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

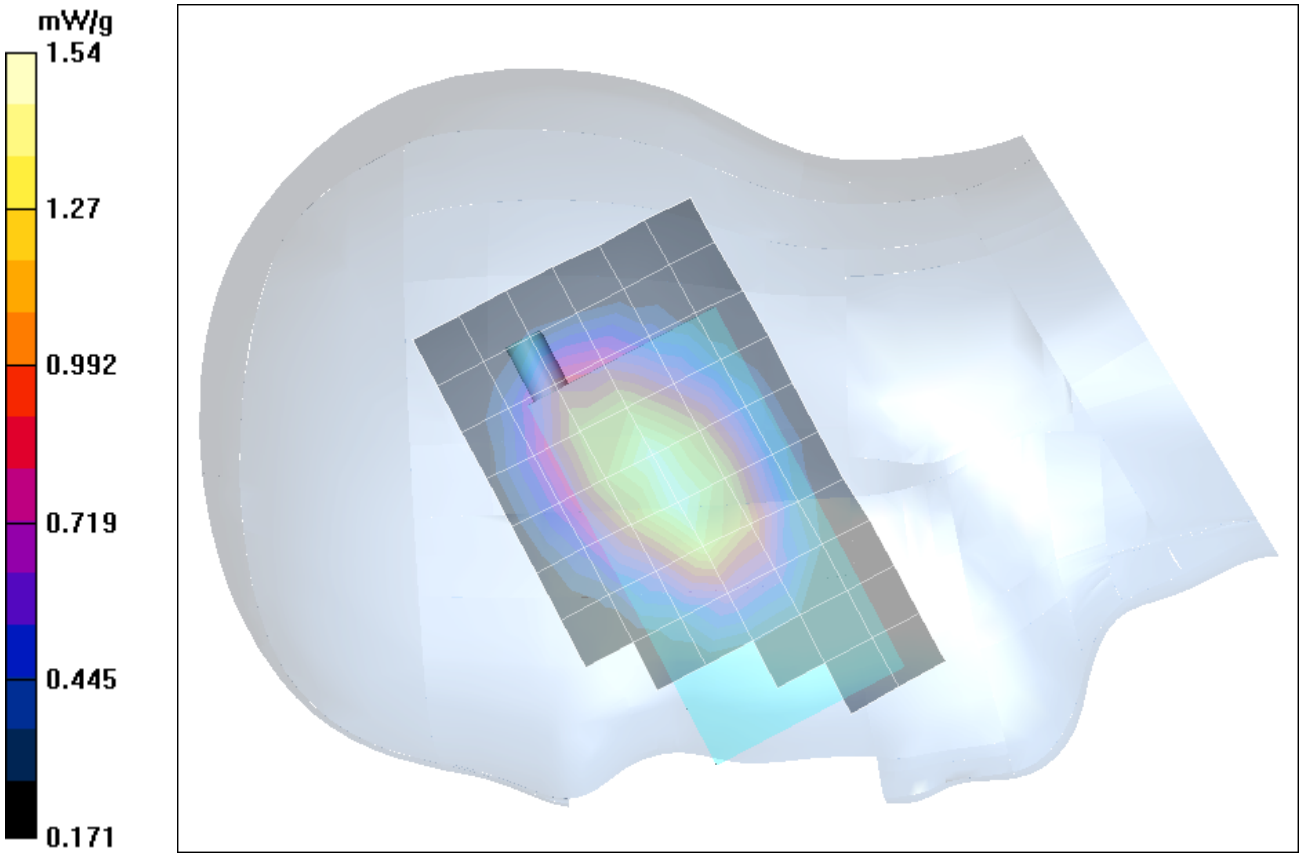
Ambient Temp: 23.8 °C; Fluid Temp: 23.6 °C; Barometric Pressure: 102.1 kPa; Humidity: 43%

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 (σ = 0.90 mho/m; ε_r = 40.5; ρ = 1000 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: Fiberglas; 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

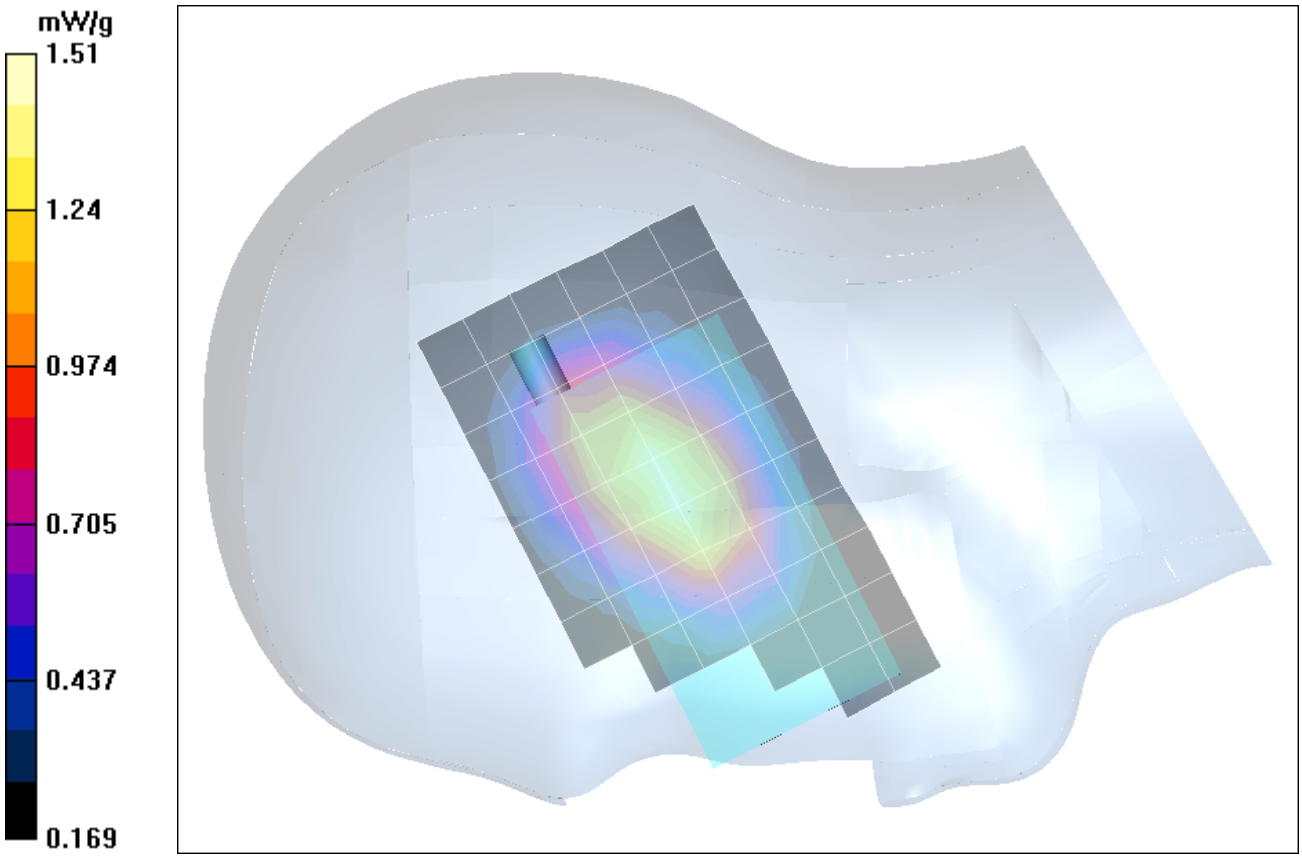
Ambient Temp: 23.8 °C; Fluid Temp: 23.6 °C; Barometric Pressure: 102.1 kPa; Humidity: 43%

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 (σ = 0.90 mho/m; ε_r = 40.5; ρ = 1000 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: Fiberglas; 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

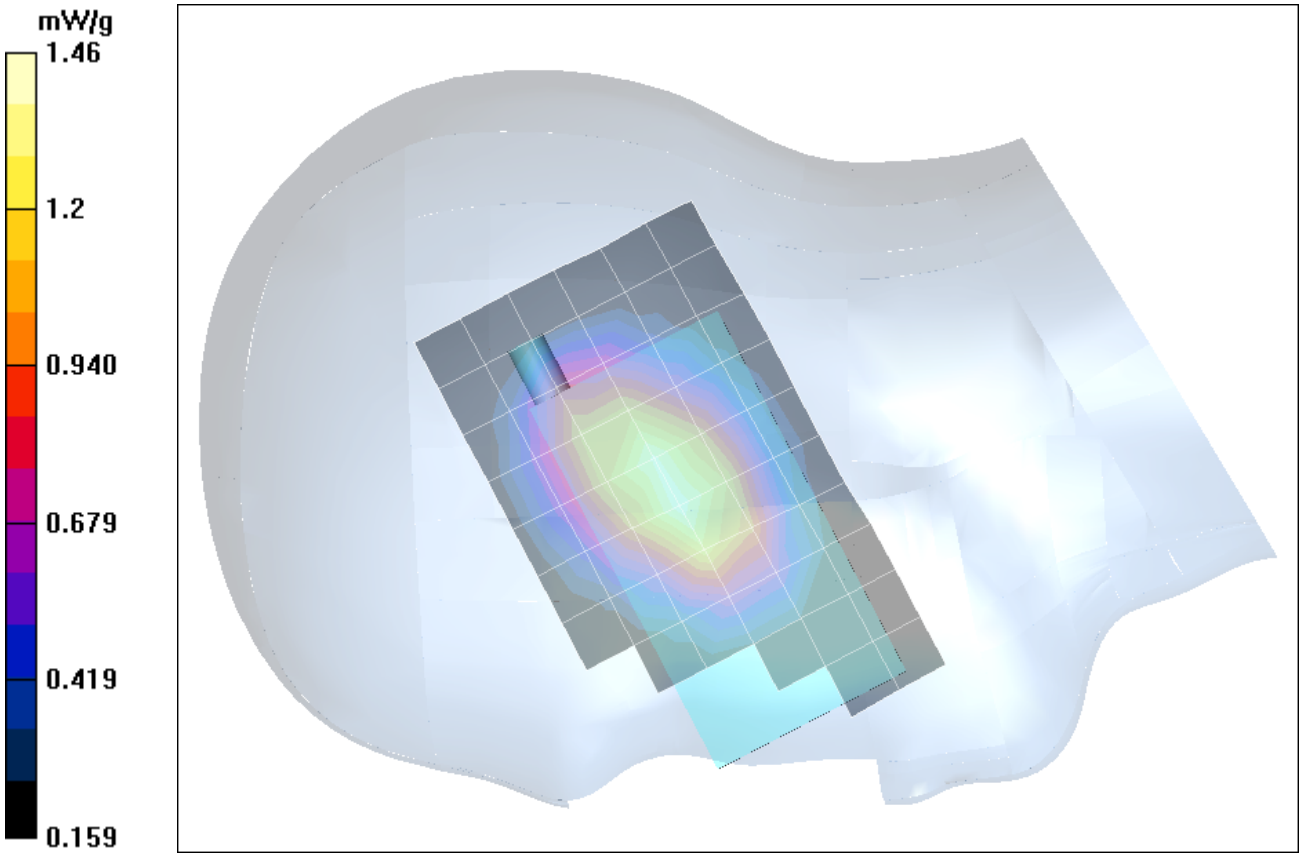
Ambient Temp: 23.8 °C; Fluid Temp: 23.6 °C; Barometric Pressure: 102.1 kPa; Humidity: 43%

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 (σ = 0.90 mho/m; ε_r = 40.5; ρ = 1000 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: Fiberglas; 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

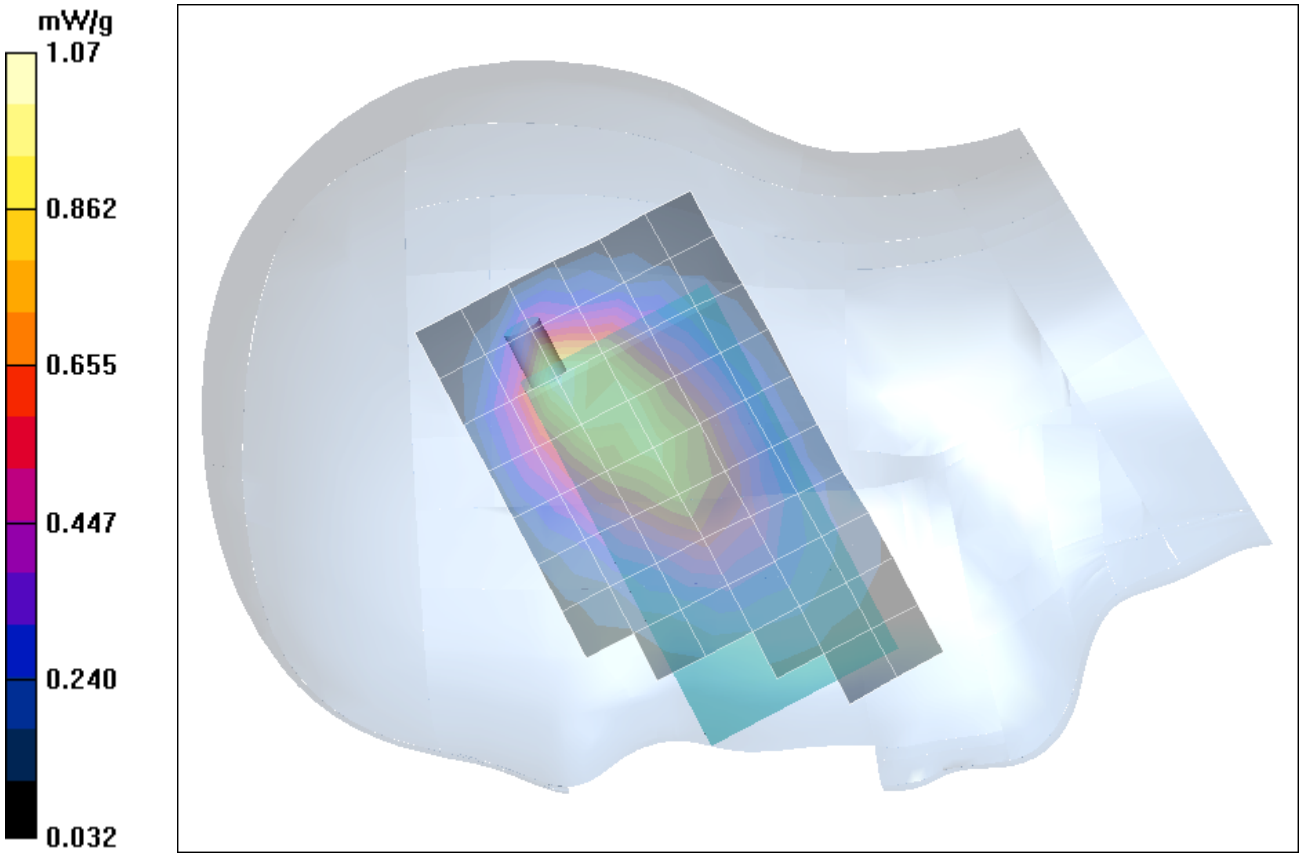
Ambient Temp: 23.8 °C; Fluid Temp: 23.6 °C; Barometric Pressure: 102.1 kPa; Humidity: 43%

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 (σ = 0.90 mho/m; ε_r = 40.5; ρ = 1000 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: Fiberglas; 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

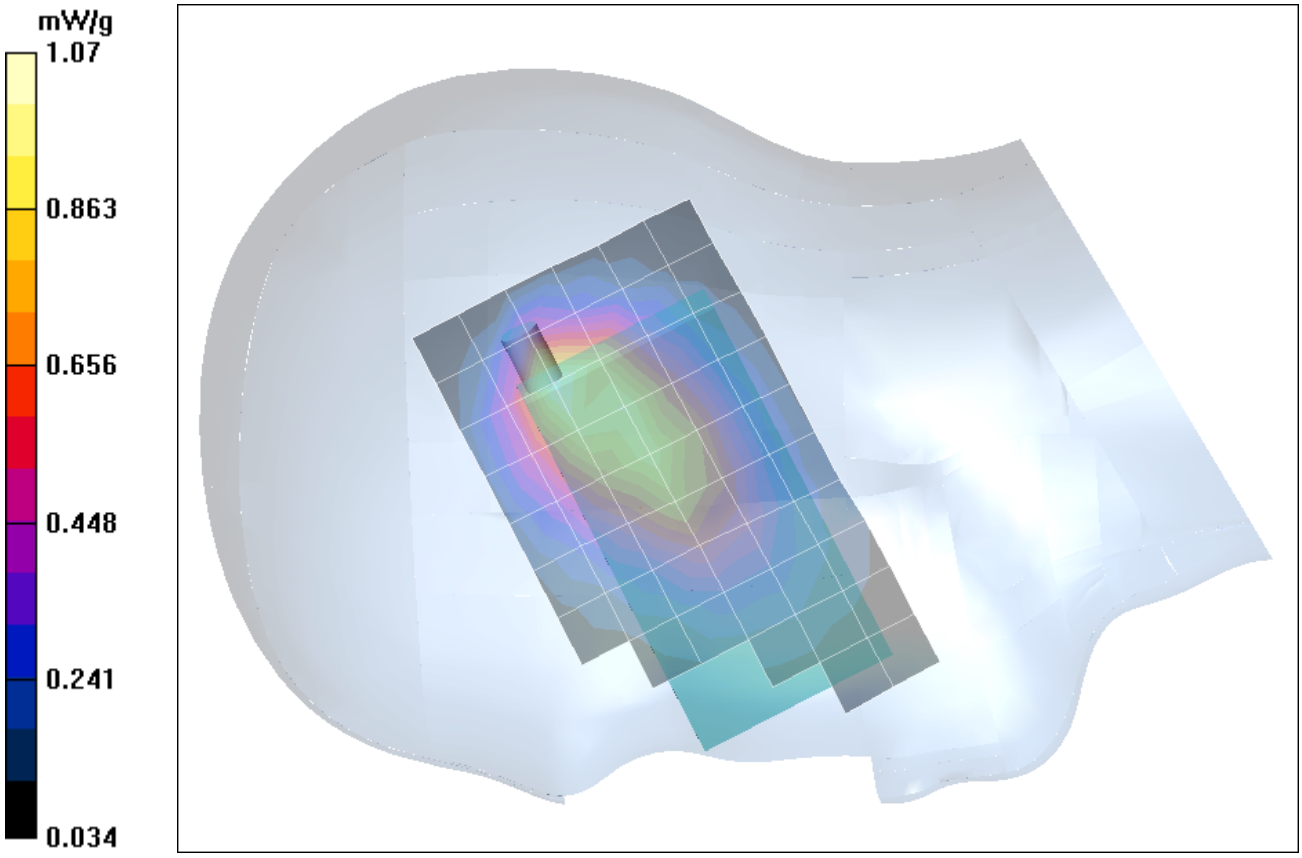
Ambient Temp: 23.8 °C; Fluid Temp: 23.6 °C; Barometric Pressure: 102.1 kPa; Humidity: 43%

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 (σ = 0.90 mho/m; ε_r = 40.5; ρ = 1000 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: Fiberglas; 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

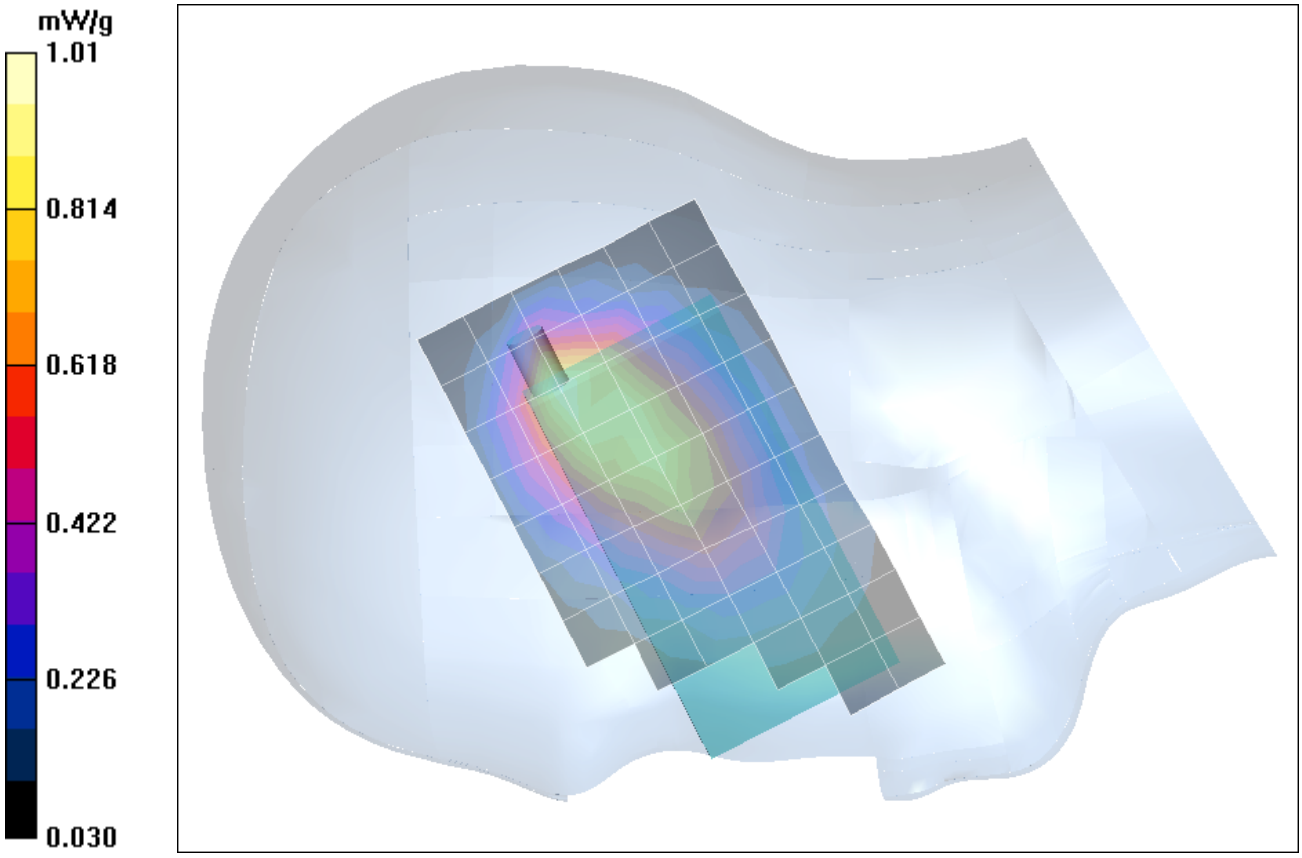
Ambient Temp: 23.8 °C; Fluid Temp: 23.6 °C; Barometric Pressure: 102.1 kPa; Humidity: 43%

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 (σ = 0.90 mho/m; ε_r = 40.5; ρ = 1000 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: Fiberglas; 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

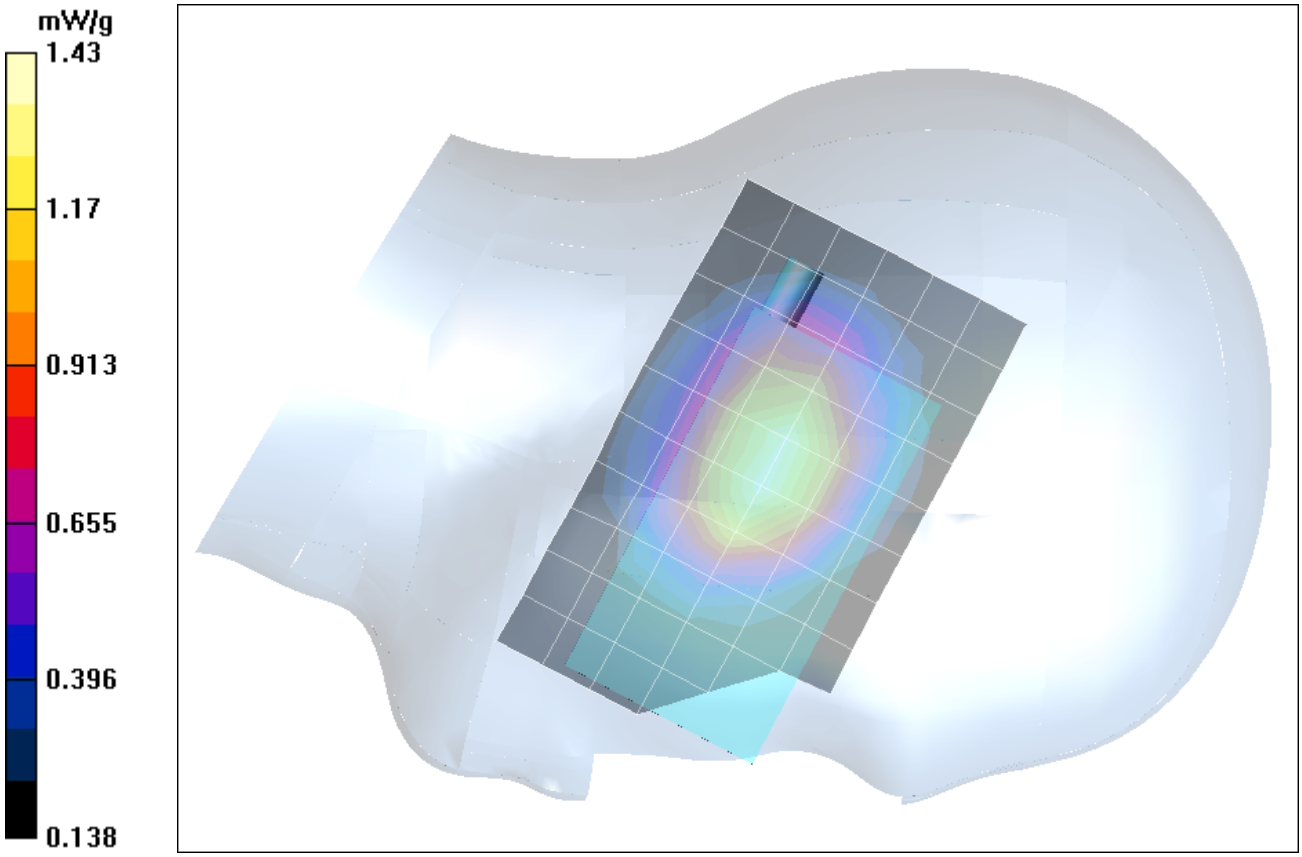
Ambient Temp: 23.8 °C; Fluid Temp: 23.6 °C; Barometric Pressure: 102.1 kPa; Humidity: 43%

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 (σ = 0.90 mho/m; ε_r = 40.5; ρ = 1000 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: 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 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

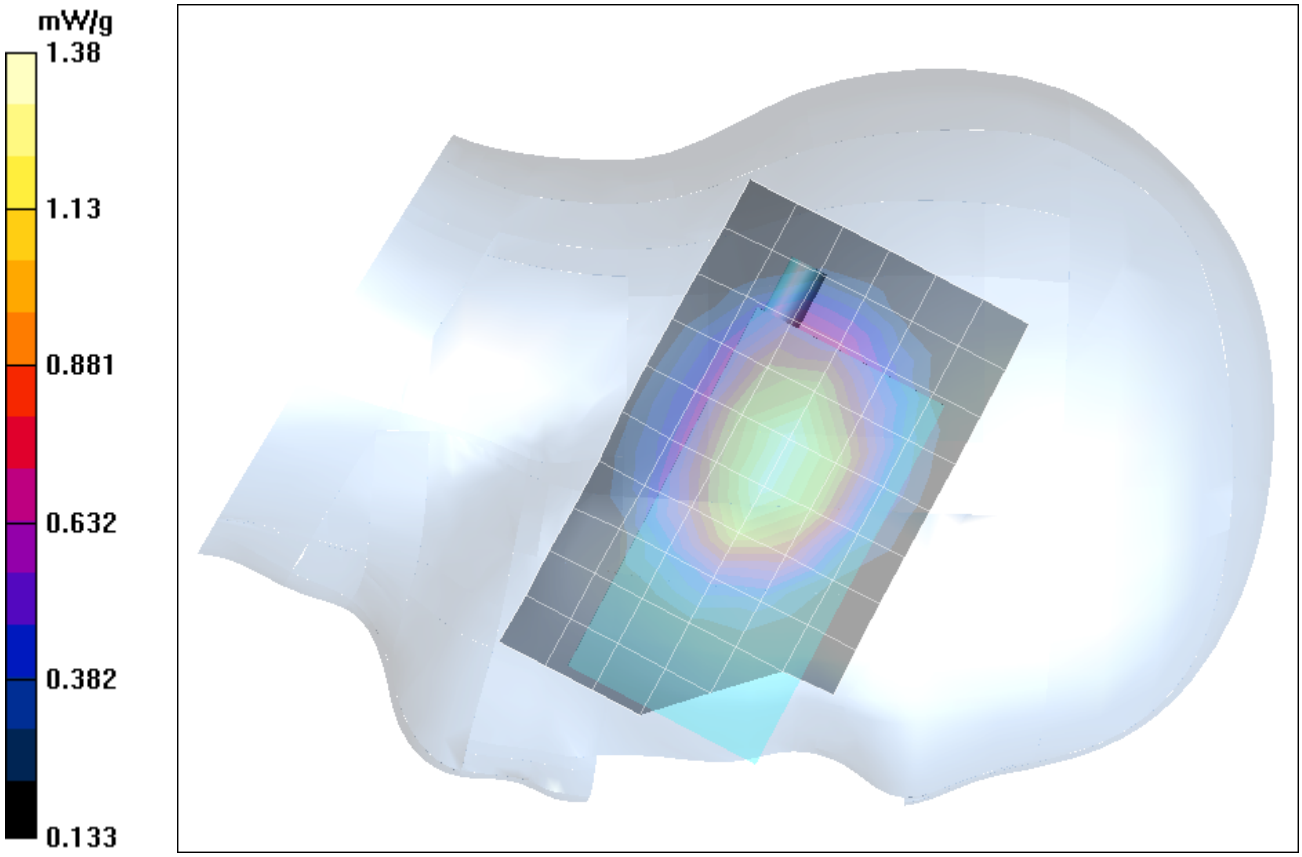
Ambient Temp: 23.8 °C; Fluid Temp: 23.6 °C; Barometric Pressure: 102.1 kPa; Humidity: 43%

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 (σ = 0.90 mho/m; ε_r = 40.5; ρ = 1000 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: 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

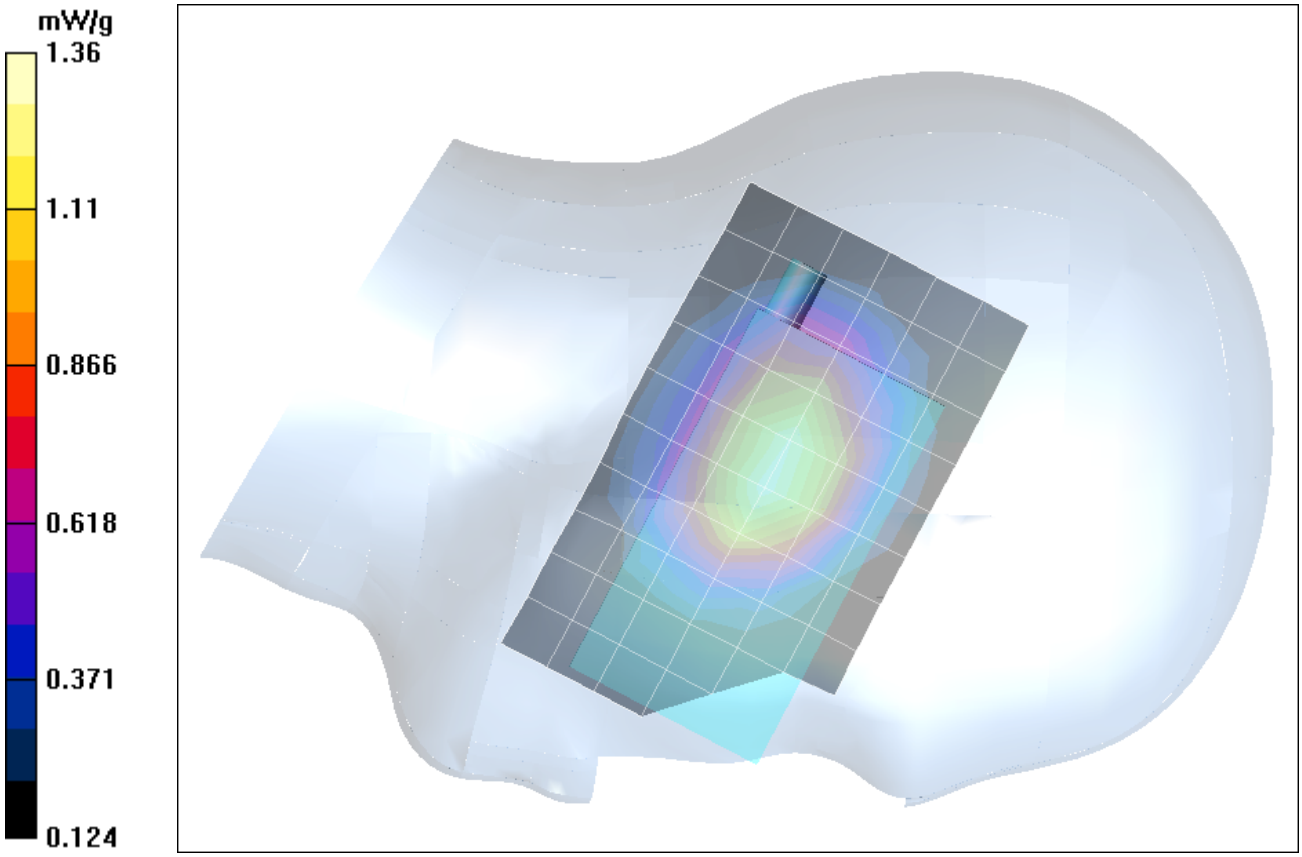
Ambient Temp: 23.8 °C; Fluid Temp: 23.6 °C; Barometric Pressure: 102.1 kPa; Humidity: 43%

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 (σ = 0.90 mho/m; ε_r = 40.5; ρ = 1000 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: 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

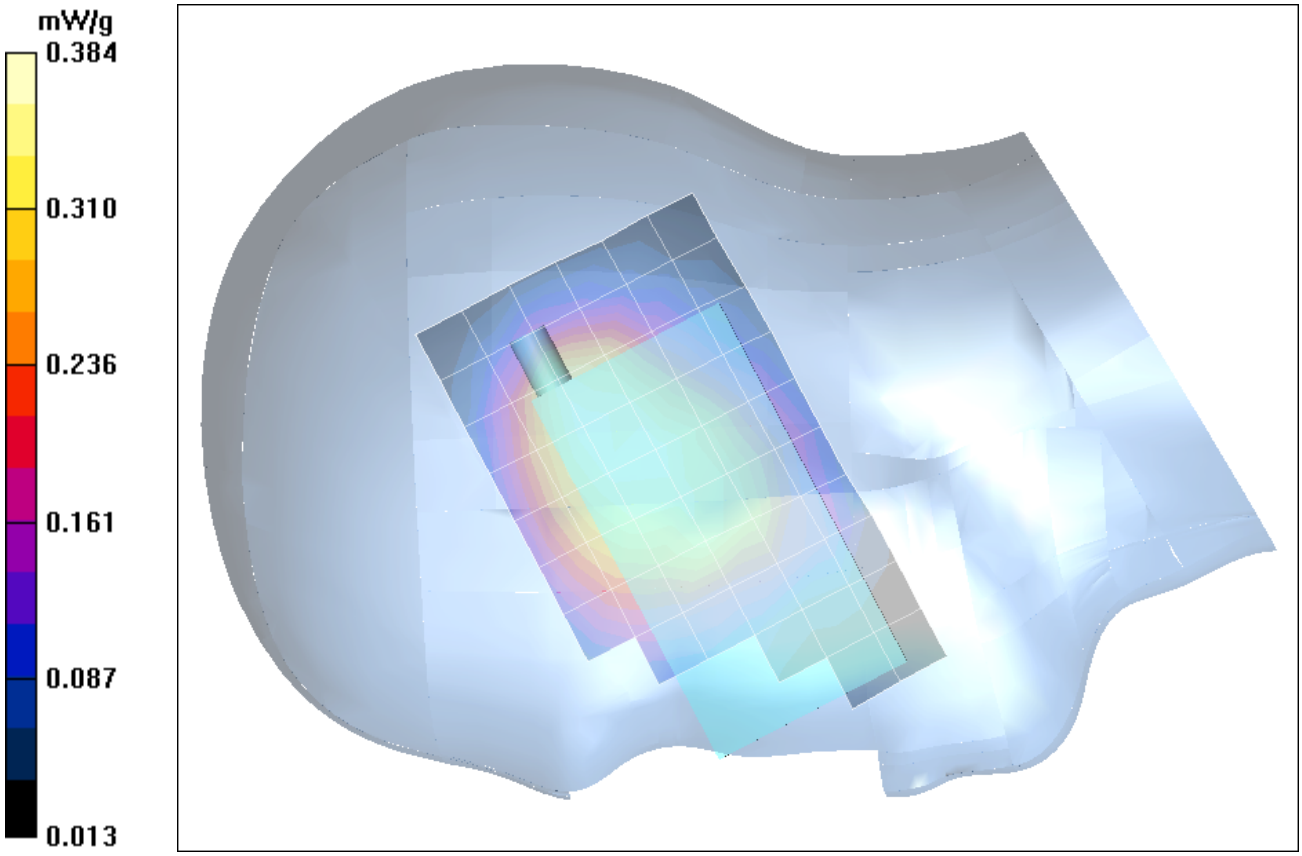


Date Tested: 07/28/04

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 (σ = 0.90 mho/m; ε_r = 40.5; ρ = 1000 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: Fiberglas; 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



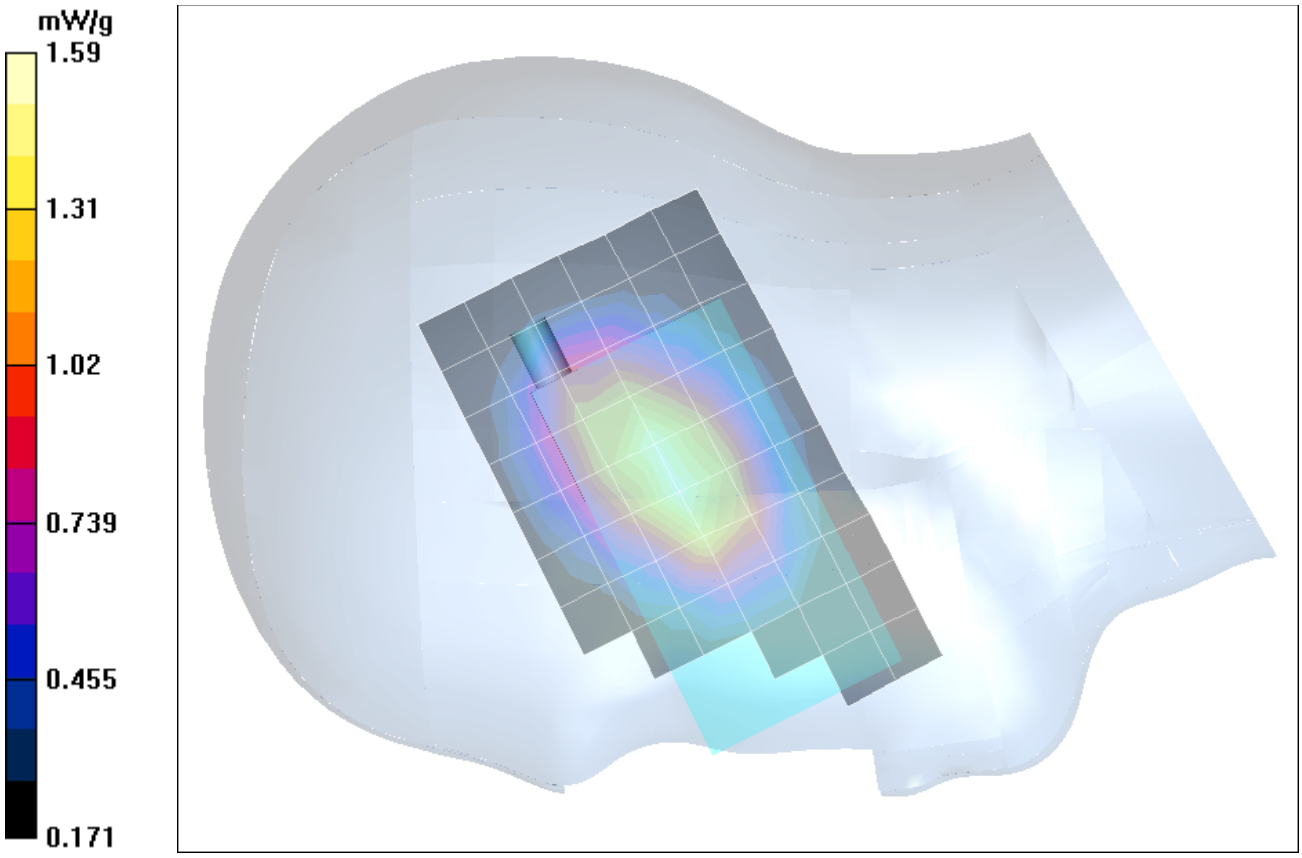
Date Tested: 07/28/04

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

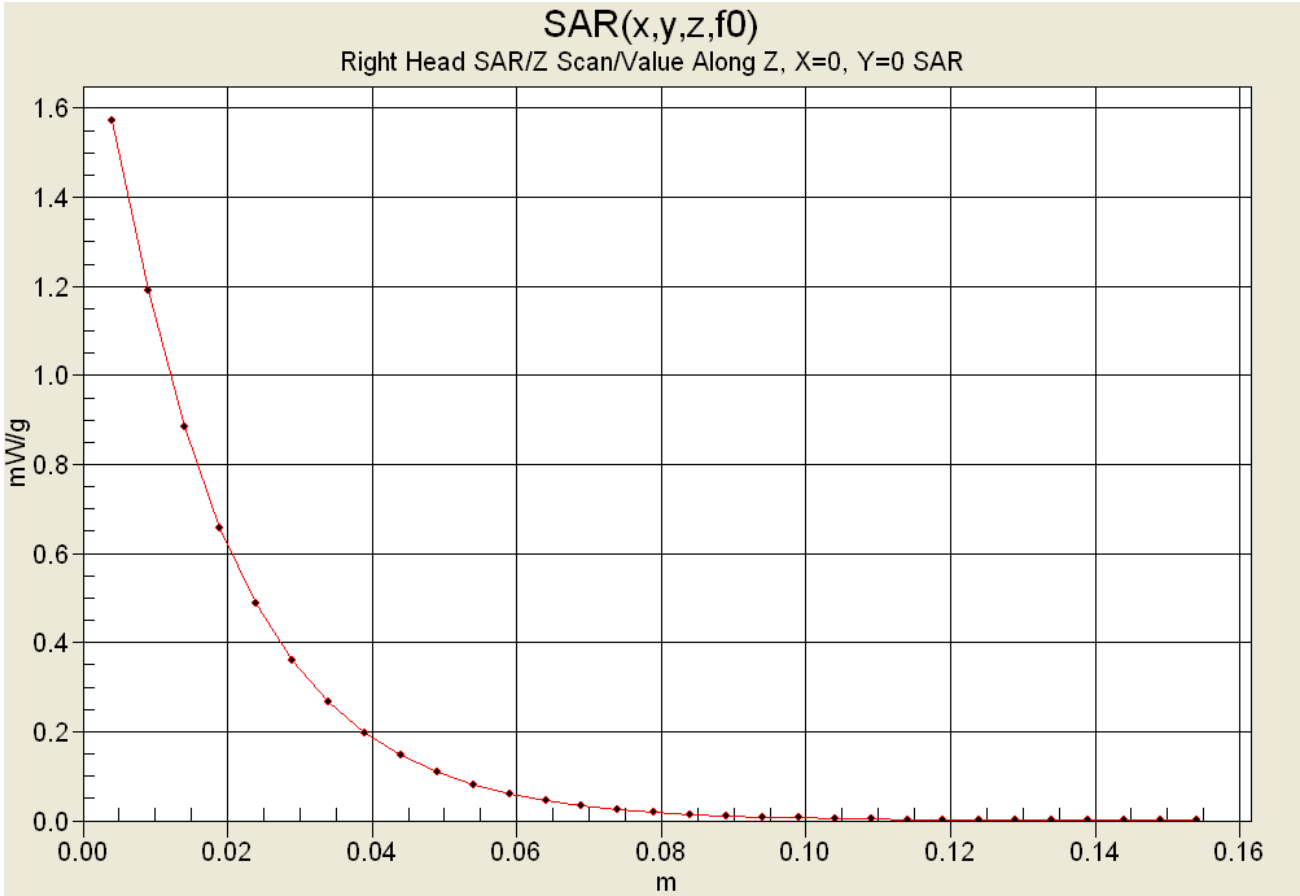
DUT: palmOne Model: Treo 650; Type: Dual-Band PCS/Cellular GSM/GPRS Phone; Serial: SGXW07D4H00P
Ambient Temp: 23.8 °C; Fluid Temp: 23.6 °C; Barometric Pressure: 102.1 kPa; Humidity: 43%

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 (σ = 0.90 mho/m; ε_r = 40.5; ρ = 1000 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: Fiberglas; 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


SAR(x,y,z,f0)
Right Head SAR/Z Scan/Value Along Z, X=0, Y=0 SAR
mW/g
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
m

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

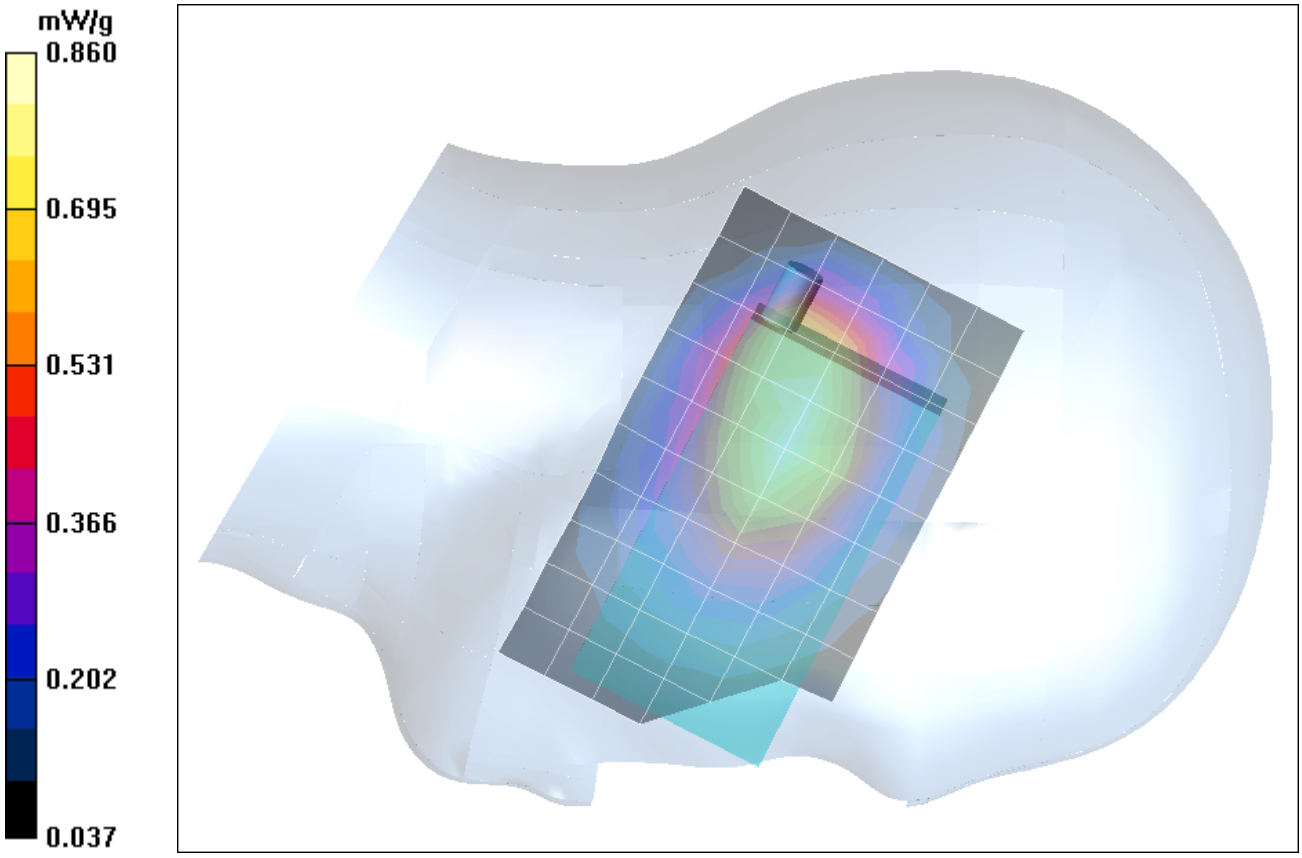
Ambient Temp: 23.8 °C; Fluid Temp: 22.5 °C; Barometric Pressure: 102.1 kPa; Humidity: 38%

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 (σ = 0.90 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3)

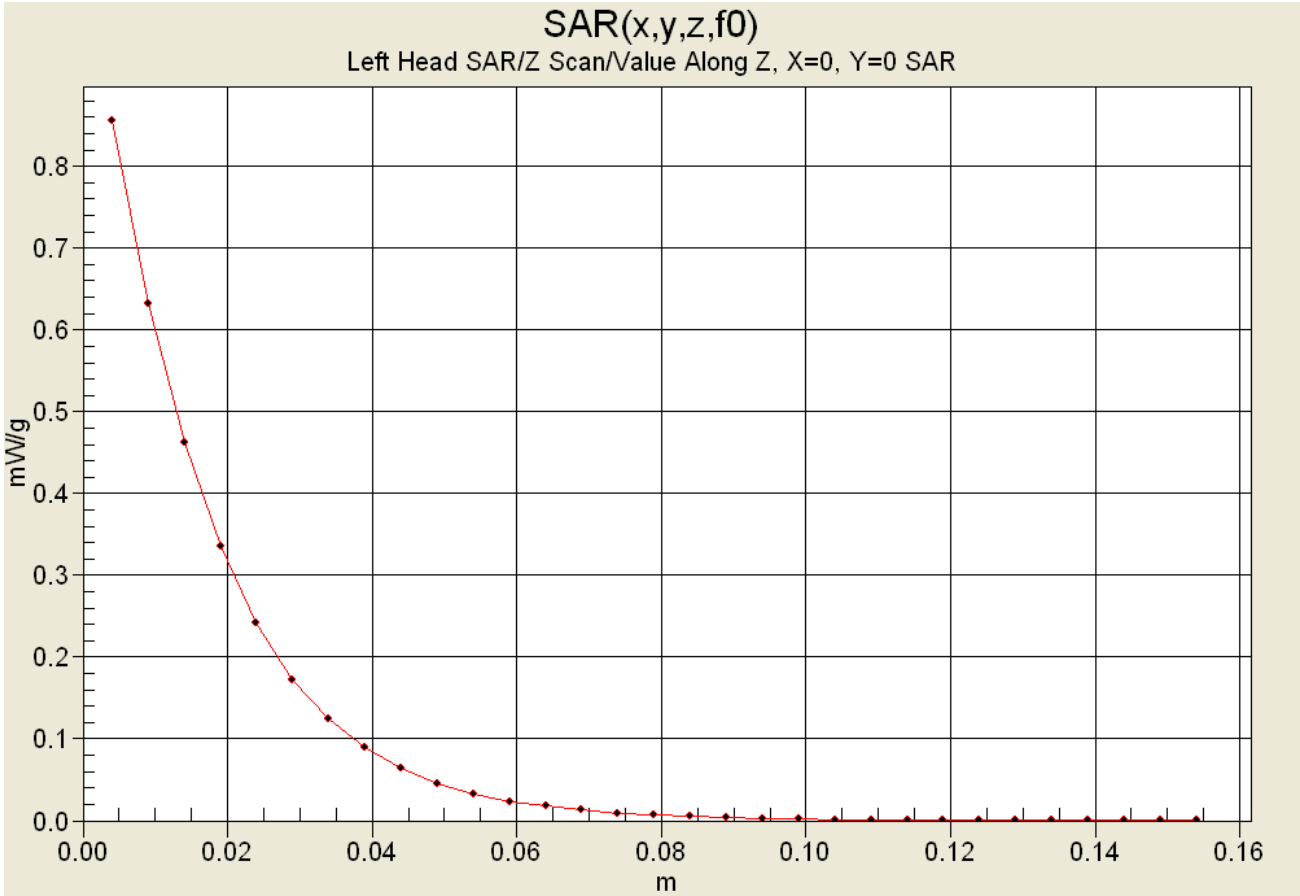
- Probe: ET3DV6 - SN1590; ConvF(6.71, 6.71, 6.71); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD,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


SAR(x,y,z,f0)
Left Head SAR/Z Scan/Value Along Z, X=0, Y=0 SAR
mW/g
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
m