

Intermec Technologies Corporation

Model: 1000CP02S

Evaluated to the following SAR Specifications:

FCC 2.1093: 2011
Health Safety Code 6:2009

Report No. ITRM0248.1

Report Prepared By



www.nwemc.com
1-888-EMI-CERT

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SAR Evaluation Report

Certificate of Evaluation
Last Date of Test: August 23, 2011
Intermec Technologies Corporation
Model: 1000CP02S

| Applicable Standards | | | |
|---------------------------|---------------------------|---------------------------------|-----------|
| Test Description | Specification | Test Method | Pass/Fail |
| SAR Evaluation | FCC 2.1093:2011 | FCC OET 65C:2001 | Pass |
| | | IEEE Std 1528:2003 | |
| | | FCC KDB 447498 D01 v04 | |
| | | FCC KDB 941225 D01 v02, and D03 | |
| | FCC KDB 648474 D01 v01r05 | Pass | |
| Health Safety Code 6:2009 | RSS-102, Issue 4:2010 | | |

| Highest SAR Values | | | | |
|--------------------|----------------------|----------------------|-----------------------|------------------------------------|
| Frequency Band | Head 1g (W/kg) | Body 1g (W/kg) | Limit 1g (W/kg) | Exposure Environment |
| Cellular | .360 | .575 | 1.6 | General Population Uncontrolled |
| AWS | .483 | .431 | | |
| PCS | .445 | 1.090 | | |

Modifications made to the product
See the Modifications section of this report

Test Facility

The measurement facility used to collect the data is located at:

Northwest EMC, Inc.
 22975 NW Evergreen Parkway, Suite 400
 Hillsboro, OR 97124

Phone: (503) 844-4066 Fax: 844-3826

Approved By:



Don Facticeau, IS Manager



NVLAP Lab Code: 200630-0

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America.

Product compliance is the responsibility of the client, therefore the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. This Report may only be duplicated in its entirety. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test.

| Revision Number | Description | Date | Page Number |
|-----------------|-------------|------|-------------|
| 00 | None | | |

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.



Accreditations and Authorizations

FCC

Accredited by NVLAP for performance of FCC radio, digital, and ISM device testing. Our Open Area Test Sites, certification chambers, and conducted measurement facilities have been fully described in reports filed with the FCC and accepted by the FCC in letters maintained in our files. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by the FCC as a Telecommunications Certification Body (TCB). This allows Northwest EMC to certify transmitters to FCC specifications in accordance with 47 CFR 2.960 and 2.962.

NVLAP

Northwest EMC, Inc. is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP) for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. NVLAP is administered by the National Institute of Standards and Technology (NIST), an agency of the U.S. Commerce Department. The NVLAP accreditation encompasses Electromagnetic Compatibility Testing in accordance with the European Union EMC Directive 2004/108/EC, and ANSI C63.4. Additionally, Northwest EMC is accredited by NVLAP to perform radio testing in accordance with the European Union R&TTE Directive 1999/5/EEC, the requirements of FCC, and the RSS radio standards for Industry Canada.

Industry Canada

Accredited by NVLAP for performance of Industry Canada RSS and ICES testing. Our Open Area Test Sites and certification chambers comply with RSS-Gen, Issue 2 and have been filed with Industry Canada and accepted. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by NIST and recognized by Industry Canada as a Certification Body (CB) per the APEC Mutual Recognition Arrangement (MRA). This allows Northwest EMC to certify transmitters to Industry Canada technical requirements. (*Site Filing Numbers - Hillsboro: 2834D-1, 2834D-2, Sultan: 2834C-1, Irvine: 2834B-1, 2834B-2, Brooklyn Park: 2834E-1*)

CAB

Designated by NIST and validated by the European Commission as a Conformity Assessment Body (CAB) to conduct tests and approve products to the EMC directive and transmitters to the R&TTE directive, as described in the U.S. - EU Mutual Recognition Agreement.

Australia/New Zealand

The National Association of Testing Authorities (NATA), Australia has been appointed by the ACA as an accreditation body to accredit test laboratories and competent bodies for EMC standards. Accredited test reports or assessments by competent bodies must carry the NATA logo. Test reports made by an overseas laboratory that has been accredited for the relevant standards by an overseas accreditation body that has a Mutual Recognition Agreement (MRA) with NATA are also accepted as technical grounds for product conformity. The report should be endorsed with the respective logo of the accreditation body (NVLAP).



Accreditations and Authorizations

VCCI

Accepted as an Associate Member to the VCCI, Acceptance No. 564. Conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. (*Registration Numbers. - Hillsboro: C-1071, R-1025, G-84, C-2687, T-1658, and R-2318, Irvine: R-1943, G-85, C-2766, and T-1659, Sultan: R-871, G-83, C-1784, and T-1511, Brooklyn Park: R-3125, G-86, G-141, C-3464, and T-1634.*)

BSMI

Northwest EMC has been designated by NIST and validated by C-Taipei (BSMI) as a CAB to conduct tests as described in the APEC Mutual Recognition Agreement (US0017).

GOST

Northwest EMC, Inc. has been assessed and accredited by the Russian Certification bodies Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC, to perform EMC and Hygienic testing for Information Technology Products. As a result of their laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification

KCC

Northwest EMC, Inc is a CAB designated by MRA partners and recognized by Korea. (*Assigned Lab Numbers: Hillsboro: US0017, Irvine: US0158, Sultan: US0157, Brooklyn Park: US0175*)

VIETNAM

Vietnam MIC has approved Northwest EMC as an accredited test lab. Per Decision No. 194/QD-QLCL (dated December 15, 2009), Northwest EMC test reports can be used for Vietnam approval submissions.

SCOPE

For details on the Scopes of our Accreditations, please visit:

<http://www.nwemc.com/accreditations/>



Northwest EMC Locations



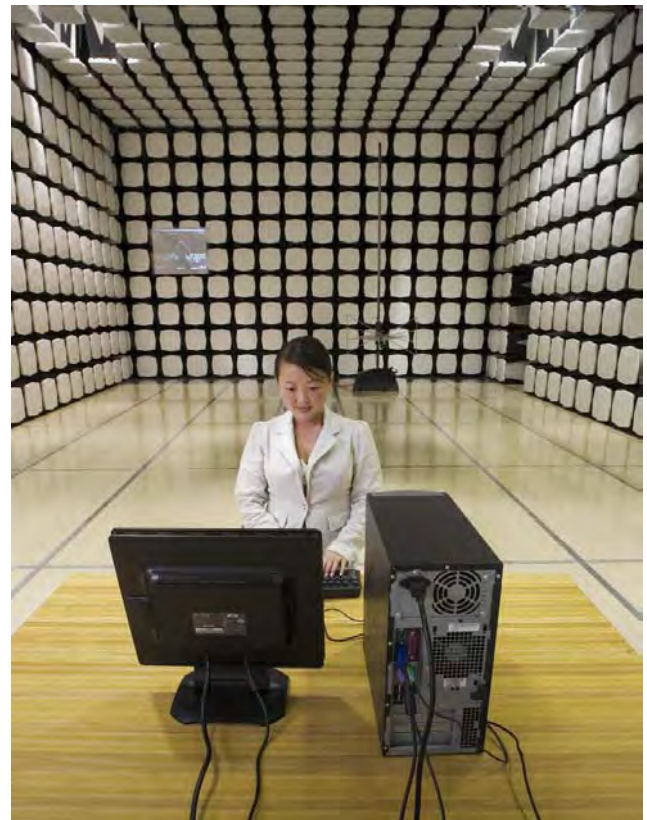
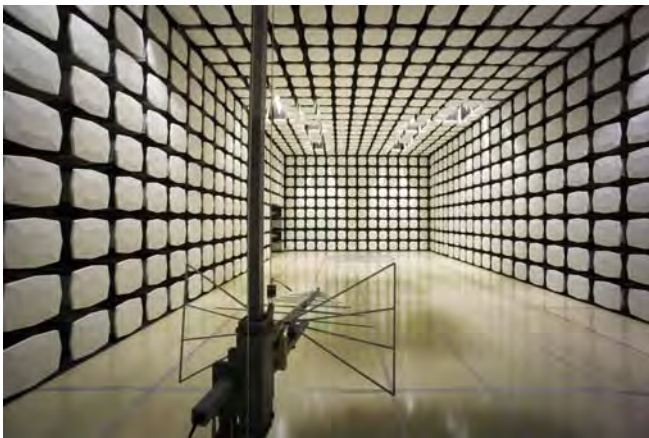
Oregon
Labs EV01-EV12
22975 NW Evergreen Pkwy
Suite 400
Hillsboro, OR 97124
(503) 844-4066

California
Labs OC01-OC13
41 Tesla
Irvine, CA 92618
(949) 861-8918

Minnesota
Labs MN01-MN08
9349 W Broadway Ave.
Brooklyn Park,
MN 55445
(763) 425-2281

Washington
Labs SU01-SU07
14128 339th Ave. SE
Sultan, WA 98294
(360) 793-8675

New York
Labs WA01-WA04
4939 Jordan Rd.
Elbridge, NY 13060
(315) 685-0796



Party Requesting the Test

| | |
|---------------------------------|-----------------------------------|
| Company Name: | Intermec Technologies Corporation |
| Address: | 6001 36 th Avenue West |
| City, State, Zip: | Everett, WA 98203-1264 |
| Test Requested By: | Wayne Rieger |
| Model: | 1000CP02S |
| First Date of Test: | August 8, 2011 |
| Last Date of Test: | August 23, 2011 |
| Receipt Date of Samples: | July 19, 2011 |
| Equipment Design Stage: | Production |
| Equipment Condition: | No Damage |

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test)

The EUT is a handheld computer containing two radio modules, the Intermec Model RC12 and the Sierra Wireless MC8355, each with their own integral antenna.

The Intermec Model RC12 radio module is an 802.11a/b/g/n – Bluetooth radio. It is not capable of 40 MHz channel operation. The 802.11a/b/g/n and Bluetooth radios share the same antenna, but cannot transmit simultaneously. The frequency range of the 802.11a/b/g/n radio:

- 2412 – 2462 MHz
- 5180 – 5320 MHz
- 5500 – 5700 MHz
- 5745 – 5825 MHz

The frequency range of the Bluetooth radio:

- 2402 – 2480 MHz

The Sierra Wireless MC8355 radio module is a UMTS radio. Its frequency range:

- 824.2 – 848.8 MHz (GPRS, EDGE)
- 826.4 – 846.6 MHz (WCDMA, HSDPA, HSUPA)
- 1850.2 – 1909.8 MHz (GPRS, EDGE)
- 1852.4 – 1907.5 MHz (WCDMA, HSDPA, HSUPA)
- 1712.4 – 1752.6 MHz (WCDMA)

The closest spacing between the UMTS antenna and 802.11a/b/g/n antenna is 3.7cm. The 802.11a/b/g/n antenna is on the right side of the handheld computer and the UMTS antenna is on the left side.

In normal operation, the EUT can be held in the hand, or next to the head like a cellular handset, or worn on the body. The only Intermec approved accessory for body worn operation is a holster that contains metal. The EUT can only fit in the holster with the top end of the unit pointing down. The holster cup can be attached to the holster belt with either the keypad facing the user, or the side facing the user. In no case can the back of the EUT face the user.

An optional snap-on audio accessory is available. It connects to the bottom end of the unit and provides a standard audio jack for connection of a VR10 headset.

The EUT is powered by a lithium-ion battery, Model 1000AB01.

Overview of the SAR Evaluation**Objective**

To demonstrate compliance with the SAR requirements of FCC 2.1093 and Canada's Health Safety Code 6.

Scope

The 802.11a/b/g/n – Bluetooth radio was evaluated under a separate SAR evaluation report.

Regarding the UMTS radio:

KDB 648474 D01 is the FCC's Policy for SAR evaluation of handsets with multiple transmitters and antennas. It states:

“Routine SAR evaluation with respect to Section 2.1093 of the rules is required for licensed transmitter to show compliance,”

The SAR evaluation documented in this report is for the UMTS portion of the EUT.

CONFIGURATION 4 ITRM0248**Software/Firmware Running during test**

| Description | Version |
|----------------------|--------------|
| Regulatory Test Tool | 1.01.00.0016 |

EUT

| Description | Manufacturer | Model/Part Number | Serial Number |
|----------------------|-----------------------------------|-------------------|---------------|
| B1 Handheld Computer | Intermec Technologies Corporation | 1000CP02S | 178U1191040 |
| B1 Holster | Intermec Technologies Corporation | X11184-V1-R1 | None |
| A1/B1 Battery | Intermec Technologies Corporation | 1000AB01 | 16961001770 |
| A1/B1 Battery | Intermec Technologies Corporation | 1000AB01 | 24561000347 |

CONFIGURATION 5 ITRM0248**Software/Firmware Running during test**

| Description | Version |
|----------------------|--------------|
| Regulatory Test Tool | 1.01.00.0016 |

EUT

| Description | Manufacturer | Model/Part Number | Serial Number |
|------------------------|-----------------------------------|-------------------|---------------|
| B1 Handheld Computer | Intermec Technologies Corporation | 1000CP02S | 178U1191040 |
| B1 Holster | Intermec Technologies Corporation | X11184-V1-R1 | None |
| Headset | Intermec Technologies Corporation | VR10 | None |
| Standard Audio Snap-On | Intermec Technologies Corporation | 225-771-001 | Proto 2 |
| A1/B1 Battery | Intermec Technologies Corporation | 1000AB01 | 16961001770 |
| A1/B1 Battery | Intermec Technologies Corporation | 1000AB01 | 24561000347 |

Cables

| Cable Type | Shield | Length (m) | Ferrite | Connection 1 | Connection 2 |
|-----------------|--------|------------|---------|--------------------------|-------------------|
| Audio Accessory | PA | | PA | udio Accessory - Headset | Handheld Computer |

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

CONFIGURATION 6 ITRM0248**Software/Firmware Running during test**

| Description | Version |
|----------------------|--------------|
| Regulatory Test Tool | 1.01.00.0016 |

EUT

| Description | Manufacturer | Model/Part Number | Serial Number |
|----------------------|-----------------------------------|-------------------|---------------|
| B1 Handheld Computer | Intermec Technologies Corporation | 1000CP02S | 178U1191040 |
| A1/B1 Battery | Intermec Technologies Corporation | 1000AB01 | 16961001770 |
| A1/B1 Battery | Intermec Technologies Corporation | 1000AB01 | 24561000347 |

| Equipment modifications | | | | | |
|--------------------------------|---------|----------------|--------------------------------------|---|---|
| Item | Date | Test | Modification | Note | Disposition of EUT |
| 1 | 8/8/11 | SAR Evaluation | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Northwest EMC following the test. |
| 2 | 8/23/11 | SAR Evaluation | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | Scheduled testing was completed. |

Per FCC KDB 941225, the conducted output power was measured at the low, middle and high channels in each band. An Agilent 8960 test set, Model E5515C, was used to control the EUT. The following applications were installed on the test set: GSM/GPRS Mobile Test A.13.12 and WCDMA Mobile Test A.17.10. This provided all the necessary tools to operate the EUT in the prescribed manner without any difficulties or equipment limitations.

Per KDB 648474, among the channels required for normal testing, SAR must be measured on the highest conducted output channel (highlighted in the following pages). When the SAR measured on the highest output channel is < 0.8 W/kg, SAR evaluation for the other required channels is unnecessary.

GPRS and EDGE

Per FCC KDB 941225 D03, "SAR must be measured according to these maximum output conditions"

- Maximum output power is verified on the High, Middle, and Low channels
- When multiple slots can be used, the device should be tested to account for the maximum source-based time-averaged output power. Measure GMSK and 8PSK modulations for both one and two time slots.
- When measuring EDGE or EGPRS modes, GMSK modulation should be used to minimize measurement error due to higher peak-to-average power (PAR) ratios inherent in 8-PSK

Results of the power measurement procedure are tabulated on the following pages.

WCDMA, HSDPA, HSUPA

Per FCC KDB 941225 D01 V02, measurements for WCDMA, HSDPA, and HSUPA were made according to the procedures in section section 5.2 of 3GPP2 TS 34.121.

- Maximum output power is verified on the High, Middle, and Low channels
- Use the appropriate RMC or AMR with TPC (transmit power control) set to all "1"s for WCDMA/HSDPA or applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Maximum output power for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HSDPA, HSPA) should be measured
- Voice mode is measured using a 12.2 kbps RMC with TPC bits configured to all "1"s.
- 12.2 kbps AMR is measured with a 3.4 kbps SRB (signaling radio bearer)
- HSPA is measured with HS-DPCCH, E-DPCCH and E-DPDCH all enabled and a 12.2 kbps RMC. FRC is configured according to HS-DPCCH Sub-Test 1 using H-set 1 and QPSK.

The results are tabulated on the following pages.

The Agilent 8960 test set was configured as follows:

WCDMA Rel99

- Set a Test Mode 1 loop back with a 12.2 kbps Reference Measurement Channel (RMC).
- Set and send continuously Up power control commands to the EUT.

HSDPA Rel 6

- Use the “34.121 Preset Call Configs” within the Agilent 8960 which provide the required settings per the defined tables.
- Establish a Test Mode 1 loop back with both 12.2 kbps RMC channel and a Fixed Reference Channel (FRC) using H-Set 1 and QPSK
- Send continuously Up power control commands to the EUT.
- Repeat measurements for HSDPA Subtest 2, 3 and 4

HSUPA Rel 6

- Use the “34.121 Preset Call Configs” within the Agilent 8960 which provide the required settings per the defined tables.
- Use UL RMC 12.2 kbps and FRC H-Set 1 and QPSK, Test Mode 1 loop back.
- Set the Absolute Grant for HSPA Subtest 1 according to the defined tables.
- Set the EUT power to be at least 5 dB lower than the maximum output power
- Send power control bits to give one TPC_cmd = +1 command to the EUT. If the EUT doesn't send any E-DPCH data with decreased E-TFCl within 500 ms, then repeat this process until the decreased E-TFCl is reported.
- Confirm that the E-TFCl transmitted by the EUT is equal to the target E-TFCl in the defined table. If the E-TFCl transmitted by the EUT is not equal to the target E-TFCl, then send power control bits to give one TPC_cmd = -1 command to the EUT. If the EUT sends any E-DPCH data with decreased E-TFCl within 500ms, send new power control bits to give one TPC_cmd = -1 command to the EUT. Then confirm that the E-TFCl transmitted by the EUT is equal to the target E-TFCl in the defined table
- Repeat measurements for HSUPA Subtest 2, 3, 4 and 5.

| | | |
|---|-----------|--------------------------------------|
| EUT: 1000CP02S | | Work Order: ITRM0248 |
| Serial Number: 178U119104 | | Date: 07/19/11 |
| Customer: Intermec Technologies Corporation | | Temperature: 23 |
| Attendees: None | | Humidity: 49% |
| Project: ITRM0227 | | Barometric Pres.: 30.01" |
| Tested by: Rod Peloquin | EUT Power | Battery |
| Job Site: EV12 | | |
| TEST SPECIFICATIONS | | |
| FCC 2.1093:2011 | | Test Method |
| | | FCC OET 65C:2001 |
| COMMENTS | | |
| Conducted output power | | |
| DEVIATIONS FROM TEST STANDARD | | |
| None | | |
| Configuration # | 6 | <i>Rodry L. Pelouin</i> Signature |

| GPRS / 1 slot / GMSK (CS-4) | | |
|-----------------------------|---------|-----------|
| Band | Channel | Power BAP |
| Cellular | 128 | 33.02 |
| | 190 | 33.07 |
| | 251 | 33.03 |
| PCS | 512 | 29.84 |
| | 661 | 29.76 |
| | 810 | 29.67 |

| GPRS / 2 slot / GMSK (CS-4) | | |
|-----------------------------|---------|-----------|
| Band | Channel | Power BAP |
| Cellular | 128 | 32.87 |
| | 190 | 32.94 |
| | 251 | 32.90 |
| PCS | 512 | 29.63 |
| | 661 | 29.54 |
| | 810 | 28.90 |

| E-GPRS / 1 slot / GMSK (MCS-4) | | |
|--------------------------------|---------|-----------|
| Band | Channel | Power BAP |
| Cellular | 128 | 32.75 |
| | 190 | 32.68 |
| | 251 | 32.68 |
| PCS | 512 | 30.00 |
| | 661 | 29.95 |
| | 810 | 29.86 |

| E-GPRS / 2 slot / GMSK (MCS-4) | | |
|--------------------------------|---------|-----------|
| Band | Channel | Power BAP |
| Cellular | 128 | 32.52 |
| | 190 | 32.48 |
| | 251 | 32.52 |
| PCS | 512 | 29.84 |
| | 661 | 29.86 |
| | 810 | 29.82 |

| | |
|---|----------------------------------|
| EUT: 1000CP02S | Work Order: ITRM0248 |
| Serial Number: 178U119104 | Date: 07/20/11 |
| Customer: Intermec Technologies Corporation | Temperature: 23 |
| Attendees: None | Humidity: 45% |
| Project: ITRM0227 | Barometric Pres.: 30.16" |
| Tested by: Rod Peloquin | Job Site: EV12 |
| EUT Power | Battery |
| TEST SPECIFICATIONS | |
| FCC 2.1093:2011 | Test Method |
| | FCC OET 65C:2001 |
| COMMENTS | |
| Conducted output power | |
| DEVIATIONS FROM TEST STANDARD | |
| None | |
| Configuration # | 4 |
| | <i>Rod Peloquin</i> Signature |

| 3GPP Release Version | Mode | Cellular Band MAP (dBm) | | | Sub-Test (See Table) |
|----------------------|-------|-------------------------|-------|-------|----------------------|
| | | 4132 | 4183 | 4233 | |
| 99 | WCDMA | 24.18 | 24.22 | 24.36 | |
| 6 | HSDPA | 23.64 | 23.61 | 23.78 | 1 |
| 6 | | 23.71 | 23.61 | 23.76 | 2 |
| 6 | | 23.13 | 23.05 | 23.28 | 3 |
| 6 | | 23.26 | 23.13 | 23.21 | 4 |
| 6 | HSUPA | 22.68 | 23.19 | 22.85 | 1 |
| 6 | | 22.09 | 22.12 | 22.33 | 2 |
| 6 | | 22.48 | 22.05 | 22.49 | 3 |
| 6 | | 22.50 | 22.57 | 22.76 | 4 |
| 6 | | 23.10 | 23.18 | 23.40 | 5 |

| 3GPP Release Version | Mode | PCS Band MAP (dBm) | | | Sub-Test (See Table) |
|----------------------|-------|--------------------|-------|-------|----------------------|
| | | 9262 | 9400 | 9538 | |
| 99 | WCDMA | 24.37 | 24.49 | 24.27 | |
| 6 | HSDPA | 23.78 | 24.01 | 23.89 | 1 |
| 6 | | 23.99 | 23.85 | 23.90 | 2 |
| 6 | | 23.41 | 23.45 | 23.24 | 3 |
| 6 | | 23.36 | 23.57 | 23.27 | 4 |
| 6 | HSUPA | 23.58 | 23.76 | 23.46 | 1 |
| 6 | | 22.23 | 22.51 | 22.56 | 2 |
| 6 | | 22.44 | 22.74 | 22.43 | 3 |
| 6 | | 22.46 | 22.99 | 22.66 | 4 |
| 6 | | 23.40 | 23.66 | 23.35 | 5 |

| 3GPP Release Version | Mode | AWS Band MAP (dBm) | | | Sub-Test (See Table) |
|----------------------|-------|--------------------|-------|-------|----------------------|
| | | 1312 | 1427 | 1513 | |
| 99 | WCDMA | 23.90 | 23.63 | 23.83 | |
| 6 | HSDPA | 23.36 | 23.34 | 23.36 | 1 |
| 6 | | 23.27 | 23.22 | 23.25 | 2 |
| 6 | | 22.91 | 22.69 | 22.64 | 3 |
| 6 | | 22.75 | 22.68 | 22.79 | 4 |
| 6 | HSUPA | 22.70 | 22.53 | 22.46 | 1 |
| 6 | | 21.75 | 21.58 | 21.55 | 2 |
| 6 | | 22.25 | 21.57 | 21.90 | 3 |
| 6 | | 22.60 | 22.05 | 21.85 | 4 |
| 6 | | 22.75 | 22.80 | 23.20 | 5 |

Characterization of tissue-equivalent liquid dielectric properties

Per IEEE 1528: 2003, Section 5.2.2, the permittivity and conductivity of the tissue material should be measured at least within 24 hours of any full-compliance test. The measured values must be within +/- 5% of the target values. The temperature variation in the liquid during SAR measurements must be within +/- 2 degrees C of that recorded when the dielectric properties were measured.

The dielectric parameters of the tissue-equivalent liquids were measured within 24 hours of testing using the HP85070E dielectric probe kit. The dielectric measurements were made at 50 MHz intervals. The attached data sheets show that the dielectric parameters of the liquid were within the required 5% tolerances.

Target values of dielectric parameters

Per FCC OET 65C, Appendix C:

“The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations and extrapolated according to the head parameters specified in P1528.”

| Target Frequency (MHz) | Head | | Body | |
|---------------------------|--------------|----------------|--------------|----------------|
| | ϵ_r | σ (S/m) | ϵ_r | σ (S/m) |
| 150 | 52.3 | 0.76 | 61.9 | 0.80 |
| 300 | 45.3 | 0.87 | 58.2 | 0.92 |
| 450 | 43.5 | 0.87 | 56.7 | 0.94 |
| 835 | 41.5 | 0.90 | 55.2 | 0.97 |
| 900 | 41.5 | 0.97 | 55.0 | 1.05 |
| 915 | 41.5 | 0.98 | 55.0 | 1.06 |
| 1450 | 40.5 | 1.20 | 54.0 | 1.30 |
| 1610 | 40.3 | 1.29 | 53.8 | 1.40 |
| 1800 – 2000 | 40.0 | 1.40 | 53.3 | 1.52 |
| 2450 | 39.2 | 1.80 | 52.7 | 1.95 |
| 3000 | 38.5 | 2.40 | 52.0 | 2.73 |
| 5800 | 35.3 | 5.27 | 48.2 | 6.00 |

(ϵ_r = relative permittivity, σ = conductivity and $\rho = 1000 \text{ kg/m}^3$)

Composition of Ingredients for Liquid Tissue Phantoms

Northwest EMC uses tissue-equivalent liquids prepared by SPEAG and confirmed by them to be within +/- 5% from the target values. Their recipes are based upon the following formulations as found in FCC OET 65C, Appendix C:

“The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.”

| Ingredients (% by weight) | Frequency (MHz) | | | | | | | | | |
|------------------------------|-----------------|-------|-------|------|-------|-------|-------|------|------|------|
| | 450 | | 835 | | 915 | | 1900 | | 2450 | |
| Tissue Type | Head | Body | Head | Body | Head | Body | Head | Body | Head | Body |
| Water | 38.56 | 51.16 | 41.45 | 52.4 | 41.05 | 56.0 | 54.9 | 40.4 | 62.7 | 73.2 |
| Salt (NaCl) | 3.95 | 1.49 | 1.45 | 1.4 | 1.35 | 0.76 | 0.18 | 0.5 | 0.5 | 0.04 |
| Sugar | 56.32 | 46.78 | 56.0 | 45.0 | 56.5 | 41.76 | 0.0 | 58.0 | 0.0 | 0.0 |
| HEC | 0.98 | 0.52 | 1.0 | 1.0 | 1.0 | 1.21 | 0.0 | 1.0 | 0.0 | 0.0 |
| Bactericide | 0.19 | 0.05 | 0.1 | 0.1 | 0.1 | 0.27 | 0.0 | 0.1 | 0.0 | 0.0 |
| Triton X-100 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 36.8 | 0.0 |
| DGBE | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 44.92 | 0.0 | 0.0 | 26.7 |
| Dielectric Constant | 43.42 | 58.0 | 42.54 | 56.1 | 42.0 | 56.8 | 39.9 | 54.0 | 39.8 | 52.5 |
| Conductivity (S/m) | 0.85 | 0.83 | 0.91 | 0.95 | 1.0 | 1.07 | 1.42 | 1.45 | 1.88 | 1.78 |

Salt: 99⁺% Pure Sodium Chloride

Sugar: 98⁺% Pure Sucrose

Water: De-ionized, 16 M Ω ⁺ resistivity

HEC: Hydroxyethyl Cellulose

DGBE: 99⁺% Di(ethylene glycol) butyl ether, [2-(2-butoxyethoxy)ethanol]

Triton X-100 (ultra pure): Polyethylene glycol mono [4-(1,1, 3, 3-tetramethylbutyl)phenyl]ether

| NORTHWEST EMC | | Tissue - Equivalent Liquid | | SAR 2011.02.21 | |
|---|------|-----------------------------------|-------------------------------|-------------------|--|
| EUT: MSL900 | | | Work Order: ITRM0248 | | |
| Serial Number: SAT | | | Date: 08/08/11 | | |
| Customer: Intermec Technologies Corporation | | | Temperature (°C): 23.1 | | |
| Attendees: None | | | Humidity: 43.4 | | |
| Project: ITRM0227 | | | Barometric Pres. (mb): 1018.4 | | |
| Tested by: Jennifer Herrett | | Power: None | | Job Site: Cal Lab | |
| TEST SPECIFICATIONS | | | Test Method | | |
| FCC 2.1093:2011 | | | FCC OET 65C:2001 | | |
| COMMENTS | | | | | |
| None | | | | | |
| DEVIATIONS FROM TEST STANDARD | | | | | |
| None | | | | | |
| Configuration # | None | Signature <i>Jennifer Herrett</i> | | | |
| Tissue: MSL900 | | | Liquid Temperature (°C): 22 | | |

| Frequency (GHz) | Actual Values | | Target Values | | Deviation (%) | |
|-----------------|-----------------------|--------------|-----------------------|--------------|-----------------------|--------------|
| | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity |
| 835 | 56.512 | 1.011 | 55.200 | 0.970 | -2.38 | -4.24 |
| 700.0 | 57.7 | 0.887 | | | | |
| 705.0 | 57.7 | 0.892 | | | | |
| 710.0 | 57.7 | 0.896 | | | | |
| 715.0 | 57.6 | 0.901 | | | | |
| 720.0 | 57.6 | 0.906 | | | | |
| 725.0 | 57.5 | 0.910 | | | | |
| 730.0 | 57.4 | 0.915 | | | | |
| 735.0 | 57.4 | 0.920 | | | | |
| 740.0 | 57.3 | 0.924 | | | | |
| 745.0 | 57.3 | 0.929 | | | | |
| 750.0 | 57.2 | 0.933 | | | | |
| 755.0 | 57.2 | 0.938 | | | | |
| 760.0 | 57.1 | 0.943 | | | | |
| 765.0 | 57.1 | 0.947 | | | | |
| 770.0 | 57.0 | 0.952 | | | | |
| 775.0 | 57.0 | 0.957 | | | | |
| 780.0 | 56.9 | 0.961 | | | | |
| 785.0 | 56.9 | 0.966 | | | | |
| 790.0 | 56.8 | 0.970 | | | | |
| 795.0 | 56.8 | 0.975 | | | | |
| 800.0 | 56.7 | 0.979 | | | | |
| 805.0 | 56.7 | 0.983 | | | | |
| 810.0 | 56.7 | 0.988 | | | | |
| 815.0 | 56.6 | 0.992 | | | | |
| 820.0 | 56.6 | 0.996 | | | | |
| 825.0 | 56.6 | 1.001 | | | | |
| 830.0 | 56.5 | 1.006 | | | | |
| 835.0 | 56.5 | 1.011 | | | | |
| 840.0 | 56.5 | 1.017 | | | | |
| 845.0 | 56.4 | 1.022 | | | | |
| 850.0 | 56.4 | 1.028 | | | | |
| 855.0 | 56.3 | 1.033 | | | | |
| 860.0 | 56.3 | 1.038 | | | | |
| 865.0 | 56.2 | 1.043 | | | | |
| 870.0 | 56.2 | 1.048 | | | | |
| 875.0 | 56.2 | 1.053 | | | | |
| 880.0 | 56.1 | 1.058 | | | | |
| 885.0 | 56.1 | 1.062 | | | | |
| 890.0 | 56.0 | 1.067 | | | | |
| 895.0 | 56.0 | 1.072 | | | | |
| 900.0 | 55.9 | 1.077 | | | | |
| 905.0 | 55.9 | 1.083 | | | | |
| 910.0 | 55.8 | 1.087 | | | | |
| 915.0 | 55.8 | 1.092 | | | | |
| 920.0 | 55.7 | 1.097 | | | | |
| 925.0 | 55.7 | 1.103 | | | | |
| 930.0 | 55.6 | 1.107 | | | | |
| 935.0 | 55.6 | 1.112 | | | | |
| 940.0 | 55.6 | 1.116 | | | | |
| 945.0 | 55.5 | 1.122 | | | | |
| 950.0 | 55.5 | 1.126 | | | | |
| 955.0 | 55.4 | 1.131 | | | | |
| 960.0 | 55.4 | 1.136 | | | | |
| 965.0 | 55.3 | 1.140 | | | | |
| 970.0 | 55.3 | 1.145 | | | | |
| 975.0 | 55.3 | 1.150 | | | | |
| 980.0 | 55.2 | 1.155 | | | | |
| 985.0 | 55.2 | 1.160 | | | | |
| 990.0 | 55.2 | 1.165 | | | | |
| 995.0 | 55.1 | 1.170 | | | | |
| 1000.0 | 55.1 | 1.175 | | | | |
| 1005.0 | 55.0 | 1.180 | | | | |
| 1010.0 | 55.0 | 1.186 | | | | |
| 1015.0 | 54.9 | 1.190 | | | | |
| 1020.0 | 54.9 | 1.196 | | | | |
| 1025.0 | 54.9 | 1.201 | | | | |
| 1030.0 | 54.8 | 1.206 | | | | |
| 1035.0 | 54.8 | 1.211 | | | | |
| 1040.0 | 54.8 | 1.217 | | | | |
| 1045.0 | 54.7 | 1.223 | | | | |
| 1050.0 | 54.7 | 1.229 | | | | |
| 1055.0 | 54.6 | 1.234 | | | | |
| 1060.0 | 54.6 | 1.240 | | | | |
| 1065.0 | 54.6 | 1.245 | | | | |
| 1070.0 | 54.5 | 1.251 | | | | |
| 1075.0 | 54.5 | 1.255 | | | | |
| 1080.0 | 54.4 | 1.261 | | | | |
| 1085.0 | 54.4 | 1.266 | | | | |
| 1090.0 | 54.3 | 1.271 | | | | |
| 1095.0 | 54.3 | 1.276 | | | | |
| 1100.0 | 54.3 | 1.281 | | | | |
| 1105.0 | 54.2 | 1.287 | | | | |
| 1110.0 | 54.2 | 1.292 | | | | |
| 1115.0 | 54.1 | 1.297 | | | | |
| 1120.0 | 54.1 | 1.302 | | | | |
| 1125.0 | 54.1 | 1.307 | | | | |
| 1130.0 | 54.0 | 1.312 | | | | |
| 1135.0 | 54.0 | 1.318 | | | | |
| 1140.0 | 53.9 | 1.323 | | | | |
| 1145.0 | 53.9 | 1.328 | | | | |
| 1150.0 | 53.9 | 1.334 | | | | |
| 1155.0 | 53.8 | 1.339 | | | | |
| 1160.0 | 53.8 | 1.344 | | | | |
| 1165.0 | 53.8 | 1.349 | | | | |
| 1170.0 | 53.7 | 1.354 | | | | |
| 1175.0 | 53.7 | 1.360 | | | | |
| 1180.0 | 53.6 | 1.365 | | | | |
| 1185.0 | 53.6 | 1.370 | | | | |
| 1190.0 | 53.6 | 1.376 | | | | |
| 1195.0 | 53.5 | 1.381 | | | | |
| 1200.0 | 53.5 | 1.386 | | | | |

| NORTHWEST EMC | | Tissue - Equivalent Liquid | | SAR 2011.02.21 | |
|-------------------------------|-----------------------------------|-----------------------------------|-------------------------------|----------------|---------|
| EUT: | MSL900 | Work Order: | ITRM0248 | | |
| Serial Number: | SAT | Date: | 08/10/2011 | | |
| Customer: | Intermec Technologies Corporation | Temperature (°C): | 23.6 | | |
| Attendees: | None | Humidity: | 43.5 | | |
| Project: | ITRM0227 | Barometric Pres. (mb): | 1017 | | |
| Tested by: | Jennifer Herrett | Power: | None | Job Site: | Cal Lab |
| TEST SPECIFICATIONS | | Test Method | | | |
| FCC 2.1093:2011 | | FCC OET 65C:2001 | | | |
| COMMENTS | | | | | |
| None | | | | | |
| DEVIATIONS FROM TEST STANDARD | | | | | |
| None | | | | | |
| Configuration # | None | Signature <i>Jennifer Herrett</i> | | | |
| Tissue: MSL900 | | | Liquid Temperature (°C): 22.1 | | |

| Frequency (GHz) | Actual Values | | Target Values | | Deviation (%) | |
|-----------------|-----------------------|--------------|-----------------------|--------------|-----------------------|--------------|
| | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity |
| 835 | 56.512 | 1.011 | 55.200 | 0.970 | -2.38 | -4.24 |
| 700.0 | 57.7 | 0.887 | | | | |
| 705.0 | 57.7 | 0.892 | | | | |
| 710.0 | 57.7 | 0.896 | | | | |
| 715.0 | 57.6 | 0.901 | | | | |
| 720.0 | 57.6 | 0.906 | | | | |
| 725.0 | 57.5 | 0.910 | | | | |
| 730.0 | 57.4 | 0.915 | | | | |
| 735.0 | 57.4 | 0.920 | | | | |
| 740.0 | 57.3 | 0.924 | | | | |
| 745.0 | 57.3 | 0.929 | | | | |
| 750.0 | 57.2 | 0.933 | | | | |
| 755.0 | 57.2 | 0.938 | | | | |
| 760.0 | 57.1 | 0.943 | | | | |
| 765.0 | 57.1 | 0.947 | | | | |
| 770.0 | 57.0 | 0.952 | | | | |
| 775.0 | 57.0 | 0.957 | | | | |
| 780.0 | 56.9 | 0.961 | | | | |
| 785.0 | 56.9 | 0.966 | | | | |
| 790.0 | 56.8 | 0.970 | | | | |
| 795.0 | 56.8 | 0.975 | | | | |
| 800.0 | 56.7 | 0.979 | | | | |
| 805.0 | 56.7 | 0.983 | | | | |
| 810.0 | 56.7 | 0.988 | | | | |
| 815.0 | 56.6 | 0.992 | | | | |
| 820.0 | 56.6 | 0.996 | | | | |
| 825.0 | 56.6 | 1.001 | | | | |
| 830.0 | 56.5 | 1.006 | | | | |
| 835.0 | 56.5 | 1.011 | | | | |
| 840.0 | 56.5 | 1.017 | | | | |
| 845.0 | 56.4 | 1.022 | | | | |
| 850.0 | 56.4 | 1.028 | | | | |
| 855.0 | 56.3 | 1.033 | | | | |
| 860.0 | 56.3 | 1.038 | | | | |
| 865.0 | 56.2 | 1.043 | | | | |
| 870.0 | 56.2 | 1.048 | | | | |
| 875.0 | 56.2 | 1.053 | | | | |
| 880.0 | 56.1 | 1.058 | | | | |
| 885.0 | 56.1 | 1.062 | | | | |
| 890.0 | 56.0 | 1.067 | | | | |
| 895.0 | 56.0 | 1.072 | | | | |
| 900.0 | 55.9 | 1.077 | | | | |
| 905.0 | 55.9 | 1.083 | | | | |
| 910.0 | 55.8 | 1.087 | | | | |
| 915.0 | 55.8 | 1.092 | | | | |
| 920.0 | 55.7 | 1.097 | | | | |
| 925.0 | 55.7 | 1.103 | | | | |
| 930.0 | 55.6 | 1.107 | | | | |
| 935.0 | 55.6 | 1.112 | | | | |
| 940.0 | 55.6 | 1.116 | | | | |
| 945.0 | 55.5 | 1.122 | | | | |
| 950.0 | 55.5 | 1.126 | | | | |
| 955.0 | 55.4 | 1.131 | | | | |
| 960.0 | 55.4 | 1.136 | | | | |
| 965.0 | 55.3 | 1.140 | | | | |
| 970.0 | 55.3 | 1.145 | | | | |
| 975.0 | 55.3 | 1.150 | | | | |
| 980.0 | 55.2 | 1.155 | | | | |
| 985.0 | 55.2 | 1.160 | | | | |
| 990.0 | 55.2 | 1.165 | | | | |
| 995.0 | 55.1 | 1.170 | | | | |
| 1000.0 | 55.1 | 1.175 | | | | |
| 1005.0 | 55.0 | 1.180 | | | | |
| 1010.0 | 55.0 | 1.186 | | | | |
| 1015.0 | 54.9 | 1.190 | | | | |
| 1020.0 | 54.9 | 1.196 | | | | |
| 1025.0 | 54.9 | 1.201 | | | | |
| 1030.0 | 54.8 | 1.206 | | | | |
| 1035.0 | 54.8 | 1.211 | | | | |
| 1040.0 | 54.8 | 1.217 | | | | |
| 1045.0 | 54.7 | 1.223 | | | | |
| 1050.0 | 54.7 | 1.229 | | | | |
| 1055.0 | 54.6 | 1.234 | | | | |
| 1060.0 | 54.6 | 1.240 | | | | |
| 1065.0 | 54.6 | 1.245 | | | | |
| 1070.0 | 54.5 | 1.251 | | | | |
| 1075.0 | 54.5 | 1.255 | | | | |
| 1080.0 | 54.4 | 1.261 | | | | |
| 1085.0 | 54.4 | 1.266 | | | | |
| 1090.0 | 54.3 | 1.271 | | | | |
| 1095.0 | 54.3 | 1.276 | | | | |
| 1100.0 | 54.3 | 1.281 | | | | |
| 1105.0 | 54.2 | 1.287 | | | | |
| 1110.0 | 54.2 | 1.292 | | | | |
| 1115.0 | 54.1 | 1.297 | | | | |
| 1120.0 | 54.1 | 1.302 | | | | |
| 1125.0 | 54.1 | 1.307 | | | | |
| 1130.0 | 54.0 | 1.312 | | | | |
| 1135.0 | 54.0 | 1.318 | | | | |
| 1140.0 | 53.9 | 1.323 | | | | |
| 1145.0 | 53.9 | 1.328 | | | | |
| 1150.0 | 53.9 | 1.334 | | | | |
| 1155.0 | 53.8 | 1.339 | | | | |
| 1160.0 | 53.8 | 1.344 | | | | |
| 1165.0 | 53.8 | 1.349 | | | | |
| 1170.0 | 53.7 | 1.354 | | | | |
| 1175.0 | 53.7 | 1.360 | | | | |
| 1180.0 | 53.6 | 1.365 | | | | |
| 1185.0 | 53.6 | 1.370 | | | | |
| 1190.0 | 53.6 | 1.376 | | | | |
| 1195.0 | 53.5 | 1.381 | | | | |
| 1200.0 | 53.5 | 1.386 | | | | |

EMC**Tissue - Equivalent Liquid**

| | |
|---|-------------------------------|
| EUT: HSL1900 | Work Order: ITRM0248 |
| Serial Number: SAN | Date: 08/10/2011 |
| Customer: Intermec Technologies Corporation | Temperature (°C): 23.6 |
| Attendees: None | Humidity: 43.5 |
| Project: ITRM0227 | Barometric Pres. (mb): 1017 |
| Tested by: Jennifer Herrett | Power: None |
| Job Site: Cal Lab | |
| TEST SPECIFICATIONS | |
| FCC 2.1093:2011 | Test Method: FCC OET 65C:2001 |
| COMMENTS | |
| None | |
| DEVIATIONS FROM TEST STANDARD | |
| None | |
| Configuration # | None |
| Signature <i>Jennifer Herrett</i> | |
| Tissue: HSL1900 | |
| Liquid Temperature (°C): 22.1 | |

| Frequency (GHz) | Actual Values | | Target Values | | Deviation (%) | |
|-----------------|-----------------------|--------------|-----------------------|--------------|-----------------------|--------------|
| | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity |
| 1900 | 39.865 | 1.397 | 40.000 | 1.400 | 0.34 | 0.20 |

| | | |
|--------|------|-------|
| 1600.0 | 41.0 | 1.100 |
| 1612.5 | 41.0 | 1.112 |
| 1625.0 | 40.9 | 1.123 |
| 1637.5 | 40.9 | 1.136 |
| 1650.0 | 40.8 | 1.148 |
| 1662.5 | 40.8 | 1.160 |
| 1675.0 | 40.7 | 1.171 |
| 1687.5 | 40.7 | 1.183 |
| 1700.0 | 40.6 | 1.195 |
| 1712.5 | 40.6 | 1.205 |
| 1725.0 | 40.5 | 1.216 |
| 1737.5 | 40.5 | 1.227 |
| 1750.0 | 40.4 | 1.238 |
| 1762.5 | 40.4 | 1.249 |
| 1775.0 | 40.3 | 1.262 |
| 1787.5 | 40.3 | 1.275 |
| 1800.0 | 40.3 | 1.289 |
| 1812.5 | 40.2 | 1.302 |
| 1825.0 | 40.2 | 1.317 |
| 1837.5 | 40.1 | 1.331 |
| 1850.0 | 40.1 | 1.345 |
| 1862.5 | 40.0 | 1.358 |
| 1875.0 | 40.0 | 1.371 |
| 1887.5 | 39.9 | 1.384 |
| 1900.0 | 39.9 | 1.397 |
| 1912.5 | 39.8 | 1.410 |
| 1925.0 | 39.8 | 1.423 |
| 1937.5 | 39.7 | 1.436 |
| 1950.0 | 39.7 | 1.449 |
| 1962.5 | 39.6 | 1.462 |
| 1975.0 | 39.6 | 1.476 |
| 1987.5 | 39.5 | 1.489 |
| 2000.0 | 39.5 | 1.502 |


EMC**Tissue - Equivalent Liquid**

| | |
|---|-------------------------------|
| EUT: HSL1900 | Work Order: ITRM0248 |
| Serial Number: SAN | Date: 08/12/2011 |
| Customer: Intermec Technologies Corporation | Temperature (°C): 22.4 |
| Attendees: None | Humidity: 40.4 |
| Project: ITRM0227 | Barometric Pres. (mb): 1016.7 |
| Tested by: Jennifer Herrett | Power: None |
| Job Site: Cal Lab | |
| TEST SPECIFICATIONS | |
| FCC 2.1093:2011 | Test Method: FCC OET 65C:2001 |
| COMMENTS | |
| None | |
| DEVIATIONS FROM TEST STANDARD | |
| None | |
| Configuration # | None |
| Signature <i>Jennifer Herrett</i> | |
| Tissue: HSL1900 Liquid Temperature (°C): 22 | |

| Frequency (GHz) | Actual Values | | Target Values | | Deviation (%) | |
|-----------------|-----------------------|--------------|-----------------------|--------------|-----------------------|--------------|
| | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity |
| 1900 | 39.782 | 1.387 | 40.000 | 1.400 | 0.54 | 0.96 |


| | | |
|--------|------|-------|
| 1600.0 | 40.9 | 1.091 |
| 1612.5 | 40.9 | 1.102 |
| 1625.0 | 40.8 | 1.114 |
| 1637.5 | 40.8 | 1.126 |
| 1650.0 | 40.7 | 1.138 |
| 1662.5 | 40.7 | 1.151 |
| 1675.0 | 40.6 | 1.163 |
| 1687.5 | 40.5 | 1.174 |
| 1700.0 | 40.5 | 1.185 |
| 1712.5 | 40.4 | 1.197 |
| 1725.0 | 40.4 | 1.208 |
| 1737.5 | 40.4 | 1.218 |
| 1750.0 | 40.3 | 1.229 |
| 1762.5 | 40.3 | 1.240 |
| 1775.0 | 40.3 | 1.253 |
| 1787.5 | 40.2 | 1.266 |
| 1800.0 | 40.2 | 1.279 |
| 1812.5 | 40.1 | 1.293 |
| 1825.0 | 40.1 | 1.307 |
| 1837.5 | 40.0 | 1.320 |
| 1850.0 | 40.0 | 1.335 |
| 1862.5 | 39.9 | 1.348 |
| 1875.0 | 39.9 | 1.361 |
| 1887.5 | 39.8 | 1.374 |
| 1900.0 | 39.8 | 1.387 |
| 1912.5 | 39.7 | 1.399 |
| 1925.0 | 39.7 | 1.412 |
| 1937.5 | 39.6 | 1.424 |
| 1950.0 | 39.6 | 1.437 |
| 1962.5 | 39.5 | 1.450 |
| 1975.0 | 39.5 | 1.463 |
| 1987.5 | 39.4 | 1.476 |
| 2000.0 | 39.4 | 1.490 |

EMC**Tissue - Equivalent Liquid**

| | |
|---|---------------------------------|
| EUT: HSL1900 | Work Order: ITRM0248 |
| Serial Number: SAN | Date: 08/15/2011 |
| Customer: Intermec Technologies Corporation | Temperature (°C): 23.3 |
| Attendees: None | Humidity: 47.9 |
| Project: ITRM0227 | Barometric Pres. (mb): 1017.4 |
| Tested by: Jennifer Herrett | Power: None |
| Job Site: Cal Lab | |
| TEST SPECIFICATIONS | |
| FCC 2.1093:2011 | Test Method FCC OET 65C:2001 |
| COMMENTS | |
| None | |
| DEVIATIONS FROM TEST STANDARD | |
| None | |
| Configuration # | None |
|  <i>Signature</i> | |
| Tissue: HSL1900 Liquid Temperature (°C): 22.8 | |

| Frequency (GHz) | Actual Values | | Target Values | | Deviation (%) | |
|-----------------|-----------------------|--------------|-----------------------|--------------|-----------------------|--------------|
| | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity |
| 1900 | 40.326 | 1.446 | 40.000 | 1.400 | -0.82 | -3.26 |
| 1600.0 | 41.7 | 1.132 | | | | |
| 1612.5 | 41.6 | 1.145 | | | | |
| 1625.0 | 41.6 | 1.159 | | | | |
| 1637.5 | 41.5 | 1.173 | | | | |
| 1650.0 | 41.5 | 1.186 | | | | |
| 1662.5 | 41.4 | 1.199 | | | | |
| 1675.0 | 41.3 | 1.211 | | | | |
| 1687.5 | 41.3 | 1.224 | | | | |
| 1700.0 | 41.2 | 1.235 | | | | |
| 1712.5 | 41.1 | 1.247 | | | | |
| 1725.0 | 41.1 | 1.259 | | | | |
| 1737.5 | 41.0 | 1.271 | | | | |
| 1750.0 | 41.0 | 1.283 | | | | |
| 1762.5 | 40.9 | 1.296 | | | | |
| 1775.0 | 40.9 | 1.309 | | | | |
| 1787.5 | 40.8 | 1.322 | | | | |
| 1800.0 | 40.8 | 1.336 | | | | |
| 1812.5 | 40.7 | 1.351 | | | | |
| 1825.0 | 40.7 | 1.365 | | | | |
| 1837.5 | 40.6 | 1.379 | | | | |
| 1850.0 | 40.6 | 1.394 | | | | |
| 1862.5 | 40.5 | 1.407 | | | | |
| 1875.0 | 40.5 | 1.420 | | | | |
| 1887.5 | 40.4 | 1.433 | | | | |
| 1900.0 | 40.3 | 1.446 | | | | |
| 1912.5 | 40.3 | 1.459 | | | | |
| 1925.0 | 40.2 | 1.472 | | | | |
| 1937.5 | 40.1 | 1.486 | | | | |
| 1950.0 | 40.1 | 1.498 | | | | |
| 1962.5 | 40.0 | 1.514 | | | | |
| 1975.0 | 40.0 | 1.527 | | | | |
| 1987.5 | 39.9 | 1.541 | | | | |
| 2000.0 | 39.9 | 1.555 | | | | |

EMC**Tissue - Equivalent Liquid**

| | |
|---|-------------------------------|
| EUT: MSL1900 | Work Order: ITRM0248 |
| Serial Number: SAO | Date: 08/15/2011 |
| Customer: Intermec Technologies Corporation | Temperature (°C): 23.3 |
| Attendees: None | Humidity: 47.9 |
| Project: ITRM0227 | Barometric Pres. (mb): 1017.4 |
| Tested by: Jennifer Herrett | Power: None |
| Job Site: Cal Lab | |
| TEST SPECIFICATIONS | |
| FCC 2.1093:2011 | Test Method: FCC OET 65C:2001 |
| COMMENTS | |
| None | |
| DEVIATIONS FROM TEST STANDARD | |
| None | |
| Configuration # | None |
| <i>Signature</i>  | |
| Tissue: MSL1900 Liquid Temperature (°C): 22.8 | |

| Frequency (GHz) | Actual Values | | Target Values | | Deviation (%) | |
|-----------------|-----------------------|--------------|-----------------------|--------------|-----------------------|--------------|
| | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity |
| 1900 | 52.907 | 1.508 | 53.300 | 1.520 | 0.74 | 0.78 |
| 1600.0 | 53.9 | 1.169 | | | | |
| 1612.5 | 53.9 | 1.184 | | | | |
| 1625.0 | 53.9 | 1.199 | | | | |
| 1637.5 | 53.8 | 1.213 | | | | |
| 1650.0 | 53.8 | 1.228 | | | | |
| 1662.5 | 53.7 | 1.241 | | | | |
| 1675.0 | 53.7 | 1.255 | | | | |
| 1687.5 | 53.6 | 1.268 | | | | |
| 1700.0 | 53.6 | 1.279 | | | | |
| 1712.5 | 53.5 | 1.292 | | | | |
| 1725.0 | 53.5 | 1.304 | | | | |
| 1737.5 | 53.4 | 1.316 | | | | |
| 1750.0 | 53.4 | 1.329 | | | | |
| 1762.5 | 53.4 | 1.342 | | | | |
| 1775.0 | 53.3 | 1.356 | | | | |
| 1787.5 | 53.3 | 1.370 | | | | |
| 1800.0 | 53.3 | 1.385 | | | | |
| 1812.5 | 53.2 | 1.401 | | | | |
| 1825.0 | 53.2 | 1.417 | | | | |
| 1837.5 | 53.2 | 1.433 | | | | |
| 1850.0 | 53.1 | 1.449 | | | | |
| 1862.5 | 53.1 | 1.464 | | | | |
| 1875.0 | 53.0 | 1.479 | | | | |
| 1887.5 | 53.0 | 1.494 | | | | |
| 1900.0 | 52.9 | 1.508 | | | | |
| 1912.5 | 52.9 | 1.522 | | | | |
| 1925.0 | 52.8 | 1.537 | | | | |
| 1937.5 | 52.8 | 1.551 | | | | |
| 1950.0 | 52.7 | 1.566 | | | | |
| 1962.5 | 52.7 | 1.581 | | | | |
| 1975.0 | 52.6 | 1.595 | | | | |
| 1987.5 | 52.6 | 1.611 | | | | |
| 2000.0 | 52.5 | 1.626 | | | | |


| NORTHWEST EMC | | Tissue - Equivalent Liquid | | SAR 2011.02.21 | |
|-------------------------------|-----------------------------------|-----------------------------------|-------------------------------|----------------|---------|
| EUT: | HSL900 | Work Order: | ITRM0248 | | |
| Serial Number: | SAS | Date: | 08/16/2011 | | |
| Customer: | Intermec Technologies Corporation | Temperature (°C): | 23.5 | | |
| Attendees: | None | Humidity: | 43.5 | | |
| Project: | ITRM0227 | Barometric Pres. (mb): | 1018.5 | | |
| Tested by: | Jennifer Herrett | Power: | None | Job Site: | Cal Lab |
| TEST SPECIFICATIONS | | Test Method | | | |
| FCC 2.1093:2011 | | FCC OET 65C:2001 | | | |
| COMMENTS | | | | | |
| None | | | | | |
| DEVIATIONS FROM TEST STANDARD | | | | | |
| None | | | | | |
| Configuration # | None | Signature <i>Jennifer Herrett</i> | | | |
| Tissue: HSL900 | | | Liquid Temperature (°C): 22.5 | | |

| Frequency (GHz) | Actual Values | | Target Values | | Deviation (%) | |
|-----------------|-----------------------|--------------|-----------------------|--------------|-----------------------|--------------|
| | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity |
| 835 | 39.922 | 0.858 | 41.500 | 0.900 | 3.80 | 4.64 |
| 700.0 | 41.7 | 0.735 | | | | |
| 705.0 | 41.6 | 0.740 | | | | |
| 710.0 | 41.5 | 0.745 | | | | |
| 715.0 | 41.5 | 0.749 | | | | |
| 720.0 | 41.4 | 0.753 | | | | |
| 725.0 | 41.3 | 0.758 | | | | |
| 730.0 | 41.3 | 0.763 | | | | |
| 735.0 | 41.2 | 0.768 | | | | |
| 740.0 | 41.1 | 0.772 | | | | |
| 745.0 | 41.0 | 0.777 | | | | |
| 750.0 | 41.0 | 0.781 | | | | |
| 755.0 | 40.9 | 0.786 | | | | |
| 760.0 | 40.9 | 0.790 | | | | |
| 765.0 | 40.8 | 0.795 | | | | |
| 770.0 | 40.7 | 0.800 | | | | |
| 775.0 | 40.7 | 0.804 | | | | |
| 780.0 | 40.6 | 0.809 | | | | |
| 785.0 | 40.5 | 0.813 | | | | |
| 790.0 | 40.5 | 0.818 | | | | |
| 795.0 | 40.4 | 0.823 | | | | |
| 800.0 | 40.3 | 0.827 | | | | |
| 805.0 | 40.3 | 0.831 | | | | |
| 810.0 | 40.2 | 0.836 | | | | |
| 815.0 | 40.2 | 0.840 | | | | |
| 820.0 | 40.1 | 0.845 | | | | |
| 825.0 | 40.0 | 0.849 | | | | |
| 830.0 | 40.0 | 0.854 | | | | |
| 835.0 | 39.9 | 0.858 | | | | |
| 840.0 | 39.9 | 0.863 | | | | |
| 845.0 | 39.8 | 0.867 | | | | |
| 850.0 | 39.7 | 0.872 | | | | |
| 855.0 | 39.7 | 0.877 | | | | |
| 860.0 | 39.6 | 0.881 | | | | |
| 865.0 | 39.6 | 0.885 | | | | |
| 870.0 | 39.5 | 0.890 | | | | |
| 875.0 | 39.5 | 0.895 | | | | |
| 880.0 | 39.4 | 0.899 | | | | |
| 885.0 | 39.3 | 0.903 | | | | |
| 890.0 | 39.3 | 0.908 | | | | |
| 895.0 | 39.2 | 0.912 | | | | |
| 900.0 | 39.2 | 0.917 | | | | |
| 905.0 | 39.1 | 0.921 | | | | |
| 910.0 | 39.1 | 0.926 | | | | |
| 915.0 | 39.0 | 0.930 | | | | |
| 920.0 | 38.9 | 0.935 | | | | |
| 925.0 | 38.9 | 0.940 | | | | |
| 930.0 | 38.8 | 0.944 | | | | |
| 935.0 | 38.8 | 0.948 | | | | |
| 940.0 | 38.7 | 0.953 | | | | |
| 945.0 | 38.7 | 0.957 | | | | |
| 950.0 | 38.6 | 0.961 | | | | |
| 955.0 | 38.5 | 0.966 | | | | |
| 960.0 | 38.5 | 0.971 | | | | |
| 965.0 | 38.4 | 0.975 | | | | |
| 970.0 | 38.4 | 0.979 | | | | |
| 975.0 | 38.3 | 0.984 | | | | |
| 980.0 | 38.3 | 0.988 | | | | |
| 985.0 | 38.2 | 0.993 | | | | |
| 990.0 | 38.2 | 0.997 | | | | |
| 995.0 | 38.1 | 1.002 | | | | |
| 1000.0 | 38.1 | 1.006 | | | | |
| 1005.0 | 38.0 | 1.011 | | | | |
| 1010.0 | 38.0 | 1.015 | | | | |
| 1015.0 | 37.9 | 1.019 | | | | |
| 1020.0 | 37.9 | 1.024 | | | | |
| 1025.0 | 37.8 | 1.028 | | | | |
| 1030.0 | 37.8 | 1.033 | | | | |
| 1035.0 | 37.7 | 1.038 | | | | |
| 1040.0 | 37.7 | 1.042 | | | | |
| 1045.0 | 37.7 | 1.047 | | | | |
| 1050.0 | 37.6 | 1.052 | | | | |
| 1055.0 | 37.6 | 1.056 | | | | |
| 1060.0 | 37.5 | 1.061 | | | | |
| 1065.0 | 37.5 | 1.066 | | | | |
| 1070.0 | 37.4 | 1.070 | | | | |
| 1075.0 | 37.4 | 1.075 | | | | |
| 1080.0 | 37.3 | 1.079 | | | | |
| 1085.0 | 37.3 | 1.084 | | | | |
| 1090.0 | 37.2 | 1.088 | | | | |
| 1095.0 | 37.2 | 1.093 | | | | |
| 1100.0 | 37.1 | 1.097 | | | | |
| 1105.0 | 37.1 | 1.102 | | | | |
| 1110.0 | 37.0 | 1.106 | | | | |
| 1115.0 | 37.0 | 1.110 | | | | |
| 1120.0 | 36.9 | 1.114 | | | | |
| 1125.0 | 36.9 | 1.119 | | | | |
| 1130.0 | 36.8 | 1.123 | | | | |
| 1135.0 | 36.8 | 1.127 | | | | |
| 1140.0 | 36.7 | 1.132 | | | | |
| 1145.0 | 36.7 | 1.136 | | | | |
| 1150.0 | 36.6 | 1.140 | | | | |
| 1155.0 | 36.6 | 1.145 | | | | |
| 1160.0 | 36.5 | 1.150 | | | | |
| 1165.0 | 36.5 | 1.154 | | | | |
| 1170.0 | 36.5 | 1.158 | | | | |
| 1175.0 | 36.4 | 1.163 | | | | |
| 1180.0 | 36.4 | 1.167 | | | | |
| 1185.0 | 36.3 | 1.171 | | | | |
| 1190.0 | 36.3 | 1.176 | | | | |
| 1195.0 | 36.2 | 1.180 | | | | |
| 1200.0 | 36.2 | 1.185 | | | | |

| NORTHWEST EMC | | Tissue - Equivalent Liquid | | SAR 2011.02.21 | |
|-------------------------------|-----------------------------------|-----------------------------------|-------------------------------|----------------|---------|
| EUT: | HSL900 | Work Order: | ITRM0248 | | |
| Serial Number: | SAS | Date: | 08/18/2011 | | |
| Customer: | Intermec Technologies Corporation | Temperature (°C): | 23.1 | | |
| Attendees: | None | Humidity: | 43 | | |
| Project: | ITRM0227 | Barometric Pres. (mb): | 1022.5 | | |
| Tested by: | Jennifer Herrett | Power: | None | Job Site: | Cal Lab |
| TEST SPECIFICATIONS | | Test Method | | | |
| FCC 2.1093:2011 | | FCC OET 65C:2001 | | | |
| COMMENTS | | | | | |
| None | | | | | |
| DEVIATIONS FROM TEST STANDARD | | | | | |
| None | | | | | |
| Configuration # | None | Signature <i>Jennifer Herrett</i> | | | |
| Tissue: HSL900 | | | Liquid Temperature (°C): 21.8 | | |

| Frequency (GHz) | Actual Values | | Target Values | | Deviation (%) | |
|-----------------|-----------------------|--------------|-----------------------|--------------|-----------------------|--------------|
| | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity |
| 835 | 39.546 | 0.856 | 41.500 | 0.900 | 4.71 | 4.86 |
| 700.0 | 41.3 | 0.734 | | | | |
| 705.0 | 41.2 | 0.739 | | | | |
| 710.0 | 41.2 | 0.743 | | | | |
| 715.0 | 41.1 | 0.748 | | | | |
| 720.0 | 41.0 | 0.752 | | | | |
| 725.0 | 41.0 | 0.756 | | | | |
| 730.0 | 40.9 | 0.761 | | | | |
| 735.0 | 40.8 | 0.765 | | | | |
| 740.0 | 40.8 | 0.770 | | | | |
| 745.0 | 40.7 | 0.774 | | | | |
| 750.0 | 40.6 | 0.779 | | | | |
| 755.0 | 40.6 | 0.783 | | | | |
| 760.0 | 40.5 | 0.787 | | | | |
| 765.0 | 40.4 | 0.792 | | | | |
| 770.0 | 40.4 | 0.797 | | | | |
| 775.0 | 40.3 | 0.801 | | | | |
| 780.0 | 40.2 | 0.806 | | | | |
| 785.0 | 40.2 | 0.811 | | | | |
| 790.0 | 40.1 | 0.816 | | | | |
| 795.0 | 40.0 | 0.820 | | | | |
| 800.0 | 40.0 | 0.824 | | | | |
| 805.0 | 39.9 | 0.829 | | | | |
| 810.0 | 39.8 | 0.834 | | | | |
| 815.0 | 39.8 | 0.838 | | | | |
| 820.0 | 39.7 | 0.843 | | | | |
| 825.0 | 39.7 | 0.847 | | | | |
| 830.0 | 39.6 | 0.852 | | | | |
| 835.0 | 39.5 | 0.856 | | | | |
| 840.0 | 39.5 | 0.861 | | | | |
| 845.0 | 39.4 | 0.866 | | | | |
| 850.0 | 39.4 | 0.870 | | | | |
| 855.0 | 39.3 | 0.875 | | | | |
| 860.0 | 39.3 | 0.879 | | | | |
| 865.0 | 39.2 | 0.883 | | | | |
| 870.0 | 39.2 | 0.888 | | | | |
| 875.0 | 39.1 | 0.892 | | | | |
| 880.0 | 39.1 | 0.896 | | | | |
| 885.0 | 39.0 | 0.901 | | | | |
| 890.0 | 38.9 | 0.905 | | | | |
| 895.0 | 38.9 | 0.909 | | | | |
| 900.0 | 38.8 | 0.914 | | | | |
| 905.0 | 38.8 | 0.918 | | | | |
| 910.0 | 38.7 | 0.922 | | | | |
| 915.0 | 38.6 | 0.927 | | | | |
| 920.0 | 38.6 | 0.931 | | | | |
| 925.0 | 38.5 | 0.935 | | | | |
| 930.0 | 38.5 | 0.940 | | | | |
| 935.0 | 38.4 | 0.944 | | | | |
| 940.0 | 38.3 | 0.949 | | | | |
| 945.0 | 38.3 | 0.953 | | | | |
| 950.0 | 38.2 | 0.958 | | | | |
| 955.0 | 38.2 | 0.962 | | | | |
| 960.0 | 38.1 | 0.967 | | | | |
| 965.0 | 38.1 | 0.971 | | | | |
| 970.0 | 38.0 | 0.976 | | | | |
| 975.0 | 37.9 | 0.980 | | | | |
| 980.0 | 37.9 | 0.984 | | | | |
| 985.0 | 37.8 | 0.989 | | | | |
| 990.0 | 37.8 | 0.993 | | | | |
| 995.0 | 37.7 | 0.997 | | | | |
| 1000.0 | 37.7 | 1.002 | | | | |
| 1005.0 | 37.7 | 1.006 | | | | |
| 1010.0 | 37.6 | 1.011 | | | | |
| 1015.0 | 37.6 | 1.015 | | | | |
| 1020.0 | 37.5 | 1.019 | | | | |
| 1025.0 | 37.5 | 1.024 | | | | |
| 1030.0 | 37.4 | 1.028 | | | | |
| 1035.0 | 37.4 | 1.033 | | | | |
| 1040.0 | 37.3 | 1.037 | | | | |
| 1045.0 | 37.3 | 1.041 | | | | |
| 1050.0 | 37.2 | 1.046 | | | | |
| 1055.0 | 37.2 | 1.050 | | | | |
| 1060.0 | 37.1 | 1.054 | | | | |
| 1065.0 | 37.1 | 1.059 | | | | |
| 1070.0 | 37.0 | 1.063 | | | | |
| 1075.0 | 37.0 | 1.068 | | | | |
| 1080.0 | 36.9 | 1.072 | | | | |
| 1085.0 | 36.9 | 1.077 | | | | |
| 1090.0 | 36.8 | 1.081 | | | | |
| 1095.0 | 36.8 | 1.086 | | | | |
| 1100.0 | 36.7 | 1.090 | | | | |
| 1105.0 | 36.7 | 1.095 | | | | |
| 1110.0 | 36.6 | 1.099 | | | | |
| 1115.0 | 36.6 | 1.104 | | | | |
| 1120.0 | 36.5 | 1.108 | | | | |
| 1125.0 | 36.5 | 1.112 | | | | |
| 1130.0 | 36.4 | 1.117 | | | | |
| 1135.0 | 36.4 | 1.121 | | | | |
| 1140.0 | 36.3 | 1.125 | | | | |
| 1145.0 | 36.3 | 1.130 | | | | |
| 1150.0 | 36.2 | 1.134 | | | | |
| 1155.0 | 36.2 | 1.138 | | | | |
| 1160.0 | 36.1 | 1.142 | | | | |
| 1165.0 | 36.1 | 1.147 | | | | |
| 1170.0 | 36.0 | 1.151 | | | | |
| 1175.0 | 36.0 | 1.156 | | | | |
| 1180.0 | 35.9 | 1.160 | | | | |
| 1185.0 | 35.9 | 1.164 | | | | |
| 1190.0 | 35.8 | 1.169 | | | | |
| 1195.0 | 35.8 | 1.173 | | | | |
| 1200.0 | 35.8 | 1.177 | | | | |

EMC**Tissue - Equivalent Liquid**

| | |
|--|-------------------------------|
| EUT: MSL1900 | Work Order: ITRM0248 |
| Serial Number: SAO | Date: 08/19/2011 |
| Customer: Intermec Technologies Corporation | Temperature (°C): 23.1 |
| Attendees: None | Humidity: 44.1 |
| Project: ITRM0227 | Barometric Pres. (mb): 1017.9 |
| Tested by: Jennifer Herrett | Power: None |
| Job Site: Cal Lab | |
| TEST SPECIFICATIONS | |
| FCC 2.1093:2011 | Test Method: FCC OET 65C:2001 |
| COMMENTS | |
| None | |
| DEVIATIONS FROM TEST STANDARD | |
| None | |
| Configuration # | None |
| <i>Signature</i>  | |
| Tissue: MSL1900 | |
| Liquid Temperature (°C): 22.8 | |

| Frequency (GHz) | Actual Values | | Target Values | | Deviation (%) | |
|-----------------|-----------------------|--------------|-----------------------|--------------|-----------------------|--------------|
| | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity |
| 1900 | 52.609 | 1.504 | 53.300 | 1.520 | 1.30 | 1.08 |

| | | |
|--------|------|-------|
| 1600.0 | 53.7 | 1.178 |
| 1612.5 | 53.6 | 1.191 |
| 1625.0 | 53.6 | 1.204 |
| 1637.5 | 53.6 | 1.218 |
| 1650.0 | 53.5 | 1.232 |
| 1662.5 | 53.5 | 1.246 |
| 1675.0 | 53.4 | 1.260 |
| 1687.5 | 53.4 | 1.273 |
| 1700.0 | 53.3 | 1.286 |
| 1712.5 | 53.3 | 1.298 |
| 1725.0 | 53.2 | 1.311 |
| 1737.5 | 53.2 | 1.322 |
| 1750.0 | 53.1 | 1.334 |
| 1762.5 | 53.1 | 1.348 |
| 1775.0 | 53.1 | 1.361 |
| 1787.5 | 53.0 | 1.375 |
| 1800.0 | 53.0 | 1.391 |
| 1812.5 | 52.9 | 1.405 |
| 1825.0 | 52.9 | 1.420 |
| 1837.5 | 52.8 | 1.435 |
| 1850.0 | 52.8 | 1.449 |
| 1862.5 | 52.7 | 1.463 |
| 1875.0 | 52.7 | 1.477 |
| 1887.5 | 52.6 | 1.490 |
| 1900.0 | 52.6 | 1.504 |
| 1912.5 | 52.6 | 1.517 |
| 1925.0 | 52.5 | 1.531 |
| 1937.5 | 52.5 | 1.546 |
| 1950.0 | 52.5 | 1.560 |
| 1962.5 | 52.4 | 1.575 |
| 1975.0 | 52.4 | 1.590 |
| 1987.5 | 52.4 | 1.605 |
| 2000.0 | 52.3 | 1.620 |

EMC**Tissue - Equivalent Liquid**

| | |
|---|-------------------------------|
| EUT: HSL1750 | Work Order: ITRM0248 |
| Serial Number: SAP | Date: 08/20/2011 |
| Customer: Intermec Technologies Corporation | Temperature (°C): 23.6 |
| Attendees: None | Humidity: 45.5 |
| Project: ITRM0227 | Barometric Pres. (mb): 1009.7 |
| Tested by: Jennifer Herrett | Power: None |
| Job Site: Cal Lab | |
| TEST SPECIFICATIONS | |
| FCC 2.1093:2011 | Test Method |
| | FCC OET 65C:2001 |
| COMMENTS | |
| None | |
| DEVIATIONS FROM TEST STANDARD | |
| None | |
| Configuration # | None |
| Signature <i>Jennifer Herrett</i> | |
| Tissue: HSL1750 | |
| Liquid Temperature (°C): 21.5 | |

| Frequency (GHz) | Actual Values | | Target Values | | Deviation (%) | |
|-----------------|-----------------------|--------------|-----------------------|--------------|-----------------------|--------------|
| | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity |
| 1800 | 40.532 | 1.432 | 40.000 | 1.400 | -1.33 | -2.30 |
| 1400.0 | 42.4 | 1.038 | | | | |
| 1425.0 | 42.3 | 1.062 | | | | |
| 1450.0 | 42.2 | 1.085 | | | | |
| 1475.0 | 42.0 | 1.109 | | | | |
| 1500.0 | 41.9 | 1.133 | | | | |
| 1525.0 | 41.8 | 1.157 | | | | |
| 1550.0 | 41.7 | 1.182 | | | | |
| 1575.0 | 41.6 | 1.206 | | | | |
| 1600.0 | 41.5 | 1.230 | | | | |
| 1625.0 | 41.4 | 1.254 | | | | |
| 1650.0 | 41.3 | 1.280 | | | | |
| 1675.0 | 41.1 | 1.306 | | | | |
| 1700.0 | 41.0 | 1.333 | | | | |
| 1725.0 | 40.9 | 1.359 | | | | |
| 1750.0 | 40.8 | 1.384 | | | | |
| 1775.0 | 40.6 | 1.408 | | | | |
| 1800.0 | 40.5 | 1.432 | | | | |
| 1825.0 | 40.4 | 1.458 | | | | |
| 1850.0 | 40.3 | 1.485 | | | | |
| 1875.0 | 40.2 | 1.513 | | | | |
| 1900.0 | 40.1 | 1.540 | | | | |

EMC**Tissue - Equivalent Liquid**

| | |
|---|-------------------------------|
| EUT: MSL1750 | Work Order: ITRM0248 |
| Serial Number: SAQ | Date: 08/22/2011 |
| Customer: Intermec Technologies Corporation | Temperature (°C): 21.2 |
| Attendees: None | Humidity: 55.5 |
| Project: ITRM0227 | Barometric Pres. (mb): 1016.5 |
| Tested by: Jennifer Herrett | Power: None |
| Job Site: Cal Lab | |
| TEST SPECIFICATIONS | |
| FCC 2.1093:2011 | Test Method |
| | FCC OET 65C:2001 |
| COMMENTS | |
| None | |
| DEVIATIONS FROM TEST STANDARD | |
| None | |
| Configuration # | None |
| Signature <i>Jennifer Herrett</i> | |
| Tissue: MSL1750 | |
| Liquid Temperature (°C): 22.4 | |

| Frequency (GHz) | Actual Values | | Target Values | | Deviation (%) | |
|-----------------|-----------------------|--------------|-----------------------|--------------|-----------------------|--------------|
| | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity |
| 1800 | 52.788 | 1.503 | 53.300 | 1.520 | 0.96 | 1.13 |
| 1400.0 | 54.2 | 1.089 | | | | |
| 1425.0 | 54.1 | 1.115 | | | | |
| 1450.0 | 54.0 | 1.139 | | | | |
| 1475.0 | 53.9 | 1.162 | | | | |
| 1500.0 | 53.8 | 1.186 | | | | |
| 1525.0 | 53.7 | 1.211 | | | | |
| 1550.0 | 53.6 | 1.239 | | | | |
| 1575.0 | 53.5 | 1.268 | | | | |
| 1600.0 | 53.4 | 1.291 | | | | |
| 1625.0 | 53.4 | 1.315 | | | | |
| 1650.0 | 53.3 | 1.341 | | | | |
| 1675.0 | 53.2 | 1.368 | | | | |
| 1700.0 | 53.1 | 1.398 | | | | |
| 1725.0 | 53.0 | 1.427 | | | | |
| 1750.0 | 52.9 | 1.454 | | | | |
| 1775.0 | 52.9 | 1.479 | | | | |
| 1800.0 | 52.8 | 1.503 | | | | |
| 1825.0 | 52.7 | 1.529 | | | | |
| 1850.0 | 52.6 | 1.557 | | | | |
| 1875.0 | 52.5 | 1.588 | | | | |
| 1900.0 | 52.5 | 1.617 | | | | |

EMC**Tissue - Equivalent Liquid**

| | |
|---|---------------------------------|
| EUT: HSL1900 | Work Order: ITRM0248 |
| Serial Number: SAN | Date: 08/23/2011 |
| Customer: Intermec Technologies Corporation | Temperature (°C): 23.2 |
| Attendees: None | Humidity: 49.4 |
| Project: ITRM0227 | Barometric Pres. (mb): 1017.6 |
| Tested by: Jennifer Herrett | Power: None |
| Job Site: Cal Lab | |
| TEST SPECIFICATIONS | |
| FCC 2.1093:2011 | Test Method FCC OET 65C:2001 |
| COMMENTS | |
| None | |
| DEVIATIONS FROM TEST STANDARD | |
| None | |
| Configuration # | None |
| Signature <i>Jennifer Herrett</i> | |
| Tissue: HSL1900 | |
| Liquid Temperature (°C): 22.1 | |

| Frequency (GHz) | Actual Values | | Target Values | | Deviation (%) | |
|-----------------|-----------------------|--------------|-----------------------|--------------|-----------------------|--------------|
| | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity | Relative Permittivity | Conductivity |
| 1900 | 39.197 | 1.420 | 40.000 | 1.400 | 2.01 | -1.41 |
| 1600.0 | 40.5 | 1.115 | | | | |
| 1612.5 | 40.5 | 1.127 | | | | |
| 1625.0 | 40.4 | 1.139 | | | | |
| 1637.5 | 40.4 | 1.151 | | | | |
| 1650.0 | 40.3 | 1.163 | | | | |
| 1662.5 | 40.3 | 1.176 | | | | |
| 1675.0 | 40.2 | 1.189 | | | | |
| 1687.5 | 40.1 | 1.201 | | | | |
| 1700.0 | 40.1 | 1.215 | | | | |
| 1712.5 | 40.0 | 1.228 | | | | |
| 1725.0 | 40.0 | 1.241 | | | | |
| 1737.5 | 39.9 | 1.253 | | | | |
| 1750.0 | 39.8 | 1.265 | | | | |
| 1762.5 | 39.8 | 1.277 | | | | |
| 1775.0 | 39.7 | 1.290 | | | | |
| 1787.5 | 39.7 | 1.302 | | | | |
| 1800.0 | 39.6 | 1.315 | | | | |
| 1812.5 | 39.6 | 1.328 | | | | |
| 1825.0 | 39.5 | 1.341 | | | | |
| 1837.5 | 39.5 | 1.355 | | | | |
| 1850.0 | 39.4 | 1.368 | | | | |
| 1862.5 | 39.4 | 1.381 | | | | |
| 1875.0 | 39.3 | 1.394 | | | | |
| 1887.5 | 39.3 | 1.408 | | | | |
| 1900.0 | 39.2 | 1.420 | | | | |
| 1912.5 | 39.1 | 1.433 | | | | |
| 1925.0 | 39.1 | 1.445 | | | | |
| 1937.5 | 39.0 | 1.458 | | | | |
| 1950.0 | 39.0 | 1.471 | | | | |
| 1962.5 | 38.9 | 1.484 | | | | |
| 1975.0 | 38.9 | 1.497 | | | | |
| 1987.5 | 38.8 | 1.511 | | | | |
| 2000.0 | 38.8 | 1.524 | | | | |

Requirement

Per IEEE 1528, Section 8.2.1, "System checks are performed prior to compliance tests and the results must always be within $\pm 10\%$ of the target value corresponding to the test frequency, liquid, and the source used. The target values are 1 g or 10 g averaged SAR values measured on systems having current system validation and calibration status, and using the system check setup as shown in Figure 14. These target values should be determined using a standard source."

Test Description

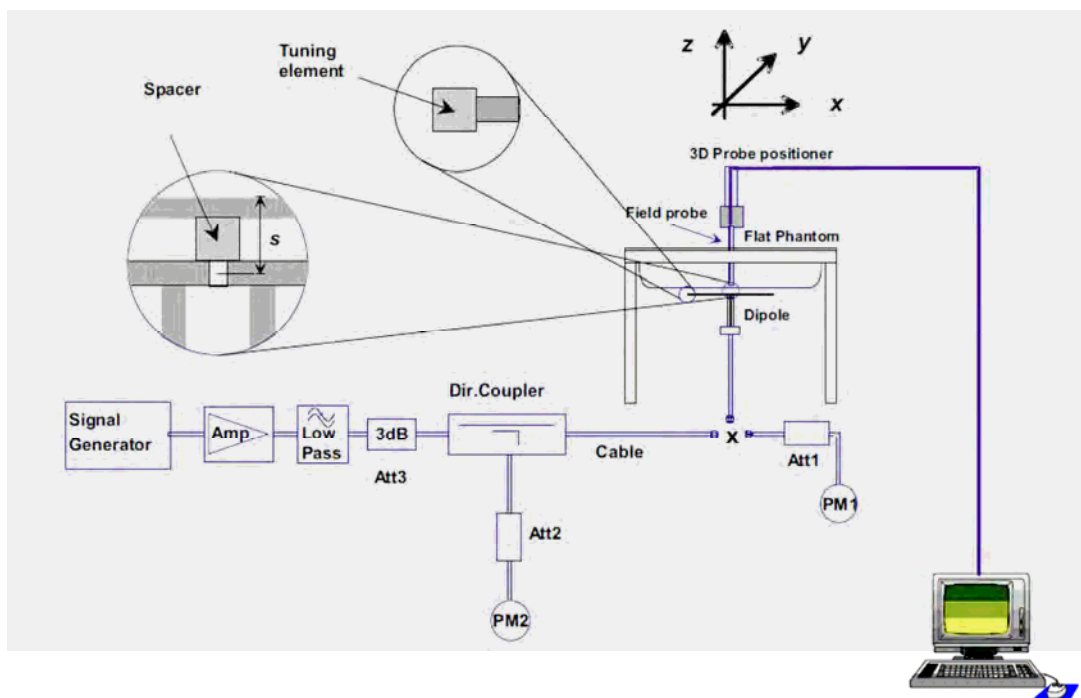
Within 24 hours of a measurement, Northwest EMC used the system validation kit (calibrated reference dipole) to test whether the system was operating within its specifications. The validation was performed in the indicated bands by making SAR measurements of the reference dipole with the phantom filled with the tissue-equivalent liquid. First, a signal generator and power amplifier were used to produce a 100mW level as measured with a power meter at the antenna terminals of the dipole. Then, the reference dipole was positioned below the bottom of the phantom and centered with its axis parallel to the longest side of the phantom. A low loss and low relative permittivity spacer was used to establish the correct distance between the center axis of the reference dipole and the liquid.

For the reference dipoles, the spacing distance s is given by:

$s = 15\text{mm}, \pm 0.2\text{mm}$ for $300\text{MHz} \leq f \leq 1000 \text{ MHz}$:

$s = 10\text{mm}, \pm 0.2\text{mm}$ for $1000\text{MHz} \leq f \leq 6000\text{MHz}$

The measured 1 g and 10 g spatial average SAR values were normalized to a 1W dipole input power for comparison to the calibration data. The results are summarized in the attached table. The deviation is less than 10% in all cases, indicating that the system performance check was within tolerance.



| NORTHWEST EMC | | System Verification | | SAR 2011.02.07 |
|--|-----|-----------------------------------|--|--|
| EUT: System Verifications | | | | Work Order: ITRM0248 |
| Serial Number: Various | | | | Date: See Data Sheets |
| Customer: Intermec Technologies Corporation | | | | Temperature: See Data Sheets |
| Attendees: None | | | | Humidity: See Data Sheets |
| Project: ITRM0227 | | | | Barometric Pres.: See Data Sheets |
| Tested by: Jennifer Herrett | | | | Job Site: EV08 |
| TEST SPECIFICATIONS | | | Test Method | |
| FCC 2.1093:2011 | | | FCC OET 65C:2001 IEEE Std 1528:2003 FCC KDB 447498 D01 v04 FCC KDB 941225 D01 v02, and D03 FCC KDB 648474 D01 V01r05 | |
| Health Safety Code 6:2009 | | | RSS-102, Issue 4:2010 | |
| COMMENTS | | | | |
| None | | | | |
| DEVIATIONS FROM TEST STANDARD | | | | |
| No Deviations | | | | |
| Configuration: | N/A | Signature <i>Jennifer Herrett</i> | | |

| Date | Liquid part number and frequency | Conducted Power into the Dipole (dBm) | Correction Factor | 1g Measured | 10g Measured | 1g Normalized to 1W | 10g Normalized to 1W | Target 1g (Normalized to 1W) - Get from Dipole cal cert | Target 10g (Normalized to 1W) - Get from Dipole cal cert | % difference 1g | % difference 10 g | Comments |
|-----------|----------------------------------|---------------------------------------|-------------------|-------------|--------------|---------------------|----------------------|---|--|-----------------|-------------------|----------|
| 8/9/2011 | MSL900 835MHz | 20.00 | 10.00 | 0.99 | 0.65 | 9.89 | 6.54 | 9.93 | 6.51 | -0.40 | 0.46 | |
| 8/18/2011 | HSL900 835MHz | 20.03 | 9.93 | 0.97 | 0.64 | 9.58 | 6.31 | 9.64 | 6.29 | -0.59 | 0.26 | |
| 8/19/2011 | MSL1900 1900MHz | 20.04 | 9.91 | 4.05 | 2.13 | 40.13 | 21.10 | 39.90 | 21.00 | 0.57 | 0.50 | |
| 8/22/2011 | HSL1750 1750MHz | 19.98 | 10.05 | 3.62 | 1.92 | 36.37 | 19.29 | 37.20 | 19.60 | -2.24 | -1.59 | |
| 8/23/2011 | MSL1750 1750MHz | 19.94 | 10.14 | 3.54 | 1.90 | 35.89 | 19.26 | 38.20 | 20.30 | -6.04 | -5.10 | |
| 8/23/2011 | HSL1900 1900MHz | 20.00 | 10.00 | 4.16 | 2.14 | 41.60 | 21.40 | 40.20 | 20.90 | 3.48 | 2.39 | |

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 24.1 | Humidity (%): | 47.8 | Test Date: | 08/09/11 |
| Liquid Temperature (°C): | 22.3 | Barometric Pressure (mb): | 1018.6 | Tested by: | Jennifer Herrett |

System Verifications_835M 8-9-11

DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN: 4d108

Communication System: CW; Frequency: 835 MHz

Medium parameters used: $\sigma = 1.0111$ mho/m, $\epsilon_r = 56.5118$; $\rho = 1000$ kg/m³, Medium parameters used: $f = 835$ MHz; $\sigma = 1.011$ mho/m; $\epsilon_r = 56.512$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

Probe: ES3DV3 - SN3246; ConvF(6.1, 6.1, 6.1); Calibrated: 11/11/2010

Sensor-Surface: 0mm (Fix Surface), Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096

Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Body/Body - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 28.088 V/m

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

Reference Value = 32.492 V/m; Power Drift = -0.04 dB

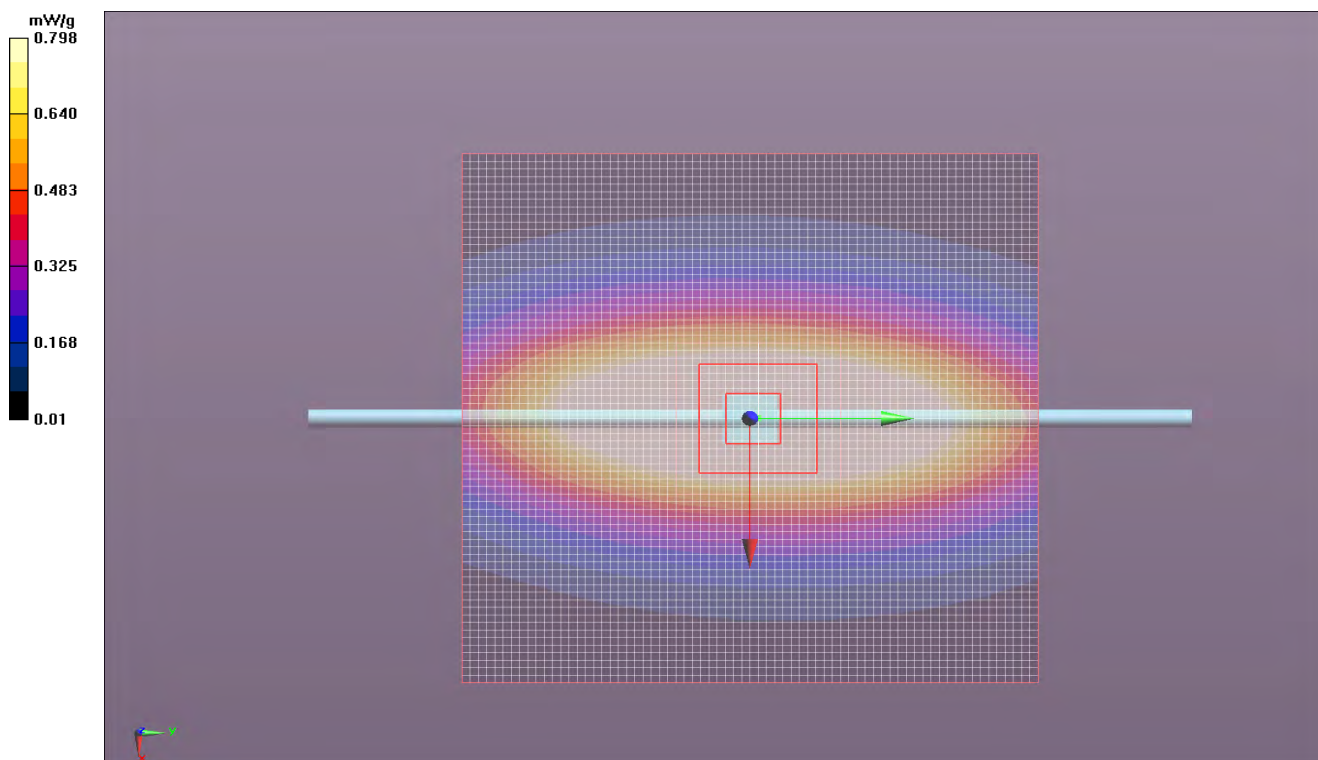
Peak SAR (extrapolated) = 1.418 W/kg

SAR(1 g) = 0.989 mW/g; SAR(10 g) = 0.654 mW/g

Maximum value of SAR (measured) = 1.150 mW/g

Body/Body - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.144 mW/g



| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 23.9 | Humidity (%): | 45.7 | Test Date: | 08/18/11 |
| Liquid Temperature (°C): | 22 | Barometric Pressure (mb): | 1022.5 | Tested by: | Jennifer Herrett |

HSL900 System Check_835MHz 8-18-11

DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:4D108

Communication System: CW; Frequency: 835 MHz

Medium parameters used: $f = 835$ MHz; $\sigma = 0.856$ mho/m; $\epsilon = 39.545$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 0.856266$ mho/m; $\epsilon = 39.5455$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASYS Configuration:

Probe: ES3DV3 - SN3173; ConvF(6.01, 6.01, 6.01); Calibrated: 2/23/2011

Sensor-Surface: 5mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: SAM with CRP; Type: SAM; Serial: 1598

Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

System Check/System Check/Area Scan (71x101x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.978 mW/g

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

Reference Value = 34.082 V/m; Power Drift = -0.09 dB

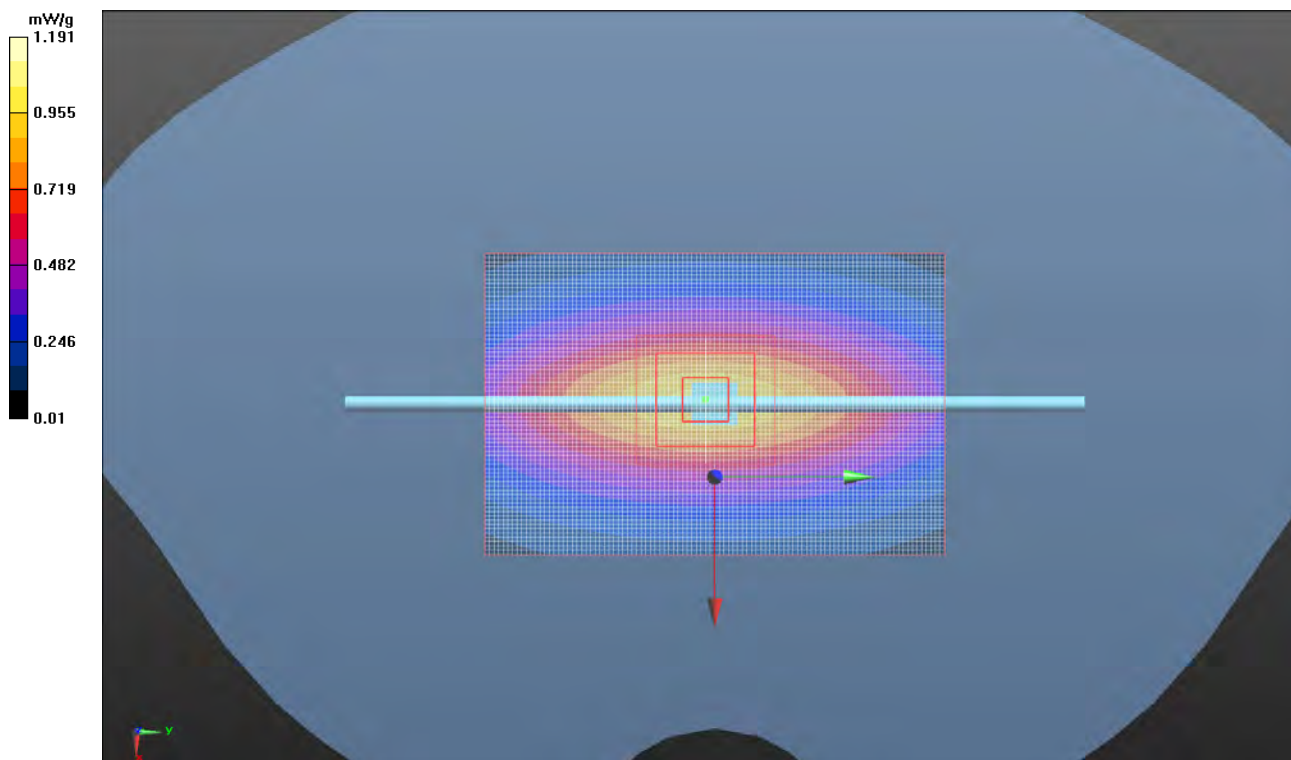
Peak SAR (extrapolated) = 1.432 W/kg

SAR(1 g) = 0.965 mW/g; SAR(10 g) = 0.635 mW/g

Maximum value of SAR (measured) = 0.962 mW/g

System Check/System Check/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 37.300 V/m



| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 25 | Humidity (%): | 45 | Test Date: | 08/19/11 |
| Liquid Temperature (°C): | 22.4 | Barometric Pressure (mb): | 1017.9 | Tested by: | Jennifer Herrett |

MSL1900 System Check_1900MHz 8-19-11

DUT: Dipole 1900 MHz D1900V2; Type: D1900V2; Serial: D1900V2 - SN:5d131

Communication System: CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.503$ mho/m; $\epsilon = 52.609$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.50349$ mho/m, $\epsilon = 52.6093$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASYS Configuration:

Probe: ES3DV3 - SN3173; ConvF(4.55, 4.55, 4.55); Calibrated: 2/23/2011

Sensor-Surface: 5mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096

Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

System Check/System Check/Area Scan (51x61x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 4.124 mW/g

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

Reference Value = 52.540 V/m; Power Drift = -0.05 dB

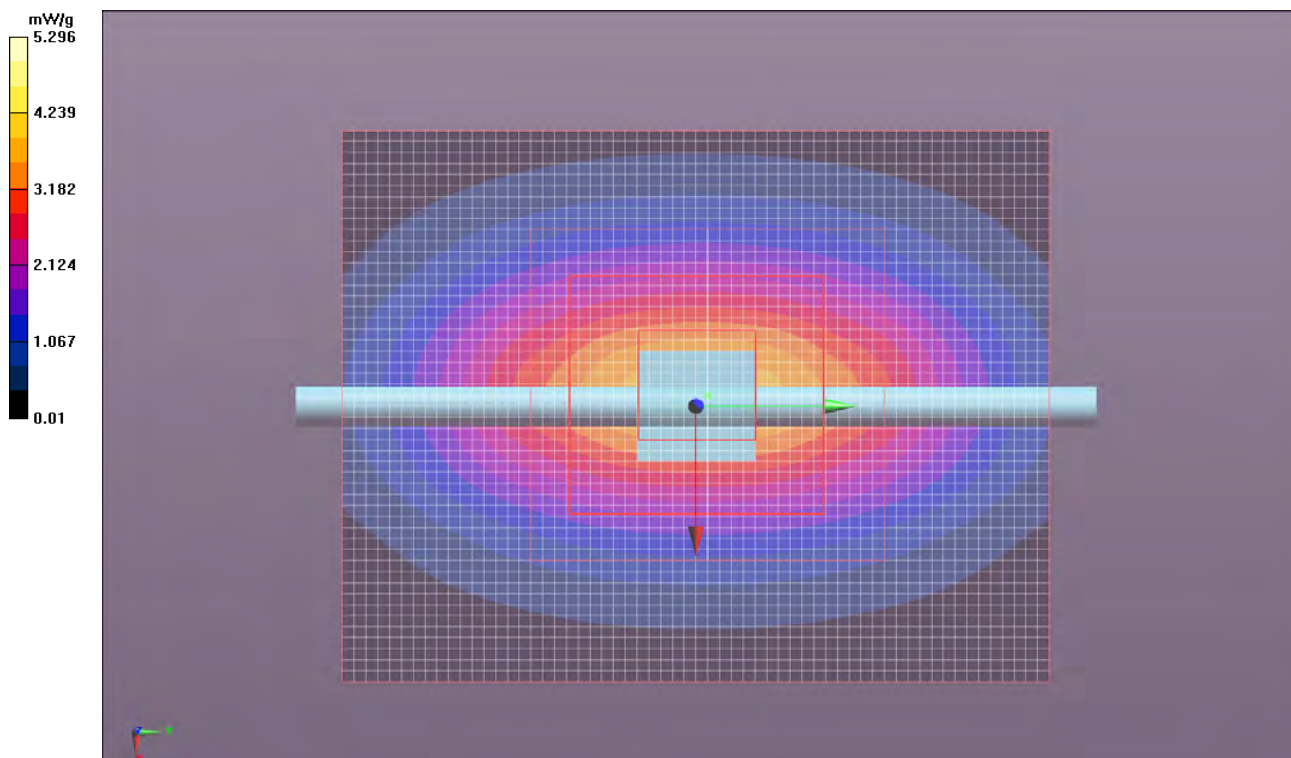
Peak SAR (extrapolated) = 7.402 W/kg

SAR(1 g) = 4.05 mW/g; SAR(10 g) = 2.13 mW/g

Maximum value of SAR (measured) = 4.065 mW/g

System Check/System Check/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 59.348 V/m



| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 24 | Humidity (%): | 48.2 | Test Date: | 08/22/11 |
| Liquid Temperature (°C): | 21.7 | Barometric Pressure (mb): | 1016.5 | Tested by: | Jennifer Herrett |

HSL1750 System Check_1750MHz 8-22-11

DUT: Dipole 1750 MHz D1750V2; Type: D1750V2; Serial: D1750V2 - SN:1040

Communication System: CW; Frequency: 1750 MHz

Medium parameters used: $f = 1750$ MHz; $\sigma = 1.384$ mho/m; $\epsilon = 40.768$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.38357$ mho/m, $\epsilon = 40.7682$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASYS Configuration:

Probe: ES3DV3 - SN3173; ConvF(5.2, 5.2, 5.2); Calibrated: 2/23/2011

Sensor-Surface: 5mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: SAM with CRP; Type: SAM; Serial: 1598

Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

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

Reference Value = 50.912 V/m; Power Drift = 0.0035 dB

Peak SAR (extrapolated) = 6.720 W/kg

SAR(1 g) = 3.62 mW/g; SAR(10 g) = 1.92 mW/g

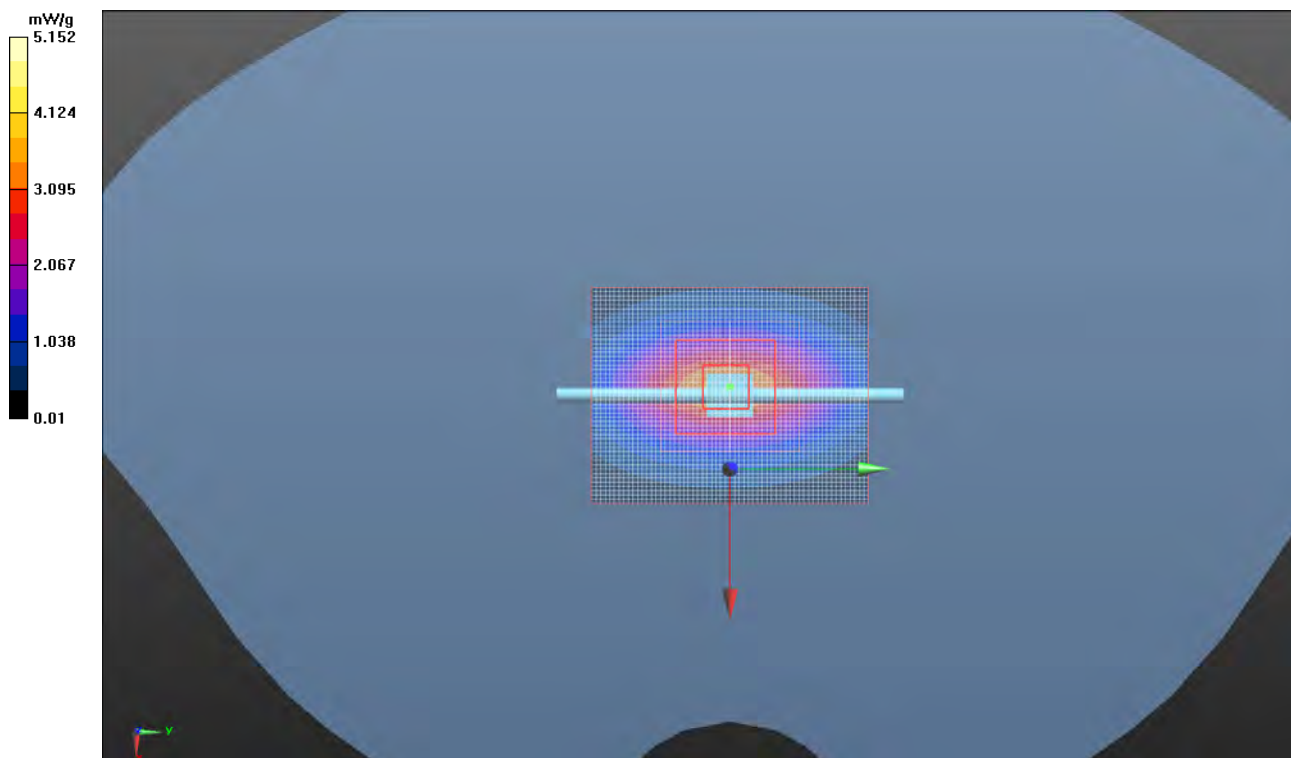
Maximum value of SAR (measured) = 3.611 mW/g

System Check/System Check/Area Scan (51x61x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 3.598 mW/g

System Check/System Check/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 61.025 V/m



| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 24.5 | Humidity (%): | 49.8 | Test Date: | 08/23/11 |
| Liquid Temperature (°C): | 22.4 | Barometric Pressure (mb): | 1017.6 | Tested by: | Jennifer Herrett |

MSL1750 System Check_1750MHz 8-23-11

DUT: Dipole 1900 MHz D1900V2; Type: D1900V2; Serial: D1900V2 - SN:1040

Communication System: CW; Frequency: 1750 MHz

Medium parameters used: $\sigma = 1.45402$ mho/m, $\epsilon_r = 52.9303$; $\rho = 1000$ kg/m³, Medium parameters used: $f = 1750$ MHz; $\sigma = 1.454$ mho/m; $\epsilon_r = 52.93$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASYS5 Configuration:

Probe: ES3DV3 - SN3173; ConvF(4.87, 4.87, 4.87); Calibrated: 2/23/2011

Sensor-Surface: 0mm (Fix Surface), Sensor-Surface: 5mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096

Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

System Check/System Check/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 48.930 V/m

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

Reference Value = 49.805 V/m; Power Drift = 0.02 dB

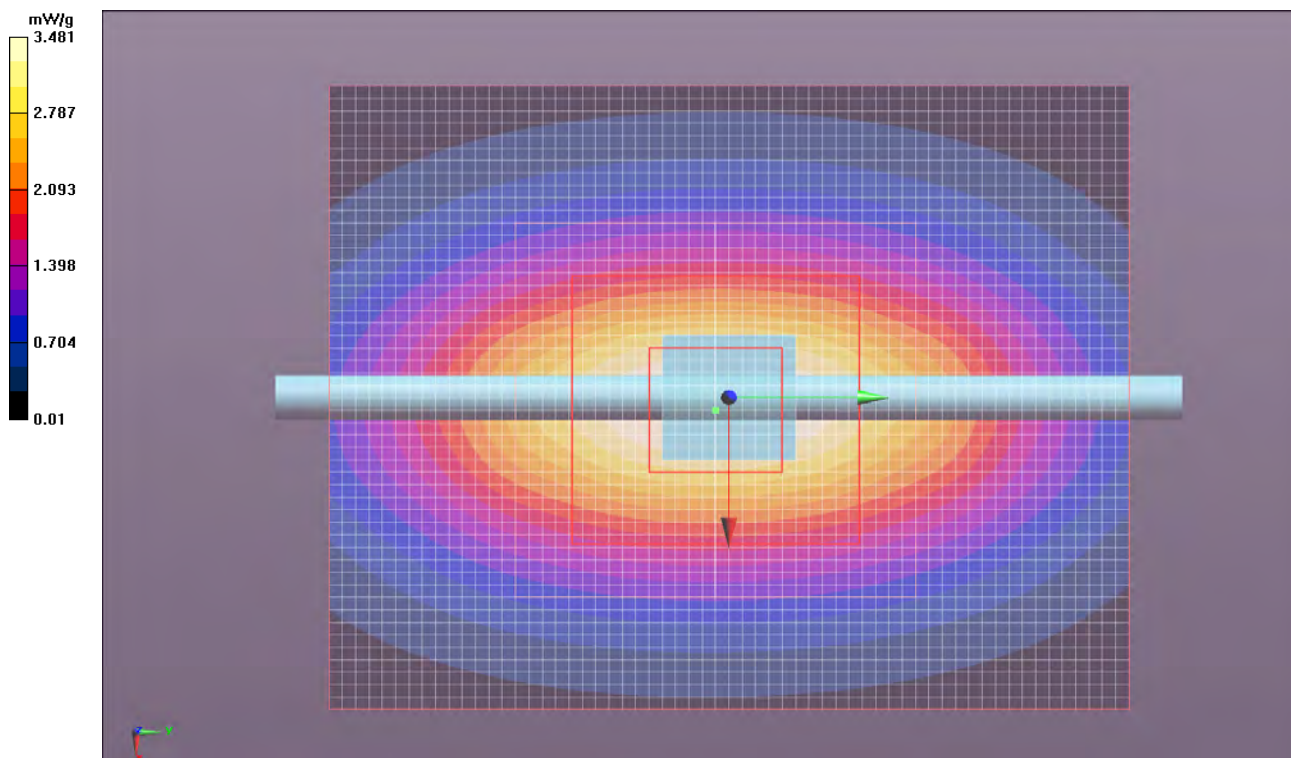
Peak SAR (extrapolated) = 6.339 W/kg

SAR(1 g) = 3.54 mW/g; SAR(10 g) = 1.9 mW/g

Maximum value of SAR (measured) = 3.554 mW/g

System Check/System Check/Area Scan (51x61x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 3.589 mW/g



| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 24.4 | Humidity (%): | 47.7 | Test Date: | 08/23/11 |
| Liquid Temperature (°C): | 22.1 | Barometric Pressure (mb): | 1017.6 | Tested by: | Jennifer Herrett |

HSL1900 System Check_1900MHz 8-23-11

DUT: Dipole 1900 MHz D1900V2; Type: D1900V2; Serial: D1900V2 - SN:5d131

Communication System: CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.42$ mho/m; $\epsilon = 39.197$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.41969$ mho/m, $\epsilon = 39.1967$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

Probe: ES3DV3 - SN3173; ConvF(4.96, 4.96, 4.96); Calibrated: 2/23/2011

Sensor-Surface: 5mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: SAM with CRP; Type: SAM; Serial: 1598

Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

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

Reference Value = 54.317 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 8.001 W/kg

SAR(1 g) = 4.16 mW/g; SAR(10 g) = 2.14 mW/g

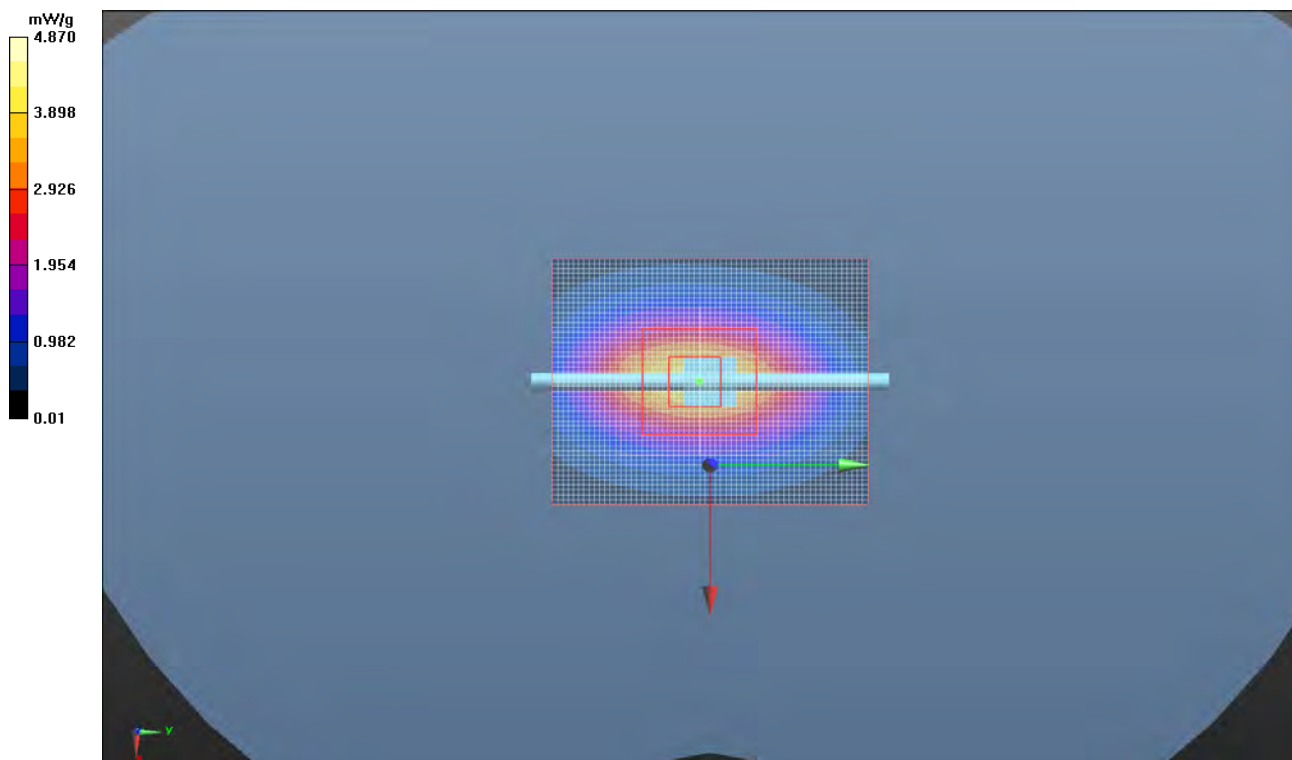
Maximum value of SAR (measured) = 4.124 mW/g

System Check/System Check/Area Scan (51x61x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 4.106 mW/g

System Check/System Check/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 58.571 V/m



Test Configurations

In normal operation, the EUT can be held in the hand, or next to the head like a cellular handset, or worn on the body. The only Intermec approved accessory for body worn operation is a holster that contains metal. The EUT can only fit in the holster with the top end of the unit pointing down. The holster cup can be attached to the holster belt with either the keypad facing the user, or the side facing the user. In no case can the back of the EUT face the user. For body worn operation, the keypad side was tested. The holster provides 1.5 mm spacing from the keypad side to the flat phantom.

The UMTS antenna is on the left side of the EUT. The closest portion of the antenna is more than 5 cm from the right side of the unit. For body worn operation, in addition to the keypad side, the left and right sides were also tested. The holster provides 1.2 mm spacing from the left or right side to the flat phantom.

An optional snap-on audio accessory is available. It connects to the bottom end of the unit and provides a standard audio jack for connection of a VR10 headset. Measurements were made with and without the headset.

The EUT is powered by a lithium-ion battery, Model 1000AB01. It was fully charged before each SAR evaluation.

Per KDB 648474, among the channels required for normal testing, SAR must be measured on the highest conducted output power channel in each band (see highlighted values in the Output Power section of this report). When the SAR measured on the highest output channel is < 0.8 W/kg, SAR evaluation for the other required channels is unnecessary.

All testing was performed with the EUT configured in a worst-case configuration and operating mode to produce the highest SAR levels. An Agilent 8960 test set, Model E5515C, was used to control the EUT. The following applications were installed on the test set: GSM/GPRS Mobile Test A.13.12 and WCDMA Mobile Test A.17.10. This provided all the necessary tools to operate the EUT in the prescribed manner without any difficulties or equipment limitations.

Summary

The following tables summarize the measured SAR values.

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 24.1 | Humidity (%): | 46.1 | Test Date: | 08/16/11 |
| Liquid Temperature (°C): | 22.4 | Barometric Pressure (mb): | 1018.5 | Tested by: | Jennifer Herrett |

Head Test 10 8-16-11

DUT: Handheld Computer (B1); Type: CN70E; Serial: 24511047015

Communication System: GPRS and Edge; Communication System Band: GSM 850; Frequency: 836.6 MHz; Communication System PAR: 9.2 dB
 Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.886$ mho/m; $\epsilon = 41.68$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 0.884189$ mho/m, $\epsilon = 41.7001$; $\rho = 1000$ kg/m³
 Phantom section: Left Section
 Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASYS5 Configuration:

Probe: ES3DV3 - SN3246; ConvF(6.04, 6.04, 6.04); Calibrated: 11/11/2010
 Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)
 Electronics: DAE4 Sn1237; Calibrated: 11/10/2010
 Phantom: SAM with CRP; Type: SAM; Serial: 1598
 Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Head - Left/Tilt - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 14.924 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.250 W/kg

SAR(1 g) = 0.184 mW/g; SAR(10 g) = 0.125 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.211 mW/g

Head - Left/Tilt - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.203 mW/g

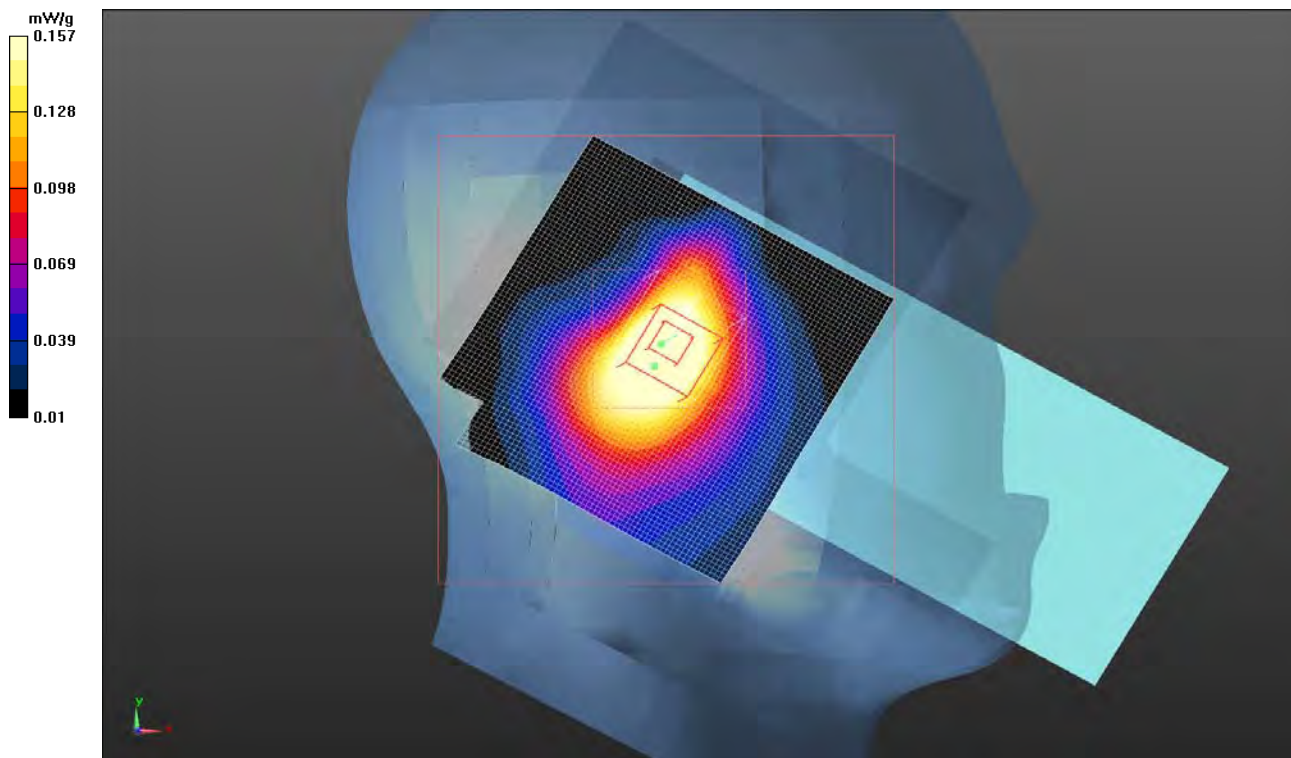
Head - Left/Tilt - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 13.334 V/m

Head - Left/Tilt - Mid/Reference scan (51x81x1): Measurement grid: dx=30mm, dy=30mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.205 mW/g



EMC

SAR TEST DATA

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 24.1 | Humidity (%): | 46.1 | Test Date: | 08/16/11 |
| Liquid Temperature (°C): | 22.4 | Barometric Pressure (mb): | 1018.5 | Tested by: | Jennifer Herrett |

Head Test 9 8-16-11

DUT: Handheld Computer (B1); Type: CN70E; Serial: 24511047015

Communication System: GPRS and Edge; Communication System Band: GSM 850; Frequency: 836.6 MHz; Communication System PAR: 9.2 dB
 Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.886$ mho/m; $\epsilon = 41.68$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 0.884189$ mho/m, $\epsilon = 41.7001$; $\rho = 1000$ kg/m³
 Phantom section: Left Section
 Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASYS5 Configuration:

Probe: ES3DV3 - SN3246; ConvF(6.04, 6.04, 6.04); Calibrated: 11/11/2010
 Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)
 Electronics: DAE4 Sn1237; Calibrated: 11/10/2010
 Phantom: SAM with CRP; Type: SAM; Serial: 1598
 Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Head - Left/Cheek - Mid/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 16.870 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.281 W/kg

SAR(1 g) = 0.217 mW/g; SAR(10 g) = 0.155 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.242 mW/g

Head - Left/Cheek - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.242 mW/g

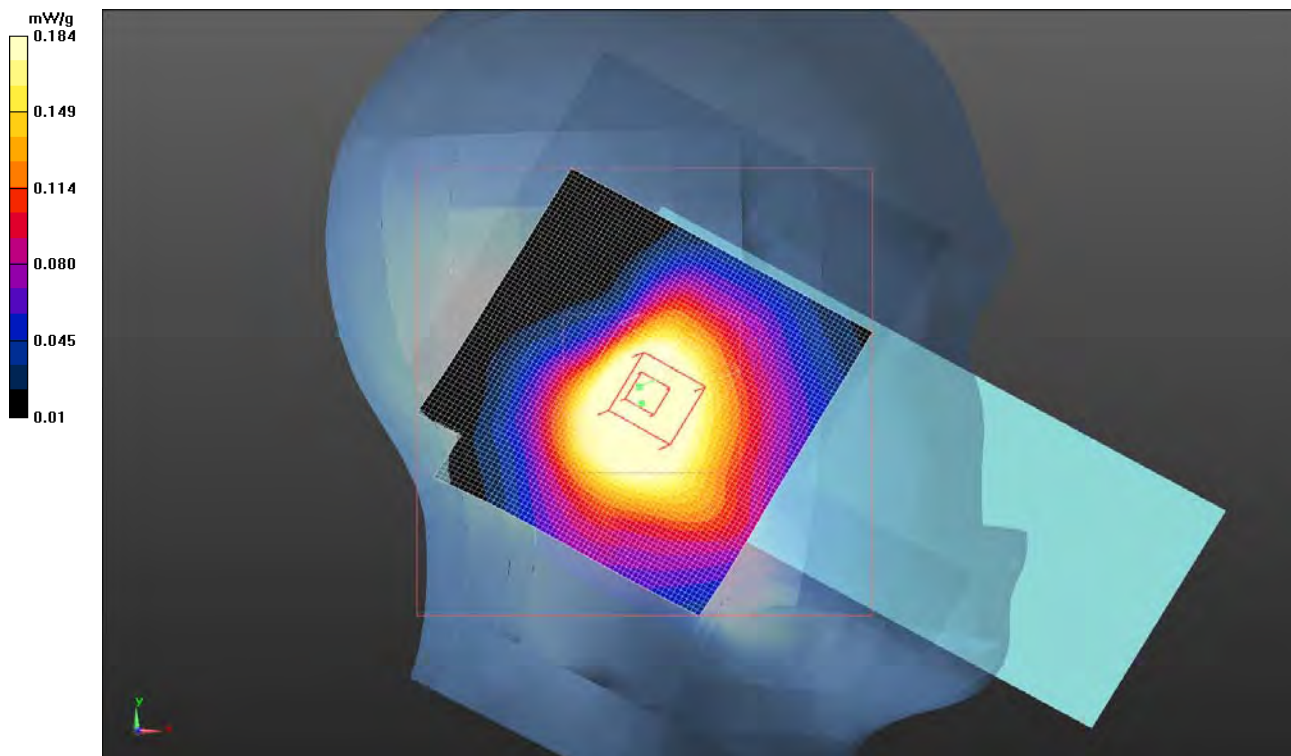
Head - Left/Cheek - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 14.403 V/m

Head - Left/Cheek - Mid/Reference scan (51x81x1): Measurement grid: dx=30mm, dy=30mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.273 mW/g



| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 26 | Humidity (%): | 44.1 | Test Date: | 08/16/11 |
| Liquid Temperature (°C): | 22.8 | Barometric Pressure (mb): | 1018.5 | Tested by: | Jennifer Herrett |

Head Test 11 8-16-11

DUT: Handheld Computer (B1); Type: CN70E; Serial: 24511047015

Communication System: GPRS and Edge; Communication System Band: GSM 850; Frequency: 836.6 MHz; Communication System PAR: 9.2 dB
 Medium parameters used: $\sigma = 0.858264$ mho/m, $\epsilon = 39.9222$; $\rho = 1000$ kg/m³, Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.86$ mho/m; $\epsilon = 39.901$; $\rho = 1000$ kg/m³
 Phantom section: Right Section
 Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASYS Configuration:

Probe: ES3DV3 - SN3246; ConvF(6.04, 6.04, 6.04); Calibrated: 11/11/2010
 Sensor-Surface: 0mm (Fix Surface), Sensor-Surface: 3mm (Mechanical Surface Detection)
 Electronics: DAE4 Sn1237; Calibrated: 11/10/2010
 Phantom: SAM with CRP; Type: SAM; Serial: 1598
 Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Head - Right/Cheek - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
 Maximum value of Total (measured) = 11.220 V/m

Head - Right/Cheek - Mid/Reference scan (51x71x1): Measurement grid: dx=30mm, dy=30mm

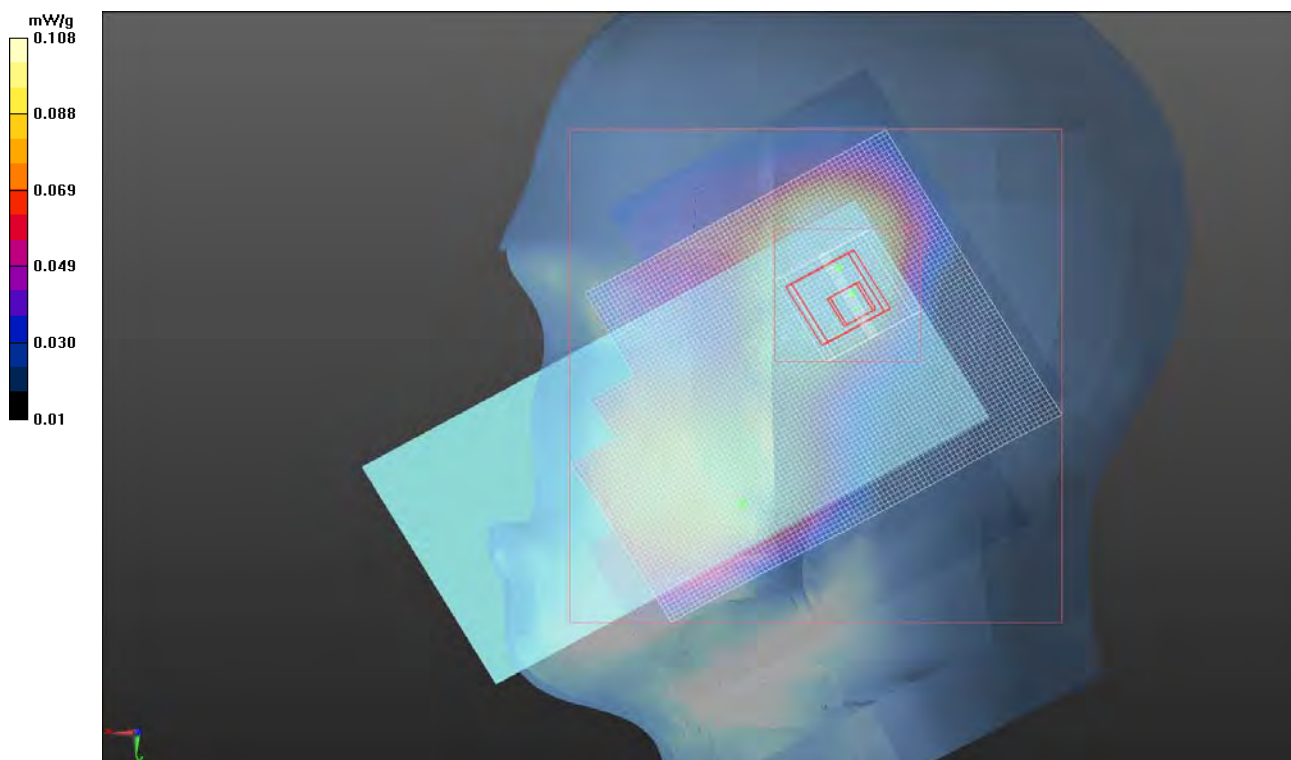
[Info: Interpolated medium parameters used for SAR evaluation.](#)
 Maximum value of SAR (interpolated) = 0.136 mW/g

Head - Right/Cheek - Mid/Area scan (71x91x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)
 Maximum value of SAR (interpolated) = 0.156 mW/g

Head - Right/Cheek - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 13.240 V/m; Power Drift = 0.08 dB
 Peak SAR (extrapolated) = 0.210 W/kg
SAR(1 g) = 0.135 mW/g; SAR(10 g) = 0.088 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)
 Maximum value of SAR (measured) = 0.164 mW/g



EMC

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|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 26 | Humidity (%): | 44.1 | Test Date: | 08/16/11 |
| Liquid Temperature (°C): | 22.8 | Barometric Pressure (mb): | 1018.5 | Tested by: | Jennifer Herrett |

Head Test 12 8-16-11

DUT: Handheld Computer (B1); Type: CN70E; Serial: 24511047015

Communication System: GPRS and Edge; Communication System Band: GSM 850; Frequency: 836.6 MHz; Communication System PAR: 9.2 dB
 Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.86$ mho/m; $\epsilon = 39.901$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 0.858264$ mho/m, $\epsilon = 39.9222$; $\rho = 1000$ kg/m³
 Phantom section: Right Section
 Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASYS5 Configuration:

Probe: ES3DV3 - SN3246; ConvF(6.04, 6.04, 6.04); Calibrated: 11/11/2010
 Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)
 Electronics: DAE4 Sn1237; Calibrated: 11/10/2010
 Phantom: SAM with CRP; Type: SAM; Serial: 1598
 Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Head - Right/Tilt - Mid/Reference scan (51x71x1): Measurement grid: dx=30mm, dy=30mm

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.126 mW/g

Head - Right/Tilt - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 12.467 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.184 W/kg

SAR(1 g) = 0.112 mW/g; SAR(10 g) = 0.069 mW/g

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.136 mW/g

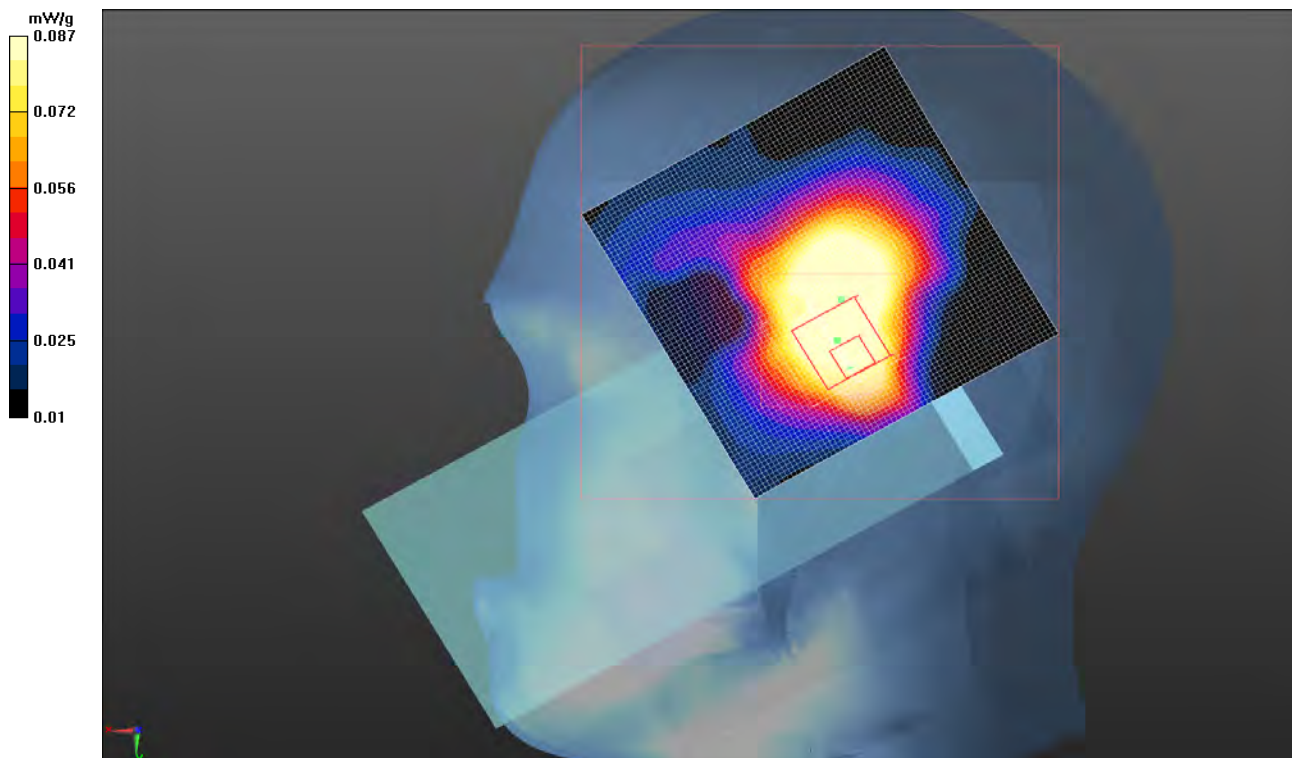
Head - Right/Tilt - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 10.067 V/m

Head - Right/Tilt - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.119 mW/g



| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 22.4 | Humidity (%): | 39.1 | Test Date: | 08/17/11 |
| Liquid Temperature (°C): | 21.3 | Barometric Pressure (mb): | 1018.8 | Tested by: | Jennifer Herrett |

Head Test 13 8-17-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: CW; Frequency: 836.6 MHz

Medium parameters used: $\sigma = 0.873463$ mho/m, $\epsilon = 41.1209$; $\rho = 1000$ kg/m³, Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.875$ mho/m; $\epsilon = 41.099$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASYS5 Configuration:

Probe: ES3DV3 - SN3173; ConvF(6.01, 6.01, 6.01); Calibrated: 2/23/2011

Sensor-Surface: 0mm (Fix Surface), Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: SAM with CRP; Type: SAM; Serial: 1598

Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Head - Left/Cheek - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 15.314 V/m

Head - Left/Cheek - Mid/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.813 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.336 W/kg

SAR(1 g) = 0.252 mW/g; SAR(10 g) = 0.178 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.283 mW/g

Head - Left/Cheek - Mid/Reference scan (51x91x1): Measurement grid: dx=30mm, dy=30mm

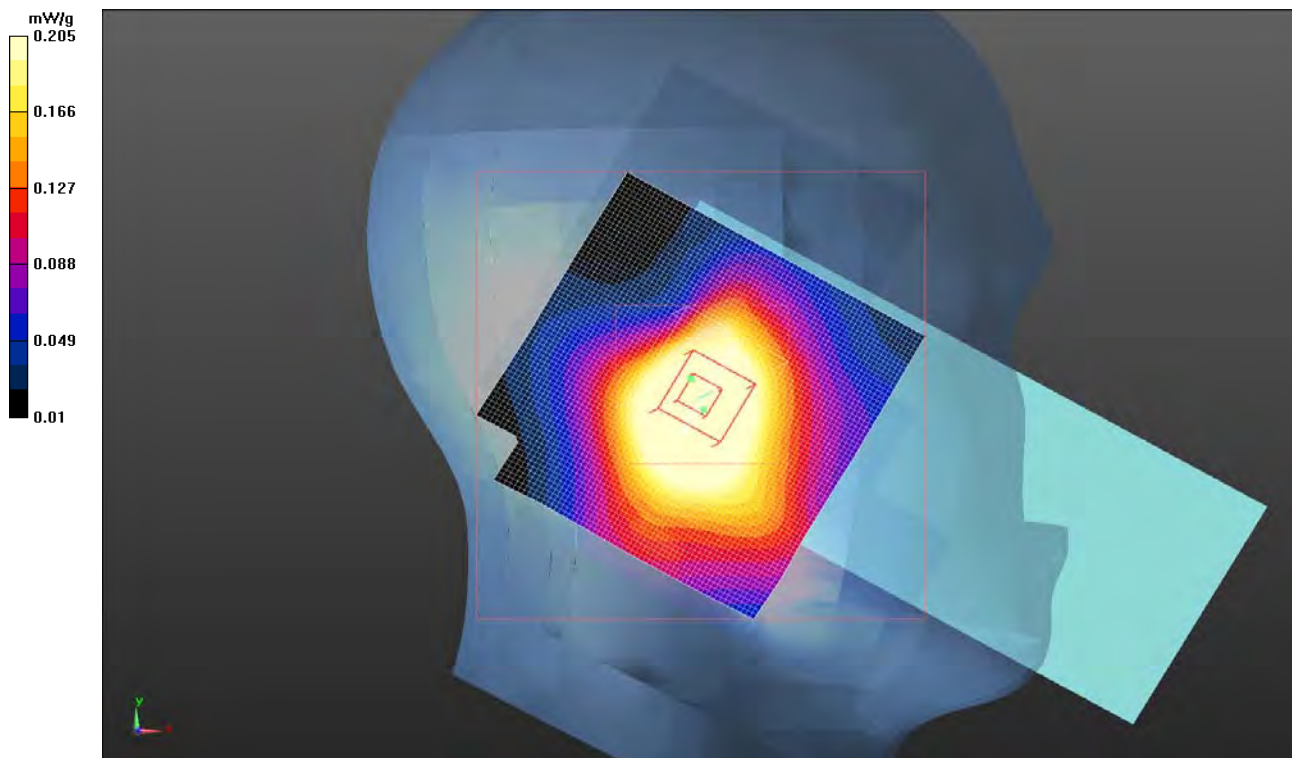
[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.318 mW/g

Head - Left/Cheek - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.309 mW/g



EMC

SAR TEST DATA

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 22.4 | Humidity (%): | 39.1 | Test Date: | 08/17/11 |
| Liquid Temperature (°C): | 21.3 | Barometric Pressure (mb): | 1018.8 | Tested by: | Jennifer Herrett |

Head Test 14 8-17-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: CW; Frequency: 836.6 MHz

Medium parameters used: $\sigma = 0.873463$ mho/m, $\epsilon = 41.1209$; $\rho = 1000$ kg/m³, Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.875$ mho/m; $\epsilon = 41.099$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASYS Configuration:

Probe: ES3DV3 - SN3173; ConvF(6.01, 6.01, 6.01); Calibrated: 2/23/2011

Sensor-Surface: 0mm (Fix Surface), Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: SAM with CRP; Type: SAM; Serial: 1598

Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Head - Left/Tilt - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 13.773 V/m

Head - Left/Tilt - Mid/Reference scan (51x91x1): Measurement grid: dx=30mm, dy=30mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.219 mW/g

Head - Left/Tilt - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 16.238 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.276 W/kg

SAR(1 g) = 0.197 mW/g; SAR(10 g) = 0.134 mW/g

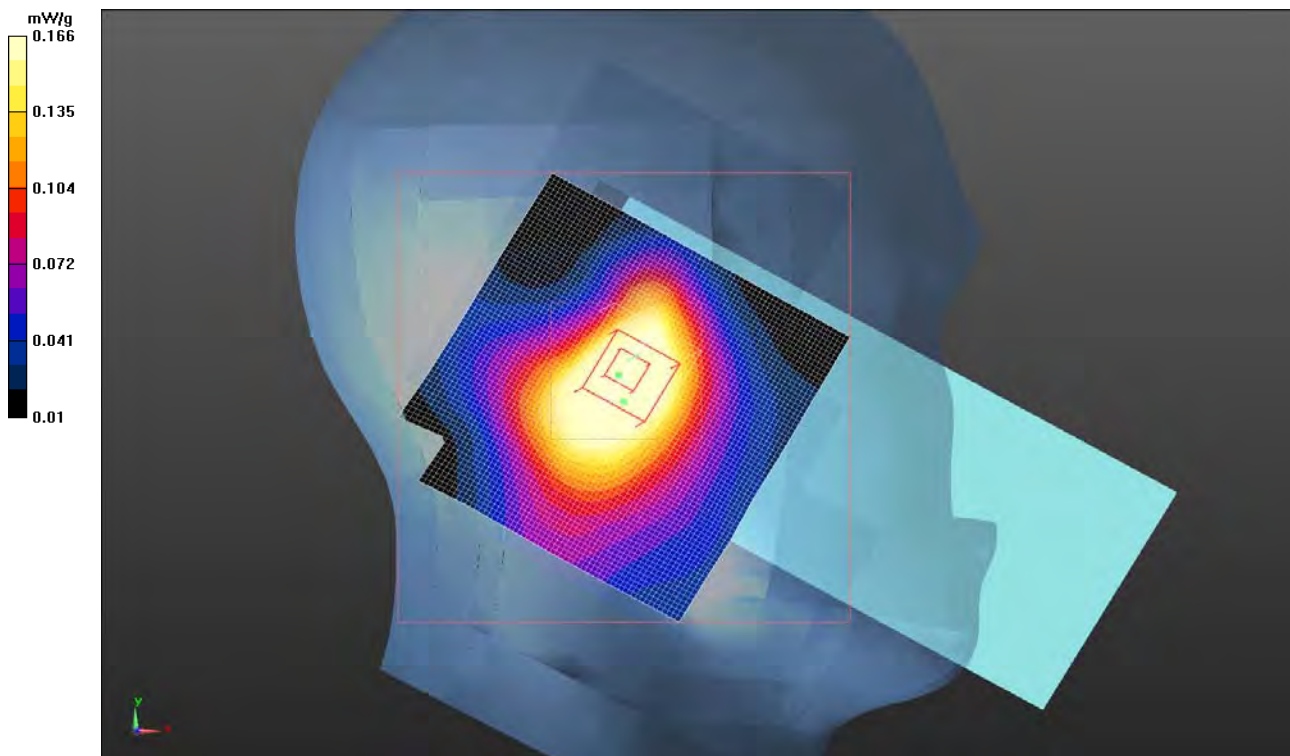
[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.227 mW/g

Head - Left/Tilt - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.235 mW/g



EMC

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 22.8 | Humidity (%): | 42.6 | Test Date: | 08/17/11 |
| Liquid Temperature (°C): | 21.5 | Barometric Pressure (mb): | 1018.8 | Tested by: | Jennifer Herrett |

Head Test 15 8-17-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: CW; Frequency: 836.6 MHz

Medium parameters used: $\sigma = 0.884189$ mho/m, $\epsilon = 41.7001$; $\rho = 1000$ kg/m³, Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.886$ mho/m; $\epsilon = 41.68$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASYS Configuration:

Probe: ES3DV3 - SN3173; ConvF(6.01, 6.01, 6.01); Calibrated: 2/23/2011

Sensor-Surface: 0mm (Fix Surface), Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: SAM with CRP; Type: SAM; Serial: 1598

Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Head - Right/Cheek - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 18.024 V/m

Head - Right/Cheek - Mid/Reference scan (51x81x1): Measurement grid: dx=30mm, dy=30mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.369 mW/g

Head - Right/Cheek - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.436 mW/g

Head - Right/Cheek - Mid/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

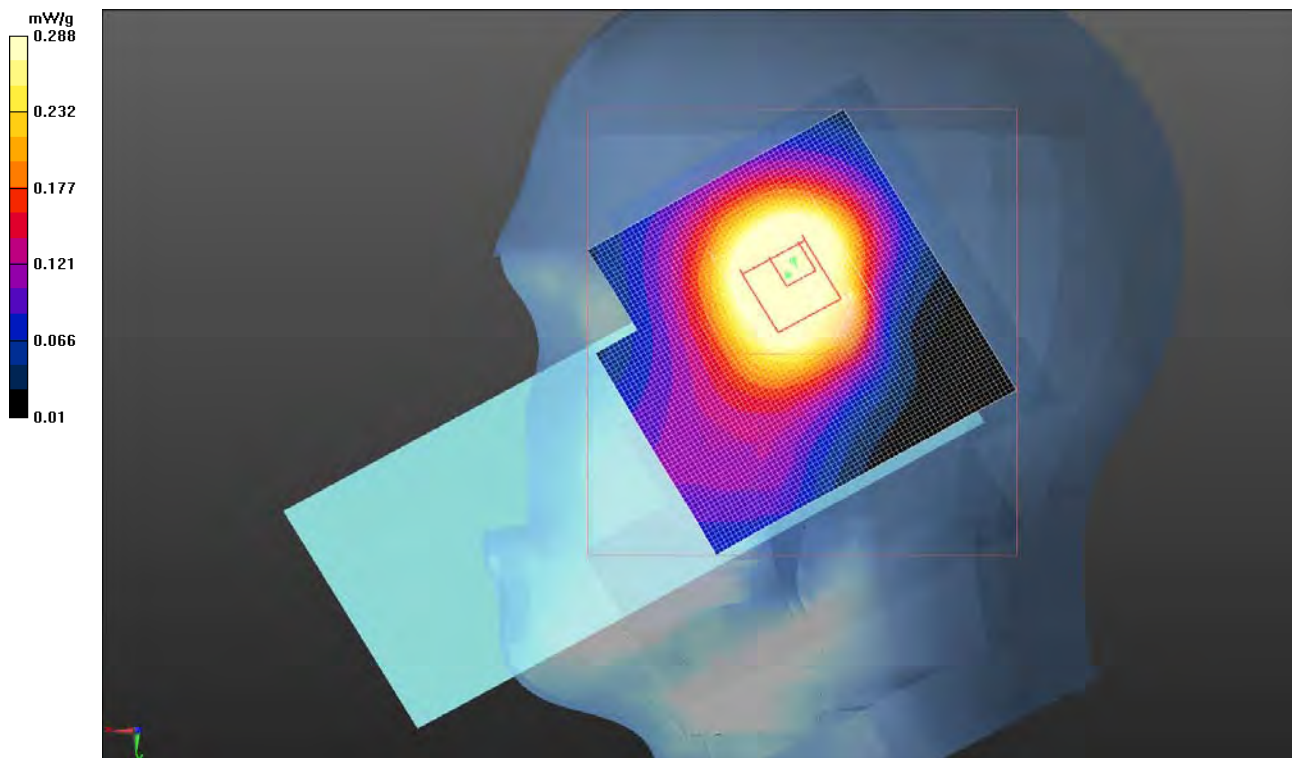
Reference Value = 21.615 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.533 W/kg

SAR(1 g) = 0.360 mW/g; SAR(10 g) = 0.244 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.416 mW/g



| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 22.8 | Humidity (%): | 42.6 | Test Date: | 08/17/11 |
| Liquid Temperature (°C): | 21.5 | Barometric Pressure (mb): | 1018.8 | Tested by: | Jennifer Herrett |

Head Test 16 8-17-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: CW; Frequency: 836.6 MHz

Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.886$ mho/m; $\epsilon = 41.68$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 0.884189$ mho/m, $\epsilon = 41.7001$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASYS5 Configuration:

Probe: ES3DV3 - SN3173; ConvF(6.01, 6.01, 6.01); Calibrated: 2/23/2011

Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: SAM with CRP; Type: SAM; Serial: 1598

Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Head - Right/Tilt - Mid/Reference scan (51x91x1): Measurement grid: dx=30mm, dy=30mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.357 mW/g

Head - Right/Tilt - Mid/Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 18.997 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 0.409 W/kg

SAR(1 g) = 0.288 mW/g; SAR(10 g) = 0.198 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.330 mW/g

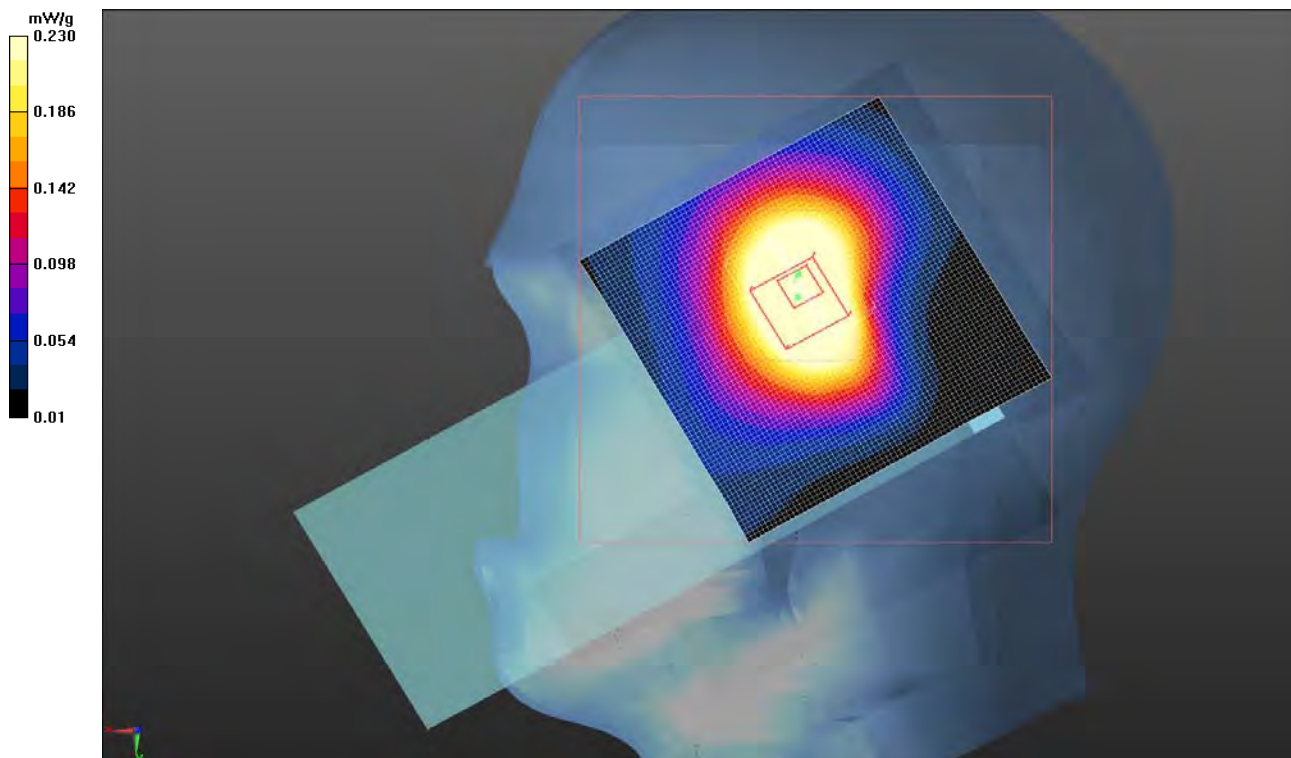
Head - Right/Tilt - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 16.108 V/m

Head - Right/Tilt - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.332 mW/g



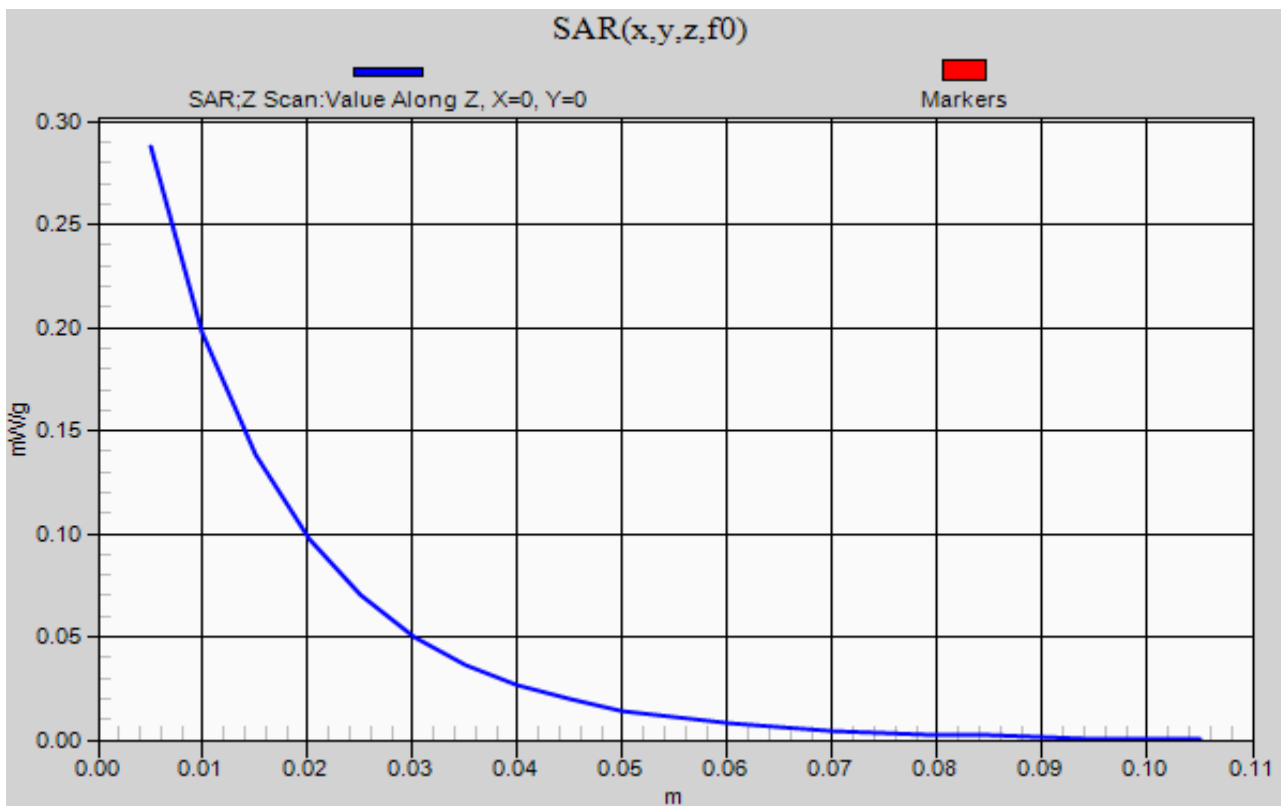
EMC

SAR TEST DATA

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 22.8 | Humidity (%): | 42.6 | Test Date: | 08/17/11 |
| Liquid Temperature (°C): | 21.5 | Barometric Pressure (mb): | 1018.8 | Tested by: | Jennifer Herrett |

Head Test 15 8-17-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040



SAR TEST DATA

| | |
|---|---|
| EUT: 1000CP02S | Work Order: ITRM0248 |
| Serial Number: 178U1191040 | Date: See Data Sheets |
| Customer: Intermec Technologies Corporation | Temperature: See Data Sheets |
| Attendees: None | Humidity: See Data Sheets |
| Project: None | Barometric Pres.: See Data Sheets |
| Tested by: Jennifer Herrett | Job Site: EV08 |
| TEST SPECIFICATIONS | |
| FCC 2.1093:2011 | Test Method FCC OET 65C:2001 IEEE Std 1528:2003 FCC KDB 447498 D01 v04 FCC KDB 941225 D01 v02, and D03 FCC KDB 648474 D01 V01r05 |
| Health Safety Code 6:2009 | RSS-102, Issue 4:2010 |
| COMMENTS | |
| None | |
| DEVIATIONS FROM TEST STANDARD | |
| No Deviations | |
| Configuration # | 4 & 5 |
| | Signature <i>Jennifer Herrett</i> |

| Test Configuration | Frequency Band | Body-Worn Accessory | Transmit Frequency | Transmit Channel | Transmit Mode | Data Rate (Mbps) | Audio Accessory | EUT Position | Start Power (Conducted) | SAR Drift During Test (dB) | 1g SAR Level | Test # | |
|--------------------|----------------|---------------------|--------------------|------------------|---------------------|------------------|-----------------|--------------|-------------------------|----------------------------|--------------|--------|----|
| Body | Cellular | Holster | 836.6 | 190 | GPRS / 1 slot | GMSK (CS-4) | None | Right | 33.07 | 0.46 | 0.145 | 9 | |
| | | | | | | | | Front | 33.07 | -0.0075 | 0.223 | 10 | |
| | | | | | | | | Left | 33.07 | -0.04 | 0.575 | 11 | |
| | | | | 4183 | WCDMA / Test Loop 1 | 12.2 kbps RMC | None | VR10 Headset | Worst Case | 33.07 | -0.0025 | 0.456 | 12 |
| | | | | | | | | Right | 24.22 | 0.03 | 0.134 | 13 | |
| | | | | | | | | Front | 24.22 | -0.02 | 0.235 | 14 | |
| | | | | | | | Left | 24.22 | 0.07 | 0.570 | 15 | | |
| | | | | | | | VR10 Headset | Worst Case | 24.22 | 0.2 | 0.540 | 16 | |

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 24.2 | Humidity (%): | 46.7 | Test Date: | 08/09/11 |
| Liquid Temperature (°C): | 22 | Barometric Pressure (mb): | 1018.6 | Tested by: | Jennifer Herrett |

Body Test 9 8-9-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: GPRS and Edge; Communication System Band: GSM 850; Frequency: 836.6 MHz; Communication System PAR: 9.2 dB
 Medium parameters used: $\sigma = 1.0111$ mho/m, $\epsilon_r = 56.5118$; $\rho = 1000$ kg/m³, Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 1.013$ mho/m; $\epsilon_r = 56.502$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section
 Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

Probe: ES3DV3 - SN3246; ConvF(6.1, 6.1, 6.1); Calibrated: 11/11/2010
 Sensor-Surface: 0mm (Fix Surface), Sensor-Surface: 3mm (Mechanical Surface Detection)
 Electronics: DAE4 Sn1237; Calibrated: 11/10/2010
 Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096
 Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Body/Body - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
 Maximum value of Total (measured) = 10.606 V/m

Body/Body - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 12.362 V/m; Power Drift = 0.46 dB
 Peak SAR (extrapolated) = 0.197 W/kg
SAR(1 g) = 0.145 mW/g; SAR(10 g) = 0.102 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.164 mW/g

Body/Body - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.160 mW/g

Body/Body - Mid/Reference scan (51x81x1): Measurement grid: dx=30mm, dy=30mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.145 mW/g

Body/Body - Mid/Zoom Scan 2 (9x12x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

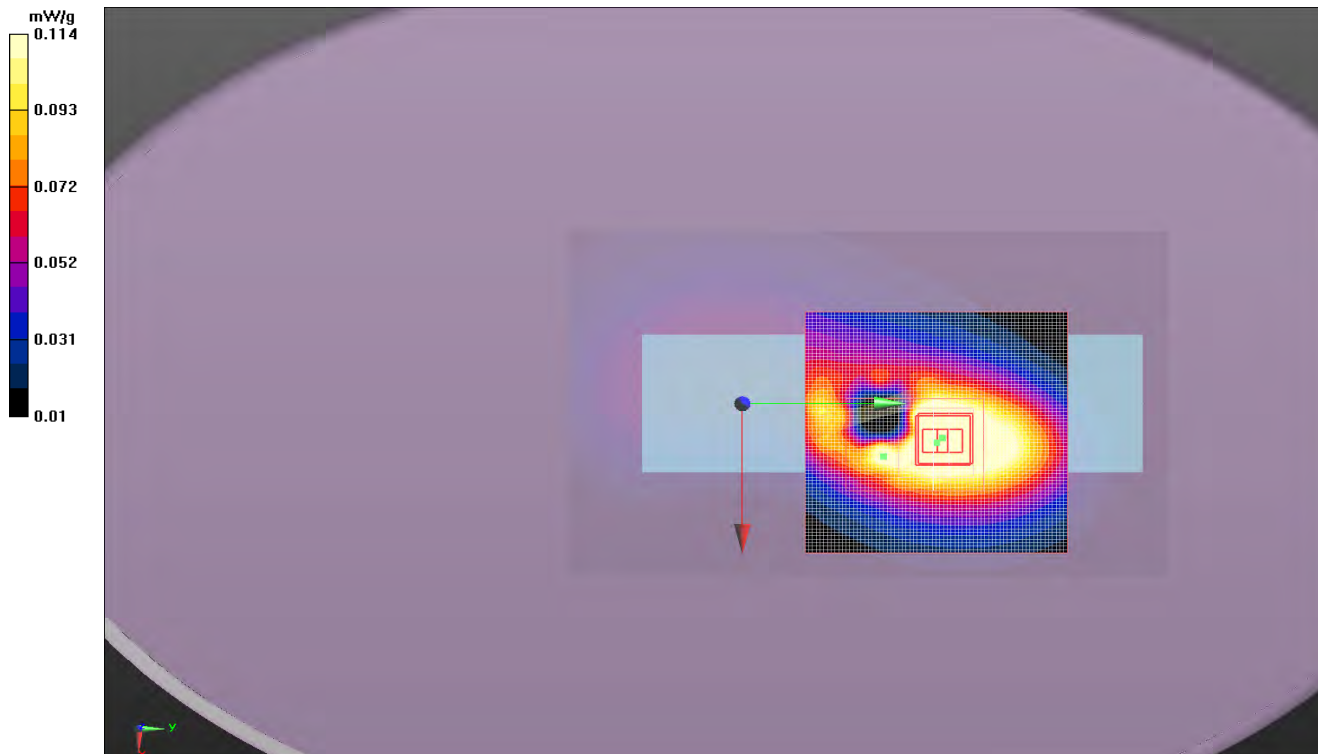
Reference Value = 12.362 V/m; Power Drift = 0.34 dB

Peak SAR (extrapolated) = 0.200 W/kg

SAR(1 g) = 0.143 mW/g; SAR(10 g) = 0.100 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.165 mW/g



| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 22.3 | Humidity (%): | 47.1 | Test Date: | 08/09/11 |
| Liquid Temperature (°C): | 22.2 | Barometric Pressure (mb): | 1018.6 | Tested by: | Jennifer Herrett |

Body Test 10 8-9-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: GPRS and Edge; Communication System Band: GSM 850; Frequency: 836.6 MHz; Communication System PAR: 9.2 dB
 Medium parameters used: $\sigma = 1.0111$ mho/m, $\epsilon_r = 56.5118$; $\rho = 1000$ kg/m³, Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 1.013$ mho/m; $\epsilon_r = 56.502$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section
 Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

Probe: ES3DV3 - SN3246; ConvF(6.1, 6.1, 6.1); Calibrated: 11/11/2010
 Sensor-Surface: 0mm (Fix Surface), Sensor-Surface: 3mm (Mechanical Surface Detection)
 Electronics: DAE4 Sn1237; Calibrated: 11/10/2010
 Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096
 Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Body/Body - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
 Maximum value of Total (measured) = 13.520 V/m

Body/Body - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 16.621 V/m; Power Drift = -0.0075 dB
 Peak SAR (extrapolated) = 0.292 W/kg
SAR(1 g) = 0.223 mW/g; SAR(10 g) = 0.152 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.261 mW/g

Body/Body - Mid/Area scan (71x151x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.262 mW/g

Body/Body - Mid/Reference scan (51x81x1): Measurement grid: dx=30mm, dy=30mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.280 mW/g

Body/Body - Mid/Zoom Scan 2 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

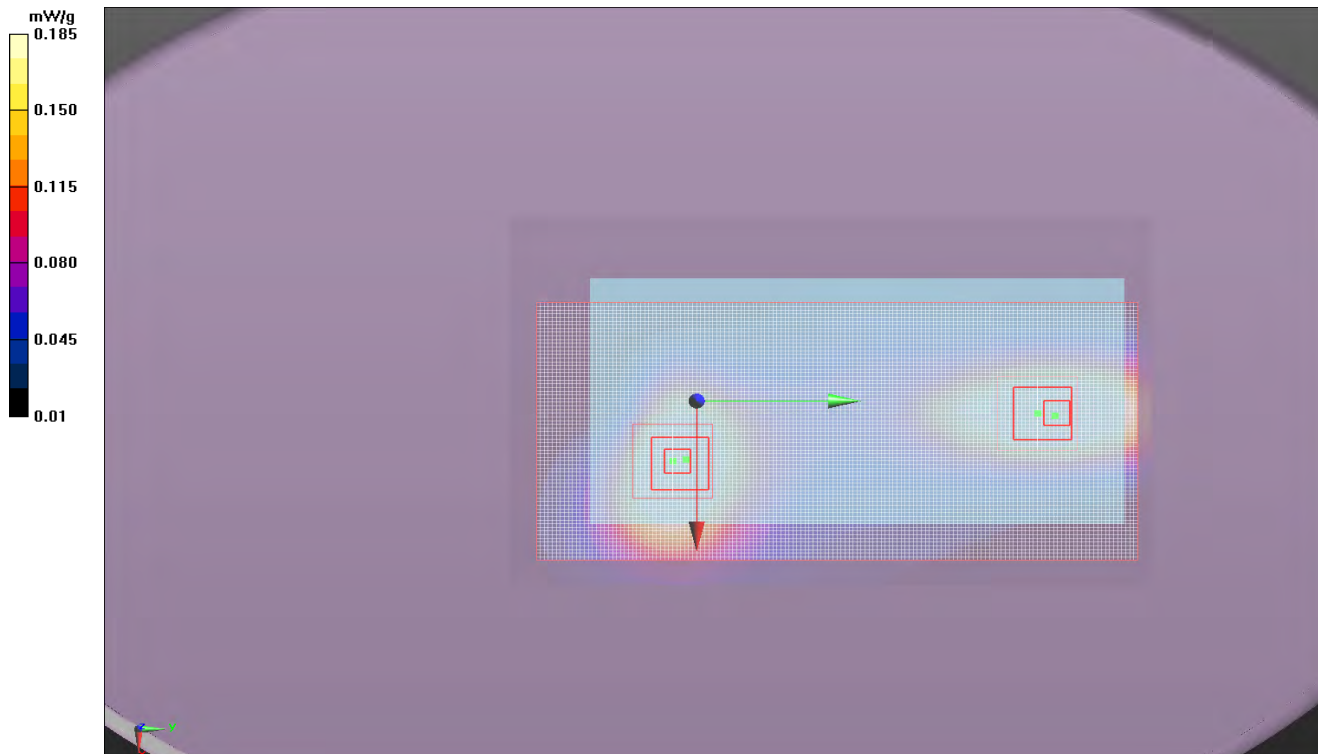
Reference Value = 16.621 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.287 W/kg

SAR(1 g) = 0.220 mW/g; SAR(10 g) = 0.151 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.245 mW/g



| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 24.2 | Humidity (%): | 46.7 | Test Date: | 08/09/11 |
| Liquid Temperature (°C): | 22 | Barometric Pressure (mb): | 1018.6 | Tested by: | Jennifer Herrett |

Body Test 11 8-9-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: GPRS and Edge; Communication System Band: GSM 850; Frequency: 836.6 MHz; Communication System PAR: 9.2 dB
 Medium parameters used: $\sigma = 1.0111$ mho/m, $\epsilon_r = 56.5118$; $\rho = 1000$ kg/m³, Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 1.013$ mho/m; $\epsilon_r = 56.502$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section
 Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

Probe: ES3DV3 - SN3246; ConvF(6.1, 6.1, 6.1); Calibrated: 11/11/2010
 Sensor-Surface: 0mm (Fix Surface), Sensor-Surface: 3mm (Mechanical Surface Detection)
 Electronics: DAE4 Sn1237; Calibrated: 11/10/2010
 Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096
 Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Body/Body - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
 Maximum value of Total (measured) = 20.633 V/m

Body/Body - Mid/Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 25.072 V/m; Power Drift = -0.04 dB
 Peak SAR (extrapolated) = 0.926 W/kg
SAR(1 g) = 0.575 mW/g; SAR(10 g) = 0.351 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.682 mW/g

Body/Body - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.692 mW/g

Body/Body - Mid/Reference scan (51x81x1): Measurement grid: dx=30mm, dy=30mm

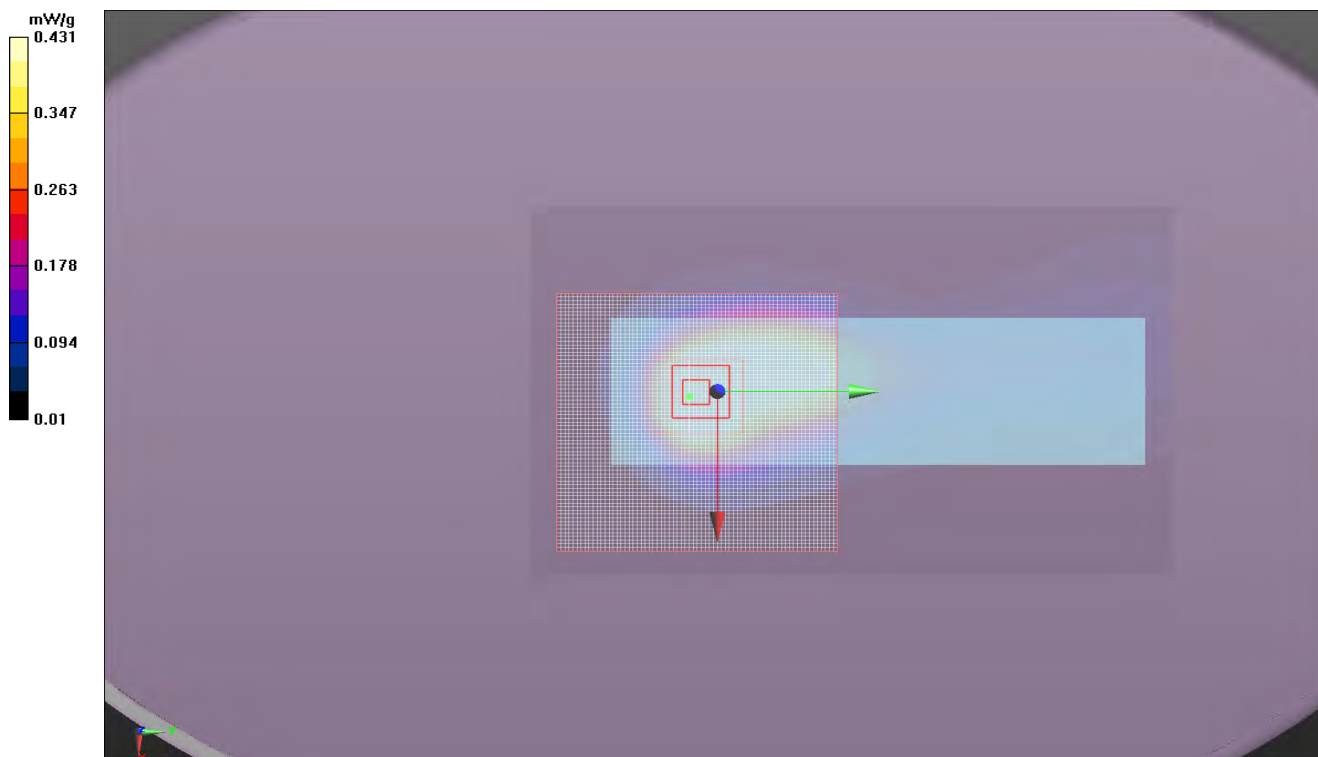
[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.886 mW/g

Date/Time: 8/9/2011 8:44:41 AM

Test Laboratory: Northwest EMC Inc.

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040



| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 22.3 | Humidity (%): | 47.1 | Test Date: | 08/09/11 |
| Liquid Temperature (°C): | 22.2 | Barometric Pressure (mb): | 1018.6 | Tested by: | Jennifer Herrett |

Body Test 12 8-9-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: GPRS and Edge; Communication System Band: GSM 850; Frequency: 836.6 MHz; Communication System PAR: 9.2 dB
 Medium parameters used: $\sigma = 1.0111$ mho/m, $\epsilon_r = 56.5118$; $\rho = 1000$ kg/m³, Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 1.013$ mho/m; $\epsilon_r = 56.502$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section
 Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

Probe: ES3DV3 - SN3246; ConvF(6.1, 6.1, 6.1); Calibrated: 11/11/2010
 Sensor-Surface: 0mm (Fix Surface), Sensor-Surface: 3mm (Mechanical Surface Detection)
 Electronics: DAE4 Sn1237; Calibrated: 11/10/2010
 Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096
 Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Body/Body - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
 Maximum value of Total (measured) = 18.490 V/m

Body/Body - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 23.626 V/m; Power Drift = -0.0025 dB
 Peak SAR (extrapolated) = 0.722 W/kg
SAR(1 g) = 0.456 mW/g; SAR(10 g) = 0.281 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.542 mW/g

Body/Body - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (interpolated) = 0.564 mW/g

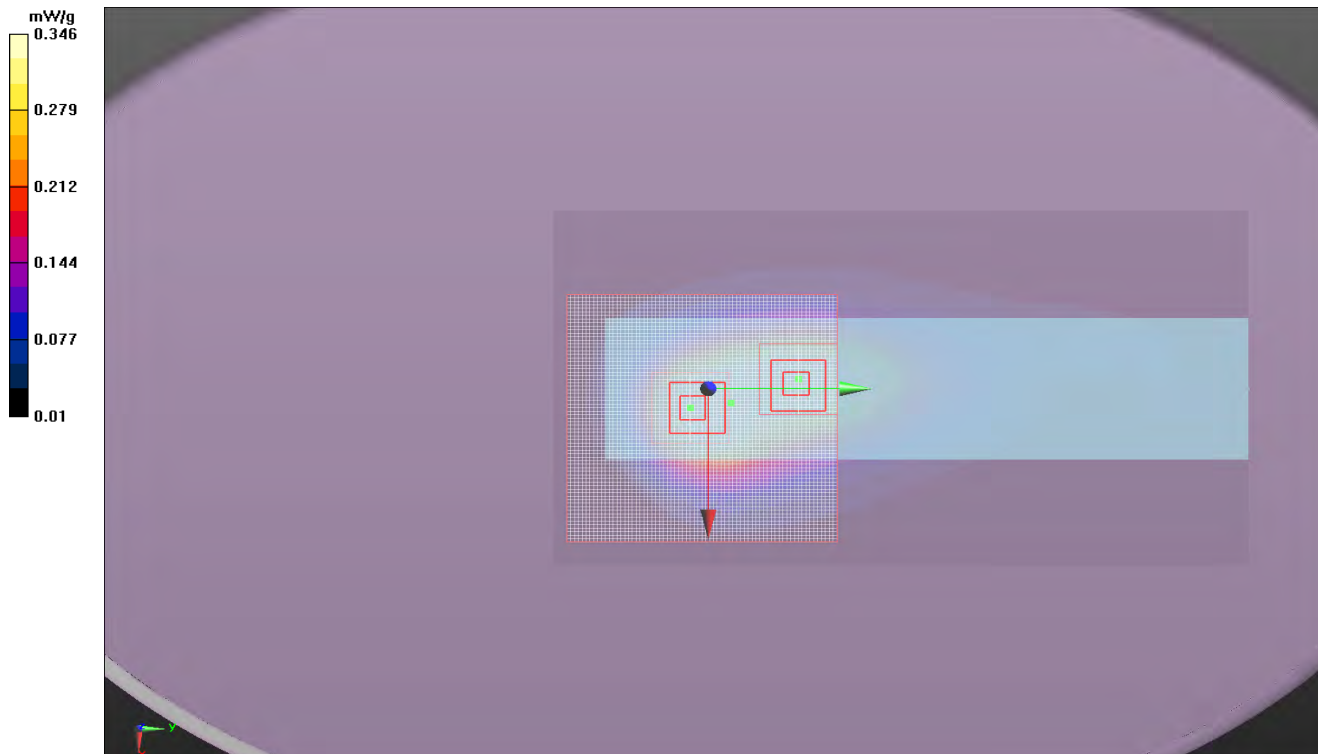
Body/Body - Mid/Reference scan (51x91x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.

Body/Body - Mid/Zoom Scan 2 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 23.626 V/m; Power Drift = -0.06 dB
 Peak SAR (extrapolated) = 0.512 W/kg
SAR(1 g) = 0.365 mW/g; SAR(10 g) = 0.250 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.419 mW/g



| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 23.3 | Humidity (%): | 44 | Test Date: | 08/09/11 |
| Liquid Temperature (°C): | 22.6 | Barometric Pressure (mb): | 1018.6 | Tested by: | Jennifer Herrett |

Body Test 13 8-9-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: CW; Frequency: 836.6 MHz

Medium parameters used: $\sigma = 1.0111$ mho/m, $\epsilon_r = 56.5118$; $\rho = 1000$ kg/m³, Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 1.013$ mho/m; $\epsilon_r = 56.502$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

Probe: ES3DV3 - SN3246; ConvF(6.1, 6.1, 6.1); Calibrated: 11/11/2010

Sensor-Surface: 0mm (Fix Surface), Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096

Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Body/Body - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 10.343 V/m

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

Reference Value = 12.478 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.181 W/kg

SAR(1 g) = 0.134 mW/g; SAR(10 g) = 0.095 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.152 mW/g

Body/Body - Mid/Area scan (71x121x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.152 mW/g

Body/Body - Mid/Reference scan (51x81x1): Measurement grid: dx=30mm, dy=30mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.156 mW/g

Body/Body - Mid/Zoom Scan 2 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

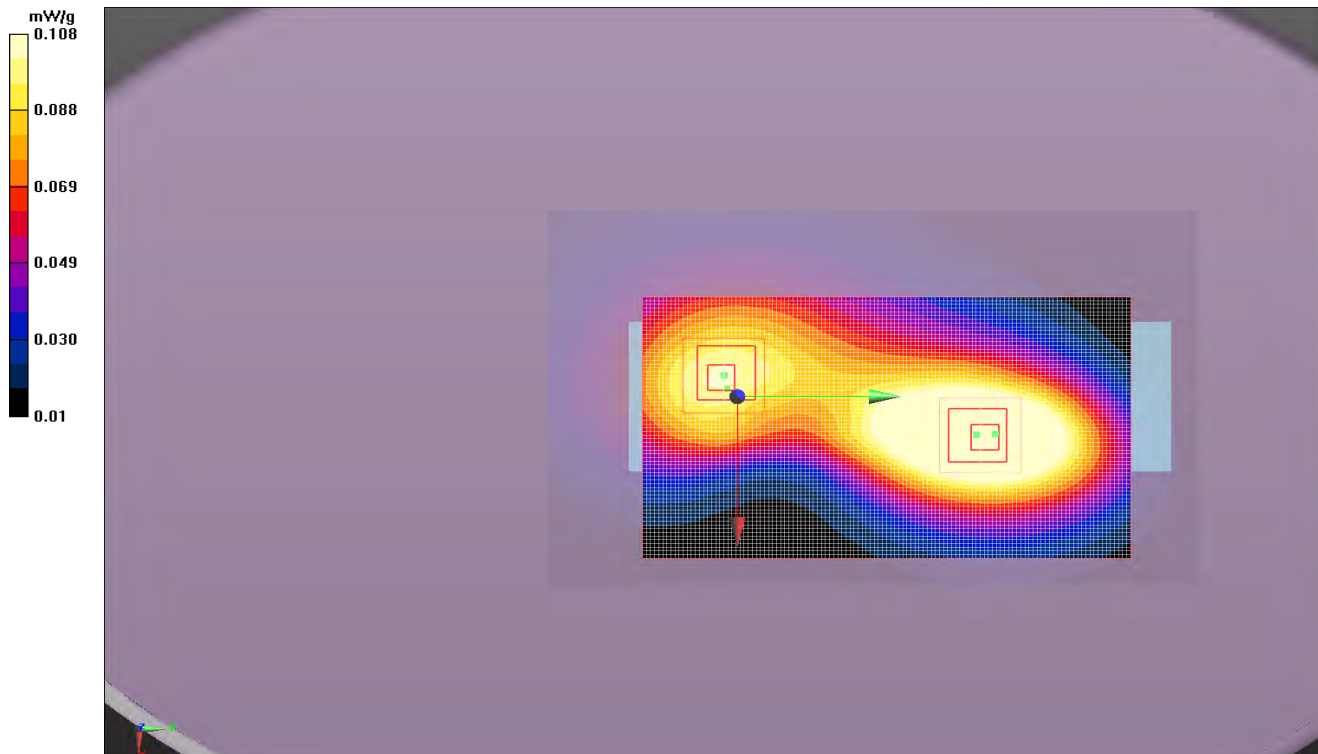
Reference Value = 12.478 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.117 W/kg

SAR(1 g) = 0.092 mW/g; SAR(10 g) = 0.068 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.102 mW/g



| | | | | | |
|--------------------------|------|---------------------------|------|------------|------------------|
| Room Temperature (°C): | 23.8 | Humidity (%): | 46.1 | Test Date: | 08/10/11 |
| Liquid Temperature (°C): | 22.2 | Barometric Pressure (mb): | 1017 | Tested by: | Jennifer Herrett |

Body Test 14 8-10-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: CW; Frequency: 836.6 MHz

Medium parameters used: $\sigma = 1.0111$ mho/m, $\epsilon_r = 56.5118$; $\rho = 1000$ kg/m³, Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 1.013$ mho/m; $\epsilon_r = 56.502$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

Probe: ES3DV3 - SN3246; ConvF(6.1, 6.1, 6.1); Calibrated: 11/11/2010

Sensor-Surface: 0mm (Fix Surface), Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096

Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Body/Body - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 13.642 V/m

Body/Body - Mid/Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.185 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.334 W/kg

SAR(1 g) = 0.235 mW/g; SAR(10 g) = 0.153 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.273 mW/g

Body/Body - Mid/Area scan (71x131x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.289 mW/g

Body/Body - Mid/Reference scan (51x81x1): Measurement grid: dx=30mm, dy=30mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.207 mW/g

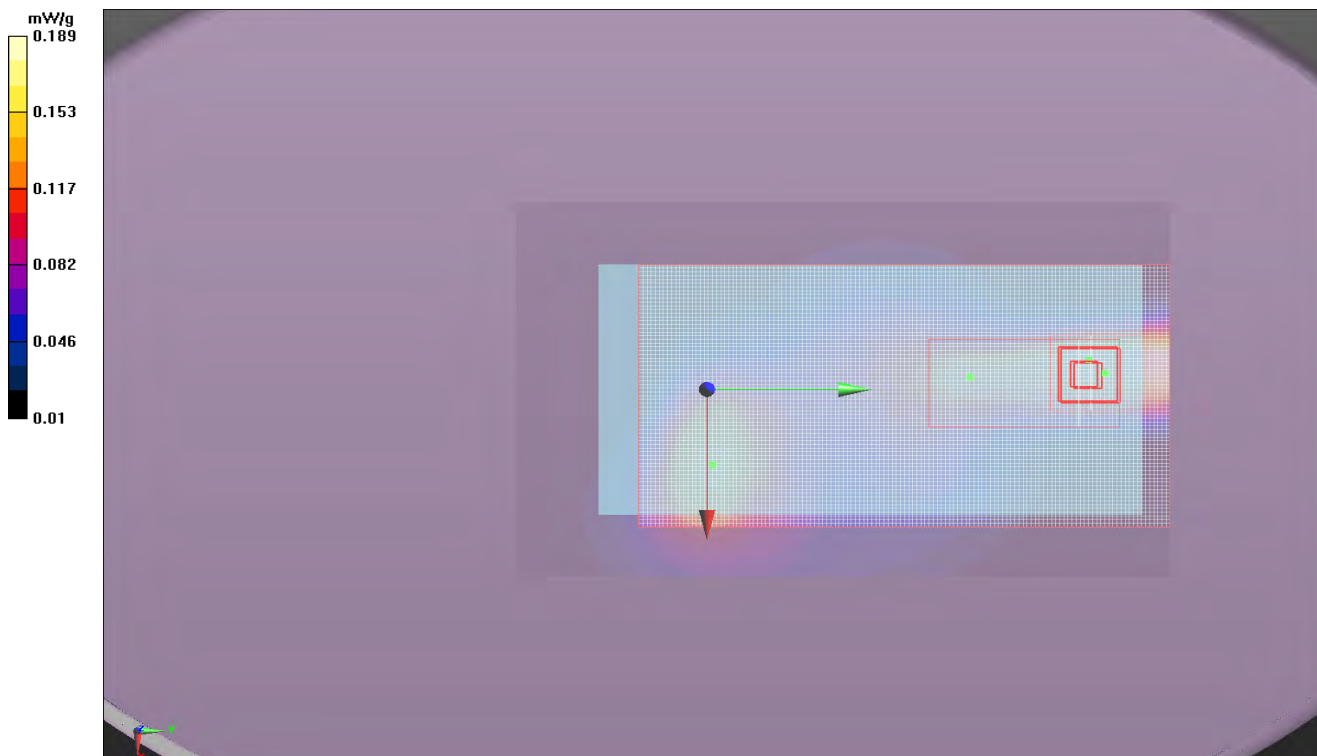
Body/Body - Mid/Zoom Scan 2 (8x15x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.185 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.349 W/kg

SAR(1 g) = 0.234 mW/g; SAR(10 g) = 0.153 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)



| | | | | | |
|--------------------------|------|---------------------------|------|------------|------------------|
| Room Temperature (°C): | 23.8 | Humidity (%): | 46.1 | Test Date: | 08/10/11 |
| Liquid Temperature (°C): | 22.2 | Barometric Pressure (mb): | 1017 | Tested by: | Jennifer Herrett |

Body Test 15 8-10-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: CW; Frequency: 836.6 MHz

Medium parameters used: $\sigma = 1.0111$ mho/m, $\epsilon_r = 56.5118$; $\rho = 1000$ kg/m³, Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 1.013$ mho/m; $\epsilon_r = 56.502$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

Probe: ES3DV3 - SN3246; ConvF(6.1, 6.1, 6.1); Calibrated: 11/11/2010

Sensor-Surface: 0mm (Fix Surface), Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096

Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Body/Body - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 20.778 V/m

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

Reference Value = 25.994 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.890 W/kg

SAR(1 g) = 0.570 mW/g; SAR(10 g) = 0.354 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.682 mW/g

Body/Body - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

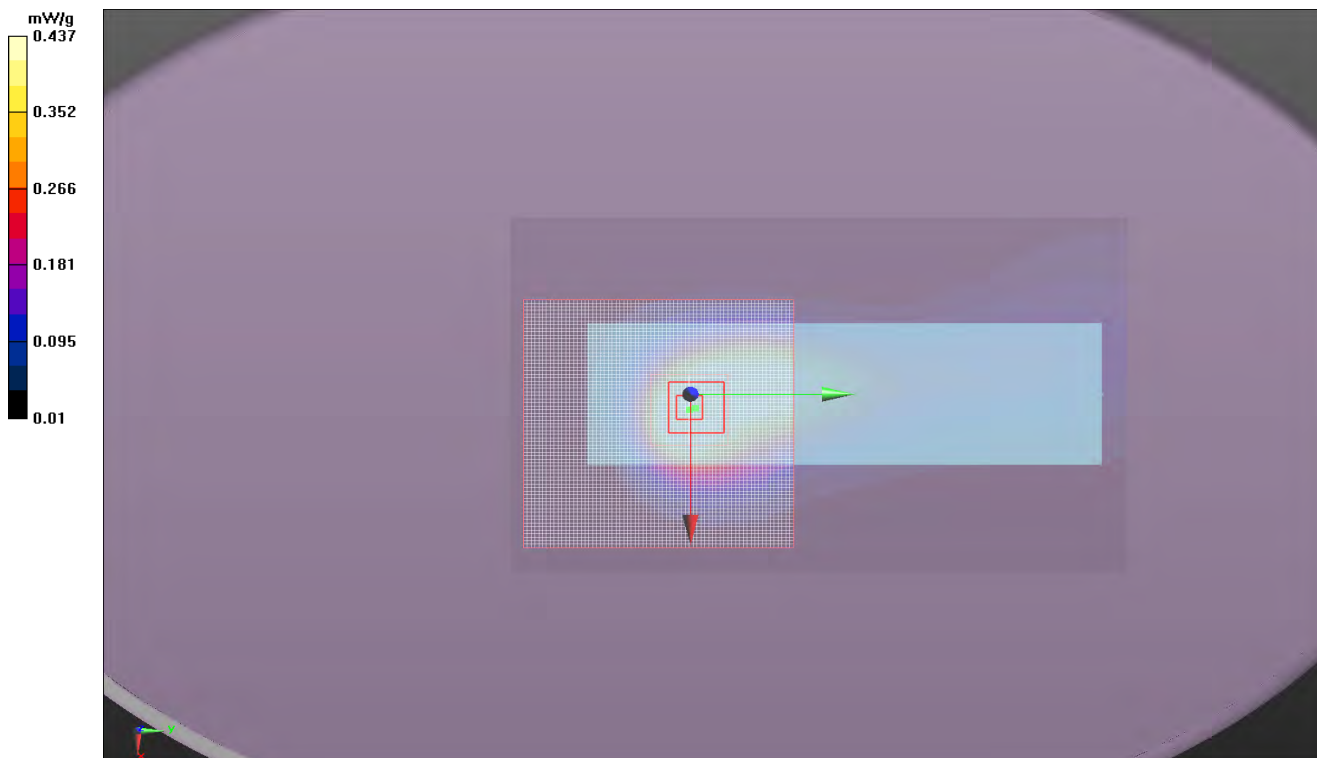
[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.692 mW/g

Body/Body - Mid/Reference scan (51x81x1): Measurement grid: dx=30mm, dy=30mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.687 mW/g



| | | | | | |
|--------------------------|------|---------------------------|------|------------|------------------|
| Room Temperature (°C): | 23.8 | Humidity (%): | 46.2 | Test Date: | 08/10/11 |
| Liquid Temperature (°C): | 22.5 | Barometric Pressure (mb): | 1017 | Tested by: | Jennifer Herrett |

Body Test 16 8-10-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: CW; Frequency: 836.6 MHz

Medium parameters used: $\sigma = 1.0111$ mho/m, $\epsilon_r = 56.5118$; $\rho = 1000$ kg/m³, Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 1.013$ mho/m; $\epsilon_r = 56.502$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

Probe: ES3DV3 - SN3246; ConvF(6.1, 6.1, 6.1); Calibrated: 11/11/2010

Sensor-Surface: 0mm (Fix Surface), Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096

Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Body/Body - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 19.384 V/m

Body/Body - Mid/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 24.176 V/m; Power Drift = 0.20 dB

Peak SAR (extrapolated) = 0.840 W/kg

SAR(1 g) = 0.540 mW/g; SAR(10 g) = 0.343 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.635 mW/g

Body/Body - Mid/Area scan (71x81x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.610 mW/g

Body/Body - Mid/Reference scan (51x91x1): Measurement grid: dx=30mm, dy=30mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.672 mW/g

Body/Body - Mid/Zoom Scan 2 (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

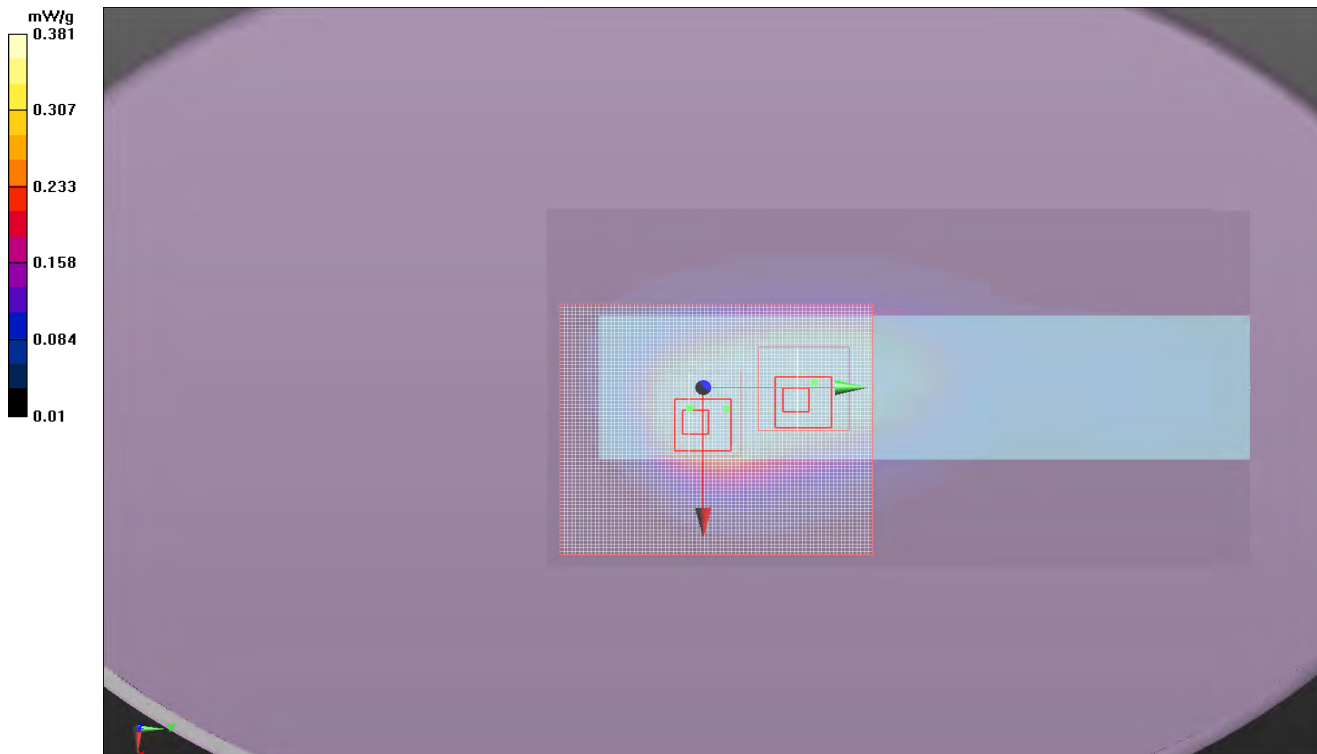
Reference Value = 24.176 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 0.746 W/kg

SAR(1 g) = 0.530 mW/g; SAR(10 g) = 0.361 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.603 mW/g

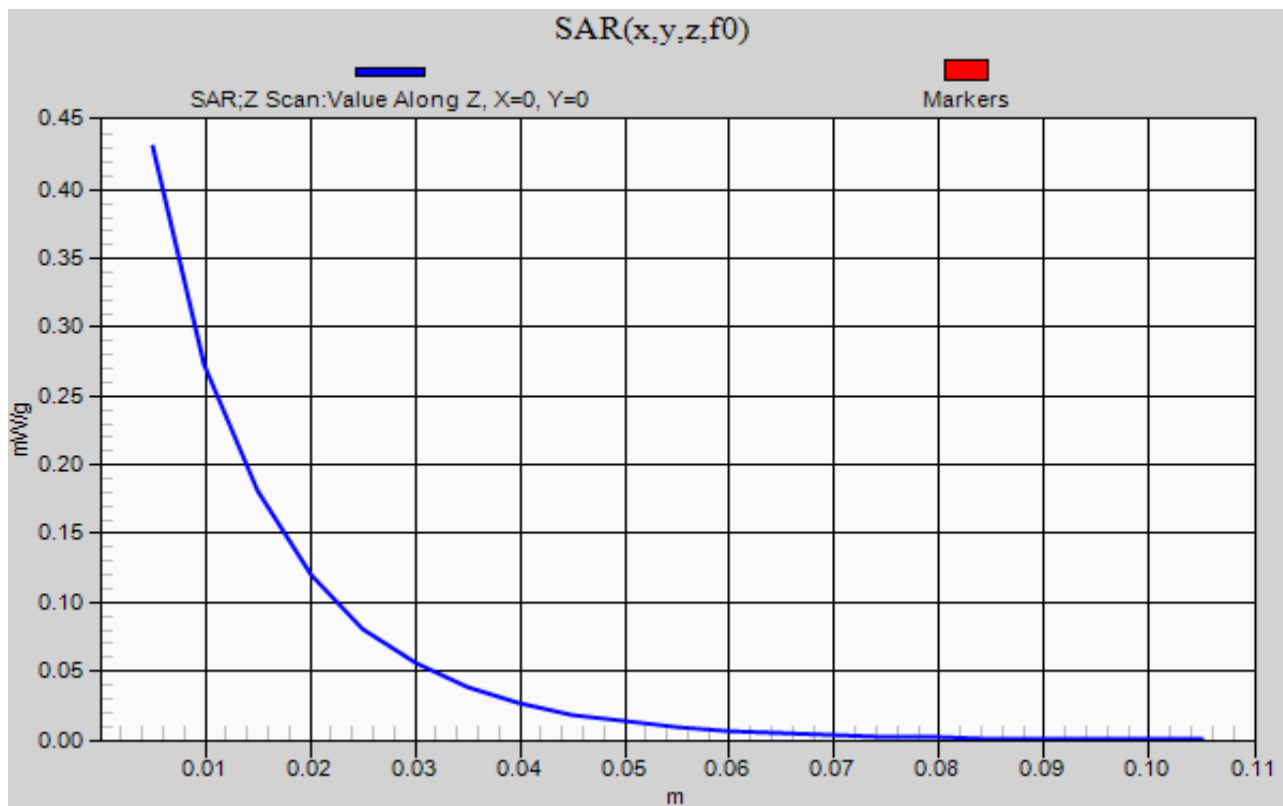


EMC SAR TEST DATA

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 24.2 | Humidity (%): | 46.7 | Test Date: | 08/09/11 |
| Liquid Temperature (°C): | 22 | Barometric Pressure (mb): | 1018.6 | Tested by: | Jennifer Herrett |

Body Test 11 8-9-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040



SAR TEST DATA

| | |
|--|---|
| EUT: 1000CP02S | Work Order: ITRM0248 |
| Serial Number: 178U1191040 | Date: See Data Sheets |
| Customer: Intermec Technologies Corporation | Temperature: See Data Sheets |
| Attendees: None | Humidity: See Data Sheets |
| Project: None | Barometric Pres.: See Data Sheets |
| Tested by: Jennifer Herrett and Ethan Schoonover | Job Site: EV08 |
| TEST SPECIFICATIONS | |
| FCC 2.1093:2011 | Test Method FCC OET 65C:2001 IEEE Std 1528:2003 FCC KDB 447498 D01 v04 FCC KDB 941225 D01 v02, and D03 FCC KDB 648474 D01 V01r05 |
| Health Safety Code 6:2009 | RSS-102, Issue 4:2010 |
| COMMENTS | |
| None | |
| DEVIATIONS FROM TEST STANDARD | |
| No Deviations | |
| Configuration # | 6 |
| Signature <i>Jennifer Herrett</i> | |

| Test Configuration | Frequency Band | Body-Worn Accessory | Transmit Frequency | Transmit Channel | Transmit Mode | Data Rate (Mbps) | EUT Position | | Start Power (Conducted) | SAR Drift During Test (dB) | 1g SAR Level | Test # |
|--------------------|----------------|---------------------|--------------------|------------------|---------------------|------------------|--------------|-------|-------------------------|----------------------------|--------------|--------|
| | | | | | | | Left | Right | | | | |
| Head | PCS | None | 1880 | 661 | E-GPRS / 1 slot | GMSK (MCS-4) | Left | Cheek | 29.95 | 0.11 | 0.024 | 33 |
| | | | | | | | | Tilt | 29.95 | 0.33 | 0.018 | 34 |
| | | | | | | | Right | Cheek | 29.95 | 0.13 | 0.041 | 35 |
| | | | | | | | | Tilt | 29.95 | 0.18 | 0.032 | 36 |
| | | | | 9400 | WCDMA / Test Loop 1 | 12.2 kbps RMC | Left | Cheek | 24.49 | -0.02 | 0.322 | 37 |
| | | | | | | | | Tilt | 24.49 | 0.005 | 0.445 | 38 |
| | | | | | | | Right | Cheek | 24.49 | 0.12 | 0.368 | 39 |
| | | | | | | | | Tilt | 24.49 | -0.03 | 0.325 | 40 |

| | | | | | |
|--------------------------|------|---------------------------|------|------------|------------------|
| Room Temperature (°C): | 23.9 | Humidity (%): | 47.2 | Test Date: | 08/10/11 |
| Liquid Temperature (°C): | 21.5 | Barometric Pressure (mb): | 1017 | Tested by: | Ethan Schoonover |

Head Test 33 8-10-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: GPRS and Edge; Communication System Band: PCS 1900; Frequency: 1880 MHz; Communication System PAR: 9.2 dB
 Medium parameters used (interpolated): $f = 1880$ MHz; $\sigma = 1.376$ mho/m; $\epsilon_r = 39.948$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.37132$ mho/m, $\epsilon_r = 39.9696$; $\rho = 1000$ kg/m³
 Phantom section: Left Section
 Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

Probe: ES3DV3 - SN3246; ConvF(5.02, 5.02, 5.02); Calibrated: 11/11/2010
 Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)
 Electronics: DAE4 Sn1237; Calibrated: 11/10/2010
 Phantom: SAM with CRP; Type: SAM; Serial: 1598
 Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Head - Right/Cheek - Mid/Reference scan (41x91x1): Measurement grid: dx=30mm, dy=30mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.046 mW/g

Head - Right/Cheek - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 3.140 V/m

Head - Right/Cheek - Mid/Zoom Scan (9x14x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.660 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 0.046 W/kg

SAR(1 g) = 0.024 mW/g; SAR(10 g) = 0.015 mW/g

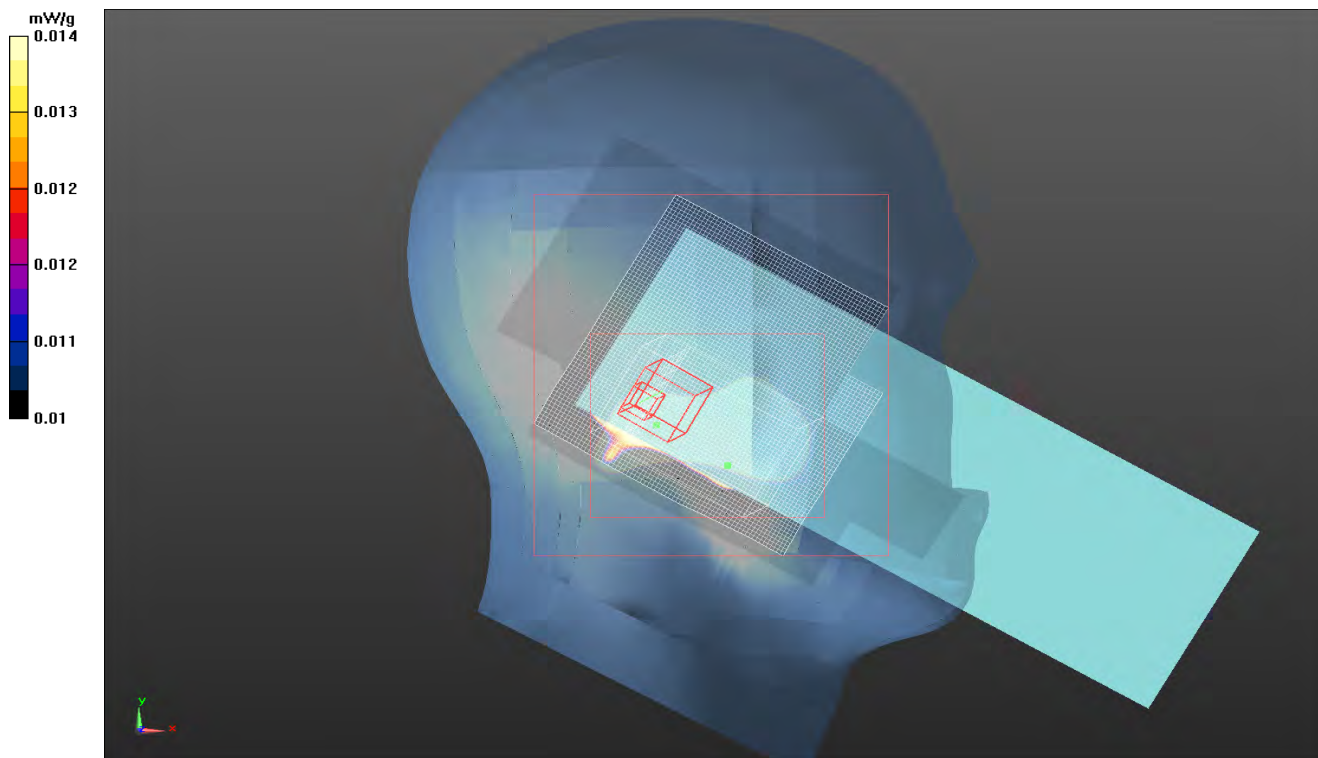
[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.030 mW/g

Head - Right/Cheek - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.044 mW/g



| | | | | | |
|--------------------------|------|---------------------------|------|------------|------------------|
| Room Temperature (°C): | 24.4 | Humidity (%): | 47.3 | Test Date: | 08/10/11 |
| Liquid Temperature (°C): | 21.6 | Barometric Pressure (mb): | 1017 | Tested by: | Ethan Schoonover |

Head Test 34 8-10-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: GPRS and Edge; Communication System Band: PCS 1900; Frequency: 1880 MHz; Communication System PAR: 9.2 dB
 Medium parameters used (interpolated): $f = 1880$ MHz; $\sigma = 1.376$ mho/m; $\epsilon_r = 39.948$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.37132$ mho/m, $\epsilon_r = 39.9696$; $\rho = 1000$ kg/m³
 Phantom section: Left Section
 Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

Probe: ES3DV3 - SN3246; ConvF(5.02, 5.02, 5.02); Calibrated: 11/11/2010
 Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)
 Electronics: DAE4 Sn1237; Calibrated: 11/10/2010
 Phantom: SAM with CRP; Type: SAM; Serial: 1598
 Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Head - Right/Tilt - Mid/Zoom Scan (9x10x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.809 V/m; Power Drift = 0.33 dB

Peak SAR (extrapolated) = 0.035 W/kg

SAR(1 g) = 0.018 mW/g; SAR(10 g) = 0.010 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.023 mW/g

Head - Right/Tilt - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 2.559 V/m

Head - Right/Tilt - Mid/Reference scan (41x91x1): Measurement grid: dx=30mm, dy=30mm

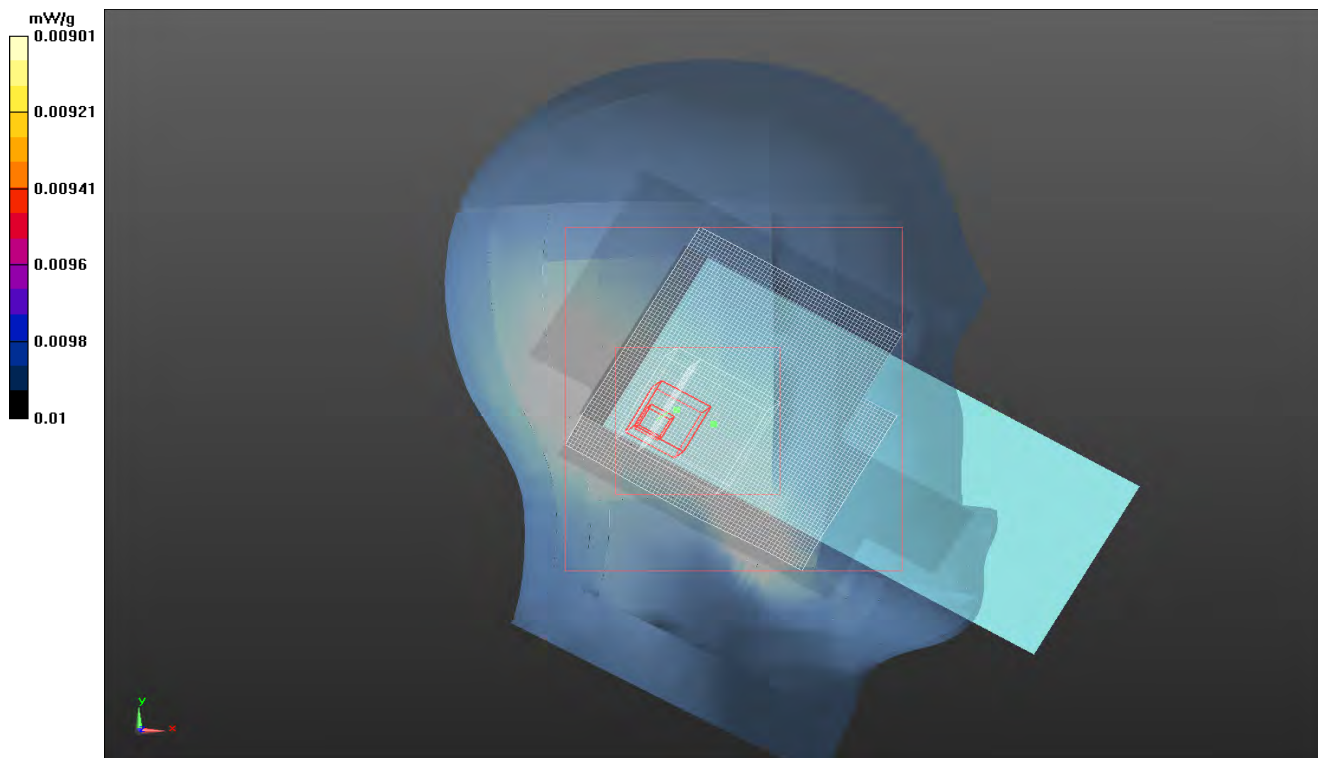
[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.028 mW/g

Head - Right/Tilt - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.023 mW/g



| | | | | | |
|--------------------------|------|---------------------------|------|------------|------------------|
| Room Temperature (°C): | 25.2 | Humidity (%): | 47.3 | Test Date: | 08/10/11 |
| Liquid Temperature (°C): | 21.8 | Barometric Pressure (mb): | 1017 | Tested by: | Ethan Schoonover |

Head Test 35 8-10-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: GPRS and Edge; Communication System Band: PCS 1900; Frequency: 1880 MHz; Communication System PAR: 9.2 dB
 Medium parameters used (interpolated): $f = 1880$ MHz; $\sigma = 1.376$ mho/m; $\epsilon_r = 39.948$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.37132$ mho/m, $\epsilon_r = 39.9696$; $\rho = 1000$ kg/m³
 Phantom section: Right Section
 Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

Probe: ES3DV3 - SN3246; ConvF(5.02, 5.02, 5.02); Calibrated: 11/11/2010
 Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)
 Electronics: DAE4 Sn1237; Calibrated: 11/10/2010
 Phantom: SAM with CRP; Type: SAM; Serial: 1598
 Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Head - Right/Cheek - Mid/Reference scan (41x91x1): Measurement grid: dx=30mm, dy=30mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.049 mW/g

Head - Right/Cheek - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 4.591 V/m

Head - Right/Cheek - Mid/Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.838 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 0.073 W/kg

SAR(1 g) = 0.041 mW/g; SAR(10 g) = 0.023 mW/g

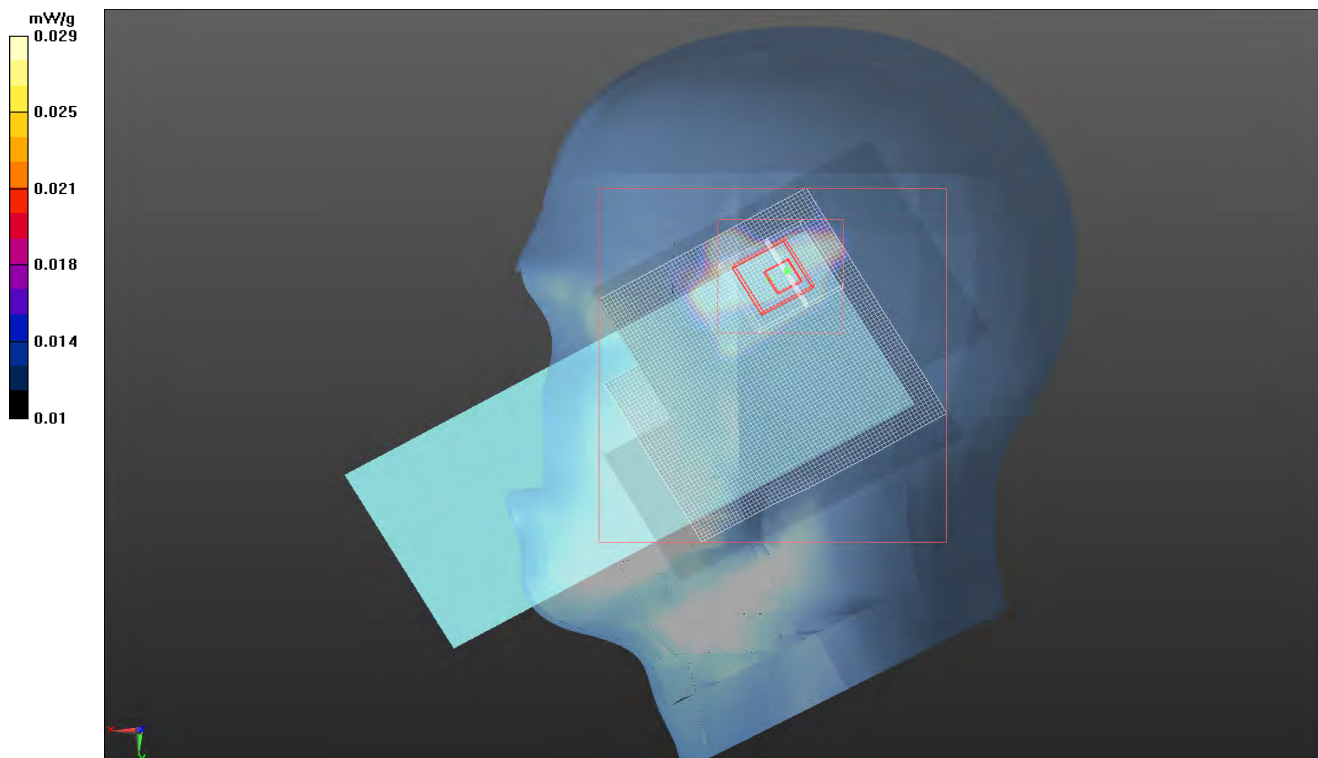
[Info: Interpolated medium parameters used for SAR evaluation.](#)

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

Head - Right/Cheek - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.060 mW/g



| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 23.3 | Humidity (%): | 47.9 | Test Date: | 08/15/11 |
| Liquid Temperature (°C): | 22.8 | Barometric Pressure (mb): | 1017.4 | Tested by: | Jennifer Herrett |

Body Test 36 8-15-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: GPRS and Edge; Communication System Band: PCS 1900; Frequency: 1880 MHz; Communication System PAR: 9.2 dB
 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.445$ mho/m; $\epsilon_r = 53.39$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.445$ mho/m, $\epsilon_r = 53.39$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section
 Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

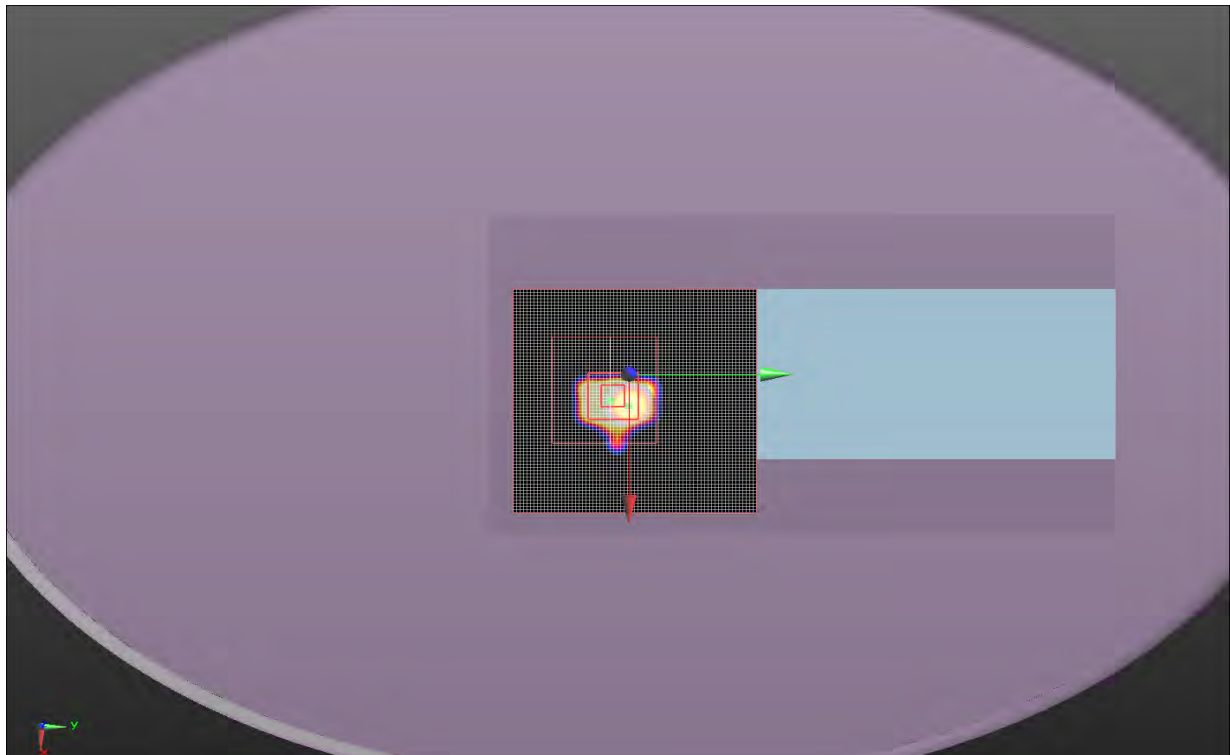
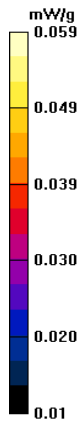
Probe: ES3DV3 - SN3246; ConvF(4.63, 4.63, 4.63); Calibrated: 11/11/2010
 Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)
 Electronics: DAE4 Sn1237; Calibrated: 11/10/2010
 Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096
 Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Body/Body - Mid/Reference scan (51x91x1): Measurement grid: dx=30mm, dy=30mm
 Maximum value of SAR (interpolated) = 0.080 mW/g

Body/Body - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.213 mW/g

Body/Body - Mid/Zoom Scan (11x10x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 7.970 V/m; Power Drift = -0.08 dB
 Peak SAR (extrapolated) = 0.142 W/kg
SAR(1 g) = 0.078 mW/g; SAR(10 g) = 0.045 mW/g
 Maximum value of SAR (measured) = 0.095 mW/g

Body/Body - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
 Maximum value of Total (measured) = 6.366 V/m



| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 24.4 | Humidity (%): | 47.7 | Test Date: | 08/23/11 |
| Liquid Temperature (°C): | 22.1 | Barometric Pressure (mb): | 1017.6 | Tested by: | Jennifer Herrett |

Head Test 37b 8-23-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: CW; Frequency: 1880 MHz

Medium parameters used (interpolated): $f = 1880$ MHz; $\sigma = 1.4$ mho/m; $\epsilon = 39.29$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.39439$ mho/m, $\epsilon = 39.3137$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASYS5 Configuration:

Probe: ES3DV3 - SN3173; ConvF(4.96, 4.96, 4.96); Calibrated: 2/23/2011

Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: SAM with CRP; Type: SAM; Serial: 1598

Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Head - Left/Cheek - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 16.537 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.474 W/kg

SAR(1 g) = 0.311 mW/g; SAR(10 g) = 0.190 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.368 mW/g

Head - Left/Cheek - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.367 mW/g

Head - Left/Cheek - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 12.892 V/m

Head - Left/Cheek - Mid/Reference scan (51x91x1): Measurement grid: dx=30mm, dy=30mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.349 mW/g

Head - Left/Cheek - Mid/Zoom Scan 2 (8x12x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

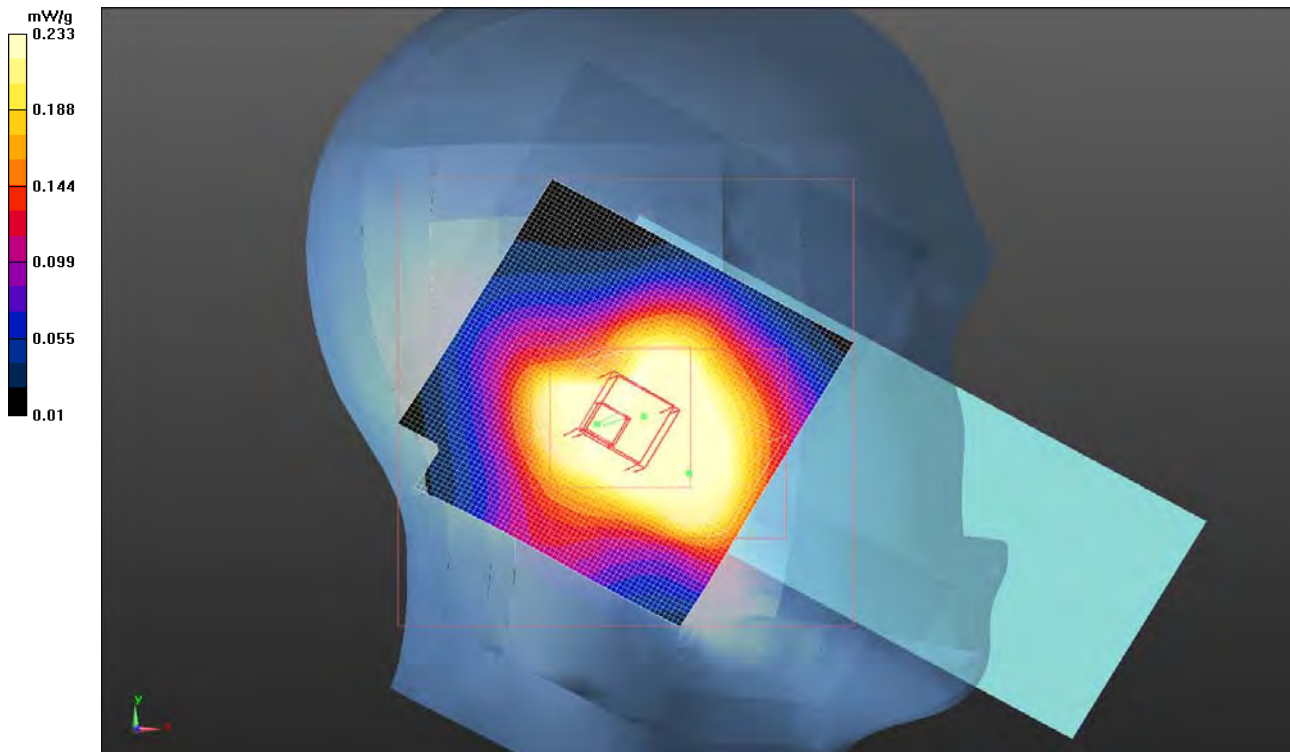
Reference Value = 16.537 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.478 W/kg

SAR(1 g) = 0.310 mW/g; SAR(10 g) = 0.189 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.373 mW/g



EMC

SAR TEST DATA

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 24.6 | Humidity (%): | 44.6 | Test Date: | 08/11/11 |
| Liquid Temperature (°C): | 22.6 | Barometric Pressure (mb): | 1016.9 | Tested by: | Ethan Schoonover |

Head Test 38 8-11-11

DUT: Handheld Computer (B1); Type: CN70E; Serial: 24511047015

Communication System: CW; Frequency: 1880 MHz

Medium parameters used (interpolated): $f = 1880$ MHz; $\sigma = 1.376$ mho/m; $\epsilon_r = 39.948$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.37132$ mho/m, $\epsilon_r = 39.9696$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

Probe: ES3DV3 - SN3246; ConvF(5.02, 5.02, 5.02); Calibrated: 11/11/2010

Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: SAM with CRP; Type: SAM; Serial: 1598

Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Head - Left/Tilt - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.057 V/m; Power Drift = 0.0051 dB

Peak SAR (extrapolated) = 0.586 W/kg

SAR(1 g) = 0.445 mW/g; SAR(10 g) = 0.328 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.495 mW/g

Head - Left/Tilt - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.523 mW/g

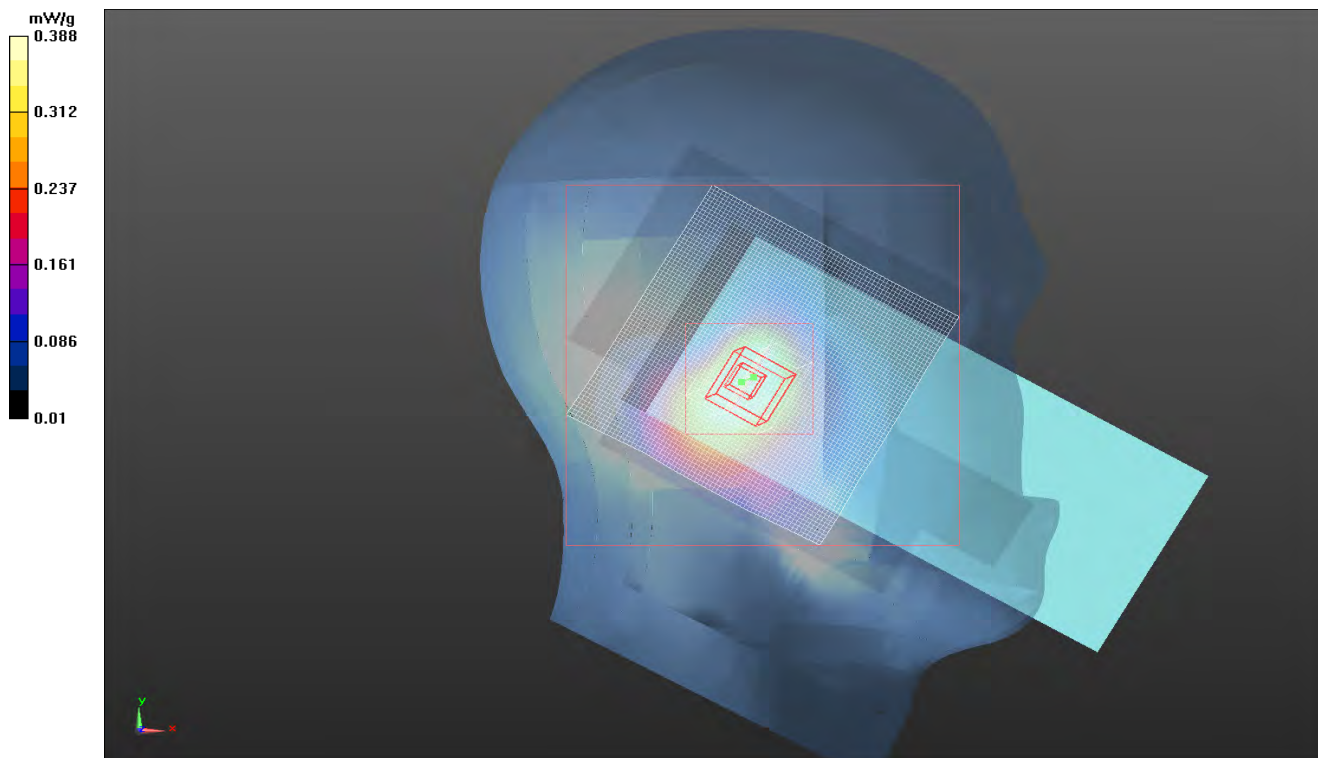
Head - Left/Tilt - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 16.781 V/m

Head - Left/Tilt - Mid/Reference scan (41x81x1): Measurement grid: dx=30mm, dy=30mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.470 mW/g



| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 25.6 | Humidity (%): | 47.4 | Test Date: | 08/11/11 |
| Liquid Temperature (°C): | 22.6 | Barometric Pressure (mb): | 1016.9 | Tested by: | Ethan Schoonover |

Head Test 39 8-11-11

DUT: Handheld Computer (B1); Type: CN70E; Serial: 24511047015

Communication System: CW; Frequency: 1880 MHz

Medium parameters used (interpolated): $f = 1880$ MHz; $\sigma = 1.376$ mho/m; $\epsilon_r = 39.948$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.37132$ mho/m, $\epsilon_r = 39.9696$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

Probe: ES3DV3 - SN3246; ConvF(5.02, 5.02, 5.02); Calibrated: 11/11/2010

Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: SAM with CRP; Type: SAM; Serial: 1598

Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Head - Left/Cheek - Mid/Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 16.700 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.514 W/kg

SAR(1 g) = 0.368 mW/g; SAR(10 g) = 0.272 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.427 mW/g

Head - Left/Cheek - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.390 mW/g

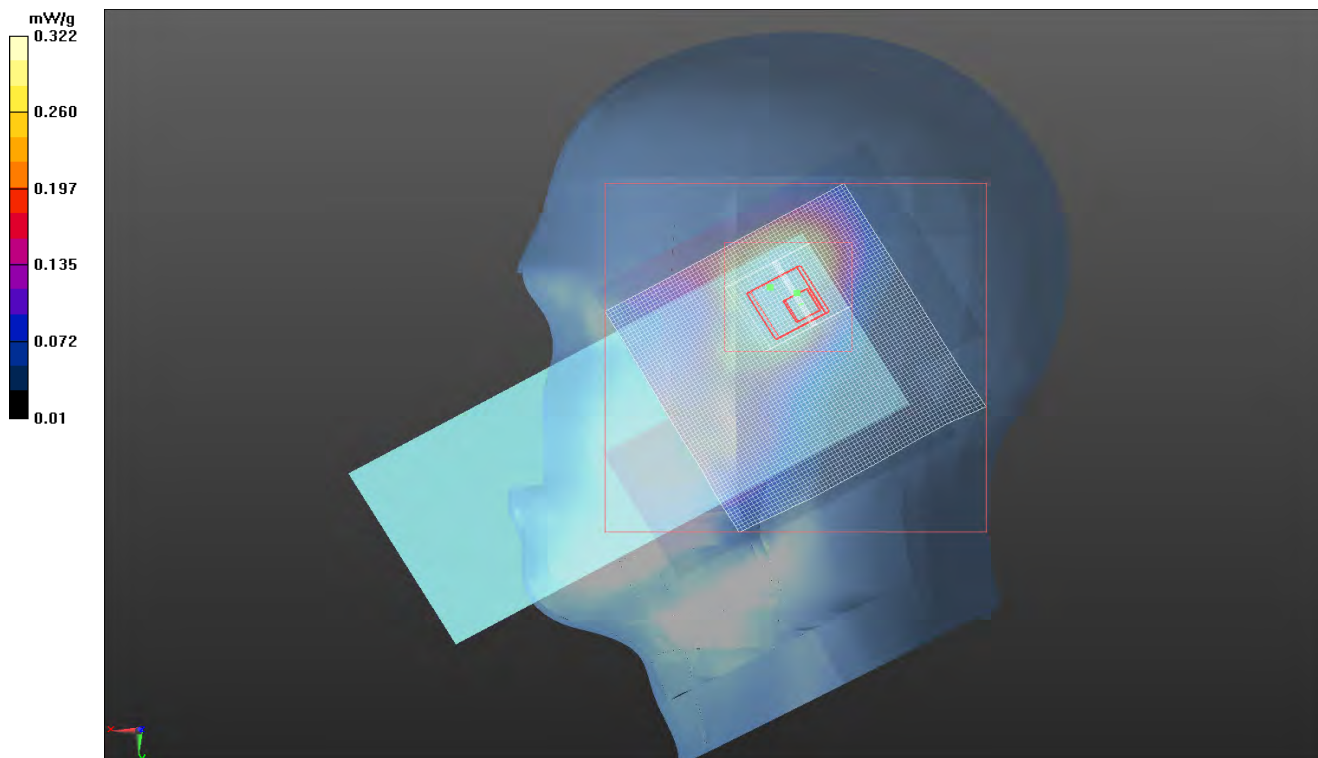
Head - Left/Cheek - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 15.300 V/m

Head - Left/Cheek - Mid/Reference scan (41x81x1): Measurement grid: dx=30mm, dy=30mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.347 mW/g



| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 25.4 | Humidity (%): | 46.4 | Test Date: | 08/11/11 |
| Liquid Temperature (°C): | 22.8 | Barometric Pressure (mb): | 1016.9 | Tested by: | Ethan Schoonover |

Head Test 40 8-11-11

DUT: Handheld Computer (B1); Type: CN70E; Serial: 24511047015

Communication System: CW; Frequency: 1880 MHz

Medium parameters used (interpolated): $f = 1880$ MHz; $\sigma = 1.376$ mho/m; $\epsilon_r = 39.948$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.37132$ mho/m, $\epsilon_r = 39.9696$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

Probe: ES3DV3 - SN3246; ConvF(5.02, 5.02, 5.02); Calibrated: 11/11/2010

Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: SAM with CRP; Type: SAM; Serial: 1598

Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Head - Left/Tilt - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 15.166 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.525 W/kg

SAR(1 g) = 0.325 mW/g; SAR(10 g) = 0.214 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.378 mW/g

Head - Left/Tilt - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.348 mW/g

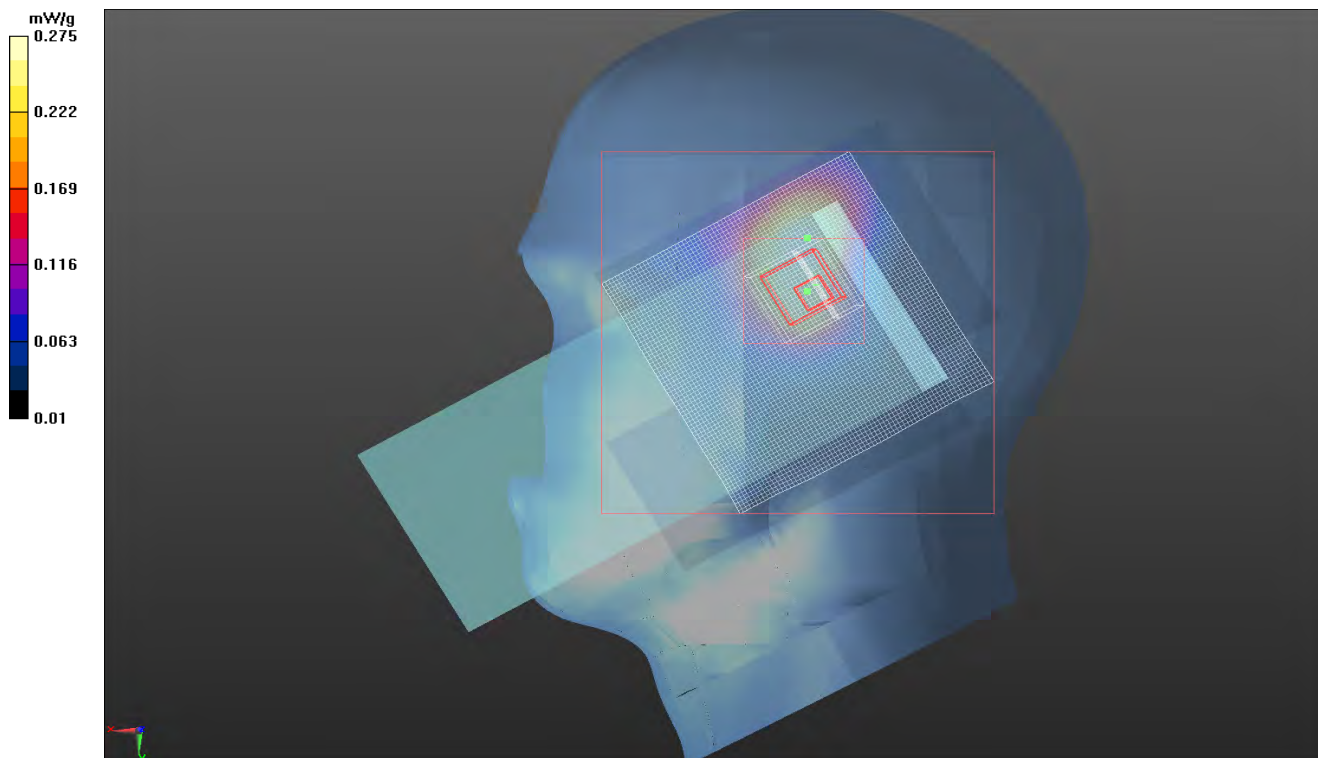
Head - Left/Tilt - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 14.146 V/m

Head - Left/Tilt - Mid/Reference scan (41x81x1): Measurement grid: dx=30mm, dy=30mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.267 mW/g

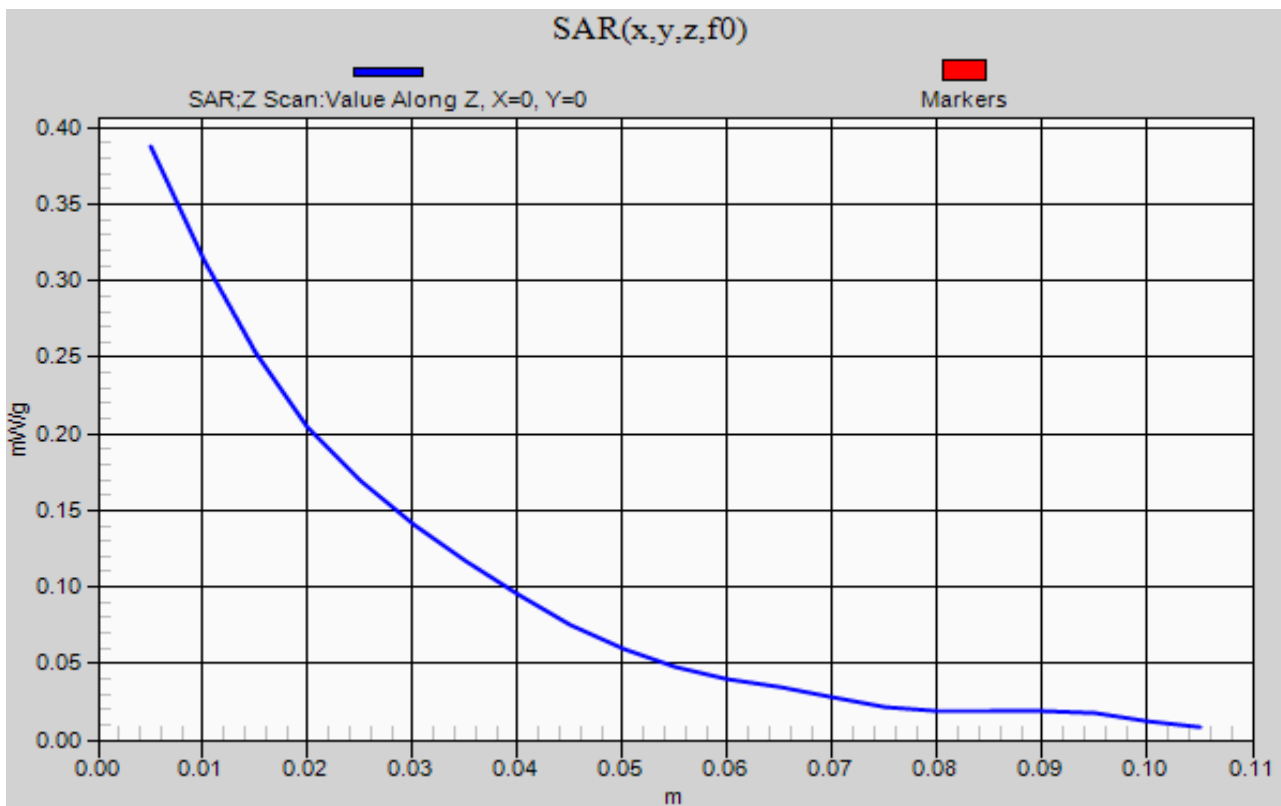


EMC SAR TEST DATA

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 24.6 | Humidity (%): | 44.6 | Test Date: | 08/11/11 |
| Liquid Temperature (°C): | 22.6 | Barometric Pressure (mb): | 1016.9 | Tested by: | Ethan Schoonover |

Head Test 38 8-11-11

DUT: Handheld Computer (B1); Type: CN70E; Serial: 24511047015



EMC

SAR TEST DATA

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 23.4 | Humidity (%): | 47.9 | Test Date: | 08/15/11 |
| Liquid Temperature (°C): | 22.5 | Barometric Pressure (mb): | 1017.4 | Tested by: | Jennifer Herrett |

Body Test 33 8-15-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: GPRS and Edge; Communication System Band: PCS 1900; Frequency: 1880 MHz; Communication System PAR: 9.2 dB
 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.445$ mho/m; $\epsilon = 53.39$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

Probe: ES3DV3 - SN3246; ConvF(4.63, 4.63, 4.63); Calibrated: 11/11/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096

Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Body/Body - Mid/Reference scan (51x81x1): Measurement grid: dx=30mm, dy=30mm

Maximum value of SAR (interpolated) = 0.000517 mW/g

Body/Body - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0 mW/g



EMC

SAR TEST DATA

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 23.3 | Humidity (%): | 46.2 | Test Date: | 08/15/11 |
| Liquid Temperature (°C): | 21.4 | Barometric Pressure (mb): | 1017.4 | Tested by: | Jennifer Herrett |

Body Test 34 8-15-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: GPRS and Edge; Communication System Band: PCS 1900; Frequency: 1880 MHz; Communication System PAR: 9.2 dB

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.445$ mho/m; $\epsilon = 53.39$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

Probe: ES3DV3 - SN3246; ConvF(4.63, 4.63, 4.63); Calibrated: 11/11/2010

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096

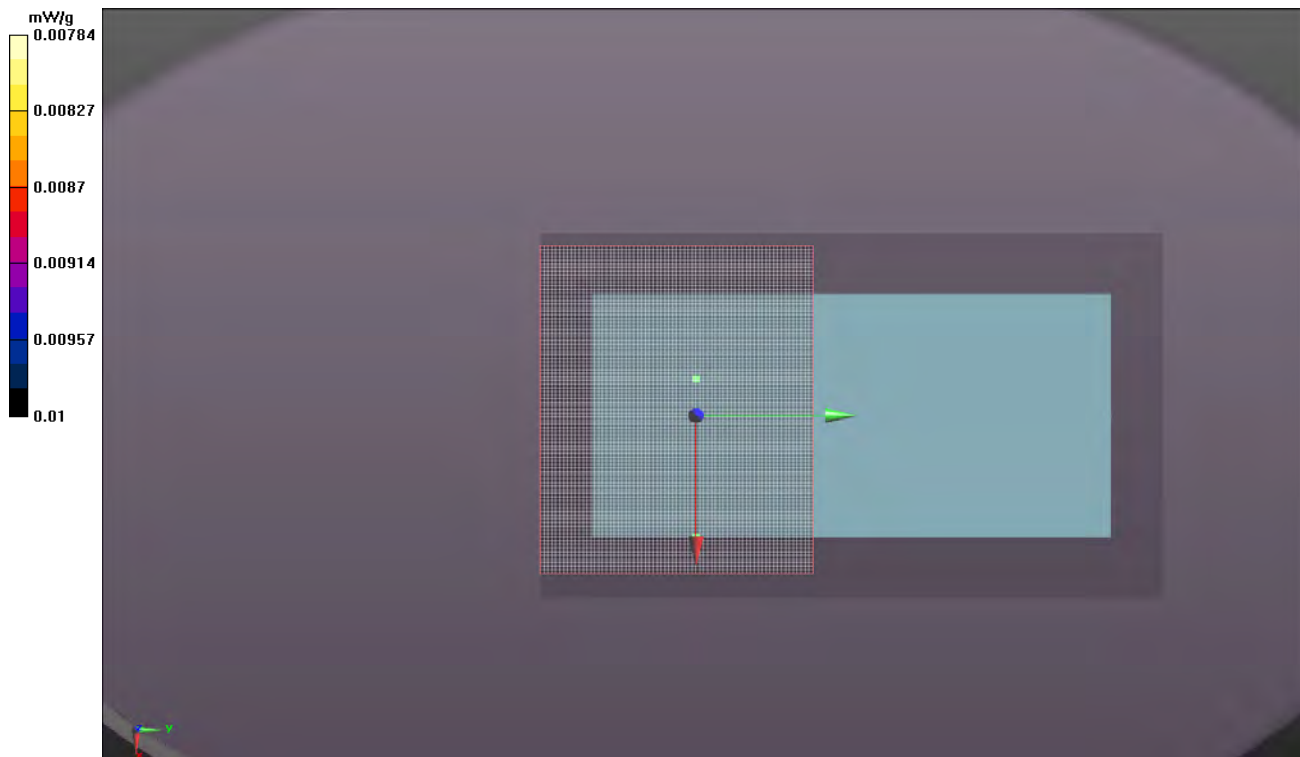
Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Body/Body - Mid/Reference scan (51x81x1): Measurement grid: dx=30mm, dy=30mm

Maximum value of SAR (interpolated) = 0.00636 mW/g

Body/Body - Mid/Area scan (91x71x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.00784 mW/g



| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 23.4 | Humidity (%): | 47.9 | Test Date: | 08/15/11 |
| Liquid Temperature (°C): | 22.5 | Barometric Pressure (mb): | 1017.4 | Tested by: | Jennifer Herrett |

Body Test 35 8-15-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: GPRS and Edge; Communication System Band: PCS 1900; Frequency: 1880 MHz; Communication System PAR: 9.2 dB
 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.445$ mho/m; $\epsilon_r = 53.39$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.445$ mho/m, $\epsilon_r = 53.39$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section
 Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

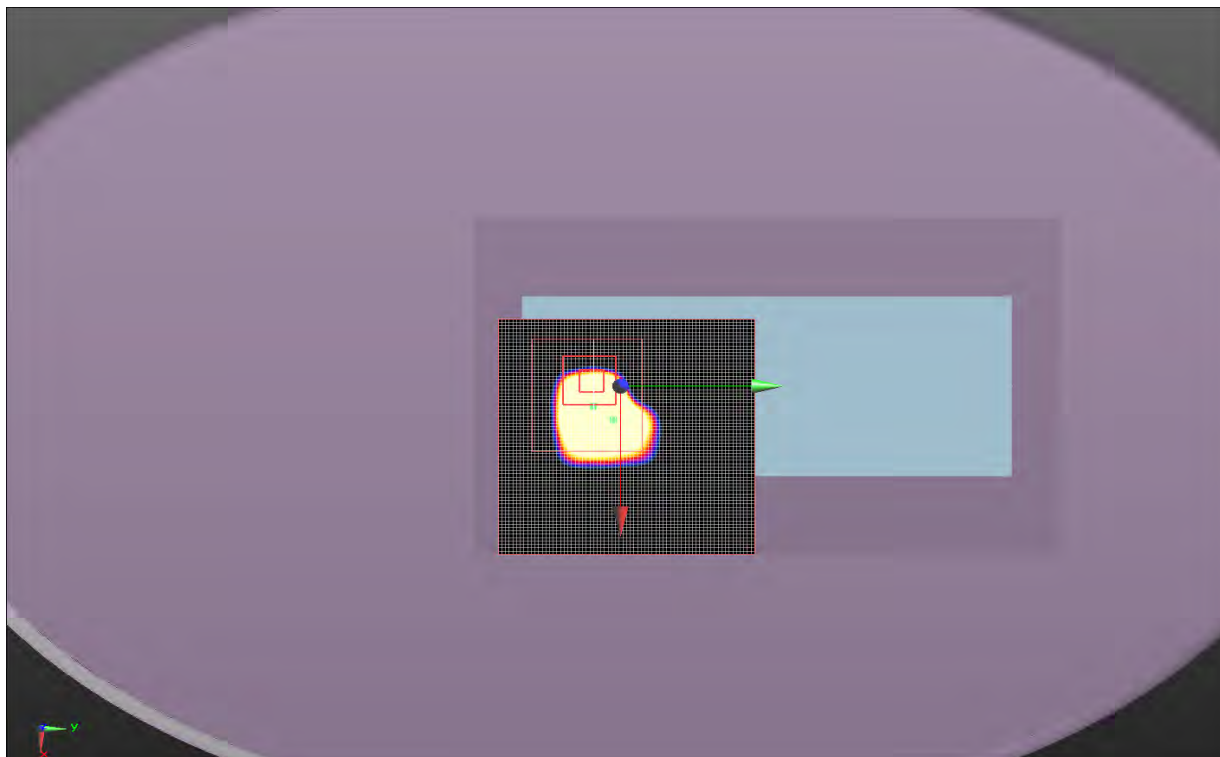
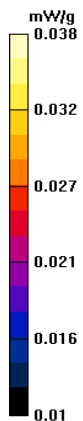
Probe: ES3DV3 - SN3246; ConvF(4.63, 4.63, 4.63); Calibrated: 11/11/2010
 Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)
 Electronics: DAE4 Sn1237; Calibrated: 11/10/2010
 Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096
 Measurement SW: DASYS52, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Body/Body - Mid/Reference scan (51x81x1): Measurement grid: dx=30mm, dy=30mm
 Maximum value of SAR (interpolated) = 0.088 mW/g

Body/Body - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.116 mW/g

Body/Body - Mid/Zoom Scan (11x10x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 8.400 V/m; Power Drift = -4.10 dB
 Peak SAR (extrapolated) = 0.121 W/kg
SAR(1 g) = 0.072 mW/g; SAR(10 g) = 0.042 mW/g
 Maximum value of SAR (measured) = 0.088 mW/g

Body/Body - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
 Maximum value of Total (measured) = 5.151 V/m



| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 23.3 | Humidity (%): | 46.2 | Test Date: | 08/15/11 |
| Liquid Temperature (°C): | 21.4 | Barometric Pressure (mb): | 1017.4 | Tested by: | Jennifer Herrett |

Body Test 36 8-15-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: GPRS and Edge; Communication System Band: PCS 1900; Frequency: 1880 MHz; Communication System PAR: 9.2 dB
 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.445$ mho/m; $\epsilon_r = 53.39$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.445$ mho/m, $\epsilon_r = 53.39$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section
 Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

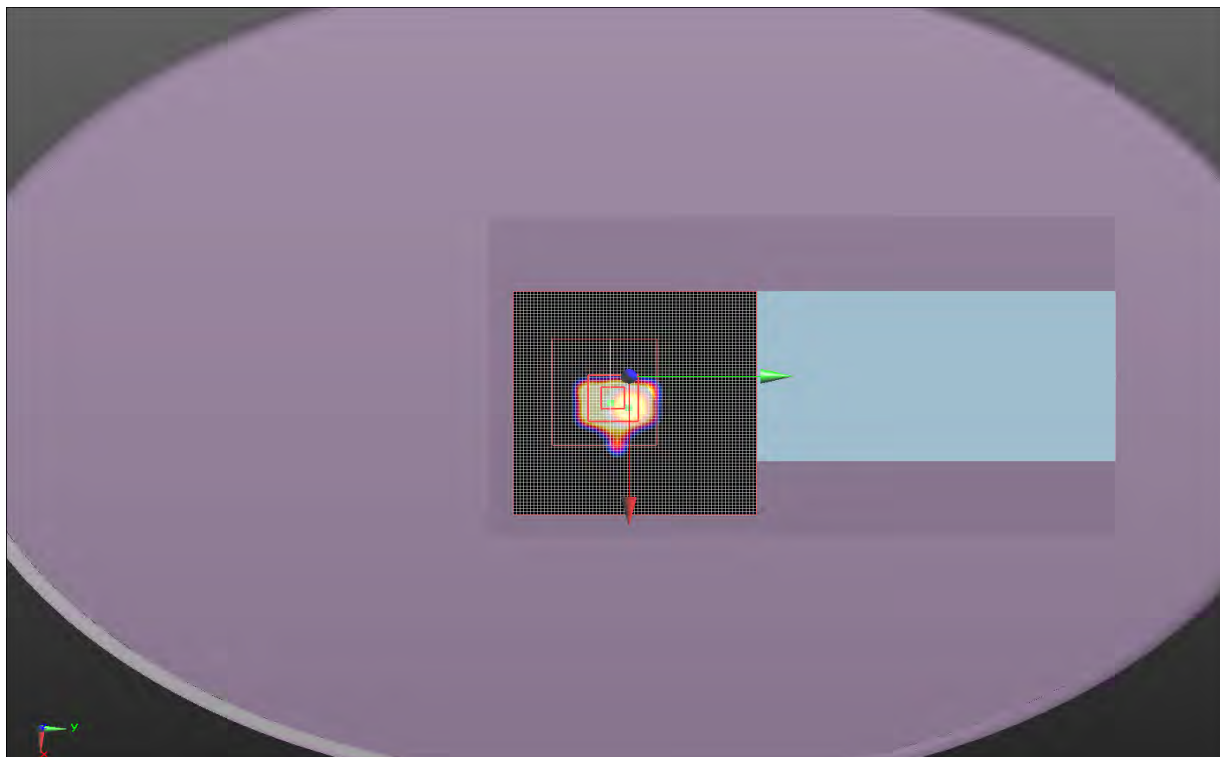
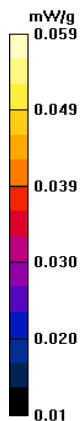
Probe: ES3DV3 - SN3246; ConvF(4.63, 4.63, 4.63); Calibrated: 11/11/2010
 Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)
 Electronics: DAE4 Sn1237; Calibrated: 11/10/2010
 Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096
 Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Body/Body - Mid/Reference scan (51x91x1): Measurement grid: dx=30mm, dy=30mm
 Maximum value of SAR (interpolated) = 0.080 mW/g

Body/Body - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.213 mW/g

Body/Body - Mid/Zoom Scan (11x10x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 7.970 V/m; Power Drift = -0.08 dB
 Peak SAR (extrapolated) = 0.142 W/kg
SAR(1 g) = 0.078 mW/g; SAR(10 g) = 0.045 mW/g
 Maximum value of SAR (measured) = 0.095 mW/g

Body/Body - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
 Maximum value of Total (measured) = 6.366 V/m



| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 25.7 | Humidity (%): | 42.3 | Test Date: | 08/16/11 |
| Liquid Temperature (°C): | 22.8 | Barometric Pressure (mb): | 1015.9 | Tested by: | Ethan Schoonover |

Body Test 37 8-16-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: CW; Frequency: 1880 MHz

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.445$ mho/m; $\epsilon_r = 53.39$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.445$ mho/m, $\epsilon_r = 53.39$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

Probe: ES3DV3 - SN3246; ConvF(4.63, 4.63, 4.63); Calibrated: 11/11/2010

Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096

Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Body/Body - Mid/Reference scan (51x81x1): Measurement grid: dx=30mm, dy=30mm

Maximum value of SAR (interpolated) = 0.044 mW/g

Body/Body - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.068 mW/g

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

Reference Value = 5.024 V/m; Power Drift = -0.57 dB

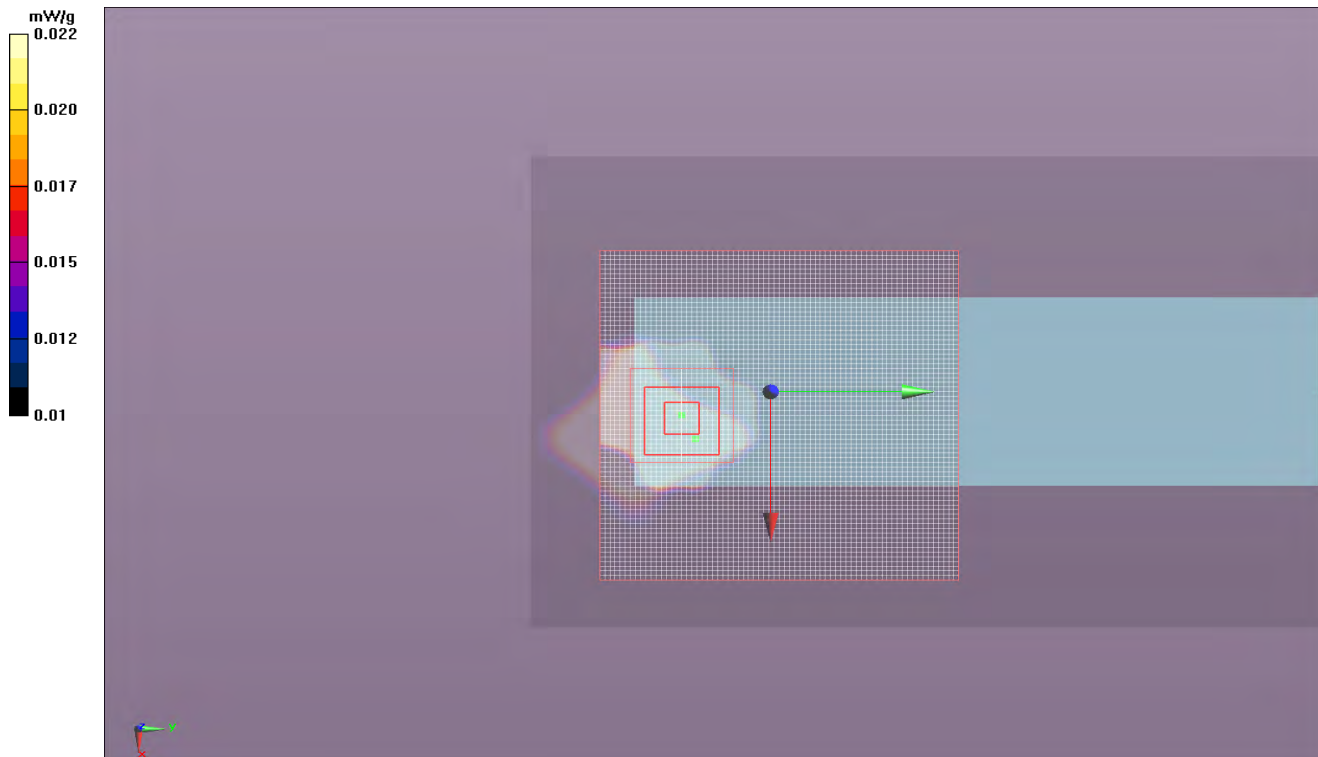
Peak SAR (extrapolated) = 0.057 W/kg

SAR(1 g) = 0.033 mW/g; SAR(10 g) = 0.021 mW/g

Maximum value of SAR (measured) = 0.040 mW/g

Body/Body - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 3.935 V/m



EMC

SAR TEST DATA

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 25.2 | Humidity (%): | 45.8 | Test Date: | 08/19/11 |
| Liquid Temperature (°C): | 22.5 | Barometric Pressure (mb): | 1017.9 | Tested by: | Jennifer Herrett |

Body Test 38b 8-19-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: CW; Frequency: 1880 MHz

Medium parameters used (interpolated): $f = 1880$ MHz; $\sigma = 1.482$ mho/m; $\epsilon = 52.673$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.4765$ mho/m, $\epsilon = 52.689$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASYS5 Configuration:

Probe: ES3DV3 - SN3173; ConvF(4.55, 4.55, 4.55); Calibrated: 2/23/2011

Sensor-Surface: 3mm (Mechanical Surface Detection); Sensor-Surface: 0mm (Fix Surface)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096

Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Body/Body - Mid/Zoom Scan 2 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.283 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.533 W/kg

SAR(1 g) = 0.426 mW/g; SAR(10 g) = 0.324 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.470 mW/g

Body/Body - Mid/Reference scan (51x81x1): Measurement grid: dx=30mm, dy=30mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.551 mW/g

Body/Body - Mid/Area scan (71x131x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.542 mW/g

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

Reference Value = 19.283 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.572 W/kg

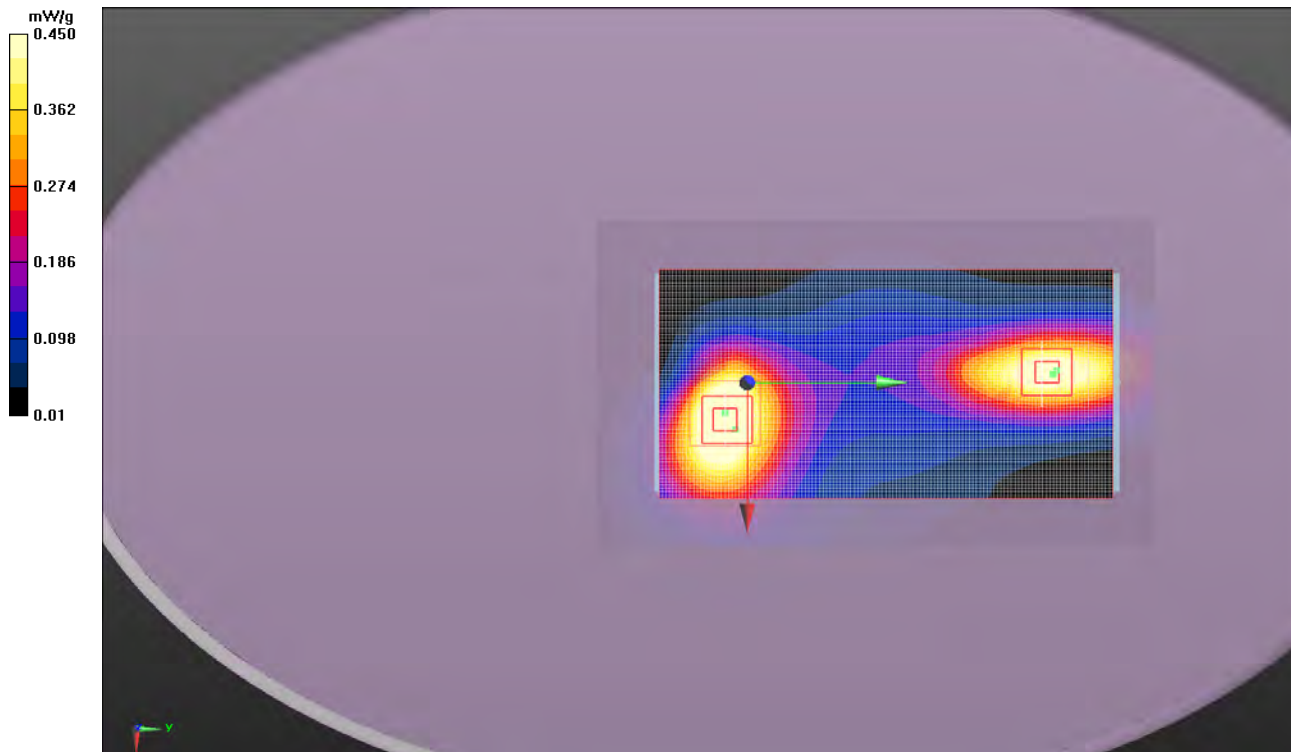
SAR(1 g) = 0.484 mW/g; SAR(10 g) = 0.378 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.523 mW/g

Body/Body - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 17.424 V/m



EMC

SAR TEST DATA

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 25.2 | Humidity (%): | 45.8 | Test Date: | 08/19/11 |
| Liquid Temperature (°C): | 22.5 | Barometric Pressure (mb): | 1017.9 | Tested by: | Jennifer Herrett |

Body Test 39b2 8-19-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: CW; Frequency: 1880 MHz

Medium parameters used (interpolated): $f = 1880$ MHz; $\sigma = 1.482$ mho/m; $\epsilon = 52.673$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.4765$ mho/m, $\epsilon = 52.689$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASYS5 Configuration:

Probe: ES3DV3 - SN3173; ConvF(4.55, 4.55, 4.55); Calibrated: 2/23/2011

Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096

Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Body/Body - Mid/Reference scan (51x91x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (interpolated) = 1.032 mW/g

Body/Body - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (interpolated) = 1.273 mW/g

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

Reference Value = 29.775 V/m; Power Drift = -0.0055 dB

Peak SAR (extrapolated) = 1.673 W/kg

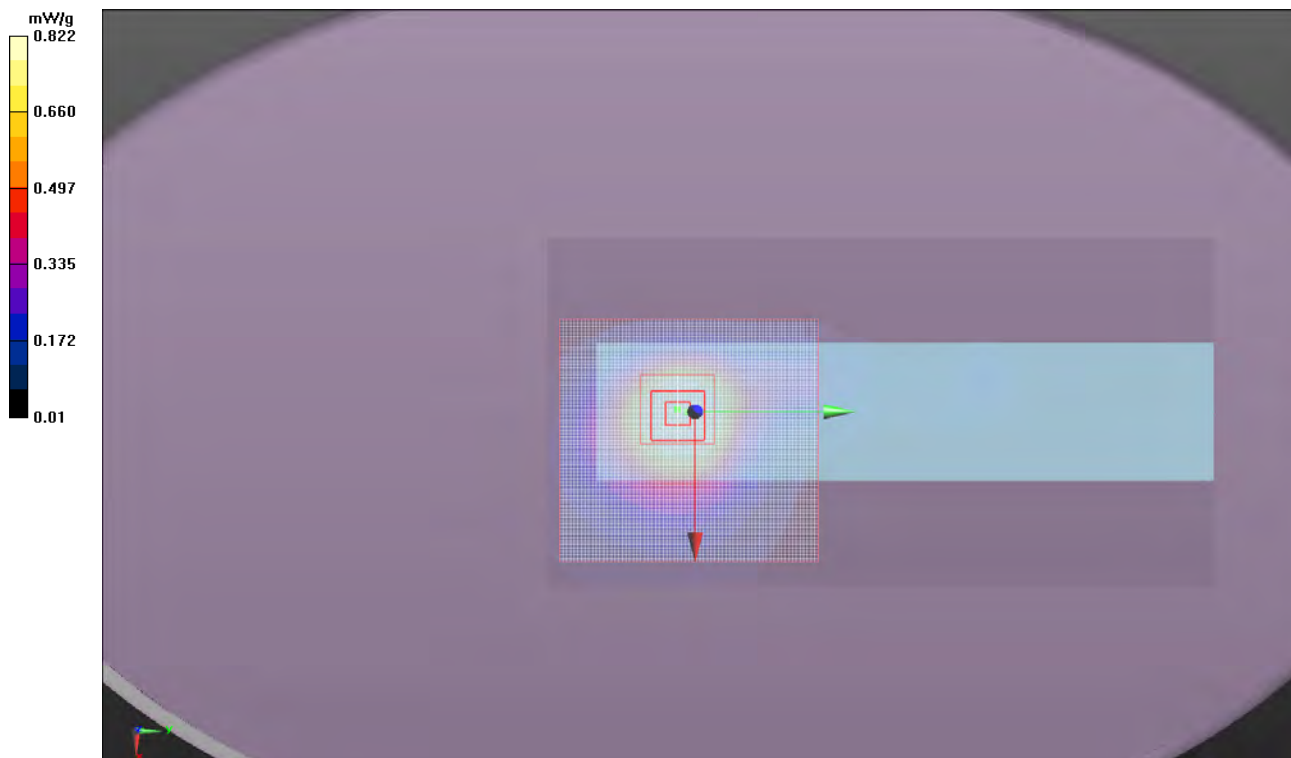
SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.658 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 1.292 mW/g

Body/Body - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 23.553 V/m



EMC

SAR TEST DATA

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 24.5 | Humidity (%): | 44.6 | Test Date: | 08/19/11 |
| Liquid Temperature (°C): | 22.1 | Barometric Pressure (mb): | 1017.9 | Tested by: | Jennifer Herrett |

Body Test 39c 8-19-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: CW; Frequency: 1852.4 MHz

Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.452$ mho/m; $\epsilon = 52.777$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.44903$ mho/m, $\epsilon = 52.7855$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASYS5 Configuration:

Probe: ES3DV3 - SN3173; ConvF(4.55, 4.55, 4.55); Calibrated: 2/23/2011

Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096

Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Body/Body - Low/Reference scan (51x91x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (interpolated) = 1.077 mW/g

Body/Body - Low/Area scan (71x91x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (interpolated) = 1.316 mW/g

Body/Body - Low/Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 30.533 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 1.649 W/kg

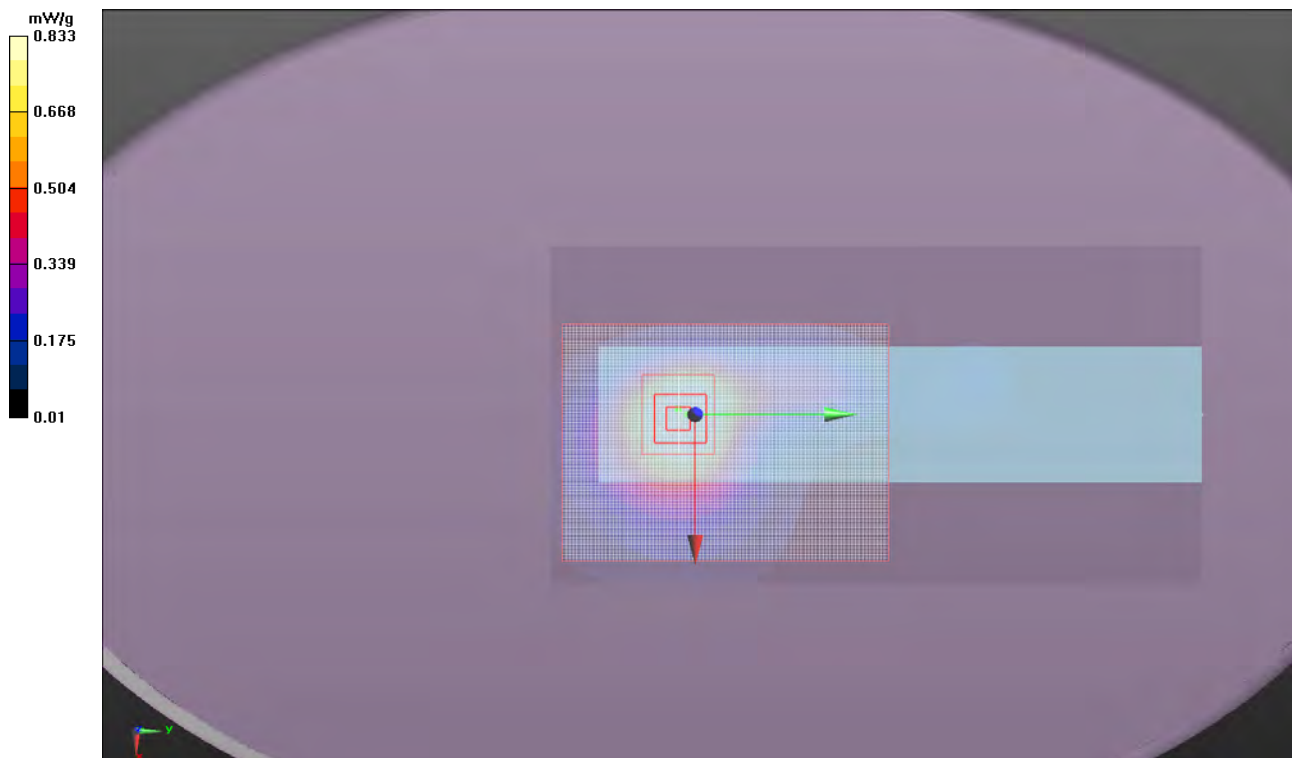
SAR(1 g) = 1.09 mW/g; SAR(10 g) = 0.677 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 1.298 mW/g

Body/Body - Low/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 23.957 V/m



EMC

SAR TEST DATA

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 24.5 | Humidity (%): | 44.6 | Test Date: | 08/19/11 |
| Liquid Temperature (°C): | 22.1 | Barometric Pressure (mb): | 1017.9 | Tested by: | Jennifer Herrett |

Body Test 39d 8-19-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: CW; Frequency: 1907.5 MHz

Medium parameters used (interpolated): $f = 1907.5$ MHz; $\sigma = 1.512$ mho/m; $\epsilon = 52.586$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.51739$ mho/m, $\epsilon = 52.5713$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASYS5 Configuration:

Probe: ES3DV3 - SN3173; ConvF(4.55, 4.55, 4.55); Calibrated: 2/23/2011

Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096

Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Body/Body - High/Reference scan (51x91x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (interpolated) = 0.997 mW/g

Body/Body - High/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (interpolated) = 1.248 mW/g

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

Reference Value = 28.773 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 1.563 W/kg

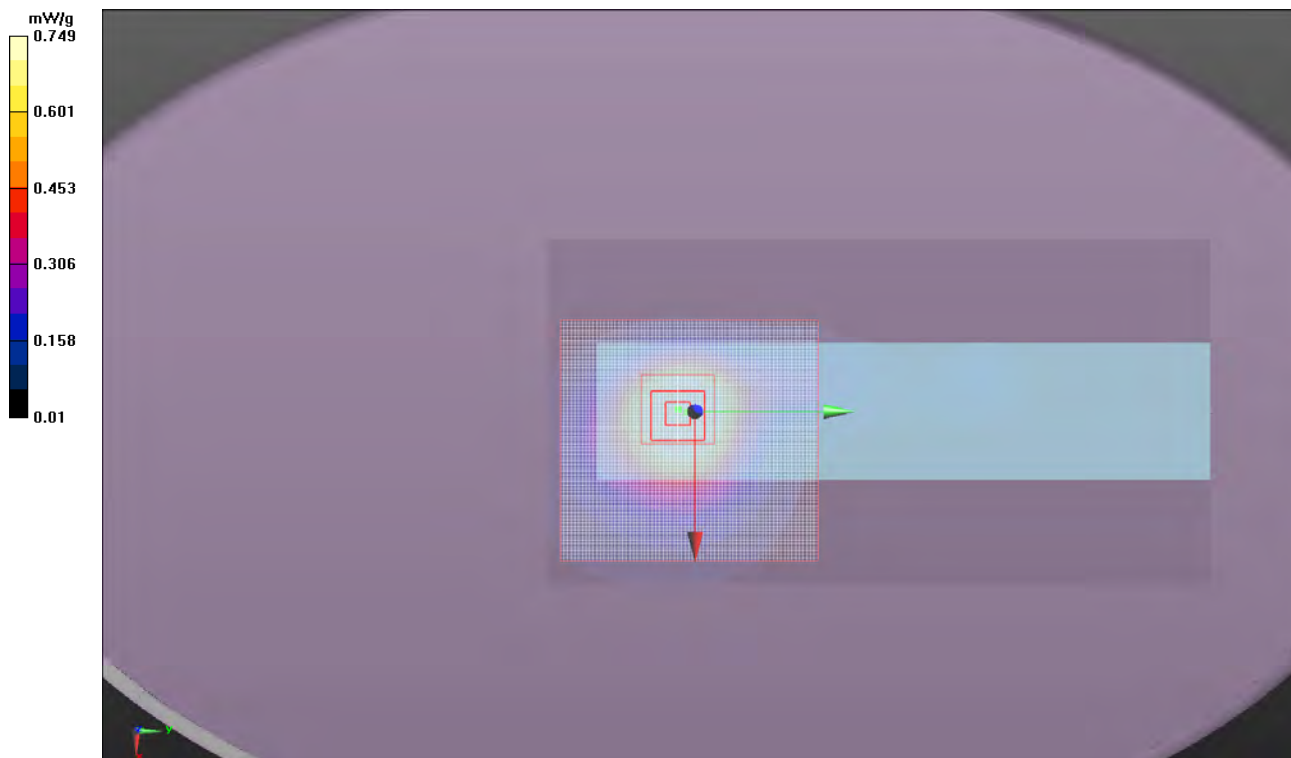
SAR(1 g) = 1.01 mW/g; SAR(10 g) = 0.617 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 1.194 mW/g

Body/Body - High/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 22.253 V/m



| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 25.9 | Humidity (%): | 40.3 | Test Date: | 08/16/11 |
| Liquid Temperature (°C): | 22.8 | Barometric Pressure (mb): | 1015.9 | Tested by: | Ethan Schoonover |

Body Test 40 8-16-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: CW; Frequency: 1880 MHz

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.445$ mho/m; $\epsilon_r = 53.39$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.445$ mho/m, $\epsilon_r = 53.39$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

Probe: ES3DV3 - SN3246; ConvF(4.63, 4.63, 4.63); Calibrated: 11/11/2010

Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096

Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Body/Body - Mid/Reference scan (51x101x1): Measurement grid: dx=30mm, dy=30mm

Maximum value of SAR (interpolated) = 0.707 mW/g

Body/Body - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.838 mW/g

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

Reference Value = 22.415 V/m; Power Drift = -0.03 dB

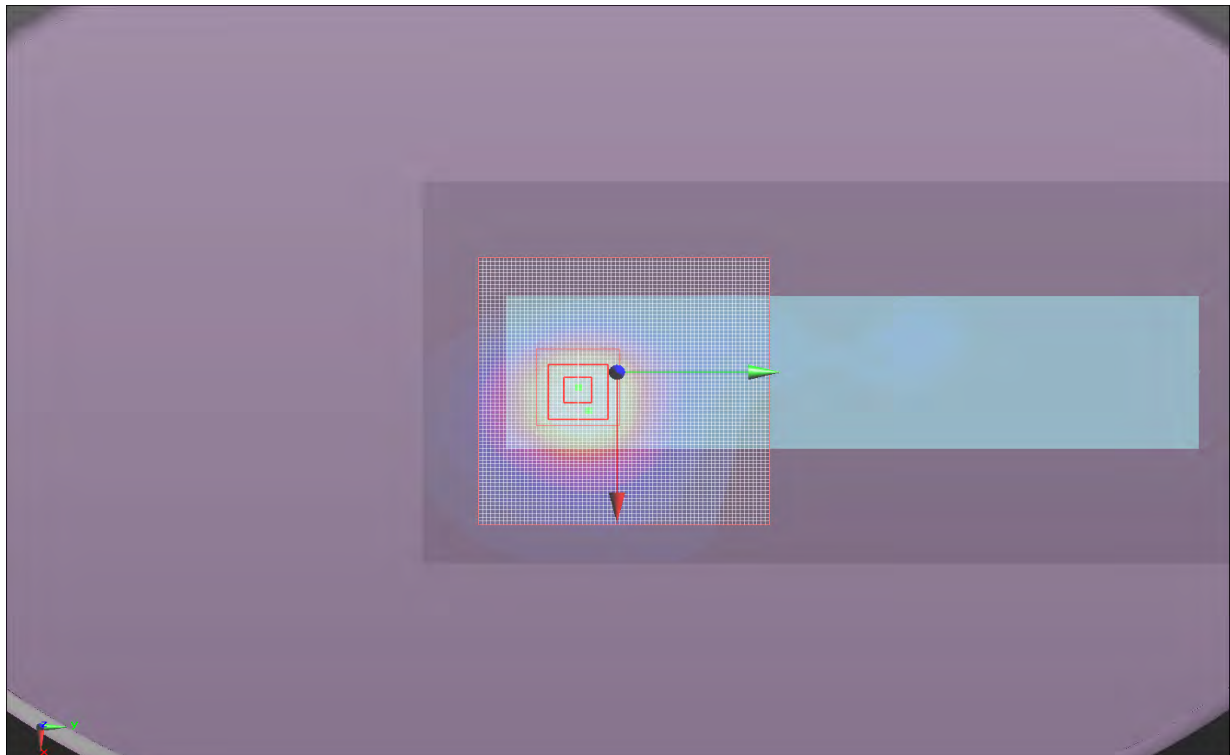
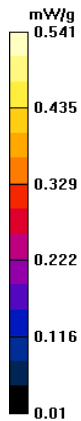
Peak SAR (extrapolated) = 1.186 W/kg

SAR(1 g) = 0.714 mW/g; SAR(10 g) = 0.418 mW/g

Maximum value of SAR (measured) = 0.866 mW/g

Body/Body - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 19.347 V/m

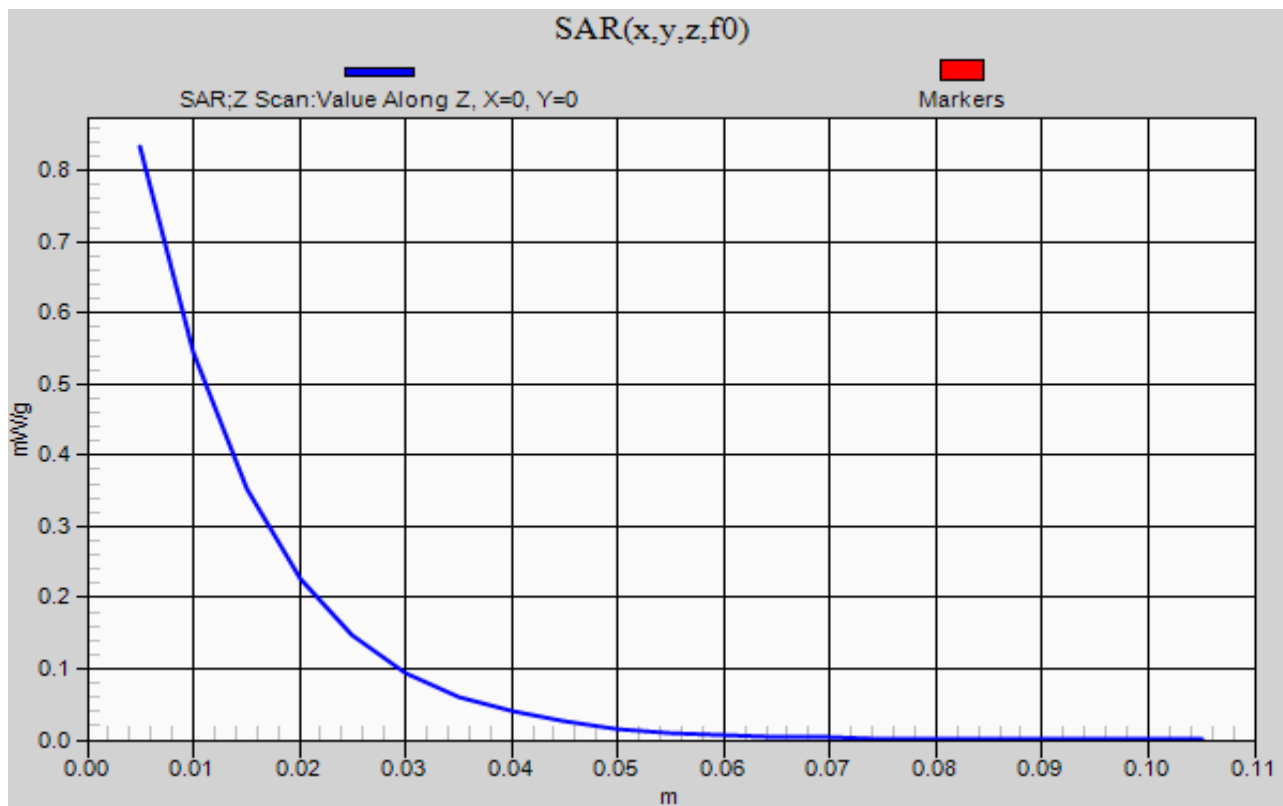


EMC SAR TEST DATA

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 24.5 | Humidity (%): | 44.6 | Test Date: | 08/19/11 |
| Liquid Temperature (°C): | 22.1 | Barometric Pressure (mb): | 1017.9 | Tested by: | Jennifer Herrett |

Body Test 39c 8-19-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040



SAR TEST DATA

| | |
|---|---|
| EUT: 1000CP02S | Work Order: ITRM0248 |
| Serial Number: 178U1191040 | Date: See Data Sheets |
| Customer: Intermec Technologies Corporation | Temperature: See Data Sheets |
| Attendees: None | Humidity: See Data Sheets |
| Project: None | Barometric Pres.: See Data Sheets |
| Tested by: Jennifer Herrett | Job Site: EV08 |
| TEST SPECIFICATIONS | |
| FCC 2.1093:2011 | Test Method FCC OET 65C:2001 IEEE Std 1528:2003 FCC KDB 447498 D01 v04 FCC KDB 941225 D01 v02, and D03 FCC KDB 648474 D01 V01r05 |
| Health Safety Code 6:2009 | RSS-102, Issue 4:2010 |
| COMMENTS | |
| None | |
| DEVIATIONS FROM TEST STANDARD | |
| No Deviations | |
| Configuration # | 6 |
| Signature <i>Jennifer Herrett</i> | |

| Test Configuration | Frequency Band | Body-Worn Accessory | Transmit Frequency | Transmit Channel | Transmit Mode | Data Rate (Mbps) | EUT Position | | Start Power (Conducted) | SAR Drift During Test (dB) | 1g SAR Level | Test # |
|--------------------|----------------|---------------------|--------------------|------------------|---------------------|------------------|--------------|-------|-------------------------|----------------------------|--------------|--------|
| | | | | | | | Left | Right | | | | |
| Head | AWS (1700 MHz) | None | 1735.4 | 1427 | WCDMA / Test Loop 1 | 12.2 kbps RMC | Left | Cheek | 23.63 | 0.02 | 0.222 | 53 |
| | | | | | | | | Tilt | 23.63 | 0.03 | 0.194 | 54 |
| | | | | | | | Right | Cheek | 23.63 | 0.02 | 0.483 | 55 |
| | | | | | | | | Tilt | 23.63 | 0.04 | 0.372 | 56 |

EMC

SAR TEST DATA

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 23.4 | Humidity (%): | 49 | Test Date: | 08/22/11 |
| Liquid Temperature (°C): | 21.9 | Barometric Pressure (mb): | 1016.5 | Tested by: | Jennifer Herrett |

Head Test 53 8-22-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: CW; Frequency: 1735.4 MHz

Medium parameters used (interpolated): $f = 1735.4$ MHz; $\sigma = 1.369$ mho/m; $\epsilon = 40.847$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.35851$ mho/m, $\epsilon = 40.9024$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASYS Configuration:

Probe: ES3DV3 - SN3173; ConvF(5.2, 5.2, 5.2); Calibrated: 2/23/2011

Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: SAM with CRP; Type: SAM; Serial: 1598

Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Head - Left/Cheek - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 14.259 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.369 W/kg

SAR(1 g) = 0.222 mW/g; SAR(10 g) = 0.129 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.272 mW/g

Head - Left/Cheek - Mid/Area scan (91x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.271 mW/g

Head - Left/Cheek - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 11.022 V/m

Head - Left/Cheek - Mid/Reference scan (51x91x1): Measurement grid: dx=30mm, dy=30mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Head - Left/Cheek - Mid/Zoom Scan 2 (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

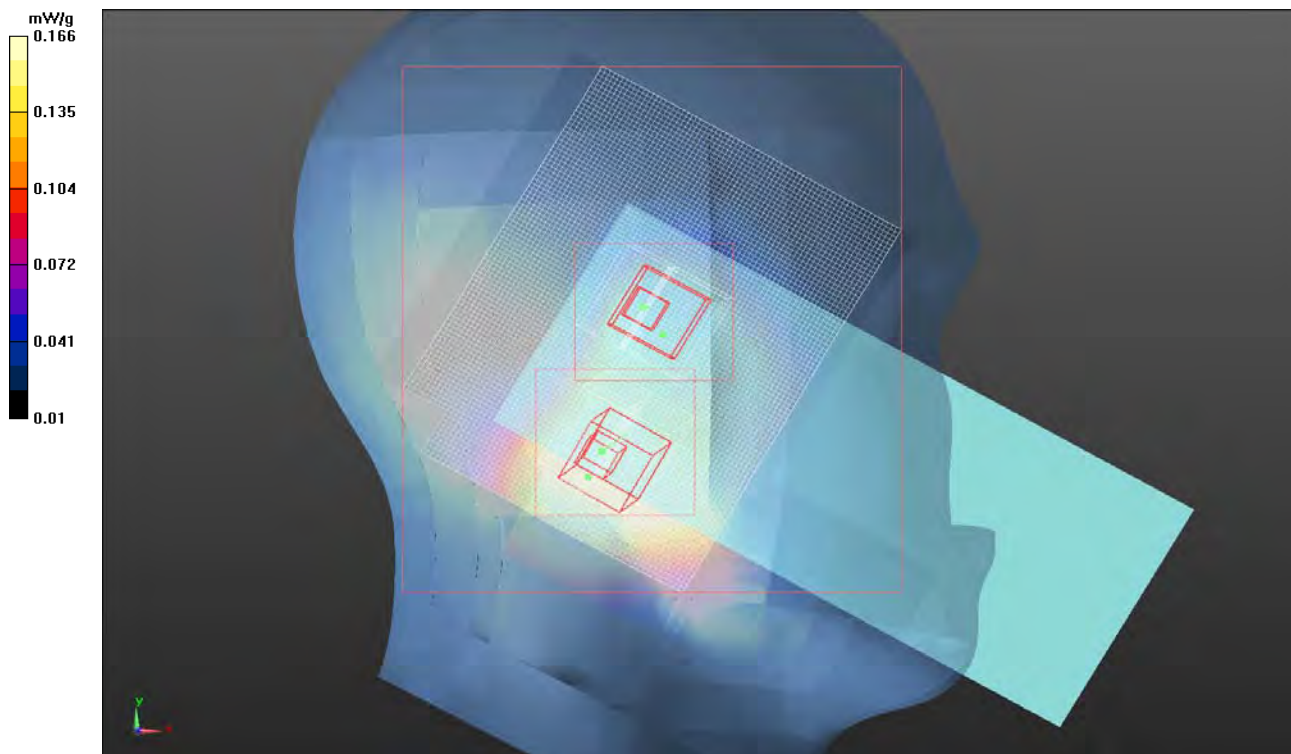
Reference Value = 14.259 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.258 W/kg

SAR(1 g) = 0.175 mW/g; SAR(10 g) = 0.111 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.207 mW/g



EMC

SAR TEST DATA

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 23.4 | Humidity (%): | 49 | Test Date: | 08/22/11 |
| Liquid Temperature (°C): | 21.9 | Barometric Pressure (mb): | 1016.5 | Tested by: | Jennifer Herrett |

Head Test 54 8-22-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: CW; Frequency: 1735.4 MHz

Medium parameters used (interpolated): $f = 1735.4$ MHz; $\sigma = 1.369$ mho/m; $\epsilon = 40.847$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.35851$ mho/m, $\epsilon = 40.9024$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASYS5 Configuration:

Probe: ES3DV3 - SN3173; ConvF(5.2, 5.2, 5.2); Calibrated: 2/23/2011

Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: SAM with CRP; Type: SAM; Serial: 1598

Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Head - Left/Tilt - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 13.350 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.287 W/kg

SAR(1 g) = 0.194 mW/g; SAR(10 g) = 0.112 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.228 mW/g

Head - Left/Tilt - Mid/Area scan (91x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.266 mW/g

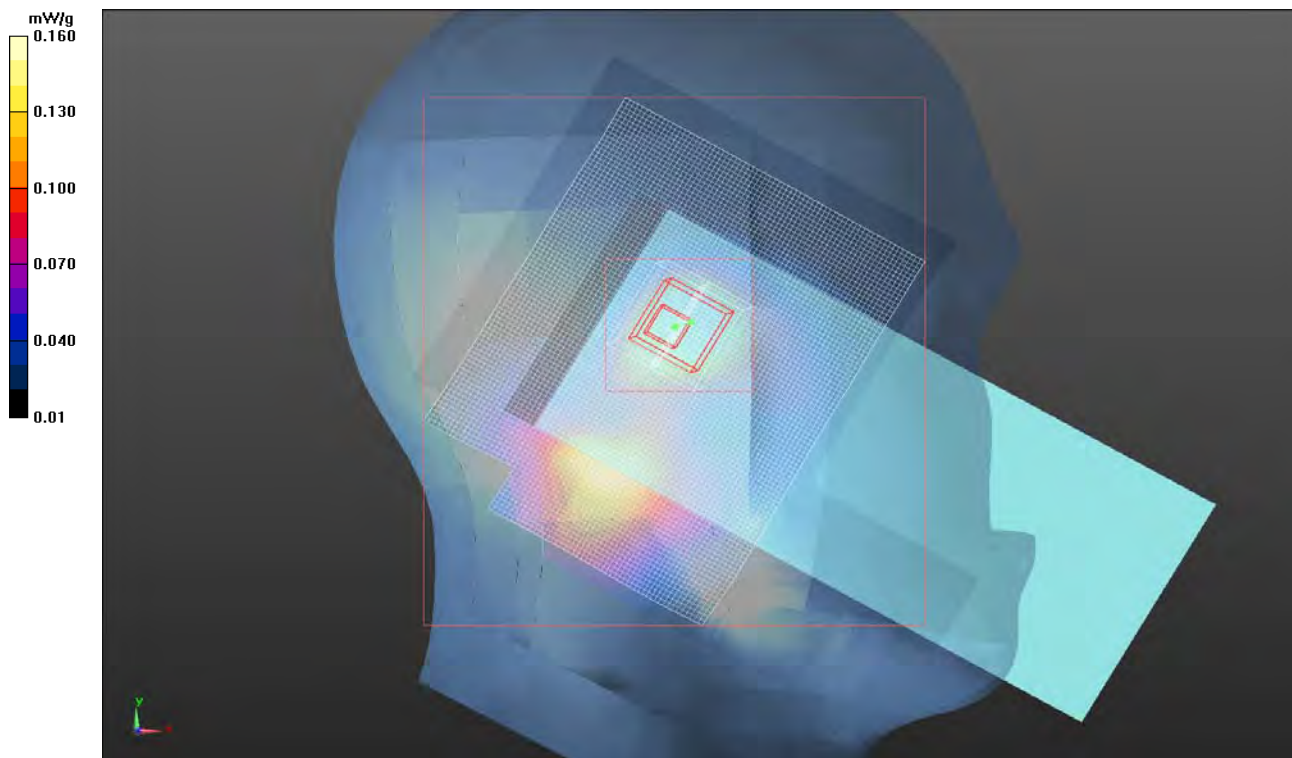
Head - Left/Tilt - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 10.823 V/m

Head - Left/Tilt - Mid/Reference scan (51x91x1): Measurement grid: dx=30mm, dy=30mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.227 mW/g



EMC

SAR TEST DATA

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 20.8 | Humidity (%): | 36.9 | Test Date: | 08/20/11 |
| Liquid Temperature (°C): | 21.9 | Barometric Pressure (mb): | 1009.7 | Tested by: | Jennifer Herrett |

Head Test 55 8-20-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: CW; Frequency: 1735.4 MHz

Medium parameters used (interpolated): $f = 1735.4$ MHz; $\sigma = 1.369$ mho/m; $\epsilon = 40.847$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.35851$ mho/m, $\epsilon = 40.9024$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASYS Configuration:

Probe: ES3DV3 - SN3173; ConvF(5.2, 5.2, 5.2); Calibrated: 2/23/2011

Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: SAM with CRP; Type: SAM; Serial: 1598

Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Head - Right/Cheek - Mid/Reference scan (51x91x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (interpolated) = 0.332 mW/g

Head - Right/Cheek - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 16.060 V/m

Head - Right/Cheek - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20.286 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.871 W/kg

SAR(1 g) = 0.483 mW/g; SAR(10 g) = 0.255 mW/g

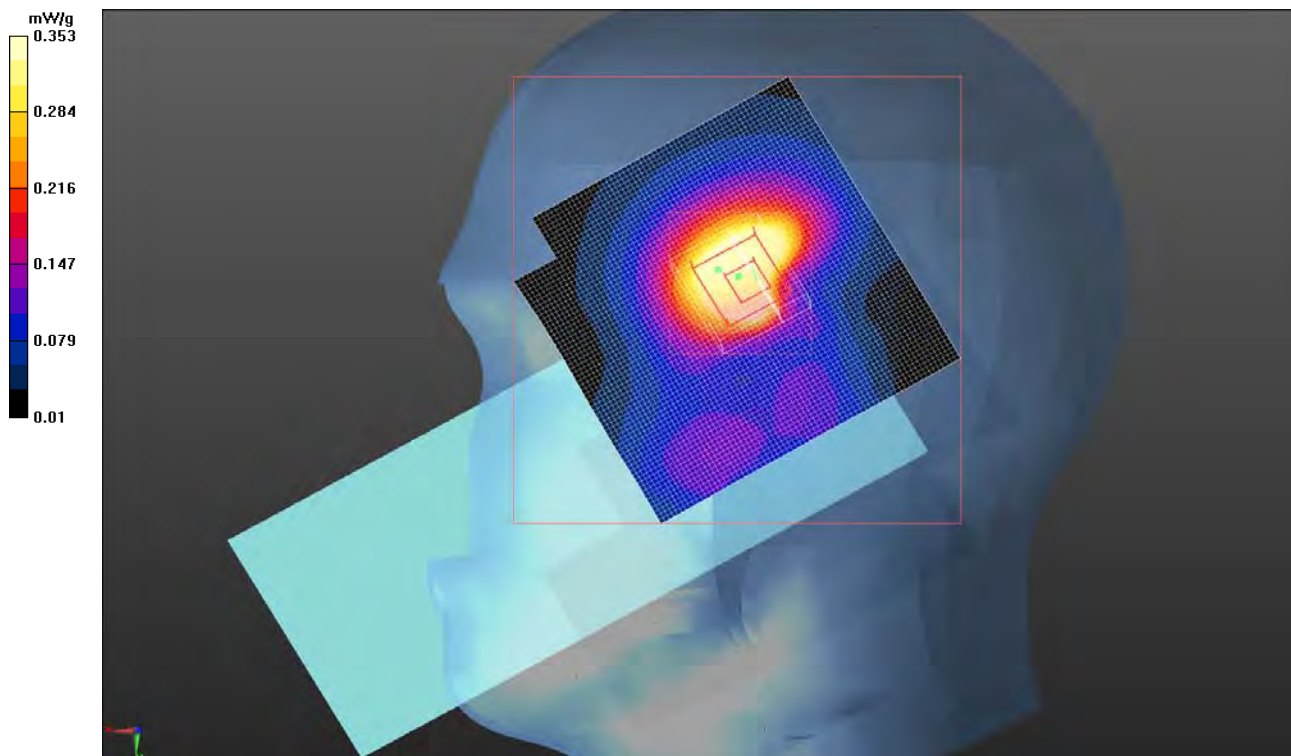
Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.588 mW/g

Head - Right/Cheek - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (interpolated) = 0.546 mW/g



| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 20.8 | Humidity (%): | 36.9 | Test Date: | 08/20/11 |
| Liquid Temperature (°C): | 21.9 | Barometric Pressure (mb): | 1009.7 | Tested by: | Jennifer Herrett |

Head Test 56 8-20-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: CW; Frequency: 1735.4 MHz

Medium parameters used (interpolated): $f = 1735.4$ MHz; $\sigma = 1.369$ mho/m; $\epsilon = 40.847$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.35851$ mho/m, $\epsilon = 40.9024$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASYS5 Configuration:

Probe: ES3DV3 - SN3173; ConvF(5.2, 5.2, 5.2); Calibrated: 2/23/2011

Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: SAM with CRP; Type: SAM; Serial: 1598

Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Head - Right/Tilt - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.772 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.689 W/kg

SAR(1 g) = 0.372 mW/g; SAR(10 g) = 0.194 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.464 mW/g

Head - Right/Tilt - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 14.059 V/m

Head - Right/Tilt - Mid/Reference scan (51x91x1): Measurement grid: dx=30mm, dy=30mm

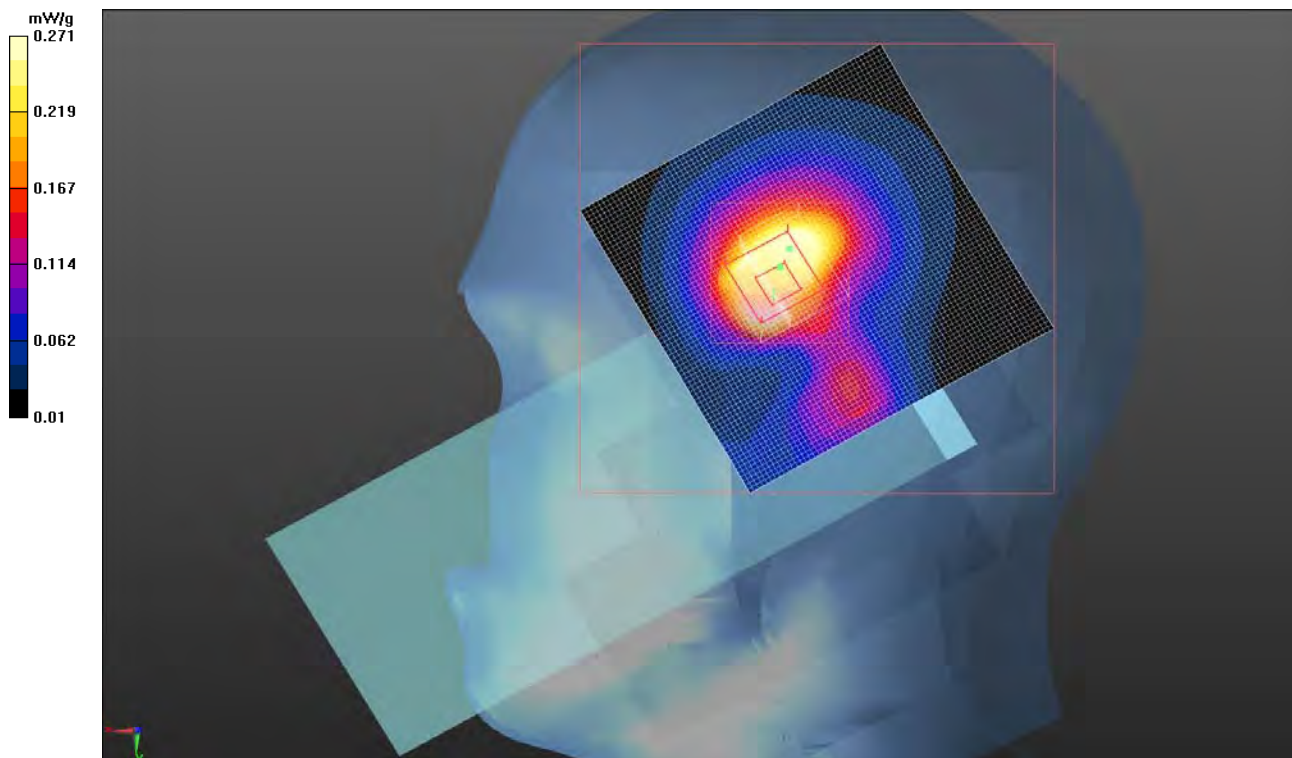
[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.261 mW/g

Head - Right/Tilt - Mid/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.413 mW/g

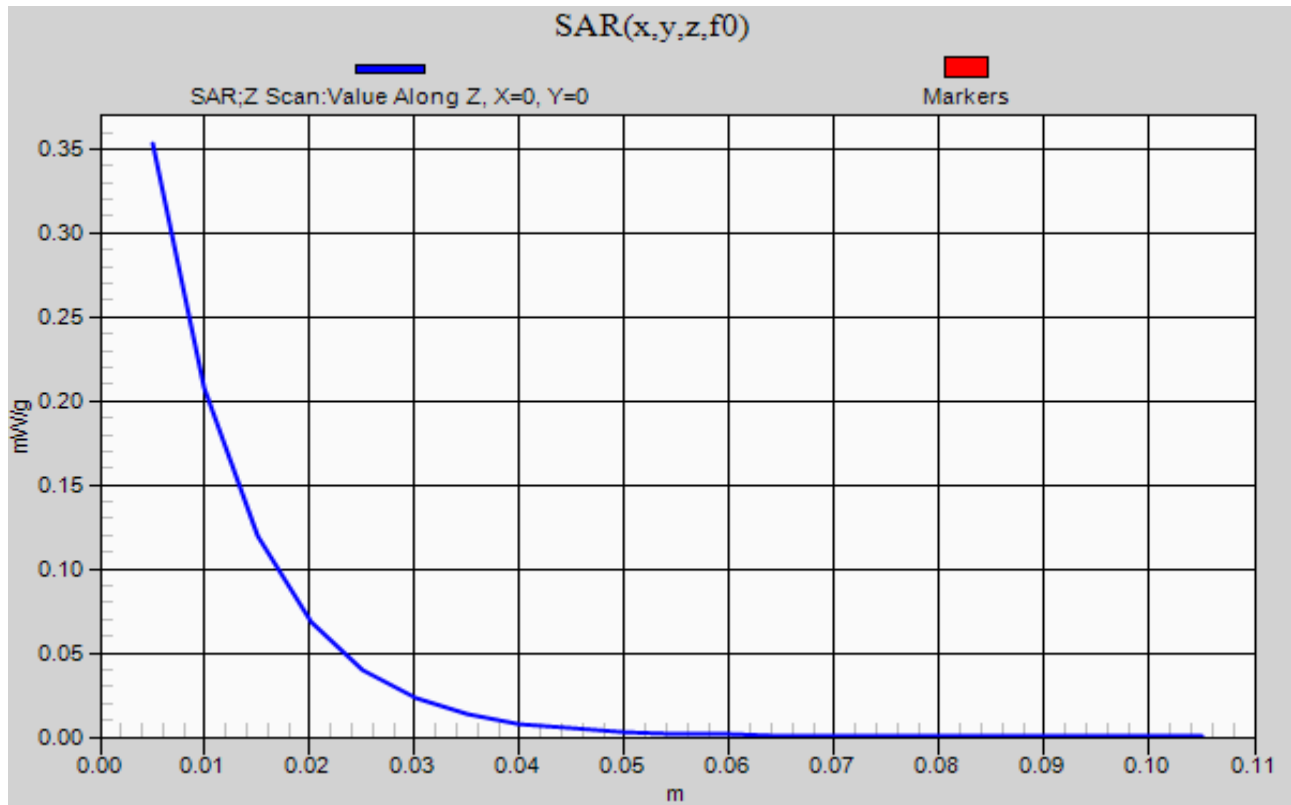


EMC SAR TEST DATA

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 20.8 | Humidity (%): | 36.9 | Test Date: | 08/20/11 |
| Liquid Temperature (°C): | 21.9 | Barometric Pressure (mb): | 1009.7 | Tested by: | Jennifer Herrett |

Head Test 55 8-20-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040



SAR TEST DATA

EMC

| | | | |
|--------------------------------------|---------------------------------------|--|-----------------|
| EUT: | 1000CP02S | Work Order: | ITRM0248 |
| Serial Number: | 178U1191040 | Date: | See Data Sheets |
| Customer: | Intermec Technologies Corporation | Temperature: | See Data Sheets |
| Attendees: | None | Humidity: | See Data Sheets |
| Project: | None | Barometric Pres.: | See Data Sheets |
| Tested by: | Jennifer Herrett and Ethan Schoonover | Job Site: | EV08 |
| TEST SPECIFICATIONS | | Test Method | |
| FCC 2.1093:2011 | | FCC OET 65C:2001 IEEE Std 1528:2003 FCC KDB 447498 D01 v04 FCC KDB 941225 D01 v02, and D03 FCC KDB 648474 D01 V01r05 | |
| Health Safety Code 6:2009 | | RSS-102, Issue 4:2010 | |
| COMMENTS | | | |
| None | | | |
| DEVIATIONS FROM TEST STANDARD | | | |
| No Deviations | | | |
| Configuration # | 5 | Signature <i>Jennifer Herrett</i> | |

| Test Configuration | Frequency Band | Body-Worn Accessory | Transmit Frequency | Transmit Channel | Transmit Mode | Data Rate (Mbps) | Audio Accessory | EUT Position | Start Power (Conducted) | SAR Drift During Test (dB) | 1g SAR Level | Test # |
|--------------------|----------------|---------------------|--------------------|------------------|---------------------|------------------|-----------------|--------------|-------------------------|----------------------------|--------------|--------|
| Body | AWS 1700 MHz | Holster | 1735.4 | 1427 | WCDMA / Test Loop 1 | 12.2 kbps RMC | VR10 Headset | Front | 23.63 | 0.08 | 0.075 | 51 |
| | | | | | | | | Left | 23.63 | -0.04 | 0.431 | 52 |

EMC

SAR TEST DATA

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 25.8 | Humidity (%): | 42.3 | Test Date: | 08/22/11 |
| Liquid Temperature (°C): | 23.4 | Barometric Pressure (mb): | 1015.8 | Tested by: | Ethan Schoonover |

Body Test 51 8-22-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: CW; Frequency: 1735.4 MHz

Medium parameters used (interpolated): $f = 1735.4$ MHz; $\sigma = 1.462$ mho/m; $\epsilon = 53.221$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.48$ mho/m, $\epsilon = 53.13$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASYS5 Configuration:

Probe: ES3DV3 - SN3173; ConvF(4.87, 4.87, 4.87); Calibrated: 2/23/2011

Sensor-Surface: 3mm (Mechanical Surface Detection); Sensor-Surface: 0mm (Fix Surface)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096

Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Body/Body - Mid/Zoom Scan 2 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.709 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.076 W/kg

SAR(1 g) = 0.052 mW/g; SAR(10 g) = 0.035 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.060 mW/g

Body/Body - Mid/Reference scan (51x111x1): Measurement grid: dx=30mm, dy=30mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.083 mW/g

Body/Body - Mid/Area scan (91x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.099 mW/g

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

Reference Value = 7.709 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.111 W/kg

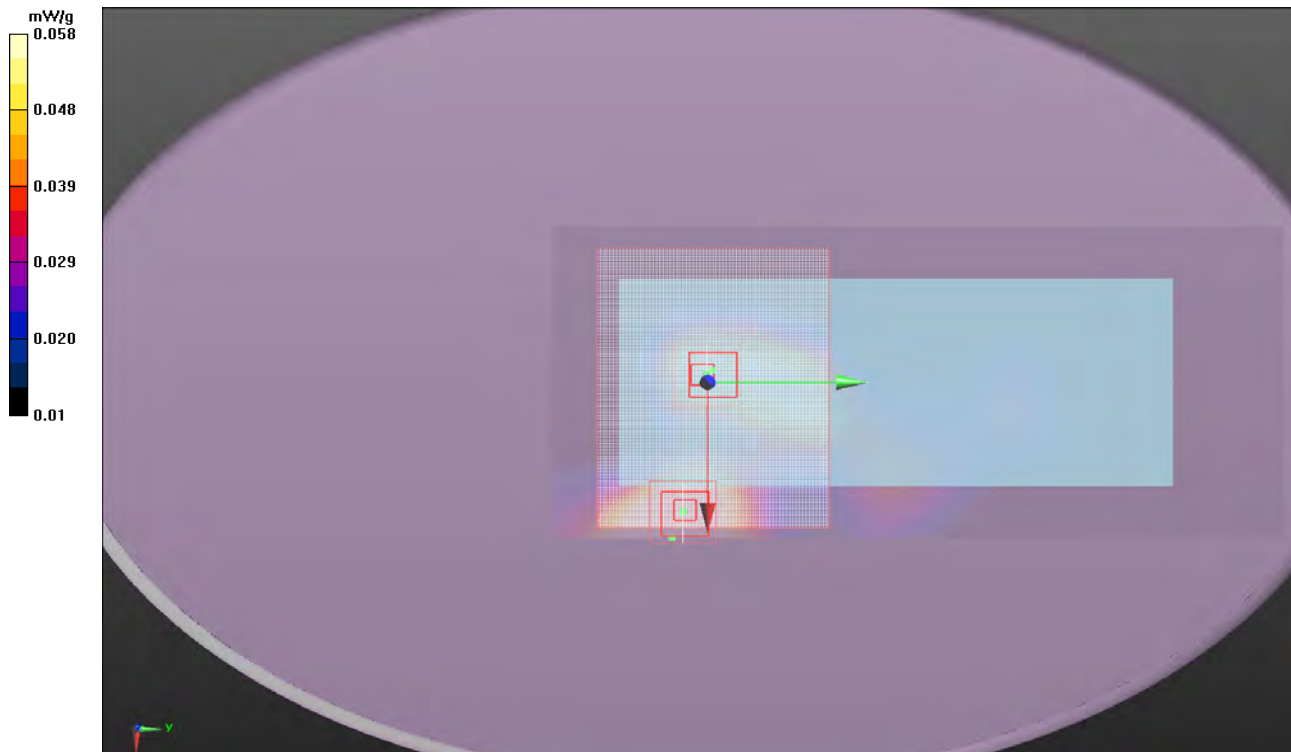
SAR(1 g) = 0.075 mW/g; SAR(10 g) = 0.048 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.088 mW/g

Body/Body - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 6.308 V/m



EMC

SAR TEST DATA

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 25.8 | Humidity (%): | 42.3 | Test Date: | 08/22/11 |
| Liquid Temperature (°C): | 23.4 | Barometric Pressure (mb): | 1015.8 | Tested by: | Ethan Schoonover |

Body Test 52 8-22-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

Communication System: CW; Frequency: 1735.4 MHz

Medium parameters used (interpolated): $f = 1735.4$ MHz; $\sigma = 1.462$ mho/m; $\epsilon = 53.221$; $\rho = 1000$ kg/m³, Medium parameters used: $\sigma = 1.48$ mho/m, $\epsilon = 53.13$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASYS5 Configuration:

Probe: ES3DV3 - SN3173; ConvF(4.87, 4.87, 4.87); Calibrated: 2/23/2011

Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 0mm (Fix Surface)

Electronics: DAE4 Sn1237; Calibrated: 11/10/2010

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1096

Measurement SW: DASYS2, Version 52.6 (2); SEMCAD X Version 14.4.4 (2829)

Body/Body - Mid/Reference scan (51x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (interpolated) = 0.565 mW/g

Body/Body - Mid/Area scan (91x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (interpolated) = 0.518 mW/g

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

Reference Value = 19.466 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.642 W/kg

SAR(1 g) = 0.431 mW/g; SAR(10 g) = 0.274 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.502 mW/g

Body/Body - Mid/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of Total (measured) = 15.137 V/m

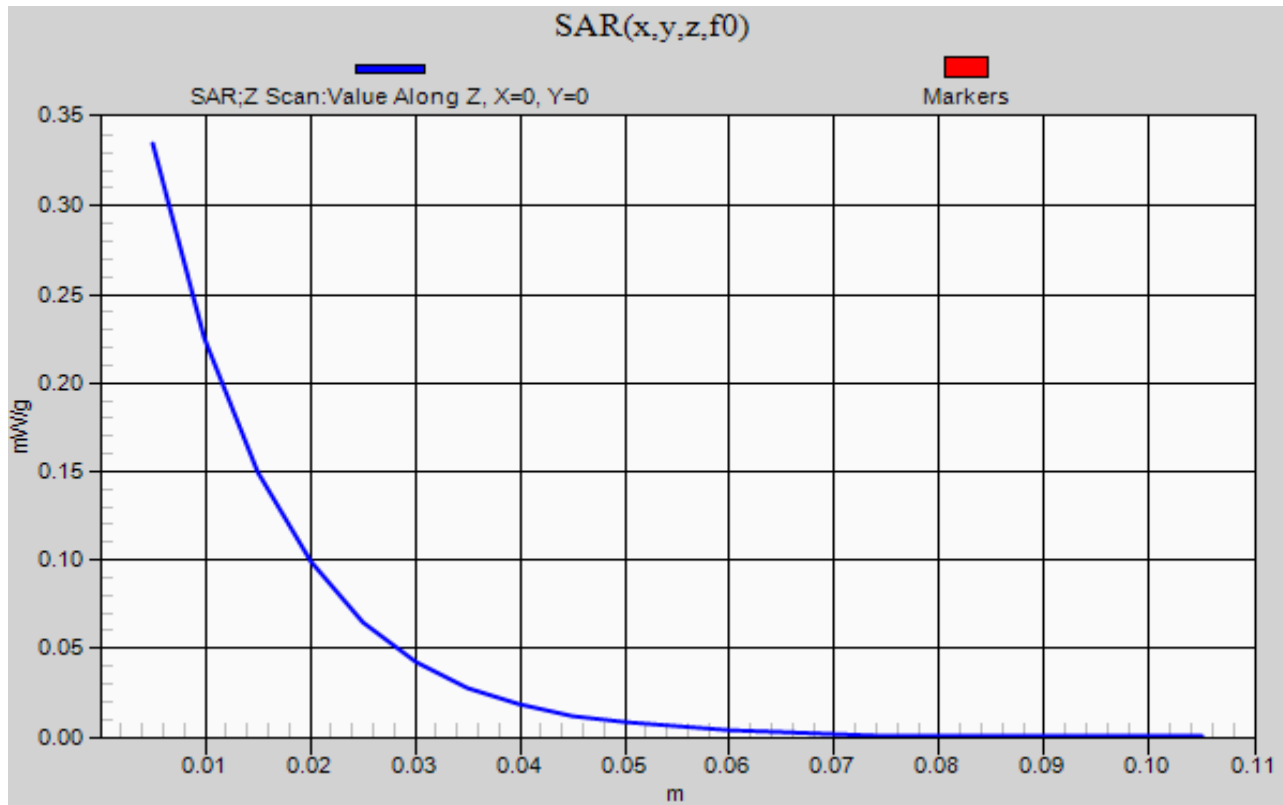


EMC SAR TEST DATA

| | | | | | |
|--------------------------|------|---------------------------|--------|------------|------------------|
| Room Temperature (°C): | 25.8 | Humidity (%): | 42.3 | Test Date: | 08/22/11 |
| Liquid Temperature (°C): | 23.4 | Barometric Pressure (mb): | 1015.8 | Tested by: | Ethan Schoonover |

Body Test 52 8-22-11

DUT: Handheld Computer (B1); Type: 1000CP02S; Serial: 178U1191040

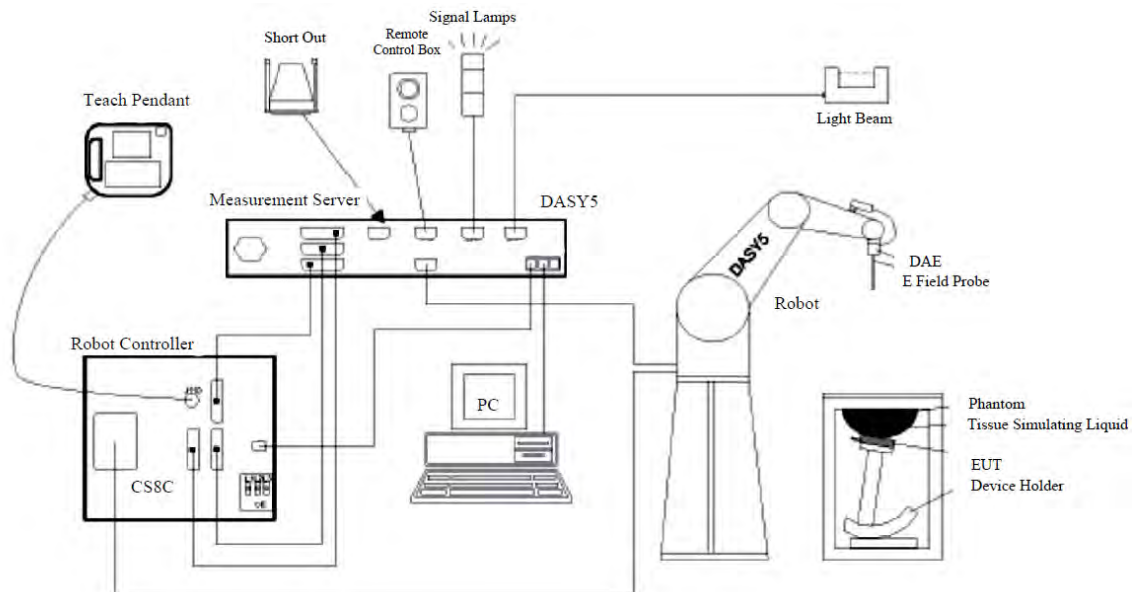


SAR Measurement System

Schmid & Partner Engineering AG, DASY52

Northwest EMC selected the leader in SAR evaluation systems to provide the measurement tools for this evaluation. SPEAG's DASY52 is the fastest and most accurate scanner on the market. It is fully compatible with all world-wide standards for transmitters operating at the ear or within 20cm of the body. It provides full compatibility with IEC 62209-1, IEC 62209-2, IEEE 1528 as well as national adaptations such as FCC OET-65c and Korean Std. MIC #2000-93

The DASY52 system for performing compliance tests consists of the following items:



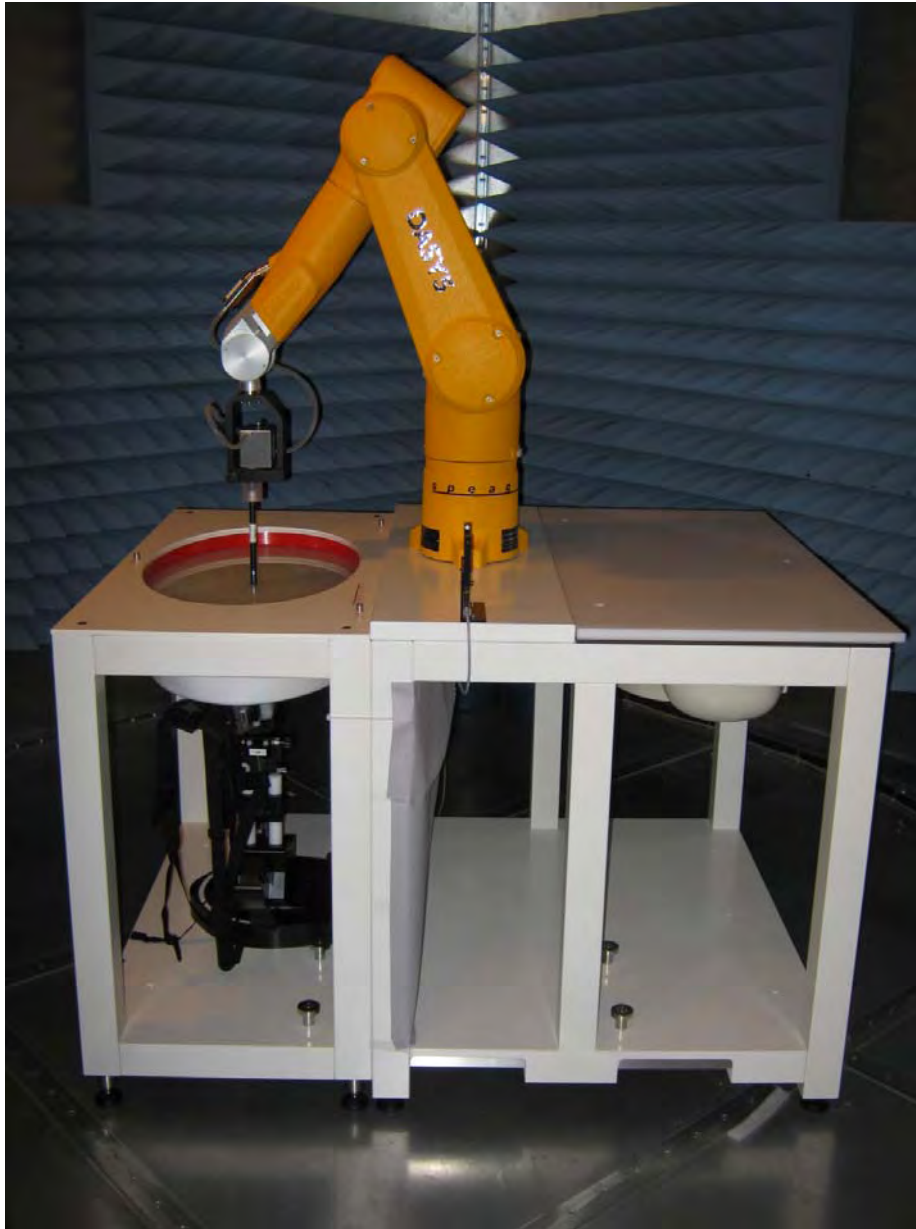
- A standard high precision 6-axis robot (Staubli TX=RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom, oval flat phantom, device holder, tissue simulating liquids, and validation dipole kits.

Test Site

Northwest EMC, Lab EV08

The SAR measurement system is located in a semi-anechoic chamber. This provides an ambient free environment that also eliminates reflections.

The chamber is 12 ft wide by 16 ft long x 8 ft high. A dedicated HVAC unit provides +/- 1 degree C temperature control.



| TEST EQUIPMENT | | | | | |
|-----------------------------------|-----------------------------|---------------|------|-------------------------------------|----------|
| Description | Manufacturer | Model | ID | Last Cal. | Interval |
| Wireless Communication Test Set | Agilent | E5515C | BSV | NCR | 0 mo |
| Humidity Temperature Meter | Omegaette | HH311 | DTY | 3/29/2011 | 24 mo |
| Humidity Temperature Meter | Omegaette | HH311 | DTX | 3/29/2011 | 24 mo |
| band Amplifier, SMA, 800-2000 MHz | Mini Circuits | ZHL-5W-2G-S+ | TRZ | NCR | 0 mo |
| MXG Analog Signal Generator | Agilent | N5181A | TIG | NCR | 0 mo |
| Power Sensor | Agilent | E9300H | SQO | 6/6/2011 | 24 mo |
| Power Meter | Agilent | N1913A | SQR | 6/6/2011 | 24 mo |
| Dielectric Probe Kit | Agilent | 85070E | IPP | 9/8/2010 | 24 mo |
| Network Analyzer | Hewlett Packard | N5230A | NAD | 8/3/2011 | 12 mo |
| Antenna, Dipole 1750MHz SAR | SPEAG | D1750v2 | ADN | 11/24/2010 | 12 mo |
| Antenna, Dipole 1900MHz SAR | SPEAG | D1900v2 | ADO | 11/24/2010 | 12 mo |
| Antenna, Dipole 835MHz SAR | SPEAG | D835V2 | ADK | 10/19/2010 | 12 mo |
| Device Holder | SPEAG | N/A | SAW | NCR | 0 mo |
| Body Solution | SPEAG | MSL 900 | SAT | Within 24 of hours of a measurement | |
| Head Solution | SPEAG | HSL 900 | SAS | | |
| Body Solution | SPEAG | MSL 1750 | SAQ | | |
| Head Solution | SPEAG | HSL 1750 | SAP | | |
| Body Solution | SPEAG | MSL 1900 | SAO | | |
| Head Solution | SPEAG | HSL 1900 | SAN | | |
| DASY5 Measurement Server | Staeubli | DAYS5 | SAK | NCR | 0 mo |
| Robot Chasis and power Supply | Staeubli | N/A | SAJ | NCR | 0 mo |
| Robot Controller | Staeubli | CS8C | SAI | 11/11/2010 | 12 mo |
| DAE | Schid & Partner Engineering | SD 000 D04 EJ | SAH | 11/11/2010 | 12 mo |
| SAR Probe | SPEAG | ES3DV3 | R035 | 2/23/2011 | 12 mo |
| SAR Probe | SPEAG | ES3DV3 | SAF | 11/11/2010 | 12 mo |
| Light Beam Unit | SPEAG | SE UKS 030 AA | SAD | NCR | 0 mo |
| Phantom, 2mm Oval ELI4 (Body) | SPEAG | QD OVA 001 BB | SAC | NCR | 0 mo |
| Phantom, Twin SAM (Head) | SPEAG | QD 000 P40 CC | SAB | NCR | 0 mo |
| Robot Arm | Staeubli | TX60LSPEAG | SAA | NCR | 0 mo |

Measurement Uncertainty Budget per IEEE 1528:2003

300 – 3000 MHz range

| Uncertainty Component | Tolerance (+/- %) | Probability Distribution | Divisor | c_i (1g) | c_i (10g) | u_i (1g) (+/-%) | u_i (10g) (+/-%) | v_i |
|--|-------------------|--------------------------|---------|------------|-------------|-------------------|--------------------|----------|
| Measurement System | | | | | | | | |
| Probe calibration (k=1) | 5.5 | normal | 1 | 1 | 1 | 5.5 | 5.5 | ∞ |
| Axial isotropy | 4.7 | rectangular | 1.732 | 0.707 | 0.707 | 1.9 | 1.9 | ∞ |
| Hemispherical isotropy | 9.6 | rectangular | 1.732 | 0.707 | 0.707 | 3.9 | 3.9 | ∞ |
| Boundary effect | 1.0 | rectangular | 1.732 | 1 | 1 | 0.6 | 0.6 | ∞ |
| Linearity | 4.7 | rectangular | 1.732 | 1 | 1 | 2.7 | 2.7 | ∞ |
| System detection limits | 1.0 | rectangular | 1.732 | 1 | 1 | 0.6 | 0.6 | ∞ |
| Readout electronics | 0.3 | normal | 1 | 1 | 1 | 0.3 | 0.3 | ∞ |
| Response time | 0.8 | rectangular | 1.732 | 1 | 1 | 0.5 | 0.5 | ∞ |
| Integration time | 2.6 | rectangular | 1.732 | 1 | 1 | 1.5 | 1.5 | ∞ |
| RF ambient conditions - noise | 1.7 | rectangular | 1.732 | 1 | 1 | 1.0 | 1.0 | ∞ |
| RF Ambient Reflections | 0.0 | rectangular | 1.732 | 1 | 1 | 0.0 | 0.0 | ∞ |
| Probe positioner mechanical tolerance | 0.4 | rectangular | 1.732 | 1 | 1 | 0.2 | 0.2 | ∞ |
| Probe positioner with respect to phantom shell | 2.9 | rectangular | 1.732 | 1 | 1 | 1.7 | 1.7 | ∞ |
| Extrapolation, interpolation, and integration algorithms for max. SAR evaluation | 1.0 | rectangular | 1.732 | 1 | 1 | 0.6 | 0.6 | ∞ |
| Test Sample Related | | | | | | | | |
| Device Positioning | 2.9 | normal | 1 | 1 | 1 | 2.9 | 2.9 | 145 |
| Device Holder | 3.6 | normal | 1 | 1 | 1 | 3.6 | 3.6 | 5 |
| Power Drift | 5.0 | rectangular | 1.732 | 1 | 1 | 2.9 | 2.9 | ∞ |
| Phantom and tissue parameters | | | | | | | | |
| Phantom Uncertainty - shell thickness tolerances | 4.0 | rectangular | 1.732 | 1 | 1 | 2.3 | 2.3 | ∞ |
| Liquid conductivity - deviation from target values | 5.0 | rectangular | 1.732 | 0.64 | 0.43 | 1.8 | 1.2 | ∞ |
| Liquid conductivity - measurement uncertainty | 6.5 | normal | 1 | 0.64 | 0.43 | 4.2 | 2.8 | ∞ |
| Liquid permittivity - deviation from target values | 5.0 | rectangular | 1.732 | 0.6 | 0.49 | 1.7 | 1.4 | ∞ |
| Liquid permittivity - measurement uncertainty | 3.2 | normal | 1 | 0.6 | 0.49 | 1.9 | 1.6 | ∞ |
| Combined Standard Uncertainty | RSS | | | | | 11.2 | 10.6 | 387 |
| Expanded Measurement Uncertainty (95% Confidence/ | normal (k=2) | | | | | 22.5 | 21.2 | |

Probe Calibration

Please see attached calibration data

SAF

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



S Schweizerischer Kalibrierdienst
S Service suisse d'étalonnage
C Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
 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 **Northwest EMC**

Certificate No: **ES3-3246_Nov10**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3246**

Calibration procedure(s) **QA CAL-01.v6, QA CAL-12.v6, QA CAL-23.v3 and QA CAL-25.v2
 Calibration procedure for dosimetric E-field probes**

Calibration date **November 11, 2010**

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

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

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|----------------------------|-----------------|--------------------------------|-----------------------|
| Power meter E4419B | GB41293874 | 1-Apr-10 (No. 217-01136) | Apr-11 |
| Power sensor E4412A | MY41495277 | 1-Apr-10 (No. 217-01136) | Apr-11 |
| Power sensor E4412A | MY41498087 | 1-Apr-10 (No. 217-01136) | Apr-11 |
| Reference 3 dB Attenuator | SN: S5054 (3c) | 30-Mar-10 (No. 217-01159) | Mar-11 |
| Reference 20 dB Attenuator | SN: S5086 (20b) | 30-Mar-10 (No. 217-01161) | Mar-11 |
| Reference 30 dB Attenuator | SN: S5129 (30b) | 30-Mar-10 (No. 217-01160) | Mar-11 |
| Reference Probe ES3DV2 | SN: 3013 | 30-Dec-09 (No. ES3-3013_Dec09) | Dec-10 |
| DAE4 | SN: 660 | 20-Apr-10 (No. DAE4-660_Apr10) | Apr-11 |

| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
|---------------------------|--------------|-----------------------------------|------------------------|
| RF generator HP 8648C | US3642U01700 | 4-Aug-99 (in house check Oct-09) | In house check: Oct-11 |
| Network Analyzer HP 8753E | US37390585 | 18-Oct-01 (in house check Oct-10) | In house check: Oct-11 |

| | | | |
|----------------|---------------|-------------------|------------------|
| | Name | Function | Signature |
| Calibrated by: | Katja Pokovic | Technical Manager | |
| Approved by: | Niels Kuster | Quality Manager | |

Issued: November 11, 2010

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



Accredited by the Swiss Accreditation Service (SAS)
 The Swiss Accreditation Service is one of the signatories to the EA
 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 |
| CF | crest factor (1/duty_cycle) of the RF signal |
| A, B, C | modulation dependent linearization parameters |
| Polarization φ | φ rotation around probe axis |
| Polarization ϑ | ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis |

Calibration is Performed According to the Following Standards:

- 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
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ 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 E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)_{x,y,z}** = NORM_{x,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.
- DCP_{x,y,z}**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- A_{x,y,z}; B_{x,y,z}; C_{x,y,z}; VR_{x,y,z}**: A, B, C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- 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 ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Probe ES3DV3

SN:3246

| | |
|---------------|-------------------|
| Manufactured: | May 5, 2009 |
| Calibrated: | November 11, 2010 |

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: ES3DV3 SN:3246**Basic Calibration Parameters**

| | Sensor X | Sensor Y | Sensor Z | Unc (k=2) |
|---|----------|----------|----------|-----------|
| Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A | 1.20 | 1.23 | 1.35 | ± 10.1% |
| DCP (mV) ^B | 104.0 | 99.5 | 96.8 | |

Modulation Calibration Parameters

| UID | Communication System Name | PAR | | A dB | B dBuV | C | VR mV | Unc ^E (k=2) |
|-------|---------------------------|------|---|---------|-----------|-------|----------|---------------------------|
| 10000 | CW | 0.00 | X | 0.00 | 0.00 | 1.00 | 148.7 | ± 2.6 % |
| | | | Y | 0.00 | 0.00 | 1.00 | 148.9 | |
| | | | Z | 0.00 | 0.00 | 1.00 | 115.9 | |
| 10021 | GSM-FDD (TDMA, GMSK) | 9.20 | X | 3.88 | 71.01 | 17.64 | 85.2 | ± 3.7 % |
| | | | Y | 9.08 | 82.29 | 21.95 | 92.0 | |
| | | | Z | 10.21 | 84.31 | 22.94 | 99.0 | |

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

^A The uncertainties of NormX,Y,Z do not affect the E²-field uncertainty inside TSL (see Pages 5 and 6).

^B Numerical linearization parameter: uncertainty not required.

^E Uncertainty is determined using the maximum deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: ES3DV3 SN:3246

Calibration Parameter Determined in Head Tissue Simulating Media

| f [MHz] | Validity [MHz] ^c | Permittivity | Conductivity | ConvF X | ConvF Y | ConvF Z | Alpha | Depth Unc (k=2) |
|---------|-----------------------------|--------------|--------------|---------|---------|---------|-------|-----------------|
| 835 | ± 50 / ± 100 | 41.5 ± 5% | 0.90 ± 5% | 6.04 | 6.04 | 6.04 | 0.62 | 1.57 ± 11.0% |
| 900 | ± 50 / ± 100 | 41.5 ± 5% | 0.97 ± 5% | 6.06 | 6.06 | 6.06 | 0.99 | 1.10 ± 11.0% |
| 1750 | ± 50 / ± 100 | 40.1 ± 5% | 1.37 ± 5% | 5.21 | 5.21 | 5.21 | 0.72 | 0.90 ± 11.0% |
| 1900 | ± 50 / ± 100 | 40.0 ± 5% | 1.40 ± 5% | 5.02 | 5.02 | 5.02 | 0.82 | 0.95 ± 11.0% |

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

DASY/EASY - Parameters of Probe: ES3DV3 SN:3246

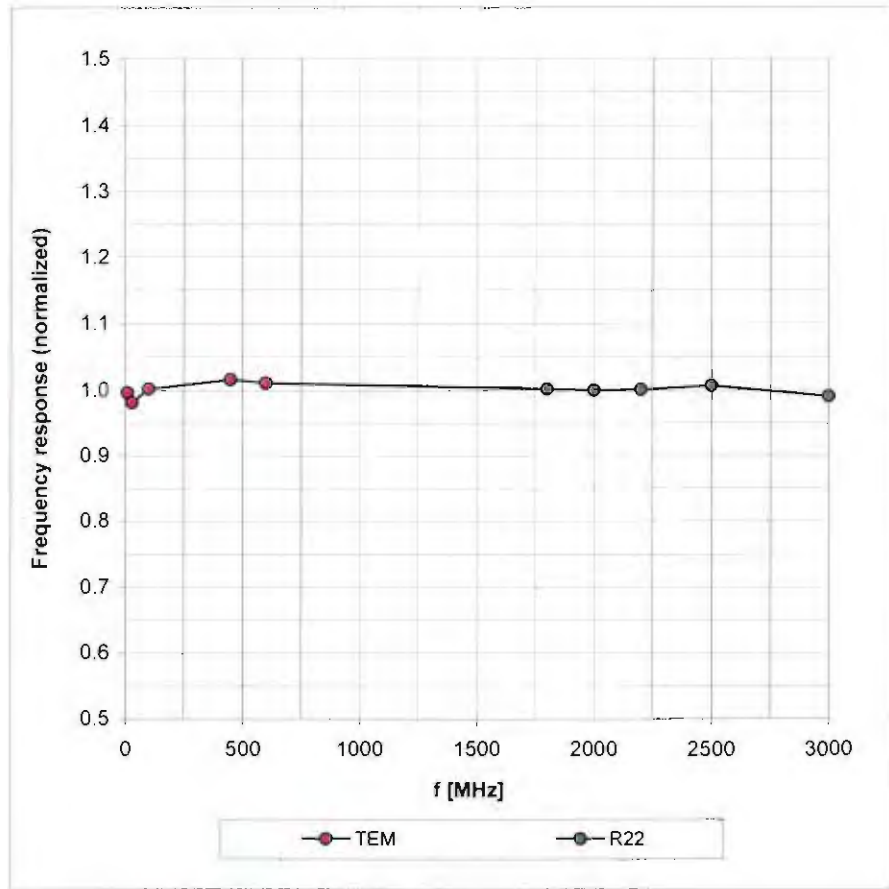
Calibration Parameter Determined in Body Tissue Simulating Media

| f [MHz] | Validity [MHz] ^c | Permittivity | Conductivity | ConvF X | ConvF Y | ConvF Z | Alpha | Depth Unc (k=2) |
|---------|-----------------------------|--------------|--------------|---------|---------|---------|-------|-----------------|
| 450 | ± 50 / ± 100 | 56.7 ± 5% | 0.94 ± 5% | 7.00 | 7.00 | 7.00 | 0.07 | 1.00 ± 13.3% |
| 835 | ± 50 / ± 100 | 55.2 ± 5% | 0.97 ± 5% | 6.10 | 6.10 | 6.10 | 0.99 | 1.20 ± 11.0% |
| 900 | ± 50 / ± 100 | 55.0 ± 5% | 1.05 ± 5% | 6.01 | 6.01 | 6.01 | 0.99 | 1.18 ± 11.0% |
| 1750 | ± 50 / ± 100 | 53.4 ± 5% | 1.49 ± 5% | 4.85 | 4.85 | 4.85 | 0.98 | 0.95 ± 11.0% |
| 1900 | ± 50 / ± 100 | 53.3 ± 5% | 1.52 ± 5% | 4.63 | 4.63 | 4.63 | 0.84 | 1.00 ± 11.0% |

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

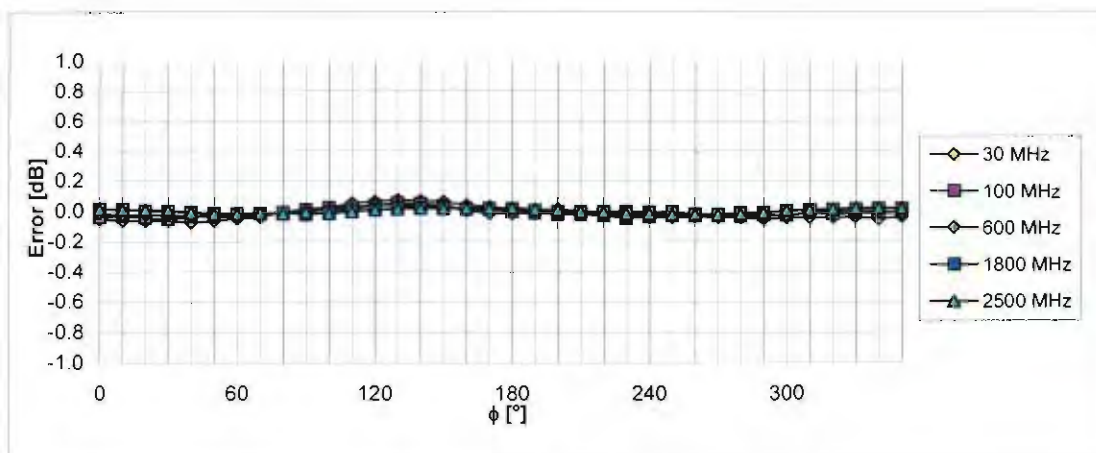
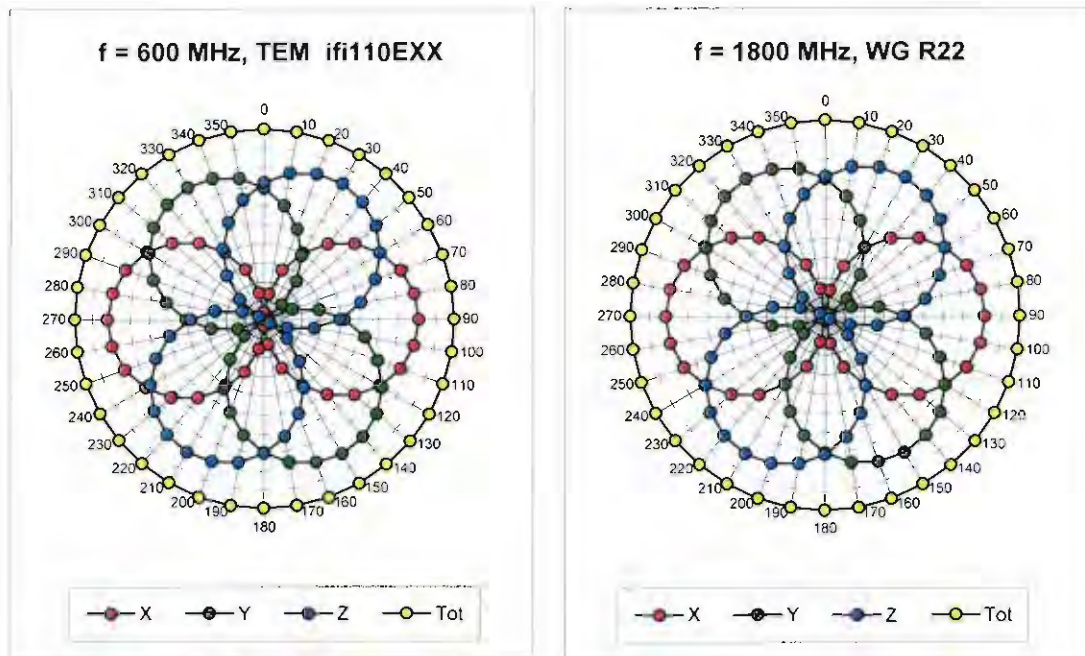
Frequency Response of E-Field

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



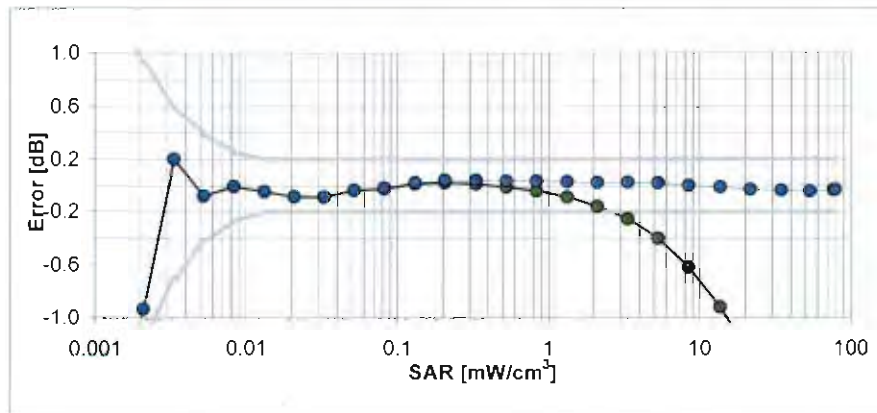
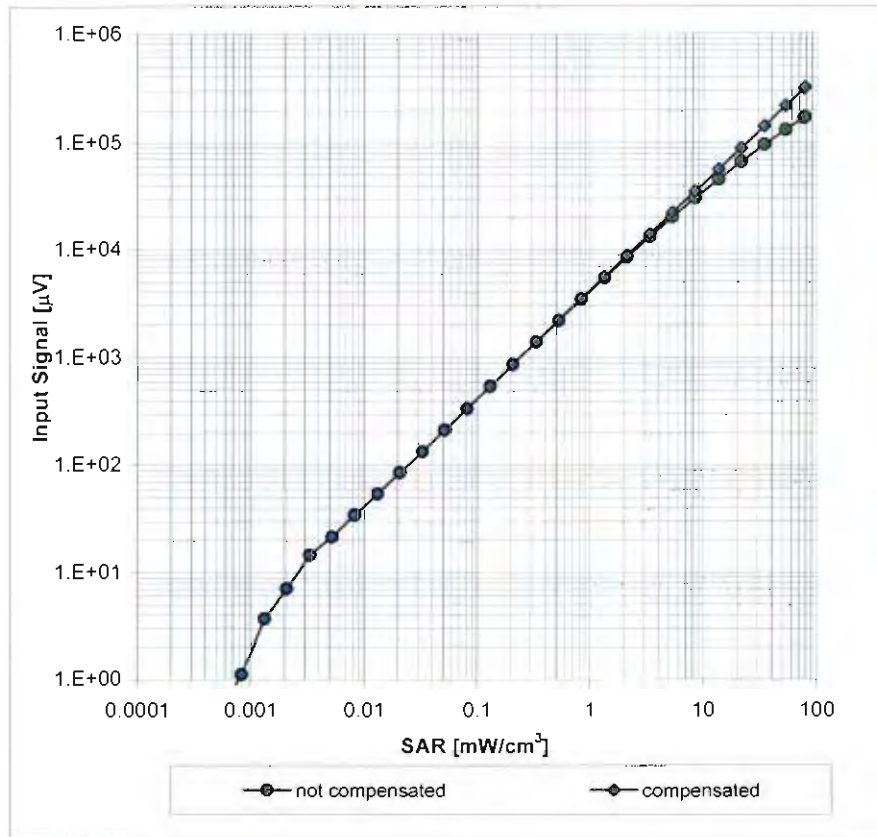
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

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



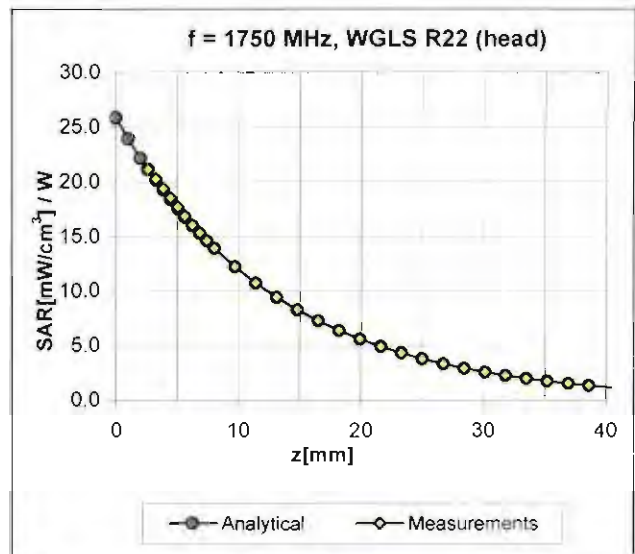
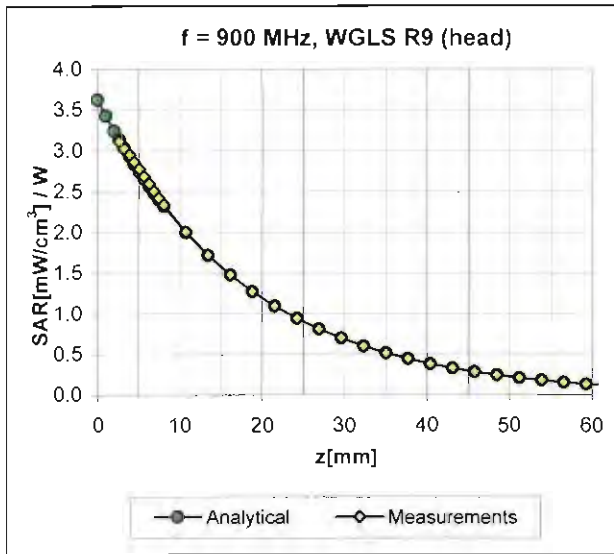
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

Dynamic Range $f(\text{SAR}_{\text{head}})$ (Waveguide R22, $f = 1800 \text{ MHz}$)



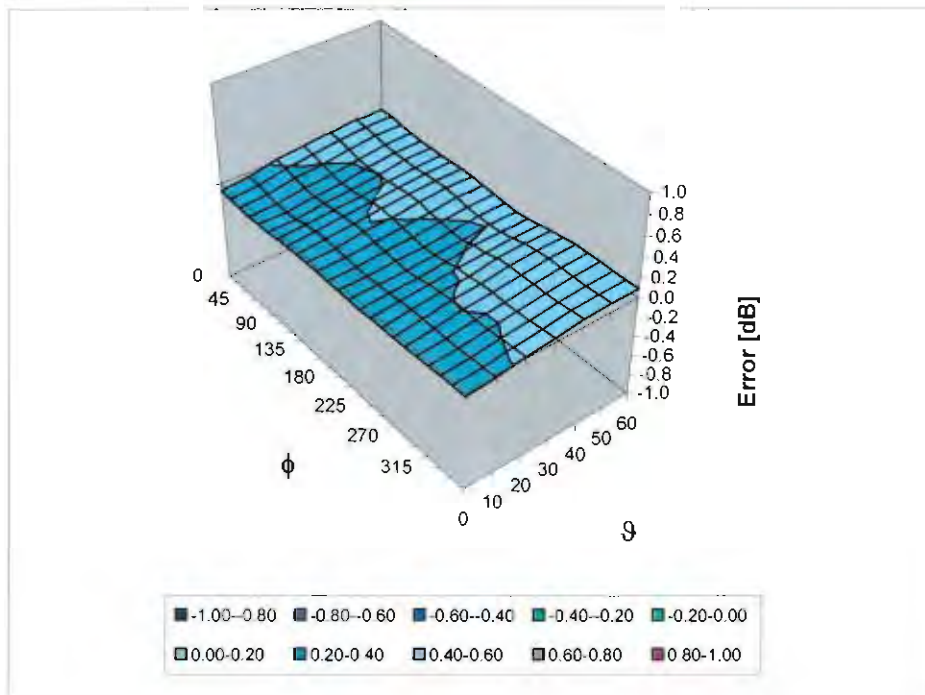
Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

Conversion Factor Assessment



Deviation from Isotropy in HSL

Error (ϕ, θ), f = 900 MHz



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

Other Probe Parameters

| | |
|---|----------------|
| Sensor Arrangement | Triangular |
| Connector Angle (°) | Not applicable |
| Mechanical Surface Detection Mode | enabled |
| Optical Surface Detection Mode | disabled |
| Probe Overall Length | 337 mm |
| Probe Body Diameter | 10 mm |
| Tip Length | 10 mm |
| Tip Diameter | 4.0 mm |
| Probe Tip to Sensor X Calibration Point | 2 mm |
| Probe Tip to Sensor Y Calibration Point | 2 mm |
| Probe Tip to Sensor Z Calibration Point | 2 mm |
| Recommended Measurement Distance from Surface | 3 mm |

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



**S
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S** Schweizerischer Kalibrierdienst
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Accreditation No.: **SCS 108**

Client **SPEAG Replacement**

Certificate No: **ES3-3173_Feb11**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3173**

Calibration procedure(s) **QA CAL-01.v7, QA CAL-23.v4, QA CAL-25.v3
Calibration procedure for dosimetric E-field probes**

Calibration date: **February 23, 2011**

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

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

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID | Cal Date (Certificate No.) | Scheduled Calibration |
|----------------------------|-----------------|-----------------------------------|------------------------|
| Power meter E4419B | GB41293874 | 01-Apr-10 (No. 217-01136) | Apr-11 |
| Power sensor E4412A | MY41495277 | 01-Apr-10 (No. 217-01136) | Apr-11 |
| Power sensor E4412A | MY41498087 | 01-Apr-10 (No. 217-01136) | Apr-11 |
| Reference 3 dB Attenuator | SN: S5054 (3c) | 30-Mar-10 (No. 217-01159) | Mar-11 |
| Reference 20 dB Attenuator | SN: S5086 (20b) | 30-Mar-10 (No. 217-01161) | Mar-11 |
| Reference 30 dB Attenuator | SN: S5129 (30b) | 30-Mar-10 (No. 217-01160) | Mar-11 |
| Reference Probe ES3DV2 | SN: 3013 | 29-Dec-10 (No. ES3-3013_Dec10) | Dec-11 |
| DAE4 | SN: 654 | 23-Apr-10 (No. DAE4-654_Apr10) | Apr-11 |
| Secondary Standards | ID | Check Date (in house) | Scheduled Check |
| RF generator HP 8648C | US3642U01700 | 4-Aug-99 (in house check Oct-09) | In house check: Oct-11 |
| Network Analyzer HP 8753E | US37390585 | 18-Oct-01 (in house check Oct-10) | In house check: Oct-11 |

| | | | |
|----------------|--------------------------------|-----------------------------------|---------------|
| Calibrated by: | Name Claudio Leubler | Function Laboratory Technician | Signature |
| Approved by: | Name Katja Pokovic | Function Technical Manager | Signature |

Issued: February 24, 2011

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Accreditation No.: **SCS 108**

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Multilateral Agreement for the recognition of calibration certificates

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 |
| CF | crest factor (1/duty_cycle) of the RF signal |
| A, B, C | modulation dependent linearization parameters |
| Polarization φ | φ rotation around probe axis |
| Polarization ϑ | ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis |

Calibration is Performed According to the Following Standards:

- 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
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ 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 affect the E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)_{x,y,z} = NORM_{x,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.
- DCP_{x,y,z}**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- A_{x,y,z}; B_{x,y,z}; C_{x,y,z}; VR_{x,y,z}; A, B, C** are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- 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 ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Probe ES3DV3

SN:3173

Manufactured: January 23, 2008
Calibrated: February 23, 2011

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3173

Basic Calibration Parameters

| | Sensor X | Sensor Y | Sensor Z | Unc (k=2) |
|---|----------|----------|----------|---------------|
| Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A | 1.21 | 1.28 | 1.35 | $\pm 10.1 \%$ |
| DCP (mV) ^B | 95.9 | 100.2 | 100.8 | |

Modulation Calibration Parameters

| UID | Communication System Name | PAR | | A dB | B dB | C dB | VR mV | Unc ^E (k=2) |
|-------|---------------------------|------|---|---------|---------|---------|----------|---------------------------|
| 10000 | CW | 0.00 | X | 0.00 | 0.00 | 1.00 | 144.1 | $\pm 2.7 \%$ |
| | | | Y | 0.00 | 0.00 | 1.00 | 114.9 | |
| | | | Z | 0.00 | 0.00 | 1.00 | 113.4 | |

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

^A The uncertainties of NormX,Y,Z do not affect the E^2 -field uncertainty inside TSL (see Pages 5 and 6).

^B Numerical linearization parameter; uncertainty not required.

^E Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3173

Calibration Parameter Determined in Head Tissue Simulating Media

| f (MHz) ^C | Relative Permittivity ^F | Conductivity (S/m) ^F | ConvF X | ConvF Y | ConvF Z | Alpha | Depth (mm) | Unct. (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|-------|------------|-------------|
| 750 | 41.9 | 0.89 | 6.25 | 6.25 | 6.25 | 0.99 | 1.11 | ± 12.0 % |
| 835 | 41.5 | 0.90 | 6.01 | 6.01 | 6.01 | 0.99 | 1.12 | ± 12.0 % |
| 900 | 41.5 | 0.97 | 5.93 | 5.93 | 5.93 | 0.99 | 1.12 | ± 12.0 % |
| 1640 | 40.3 | 1.29 | 5.34 | 5.34 | 5.34 | 0.99 | 1.11 | ± 12.0 % |
| 1750 | 40.1 | 1.37 | 5.20 | 5.20 | 5.20 | 0.99 | 1.13 | ± 12.0 % |
| 1810 | 40.0 | 1.40 | 5.05 | 5.05 | 5.05 | 0.94 | 1.15 | ± 12.0 % |
| 1900 | 40.0 | 1.40 | 4.96 | 4.96 | 4.96 | 0.96 | 1.13 | ± 12.0 % |
| 1950 | 40.0 | 1.40 | 4.80 | 4.80 | 4.80 | 0.91 | 1.17 | ± 12.0 % |
| 2000 | 40.0 | 1.40 | 4.88 | 4.88 | 4.88 | 0.99 | 1.06 | ± 12.0 % |
| 2150 | 39.7 | 1.53 | 4.72 | 4.72 | 4.72 | 0.95 | 1.13 | ± 12.0 % |
| 2300 | 39.5 | 1.67 | 4.58 | 4.58 | 4.58 | 0.96 | 1.09 | ± 12.0 % |
| 2450 | 39.2 | 1.80 | 4.26 | 4.26 | 4.26 | 0.92 | 1.14 | ± 12.0 % |
| 2600 | 39.0 | 1.96 | 4.13 | 4.13 | 4.13 | 0.90 | 1.16 | ± 12.0 % |

^C Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

^F At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

DASY/EASY - Parameters of Probe: ES3DV3- SN:3173

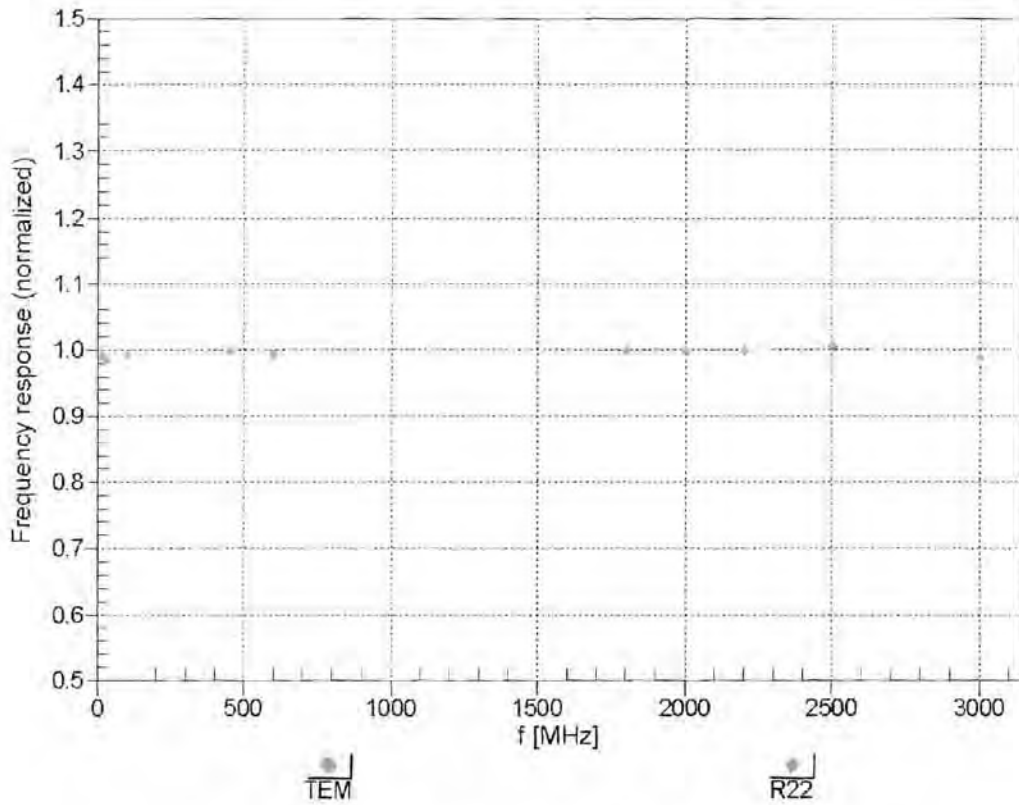
Calibration Parameter Determined in Body Tissue Simulating Media

| f (MHz) ^C | Relative Permittivity ^F | Conductivity (S/m) ^F | ConvF X | ConvF Y | ConvF Z | Alpha | Depth (mm) | Unct. (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|-------|------------|-------------|
| 750 | 55.5 | 0.96 | 6.01 | 6.01 | 6.01 | 0.99 | 1.15 | ± 12.0 % |
| 835 | 55.2 | 0.97 | 5.97 | 5.97 | 5.97 | 0.99 | 1.16 | ± 12.0 % |
| 900 | 55.0 | 1.05 | 5.89 | 5.89 | 5.89 | 0.99 | 1.14 | ± 12.0 % |
| 1640 | 53.8 | 1.40 | 5.30 | 5.30 | 5.30 | 0.99 | 1.18 | ± 12.0 % |
| 1750 | 53.4 | 1.49 | 4.87 | 4.87 | 4.87 | 0.95 | 1.22 | ± 12.0 % |
| 1810 | 53.3 | 1.52 | 4.71 | 4.71 | 4.71 | 0.95 | 1.20 | ± 12.0 % |
| 1900 | 53.3 | 1.52 | 4.55 | 4.55 | 4.55 | 0.90 | 1.24 | ± 12.0 % |
| 1950 | 53.3 | 1.52 | 4.61 | 4.61 | 4.61 | 0.93 | 1.20 | ± 12.0 % |
| 2000 | 53.3 | 1.52 | 4.49 | 4.49 | 4.49 | 0.89 | 1.24 | ± 12.0 % |
| 2150 | 53.1 | 1.66 | 4.37 | 4.37 | 4.37 | 0.98 | 1.16 | ± 12.0 % |
| 2300 | 52.9 | 1.81 | 4.19 | 4.19 | 4.19 | 0.99 | 1.08 | ± 12.0 % |
| 2450 | 52.7 | 1.95 | 4.05 | 4.05 | 4.05 | 0.99 | 1.01 | ± 12.0 % |
| 2600 | 52.5 | 2.16 | 3.90 | 3.90 | 3.90 | 0.99 | 1.03 | ± 12.0 % |

^C Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

^F At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

Frequency Response of E-Field (TEM-Cell:ifi110 EXX, Waveguide: R22)

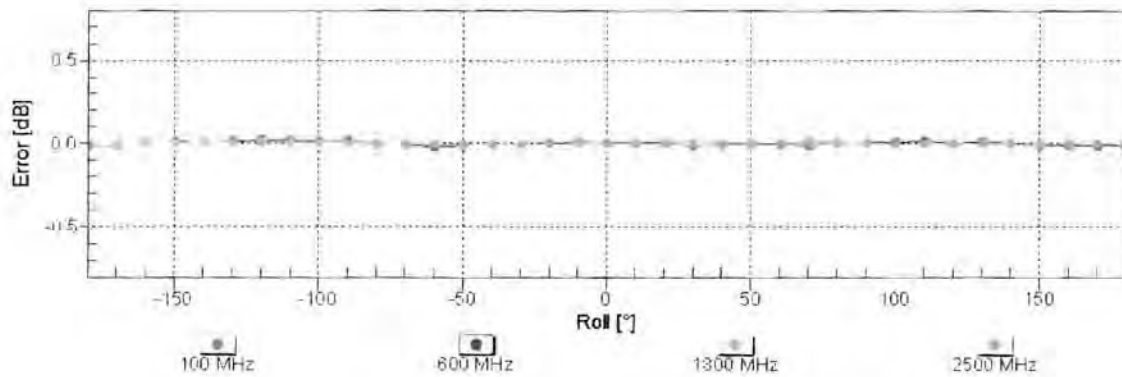
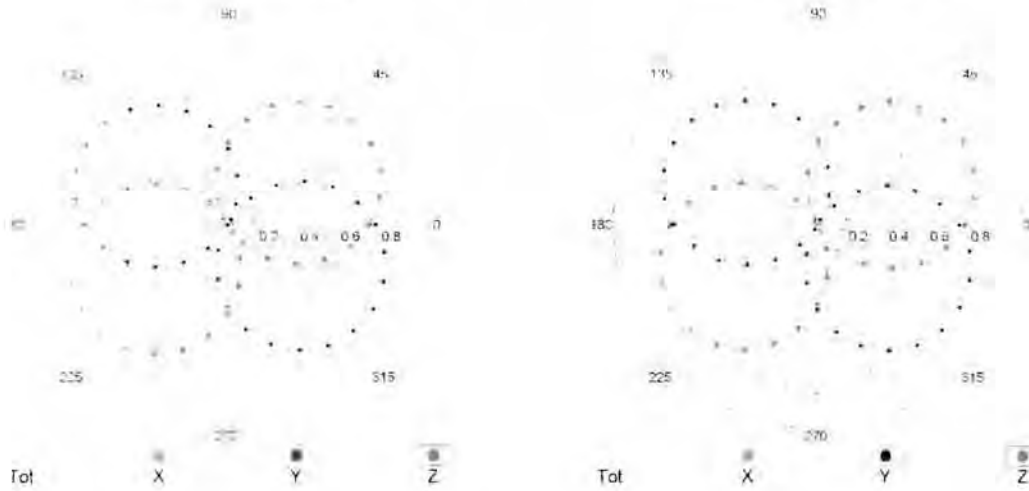


Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ (k=2)

Receiving Pattern (ϕ), $\theta = 0^\circ$

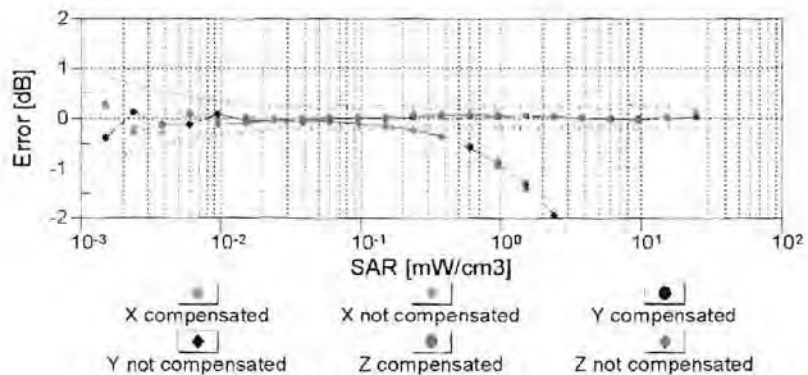
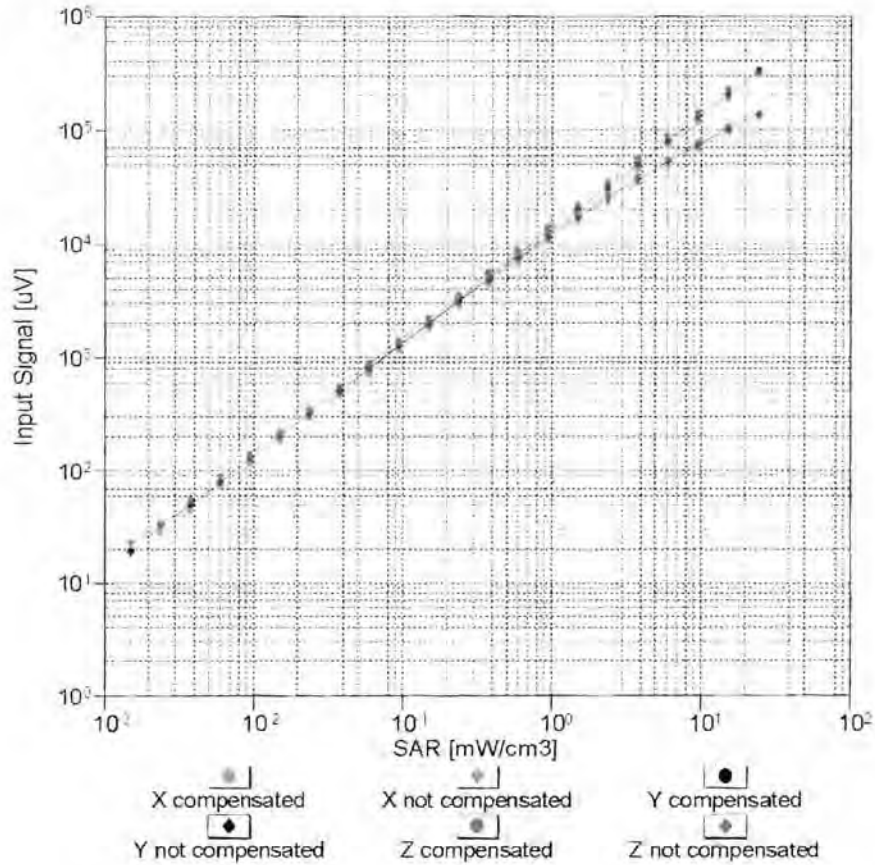
f=600 MHz,TEM

f=1800 MHz,R22



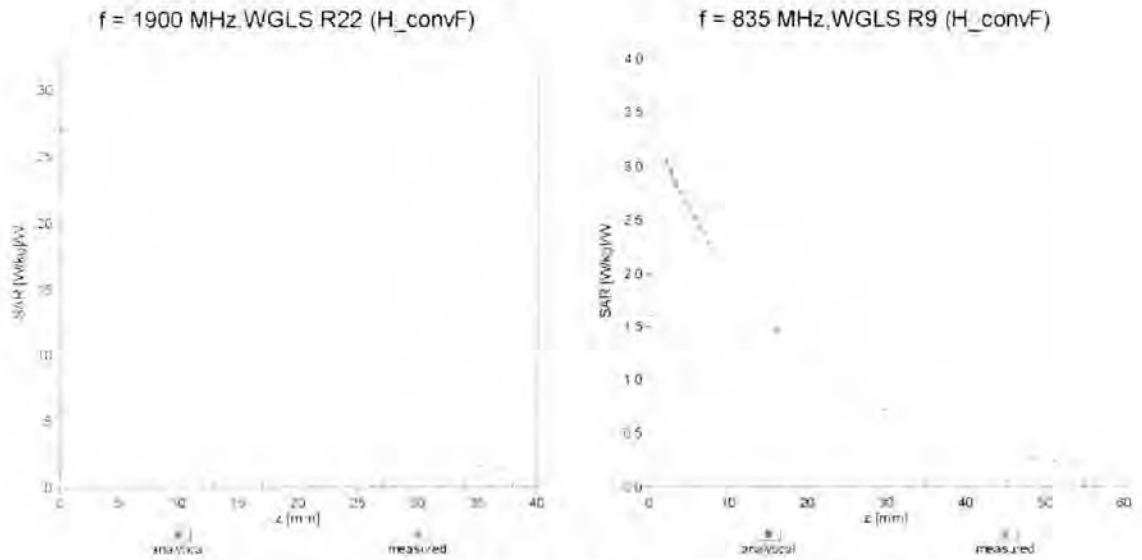
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ (k=2)

Dynamic Range $f(SAR_{head})$ (TEM cell , $f = 900$ MHz)



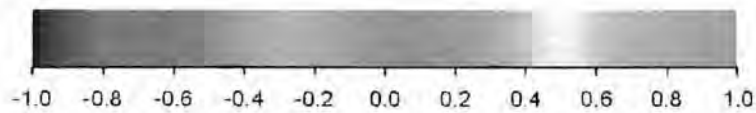
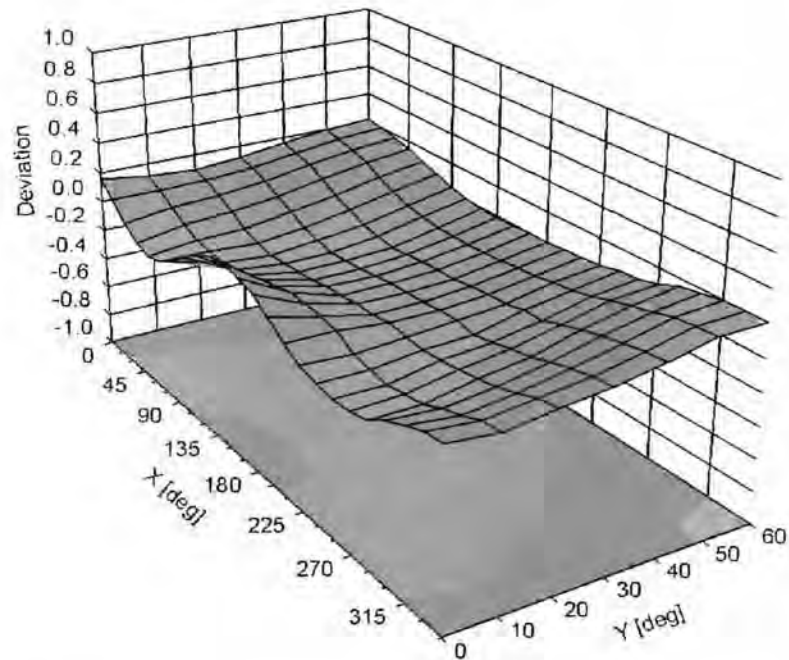
Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, θ), f = 900 MHz



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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3173**Other Probe Parameters**

| | |
|---|----------------|
| Sensor Arrangement | Triangular |
| Connector Angle (°) | Not applicable |
| Mechanical Surface Detection Mode | enabled |
| Optical Surface Detection Mode | disabled |
| Probe Overall Length | 337 mm |
| Probe Body Diameter | 10 mm |
| Tip Length | 10 mm |
| Tip Diameter | 4 mm |
| Probe Tip to Sensor X Calibration Point | 2 mm |
| Probe Tip to Sensor Y Calibration Point | 2 mm |
| Probe Tip to Sensor Z Calibration Point | 2 mm |
| Recommended Measurement Distance from Surface | 3 mm |

Dipole Calibration

Please see attached calibration data

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



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Accreditation No.: **SCS 108**

Client **Northwest EMC**

Certificate No: **D835V2-4d108_Oct10**

CALIBRATION CERTIFICATE

Object **D835V2 - SN: 4d108**

Calibration procedure(s) **QA CAL-05.v7
Calibration procedure for dipole validation kits**

Calibration date: **October 19, 2010**

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

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

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|-----------------------------|--------------------|-----------------------------------|------------------------|
| Power meter EPM-442A | GB37480704 | 06-Oct-10 (No. 217-01266) | Oct-11 |
| Power sensor HP 8481A | US37292783 | 06-Oct-10 (No. 217-01266) | Oct-11 |
| Reference 20 dB Attenuator | SN: 5086 (20g) | 30-Mar-10 (No. 217-01158) | Mar-11 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 30-Mar-10 (No. 217-01162) | Mar-11 |
| Reference Probe ES3DV3 | SN: 3205 | 30-Apr-10 (No. ES3-3205_Apr10) | Apr-11 |
| DAE4 | SN: 601 | 10-Jun-10 (No. DAE4-601_Jun10) | Jun-11 |
| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
| Power sensor HP 8481A | MY41092317 | 18-Oct-02 (in house check Oct-09) | In house check: Oct-11 |
| RF generator R&S SMT-06 | 100005 | 4-Aug-99 (in house check Oct-09) | In house check: Oct-11 |
| Network Analyzer HP 8753E | US37390585 S4206 | 18-Oct-01 (in house check Oct-10) | In house check: Oct-11 |

| | Name | Function | Signature |
|----------------|---------------|-----------------------|-----------|
| Calibrated by: | Dimce Iliev | Laboratory Technician | |
| Approved by: | Katja Pokovic | Technical Manager | |

Issued: October 19, 2010

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Accreditation No.: **SCS 108**

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

- d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

Measurement Conditions

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

| | | |
|------------------------------|---------------------------|-------------|
| DASY Version | DASY5 | V52.2 |
| Extrapolation | Advanced Extrapolation | |
| Phantom | Modular Flat Phantom V4.9 | |
| Distance Dipole Center - TSL | 15 mm | with Spacer |
| Zoom Scan Resolution | dx, dy, dz = 5 mm | |
| Frequency | 835 MHz \pm 1 MHz | |

Head TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|----------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters | 22.0 °C | 41.5 | 0.90 mho/m |
| Measured Head TSL parameters | (22.0 \pm 0.2) °C | 42.3 \pm 6 % | 0.90 mho/m \pm 6 % |
| Head TSL temperature during test | (22.0 \pm 0.2) °C | ---- | ---- |

SAR result with Head TSL

| SAR averaged over 1 cm ³ (1 g) of Head TSL | Condition | |
|---|--------------------|--|
| SAR measured | 250 mW input power | 2.40 mW / g |
| SAR normalized | normalized to 1W | 9.60 mW / g |
| SAR for nominal Head TSL parameters | normalized to 1W | 9.64 mW / g \pm 17.0 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Head TSL | condition | |
|---|--------------------|--|
| SAR measured | 250 mW input power | 1.57 mW / g |
| SAR normalized | normalized to 1W | 6.28 mW / g |
| SAR for nominal Head TSL parameters | normalized to 1W | 6.29 mW / g \pm 16.5 % (k=2) |

Body TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|----------------------------------|-----------------|--------------|------------------|
| Nominal Body TSL parameters | 22.0 °C | 55.2 | 0.97 mho/m |
| Measured Body TSL parameters | (22.0 ± 0.2) °C | 54.4 ± 6 % | 0.99 mho/m ± 6 % |
| Body TSL temperature during test | (21.8 ± 0.2) °C | ---- | ---- |

SAR result with Body TSL

| SAR averaged over 1 cm ³ (1 g) of Body TSL | Condition | |
|---|--------------------|----------------------------|
| SAR measured | 250 mW input power | 2.53 mW / g |
| SAR normalized | normalized to 1W | 10.1 mW / g |
| SAR for nominal Body TSL parameters | normalized to 1W | 9.93 mW / g ± 17.0 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Body TSL | condition | |
|---|--------------------|----------------------------|
| SAR measured | 250 mW input power | 1.65 mW / g |
| SAR normalized | normalized to 1W | 6.60 mW / g |
| SAR for nominal Body TSL parameters | normalized to 1W | 6.51 mW / g ± 16.5 % (k=2) |

Appendix

Antenna Parameters with Head TSL

| | |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 51.8 Ω - 3.2 j Ω |
| Return Loss | - 28.8 dB |

Antenna Parameters with Body TSL

| | |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 48.0 Ω - 4.4 j Ω |
| Return Loss | - 26.2 dB |

General Antenna Parameters and Design

| | |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.396 ns |
|----------------------------------|----------|

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

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

| | |
|-----------------|--------------|
| Manufactured by | SPEAG |
| Manufactured on | May 26, 2010 |

DASY5 Validation Report for Head TSL

Date/Time: 18.10.2010 12:32:33

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d108

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL900

Medium parameters used: $f = 835$ MHz; $\sigma = 0.9$ mho/m; $\epsilon_r = 42.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.03, 6.03, 6.03); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY52, V52.2 Build 0, Version 52.2.0 (163)
- Postprocessing SW: SEMCAD X, V14.2 Build 2, Version 14.2.2 (1685)

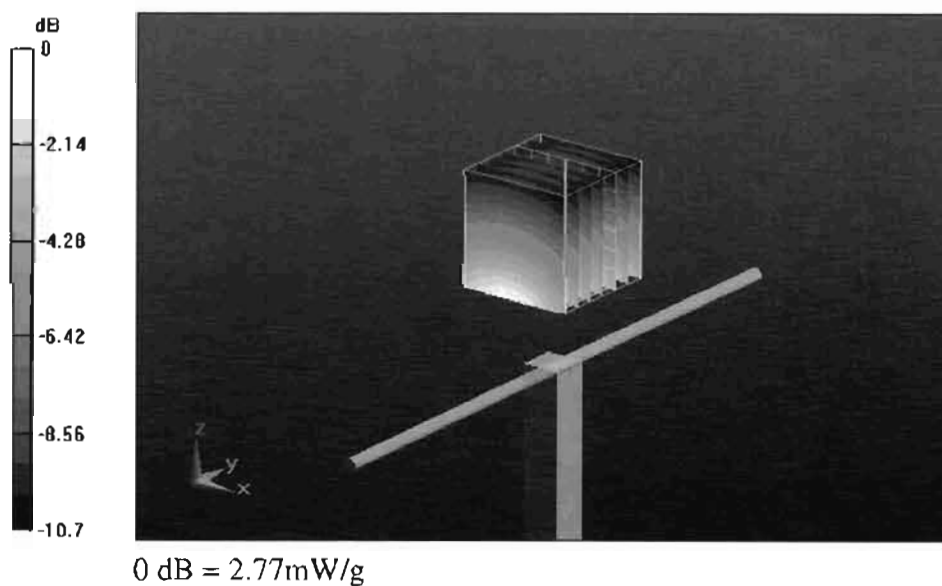
Pin=250 mW /d=15mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 57.1 V/m; Power Drift = 0.000575 dB

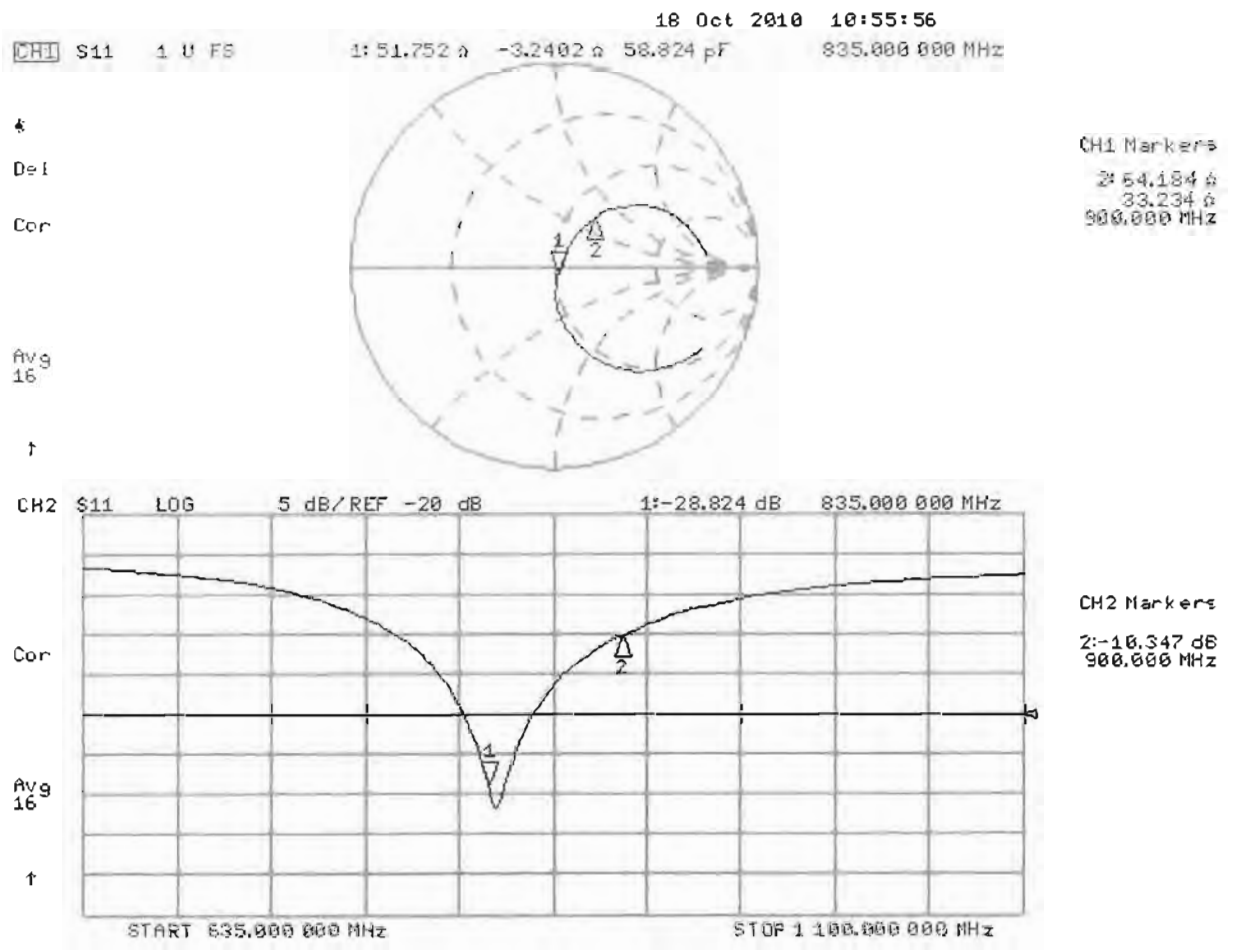
Peak SAR (extrapolated) = 3.61 W/kg

SAR(1 g) = 2.4 mW/g; SAR(10 g) = 1.57 mW/g

Maximum value of SAR (measured) = 2.77 mW/g



Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body

Date/Time: 19.10.2010 11:59:09

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d108

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: MSL900

Medium parameters used: $f = 835$ MHz; $\sigma = 0.99$ mho/m; $\epsilon_r = 54.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.86, 5.86, 5.86); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY52, V52.2 Build 0, Version 52.2.0 (163)
- Postprocessing SW: SEMCAD X, V14.2 Build 2, Version 14.2.2 (1685)

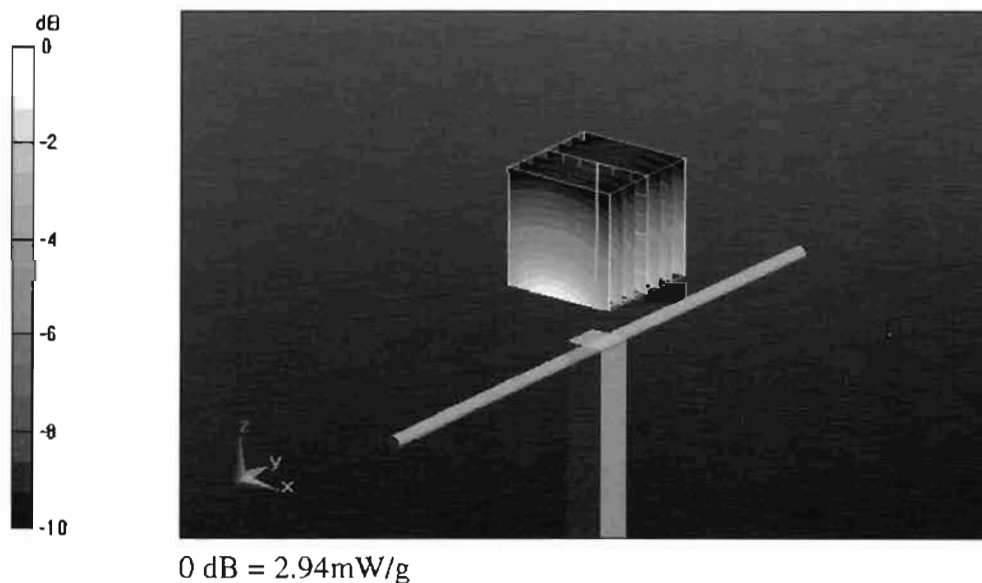
Pin=250 mW /d=15mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 56.4 V/m; Power Drift = 0.0047 dB

Peak SAR (extrapolated) = 3.73 W/kg

SAR(1 g) = 2.53 mW/g; SAR(10 g) = 1.65 mW/g

Maximum value of SAR (measured) = 2.94 mW/g



Impedance Measurement Plot for Body TSL

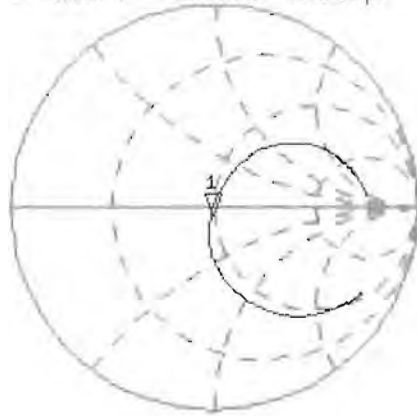
19 Oct 2010 09:56:43
CH1 S11 1 U FS 1: 48.027 Ω -4.3809 Ω 43.509 pF 835.000 000 MHz

*
De l

Cor

avg
16

↑

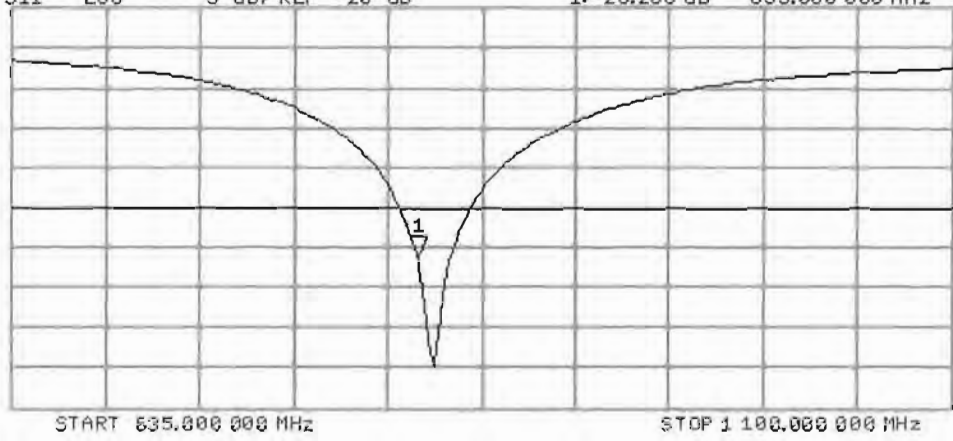


CH2 S11 LOG 5 dB/REF -20 dB 1:-26.208 dB 835.000 000 MHz

Cor

avg
16

↑



ADO

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



S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **Northwest EMC**

Certificate No: **D1900V2-5d131_Nov10**

CALIBRATION CERTIFICATE

Object: **D1900V2 - SN: 5d131**

Calibration procedure(s): **QA CAL-05.v7
Calibration procedure for dipole validation kits**

Calibration date: **November 24, 2010**

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

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

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|-----------------------------|--------------------|-----------------------------------|------------------------|
| Power meter EPM-442A | GB37480704 | 06-Oct-10 (No. 217-01266) | Oct-11 |
| Power sensor HP 8481A | US37292783 | 06-Oct-10 (No. 217-01266) | Oct-11 |
| Reference 20 dB Attenuator | SN: 5086 (20g) | 30-Mar-10 (No. 217-01158) | Mar-11 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 30-Mar-10 (No. 217-01162) | Mar-11 |
| Reference Probe ES3DV3 | SN: 3205 | 30-Apr-10 (No. ES3-3205_Apr10) | Apr-11 |
| DAE4 | SN: 601 | 10-Jun-10 (No. DAE4-601_Jun10) | Jun-11 |
| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
| Power sensor HP 8481A | MY41092317 | 18-Oct-02 (in house check Oct-09) | In house check: Oct-11 |
| RF generator R&S SMT-06 | 100005 | 4-Aug-99 (in house check Oct-09) | In house check: Oct-11 |
| Network Analyzer HP 8753E | US37390585 S4206 | 18-Oct-01 (in house check Oct-10) | In house check: Oct-11 |

| | | | |
|----------------|------------------------|------------------------------|------------------|
| | Name | Function | Signature |
| Calibrated by: | Claudio Leubler | Laboratory Technician | |
| Approved by: | Katja Pokovic | Technical Manager | |

Issued: November 25, 2010



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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Glossary:

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

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
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

Measurement Conditions

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

| | | |
|------------------------------|---------------------------|-------------|
| DASY Version | DASY5 | V52.2 |
| Extrapolation | Advanced Extrapolation | |
| Phantom | Modular Flat Phantom V5.0 | |
| Distance Dipole Center - TSL | 10 mm | with Spacer |
| Zoom Scan Resolution | dx, dy, dz = 5 mm | |
| Frequency | 1900 MHz ± 1 MHz | |

Head TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|----------------------------------|-----------------|--------------|------------------|
| Nominal Head TSL parameters | 22.0 °C | 40.0 | 1.40 mho/m |
| Measured Head TSL parameters | (22.0 ± 0.2) °C | 39.3 ± 6 % | 1.40 mho/m ± 6 % |
| Head TSL temperature during test | (22.0 ± 0.2) °C | ---- | ---- |

SAR result with Head TSL

| SAR averaged over 1 cm ³ (1 g) of Head TSL | Condition | |
|---|--------------------|-----------------------------------|
| SAR measured | 250 mW input power | 10.1 mW / g |
| SAR normalized | normalized to 1W | 40.4 mW / g |
| SAR for nominal Head TSL parameters | normalized to 1W | 40.2 mW / g ± 17.0 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Head TSL | condition | |
|---|--------------------|-----------------------------------|
| SAR measured | 250 mW input power | 5.23 mW / g |
| SAR normalized | normalized to 1W | 20.9 mW / g |
| SAR for nominal Head TSL parameters | normalized to 1W | 20.9 mW / g ± 16.5 % (k=2) |

Body TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|----------------------------------|-----------------|--------------|------------------|
| Nominal Body TSL parameters | 22.0 °C | 53.3 | 1.52 mho/m |
| Measured Body TSL parameters | (22.0 ± 0.2) °C | 52.8 ± 6 % | 1.52 mho/m ± 6 % |
| Body TSL temperature during test | (22.0 ± 0.2) °C | ---- | ---- |

SAR result with Body TSL

| SAR averaged over 1 cm ³ (1 g) of Body TSL | Condition | |
|---|--------------------|-----------------------------------|
| SAR measured | 250 mW input power | 10.0 mW / g |
| SAR normalized | normalized to 1W | 40.0 mW / g |
| SAR for nominal Body TSL parameters | normalized to 1W | 39.9 mW / g ± 17.0 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Body TSL | condition | |
|---|--------------------|-----------------------------------|
| SAR measured | 250 mW input power | 5.25 mW / g |
| SAR normalized | normalized to 1W | 21.0 mW / g |
| SAR for nominal Body TSL parameters | normalized to 1W | 21.0 mW / g ± 16.5 % (k=2) |

Appendix

Antenna Parameters with Head TSL

| | |
|--------------------------------------|-----------------------------|
| Impedance, transformed to feed point | $52.7 \Omega + 6.5 j\Omega$ |
| Return Loss | - 23.3 dB |

Antenna Parameters with Body TSL

| | |
|--------------------------------------|-----------------------------|
| Impedance, transformed to feed point | $48.1 \Omega + 6.9 j\Omega$ |
| Return Loss | - 22.8 dB |

General Antenna Parameters and Design

| | |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.206 ns |
|----------------------------------|----------|

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

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

| | |
|-----------------|----------------|
| Manufactured by | SPEAG |
| Manufactured on | April 14, 2010 |

DASY5 Validation Report for Head TSL

Date/Time: 10.11.2010 16:31:30

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d131

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL U12 BB

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.4$ mho/m; $\epsilon_r = 39.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.09, 5.09, 5.09); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY52, V52.2 Build 0, Version 52.2.0 (163)
- Postprocessing SW: SEMCAD X, V14.2 Build 2, Version 14.2.2 (1685)

Head/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:

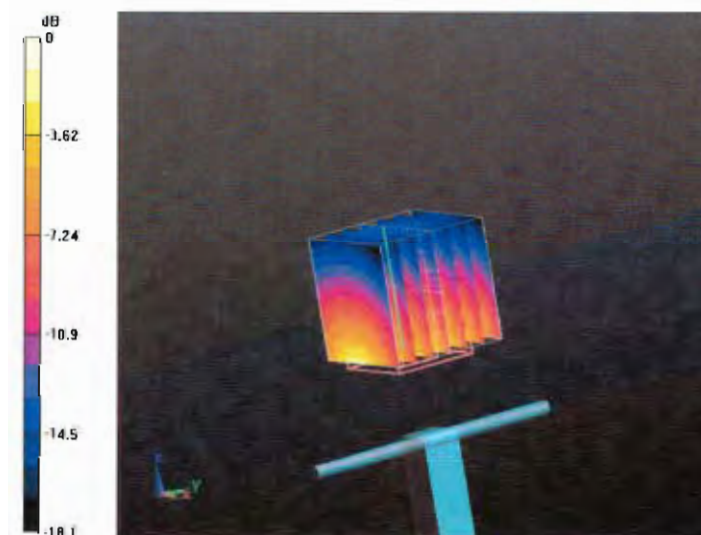
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 95.1 V/m; Power Drift = 0.064 dB

Peak SAR (extrapolated) = 18.4 W/kg

SAR(1 g) = 10.1 mW/g; SAR(10 g) = 5.23 mW/g

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



0 dB = 12.6mW/g

Impedance Measurement Plot for Head TSL

10 Nov 2010 13:03:53

CH1 S11 1 U FS

1: 52.686 Ω 6.4824 Ω 543.01 μH

1 900,000 000 MHz

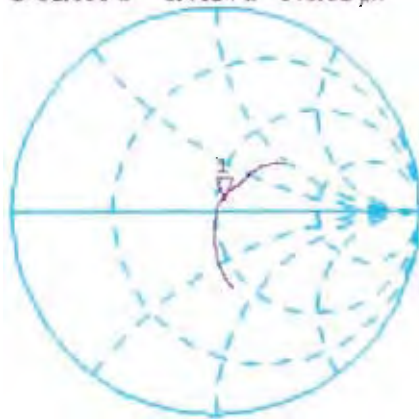
+

Del

CA

Avg 16

T

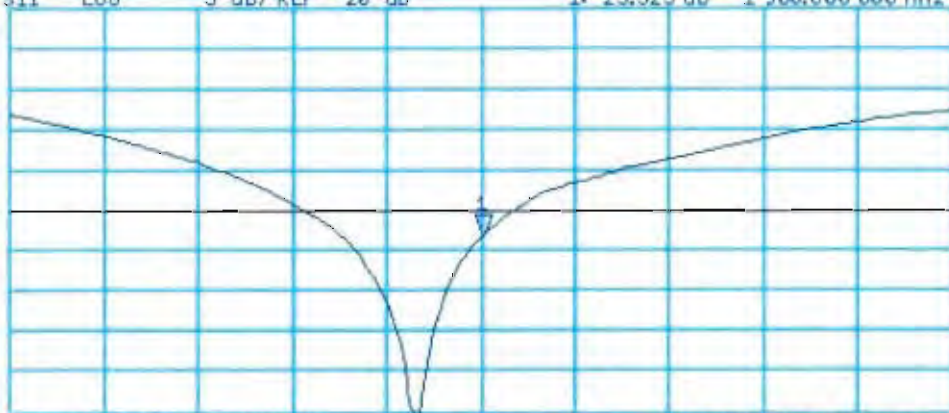


CH2 S11 LOG 5 dB/REF -20 dB 1: -23.325 dB 1 900,000 000 MHz

CA

Avg 16

T



START 1 700,000 000 MHz

STOP 2 100,000 000 MHz

DASY5 Validation Report for Body

Date/Time: 24.11.2010 12:48:29

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d131

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: MSL U12 BB

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 52.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.59, 4.59, 4.59); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY52, V52.2 Build 0, Version 52.2.0 (163)
- Postprocessing SW: SEMCAD X, V14.2 Build 2, Version 14.2.2 (1685)

Body/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:

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

Reference Value = 95.7 V/m; Power Drift = -0.00519 dB

Peak SAR (extrapolated) = 17.2 W/kg

SAR(1 g) = 10 mW/g; SAR(10 g) = 5.25 mW/g

Maximum value of SAR (measured) = 12.3 mW/g



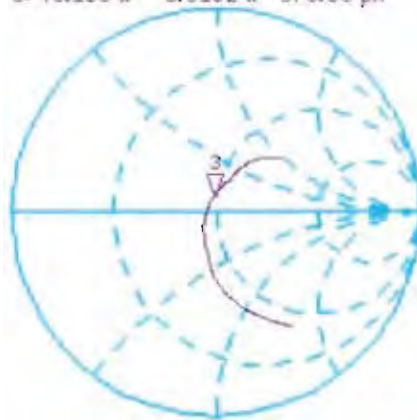
0 dB = 12.3mW/g

Impedance Measurement Plot for Body TSL

24 Nov 2010 10:39:26

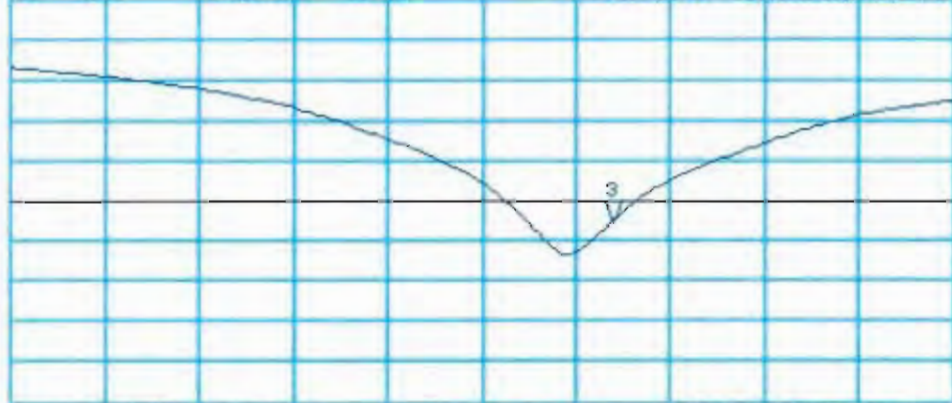
CH1 S11 1 V FS 3: 48.105 Ω 6.9102 Ω 578.83 pF 1 900.000 000 MHz

Del
Cor
Avg 16
↑



CH2 S11 LOG 5 dB/REF -20 dB 3:-22.750 dB 1 900.000 000 MHz

Cor
Avg 16
↑



START 1 550.000 000 MHz STOP 2 100.000 000 MHz

ADN

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



S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **Northwest EMC**

Certificate No: **D1750V2-1040_Nov10**

CALIBRATION CERTIFICATE

Object **D1750V2 - SN: 1040**

Calibration procedure(s) **QA CAL-05.v6
Calibration procedure for dipole validation kits**

Calibration date: **November 24, 2010**

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

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

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|-----------------------------|--------------------|-----------------------------------|------------------------|
| Power meter EPM-442A | GB37480704 | 06-Oct-10 (No. 217-01266) | Oct-11 |
| Power sensor HP 8481A | US37292783 | 06-Oct-10 (No. 217-01266) | Oct-11 |
| Reference 20 dB Attenuator | SN: 5086 (20g) | 30-Mar-10 (No. 217-01158) | Mar-11 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 30-Mar-10 (No. 217-01162) | Mar-11 |
| Reference Probe ES3DV3 | SN: 3205 | 30-Apr-10 (No. ES3-3205_Apr10) | Apr-11 |
| DAE4 | SN: 601 | 10-Jun-10 (No. DAE4-601_Jun10) | Jun-11 |
| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
| Power sensor HP 8481A | MY41092317 | 18-Oct-02 (in house check Oct-09) | In house check: Oct-11 |
| RF generator R&S SMT-06 | 100005 | 4-Aug-99 (in house check Oct-09) | In house check: Oct-11 |
| Network Analyzer HP 8753E | US37390585 S4206 | 18-Oct-01 (in house check Oct-10) | In house check: Oct-11 |

Calibrated by: **Name** Claudio Leubler **Function** Laboratory Technician

Signature

Approved by: **Name** Katja Pokovic **Function** Technical Manager

Issued: November 25, 2010

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 |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A | not applicable or not measured |

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
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

Measurement Conditions

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

| | | |
|-------------------------------------|---------------------------|-------------|
| DASY Version | DASY5 | V52.2 |
| Extrapolation | Advanced Extrapolation | |
| Phantom | Modular Flat Phantom V5.0 | |
| Distance Dipole Center - TSL | 10 mm | with Spacer |
| Zoom Scan Resolution | dx, dy, dz = 5 mm | |
| Frequency | 1750 MHz \pm 1 MHz | |

Head TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---------------------|---------------------|----------------------|
| Nominal Head TSL parameters | 22.0 °C | 40.1 | 1.37 mho/m |
| Measured Head TSL parameters | (22.0 \pm 0.2) °C | 39.4 \pm 6 % | 1.32 mho/m \pm 6 % |
| Head TSL temperature during test | (22.0 \pm 0.2) °C | ---- | ---- |

SAR result with Head TSL

| SAR averaged over 1 cm³ (1 g) of Head TSL | Condition | |
|---|--------------------|--|
| SAR measured | 250 mW input power | 9.13 mW / g |
| SAR normalized | normalized to 1W | 36.5 mW / g |
| SAR for nominal Head TSL parameters | normalized to 1W | 37.2 mW / g \pm 17.0 % (k=2) |

| SAR averaged over 10 cm³ (10 g) of Head TSL | condition | |
|---|--------------------|--|
| SAR measured | 250 mW input power | 4.85 mW / g |
| SAR normalized | normalized to 1W | 19.4 mW / g |
| SAR for nominal Head TSL parameters | normalized to 1W | 19.6 mW / g \pm 16.5 % (k=2) |

Body TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|----------------------------------|-----------------|--------------|------------------|
| Nominal Body TSL parameters | 22.0 °C | 53.4 | 1.49 mho/m |
| Measured Body TSL parameters | (22.0 ± 0.2) °C | 52.9 ± 6 % | 1.43 mho/m ± 6 % |
| Body TSL temperature during test | (21.7 ± 0.2) °C | ---- | ---- |

SAR result with Body TSL

| SAR averaged over 1 cm ³ (1 g) of Body TSL | condition | |
|---|--------------------|-----------------------------------|
| SAR measured | 250 mW input power | 9.35 mW / g |
| SAR normalized | normalized to 1W | 37.4 mW / g |
| SAR for nominal Body TSL parameters | normalized to 1W | 38.2 mW / g ± 17.0 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Body TSL | condition | |
|---|--------------------|-----------------------------------|
| SAR measured | 250 mW input power | 5.03 mW / g |
| SAR normalized | normalized to 1W | 20.1 mW / g |
| SAR for nominal Body TSL parameters | normalized to 1W | 20.3 mW / g ± 16.5 % (k=2) |

Appendix

Antenna Parameters with Head TSL

| | |
|--------------------------------------|-----------------------------|
| Impedance, transformed to feed point | $50.3 \Omega + 0.8 j\Omega$ |
| Return Loss | - 41.6 dB |

Antenna Parameters with Body TSL

| | |
|--------------------------------------|-----------------------------|
| Impedance, transformed to feed point | $46.0 \Omega + 1.1 j\Omega$ |
| Return Loss | - 27.2 dB |

General Antenna Parameters and Design

| | |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.220 ns |
|----------------------------------|----------|

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

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

| | |
|-----------------|-------------------|
| Manufactured by | SPEAG |
| Manufactured on | December 02, 2009 |

DASY5 Validation Report for Head

Date/Time: 10.11.2010 13:00:43

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1040

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: HSL U12 BB

Medium parameters used: $f = 1750$ MHz; $\sigma = 1.32$ mho/m; $\epsilon_r = 39.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.25, 5.25, 5.25); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY52, V52.2 Build 0, Version 52.2.0 (163)
- Postprocessing SW: SEMCAD X, V14.2 Build 2, Version 14.2.2 (1685)

Head/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:

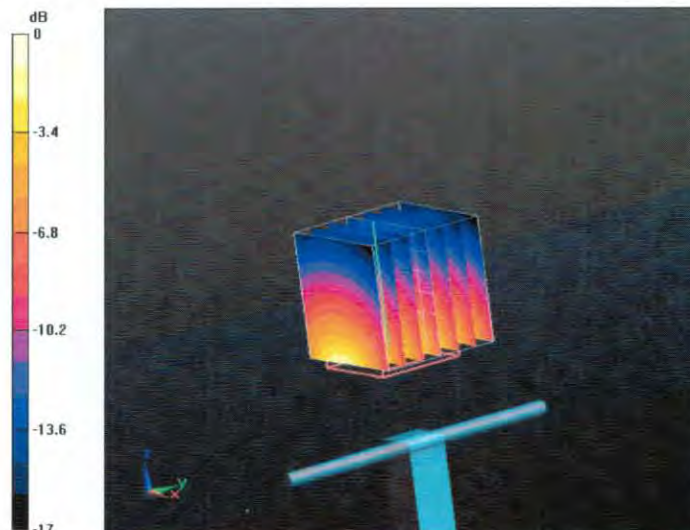
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 93.8 V/m; Power Drift = 0.050 dB

Peak SAR (extrapolated) = 16.4 W/kg

SAR(1 g) = 9.13 mW/g; SAR(10 g) = 4.85 mW/g

Maximum value of SAR (measured) = 11.3 mW/g



0 dB = 11.3mW/g

Impedance Measurement Plot for Head TSL

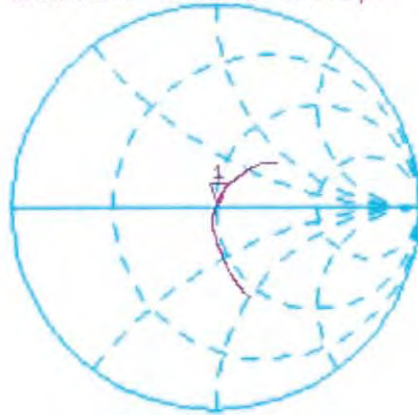
10 Nov 2010 11:36:58

CH1 S11 1 U FS

1: 50.342 Ω 0.7500 Ω 68.209 μH

1 750.000 000 MHz

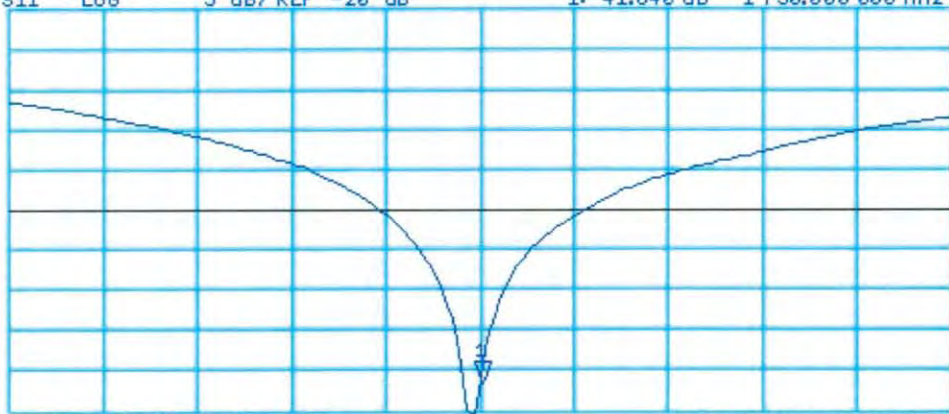
*
De1
CA



Avg
16
↑

CH2 S11 LOG 5 dB/REF -20 dB 1:-41.640 dB 1 750.000 000 MHz

CA
Avg
16
↑



START 1 550.000 000 MHz

STOP 1 950.000 000 MHz

DASY5 Validation Report for Body TSL

Date/Time: 24.11.2010 10:28:00

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1040

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: MSL U12 BB

Medium parameters used: $f = 1750$ MHz; $\sigma = 1.43$ mho/m; $\epsilon_r = 52.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.8, 4.8, 4.8); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY52, V52.2 Build 0, Version 52.2.0 (163)
- Postprocessing SW: SEMCAD X, V14.2 Build 2, Version 14.2.2 (1685)

Body/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:

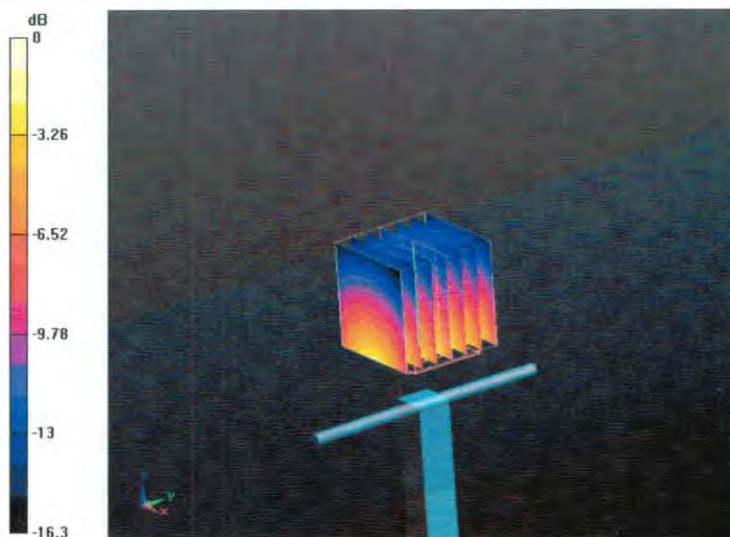
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 94.3 V/m; Power Drift = -0.015 dB

Peak SAR (extrapolated) = 16.1 W/kg

SAR(1 g) = 9.35 mW/g; SAR(10 g) = 5.03 mW/g

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



0 dB = 11.7mW/g

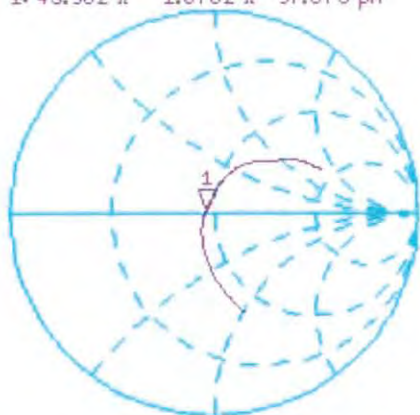
Impedance Measurement Plot for Body TSL

24 Nov 2010 10:21:58

CH1 S11 1 U FS 1: 45.982 Ω 1.0762 Ω 97.873 pF 1 750.000 000 MHz

*
Del
Cor

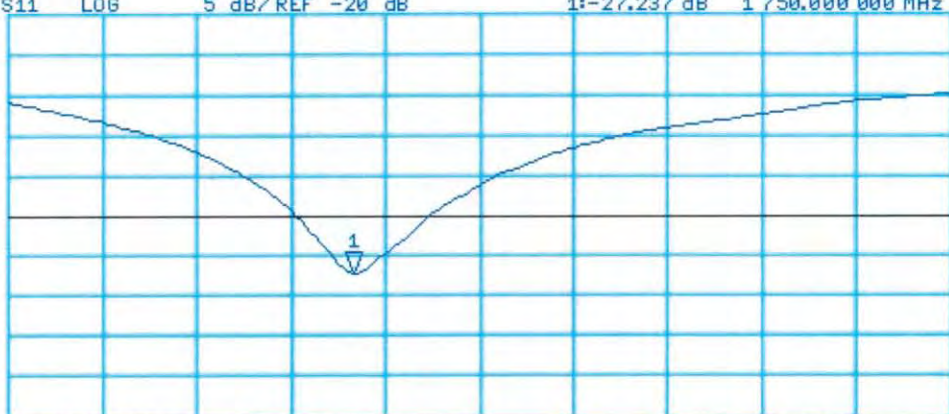
Avg
16



CH2 S11 LOG 5 dB/REF -20 dB 1: -27.237 dB 1 750.000 000 MHz

Cor

Avg
16



START 1 550.000 000 MHz

STOP 2 100.000 000 MHz