



# RF EXPOSURE LAB, LLC

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## CERTIFICATE OF COMPLIANCE SAR EVALUATION

Novatel Wireless  
9645 Scranton Road, Suite 205  
San Diego, CA 92121

Dates of Test: January 20 - 29, 2009  
Test Report Number: SAR.20090103

|                        |  |
|------------------------|--|
| FCC ID:                | PKRNVWE760   |
| IC Certificate:        | 3229B-E760   |
| Model(s):              | E760 in Dell Inspiron 1010   |
| Broadcom WLAN Modules: | Model: BCM94312HMG FCCID: QDS-BRCM1030<br>Model: BCM94332HMBL FCCID: QDS-BRCM1031  |
| Test Sample:           | Engineering Unit Same as Production  |
| Serial No.:            | 7F1SWF1  |
| Equipment Type:        | Wireless Computer  |
| Classification:        | Portable Transmitter Next to Body  |
| TX Frequency Range:    | 824.2 – 848.8 MHz, 1850.2 – 1909.8 MHz, 2412 – 2462 MHz,<br>5180 – 5240 MHz, 5260 – 5320 MHz, 5745 – 5805 MHz  |
| Frequency Tolerance:   | ± 25 ppm   |
| Maximum RF Output:     | 835 MHz – 24.3 dBm, 1900 MHz – 24.1 dBm, 2450 MHz (b) – 22.3 dBm,<br>2450 MHz (g) – 23.1 dBm, 2450 (n20) – 19.0 dBm, 2450 MHz (n40) – 14.0 dBm,<br>5200 MHz (a) – 18.1 dBm, 5200 MHz (n20) – 15.9 dBm, 5200 MHz (n40) – 16.7 dBm,<br>5600 MHz (a) – 17.7 dBm, 5600 MHz (n20) – 16.9 dBm, 5600 MHz (n40) – 17.8 dBm,<br>5800 MHz (a) – 16.8 dBm, 5800 MHz (n20) – 16.9 dBm, 5800 MHz (n40) – 17.2 dBm |
| Signal Modulation:     | DSSS, OFDM, CDMA   |
| Antenna Type (Length): | WWAN (TYCO) – Internal Left Top LCD 17.5 cm from User<br>WLAN (TYCO) – Internal Left (Aux) Right (Main) Top LCD 17.5 cm from User<br>WWAN (Yageo) – Internal Left Top LCD 17.5 cm from User<br>WLAN (Yageo) – Internal Left (Aux) Right (Main) Top LCD 17.5 cm from User   |
| Battery:               | Laptop Supplied  |
| Application Type:      | Class II Permissive Change   |
| FCC Rule Parts:        | Part 15, 22, 24  |
| Industry Canada:       | RSS-102  |

This wireless mobile and/or portable device has been shown to be compliant for localized specific absorption rate (SAR) for uncontrolled environment/general exposure limits specified in ANSI/IEEE Std. C95.1-1999 and had been tested in accordance with the measurement procedures specified in IEEE 1528-2003, OET Bulletin 65 Supp. C, RSS-102 and Safety Code 6 (See test report).

I attest to the accuracy of the data. All measurements were performed by myself 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.

RF Exposure Lab, LLC certifies that no party to this application has been denied FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 853(a).

Jay M. Moulton  
Vice President



Certificate # 2387.01

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## 1. Introduction

This measurement report shows compliance of the Novatel Wireless Model E760 in Dell Inspiron 1010 FCC ID: PKRNVWE760 with FCC Part 2, 1093, ET Docket 93-62 Rules for mobile and portable devices and IC Certificate: 3229B-E760 with RSS102 & Safety Code 6. The FCC have adopted the guidelines for evaluating the environmental effects of radio frequency radiation in ET Docket 93-62 on August 6, 1996 to protect the public and workers from the potential hazards of RF emissions due to FCC regulated portable devices. [1], [6]

The test procedures, as described in ANSI C95.1 – 1999 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz [2], ANSI C95.3 – 2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields [3], FCC OET Bulletin 65 Supp. C – 2001 [4], IEEE Std.1528 – 2003 Recommended Practice [5], and Industry Canada Safety Code 6 Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3kHz to 300 GHz were employed.

### SAR Definition [5]

Specific Absorption Rate is defined as the time derivative (rate) of the incremental energy ( $dW$ ) absorbed by (dissipated in) an incremental mass ( $dm$ ) contained in a volume element ( $dV$ ) of a given density ( $\rho$ ).

$$SAR = \frac{d}{dt} \left( \frac{dW}{dm} \right) = \frac{d}{dt} \left( \frac{dW}{\rho dV} \right)$$

SAR is expressed in units of watts per kilogram (W/kg). SAR can be related to the electric field at a point by

$$SAR = \frac{\sigma |E|^2}{\rho}$$

where:

$\sigma$  = conductivity of the tissue (S/m)

$\rho$  = mass density of the tissue (kg/m<sup>3</sup>)

$E$  = rms electric field strength (V/m)

## 2. SAR Measurement Setup

### Robotic System

The measurements are conducted utilizing the ALSAS-10-U automated dosimetric assessment system. The ALSAS-10-U is designed and manufactured by Aprel Laboratories in Nepean, Ontario, Canada. The system utilizes a Robcomm 3 robot manufactured by ThermoCRS located in Michigan USA.

### System Hardware

The system consists of a six axis articulated arm, controller for precise probe positioning (0.05 mm repeatability), a power supply, a teach pendant for teaching area scans, near field probe, an IBM Pentium 4™ 2.66 GHz PC with Windows XP Pro™, and custom software developed to enable communications between the robot controller software and the host operating system.

An amplifier is located on the articulated arm, which is isolated from the custom designed end effector and robot arm. The end effector provides the mechanical touch detection functionality and probe connection interface. The amplifier is functionally validated within the manufacturer's site and calibrated at NCL Calibration Laboratories. A Data Acquisition Card (DAC) is used to collect the signal as detected by the isotropic e-field probe. The DAC manufacturer calibrates the DAC to NIST standards. A formal validation is executed using all mechanical and electronic components to prove conformity of the measurement platform as a whole.

### System Description

The ALSAS-10-U has been designed to measure devices within the compliance environment to meet all recognized standards. The system also conforms to standards, which are currently being developed by the scientific and manufacturing community.

The course scan resolution is defined by the operator and reflects the requirements of the standard to which the device is being tested. Precise measurements are made within the predefined course scan area and the values are logged.

The user predefines the sample rate for which the measurements are made so as to ensure that the full duty-cycle of a pulse modulation device is covered during the sample. The following algorithm is an example of the function used by the system for linearization of the output for the probe.

$$V_i = U_i + U_i^2 \bullet \frac{cf}{dcp_i}$$



The April E-Field probe is evaluated to establish the diode compression point.

A complex algorithm is then used to calculate the values within the measured points down to a resolution of 1mm. The data from this process is then used to provide the co-ordinates from which the cube scan is created for the determination of the 1 g and 10 g averages.

Cube scan averaging consists of a number of complex algorithms, which are used to calculate the one, and ten gram averages. The basis for the cube scan process is centered on the location where the maximum measured SAR value was found. When a secondary peak value is found which is within 60% of the initial peak value, the system will report this back to the operator who can then assess the need for further analysis of both the peak values prior to the one and ten-gram cube scan averaging process. The algorithm consists of 3D cubic Spline, and Lagrange extrapolation to the surface, which form the matrix for calculating the measurement output for the one and ten gram average values. The resolution for the physical scan integral is user defined with a final calculated resolution down to 1mm.

In-depth analysis for the differential of the physical scanning resolution for the cube scan analysis has been carried out, to identify the optimum setting for the probe positioning steps, and this has been determined at 8mm increments on the X, & Y planes. The reduction of the physical step increment increased the time taken for analysis but did not provide a better uncertainty or return on measured values.

The final output from the system provides data for the area scan measurements, physical and splined (1mm resolution) cube scan with physical and calculated values (1mm resolution).

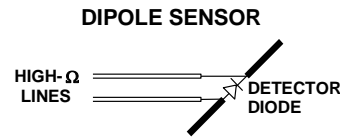
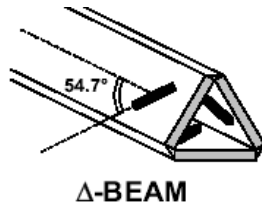
The overall uncertainty for the methodology and algorithms the ALSAS-10-U used during the SAR calculation was evaluated using the data from IEEE 1528 f3 algorithm:

$$f_3(x, y, z) = A \frac{a^2}{\frac{a^2}{4} + x'^2 + y'^2} \left( e^{-\frac{2z}{a}} + \frac{a^2}{2(a + 2z)^2} \right)$$

The probe used during the measurement process has been assessed to provide values for diode compression. These values are calculated during the probe calibration exercise and are used in the mathematical calculations for the assessment of SAR.

## E-Field Probe

The E-field probe used by RF Exposure Lab, LLC, has been fully calibrated and assessed for isotropic, and boundary effect. The probe utilizes a triangular sensor arrangement as detailed in the diagram below right.



The SAR is assessed with the probe which moves at a default height of 5mm from the center of the diode, which is mounted to the sensor, to the phantom surface (Z height). The diagram above right shows how the center of the sensor is defined with the location of the diode placed at the center of the dipole. The 5mm default in the Z axis is the optimum height for assessing SAR where the boundary effect is at its least, with the probe located closest to the phantom surface (boundary).

The manufacturer specified precision of the robot is  $\pm 0.05$  mm and the precision of the APREL bottom detection device is  $\pm 0.1$  mm. These precisions are calibrated and tested in the manufacturing process of the bottom detection device. A constant distance is maintained because the surface of the phantom is dynamically detected for each point. The surface detection algorithm corrects the position of the robot so that the probe rests on the surface of the phantom. The probe is then moved to the measurement location 2.44 mm above the phantom surface resulting in the probe center location to be at 4.0 mm above the phantom surface. Therefore, the probe sensor will be at 4.0 mm above the phantom surface  $\pm 0.1$  mm for each SAR location for frequencies below 3 GHz. The probe is moved to the measurement location 1.44 mm above the phantom surface resulting in the probe center location to be at 2.0 mm above the phantom surface. Therefore, the probe sensor will be at 2.0 mm above the phantom surface  $\pm 0.1$  mm for each SAR location for frequencies above 3 GHz.

The probe boundary effect compensation cannot be disabled in the ALSAS-10U testing system. The probe tip will always be at least half a probe tip diameter from the phantom surface. For frequencies up to 3 GHz, the probe diameter is 5 mm. With the sensor offset set at 1.54 mm (default setting), the sensor to phantom gap will be 4.0 mm which is greater than half the probe tip diameter. For frequencies greater than 3 GHz, the probe diameter is 3 mm. With the sensor offset set at 0.56 mm (default setting), the sensor to phantom gap will be 3.0 mm which is greater than half the probe tip diameter.

The separation of the first 2 measurement points in the zoom scan is specified in the test setup software. For frequencies below 3 GHz, the user must specify a zoom scan resolution of less than 6 mm in the z-axis to have the first two measurements within 1 cm of the surface. The z-axis is set to 4 mm as shown on each of the data sheets in Appendix B. For frequencies above 3 GHz, the user must specify a zoom scan resolution of less than 3 mm in the z-axis to have the first two measurements within 5 mm of the surface. The z-axis is set to 2 mm as shown on each of the data sheets in Appendix B.

The zoom scan volume for devices  $\leq 3$  GHz with a cube scan of 5x5x8 yields a volume of 32x32x28 mm<sup>3</sup>. For devices  $>3$  GHz and  $<4.5$  GHz, the cube scan of 9x9x9 yields a volume of 32x32x24 mm<sup>3</sup>. For devices  $\geq 4.5$  GHz, the cube scan of 7x7x12 yields a volume of 24x24x22 mm<sup>3</sup>.

### 3. Robot Specifications

#### Specifications

Positioner: ThermoCRS, Robot Model: Robocomm 3  
Repeatability: 0.05 mm  
No. of axis: 6

#### Data Acquisition Card (DAC) System

##### Cell Controller

Processor: Pentium 4™  
Clock Speed: 2.66 GHz  
Operating System: Windows XP Pro™

##### Data Converter

Features: Signal Amplifier, End Effector, DAC  
Software: ALSAS 10-U Software

#### E-Field Probe

Model: Various See Probe Calibration Sheet  
Serial Number: Various See Probe Calibration Sheet  
Construction: Triangular Core Touch Detection System  
Frequency: 10MHz to 6GHz

#### Phantom

Phantom: Uniphantom, Right Phantom, Left Phantom



## 4. Probe and Dipole Calibration

See Appendix D and E.



## 5. Phantom & Simulating Tissue Specifications

### SAM Phantom



The Aprel system utilizes three separate phantoms. Each phantom for SAR assessment testing is a low loss dielectric shell, with shape and dimensions derived from the anthropomorphic data of the 90<sup>th</sup> percentile adult male head dimensions as tabulated by the US Army. The SAM phantom shell is bisected along the mid sagittal plane into right and left halves. The perimeter sidewalls of each phantom half is extended to allow filling with liquid to a depth of 15 cm that is sufficient to minimize reflections from the upper surface [5]. See photos in Appendix C.

### Brain & Muscle Simulating Mixture Characterization

The brain and muscle mixtures consist of a glycol based chemical and saline solution. The mixture is calibrated to obtain proper dielectric constant (permittivity) and conductivity of the desired tissue. The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 have been incorporated in the following tables. Other head and body tissue parameters that have not been specified in P1528 are derived from the issue dielectric parameters computed from the 4-Cole-Cole equations.

**Table 5.1 Typical Composition of Ingredients for Tissue**

| Ingredients         |        | Simulating Tissue |                 |                 |                 |                 |                 |
|---------------------|--------|-------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                     |        | 835 MHz Muscle    | 1900 MHz Muscle | 2450 MHz Muscle | 5200 MHz Muscle | 5600 MHz Muscle | 5800 MHz Muscle |
| Mixing Percentage   |        |                   |                 |                 |                 |                 |                 |
| Water               |        | 52.40             | 69.91           | 73.20           | 70.00           | 59.00           | 76.50           |
| Sugar               |        | 0.00              | 29.96           | 0.00            | 0.00            | 40.60           | 0.00            |
| Salt                |        | 45.00             | 0.00            | 0.04            | 1.50            | 0.00            | 1.50            |
| HEC                 |        | 1.40              | 0.13            | 0.00            | 0.00            | 0.30            | 0.00            |
| Bactericide         |        | 0.10              | 0.00            | 0.00            | 0.00            | 0.10            | 0.00            |
| DGBE                |        | 1.00              | 0.00            | 26.70           | 28.50           | 0.00            | 22.00           |
| Dielectric Constant | Target | 55.20             | 53.30           | 52.70           | 48.96           | 48.47           | 48.25           |
| Conductivity (S/m)  | Target | 0.97              | 1.52            | 1.95            | 5.35            | 5.77            | 5.96            |

### Device Holder

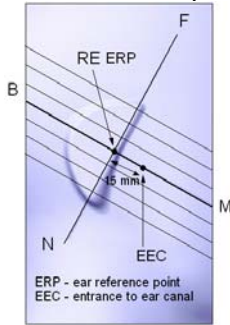


In combination with the SAM phantom, the mounting device enables the rotation of the mounted transmitter in spherical coordinates whereby the rotation point is the ear opening. The devices can easily, accurately, and repeatably be positioned according to the FCC specifications. The device holder can be locked at different phantom locations (left head, right head, and uni-phantom).

## 6. Definition of Reference Points

### Ear Reference Point

Figure 6.2 shows the front, back and side views of the SAM Phantom. The point “M” is the reference point for the center of the mouth, “LE” is the left ear reference point (ERP), and “RE” is the right ERP. The ERPs are 15mm posterior to the entrance to the ear canal (EEC) along the B-M line (Back-Mouth), as shown in Figure 6.1. The plane passing through the two ear canals and M is defined as the Reference Plane. The line N-F (Neck-Front) is perpendicular to the reference plane and passing through the RE (or LE) is called the Reference Pivoting Line (see Figure 6.1). Line B-M is perpendicular to the N-F line. Both N-F and B-M lines are marked on the external phantom shell to facilitate handset positioning [5].



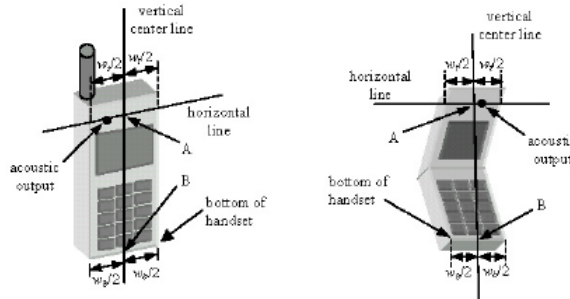
**Figure 6.1 Close-up side view of ERP's**



**Figure 6.2 Front, back and side view of SAM**

### Device Reference Points

Two imaginary lines on the device need to be established: the vertical centerline and the horizontal line. The test device is placed in a normal operating position with the “test device reference point” located along the “vertical centerline” on the front of the device aligned to the “ear reference point” (See Fig. 6.3). The “test device reference point” is then located at the same level as the center of the ear reference point. The test device is positioned so that the “vertical centerline” is bisecting the front surface of the device at it’s top and bottom edges, positioning the “ear reference point” on the outer surface of both the left and right head phantoms on the ear reference point [5].

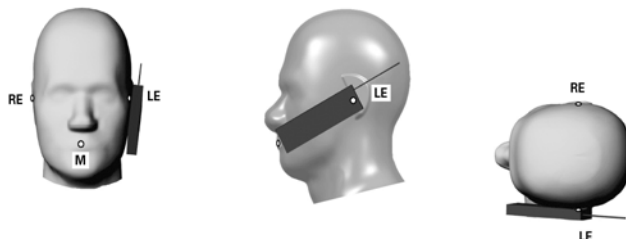


**Figure 6.3 Handset Vertical Center & Horizontal Line Reference Points**

## 7. Test Configuration Positions

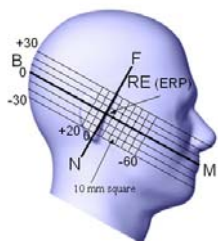
### Positioning for Cheek/Touch [5]

1. Position the device close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 7.1), such that the plane defined by the vertical center line and the horizontal line of the device is approximately parallel to the sagittal plane of the phantom.



**Figure 7.1 Front, Side and Top View of Cheek/Touch Position**

2. Translate the device towards the phantom along the line passing through RE and LE until the device touches the ear.
3. While maintaining the device in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to MB-NF including the line MB (called the reference plane).
4. Rotate the device around the vertical centerline until the device (horizontal line) is symmetrical with respect to the line NF.
5. While maintaining the vertical centerline in the reference plane, keeping point A on the line passing through RE and LE and maintaining the device contact with the ear, rotate the device about the line NF until any point on the device is in contact with a phantom point below the ear (cheek). See Figure 7.2.



**Figure 7.2 Side view w/ relevant markings**

## Positioning for Ear / 15° Tilt [5]

With the test device aligned in the Cheek/Touch Position”:

1. While maintaining the orientation of the device, retracted the device parallel to the reference plane far enough to enable a rotation of the device by 15 degrees.
2. Rotate the device around the horizontal line by 15 degrees.
3. While maintaining the orientation of the device, move the device parallel to the reference plane until any part of the device touches the head. (In this position, point A is located on the line RE-LE). The tilted position is obtained when the contact is on the pinna. If the contact is at any location other than the pinna, the angle of the device shall be reduced. The tilted position is obtained when any part of the device is in contact with the ear as well as a second part of the device is in contact with the head (see Figure 7.3).



**Figure 7.3 Front, Side and Top View of Ear/15° Tilt Position**

## Body Worn Configurations

Body-worn operating configurations are tested with the accessories attached to the device and positioned against a flat phantom in a normal use configuration. A device with a headset output is tested with a headset connected to the device. Body dielectric parameters are used.

Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then, when multiple accessories that contain metallic components are supplied with the device, the device is tested with each accessory that contains a unique metallic component. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

Body-worn accessories may not always be supplied or available as options for some devices intended to be authorized for body-worn use. In this case, a test configuration where a separation distance between the back of the device and the flat phantom is used. All test position spacings are documented.

Transmitters that are designed to operate in front of a person's face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessory(ies), including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.

In all cases SAR measurements are performed to investigate the worst-case positioning. Worst-case positioning is then documented and used to perform Body SAR testing.

In order for users to be aware of the body-worn operating requirements for meeting RF exposure compliance, operating instructions and cautions statements are included in the user's manual.

## 8. ANSI/IEEE C95.1 – 1999 RF Exposure Limits [2]

### Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

### Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

**Table 8.1 Human Exposure Limits**

|  | UNCONTROLLED ENVIRONMENT<br>General Population<br>(W/kg) or (mW/g) | CONTROLLED ENVIROMENT<br>Professional Population<br>(W/kg) or (mW/g) |
|--|--|--|
| SPATIAL PEAK SAR <sup>1</sup><br>Brain                       | 1.60   | 8.00   |
| SPATIAL AVERAGE SAR <sup>2</sup><br>Whole Body               | 0.08   | 0.40   |
| SPATIAL PEAK SAR <sup>3</sup><br>Hands, Feet, Ankles, Wrists | 4.00   | 20.00  |

<sup>1</sup> 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.

<sup>2</sup> The Spatial Average value of the SAR averaged over the whole body.

<sup>3</sup> 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.

## 9. Measurement Uncertainty

### Exposure Assessment Measurement Uncertainty

| Source of Uncertainty                            | Tolerance Value | Probability Distribution | Divisor | $c_i^{-1}$<br>(1-g) | $c_i^{-1}$<br>(10-g) | Standard Uncertainty<br>(1-g) % | Standard Uncertainty<br>(10-g) % |
|--|-----------------|--------------------------|---------|---------------------|----------------------|---------------------------------|----------------------------------|
| Measurement System                               |                 |                          |         |                     |                      |                                 |                                  |
| Probe Calibration                                | 3.5             | normal                   | 1       | 1                   | 1                    | 3.5                             | 3.5                              |
| Axial Isotropy                                   | 3.7             | rectangular              | •3      | $(1-cp)^{1/2}$      | $(1-cp)^{1/2}$       | 1.5                             | 1.5                              |
| Hemispherical Isotropy                           | 10.9            | rectangular              | •3      | •cp                 | •cp                  | 4.4                             | 4.4                              |
| Boundary Effect                                  | 1.0             | rectangular              | •3      | 1                   | 1                    | 0.6                             | 0.6                              |
| Linearity  | 4.7             | rectangular              | •3      | 1                   | 1                    | 2.7                             | 2.7                              |
| Detection Limit                                  | 1.0             | rectangular              | •3      | 1                   | 1                    | 0.6                             | 0.6                              |
| Readout Electronics                              | 1.0             | normal                   | 1       | 1                   | 1                    | 1.0                             | 1.0                              |
| Response Time                                    | 0.8             | rectangular              | •3      | 1                   | 1                    | 0.5                             | 0.5                              |
| Integration Time                                 | 1.7             | rectangular              | •3      | 1                   | 1                    | 1.0                             | 1.0                              |
| RF Ambient Condition                             | 3.0             | rectangular              | •3      | 1                   | 1                    | 1.7                             | 1.7                              |
| Probe Positioner Mech.                           | 0.4             | rectangular              | •3      | 1                   | 1                    | 0.2                             | 0.2                              |
| Restriction                                      |                 |                          |         |                     |                      |                                 |                                  |
| Probe Positioning with respect to Phantom Shell  | 2.9             | rectangular              | •3      | 1                   | 1                    | 1.7                             | 1.7                              |
| Extrapolation and Integration                    | 3.7             | rectangular              | •3      | 1                   | 1                    | 2.1                             | 2.1                              |
| Test Sample Positioning                          | 4.0             | normal                   | 1       | 1                   | 1                    | 4.0                             | 4.0                              |
| Device Holder Uncertainty                        | 2.0             | normal                   | 1       | 1                   | 1                    | 2.0                             | 2.0                              |
| Drift of Output Power                            | 4.2             | rectangular              | •3      | 1                   | 1                    | 2.4                             | 2.4                              |
| Phantom and Setup                                |                 |                          |         |                     |                      |                                 |                                  |
| Phantom Uncertainty(shape & thickness tolerance) | 3.4             | rectangular              | •3      | 1                   | 1                    | 2.0                             | 2.0                              |
| Liquid Conductivity(target)                      | 5.0             | rectangular              | •3      | 0.7                 | 0.5                  | 2.0                             | 1.4                              |
| Liquid Conductivity(meas.)                       | 0.5             | normal                   | 1       | 0.7                 | 0.5                  | 0.4                             | 0.3                              |
| Liquid Permittivity(target)                      | 5.0             | rectangular              | •3      | 0.6                 | 0.5                  | 1.7                             | 1.4                              |
| Liquid Permittivity(meas.)                       | 1.0             | normal                   | 1       | 0.6                 | 0.5                  | 0.6                             | 0.5                              |
| Combined Uncertainty                             |                 | RSS                      |         |                     |                      | 9.6                             | 9.4                              |
| Combined Uncertainty (coverage factor=2)         |                 | Normal (k=2)             |         |                     |                      | 19.1                            | 18.8                             |

## 10. System Validation

### Tissue Verification

**Table 10.1 Measured Tissue Parameters**

|                                 |      | 835 MHz Body  |          | 1900 MHz Body |          | 2450 MHz Body |          |
|---------------------------------|------|---------------|----------|---------------|----------|---------------|----------|
| Date(s)                         |      | Jan. 21, 2009 |          | Jan. 20, 2009 |          | Jan. 22, 2009 |          |
| Liquid Temperature (°C)         | 20.0 | Target        | Measured | Target        | Measured | Target        | Measured |
| Dielectric Constant: $\epsilon$ |      | 55.20         | 55.12    | 53.30         | 53.11    | 52.70         | 52.56    |
| Conductivity: $\sigma$          |      | 0.97          | 0.98     | 1.52          | 1.53     | 1.95          | 1.97     |

|                                 |      | 5250 MHz Body |          | 5600 MHz Body |          | 5785 MHz Body |          |
|---------------------------------|------|---------------|----------|---------------|----------|---------------|----------|
| Date(s)                         |      | Jan. 23, 2009 |          | Jan. 22, 2009 |          | Jan. 23, 2009 |          |
| Liquid Temperature (°C)         | 20.0 | Target        | Measured | Target        | Measured | Target        | Measured |
| Dielectric Constant: $\epsilon$ |      | 48.95         | 48.81    | 48.47         | 48.37    | 48.22         | 47.33    |
| Conductivity: $\sigma$          |      | 5.36          | 5.42     | 5.77          | 5.80     | 5.98          | 5.97     |

|                                 |      | 835 MHz Body  |          | 1900 MHz Body |          | 2450 MHz Body |          |
|---------------------------------|------|---------------|----------|---------------|----------|---------------|----------|
| Date(s)                         |      | Jan. 24, 2009 |          | Jan. 24, 2009 |          | Jan. 24, 2009 |          |
| Liquid Temperature (°C)         | 20.0 | Target        | Measured | Target        | Measured | Target        | Measured |
| Dielectric Constant: $\epsilon$ |      | 55.20         | 55.19    | 53.30         | 53.26    | 52.70         | 52.49    |
| Conductivity: $\sigma$          |      | 0.97          | 0.99     | 1.52          | 1.54     | 1.95          | 1.96     |

|                                 |      | 5250 MHz Body |          | 5600 MHz Body |          | 5785 MHz Body |          |
|---------------------------------|------|---------------|----------|---------------|----------|---------------|----------|
| Date(s)                         |      | Jan. 29, 2009 |          | Jan. 26, 2009 |          | Jan. 26, 2009 |          |
| Liquid Temperature (°C)         | 20.0 | Target        | Measured | Target        | Measured | Target        | Measured |
| Dielectric Constant: $\epsilon$ |      | 48.95         | 49.05    | 48.47         | 48.66    | 48.22         | 49.89    |
| Conductivity: $\sigma$          |      | 5.36          | 5.41     | 5.77          | 5.62     | 5.98          | 5.96     |

See Appendix A for data printout.



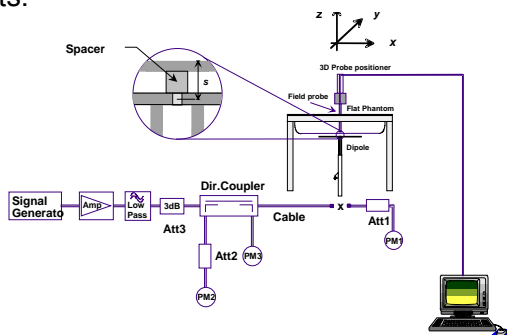
### Test System Verification

Prior to assessment, the system is verified to the  $\pm 10\%$  of the specifications at the test frequency by using the system kit. Power is extrapolated to 1 watt. (Graphic Plots Attached)

**Table 10.2 System Dipole Validation Target & Measured**

|             | Test Frequency | Targeted SAR <sub>1g</sub> (W/kg) | Measure SAR <sub>1g</sub> (W/kg) | Deviation (%) |
|-------------|----------------|-----------------------------------|----------------------------------|---------------|
| 21-Jan-2009 | 835 MHz        | 9.75                              | 9.74                             | - 0.10        |
| 24-Jan-2009 | 835 MHz        | 9.75                              | 9.49                             | - 2.67        |
| 20-Jan-2009 | 1900 MHz       | 40.99                             | 39.48                            | - 3.68        |
| 24-Jan-2009 | 1900 MHz       | 40.99                             | 40.55                            | - 1.07        |
| 22-Jan-2009 | 2450 MHz       | 53.55                             | 53.44                            | - 0.21        |
| 24-Jan-2009 | 2450 MHz       | 53.55                             | 52.82                            | - 1.36        |
| 23-Jan-2009 | 5250 MHz       | 62.98                             | 65.21                            | + 3.54        |
| 29-Jan-2009 | 5250 MHz       | 62.98                             | 64.26                            | + 2.03        |
| 22-Jan-2009 | 5600 MHz       | 59.92                             | 60.58                            | + 1.10        |
| 26-Jan-2009 | 5600 MHz       | 59.92                             | 64.42                            | + 7.51        |
| 23-Jan-2009 | 5785 MHz       | 58.92                             | 56.09                            | - 4.80        |
| 26-Jan-2009 | 5785 MHz       | 58.92                             | 57.73                            | - 2.02        |

See Appendix A for data plots.



**Figure 10.1 Dipole Validation Test Setup**

## 11. SAR Test Data Summary

### See Measurement Result Data Pages

See Appendix B for SAR Test Data Plots.  
See Appendix C for SAR Test Setup Photos.

### Procedures Used To Establish Test Signal

The device was placed into simulated transmit mode using the manufacturer's test codes. Such test signals offer a consistent means for testing SAR and are recommended for evaluating SAR. When test modes are not available or inappropriate for testing a device, the actual transmission is activated through a base station simulator or similar equipment. See data pages for actual procedure used in measurement.

### Device Test Condition

The device is battery operated. Each SAR measurement was taken with a fully charged battery. In order to verify that the device was tested at full power, conducted output power measurements were performed before and after each SAR measurement to confirm the output power unless otherwise noted. If a conducted power deviation of more than 5% occurred, the test was repeated.

The testing was conducted in the normal use position. The main and auxiliary antennas for WLAN were both 17.5 cm from the user. The antenna to user distance of the WWAN is 17.5 cm. The WWAN and aux WLAN antenna are 6.0 mm apart. The WWAN and main WLAN antennas are 132 mm apart. The SAR for the simultaneous transmission was determined by added the highest SAR in WWAN with the highest SAR in WLAN. The total was below the limit to meet SAR requirements; therefore, the device was considered to pass.

The 1xRTT testing was conducted in RC3 with the device configured using TDSO/SO32 with FCH transmitting at full rate. The power control was set to "All Bits Up." Multiple code channels were not tested due to the conducted power measured was less than ¼ dB higher than with FCH only.

The Rev. 0 and Rev. A Subtype 0/1 testing was conducted with the Reverse Data Channel rate of 153.6 kbps. The Forward Traffic Channel data rate is set to the 2-slot version of 307.2 kbps with the ACK Channel transmitting in all slots. The power control was set to "All Bits Up." Other rates were not tested due to the conducted power measured was less than ¼ dB higher than 153.6 kbps.

The Rev. A Subtype 2 testing was conducted with the Reverse Data Channel payload size of 4096 bits and Termination Target of 16 slots. The Forward Traffic Channel data rate is set to the 2-slot version of 307.2 kbps with the ACK Channel transmitting in all slots. The power control was set to "All Bits Up." Other rates were not tested due to the conducted power measured was less than ¼ dB higher than 4096 bits.

The WWAN Auxiliary Antenna is a receive only antenna. Therefore, it does not require any SAR evaluation. The Bluetooth device is a Class 2 device. The power level is less than  $f(\text{GHz})/60$  mW. Therefore, it does not require stand only testing. Also, since the distance from the BT antenna to any of the WLAN or WWAN antennas is greater than 20 cm, it does not require any simultaneous evaluation.

This device has two different antenna types for WWAN. Both antenna types were evaluated for SAR in this report.

## 12. Conducted Power Measurement Procedures

Power measurements were performed using a base station simulator under average power.

### 12.1 Procedures Used to Establish RF Signal for SAR

The device was placed into a simulated call using a base station simulator in a screen room. Such test signals offer a consistent means for testing SAR and re recommended for evaluating SAR. SAR measurements were taken with a fully charged battery. The SAR measurement software calculates a reference point at the start and end of the test to check for power drifts. If conducted power deviations of more than 5% occurred, the tests were repeated.

### 12.2 SAR Measurement Conditions for CDMA2000, 1xEV-DO

#### 12.2.1 Output Power Verification 1xRTT

Use CDMA2000 Rev 6 protocol in the call box.

- 1) Test for Reverse/Forward TCH RC1, Reverse/Forward TCH RC2, and RC3 Reverse FCH and demodulation of RC 3, 4 and 5.
  - a. Set up a call using Fundamental Channel Test Mode 1 (RC1, SO 2) with 9600 bps data rate only.
  - b. As per C.S0011 or TIA/EIA-98-F Table 4.4.5.2-1, set the test parameters.
  - c. Send continuously '0' power control bits to the UNDP-1.
  - d. Measure the output power at UNDP-1 antenna connector as recorded on the power meter with values corrected for cables losses.
  - e. Repeat step b through d for Fundamental Channel Test Mode:
    - i. RC1, SO55
    - ii. RC2, SO9
    - iii. RC2, SO55
    - iv. RC3, SO55
- 2) Test for RC 3 Reverse FCH, RC3 Reverse SCH0 and demodulation of RC 3, 4 and 5.
  - a. Set up a call using Supplemental Channel Test Mode 3 (RC 3, SO 32) with 9600 bps Fundamental Channel and 9600 bps SCH0 data rate.
  - b. As per C.S0011 or TIA/EIA-98-F Table 4.4.5.2-2, set the test parameters.
  - c. Send alternating '0' and '1' power control bit to the UNDP-1
  - d. Determine the active channel configuration. If the desired channel configuration is not the active channel configuration, increase  $\hat{\rho}$  by 1 dB and repeat the verification. Repeat this step until the desired channel configuration becomes active.
  - e. Measure the output power at the UNDP-1 antenna connector.
  - f. Decrease  $\hat{\rho}$  by 0.5 dB.
  - g. Determine the active channel configuration. If the active channel configuration is the desired channel configuration, measure the output power at the UNDP-1 antenna connector.
  - h. Repeat step f and g until the output power no longer increases or the desired channel configuration is no longer active. Record the highest output power achieved with the desired channel configuration active.
  - i. Repeat step a through h ten times and average the result.

## 12.2.2 Output Power Verification 1xRTT

- 1) Use 1xEV-DO Rel 0 protocol in the call box 8960.
  - a. FTAP
    - Select Test Application Protocol to FTAP
    - Set FTAP Rate to 307.2 kbps (2 Slot, QPSK)
    - Generator Info -> Termination Parameters -> Max Forward Packet Duration -> 16 Slots
    - Set  $\hat{I}$ or to -60 dBm/1.23 MHz
    - Send continuously '0' power control bits
    - Measure the power at UNDP-1 antenna connector
  - b. RTAP
    - Select Test Application Protocol to RTAP
    - Set RTAP Rate to 9.6 kbps
    - Generator Info -> Termination Parameters -> Max Forward Packet Duration -> 16 Slots
    - Set  $\hat{I}$ or to -60 dBm/1.23 MHz
    - Send continuously '0' power control bits
    - Measure the power at UNDP-1 antenna connector
    - Repeat above steps for RTAP Rate = 19.2 kbps, 38.4 kbps, 76.8 kbps and 153.6 kbps respectively
- 2) Use 1xEV-DO Rev A protocol in the call box 8960
  - a. FETAP
    - Select Test Application Protocol to FETAP
    - Set FETAP Rate to 307.2 kbps (2 Slot, QPSK)
    - Generator Info -> Termination Parameters -> Max Forward Packet Duration -> 16 Slots
    - Set  $\hat{I}$ or to -60 dBm/1.23 MHz
    - Send continuously '0' power control bits
    - Measure the power at UNDP-1 antenna connector
  - b. RETAP
    - Select Test Application Protocol to RETAP
    - F-Traffic Format -> 4 (1024, 2, 128) Canonical (307.2k, QPSK) • Set R-Data Pkt Size to 128
    - Protocol Subtype Config -> Release A Physical Layer Subtype -> Subtype 2 -> PL Subtype 2 Access Channel MAC Subtype -> Default (Subtype 0)
    - Generator Info -> Termination Parameters -> Max Forward Packet Duration -> 16 Slots ->ACK R-Data After -> Subpacket 0 (All ACK)
    - Set  $\hat{I}$ or to -60 dBm/1.23 MHz
    - Send continuously '0' power control bits
    - Measure the power at UNDP-1 antenna connector
    - Repeat above steps for R-Data Pkt Size = 256, 512, 768, 1024, 1536, 2048, 3072, 4096, 6144, 8192, 12288 respectively.

**1xRTT Power Measurements**

| IS-2000  | Channel      | SO2 [dBm] | SO55 [dBm] | SO9 [dBm] | SO55 [dBm] | SO55 [dBm] | SO32 [dBm] |
|----------|--------------|-----------|------------|-----------|------------|------------|------------|
|          | F-RC         | RC1       | RC1        | RC2       | RC2        | RC3        | RC3        |
| Band     | Vocoder Rate | Full      | Full       | Full      | Full       | Full       | Full       |
| Cellular | 1013         | 24.05     | 24.01      | 23.99     | 24.16      | 24.09      | 24.04      |
|          | 384          | 24.26     | 24.25      | 24.16     | 24.30      | 24.21      | 24.23      |
|          | 777          | 24.16     | 24.13      | 24.09     | 24.24      | 24.18      | 24.12      |
| PCS      | 25           | 23.71     | 23.75      | 23.72     | 23.71      | 23.69      | 23.67      |
|          | 600          | 23.79     | 23.81      | 23.81     | 23.77      | 23.75      | 23.71      |
|          | 1175         | 23.82     | 23.86      | 23.89     | 23.81      | 23.79      | 23.77      |

**EvDo Rev 0 Power Measurements**

| 1x EvDo Rev. 0 [dBm] - FTAP rate = 2 Slot Version 307.2 kbps |           |          |           |           |           |            |
|--|-----------|----------|-----------|-----------|-----------|------------|
|  | RTAP Rate | 9.6 kbps | 19.2 kbps | 38.4 kbps | 76.8 kbps | 153.6 kbps |
| Band   | Channel   |          |           |           |           |            |
| Cellular   | 1013      | 23.91    | 23.95     | 23.97     | 23.92     | 23.96      |
|  | 384       | 24.08    | 24.09     | 24.02     | 24.01     | 24.06      |
|  | 777       | 23.95    | 23.98     | 24.00     | 23.96     | 23.98      |
| PCS  | 25        | 23.68    | 23.82     | 23.87     | 23.85     | 23.81      |
|  | 600       | 23.71    | 23.86     | 23.89     | 23.88     | 23.87      |
|  | 1175      | 23.79    | 23.89     | 23.94     | 23.92     | 23.90      |

**EvDo Rev A Power Measurements**

| 1x EvDo Rev. A Type 2 [dBm] - FTAP rate = 2 Slot Version 307.2 kbps, ACK On all slots |               |          |          |          |          |           |           |           |           |           |           |           |            |
|---|---------------|----------|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
|   | RETAP Payload | 128 bits | 256 bits | 512 bits | 768 bits | 1024 bits | 1536 bits | 2048 bits | 3072 bits | 4096 bits | 6144 bits | 8192 bits | 12288 bits |
| Band  | Channel       |          |          |          |          |           |           |           |           |           |           |           |            |
| Cellular  | 1013          | 23.87    | 24.02    | 24.06    | 24.05    | 24.09     | 24.02     | 24.03     | 24.08     | 24.10     | 24.09     | 24.13     | 24.07      |
|   | 384           | 23.95    | 24.16    | 24.18    | 24.19    | 24.17     | 24.15     | 24.16     | 24.19     | 24.21     | 24.20     | 24.25     | 24.19      |
|   | 777           | 23.91    | 24.11    | 24.13    | 24.16    | 24.14     | 24.12     | 24.11     | 24.15     | 24.17     | 24.18     | 24.19     | 24.15      |
| PCS   | 25            | 23.61    | 23.62    | 23.75    | 23.79    | 23.75     | 23.74     | 23.70     | 23.71     | 23.85     | 23.92     | 23.91     | 23.94      |
|   | 600           | 23.68    | 23.69    | 23.82    | 23.86    | 23.81     | 23.85     | 23.79     | 23.76     | 23.91     | 23.98     | 23.99     | 23.98      |
|   | 1175          | 23.76    | 23.75    | 23.89    | 23.87    | 23.86     | 23.89     | 23.84     | 23.80     | 23.96     | 24.01     | 24.03     | 24.05      |

Power Control was set in "All Bits Up" for all measurements.

| <b>802.11b</b> |                |                  |                |              |
|----------------|----------------|------------------|----------------|--------------|
| <b>Freq</b>    | <b>Channel</b> | <b>Data Rate</b> | <b>Antenna</b> | <b>Power</b> |
| 2412           | 1              | 1                | Main           | 22.32        |
| 2437           | 6              | 1                | Main           | 22.26        |
| 2462           | 11             | 1                | Main           | 22.18        |
| 2412           | 1              | 1                | Aux            | 22.30        |
| 2437           | 6              | 1                | Aux            | 22.23        |
| 2462           | 11             | 1                | Aux            | 22.14        |
|                |                |                  |                |              |
| <b>802.11g</b> |                |                  |                |              |
| <b>Freq</b>    | <b>Channel</b> | <b>Data Rate</b> | <b>Antenna</b> | <b>Power</b> |
| 2417           | 1              | 6                | Main           | 23.01        |
| 2437           | 6              | 6                | Main           | 23.09        |
| 2457           | 11             | 6                | Main           | 23.06        |
| 2417           | 1              | 6                | Aux            | 22.98        |
| 2437           | 6              | 6                | Aux            | 23.04        |
| 2457           | 11             | 6                | Aux            | 23.01        |

**Broadcom 1030 Conduct Power Measurements**

| 802.11b                            |         |           |         |       | 802.11a 5.2 GHz                    |         |           |         |       |
|------------------------------------|---------|-----------|---------|-------|------------------------------------|---------|-----------|---------|-------|
| Freq                               | Channel | Data Rate | Antenna | Power | Freq                               | Channel | Data Rate | Antenna | Power |
| 2412                               | 1       | 1         | Main    | 22.05 | 5.18                               | 36      | 6         | Main    | 14.56 |
| 2437                               | 6       | 1         | Main    | 21.97 | 5.20                               | 40      | 6         | Main    | 14.76 |
| 2462                               | 11      | 1         | Main    | 21.64 | 5.22                               | 44      | 6         | Main    | 14.59 |
| 2412                               | 1       | 1         | Aux     | 22.01 | 5.24                               | 48      | 6         | Main    | 14.38 |
| 2437                               | 6       | 1         | Aux     | 21.95 | 5.26                               | 52      | 6         | Main    | 17.76 |
| 2462                               | 11      | 1         | Aux     | 21.60 | 5.28                               | 56      | 6         | Main    | 17.89 |
|                                    |         |           |         |       | 5.30                               | 60      | 6         | Main    | 18.09 |
| <b>802.11g</b>                     |         |           |         |       | 5.32                               | 64      | 6         | Main    | 16.30 |
| Freq                               | Channel | Data Rate | Antenna | Power | 5.18                               | 36      | 6         | Aux     | 14.53 |
| 2412                               | 1       | 1         | Main    | 18.97 | 5.20                               | 40      | 6         | Aux     | 14.70 |
| 2437                               | 6       | 1         | Main    | 18.86 | 5.22                               | 44      | 6         | Aux     | 14.52 |
| 2462                               | 11      | 1         | Main    | 16.84 | 5.24                               | 48      | 6         | Aux     | 14.30 |
| 2412                               | 1       | 1         | Aux     | 18.92 | 5.26                               | 52      | 6         | Aux     | 17.71 |
| 2437                               | 6       | 1         | Aux     | 18.85 | 5.28                               | 56      | 6         | Aux     | 17.85 |
| 2462                               | 11      | 1         | Aux     | 16.81 | 5.30                               | 60      | 6         | Aux     | 18.05 |
|                                    |         |           |         |       | 5.32                               | 64      | 6         | Aux     | 16.29 |
| <b>802.11n 2.4 GHz 20 MHz Wide</b> |         |           |         |       | <b>802.11n 5.2 GHz 20 MHz Wide</b> |         |           |         |       |
| Freq                               | Channel | Data Rate | Antenna | Power | Freq                               | Channel | Data Rate | Antenna | Power |
| 2412                               | 1       | 1         | Main    | 14.23 | 5.18                               | 36      | 6         | Main    | 8.71  |
| 2437                               | 6       | 1         | Main    | 18.97 | 5.20                               | 40      | 6         | Main    | 8.69  |
| 2462                               | 11      | 1         | Main    | 13.95 | 5.22                               | 44      | 6         | Main    | 8.73  |
| 2412                               | 1       | 1         | Aux     | 13.86 | 5.24                               | 48      | 6         | Main    | 8.87  |
| 2437                               | 6       | 1         | Aux     | 18.62 | 5.26                               | 52      | 6         | Main    | 15.86 |
| 2462                               | 11      | 1         | Aux     | 13.35 | 5.28                               | 56      | 6         | Main    | 15.79 |
|                                    |         |           |         |       | 5.30                               | 60      | 6         | Main    | 15.82 |
| <b>802.11n 2.4 GHz 40 MHz Wide</b> |         |           |         |       | 5.32                               | 64      | 6         | Main    | 13.85 |
| Freq                               | Channel | Data Rate | Antenna | Power | 5.18                               | 36      | 6         | Aux     | 8.65  |
| 2437                               | 6       | 1         | Main    | 13.65 | 5.20                               | 40      | 6         | Aux     | 8.66  |
| 2437                               | 6       | 1         | Aux     | 13.98 | 5.22                               | 44      | 6         | Aux     | 8.70  |
|                                    |         |           |         |       | 5.24                               | 48      | 6         | Aux     | 8.76  |
| <b>802.11 a 5.8 GHz</b>            |         |           |         |       | 5.26                               | 52      | 6         | Aux     | 15.80 |
| Freq                               | Channel | Data Rate | Antenna | Power | 5.28                               | 56      | 6         | Aux     | 15.76 |
| 5.745                              | 149     | 6         | Main    | 16.68 | 5.30                               | 60      | 6         | Aux     | 15.79 |
| 5.765                              | 153     | 6         | Main    | 16.69 | 5.32                               | 64      | 6         | Aux     | 13.86 |
| 5.785                              | 157     | 6         | Main    | 16.71 |                                    |         |           |         |       |
| 5.805                              | 161     | 6         | Main    | 16.73 |                                    |         |           |         |       |
| 5.825                              | 165     | 6         | Main    | 16.75 | <b>802.11n 5.2 GHz 40 MHz Wide</b> |         |           |         |       |
| Freq                               | Channel | Data Rate | Antenna | Power | Freq                               | Channel | Data Rate | Antenna | Power |
| 5.745                              | 149     | 6         | Aux     | 16.65 | 5.21                               | 42      | 6         | Main    | 10.82 |
| 5.765                              | 153     | 6         | Aux     | 16.67 | 5.25                               | 50      | 6         | Main    | 16.70 |
| 5.785                              | 157     | 6         | Aux     | 16.69 | 5.29                               | 58      | 6         | Main    | 13.71 |
| 5.805                              | 161     | 6         | Aux     | 16.70 | 5.21                               | 42      | 6         | Aux     | 10.80 |
| 5.825                              | 165     | 6         | Aux     | 16.72 | 5.25                               | 50      | 6         | Aux     | 16.65 |
|                                    |         |           |         |       | 5.29                               | 58      | 6         | Aux     | 13.70 |

**Broadcom 1031 Conduct Power Measurements**



| 802.11a 5.6 GHz             |         |           |         |       | 802.11n 5.6 GHz 20 MHz Wide |         |           |         |       |
|-----------------------------|---------|-----------|---------|-------|-----------------------------|---------|-----------|---------|-------|
| Freq                        | Channel | Data Rate | Antenna | Power | Freq                        | Channel | Data Rate | Antenna | Power |
| 5.50                        | 100     | 6         | Main    | 17.68 | 5.50                        | 100     | 6         | Main    | 16.09 |
| 5.52                        | 104     | 6         | Main    | 17.66 | 5.52                        | 104     | 6         | Main    | 16.18 |
| 5.54                        | 108     | 6         | Main    | 17.61 | 5.54                        | 108     | 6         | Main    | 16.27 |
| 5.56                        | 112     | 6         | Main    | 17.63 | 5.56                        | 112     | 6         | Main    | 16.51 |
| 5.58                        | 116     | 6         | Main    | 17.62 | 5.58                        | 116     | 6         | Main    | 16.72 |
| 5.60                        | 120     | 6         | Main    | 17.65 | 5.60                        | 120     | 6         | Main    | 16.87 |
| 5.62                        | 124     | 6         | Main    | 17.67 | 5.62                        | 124     | 6         | Main    | 16.74 |
| 5.64                        | 128     | 6         | Main    | 17.69 | 5.64                        | 128     | 6         | Main    | 16.72 |
| 5.66                        | 132     | 6         | Main    | 17.70 | 5.66                        | 132     | 6         | Main    | 16.68 |
| 5.68                        | 136     | 6         | Main    | 17.66 | 5.68                        | 136     | 6         | Main    | 16.66 |
| 5.70                        | 140     | 6         | Main    | 17.71 | 5.70                        | 140     | 6         | Main    | 16.65 |
| 5.50                        | 100     | 6         | Aux     | 17.60 | 5.50                        | 100     | 6         | Aux     | 15.81 |
| 5.52                        | 104     | 6         | Aux     | 17.59 | 5.52                        | 104     | 6         | Aux     | 15.89 |
| 5.54                        | 108     | 6         | Aux     | 17.62 | 5.54                        | 108     | 6         | Aux     | 15.92 |
| 5.56                        | 112     | 6         | Aux     | 17.64 | 5.56                        | 112     | 6         | Aux     | 16.06 |
| 5.58                        | 116     | 6         | Aux     | 17.57 | 5.58                        | 116     | 6         | Aux     | 16.25 |
| 5.60                        | 120     | 6         | Aux     | 17.59 | 5.60                        | 120     | 6         | Aux     | 16.39 |
| 5.62                        | 124     | 6         | Aux     | 17.62 | 5.62                        | 124     | 6         | Aux     | 16.37 |
| 5.64                        | 128     | 6         | Aux     | 17.66 | 5.64                        | 128     | 6         | Aux     | 16.41 |
| 5.66                        | 132     | 6         | Aux     | 17.63 | 5.66                        | 132     | 6         | Aux     | 16.38 |
| 5.68                        | 136     | 6         | Aux     | 17.64 | 5.68                        | 136     | 6         | Aux     | 16.43 |
| 5.70                        | 140     | 6         | Aux     | 17.62 | 5.70                        | 140     | 6         | Aux     | 16.45 |
|                             |         |           |         |       |                             |         |           |         |       |
| 802.11n 5.6 GHz 40 MHz Wide |         |           |         |       | 802.11n 5.8 GHz 20 MHz Wide |         |           |         |       |
| Freq                        | Channel | Data Rate | Antenna | Power | Freq                        | Channel | Data Rate | Antenna | Power |
| 5.53                        | 106     | 6         | Main    | 16.15 | 5.745                       | 149     | 6         | Main    | 16.85 |
| 5.57                        | 114     | 6         | Main    | 16.59 | 5.765                       | 153     | 6         | Main    | 16.79 |
| 5.61                        | 122     | 6         | Main    | 17.79 | 5.785                       | 157     | 6         | Main    | 16.12 |
| 5.63                        | 130     | 6         | Main    | 17.16 | 5.805                       | 161     | 6         | Main    | 16.32 |
| 5.69                        | 138     | 6         | Main    | 16.52 | 5.825                       | 165     | 6         | Main    | 16.46 |
| 5.53                        | 106     | 6         | Aux     | 16.10 | 5.745                       | 149     | 6         | Aux     | 16.87 |
| 5.57                        | 114     | 6         | Aux     | 16.49 | 5.765                       | 153     | 6         | Aux     | 16.84 |
| 5.61                        | 122     | 6         | Aux     | 17.71 | 5.785                       | 157     | 6         | Aux     | 16.89 |
| 5.63                        | 130     | 6         | Aux     | 17.09 | 5.805                       | 161     | 6         | Aux     | 16.81 |
| 5.69                        | 138     | 6         | Aux     | 16.50 | 5.825                       | 165     | 6         | Aux     | 16.77 |
|                             |         |           |         |       |                             |         |           |         |       |
|                             |         |           |         |       | 802.11n 5.8 GHz 40 MHz Wide |         |           |         |       |
|                             |         |           |         |       | Freq                        | Channel | Data Rate | Antenna | Power |
|                             |         |           |         |       | 5.76                        | 152     | 6         | Main    | 16.71 |
|                             |         |           |         |       | 5.80                        | 160     | 6         | Main    | 16.50 |
|                             |         |           |         |       | 5.76                        | 152     | 6         | Aux     | 17.23 |
|                             |         |           |         |       | 5.80                        | 160     | 6         | Aux     | 16.97 |

**Broadcom 1031 Conduct Power Measurements**

## SAR Data Summary – 835 MHz Body

| MEASUREMENT RESULTS |             |           |     |            |              |                 |                      |                               |            |
|---------------------|-------------|-----------|-----|------------|--------------|-----------------|----------------------|-------------------------------|------------|
| Position            | Mode        | Frequency |     | Modulation | Antenna Type | End Power (dBm) | Rev Ch/ Tx Level/RMC | Fwd Ch/Multi Slot/Test Set Up | SAR (W/kg) |
|                     |             | MHz       | Ch. |            |              |                 |                      |                               |            |
| Touch               | EV-DO Rev 0 | 836.6     | 384 | CDMA       | Tyco         | 24.06           | 153.6 kbps           | 2 Slot 307.2 kbps             | 0.275      |
|                     |             | 836.6     | 384 | CDMA       | Yageo        | 24.06           | 153.6 kbps           | 2 Slot 307.2 kbps             | 0.272      |

**Muscle**  
**1.6 W/kg (mW/g)**  
averaged over 1 gram

1. Battery is fully charged for all tests.  
 Power Measured       Conducted       ERP       EIRP
2. SAR Measurement  
 Phantom Configuration       Left Head       Uniphantom       Right Head  
 SAR Configuration       Head       Body
3. Test Signal Call Mode       Test Code       Base Station Simulator
4. Test Configuration       With Belt Clip       Without Belt Clip       N/A



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 Jay M. Moulton  
 Vice President

## SAR Data Summary – 1900 MHz Body

| MEASUREMENT RESULTS |             |           |     |            |              |                 |                      |                               |            |
|---------------------|-------------|-----------|-----|------------|--------------|-----------------|----------------------|-------------------------------|------------|
| Position            | Mode        | Frequency |     | Modulation | Antenna Type | End Power (dBm) | Rev Ch/ Tx Level/RMC | Fwd Ch/Multi Slot/Test Set Up | SAR (W/kg) |
|                     |             | MHz       | Ch. |            |              |                 |                      |                               |            |
| Touch               | EV-DO Rev 0 | 1880      | 600 | CDMA       | Tyco         | 23.87           | 153.6 kbps           | 2 Slot 307.2 kbps             | 0.541      |
|                     |             | 1880      | 600 | CDMA       | Yageo        | 23.87           | 153.6 kbps           | 2 Slot 307.2 kbps             | 0.538      |

**Muscle**  
**1.6 W/kg (mW/g)**  
averaged over 1 gram

1. Battery is fully charged for all tests.  
 Power Measured       Conducted       ERP       EIRP
2. SAR Measurement  
 Phantom Configuration       Left Head       Uniphantom       Right Head  
 SAR Configuration       Head       Body
3. Test Signal Call Mode       Test Code       Base Station Simulator
4. Test Configuration       With Belt Clip       Without Belt Clip       N/A



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 Jay M. Moulton  
 Vice President

**SAR Data Summary – 2450 MHz Body**
**MEASUREMENT RESULTS**

| Position | Module | Band | Antenna | Antenna Type | Frequency |      | Modulation | End Power (dBm) | Battery  | SAR (W/kg) |       |
|----------|--------|------|---------|--------------|-----------|------|------------|-----------------|----------|------------|-------|
|          |        |      |         |              | MHz       | Ch.  |            |                 |          |            |       |
| Touch    | 1030   | b    | Main    | Tyco         | 2412      | 1    | DSSS       | 22.32           | Standard | 0.190      |       |
|          |        |      |         | Yageo        | 2412      | 1    | DSSS       | 22.32           | Standard | 0.180      |       |
|          |        |      | Aux     | Tyco         | 2412      | 1    | DSSS       | 22.30           | Standard | 0.196      |       |
|          |        |      |         | Yageo        | 2412      | 1    | DSSS       | 22.30           | Standard | 0.149      |       |
|          |        | g    | Main    | Tyco         | 2437      | 6    | OFDM       | 23.09           | Standard | 0.175      |       |
|          |        |      |         | Yageo        | 2437      | 6    | OFDM       | 23.09           | Standard | 0.172      |       |
|          |        |      | Aux     | Tyco         | 2437      | 6    | OFDM       | 23.04           | Standard | 0.186      |       |
|          |        |      |         | Yageo        | 2437      | 6    | OFDM       | 23.04           | Standard | 0.173      |       |
|          |        | 1031 | b       | Main         | Tyco      | 2412 | 1          | DSSS            | 22.05    | Standard   | 0.175 |
|          |        |      |         |              | Yageo     | 2412 | 1          | DSSS            | 22.05    | Standard   | 0.175 |
|          |        |      |         | Aux          | Tyco      | 2412 | 1          | DSSS            | 22.01    | Standard   | 0.164 |
|          |        |      |         |              | Yageo     | 2412 | 1          | DSSS            | 22.01    | Standard   | 0.196 |
|          | n20    |      | Main    | Tyco         | 2437      | 6    | OFDM       | 18.97           | Standard | 0.163      |       |
|          |        |      |         | Yageo        | 2437      | 6    | OFDM       | 18.97           | Standard | 0.157      |       |
|          |        |      | Aux     | Tyco         | 2437      | 6    | OFDM       | 18.62           | Standard | 0.181      |       |
|          |        |      |         | Yageo        | 2437      | 6    | OFDM       | 18.62           | Standard | 0.187      |       |
|          | n40    |      | Main    | Tyco         | 2437      | 6    | OFDM       | 13.65           | Standard | 0.170      |       |
|          |        |      |         | Yageo        | 2437      | 6    | OFDM       | 13.65           | Standard | 0.178      |       |
|          |        |      | Aux     | Tyco         | 2437      | 6    | OFDM       | 13.98           | Standard | 0.165      |       |
|          |        |      |         | Yageo        | 2437      | 6    | OFDM       | 13.98           | Standard | 0.183      |       |

**Muscle**  
**1.6 W/kg (mW/g)**  
 averaged over 1 gram

1. Battery is fully charged for all tests.  
 Power Measured  Conducted  ERP  EIRP
2. SAR Measurement  
 Phantom Configuration  Left Head  Uniphantom  Right Head  
 SAR Configuration  Head  Body
3. Test Signal Call Mode  Test Code  Base Station Simulator
4. Test Configuration  With Belt Clip  Without Belt Clip  N/A



Jay M. Moulton  
 Vice President

**SAR Data Summary – 5250 MHz Body**
**MEASUREMENT RESULTS**

| Position | Module | Band   | Antenna | Antenna Type | Frequency |     | Modulation | End Power (dBm) | Battery  | SAR (W/kg) |
|----------|--------|--------|---------|--------------|-----------|-----|------------|-----------------|----------|------------|
|          |        |        |         |              | MHz       | Ch. |            |                 |          |            |
| Touch    | 1031   | a1     | Main    | Tyco         | 5200      | 40  | OFDM       | 14.76           | Standard | 0.207      |
|          |        |        |         | Yageo        | 5200      | 40  | OFDM       | 14.76           | Standard | 0.188      |
|          |        |        | Aux     | Tyco         | 5200      | 40  | OFDM       | 14.70           | Standard | 0.176      |
|          |        |        |         | Yageo        | 5200      | 40  | OFDM       | 17.70           | Standard | 0.188      |
|          |        | a2     | Main    | Tyco         | 5300      | 60  | OFDM       | 18.09           | Standard | 0.181      |
|          |        |        |         | Yageo        | 5300      | 60  | OFDM       | 18.09           | Standard | 0.192      |
|          |        |        | Aux     | Tyco         | 5300      | 60  | OFDM       | 18.05           | Standard | 0.185      |
|          |        |        |         | Yageo        | 5300      | 60  | OFDM       | 18.05           | Standard | 0.187      |
|          |        | n20 a1 | Main    | Tyco         | 5240      | 48  | OFDM       | 8.87            | Standard | 0.180      |
|          |        |        |         | Yageo        | 5240      | 48  | OFDM       | 8.87            | Standard | 0.172      |
|          |        |        | Aux     | Tyco         | 5240      | 48  | OFDM       | 8.76            | Standard | 0.198      |
|          |        |        |         | Yageo        | 5240      | 48  | OFDM       | 8.76            | Standard | 0.171      |
|          |        | n20 a2 | Main    | Tyco         | 5300      | 52  | OFDM       | 15.82           | Standard | 0.183      |
|          |        |        |         | Yageo        | 5300      | 52  | OFDM       | 15.82           | Standard | 0.184      |
|          |        |        | Aux     | Tyco         | 5300      | 52  | OFDM       | 15.79           | Standard | 0.185      |
|          |        |        |         | Yageo        | 5300      | 52  | OFDM       | 15.79           | Standard | 0.192      |
|          |        | n40 a1 | Main    | Tyco         | 5230      | 42  | OFDM       | 10.82           | Standard | 0.160      |
|          |        |        |         | Yageo        | 5230      | 42  | OFDM       | 10.82           | Standard | 0.183      |
|          |        |        | Aux     | Tyco         | 5230      | 42  | OFDM       | 10.80           | Standard | 0.190      |
|          |        |        |         | Yageo        | 5230      | 42  | OFDM       | 10.80           | Standard | 0.190      |
|          |        | n40 a2 | Main    | Tyco         | 5290      | 50  | OFDM       | 16.70           | Standard | 0.187      |
|          |        |        |         | Yageo        | 5290      | 50  | OFDM       | 16.70           | Standard | 0.184      |
|          |        |        | Aux     | Tyco         | 5290      | 50  | OFDM       | 16.65           | Standard | 0.187      |
|          |        |        |         | Yageo        | 5290      | 50  | OFDM       | 16.65           | Standard | 0.199      |

**Muscle**  
**1.6 W/kg (mW/g)**  
 averaged over 1 gram

1. Battery is fully charged for all tests.  
 Power Measured  Conducted  ERP  EIRP
2. SAR Measurement  
 Phantom Configuration  Left Head  Uniphantom  Right Head  
 SAR Configuration  Head  Body
3. Test Signal Call Mode  Test Code  Base Station Simulator
4. Test Configuration  With Belt Clip  Without Belt Clip  N/A



Jay M. Moulton  
 Vice President

**SAR Data Summary – 5600 MHz Body**
**MEASUREMENT RESULTS**

| Position | Module | Band | Antenna | Antenna Type | Frequency |     | Modulation | End Power (dBm) | Battery  | SAR (W/kg) |
|----------|--------|------|---------|--------------|-----------|-----|------------|-----------------|----------|------------|
|          |        |      |         |              | MHz       | Ch. |            |                 |          |            |
| Touch    | 1031   | a6   | Main    | Tyco         | 5700      | 140 | OFDM       | 17.71           | Standard | 0.232      |
|          |        |      |         | Yageo        | 5700      | 140 | OFDM       | 17.71           | Standard | 0.250      |
|          |        |      | Aux     | Tyco         | 5700      | 140 | OFDM       | 17.62           | Standard | 0.230      |
|          |        |      |         | Yageo        | 5700      | 140 | OFDM       | 17.62           | Standard | 0.308      |
|          |        | n20  | Main    | Tyco         | 5600      | 120 | OFDM       | 16.87           | Standard | 0.260      |
|          |        |      |         | Yageo        | 5600      | 120 | OFDM       | 16.87           | Standard | 0.238      |
|          |        |      | Aux     | Tyco         | 5600      | 120 | OFDM       | 16.39           | Standard | 0.232      |
|          |        |      |         | Yageo        | 5600      | 120 | OFDM       | 16.39           | Standard | 0.185      |
|          |        | n40  | Main    | Tyco         | 5600      | 122 | OFDM       | 17.79           | Standard | 0.253      |
|          |        |      |         | Yageo        | 5600      | 122 | OFDM       | 17.79           | Standard | 0.250      |
|          |        |      | Aux     | Tyco         | 5600      | 122 | OFDM       | 17.71           | Standard | 0.261      |
|          |        |      |         | Yageo        | 5600      | 122 | OFDM       | 17.71           | Standard | 0.224      |

**Muscle**  
**1.6 W/kg (mW/g)**  
 averaged over 1 gram

- Battery is fully charged for all tests.  
 Power Measured  Conducted  ERP  EIRP
- SAR Measurement  
 Phantom Configuration  Left Head  Uniphantom  Right Head  
 SAR Configuration  Head  Body
- Test Signal Call Mode  Test Code  Base Station Simulator
- Test Configuration  With Belt Clip  Without Belt Clip  N/A



Jay M. Moulton  
 Vice President

**SAR Data Summary – 5800 MHz Body**
**MEASUREMENT RESULTS**

| Position | Module | Band | Antenna | Antenna Type | Frequency |     | Modulation | End Power (dBm) | Battery  | SAR (W/kg) |
|----------|--------|------|---------|--------------|-----------|-----|------------|-----------------|----------|------------|
|          |        |      |         |              | MHz       | Ch. |            |                 |          |            |
| Touch    | 1031   | a8   | Main    | Tyco         | 5825      | 165 | OFDM       | 16.75           | Standard | 0.124      |
|          |        |      |         | Yageo        | 5825      | 165 | OFDM       | 16.75           | Standard | 0.120      |
|          |        |      | Aux     | Tyco         | 5825      | 165 | OFDM       | 16.72           | Standard | 0.126      |
|          |        |      |         | Yageo        | 5825      | 165 | OFDM       | 16.72           | Standard | 0.136      |
|          |        | n20  | Main    | Tyco         | 5745      | 149 | OFDM       | 16.85           | Standard | 0.131      |
|          |        |      |         | Yageo        | 5745      | 149 | OFDM       | 16.85           | Standard | 0.125      |
|          |        |      | Aux     | Tyco         | 5745      | 149 | OFDM       | 16.87           | Standard | 0.128      |
|          |        |      |         | Yageo        | 5745      | 149 | OFDM       | 16.87           | Standard | 0.142      |
|          |        | n40  | Main    | Tyco         | 5755      | 152 | OFDM       | 16.50           | Standard | 0.133      |
|          |        |      |         | Yageo        | 5755      | 152 | OFDM       | 16.50           | Standard | 0.138      |
|          |        |      | Aux     | Tyco         | 5755      | 152 | OFDM       | 16.97           | Standard | 0.126      |
|          |        |      |         | Yageo        | 5755      | 152 | OFDM       | 16.97           | Standard | 0.131      |

**Muscle**  
**1.6 W/kg (mW/g)**  
 averaged over 1 gram

1. Battery is fully charged for all tests.  
 Power Measured  Conducted  ERP  EIRP
2. SAR Measurement  
 Phantom Configuration  Left Head  Uniphantom  Right Head  
 SAR Configuration  Head  Body
3. Test Signal Call Mode  Test Code  Base Station Simulator
4. Test Configuration  With Belt Clip  Without Belt Clip  N/A



Jay M. Moulton  
 Vice President

## SAR Data Summary – Simultaneous Transmission

| MEASUREMENT RESULTS |           |     |            |             |           |      |            |          |          |                  |       |
|---------------------|-----------|-----|------------|-------------|-----------|------|------------|----------|----------|------------------|-------|
| WWAN                | Frequency |     | Modulation | WLAN Module | Frequency |      | Modulation | WWAN SAR | WLAN SAR | Total SAR (W/kg) |       |
|                     | MHz       | Ch  |            |             | MHz       | Ch   |            |          |          |                  |       |
| 835                 | 836.6     | 384 | CDMA       | 1030        | 2412      | 1    | DSSS       | 0.275    | 0.196    | 0.471            |       |
|                     | 836.6     | 384 | CDMA       |             | 2412      | 1    | DSSS       | 0.275    | 0.196    | 0.471            |       |
|                     | 836.6     | 384 | CDMA       |             | 1031      | 5200 | 40         | OFDM     | 0.275    | 0.207            | 0.482 |
|                     | 836.6     | 384 | CDMA       |             |           | 5700 | 140        | OFDM     | 0.275    | 0.308            | 0.583 |
|                     | 836.6     | 384 | CDMA       |             |           | 5745 | 149        | OFDM     | 0.275    | 0.142            | 0.417 |
| 1900                | 1880.00   | 600 | CDMA       | 1030        | 2412      | 1    | DSSS       | 0.541    | 0.196    | 0.737            |       |
|                     | 1880.00   | 600 | CDMA       |             | 1031      | 2412 | 1          | DSSS     | 0.541    | 0.196            | 0.737 |
|                     | 1880.00   | 600 | CDMA       |             |           | 5200 | 40         | OFDM     | 0.541    | 0.207            | 0.748 |
|                     | 1880.00   | 600 | CDMA       |             |           | 5700 | 140        | OFDM     | 0.541    | 0.308            | 0.849 |
|                     | 1880.00   | 600 | CDMA       |             | 5745      | 149  | OFDM       | 0.541    | 0.142    | 0.683            |       |

**Muscle**  
**1.6 W/kg (mW/g)**  
averaged over 1 gram

1. Battery is fully charged for all tests.  
 Power Measured  Conducted  ERP  EIRP
2. SAR Measurement  
 Phantom Configuration  Left Head  Uniphantom  Right Head  
 SAR Configuration  Head  Body
3. Test Signal Call Mode  Test Code  Base Station Simulator
4. Test Configuration  With Belt Clip  Without Belt Clip  N/A



Jay M. Moulton  
Vice President



## 12.1 Test Equipment List

Table 12.1 Equipment Specifications

| Type                                       | Calibration Due Date | Serial Number   |
|--|----------------------|-----------------|
| ThermoCRS Robot                            | N/A                  | RAF0338198      |
| ThermoCRS Controller                       | N/A                  | RCF0338224      |
| ThermoCRS Teach Pendant (Joystick)         | N/A                  | STP0334405      |
| IBM Computer, 2.66 MHz P4                  | N/A                  | 8189D8U KCPR08N |
| Aprel E-Field Probe ALS-E020               | 12/03/2008           | RFE-217         |
| Aprel E-Field Probe ALS-E030               | 04/30/2008           | AL-E3P1         |
| Aprel Dummy Probe                          | N/A                  | 023             |
| Aprel Left Phantom                         | N/A                  | RFE-267         |
| Aprel Right Phantom                        | N/A                  | RFE-268         |
| Aprel UniPhantom                           | N/A                  | RFE-273         |
| Aprel Validation Dipole ALS-D-450-S-2      | 04/30/2009           | RFE-362         |
| Aprel Validation Dipole ALS-D-835-S-2      | 02/22/2010           | RFE-274         |
| Aprel Validation Dipole ALS-D-1900-S-2     | 02/21/2010           | RFE-277         |
| Aprel Validation Dipole ALS-D-2450-S-2     | 02/20/2010           | RFE-278         |
| Aprel Validation Dipole ALS-D-BB-S-2       | 05/23/2009           | 5258-235-00801  |
| Agilent (HP) 437B Power Meter              | 12/01/2009           | 3125U08837      |
| Agilent (HP) 8481B Power Sensor            | 12/02/2009           | 3318A05384      |
| Advantest R3261A Spectrum Analyzer         | 12/02/2009           | 31720068        |
| Agilent (HP) 8350B Signal Generator        | 12/01/2009           | 2749A10226      |
| Agilent (HP) 83525A RF Plug-In             | 12/01/2009           | 2647A01172      |
| Agilent (HP) 8753C Vector Network Analyzer | 12/01/2009           | 3135A01724      |
| Agilent (HP) 85047A S-Parameter Test Set   | 12/01/2009           | 2904A00595      |
| Agilent (HP) E55125C Base Station Sim.     | 10/30/2010           | MY4860364       |
| Aprel Dielectric Probe Assembly            | N/A                  | 0011            |
| Brain Equivalent Matter (450 MHz)          | N/A                  | N/A             |
| Brain Equivalent Matter (835 MHz)          | N/A                  | N/A             |
| Brain Equivalent Matter (1900 MHz)         | N/A                  | N/A             |
| Brain Equivalent Matter (2450 MHz)         | N/A                  | N/A             |
| Muscle Equivalent Matter (450 MHz)         | N/A                  | N/A             |
| Muscle Equivalent Matter (835 MHz)         | N/A                  | N/A             |
| Muscle Equivalent Matter (1900 MHz)        | N/A                  | N/A             |
| Muscle Equivalent Matter (2450 MHz)        | N/A                  | N/A             |
| Muscle Equivalent Matter (5200 MHz)        | N/A                  | N/A             |
| Muscle Equivalent Matter (5800 MHz)        | N/A                  | N/A             |

## 13.1 Conclusion

The SAR measurement indicates that the EUT complies with the RF radiation exposure limits of the FCC. These measurements are taken to simulate the RF effects exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The tested device complies with the requirements in respect to all parameters subject to the test. The test results and statements relate only to the item(s) tested.

Please note that the absorption and distribution of electromagnetic energy in the body is a very complex phenomena that depends on the mass, shape, and size of the body; the orientation of the body with respect to the field vectors; and, the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease). Because innumerable factors may interact to determine the specific biological outcome of an exposure to electromagnetic fields, any protection guide shall consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables. [3]

## 14.1 References

- [1] Federal Communications Commission, ET Docket 93-62, Guidelines for Evaluating the Environmental Effects of Radio Frequency Radiation, August 1996
- [2] ANSI/IEEE C95.1 – 1999, American National Standard Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300kHz to 100GHz, New York: IEEE, 1992.
- [3] ANSI/IEEE C95.3 – 2002, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields – RF and Microwave, New York: IEEE, 1992.
- [4] Federal Communications Commission, OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01), Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields, July 2001.
- [5] IEEE Standard 1528 – 2003, IEEE Recommended Practice for Determining the Peak-Spatial Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communication Devices: Measurement Techniques, October 2003.
- [6] Industry Canada, RSS – 102e, Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands), November 2005.
- [7] Industry Canada, Safety Code 6, Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3kHz to 300 GHz, 1999.

## Appendix A – System Validation Plots and Data

```

*****
Test Result for UIM Dielectric Parameter
Wed 21/Jan/2009 08:03:26
Freq  Frequency(GHz)
FCC_eH      FCC Bulletin 65 Supplement C ( June 2001) Limits for Head Epsilon
FCC_sH      FCC Bulletin 65 Supplement C (June 2001) Limits for Head Sigma
FCC_eB      FCC Limits for Body Epsilon
FCC_sB      FCC Limits for Body Sigma
Test_e      Epsilon of UIM
Test_s      Sigma of UIM
*****
Freq      FCC_eB      FCC_sB      Test_e      Test_s
0.8050    55.32      0.97      55.36      0.95
0.8150    55.28      0.97      55.29      0.96
0.8250    55.24      0.97      55.21      0.97
0.8350    55.20      0.97      55.12      0.98
0.8450    55.17      0.98      55.06      0.99
0.8550    55.14      0.99      54.99      1.00
0.8650    55.11      1.01      54.93      1.02
    
```

```

*****
Test Result for UIM Dielectric Parameter
Sat 24/Jan/2009 02:19:31
Freq  Frequency(GHz)
FCC_eH      FCC Bulletin 65 Supplement C ( June 2001) Limits for Head Epsilon
FCC_sH      FCC Bulletin 65 Supplement C (June 2001) Limits for Head Sigma
FCC_eB      FCC Limits for Body Epsilon
FCC_sB      FCC Limits for Body Sigma
Test_e      Epsilon of UIM
Test_s      Sigma of UIM
*****
Freq      FCC_eB      FCC_sB      Test_e      Test_s
0.8050    55.32      0.97      55.39      0.95
0.8150    55.28      0.97      55.31      0.96
0.8250    55.24      0.97      55.26      0.98
0.8350    55.20      0.97      55.19      0.99
0.8450    55.17      0.98      55.10      1.00
0.8550    55.14      0.99      55.03      1.01
0.8650    55.11      1.01      54.97      1.02
    
```

\*\*\*\*\*

Test Result for UIM Dielectric Parameter

Tue 20/Jan/2009 09:14:42

Freq Frequency(GHz)

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

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

FCC\_eB FCC Limits for Body Epsilon

FCC\_sB FCC Limits for Body Sigma

Test\_e Epsilon of UIM

Test\_s Sigma of UIM

\*\*\*\*\*

| Freq   | FCC_eB | FCC_sB | Test_e | Test_s |
|--------|--------|--------|--------|--------|
| 1.8700 | 53.30  | 1.52   | 53.38  | 1.50   |
| 1.8800 | 53.30  | 1.52   | 53.29  | 1.51   |
| 1.8900 | 53.30  | 1.52   | 53.23  | 1.52   |
| 1.9000 | 53.30  | 1.52   | 53.11  | 1.53   |
| 1.9100 | 53.30  | 1.52   | 53.06  | 1.54   |
| 1.9200 | 53.30  | 1.52   | 53.00  | 1.56   |
| 1.9300 | 53.30  | 1.52   | 52.93  | 1.57   |

\*\*\*\*\*

Test Result for UIM Dielectric Parameter

Sat 24/Jan/2009 01:17:28

Freq Frequency(GHz)

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

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

FCC\_eB FCC Limits for Body Epsilon

FCC\_sB FCC Limits for Body Sigma

Test\_e Epsilon of UIM

Test\_s Sigma of UIM

\*\*\*\*\*

| Freq   | FCC_eB | FCC_sB | Test_e | Test_s |
|--------|--------|--------|--------|--------|
| 1.8700 | 53.30  | 1.52   | 53.45  | 1.52   |
| 1.8800 | 53.30  | 1.52   | 53.39  | 1.52   |
| 1.8900 | 53.30  | 1.52   | 53.31  | 1.53   |
| 1.9000 | 53.30  | 1.52   | 53.26  | 1.54   |
| 1.9100 | 53.30  | 1.52   | 53.19  | 1.54   |
| 1.9200 | 53.30  | 1.52   | 53.11  | 1.56   |
| 1.9300 | 53.30  | 1.52   | 53.06  | 1.57   |

\*\*\*\*\*

Test Result for UIM Dielectric Parameter

Thu 22/Jan/2009 08:12:25

Freq Frequency(GHz)

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

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

FCC\_eB FCC Limits for Body Epsilon

FCC\_sB FCC Limits for Body Sigma

Test\_e Epsilon of UIM

Test\_s Sigma of UIM

\*\*\*\*\*

| Freq   | FCC_eB | FCC_sB | Test_e | Test_s |
|--------|--------|--------|--------|--------|
| 2.4200 | 52.74  | 1.92   | 52.77  | 1.93   |
| 2.4300 | 52.73  | 1.93   | 52.73  | 1.95   |
| 2.4400 | 52.71  | 1.94   | 52.65  | 1.96   |
| 2.4500 | 52.70  | 1.95   | 52.56  | 1.97   |
| 2.4600 | 52.69  | 1.96   | 52.48  | 1.98   |
| 2.4700 | 52.67  | 1.98   | 52.39  | 1.99   |
| 2.4800 | 52.66  | 1.99   | 52.30  | 2.01   |

\*\*\*\*\*

Test Result for UIM Dielectric Parameter

Sat 24/Jan/2009 08:24:25

Freq Frequency(GHz)

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

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

FCC\_eB FCC Limits for Body Epsilon

FCC\_sB FCC Limits for Body Sigma

Test\_e Epsilon of UIM

Test\_s Sigma of UIM

\*\*\*\*\*

| Freq   | FCC_eB | FCC_sB | Test_e | Test_s |
|--------|--------|--------|--------|--------|
| 2.4200 | 52.74  | 1.92   | 52.70  | 1.94   |
| 2.4300 | 52.73  | 1.93   | 52.64  | 1.95   |
| 2.4400 | 52.71  | 1.94   | 52.57  | 1.95   |
| 2.4500 | 52.70  | 1.95   | 52.49  | 1.96   |
| 2.4600 | 52.69  | 1.96   | 52.42  | 1.97   |
| 2.4700 | 52.67  | 1.98   | 52.34  | 1.98   |
| 2.4800 | 52.66  | 1.99   | 52.28  | 2.00   |

\*\*\*\*\*

Test Result for UIM Dielectric Parameter

Fri 23/Jan/2009 07:34:34

Freq Frequency(GHz)

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

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

FCC\_eB FCC Limits for Body Epsilon

FCC\_sB FCC Limits for Body Sigma

Test\_e Epsilon of UIM

Test\_s Sigma of UIM

\*\*\*\*\*

| Freq   | FCC_eB | FCC_sB | Test_e | Test_s |
|--------|--------|--------|--------|--------|
| 5.2200 | 48.99  | 5.32   | 49.09  | 5.37   |
| 5.2300 | 48.97  | 5.33   | 48.98  | 5.39   |
| 5.2400 | 48.96  | 5.35   | 48.90  | 5.40   |
| 5.2500 | 48.95  | 5.36   | 48.81  | 5.42   |
| 5.2600 | 48.93  | 5.37   | 48.72  | 5.43   |
| 5.2700 | 48.92  | 5.38   | 48.64  | 5.44   |
| 5.2800 | 48.91  | 5.39   | 48.56  | 5.46   |

\*\*\*\*\*

Test Result for UIM Dielectric Parameter

Thu 29/Jan/2009 08:07:06

Freq Frequency(GHz)

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

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

FCC\_eB FCC Limits for Body Epsilon

FCC\_sB FCC Limits for Body Sigma

Test\_e Epsilon of UIM

Test\_s Sigma of UIM

\*\*\*\*\*

| Freq   | FCC_eB | FCC_sB | Test_e | Test_s |
|--------|--------|--------|--------|--------|
| 5.2200 | 48.99  | 5.32   | 49.15  | 5.32   |
| 5.2300 | 48.97  | 5.33   | 49.09  | 5.39   |
| 5.2400 | 48.96  | 5.35   | 49.08  | 5.40   |
| 5.2500 | 48.95  | 5.36   | 49.05  | 5.41   |
| 5.2600 | 48.93  | 5.37   | 49.04  | 5.43   |
| 5.2700 | 48.92  | 5.38   | 48.99  | 5.45   |
| 5.2800 | 48.91  | 5.39   | 48.93  | 5.46   |

\*\*\*\*\*

Test Result for UIM Dielectric Parameter

Thu 22/Jan/2009 02:28:28

Freq Frequency(GHz)

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

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

FCC\_eB FCC Limits for Body Epsilon

FCC\_sB FCC Limits for Body Sigma

Test\_e Epsilon of UIM

Test\_s Sigma of UIM

\*\*\*\*\*

| Freq   | FCC_eB | FCC_sB | Test_e | Test_s |
|--------|--------|--------|--------|--------|
| 5.5700 | 48.51  | 5.73   | 48.44  | 5.73   |
| 5.5800 | 48.50  | 5.74   | 48.40  | 5.76   |
| 5.5900 | 48.48  | 5.75   | 48.38  | 5.78   |
| 5.6000 | 48.47  | 5.77   | 48.37  | 5.80   |
| 5.6100 | 48.46  | 5.78   | 48.34  | 5.82   |
| 5.6200 | 48.44  | 5.79   | 48.32  | 5.84   |
| 5.6300 | 48.43  | 5.80   | 48.30  | 5.87   |

\*\*\*\*\*

Test Result for UIM Dielectric Parameter

Mon 26/Jan/2009 07:07:34

Freq Frequency(GHz)

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

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

FCC\_eB FCC Limits for Body Epsilon

FCC\_sB FCC Limits for Body Sigma

Test\_e Epsilon of UIM

Test\_s Sigma of UIM

\*\*\*\*\*

| Freq   | FCC_eB | FCC_sB | Test_e | Test_s |
|--------|--------|--------|--------|--------|
| 5.5700 | 48.51  | 5.73   | 48.73  | 5.58   |
| 5.5800 | 48.50  | 5.74   | 48.71  | 5.59   |
| 5.5900 | 48.48  | 5.75   | 48.69  | 5.61   |
| 5.6000 | 48.47  | 5.77   | 48.66  | 5.62   |
| 5.6100 | 48.46  | 5.78   | 48.64  | 5.64   |
| 5.6200 | 48.44  | 5.79   | 48.61  | 5.65   |
| 5.6300 | 48.43  | 5.80   | 48.59  | 5.67   |



\*\*\*\*\*

Test Result for UIM Dielectric Parameter

Fri 23/Jan/2009 02:15:41

Freq Frequency(GHz)

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

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

FCC\_eB FCC Limits for Body Epsilon

FCC\_sB FCC Limits for Body Sigma

Test\_e Epsilon of UIM

Test\_s Sigma of UIM

\*\*\*\*\*

| Freq   | FCC_eB | FCC_sB | Test_e | Test_s |
|--------|--------|--------|--------|--------|
| 5.7550 | 48.26  | 5.95   | 47.49  | 5.92   |
| 5.7650 | 48.25  | 5.96   | 47.41  | 5.94   |
| 5.7750 | 48.23  | 5.97   | 47.36  | 5.95   |
| 5.7850 | 48.22  | 5.98   | 47.33  | 5.97   |
| 5.7950 | 48.21  | 5.99   | 47.30  | 5.99   |
| 5.8050 | 48.19  | 6.01   | 47.27  | 6.00   |
| 5.8150 | 48.18  | 6.02   | 47.23  | 6.03   |

\*\*\*\*\*

Test Result for UIM Dielectric Parameter

Mon 26/Jan/2009 10:36:43

Freq Frequency(GHz)

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

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

FCC\_eB FCC Limits for Body Epsilon

FCC\_sB FCC Limits for Body Sigma

Test\_e Epsilon of UIM

Test\_s Sigma of UIM

\*\*\*\*\*

| Freq   | FCC_eB | FCC_sB | Test_e | Test_s |
|--------|--------|--------|--------|--------|
| 5.7550 | 48.26  | 5.95   | 49.99  | 6.00   |
| 5.7650 | 48.25  | 5.96   | 49.94  | 5.99   |
| 5.7750 | 48.23  | 5.97   | 49.94  | 5.98   |
| 5.7850 | 48.22  | 5.98   | 49.89  | 5.96   |
| 5.7950 | 48.21  | 5.99   | 49.80  | 5.95   |
| 5.8050 | 48.19  | 6.01   | 49.78  | 5.93   |
| 5.8150 | 48.18  | 6.02   | 49.78  | 5.91   |

## SAR Test Report

By Operator : Jay  
Measurement Date : 21-Jan-2009  
Starting Time : 21-Jan-2009 08:29:47 AM  
End Time : 21-Jan-2009 08:45:15 AM  
Scanning Time : 928 secs

### Product Data

Device Name : Validation  
Serial No. : 835  
Type : Dipole  
Model : ALS-D-835-S-2  
Frequency : 835.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 161 mm  
Width : 3.6 mm  
Depth : 89.8 mm  
Antenna Type : Internal  
Orientation : Touch  
Power Drift-Start : 1.061 W/kg  
Power Drift-Finish: 1.044 W/kg  
Power Drift (%) : -1.661

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 835  
Frequency : 835.00 MHz  
Last Calib. Date : 21-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 24.00 °C  
Humidity : 40.00 RH%  
Epsilon : 55.12 F/m  
Sigma : 0.98 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

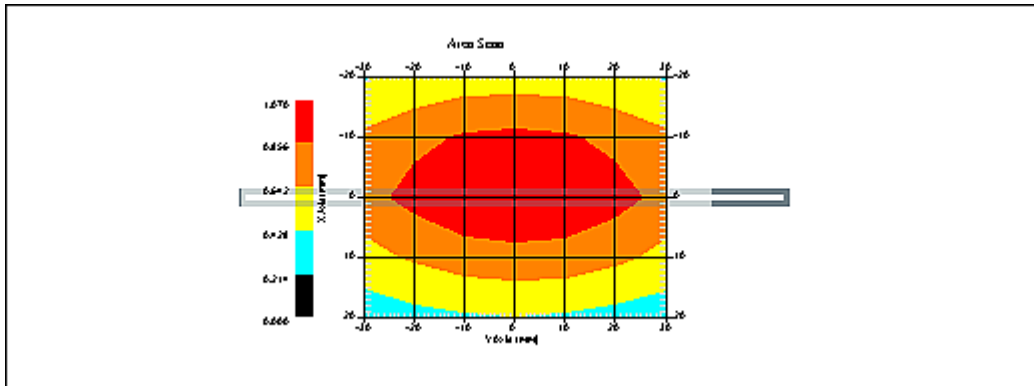
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 835.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.3  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 24.00 °C  
Set-up Date : 21-Jan-2009  
Set-up Time : 9:21:48 AM  
Area Scan : 5x7x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

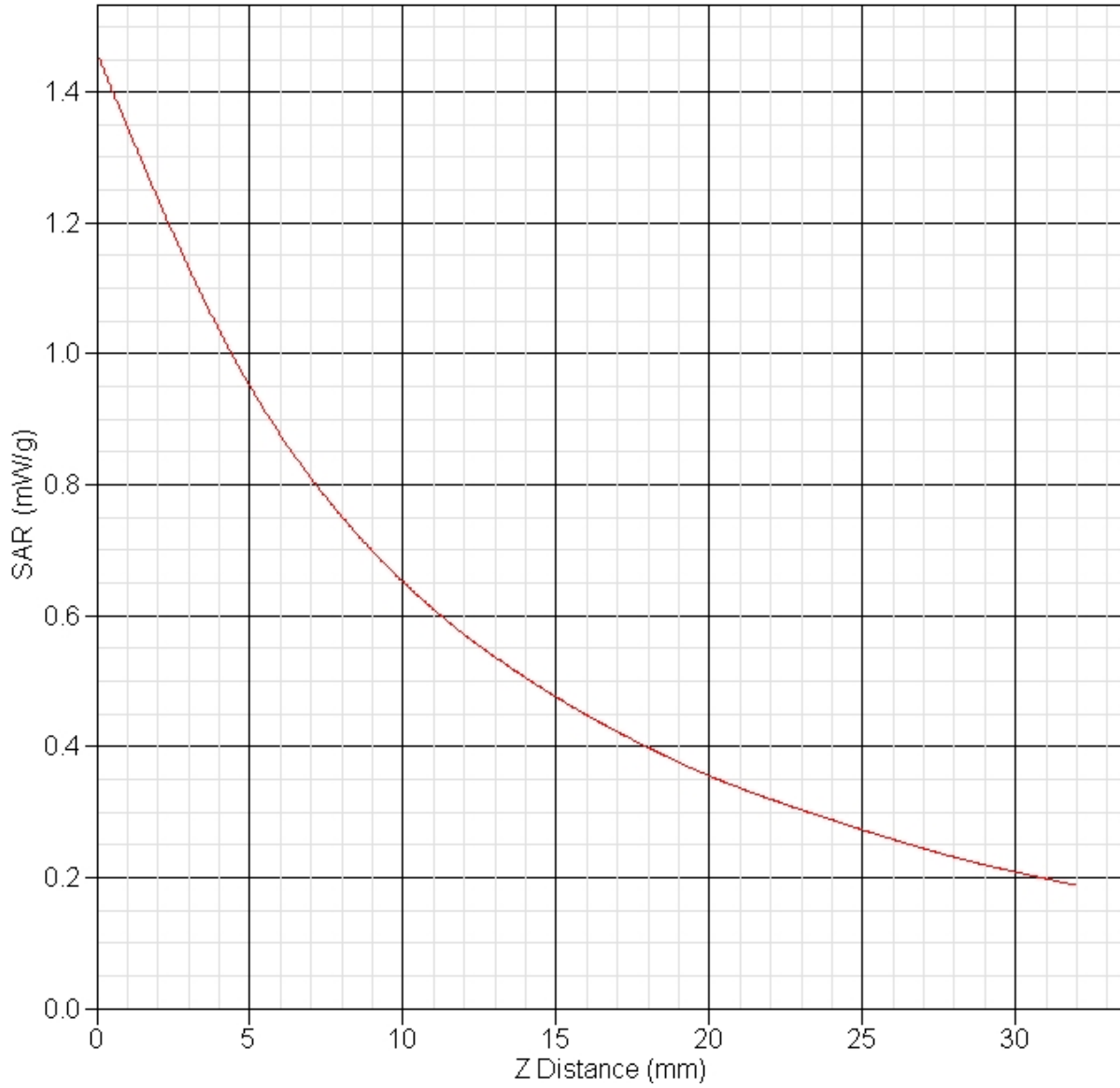
Other Data

DUT Position : Touch  
Separation : 15 mm  
Channel : Mid



1 gram SAR value : 0.974 W/kg  
10 gram SAR value : 0.645 W/kg  
Area Scan Peak SAR : 1.069 W/kg  
Zoom Scan Peak SAR : 1.461 W/kg

**SAR-Z Axis**  
at Hotspot x:0.11 y:-0.10



## SAR Test Report

By Operator : Jay  
Measurement Date : 24-Jan-2009  
Starting Time : 24-Jan-2009 03:07:18 PM  
End Time : 24-Jan-2009 03:22:14 PM  
Scanning Time : 896 secs

### Product Data

Device Name : Validation  
Serial No. : 835  
Type : Dipole  
Model : ALS-D-835-S-2  
Frequency : 835.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 161 mm  
Width : 3.6 mm  
Depth : 89.8 mm  
Antenna Type : Internal  
Orientation : Touch  
Power Drift-Start : 1.010 W/kg  
Power Drift-Finish: 0.990 W/kg  
Power Drift (%) : -1.987

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 835  
Frequency : 835.00 MHz  
Last Calib. Date : 24-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 24.00 °C  
Humidity : 40.00 RH%  
Epsilon : 55.19 F/m  
Sigma : 0.99 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

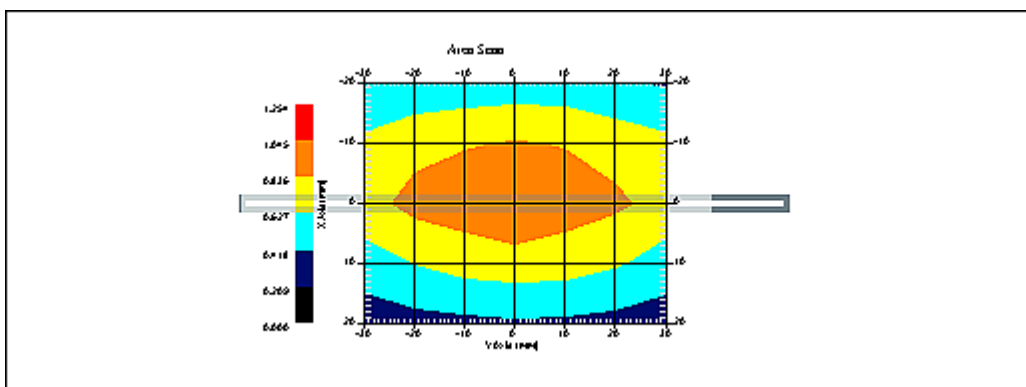
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 835.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.3  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 24.00 °C  
Set-up Date : 24-Jan-2009  
Set-up Time : 9:21:48 AM  
Area Scan : 5x7x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

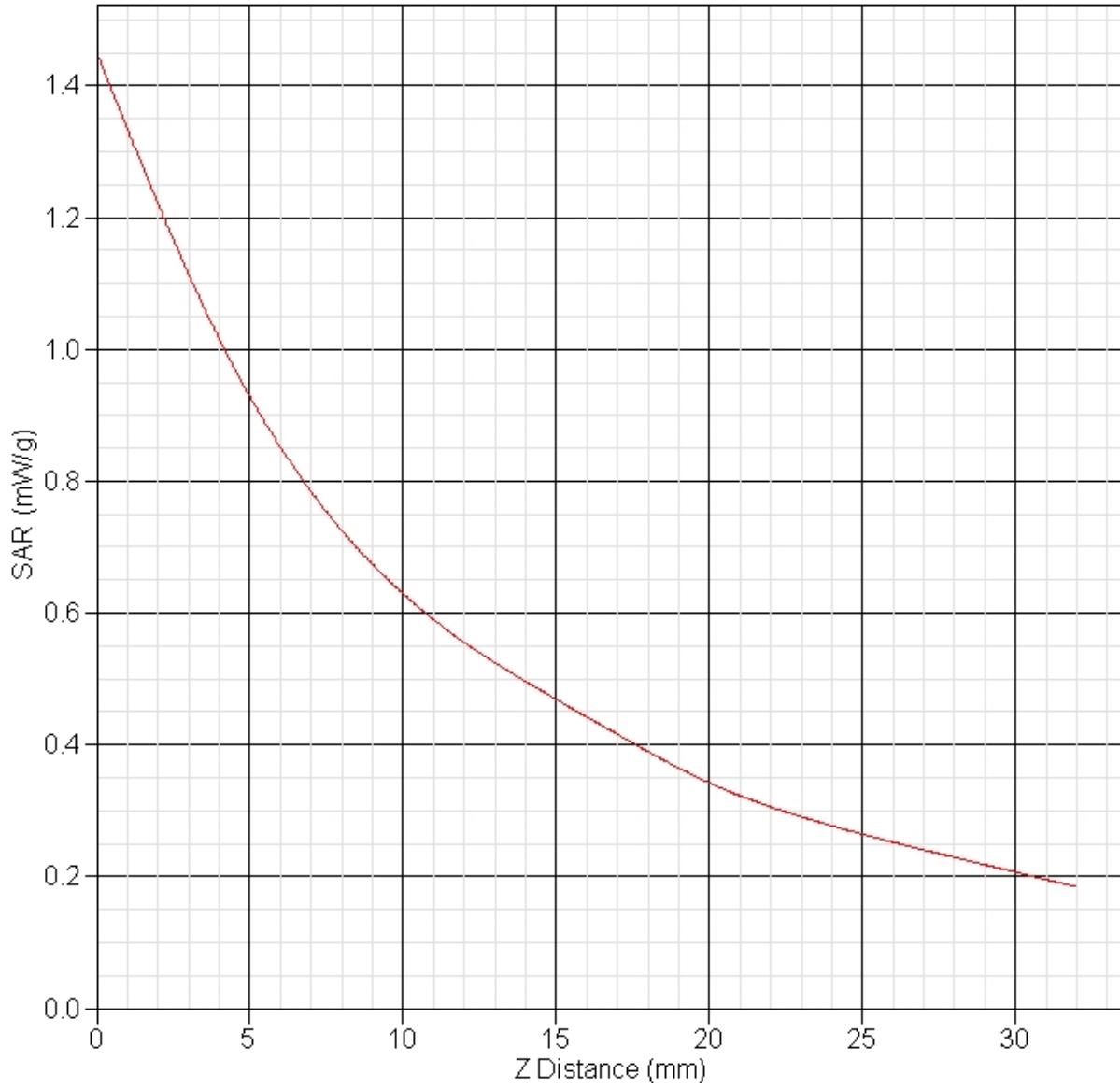
Other Data

DUT Position : Touch  
Separation : 15 mm  
Channel : Mid



1 gram SAR value : 0.949 W/kg  
10 gram SAR value : 0.626 W/kg  
Area Scan Peak SAR : 1.046 W/kg  
Zoom Scan Peak SAR : 1.451 W/kg

### SAR-Z Axis at Hotspot x:0.08 y:7.87



## SAR Test Report

By Operator : Jay  
Measurement Date : 20-Jan-2009  
Starting Time : 20-Jan-2009 09:17:42 AM  
End Time : 20-Jan-2009 09:30:28 AM  
Scanning Time : 766 secs

### Product Data

Device Name : Validation  
Serial No. : 1900  
Type : Dipole  
Model : ALS-D-1900-S-2  
Frequency : 1900.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 68 mm  
Width : 3.6 mm  
Depth : 39.5 mm  
Antenna Type : Internal  
Orientation : Touch  
Power Drift-Start : 5.300 W/kg  
Power Drift-Finish: 4.224 W/kg  
Power Drift (%) : -1.432

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 1900  
Frequency : 1900.00 MHz  
Last Calib. Date : 20-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 43.00 RH%  
Epsilon : 53.11 F/m  
Sigma : 1.53 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 1900.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

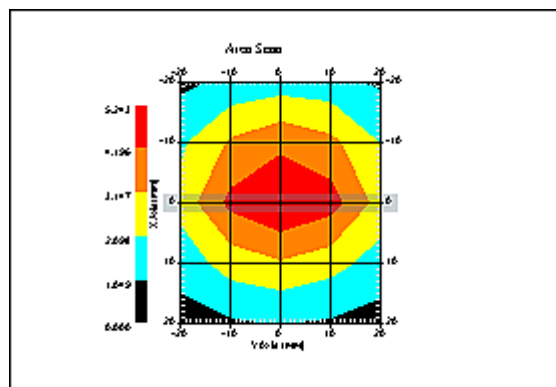


Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 20-Jan-2009  
Set-up Time : 8:21:16 AM  
Area Scan : 5x5x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

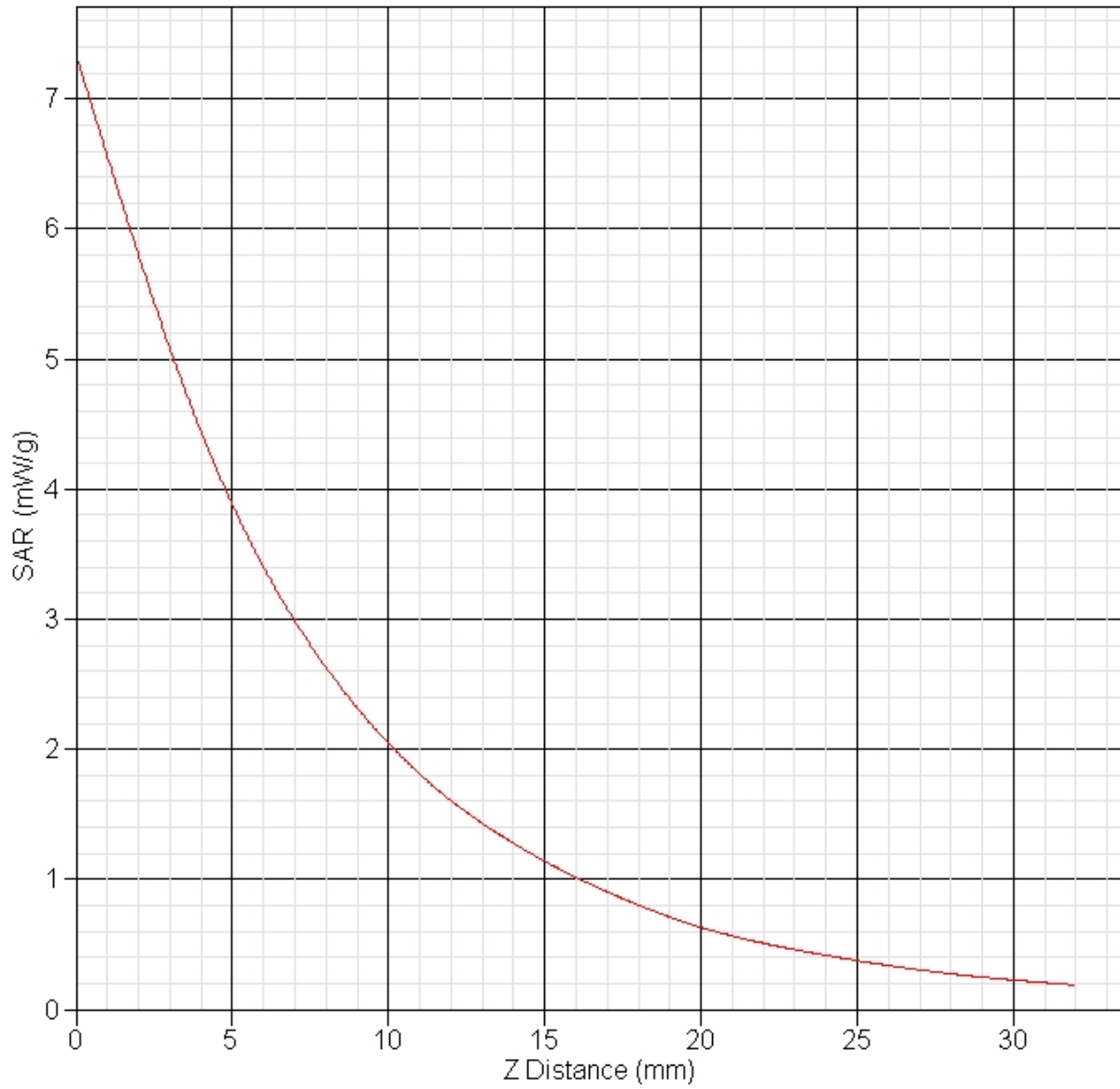
Other Data

DUT Position : Touch  
Separation : 10 mm  
Channel : Mid



1 gram SAR value : 3.948 W/kg  
10 gram SAR value : 2.018 W/kg  
Area Scan Peak SAR : 5.243 W/kg  
Zoom Scan Peak SAR : 7.346 W/kg

**SAR-Z Axis**  
at Hotspot x:-0.01 y:-0.13



## SAR Test Report

By Operator : Jay  
Measurement Date : 24-Jan-2009  
Starting Time : 24-Jan-2009 01:56:28 PM  
End Time : 24-Jan-2009 02:09:12 PM  
Scanning Time : 764 secs

### Product Data

Device Name : Validation  
Serial No. : 1900  
Type : Dipole  
Model : ALS-D-1900-S-2  
Frequency : 1900.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 68 mm  
Width : 3.6 mm  
Depth : 39.5 mm  
Antenna Type : Internal  
Orientation : Touch  
Power Drift-Start : 4.601 W/kg  
Power Drift-Finish: 4.587 W/kg  
Power Drift (%) : -0.306

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 1900  
Frequency : 1900.00 MHz  
Last Calib. Date : 24-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 43.00 RH%  
Epsilon : 53.26 F/m  
Sigma : 1.54 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

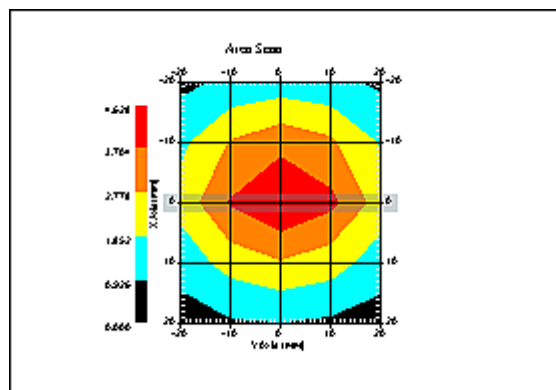
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 1900.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 24-Jan-2009  
Set-up Time : 8:21:16 AM  
Area Scan : 5x5x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

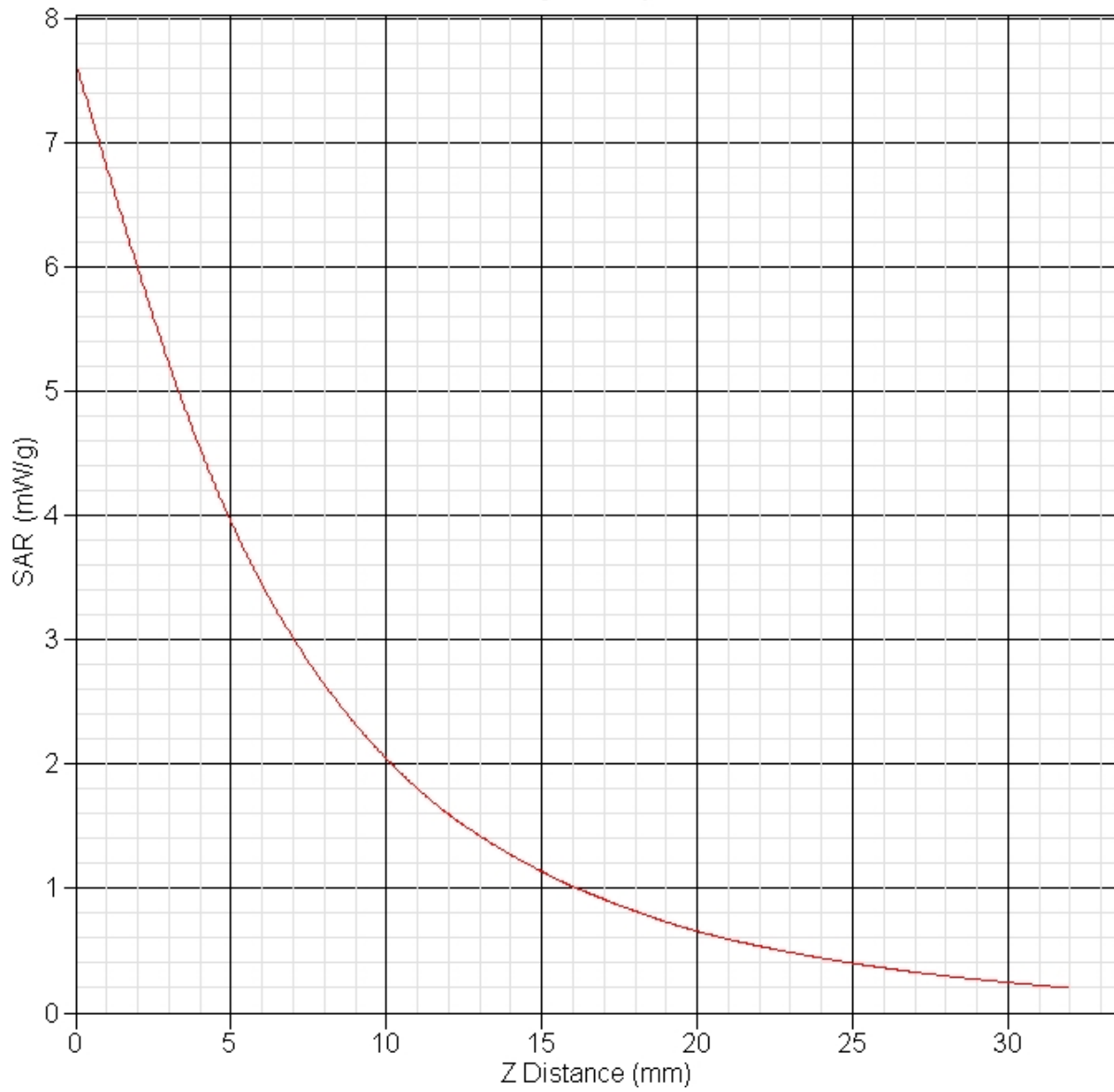
Other Data

DUT Position : Touch  
Separation : 10 mm  
Channel : Mid



1 gram SAR value : 4.055 W/kg  
10 gram SAR value : 2.082 W/kg  
Area Scan Peak SAR : 4.628 W/kg  
Zoom Scan Peak SAR : 7.656 W/kg

**SAR-Z Axis**  
at Hotspot x:0.02 y:-0.13



## SAR Test Report

By Operator : Jay  
Measurement Date : 22-Jan-2009  
Starting Time : 22-Jan-2009 08:18:21 AM  
End Time : 22-Jan-2009 08:31:15 AM  
Scanning Time : 774 secs

### Product Data

Device Name : Validation  
Serial No. : 2450  
Type : Dipole  
Model : ALS-D-2450-S-2  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 51.5 mm  
Width : 3.6 mm  
Depth : 30.4 mm  
Antenna Type : Internal  
Orientation : Touch  
Power Drift-Start : 6.002 W/kg  
Power Drift-Finish: 6.167 W/kg  
Power Drift (%) : 2.745

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 2450  
Frequency : 2450.00 MHz  
Last Calib. Date : 22-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 41.00 RH%  
Epsilon : 52.56 F/m  
Sigma : 1.97 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

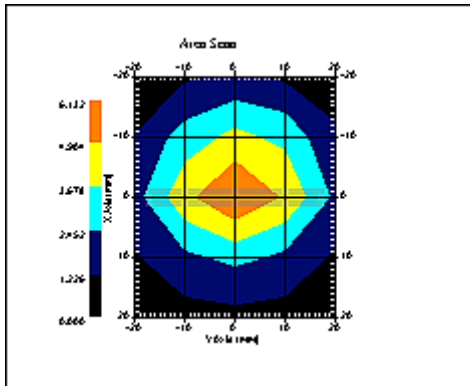
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 22-Jan-2009  
Set-up Time : 7:57:03 AM  
Area Scan : 5x5x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

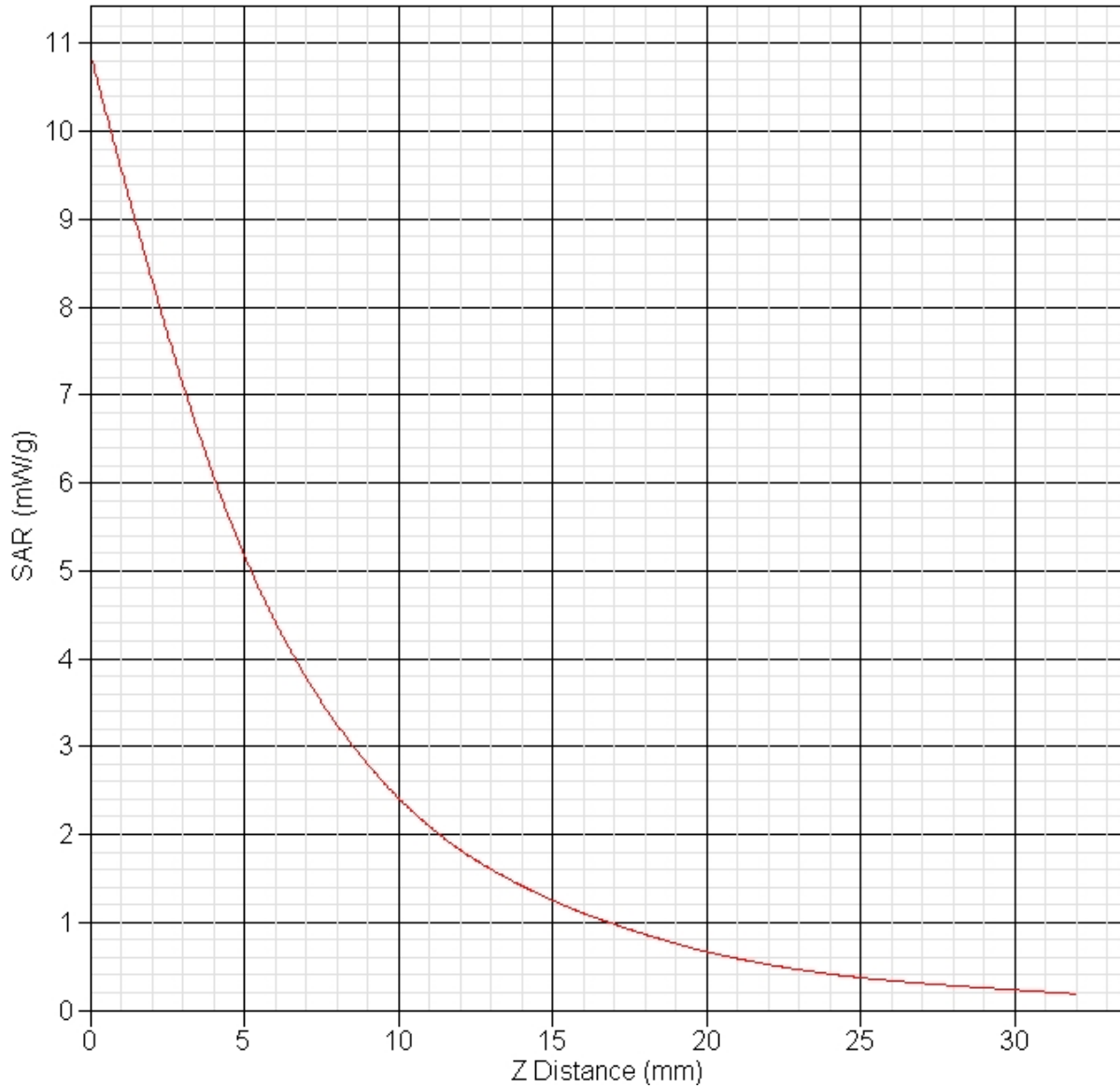
Other Data

DUT Position : Touch  
Separation : 10 mm  
Channel : Mid



1 gram SAR value : 5.344 W/kg  
10 gram SAR value : 2.501 W/kg  
Area Scan Peak SAR : 6.132 W/kg  
Zoom Scan Peak SAR : 10.890 W/kg

**SAR-Z Axis**  
at Hotspot x:0.10 y:-0.16





## SAR Test Report

By Operator : Jay  
Measurement Date : 24-Jan-2009  
Starting Time : 24-Jan-2009 08:31:56 AM  
End Time : 24-Jan-2009 08:44:45 AM  
Scanning Time : 769 secs

### Product Data

Device Name : Validation  
Serial No. : 2450  
Type : Dipole  
Model : ALS-D-2450-S-2  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 51.5 mm  
Width : 3.6 mm  
Depth : 30.4 mm  
Antenna Type : Internal  
Orientation : Touch  
Power Drift-Start : 6.302 W/kg  
Power Drift-Finish: 6.172 W/kg  
Power Drift (%) : -2.063

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 2450  
Frequency : 2450.00 MHz  
Last Calib. Date : 24-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 41.00 RH%  
Epsilon : 52.49 F/m  
Sigma : 1.96 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

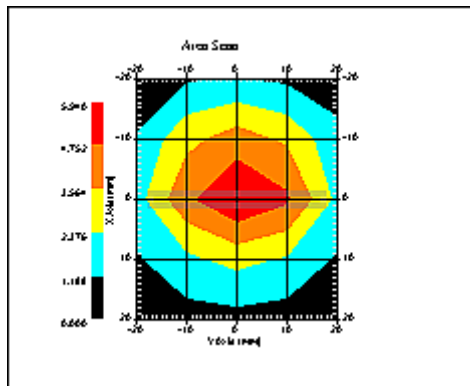
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 24-Jan-2009  
Set-up Time : 7:57:03 AM  
Area Scan : 5x5x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

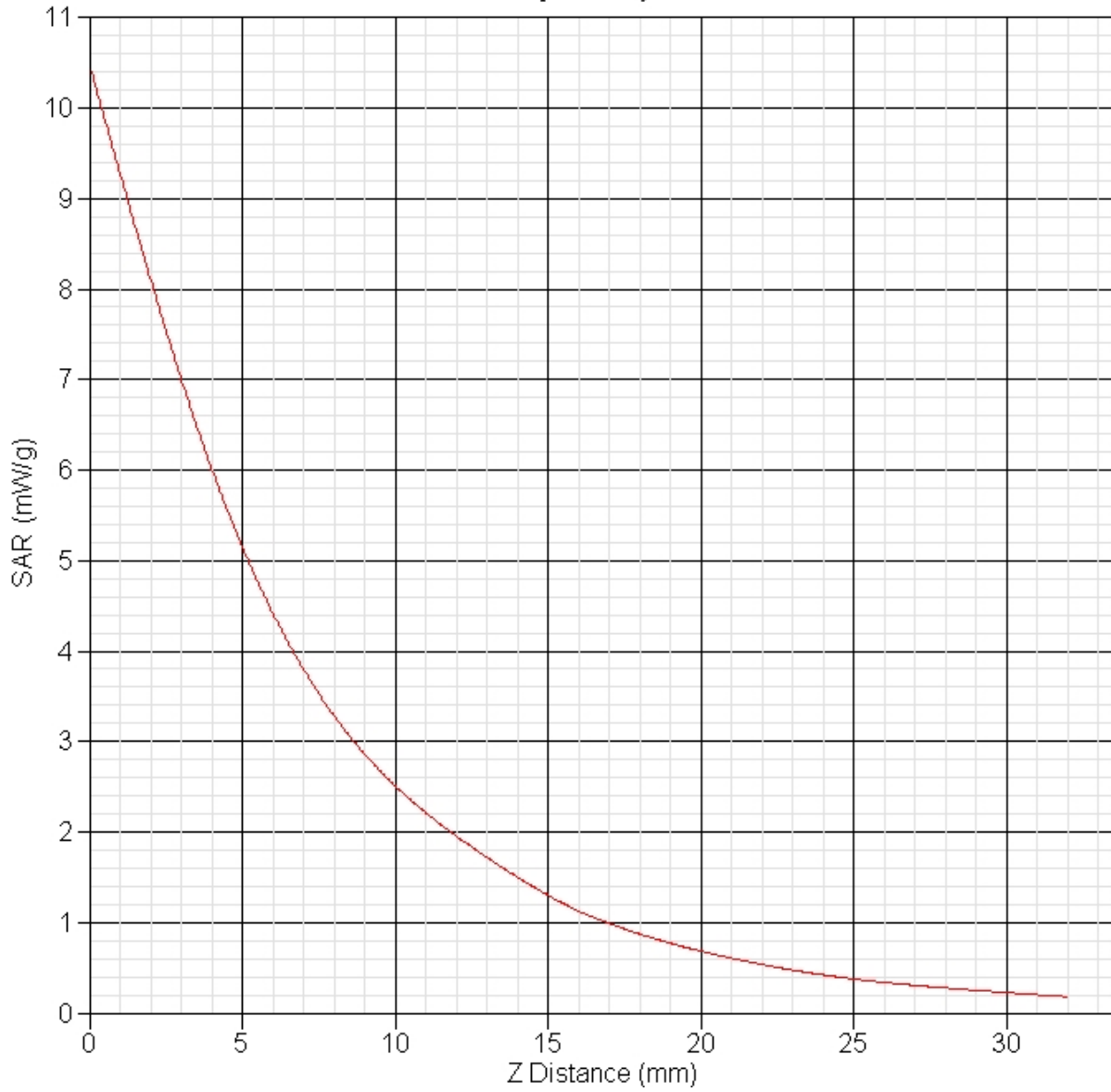
Other Data

DUT Position : Touch  
Separation : 10 mm  
Channel : Mid



1 gram SAR value : 5.282 W/kg  
10 gram SAR value : 2.493 W/kg  
Area Scan Peak SAR : 5.940 W/kg  
Zoom Scan Peak SAR : 10.490 W/kg

### SAR-Z Axis at Hotspot x:0.08 y:-0.13



## SAR Test Report

By Operator : Jay  
Measurement Date : 23-Jan-2009  
Starting Time : 23-Jan-2009 07:37:41 AM  
End Time : 23-Jan-2009 08:00:44 AM  
Scanning Time : 1383 secs

### Product Data

Device Name : Validation  
Serial No. : 5200  
Type : Dipole  
Model : ALS-D-BB-S-2  
Frequency : 5200.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 23.1 mm  
Width : 3.6 mm  
Depth : 20.7 mm  
Antenna Type : Internal  
Orientation : Touch  
Power Drift-Start : 8.980 W/kg  
Power Drift-Finish: 8.903 W/kg  
Power Drift (%) : -0.855

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 23-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.81 F/m  
Sigma : 5.42 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

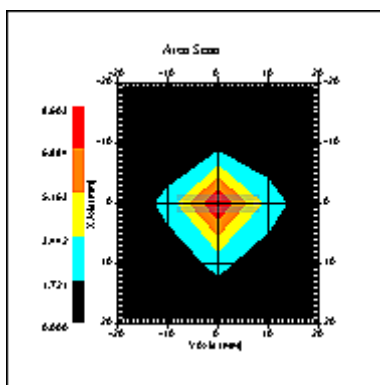
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 23-Jan-2009  
Set-up Time : 9:00:47 AM  
Area Scan : 5x5x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

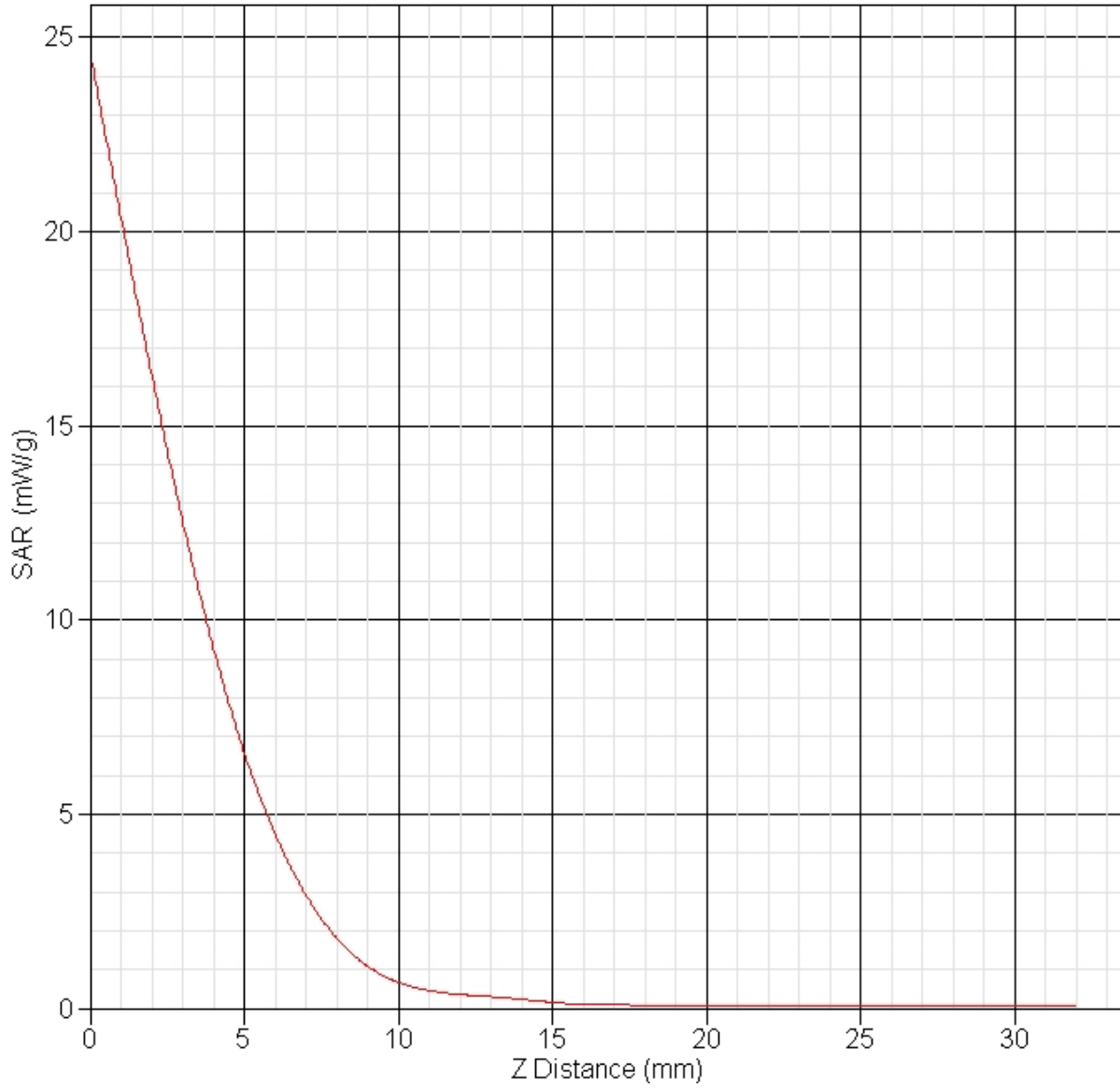
Other Data

DUT Position : Touch  
Separation : 10 mm  
Channel : Mid



1 gram SAR value : 6.521 W/kg  
10 gram SAR value : 1.643 W/kg  
Area Scan Peak SAR : 8.603 W/kg  
Zoom Scan Peak SAR : 24.619 W/kg

### SAR-Z Axis at Hotspot x:0.31 y:-0.10



## SAR Test Report

By Operator : Jay  
Measurement Date : 29-Jan-2009  
Starting Time : 29-Jan-2009 08:13:50 AM  
End Time : 29-Jan-2009 08:36:49 AM  
Scanning Time : 1379 secs

### Product Data

Device Name : Validation  
Serial No. : 5200  
Type : Dipole  
Model : ALS-D-BB-S-2  
Frequency : 5200.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 23.1 mm  
Width : 3.6 mm  
Depth : 20.7 mm  
Antenna Type : Internal  
Orientation : Touch  
Power Drift-Start : 9.020 W/kg  
Power Drift-Finish: 9.076 W/kg  
Power Drift (%) : 0.614

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 29-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 49.05 F/m  
Sigma : 5.41 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

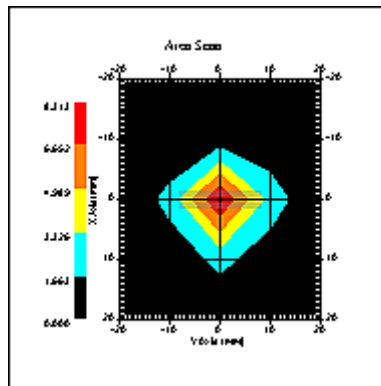
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 29-Jan-2009  
Set-up Time : 9:00:47 AM  
Area Scan : 5x5x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

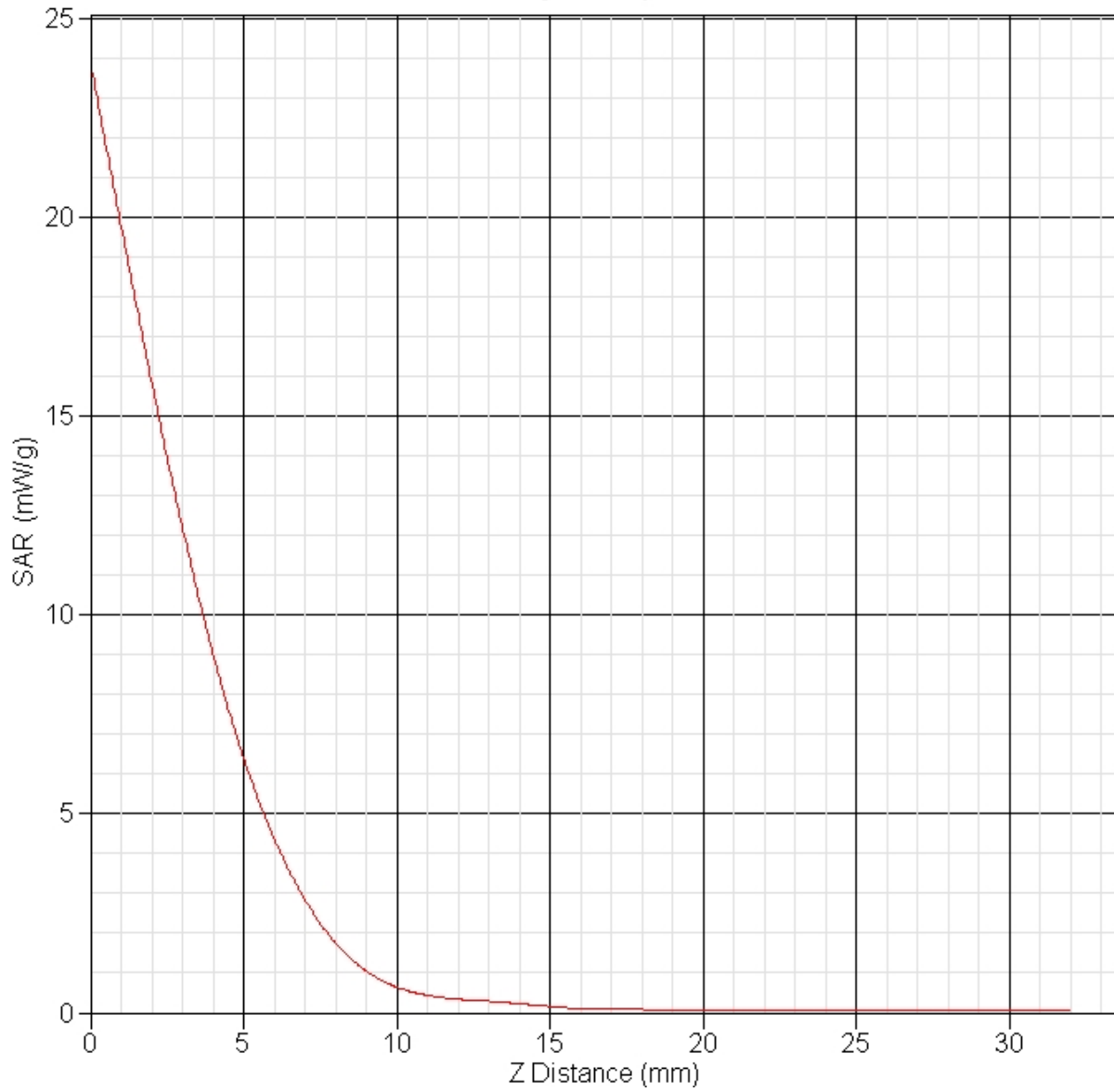
DUT Position : Touch  
Separation : 10 mm  
Channel : Mid



1 gram SAR value : 6.426 W/kg  
10 gram SAR value : 1.642 W/kg  
Area Scan Peak SAR : 8.313 W/kg  
Zoom Scan Peak SAR : 23.919 W/kg



### SAR-Z Axis at Hotspot x:0.32 y:-0.15



## SAR Test Report

By Operator : Jay  
Measurement Date : 22-Jan-2009  
Starting Time : 22-Jan-2009 03:03:21 PM  
End Time : 22-Jan-2009 03:26:07 PM  
Scanning Time : 1366 secs

### Product Data

Device Name : Validation  
Serial No. : 5600  
Type : Dipole  
Model : ALS-D-BB-S-2  
Frequency : 5600.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 23.1 mm  
Width : 3.6 mm  
Depth : 20.7 mm  
Antenna Type : Internal  
Orientation : Touch  
Power Drift-Start : 8.139 W/kg  
Power Drift-Finish: 8.050 W/kg  
Power Drift (%) : -1.094

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5600  
Frequency : 5600.00 MHz  
Last Calib. Date : 22-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.37 F/m  
Sigma : 5.80 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

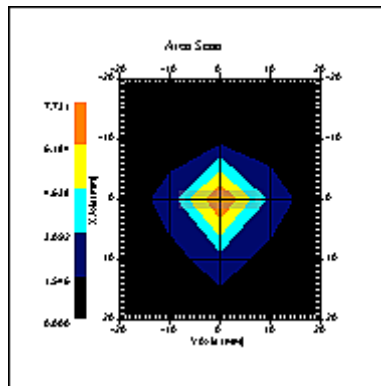
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.1  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 22-Jan-2009  
Set-up Time : 8:54:57 AM  
Area Scan : 5x5x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

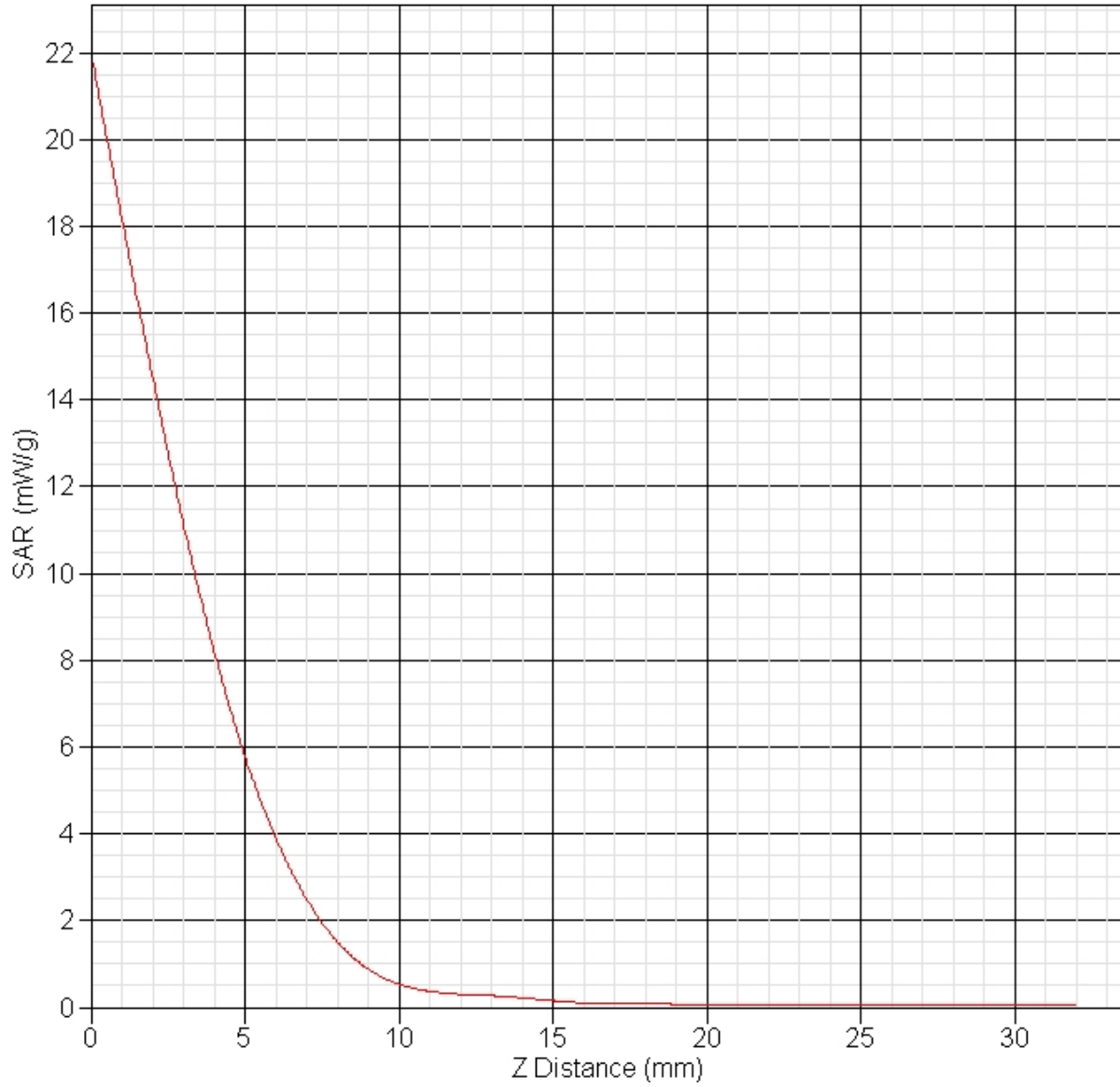
Other Data

DUT Position : Touch  
Separation : 10 mm  
Channel : Mid



1 gram SAR value : 6.058 W/kg  
10 gram SAR value : 1.648 W/kg  
Area Scan Peak SAR : 7.731 W/kg  
Zoom Scan Peak SAR : 22.017 W/kg

### SAR-Z Axis at Hotspot x:0.33 y:-0.18



## SAR Test Report

By Operator : Jay  
Measurement Date : 26-Jan-2009  
Starting Time : 26-Jan-2009 07:10:38 AM  
End Time : 26-Jan-2009 07:33:36 AM  
Scanning Time : 1378 secs

### Product Data

Device Name : Validation  
Serial No. : 5600  
Type : Dipole  
Model : ALS-D-BB-S-2  
Frequency : 5600.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 23.1 mm  
Width : 3.6 mm  
Depth : 20.7 mm  
Antenna Type : Internal  
Orientation : Touch  
Power Drift-Start : 8.510 W/kg  
Power Drift-Finish: 8.512 W/kg  
Power Drift (%) : 0.031

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5600  
Frequency : 5600.00 MHz  
Last Calib. Date : 26-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.66 F/m  
Sigma : 5.62 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

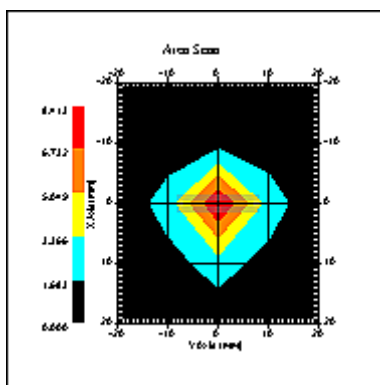
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.1  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 26-Jan-2009  
Set-up Time : 8:54:57 AM  
Area Scan : 5x5x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

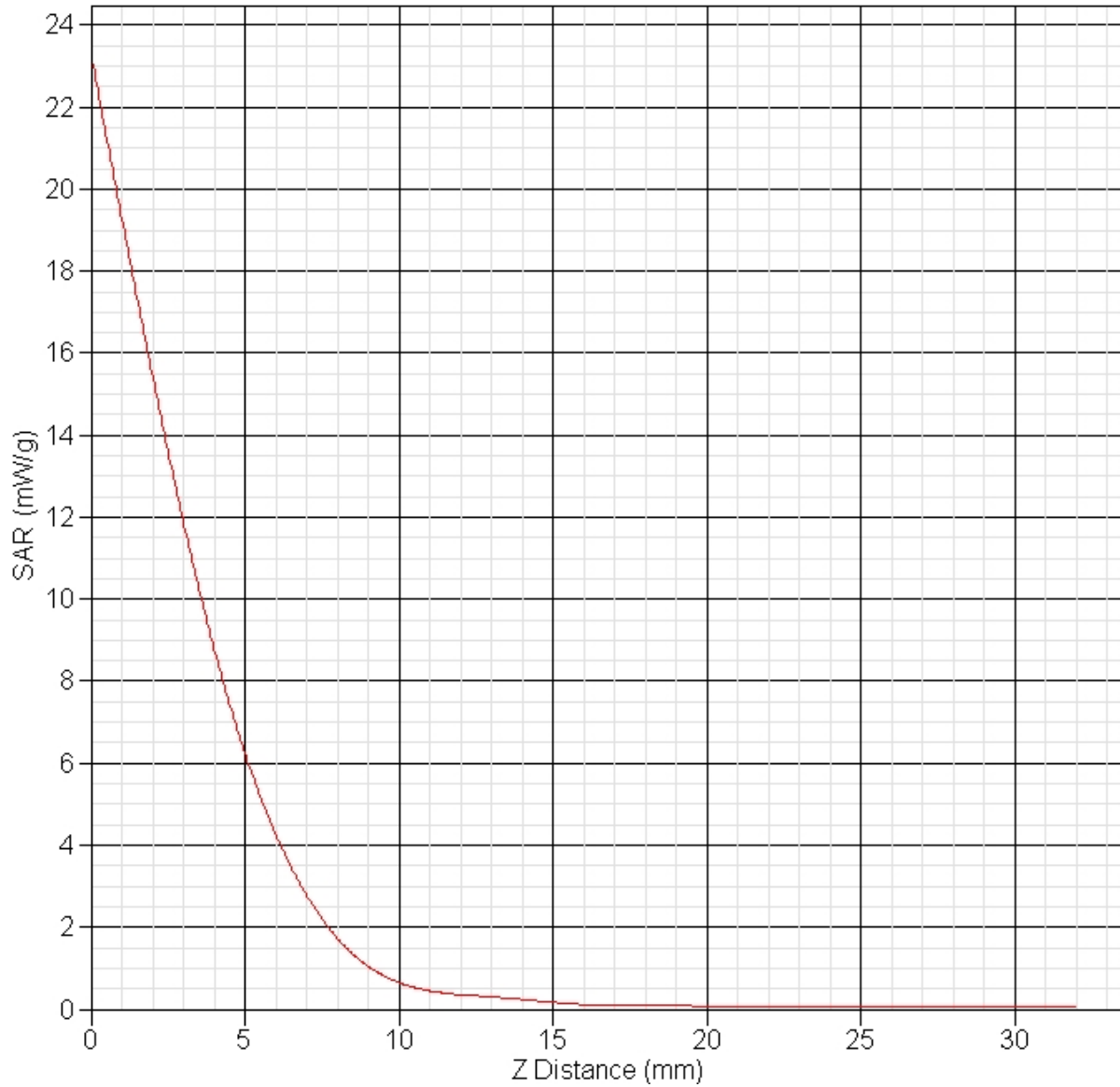
Other Data

DUT Position : Touch  
Separation : 10 mm  
Channel : Mid



1 gram SAR value : 6.442 W/kg  
10 gram SAR value : 1.737 W/kg  
Area Scan Peak SAR : 8.413 W/kg  
Zoom Scan Peak SAR : 23.318 W/kg

**SAR-Z Axis**  
at Hotspot x:0.32 y:-0.15



## SAR Test Report

By Operator : Jay  
Measurement Date : 23-Jan-2009  
Starting Time : 23-Jan-2009 02:57:24 PM  
End Time : 23-Jan-2009 03:20:11 PM  
Scanning Time : 1367 secs

### Product Data

Device Name : Validation  
Serial No. : 5800  
Type : Dipole  
Model : ALS-D-BB-S-2  
Frequency : 5800.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 23.1 mm  
Width : 3.6 mm  
Depth : 20.7 mm  
Antenna Type : Internal  
Orientation : Touch  
Power Drift-Start : 7.372 W/kg  
Power Drift-Finish: 7.416 W/kg  
Power Drift (%) : 0.599

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5800  
Frequency : 5800.00 MHz  
Last Calib. Date : 23-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.33 F/m  
Sigma : 5.97 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 12  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

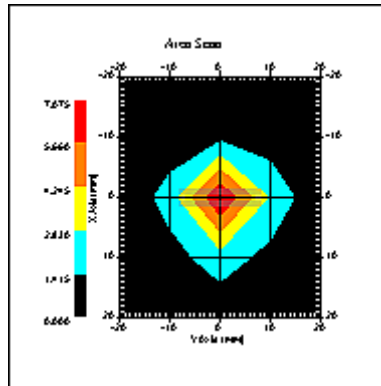


Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 23-Jan-2009  
Set-up Time : 4:10:18 PM  
Area Scan : 5x5x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

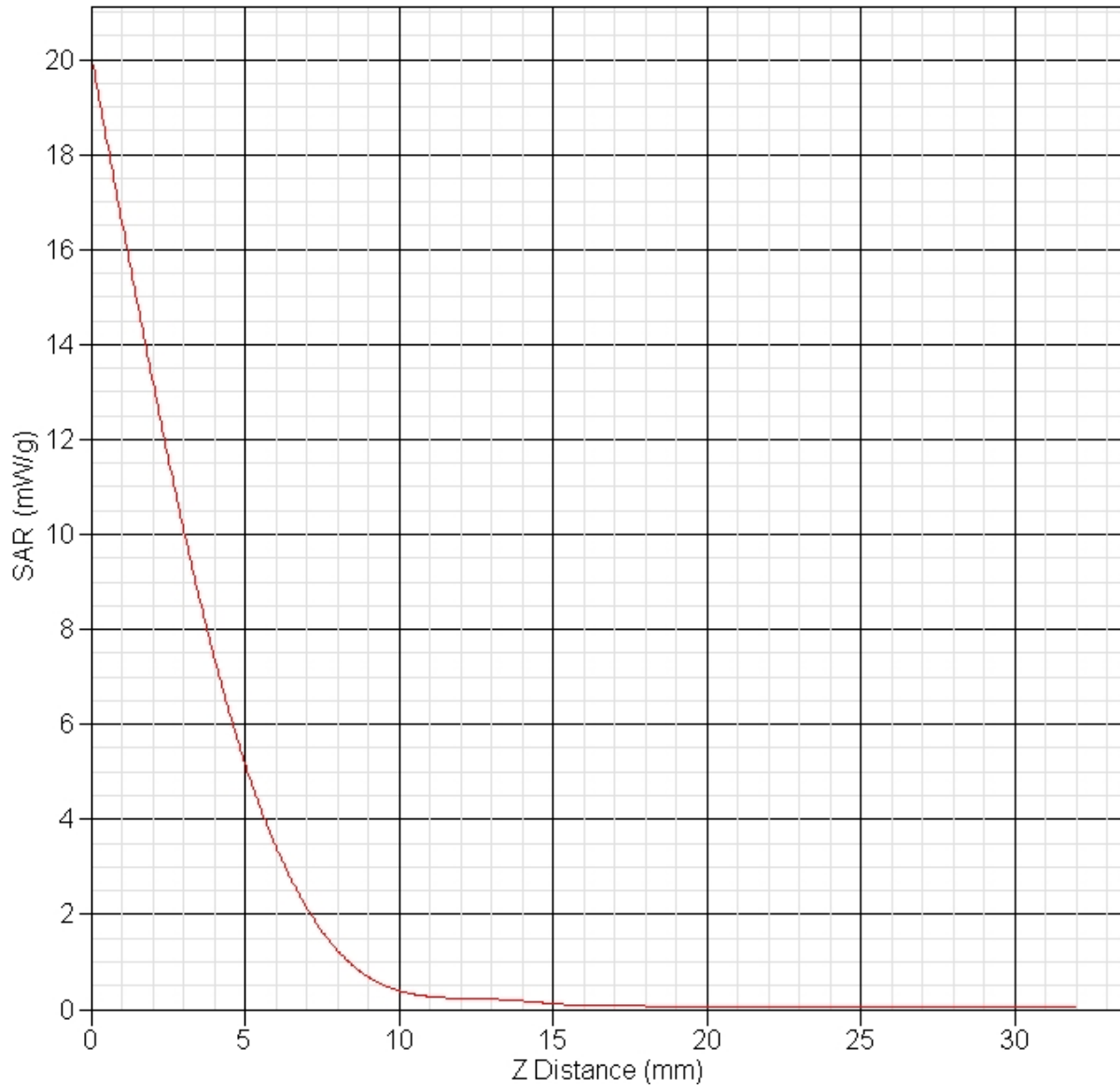
Other Data

DUT Position : Touch  
Separation : 10 mm  
Channel : Mid



1 gram SAR value : 5.609 W/kg  
10 gram SAR value : 1.551 W/kg  
Area Scan Peak SAR : 7.075 W/kg  
Zoom Scan Peak SAR : 20.116 W/kg

### SAR-Z Axis at Hotspot x:0.31 y:-0.15



## SAR Test Report

By Operator : Jay  
Measurement Date : 26-Jan-2009  
Starting Time : 26-Jan-2009 11:22:36 AM  
End Time : 26-Jan-2009 11:45:36 AM  
Scanning Time : 1380 secs

### Product Data

Device Name : Validation  
Serial No. : 5800  
Type : Dipole  
Model : ALS-D-BB-S-2  
Frequency : 5800.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 23.1 mm  
Width : 3.6 mm  
Depth : 20.7 mm  
Antenna Type : Internal  
Orientation : Touch  
Power Drift-Start : 7.539 W/kg  
Power Drift-Finish: 7.656 W/kg  
Power Drift (%) : 1.553

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5800  
Frequency : 5800.00 MHz  
Last Calib. Date : 26-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 49.89 F/m  
Sigma : 5.96 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

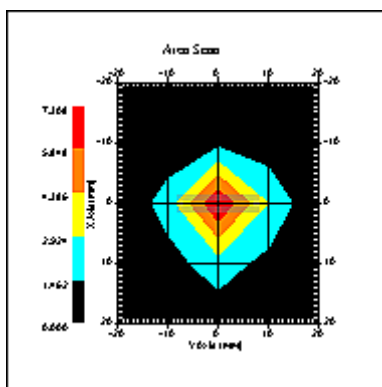
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 12  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 26-Jan-2009  
Set-up Time : 4:10:18 PM  
Area Scan : 5x5x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

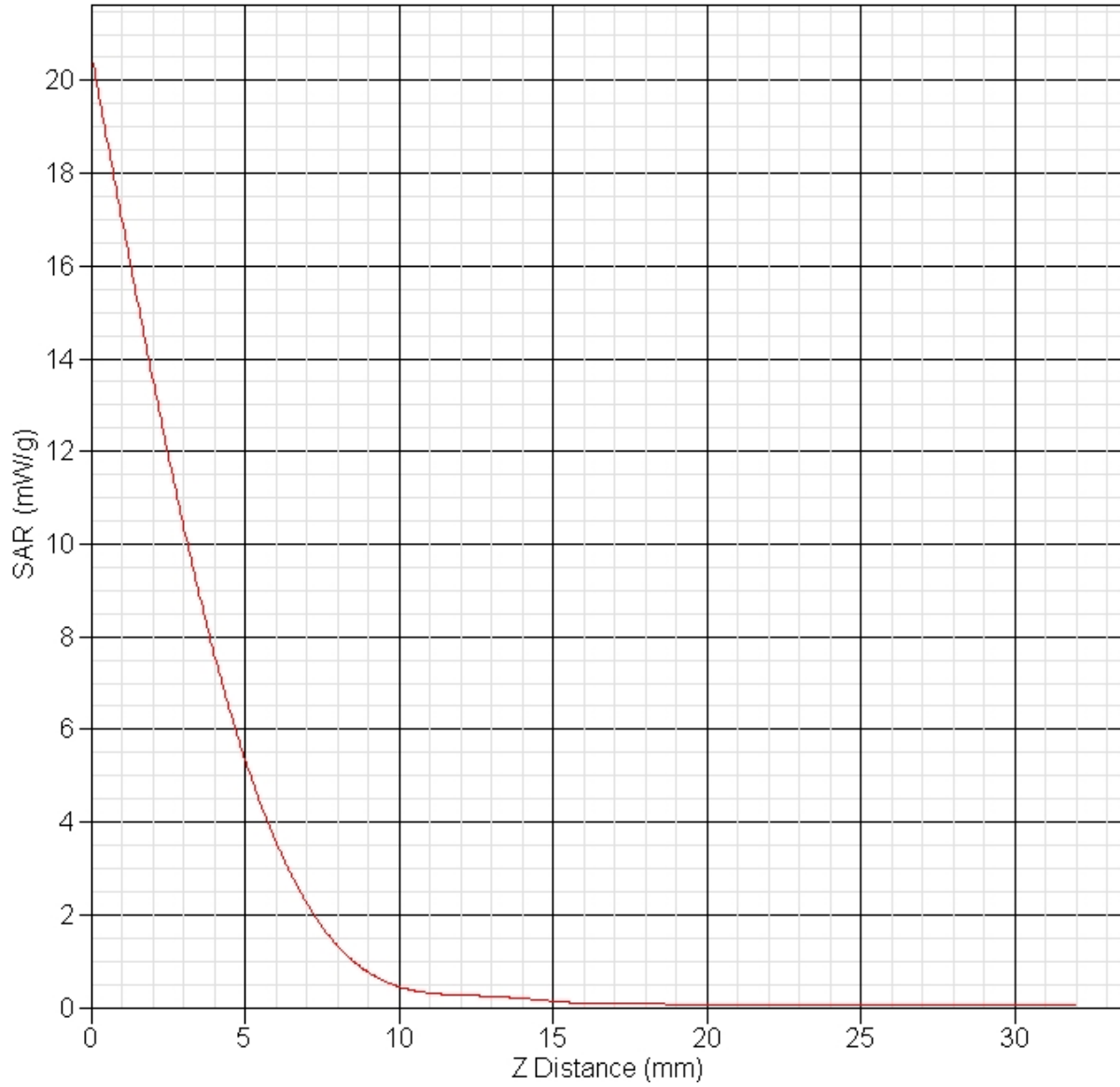
Other Data

DUT Position : Touch  
Separation : 10 mm  
Channel : Mid



1 gram SAR value : 5.773 W/kg  
10 gram SAR value : 1.600 W/kg  
Area Scan Peak SAR : 7.308 W/kg  
Zoom Scan Peak SAR : 20.616 W/kg

### SAR-Z Axis at Hotspot x:0.30 y:-0.16



## Appendix B – SAR Test Data Plots

**SAR Test Report**

By Operator : Jay  
Measurement Date : 24-Jan-2009  
Starting Time : 24-Jan-2009 03:28:47 PM  
End Time : 24-Jan-2009 03:46:17 PM  
Scanning Time : 1050 secs

## Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : EvDo Rev 0  
Model : E760 In Dell Inspiron 1010  
Frequency : 835.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco  
Orientation : Touch  
Power Drift-Start : 0.284 W/kg  
Power Drift-Finish: 0.281 W/kg  
Power Drift (%) : -1.054

## PhantomData

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

## Tissue Data

Type : BODY  
Serial No. : 835  
Frequency : 835.00 MHz  
Last Calib. Date : 24-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 24.00 °C  
Humidity : 40.00 RH%  
Epsilon : 55.19 F/m  
Sigma : 0.99 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

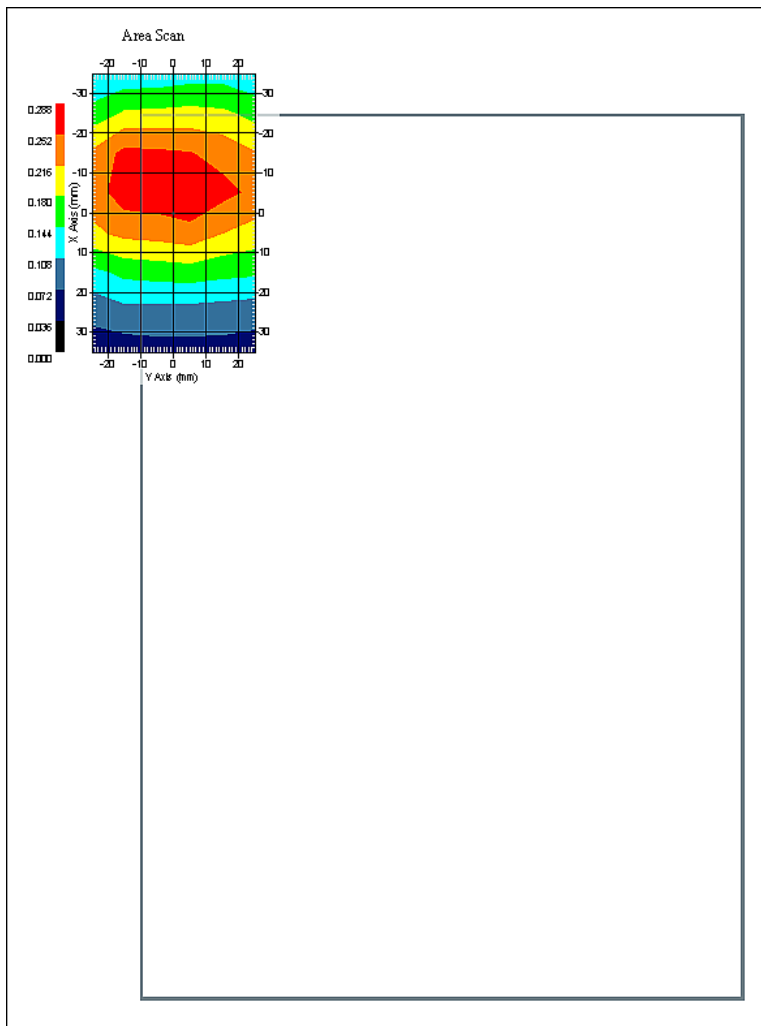
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 835.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.3  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 24-Jan-2009  
Set-up Time : 11:05:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

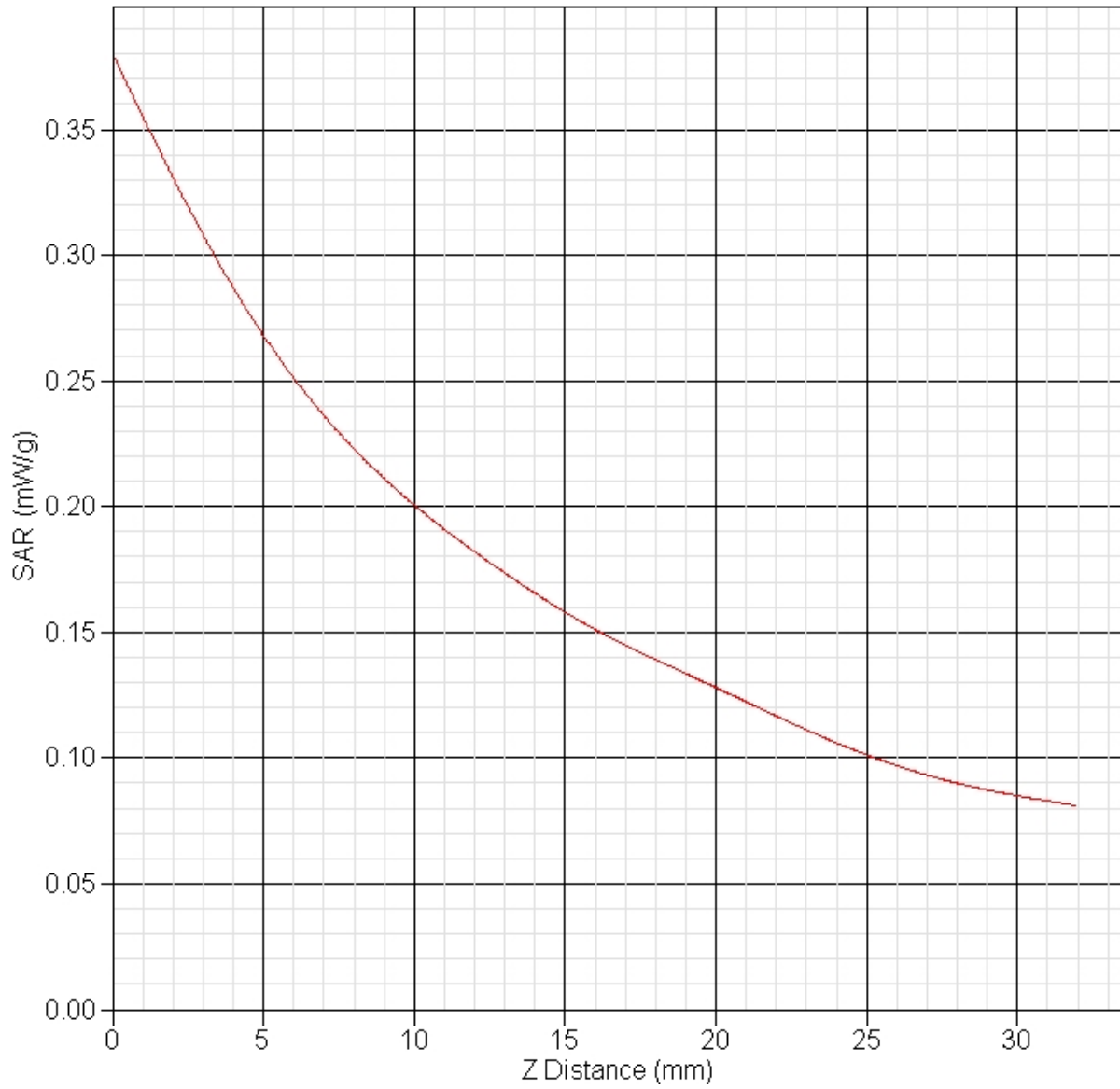
DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.275 W/kg  
10 gram SAR value : 0.197 W/kg  
Area Scan Peak SAR : 0.286 W/kg  
Zoom Scan Peak SAR : 0.380 W/kg



### SAR-Z Axis at Hotspot x:0.07 y:4.90



## SAR Test Report

By Operator : Jay  
Measurement Date : 21-Jan-2009  
Starting Time : 21-Jan-2009 11:50:13 AM  
End Time : 21-Jan-2009 12:07:51 PM  
Scanning Time : 1058 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : EvDo Rev 0  
Model : E760 In Dell Inspiron 1010  
Frequency : 835.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo  
Orientation : Touch  
Power Drift-Start : 0.292 W/kg  
Power Drift-Finish: 0.281 W/kg  
Power Drift (%) : -3.783

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 835  
Frequency : 835.00 MHz  
Last Calib. Date : 21-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 24.00 °C  
Humidity : 40.00 RH%  
Epsilon : 55.12 F/m  
Sigma : 0.98 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

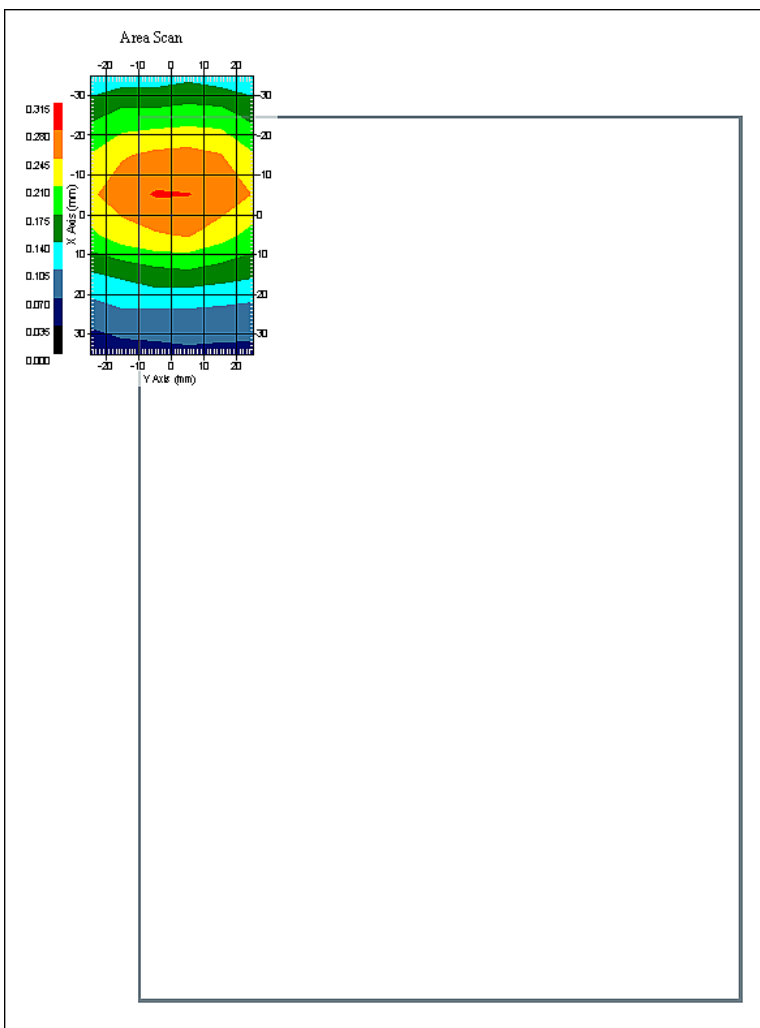
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 835.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.3  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 21-Jan-2009  
Set-up Time : 11:05:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.272 W/kg  
10 gram SAR value : 0.192 W/kg  
Area Scan Peak SAR : 0.283 W/kg  
Zoom Scan Peak SAR : 0.370 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 24-Jan-2009  
Starting Time : 24-Jan-2009 02:14:45 PM  
End Time : 24-Jan-2009 02:32:11 PM  
Scanning Time : 1046 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : EvDo Rev 0  
Model : E760 In Dell Inspiron 1010  
Frequency : 1900.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco  
Orientation : Touch  
Power Drift-Start : 0.598 W/kg  
Power Drift-Finish: 0.580 W/kg  
Power Drift (%) : -3.058

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 1900  
Frequency : 1900.00 MHz  
Last Calib. Date : 24-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 43.00 RH%  
Epsilon : 53.26 F/m  
Sigma : 1.54 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

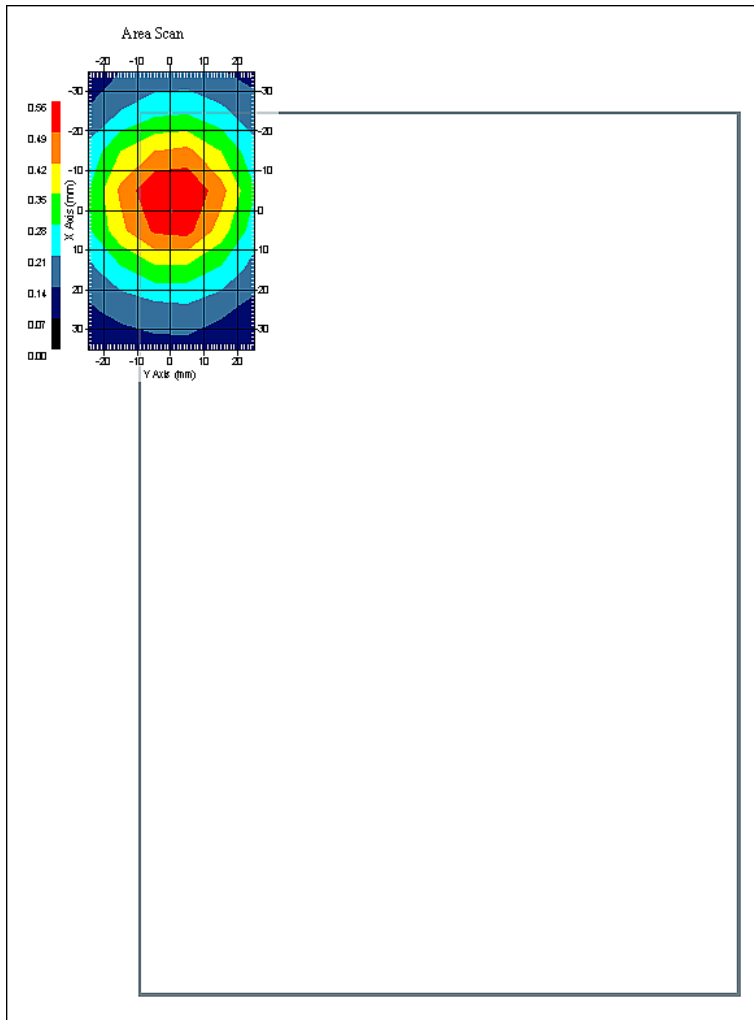
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 1900.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 24-Jan-2009  
Set-up Time : 11:02:49 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

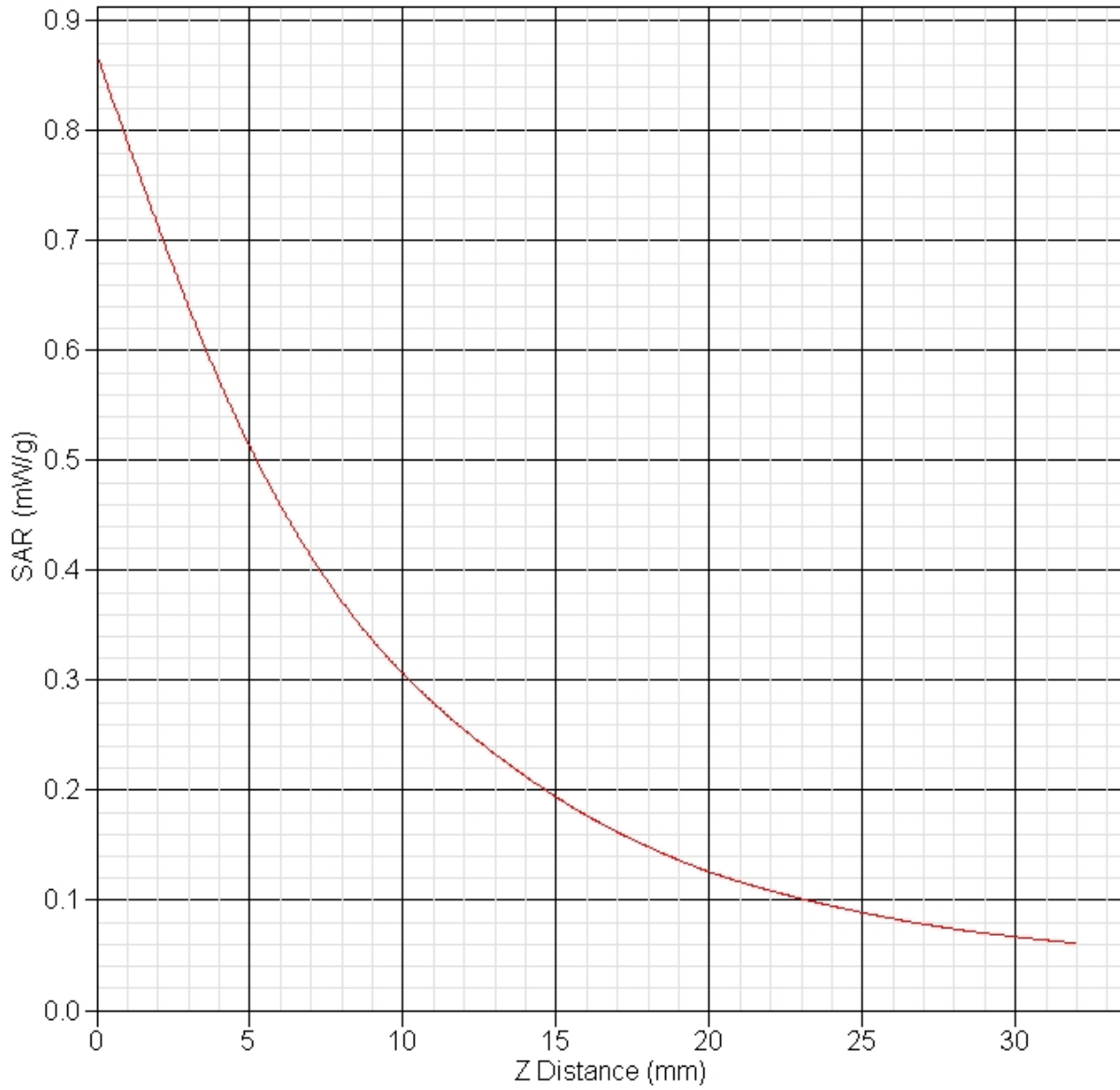
Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.541 W/kg  
10 gram SAR value : 0.323 W/kg  
Area Scan Peak SAR : 0.559 W/kg  
Zoom Scan Peak SAR : 0.870 W/kg

### SAR-Z Axis at Hotspot x:0.06 y:-3.14



## SAR Test Report

By Operator : Jay  
Measurement Date : 20-Jan-2009  
Starting Time : 20-Jan-2009 12:15:31 PM  
End Time : 20-Jan-2009 12:32:55 PM  
Scanning Time : 1044 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : EvDo Rev 0  
Model : E760 In Dell Inspiron 1010  
Frequency : 1900.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo  
Orientation : Touch  
Power Drift-Start : 0.605 W/kg  
Power Drift-Finish: 0.584 W/kg  
Power Drift (%) : -3.589

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 1900  
Frequency : 1900.00 MHz  
Last Calib. Date : 20-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 43.00 RH%  
Epsilon : 53.11 F/m  
Sigma : 1.53 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

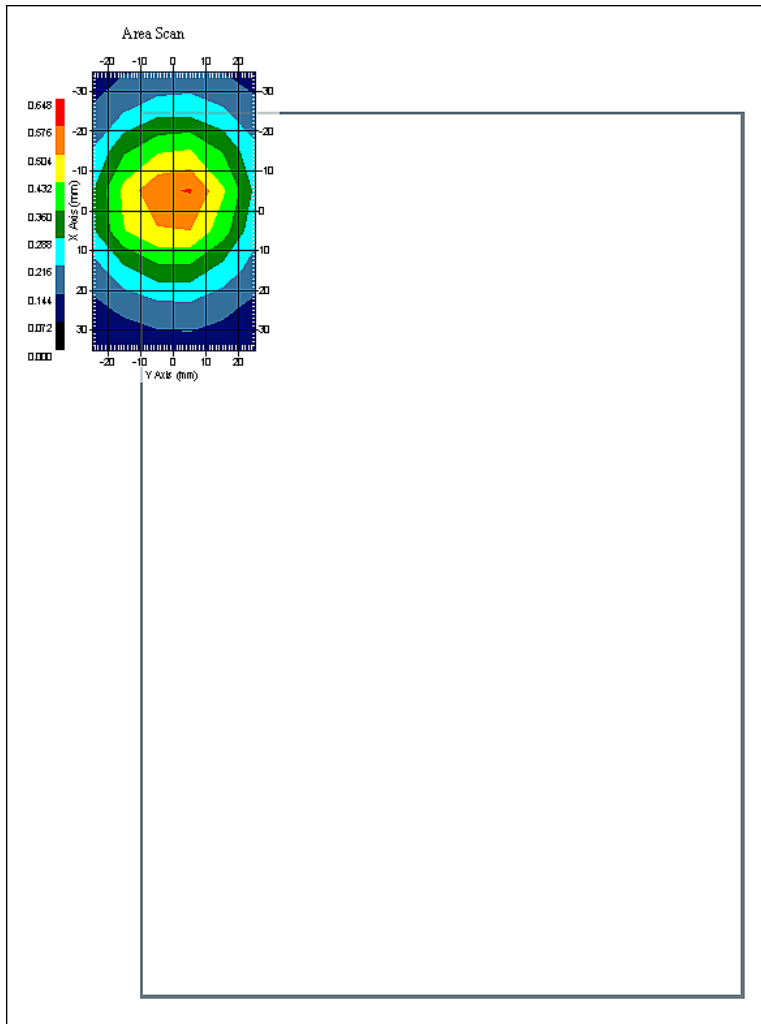
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 1900.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 20-Jan-2009  
Set-up Time : 11:02:49 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.538 W/kg  
10 gram SAR value : 0.324 W/kg  
Area Scan Peak SAR : 0.580 W/kg  
Zoom Scan Peak SAR : 0.840 W/kg



## SAR Test Report

By Operator : Jay  
Measurement Date : 24-Jan-2009  
Starting Time : 24-Jan-2009 09:45:56 AM  
End Time : 24-Jan-2009 10:03:29 AM  
Scanning Time : 1053 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1030 b  
Model : E760 In Dell Inspiron 1010  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Main  
Orientation : Touch  
Power Drift-Start : 0.193 W/kg  
Power Drift-Finish: 0.191 W/kg  
Power Drift (%) : -1.039

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 2450  
Frequency : 2450.00 MHz  
Last Calib. Date : 24-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 41.00 RH%  
Epsilon : 52.49 F/m  
Sigma : 1.96 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

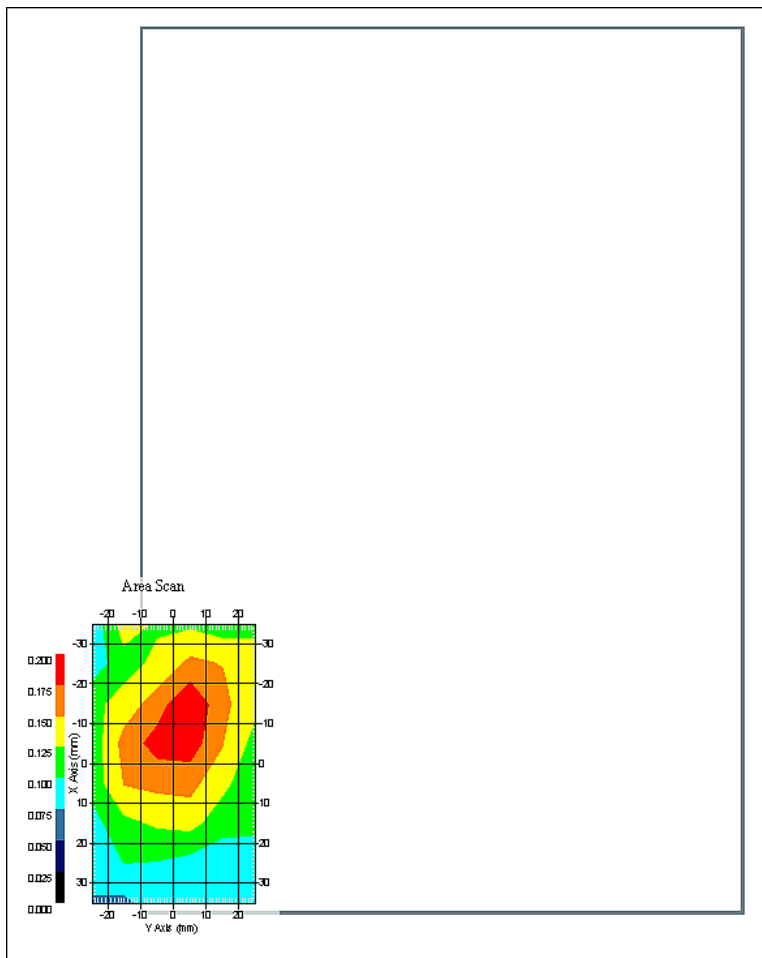
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 24-Jan-2009  
Set-up Time : 10:26:04 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Low



1 gram SAR value : 0.190 W/kg  
10 gram SAR value : 0.130 W/kg  
Area Scan Peak SAR : 0.199 W/kg  
Zoom Scan Peak SAR : 0.260 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 22-Jan-2009  
Starting Time : 22-Jan-2009 10:44:38 AM  
End Time : 22-Jan-2009 11:02:09 AM  
Scanning Time : 1051 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1030 b  
Model : E760 In Dell Inspiron 1010  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Main  
Orientation : Touch  
Power Drift-Start : 0.187 W/kg  
Power Drift-Finish: 0.189 W/kg  
Power Drift (%) : 1.061

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 2450  
Frequency : 2450.00 MHz  
Last Calib. Date : 22-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 41.00 RH%  
Epsilon : 52.56 F/m  
Sigma : 1.97 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

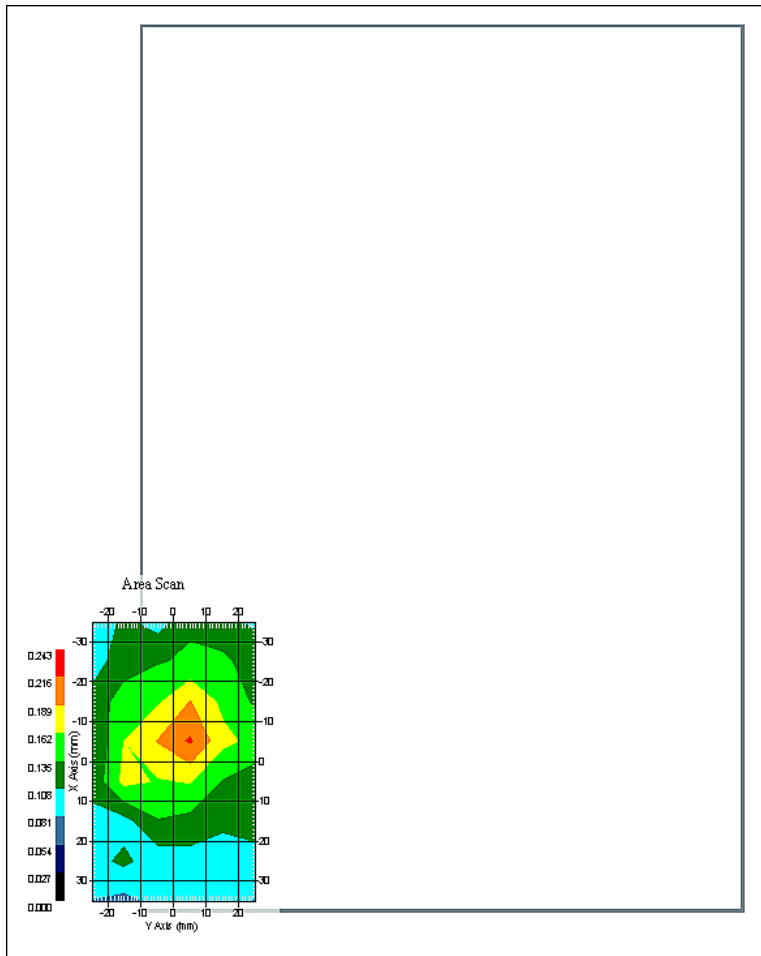
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 22-Jan-2009  
Set-up Time : 10:26:04 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Low



1 gram SAR value : 0.180 W/kg  
10 gram SAR value : 0.125 W/kg  
Area Scan Peak SAR : 0.220 W/kg  
Zoom Scan Peak SAR : 0.230 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 24-Jan-2009  
Starting Time : 24-Jan-2009 10:30:57 AM  
End Time : 24-Jan-2009 10:48:31 AM  
Scanning Time : 1054 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1030 b  
Model : E760 In Dell Inspiron 1010  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Aux  
Orientation : Touch  
Power Drift-Start : 0.181 W/kg  
Power Drift-Finish: 0.179 W/kg  
Power Drift (%) : -0.877

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 2450  
Frequency : 2450.00 MHz  
Last Calib. Date : 24-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 41.00 RH%  
Epsilon : 52.49 F/m  
Sigma : 1.96 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

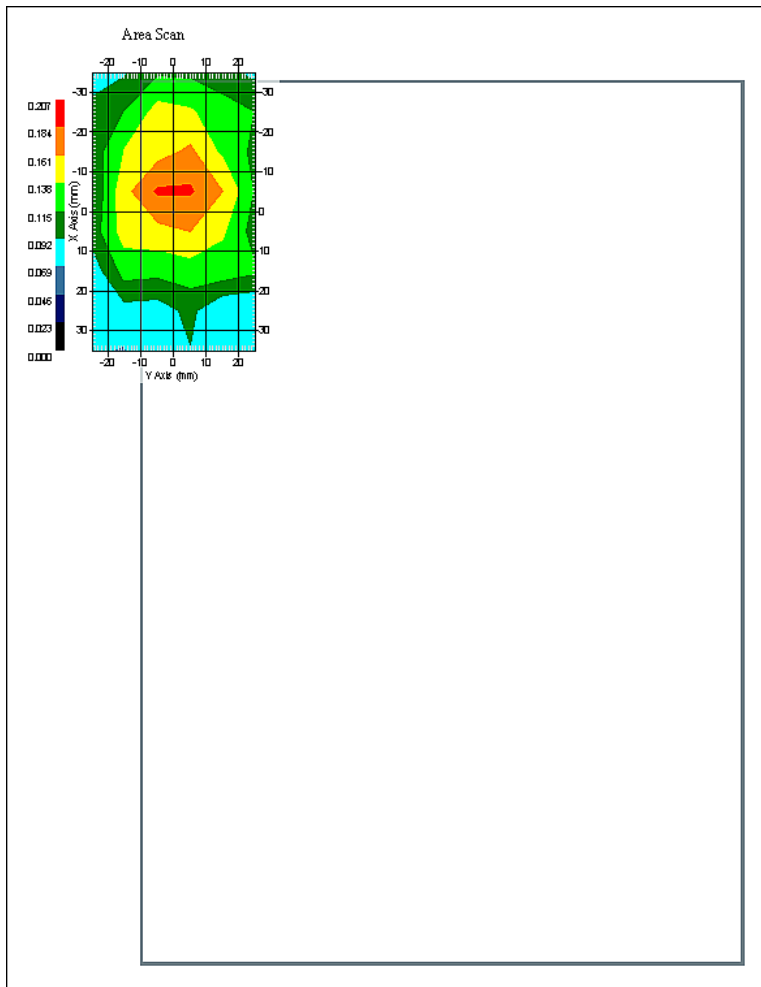
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 24-Jan-2009  
Set-up Time : 10:26:04 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Low



1 gram SAR value : 0.196 W/kg  
10 gram SAR value : 0.125 W/kg  
Area Scan Peak SAR : 0.187 W/kg  
Zoom Scan Peak SAR : 0.340 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 22-Jan-2009  
Starting Time : 22-Jan-2009 11:29:40 AM  
End Time : 22-Jan-2009 11:47:17 AM  
Scanning Time : 1057 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1030 b  
Model : E760 In Dell Inspiron 1010  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Aux  
Orientation : Touch  
Power Drift-Start : 0.180 W/kg  
Power Drift-Finish: 0.182 W/kg  
Power Drift (%) : 1.114

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 2450  
Frequency : 2450.00 MHz  
Last Calib. Date : 22-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 41.00 RH%  
Epsilon : 52.56 F/m  
Sigma : 1.97 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

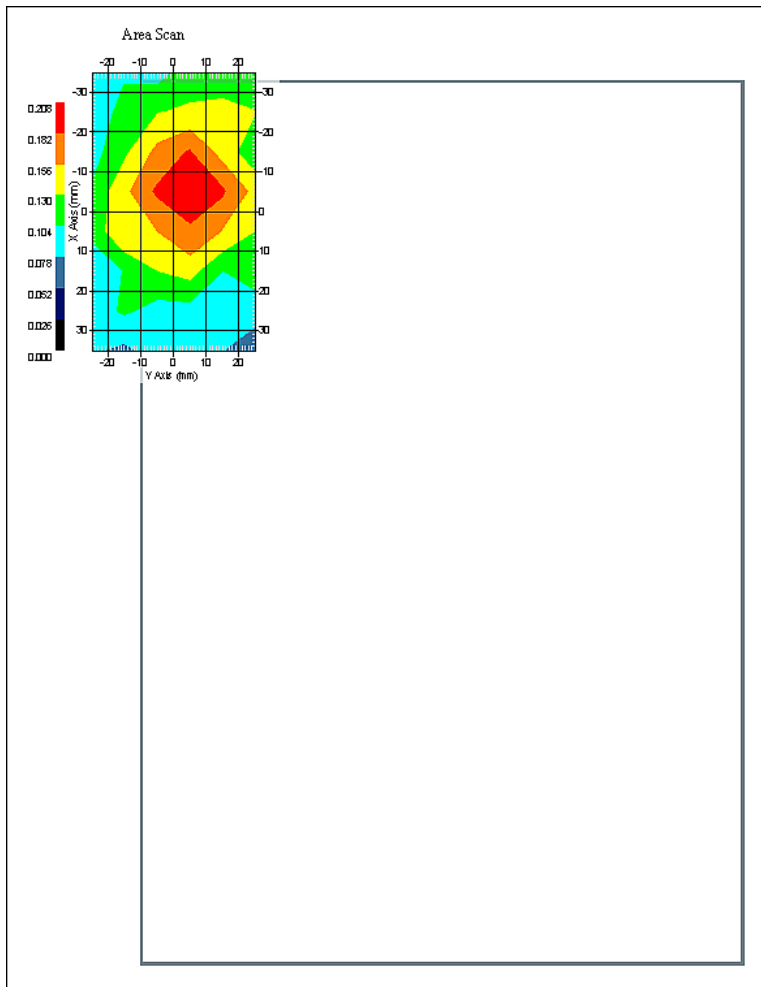
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 22-Jan-2009  
Set-up Time : 10:26:04 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Low



1 gram SAR value : 0.149 W/kg  
10 gram SAR value : 0.112 W/kg  
Area Scan Peak SAR : 0.207 W/kg  
Zoom Scan Peak SAR : 0.290 W/kg



## SAR Test Report

By Operator : Jay  
Measurement Date : 24-Jan-2009  
Starting Time : 24-Jan-2009 10:08:21 AM  
End Time : 24-Jan-2009 10:25:54 AM  
Scanning Time : 1053 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1030 g  
Model : E760 In Dell Inspiron 1010  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Main  
Orientation : Touch  
Power Drift-Start : 0.181 W/kg  
Power Drift-Finish: 0.179 W/kg  
Power Drift (%) : -0.874

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 2450  
Frequency : 2450.00 MHz  
Last Calib. Date : 24-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 41.00 RH%  
Epsilon : 52.49 F/m  
Sigma : 1.96 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

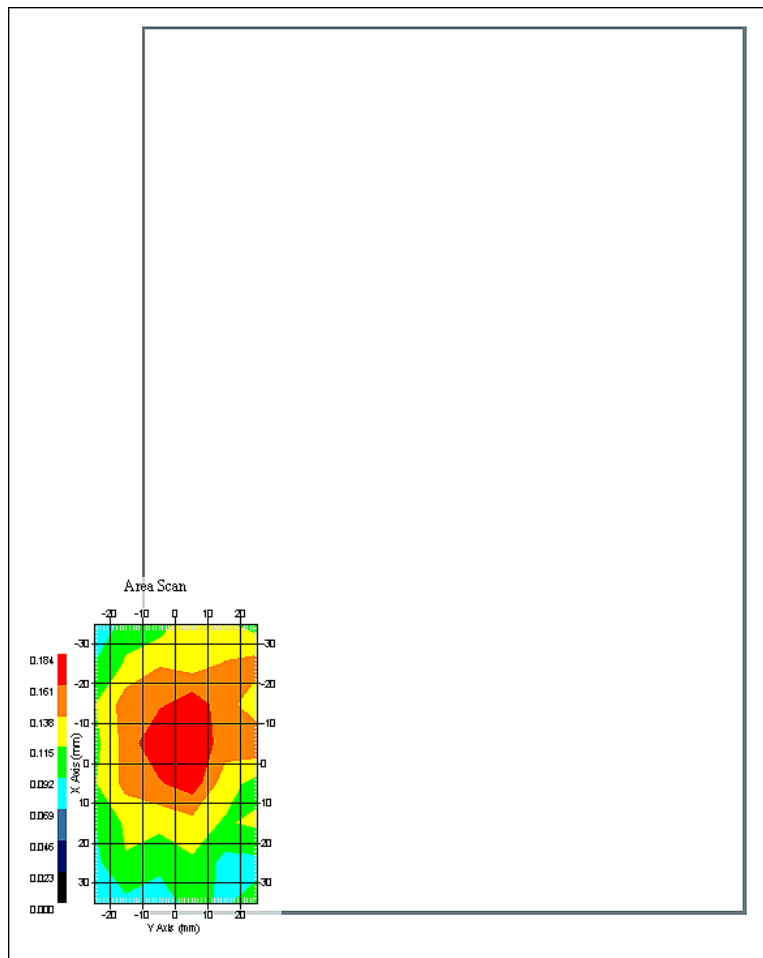
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 24-Jan-2009  
Set-up Time : 10:26:04 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.175 W/kg  
10 gram SAR value : 0.122 W/kg  
Area Scan Peak SAR : 0.184 W/kg  
Zoom Scan Peak SAR : 0.280 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 22-Jan-2009  
Starting Time : 22-Jan-2009 11:07:53 AM  
End Time : 22-Jan-2009 11:25:26 AM  
Scanning Time : 1053 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1030 g  
Model : E760 In Dell Inspiron 1010  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Main  
Orientation : Touch  
Power Drift-Start : 0.189 W/kg  
Power Drift-Finish: 0.185 W/kg  
Power Drift (%) : -2.348

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 2450  
Frequency : 2450.00 MHz  
Last Calib. Date : 22-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 41.00 RH%  
Epsilon : 52.56 F/m  
Sigma : 1.97 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

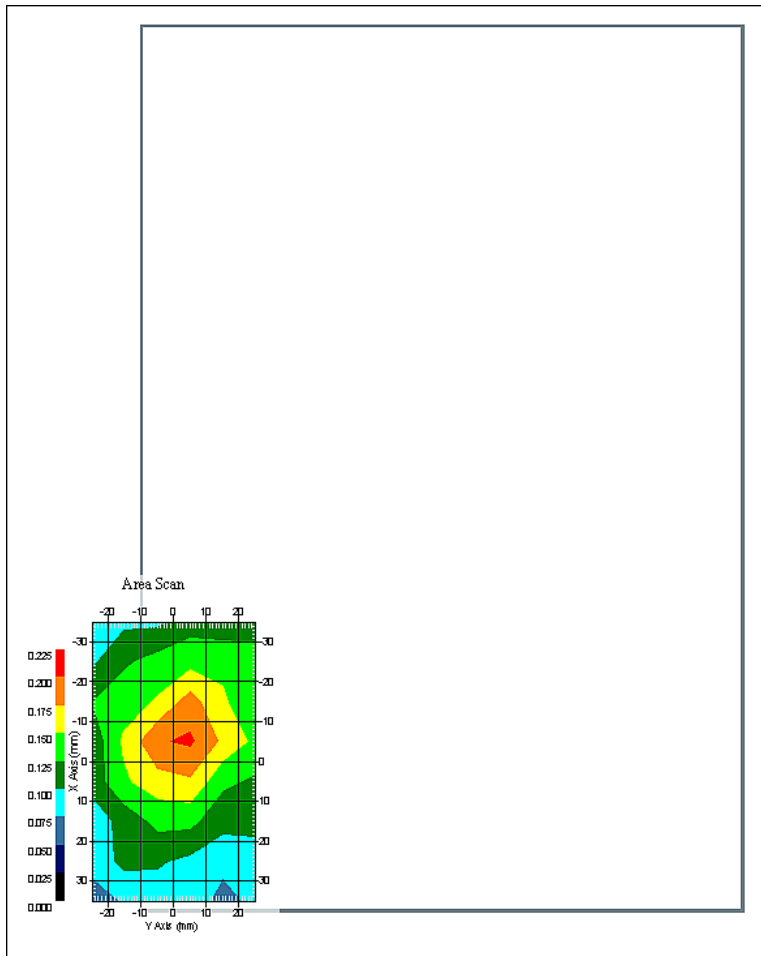
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 22-Jan-2009  
Set-up Time : 10:26:04 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.172 W/kg  
10 gram SAR value : 0.116 W/kg  
Area Scan Peak SAR : 0.204 W/kg  
Zoom Scan Peak SAR : 0.240 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 24-Jan-2009  
Starting Time : 24-Jan-2009 10:53:04 AM  
End Time : 24-Jan-2009 11:10:29 AM  
Scanning Time : 1045 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1030 g  
Model : E760 In Dell Inspiron 1010  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Aux  
Orientation : Touch  
Power Drift-Start : 0.183 W/kg  
Power Drift-Finish: 0.186 W/kg  
Power Drift (%) : 1.639

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 2450  
Frequency : 2450.00 MHz  
Last Calib. Date : 24-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 41.00 RH%  
Epsilon : 52.49 F/m  
Sigma : 1.96 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

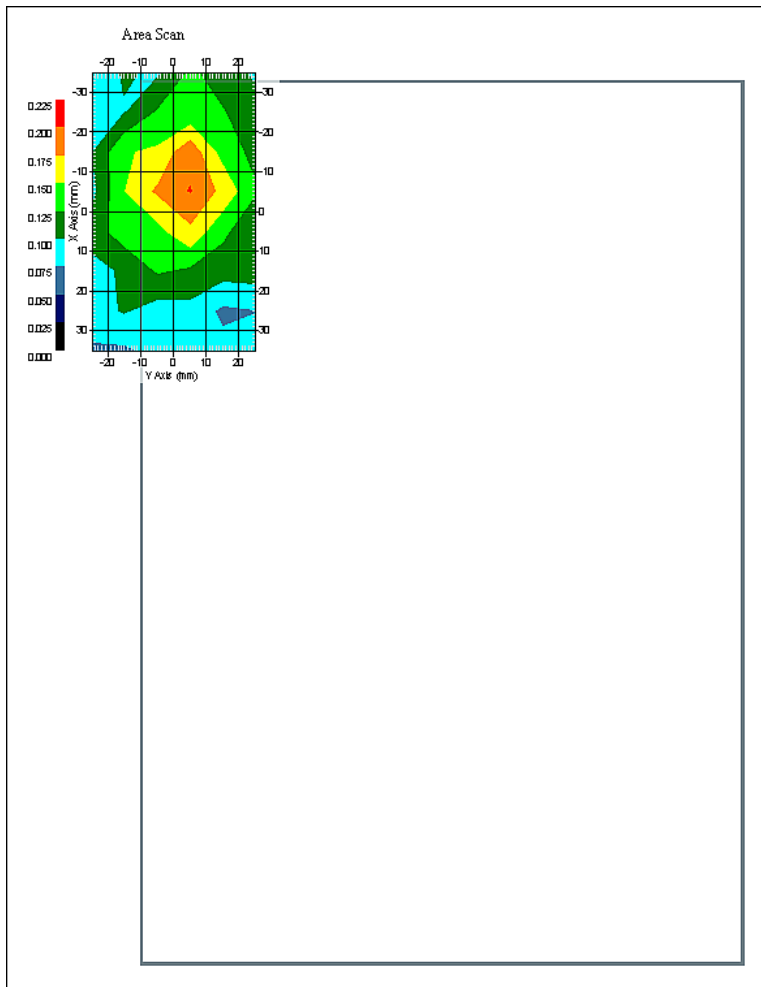
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 24-Jan-2009  
Set-up Time : 10:26:04 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.186 W/kg  
10 gram SAR value : 0.122 W/kg  
Area Scan Peak SAR : 0.201 W/kg  
Zoom Scan Peak SAR : 0.300 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 24-Jan-2009  
Starting Time : 24-Jan-2009 11:15:56 AM  
End Time : 24-Jan-2009 11:33:33 AM  
Scanning Time : 1057 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 b  
Model : E760 In Dell Inspiron 1010  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Main  
Orientation : Touch  
Power Drift-Start : 0.187 W/kg  
Power Drift-Finish: 0.192 W/kg  
Power Drift (%) : 2.996

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 2450  
Frequency : 2450.00 MHz  
Last Calib. Date : 24-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 41.00 RH%  
Epsilon : 52.49 F/m  
Sigma : 1.96 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

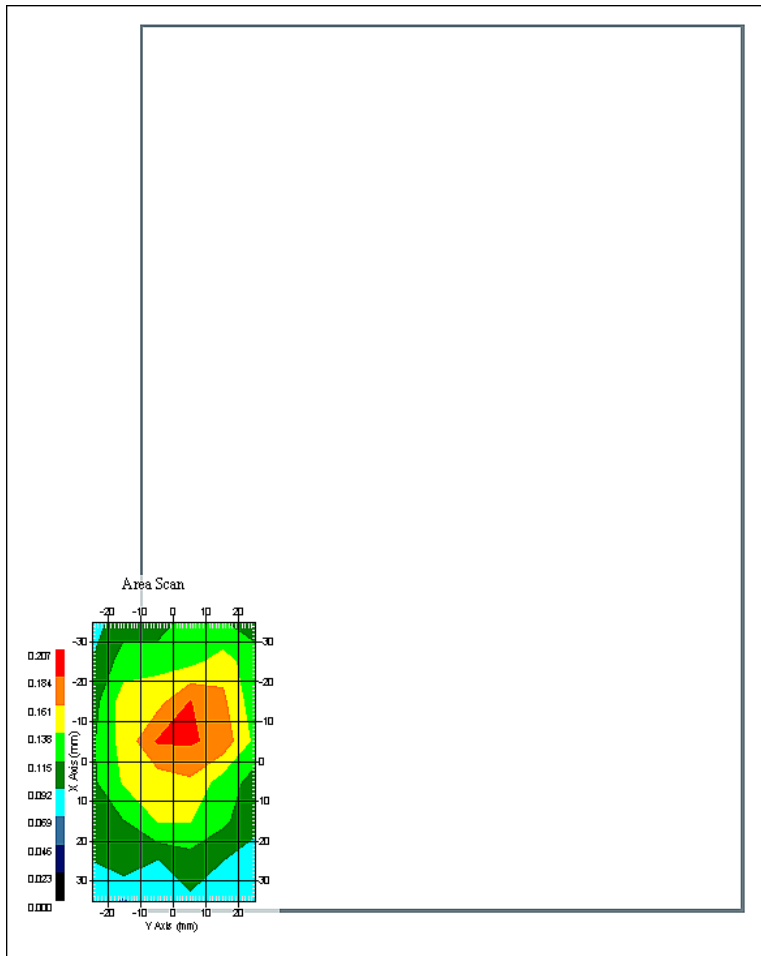
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 24-Jan-2009  
Set-up Time : 10:26:04 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Low



1 gram SAR value : 0.175 W/kg  
10 gram SAR value : 0.124 W/kg  
Area Scan Peak SAR : 0.187 W/kg  
Zoom Scan Peak SAR : 0.240 W/kg



## SAR Test Report

By Operator : Jay  
Measurement Date : 22-Jan-2009  
Starting Time : 22-Jan-2009 12:30:34 PM  
End Time : 22-Jan-2009 12:48:09 PM  
Scanning Time : 1055 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 b  
Model : E760 In Dell Inspiron 1010  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Main  
Orientation : Touch  
Power Drift-Start : 0.188 W/kg  
Power Drift-Finish: 0.192 W/kg  
Power Drift (%) : 1.980

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 2450  
Frequency : 2450.00 MHz  
Last Calib. Date : 22-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 41.00 RH%  
Epsilon : 52.56 F/m  
Sigma : 1.97 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

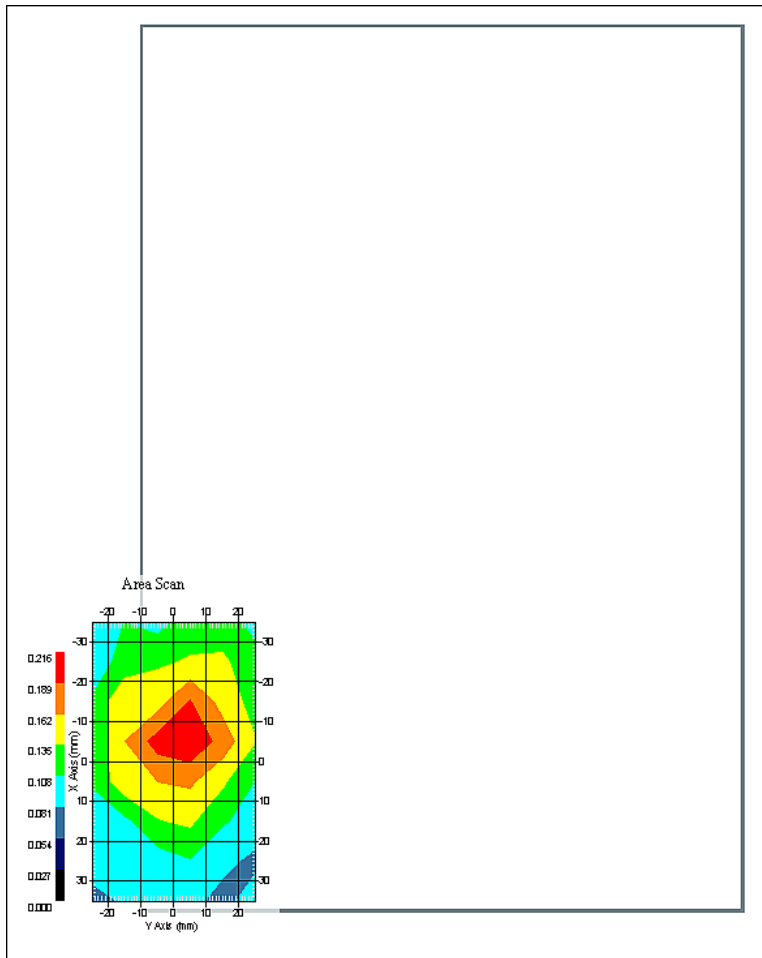
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 22-Jan-2009  
Set-up Time : 10:26:04 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Low



1 gram SAR value : 0.175 W/kg  
10 gram SAR value : 0.120 W/kg  
Area Scan Peak SAR : 0.214 W/kg  
Zoom Scan Peak SAR : 0.270 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 24-Jan-2009  
Starting Time : 24-Jan-2009 12:23:35 PM  
End Time : 24-Jan-2009 12:41:05 PM  
Scanning Time : 1050 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 b  
Model : E760 In Dell Inspiron 1010  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Aux  
Orientation : Touch  
Power Drift-Start : 0.188 W/kg  
Power Drift-Finish: 0.195 W/kg  
Power Drift (%) : 3.895

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 2450  
Frequency : 2450.00 MHz  
Last Calib. Date : 24-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 41.00 RH%  
Epsilon : 52.49 F/m  
Sigma : 1.96 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

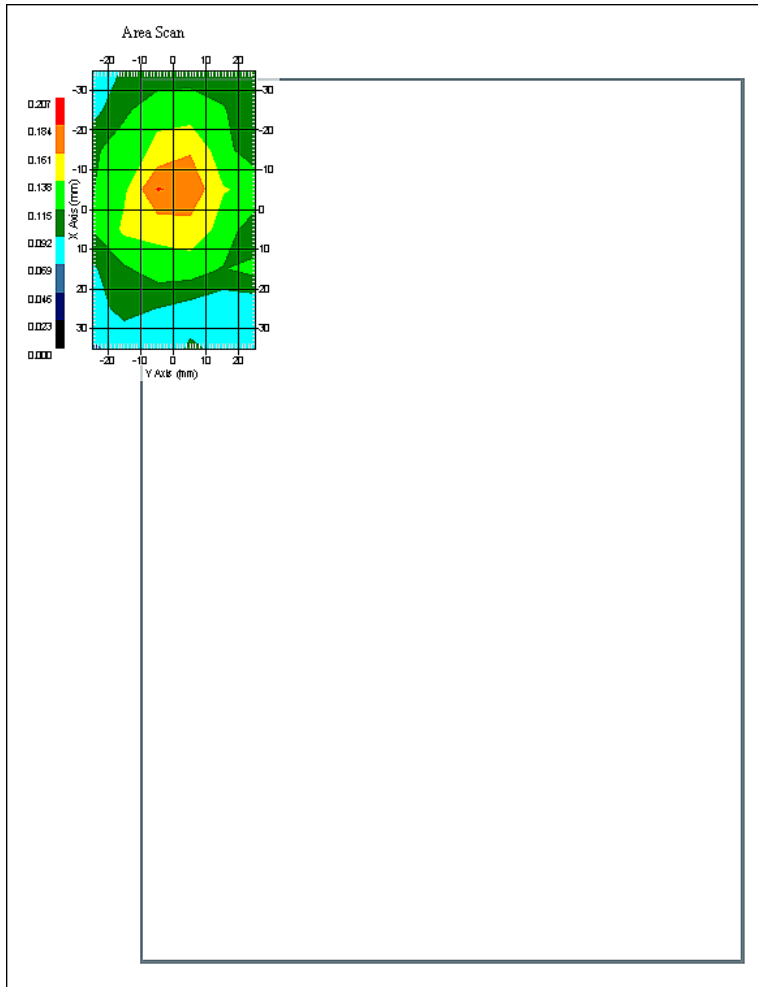
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 24-Jan-2009  
Set-up Time : 10:26:04 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Low



1 gram SAR value : 0.164 W/kg  
10 gram SAR value : 0.113 W/kg  
Area Scan Peak SAR : 0.185 W/kg  
Zoom Scan Peak SAR : 0.260 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 22-Jan-2009  
Starting Time : 22-Jan-2009 01:39:44 PM  
End Time : 22-Jan-2009 01:57:21 PM  
Scanning Time : 1057 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 b  
Model : E760 In Dell Inspiron 1010  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Aux  
Orientation : Touch  
Power Drift-Start : 0.182 W/kg  
Power Drift-Finish: 0.183 W/kg  
Power Drift (%) : 0.548

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 2450  
Frequency : 2450.00 MHz  
Last Calib. Date : 22-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 41.00 RH%  
Epsilon : 52.56 F/m  
Sigma : 1.97 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

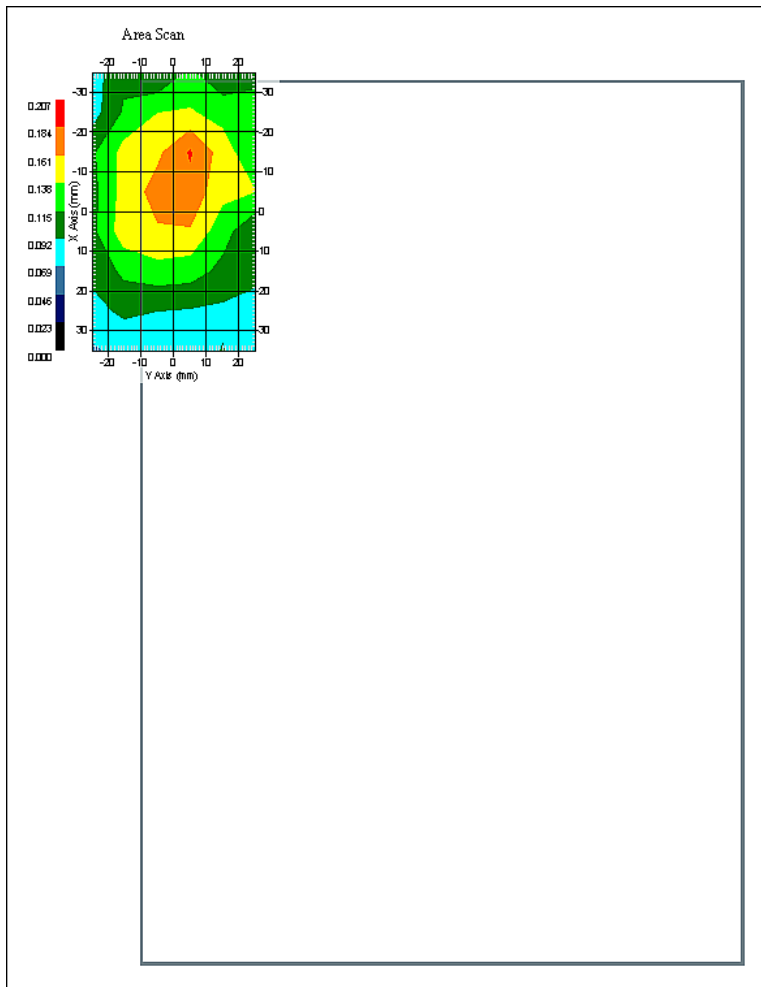
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 22-Jan-2009  
Set-up Time : 10:26:04 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

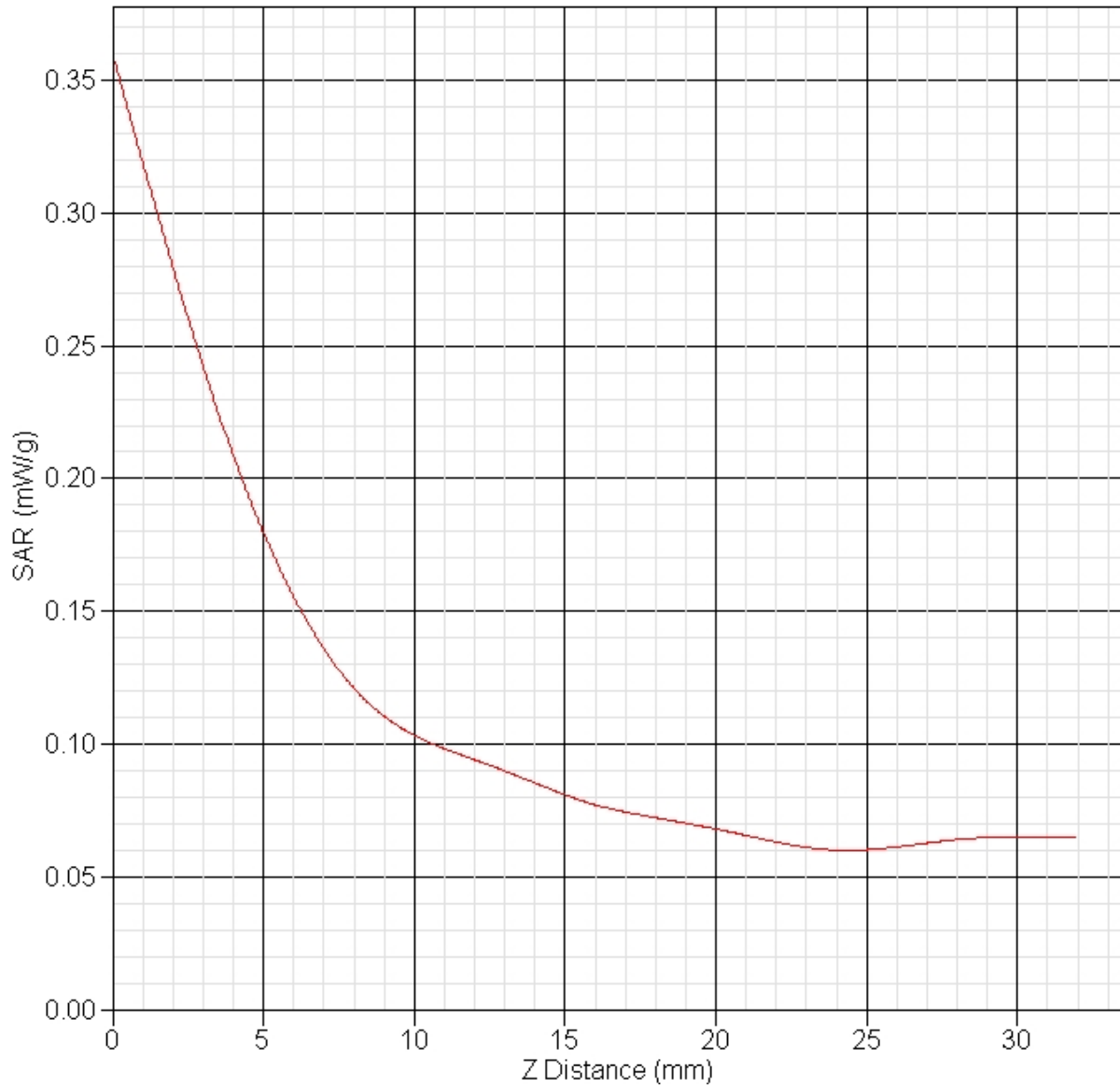
Other Data

DUT Position : Touch  
Separation : 0  
Channel : Low



1 gram SAR value : 0.196 W/kg  
10 gram SAR value : 0.128 W/kg  
Area Scan Peak SAR : 0.186 W/kg  
Zoom Scan Peak SAR : 0.360 W/kg

### SAR-Z Axis at Hotspot x:-1.91 y:-3.16



## SAR Test Report

By Operator : Jay  
Measurement Date : 24-Jan-2009  
Starting Time : 24-Jan-2009 11:38:20 AM  
End Time : 24-Jan-2009 11:55:51 AM  
Scanning Time : 1051 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n20  
Model : E760 In Dell Inspiron 1010  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Main  
Orientation : Touch  
Power Drift-Start : 0.179 W/kg  
Power Drift-Finish: 0.182 W/kg  
Power Drift (%) : 1.679

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 2450  
Frequency : 2450.00 MHz  
Last Calib. Date : 24-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 41.00 RH%  
Epsilon : 52.49 F/m  
Sigma : 1.96 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

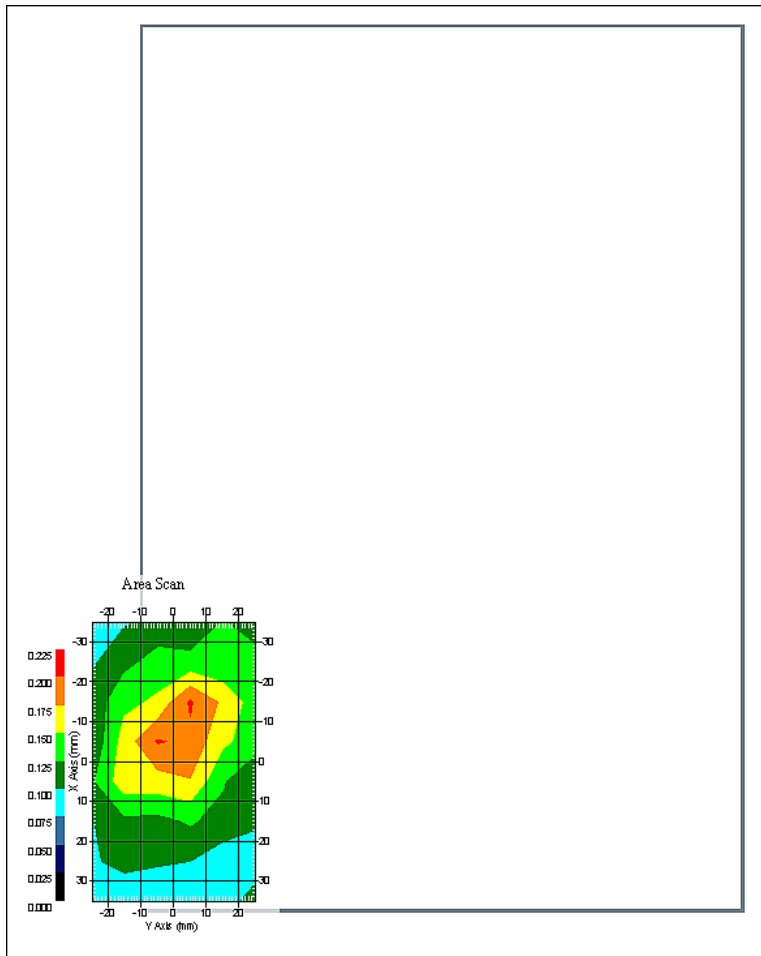


Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 24-Jan-2009  
Set-up Time : 10:26:04 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.163 W/kg  
10 gram SAR value : 0.120 W/kg  
Area Scan Peak SAR : 0.203 W/kg  
Zoom Scan Peak SAR : 0.290 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 22-Jan-2009  
Starting Time : 22-Jan-2009 12:52:55 PM  
End Time : 22-Jan-2009 01:11:27 PM  
Scanning Time : 1052 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n20  
Model : E760 In Dell Inspiron 1010  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Main  
Orientation : Touch  
Power Drift-Start : 0.189 W/kg  
Power Drift-Finish: 0.190 W/kg  
Power Drift (%) : 0.524

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 2450  
Frequency : 2450.00 MHz  
Last Calib. Date : 22-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 41.00 RH%  
Epsilon : 52.56 F/m  
Sigma : 1.97 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

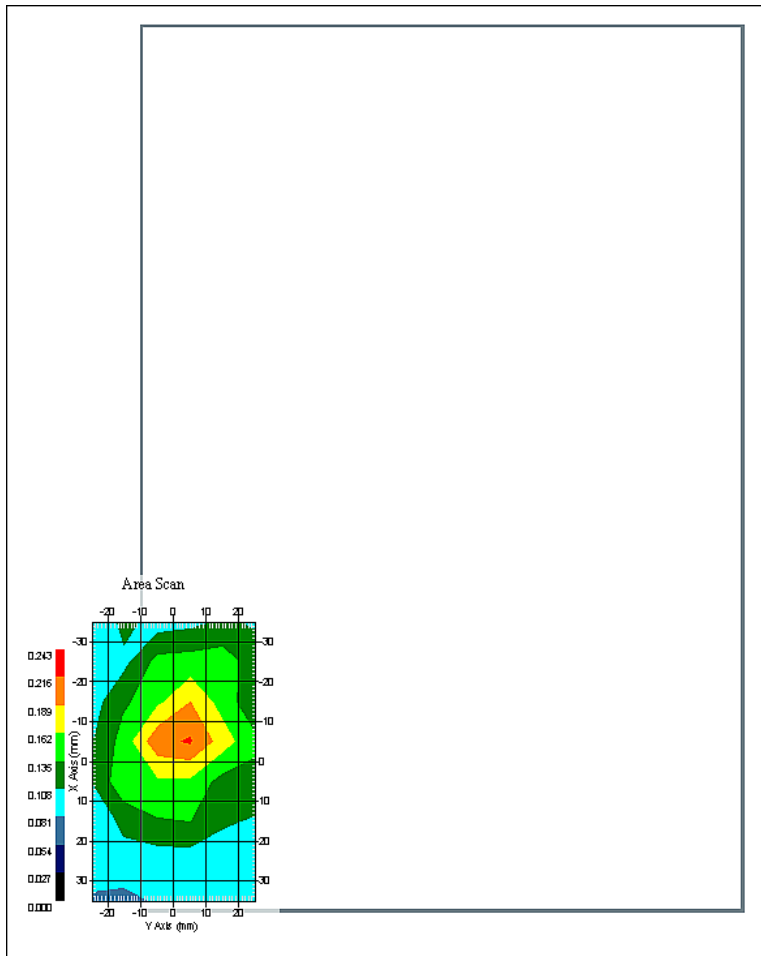
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 22-Jan-2009  
Set-up Time : 10:26:04 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.157 W/kg  
10 gram SAR value : 0.116 W/kg  
Area Scan Peak SAR : 0.219 W/kg  
Zoom Scan Peak SAR : 0.220 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 24-Jan-2009  
Starting Time : 24-Jan-2009 12:46:51 PM  
End Time : 24-Jan-2009 01:04:14 PM  
Scanning Time : 1043 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n20  
Model : E760 In Dell Inspiron 1010  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Aux  
Orientation : Touch  
Power Drift-Start : 0.187 W/kg  
Power Drift-Finish: 0.187 W/kg  
Power Drift (%) : 0.535

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 2450  
Frequency : 2450.00 MHz  
Last Calib. Date : 24-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 41.00 RH%  
Epsilon : 52.49 F/m  
Sigma : 1.96 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

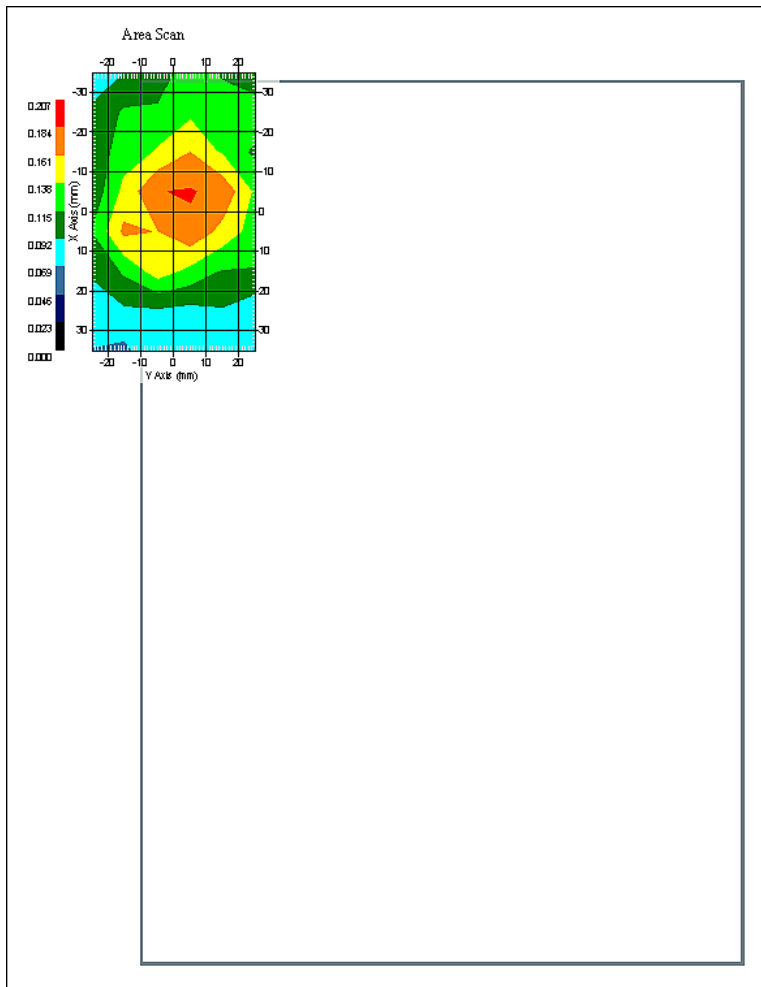
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 24-Jan-2009  
Set-up Time : 10:26:04 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.181 W/kg  
10 gram SAR value : 0.122 W/kg  
Area Scan Peak SAR : 0.186 W/kg  
Zoom Scan Peak SAR : 0.250 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 22-Jan-2009  
Starting Time : 22-Jan-2009 02:02:55 PM  
End Time : 22-Jan-2009 02:20:29 PM  
Scanning Time : 1054 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n20  
Model : E760 In Dell Inspiron 1010  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Aux  
Orientation : Touch  
Power Drift-Start : 0.184 W/kg  
Power Drift-Finish: 0.188 W/kg  
Power Drift (%) : 2.186

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 2450  
Frequency : 2450.00 MHz  
Last Calib. Date : 22-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 41.00 RH%  
Epsilon : 52.56 F/m  
Sigma : 1.97 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

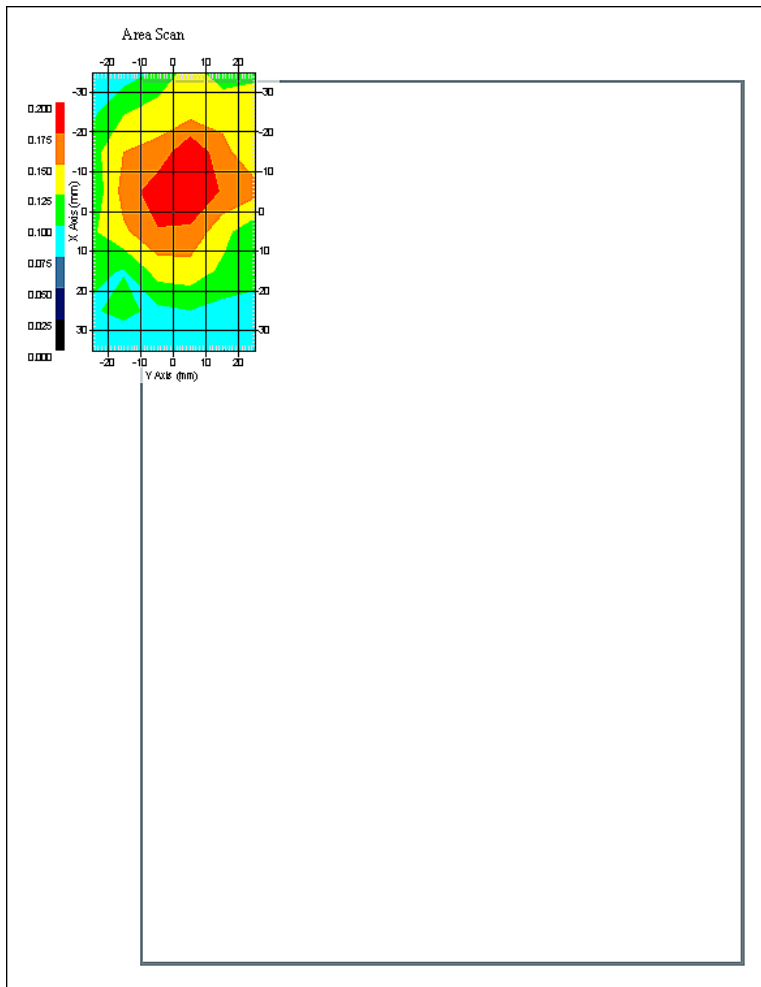
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 22-Jan-2009  
Set-up Time : 10:26:04 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.187 W/kg  
10 gram SAR value : 0.133 W/kg  
Area Scan Peak SAR : 0.200 W/kg  
Zoom Scan Peak SAR : 0.270 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 24-Jan-2009  
Starting Time : 24-Jan-2009 12:00:36 PM  
End Time : 24-Jan-2009 12:18:04 PM  
Scanning Time : 1048 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n40  
Model : E760 In Dell Inspiron 1010  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Main  
Orientation : Touch  
Power Drift-Start : 0.185 W/kg  
Power Drift-Finish: 0.186 W/kg  
Power Drift (%) : 0.548

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 2450  
Frequency : 2450.00 MHz  
Last Calib. Date : 24-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 41.00 RH%  
Epsilon : 52.49 F/m  
Sigma : 1.96 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

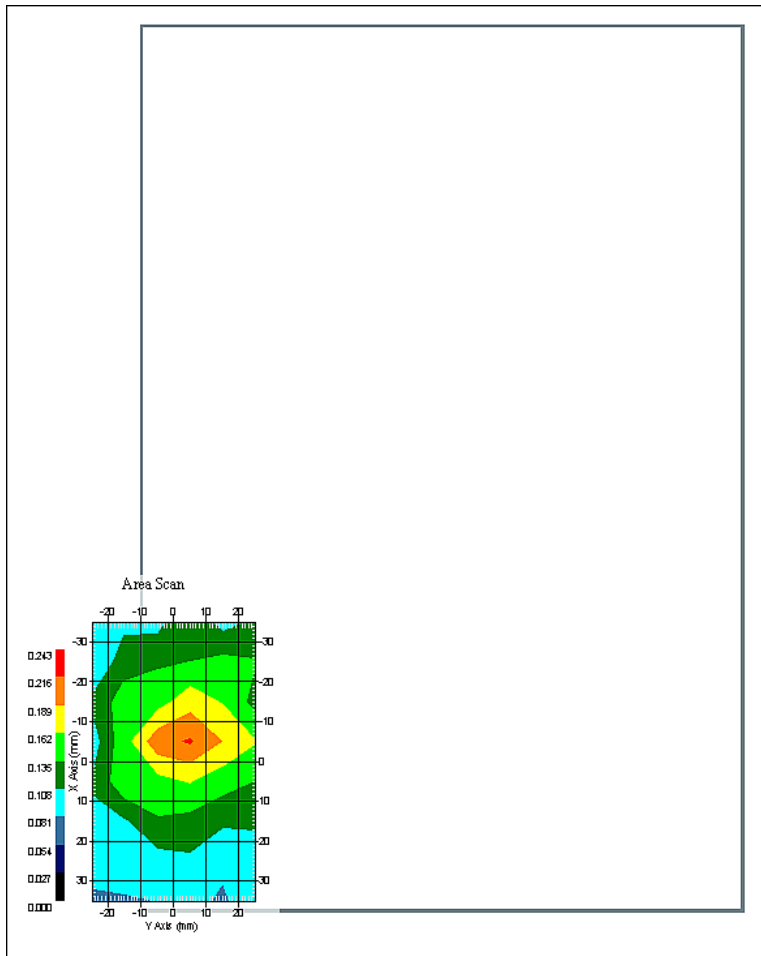


Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 24-Jan-2009  
Set-up Time : 10:26:04 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.170 W/kg  
10 gram SAR value : 0.116 W/kg  
Area Scan Peak SAR : 0.219 W/kg  
Zoom Scan Peak SAR : 0.250 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 22-Jan-2009  
Starting Time : 22-Jan-2009 01:17:16 PM  
End Time : 22-Jan-2009 01:34:51 PM  
Scanning Time : 1055 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n40  
Model : E760 In Dell Inspiron 1010  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Main  
Orientation : Touch  
Power Drift-Start : 0.196 W/kg  
Power Drift-Finish: 0.192 W/kg  
Power Drift (%) : -1.978

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 2450  
Frequency : 2450.00 MHz  
Last Calib. Date : 22-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 41.00 RH%  
Epsilon : 52.56 F/m  
Sigma : 1.97 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

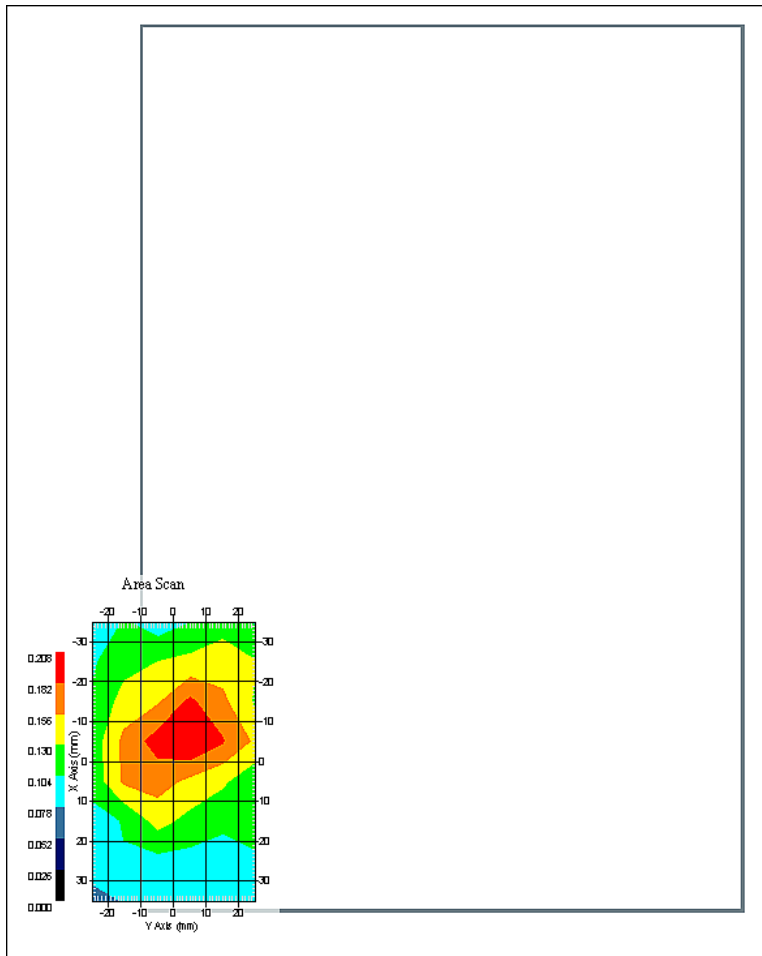
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 22-Jan-2009  
Set-up Time : 10:26:04 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.178 W/kg  
10 gram SAR value : 0.130 W/kg  
Area Scan Peak SAR : 0.208 W/kg  
Zoom Scan Peak SAR : 0.250 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 24-Jan-2009  
Starting Time : 24-Jan-2009 01:09:17 PM  
End Time : 24-Jan-2009 01:26:55 PM  
Scanning Time : 1058 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n40  
Model : E760 In Dell Inspiron 1010  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Aux  
Orientation : Touch  
Power Drift-Start : 0.192 W/kg  
Power Drift-Finish: 0.193 W/kg  
Power Drift (%) : 0.448

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 2450  
Frequency : 2450.00 MHz  
Last Calib. Date : 24-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 41.00 RH%  
Epsilon : 52.49 F/m  
Sigma : 1.96 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

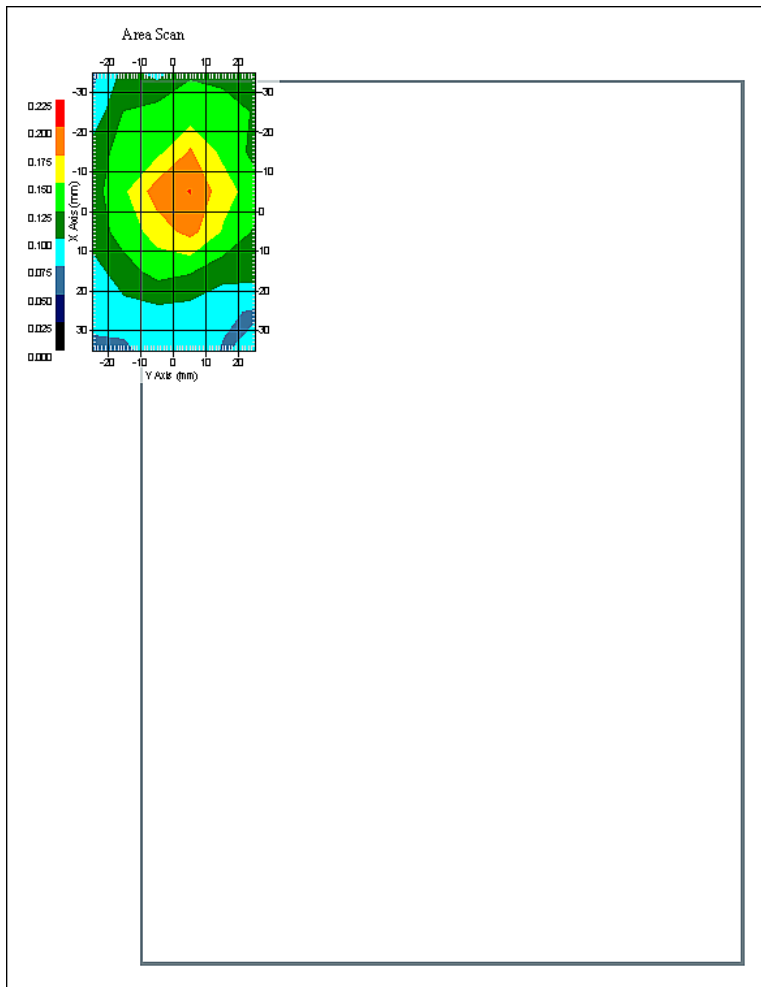
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 24-Jan-2009  
Set-up Time : 10:26:04 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.165 W/kg  
10 gram SAR value : 0.109 W/kg  
Area Scan Peak SAR : 0.201 W/kg  
Zoom Scan Peak SAR : 0.270 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 22-Jan-2009  
Starting Time : 22-Jan-2009 02:25:01 PM  
End Time : 22-Jan-2009 02:42:46 PM  
Scanning Time : 1065 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n40  
Model : E760 In Dell Inspiron 1010  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Aux  
Orientation : Touch  
Power Drift-Start : 0.190 W/kg  
Power Drift-Finish: 0.196 W/kg  
Power Drift (%) : 3.090

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 2450  
Frequency : 2450.00 MHz  
Last Calib. Date : 22-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 41.00 RH%  
Epsilon : 52.56 F/m  
Sigma : 1.97 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

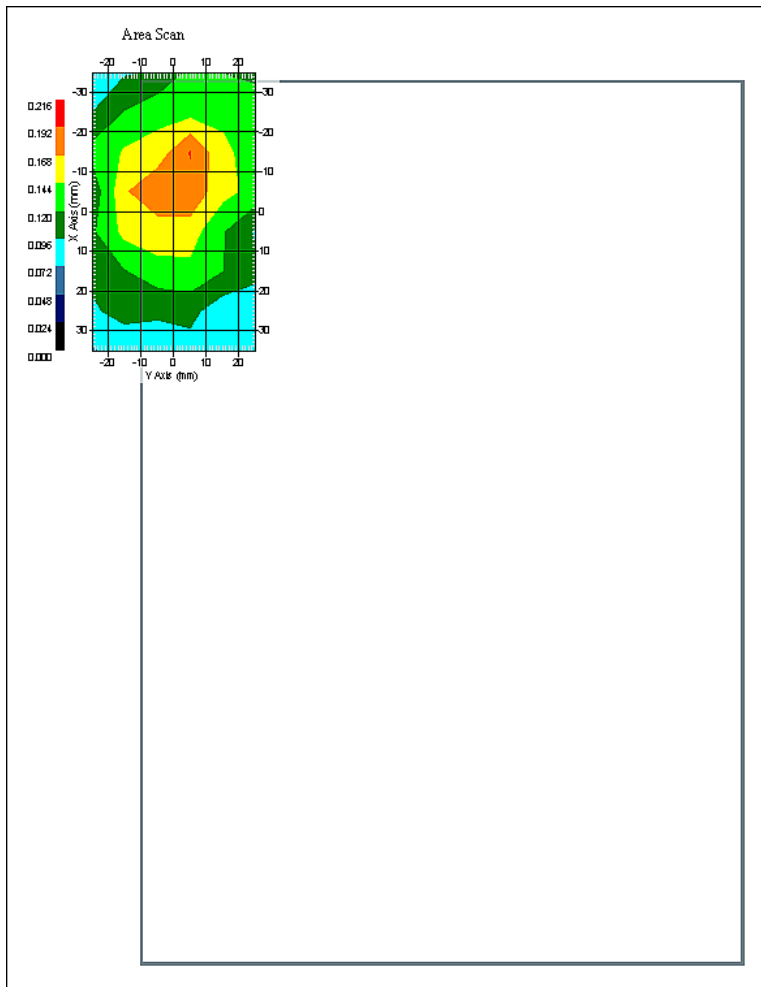
Name : Probe 215 - RFEL  
Model : E020  
Type : E-Field Triangle  
Serial No. : 215  
Last Calib. Date : 03-Nov-2008  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.5  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 22-Jan-2009  
Set-up Time : 10:26:04 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=4mm  
Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.183 W/kg  
10 gram SAR value : 0.156 W/kg  
Area Scan Peak SAR : 0.193 W/kg  
Zoom Scan Peak SAR : 0.210 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 29-Jan-2009  
Starting Time : 29-Jan-2009 08:41:37 AM  
End Time : 29-Jan-2009 09:09:46 AM  
Scanning Time : 1689 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 a Legacy Low Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Main  
Orientation : Touch  
Power Drift-Start : 0.217 W/kg  
Power Drift-Finish: 0.223 W/kg  
Power Drift (%) : 2.768

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 29-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 49.05 F/m  
Sigma : 5.41 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

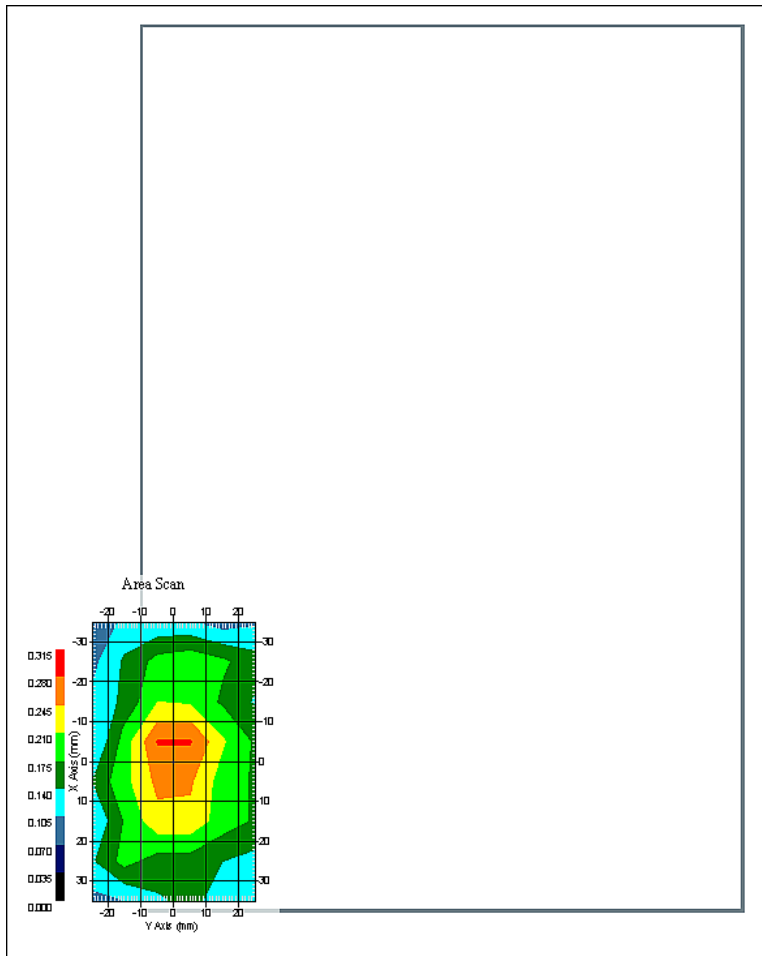


Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 29-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

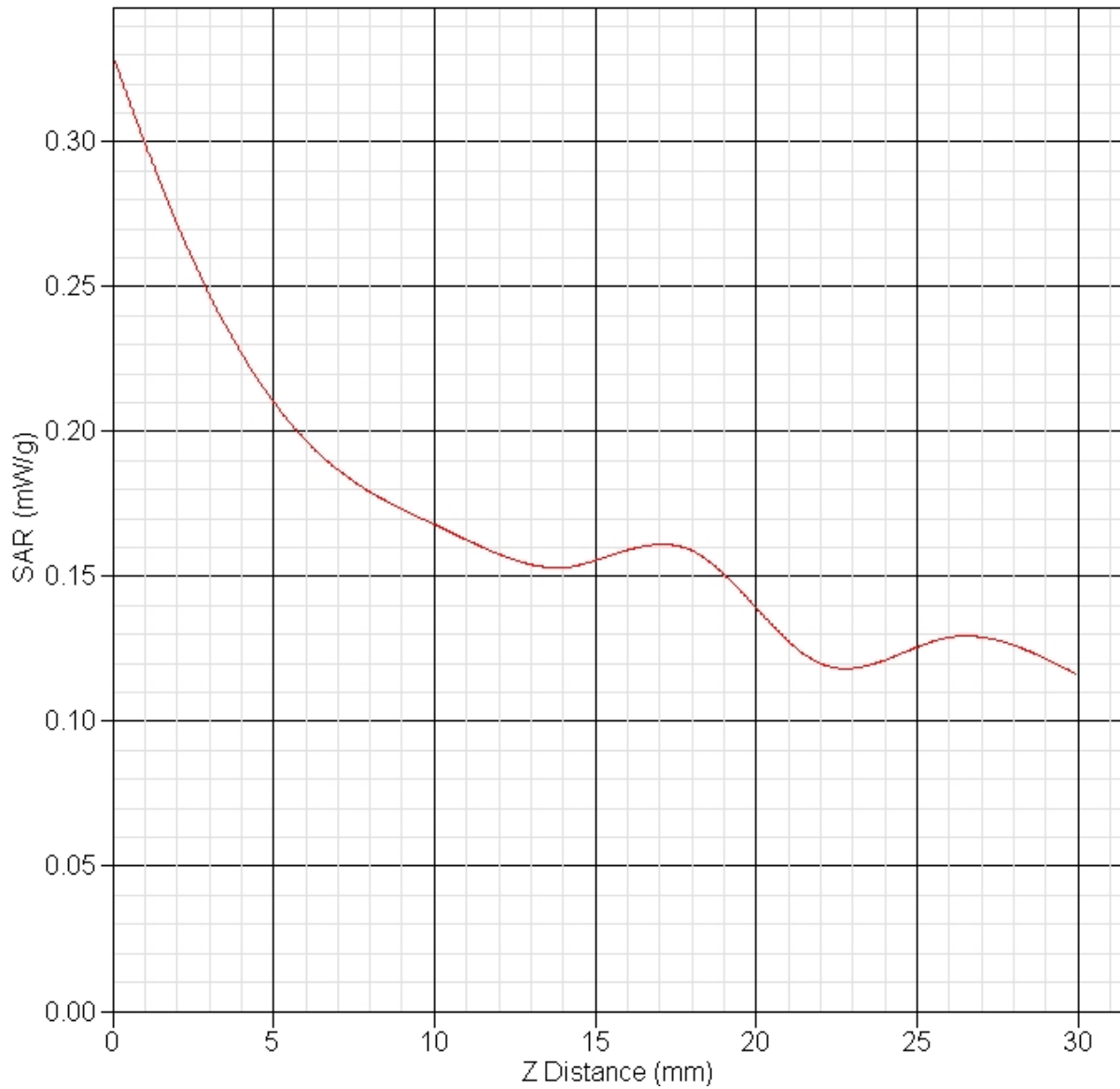
Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.207 W/kg  
10 gram SAR value : 0.152 W/kg  
Area Scan Peak SAR : 0.283 W/kg  
Zoom Scan Peak SAR : 0.330 W/kg

**SAR-Z Axis**  
at Hotspot x:0.16 y:2.83



## SAR Test Report

By Operator : Jay  
Measurement Date : 23-Jan-2009  
Starting Time : 23-Jan-2009 08:04:17 AM  
End Time : 23-Jan-2009 08:31:51 AM  
Scanning Time : 1654 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 a Legacy Low Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Main  
Orientation : Touch  
Power Drift-Start : 0.228 W/kg  
Power Drift-Finish: 0.223 W/kg  
Power Drift (%) : -2.199

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 23-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.81 F/m  
Sigma : 5.42 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

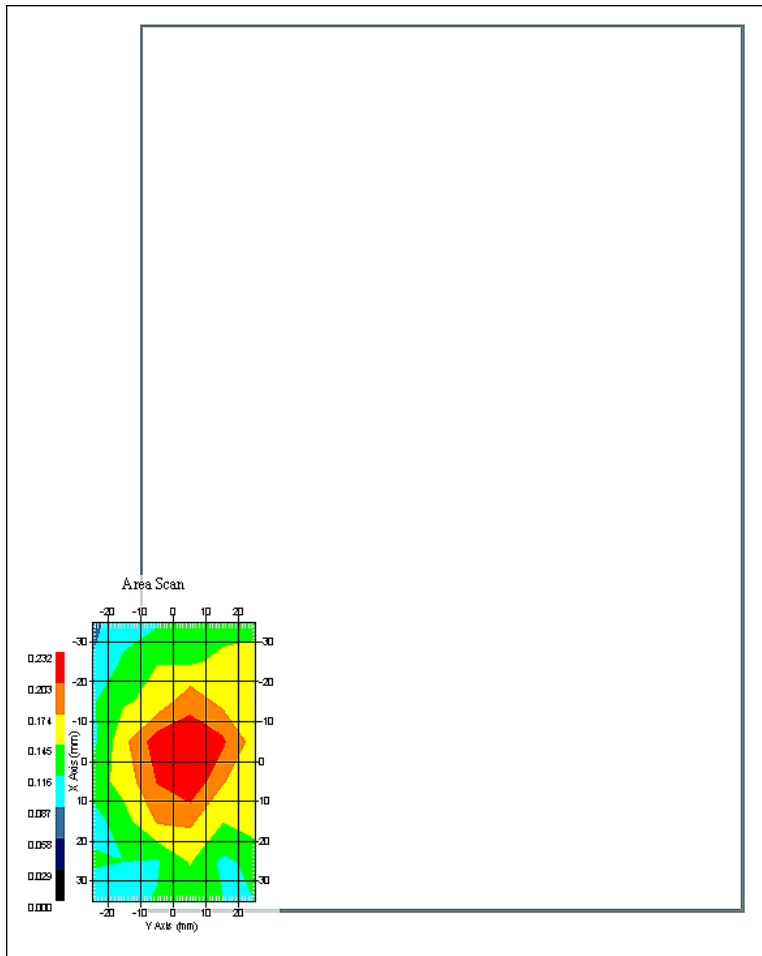
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 23-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.188 W/kg  
10 gram SAR value : 0.129 W/kg  
Area Scan Peak SAR : 0.229 W/kg  
Zoom Scan Peak SAR : 0.280 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 29-Jan-2009  
Starting Time : 29-Jan-2009 11:56:50 AM  
End Time : 29-Jan-2009 12:24:26 PM  
Scanning Time : 1656 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 a Legacy Low Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Aux  
Orientation : Touch  
Power Drift-Start : 0.238 W/kg  
Power Drift-Finish: 0.235 W/kg  
Power Drift (%) : -0.954

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 29-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 49.05 F/m  
Sigma : 5.41 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

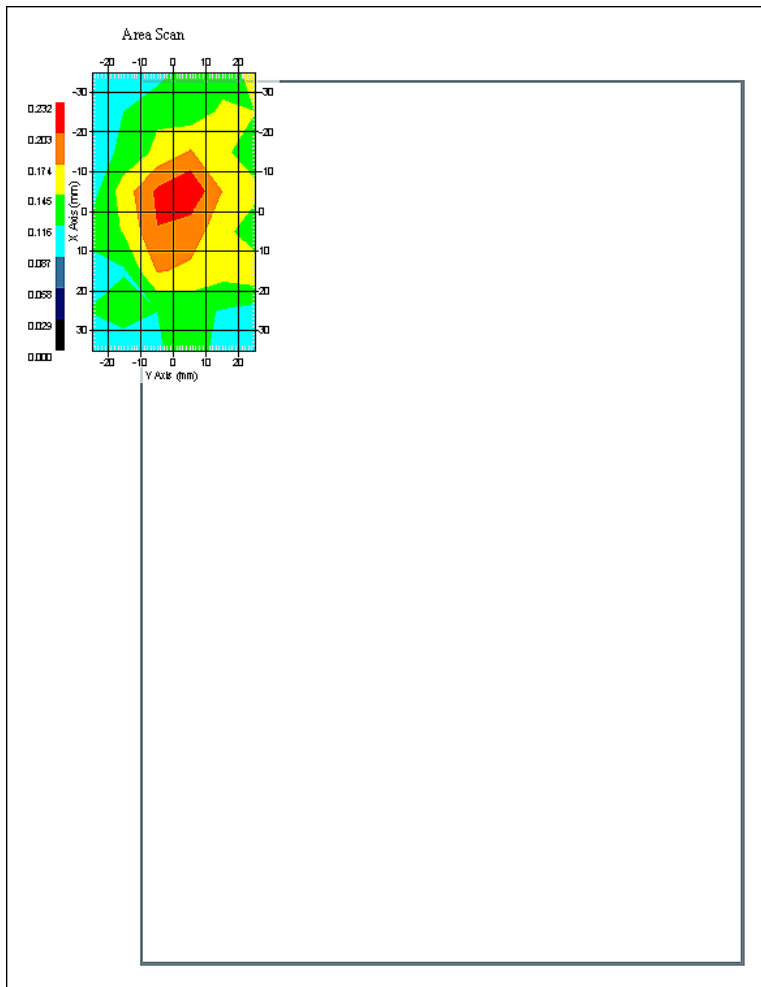
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 29-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.176 W/kg  
10 gram SAR value : 0.124 W/kg  
Area Scan Peak SAR : 0.231 W/kg  
Zoom Scan Peak SAR : 0.280 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 23-Jan-2009  
Starting Time : 23-Jan-2009 11:18:35 AM  
End Time : 23-Jan-2009 11:46:15 AM  
Scanning Time : 1660 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 a Legacy Low Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Aux  
Orientation : Touch  
Power Drift-Start : 0.230 W/kg  
Power Drift-Finish: 0.230 W/kg  
Power Drift (%) : -0.088

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 23-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.81 F/m  
Sigma : 5.42 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

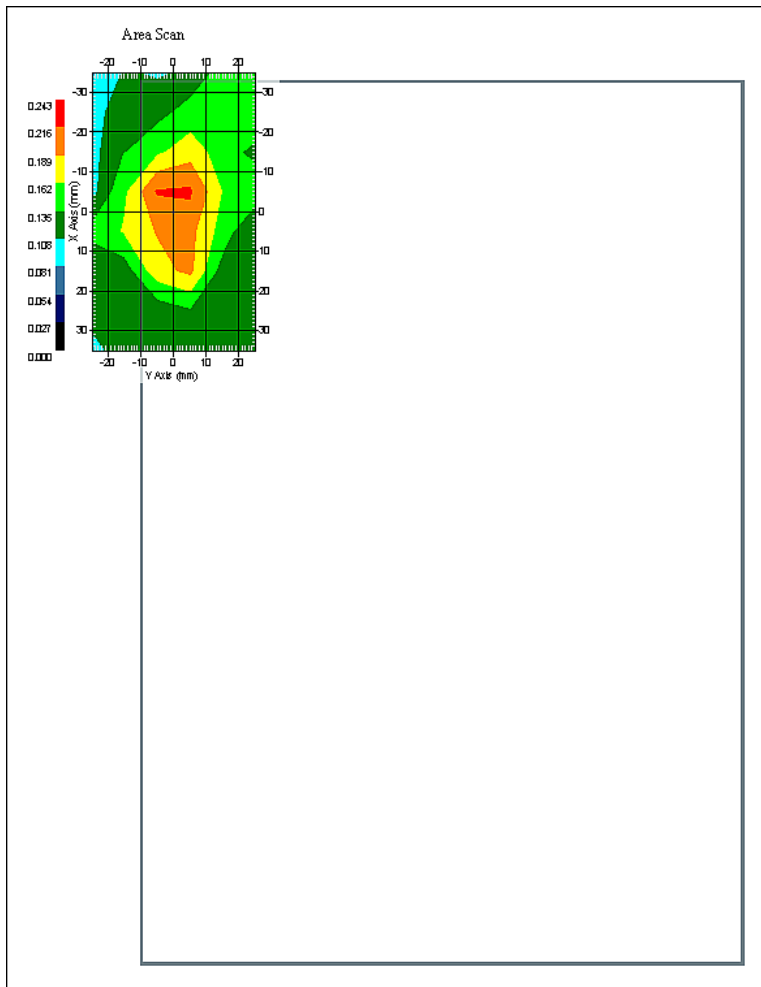
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 23-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.188 W/kg  
10 gram SAR value : 0.125 W/kg  
Area Scan Peak SAR : 0.220 W/kg  
Zoom Scan Peak SAR : 0.290 W/kg



## SAR Test Report

By Operator : Jay  
Measurement Date : 29-Jan-2009  
Starting Time : 29-Jan-2009 09:14:19 AM  
End Time : 29-Jan-2009 09:41:54 AM  
Scanning Time : 1655 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 a Legacy High Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Main  
Orientation : Touch  
Power Drift-Start : 0.226 W/kg  
Power Drift-Finish: 0.220 W/kg  
Power Drift (%) : -2.291

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 29-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 49.05 F/m  
Sigma : 5.41 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

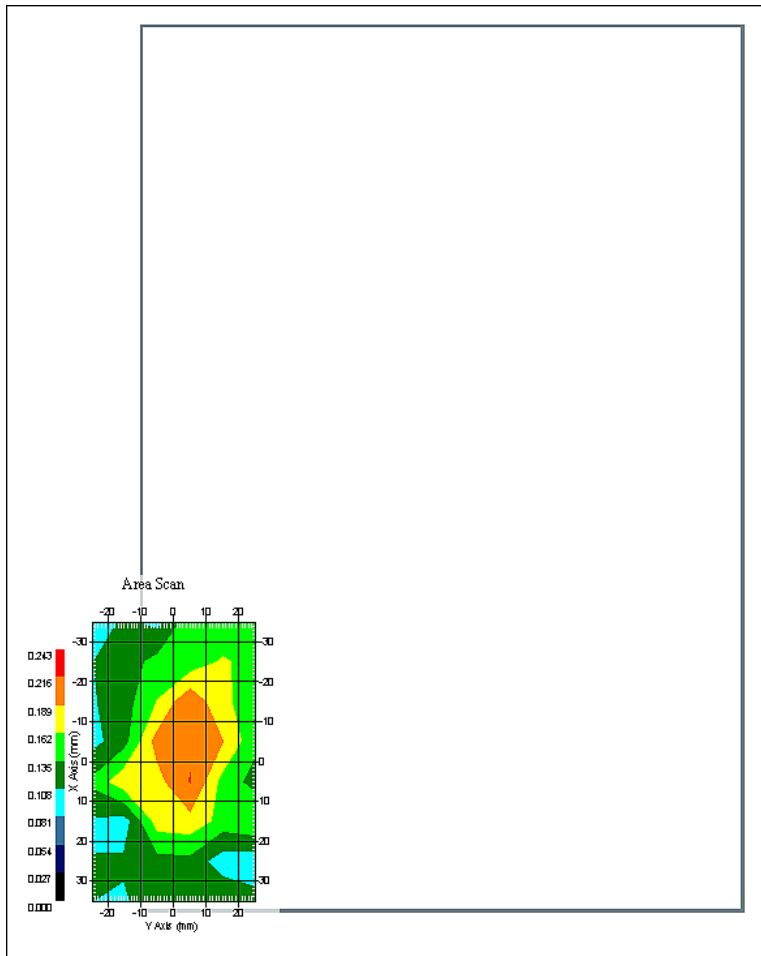
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 29-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.181 W/kg  
10 gram SAR value : 0.126 W/kg  
Area Scan Peak SAR : 0.217 W/kg  
Zoom Scan Peak SAR : 0.290 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 23-Jan-2009  
Starting Time : 23-Jan-2009 08:36:53 AM  
End Time : 23-Jan-2009 09:04:26 AM  
Scanning Time : 1653 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 a Legacy High Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Main  
Orientation : Touch  
Power Drift-Start : 0.224 W/kg  
Power Drift-Finish: 0.224 W/kg  
Power Drift (%) : 0.001

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 23-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.81 F/m  
Sigma : 5.42 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

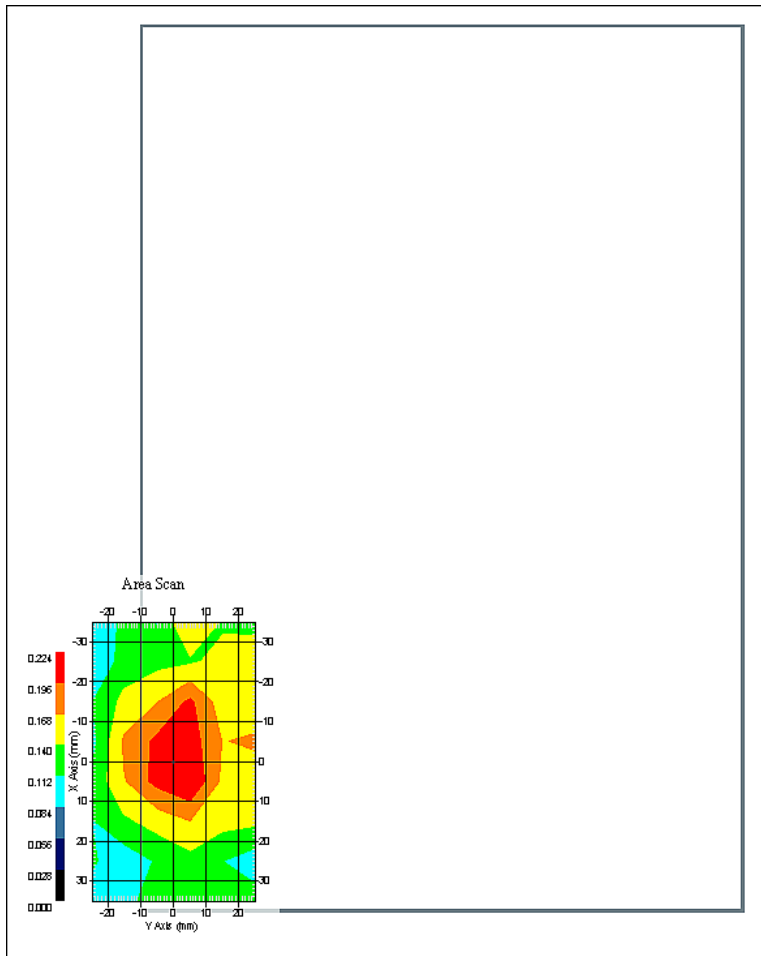
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 23-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.192 W/kg  
10 gram SAR value : 0.127 W/kg  
Area Scan Peak SAR : 0.223 W/kg  
Zoom Scan Peak SAR : 0.310 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 29-Jan-2009  
Starting Time : 29-Jan-2009 12:29:35 PM  
End Time : 29-Jan-2009 12:57:14 PM  
Scanning Time : 1659 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 a Legacy High Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Aux  
Orientation : Touch  
Power Drift-Start : 0.234 W/kg  
Power Drift-Finish: 0.226 W/kg  
Power Drift (%) : -3.519

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 29-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 49.05 F/m  
Sigma : 5.41 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

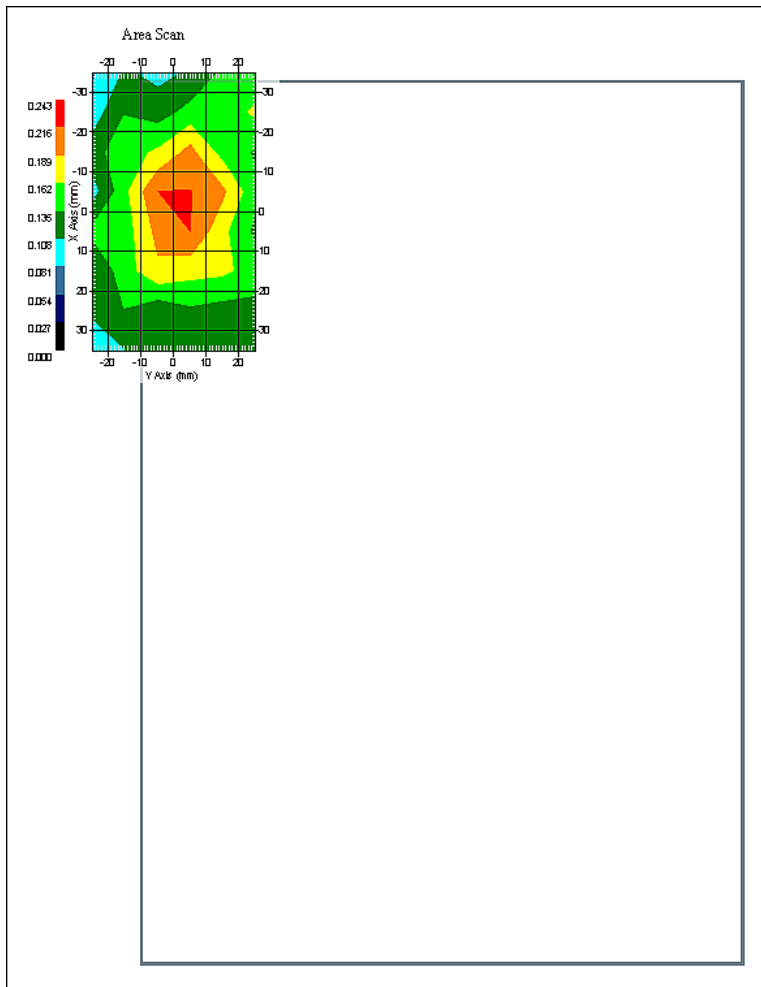
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 29-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.185 W/kg  
10 gram SAR value : 0.130 W/kg  
Area Scan Peak SAR : 0.217 W/kg  
Zoom Scan Peak SAR : 0.290 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 23-Jan-2009  
Starting Time : 23-Jan-2009 11:51:00 AM  
End Time : 23-Jan-2009 12:18:39 PM  
Scanning Time : 1659 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 a Legacy High Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Aux  
Orientation : Touch  
Power Drift-Start : 0.245 W/kg  
Power Drift-Finish: 0.238 W/kg  
Power Drift (%) : -2.947

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 23-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.81 F/m  
Sigma : 5.42 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

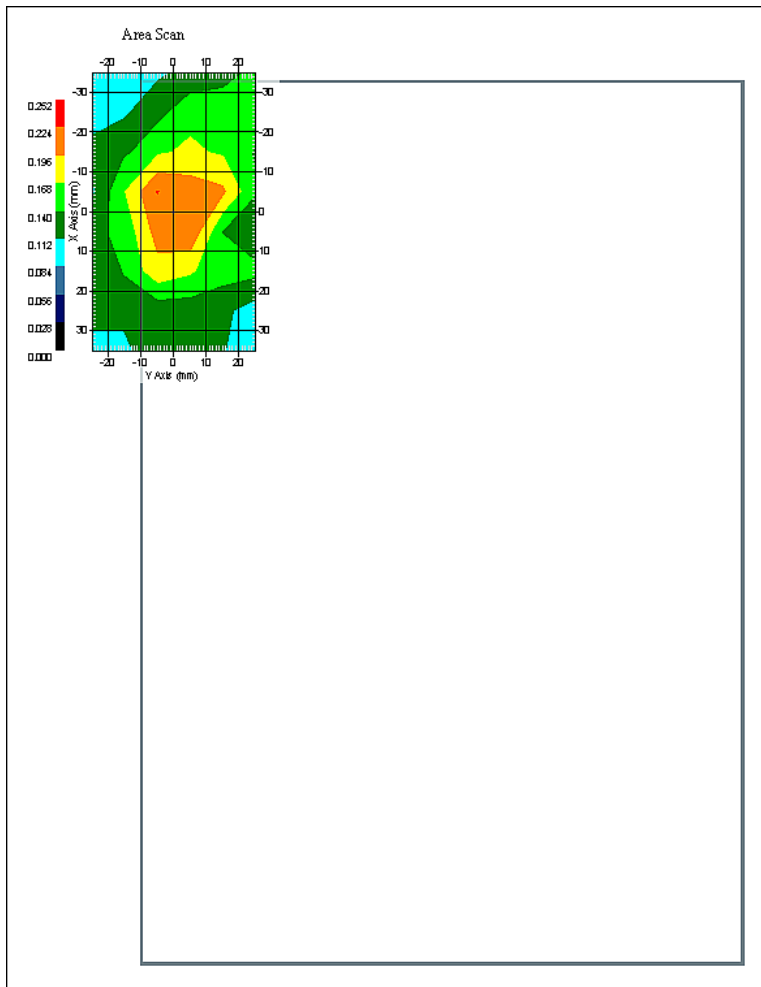
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 23-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.187 W/kg  
10 gram SAR value : 0.130 W/kg  
Area Scan Peak SAR : 0.225 W/kg  
Zoom Scan Peak SAR : 0.270 W/kg



## SAR Test Report

By Operator : Jay  
Measurement Date : 29-Jan-2009  
Starting Time : 29-Jan-2009 09:46:21 AM  
End Time : 29-Jan-2009 10:13:45 AM  
Scanning Time : 1644 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n20 Low Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Main  
Orientation : Touch  
Power Drift-Start : 0.228 W/kg  
Power Drift-Finish: 0.223 W/kg  
Power Drift (%) : -2.192

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 29-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 49.05 F/m  
Sigma : 5.41 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

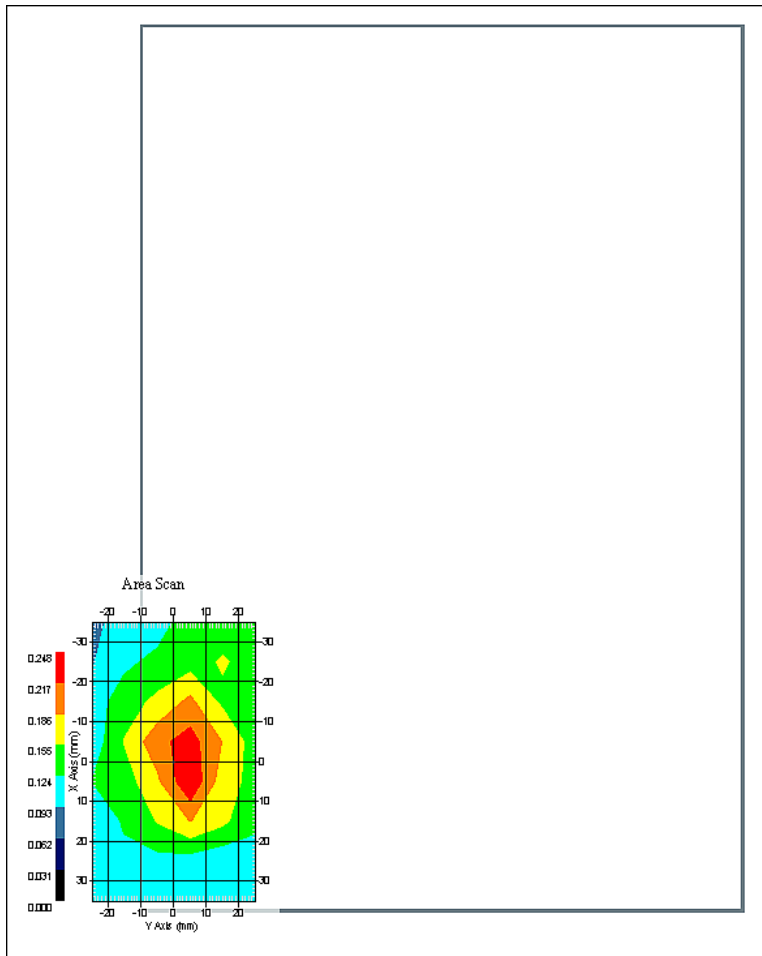
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 29-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : High



1 gram SAR value : 0.180 W/kg  
10 gram SAR value : 0.129 W/kg  
Area Scan Peak SAR : 0.245 W/kg  
Zoom Scan Peak SAR : 0.270 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 23-Jan-2009  
Starting Time : 23-Jan-2009 09:09:10 AM  
End Time : 23-Jan-2009 09:36:52 AM  
Scanning Time : 1662 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n20 Low Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Main  
Orientation : Touch  
Power Drift-Start : 0.218 W/kg  
Power Drift-Finish: 0.221 W/kg  
Power Drift (%) : 1.371

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 23-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.81 F/m  
Sigma : 5.42 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

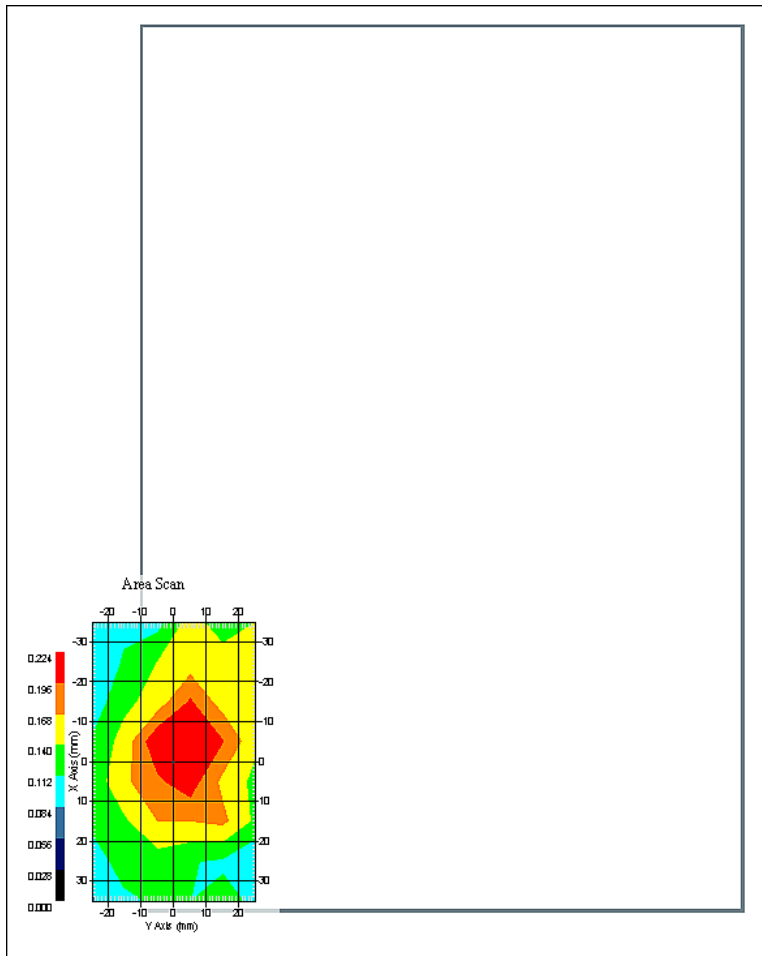
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 23-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : High



1 gram SAR value : 0.172 W/kg  
10 gram SAR value : 0.138 W/kg  
Area Scan Peak SAR : 0.221 W/kg  
Zoom Scan Peak SAR : 0.300 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 29-Jan-2009  
Starting Time : 29-Jan-2009 01:02:58 PM  
End Time : 29-Jan-2009 01:30:31 PM  
Scanning Time : 1653 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n20 Low Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal  
Orientation : Touch  
Power Drift-Start : 0.229 W/kg  
Power Drift-Finish: 0.230 W/kg  
Power Drift (%) : 0.432

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 29-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 49.05 F/m  
Sigma : 5.41 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

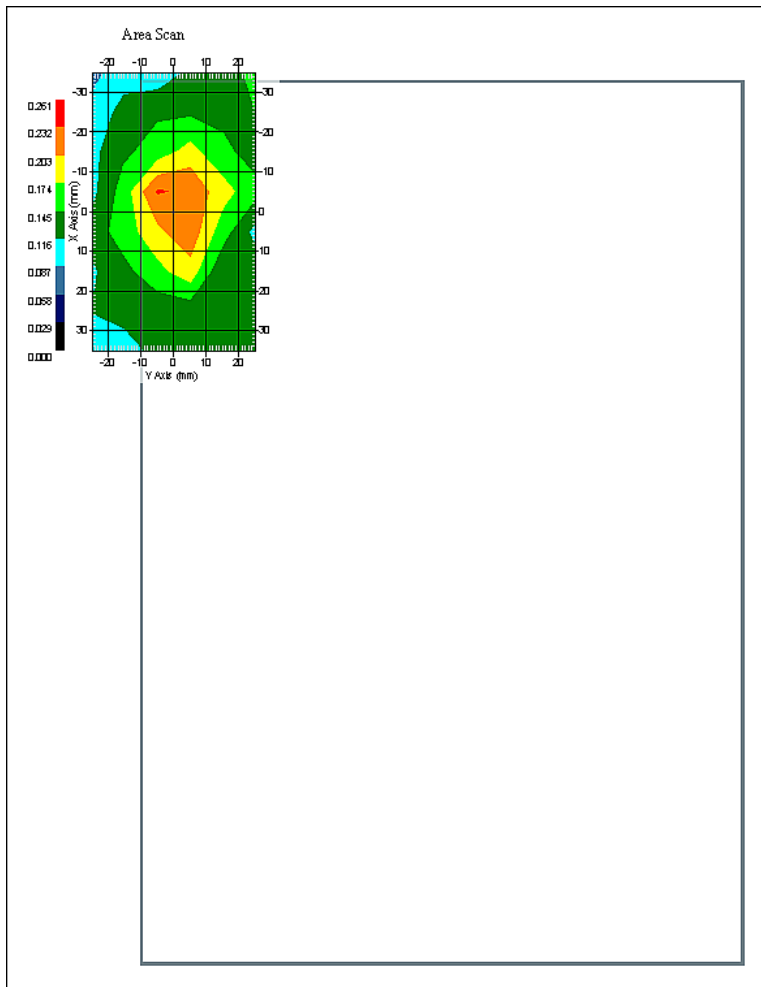
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 29-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : High



1 gram SAR value : 0.198 W/kg  
10 gram SAR value : 0.132 W/kg  
Area Scan Peak SAR : 0.234 W/kg  
Zoom Scan Peak SAR : 0.310 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 23-Jan-2009  
Starting Time : 23-Jan-2009 12:23:23 PM  
End Time : 23-Jan-2009 12:51:10 PM  
Scanning Time : 1667 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n20 Low Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Aux  
Orientation : Touch  
Power Drift-Start : 0.235 W/kg  
Power Drift-Finish: 0.228 W/kg  
Power Drift (%) : -3.075

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 23-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.81 F/m  
Sigma : 5.42 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

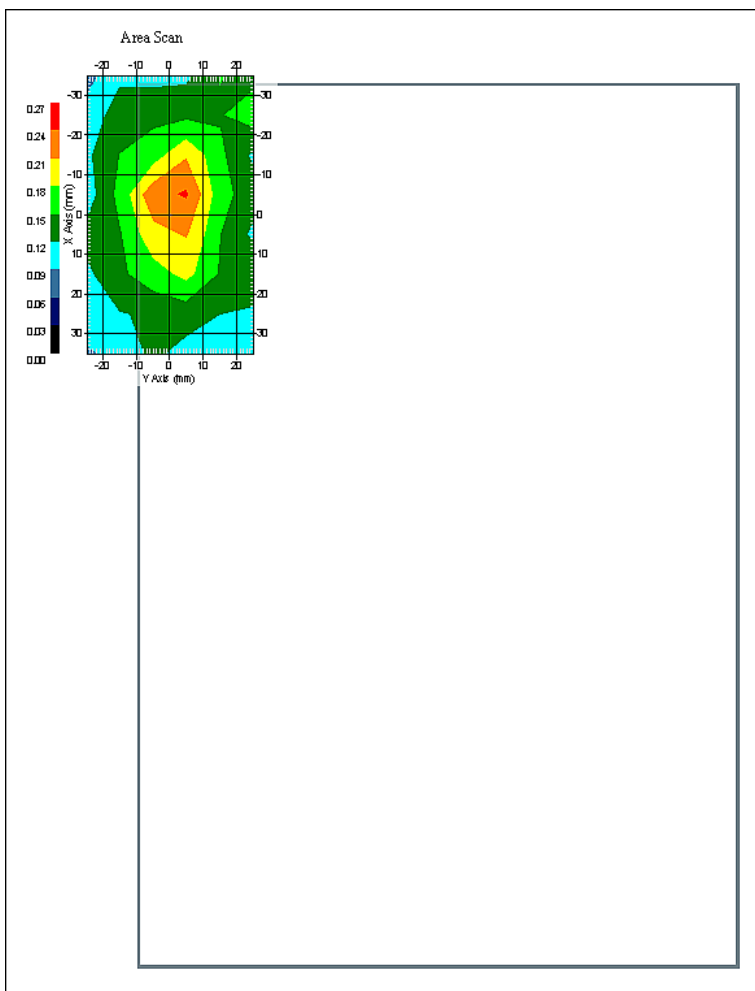
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 23-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : High



1 gram SAR value : 0.171 W/kg  
10 gram SAR value : 0.118 W/kg  
Area Scan Peak SAR : 0.243 W/kg  
Zoom Scan Peak SAR : 0.290 W/kg



## SAR Test Report

By Operator : Jay  
Measurement Date : 29-Jan-2009  
Starting Time : 29-Jan-2009 10:18:50 AM  
End Time : 29-Jan-2009 10:46:28 AM  
Scanning Time : 1658 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n20 High Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Main  
Orientation : Touch  
Power Drift-Start : 0.227 W/kg  
Power Drift-Finish: 0.224 W/kg  
Power Drift (%) : -1.322

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 29-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 49.15 F/m  
Sigma : 5.41 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

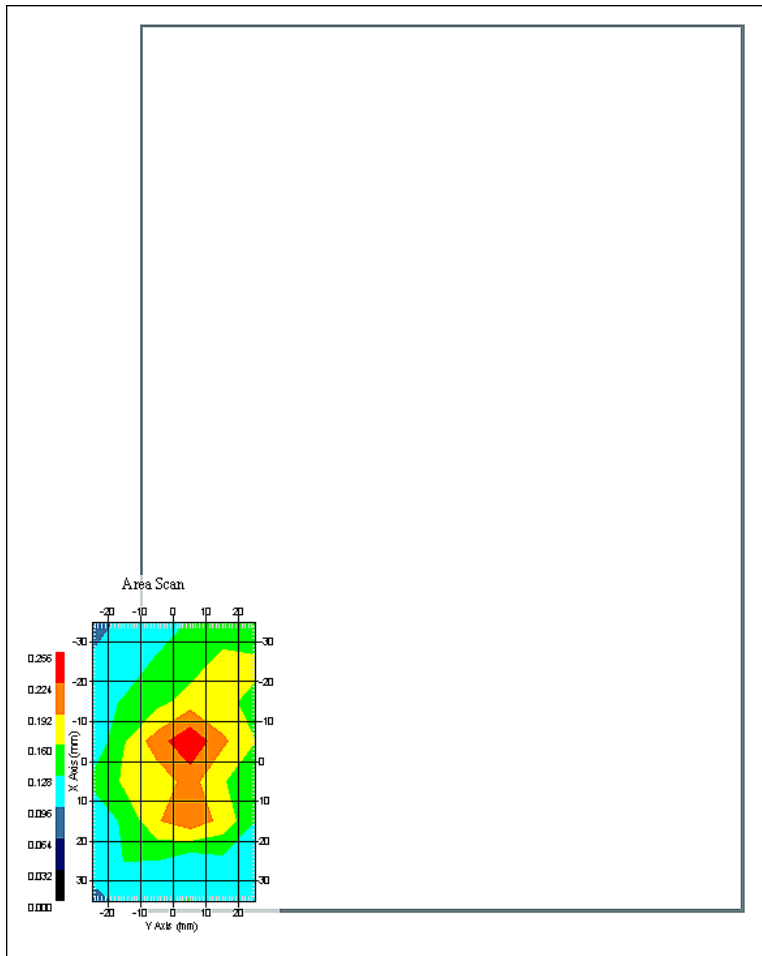
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 29-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.183 W/kg  
10 gram SAR value : 0.122 W/kg  
Area Scan Peak SAR : 0.254 W/kg  
Zoom Scan Peak SAR : 0.300 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 23-Jan-2009  
Starting Time : 23-Jan-2009 09:41:04 AM  
End Time : 23-Jan-2009 10:08:54 AM  
Scanning Time : 1670 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n20 High Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Main  
Orientation : Touch  
Power Drift-Start : 0.214 W/kg  
Power Drift-Finish: 0.221 W/kg  
Power Drift (%) : 3.373

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 23-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.81 F/m  
Sigma : 5.42 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

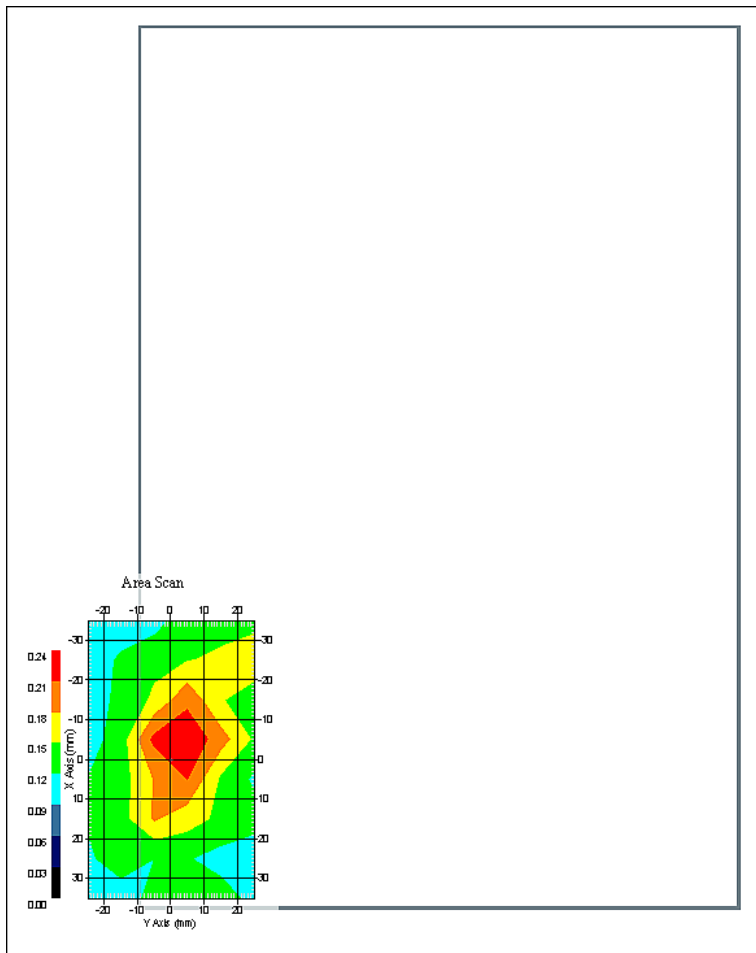
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 23-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.184 W/kg  
10 gram SAR value : 0.124 W/kg  
Area Scan Peak SAR : 0.237 W/kg  
Zoom Scan Peak SAR : 0.290 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 29-Jan-2009  
Starting Time : 29-Jan-2009 01:35:32 PM  
End Time : 29-Jan-2009 02:03:13 PM  
Scanning Time : 1661 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n20 High Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Aux  
Orientation : Touch  
Power Drift-Start : 0.233 W/kg  
Power Drift-Finish: 0.230 W/kg  
Power Drift (%) : -0.975

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 29-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 49.05 F/m  
Sigma : 5.41 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

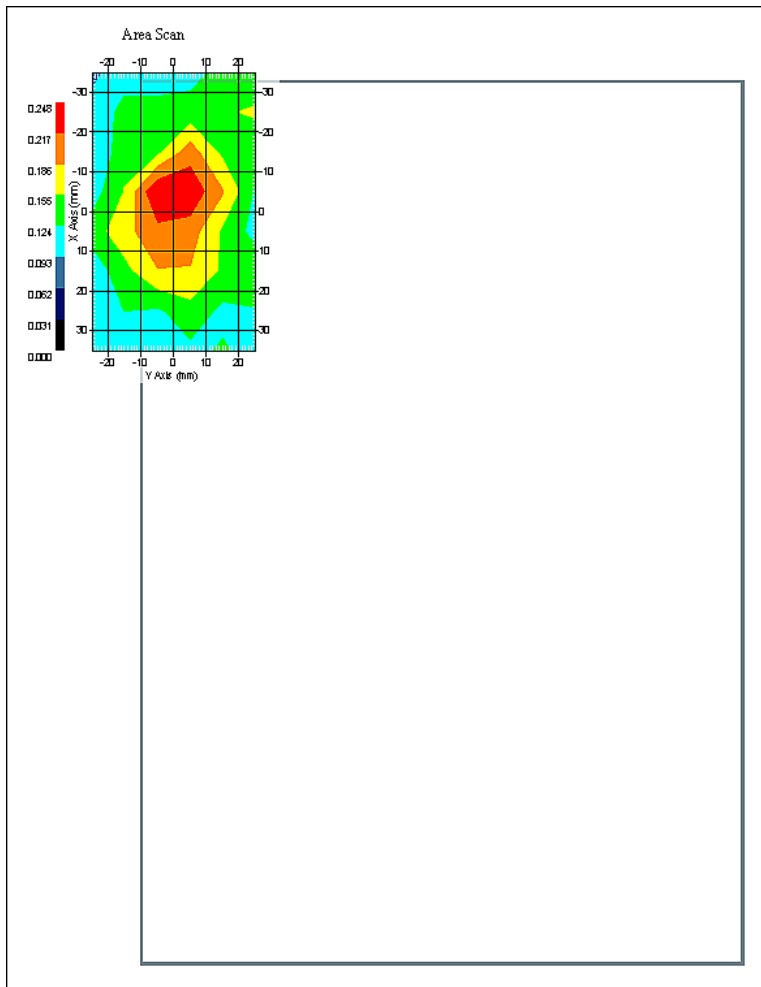
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 29-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.185 W/kg  
10 gram SAR value : 0.123 W/kg  
Area Scan Peak SAR : 0.246 W/kg  
Zoom Scan Peak SAR : 0.310 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 23-Jan-2009  
Starting Time : 23-Jan-2009 12:56:05 PM  
End Time : 23-Jan-2009 01:23:41 PM  
Scanning Time : 1656 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n20 High Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Aux  
Orientation : Touch  
Power Drift-Start : 0.234 W/kg  
Power Drift-Finish: 0.231 W/kg  
Power Drift (%) : -1.326

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 23-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.81 F/m  
Sigma : 5.42 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

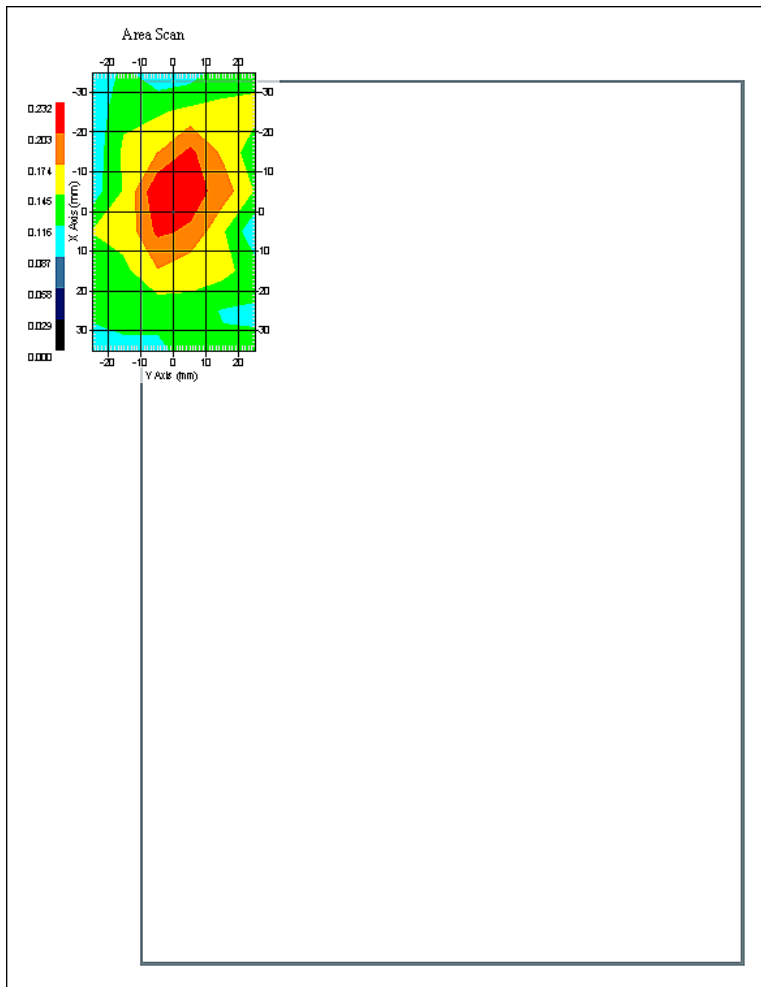
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 23-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.192 W/kg  
10 gram SAR value : 0.124 W/kg  
Area Scan Peak SAR : 0.228 W/kg  
Zoom Scan Peak SAR : 0.310 W/kg



## SAR Test Report

By Operator : Jay  
Measurement Date : 29-Jan-2009  
Starting Time : 29-Jan-2009 10:51:12 AM  
End Time : 29-Jan-2009 11:18:51 AM  
Scanning Time : 1659 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n40 Low Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Main  
Orientation : Touch  
Power Drift-Start : 0.226 W/kg  
Power Drift-Finish: 0.228 W/kg  
Power Drift (%) : 0.818

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 29-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 49.05 F/m  
Sigma : 5.41 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

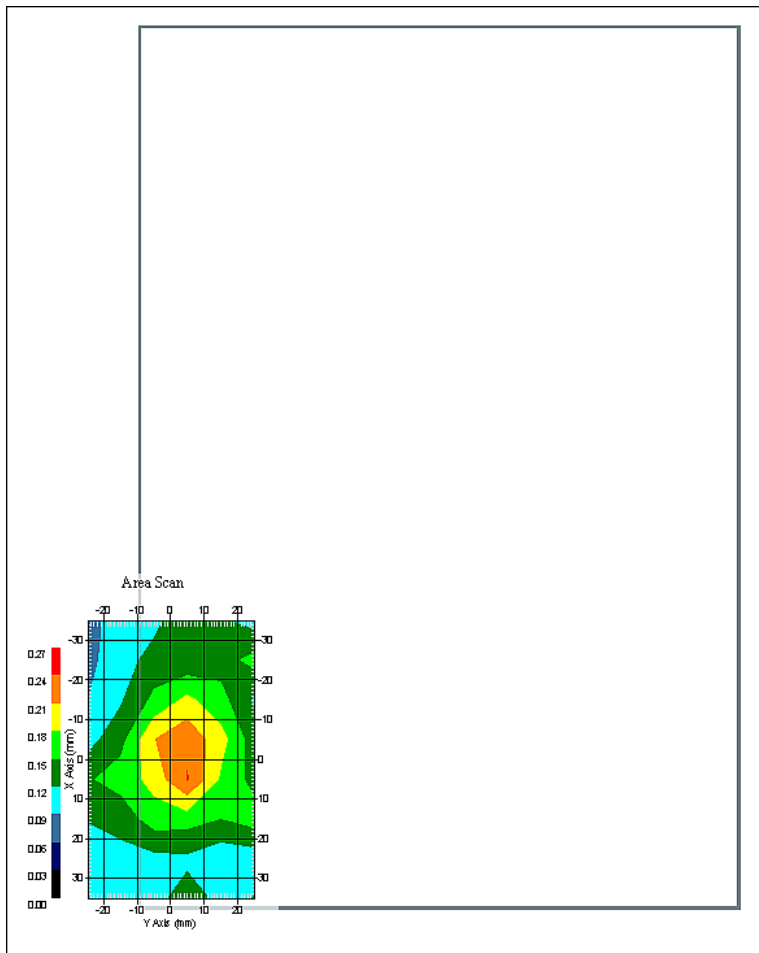
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 29-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : High



1 gram SAR value : 0.160 W/kg  
10 gram SAR value : 0.115 W/kg  
Area Scan Peak SAR : 0.242 W/kg  
Zoom Scan Peak SAR : 0.300 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 23-Jan-2009  
Starting Time : 23-Jan-2009 10:13:29 AM  
End Time : 23-Jan-2009 10:41:12 AM  
Scanning Time : 1663 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n40 Low Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Main  
Orientation : Touch  
Power Drift-Start : 0.228 W/kg  
Power Drift-Finish: 0.232 W/kg  
Power Drift (%) : 1.624

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 23-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.81 F/m  
Sigma : 5.42 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

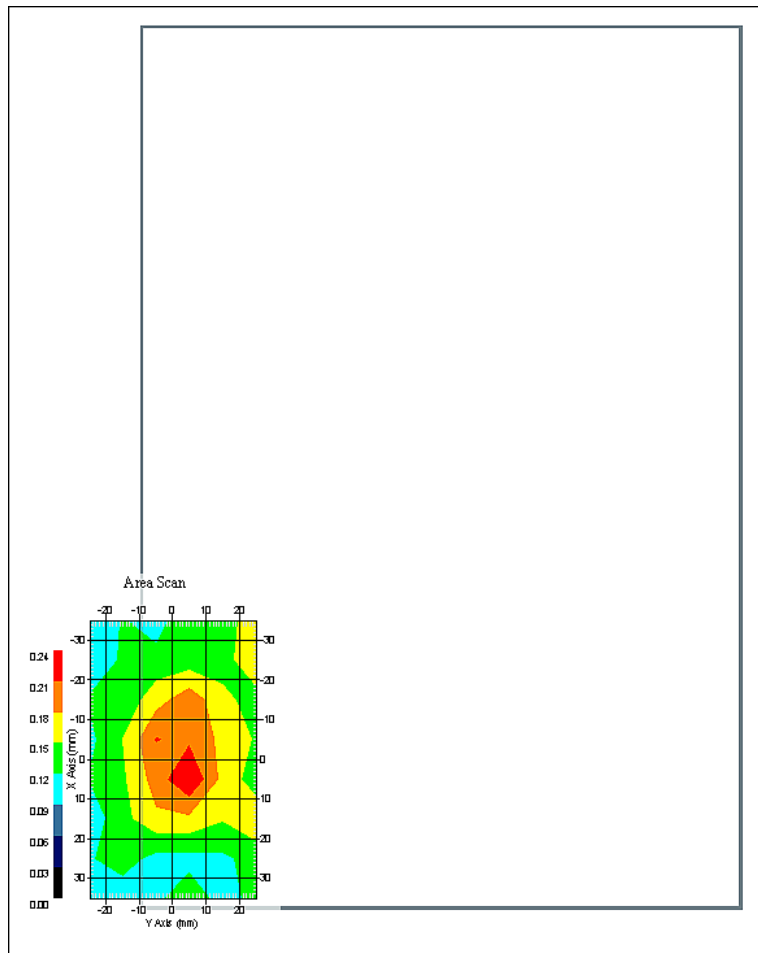
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 23-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : High



1 gram SAR value : 0.183 W/kg  
10 gram SAR value : 0.125 W/kg  
Area Scan Peak SAR : 0.238 W/kg  
Zoom Scan Peak SAR : 0.290 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 29-Jan-2009  
Starting Time : 29-Jan-2009 02:08:32 PM  
End Time : 29-Jan-2009 02:36:18 PM  
Scanning Time : 1666 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n40 Low Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Aux  
Orientation : Touch  
Power Drift-Start : 0.236 W/kg  
Power Drift-Finish: 0.231 W/kg  
Power Drift (%) : -2.443

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 29-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 49.05 F/m  
Sigma : 5.41 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

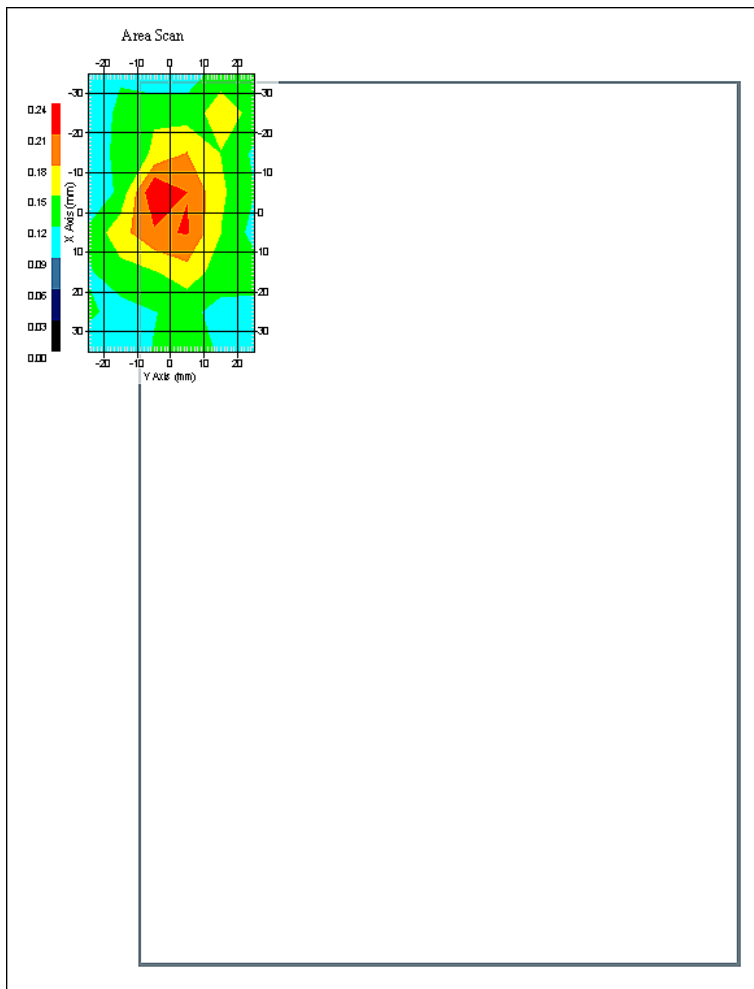
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 29-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : High



1 gram SAR value : 0.190 W/kg  
10 gram SAR value : 0.129 W/kg  
Area Scan Peak SAR : 0.239 W/kg  
Zoom Scan Peak SAR : 0.300 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 23-Jan-2009  
Starting Time : 23-Jan-2009 01:28:23 PM  
End Time : 23-Jan-2009 01:56:08 PM  
Scanning Time : 1665 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n40 Low Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Aux  
Orientation : Touch  
Power Drift-Start : 0.234 W/kg  
Power Drift-Finish: 0.230 W/kg  
Power Drift (%) : -1.411

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 23-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.81 F/m  
Sigma : 5.42 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

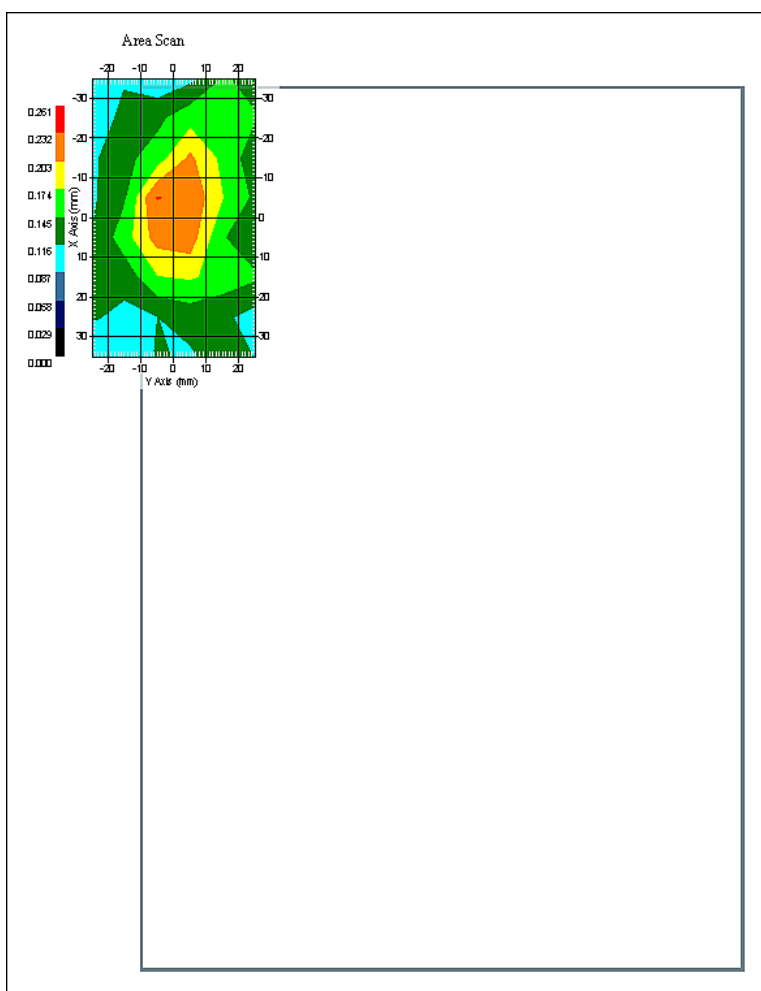
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 23-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : High



1 gram SAR value : 0.190 W/kg  
10 gram SAR value : 0.126 W/kg  
Area Scan Peak SAR : 0.233 W/kg  
Zoom Scan Peak SAR : 0.290 W/kg



## SAR Test Report

By Operator : Jay  
Measurement Date : 29-Jan-2009  
Starting Time : 29-Jan-2009 11:23:45 AM  
End Time : 29-Jan-2009 11:51:29 AM  
Scanning Time : 1664 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n40 High Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal  
Orientation : Touch  
Power Drift-Start : 0.228 W/kg  
Power Drift-Finish: 0.230 W/kg  
Power Drift (%) : 0.875

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 29-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 49.05 F/m  
Sigma : 5.41 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

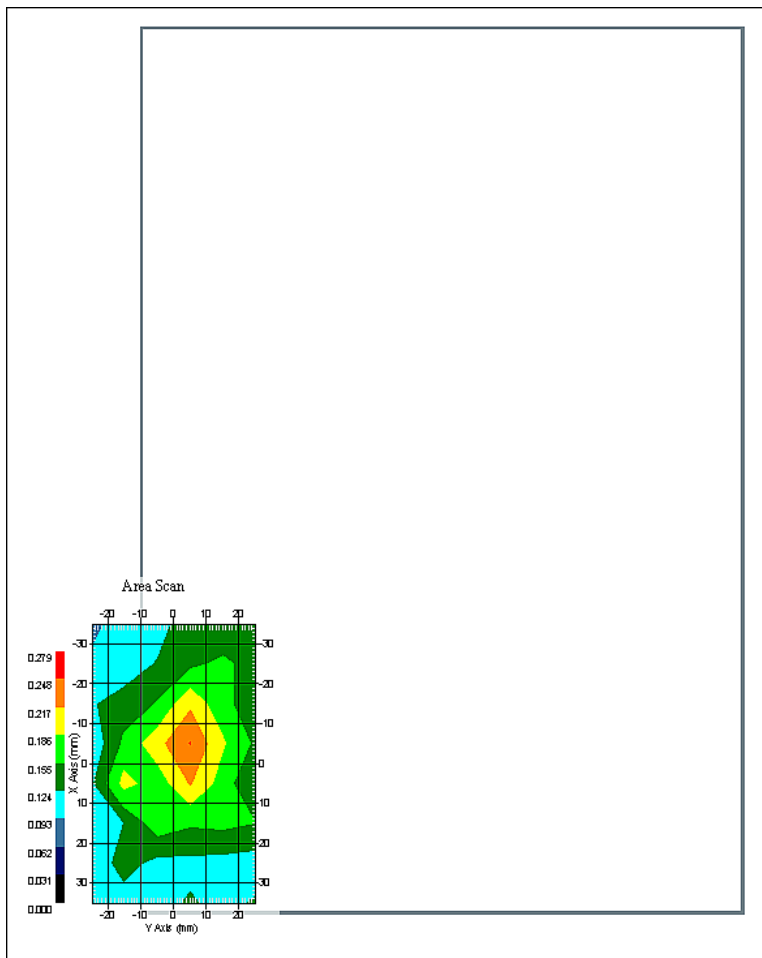
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 29-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Low



1 gram SAR value : 0.187 W/kg  
10 gram SAR value : 0.126 W/kg  
Area Scan Peak SAR : 0.249 W/kg  
Zoom Scan Peak SAR : 0.300 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 23-Jan-2009  
Starting Time : 23-Jan-2009 10:46:12 AM  
End Time : 23-Jan-2009 11:13:50 AM  
Scanning Time : 1658 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n40 High Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Main  
Orientation : Touch  
Power Drift-Start : 0.224 W/kg  
Power Drift-Finish: 0.226 W/kg  
Power Drift (%) : 1.016

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 23-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.81 F/m  
Sigma : 5.42 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

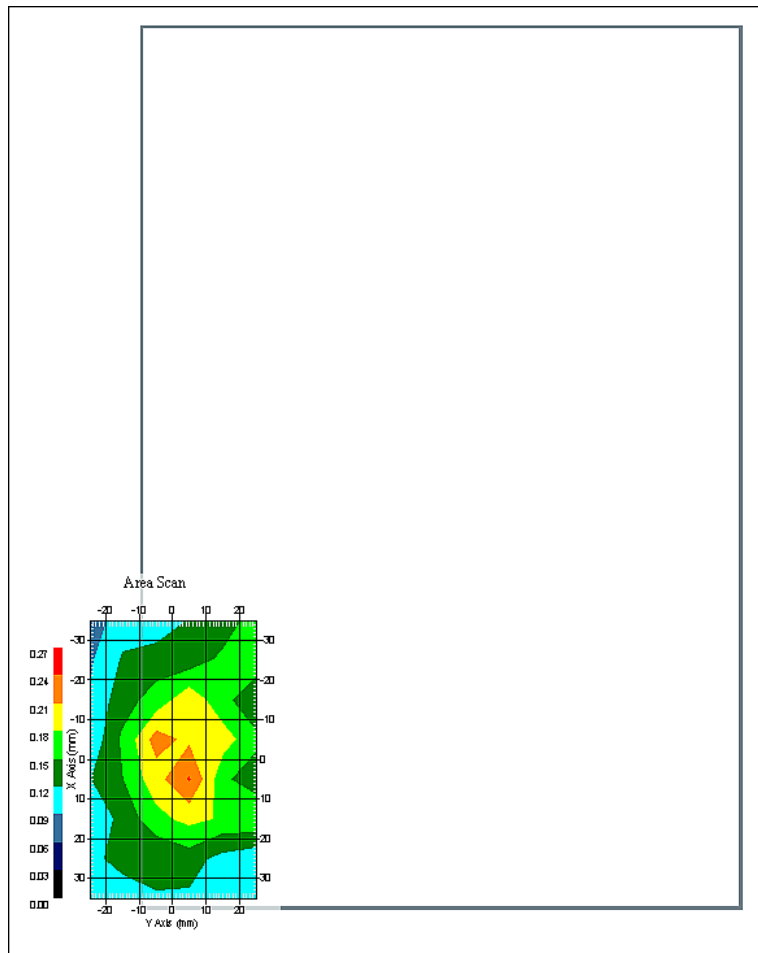
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 23-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Low



1 gram SAR value : 0.184 W/kg  
10 gram SAR value : 0.127 W/kg  
Area Scan Peak SAR : 0.242 W/kg  
Zoom Scan Peak SAR : 0.270 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 29-Jan-2009  
Starting Time : 29-Jan-2009 02:40:13 PM  
End Time : 29-Jan-2009 03:07:52 PM  
Scanning Time : 1659 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n40 High Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Aux  
Orientation : Touch  
Power Drift-Start : 0.234 W/kg  
Power Drift-Finish: 0.236 W/kg  
Power Drift (%) : 0.794

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 29-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 49.05 F/m  
Sigma : 5.41 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

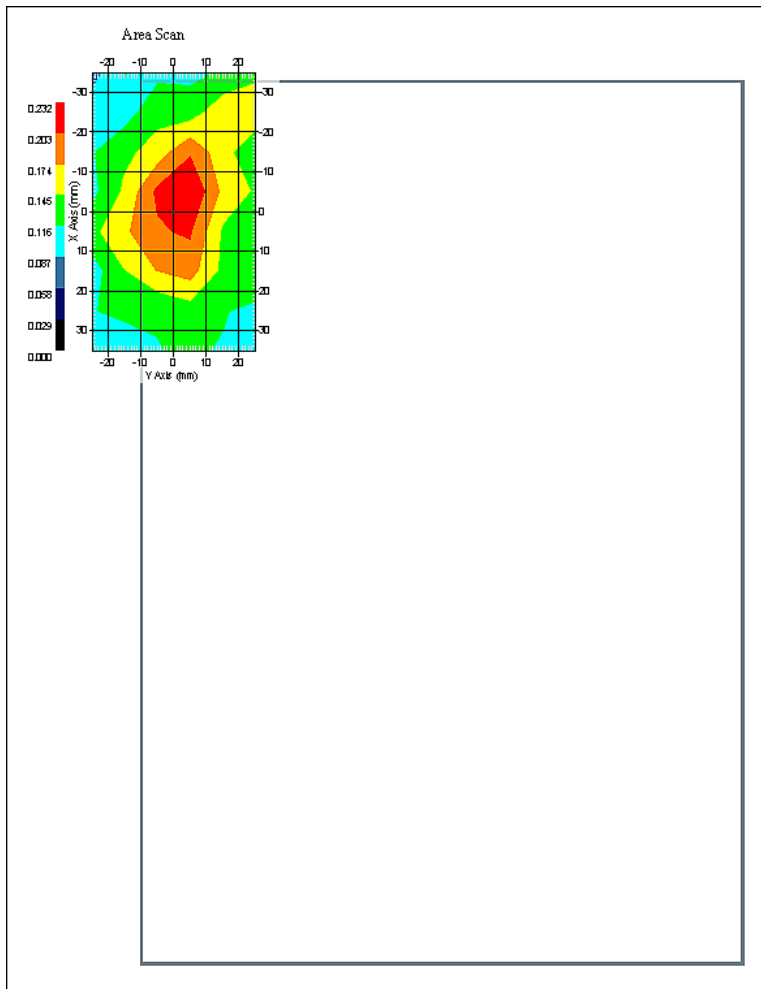
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 29-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Low



1 gram SAR value : 0.187 W/kg  
10 gram SAR value : 0.129 W/kg  
Area Scan Peak SAR : 0.231 W/kg  
Zoom Scan Peak SAR : 0.290 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 23-Jan-2009  
Starting Time : 23-Jan-2009 02:01:47 PM  
End Time : 23-Jan-2009 02:29:21 PM  
Scanning Time : 1654 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n40 High Band  
Model : E760 In Dell Inspiron 1010  
Frequency : 5250.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Aux  
Orientation : Touch  
Power Drift-Start : 0.242 W/kg  
Power Drift-Finish: 0.239 W/kg  
Power Drift (%) : -1.192

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 23-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.81 F/m  
Sigma : 5.42 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

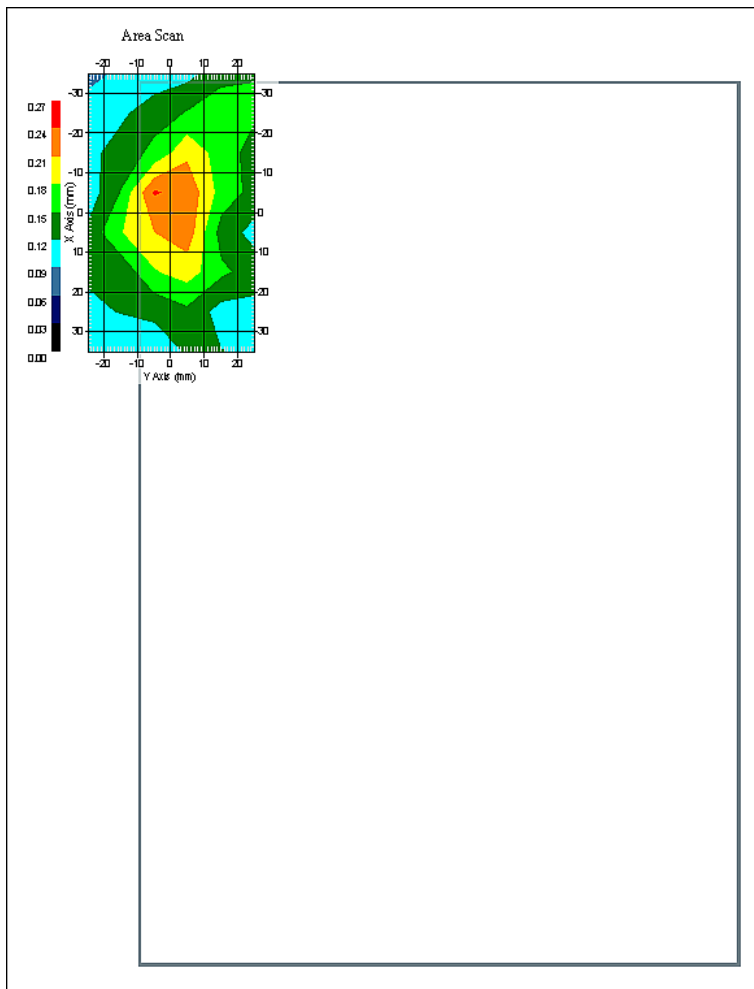
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 8.6  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 23-Jan-2009  
Set-up Time : 7:51:10 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Low



1 gram SAR value : 0.199 W/kg  
10 gram SAR value : 0.132 W/kg  
Area Scan Peak SAR : 0.242 W/kg  
Zoom Scan Peak SAR : 0.330 W/kg



## SAR Test Report

By Operator : Jay  
Measurement Date : 26-Jan-2009  
Starting Time : 26-Jan-2009 07:38:25 AM  
End Time : 26-Jan-2009 08:05:44 AM  
Scanning Time : 1639 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 a Legacy  
Model : E760 In Dell Inspiron 1010  
Frequency : 5600.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Main  
Orientation : Touch  
Power Drift-Start : 0.290 W/kg  
Power Drift-Finish: 0.288 W/kg  
Power Drift (%) : -0.685

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5600  
Frequency : 5600.00 MHz  
Last Calib. Date : 26-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.66 F/m  
Sigma : 5.62 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

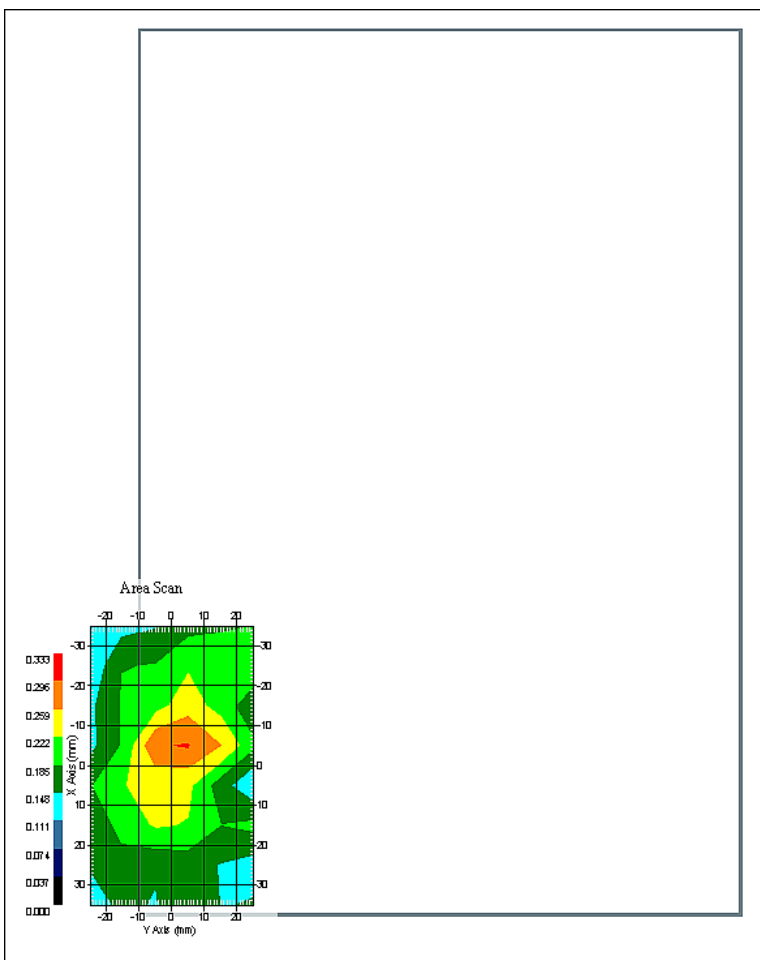
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.1  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 26-Jan-2009  
Set-up Time : 9:42:15 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : High



1 gram SAR value : 0.232 W/kg  
10 gram SAR value : 0.162 W/kg  
Area Scan Peak SAR : 0.299 W/kg  
Zoom Scan Peak SAR : 0.420 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 22-Jan-2009  
Starting Time : 22-Jan-2009 03:31:54 PM  
End Time : 22-Jan-2009 04:09:11 PM  
Scanning Time : 1637 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 a Legacy  
Model : E760 In Dell Inspiron 1010  
Frequency : 5600.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Main  
Orientation : Touch  
Power Drift-Start : 0.309 W/kg  
Power Drift-Finish: 0.301 W/kg  
Power Drift (%) : -2.585

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5600  
Frequency : 5600.00 MHz  
Last Calib. Date : 22-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.37 F/m  
Sigma : 5.80 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

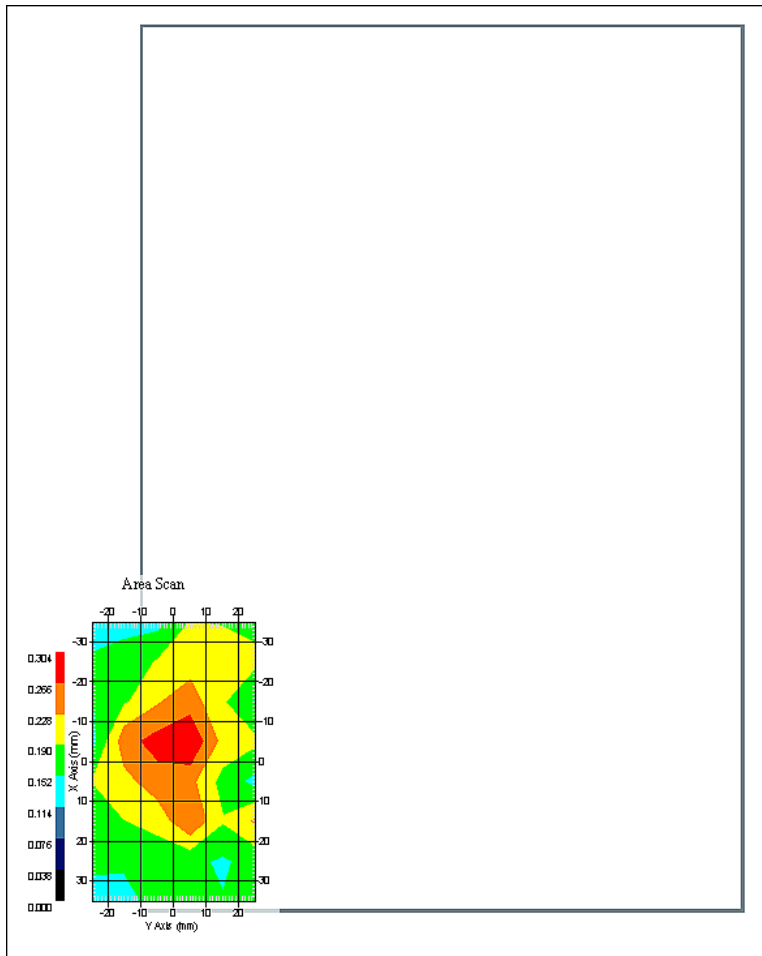
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.1  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 22-Jan-2009  
Set-up Time : 9:42:15 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : High



1 gram SAR value : 0.250 W/kg  
10 gram SAR value : 0.164 W/kg  
Area Scan Peak SAR : 0.302 W/kg  
Zoom Scan Peak SAR : 0.420 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 26-Jan-2009  
Starting Time : 26-Jan-2009 09:15:53 AM  
End Time : 26-Jan-2009 09:43:40 AM  
Scanning Time : 1667 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 a Legacy  
Model : E760 In Dell Inspiron 1010  
Frequency : 5600.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Aux  
Orientation : Touch  
Power Drift-Start : 0.266 W/kg  
Power Drift-Finish: 0.267 W/kg  
Power Drift (%) : 0.377

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5600  
Frequency : 5600.00 MHz  
Last Calib. Date : 26-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.66 F/m  
Sigma : 5.62 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

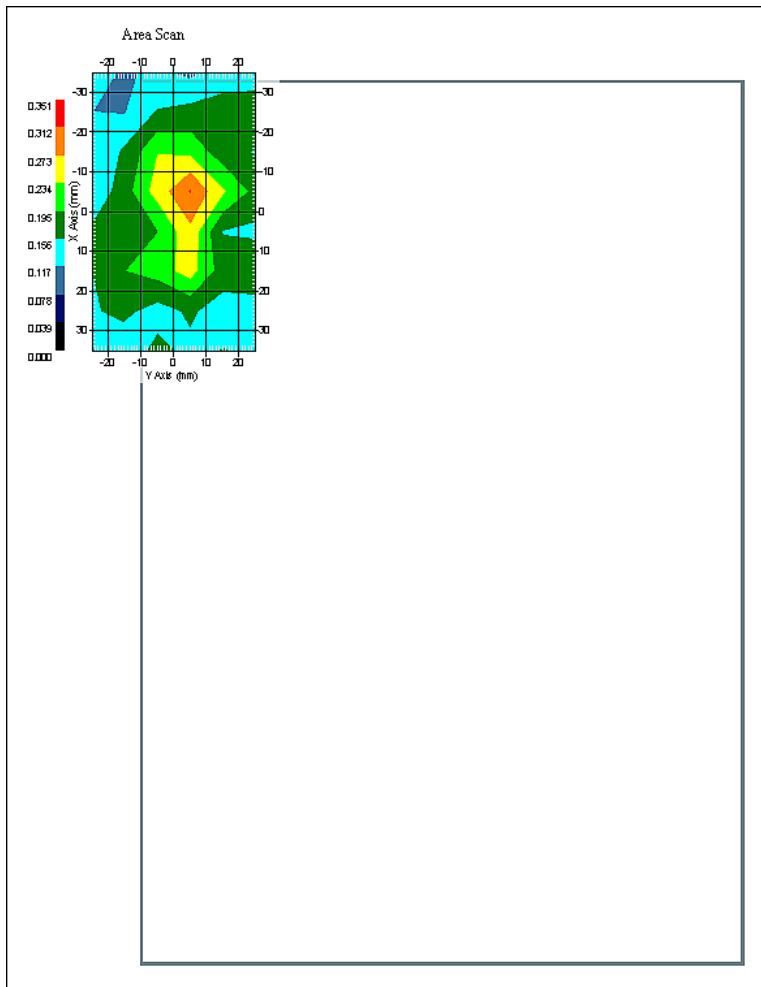
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.1  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 26-Jan-2009  
Set-up Time : 9:42:15 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : High



1 gram SAR value : 0.230 W/kg  
10 gram SAR value : 0.188 W/kg  
Area Scan Peak SAR : 0.314 W/kg  
Zoom Scan Peak SAR : 0.330 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 22-Jan-2009  
Starting Time : 22-Jan-2009 05:17:26 PM  
End Time : 22-Jan-2009 05:44:43 PM  
Scanning Time : 1637 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 a Legacy  
Model : E760 In Dell Inspiron 1010  
Frequency : 5600.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Aux  
Orientation : Touch  
Power Drift-Start : 0.332 W/kg  
Power Drift-Finish: 0.338 W/kg  
Power Drift (%) : 1.800

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5600  
Frequency : 5600.00 MHz  
Last Calib. Date : 22-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.37 F/m  
Sigma : 5.80 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

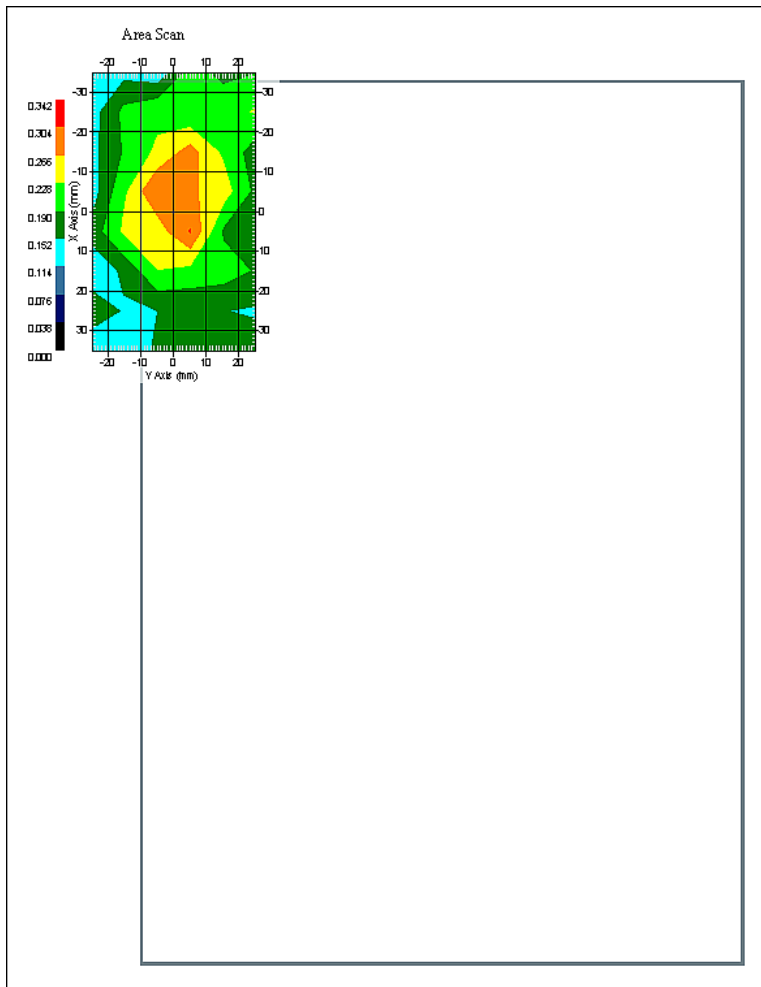
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.1  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 22-Jan-2009  
Set-up Time : 9:42:15 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

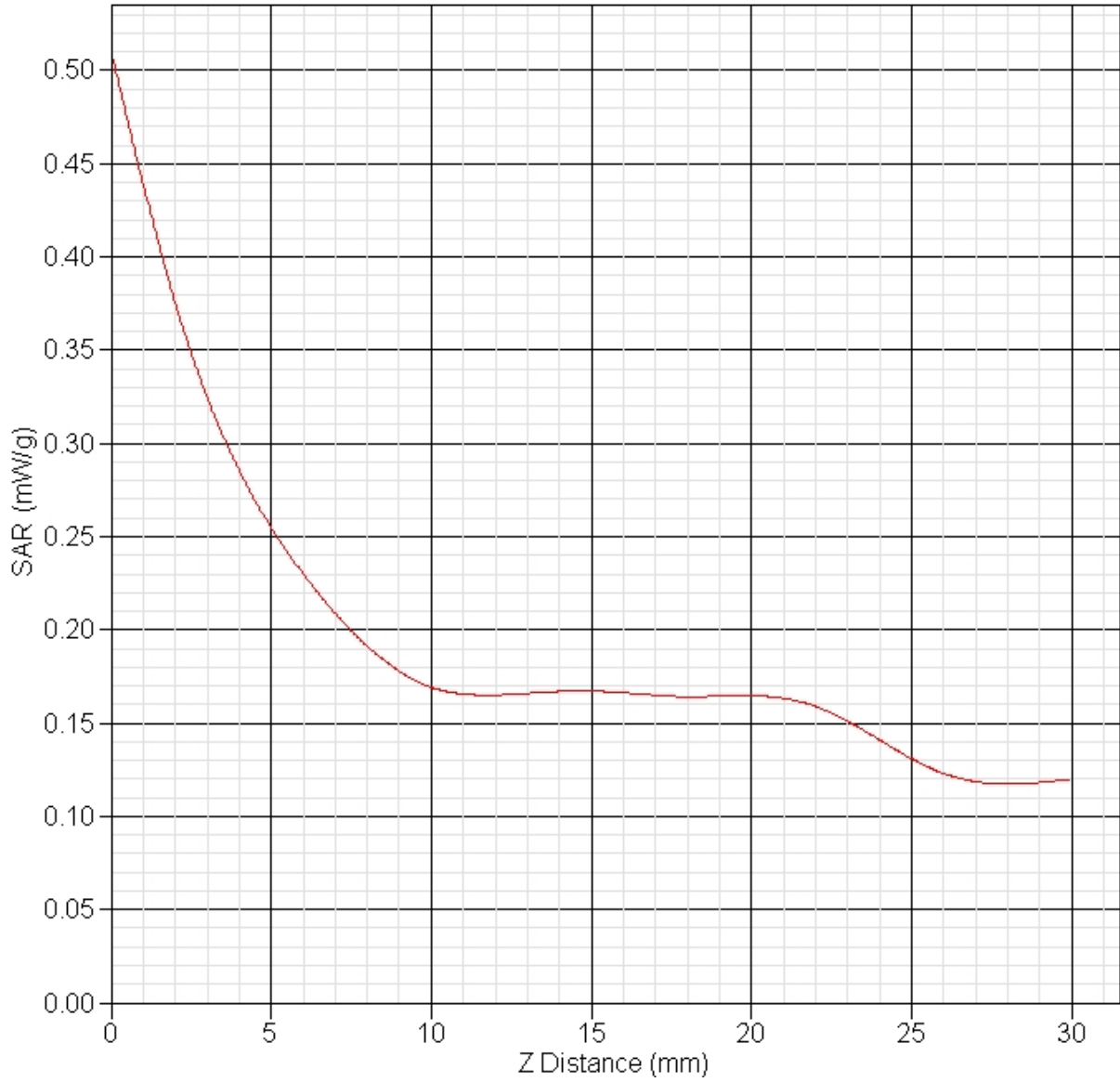
DUT Position : Touch  
Separation : 0  
Channel : High



1 gram SAR value : 0.308 W/kg  
10 gram SAR value : 0.197 W/kg  
Area Scan Peak SAR : 0.306 W/kg  
Zoom Scan Peak SAR : 0.510 W/kg



### SAR-Z Axis at Hotspot x:0.05 y:2.87



## SAR Test Report

By Operator : Jay  
Measurement Date : 26-Jan-2009  
Starting Time : 26-Jan-2009 08:10:27 AM  
End Time : 26-Jan-2009 08:37:48 AM  
Scanning Time : 1641 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n20  
Model : E760 In Dell Inspiron 1010  
Frequency : 5600.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Main  
Orientation : Touch  
Power Drift-Start : 0.287 W/kg  
Power Drift-Finish: 0.296 W/kg  
Power Drift (%) : 2.919

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5600  
Frequency : 5600.00 MHz  
Last Calib. Date : 26-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.66 F/m  
Sigma : 5.62 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

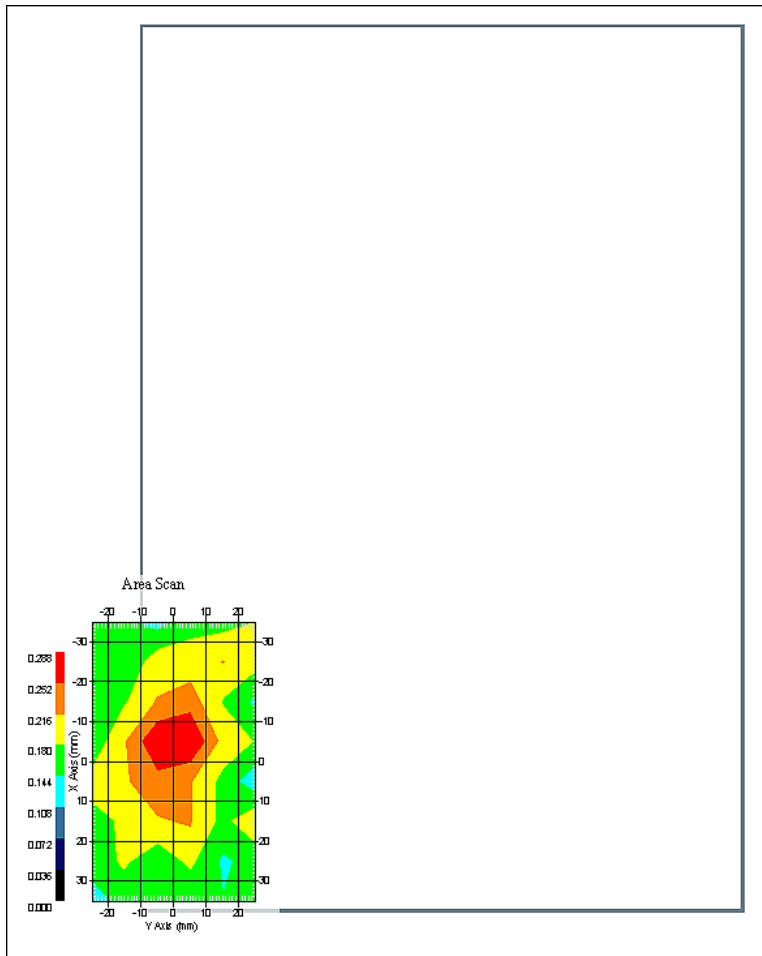
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.1  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 26-Jan-2009  
Set-up Time : 9:42:15 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.260 W/kg  
10 gram SAR value : 0.161 W/kg  
Area Scan Peak SAR : 0.288 W/kg  
Zoom Scan Peak SAR : 0.480 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 22-Jan-2009  
Starting Time : 22-Jan-2009 04:14:03 PM  
End Time : 22-Jan-2009 04:41:15 PM  
Scanning Time : 1632 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n20  
Model : E760 In Dell Inspiron 1010  
Frequency : 5600.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Main  
Orientation : Touch  
Power Drift-Start : 0.298 W/kg  
Power Drift-Finish: 0.296 W/kg  
Power Drift (%) : -0.676

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5600  
Frequency : 5600.00 MHz  
Last Calib. Date : 22-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.37 F/m  
Sigma : 5.80 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

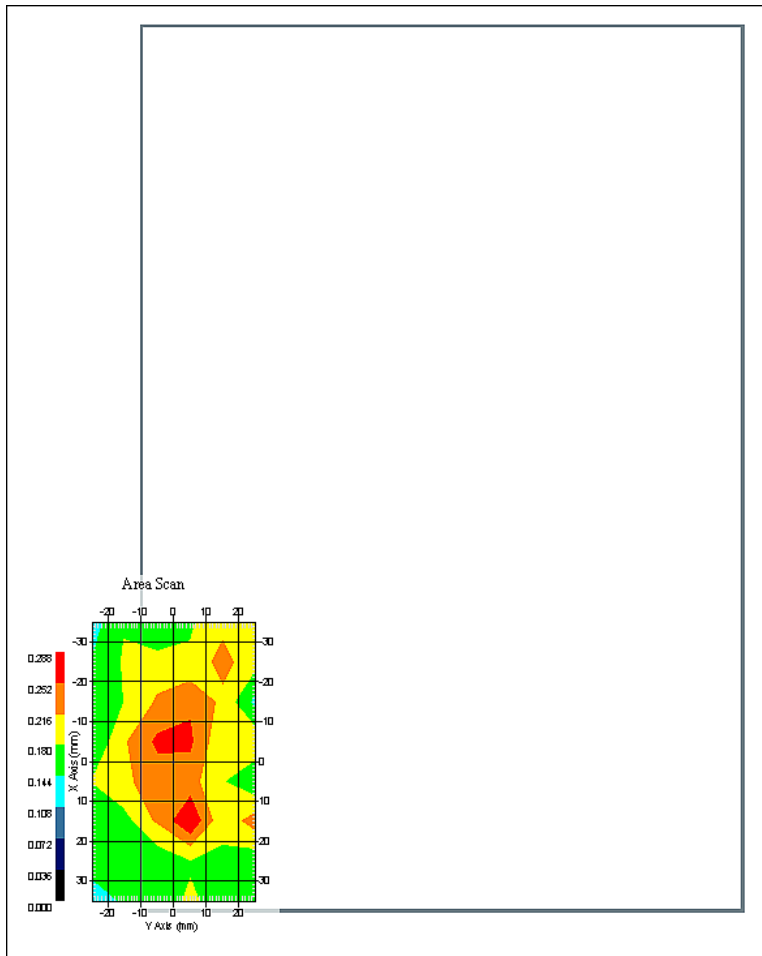
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.1  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 22-Jan-2009  
Set-up Time : 9:42:15 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.238 W/kg  
10 gram SAR value : 0.178 W/kg  
Area Scan Peak SAR : 0.285 W/kg  
Zoom Scan Peak SAR : 0.370 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 26-Jan-2009  
Starting Time : 26-Jan-2009 09:48:51 AM  
End Time : 26-Jan-2009 10:16:07 AM  
Scanning Time : 1636 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n20  
Model : E760 In Dell Inspiron 1010  
Frequency : 5600.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Aux  
Orientation : Touch  
Power Drift-Start : 0.287 W/kg  
Power Drift-Finish: 0.284 W/kg  
Power Drift (%) : -1.040

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5600  
Frequency : 5600.00 MHz  
Last Calib. Date : 26-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.66 F/m  
Sigma : 5.62 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

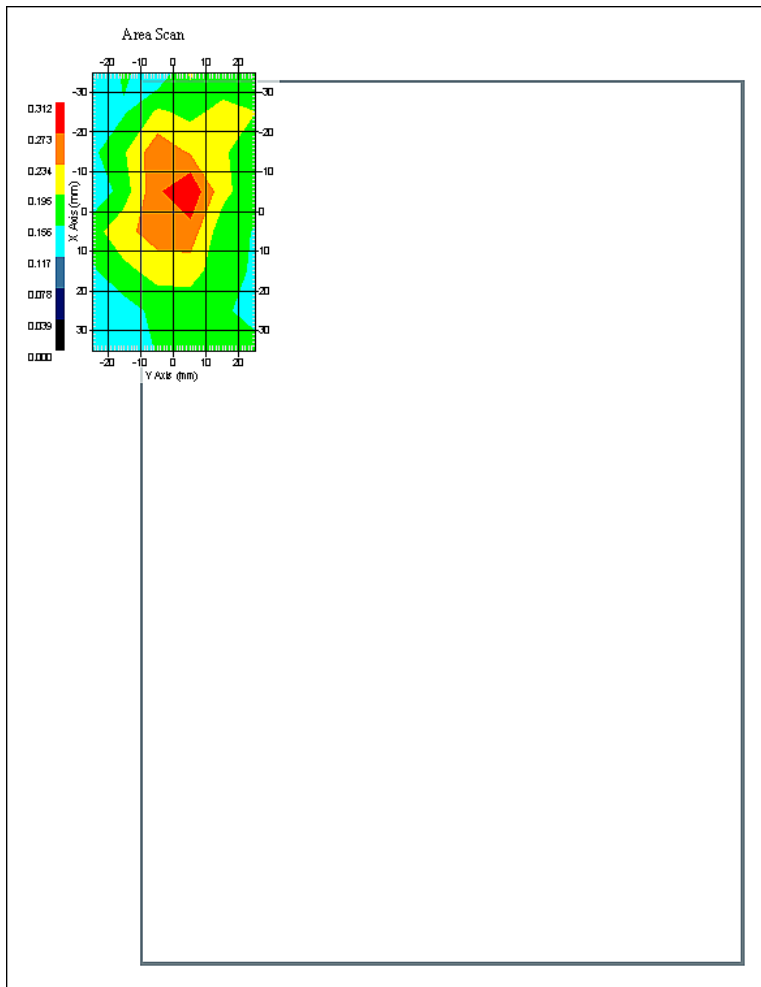
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.1  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 26-Jan-2009  
Set-up Time : 9:42:15 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.232 W/kg  
10 gram SAR value : 0.171 W/kg  
Area Scan Peak SAR : 0.309 W/kg  
Zoom Scan Peak SAR : 0.370 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 22-Jan-2009  
Starting Time : 22-Jan-2009 05:48:48 PM  
End Time : 22-Jan-2009 06:16:08 PM  
Scanning Time : 1640 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n20  
Model : E760 In Dell Inspiron 1010  
Frequency : 5600.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Aux  
Orientation : Touch  
Power Drift-Start : 0.267 W/kg  
Power Drift-Finish: 0.270 W/kg  
Power Drift (%) : 1.123

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5600  
Frequency : 5600.00 MHz  
Last Calib. Date : 22-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.37 F/m  
Sigma : 5.80 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.1  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

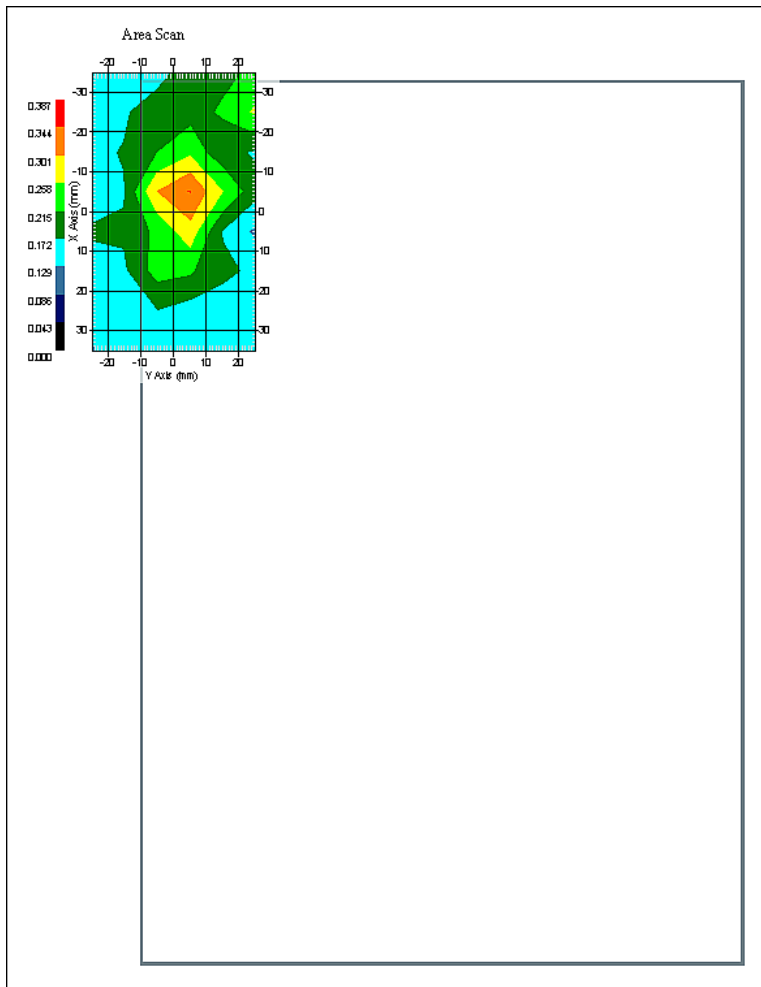


Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 22-Jan-2009  
Set-up Time : 9:42:15 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.185 W/kg  
10 gram SAR value : 0.152 W/kg  
Area Scan Peak SAR : 0.346 W/kg  
Zoom Scan Peak SAR : 0.310 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 26-Jan-2009  
Starting Time : 26-Jan-2009 08:42:52 PM  
End Time : 26-Jan-2009 09:10:06 PM  
Scanning Time : 1634 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n40  
Model : E760 In Dell Inspiron 1010  
Frequency : 5600.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Main  
Orientation : Touch  
Power Drift-Start : 0.252 W/kg  
Power Drift-Finish: 0.255 W/kg  
Power Drift (%) : 1.193

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5600  
Frequency : 5600.00 MHz  
Last Calib. Date : 26-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.66 F/m  
Sigma : 5.62 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

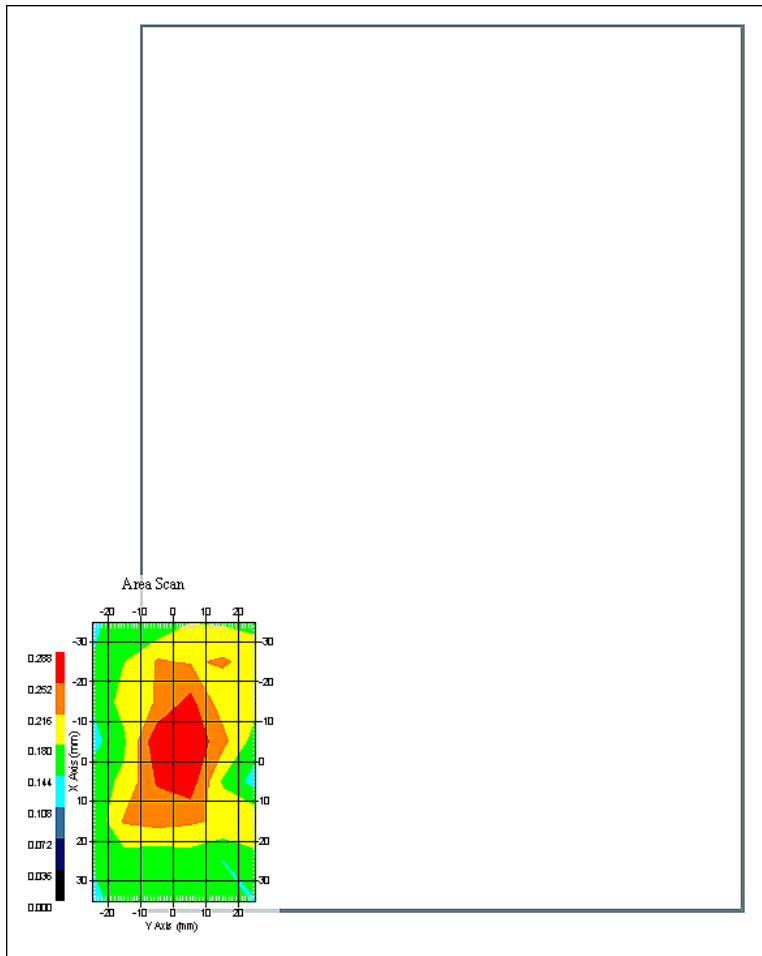
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.1  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 26-Jan-2009  
Set-up Time : 9:42:15 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.253 W/kg  
10 gram SAR value : 0.166 W/kg  
Area Scan Peak SAR : 0.285 W/kg  
Zoom Scan Peak SAR : 0.440 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 22-Jan-2009  
Starting Time : 22-Jan-2009 04:45:01 PM  
End Time : 22-Jan-2009 05:12:07 PM  
Scanning Time : 1626 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n40  
Model : E760 In Dell Inspiron 1010  
Frequency : 5600.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Main  
Orientation : Touch  
Power Drift-Start : 0.285 W/kg  
Power Drift-Finish: 0.292 W/kg  
Power Drift (%) : 2.458

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5600  
Frequency : 5600.00 MHz  
Last Calib. Date : 22-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.37 F/m  
Sigma : 5.80 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

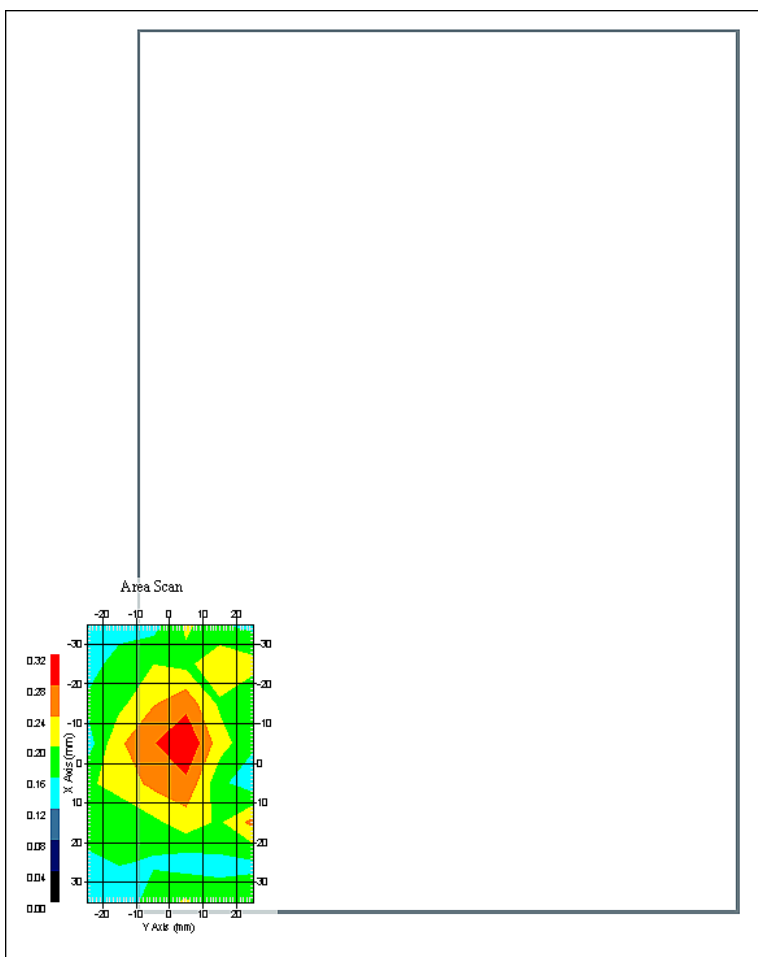
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.1  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 22-Jan-2009  
Set-up Time : 9:42:15 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.250 W/kg  
10 gram SAR value : 0.166 W/kg  
Area Scan Peak SAR : 0.316 W/kg  
Zoom Scan Peak SAR : 0.350 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 26-Jan-2009  
Starting Time : 26-Jan-2009 10:21:57 AM  
End Time : 26-Jan-2009 10:49:11 AM  
Scanning Time : 1634 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n40  
Model : E760 In Dell Inspiron 1010  
Frequency : 5600.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Aux  
Orientation : Touch  
Power Drift-Start : 0.275 W/kg  
Power Drift-Finish: 0.279 W/kg  
Power Drift (%) : 1.450

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5600  
Frequency : 5600.00 MHz  
Last Calib. Date : 26-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.66 F/m  
Sigma : 5.62 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

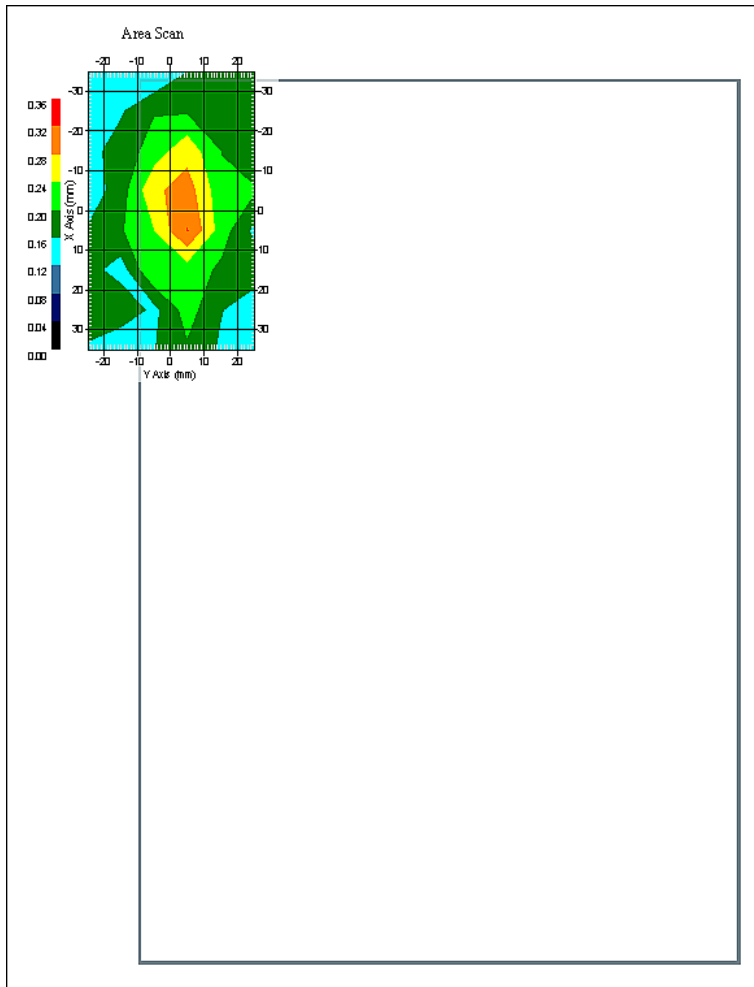
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.1  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 26-Jan-2009  
Set-up Time : 9:42:15 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.261 W/kg  
10 gram SAR value : 0.180 W/kg  
Area Scan Peak SAR : 0.321 W/kg  
Zoom Scan Peak SAR : 0.410 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 22-Jan-2009  
Starting Time : 22-Jan-2009 06:21:59 PM  
End Time : 22-Jan-2009 06:49:08 PM  
Scanning Time : 1629 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n40  
Model : E760 In Dell Inspiron 1010  
Frequency : 5600.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Aux  
Orientation : Touch  
Power Drift-Start : 0.268 W/kg  
Power Drift-Finish: 0.264 W/kg  
Power Drift (%) : -1.490

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5600  
Frequency : 5600.00 MHz  
Last Calib. Date : 22-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.37 F/m  
Sigma : 5.80 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.1  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

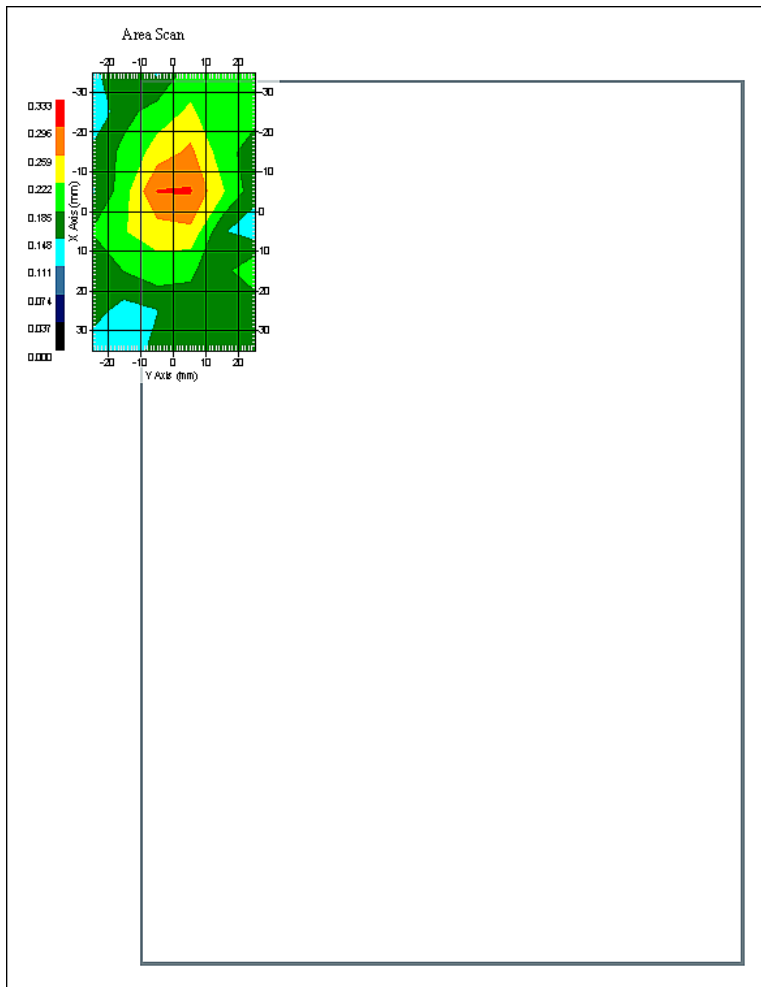


Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 22-Jan-2009  
Set-up Time : 9:42:15 AM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.224 W/kg  
10 gram SAR value : 0.158 W/kg  
Area Scan Peak SAR : 0.299 W/kg  
Zoom Scan Peak SAR : 0.380 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 26-Jan-2009  
Starting Time : 26-Jan-2009 11:50:18 AM  
End Time : 26-Jan-2009 12:17:28 PM  
Scanning Time : 1630 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 a Legacy  
Model : E760 In Dell Inspiron 1010  
Frequency : 5800.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Main  
Orientation : Touch  
Power Drift-Start : 0.157 W/kg  
Power Drift-Finish: 0.155 W/kg  
Power Drift (%) : -1.277

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5800  
Frequency : 5800.00 MHz  
Last Calib. Date : 26-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 49.89 F/m  
Sigma : 5.96 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

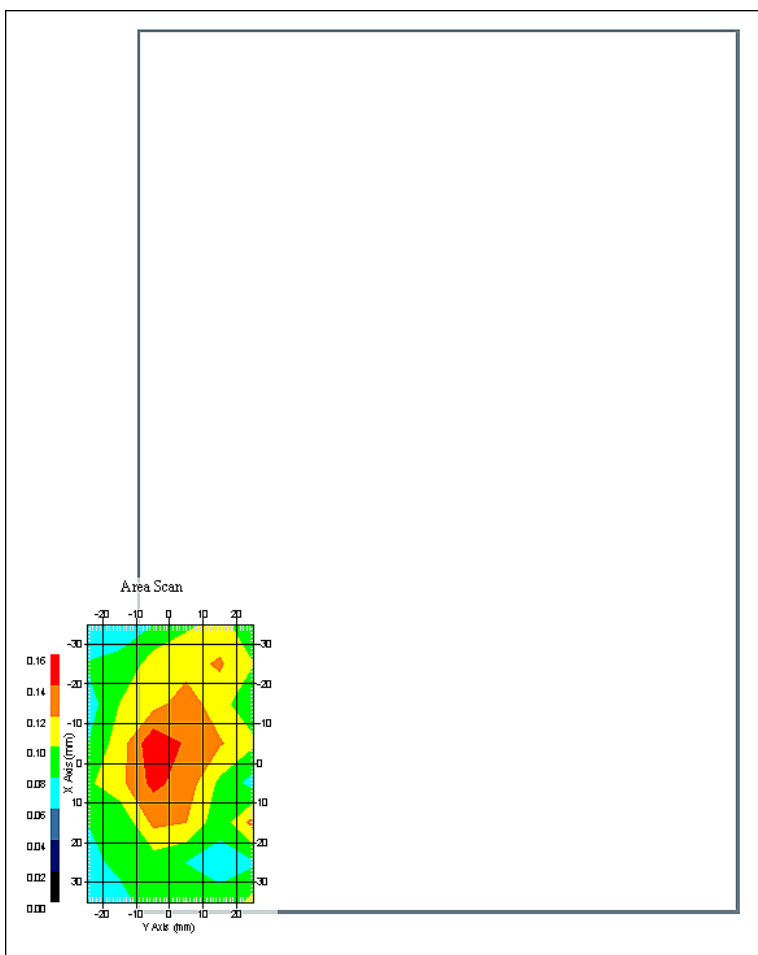
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 12  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 26-Jan-2009  
Set-up Time : 1:35:05 PM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : High



1 gram SAR value : 0.124 W/kg  
10 gram SAR value : 0.091 W/kg  
Area Scan Peak SAR : 0.156 W/kg  
Zoom Scan Peak SAR : 0.200 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 23-Jan-2009  
Starting Time : 23-Jan-2009 03:25:47 PM  
End Time : 23-Jan-2009 03:52:57 PM  
Scanning Time : 1630 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 a Legacy  
Model : E760 In Dell Inspiron 1010  
Frequency : 5800.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Main  
Orientation : Touch  
Power Drift-Start : 0.152 W/kg  
Power Drift-Finish: 0.150 W/kg  
Power Drift (%) : -1.317

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5800  
Frequency : 5800.00 MHz  
Last Calib. Date : 23-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.33 F/m  
Sigma : 5.97 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

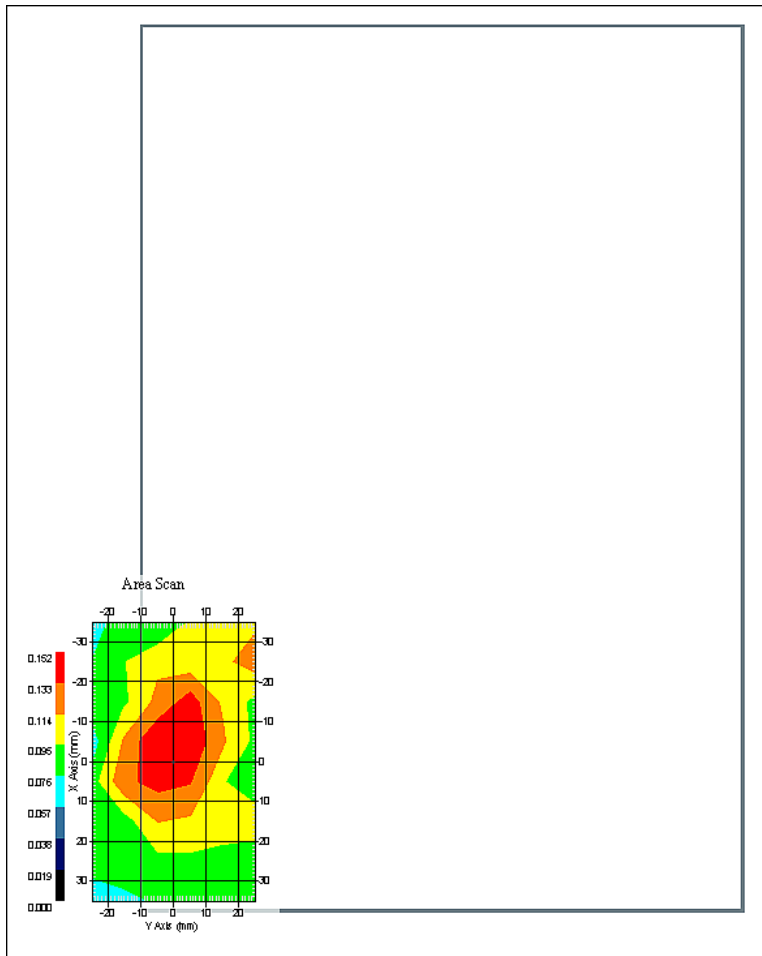
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 12  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 23-Jan-2009  
Set-up Time : 1:35:05 PM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : High



1 gram SAR value : 0.120 W/kg  
10 gram SAR value : 0.092 W/kg  
Area Scan Peak SAR : 0.152 W/kg  
Zoom Scan Peak SAR : 0.210 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 26-Jan-2009  
Starting Time : 26-Jan-2009 01:26:11 PM  
End Time : 26-Jan-2009 01:53:28 PM  
Scanning Time : 1637 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 a Legacy  
Model : E760 In Dell Inspiron 1010  
Frequency : 5800.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Aux  
Orientation : Touch  
Power Drift-Start : 0.160 W/kg  
Power Drift-Finish: 0.165 W/kg  
Power Drift (%) : 3.125

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5800  
Frequency : 5800.00 MHz  
Last Calib. Date : 26-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 49.89 F/m  
Sigma : 5.96 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

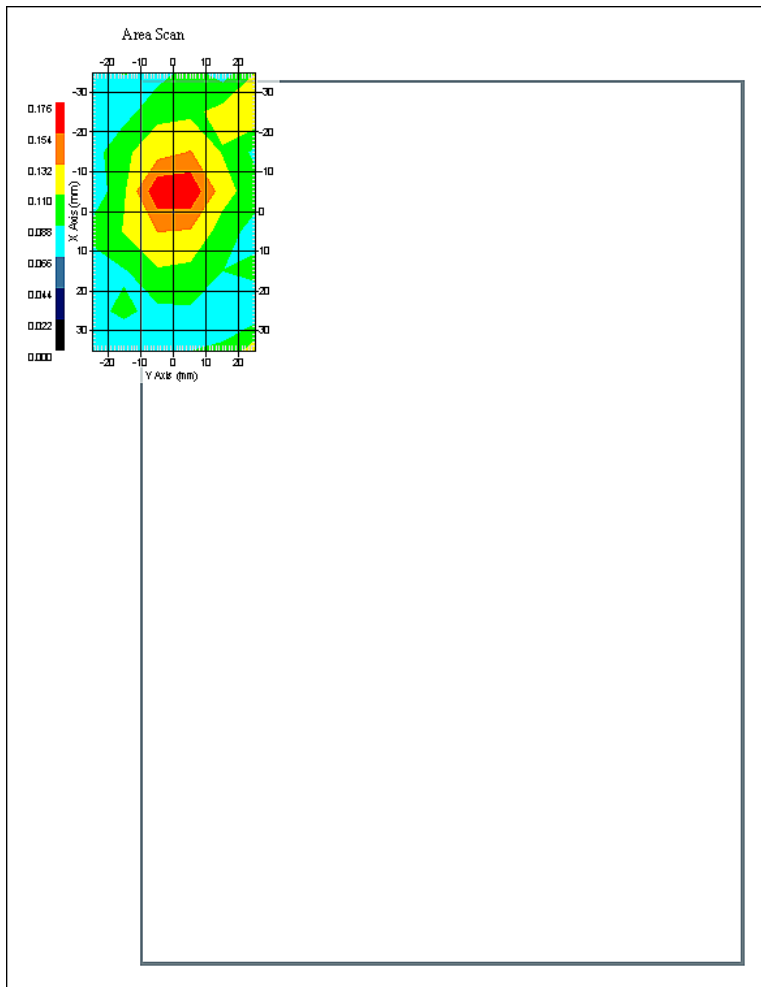
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 12  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 26-Jan-2009  
Set-up Time : 1:35:05 PM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : High



1 gram SAR value : 0.126 W/kg  
10 gram SAR value : 0.089 W/kg  
Area Scan Peak SAR : 0.172 W/kg  
Zoom Scan Peak SAR : 0.200 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 23-Jan-2009  
Starting Time : 23-Jan-2009 05:02:52 PM  
End Time : 23-Jan-2009 05:30:06 PM  
Scanning Time : 1634 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 a Legacy  
Model : E760 In Dell Inspiron 1010  
Frequency : 5800.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Aux  
Orientation : Touch  
Power Drift-Start : 0.175 W/kg  
Power Drift-Finish: 0.176 W/kg  
Power Drift (%) : 0.372

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5800  
Frequency : 5800.00 MHz  
Last Calib. Date : 23-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.33 F/m  
Sigma : 5.97 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 12  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

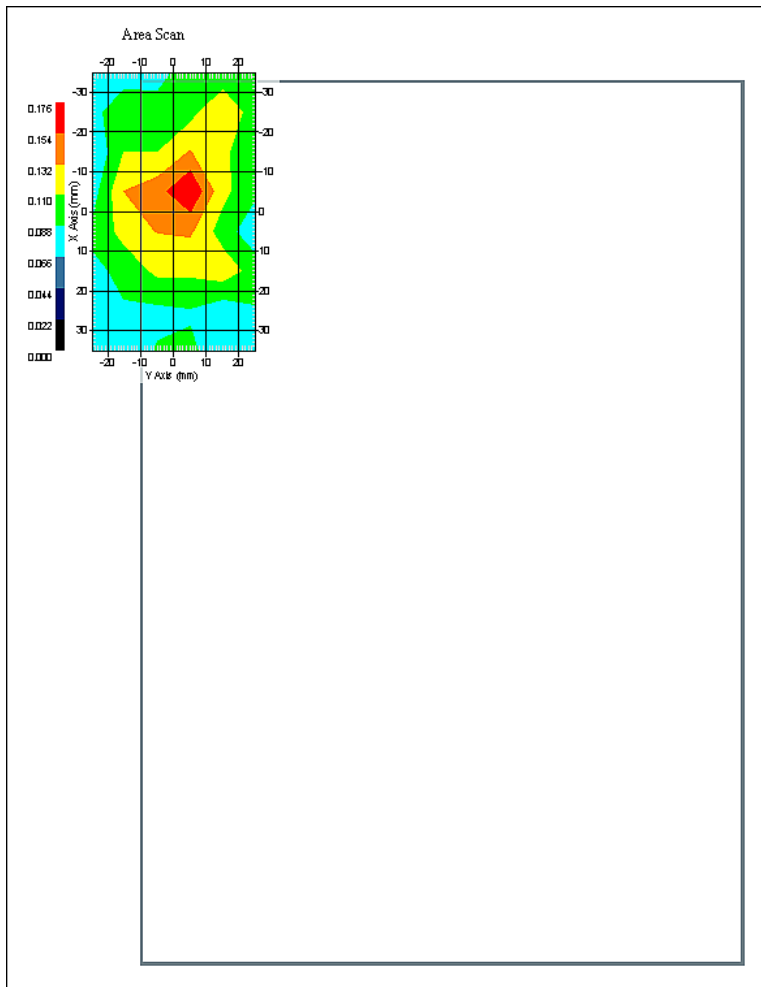


Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 23-Jan-2009  
Set-up Time : 1:35:05 PM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : High



1 gram SAR value : 0.136 W/kg  
10 gram SAR value : 0.100 W/kg  
Area Scan Peak SAR : 0.176 W/kg  
Zoom Scan Peak SAR : 0.190 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 26-Jan-2009  
Starting Time : 26-Jan-2009 12:22:25 PM  
End Time : 26-Jan-2009 12:49:38 PM  
Scanning Time : 1633 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n20  
Model : E760 In Dell Inspiron 1010  
Frequency : 5800.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Main  
Orientation : Touch  
Power Drift-Start : 0.169 W/kg  
Power Drift-Finish: 0.171 W/kg  
Power Drift (%) : 1.187

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5800  
Frequency : 5800.00 MHz  
Last Calib. Date : 26-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 49.89 F/m  
Sigma : 5.96 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

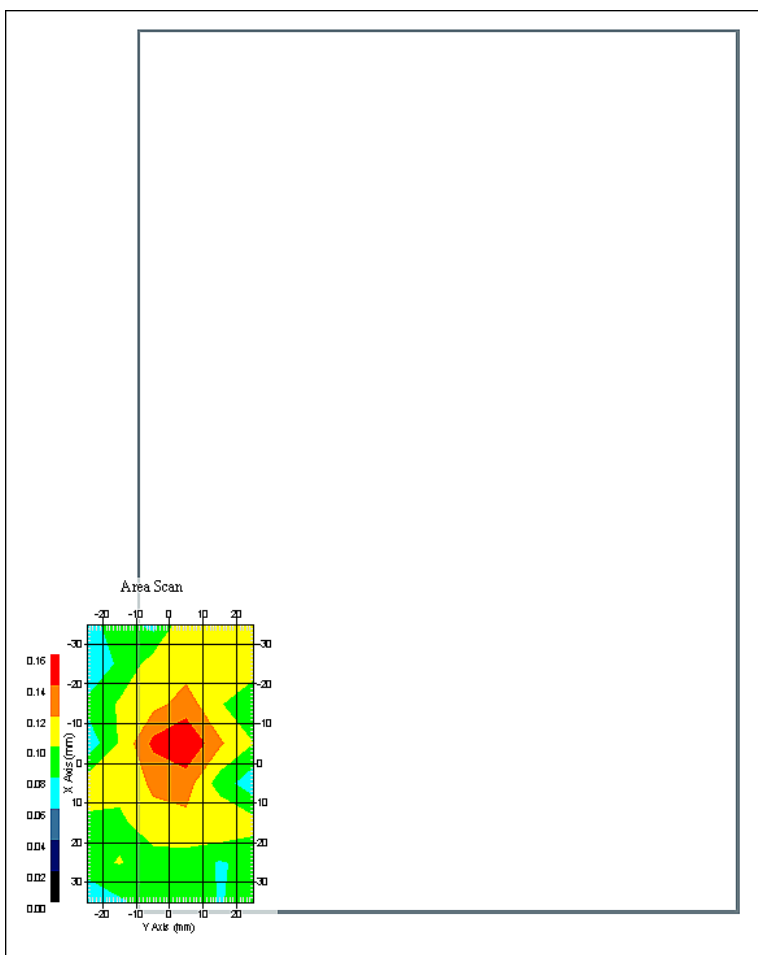
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 12  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 26-Jan-2009  
Set-up Time : 1:35:05 PM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Low



1 gram SAR value : 0.131 W/kg  
10 gram SAR value : 0.093 W/kg  
Area Scan Peak SAR : 0.159 W/kg  
Zoom Scan Peak SAR : 0.190 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 23-Jan-2009  
Starting Time : 23-Jan-2009 03:57:53 PM  
End Time : 23-Jan-2009 04:25:02 PM  
Scanning Time : 1629 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n20  
Model : E760 In Dell Inspiron 1010  
Frequency : 5800.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Main  
Orientation : Touch  
Power Drift-Start : 0.150 W/kg  
Power Drift-Finish: 0.151 W/kg  
Power Drift (%) : 0.667

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5800  
Frequency : 5800.00 MHz  
Last Calib. Date : 23-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.33 F/m  
Sigma : 5.97 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

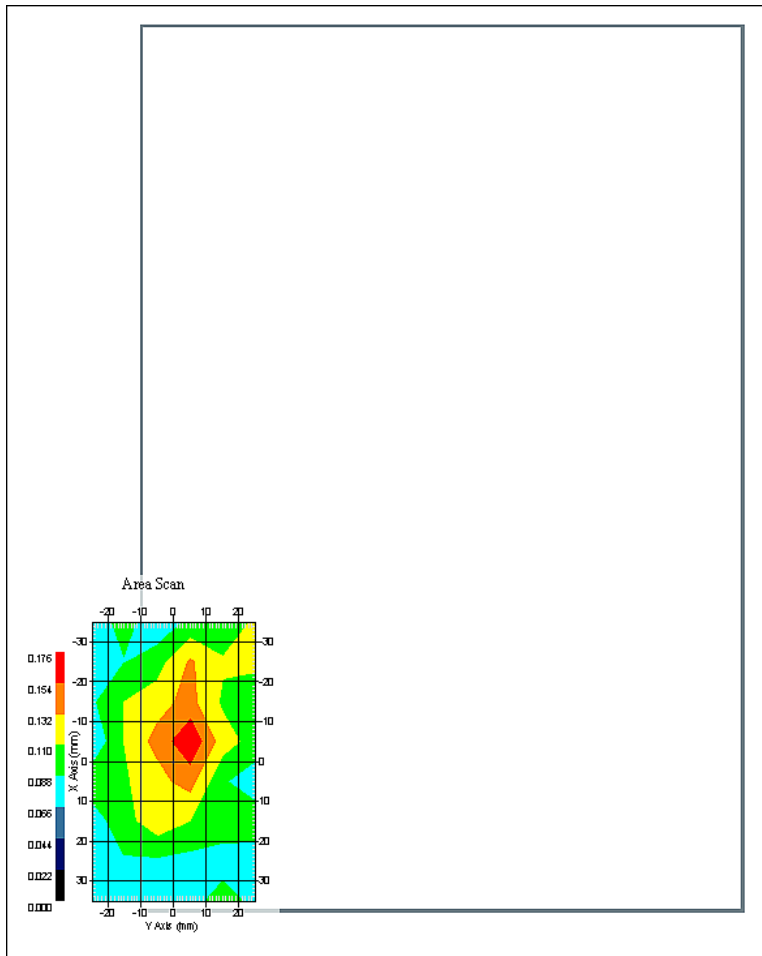
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 12  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 23-Jan-2009  
Set-up Time : 1:35:05 PM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Low



1 gram SAR value : 0.125 W/kg  
10 gram SAR value : 0.092 W/kg  
Area Scan Peak SAR : 0.173 W/kg  
Zoom Scan Peak SAR : 0.190 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 26-Jan-2009  
Starting Time : 26-Jan-2009 01:58:37 PM  
End Time : 26-Jan-2009 02:25:56 PM  
Scanning Time : 1639 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n20  
Model : E760 In Dell Inspiron 1010  
Frequency : 5800.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Aux  
Orientation : Touch  
Power Drift-Start : 0.149 W/kg  
Power Drift-Finish: 0.149 W/kg  
Power Drift (%) : 0.660

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5800  
Frequency : 5800.00 MHz  
Last Calib. Date : 26-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 49.89 F/m  
Sigma : 5.96 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

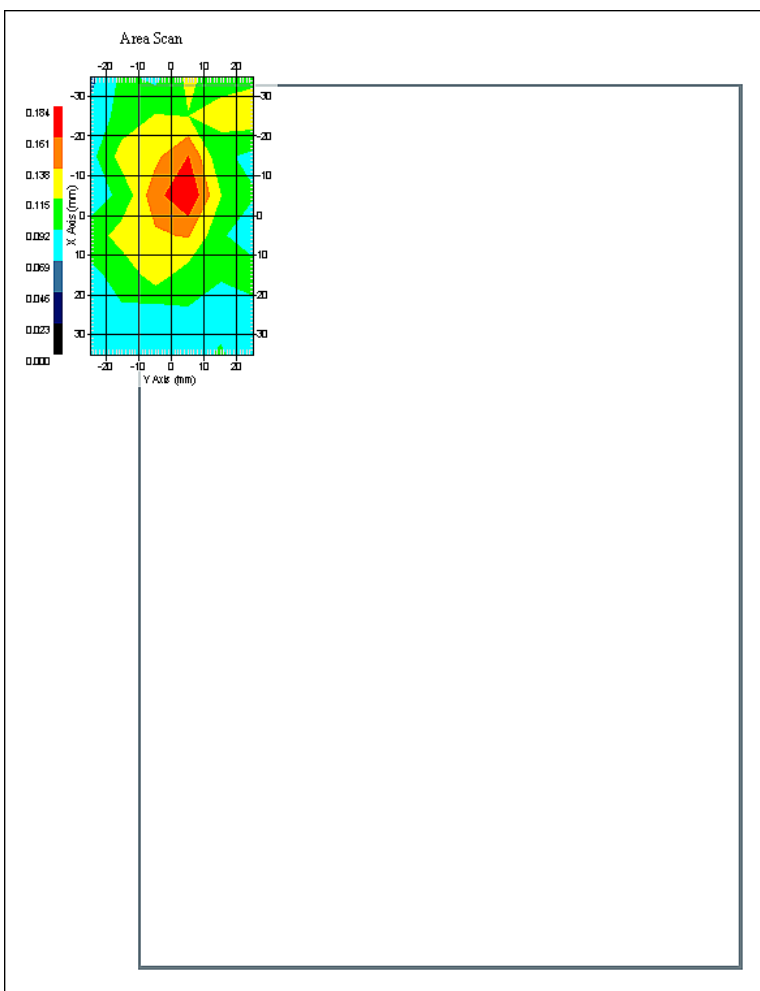
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 12  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 26-Jan-2009  
Set-up Time : 1:35:05 PM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Low



1 gram SAR value : 0.128 W/kg  
10 gram SAR value : 0.093 W/kg  
Area Scan Peak SAR : 0.184 W/kg  
Zoom Scan Peak SAR : 0.210 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 23-Jan-2009  
Starting Time : 23-Jan-2009 05:35:11 PM  
End Time : 23-Jan-2009 06:02:23 PM  
Scanning Time : 1632 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n20  
Model : E760 In Dell Inspiron 1010  
Frequency : 5800.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Aux  
Orientation : Touch  
Power Drift-Start : 0.163 W/kg  
Power Drift-Finish: 0.168 W/kg  
Power Drift (%) : 2.991

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5800  
Frequency : 5800.00 MHz  
Last Calib. Date : 23-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.33 F/m  
Sigma : 5.97 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 12  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

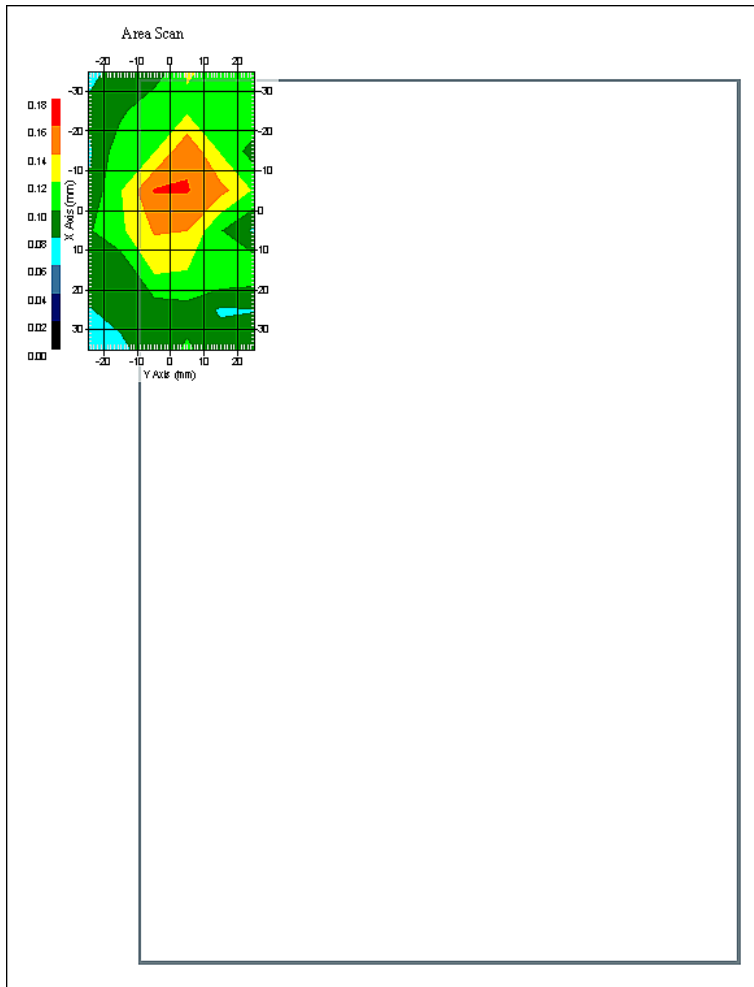


Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 23-Jan-2009  
Set-up Time : 1:35:05 PM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

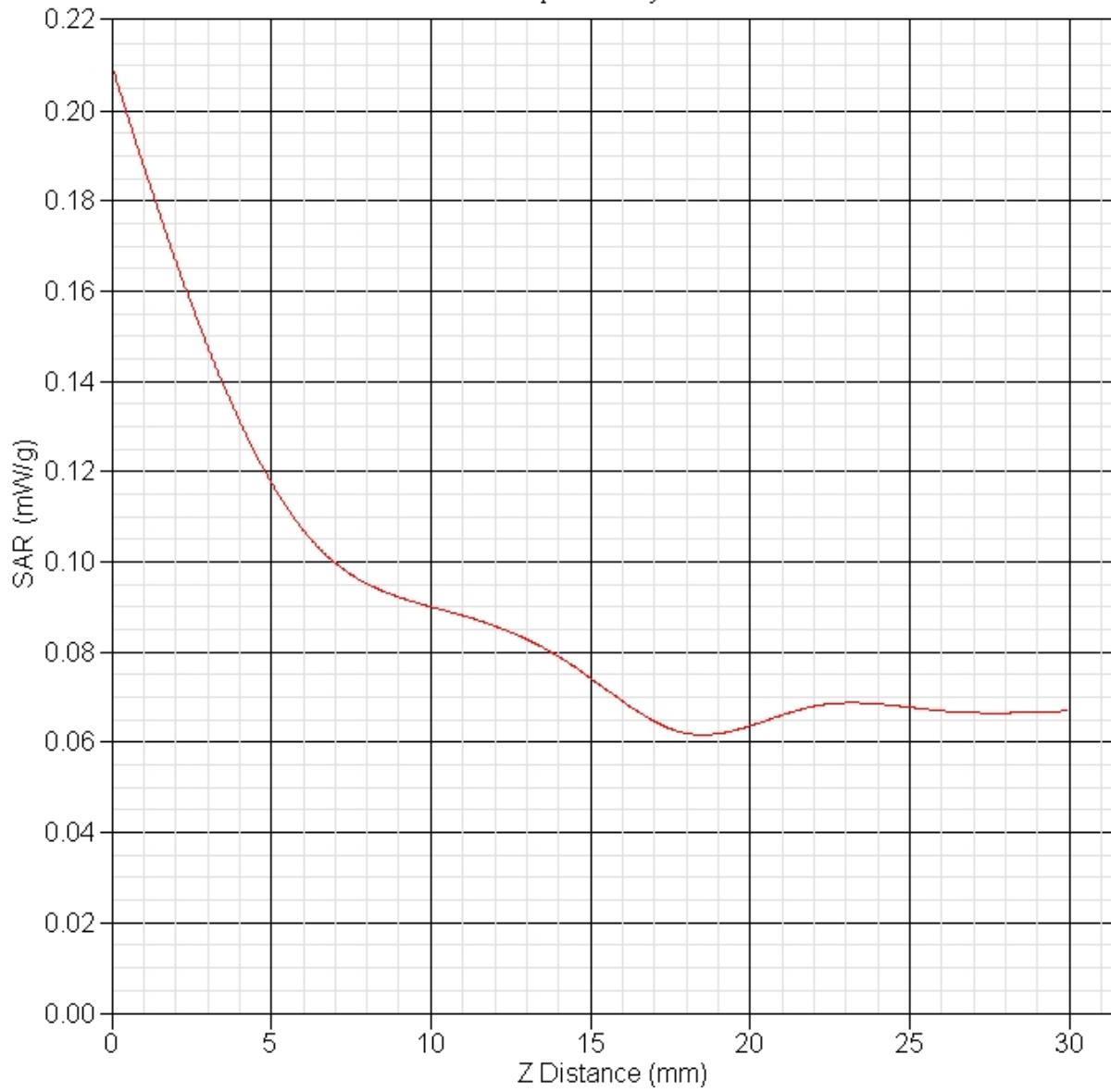
Other Data

DUT Position : Touch  
Separation : 0  
Channel : Low



1 gram SAR value : 0.142 W/kg  
10 gram SAR value : 0.100 W/kg  
Area Scan Peak SAR : 0.161 W/kg  
Zoom Scan Peak SAR : 0.210 W/kg

### SAR-Z Axis at Hotspot x:-7.93 y:2.86



## SAR Test Report

By Operator : Jay  
Measurement Date : 26-Jan-2009  
Starting Time : 26-Jan-2009 12:54:43 PM  
End Time : 26-Jan-2009 01:21:50 PM  
Scanning Time : 1627 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n40  
Model : E760 In Dell Inspiron 1010  
Frequency : 5800.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Main  
Orientation : Touch  
Power Drift-Start : 0.152 W/kg  
Power Drift-Finish: 0.157 W/kg  
Power Drift (%) : 3.289

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5800  
Frequency : 5800.00 MHz  
Last Calib. Date : 26-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 49.89 F/m  
Sigma : 5.96 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

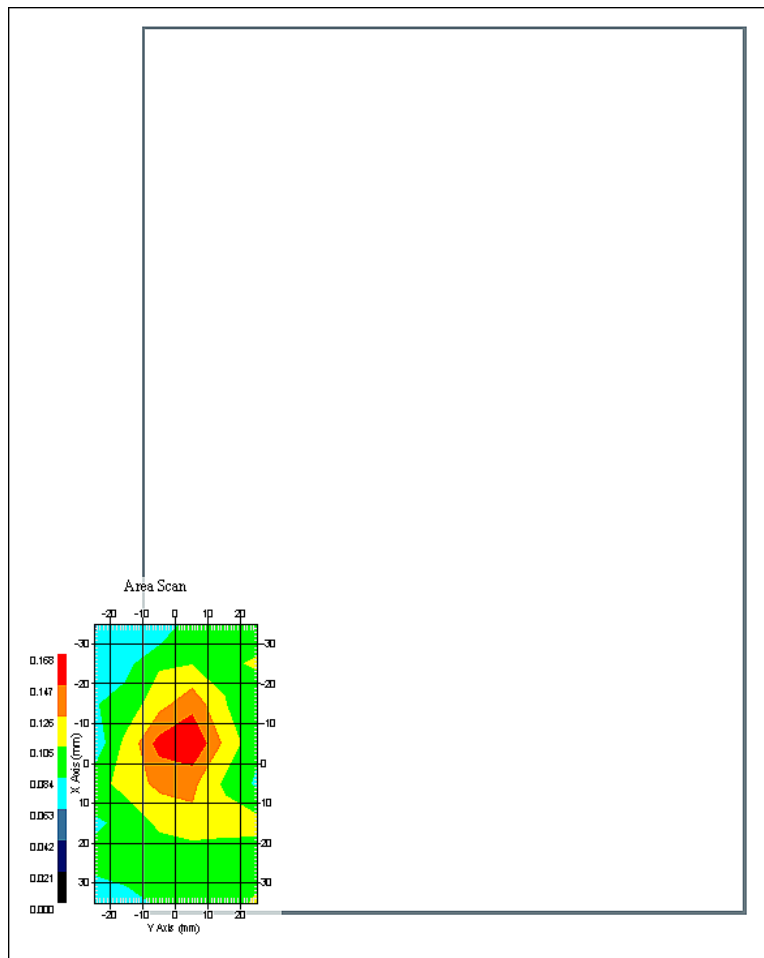
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 12  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 26-Jan-2009  
Set-up Time : 1:35:05 PM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Low



1 gram SAR value : 0.133 W/kg  
10 gram SAR value : 0.092 W/kg  
Area Scan Peak SAR : 0.166 W/kg  
Zoom Scan Peak SAR : 0.230 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 26-Jan-2009  
Starting Time : 26-Jan-2009 12:54:43 PM  
End Time : 26-Jan-2009 01:21:50 PM  
Scanning Time : 1627 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n40  
Model : E760 In Dell Inspiron 1010  
Frequency : 5800.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Main  
Orientation : Touch  
Power Drift-Start : 0.152 W/kg  
Power Drift-Finish: 0.157 W/kg  
Power Drift (%) : 3.289

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5800  
Frequency : 5800.00 MHz  
Last Calib. Date : 26-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 49.89 F/m  
Sigma : 5.96 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

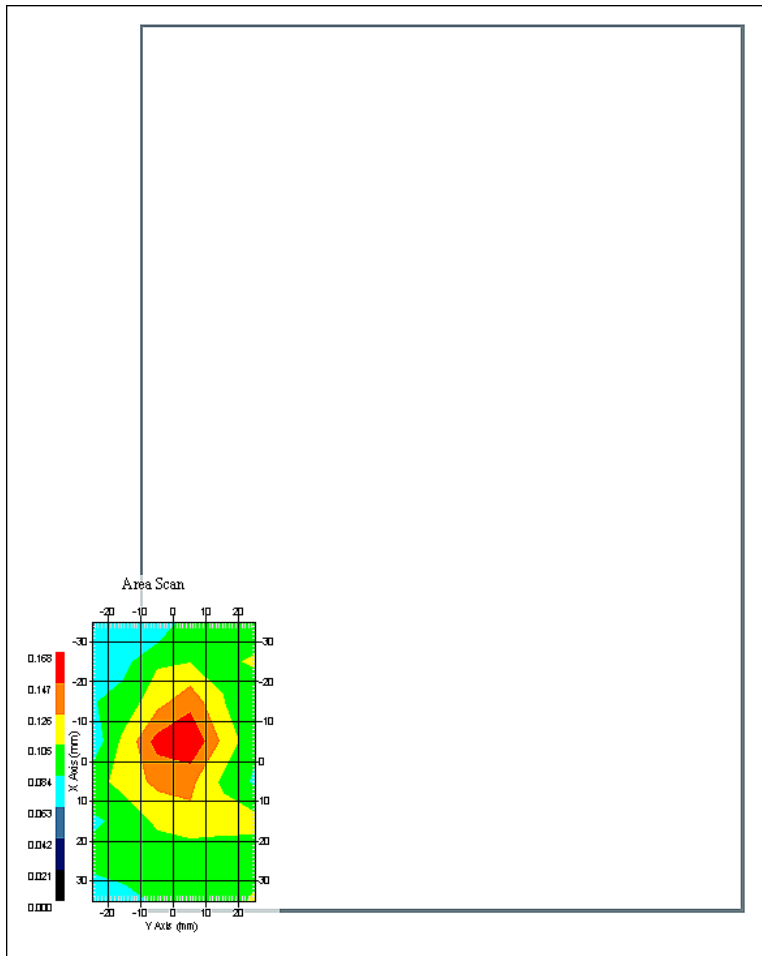
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 12  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 26-Jan-2009  
Set-up Time : 1:35:05 PM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Low



1 gram SAR value : 0.133 W/kg  
10 gram SAR value : 0.092 W/kg  
Area Scan Peak SAR : 0.166 W/kg  
Zoom Scan Peak SAR : 0.230 W/kg

## SAR Test Report

By Operator : Jay  
Measurement Date : 26-Jan-2009  
Starting Time : 26-Jan-2009 02:30:48 PM  
End Time : 26-Jan-2009 02:58:09 PM  
Scanning Time : 1641 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n40  
Model : E760 In Dell Inspiron 1010  
Frequency : 5800.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Tyco Aux  
Orientation : Touch  
Power Drift-Start : 0.165 W/kg  
Power Drift-Finish: 0.165 W/kg  
Power Drift (%) : 0.133

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5800  
Frequency : 5800.00 MHz  
Last Calib. Date : 26-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 49.89 F/m  
Sigma : 5.96 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

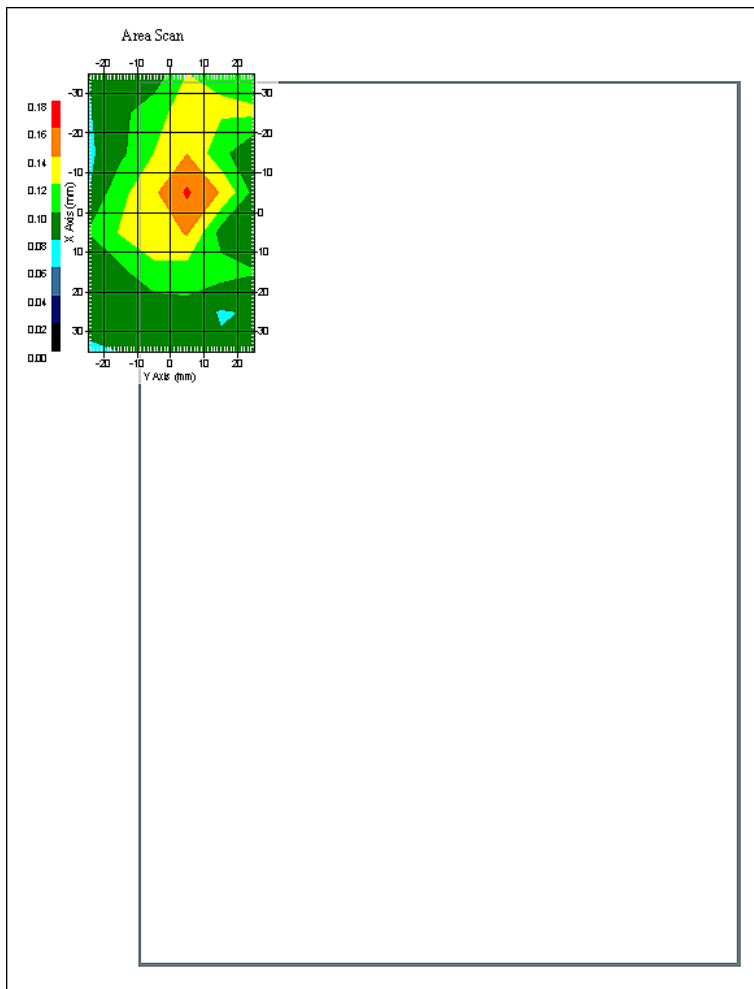
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 12  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 26-Jan-2009  
Set-up Time : 1:35:05 PM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

Other Data

DUT Position : Touch  
Separation : 0  
Channel : Low



1 gram SAR value : 0.126 W/kg  
10 gram SAR value : 0.099 W/kg  
Area Scan Peak SAR : 0.163 W/kg  
Zoom Scan Peak SAR : 0.170 W/kg



## SAR Test Report

By Operator : Jay  
Measurement Date : 23-Jan-2009  
Starting Time : 23-Jan-2009 06:06:25 PM  
End Time : 23-Jan-2009 06:33:41 PM  
Scanning Time : 1636 secs

### Product Data

Device Name : Novatel Wireless  
Serial No. : 7F1SWF1  
Mode : Broadcom 1031 n40  
Model : E760 In Dell Inspiron 1010  
Frequency : 5800.00 MHz  
Max. Transmit Pwr : 0.1 W  
Drift Time : 0 min(s)  
Length : 262 mm  
Width : 180 mm  
Depth : 25 mm  
Antenna Type : Internal - Yageo Aux  
Orientation : Touch  
Power Drift-Start : 0.157 W/kg  
Power Drift-Finish: 0.161 W/kg  
Power Drift (%) : 2.589

### Phantom Data

Name : APREL-Uni  
Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Serial No. : System Default  
Location : Center  
Description : Uni-Phantom

### Tissue Data

Type : BODY  
Serial No. : 5800  
Frequency : 5800.00 MHz  
Last Calib. Date : 23-Jan-2009  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.33 F/m  
Sigma : 5.97 S/m  
Density : 1000.00 kg/cu. m

### Probe Data

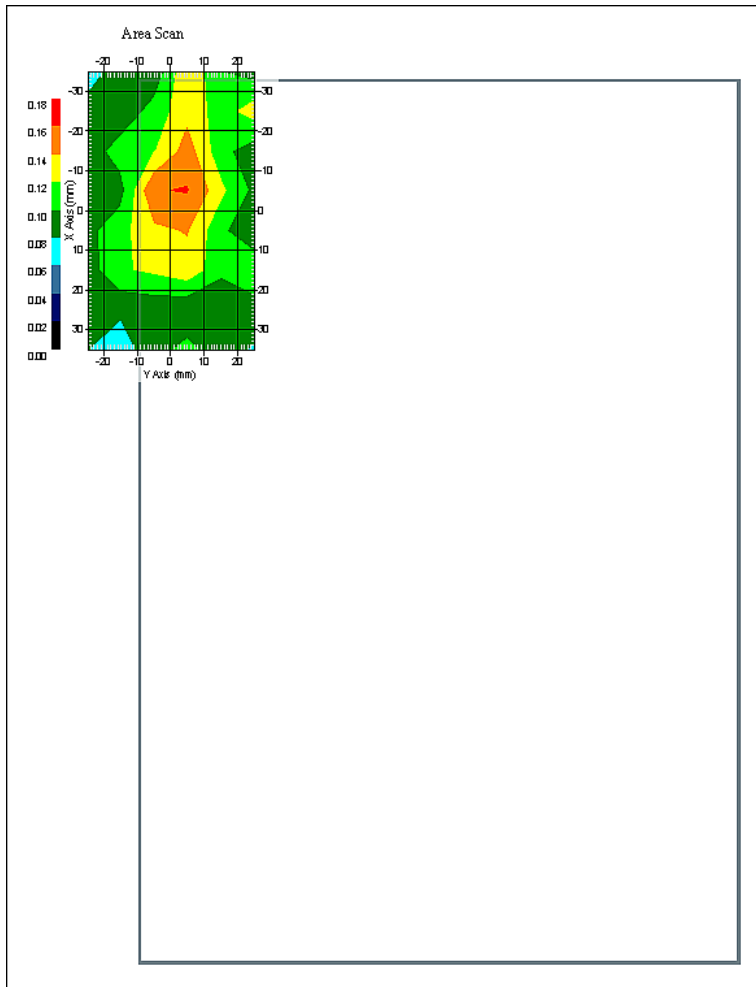
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 14-Apr-2008  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 12  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 23-Jan-2009  
Set-up Time : 1:35:05 PM  
Area Scan : 8x6x1 : Measurement x=10mm, y=10mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

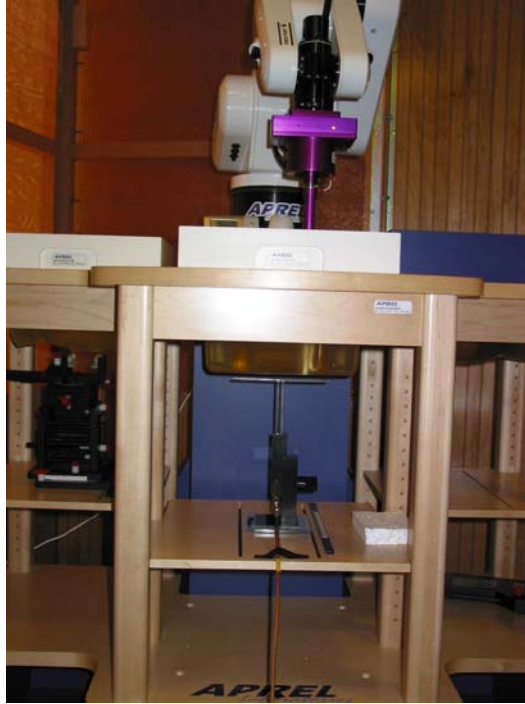
Other Data

DUT Position : Touch  
Separation : 0  
Channel : Low

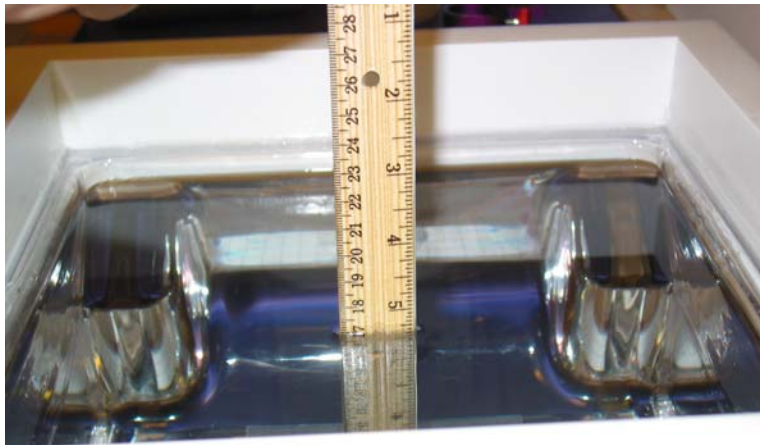


1 gram SAR value : 0.131 W/kg  
10 gram SAR value : 0.095 W/kg  
Area Scan Peak SAR : 0.161 W/kg  
Zoom Scan Peak SAR : 0.200 W/kg

## Appendix C – SAR Test Setup Photos



**System Body Configuration**



**Body Tissue Depth**



**WWAN & Auxiliary Antenna WLAN Test Configuration**



**Main Antenna WLAN Test Configuration**



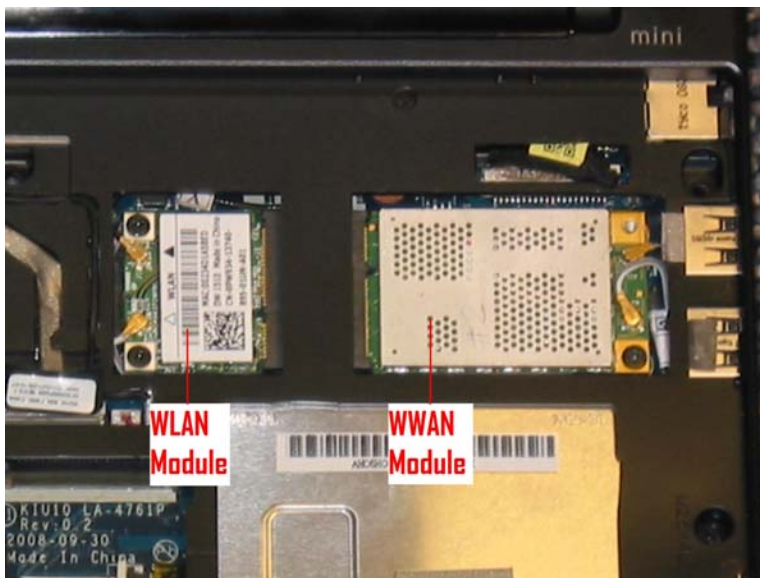
**Front of Device**



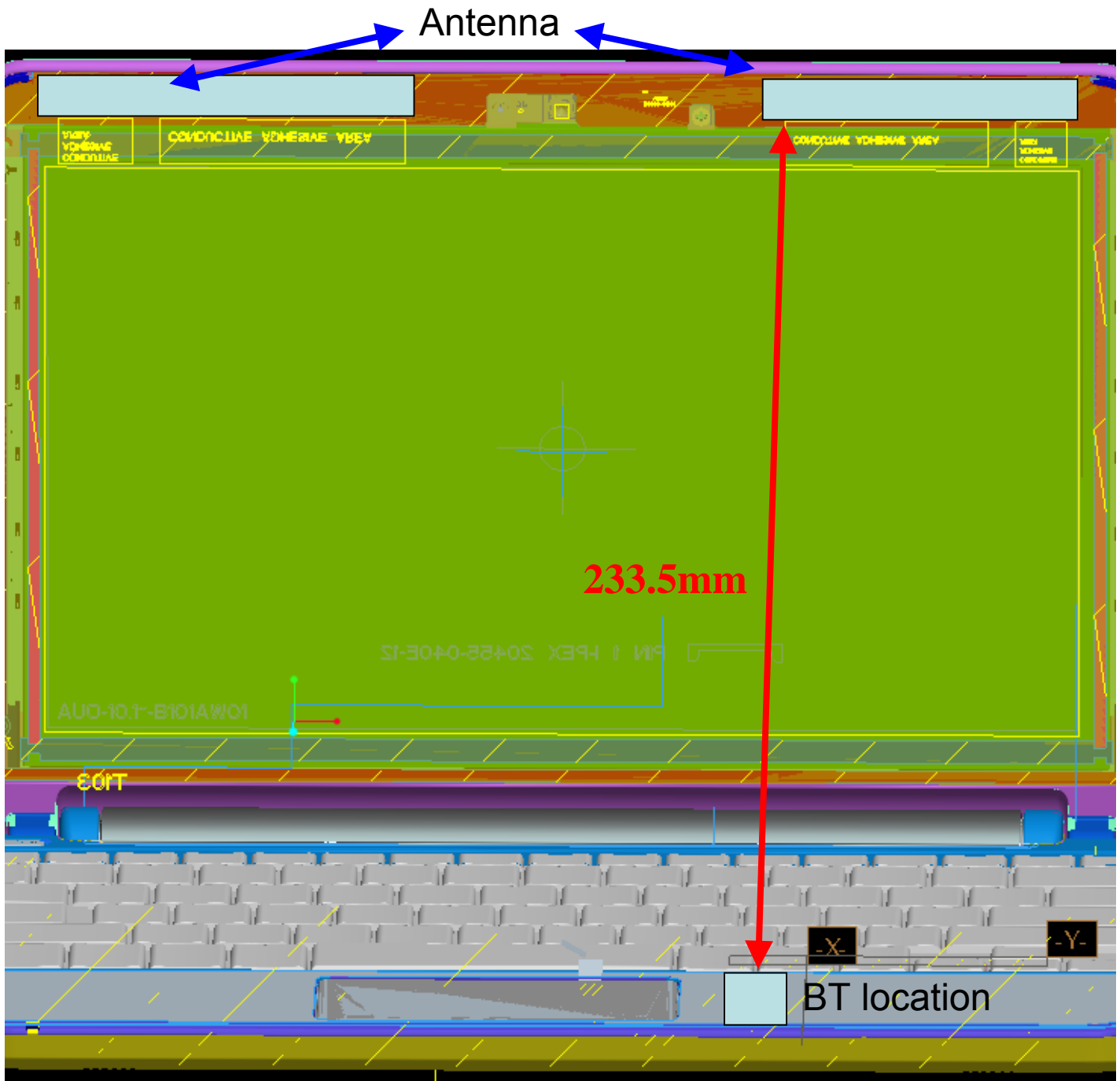
**Back of Device**



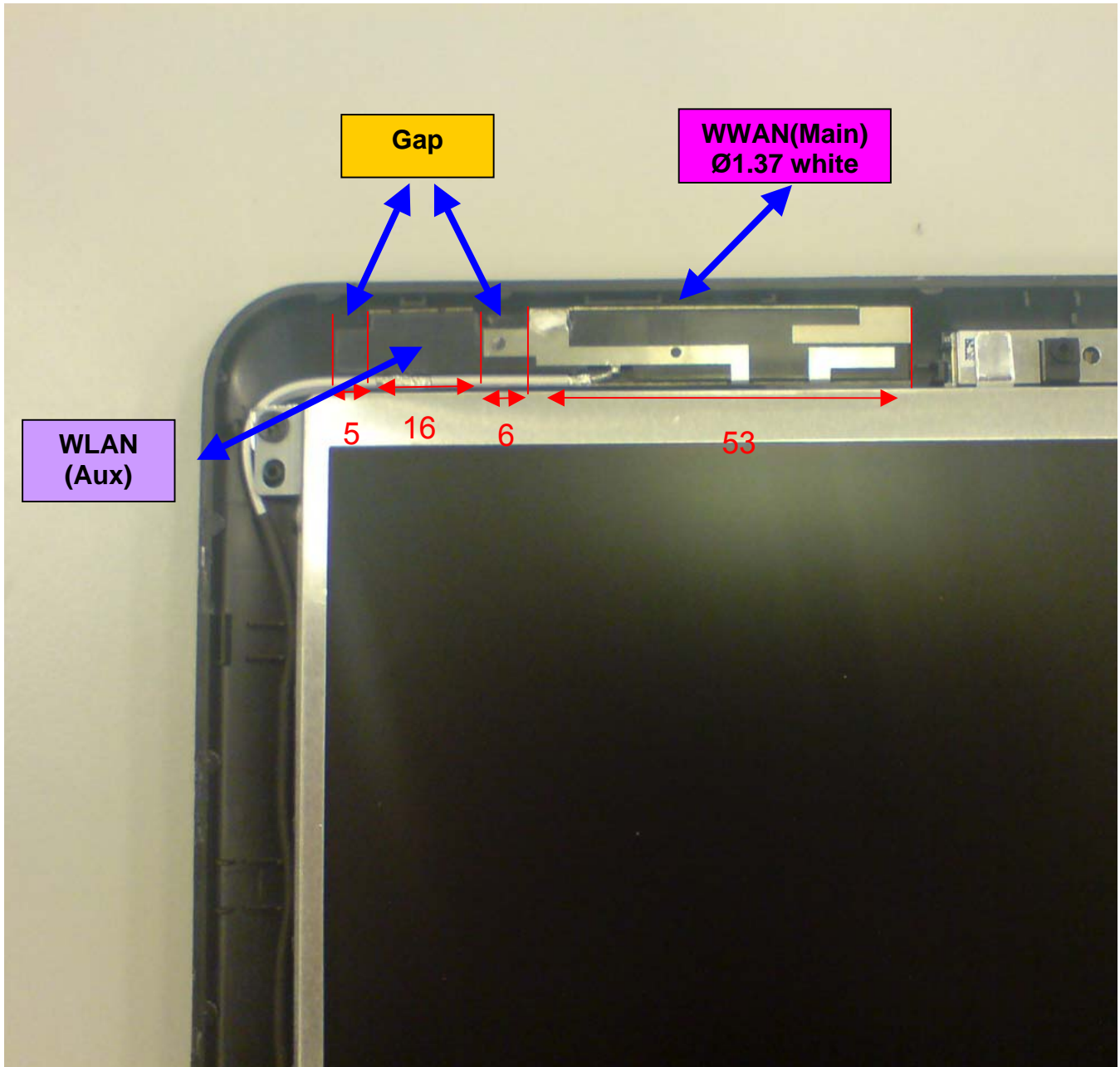
**Front of Device with Keyboard Removed**



**WWAN & WLAN Modules Location**

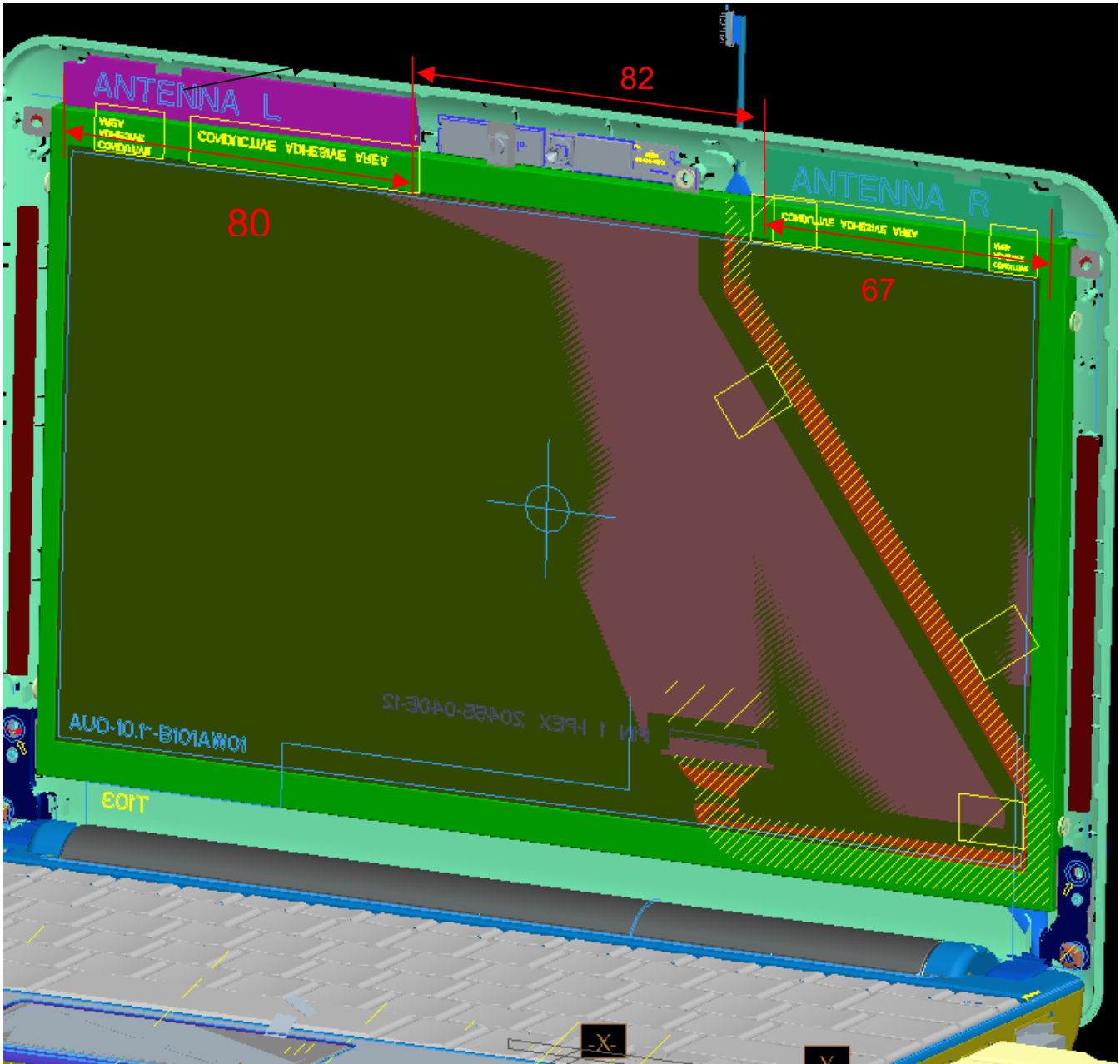


**Antenna to Antenna Distance and BT Distance**



**WWAN Main to WLAN Aux Distance**





**Left Antenna Module and Right Antenna Module Distance**

## Appendix D – Probe Calibration Data Sheets

# NCL CALIBRATION LABORATORIES

Calibration File No.: CP-926

Client.: RFEL

## CERTIFICATE OF CALIBRATION

It is certified that the equipment identified below has been calibrated in the  
**NCL CALIBRATION LABORATORIES** by qualified personnel following recognized  
procedures and using transfer standards traceable to NRC/NIST.

Equipment: Miniature Isotropic RF Probe 835 MHz

BODY Calibration

Manufacturer: APREL Laboratories

Model No.: E-020

Serial No.: 215

Calibration Procedure: SSI/DRB-TP-D01-032-E020-V2

Project No: RFEL-00150-CAL-5367

Calibrated: 3<sup>rd</sup> November 2008

Released on: 3<sup>rd</sup> November 2008

This Calibration Certificate is Incomplete Unless Accompanied with the Calibration Results Summary  
This calibration has been conducted in line with the SCC ISO-IEC 17025 Scope of Accreditation  
Accredited Laboratory Number 48

Released By: \_\_\_\_\_

**NCL** CALIBRATION LABORATORIES

51 SPECTRUM WAY  
NEPEAN, ONTARIO  
CANADA K2R 1E6

Division of APREL Lab.  
TEL: (613) 820-4988  
FAX: (613) 820-4161

## Introduction

This Calibration Report reproduces the results of the calibration performed in line with the SSI/DRB-TP-D01-032-E020-V2 E-Field Probe Calibration Procedure. The results contained within this report are for APREL E-Field Probe E-020 215.

## References

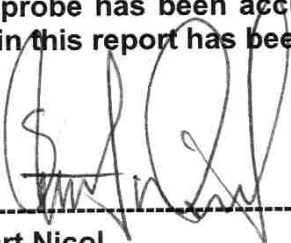
SSI/DRB-TP-D01-032-E020-V2 E-Field Probe Calibration Procedure  
IEEE 1528 "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques"  
IEEE 1309 "IEEE Standard for Calibration of Electromagnetic Field Sensors and Probes, Excluding Antennas, from 9 KHz to 40 GHz" 2005  
SSI-TP-011 Tissue Calibration Procedure  
IEC 62209 "Human exposure to radio frequency fields from handheld and body-mounted wireless communication devices –Human models, instrumentation and procedures Part 1 & 2: Procedure to determine the Specific Absorption Rate (SAR) for handheld devices used in close proximity of the ear (frequency range of 200MHz to 3GHz)"

## Conditions

Probe 215 was a re-calibration.

**Ambient Temperature of the Laboratory:** 22 °C +/- 0.5°C  
**Temperature of the Tissue:** 21 °C +/- 0.5°C

**We the undersigned attest that to the best of our knowledge the calibration of this probe has been accurately conducted and that all information contained within this report has been reviewed for accuracy.**



---

**Stuart Nicol**



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**Jesse Hones**

## Calibration Results Summary

|                       |                     |
|-----------------------|---------------------|
| <b>Probe Type:</b>    | E-Field Probe E-020 |
| <b>Serial Number:</b> | 215                 |
| <b>Frequency:</b>     | 835 MHz             |
| <b>Sensor Offset:</b> | 1.56 mm             |
| <b>Sensor Length:</b> | 2.5 mm              |
| <b>Tip Enclosure:</b> | Ertalyte*           |
| <b>Tip Diameter:</b>  | <5 mm               |
| <b>Tip Length:</b>    | 60 mm               |
| <b>Total Length:</b>  | 290 mm              |

\*Resistive to recommended tissue recipes per IEEE-1528

## Sensitivity in Air

|                                 |   |
|---------------------------------|---|
| <b>Channel X:</b>               | 1.2 $\mu\text{V}/(\text{V}/\text{m})^2$ |
| <b>Channel Y:</b>               | 1.2 $\mu\text{V}/(\text{V}/\text{m})^2$ |
| <b>Channel Z:</b>               | 1.2 $\mu\text{V}/(\text{V}/\text{m})^2$ |
| <b>Diode Compression Point:</b> | 95 mV                                   |

## **Sensitivity in Body Tissue Measured**

**Frequency:** 835 MHz

**Epsilon:** 55.2 (+/-5%)                      **Sigma:** 1.05 S/m (+/-10%)

### **ConvF**

**Channel X:** 6.3

**Channel Y:** 6.3

**Channel Z:** 6.3

Tissue sensitivity values were calculated using the load impedance of the APREL Laboratories Daq-Paq.

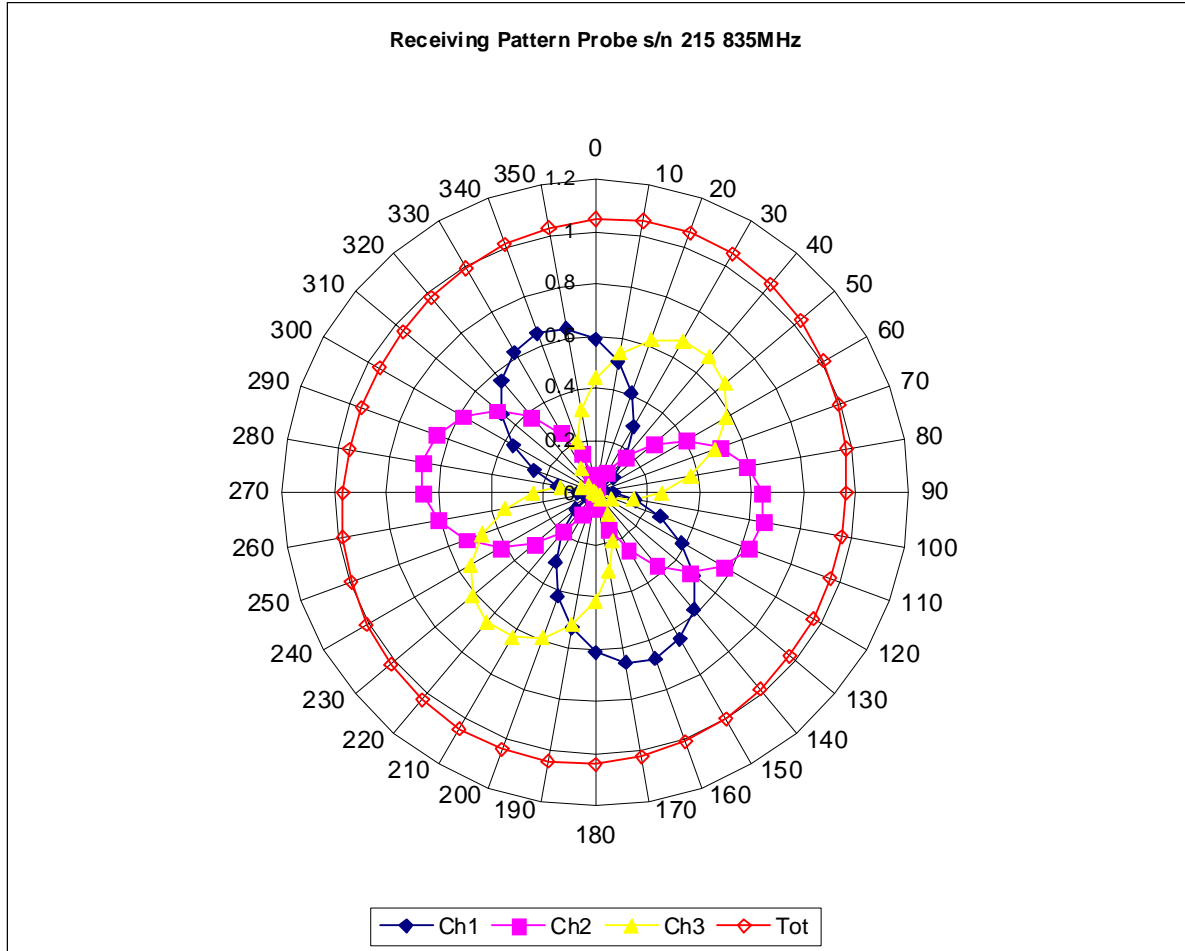
### **Boundary Effect:**

Uncertainty resulting from the boundary effect is less than 2% for the distance between the tip of the probe and the tissue boundary, when less than 2.44mm.

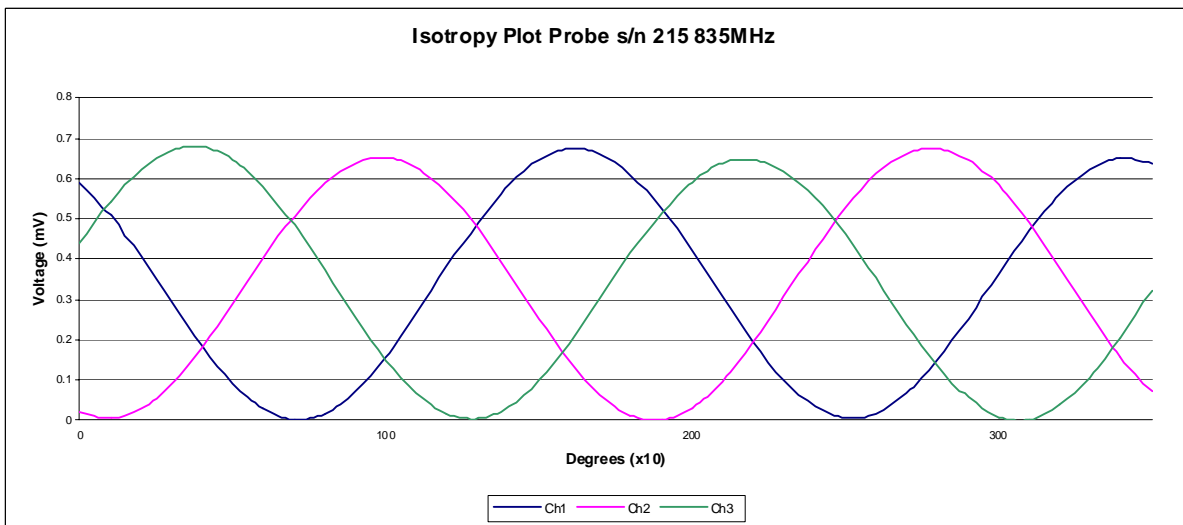
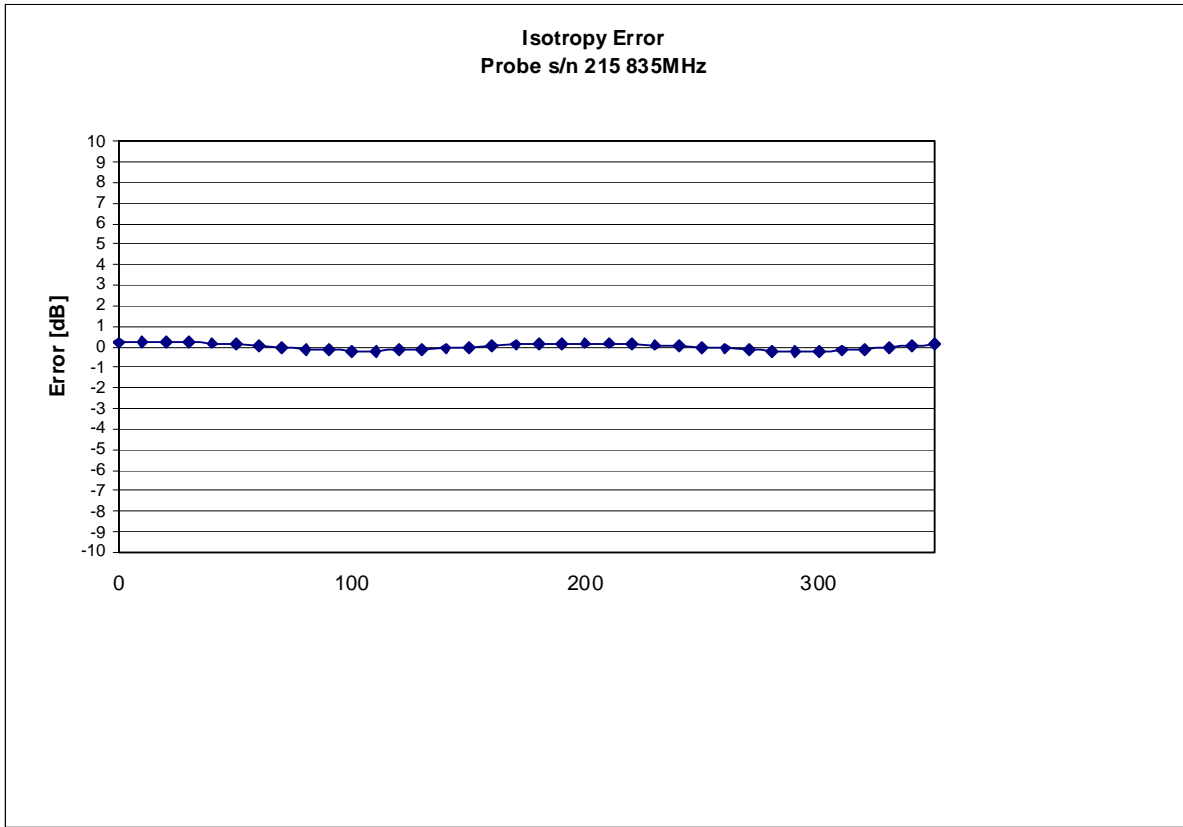
### **Spatial Resolution:**

The measured probe tip diameter is 5 mm (+/- 0.01 mm) and therefore meets the requirements of SSI/DRB-TP-D01-032 for spatial resolution.

### Receiving Pattern 835 MHz (Air)



### Isotropy Error 835 MHz (Air)

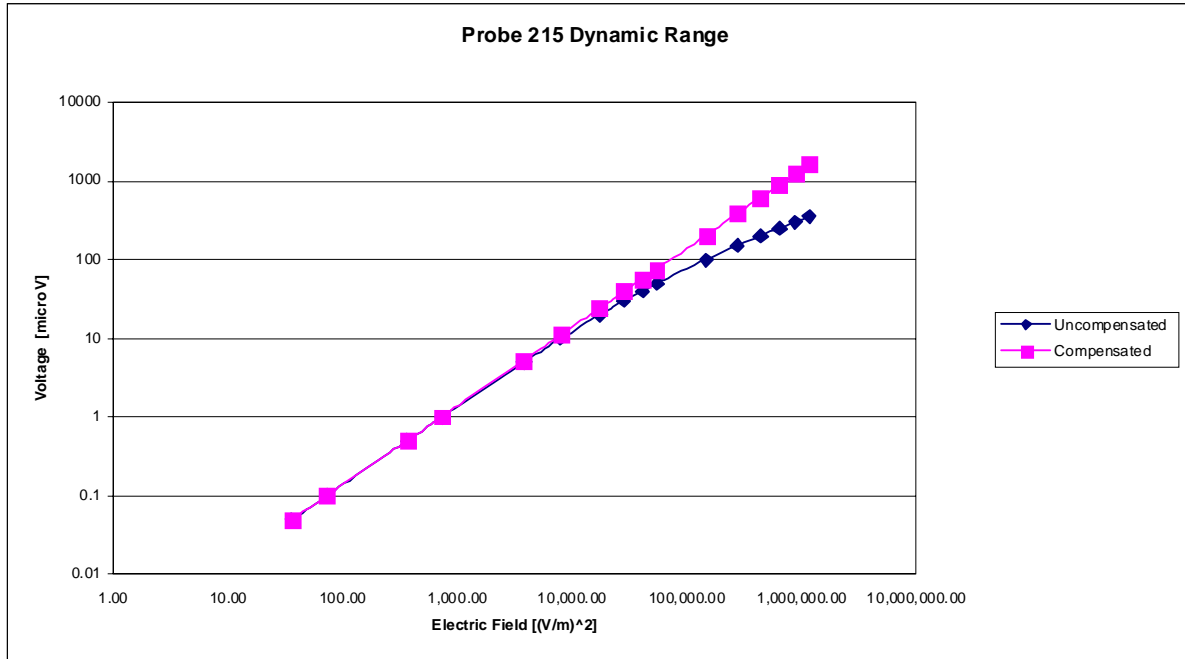


Isotropicity Tissue:

0.10 dB

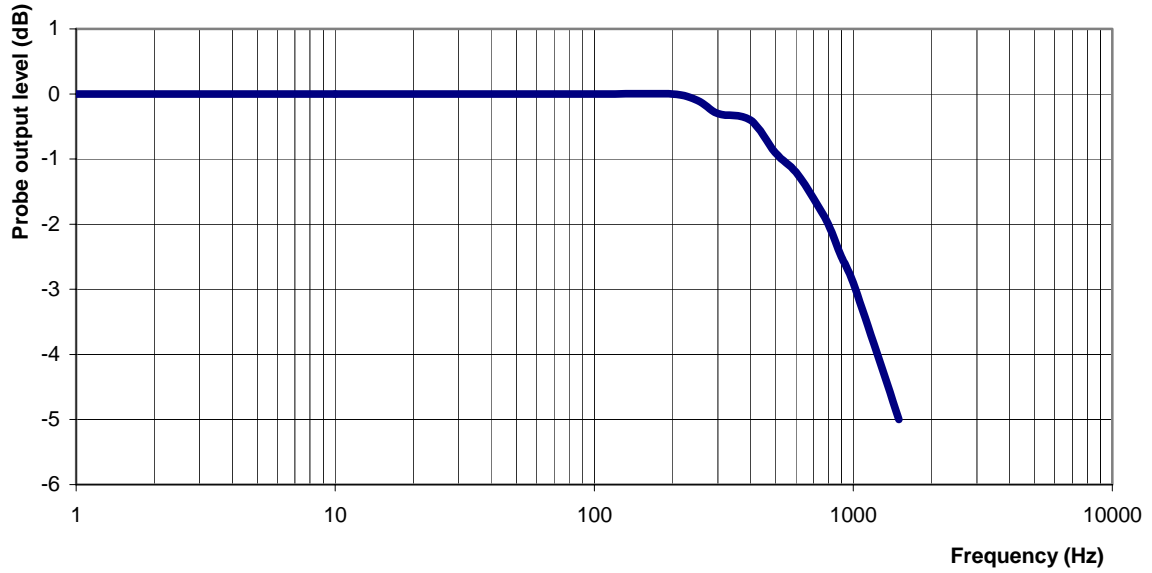


## Dynamic Range



## Video Bandwidth

**Probe Frequency Characteristics**



**Video Bandwidth at 500 Hz**                      1 dB  
**Video Bandwidth at 1.02 KHz:**                3 dB

## **Conversion Factor Uncertainty Assessment Measured**

### **Sensitivity in Body Tissue**

**Frequency:** 835 MHz  
**Epsilon:** 55.2 (+/-5%)      **Sigma:** 1.05 S/m (+/-10%)

#### **ConvF**

**Channel X:** 6.3      7%(K=2)  
**Channel Y:** 6.3      7%(K=2)  
**Channel Z:** 6.3      7%(K=2)

To minimize the uncertainty calculation all tissue sensitivity values were calculated using a load impedance of 5 M $\Omega$ .

#### **Boundary Effect:**

For a distance of 2.5mm the evaluated uncertainty (increase in the probe sensitivity) is less than 2%.

## **Test Equipment**

The test equipment used during Probe Calibration, manufacturer, model number and, current calibration status are listed and located on the main APREL server R:\NCL\Calibration Equipment\Instrument List May 2008.

# NCL CALIBRATION LABORATORIES

Calibration File No.: CP-933

Client.: RFEL

## CERTIFICATE OF CALIBRATION

It is certified that the equipment identified below has been calibrated in the  
**NCL CALIBRATION LABORATORIES** by qualified personnel following recognized  
procedures and using transfer standards traceable to NRC/NIST.

Equipment: Miniature Isotropic RF Probe 1900 MHz

BODY Calibration

Manufacturer: APREL Laboratories

Model No.: E-020

Serial No.: 215

Calibration Procedure: SSI/DRB-TP-D01-032-E020-V2

Project No: RFEL-00150-CAL-5367

Calibrated: 3<sup>rd</sup> November 2008

Released on: 3<sup>rd</sup> November 2008

This Calibration Certificate is Incomplete Unless Accompanied with the Calibration Results Summary  
This calibration has been conducted in line with the SCC ISO-IEC 17025 Scope of Accreditation  
Accredited Laboratory Number 48

Released By: \_\_\_\_\_

**NCL CALIBRATION LABORATORIES**

51 SPECTRUM WAY  
NEPEAN, ONTARIO  
CANADA K2R 1E6

Division of APREL Lab.  
TEL: (613) 820-4988  
FAX: (613) 820-4161

## Introduction

This Calibration Report reproduces the results of the calibration performed in line with the SSI/DRB-TP-D01-032-E020-V2 E-Field Probe Calibration Procedure. The results contained within this report are for APREL E-Field Probe E-020 215.

## References

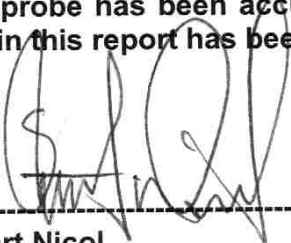
SSI/DRB-TP-D01-032-E020-V2 E-Field Probe Calibration Procedure  
IEEE 1528 "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques"  
IEEE 1309 "IEEE Standard for Calibration of Electromagnetic Field Sensors and Probes, Excluding Antennas, from 9 KHz to 40 GHz" 2005  
SSI-TP-011 Tissue Calibration Procedure  
IEC 62209 "Human exposure to radio frequency fields from handheld and body-mounted wireless communication devices –Human models, instrumentation and procedures Part 1 & 2: Procedure to determine the Specific Absorption Rate (SAR) for handheld devices used in close proximity of the ear (frequency range of 200MHz to 3GHz)"

## Conditions

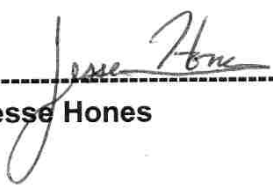
Probe 215 was a re-calibration.

**Ambient Temperature of the Laboratory:** 22 °C +/- 0.5°C  
**Temperature of the Tissue:** 21 °C +/- 0.5°C

**We the undersigned attest that to the best of our knowledge the calibration of this probe has been accurately conducted and that all information contained within this report has been reviewed for accuracy.**



-----  
**Stuart Nicol**



-----  
**Jesse Hones**

## Calibration Results Summary

|                       |                     |
|-----------------------|---------------------|
| <b>Probe Type:</b>    | E-Field Probe E-020 |
| <b>Serial Number:</b> | 215                 |
| <b>Frequency:</b>     | 1900 MHz            |
| <b>Sensor Offset:</b> | 1.56 mm             |
| <b>Sensor Length:</b> | 2.5 mm              |
| <b>Tip Enclosure:</b> | Ertalyte*           |
| <b>Tip Diameter:</b>  | <5 mm               |
| <b>Tip Length:</b>    | 60 mm               |
| <b>Total Length:</b>  | 290 mm              |

\*Resistive to recommended tissue recipes per IEEE-1528

## Sensitivity in Air

|                                 |   |
|---------------------------------|---|
| <b>Channel X:</b>               | 1.2 $\mu\text{V}/(\text{V}/\text{m})^2$ |
| <b>Channel Y:</b>               | 1.2 $\mu\text{V}/(\text{V}/\text{m})^2$ |
| <b>Channel Z:</b>               | 1.2 $\mu\text{V}/(\text{V}/\text{m})^2$ |
| <b>Diode Compression Point:</b> | 95 mV                                   |

## **Sensitivity in Body Tissue Measured**

**Frequency:** 1900 MHz

**Epsilon:** 54.2 (+/-5%)                      **Sigma:** 1.57 S/m (+/-5%)

### **ConvF**

**Channel X:** 5.0

**Channel Y:** 5.0

**Channel Z:** 5.0

Tissue sensitivity values were calculated using the load impedance of the APREL Laboratories Daq-Paq.

### **Boundary Effect:**

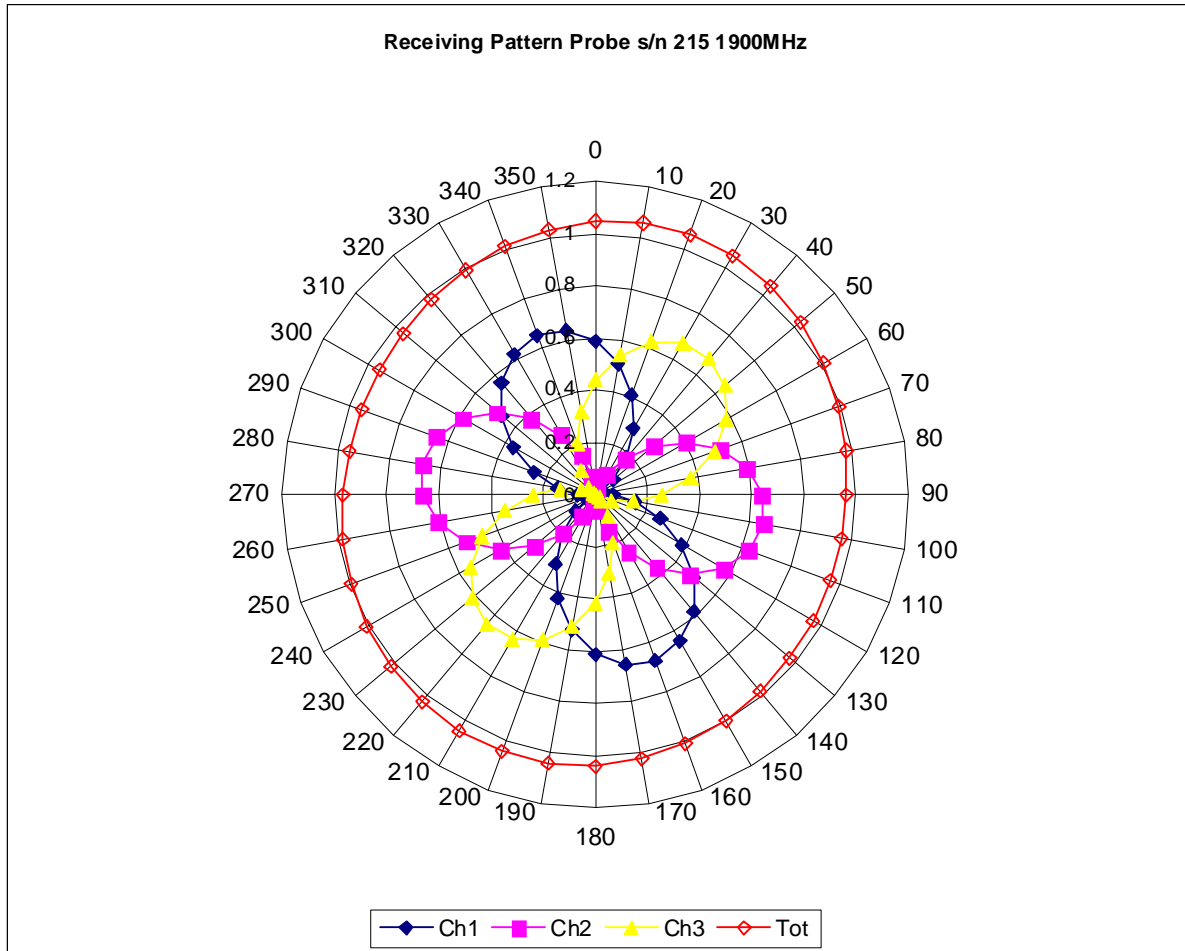
Uncertainty resulting from the boundary effect is less than 2% for the distance between the tip of the probe and the tissue boundary, when less than 2.44mm.

### **Spatial Resolution:**

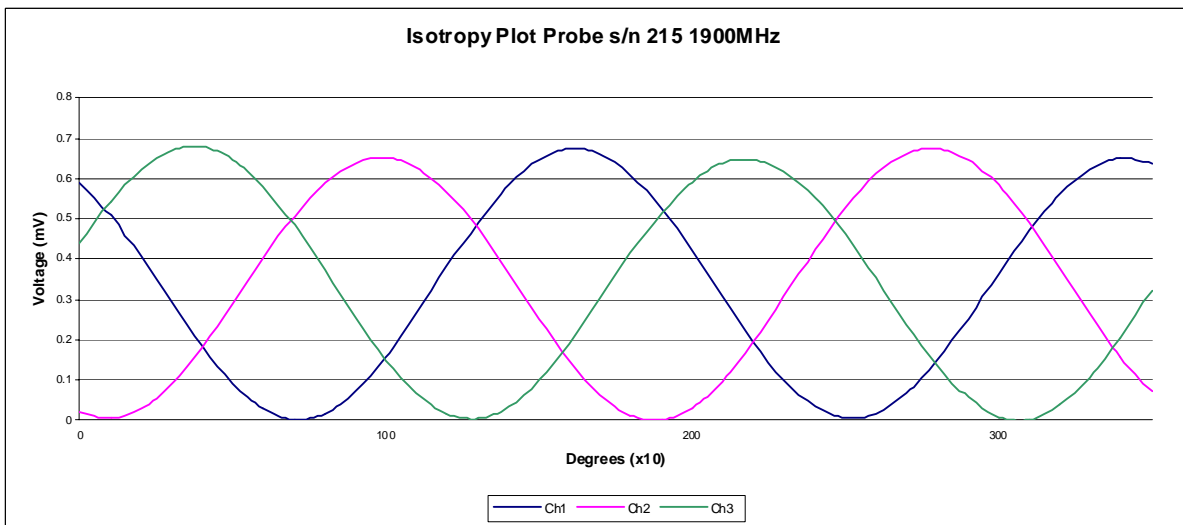
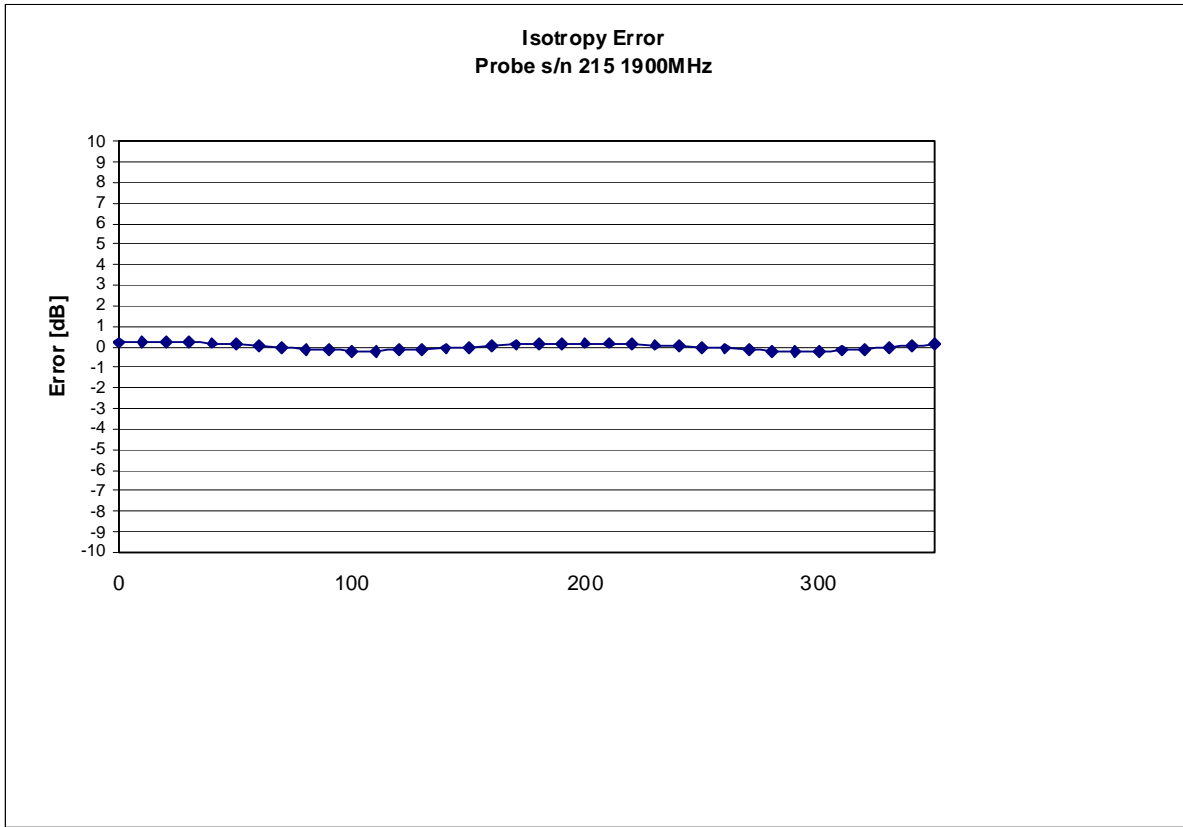
The measured probe tip diameter is 5 mm (+/- 0.01 mm) and therefore meets the requirements of SSI/DRB-TP-D01-032 for spatial resolution.



## Receiving Pattern 1900 MHz (Air)



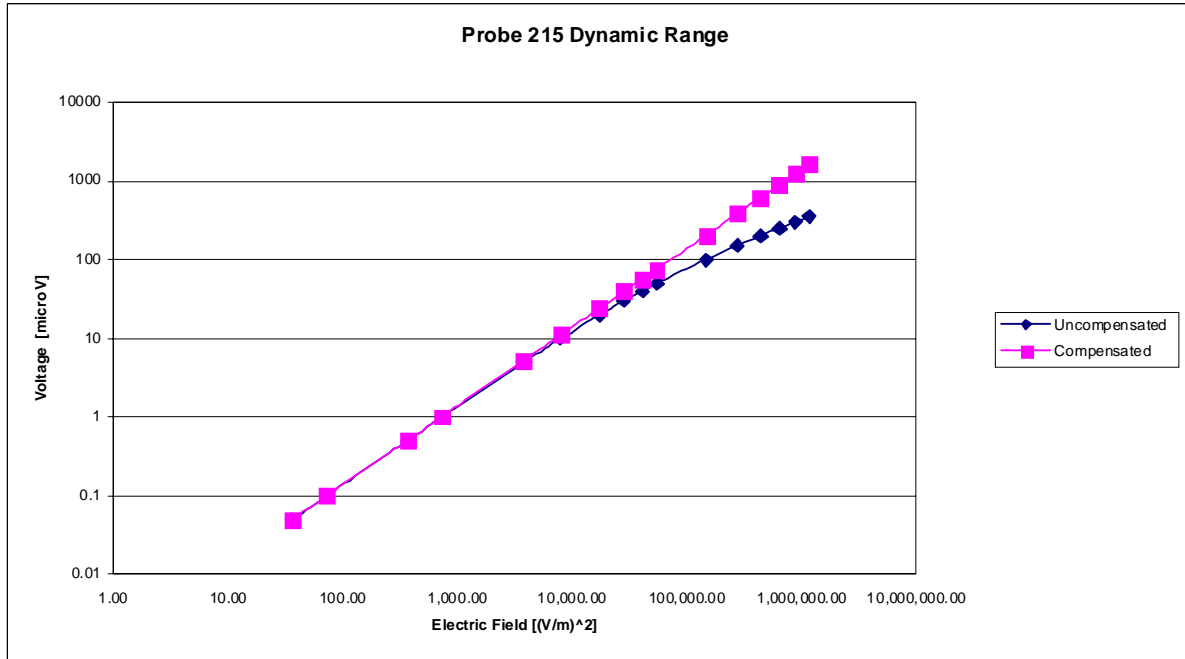
### Isotropy Error 1900 MHz (Air)



Isotropicity Tissue:

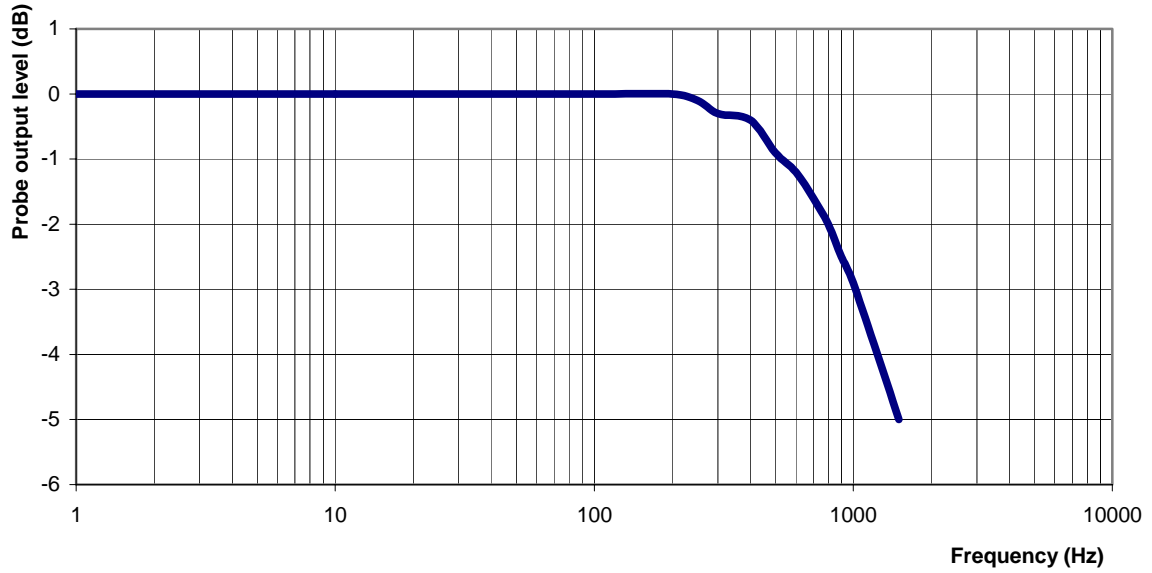
0.10 dB

## Dynamic Range



## Video Bandwidth

**Probe Frequency Characteristics**



**Video Bandwidth at 500 Hz**                      1 dB  
**Video Bandwidth at 1.02 KHz:**                3 dB

## **Conversion Factor Uncertainty Assessment Measured**

### **Sensitivity in Body Tissue**

**Frequency:** 1900 MHz

**Epsilon:** 54.2 (+/-5%)      **Sigma:** 1.57 S/m (+/-5%)

#### **ConvF**

**Channel X:** 5.0      7%(K=2)

**Channel Y:** 5.0      7%(K=2)

**Channel Z:** 5.0      7%(K=2)

To minimize the uncertainty calculation all tissue sensitivity values were calculated using a load impedance of 5 MΩ.

#### **Boundary Effect:**

For a distance of 2.5mm the evaluated uncertainty (increase in the probe sensitivity) is less than 2%.

## **Test Equipment**

The test equipment used during Probe Calibration, manufacturer, model number and, current calibration status are listed and located on the main APREL server R:\NCL\Calibration Equipment\Instrument List May 2008.

# NCL CALIBRATION LABORATORIES

Calibration File No.: CP-935

Client.: RFEL

## CERTIFICATE OF CALIBRATION

It is certified that the equipment identified below has been calibrated in the **NCL CALIBRATION LABORATORIES** by qualified personnel following recognized procedures and using transfer standards traceable to NRC/NIST.

Equipment: Miniature Isotropic RF Probe 2450 MHz

BODY Calibration

Manufacturer: APREL Laboratories

Model No.: E-020

Serial No.: 215

Calibration Procedure: SSI/DRB-TP-D01-032-E020-V2

Project No: RFEL-00150-CAL-5367

Calibrated: 3<sup>rd</sup> November 2008

Released on: 3<sup>rd</sup> November 2008

This Calibration Certificate is Incomplete Unless Accompanied with the Calibration Results Summary

This calibration has been conducted in line with the SCC ISO-IEC 17025 Scope of Accreditation

Accredited Laboratory Number 48

Released By: \_\_\_\_\_

**NCL** CALIBRATION LABORATORIES

51 SPECTRUM WAY  
NEPEAN, ONTARIO  
CANADA K2R 1E6

Division of APREL Lab.  
TEL: (613) 820-4988  
FAX: (613) 820-4161

## Introduction

This Calibration Report reproduces the results of the calibration performed in line with the SSI/DRB-TP-D01-032-E020-V2 E-Field Probe Calibration Procedure. The results contained within this report are for APREL E-Field Probe E-020 215.

## References

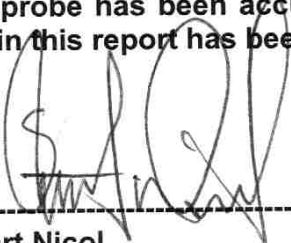
SSI/DRB-TP-D01-032-E020-V2 E-Field Probe Calibration Procedure  
IEEE 1528 "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques"  
IEEE 1309 "IEEE Standard for Calibration of Electromagnetic Field Sensors and Probes, Excluding Antennas, from 9 KHz to 40 GHz" 2005  
SSI-TP-011 Tissue Calibration Procedure  
IEC 62209 "Human exposure to radio frequency fields from handheld and body-mounted wireless communication devices –Human models, instrumentation and procedures Part 1 & 2: Procedure to determine the Specific Absorption Rate (SAR) for handheld devices used in close proximity of the ear (frequency range of 200MHz to 3GHz)"

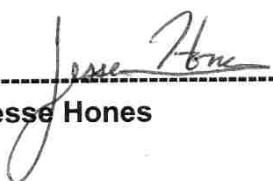
## Conditions

Probe 215 was a re-calibration.

**Ambient Temperature of the Laboratory:** 22 °C +/- 0.5°C  
**Temperature of the Tissue:** 21 °C +/- 0.5°C

**We the undersigned attest that to the best of our knowledge the calibration of this probe has been accurately conducted and that all information contained within this report has been reviewed for accuracy.**

  
-----  
**Stuart Nicol**

  
-----  
**Jesse Hones**



## Calibration Results Summary

|                       |                     |
|-----------------------|---------------------|
| <b>Probe Type:</b>    | E-Field Probe E-020 |
| <b>Serial Number:</b> | 215                 |
| <b>Frequency:</b>     | 2450 MHz            |
| <b>Sensor Offset:</b> | 1.56 mm             |
| <b>Sensor Length:</b> | 2.5 mm              |
| <b>Tip Enclosure:</b> | Ertalyte*           |
| <b>Tip Diameter:</b>  | <5 mm               |
| <b>Tip Length:</b>    | 60 mm               |
| <b>Total Length:</b>  | 290 mm              |

\*Resistive to recommended tissue recipes per IEEE-1528

## Sensitivity in Air

|                                 |   |
|---------------------------------|---|
| <b>Channel X:</b>               | 1.2 $\mu\text{V}/(\text{V}/\text{m})^2$ |
| <b>Channel Y:</b>               | 1.2 $\mu\text{V}/(\text{V}/\text{m})^2$ |
| <b>Channel Z:</b>               | 1.2 $\mu\text{V}/(\text{V}/\text{m})^2$ |
| <b>Diode Compression Point:</b> | 95 mV                                   |

## **Sensitivity in Body Tissue Measured**

**Frequency:** 2450 MHz

**Epsilon:** 53.8 (+/-5%)                      **Sigma:** 1.99 S/m (+/-5%)

### **ConvF**

**Channel X:** 4.5

**Channel Y:** 4.5

**Channel Z:** 4.5

Tissue sensitivity values were calculated using the load impedance of the APREL Laboratories Daq-Paq.

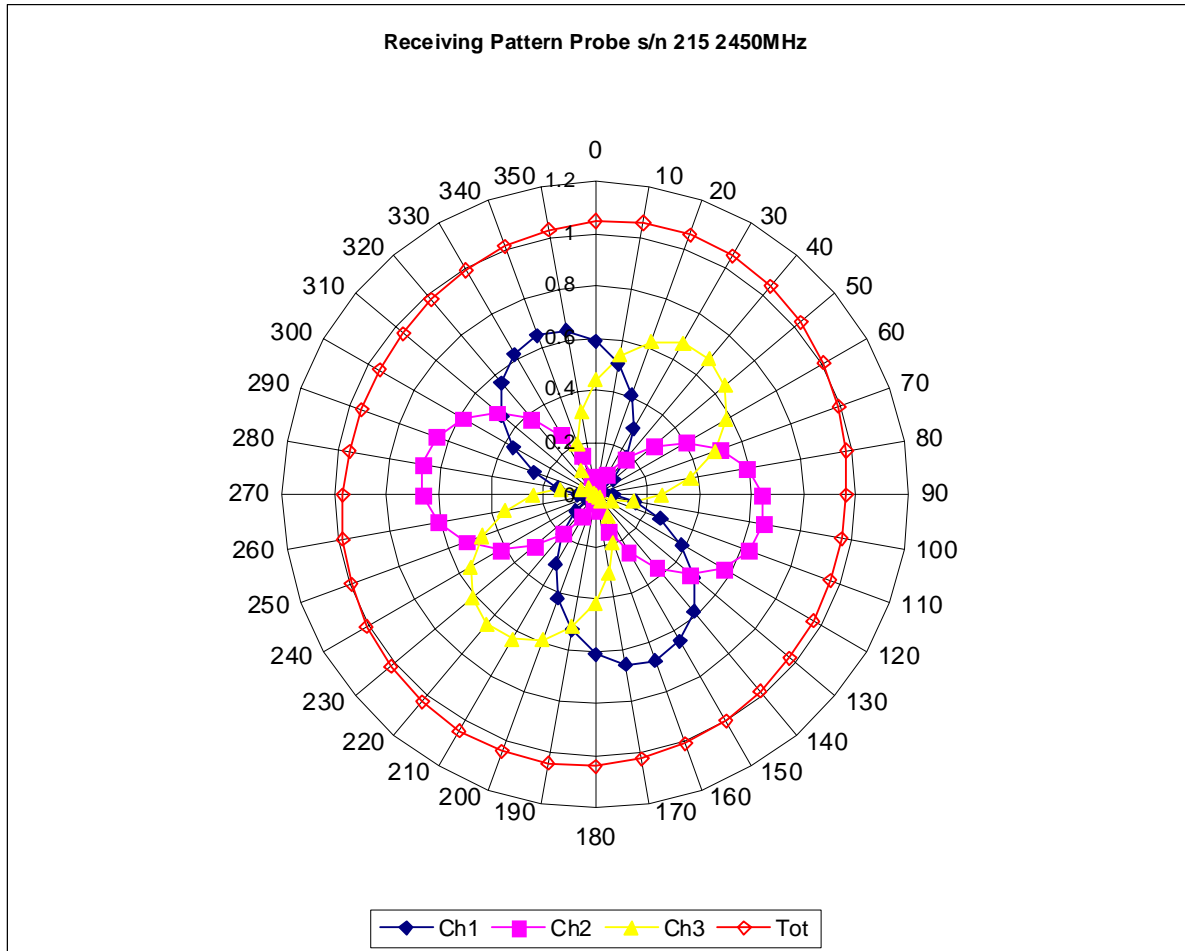
### **Boundary Effect:**

Uncertainty resulting from the boundary effect is less than 2% for the distance between the tip of the probe and the tissue boundary, when less than 2.44mm.

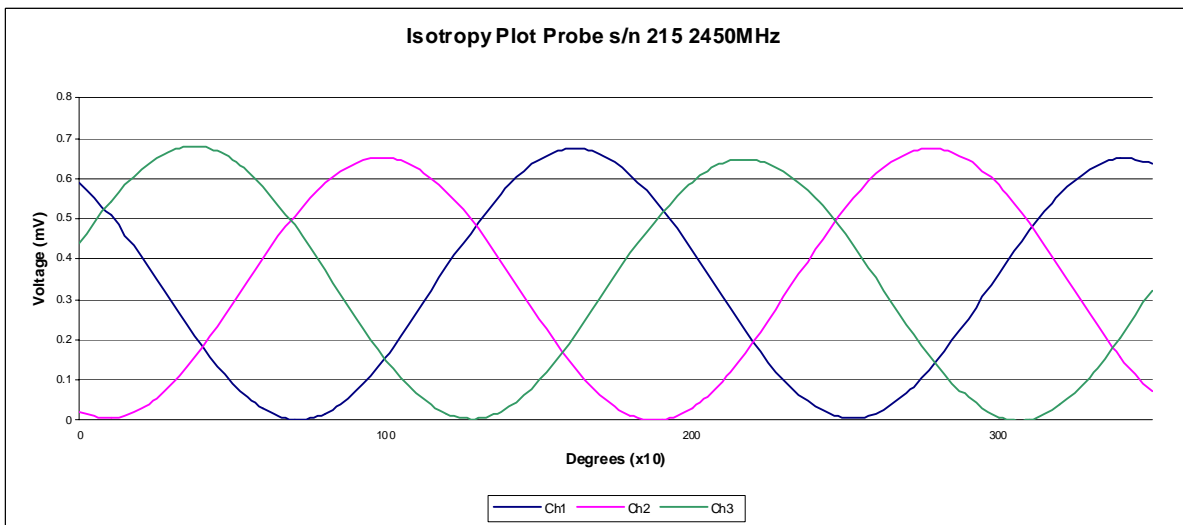
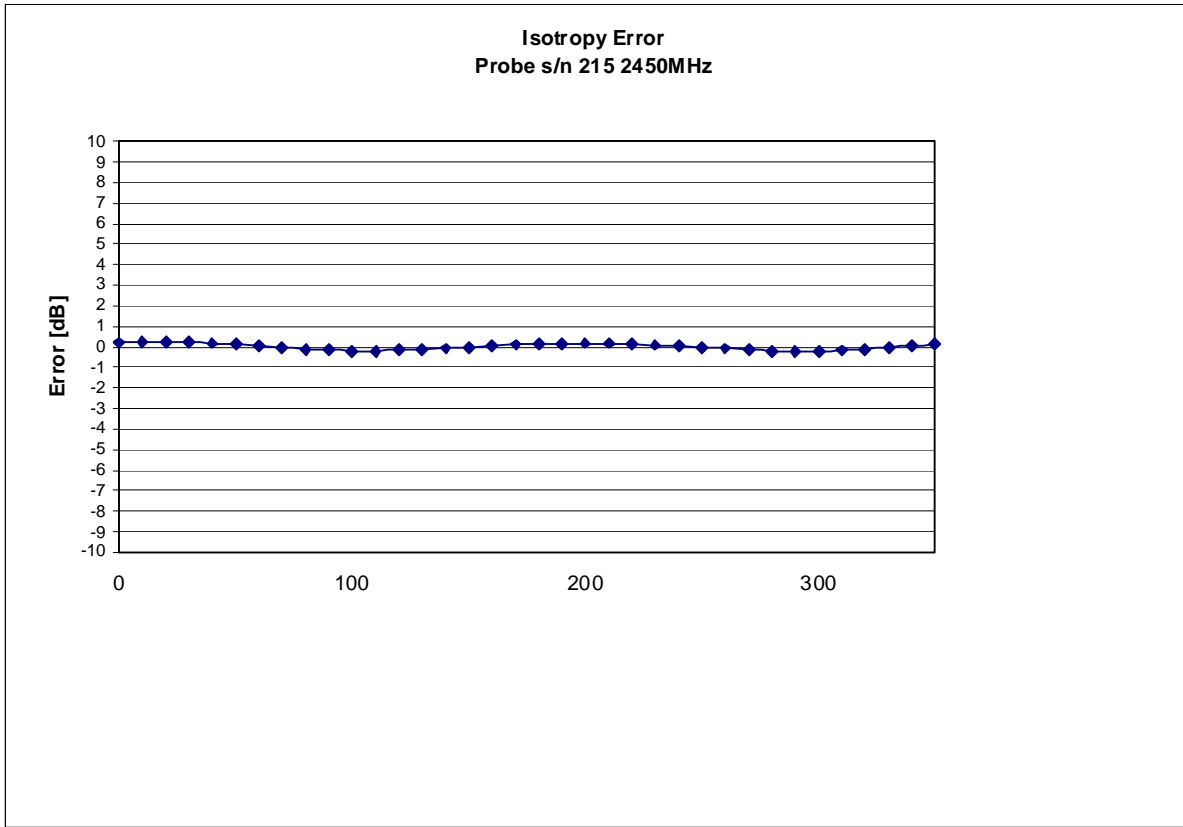
### **Spatial Resolution:**

The measured probe tip diameter is 5 mm (+/- 0.01 mm) and therefore meets the requirements of SSI/DRB-TP-D01-032 for spatial resolution.

## Receiving Pattern 2450 MHz (Air)



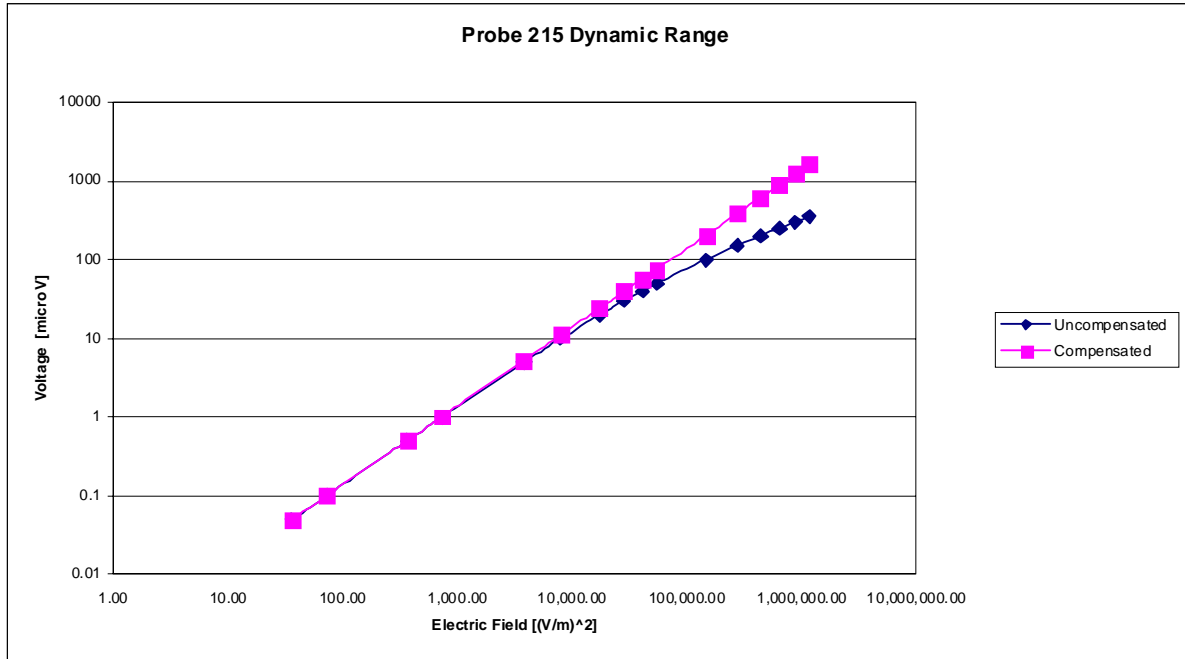
### Isotropy Error 2450 MHz (Air)



Isotropicity Tissue:

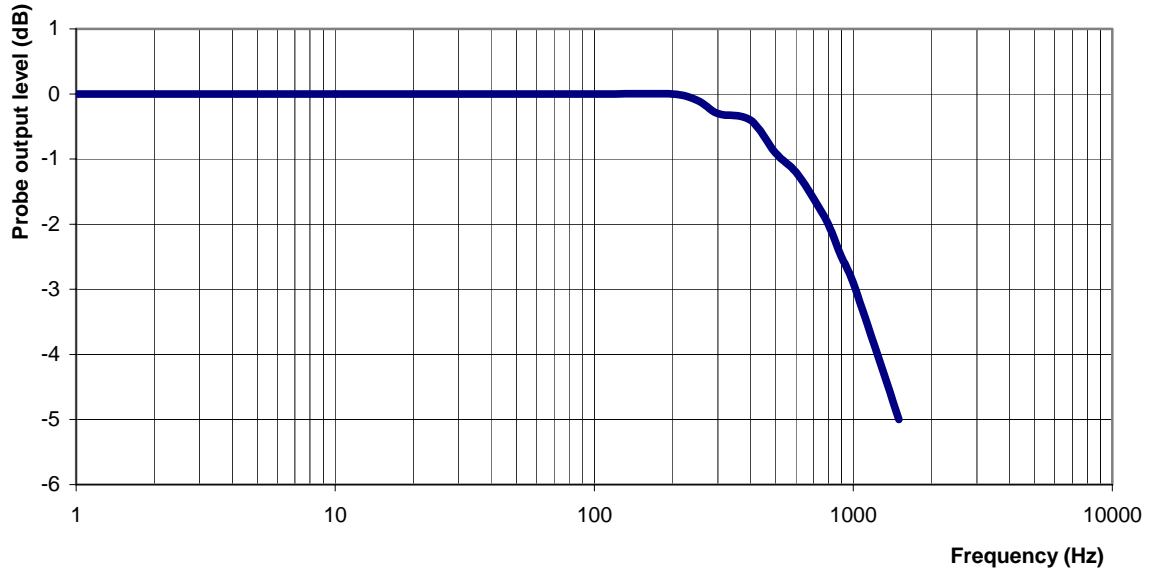
0.10 dB

## Dynamic Range



## Video Bandwidth

**Probe Frequency Characteristics**



**Video Bandwidth at 500 Hz**                      1 dB  
**Video Bandwidth at 1.02 KHz:**                3 dB

## **Conversion Factor Uncertainty Assessment**

### **Sensitivity in Body Tissue**

**Frequency:** 2450 MHz

**Epsilon:** 53.8 (+/-5%)

**Sigma:** 1.99 S/m (+/-5%)

#### **ConvF**

**Channel X:** 4.5 7%(K=2)

**Channel Y:** 4.5 7%(K=2)

**Channel Z:** 4.5 7%(K=2)

To minimize the uncertainty calculation all tissue sensitivity values were calculated using a load impedance of 5 MΩ.

#### **Boundary Effect:**

For a distance of 2.5mm the evaluated uncertainty (increase in the probe sensitivity) is less than 2%.

## **Test Equipment**

The test equipment used during Probe Calibration, manufacturer, model number and, current calibration status are listed and located on the main APREL server R:\NCL\Calibration Equipment\Instrument List May 2008.



# NCL CALIBRATION LABORATORIES

Calibration File No.: CP-868

Client.: RFEL

## CERTIFICATE OF CALIBRATION

It is certified that the equipment identified below has been calibrated in the  
**NCL CALIBRATION LABORATORIES** by qualified personnel following recognized  
procedures and using transfer standards traceable to NRC/NIST.

Equipment: Miniature Isotropic RF Probe 5200 MHz

BODY Calibration

Manufacturer: APREL Laboratories

Model No.: E-020

Serial No.: E030-001

Calibration Procedure: SSI/DRB-TP-D01-032-E020-V2

Project No: RFEL-E030-5334

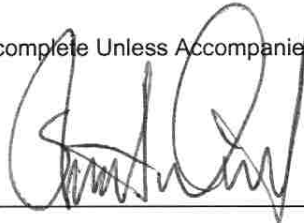
Calibrated: 14<sup>th</sup> April 2008

Released on: 14<sup>th</sup> April 2008

APREL Laboratories Certified Under Laboratory 48 of SCC

This Calibration Certificate is Incomplete Unless Accompanied with the Calibration Results Summary

Released By: \_\_\_\_\_



**NCL** CALIBRATION LABORATORIES

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NEPEAN, ONTARIO  
CANADA K2R 1E6

Division of APREL Lab.  
TEL: (613) 820-4988  
FAX: (613) 820-4161

## Introduction

This Calibration Report reproduces the results of the calibration performed in line with the SSI/DRB-TP-D01-032-E020-V2 E-Field Probe Calibration Procedure. The results contained within this report are for APREL E-Field Probe E030-001.

## References

SSI/DRB-TP-D01-032-E020-V2 E-Field Probe Calibration Procedure

IEEE 1528 "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques"

SSI-TP-011 Tissue Calibration Procedure

IEC 62209 "Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures –Part 1 & 2: Procedure to determine the Specific Absorption Rate (SAR) for hand-held devices used in close proximity of the ear (frequency range of 300 MHz to 3 GHz)"

IEEE 1309 Draft Standard for Calibration of Electromagnetic Field Sensors and Probes, Excluding Antennas, from 9kHz to 40GHz


## Conditions

Probe E030-001 was a new probe.

**Ambient Temperature of the Laboratory:** 22 °C +/- 0.5°C

**Temperature of the Tissue:** 21 °C +/- 0.5°C

**We the undersigned attest that to the best of our knowledge the calibration of this probe has been accurately conducted and that all information contained within this report has been reviewed for accuracy.**

  
-----  
**Stuart Nicol**

  
-----  
**Jesse Hones**

## Calibration Results Summary

|                       |                     |
|-----------------------|---------------------|
| <b>Probe Type:</b>    | E-Field Probe E-030 |
| <b>Serial Number:</b> | E030-001            |
| <b>Frequency:</b>     | 5200 MHz            |
| <b>Sensor Offset:</b> | 1.06 mm             |
| <b>Sensor Length:</b> | 2.5 mm              |
| <b>Tip Enclosure:</b> | Composite*          |
| <b>Tip Diameter:</b>  | <2.5 mm             |
| <b>Tip Length:</b>    | 55 mm               |
| <b>Total Length:</b>  | 289 mm              |

\*Resistive to recommended tissue recipes per IEEE-1528

## Sensitivity in Air

|                                 |   |
|---------------------------------|---|
| <b>Channel X:</b>               | 1.2 $\mu\text{V}/(\text{V}/\text{m})^2$ |
| <b>Channel Y:</b>               | 1.2 $\mu\text{V}/(\text{V}/\text{m})^2$ |
| <b>Channel Z:</b>               | 1.2 $\mu\text{V}/(\text{V}/\text{m})^2$ |
| <b>Diode Compression Point:</b> | 95 mV                                   |

## **Sensitivity in Body Tissue Measured**

**Frequency:** 5200 MHz

**Epsilon:** 48.11                      **Sigma:** 5.51 S/m

### **ConvF:**

**Channel X:** 8.6

**Channel Y:** 8.6

**Channel Z:** 8.6

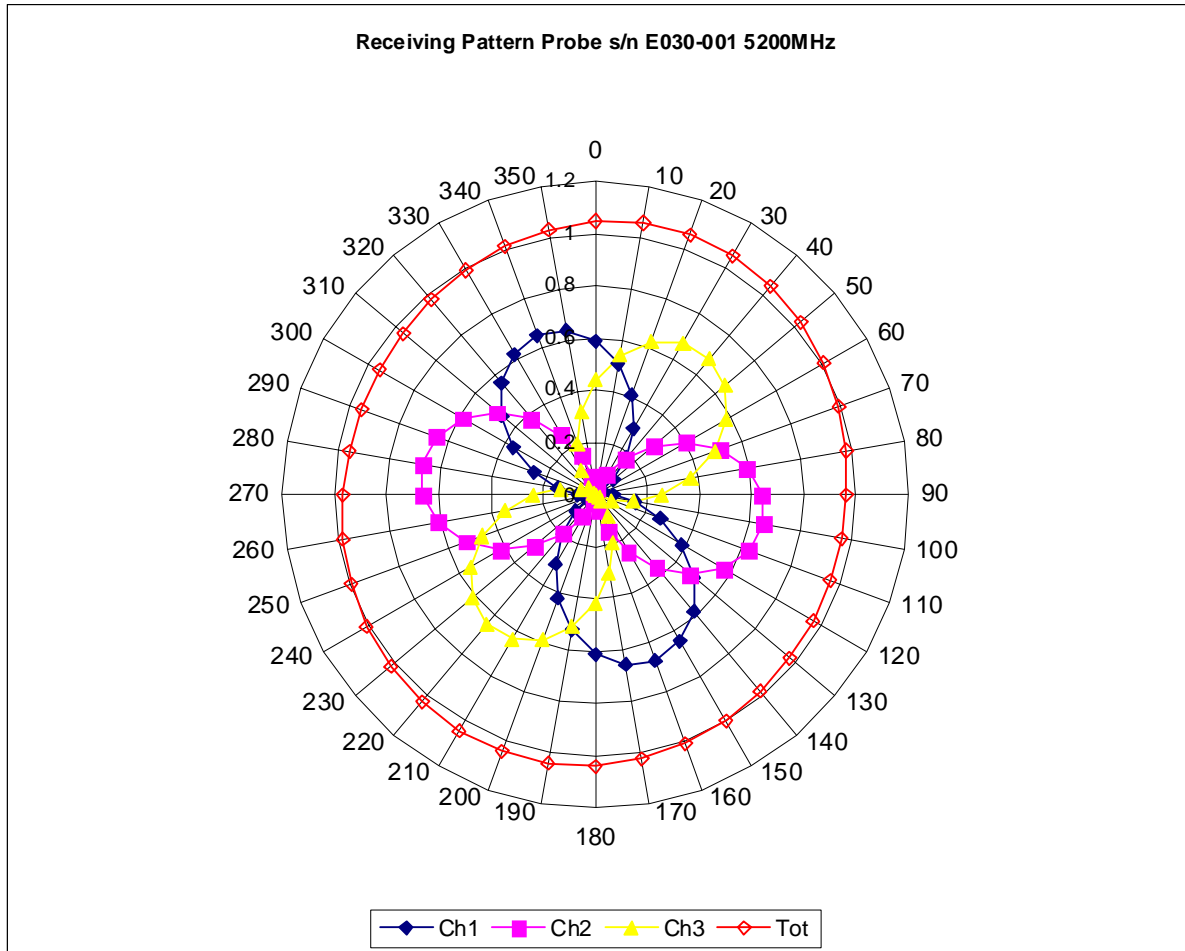
### **Boundary Effect:**

Uncertainty resulting from the boundary effect is less than 2.1% for the distance between the tip of the probe and the tissue boundary, when less than 0.58mm.

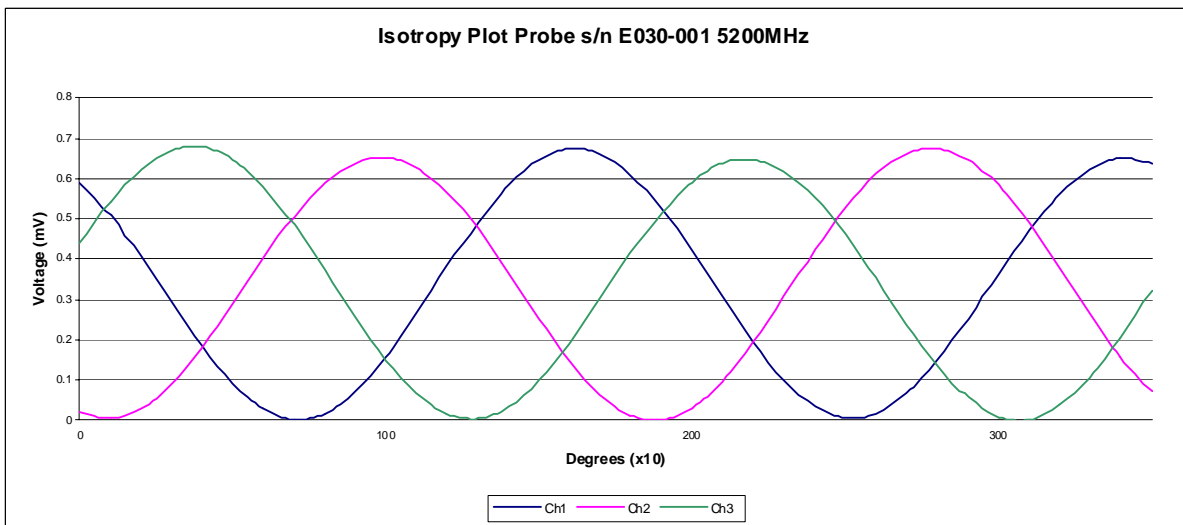
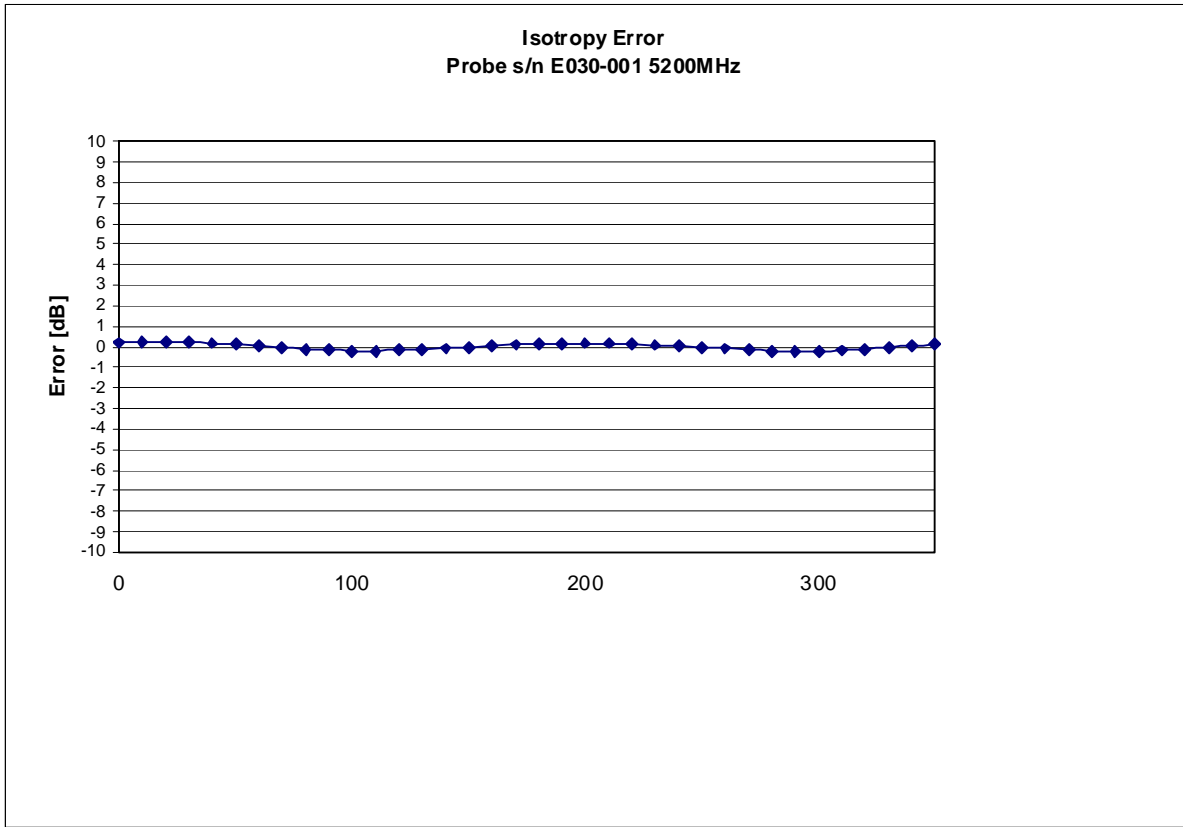
### **Spatial Resolution:**

The measured probe tip diameter is 2.5mm (+/- 0.01 mm) and therefore meets the requirements of SSI/DRB-TP-D01-032 for spatial resolution.

## Receiving Pattern 5200 MHz (Air)



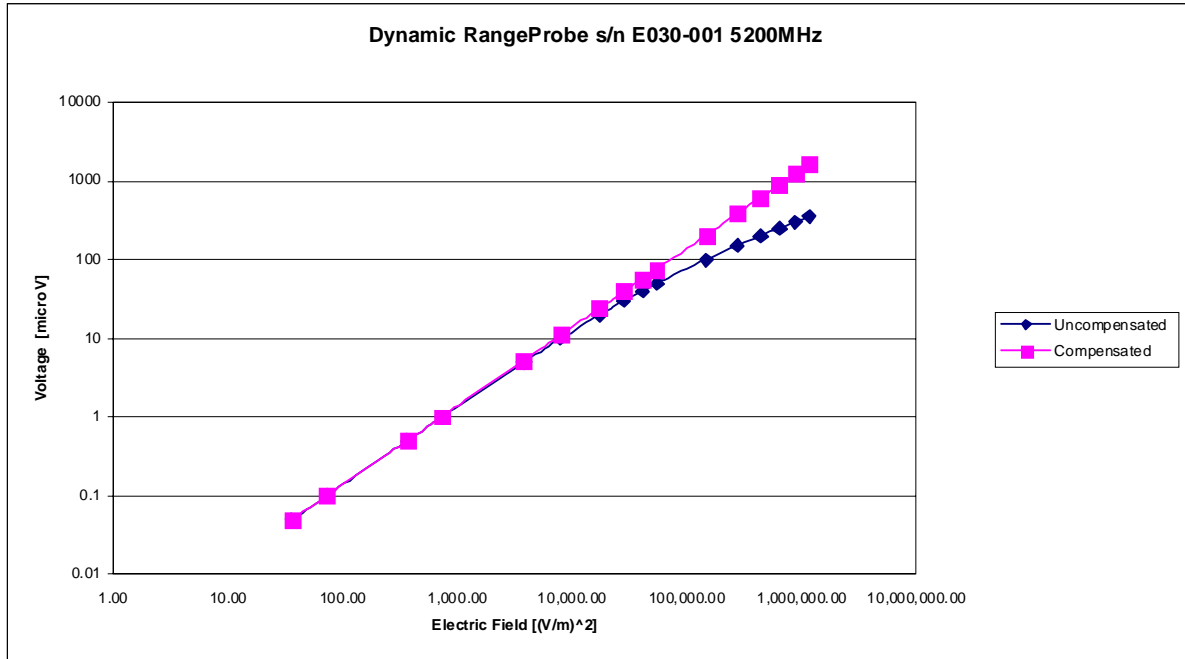
### Isotropy Error 5200 MHz (Air)



Isotropicity Tissue:

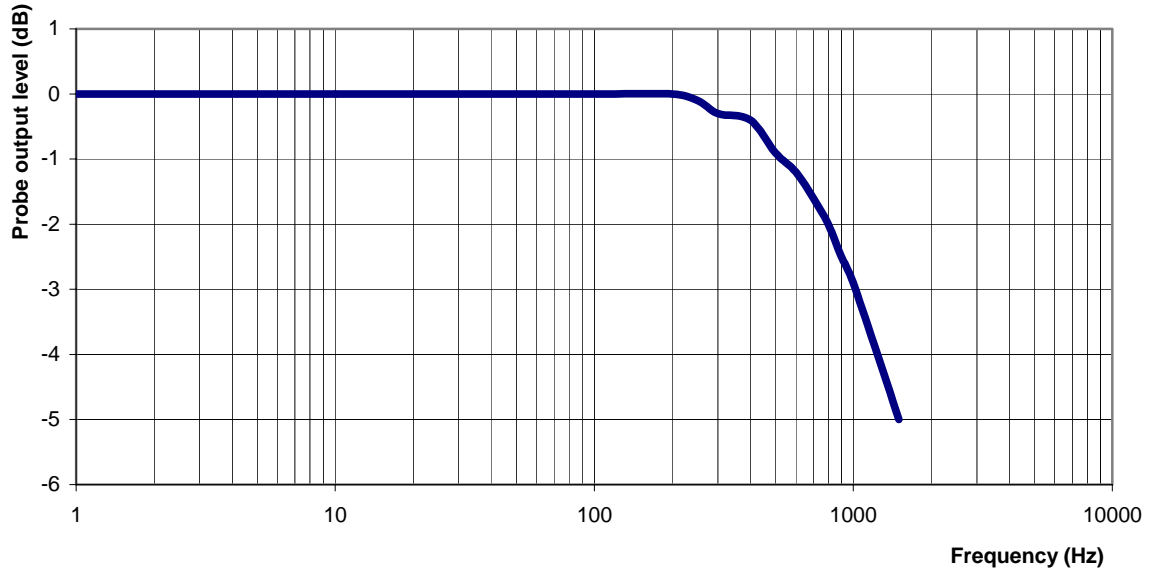
0.10 dB

## Dynamic Range



## Video Bandwidth

**Probe Frequency Characteristics**



**Video Bandwidth at 500 Hz**                      1 dB  
**Video Bandwidth at 1.02 KHz:**                3 dB



## **Conversion Factor Uncertainty Assessment**

### **Sensitivity in Body Tissue Measured**

|                   |       |               |          |
|-------------------|-------|---------------|----------|
| <b>Frequency:</b> |       | 5200 MHz      |          |
| <b>Epsilon:</b>   | 48.11 | <b>Sigma:</b> | 5.51 S/m |
| <b>ConvF</b>      |       |               |          |
| <b>Channel X:</b> | 8.6   | 7%(K=2)       |          |
| <b>Channel Y:</b> | 8.6   | 7%(K=2)       |          |
| <b>Channel Z:</b> | 8.6   | 7%(K=2)       |          |

To minimize the uncertainty calculation all tissue sensitivity values were calculated using a load impedance of 5 M $\Omega$ .

#### **Boundary Effect:**

For a distance of 0.58mm the evaluated uncertainty (increase in the probe sensitivity) is less than 2.1%.

## **Test Equipment**

The test equipment used during Probe Calibration, manufacturer, model number and, current calibration status are listed and located on the main APREL server R:\NCL\Calibration Equipment\Instrument List May 2007.

# NCL CALIBRATION LABORATORIES

Calibration File No.: CP-869

Client.: RFEL

## CERTIFICATE OF CALIBRATION

It is certified that the equipment identified below has been calibrated in the  
**NCL CALIBRATION LABORATORIES** by qualified personnel following recognized  
procedures and using transfer standards traceable to NRC/NIST.

Equipment: Miniature Isotropic RF Probe 5600 MHz

BODY Calibration

Manufacturer: APREL Laboratories

Model No.: E-020

Serial No.: E030-001

Calibration Procedure: SSI/DRB-TP-D01-032-E020-V2

Project No: RFEL-E030-5334

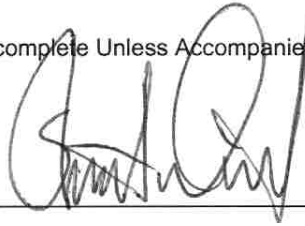
Calibrated: 14<sup>th</sup> April 2008

Released on: 14<sup>th</sup> April 2008

APREL Laboratories Certified Under Laboratory 48 of SCC

This Calibration Certificate is Incomplete Unless Accompanied with the Calibration Results Summary

Released By: \_\_\_\_\_



**NCL** CALIBRATION LABORATORIES

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CANADA K2R 1E6

Division of APREL Lab.  
TEL: (613) 820-4988  
FAX: (613) 820-4161

## Introduction

This Calibration Report reproduces the results of the calibration performed in line with the SSI/DRB-TP-D01-032-E020-V2 E-Field Probe Calibration Procedure. The results contained within this report are for APREL E-Field Probe E030-001.

## References

SSI/DRB-TP-D01-032-E020-V2 E-Field Probe Calibration Procedure

IEEE 1528 "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques"

SSI-TP-011 Tissue Calibration Procedure

IEC 62209 "Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures –Part 1 & 2: Procedure to determine the Specific Absorption Rate (SAR) for hand-held devices used in close proximity of the ear (frequency range of 300 MHz to 3 GHz)"

IEEE 1309 Draft Standard for Calibration of Electromagnetic Field Sensors and Probes, Excluding Antennas, from 9kHz to 40GHz


## Conditions

Probe E030-001 was a new probe.

**Ambient Temperature of the Laboratory:** 22 °C +/- 0.5°C

**Temperature of the Tissue:** 21 °C +/- 0.5°C

**We the undersigned attest that to the best of our knowledge the calibration of this probe has been accurately conducted and that all information contained within this report has been reviewed for accuracy.**

  
-----  
**Stuart Nicol**

  
-----  
**Jesse Hones**

## Calibration Results Summary

|                       |                     |
|-----------------------|---------------------|
| <b>Probe Type:</b>    | E-Field Probe E-030 |
| <b>Serial Number:</b> | E030-001            |
| <b>Frequency:</b>     | 5600 MHz            |
| <b>Sensor Offset:</b> | 1.06 mm             |
| <b>Sensor Length:</b> | 2.5 mm              |
| <b>Tip Enclosure:</b> | Composite*          |
| <b>Tip Diameter:</b>  | <2.5 mm             |
| <b>Tip Length:</b>    | 55 mm               |
| <b>Total Length:</b>  | 289 mm              |

\*Resistive to recommended tissue recipes per IEEE-1528

## Sensitivity in Air

|                                 |   |
|---------------------------------|---|
| <b>Channel X:</b>               | 1.2 $\mu\text{V}/(\text{V}/\text{m})^2$ |
| <b>Channel Y:</b>               | 1.2 $\mu\text{V}/(\text{V}/\text{m})^2$ |
| <b>Channel Z:</b>               | 1.2 $\mu\text{V}/(\text{V}/\text{m})^2$ |
| <b>Diode Compression Point:</b> | 95 mV                                   |

## **Sensitivity in Body Tissue Measured**

**Frequency:** 5600 MHz

**Epsilon:** 46.43                      **Sigma:** 5.87 S/m

### **ConvF:**

**Channel X:** 6.1

**Channel Y:** 6.1

**Channel Z:** 6.1

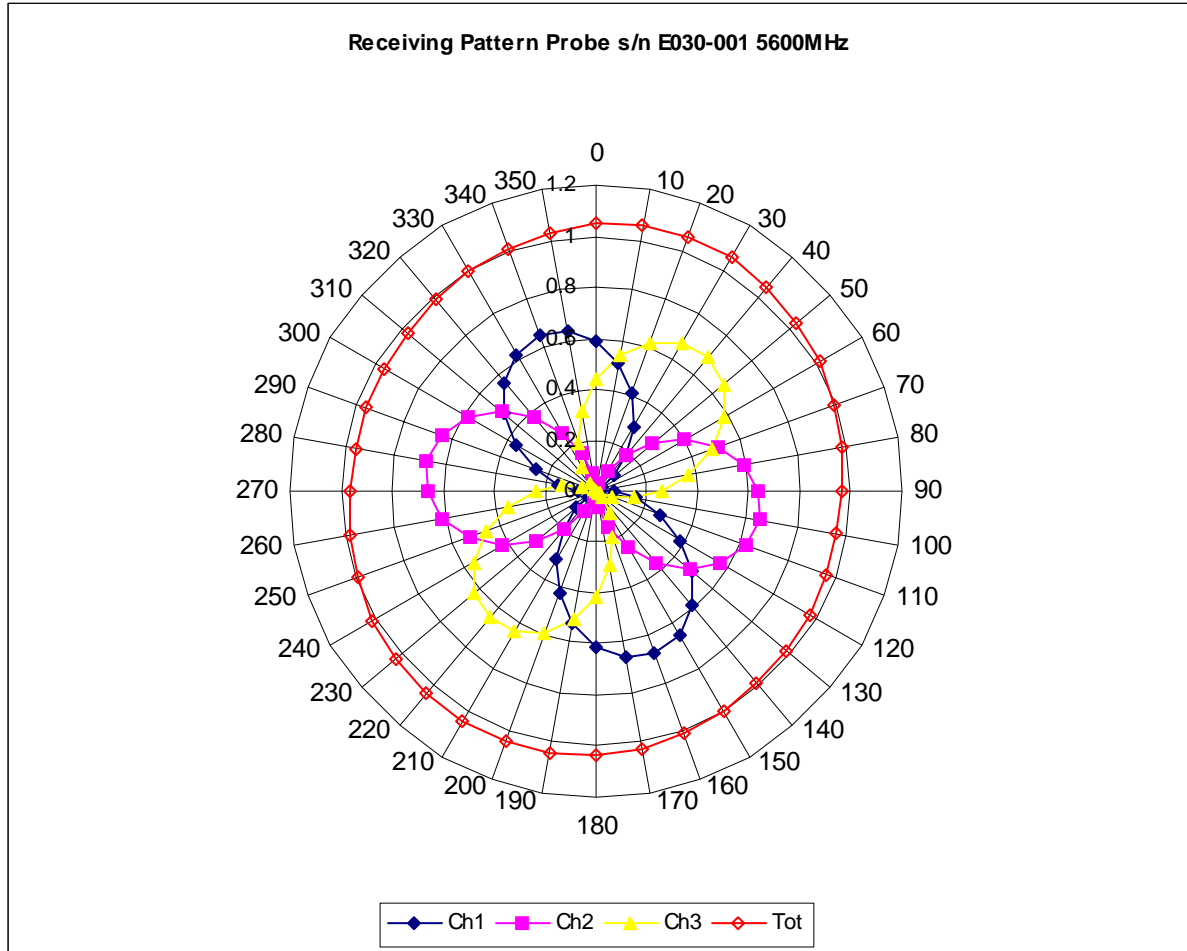
### **Boundary Effect:**

Uncertainty resulting from the boundary effect is less than 2.1% for the distance between the tip of the probe and the tissue boundary, when less than 0.58mm.

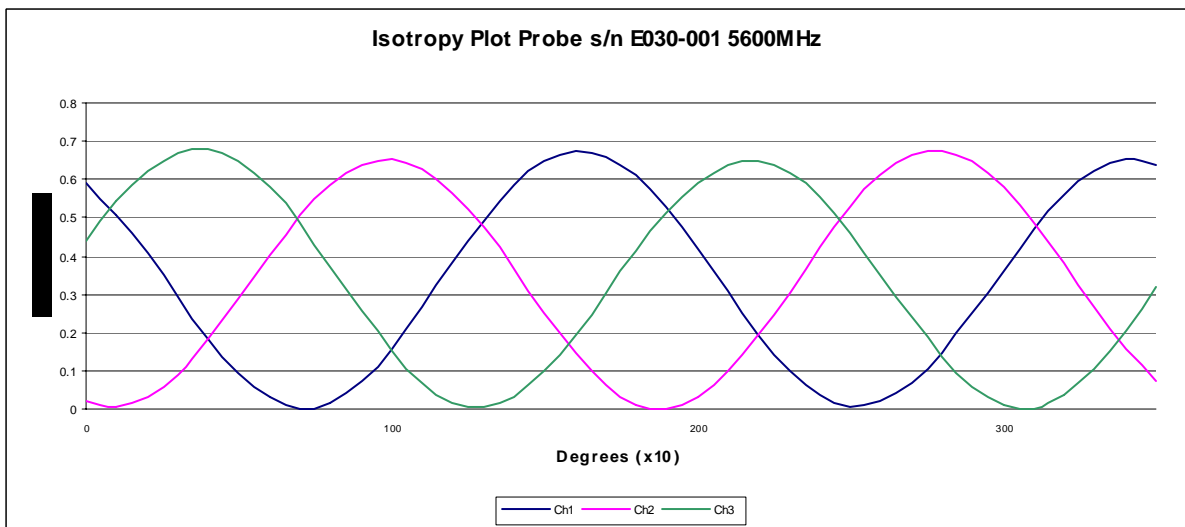
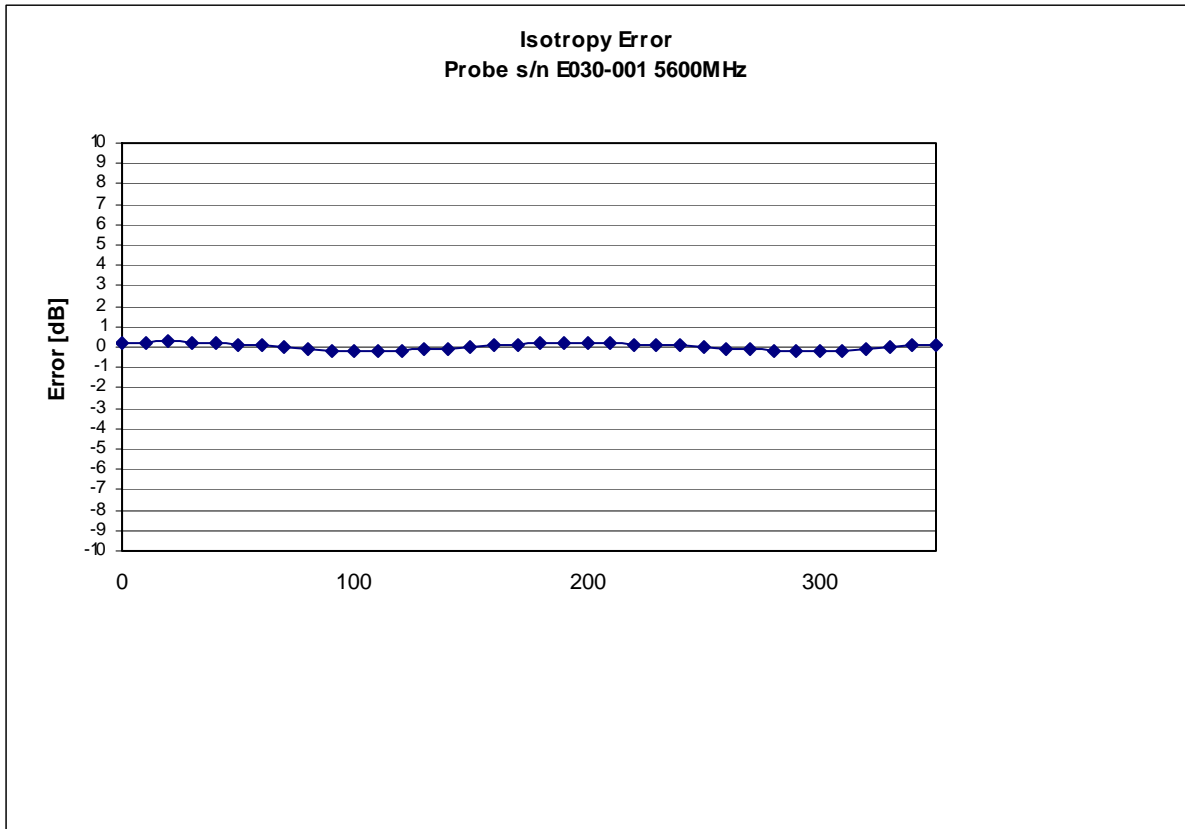
### **Spatial Resolution:**

The measured probe tip diameter is 2.5mm (+/- 0.01 mm) and therefore meets the requirements of SSI/DRB-TP-D01-032 for spatial resolution.

## Receiving Pattern 5600 MHz (Air)



### Isotropy Error 5600 MHz (Air)

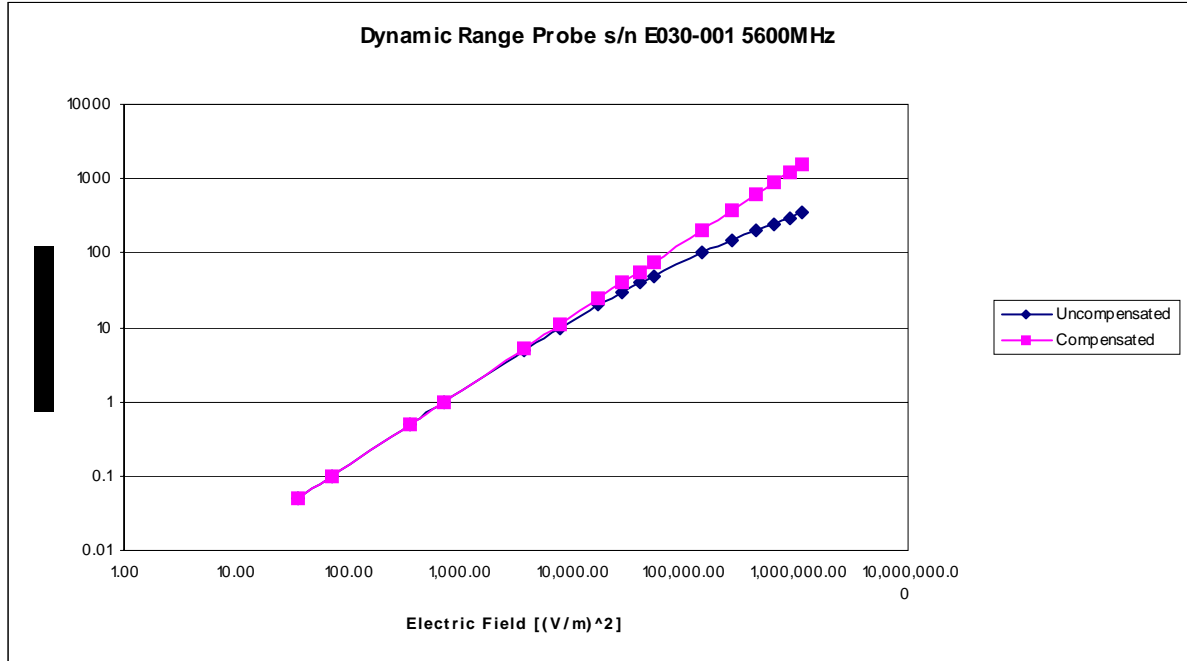


Isotropicity Tissue:

0.10 dB

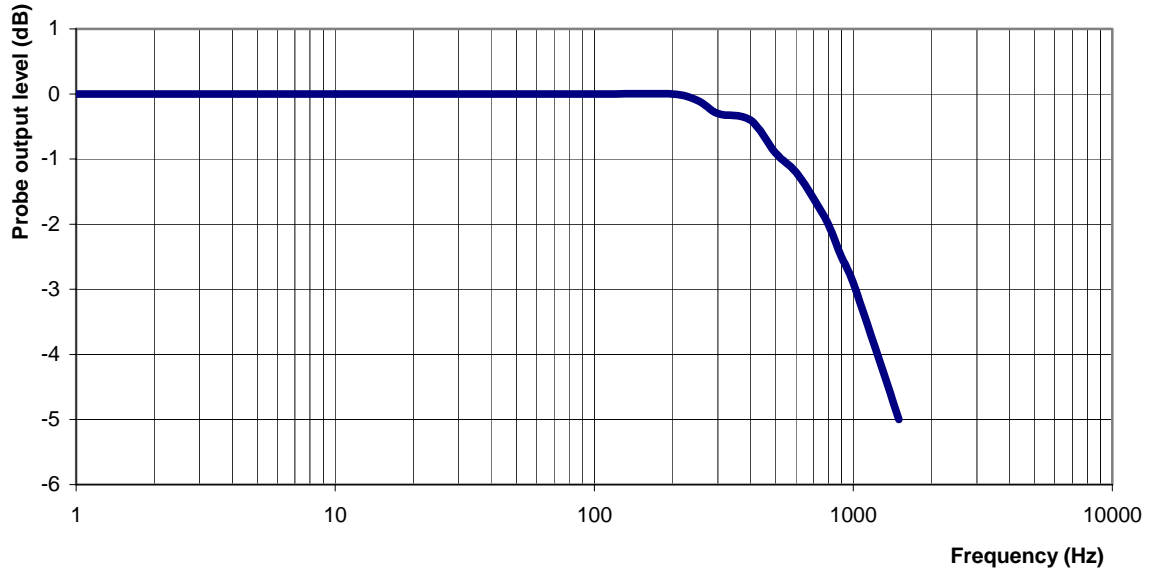


## Dynamic Range



## Video Bandwidth

**Probe Frequency Characteristics**



**Video Bandwidth at 500 Hz**                      1 dB  
**Video Bandwidth at 1.02 KHz:**                3 dB

## **Conversion Factor Uncertainty Assessment**

### **Sensitivity in Body Tissue Measured**

**Frequency:** 5600 MHz

**Epsilon:** 46.43

**Sigma:** 5.87 S/m

#### **ConvF**

**Channel X:** 6.1 7%(K=2)

**Channel Y:** 6.1 7%(K=2)

**Channel Z:** 6.1 7%(K=2)

To minimize the uncertainty calculation all tissue sensitivity values were calculated using a load impedance of 5 M $\Omega$ .

#### **Boundary Effect:**

For a distance of 0.58mm the evaluated uncertainty (increase in the probe sensitivity) is less than 2.1%.

## **Test Equipment**

The test equipment used during Probe Calibration, manufacturer, model number and, current calibration status are listed and located on the main APREL server R:\NCL\Calibration Equipment\Instrument List May 2007.

# NCL CALIBRATION LABORATORIES

Calibration File No.: CP-870

Client.: RFEL

## CERTIFICATE OF CALIBRATION

It is certified that the equipment identified below has been calibrated in the  
**NCL CALIBRATION LABORATORIES** by qualified personnel following recognized  
procedures and using transfer standards traceable to NRC/NIST.

Equipment: Miniature Isotropic RF Probe 5800 MHz

BODY Calibration

Manufacturer: APREL Laboratories

Model No.: E-020

Serial No.: E030-001

Calibration Procedure: SSI/DRB-TP-D01-032-E020-V2

Project No: RFEL-E030-5334

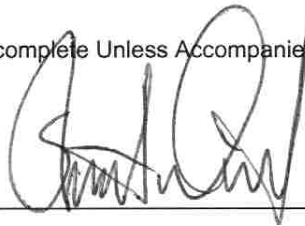
Calibrated: 14<sup>th</sup> April 2008

Released on: 14<sup>th</sup> April 2008

APREL Laboratories Certified Under Laboratory 48 of SCC

This Calibration Certificate is Incomplete Unless Accompanied with the Calibration Results Summary

Released By: \_\_\_\_\_



**NCL** CALIBRATION LABORATORIES

51 SPECTRUM WAY  
NEPEAN, ONTARIO  
CANADA K2R 1E6

Division of APREL Lab.  
TEL: (613) 820-4988  
FAX: (613) 820-4161

## Introduction

This Calibration Report reproduces the results of the calibration performed in line with the SSI/DRB-TP-D01-032-E020-V2 E-Field Probe Calibration Procedure. The results contained within this report are for APREL E-Field Probe E030-001.

## References


SSI/DRB-TP-D01-032-E020-V2 E-Field Probe Calibration Procedure  
IEEE 1528 "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques"  
SSI-TP-011 Tissue Calibration Procedure  
IEC 62209 "Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures –Part 1 & 2: Procedure to determine the Specific Absorption Rate (SAR) for hand-held devices used in close proximity of the ear (frequency range of 300 MHz to 3 GHz)"  
IEEE 1309 Draft Standard for Calibration of Electromagnetic Field Sensors and Probes, Excluding Antennas, from 9kHz to 40GHz

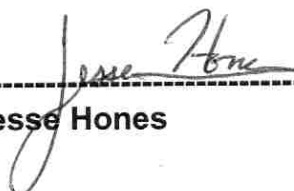
## Conditions

Probe E030-001 was a new probe.

**Ambient Temperature of the Laboratory:** 22 °C +/- 0.5°C  
**Temperature of the Tissue:** 21 °C +/- 0.5°C

**We the undersigned attest that to the best of our knowledge the calibration of this probe has been accurately conducted and that all information contained within this report has been reviewed for accuracy.**

  
-----  
**Stuart Nicol**

  
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**Jesse Hones**

## Calibration Results Summary

|                       |                     |
|-----------------------|---------------------|
| <b>Probe Type:</b>    | E-Field Probe E-030 |
| <b>Serial Number:</b> | E030-001            |
| <b>Frequency:</b>     | 5800 MHz            |
| <b>Sensor Offset:</b> | 1.06 mm             |
| <b>Sensor Length:</b> | 2.5 mm              |
| <b>Tip Enclosure:</b> | Composite*          |
| <b>Tip Diameter:</b>  | <2.5 mm             |
| <b>Tip Length:</b>    | 55 mm               |
| <b>Total Length:</b>  | 289 mm              |

\*Resistive to recommended tissue recipes per IEEE-1528

## Sensitivity in Air

|                                 |   |
|---------------------------------|---|
| <b>Channel X:</b>               | 1.2 $\mu\text{V}/(\text{V}/\text{m})^2$ |
| <b>Channel Y:</b>               | 1.2 $\mu\text{V}/(\text{V}/\text{m})^2$ |
| <b>Channel Z:</b>               | 1.2 $\mu\text{V}/(\text{V}/\text{m})^2$ |
| <b>Diode Compression Point:</b> | 95 mV                                   |

## **Sensitivity in Body Tissue Measured**

**Frequency:** 5800 MHz

**Epsilon:** 46.38                      **Sigma:** 6.22 S/m

### **ConvF:**

**Channel X:** 12

**Channel Y:** 12

**Channel Z:** 12

### **Boundary Effect:**

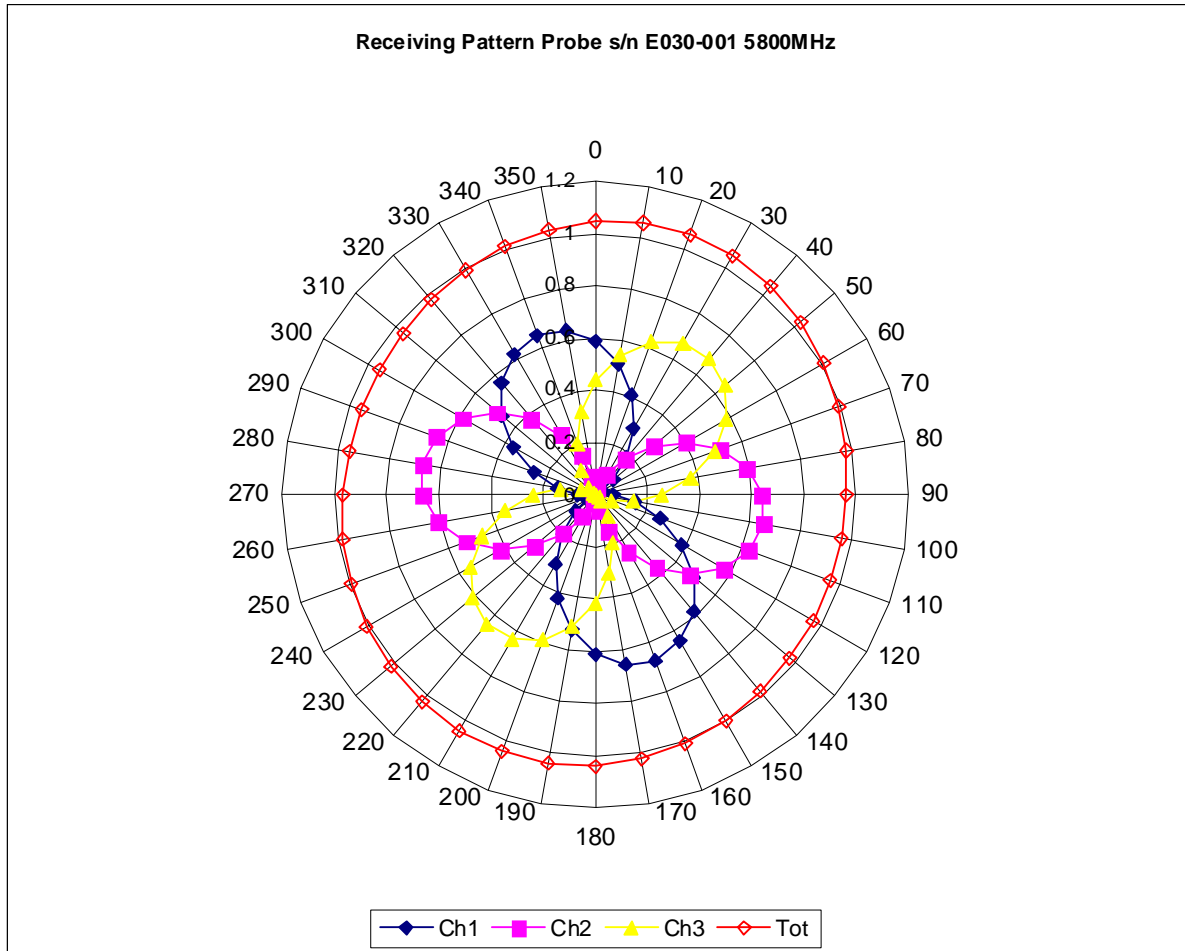
Uncertainty resulting from the boundary effect is less than 2.1% for the distance between the tip of the probe and the tissue boundary, when less than 0.58mm.

### **Spatial Resolution:**

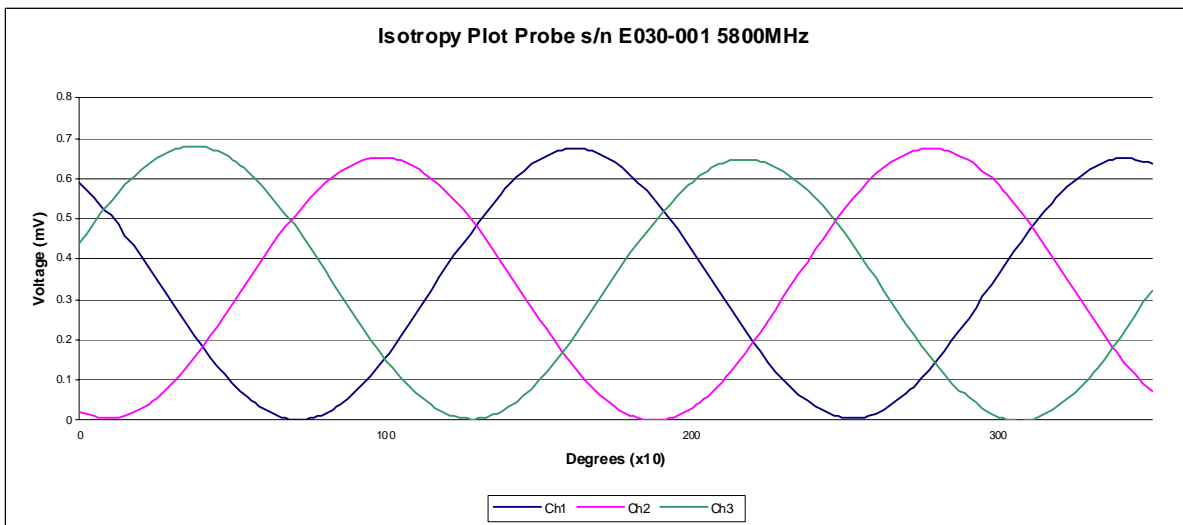
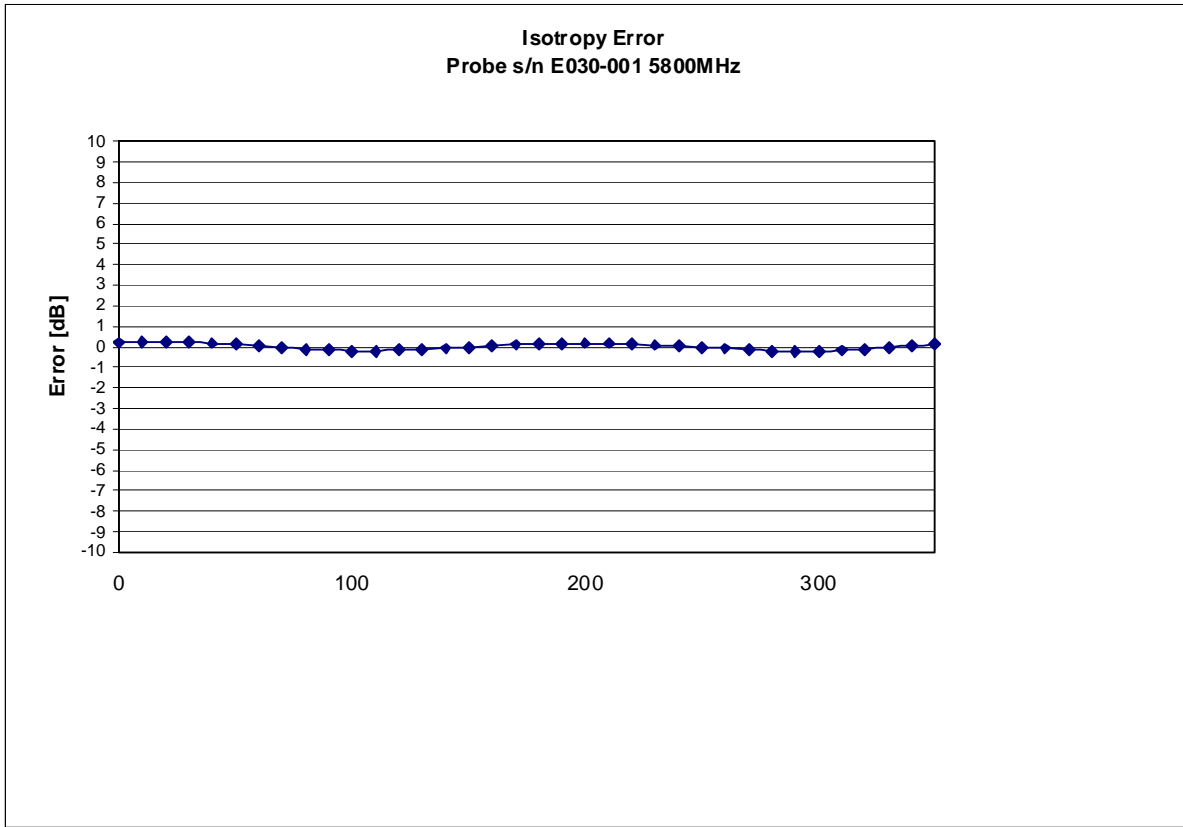
The measured probe tip diameter is 2.5mm (+/- 0.01 mm) and therefore meets the requirements of SSI/DRB-TP-D01-032 for spatial resolution.



## Receiving Pattern 5800 MHz (Air)



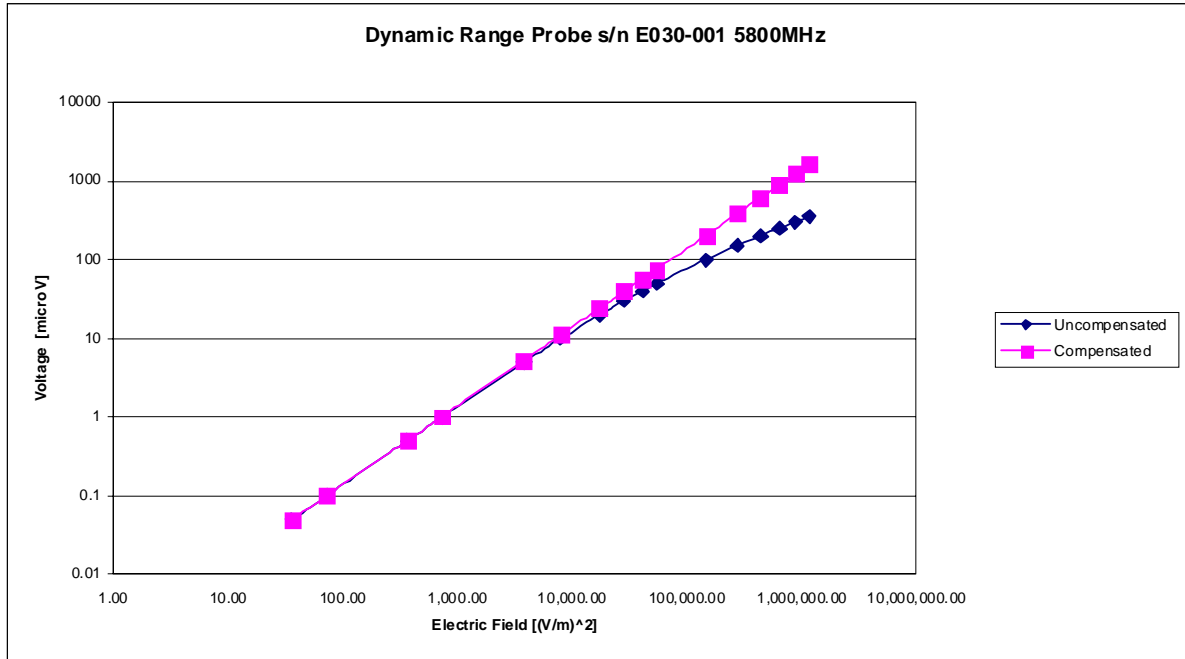
### Isotropy Error 5800 MHz (Air)



Isotropicity Tissue:

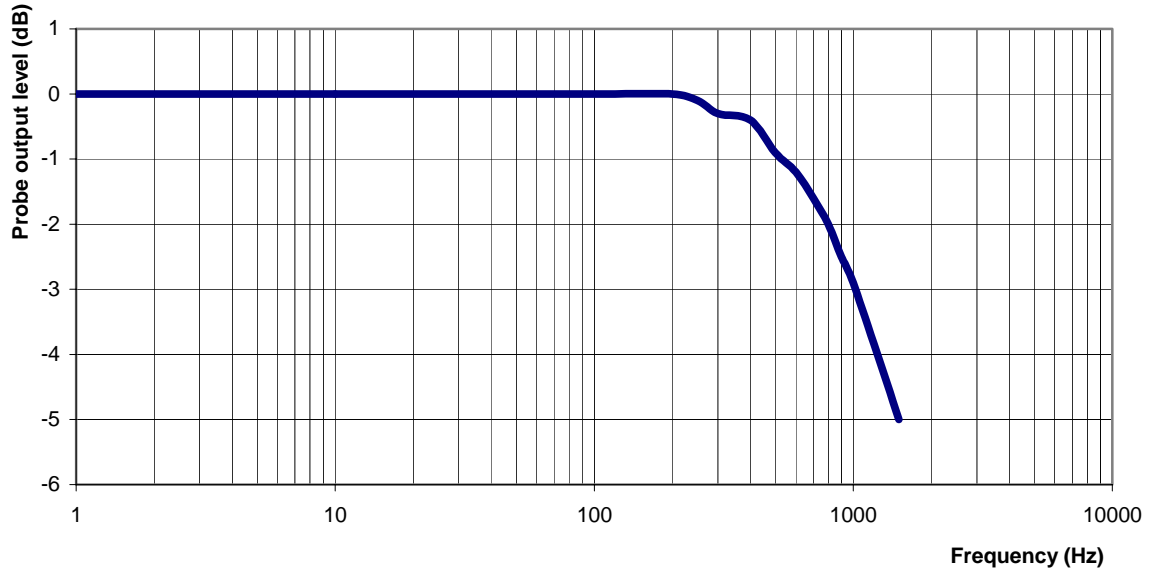
0.10 dB

## Dynamic Range



## Video Bandwidth

**Probe Frequency Characteristics**



**Video Bandwidth at 500 Hz**                      1 dB  
**Video Bandwidth at 1.02 KHz:**                3 dB

## Conversion Factor Uncertainty Assessment

### Sensitivity in Body Tissue Measured

**Frequency:** 5800 MHz  
**Epsilon:** 46.38                      **Sigma:** 6.22 S/m

#### ConvF

**Channel X:** 12                      7%(K=2)  
**Channel Y:** 12                      7%(K=2)  
**Channel Z:** 12                      7%(K=2)

To minimize the uncertainty calculation all tissue sensitivity values were calculated using a load impedance of 5 M $\Omega$ .

#### Boundary Effect:

For a distance of 0.58mm the evaluated uncertainty (increase in the probe sensitivity) is less than 2.1%.

## **Test Equipment**

The test equipment used during Probe Calibration, manufacturer, model number and, current calibration status are listed and located on the main APREL server R:\NCL\Calibration Equipment\Instrument List May 2007.

## Appendix E – Dipole Calibration Data Sheets

## RF Exposure Lab, LLC

Calibration File No: CAL.20080203

# CERTIFICATE OF CALIBRATION

It is certified that the equipment identified below has been calibrated at RF Exposure Lab, LLC by qualified personnel following recognized procedures and using transfer standards traceable to NRC/NIST.

### Validation Dipole

Manufacturer: APREL Laboratories

Part Number: ALS-D-835-S-2

Frequency: 835 MHz

Serial No: RFE-274

Manufactured: 20 February 2004  
Calibrated: 22 February 2008

Calibrated By: Signature on File  
Jay Moulton – Technical Manager

Approved By: Signature on File  
Tamara Moulton – Quality Manager

Measurement Uncertainty:

|                     |      |
|---------------------|------|
| Repeatability:      | 2.3% |
| Tissue Uncertainty: | 3.2% |
| Network Analyzer:   | 2.5% |



## RF EXPOSURE LAB, LLC

2867 Progress Place, Suite 4D  
Escondido, CA 92029

Tel: (760) 737-3131  
FAX: (760) 737-9131



## Calibration Results Summary

The following results relate to the Calibrated Dipole and should be used as a quick reference for the user.

### Mechanical Dimensions

**Length:** 161.8 mm  
**Height:** 91.1 mm

### Electrical Specifications

#### Head

**SWR:** 1.1182 U  
**Return Loss:** -27.508 dB  
**Impedance:** 49.648  $\Omega$

### System Validation Results

| Frequency | 1 Gram | 10 Gram |
|-----------|--------|---------|
| 835 MHz   | 9.500  | 6.000   |

#### Body

**SWR:** 1.1533 U  
**Return Loss:** -23.596 dB  
**Impedance:** 51.395  $\Omega$

### System Validation Results

| Frequency | 1 Gram | 10 Gram |
|-----------|--------|---------|
| 835 MHz   | 9.750  | 6.240   |

## Head Measurement Conditions

The measurements were performed in the Uni-Phantom filled with head simulating liquid of the following electrical parameters at 835 MHz:

|                        |            |      |
|------------------------|------------|------|
| Relative Dielectricity | 41.48      | ± 5% |
| Conductivity           | 0.92 mho/m | ± 5% |

The APREL Laboratories ALSAS system with a dosimetric E-field probe E-020 (SN:217, Conversion factor 6.0 at 835 MHz) was used for the measurements.

The dipole was mounted so that the dipole feed point was positioned below the center marking of the flat phantom and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 15mm from the dipole center to the solution surface.

The coarse grid with a grid spacing of 10mm was aligned with the dipole. The 5x5x8 fine cube was chosen for cube integration. The dipole input power (forward power) was 100mW ± 3%. The results are normalized to 1W input power.

The laboratories environmental conditions were as follows during the calibration sequence.

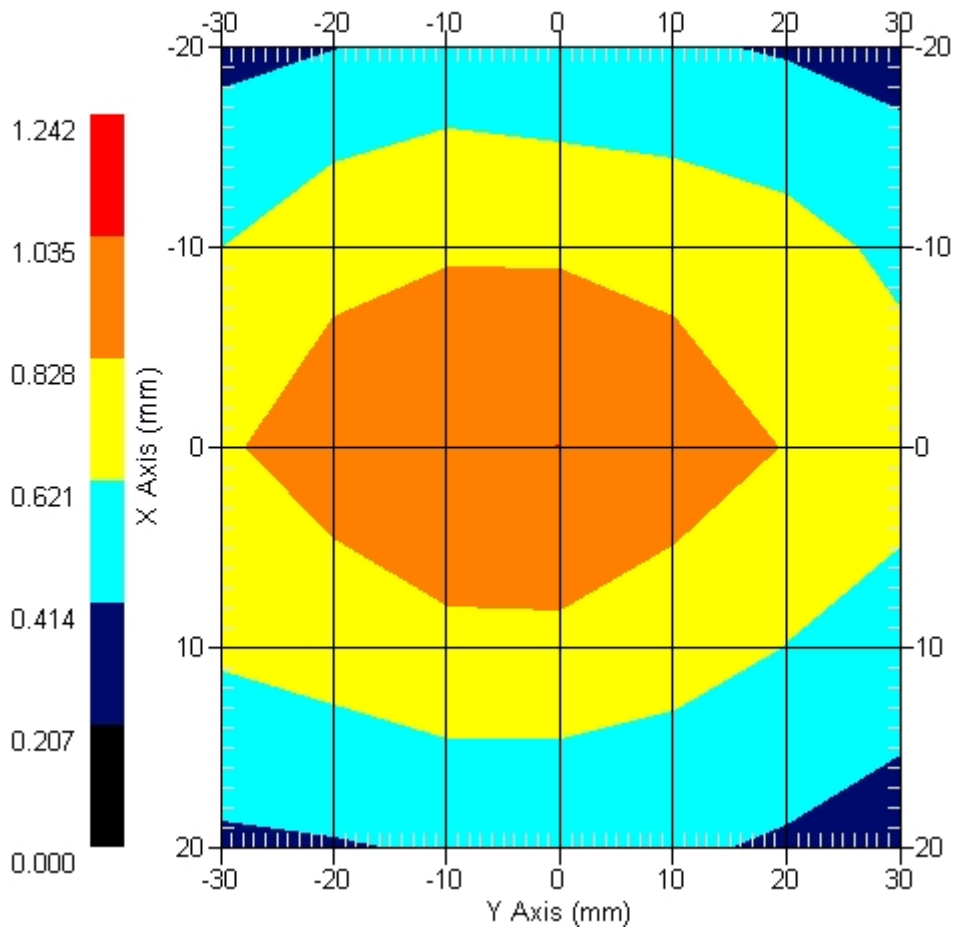
|  |                |
|--|----------------|
| Ambient Temperature of the Laboratory: | 24 °C ± 1.0 °C |
| Temperature of the Tissue:             | 20 °C ± 1.0 °C |
| Relative Humidity:                     | 40%            |

**SAR Measurement**

Standard SAR measurements were performed according to the measurement conditions described above. The results have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR values measured with the dosimetric probe E-020 SN:217 and applying the advanced extrapolation are:

Averaged over 1 cm<sup>3</sup> (1 g) of tissue: 9.500 mW/g ± 19.0% (k=2)<sup>1</sup>  
 Averaged over 10 cm<sup>3</sup> (10 g) of tissue: 6.000 mW/g ± 18.5% (k=2)<sup>1</sup>

**Area Scan**



1 gram SAR value : 0.950 W/kg  
 10 gram SAR value : 0.600 W/kg  
 Area Scan Peak SAR : 1.037 W/kg  
 Zoom Scan Peak SAR : 1.541 W/kg

<sup>1</sup> validation uncertainty

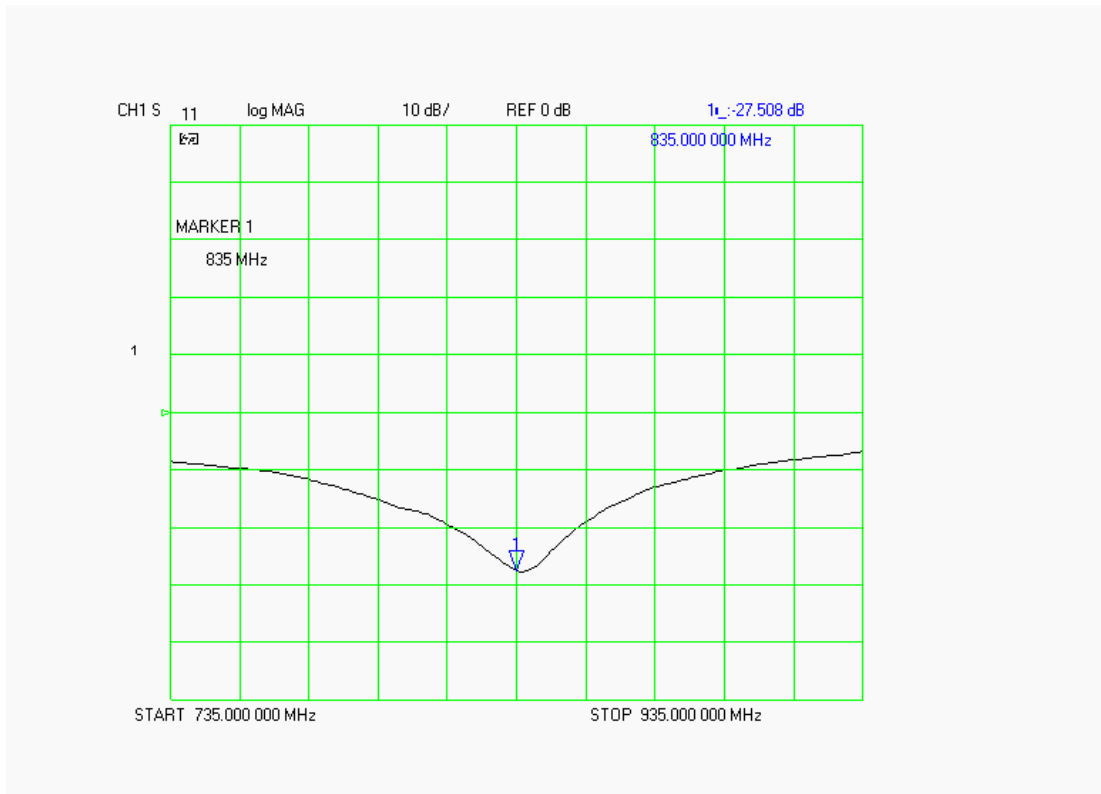
### Dipole Impedance and Return Loss

The impedance was measured at the SMA connector with a network analyzer. The dipole was positioned at the flat phantom sections according to measurement conditions stated above during impedance measurements.

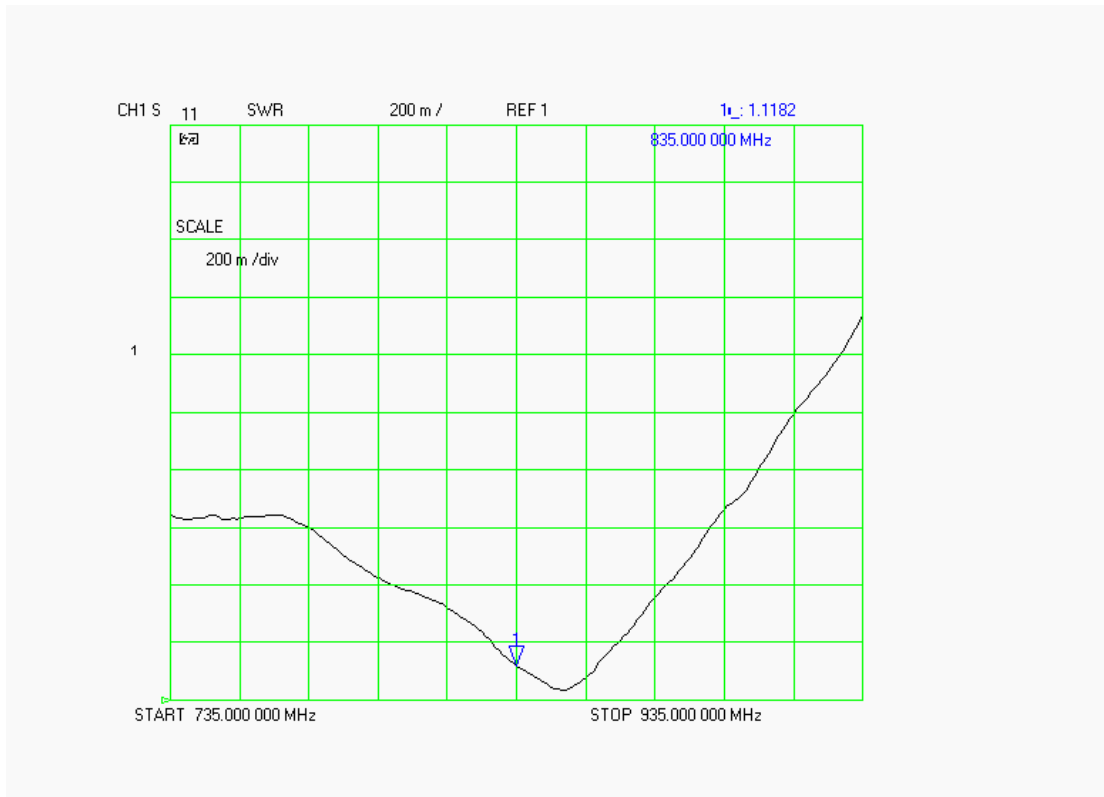
| Test      | Result          |
|-----------|-----------------|
| S11 R/L   | -27.508 dB      |
| SWR       | 1.1182 U        |
| Impedance | 49.648 $\Omega$ |

The following graphs are the results as displayed on the Vector Network Analyzer.

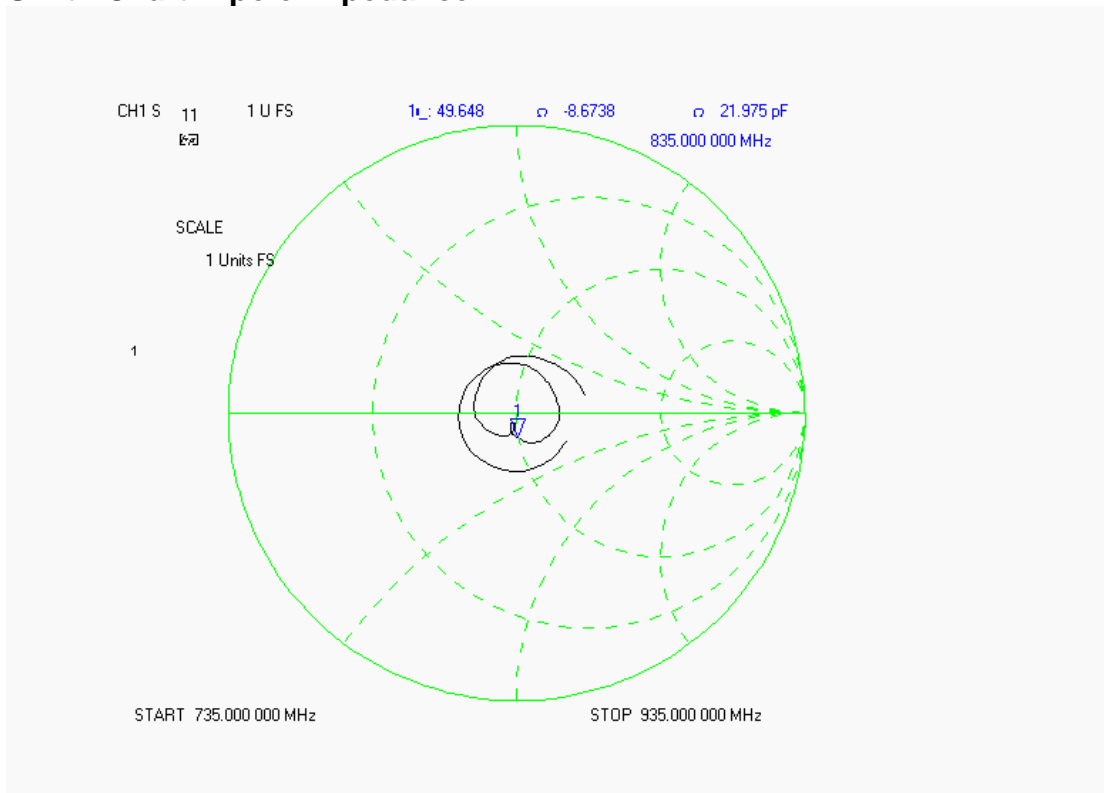
### S11 Parameter Return Loss



### SWR



### Smith Chart Dipole Impedance



## Body Measurement Conditions

The measurements were performed in the Uni-Phantom filled with body simulating liquid of the following electrical parameters at 835 MHz:

|                        |            |      |
|------------------------|------------|------|
| Relative Dielectricity | 55.20      | ± 5% |
| Conductivity           | 0.96 mho/m | ± 5% |

The APREL Laboratories ALSAS system with a dosimetric E-field probe E-020 (SN:217, Conversion factor 6.1 at 835 MHz) was used for the measurements.

The dipole was mounted so that the dipole feed point was positioned below the center marking of the flat phantom and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 15mm from the dipole center to the solution surface.

The coarse grid with a grid spacing of 10mm was aligned with the dipole. The 5x5x8 fine cube was chosen for cube integration. The dipole input power (forward power) was 100mW ± 3%. The results are normalized to 1W input power.

The laboratories environmental conditions were as follows during the calibration sequence.

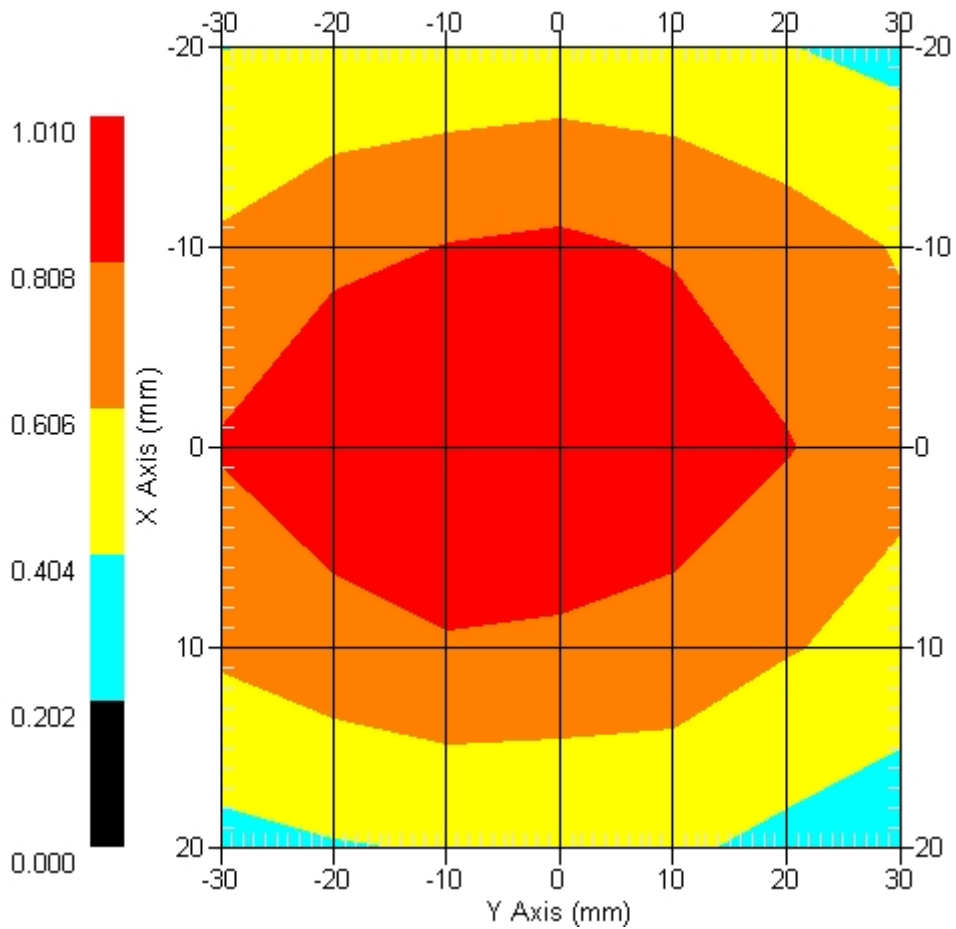
|  |                |
|--|----------------|
| Ambient Temperature of the Laboratory: | 24 °C ± 1.0 °C |
| Temperature of the Tissue:             | 20 °C ± 1.0 °C |
| Relative Humidity:                     | 40%            |

**SAR Measurement**

Standard SAR measurements were performed according to the measurement conditions described above. The results have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR values measured with the dosimetric probe E-020 SN:217 and applying the advanced extrapolation are:

Averaged over 1 cm<sup>3</sup> (1 g) of tissue: 9.750 mW/g ± 19.1% (k=2)<sup>1</sup>  
 Averaged over 10 cm<sup>3</sup> (10 g) of tissue: 6.240 mW/g ± 18.6% (k=2)<sup>1</sup>

**Area Scan**



1 gram SAR value : 0.975 W/kg  
 10 gram SAR value : 0.624 W/kg  
 Area Scan Peak SAR : 1.009 W/kg  
 Zoom Scan Peak SAR : 1.571 W/kg

<sup>1</sup> validation uncertainty

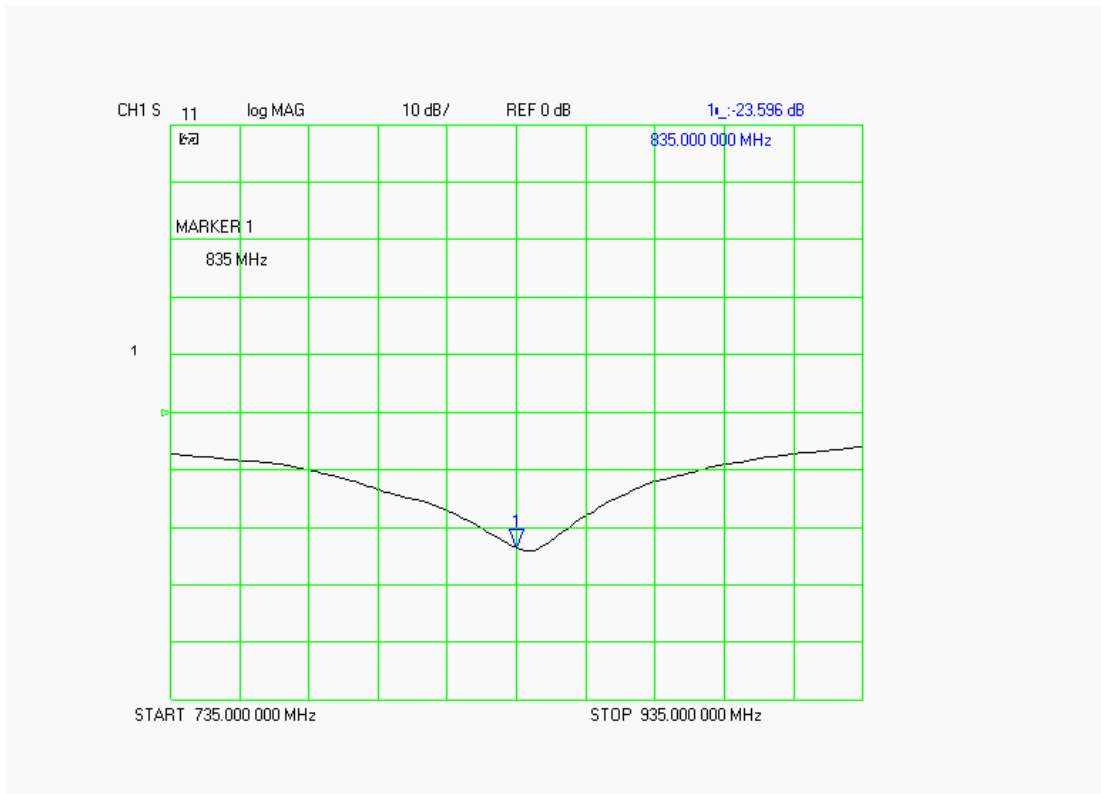
### Dipole Impedance and Return Loss

The impedance was measured at the SMA connector with a network analyzer. The dipole was positioned at the flat phantom sections according to measurement conditions stated above during impedance measurements.

| Test      | Result          |
|-----------|-----------------|
| S11 R/L   | -23.596 dB      |
| SWR       | 1.1533 U        |
| Impedance | 51.395 $\Omega$ |

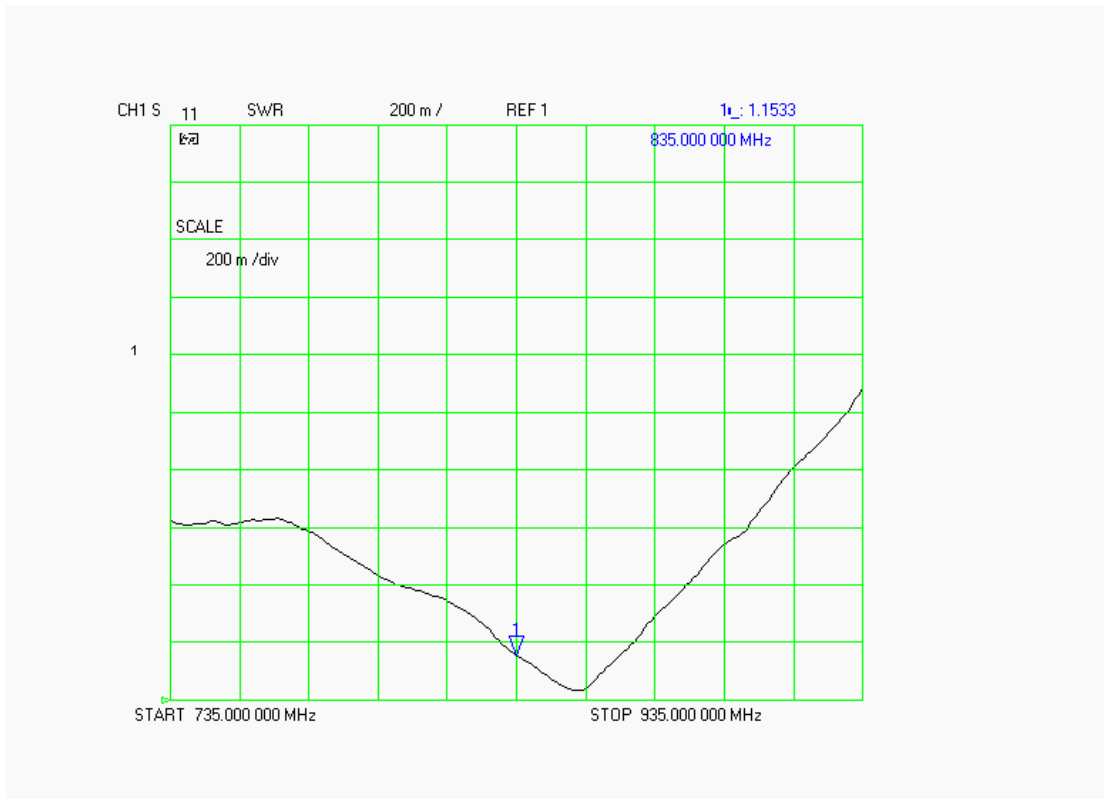
The following graphs are the results as displayed on the Vector Network Analyzer.

### S11 Parameter Return Loss

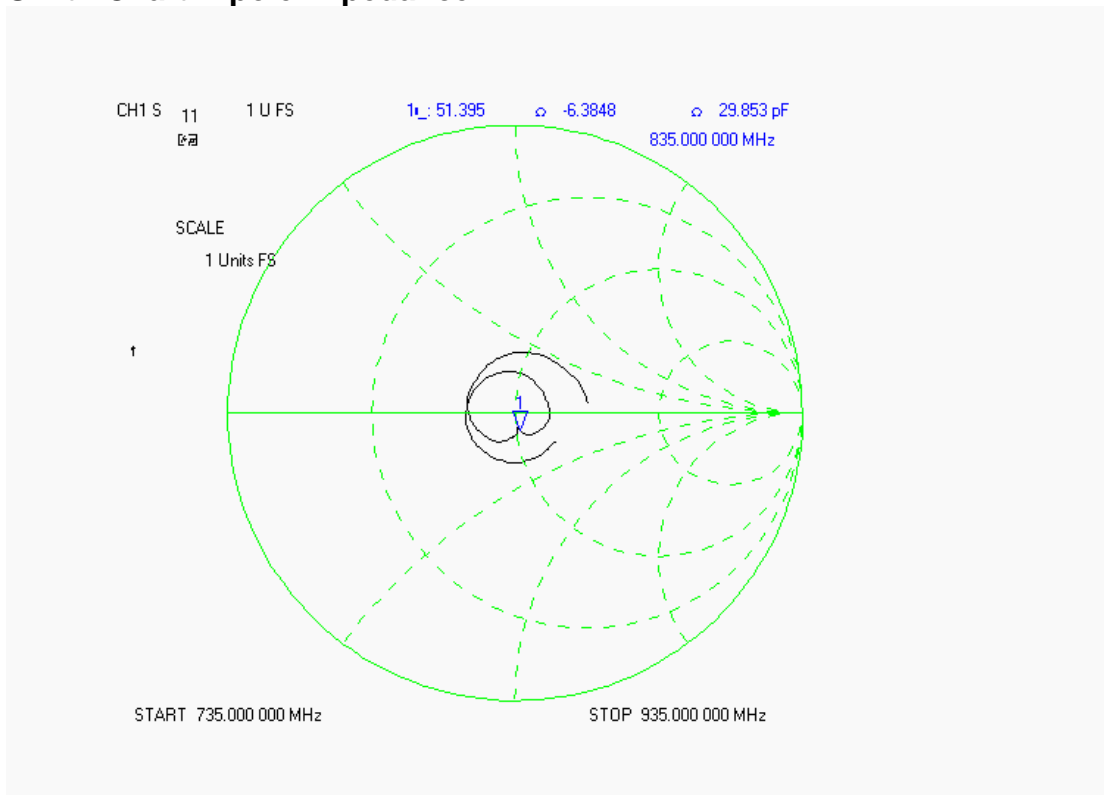




### SWR



### Smith Chart Dipole Impedance



## Test Equipment List

The test equipment used during Dipole Calibration, manufacturer, model number and, current calibration status are listed and located on the RF Exposure Lab, LLC system computer C:\Test Equipment\Calibration Equipment\Instrument List February 2008.

## RF Exposure Lab, LLC

Calibration File No: CAL.20080202

# CERTIFICATE OF CALIBRATION

It is certified that the equipment identified below has been calibrated at RF Exposure Lab, LLC by qualified personnel following recognized procedures and using transfer standards traceable to NRC/NIST.

### Validation Dipole

Manufacturer: APREL Laboratories

Part Number: ALS-D-1900-S-2

Frequency: 1.9 GHz

Serial No: RFE-277

Manufactured: 20 February 2004  
Calibrated: 21 February 2008

Calibrated By: Signature on File  
Jay Moulton – Technical Manager

Approved By: Signature on File  
Tamara Moulton – Quality Manager

Measurement Uncertainty:

|                     |      |
|---------------------|------|
| Repeatability:      | 2.3% |
| Tissue Uncertainty: | 3.2% |
| Network Analyzer:   | 2.5% |



## RF EXPOSURE LAB, LLC

2867 Progress Place, Suite 4D  
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## Calibration Results Summary

The following results relate to the Calibrated Dipole and should be used as a quick reference for the user.

### Mechanical Dimensions

**Length:** 68.0 mm  
**Height:** 37.5 mm

### Electrical Specifications

#### Head

**SWR:** 1.0793 U  
**Return Loss:** -38.514 dB  
**Impedance:** 49.063  $\Omega$

### System Validation Results

| Frequency | 1 Gram | 10 Gram |
|-----------|--------|---------|
| 1.9 GHz   | 39.380 | 20.270  |

#### Body

**SWR:** 1.1006 U  
**Return Loss:** -41.682 dB  
**Impedance:** 53.580  $\Omega$

### System Validation Results

| Frequency | 1 Gram | 10 Gram |
|-----------|--------|---------|
| 1.9 GHz   | 40.990 | 21.090  |

## Head Measurement Conditions

The measurements were performed in the Uni-Phantom filled with head simulating liquid of the following electrical parameters at 1900 MHz:

|                        |            |      |
|------------------------|------------|------|
| Relative Dielectricity | 39.97      | ± 5% |
| Conductivity           | 1.41 mho/m | ± 5% |

The APREL Laboratories ALSAS system with a dosimetric E-field probe E-020 (SN:217, Conversion factor 4.65 at 1900 MHz) was used for the measurements.

The dipole was mounted so that the dipole feed point was positioned below the center marking of the flat phantom and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10mm from the dipole center to the solution surface.

The coarse grid with a grid spacing of 10mm was aligned with the dipole. The 5x5x8 fine cube was chosen for cube integration. The dipole input power (forward power) was 100mW ± 3%. The results are normalized to 1W input power.

The laboratories environmental conditions were as follows during the calibration sequence.

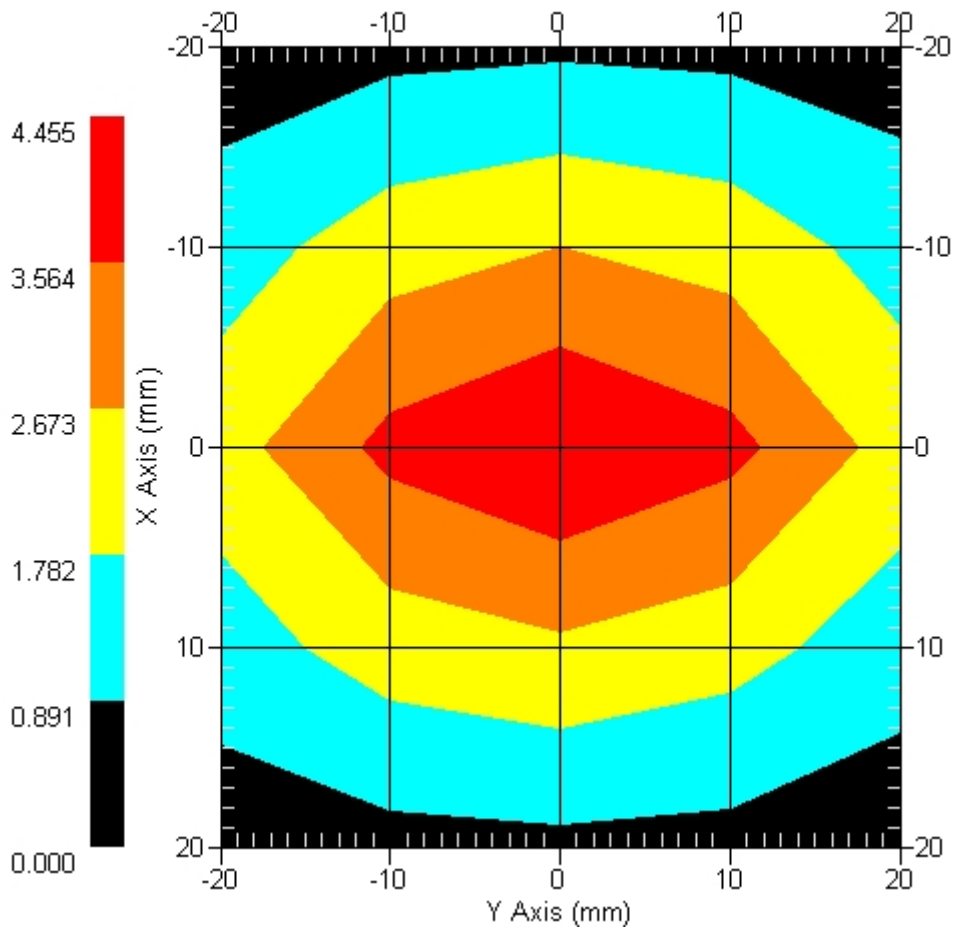
|  |                |
|--|----------------|
| Ambient Temperature of the Laboratory: | 23 °C ± 1.0 °C |
| Temperature of the Tissue:             | 20 °C ± 1.0 °C |
| Relative Humidity:                     | 40%            |

**SAR Measurement**

Standard SAR measurements were performed according to the measurement conditions described above. The results have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR values measured with the dosimetric probe E-020 SN:217 and applying the advanced extrapolation are:

Averaged over 1 cm<sup>3</sup> (1 g) of tissue: 39.380 mW/g ± 19.2% (k=2)<sup>1</sup>  
 Averaged over 10 cm<sup>3</sup> (10 g) of tissue: 20.270 mW/g ± 18.8% (k=2)<sup>1</sup>

**Area Scan**



1 gram SAR value : 3.938 W/kg  
 10 gram SAR value : 2.027 W/kg  
 Area Scan Peak SAR : 4.455 W/kg  
 Zoom Scan Peak SAR : 7.246 W/kg

<sup>1</sup> validation uncertainty

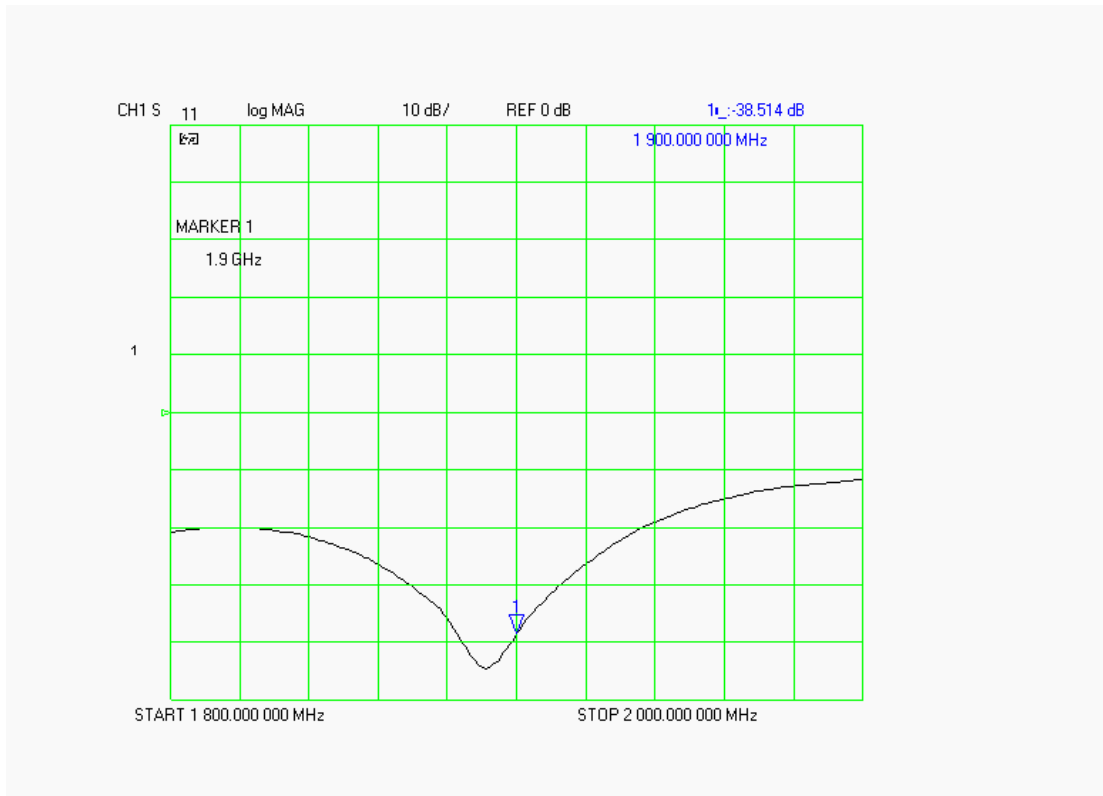
### Dipole Impedance and Return Loss

The impedance was measured at the SMA connector with a network analyzer. The dipole was positioned at the flat phantom sections according to measurement conditions stated above during impedance measurements.

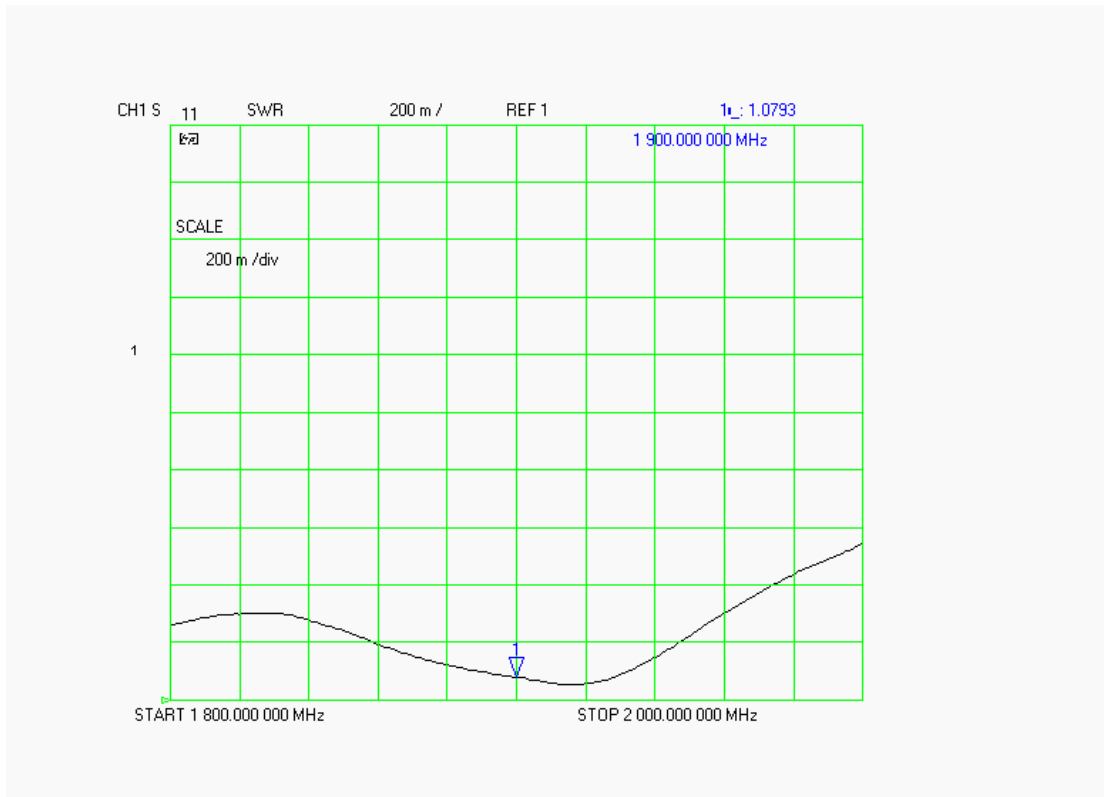
| Test      | Result          |
|-----------|-----------------|
| S11 R/L   | -38.514 dB      |
| SWR       | 1.0793 U        |
| Impedance | 49.063 $\Omega$ |

The following graphs are the results as displayed on the Vector Network Analyzer.

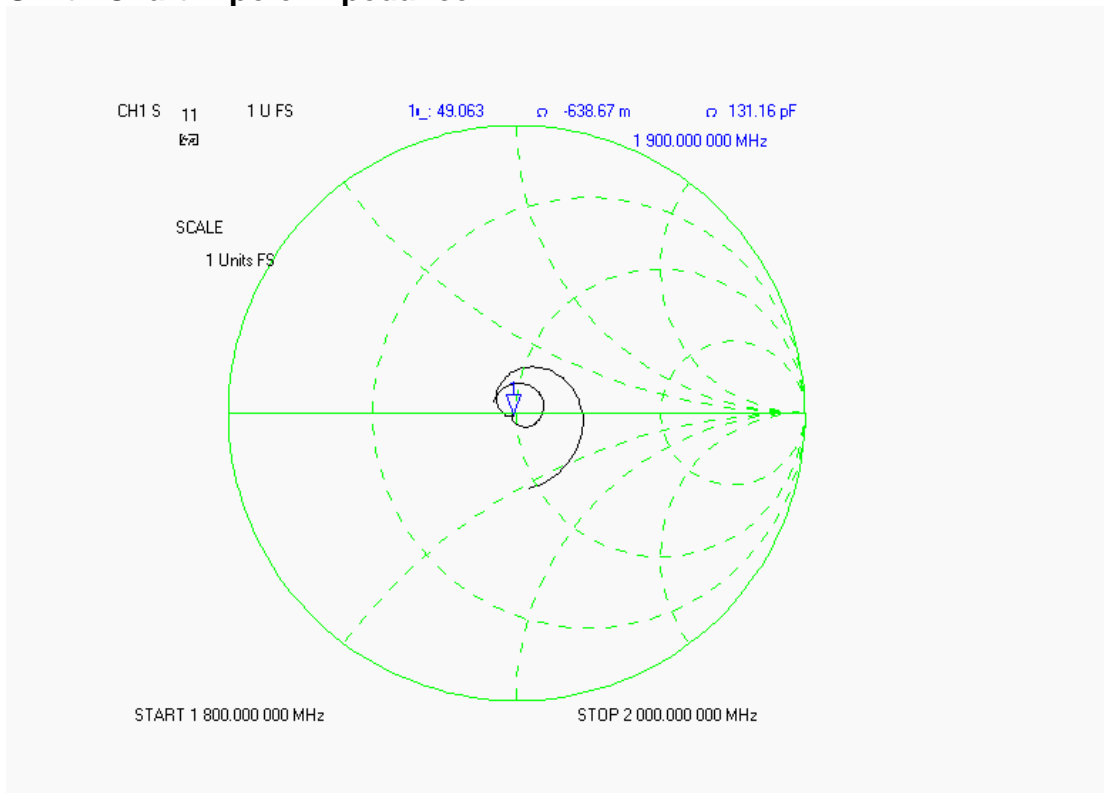
### S11 Parameter Return Loss



### SWR



### Smith Chart Dipole Impedance





## Body Measurement Conditions

The measurements were performed in the Uni-Phantom filled with body simulating liquid of the following electrical parameters at 1900 MHz:

|                        |            |      |
|------------------------|------------|------|
| Relative Dielectricity | 53.27      | ± 5% |
| Conductivity           | 1.50 mho/m | ± 5% |

The APREL Laboratories ALSAS system with a dosimetric E-field probe E-020 (SN:217, Conversion factor 4.85 at 1900 MHz) was used for the measurements.

The dipole was mounted so that the dipole feed point was positioned below the center marking of the flat phantom and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10mm from the dipole center to the solution surface.

The coarse grid with a grid spacing of 10mm was aligned with the dipole. The 5x5x8 fine cube was chosen for cube integration. The dipole input power (forward power) was 100mW ± 3%. The results are normalized to 1W input power.

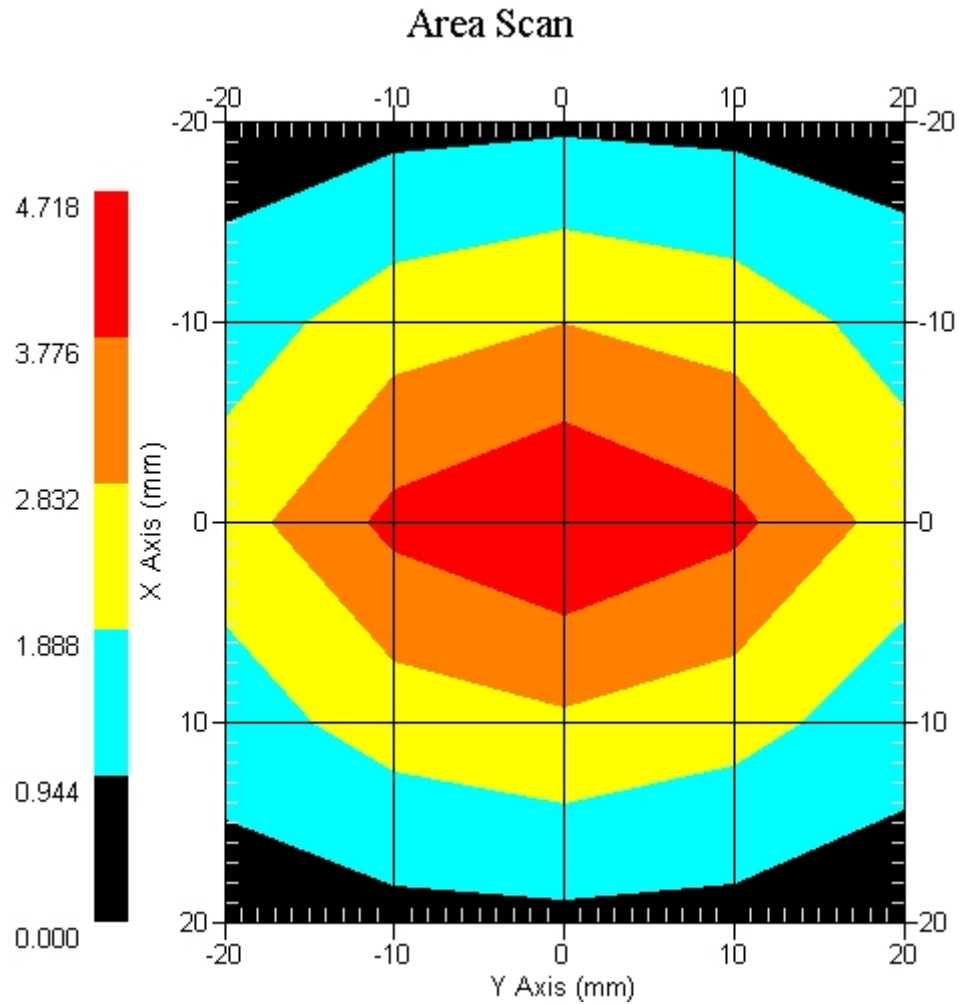
The laboratories environmental conditions were as follows during the calibration sequence.

|  |                |
|--|----------------|
| Ambient Temperature of the Laboratory: | 23 °C ± 1.0 °C |
| Temperature of the Tissue:             | 20 °C ± 1.0 °C |
| Relative Humidity:                     | 40%            |

**SAR Measurement**

Standard SAR measurements were performed according to the measurement conditions described above. The results have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR values measured with the dosimetric probe E-020 SN:217 and applying the advanced extrapolation are:

Averaged over 1 cm<sup>3</sup> (1 g) of tissue:                    40.990 mW/g ± 18.9% (k=2)<sup>1</sup>  
 Averaged over 10 cm<sup>3</sup> (10 g) of tissue:                    21.090 mW/g ± 18.5% (k=2)<sup>1</sup>



1 gram SAR value : 4.099 W/kg  
 10 gram SAR value : 2.109 W/kg  
 Area Scan Peak SAR : 4.718 W/kg  
 Zoom Scan Peak SAR : 7.606 W/kg

<sup>1</sup> validation uncertainty

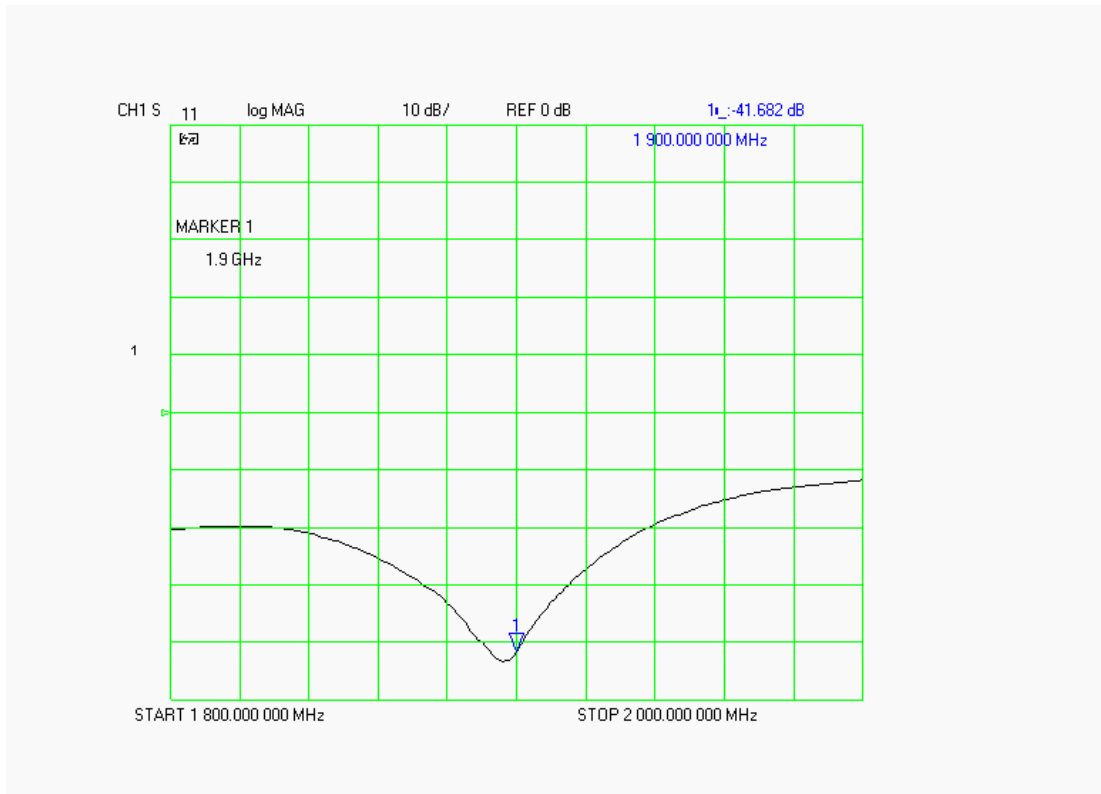
### Dipole Impedance and Return Loss

The impedance was measured at the SMA connector with a network analyzer. The dipole was positioned at the flat phantom sections according to measurement conditions stated above during impedance measurements.

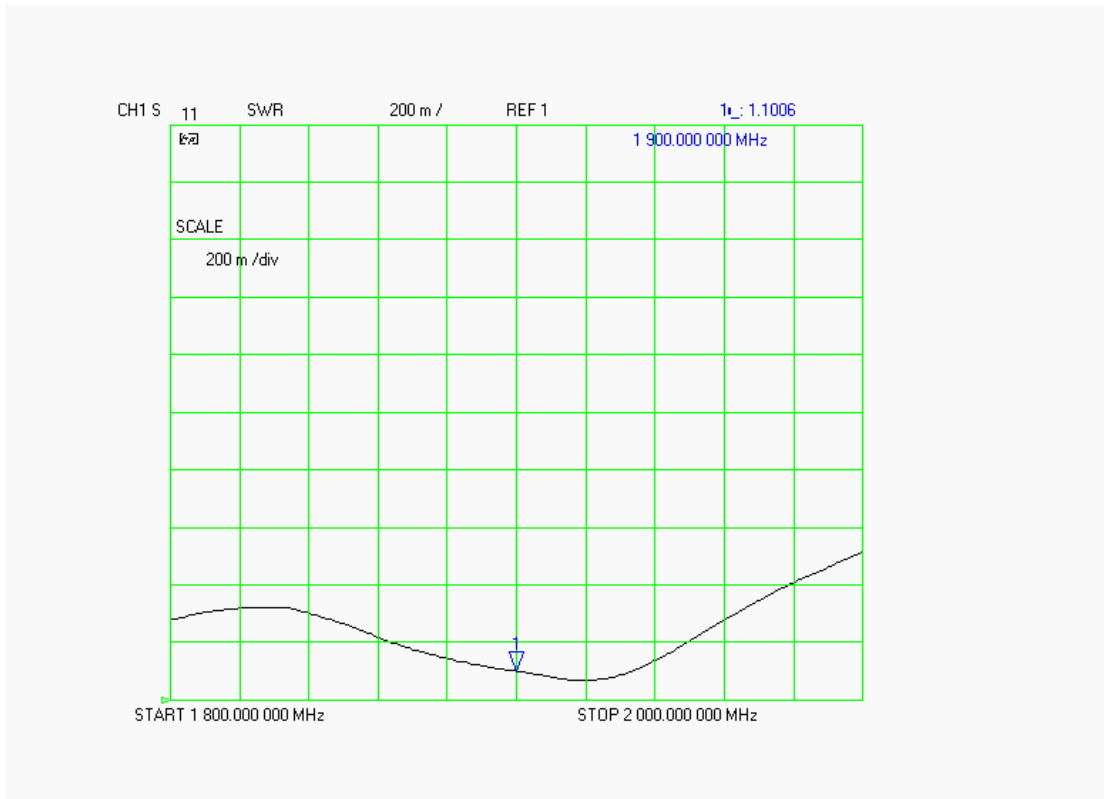
| Test      | Result          |
|-----------|-----------------|
| S11 R/L   | -41.682 dB      |
| SWR       | 1.1006 U        |
| Impedance | 53.580 $\Omega$ |

The following graphs are the results as displayed on the Vector Network Analyzer.

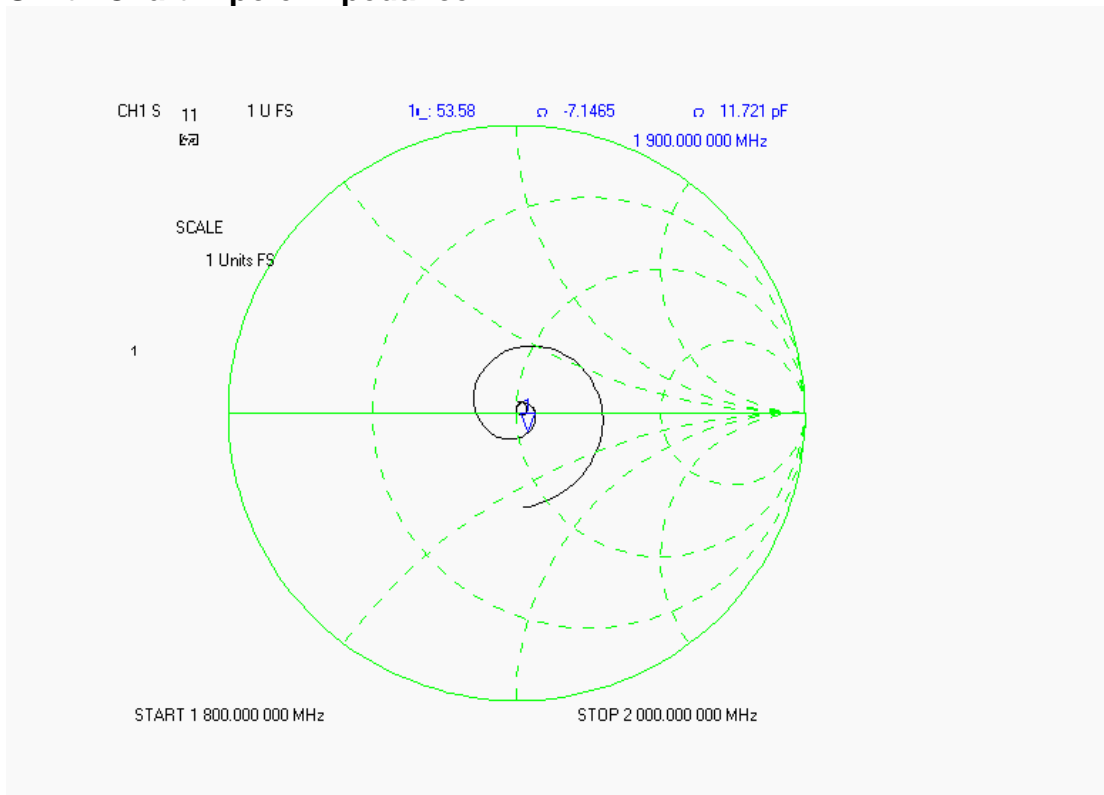
### S11 Parameter Return Loss



**SWR**



**Smith Chart Dipole Impedance**



## Test Equipment List

The test equipment used during Dipole Calibration, manufacturer, model number and, current calibration status are listed and located on the RF Exposure Lab, LLC system computer C:\Test Equipment\Calibration Equipment\Instrument List February 2008.

## RF Exposure Lab, LLC

Calibration File No: CAL.20080201

# CERTIFICATE OF CALIBRATION

It is certified that the equipment identified below has been calibrated at RF Exposure Lab, LLC by qualified personnel following recognized procedures and using transfer standards traceable to NRC/NIST.

### Validation Dipole

Manufacturer: APREL Laboratories

Part Number: ALS-D-2450-S-2

Frequency: 2.4 GHz

Serial No: RFE-278

Manufactured: 20 February 2004  
Calibrated: 20 February 2008

Calibrated By: Signature on File  
Jay Moulton – Technical Manager

Approved By: Signature on File  
Tamara Moulton – Quality Manager

Measurement Uncertainty:

|                     |      |
|---------------------|------|
| Repeatability:      | 2.3% |
| Tissue Uncertainty: | 3.2% |
| Network Analyzer:   | 2.5% |



## RF EXPOSURE LAB, LLC

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## Calibration Results Summary

The following results relate to the Calibrated Dipole and should be used as a quick reference for the user.

### Mechanical Dimensions

**Length:** 51.5 mm  
**Height:** 30.5 mm

### Electrical Specifications

#### Head

**SWR:** 1.0953 U  
**Return Loss:** -29.601 dB  
**Impedance:** 53.854  $\Omega$

### System Validation Results

| Frequency | 1 Gram | 10 Gram |
|-----------|--------|---------|
| 2.45 GHz  | 52.880 | 24.500  |

#### Body

**SWR:** 1.1354 U  
**Return Loss:** -31.173 dB  
**Impedance:** 54.146  $\Omega$

### System Validation Results

| Frequency | 1 Gram | 10 Gram |
|-----------|--------|---------|
| 2.45 GHz  | 53.550 | 24.710  |

## Head Measurement Conditions

The measurements were performed in the Uni-Phantom filled with head simulating liquid of the following electrical parameters at 2450 MHz:

|                        |            |      |
|------------------------|------------|------|
| Relative Dielectricity | 39.37      | ± 5% |
| Conductivity           | 1.78 mho/m | ± 5% |

The APREL Laboratories ALSAS system with a dosimetric E-field probe E-020 (SN:217, Conversion factor 3.4 at 2450 MHz) was used for the measurements.

The dipole was mounted so that the dipole feed point was positioned below the center marking of the flat phantom and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10mm from the dipole center to the solution surface.

The coarse grid with a grid spacing of 10mm was aligned with the dipole. The 5x5x8 fine cube was chosen for cube integration. The dipole input power (forward power) was 100mW ± 3%. The results are normalized to 1W input power.

The laboratories environmental conditions were as follows during the calibration sequence.

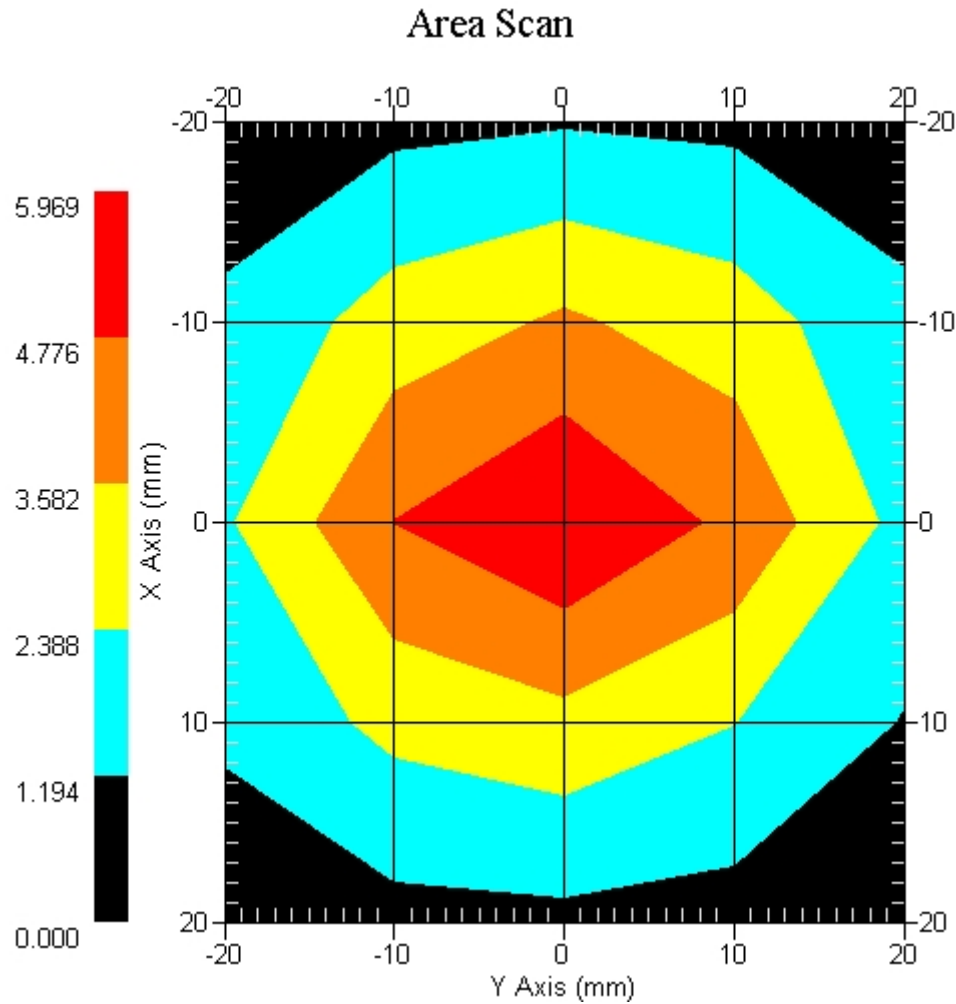
|  |                |
|--|----------------|
| Ambient Temperature of the Laboratory: | 24 °C ± 1.0 °C |
| Temperature of the Tissue:             | 20 °C ± 1.0 °C |
| Relative Humidity:                     | 41%            |



**SAR Measurement**

Standard SAR measurements were performed according to the measurement conditions described above. The results have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR values measured with the dosimetric probe E-020 SN:217 and applying the advanced extrapolation are:

Averaged over 1 cm<sup>3</sup> (1 g) of tissue:                      52.880 mW/g ± 19.7% (k=2)<sup>1</sup>  
 Averaged over 10 cm<sup>3</sup> (10 g) of tissue:                      24.500 mW/g ± 19.4% (k=2)<sup>1</sup>



1 gram SAR value : 5.288 W/kg  
 10 gram SAR value : 2.450 W/kg  
 Area Scan Peak SAR : 5.969 W/kg  
 Zoom Scan Peak SAR : 10.890 W/kg

<sup>1</sup> validation uncertainty

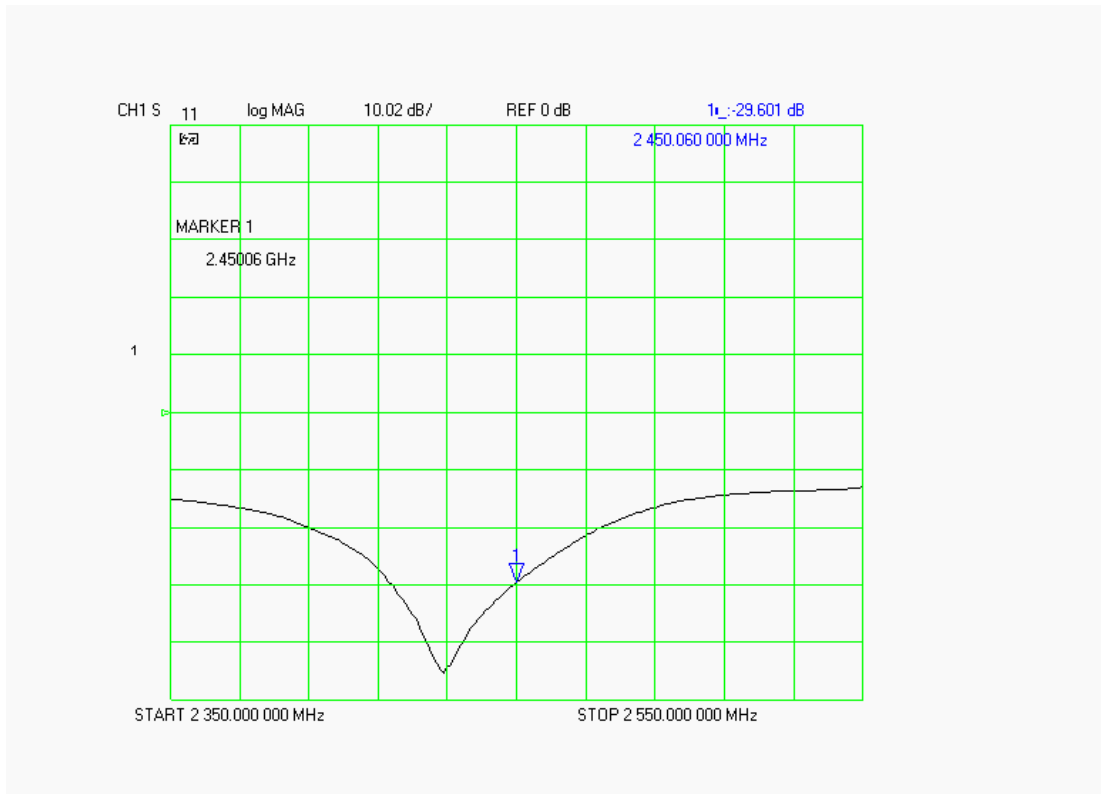
### Dipole Impedance and Return Loss

The impedance was measured at the SMA connector with a network analyzer. The dipole was positioned at the flat phantom sections according to measurement conditions stated above during impedance measurements.

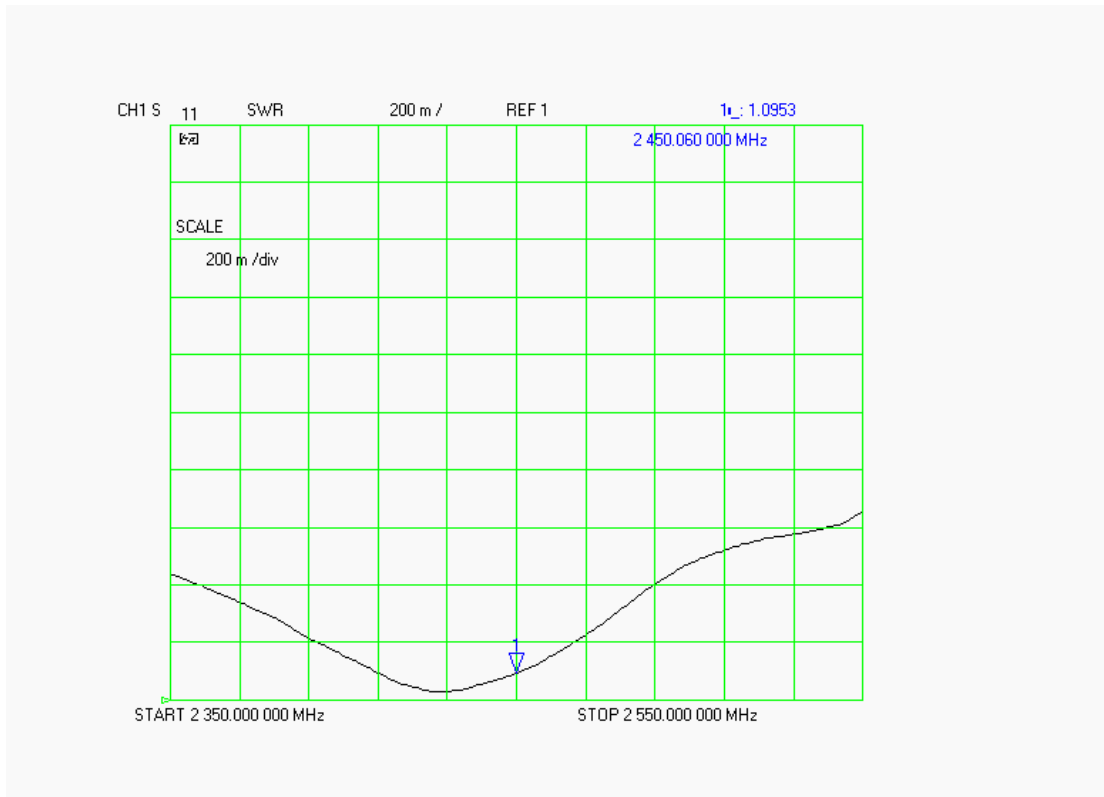
| Test      | Result          |
|-----------|-----------------|
| S11 R/L   | -29.601 dB      |
| SWR       | 1.0953 U        |
| Impedance | 53.854 $\Omega$ |

The following graphs are the results as displayed on the Vector Network Analyzer.

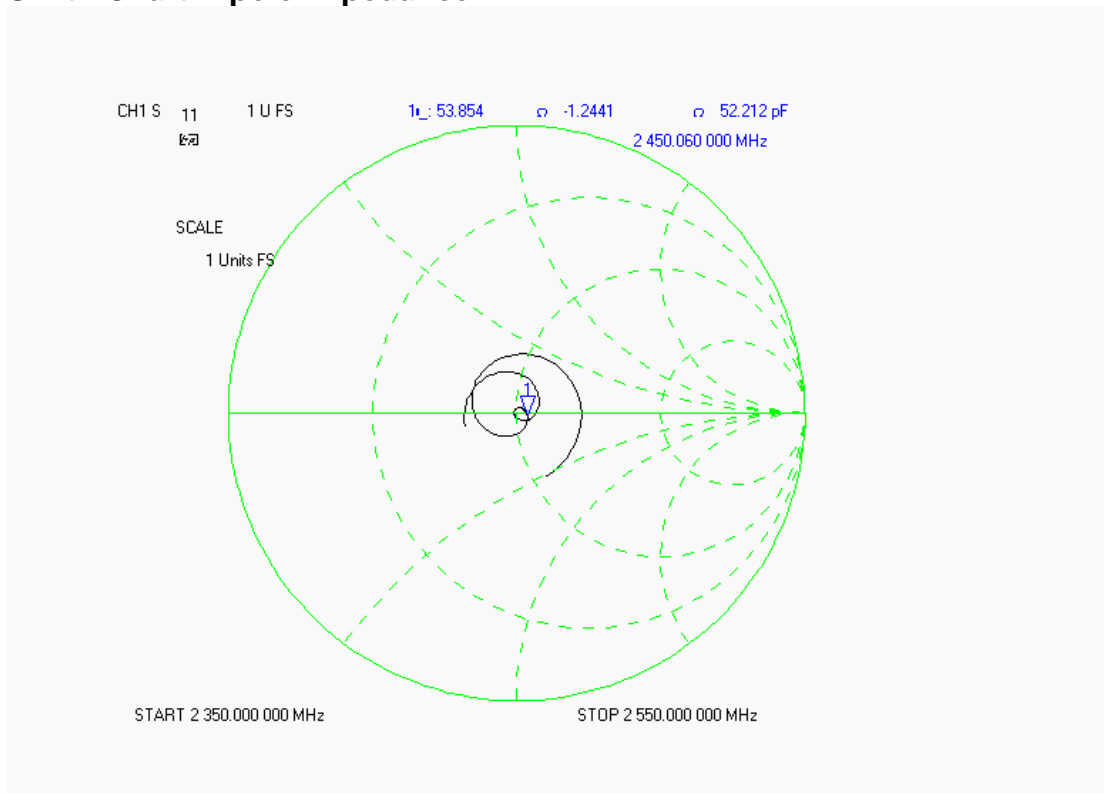
### S11 Parameter Return Loss



### SWR



### Smith Chart Dipole Impedance



## Body Measurement Conditions

The measurements were performed in the Uni-Phantom filled with body simulating liquid of the following electrical parameters at 2450 MHz:

|                        |            |      |
|------------------------|------------|------|
| Relative Dielectricity | 52.59      | ± 5% |
| Conductivity           | 1.92 mho/m | ± 5% |

The APREL Laboratories ALSAS system with a dosimetric E-field probe E-020 (SN:217, Conversion factor 3.61 at 2450 MHz) was used for the measurements.

The dipole was mounted so that the dipole feed point was positioned below the center marking of the flat phantom and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10mm from the dipole center to the solution surface.

The coarse grid with a grid spacing of 10mm was aligned with the dipole. The 5x5x8 fine cube was chosen for cube integration. The dipole input power (forward power) was 100mW ± 3%. The results are normalized to 1W input power.

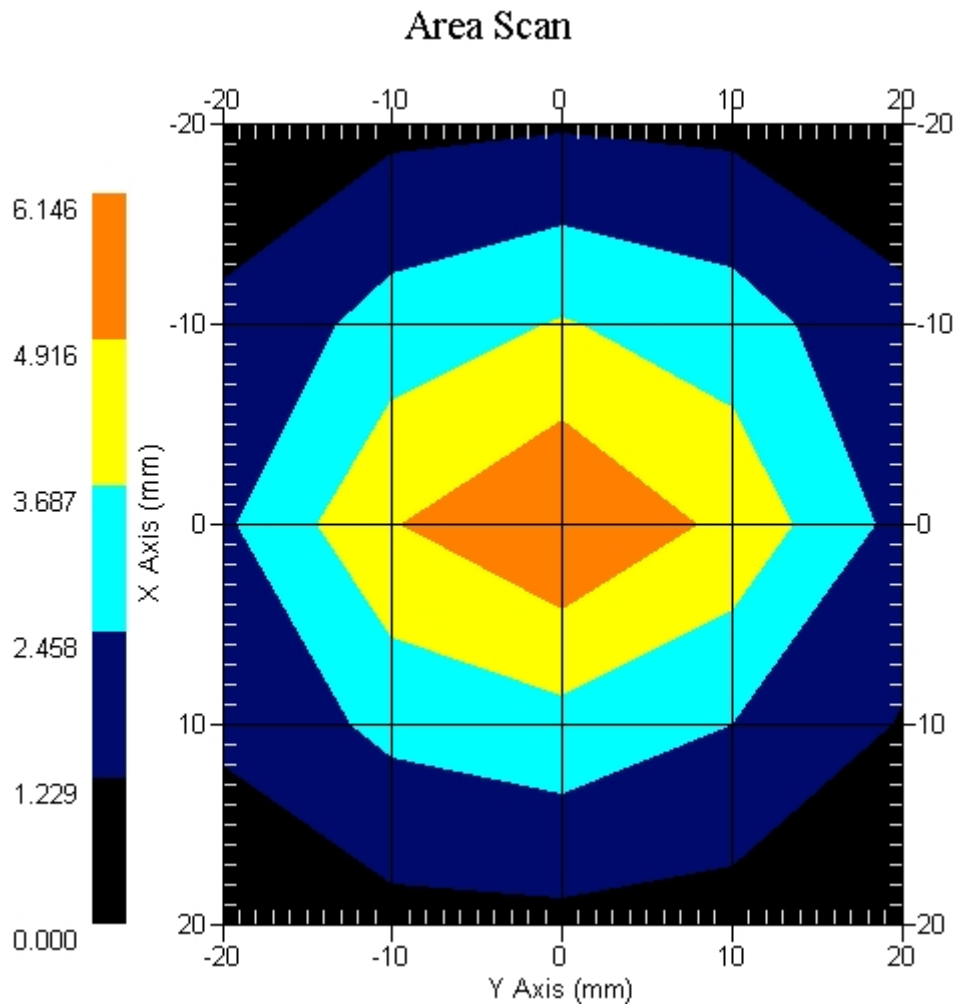
The laboratories environmental conditions were as follows during the calibration sequence.

|  |                |
|--|----------------|
| Ambient Temperature of the Laboratory: | 24 °C ± 1.0 °C |
| Temperature of the Tissue:             | 20 °C ± 1.0 °C |
| Relative Humidity:                     | 41%            |

**SAR Measurement**

Standard SAR measurements were performed according to the measurement conditions described above. The results have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR values measured with the dosimetric probe E-020 SN:217 and applying the advanced extrapolation are:

Averaged over 1 cm<sup>3</sup> (1 g) of tissue:                    53.550 mW/g ± 18.8% (k=2)<sup>1</sup>  
 Averaged over 10 cm<sup>3</sup> (10 g) of tissue:                    24.710 mW/g ± 18.4% (k=2)<sup>1</sup>



1 gram SAR value : 5.355 W/kg  
 10 gram SAR value : 2.471 W/kg  
 Area Scan Peak SAR : 6.146 W/kg  
 Zoom Scan Peak SAR : 11.090 W/kg

<sup>1</sup> validation uncertainty

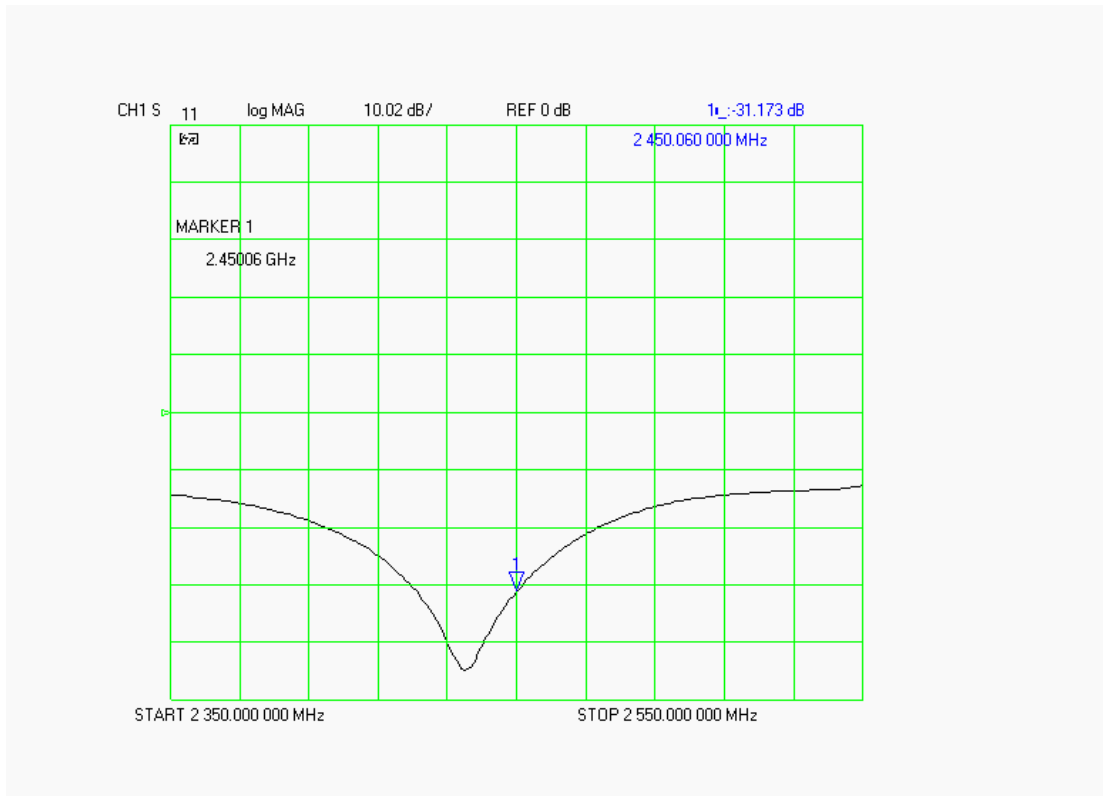
### Dipole Impedance and Return Loss

The impedance was measured at the SMA connector with a network analyzer. The dipole was positioned at the flat phantom sections according to measurement conditions stated above during impedance measurements.

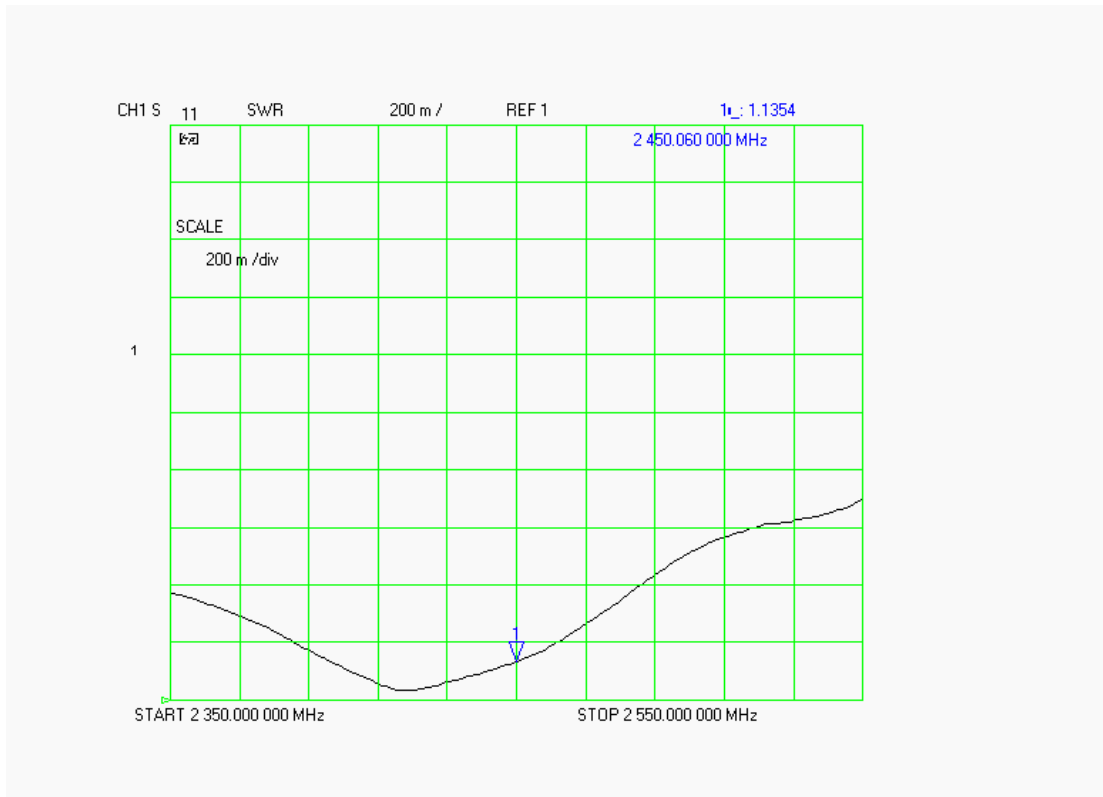
| Test      | Result          |
|-----------|-----------------|
| S11 R/L   | -31.173 dB      |
| SWR       | 1.1354 U        |
| Impedance | 54.146 $\Omega$ |

The following graphs are the results as displayed on the Vector Network Analyzer.

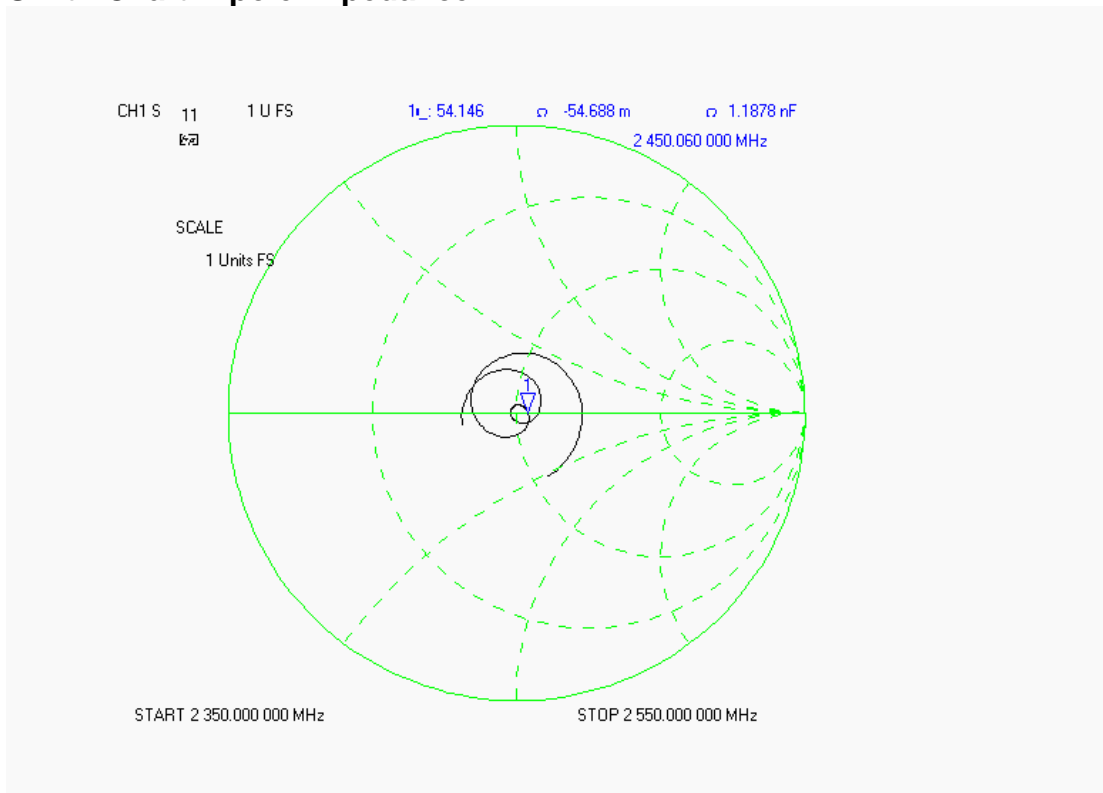
### S11 Parameter Return Loss



### SWR



### Smith Chart Dipole Impedance



## Test Equipment List

The test equipment used during Dipole Calibration, manufacturer, model number and, current calibration status are listed and located on the RF Exposure Lab, LLC system computer C:\Test Equipment\Calibration Equipment\Instrument List February 2008.



## RF Exposure Lab, LLC

Calibration File No: CAL.20070501

# CERTIFICATE OF CALIBRATION

It is certified that the equipment identified below has been calibrated at RF Exposure Lab, LLC by qualified personnel following recognized procedures and using transfer standards traceable to NRC/NIST.

### Validation Dipole

Manufacturer: APREL Laboratories

Part Number: ALS-D-BB-S-2

Frequency: 5.2 GHz to 5.8 GHz

Serial No: 235-00801

Manufactured: 22 May 2005  
Calibrated: 23 May 2007

Calibrated By: Signature on File  
Jay Moulton – Technical Manager

Approved By: Signature on File  
Tamara Moulton – Quality Manager

Measurement Uncertainty:

|                     |      |
|---------------------|------|
| Repeatability:      | 2.3% |
| Tissue Uncertainty: | 3.2% |
| Network Analyzer:   | 2.5% |



## RF EXPOSURE LAB, LLC

2867 Progress Place, Suite 4D  
Escondido, CA 92029

Tel: (760) 737-3131  
FAX: (760) 737-9131

## Calibration Results Summary

The following results relate to the Calibrated Dipole and should be used as a quick reference for the user.

### Mechanical Dimensions

**Length:** 23.3 mm  
**Height:** 20.3 mm

### Electrical Specifications

#### 5.2 GHz Body

**SWR:** 1.8749 U  
**Return Loss:** -17.057 dB  
**Impedance:** 54.252  $\Omega$

#### System Validation Results

| Frequency | 1 Gram | 10 Gram |
|-----------|--------|---------|
| 5.2 GHz   | 62.98  | 15.44   |

#### 5.6 GHz Body

**SWR:** 1.2178 U  
**Return Loss:** -18.513 dB  
**Impedance:** 45.365  $\Omega$

#### System Validation Results

| Frequency | 1 Gram | 10 Gram |
|-----------|--------|---------|
| 5.6 GHz   | 59.92  | 15.30   |

#### 5.8 GHz Body

**SWR:** 1.8551 U  
**Return Loss:** -10.237 dB  
**Impedance:** 45.014  $\Omega$

#### System Validation Results

| Frequency | 1 Gram | 10 Gram |
|-----------|--------|---------|
| 5.8 GHz   | 58.92  | 15.05   |

## 5.2 GHz Body Measurement Conditions

The measurements were performed in the Uni-Phantom filled with body simulating liquid of the following electrical parameters at 5.2 GHz:

|                        |            |      |
|------------------------|------------|------|
| Relative Dielectricity | 49.19      | ± 5% |
| Conductivity           | 5.40 mho/m | ± 5% |

The APREL Laboratories ALSAS system with a dosimetric E-field probe E-030 (SN:AL-E3P1, Conversion factor 13.0 at 5.2 GHz) was used for the measurements.

The dipole was mounted so that the dipole feed point was positioned below the center marking of the flat phantom and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10mm from the dipole center to the solution surface.

The coarse grid with a grid spacing of 10mm was aligned with the dipole. The 7x7x7 fine cube was chosen for cube integration. The dipole input power (forward power) was 100mW ± 3%. The results are normalized to 1W input power.

The laboratories environmental conditions were as follows during the calibration sequence.

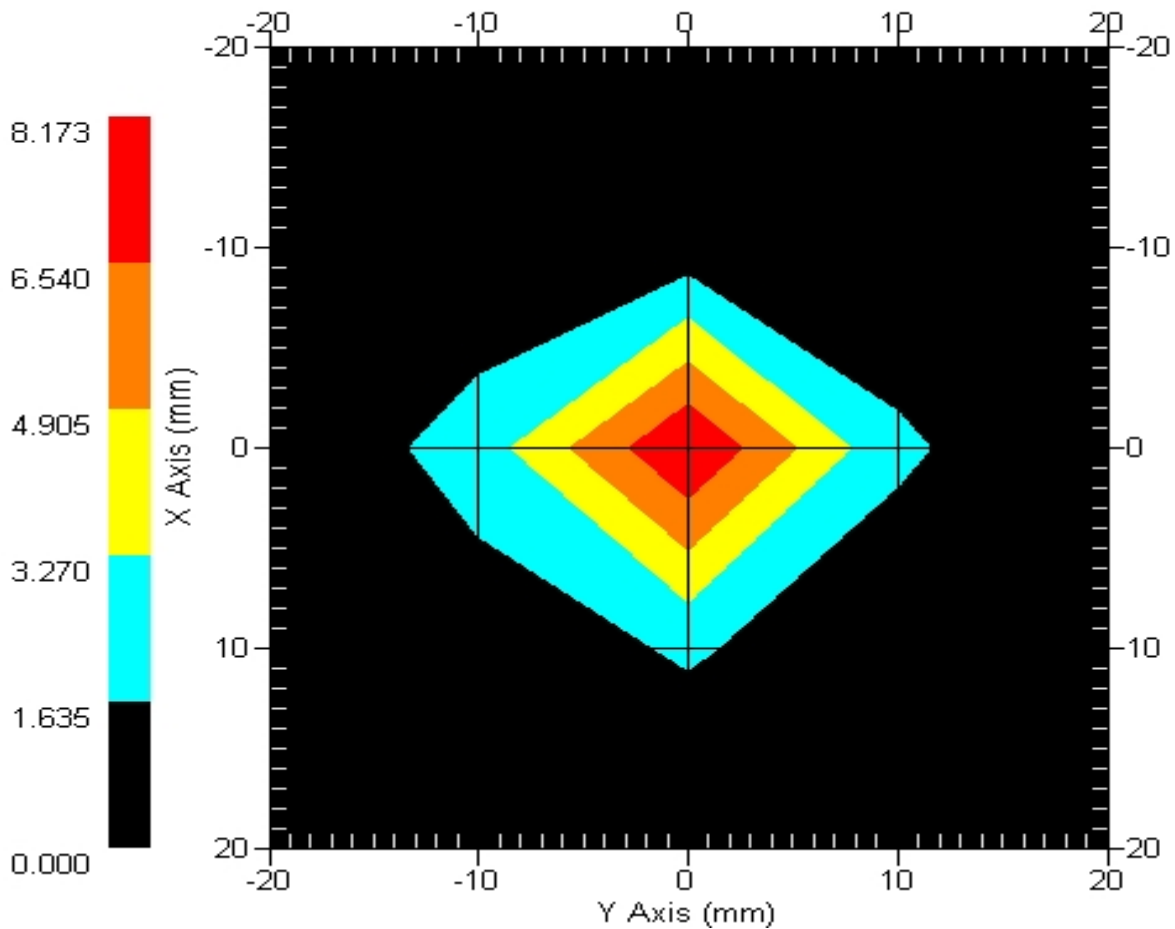
|  |                |
|--|----------------|
| Ambient Temperature of the Laboratory: | 23 °C ± 1.0 °C |
| Temperature of the Tissue:             | 20 °C ± 1.0 °C |
| Relative Humidity:                     | 52%            |

**SAR Measurement**

Standard SAR measurements were performed according to the measurement conditions described above. The results have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR values measured with the dosimetric probe E-030 SN:AL-E3P1 and applying the advanced extrapolation are:

Averaged over 1 cm<sup>3</sup> (1 g) of tissue: 62.98 mW/g ± 19.1% (k=2)<sup>1</sup>  
 Averaged over 10 cm<sup>3</sup> (10 g) of tissue: 15.44 mW/g ± 18.8% (k=2)<sup>1</sup>

**Area Scan**



1 gram SAR value : 6.298 W/kg  
 10 gram SAR value : 1.544 W/kg  
 Area Scan Peak SAR : 8.173 W/kg  
 Zoom Scan Peak SAR : 21.817 W/kg

<sup>1</sup> validation uncertainty

## 5.6 GHz Body Measurement Conditions

The measurements were performed in the Uni-Phantom filled with body simulating liquid of the following electrical parameters at 5.6 GHz:

|                        |            |      |
|------------------------|------------|------|
| Relative Dielectricity | 48.22      | ± 5% |
| Conductivity           | 5.68 mho/m | ± 5% |

The APREL Laboratories ALSAS system with a dosimetric E-field probe E-030 (SN:AL-E3P1, Conversion factor 13.5 at 5.6 GHz) was used for the measurements.

The dipole was mounted so that the dipole feed point was positioned below the center marking of the flat phantom and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10mm from the dipole center to the solution surface.

The coarse grid with a grid spacing of 10mm was aligned with the dipole. The 7x7x7 fine cube was chosen for cube integration. The dipole input power (forward power) was 100mW ± 3%. The results are normalized to 1W input power.

The laboratories environmental conditions were as follows during the calibration sequence.

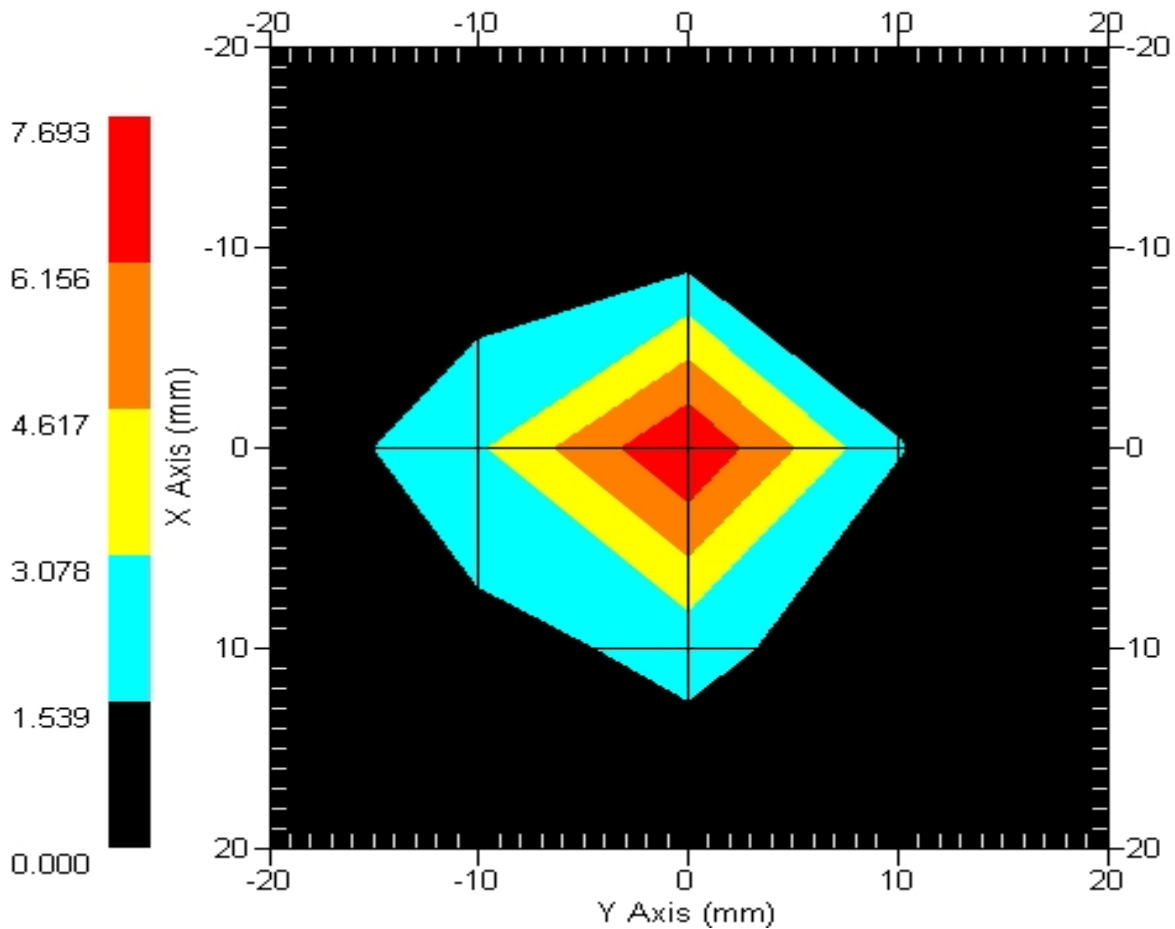
|  |                |
|--|----------------|
| Ambient Temperature of the Laboratory: | 23 °C ± 1.0 °C |
| Temperature of the Tissue:             | 20 °C ± 1.0 °C |
| Relative Humidity:                     | 52%            |

**SAR Measurement**

Standard SAR measurements were performed according to the measurement conditions described above. The results have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR values measured with the dosimetric probe E-030 SN:AL-E3P1 and applying the advanced extrapolation are:

Averaged over 1 cm<sup>3</sup> (1 g) of tissue: 59.92 mW/g ± 19.1% (k=2)<sup>1</sup>  
 Averaged over 10 cm<sup>3</sup> (10 g) of tissue: 15.30 mW/g ± 18.8% (k=2)<sup>1</sup>

**Area Scan**



1 gram SAR value : 5.992 W/kg  
 10 gram SAR value : 1.530 W/kg  
 Area Scan Peak SAR : 7.693 W/kg  
 Zoom Scan Peak SAR : 19.415 W/kg

<sup>1</sup> validation uncertainty

## 5.8 GHz Body Measurement Conditions

The measurements were performed in the Uni-Phantom filled with body simulating liquid of the following electrical parameters at 5.8 GHz:

|                        |            |      |
|------------------------|------------|------|
| Relative Dielectricity | 48.53      | ± 5% |
| Conductivity           | 5.95 mho/m | ± 5% |

The APREL Laboratories ALSAS system with a dosimetric E-field probe E-030 (SN:AL-E3P1, Conversion factor 14.0 at 5.8 GHz) was used for the measurements.

The dipole was mounted so that the dipole feed point was positioned below the center marking of the flat phantom and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10mm from the dipole center to the solution surface.

The coarse grid with a grid spacing of 10mm was aligned with the dipole. The 7x7x7 fine cube was chosen for cube integration. The dipole input power (forward power) was 100mW ± 3%. The results are normalized to 1W input power.

The laboratories environmental conditions were as follows during the calibration sequence.

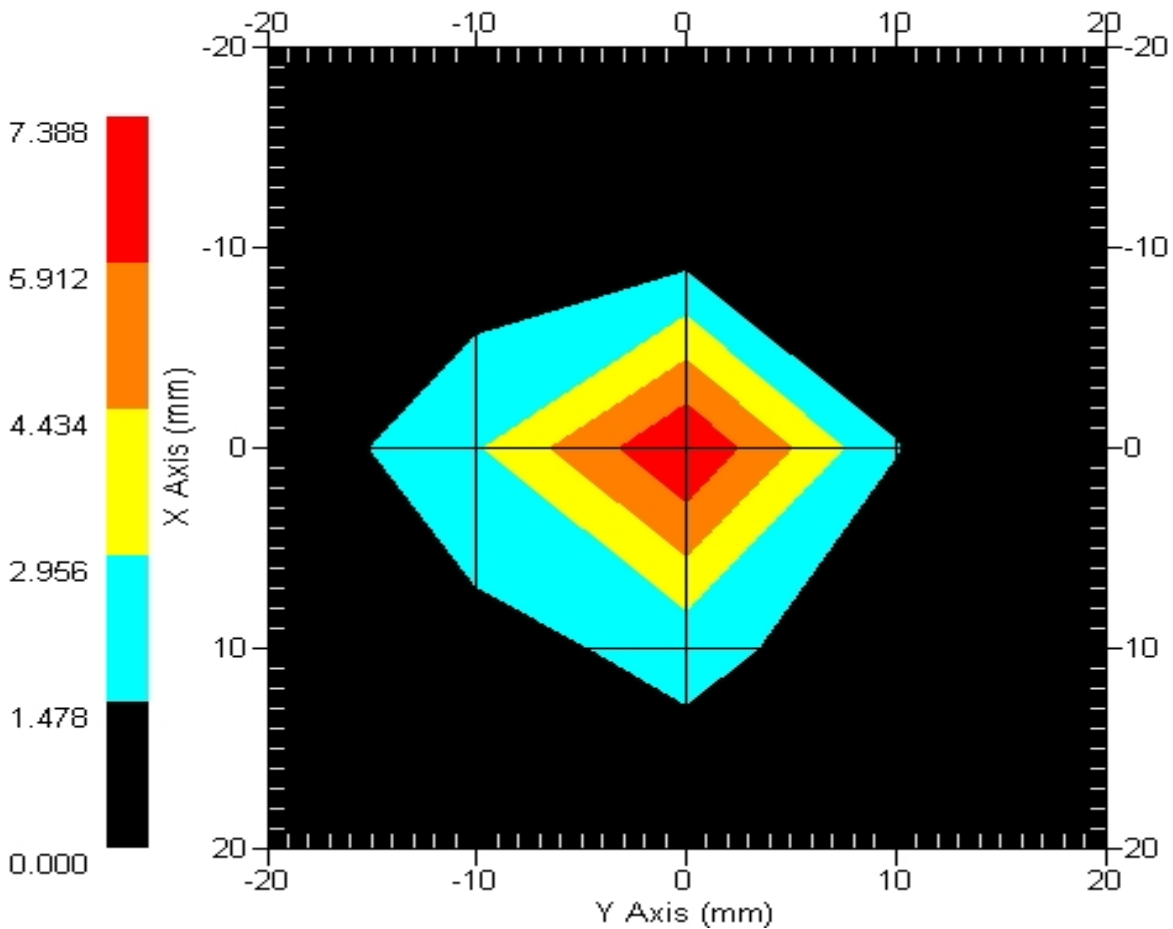
|  |                |
|--|----------------|
| Ambient Temperature of the Laboratory: | 23 °C ± 1.0 °C |
| Temperature of the Tissue:             | 20 °C ± 1.0 °C |
| Relative Humidity:                     | 52%            |

**SAR Measurement**

Standard SAR measurements were performed according to the measurement conditions described above. The results have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR values measured with the dosimetric probe E-030 SN:AL-E3P1 and applying the advanced extrapolation are:

Averaged over 1 cm<sup>3</sup> (1 g) of tissue: 58.92 mW/g ± 19.1% (k=2)<sup>1</sup>  
 Averaged over 10 cm<sup>3</sup> (10 g) of tissue: 15.05 mW/g ± 18.8% (k=2)<sup>1</sup>

**Area Scan**



1 gram SAR value : 5.892 W/kg  
 10 gram SAR value : 1.505 W/kg  
 Area Scan Peak SAR : 7.388 W/kg  
 Zoom Scan Peak SAR : 19.315 W/kg

<sup>1</sup> validation uncertainty



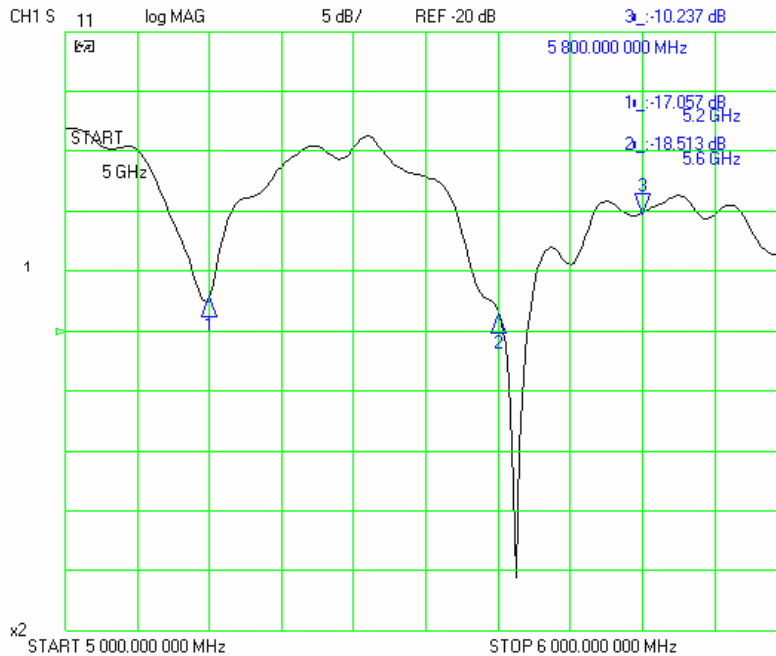
### Dipole Impedance and Return Loss

The impedance was measured at the SMA connector with a network analyzer. The dipole was positioned at the flat phantom sections according to measurement conditions stated above during impedance measurements.

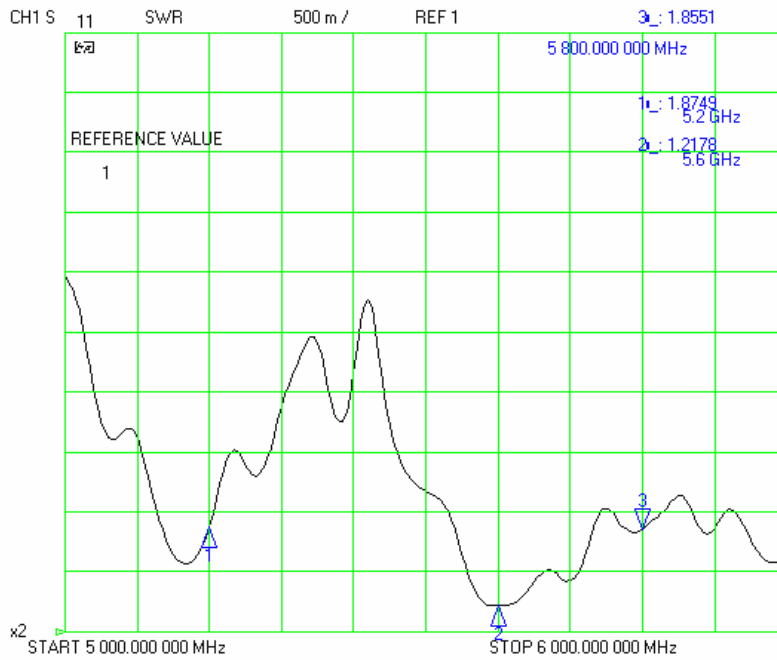
| Test      | Result – 5.2 GHz | Result – 5.6 GHz | Result – 5.8 GHz |
|-----------|------------------|------------------|------------------|
| S11 R/L   | -17.057 dB       | -18.513 dB       | -10.237 dB       |
| SWR       | 1.8749 U         | 1.2178 U         | 1.8551 U         |
| Impedance | 54.252 $\Omega$  | 45.365 $\Omega$  | 45.014 $\Omega$  |

The following graphs are the results as displayed on the Vector Network Analyzer.

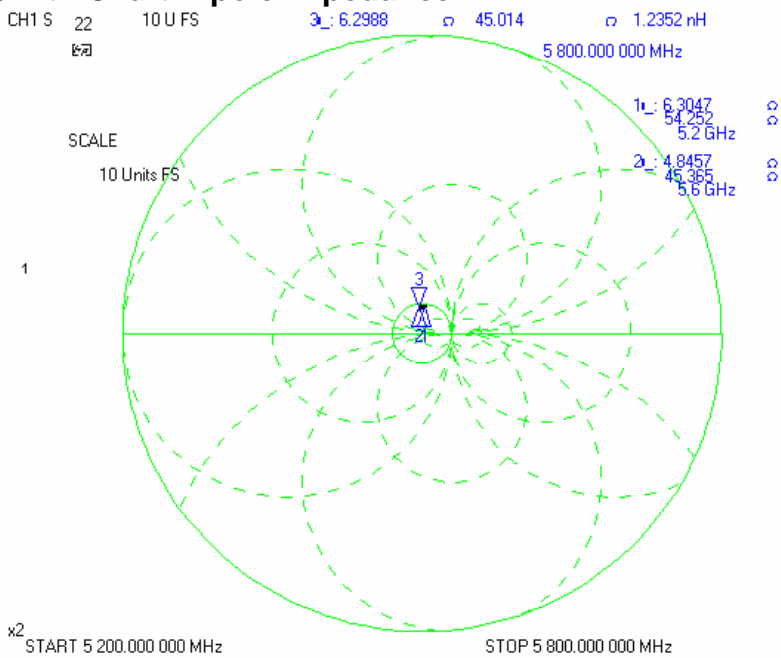
### S11 Parameter Return Loss



**SWR**



**Smith Chart Dipole Impedance**



## Test Equipment List

The test equipment used during Dipole Calibration, manufacturer, model number and, current calibration status are listed and located on the RF Exposure Lab, LLC system computer C:\Test Equipment\Calibration Equipment\Instrument List May 2007.

## Appendix F – Phantom Calibration Data Sheets

## NCL CALIBRATION LABORATORIES

Calibration File No.: RFE-273

# CERTIFICATE OF CALIBRATION

It is certified that the equipment identified below has been calibrated in the **NCL CALIBRATION LABORATORIES** by qualified personnel following recognized procedures and using transfer standards traceable to National Standards.

Thickness of the UniPhantom is 2 mm  $\pm$  10%  
Pinna thickness is 6 mm  $\pm$  10%

|             |         |                |          |
|-------------|---------|----------------|----------|
| Resolution: | 0.01 mm | Calibrated to: | 0.0 mm   |
| Stability:  | OK      | Accuracy:      | < 0.1 mm |

Calibrated By: Karen K. Feb 17/04.

### **NCL** CALIBRATION LABORATORIES

51 SPECTRUM WAY  
NEPEAN, ONTARIO  
CANADA K2R 1E6

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