# DECLARATION OF COMPLIANCE - SAR RF EXPOSURE EVALUATION (FCC/IC)

| | | | | | |
|---|---|---|---|---|---|
| **Test Lab Information** | **Name** | **CELLTECH LABS INC.** | | | |
| | **Address** | 21-364 Lougheed Road, Kelowna, B.C. V1X 7R8 Canada | | | |
| **Test Lab Accreditation(s)** | **A2LA** | ISO/IEC 17025:2005 (A2LA Test Lab Certificate No. 2470.01) | | | |
| **Applicant Information** | **Name** | **VERTEX STANDARD USA INC.** | | | |
| | **Address** | 8000 West Sunrise Blvd. Ft. Lauderdale, FL 33322, USA | | | |
| **Application Type(s)** | **FCC** | TCB Certification | **IC** | CB Certification | |
| **Standard(s) Applied** | **FCC** | 47 CFR §2.1093 | **IC** | Health Canada Safety Code 6 | |
| **Procedure(s) Applied** | **FCC** | OET Bulletin 65, Supplement C | **FCC** | KDB 447498 D01v05 | |
| | **FCC** | KDB 643646 D01v01 | **IC** | RSS-102 Issue 4 | |
| | **IEEE** | 1528-2003 | **IEC** | 62209-1:2005, 62209-2:2010 | |
| **Device Classification(s)** | **FCC** | Licensed Non-Broadcast Transmitter Held to Face (TNF) - FCC Part 90 | | | |
| | **IC** | Land Mobile Radio Transmitter/Receiver (27.41-960 MHz) - RSS-119 Issue 11 | | | |
| **Device Identifier(s)** | **FCC ID:** | AXI11153020 | **IC** | 10239A-11153020 | |
| **Device Model(s) Tested** | EVX-534-D0-5 (S/N: 223F250004) | | EVX-539-D0-5 (S/N: 223F250010) | | |
| **Test Sample Revision No.s** | **Hardware** | n/a | **Firmware** | n/a | |
| **Date of Sample Receipt** | May 23, 2013 | **Date(s) of SAR Evaluations** | May 24 & 27, 2013 | | |
| **Device Description** | Portable FM VHF Push-To-Talk (PTT) Radio Transceiver | | | | |
| **Transmit Frequency Range** | **FCC** | 150.8 - 173.4 MHz | | | |
| | **IC** | 138.0 - 144.0, 148.0 - 174.0 MHz | | | |
| **Manuf. Rated Output Power** | 5 Watts (Conducted) | **Manuf. Tolerance Specification** | +/- 10% | | |
| **Antenna Type(s) Tested** | P/N: ATV-16XL | | | | |
| **Battery Type(s) Tested** | Li-ion | 7.4 V | 1350mAh | P/N: FNB-V133LI | a |
| | Li-ion | 7.4 V | 2250 mAh | P/N: FNB-V134LI | b |
| **Body-worn Accessories Tested** | Belt-Clip (contains metal) | | | P/N: CLIP-20 | 1 |
| **Audio Accessories Tested** | See manufacturer's accessory listing (Section 7.0) | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Max. SAR Level(s) Evaluated** | Face-held (FCC) | **1.12 W/kg** | 1g | 50% PTT duty cycle | Occupational / Controlled Exposure |
| | Face-held (IC) | **1.23 W/kg** | 1g | 50% PTT duty cycle | Occupational / Controlled Exposure |
| | Body-worn (FCC) | **2.42 W/kg** | 1g | 50% PTT duty cycle | Occupational / Controlled Exposure |
| | Body-worn (IC) | **2.61 W/kg** | 1g | 50% PTT duty cycle | Occupational / Controlled Exposure |
| **FCC Spatial Peak SAR Limit** | Head/Body | 8.0 W/kg | 1g | 50% PTT duty cycle | Occupational / Controlled Exposure |

Celltech Labs Inc. declares under its sole responsibility that this wireless portable device has demonstrated compliance with the Specific Absorption Rate (SAR) RF exposure requirements specified in FCC 47 CFR §2.1093 and Health Canada Safety Code 6 for the Occupational / Controlled Exposure environment. The device was tested in accordance with the measurement procedures specified in FCC OET Bulletin 65, Supplement C (Edition 01-01), Industry Canada RSS-102 Issue 4, IEEE Standard 1528-2003 and IEC International Standard 62209-1:2005. All measurements were performed in accordance with the SAR system manufacturer recommendations.

I attest to the accuracy of data. All measurements were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.



The results and statements contained in this report pertain only to the device(s) evaluated.

| **Test Report Approved By** |  | **Mike Meaker** | **Engineering Technologist** | **Celltech Labs Inc.** |
|---|---|---|---|---|

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| REVISION HISTORY | | | |
|---|---|---|---|
| **REVISION NO.** | **DESCRIPTION** | **IMPLEMENTED BY** | **RELEASE DATE** |
| 1.0 | Initial Release | Mike Meaker | May 31, 2013 |

| TEST REPORT SIGN-OFF | | | |
|---|---|---|---|
| **DEVICE TESTED BY** | **REPORT PREPARED BY** | **QA REVIEW BY** | **REPORT APPROVED BY** |
| Mike Meaker | Cheri Frangiadakis | Mike Meaker | Mike Meaker |

## 1.0 INTRODUCTION

This measurement report demonstrates that the Vertex Standard USA Inc. Model(s): EVX-534-D0-5 and EVX-539-D0-5 Portable VHF PTT Radio Transceiver FCC ID: AXI11153020 complies with the SAR (Specific Absorption Rate) RF exposure requirements of FCC 47 CFR §2.1093 (see reference [1]) and Health Canada's Safety Code 6 (see reference [2]) for the Occupational / Controlled Exposure environment. The measurement procedures described in FCC OET Bulletin 65, Supplement C 01-01 (see reference [3]), IC RSS-102 Issue 4 (see reference [4]), IEEE Standard 1528-2003 (see reference [5]) and IEC Standard 62209-1:2005 (see reference [6]) were employed. A description of the device, operating configuration, detailed summary of the test results, methodology and procedures used in the evaluation, equipment used and the various provisions of the rules are included within this test report.

## 2.0 SAR MEASUREMENT SYSTEM

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

## 3.0 RF CONDUCTED OUTPUT POWER MEASUREMENTS

**MEASURED RF CONDUCTED OUTPUT POWER LEVELS**

| Test Frequency | Mode | Model: EVX-534-D0-534 | | Model: EVX-539-D0-539 | | Method |
|---|---|---|---|---|---|---|
| | | Watts | dBm | Watts | dBm | |
| 138.0 MHz | CW | 5.30 | 37.2 | 5.40 | 37.3 | Average Conducted |
| 144.0 MHz | CW | 5.20 | 37.2 | 5.30 | 37.2 | Average Conducted |
| 150.8 MHz | CW | 5.20 | 37.2 | 5.20 | 37.2 | Average Conducted |
| 158.3 MHz | CW | 5.30 | 37.2 | 5.40 | 37.3 | Average Conducted |
| 165.9 MHz | CW | 5.40 | 37.3 | 5.50 | 37.4 | Average Conducted |
| 173.4 MHz | CW | 5.40 | 37.3 | 5.50 | 37.4 | Average Conducted |

**Notes**

1. The test channels were selected in accordance with the procedures specified in FCC KDB 447498 (see reference [8]).

2. The RF conducted output power levels of the DUT were measured by Celltech prior to the SAR evaluations using a Gigatronics 8652A Universal Power Meter at the external antenna connector of the radio in accordance with FCC 47 CFR §2.1046 (see reference [15]) and IC RSS-Gen (see reference [16]).

## 4.0 SAR PROBE CALIBRATION & MEASUREMENT FREQUENCIES

The following procedures are recommended for to minimize probe calibration and tissue dielectric parameter discrepancies. In general, SAR measurements below 300 MHz should be within ±50 MHz of the probe calibration frequency. At 300 MHz to 6 GHz, measurements should be within ±100 MHz of the probe calibration frequency. Measurements exceeding 50% of these intervals, ±25 MHz < 300 MHz and ±50 MHz ≥300 MHz, require additional steps (per FCC KDB 865664 D01v01 - see reference [6]).

| Probe Calibration Freq. | Device Measurement Freq. | Frequency Interval | ±25 MHz (< 300 MHz) |
|---|---|---|---|
| **150 MHz** | 138.0 MHz | 12.0 MHz | < 25 MHz[1] |
| | 158.3 MHz | 8.3 MHz | < 25 MHz[1] |
| | 174.3 MHz | 24.3 MHz | < 25 MHz[1] |
| 1. The probe calibration and measurement frequency interval is < 50 MHz; therefore the additional steps were not required. | | | |

## 5.0 NO. OF TEST CHANNELS ($N_c$)

| Antenna Part No. | Antenna Freq. Range | Test Freq. Range | Band | $N_c$ | Test Frequencies (MHz) |
|---|---|---|---|---|---|
| ATV-16XL | 136 - 174 MHz | 138.0 - 144.0 MHz | IC | 2 | 138.0, 144.0 |
| | | 150.8 - 173.4 MHz | FCC/IC | 4 | 150.8, 158.3, 165.9, 173.4 |
| Note: The number of test channels (*Nc*) were calculated in accordance with the procedures specified in FCC KDB 447498 (see reference [8]). | | | | | |

## 6.0 MANUFACTURER'S DISCLOSED ACCESSORY LISTING

| Accessory ID # for Test Report | ACCESSORY CATEGORY: ANTENNA | | | |
|---|---|---|---|---|
| | **Part Number** | **Description** | | **SAR Evaluation** |
| 1 | ATV-16XL | Detachable Whip - Untuned (136-174 MHz) | | Yes[2] |
| **Accessory ID # for Test Report** | **ACCESSORY CATEGORY: BATTERY** | | | |
| | **Part Number** | **Description** | | **SAR Evaluation** |
| a | FNB-V133LI / FNB-V133LI-UNI | Li-ion (7.4V, 1350mAh) | | Yes |
| b | FNB-V134LI / FNB-V134LI-UNI | Li-ion (7.4V, 2250mAh) | | Yes |
| **Accessory ID # for Test Report** | **ACCESSORY CATEGORY: BODY-WORN** | | | |
| | **Part Number** | **Description** | | **SAR Evaluation** |
| 1 | CLIP-20 | Belt-clip (contains metal) | | Yes |
| **Accessory ID # for Test Report** | **ACCESSORY CATEGORY: AUDIO** | | | |
| | **Part Number** | **Description** | **Audio Accessory Grouping** | **SAR Evaluation** |
| G1a | MH-360S | Compact Speaker-Mic | Group 1 | No[1] |
| G1b | MH-450S | Standard Speaker-Mic | | Yes |
| G2a | MH-81A4B | Light duty VOX headset | Group 2 | No[1] |
| G3a | MH-37A4B | Earpiece mic | Group 3 | No[1] |

**Manufacturer's disclosed accessory listing information provided by Vertex Standard USA Inc.**

Notes:
1. Audio accessories not evaluated for SAR in accordance with the procedures and provisions of FCC KDB 643646 D01v01r01.
2. Antenna ATV-16XL is not tuned. Antenna is intended to be cut to length in order to tune to desired frequency within the operating range. Manufacturer supplied 3 pretuned samples for low, mid, and high frequencies. These samples were used for SAR testing.

## 7.0 FLUID DIELECTRIC PARAMETERS

### FLUID DIELECTRIC PARAMETERS

| Date: 05/24/2013 | | Frequency: 150 MHz | | | Tissue: Head | |
|---|---|---|---|---|---|---|
| Freq | Test_e | Test_s | Target_e | Target_s | Deviation Permittivity | Deviation Conductivity |
| 0.050 | 97.08 | 0.63 | 52.3 | 0.76 | 85.62% | -17.11% |
| 0.060 | 83.74 | 0.66 | 52.3 | 0.76 | 60.11% | -13.16% |
| 0.070 | 83.62 | 0.66 | 52.3 | 0.76 | 59.89% | -13.16% |
| 0.080 | 67.92 | 0.67 | 52.3 | 0.76 | 29.87% | -11.84% |
| 0.090 | 60.92 | 0.7 | 52.3 | 0.76 | 16.48% | -7.89% |
| 0.100 | 54.76 | 0.71 | 52.3 | 0.76 | 4.70% | -6.58% |
| 0.110 | 60.77 | 0.73 | 52.3 | 0.76 | 16.20% | -3.95% |
| 0.120 | 55.35 | 0.73 | 52.3 | 0.76 | 5.83% | -3.95% |
| 0.130 | 55.65 | 0.73 | 52.3 | 0.76 | 6.41% | -3.95% |
| 0.138* | 53.7 | 0.738 | 52.3 | 0.76 | 2.68% | -2.89% |
| 0.140 | 53.21 | 0.74 | 52.3 | 0.76 | 1.74% | -2.63% |
| 0.150 | 53.54 | 0.74 | 52.3 | 0.76 | 2.37% | -2.63% |
| 0.1583* | 52.8 | 0.757 | 52.3 | 0.76 | 0.96% | -0.39% |
| 0.160 | 52.7 | 0.76 | 52.3 | 0.76 | 0.76% | 0.00% |
| 0.170 | 51.01 | 0.76 | 52.3 | 0.76 | -2.47% | 0.00% |
| 0.1734* | 50.7 | 0.76 | 52.3 | 0.76 | -3.06% | 0.00% |
| 0.180 | 50.24 | 0.76 | 52.3 | 0.76 | -3.94% | 0.00% |
| 0.190 | 48.96 | 0.78 | 52.3 | 0.76 | -6.39% | 2.63% |
| 0.200 | 49.54 | 0.79 | 52.3 | 0.76 | -5.28% | 3.95% |
| 0.210 | 49.69 | 0.8 | 52.3 | 0.76 | -4.99% | 5.26% |
| 0.220 | 48 | 0.82 | 52.3 | 0.76 | -8.22% | 7.89% |
| 0.230 | 47.02 | 0.83 | 52.3 | 0.76 | -10.10% | 9.21% |
| 0.240 | 47.37 | 0.83 | 52.3 | 0.76 | -9.43% | 9.21% |
| 0.250 | 46.19 | 0.85 | 52.3 | 0.76 | -11.68% | 11.84% |

**interpolated using DASY4 software*

| Test Date | Fluid Type | Ambient Temperature | Fluid Temperature | Fluid Depth | Atmospheric Pressure | Relative Humidity | ρ (Kg/m$^3$) |
|---|---|---|---|---|---|---|---|
| May 24 | 150 Head | 23.0°C | 21.2°C | ≥ 15 cm | 101.6 kPa | 32% | 1000 |

## FLUID DIELECTRIC PARAMETERS

| Date: 05/27/2013 | | Frequency: 150 MHz | | | Tissue: Body | |
|---|---|---|---|---|---|---|
| Freq | Test_e | Test_s | Target_e | Target_s | Deviation Permittivity | Deviation Conductivity |
| 0.050 | 95.57 | 0.71 | 61.9 | 0.8 | 54.39% | -11.25% |
| 0.060 | 91.06 | 0.69 | 61.9 | 0.8 | 47.11% | -13.75% |
| 0.070 | 82.63 | 0.73 | 61.9 | 0.8 | 33.49% | -8.75% |
| 0.080 | 72.55 | 0.72 | 61.9 | 0.8 | 17.21% | -10.00% |
| 0.090 | 71.77 | 0.72 | 61.9 | 0.8 | 15.95% | -10.00% |
| 0.100 | 65.95 | 0.75 | 61.9 | 0.8 | 6.54% | -6.25% |
| 0.110 | 64.47 | 0.75 | 61.9 | 0.8 | 4.15% | -6.25% |
| 0.120 | 63.38 | 0.74 | 61.9 | 0.8 | 2.39% | -7.50% |
| 0.130 | 63.06 | 0.76 | 61.9 | 0.8 | 1.87% | -5.00% |
| 0.138* | 61.7 | 0.768 | 61.9 | 0.8 | -0.32% | -4.00% |
| 0.140 | 61.34 | 0.77 | 61.9 | 0.8 | -0.90% | -3.75% |
| 0.150 | 62.87 | 0.77 | 61.9 | 0.8 | 1.57% | -3.75% |
| 0.1583* | 63.4 | 0.778 | 61.9 | 0.8 | 2.42% | -2.75% |
| 0.160 | 63.55 | 0.78 | 61.9 | 0.8 | 2.67% | -2.50% |
| 0.170 | 61.79 | 0.78 | 61.9 | 0.8 | -0.18% | -2.50% |
| 0.1734* | 62 | 0.78 | 61.9 | 0.8 | 0.16% | -2.50% |
| 0.180 | 62.4 | 0.78 | 61.9 | 0.8 | 0.81% | -2.50% |
| 0.190 | 59.74 | 0.8 | 61.9 | 0.8 | -3.49% | 0.00% |
| 0.200 | 60.65 | 0.81 | 61.9 | 0.8 | -2.02% | 1.25% |
| 0.210 | 59.09 | 0.82 | 61.9 | 0.8 | -4.54% | 2.50% |
| 0.220 | 59 | 0.81 | 61.9 | 0.8 | -4.68% | 1.25% |
| 0.230 | 58.81 | 0.83 | 61.9 | 0.8 | -4.99% | 3.75% |
| 0.240 | 58.9 | 0.82 | 61.9 | 0.8 | -4.85% | 2.50% |
| 0.250 | 57.91 | 0.83 | 61.9 | 0.8 | -6.45% | 3.75% |

**interpolated using DASY4 software*

| Test Date | Fluid Type | Ambient Temperature | Fluid Temperature | Fluid Depth | Atmospheric Pressure | Relative Humidity | ρ (Kg/m$^3$) |
|---|---|---|---|---|---|---|---|
| May 27 | 150 Body | 22.0°C | 20.9°C | ≥ 15 cm | 101.2 kPa | 37% | 1000 |

# 8.0 SAR MEASUREMENT SUMMARY

## Table 1 — FACE-HELD SAR EVALUATION RESULTS

| C | Test Date(s): May 24, 2013 | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| R | Antenna Tested | Test Freq. (MHz) | Cond. Pwr (W) | SAR W/kg 1g Battery (a) | | | | SAR W/kg 1g Default Battery (b) | | | |
| | | | | 100% ptt d/f | 50% ptt d/f | Drift (dB) | 50%+droop | 100% ptt d/f | 50% ptt d/f | Drift dB | 50%+droop |
| **Radio Model Tested: EVX-539-D0-5** | | | | | | | | | | | |
| 1 | ATV-16XL (LOW) | 138.0 | 5.4 | F4 | 2.11 | 1.06 | -0.229 | 1.11 | F1 | 2.18 | 1.09 |
| 2 | | 144.0 | 5.3 | N/A | | | | N/A | | | |
| 3 | ATV-16XL (MID) | 150.8 | 5.2 | N/A | | | | N/A | | | |
| 4 | | 158.3 | 5.4 | F5 | 2.19 | **1.10** | -0.401 | 1.20 | F2 | 1.91 | 0.955 |
| 5 | ATV-16XL (HIGH) | 165.9 | 5.5 | N/A | | | | N/A | | | |
| 6 | | 173.4 | 5.5 | N/A | | | | F3 | 0.473 | 0.237 | -0.592 |
| **Radio Model Tested: EVX-534-D0-5 (Worst-Case)** | | | | | | | | | | | |
| 7 | ATV-16XL (MID) | 158.3 | 5.3 | F6 | 2.05 | 1.03 | -0.319 | 1.10 | N/A | | |

| SAR LIMITS | | HEAD | SPATIAL PEAK | RF EXPOSURE CATEGORY |
|---|---|---|---|---|
| FCC 47 CFR 2.1093 | Health Canada Safety Code 6 | 8.0 W/kg | 1g averaging | Occupational / Controlled |

**Notes**

Test Mode = CW (Unmodulated Continuous Wave) | Phantom = Barski Planar Phantom

| Battery | Front of DUT Distance to Planar Phantom (see Appendix D) | Antenna Distance to Planar Phantom (see Appendix D) |
|---|---|---|
| a | 2.5 cm | 3.9 cm |
| b | 2.5 cm | 3.9 cm |

C = Column; R = Row | F1-Fx (F = Face) denotes the corresponding Face SAR Plot # as shown in Appendix A

**Test Procedures applied in accordance with FCC KDB 643646 D01v01 (see reference [10])**

1. For face-held configuration, the highest capacity battery was selected as the default battery (battery "b").
2. The SAR evaluations commenced at the highest output power channel per antenna and frequency range.
3. When the head SAR of an antenna tested on the highest output power channel using the default battery is ≤ 3.5 W/kg (50% PTT duty factor), testing of all other required channels is not necessary.
4. When the SAR for all antennas tested using the default battery is ≤ 4.0 W/kg, test additional batteries using the antenna and channel configuration that resulted in the highest SAR.
5. When test reduction applies, the slots for such configurations are denoted with N/A (Not Applicable).

## Table 2 — BODY-WORN SAR EVALUATION RESULTS

| C | Test Date(s): May 27, 2013 | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| R | Antenna Tested | Test Freq. (MHz) | Cond. Pwr (W) | SAR W/kg 1g<br>Default Battery (a)<br>Default Body-worn Acc. (1)<br>Default Audio Acc. (G1b) | | | | SAR W/kg 1g<br>Battery (b)<br>Default Body-worn Acc. (1)<br>Default Audio Acc. (G1b) | | | |
| | | | | 100% ptt d/f | 50% ptt d/f | Drift (dB) | 50%+droop | 100% ptt d/f | 50% ptt d/f | Drift dB | 50%+droop |
| **Radio Model Tested: EVX-539-D0-5** | | | | | | | | | | | |
| 1 | ATV-16XL (LOW) | 138.0 | 5.4 | B1 | 0.351 | 0.176 | -0.228 | 0.185 | N/A | | |
| 2 | | 144.0 | 5.3 | N/A | | | | | N/A | | |
| 3 | ATV-16XL (MID) | 150.8 | 5.2 | N/A | | | | | N/A | | |
| 4 | | 158.3 | 5.4 | B2 | 4.73 | **2.37** | -0.333 | 2.55 | B4 | 3.31 | 1.66 | -0.321 | 1.78 |
| 5 | ATV-16XL (HIGH) | 165.9 | 5.5 | | | | | | | | |
| 6 | | 173.4 | 5.5 | B3 | 0.502 | 0.251 | -0.585 | 0.287 | N/A | | |
| **Radio Model Tested: EVX-534-D0-5 (Worst-Case)** | | | | | | | | | | | |
| 7 | ATV-16XL (MID) | 158.3 | 5.3 | B5 | 4.34 | 2.17 | -0.256 | 2.30 | | | |

| SAR LIMITS | | BODY | SPATIAL PEAK | RF EXPOSURE CATEGORY |
|---|---|---|---|---|
| FCC 47 CFR 2.1093 | Health Canada Safety Code 6 | 8.0 W/kg | 1g averaging | Occupational / Controlled |

**Notes**

Test Mode = CW (Unmodulated Continuous Wave)

Phantom = Barski Planar Phantom

| Battery | Back of DUT Distance to Planar Phantom (see Appendix D) | Antenna Distance to Planar Phantom (see Appendix D) |
|---|---|---|
| a | 1.7 cm | 2.7 cm |
| b | 1.2 cm | 2.9 cm |

C = Column; R = Row

B1-Bx (B = Body) denotes the corresponding Body SAR Plot # as shown in Appendix A

**Test Procedures applied in accordance with FCC KDB 643646 D01v01 (see reference [10])**

1. For body-worn configuration, the thinnest standard battery was selected as the default battery (battery "a").
2. The SAR evaluations commenced at the highest output power channel per antenna and frequency range.
3. When the SAR of an antenna tested on the highest output power channel using the default battery is ≤ 3.5 W/kg (50% PTT duty factor), testing of all other required channels is not necessary.
4. When the SAR for all antennas tested using the default battery is ≤ 4.0 W/kg, test additional batteries using the antenna and channel configuration that resulted in the highest SAR.
5. Audio accessory (G1b) was selected as the default audio accessory based on preliminary evaluations with the most conservative SAR.
6. Testing of additional audio accessories was not required because the highest measured SAR with the default audio accessory was ≤ 4.0 W/kg.

NOTE: Repeatability tests were not required because the highest measured SAR was < 4.0 W/kg - per KDB 865664 (see reference [9]).

## 9.0 SAR SCALING (TUNE-UP TOLERANCE)

**SAR LEVELS SCALED TO MANUFACTURER'S TUNE-UP TOLERANCE**

| Test Config. | Freq. (MHz) | Plot | Antenna | Battery | Conducted Power (W) | SAR Level 1g (W/kg) | Drift (dB) | Scale to 5.5 W (5 W + 10%) | Scaled SAR 1g (W/kg) |
|---|---|---|---|---|---|---|---|---|---|
| **FCC** (scaled without drift) | | | | | | | | | |
| Face-held | 158.3 | F5 | Mid | a | 5.4 | 1.10 | -0.401 | +0.1 dB | **1.12** |
| Body-worn | 158.3 | B2 | Mid | a | 5.4 | 2.37 | -0.333 | +0.1 dB | **2.42** |
| **IC** (scaled with drift) | | | | | | | | | |
| Face-held | 158.3 | F5 | Mid | a | 5.4 | 1.10 | -0.401 | +0.1 dB | **1.23** |
| Body-worn | 158.3 | B2 | Mid | a | 5.4 | 2.37 | -0.333 | +0.1 dB | **2.61** |

Notes:

1. Only the highest SAR values for head and body per frequency band are scaled.
2. The resulting value is the reported SAR.
3. The scaled SAR levels are below the FCC/IC Occupational SAR Limit of 8.0 W/kg.

## 10.0 DETAILS OF SAR EVALUATION

1. The number of test frequencies and the test channels evaluated for SAR were selected in accordance with the procedures described in FCC KDB 447498 (see reference [8]).
2. SAR was tested on Radio Model: EVX-539-D0-5. Radio Model: EVX-534-D0-5 was tested in the worst-case configuration for face and body.
3. The manufacturer provided 3 tuned test samples of the ATV-16XL antenna. For testing purposes each tuned sample was treated as a separate antenna. The 3 samples cover the entire operating range of the radio. The samples are tuned for low, mid and high frequencies and cover 136-150MHz, 150-162MHz, and 162-174MHz respectively.
4. The DUT was evaluated for SAR in accordance with the procedures described in FCC KDB 643646 D01v01 (see reference [10]).
5. Each SAR evaluation was performed with a fully charged battery. The radio was allowed a cooldown period and the battery was swapped between the area and zoom scan evaluations.
6. The SAR droop of the DUT was measured by the DASY4 system for the duration of the SAR evaluations. The measured SAR droop was added to the measured SAR levels to report scaled SAR levels as shown in the SAR test data tables. A SAR-versus-Time power droop evaluation was performed (see Appendix A).
7. The fluid temperature was measured prior to and after the SAR evaluations. The fluid temperature remained within +/-2°C during the SAR evaluations.
8. The dielectric parameters of the simulated tissue mixtures were measured prior to the SAR evaluations using a Dielectric Probe Kit and a Network Analyzer (see Appendix C).
9. The DUT was tested at the maximum conducted output power level preset by the manufacturer in unmodulated continuous transmit operation (Continuous Wave mode at 100% duty cycle) with the transmit key constantly depressed. For a push-to-talk device the 50% duty cycle compensation reported assumes a transmit/receive cycle of equal time base.

## 11.0 SAR EVALUATION PROCEDURES

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

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

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

An area scan was determined as follows:

c. Based on the defined area scan grid, a more detailed grid is created to increase the points by a factor of 10. The interpolation function then evaluates all field values between corresponding measurement points.

d. A linear search is applied to find all the candidate maxima. Subsequently, all maxima are removed that are >2 dB from the global maximum. The remaining maxima are then used to position the cube scans.

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

e. Extrapolation is used to find the points between the dipole center of the probe and the surface of the phantom. This data cannot be measured, since the center of the dipoles is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.4 mm (see probe calibration document in Appendix F). The extrapolation was based on trivariate quadratics computed from the previously calculated 3D interpolated points nearest the phantom surface.

f. Interpolated data is used to calculate the average SAR over 1g and 10g cubes by spatially discretizing the entire measured cube. The volume used to determine the averaged SAR is a 1mm grid (42875 interpolated points).

g. A zoom scan volume of 30 mm x 30 mm x 30 mm (5 x 5 x 7 points) centered at the peak SAR location determined from the area scan is used for all zoom scans for devices with a transmit frequency < 800 MHz. Zoom scans for frequencies ≥ 800 MHz are determined with a scan volume of 30 mm x 30 mm x 30 mm (7 x 7 x 7) to ensure complete capture of the peak spatial-average SAR.

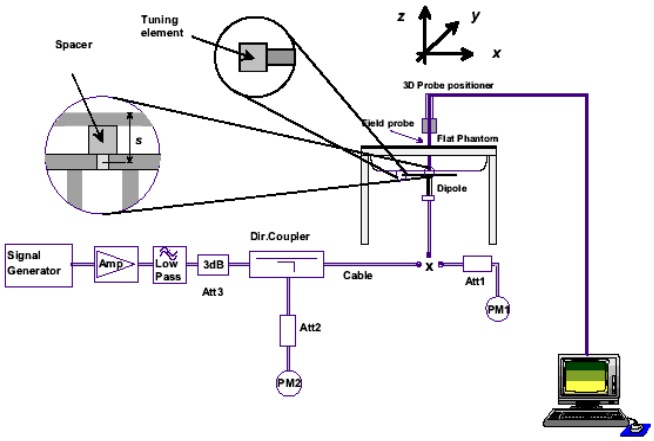
## 12.0 SYSTEM PERFORMANCE CHECK

Prior to the SAR evaluations, system verifications were performed with a planar phantom and SPEAG 300 MHz dipole (see Appendix B) in accordance with the procedures described in FCC KDB 865664 (see reference [9]). The system was verified to meet the internally generated SAR target using 150MHz tissue-equivalent medium with a 300 MHz validation dipole transmitting at 300 MHz (see Appendix E). The dielectric parameters of the simulated tissue mixture were measured prior to the system performance check using a Dielectric Probe Kit and a Network Analyzer (see Appendix C for measured fluid dielectric parameters). A forward power of 398 mW was applied to the dipole for 150 Head and 250 mW was applied for 150 Body.

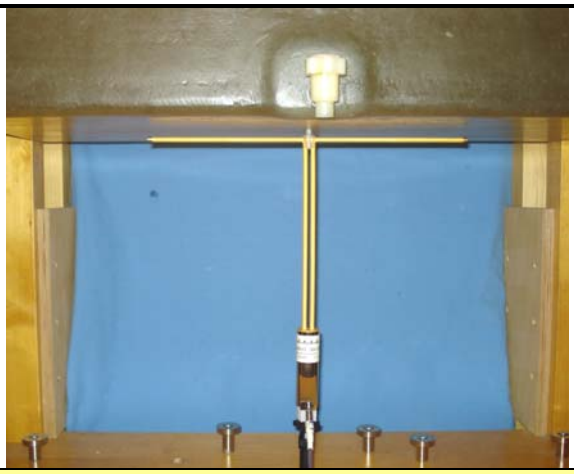
### SYSTEM PERFORMANCE CHECK EVALUATIONS

| Test Date | Equiv. Tissue | SAR 1g (W/kg) | | | Dielectric Constant $\varepsilon_r$ | | | Conductivity $\sigma$ (mho/m) | | | $\rho$ (Kg/m$^3$) | Amb. Temp. (°C) | Fluid Temp. (°C) | Fluid Depth (cm) | Humid. (%) | Barom. Press. (kPa) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Freq. (MHz) | Target | Meas. | Dev. | SPEAG Target | Meas. | Dev. | SPEAG Target | Meas. | Dev. | | | | | | |
| May 24 | Head 150 | **0.953** | 0.892 | -6.4% | **52.3 ±5%** | 53.5 | +2.3% | **0.76 ±5%** | 0.74 | -2.6% | 1000 | 23 | 21.2 | ≥ 15 | 32 | 101.6 |
| May 27 | Body 150 | **0.653** | 0.606 | -7.2% | **61.9 ±5%** | 62.9 | +1.6% | **0.80 ±5%** | 0.77 | -3.8% | 1000 | 22 | 20.9 | ≥ 15 | 37 | 101.2 |

| Notes | | |
|---|---|---|
| | 1. | The 150MHz SAR values have a coefficient of variation < 3%. |
| | 2. | The target dielectric parameters are the nominal values from the SAR system manufacturer's dipole calibration (see Appendix E). |
| | 3. | The fluid temperature was measured prior to and after the system performance check evaluations. The fluid temperature remained within +/-2°C during the system performance check evaluations. |
| | 4. | The dielectric parameters of the simulated tissue mixture were measured prior to the system performance check using a Dielectric Probe Kit and a Network Analyzer (see Appendix C). |




System Performance Check Measurement Setup (IEEE Standard 1528-2003)



SPEAG 300 MHz Validation Dipole Setup

## 13.0 SIMULATED EQUIVALENT TISSUES

The simulated equivalent tissue recipes in the table below are derived from the SAR system manufacturer's suggested recipes in the DASY4 manual (see references [12] and [13]) in accordance with the procedures and requirements specified in IEEE Standard 1528-2003 (see reference [5]) and IEC Standard 62209-1:2005 (see reference [6]). The ingredient percentage may have been adjusted minimally in order to achieve the appropriate target dielectric parameters within the specified tolerance.

| SIMULATED TISSUE MIXTURES | | |
|---|---|---|
| **INGREDIENT** | **150 MHz HEAD** | **150 MHz BODY** |
| Water | 38.35 % | 46.6 % |
| Sugar | 55.5% | 49.7 % |
| Salt | 5.15% | 2.6 % |
| HEC | 0.9% | 1.0 % |
| Bactericide | 0.1% | 0.1 % |

## 14.0 SAR LIMITS

| SAR RF EXPOSURE LIMITS | | | |
|---|---|---|---|
| **FCC 47 CFR 2.1093** | **Health Canada Safety Code 6** | **(General Population / Uncontrolled Exposure)** | **(Occupational / Controlled Exposure)** |
| **Spatial Average (averaged over the whole body)** | | 0.08 W/kg | 0.4 W/kg |
| **Spatial Peak (averaged over any 1 g of tissue)** | | 1.6 W/kg | **8.0 W/kg** |
| **Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)** | | 4.0 W/kg | 20.0 W/kg |
| The Spatial Average value of the SAR averaged over the whole body. | | | |
| The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time. | | | |
| The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time. | | | |
| Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure. | | | |
| Controlled environments are defined as locations where there is potential exposure of individuals who have knowledge of their potential exposure and can exercise control over their exposure. | | | |

# 15.0 ROBOT SYSTEM SPECIFICATIONS

| Specifications | |
|---|---|
| **Positioner** | Stäubli Unimation Corp. Robot Model: RX60L |
| **Repeatability** | 0.02 mm |
| **No. of axis** | 6 |
| **Data Acquisition Electronic (DAE) System** | |
| **Cell Controller** | |
| **Processor** | AMD Athlon XP 2400+ |
| **Clock Speed** | 2.0 GHz |
| **Operating System** | Windows XP Professional |
| **Data Converter** | |
| **Features** | Signal Amplifier, multiplexer, A/D converter, and control logic |
| **Software** | Measurement Software: DASY4, V4.7 Build 80 |
| | Postprocessing Software: SEMCAD, V1.8 Build 186 |
| **Connecting Lines** | Optical downlink for data and status info., Optical uplink for commands and clock |
| **DASY4 Measurement Server** | |
| **Function** | Real-time data evaluation for field measurements and surface detection |
| **Hardware** | PC/104 166MHz Pentium CPU; 32 MB chipdisk; 64 MB RAM |
| **Connections** | COM1, COM2, DAE, Robot, Ethernet, Service Interface |
| **E-Field Probe** | |
| **Model** | ET3DV6 |
| **Serial No.** | 1590 |
| **Construction** | Triangular core fiber optic detection system |
| **Frequency** | 10 MHz to 6 GHz |
| **Linearity** | ±0.2 dB (30 MHz to 3 GHz) |
| **Phantom** | |
| **Type** | Barski Planar Phantom |
| **Shell Material** | Fiberglass |
| **Thickness** | 2.0 ±0.1 mm |
| **Volume** | Approx. 70 liters |

## 16.0 PROBE SPECIFICATION (ET3DV6)

| | |
|---|---|
| Construction: | Symmetrical design with triangular core;<br>Built-in shielding against static charges<br>PEEK enclosure material (resistant to organic solvents, glycol) |
| Calibration: | In air from 10 MHz to 2.5 GHz<br>In head simulating tissue at frequencies of 900 MHz<br>and 1.8 GHz (accuracy ± 8%) |
| Frequency: | 10 MHz to > 6 GHz; Linearity: ± 0.2 dB (30 MHz to 3 GHz) |
| Directivity: | ± 0.2 dB in head tissue (rotation around probe axis)<br>± 0.4 dB in head tissue (rotation normal to probe axis) |
| Dynamic Range: | 5 μW/g to > 100 mW/g; Linearity: ± 0.2 dB |
| Surface Detect: | ± 0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces |
| Dimensions: | Overall length: 330 mm; Tip length: 16 mm;<br>Body diameter: 12 mm; Tip diameter: 6.8 mm<br>Distance from probe tip to dipole centers: 2.7 mm |
| Application: | General dosimetry up to 3 GHz; Compliance tests of mobile phone |

**ET3DV6 E-Field Probe**

## 17.0 BARSKI PLANAR PHANTOM

The Barski Planar Phantom is a fiberglass shell phantom with a 2.0 mm (+/-0.2mm) thick device measurement area at the center of the phantom for SAR evaluations of devices with a larger surface area than the planar section of the SAM phantom. The planar phantom is integrated in a wooden table. The planar phantom was used for the DUT SAR evaluations and the system performance check evaluations. See Appendix G for dimensions and specifications of the Barski Planar Phantom.

**Barski Planar Phantom**

## 18.0 DEVICE HOLDER

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

**Device Holder**

## 19.0 TEST EQUIPMENT LIST

| TEST EQUIPMENT | | ASSET NO. | SERIAL NO. | DATE CALIBRATED | CALIBRATION INTERVAL |
|---|---|---|---|---|---|
| USED | DESCRIPTION | | | | |
| x | Schmid & Partner DASY4 System | - | - | - | - |
| x | -DASY4 Measurement Server | 00158 | 1078 | CNR | CNR |
| x | -Robot | 00046 | 599396-01 | CNR | CNR |
| x | -DAE4 | 00019 | 353 | 19-Apr-12 | Biennial |
| x | -ET3DV6 E-Field Probe | 00017 | 1590 | 24-Apr-13 | Annual |
| x | -D300V3 Validation Dipole | 00216 | 1009 | 17-Apr-12 / 8-Jan-13 | Triennial |
| x | -Barski Planar Phantom | 00155 | 03-01 | CNR | CNR |
| x | HP 85070C Dielectric Probe Kit | 00033 | none | CNR | CNR |
| x | Gigatronics 8652A Power Meter | 00007 | 1835272 | 03-May-12 | Biennial |
| x | Gigatronics 80701A Power Sensor | 00014 | 1833542 | 03-May-12 | Biennial |
| x | Gigatronics 80334A Power Sensor | - | 1837001 | 03-May-12 | Biennial |
| x | HP 8753ET Network Analyzer | 00134 | US39170292 | 26-Apr-12 | Biennial |
| x | Rohde & Schwarz SMR20 Signal Generator | 00006 | 100104 | 02-May-12 | Biennial |
| x | Amplifier Research 5S1G4 Power Amplifier | 00106 | 26235 | CNR | CNR |
| Abbr. | CNR = Calibration Not Required | | | | |

# 20.0 MEASUREMENT UNCERTAINTIES

**UNCERTAINTY BUDGET FOR DEVICE EVALUATION (IEC 62209-2:2010)**

| Source of Uncertainty | IEC 62209-2 Section | Tolerance / Uncertainty ±% | Probability Distribution | Divisor | ci 1g | ci 10g | Standard Uncertainty ±% (1g) | Standard Uncertainty ±% (10g) | $V_i$ or $V_{eff}$ |
|---|---|---|---|---|---|---|---|---|---|
| **Measurement System** | | | | | | | | | |
| Probe Calibration (150 MHz) | 7.2.2.1 | 10.0 | Normal | 1 | 1 | 1 | 10.0 | 10.0 | ∞ |
| Isotropy | 7.2.2.2 | 4.7 | Rectangular | 1.732050808 | 1 | 1 | 2.7 | 2.7 | ∞ |
| Boundary Effect | 7.2.2.6 | 2.5 | Rectangular | 1.732050808 | 1 | 1 | 1.4 | 1.4 | ∞ |
| Linearity | 7.2.2.3 | 4.7 | Rectangular | 1.732050808 | 1 | 1 | 2.7 | 2.7 | ∞ |
| Detection Limits | 7.2.2.5 | 1 | Rectangular | 1.732050808 | 1 | 1 | 0.6 | 0.6 | ∞ |
| Readout Electronics | 7.2.2.7 | 0.3 | Normal | 1 | 1 | 1 | 0.3 | 0.3 | ∞ |
| Response Time | 7.2.2.8 | 0.8 | Rectangular | 1.732050808 | 1 | 1 | 0.5 | 0.5 | ∞ |
| Integration Time | 7.2.2.9 | 2.6 | Rectangular | 1.732050808 | 1 | 1 | 1.5 | 1.5 | ∞ |
| RF Ambient Conditions | 7.2.4.5 | 3 | Rectangular | 1.732050808 | 1 | 1 | 1.7 | 1.7 | ∞ |
| Probe Positioner Mechanical Restrictions | 7.2.3.1 | 0.4 | Rectangular | 1.732050808 | 1 | 1 | 0.2 | 0.2 | ∞ |
| Probe Positioning wrt Phantom Shell | 7.2.3.3 | 2.9 | Rectangular | 1.732050808 | 1 | 1 | 1.7 | 1.7 | ∞ |
| Post-processing | 7.2.5 | 1 | Rectangular | 1.732050808 | 1 | 1 | 0.6 | 0.6 | ∞ |
| **Test Sample Related** | | | | | | | | | |
| Test Sample Positioning | 7.2.3.4.3 | 2.9 | Normal | 1 | 1 | 1 | 2.9 | 2.9 | 12 |
| Device Holder Uncertainty | 7.2.3.4.2 | 3.6 | Normal | 1 | 1 | 1 | 3.6 | 3.6 | 8 |
| Drift of Output Power (meas. SAR drift) | 7.2.2.10 | 0 | Rectangular | 1.732050808 | 1 | 1 | 0.0 | 0.0 | ∞ |
| **Phantom and Tissue Parameters** | | | | | | | | | |
| Phantom Uncertainty | 7.2.3.2 | 4 | Rectangular | 1.732050808 | 1 | 1 | 2.3 | 2.3 | ∞ |
| SAR Correction Algorithm for deviations in permittivity and conductivity | 7.2.4.3 | 1.2 | Normal | 1 | 1 | 0.81 | 1.2 | 0.97 | ∞ |
| Liquid Conductivity (measured) | 7.2.4.3 | 4 | Normal | 1 | 0.78 | 0.71 | 3.1 | 2.8 | ∞ |
| Liquid Permittivity (measured) | 7.2.4.3 | 3.06 | Normal | 1 | 0.23 | 0.26 | 0.7 | 0.8 | ∞ |
| Liquid Permittivity - temp. uncertainty | 7.2.4.4 | 1.04 | Rectangular | 1.732050808 | 0.78 | 0.71 | 0.5 | 0.4 | ∞ |
| Liquid Conductivity - temp. uncertainty | 7.2.4.4 | 1.97 | Rectangular | 1.732050808 | 0.23 | 0.26 | 0.3 | 0.3 | ∞ |
| **Combined Standard Uncertainty** | **7.3.1** | | **RSS** | | | | **12.83** | **12.75** | |
| **Expanded Uncertainty (95% Confidence Interval)** | **7.3.2** | | **k=2** | | | | **25.66** | **25.50** | |

**Measurement Uncertainty Table in accordance with International Standard IEC 62209-2:2010**

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2

## 21.0 REFERENCES

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

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

[3] Federal Communications Commission - “Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields”, OET Bulletin 65, Supplement C (Edition 01-01), FCC, Washington, D.C.: June 2001.

[4] Industry Canada - “Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)”, Radio Standards Specification RSS-102 Issue 4: March 2010.

[5] IEEE Standard 1528-2003 - “Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”: December 2003.

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

[7] International Standard IEC 62209-2 Edition 1.0 2010-03 - “Human exposure to radio frequency fields from hand-held & body-mounted wireless communication devices - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)”.

[8] Federal Communications Commission, Office of Engineering and Technology - “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”; KDB 447498 D01 v05: October 2012.

[9] Federal Communications Commission, Office of Engineering and Technology - “SAR Measurement Requirements for 100 MHz to 6 GHz”; KDB 865664 D01v01: October 2012.

[10] Federal Communications Commission, Office of Engineering and Technology - “SAR Test Reduction Considerations for Occupational PTT Radios”, KDB 643646 D01v01: December 2010.

[12] Schmid & Partner Engineering AG - DASY4 Manual V4.6, Chapter 16 Application Note, Head Tissue Recipe: Sept. 2005.

[13] Schmid & Partner Engineering AG - DASY4 Manual V4.6, Chapter 17 Application Note, Body Tissue Recipe: Sept. 2005.

[14] ISO/IEC 17025 - “General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:2005).”

[15] Federal Communications Commission - “Measurements Required: RF Power Output”; Rule Part 47 CFR §2.1046.

[16] Industry Canada - “General Requirements and Information for the Certification of Radiocommunication Equipment”, Radio Standards Specification RSS-Gen Issue 3: December 2010.

# APPENDIX A - SAR MEASUREMENT PLOTS

## Plot F1

Date Tested: 05/24/2013

**DUT: EVX-539-D0-5; Type: VHF PTT Radio Transceiver; Serial: Not Specified**

Program Notes: Ambient Temp: 23C; Fluid Temp: 21.2C; Barometric Pressure: 101.6 kPa; Humidity: 32%

Communication System: VHF 136-174
Frequency: 138 MHz; Duty Cycle: 1:1
Medium: HSL150 Medium parameters used (interpolated): f = 138 MHz; $\sigma$ = 0.738 mho/m; $\varepsilon_r$ = 53.7; $\rho$ = 1000 kg/m$^3$

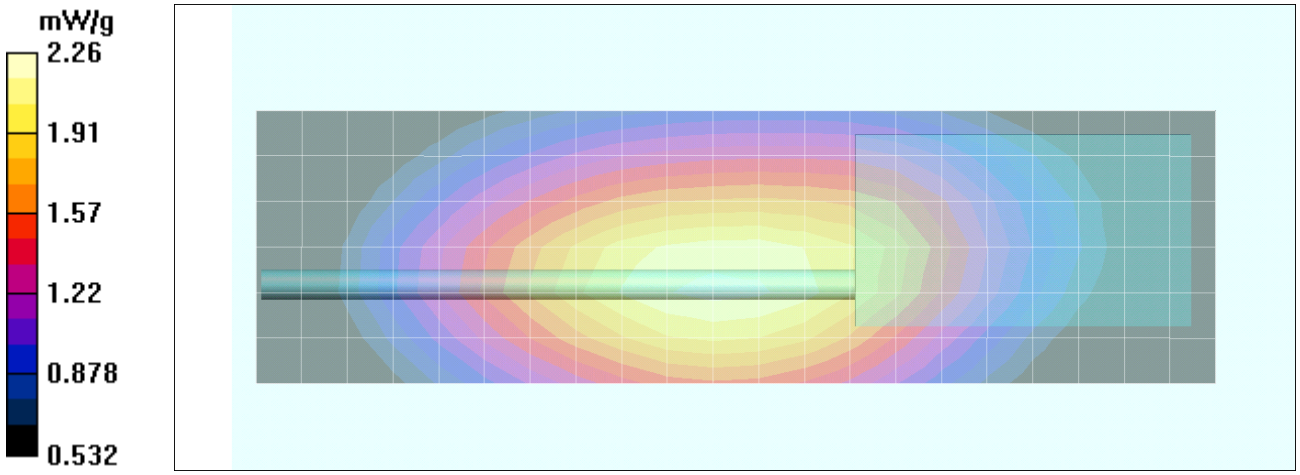
- Probe: ET3DV6 - SN1590; ConvF(9.31, 9.31, 9.31); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**LOW - 134LI - 138.0MHz/Area Scan (7x22x1):** Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.19 mW/g

**LOW - 134LI - 138.0MHz/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 52.7 V/m; Power Drift = -0.202 dB
Peak SAR (extrapolated) = 3.14 W/kg
**SAR(1 g) = 2.18 mW/g; SAR(10 g) = 1.65 mW/g**

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.26 mW/g



## Plot F2

Date Tested: 05/24/2013

**DUT: EVX-539-D0-5; Type: VHF PTT Radio Transceiver; Serial: Not Specified**

Program Notes: Ambient Temp: 23C; Fluid Temp: 21.2C; Barometric Pressure: 101.6 kPa; Humidity: 32%

Communication System: VHF 136-174
Frequency: 158.3 MHz; Duty Cycle: 1:1
Medium: HSL150 Medium parameters used (interpolated): f = 158.3 MHz; $\sigma$ = 0.757 mho/m; $\varepsilon_r$ = 52.8; $\rho$ = 1000 kg/m$^3$

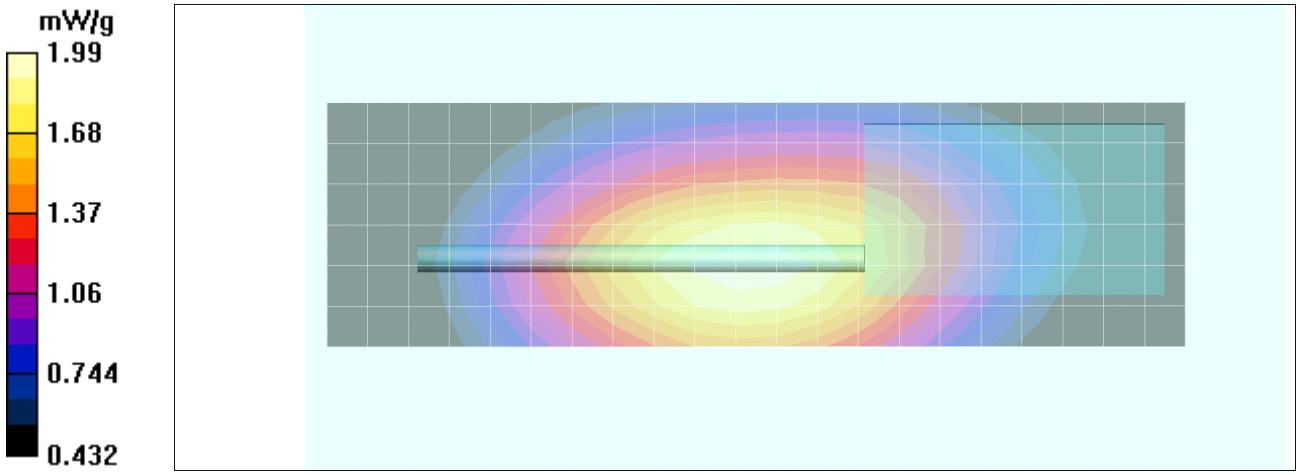
- Probe: ET3DV6 - SN1590; ConvF(9.31, 9.31, 9.31); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**MID - 134LI - 158.3MHz/Area Scan (7x22x1):** Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.98 mW/g

**MID - 134LI - 158.3MHz/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 48.8 V/m; Power Drift = -0.289 dB
Peak SAR (extrapolated) = 2.79 W/kg
**SAR(1 g) = 1.91 mW/g; SAR(10 g) = 1.43 mW/g**

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.99 mW/g



## Plot F3

Date Tested: 05/24/2013

**DUT: EVX-539-D0-5; Type: VHF PTT Radio Transceiver; Serial: Not Specified**

Program Notes: Ambient Temp: 23C; Fluid Temp: 21.2C; Barometric Pressure: 101.6 kPa; Humidity: 32%

Communication System: VHF 136-174
Frequency: 173.4 MHz; Duty Cycle: 1:1
Medium: HSL150 Medium parameters used (interpolated): f = 173.4 MHz; $\sigma$ = 0.76 mho/m; $\varepsilon_r$ = 50.7; $\rho$ = 1000 kg/m$^3$

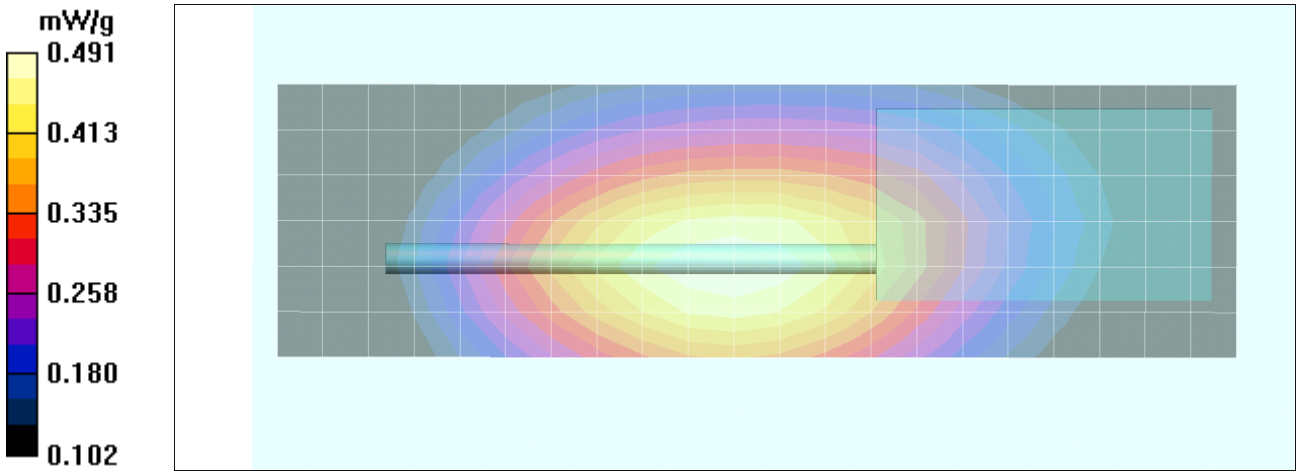
- Probe: ET3DV6 - SN1590; ConvF(9.31, 9.31, 9.31); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**HIGH - 134LI - 173.4MHz/Area Scan (7x22x1):** Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.496 mW/g

**HIGH - 134LI - 173.4MHz/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 25.1 V/m; Power Drift = -0.592 dB
Peak SAR (extrapolated) = 0.691 W/kg
**SAR(1 g) = 0.473 mW/g; SAR(10 g) = 0.354 mW/g**

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.491 mW/g



## Plot F4

Date Tested: 05/24/2013

**DUT: EVX-539-D0-5; Type: VHF PTT Radio Transceiver; Serial: Not Specified**

Program Notes: Ambient Temp: 23C; Fluid Temp: 21.2C; Barometric Pressure: 101.6 kPa; Humidity: 32%

Communication System: VHF 136-174
Frequency: 138 MHz; Duty Cycle: 1:1
Medium: HSL150 Medium parameters used (interpolated): f = 138 MHz; $\sigma$ = 0.738 mho/m; $\varepsilon_r$ = 53.7; $\rho$ = 1000 kg/m$^3$

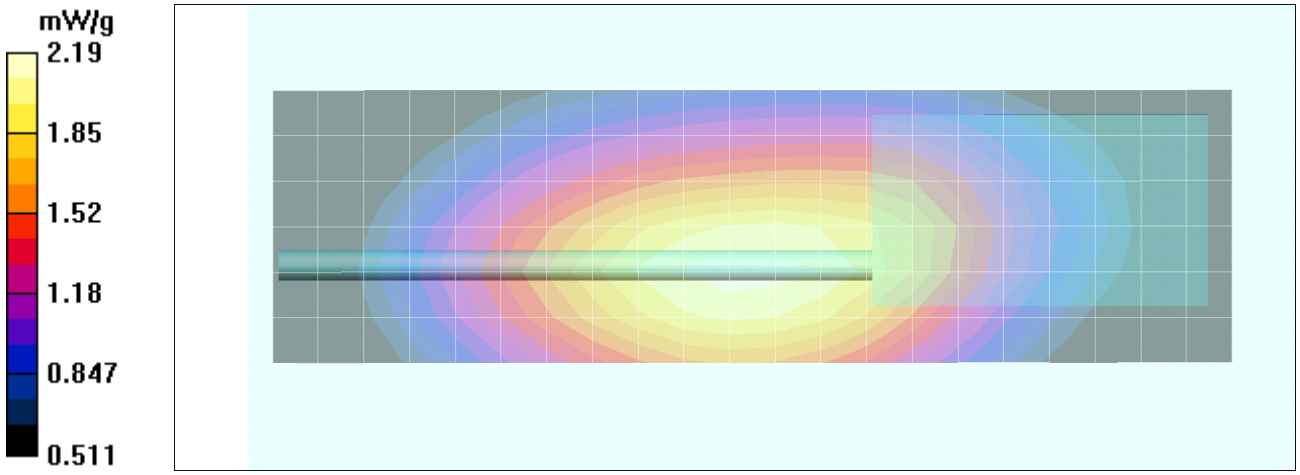
- Probe: ET3DV6 - SN1590; ConvF(9.31, 9.31, 9.31); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**LOW - 133LI - 138.0MHz/Area Scan (7x22x1):** Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.15 mW/g

**LOW - 133LI - 138.0MHz/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 52.0 V/m; Power Drift = -0.229 dB
Peak SAR (extrapolated) = 3.05 W/kg
**SAR(1 g) = 2.11 mW/g; SAR(10 g) = 1.6 mW/g**

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.19 mW/g



## Plot F5

Date Tested: 05/24/2013

**DUT: EVX-539-D0-5; Type: VHF PTT Radio Transceiver; Serial: Not Specified**

Program Notes: Ambient Temp: 23C; Fluid Temp: 21.2C; Barometric Pressure: 101.6 kPa; Humidity: 32%

Communication System: VHF 136-174
Frequency: 158.3 MHz; Duty Cycle: 1:1
Medium: HSL150 Medium parameters used (interpolated): f = 158.3 MHz; $\sigma$ = 0.757 mho/m; $\varepsilon_r$ = 52.8; $\rho$ = 1000 kg/m$^3$

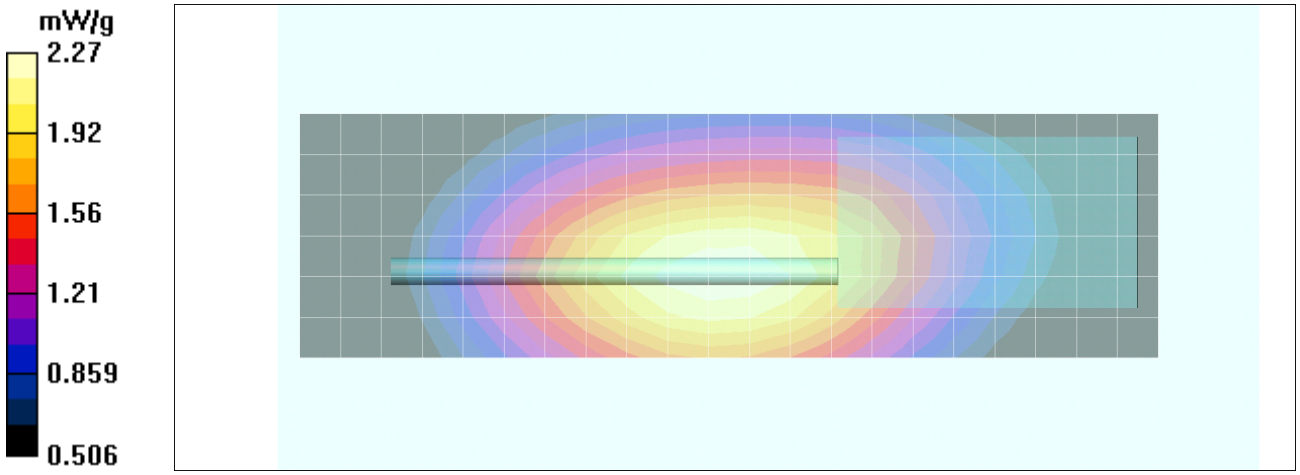
- Probe: ET3DV6 - SN1590; ConvF(9.31, 9.31, 9.31); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**MID - 133LI - 158.3MHz/Area Scan (7x22x1):** Measurement grid: dx=15mm, dy=15mm

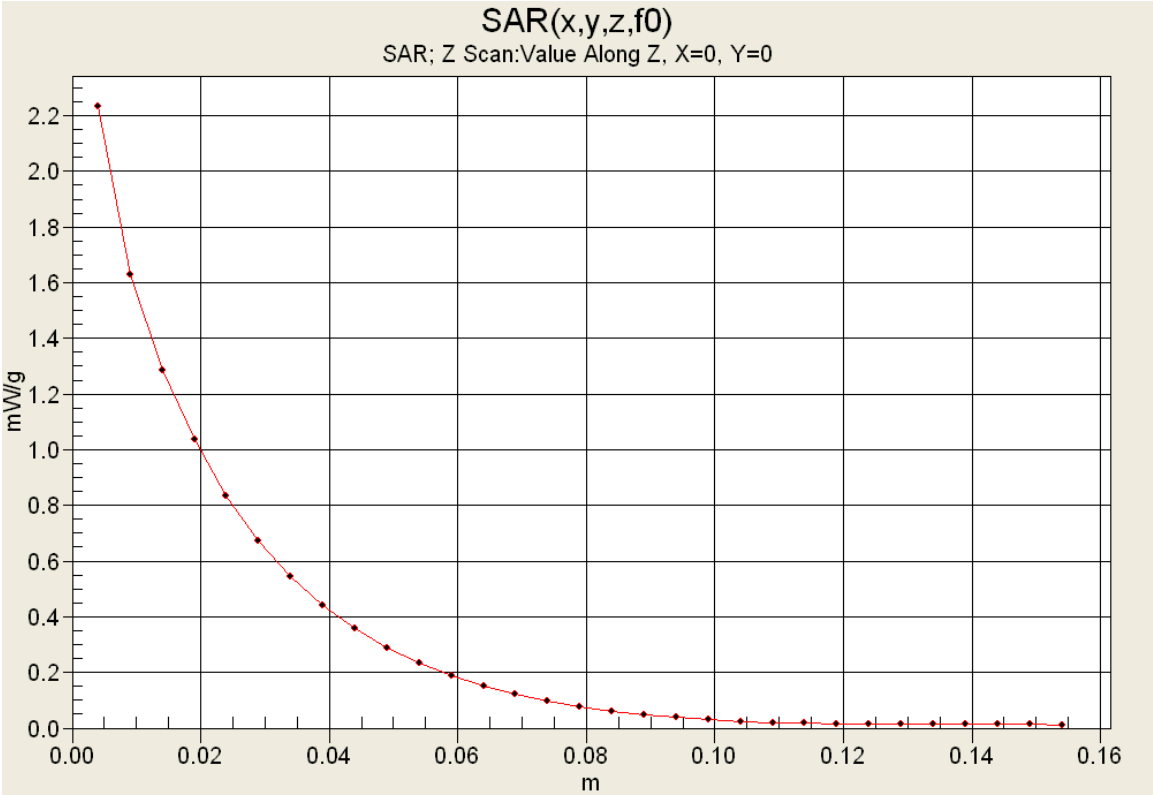
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.28 mW/g

**MID - 133LI - 158.3MHz/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 53.5 V/m; Power Drift = -0.401 dB
Peak SAR (extrapolated) = 3.19 W/kg
**SAR(1 g) = 2.19 mW/g; SAR(10 g) = 1.65 mW/g**

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.27 mW/g



## Z-Axis Scan



## Plot F6

Date Tested: 05/24/2013

**DUT: EVX-534-D0-5; Type: VHF PTT Radio Transceiver; Serial: Not Specified**

Program Notes: Ambient Temp: 23C; Fluid Temp: 21.2C; Barometric Pressure: 101.6 kPa; Humidity: 32%

Communication System: VHF 136-174
Frequency: 158.3 MHz; Duty Cycle: 1:1
Medium: HSL150 Medium parameters used (interpolated): f = 158.3 MHz; $\sigma$ = 0.757 mho/m; $\varepsilon_r$ = 52.8; $\rho$ = 1000 kg/m$^3$

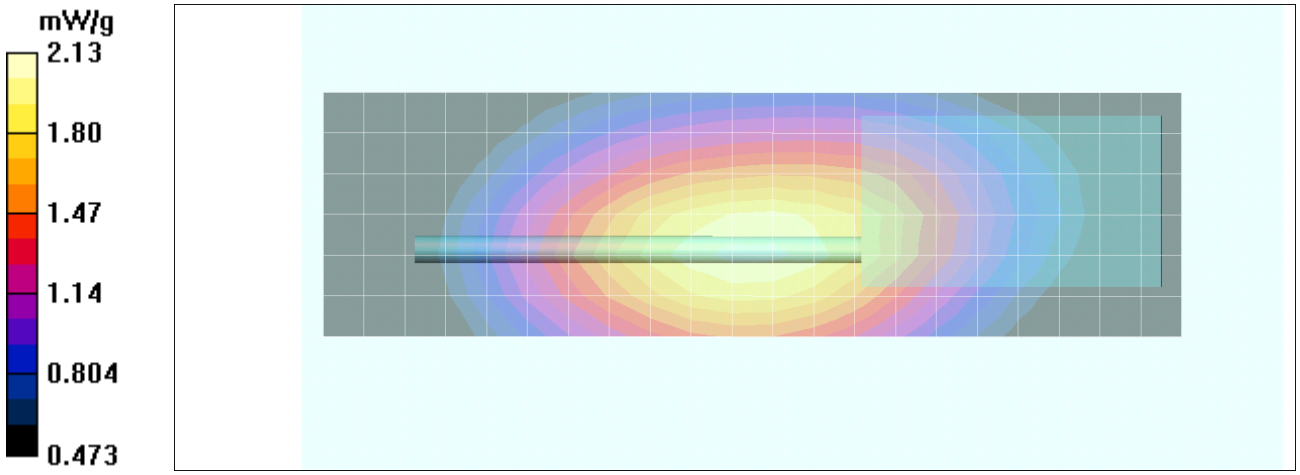
- Probe: ET3DV6 - SN1590; ConvF(9.31, 9.31, 9.31); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**MID - 133LI - 158.3MHz - 534/Area Scan (7x22x1):** Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.06 mW/g

**MID - 133LI - 158.3MHz - 534/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 50.2 V/m; Power Drift = -0.319 dB
Peak SAR (extrapolated) = 2.97 W/kg
**SAR(1 g) = 2.05 mW/g; SAR(10 g) = 1.55 mW/g**

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.13 mW/g



## Plot B1

Date Tested: 05/27/2013

**DUT: EVX-539-D0-5; Type: VHF PTT Radio Transceiver; Serial: Not Specified**

Program Notes: Ambient Temp: 22C; Fluid Temp: 20.9C; Barometric Pressure: 101.2 kPa; Humidity: 37%

Communication System: VHF 136-174
Frequency: 138 MHz; Duty Cycle: 1:1
Medium: M150 Medium parameters used (interpolated): f = 138 MHz; $\sigma$ = 0.768 mho/m; $\varepsilon_r$ = 61.7; $\rho$ = 1000 kg/m$^3$

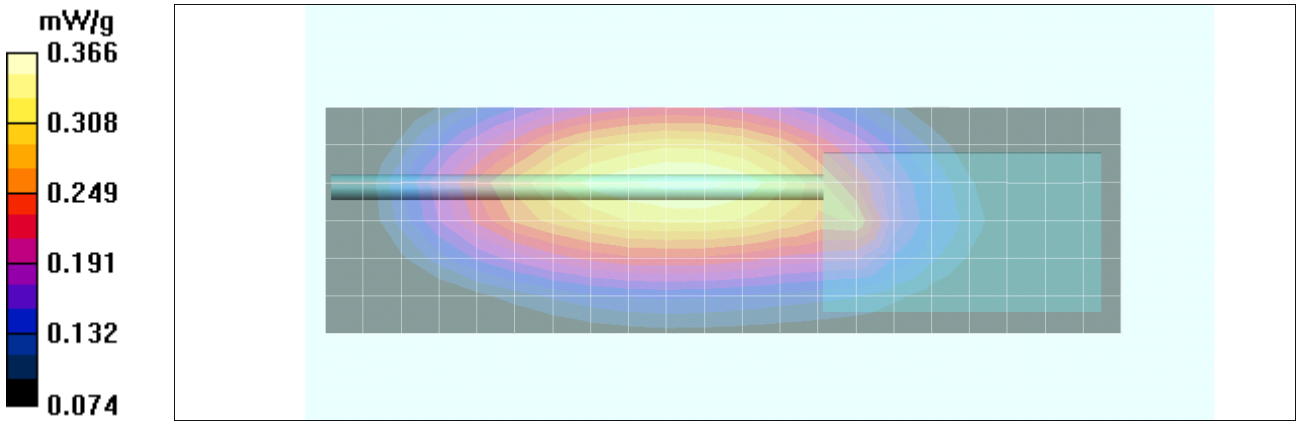
- Probe: ET3DV6 - SN1590; ConvF(8.65, 8.65, 8.65); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**LOW - 133LI - 138.0MHz/Area Scan (7x22x1):** Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.355 mW/g

**LOW - 133LI - 138.0MHz/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 19.1 V/m; Power Drift = -0.228 dB
Peak SAR (extrapolated) = 0.524 W/kg
**SAR(1 g) = 0.351 mW/g; SAR(10 g) = 0.260 mW/g**

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.366 mW/g



## Plot B2

Date Tested: 05/27/2013

**DUT: EVX-539-D0-5; Type: VHF PTT Radio Transceiver; Serial: Not Specified**

Program Notes: Ambient Temp: 22C; Fluid Temp: 20.9C; Barometric Pressure: 101.2 kPa; Humidity: 37%

Communication System: VHF 136-174
Frequency: 158.3 MHz; Duty Cycle: 1:1
Medium: M150 Medium parameters used (interpolated): f = 158.3 MHz; $\sigma$ = 0.778 mho/m; $\varepsilon_r$ = 63.4; $\rho$ = 1000 kg/m$^3$

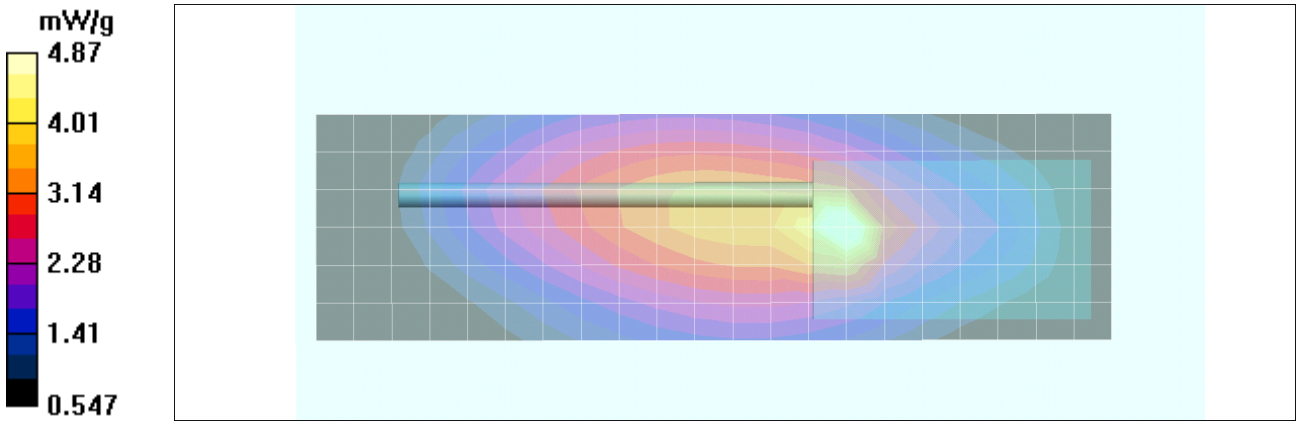
- Probe: ET3DV6 - SN1590; ConvF(8.65, 8.65, 8.65); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**MID - 133LI - 158.3MHz/Area Scan (7x22x1):** Measurement grid: dx=15mm, dy=15mm

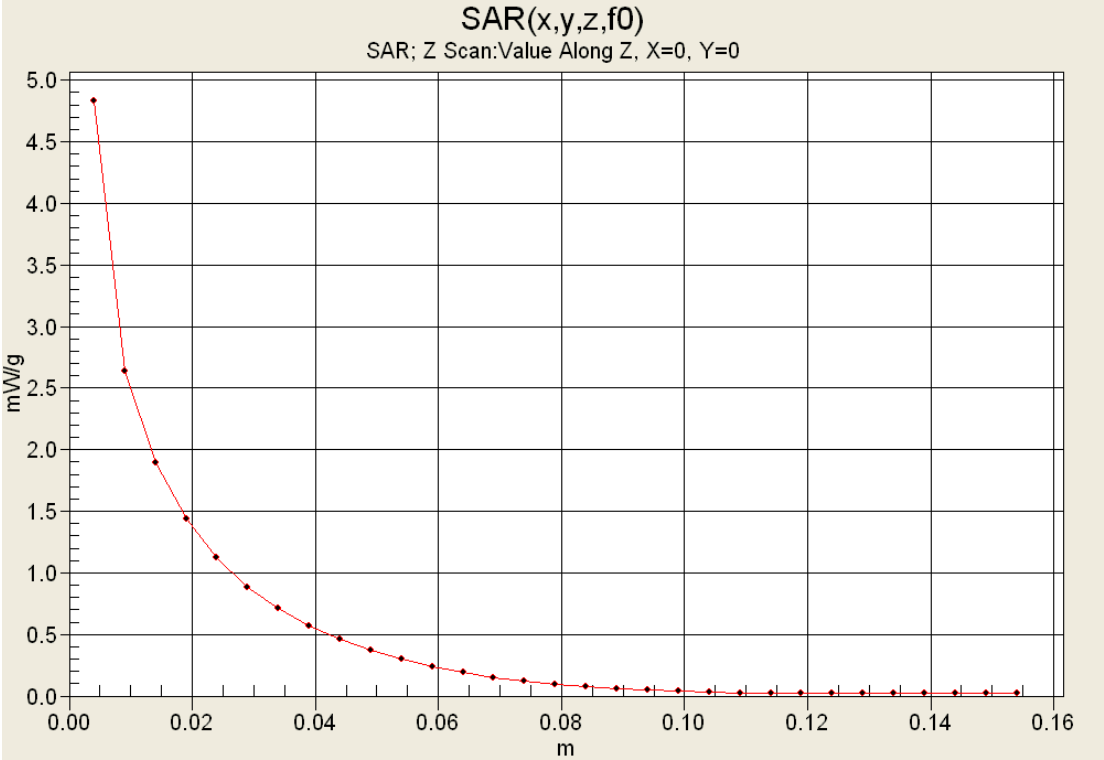
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 5.56 mW/g

**MID - 133LI - 158.3MHz/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 66.9 V/m; Power Drift = -0.333 dB
Peak SAR (extrapolated) = 11.7 W/kg
**SAR(1 g) = 4.73 mW/g; SAR(10 g) = 2.85 mW/g**

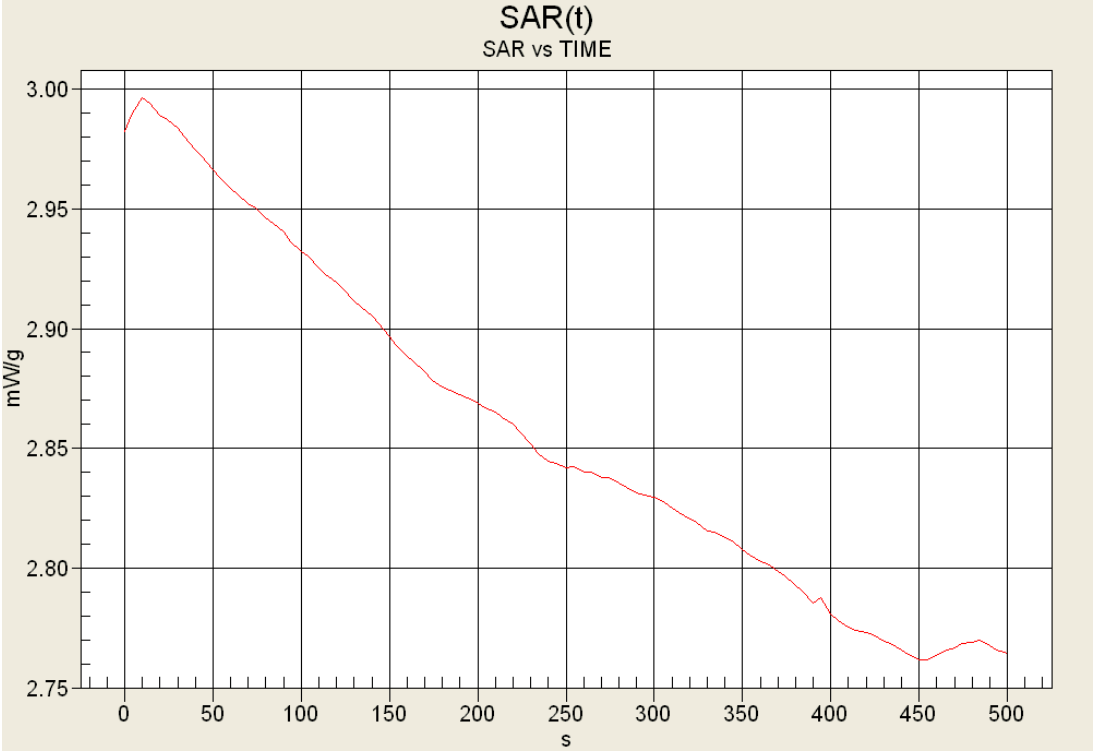
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 4.87 mW/g



## Z-Axis Scan




## SAR-Vs-Time



## Plot B3

Date Tested: 05/27/2013

**DUT: EVX-539-D0-5; Type: VHF PTT Radio Transceiver; Serial: Not Specified**

Program Notes: Ambient Temp: 22C; Fluid Temp: 20.9C; Barometric Pressure: 101.2 kPa; Humidity: 37%

Communication System: VHF 136-174
Frequency: 173.4 MHz; Duty Cycle: 1:1
Medium: M150 Medium parameters used (interpolated): f = 173.4 MHz; $\sigma$ = 0.78 mho/m; $\varepsilon_r$ = 62; $\rho$ = 1000 kg/m$^3$

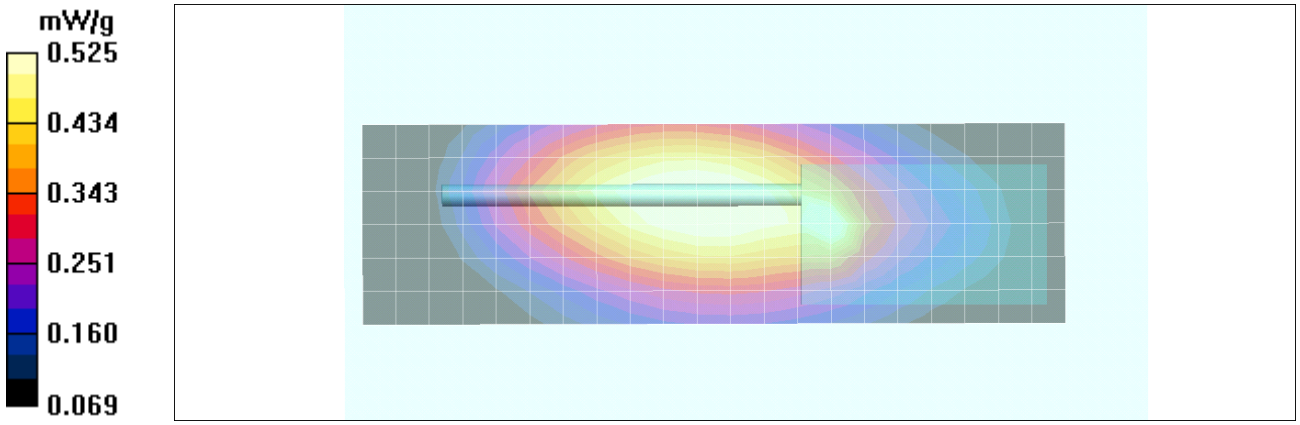
- Probe: ET3DV6 - SN1590; ConvF(8.65, 8.65, 8.65); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**HIGH - 133LI - 173.4MHz/Area Scan (7x22x1):** Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.577 mW/g

**HIGH - 133LI - 173.4MHz/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 25.4 V/m; Power Drift = -0.585 dB
Peak SAR (extrapolated) = 1.04 W/kg
**SAR(1 g) = 0.502 mW/g; SAR(10 g) = 0.331 mW/g**

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.525 mW/g



## Plot B4

Date Tested: 05/27/2013

**DUT: EVX-539-D0-5; Type: VHF PTT Radio Transceiver; Serial: Not Specified**

Program Notes: Ambient Temp: 22C; Fluid Temp: 20.9C; Barometric Pressure: 101.2 kPa; Humidity: 37%

Communication System: VHF 136-174
Frequency: 158.3 MHz; Duty Cycle: 1:1
Medium: M150 Medium parameters used (interpolated): f = 158.3 MHz; $\sigma$ = 0.778 mho/m; $\varepsilon_r$ = 63.4; $\rho$ = 1000 kg/m$^3$

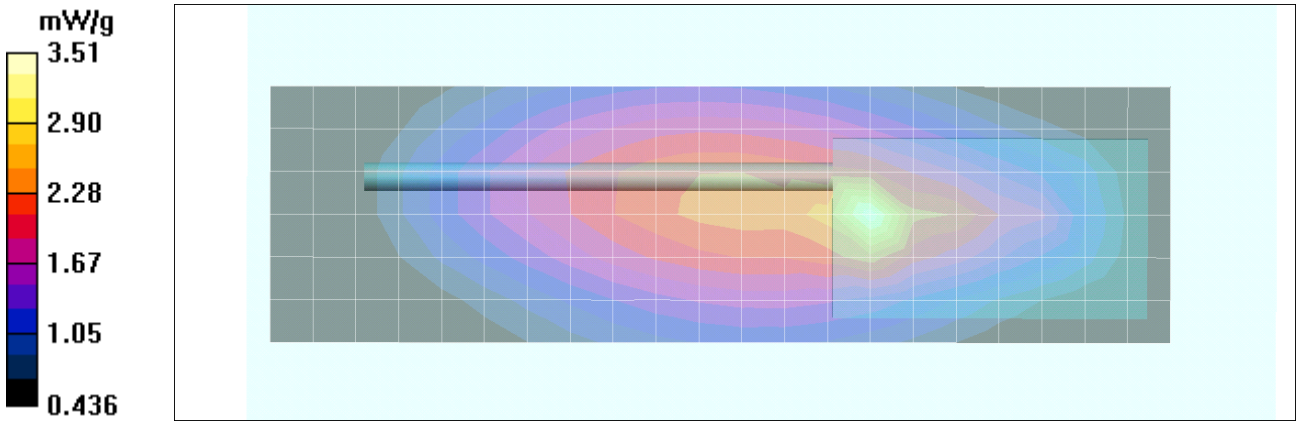
- Probe: ET3DV6 - SN1590; ConvF(8.65, 8.65, 8.65); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**MID - 134LI - 158.3MHz/Area Scan (7x22x1):** Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.49 mW/g

**MID - 134LI - 158.3MHz/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 55.9 V/m; Power Drift = -0.321 dB
Peak SAR (extrapolated) = 7.66 W/kg
**SAR(1 g) = 3.31 mW/g; SAR(10 g) = 2.04 mW/g**

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.51 mW/g



## Plot B5

Date Tested: 05/27/2013

**DUT: EVX-534-D0-5; Type: VHF PTT Radio Transceiver; Serial: Not Specified**

Program Notes: Ambient Temp: 22C; Fluid Temp: 20.9C; Barometric Pressure: 101.2 kPa; Humidity: 37%

Communication System: VHF 136-174
Frequency: 158.3 MHz; Duty Cycle: 1:1
Medium: M150 Medium parameters used (interpolated): f = 158.3 MHz; $\sigma$ = 0.778 mho/m; $\varepsilon_r$ = 63.4; $\rho$ = 1000 kg/m$^3$

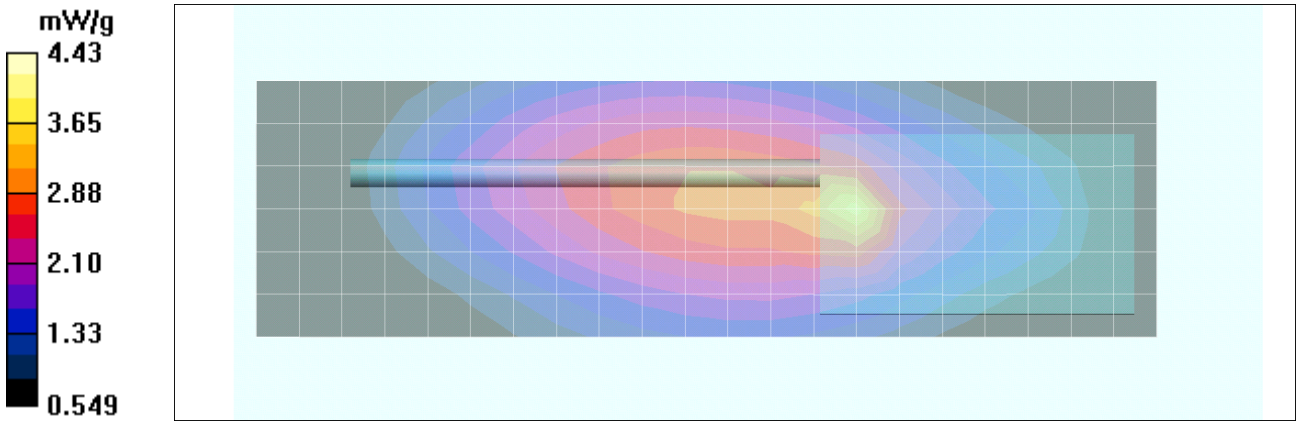
- Probe: ET3DV6 - SN1590; ConvF(8.65, 8.65, 8.65); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**MID - 133LI - 158.3MHz - 534/Area Scan (7x22x1):** Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.83 mW/g

**MID - 133LI - 158.3MHz - 534/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 67.1 V/m; Power Drift = -0.256 dB
Peak SAR (extrapolated) = 9.81 W/kg
**SAR(1 g) = 4.34 mW/g; SAR(10 g) = 2.74 mW/g**

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 4.43 mW/g



# APPENDIX B - SYSTEM PERFORMANCE CHECK PLOTS

## System Performance Check - 150 MHz Head

Date Tested: 05/24/2013

**DUT: Dipole 300 MHz; Type: D300V3; Serial: 1009; Calibrated: 17/04/2012**

Program Notes: Ambient Temp: 23C; Fluid Temp: 21.2C; Barometric Pressure: 101.6 kPa; Humidity: 32%

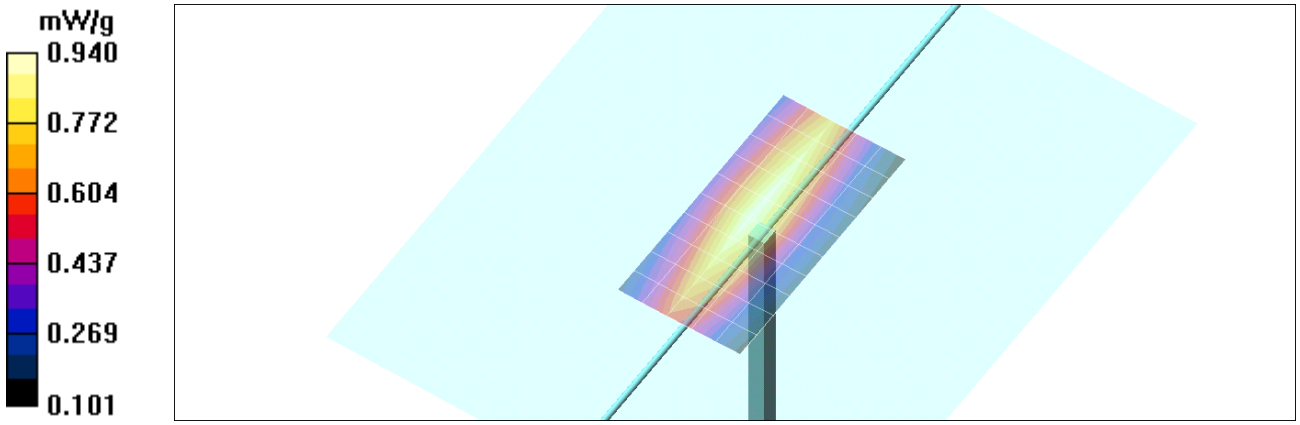
Procedure Notes: 300 MHz Dipole transmitting at 300 MHz using 150 MHz SAR probe calibration and 150 MHz tissue dielectric parameters

Communication System: CW
Frequency: 150 MHz; Duty Cycle: 1:1
Medium: HSL150 Medium parameters used: f = 150 MHz; $\sigma$ = 0.74 mho/m; $\varepsilon_r$ = 53.5; $\rho$ = 1000 kg/m$^3$

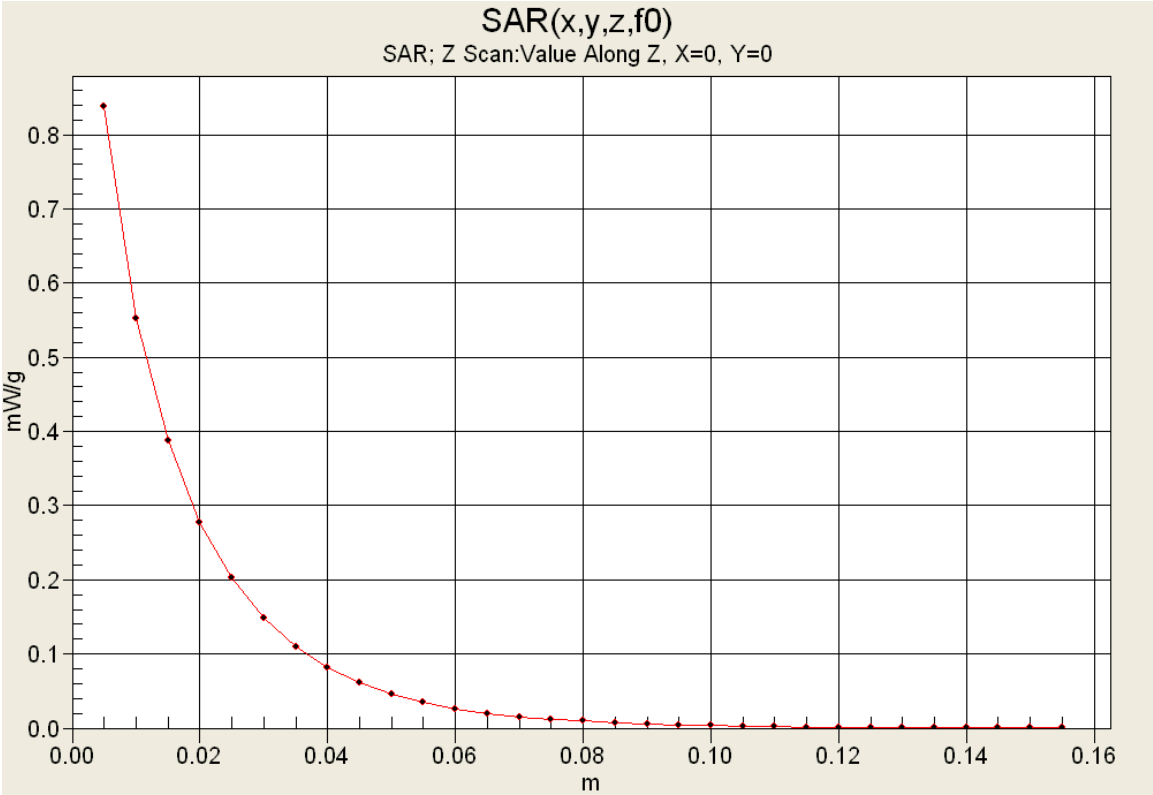
- Probe: ET3DV6 - SN1590; ConvF(9.31, 9.31, 9.31); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Head d=15mm, Pin = 398mW 2/Area Scan (6x11x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.928 mW/g

**Head d=15mm, Pin = 398mW 2/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 34.5 V/m; Power Drift = -0.072 dB
Peak SAR (extrapolated) = 1.51 W/kg
**SAR(1 g) = 0.892 mW/g; SAR(10 g) = 0.585 mW/g**
Maximum value of SAR (measured) = 0.940 mW/g



## Z-Axis Scan



## System Performance Check - 150 MHz Body

Date Tested: 05/27/2013

**DUT: Dipole 300 MHz Body; Type: D300V3; Serial: 1009; Calibrated: 01/08/2013**

Program Notes: Ambient Temp: 22C; Fluid Temp: 20.9C; Barometric Pressure: 101.2 kPa; Humidity: 37%

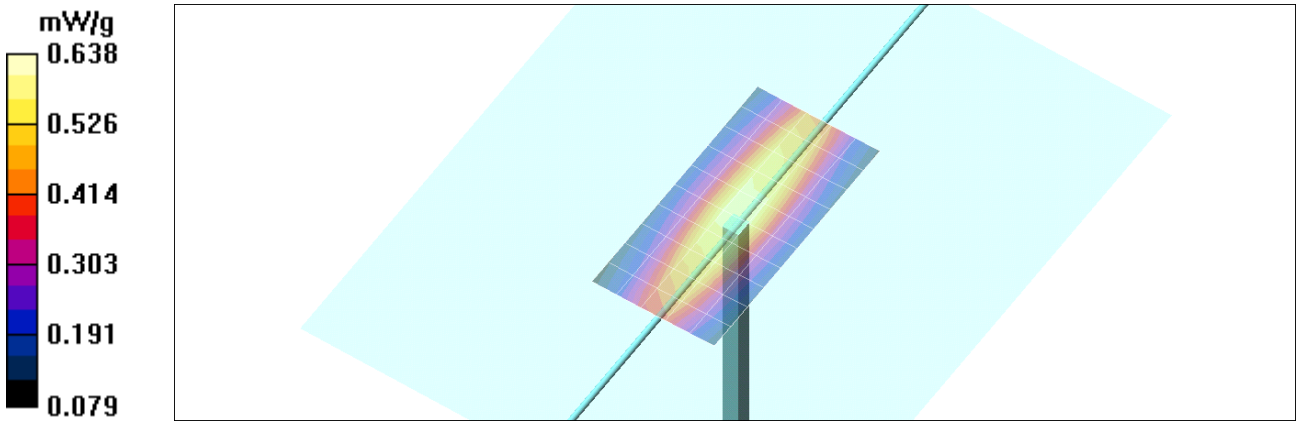
Procedure Notes: 300 MHz Dipole transmitting at 300 MHz using 150 MHz SAR probe calibration and 150 MHz tissue dielectric parameters

Communication System: CW
Frequency: 150 MHz; Duty Cycle: 1:1
Medium: M150 Medium parameters used: f = 150 MHz; $\sigma$ = 0.77 mho/m; $\varepsilon_r$ = 62.9; $\rho$ = 1000 kg/m$^3$

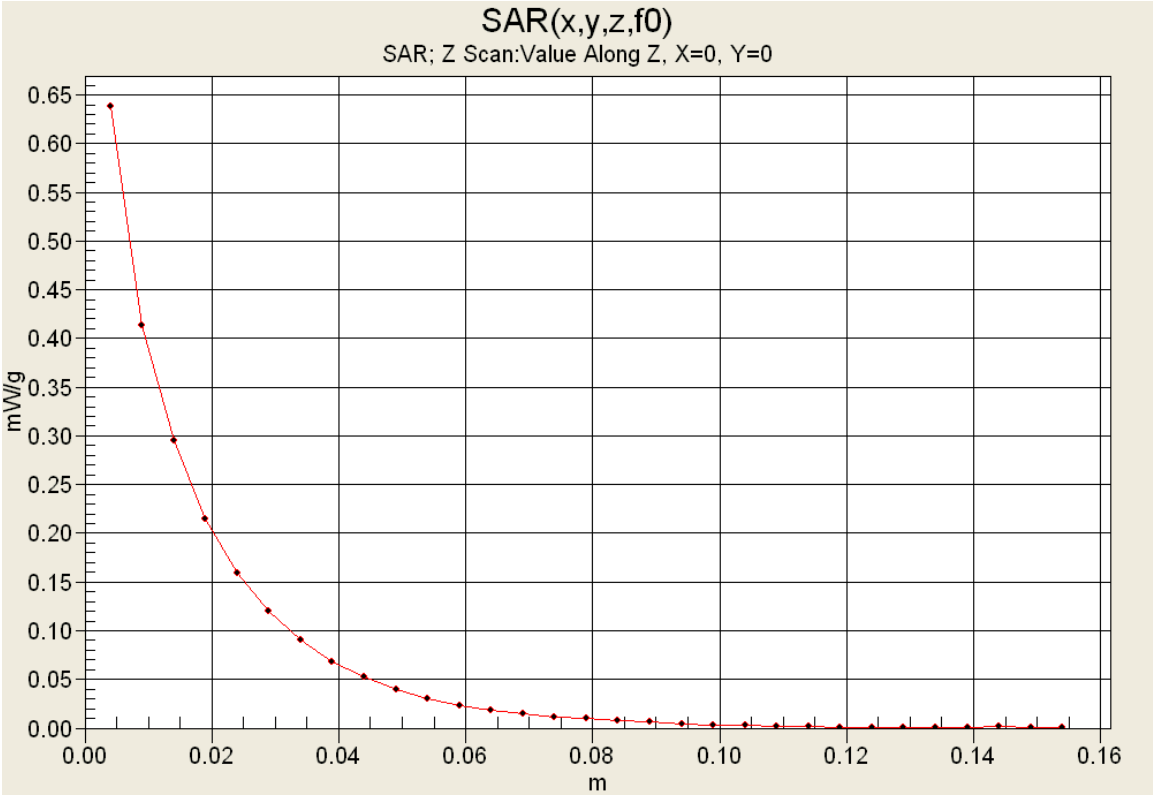
- Probe: ET3DV6 - SN1590; ConvF(8.65, 8.65, 8.65); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Body d=15mm, Pin = 250mW/Area Scan (6x11x1):** Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.587 mW/g

**Body d=15mm, Pin = 250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.0 V/m; Power Drift = -0.044 dB
Peak SAR (extrapolated) = 1.01 W/kg
**SAR(1 g) = 0.606 mW/g; SAR(10 g) = 0.405 mW/g**
Maximum value of SAR (measured) = 0.638 mW/g



## Z-Axis Scan



# APPENDIX C - MEASURED FLUID DIELECTRIC PARAMETERS

## 150 MHz Head

**********

Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
24/May/2013
Freq Frequency(GHz)
FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM

**********

| Freq | FCC_eH | FCC_sH | Test_e | Test_s |
|---|---|---|---|---|
| 0.0500 | 56.97 | 0.69 | 97.08 | 0.63 |
| 0.0600 | 56.50 | 0.69 | 83.74 | 0.66 |
| 0.0700 | 56.03 | 0.70 | 83.62 | 0.66 |
| 0.0800 | 55.57 | 0.71 | 67.92 | 0.67 |
| 0.0900 | 55.10 | 0.72 | 60.92 | 0.70 |
| 0.1000 | 54.63 | 0.72 | 54.76 | 0.71 |
| 0.1100 | 54.17 | 0.73 | 60.77 | 0.73 |
| 0.1200 | 53.70 | 0.74 | 55.35 | 0.73 |
| 0.1300 | 53.23 | 0.75 | 55.65 | 0.73 |
| 0.1400 | 52.77 | 0.75 | 53.21 | 0.74 |
| 0.1500 | 52.30 | 0.76 | 53.54 | 0.74 |
| 0.1600 | 51.83 | 0.77 | 52.70 | 0.76 |
| 0.1700 | 51.37 | 0.77 | 51.01 | 0.76 |
| 0.1800 | 50.90 | 0.78 | 50.24 | 0.76 |
| 0.1900 | 50.43 | 0.79 | 48.96 | 0.78 |
| 0.2000 | 49.97 | 0.80 | 49.54 | 0.79 |
| 0.2100 | 49.50 | 0.80 | 49.69 | 0.80 |
| 0.2200 | 49.03 | 0.81 | 48.00 | 0.82 |
| 0.2300 | 48.57 | 0.82 | 47.02 | 0.83 |
| 0.2400 | 48.10 | 0.83 | 47.37 | 0.83 |
| 0.2500 | 47.63 | 0.83 | 46.19 | 0.85 |

## 150 MHz Body

**********

Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
27/May/2013
Freq Frequency(GHz)
FCC_eB FCC Limits for Body Epsilon
FCC_sB FCC Limits for Body Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM

**********

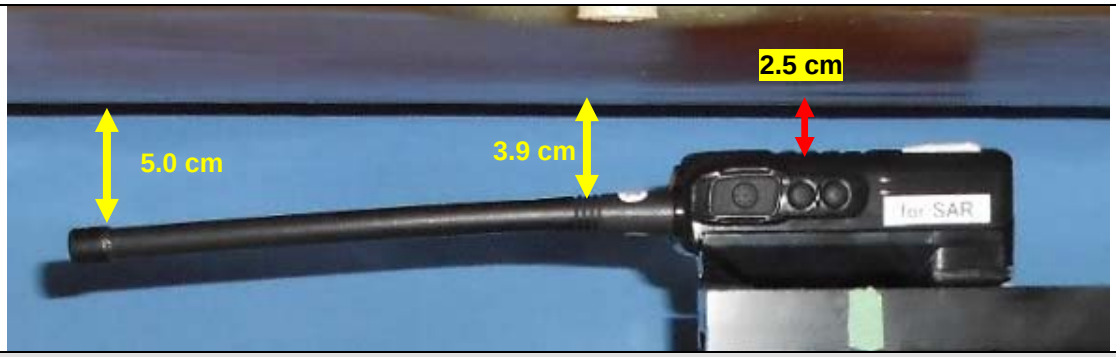
| Freq | FCC_eB | FCC_sB | Test_e | Test_s |
|---|---|---|---|---|
| 0.0500 | 64.37 | 0.72 | 95.57 | 0.71 |
| 0.0600 | 64.12 | 0.73 | 91.06 | 0.69 |
| 0.0700 | 63.87 | 0.74 | 82.63 | 0.73 |
| 0.0800 | 63.63 | 0.74 | 72.55 | 0.72 |
| 0.0900 | 63.38 | 0.75 | 71.77 | 0.72 |
| 0.1000 | 63.13 | 0.76 | 65.95 | 0.75 |
| 0.1100 | 62.89 | 0.77 | 64.47 | 0.75 |
| 0.1200 | 62.64 | 0.78 | 63.38 | 0.74 |
| 0.1300 | 62.39 | 0.78 | 63.06 | 0.76 |
| 0.1400 | 62.15 | 0.79 | 61.34 | 0.77 |
| 0.1500 | 61.90 | 0.80 | 62.87 | 0.77 |
| 0.1600 | 61.65 | 0.81 | 63.55 | 0.78 |
| 0.1700 | 61.41 | 0.82 | 61.79 | 0.78 |
| 0.1800 | 61.16 | 0.82 | 62.40 | 0.78 |
| 0.1900 | 60.91 | 0.83 | 59.74 | 0.80 |
| 0.2000 | 60.67 | 0.84 | 60.65 | 0.81 |
| 0.2100 | 60.42 | 0.85 | 59.09 | 0.82 |
| 0.2200 | 60.17 | 0.86 | 59.00 | 0.81 |
| 0.2300 | 59.93 | 0.86 | 58.81 | 0.83 |
| 0.2400 | 59.68 | 0.87 | 58.90 | 0.82 |
| 0.2500 | 59.43 | 0.88 | 57.91 | 0.83 |

# APPENDIX D - SAR TEST SETUP & DUT PHOTOGRAPHS

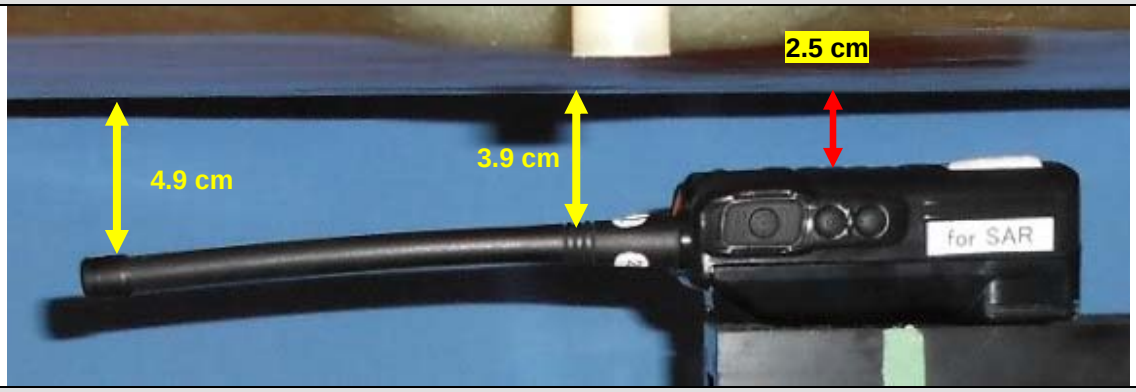
# FACE-HELD SAR TEST SETUP PHOTOGRAPHS

**Face-held SAR Configuration Test Setup**

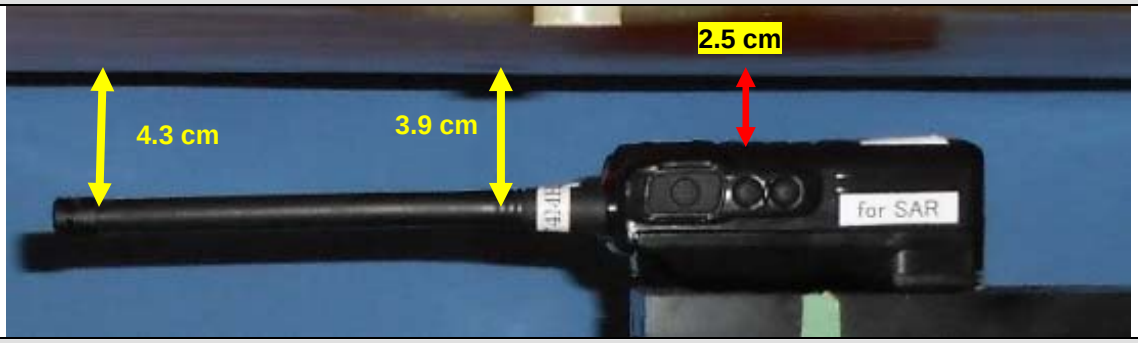
# FACE-HELD SAR TEST SETUP PHOTOGRAPHS



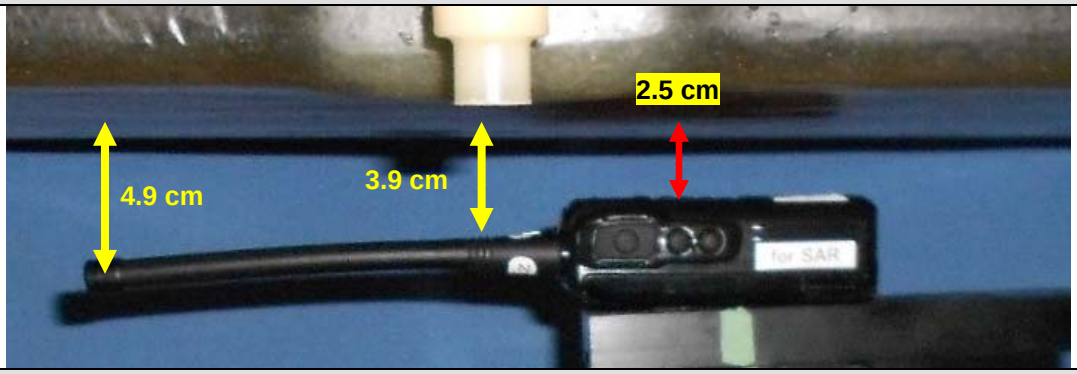

**Face-held SAR Configuration - Antenna Low, Battery b**




**Face-held SAR Configuration - Antenna Mid, Battery b**




**Face-held SAR Configuration - Antenna High, Battery b**

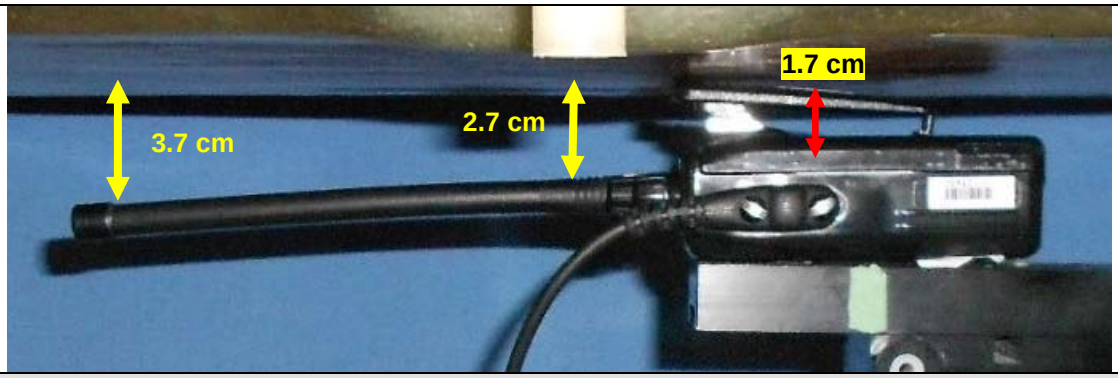



**Face-held SAR Configuration - Antenna Mid, Battery a**

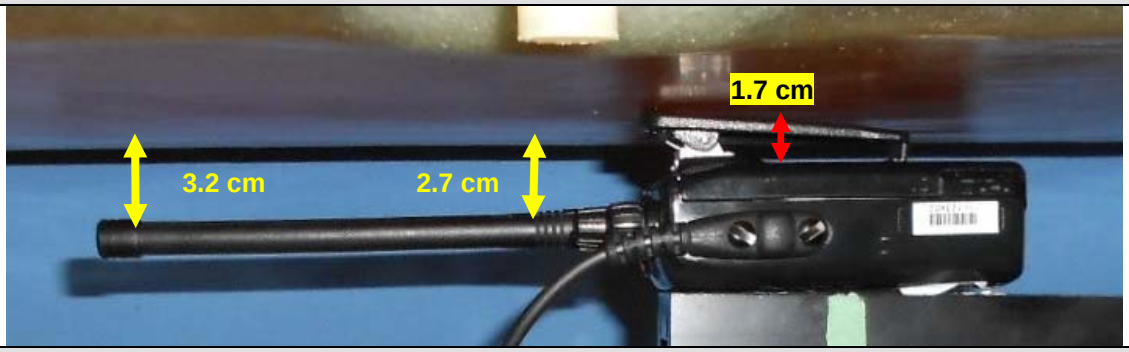
# BODY-WORN SAR TEST SETUP PHOTOGRAPHS (WITH DEFAULT AUDIO ACC.)

**Body-worn SAR Configuration Test Setup**

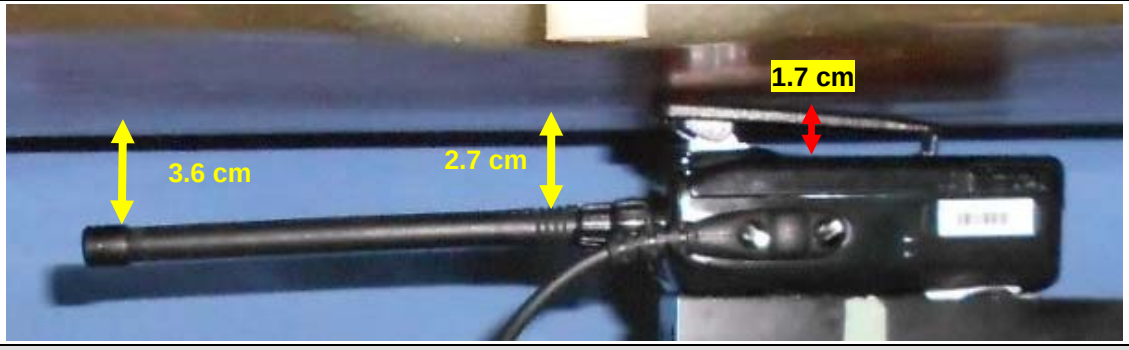
# BODY-WORN SAR TEST SETUP PHOTOGRAPHS (WITH DEFAULT AUDIO ACC.)



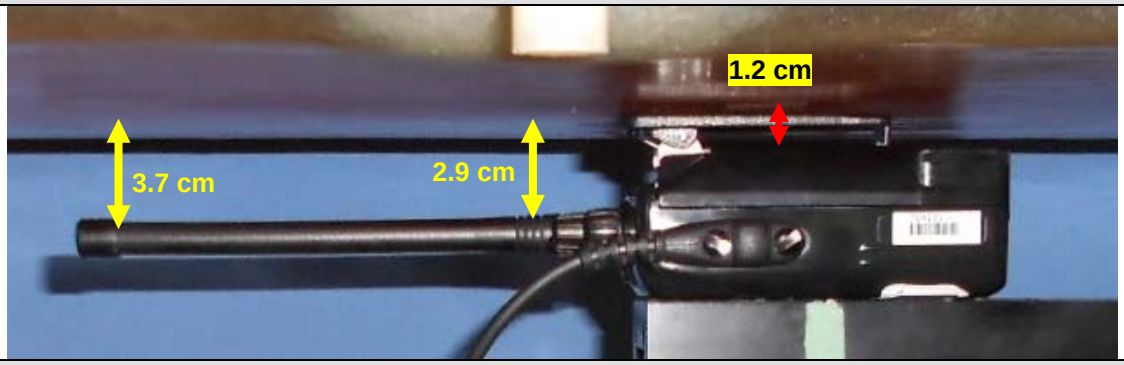

Body-worn SAR Configuration - Antenna Low, Battery a, Audio G1b




Body-worn SAR Configuration - Antenna Mid, Battery a, Audio G1b




Body-worn SAR Configuration - Antenna High, Battery a, Audio G1B




Body-worn SAR Configuration - Antenna Mid, Battery b, Audio G1b

# DUT PHOTOGRAPHS

**Radio Model: EVX-539-D0-5**


**Radio Front**


**Radio Left Side**


**Radio Back**

**Radio Right Side**

**Radio Top**

**Radio Bottom**

# DUT PHOTOGRAPHS

**Radio Model: EVX-534-D0-5**


**Radio Front**


**Radio Left Side**


**Radio Back**

**Radio Right Side**

**Radio Top**

**Radio Bottom**

# DUT PHOTOGRAPHS


**Back of Radio without battery**


**Side of Radio with Battery a and Belt-clip accessory**


**Side of Radio with Battery b and Belt-clip accessory**

**Belt-clip accessory**

# DUT PHOTOGRAPHS

**Antenna 1 (Low 136-150 MHz)**

**Antenna 1 (Mid 150-162 MHz)**

**Antenna 1 (High 162-174 MHz)**

# DUT PHOTOGRAPHS


Battery a - Front

Battery a - Side


Battery a - Back

Battery a - Side

Battery a - Top

Battery a - Bottom

# DUT PHOTOGRAPHS


Battery b - Front

Battery b - Side


Battery b - Back


Battery b - Side

Battery b - Top

Battery b - Bottom

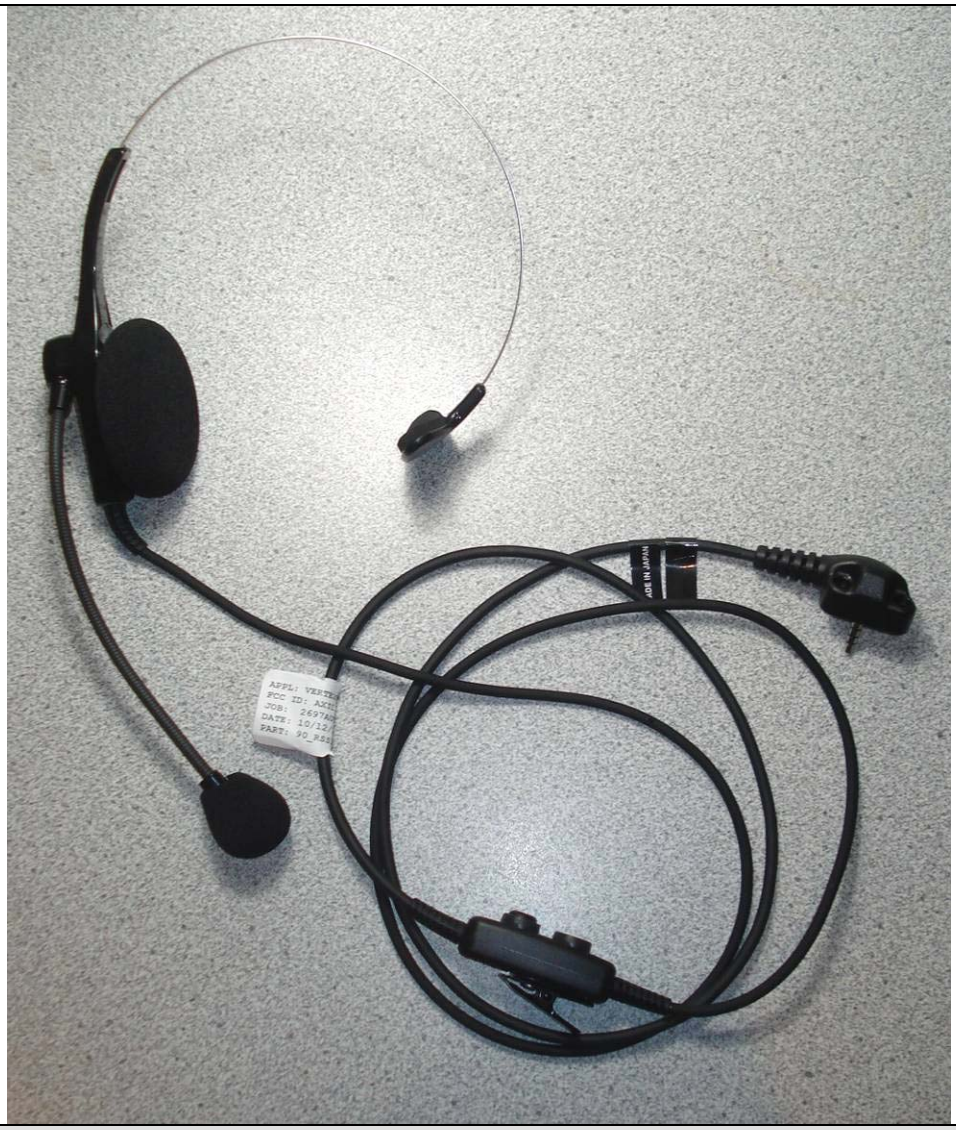
# DUT PHOTOGRAPHS


**Audio Accessory G1a**

# DUT PHOTOGRAPHS


**Audio Accessory G1b**

# DUT PHOTOGRAPHS



**Audio Accessory G2a**

# DUT PHOTOGRAPHS

**Audio Accessory G3a**