

# APPENDIX C – DIPOLE CALIBRATION CERTIFICATES

**Calibration Laboratory of  
Schmid & Partner  
Engineering AG**  
Zeughausstrasse 43, 8004 Zurich, Switzerland



**S** Schweizerischer Kalibrierdienst  
**C** Service suisse d'étalonnage  
**S** Servizio svizzero di taratura  
**S** Swiss Calibration Service

Accredited by the Swiss Federal Office of Metrology and Accreditation  
The Swiss Accreditation Service is one of the signatories to the EA  
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **Bay Area (BACL)**

Certificate No: **D900V2-122\_Apr05**

## CALIBRATION CERTIFICATE

Object: **D900V2 - SN: 122**

Calibration procedure(s): **QA CAL-05.v6  
Calibration procedure for dipole validation kits**

Calibration date: **April 20, 2005**

Condition of the calibrated item: **In Tolerance**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM E442	GB37480704	12-Oct-04 (METAS, No. 251-00412)	Oct-05
Power sensor HP 8481A	US37292783	12-Oct-04 (METAS, No. 251-00412)	Oct-05
Reference 20 dB Attenuator	SN: 5086 (20g)	10-Aug-04 (METAS, No 251-00402)	Aug-05
Reference 10 dB Attenuator	SN: 5047.2 (10r)	10-Aug-04 (METAS, No 251-00402)	Aug-05
Reference Probe ET3DV6	SN 1507	26-Oct-04 (SPEAG, No. ET3-1507_Oct04)	Oct-05
DAE4	SN 601	07-Jan-05 (SPEAG, No. DAE4-601_Jan05)	Jan-06
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-03)	In house check: Oct-05
RF generator R&S SML-03	100698	27-Mar-02 (SPEAG, in house check Dec-03)	In house check: Dec-05
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Nov-04)	In house check: Nov-05

Calibrated by: **Name: Mike Meili, Function: Laboratory Technician, Signature: Mike Meili**

Approved by: **Name: Katja Pokovic, Function: Technical Manager, Signature: Katja Pokovic**

Issued: April 25, 2005

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

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Accreditation No.: **SCS 108**

**Glossary:**

TSL tissue simulating liquid  
ConvF sensitivity in TSL / NORM x,y,z  
N/A not applicable or not measured

**Calibration is Performed According to the Following Standards:**

- a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
- c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

**Additional Documentation:**

- d) DASY4 System Handbook

**Methods Applied and Interpretation of Parameters:**

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

### Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY4	V4.5
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V4.9	
Distance Dipole Center - TSL	15 mm	with Spacer
Area Scan resolution	dx, dy = 15 mm	
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	900 MHz $\pm$ 1 MHz	

### Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.97 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	41.4 $\pm$ 6 %	0.97 mho/m $\pm$ 6 %
Head TSL temperature during test	(22.3 $\pm$ 0.2) °C	----	----

### SAR result with Head TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	condition	
SAR measured	250 mW input power	2.69 mW / g
SAR normalized	normalized to 1W	10.8 mW / g
SAR for nominal Head TSL parameters <sup>1</sup>	normalized to 1W	<b>10.7 mW / g <math>\pm</math> 17.0 % (k=2)</b>

SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.74 mW / g
SAR normalized	normalized to 1W	6.96 mW / g
SAR for nominal Head TSL parameters <sup>1</sup>	normalized to 1W	<b>6.95 mW / g <math>\pm</math> 16.5 % (k=2)</b>

<sup>1</sup> Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

**Appendix****Antenna Parameters with Head TSL**

Impedance, transformed to feed point	49.4 $\Omega$ - 7.9 j $\Omega$
Return Loss	- 22.0 dB

**General Antenna Parameters and Design**

Electrical Delay (one direction)	1.408 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

**Additional EUT Data**

Manufactured by	SPEAG
Manufactured on	July 4, 2001

**DASY4 Validation Report for Head TSL**

Date/Time: 20.04.2005 14:11:0

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN:122**

Communication System: CW-900; Frequency: 900 MHz; Duty Cycle: 1:1

Medium: HSL 900 MHz;

Medium parameters used:  $f = 900$  MHz;  $\sigma = 0.97$  mho/m;  $\epsilon_r = 41.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

**DASY4 Configuration:**

- Probe: ET3DV6 - SN1507; ConvF(5.95, 5.95, 5.95); Calibrated: 26.10.2004
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.01.2005
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

**Pin = 250 mW; d = 15 mm/Area Scan (81x81x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (interpolated) = 2.91 mW/g

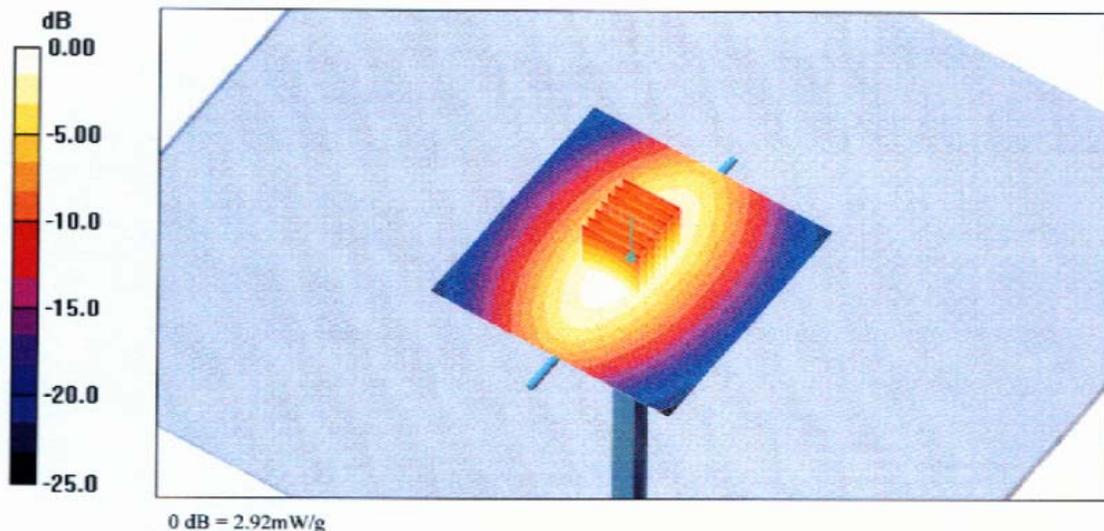
**Pin = 250 mW; d = 15 mm/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 57.0 V/m; Power Drift = 0.037 dB

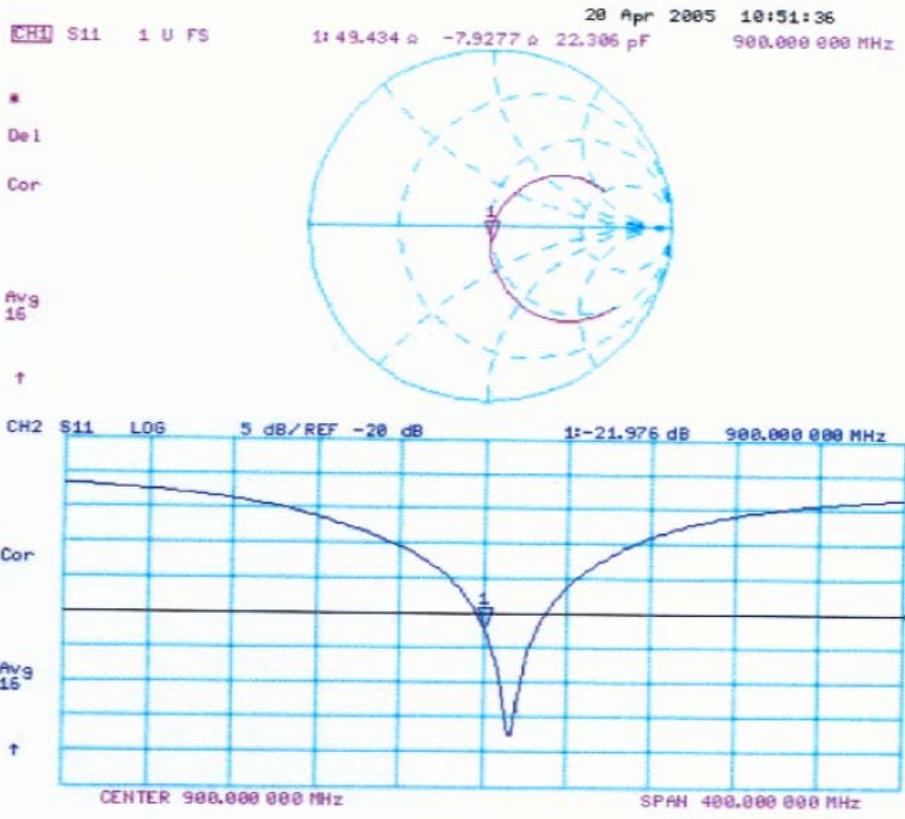
Peak SAR (extrapolated) = 3.96 W/kg

**SAR(1 g) = 2.69 mW/g; SAR(10 g) = 1.74 mW/g**

Maximum value of SAR (measured) = 2.92 mW/g



### Impedance Measurement Plot for Head TSL



**NCL CALIBRATION LABORATORIES**

Calibration File No: DC-0267  
Project Number: **BACL-CAL2450-3985**

**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.

BACL Validation Dipole

Manufacturer: APREL Laboratories

Part number: **D-1800-S-1**

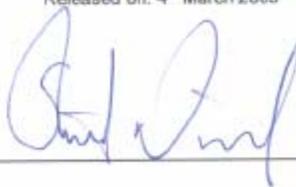
Frequency: 1800 MHz

Serial No: **BCL-049**

Customer: Bay Area Compliance Laboratory

Calibrated: **4<sup>th</sup> March 2005**  
Released on: **4<sup>th</sup> March 2005**

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



**NCL CALIBRATION LABORATORIES**

51 SPECTRUM WAY  
NEPEAN, ONTARIO  
CANADA K2R 1E6

Division of APREL Lab.  
TEL: (513) 820-4988  
FAX: (513) 820-4162

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Division of APREL Laboratories.

**Conditions**

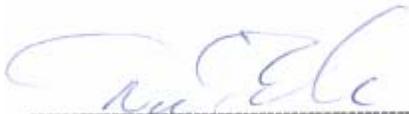
Dipole BCL-049 received from customer, with the attribute of having a repair to one radial arm, in good condition for re-calibration. SMA connector cleaned prior to calibration.

**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**  
**Director Product Development**



-----  
**D. Brooks**  
**Member of Engineering Staff**  
**(Calibration Engineer)**

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**NCL Calibration Laboratories**

Division of APREL Laboratories.

**Calibration Results Summary**

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

**Mechanical Dimensions**

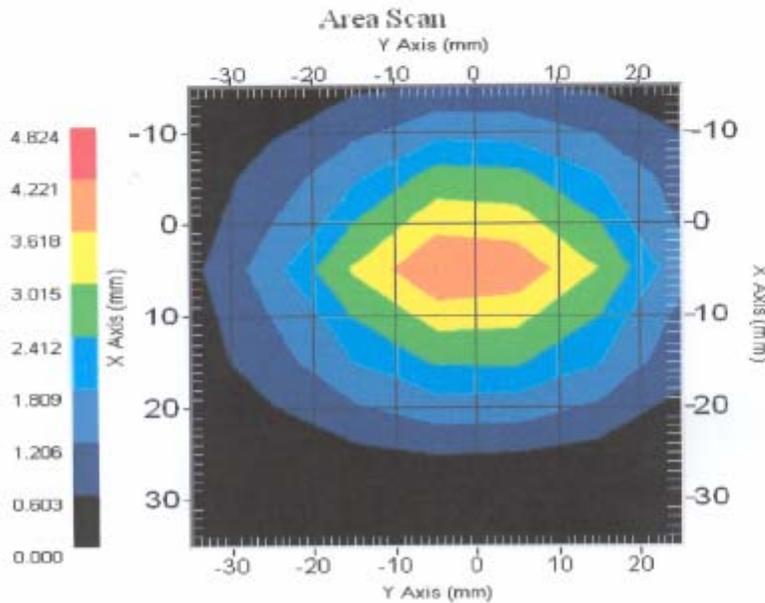
Length: 72.0 mm  
 Height: 41.7 mm

**Electrical Specification**

SWR: 1.09 U  
 Return Loss: -26.9 dB  
 Impedance: 50.9 Ω

**System Validation Results**

Frequency	1 Gram	10 Gram	Peak
1800 MHz	38.81	20.01	71.56



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**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 BCL-049. 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 212.

**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 BCL-049 received from customer in good condition, with the attribute of a repair of one radial arm.

**Ambient Temperature of the Laboratory:** 22 °C +/- 0.5°C  
**Temperature of the Tissue:** 20 °C +/- 0.5°C

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**Dipole Calibration Results****Mechanical Verification**

APREL Length	APREL Height	Measured Length	Measured Height
72.0 mm	41.7 mm	71.6 mm	41.7 mm

**Tissue Validation**

Head Tissue 1800 MHz	Measured
Dielectric constant, $\epsilon_r$	40.0
Conductivity, $\sigma$ [S/m]	1.40

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**NCL Calibration Laboratories**

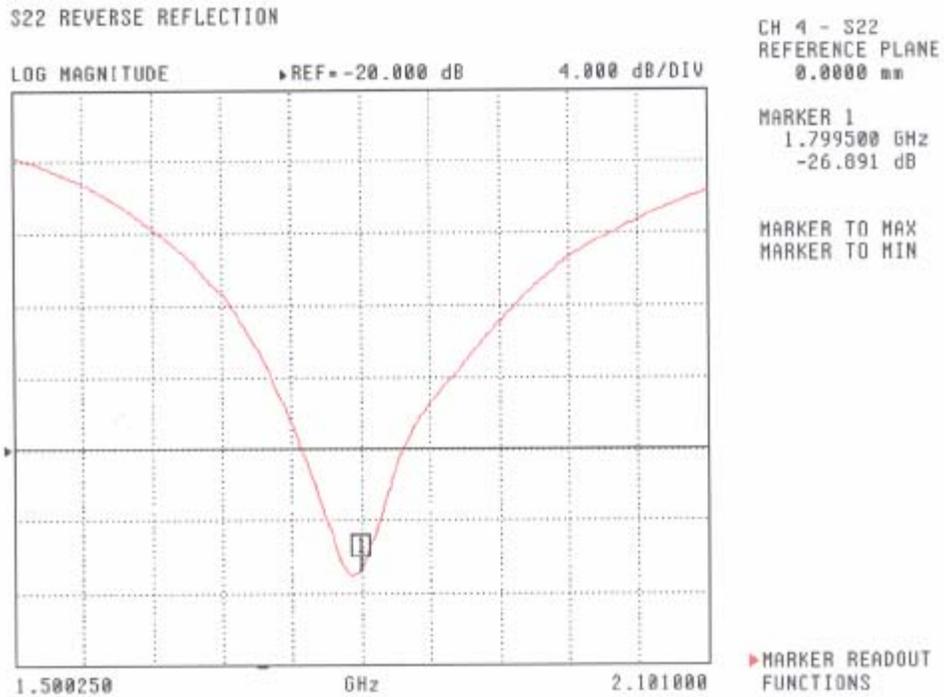
Division of APREL Laboratories.

**Electrical Calibration**

Test	Result
S11 R/L	-26.9 dB
SWR	1.09 U
Impedance	50.9 Ω

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

**S11 Parameter Return Loss**

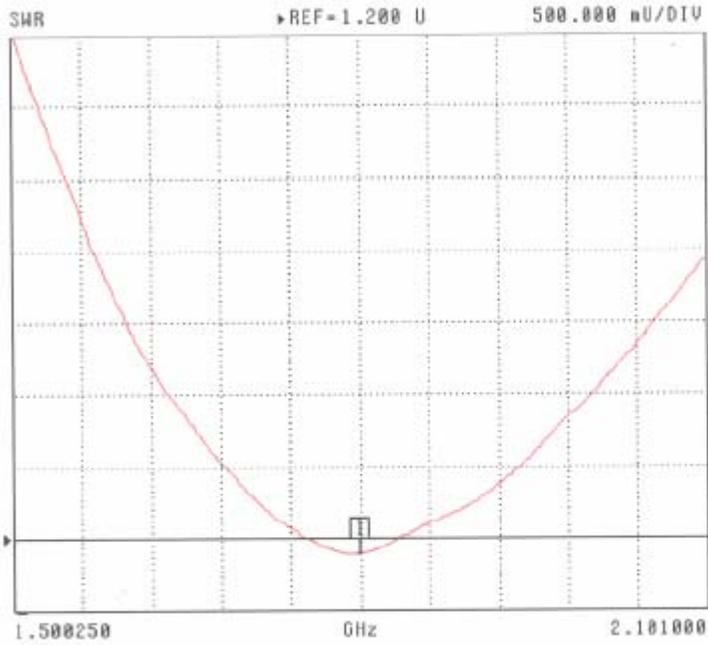


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**SWR**

S22 REVERSE REFLECTION



CH 4 - S22  
REFERENCE PLANE  
0.0000 mm

MARKER 1  
1.799500 GHz  
1.095 U

MARKER TO MAX  
MARKER TO MIN

MARKER READOUT  
FUNCTIONS

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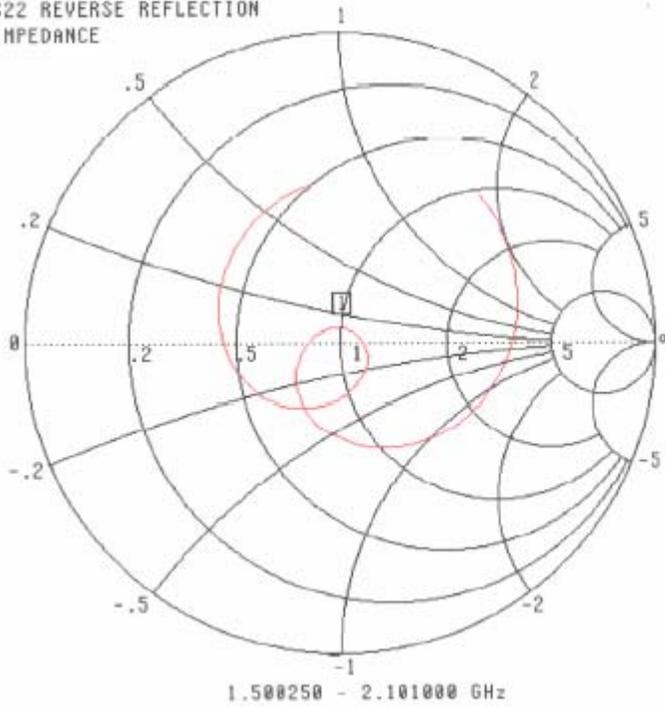
7

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**Smith Chart Dipole Impedance**

S22 REVERSE REFLECTION  
IMPEDANCE



CH 4 - S22  
REFERENCE PLANE  
0.0000 mm

MARKER 1  
1.799500 GHz  
50.963  $\Omega$   
4.489 j $\Omega$

MARKER TO MAX  
MARKER TO MIN

▶ MARKER READOUT  
FUNCTIONS

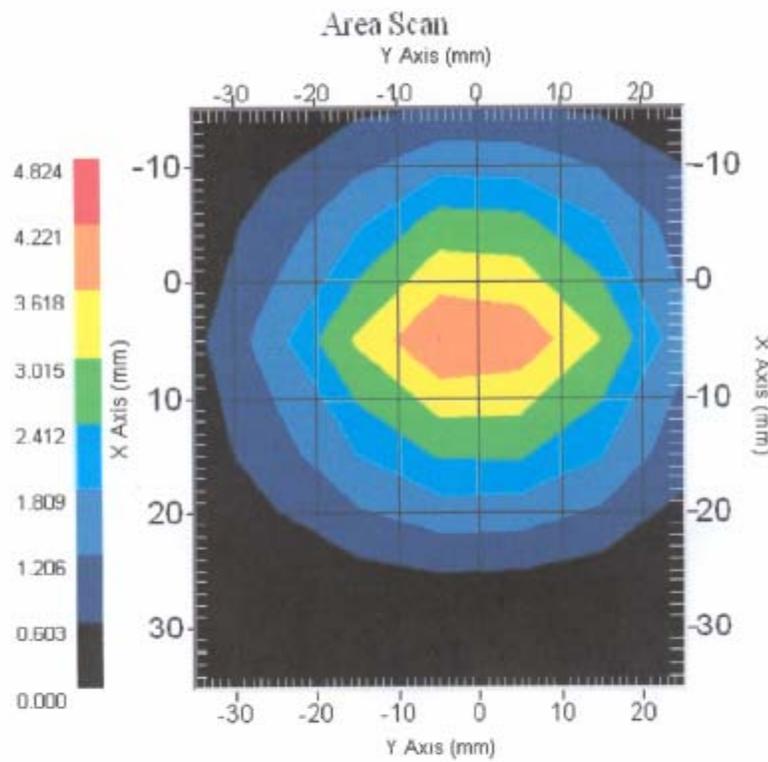
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**System Validation Results Using the Electrically Calibrated Dipole**

Head Tissue Frequency	1 Gram	10 Gram	Peak Above Feed Point
1800 MHz	38.81	20.01	71.56



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**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 2004

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## APPENDIX D - TEST SYSTEM VERIFICATIONS SCANS

### Liquid Measurement Result

2006-02-08

Simulant	Freq [MHz]	Parameters	Liquid Temp [°C]	Target Value	Measured Value	Deviation	Limits [%]
Body	835	$\epsilon_r$	22.0	55.2	55.9	1.27	$\pm 5$
		$\sigma$	22.0	0.97	0.96	-1.03	$\pm 5$
		1g SAR	22.0	8.872	8.51	-4.08	$\pm 10$

$\epsilon_r$  = relative permittivity,  $\sigma$  = conductivity and  $\rho=1000\text{kg/m}^3$

2006-02-08

Simulant	Freq [MHz]	Parameters	Liquid Temp [°C]	Target Value	Measured Value	Deviation	Limits [%]
Body	1900	$\epsilon_r$	22.0	53.3	52.0	-2.43	$\pm 5$
		$\sigma$	22.0	1.52	1.57	3.29	$\pm 5$
		1g SAR	22.0	24.97	25.0	0.12	$\pm 10$

$\epsilon_r$  = relative permittivity,  $\sigma$  = conductivity and  $\rho=1000\text{kg/m}^3$

Date/Time: 2/8/2006 9:02:48 AM

Test Laboratory: Bay Area Compliance Lab Corp.

File Name: [ET\\_1604\\_SystemValidationCheck\\_D835\\_Body.da4](#)**DUT: Dipole 835 MHz; Type: CD835V3; Serial: CD835V3 - SN:1012****Program Name: System Performance Check at 835 MHz**

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 835$  MHz;  $\sigma = 0.96$  mho/m;  $\epsilon_r = 55.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.27, 6.27, 6.27); Calibrated: 3/18/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 10/18/2005
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

**d=15mm, Pin=1W/Area Scan (61x121x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 8.16 mW/g

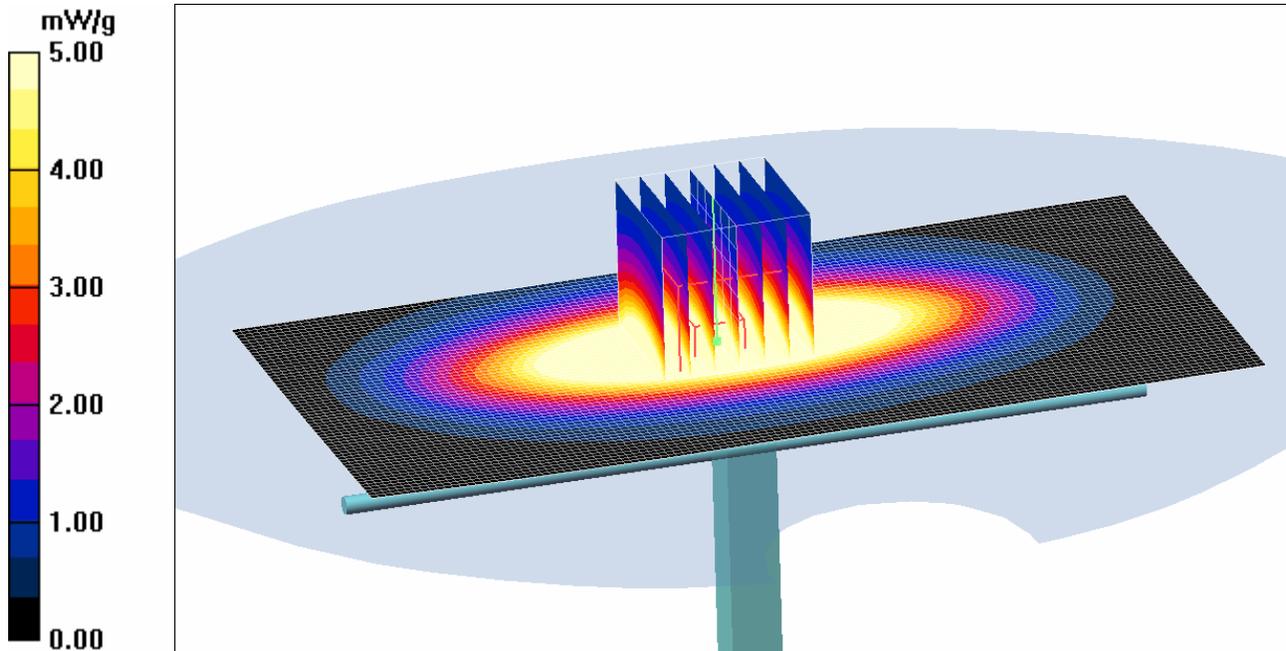
**d=15mm, Pin=1W/Zoom Scan :** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 97.5 V/m; Power Drift = -0.012 dB

Peak SAR (extrapolated) = 11.6 W/kg

**SAR(1 g) = 8.51 mW/g; SAR(10 g) = 4.91 mW/g**

Maximum value of SAR (measured) = 8.34 mW/g



Date/Time: 2/09/2006 9:58:28 AM

Test Laboratory: Bay Area Compliance Lab Corp.

File Name:

**DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN:5122**

**Program Name: System Performance Check at 1900 MHz**

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.57$  mho/m;  $\epsilon_r = 52$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(4.79, 4.79, 4.79); Calibrated: 3/18/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 10/18/2005
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

**d=10mm, Pin=1W/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 33.3 mW/g

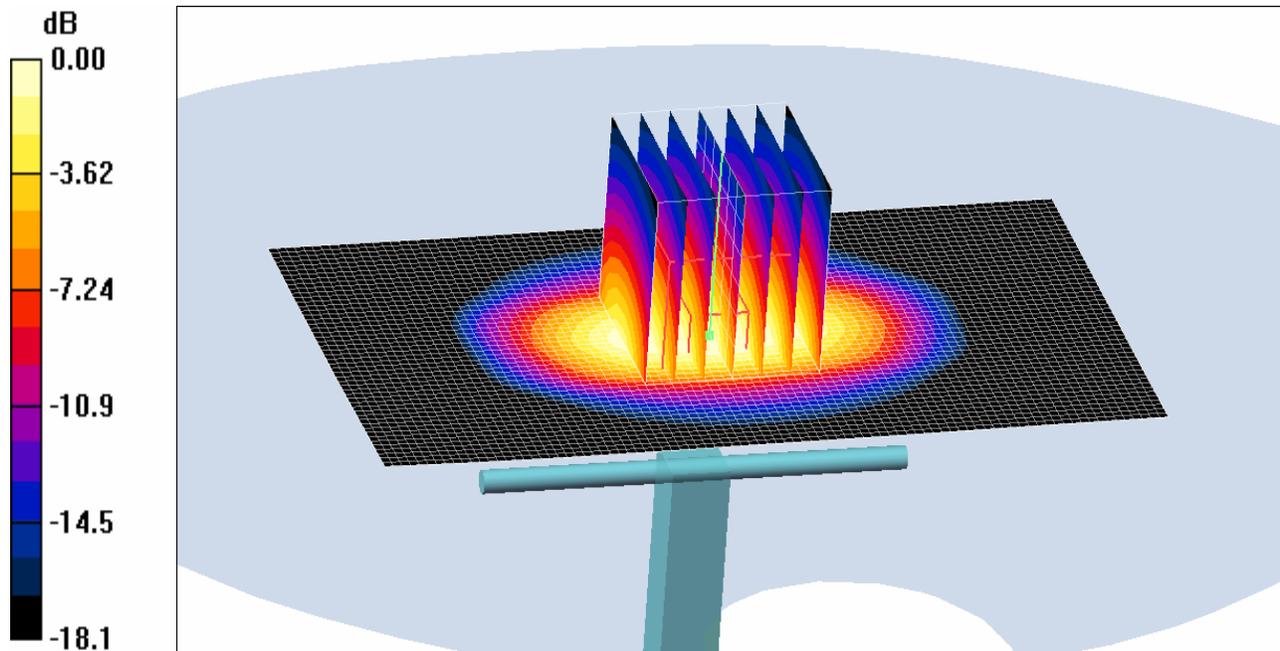
**d=15mm, Pin=1W /Zoom Scan:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 144.0 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 40.4 W/kg

**SAR(1 g) = 25.0 mW/g; SAR(10 g) = 14 mW/g**

Maximum value of SAR (measured) = 28.5 mW/g



## APPENDIX E - EUT SCANS

Date/Time: 2/8/2006 4:53:08 PM

Test Laboratory: Bay Area Compliance Lab Corp.

### COMPAQ LAPTOP -H

**DUT: ZTE CDMA 1X EDVO WIRELESS CARD; Type: Sample; Serial: 699ECA25**

Communication System: CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 836.52 \text{ MHz}$ ;  $\sigma = 0.96 \text{ mho/m}$ ;  $\epsilon_r = 55.9$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.27, 6.27, 6.27); Calibrated: 3/18/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 10/18/2005
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**COMPAQ LAPTOP/Area Scan (71x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.457 mW/g

**COMPAQ LAPTOP/Zoom Scan (5x5x5):** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

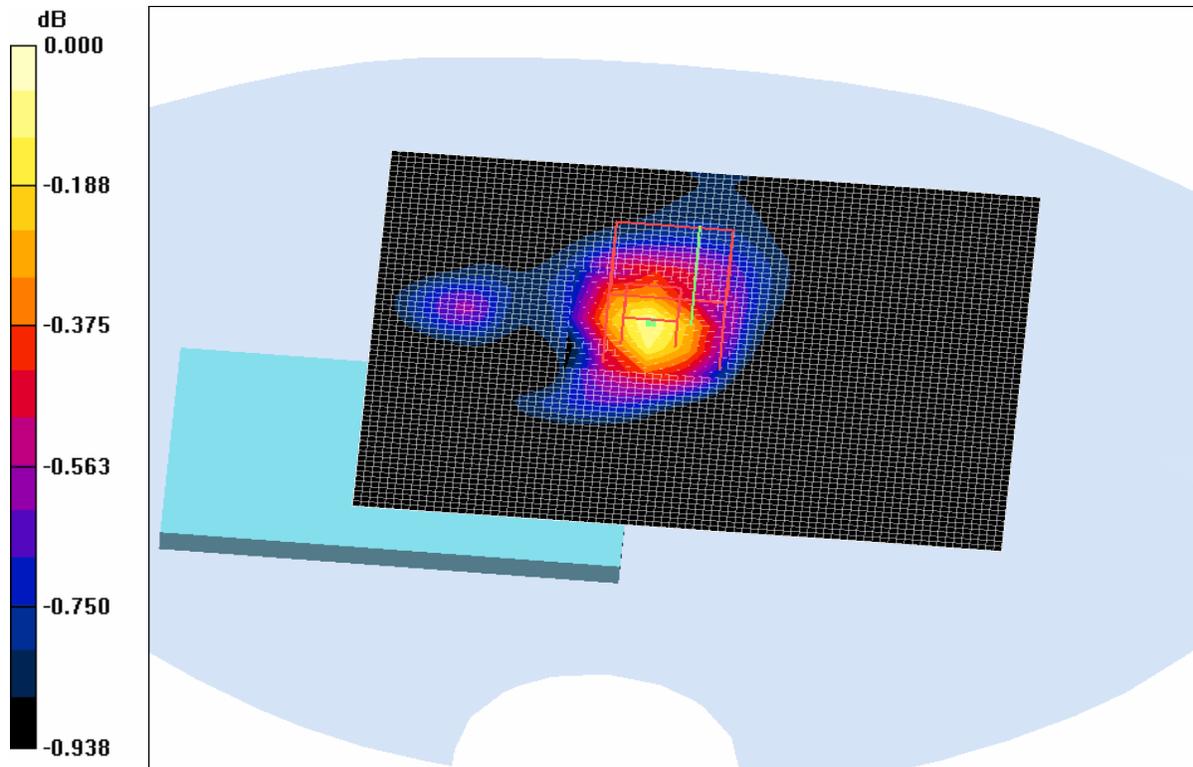
Reference Value = 21.4 V/m; Power Drift = -0.098 dB

Peak SAR (extrapolated) = 0.471 W/kg

**SAR(1 g) = 0.460 mW/g; SAR(10 g) = 0.440 mW/g**

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.470 mW/g



0 dB = 0.470mW/g

**Plot #1**

Date/Time: 2/8/2006 6:12:43 PM

Test Laboratory: Bay Area Compliance Lab Corp.

**COMPAQ LAPTOP-V**

**DUT:ZTE CDMA 1X EDVO WIRELESS CARD; Type: Sample; Serial: 699ECA25**

Communication System: CDMA; Frequency: 836.52 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 836.52$  MHz;  $\sigma = 0.96$  mho/m;  $\epsilon_r = 55.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.27, 6.27, 6.27); Calibrated: 3/18/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 10/18/2005
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**DELL LAPTOP/Area Scan (71x81x1):** Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.432 mW/g

**DELL LAPTOP/Zoom Scan (5x5x5):** Measurement grid: dx=5mm, dy=5mm, dz=5mm

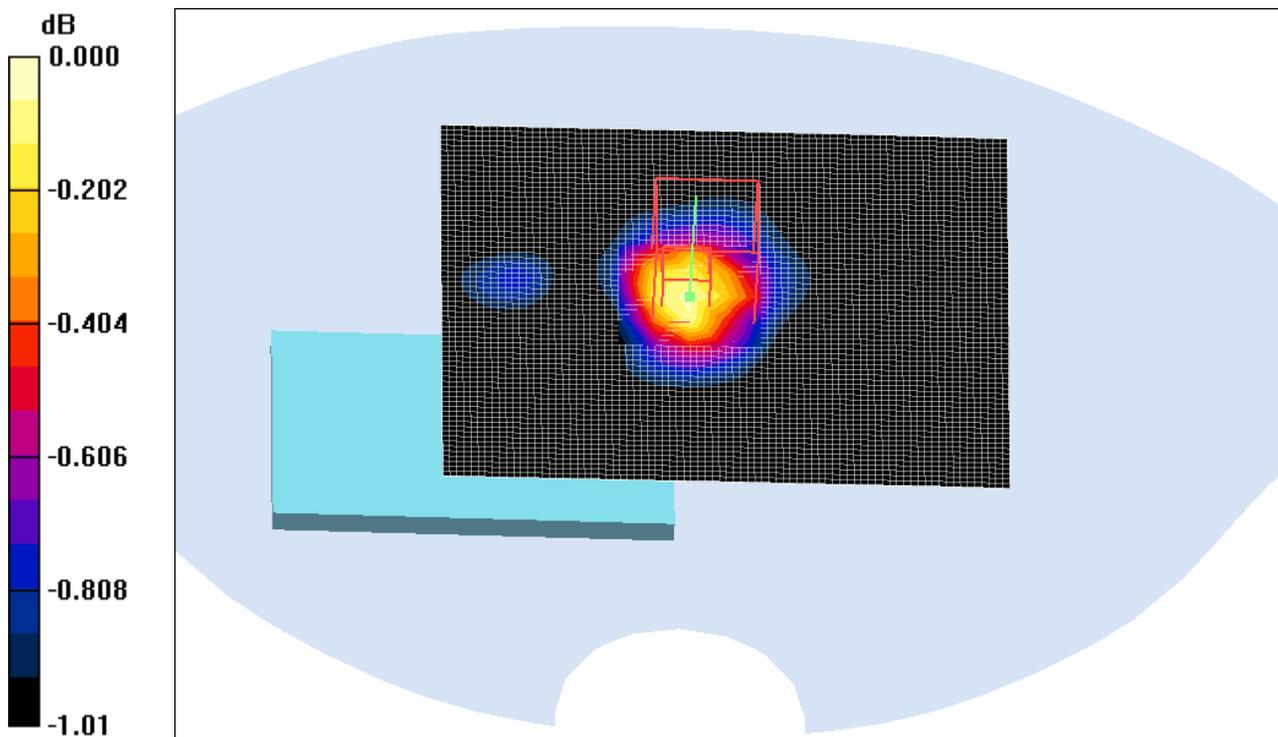
Reference Value = 19.8 V/m; Power Drift = 0.053 dB

Peak SAR (extrapolated) = 0.443 W/kg

**SAR(1 g) = 0.429 mW/g; SAR(10 g) = 0.419 mW/g**

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.44 mW/g



0 dB = 0.44mW/g

**Plot #2**

Date/Time: 2/8/2006 10:07:59 AM

Test Laboratory: Bay Area Compliance Lab Corp.

**DELL LAPTOP -H****DUT: ZTE CDMA 1X EDVO WIRELESS CARD; Type: Sample; Serial: 699ECA25**

Communication System: CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 836.52$  MHz;  $\sigma = 0.96$  mho/m;  $\epsilon_r = 55.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.27, 6.27, 6.27); Calibrated: 3/18/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 10/18/2005
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**DELL LAPTOP/Area Scan (71x81x1):** Measurement grid: dx=15mm, dy=15mm[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.529 mW/g

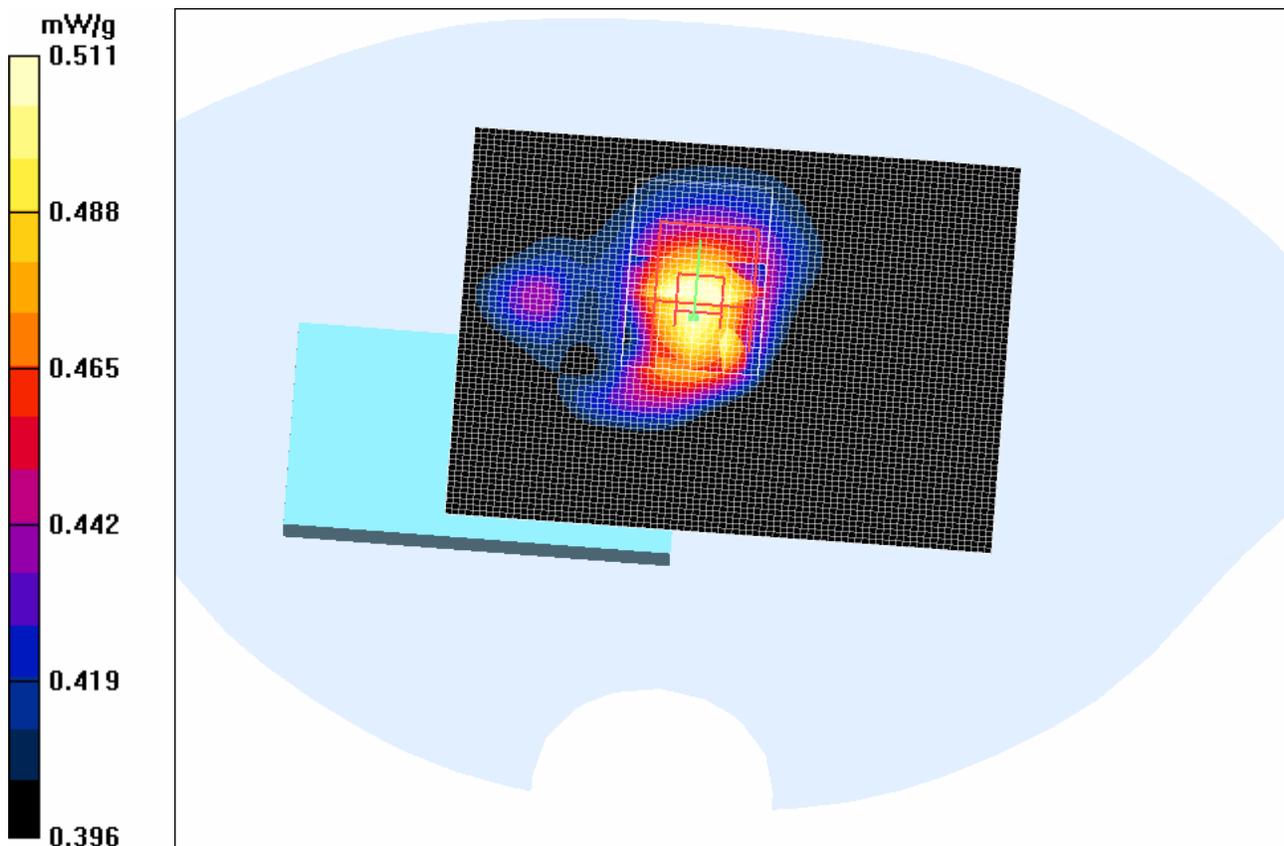
**DELL LAPTOP/Zoom Scan (5x5x5):** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 22.2 V/m; Power Drift = -0.036 dB

Peak SAR (extrapolated) = 0.515 W/kg

**SAR(1 g) = 0.503 mW/g; SAR(10 g) = 0.471 mW/g**[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.511 mW/g

**Plot #3**

Date/Time: 2/8/2006 6:12:43 PM

Test Laboratory: Bay Area Compliance Lab Corp.

**DELL LAPTOP-V****DUT:ZTE CDMA 1X EDVO WIRELESS CARD; Type: Sample; Serial: 699ECA25**

Communication System: CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 836.52$  MHz;  $\sigma = 0.96$  mho/m;  $\epsilon_r = 55.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.27, 6.27, 6.27); Calibrated: 3/18/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 10/18/2005
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**DELL LAPTOP/Area Scan (71x81x1):** Measurement grid: dx=15mm, dy=15mm[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.442 mW/g

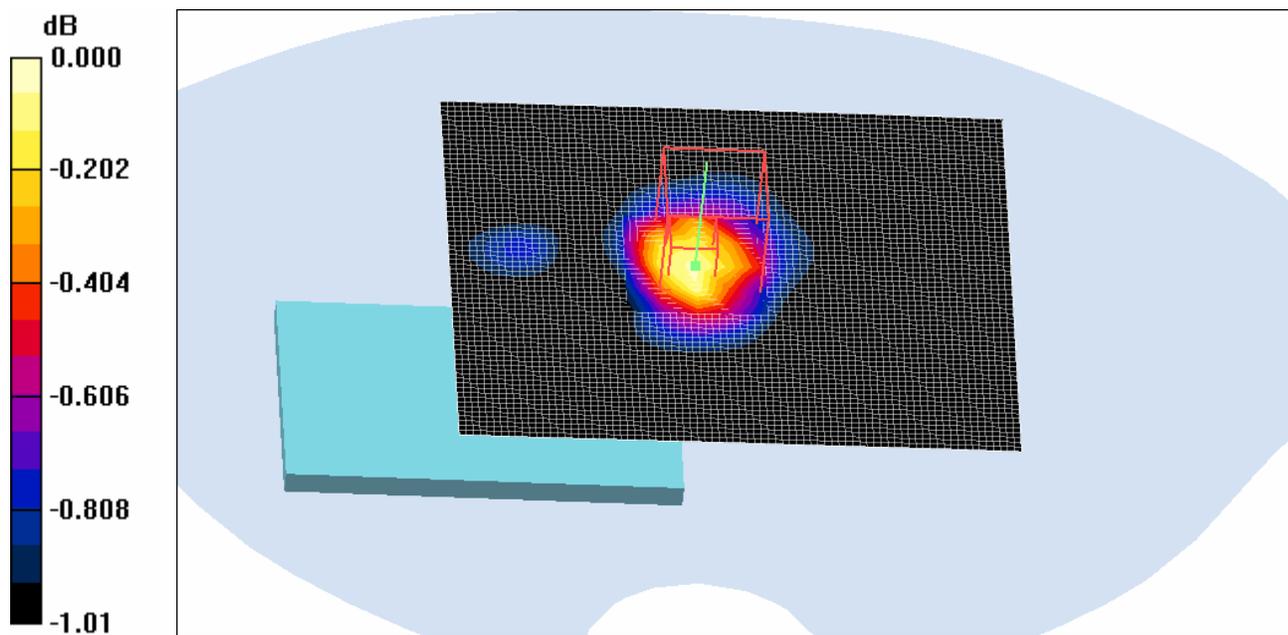
**DELL LAPTOP/Zoom Scan (5x5x5):** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20.8 V/m; Power Drift = 0.053 dB

Peak SAR (extrapolated) = 0.453 W/kg

**SAR(1 g) = 0.445 mW/g; SAR(10 g) = 0.428 mW/g**[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.449 mW/g



0 dB = 0.449mW/g

**Plot #4**

Date/Time: 2/8/2006 4:37:26 PM

Test Laboratory: Bay Area Compliance Lab Corp.

**SONY LAPTOP -H****DUT: ZTE CDMA 1X EDVO WIRELESS CARD; Type: Sample; Serial: 699ECA25**

Communication System: CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 836.52$  MHz;  $\sigma = 0.96$  mho/m;  $\epsilon_r = 55.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.27, 6.27, 6.27); Calibrated: 3/18/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 10/18/2005
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**SONY LAPTop/Area Scan (71x81x1):** Measurement grid: dx=15mm, dy=15mm[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.432 mW/g

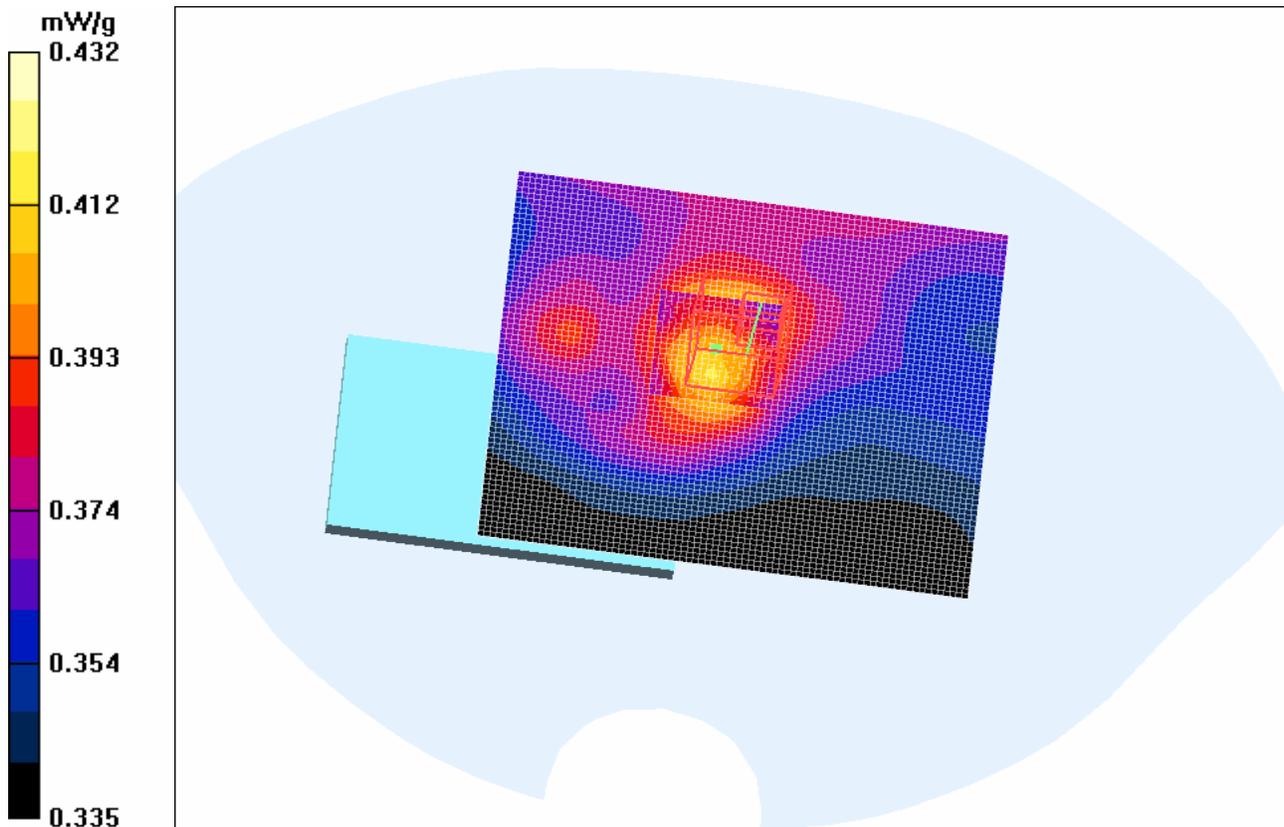
**SONY LAPTop/Zoom Scan (5x5x5):** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20.9 V/m; Power Drift = -0.081 dB

Peak SAR (extrapolated) = 0.450 W/kg

**SAR(1 g) = 0.450 mW/g; SAR(10 g) = 0.429 mW/g**[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.449 mW/g

**Plot #5**

Date/Time: 2/8/2006 5:44:34 PM

Test Laboratory: Bay Area Compliance Lab Corp.

**SONY LAPTOP -V**

**DUT: ZTE CDMA 1X EDVO WIRELESS CARD; Type: Sample; Serial: 699ECA25**

Communication System: CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 836.52$  MHz;  $\sigma = 0.96$  mho/m;  $\epsilon_r = 55.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.27, 6.27, 6.27); Calibrated: 3/18/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 10/18/2005
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**SONY LAPTop/Area Scan (71x81x1):** Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.448 mW/g

**SONY LAPTop/Zoom Scan (5x5x5):** Measurement grid: dx=5mm, dy=5mm, dz=5mm

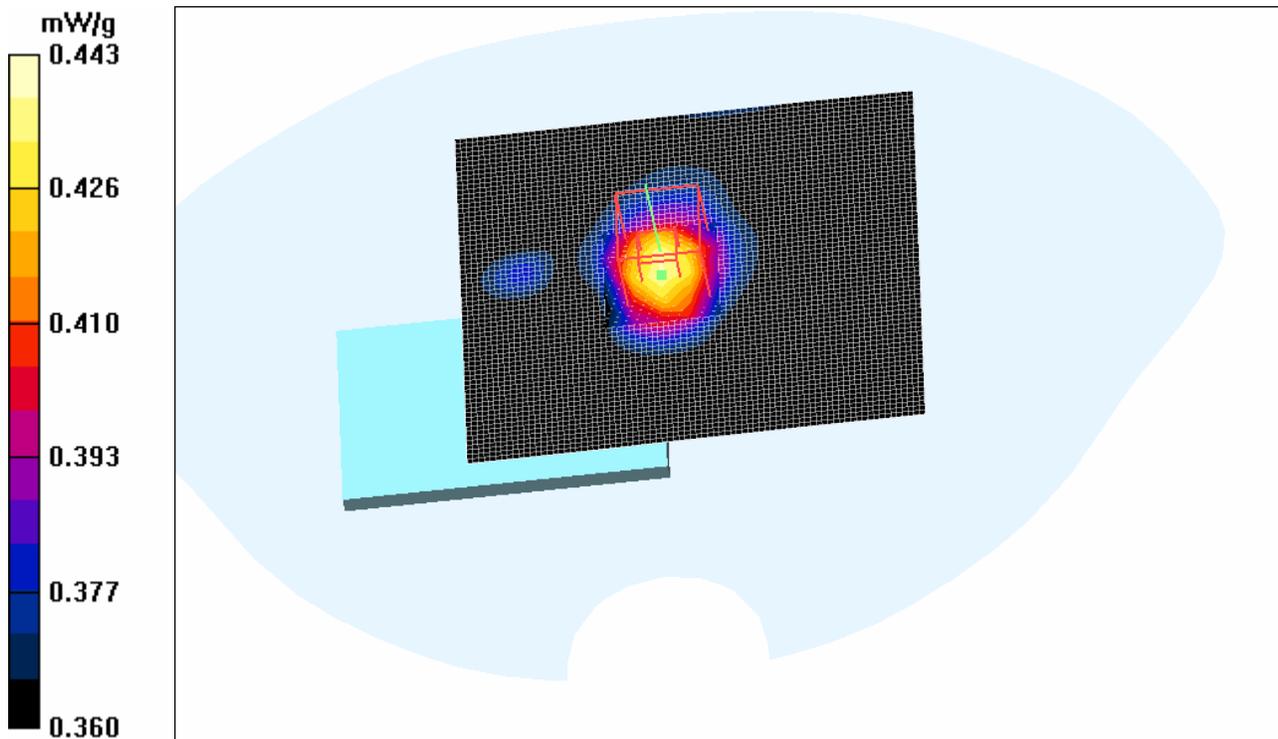
Reference Value = 20.7 V/m; Power Drift = 0.035 dB

Peak SAR (extrapolated) = 0.448 W/kg

**SAR(1 g) = 0.440 mW/g; SAR(10 g) = 0.425 mW/g**

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.443 mW/g



**Plot #6**

Date/Time: 2/9/2006 10:57:48 AM

Test Laboratory: Bay Area Compliance Lab Corp.

**COMPAQ LAPTOP -H**

**DUT:ZTE MY39 CDMA 1X EDVO WIRELESS CARD; Type: Sample; Serial: 699RCA25**

**Program Name: ZTE**

Communication System: CDMA; Frequency: 1880 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 1880$  MHz;  $\sigma = 1.57$  mho/m;  $\epsilon_r = 52$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.27, 6.27, 6.27); Calibrated: 3/18/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 10/18/2005
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

**1.5cm Body position - Middle chn\_H/Area Scan (71x81x1):** Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (interpolated) = 0.611 mW/g

**1.5cm Body position - Middle chn\_H/Zoom Scan 2 (5x5x5):** Measurement grid: dx=5mm, dy=5mm, dz=5mm

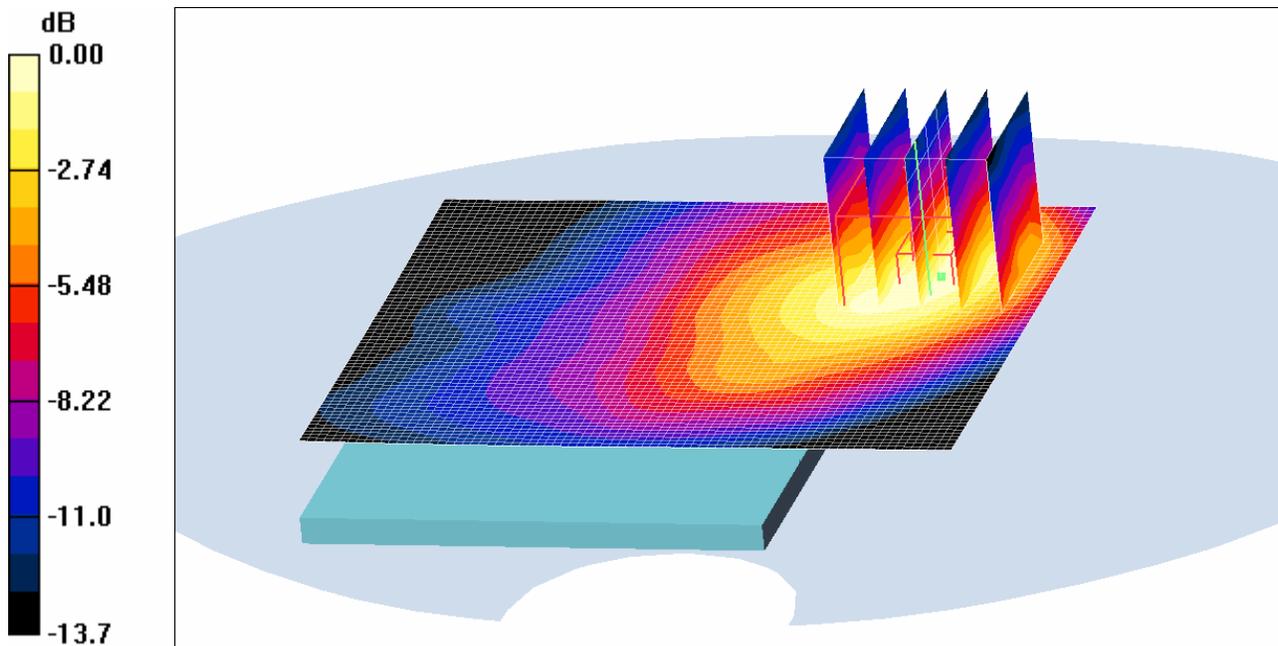
Reference Value = 16.1 V/m; Power Drift = 0.01dB

Peak SAR (extrapolated) = 0.869 W/kg

**SAR(1 g) = 0.547 mW/g; SAR(10 g) = 0.349 mW/g**

[Info: Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (measured) = 0.58mW/g



0 dB = 0.58mW/g

**Plot #7**

Date/Time: 2/9/2005 10:43:35 AM

Test Laboratory: Bay Area Compliance Lab Corp.

**COMPAQ LAPTOP -V****DUT:ZTE CDMA 1X EVDO WIRELESS CARD; Type: Sample; Serial: 300511194096****Program Name: ZTE**

Communication System: CDMA; Frequency: 1880 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 1880$  MHz;  $\sigma = 1.57$  mho/m;  $\epsilon_r = 52$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.27, 6.27, 6.27); Calibrated: 3/18/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 10/18/2005
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

**1.5cm Body position - Middle chn\_V/Area Scan (81x81x1):** Measurement grid: dx=15mm, dy=15mm**Info:** [Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (interpolated) = 0.523 mW/g

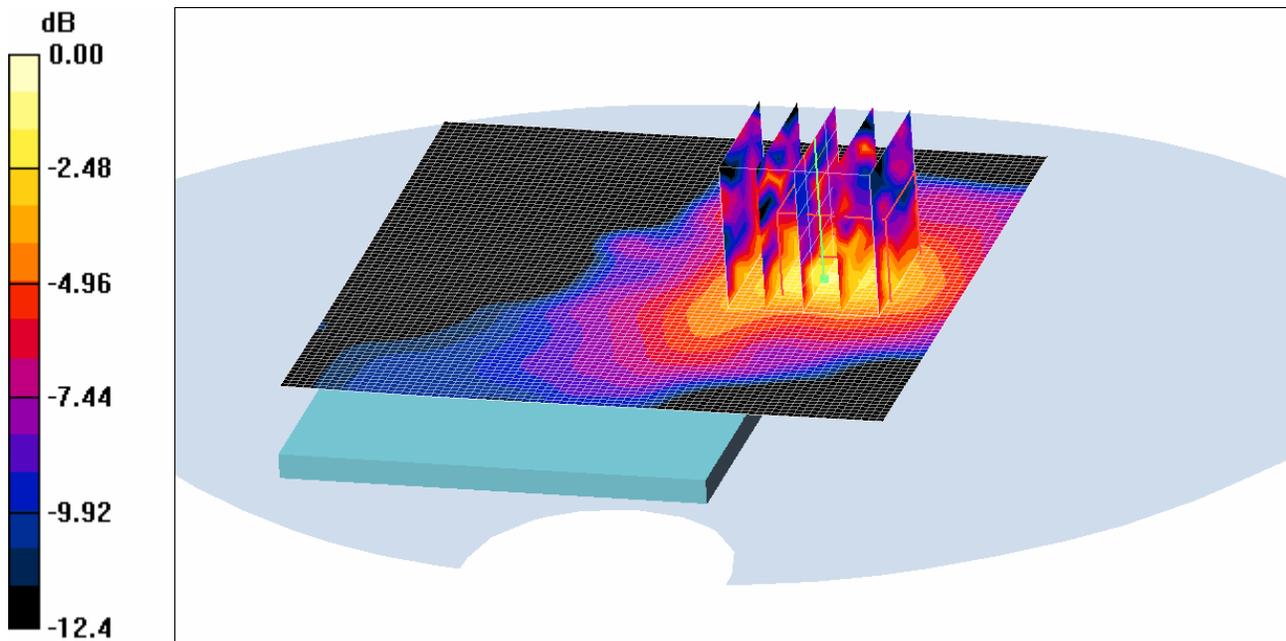
**1.5cm Body position - Middle chn\_V/Zoom Scan (5x5x5):** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 14.2 V/m; Power Drift = -0.0208 dB

Peak SAR (extrapolated) = 0.786 W/kg

**SAR(1 g) = 0.411 mW/g; SAR(10 g) = 0.317 mW/g****Info:** [Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (measured) = 0.5 mW/g



0 dB = 0.5mW/g

**Plot #8**

Date/Time: 2/9/2006 12:07:24 PM

Test Laboratory: Bay Area Compliance Lab Corp.

**DELL LAPTOP -H**

**DUT: ZTE MY39 CDMA 1X EDVO WIRELESS CARD; Type: Sample; Serial: 699ECA25**

**Program Name: ZTE**

Communication System: CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.57 \text{ mho/m}$ ;  $\epsilon_r = 52$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.27, 6.27, 6.27); Calibrated: 3/18/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 10/18/2005
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

**1.5cm Body position - Middle chn\_H 2/Area Scan (71x81x1):** Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (interpolated) = 0.619 mW/g

**1.5cm Body position - Middle chn\_H 2/Zoom Scan (5x5x5):** Measurement grid: dx=5mm, dy=5mm, dz=5mm

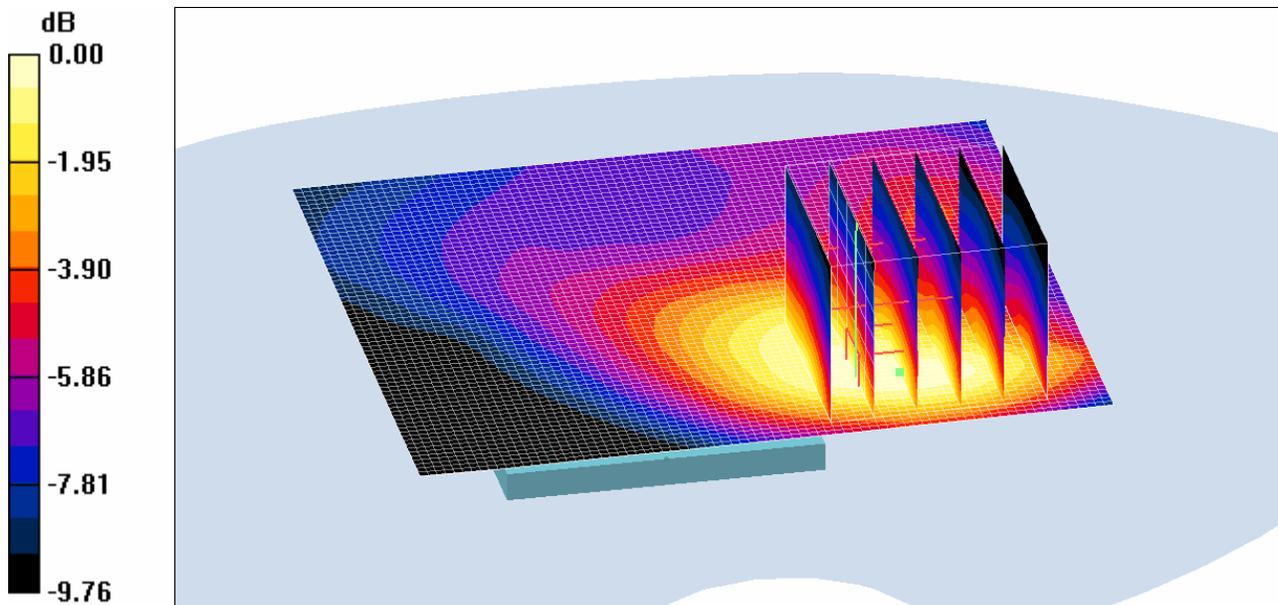
Reference Value = 16.5 V/m; Power Drift = 0.0201 dB

Peak SAR (extrapolated) = 0.877 W/kg

**SAR(1 g) = 0.552 mW/g; SAR(10 g) = 0.353 mW/g**

[Info: Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (measured) = 0.600 mW/g



0 dB = 0.609mW/g

**Plot #9**

Date/Time: 2/9/2006 1:17:32 PM

Test Laboratory: Bay Area Compliance Lab Corp.

**DELL LAPTOP -V**

**DUT: ZTE MY39 CDMA 1X EDVO WIRELESS CARD; Type: Sample; Serial: 699ECA25**

**Program Name: ZTE**

Communication System: CDMA; Frequency: 1880 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.57 \text{ mho/m}$ ;  $\epsilon_r = 52$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.27, 6.27, 6.27); Calibrated: 3/18/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 10/18/2005
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

**1.5cm Body position - Middle chn\_V 2/Area Scan (71x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

[Info: Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (interpolated) = 0.584 mW/g

**1.5cm Body position - Middle chn\_V 2/Zoom Scan (5x5x5):** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

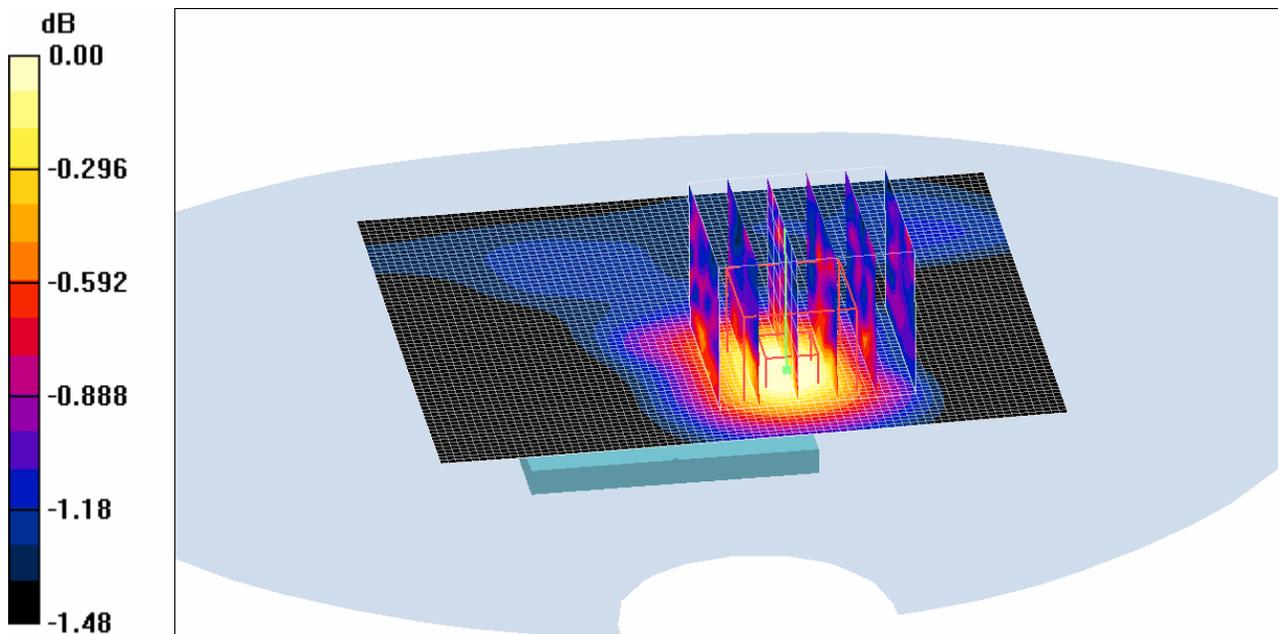
Reference Value = 15.3 V/m; Power Drift = -0.019 dB

Peak SAR (extrapolated) = 0.788 W/kg

**SAR(1 g) = 0.45 mW/g; SAR(10 g) = 0.341 mW/g**

[Info: Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (measured) = 0.48 mW/g



0 dB = 0.48mW/g

**Plot #10**

Date/Time: 2/9/2006 2:35:24 PM

Test Laboratory: Bay Area Compliance Lab Corp.

**SONY LAPTOP -H****DUT: ZTE MY39 CDMA 1X EDVO WIRELESS CARD; Type: Sample; Serial: 699ECA25****Program Name: ZTE**

Communication System: CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 1880$  MHz;  $\sigma = 1.57$  mho/m;  $\epsilon_r = 52$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.27, 6.27, 6.27); Calibrated: 3/18/2005

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn456; Calibrated: 10/18/2005

- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

**1.5cm Body position - Middle chn\_V/Area Scan (71x81x1):** Measurement grid: dx=15mm, dy=15mm[Info: Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (interpolated) = 0.593 mW/g

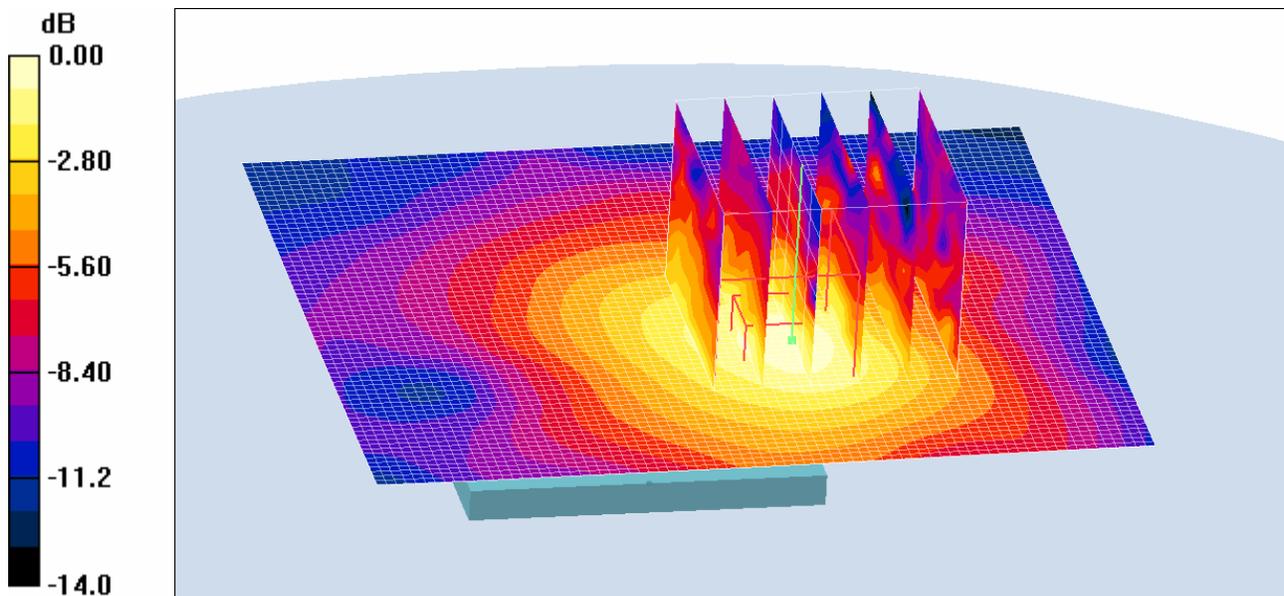
**1.5cm Body position - Middle chn\_V/Zoom Scan (5x5x5):** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 14.8 V/m; Power Drift = -0.044 dB

Peak SAR (extrapolated) = 0.854 W/kg

**SAR(1 g) = 0.524 mW/g; SAR(10 g) = 0.341 mW/g**[Info: Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (measured) = 0.55 mW/g



0 dB = 0.55mW/g

**Plot #11**

Date/Time: 2/9/2006 2:18:22 PM

Test Laboratory: Bay Area Compliance Lab Corp.

**SONY LAPTOP -H**

**DUT:ZTE MY39 CDMA 1X EDVO WIRELESS CARD; Type: Sample; Serial: 699ECA25**

**Program Name: ZTE**

Communication System: CDMA; Frequency: 1880 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated):  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.57 \text{ mho/m}$ ;  $\epsilon_r = 52$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.27, 6.27, 6.27); Calibrated: 3/18/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 10/18/2005
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

**1.5cm Body position - Middle chn\_H 2/Area Scan (71x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

[Info: Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (interpolated) = 0.562 mW/g

**1.5cm Body position - Middle chn\_H 2/Zoom Scan 2 (5x5x5):** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

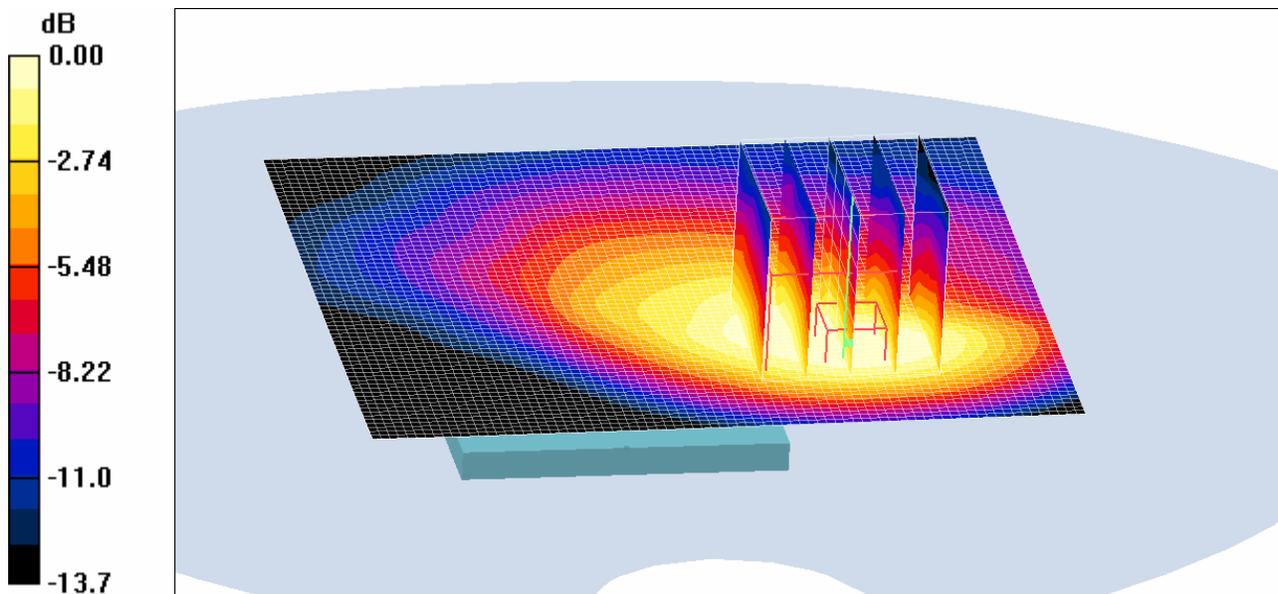
Reference Value = 8.51 V/m; Power Drift = 0.02dB

Peak SAR (extrapolated) = 0.812 W/kg

**SAR(1 g) = 0.44 mW/g; SAR(10 g) = 0.322 mW/g**

[Info: Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (measured) = 0.47 mW/g



0 dB = 0.47mW/g

**Plot #12**

## APPENDIX F – CONDUCTED OUTPUT POWER MEASUREMENT

### Provision Applicable

The measured peak output power should be greater and within 5% than EMI measurement.

### Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

### Test equipment

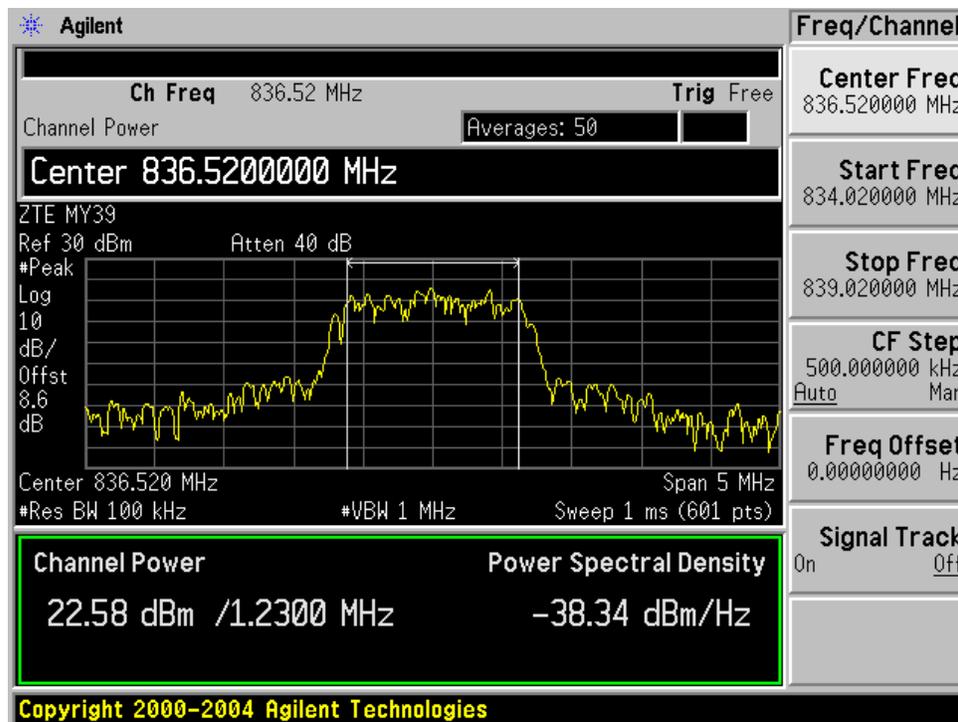
Agilent PSA E4446A Spectrum Analyzer, Calibration Due Date: 2005-11-10.

### Test Results

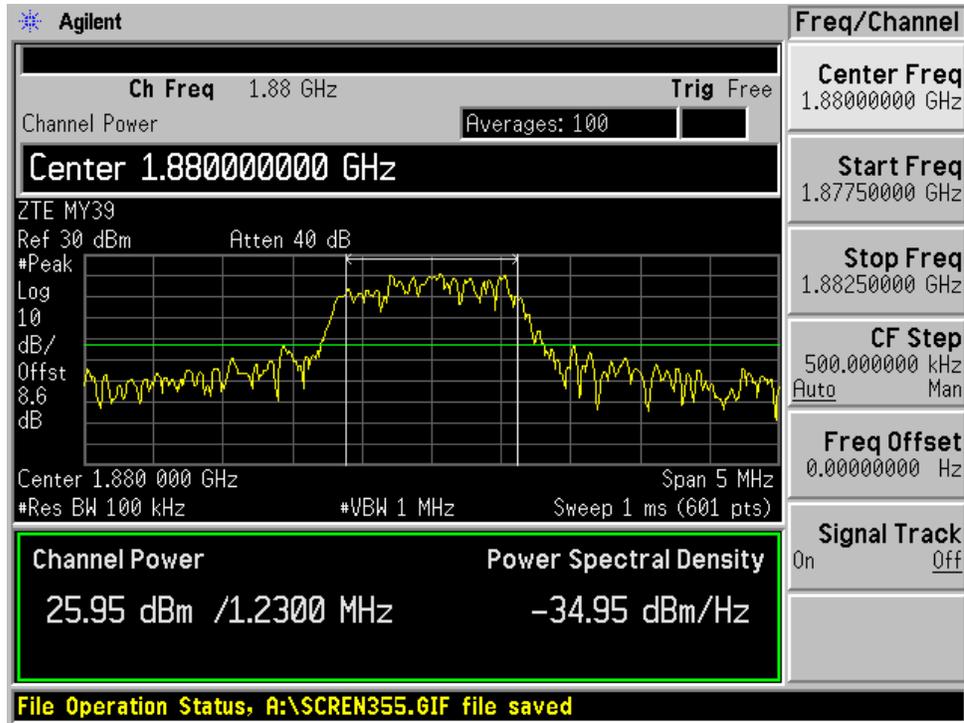
Frequency (MHz)	Output Power in dBm	Output Power in W
836.52	22.58	0.181
1880.00	25.95	0.394

Please refer to the following plots.

835 MHz Middle Channel



1880 MHz Middle Channel



## **APPENDIX G – EUT TEST POSITION PHOTOS**

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### **Body Setup Photo With Compaq Laptop (Antenna Folded)**



### **Body Setup Photo With Compaq Laptop (Antenna Up)**



**Body Setup with Dell Laptop (Antenna Folded)**

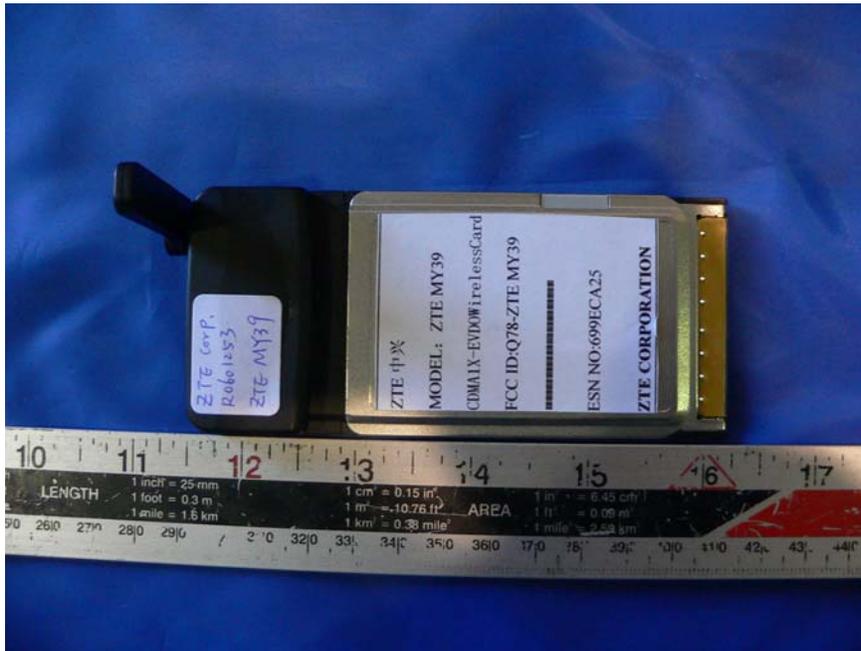


**Body Setup With SONY Laptop (Folded Antenna)**



## APPENDIX H – EUT & ACCESSORIES PHOTOS

### EUT - Top View



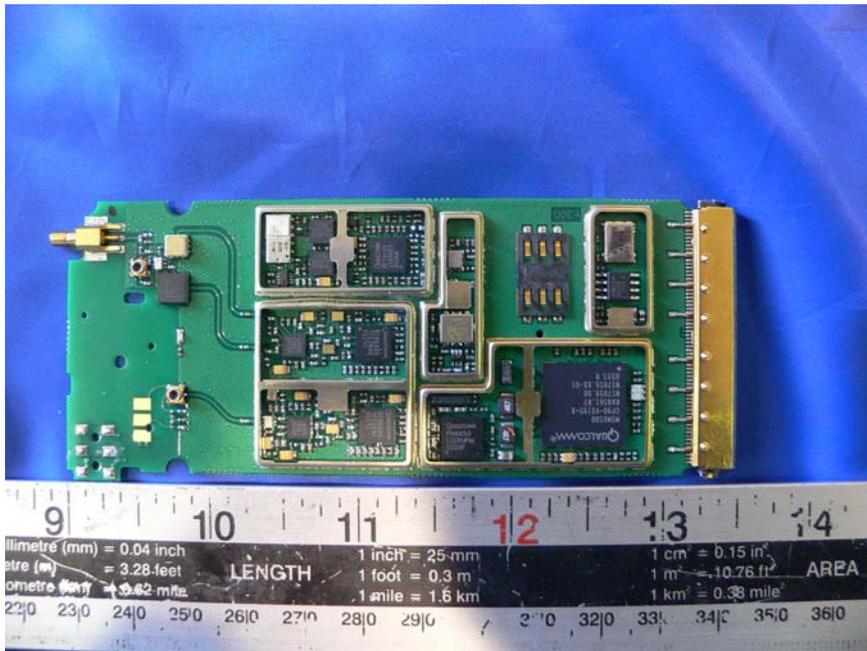
### EUT - Bottom View



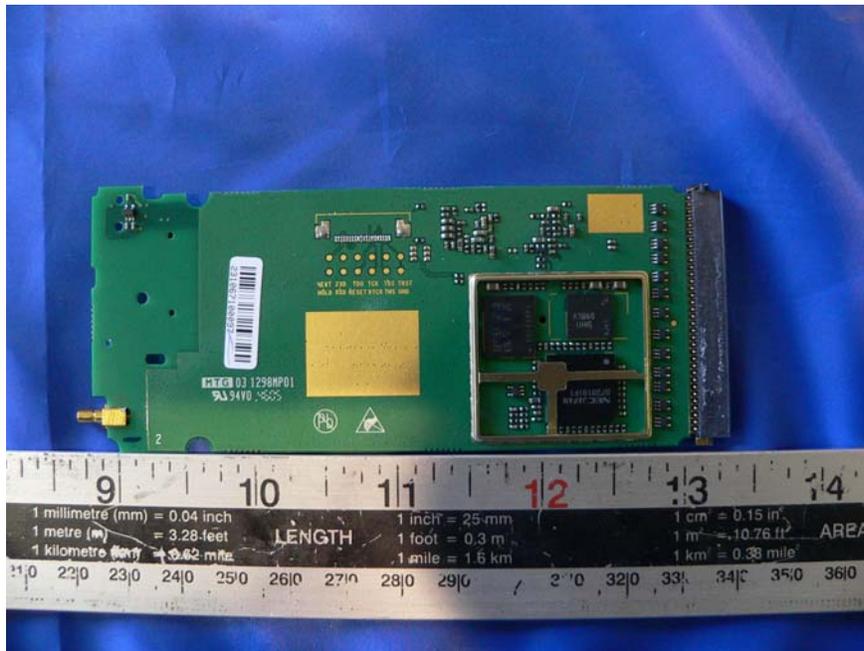
### EUT - Port View



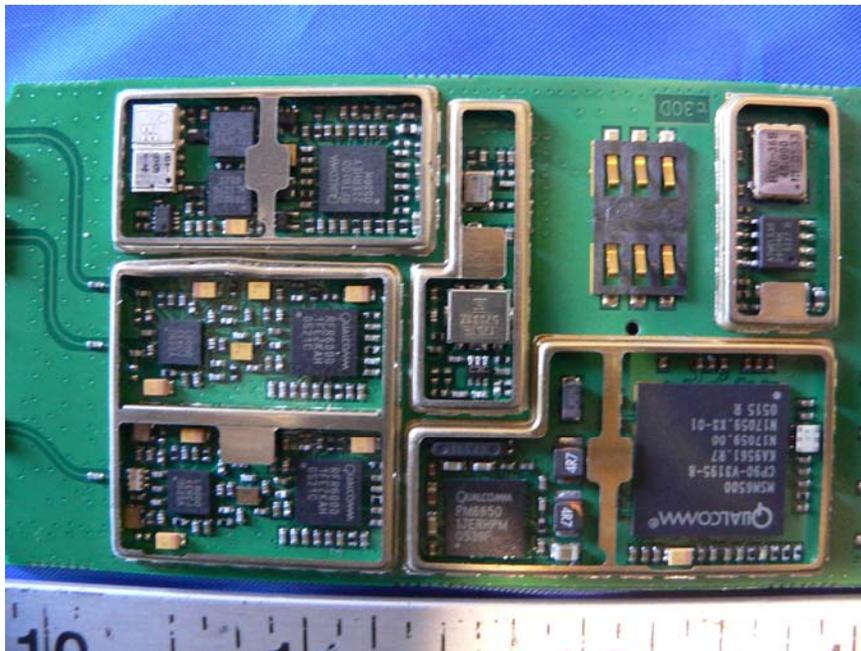
### EUT - Component View



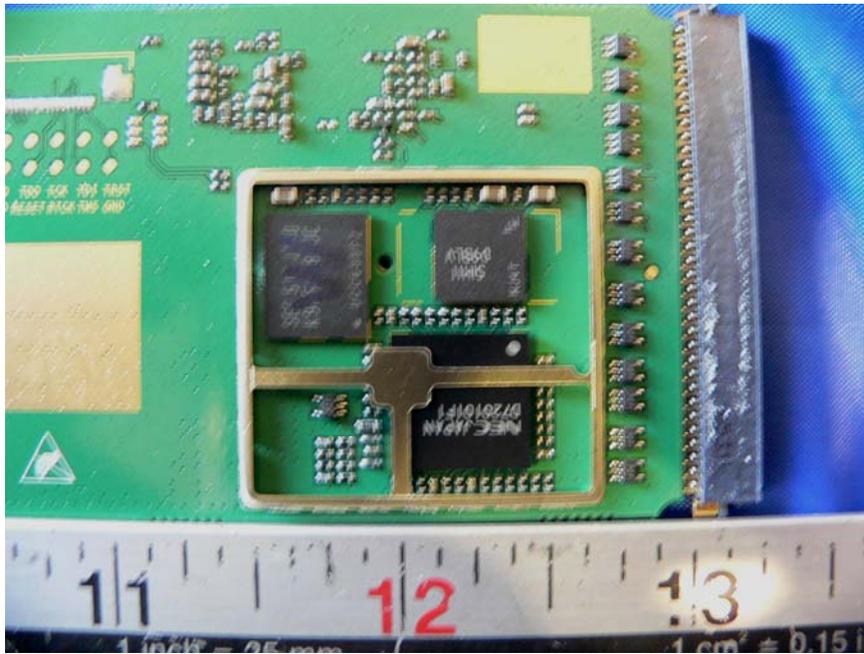
### EUT - Solder View



### EUT - Close View 1



**EUT - Close View 2**



## APPENDIX I - INFORMATIVE REFERENCES

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