

APPENDIX A - SAR MEASUREMENT DATA

Date Tested: 07/28/04

Head SAR - Cellular GSM Voice Mode - Mid Channel - Right Ear - Cheek/Touch Position

DUT: palmOne Model: Treo 650; Type: Dual-Band PCS/Cellular GSM/GPRS Phone; Serial: SGXW07D4H00P

Ambient Temp: 23.8 °C; Fluid Temp: 23.6 °C; Barometric Pressure: 102.1 kPa; Humidity: 43%

Frequency: 836.6 MHz; Duty Cycle: 1:8.3
 RF Output Power: 32.1 dBm (Peak Conducted)
 Communication System: Cellular GSM (1 Time Slot)
 3.7V 1900mAh Li-ion Battery Pack (P/N: 167-10165-00)
 Medium: HSL835 ($\sigma = 0.90$ mho/m; $\epsilon_r = 40.5$; $\rho = 1000$ kg/m³)

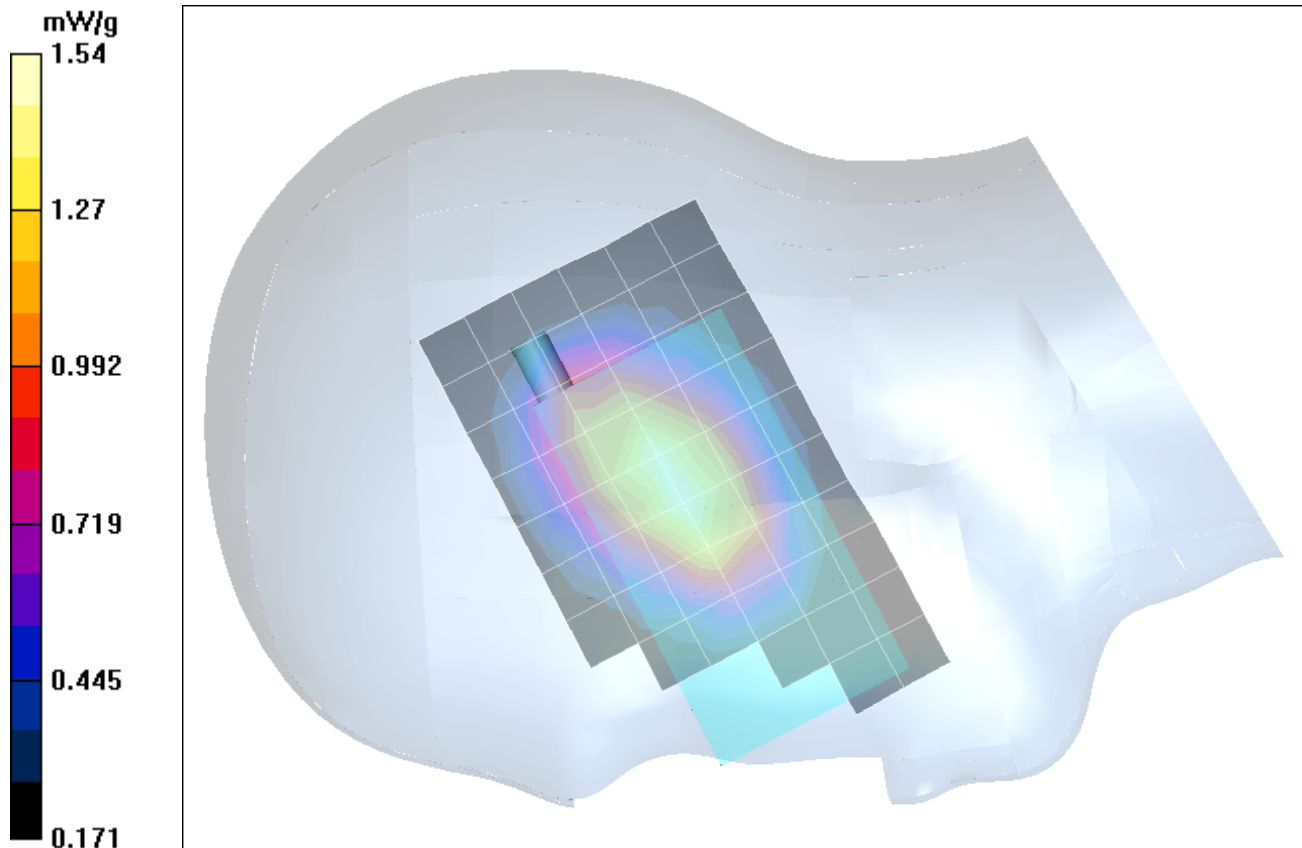
- Probe: ET3DV6 - SN1590; ConvF(6.71, 6.71, 6.71); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Head SAR - Cellular GSM - Right Ear - Cheek/Touch Position - Channel 190/Area Scan (7x11x1):

Measurement grid: dx=15mm, dy=15mm

Head SAR - Cellular GSM - Right Ear - Cheek/Touch Position - Channel 190/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 33.3 V/m; Power Drift = -0.0708 dB
 Peak SAR (extrapolated) = 1.94 W/kg
SAR(1 g) = 1.45 mW/g; SAR(10 g) = 1.03 mW/g



Date Tested: 07/28/04

Head SAR - Cellular GSM Voice Mode - Low Channel - Right Ear - Cheek/Touch Position

DUT: palmOne Model: Treo 650; Type: Dual-Band PCS/Cellular GSM/GPRS Phone; Serial: SGXW07D4H00P

Ambient Temp: 23.8 °C; Fluid Temp: 23.6 °C; Barometric Pressure: 102.1 kPa; Humidity: 43%

Frequency: 824.2 MHz; Duty Cycle: 1:8.3

RF Output Power: 31.9 dBm (Peak Conducted)

Communication System: Cellular GSM (1 Time Slot)

3.7V 1900mAh Li-ion Battery Pack (P/N: 167-10165-00)

Medium: HSL835 ($\sigma = 0.90 \text{ mho/m}$; $\epsilon_r = 40.5$; $\rho = 1000 \text{ kg/m}^3$)

- Probe: ET3DV6 - SN1590; ConvF(6.71, 6.71, 6.71); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Head SAR - Cellular GSM - Right Ear - Cheek/Touch Position - Channel 128/Area Scan (7x11x1):

Measurement grid: dx=15mm, dy=15mm

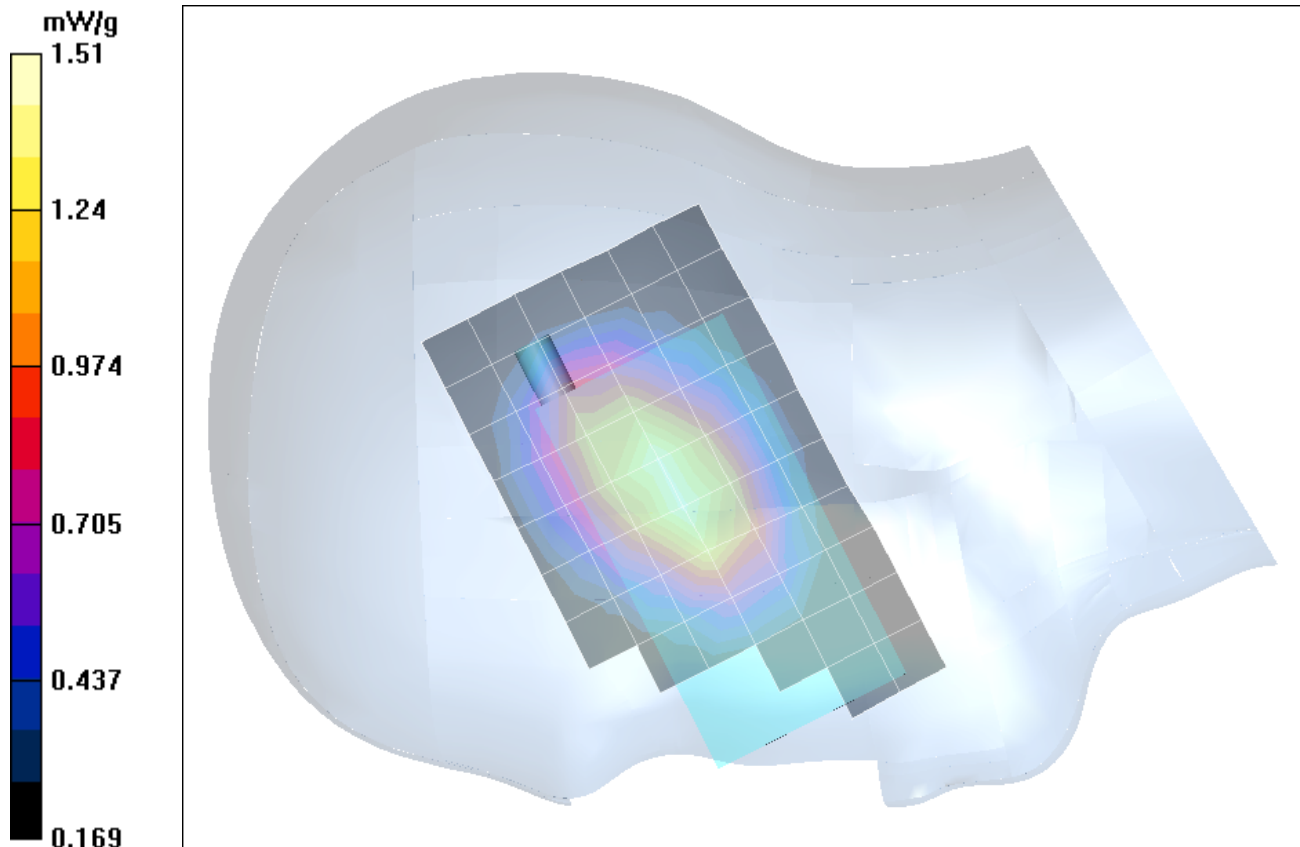
Head SAR - Cellular GSM - Right Ear - Cheek/Touch Position - Channel 128/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 32.9 V/m; Power Drift = -0.0393 dB

Peak SAR (extrapolated) = 1.94 W/kg

SAR(1 g) = 1.42 mW/g; SAR(10 g) = 1 mW/g



Date Tested: 07/28/04

Head SAR - Cellular GSM Voice Mode - High Channel - Right Ear - Cheek/Touch Position

DUT: palmOne Model: Treo 650; Type: Dual-Band PCS/Cellular GSM/GPRS Phone; Serial: SGXW07D4H00P

Ambient Temp: 23.8 °C; Fluid Temp: 23.6 °C; Barometric Pressure: 102.1 kPa; Humidity: 43%

Frequency: 848.8 MHz; Duty Cycle: 1:8.3
 RF Output Power: 32.2 dBm (Peak Conducted)
 Communication System: Cellular GSM (1 Time Slot)
 3.7V 1900mAh Li-ion Battery Pack (P/N: 167-10165-00)
 Medium: HSL835 ($\sigma = 0.90$ mho/m; $\epsilon_r = 40.5$; $\rho = 1000$ kg/m³)

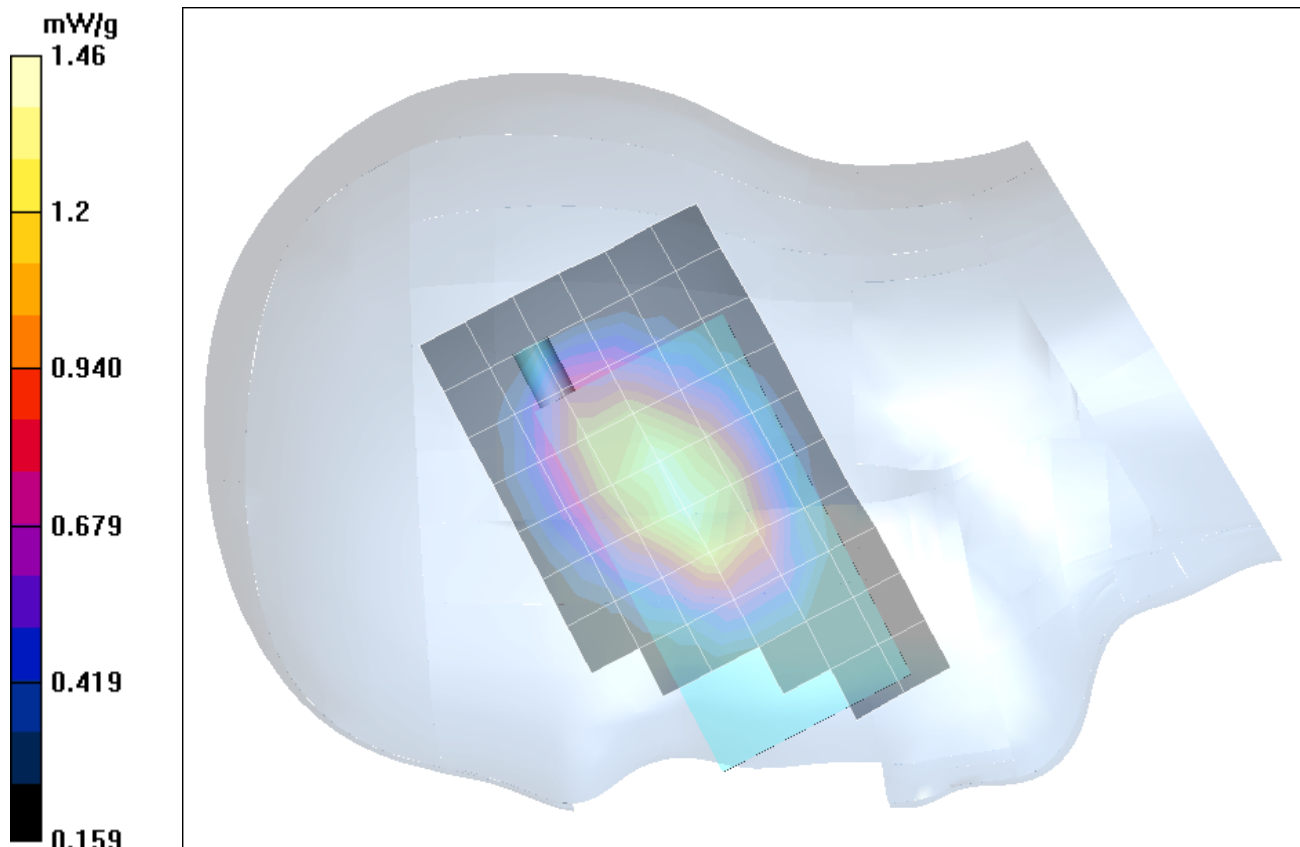
- Probe: ET3DV6 - SN1590; ConvF(6.71, 6.71, 6.71); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Head SAR - Cellular GSM - Right Ear - Cheek/Touch Position - Channel 251/Area Scan (7x11x1):

Measurement grid: dx=15mm, dy=15mm

Head SAR - Cellular GSM - Right Ear - Cheek/Touch Position - Channel 251/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 31.9 V/m; Power Drift = -0.0404 dB
 Peak SAR (extrapolated) = 1.88 W/kg
SAR(1 g) = 1.38 mW/g; SAR(10 g) = 0.976 mW/g



Date Tested: 07/28/04

Head SAR - Cellular GSM Voice Mode - Mid Channel - Right Ear - Tilt Position (15°)

DUT: palmOne Model: Treo 650; Type: Dual-Band PCS/Cellular GSM/GPRS Phone; Serial: SGXW07D4H00P

Ambient Temp: 23.8 °C; Fluid Temp: 23.6 °C; Barometric Pressure: 102.1 kPa; Humidity: 43%

Frequency: 836.6 MHz; Duty Cycle: 1:8.3
 RF Output Power: 32.1 dBm (Peak Conducted)
 Communication System: Cellular GSM (1 Time Slot)
 3.7V 1900mAh Li-ion Battery Pack (P/N: 167-10165-00)
 Medium: HSL835 ($\sigma = 0.90 \text{ mho/m}$; $\epsilon_r = 40.5$; $\rho = 1000 \text{ kg/m}^3$)

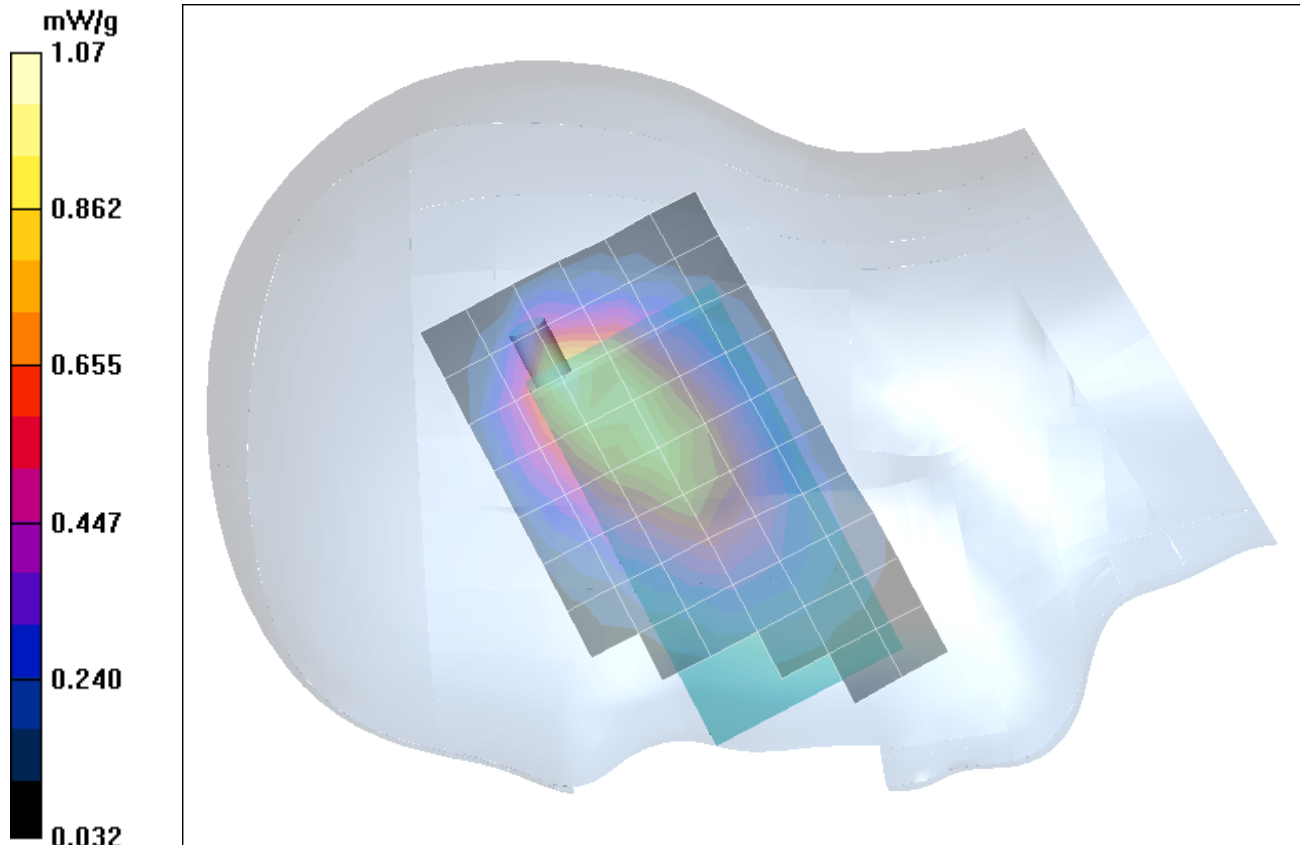
- Probe: ET3DV6 - SN1590; ConvF(6.71, 6.71, 6.71); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Head SAR - Cellular GSM - Right Ear - Tilt Position (15°) - Channel 190/Area Scan (7x11x1):

Measurement grid: dx=15mm, dy=15mm

Head SAR - Cellular GSM - Right Ear - Tilt Position (15°) - Channel 190/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 31.3 V/m; Power Drift = -0.0169 dB
 Peak SAR (extrapolated) = 2.36 W/kg
SAR(1 g) = 1.00 mW/g; SAR(10 g) = 0.651 mW/g



Date Tested: 07/28/04

Head SAR - Cellular GSM Voice Mode - Low Channel - Right Ear - Tilt Position (15°)

DUT: palmOne Model: Treo 650; Type: Dual-Band PCS/Cellular GSM/GPRS Phone; Serial: SGXW07D4H00P

Ambient Temp: 23.8 °C; Fluid Temp: 23.6 °C; Barometric Pressure: 102.1 kPa; Humidity: 43%

Frequency: 824.2 MHz; Duty Cycle: 1:8.3
 RF Output Power: 31.9 dBm (Peak Conducted)
 Communication System: Cellular GSM (1 Time Slot)
 3.7V 1900mAh Li-ion Battery Pack (P/N: 167-10165-00)
 Medium: HSL835 ($\sigma = 0.90 \text{ mho/m}$; $\epsilon_r = 40.5$; $\rho = 1000 \text{ kg/m}^3$)

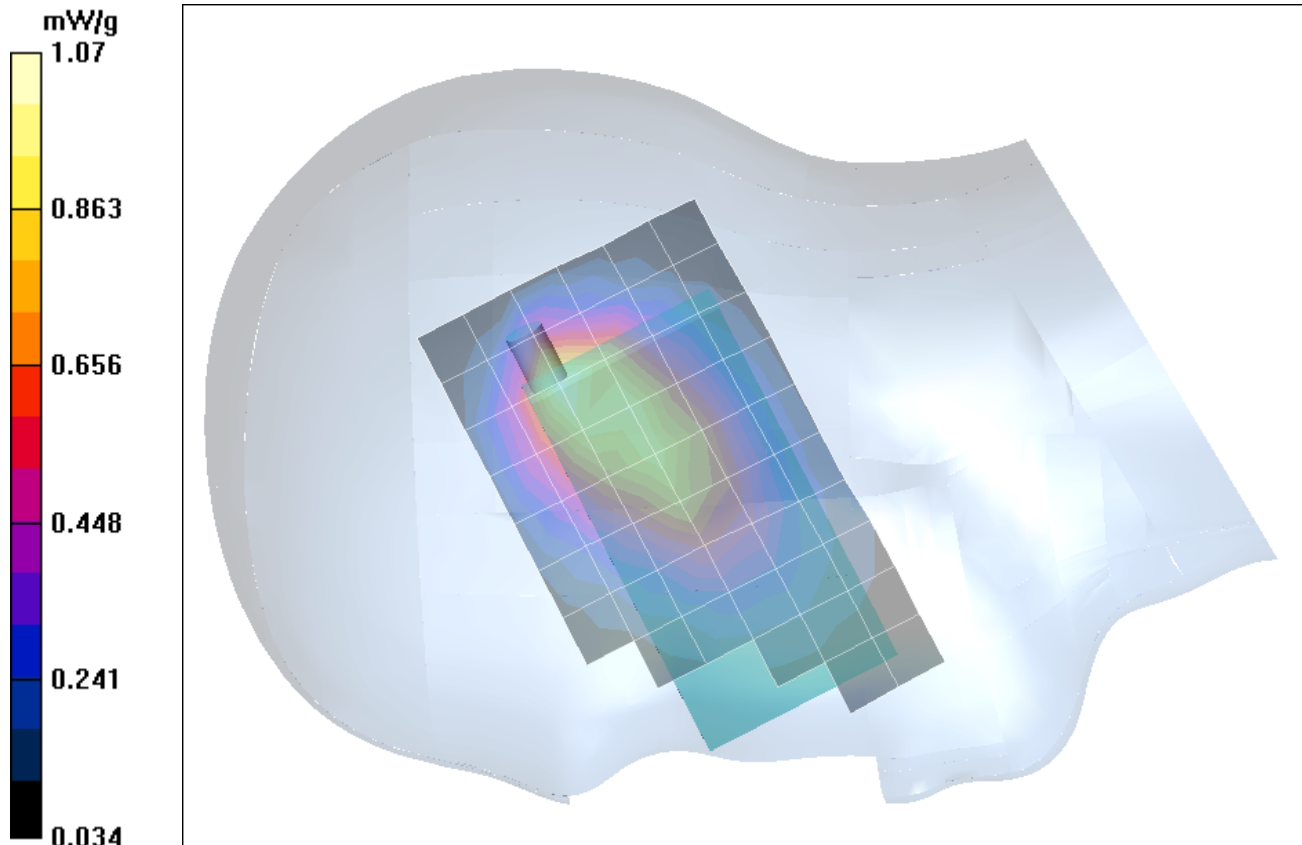
- Probe: ET3DV6 - SN1590; ConvF(6.71, 6.71, 6.71); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Head SAR - Cellular GSM - Right Ear - Tilt Position (15°) - Channel 128/Area Scan (7x11x1):

Measurement grid: dx=15mm, dy=15mm

Head SAR - Cellular GSM - Right Ear - Tilt Position (15°) - Channel 128/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 31.5 V/m; Power Drift = -0.0311 dB
 Peak SAR (extrapolated) = 2.33 W/kg
SAR(1 g) = 1.01 mW/g; SAR(10 g) = 0.657 mW/g



Date Tested: 07/28/04

Head SAR - Cellular GSM Voice Mode - High Channel - Right Ear - Tilt Position (15°)

DUT: palmOne Model: Treo 650; Type: Dual-Band PCS/Cellular GSM/GPRS Phone; Serial: SGXW07D4H00P

Ambient Temp: 23.8 °C; Fluid Temp: 23.6 °C; Barometric Pressure: 102.1 kPa; Humidity: 43%

Frequency: 848.8 MHz; Duty Cycle: 1:8.3
 RF Output Power: 32.2 dBm (Peak Conducted)
 Communication System: Cellular GSM (1 Time Slot)
 3.7V 1900mAh Li-ion Battery Pack (P/N: 167-10165-00)
 Medium: HSL835 ($\sigma = 0.90$ mho/m; $\epsilon_r = 40.5$; $\rho = 1000$ kg/m³)

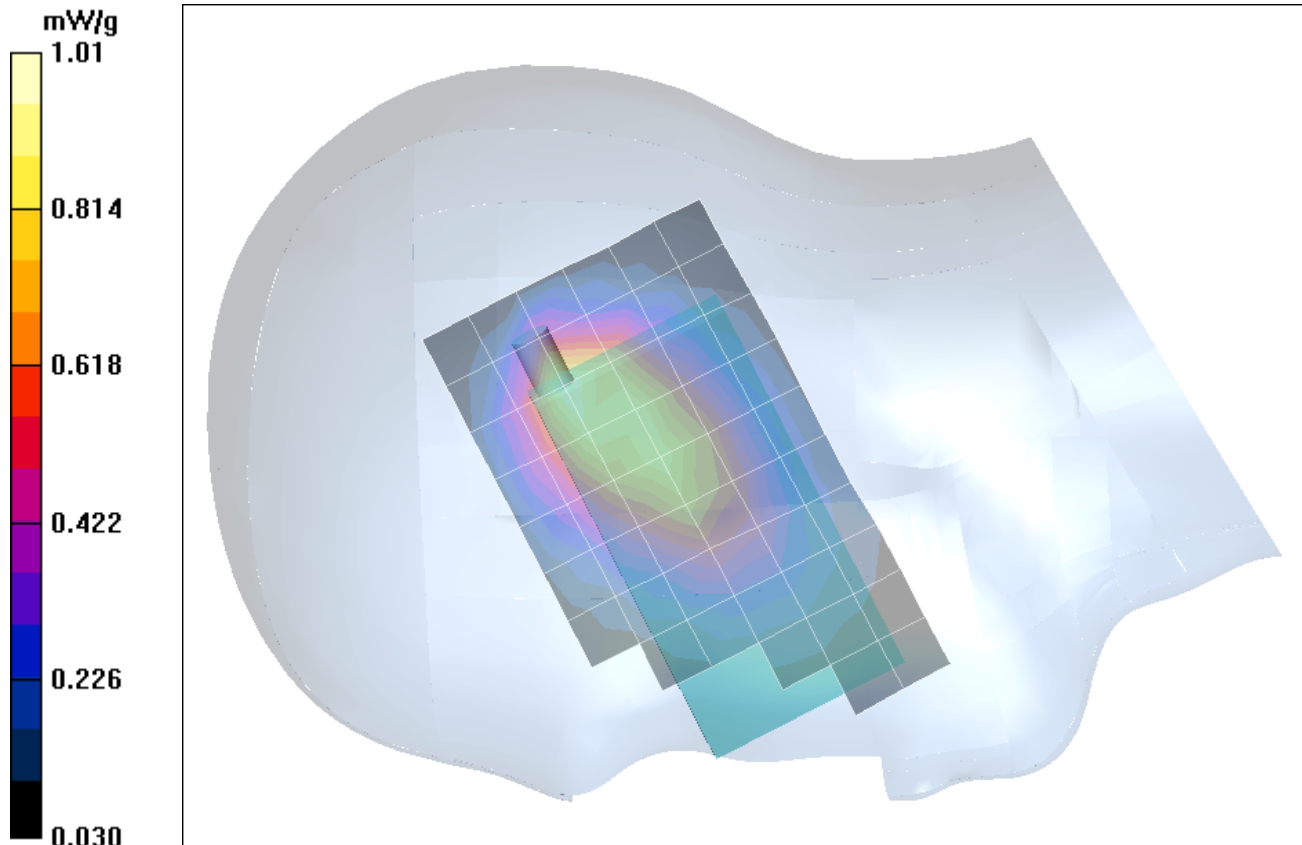
- Probe: ET3DV6 - SN1590; ConvF(6.71, 6.71, 6.71); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Head SAR - Cellular GSM - Right Ear - Tilt Position (15°) - Channel 251/Area Scan (7x11x1):

Measurement grid: dx=15mm, dy=15mm

Head SAR - Cellular GSM - Right Ear - Tilt Position (15°) - Channel 251/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 30.4 V/m; Power Drift = 0.00886 dB
 Peak SAR (extrapolated) = 2.14 W/kg
SAR(1 g) = 0.945 mW/g; SAR(10 g) = 0.621 mW/g



Date Tested: 07/28/04

Head SAR - Cellular GSM Voice Mode - Mid Channel - Left Ear - Cheek/Touch Position

DUT: palmOne Model: Treo 650; Type: Dual-Band PCS/Cellular GSM/GPRS Phone; Serial: SGXW07D4H00P

Ambient Temp: 23.8 °C; Fluid Temp: 23.6 °C; Barometric Pressure: 102.1 kPa; Humidity: 43%

Frequency: 836.6 MHz; Duty Cycle: 1:8.3
 RF Output Power: 32.1 dBm (Peak Conducted)
 Communication System: Cellular GSM (1 Time Slot)
 3.7V 1900mAh Li-ion Battery Pack (P/N: 167-10165-00)
 Medium: HSL835 ($\sigma = 0.90 \text{ mho/m}$; $\epsilon_r = 40.5$; $\rho = 1000 \text{ kg/m}^3$)

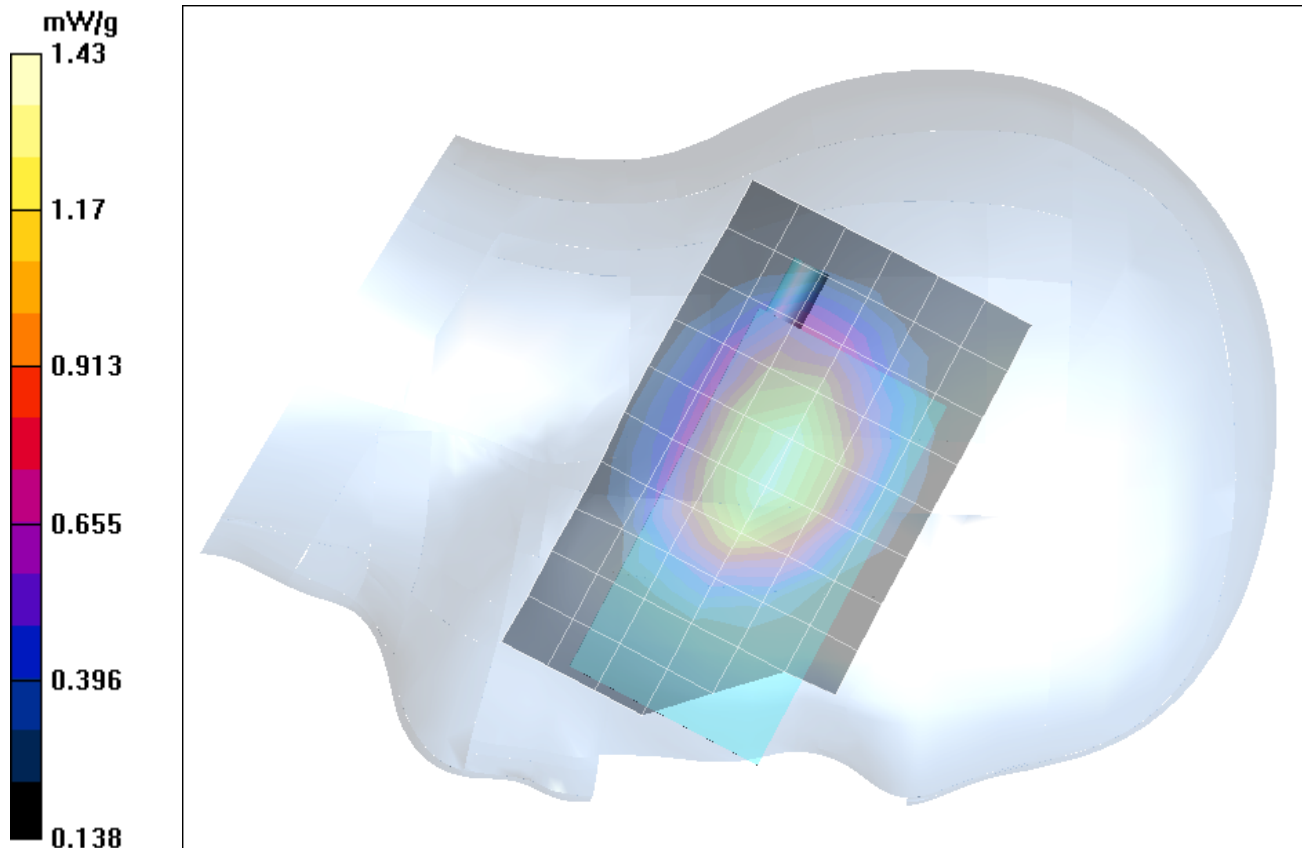
- Probe: ET3DV6 - SN1590; ConvF(6.71, 6.71, 6.71); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Head SAR - Cellular GSM - Left Ear - Cheek/Touch Position - Channel 190/Area Scan (7x11x1):

Measurement grid: dx=15mm, dy=15mm

Head SAR - Cellular GSM - Left Ear - Cheek/Touch Position - Channel 190/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 32 V/m; Power Drift = -0.133 dB
 Peak SAR (extrapolated) = 1.78 W/kg
SAR(1 g) = 1.35 mW/g; SAR(10 g) = 0.959 mW/g



Date Tested: 07/28/04

Head SAR - Cellular GSM Voice Mode - Low Channel - Left Ear - Cheek/Touch Position

DUT: palmOne Model: Treo 650; Type: Dual-Band PCS/Cellular GSM/GPRS Phone; Serial: SGXW07D4H00P

Ambient Temp: 23.8 °C; Fluid Temp: 23.6 °C; Barometric Pressure: 102.1 kPa; Humidity: 43%

Frequency: 824.2 MHz; Duty Cycle: 1:8.3

RF Output Power: 31.9 dBm (Peak Conducted)

Communication System: Cellular GSM (1 Time Slot)

3.7V 1900mAh Li-ion Battery Pack (P/N: 167-10165-00)

Medium: HSL835 ($\sigma = 0.90$ mho/m; $\epsilon_r = 40.5$; $\rho = 1000$ kg/m³)

- Probe: ET3DV6 - SN1590; ConvF(6.71, 6.71, 6.71); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Head SAR - Cellular GSM - Left Ear - Cheek/Touch Position - Channel 128/Area Scan (7x11x1):

Measurement grid: dx=15mm, dy=15mm

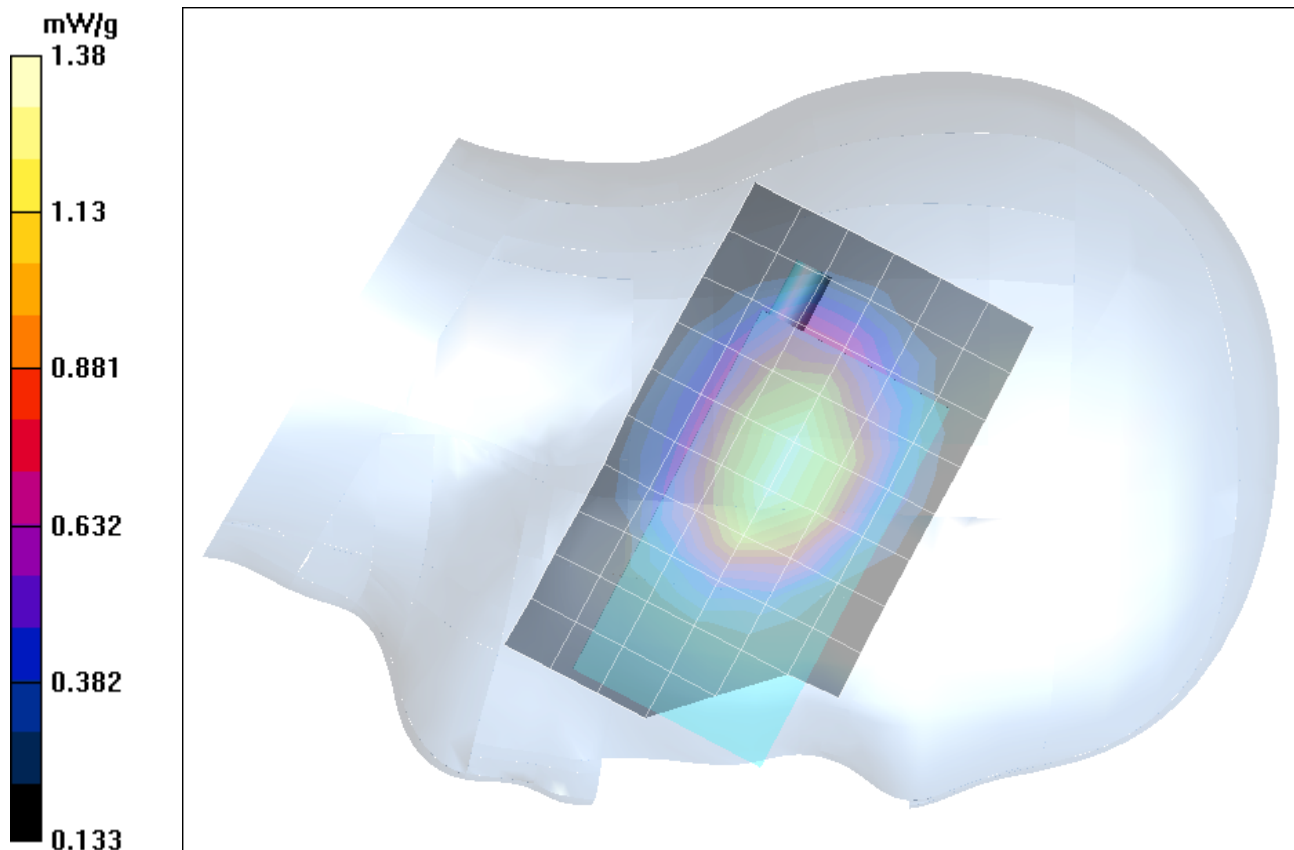
Head SAR - Cellular GSM - Left Ear - Cheek/Touch Position - Channel 128/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 32.4 V/m; Power Drift = -0.143 dB

Peak SAR (extrapolated) = 1.72 W/kg

SAR(1 g) = 1.31 mW/g; SAR(10 g) = 0.929 mW/g



Date Tested: 07/28/04

Head SAR - Cellular GSM Voice Mode - High Channel - Left Ear - Cheek/Touch Position

DUT: palmOne Model: Treo 650; Type: Dual-Band PCS/Cellular GSM/GPRS Phone; Serial: SGXW07D4H00P

Ambient Temp: 23.8 °C; Fluid Temp: 23.6 °C; Barometric Pressure: 102.1 kPa; Humidity: 43%

Frequency: 848.8 MHz; Duty Cycle: 1:8.3
 RF Output Power: 32.2 dBm (Peak Conducted)
 Communication System: Cellular GSM (1 Time Slot)
 3.7V 1900mAh Li-ion Battery Pack (P/N: 167-10165-00)
 Medium: HSL835 ($\sigma = 0.90$ mho/m; $\epsilon_r = 40.5$; $\rho = 1000$ kg/m³)

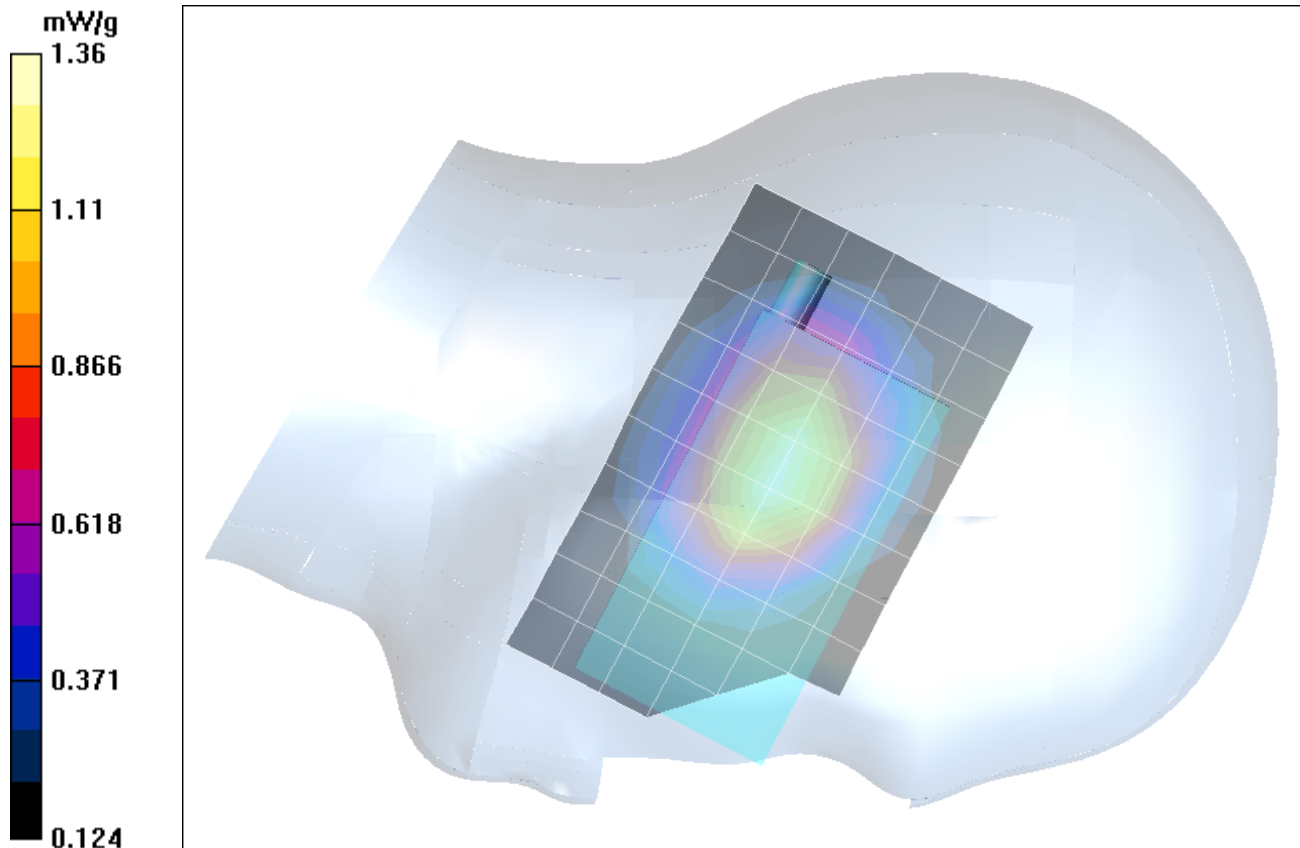
- Probe: ET3DV6 - SN1590; ConvF(6.71, 6.71, 6.71); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Head SAR - Cellular GSM - Left Ear - Cheek/Touch Position - Channel 251/Area Scan (7x11x1):

Measurement grid: dx=15mm, dy=15mm

Head SAR - Cellular GSM - Left Ear - Cheek/Touch Position - Channel 251/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 31.2 V/m; Power Drift = -0.0673 dB
 Peak SAR (extrapolated) = 1.69 W/kg
SAR(1 g) = 1.28 mW/g; SAR(10 g) = 0.907 mW/g



Date Tested: 07/28/04

Head SAR - Cellular GSM Voice Mode - Mid Channel - Right Ear - Cheek/Touch Position With Aluminum Case Accessory (SKU#3202WW)

DUT: palmOne Model: Treo 650; Type: Dual-Band PCS/Cellular GSM/GPRS Phone; Serial: SGXW07D4H00P

Ambient Temp: 23.8 °C; Fluid Temp: 23.6 °C; Barometric Pressure: 102.1 kPa; Humidity: 43%

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

RF Output Power: 32.1 dBm (Peak Conducted)

Communication System: Cellular GSM (1 Time Slot)

3.7V 1900mAh Li-ion Battery Pack (P/N: 167-10165-00)

Medium: HSL835 ($\sigma = 0.90 \text{ mho/m}$; $\epsilon_r = 40.5$; $\rho = 1000 \text{ kg/m}^3$)

- Probe: ET3DV6 - SN1590; ConvF(6.71, 6.71, 6.71); Calibrated: 24/05/2004

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

- Electronics: DAE3 Sn370; Calibrated: 14/05/2004

- Phantom: SAM 4.0; Type: Fiberglass; Serial: 1033

- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Head SAR - Cellular GSM - Right Ear - Cheek/Touch Position - Channel 190/Area Scan (7x11x1):

Measurement grid: dx=15mm, dy=15mm

Head SAR - Cellular GSM - Right Ear - Cheek/Touch Position - Channel 190/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19 V/m; Power Drift = -0.0148 Db

Peak SAR (extrapolated) = 0.557 W/kg

SAR(1 g) = 0.359 mW/g; SAR(10 g) = 0.240 mW/g

Head SAR - Cellular GSM - Right Ear - Cheek/Touch Position - Channel 190/Zoom Scan (7x7x7)/Cube 1:

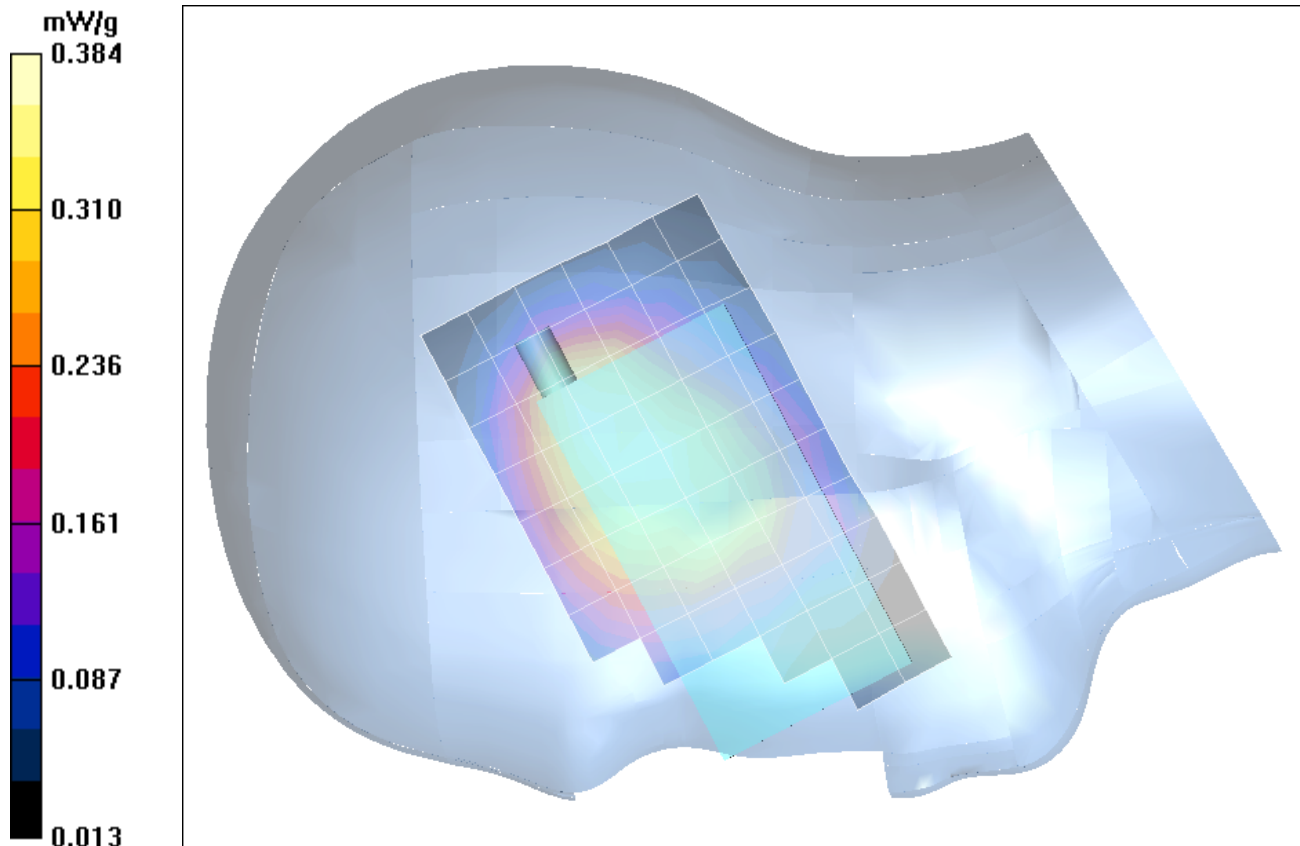
Peak SAR (extrapolated) = 0.505 W/kg

SAR(1 g) = 0.361 mW/g; SAR(10 g) = 0.267 mW/g

Head SAR - Cellular GSM - Right Ear - Cheek/Touch Position - Channel 190/Zoom Scan (7x7x7)/Cube 2:

Peak SAR (extrapolated) = 0.492 W/kg

SAR(1 g) = 0.335 mW/g; SAR(10 g) = 0.248 mW/g



Date Tested: 07/28/04

Head SAR - Cellular GSM Voice Mode - Mid Channel - Right Ear - Cheek/Touch Position Simultaneous Transmit with Co-located Bluetooth Transmitter (Broadcom BCM-2035)

DUT: palmOne Model: Treo 650; Type: Dual-Band PCS/Cellular GSM/GPRS Phone; Serial: SGXW07D4H00P
Ambient Temp: 23.8 °C; Fluid Temp: 23.6 °C; Barometric Pressure: 102.1 kPa; Humidity: 43%

3.7V 1900mAh Li-ion Battery Pack (P/N: 167-10165-00)
Frequency: 836.6 MHz; Duty Cycle: 1:8.3
RF Output Power: 32.1 dBm (Peak Conducted)
Communication System: Cellular GSM (1 Time Slot)
Frequency: 2441 MHz; Duty Cycle: 1:1 (Bluetooth)
RF Output Power: -5.1 dBm (Peak Conducted) Bluetooth
Communication System: Modulated Fixed Frequency (Bluetooth)
Medium: HSL835 ($\sigma = 0.90$ mho/m; $\epsilon_r = 40.5$; $\rho = 1000$ kg/m³)
- Probe: ET3DV6 - SN1590; ConvF(6.71, 6.71, 6.71); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Head SAR - Cellular GSM & Bluetooth - Right Ear - Cheek/Touch Position - Channel 190/Area Scan (7x11x1):

Measurement grid: dx=15mm, dy=15mm

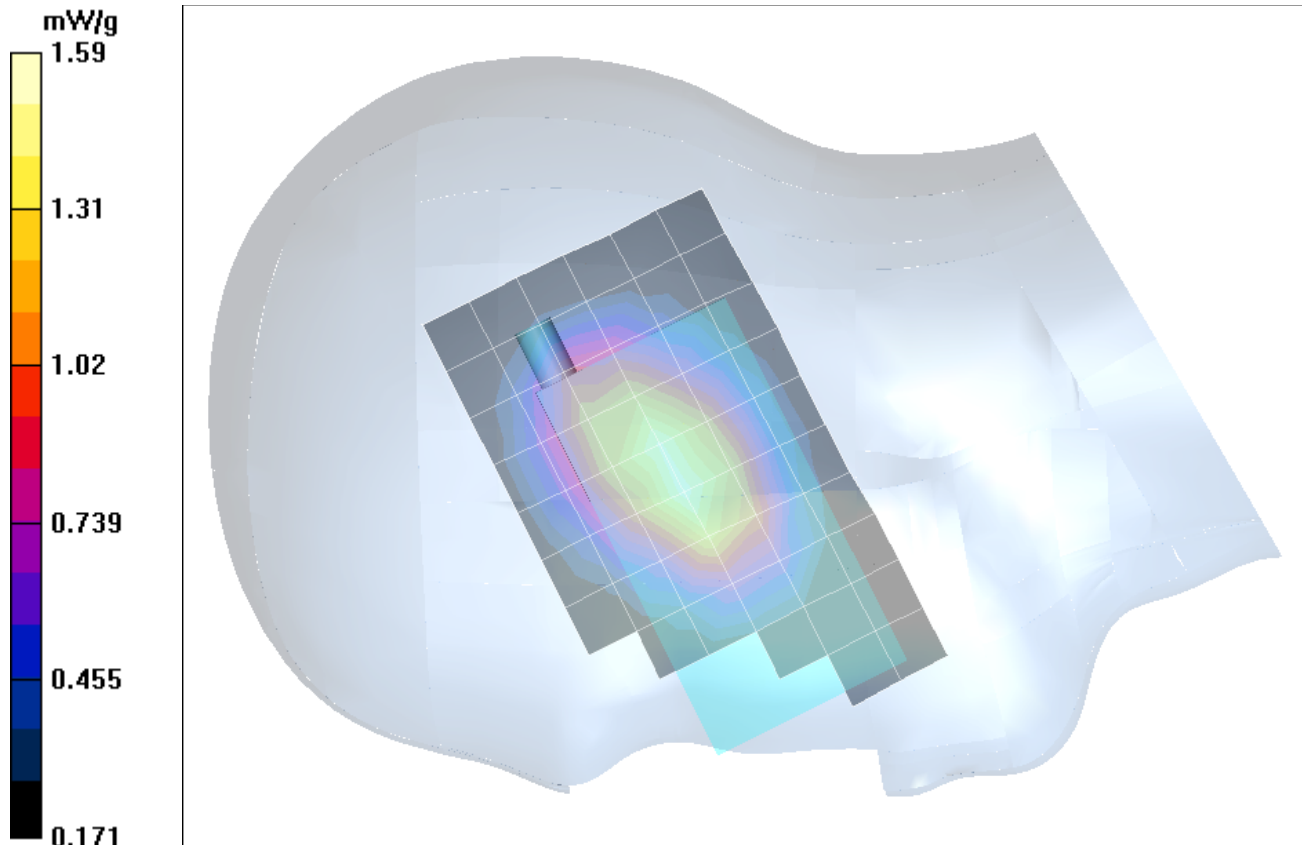
Head SAR - Cellular GSM & Bluetooth - Right Ear - Cheek/Touch Position - Channel 190/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

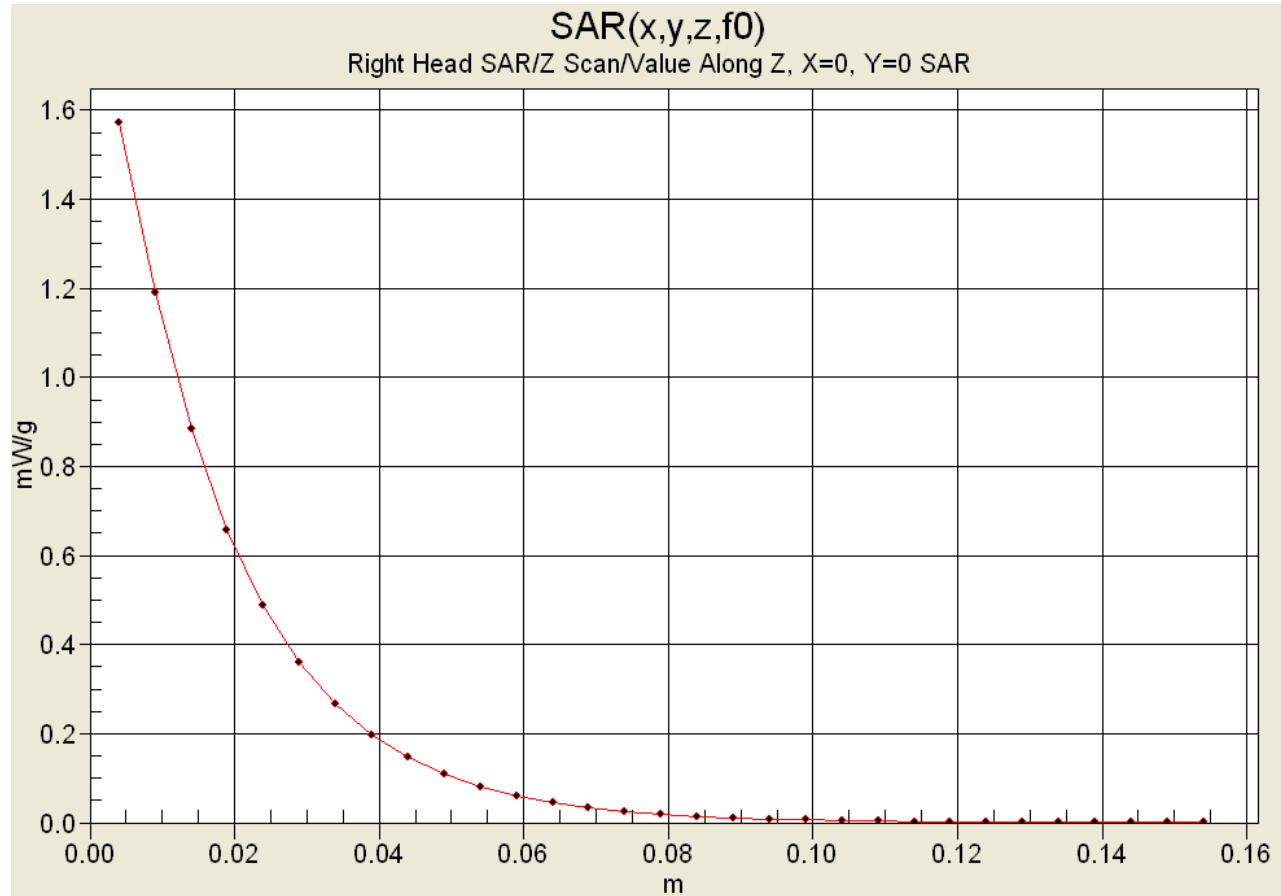
Reference Value = 33.7 V/m; Power Drift = -0.0188 dB

Peak SAR (extrapolated) = 2.02 W/kg

SAR(1 g) = 1.50 mW/g; SAR(10 g) = 1.06 mW/g



Z-Axis Scan



Date Tested: 07/29/04

Head SAR - Cellular GSM Voice Mode - Mid Channel - Left Ear - Tilt Position (15°)

DUT: palmOne Model: Treo 650; Type: Dual-Band PCS/Cellular GSM/GPRS Phone; Serial: SGXW07D4H00P

Ambient Temp: 23.8 °C; Fluid Temp: 22.5 °C; Barometric Pressure: 102.1 kPa; Humidity: 38%

Frequency: 836.6 MHz; Duty Cycle: 1:8.3
 RF Output Power: 32.1 dBm (Peak Conducted)
 Communication System: Cellular GSM (1 Time Slot)
 3.7V 1900mAh Li-ion Battery Pack (P/N: 167-10165-00)
 Medium: HSL835 ($\sigma = 0.90$ mho/m; $\epsilon_r = 40.4$; $\rho = 1000$ kg/m³)

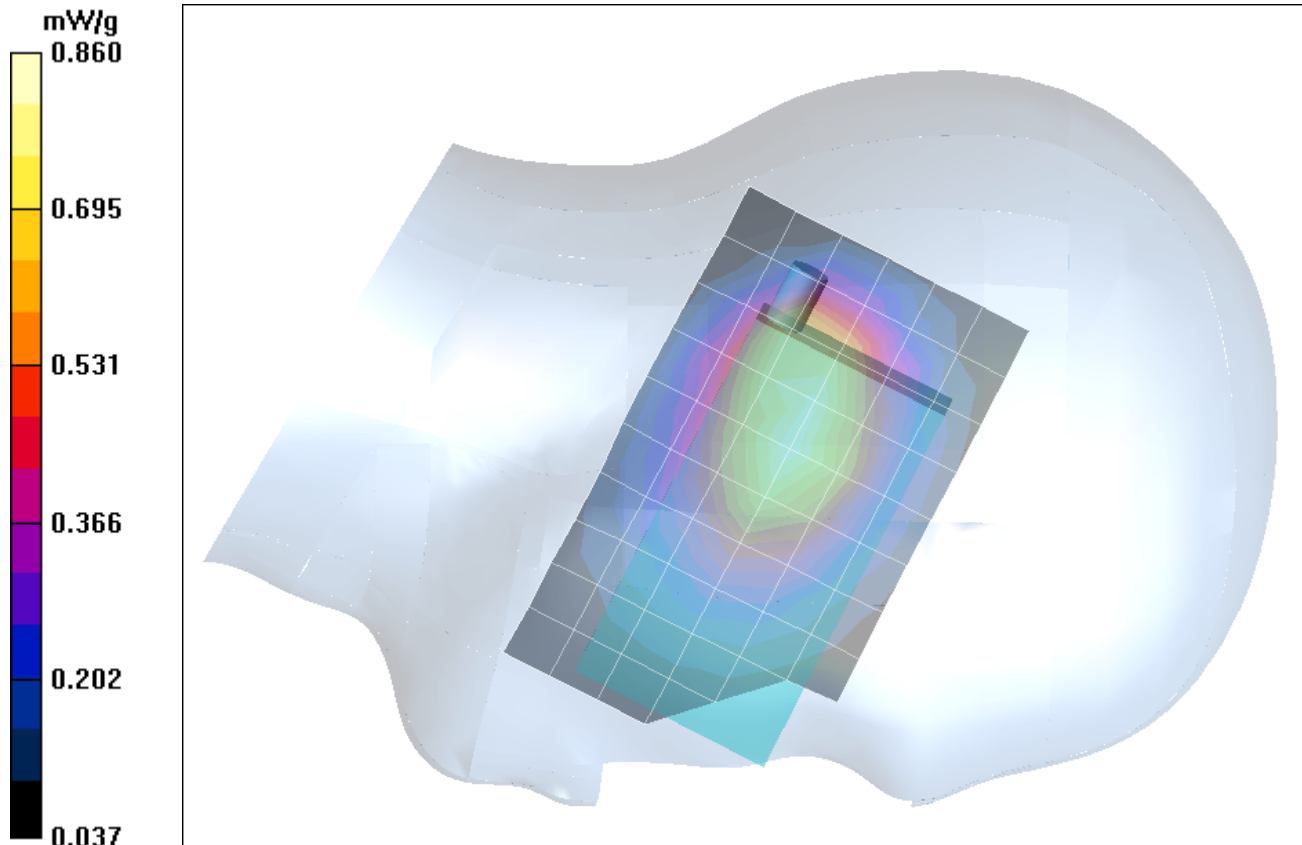
- Probe: ET3DV6 - SN1590; ConvF(6.71, 6.71, 6.71); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Head SAR - Cellular GSM - Left Ear - Tilt Position (15°) - Channel 190/Area Scan (7x11x1):

Measurement grid: dx=15mm, dy=15mm

Head SAR - Cellular GSM - Left Ear - Tilt Position (15°) - Channel 190/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 29.9 V/m; Power Drift = -0.0844 dB
 Peak SAR (extrapolated) = 1.17 W/kg
SAR(1 g) = 0.805 mW/g; SAR(10 g) = 0.563 mW/g



Z-Axis Scan

