

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	49.4 Ω - 7.9 j Ω
Return Loss	- 22.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.408 ns
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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 14:11:07

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/m³

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

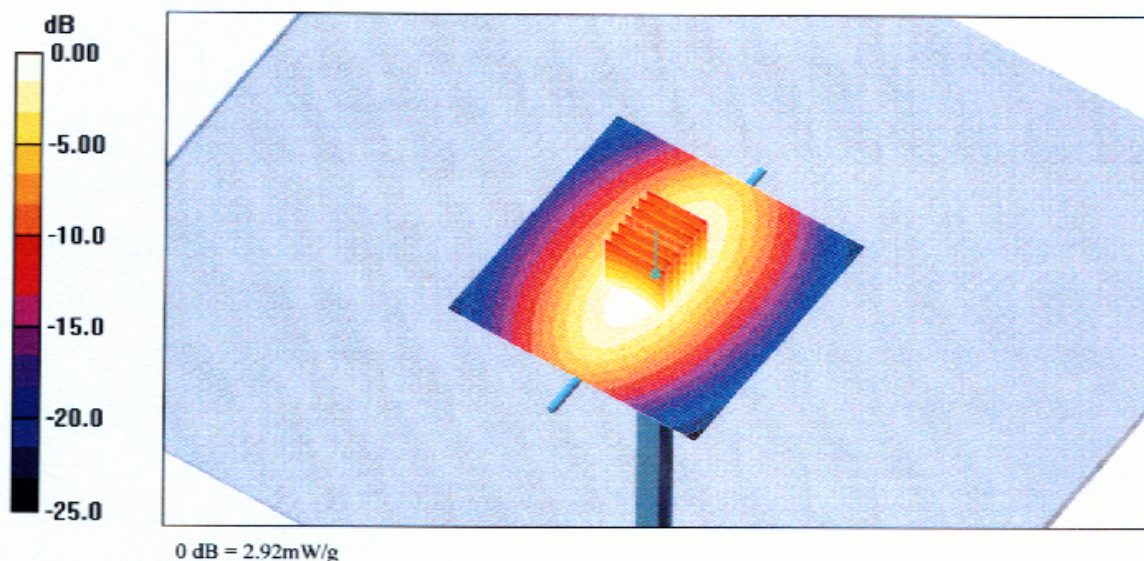
Pin = 250 mW; d = 15 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

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

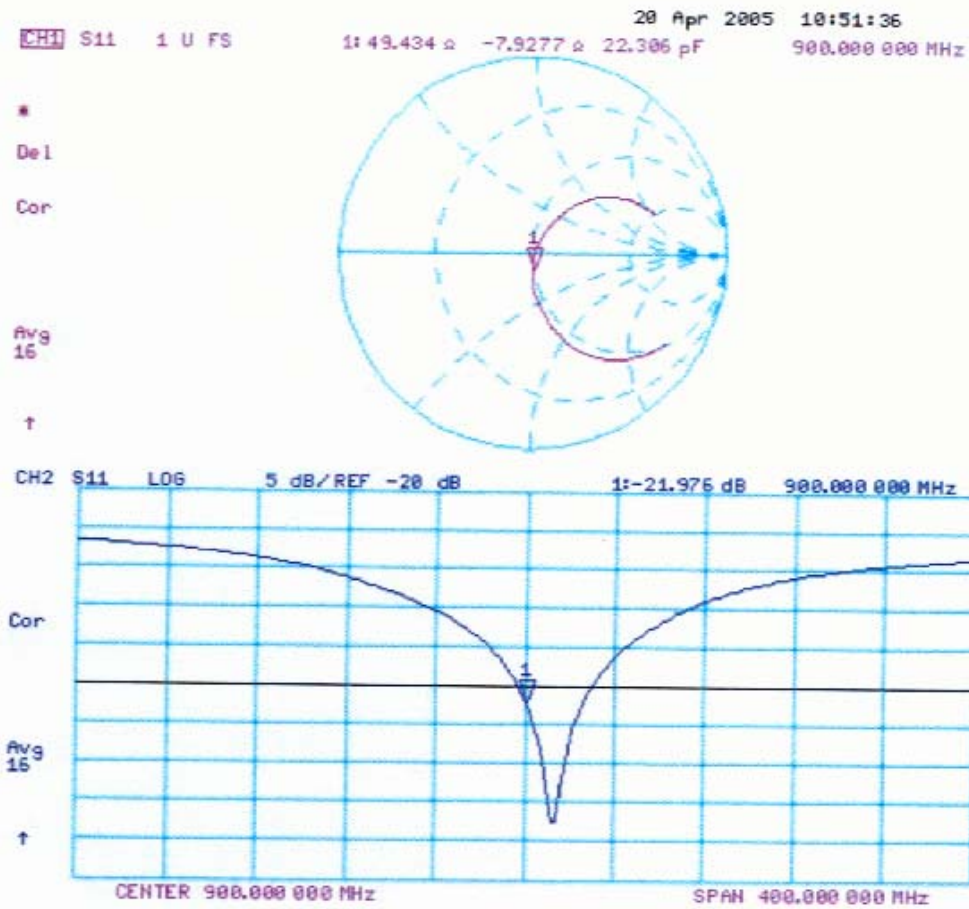
Peak SAR (extrapolated) = 3.96 W/kg

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

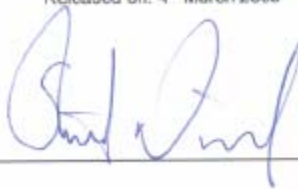
Frequency: 1800 MHz

Serial No: BCL-049

Customer: Bay Area Compliance Laboratory

Calibrated: 4th March 2005
Released on: 4th 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) 820-4182

NCL Calibration Laboratories

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)

This page has been reviewed for content and attested to by signature within this document.

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

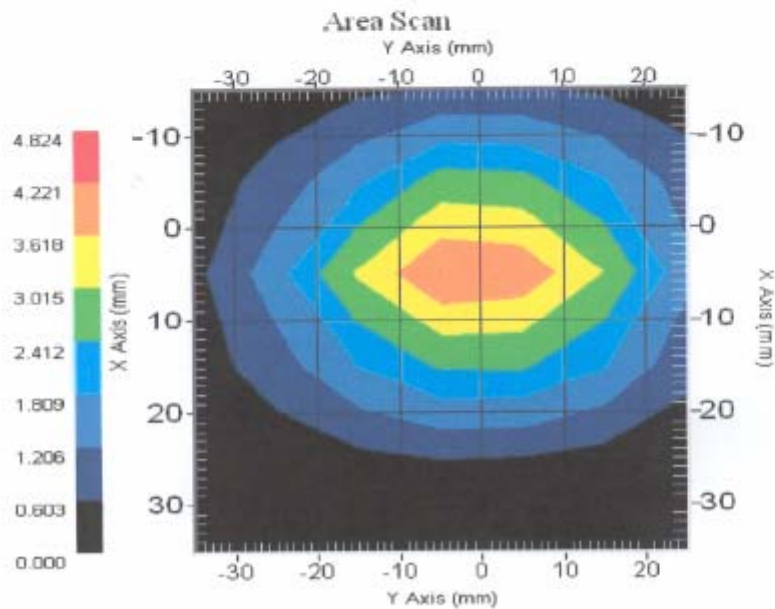
Length: 72.0 mm
Height: 41.7 mm

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, ϵ_r	40.0
Conductivity, σ [S/m]	1.40

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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**S22 REVERSE REFLECTION**

CH 4 - S22
REFERENCE PLANE
0.0000 mm

MARKER 1
1.799500 GHz
-26.891 dB

MARKER TO MAX
MARKER TO MIN

MARKER READOUT
FUNCTIONS

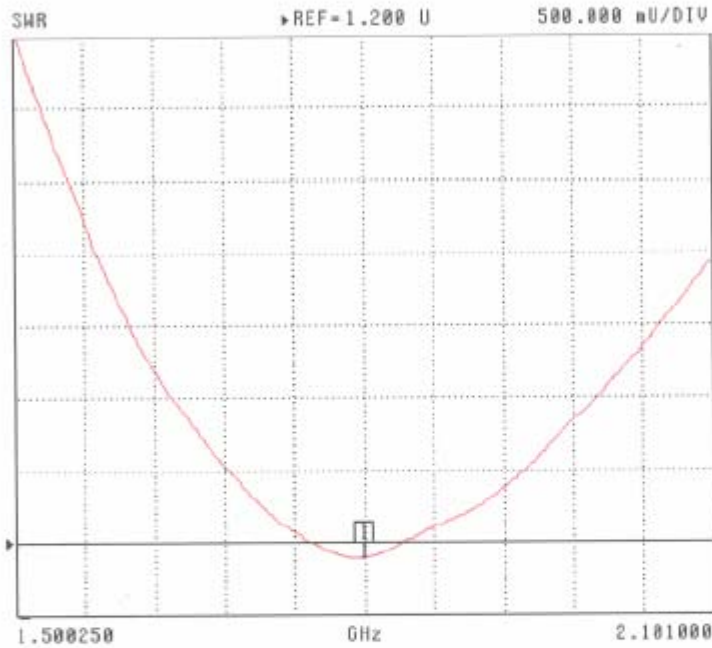
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SWR

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

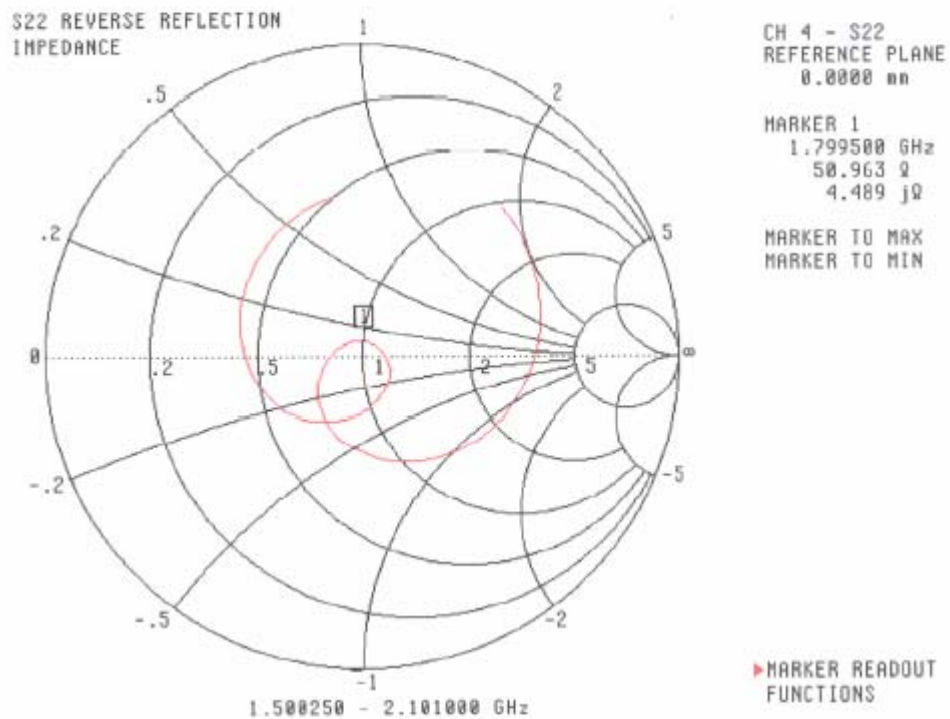
MARKER READOUT
FUNCTIONS

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Smith Chart Dipole Impedance

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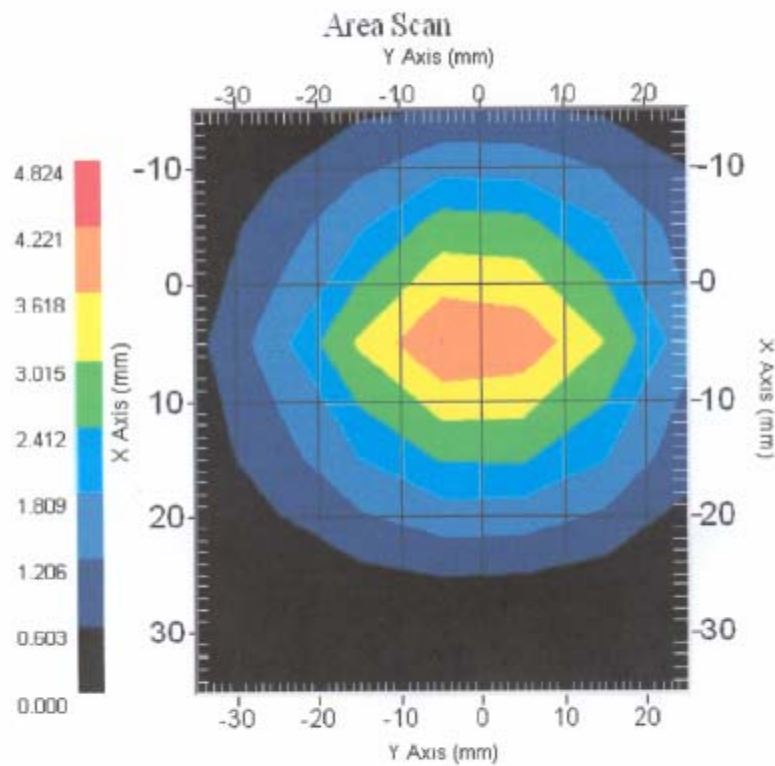
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System Validation Results Using the Electrically Calibrated Dipole

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

2005-07-25

Simulant	Freq [MHz]	Parameters	Liquid Temp [°C]	Target Value	Measured Value	Deviation	Limits [%]
Body	835	ϵ_r	22.0	55.2	55.8	1.10	± 5
		σ	22.0	0.97	0.96	-1.03	± 5
		1g SAR	22.0	8.848	8.92	0.81	± 10
Head	835	ϵ_r	22.0	41.5	41.3	-0.48	± 5
		σ	22.0	0.90	0.89	-1.11	± 5
		1g SAR	22.0	9.5	9.01	-5.16	± 10

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

2005-07-26

Simulant	Freq [MHz]	Parameters	Liquid Temp [°C]	Target Value	Measured Value	Deviation	Limits [%]
Body	1880	ϵ_r	22.0	53.3	52.4	-1.67	± 5
		σ	22.0	1.52	1.50	-1.32	± 5
		1g SAR	22.0	24.97	26.7	6.93	± 10
Head	1880	ϵ_r	22.0	40.0	39.9	-0.25	± 5
		σ	22.0	1.4	1.38	-2.0	± 5
		1g SAR	22.0	39.7	39.4	-0.76	± 10

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

Date/Time: 7/25/2005 1:57:01 PM

Test Laboratory: Bay Area Compliance Lab Corp.

SystemValidationCheck_D835_Body**DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN:122**

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

Medium parameters used: $f = 835$ MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 55.8$; $\rho = 1000$ kg/m³

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) Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn456; Calibrated: 6/1/2004
- 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 3/Area Scan (61x121x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 9.46 mW/g

d=15mm, Pin=1W 3/Z Scan (1x1x16): Measurement grid: dx=20mm, dy=20mm, dz=20mm

Maximum value of SAR (interpolated) = 4.29 mW/g

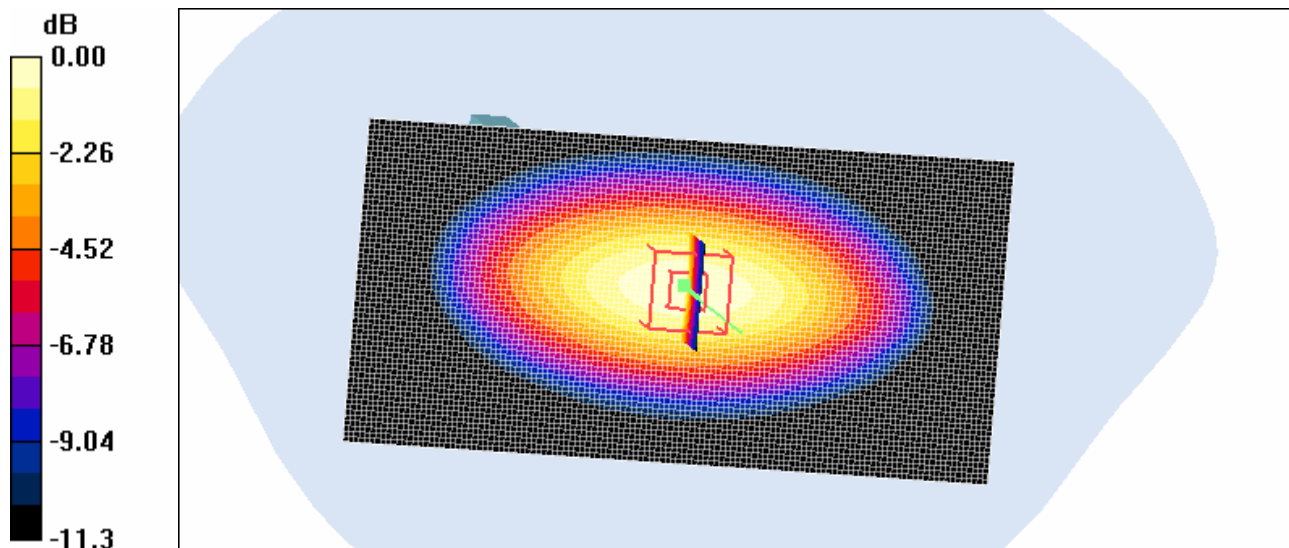
d=15mm, Pin=1W 3/Zoom Scan (5x5x5) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 104.4 V/m; Power Drift = -0.024 dB

Peak SAR (extrapolated) = 13.4 W/kg

SAR(1 g) = 8.92 mW/g; SAR(10 g) = 5.68 mW/g

Maximum value of SAR (measured) = 9.69 mW/g



0 dB = 9.69mW/g

Date/Time: 7/25/2005 4:15:59 PM

Test Laboratory: Bay Area Compliance Lab Corp.

SystemValidationCheck_D835_Head**DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN:122Serial: SN:122**

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

Medium parameters used: $f = 835$ MHz; $\sigma = 0.89$ mho/m; $\epsilon_r = 41.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.27, 6.27, 6.27)ConvF(6.62, 6.62, 6.62); Calibrated: 3/18/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn456; Calibrated: 6/1/2004
- 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) = 9.40 mW/g

d=15mm, Pin=1W/Z Scan (1x1x16): Measurement grid: dx=20mm, dy=20mm, dz=20mm

Maximum value of SAR (interpolated) = 4.75 mW/g

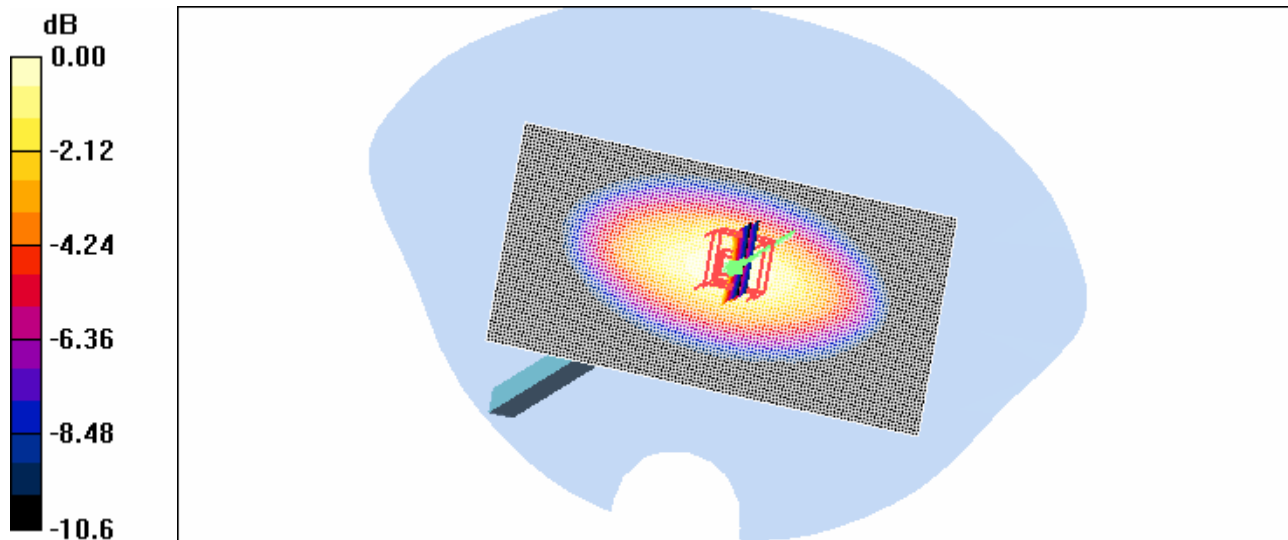
d=15mm, Pin=1W/Zoom Scan (5x5x5) Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 119.0 V/m; Power Drift = 0.163 dB

Peak SAR (extrapolated) = 13.4 W/kg

SAR(1 g) = 9.01 mW/g; SAR(10 g) = 5.88 mW/g

Maximum value of SAR (measured) = 9.73 mW/g



0 dB = 9.73mW/g

Date/Time: 7/26/2005 10:18:48 AM

Test Laboratory: Bay Area Compliance Lab Corp.

SystemValidationCheck_D1900_Body**DUT: Dipole 1800 MHz; Type: D1800S2; Serial: BCL-049**

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

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 52.4$; $\rho = 1000$ kg/m³

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) Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn456; Calibrated: 6/1/2004
- 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 (51x61x1): Measurement grid: dx=10mm, dy=15mm

Maximum value of SAR (interpolated) = 36.2 mW/g

d=10mm, Pin=1W/Z Scan (1x1x16): Measurement grid: dx=20mm, dy=20mm, dz=20mm

Maximum value of SAR (interpolated) = 9.06 mW/g

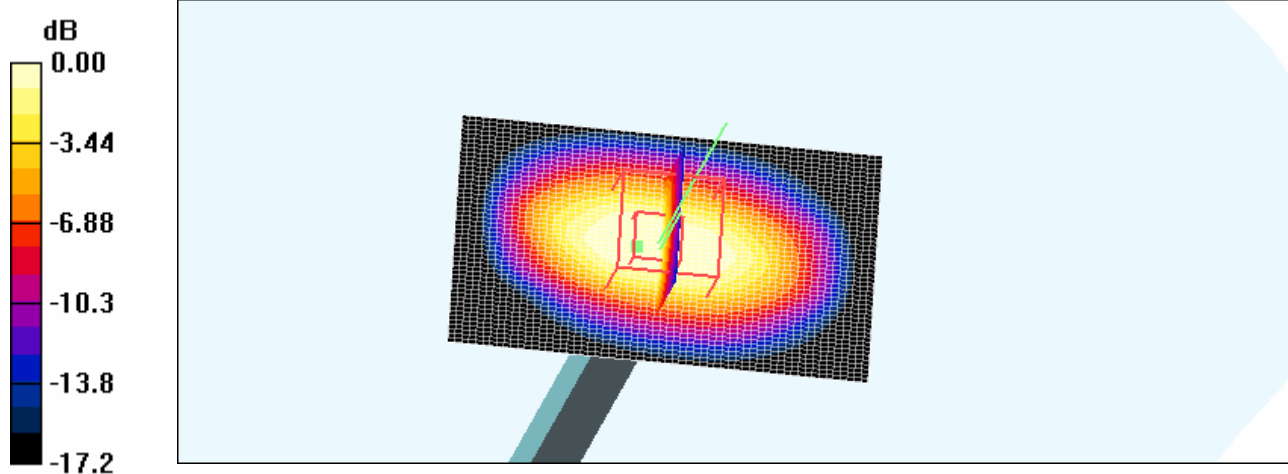
d=10mm, Pin=1W/Zoom Scan (5x5x5): Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 161.4 V/m; Power Drift = -0.103 dB

Peak SAR (extrapolated) = 46.9 W/kg

SAR(1 g) = 26.7 mW/g; SAR(10 g) = 13.9 mW/g

Maximum value of SAR (measured) = 30.6 mW/g



0 dB = 30.6mW/g

Date/Time: 7/26/2005 1:36:13 PM

Test Laboratory: Bay Area Compliance Lab Corp.

SystemValidationCheck_D1900_Head**DUT: Dipole 1800 MHz; Type: D1800S2; Serial: BCL-049**

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

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.38$ mho/m; $\epsilon_r = 39.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(5.19, 5.19, 5.19); Calibrated: 3/18/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection) Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE3 Sn456; Calibrated: 6/1/2004
- 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 (51x61x1): Measurement grid: dx=10mm, dy=15mm

Maximum value of SAR (interpolated) = 47.9 mW/g

d=10mm, Pin=1W/Z Scan (1x1x16): Measurement grid: dx=20mm, dy=20mm, dz=20mm

Maximum value of SAR (interpolated) = 9.59 mW/g

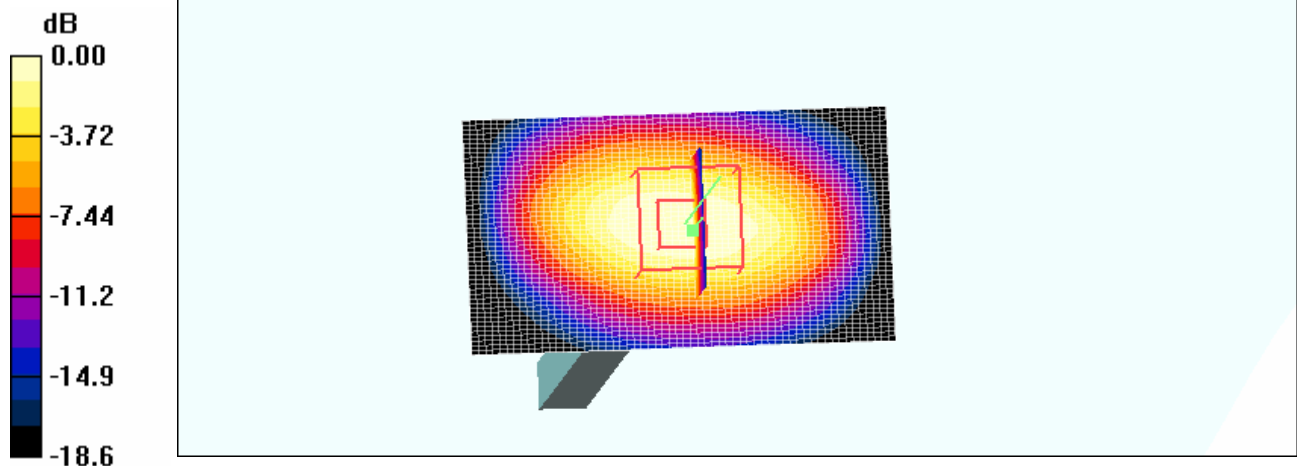
d=10mm, Pin=1W/Zoom Scan (5x5x5): Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 191.6 V/m; Power Drift = -0.029 dB

Peak SAR (extrapolated) = 72.2 W/kg

SAR(1 g) = 39.4 mW/g; SAR(10 g) = 20.1 mW/g

Maximum value of SAR (measured) = 44.9 mW/g



0 dB = 44.9mW/g

APPENDIX E - EUT SCANS

Date/Time: 7/25/2005 2:26:11 PM

Test Laboratory: Bay Area Compliance Lab Corp.

Body 850**DUT: Mobicom; Serial: 2188A-2**

Communication System: GSM850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 55.9$; $\rho = 1000$ kg/m³

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: 6/1/2004
- 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 from phantom , Middle Channel/Area Scan (41x91x1): Measurement grid: dx=15mm, dy=15mm[Info: Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (interpolated) = 0.745 mW/g

1.5cm from phantom , Middle Channel/Z Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=20mm[Info: Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (interpolated) = 0.882 mW/g

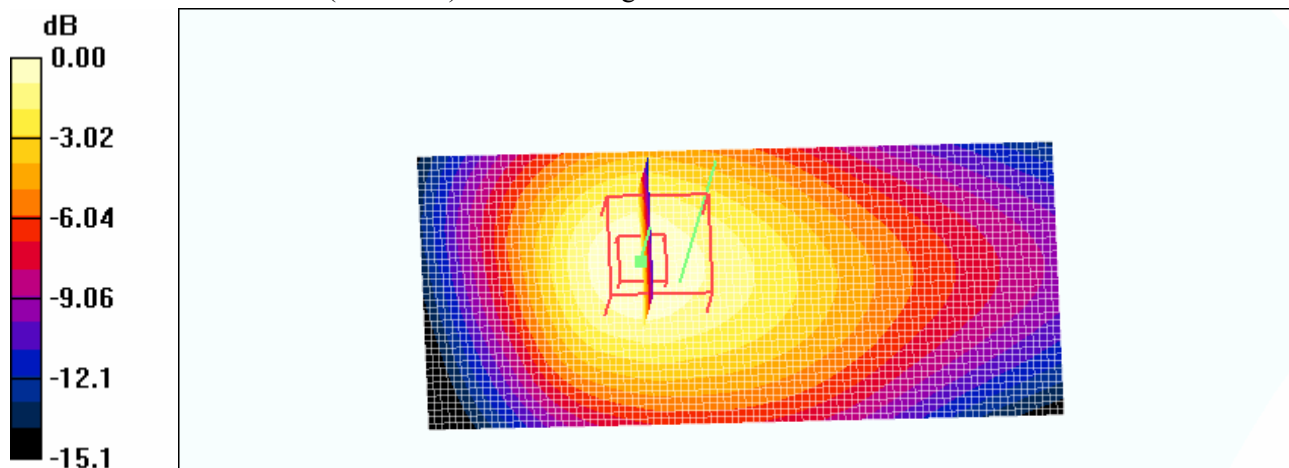
1.5cm from phantom , Middle Channel/Zoom Scan 2: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 27.1 V/m; Power Drift = 0.021 dB

Peak SAR (extrapolated) = 1.05 W/kg

SAR(1 g) = 0.686 mW/g; SAR(10 g) = 0.431 mW/g[Info: Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (measured) = 0.746 mW/g



0 dB = 0.746mW/g

Plot #1

Date/Time: 7/25/2005 7:34:34 PM

Test Laboratory: Bay Area Compliance Lab Corp.

Left Head 850 Touch**DUT: Mobicom; Serial: 2188A-2**

Communication System: GSM850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.89$ mho/m; $\epsilon_r = 41.5$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.62, 6.62, 6.62); Calibrated: 3/18/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 6/1/2004
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Touch Middle Channel/Area Scan (41x91x1): Measurement grid: dx=15mm, dy=15mm[Info: Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (interpolated) = 0.696 mW/g

Touch Middle Channel/Z Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=20mm[Info: Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (interpolated) = 0.653 mW/g

Touch Middle Channel/Zoom Scan: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 25.2 V/m; Power Drift = 0.053 dB

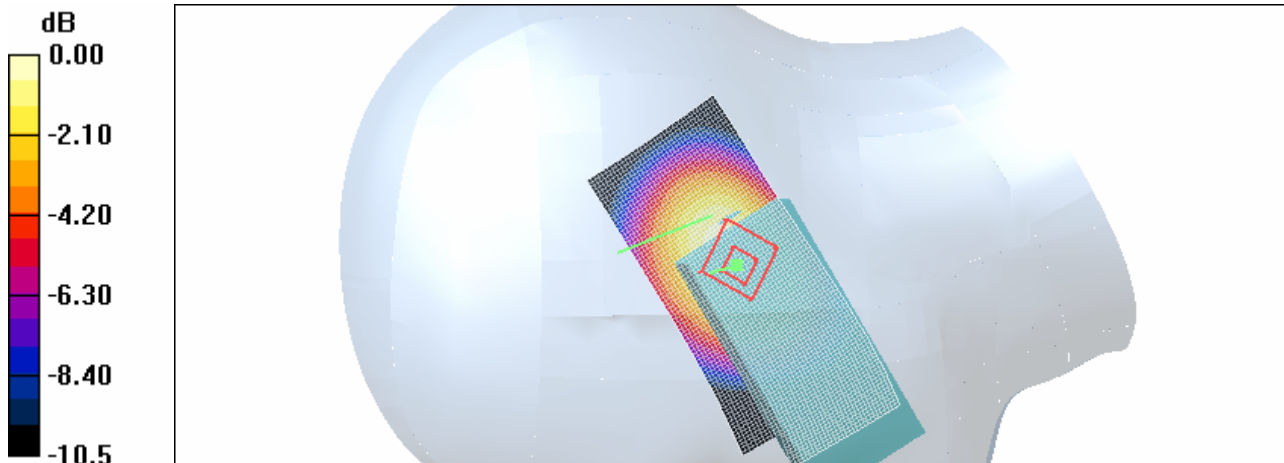
Peak SAR (extrapolated) = 0.902 W/kg

SAR(1 g) = 0.641 mW/g; SAR(10 g) = 0.439 mW/g[Info: Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (measured) = 0.690 mW/g

Tilt Middle Channel/Z Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=20mm[Info: Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (interpolated) = 0.348 mW/g

**Plot #2**

Test Laboratory: Bay Area Compliance Lab Corp.

Left Head 850 Tilt

DUT: Mobicom; Serial: 2188A-2

Communication System: GSM850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.89$ mho/m; $\epsilon_r = 41.5$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.62, 6.62, 6.62); Calibrated: 3/18/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 6/1/2004
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Tilt Middle Channel/Area Scan (41x91x1): Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (interpolated) = 0.304 mW/g

Tilt Middle Channel/Z Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=20mm

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

Maximum value of SAR (interpolated) = 0.348 mW/g

Tilt Middle Channel/Zoom Scan: Measurement grid: dx=5mm, dy=5mm, dz=5mm

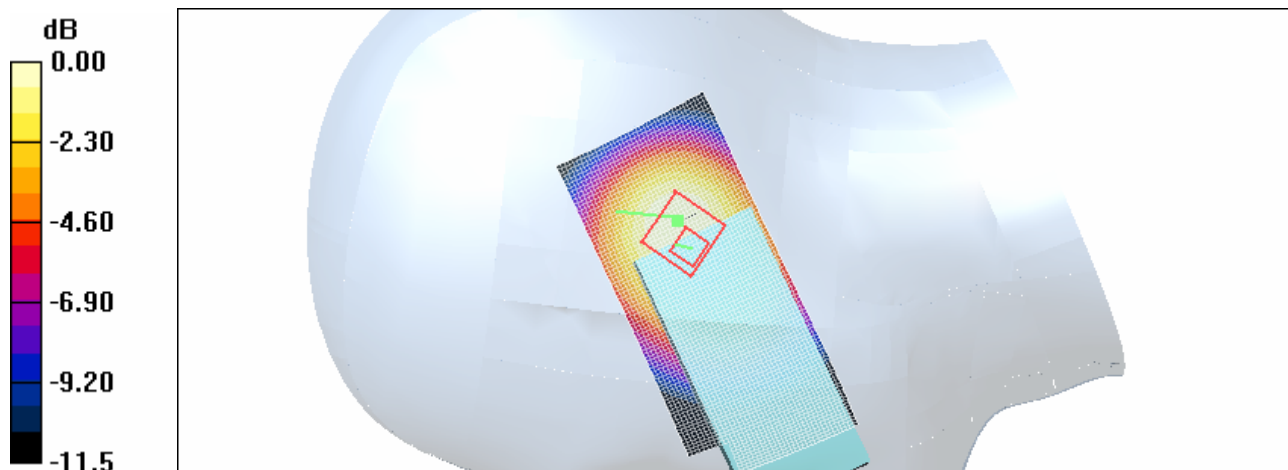
Reference Value = 18.3 V/m; Power Drift = 0.020 dB

Peak SAR (extrapolated) = 0.350 W/kg

SAR(1 g) = 0.269 mW/g; SAR(10 g) = 0.194 mW/g

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

Maximum value of SAR (measured) = 0.287 mW/g



0 dB = 0.287mW/g

Plot #3

Date/Time: 7/25/2005 5:31:13 PM

Test Laboratory: Bay Area Compliance Lab Corp.

Right Head 850 Touch**DUT: Mobicom; Serial: 2188A-2**

Communication System: GSM850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.89$ mho/m; $\epsilon_r = 41.5$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.62, 6.62, 6.62); Calibrated: 3/18/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 6/1/2004
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Touch Middle Channel/Area Scan (41x91x1): Measurement grid: dx=15mm, dy=15mm[Info: Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (interpolated) = 0.564 mW/g

Touch Middle Channel/Z Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=20mm[Info: Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (interpolated) = 0.493 mW/g

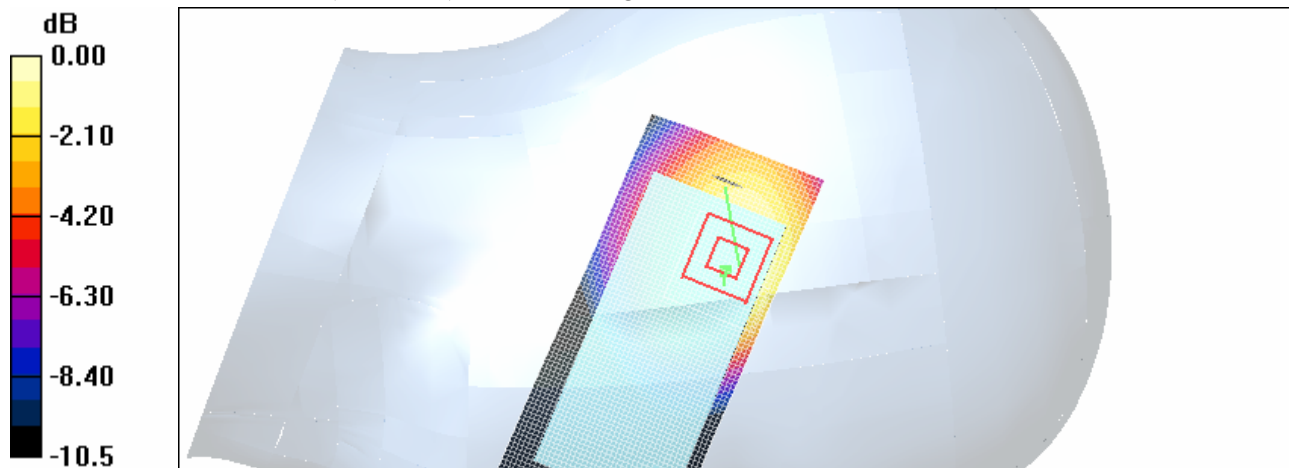
Touch Middle Channel/Zoom Scan: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 22.0 V/m; Power Drift = 0.033 dB

Peak SAR (extrapolated) = 0.737 W/kg

SAR(1 g) = 0.525 mW/g; SAR(10 g) = 0.364 mW/g[Info: Interpolated medium parameters used for SAR evaluation!](#)

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

**Plot #4**

Date/Time: 7/25/2005 6:16:51 PM

Test Laboratory: Bay Area Compliance Lab Corp.

Right Head 850 Tilt**DUT: Mobicom; Serial: 2188A-2**

Communication System: GSM850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.89$ mho/m; $\epsilon_r = 41.5$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(6.62, 6.62, 6.62); Calibrated: 3/18/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 6/1/2004
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Tilt Middle Channel/Area Scan (41x91x1): Measurement grid: dx=15mm, dy=15mm[Info: Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (interpolated) = 0.245 mW/g

Tilt Middle Channel/Z Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=20mm[Info: Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (interpolated) = 0.253 mW/g

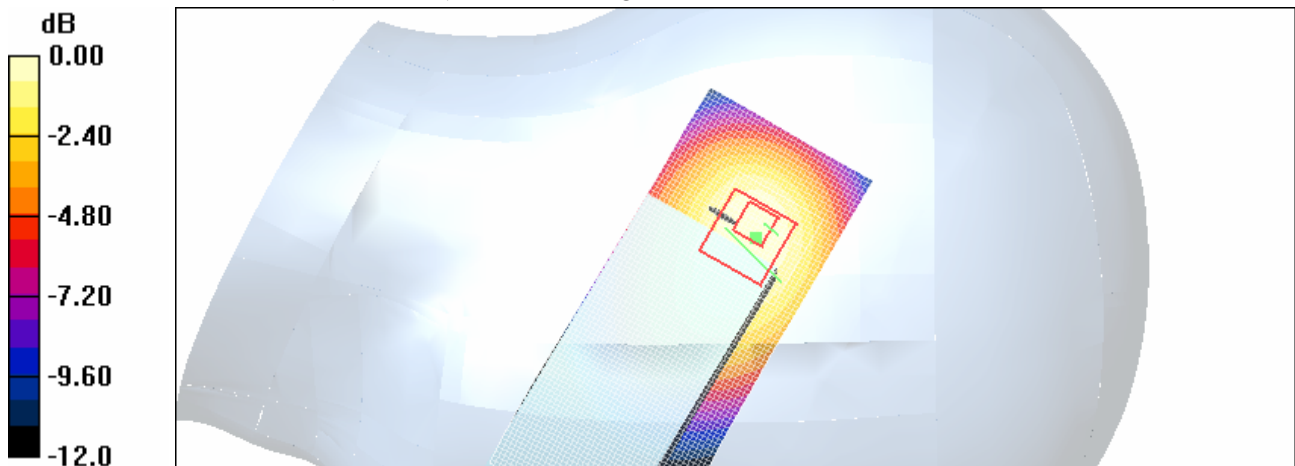
Tilt Middle Channel/Zoom Scan: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 15.8 V/m; Power Drift = -0.021 dB

Peak SAR (extrapolated) = 0.319 W/kg

SAR(1 g) = 0.226 mW/g; SAR(10 g) = 0.156 mW/g[Info: Interpolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (measured) = 0.242 mW/g



0 dB = 0.242mW/g

Plot #5

Date/Time: 7/26/2005 12:29:55 PM

Test Laboratory: Bay Area Compliance Lab Corp.

Body 1900**DUT: Mobicom; Serial: 2188A-2**

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.57$ mho/m; $\epsilon_r = 51.1$; $\rho = 1000$ kg/m³

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: 6/1/2004
- 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 from phantom , Middle Channel/Area Scan (41x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.152 mW/g

1.5cm from phantom , Middle Channel/Z Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=20mm

Maximum value of SAR (interpolated) = 0.189 mW/g

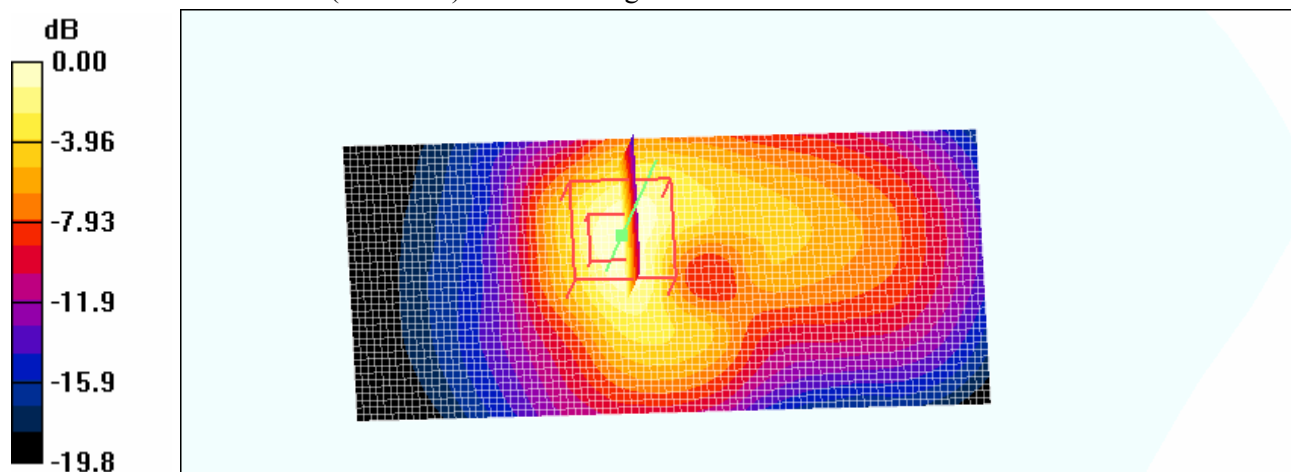
1.5cm from phantom , Middle Channel/Zoom Scan: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.3 V/m; Power Drift = -0.111 dB

Peak SAR (extrapolated) = 0.259 W/kg

SAR(1 g) = 0.142 mW/g; SAR(10 g) = 0.072 mW/g

Maximum value of SAR (measured) = 0.156 mW/g



0 dB = 0.156mW/g

Plot #6

Date/Time: 7/26/2005 6:03:51 PM

Test Laboratory: Bay Area Compliance Lab Corp.

Left Head 1900 Touch**DUT: Mobicom; Serial: 2188A-2**

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used (extrapolated): $f = 1880$ MHz; $\sigma = 1.37$ mho/m; $\epsilon_r = 40$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(5.19, 5.19, 5.19); Calibrated: 3/18/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 6/1/2004
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Touch Middle Channel/Area Scan (41x91x1): Measurement grid: dx=15mm, dy=15mm[Info: Extrapolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (interpolated) = 0.265 mW/g

Touch Middle Channel/Z Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=20mm[Info: Extrapolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (interpolated) = 0.296 mW/g

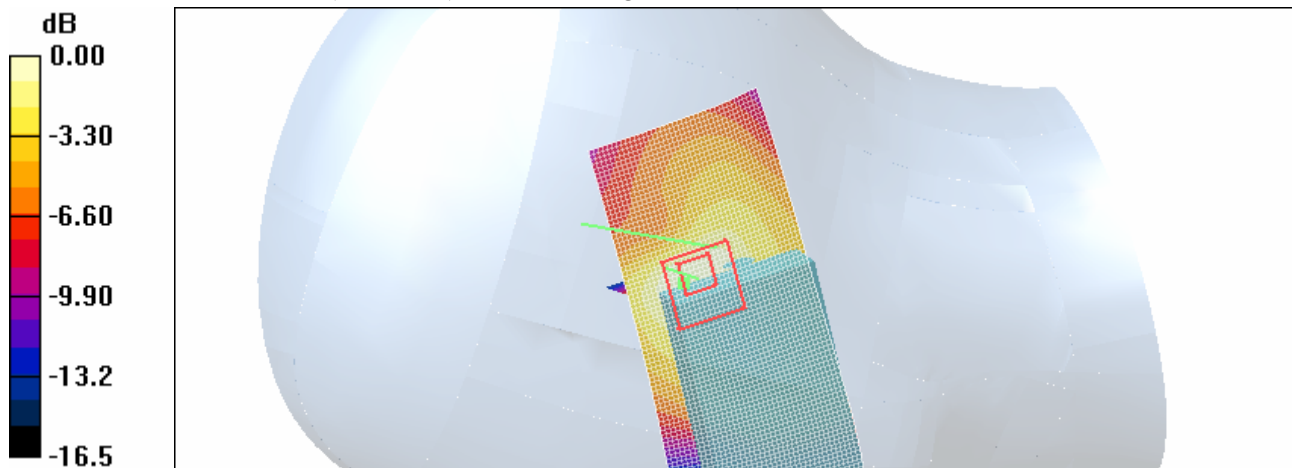
Touch Middle Channel/Zoom Scan: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 13.5 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.353 W/kg

SAR(1 g) = 0.233 mW/g; SAR(10 g) = 0.142 mW/g[Info: Extrapolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (measured) = 0.253 mW/g



0 dB = 0.253mW/g

Plot #7

Date/Time: 7/26/2005 6:35:27 PM

Test Laboratory: Bay Area Compliance Lab Corp.

Left Head 1900 Tilt**DUT: Mobicom; Serial: 2188A-2**

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used (extrapolated): $f = 1880 \text{ MHz}$; $\sigma = 1.37 \text{ mho/m}$; $\epsilon_r = 40$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(5.19, 5.19, 5.19); Calibrated: 3/18/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 6/1/2004
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Tilt Middle Channel/Area Scan (41x91x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$ [Info: Extrapolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (interpolated) = 0.193 mW/g

Tilt Middle Channel/Z Scan (1x1x17): Measurement grid: $dx=20\text{mm}$, $dy=20\text{mm}$, $dz=20\text{mm}$ [Info: Extrapolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (interpolated) = 0.222 mW/g

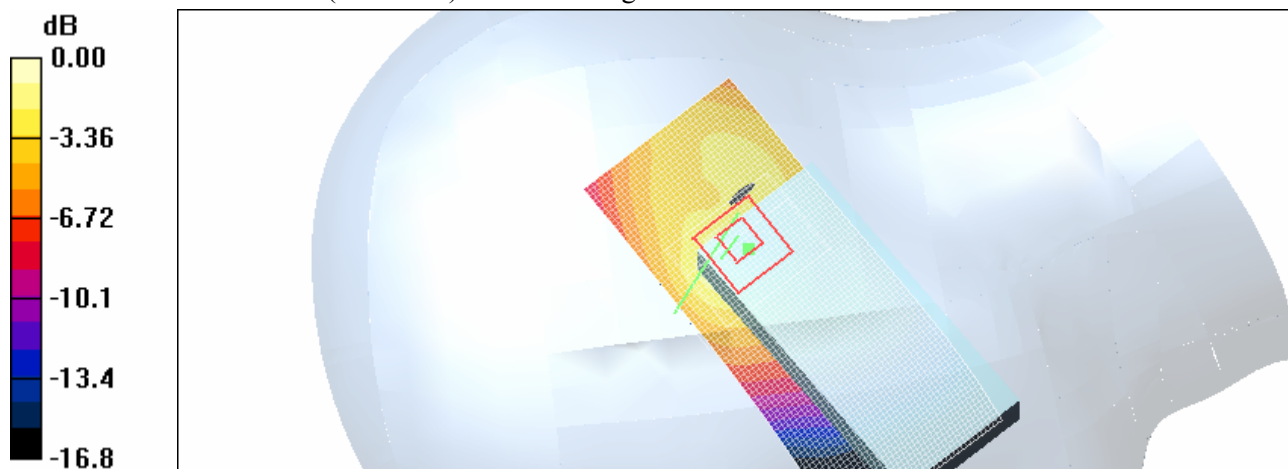
Tilt Middle Channel/Zoom Scan: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 11.5 V/m; Power Drift = -0.00 dB

Peak SAR (extrapolated) = 0.281 W/kg

SAR(1 g) = 0.176 mW/g; SAR(10 g) = 0.100 mW/g[Info: Extrapolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (measured) = 0.194 mW/g



0 dB = 0.194mW/g

Plot #8

Date/Time: 7/26/2005 3:14:13 PM

Test Laboratory: Bay Area Compliance Lab Corp.

Right Head 1900 Touch**DUT: Mobicom; Serial: 2188A-2**

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used (extrapolated): $f = 1880$ MHz; $\sigma = 1.37$ mho/m; $\epsilon_r = 40$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(5.19, 5.19, 5.19); Calibrated: 3/18/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 6/1/2004
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Touch Middle Channel/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm[Info: Extrapolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (interpolated) = 0.291 mW/g

Touch Middle Channel/Z Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=20mm[Info: Extrapolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (interpolated) = 0.251 mW/g

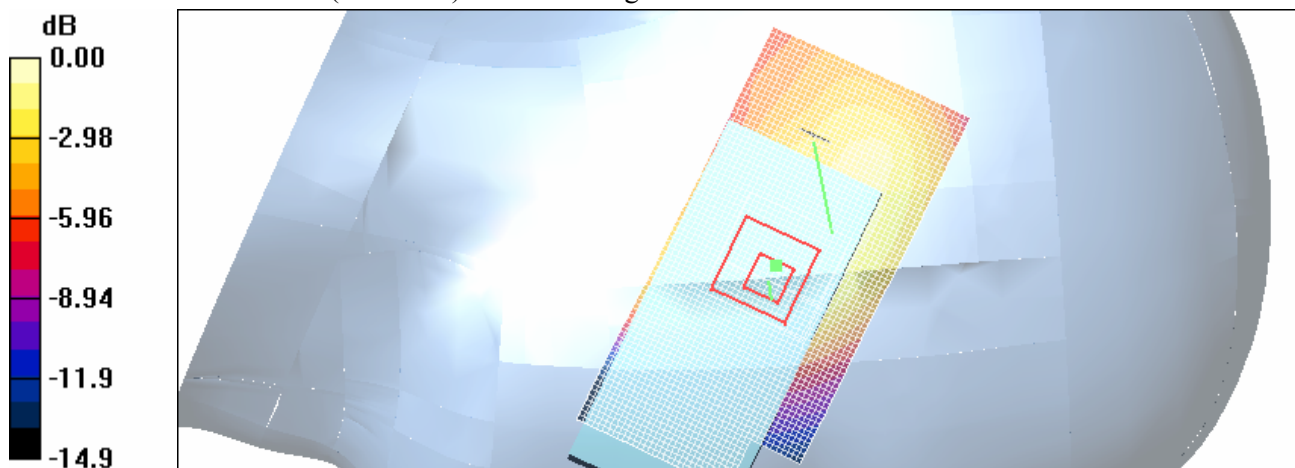
Touch Middle Channel/Zoom Scan: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 12.3 V/m; Power Drift = -0.048 dB

Peak SAR (extrapolated) = 0.412 W/kg

SAR(1 g) = 0.268 mW/g; SAR(10 g) = 0.162 mW/g[Info: Extrapolated medium parameters used for SAR evaluation!](#)

Maximum value of SAR (measured) = 0.300 mW/g



0 dB = 0.300mW/g

Plot #9

Test Laboratory: Bay Area Compliance Lab Corp.

Right Head 1900 Tilt

DUT: Mobicom; Serial: 2188A-2

Communication System: PCS 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used (extrapolated): $f = 1880$ MHz; $\sigma = 1.37$ mho/m; $\epsilon_r = 40$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(5.19, 5.19, 5.19); Calibrated: 3/18/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 6/1/2004
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Tilt Middle Channel/Area Scan (41x91x1): Measurement grid: dx=15mm, dy=15mm

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

Maximum value of SAR (interpolated) = 0.164 mW/g

Tilt Middle Channel/Z Scan (1x1x17): Measurement grid: dx=20mm, dy=20mm, dz=20mm

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

Maximum value of SAR (interpolated) = 0.178 mW/g

Tilt Middle Channel/Zoom Scan: Measurement grid: dx=5mm, dy=5mm, dz=5mm

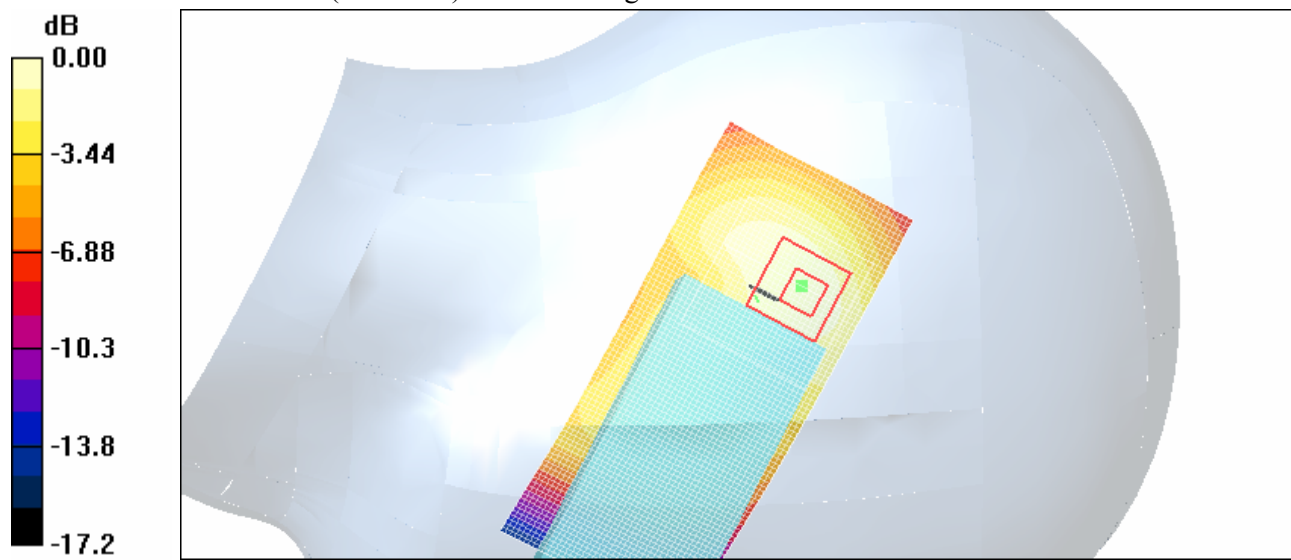
Reference Value = 10.5 V/m; Power Drift = -0.025 dB

Peak SAR (extrapolated) = 0.250 W/kg

SAR(1 g) = 0.149 mW/g; SAR(10 g) = 0.089 mW/g

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

Maximum value of SAR (measured) = 0.160 mW/g



0 dB = 0.160mW/g

Plot #10

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

Hewlett Packard HP8564E Spectrum Analyzer, Calibration Due Date: 2005-10-04.

Hewlett Packard HP 7470A Plotter, Calibration not required.

Agilent E5515C Analyzer, Communications, Calibration Due Date: 2005-08-08.

Test Results

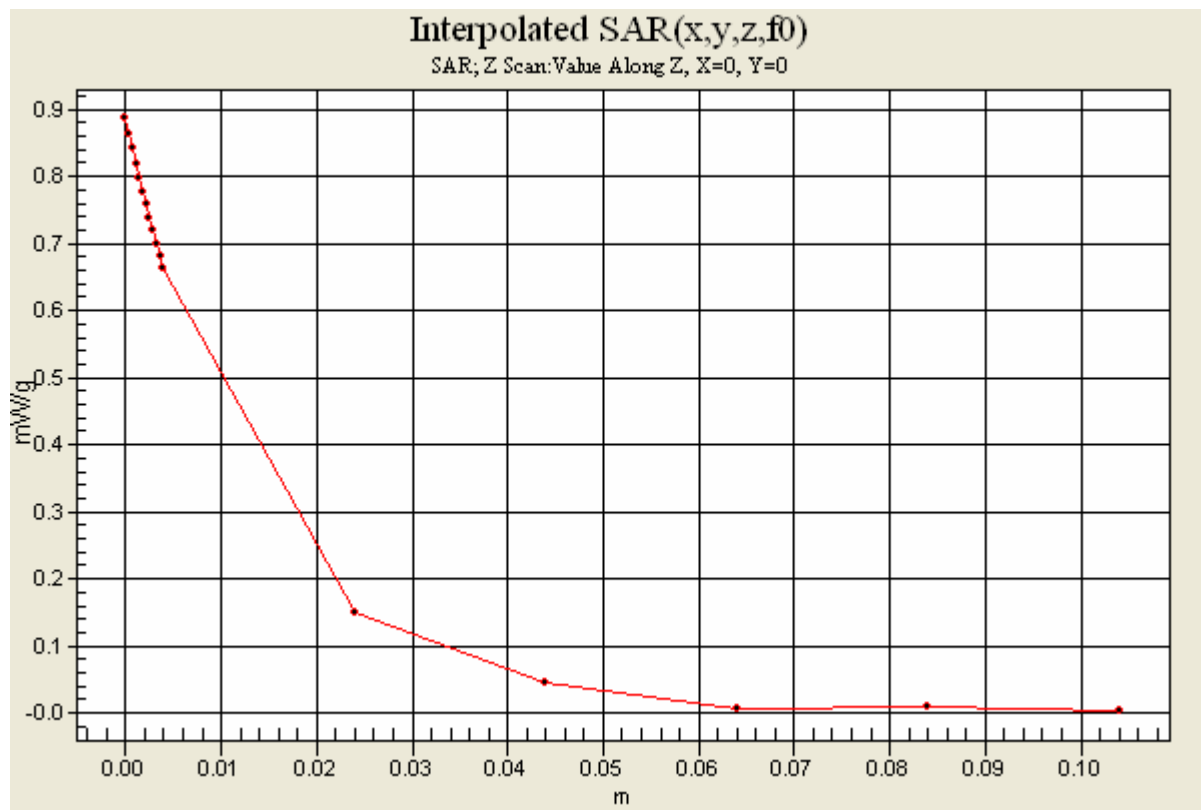
GSM 850:

Channel	Frequency (MHz)	Output Power in dBm	Output Power in W
MIDDLE	836.60	31.55	1.429

GSM 1900:

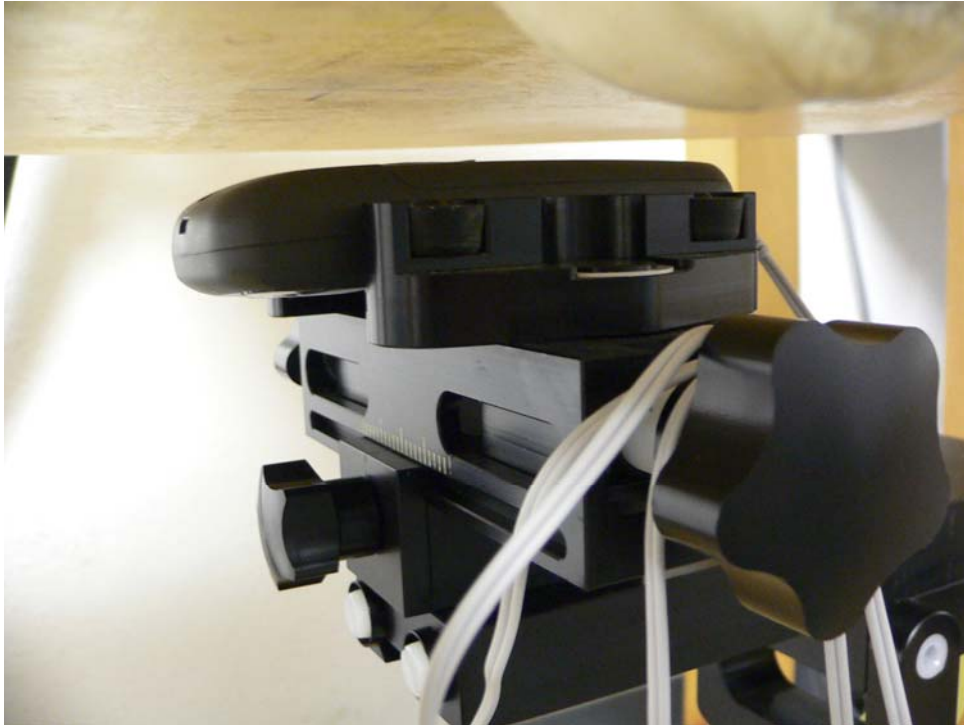
Channel	Frequency (MHz)	Output Power in dBm	Output Power in W
MIDDLE	1880	28.15	0.653

APPENDIX G – Z-AXIS PLOT

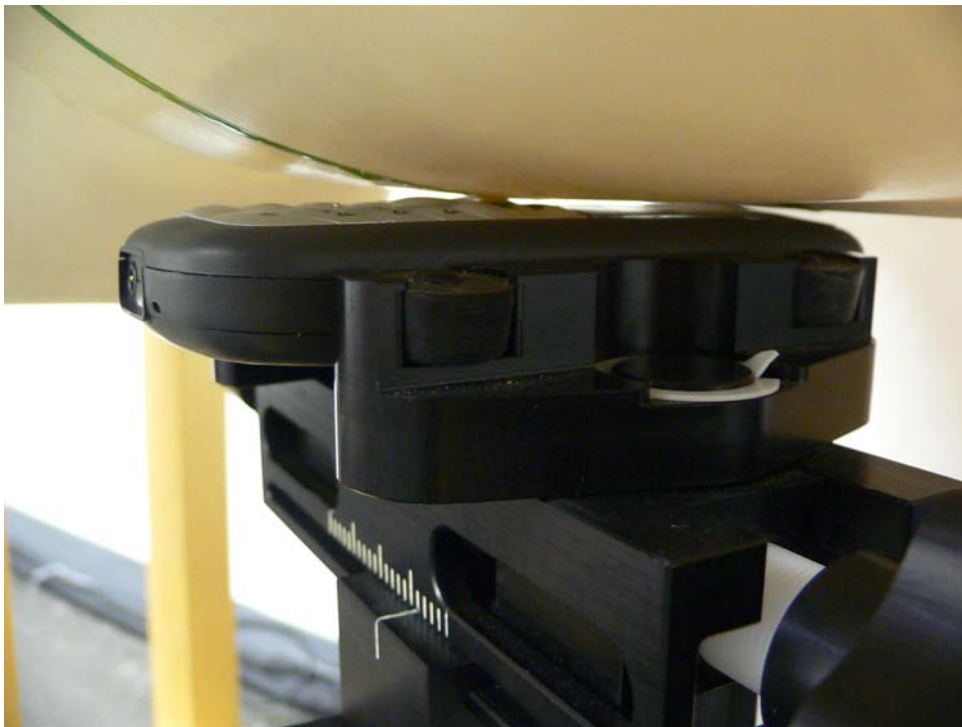


APPENDIX H – EUT TEST POSITION PHOTOS

Body Worn



Left Head Cheek



Left Head Tilted



Right Head Cheek



Right Head Tilted



APPENDIX I – EUT & ACCESSORIES PHOTOS

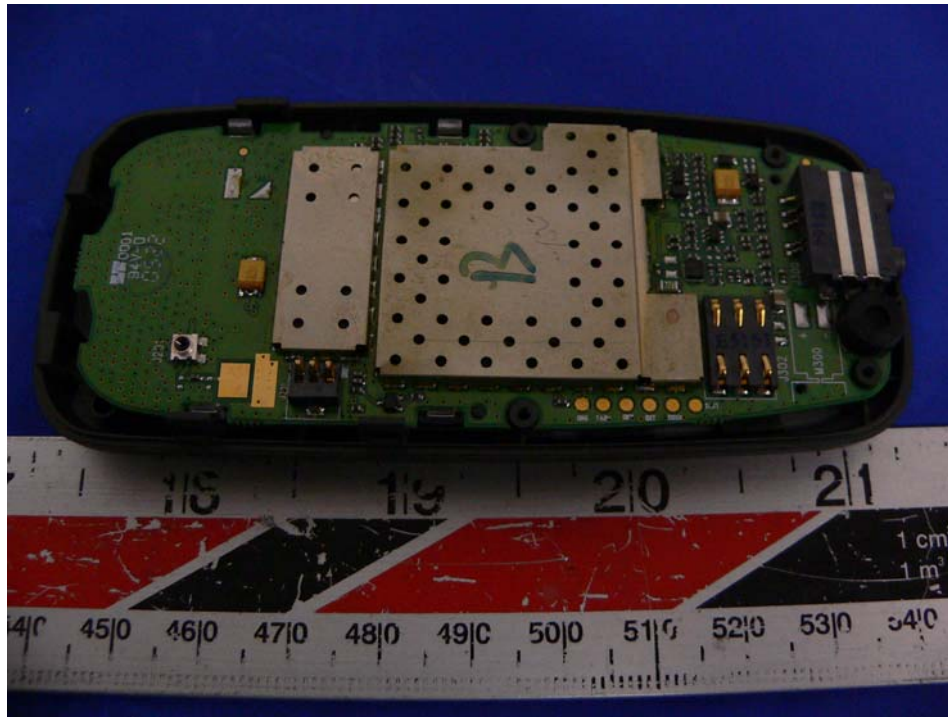
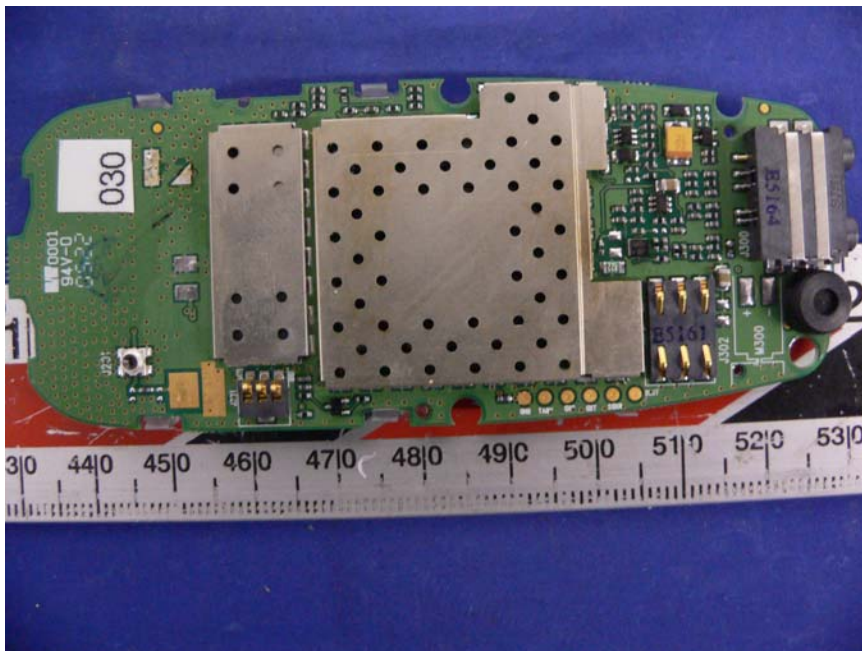
EUT Front View

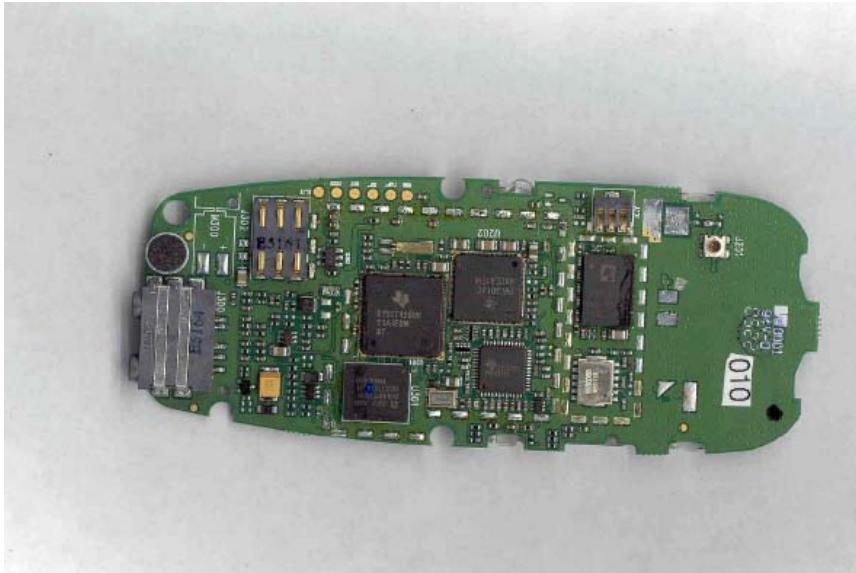
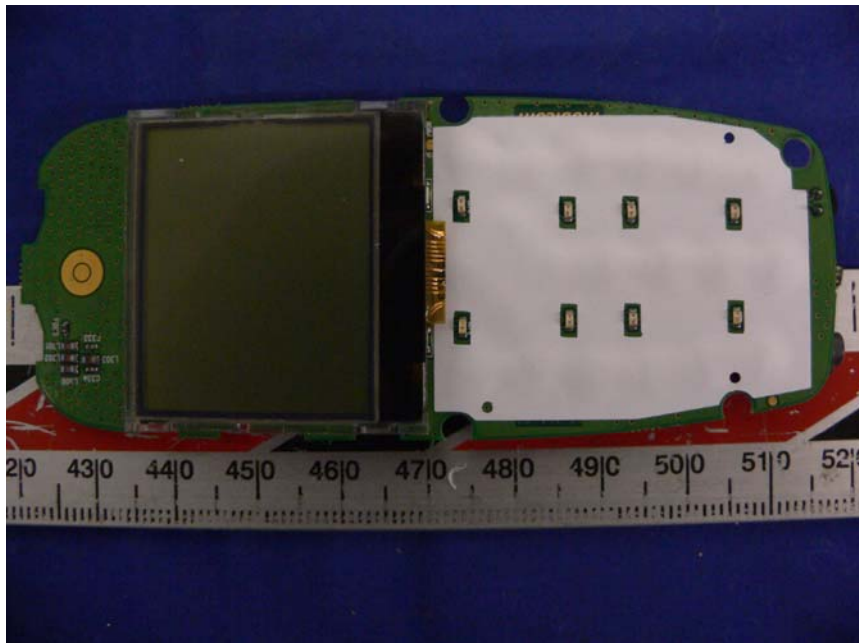


EUT Rear View

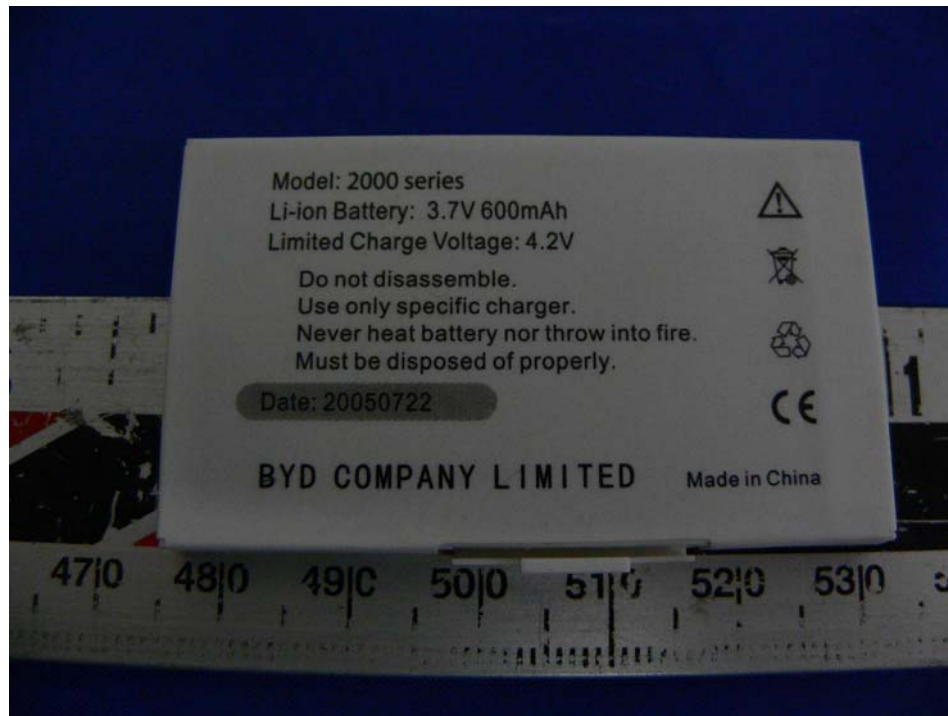


EUT Port View**EUT Battery Cover Off View**

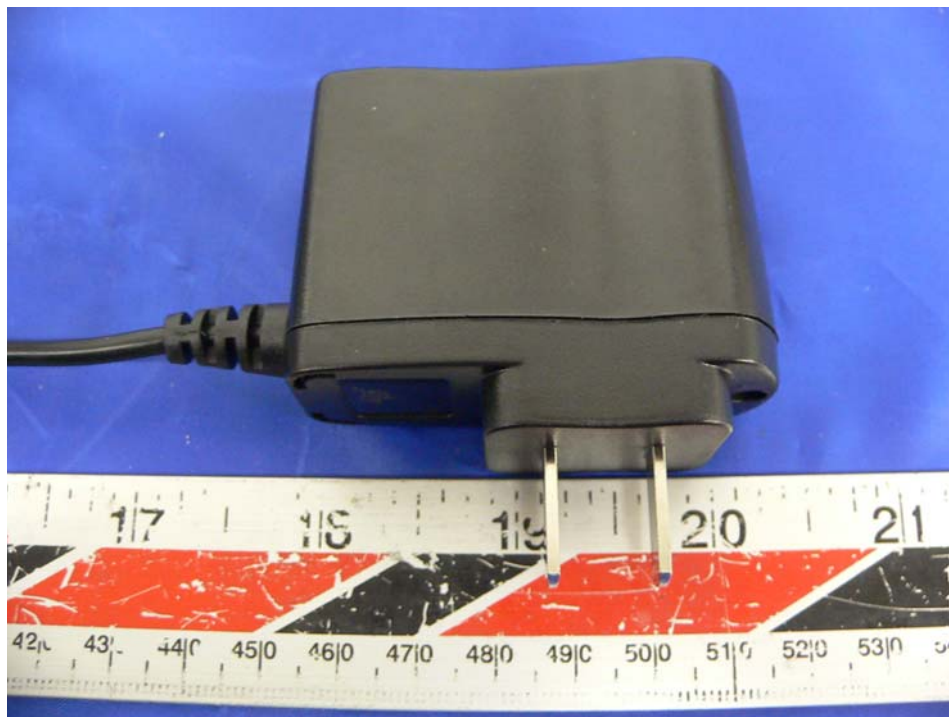
EUT Cover Off View**EUT Component with Shielding View**

EUT Component without Shielding View**EUT Displayer and Keyboard View**

Battery



Power Supply



Headset



APPENDIX J - INFORMATIVE REFERENCES

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