

ALSAS-10U VER 2.3.2 APREL Laboratories

SAR Test Report-802.11n, 40MHz

Report Date : 28-Jan-2007
Measurement Date : 28-Jan-2007

Product Data

Device Name : Notebook card
Type : Other
Model : CB801An,WPC-0600
Frequency : 2450.00 MHz
Drift Time : 0 min(s)
Length : 39.02 mm
Width : 53.88 mm
Depth : 11.17 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 : 28-Jan-2007
Temperature : 21.20 °C
Ambient Temp. : 22.20 °C
Humidity : 53.00 RH%
Epsilon : 50.74 F/m
Sigma : 1.788 S/m
Density : 1000.00 kg/cu. m

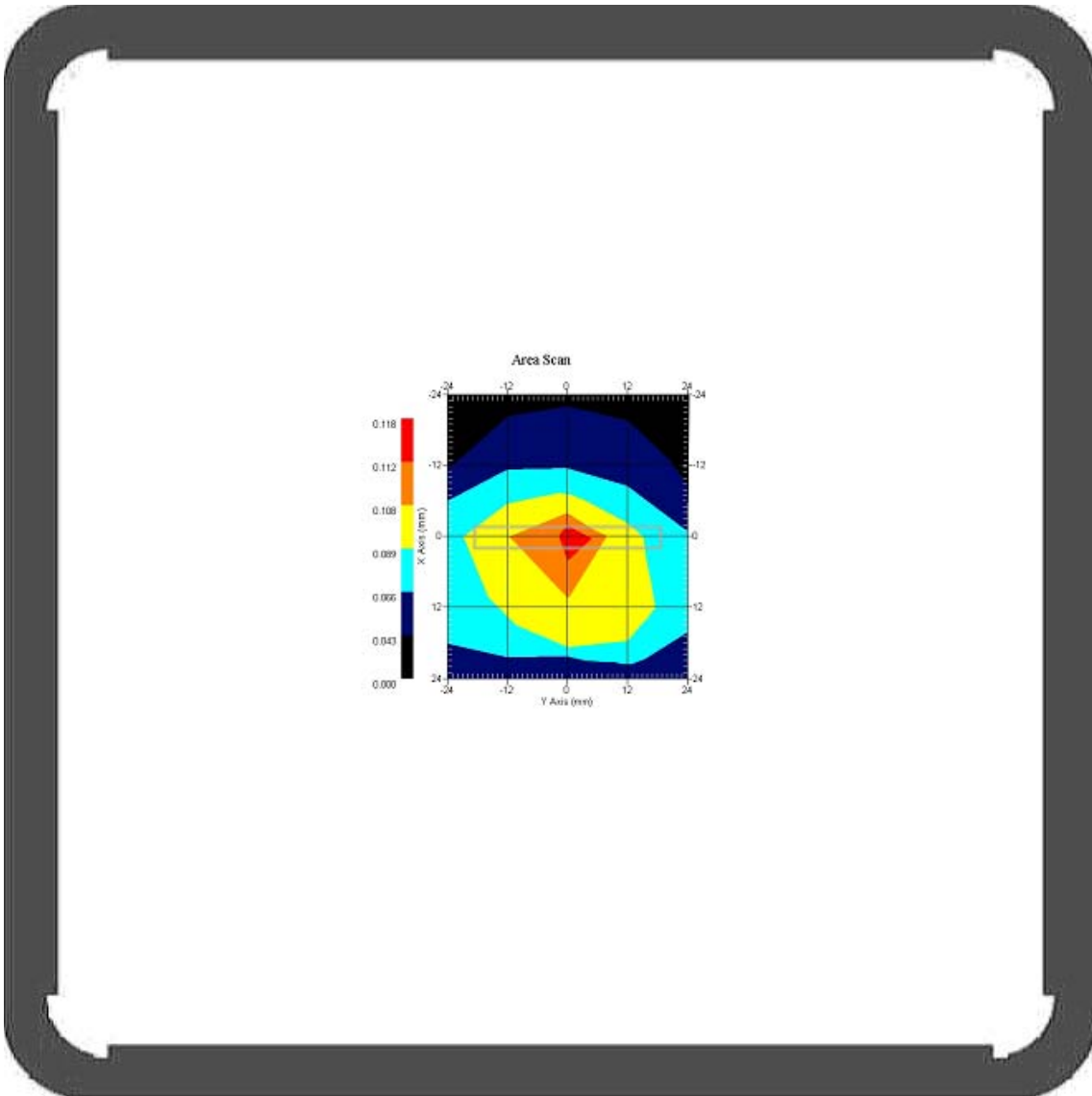
Probe Data

Name : Probe 264
Model : E020
Type : E-Field Triangle
Serial No. : 264
Last Calib. Date : 22-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

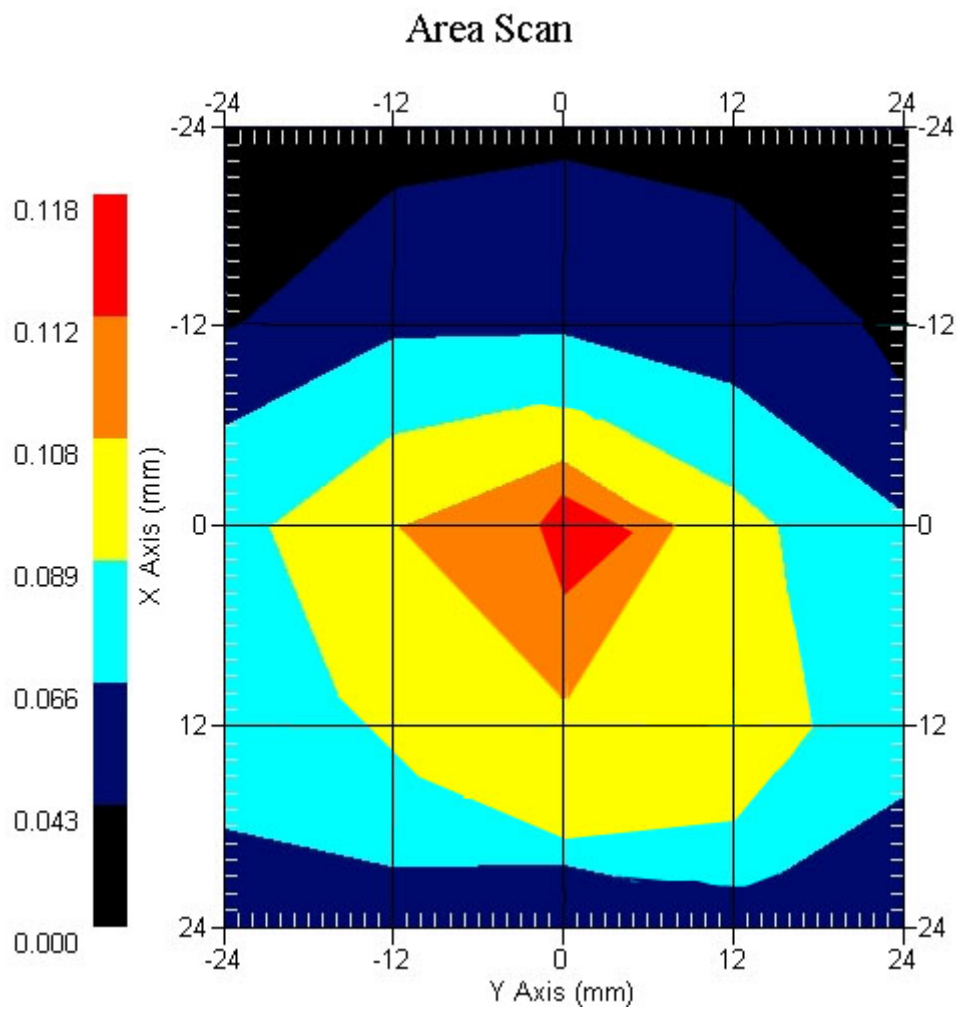
Measurement Data

Crest Factor : 1
Tissue Temp. : 21.20 °C
Ambient Temp. : 22.20 °C
Area Scan : 5x6x1 : Measurement x=12mm, y=12mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.363 W/kg
Power Drift-Finish: 0.358 W/kg
Power Drift (%) : -1.397

DUT Position : Touch EUT Top
Channel : 1



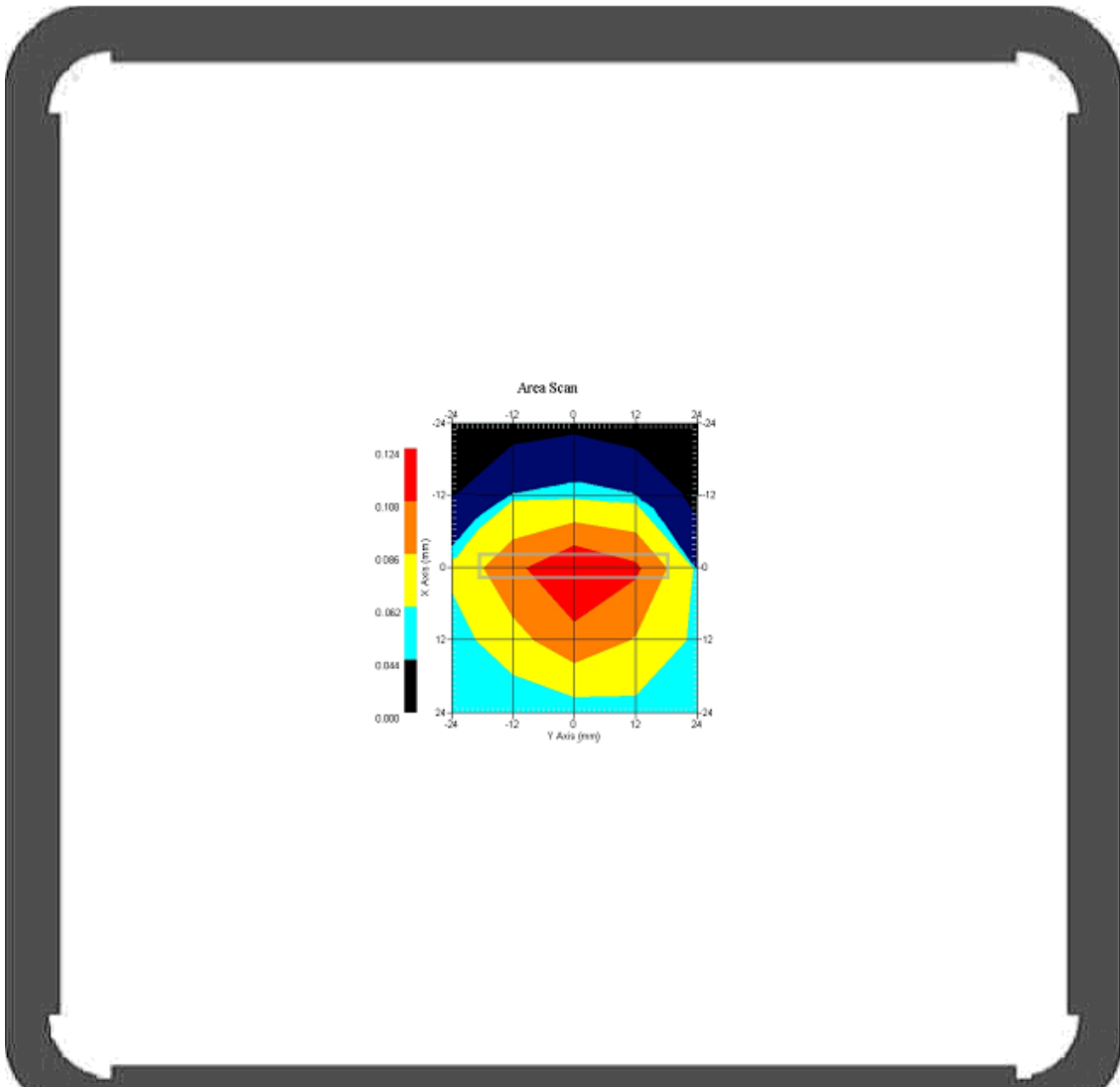
1 gram SAR value : 0.106 W/kg
10 gram SAR value : 0.084 W/kg
Area Scan Peak SAR : 0.118 W/kg
Zoom Scan Peak SAR : 0.211 W/kg



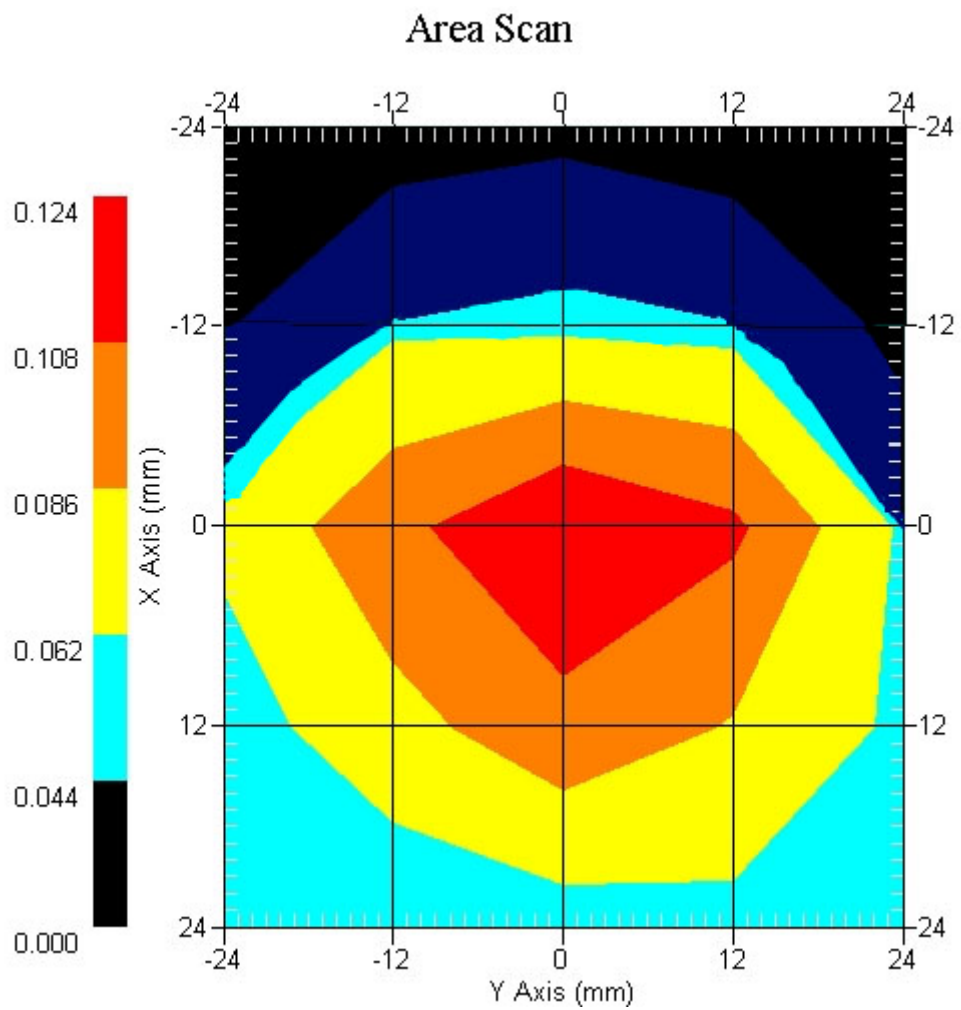
Measurement Data

Crest Factor : 1
Tissue Temp. : 21.20 °C
Ambient Temp. : 22.20 °C
Area Scan : 5x6x1 : Measurement x=12mm, y=12mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.505 W/kg
Power Drift-Finish: 0.491 W/kg
Power Drift (%) : -2.851

DUT Position : Touch EUT Top
Channel : 6



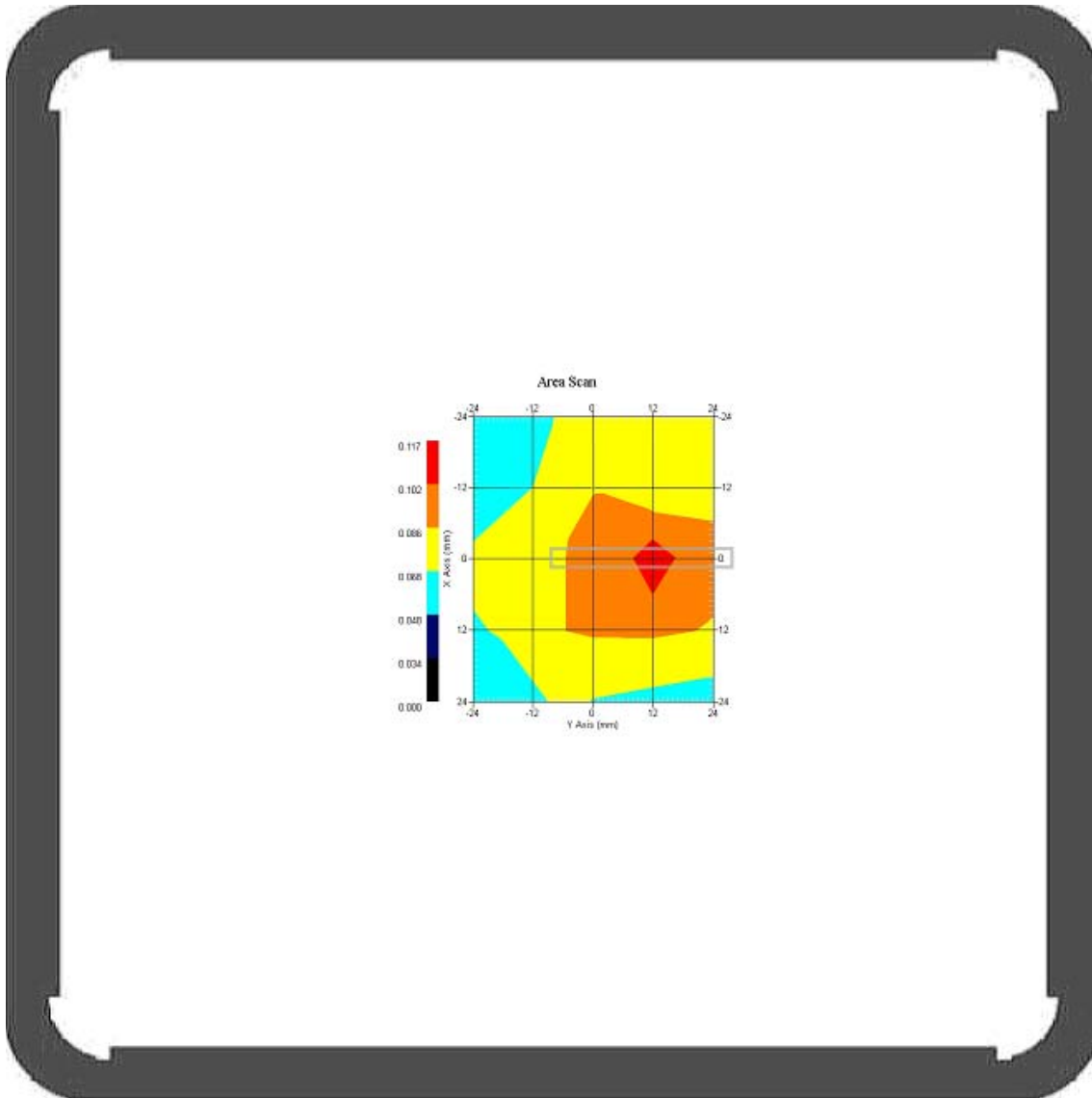
1 gram SAR value : 0.110 W/kg
10 gram SAR value : 0.088 W/kg
Area Scan Peak SAR : 0.124 W/kg
Zoom Scan Peak SAR : 0.249 W/kg



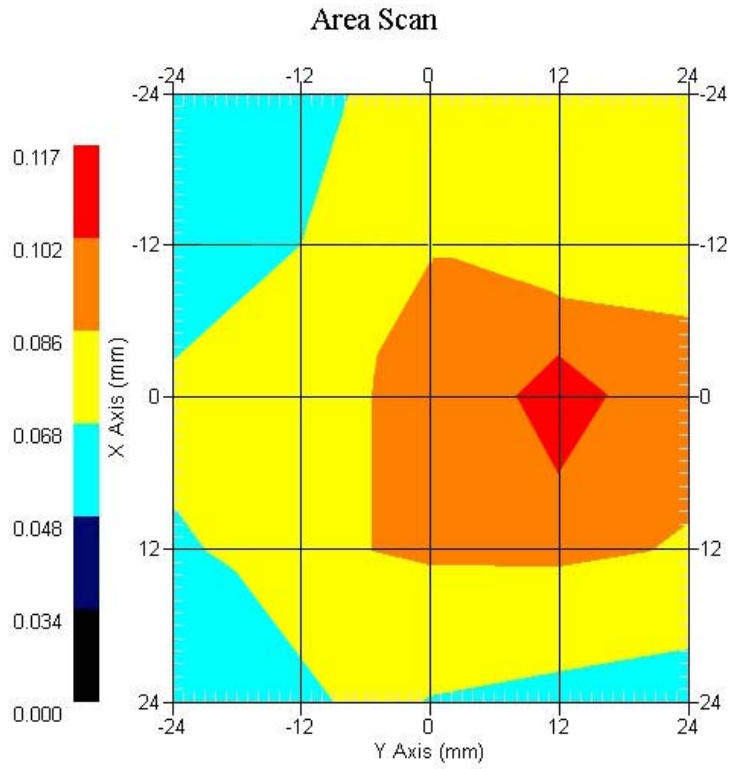
Measurement Data

Crest Factor : 1
Tissue Temp. : 21.20 °C
Ambient Temp. : 22.20 °C
Area Scan : 5x6x1 : Measurement x=12mm, y=12mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.327 W/kg
Power Drift-Finish: 0.339 W/kg
Power Drift (%) : 2.360

DUT Position : Touch EUT Top
Channel : 11



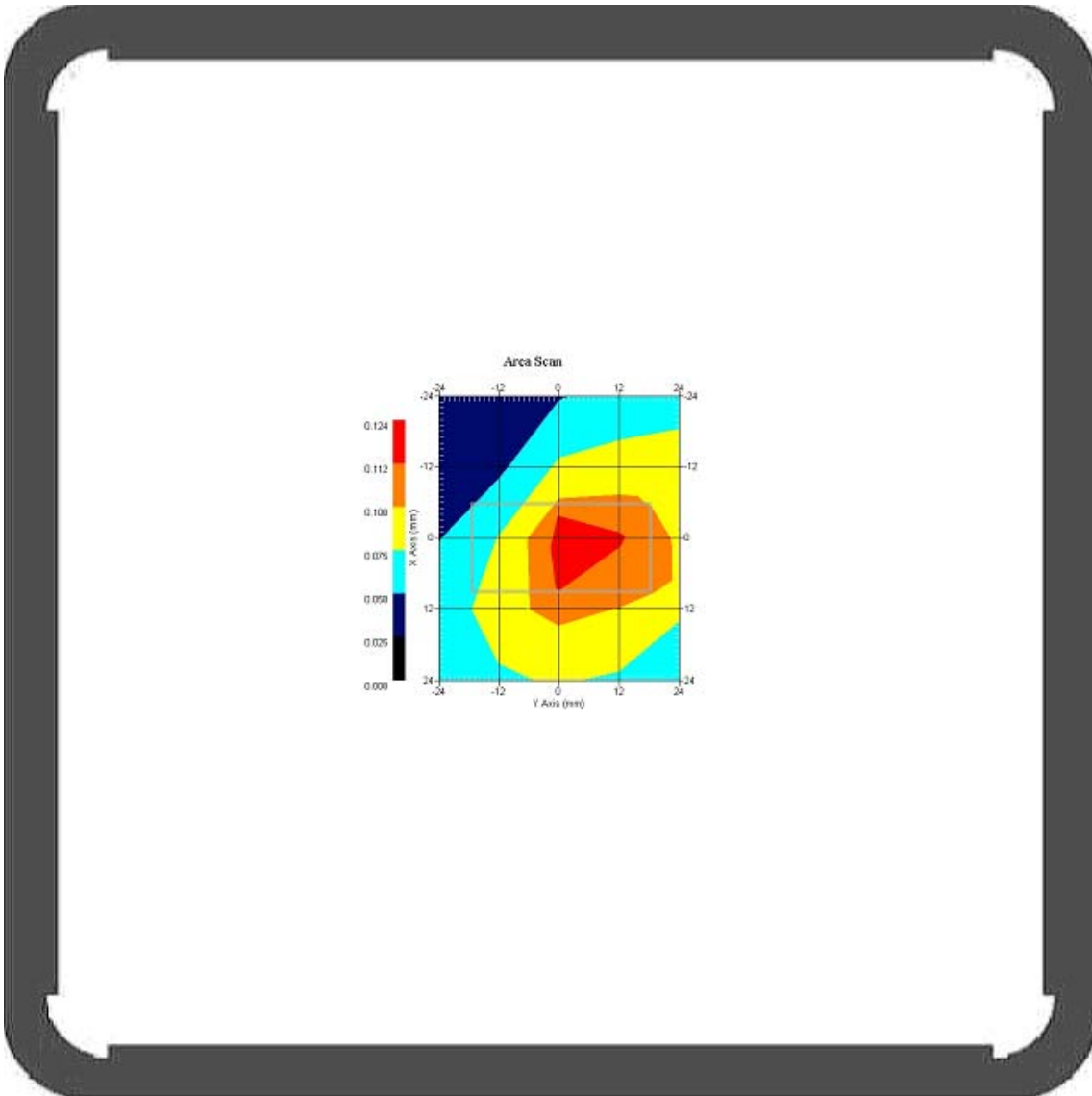
1 gram SAR value : 0.108 W/kg
10 gram SAR value : 0.099 W/kg
Area Scan Peak SAR : 0.117 W/kg
Zoom Scan Peak SAR : 0.218 W/kg



Measurement Data

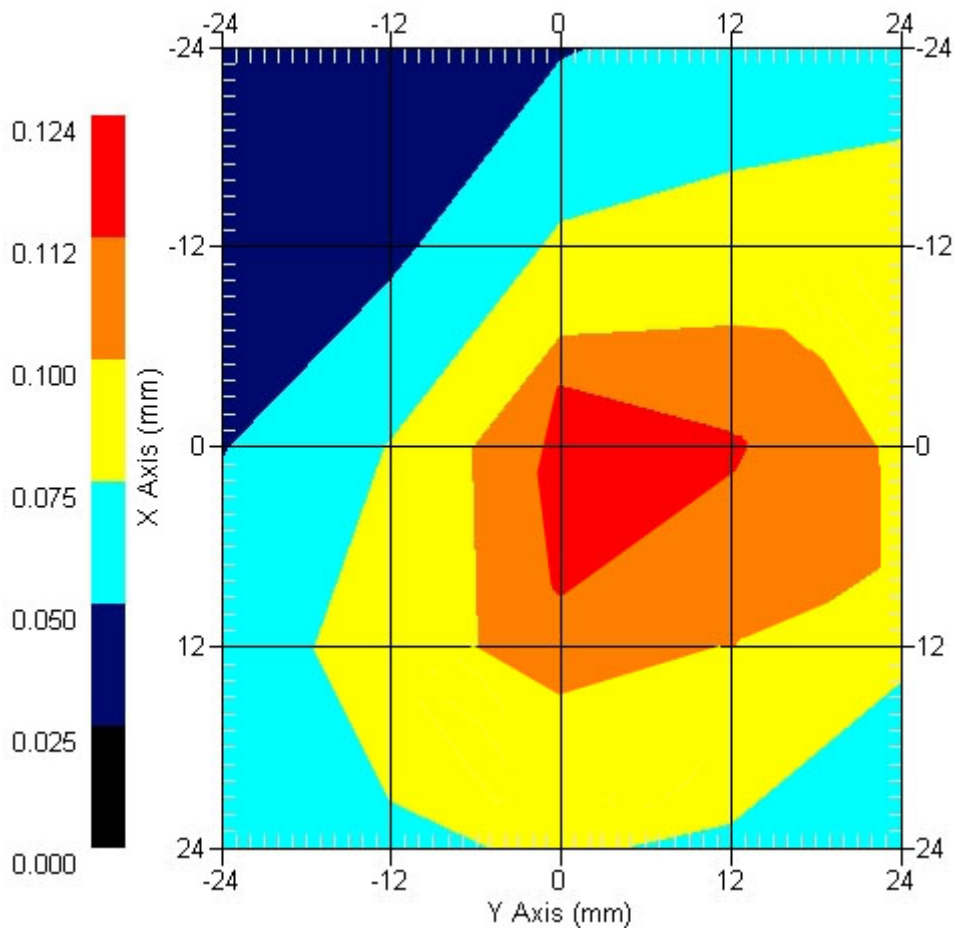
Crest Factor : 1
Tissue Temp. : 21.20 °C
Ambient Temp. : 22.20 °C
Area Scan : 5x6x1 : Measurement x=12mm, y=12mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.135 W/kg
Power Drift-Finish: 0.138 W/kg
Power Drift (%) : 2.221

DUT Position : Touch EUT Front
Channel : 6



1 gram SAR value : 0.105 W/kg
10 gram SAR value : 0.086 W/kg
Area Scan Peak SAR : 0.124 W/kg
Zoom Scan Peak SAR : 0.208 W/kg

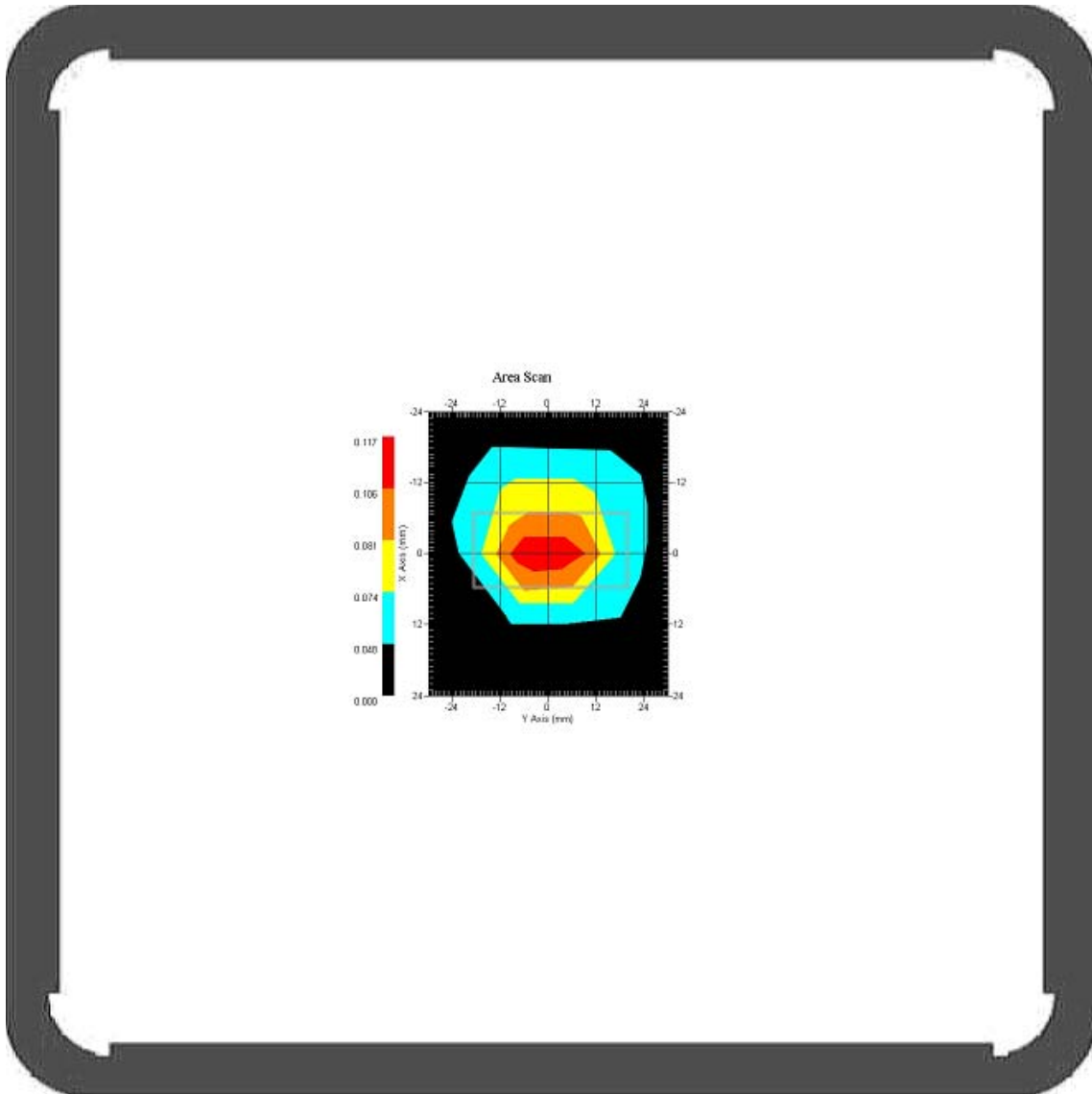
Area Scan



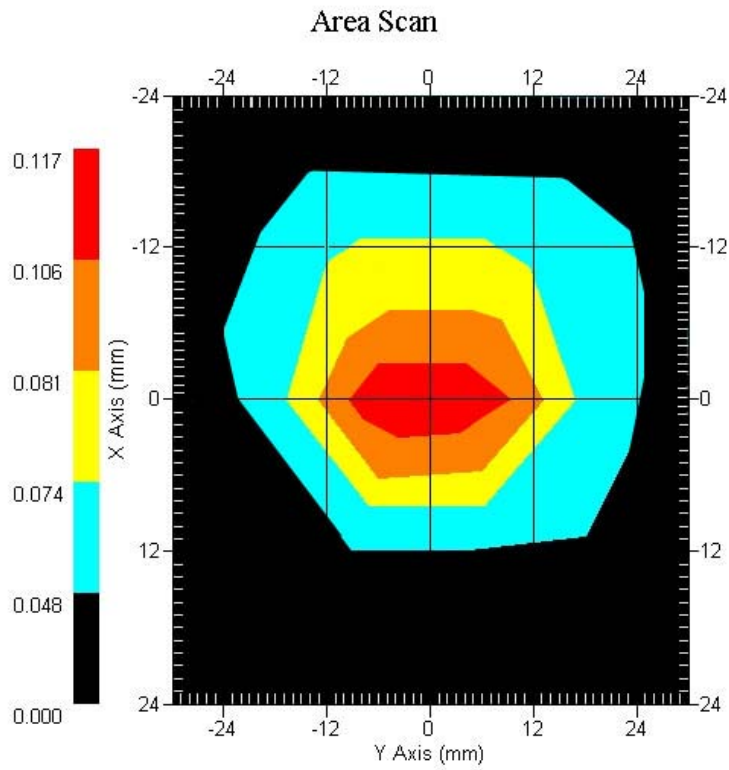
Measurement Data

Crest Factor : 1
Tissue Temp. : 21.20 °C
Ambient Temp. : 22.20 °C
Area Scan : 5x6x1 : Measurement x=12mm, y=12mm, z=4mm
Zoom Scan : 7x7x7 : Measurement x=5mm, y=5mm, z=5mm
Power Drift-Start : 0.182 W/kg
Power Drift-Finish: 0.177 W/kg
Power Drift (%) : 2.825

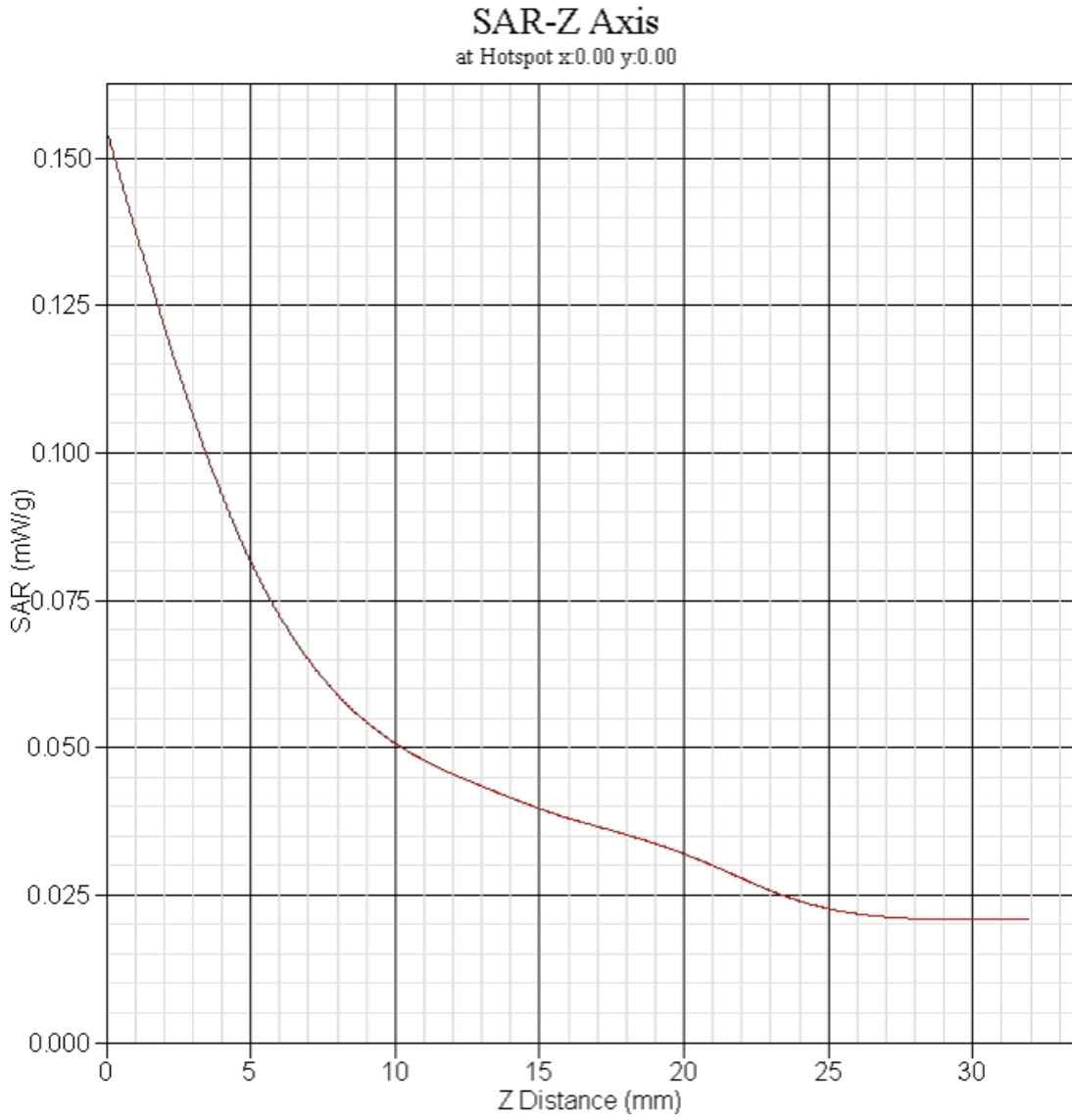
DUT Position : Touch EUT Back
Channel : 6



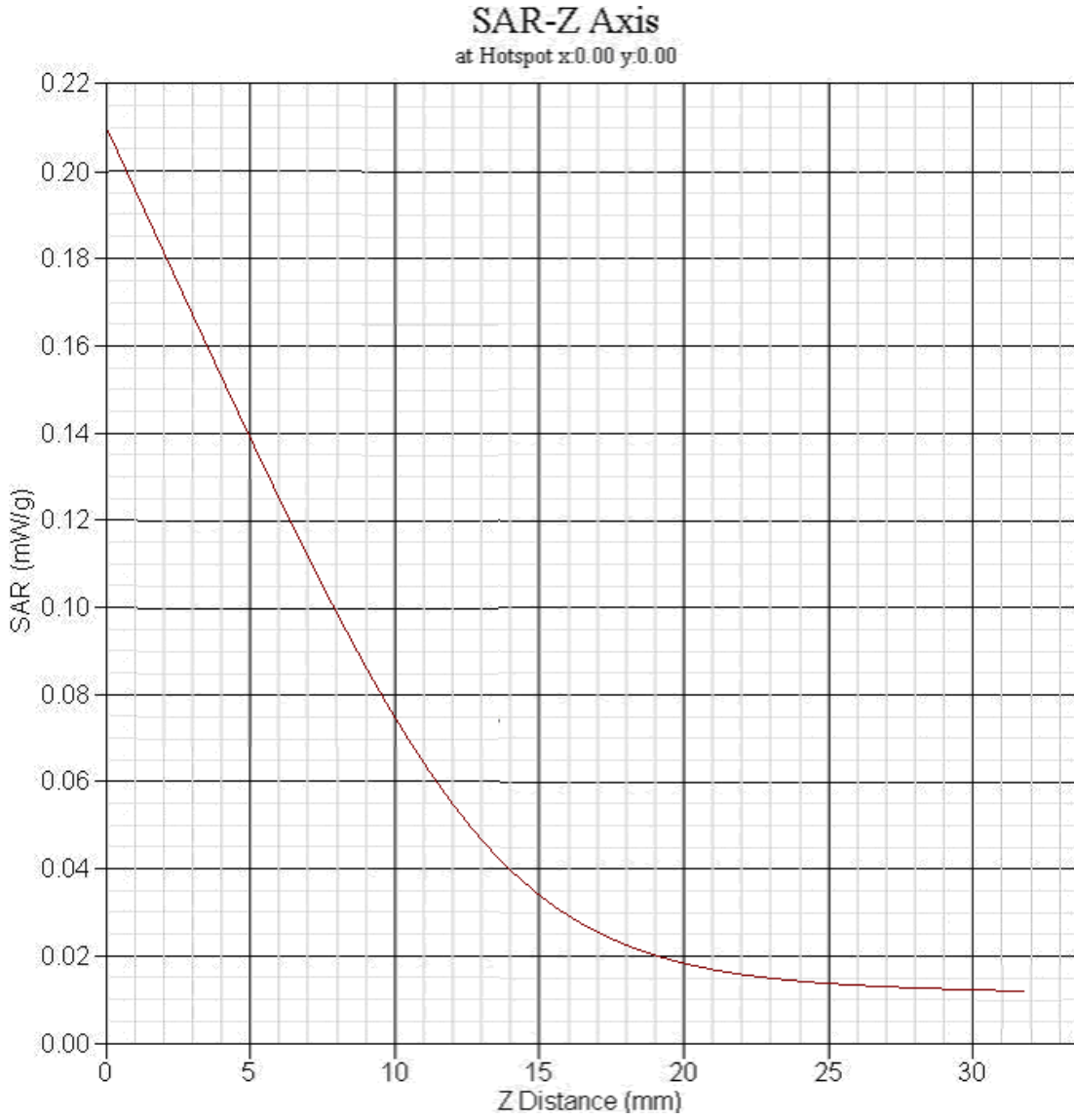
1 gram SAR value : 0.103 W/kg
10 gram SAR value : 0.092 W/kg
Area Scan Peak SAR : 0.117 W/kg
Zoom Scan Peak SAR : 0.199 W/kg



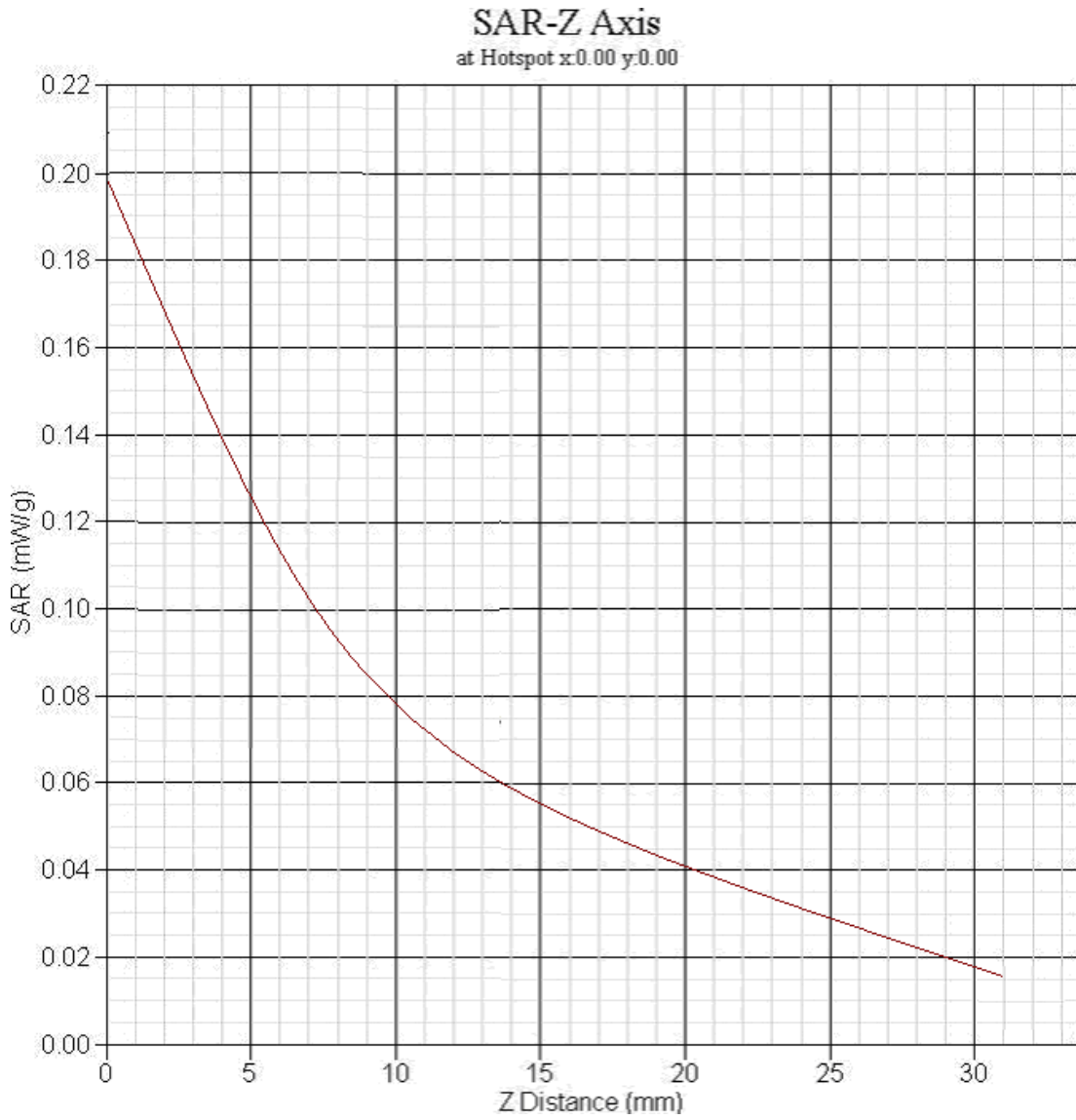
802.11b EUT Top Z-Axis plot
Channel: 6



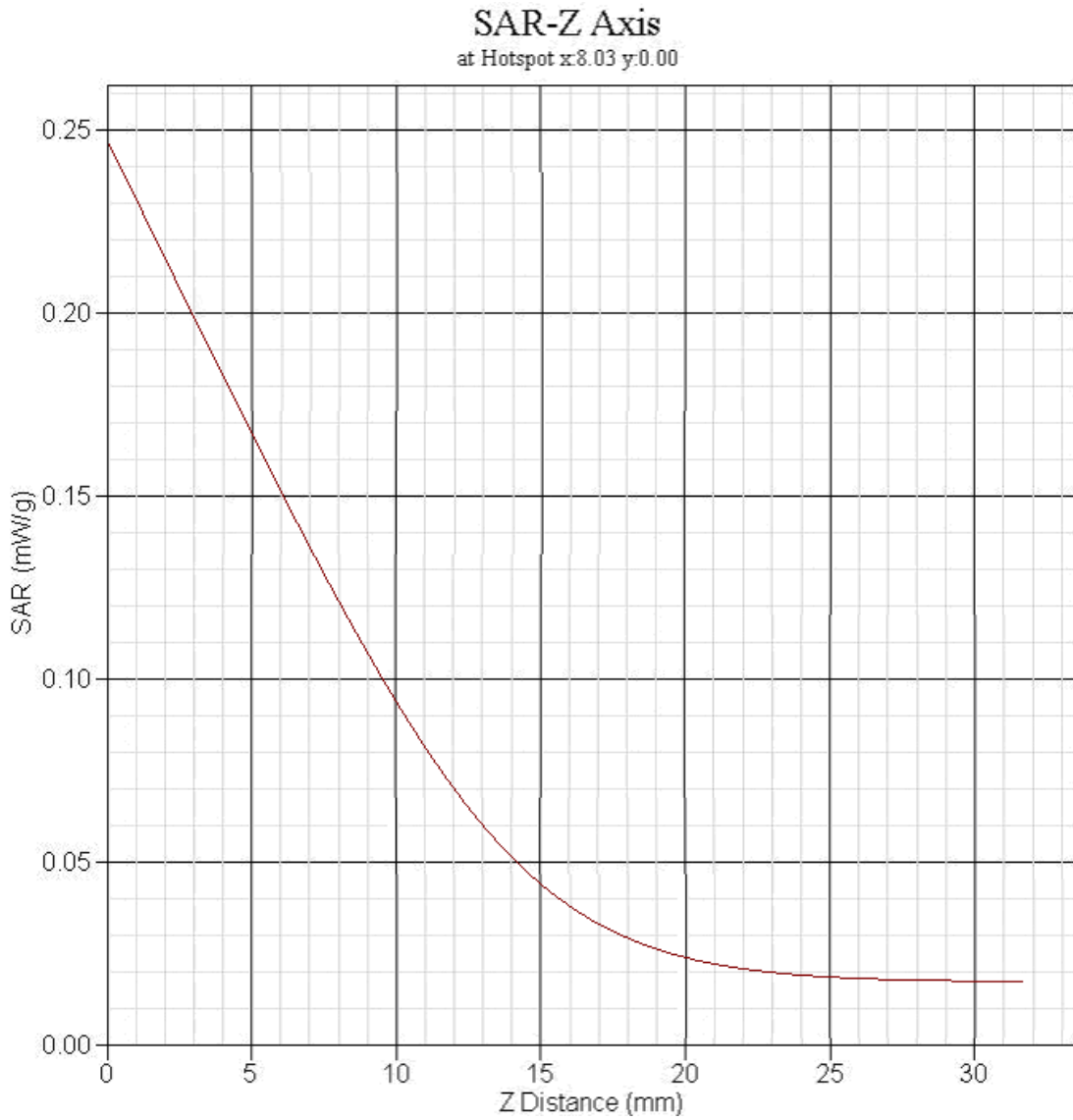
802.11g EUT Top Z-Axis plot
Channel: 11



802.11n, 20MHz EUT Top Z-Axis plot
Channel: 6



802.11n, 40MHz EUT Top Z-Axis plot
Channel: 6

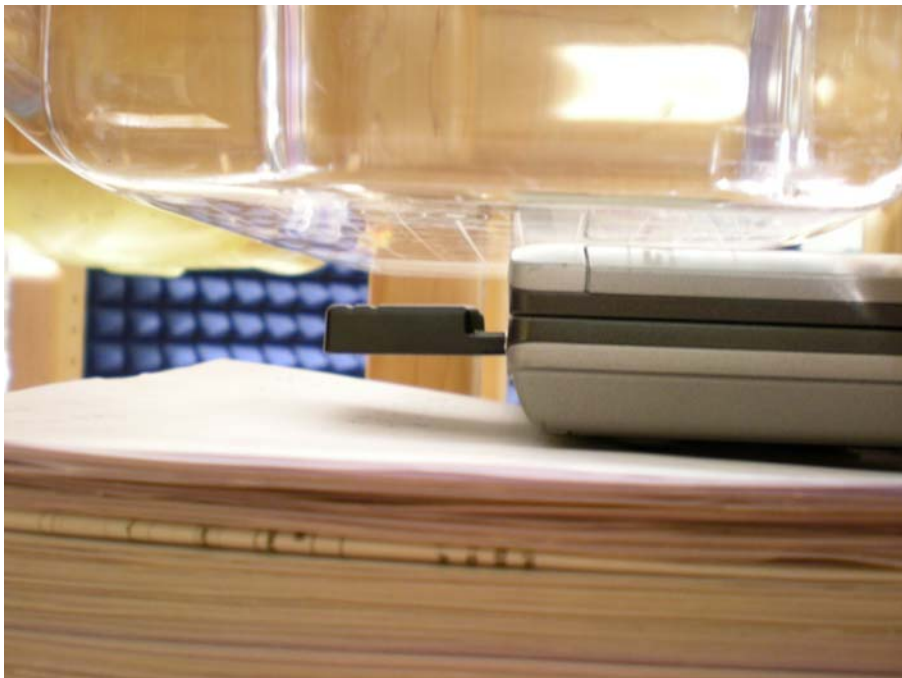


Appendix C. Test Setup Photographs & EUT Photographs
Test Setup Photographs

EUT Back



EUT Front



EUT Top



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

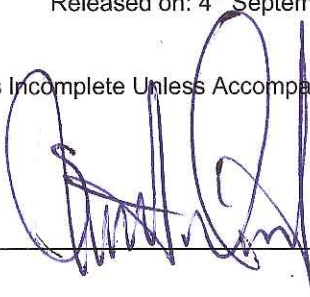
Project No: QTKB-E-Probe-5305

Calibrated: 22nd August 2007

Released on: 4th 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
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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

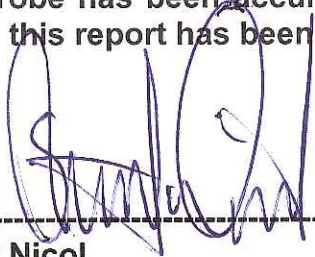
Conditions

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



J. Hones

Calibration Results Summary

Probe Type:	E-Field Probe E-020
Serial Number:	264
Frequency:	2450 MHz
Sensor Offset:	1.56 mm
Sensor Length:	2.5 mm
Tip Enclosure:	Ertalyte*
Tip Diameter:	<5 mm
Tip Length:	60 mm
Total Length:	290 mm

*Resistive to recommended tissue recipes per IEEE-1528

Sensitivity in Air

Channel X:	$1.2 \mu\text{V}/(\text{V}/\text{m})^2$
Channel Y:	$1.2 \mu\text{V}/(\text{V}/\text{m})^2$
Channel Z:	$1.2 \mu\text{V}/(\text{V}/\text{m})^2$
Diode Compression Point:	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)

