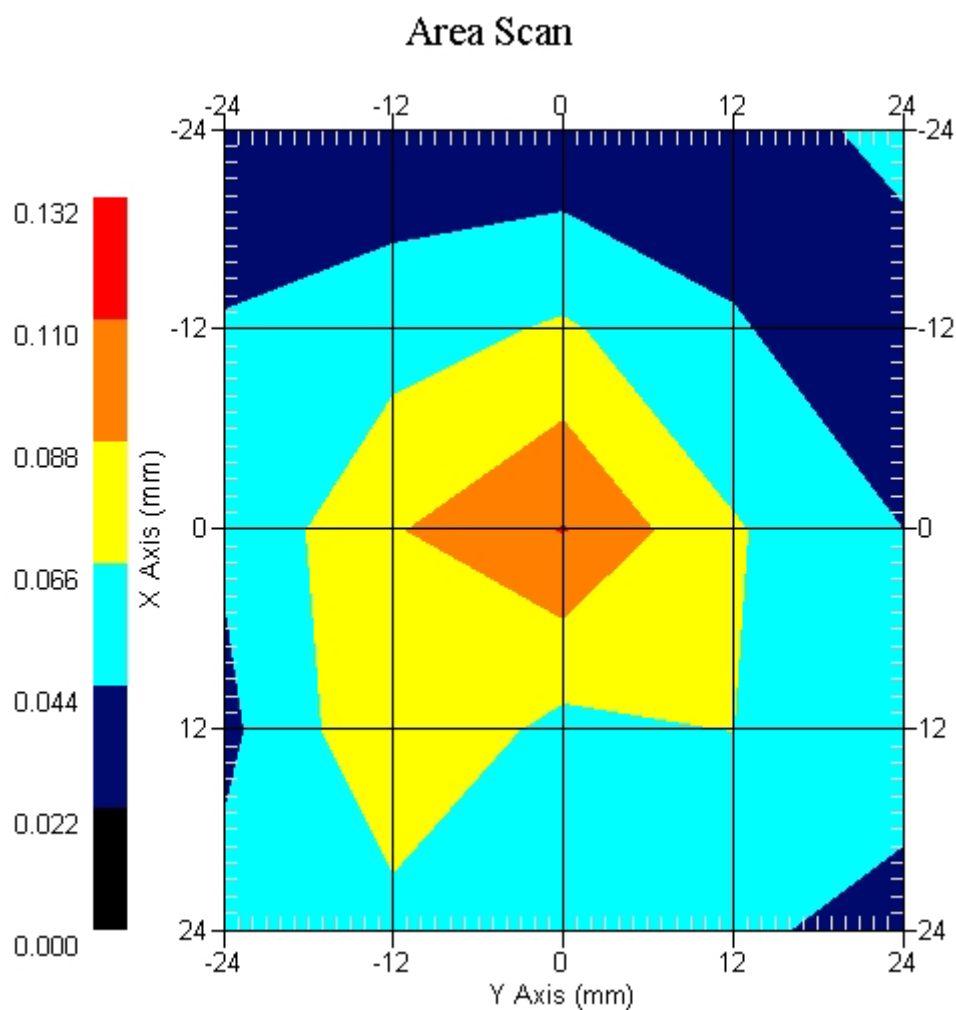
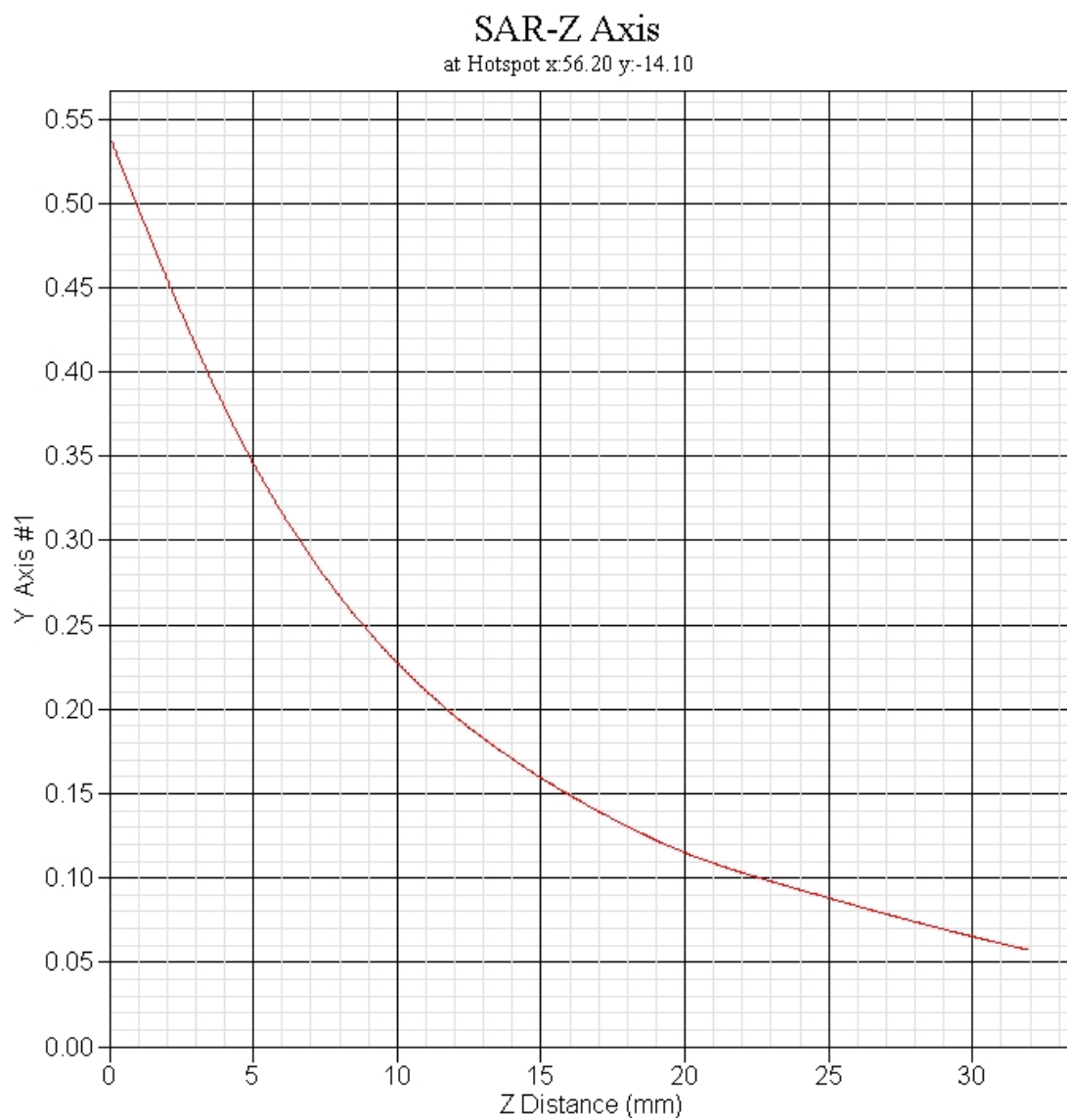




**802.11n 20MHz BW, Z-Axis plot**  
channel: 6



ALSAS-10U VER 2.3.2 APREL Laboratories  
SAR Test Report -802.11n, 40MHz BW

Report Date : 12-Nov-2007  
Measurement Date : 12-Nov-2007

**Product Data**

Device Name : USB  
Type : Other  
Model : UB801Rn  
Frequency : 2450.00 MHz  
Drift Time : 0 min(s)  
Length : 10.4 mm  
Width : 26.3 mm  
Depth : 68 mm  
Antenna Type : Internal

**Phantom Data**

Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Location : Center

**Tissue Data**

Type : BODY  
Serial No. : 325-B  
Frequency : 2450.00 MHz  
Last Calib. Date : 12-Nov-2007  
Temperature : 20.50 °C  
Ambient Temp. : 21.40 °C  
Humidity : 41.00 RH%  
Epsilon : 52.76 F/m  
Sigma : 1.933 S/m  
Density : 1000.00 kg/cu. m

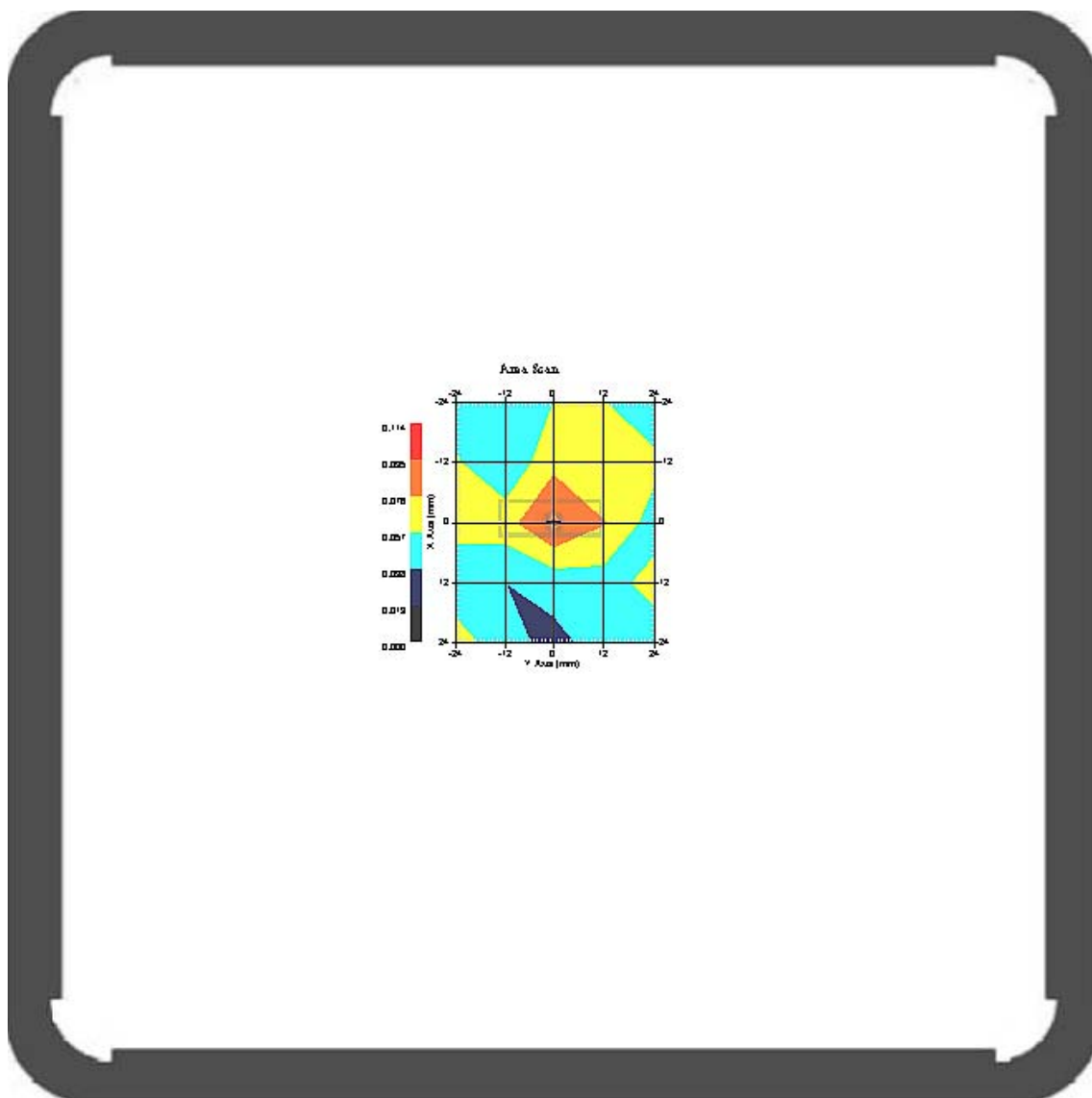
**Probe Data**

Name : Probe 264  
Model : E020  
Type : E-Field Triangle  
Serial No. : 264  
Last Calib. Date : 21-Aug-2007  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 5.2  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

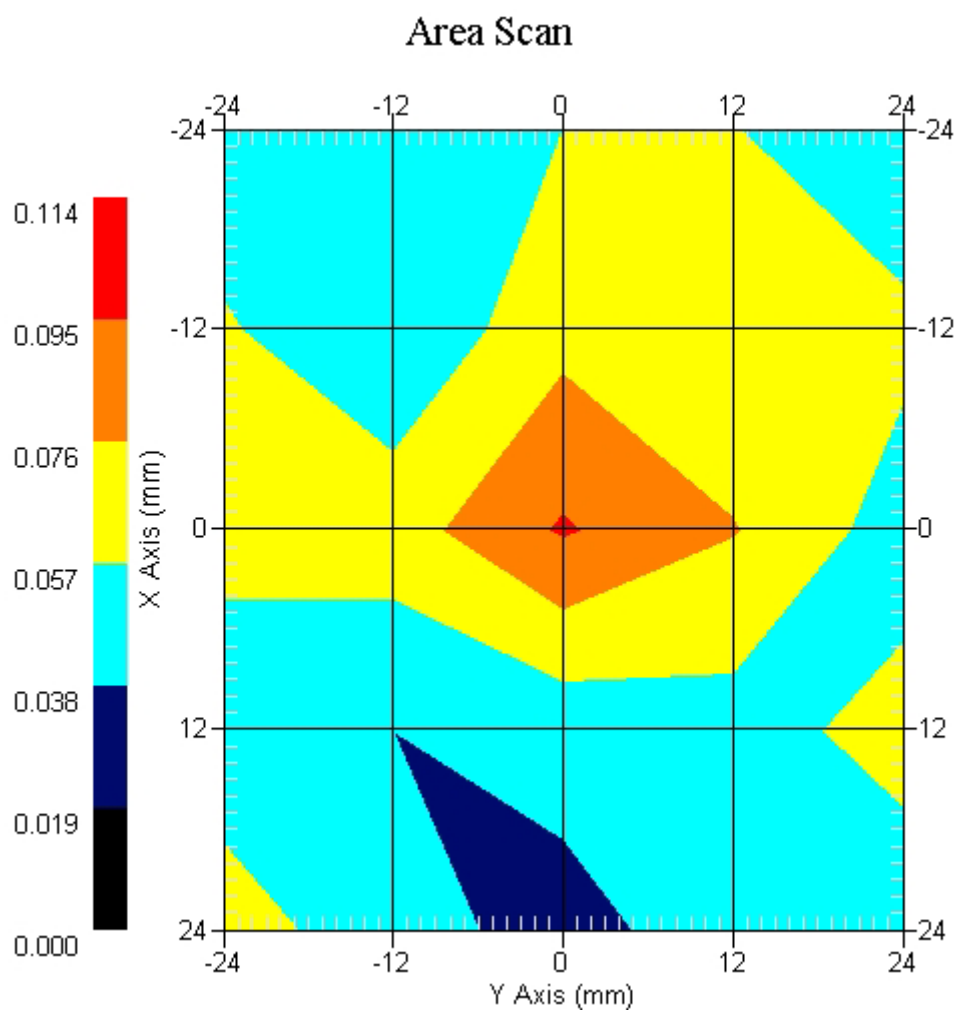
## Measurement Data

Crest Factor : 1  
 Tissue Temp. : 20.50 °C  
 Ambient Temp. : 21.40 °C  
 Area Scan : 5x5x1 : Measurement x=12mm, y=12mm, z=4mm  
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm  
 Power Drift-Start : 0.085 W/kg  
 Power Drift-Finish: 0.085 W/kg  
 Power Drift (%) : 0.418

DUT Position : Touch EUT Top  
 Channel : 6



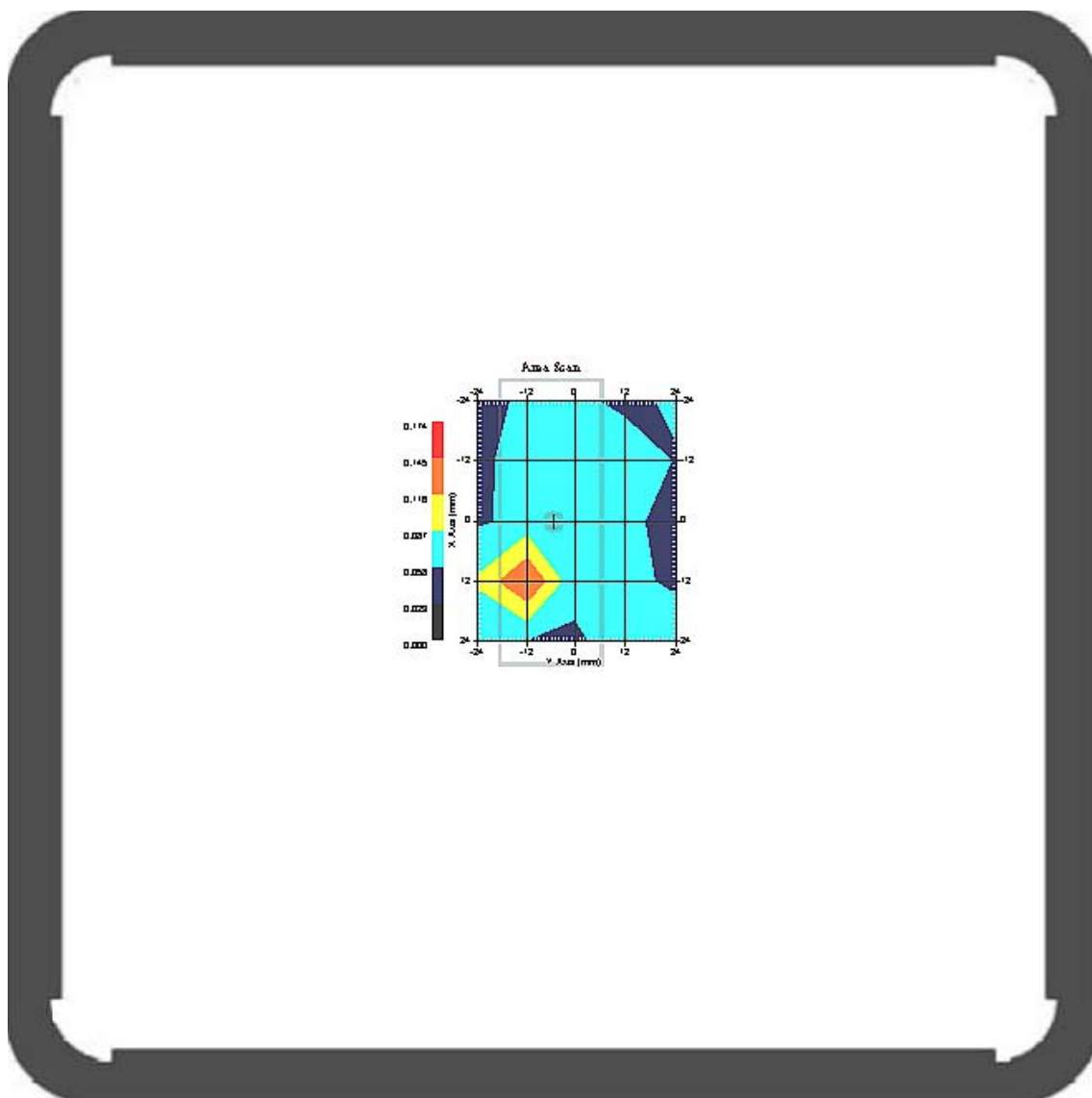
1 gram SAR value : 0.106 W/kg  
 10 gram SAR value : 0.087 W/kg  
 Area Scan Peak SAR : 0.097 W/kg  
 Zoom Scan Peak SAR : 0.134 W/kg



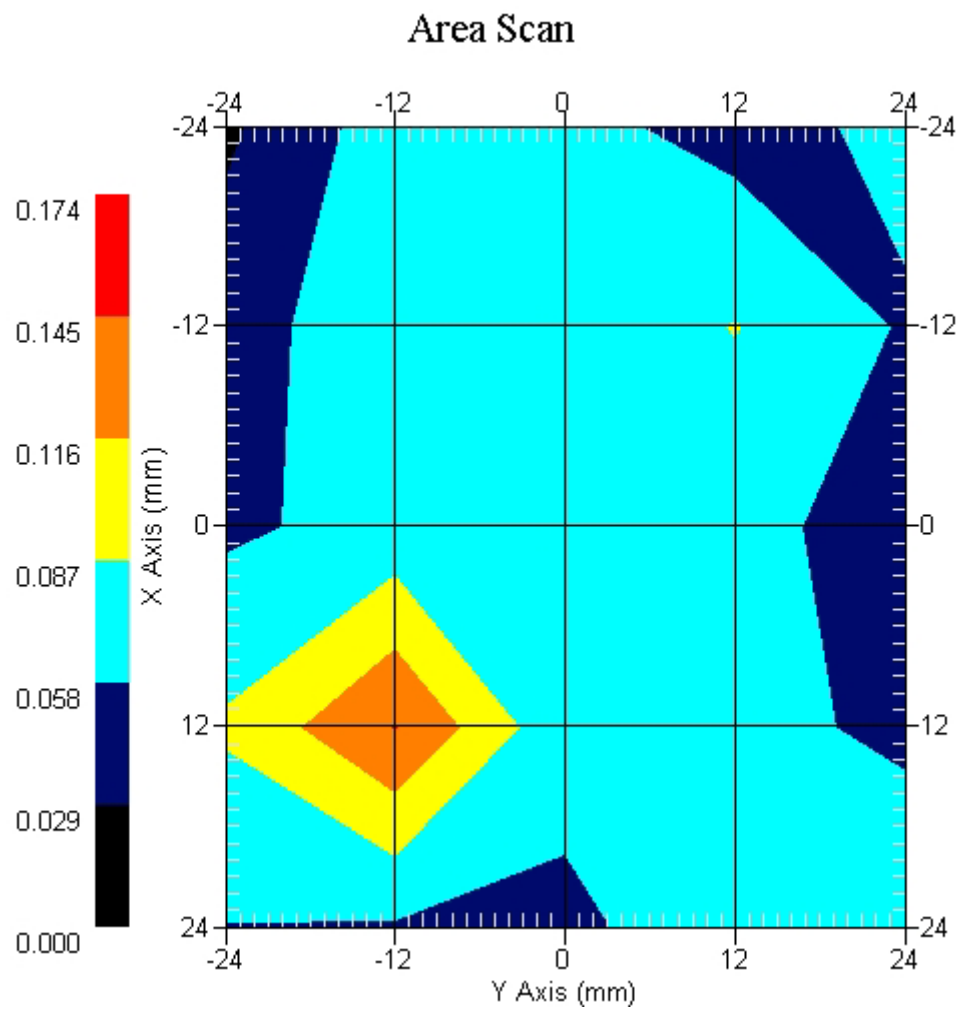
## Measurement Data

Crest Factor : 1  
 Tissue Temp. : 20.50 °C  
 Ambient Temp. : 21.40 °C  
 Area Scan : 5x5x1 : Measurement x=12mm, y=12mm, z=4mm  
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm  
 Power Drift-Start : 0.054 W/kg  
 Power Drift-Finish: 0.056 W/kg  
 Power Drift (%) : 3.571

DUT Position : Touch EUT Front  
 Channel : 1



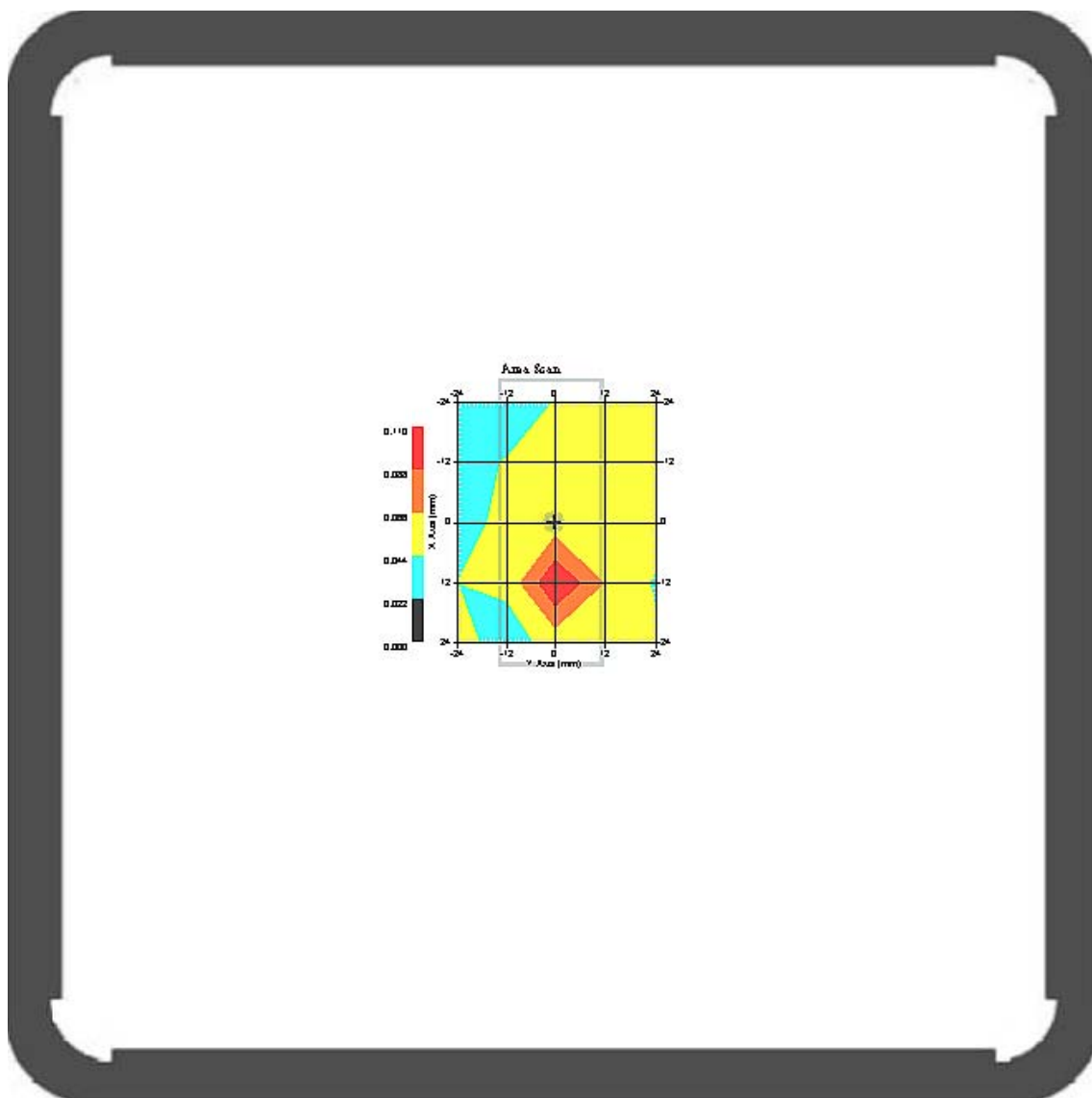
1 gram SAR value : 0.096 W/kg  
 10 gram SAR value : 0.085 W/kg  
 Area Scan Peak SAR : 0.146 W/kg  
 Zoom Scan Peak SAR : 0.158 W/kg



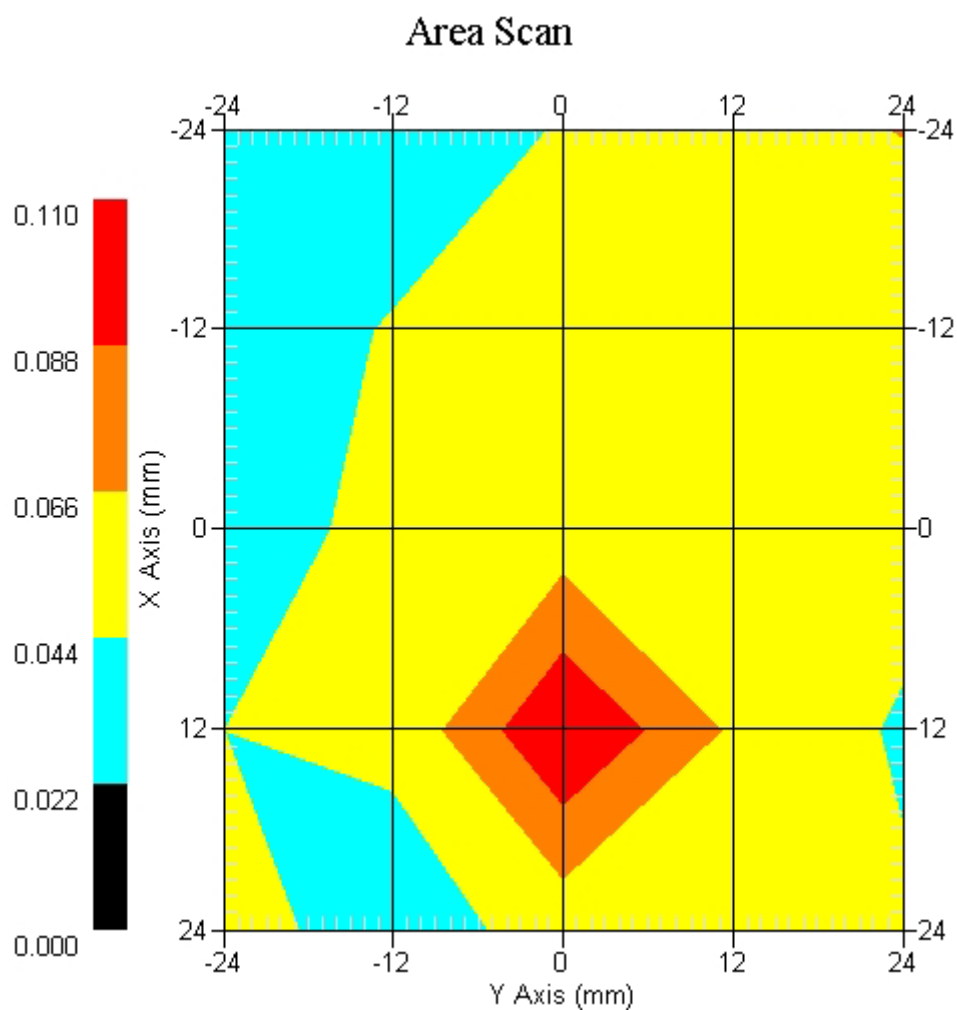
## Measurement Data

Crest Factor : 1  
 Tissue Temp. : 20.50 °C  
 Ambient Temp. : 21.40 °C  
 Area Scan : 5x5x1 : Measurement x=12mm, y=12mm, z=4mm  
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm  
 Power Drift-Start : 0.050 W/kg  
 Power Drift-Finish: 0.052 W/kg  
 Power Drift (%) : 3.846

DUT Position : Touch EUT Front  
 Channel : 6



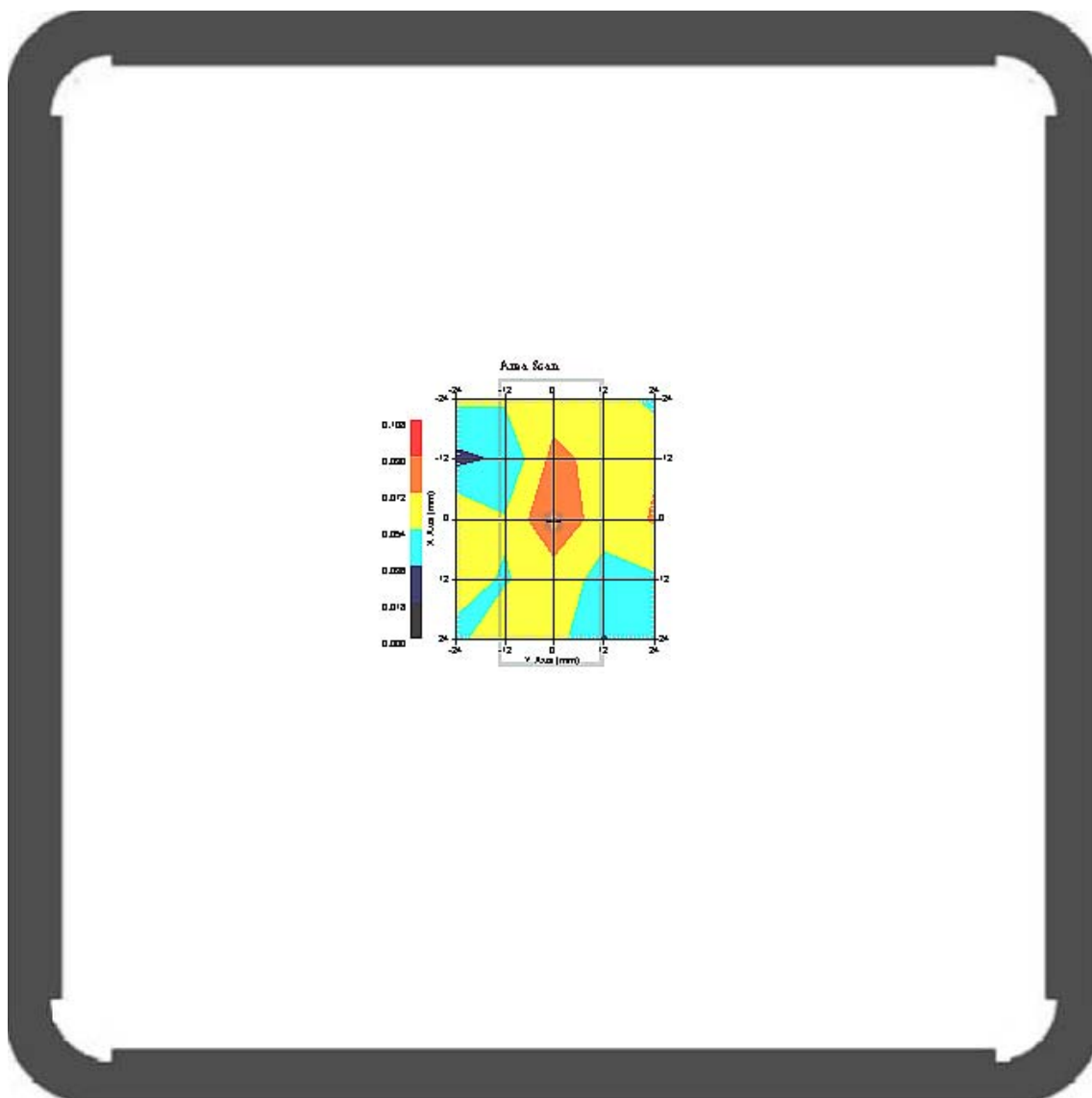
1 gram SAR value : 0.120 W/kg  
 10 gram SAR value : 0.119 W/kg  
 Area Scan Peak SAR : 0.110 W/kg  
 Zoom Scan Peak SAR : 0.168 W/kg



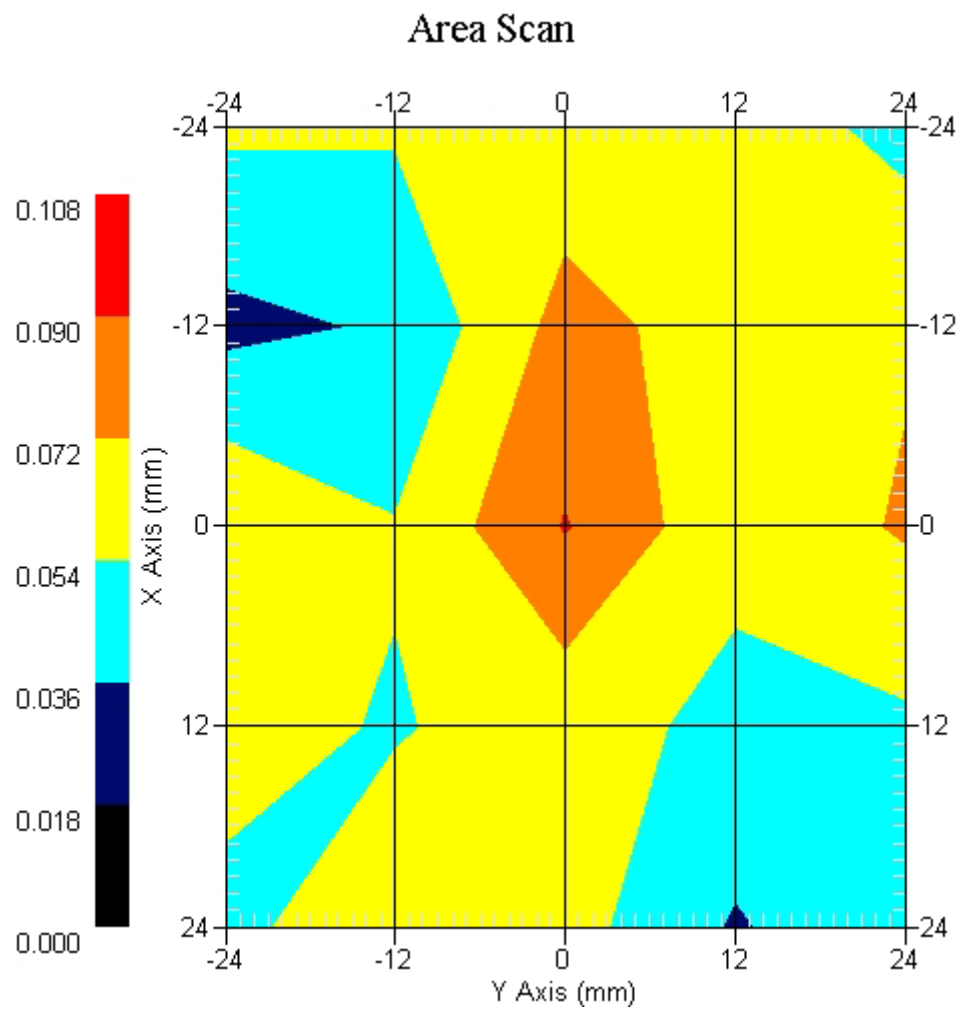
## Measurement Data

Crest Factor : 1  
 Tissue Temp. : 20.50 °C  
 Ambient Temp. : 21.40 °C  
 Area Scan : 5x5x1 : Measurement x=12mm, y=12mm, z=4mm  
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm  
 Power Drift-Start : 0.054 W/kg  
 Power Drift-Finish: 0.056 W/kg  
 Power Drift (%) : 3.571

DUT Position : Touch EUT Front  
 Channel : 11



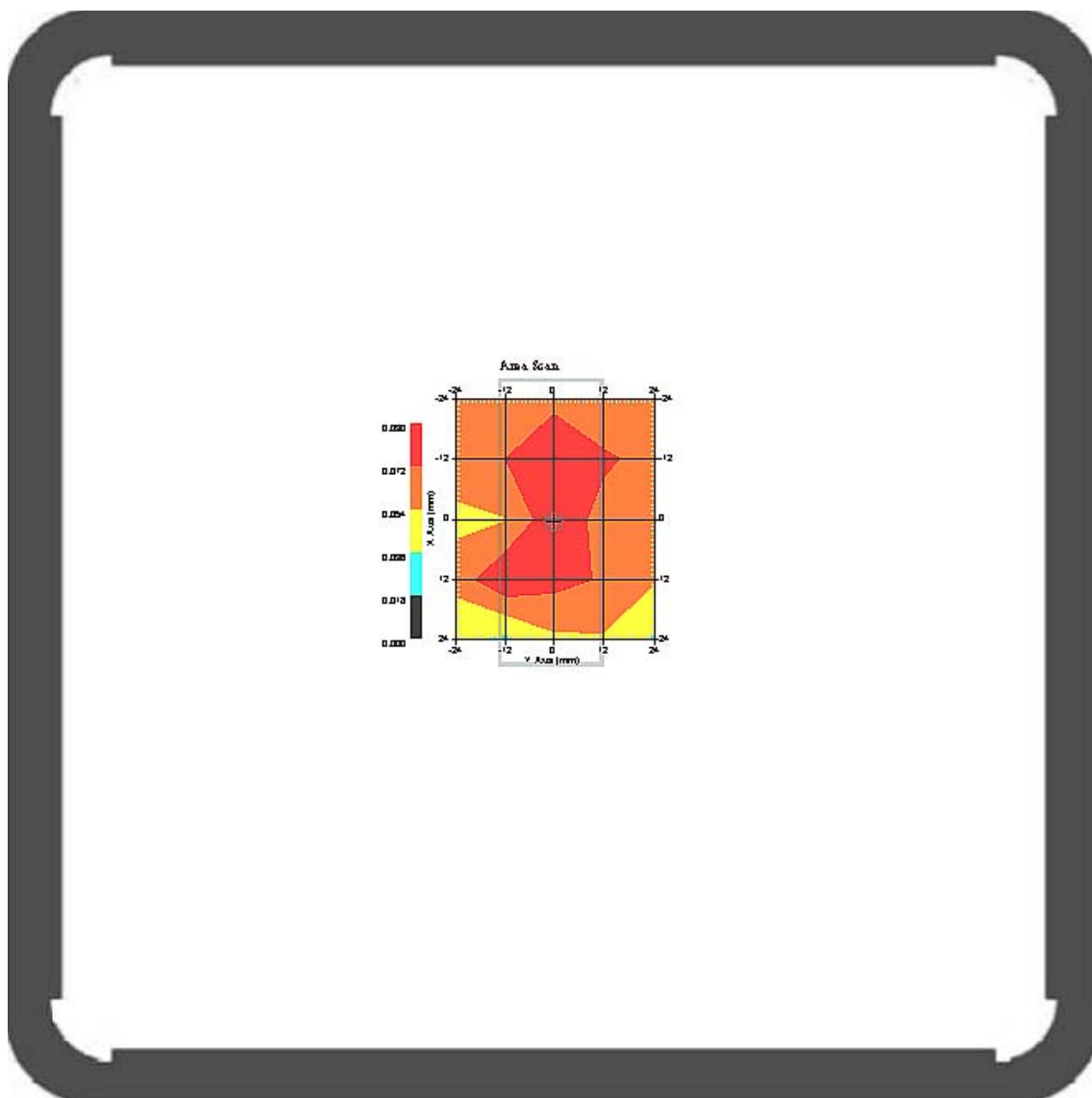
1 gram SAR value : 0.105 W/kg  
 10 gram SAR value : 0.103 W/kg  
 Area Scan Peak SAR : 0.091 W/kg  
 Zoom Scan Peak SAR : 0.000 W/kg



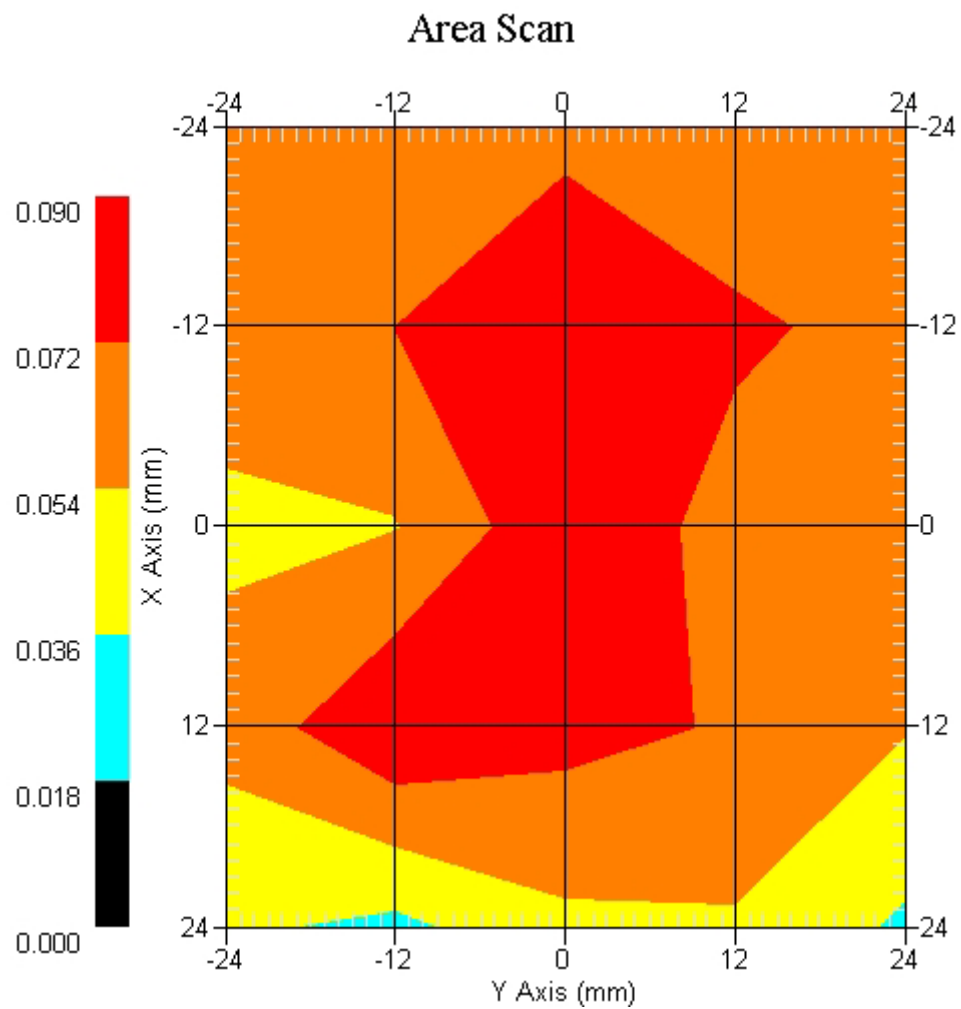
## Measurement Data

Crest Factor : 1  
 Tissue Temp. : 20.50 °C  
 Ambient Temp. : 21.40 °C  
 Area Scan : 5x5x1 : Measurement x=12mm, y=12mm, z=4mm  
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm  
 Power Drift-Start : 0.076 W/kg  
 Power Drift-Finish: 0.078 W/kg  
 Power Drift (%) : 2.564

DUT Position : Touch EUT Back  
 Channel : 6

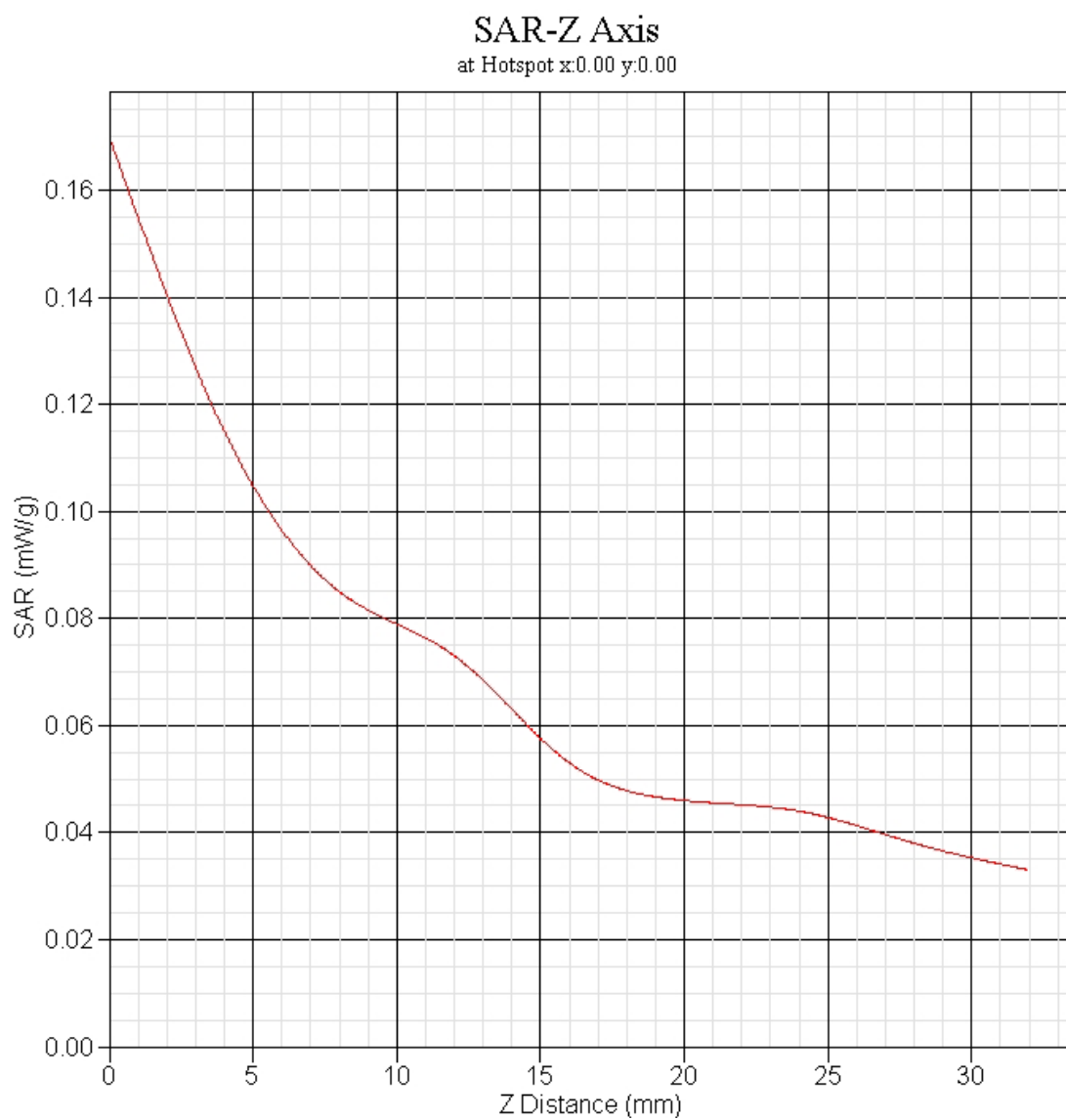


1 gram SAR value : 0.094 W/kg  
 10 gram SAR value : 0.099 W/kg  
 Area Scan Peak SAR : 0.088 W/kg  
 Zoom Scan Peak SAR : 0.166 W/kg



802.11n 40MHz BW, Z-Axis plot

channel: 6



ALSAS-10U VER 2.3.2 APREL Laboratories

SAR Test Report-802.11n, 20MHz BW

Report Date : 13-Nov-2007  
Measurement Date : 13-Nov-2007

**Product Data**

Device Name : USB  
Type : Other  
Model : UB801Rn  
Frequency : 2450.00 MHz  
Drift Time : 0 min(s)  
Length : 10.4 mm  
Width : 26.3 mm  
Depth : 68 mm  
Antenna Type : Internal

**Phantom Data**

Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Location : Center

**Tissue Data**

Type : BODY  
Serial No. : 325-B  
Frequency : 2450.00 MHz  
Last Calib. Date : 13-Nov-2007  
Temperature : 20.90 °C  
Ambient Temp. : 22.00 °C  
Humidity : 43.00 RH%  
Epsilon : 52.53 F/m  
Sigma : 1.836 S/m  
Density : 1000.00 kg/cu. m

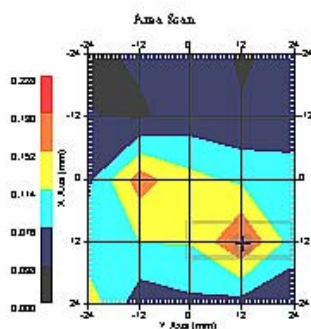
**Probe Data**

Name : Probe 264  
Model : E020  
Type : E-Field Triangle  
Serial No. : 264  
Last Calib. Date : 21-Aug-2007  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 5.2  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

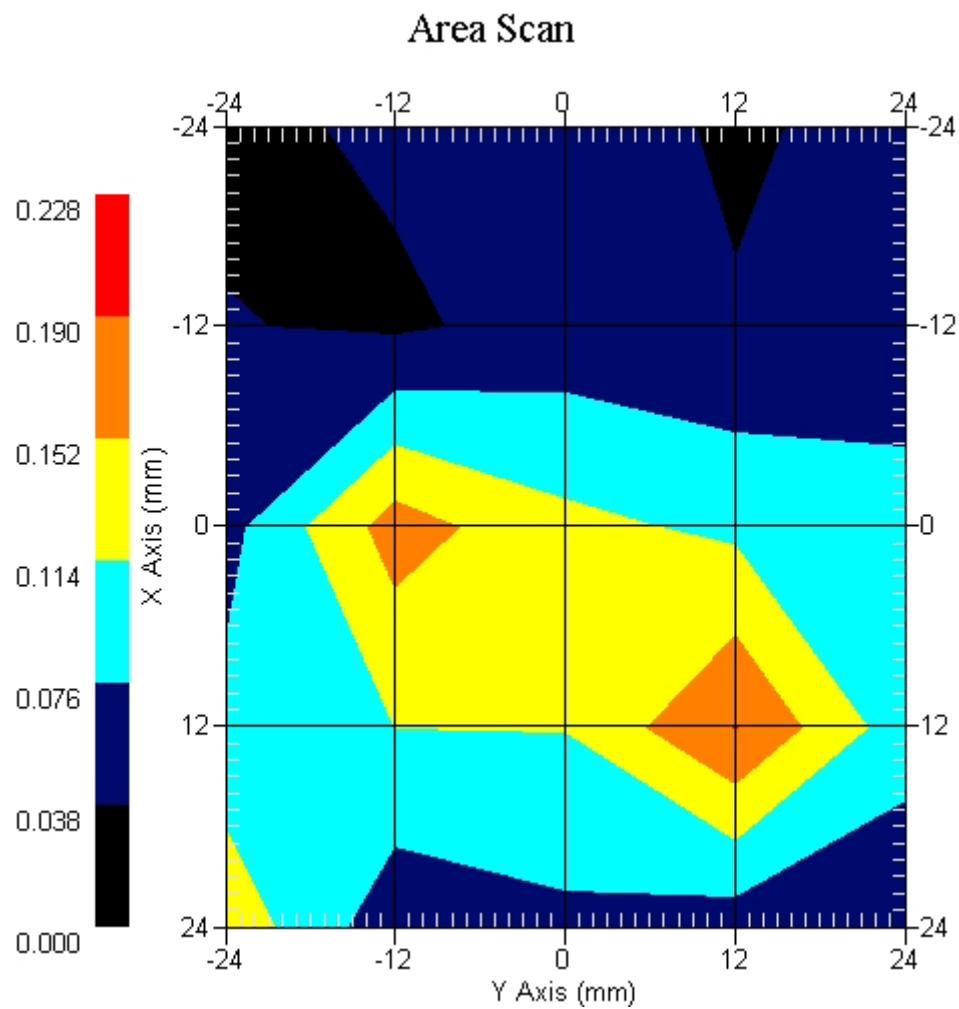
## Measurement Data

Crest Factor : 1  
 Tissue Temp. : 22.20 °C  
 Ambient Temp. : 23.10 °C  
 Area Scan : 5x5x1 : Measurement x=12mm, y=12mm, z=4mm  
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm  
 Power Drift-Start : 0.098 W/kg  
 Power Drift-Finish: 0.101 W/kg  
 Power Drift (%) : 2.970

DUT Position : Touch EUT Top  
 Channel : 6



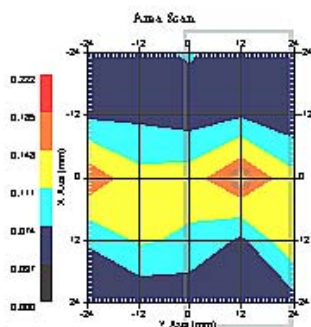
1 gram SAR value : 0.178 W/kg  
 10 gram SAR value : 0.133 W/kg  
 Area Scan Peak SAR : 0.191 W/kg  
 Zoom Scan Peak SAR : 0.240 W/kg



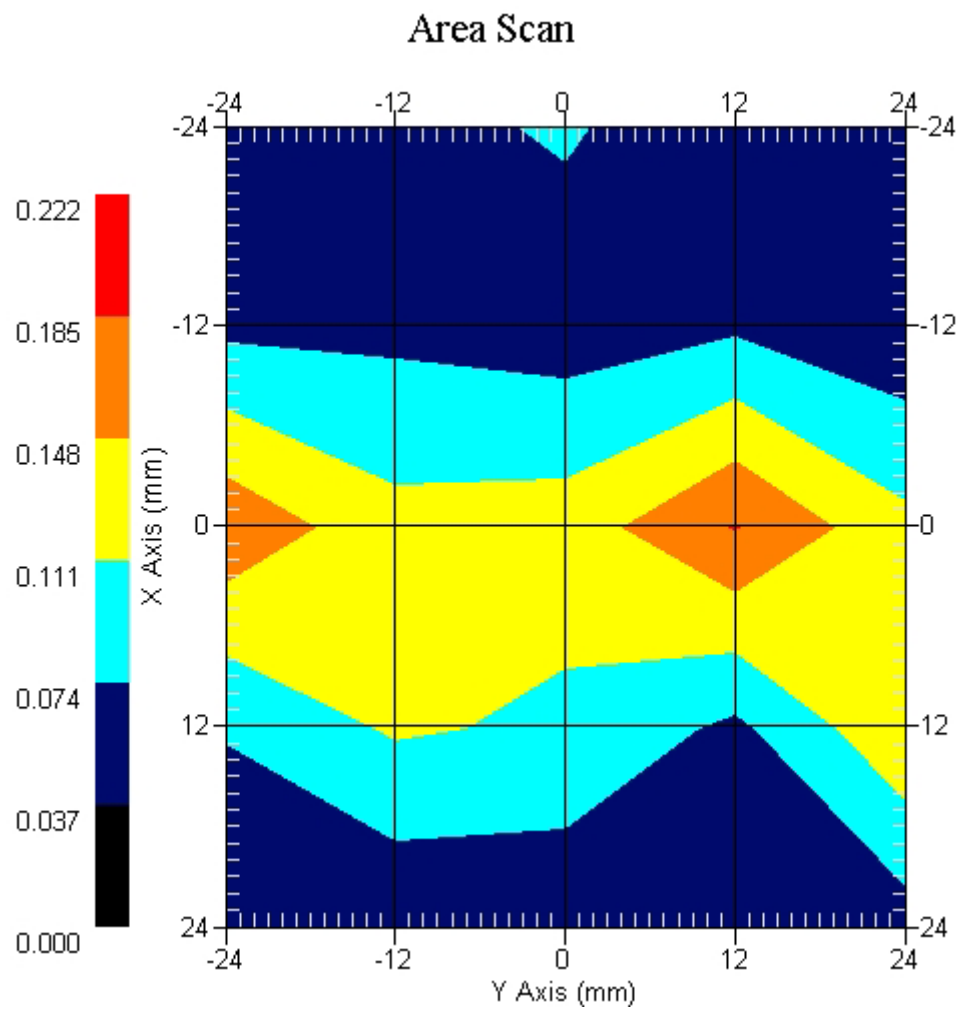
## Measurement Data

Crest Factor : 1  
 Tissue Temp. : 20.90 °C  
 Ambient Temp. : 22.00 °C  
 Area Scan : 5x5x1 : Measurement x=12mm, y=12mm, z=4mm  
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm  
 Power Drift-Start : 0.054 W/kg  
 Power Drift-Finish: 0.056 W/kg  
 Power Drift (%) : 3.571

DUT Position : Touch EUT Front  
 Channel : 1



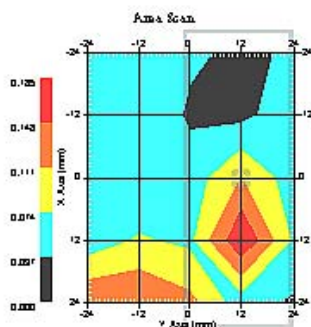
1 gram SAR value : 0.195 W/kg  
 10 gram SAR value : 0.132 W/kg  
 Area Scan Peak SAR : 0.187 W/kg  
 Zoom Scan Peak SAR : 0.526 W/kg



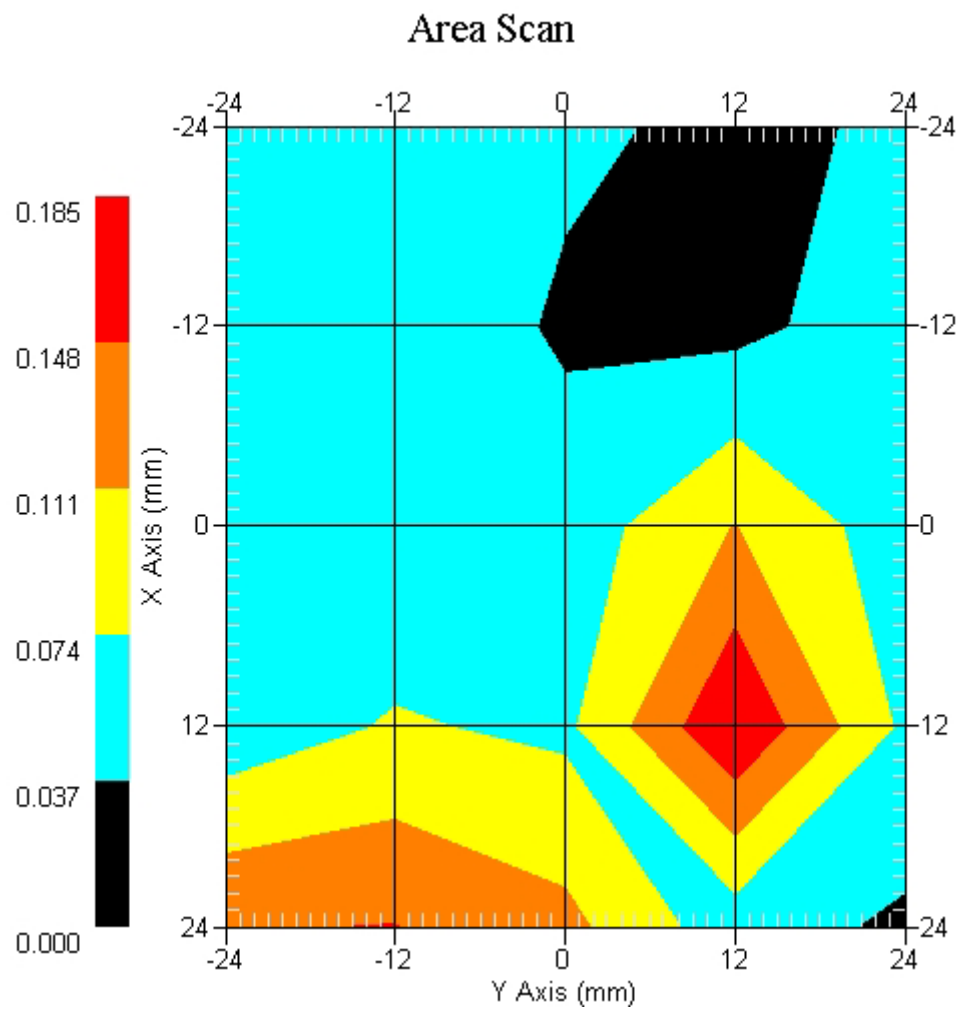
## Measurement Data

Crest Factor : 1  
 Tissue Temp. : 20.90 °C  
 Ambient Temp. : 22.00 °C  
 Area Scan : 5x5x1 : Measurement x=12mm, y=12mm, z=4mm  
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm  
 Power Drift-Start : 0.033 W/kg  
 Power Drift-Finish: 0.032 W/kg  
 Power Drift (%) : -3.125

DUT Position : Touch EUT Front  
 Channel : 6



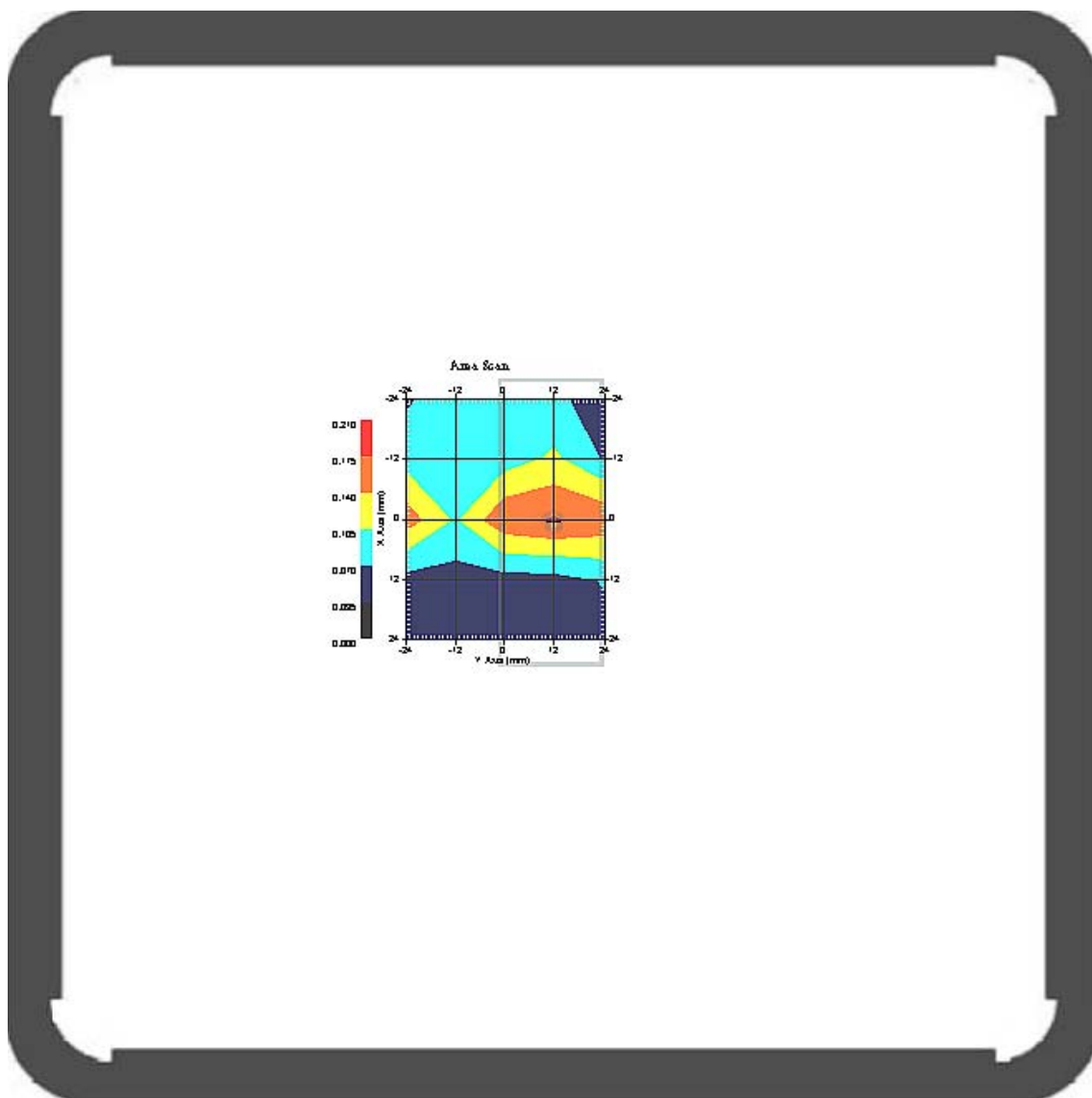
1 gram SAR value : 0.184 W/kg  
 10 gram SAR value : 0.121 W/kg  
 Area Scan Peak SAR : 0.183 W/kg  
 Zoom Scan Peak SAR : 0.600 W/kg



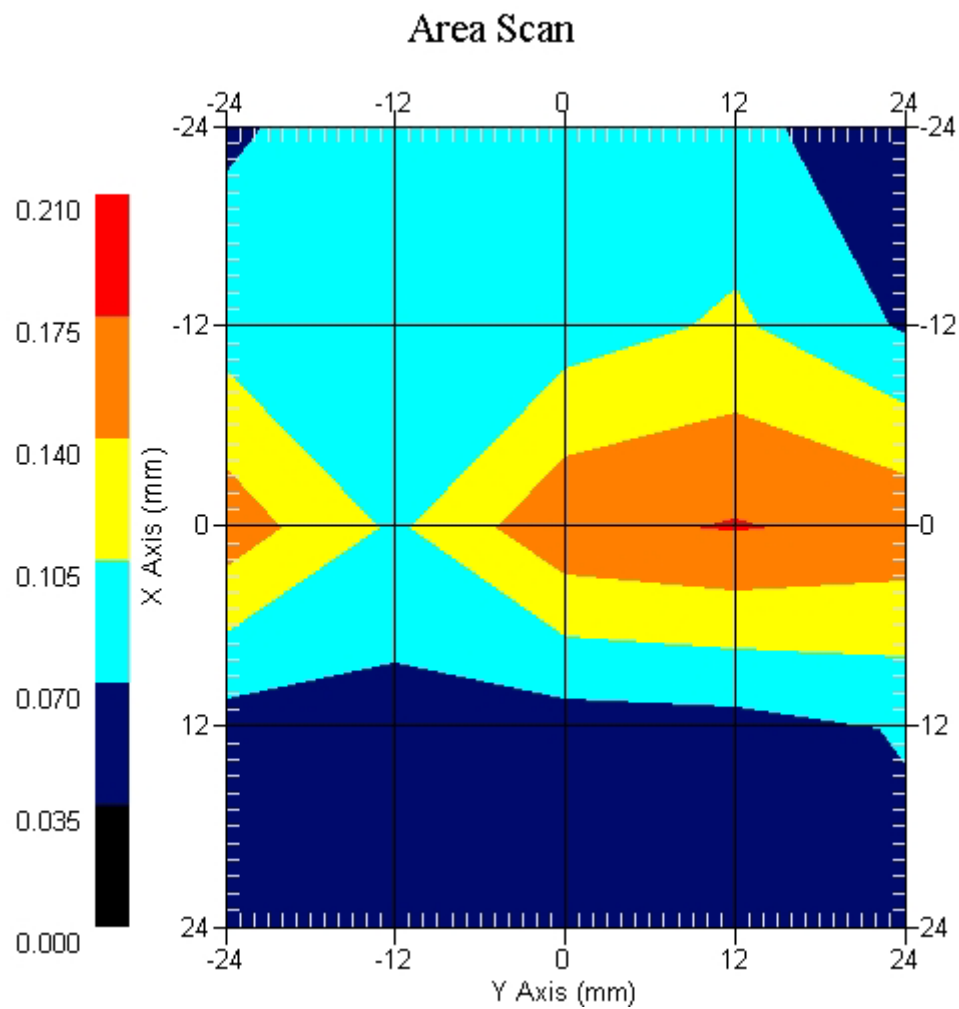
## Measurement Data

Crest Factor : 1  
 Tissue Temp. : 20.90 °C  
 Ambient Temp. : 22.00 °C  
 Area Scan : 5x5x1 : Measurement x=12mm, y=12mm, z=4mm  
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm  
 Power Drift-Start : 0.062 W/kg  
 Power Drift-Finish: 0.065 W/kg  
 Power Drift (%) : 4.615

DUT Position : Touch EUT Front  
 Channel : 11



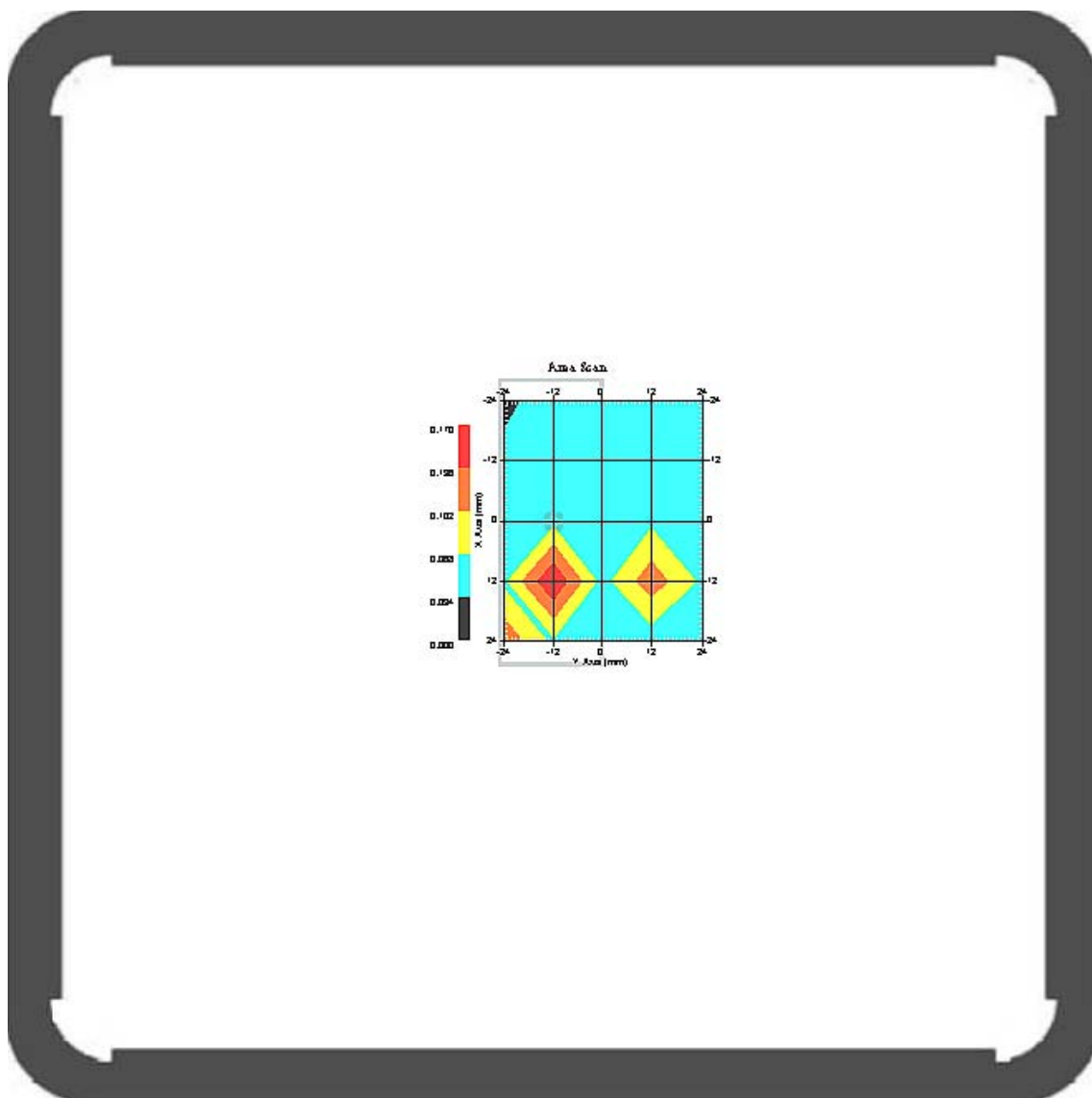
1 gram SAR value : 0.117 W/kg  
 10 gram SAR value : 0.103 W/kg  
 Area Scan Peak SAR : 0.177 W/kg  
 Zoom Scan Peak SAR : 0.440 W/kg



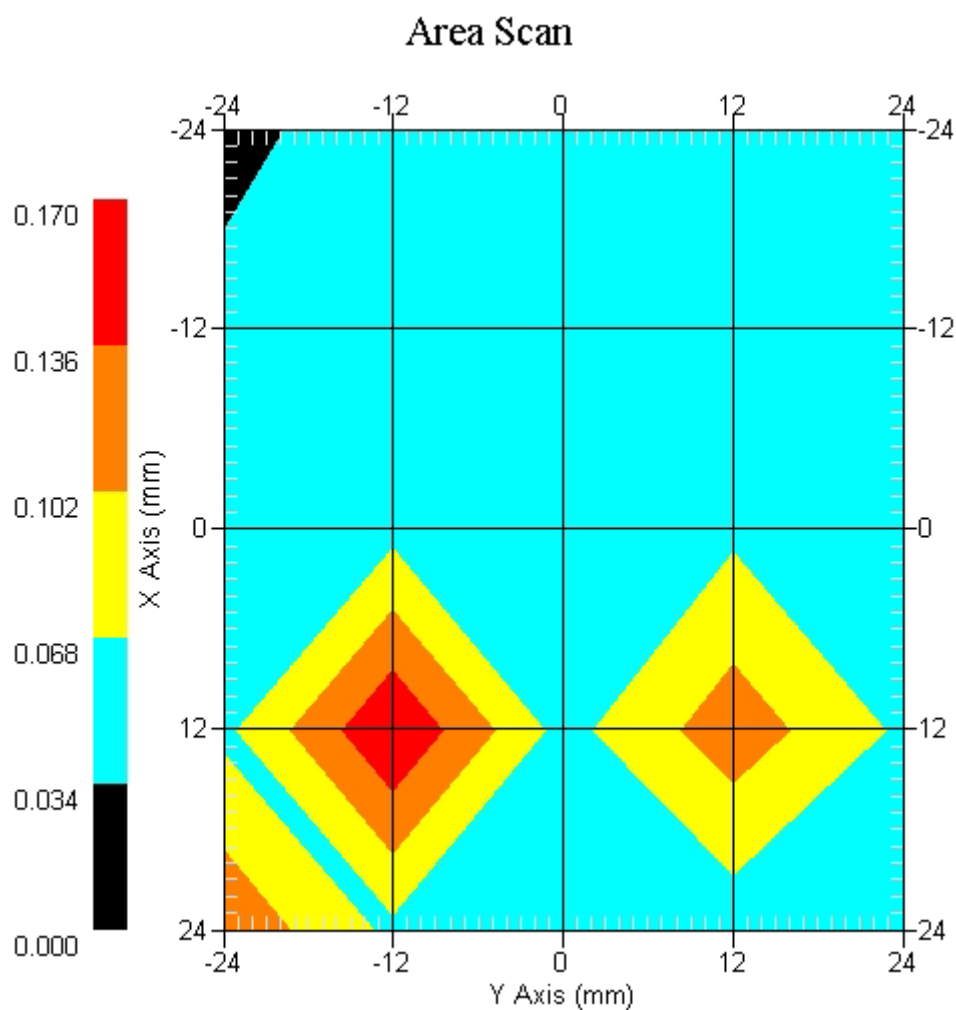
## Measurement Data

Crest Factor : 1  
 Tissue Temp. : 20.90 °C  
 Ambient Temp. : 22.00 °C  
 Area Scan : 5x5x1 : Measurement x=12mm, y=12mm, z=4mm  
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm  
 Power Drift-Start : 0.079 W/kg  
 Power Drift-Finish: 0.082 W/kg  
 Power Drift (%) : 3.658

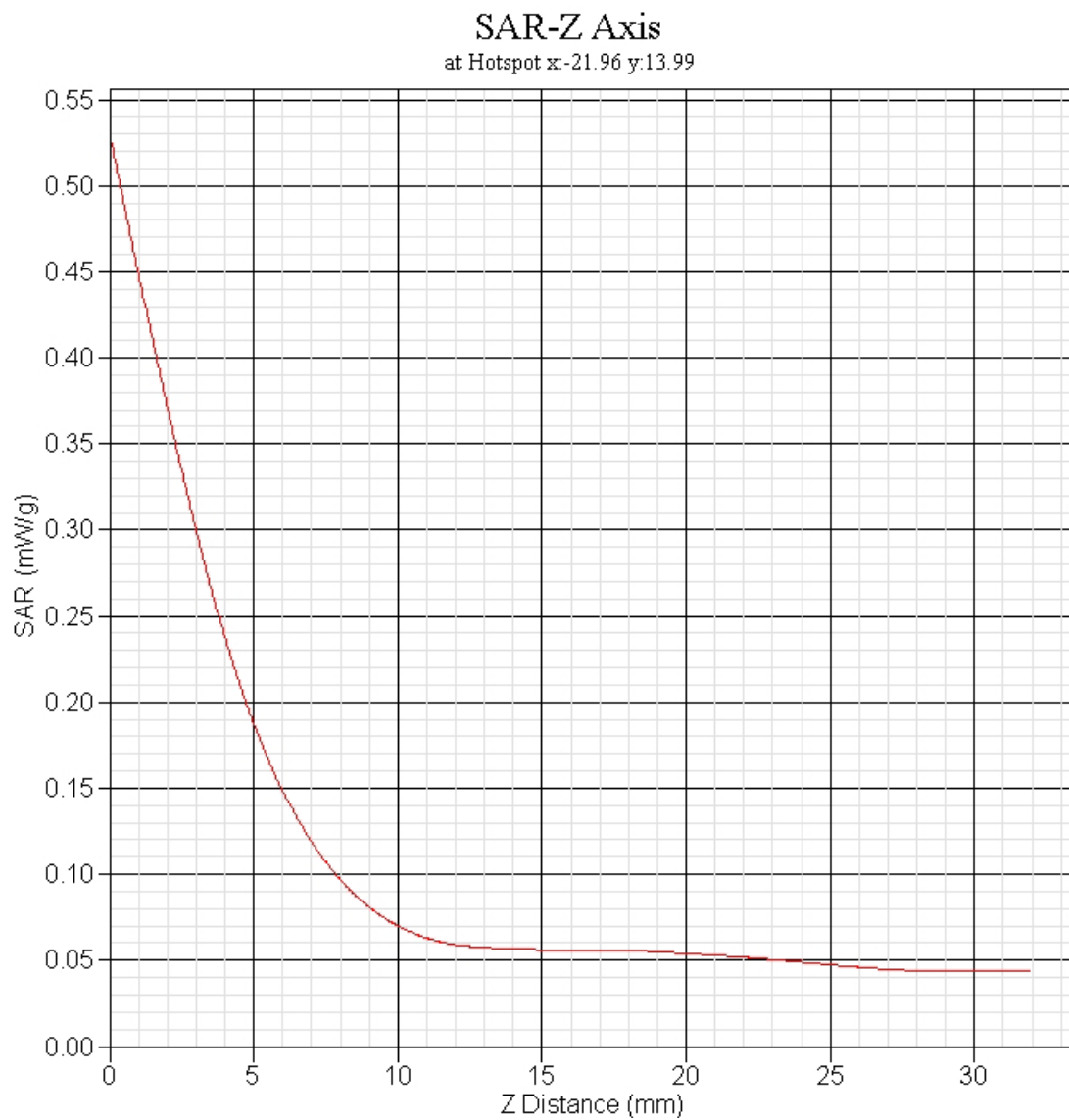
DUT Position : Touch EUT Back  
 Channel : 6



1 gram SAR value : 0.153 W/kg  
 10 gram SAR value : 0.113 W/kg  
 Area Scan Peak SAR : 0.169 W/kg  
 Zoom Scan Peak SAR : 0.330 W/kg



**802.11n 20MHz BW, Z-Axis plot**  
channel: 1



ALSAS-10U VER 2.3.2 APREL Laboratories  
SAR Test Report -802.11n, 40MHz BW

Report Date : 13-Nov-2007  
Measurement Date : 13-Nov-2007

## Product Data

Device Name : USB  
Type : Other  
Model : UB801Rn  
Frequency : 2450.00 MHz  
Drift Time : 0 min(s)  
Length : 10.4 mm  
Width : 26.3 mm  
Depth : 68 mm  
Antenna Type : Internal

## Phantom Data

Type : Uni-Phantom  
Size (mm) : 280 x 280 x 200  
Location : Center

## Tissue Data

Type : BODY  
Serial No. : 325-B  
Frequency : 2450.00 MHz  
Last Calib. Date : 13-Nov-2007  
Temperature : 20.90 °C  
Ambient Temp. : 22.00 °C  
Humidity : 48.00 RH%  
Epsilon : 52.53 F/m  
Sigma : 1.836 S/m  
Density : 1000.00 kg/cu. m

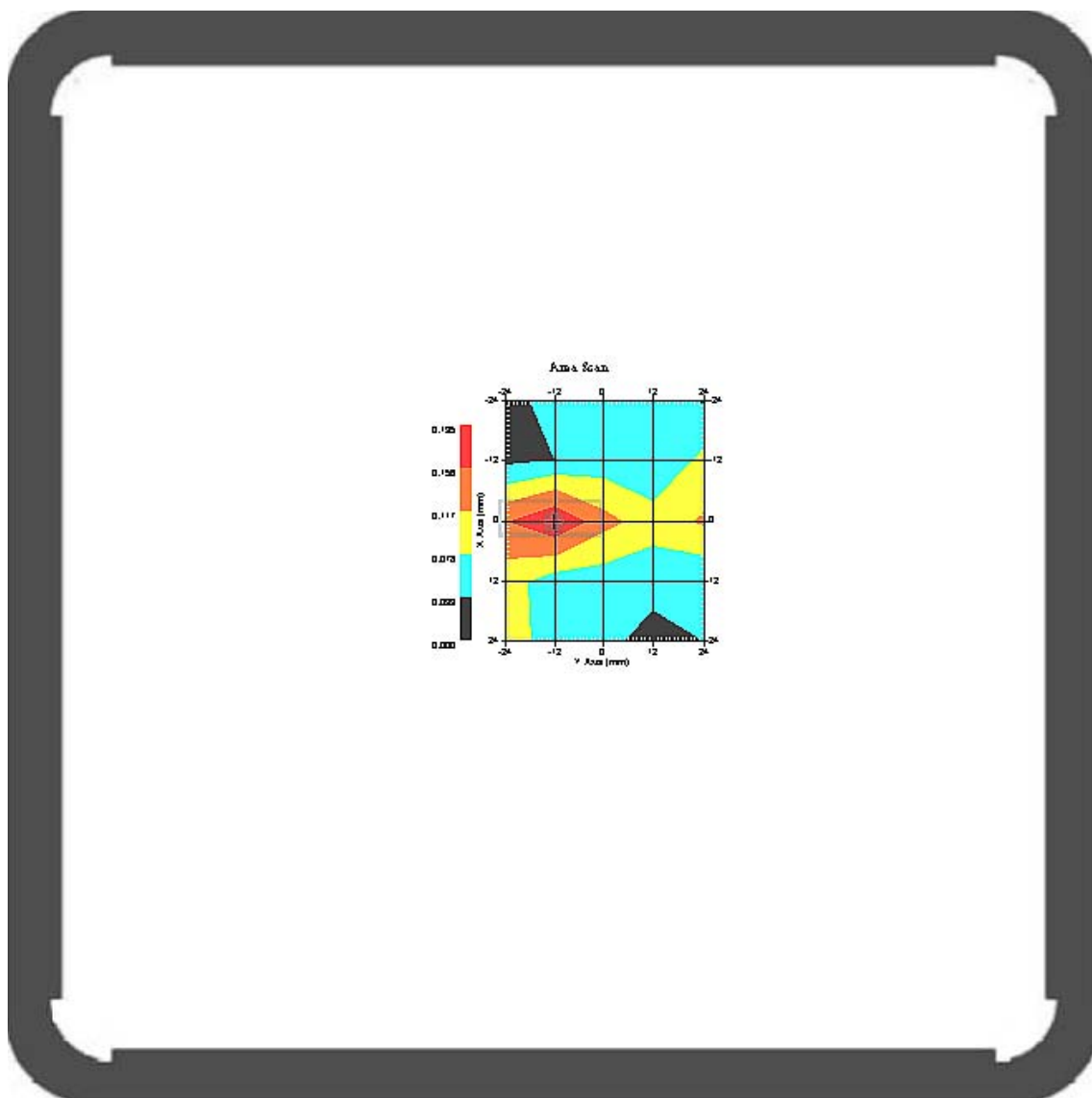
## Probe Data

Name : Probe 264  
Model : E020  
Type : E-Field Triangle  
Serial No. : 264  
Last Calib. Date : 21-Aug-2007  
Frequency : 2450.00 MHz  
Duty Cycle Factor: 1  
Conversion Factor: 5.2  
Probe Sensitivity: 1.20 1.20 1.20  $\mu\text{V}/(\text{V}/\text{m})^2$   
Compression Point: 95.00 mV  
Offset : 1.56 mm

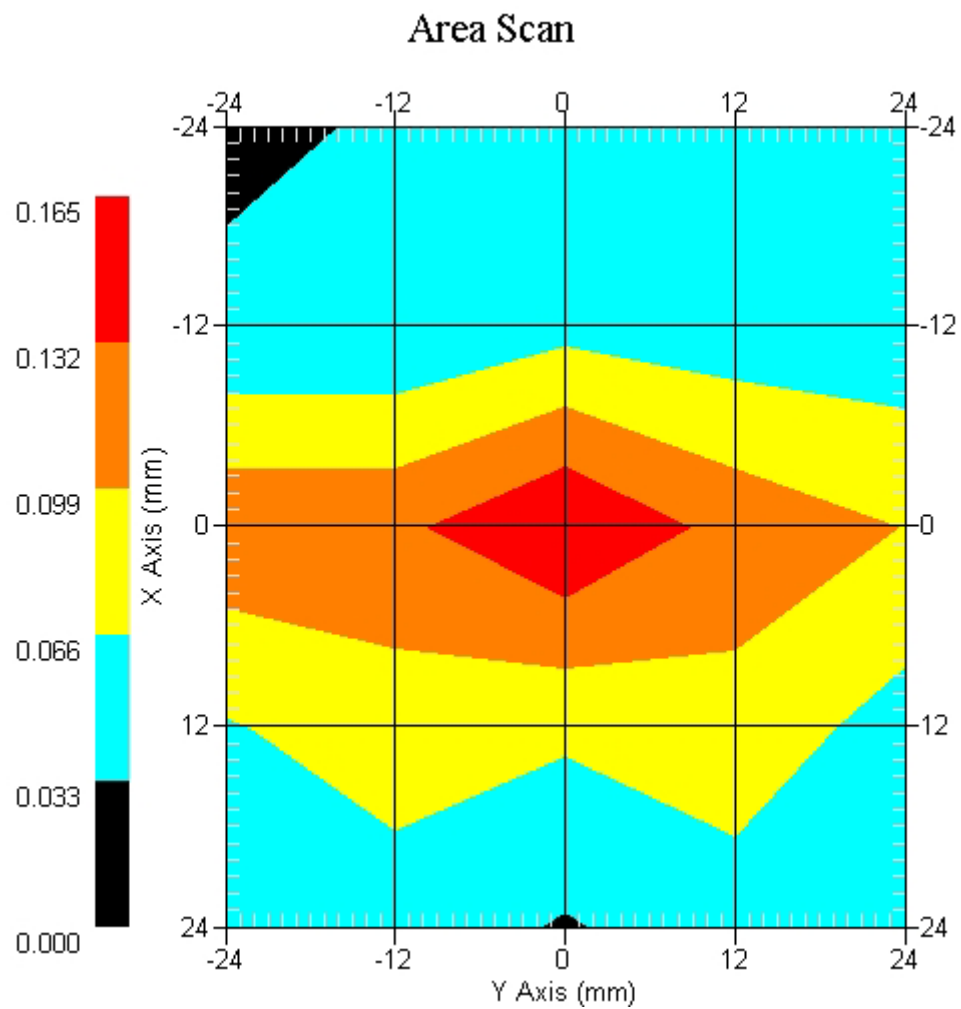
## Measurement Data

Crest Factor : 1  
 Tissue Temp. : 20.90 °C  
 Ambient Temp. : 22.00 °C  
 Area Scan : 5x5x1 : Measurement x=12mm, y=12mm, z=4mm  
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm  
 Power Drift-Start : 0.098 W/kg  
 Power Drift-Finish: 0.101 W/kg  
 Power Drift (%) : 2.970

DUT Position : Touch EUT Top  
 Channel : 6



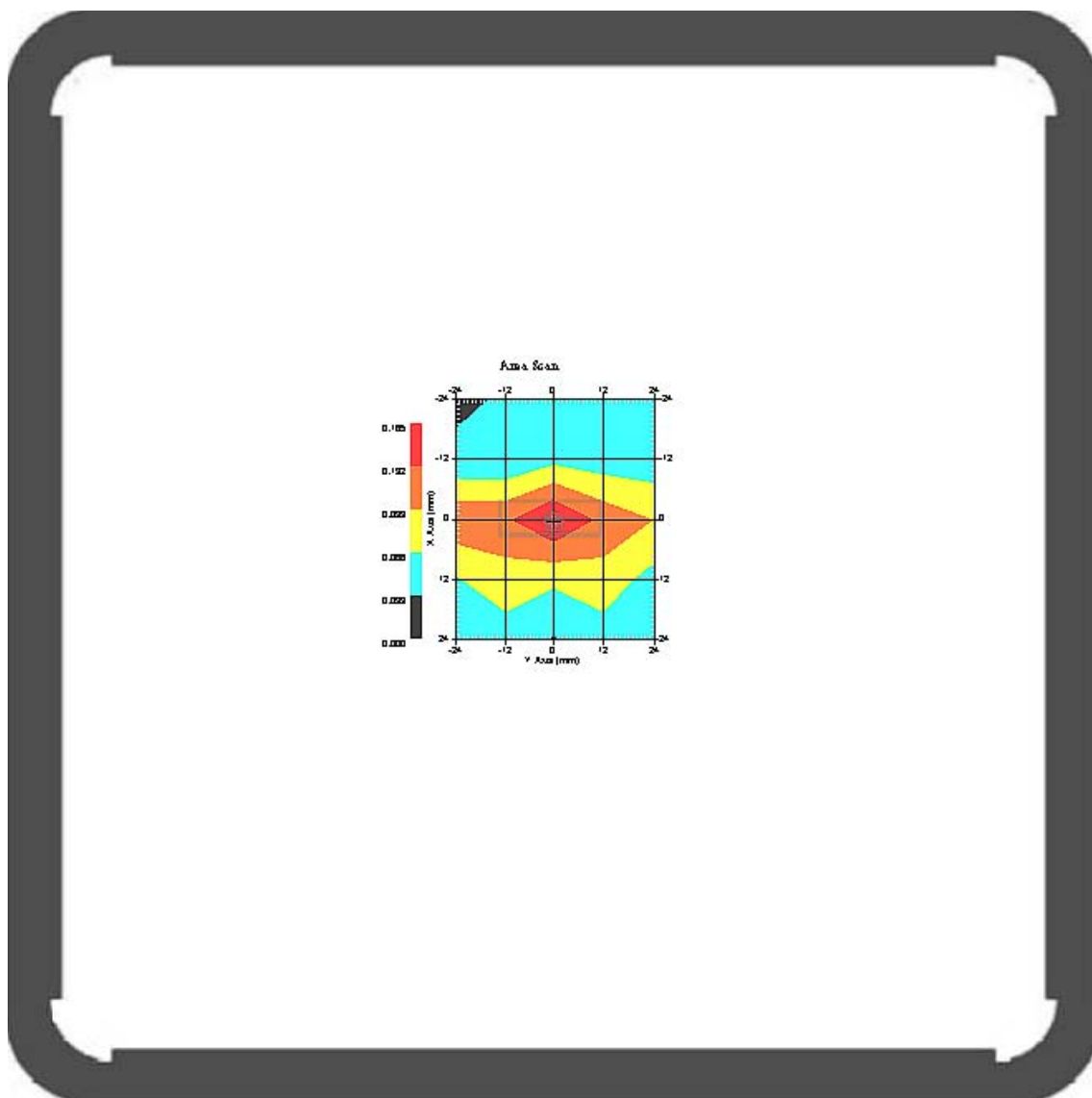
1 gram SAR value : 0.119 W/kg  
 10 gram SAR value : 0.079 W/kg  
 Area Scan Peak SAR : 0.193 W/kg  
 Zoom Scan Peak SAR : 0.182 W/kg



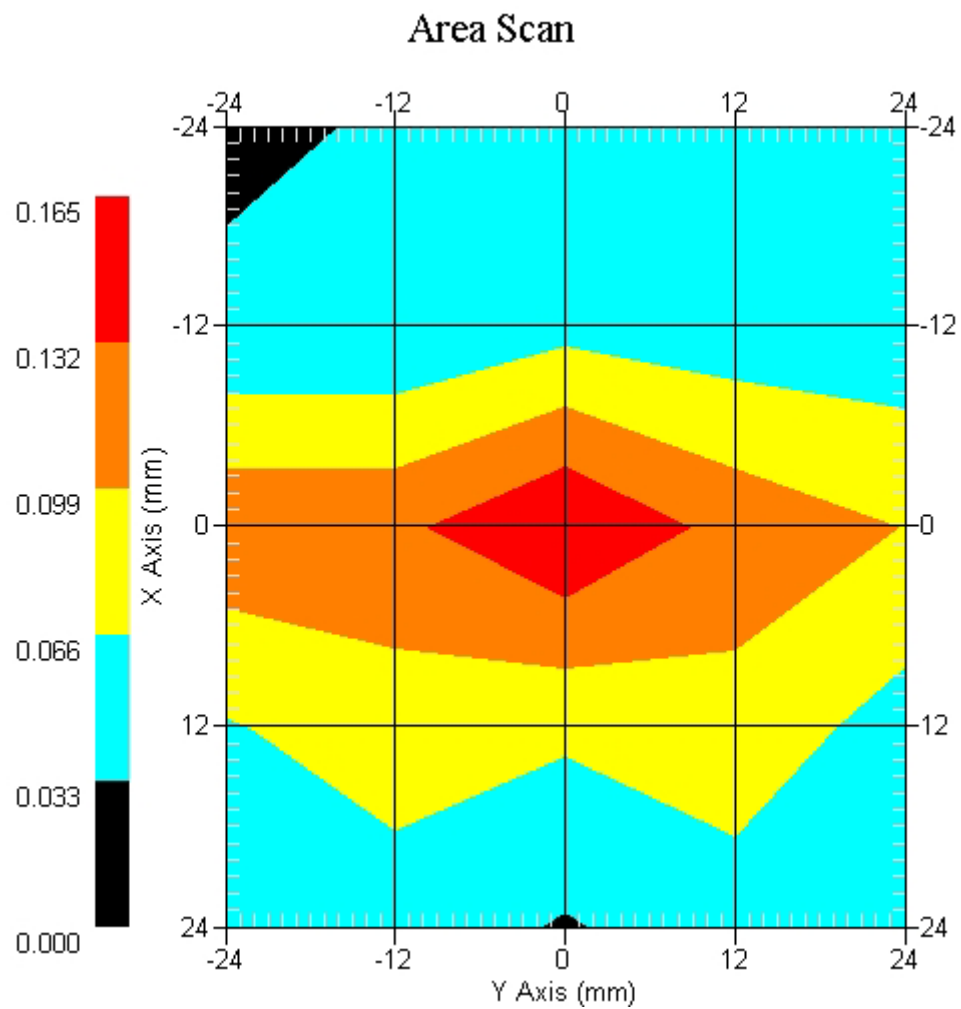
## Measurement Data

Crest Factor : 1  
 Tissue Temp. : 20.90 °C  
 Ambient Temp. : 22.00 °C  
 Area Scan : 5x5x1 : Measurement x=12mm, y=12mm, z=4mm  
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm  
 Power Drift-Start : 0.077 W/kg  
 Power Drift-Finish: 0.080 W/kg  
 Power Drift (%) : 3.750

DUT Position : Touch EUT Top  
 Channel : 6



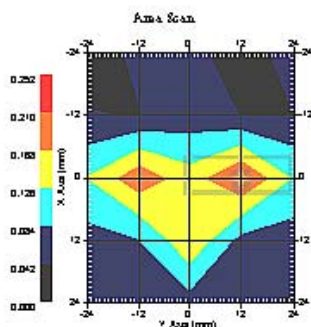
1 gram SAR value : 0.217 W/kg  
 10 gram SAR value : 0.113 W/kg  
 Area Scan Peak SAR : 0.165 W/kg  
 Zoom Scan Peak SAR : 0.510 W/kg



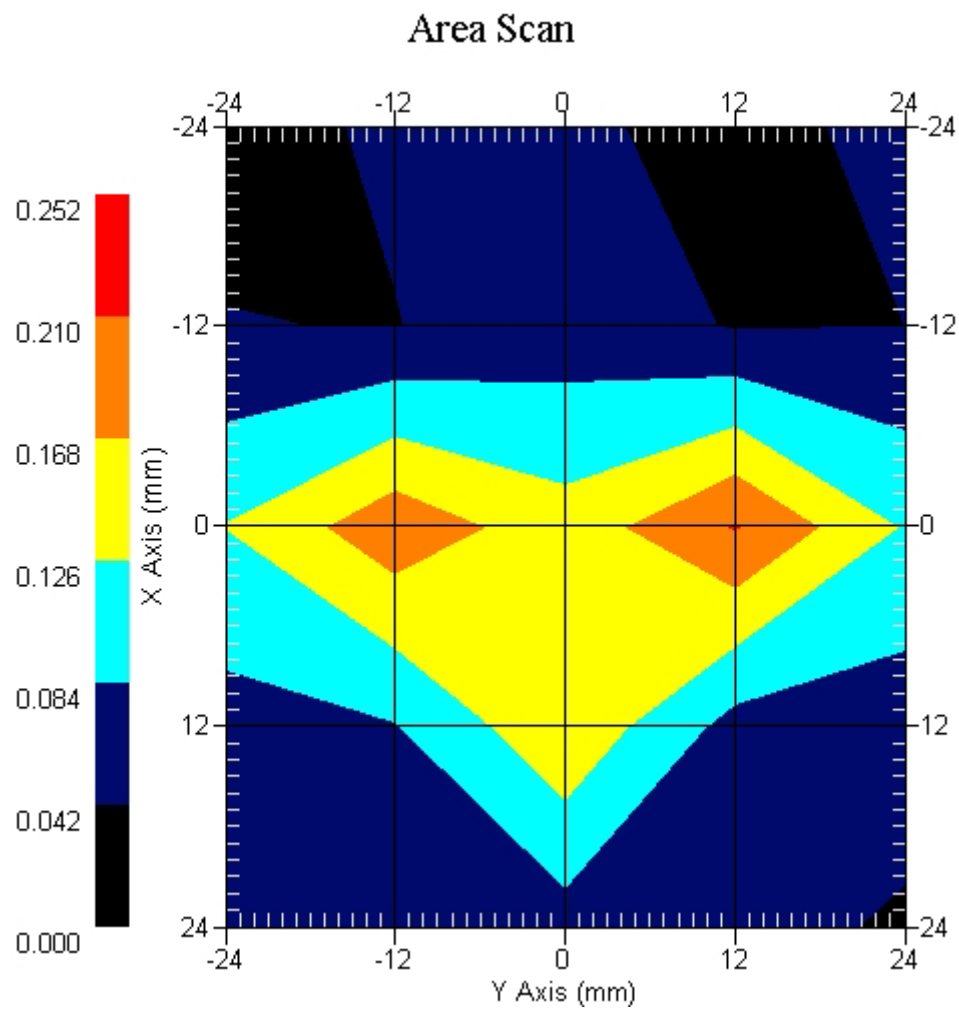
## Measurement Data

Crest Factor : 1  
 Tissue Temp. : 20.90 °C  
 Ambient Temp. : 22.00 °C  
 Area Scan : 5x5x1 : Measurement x=12mm, y=12mm, z=4mm  
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm  
 Power Drift-Start : 0.118 W/kg  
 Power Drift-Finish: 0.121 W/kg  
 Power Drift (%) : 2.479

DUT Position : Touch EUT Top  
 Channel : 11



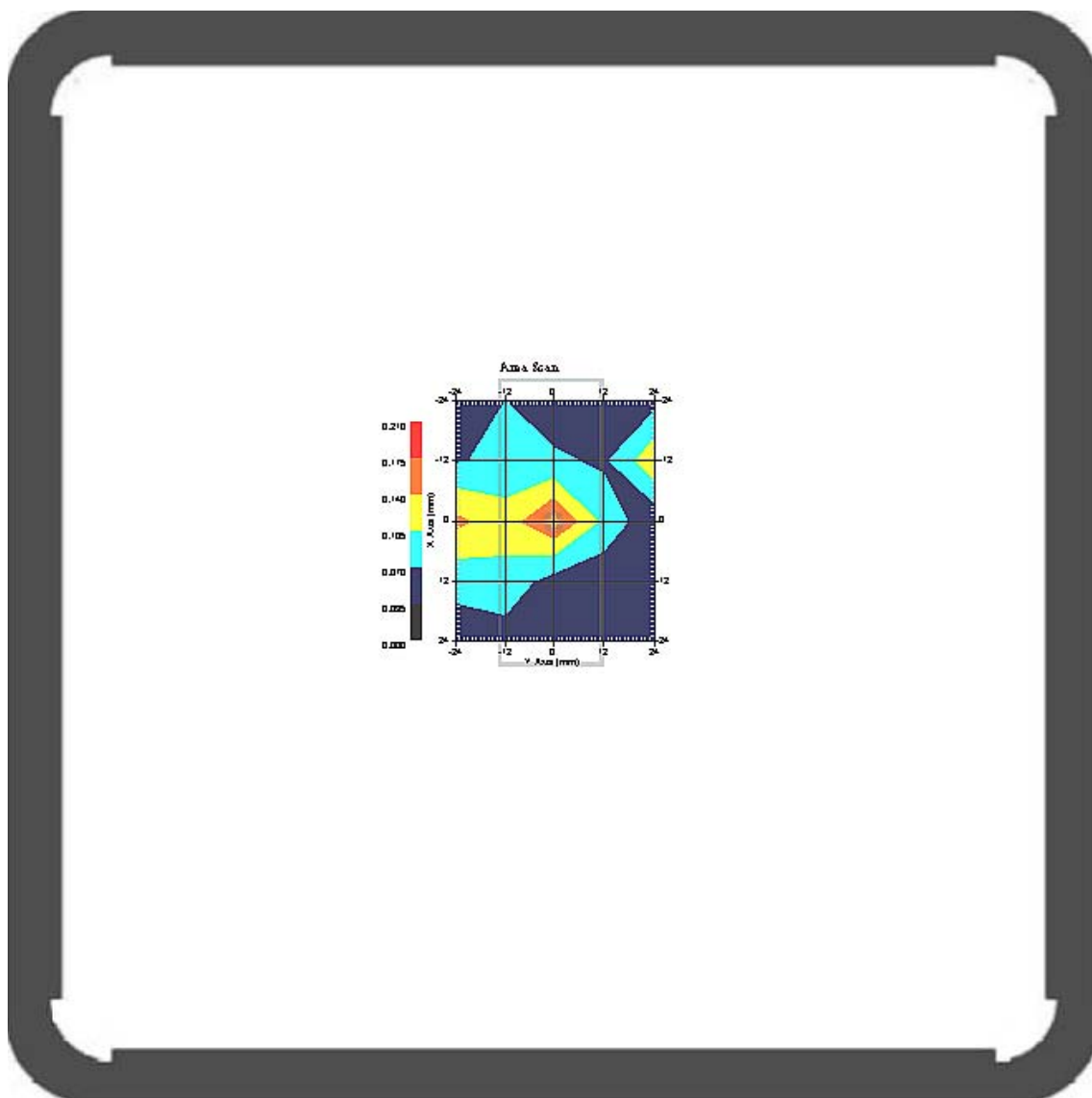
1 gram SAR value : 0.251 W/kg  
 10 gram SAR value : 0.172 W/kg  
 Area Scan Peak SAR : 0.212 W/kg  
 Zoom Scan Peak SAR : 0.460 W/kg



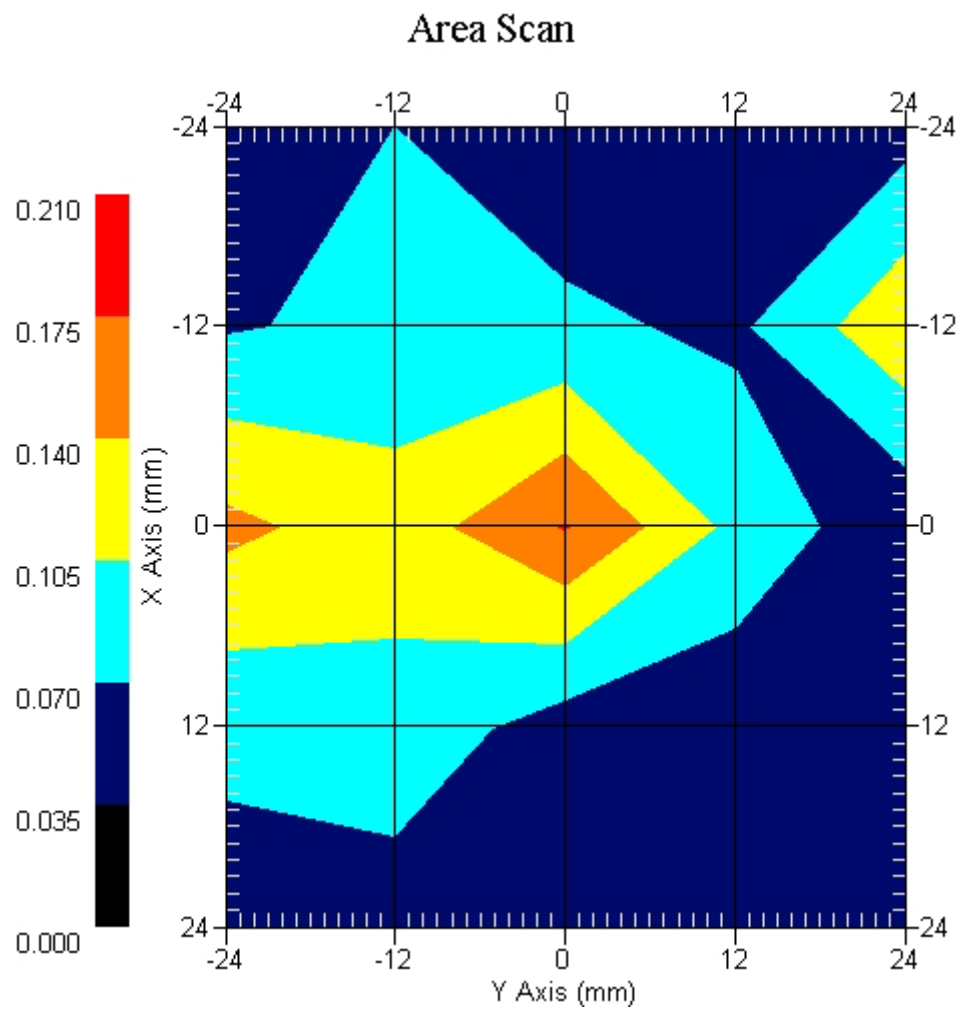
## Measurement Data

Crest Factor : 1  
 Tissue Temp. : 20.90 °C  
 Ambient Temp. : 22.00 °C  
 Area Scan : 5x5x1 : Measurement x=12mm, y=12mm, z=4mm  
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm  
 Power Drift-Start : 0.038 W/kg  
 Power Drift-Finish: 0.039 W/kg  
 Power Drift (%) : 2.564

DUT Position : Touch EUT Front  
 Channel : 6



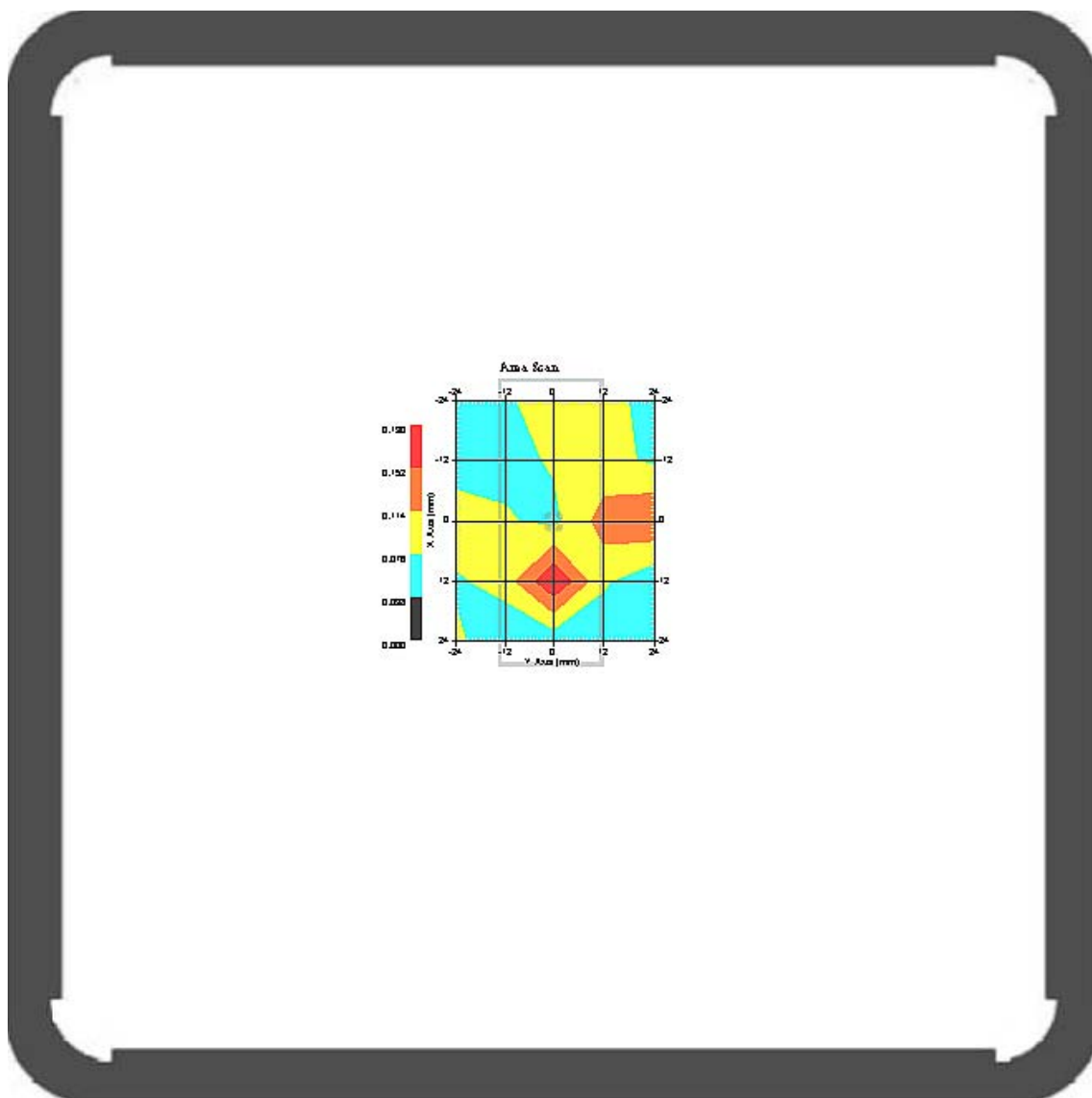
1 gram SAR value : 0.215 W/kg  
 10 gram SAR value : 0.127 W/kg  
 Area Scan Peak SAR : 0.177 W/kg  
 Zoom Scan Peak SAR : 0.570 W/kg



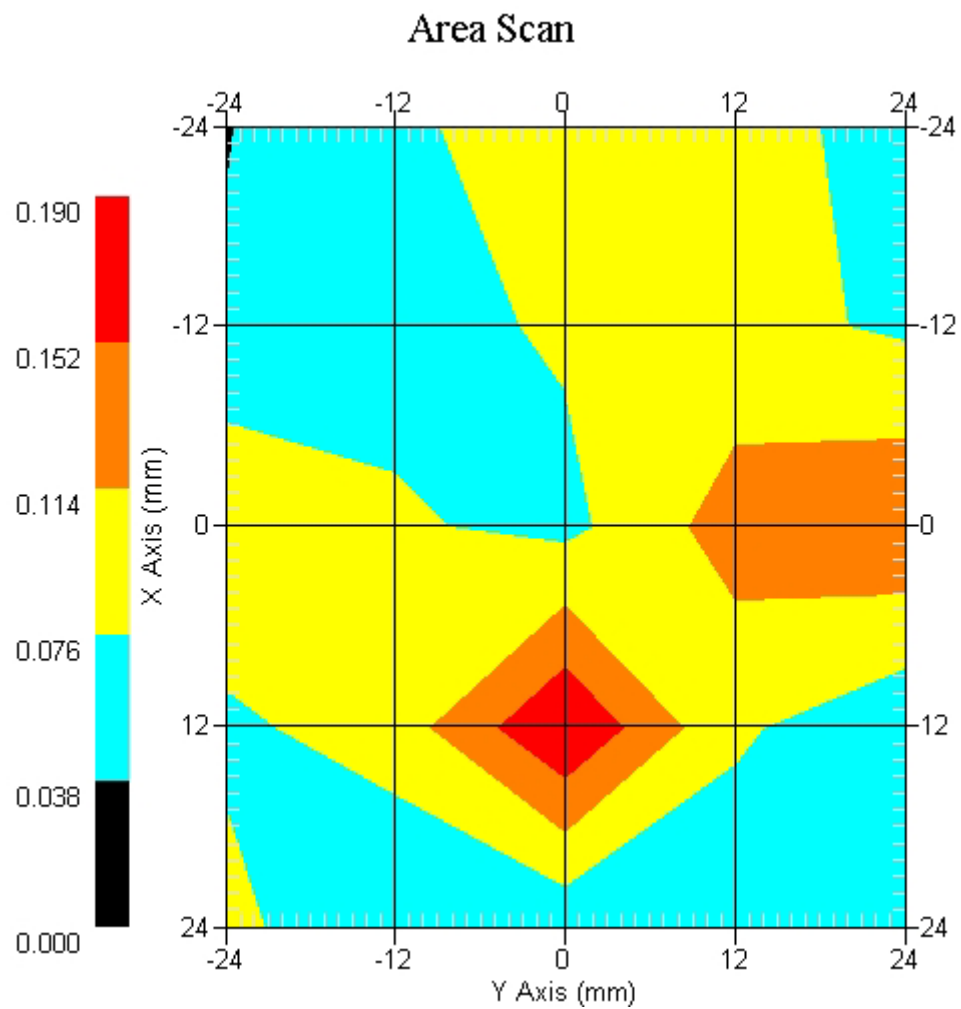
## Measurement Data

Crest Factor : 1  
 Tissue Temp. : 20.90 °C  
 Ambient Temp. : 22.00 °C  
 Area Scan : 5x5x1 : Measurement x=12mm, y=12mm, z=4mm  
 Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm  
 Power Drift-Start : 0.099 W/kg  
 Power Drift-Finish: 0.102 W/kg  
 Power Drift (%) : 2.941

DUT Position : Touch EUT Back  
 Channel : 6

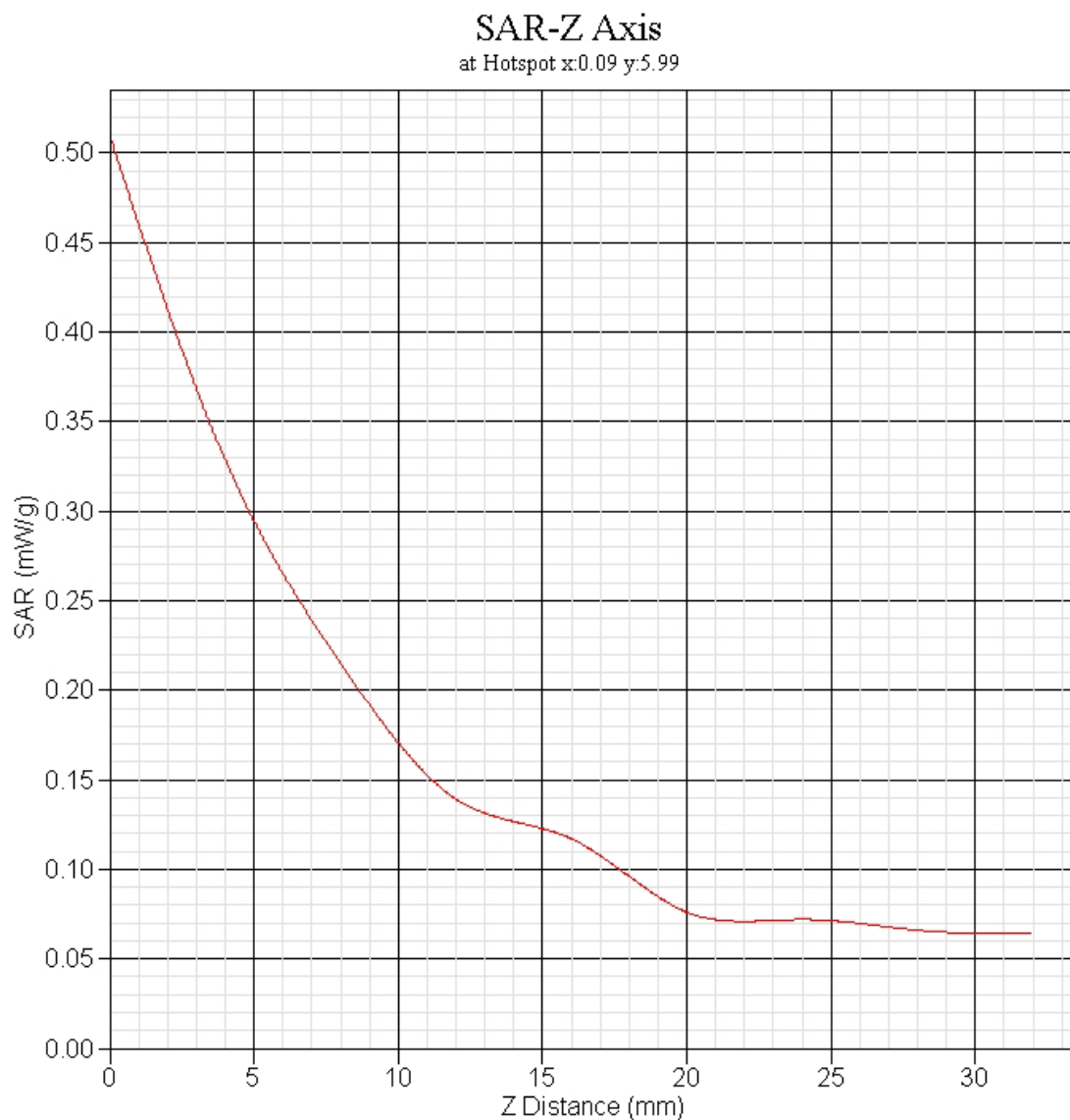


1 gram SAR value : 0.173 W/kg  
 10 gram SAR value : 0.122 W/kg  
 Area Scan Peak SAR : 0.188 W/kg  
 Zoom Scan Peak SAR : 0.100 W/kg



802.11n 40MHz BW, Z-Axis plot

channel: 6

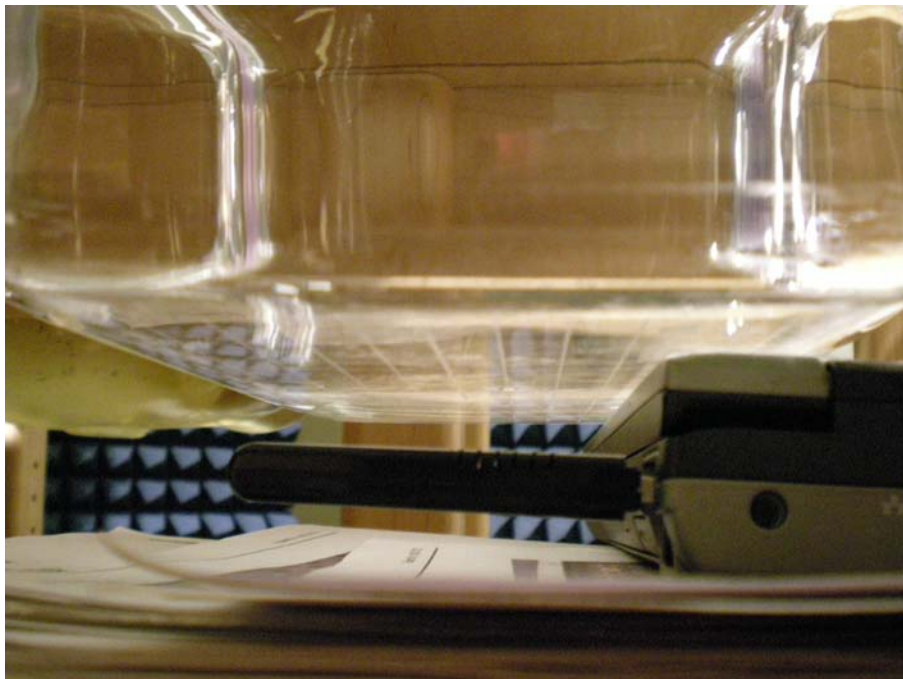


**Appendix C. Test Setup Photographs & EUT Photographs****Test Setup Photographs****EUT Top**

**( EUT was tested with Notebook “DELL AW-M65” )**

**EUT Front**

**( EUT was tested with Notebook “DELL AW-M65” )**



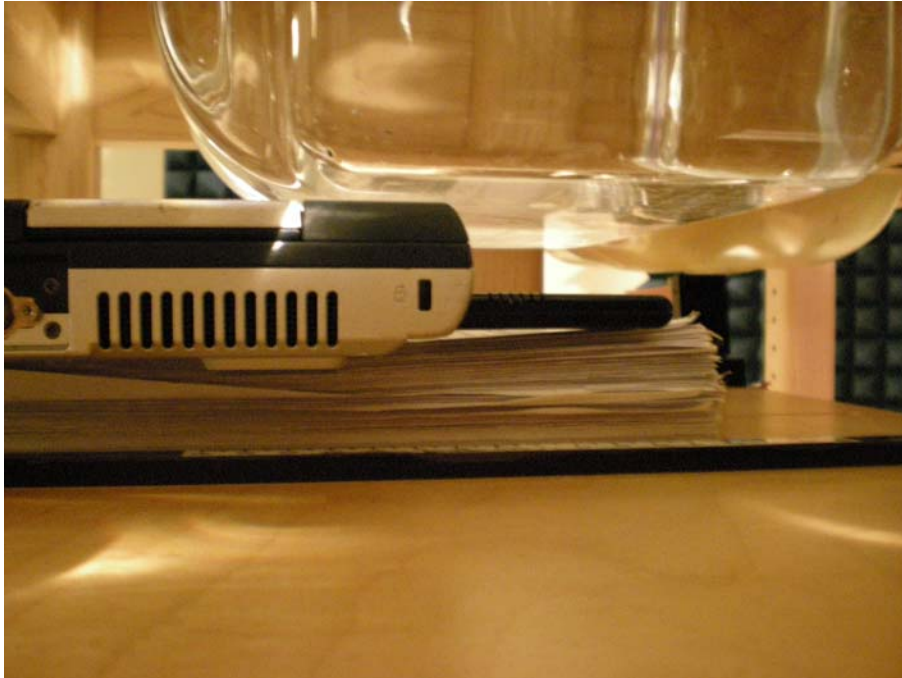
**EUT Back**  
**( EUT was tested with Notebook “DELL AW-M65”)**



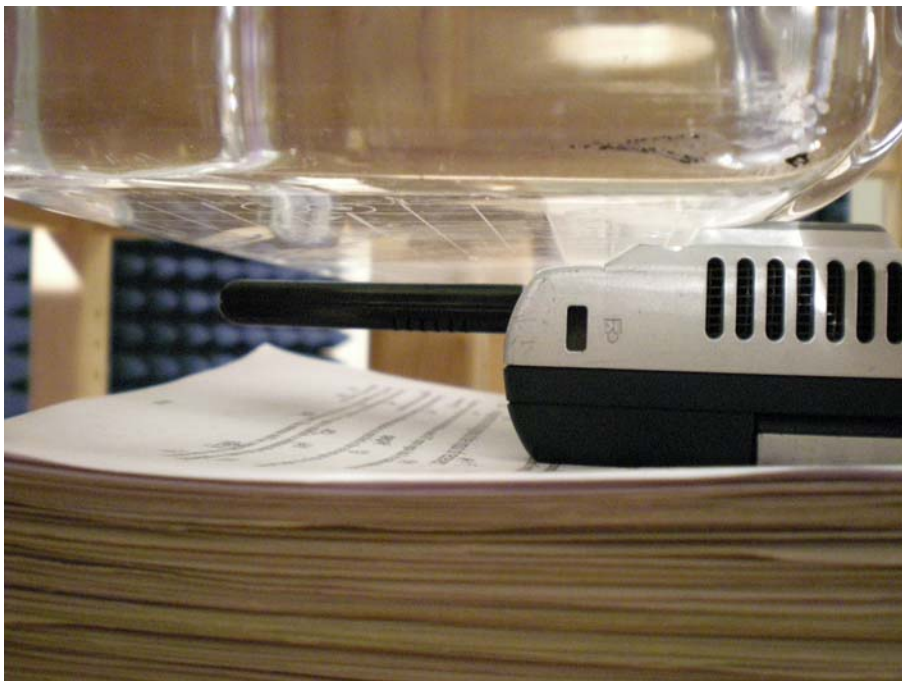
**EUT Top**  
**( EUT was tested with Notebook “ASUS L-400”)**



**EUT Front**  
**( EUT was tested with Notebook “ASUS L-400” )**



**EUT Back**  
**( EUT was tested with Notebook “ASUS L-400” )**



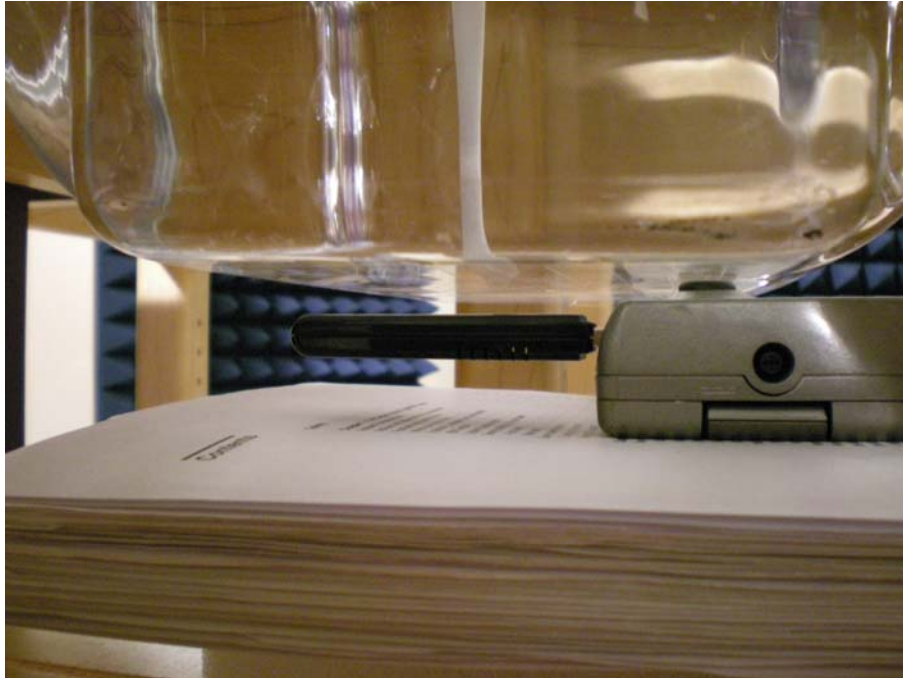
**EUT Top**  
**( EUT was tested with Notebook “DELL D400”)**



**EUT Front**  
**( EUT was tested with Notebook “DELL D400”)**



**EUT Back**  
**( EUT was tested with Notebook “DELL D400”)**



Note: The positions used in the measurements were according to IEEE 1528-2003.

**Test EUT Photographs**





## **Appendix - Probe Calibration**

**Miniature Isotropic RF Probe**

**M/N: ALS-E-020**

**S/N: 264**

**2450MHz Head Calibration**

**2450MHz Body Calibration**

# NCL CALIBRATION LABORATORIES

Calibration File No.: CP-825

Client: QUIETEK

## 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

Manufacturer: APREL Laboratories

Model No.: ALS-E-020

Serial No.: 264

HEAD Calibration

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

Project No: QTKB-E-Probe-5305

Calibrated: 22<sup>nd</sup> August 2007

Released on: 4<sup>th</sup> September 2007

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 E-020 264.

## 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

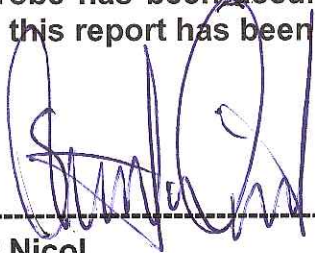
## Conditions

Probe 264 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.



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**Stuart Nicol**



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**J. Hones**

## **Calibration Results Summary**

|                       |                     |
|-----------------------|---------------------|
| <b>Probe Type:</b>    | E-Field Probe E-020 |
| <b>Serial Number:</b> | 264                 |
| <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 Head Tissue**

**Frequency:** 2450 MHz

**Epsilon:** 39.2 (+/-5%)      **Sigma:** 1.80 S/m (+/-5%)

### **ConvF**

**Channel X:** 5.0

**Channel Y:** 5.0

**Channel Z:** 5.0

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

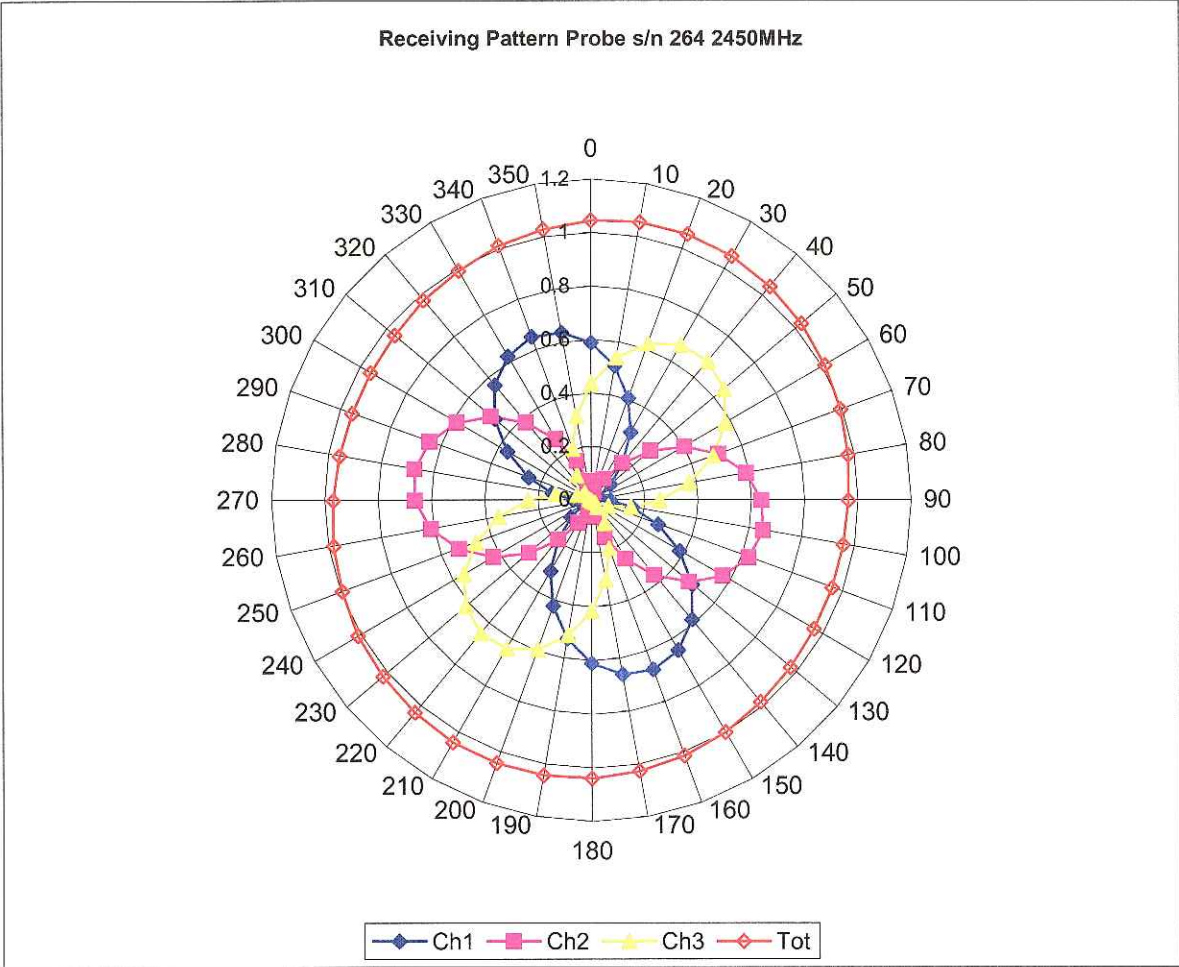
## **Boundary Effect:**

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

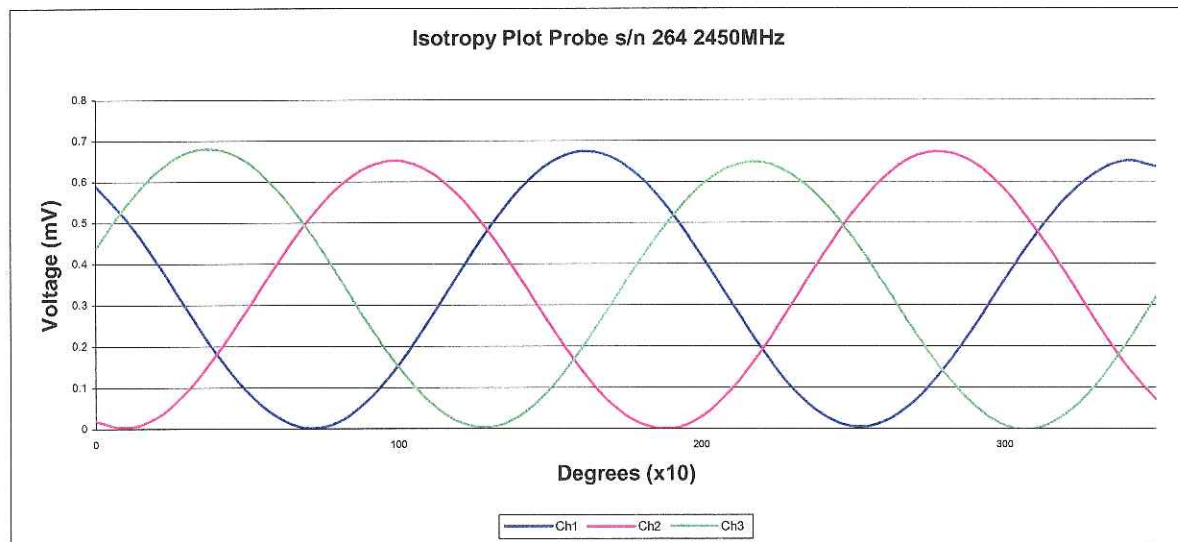
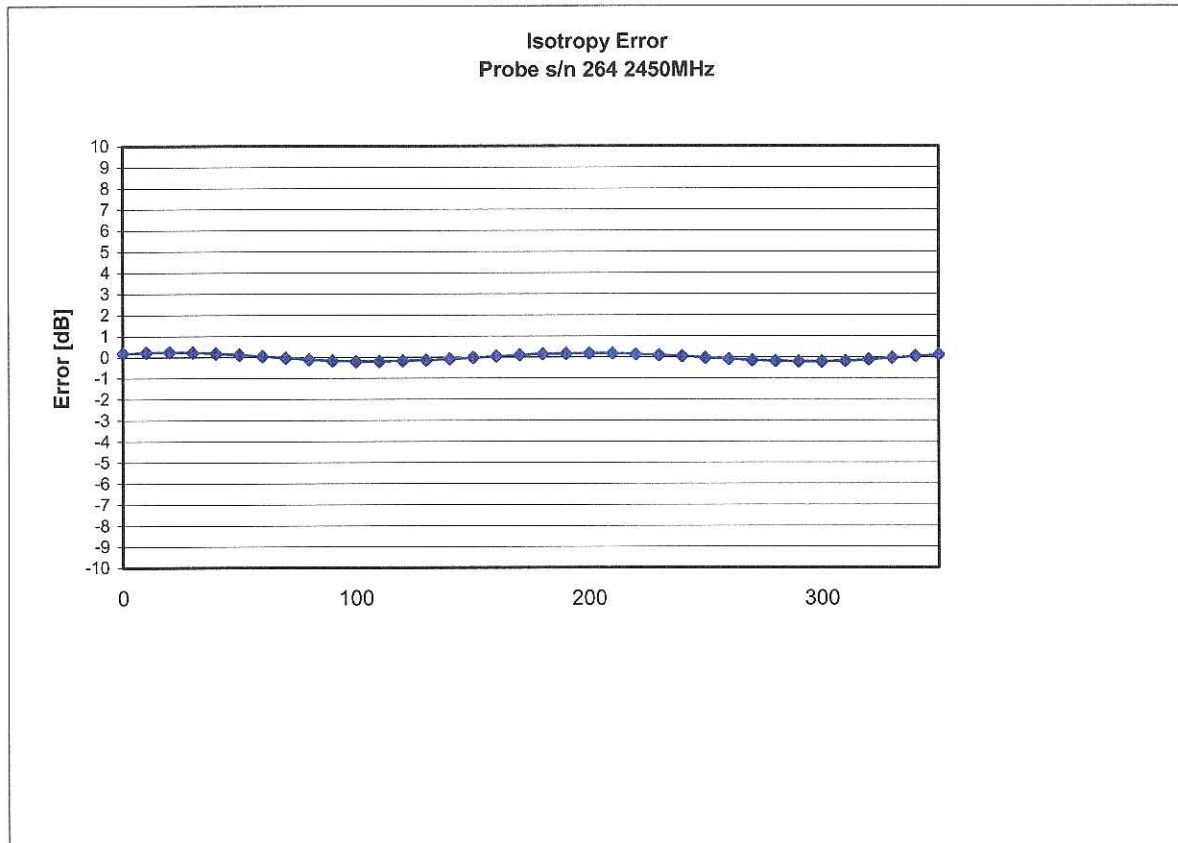
## **Spatial Resolution:**

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

Receiving Pattern 2450 MHz (Air)



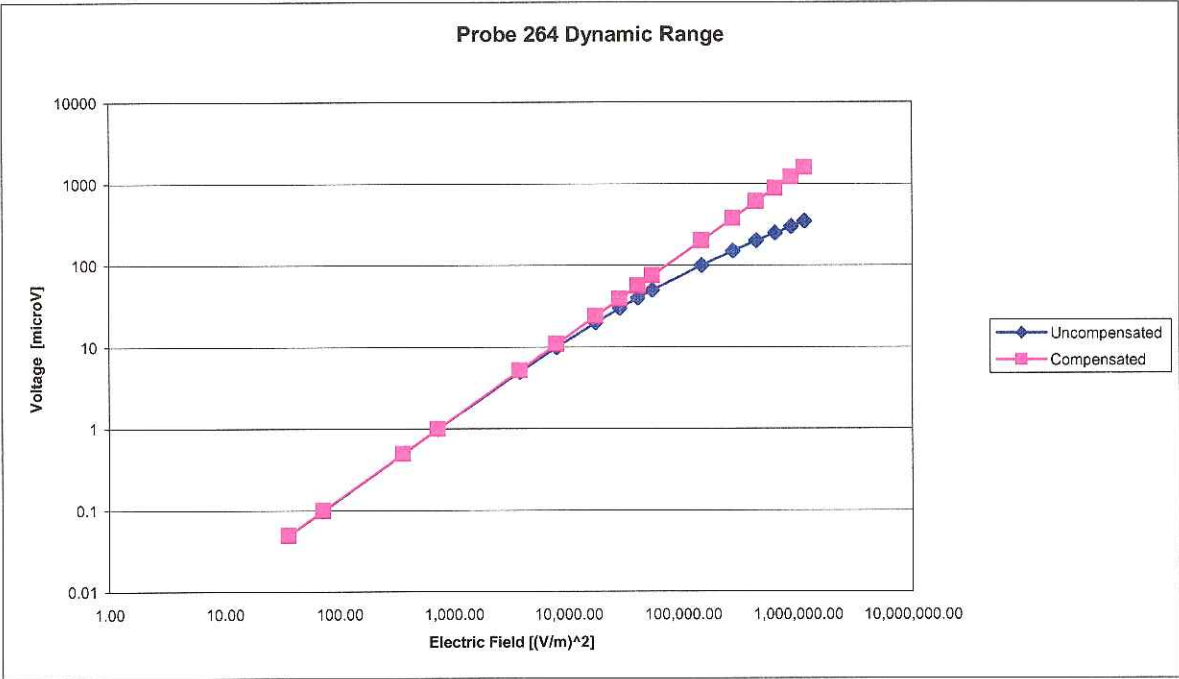
## Isotropy Error 2450 MHz (Air)



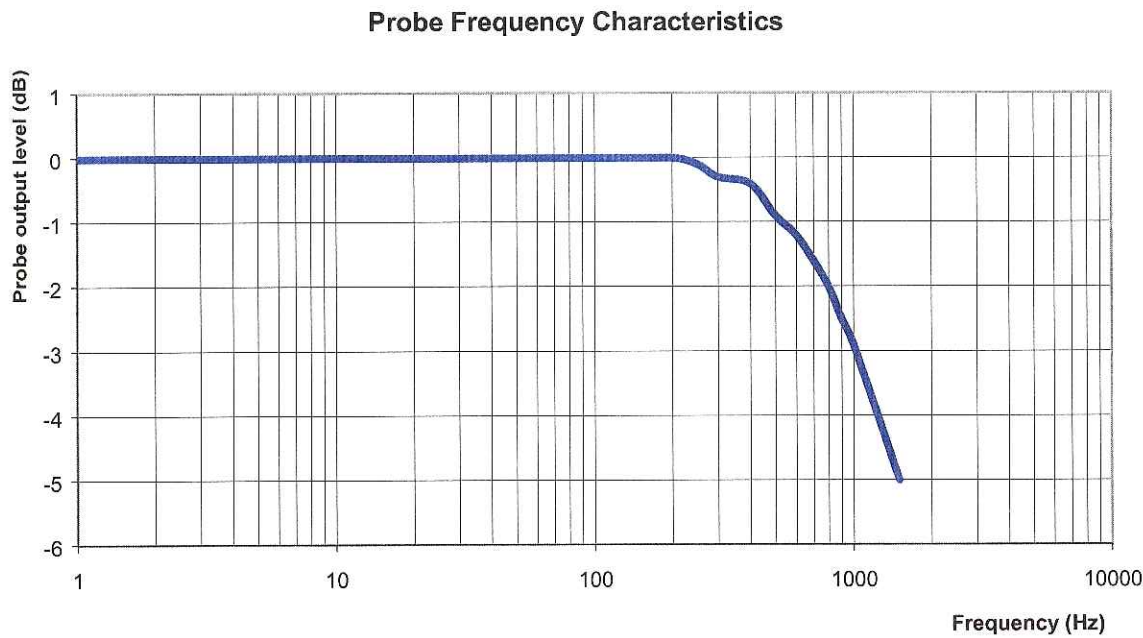
Isotropy in Tissue:

0.10 dB

Dynamic Range



**Video Bandwidth**



|                                   |             |
|-----------------------------------|-------------|
| <b>Video Bandwidth at 500 Hz</b>  | <b>1 dB</b> |
| <b>Video Bandwidth at 1000 Hz</b> | <b>3 dB</b> |

## **Conversion Factor Uncertainty Assessment**

**Frequency:** 2450MHz

**Epsilon:** 39.2 (+/-5%)      **Sigma:** 1.80 S/m (+/-5%)

### **ConvF**

**Channel X:** 5.0      7%(K=2)

**Channel Y:** 5.0      7%(K=2)

**Channel Z:** 5.0      7%(K=2)

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

### **Boundary Effect:**

For a distance of 2.4mm 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 2007.

# NCL CALIBRATION LABORATORIES

Calibration File No.: CP-832

Client: QUIETEK

## 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

Manufacturer: APREL Laboratories

Model No.: ALS-E-020

Serial No.: 264

BODY Calibration

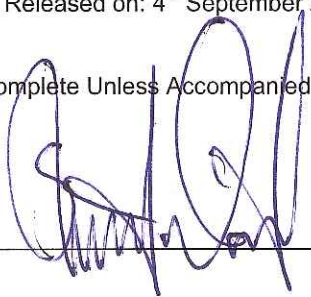
Calibration Procedure: SSI/DRB-TP-D01-032-E020-V2

Project No: QTKB-E-Probe-5305

Calibrated: 21<sup>st</sup> August 2007  
Released on: 4<sup>th</sup> September 2007

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) 820-4161

## 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-020 264.

## 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

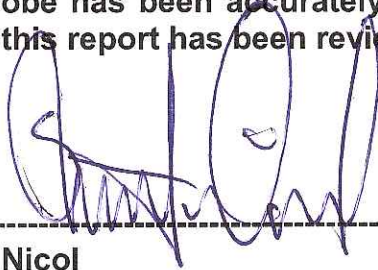
## Conditions

Probe 264 was a re-calibration.

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

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

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



-----  
**Stuart Nicol**



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**J. Hones**

## **Calibration Results Summary**

|                       |                     |
|-----------------------|---------------------|
| <b>Probe Type:</b>    | E-Field Probe E-020 |
| <b>Serial Number:</b> | 264                 |
| <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**

**Frequency:** 2450 MHz

**Epsilon:** 52.7 (+/-5%)      **Sigma:** 1.95 S/m (+/-5%)

### **ConvF**

**Channel X:** 5.2

**Channel Y:** 5.2

**Channel Z:** 5.2

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.