

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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|  <b>MOTOROLA</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <br>Certificate Number: 1449-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p align="center"><b>FCC ID: AZ489FT4874</b><br/> <b>DECLARATION OF COMPLIANCE SAR ASSESSMENT Part 2 of 2</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p align="center"><b>Government &amp; Enterprise Mobility Solutions</b><br/> <b>EME Test Laboratory</b><br/> <b>8000 West Sunrise Blvd</b><br/> <b>Fort Lauderdale, FL. 33322</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p><b>Date of Report:</b> December 16, 2005<br/> <b>Report Revision:</b> Rev. A<br/> <b>Report ID:</b> FCC rpt_RLE1095A_Rev A_051216<br/>         SR2962</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <table border="0"> <tr> <td style="vertical-align: top;"> <p><b>Responsible Engineer:</b><br/> <b>Date/s Tested:</b><br/> <b>Manufacturer/Location:</b><br/> <b>Sector/Group/Div.:</b><br/> <b>Date submitted for test:</b><br/> <b>DUT Description:</b></p> <p><b>Test TX mode(s):</b><br/> <b>Max. Power output:</b><br/> <b>Nominal Power:</b><br/> <b>Tx Frequency Bands:</b><br/> <b>Signaling type:</b><br/> <b>Model(s) Tested:</b><br/> <b>Model(s) Certified:</b><br/> <b>Serial Number(s):</b><br/> <b>Classification:</b><br/> <b>Rule Part(s):</b></p> <p><b>Approved Accessories:</b><br/> <b>Antenna(s):</b><br/> <b>Battery(ies):</b><br/> <b>Body worn accessory(ies):</b><br/> <b>Audio/Data cable accessory(ies):</b></p> </td> <td style="vertical-align: top;"> <p>Deanna Zakharia (Elect. Principal Staff Eng.)<br/>           10/13/2005 – 10/14/2005<br/>           Motorola - China<br/>           CPD<br/>           10/5/2005<br/>           ELB1110 UHF, 1 channel 12.5KHz, Display, Fixed Antenna, 1Watt<br/>           Radiated output power<br/>           CW<br/>           1.0 watts<br/>           1.0 watt<br/>           460MHz – 470MHz<br/>           FM<br/>           RLE1095A<br/>           RLE1095A<br/>           3454FL0065 &amp; 3454FL0064<br/>           Occupational/Controlled<br/>           90</p> <p>Fixed antenna (UHF Helical 460-470MHz ¼ λ -2.0dBi gain)<br/>           IXNN4001A (3.6V NiMH rechargeable battery)<br/>           1564019V01 (Spring belt clip); 1564017V01 (standard belt clip)<br/>           HMN9026C (Remote speaker microphone); NTN9159E (light headset); HMN9025C (Ear bud w/PTT microphone);<br/>           HCSN4000C (Ear bud w/ PTT microphone); HCSN4001B (Earpiece w/ boom microphone); HMN9039D (Earpiece w/ boom microphone)</p> <p align="center"><b>Max. Calc. 1-g/10-g Avg. SAR: 0.42/0.25 mW/g (Body)</b><br/> <b>Max. Calc. 1-g/10-g Avg. SAR: 0.25/0.19 mW/g (Face)</b></p> </td> </tr> </table> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p><b>Responsible Engineer:</b><br/> <b>Date/s Tested:</b><br/> <b>Manufacturer/Location:</b><br/> <b>Sector/Group/Div.:</b><br/> <b>Date submitted for test:</b><br/> <b>DUT Description:</b></p> <p><b>Test TX mode(s):</b><br/> <b>Max. Power output:</b><br/> <b>Nominal Power:</b><br/> <b>Tx Frequency Bands:</b><br/> <b>Signaling type:</b><br/> <b>Model(s) Tested:</b><br/> <b>Model(s) Certified:</b><br/> <b>Serial Number(s):</b><br/> <b>Classification:</b><br/> <b>Rule Part(s):</b></p> <p><b>Approved Accessories:</b><br/> <b>Antenna(s):</b><br/> <b>Battery(ies):</b><br/> <b>Body worn accessory(ies):</b><br/> <b>Audio/Data cable accessory(ies):</b></p> | <p>Deanna Zakharia (Elect. Principal Staff Eng.)<br/>           10/13/2005 – 10/14/2005<br/>           Motorola - China<br/>           CPD<br/>           10/5/2005<br/>           ELB1110 UHF, 1 channel 12.5KHz, Display, Fixed Antenna, 1Watt<br/>           Radiated output power<br/>           CW<br/>           1.0 watts<br/>           1.0 watt<br/>           460MHz – 470MHz<br/>           FM<br/>           RLE1095A<br/>           RLE1095A<br/>           3454FL0065 &amp; 3454FL0064<br/>           Occupational/Controlled<br/>           90</p> <p>Fixed antenna (UHF Helical 460-470MHz ¼ λ -2.0dBi gain)<br/>           IXNN4001A (3.6V NiMH rechargeable battery)<br/>           1564019V01 (Spring belt clip); 1564017V01 (standard belt clip)<br/>           HMN9026C (Remote speaker microphone); NTN9159E (light headset); HMN9025C (Ear bud w/PTT microphone);<br/>           HCSN4000C (Ear bud w/ PTT microphone); HCSN4001B (Earpiece w/ boom microphone); HMN9039D (Earpiece w/ boom microphone)</p> <p align="center"><b>Max. Calc. 1-g/10-g Avg. SAR: 0.42/0.25 mW/g (Body)</b><br/> <b>Max. Calc. 1-g/10-g Avg. SAR: 0.25/0.19 mW/g (Face)</b></p> |
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| <p>Based on the information and the testing results provided herein, the undersigned certifies that when used as stated in the operating instructions supplied, said product complies with the national and international reference standards and guidelines listed in section 2.0 of this report. This report shall not be reproduced without written approval from an officially designated representative of the Motorola EME Laboratory.</p> <p>This reporting format is consistent with the test report guidelines of the TIA TSB-150 December 2004<br/>         The results and statements contained in this report pertain only to the device(s) evaluated.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p align="center">Signature on file – Ken Enger<br/>         Ken Enger GEMS EME Lab Senior Resource Manager,<br/>         Laboratory Director,<br/> <b>12/16/2005</b><br/> <b>Approval Date:</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p align="center"><b>Certification Date: 10/20/05</b><br/> <b>Certification No.: L1051028P</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |



## **Appendix C**

### **Dipole Calibration Certificates**

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

**Client** **Motorola CGISS**

## CALIBRATION CERTIFICATE

Object(s) **D450V2 - SN:1001**

Calibration procedure(s) **QA CAL-15.v2**  
**Calibration procedure for dipole validation kits below 800 MHz**

Calibration date: **May 22, 2004**

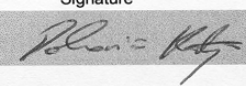
Condition of the calibrated item **In Tolerance (according to the specific calibration document)**

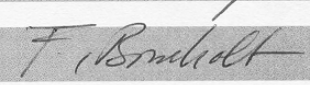
This calibration statement documents traceability of M&TE used in the calibration procedures and conformity of the procedures with the ISO/IEC 17025 international standard.

All calibrations have been conducted in the closed laboratory facility: environment temperature 22 +/- 2 degrees Celsius and humidity < 75%.

Calibration Equipment used (M&TE critical for calibration)

| Model Type                        | ID #           | Cal Date (Calibrated by, Certificate No.) | Scheduled Calibration  |
|-----------------------------------|----------------|-------------------------------------------|------------------------|
| Power meter EPM E4419B            | GB41293874     | 5-May-04 (METAS, No 251-00388)            | May-05                 |
| Power sensor E4412A               | MY41495277     | 5-May-04 (METAS, No 251-00388)            | May-05                 |
| Reference 20 dB Attenuator        | SN: 5086 (20b) | 3-May-04 (METAS, No 251-00389)            | May-05                 |
| Fluke Process Calibrator Type 702 | SN: 6295803    | 8-Sep-03 (Sintrel SCS No. E-030020)       | Sep-04                 |
| Power sensor HP 8481A             | MY41092180     | 18-Sep-02 (SPEAG, in house check Oct-03)  | In house check: Oct 05 |
| RF generator HP 8684C             | US3642U01700   | 4-Aug-99 (SPEAG, in house check Aug-02)   | In house check: Aug-05 |
| Network Analyzer HP 8753E         | US37390585     | 18-Oct-01 (SPEAG, in house check Oct-03)  | In house check: Oct 05 |

|                | Name          | Function            | Signature                                                                             |
|----------------|---------------|---------------------|---------------------------------------------------------------------------------------|
| Calibrated by: | Katja Pokovic | Laboratory Director |  |

|              | Name        | Function     | Signature                                                                             |
|--------------|-------------|--------------|---------------------------------------------------------------------------------------|
| Approved by: | Fin Bomholt | R&D Director |  |

Date issued: May 24, 2004

This calibration certificate is issued as an intermediate solution until the accreditation process (based on ISO/IEC 17025 International Standard) for Calibration Laboratory of Schmid & Partner Engineering AG is completed.

D450V2- SN:1001

## 1. Measurement Conditions

The measurements were performed in the 6mm thick flat phantom filled with **head** simulating liquid of the following electrical parameters at 450 MHz:

|                        |                   |           |
|------------------------|-------------------|-----------|
| Relative Dielectricity | <b>45.1</b>       | $\pm 5\%$ |
| Conductivity           | <b>0.85 mho/m</b> | $\pm 5\%$ |

The DASY4 System with a dosimetric E-field probe ET3DV6 (SN:1507, Conversion factor 6.45 at 450 MHz) was used for the measurements.

The dipole was mounted on the small tripod so that the dipole feedpoint was positioned below the center of the flat phantom and the dipole was oriented parallel to the longer side of the phantom. The standard measuring distance was 15mm from dipole center to the liquid surface including the 6mm thick phantom shell. The included distance spacer was used during measurements for accurate distance positioning.

The coarse grid with a grid spacing of 15mm was aligned with the dipole. The 7x7x7 fine cube was chosen for cube integration.

The dipole input power (forward power) was  $398 \text{ mW} \pm 3 \%$ . The results are normalized to 1W input power.

## 2. SAR Measurement with DASY System

Standard SAR-measurements were performed according to the measurement conditions described in section 1. The results (see figure supplied) have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR-values measured with the dosimetric probe ET3DV6 SN:1507 and applying the advanced extrapolation are:

averaged over  $1 \text{ cm}^3$  (1 g) of tissue: **5.28 mW/g**  $\pm 20.7 \%$  (k=2)<sup>1</sup>

averaged over  $10 \text{ cm}^3$  (10 g) of tissue: **3.52 mW/g**  $\pm 20.2 \%$  (k=2)<sup>1</sup>

D450V2- SN:1001

### **3. Dipole Impedance and Return Loss**

The impedance was measured at the SMA-connector with a network analyzer and numerically transformed to the dipole feedpoint. The transformation parameters from the SMA-connector to the dipole feedpoint are:

|                      |                 |                                       |
|----------------------|-----------------|---------------------------------------|
| Electrical delay:    | <b>1.346 ns</b> | (one direction)                       |
| Transmission factor: | <b>0.991</b>    | (voltage transmission, one direction) |

The dipole was positioned at the flat phantom sections according to section 1 and the distance spacer was in place during impedance measurements.

|                                 |                                   |
|---------------------------------|-----------------------------------|
| Feedpoint impedance at 450 MHz: | $\text{Re}\{Z\} = 53.0 \, \Omega$ |
|---------------------------------|-----------------------------------|

|  |                                    |
|--|------------------------------------|
|  | $\text{Im}\{Z\} = -11.1 \, \Omega$ |
|--|------------------------------------|

|                        |                 |
|------------------------|-----------------|
| Return Loss at 450 MHz | <b>-19.2 dB</b> |
|------------------------|-----------------|

### **4. Handling**

Do not apply excessive force to the dipole arms, because they might bend. Bending of the dipole arms stresses the soldered connections near the feedpoint leading to a damage of the dipole.

### **5. Design**

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.

### **6. Power Test**

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

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 450 MHz; Serial: D450V2 - SN:1001**

Communication System: CW; Duty Cycle: 1:1; Medium: HSL450

Medium parameters used:  $f = 450 \text{ MHz}$ ;  $\sigma = 0.85 \text{ mho/m}$ ;  $\epsilon_r = 45.1$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom: Flat Phantom 4.4; Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ET3DV6 - SN1507; ConvF(6.45, 6.45, 6.45);
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 600; Calibrated: 9/30/2003
- Measurement SW: DASY4, V4.2 Build 44;

**d=15mm, Pin=398mW/Area Scan (71x181x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 52.5 V/m; Power Drift = -0.0 dB

Maximum value of SAR (interpolated) = 2.21 mW/g

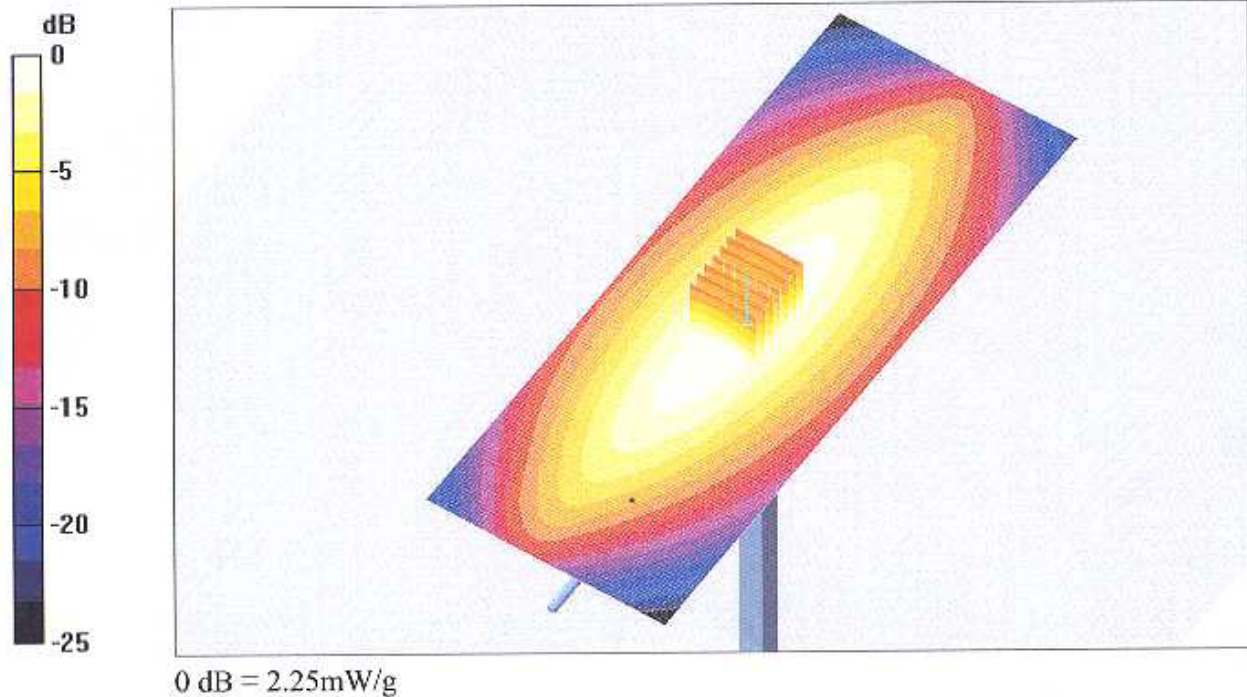
**d=15mm, Pin=398mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 52.5 V/m; Power Drift = -0.0 dB

Maximum value of SAR (measured) = 2.25 mW/g

Peak SAR (extrapolated) = 3.18 W/kg

**SAR(1 g) = 2.1 mW/g; SAR(10 g) = 1.4 mW/g**



## **Appendix D**

### **Test System Verification Scans**

Note: Dipole validation scans at the head from SPEAG are provided in Appendix D. The GEMS EME lab validated the dipole to the applicable IEEE system performance targets. Within the same day system validation was performed using FCC body tissue parameters to generate the system performance target values for body at the applicable frequency. The results of the GEMS EME system performance validation are provided herein. To assess the isotropic characteristics of the measurement probe, two system performance zoom scans (0 and 90 degrees) were measured. The results were averaged together and adjusted to account for the power drift in order to obtain the final calculated 1 gram results.

**Motorola GEMS EME Lab****SPEAG 450 MHz Dipole; Model D450V2, SN 1001; Test Date: 10/13/05**

Run #: CM-SYSP-450B-051013-01

Sim.Tissue Temp: 20.4 (C)

TX Freq: 450 (MHz)

Start power: 250 (mW)

Target: 4.96 mW/g for 1g SAR 3.25 mW/g for 10g SAR

5.14 mW/g calculated 1g-SAR; 3.66 % from target (including drift)

3.36 mW/g calculated 10g-SAR; 3.51 % from target (including drift)

Probe: ET3DV6 - SN1384, Calibrated: 5/26/2005, ConvF(7.1, 7.1, 7.1),

Duty Cycle: 1:1, Medium: Body 450, Medium parameters used:  $\sigma = 0.93$  mho/m,  $\epsilon_r = 54.7$ ;  $\rho = 1000$  kg/m<sup>3</sup> ;

Electronics: DAE3 Sn374, Calibrated: 4/6/2005

**System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 36.7 V/m; Power Drift = 0.0155 dB

Peak SAR (extrapolated) = 2.17 W/kg

**SAR(1 g) = 1.28 mW/g; SAR(10 g) = 0.839 mW/g**

Maximum value of SAR (measured) = 1.36 mW/g

**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 36.7 V/m; Power Drift = 0.0155 dB

Peak SAR (extrapolated) = 2.18 W/kg

**SAR(1 g) = 1.3 mW/g; SAR(10 g) = 0.849 mW/g**

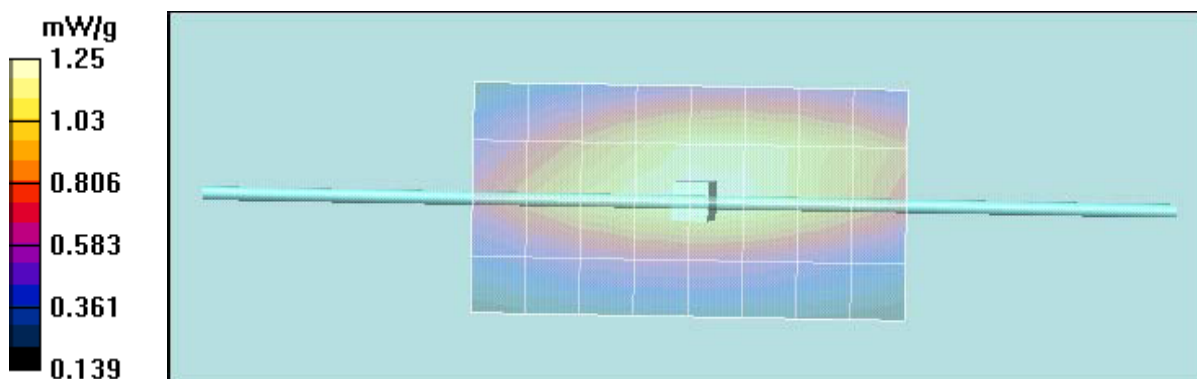
Maximum value of SAR (measured) = 1.37 mW/g

**System Performance Check/Dipole Area Scan (41x81x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 36.7 V/m; Power Drift = 0.0155 dB

**Motorola Fast SAR: SAR(1 g) = 1.27 mW/g; SAR(10 g) = 0.900 mW/g**

Maximum value of SAR (interpolated) = 1.34 mW/g

**System Performance Check/Z-Axis Scan (1x1x17):** Measurement grid: dx=20mm, dy=20mm, dz=10mm

**Motorola GEMS EME Lab****SPEAG 450 MHz Dipole; Model D450V2, SN 1001; Test Date: 10/14/05**

Run #: KU[SF]-SYSP-450B-051014-01

Sim.Tissue Temp: 21.6 (C)

TX Freq: 450 (MHz)

Start power: 250 (mW)

Target:

2.79 mW/g for 1g SAR 1.83 mW/g for 10g SAR

2.82 mW/g calculated 1g-SAR; 0.91% from target (including drift)

1.86 mW/g calculated 10g-SAR; 1.84% from target (including drift)

Probe: ET3DV6 - SN1393, Calibrated: 5/20/2005, ConvF(7.7, 7.7, 7.7),

Duty Cycle: 1:1, Medium: 300 MHz Body, Medium parameters used:  $\sigma = 0.91$  mho/m,  $\epsilon_r = 57.8$ ;  $\rho = 1000$  kg/m<sup>3</sup> ;

Electronics: DAE3 Sn363, Calibrated: 5/24/2005

**System Performance Check/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

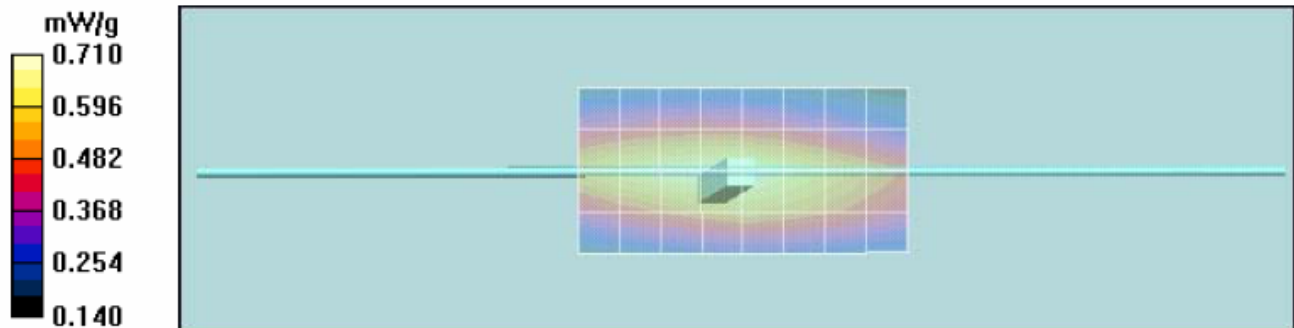
dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 27.9 V/m; Power Drift = 0.00 dB

**SAR(1 g) = 0.682 mW/g; SAR(10 g) = 0.452 mW/g**

Maximum value of SAR (measured) = 0.722 mW/g

**System Performance Check/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm; Reference Value = 27.9 V/m; Power Drift = 0.00 dB

**SAR(1 g) = 0.726 mW/g; SAR(10 g) = 0.480 mW/g**

**SYSTEM PERFORMANCE CHECK TARGET SAR**

|                 |                 |                    |                 |
|-----------------|-----------------|--------------------|-----------------|
| Date:           | <u>8/5/2005</u> | Frequency (MHz):   | <u>450</u>      |
| Lab Location:   | <u>GEMS EME</u> | Mixture Type:      | <u>FCC Body</u> |
| Robot System:   | <u>GEMS-3</u>   | Ambient Temp.(°C): | <u>22.3</u>     |
| Probe Serial #: | <u>1393</u>     | Tissue Temp.(°C):  | <u>20.5</u>     |
| DAE Serial #:   | <u>363</u>      |                    |                 |

## Tissue Characteristics

|               |             |                  |                      |
|---------------|-------------|------------------|----------------------|
| Permittivity: | <u>54.4</u> | Phantom Type/SN: | <u>80302002D-S14</u> |
| Conductivity: | <u>0.92</u> | Distance (mm):   | <u>15</u>            |

|                   |               |          |
|-------------------|---------------|----------|
| Reference Source: | <u>Dipole</u> | (Dipole) |
| Reference SN:     | <u>1001</u>   |          |

Power to Dipole: 250 mW

|                     |                     |                              |
|---------------------|---------------------|------------------------------|
| Measured SAR Value: | <u>1.24</u> mW/g,   | <u>0.812</u> mW/g (10g avg.) |
| Power Drift:        | <u>-0.000604</u> dB |                              |

## New Target/Measured

|            |                   |                             |
|------------|-------------------|-----------------------------|
| SAR Value: | <u>4.96</u> mW/g, | <u>3.25</u> mW/g (10g avg.) |
|------------|-------------------|-----------------------------|

(normalized to 1.0 W, including drift)

Test performed by: E. Church Initial: ERC

Sys. Per. Chk. Form: 021024

**Motorola GEMS EME Lab****SPEAG 450 MHz Dipole; Model D450V2, SN 1001; Test Date: 8/5/05**

Run #: ErC-VAL-450B-050805-02

Sim.Tissue Temp: 20.5 (C)

TX Freq: 450 (MHz)

Start power: 250 (mW)

Target:

**New Body Target:****4.96 mW/g for 1g SAR 3.25 mW/g for 10g SAR**

Probe: ET3DV6 - SN1393, Calibrated: 5/20/2005, ConvF(7.18, 7.18, 7.18),

Duty Cycle: 1:1, Medium: 450 MHz Body, Medium parameters used:  $\sigma = 0.92$  mho/m,  $\epsilon_r = 54.4$ ;  $\rho = 1000$  kg/m<sup>3</sup> ;

Electronics: DAE3 Sn363, Calibrated: 5/24/2005

**Dipole Validation 450 Body/0-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 37.9 V/m; Power Drift = -0.000604 dB

Peak SAR (extrapolated) = 2.06 W/kg

**SAR(1 g) = 1.24 mW/g; SAR(10 g) = 0.812 mW/g**

Maximum value of SAR (measured) = 1.31 mW/g

**Dipole Validation 450 Body/90-Degree 5x5x7 Cube (5x5x7)/Cube 0:** Measurement grid:

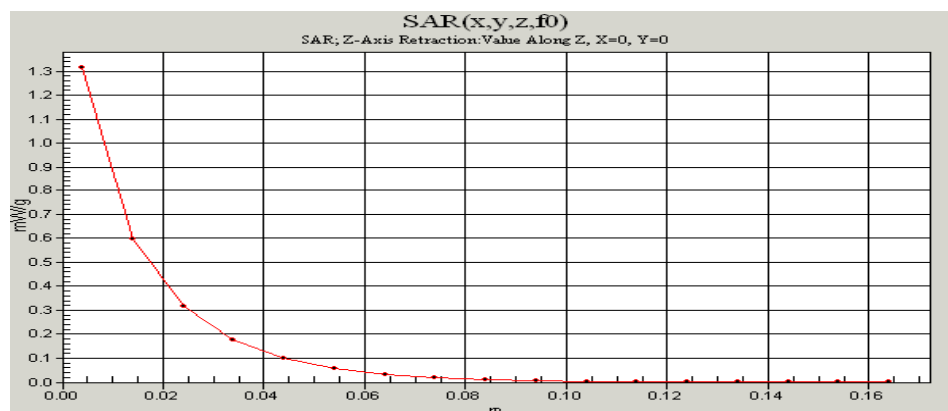
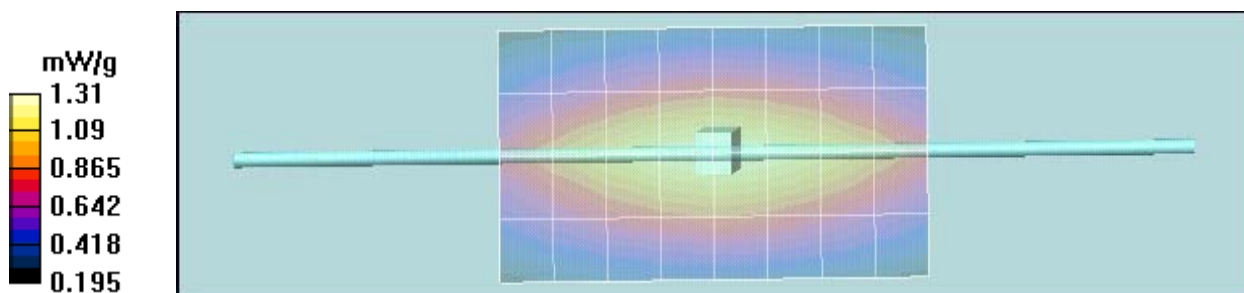
dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 37.9 V/m; Power Drift = -0.000604 dB

Peak SAR (extrapolated) = 2.06 W/kg

**SAR(1 g) = 1.24 mW/g; SAR(10 g) = 0.812 mW/g****Dipole Validation 450 Body/Dipole Area Scan (5x9x1):** Measurement grid: dx=15mm, dy=15mm**Dipole Validation 450 Body/Z-Axis Retraction (1x1x17):** Measurement grid: dx=20mm, dy=20mm, dz=10mm

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



## **Appendix E**

### **DUT Scans (Shortened scans & Highest SAR configurations)**

## Shortened Scan Results

**FCC ID: AZ489FT4874; Test Date: 10/14/05**

**Motorola GEMS EME Laboratory**

Run #: CM-Ab-051014-14

Sim. Tissue Temp: 20.7 (C)

Model #: RLE1059A SN: 3454FL0064

Antenna: FIXED TX Freq (MHz): 461.0625

Battery: IXNN4001A Start power: 1.002 W

Carry acc.: 1564017V01 Audio acc.: HMN9026C

**Shortened scan reflect highest S.A.R. producing configuration; Run time 6 minutes.**

**Representative “normal” scan run time was 28 minutes**

**“Shortened” scan max calculated S.A.R. using S.A.R. drift: 1-g Avg. = 0.57mW/g; 10-g Avg. = 0.39mW/g**

**“Normal” scan max calculated S.A.R. using S.A.R. drift: 1-g Avg. = 0.53mW/g; 10-g Avg. = 0.35mW/g**

**(see part 1 of 2 section 9.0 run # CM-Ab-051014-12)**

### **DUT with carry accessory against the phantom**

Probe: ET3DV6 - SN1384, Calibrated: 5/26/2005, ConvF(7.1, 7.1, 7.1),

Duty Cycle: 1:1, Medium: 465 MHz FCC Body, Medium parameters used:  $\sigma = 0.94$  mho/m,  $\epsilon_r = 54.6$ ;  $\rho = 1000$  kg/m<sup>3</sup> ;

Electronics: DAE3 Sn374, Calibrated: 4/6/2005

**Ab Scan/Area Scan (51x131x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 32.6 V/m; Power Drift = 0.493 dB

**Motorola Fast SAR: SAR(1 g) = 0.934 mW/g; SAR(10 g) = 0.671 mW/g**

Maximum value of SAR (interpolated) = 0.988 mW/g

**Ab Scan/Z Scan (1x1x17):** Measurement grid: dx=20mm, dy=20mm, dz=10mm

Maximum value of SAR (measured) = 1.16 mW/g

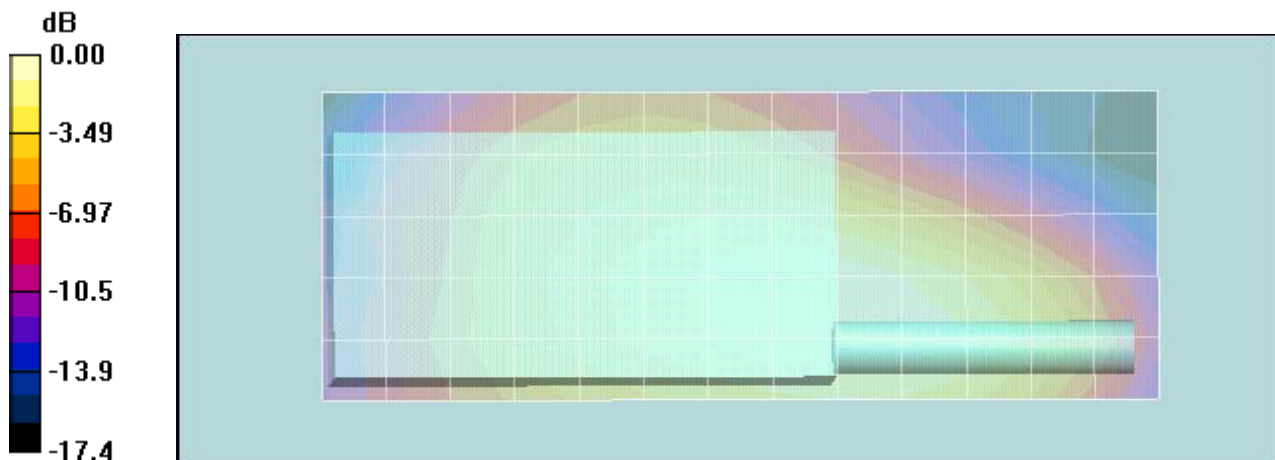
**Ab Scan/Zoom Scan (5x5x5)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=7.5mm

Reference Value = 32.6 V/m; Power Drift = 0.493 dB

Peak SAR (extrapolated) = 1.76 W/kg

**SAR(1 g) = 1.14 mW/g; SAR(10 g) = 0.780 mW/g**

Maximum value of SAR (measured) = 1.21 mW/g



## Highest SAR Configurations

**FCC ID: AZ489FT4874; Test Date: 10/14/05**

**Motorola GEMS EME Laboratory**

Run #: CM-Ab-051014-12

Sim. Tissue Temp: 20.7 (C)

Model #: RLE1095A SN: 3454FL0064

Antenna: FIXED TX Freq (MHz): 461.0625

Battery: IXNN4001A Start power: 1.002 W

Carry acc.: 1564017V01 Audio acc.: HMN9026C

### DUT with carry accessory against the phantom

Probe: ET3DV6 - SN1384, Calibrated: 5/26/2005, ConvF(7.1, 7.1, 7.1),

Duty Cycle: 1:1, Medium: 465 MHz FCC Body, Medium parameters used:  $\sigma = 0.94$  mho/m,  $\epsilon_r = 54.6$ ;  $\rho = 1000$  kg/m<sup>3</sup> ;

Electronics: DAE3 Sn374, Calibrated: 4/6/2005

**Ab Scan/Area Scan (51x131x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 33.9 V/m; Power Drift = -0.509 dB

**Motorola Fast SAR: SAR(1 g) = 1.01 mW/g; SAR(10 g) = 0.721 mW/g**

Maximum value of SAR (interpolated) = 1.06 mW/g

**Ab Scan/Z Scan (1x1x17):** Measurement grid: dx=20mm, dy=20mm, dz=10mm

Maximum value of SAR (measured) = 0.987 mW/g

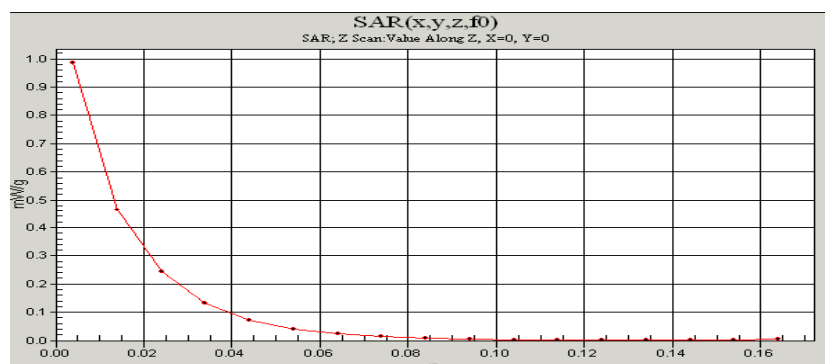
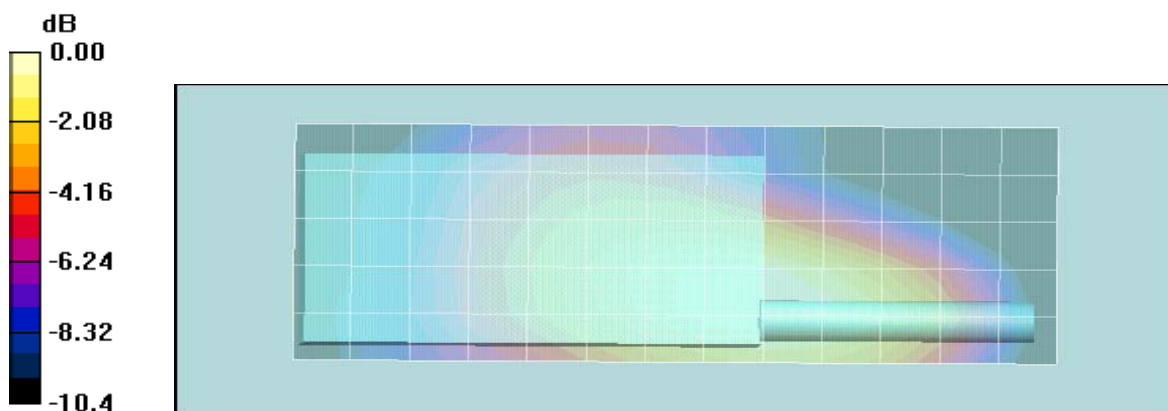
**Ab Scan/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 33.9 V/m; Power Drift = -0.509 dB

Peak SAR (extrapolated) = 1.52 W/kg

**SAR(1 g) = 0.938 mW/g; SAR(10 g) = 0.627 mW/g**

Maximum value of SAR (measured) = 0.989 mW/g



**FCC ID: AZ489FT4874; Test Date: 10/13/05**

**Motorola GEMS EME Laboratory**

Run #: CM-Face-051013-08

Sim. Tissue Temp: 20.9 (C)

Model #: RLE1095A SN: 3454FL0064

Antenna: FIXED TX Freq (MHz): 461.0625

Battery: IXNN4001A Start power: 1.002 W

Carry acc.: NONE Audio acc.: NONE

**DUT with front housing separated 2.5cm from the phantom**

Probe: ET3DV6 - SN1384, Calibrated: 5/26/2005, ConvF(7.51, 7.51, 7.51),

Duty Cycle: 1:1, Medium: 465 MHz IEEE Head , Medium parameters used:  $\sigma = 0.91$  mho/m,  $\epsilon_r = 44.4$ ;  $\rho = 1000$  kg/m<sup>3</sup> ;

Electronics: DAE3 Sn374, Calibrated: 4/6/2005

**Ab Scan/Area Scan (51x131x1):** Measurement grid: dx=15mm, dy=15mm

Reference Value = 33.1 V/m; Power Drift = -0.345 dB

**Motorola Fast SAR: SAR(1 g) = 0.930 mW/g; SAR(10 g) = 0.687 mW/g**

Maximum value of SAR (interpolated) = 0.977 mW/g

**Ab Scan/Z Scan (1x1x17):** Measurement grid: dx=20mm, dy=20mm, dz=10mm

Maximum value of SAR (measured) = 0.947 mW/g

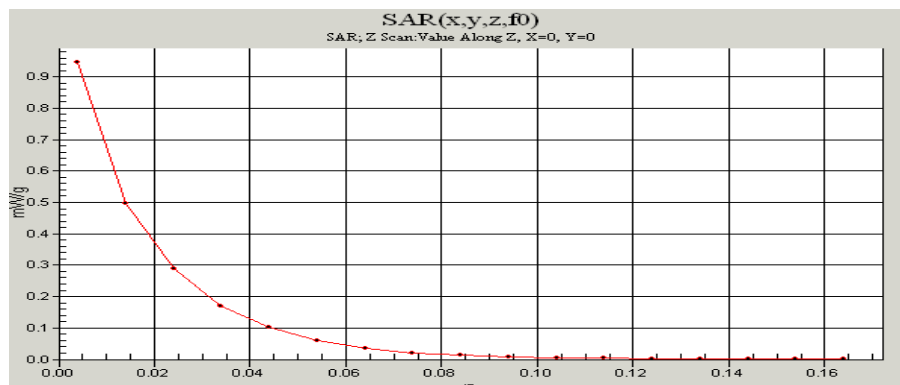
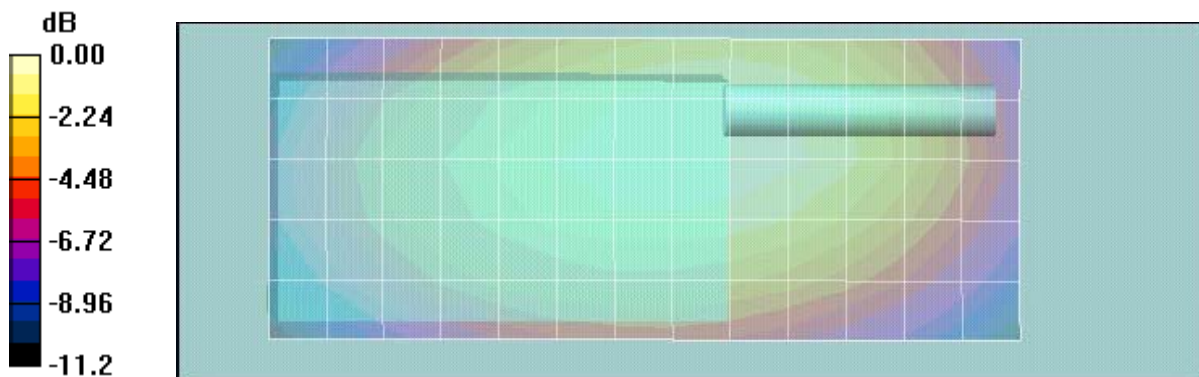
**Ab Scan/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 33.1 V/m; Power Drift = -0.345 dB

Peak SAR (extrapolated) = 1.41 W/kg

**SAR(1 g) = 0.914 mW/g; SAR(10 g) = 0.654 mW/g**

Maximum value of SAR (measured) = 0.955 mW/g

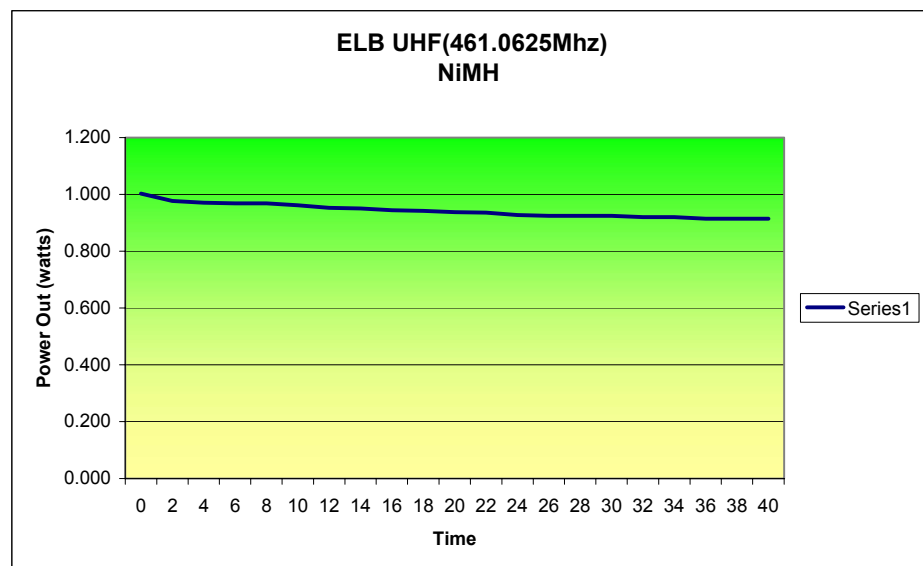


## APPENDIX F

### DUT Supplementary Data (Power slump)

**Channel 1 Frequency 10: 461.0625MHz**  
**S/N: 3454FL0064**

| Time (min) | Pwr Out(W) |
|------------|------------|
| 0          | 1.002      |
| 2          | 0.977      |
| 4          | 0.971      |
| 6          | 0.968      |
| 8          | 0.968      |
| 10         | 0.962      |
| 12         | 0.953      |
| 14         | 0.951      |
| 16         | 0.944      |
| 18         | 0.942      |
| 20         | 0.938      |
| 22         | 0.935      |
| 24         | 0.927      |
| 26         | 0.925      |
| 28         | 0.925      |
| 30         | 0.925      |
| 32         | 0.920      |
| 34         | 0.920      |
| 36         | 0.914      |
| 38         | 0.914      |
| 40         | 0.914      |



## Appendix G

### DUT Test Position Photos

**Figure 1: Highest S.A.R. Test Position (Body)**

**DUT with body worn accessory model 1564017V01 and attached audio accessory model HMN9026C  
(Same position used for all other offered audio accessories)**



**Figure 2: Body assessment**

**DUT with body worn accessory model 1564019V01 and attached audio accessory model HMN9026C**



**Figure 3: Body assessment**

**DUT with back housing separated 2.5cm from the phantom with attached audio accessory model HMN9026C**



**Figure 4: Body assessment**

**DUT with back housing antenna at 2.5cm from the phantom with attached audio accessory model HMN9026C**



**Figure 5: Body assessment**

**DUT with front housing separated 2.5cm from the phantom with attached audio accessory model HMN9026C**



**Figure 6: Face assessment**

**DUT with front housing separated 2.5cm from the phantom**



## Appendix H

### DUT and Accessory Photos

The purpose of this appendix is to illustrate the body-worn carry accessories for FCC ID: AZ489FT4874. The sample that was used in the following photos represents the product used to obtain the results presented herein and was used in this section to demonstrate the different body-worn accessories.



**Photo 1.**  
**Model 1564017V01**  
**Back View**



**Photo2.**  
**Model 1564017V01**  
**Side View**



**Photo 3.**  
**Model 1564019V01**  
**Back View**



**Photo 4.**  
**Model 1564019V01**  
**Side View**

## Appendix I

### DUT Body-worn Separation Distances

The following table summarizes the test status and separation distance provided by each of the applicable body-worn accessories:

| <b>Carry Case Models</b> | <b>Tested ?</b> | <b>Min. Separation distances between DUT antenna and phantom surface. (mm)</b> | <b>Comments</b> |
|--------------------------|-----------------|--------------------------------------------------------------------------------|-----------------|
| 1564019V01               | Yes             | 23-30                                                                          | NA              |
| 1564017V01               | Yes             | 16-17                                                                          | NA              |

| <b>Audio Acc. Models</b> | <b>Tested ?</b> | <b>Separation distances between DUT antenna and phantom surface. (mm)</b> | <b>Comments</b>           |
|--------------------------|-----------------|---------------------------------------------------------------------------|---------------------------|
| HMN9026C                 | Yes             | NA                                                                        | NA                        |
| NTN9159E                 | Yes             | NA                                                                        | NA                        |
| HMN9025C                 | Yes             | NA                                                                        | NA                        |
| HCSN4000C                | Yes             | NA                                                                        | NA                        |
| HCSN4001B                | No              | NA                                                                        | By similarity to NTN9159E |
| HMN9039D                 | No              | NA                                                                        | By similarity to NTN9159E |