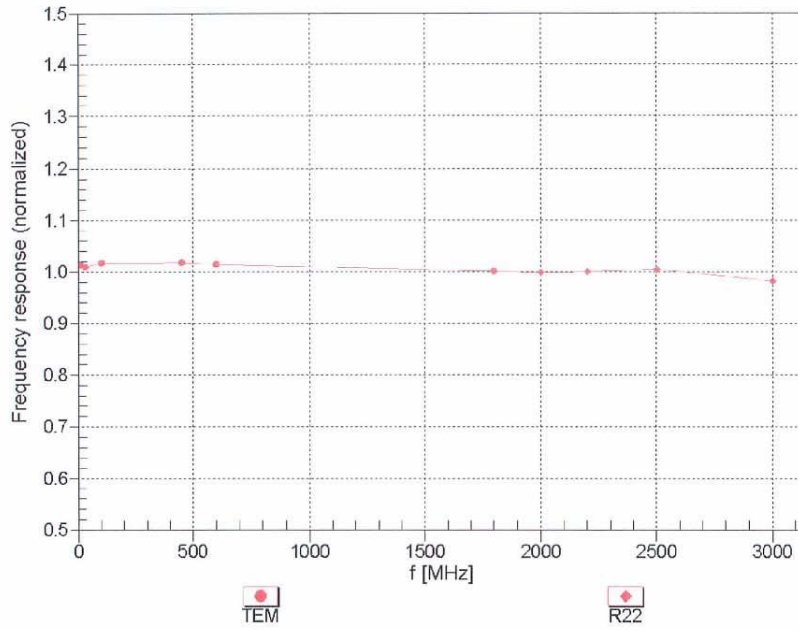


ES3DV2- SN:3019

August 25, 2011

### Frequency Response of E-Field (TEM-Cell:ifi110 EXX, Waveguide: R22)



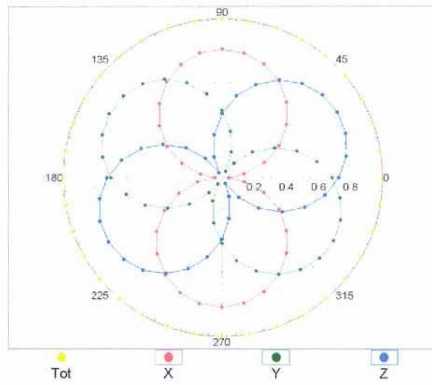
Uncertainty of Frequency Response of E-field:  $\pm 6.3\%$  ( $k=2$ )

ES3DV2- SN:3019

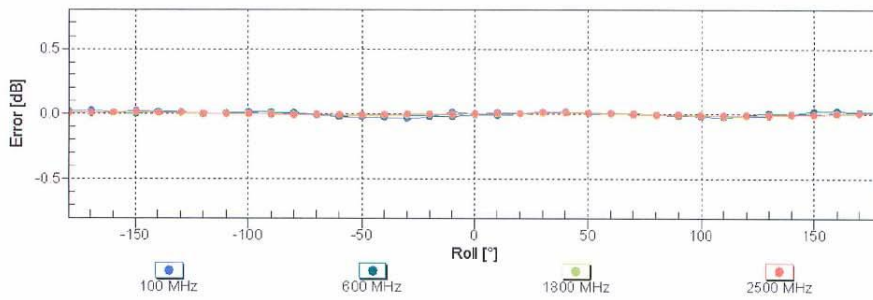
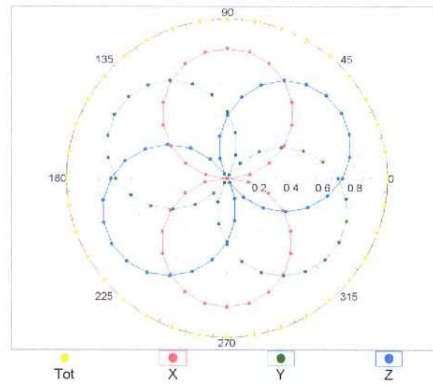
August 25, 2011

### Receiving Pattern ( $\phi$ ), $\theta = 0^\circ$

f=600 MHz,TEM



f=1800 MHz,R22

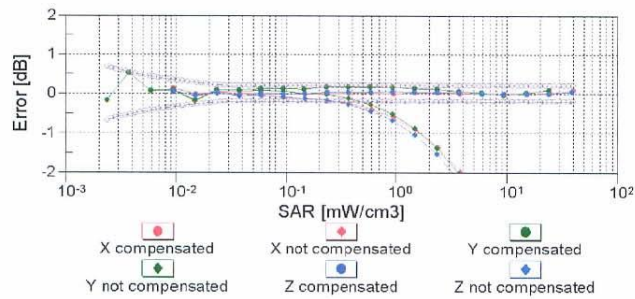
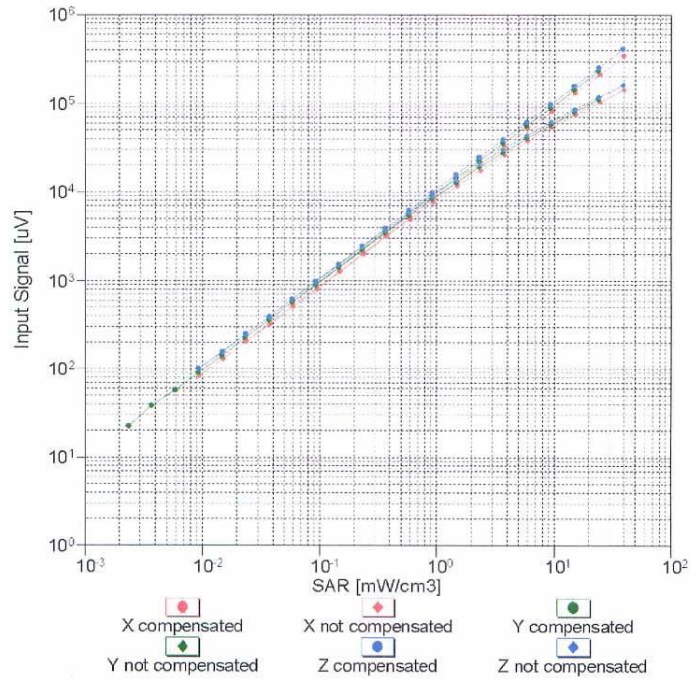


Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  (k=2)

ES3DV2- SN:3019

August 25, 2011

### Dynamic Range $f(SAR_{head})$ (TEM cell , $f = 900$ MHz)

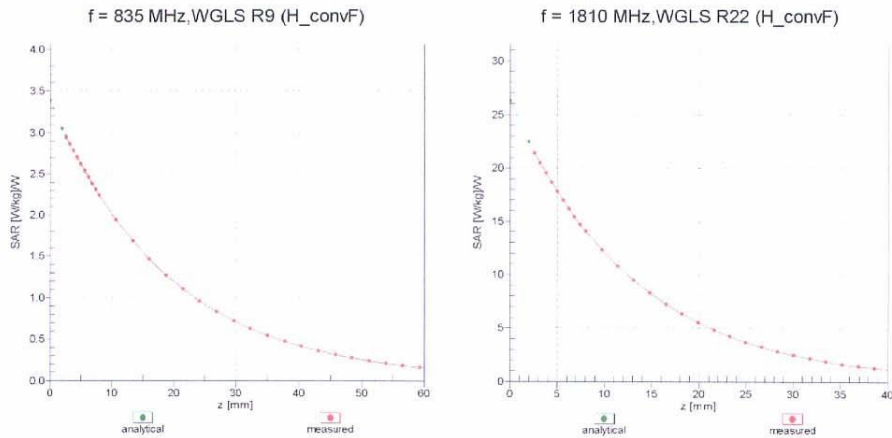


Uncertainty of Linearity Assessment:  $\pm 0.6\%$  ( $k=2$ )

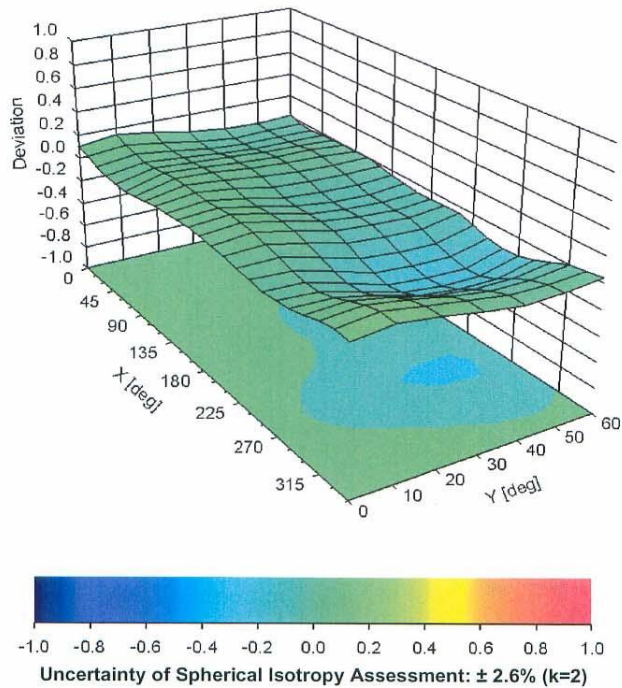
ES3DV2- SN:3019

August 25, 2011

### Conversion Factor Assessment



### Deviation from Isotropy in Liquid Error ( $\phi, \theta$ ), f = 900 MHz



ES3DV2- SN:3019

August 25, 2011

**DASY/EASY - Parameters of Probe: ES3DV2 - SN:3019****Other Probe Parameters**

Sensor Arrangement	Triangular
Connector Angle (°)	Not applicable
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	4 mm
Probe Tip to Sensor X Calibration Point	2 mm
Probe Tip to Sensor Y Calibration Point	2 mm
Probe Tip to Sensor Z Calibration Point	2 mm
Recommended Measurement Distance from Surface	3 mm

**13 APPENDIX C - DIPOLE CALIBRATION CERTIFICATES**

**NCL CALIBRATION LABORATORIES**

Calibration File No: DC-1384  
Project Number: BAC-835-dipole-cal-5626

**CERTIFICATE OF CALIBRATION**

It is certified that the equipment identified below has been calibrated in the  
**NCL CALIBRATION LABORATORIES** by qualified personnel following recognized  
procedures and using transfer standards traceable to NRC/NIST.

Validation Dipole  
835MHz Head & Body

Manufacturer: APREL Laboratories  
Part number: ALS-D-835-S-2  
Frequency: 835MHz  
Serial No: 180-00564

Customer: Bay Area Compliance

Calibrated: 24<sup>th</sup> October 2011  
Released on: 27<sup>th</sup> October 2011

This Calibration Certificate is incomplete unless accompanied with the Calibration Results Summary

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

***NCL*** CALIBRATION LABORATORIES

303 Terry Fox Drive, Suite 102  
Kanata, Ontario  
CANADA K2K 3J1

Division of APREL  
TEL: (613) 435-8300  
FAX: (613) 435-8306

**NCL Calibration Laboratories**

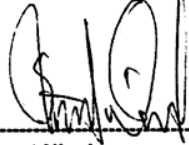
Division of APREL Inc.

**Conditions**

Dipole 180-00565 was a recalibration.

**Ambient Temperature of the Laboratory:** 22 °C +/- 0.5°C**Temperature of the Tissue:** 21 °C +/- 0.5°C

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



Stuart Nicol



C. Teodorian

**Primary Measurement Standards**

Instrument	Serial Number	Cal due date
Power meter Anritsu MA2408A	90025437	Nov.4, 2011
Power Sensor Anritsu MA2481D	103555	Nov 4, 2011
Attenuator HP 8495A (70dB)	1944A10711	Sept. 14, 2012
Network Analyzer Agilent E5071C	1334746J	Aug. 8, 2012

**Secondary Measurement Standards**

Signal Generator Agilent E4438C -506	MY55182336	June 7, 2012
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This page has been reviewed for content and attested to by signature within this document.

**NCL Calibration Laboratories**

Division of APREL Inc.

**Calibration Results Summary**

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

**Mechanical Dimensions**

Length: 161.0 mm  
 Height: 89.8 mm

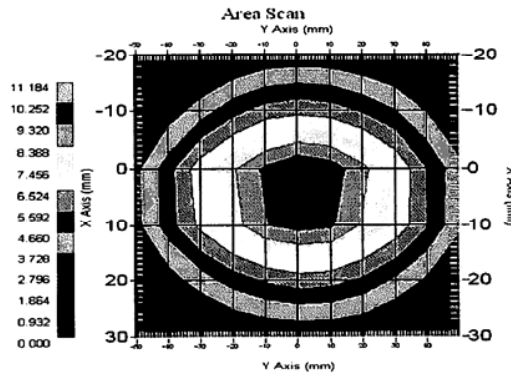
**Electrical Specification 835MHz**

Tissue Type	Return Loss:	Impedance:	SWR:
Head	-32.132	48.897	1.0621U
Body	-24.800	53.311	1.1206U

**System Validation Results**

Tissue	Frequency	1 Gram	10 Gram	Peak
Head	835 MHz	9.590	6.003	15.013
Body	835 MHz	9.981	6.006	15.013

**835MHz**



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### **NCL Calibration Laboratories**

Division of APREL Inc.

#### **Introduction**

This Calibration Report has been produced in line with the SSI Dipole Calibration Procedure SSI-TP-018-ALSAS. The results contained within this report are for Validation Dipole 180-00565. The calibration routine consisted of a three-step process. Step 1 was a mechanical verification of the dipole to ensure that it meets the mechanical specifications. Step 2 was an Electrical Calibration for the Validation Dipole, where the SWR, Impedance, and the Return loss were assessed. Step 3 involved a System Validation using the ALSAS-10U, along with APREL E-030 130 MHz to 26 GHz E-Field Probe Serial Number 215.

#### **References**

- o IEEE Standard 1528 (2003) including Amendment 1  
IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
- o EN 62209-1 (2006)  
Human Exposure to RF Fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures-Part 1: Procedure to measure the Specific Absorption Rate (SAR) for hand-held mobile wireless devices
- o IEC 62209-2 Ed. 1.0 (2010-03)  
Human exposure to RF fields from hand-held and body-mounted wireless devices - Human models, instrumentation, and procedures - Part 2: specific absorption rate (SAR) for wireless communication devices (30 MHz - 6 GHz)
- o TP-D01-032-E020-V2 E-Field probe calibration procedure
- o D22-012-Tissue dielectric tissue calibration procedure
- o D28-002-Dipole procedure for validation of SAR system using a dipole
- o IEEE 1309 Draft Standard for Calibration of Electromagnetic Field Sensors and Probes, Excluding Antennas, from 9kHz to 40GHz

#### **Conditions**

Dipole 180-00564 was a recalibration.

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

#### **Dipole Calibration uncertainty**

The calibration uncertainty for the dipole is made up of various parameters presented below.

<b>Mechanical</b>	1%
<b>Positioning Error</b>	1.22%
<b>Electrical</b>	1.7%
<b>Tissue</b>	2.2%
<b>Dipole Validation</b>	2.2%
<b>TOTAL</b>	<b>8.32% (16.64% K=2)</b>

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**NCL Calibration Laboratories**

Division of APREL Inc.

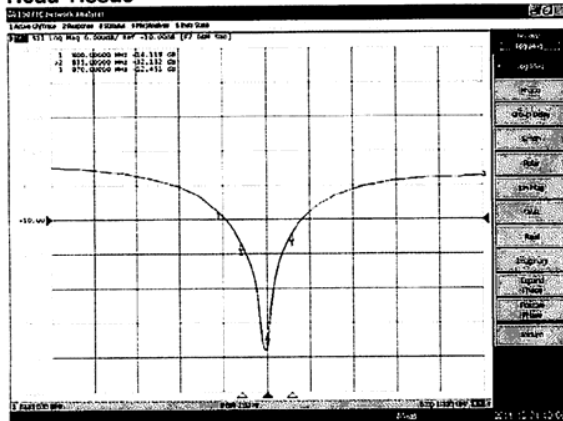
**Electrical Calibration**

**Electrical Specification 835MHz**

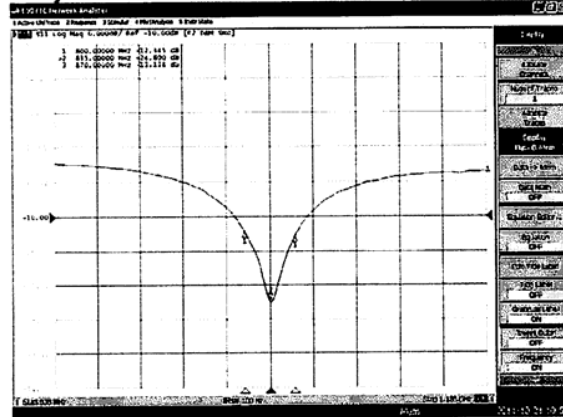
Tissue Type	Measured Epsilon	Measured Sigma
Head	41.09	0.89
Body	53.15	0.95

**Forward Reflection**

**Head Tissue**



**Body Tissue**



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

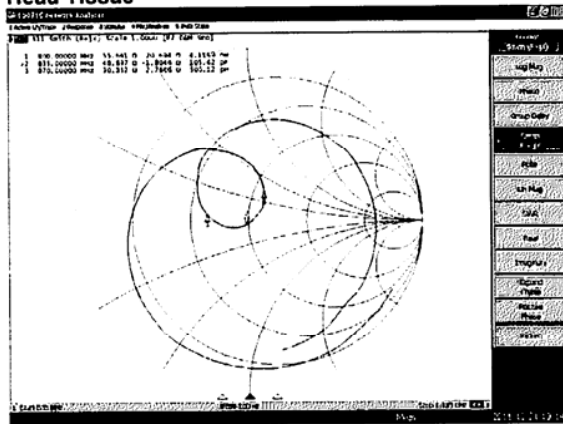
**NCL Calibration Laboratories**

Division of APREL Inc.

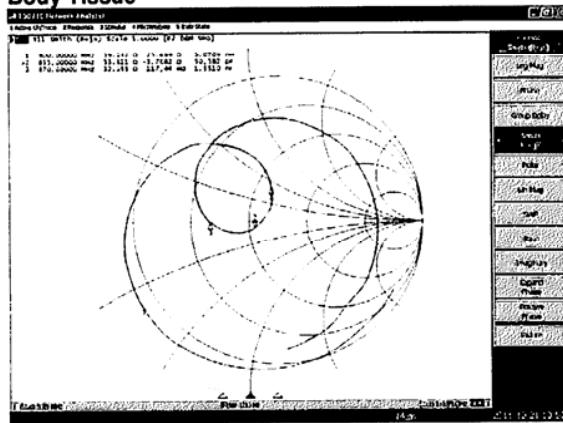
**Electrical Specification 835MHz  
Impedance**

Tissue Type	Measured Epsilon	Measured Sigma
Head	41.09	0.89
Body	53.15	0.95

**Head Tissue**



**Body Tissue**



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

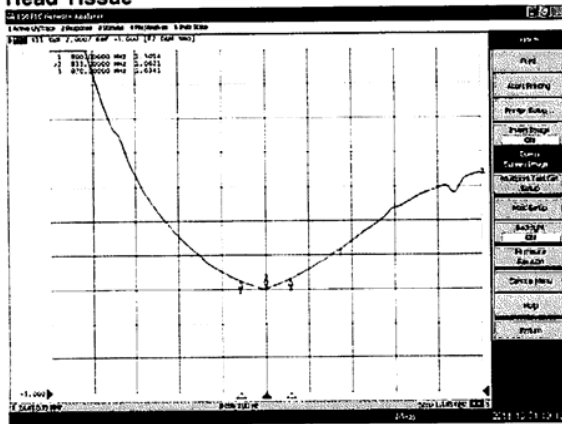
**NCL Calibration Laboratories**

Division of APREL Inc.

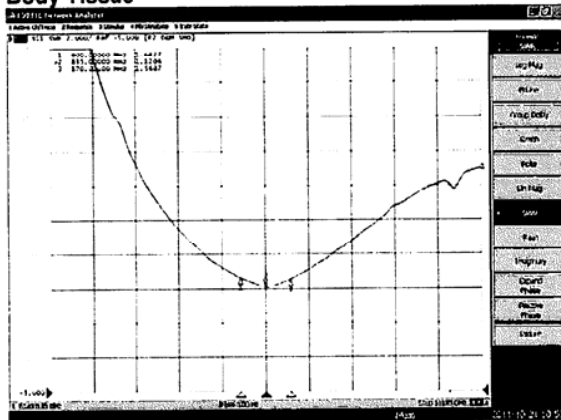
**Electrical Specification 835MHz  
Standing Wave Ratio**

Tissue Type	Measured Epsilon	Measured Sigma
Head	41.09	0.89
Body	53.15	0.95

**Head Tissue**



**Body Tissue**



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**NCL Calibration Laboratories**

Division of APREL Inc.

**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 2011.

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**NCL CALIBRATION LABORATORIES**

Calibration File No: DC-1385  
Project Number: BAC-1900-dipole-cal-5627

**CERTIFICATE OF CALIBRATION**

It is certified that the equipment identified below has been calibrated in the  
**NCL CALIBRATION LABORATORIES** by qualified personnel following recognized  
procedures and using transfer standards traceable to NRC/NIST.

Validation Dipole  
1900MHz Head & Body

Manufacturer: APREL Laboratories  
Part number: ALS-D-1900-S-2  
Frequency: 1900MHz  
Serial No: 210-00715

Customer: Bay Area Compliance

Calibrated: 24<sup>th</sup> October 2011  
Released on: 27<sup>th</sup> October 2011

This Calibration Certificate is incomplete unless accompanied with the Calibration Results Summary

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

**NCL** CALIBRATION LABORATORIES

303 Terry Fox Drive, Suite 102  
Kanata, Ontario  
CANADA K2K 3J1

Division of APREL  
TEL: (613) 435-8300  
FAX: (613) 435-8306

**NCL Calibration Laboratories**

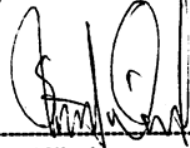
Division of APREL Inc.

**Conditions**

Dipole 210-00715 was a recalibration.

**Ambient Temperature of the Laboratory:** 22 °C +/- 0.5°C**Temperature of the Tissue:** 21 °C +/- 0.5°C

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



Stuart Nicol



C. Teodorian

**Primary Measurement Standards**

Instrument	Serial Number	Cal due date
Power meter Anritsu MA2408A	190025437	Nov. 4, 2011
Power Sensor Anritsu MA2481D	103555	Nov 4, 2011
Attenuator HP 8495A (70dB)	1944A10711	Sept. 14, 2012
Network Analyzer Agilent E5071C	1334746J	Aug. 8, 2012

**Secondary Measurement Standards**

Signal Generator Agilent E4438C -506	MY55182336	June 7, 2012
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This page has been reviewed for content and attested to by signature within this document.

**NCL Calibration Laboratories**

Division of APREL Inc.

**Calibration Results Summary**

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

**Mechanical Dimensions**

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

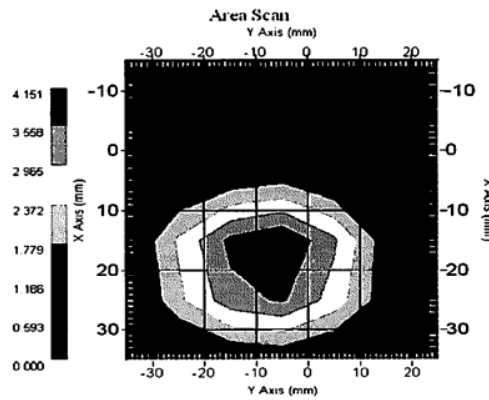
**Electrical Specification 1900MHz**

Tissue Type	Return Loss:	Impedance:	SWR:
Head	-28.634	46.965	1.0813U
Body	-23.129	47.664	1.1520U

**System Validation Results**

Tissue	Frequency	1 Gram	10 Gram	Peak
Head	1900 MHz	39.378	19.668	77.268
Body	1900 MHz	39.654	19.668	77.268

**1900MHz**



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### **NCL Calibration Laboratories**

Division of APREL Inc.

### **Introduction**

This Calibration Report has been produced in line with the SSI Dipole Calibration Procedure SSI-TP-018-ALSAS. The results contained within this report are for Validation Dipole 210-00716. The calibration routine consisted of a three-step process. Step 1 was a mechanical verification of the dipole to ensure that it meets the mechanical specifications. Step 2 was an Electrical Calibration for the Validation Dipole, where the SWR, Impedance, and the Return loss were assessed. Step 3 involved a System Validation using the ALSAS-10U, along with APREL E-030 130 MHz to 26 GHz E-Field Probe Serial Number 215.

### **References**

- o IEEE Standard 1528 (2003) including Amendment 1  
IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
- o EN 62209-1 (2006)  
Human Exposure to RF Fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures-Part 1: Procedure to measure the Specific Absorption Rate (SAR) for hand-held mobile wireless devices
- o IEC 62209-2 Ed. 1.0 (2010-03)  
Human exposure to RF fields from hand-held and body-mounted wireless devices - Human models, instrumentation, and procedures - Part 2: specific absorption rate (SAR) for wireless communication devices (30 MHz - 6 GHz)
- o TP-D01-032-E020-V2 E-Field probe calibration procedure
- o D22-012-Tissue dielectric tissue calibration procedure
- o D28-002-Dipole procedure for validation of SAR system using a dipole
- o IEEE 1309 Draft Standard for Calibration of Electromagnetic Field Sensors and Probes, Excluding Antennas, from 9kHz to 40GHz

### **Conditions**

Dipole 210-00715 was a recalibration.

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

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

### **Dipole Calibration uncertainty**

The calibration uncertainty for the dipole is made up of various parameters presented below.

<b>Mechanical</b>	1%
<b>Positioning Error</b>	1.22%
<b>Electrical</b>	1.7%
<b>Tissue</b>	2.2%
<b>Dipole Validation</b>	2.2%
<b>TOTAL</b>	<b>8.32% (16.64% K=2)</b>

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

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**NCL Calibration Laboratories**

Division of APREL Inc.

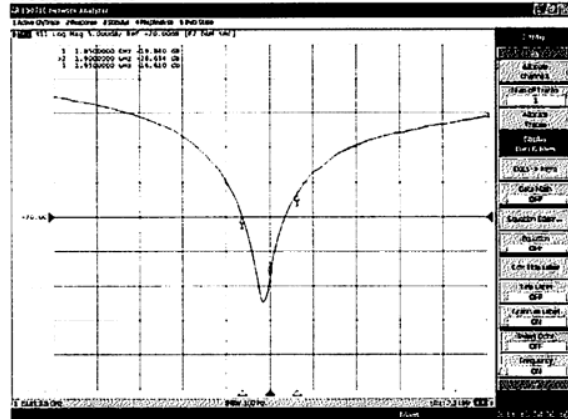
**Electrical Calibration**

**Electrical Specification 1900MHz**

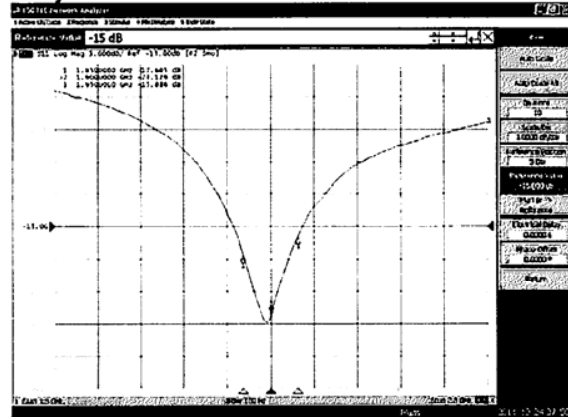
Forward Reflection

Tissue Type	Measured Epsilon	Measured Sigma
Head	38.12	1.41
Body	51.52	1.57

**Head Tissue**



**Body Tissue**



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

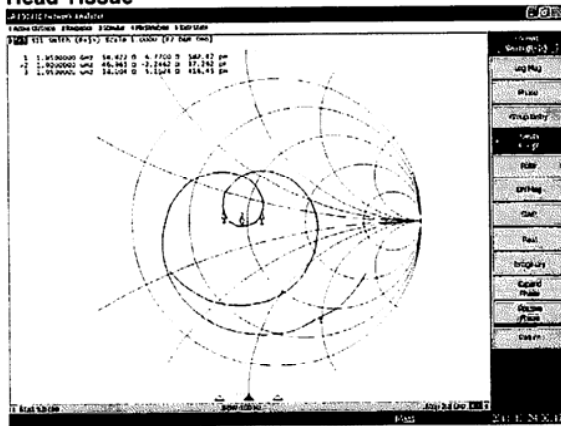
**NCL Calibration Laboratories**

Division of APREL Inc.

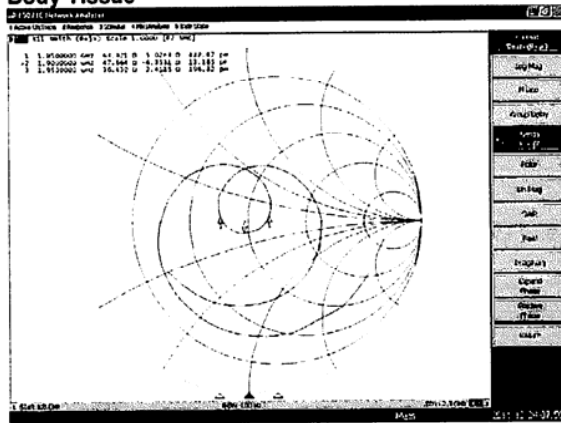
**Electrical Specification 1900MHz  
Impedance**

Tissue Type	Measured Epsilon	Measured Sigma
Head	38.12	1.41
Body	51.52	1.57

**Head Tissue**



**Body Tissue**



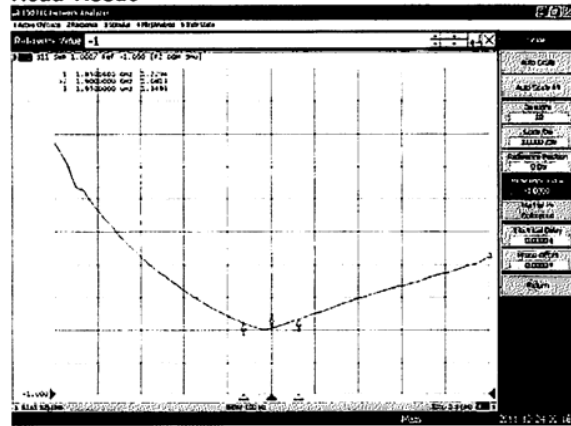
This page has been reviewed for content and attested to by signature within this document.

**NCL Calibration Laboratories**  
 Division of APREL Inc.

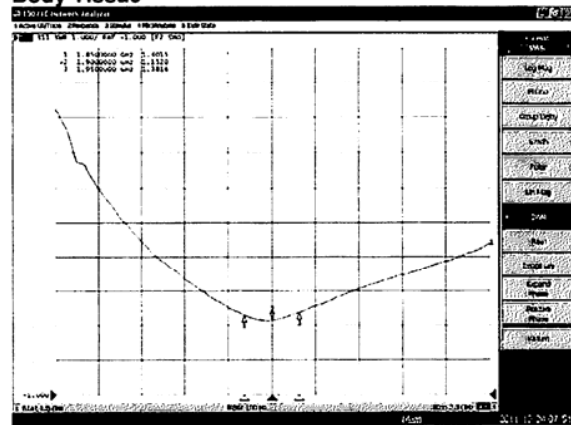
**Electrical Specification 1900MHz  
 Standing Wave Ratio**

Tissue Type	Measured Epsilon	Measured Sigma
Head	38.12	1.41
Body	51.52	1.57

**Head Tissue**



**Body Tissue**



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**NCL Calibration Laboratories**

Division of APREL Inc.

**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 2011.

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

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## 14 APPENDIX D - TEST SYSTEM VERIFICATIONS SCANS

**Test Laboratory: Bay Area Compliance Lab Corp.(BACL)**

**System Performance Test (835MHz Body)**

**DUT: Dipole 835 MHz; Type: ALS-D-835-S-2; Serial: 180-00564**

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: ES3DV2 - SN3019; ConvF(6.19, 6.19, 6.19); Calibrated: 8/25/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 3/16/2012
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 80; Post processing SW: SEMCAD, V1.8 Build 186

**d =15 mm, Pin = 0.5W 2/Area Scan (81x121x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 5.05 mW/g

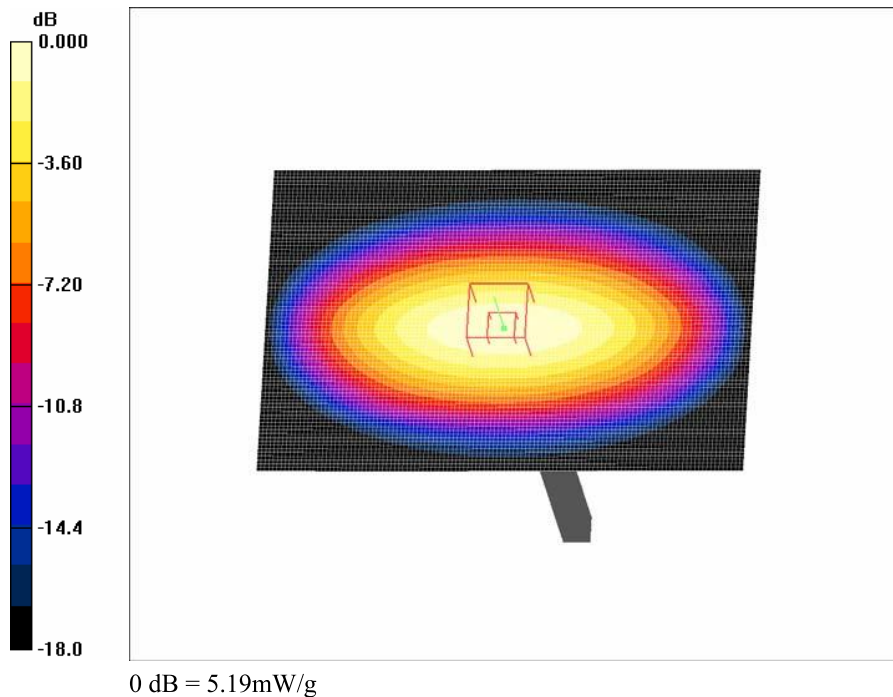
**d =15 mm, Pin = 0.5W 2/Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 73.2 V/m; Power Drift = -0.133 dB

Peak SAR (extrapolated) = 7.03 W/kg

**SAR(1 g) = 4.82 mW/g; SAR(10 g) = 3.13 mW/g**

Maximum value of SAR (measured) = 5.19 mW/g



### 835 MHz Body System Validation

**Test Laboratory: Bay Area Compliance Lab Corp.(BACL)****System Performance Test (835MHz Head)****DUT: Dipole 835 MHz; Type: ALS-D-835-S-2; Serial: 180-00564**

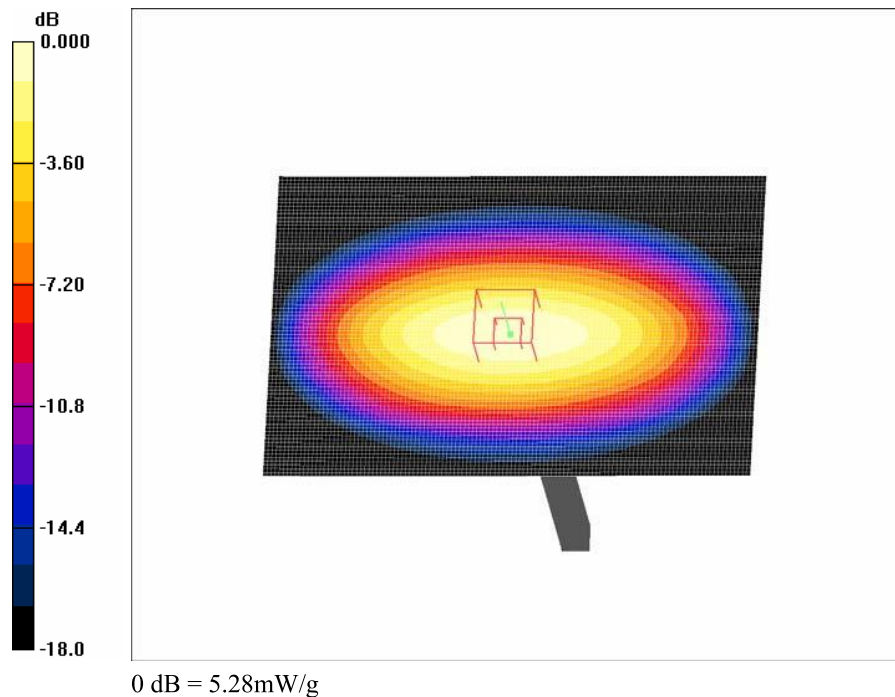
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.89 \text{ mho/m}$ ;  $\epsilon_r = 41.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
 Phantom section: Flat Section

## DASY4 Configuration:

- Probe: ES3DV2 - SN3019; ConvF(6.22, 6.22, 6.22); Calibrated: 8/25/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 3/16/2012
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 80; Post processing SW: SEMCAD, V1.8 Build 186

**d =15 mm, Pin = 0.5W/Area Scan (81x121x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (interpolated) = 5.15 mW/g

**d =15 mm, Pin = 0.5W/Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm  
 Reference Value = 76.5 V/m; Power Drift = -0.139 dB  
 Peak SAR (extrapolated) = 7.21 W/kg  
**SAR(1 g) = 4.91 mW/g; SAR(10 g) = 3.28 mW/g**  
 Maximum value of SAR (measured) = 5.28 mW/g

**835 MHz Head System Validation**

**Test Laboratory: Bay Area Compliance Lab Corp.(BACL)****System Performance Test (1900MHz Body)****DUT: Dipole 1900 MHz; Type: ALS-D-1900-S-2; Serial: 210-00715**

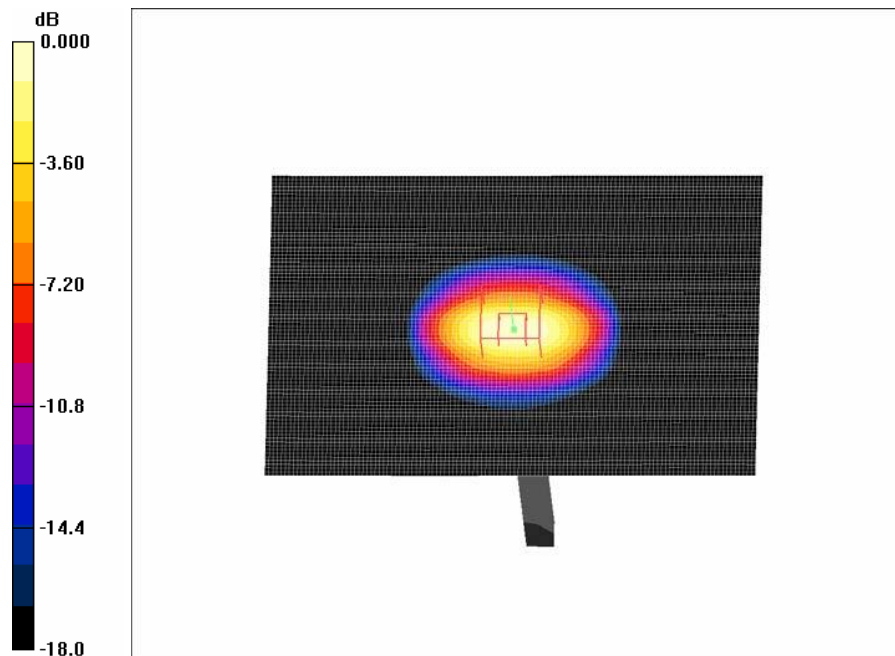
Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.5$  mho/m;  $\epsilon_r = 52.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section

## DASY4 Configuration:

- Probe: ES3DV2 - SN3019; ConvF(4.38, 4.38, 4.38); Calibrated: 8/25/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 3/16/2012
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 80; Post processing SW: SEMCAD, V1.8 Build 186

**d =10 mm, Pin = 0.5W /Area Scan (81x121x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (interpolated) = 21.2 mW/g

**d =10 mm, Pin = 0.5W /Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm  
 Reference Value = 138.9 V/m; Power Drift = -0.281 dB  
 Peak SAR (extrapolated) = 42.1 W/kg  
**SAR(1 g) = 19.6 mW/g; SAR(10 g) = 9.43 mW/g**  
 Maximum value of SAR (measured) = 22.0 mW/g



0 dB = 22.0mW/g

**1900 MHz Body System Validation**



**Test Laboratory: Bay Area Compliance Lab Corp.(BACL)****System Performance Test (1900MHz Head)****DUT: Dipole 1900 MHz; Type: ALS-D-1900-S-2; Serial: 210-00715**

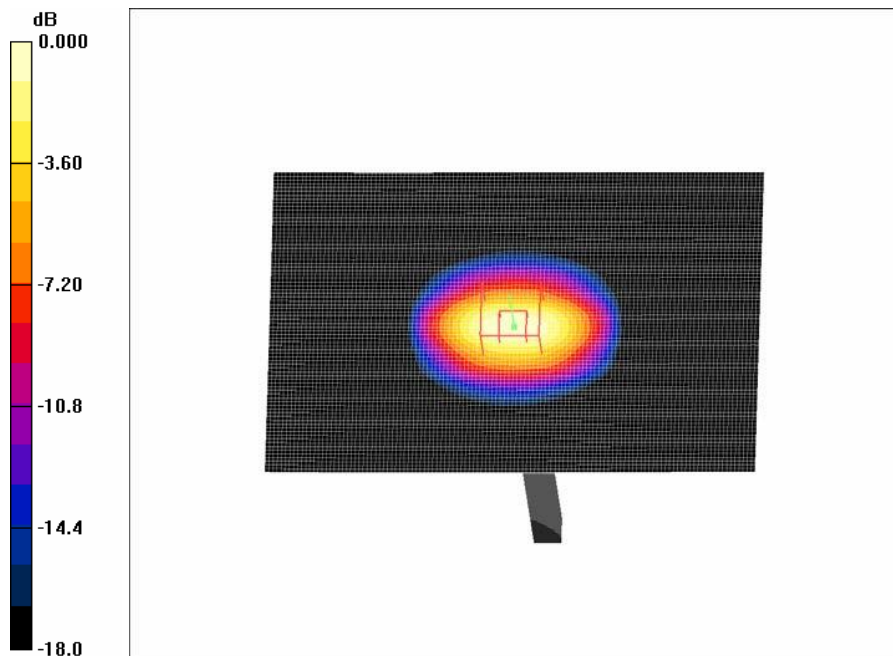
Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section

## DASY4 Configuration:

- Probe: ES3DV2 - SN3019; ConvF(4.87, 4.87, 4.87); Calibrated: 8/25/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 3/16/2012
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 80; Post processing SW: SEMCAD, V1.8 Build 186

**d =10 mm, Pin = 0.5W /Area Scan (81x121x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (interpolated) = 22.5 mW/g

**d =10 mm, Pin = 0.5W /Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm  
 Reference Value = 130.9 V/m; Power Drift = -0.257 dB  
 Peak SAR (extrapolated) = 46.9 W/kg  
**SAR(1 g) = 20.5 mW/g; SAR(10 g) = 9.72 mW/g**  
 Maximum value of SAR (measured) = 23.7 mW/g



0 dB = 23.7mW/g

**1900 MHz Head System Validation**

## 15 APPENDIX E – EUT SCAN RESULTS

**Test Laboratory: Bay Area Compliance Lab Corp.(BACL)**

**EUT 1.5cm Separation to the Flat Phantom (High Channel)**

**DUT: Maxcom Mobile; Type: Mobile Phone; Serial: R1205078-1**

Communication System: GSM 850 2 Slot; Frequency: 848.8 MHz; Duty Cycle: 1:4.15

Medium parameters used (interpolated):  $f = 848.8$  MHz;  $\sigma = 0.969$  mho/m;  $\epsilon_r = 55.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV2 - SN3019; ConvF(6.19, 6.19, 6.19); Calibrated: 8/25/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 3/16/2012
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 80; Post processing SW: SEMCAD, V1.8 Build 186

**EUT 1.5cm Separation to the Flat Phantom/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.361 mW/g

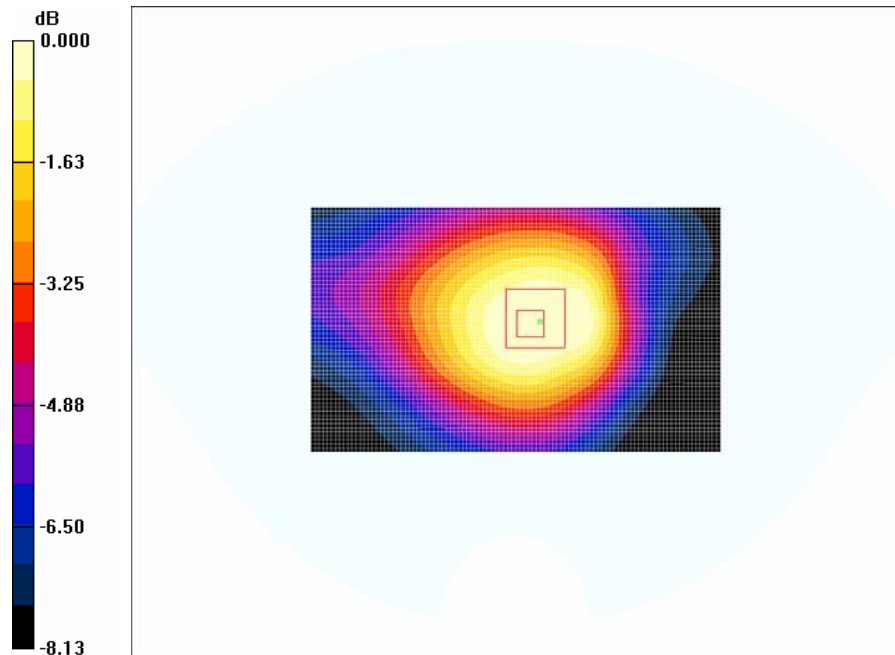
**EUT 1.5cm Separation to the Flat Phantom/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20.2 V/m; Power Drift = -0.690 dB

Peak SAR (extrapolated) = 0.442 W/kg

**SAR(1 g) = 0.330 mW/g; SAR(10 g) = 0.248 mW/g**

Maximum value of SAR (measured) = 0.346 mW/g



0 dB = 0.346mW/g

#1

**Test Laboratory: Bay Area Compliance Lab Corp.(BACL)****Right Head Touch (High Channel)****DUT: Maxcom Mobile; Type: Mobile Phone; Serial: R1205078-1**

Communication System: GSM 850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium parameters used (interpolated):  $f = 848.8$  MHz;  $\sigma = 0.899$  mho/m;  $\epsilon_r = 41.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV2 - SN3019; ConvF(6.22, 6.22, 6.22); Calibrated: 8/25/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 3/16/2012
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 80; Post processing SW: SEMCAD, V1.8 Build 186

**Right Head Touch/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.567 mW/g

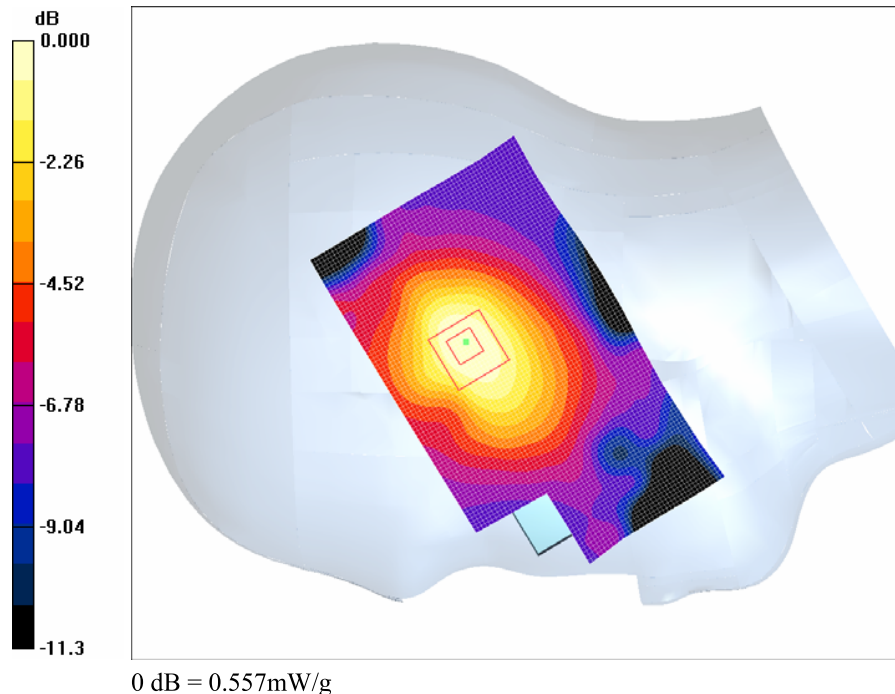
**Right Head Touch/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.9 V/m; Power Drift = 1.27 dB

Peak SAR (extrapolated) = 0.780 W/kg

**SAR(1 g) = 0.526 mW/g; SAR(10 g) = 0.368 mW/g**

Maximum value of SAR (measured) = 0.557 mW/g



#2

**Test Laboratory: Bay Area Compliance Lab Corp.(BACL)****Right Head Tilt (High Channel)****DUT: Maxcom Mobile; Type: Mobile Phone; Serial: R1205078-1**

Communication System: GSM 850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium parameters used (interpolated):  $f = 848.8$  MHz;  $\sigma = 0.899$  mho/m;  $\epsilon_r = 41.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV2 - SN3019; ConvF(6.22, 6.22, 6.22); Calibrated: 8/25/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 3/16/2012
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 80; Post processing SW: SEMCAD, V1.8 Build 186

**Right Head Tilt/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.379 mW/g

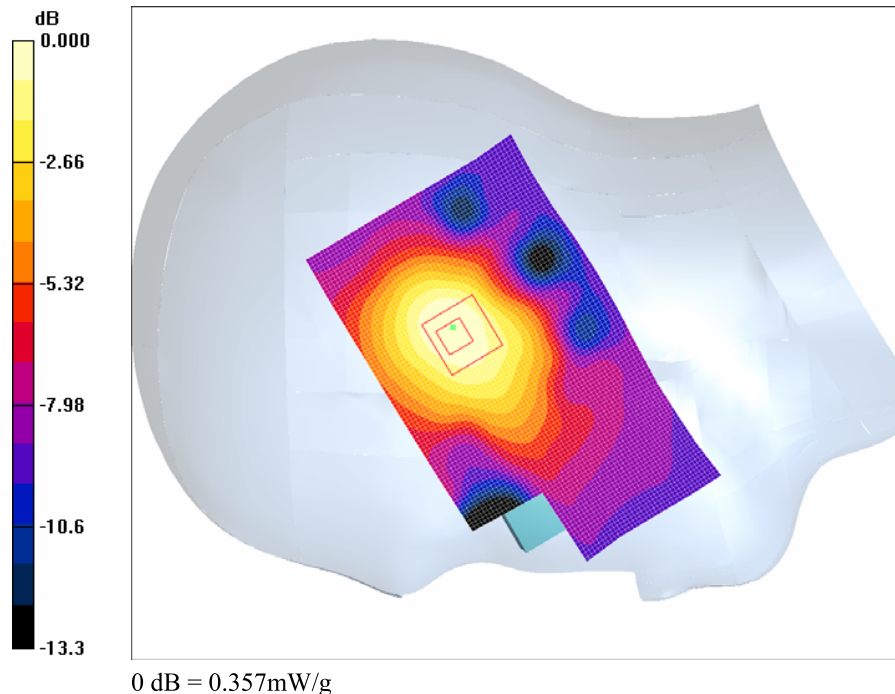
**Right Head Tilt/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 18.3 V/m; Power Drift = -0.211 dB

Peak SAR (extrapolated) = 0.515 W/kg

**SAR(1 g) = 0.331 mW/g; SAR(10 g) = 0.224 mW/g**

Maximum value of SAR (measured) = 0.357 mW/g



#3

**Test Laboratory: Bay Area Compliance Lab Corp.(BACL)****Left Head Touch (High Channel)****DUT: Maxcom Mobile; Type: Mobile Phone; Serial: R1205078-1**

Communication System: GSM 850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium parameters used (interpolated):  $f = 848.8$  MHz;  $\sigma = 0.899$  mho/m;  $\epsilon_r = 41.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

## DASY4 Configuration:

- Probe: ES3DV2 - SN3019; ConvF(6.22, 6.22, 6.22); Calibrated: 8/25/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 3/16/2012
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 80; Post processing SW: SEMCAD, V1.8 Build 186

**Left Head Touch/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

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

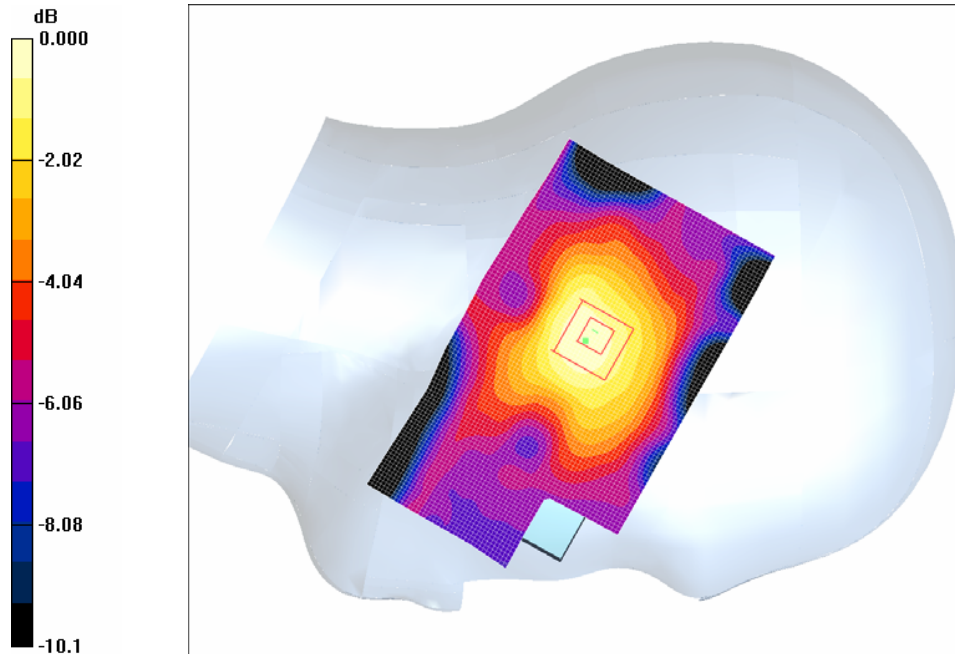
**Left Head Touch/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.8 V/m; Power Drift = -0.176 dB

Peak SAR (extrapolated) = 0.636 W/kg

**SAR(1 g) = 0.437 mW/g; SAR(10 g) = 0.320 mW/g**

Maximum value of SAR (measured) = 0.458 mW/g



0 dB = 0.458mW/g

#4

**Test Laboratory: Bay Area Compliance Lab Corp.(BACL)****Left Head Tilt (High Channel)****DUT: Maxcom Mobile; Type: Mobile Phone; Serial: R1205078-1**

Communication System: GSM 850; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium parameters used (interpolated):  $f = 848.8$  MHz;  $\sigma = 0.899$  mho/m;  $\epsilon_r = 41.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV2 - SN3019; ConvF(6.22, 6.22, 6.22); Calibrated: 8/25/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 3/16/2012
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 80; Post processing SW: SEMCAD, V1.8 Build 186

**Left Head Tilt/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.344 mW/g

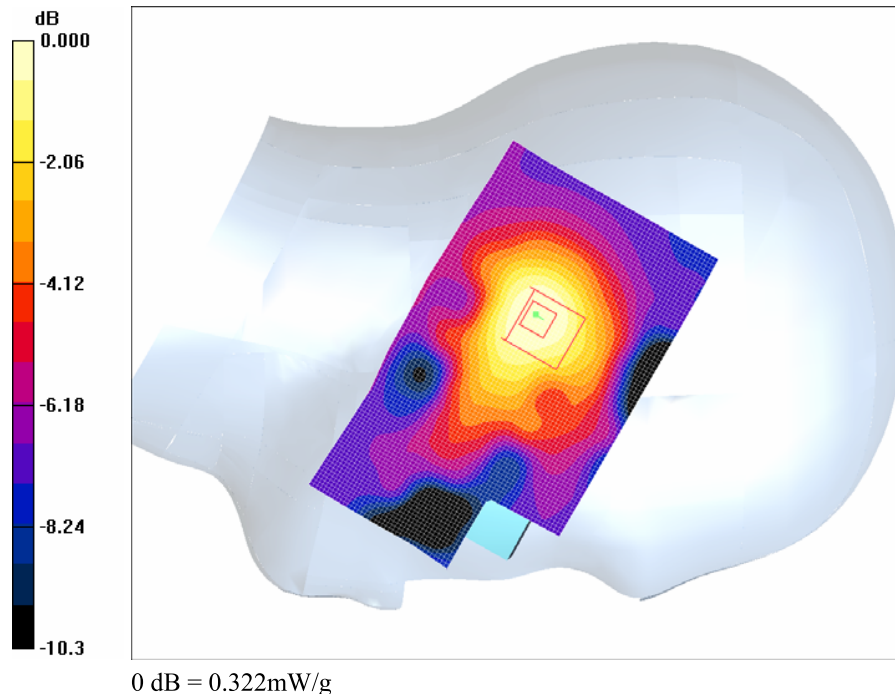
**Left Head Tilt/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.5 V/m; Power Drift = -0.043 dB

Peak SAR (extrapolated) = 0.441 W/kg

**SAR(1 g) = 0.297 mW/g; SAR(10 g) = 0.215 mW/g**

Maximum value of SAR (measured) = 0.322 mW/g



#5

**Test Laboratory: Bay Area Compliance Lab Corp.(BACL)****EUT 1.5cm Separation to the Flat Phantom (Low Channel)****DUT: Maxcom Mobile; Type: Mobile Phone; Serial: R1205078-1**

Communication System: PCS 1900 2 Slots; Frequency: 1850.2 MHz; Duty Cycle: 1:4.15  
 Medium parameters used:  $f = 1850.2$  MHz;  $\sigma = 1.53$  mho/m;  $\epsilon_r = 51.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section

## DASY4 Configuration:

- Probe: ES3DV2 - SN3019; ConvF(4.38, 4.38, 4.38); Calibrated: 8/25/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 3/16/2012
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 80; Post processing SW: SEMCAD, V1.8 Build 186

**EUT 1.5cm Separation to the Flat Phantom/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (interpolated) = 0.786 mW/g

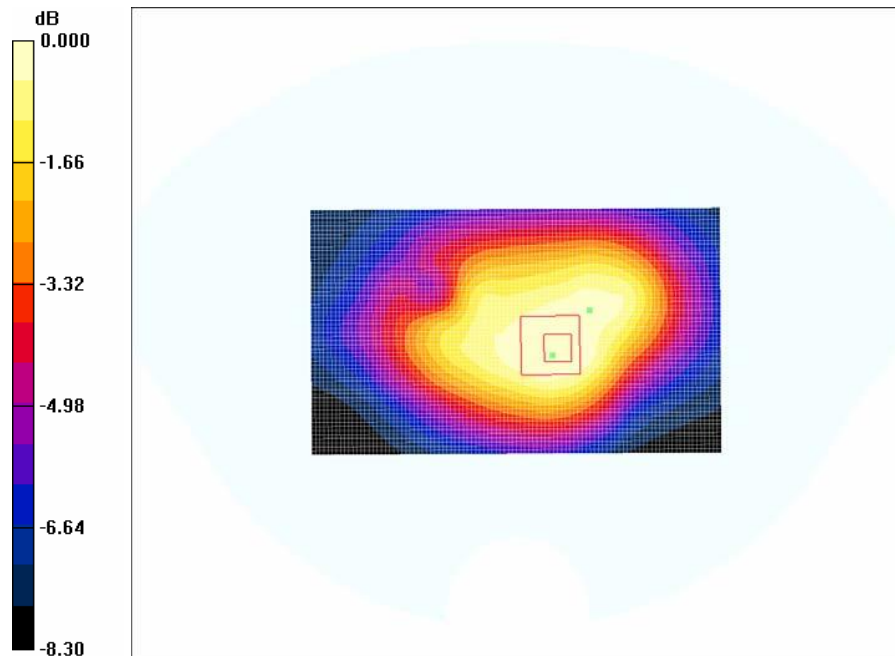
**EUT 1.5cm Separation to the Flat Phantom/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20.4 V/m; Power Drift = 0.268 dB

Peak SAR (extrapolated) = 1.19 W/kg

**SAR(1 g) = 0.699 mW/g; SAR(10 g) = 0.443 mW/g**

Maximum value of SAR (measured) = 0.740 mW/g



0 dB = 0.740mW/g

#6

**Test Laboratory: Bay Area Compliance Lab Corp.(BACL)****Right Head Touch (Low Channel)****DUT: Maxcom Mobile; Type: Mobile Phone; Serial: R1205078-1**

Communication System: PCS 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium parameters used (extrapolated):  $f = 1850.2$  MHz;  $\sigma = 1.35$  mho/m;  $\epsilon_r = 40.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV2 - SN3019; ConvF(4.87, 4.87, 4.87); Calibrated: 8/25/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 3/16/2012
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 80; Post processing SW: SEMCAD, V1.8 Build 186

**Right Head Touch/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.47 mW/g

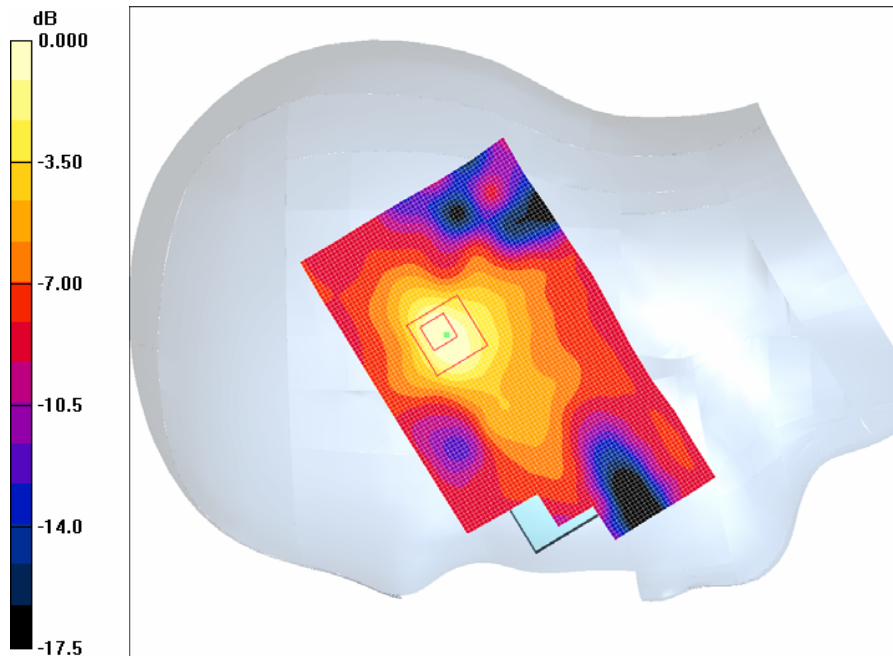
**Right Head Touch/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 21.1 V/m; Power Drift = 0.056 dB

Peak SAR (extrapolated) = 3.14 W/kg

**SAR(1 g) = 1.05 mW/g; SAR(10 g) = 0.639 mW/g**

Maximum value of SAR (measured) = 1.28 mW/g



0 dB = 1.28mW/g

#7



**Test Laboratory: Bay Area Compliance Lab Corp.(BACL)****Right Head Touch (Middle Channel)****DUT: Maxcom Mobile; Type: Mobile Phone; Serial: R1205078-1**

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/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV2 - SN3019; ConvF(4.87, 4.87, 4.87); Calibrated: 8/25/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 3/16/2012
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 80; Post processing SW: SEMCAD, V1.8 Build 186

**Right Head Touch/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.18 mW/g

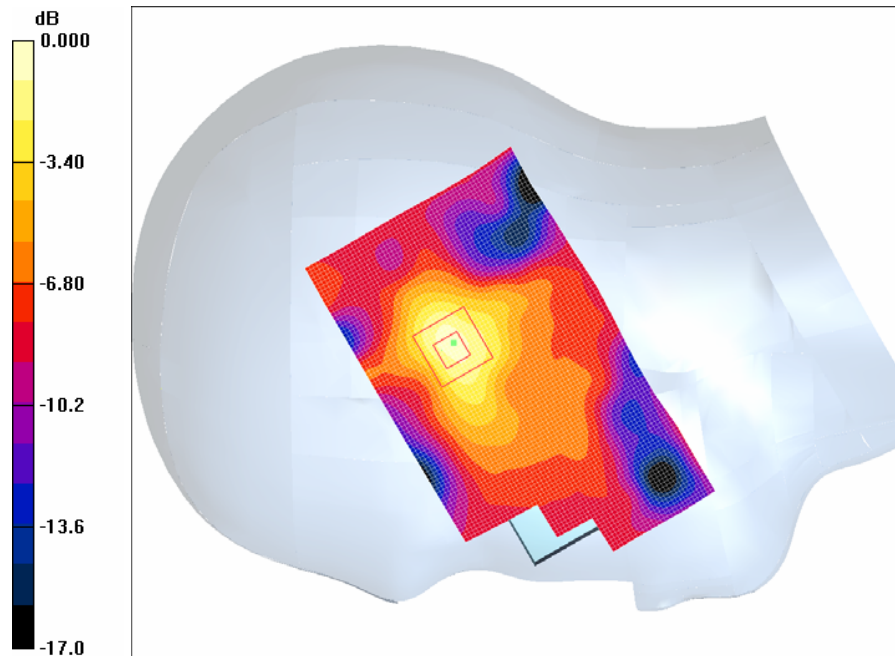
**Right Head Touch/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 21.3 V/m; Power Drift = -0.142 dB

Peak SAR (extrapolated) = 2.96 W/kg

**SAR(1 g) = 1.09 mW/g; SAR(10 g) = 0.641 mW/g**

Maximum value of SAR (measured) = 1.24 mW/g



0 dB = 1.24mW/g

#8

**Test Laboratory: Bay Area Compliance Lab Corp.(BACL)****Right Head Touch (High Channel)****DUT: Maxcom Mobile; Type: Mobile Phone; Serial: R1205078-1**

Communication System: PCS 1900; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium parameters used (interpolated):  $f = 1909.8$  MHz;  $\sigma = 1.39$  mho/m;  $\epsilon_r = 39.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV2 - SN3019; ConvF(4.87, 4.87, 4.87); Calibrated: 8/25/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 3/16/2012
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 80; Post processing SW: SEMCAD, V1.8 Build 186

**Right Head Touch/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.43 mW/g

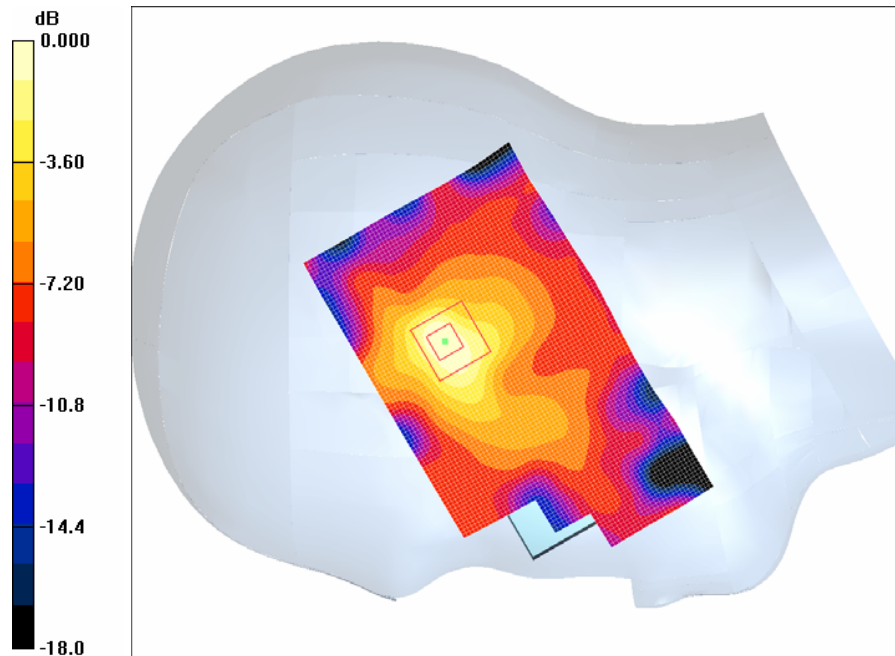
**Right Head Touch/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 21.5 V/m; Power Drift = -2.20 dB

Peak SAR (extrapolated) = 3.72 W/kg

**SAR(1 g) = 1.06 mW/g; SAR(10 g) = 0.652 mW/g**

Maximum value of SAR (measured) = 1.22 mW/g



#9

**Test Laboratory: Bay Area Compliance Lab Corp.(BACL)****Right Head Tilt (Low Channel)****DUT: Maxcom Mobile; Type: Mobile Phone; Serial: R1205078-1**

Communication System: PCS 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium parameters used (extrapolated):  $f = 1850.2$  MHz;  $\sigma = 1.35$  mho/m;  $\epsilon_r = 40.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV2 - SN3019; ConvF(4.87, 4.87, 4.87); Calibrated: 8/25/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 3/16/2012
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 80; Post processing SW: SEMCAD, V1.8 Build 186

**Right Head Tilt/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.32 mW/g

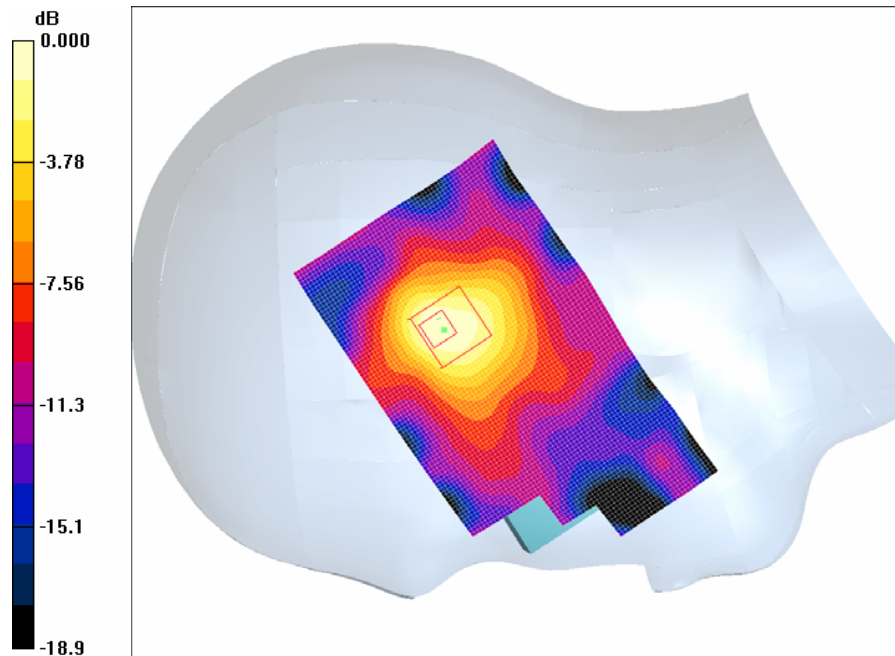
**Right Head Tilt/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 22.1 V/m; Power Drift = 1.14 dB

Peak SAR (extrapolated) = 2.52 W/kg

**SAR(1 g) = 1.1 mW/g; SAR(10 g) = 0.567 mW/g**

Maximum value of SAR (measured) = 1.22 mW/g



0 dB = 1.22mW/g

#10

**Test Laboratory: Bay Area Compliance Lab Corp.(BACL)****Right Head Tilt (Middle Channel)****DUT: Maxcom Mobile; Type: Mobile Phone; Serial: R1205078-1**

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/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV2 - SN3019; ConvF(4.87, 4.87, 4.87); Calibrated: 8/25/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 3/16/2012
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 80; Post processing SW: SEMCAD, V1.8 Build 186

**Right Head Tilt/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.25 mW/g

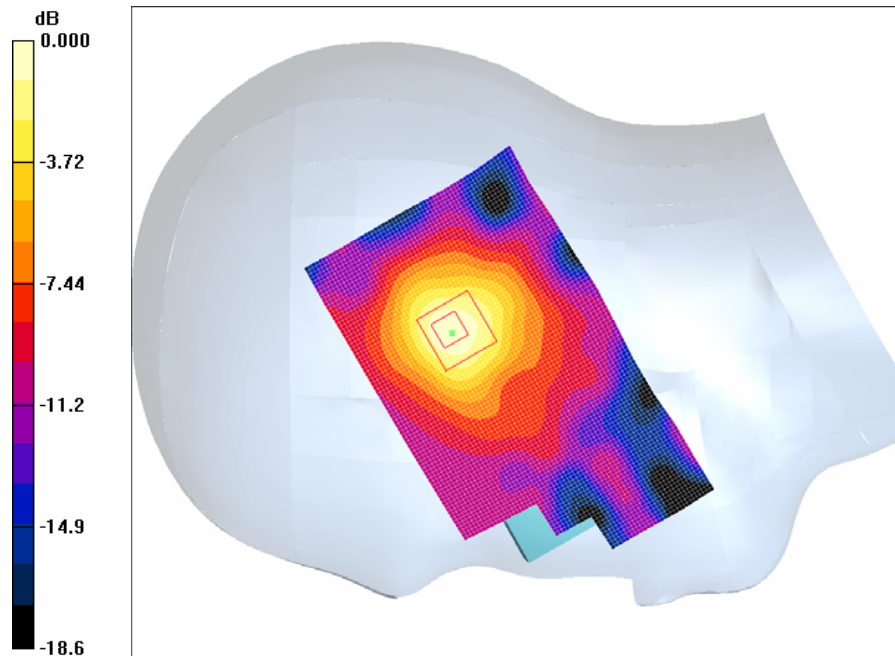
**Right Head Tilt/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 23.3 V/m; Power Drift = 0.047 dB

Peak SAR (extrapolated) = 2.28 W/kg

**SAR(1 g) = 1.11 mW/g; SAR(10 g) = 0.575 mW/g**

Maximum value of SAR (measured) = 1.26 mW/g



#11

**Test Laboratory: Bay Area Compliance Lab Corp.(BACL)****Right Head Tilt (High Channel)****DUT: Maxcom Mobile; Type: Mobile Phone; Serial: R1205078-1**

Communication System: PCS 1900; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium parameters used (interpolated):  $f = 1909.8$  MHz;  $\sigma = 1.39$  mho/m;  $\epsilon_r = 39.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV2 - SN3019; ConvF(4.87, 4.87, 4.87); Calibrated: 8/25/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 3/16/2012
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 80; Post processing SW: SEMCAD, V1.8 Build 186

**Right Head Tilt/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.38 mW/g

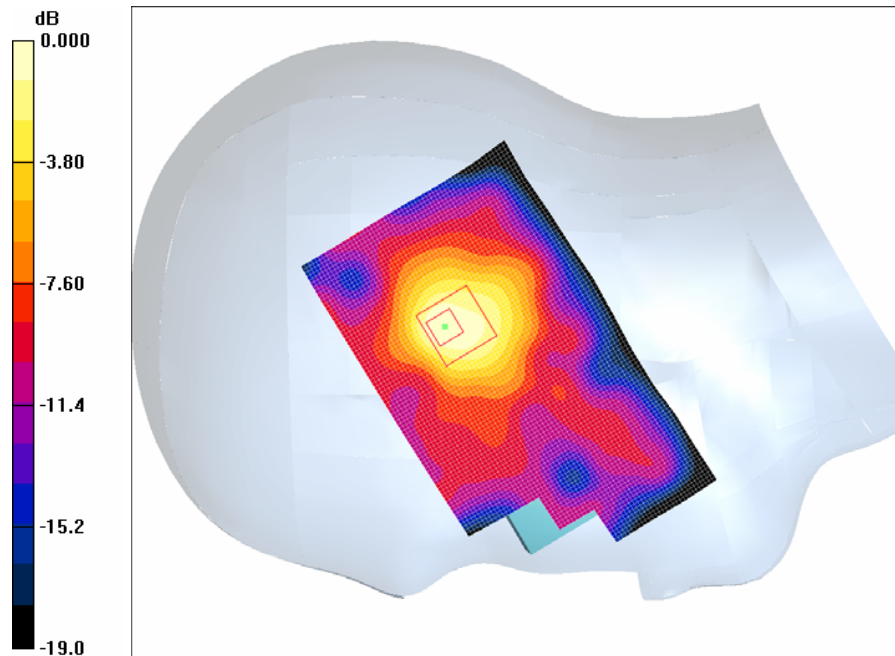
**Right Head Tilt/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 25.3 V/m; Power Drift = -0.685 dB

Peak SAR (extrapolated) = 2.40 W/kg

**SAR(1 g) = 1.1 mW/g; SAR(10 g) = 0.577 mW/g**

Maximum value of SAR (measured) = 1.26 mW/g



0 dB = 1.26mW/g

#12

**Test Laboratory: Bay Area Compliance Lab Corp.(BACL)****Left Head Touch (Low Channel)****DUT: Maxcom Mobile; Type: Mobile Phone; Serial: R1205078-1**

Communication System: PCS 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium parameters used (extrapolated):  $f = 1850.2$  MHz;  $\sigma = 1.35$  mho/m;  $\epsilon_r = 40.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

## DASY4 Configuration:

- Probe: ES3DV2 - SN3019; ConvF(4.87, 4.87, 4.87); Calibrated: 8/25/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 3/16/2012
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 80; Post processing SW: SEMCAD, V1.8 Build 186

**Left Head Touch/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.962 mW/g

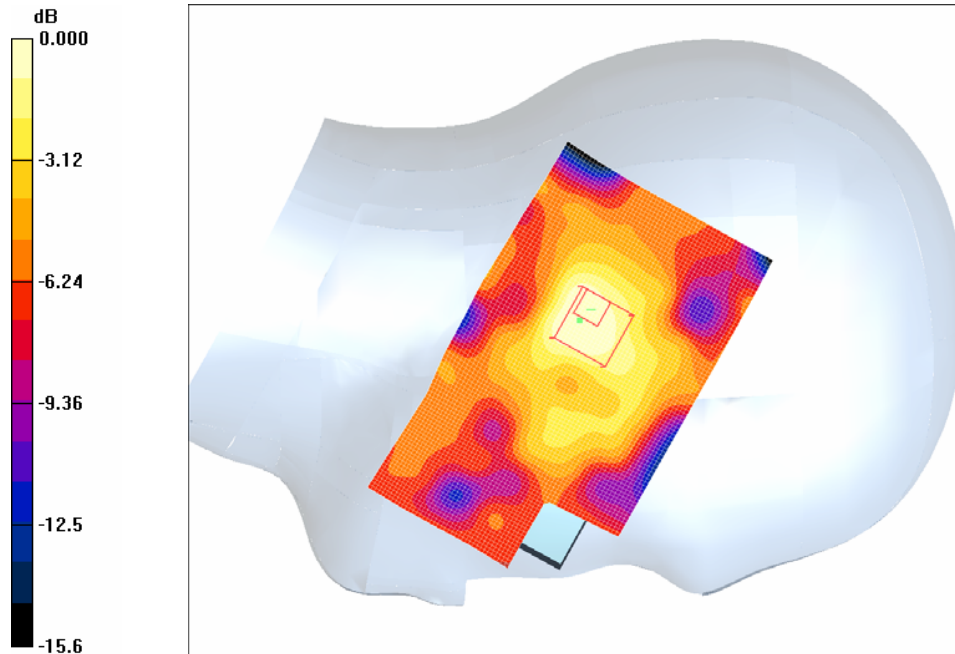
**Left Head Touch/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20.4 V/m; Power Drift = -0.127 dB

Peak SAR (extrapolated) = 2.19 W/kg

**SAR(1 g) = 0.694 mW/g; SAR(10 g) = 0.490 mW/g**

Maximum value of SAR (measured) = 0.763 mW/g



0 dB = 0.763mW/g

#13

**Test Laboratory: Bay Area Compliance Lab Corp.(BACL)****Left Head Tilt (Low Channel)****DUT: Maxcom Mobile; Type: Mobile Phone; Serial: R1205078-1**

Communication System: PCS 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3

Medium parameters used (extrapolated):  $f = 1850.2$  MHz;  $\sigma = 1.35$  mho/m;  $\epsilon_r = 40.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV2 - SN3019; ConvF(4.87, 4.87, 4.87); Calibrated: 8/25/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 3/16/2012
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.7 Build 80; Post processing SW: SEMCAD, V1.8 Build 186

**Left Head Tilt/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.888 mW/g

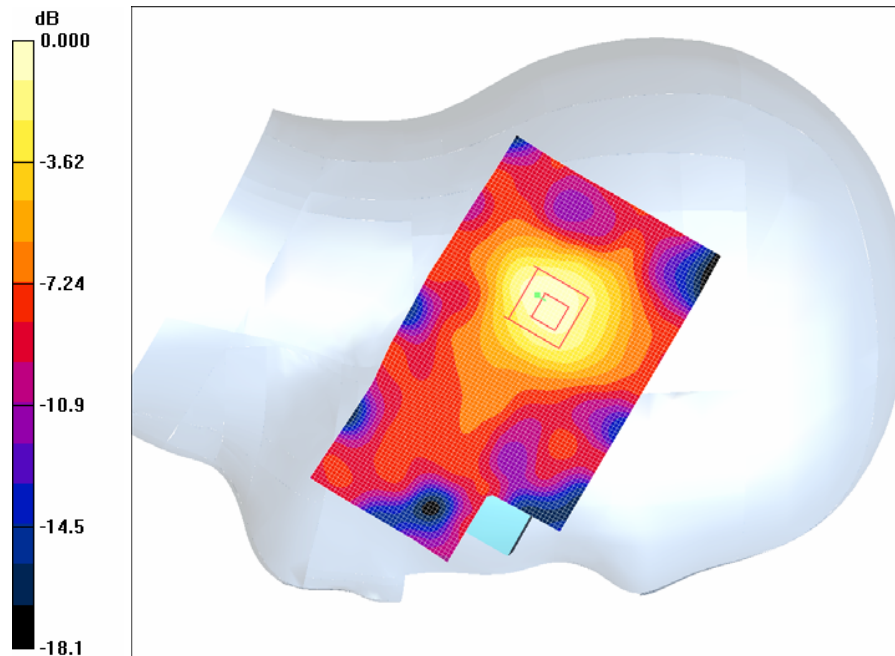
**Left Head Tilt/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 24.5 V/m; Power Drift = -0.090 dB

Peak SAR (extrapolated) = 1.84 W/kg

**SAR(1 g) = 0.750 mW/g; SAR(10 g) = 0.488 mW/g**

Maximum value of SAR (measured) = 0.853 mW/g

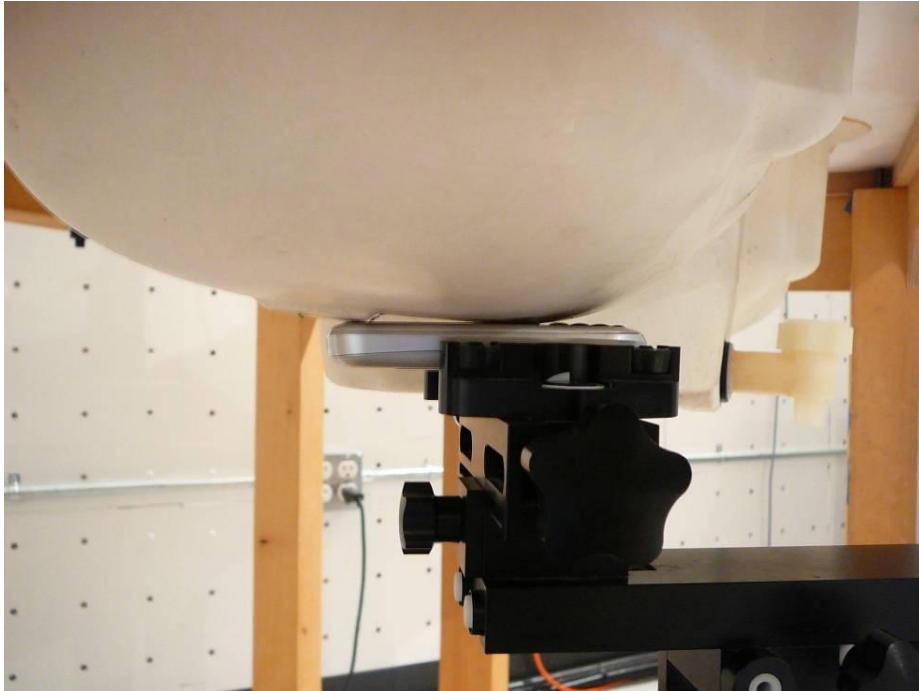


#14

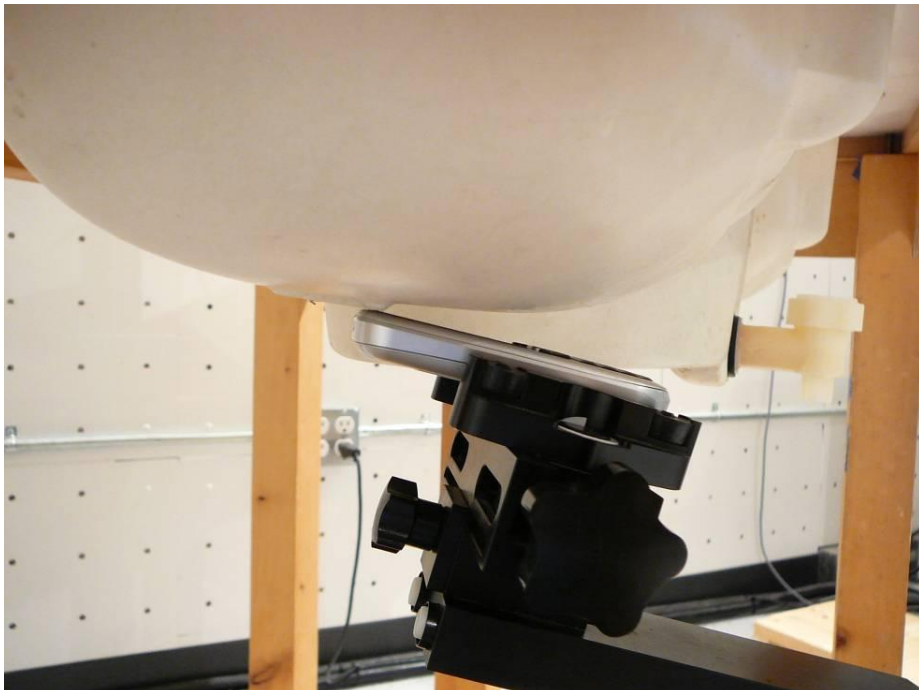
## 16 APPENDIX F – TEST SETUP PHOTOS

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### 16.1 Right Head-Touch Setup Photo

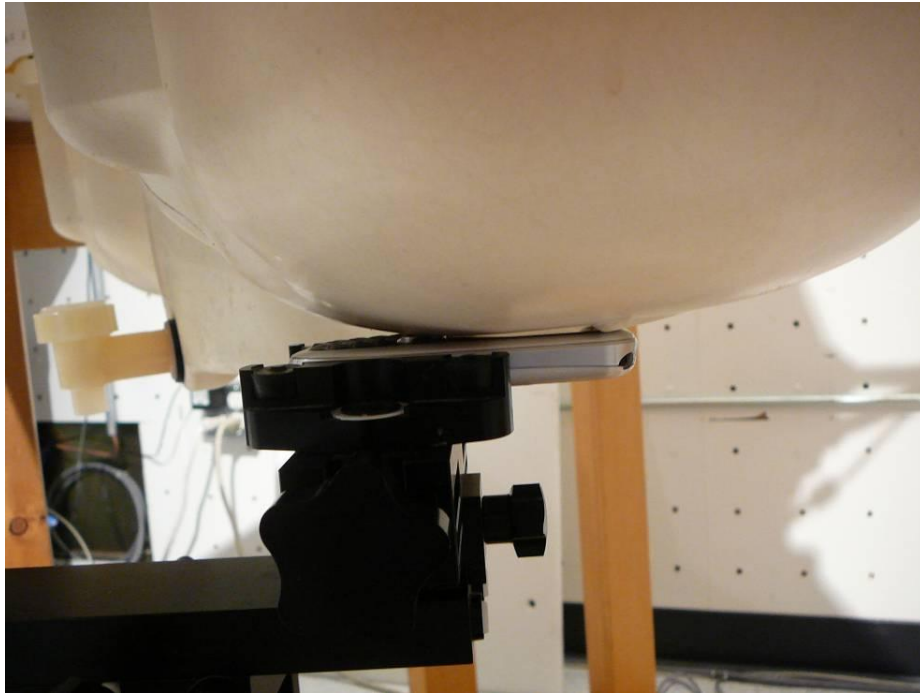


### 16.2 Right Head-Tilt Setup Photo

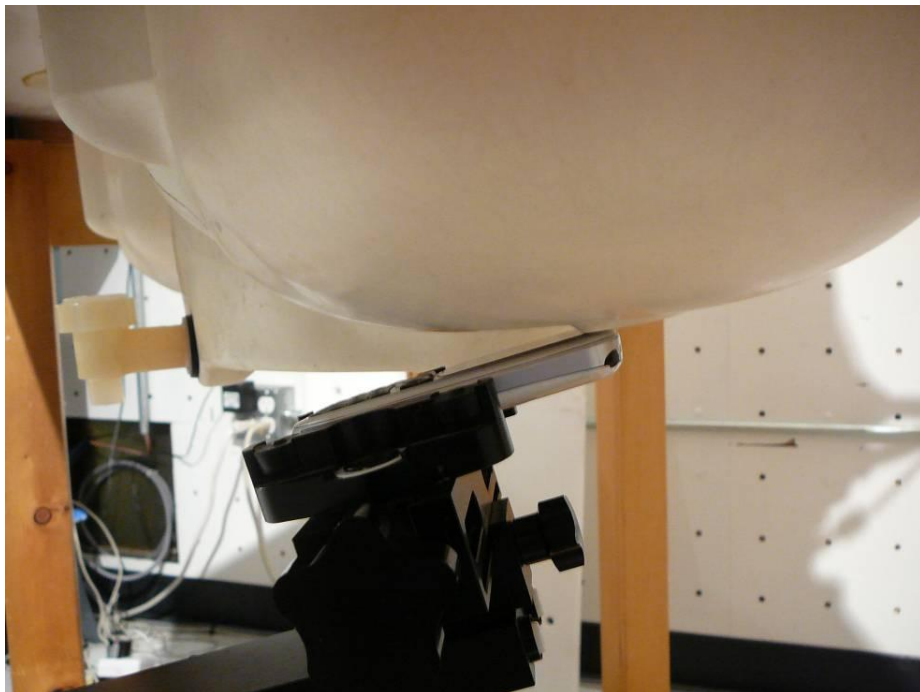




**16.3 Left Head-Touch Setup Photo**



**16.4 Left Head-Tilt Setup Photo**



**16.5 1.5 cm Body Worn to the flat phantom with Headset Setup Photo**



## 17 APPENDIX H – EUT PHOTOS

### 17.1 EUT – Front View



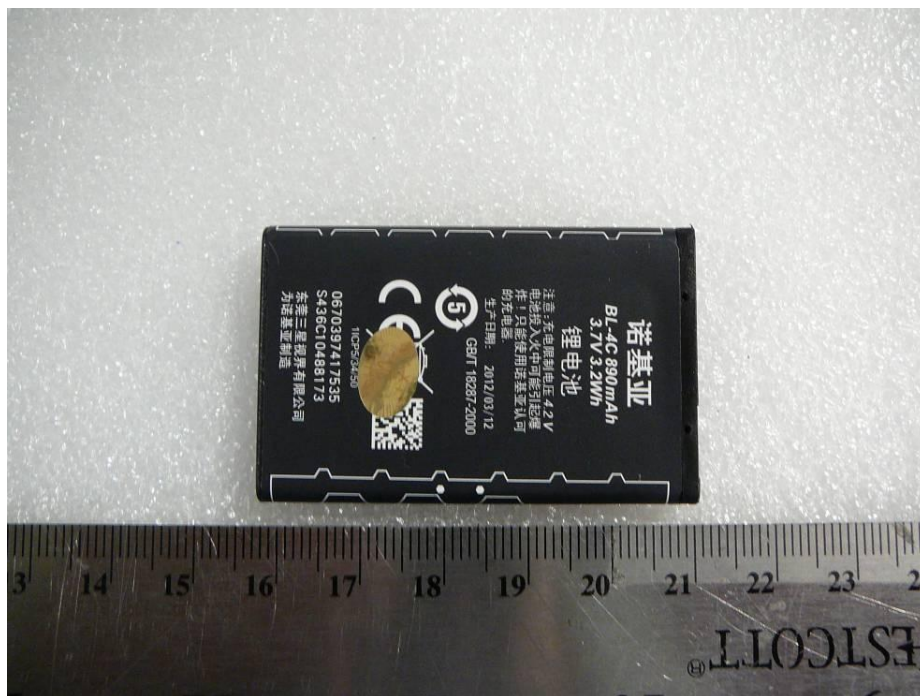
### 17.2 EUT – Bottom View



### 17.3 EUT – Battery Compartment View



### 17.4 EUT – Battery View



### 17.5 EUT – Accessory Headset



## 18 APPENDIX H – DECLARATION OF SIMILARITIES



Company Name: MAXCOM MOBILE  
Address: Room 2202 International Science and Technology Building, Futian District,  
3007 Shennan Road, Shenzhen, China  
Tel: 0755-83018553  
Fax: 0755-83018553  
2012-04-27

### Product Similarity Declaration

To Whom It May Concern,

We, MAXCOM MOBILE., hereby declare that our GSM Mobile Phone, Model Number: Mini-Q902 and Like-Q90 are electrically identical with the Like-m94 that was certified by BACL. They are just different in model No. due to marketing purposes.

Please contact me if you have any question.

Signature:

A handwritten signature in blue ink that reads "Jaime Wong".

Jaime Wong  
manager

## 19 APPENDIX I - INFORMATIVE REFERENCES

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**- END OF REPORT -**