                |  |

|   |   |  |
|---|---|--|
| <b>Celltech</b><br>Testing and Engineering Services Lab | Test Report Serial No.: 070406LUB-T762-S15W | Test Report Issue Date: July 17, 2006  |
| Date(s) of Evaluation:                                  | July 06, 2006                               | Test Report Revision No.: Revision 1.1 |
| Description of Tests:                                   | RF Exposure SAR                             | FCC 47 CFR §2.1093 IC RSS-102 Issue 2  |

### 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 Measurement System with SAM Phantom and device holder



DASY4 Measurement System with SAM Phantom and validation dipole

|           |                             |       |          |           |  |        |                |               |
|-----------|-----------------------------|-------|----------|-----------|--|--------|----------------|---------------|
| Company:  | Socket Communications, Inc. |       |          | FCC ID:   | LUB80211GCF                                | IC ID: | 2529A-80211GCF | <b>socket</b> |
| Model(s): | P500                        | Name: | GoWi-Fi! | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |        |                |               |



|                         |                     |     |                           |                    |  |
|-------------------------|---------------------|-----|---------------------------|--------------------|--|
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| Date(s) of Evaluation:  | July 06, 2006       |     | Test Report Revision No.: | Revision 1.1       |  |
| Description of Tests:   | RF Exposure         | SAR | FCC 47 CFR §2.1093        | IC RSS-102 Issue 2 |  |

## 4.0 MEASUREMENT SUMMARY

### BODY SAR EVALUATION RESULTS

| Freq. (MHz) | Chan. | Test Mode | Transmit Mode | Data Rate (Mbps) | Power Supply            | Host PDA | DUT/PDA Position to Planar Phantom | DUT Separation Distance to Planar Phantom | Host PDA Separation Distance to Planar Phantom | Av. Cond. Power Before Test (dBm) | SAR Drift During Test (dB) | Measured SAR 1g (W/kg) |
|-------------|-------|-----------|---------------|------------------|-------------------------|----------|------------------------------------|---|--|-----------------------------------|----------------------------|------------------------|
| 2437        | 6     | DSSS      | 802.11b       | 1                | Host PDA Li-ion Battery | HP iPAQ  | Front Side                         | 10 mm                                     | 0.0 mm   | 18.2                              | -0.0372                    | 0.474                  |
| 2437        | 6     | DSSS      | 802.11b       | 1                | Host PDA Li-ion Battery | HP iPAQ  | Back Side                          | 10 mm                                     | 0.8 mm   | 18.2                              | -0.182                     | 0.587                  |

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)                     | July 06, 2006 |  |          |       | Relative Humidity           |  | 35                  |  | %         |  |  |  |  |  |  |  |
|----------------------------------|---------------|--|----------|-------|-----------------------------|--|---------------------|--|-----------|--|--|--|--|--|--|--|
| Measured Fluid Type              | 2450 MHz Body |  |          |       | Atmospheric Pressure        |  | 101.1               |  | kPa       |  |  |  |  |  |  |  |
| Dielectric Constant $\epsilon_r$ | IEEE Target   |  | Measured |       | Deviation                   |  | Ambient Temperature |  | 24.9      |  |  |  |  |  |  |  |
|                                  | 52.7          | $\pm 5\%$  | 50.3     | -4.6% | Fluid Temperature           |  | 23.7                |  | °C        |  |  |  |  |  |  |  |
| Conductivity $\sigma$ (mho/m)    | IEEE Target   |  | Measured |       | Deviation                   |  | Fluid Depth         |  | $\geq 15$ |  |  |  |  |  |  |  |
|                                  | 1.95          | $\pm 5\%$  | 1.95     | 0.0%  | $\rho$ (Kg/m <sup>3</sup> ) |  | 1000                |  | cm        |  |  |  |  |  |  |  |
| 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 SAR levels measured at the mid channel were $\geq 3$ dB below the SAR limit, SAR evaluations for the low and high channels was optional (per FCC OET Bulletin 65, Supplement C, Edition 01-01 - see reference [3]).   |          |       |                             |  |                     |  |           |  |  |  |  |  |  |  |
|                                  | 3.            | 802.11g mode was not evaluated for SAR based on the measured average conducted power levels were not $0.25$ dB $>$ output power levels measured in 802.11b mode (per October 2005 TCB Council Workshop - see reference [7]). |          |       |                             |  |                     |  |           |  |  |  |  |  |  |  |
|                                  | 4.            | The power drifts were measured by the DASY4 system during the SAR evaluations and were within 5% of the start power.   |          |       |                             |  |                     |  |           |  |  |  |  |  |  |  |
|                                  | 5.            | The host PDA battery was fully charged prior to the SAR evaluations.   |          |       |                             |  |                     |  |           |  |  |  |  |  |  |  |
|                                  | 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.  |          |       |                             |  |                     |  |           |  |  |  |  |  |  |  |

|           |                             |       |          |           |  |        |                |  |
|-----------|-----------------------------|-------|----------|-----------|--|--------|----------------|--|
| Company:  | Socket Communications, Inc. |       |          | FCC ID:   | LUB80211GCF                                | IC ID: | 2529A-80211GCF |  |
| Model(s): | P500                        | Name: | GoWi-Fi! | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |        |                |  |

|  |                         |                     |                           |                    |
|--|-------------------------|---------------------|---------------------------|--------------------|
|  | Test Report Serial No.: | 070406LUB-T762-S15W | Test Report Issue Date:   | July 17, 2006      |
|  | Date(s) of Evaluation:  | July 06, 2006       | Test Report Revision No.: | Revision 1.1       |
|  | Description of Tests:   | RF Exposure         | SAR                       | FCC 47 CFR §2.1093 |

## 5.0 DETAILS OF SAR EVALUATION

The SOCKET COMMUNICATIONS, INC. Model: P500 802.11b/g WLAN Compact Flash Card FCC ID: LUB80211GCF for PDAs was compliant for localized Specific Absorption Rate based on the test provisions and conditions described below. Detailed test setup photographs are shown in Appendix D.

### Test Configurations

1. The DUT was tested for body-worn SAR with the front side (LCD side) of the host PDA placed parallel to, and touching, the outer surface of the SAM phantom (planar section). The SAR evaluation was performed with the DUT inserted in the Compact Flash card slot of the host PDA and powered from the PDA battery. The separation distance from the front side of the DUT to the outer surface of the SAM phantom (planar section) was 10 mm.
2. The DUT was tested for body-worn SAR with the back side (battery side) of the host PDA placed parallel to the outer surface of the SAM phantom (planar section) with an 8 mm air-gap separation distance from the back of the host PDA to the SAM phantom (planar section). The SAR evaluation was performed with the DUT inserted in the Compact Flash card slot of the host PDA and powered from the PDA battery. The separation distance from the back side of the DUT to the outer surface of the SAM Phantom (planar section) was 10 mm.

### Test Modes & Power Settings

3. The average conducted power levels were measured prior to the SAR evaluations using the Gigatronics 8652A universal power meter. The peak conducted power levels were measured prior to the SAR evaluations using the Agilent E4408B spectrum analyzer and a 30 dB attenuator. The power measurements were made according to the procedures described in FCC 47 CFR §2.1046.
4. The DUT was put into test mode using internal test software provided by the manufacturer and controlled via the host PDA. The DUT was tested at maximum power in modulated DSSS continuous transmit mode with 100% duty cycle.

## 6.0 EVALUATION PROCEDURES

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

(ii) For body-worn and face-held devices a planar phantom was used.

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

An area scan was determined as follows:

- c. Based on the defined area scan grid, a more detailed grid is created to increase the points by a factor of 10. The interpolation function then evaluates all field values between corresponding measurement points.
- d. A linear search is applied to find all the candidate maxima. Subsequently, all maxima are removed that are >2 dB from the global maximum. The remaining maxima are then used to position the cube scans.

A 1g and 10g spatial peak SAR was determined as follows:

- e. Extrapolation is used to find the points between the dipole center of the probe and the surface of the phantom. This data cannot be measured, since the center of the dipoles is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.4 mm (see probe calibration document in Appendix F). The extrapolation was based on trivariate quadratics computed from the previously calculated 3D interpolated points nearest the phantom surface.
- f. Interpolated data is used to calculate the average SAR over 1g and 10g cubes by spatially discretizing the entire measured cube. The volume used to determine the averaged SAR is a 1mm grid (42875 interpolated points).
- g. A zoom scan volume of 32 mm x 32 mm x 30 mm (5 x 5 x 7 points) centered at the peak SAR location determined from the area scan is used for all zoom scans for devices with a transmit frequency < 800 MHz. Zoom scans for frequencies  $\geq$  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.

|           |                             |       |          |           |  |        |                |   |
|-----------|-----------------------------|-------|----------|-----------|--|--------|----------------|---|
| Company:  | Socket Communications, Inc. |       |          | FCC ID:   | LUB80211GCF                                | IC ID: | 2529A-80211GCF |  |
| Model(s): | P500                        | Name: | GoWi-Fi! | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |        |                |   |

## 7.0 SYSTEM PERFORMANCE CHECK

Prior to the SAR evaluations a system check was performed at the planar section of the SAM 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 | Equiv. Tissue | SAR 1g (W/kg)      |             |   | Dielectric Constant $\epsilon_r$ |             |       | Conductivity $\sigma$ (mho/m) |             |       | $\rho$ (Kg/m <sup>3</sup> ) | Amb. Temp. (°C) | Fluid Temp. (°C) | Fluid Depth (cm) | Humid. (%) | Barom. Press. (kPa) |
|-----------|---------------|--------------------|-------------|---|----------------------------------|-------------|-------|-------------------------------|-------------|-------|-----------------------------|-----------------|------------------|------------------|------------|---------------------|
|           |               | Freq. MHz          | IEEE Target | Meas.   | Dev.                             | IEEE Target | Meas. | Dev.                          | IEEE Target | Meas. | Dev.                        |                 |                  |                  |            |                     |
| 7/6/06    | Body<br>2450  | 12.8<br>$\pm 10\%$ | 13.3        | +3.9%   | 52.7<br>$\pm 5\%$                | 50.3        | -4.6% | 1.95<br>$\pm 5\%$             | 1.95        | 0.0%  | 1000                        | 24.9            | 23.7             | $\geq 15$        | 35         | 101.1               |
|           |               | Note(s):           |             | 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. |                                  |             |       |                               |             |       |                             |                 |                  |                  |            |                     |

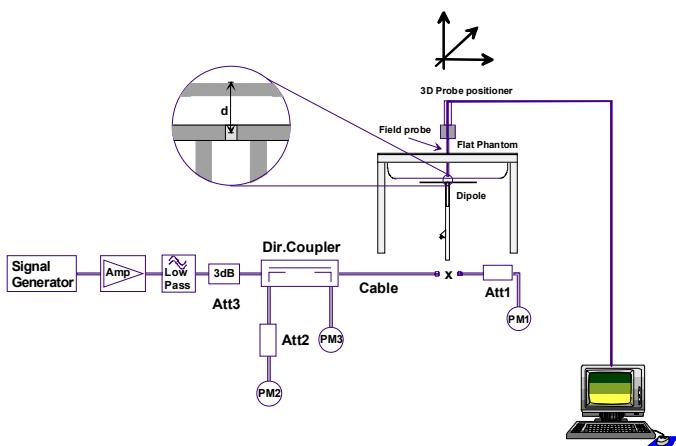


Figure 1. System Performance Check Measurement Setup

| 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

|                         |                             |  |          |           |  |        |                |   |  |
|-------------------------|-----------------------------|--|----------|-----------|--|--------|----------------|---|--|
| Company:                | Socket Communications, Inc. |  |          | FCC ID:   | LUB80211GCF                                | IC ID: | 2529A-80211GCF |  |  |
| Model(s):               | P500                        | Name:  | GoWi-Fi! | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |        |                |   |  |
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|                         |                     |                           |                    |
|-------------------------|---------------------|---------------------------|--------------------|
| Test Report Serial No.: | 070406LUB-T762-S15W | Test Report Issue Date:   | July 17, 2006      |
| Date(s) of Evaluation:  | July 06, 2006       | Test Report Revision No.: | Revision 1.1       |
| Description of Tests:   | RF Exposure         | SAR                       | FCC 47 CFR §2.1093 |

## 8.0 SIMULATED EQUIVALENT TISSUES

The 2450MHz simulated tissue mixture consisted 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   |

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.



|                         |                     |                           |                    |
|-------------------------|---------------------|---------------------------|--------------------|
| Test Report Serial No.: | 070406LUB-T762-S15W | Test Report Issue Date:   | July 17, 2006      |
| Date(s) of Evaluation:  | July 06, 2006       | Test Report Revision No.: | Revision 1.1       |
| Description of Tests:   | RF Exposure         | SAR                       | FCC 47 CFR §2.1093 |

## 10.0 ROBOT SYSTEM SPECIFICATIONS

| <u>Specifications</u>                           |  |
|---|--|
| <b>POSITIONER:</b>                              | Stäubli Unimation Corp. Robot Model: RX60L   |
| <b>Repeatability:</b>                           | 0.02 mm  |
| <b>No. of axis:</b>                             | 6  |
| <u>Data Acquisition Electronic (DAE) System</u> |  |
| <u>Cell Controller</u>                          |  |
| <b>Processor:</b>                               | AMD Athlon XP 2400+  |
| <b>Clock Speed:</b>                             | 2.0 GHz  |
| <b>Operating System:</b>                        | Windows XP Professional  |
| <u>Data Converter</u>                           |  |
| <b>Features:</b>                                | Signal Amplifier, multiplexer, A/D converter, and control logic                    |
| <b>Software:</b>                                | DASY4 software   |
| <b>Connecting Lines:</b>                        | Optical downlink for data and status info<br>Optical uplink for commands and clock |
| <u>DASY4 Measurement Server</u>                 |  |
| <b>Function:</b>                                | Real-time data evaluation for field measurements and surface detection             |
| <b>Hardware:</b>                                | PC/104 166MHz Pentium CPU; 32 MB chipdisk; 64 MB RAM                               |
| <b>Connections:</b>                             | COM1, COM2, DAE, Robot, Ethernet, Service Interface                                |
| <u>E-Field Probe</u>                            |  |
| <b>Model:</b>                                   | EX3DV4   |
| <b>Serial No.:</b>                              | 3547   |
| <b>Construction:</b>                            | Symmetrical design with triangular core  |
| <b>Frequency:</b>                               | 10 MHz to 6 GHz  |
| <b>Linearity:</b>                               | ±0.2 dB (30 MHz to 3 GHz)  |
| <u>Phantom(s)</u>                               |  |
| <b>Type:</b>                                    | SAM V4.0C  |
| <b>Shell Material:</b>                          | Fiberglass   |
| <b>Thickness:</b>                               | 2.0 ±0.1 mm  |
| <b>Volume:</b>                                  | Approx. 25 liters  |

|                         |  |         |             |           |  |               |
|-------------------------|--|---------|-------------|-----------|--|---------------|
| Company:                | Socket Communications, Inc.  | FCC ID: | LUB80211GCF | IC ID:    | 2529A-80211GCF                             |               |
| Model(s):               | P500   | Name:   | GoWi-Fi!    | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |               |
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## 11.0 PROBE SPECIFICATION (EX3DV4)

|                |  |
|----------------|--|
| Construction:  | Symmetrical design with triangular core<br>Built-in shielding against static charges<br>PEEK enclosure material (resistant to organic solvents, e.g. DGBE)   |
| Calibration:   | Basic Broadband Calibration in air: 10-3000 MHz<br>Conversion Factors (CF) for HSL 900 and HSL 1750  |
| Frequency:     | 10 MHz to >6 GHz; Linearity: $\pm 0.2$ dB (30 MHz to 3 GHz)  |
| Directivity:   | $\pm 0.3$ dB in HSL (rotation around probe axis)<br>$\pm 0.5$ dB in tissue material (rotation normal to probe axis)  |
| Dynamic Range: | 10 $\mu$ W/g to >100 mW/g; Linearity: $\pm 0.2$ dB<br>(noise: typically < 1 $\mu$ W/g)   |
| Dimensions:    | Overall length: 330 mm (Tip: 20 mm)<br>Tip diameter: 2.5 mm (Body: 12 mm)  |
| Application:   | Typical distance from probe tip to dipole centers: 1.0 mm<br>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

## 12.0 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

## 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



|                         |                     |     |                           |                    |  |
|-------------------------|---------------------|-----|---------------------------|--------------------|--|
| Test Report Serial No.: | 070406LUB-T762-S15W |     | Test Report Issue Date:   | July 17, 2006      |  |
| Date(s) of Evaluation:  | July 06, 2006       |     | Test Report Revision No.: | Revision 1.1       |  |
| Description of Tests:   | RF Exposure         | SAR | FCC 47 CFR §2.1093        | IC RSS-102 Issue 2 |  |

## 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       | N/A                  |
| x              | -Robot                                   | 00046     | 599396-01  | N/A             | N/A       | N/A                  |
|                | -DAE4                                    | 00019     | 353        | 21Jun06         | 21Jun07   |                      |
| x              | -DAE3                                    | 00018     | 370        | 08Feb06         | 08Feb07   |                      |
|                | -ET3DV6 E-Field Probe                    | 00016     | 1387       | 16Mar06         | 16Mar07   |                      |
| x              | -EX3DV4 E-Field Probe                    | 00125     | 3547       | 14Feb06         | 14Feb07   |                      |
|                | -300MHz Validation Dipole                | 00023     | 135        | 25Oct05         | 25Oct06   |                      |
|                | -450MHz Validation Dipole                | 00024     | 136        | 25Oct05         | 25Oct06   |                      |
|                | -835MHz Validation Dipole                | 00022     | 411        | Brain           | 28Mar06   | 28Mar07              |
|                |  |           |            | Body            | 27Mar06   | 27Mar07              |
|                | -900MHz Validation Dipole                | 00020     | 054        | Brain           | 06Jun06   | 06Jun07              |
|                |  |           |            | Body            | 06Jun06   | 06Jun07              |
|                | -1800MHz Validation Dipole               | 00021     | 247        | Brain           | 08Jun06   | 08Jun07              |
|                |  |           |            | Body            | 09Jun06   | 09Jun07              |
|                | -1900MHz Validation Dipole               | 00032     | 151        | Brain           | 09Jun06   | 09Jun07              |
|                |  |           |            | Body            | 12Jun06   | 12Jun07              |
|                | -2450MHz Validation Dipole               | 00025     | 150        | Brain           | 20Sep05   | 20Sep06              |
| x              |  |           |            | Body            | 24Apr06   | 24Apr07              |
|                | -5800MHz Validation Dipole               | 00126     | 1031       | Brain           | 15Mar06   | 15Mar07              |
| 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                  |
|                | Gigatronics 8652A Power Meter            | 00110     | 1835801    | 12Apr06         | 12Apr07   |                      |
| x              | Gigatronics 8652A Power Meter            | 00007     | 1835272    | 03Feb06         | 03Feb07   |                      |
|                | Gigatronics 80701A Power Sensor          | 00011     | 1833542    | 03Feb06         | 03Feb07   |                      |
|                | Gigatronics 80701A Power Sensor          | 00012     | 1834350    | 12Sep05         | 12Sep06   |                      |
| x              | Gigatronics 80701A Power Sensor          | 00013     | 1833713    | 03Feb06         | 03Feb07   |                      |
| x              | Gigatronics 80701A Power Sensor          | 00014     | 1833699    | 07Sep05         | 07Sep06   |                      |
| x              | HP 8753ET Network Analyzer               | 00134     | US39170292 | 18Apr06         | 18Apr07   |                      |
| x              | HP 8648D Signal Generator                | 00005     | 3847A00611 | N/A             | N/A       | N/A                  |
|                | Rohde & Schwarz SMR40 Signal Generator   | 00006     | 100104     | 06Apr06         | 06Apr07   |                      |
| x              | Amplifier Research 5S1G4 Power Amplifier | 00106     | 26235      | N/A             | N/A       | N/A                  |
| x              | HP E4408B Spectrum Analyzer              | 00015     | US39240170 | 02-Feb-06       | 02-Feb-07 |                      |

|           |                             |  |  |         |             |           |  |         |
|-----------|-----------------------------|--|--|---------|-------------|-----------|--|---------|
| Company:  | Socket Communications, Inc. |  |  | FCC ID: | LUB80211GCF | IC ID:    | 2529A-80211GCF                             | socket® |
| Model(s): | P500                        |  |  | Name:   | GoWi-Fi!    | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |         |

|  |                         |                     |                           |                    |
|--|-------------------------|---------------------|---------------------------|--------------------|
| <br>Testing and Engineering Services Lab | Test Report Serial No.: | 070406LUB-T762-S15W | Test Report Issue Date:   | July 17, 2006      |
|  | Date(s) of Evaluation:  | July 06, 2006       | Test Report Revision No.: | Revision 1.1       |
|  | Description of Tests:   | RF Exposure         | SAR                       | FCC 47 CFR §2.1093 |

## 15.0 MEASUREMENT UNCERTAINTIES

| UNCERTAINTY BUDGET FOR DEVICE EVALUATION   |                           |                          |             |       |                                |                    |
|--|---------------------------|--------------------------|-------------|-------|--------------------------------|--------------------|
| Error Description  | Uncertainty Value $\pm\%$ | Probability Distribution | Divisor     | ci 1g | Uncertainty Value $\pm\%$ (1g) | $V_i$ or $V_{eff}$ |
| <b>Measurement System</b>  |                           |                          |             |       |                                |                    |
| Probe calibration  | 5.9                       | Normal                   | 1           | 1     | 5.9                            | $\infty$           |
| Axial isotropy of the probe  | 4.7                       | Rectangular              | 1.732050808 | 0.7   | 1.9                            | $\infty$           |
| Spherical isotropy of the probe  | 9.6                       | Rectangular              | 1.732050808 | 0.7   | 3.9                            | $\infty$           |
| Spatial resolution   | 0                         | Rectangular              | 1.732050808 | 1     | 0.0                            | $\infty$           |
| Boundary effects   | 1                         | Rectangular              | 1.732050808 | 1     | 0.6                            | $\infty$           |
| Probe linearity  | 4.7                       | Rectangular              | 1.732050808 | 1     | 2.7                            | $\infty$           |
| Detection limit  | 1                         | Rectangular              | 1.732050808 | 1     | 0.6                            | $\infty$           |
| Readout electronics  | 0.3                       | Normal                   | 1           | 1     | 0.3                            | $\infty$           |
| Response time  | 0.8                       | Rectangular              | 1.732050808 | 1     | 0.5                            | $\infty$           |
| Integration time   | 2.6                       | Rectangular              | 1.732050808 | 1     | 1.5                            | $\infty$           |
| RF ambient conditions  | 3                         | Rectangular              | 1.732050808 | 1     | 1.7                            | $\infty$           |
| Mech. constraints of robot   | 0.4                       | Rectangular              | 1.732050808 | 1     | 0.2                            | $\infty$           |
| Probe positioning  | 2.9                       | Rectangular              | 1.732050808 | 1     | 1.7                            | $\infty$           |
| Extrapolation & integration  | 1                         | Rectangular              | 1.732050808 | 1     | 0.6                            | $\infty$           |
| <b>Test Sample Related</b>   |                           |                          |             |       |                                |                    |
| 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                            | $\infty$           |
| <b>Phantom and Setup</b>   |                           |                          |             |       |                                |                    |
| Phantom uncertainty  | 4                         | Rectangular              | 1.732050808 | 1     | 2.3                            | $\infty$           |
| Liquid conductivity (target)   | 5                         | Rectangular              | 1.732050808 | 0.64  | 1.8                            | $\infty$           |
| Liquid conductivity (measured)   | 2.5                       | Normal                   | 1           | 0.64  | 1.6                            | $\infty$           |
| Liquid permittivity (target)   | 5                         | Rectangular              | 1.732050808 | 0.6   | 1.7                            | $\infty$           |
| Liquid permittivity (measured)   | 2.5                       | Normal                   | 1           | 0.6   | 1.5                            | $\infty$           |
| <b>Combined Standard Uncertainty</b>   |                           |                          |             |       |                                |                    |
| <b>Expanded Uncertainty (k=2)</b>  |                           |                          |             |       |                                |                    |
| Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003 (see reference [5]) |                           |                          |             |       |                                |                    |

|                         |                             |  |          |           |  |        |                |   |
|-------------------------|-----------------------------|--|----------|-----------|--|--------|----------------|---|
| Company:                | Socket Communications, Inc. |  |          | FCC ID:   | LUB80211GCF                                | IC ID: | 2529A-80211GCF |  |
| Model(s):               | P500                        | Name:  | GoWi-Fi! | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |        |                |   |
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|--|-------------------------|---------------------|---------------------------|--------------------|
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|  | Date(s) of Evaluation:  | July 06, 2006       | Test Report Revision No.: | Revision 1.1       |
|  | Description of Tests:   | RF Exposure         | SAR                       | FCC 47 CFR §2.1093 |

## MEASUREMENT UNCERTAINTIES (Cont.)

| UNCERTAINTY BUDGET FOR SYSTEM VALIDATION |                      |                          |             |       |                           |                    |
|--|----------------------|--------------------------|-------------|-------|---------------------------|--------------------|
| Error Description                        | Uncertainty Value ±% | Probability Distribution | Divisor     | ci 1g | Uncertainty Value ±% (1g) | $V_i$ or $V_{eff}$ |
| <b>Measurement System</b>                |                      |                          |             |       |                           |                    |
| 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                       | ∞                  |
| <b>Test Sample Related</b>               |                      |                          |             |       |                           |                    |
| Dipole Positioning                       | 2                    | Normal                   | 1.732050808 | 1     | 1.2                       | ∞                  |
| Power & Power Drift                      | 4.7                  | Normal                   | 1.732050808 | 1     | 2.7                       | ∞                  |
| <b>Phantom and Setup</b>                 |                      |                          |             |       |                           |                    |
| 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                       | ∞                  |
| <b>Combined Standard Uncertainty</b>     |                      |                          |             |       | 9.04                      |                    |
| <b>Expanded Uncertainty (k=2)</b>        |                      |                          |             |       | 18.08                     |                    |

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

|                         |                             |  |          |           |  |        |                |   |
|-------------------------|-----------------------------|--|----------|-----------|--|--------|----------------|---|
| Company:                | Socket Communications, Inc. |  |          | FCC ID:   | LUB80211GCF                                | IC ID: | 2529A-80211GCF |  |
| Model(s):               | P500                        | Name:  | GoWi-Fi! | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |        |                |   |
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|  |                         |                           |                         |                    |
|--|-------------------------|---------------------------|-------------------------|--------------------|
|  | Test Report Serial No.: | 070406LUB-T762-S15W       | Test Report Issue Date: | July 17, 2006      |
| Date(s) of Evaluation:   | July 06, 2006           | Test Report Revision No.: | Revision 1.1            |                    |
| Description of Tests:  | RF Exposure             | SAR                       | FCC 47 CFR §2.1093      | IC RSS-102 Issue 2 |

## 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, "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] Schmid & Partner Engineering AG, "DASY4 Manual", V4.5: March 2005.
- [7] FCC TCB Council Workshop, "RF Exposure (RFx) Mobile and Portable Device Review and Approval Procedures, 802.11abg SAR Procedures (Proposed Testing Guidance)": October 2005.

|           |                             |       |          |           |  |        |                |   |
|-----------|-----------------------------|-------|----------|-----------|--|--------|----------------|---|
| Company:  | Socket Communications, Inc. |       |          | FCC ID:   | LUB80211GCF                                | IC ID: | 2529A-80211GCF |  |
| Model(s): | P500                        | Name: | GoWi-Fi! | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |        |                |   |

|   |                         |                     |                           |                    |
|---|-------------------------|---------------------|---------------------------|--------------------|
| <br>Testing and Engineering Services Lab | Test Report Serial No.: | 070406LUB-T762-S15W | Test Report Issue Date:   | July 17, 2006      |
|   | Date(s) of Evaluation:  | July 06, 2006       | Test Report Revision No.: | Revision 1.1       |
|   | Description of Tests:   | RF Exposure         | SAR                       | FCC 47 CFR §2.1093 |

## APPENDIX A - SAR MEASUREMENT DATA

|           |                             |       |          |           |  |        |                |   |
|-----------|-----------------------------|-------|----------|-----------|--|--------|----------------|---|
| Company:  | Socket Communications, Inc. |       |          | FCC ID:   | LUB80211GCF                                | IC ID: | 2529A-80211GCF |  |
| Model(s): | P500                        | Name: | GoWi-Fi! | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |        |                |   |

|  |                         |                     |                           |                    |
|--|-------------------------|---------------------|---------------------------|--------------------|
| <br>Testing and Engineering Services Lab | Test Report Serial No.: | 070406LUB-T762-S15W | Test Report Issue Date:   | July 17, 2006      |
|  | Date(s) of Evaluation:  | July 06, 2006       | Test Report Revision No.: | Revision 1.1       |
|  | Description of Tests:   | RF Exposure         | SAR                       | FCC 47 CFR §2.1093 |

Date Tested: 07/06/2006

## Body SAR - 802.11b - 1 Mbps - Front Side of DUT & PDA - 1.0 cm DUT Spacing - 2437 MHz

**DUT: Socket Communications; Model: P500; Type: 802.11b/g Compact Flash Card for PDAs; Serial: 0606001343**

Ambient Temp: 24.9 °C; Fluid Temp: 23.7 °C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: DSSS WLAN

Power Source: Host PDA Li-ion Battery

RF Output Power: 18.2 dBm (Average Conducted)

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

Medium: M2450 ( $\sigma = 1.95 \text{ mho/m}$ ;  $\epsilon_r = 50.3$ ;  $\rho = 1000 \text{ kg/m}^3$ )

- Probe: EX3DV4 - SN3547; ConvF(7.53, 7.53, 7.53); Calibrated: 14/02/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 08/02/2006
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

### Body SAR - Front Side (LCD Side) of Host PDA Touching Planar Phantom

### 10 mm Separation Distance from Front Side of DUT to Planar Phantom - Channel 6 (2437 MHz)

**Area Scan (8x11x1):** Measurement grid: dx=15mm, dy=15mm

### Body SAR - Front Side (LCD Side) of Host PDA Touching Planar Phantom

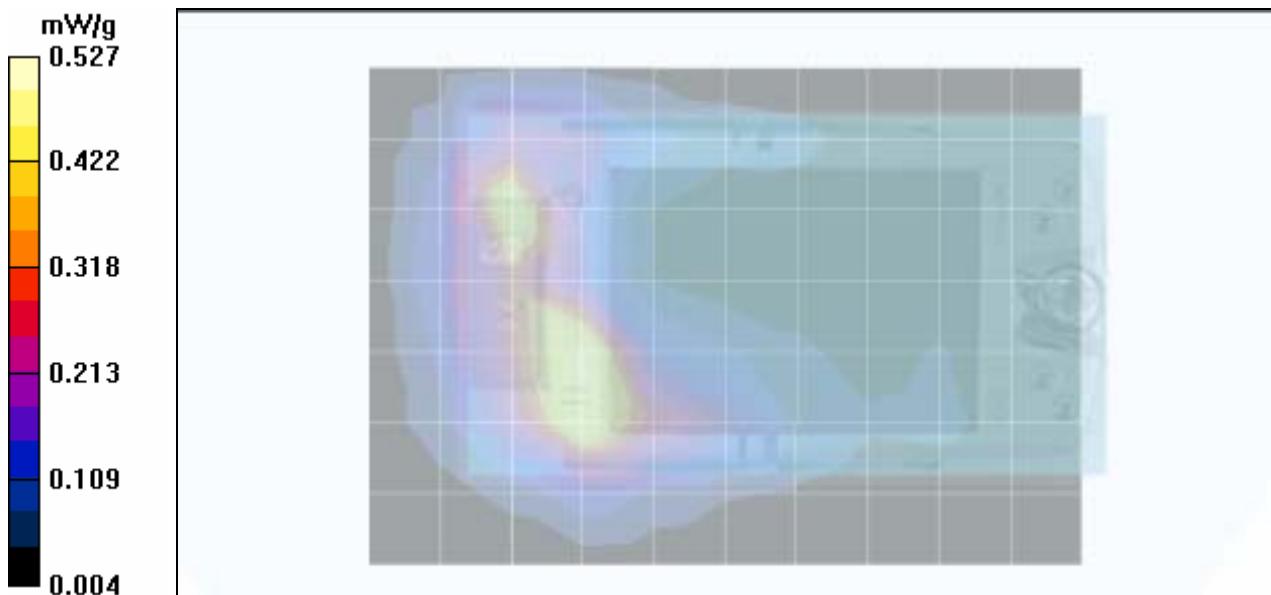
### 10 mm Separation Distance from Front Side of DUT to Planar Phantom - Channel 6 (2437 MHz)

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

Reference Value = 5.12 V/m; Power Drift = -0.0372 dB

Peak SAR (extrapolated) = 0.886 W/kg

**SAR(1 g) = 0.474 mW/g; SAR(10 g) = 0.238 mW/g**



|           |                             |       |          |           |  |        |                |   |
|-----------|-----------------------------|-------|----------|-----------|--|--------|----------------|---|
| Company:  | Socket Communications, Inc. |       |          | FCC ID:   | LUB80211GCF                                | IC ID: | 2529A-80211GCF |  |
| Model(s): | P500                        | Name: | GoWi-Fi! | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |        |                |   |

|   |                         |                     |                           |                    |
|---|-------------------------|---------------------|---------------------------|--------------------|
| <br>Testing and Engineering Services Lab | Test Report Serial No.: | 070406LUB-T762-S15W | Test Report Issue Date:   | July 17, 2006      |
|   | Date(s) of Evaluation:  | July 06, 2006       | Test Report Revision No.: | Revision 1.1       |
|   | Description of Tests:   | RF Exposure         | SAR                       | FCC 47 CFR §2.1093 |

Date Tested: 07/06/2006

### Body SAR - 802.11b - 1 Mbps - Back Side of DUT & PDA - 1.0 cm DUT Spacing - 2437 MHz

**DUT: Socket Communications; Model: P500; Type: 802.11b/g Compact Flash Card for PDAs; Serial: 0606001343**

Ambient Temp: 24.9 °C; Fluid Temp: 23.7 °C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: DSSS WLAN

Power Source: Host PDA Li-ion Battery

RF Output Power: 18.2 dBm (Average Conducted)

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

Medium: M2450 ( $\sigma = 1.95 \text{ mho/m}$ ;  $\epsilon_r = 50.3$ ;  $\rho = 1000 \text{ kg/m}^3$ )

- Probe: EX3DV4 - SN3547; ConvF(7.53, 7.53, 7.53); Calibrated: 14/02/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 08/02/2006
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

#### Body SAR - 8 mm Separation Distance from Back Side (Battery Side) of Host PDA to Planar Phantom

#### 10 mm Separation Distance from Back Side of DUT to Planar Phantom - Channel 6 (2437 MHz)

Area Scan (8x11x1): Measurement grid: dx=15mm, dy=15mm

#### Body SAR - 8 mm Separation Distance from Back Side (Battery Side) of Host PDA to Planar Phantom

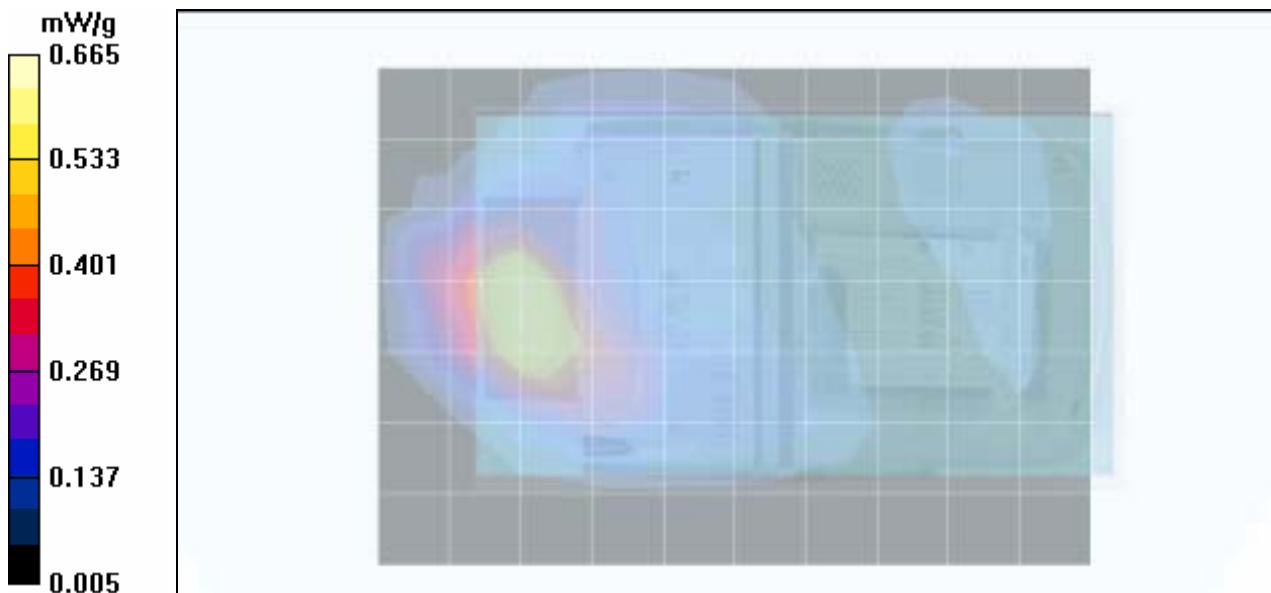
#### 10 mm Separation Distance from Back Side of DUT to Planar Phantom - Channel 6 (2437 MHz)

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

Reference Value = 8.05 V/m; Power Drift = -0.182 dB

Peak SAR (extrapolated) = 1.15 W/kg

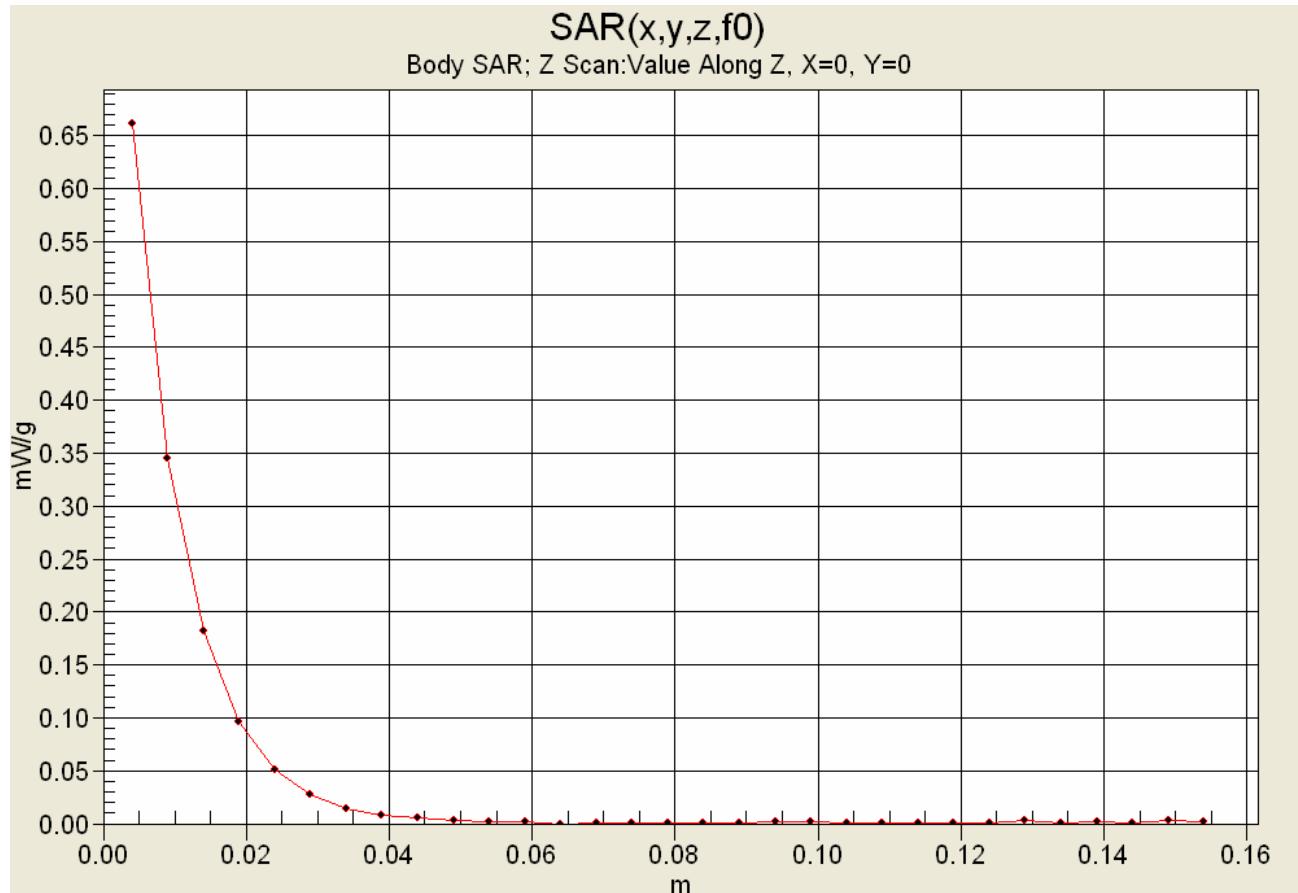
**SAR(1 g) = 0.587 mW/g; SAR(10 g) = 0.290 mW/g**



|           |                             |       |          |           |  |        |                |   |
|-----------|-----------------------------|-------|----------|-----------|--|--------|----------------|---|
| Company:  | Socket Communications, Inc. |       |          | FCC ID:   | LUB80211GCF                                | IC ID: | 2529A-80211GCF |  |
| Model(s): | P500                        | Name: | GoWi-Fi! | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |        |                |   |

|  |                         |                     |                           |                    |
|--|-------------------------|---------------------|---------------------------|--------------------|
| <br>Testing and Engineering Services Lab | Test Report Serial No.: | 070406LUB-T762-S15W | Test Report Issue Date:   | July 17, 2006      |
|  | Date(s) of Evaluation:  | July 06, 2006       | Test Report Revision No.: | Revision 1.1       |
|  | Description of Tests:   | RF Exposure SAR     | FCC 47 CFR §2.1093        | IC RSS-102 Issue 2 |

## Z-Axis Scan



|           |                             |       |          |           |  |        |                |   |
|-----------|-----------------------------|-------|----------|-----------|--|--------|----------------|---|
| Company:  | Socket Communications, Inc. |       |          | FCC ID:   | LUB80211GCF                                | IC ID: | 2529A-80211GCF |  |
| Model(s): | P500                        | Name: | GoWi-Fi! | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |        |                |   |

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|   |                         |                     |                           |                    |
|---|-------------------------|---------------------|---------------------------|--------------------|
| <br>Testing and Engineering Services Lab | Test Report Serial No.: | 070406LUB-T762-S15W | Test Report Issue Date:   | July 17, 2006      |
|   | Date(s) of Evaluation:  | July 06, 2006       | Test Report Revision No.: | Revision 1.1       |
|   | Description of Tests:   | RF Exposure         | SAR                       | FCC 47 CFR §2.1093 |

## APPENDIX B - SYSTEM PERFORMANCE CHECK DATA

|           |                             |       |          |           |  |        |                |   |
|-----------|-----------------------------|-------|----------|-----------|--|--------|----------------|---|
| Company:  | Socket Communications, Inc. |       |          | FCC ID:   | LUB80211GCF                                | IC ID: | 2529A-80211GCF |  |
| Model(s): | P500                        | Name: | GoWi-Fi! | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |        |                |   |

|  |                         |                     |                           |                    |
|--|-------------------------|---------------------|---------------------------|--------------------|
| <br>Testing and Engineering Services Lab | Test Report Serial No.: | 070406LUB-T762-S15W | Test Report Issue Date:   | July 17, 2006      |
|  | Date(s) of Evaluation:  | July 06, 2006       | Test Report Revision No.: | Revision 1.1       |
|  | Description of Tests:   | RF Exposure         | SAR                       | FCC 47 CFR §2.1093 |

Date Tested: 07/06/2006

## System Performance Check (Body) - 2450 MHz Dipole

**DUT: Dipole 2450 MHz; Model: D2450V2; Type: System Performance Check; Serial: 150; Validation: 04/24/2006**

Ambient Temp: 24.9 °C; Fluid Temp: 23.7 °C; Barometric Pressure: 101.1 kPa; Humidity: 35%

Communication System: CW

Forward Conducted Power: 250 mW

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: M2450 ( $\sigma = 1.95 \text{ mho/m}$ ;  $\epsilon_r = 50.3$ ;  $\rho = 1000 \text{ kg/m}^3$ )

- Probe: EX3DV4 - SN3547; ConvF(7.53, 7.53, 7.53); Calibrated: 14/02/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 08/02/2006
- Phantom: SAM 4.0; Type: Fiberglas; 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=10mm, dy=10mm

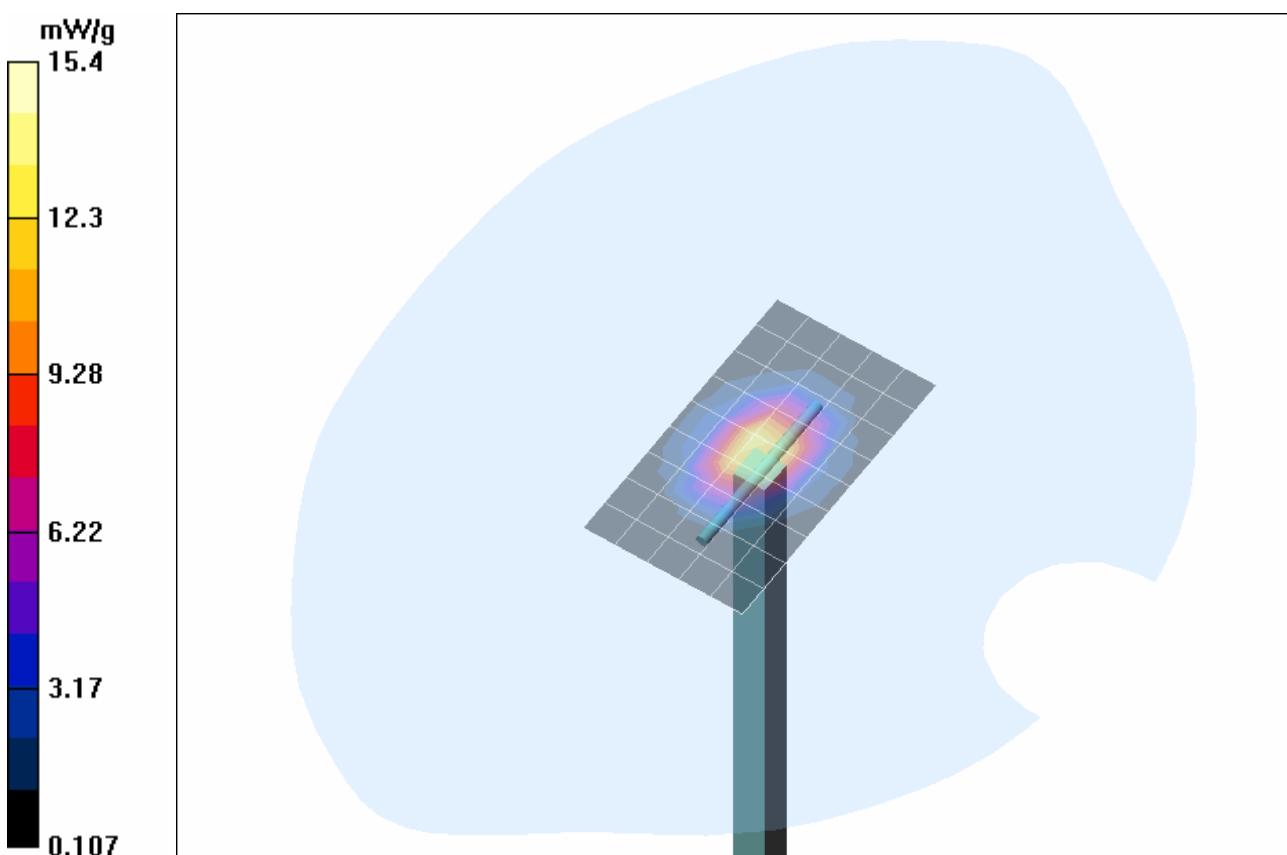
### 2450 MHz Dipole - System Performance Check/Zoom Scan (7x7x7)/Cube 0:

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

Reference Value = 89.4 V/m; Power Drift = -0.049 dB

Peak SAR (extrapolated) = 27.6 W/kg

**SAR(1 g) = 13.3 mW/g; SAR(10 g) = 6.11 mW/g**

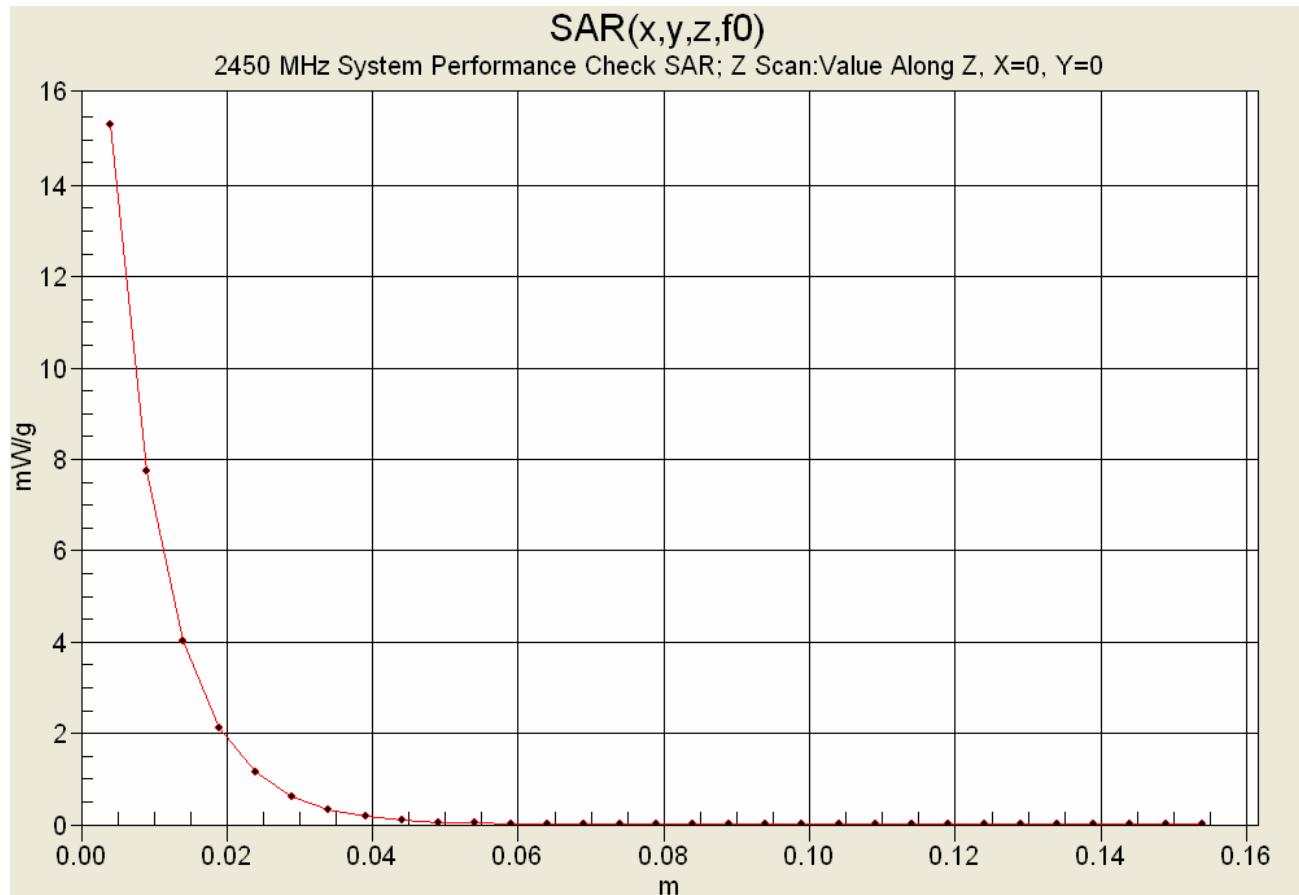


|           |                             |       |          |           |  |        |                |   |
|-----------|-----------------------------|-------|----------|-----------|--|--------|----------------|---|
| Company:  | Socket Communications, Inc. |       |          | FCC ID:   | LUB80211GCF                                | IC ID: | 2529A-80211GCF |  |
| Model(s): | P500                        | Name: | GoWi-Fi! | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |        |                |   |

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|  |                         |                     |                           |                    |
|--|-------------------------|---------------------|---------------------------|--------------------|
| <br>Testing and Engineering Services Lab | Test Report Serial No.: | 070406LUB-T762-S15W | Test Report Issue Date:   | July 17, 2006      |
|  | Date(s) of Evaluation:  | July 06, 2006       | Test Report Revision No.: | Revision 1.1       |
|  | Description of Tests:   | RF Exposure SAR     | FCC 47 CFR §2.1093        | IC RSS-102 Issue 2 |

## Z-Axis Scan



|           |                             |       |          |           |  |        |                |   |
|-----------|-----------------------------|-------|----------|-----------|--|--------|----------------|---|
| Company:  | Socket Communications, Inc. |       |          | FCC ID:   | LUB80211GCF                                | IC ID: | 2529A-80211GCF |  |
| Model(s): | P500                        | Name: | GoWi-Fi! | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |        |                |   |

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|  |                         |                     |                           |                    |
|--|-------------------------|---------------------|---------------------------|--------------------|
| <br>Testing and Engineering Services Lab | Test Report Serial No.: | 070406LUB-T762-S15W | Test Report Issue Date:   | July 17, 2006      |
|  | Date(s) of Evaluation:  | July 06, 2006       | Test Report Revision No.: | Revision 1.1       |
|  | Description of Tests:   | RF Exposure         | SAR                       | FCC 47 CFR §2.1093 |

## APPENDIX C - MEASURED FLUID DIELECTRIC PARAMETERS

|           |                             |       |          |           |  |        |                |   |
|-----------|-----------------------------|-------|----------|-----------|--|--------|----------------|---|
| Company:  | Socket Communications, Inc. |       |          | FCC ID:   | LUB80211GCF                                | IC ID: | 2529A-80211GCF |  |
| Model(s): | P500                        | Name: | GoWi-Fi! | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |        |                |   |

|  |                         |                     |  |                                       |               |
|--|-------------------------|---------------------|--|---------------------------------------|---------------|
| <br>Testing and Engineering Services Lab | Test Report Serial No.: | 070406LUB-T762-S15W |  | Test Report Issue Date:               | July 17, 2006 |
|  | Date(s) of Evaluation:  | July 06, 2006       |  | Test Report Revision No.:             | Revision 1.1  |
|  | Description of Tests:   | RF Exposure SAR     |  | FCC 47 CFR §2.1093 IC RSS-102 Issue 2 |               |

## 2450 MHz System Performance Check & DUT Evaluation (Body)

---

Celltech Labs Inc.

Test Result for UIM Dielectric Parameter

Thu 06/Jul/2006

Frequency (GHz)

FCC\_eH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Epsilon  
 FCC\_sH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Sigma

FCC\_eB FCC Limits for Body Epsilon

FCC\_sB FCC Limits for Body Sigma

Test\_e Epsilon of UIM

Test\_s Sigma of UIM

---

| Freq          | FCC_eB       | FCC_sB      | Test_e       | Test_s      |
|---------------|--------------|-------------|--------------|-------------|
| 2.3500        | 52.83        | 1.85        | 50.39        | 1.80        |
| 2.3600        | 52.82        | 1.86        | 50.35        | 1.81        |
| 2.3700        | 52.81        | 1.87        | 50.34        | 1.82        |
| 2.3800        | 52.79        | 1.88        | 50.39        | 1.85        |
| 2.3900        | 52.78        | 1.89        | 50.33        | 1.87        |
| 2.4000        | 52.77        | 1.90        | 50.32        | 1.87        |
| 2.4100        | 52.75        | 1.91        | 50.31        | 1.88        |
| 2.4200        | 52.74        | 1.92        | 50.33        | 1.90        |
| 2.4300        | 52.73        | 1.93        | 50.37        | 1.90        |
| 2.4400        | 52.71        | 1.94        | 50.36        | 1.94        |
| <b>2.4500</b> | <b>52.70</b> | <b>1.95</b> | <b>50.34</b> | <b>1.95</b> |
| 2.4600        | 52.69        | 1.96        | 50.36        | 1.95        |
| 2.4700        | 52.67        | 1.98        | 50.26        | 1.97        |
| 2.4800        | 52.66        | 1.99        | 50.28        | 1.98        |
| 2.4900        | 52.65        | 2.01        | 50.19        | 2.01        |
| 2.5000        | 52.64        | 2.02        | 50.33        | 2.02        |
| 2.5100        | 52.62        | 2.04        | 50.25        | 2.03        |
| 2.5200        | 52.61        | 2.05        | 50.30        | 2.04        |
| 2.5300        | 52.60        | 2.06        | 50.18        | 2.05        |
| 2.5400        | 52.59        | 2.08        | 50.26        | 2.06        |
| 2.5500        | 52.57        | 2.09        | 50.35        | 2.09        |

|           |                             |       |          |           |  |        |                |   |
|-----------|-----------------------------|-------|----------|-----------|--|--------|----------------|---|
| Company:  | Socket Communications, Inc. |       |          | FCC ID:   | LUB80211GCF                                | IC ID: | 2529A-80211GCF |  |
| Model(s): | P500                        | Name: | GoWi-Fi! | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |        |                |   |

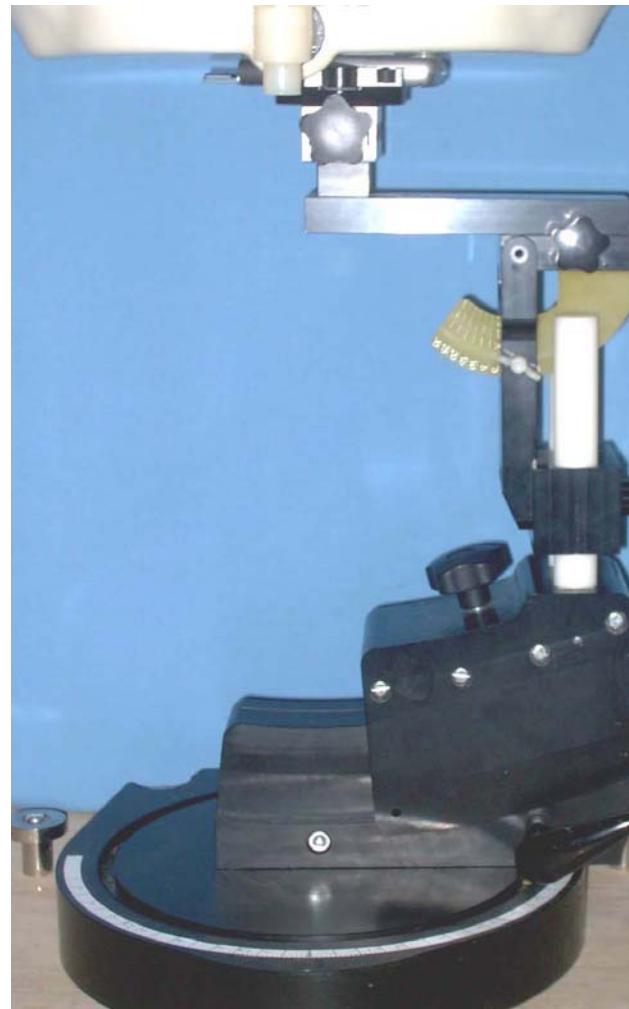
|  |                         |                     |                           |                    |
|--|-------------------------|---------------------|---------------------------|--------------------|
| <br>Testing and Engineering Services Lab | Test Report Serial No.: | 070406LUB-T762-S15W | Test Report Issue Date:   | July 17, 2006      |
|  | Date(s) of Evaluation:  | July 06, 2006       | Test Report Revision No.: | Revision 1.1       |
|  | Description of Tests:   | RF Exposure         | SAR                       | FCC 47 CFR §2.1093 |

## APPENDIX D - SAR TEST SETUP PHOTOGRAPHS

|           |                             |       |          |           |  |        |                |   |
|-----------|-----------------------------|-------|----------|-----------|--|--------|----------------|---|
| Company:  | Socket Communications, Inc. |       |          | FCC ID:   | LUB80211GCF                                | IC ID: | 2529A-80211GCF |  |
| Model(s): | P500                        | Name: | GoWi-Fi! | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |        |                |   |

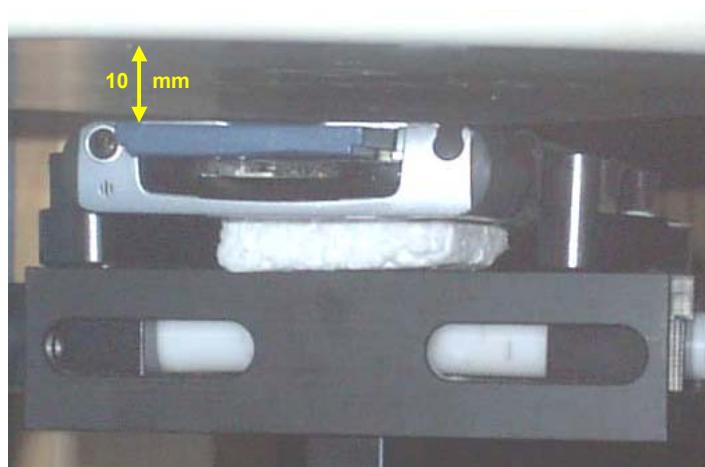
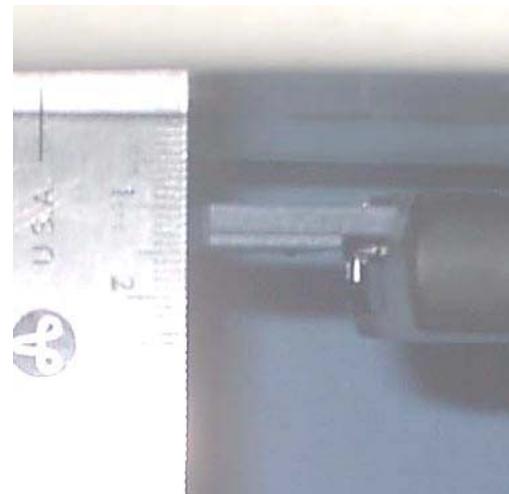
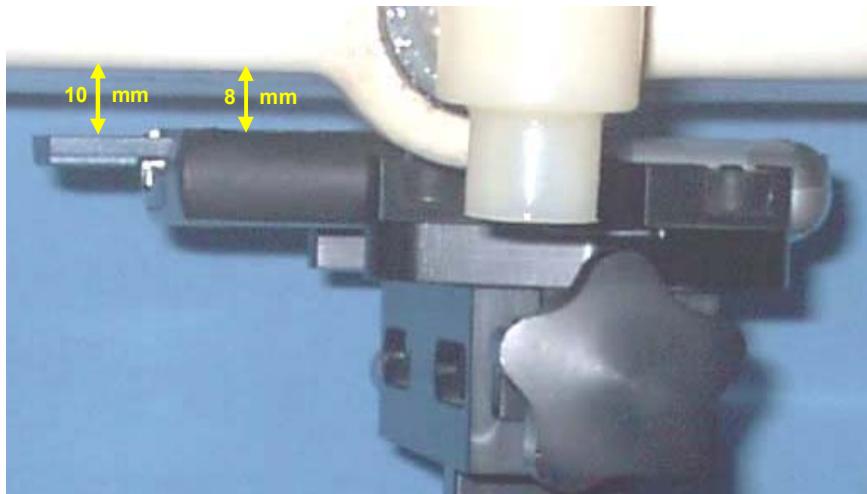
## BODY SAR TEST SETUP PHOTOGRAPHS

Front Side of PDA Touching Planar Phantom  
10 mm Separation Distance from Front Side of DUT to Planar Phantom



## BODY SAR TEST SETUP PHOTOGRAPHS

8 mm Air-Gap Distance from Back Side of PDA to Planar Phantom  
10 mm Separation Distance from Back Side of DUT to Planar Phantom



|                         |                     |                           |                    |
|-------------------------|---------------------|---------------------------|--------------------|
| Test Report Serial No.: | 070406LUB-T762-S15W | Test Report Issue Date:   | July 17, 2006      |
| Date(s) of Evaluation:  | July 06, 2006       | Test Report Revision No.: | Revision 1.1       |
| Description of Tests:   | RF Exposure SAR     | FCC 47 CFR §2.1093        | IC RSS-102 Issue 2 |

## DUT PHOTOGRAPHS



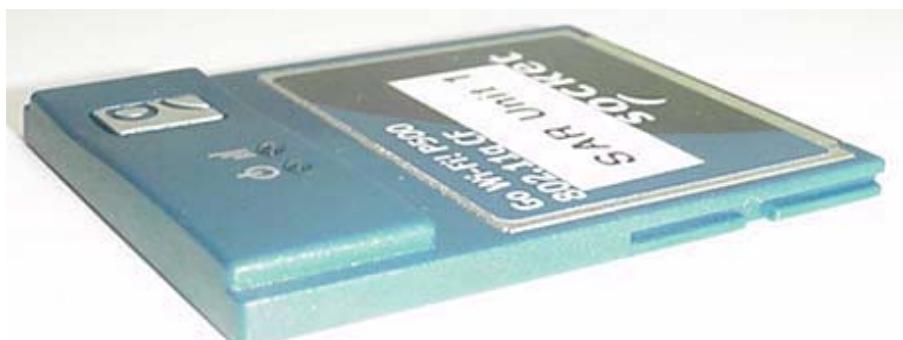
Front of DUT



Back of DUT



Bottom End - Right Side of DUT



Top End - Left Side of DUT

|           |                             |  |  |         |             |           |  |   |
|-----------|-----------------------------|--|--|---------|-------------|-----------|--|---|
| Company:  | Socket Communications, Inc. |  |  | FCC ID: | LUB80211GCF | IC ID:    | 2529A-80211GCF                             |  |
| Model(s): | P500                        |  |  | Name:   | GoWi-Fi!    | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |   |

|                         |                     |     |                           |                    |
|-------------------------|---------------------|-----|---------------------------|--------------------|
| Test Report Serial No.: | 070406LUB-T762-S15W |     | Test Report Issue Date:   | July 17, 2006      |
| Date(s) of Evaluation:  | July 06, 2006       |     | Test Report Revision No.: | Revision 1.1       |
| Description of Tests:   | RF Exposure         | SAR | FCC 47 CFR §2.1093        | IC RSS-102 Issue 2 |

## DUT PHOTOGRAPHS

### DUT in HP iPAQ Host PDA



Front Side of DUT in Host PDA



Back Side of DUT in Host PDA  
(with Lithium-ion Battery)

|           |                             |  |  |         |             |           |  |   |
|-----------|-----------------------------|--|--|---------|-------------|-----------|--|---|
| Company:  | Socket Communications, Inc. |  |  | FCC ID: | LUB80211GCF | IC ID:    | 2529A-80211GCF                             |  |
| Model(s): | P500                        |  |  | Name:   | GoWi-Fi!    | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |   |

|                         |                     |                           |                    |
|-------------------------|---------------------|---------------------------|--------------------|
| Test Report Serial No.: | 070406LUB-T762-S15W | Test Report Issue Date:   | July 17, 2006      |
| Date(s) of Evaluation:  | July 06, 2006       | Test Report Revision No.: | Revision 1.1       |
| Description of Tests:   | RF Exposure SAR     | FCC 47 CFR §2.1093        | IC RSS-102 Issue 2 |

## DUT PHOTOGRAPHS

### DUT in HP iPAQ Host PDA



Right Side of DUT and Host PDA



Left Side of DUT and Host PDA



CF Card Slot - Top End of PDA  
(Compact Flash Card Removed)

|           |                             |       |          |           |  |        |                |   |
|-----------|-----------------------------|-------|----------|-----------|--|--------|----------------|---|
| Company:  | Socket Communications, Inc. |       |          | FCC ID:   | LUB80211GCF                                | IC ID: | 2529A-80211GCF |  |
| Model(s): | P500                        | Name: | GoWi-Fi! | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |        |                |   |

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|  |                         |                     |                           |                    |
|--|-------------------------|---------------------|---------------------------|--------------------|
| <br>Testing and Engineering Services Lab | Test Report Serial No.: | 070406LUB-T762-S15W | Test Report Issue Date:   | July 17, 2006      |
|  | Date(s) of Evaluation:  | July 06, 2006       | Test Report Revision No.: | Revision 1.1       |
|  | Description of Tests:   | RF Exposure         | SAR                       | FCC 47 CFR §2.1093 |

## APPENDIX E - SYSTEM VALIDATION

|           |                             |       |          |           |  |        |                |   |
|-----------|-----------------------------|-------|----------|-----------|--|--------|----------------|---|
| Company:  | Socket Communications, Inc. |       |          | FCC ID:   | LUB80211GCF                                | IC ID: | 2529A-80211GCF |  |
| Model(s): | P500                        | Name: | GoWi-Fi! | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |        |                |   |

|  |                     |                   |                      |                   |
|--|---------------------|-------------------|----------------------|-------------------|
| <br>Celltech<br>Testing and Engineering Services Ltd. | Date of Evaluation: | April 24, 2006    | Document Serial No.: | SV2450B-042406-R0 |
|  | Evaluation Type:    | System Validation | Validation Dipole:   | 2450 MHz Body     |

## 2450 MHz SYSTEM VALIDATION DIPOLE

Type:

**2450 MHz Validation Dipole**

Asset Number:

**00025**

Serial Number:

**150**

Place of Validation:

**Celltech Labs Inc.**

Date of Validation:

**April 24, 2006**

**Celltech Labs Inc. hereby certifies that the 2450 MHz System Validation (Body) was performed on the date indicated above.**

Performed by:

**Sean Johnston**

Approved by:

**Spencer Watson**

## 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:

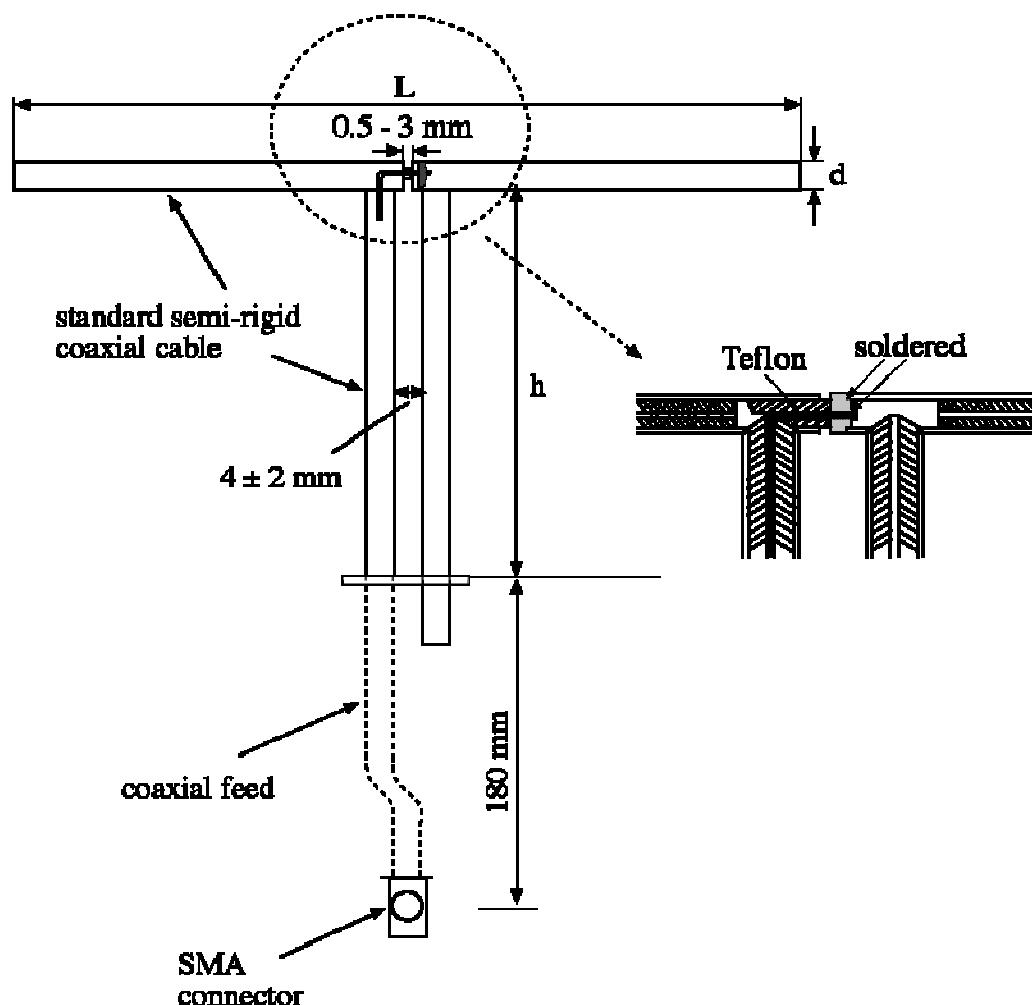
Feed point impedance at 2450 MHz

$$\text{Re}\{Z\} = 45.082\Omega$$

$$\text{Im}\{Z\} = 2.1797\Omega$$

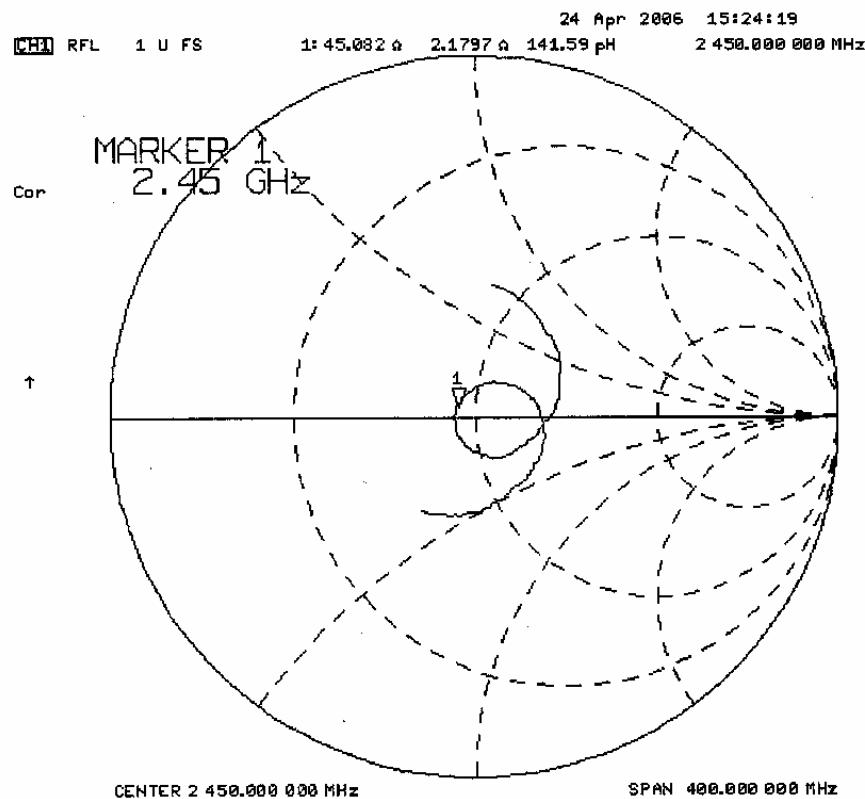
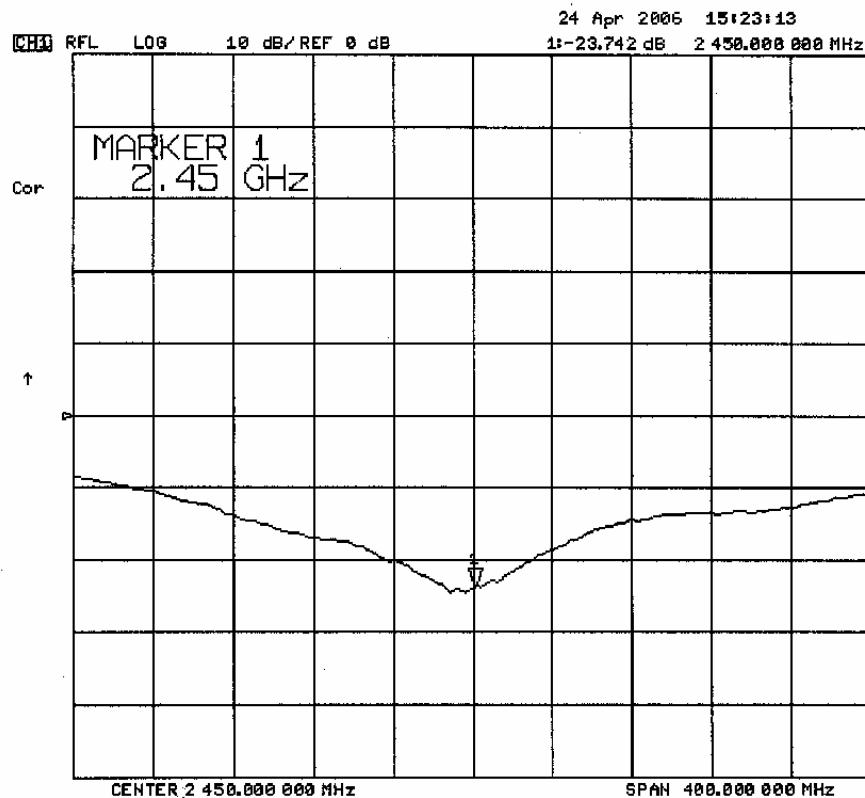
Return Loss at 2450 MHz

$$-23.742\text{dB}$$



|  |                     |                   |                      |                   |
|--|---------------------|-------------------|----------------------|-------------------|
| <br>Testing and Engineering Services Ltd. | Date of Evaluation: | April 24, 2006    | Document Serial No.: | SV2450B-042406-R0 |
|  | Evaluation Type:    | System Validation | Validation Dipole:   | 2450 MHz Body     |

## 2. Validation Dipole VSWR Data



|   |                     |                   |                      |                   |      |
|---|---------------------|-------------------|----------------------|-------------------|------|
| <br>Celltech<br><small>Testing and Engineering Services Ltd.</small> | Date of Evaluation: | April 24, 2006    | Document Serial No.: | SV2450B-042406-R0 |      |
|   | Evaluation Type:    | System Validation | Validation Dipole:   | 2450 MHz          | Body |

### 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)

|   |                     |                   |                      |                   |
|---|---------------------|-------------------|----------------------|-------------------|
| <b>Celltech</b><br>Testing and Engineering Services Ltd | Date of Evaluation: | April 24, 2006    | Document Serial No.: | SV2450B-042406-R0 |
|   | Evaluation Type:    | System Validation | Validation Dipole:   | 2450 MHz Body     |

## 5. 2450 MHz System Validation Setup



|   |                     |                   |                      |                   |
|---|---------------------|-------------------|----------------------|-------------------|
| <b>Celltech</b><br>Testing and Engineering Services Ltd | Date of Evaluation: | April 24, 2006    | Document Serial No.: | SV2450B-042406-R0 |
|   | Evaluation Type:    | System Validation | Validation Dipole:   | 2450 MHz Body     |

## 6. 2450 MHz Dipole Setup



|  |                     |                   |                      |                   |
|--|---------------------|-------------------|----------------------|-------------------|
| <br>Celltech<br><small>Testing and Engineering Services Ltd</small> | Date of Evaluation: | April 24, 2006    | Document Serial No.: | SV2450B-042406-R0 |
|  | Evaluation Type:    | System Validation | Validation Dipole:   | 2450 MHz Body     |

## 7. Measurement Conditions

The planar phantom was filled with 2450 MHz Body tissue simulant:

Relative Permittivity: 51.2  
 Conductivity: 1.89 mho/m  
 Fluid Temperature: 23.9 °C  
 Fluid Depth: ≥ 15.0 cm

Environmental Conditions:

Ambient Temperature: 24.9 °C  
 Humidity: 30 %  
 Barometric Pressure: 101.1 kPa

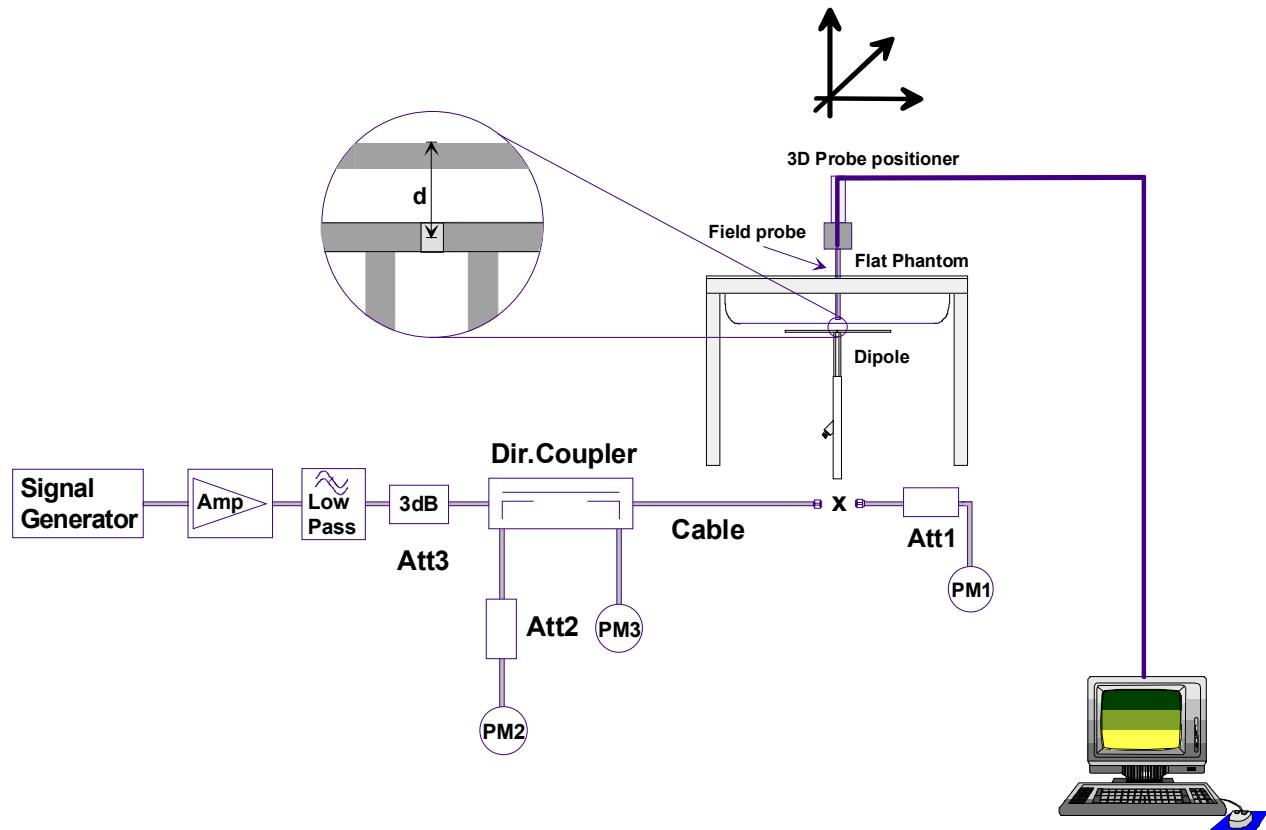
Measurements were made at the planar section of the SAM phantom using a dosimetric E-field probe ET3DV5 (S/N: 1590, conversion factor 4.22).

The 2450 MHz Body tissue simulant consisted of the following ingredients:

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

## 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                 | 12.7                               | 50.80                           | 5.87                                | 23.48                            | 14.40                  |
| Test 2                 | 12.8                               | 51.20                           | 5.88                                | 23.52                            | 14.40                  |
| Test 3                 | 12.6                               | 50.40                           | 5.81                                | 23.24                            | 14.10                  |
| Test 4                 | 13.1                               | 52.40                           | 6.05                                | 24.20                            | 14.70                  |
| Test 5                 | 12.7                               | 50.80                           | 5.84                                | 23.36                            | 14.20                  |
| Test 6                 | 12.6                               | 50.40                           | 5.79                                | 23.16                            | 14.10                  |
| Test 7                 | 12.9                               | 51.60                           | 6.00                                | 24.00                            | 14.50                  |
| Test 8                 | 12.9                               | 51.60                           | 5.99                                | 23.96                            | 14.50                  |
| Test 9                 | 13.1                               | 52.40                           | 6.09                                | 24.36                            | 14.80                  |
| Test10                 | 13.2                               | 52.80                           | 6.09                                | 24.36                            | 14.90                  |
| <b>Average Value</b>   | <b>12.86</b>                       | <b>51.44</b>                    | <b>5.94</b>                         | <b>23.76</b>                     | <b>14.46</b>           |

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%   | 51.44                     | +0.47%  | 23.7  | +/- 10%                   |

| 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.

|  |                     |                   |                      |                   |      |
|--|---------------------|-------------------|----------------------|-------------------|------|
| <br>Testing and Engineering Services Ltd. | Date of Evaluation: | April 24, 2006    | Document Serial No.: | SV2450B-042406-R0 |      |
|  | Evaluation Type:    | System Validation | Validation Dipole:   | 2450 MHz          | Body |

## 2450 MHz Dipole - System Validation (Body) - April 24, 2006

DUT: Dipole 2450 MHz; Model: D2450V2; Serial: 150; Validated: 04/24/2006

Ambient Temp: 24.9 °C; Fluid Temp: 23.9 °C; Barometric Pressure: 101.1 kPa; Humidity: 30%

Communication System: CW

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: M2450 ( $\sigma = 1.89$  mho/m;  $\epsilon_r = 51.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>)

- Probe: ET3DV6 - SN1590; ConvF(4.22, 4.22, 4.22); Calibrated: 20/05/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 15/06/2005
- Phantom: Barski Industries; Type: Fiberglas Planar; Serial: 03-01
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

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

**2450 MHz System Validation/Zoom Scan 1 (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 84.0 V/m; Power Drift = -0.104 dB

**SAR(1 g) = 12.7 mW/g; SAR(10 g) = 5.87 mW/g**

Maximum value of SAR (measured) = 14.4 mW/g

**2450 MHz System Validation/Zoom Scan 2 (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 83.9 V/m; Power Drift = -0.070 dB

**SAR(1 g) = 12.8 mW/g; SAR(10 g) = 5.88 mW/g**

Maximum value of SAR (measured) = 14.4 mW/g

**2450 MHz System Validation/Zoom Scan 3 (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 84.1 V/m; Power Drift = -0.039 dB

**SAR(1 g) = 12.6 mW/g; SAR(10 g) = 5.81 mW/g**

Maximum value of SAR (measured) = 14.1 mW/g

**2450 MHz System Validation/Zoom Scan 4 (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 86.2 V/m; Power Drift = -0.026 dB

**SAR(1 g) = 13.1 mW/g; SAR(10 g) = 6.05 mW/g**

Maximum value of SAR (measured) = 14.7 mW/g

**2450 MHz System Validation/Zoom Scan 5 (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 83.3 V/m; Power Drift = 0.014 dB

**SAR(1 g) = 12.7 mW/g; SAR(10 g) = 5.84 mW/g**

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

**2450 MHz System Validation/Zoom Scan 6 (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 84.5 V/m; Power Drift = -0.037 dB

**SAR(1 g) = 12.6 mW/g; SAR(10 g) = 5.79 mW/g**

Maximum value of SAR (measured) = 14.1 mW/g

**2450 MHz System Validation/Zoom Scan 7 (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 89.0 V/m; Power Drift = -0.078 dB

**SAR(1 g) = 12.9 mW/g; SAR(10 g) = 6 mW/g**

Maximum value of SAR (measured) = 14.5 mW/g

**2450 MHz System Validation/Zoom Scan 8 (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 89.1 V/m; Power Drift = -0.069 dB

**SAR(1 g) = 12.9 mW/g; SAR(10 g) = 5.99 mW/g**

Maximum value of SAR (measured) = 14.5 mW/g

**2450 MHz System Validation/Zoom Scan 9 (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 89.8 V/m; Power Drift = -0.076 dB

**SAR(1 g) = 13.1 mW/g; SAR(10 g) = 6.09 mW/g**

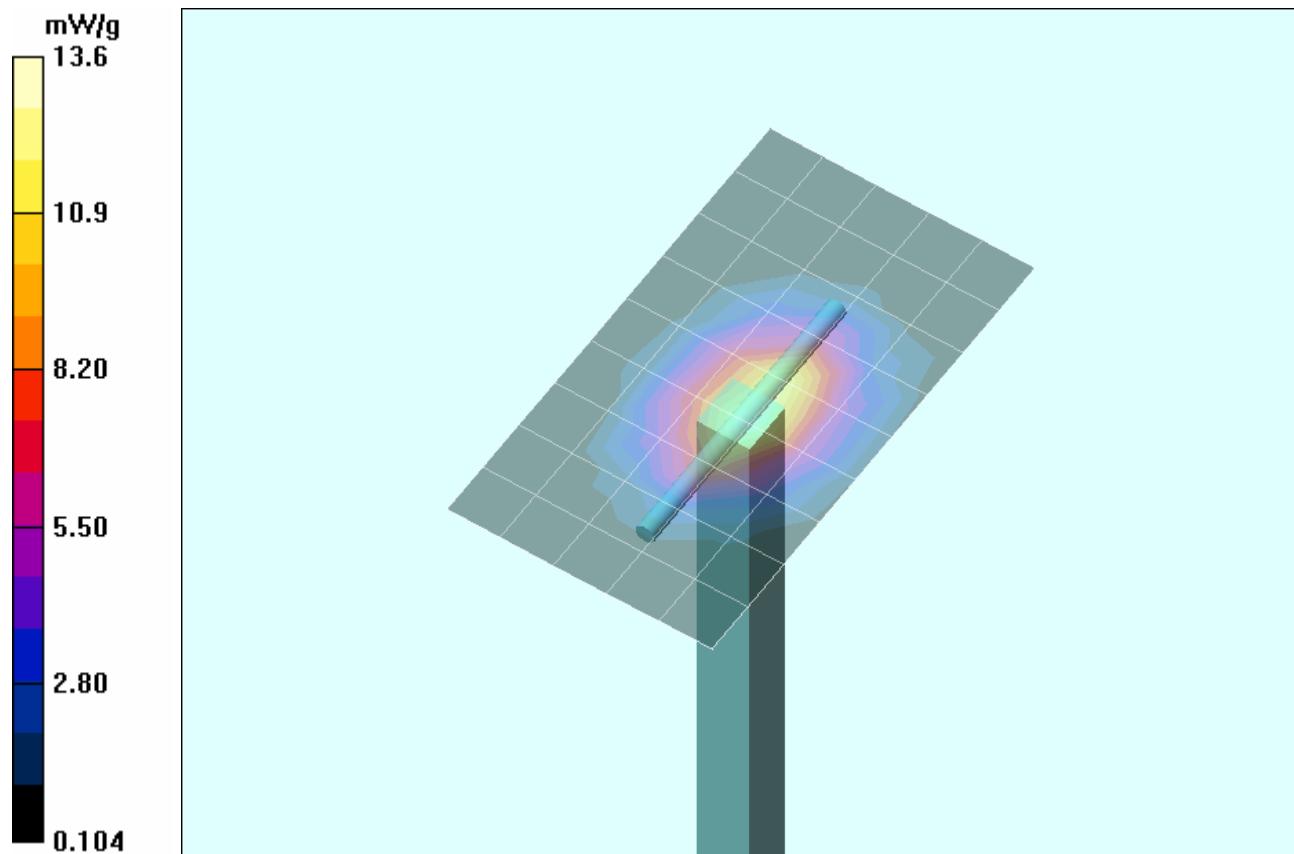
Maximum value of SAR (measured) = 14.8 mW/g

**2450 MHz System Validation/Zoom Scan 10 (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 89.8 V/m; Power Drift = -0.013 dB

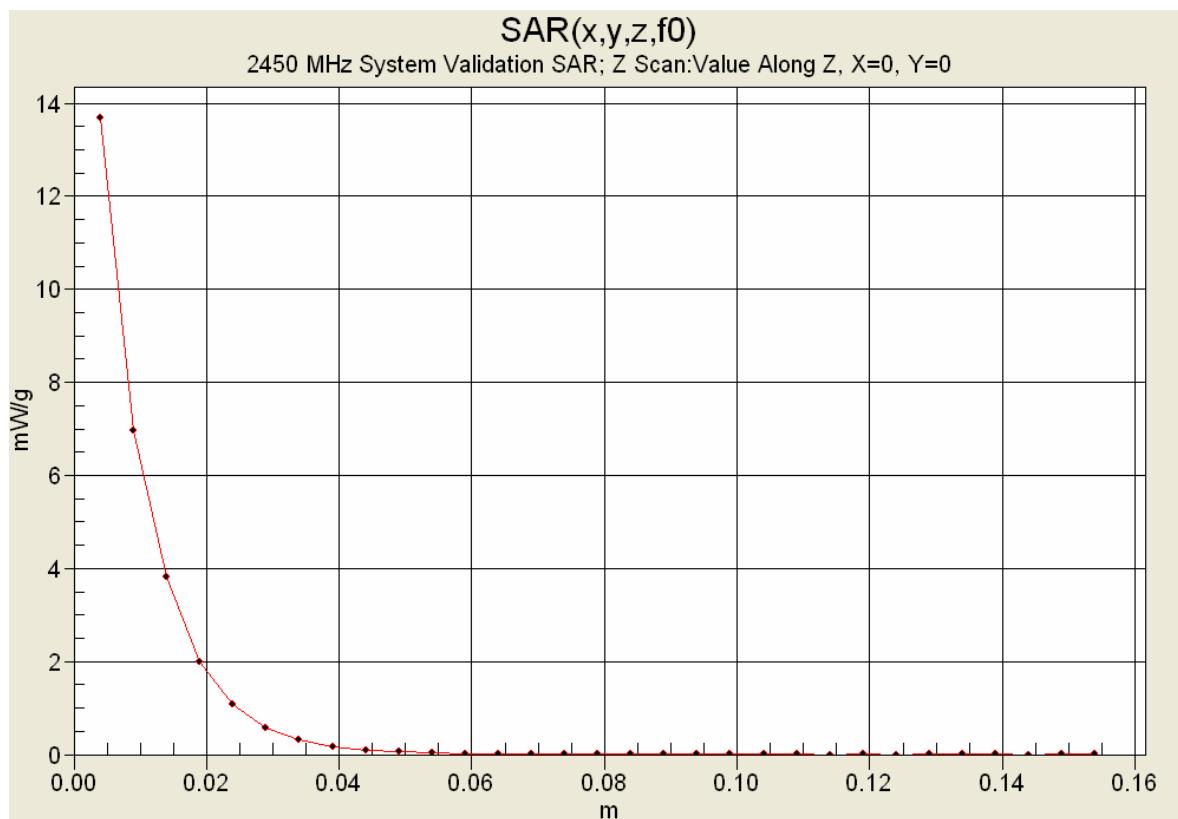
**SAR(1 g) = 13.2 mW/g; SAR(10 g) = 6.09 mW/g**

Maximum value of SAR (measured) = 14.9 mW/g



1 g average of 10 measurements: 12.86 mW/g

10 g average of 10 measurements: 5.94 mW/g



|  |                     |                   |                      |                   |      |
|--|---------------------|-------------------|----------------------|-------------------|------|
| <br>Testing and Engineering Services Ltd. | Date of Evaluation: | April 24, 2006    | Document Serial No.: | SV2450B-042406-R0 |      |
|  | Evaluation Type:    | System Validation | Validation Dipole:   | 2450 MHz          | Body |

## 10. Measured Fluid Dielectric Parameters

### 2450 MHz System Validation (Body)

\*\*\*\*\*  
Celltech Labs Inc.

Test Result for UIM Dielectric Parameter

Mon 24/Apr/2006

Frequency(GHz)

FCC\_eH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Epsilon

FCC\_sH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Sigma

FCC\_eB FCC Limits for Body Epsilon

FCC\_sB FCC Limits for Body Sigma

Test\_e Epsilon of UIM

Test\_s Sigma of UIM

\*\*\*\*\*

| Freq          | FCC_eB       | FCC_sB      | Test_e       | Test_s      |
|---------------|--------------|-------------|--------------|-------------|
| 2.3500        | 52.83        | 1.85        | 51.24        | 1.76        |
| 2.3600        | 52.82        | 1.86        | 51.30        | 1.78        |
| 2.3700        | 52.81        | 1.87        | 51.30        | 1.79        |
| 2.3800        | 52.79        | 1.88        | 51.28        | 1.81        |
| 2.3900        | 52.78        | 1.89        | 51.28        | 1.82        |
| 2.4000        | 52.77        | 1.90        | 51.22        | 1.81        |
| 2.4100        | 52.75        | 1.91        | 51.26        | 1.85        |
| 2.4200        | 52.74        | 1.92        | 51.13        | 1.85        |
| 2.4300        | 52.73        | 1.93        | 51.03        | 1.86        |
| 2.4400        | 52.71        | 1.94        | 51.10        | 1.86        |
| <b>2.4500</b> | <b>52.70</b> | <b>1.95</b> | <b>51.17</b> | <b>1.89</b> |
| 2.4600        | 52.69        | 1.96        | 51.07        | 1.92        |
| 2.4700        | 52.67        | 1.98        | 51.03        | 1.92        |
| 2.4800        | 52.66        | 1.99        | 51.04        | 1.92        |
| 2.4900        | 52.65        | 2.01        | 51.04        | 1.93        |
| 2.5000        | 52.64        | 2.02        | 51.04        | 1.93        |
| 2.5100        | 52.62        | 2.04        | 50.96        | 1.95        |
| 2.5200        | 52.61        | 2.05        | 50.94        | 1.97        |
| 2.5300        | 52.60        | 2.06        | 51.02        | 1.97        |
| 2.5400        | 52.59        | 2.08        | 50.97        | 1.99        |
| 2.5500        | 52.57        | 2.09        | 50.85        | 1.98        |

|  |                         |                     |                           |                    |
|--|-------------------------|---------------------|---------------------------|--------------------|
| <br>Testing and Engineering Services Lab | Test Report Serial No.: | 070406LUB-T762-S15W | Test Report Issue Date:   | July 17, 2006      |
|  | Date(s) of Evaluation:  | July 06, 2006       | Test Report Revision No.: | Revision 1.1       |
|  | Description of Tests:   | RF Exposure         | SAR                       | FCC 47 CFR §2.1093 |

## APPENDIX F - PROBE CALIBRATION

|           |                             |       |          |           |  |        |                |   |
|-----------|-----------------------------|-------|----------|-----------|--|--------|----------------|---|
| Company:  | Socket Communications, Inc. |       |          | FCC ID:   | LUB80211GCF                                | IC ID: | 2529A-80211GCF |  |
| Model(s): | P500                        | Name: | GoWi-Fi! | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |        |                |   |



Accredited by the Swiss Federal Office of Metrology and Accreditation  
 The Swiss Accreditation Service is one of the signatories to the EA  
 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **Celltech Labs**

Certificate No: **EX3-3547\_Feb06**

## CALIBRATION CERTIFICATE

|                                  |  |
|----------------------------------|--|
| Object                           | <b>EX3DV4 - SN:3547</b>  |
| Calibration procedure(s)         | <b>QA CAL-01.v5 and QA CAL-14.v3<br/>Calibration procedure for dosimetric E-field probes</b> |
| Calibration date:                | <b>February 14, 2006</b>   |
| Condition of the calibrated item | <b>In Tolerance</b>  |

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

All calibrations have been conducted in the closed laboratory facility: environment temperature  $(22 \pm 3)^\circ\text{C}$  and humidity  $< 70\%$ .

### Calibration Equipment used (M&TE critical for calibration)

| Primary Standards          | ID #            | Cal Date (Calibrated by, Certificate No.) | Scheduled Calibration |
|----------------------------|-----------------|---|-----------------------|
| Power meter E4419B         | GB41293874      | 3-May-05 (METAS, No. 251-00466)           | May-06                |
| Power sensor E4412A        | MY41495277      | 3-May-05 (METAS, No. 251-00466)           | May-06                |
| Power sensor E4412A        | MY41498087      | 3-May-05 (METAS, No. 251-00466)           | May-06                |
| Reference 3 dB Attenuator  | SN: S5054 (3c)  | 11-Aug-05 (METAS, No. 251-00499)          | Aug-06                |
| Reference 20 dB Attenuator | SN: S5086 (20b) | 3-May-05 (METAS, No. 251-00467)           | May-06                |
| Reference 30 dB Attenuator | SN: S5129 (30b) | 11-Aug-05 (METAS, No. 251-00500)          | Aug-06                |
| Reference Probe ES3DV2     | SN: 3013        | 2-Jan-06 (SPEAG, No. ES3-3013_Jan06)      | Jan-07                |
| DAE4                       | SN: 654         | 2-Feb-06 (SPEAG, No. DAE4-654_Feb06)      | Feb-07                |

| Secondary Standards       | ID #         | Check Date (in house)                    | Scheduled Check        |
|---------------------------|--------------|--|------------------------|
| RF generator HP 8648C     | US3642U01700 | 4-Aug-99 (SPEAG, in house check Nov-05)  | In house check: Nov-07 |
| Network Analyzer HP 8753E | US37390585   | 18-Oct-01 (SPEAG, in house check Nov-05) | In house check: Nov 06 |

| Calibrated by: | Name          | Function          | Signature |
|----------------|---------------|-------------------|-----------|
|                | Katja Pokovic | Technical Manager |           |

| Approved by: | Name         | Function        | Signature |
|--------------|--------------|-----------------|-----------|
|              | Niels Kuster | Quality Manager |           |

Issued: February 14, 2006

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



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 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

### **Glossary:**

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

### **Calibration is Performed According to the Following Standards:**

- IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz)", July 2001

### **Methods Applied and Interpretation of Parameters:**

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

# Probe EX3DV4

## SN:3547

|                  |                   |
|------------------|-------------------|
| Manufactured:    | July 5, 2004      |
| Last calibrated: | January 21, 2005  |
| Recalibrated:    | February 14, 2006 |

**Calibrated for DASY Systems**

(Note: non-compatible with DASY2 system!)

## DASY - Parameters of Probe: EX3DV4 SN:3547

### Sensitivity in Free Space<sup>A</sup>

|       |                          |                                     |
|-------|--------------------------|-------------------------------------|
| NormX | <b>0.399</b> $\pm$ 10.1% | $\mu\text{V}/(\text{V}/\text{m})^2$ |
| NormY | <b>0.423</b> $\pm$ 10.1% | $\mu\text{V}/(\text{V}/\text{m})^2$ |
| NormZ | <b>0.475</b> $\pm$ 10.1% | $\mu\text{V}/(\text{V}/\text{m})^2$ |

### Diode Compression<sup>B</sup>

|       |              |
|-------|--------------|
| DCP X | <b>92</b> mV |
| DCP Y | <b>92</b> mV |
| DCP Z | <b>92</b> mV |

### Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

### Boundary Effect

**TSL**                    **900 MHz**                    **Typical SAR gradient: 5 % per mm**

|   |               |               |
|---|---------------|---------------|
| Sensor Center to Phantom Surface Distance               | <b>2.0 mm</b> | <b>3.0 mm</b> |
| SAR <sub>be</sub> [%]      Without Correction Algorithm | 3.5           | 1.1           |
| SAR <sub>be</sub> [%]      With Correction Algorithm    | 0.1           | 0.4           |

**TSL**                    **1810 MHz**                    **Typical SAR gradient: 10 % per mm**

|   |               |               |
|---|---------------|---------------|
| Sensor Center to Phantom Surface Distance               | <b>2.0 mm</b> | <b>3.0 mm</b> |
| SAR <sub>be</sub> [%]      Without Correction Algorithm | 2.5           | 1.1           |
| SAR <sub>be</sub> [%]      With Correction Algorithm    | 0.2           | 0.4           |

### Sensor Offset

Probe Tip to Sensor Center                    **1.0 mm**

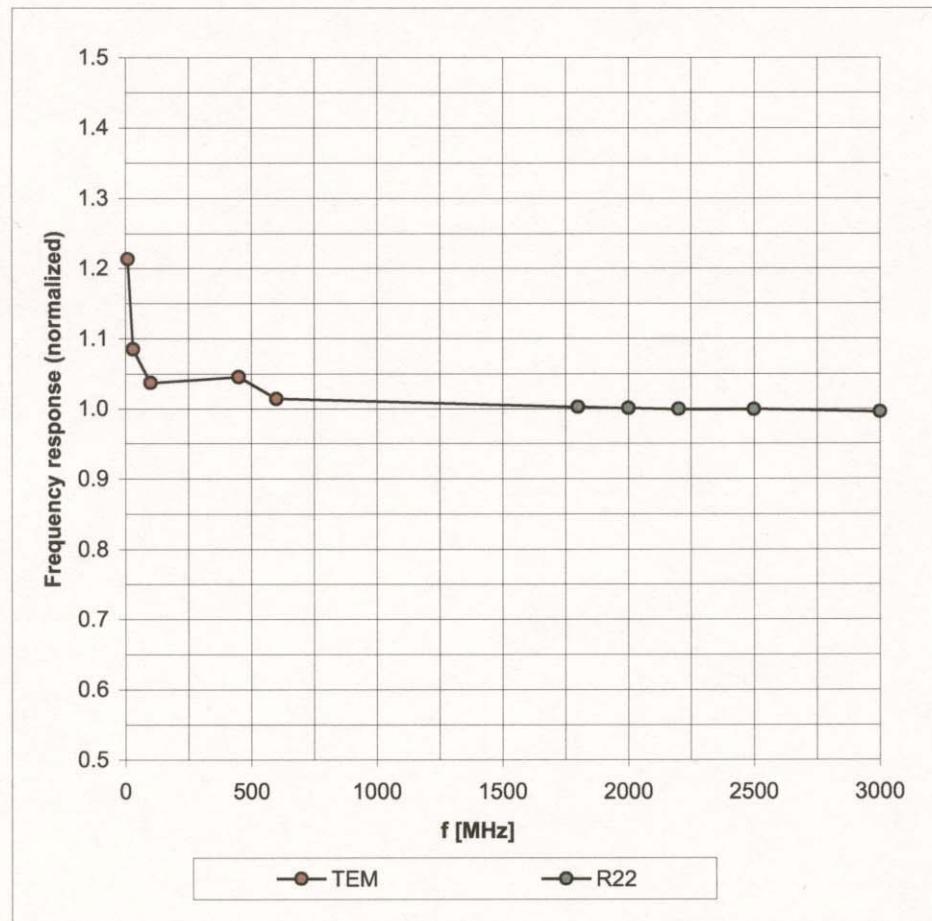
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%.

<sup>A</sup> The uncertainties of NormX,Y,Z do not affect the  $E^2$ -field uncertainty inside TSL (see Page 8).

<sup>B</sup> Numerical linearization parameter: uncertainty not required.

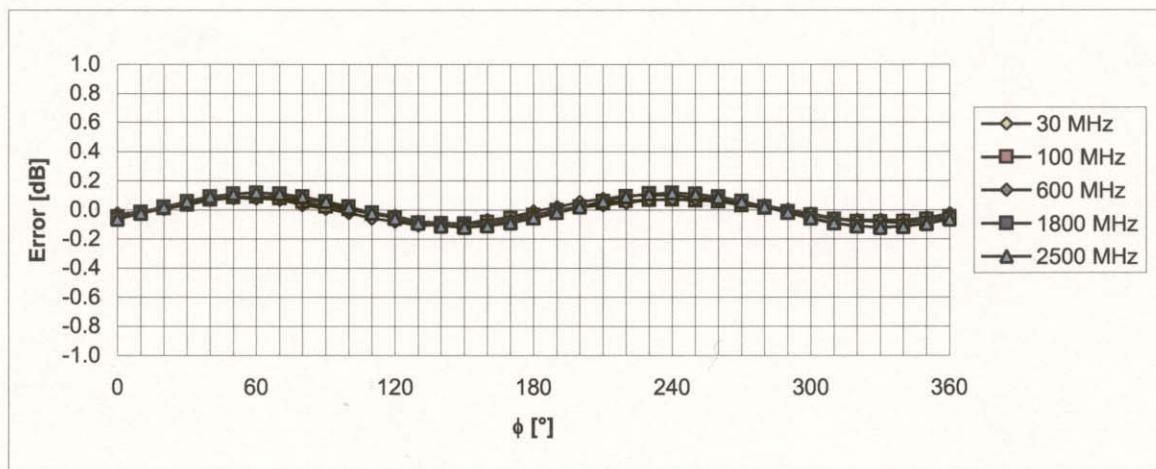
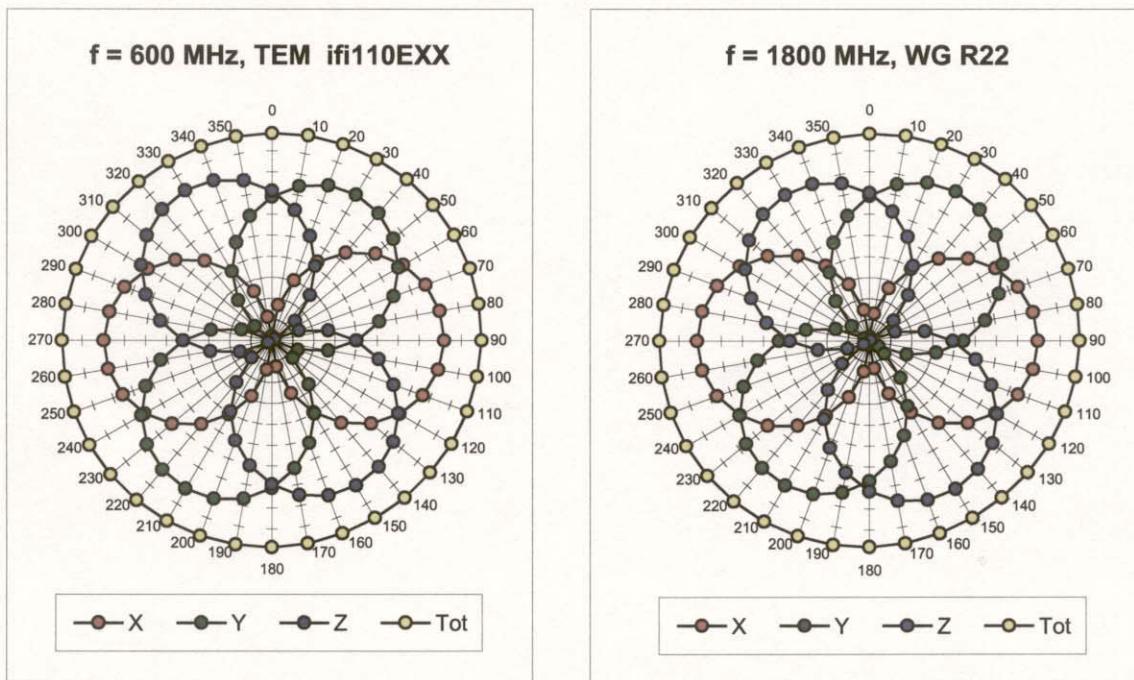
## Frequency Response of E-Field

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



Uncertainty of Frequency Response of E-field:  $\pm 6.3\%$  (k=2)

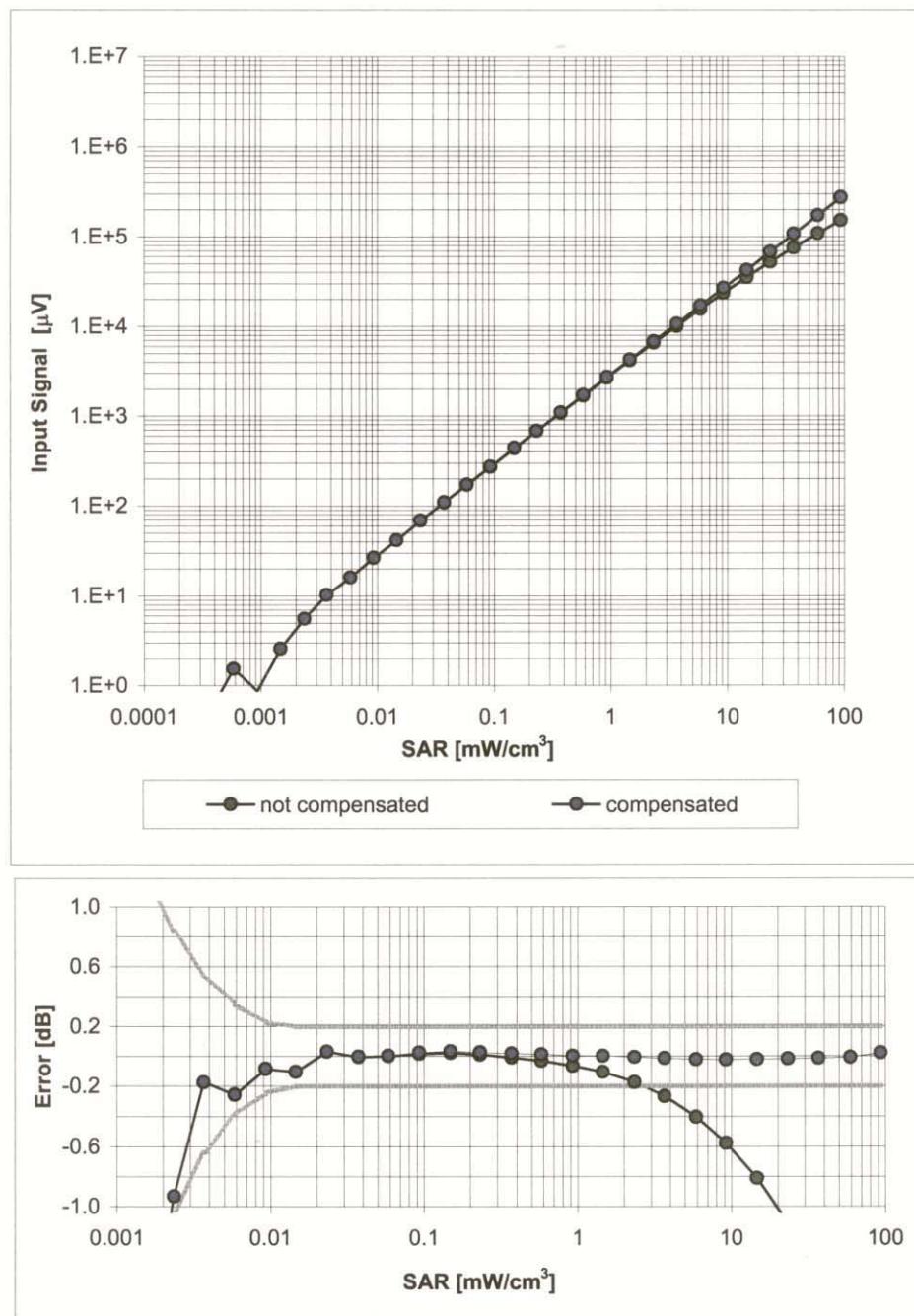
## Receiving Pattern ( $\phi$ ), $\vartheta = 0^\circ$



Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  (k=2)

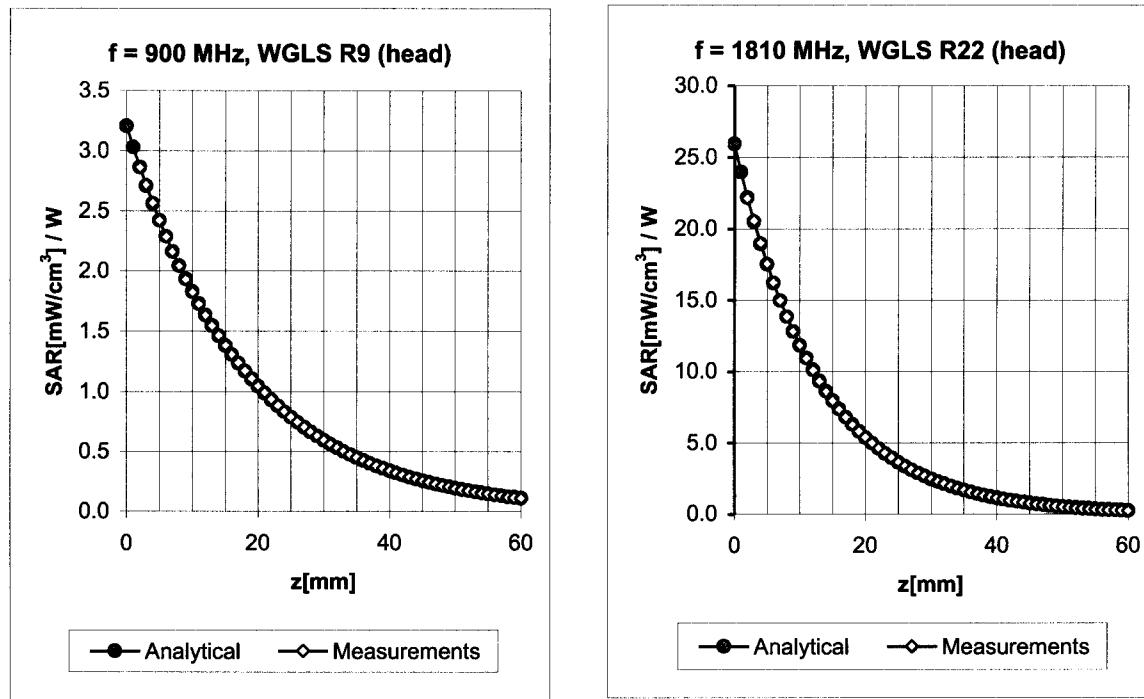
## Dynamic Range f(SAR<sub>head</sub>)

(Waveguide R22, f = 1800 MHz)



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

## Conversion Factor Assessment



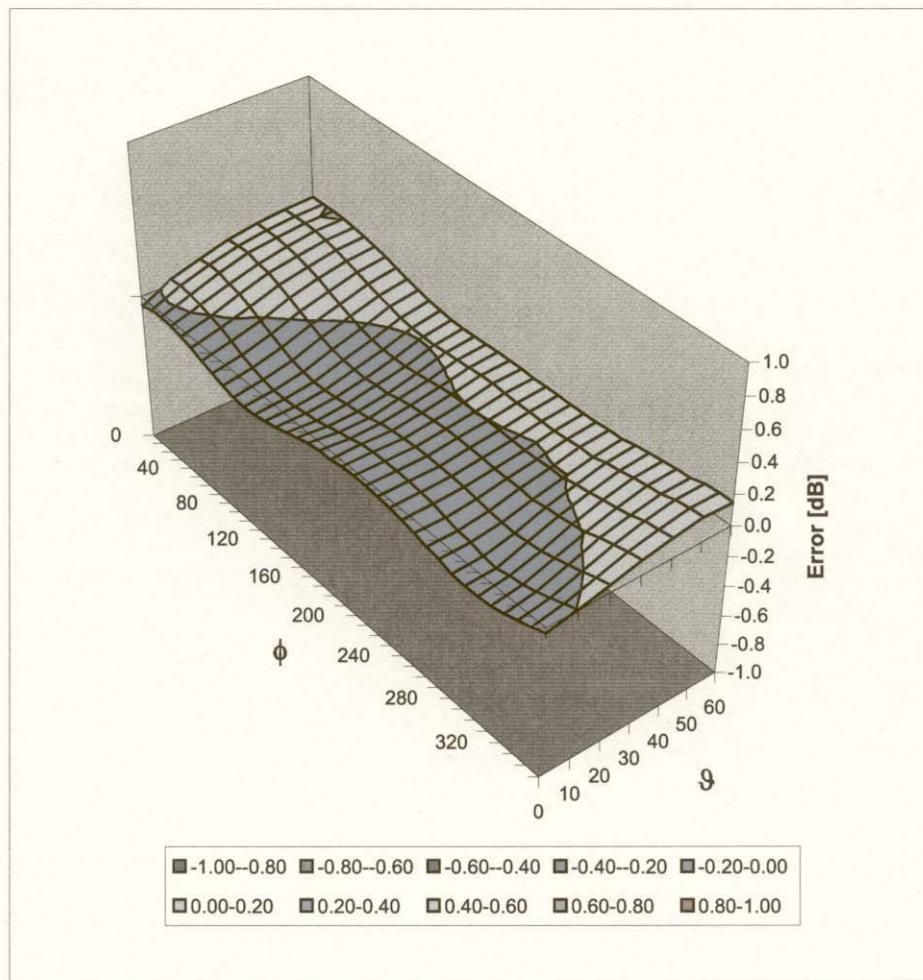
| f [MHz] | Validity [MHz] <sup>c</sup> | TSL  | Permittivity | Conductivity | Alpha | Depth | ConvF | Uncertainty   |
|---------|-----------------------------|------|--------------|--------------|-------|-------|-------|---------------|
| 900     | ± 50 / ± 100                | Head | 41.5 ± 5%    | 0.97 ± 5%    | 0.71  | 0.66  | 9.20  | ± 11.0% (k=2) |
| 1810    | ± 50 / ± 100                | Head | 40.0 ± 5%    | 1.40 ± 5%    | 0.42  | 0.73  | 8.20  | ± 11.0% (k=2) |
| 2450    | ± 50 / ± 100                | Head | 39.2 ± 5%    | 1.80 ± 5%    | 0.55  | 0.56  | 7.41  | ± 11.8% (k=2) |
| 5800    | ± 50 / ± 100                | Head | 35.3 ± 5%    | 5.27 ± 5%    | 0.58  | 0.93  | 4.79  | ± 13.1% (k=2) |

|      |              |      |           |           |      |      |      |               |
|------|--------------|------|-----------|-----------|------|------|------|---------------|
| 900  | ± 50 / ± 100 | Body | 55.0 ± 5% | 1.05 ± 5% | 0.79 | 0.65 | 9.09 | ± 11.0% (k=2) |
| 1810 | ± 50 / ± 100 | Body | 53.3 ± 5% | 1.52 ± 5% | 0.10 | 4.00 | 7.84 | ± 11.0% (k=2) |
| 2450 | ± 50 / ± 100 | Body | 52.7 ± 5% | 1.95 ± 5% | 0.58 | 0.54 | 7.53 | ± 11.8% (k=2) |
| 5200 | ± 50 / ± 100 | Body | 49.0 ± 5% | 5.30 ± 5% | 0.54 | 1.09 | 4.87 | ± 13.1% (k=2) |
| 5500 | ± 50 / ± 100 | Body | 48.6 ± 5% | 5.65 ± 5% | 0.57 | 0.96 | 4.57 | ± 13.1% (k=2) |
| 5800 | ± 50 / ± 100 | Body | 48.2 ± 5% | 6.00 ± 5% | 0.79 | 0.70 | 4.69 | ± 13.1% (k=2) |

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

## Deviation from Isotropy in HSL

Error ( $\phi, \theta$ ),  $f = 900$  MHz



Uncertainty of Spherical Isotropy Assessment:  $\pm 2.6\%$  (k=2)

|  |                         |                     |                           |                    |
|--|-------------------------|---------------------|---------------------------|--------------------|
| <br>Testing and Engineering Services Lab | Test Report Serial No.: | 070406LUB-T762-S15W | Test Report Issue Date:   | July 17, 2006      |
|  | Date(s) of Evaluation:  | July 06, 2006       | Test Report Revision No.: | Revision 1.1       |
|  | Description of Tests:   | RF Exposure         | SAR                       | FCC 47 CFR §2.1093 |

## APPENDIX G - SAM PHANTOM CERTIFICATE OF CONFORMITY

|           |                             |       |          |           |  |        |                |   |
|-----------|-----------------------------|-------|----------|-----------|--|--------|----------------|---|
| Company:  | Socket Communications, Inc. |       |          | FCC ID:   | LUB80211GCF                                | IC ID: | 2529A-80211GCF |  |
| Model(s): | P500                        | Name: | GoWi-Fi! | DUT Type: | 802.11b/g WLAN Compact Flash Card for PDAs |        |                |   |

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## 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<br>Hauptstr. 69<br>CH-8559 Fruthwilen<br>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<br>Relative permittivity < 5<br>Loss tangent < 0.05. | Material sample<br>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

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