

**Exhibit 11: RF Exposure/Environmental Evaluation****Section 15.319 (i)****Requirement:**

Unlicensed PCS devices are subject to the radiofrequency radiation exposure requirements specified in §§1.1307(b), 2.1091 and 2.1093 of this chapter, as appropriate. All equipment shall be considered to operate in a "general population/uncontrolled" environment. Applications for equipment authorization of devices operating under this section must contain a statement confirming compliance with these requirements for both fundamental emissions and unwanted emissions. Technical information showing the basis for this statement must be submitted to the Commission upon request.

**Demonstration of Compliance:**

The AAS19ZAN9121AA is classified as a portable device. Therefore, the AAS19ZAN9121AA is subject to routine environmental evaluation for RF exposure as per §2.1093(c).

Testing to demonstrate compliance to this section was performed by Motorola, Inc. and the results of this test is enclosed below.



**MOTOROLA**

COMMERCIAL, GOVERNMENT, AND INDUSTRIAL  
SOLUTION SECTOR (CGISS)

ELECTROMAGNETIC EXPOSURE (EME)  
TESTING LABORATORY

SAR TEST REPORT

October 6, 1999

Prepared by

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1.0 Environmental Evaluation for Occupational RF Exposure -- Pursuant 47  
CR2.1093(d)(2)

### 1.1 General Information

FCC ID: ABZ99FT7010

Device category: Portable radio

RF exposure environment: Uncontrolled

Test method: Measurement

Note: The test software operation utilized 2 time slots (2/8 or 25%  
duty cycle), therefore the measured SAR results must be divided by  
2 to simulate the proper user mode (1/8 slots or 12.5% duty cycle).

#### Special Note:

This is a very low RF power radio typically operating in the 33 mW range  
(conducted). The resulting measured SAR was below the 10 micro-Watt/g  
sensitivity limit of the test system. Therefore, the resulting SAR scan plots are very  
erratic due to being in the system noise level and therefore it can be concluded that  
these results demonstrate that the SAR levels are well within the FCC limit of 1.6  
W/kg, per the requirements of 47 CFR 2.1093(d)(2).

### 1.2 Antenna Description

Antenna type: monopole ( ) dipole ( ) Helix ( x ) Patch ( ) Other ( )  
1/4 wave

Antenna Location on Device: Left ( ) Right ( x ) Top ( x ) Bottom ( )  
Front ( ) Back ( )

|                     |                                 |         |
|---------------------|---------------------------------|---------|
| Antenna Dimensions: | Length (extended)               | 1.8 cm  |
|                     | Diameter (at tip of antenna)    | 1.05 cm |
|                     | Diameter (at middle of antenna) | 1.15 cm |
|                     | Diameter (at base of antenna)   | 1.25 cm |

Antenna configuration: Fixed ( x ) Retractable ( ) External ( ) Other ( )

Antenna Gain: -1 (dBi)

### 1.3 Test Signal

Test signal source: Test mode ( x ) Base Station ( ) Simulator ( )  
Other ( )

Signal Modulation: C.W. ( ) TDMA ( x ) Other ( )

**1.4 Output Power**

Output power measurement conditions: Free Space radiated ( )  
 SAR test configuration ( )  
 Conducted (x)

Output power measured with: Power meter (x)  
 Base Station Simulator ( )  
 Spectrum Analyzer ( )

Measured Output Power before and after SAR runs

Measurements made with the radio operating with  
 2/8 multiplexing (25% duty cycle)

| Output Power<br>Measured at<br>Frequency<br>(MHz) | Output Power<br>Measured Before SAR<br>with Fully Charged<br>Battery<br>(mWatts) | Output Power<br>Measured After SAR<br>(mWatts) |
|---------------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------|
| 1920.05                                           | 37                                                                               | 34 after 20 mins                               |
| 1925.15                                           | 40                                                                               | 36 after 20 mins                               |
| 1930.25                                           | 40                                                                               | 36 after 20 mins                               |

No battery changes made during SAR runs

**1.5 Test Position**

The following describes the three test positions used to perform SAR measurements on the portable radio:

1. Head - The portable radio is positioned in a normal operating position by aligning the axis of the radio with a line from the center of the ear to the corner of the lips, center the listening area of the radio over the ear canal. Next, position the radio as close as possible to the phantom, preferably with three points of contact with the phantom to allow for best coupling to the simulated tissue.
2. Face - The portable radio is positioned in the right hand of a full body phantom and the radio's normal speaking area is aligned with the center of the phantom's mouth.
3. Abdomen - The portable radio is positioned in a carry case accessory with belt clip beneath the abdomen of the full body phantom with the back of the radio facing the abdomen, the keypad/display facing the floor and the antenna is made to be as parallel as possible to the phantom.

Reference figures: 1, 2, and 3 for portable radio antenna orientation and distances relative to phantoms.

### 1.6 Measurement Uncertainty

The table below list an estimate of the possible errors that are associated with the measurement system.

|                                                     | Error (%) | Distribution | Divisor | Standard Uncertainty |
|-----------------------------------------------------|-----------|--------------|---------|----------------------|
| Measurement of the conductivity of tissue simulated | +/- 3     | Normal       | 2       | 1.5                  |
| Temperature rise calibration of probe               | +/- 5     | Rectangular  | 1.732   | 2.89                 |
| Measurement of thermal capacity of tissue simulated | +/- 5     | Normal       | 2       | 2.5                  |
| Accuracy of a repeatable radio position             | +/- 1     | Normal       | 2       | 0.5                  |
| Probe isotropic response                            | +/- 12    | Normal       | 2       | 6                    |

With a coverage factor of  $k=2$ , providing a level of confidence of approximately 95%, the Uncertainty for SAR testing is  $\pm 14.6\%$ .

### 1.7 Measurement System and Phantom Description

Description of Measurement System and Performance:

The measurement system used to evaluate the portable radio SAR consist of a small diameter isotropic electric field probe, multiple axis probe positioning system, differential amplifiers, high impedance cables connecting the probes to the differential amplifiers and the amplifier output to a computer, IDX FLEXWARE software version 3.58, robotics arm with its extension, a custom probe holder, and supporting equipment to calibrate the probe and characterize the simulated tissue material. The measurement system has sensitivity of 10 micro-Watt/g. Linear response up to 20 mW/g. The system is calibrated using thermal measurements of SAR in muscle and brain simulated tissue at the frequency band of interest.

#### Description of Positioning System and Performance:

The Intelledex Microsmooth Model 660 six-axis robotics arm is used to position a small diameter isotropic electric field probe inside a human shaped phantom with a solution that mimics the electrical characteristics of human brain or muscle tissue. Communication with the robot is by a hand held controller and over an RS-232 link. Reference Intelledex MicroSmooth 660 Operation Manual. The positioning system performance is based on a 1 mm positioning repeatability.

#### Overall System Performance Verification Procedure:

Established procedures within the Motorola Worldwide CGISS (formerly LMPS) EME Lab are routinely followed to verify the overall system performance. They consist of calibrating the electric field probe together with the system instrumentation for each frequency band of interest and measuring the simulated tissue conductivity and dielectric constant to ensure that they are within established specs.

**RF Susceptibility Verification Results:**

No change is produced in the voltage offsets of the measurement system instrumentation amplifiers as a result of positioning a transmitting radio around the amplifiers and cables or when the transmitting radio is moved around the lab. The radio used to cause RF interference to the measurement system is made to transmit in the same band and with comparable output power as the radio to be tested by the measurement system. The measurement system immunity to unwanted RF exposure is accomplished by providing the probe leads that connect to the instrumentation amplifiers with shielded EMI cables, enclosing the instrumentation amplifiers in a shielded housing, connecting the instrumentation amplifiers to the computer equipment with high impedance cables, using RF absorbing cones throughout the lab to minimize reflections, providing enough distance between the computer equipment, positioning system and probe to eliminate unwanted coupling.

**System Verification Results:**

Overall system results are verified by performing SAR measurements with a reference radio, at the frequency band of interest, and then comparing the results to previously measured data using the same reference radio.

**Description of phantom:**

Human shaped, solid shell device made of Fiberglass and mounted on a non metallic base or stand. The phantoms used in the Motorola EME Labs are the half body or torso (left and right ear version, no arms) and a laydown full body (6 feet tall).

Phantom Types:                      Full body ( x )

                                                 Abdomen Thickness: 0.15 cm

                                                 Face Thickness:              0.15 cm

                                                 Torso ( x )

                                                 Torso's Head: Left Ear ( x )    Right Ear ( x )

                                                 Left/Right Ear Thickness: 0.5 cm

                                                 Cheek Thickness:        0.15 cm

**1.8 Simulated Tissue Properties**

|                                                  |                  |                  |
|--------------------------------------------------|------------------|------------------|
| Type of simulated tissue used:                   | Muscle ( x )     | Brain ( x )      |
|                                                  | [Full Body]      | [Torso]          |
| Simulated tissue composition (% by weight) for : | Muscle ( x )     | Brain ( x )      |
|                                                  | Di-Water: 55.20% | Di-Water: 54.90% |

|             |        |             |        |
|-------------|--------|-------------|--------|
| Sugar:      | 43.40% | Glycol:     | 44.92% |
| Salt:       | 0.15%  | Salt:       | 0.18%  |
| HEC:        | 1.00%  | HEC:        | 0.00%  |
| Dowicil 75: | 0.20%  | Dowicil 75: | 0.00%  |

Note: HEC (HYDROXYETHYL CELLULOSE) is a gelling agent and Dowicil 75 is anti-bacterial compound.

Characterization of Simulated tissue materials and ambient conditions:

Simulated tissue prepared for SAR measurements are measured at room temperature and verified to be in spec prior to actual SAR measurements by filling a coaxial slotted line with the tissue and probing the amplitude and phase changes versus distance in the simulated tissue.

A HP8753D Network Analyzer is used to perform the measurements.

Measured simulated tissue dielectric constant and conductivity used in SAR runs as of 9/24/99

|                                       |                        |                 |
|---------------------------------------|------------------------|-----------------|
| Simulated tissue dielectric constant: | Muscle: 49.0           | Brain: 38.4     |
| Simulated tissue conductivity:        | Muscle: 1.95 S/m       | Brain: 1.42 S/m |
| Simulated tissue density:             | Muscle 1.25 g/cubic cm |                 |
|                                       | Brain 0.98 g/cubic cm  |                 |

Note: Simulated tissue dielectric constant and conductivity have been rounded off to one and two significant digits after the decimal point respectively, to take into account the tissue measurement uncertainty.

## 1.9 Electric Field Probe Descriptions and Calibration

### Electric Field Probe Description and Performance

The electric field probe is a three channel device used to measure RF electric fields. The probe sensors consist of three mutually orthogonal dipoles, each 2.5 mm in length. Located at the center of each of the three dipoles is a Schottky diode detector. For each channel of the probe, the dipole and two high impedance lines are vapor deposited on a quartz substrate. The three substrates are mounted on a non conductive RF transparent support which has a I-beam cross section. Along the support are three pairs of high impedance lines which connect the substrate to a single output connector. The probe is enclosed in a protective sleeve to avoid contact with the corrosive elements of the simulated tissue. The total length of the probe is approximately 25 cm. The electric field probe is isotropic and its performance is such that no significant field perturbation from the probe occurs during measurements.

Probe type: Electric Field ( x )

Magnetic ( )

Other ( )

Probe S/N: p041 (Brain), pG (Muscle)

### Electric Field Probe Calibration Procedure:

The SAR measurement system is calibrated as a single unit and is performed in two steps.

- 1) Correlation of the measured free space electric field and the measured electric field in the medium to temperature rise in a dielectric medium.
  - a. A RF transparent thermistor based temperature probe (Vitek Electrothermia Monitor #101) and an isotropic electric field probe are placed side by side in a planar phantom while both are exposed to RF energy from a half wave dipole antenna located below the phantom.
  - b. The location (hot spot) of maximum electric field concentration on the phantom's surface is determined. Then the electric field probe is moved sideways so that the temperature probe, while affixed to the electric field probe, is placed at the previous location of the electric field probe. Temperature changes for 30 second exposures at the same RF power levels used for the electric field measurements are recorded.
  - c. The conversion factor, which scales the electric field in terms of the thermally derived SAR, is determined.
- 2) Determination of free space electric field from amplified probe outputs in a test RF (Waveguide) field.
  - a. A RF signal generator is connected to the input of a Waveguide (WR510) and the output of the Waveguide to a RF HP 437B power meter. The RF signal generator is adjusted so that the power density inside the Waveguide is 1 mW/sq-cm. For Waveguide model 510, the corresponding power level is 33.3 mW.



- b. The probe is inserted through the middle of the shorted edge with the positioning system and the tip of the probe, where the probe detectors are located, is carefully inserted in the Waveguide, with its axis orthogonal to the E-field, its sensors placed at the center of the Waveguide cross section. Once the prescribed probe position inside the Waveguide is achieved, it must be maintained during the measurements.
- c. The probe is rotated 360 degrees on its axis while the RF power level from the signal generator is maintained constant throughout the calibration.
- d. Software indicators will show the maximum measured value on each of the three channels while the probe is being rotated through 360 degrees. The maximum measured values are referred to as amplifier settings and they are the factors necessary to adjust each channel of the measurement system so its indicated output can then be equated to the RF field.

### Media and Frequency for E-Field Probe Calibration

|                                          |                     |
|------------------------------------------|---------------------|
| Media: Air                               | Frequency: 1900 MHz |
| Media: Simulated Muscle and Brain tissue | Frequency: 1900 MHz |

Probe Offset: 3 mm

Probe Isotropic Response: +/- 12% deviation from isotropy in tissue located in flat phantom.

|                                   |                               |
|-----------------------------------|-------------------------------|
| E-Field Probe Calibration Factor: | Muscle (probe pG): 1.67 mW/g  |
|                                   | Brain (probe p041): 1.11 mW/g |

Probe Initial Thermal Derived SAR Calibration Date: 5/1/99 (pG), 11/1/98 (p041);

Next Due Date: 5/1/2000 (pG), 11/1/99 (p041)

Probe Free Space Calibration Date Prior to SAR Measurement: 9/16/99.

#### 1.10 SAR Measurement Parameters, Procedures and Results:

SAR test frequencies: 1920.05 MHz, 1925.15 MHz, and 1930.25 MHz

The radio is marketed as a unlicensed PCS Handset transceiver capable of operating as a telephone or traditional two-way (dispatch) radio. This is a UPCS band operating in TDMA system with 8 slots in a 5 msec frame, 4 TX and 4 RX slots at 625 usec to allow full duplex phone calls. Both Phone and Dispatch modes utilize 1 time slot (1/8) with a 12.5% duty cycle.

The operating position when the radio is used as a telephone, is to position it adjacent to the head as described in Fig 1.

The standard operating position when the radio is used as a traditional two-way radio (dispatch) is to position the radio with a separation distance of 1-2 inches (2.5cm – 5cm) between the radio microphone and the user's lips.

The phantom's palm in which the radio is positioned to perform the test is fixed. Refer to Fig 2, which shows the dispatch test set up configuration. When the radio was tested in the phantom's

palm, the separation distance between the tip of the phantom's nose and the radio case was actually 3 mm and thus, constitutes the smallest distance for the device. In the standard operating position, the body of the radio does not touch the user's nose.

Several accessories marketed as separate items are available which influence possible operating conditions of this handheld transceiver. These include some body-worn items such as a leather carry case with belt clip which is intended to be attached to a user's belt, and peripheral devices such as a remote speaker microphone. The combination of carrying case and audio accessory devices permits the handheld transceiver to be operated as a two-way while worn on the body.

**Description of coarse scan region (for highest measured SAR values obtained per test position):**

A coarse scan of the radio was performed to determine the hot spot location with the radio positioned in the head, face and abdominal test position, described in the coarse scan region plot for runs 99092702\_AREA.VLT, 99092518\_AREA.VLT, and 99092516\_AREA.VLT, respectively.

Coarse Scan Area (Head Position): x = 10 cm, y = 6 cm, z = 0 cm Scan resolution: 1 cm

Coarse Scan Area (Face Position): x = 13 cm, y = 6 cm, z = 0 cm Scan resolution: 1 cm

Coarse Scan Area (Abdomen Position): x = 15cm, y = 8 cm, z = 0 cm Scan resolution: 1 cm

**Description of fine scan region (for highest measured SAR values obtained per test position):**

Subsequent to and based on the above coarse scan regions, a finer scan region centered around each of the peak SAR locations were scanned, to determine the one gram average SAR. Reference the plots for runs 99092702\_ZOOM.VLT, 99092518\_ZOOM.VLT, and 99092516\_ZOOM.VLT.

Fine Scan Area (Head Position): x = 2 cm, y = 2 cm, z = 0 cm Scan resolution: 0.25cm

Fine Scan Area (Face Position): x = 2 cm, y = 2 cm, z = 0 cm Scan resolution: 0.25cm

Fine Scan Area (Abdomen Position): x = 2 cm, y = 2 cm, z = 0 cm Scan resolution: 0.25cm

**Note:**

- 1) The 0,0 location of the face and abdomen scan areas was chosen to be at the radio/antenna interface.
- 2) The 0,0 location of the head scan area was chosen to be at the center of the ear.

**Identification of peak SAR location:**

Reference the contour plot (run # 99092518\_AREA.VLT) for the highest measured peak SAR location on the radio.

**Highest peak SAR (W/kg) and its test configuration:**

1) Highest measured peak SAR = 0.048 mW/g and it occurs at the surface of the phantom when the radio is in the face position. Reference the field attenuation (SAR scan) curve for run # 99092518\_ZOOM.VLT.

2) Highest measured one-gram averaged peak SAR (W/kg):

The measured 1-gram averaged peak SAR = 0.0289 mW/g but, will be rounded to 0.029 mW/g.

The 1-gram averaged peak SAR was measured at the low end of the band (1920.05 MHz).

Reference run # 99092518\_ZOOM.VLT.

The calculated maximum 1 gram averaged peak SAR value is determined by scaling up the SAR by the same ratio as the maximum power delivered to the radio antenna connector under any conditions of permissible tuning, frequency, voltage and temperature. For this reason, the radio Maximum Calculated 1gram averaged peak SAR becomes:

$$\text{Maximum Calculated 1 gram Averaged Peak SAR} = [ (A / B) \times (C \times D) ]$$

A = Maximum frame average power delivered to the antenna connector under any conditions of permissible tuning, frequency, voltage and temperature.

B = Lowest frame average power measured at end of SAR.

C = Measured 1 gram averaged peak SAR.

$$D = D1 \times D2$$

D1 is the transmission mode duty cycle, i.e., the ratio of the user requested transmission and the the tested mode.

D2 is the Push To Talk duty cycle. For two-way radio (dispatch, controlled environment) = 0.5, all others =1

$$\text{Max. Calc. 1-gram Avg Peak SAR} = (0.053\text{W}/0.036\text{W} \times 0.0289 \text{ mW/g} \times 12.5\%/25\% \times 1) = 0.021\text{mW/g}$$

Refer to table 1 on the following page for other SAR test positions and measured 1-gram averaged SAR values.

**SAR Distribution of Worse Case Test Results:**

Refer to table 1 for variation of test frequency and position relative to the phantom; and, based on the description for scaling up the measured SAR 1-gram averaged peak value, to table 2 for the highest calculated SAR values by expected operating conditions.

**TABLE 1****MEASURED SAR MATRIX**

| RADIO<br>SERIAL<br>NO.                                      | ANTENNA<br>POSITION | TRANSMIT<br>FREQUENCY<br>(MHz) | SAR (mW/g)            |                    |                     |                     |
|-------------------------------------------------------------|---------------------|--------------------------------|-----------------------|--------------------|---------------------|---------------------|
|                                                             |                     |                                | ABDOMEN<br>(Dispatch) | FACE<br>(Dispatch) | HEAD (L)<br>(Phone) | HEAD (R)<br>(Phone) |
|                                                             |                     |                                |                       |                    |                     |                     |
| Separation distance from antenna/case to closest body part: |                     |                                | 1.7 cm                | 0.3 cm             | 1.3 cm              | 2.0 cm              |
| PROYYY0863                                                  | FIXED               | 1920.05                        | 0.0052                | 0.0289             | 0.0052              | **                  |
| PROYYY0880                                                  | FIXED               | 1920.05                        | 0.0037                | 0.0018             | 0.0086              | (Noise Level)       |
| PROYYY0880                                                  | FIXED               | 1925.15                        | *                     | *                  | 0.0038              | 0.0048              |
| PROYYY0880                                                  | FIXED               | 1930.05                        | *                     | *                  | 0.0036              | 0.0018              |

NOTES: 1) \* Measurement was performed on the "Low" Transmit Band because it had the highest SAR deposition..

2) \*\* Head measurements on the second radio was only performed on the left side which showed the highest SAR deposition.

3) Measured 1-gram averaged peak SAR values in the table have been rounded off to two significant digits after the decimal point, to take into account the probe's measurement uncertainty.

4) Battery: HNN9021A (3.6 volt, 550 mAh) NiMH

4) The highest SAR deposition in both the face and abdominal positions were with the radio in the soft leather carry case.

**TABLE 2**Maximum Calculated SAR by Expected Operating Position and Conditions

| MEASUREMENT<br>POSITION                                | HIGHEST<br>MEASURED<br>SAR<br>DEPOSITION | MAXIMUM OPERATIONAL<br>DUTY CYCLE AND MODE          | OPERATIONAL<br>MAXIMUM<br>CALCULATED<br>SAR |
|--------------------------------------------------------|------------------------------------------|-----------------------------------------------------|---------------------------------------------|
| Abdomen (with soft leather carry case and audio accy.) | 0.0052 mW/g                              | 12.5% - with attached earbud & microphone accessory | 0.004 mW/g                                  |
| Face                                                   | 0.029 mW/g                               | 12.5% - 2-way dispatch                              | 0.021 mW/g                                  |
| Head                                                   | 0.0086 mW/g                              | 12.5% - Telephone                                   | 0.0063 mW/g                                 |

**Description of procedures used to extrapolate SAR to phantom surface:**

The highest local SAR occur at the surface of the phantom. There is a 3 mm probe offset from the physical end of the probe to the probe detectors. The probe offset make it necessary to extrapolate to the peak surface SAR from the SAR measured at a short distance from the surface.

At the measurement point on the phantom surface where the highest probe voltage is recorded (a.k.a. hot-spot), 11 probe voltage measurements are performed starting as close as possible to the phantom surface and every 0.5 cm thereafter along a path normal to the probe axis (+z - axis) for a distance of 5 cm. An exponential decay of the energy density with depth is calculated using the first three probe voltage measurements nearest the surface. The extrapolated peak surface voltage is calculated from the following relation:

$$\text{Peak Surface Voltage} = (V1) \times (\text{Exponential Decay})$$

where: V1 is the first voltage measurements along a path normal to the probe axis.

$$\text{Exponential Decay} = e\{\text{Ln (Slope)} \times (\text{Offset} / \text{Spacing})\}$$

$$\text{Slope} = [(V1/V2) + (V2/V3)] / 2$$

where: V1, V2 and V3 are the first, second and third voltage measurements along a path normal to probe axis, respectively. Reference the first three measured voltage values from run # 99092518\_ZOOM.VLT.

Offset = Distance from center of probe dipoles to outside of probe case

Spacing = Distance between measurement points (in +z-axis)

The peak SAR, at the surface, is calculated as follows:

$$\text{Peak SAR (at surface)} = \text{Peak Surface Voltage} \times (\text{Probe Calibration Factor} / \text{Sensor Factor})$$

where: Sensor Factor = 10.8 mV/mW/sq-cm

**Description of 1-gram average procedures, highest SAR gradient at peak location (W/kg/mm):**

**1-gram avg SAR=(Peak Surface Voltage + 1 cm Voltage)/2 x Probe Calibration Factor/Sensor Factor**

Peak Surface Voltage is described above and the 1 cm Voltage is an interpolated voltage, Representative of the voltage 1 cm above the surface of the phantom.

The derivative of the peak SAR is the gradient at the peak location.

Gradient (at peak SAR location) = [Ln (slope) x Peak SAR] / Spacing

Gradient (at peak SAR location) is 0.036 W/Kg/mm. The calculation was determined using the Measured values from run # 99092518\_ZOOM.VLT.

FIG. 1A HEAD POSITION - LEFT EAR

<====  
(+x Axis)

====>  
(-x Axis)



DIM A = Distance from surface of antenna base to phantom head = 13 mm

DIM B = Distance from surface of antenna tip to phantom head = 18 mm

Legend: Torso filled with simulated brain tissue on non RF support fixture and radio affixed to head.

Axis is (+y) Axis is out of the page, toward viewer and (-y) into the page, away from viewer.

Exhibit 11

FIG. 1B HEAD POSITION - RIGHT EAR

<====  
(+x Axis)

====>  
(-x Axis)



DIM A = Distance from surface of antenna base to phantom head = 20 mm

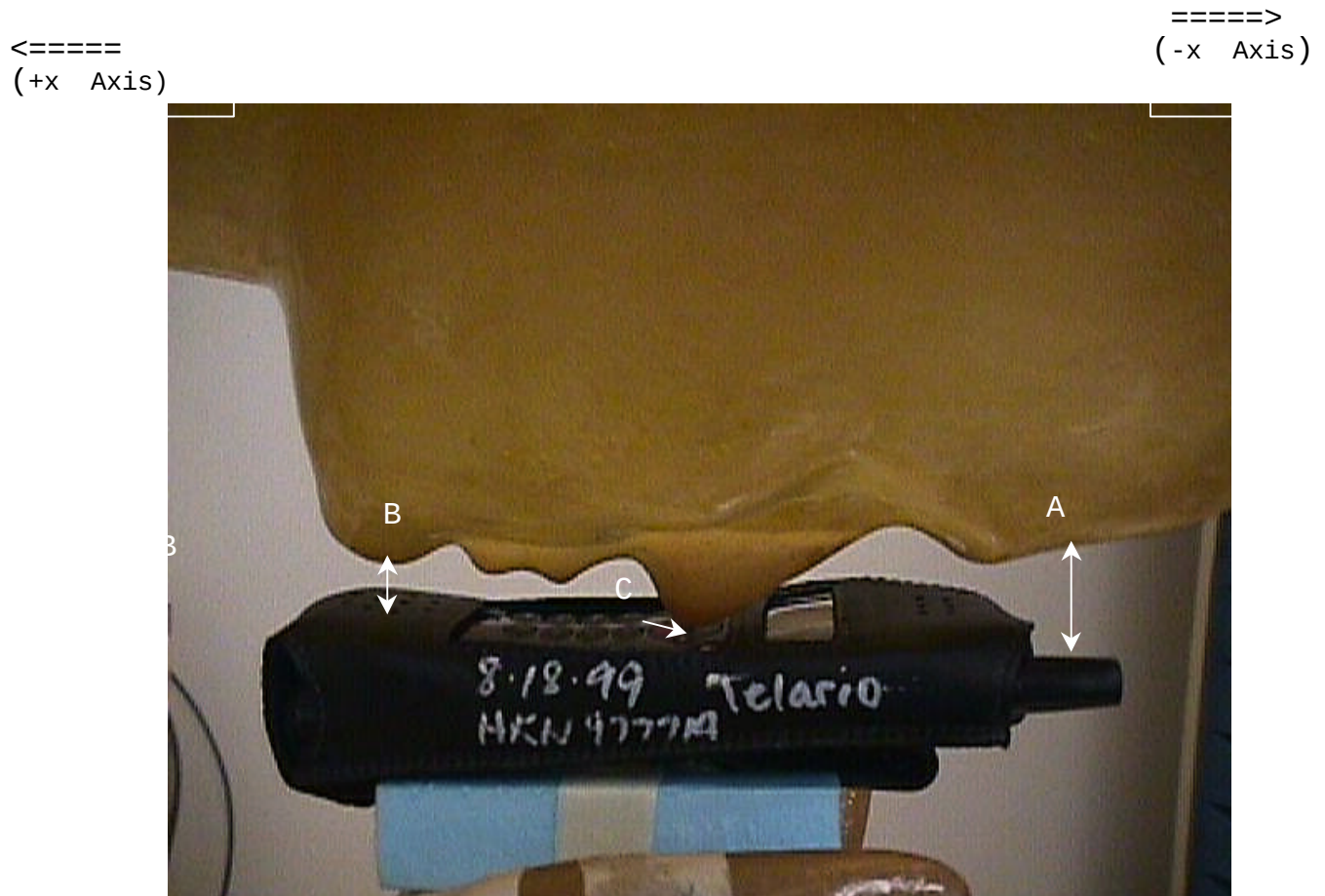
DIM B = Distance from surface of antenna tip to phantom head = 25 mm

Legend: Torso filled with simulated brain tissue on non RF support fixture and radio affixed to head.

(+y) Axis is out of the page, toward viewer and (-y) Axis is into the page, away from viewer.



FIG. 2 FACIAL POSITION



Radio in phantom's palm

DIM A = Distance from center of phantom's forehead to antenna is = 26 mm.

DIM B = Closest distance between phantom's chin and radio surface = 20 mm

DIM C = Closest distance between phantom's nose tip and radio surface = 3 mm

Legend: Lay down full body phantom filled with simulated muscle tissue on non RF support fixture and radio in phantom's palm.

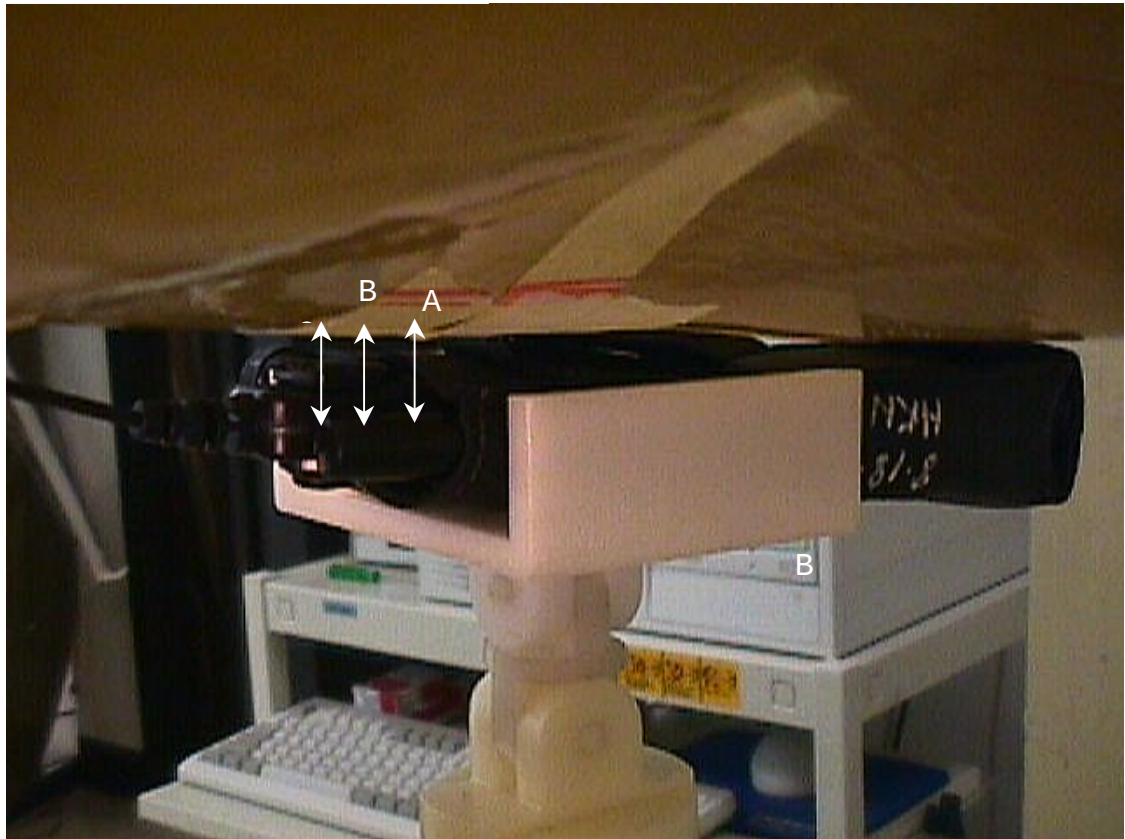
(+y) direction is out of the page, toward viewer and (-y) direction is into the page, away from viewer.

Exhibit 11

FIG. 3 ABDOMINAL POSITION

&lt;== Toward Phantom's feet (+ x axis)

Toward phantom's head (-x axis) ==&gt;



DIM A = Distance from surface of antenna base to phantom surface = 17 mm

DIM B = Distance from center of antenna surface to phantom surface = 17 mm

DIM C = Distance from surface of antenna tip to phantom surface = 18 mm

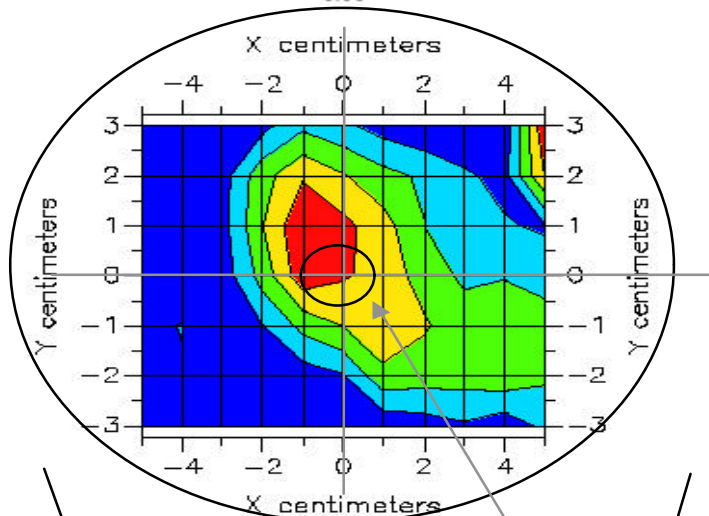
Legend: Lay down full body phantom filled with simulated muscle tissue on non RF support fixture and radio affixed to phantom's abdomen.

+y) axis is out of the page, toward viewer and (-y) axis is into the page, away from viewer.

Head Position Coarse Scan Region

PROYYY0880 (A.G.)

File : 99092702-AREA-VLT  
 Start : 27-Sep-99 07:37:02 am End : 27-Sep-99 07:44:32 am  
 TC3000/AAS19ZAN9121AA/PROYYY0863;1920.05MHzMHz;W;1/4 Wave/Internal;  
 Head/Left Ear;AREA;p041/E Field/0 DegreesBrain/38.400/1.420  
 3.58

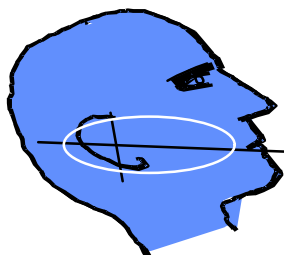


Spatial SAR Chart



Center of Ear

Radio



Partial View of Torso Phantom  
 As Viewed From Tissue Side

Exhibit 11

PROYYY0880 (A.G.)

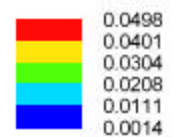


Exhibit 11

## Head Position SAR Data

File c:/idx3/SYSTEM/SARMEAS3/data/Normal/99092702\_ZOOM.VLT  
 Start 27-Sep-99 07:44:32 am End : 27-Sep-99 07:53:37 am  
 Ver 3.68

Radio Type : Telario TC3000  
 Model Number : AAS197AN9121AA  
 Serial Number : ~~XXXXXXXXXX~~ PROXYX080 (AS)  
 Frequency : 1920.05MHz MHz  
 Peak Trans. Pwr : 0.053 W  
 Start Trans. Pwr: 0.037 W  
 Antenna Type : 1/4 Wave  
 Antenna Posn. : Internal  
 Phantom Type : Head  
 Phantom Posn. : Left Ear  
 Scan Type : ZOOM/SAR  
 Probe Name : p041  
 Field Type : E Field  
 Orientation : 0 Degrees

Mixture Type = Brain  
 Mixture Dielectric Constant = 38.400  
 Mixture Conductivity = 1.420

Comment :  
 Configuration:  
 Run #1  
 Battery: HNN9021A

## MOBILE ROBOT

Probe Offset = 0.28 cm  
 Sensor Factor = 0.0108  
 Conversion Factor = 1.108

Amplifier Channel Settings 0.137 0.109 0.084

Max Location X = -0.500, Y = 1.500, Z = 0.000 (cm) Value = 0.485

Measured Values (volts) =  
 8.713E-005 7.819E-005 5.510E-005 4.190E-005 5.895E-005 3.449E-005  
 2.084E-005 6.161E-005 5.121E-005 4.301E-005 6.937E-005

Calc. Voltage @ Surface (Vs) = 0.0001

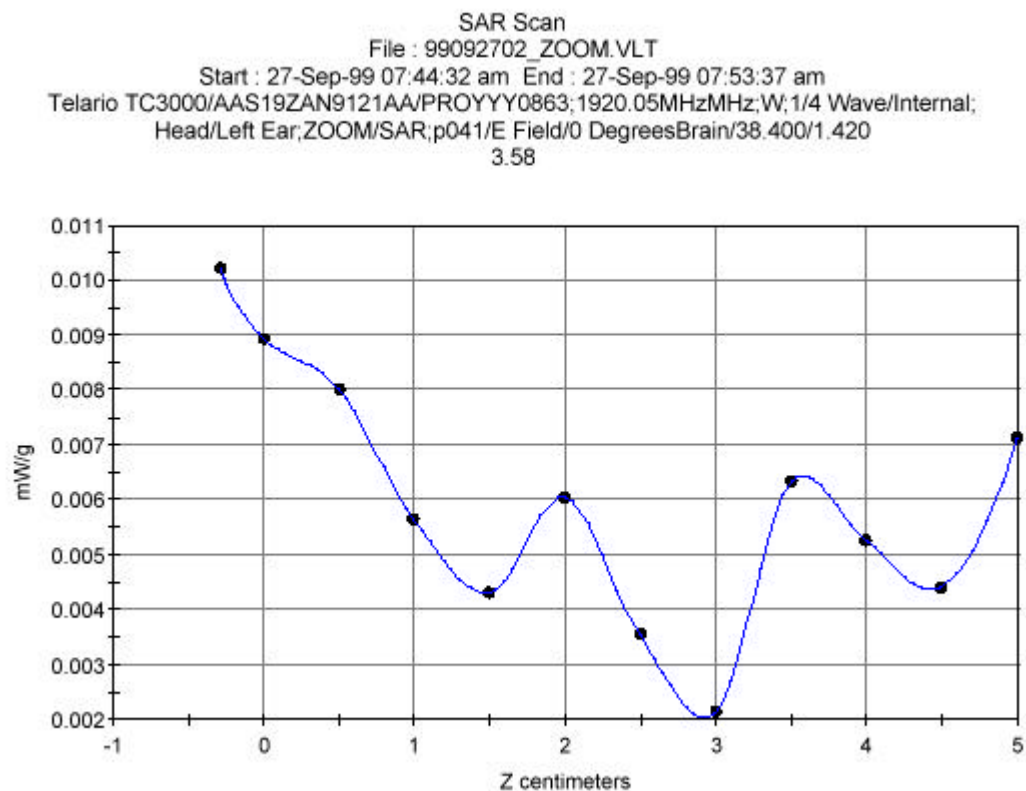
Voltage @ 1.00 cm (Vt) = 0.0001

Ave. Voltage (Vs+Vt)/2 = 0.0001

Ave. SAR over 1 g (mW/g) = 0.0086

Exhibit 11

## Head Position SAR Curve



Note: Graph irregular due to very low RF levels in the noise range.

## Facial Position Coarse Scan Region

File : 99092518\_AREA.VLT  
Start : 25-Sep-99 04:42:10 pm End : 25-Sep-99 04:50:38 pm  
TC3000/AAS19ZAN9121AA/PROYYY0863;1920.05MHzMHz;W;1/4 Wave/Internal;  
Body/Face;AREA;pG/E Field/0 DegreesMuscle/49.000/1.950

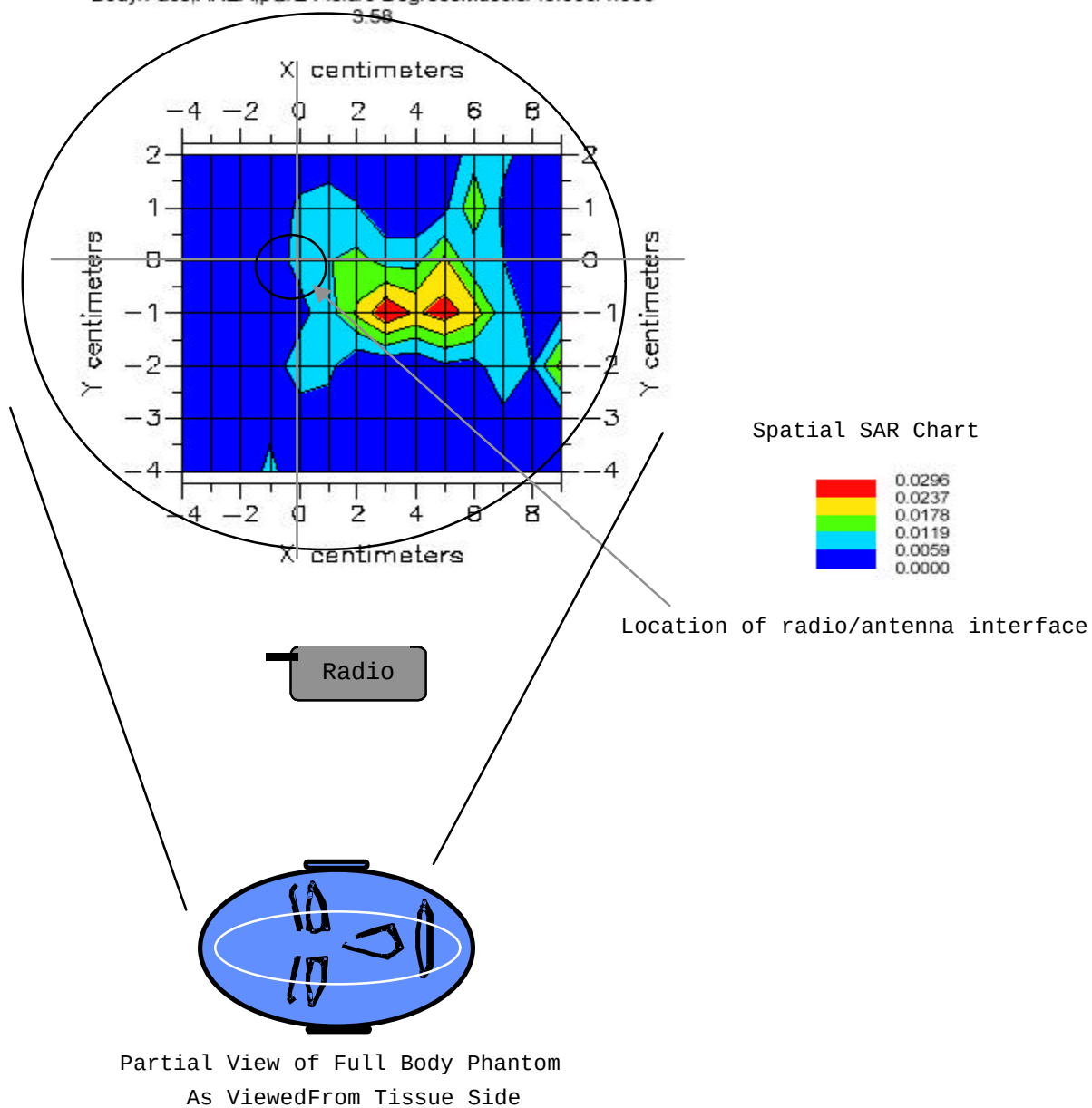
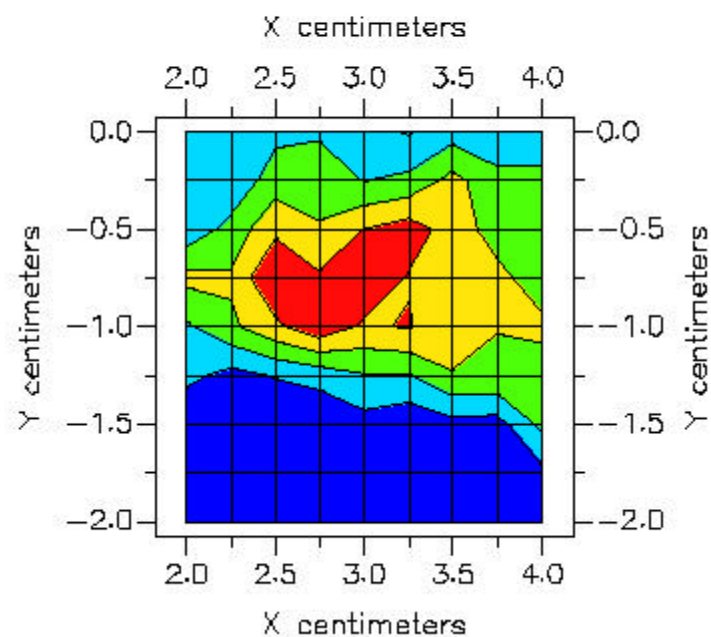


Exhibit 11



## Facial Position Fine Scan Region

File : 99092518\_ZOOM.VLT  
Start : 25-Sep-99 04:50:38 pm End : 25-Sep-99 04:58:17 pm  
TC3000/AAS19ZAN9121AA/PROYYY0863;1920.05MHzMHz;W;1/4 Wave/Internal;  
Body/Face;ZOOM/SAR;pG/E Field/0 DegreesMuscle/49.000/1.950  
3.58



Spatial SAR  
Chart



## Facial Position SAR Data

File: c:\idx3\SYSTEM\SARMEAS\data\Normal\99092518\_ZOOM.VLT  
 Start: 25-Sep-99 04:50:38 pm End: 25-Sep-99 04:58:17 pm  
 Ver: 3.5B

Radio Type: Telario TC3000  
 Model Number: AAS19ZAN9121AA  
 Serial Number: PROYY0863  
 Frequency: 1920.05MHz MHz  
 Peak Trans. Pwr: 0.053 W  
 Start Trans. Pwr: 0.037 W  
 Antenna Type: 1/4 Wave  
 Antenna Posn.: Internal  
 Phantom Type: Body  
 Phantom Posn.: Face  
 Scan Type: ZOOM/SAR  
 Probe Name: p6  
 Field Type: E Field  
 Orientation: 0 Degrees

Mixture Type = Muscle  
 Mixture Dielectric Constant = 49.000  
 Mixture Conductivity = 1.950

Comment:  
 Configuration: HKM9777A & HMN9068A ATTACHED  
 Run #1  
 Battery: HMN9021A

Robot: MOBILE ROBOT

Probe Offset = 0.28 cm  
 Sensor Factor = 0.0108  
 Conversion Factor = 1.670

p6 Amplifier Channel Settings 0.125 0.108 0.076

Max Location X = 2.500, Y = 0.750, Z = 0.000 (cm) Value = 0.232

Measured Values (volts) =  
 1.900E-004 8.871E-005 3.390E-005 1.229E-005 2.756E-005 1.121E-005  
 1.857E-005 3.582E-007 2.165E-005 8.879E-006 1.032E-005

Calc. Voltage @ Surface (Vs) = 0.0003

Voltage @ 1.00 cm (Vt) = 0.0001

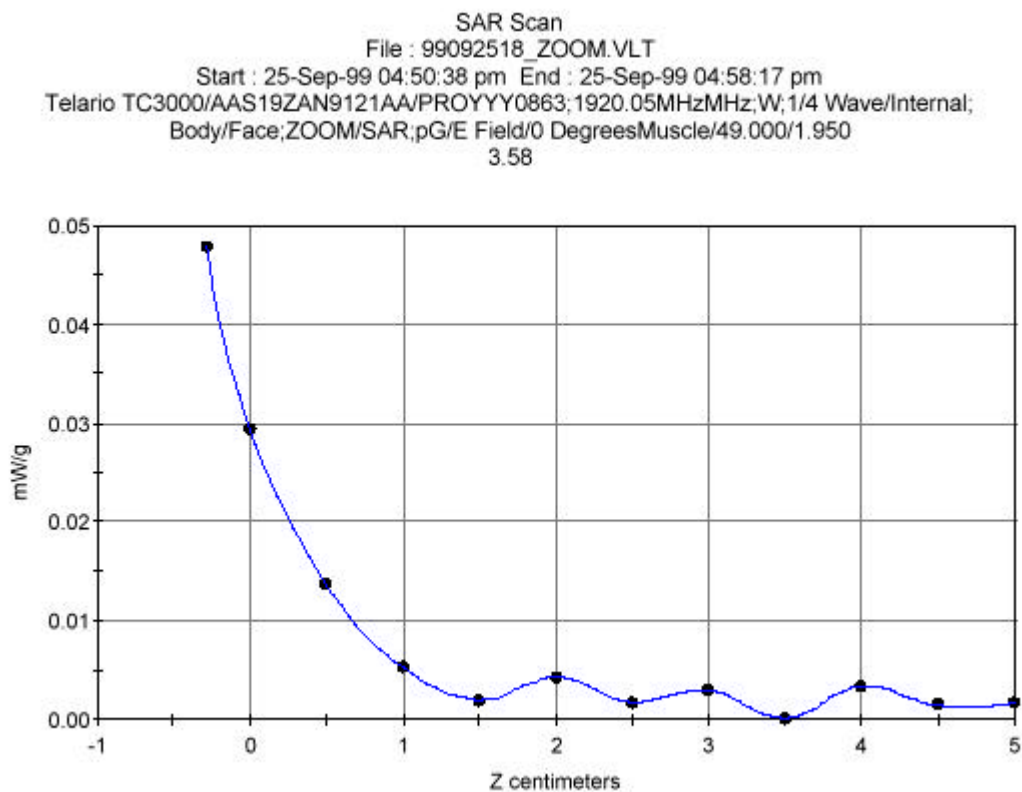
Ave. Voltage (Vs+Vt)/2 = 0.0002

Ave. SAR over 1 g (mW/g) = 0.0289

END OF FILE

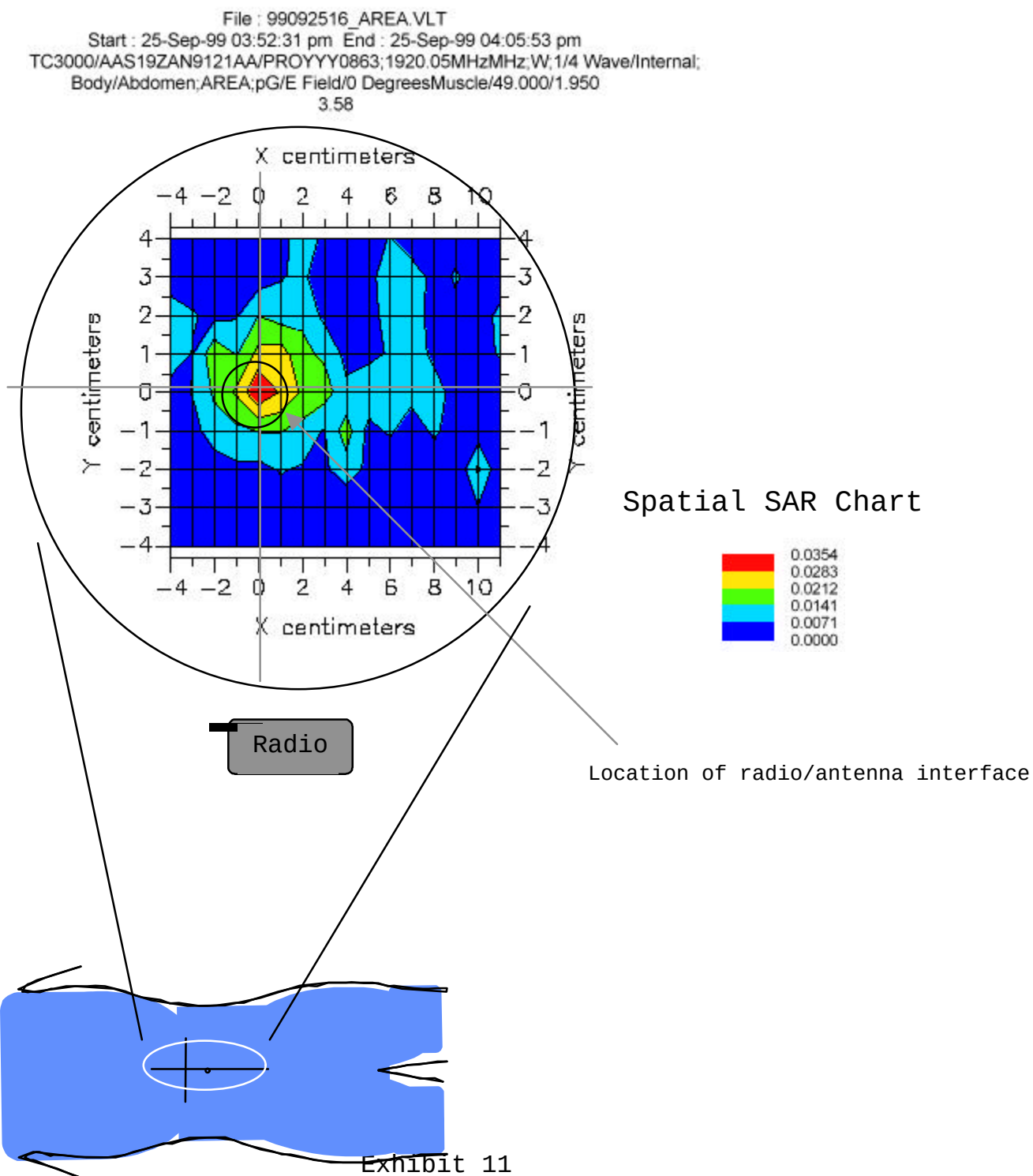
## Facial Position SAR Curve

## SAR Scan



Note: Graph irregular due to very low RF levels in the noise range.

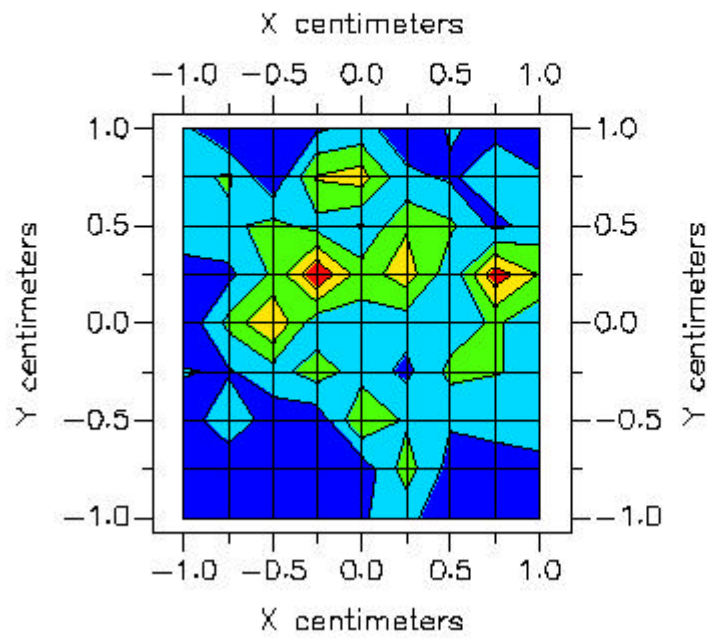
Abdominal Position Coarse Scan Region



Partial View of Full Body Phantom  
 As Viewed From Tissue Side

## Abdominal Position Fine Scan Region

File : 99092516\_ZOOM.VLT  
Start : 25-Sep-99 04:05:53 pm End : 25-Sep-99 04:13:30 pm  
TC3000/AAS19ZAN9121AA/PROYYY0863;1920.05MHzMHz;W;1/4 Wave/Internal;  
Body/Abdomen;ZOOM/SAR;pG/E Field/0 DegreesMuscle/49.000/1.950  
3.58



Spatial SAR  
Chart

## Abdominal Position SAR Data

File... c:/dx3/SYSTEM/SARMEAS3/data/Normal/99092516\_ZOOM.VLT  
Start 25-Sep-99 04:05:53 pm End : 25-Sep-99 04:13:30 pm  
Ver 3.58

Radio Type : Telario TC3000  
Model Number : AAS19ZAN9121AA  
Serial Number : PROYYY0863  
Frequency : 1920.05MHz MHz  
Peak Trans. Pwr : 0.053 W  
Start Trans. Pwr: 0.037 W  
Antenna Type : 1/4 Wave  
Antenna Posn. : Internal  
Phantom Type : Body  
Phantom Posn. : Abdomen  
Scan Type : ZOOM/SAR  
Probe Name : p6  
Field type : E Field  
Orientation : 0 Degrees

Mixture Type = Muscle  
Mixture Dielectric Constant = 49.000  
Mixture Conductivity = 1.950

Comment :  
Configuration: HKN9777A & HMN9068A ATTACHED  
Run #1  
Battery: HMN9021A

Robot MOBILE ROBOT

Probe Offset = 0.28 cm  
Sensor Factor = 0.0108  
Conversion Factor = 1.670

p6 Amplifier Channel Settings 0.125 0.108 0.076

Max Location X = -0.250 Y = 0.250 Z = 0.000 (cm) Value = 0.120

Measured Values (volts) =  
3.793E-005 2.326E-005 2.071E-005 3.889E-006 1.277E-005 7.922E-006  
2.688E-007 1.757E-005 5.544E-006 1.683E-005 3.715E-006

Calc. Voltage @ Surface (Vs) = 0.0000

Voltage @ 1.00 cm (Vt) = 0.0000

Ave. Voltage (Vs+Vt)/2 = 0.0000

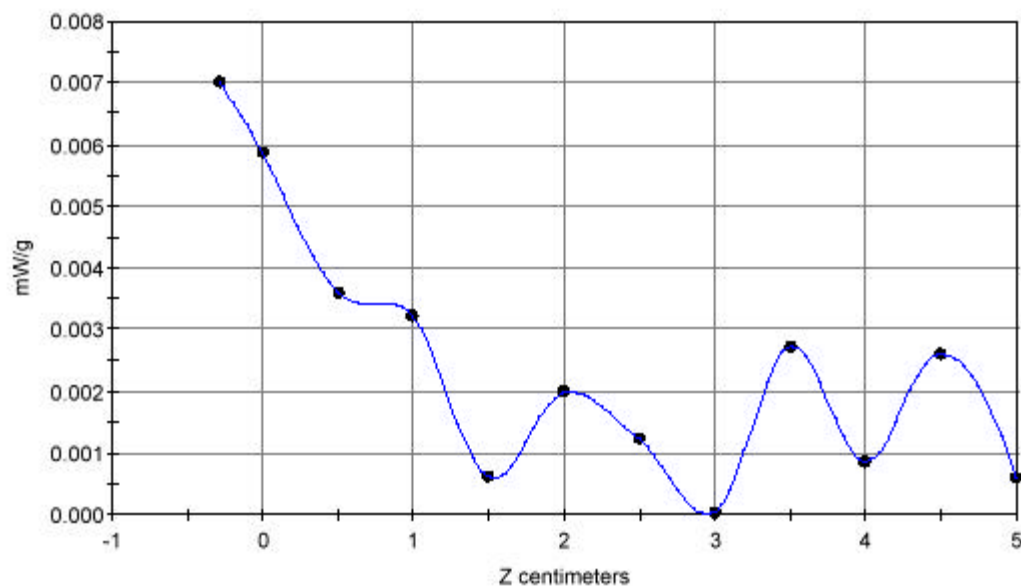
Ave. SAR over 1 g (mW/g) = 0.0052

END OF FILE

## Abdominal Position SAR Curve

## SAR Scan

SAR Scan  
File : 99092516\_ZOOM.VLT  
Start : 25-Sep-99 04:05:53 pm End : 25-Sep-99 04:13:30 pm  
Telario TC3000/AAS19ZAN9121AA/PROYYY0863;1920.05MHzMHz;W;1/4 Wave/Internal;  
Body/Abdomen;ZOOM/SAR;pG/E Field/0 DegreesMuscle/49.000/1.950  
3.58



Note: Graph irregular due to very low RF levels in the noise range.

Exhibit 11