

# RF Exposure Lab

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## CERTIFICATE OF COMPLIANCE SAR EVALUATION

DRS Tactical Systems  
1110 W. Hibiscus Blvd.  
Melbourne, FL 32901

Dates of Test: June 14 - 21, 2010  
Test Report Number: SAR.20100604  
Revision D

FCC ID:	UGLX10GX
IC Certificate:	7888B-X10GX
Model(s):	X10gx
WWAN Module:	Sierra Wireless Gobi2000 FCC IC: N7NGOBI2 IC: 2417C-GOBI2
WLAN Module:	Intel WiFi Link 5300 FCC ID: PD9533ANH IC: 1000M-533ANH
BT Module:	Castle Tech. BTC04R200B FCC ID: RK9-BTC04R IC: 4729A-BTC04R
Test Sample:	Engineering Unit same as Production
Serial No.:	814GM01006G01200011M000
Equipment Type:	Wireless Tablet PC
Classification:	Portable Transmitter Next to Body
TX Frequency Range:	824.2–848.8 MHz, 1850.2–1909.8 MHz, 2402–2480 MHz, 2412–2462 MHz, 5180 – 5240 MHz, 5260 – 5320 MHz, 5500 – 5700 MHz, 5745 – 5825 MHz
Frequency Tolerance:	± 25 ppm
Maximum RF Output:	850 MHz (GSM) – 32.88 dBm, 850 MHz (CDMA) – 24.66 dBm, 850 MHz (WCDMA) – 24.23 dBm, 1900 MHz (GSM) – 29.46 dBm, 1900 MHz (CDMA) – 24.65 dBm, 1900 MHz (WCDMA) – 24.13 dBm, 2450 Mhz (b) – 19.73 dBm, 2450 MHz (g) – 23.88 dBm, 5200 MHz – 16.68 dBm, 5600 MHz – 16.72 dBm, 5800 MHz – 24.72 dBm Conducted
Signal Modulation:	GMSK, 8-PSK, CDMA, WCDMA, OFDM, DSSS
Antenna Type (Length):	Internal (Yageo WWAN/WLAN Main P/N CAN43139GWWI01201, WWAN/WLAN Aux P/N CAN43139GWWI01202, WLAN MIMO CAN43139GWWI01203
Battery:	Std. (DRS Tactical P/N 0300-15663-2400) Battery Pack
Application Type:	Certification
FCC Rule Parts:	Part 22, 24, Sec. 15.247, Sec 15.407
Industry Canada:	RSS-102, Safety Code 6

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

## Table of Contents

1.	Introduction .....	3
	SAR Definition [5] .....	3
2.	SAR Measurement Setup .....	4
	Robotic System .....	4
	System Hardware .....	4
	System Description .....	4
	E-Field Probe ALS-E-020 .....	5
3.	Robot Specifications .....	7
4.	Probe and Dipole Calibration .....	8
5.	Phantom & Simulating Tissue Specifications .....	9
	SAM Phantom .....	9
	Brain & Muscle Simulating Mixture Characterization .....	9
	Device Holder .....	9
6.	Definition of Reference Points .....	10
	Ear Reference Point .....	10
	Device Reference Points .....	10
7.	Test Configuration Positions .....	11
	Positioning for Cheek/Touch [5] .....	11
	Positioning for Ear / 15° Tilt [5] .....	12
	Body Worn Configurations .....	13
8.	ANSI/IEEE C95.1 – 1999 RF Exposure Limits [2] .....	14
	Uncontrolled Environment .....	14
	Controlled Environment .....	14
9.	Measurement Uncertainty .....	15
10.	System Validation .....	16
	Tissue Verification .....	16
	Test System Verification .....	16
11.	SAR Test Data Summary .....	18
	Procedures Used To Establish Test Signal .....	18
	Device Test Condition .....	18
12.	Conducted Power Measurement Procedures .....	20
12.1	Procedures Used to Establish RF Signal for SAR .....	20
12.2	SAR Measurement Conditions for CDMA2000, 1xEV-DO .....	20
12.3	SAR Measurement Conditions for WCDMA/HSDPA/HSUPA .....	21
12.4	SAR Measurement Conditions for GSM/GPRS/EDGE .....	22
	SAR Data Summary – 850 MHz Body .....	29
	SAR Data Summary – 1900 MHz Body .....	30
	SAR Data Summary – 2450 MHz Body .....	31
	SAR Data Summary – 5200 MHz Body .....	32
	SAR Data Summary – 5600 MHz Body .....	33
	SAR Data Summary – 5800 MHz Body .....	34
13.	Test Equipment List .....	35
14.	Conclusion .....	36
15.	References .....	37
	Appendix A – System Validation Plots and Data .....	38
	Appendix B – SAR Test Data Plots .....	66
	Appendix C – SAR Test Setup Photos .....	191
	Appendix D – Probe Calibration Data Sheets .....	196
	Appendix E – Dipole Calibration Data Sheets .....	257
	Appendix F – Phantom Calibration Data Sheets .....	299

## 1. Introduction

This measurement report shows compliance of the DRS Tactical Systems Model X10gx Wireless Tablet PC FCC ID: UGLX10GX with FCC Part 2, 1093, ET Docket 93-62 Rules for mobile and portable devices and IC Certificate: 7888B-X10GX 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).

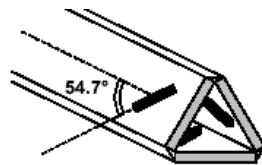
The overall uncertainty for the methodology and algorithms the ALSAS-10-U used during the SAR calculation was evaluated using the data from IEEE 1528 f3 algorithm:

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

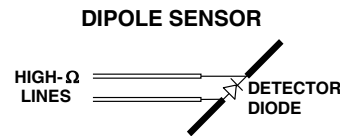
The probe used during the measurement process has been assessed to provide values for diode compression. These values are calculated during the probe calibration exercise and are used in the mathematical calculations for the assessment of SAR.

## E-Field Probe ALS-E-020

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.



**Δ-BEAM**



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  $5 \times 5 \times 8$  yields a volume of  $32 \times 32 \times 28$  mm<sup>3</sup>. For devices  $> 3$  GHz and  $< 4.5$  GHz, the cube scan of  $9 \times 9 \times 9$  yields a volume of  $32 \times 32 \times 24$  mm<sup>3</sup>. For devices  $\geq 4.5$  GHz, the cube scan of  $7 \times 7 \times 12$  yields a volume of  $24 \times 24 \times 22$  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:	ALS-E-020
Serial Number:	RFE-217
Construction:	Triangular Core Touch Detection System
Frequency:	10MHz to 6GHz

##### Phantom

Phantom:	Uniphantom, Right Phantom, Left Phantom
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## **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					
	850 MHz Muscle	1900 MHz Muscle	2450 MHz Muscle	5250 MHz Muscle	5600 MHz Muscle	5785 MHz Muscle
Mixing Percentage						
Water	52.40	69.91	73.20	58.85	59.00	59.00
Sugar	45.00	0.00	0.00	41.00	40.60	40.60
Salt	1.40	0.13	0.04	0.00	0.00	0.00
HEC	1.00	0.00	0.00	0.10	0.30	0.30
Bactericide	0.10	0.00	0.00	0.05	0.10	0.10
DGBE	0.00	29.96	26.70	0.00	0.00	0.00
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

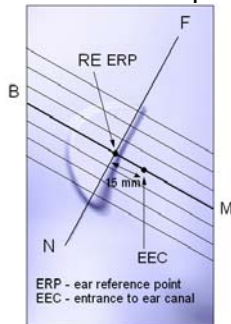


In combination with the SAM phantom, the mounting device enables the rotation of the mounted transmitter in spherical coordinates whereby the rotation point is the ear opening. The devices can easily, accurately, and repeatably be positioned according to the FCC specifications. The device holder can 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].



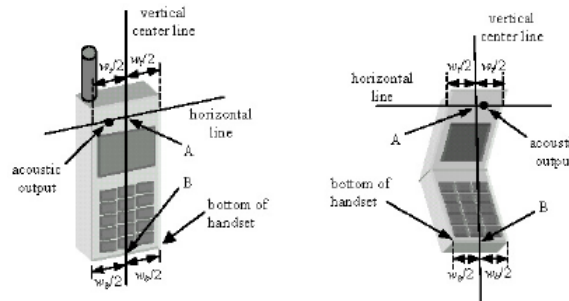
**Figure 6.1 Close-up side view of ERP's**



**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].

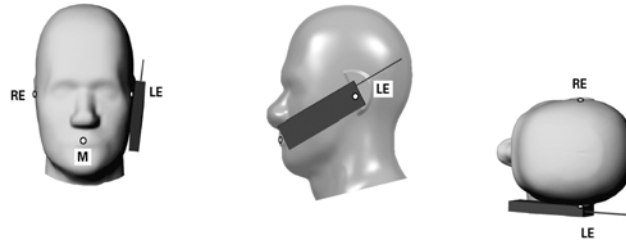


**Figure 6.3 Handset Vertical Center & Horizontal Line Reference Points**

## 7. Test Configuration Positions

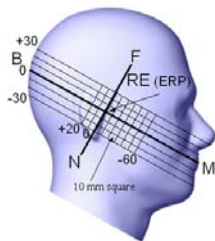
### Positioning for Cheek/Touch [5]

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.

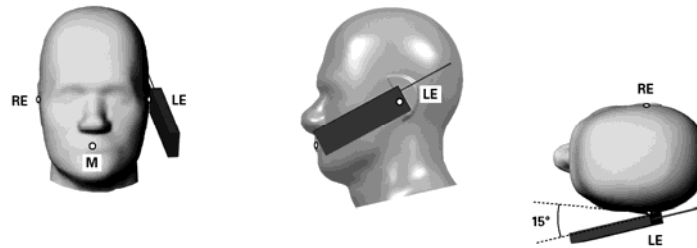


**Figure 7.2 Side view w/ relevant markings**

## 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 General Population (W/kg) or (mW/g)	CONTROLLED ENVIROMENT Professional Population (W/kg) or (mW/g)
SPATIAL PEAK SAR <sup>1</sup> Brain	1.60	8.00
SPATIAL AVERAGE SAR <sup>2</sup> Whole Body	0.08	0.40
SPATIAL PEAK SAR <sup>3</sup> 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	$c_i^{-1}$ (1-g)	$c_i^{-1}$ (10-g)	Standard Uncertainty (1-g) %	Standard Uncertainty (10-g) %
Measurement System							
Probe Calibration	3.5	normal	1	1	1	3.5	3.5
Axial Isotropy	3.7	rectangular	$\sqrt{3}$	$(1-c_p)^{1/2}$	$(1-c_p)^{1/2}$	1.5	1.5
Hemispherical Isotropy	10.9	rectangular	$\sqrt{3}$	$\sqrt{c_p}$	$\sqrt{c_p}$	4.4	4.4
Boundary Effect	1.0	rectangular	$\sqrt{3}$	1	1	0.6	0.6
Linearity	4.7	rectangular	$\sqrt{3}$	1	1	2.7	2.7
Detection Limit	1.0	rectangular	$\sqrt{3}$	1	1	0.6	0.6
Readout Electronics	1.0	normal	1	1	1	1.0	1.0
Response Time	0.8	rectangular	$\sqrt{3}$	1	1	0.5	0.5
Integration Time	1.7	rectangular	$\sqrt{3}$	1	1	1.0	1.0
RF Ambient Condition	3.0	rectangular	$\sqrt{3}$	1	1	1.7	1.7
Probe Positioner Mech.	0.4	rectangular	$\sqrt{3}$	1	1	0.2	0.2
Restriction							
Probe Positioning with respect to Phantom Shell	2.9	rectangular	$\sqrt{3}$	1	1	1.7	1.7
Extrapolation and Integration	3.7	rectangular	$\sqrt{3}$	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	$\sqrt{3}$	1	1	2.4	2.4
Phantom and Setup							
Phantom Uncertainty(shape & thickness tolerance)	3.4	rectangular	$\sqrt{3}$	1	1	2.0	2.0
Liquid Conductivity(target)	5.0	rectangular	$\sqrt{3}$	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	$\sqrt{3}$	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		1900 MHz Body	
Date(s)		Jun. 15, 2010		Jun. 14, 2010		Jun. 15, 2010	
Liquid Temperature (°C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: $\epsilon$		55.20	55.06	53.30	53.08	53.30	53.16
Conductivity: $\sigma$		0.97	0.98	1.52	1.54	1.52	1.53
		2450 MHz Body		5250 MHz Body		5250 MHz Body	
Date(s)		Jun. 16, 2010		Jun. 17, 2010		Jun. 18, 2010	
Liquid Temperature (°C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: $\epsilon$		52.70	52.41	48.96	47.39	48.96	47.19
Conductivity: $\sigma$		1.95	1.97	5.35	5.36	5.35	5.37
		5600 MHz Body		5785 MHz Body			
Date(s)		Jun. 19, 2010		Jun. 21, 2010			
Liquid Temperature (°C)	20.0	Target	Measured	Target	Measured		
Dielectric Constant: $\epsilon$		48.47	48.57	48.25	48.15		
Conductivity: $\sigma$		5.77	5.91	5.96	6.01		

See Appendix A for data printout.

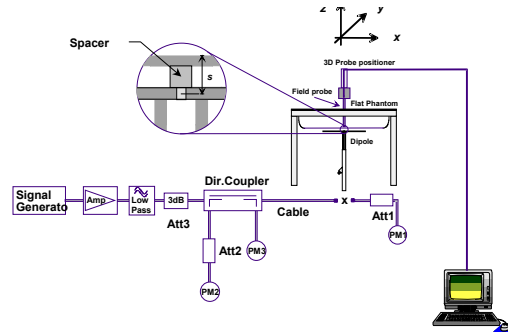
### Test System Verification

Prior to assessment, the system is verified to the  $\pm 10\%$  of the specifications at 2450 MHz by using the system kit. Power is extrapolated to 1 watt. (Graphic Plots Attached)

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

Date	Test Frequency	Targeted SAR <sub>1g</sub> (W/kg)	Measure SAR <sub>1g</sub> (W/kg)	Deviation (%)
15-Jun-2010	850 MHz	9.49	9.34	- 1.58
14-Jun-2010	1900 MHz	38.70	38.81	+ 0.28
15-Jun-2010	1900 MHz	38.70	39.37	+ 1.73
16-Jun-2010	2450 MHz	53.10	55.30	+ 4.14
17-Jun-2010	5250 MHz	61.66	62.27	+ 0.99
18-Jun-2010	5250 MHz	61.66	63.63	+ 3.19
19-Jun-2010	5600 MHz	65.03	63.28	- 2.69
21-Jun-2010	5785 MHz	63.43	61.78	- 2.60

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 unit was required to be disassembled to measure the conducted power. To insure that the integrity of the device was not compromised, the power measurements were conducted at the completion of all testing.

This device is capable of operating in 850/1900 GSM/GPRS/EDGE frequency bands. In GSM/GPRS mode, the device is in Class 4 for 850 MHz and Class 1 for 1900 MHz. In EDGE mode, the device is in Class E2 for 850/1900 MHz. The GSM/GPRS testing was conducted in the GPRS mode. The GPRS mode has 2-slot and 4-slot configurations. The power measured is peak power. The average power in GSM is 1 to 1½ dB lower than the average power in GPRS 2-slot which is 1½ to 2 dB higher than 4-slot. The EDGE mode is 3 dB lower than its equivalent slot configuration for GPRS. Therefore, the device was only tested in the highest power configuration which was 2-slot GPRS.

The WCDMA testing was conducted using 12.2 kbps RMC configured in Test Loop Mode 1. The HSPA testing was conducted with HS-DPCCH, E-DPCCH and E-DPDCH all enabled and a 12.2 kbps RMC. FRC was configured according to HS-DPCCH Sub-Test 1 using H-set 1 and QPSK.

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  $\frac{1}{4}$  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  $\frac{1}{4}$  dB higher than 4096 bits.

Per KDB 941225, SAR testing is required for HSPA only when the average conducted power is at least  $\frac{1}{4}$  dB higher than WCDMA(Rel. 99) or when the SAR value is greater than 75% of the SAR limit. Since neither of these issues are present, SAR is required only for WCDMA(Rel. 99).

Per KDB 941225, SAR testing is required for Rev. 0. Rev. A testing is required if the average conducted power is greater than Rev. 0. 1x is required only if conducted power is  $\frac{1}{4}$  dB higher than Rev. 0. Since none of these exist, Rev. 0 is the only configuration tested.

## 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 are 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  $\hat{I}_{or}$  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  $\hat{I}_{or}$  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.

## 12.3 SAR Measurement Conditions for WCDMA/HSDPA/HSUPA

Configure the call box 8960 to support all WCDMA tests in respect to the 3GPP 34.121 (listed in Table below). Measure the power at Ch4132, 4182 and 4233 for US cell; Ch9262, 9400 and 9538 for US PCS band.

For Rel99

- Set a Test Mode 1 loop back with a 12.2kbps Reference Measurement Channel (RMC).

- Set and send continuously Up power control commands to the UNDP-1
- Measure the power at the UNDP-1 antenna connector using the power meter with average detector.

For HSDPA Rel 6

- Establish a Test Mode 1 loop back with both 1 12.2kbps RMC channel and a H-Set1 Fixed Reference Channel (FRC). With the 8820 this is accomplished by setting the signal Channel Coding to "Fixed Reference Channel" and configuring for HSET-1 QKSP.
- Set beta values and HSDPA settings for HSDPA Subtest1 according to Table below.
- Send continuously Up power control commands to the UNDP-1
- Measure the power at the UNDP-1 antenna connector using the power meter with modulated average detector.
- Repeat the measurement for the HSDPA Subtest2, 3 and 4 as given in Table below.

For HSUPA Rel 6

- Use UL RMC 12.2kbps and FRC H-Set1 QPSK, Test Mode 1 loop back. With the 8960 this is accomplished by setting the signal Channel Coding to "E-DCH Test Channel" and configuring the equipment category to Cat5\_10ms.
- Set the Absolute Grant for HSUPA Subtest1 according to Table below.
- Set the UNDP power to be at least 5dB lower than the Maximum output power
- Send power control bits to give one TPC\_cmd = +1 command to the UNDP. If UNDP doesn't send any E-DPCH data with decreased E-TFCl within 500ms, then repeat this process until the decreased E-TFCl is reported.
- Confirm that the E-TFCl transmitted by the UNDP is equal to the target E-TFCl in Table below. If the E-TFCl transmitted by the UNDP is not equal to the target E-TFCl, then send power control bits to give one TPC\_cmd = -1 command to the UE. If UE sends any E-DPCH data with decreased E-TFCl within 500 ms, send new power control bits to give one TPC\_cmd = -1 command to the UE. Then confirm that the E-TFCl transmitted by the UE is equal to the target E-TFCl in Table below.
- Measure the power using the power meter with modulated average detector.
- Repeat the measurement for the HSUPA Subtest2, 3, 4 and 5 as given in Table below.

## 12.4 SAR Measurement Conditions for GSM/GPRS/EDGE

Configure the 8960 box to support GMSK and 8PSK call respectively, and set one timeslot transmission for GMSK GSM/GPRS and GMSK/8PSK EDGE. Measure and record power outputs for both modulations.



### 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	24.52	24.59	24.63	24.66	24.61	24.30
	384	24.51	24.53	24.46	24.60	24.63	24.38
	777	24.33	24.36	24.31	24.40	24.58	24.49
PCS	25	24.53	24.51	24.56	24.35	24.65	24.42
	600	24.46	24.51	24.36	24.42	24.60	24.37
	1175	24.36	24.49	24.51	24.53	24.55	24.50

### 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	24.47	24.49	24.41	24.51	24.52
	384	24.36	24.49	24.50	24.32	24.59
	777	24.26	24.23	24.32	24.25	24.59
PCS	25	24.51	24.42	24.39	24.45	24.52
	600	24.31	24.46	24.29	24.20	24.53
	1175	24.51	24.52	24.43	24.39	24.52

### 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	24.39	24.49	24.35	24.46	24.31	24.39	24.50	24.42	24.52	24.49	24.48	24.40
	384	24.53	24.51	24.50	24.53	24.39	24.41	24.56	24.49	24.47	24.49	24.56	24.52
	777	24.40	24.43	24.40	24.46	24.30	24.49	24.53	24.46	24.43	24.39	24.42	24.38
PCS	25	24.41	24.41	24.39	24.36	24.49	24.45	24.48	24.41	24.47	24.52	24.38	24.50
	600	24.45	24.53	24.39	24.41	24.46	24.32	24.52	24.50	24.42	24.46	24.48	24.53
	1175	24.36	24.52	24.34	24.42	24.29	24.31	24.39	24.30	24.31	24.29	24.27	24.25

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

3GPP Release Version	Mode	Cellular Band [dBm]			Sub-Test (See Table Below)	MPR
		4132	5183	4233		
99	WCDMA	24.23	24.09	24.19	-	-
6	HSDPA	24.05	23.98	24.08	1	0
6		23.56	23.26	23.51	2	0
6		23.52	23.31	23.48	3	0.5
6		23.01	22.85	23.05	4	0.5
6	HSUPA	23.79	23.75	23.39	1	0
6		21.56	21.51	21.54	2	2
6		22.48	22.39	22.43	3	1
6		22.10	21.96	21.99	4	2
6		23.89	23.55	23.40	5	0

3GPP Release Version	Mode	PCS Band [dBm]			Sub-Test (See Table Below)	MPR
		9262	9400	9538		
99	WCDMA	24.13	23.98	23.91	-	-
6	HSDPA	24.08	23.86	23.82	1	0
6		23.51	23.27	23.39	2	0
6		23.52	23.35	23.38	3	0.5
6		23.19	23.07	23.10	4	0.5
6	HSUPA	23.56	23.42	23.18	1	0
6		21.35	21.46	21.36	2	2
6		22.38	22.58	22.37	3	1
6		21.86	21.91	21.80	4	2
6		23.66	23.68	23.71	5	0

**Sub-Test Setup for Release 6 HSDPA**

Sub-Test	$\beta_c$	$\beta_d$	$B_c / \beta_d$	$\beta_{hs}$
1	2/15	15/15	2/15	4/15
2	12/15	15/15	15/15	24/15
3	15/15	8/15	15/8	30/15
4	15/15	4/15	15/4	30/15
$\Delta_{ack}, \Delta_{nack}$ and $\Delta_{cqi} = 8$				

**Sub-Test Setup for Release 6 HSUPA**

Sub-Test	$\beta_c$	$\beta_d$	$B_c / \beta_d$	$\beta_{hs}$	$B_{ec}$	$B_{ed}$	MPR	AG Index	E-TFCI
1	11/15	15/15	11/15	22/15	209/225	1039/225	0.0	20	75
2	6/15	15/15	6/15	12/15	12/15	94/75	2.0	12	67
3	15/15	9/15	15/9	30/15	30/15	47/15	1.0	15	92
4	2/15	15/15	2/15	4/15	2/15	56/15	2.0	17	71
5	15/15	15/15	15/15	30/15	24/15	134/15	0.0	21	81
$\Delta_{ack}, \Delta_{nack}$ and $\Delta_{cqi} = 8$									

GSM		
Band	Channel	Power
Cellular	128	32.81
	190	32.54
	251	32.58
PCS	512	29.11
	661	29.40
	810	29.21

GPRS/1-Slot		
Band	Channel	Power
Cellular	128	32.88
	190	32.59
	251	32.61
PCS	512	29.16
	661	29.46
	810	29.27

EDGE/1-Slot		
Band	Channel	Power
Cellular	128	27.43
	190	27.51
	251	27.30
PCS	512	25.63
	661	26.01
	810	25.88

802.11b					2450 GHz n20				
Freq	Channel	Data Rate	Antenna	Power	Freq	Channel	Data Rate	Antenna	Power
2412	1	1	Chain A	19.73	2412	1	6	Chain A	21.06
2437	6	1	Chain A	19.21	2437	6	6	Chain A	23.90
2462	11	1	Chain A	19.28	2462	11	6	Chain A	21.01
2412	1	1	Chain B	19.65	2412	1	6	Chain B	21.02
2437	6	1	Chain B	19.54	2437	6	6	Chain B	23.61
2462	11	1	Chain B	19.37	2462	11	6	Chain B	21.11
2412	1	1	Chain C	19.12	2412	1	6	Chain C	21.29
2437	6	1	Chain C	19.53	2437	6	6	Chain C	23.80
2462	11	1	Chain C	19.51	2462	11	6	Chain C	21.26
802.11g					2450 GHz n40				
Freq	Channel	Data Rate	Antenna	Power	Freq	Channel	Data Rate	Antenna	Power
2412	1	6	Chain A	21.49	2422	3	6	Chain A	22.56
2437	6	6	Chain A	23.76	2437	6	6	Chain A	22.69
2462	11	6	Chain A	21.38	2452	9	6	Chain A	22.57
2412	1	6	Chain B	21.28	2422	3	6	Chain B	23.04
2437	6	6	Chain B	23.76	2437	6	6	Chain B	23.06
2462	11	6	Chain B	21.19	2452	9	6	Chain B	22.95
2412	1	6	Chain C	21.09	2422	3	6	Chain C	22.91
2437	6	6	Chain C	23.88	2437	6	6	Chain C	22.85
2462	11	6	Chain C	21.09	2452	9	6	Chain C	23.01

802.11a 5.18-5.24 GHz					802.11 n20 5.18-5.24 GHz				
Freq	Channel	Data Rate	Antenna	Power	Freq	Channel	Data Rate	Antenna	Power
5.18	36	6	Chain A	16.08	5.18	36	6	Chain A	16.06
5.20	40	6	Chain A	16.33	5.20	40	6	Chain A	16.32
5.22	44	6	Chain A	16.31	5.22	44	6	Chain A	16.26
5.24	48	6	Chain A	16.28	5.24	48	6	Chain A	16.21
5.18	36	6	Chain B	16.21	5.18	36	6	Chain B	16.12
5.20	40	6	Chain B	16.32	5.20	40	6	Chain B	16.49
5.22	44	6	Chain B	16.30	5.22	44	6	Chain B	16.34
5.24	48	6	Chain B	16.31	5.24	48	6	Chain B	16.18
5.18	36	6	Chain C	16.42	5.18	36	6	Chain C	16.37
5.20	40	6	Chain C	16.56	5.20	40	6	Chain C	16.42
5.22	44	6	Chain C	16.53	5.22	44	6	Chain C	16.37
5.24	48	6	Chain C	16.54	5.24	48	6	Chain C	16.39
802.11 n40 5.18-5.24 GHz					802.11a 5.24-5.32 GHz				
Freq	Channel	Data Rate	Antenna	Power	Freq	Channel	Data Rate	Antenna	Power
5.19	38	6	Chain A	16.66	5.26	52	6	Chain A	16.36
5.21	42	6	Chain A	16.59	5.28	56	6	Chain A	16.39
5.23	46	6	Chain A	16.62	5.30	60	6	Chain A	16.37
5.19	38	6	Chain B	16.68	5.32	64	6	Chain A	16.39
5.21	42	6	Chain B	16.57	5.26	52	6	Chain B	16.28
5.23	46	6	Chain B	16.53	5.28	56	6	Chain B	16.30
5.19	38	6	Chain C	16.56	5.30	60	6	Chain B	16.29
5.21	42	6	Chain C	16.48	5.32	64	6	Chain B	16.27
5.23	46	6	Chain C	16.46	5.26	52	6	Chain C	16.65
					5.28	56	6	Chain C	16.68
802.11 n20 5.24-5.32 GHz					5.30	60	6	Chain C	16.60
Freq	Channel	Data Rate	Antenna	Power	5.32	64	6	Chain C	16.58
5.26	52	6	Chain A	16.25					
5.28	56	6	Chain A	16.31	802.11 n40 5.24-5.32 GHz				
5.30	60	6	Chain A	16.11	Freq	Channel	Data Rate	Antenna	Power
5.32	64	6	Chain A	16.06	5.27	54	6	Chain A	16.68
5.26	52	6	Chain B	16.42	5.29	58	6	Chain A	16.53
5.28	56	6	Chain B	16.51	5.31	62	6	Chain A	16.42
5.30	60	6	Chain B	16.44	5.27	54	6	Chain B	16.61
5.32	64	6	Chain B	16.37	5.29	58	6	Chain B	16.57
5.26	52	6	Chain C	16.54	5.31	62	6	Chain B	16.55
5.28	56	6	Chain C	16.61	5.27	54	6	Chain C	16.43
5.30	60	6	Chain C	16.51	5.29	58	6	Chain C	16.37
5.32	64	6	Chain C	16.48	5.31	62	6	Chain C	16.34

802.11a 5.6 GHz					802.11 n20 5.6 GHz				
Freq	Channel	Data Rate	Antenna	Power	Freq	Channel	Data Rate	Antenna	Power
5.50	100	6	Chain A	16.05	5.50	100	6	Chain A	16.06
5.52	104	6	Chain A	16.09	5.52	104	6	Chain A	16.09
5.54	108	6	Chain A	16.15	5.54	108	6	Chain A	16.12
5.56	112	6	Chain A	16.22	5.56	112	6	Chain A	16.18
5.58	116	6	Chain A	16.30	5.58	116	6	Chain A	16.25
5.60	120	6	Chain A	16.42	5.60	120	6	Chain A	16.31
5.62	124	6	Chain A	16.34	5.62	124	6	Chain A	16.30
5.64	128	6	Chain A	16.21	5.64	128	6	Chain A	16.25
5.66	132	6	Chain A	16.14	5.66	132	6	Chain A	16.21
5.68	136	6	Chain A	16.07	5.68	136	6	Chain A	16.26
5.70	140	6	Chain A	16.06	5.70	140	6	Chain A	16.27
5.50	100	6	Chain B	16.34	5.50	100	6	Chain B	16.05
5.52	104	6	Chain B	16.38	5.52	104	6	Chain B	16.10
5.54	108	6	Chain B	16.40	5.54	108	6	Chain B	16.17
5.56	112	6	Chain B	16.42	5.56	112	6	Chain B	16.23
5.58	116	6	Chain B	16.46	5.58	116	6	Chain B	16.28
5.60	120	6	Chain B	16.49	5.60	120	6	Chain B	16.34
5.62	124	6	Chain B	16.47	5.62	124	6	Chain B	16.30
5.64	128	6	Chain B	16.44	5.64	128	6	Chain B	16.28
5.66	132	6	Chain B	16.42	5.66	132	6	Chain B	16.24
5.68	136	6	Chain B	16.38	5.68	136	6	Chain B	16.20
5.70	140	6	Chain B	16.36	5.70	140	6	Chain B	16.16
5.50	100	6	Chain C	16.15	5.50	100	6	Chain C	16.50
5.52	104	6	Chain C	16.23	5.52	104	6	Chain C	16.52
5.54	108	6	Chain C	16.38	5.54	108	6	Chain C	16.54
5.56	112	6	Chain C	16.50	5.56	112	6	Chain C	16.55
5.58	116	6	Chain C	16.62	5.58	116	6	Chain C	16.59
5.60	120	6	Chain C	16.72	5.60	120	6	Chain C	16.63
5.62	124	6	Chain C	16.60	5.62	124	6	Chain C	16.60
5.64	128	6	Chain C	16.49	5.64	128	6	Chain C	16.52
5.66	132	6	Chain C	16.34	5.66	132	6	Chain C	16.49
5.68	136	6	Chain C	16.25	5.68	136	6	Chain C	16.45
5.70	140	6	Chain C	16.18	5.70	140	6	Chain C	16.45

802.11 n40 5.6 GHz					802.11 n20 5.8 GHz				
Freq	Channel	Data Rate	Antenna	Power	Freq	Channel	Data Rate	Antenna	Power
5.51	102	6	Chain A	16.53	5.745	149	6	Chain A	23.95
5.53	106	6	Chain A	16.58	5.765	153	6	Chain A	23.97
5.55	110	6	Chain A	16.62	5.785	157	6	Chain A	24.06
5.57	114	6	Chain A	16.66	5.805	161	6	Chain A	24.00
5.59	122	6	Chain A	16.68	5.825	165	6	Chain A	23.97
5.61	126	6	Chain A	16.63	5.745	149	6	Chain B	24.56
6.63	130	6	Chain A	16.42	5.765	153	6	Chain B	24.61
5.67	134	6	Chain A	16.32	5.785	157	6	Chain B	24.70
5.69	138	6	Chain A	16.28	5.805	161	6	Chain B	24.52
5.51	102	6	Chain B	16.31	5.825	165	6	Chain B	24.49
5.53	106	6	Chain B	16.38	5.745	149	6	Chain C	24.38
5.55	110	6	Chain B	16.47	5.765	153	6	Chain C	24.42
5.57	114	6	Chain B	16.58	5.785	157	6	Chain C	24.48
5.59	122	6	Chain B	16.71	5.805	161	6	Chain C	24.31
5.61	126	6	Chain B	16.67	5.825	165	6	Chain C	24.18
6.63	130	6	Chain B	16.59					
5.67	134	6	Chain B	16.51	802.11 n40 5.8 GHz				
5.69	138	6	Chain B	16.45	Freq	Channel	Data Rate	Antenna	Power
5.51	102	6	Chain C	16.25	5.755	151	6	Chain A	24.12
5.53	106	6	Chain C	16.31	5.775	155	6	Chain A	24.16
5.55	110	6	Chain C	16.45	5.795	159	6	Chain A	24.23
5.57	114	6	Chain C	16.53	5.815	163	6	Chain A	24.15
5.59	122	6	Chain C	16.62	5.755	151	6	Chain B	24.72
5.61	126	6	Chain C	16.57	5.775	155	6	Chain B	24.75
6.63	130	6	Chain C	16.51	5.795	159	6	Chain B	24.79
5.67	134	6	Chain C	16.49	5.815	163	6	Chain B	24.72
5.69	138	6	Chain C	16.42	5.755	151	6	Chain C	24.41
					5.775	155	6	Chain C	24.45
802.11a 5.8 GHz					5.795	159	6	Chain C	24.48
Freq	Channel	Data Rate	Antenna	Power	5.815	163	6	Chain C	24.42
5.745	149	6	Chain A	24.05					
5.765	153	6	Chain A	24.07					
5.785	157	6	Chain A	24.09					
5.805	161	6	Chain A	24.02					
5.825	165	6	Chain A	23.97					
5.745	149	6	Chain B	24.34					
5.765	153	6	Chain B	24.35					
5.785	157	6	Chain B	24.42					
5.805	161	6	Chain B	24.40					
5.825	165	6	Chain B	24.39					
5.745	149	6	Chain C	24.45					
5.765	153	6	Chain C	24.52					
5.785	157	6	Chain C	24.61					
5.805	161	6	Chain C	24.49					
5.825	165	6	Chain C	24.36					

## SAR Data Summary – 850 MHz Body

MEASUREMENT RESULTS								
Position	Gap	Frequency		Technology	Modulation	End Power		SAR (W/kg)
		MHz	Ch.			(dBm)	Battery	
Bottom	0 mm	824.7	1013	EvDo Rev.0	CDMA	24.52	Standard	1.133
		836.6	384	EvDo Rev.0	CDMA	24.59	Standard	1.096
		848.3	777	EvDo Rev.0	CDMA	24.59	Standard	1.166
		836.6	190	GPRS 1 slot	GMSK	32.59	Standard	0.714
		826.4	4132	WCDMA	CDMA	24.23	Standard	1.072
		836.6	4183	WCDMA	CDMA	24.09	Standard	1.076
		846.6	4233	WCDMA	CDMA	24.19	Standard	1.169
					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 – 1900 MHz Body

MEASUREMENT RESULTS								
Position	Gap	Frequency		Technology	Modulation	End Power		SAR (W/kg)
		MHz	Ch.			(dBm)	Battery	
Bottom	0 mm	1851.25	25	EvDo Rev.0	CDMA	24.52	Standard	0.885
		1880.00	600	EvDo Rev.0	CDMA	24.40	Standard	0.854
		1908.75	1175	EvDo Rev.0	CDMA	24.52	Standard	1.087
		1880.00	661	GPRS 1 slot	GMSK	29.46	Standard	0.742
		1852.40	9262	WCDMA	CDMA	24.13	Standard	1.064
		1880.00	9400	WCDMA	CDMA	23.98	Standard	1.014
		1907.60	9538	WCDMA	CDMA	23.91	Standard	1.133
					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 – 2450 MHz Body

MEASUREMENT RESULTS									
Position	Gap	Antenna	Frequency		Technology	Modulation	End Power		SAR (W/kg)
			MHz	Ch.			(dBm)	Battery	
Bottom	0 mm	Chain A	2437	6	g	OFDM	23.76	Standard	0.216
			2437	6	n20	OFDM	23.90	Standard	0.240
			2437	6	n40	OFDM	22.69	Standard	0.194
		Chain B	2437	6	g	OFDM	23.76	Standard	0.271
			2437	6	n20	OFDM	23.61	Standard	0.254
			2437	6	n40	OFDM	23.06	Standard	0.145
		Chain C	2437	6	g	OFDM	23.88	Standard	0.362
			2437	6	n20	OFDM	23.80	Standard	0.382
			2437	6	n40	OFDM	22.85	Standard	0.273
						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 – 5200 MHz Body

MEASUREMENT RESULTS									
Position	Gap	Antenna	Frequency		Technology	Modulation	End Power		SAR (W/kg)
			MHz	Ch.			(dBm)	Battery	
Bottom	0 mm	Chain A	5200	40	a	OFDM	16.33	Standard	0.335
			5200	40	n20	OFDM	16.32	Standard	0.354
			5190	38	n40	OFDM	16.66	Standard	0.339
		Chain B	5200	40	a	OFDM	16.32	Standard	0.318
			5200	40	n20	OFDM	16.49	Standard	0.388
			5190	38	n40	OFDM	16.68	Standard	0.337
		Chain C	5200	40	a	OFDM	16.56	Standard	0.399
			5200	40	n20	OFDM	16.42	Standard	0.349
			5190	38	n40	OFDM	16.56	Standard	0.346
		Chain A	5280	56	a	OFDM	16.39	Standard	0.326
			5280	56	n20	OFDM	16.31	Standard	0.323
			5270	54	n40	OFDM	16.68	Standard	0.323
		Chain B	5280	56	a	OFDM	16.30	Standard	0.383
			5280	56	n20	OFDM	16.51	Standard	0.323
			5270	54	n40	OFDM	16.61	Standard	0.360
		Chain C	5280	56	a	OFDM	16.68	Standard	0.341
			5280	56	n20	OFDM	16.61	Standard	0.371
			5270	54	n40	OFDM	16.43	Standard	0.375

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 – 5600 MHz Body

MEASUREMENT RESULTS									
Position	Gap	Antenna	Frequency		Technology	Modulation	End Power		SAR (W/kg)
			MHz	Ch.			(dBm)	Battery	
Bottom	0 mm	Chain A	5600	120	a	OFDM	16.42	Standard	0.324
			5600	120	n20	OFDM	16.31	Standard	0.386
			5590	122	n40	OFDM	16.68	Standard	0.310
		Chain B	5600	120	a	OFDM	16.49	Standard	0.328
			5600	120	n20	OFDM	16.34	Standard	0.331
			5590	122	n40	OFDM	16.71	Standard	0.314
		Chain C	5600	120	a	OFDM	16.72	Standard	0.397
			5600	120	n20	OFDM	16.63	Standard	0.359
			5590	122	n40	OFDM	16.62	Standard	0.356
									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 – 5800 MHz Body

MEASUREMENT RESULTS									
Position	Gap	Antenna	Frequency		Technology	Modulation	End Power		SAR (W/kg)
			MHz	Ch.			(dBm)	Battery	
Bottom	0 mm	Chain A	5785	157	a	OFDM	24.09	Standard	0.413
			5785	157	n20	OFDM	24.06	Standard	0.470
			5795	159	n40	OFDM	24.23	Standard	0.448
		Chain B	5785	157	a	OFDM	24.42	Standard	0.419
			5785	157	n20	OFDM	24.70	Standard	0.448
			5795	159	n40	OFDM	24.79	Standard	0.444
		Chain C	5785	157	a	OFDM	24.61	Standard	0.416
			5785	157	n20	OFDM	24.48	Standard	0.404
			5795	159	n40	OFDM	24.48	Standard	0.408
						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

## 13. 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	10/21/2010	RFE-217
Aprel E-Field Probe ALS-E030	07/14/2010	E030-001
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	01/12/2011	RFE-362
Aprel Validation Dipole ALS-D-835-S-2	01/14/2011	180-00561
Aprel Validation Dipole ALS-D-900-S-2	01/12/2011	RFE-275
Aprel Validation Dipole ALS-D-1900-S-2	01/15/2011	210-00713
Aprel Validation Dipole ALS-D-2450-S-2	01/12/2011	RFE-278
Aprel Validation Dipole RFE-D-2600-S-2	01/18/2011	RFE-121
Aprel Validation Dipole RFE-D-BB-S-2	01/12/2011	235-00801
Agilent (HP) 437B Power Meter	03/24/2010	3125U08837
Agilent (HP) 8481B Power Sensor	03/24/2010	3318A05384
Advantest R3261A Spectrum Analyzer	03/24/2010	31720068
Agilent (HP) 8350B Signal Generator	04/19/2010	2749A10226
Agilent (HP) 83525A RF Plug-In	04/19/2010	2647A01172
Agilent (HP) 8753C Vector Network Analyzer	03/25/2010	3135A01724
Agilent (HP) 85047A S-Parameter Test Set	03/25/2010	2904A00595
Agilent (HP) E55125C Base Station Sim.	03/25/2011	MY48360364
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

## 14. 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]



## 15. 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

Tue 15/Jun/2010 11:09:52

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	55.20	0.94
0.8150	55.28	0.97	55.15	0.94
0.8250	55.24	0.97	55.11	0.95
0.8350	55.20	0.97	55.06	0.98
0.8450	55.17	0.98	55.02	0.99
0.8550	55.14	0.99	54.99	1.01
0.8650	55.11	1.01	54.95	1.02

\*\*\*\*\*

Test Result for UIM Dielectric Parameter

Mon 14/Jun/2010 07:01:41

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
1.8700	53.30	1.52	53.14	1.52
1.8800	53.30	1.52	53.12	1.52
1.8900	53.30	1.52	53.09	1.53
1.9000	53.30	1.52	53.08	1.54
1.9100	53.30	1.52	53.06	1.55
1.9200	53.30	1.52	53.05	1.56
1.9300	53.30	1.52	53.03	1.58

\*\*\*\*\*

Test Result for UIM Dielectric Parameter

Tue 15/Jun/2010 06:54:10

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	53.22	1.50
1.8800	53.30	1.52	53.20	1.51
1.8900	53.30	1.52	53.18	1.52
1.9000	53.30	1.52	53.16	1.53
1.9100	53.30	1.52	53.14	1.54
1.9200	53.30	1.52	53.12	1.55
1.9300	53.30	1.52	53.11	1.56

\*\*\*\*\*

Test Result for UIM Dielectric Parameter

Wed 16/Jun/2010 07:08:11

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	52.47	1.94
2.4300	52.73	1.93	52.45	1.95
2.4400	52.71	1.94	52.42	1.96
2.4500	52.70	1.95	52.41	1.97
2.4600	52.69	1.96	52.40	1.98
2.4700	52.67	1.98	52.37	1.99
2.4800	52.66	1.99	52.36	2.01

\*\*\*\*\*

Test Result for UIM Dielectric Parameter

Thu 17/Jun/2010 06:58:42

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
5.2200	48.99	5.32	47.45	5.31
5.2300	48.97	5.33	47.42	5.33
5.2400	48.96	5.35	47.41	5.35
5.2500	48.95	5.36	47.39	5.36
5.2600	48.93	5.37	47.37	5.37
5.2700	48.92	5.38	47.35	5.39
5.2800	48.91	5.39	47.34	5.40

\*\*\*\*\*

Test Result for UIM Dielectric Parameter

Fri 18/Jun/2010 06:51:23

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	47.23	5.32
5.2300	48.97	5.33	47.21	5.34
5.2400	48.96	5.35	47.20	5.36
5.2500	48.95	5.36	47.19	5.37
5.2600	48.93	5.37	47.18	5.39
5.2700	48.92	5.38	47.16	5.40
5.2800	48.91	5.39	47.14	5.42

\*\*\*\*\*

Test Result for UIM Dielectric Parameter

Sat 19/Jun/2010 06:57:34

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	48.63	5.86
5.5800	48.50	5.74	48.61	5.87
5.5900	48.48	5.75	48.59	5.89
5.6000	48.47	5.77	48.57	5.91
5.6100	48.46	5.78	48.56	5.92
5.6200	48.44	5.79	48.54	5.93
5.6300	48.43	5.80	48.52	5.95

\*\*\*\*\*

Test Result for UIM Dielectric Parameter

Mon 21/Jun/2010 06:58:36

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	48.21	5.98
5.7650	48.25	5.96	48.19	5.99
5.7750	48.23	5.97	48.17	6.00
5.7850	48.22	5.98	48.15	6.01
5.7950	48.21	5.99	48.13	6.02
5.8050	48.19	6.01	48.12	6.04
5.8150	48.18	6.02	48.10	6.05

**SAR Test Report**

By Operator : Jay  
Measurement Date : 15-Jun-2010  
Starting Time : 15-Jun-2010 11:10:41 AM  
End Time : 15-Jun-2010 11:25:52 AM  
Scanning Time : 911 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 : 1.216 W/kg  
Power Drift-Finish: 1.178 W/kg  
Power Drift (%) : -3.128

## 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 : 15-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 49.00 RH%  
Epsilon : 55.06 F/m  
Sigma : 0.98 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

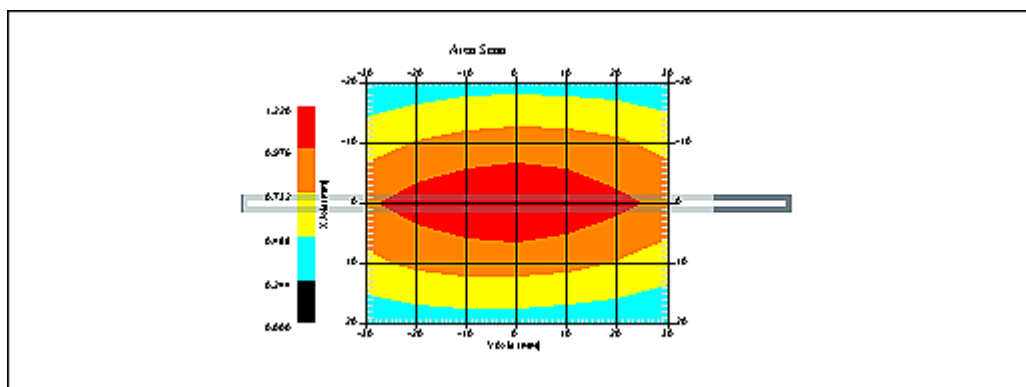
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 835.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.1  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 25.00 °C  
 Set-up Date : 15-Jun-2010  
 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

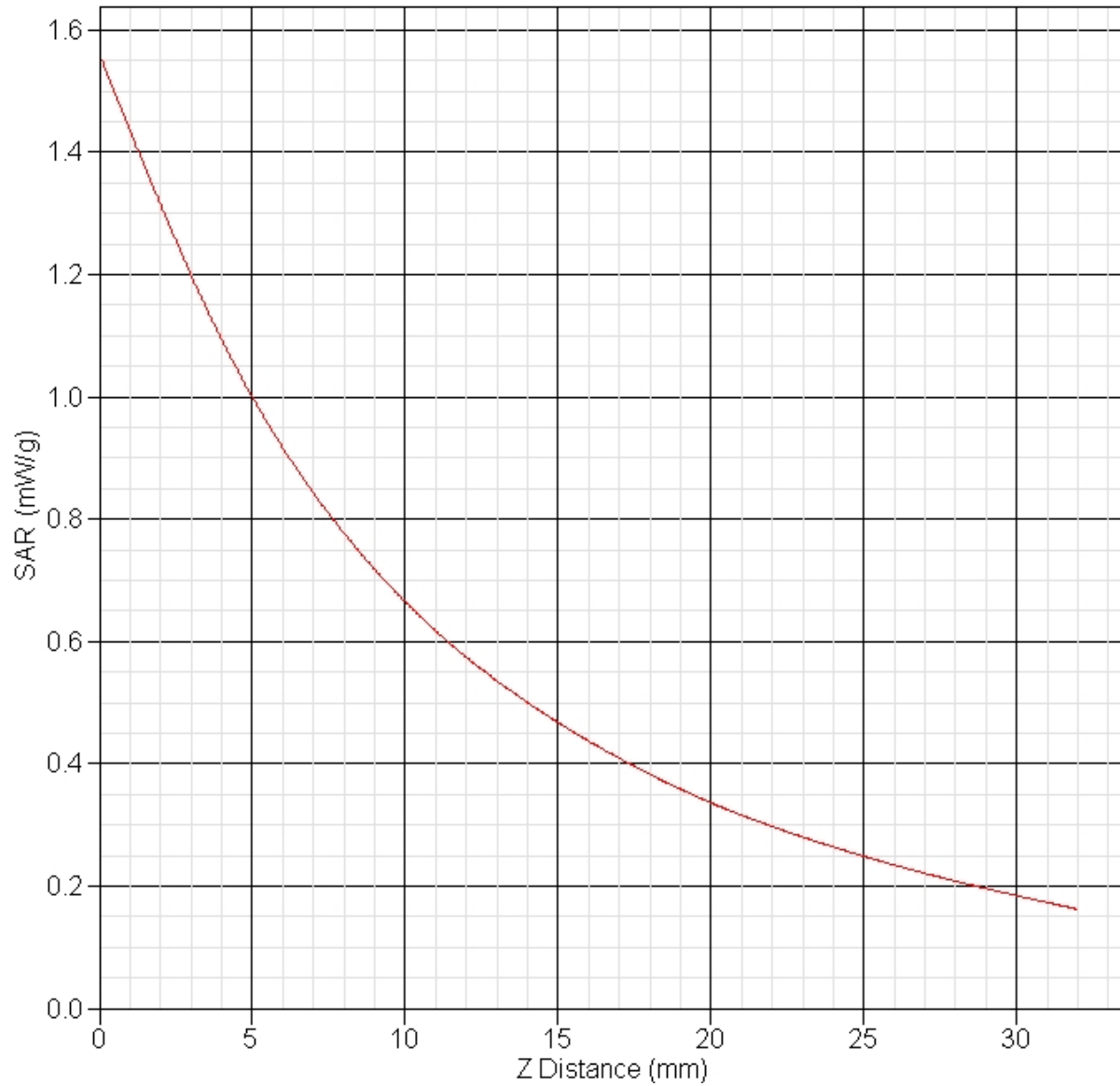
DUT Position : Touch  
 Separation : 15 mm  
 Channel : Mid



1 gram SAR value : 0.934 W/kg  
 10 gram SAR value : 0.603 W/kg  
 Area Scan Peak SAR : 1.218 W/kg  
 Zoom Scan Peak SAR : 1.561 W/kg

### SAR-Z Axis

at Hotspot x:0.25 y:-0.20





**SAR Test Report**

By Operator : Jay  
Measurement Date : 14-Jun-2010  
Starting Time : 14-Jun-2010 07:16:30 AM  
End Time : 14-Jun-2010 07:29:59 AM  
Scanning Time : 809 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 : 4.433 W/kg  
Power Drift-Finish: 4.485 W/kg  
Power Drift (%) : 1.176

## 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 : 14-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 49.00 RH%  
Epsilon : 53.08 F/m  
Sigma : 1.54 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

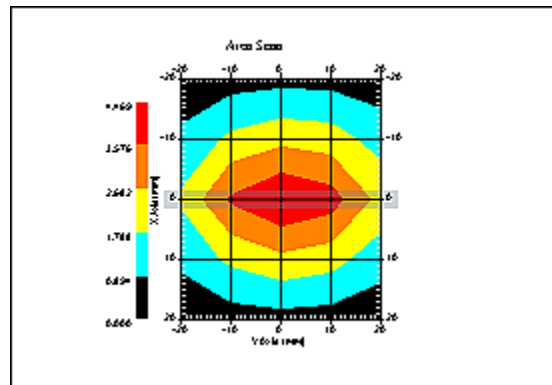
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 1900.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.85  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 14-Jun-2010  
 Set-up Time : 8:03:12 AM  
 Area Scan : 5x5x1 : Measurement x=10mm, y=10mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

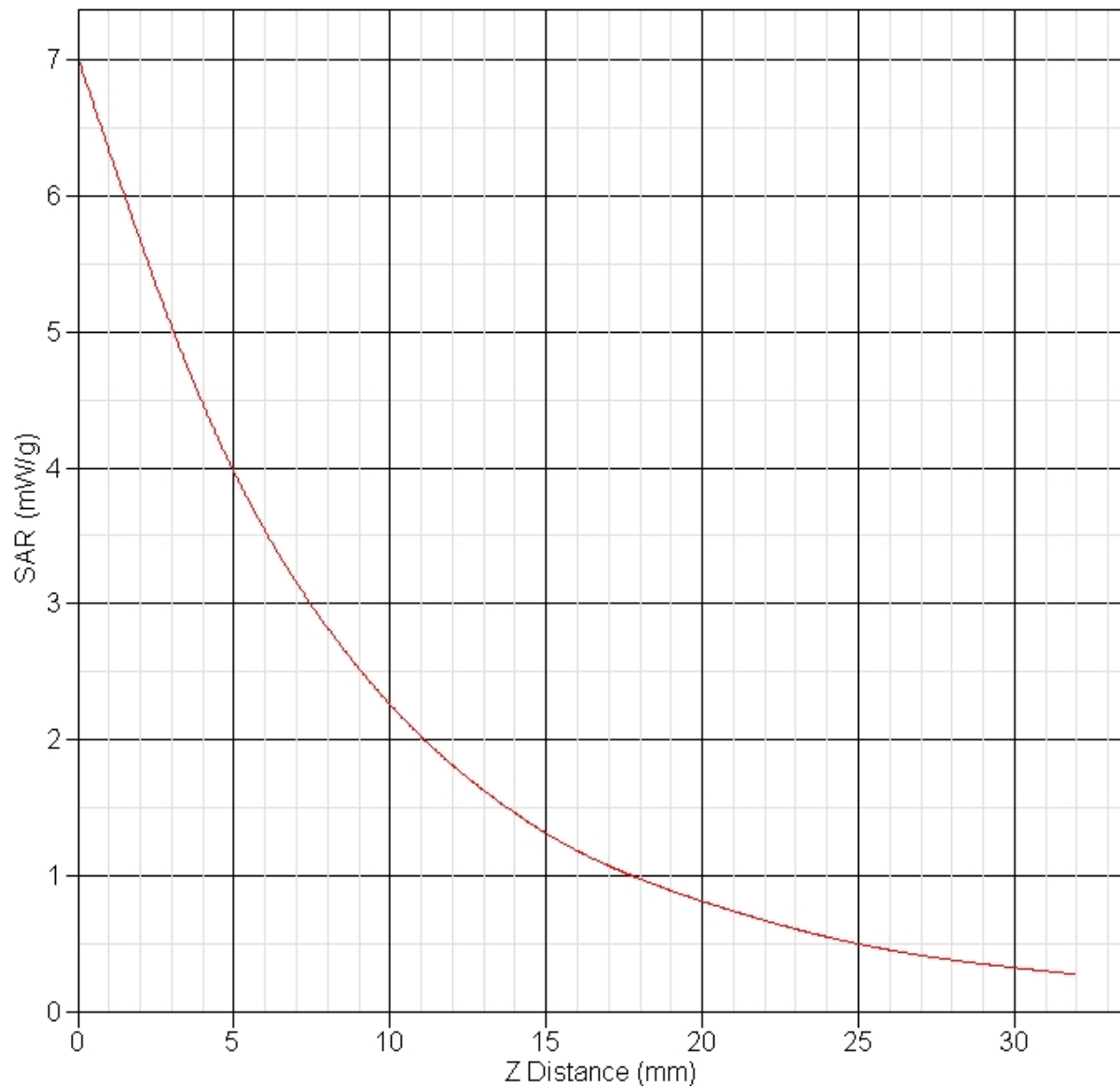
## Other Data

DUT Position : Touch  
 Separation : 10 mm  
 Channel : Mid



1 gram SAR value : 3.881 W/kg  
 10 gram SAR value : 1.999 W/kg  
 Area Scan Peak SAR : 4.469 W/kg  
 Zoom Scan Peak SAR : 7.026 W/kg

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



**SAR Test Report**

By Operator : Jay  
Measurement Date : 15-Jun-2010  
Starting Time : 15-Jun-2010 07:03:41 AM  
End Time : 15-Jun-2010 07:17:00 AM  
Scanning Time : 799 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 : 4.265 W/kg  
Power Drift-Finish: 4.284 W/kg  
Power Drift (%) : 0.453

## 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 : 15-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 49.00 RH%  
Epsilon : 53.16 F/m  
Sigma : 1.53 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

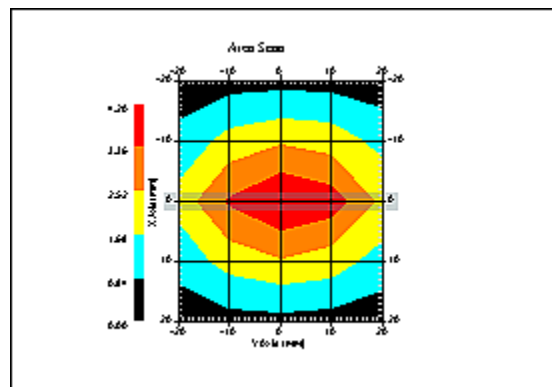
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 1900.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.85  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 15-Jun-2010  
 Set-up Time : 8:39:41 AM  
 Area Scan : 5x5x1 : Measurement x=10mm, y=10mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

## Other Data

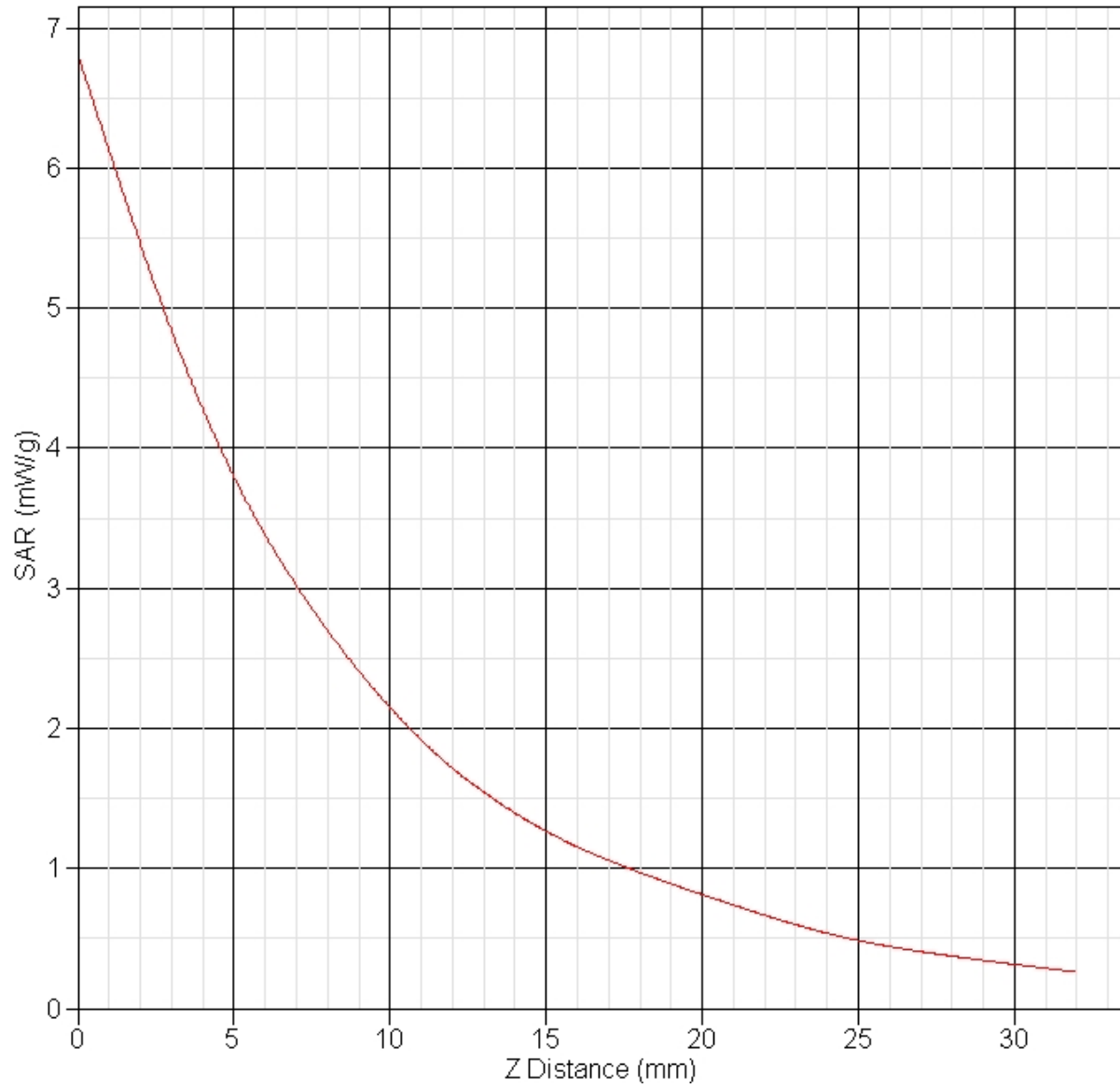
DUT Position : Touch  
 Separation : 10 mm  
 Channel : Mid



1 gram SAR value : 3.937 W/kg  
 10 gram SAR value : 2.033 W/kg  
 Area Scan Peak SAR : 4.200 W/kg  
 Zoom Scan Peak SAR : 6.816 W/kg

### SAR-Z Axis

at Hotspot x:0.25 y:-0.17



**SAR Test Report**

By Operator : Jay  
Measurement Date : 16-Jun-2010  
Starting Time : 16-Jun-2010 07:13:22 AM  
End Time : 16-Jun-2010 07:26:16 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 : 6.390 W/kg  
Power Drift-Finish: 6.601 W/kg  
Power Drift (%) : 3.301

## 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 : 16-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 45.00 RH%  
Epsilon : 52.41 F/m  
Sigma : 1.97 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

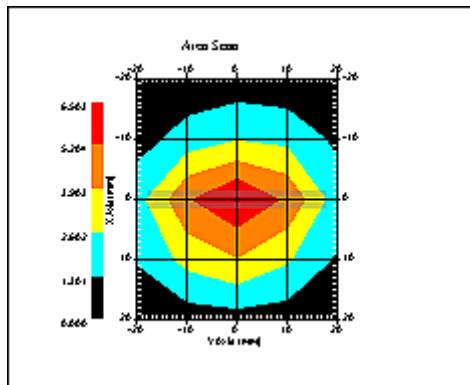
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 3.61  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 16-Jun-2010  
 Set-up Time : 7:40:13 AM  
 Area Scan : 5x5x1 : Measurement x=10mm, y=10mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

## Other Data

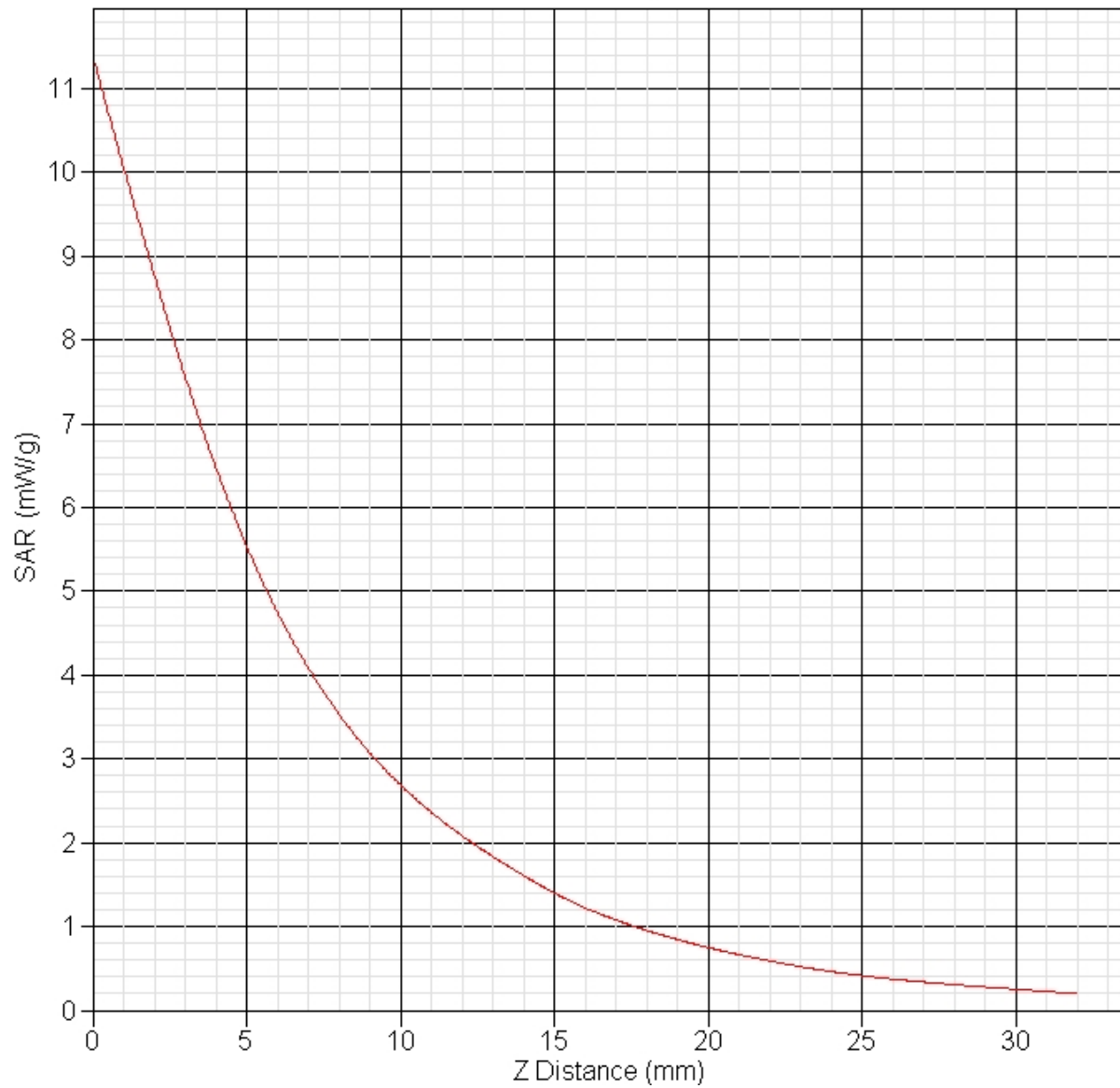
DUT Position : Touch  
 Separation : 10 mm  
 Channel : Mid



1 gram SAR value : 5.530 W/kg  
 10 gram SAR value : 2.536 W/kg  
 Area Scan Peak SAR : 6.503 W/kg  
 Zoom Scan Peak SAR : 11.390 W/kg



**SAR-Z Axis**  
at Hotspot x:0.24 y:-0.17



**SAR Test Report**

By Operator : Jay  
Measurement Date : 17-Jun-2010  
Starting Time : 17-Jun-2010 07:02:43 AM  
End Time : 17-Jun-2010 07:25:59 AM  
Scanning Time : 1396 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 : 8.662 W/kg  
Power Drift-Finish: 8.729 W/kg  
Power Drift (%) : 0.776

## 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 : 17-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.93 F/m  
Sigma : 5.20 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

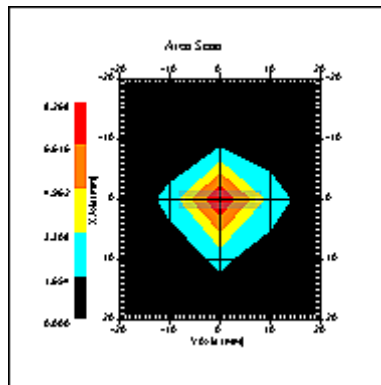
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 17-Jun-2010  
 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

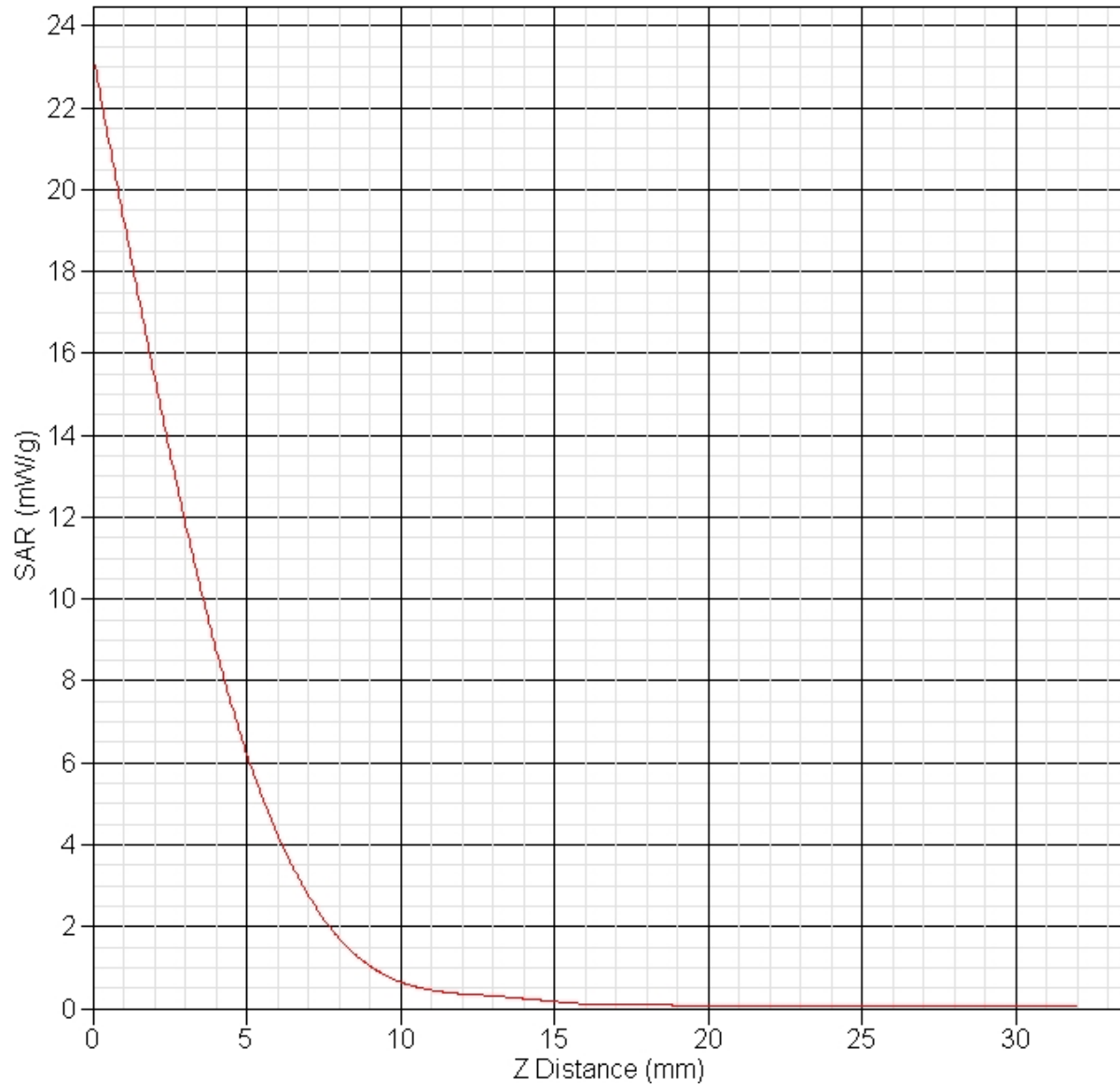
DUT Position : Touch  
 Separation : 10 mm  
 Channel : Mid



1 gram SAR value : 6.227 W/kg  
 10 gram SAR value : 1.983 W/kg  
 Area Scan Peak SAR : 8.268 W/kg  
 Zoom Scan Peak SAR : 23.318 W/kg

### SAR-Z Axis

at Hotspot x:0.41 y:-0.22



**SAR Test Report**

By Operator : Jay  
Measurement Date : 18-Jun-2010  
Starting Time : 18-Jun-2010 06:52:02 AM  
End Time : 18-Jun-2010 07:15:06 AM  
Scanning Time : 1384 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 : 8.831 W/kg  
Power Drift-Finish: 8.803 W/kg  
Power Drift (%) : -0.317

## 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. : 5200  
Frequency : 5200.00 MHz  
Last Calib. Date : 18-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.27 F/m  
Sigma : 5.38 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

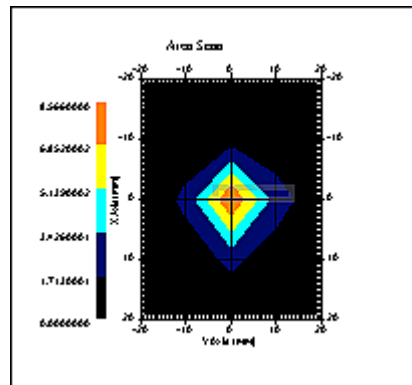
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 18-Jun-2010  
 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

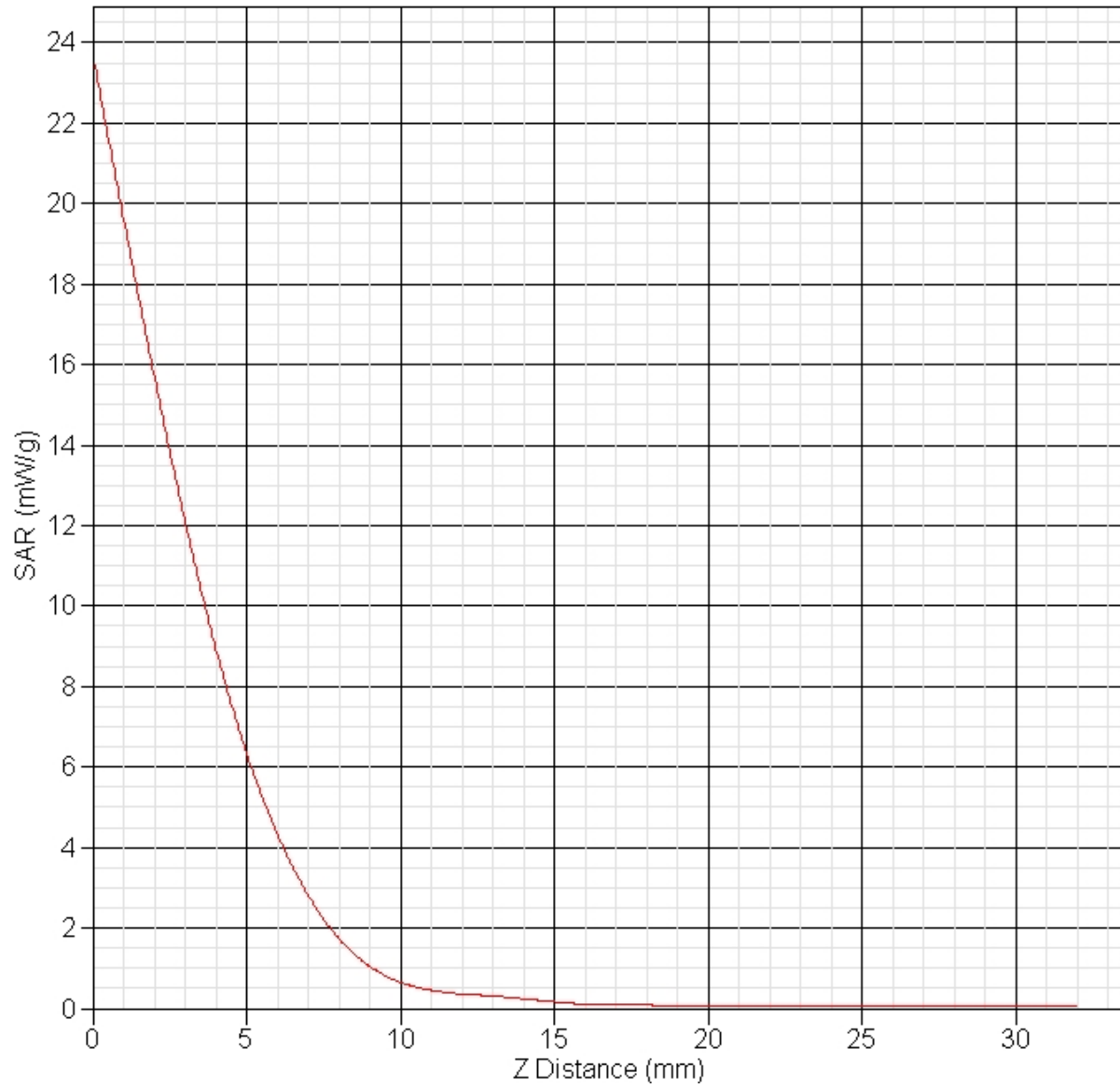
DUT Position : Touch  
 Separation : 10 mm  
 Channel : Mid



1 gram SAR value : 6.363 W/kg  
 10 gram SAR value : 1.820 W/kg  
 Area Scan Peak SAR : 8.566 W/kg  
 Zoom Scan Peak SAR : 23.719 W/kg

### SAR-Z Axis

at Hotspot x:0.27 y:-0.16



**SAR Test Report**

By Operator : Jay  
Measurement Date : 19-Jun-2010  
Starting Time : 19-Jun-2010 07:01:39 AM  
End Time : 19-Jun-2010 07:24:27 AM  
Scanning Time : 1368 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 : 8.011 W/kg  
Power Drift-Finish: 8.090 W/kg  
Power Drift (%) : 0.984

## 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 : 19-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.57 F/m  
Sigma : 5.91 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 : 15-Jul-2009  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

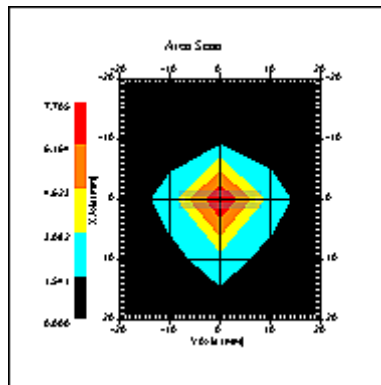


## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 19-Jun-2010  
 Set-up Time : 8:54:57 AM  
 Area Scan : 5x5x1 : Measurement x=10mm, y=10mm, z=4mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

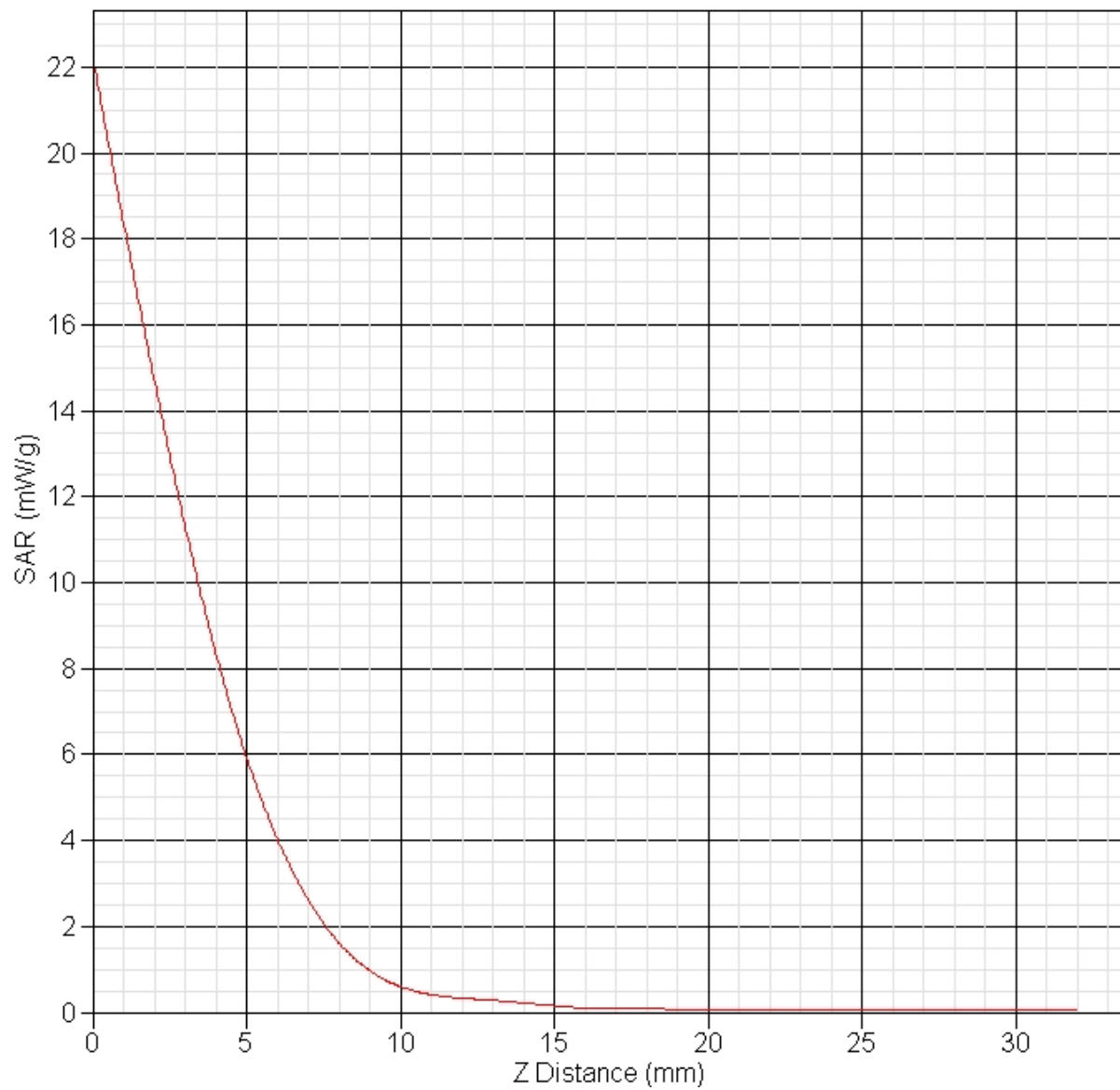
## Other Data

DUT Position : Touch  
 Separation : 10 mm  
 Channel : Mid



1 gram SAR value : 6.328 W/kg  
 10 gram SAR value : 2.056 W/kg  
 Area Scan Peak SAR : 7.705 W/kg  
 Zoom Scan Peak SAR : 22.217 W/kg

**SAR-Z Axis**  
at Hotspot x:0.35 y:-0.18



**SAR Test Report**

By Operator : Jay  
Measurement Date : 21-Jun-2010  
Starting Time : 21-Jun-2010 07:06:39 AM  
End Time : 21-Jun-2010 07:29:27 AM  
Scanning Time : 1368 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 : 7.418 W/kg  
Power Drift-Finish: 7.534 W/kg  
Power Drift (%) : 1.558

## 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 : 21-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.15 F/m  
Sigma : 6.01 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

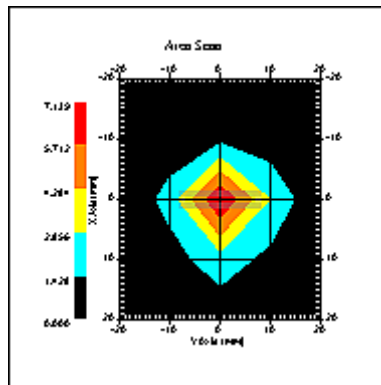
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.2  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 21-Jun-2010  
 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

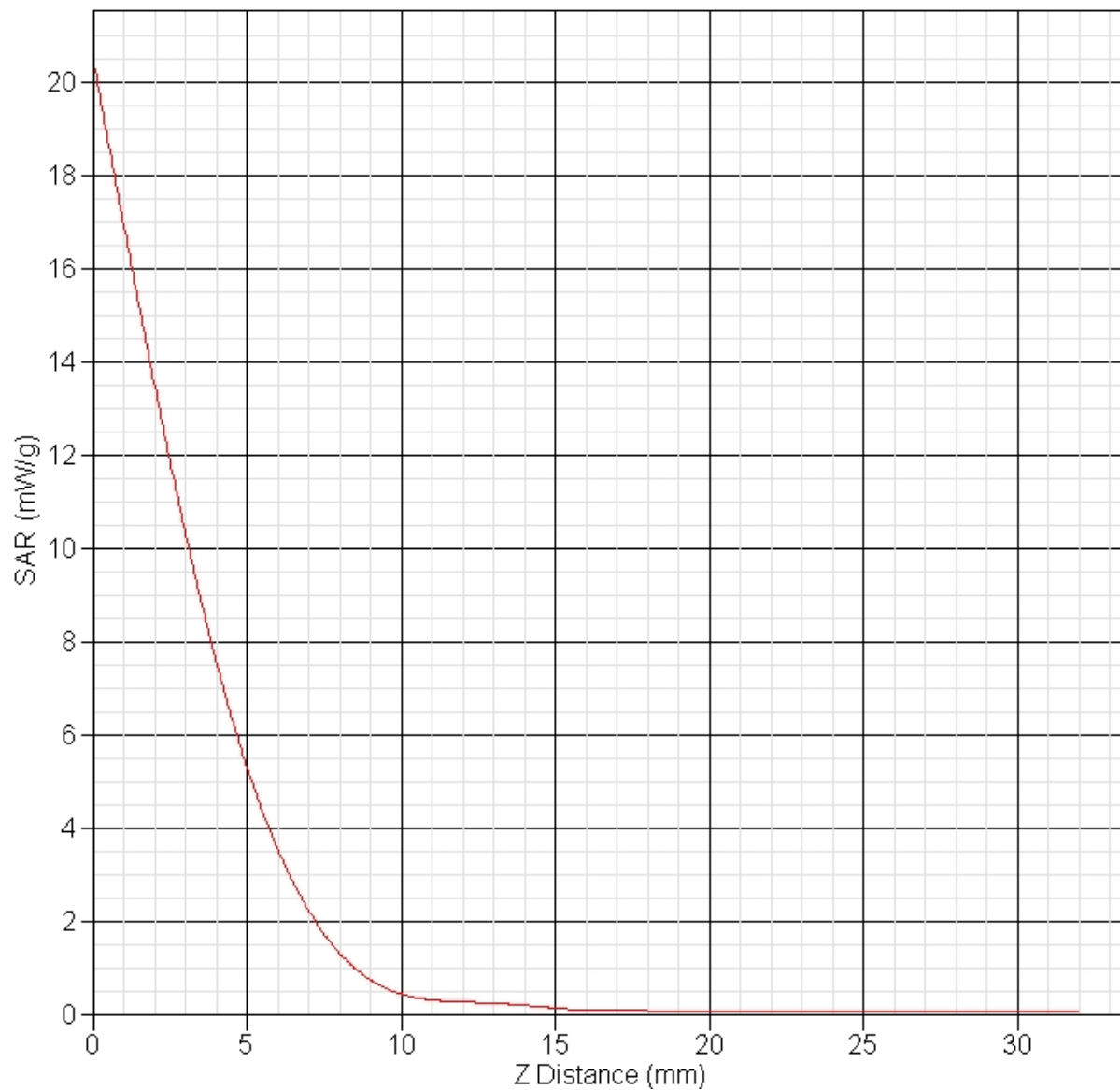
## Other Data

DUT Position : Touch  
 Separation : 10 mm  
 Channel : Mid



1 gram SAR value : 6.178 W/kg  
 10 gram SAR value : 1.961 W/kg  
 Area Scan Peak SAR : 7.139 W/kg  
 Zoom Scan Peak SAR : 20.516 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 : 15-Jun-2010  
Starting Time : 15-Jun-2010 04:54:19 PM  
End Time : 15-Jun-2010 05:11:42 PM  
Scanning Time : 1043 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : Rev. 0  
Model : X10gx  
Frequency : 850.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal  
Orientation : Bottom  
Power Drift-Start : 1.323 W/kg  
Power Drift-Finish: 1.277 W/kg  
Power Drift (%) : -3.513

## 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 : 15-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 40.00 RH%  
Epsilon : 55.06 F/m  
Sigma : 0.98 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

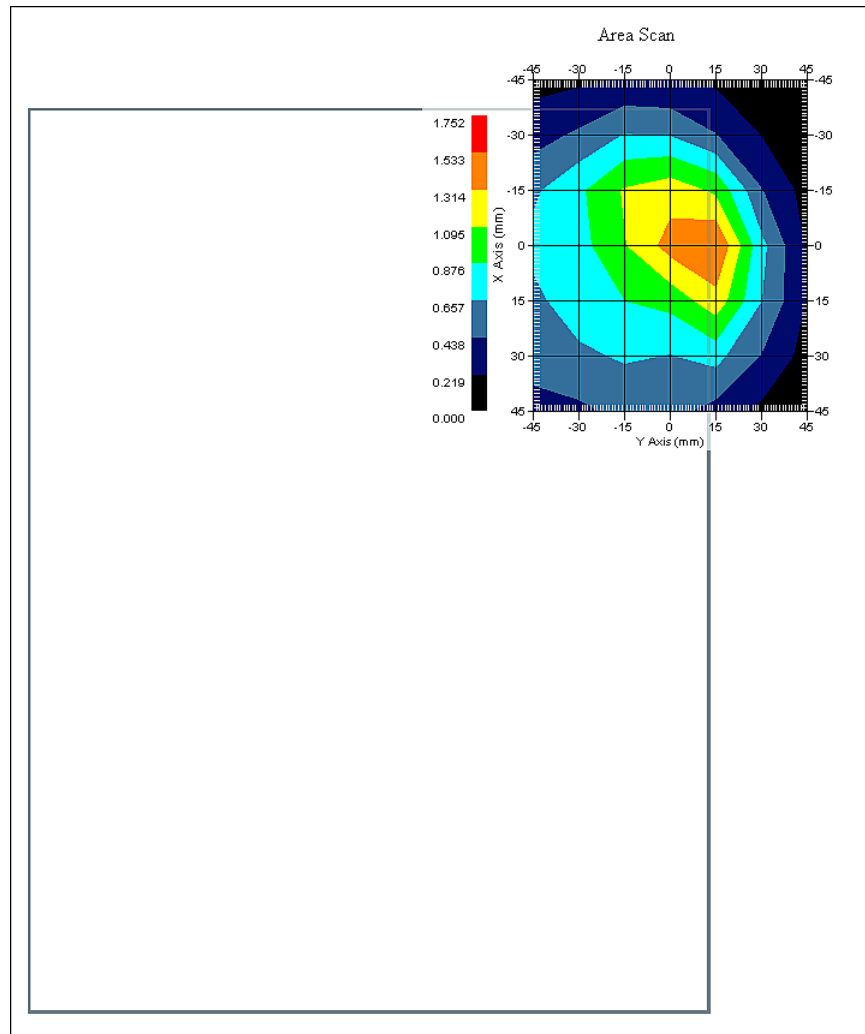
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 835.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.1  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 15-Jun-2010  
 Set-up Time : 4:45:50 PM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Low



1 gram SAR value : 1.133 W/kg  
 10 gram SAR value : 0.789 W/kg  
 Area Scan Peak SAR : 1.436 W/kg  
 Zoom Scan Peak SAR : 2.022 W/kg



**SAR Test Report**

By Operator : Jay  
Measurement Date : 15-Jun-2010  
Starting Time : 15-Jun-2010 05:15:44 PM  
End Time : 15-Jun-2010 05:33:04 PM  
Scanning Time : 1040 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : Rev. 0  
Model : X10gx  
Frequency : 850.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal  
Orientation : Bottom  
Power Drift-Start : 1.193 W/kg  
Power Drift-Finish: 1.178 W/kg  
Power Drift (%) : -1.258

## 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 : 15-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 40.00 RH%  
Epsilon : 55.06 F/m  
Sigma : 0.98 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

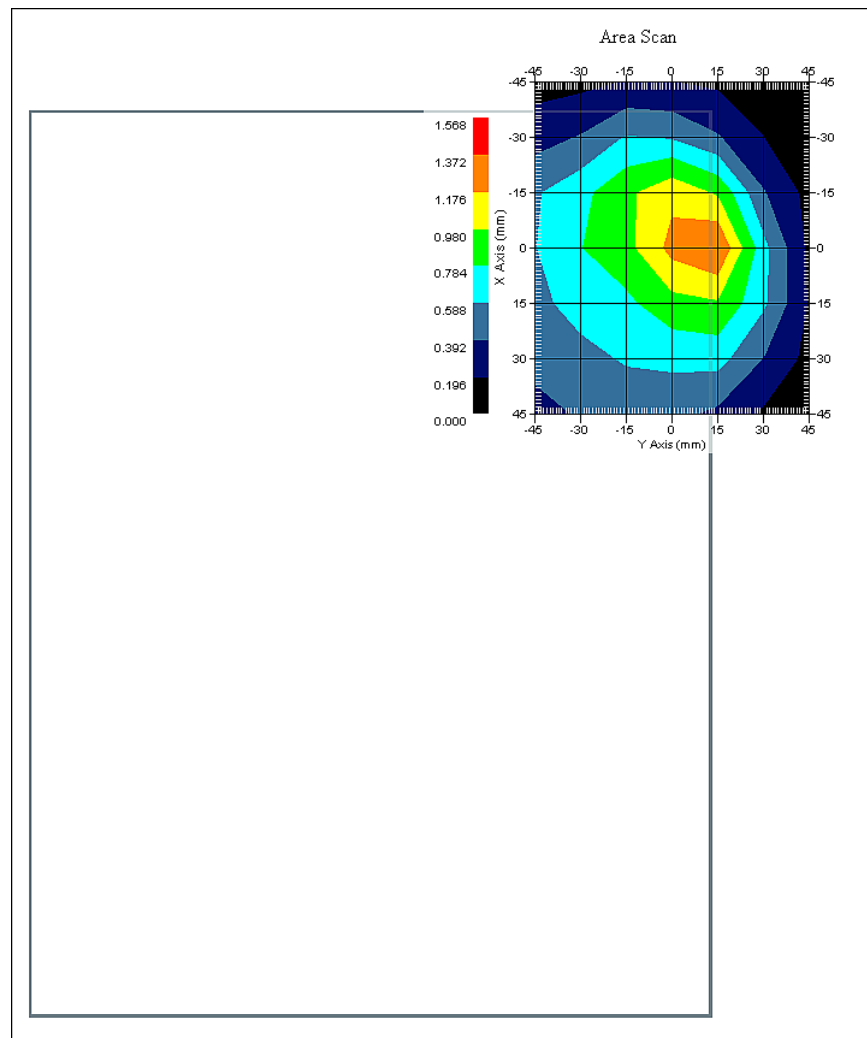
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 835.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.1  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 15-Jun-2010  
 Set-up Time : 4:45:50 PM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 1.096 W/kg  
 10 gram SAR value : 0.758 W/kg  
 Area Scan Peak SAR : 1.175 W/kg  
 Zoom Scan Peak SAR : 2.092 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 15-Jun-2010  
Starting Time : 15-Jun-2010 05:42:47 PM  
End Time : 15-Jun-2010 06:00:00 PM  
Scanning Time : 1033 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : Rev. 0  
Model : X10gx  
Frequency : 850.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal  
Orientation : Bottom  
Power Drift-Start : 1.016 W/kg  
Power Drift-Finish: 1.035 W/kg  
Power Drift (%) : 1.875

## 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. : 835  
Frequency : 835.00 MHz  
Last Calib. Date : 15-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 40.00 RH%  
Epsilon : 55.06 F/m  
Sigma : 0.98 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

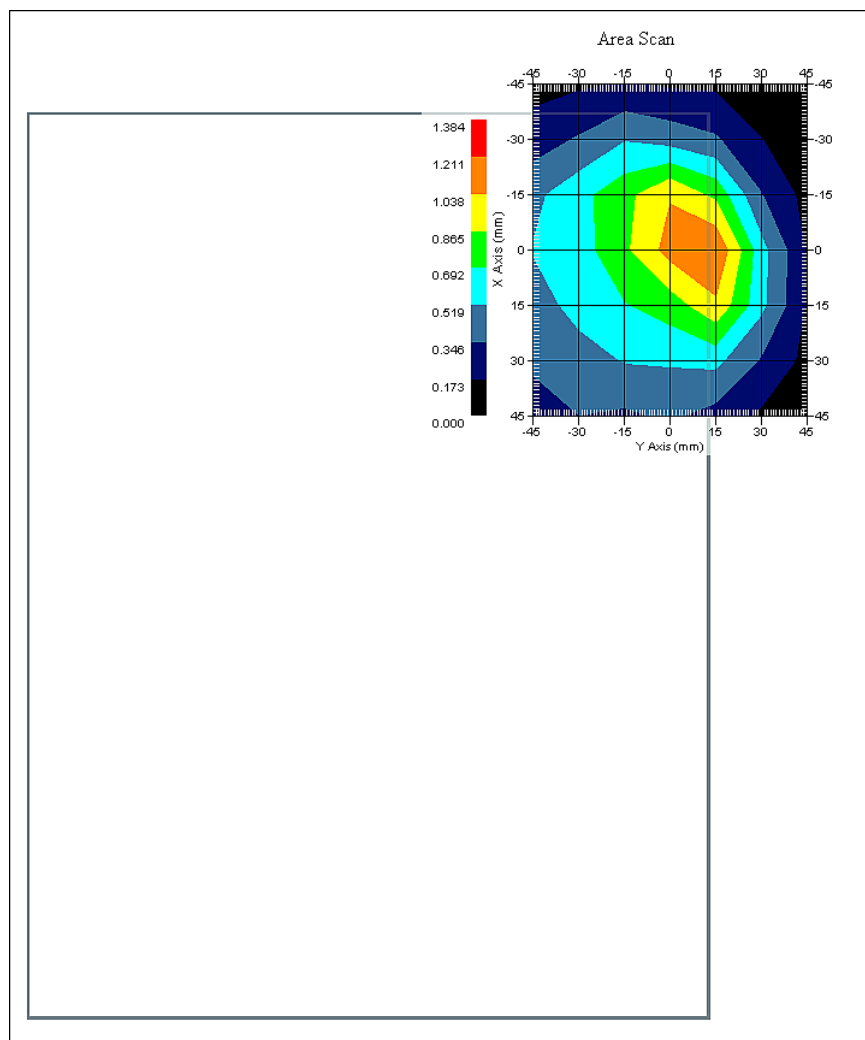
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 835.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.1  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 15-Jun-2010  
 Set-up Time : 4:45:50 PM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : High



1 gram SAR value : 1.166 W/kg  
 10 gram SAR value : 0.757 W/kg  
 Area Scan Peak SAR : 1.214 W/kg  
 Zoom Scan Peak SAR : 1.751 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 15-Jun-2010  
Starting Time : 15-Jun-2010 11:34:15 AM  
End Time : 15-Jun-2010 11:51:40 AM  
Scanning Time : 1045 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : GSM  
Model : X10gx  
Frequency : 850.00 MHz  
Max. Transmit Pwr : 2 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal  
Orientation : Bottom  
Power Drift-Start : 0.622 W/kg  
Power Drift-Finish: 0.599 W/kg  
Power Drift (%) : -3.691

## 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 : 15-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 40.00 RH%  
Epsilon : 55.06 F/m  
Sigma : 0.98 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

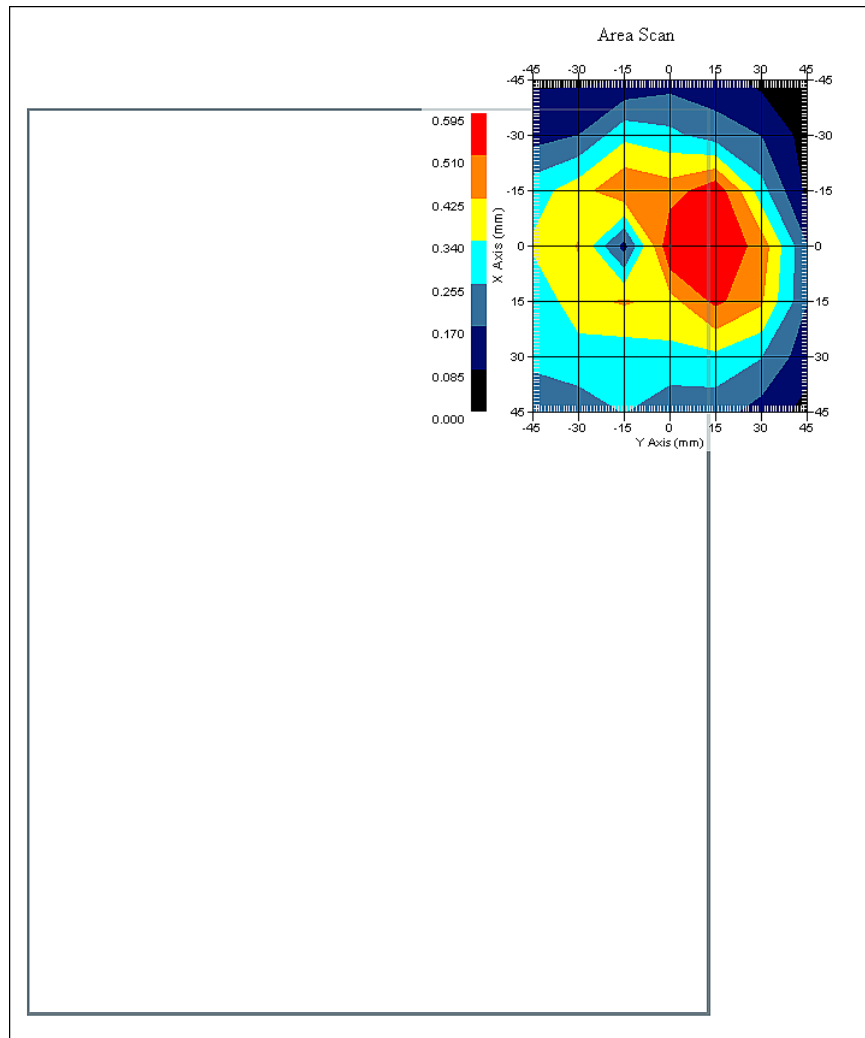
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 835.00 MHz  
Duty Cycle Factor: 8  
Conversion Factor: 6.1  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 8  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 15-Jun-2010  
 Set-up Time : 12:29:32 PM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.714 W/kg  
 10 gram SAR value : 0.457 W/kg  
 Area Scan Peak SAR : 0.592 W/kg  
 Zoom Scan Peak SAR : 1.381 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 15-Jun-2010  
Starting Time : 15-Jun-2010 02:59:48 PM  
End Time : 15-Jun-2010 03:17:24 PM  
Scanning Time : 1056 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : WCDMA  
Model : X10gx  
Frequency : 850.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal  
Orientation : Bottom  
Power Drift-Start : 1.302 W/kg  
Power Drift-Finish: 1.272 W/kg  
Power Drift (%) : -2.304

## 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 : 15-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 40.00 RH%  
Epsilon : 55.06 F/m  
Sigma : 0.98 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

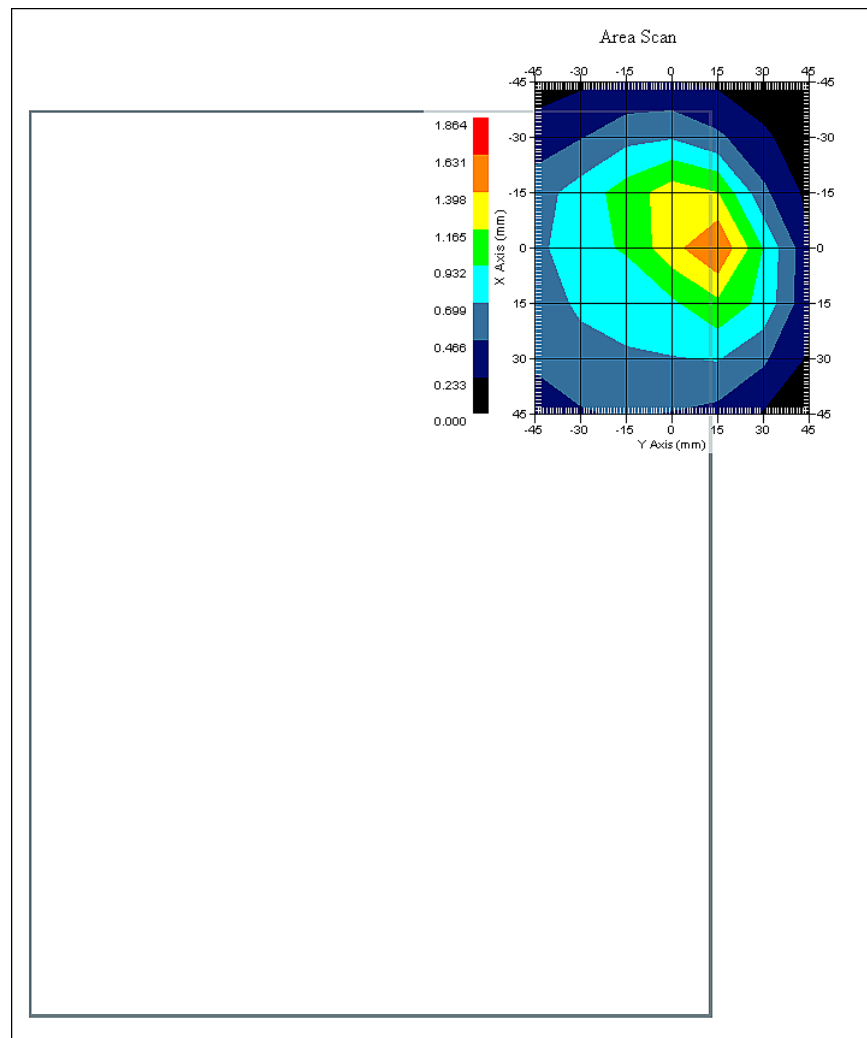
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 835.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.1  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 15-Jun-2010  
 Set-up Time : 12:29:32 PM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Low



1 gram SAR value : 1.072 W/kg  
 10 gram SAR value : 0.770 W/kg  
 Area Scan Peak SAR : 1.432 W/kg  
 Zoom Scan Peak SAR : 1.922 W/kg



**SAR Test Report**

By Operator : Jay  
Measurement Date : 15-Jun-2010  
Starting Time : 15-Jun-2010 03:19:54 PM  
End Time : 15-Jun-2010 03:37:13 PM  
Scanning Time : 1039 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : WCDMA  
Model : X10gx  
Frequency : 850.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal  
Orientation : Bottom  
Power Drift-Start : 1.127 W/kg  
Power Drift-Finish: 1.151 W/kg  
Power Drift (%) : 2.083

## 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 : 15-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 40.00 RH%  
Epsilon : 55.06 F/m  
Sigma : 0.98 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

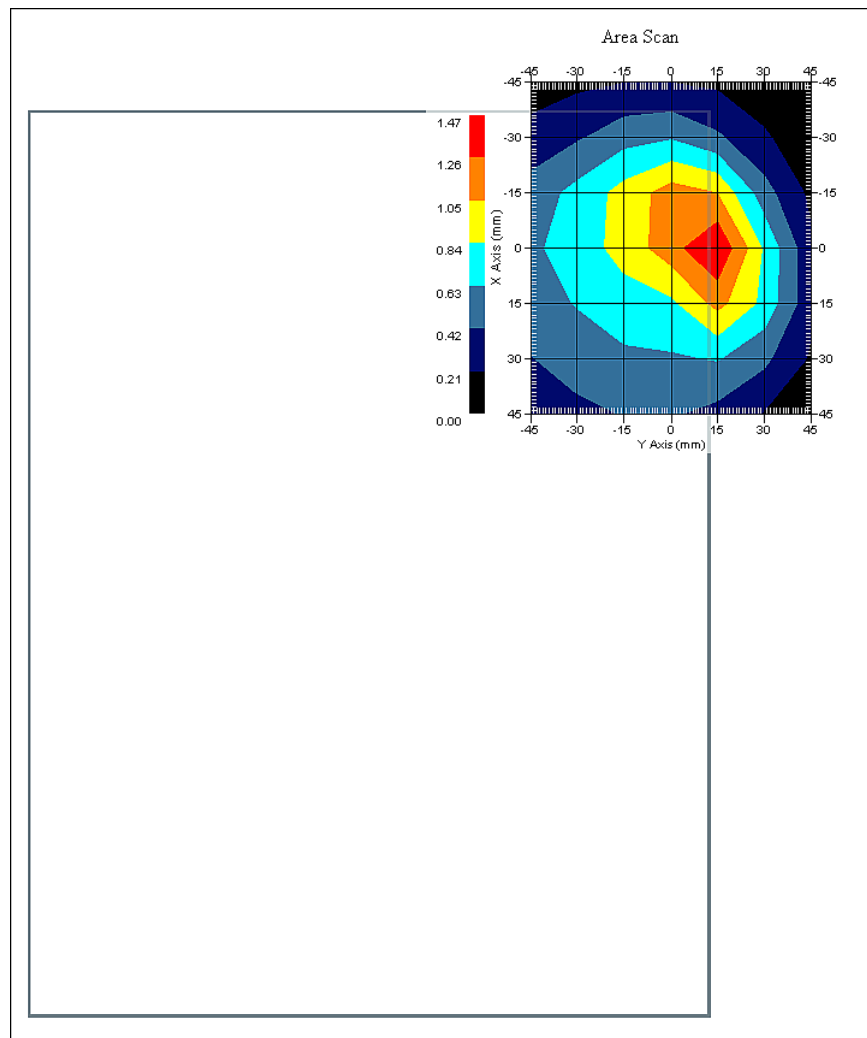
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 835.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.1  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 15-Jun-2010  
 Set-up Time : 12:29:32 PM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 1.076 W/kg  
 10 gram SAR value : 0.757 W/kg  
 Area Scan Peak SAR : 1.368 W/kg  
 Zoom Scan Peak SAR : 1.861 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 15-Jun-2010  
Starting Time : 15-Jun-2010 03:39:58 PM  
End Time : 15-Jun-2010 03:57:36 PM  
Scanning Time : 1058 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : WCDMA  
Model : X10gx  
Frequency : 850.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal  
Orientation : Bottom  
Power Drift-Start : 1.066 W/kg  
Power Drift-Finish: 1.028 W/kg  
Power Drift (%) : -3.565

## 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 : 15-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 40.00 RH%  
Epsilon : 55.06 F/m  
Sigma : 0.98 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

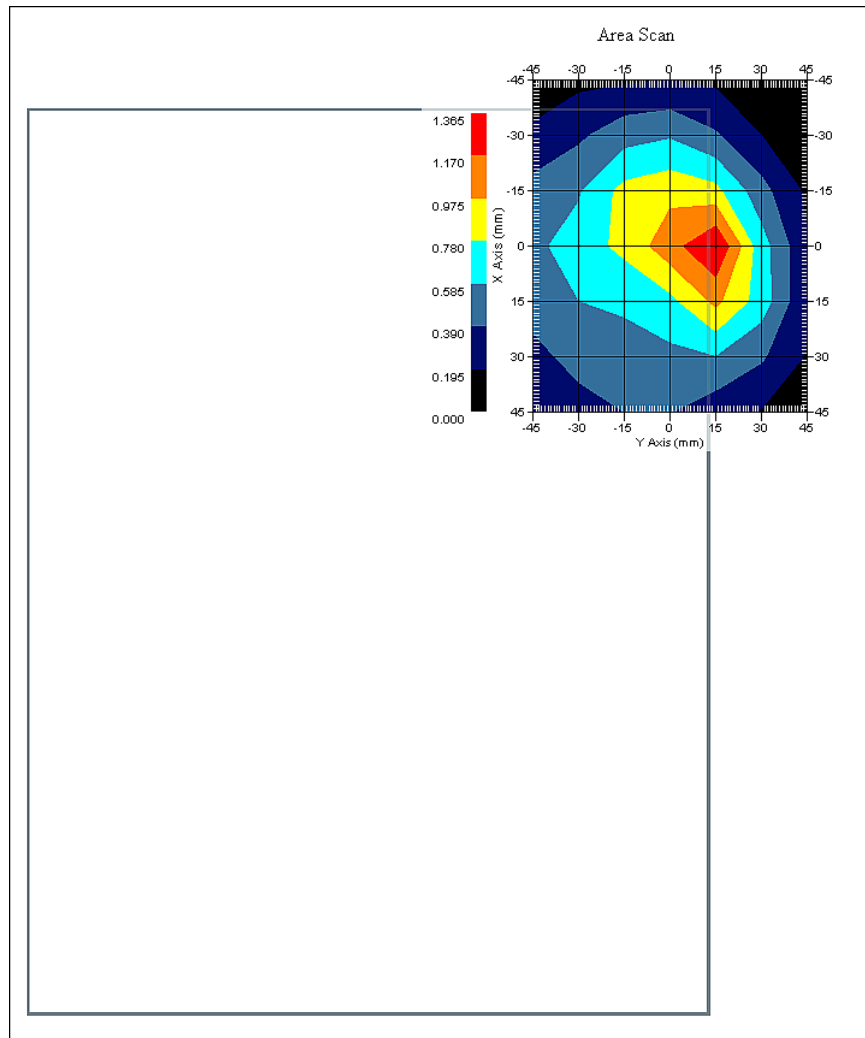
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 835.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 6.1  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 15-Jun-2010  
 Set-up Time : 4:45:50 PM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

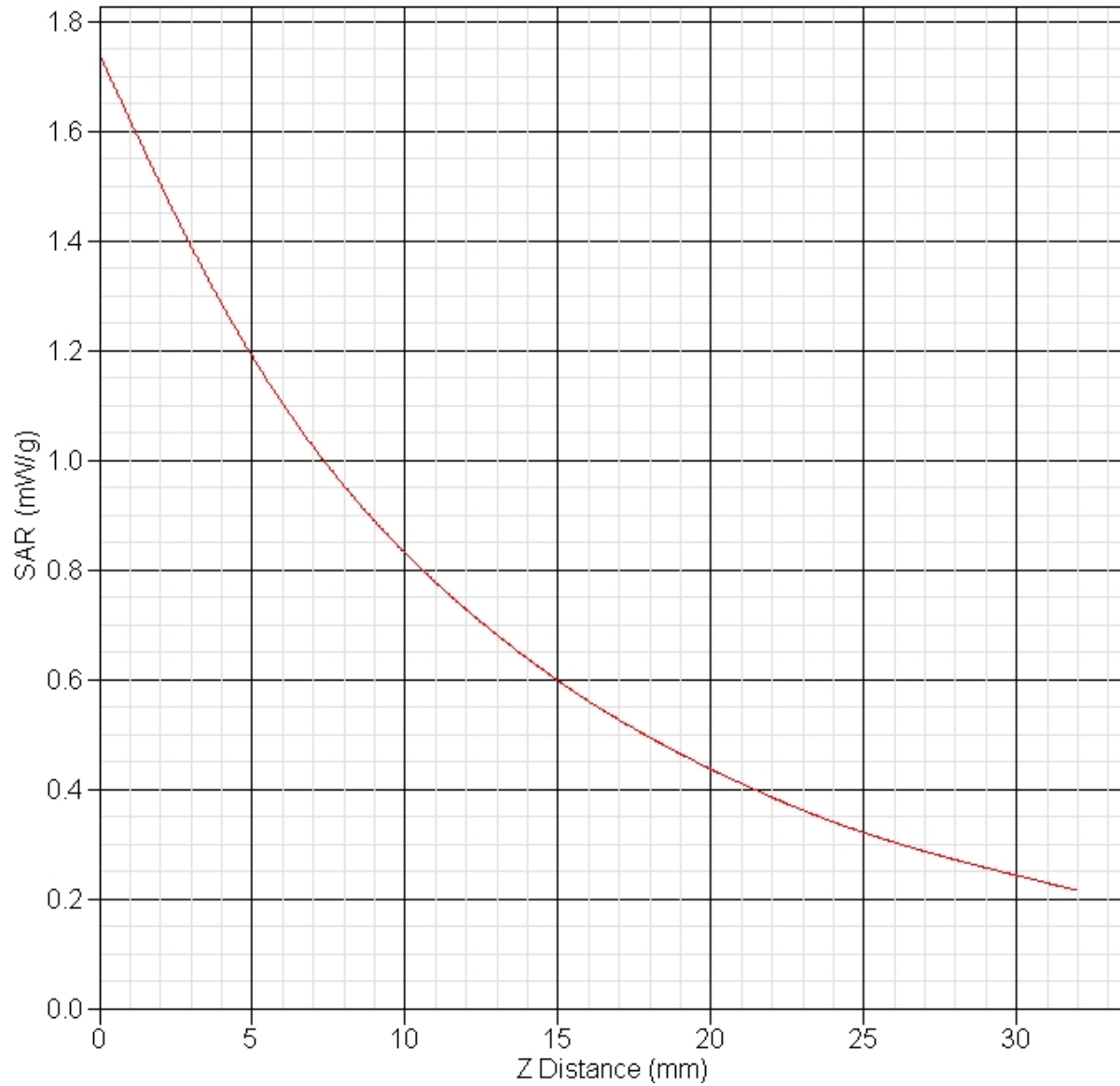
## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : High



1 gram SAR value : 1.169 W/kg  
 10 gram SAR value : 0.775 W/kg  
 Area Scan Peak SAR : 1.365 W/kg  
 Zoom Scan Peak SAR : 1.741 W/kg

**SAR-Z Axis**  
at Hotspot x:7.14 y:6.86



**SAR Test Report**

By Operator : Jay  
Measurement Date : 15-Jun-2010  
Starting Time : 15-Jun-2010 07:40:50 AM  
End Time : 15-Jun-2010 07:58:10 AM  
Scanning Time : 1040 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : Rev. 0  
Model : X10gx  
Frequency : 1900.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal  
Orientation : Bottom  
Power Drift-Start : 0.886 W/kg  
Power Drift-Finish: 0.896 W/kg  
Power Drift (%) : 1.074

## 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 : 15-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 36.00 RH%  
Epsilon : 53.16 F/m  
Sigma : 1.53 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

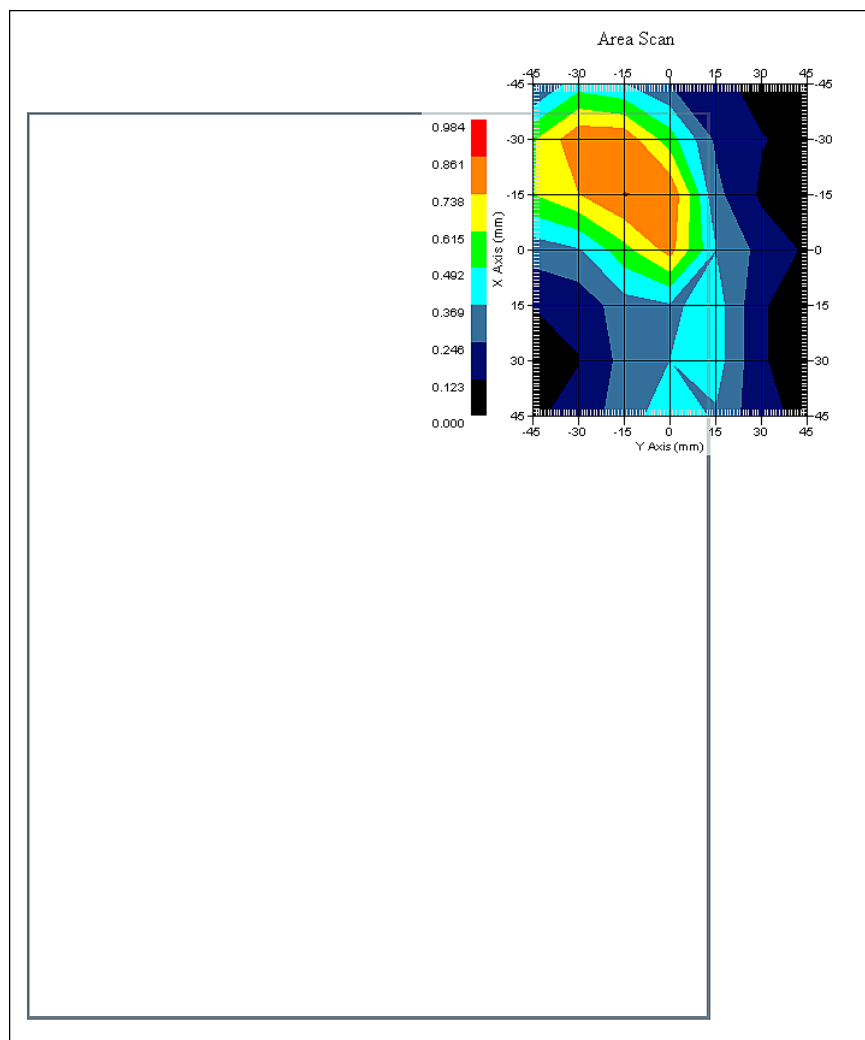
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 1900.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.85  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 15-Jun-2010  
 Set-up Time : 10:10:38 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Low



1 gram SAR value : 0.885 W/kg  
 10 gram SAR value : 0.555 W/kg  
 Area Scan Peak SAR : 0.863 W/kg  
 Zoom Scan Peak SAR : 1.471 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 15-Jun-2010  
Starting Time : 15-Jun-2010 07:21:45 AM  
End Time : 15-Jun-2010 07:39:24 AM  
Scanning Time : 1059 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : Rev. 0  
Model : X10gx  
Frequency : 1900.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal  
Orientation : Bottom  
Power Drift-Start : 1.141 W/kg  
Power Drift-Finish: 1.171 W/kg  
Power Drift (%) : 2.605

## 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 : 15-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 36.00 RH%  
Epsilon : 53.16 F/m  
Sigma : 1.53 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 1900.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.85  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

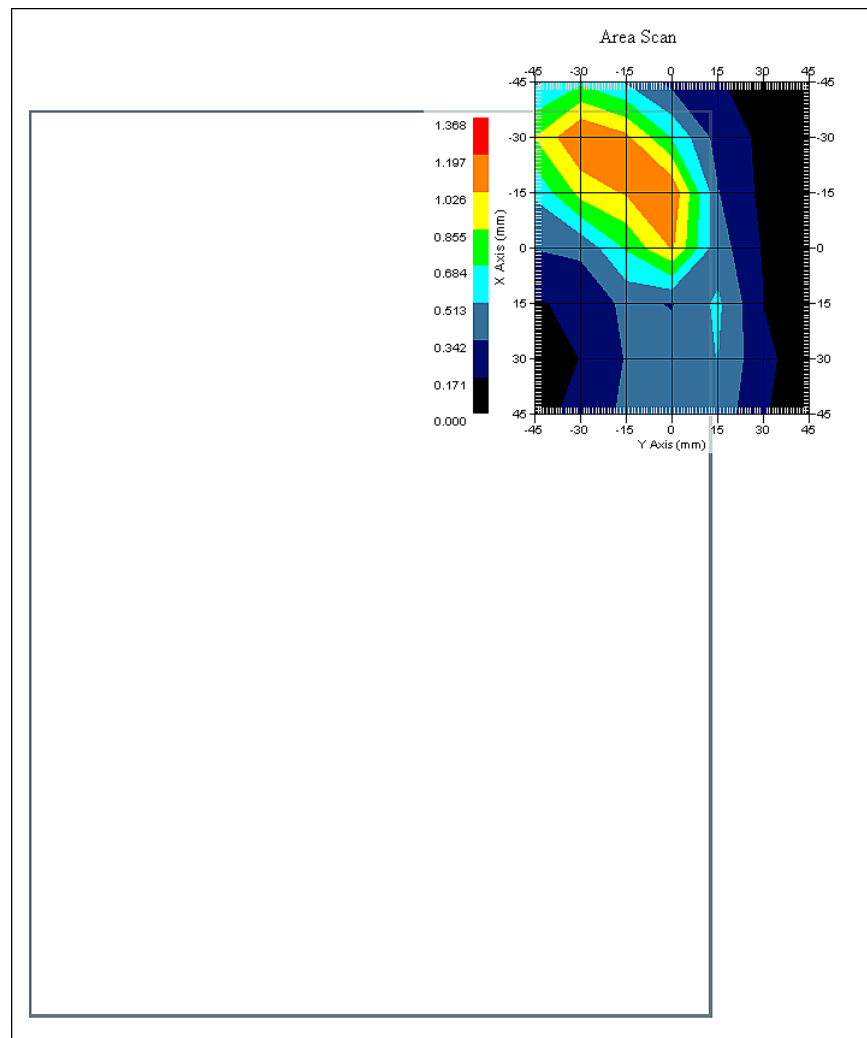


## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 15-Jun-2010  
 Set-up Time : 10:10:38 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.854 W/kg  
 10 gram SAR value : 0.659 W/kg  
 Area Scan Peak SAR : 1.200 W/kg  
 Zoom Scan Peak SAR : 1.541 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 15-Jun-2010  
Starting Time : 15-Jun-2010 07:59:12 AM  
End Time : 15-Jun-2010 08:16:43 AM  
Scanning Time : 1051 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : Rev. 0  
Model : X10gx  
Frequency : 1900.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal  
Orientation : Bottom  
Power Drift-Start : 1.118 W/kg  
Power Drift-Finish: 1.107 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. : 1900  
Frequency : 1900.00 MHz  
Last Calib. Date : 15-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 36.00 RH%  
Epsilon : 53.16 F/m  
Sigma : 1.53 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

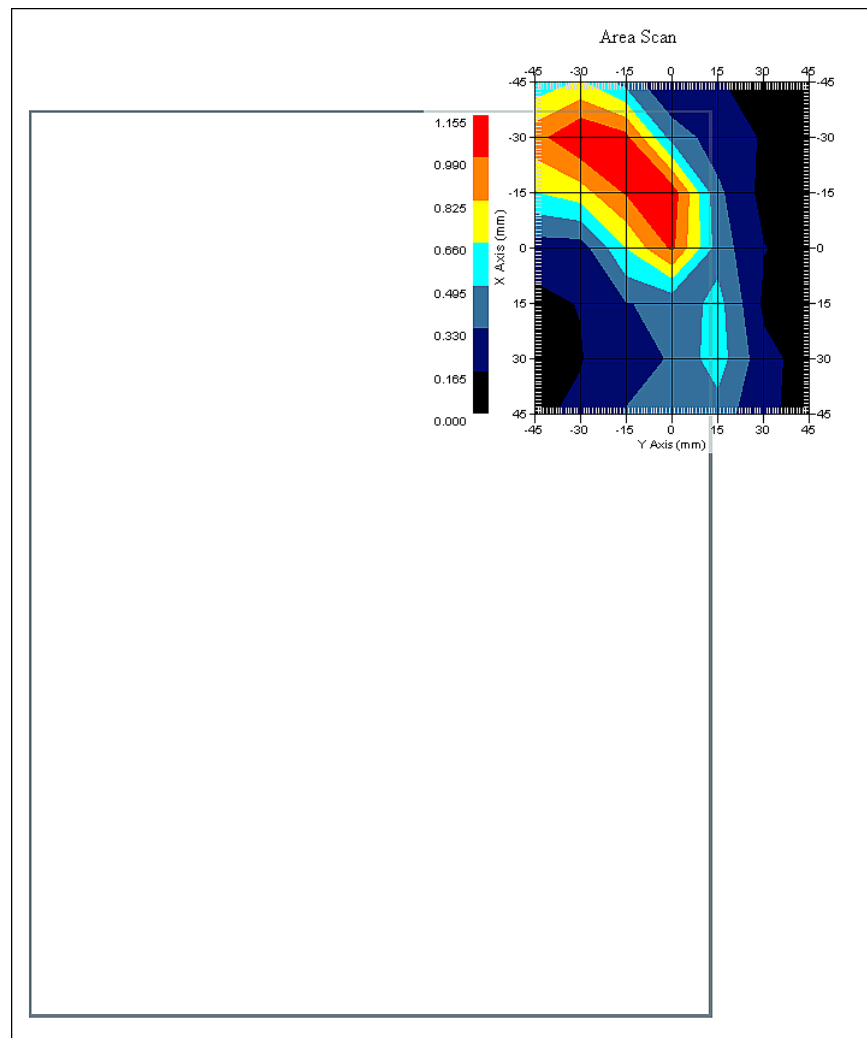
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 1900.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.85  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 15-Jun-2010  
 Set-up Time : 10:10:38 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : High



1 gram SAR value : 1.087 W/kg  
 10 gram SAR value : 0.633 W/kg  
 Area Scan Peak SAR : 1.155 W/kg  
 Zoom Scan Peak SAR : 1.831 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 14-Jun-2010  
Starting Time : 14-Jun-2010 11:04:02 AM  
End Time : 14-Jun-2010 11:22:02 AM  
Scanning Time : 1080 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : GSM  
Model : X10gx  
Frequency : 1900.00 MHz  
Max. Transmit Pwr : 1 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal  
Orientation : Bottom  
Power Drift-Start : 0.593 W/kg  
Power Drift-Finish: 0.600 W/kg  
Power Drift (%) : 1.159

## 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 : 14-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 36.00 RH%  
Epsilon : 53.08 F/m  
Sigma : 1.54 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

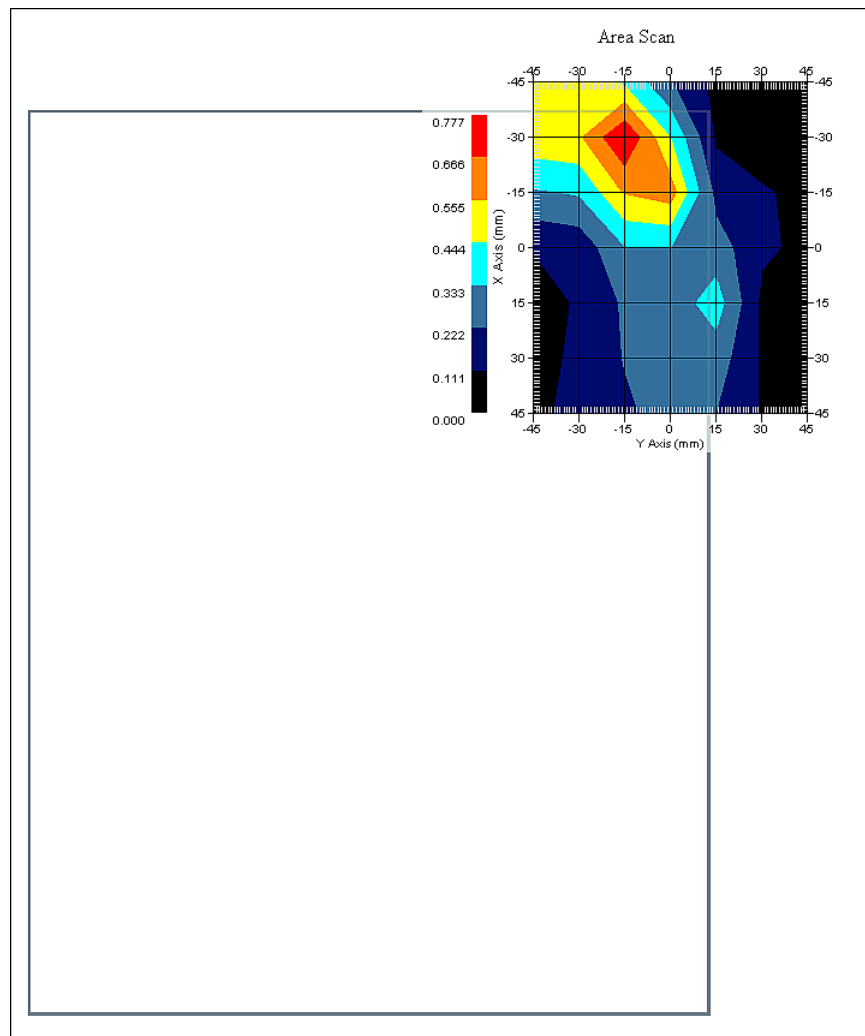
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 1900.00 MHz  
Duty Cycle Factor: 8  
Conversion Factor: 4.85  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 8  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 14-Jun-2010  
 Set-up Time : 10:57:00 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.742 W/kg  
 10 gram SAR value : 0.386 W/kg  
 Area Scan Peak SAR : 0.776 W/kg  
 Zoom Scan Peak SAR : 1.321 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 14-Jun-2010  
Starting Time : 14-Jun-2010 07:09:55 PM  
End Time : 14-Jun-2010 07:27:49 PM  
Scanning Time : 1074 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : WCDMA  
Model : X10gx  
Frequency : 1900.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal  
Orientation : Bottom  
Power Drift-Start : 1.355 W/kg  
Power Drift-Finish: 1.338 W/kg  
Power Drift (%) : -1.251

## 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 : 14-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 36.00 RH%  
Epsilon : 53.08 F/m  
Sigma : 1.54 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

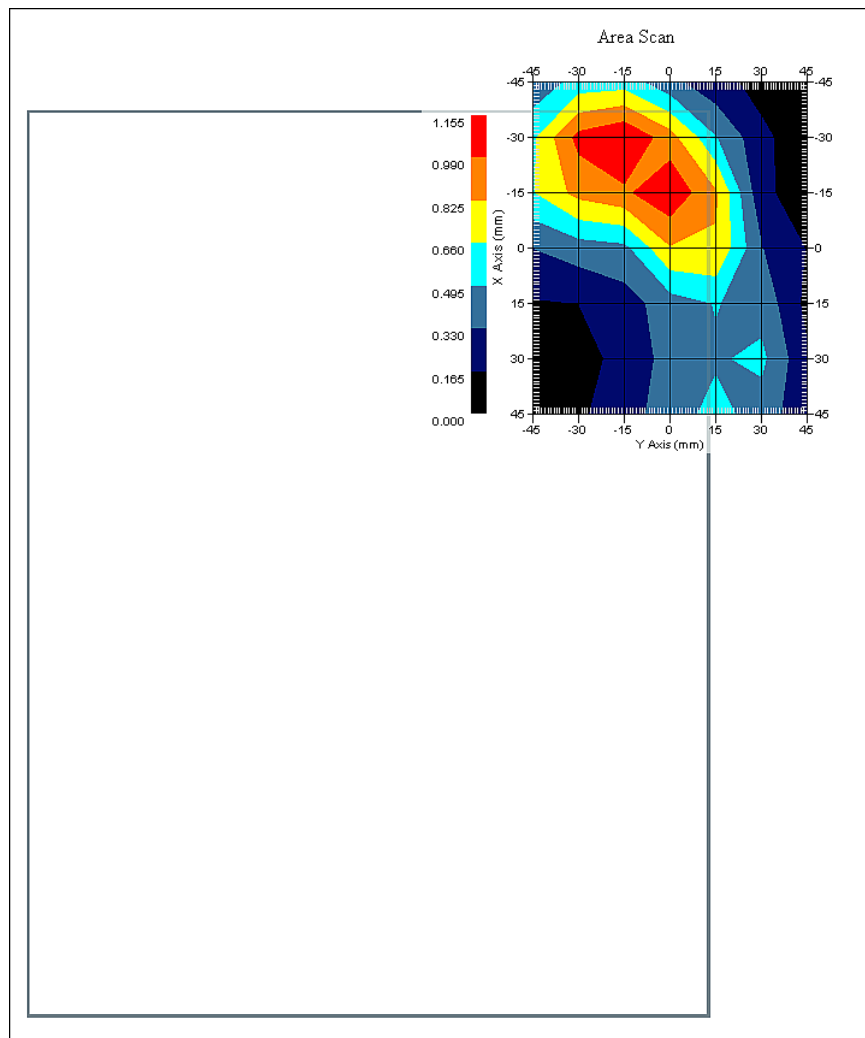
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 1900.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.85  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 14-Jun-2010  
 Set-up Time : 10:57:00 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Low



1 gram SAR value : 1.064 W/kg  
 10 gram SAR value : 0.644 W/kg  
 Area Scan Peak SAR : 1.153 W/kg  
 Zoom Scan Peak SAR : 1.601 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 14-Jun-2010  
Starting Time : 14-Jun-2010 06:36:22 PM  
End Time : 14-Jun-2010 06:54:04 PM  
Scanning Time : 1062 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : WCDMA  
Model : X10gx  
Frequency : 1900.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal  
Orientation : Bottom  
Power Drift-Start : 1.031 W/kg  
Power Drift-Finish: 0.999 W/kg  
Power Drift (%) : -1.936

## 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 : 14-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 36.00 RH%  
Epsilon : 53.08 F/m  
Sigma : 1.54 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 1900.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.85  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

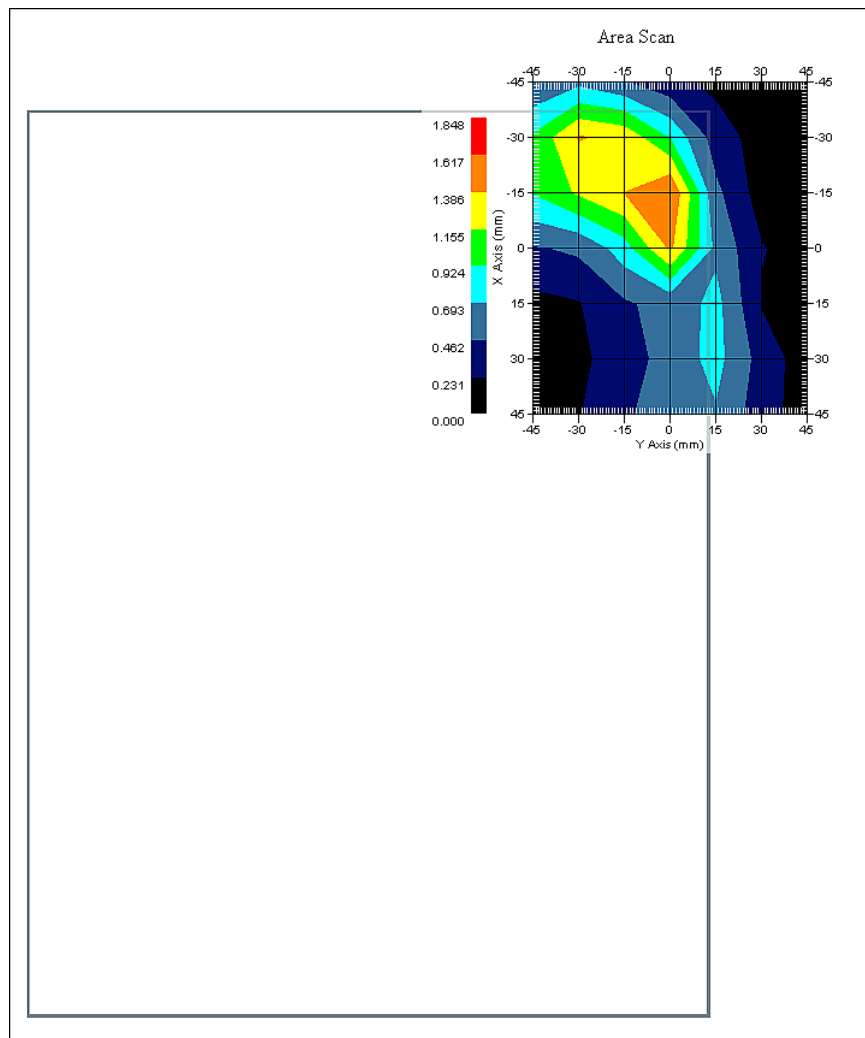


## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 14-Jun-2010  
 Set-up Time : 10:57:00 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 1.014 W/kg  
 10 gram SAR value : 0.633 W/kg  
 Area Scan Peak SAR : 1.520 W/kg  
 Zoom Scan Peak SAR : 2.022 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 14-Jun-2010  
Starting Time : 14-Jun-2010 07:28:43 PM  
End Time : 14-Jun-2010 07:46:33 PM  
Scanning Time : 1070 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : WCDMA  
Model : X10gx  
Frequency : 1900.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal  
Orientation : Bottom  
Power Drift-Start : 1.237 W/kg  
Power Drift-Finish: 1.191 W/kg  
Power Drift (%) : -3.712

## 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 : 14-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 36.00 RH%  
Epsilon : 53.08 F/m  
Sigma : 1.54 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

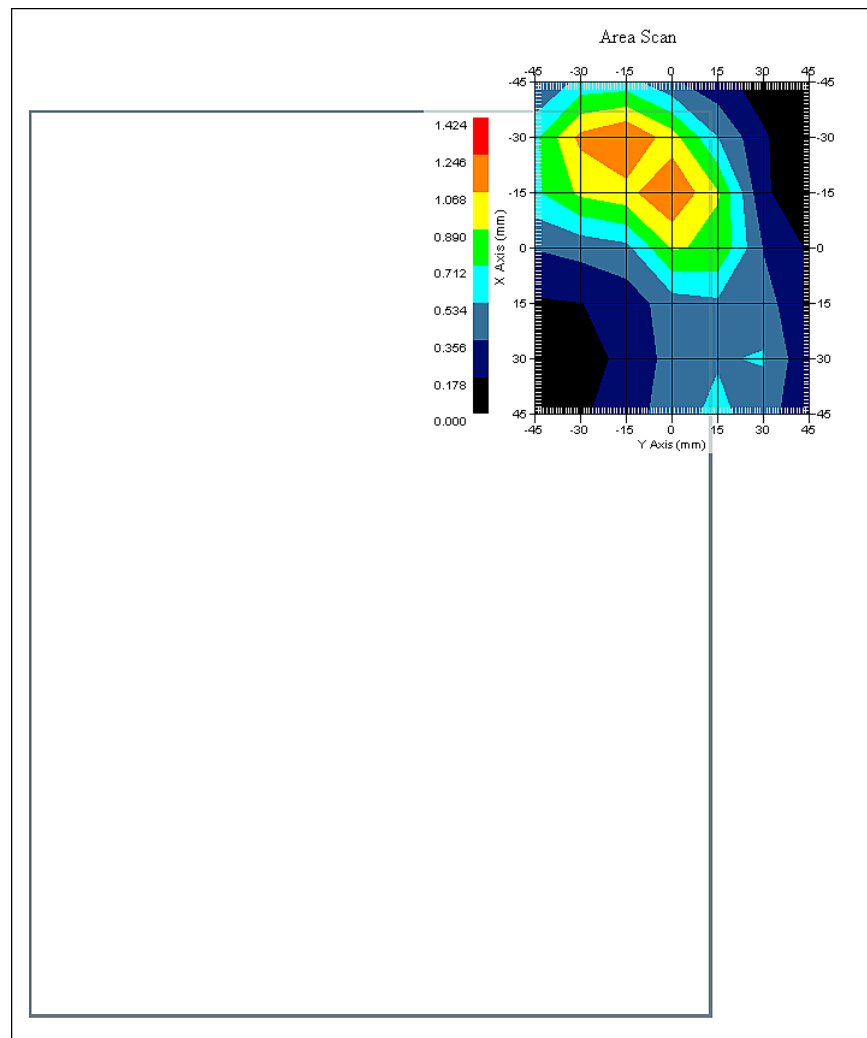
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 1900.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.85  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 14-Jun-2010  
 Set-up Time : 10:57:00 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

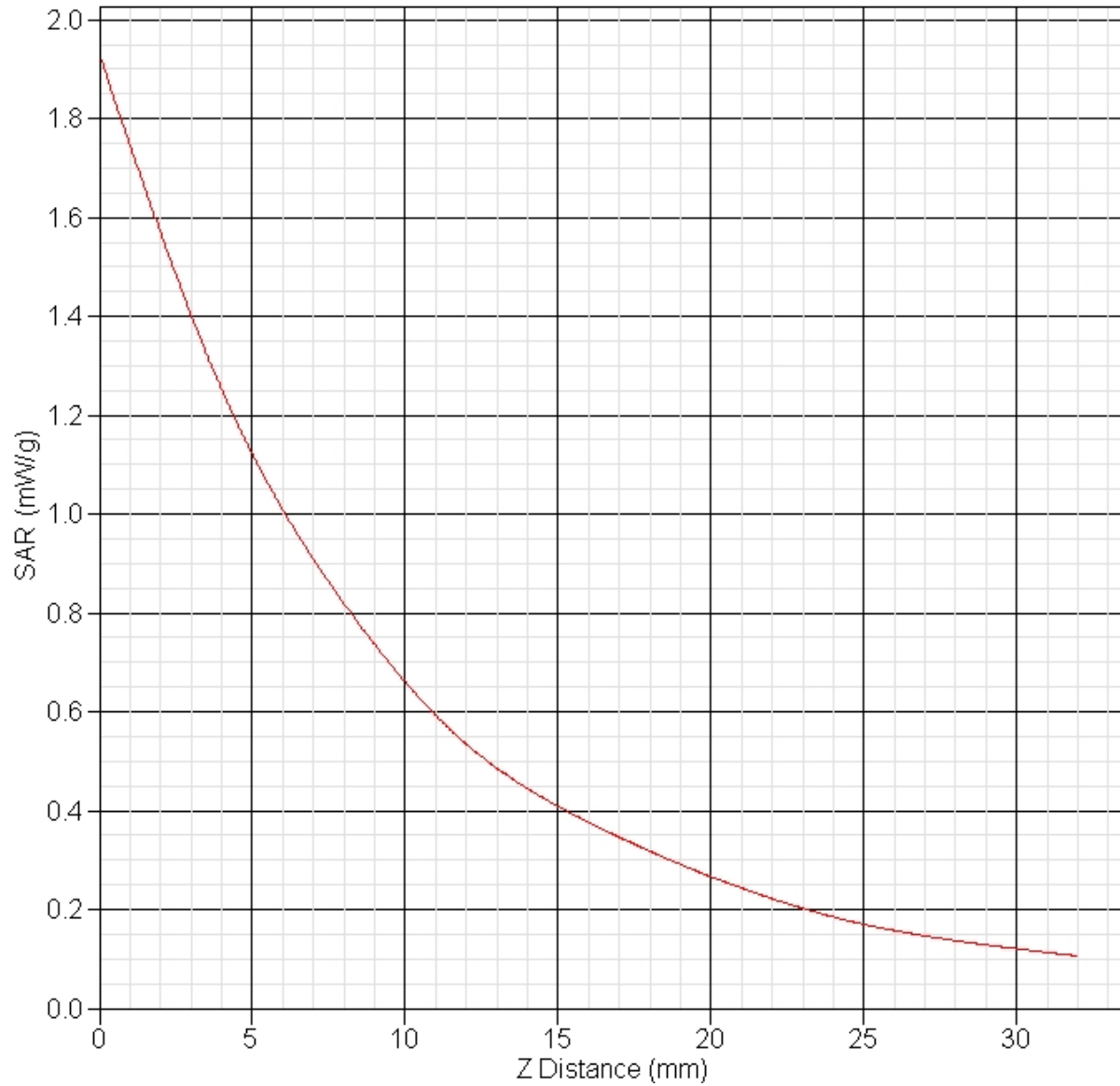
## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : High



1 gram SAR value : 1.133 W/kg  
 10 gram SAR value : 0.604 W/kg  
 Area Scan Peak SAR : 1.247 W/kg  
 Zoom Scan Peak SAR : 1.931 W/kg

**SAR-Z Axis**  
at Hotspot x:8.05 y:7.87



**SAR Test Report**

By Operator : Jay  
Measurement Date : 16-Jun-2010  
Starting Time : 16-Jun-2010 10:44:25 AM  
End Time : 16-Jun-2010 11:02:17 AM  
Scanning Time : 1072 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : g  
Model : X10gx  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.24 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain A  
Orientation : Bottom  
Power Drift-Start : 0.190 W/kg  
Power Drift-Finish: 0.194 W/kg  
Power Drift (%) : 2.081

## 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 : 16-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 46.00 RH%  
Epsilon : 52.41 F/m  
Sigma : 1.97 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

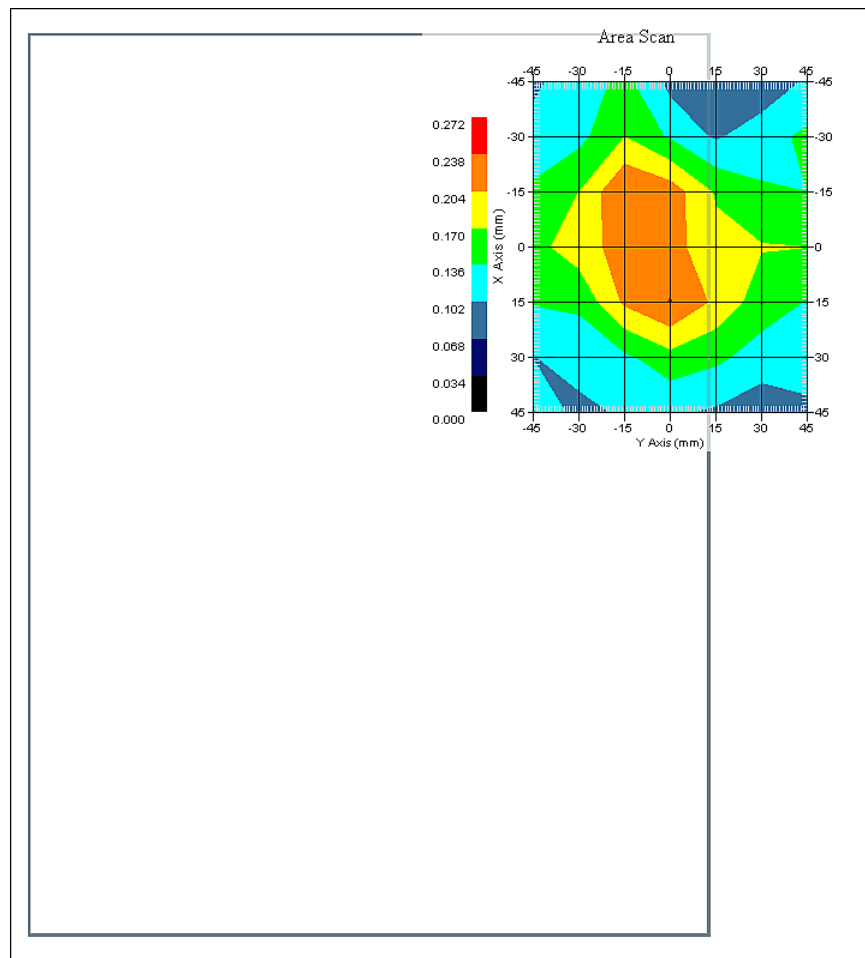
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 3.61  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 16-Jun-2010  
 Set-up Time : 10:43:14 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.216 W/kg  
 10 gram SAR value : 0.184 W/kg  
 Area Scan Peak SAR : 0.240 W/kg  
 Zoom Scan Peak SAR : 0.320 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 16-Jun-2010  
Starting Time : 16-Jun-2010 12:22:46 PM  
End Time : 16-Jun-2010 12:40:09 PM  
Scanning Time : 1043 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n20  
Model : X10gx  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.24 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain A  
Orientation : Bottom  
Power Drift-Start : 0.172 W/kg  
Power Drift-Finish: 0.167 W/kg  
Power Drift (%) : -2.904

## 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 : 16-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 46.00 RH%  
Epsilon : 52.41 F/m  
Sigma : 1.97 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

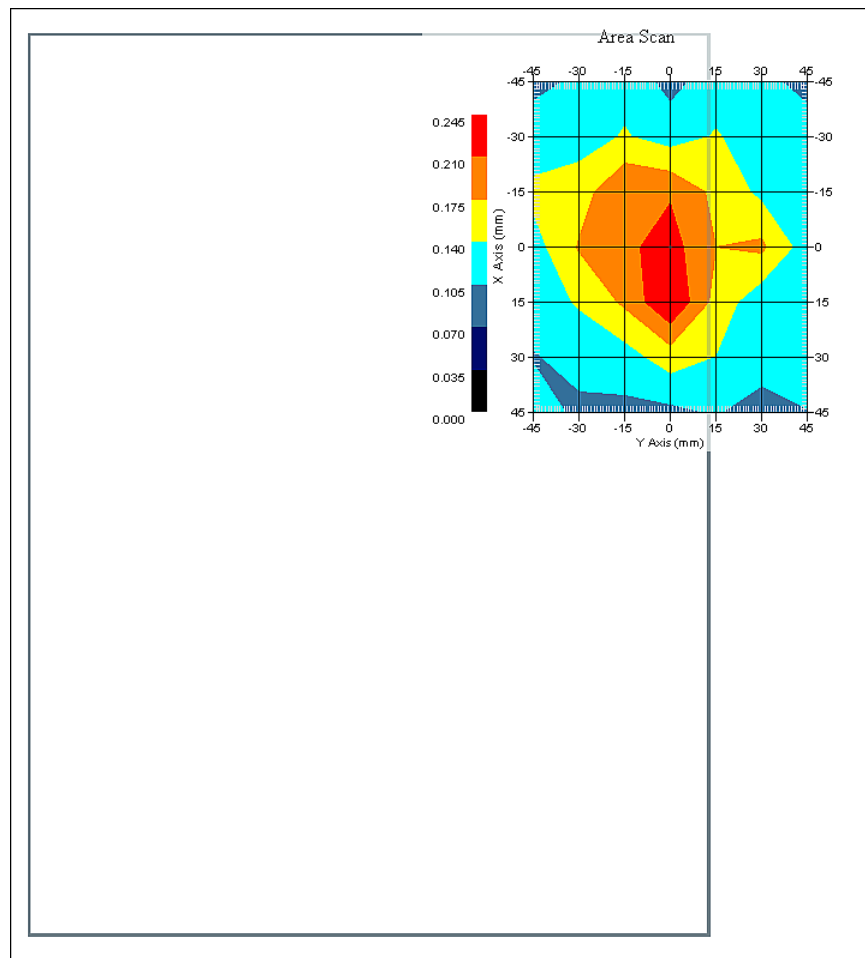
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 3.61  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 16-Jun-2010  
 Set-up Time : 10:43:14 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.240 W/kg  
 10 gram SAR value : 0.177 W/kg  
 Area Scan Peak SAR : 0.244 W/kg  
 Zoom Scan Peak SAR : 0.310 W/kg



**SAR Test Report**

By Operator : Jay  
Measurement Date : 16-Jun-2010  
Starting Time : 16-Jun-2010 12:42:16 PM  
End Time : 16-Jun-2010 12:59:53 PM  
Scanning Time : 1057 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n40  
Model : X10gx  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.24 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain A  
Orientation : Bottom  
Power Drift-Start : 0.140 W/kg  
Power Drift-Finish: 0.140 W/kg  
Power Drift (%) : 0.037

## 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 : 16-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 46.00 RH%  
Epsilon : 52.41 F/m  
Sigma : 1.97 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

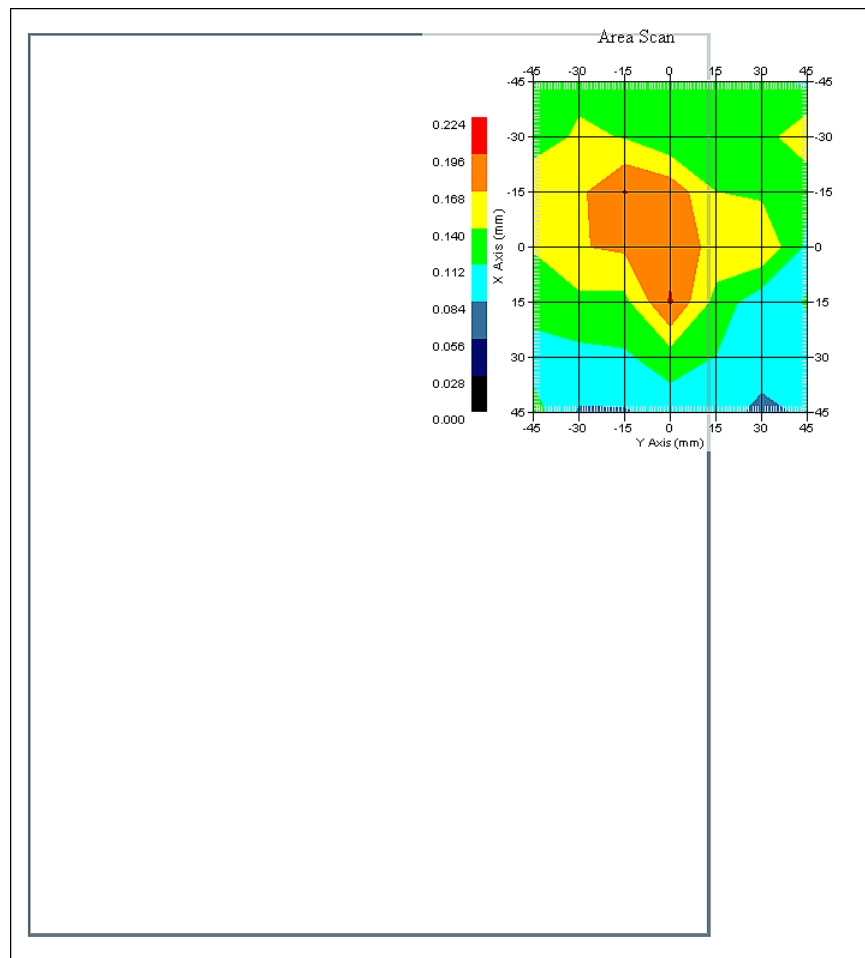
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 3.61  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 16-Jun-2010  
 Set-up Time : 10:43:14 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.194 W/kg  
 10 gram SAR value : 0.128 W/kg  
 Area Scan Peak SAR : 0.199 W/kg  
 Zoom Scan Peak SAR : 0.330 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 16-Jun-2010  
Starting Time : 16-Jun-2010 04:55:32 PM  
End Time : 16-Jun-2010 05:12:50 PM  
Scanning Time : 1038 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : g  
Model : X10gx  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.24 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain B  
Orientation : Bottom  
Power Drift-Start : 0.133 W/kg  
Power Drift-Finish: 0.139 W/kg  
Power Drift (%) : 4.970

## 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 : 16-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 46.00 RH%  
Epsilon : 52.41 F/m  
Sigma : 1.97 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

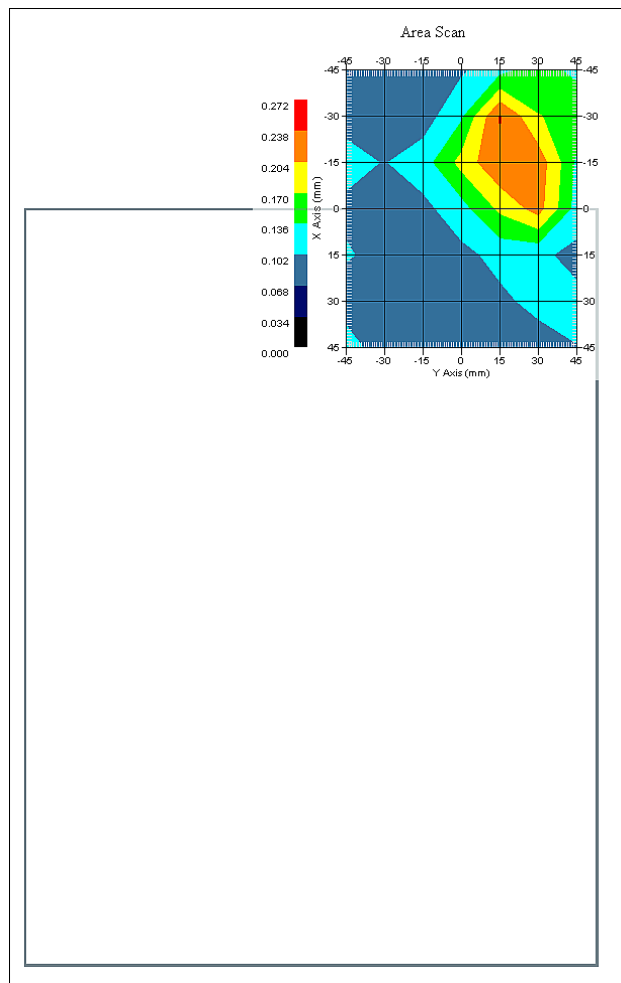
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 3.61  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 16-Jun-2010  
 Set-up Time : 10:43:14 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.271 W/kg  
 10 gram SAR value : 0.192 W/kg  
 Area Scan Peak SAR : 0.240 W/kg  
 Zoom Scan Peak SAR : 0.410 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 16-Jun-2010  
Starting Time : 16-Jun-2010 03:17:54 PM  
End Time : 16-Jun-2010 03:35:24 PM  
Scanning Time : 1050 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n20  
Model : X10gx  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.24 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain B  
Orientation : Bottom  
Power Drift-Start : 0.198 W/kg  
Power Drift-Finish: 0.199 W/kg  
Power Drift (%) : 0.686

## 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 : 16-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 46.00 RH%  
Epsilon : 52.41 F/m  
Sigma : 1.97 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

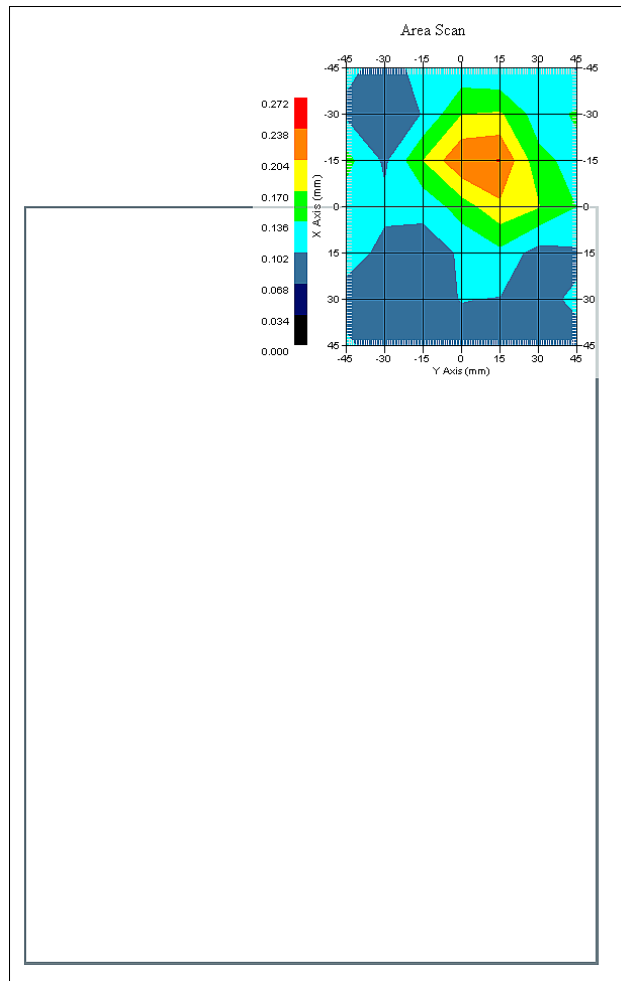
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 3.61  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 16-Jun-2010  
 Set-up Time : 10:43:14 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.254 W/kg  
 10 gram SAR value : 0.180 W/kg  
 Area Scan Peak SAR : 0.239 W/kg  
 Zoom Scan Peak SAR : 0.380 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 16-Jun-2010  
Starting Time : 16-Jun-2010 02:58:07 PM  
End Time : 16-Jun-2010 03:15:54 PM  
Scanning Time : 1067 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n40  
Model : X10gx  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.24 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain B  
Orientation : Bottom  
Power Drift-Start : 0.109 W/kg  
Power Drift-Finish: 0.111 W/kg  
Power Drift (%) : 1.836

## 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 : 16-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 46.00 RH%  
Epsilon : 52.41 F/m  
Sigma : 1.97 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

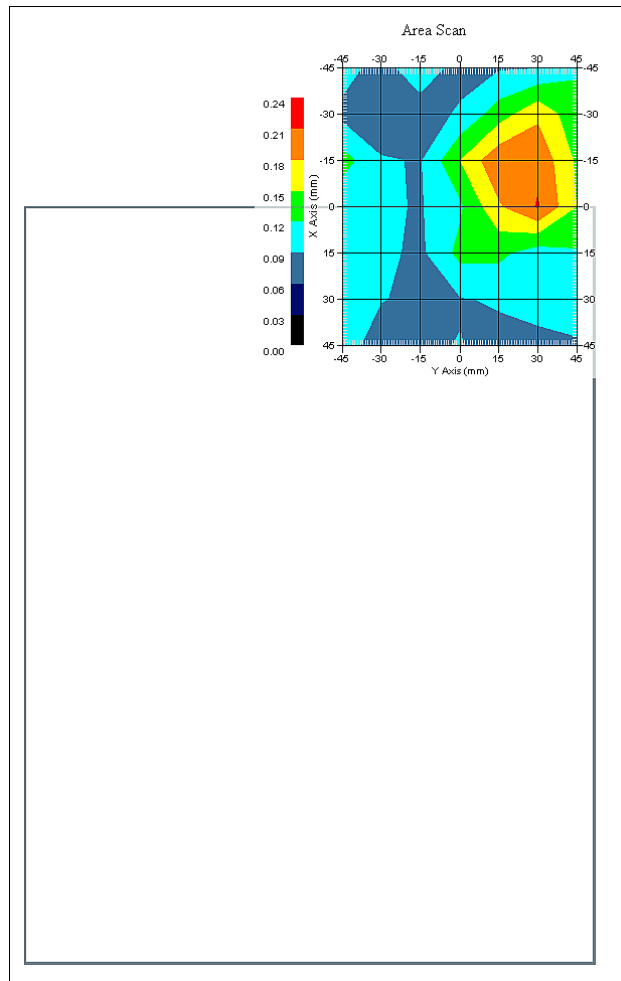
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 3.61  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 16-Jun-2010  
 Set-up Time : 10:43:14 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.145 W/kg  
 10 gram SAR value : 0.131 W/kg  
 Area Scan Peak SAR : 0.213 W/kg  
 Zoom Scan Peak SAR : 0.300 W/kg



**SAR Test Report**

By Operator : Jay  
Measurement Date : 16-Jun-2010  
Starting Time : 16-Jun-2010 05:16:17 PM  
End Time : 16-Jun-2010 05:33:45 PM  
Scanning Time : 1048 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : g  
Model : X10gx  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.24 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain C  
Orientation : Bottom  
Power Drift-Start : 0.220 W/kg  
Power Drift-Finish: 0.225 W/kg  
Power Drift (%) : 2.596

## 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 : 16-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 46.00 RH%  
Epsilon : 52.41 F/m  
Sigma : 1.97 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

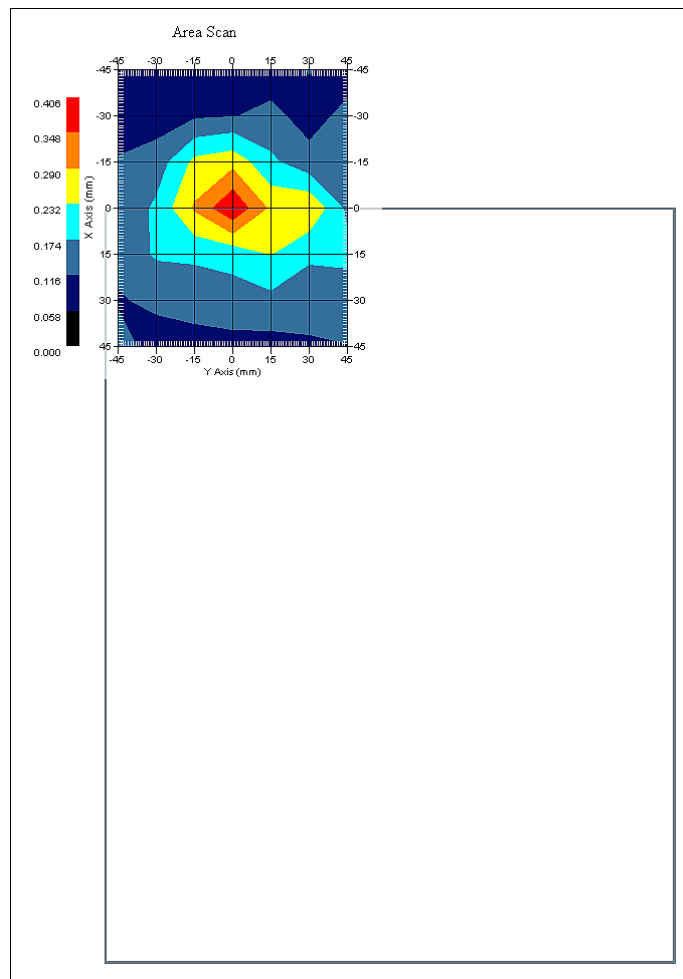
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 3.61  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 16-Jun-2010  
 Set-up Time : 10:43:14 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.362 W/kg  
 10 gram SAR value : 0.194 W/kg  
 Area Scan Peak SAR : 0.404 W/kg  
 Zoom Scan Peak SAR : 0.580 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 16-Jun-2010  
Starting Time : 16-Jun-2010 06:52:40 PM  
End Time : 16-Jun-2010 07:10:05 PM  
Scanning Time : 1045 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n20  
Model : X10gx  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.24 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain C  
Orientation : Bottom  
Power Drift-Start : 0.251 W/kg  
Power Drift-Finish: 0.250 W/kg  
Power Drift (%) : -0.360

## 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 : 16-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 46.00 RH%  
Epsilon : 52.41 F/m  
Sigma : 1.97 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

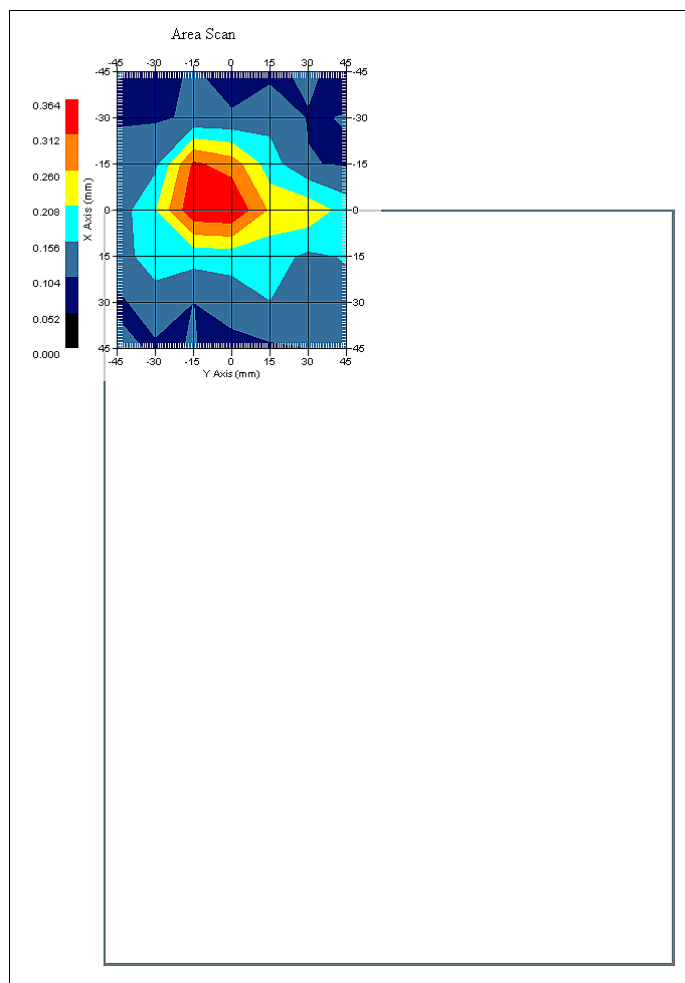
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 3.61  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 16-Jun-2010  
 Set-up Time : 10:43:14 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

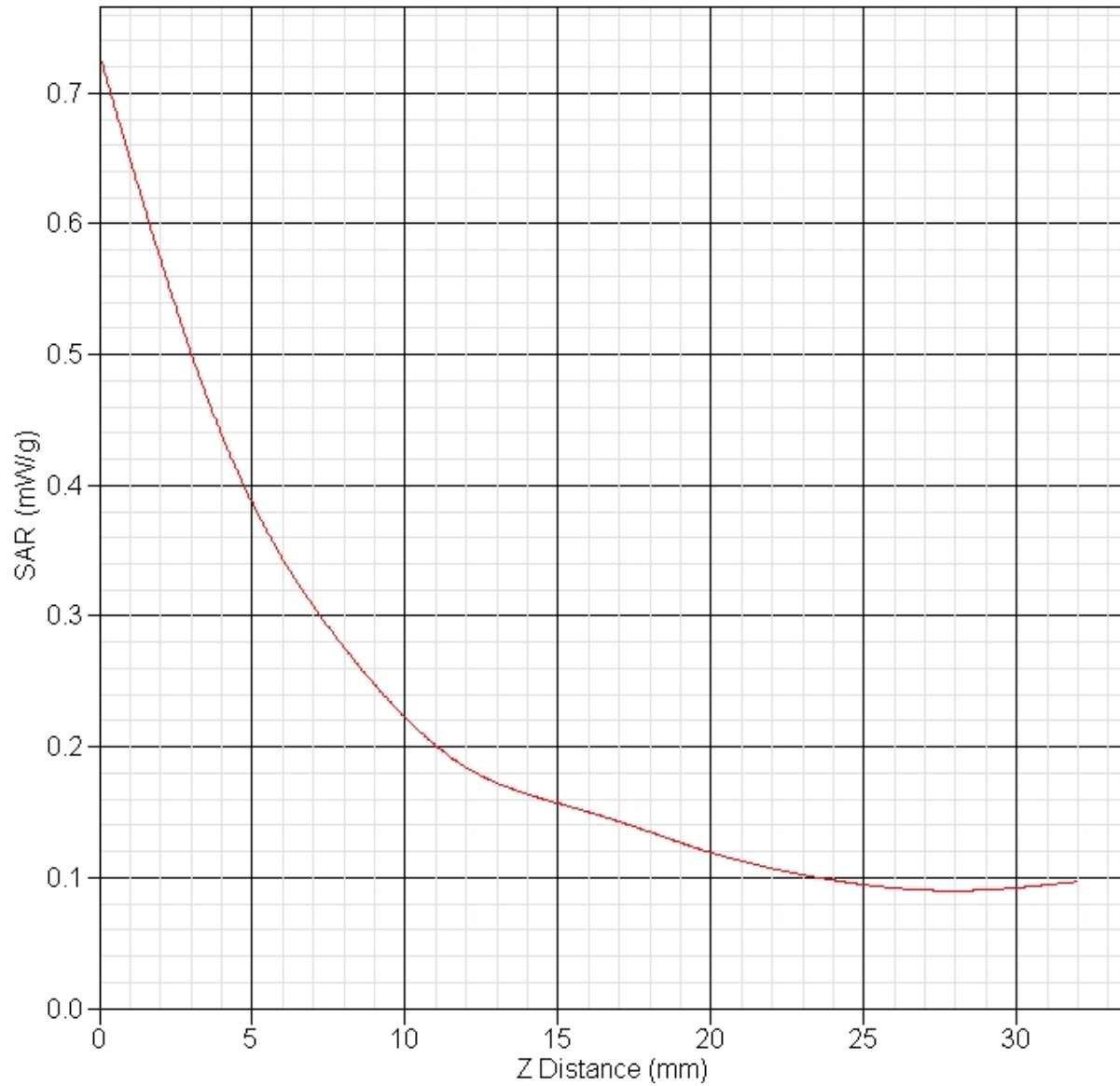
## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.382 W/kg  
 10 gram SAR value : 0.225 W/kg  
 Area Scan Peak SAR : 0.364 W/kg  
 Zoom Scan Peak SAR : 0.730 W/kg

**SAR-Z Axis**  
at Hotspot x:15.06 y:-8.14



**SAR Test Report**

By Operator : Jay  
Measurement Date : 16-Jun-2010  
Starting Time : 16-Jun-2010 07:12:17 PM  
End Time : 16-Jun-2010 07:29:34 PM  
Scanning Time : 1037 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n40  
Model : X10gx  
Frequency : 2450.00 MHz  
Max. Transmit Pwr : 0.24 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain C  
Orientation : Bottom  
Power Drift-Start : 0.203 W/kg  
Power Drift-Finish: 0.206 W/kg  
Power Drift (%) : 1.495

## 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 : 16-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 46.00 RH%  
Epsilon : 52.41 F/m  
Sigma : 1.97 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

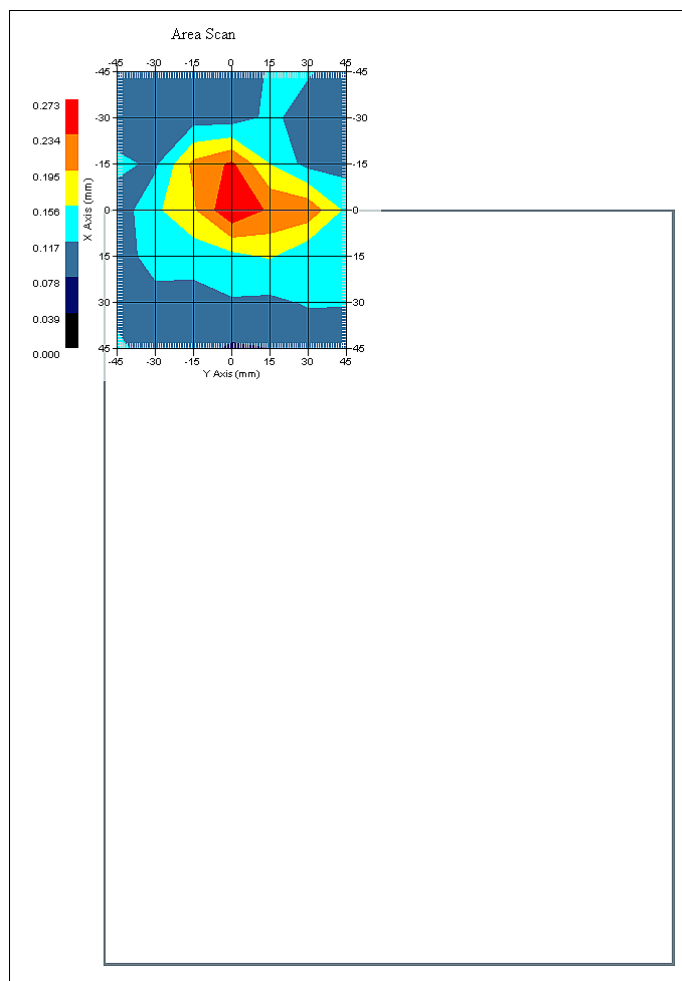
Name : RFEL 217  
Model : E020  
Type : E-Field Triangle  
Serial No. : 217  
Last Calib. Date : 21-Oct-2009  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 3.61  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 16-Jun-2010  
 Set-up Time : 10:43:14 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=4mm  
 Zoom Scan : 5x5x8 : Measurement x=8mm, y=8mm, z=4mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.273 W/kg  
 10 gram SAR value : 0.177 W/kg  
 Area Scan Peak SAR : 0.270 W/kg  
 Zoom Scan Peak SAR : 0.430 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 17-Jun-2010  
Starting Time : 17-Jun-2010 07:31:03 AM  
End Time : 17-Jun-2010 07:59:04 AM  
Scanning Time : 1681 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : a  
Model : X10gx  
Frequency : 5100.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain A  
Orientation : Bottom  
Power Drift-Start : 0.278 W/kg  
Power Drift-Finish: 0.278 W/kg  
Power Drift (%) : -0.005

## 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 : 17-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.39 F/m  
Sigma : 5.36 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 : 15-Jul-2009  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

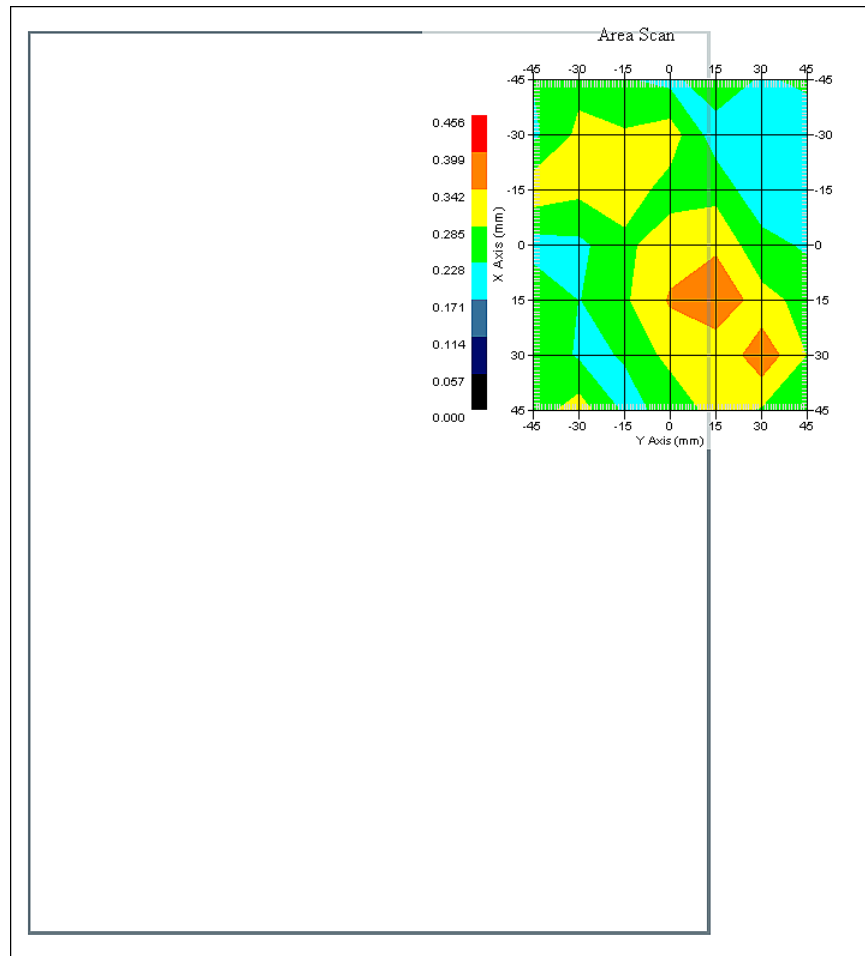


## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 17-Jun-2010  
 Set-up Time : 7:57:10 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Low



1 gram SAR value : 0.335 W/kg  
 10 gram SAR value : 0.274 W/kg  
 Area Scan Peak SAR : 0.400 W/kg  
 Zoom Scan Peak SAR : 0.390 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 17-Jun-2010  
Starting Time : 17-Jun-2010 08:30:01 AM  
End Time : 17-Jun-2010 08:57:40 AM  
Scanning Time : 1659 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n20  
Model : X10gx  
Frequency : 5100.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain A  
Orientation : Bottom  
Power Drift-Start : 0.250 W/kg  
Power Drift-Finish: 0.255 W/kg  
Power Drift (%) : 1.907

## 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 : 17-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.39 F/m  
Sigma : 5.36 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

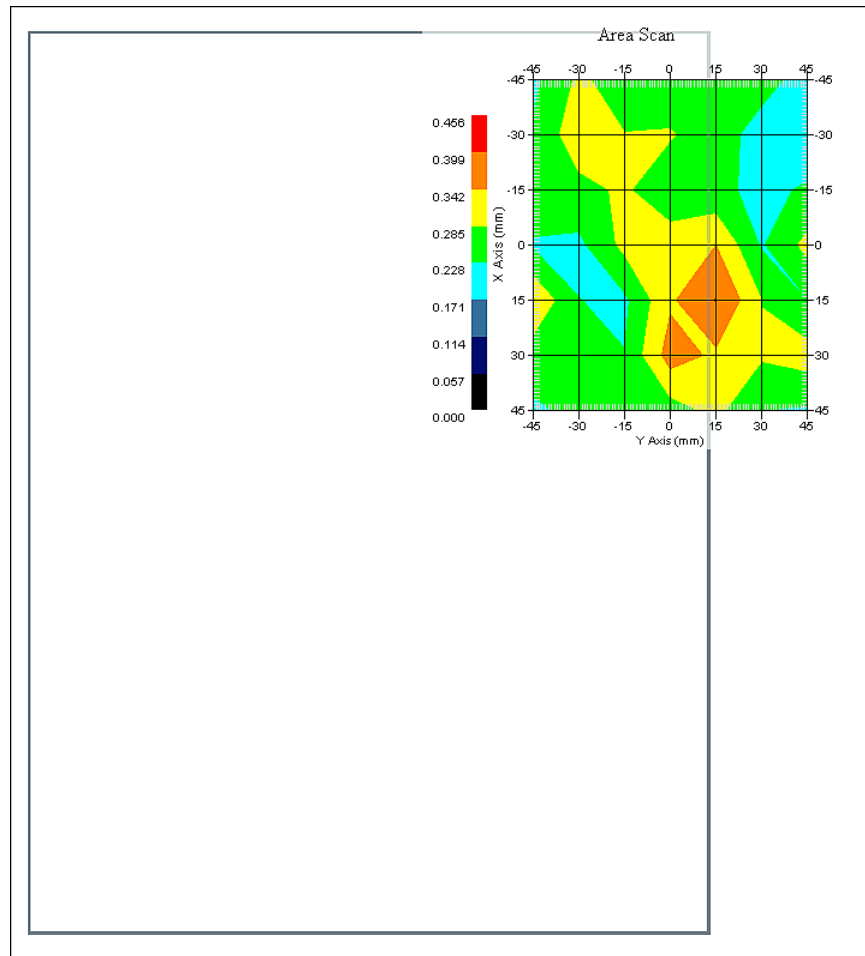
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 17-Jun-2010  
 Set-up Time : 7:57:10 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Low



1 gram SAR value : 0.354 W/kg  
 10 gram SAR value : 0.278 W/kg  
 Area Scan Peak SAR : 0.402 W/kg  
 Zoom Scan Peak SAR : 0.570 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 17-Jun-2010  
Starting Time : 17-Jun-2010 09:26:54 AM  
End Time : 17-Jun-2010 09:54:53 AM  
Scanning Time : 1679 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n40  
Model : X10gx  
Frequency : 5100.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain A  
Orientation : Bottom  
Power Drift-Start : 0.274 W/kg  
Power Drift-Finish: 0.276 W/kg  
Power Drift (%) : 0.726

## 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 : 17-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.39 F/m  
Sigma : 5.36 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

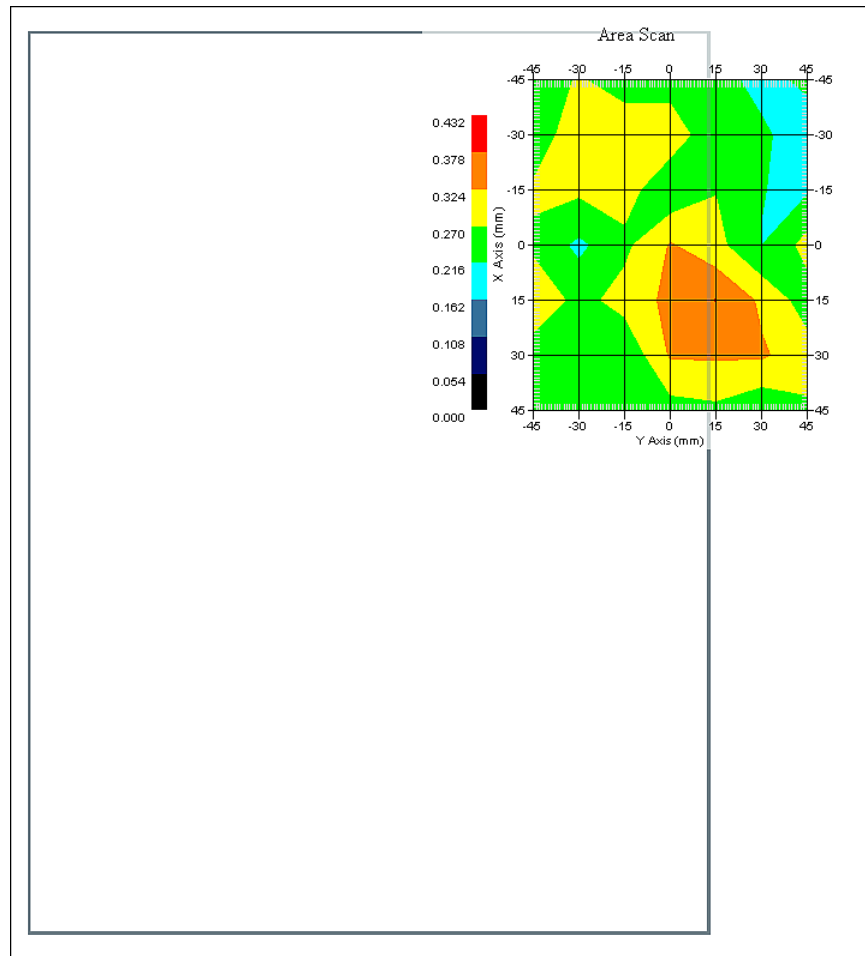
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 17-Jun-2010  
 Set-up Time : 7:57:10 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Low



1 gram SAR value : 0.339 W/kg  
 10 gram SAR value : 0.276 W/kg  
 Area Scan Peak SAR : 0.380 W/kg  
 Zoom Scan Peak SAR : 0.290 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 17-Jun-2010  
Starting Time : 17-Jun-2010 10:24:18 AM  
End Time : 17-Jun-2010 10:52:04 AM  
Scanning Time : 1666 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : a  
Model : X10gx  
Frequency : 5100.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain B  
Orientation : Bottom  
Power Drift-Start : 0.411 W/kg  
Power Drift-Finish: 0.401 W/kg  
Power Drift (%) : -2.425

## 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 : 17-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.39 F/m  
Sigma : 5.36 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

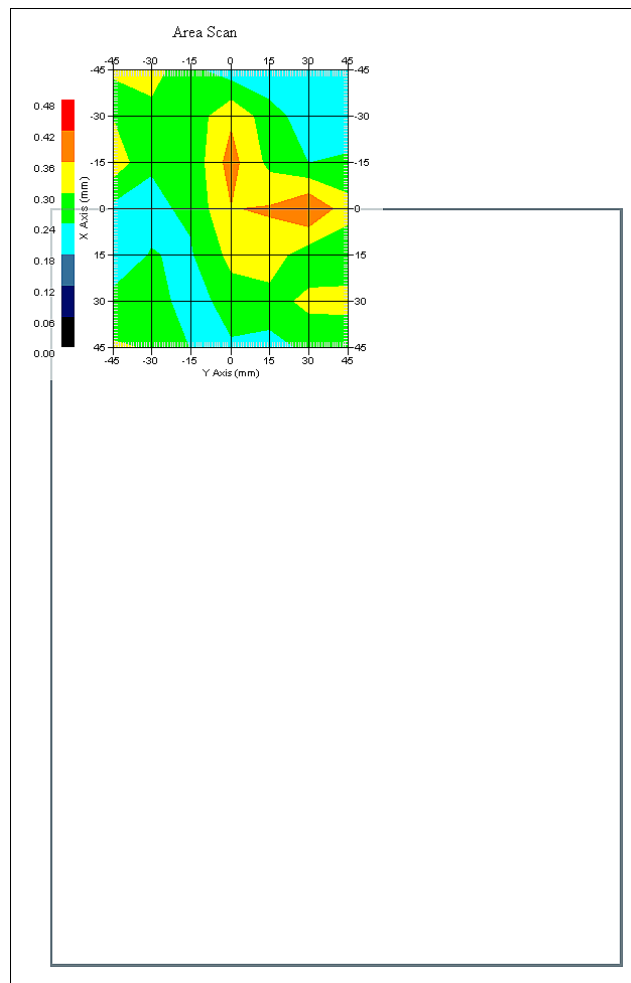
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 17-Jun-2010  
 Set-up Time : 7:57:10 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Low



1 gram SAR value : 0.318 W/kg  
 10 gram SAR value : 0.246 W/kg  
 Area Scan Peak SAR : 0.422 W/kg  
 Zoom Scan Peak SAR : 0.420 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 17-Jun-2010  
Starting Time : 17-Jun-2010 11:23:12 AM  
End Time : 17-Jun-2010 11:50:54 AM  
Scanning Time : 1662 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n20  
Model : X10gx  
Frequency : 5100.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain B  
Orientation : Bottom  
Power Drift-Start : 0.379 W/kg  
Power Drift-Finish: 0.392 W/kg  
Power Drift (%) : 3.254

## 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 : 17-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.39 F/m  
Sigma : 5.36 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 : 15-Jul-2009  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

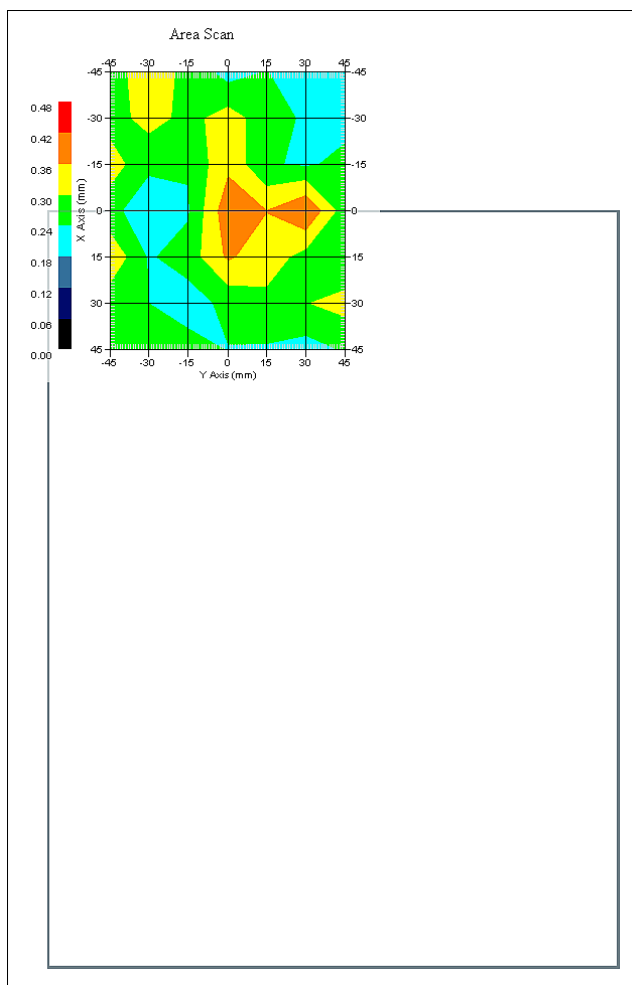


## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 17-Jun-2010  
 Set-up Time : 7:57:10 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Low



1 gram SAR value : 0.388 W/kg  
 10 gram SAR value : 0.277 W/kg  
 Area Scan Peak SAR : 0.421 W/kg  
 Zoom Scan Peak SAR : 0.580 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 17-Jun-2010  
Starting Time : 17-Jun-2010 12:22:25 PM  
End Time : 17-Jun-2010 12:50:08 PM  
Scanning Time : 1663 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n40  
Model : X10gx  
Frequency : 5100.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain B  
Orientation : Bottom  
Power Drift-Start : 0.340 W/kg  
Power Drift-Finish: 0.331 W/kg  
Power Drift (%) : -2.576

## 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 : 17-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.39 F/m  
Sigma : 5.36 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

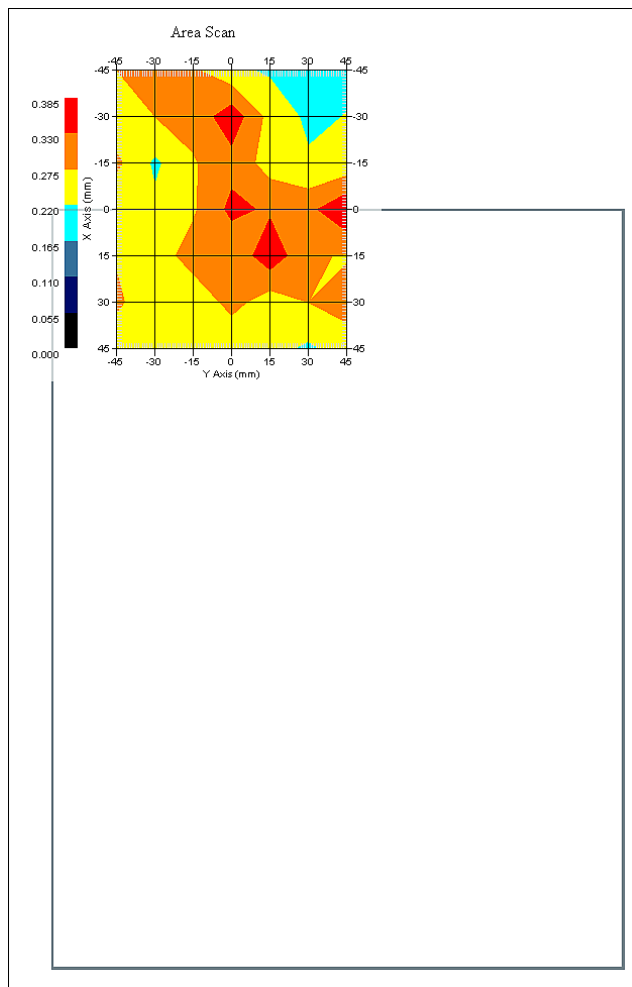
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 17-Jun-2010  
 Set-up Time : 7:57:10 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Low



1 gram SAR value : 0.337 W/kg  
 10 gram SAR value : 0.286 W/kg  
 Area Scan Peak SAR : 0.384 W/kg  
 Zoom Scan Peak SAR : 0.310 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 17-Jun-2010  
Starting Time : 17-Jun-2010 01:22:13 PM  
End Time : 17-Jun-2010 01:49:57 PM  
Scanning Time : 1664 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : a  
Model : X10gx  
Frequency : 5100.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain C  
Orientation : Bottom  
Power Drift-Start : 0.400 W/kg  
Power Drift-Finish: 0.391 W/kg  
Power Drift (%) : -2.258

## 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 : 17-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.39 F/m  
Sigma : 5.36 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

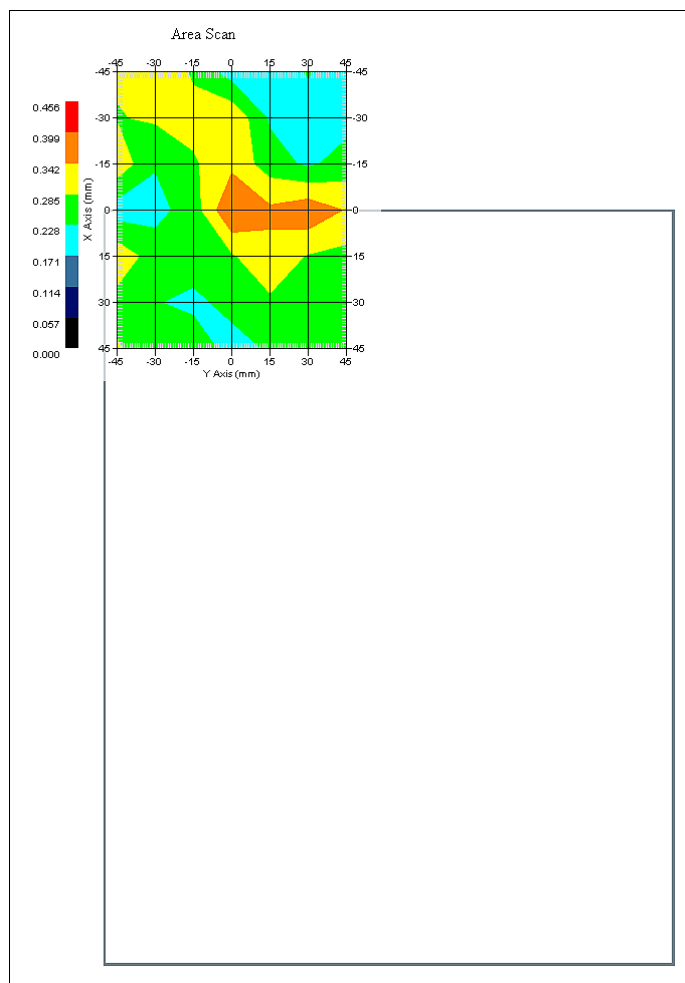
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 17-Jun-2010  
 Set-up Time : 7:57:10 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

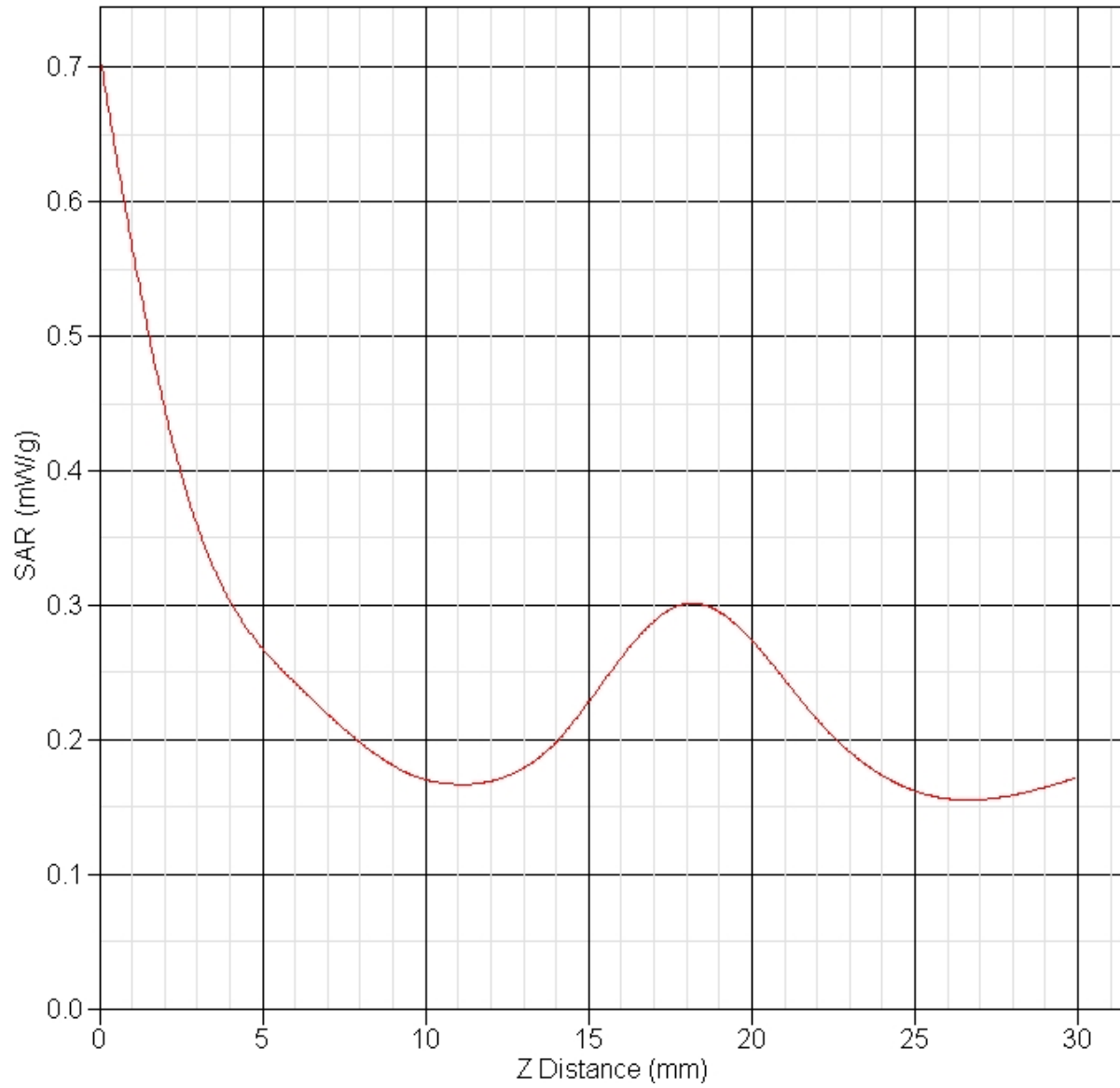
## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Low



1 gram SAR value : 0.399 W/kg  
 10 gram SAR value : 0.300 W/kg  
 Area Scan Peak SAR : 0.400 W/kg  
 Zoom Scan Peak SAR : 0.710 W/kg

**SAR-Z Axis**  
at Hotspot x:7.07 y:-0.14



**SAR Test Report**

By Operator : Jay  
Measurement Date : 17-Jun-2010  
Starting Time : 17-Jun-2010 02:21:21 PM  
End Time : 17-Jun-2010 02:49:01 PM  
Scanning Time : 1660 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n20  
Model : X10gx  
Frequency : 5100.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain C  
Orientation : Bottom  
Power Drift-Start : 0.397 W/kg  
Power Drift-Finish: 0.393 W/kg  
Power Drift (%) : -1.000

## 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 : 17-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.39 F/m  
Sigma : 5.36 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

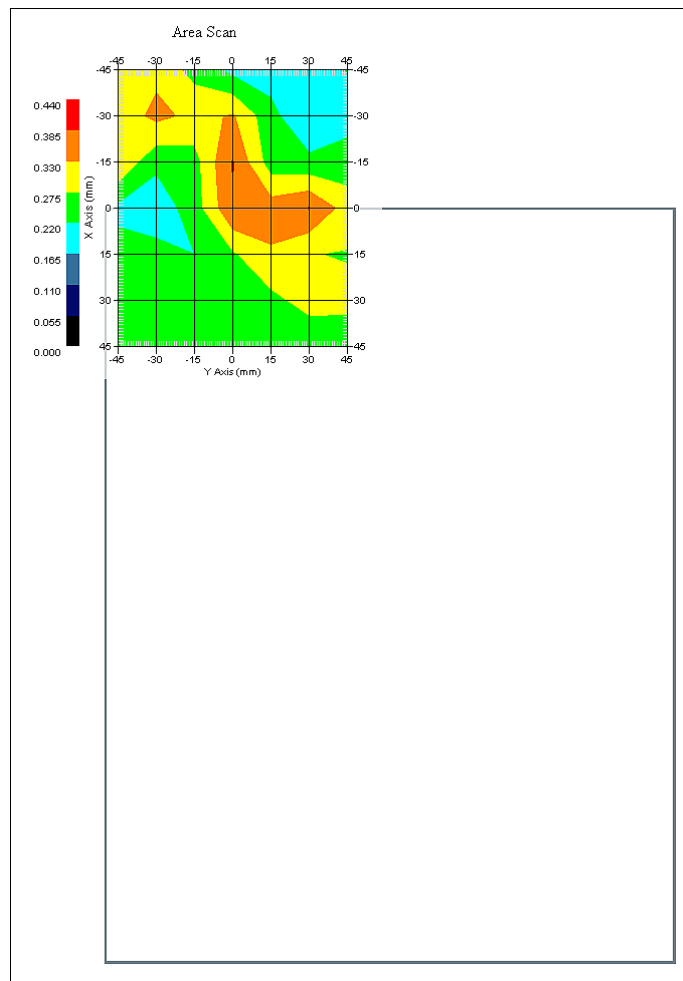
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 17-Jun-2010  
 Set-up Time : 7:57:10 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Low



1 gram SAR value : 0.349 W/kg  
 10 gram SAR value : 0.281 W/kg  
 Area Scan Peak SAR : 0.388 W/kg  
 Zoom Scan Peak SAR : 0.620 W/kg



**SAR Test Report**

By Operator : Jay  
Measurement Date : 17-Jun-2010  
Starting Time : 17-Jun-2010 03:21:35 PM  
End Time : 17-Jun-2010 03:49:31 PM  
Scanning Time : 1676 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n40  
Model : X10gx  
Frequency : 5100.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain C  
Orientation : Bottom  
Power Drift-Start : 0.398 W/kg  
Power Drift-Finish: 0.389 W/kg  
Power Drift (%) : -2.204

## 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 : 17-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.39 F/m  
Sigma : 5.36 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

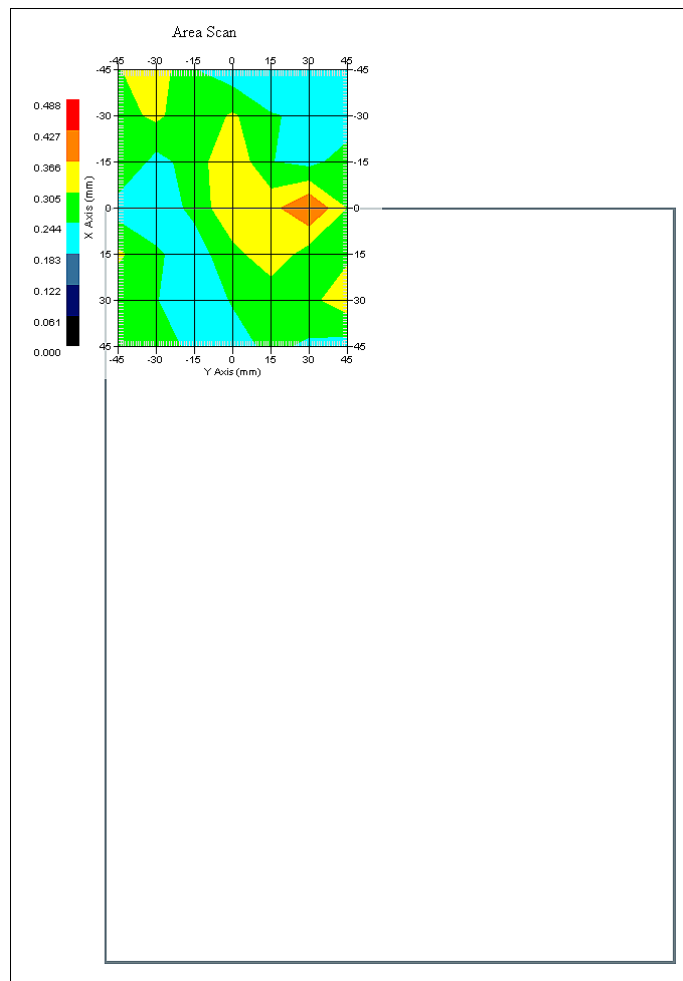
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 17-Jun-2010  
 Set-up Time : 7:57:10 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Low



1 gram SAR value : 0.346 W/kg  
 10 gram SAR value : 0.280 W/kg  
 Area Scan Peak SAR : 0.429 W/kg  
 Zoom Scan Peak SAR : 0.480 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 17-Jun-2010  
Starting Time : 17-Jun-2010 08:00:34 AM  
End Time : 17-Jun-2010 08:28:25 AM  
Scanning Time : 1671 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : a  
Model : X10gx  
Frequency : 5200.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain A  
Orientation : Bottom  
Power Drift-Start : 0.304 W/kg  
Power Drift-Finish: 0.293 W/kg  
Power Drift (%) : -3.618

## 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 : 17-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.39 F/m  
Sigma : 5.36 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

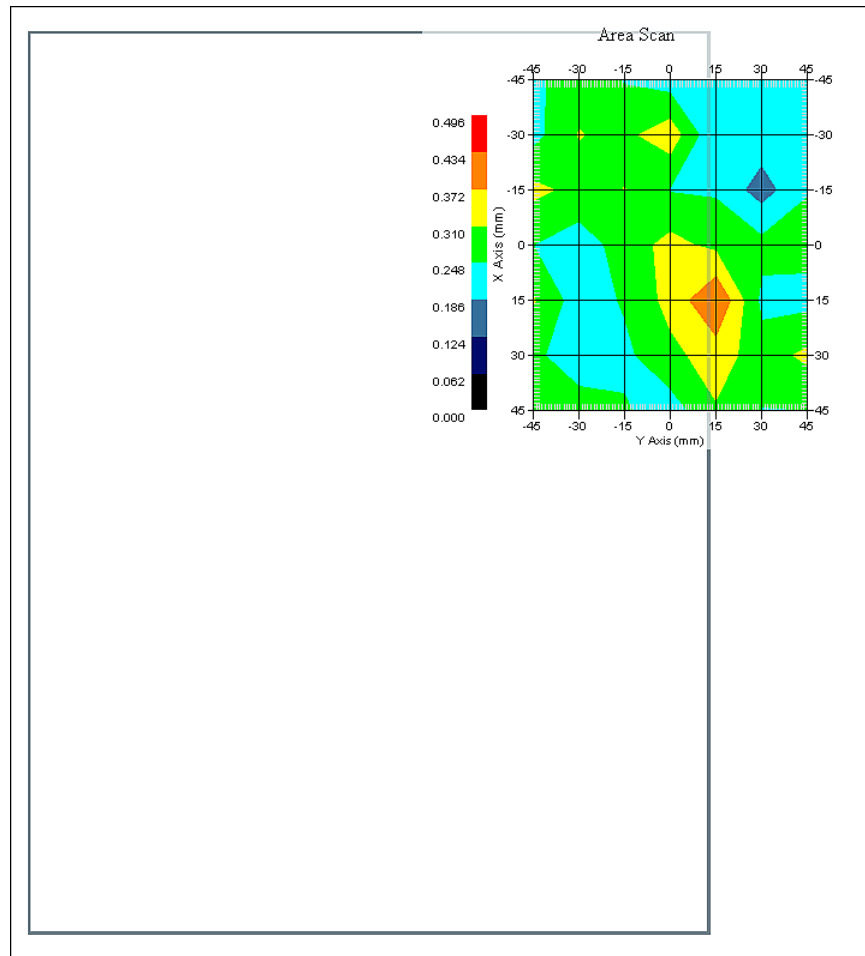
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 17-Jun-2010  
 Set-up Time : 7:57:10 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Low



1 gram SAR value : 0.326 W/kg  
 10 gram SAR value : 0.270 W/kg  
 Area Scan Peak SAR : 0.436 W/kg  
 Zoom Scan Peak SAR : 0.440 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 17-Jun-2010  
Starting Time : 17-Jun-2010 08:58:24 AM  
End Time : 17-Jun-2010 09:26:06 AM  
Scanning Time : 1662 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n20  
Model : X10gx  
Frequency : 5200.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain A  
Orientation : Bottom  
Power Drift-Start : 0.266 W/kg  
Power Drift-Finish: 0.271 W/kg  
Power Drift (%) : 1.876

## 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 : 17-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.39 F/m  
Sigma : 5.36 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

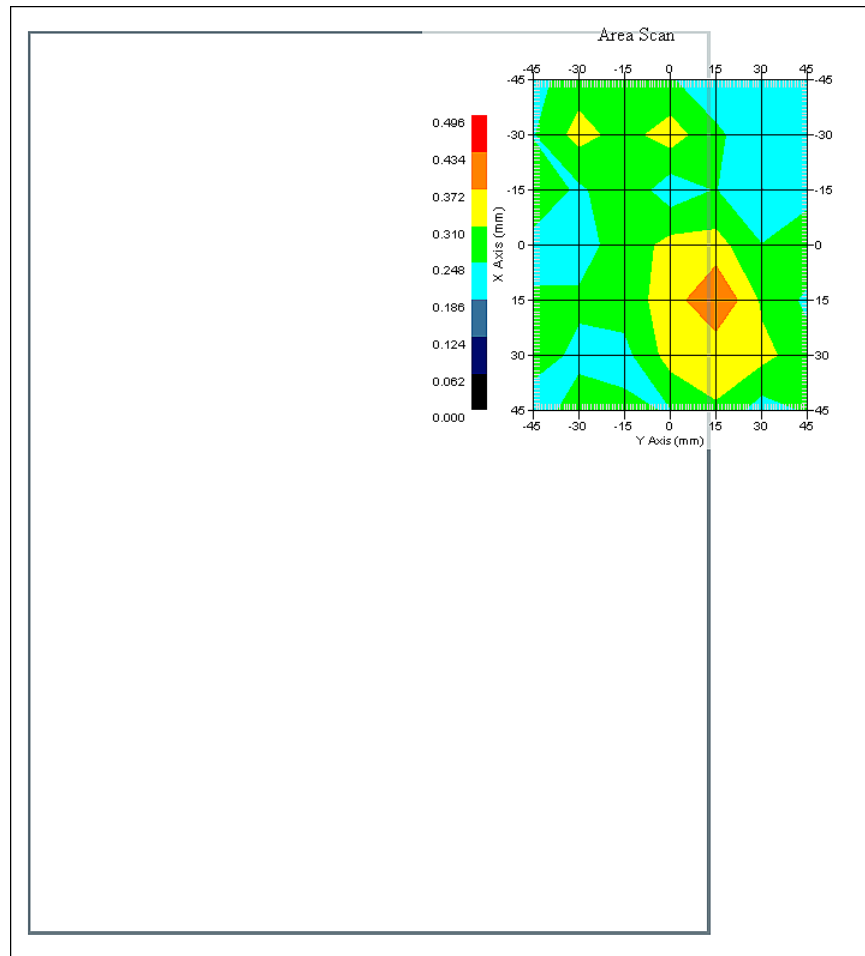
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 17-Jun-2010  
 Set-up Time : 7:57:10 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Low



1 gram SAR value : 0.323 W/kg  
 10 gram SAR value : 0.269 W/kg  
 Area Scan Peak SAR : 0.437 W/kg  
 Zoom Scan Peak SAR : 0.240 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 17-Jun-2010  
Starting Time : 17-Jun-2010 09:56:03 AM  
End Time : 17-Jun-2010 10:23:51 AM  
Scanning Time : 1668 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n40  
Model : X10gx  
Frequency : 5200.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain A  
Orientation : Bottom  
Power Drift-Start : 0.338 W/kg  
Power Drift-Finish: 0.327 W/kg  
Power Drift (%) : -3.254

## 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 : 17-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.39 F/m  
Sigma : 5.36 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

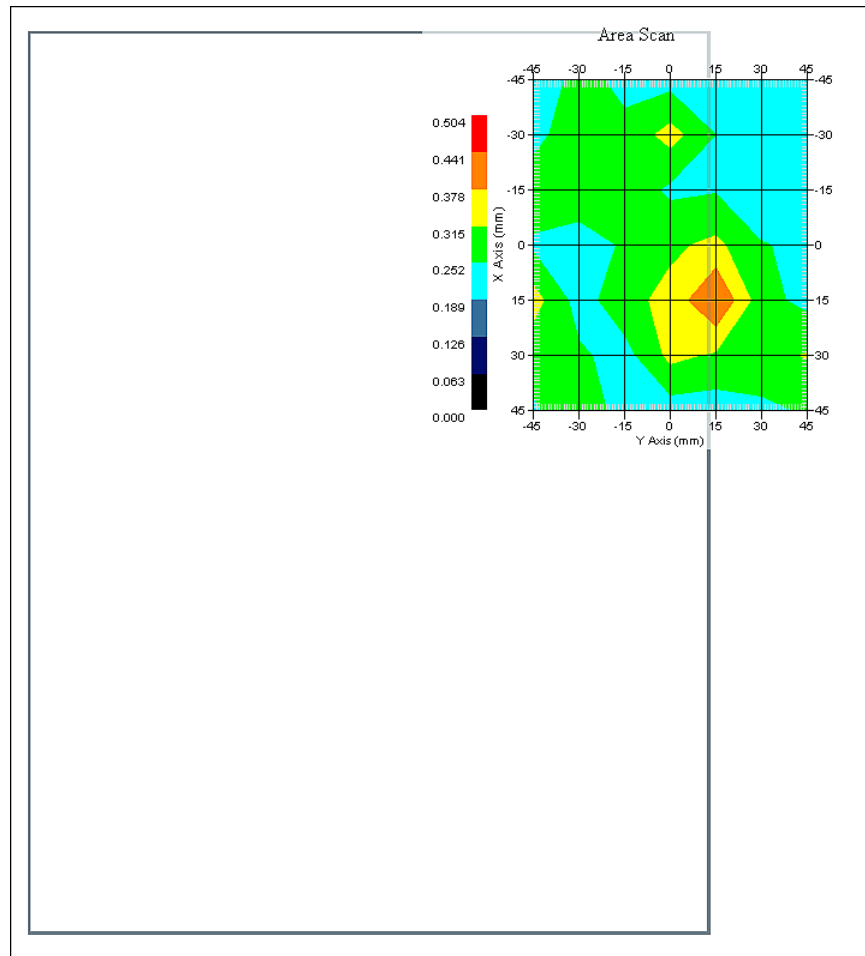
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 17-Jun-2010  
 Set-up Time : 7:57:10 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Low



1 gram SAR value : 0.323 W/kg  
 10 gram SAR value : 0.267 W/kg  
 Area Scan Peak SAR : 0.444 W/kg  
 Zoom Scan Peak SAR : 0.380 W/kg



**SAR Test Report**

By Operator : Jay  
Measurement Date : 17-Jun-2010  
Starting Time : 17-Jun-2010 10:53:46 AM  
End Time : 17-Jun-2010 11:21:27 AM  
Scanning Time : 1661 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : a  
Model : X10gx  
Frequency : 5200.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain B  
Orientation : Bottom  
Power Drift-Start : 0.373 W/kg  
Power Drift-Finish: 0.390 W/kg  
Power Drift (%) : 4.809

## 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 : 17-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.39 F/m  
Sigma : 5.36 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

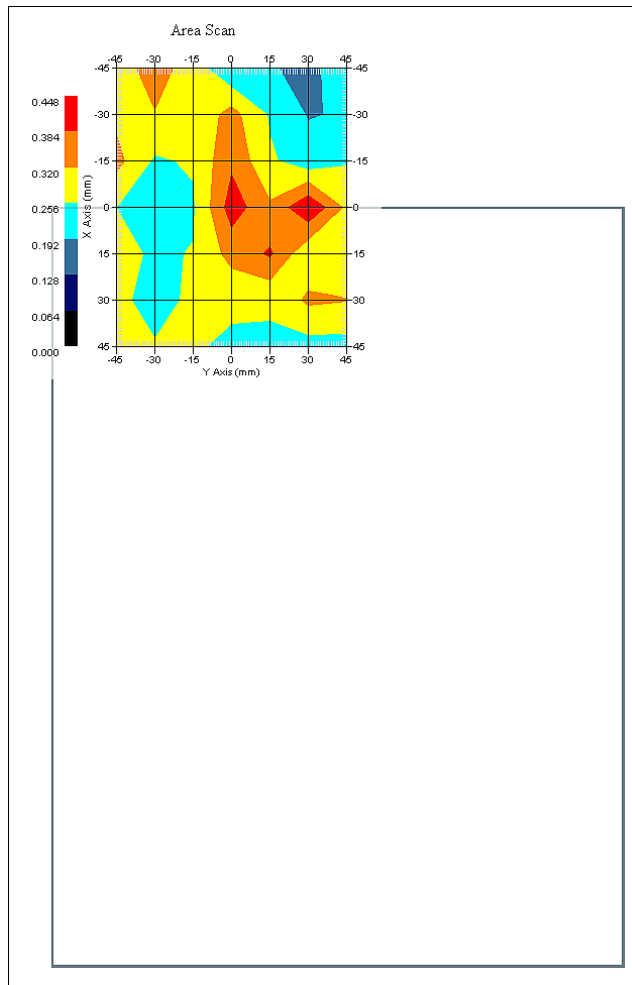
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 17-Jun-2010  
 Set-up Time : 7:57:10 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Low



1 gram SAR value : 0.383 W/kg  
 10 gram SAR value : 0.270 W/kg  
 Area Scan Peak SAR : 0.445 W/kg  
 Zoom Scan Peak SAR : 0.610 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 17-Jun-2010  
Starting Time : 17-Jun-2010 11:52:33 AM  
End Time : 17-Jun-2010 12:20:16 PM  
Scanning Time : 1663 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n20  
Model : X10gx  
Frequency : 5200.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain B  
Orientation : Bottom  
Power Drift-Start : 0.378 W/kg  
Power Drift-Finish: 0.390 W/kg  
Power Drift (%) : 3.172

## 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 : 17-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.39 F/m  
Sigma : 5.36 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

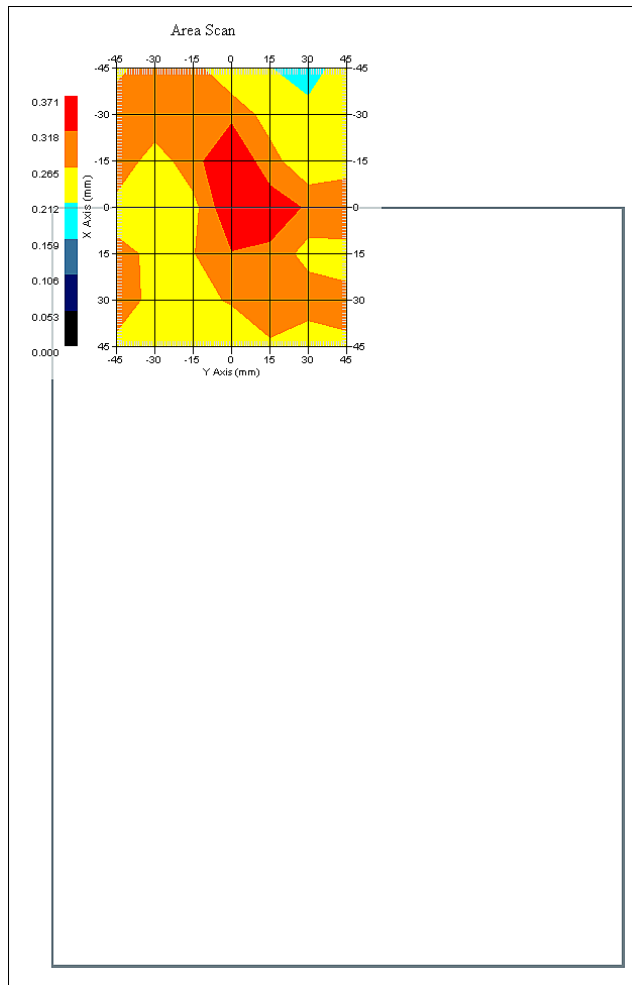
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 17-Jun-2010  
 Set-up Time : 7:57:10 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Low



1 gram SAR value : 0.323 W/kg  
 10 gram SAR value : 0.288 W/kg  
 Area Scan Peak SAR : 0.370 W/kg  
 Zoom Scan Peak SAR : 0.410 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 17-Jun-2010  
Starting Time : 17-Jun-2010 12:52:57 PM  
End Time : 17-Jun-2010 01:20:37 PM  
Scanning Time : 1660 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n40  
Model : X10gx  
Frequency : 5200.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain B  
Orientation : Bottom  
Power Drift-Start : 0.392 W/kg  
Power Drift-Finish: 0.383 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 : 17-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.39 F/m  
Sigma : 5.36 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

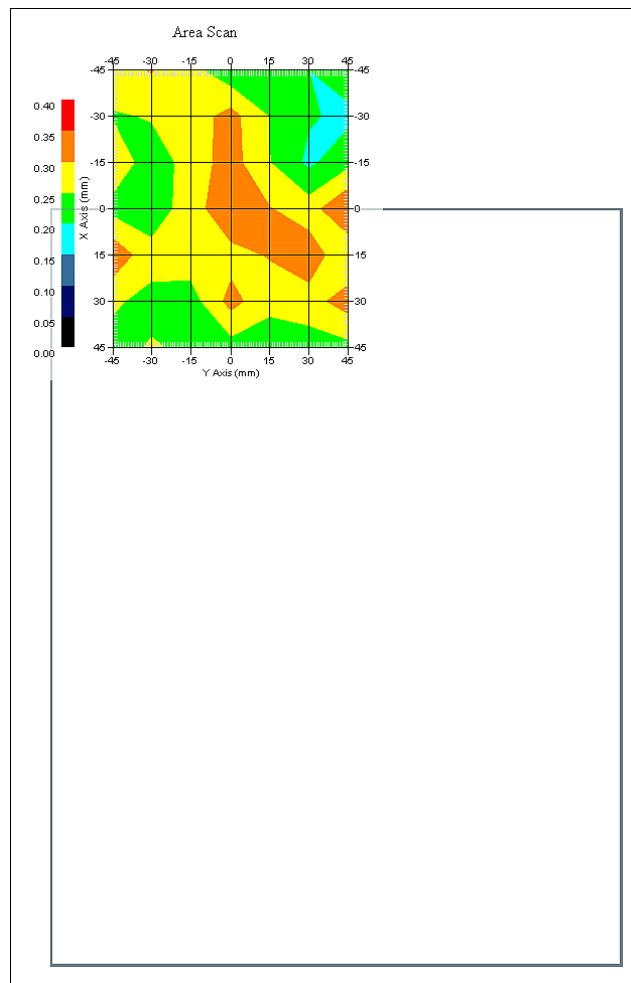
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 17-Jun-2010  
 Set-up Time : 7:57:10 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Low



1 gram SAR value : 0.360 W/kg  
 10 gram SAR value : 0.286 W/kg  
 Area Scan Peak SAR : 0.353 W/kg  
 Zoom Scan Peak SAR : 0.550 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 17-Jun-2010  
Starting Time : 17-Jun-2010 01:51:47 PM  
End Time : 17-Jun-2010 02:19:39 PM  
Scanning Time : 1672 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : a  
Model : X10gx  
Frequency : 5200.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain C  
Orientation : Bottom  
Power Drift-Start : 0.355 W/kg  
Power Drift-Finish: 0.358 W/kg  
Power Drift (%) : 1.320

## 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 : 17-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.39 F/m  
Sigma : 5.36 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

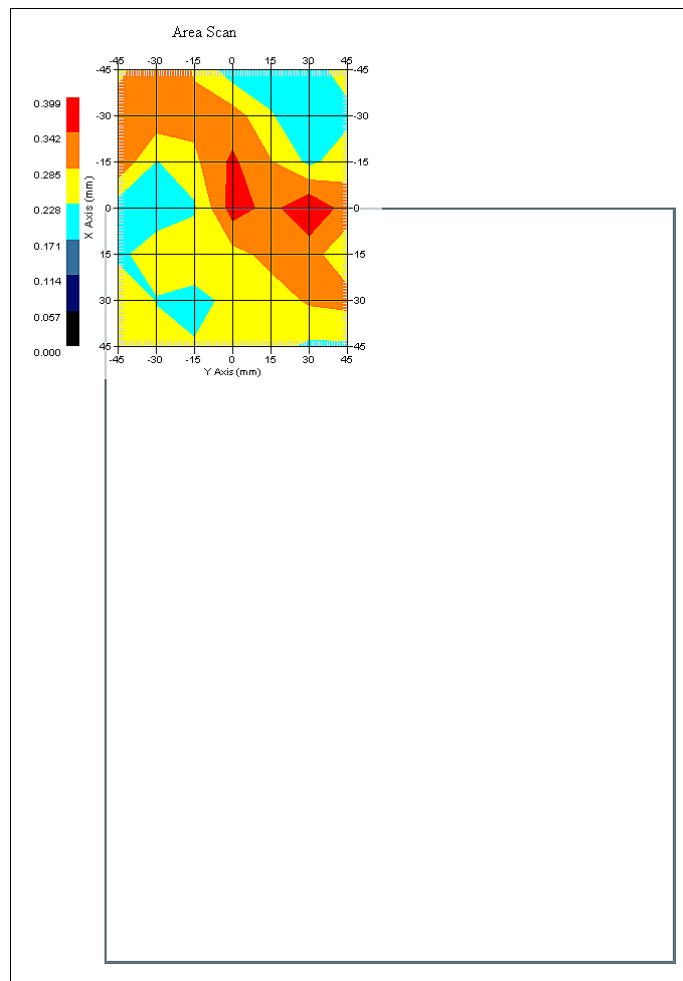
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 17-Jun-2010  
 Set-up Time : 7:57:10 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Low



1 gram SAR value : 0.341 W/kg  
 10 gram SAR value : 0.271 W/kg  
 Area Scan Peak SAR : 0.397 W/kg  
 Zoom Scan Peak SAR : 0.520 W/kg



**SAR Test Report**

By Operator : Jay  
Measurement Date : 17-Jun-2010  
Starting Time : 17-Jun-2010 02:51:49 PM  
End Time : 17-Jun-2010 03:19:36 PM  
Scanning Time : 1667 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n20  
Model : X10gx  
Frequency : 5200.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain C  
Orientation : Bottom  
Power Drift-Start : 0.393 W/kg  
Power Drift-Finish: 0.376 W/kg  
Power Drift (%) : -4.260

## 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 : 17-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.39 F/m  
Sigma : 5.36 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

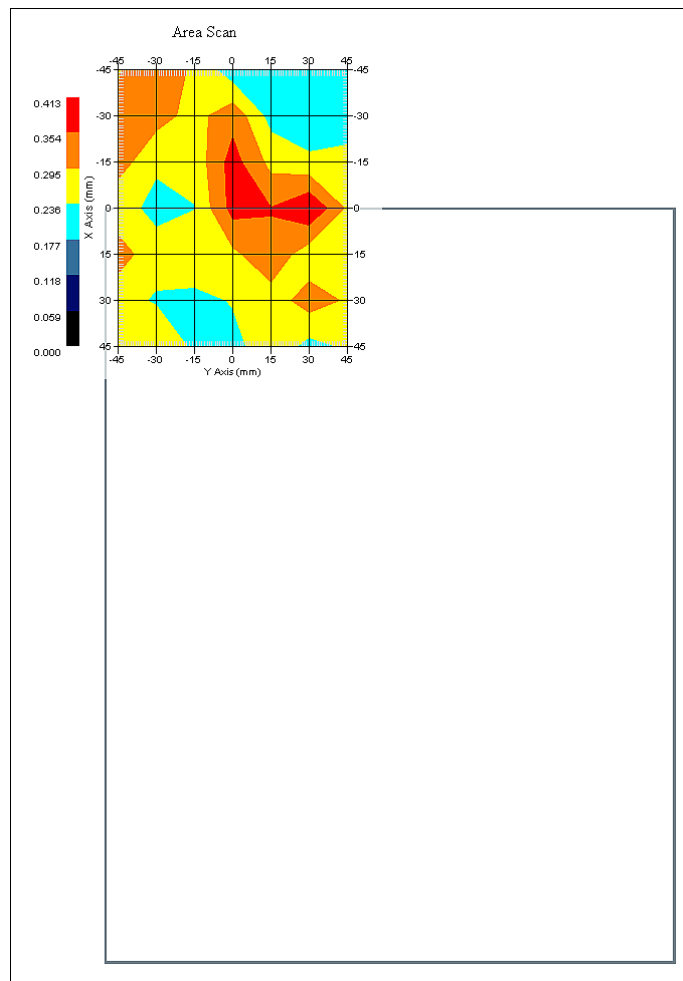
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 17-Jun-2010  
 Set-up Time : 7:57:10 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Low



1 gram SAR value : 0.371 W/kg  
 10 gram SAR value : 0.272 W/kg  
 Area Scan Peak SAR : 0.412 W/kg  
 Zoom Scan Peak SAR : 0.570 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 17-Jun-2010  
Starting Time : 17-Jun-2010 03:50:18 PM  
End Time : 17-Jun-2010 04:18:04 PM  
Scanning Time : 1666 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n40  
Model : X10gx  
Frequency : 5200.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain C  
Orientation : Bottom  
Power Drift-Start : 0.376 W/kg  
Power Drift-Finish: 0.387 W/kg  
Power Drift (%) : 2.611

## 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 : 17-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 47.39 F/m  
Sigma : 5.36 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

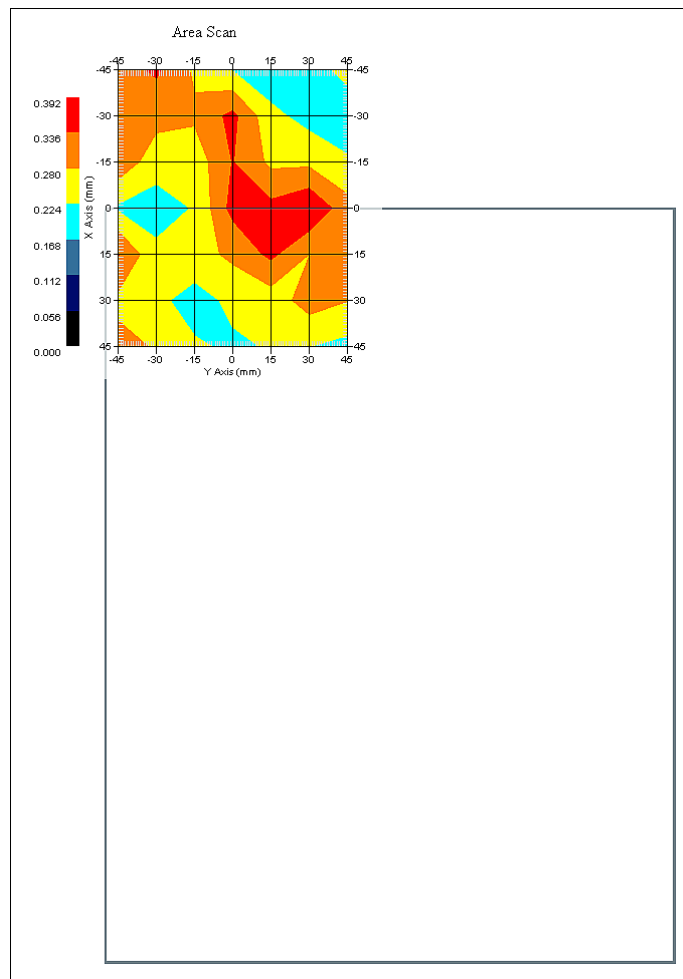
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5200.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 17-Jun-2010  
 Set-up Time : 7:57:10 AM  
 Area Scan : 7x7x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Low



1 gram SAR value : 0.375 W/kg  
 10 gram SAR value : 0.264 W/kg  
 Area Scan Peak SAR : 0.392 W/kg  
 Zoom Scan Peak SAR : 0.600 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 19-Jun-2010  
Starting Time : 19-Jun-2010 07:27:34 AM  
End Time : 19-Jun-2010 07:50:26 AM  
Scanning Time : 1372 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : a  
Model : X10gx  
Frequency : 5600.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain A  
Orientation : Bottom  
Power Drift-Start : 0.279 W/kg  
Power Drift-Finish: 0.285 W/kg  
Power Drift (%) : 2.243

## 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 : 19-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.57 F/m  
Sigma : 5.91 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

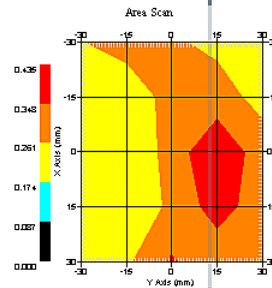
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 19-Jun-2010  
 Set-up Time : 11:24:11 AM  
 Area Scan : 5x5x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.324 W/kg  
 10 gram SAR value : 0.250 W/kg  
 Area Scan Peak SAR : 0.435 W/kg  
 Zoom Scan Peak SAR : 0.680 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 19-Jun-2010  
Starting Time : 19-Jun-2010 07:51:29 AM  
End Time : 19-Jun-2010 08:14:26 AM  
Scanning Time : 1377 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n20  
Model : X10gx  
Frequency : 5600.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain A  
Orientation : Bottom  
Power Drift-Start : 0.291 W/kg  
Power Drift-Finish: 0.283 W/kg  
Power Drift (%) : -2.742

## 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 : 19-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.57 F/m  
Sigma : 5.91 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

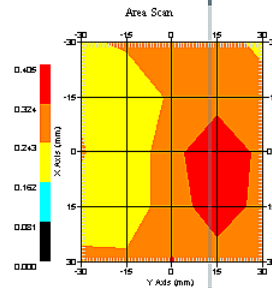
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 19-Jun-2010  
 Set-up Time : 11:24:11 AM  
 Area Scan : 5x5x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.386 W/kg  
 10 gram SAR value : 0.294 W/kg  
 Area Scan Peak SAR : 0.405 W/kg  
 Zoom Scan Peak SAR : 0.650 W/kg



**SAR Test Report**

By Operator : Jay  
Measurement Date : 19-Jun-2010  
Starting Time : 19-Jun-2010 08:15:23 AM  
End Time : 19-Jun-2010 08:38:16 AM  
Scanning Time : 1373 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n40  
Model : X10gx  
Frequency : 5600.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain A  
Orientation : Bottom  
Power Drift-Start : 0.265 W/kg  
Power Drift-Finish: 0.264 W/kg  
Power Drift (%) : -0.363

## 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 : 19-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.57 F/m  
Sigma : 5.91 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

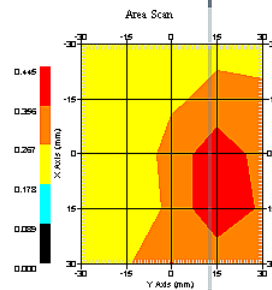
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 19-Jun-2010  
 Set-up Time : 11:24:11 AM  
 Area Scan : 5x5x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.310 W/kg  
 10 gram SAR value : 0.237 W/kg  
 Area Scan Peak SAR : 0.444 W/kg  
 Zoom Scan Peak SAR : 0.670 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 19-Jun-2010  
Starting Time : 19-Jun-2010 08:43:03 AM  
End Time : 19-Jun-2010 09:05:51 AM  
Scanning Time : 1368 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : a  
Model : X10gx  
Frequency : 5600.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain B  
Orientation : Bottom  
Power Drift-Start : 0.273 W/kg  
Power Drift-Finish: 0.274 W/kg  
Power Drift (%) : 0.530

## 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 : 19-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.57 F/m  
Sigma : 5.91 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

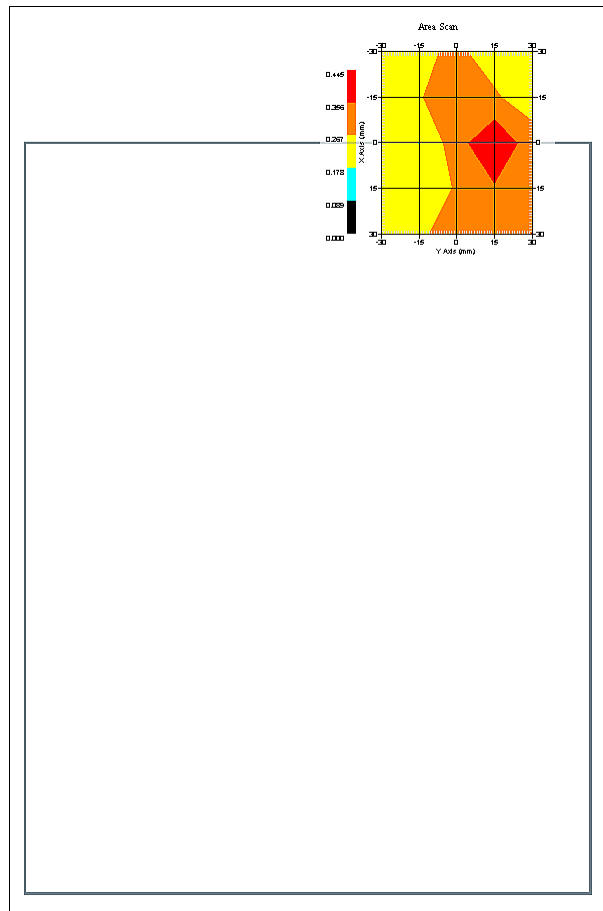
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
Scan Type : Complete  
Tissue Temp. : 20.00 °C  
Ambient Temp. : 23.00 °C  
Set-up Date : 19-Jun-2010  
Set-up Time : 11:24:11 AM  
Area Scan : 5x5x1 : Measurement x=15mm, y=15mm, z=2mm  
Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
Separation : 0  
Channel : Mid



1 gram SAR value : 0.328 W/kg  
10 gram SAR value : 0.243 W/kg  
Area Scan Peak SAR : 0.444 W/kg  
Zoom Scan Peak SAR : 0.670 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 19-Jun-2010  
Starting Time : 19-Jun-2010 09:08:55 AM  
End Time : 19-Jun-2010 09:31:57 AM  
Scanning Time : 1382 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n20  
Model : X10gx  
Frequency : 5600.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain B  
Orientation : Bottom  
Power Drift-Start : 0.287 W/kg  
Power Drift-Finish: 0.287 W/kg  
Power Drift (%) : 0.065

## 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 : 19-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.57 F/m  
Sigma : 5.91 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

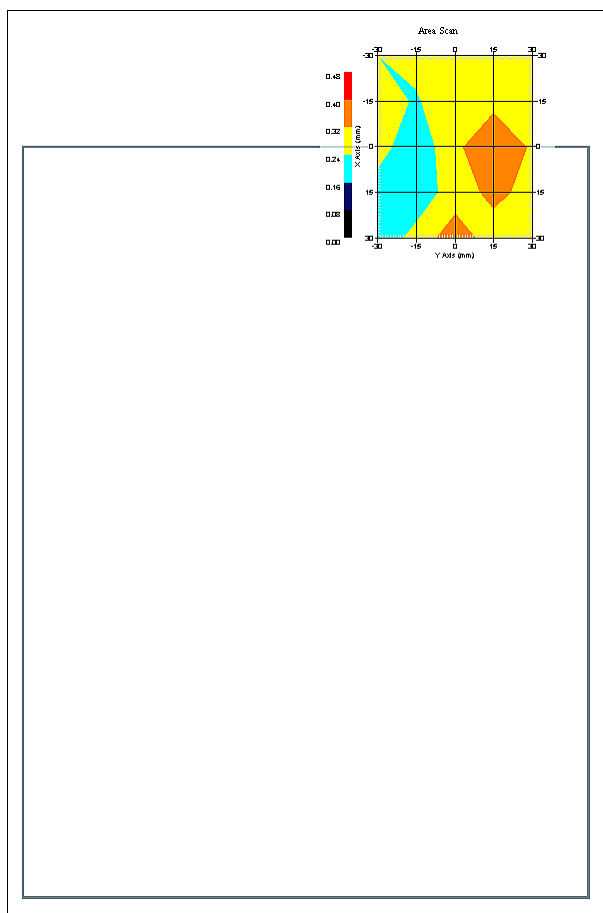
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 19-Jun-2010  
 Set-up Time : 11:24:11 AM  
 Area Scan : 5x5x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.331 W/kg  
 10 gram SAR value : 0.251 W/kg  
 Area Scan Peak SAR : 0.402 W/kg  
 Zoom Scan Peak SAR : 0.670 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 19-Jun-2010  
Starting Time : 19-Jun-2010 09:33:46 AM  
End Time : 19-Jun-2010 09:56:42 AM  
Scanning Time : 1376 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n40  
Model : X10gx  
Frequency : 5600.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain B  
Orientation : Bottom  
Power Drift-Start : 0.264 W/kg  
Power Drift-Finish: 0.276 W/kg  
Power Drift (%) : 4.601

## 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 : 19-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.57 F/m  
Sigma : 5.91 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

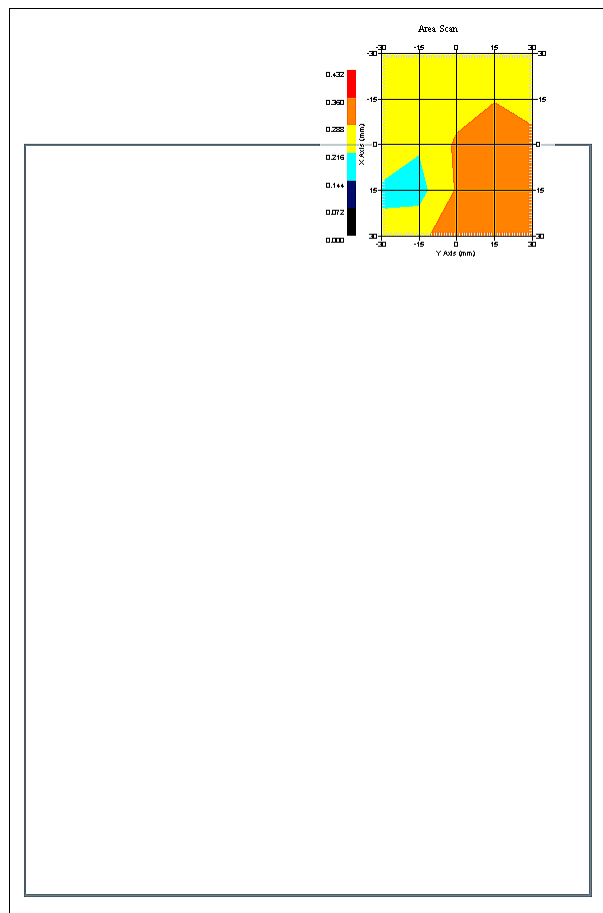
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 19-Jun-2010  
 Set-up Time : 11:24:11 AM  
 Area Scan : 5x5x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.314 W/kg  
 10 gram SAR value : 0.249 W/kg  
 Area Scan Peak SAR : 0.362 W/kg  
 Zoom Scan Peak SAR : 0.680 W/kg



**SAR Test Report**

By Operator : Jay  
Measurement Date : 19-Jun-2010  
Starting Time : 19-Jun-2010 09:58:04 AM  
End Time : 19-Jun-2010 10:21:02 AM  
Scanning Time : 1378 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : a  
Model : X10gx  
Frequency : 5600.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain C  
Orientation : Bottom  
Power Drift-Start : 0.281 W/kg  
Power Drift-Finish: 0.274 W/kg  
Power Drift (%) : -2.404

## 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 : 19-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.57 F/m  
Sigma : 5.91 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

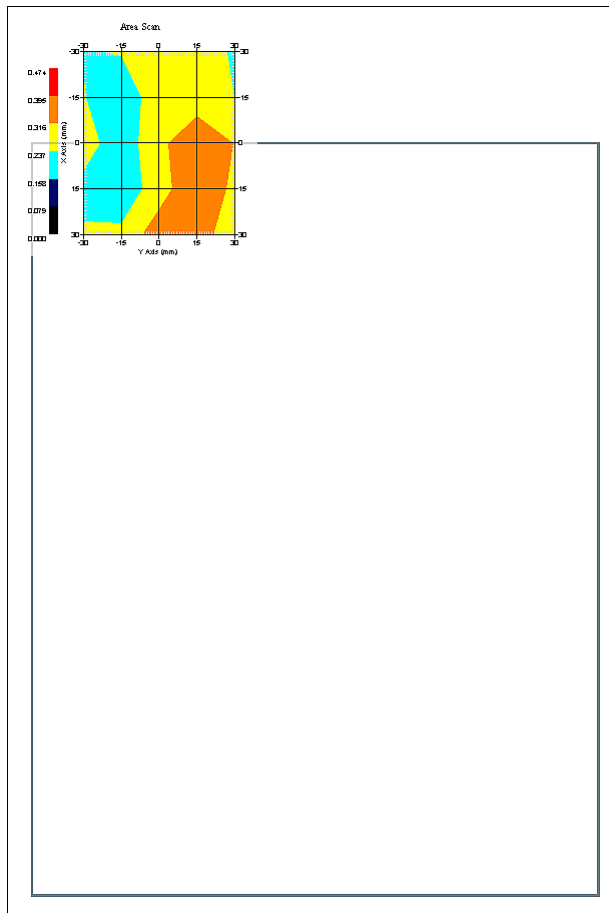
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 19-Jun-2010  
 Set-up Time : 11:24:11 AM  
 Area Scan : 5x5x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

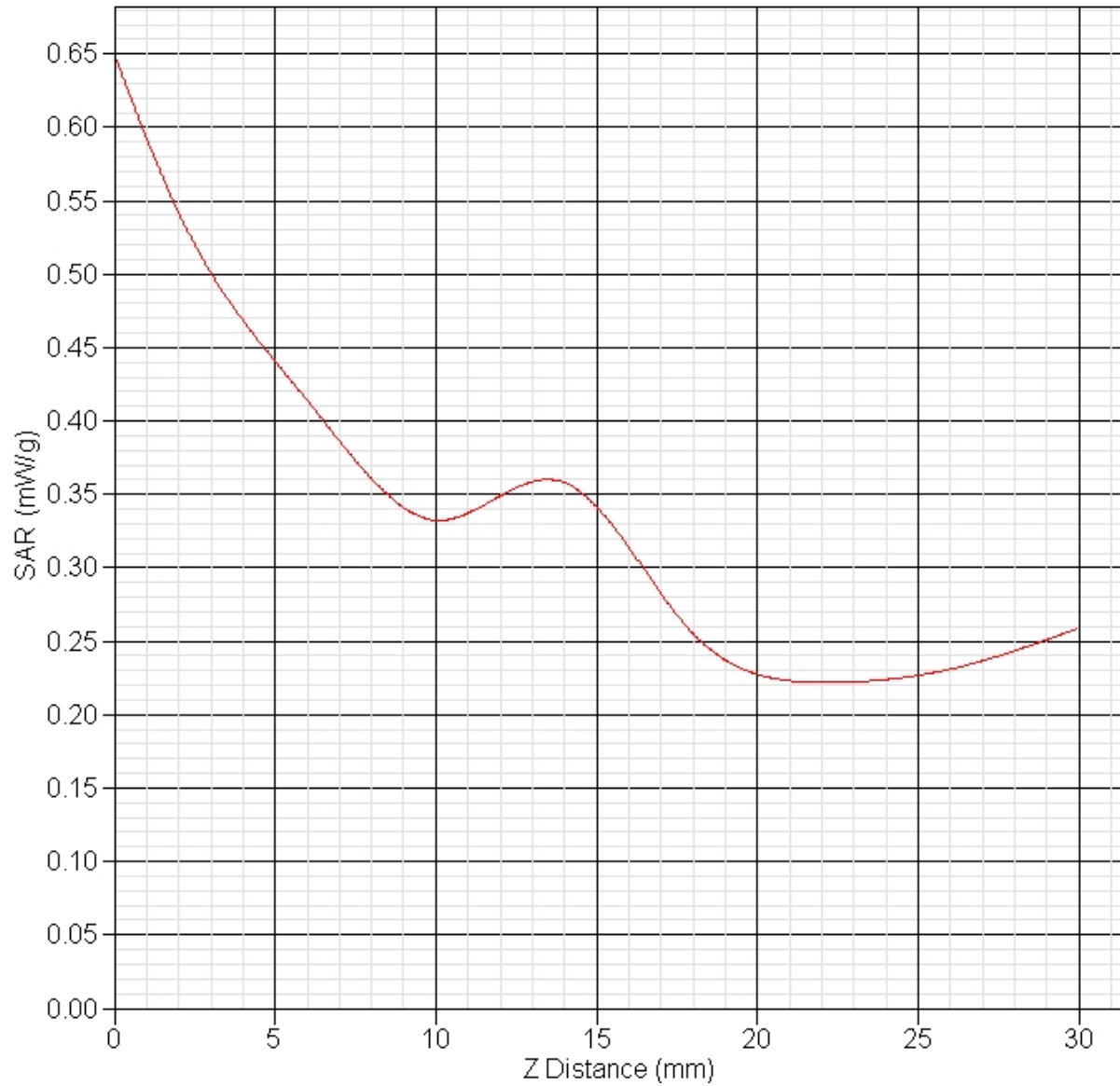
## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.397 W/kg  
 10 gram SAR value : 0.278 W/kg  
 Area Scan Peak SAR : 0.396 W/kg  
 Zoom Scan Peak SAR : 0.650 W/kg

**SAR-Z Axis**  
at Hotspot x:7.06 y:22.84



**SAR Test Report**

By Operator : Jay  
Measurement Date : 19-Jun-2010  
Starting Time : 19-Jun-2010 10:23:05 AM  
End Time : 19-Jun-2010 10:45:45 AM  
Scanning Time : 1360 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n20  
Model : X10gx  
Frequency : 5600.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain C  
Orientation : Bottom  
Power Drift-Start : 0.267 W/kg  
Power Drift-Finish: 0.278 W/kg  
Power Drift (%) : 3.979

## 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 : 19-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.57 F/m  
Sigma : 5.91 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

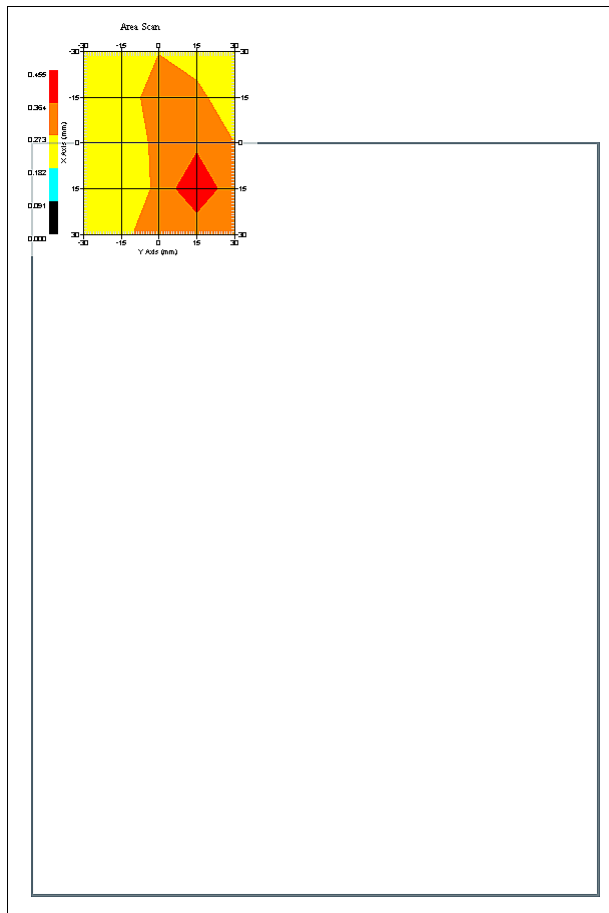
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 19-Jun-2010  
 Set-up Time : 11:24:11 AM  
 Area Scan : 5x5x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.359 W/kg  
 10 gram SAR value : 0.278 W/kg  
 Area Scan Peak SAR : 0.455 W/kg  
 Zoom Scan Peak SAR : 0.670 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 19-Jun-2010  
Starting Time : 19-Jun-2010 10:48:59 AM  
End Time : 19-Jun-2010 11:11:53 AM  
Scanning Time : 1374 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n40  
Model : X10gx  
Frequency : 5600.00 MHz  
Max. Transmit Pwr : 0.04 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain C  
Orientation : Bottom  
Power Drift-Start : 0.250 W/kg  
Power Drift-Finish: 0.255 W/kg  
Power Drift (%) : 1.891

## 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 : 19-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.57 F/m  
Sigma : 5.91 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

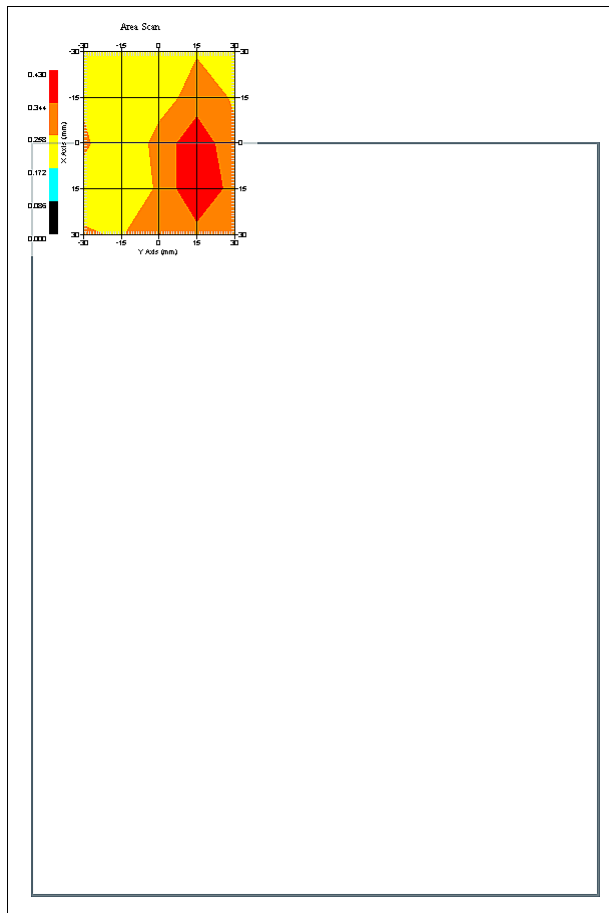
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5600.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 19-Jun-2010  
 Set-up Time : 11:24:11 AM  
 Area Scan : 5x5x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.356 W/kg  
 10 gram SAR value : 0.264 W/kg  
 Area Scan Peak SAR : 0.428 W/kg  
 Zoom Scan Peak SAR : 0.630 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 21-Jun-2010  
Starting Time : 21-Jun-2010 07:32:09 AM  
End Time : 21-Jun-2010 07:55:10 AM  
Scanning Time : 1381 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : a  
Model : X10gx  
Frequency : 5800.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain A  
Orientation : Bottom  
Power Drift-Start : 0.283 W/kg  
Power Drift-Finish: 0.287 W/kg  
Power Drift (%) : 1.418

## 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 : 21-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.15 F/m  
Sigma : 6.01 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 : 15-Jul-2009  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.2  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

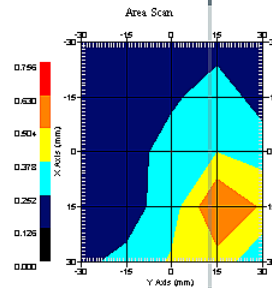


## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 21-Jun-2010  
 Set-up Time : 8:01:42 AM  
 Area Scan : 5x5x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.413 W/kg  
 10 gram SAR value : 0.316 W/kg  
 Area Scan Peak SAR : 0.632 W/kg  
 Zoom Scan Peak SAR : 0.720 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 21-Jun-2010  
Starting Time : 21-Jun-2010 07:57:25 AM  
End Time : 21-Jun-2010 08:20:21 AM  
Scanning Time : 1376 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n20  
Model : X10gx  
Frequency : 5800.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain A  
Orientation : Bottom  
Power Drift-Start : 0.314 W/kg  
Power Drift-Finish: 0.314 W/kg  
Power Drift (%) : -0.518

## 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 : 21-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.15 F/m  
Sigma : 6.01 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

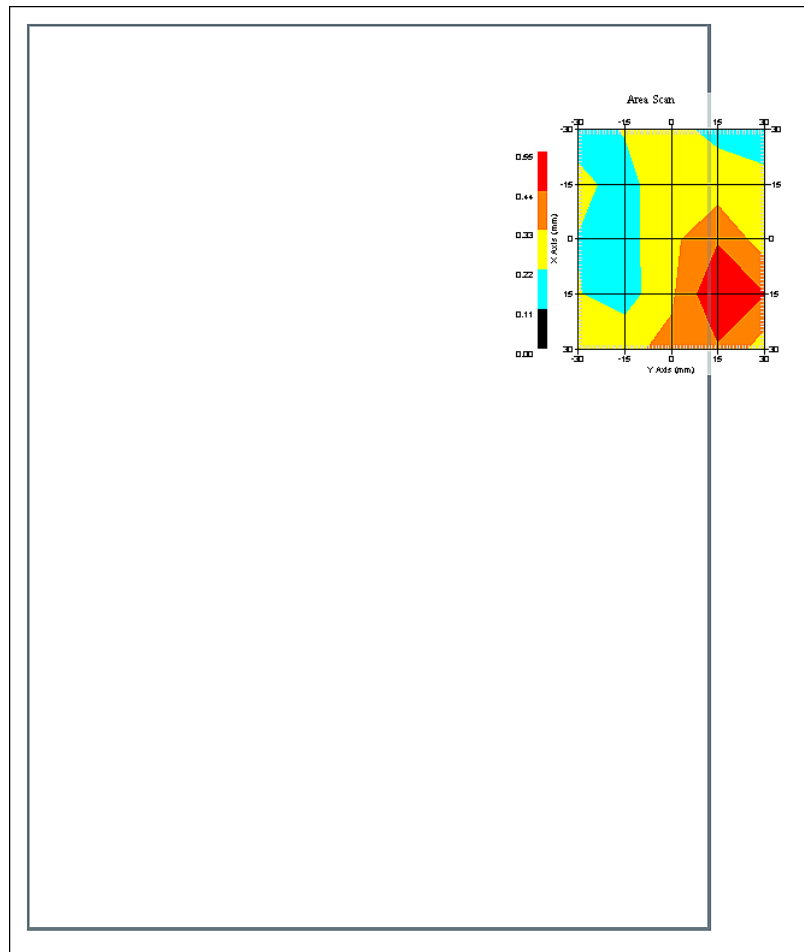
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.2  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 21-Jun-2010  
 Set-up Time : 8:01:42 AM  
 Area Scan : 5x5x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

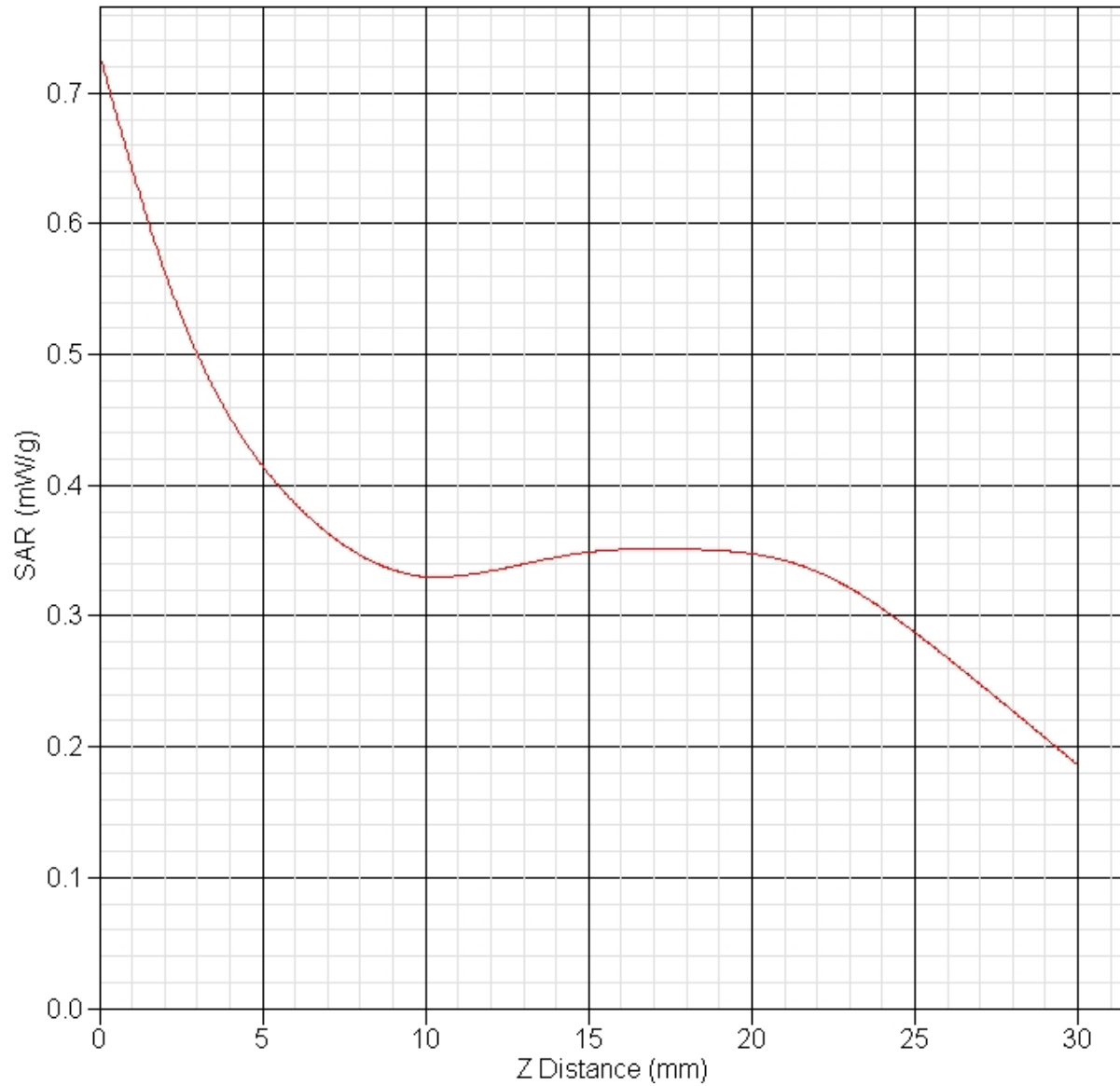
## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.470 W/kg  
 10 gram SAR value : 0.354 W/kg  
 Area Scan Peak SAR : 0.550 W/kg  
 Zoom Scan Peak SAR : 0.730 W/kg

**SAR-Z Axis**  
at Hotspot x:15.09 y:14.81



**SAR Test Report**

By Operator : Jay  
Measurement Date : 21-Jun-2010  
Starting Time : 21-Jun-2010 08:22:50 AM  
End Time : 21-Jun-2010 08:45:32 AM  
Scanning Time : 1362 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n40  
Model : X10gx  
Frequency : 5800.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain A  
Orientation : Bottom  
Power Drift-Start : 0.380 W/kg  
Power Drift-Finish: 0.382 W/kg  
Power Drift (%) : 0.611

## 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 : 21-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.15 F/m  
Sigma : 6.01 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

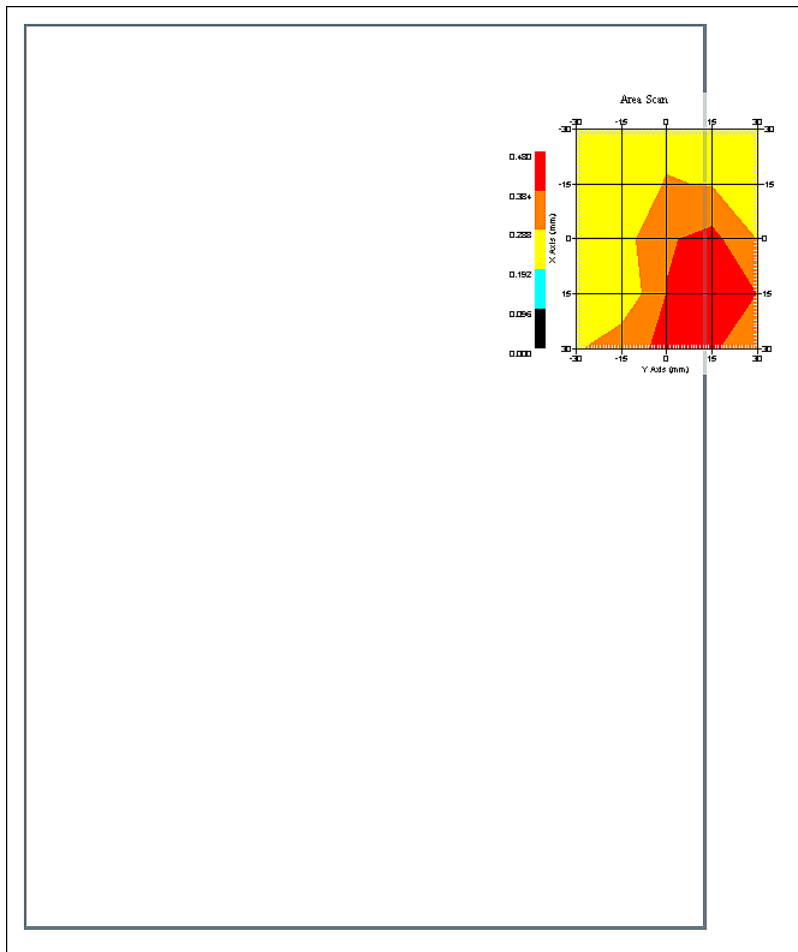
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.2  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 21-Jun-2010  
 Set-up Time : 8:01:42 AM  
 Area Scan : 5x5x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.448 W/kg  
 10 gram SAR value : 0.340 W/kg  
 Area Scan Peak SAR : 0.479 W/kg  
 Zoom Scan Peak SAR : 0.670 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 21-Jun-2010  
Starting Time : 21-Jun-2010 08:47:15 AM  
End Time : 21-Jun-2010 09:10:04 AM  
Scanning Time : 1369 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : a  
Model : X10gx  
Frequency : 5800.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain B  
Orientation : Bottom  
Power Drift-Start : 0.369 W/kg  
Power Drift-Finish: 0.374 W/kg  
Power Drift (%) : 1.493

## 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 : 21-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.15 F/m  
Sigma : 6.01 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

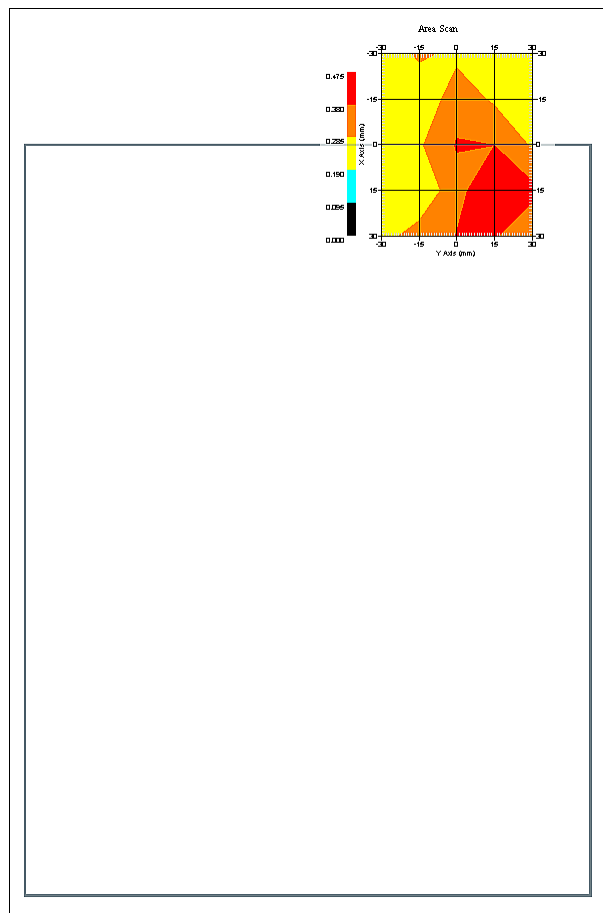
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.2  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 21-Jun-2010  
 Set-up Time : 8:01:42 AM  
 Area Scan : 5x5x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.419 W/kg  
 10 gram SAR value : 0.329 W/kg  
 Area Scan Peak SAR : 0.475 W/kg  
 Zoom Scan Peak SAR : 0.570 W/kg



**SAR Test Report**

By Operator : Jay  
Measurement Date : 21-Jun-2010  
Starting Time : 21-Jun-2010 09:12:52 AM  
End Time : 21-Jun-2010 09:34:32 AM  
Scanning Time : 1360 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n20  
Model : X10gx  
Frequency : 5800.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain B  
Orientation : Bottom  
Power Drift-Start : 0.350 W/kg  
Power Drift-Finish: 0.357 W/kg  
Power Drift (%) : 2.371

## 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. : 5800  
Frequency : 5800.00 MHz  
Last Calib. Date : 21-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.15 F/m  
Sigma : 6.01 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

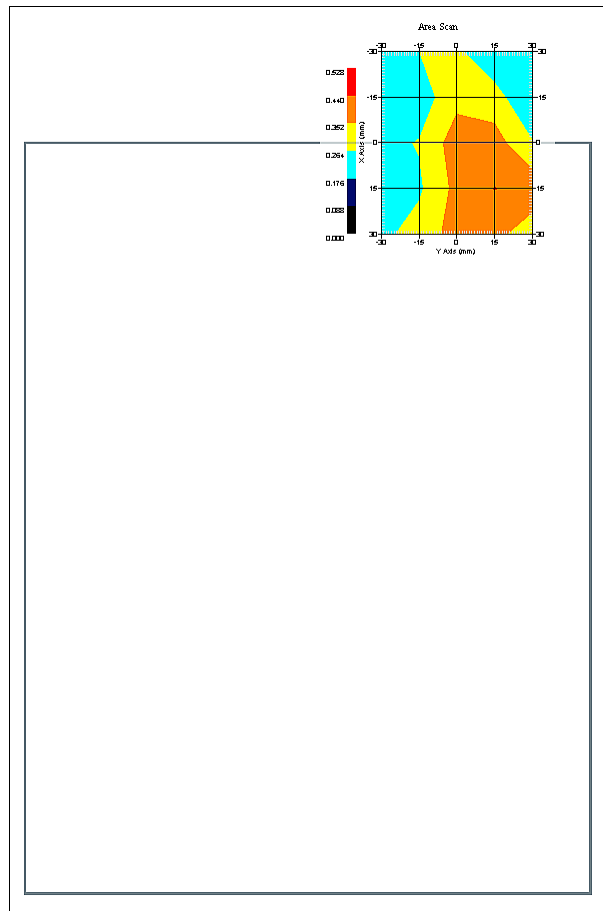
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.2  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 21-Jun-2010  
 Set-up Time : 8:01:42 AM  
 Area Scan : 5x5x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.448 W/kg  
 10 gram SAR value : 0.344 W/kg  
 Area Scan Peak SAR : 0.442 W/kg  
 Zoom Scan Peak SAR : 0.690 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 21-Jun-2010  
Starting Time : 21-Jun-2010 09:36:08 AM  
End Time : 21-Jun-2010 09:58:58 AM  
Scanning Time : 1370 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n40  
Model : X10gx  
Frequency : 5800.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain B  
Orientation : Bottom  
Power Drift-Start : 0.407 W/kg  
Power Drift-Finish: 0.376 W/kg  
Power Drift (%) : -4.291

## 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. : 5800  
Frequency : 5800.00 MHz  
Last Calib. Date : 21-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.15 F/m  
Sigma : 6.01 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

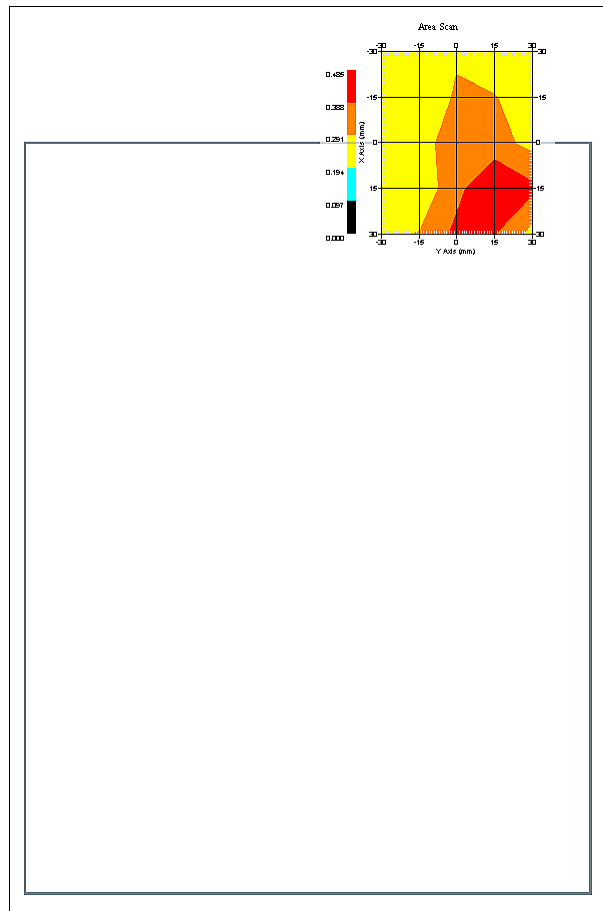
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.2  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 21-Jun-2010  
 Set-up Time : 8:01:42 AM  
 Area Scan : 5x5x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.444 W/kg  
 10 gram SAR value : 0.346 W/kg  
 Area Scan Peak SAR : 0.483 W/kg  
 Zoom Scan Peak SAR : 0.690 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 21-Jun-2010  
Starting Time : 21-Jun-2010 10:00:05 AM  
End Time : 21-Jun-2010 10:22:54 AM  
Scanning Time : 1369 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : a  
Model : X10gx  
Frequency : 5800.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain C  
Orientation : Bottom  
Power Drift-Start : 0.367 W/kg  
Power Drift-Finish: 0.339 W/kg  
Power Drift (%) : -4.013

## 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 : 21-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.15 F/m  
Sigma : 6.01 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

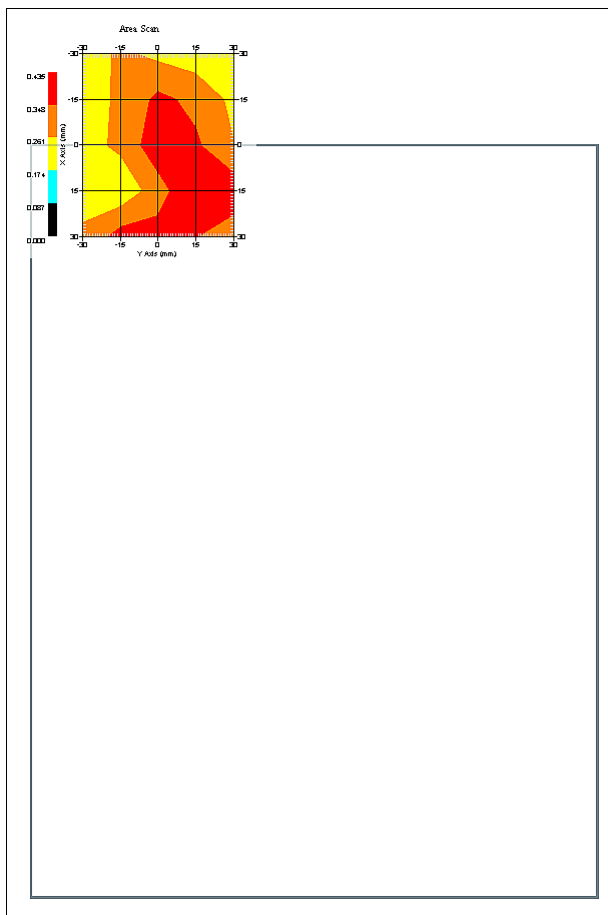
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.2  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 21-Jun-2010  
 Set-up Time : 8:01:42 AM  
 Area Scan : 5x5x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.416 W/kg  
 10 gram SAR value : 0.324 W/kg  
 Area Scan Peak SAR : 0.433 W/kg  
 Zoom Scan Peak SAR : 0.540 W/kg

**SAR Test Report**

By Operator : Jay  
Measurement Date : 21-Jun-2010  
Starting Time : 21-Jun-2010 10:24:50 AM  
End Time : 21-Jun-2010 10:47:41 AM  
Scanning Time : 1371 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n20  
Model : X10gx  
Frequency : 5800.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain C  
Orientation : Bottom  
Power Drift-Start : 0.306 W/kg  
Power Drift-Finish: 0.307 W/kg  
Power Drift (%) : 0.301

## 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 : 21-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.15 F/m  
Sigma : 6.01 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

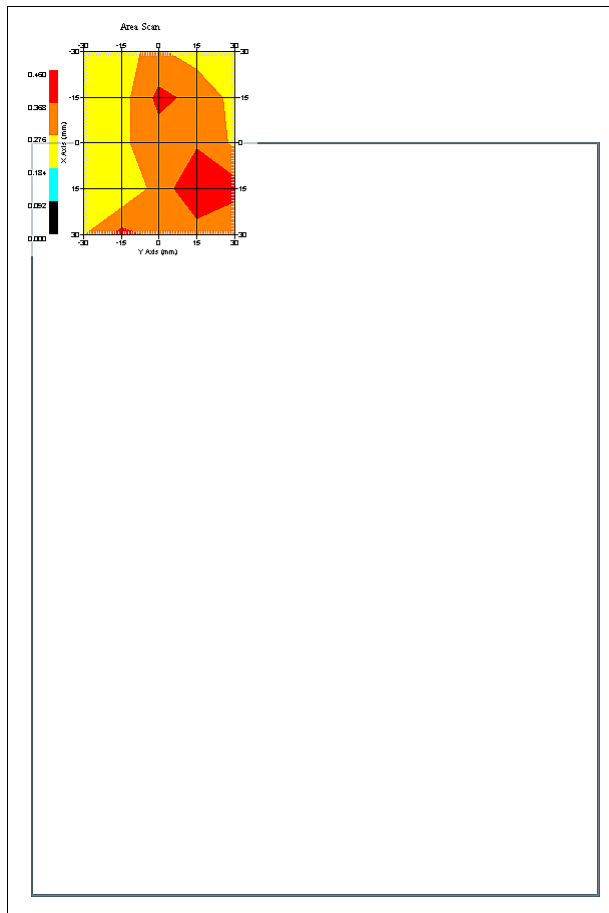
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.2  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 21-Jun-2010  
 Set-up Time : 8:01:42 AM  
 Area Scan : 5x5x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid



1 gram SAR value : 0.404 W/kg  
 10 gram SAR value : 0.311 W/kg  
 Area Scan Peak SAR : 0.458 W/kg  
 Zoom Scan Peak SAR : 0.610 W/kg



**SAR Test Report**

By Operator : Jay  
Measurement Date : 21-Jun-2010  
Starting Time : 21-Jun-2010 10:49:24 AM  
End Time : 21-Jun-2010 11:12:11 AM  
Scanning Time : 1367 secs

## Product Data

Device Name : DRS  
Serial No. : 814GM01006G01200011M000  
Mode : n40  
Model : X10gx  
Frequency : 5800.00 MHz  
Max. Transmit Pwr : 0.25 W  
Drift Time : 0 min(s)  
Length : 290 mm  
Width : 220 mm  
Depth : 40 mm  
Antenna Type : Internal - Chain C  
Orientation : Bottom  
Power Drift-Start : 0.294 W/kg  
Power Drift-Finish: 0.303 W/kg  
Power Drift (%) : 3.069

## 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 : 21-Jun-2010  
Temperature : 20.00 °C  
Ambient Temp. : 23.00 °C  
Humidity : 50.00 RH%  
Epsilon : 48.15 F/m  
Sigma : 6.01 S/m  
Density : 1000.00 kg/cu. m

## Probe Data

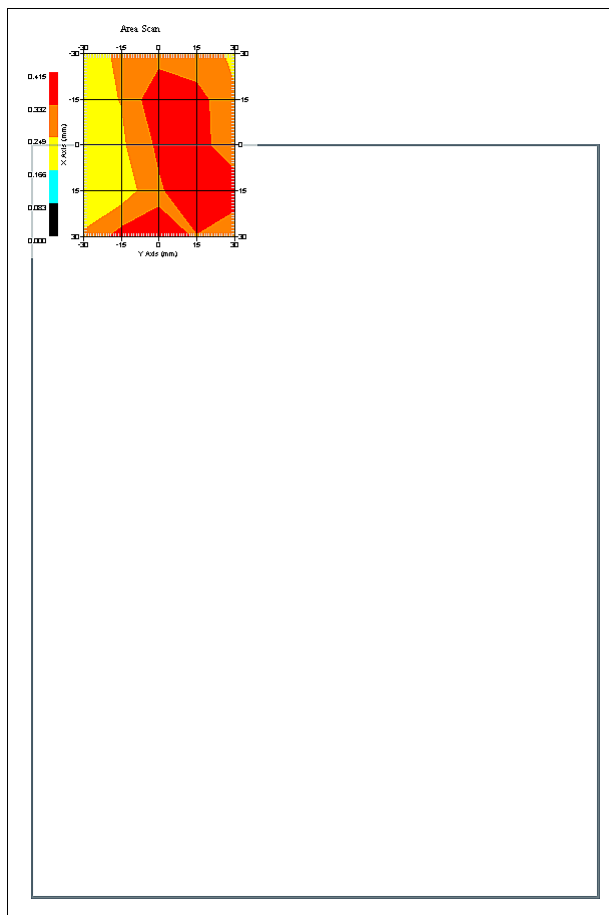
Name : Probe E030-001 - RFEL  
Model : E030  
Type : E-Field Triangle  
Serial No. : E030-001  
Last Calib. Date : 15-Jul-2009  
Frequency : 5800.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 4.2  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V/m})^2$   
Compression Point: 95.00 mV  
Offset : 1.06 mm

## Measurement Data

Crest Factor : 1  
 Scan Type : Complete  
 Tissue Temp. : 20.00 °C  
 Ambient Temp. : 23.00 °C  
 Set-up Date : 21-Jun-2010  
 Set-up Time : 8:01:42 AM  
 Area Scan : 5x5x1 : Measurement x=15mm, y=15mm, z=2mm  
 Zoom Scan : 7x7x10 : Measurement x=4mm, y=4mm, z=2.5mm

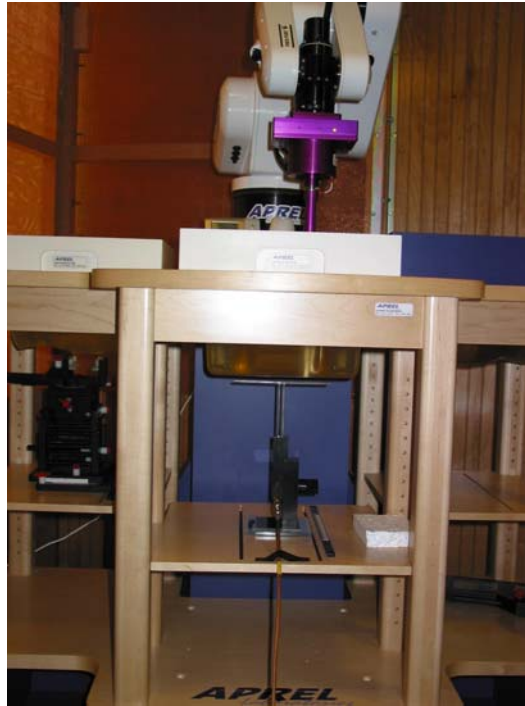
## Other Data

DUT Position : Bottom  
 Separation : 0  
 Channel : Mid

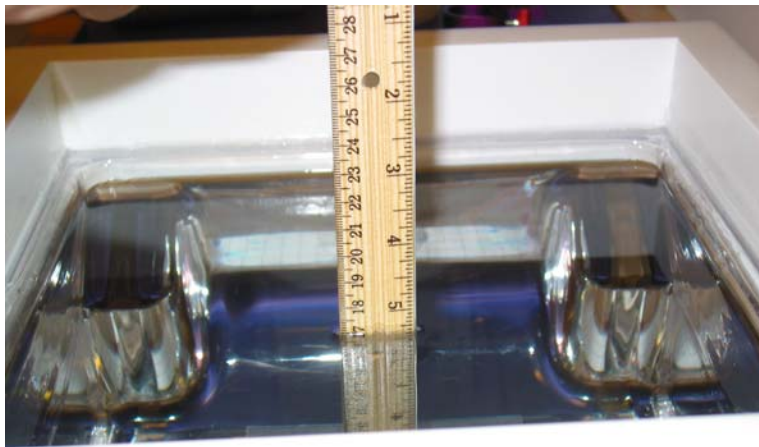


1 gram SAR value : 0.408 W/kg  
 10 gram SAR value : 0.312 W/kg  
 Area Scan Peak SAR : 0.415 W/kg  
 Zoom Scan Peak SAR : 0.640 W/kg

## Appendix C – SAR Test Setup Photos



**System Body Configuration**



**Body Tissue Depth**



**Bottom WWAN and Main WLAN Test Position**



**Bottom Secondary WLAN Test Position**



**Bottom Tertiary WLAN Test Position**



**Front of Device**





**Back of Device**



**Battery**



### **Antenna Locations**

**Antenna to User Distance 2 cm**

**Main WWAN to Main WLAN Distance 1.2 cm**

**Main WWAN to Secondary WLAN Distance 9.4 cm**

**Main WLAN to Tertiary WLAN Distance 22.0 cm**

**BT to Tertiary WLAN 6 cm**

## **Appendix D – Probe Calibration Data Sheets**



# NCL CALIBRATION LABORATORIES

Calibration File No.: CP-1079

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.: 217

Calibration Procedure: SSI/DRB-TP-D01-032-E020-V2  
Project No: RFEL-E020-CAL-5477

Calibrated: 21<sup>st</sup> October 2009  
Released on: 28<sup>th</sup> October 2009

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-020 217.

## 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

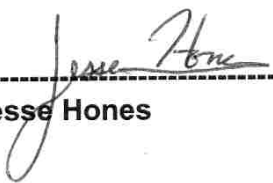
## Conditions

Probe 217 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>	217
<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:** 54.9 (+/-5%)      **Sigma:** 1.04 S/m (+/-5%)

### **ConvF**

**Channel X:** 6.1

**Channel Y:** 6.1

**Channel Z:** 6.1

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

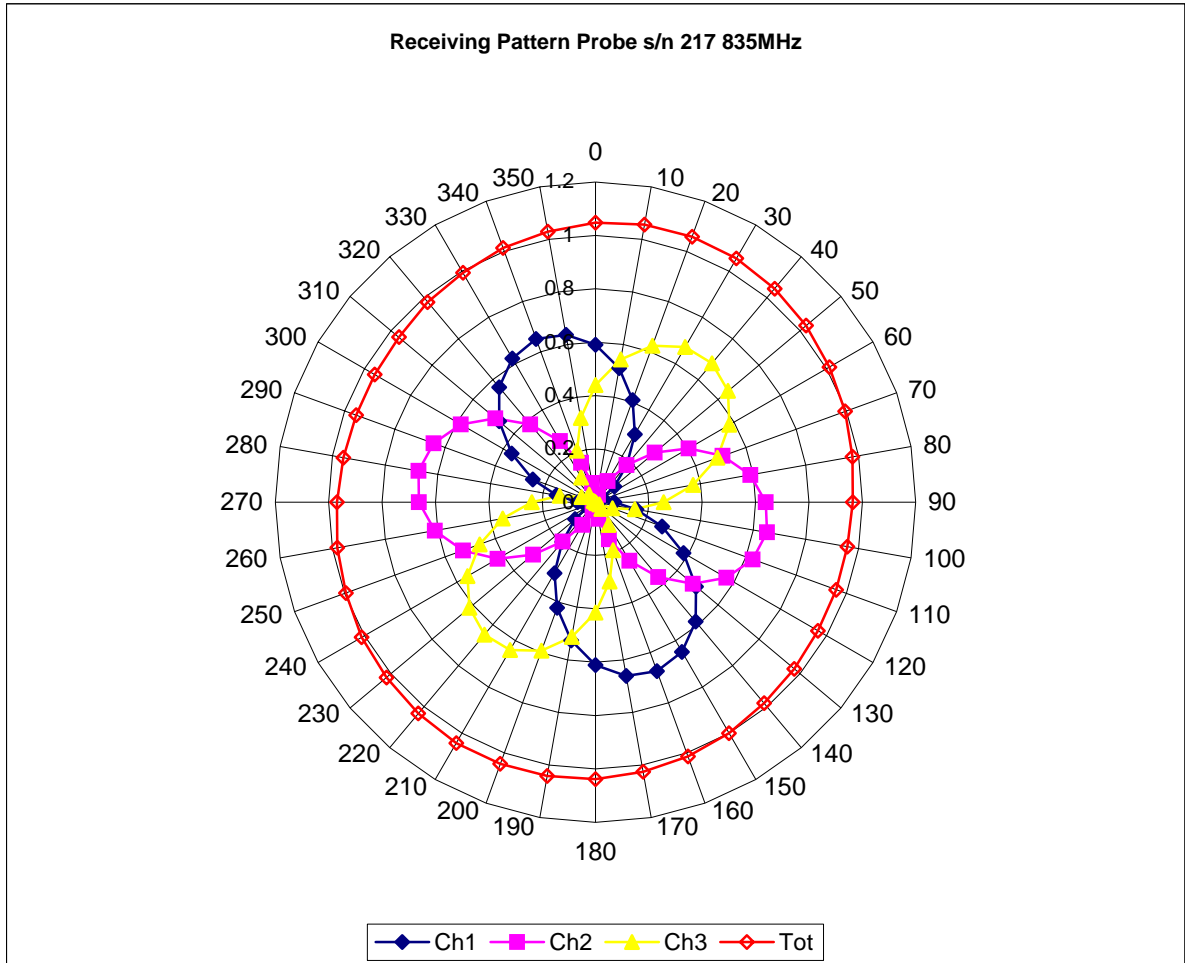
## **Boundary Effect:**

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.

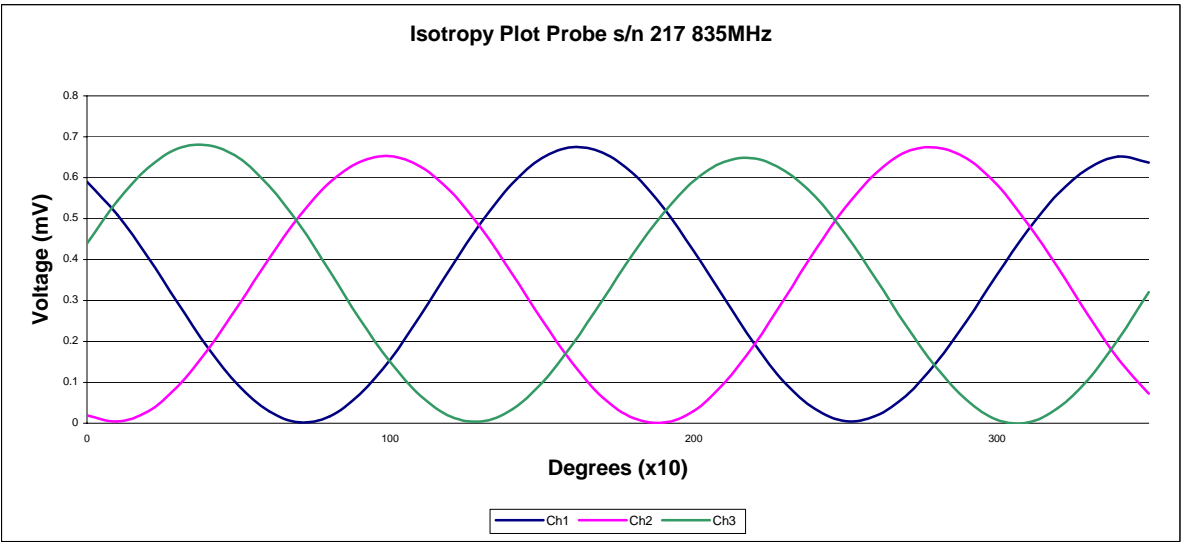
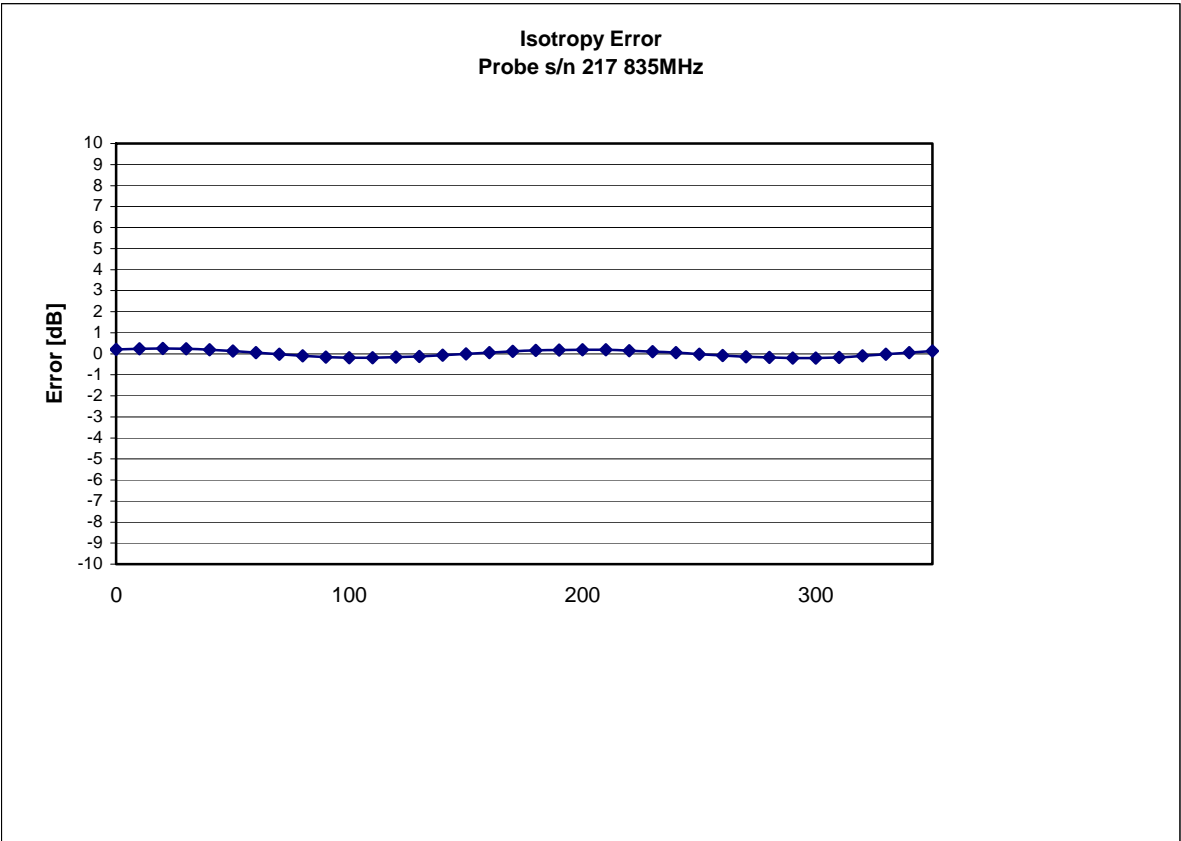
## **Spatial Resolution:**

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)



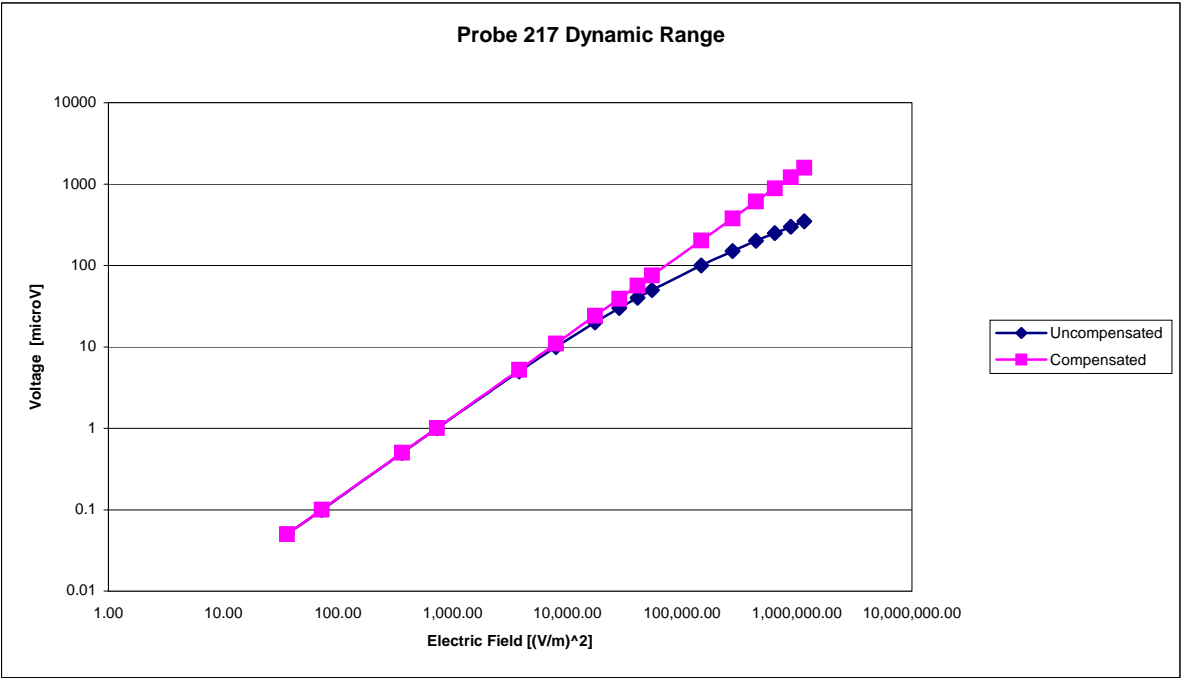
Isotropy Error 835 MHz (Air)



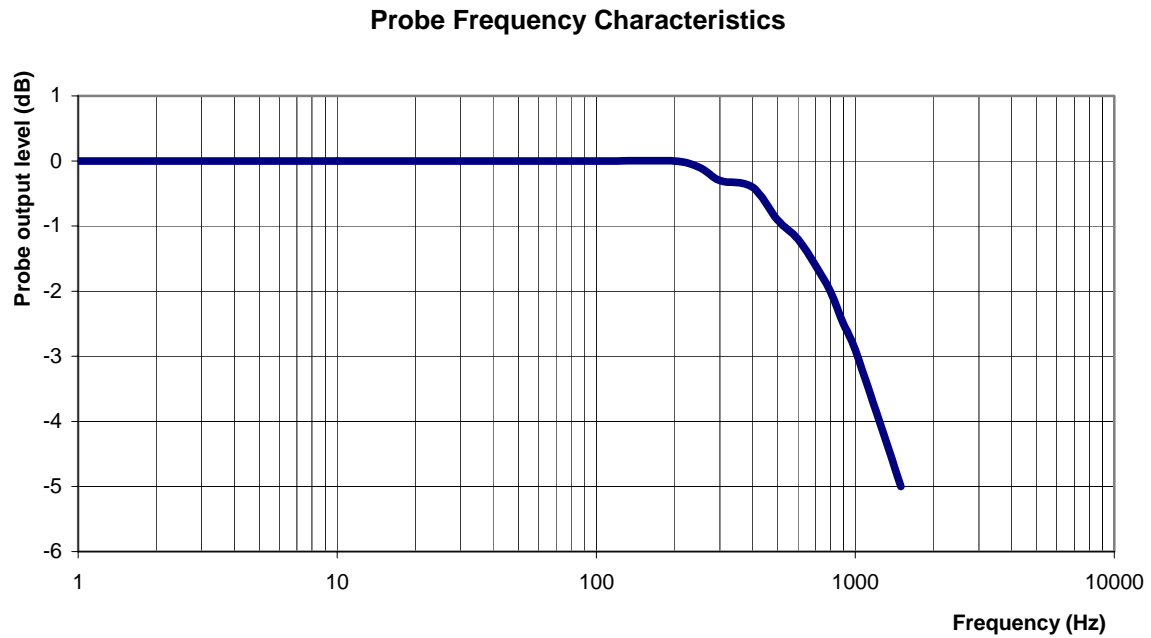
Isotropy Tissue:

0.10 dB

Dynamic Range



## Video Bandwidth



<b>Video Bandwidth at 500 Hz</b>	<b>1 dB</b>
<b>Video Bandwidth at 1.02 KHz:</b>	<b>3 dB</b>



## **Conversion Factor Uncertainty Assessment Measured**

### **Sensitivity in Body Tissue**

**Frequency:** 835 MHz

**Epsilon:** 54.9 (+/-5%) **Sigma:** 1.04 S/m (+/-5%)

#### **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 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 2009.

# NCL CALIBRATION LABORATORIES

Calibration File No.: CP-1084

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.: 217

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

Project No: RFEL-E020-CAL-5477

Calibrated: 21<sup>st</sup> October 2009

Released on: 28<sup>th</sup> October 2009

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-020 217.

## 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

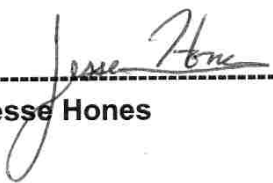
## Conditions

Probe 217 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>	217
<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:** 54.6 (+/-5%)      **Sigma:** 1.55 S/m (+/-5%)

### **ConvF**

**Channel X:** 4.85

**Channel Y:** 4.85

**Channel Z:** 4.85

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

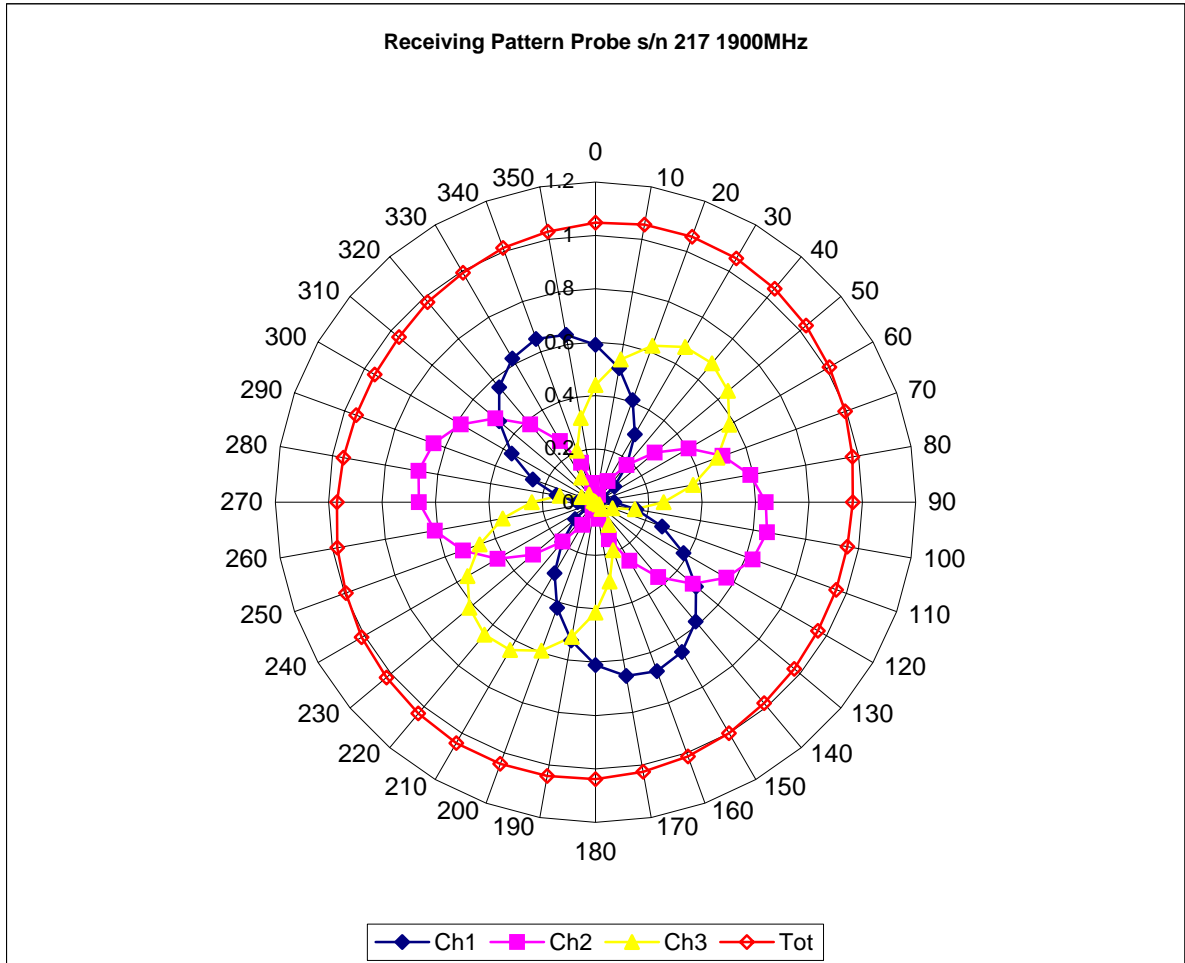
## **Boundary Effect:**

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.

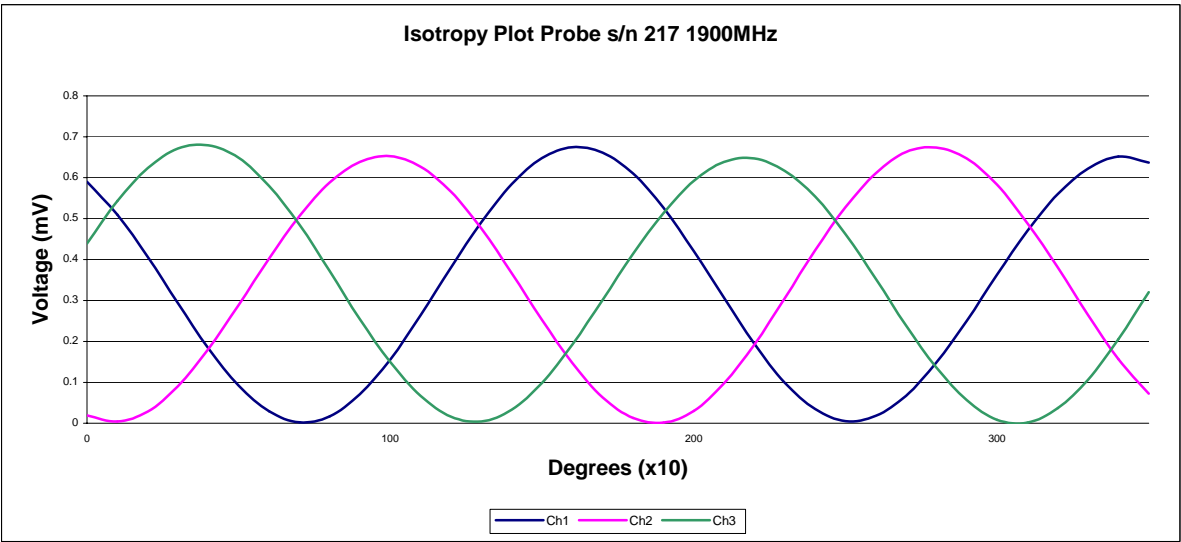
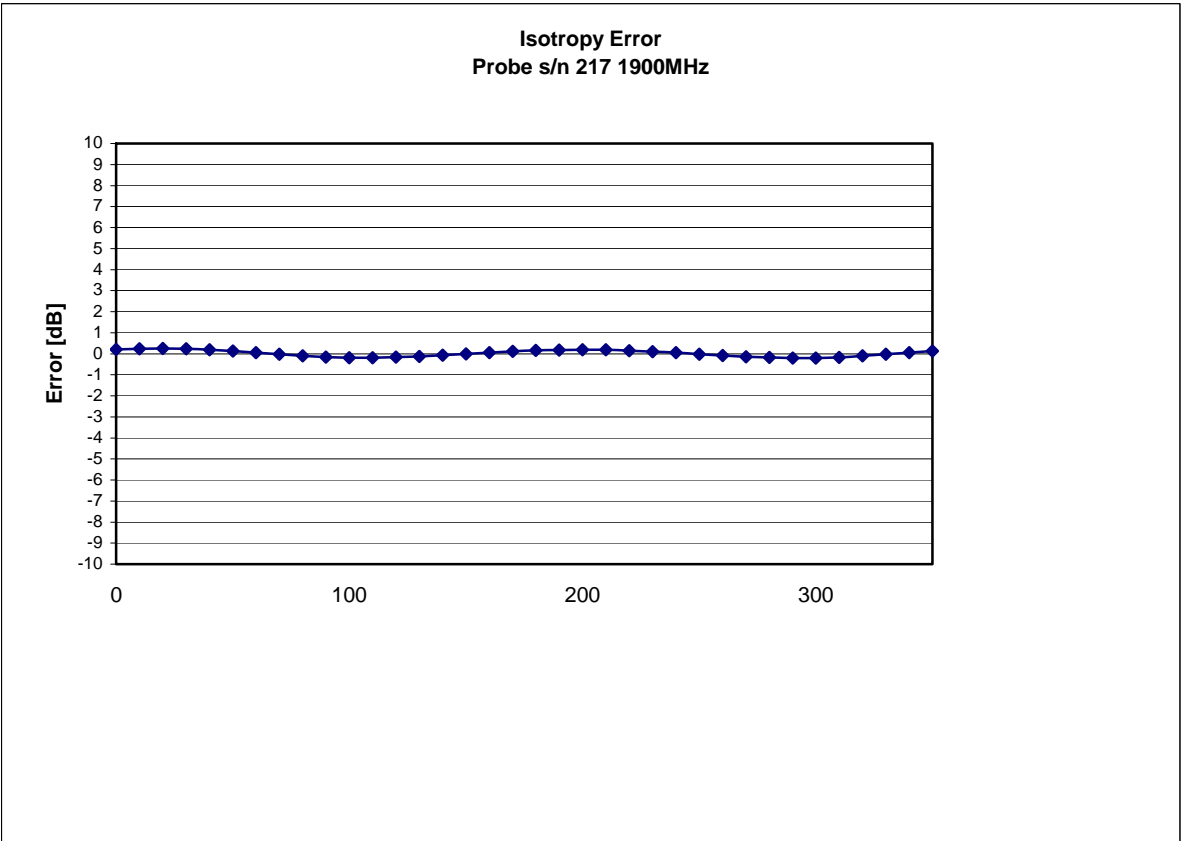
## **Spatial Resolution:**

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)

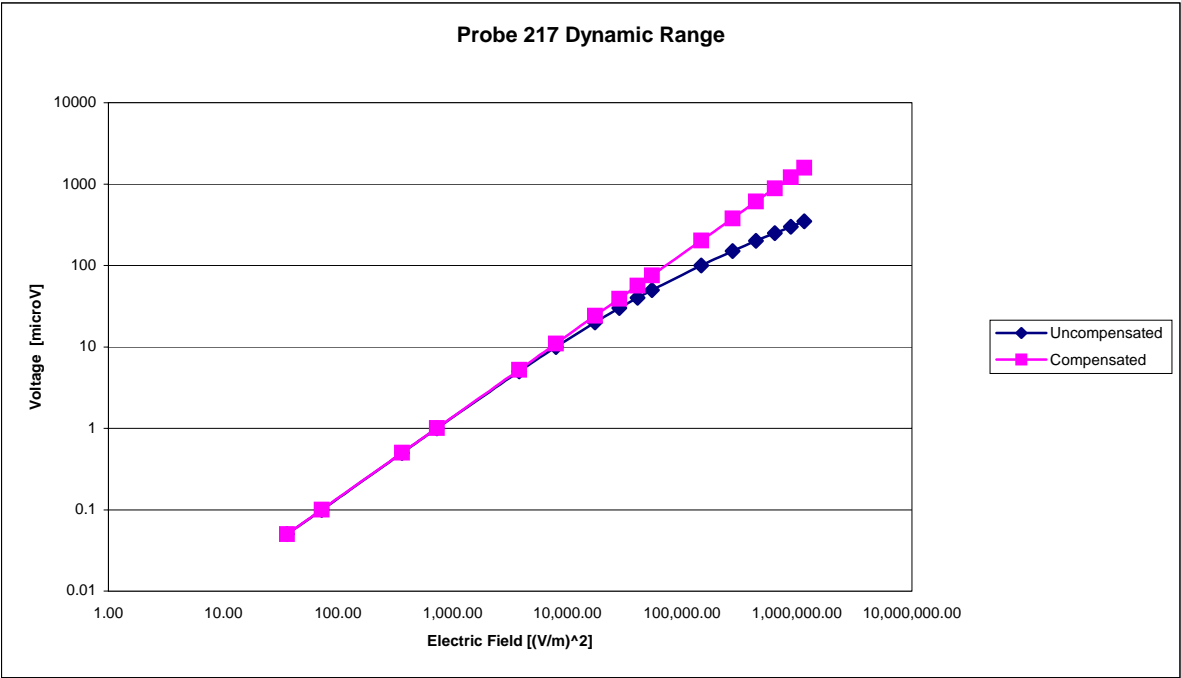


Isotropy Tissue:

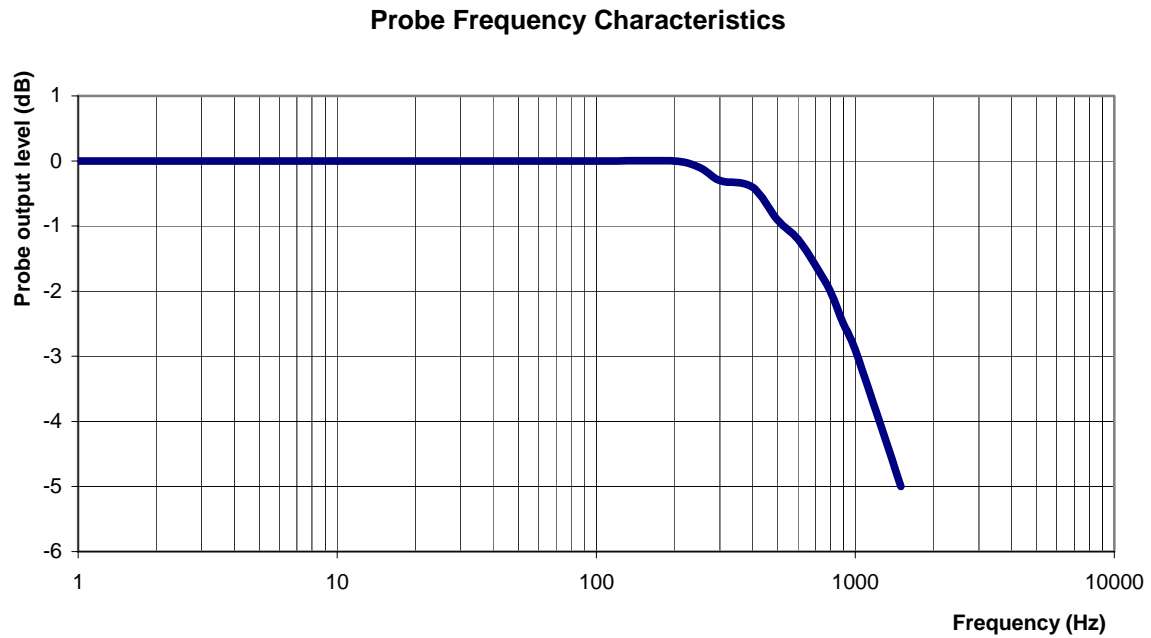
0.10 dB



Dynamic Range



## Video Bandwidth



<b>Video Bandwidth at 500 Hz</b>	<b>1 dB</b>
<b>Video Bandwidth at 1.02 KHz:</b>	<b>3 dB</b>

## **Conversion Factor Uncertainty Assessment Measured**

### **Sensitivity in Body Tissue**

**Frequency:** 1900 MHz

**Epsilon:** 54.6 (+/-5%)

**Sigma:** 1.55 S/m (+/-5%)

#### **ConvF**

**Channel X:** 4.85 7%(K=2)

**Channel Y:** 4.85 7%(K=2)

**Channel Z:** 4.85 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 2009.

# NCL CALIBRATION LABORATORIES

Calibration File No.: CP-1086

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.: 217

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

Project No: RFEL-E020-CAL-5477

Calibrated: 21<sup>st</sup> October 2009

Released on: 28<sup>th</sup> October 2009

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-020 217.

## 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

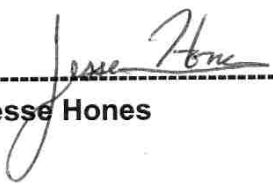
## Conditions

Probe 217 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>	217
<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:** 53.4 (+/-5%)      **Sigma:** 1.95 S/m (+/-5%)

### **ConvF**

**Channel X:** 3.61

**Channel Y:** 3.61

**Channel Z:** 3.61

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

## **Boundary Effect:**

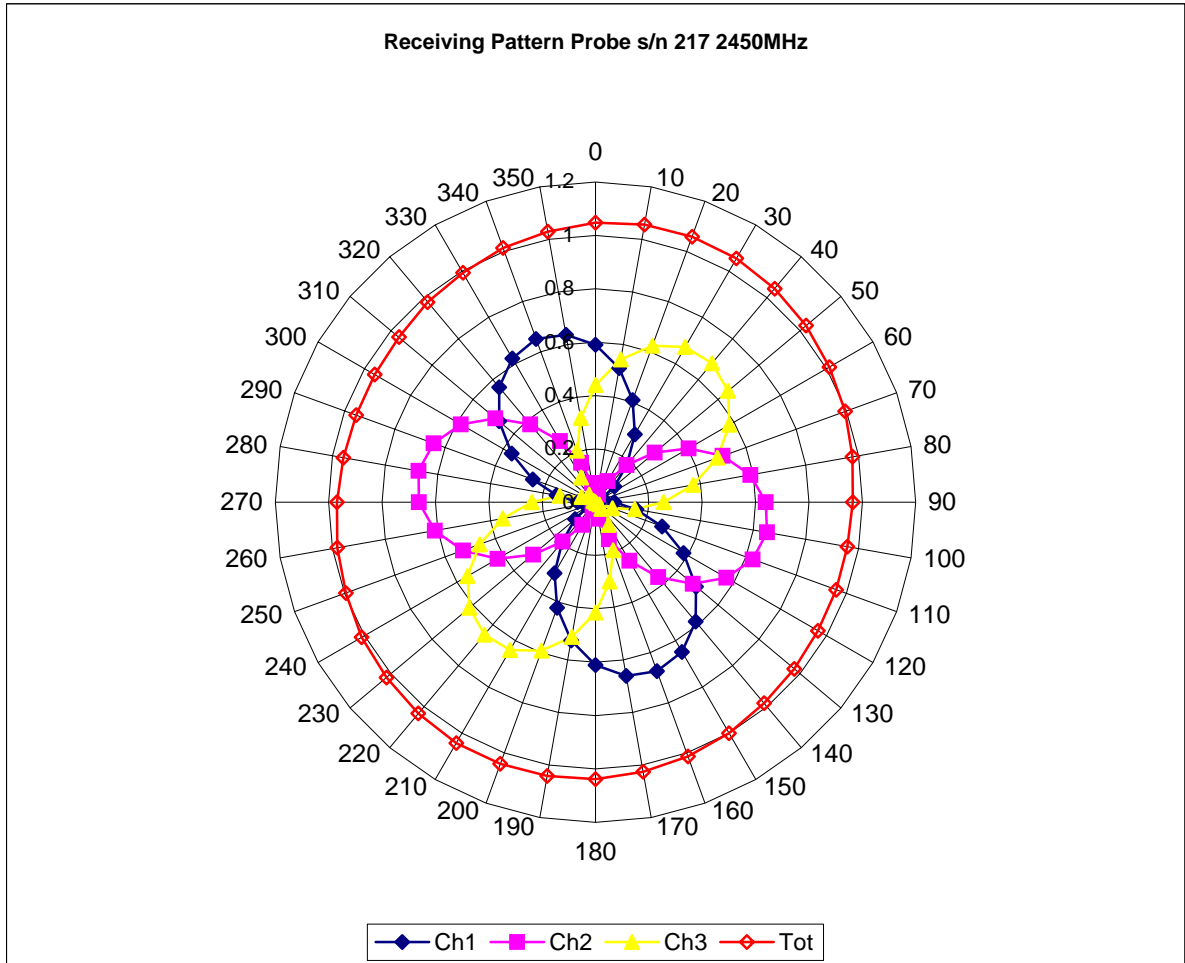
Uncertainty resulting from the boundary effect is less than 2% for the distance between the tip of the probe and the tissue boundary, when less than 2.44mm.

## **Spatial Resolution:**

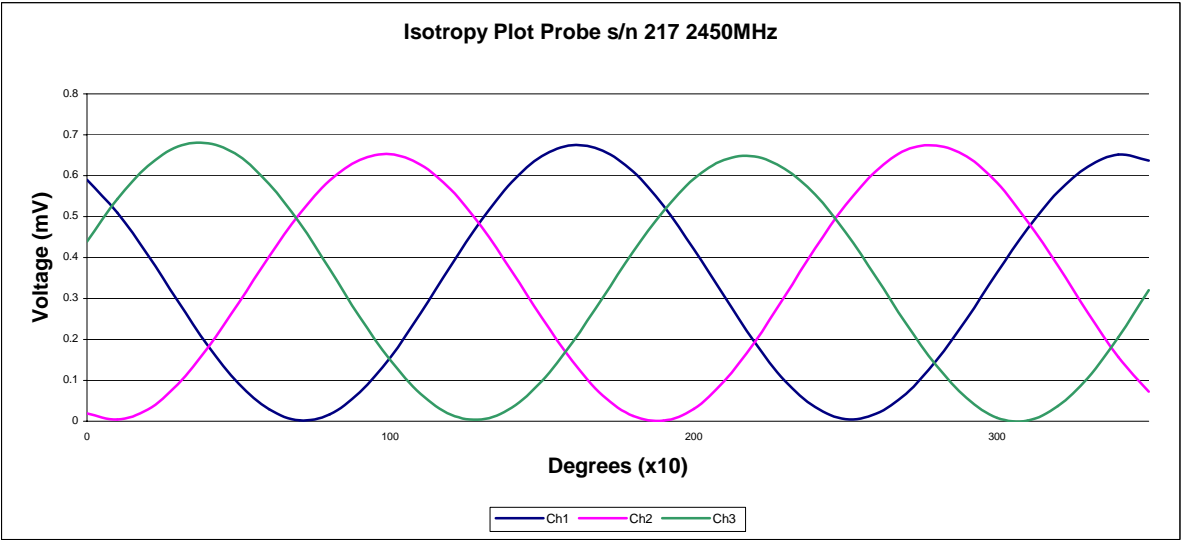
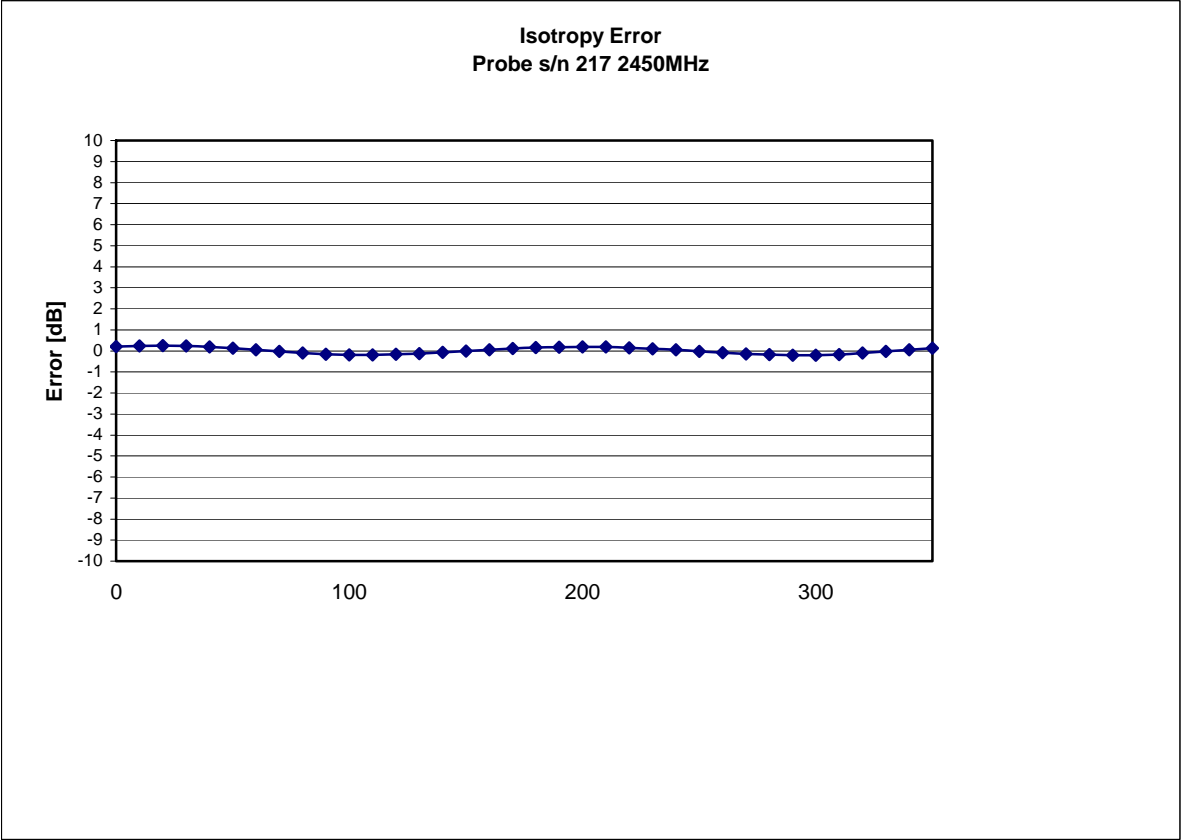
The measured probe tip diameter is 5 mm (+/- 0.01 mm) and therefore meets the requirements of SSI/DRB-TP-D01-032 for spatial resolution.



## Receiving Pattern 2450 MHz (Air)



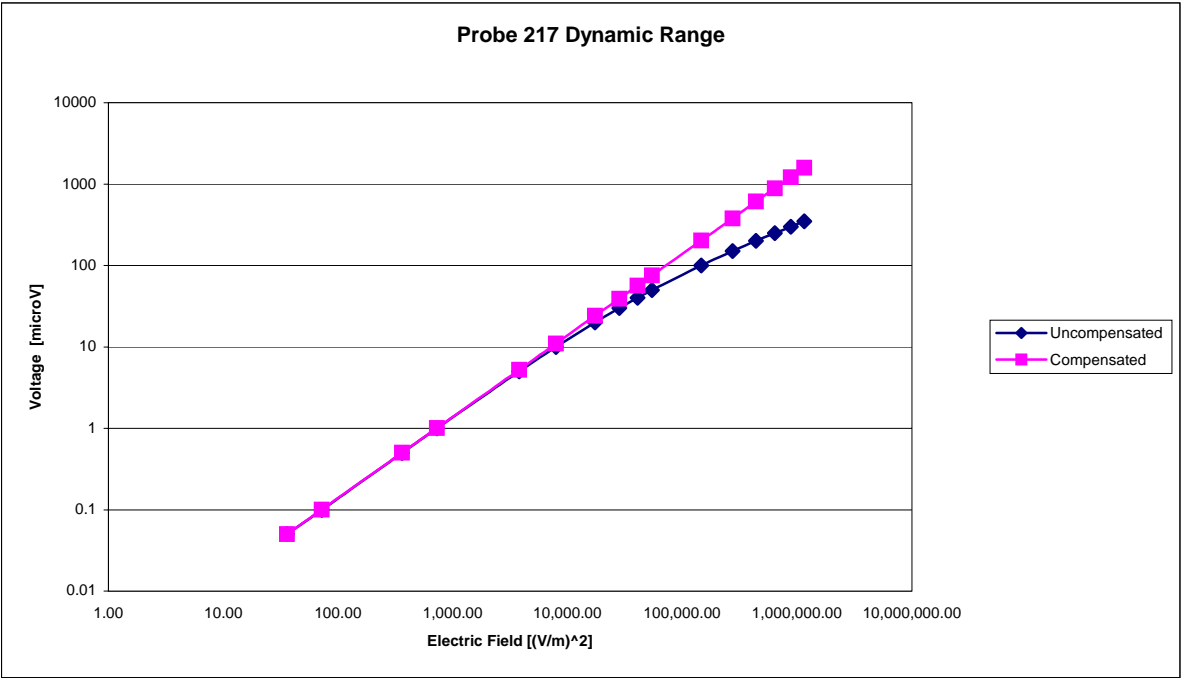
Isotropy Error 2450 MHz (Air)



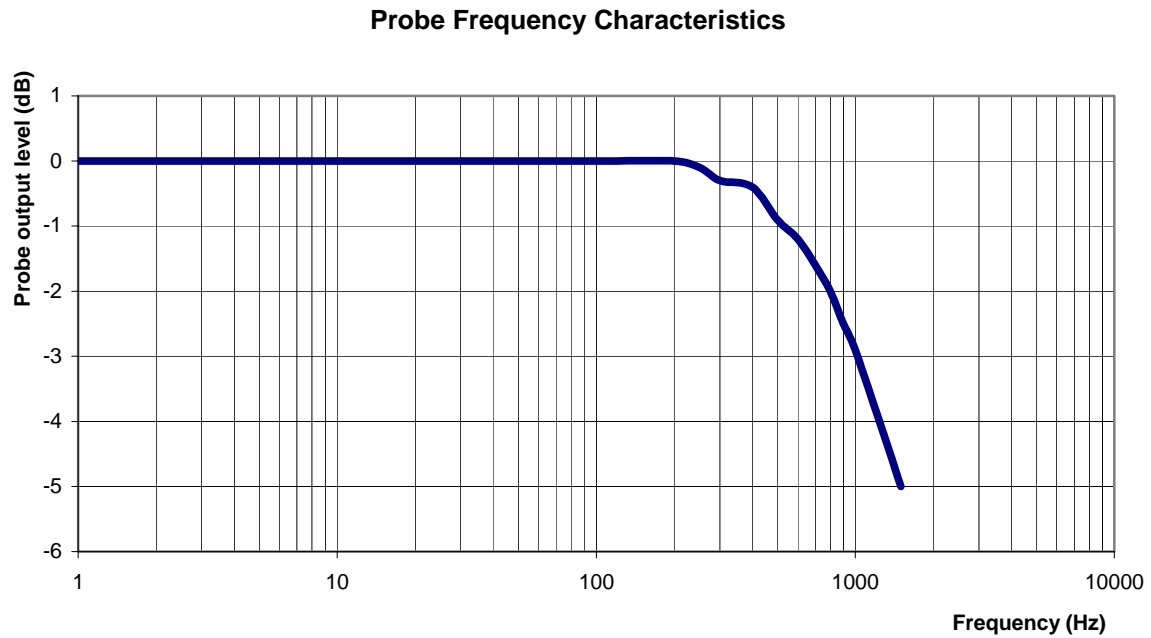
Isotropy Tissue:

0.10 dB

Dynamic Range



## Video Bandwidth



<b>Video Bandwidth at 500 Hz</b>	<b>1 dB</b>
<b>Video Bandwidth at 1.02 KHz:</b>	<b>3 dB</b>

## **Conversion Factor Uncertainty Assessment**

### **Sensitivity in Body Tissue**

**Frequency:** 2450 MHz

**Epsilon:** 53.4 (+/-5%) **Sigma:** 1.95 S/m (+/-5%)

#### **ConvF**

**Channel X:** 3.61 7%(K=2)

**Channel Y:** 3.61 7%(K=2)

**Channel Z:** 3.61 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 2009.

# NCL CALIBRATION LABORATORIES

Calibration File No.: CP-1004

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

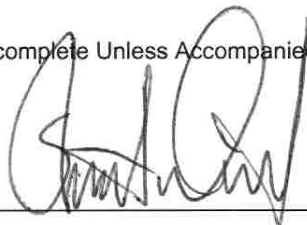
Project No: RFEB-ALSE030-cal-5453

Calibrated: 9<sup>th</sup> July 2009  
Released on: 16<sup>th</sup> July 2009

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 is 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-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:** 47.96

**Sigma:** 5.15 S/m

### **ConvF:**

**Channel X:** 4.4

**Channel Y:** 4.4

**Channel Z:** 4.4

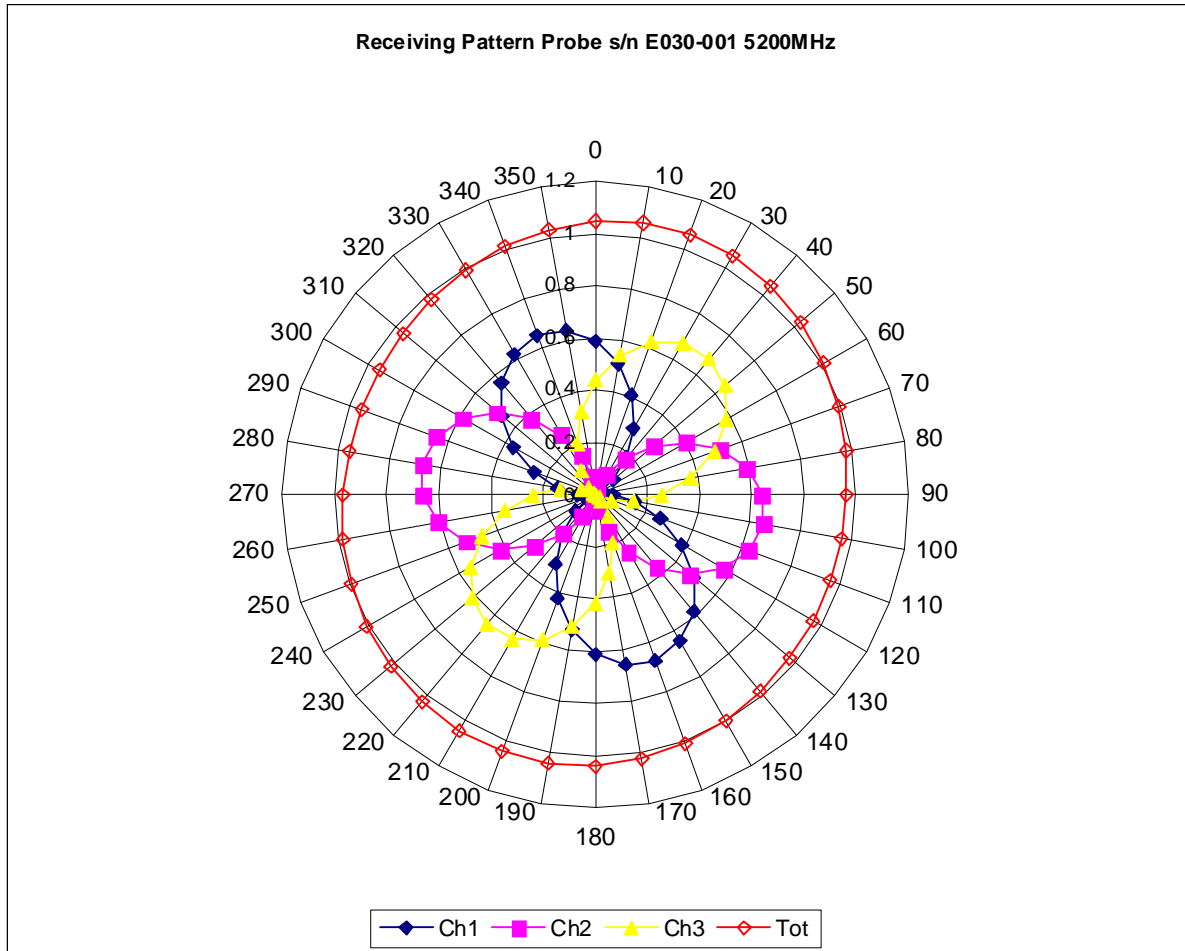
### **Boundary Effect:**

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.

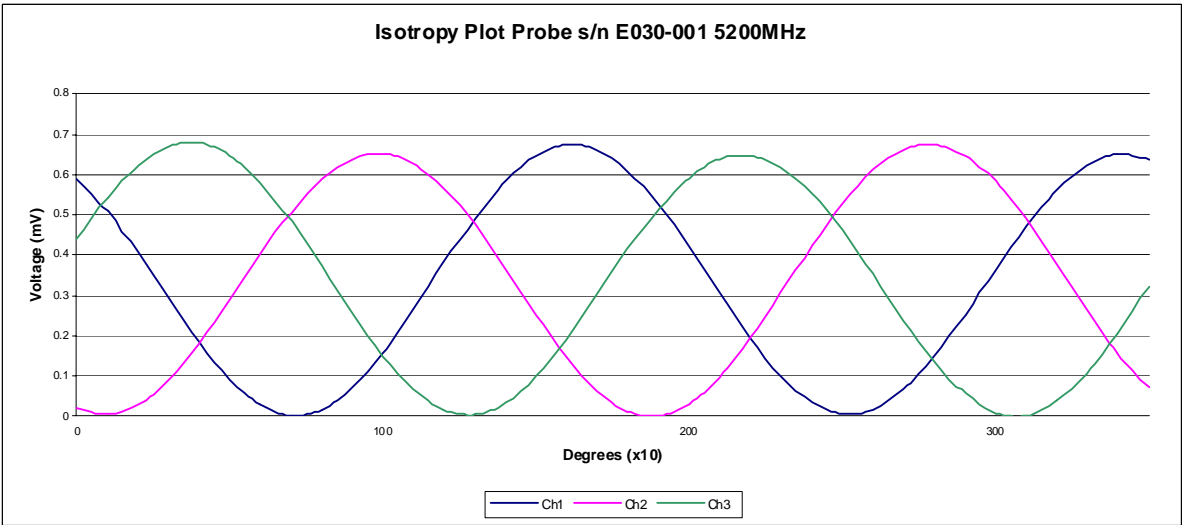
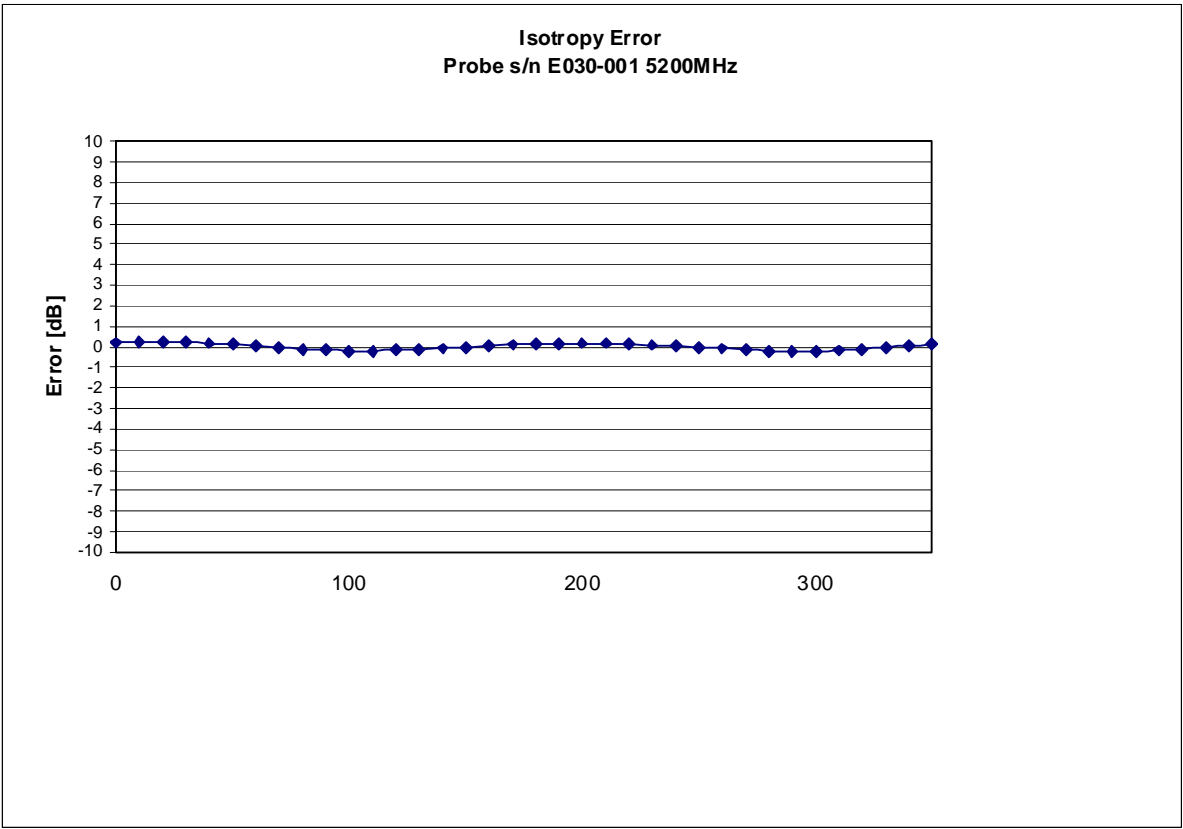
### **Spatial Resolution:**

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)



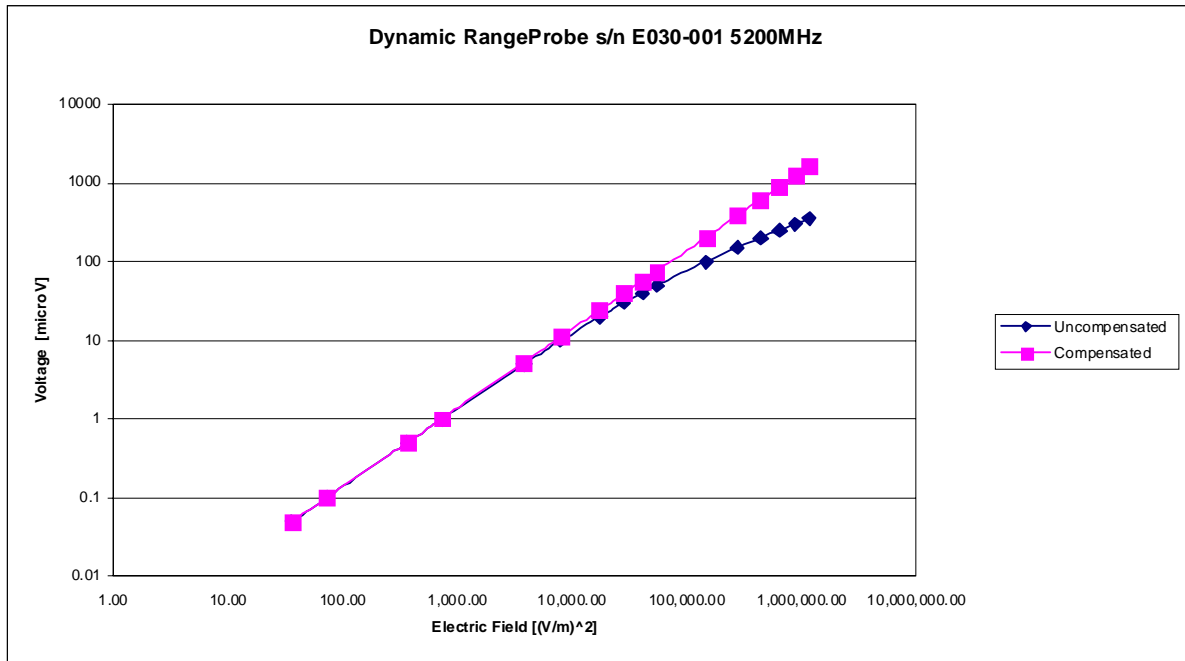
Isotropy Error 5200 MHz (Air)



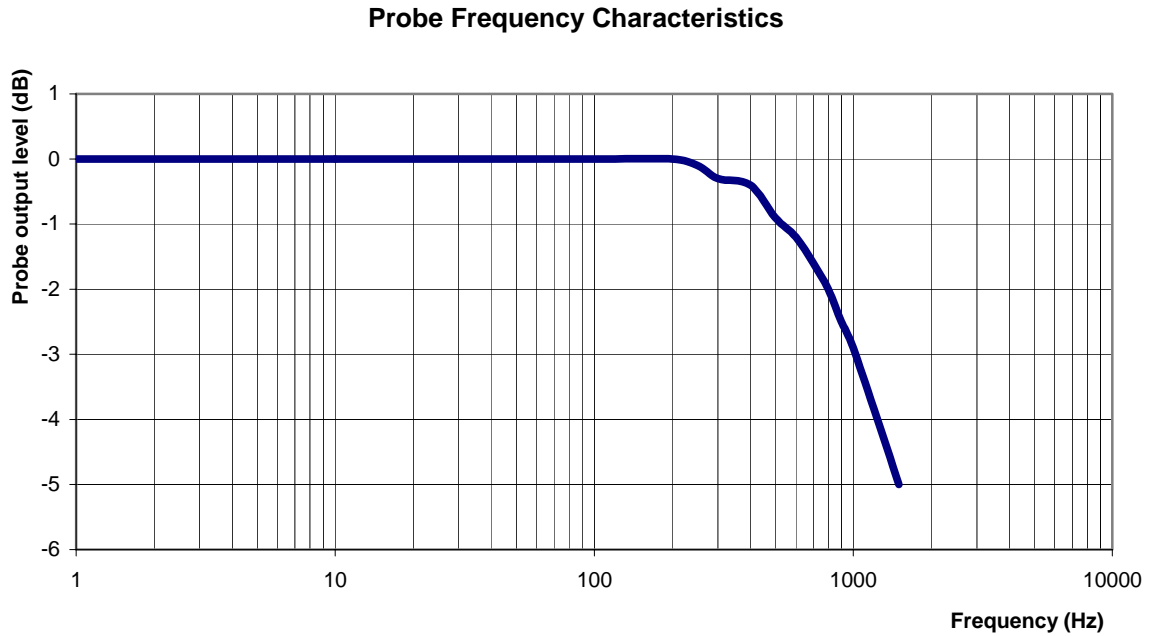
Isotropy Tissue:

0.10 dB

## Dynamic Range



## Video Bandwidth



<b>Video Bandwidth at 500 Hz</b>	<b>1 dB</b>
<b>Video Bandwidth at 1.02 KHz:</b>	<b>3 dB</b>

## **Conversion Factor Uncertainty Assessment**

### **Sensitivity in Body Tissue Measured**

**Frequency:** 5200 MHz

**Epsilon:** 47.96

**Sigma:** 5.15 S/m

#### **ConvF**

**Channel X:** 4.4 7%(K=2)

**Channel Y:** 4.4 7%(K=2)

**Channel Z:** 4.4 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 2009.



# NCL CALIBRATION LABORATORIES

Calibration File No.: CP-1006

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: RFEB-ALSE030-cal-5453

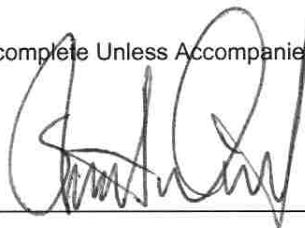
Calibrated: 14<sup>th</sup> July 2009

Released on: 16<sup>th</sup> July 2009

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**  
-----  
**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:** 46.76                      **Sigma:** 5.84 S/m

### **ConvF:**

**Channel X:** 4.0

**Channel Y:** 4.0

**Channel Z:** 4.0

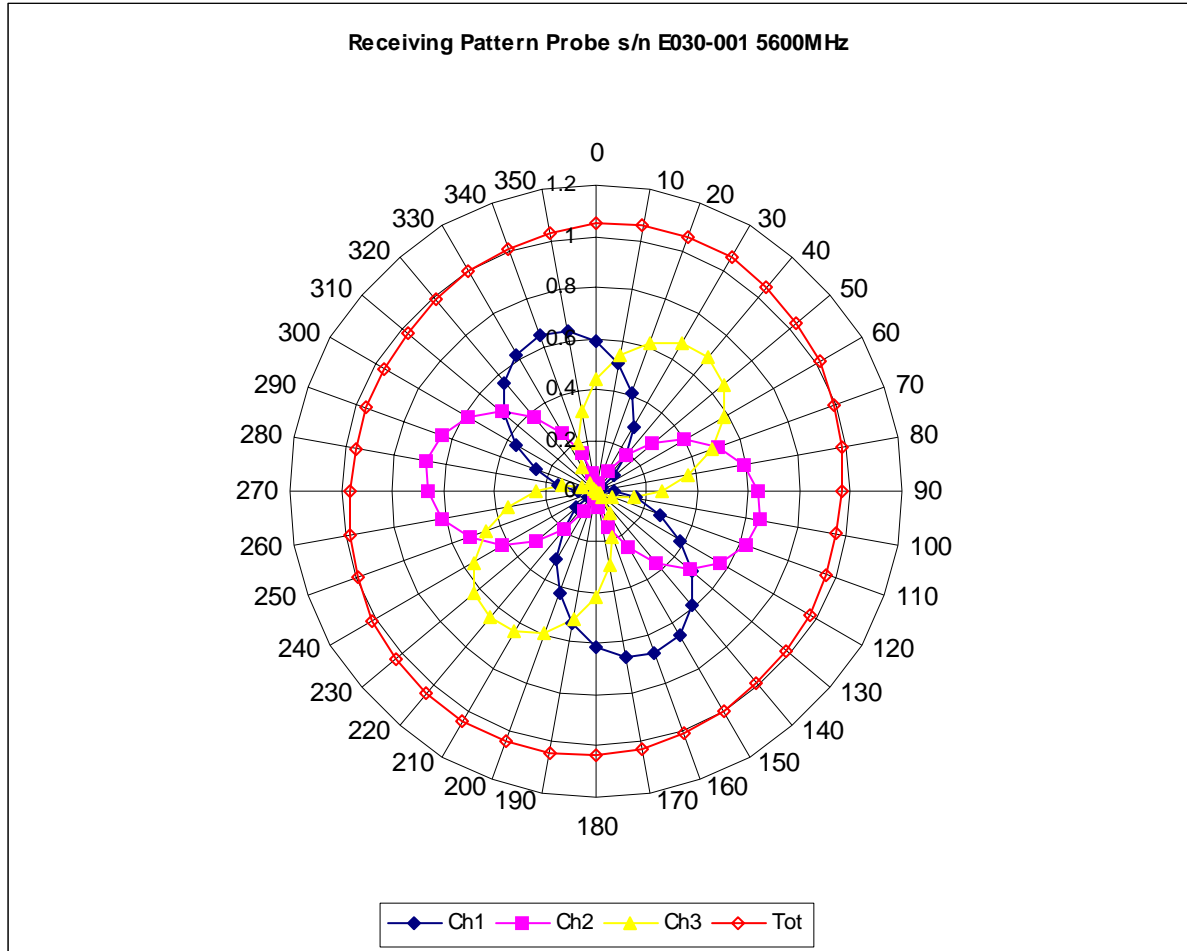
### **Boundary Effect:**

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.

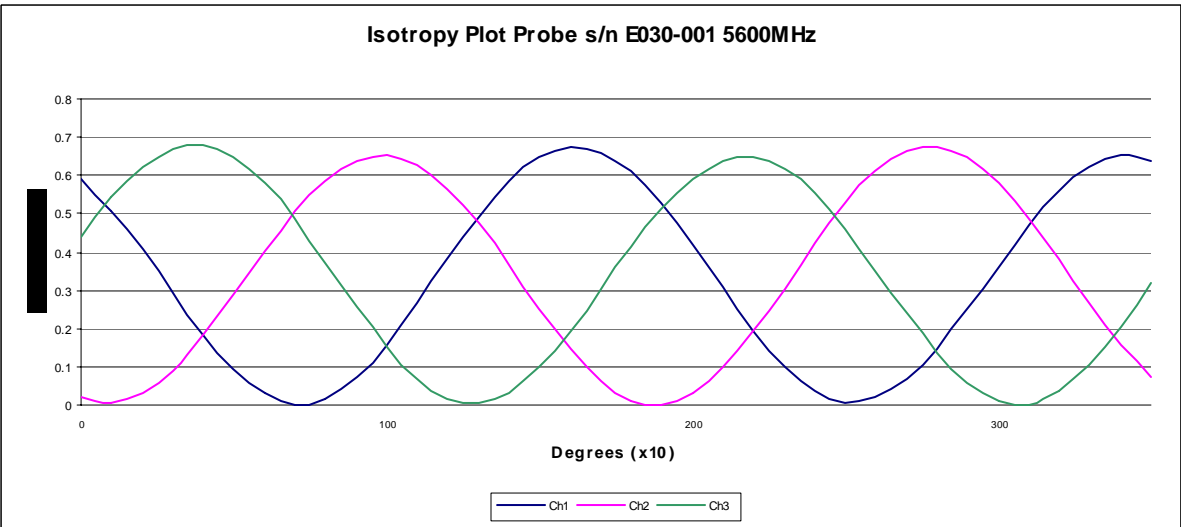
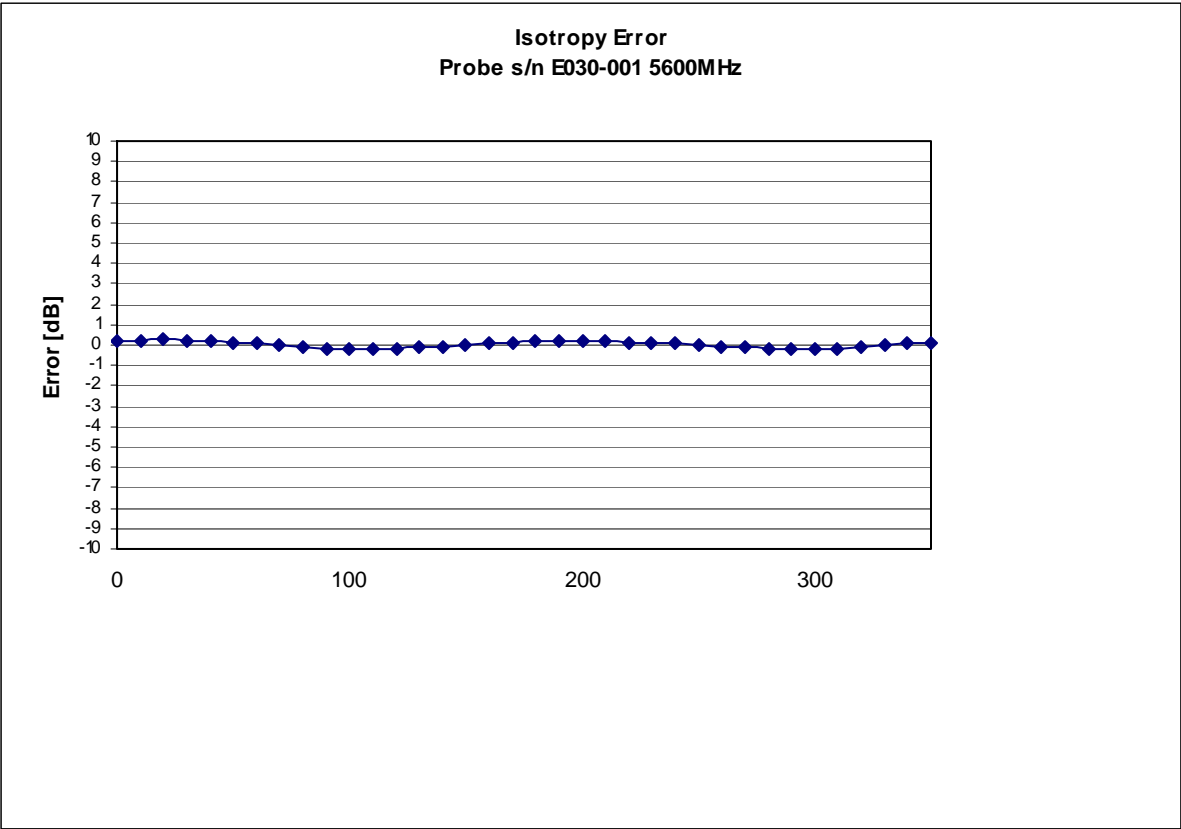
### **Spatial Resolution:**

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)



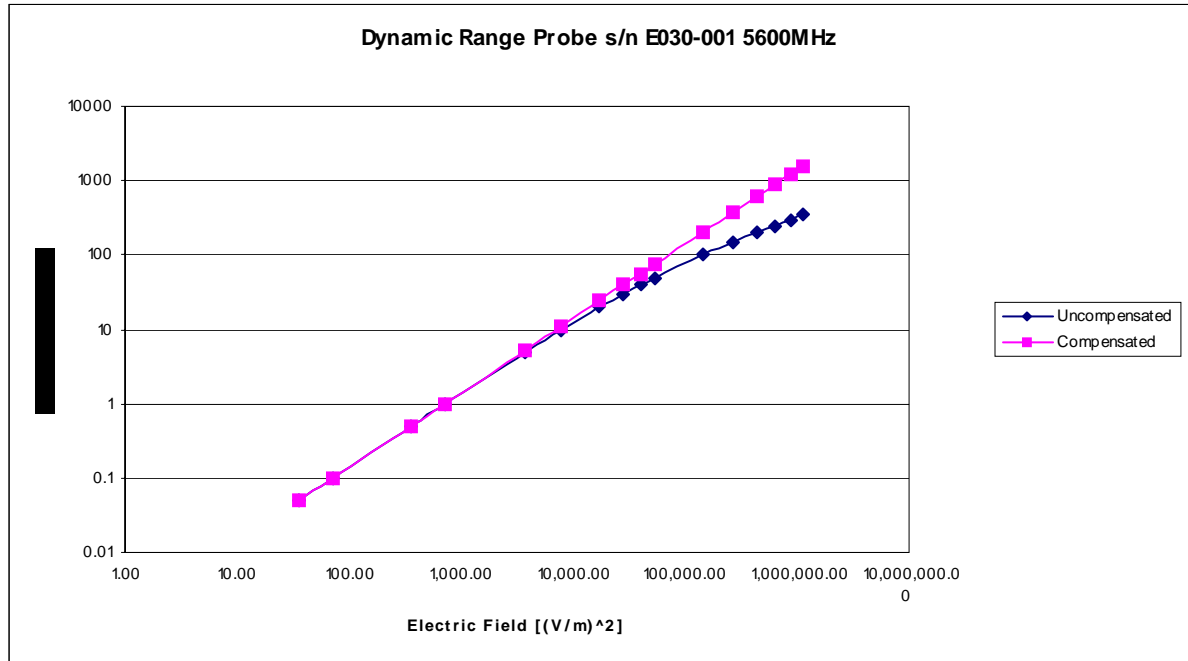
Isotropy Error 5600 MHz (Air)



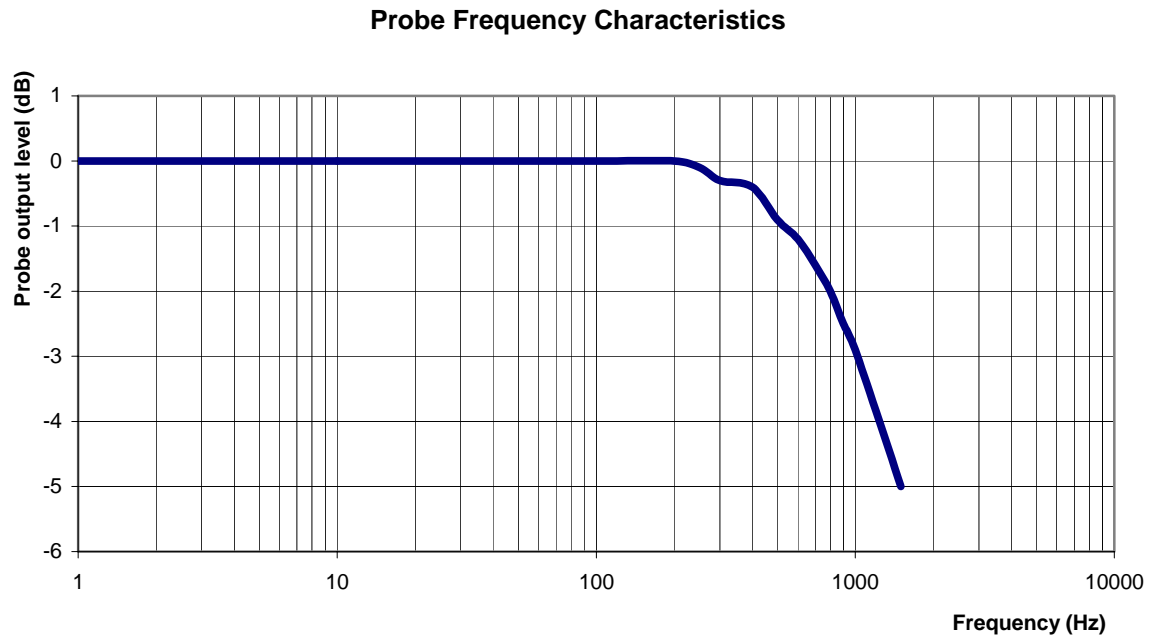
Isotropy Tissue:

0.10 dB

## Dynamic Range



## Video Bandwidth



<b>Video Bandwidth at 500 Hz</b>	<b>1 dB</b>
<b>Video Bandwidth at 1.02 KHz:</b>	<b>3 dB</b>



## **Conversion Factor Uncertainty Assessment**

### **Sensitivity in Body Tissue Measured**

**Frequency:** 5600 MHz

**Epsilon:** 46.76

**Sigma:** 5.84 S/m

#### **ConvF**

**Channel X:** 4.0 7%(K=2)

**Channel Y:** 4.0 7%(K=2)

**Channel Z:** 4.0 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 2009.

# NCL CALIBRATION LABORATORIES

Calibration File No.: CP-1008

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: RFEB-ALSE030-cal-5453

Calibrated: 15<sup>th</sup> July 2009

Released on: 16<sup>th</sup> April 2009

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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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>	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:** 46.28                      **Sigma:** 6.22 S/m

### **ConvF:**

**Channel X:** 4.2

**Channel Y:** 4.2

**Channel Z:** 4.2

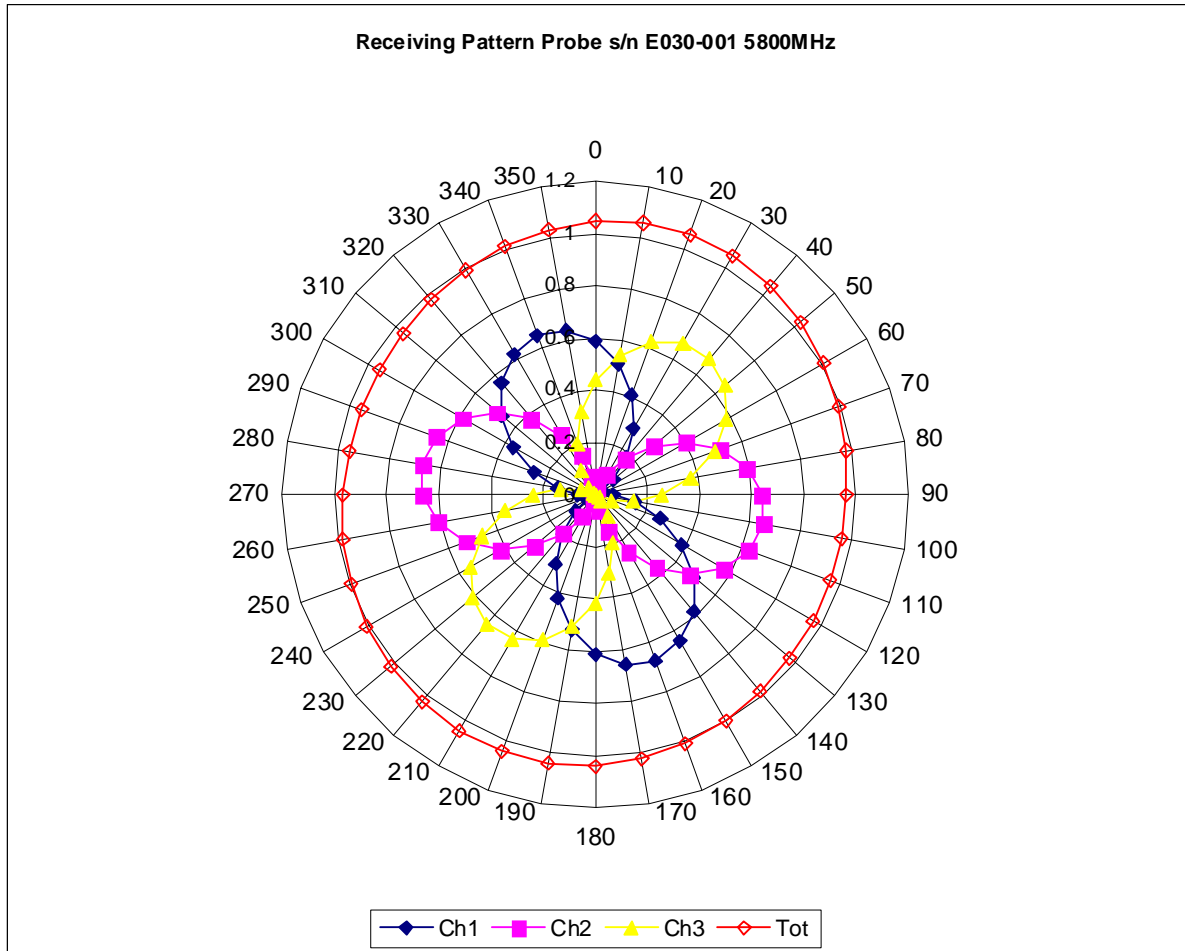
### **Boundary Effect:**

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.

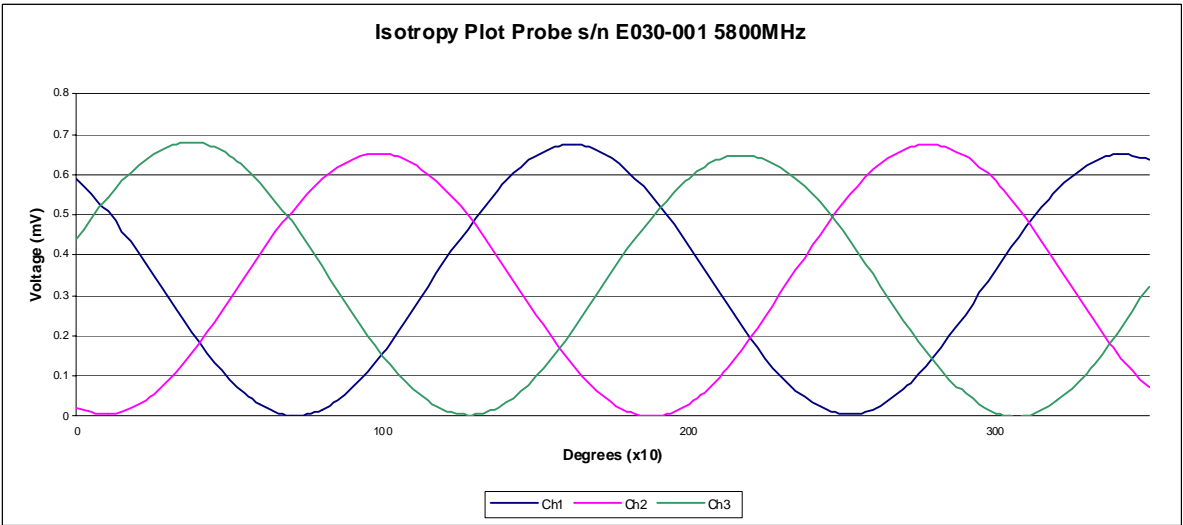
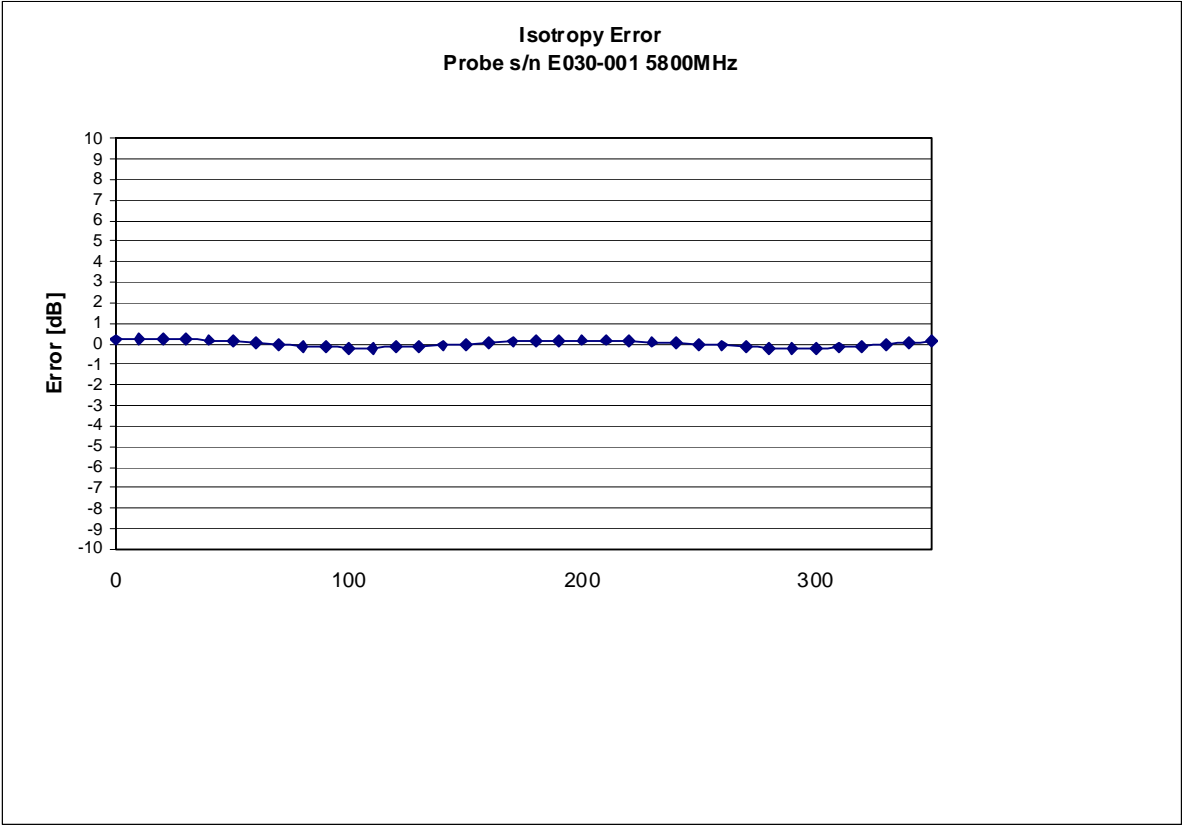
### **Spatial Resolution:**

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)

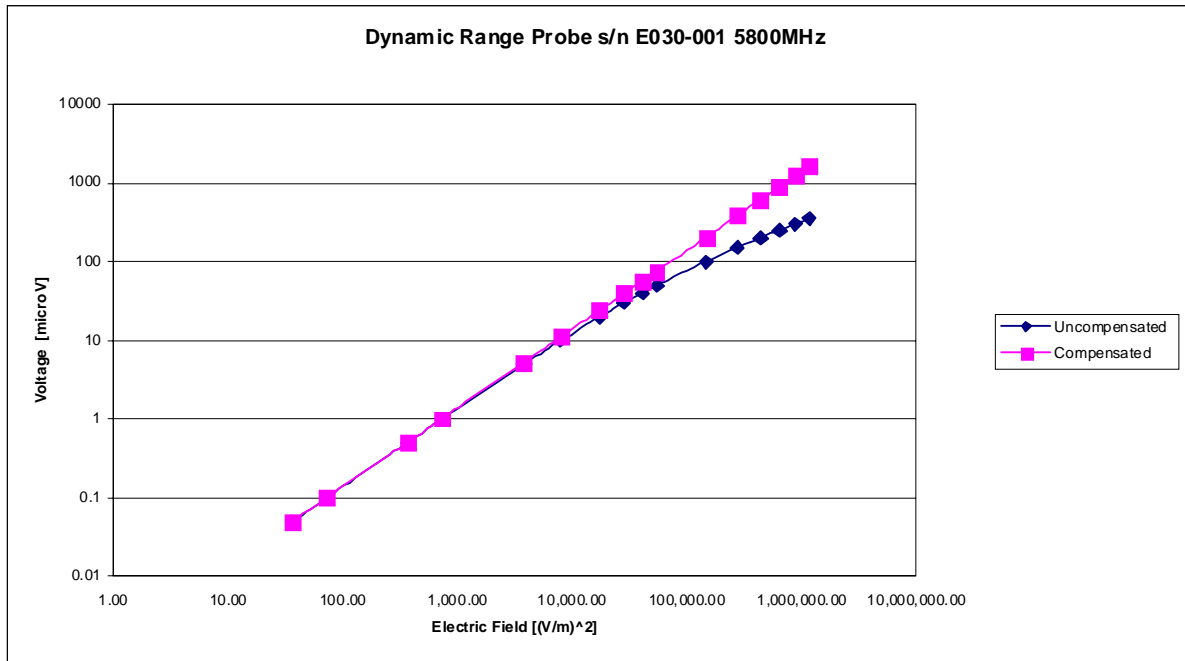


Isotropy Tissue:

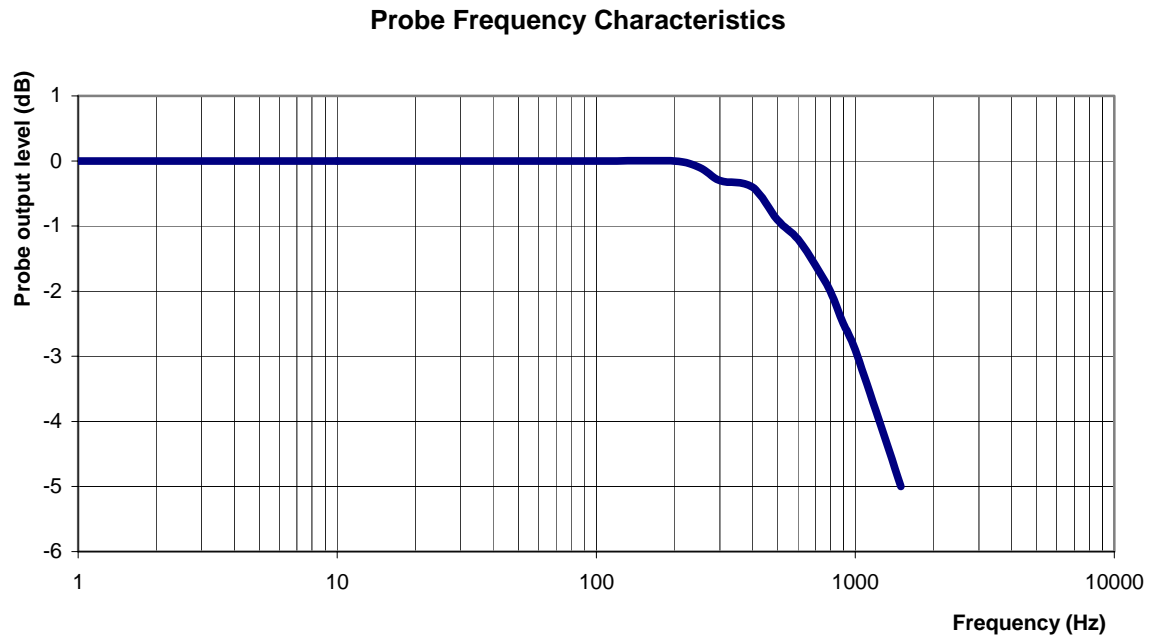
0.10 dB



## Dynamic Range



## Video Bandwidth



<b>Video Bandwidth at 500 Hz</b>	<b>1 dB</b>
<b>Video Bandwidth at 1.02 KHz:</b>	<b>3 dB</b>

## **Conversion Factor Uncertainty Assessment**

### **Sensitivity in Body Tissue Measured**

**Frequency:** 5800 MHz

**Epsilon:** 46.28

**Sigma:** 6.22 S/m

#### **ConvF**

**Channel X:** 4.2 7%(K=2)

**Channel Y:** 4.2 7%(K=2)

**Channel Z:** 4.2 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 2009.

## **Appendix E – Dipole Calibration Data Sheets**

# NCL CALIBRATION LABORATORIES

Calibration File No: DC-1114  
Project Number: RFEL-835-Dipole-5480

## 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.

Validation Dipole

Manufacturer: APREL Laboratories

Part number: ALS-D-835-S-2

Frequency: 835 MHz

Serial No: 180-00561

Customer: RFEL

Calibrated: 14<sup>th</sup> January 2010  
Released on: 19<sup>th</sup> January 2010

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) 820-4162

## Conditions

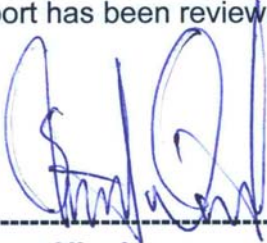
Dipole 180-00561 was a new calibration.

**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 device has been accurately conducted and that all information contained within this report has been reviewed for accuracy.**

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



-----  
**Stuart Nicol**



-----  
**C. Teodorian**

## Calibration Results Summary

The following results relate the Calibrated Dipole and should be used as a quick reference for the user.

### Mechanical Dimensions

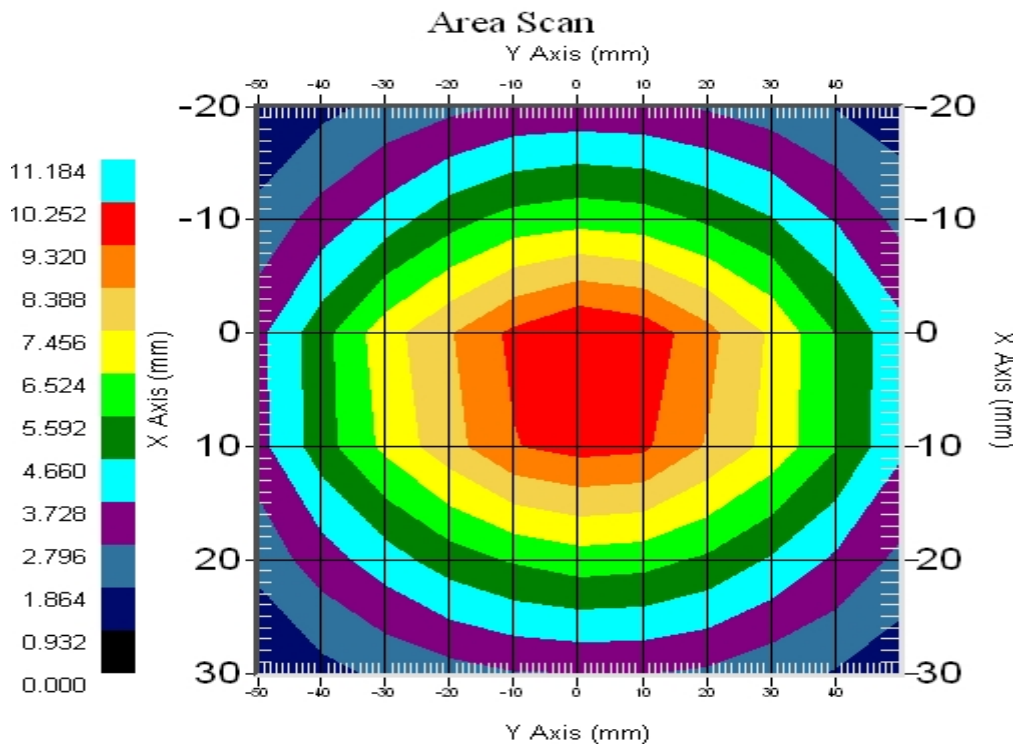
**Length:** 161.0 mm  
**Height:** 89.8 mm

### Electrical Specification

**SWR:** 1.009U  
**Return Loss:** -47.751 dB  
**Impedance:** 50.065  $\Omega$

### System Validation Results

Frequency	1 Gram	10 Gram	Peak
835 MHz	9.49	6.1	14.21





## **Introduction**

This Calibration Report has been produced in line with the SSI Dipole Calibration Procedure SSI-TP-018-ALSAS. The results contained within this report are for Validation Dipole 180-00561. The calibration routine consisted of a three-step process. Step 1 was a mechanical verification of the dipole to ensure that it meets the mechanical specifications. Step 2 was an Electrical Calibration for the Validation Dipole, where the SWR, Impedance, and the Return loss were assessed. Step 3 involved a System Validation using the ALSAS-10U, along with APREL E-020 130 MHz to 26 GHz E-Field Probe Serial Number 2225.

## **References**

SSI-TP-018-ALSAS Dipole Calibration Procedure

SSI-TP-016 Tissue 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"

## **Conditions**

Dipole 180-00561 was a new calibration.

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

**Temperature of the Tissue:** 20 °C +/- 0.5°C

## **Dipole Calibration Results**

### **Mechanical Verification**

<b>APREL Length</b>	<b>APREL Height</b>	<b>Measured Length</b>	<b>Measured Height</b>
161.0 mm	89.8 mm	162.1 mm	89.8 mm

### **Tissue Validation**

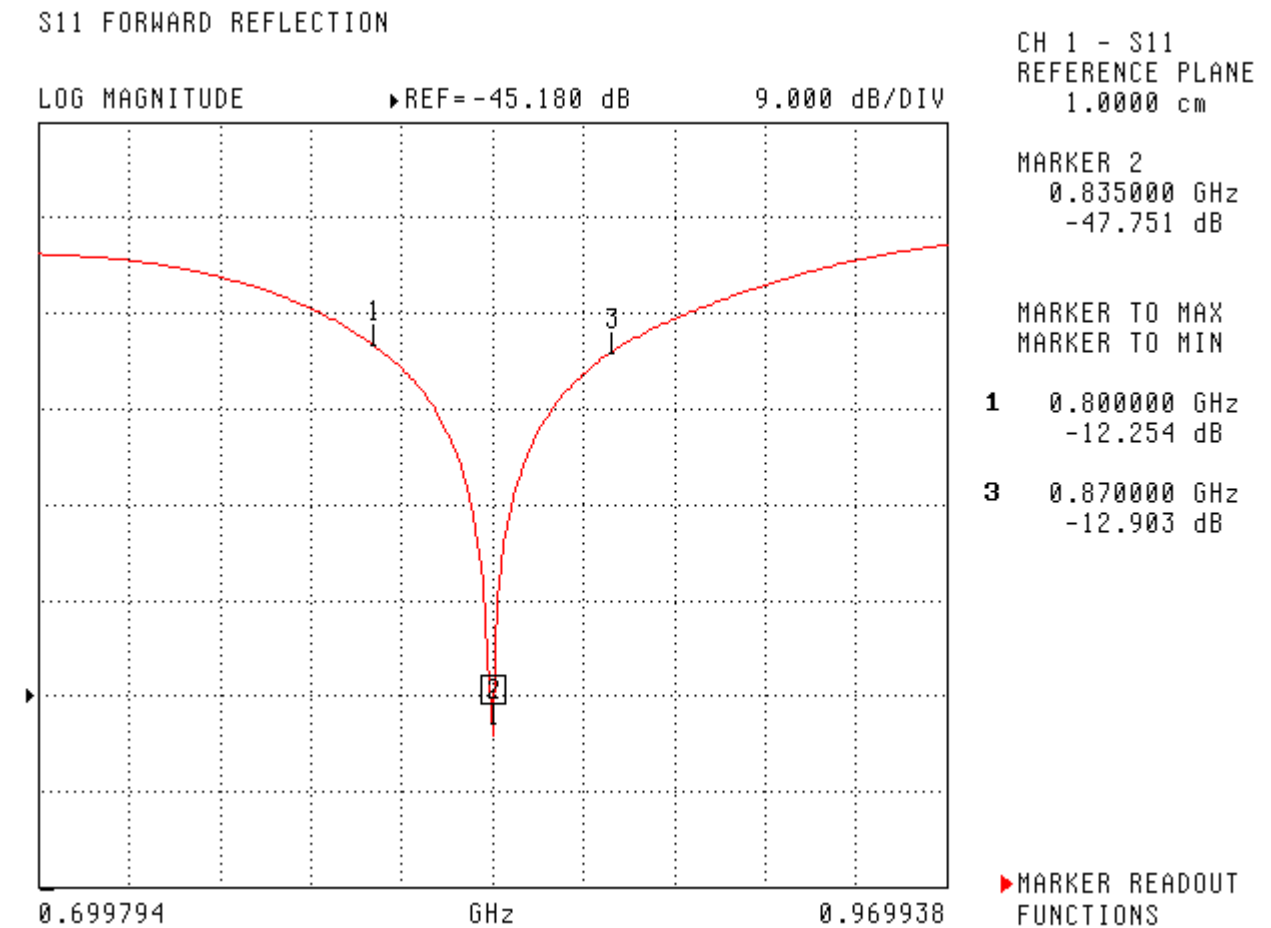
<b>Head Tissue 835MHz</b>	<b>Measured</b>
<b>Dielectric constant, <math>\epsilon_r</math></b>	41.54
<b>Conductivity, <math>\sigma</math> [S/m]</b>	0.91

## Electrical Calibration

Test	Result
S11 RL	-47.751dB
SWR	1.009U
Impedance	50.065 $\Omega$

The Following Graphs are the results as displayed on the Vector Network Analyzer.

### S11 Parameter Return Loss



## SWR

S11 FORWARD REFLECTION

SWR

► REF= 97.512 mU

900.000 mU/DIV

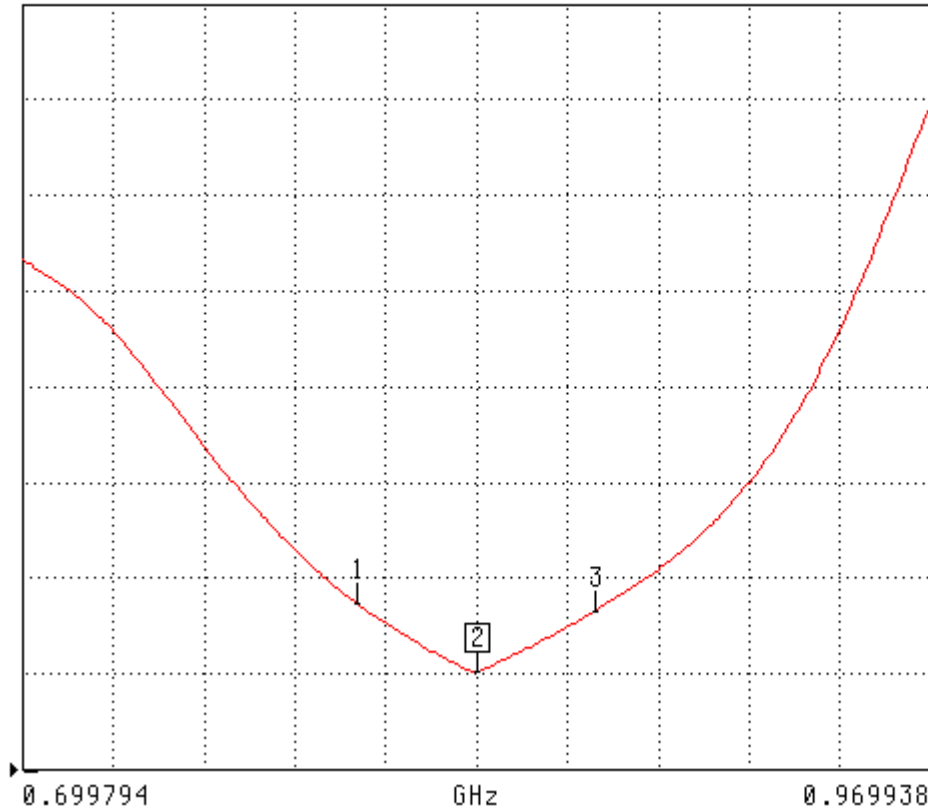
CH 1 - S11  
REFERENCE PLANE  
1.0000 cm

MARKER 2  
0.835000 GHz  
1.009 U

MARKER TO MAX  
MARKER TO MIN

**1** 0.800000 GHz  
1.645 U

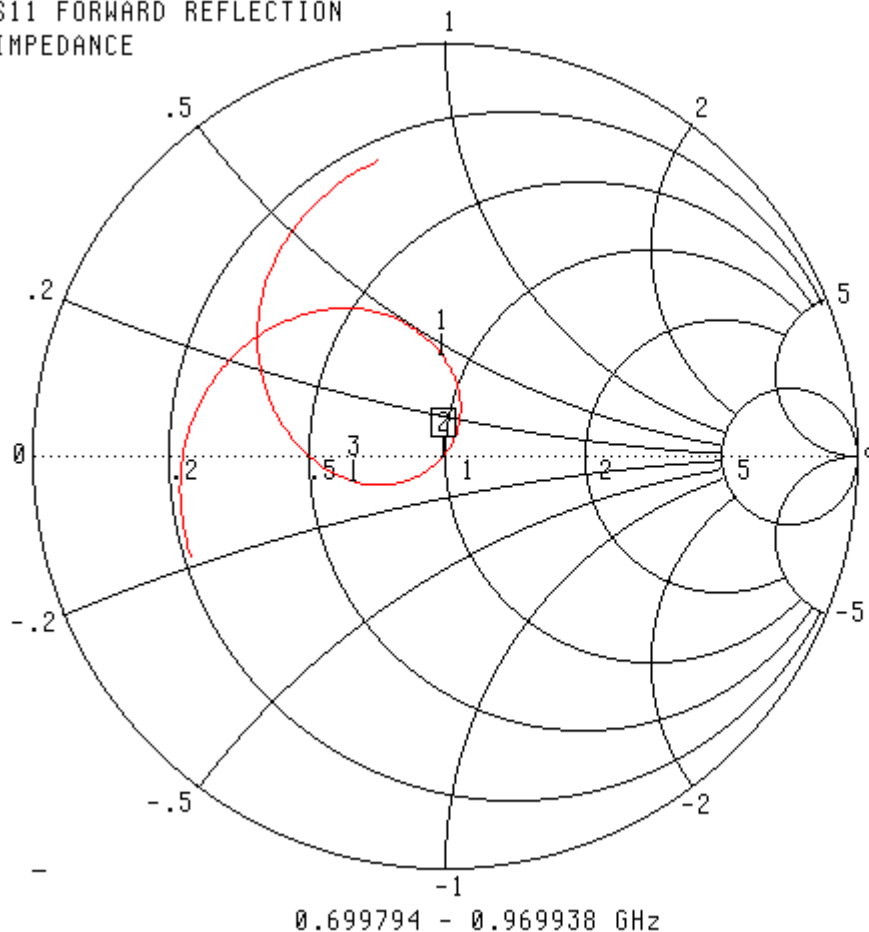
**3** 0.870000 GHz  
1.585 U



► MARKER READOUT  
FUNCTIONS

## Smith Chart Dipole Impedance

S11 FORWARD REFLECTION  
IMPEDANCE



CH 1 - S11  
REFERENCE PLANE  
1.0000 cm

MARKER 2  
0.835000 GHz  
50.065  $\Omega$   
-410.940  $j\Omega$

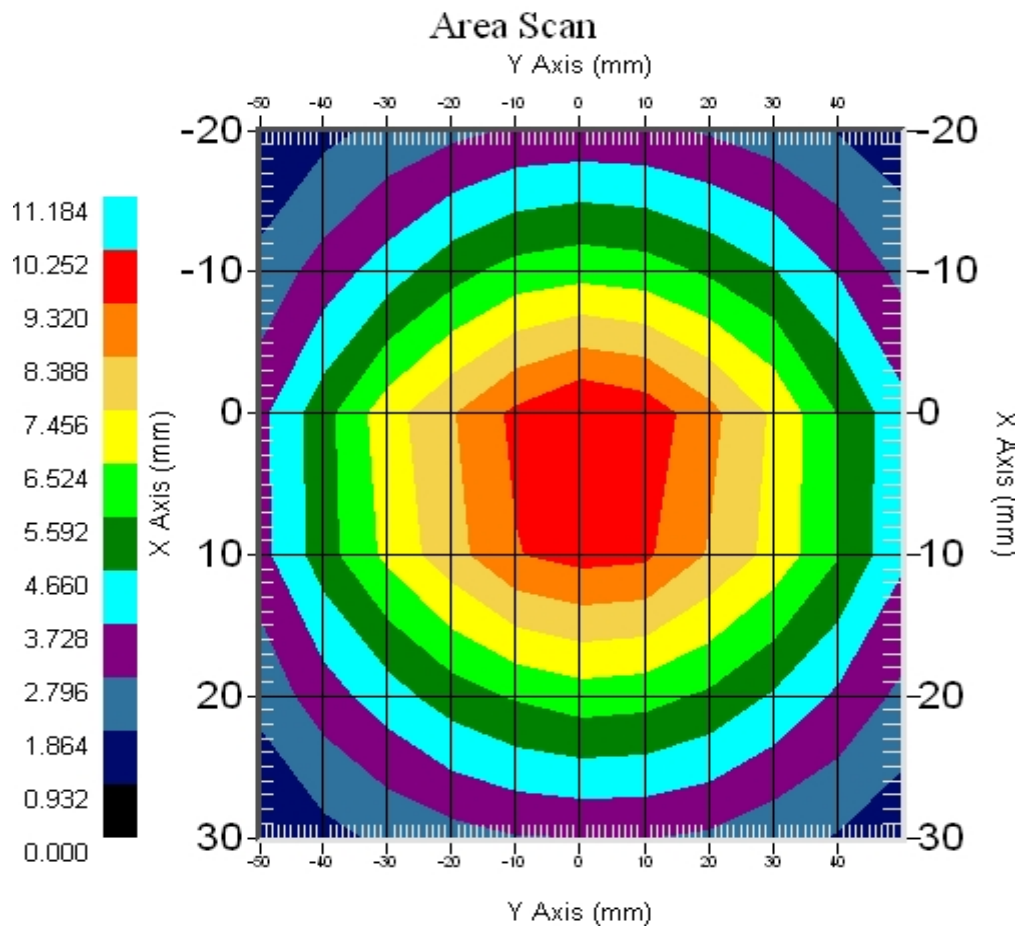
MARKER TO MAX  
MARKER TO MIN

**1** 0.800000 GHz  
43.873  $\Omega$   
22.755  $j\Omega$   
**3** 0.870000 GHz  
31.944  $\Omega$   
-4.372  $j\Omega$

▶ MARKER READOUT  
FUNCTIONS

## System Validation Results Using the Electrically Calibrated Dipole

Head Tissue Frequency	1 Gram	10 Gram	Peak Above Feed Point
835 MHz	9.49	6.1	14.21



## **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 2009.

# NCL CALIBRATION LABORATORIES

Calibration File No: DC-1115  
Project Number: RFEL-1900-Dipole-5481

## 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.

Validation Dipole

Manufacturer: APREL Laboratories

Part number: ALS-D-1900-S-2

Frequency: 1900 MHz

Serial No: 210-00713

Customer: RFEL

Calibrated: 15<sup>th</sup> January 2010  
Released on: 19<sup>th</sup> January 2010

This Calibration Certificate is Incomplete Unless Accompanied with the Calibration Results Summary

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

**NCL** CALIBRATION LABORATORIES

51 SPECTRUM WAY  
NEPEAN, ONTARIO  
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Division of APREL Lab.  
TEL: (613) 820-4988  
FAX: (613) 820-4162



## Conditions

Dipole 210-00713 was new and taken from stock prior to 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 device has been accurately conducted and that all information contained within this report has been reviewed for accuracy.



-----  
**Stuart Nicol**



-----  
**C. Teodorian**

## Calibration Results Summary

The following results relate the Calibrated Dipole and should be used as a quick reference for the user.

### Mechanical Dimensions

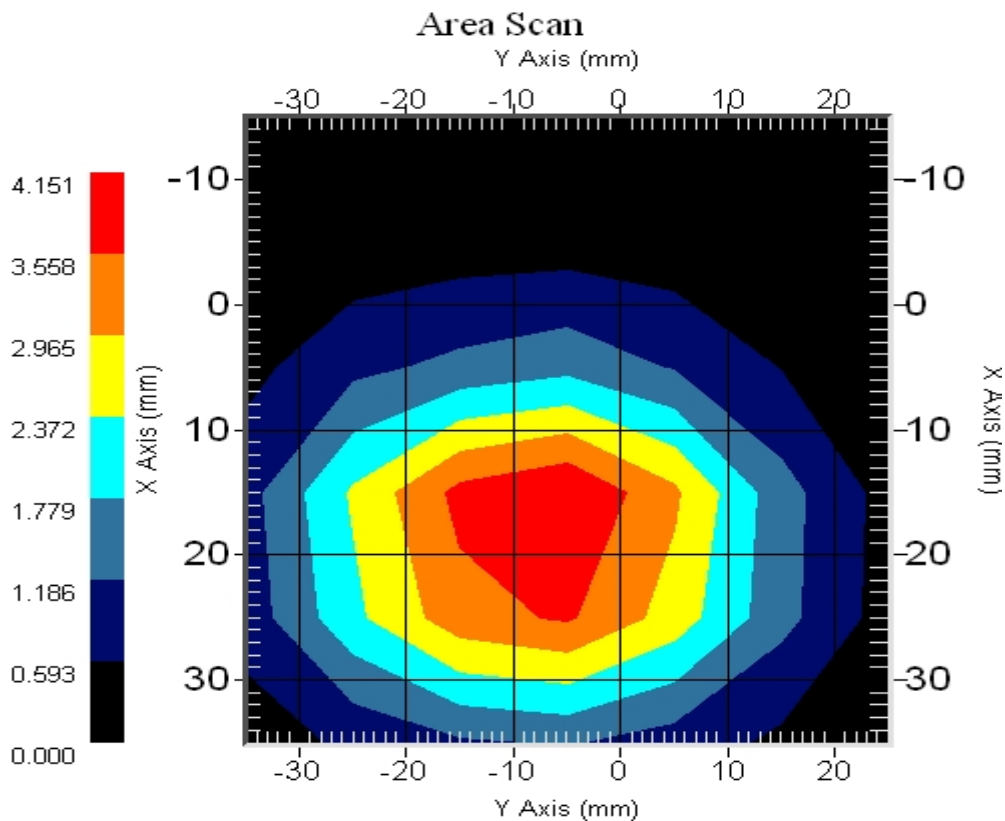
**Length:** 67.1 mm  
**Height:** 38.9 mm

### Electrical Specification

**SWR:** 1.011U  
**Return Loss:** -45.642dB  
**Impedance:** 50.194 $\Omega$

### System Validation Results

Frequency	1 Gram	10 Gram	Peak
1900 MHz	38.7	20.5	69.7



## **Introduction**

This Calibration Report has been produced in line with the SSI Dipole Calibration Procedure SSI-TP-018-ALSAS. The results contained within this report are for Validation Dipole 210-00713. The calibration routine consisted of a three-step process. Step 1 was a mechanical verification of the dipole to ensure that it meets the mechanical specifications. Step 2 was an Electrical Calibration for the Validation Dipole, where the SWR, Impedance, and the Return loss were assessed. Step 3 involved a System Validation using the ALSAS-10U, along with APREL E-020 130 MHz to 26 GHz E-Field Probe Serial Number 226.

## **References**

SSI-TP-018-ALSAS Dipole Calibration Procedure

SSI-TP-016 Tissue 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"

## **Conditions**

Dipole 210-00713 was new taken from stock.

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

**Temperature of the Tissue:** 20 °C +/- 0.5°C

## **Dipole Calibration Results**

### **Mechanical Verification**

<b>APREL Length</b>	<b>APREL Height</b>	<b>Measured Length</b>	<b>Measured Height</b>
68.0 mm	39.5 mm	67.1mm	38.9 mm

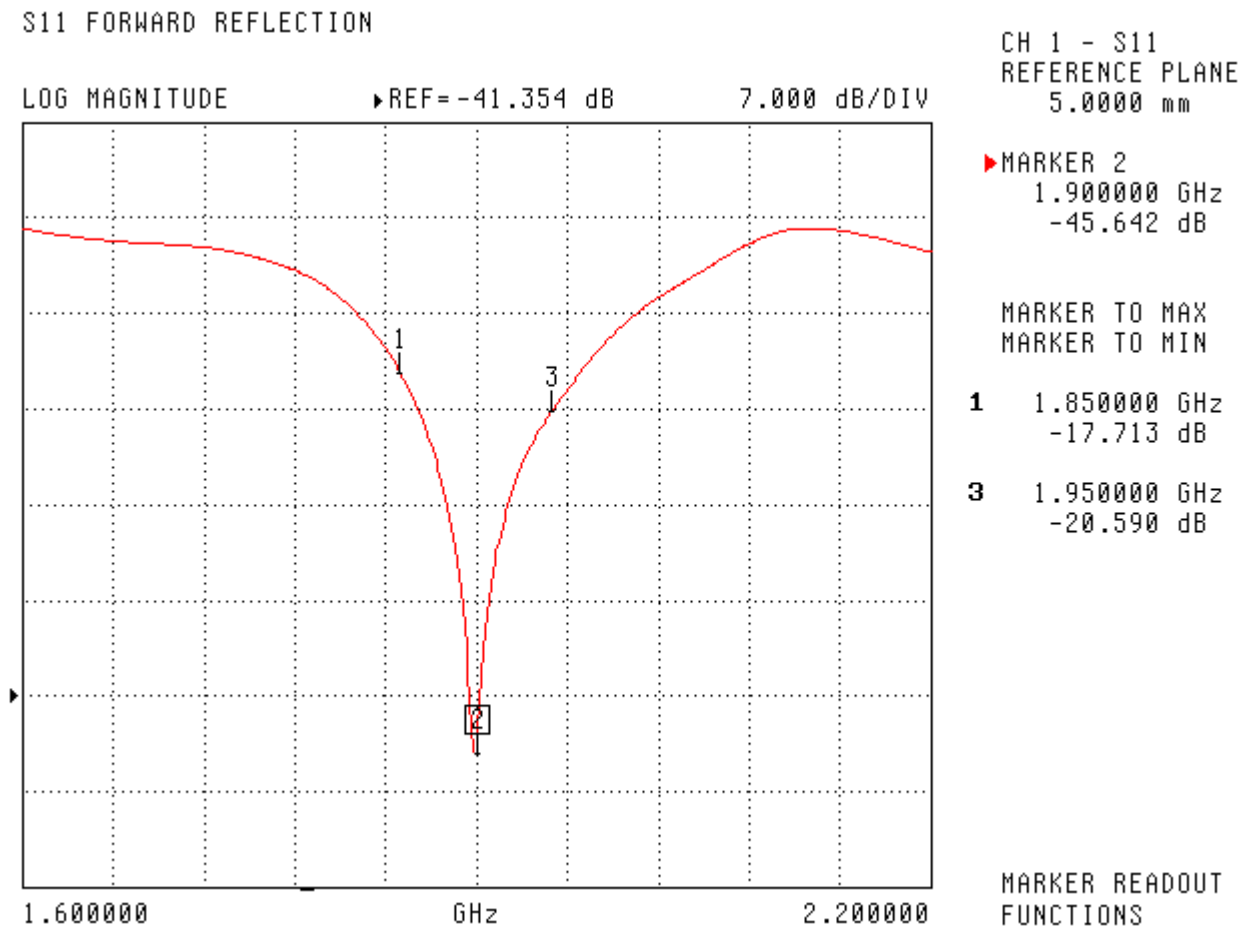
### **Tissue Validation**

<b>Head Tissue 1900 MHz</b>	<b>Measured</b>
<b>Dielectric constant, <math>\epsilon_r</math></b>	40.03
<b>Conductivity, <math>\sigma</math> [S/m]</b>	1.38

**Electrical Calibration**

Test	Result
S11 R/L	-45.642dB
SWR	1.011U
Impedance	50.194 $\Omega$

The Following Graphs are the results as displayed on the Vector Network Analyzer.

**S11 Parameter Return Loss**

## SWR

S11 FORWARD REFLECTION

SWR      ▶ REF=592.479 mU      300.000 mU/DIV

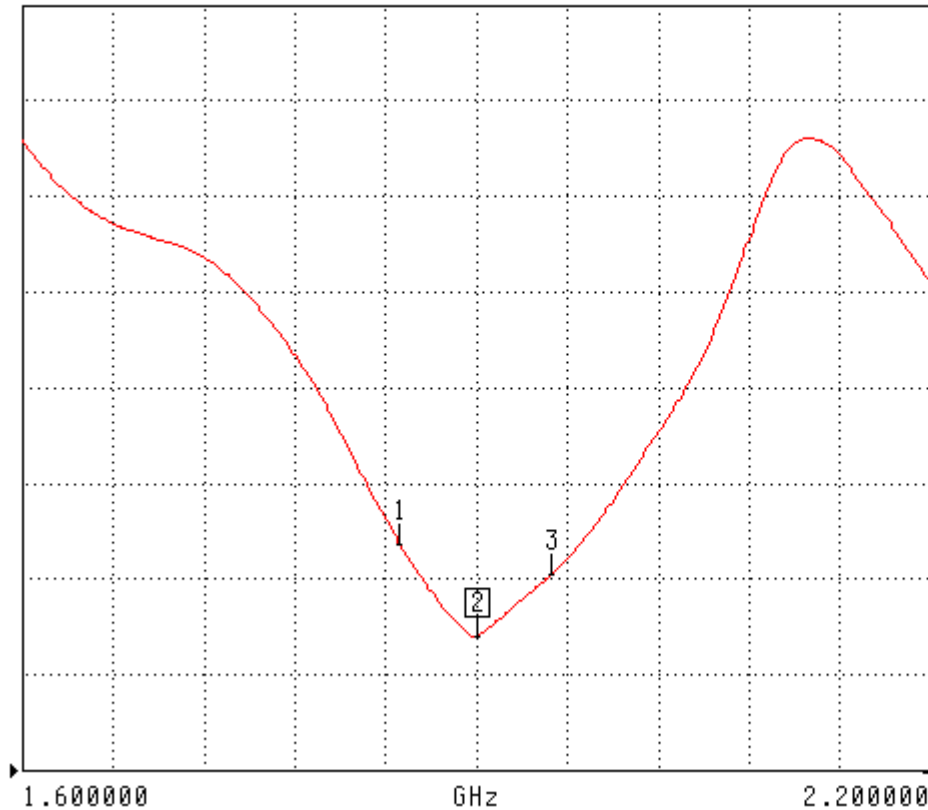
CH 1 - S11  
REFERENCE PLANE  
5.0000 mm

▶ MARKER 2  
1.900000 GHz  
1.011 U

MARKER TO MAX  
MARKER TO MIN

**1** 1.850000 GHz  
1.299 U

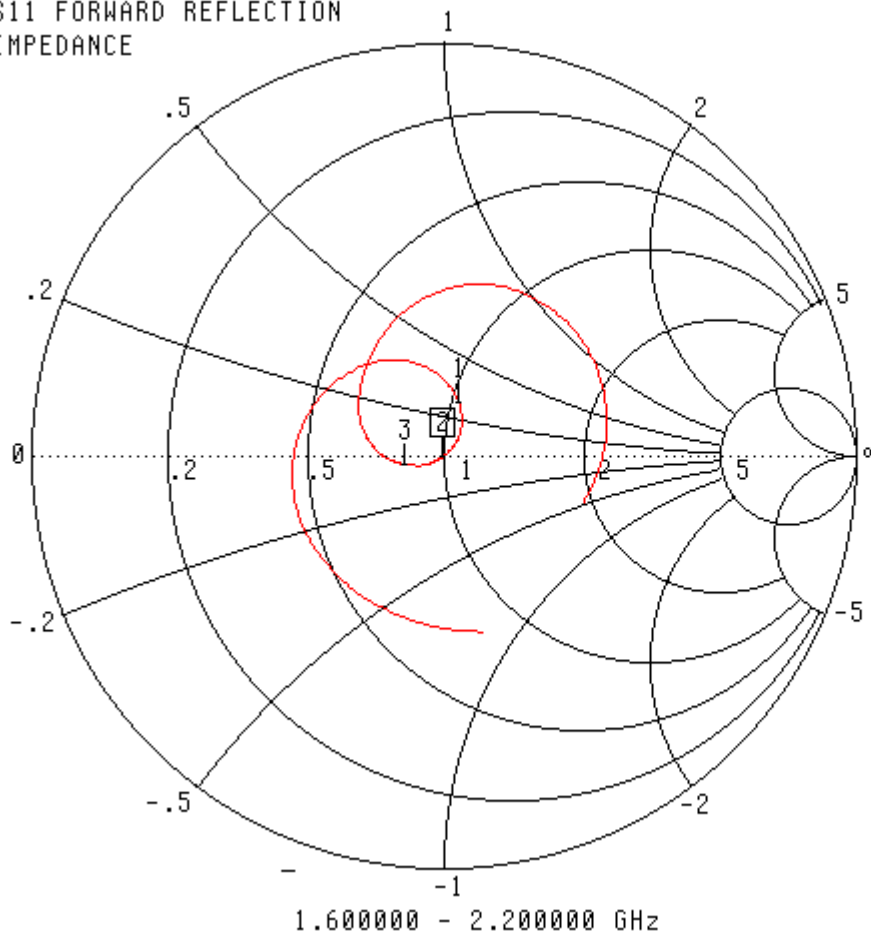
**3** 1.950000 GHz  
1.206 U



MARKER READOUT  
FUNCTIONS

## Smith Chart Dipole Impedance

S11 FORWARD REFLECTION  
IMPEDANCE



CH 1 - S11  
REFERENCE PLANE  
5.0000 mm

▶ MARKER 2  
1.900000 GHz  
50.194  $\Omega$   
-486.191  $j\Omega$

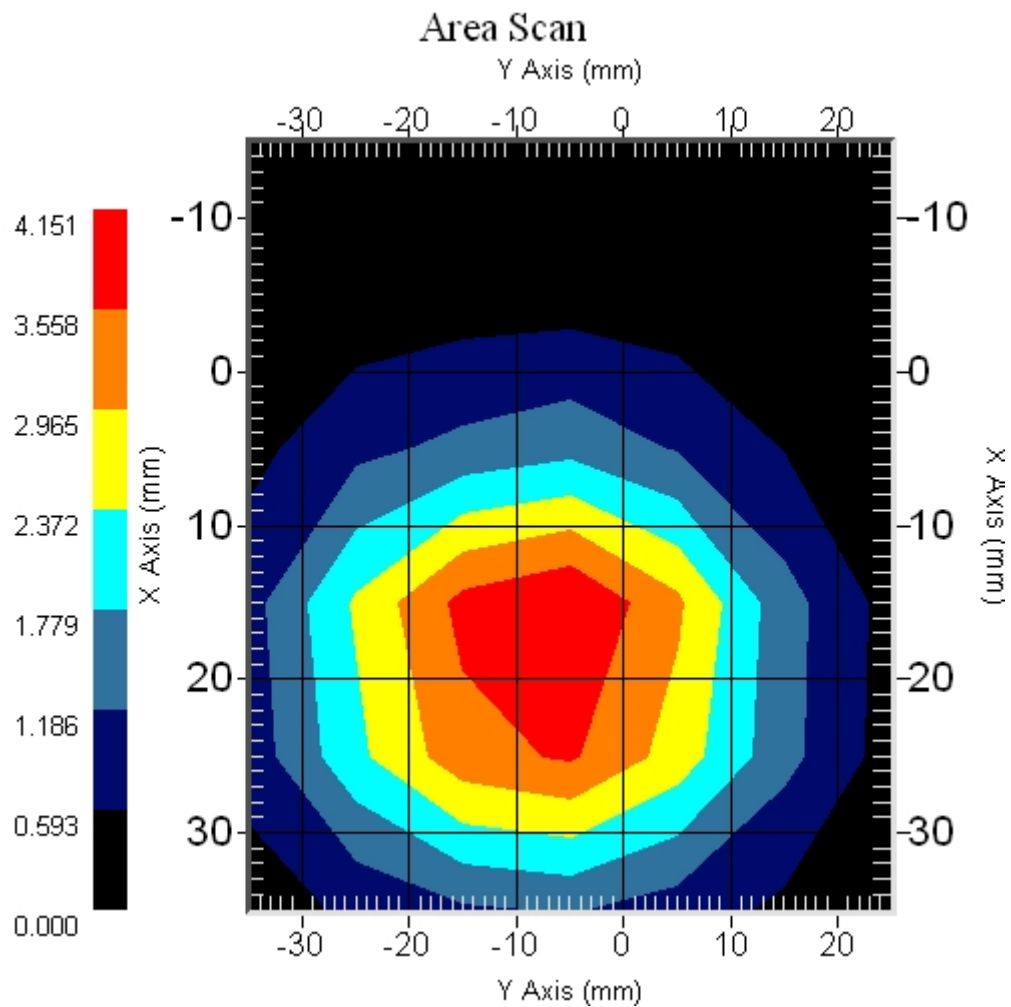
MARKER TO MAX  
MARKER TO MIN

**1** 1.850000 GHz  
52.569  $\Omega$   
13.209  $j\Omega$   
**3** 1.950000 GHz  
41.678  $\Omega$   
-2.040  $j\Omega$

MARKER READOUT  
FUNCTIONS

### System Validation Results Using the Electrically Calibrated Dipole

Head Tissue Frequency	1 Gram	10 Gram	Peak Above Feed Point
1900 MHz	38.7	20.5	69.7





## **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 2009.

## NCL CALIBRATION LABORATORIES

Calibration File No: DC-1109

Project Number: RFEB-5495

# 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.

Validation Dipole

Manufacturer: APREL Laboratories

Part number: ALS-D-2450-S-2

Frequency: 2450 MHz

Serial No: RFE-278

Customer: RFEL

Calibrated: 12<sup>th</sup> January 2010  
Released on: 12<sup>th</sup> January 2010

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) 820-4162

## Conditions

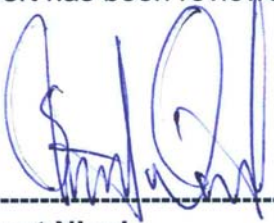
Dipole RFE-278 was a new calibration.

**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 device has been accurately conducted and that all information contained within this report has been reviewed for accuracy.**

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



-----  
**Stuart Nicol**



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**C. Teodorian**

## Calibration Results Summary

The following results relate the Calibrated Dipole and should be used as a quick reference for the user.

### Mechanical Dimensions

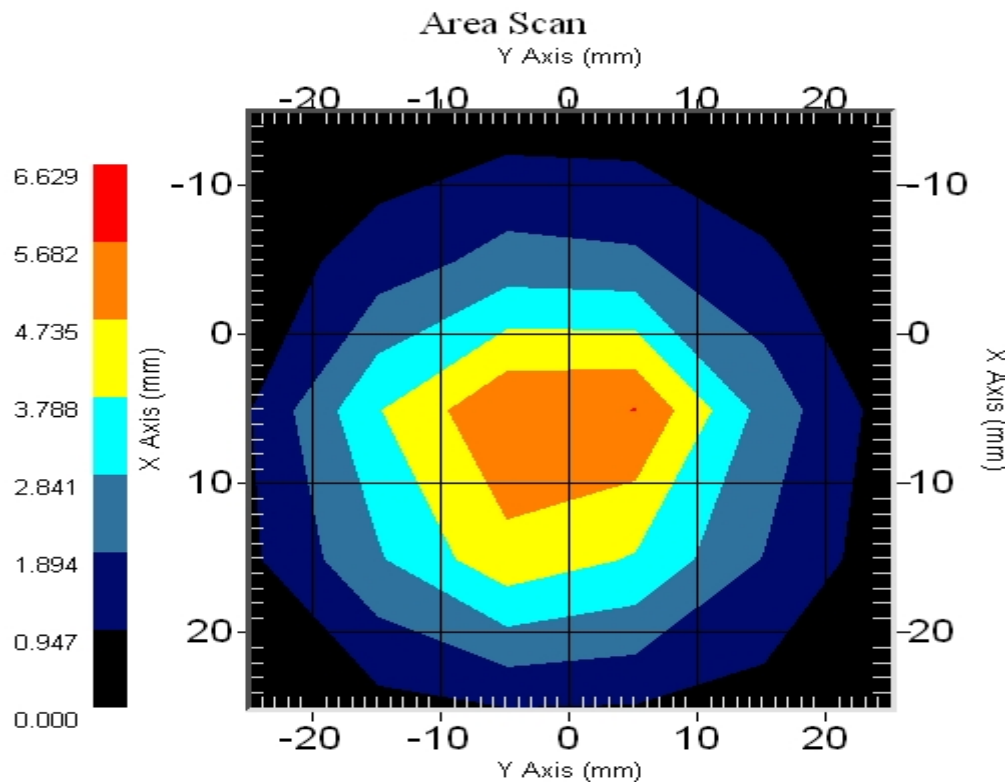
**Length:** 51.5 mm  
**Height:** 30.4 mm

### Electrical Specification

**SWR:** 1.070 U  
**Return Loss:** -29.451 dB  
**Impedance:** 50.710  $\Omega$

### System Validation Results @ 100mW

Frequency	1 Gram	10 Gram	Peak
2450 MHz	5.31	2.44	10.18



## **Introduction**

This Calibration Report has been produced in line with the SSI Dipole Calibration Procedure SSI-TP-018-ALSAS. The results contained within this report are for Validation Dipole RFE-278. The calibration routine consisted of a three-step process. Step 1 was a mechanical verification of the dipole to ensure that it meets the mechanical specifications. Step 2 was an Electrical Calibration for the Validation Dipole, where the SWR, Impedance, and the Return loss were assessed. Step 3 involved a System Validation using the ALSAS-10U, along with APREL E-020 130 MHz to 26 GHz E-Field Probe Serial Number 226.

## **References**

SSI-TP-018-ALSAS Dipole Calibration Procedure

SSI-TP-016 Tissue 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"

## **Conditions**

Dipole RFE-278 was a re-calibration.

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

**Temperature of the Tissue:** 20 °C +/- 0.5°C

## **Dipole Calibration Results**

### **Mechanical Verification**

<b>APREL Length</b>	<b>APREL Height</b>	<b>Measured Length</b>	<b>Measured Height</b>
51.5 mm	30.4 mm	52.1 mm	31.0 mm

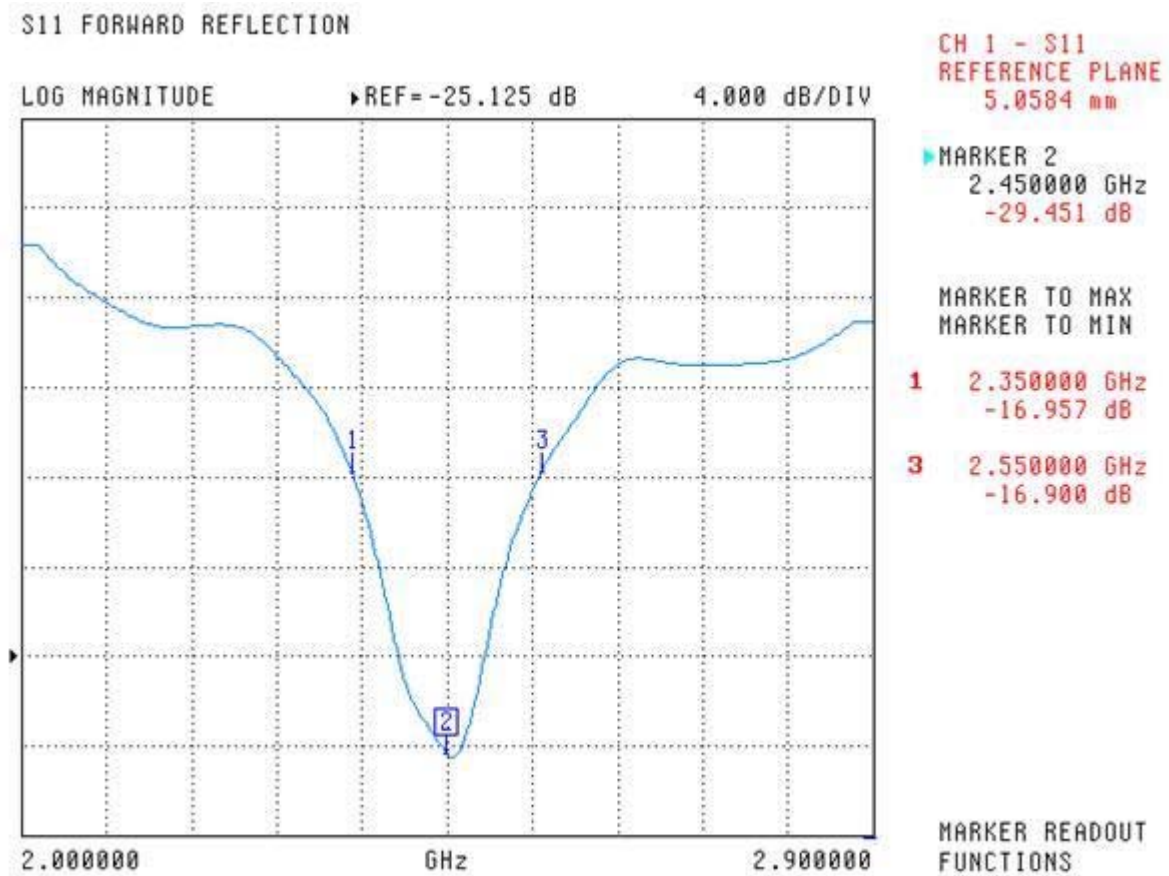
### **Tissue Validation**

<b>Head Tissue 2450 MHz</b>	<b>Measured</b>
<b>Dielectric constant, <math>\epsilon_r</math></b>	39.8
<b>Conductivity, <math>\sigma</math> [S/m]</b>	1.85

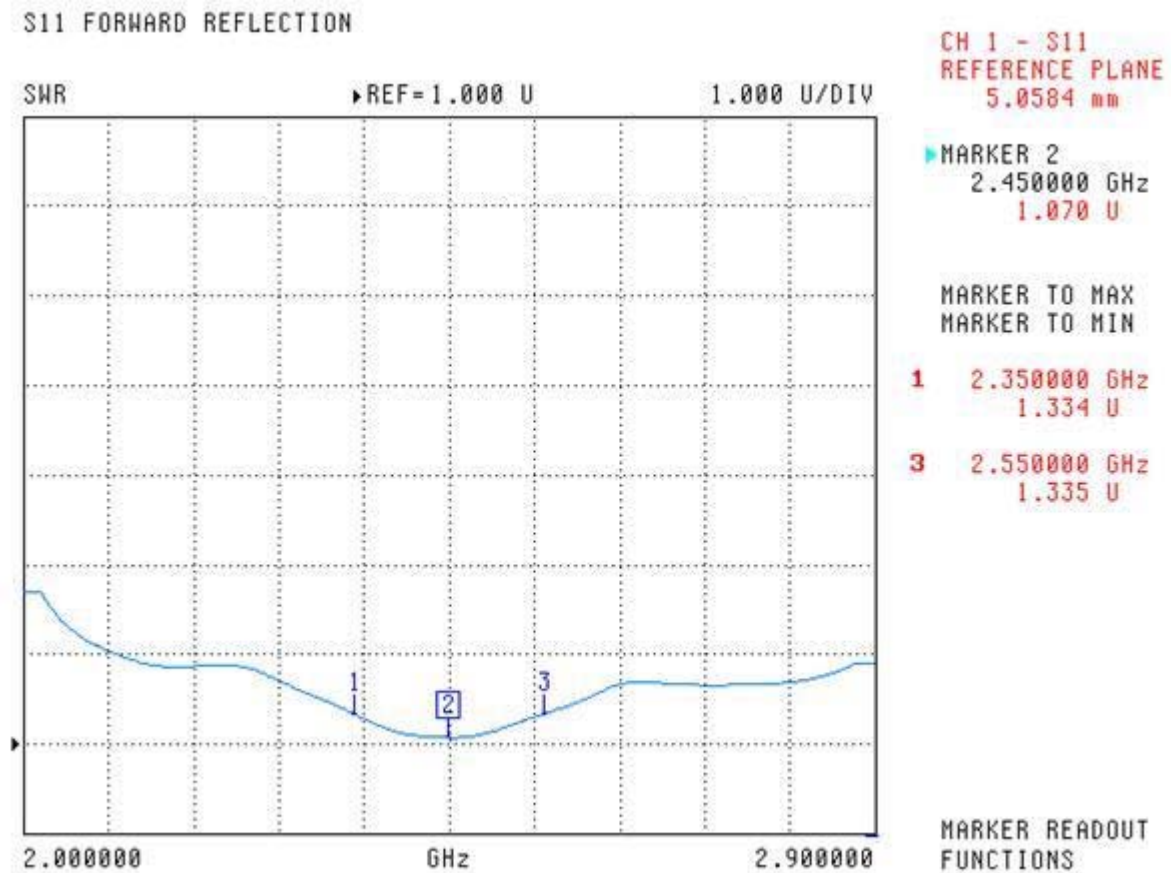
**Electrical Calibration**

Test	Result
S11 R/L	-29.451 dB
SWR	1.070 U
Impedance	50.710 $\Omega$

The Following Graphs are the results as displayed on the Vector Network Analyzer.

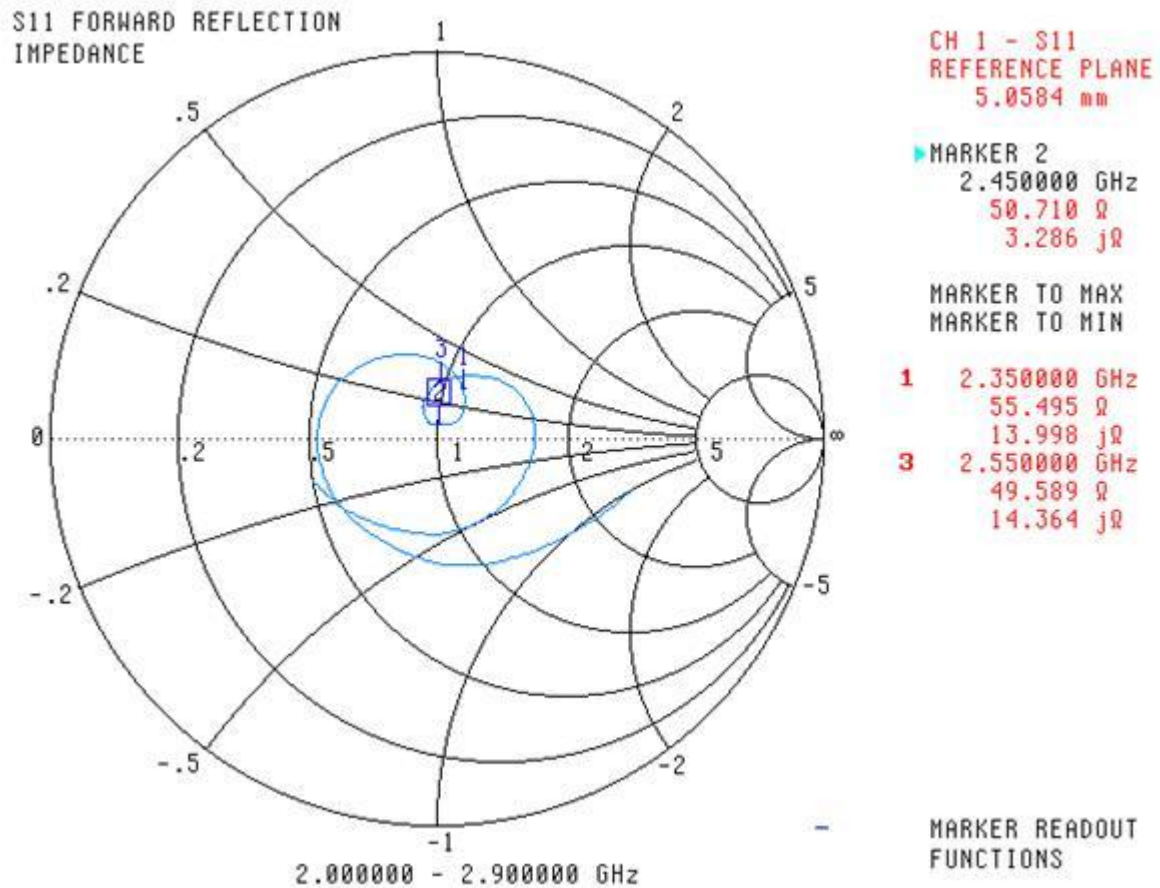
**S11 Parameter Return Loss**

## SWR





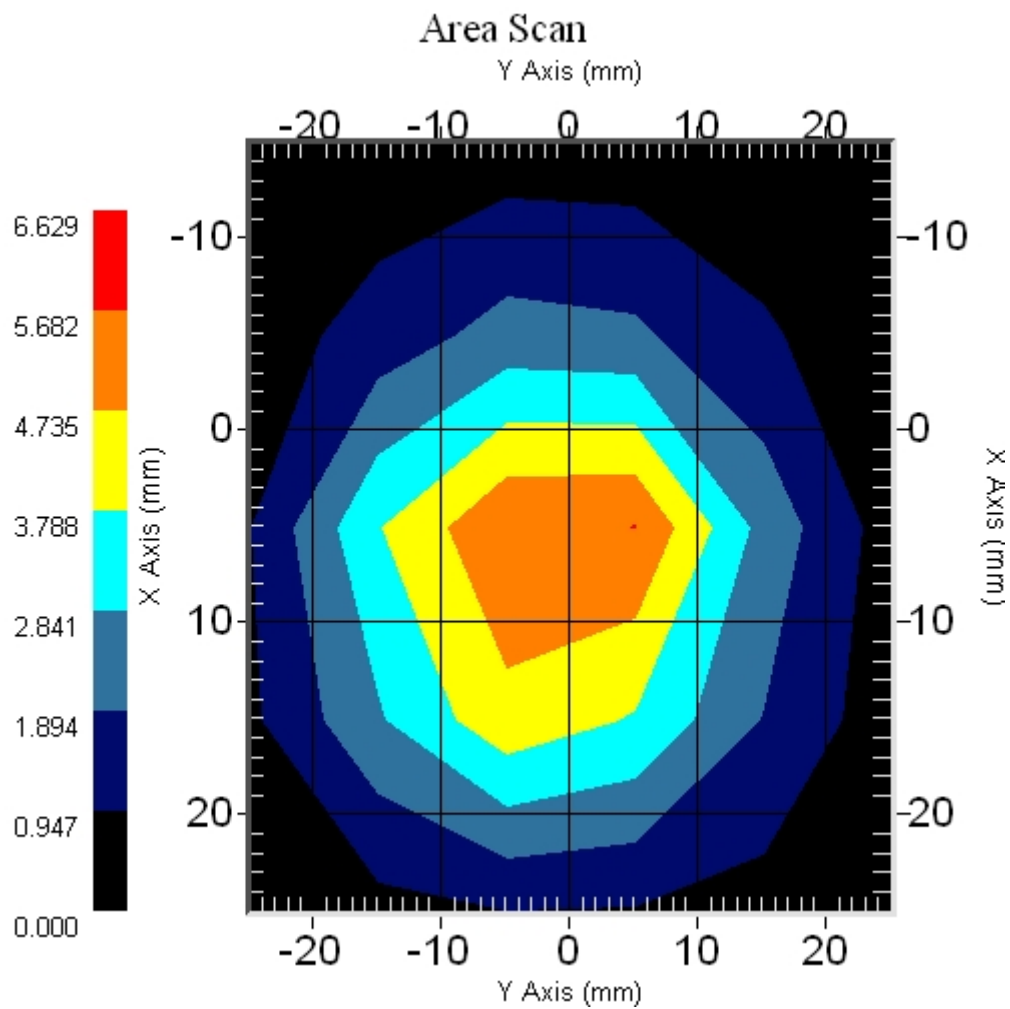
## Smith Chart Dipole Impedance



## System Validation Results Using the Electrically Calibrated Dipole

### Results @ 100mW

Head Tissue Frequency	1 Gram	10 Gram	Peak Above Feed Point
2450 MHz	5.31	2.44	10.18



## **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 2009.

## NCL CALIBRATION LABORATORIES

Calibration File No: DC-1110, 1111, 1112  
Project Number: RFEB-5496, 5497, 5498

# 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.

Validation Dipole

Manufacturer: APREL Laboratories

Part number: ALS-D-BB-S-2

Frequency: 5200-5800 MHz

Serial No: 235-00801

Customer: RFEL

Calibrated: 12<sup>th</sup> January 2010  
Released on: 12<sup>th</sup> January 2010

This Calibration Certificate is Incomplete Unless Accompanied with the Calibration Results Summary

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

**NCL** CALIBRATION LABORATORIES

51 SPECTRUM WAY  
NEPEAN, ONTARIO  
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Division of APREL Lab.  
TEL: (613) 820-4988  
FAX: (613) 820-4162

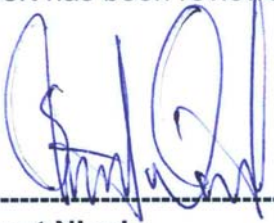
## Conditions

Dipole 235-00801 was new and taken from stock prior to 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 device has been accurately conducted and that all information contained within this report has been reviewed for accuracy.



-----  
**Stuart Nicol**



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**C. Teodorian**

## **Calibration Results Summary**

The following results relate the Calibrated Dipole and should be used as a quick reference for the user.

### **Mechanical Dimensions**

**Length:** 23 mm  
**Height:** 21 mm

### **Electrical Specification 5200MHz**

**SWR:** 1.025 U  
**Return Loss:** -38.354 dB  
**Impedance:** 51.08  $\Omega$

### **Electrical Specification 5600MHz**

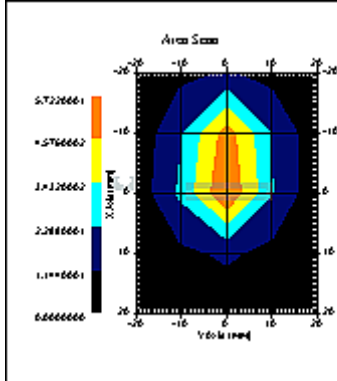
**SWR:** 1.025 U  
**Return Loss:** -38.3 dB  
**Impedance:** 49.303  $\Omega$

### **Electrical Specification 5800MHz**

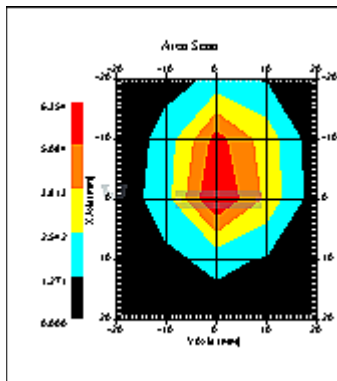
**SWR:** 1.038 U  
**Return Loss:** -34.609 dB  
**Impedance:** 48.872  $\Omega$

## System Validation Results

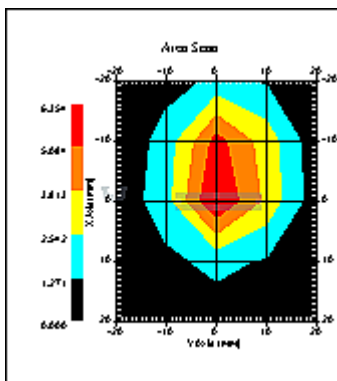
Frequency	1 Gram	10 Gram	Peak
5200 MHz	61.66	19.5	-
5600 MHz	65.03	21.2	-
5800 MHz	63.43	20.19	-



5200MHz



5600MHz



5800MHz

## **Introduction**

This Calibration Report has been produced in line with the SSI Dipole Calibration Procedure SSI-TP-018-ALSAS. The results contained within this report are for Validation Dipole 235-00801. The calibration routine consisted of a three-step process. Step 1 was a mechanical verification of the dipole to ensure that it meets the mechanical specifications. Step 2 was an Electrical Calibration for the Validation Dipole, where the SWR, Impedance, and the Return loss were assessed. Step 3 involved a System Validation using the ALSAS-10U, along with APREL E-030 130 MHz to 26 GHz E-Field Probe Serial Number 215.

## **References**

SSI-TP-018-ALSAS Dipole Calibration Procedure

SSI-TP-016 Tissue 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"

IEC-62209 "Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures"

Part 1: "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)"

IEC-62209 "Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures"

Part 2 *Draft*: "Procedure to determine the Specific Absorption Rate (SAR) for hand-held devices used in close proximity of the ear (frequency range of 30 MHz to 6 GHz)"

## **Conditions**

Dipole 235-00801 was a re-calibration.

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

**Temperature of the Tissue:** 20 °C +/- 0.5°C



## Dipole Calibration Results

### Mechanical Verification

<b>APREL Length</b>	<b>APREL Height</b>	<b>Measured Length</b>	<b>Measured Height</b>
23 mm	21 mm	23 mm	21 mm

### Tissue Validation

<b>Head Tissue 5200 MHz</b>	<b>Measured</b>
<b>Dielectric constant, <math>\epsilon_r</math></b>	35.4
<b>Conductivity, <math>\sigma</math> [S/m]</b>	4.8

<b>Head Tissue 5600 MHz</b>	<b>Measured</b>
<b>Dielectric constant, <math>\epsilon_r</math></b>	36.1
<b>Conductivity, <math>\sigma</math> [S/m]</b>	5.17

<b>Head Tissue 5800 MHz</b>	<b>Measured</b>
<b>Dielectric constant, <math>\epsilon_r</math></b>	35.8
<b>Conductivity, <math>\sigma</math> [S/m]</b>	5.38

## Electrical Calibration

### Electrical Specification 5200MHz

SWR: 1.025 U  
Return Loss: -38.354 dB  
Impedance: 51.08  $\Omega$

### Electrical Specification 5600MHz

SWR: 1.025 U  
Return Loss: -38.3 dB  
Impedance: 49.303  $\Omega$

### Electrical Specification 5800MHz

SWR: 1.038 U  
Return Loss: -34.609 dB  
Impedance: 48.872  $\Omega$

The Following Graphs are the results as displayed on the Vector Network Analyzer.

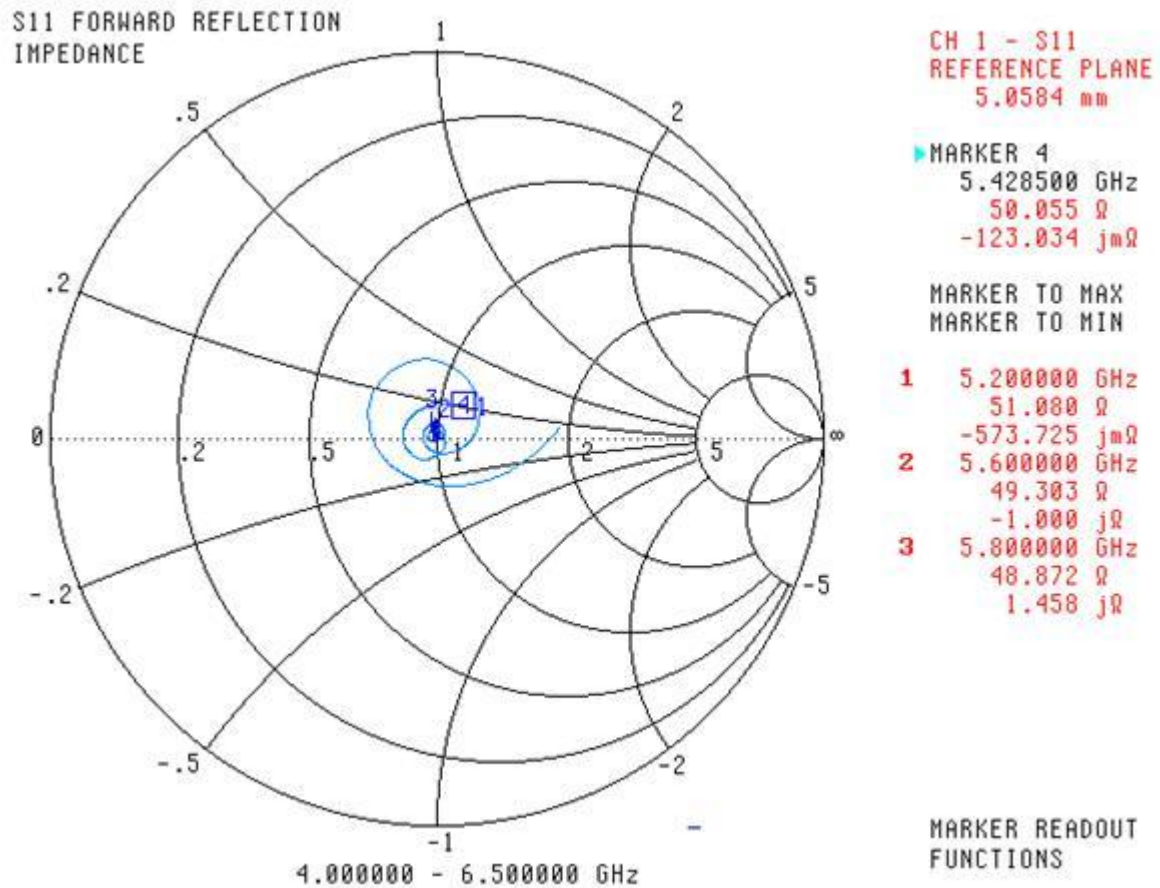
### S11 Parameter Return Loss



SWR

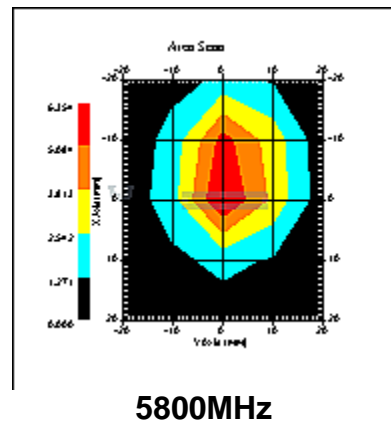
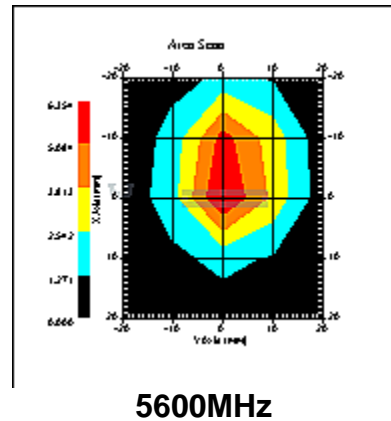
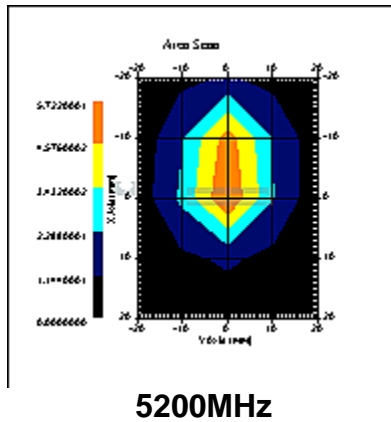


## Smith Chart Dipole Impedance



## System Validation Results Using the Electrically Calibrated Dipole

Frequency	1 Gram	10 Gram	Peak
5200 MHz	61.66	19.5	-
5600 MHz	65.03	21.2	-
5800 MHz	63.43	20.19	-



## **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 2009.

## **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  
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