APPENDIX B: SAR Test Data

LG Electronics Inc.

DUT: KP110a ;Type: Dual-Band Mobile Phone; Serial:#1

Communication System: GSM 850; Frequency: 836.60 MHz;Duty Cycle: 1:8.3
Medium: Head 837 MHz;(σ = 0.898mho/m; ε_r = 41.3; ρ = 1000 kg/m^3)
Phantom section: Right Section

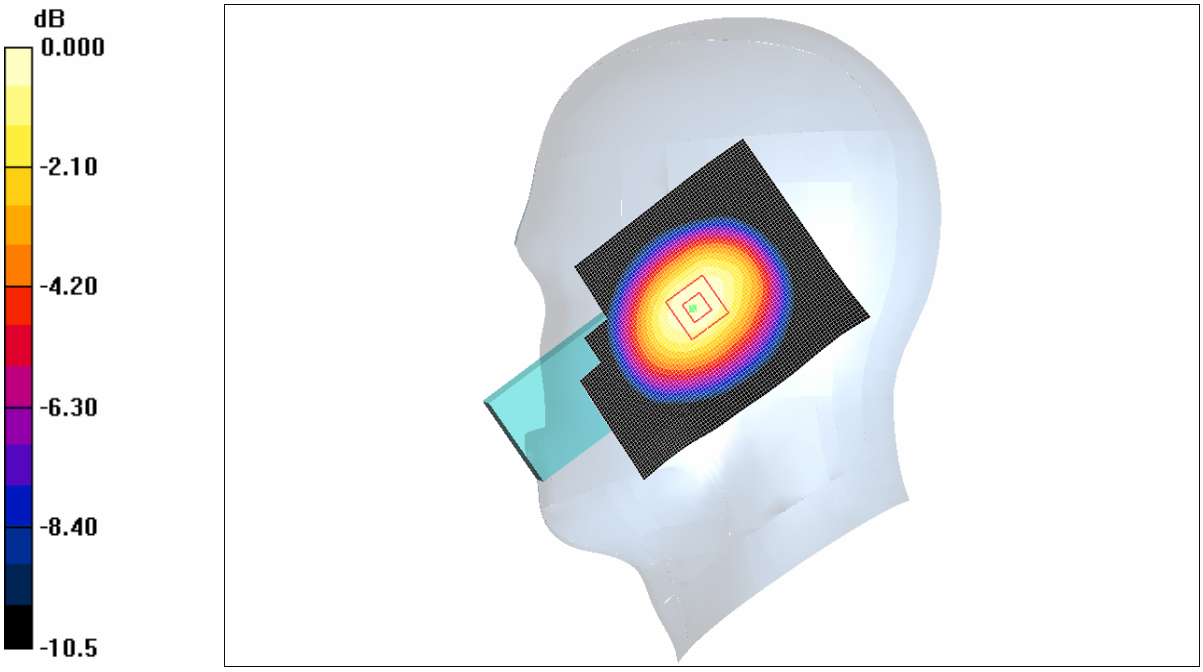
Test Date: 11/27/2007;Ambient Temp: 22. 9˚C;Tissue Temp: 21.8˚C

Probe: ES3DV3 - SN3066; ConvF(5.96, 5.96, 5.96); Calibrated: 2007-01-23
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn534; Calibrated: 2007-09-24
Phantom: SAM 835; Type: SAM 4.0; Serial:TP-1066
Measurement SW: DASY4, V4.7 Build 44; Post processing SW: SEMCAD, V1.8 Build 171

Right Head Touch, Ch.190, Fixed Ant., Standard Battery

Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.423mW/g

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.3V/m; Power Drift = -0.136dB
Peak SAR (extrapolated) = 0.523W/kg
SAR(1 g) = 0.388mW/g; SAR(10 g) = 0.270mW/g
Maximum value of SAR (measured) = 0.417mW/g



0 dB = 0.417mW/g

LG Electronics Inc.

DUT: KP110a ;Type: Dual-Band Mobile Phone; Serial:#1

Communication System: GSM 850; Frequency: 836.60 MHz;Duty Cycle: 1:8.3
Medium: Head 837 MHz;(σ = 0.898mho/m; ε_r = 41.3; ρ = 1000 kg/m^3)
Phantom section: Right Section

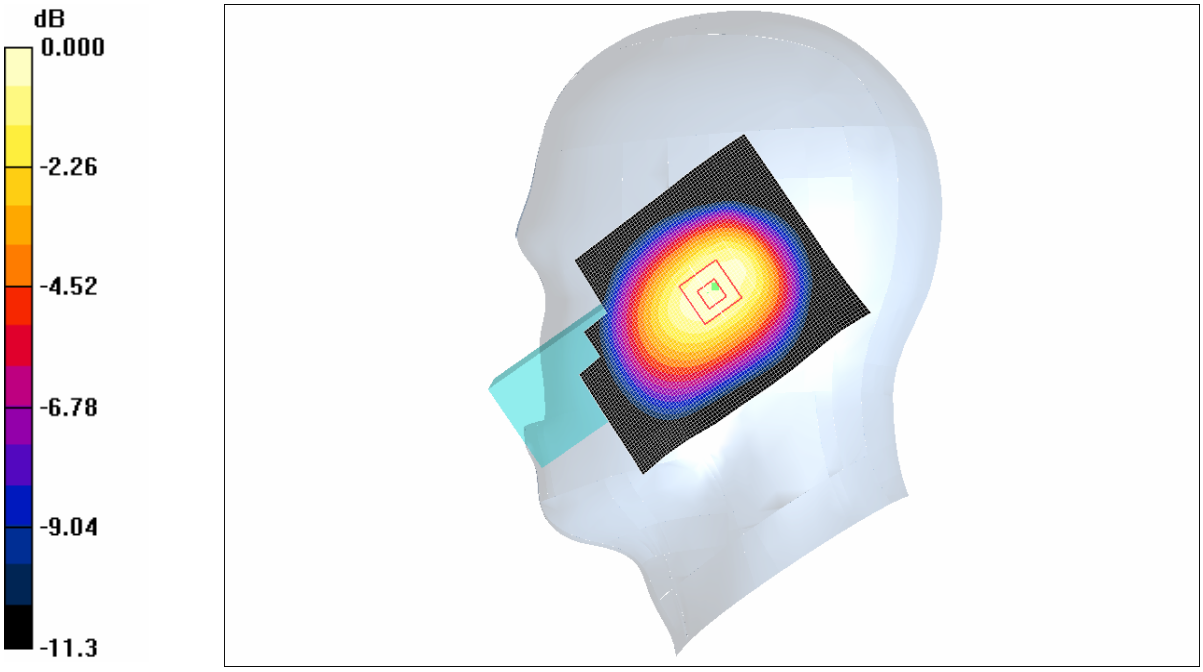
Test Date: 11/27/2007;Ambient Temp: 22. 9˚C;Tissue Temp: 21.8˚C

Probe: ES3DV3 - SN3066; ConvF(5.96, 5.96, 5.96); Calibrated: 2007-01-23
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn534; Calibrated: 2007-09-24
Phantom: SAM 835; Type: SAM 4.0; Serial:TP-1066
Measurement SW: DASY4, V4.7 Build 44; Post processing SW: SEMCAD, V1.8 Build 171

Right Head Tilt, Ch.190, Fixed Ant., Standard Battery

Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.231mW/g

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.2V/m; Power Drift = 0.006dB
Peak SAR (extrapolated) = 0.285W/kg
SAR(1 g) = 0.215mW/g; SAR(10 g) = 0.152mW/g
Maximum value of SAR (measured) = 0.229mW/g



0 dB = 0.229mW/g

LG Electronics Inc.

DUT: KP110a ;Type: Dual-Band Mobile Phone; Serial:#1

Communication System: GSM 850; Frequency: 836.60 MHz;Duty Cycle: 1:8.3
Medium: Head 837 MHz;(σ = 0.898mho/m; ε_r = 41.3; ρ = 1000 kg/m^3)
Phantom section: Left Section

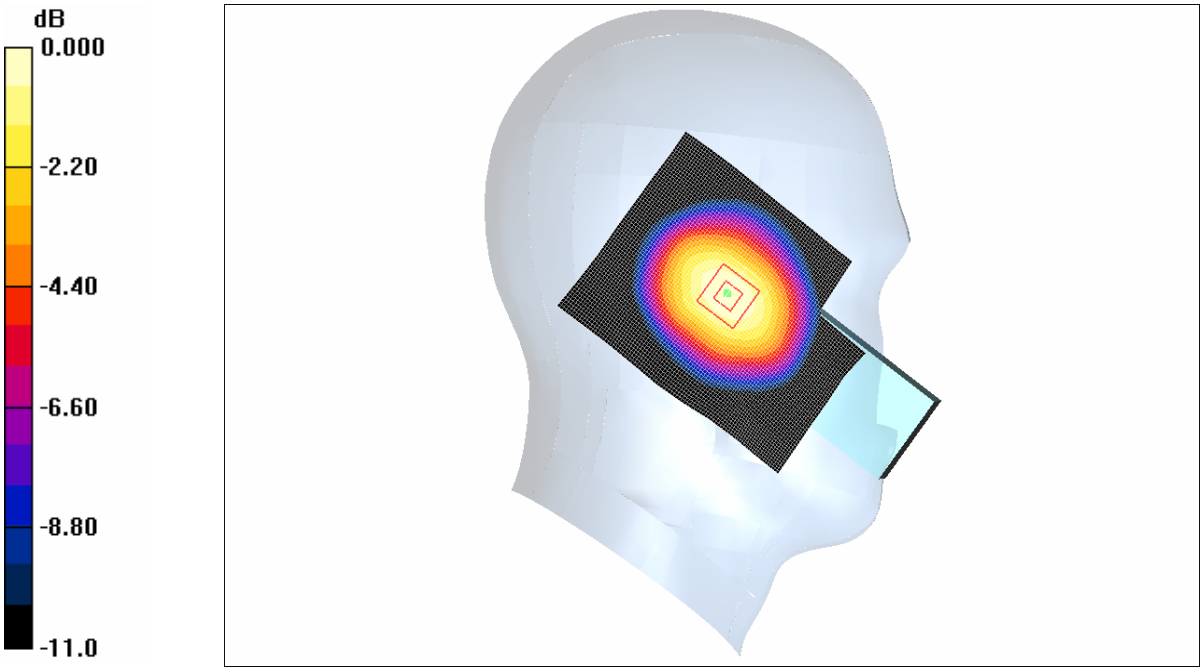
Test Date: 11/27/2007;Ambient Temp: 22. 9˚C;Tissue Temp: 21.8˚C

Probe: ES3DV3 - SN3066; ConvF(5.96, 5.96, 5.96); Calibrated: 2007-01-23
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn534; Calibrated: 2007-09-24
Phantom: SAM 835; Type: SAM 4.0; Serial:TP-1066
Measurement SW: DASY4, V4.7 Build 44; Post processing SW: SEMCAD, V1.8 Build 171

Left Head Touch, Ch.190, Fixed Ant., Standard Battery

Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.423mW/g

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.6V/m; Power Drift = 0.222dB
Peak SAR (extrapolated) = 0.536W/kg
SAR(1 g) = 0.393mW/g; SAR(10 g) = 0.269mW/g
Maximum value of SAR (measured) = 0.422mW/g



0 dB = 0.422mW/g

LG Electronics Inc.

DUT: KP110a ;Type: Dual-Band Mobile Phone; Serial:#1

Communication System: GSM 850; Frequency: 836.60 MHz;Duty Cycle: 1:8.3
Medium: Head 837 MHz;(σ = 0.898mho/m; ε_r = 41.3; ρ = 1000 kg/m^3)
Phantom section: Left Section

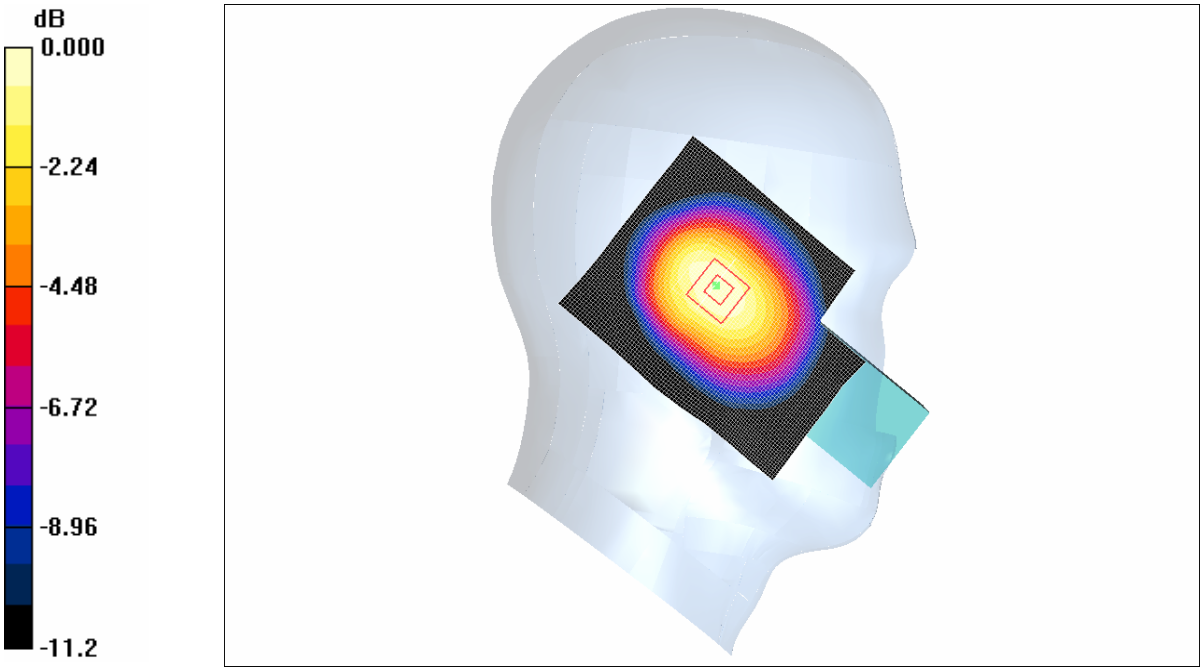
Test Date: 11/27/2007;Ambient Temp: 22. 9˚C;Tissue Temp: 21.8˚C

Probe: ES3DV3 - SN3066; ConvF(5.96, 5.96, 5.96); Calibrated: 2007-01-23
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn534; Calibrated: 2007-09-24
Phantom: SAM 835; Type: SAM 4.0; Serial:TP-1066
Measurement SW: DASY4, V4.7 Build 44; Post processing SW: SEMCAD, V1.8 Build 171

Left Head Tilt, Ch.190, Fixed Ant., Standard Battery

Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.231mW/g

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.7V/m; Power Drift = -0.009dB
Peak SAR (extrapolated) = 0.289W/kg
SAR(1 g) = 0.211mW/g; SAR(10 g) = 0.144mW/g
Maximum value of SAR (measured) = 0.226mW/g



0 dB = 0.226mW/g

LG Electronics Inc.

DUT: KP110a ;Type: Dual-Band Mobile Phone; Serial:#1

Communication System: PCS 1900; Frequency: 1880.00 MHz;Duty Cycle: 1:8.3
Medium: Head 1880 MHz;(σ = 1.4mho/m; ε_r =41.6; ρ = 1000 kg/m^3)
Phantom section: Right Section

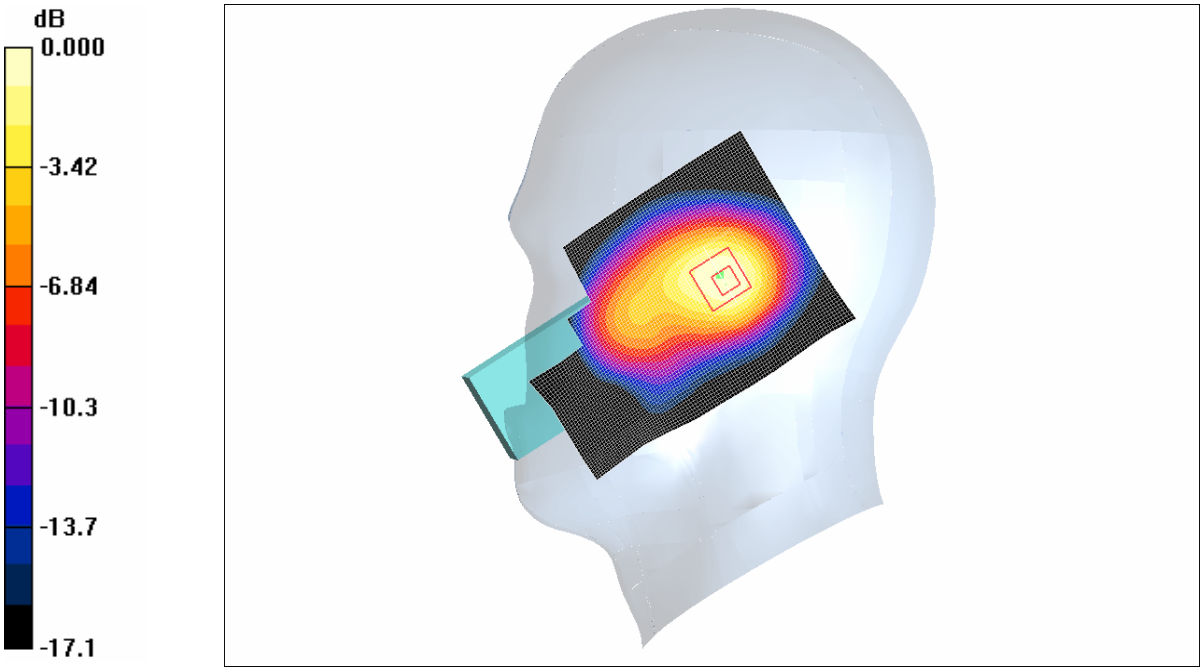
Test Date: 11/28/2007;Ambient Temp: 22. 9°C;Tissue Temp: 21.8°C

Probe: ES3DV3 - SN3066; ConvF(4.85, 4.85, 4.85); Calibrated: 2007-01-23
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn534; Calibrated: 2007-09-24
Phantom: SAM 1800; Type: SAM 4.0; Serial:TP-1066
Measurement SW: DASY4, V4.7 Build 44; Post processing SW: SEMCAD, V1.8 Build 171

Right Head Touch, Ch.661, Fixed Ant., Standard Battery

Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.473mW/g

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.2V/m; Power Drift = -0.362dB
Peak SAR (extrapolated) = 0.648W/kg
SAR(1 g) = 0.409mW/g; SAR(10 g) = 0.239mW/g
Maximum value of SAR (measured) = 0.448mW/g



0 dB = 0.448mW/g

LG Electronics Inc.

DUT: KP110a ;Type: Dual-Band Mobile Phone; Serial:#1

Communication System: PCS 1900; Frequency: 1880.00 MHz;Duty Cycle: 1:8.3
Medium: Head 1880 MHz;(σ = 1.4mho/m; ε_r =41.6; ρ = 1000 kg/m^3)
Phantom section: Right Section

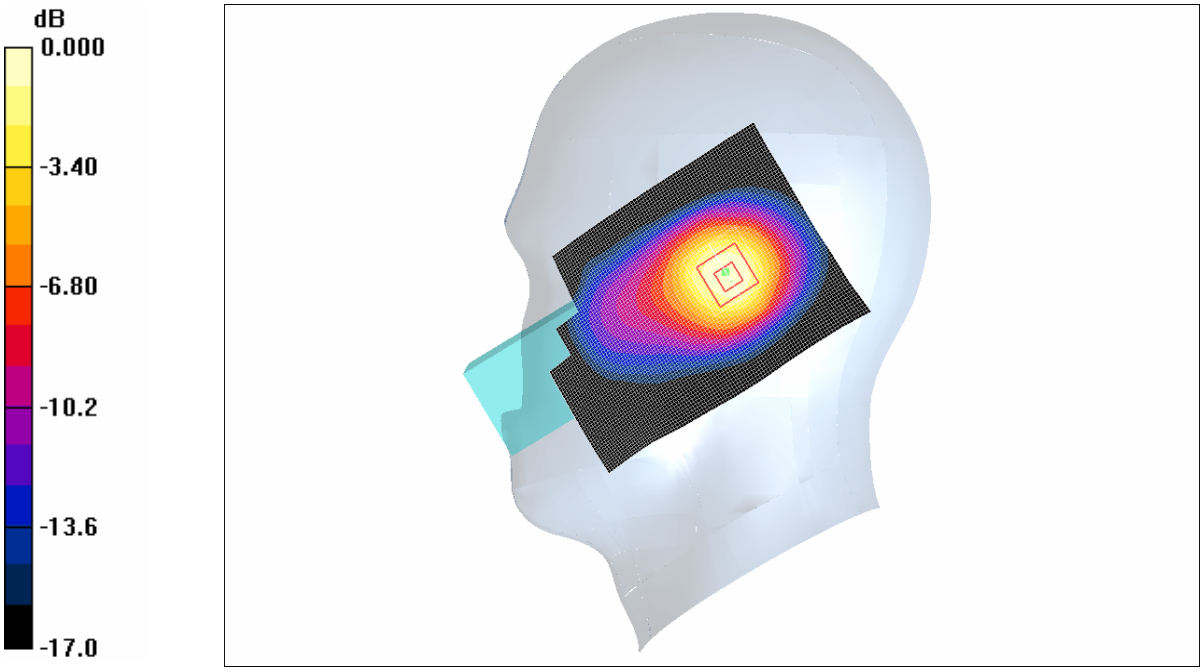
Test Date: 11/28/2007;Ambient Temp: 22. 9˚C;Tissue Temp: 21.8˚C

Probe: ES3DV3 - SN3066; ConvF(4.85, 4.85, 4.85); Calibrated: 2007-01-23
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn534; Calibrated: 2007-09-24
Phantom: SAM 1800; Type: SAM 4.0; Serial:TP-1066
Measurement SW: DASY4, V4.7 Build 44; Post processing SW: SEMCAD, V1.8 Build 171

Right Head Tilt, Ch.661, Fixed Ant., Standard Battery

Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.390mW/g

.43**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.1V/m; Power Drift = -0.135dB
Peak SAR (extrapolated) = 0.538W/kg
SAR(1 g) = 0.328mW/g; SAR(10 g) = 0.186mW/g
Maximum value of SAR (measured) = 0.356mW/g



0 dB = 0.356mW/g

LG Electronics Inc.

DUT: KP110a ;Type: Dual-Band Mobile Phone; Serial:#1

Communication System: PCS 1900; Frequency: 1880.00 MHz;Duty Cycle: 1:8.3
Medium: Head 1880 MHz;(σ = 1.4mho/m; ε_r =41.6; ρ = 1000 kg/m^3)
Phantom section: Left Section

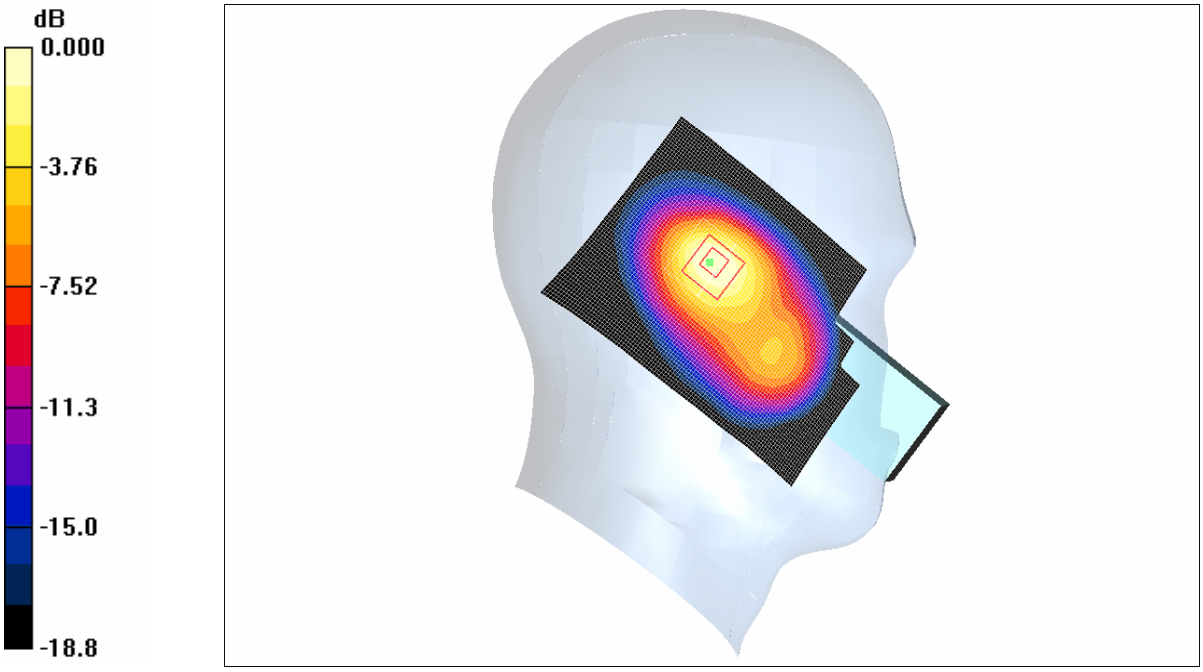
Test Date: 11/28/2007;Ambient Temp: 22. 9°C;Tissue Temp: 21.8°C

Probe: ES3DV3 - SN3066; ConvF(4.85, 4.85, 4.85); Calibrated: 2007-01-23
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn534; Calibrated: 2007-09-24
Phantom: SAM 1800; Type: SAM 4.0; Serial:TP-1066
Measurement SW: DASY4, V4.7 Build 44; Post processing SW: SEMCAD, V1.8 Build 171

Left Head Touch, Ch.661, Fixed Ant., Standard Battery

Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.525mW/g

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.8V/m; Power Drift = -0.317dB
Peak SAR (extrapolated) = 0.764W/kg
SAR(1 g) = 0.443mW/g; SAR(10 g) = 0.241mW/g
Maximum value of SAR (measured) = 0.479mW/g



0 dB = 0.479mW/g

LG Electronics Inc.

DUT: KP110a ;Type: Dual-Band Mobile Phone; Serial:#1

Communication System: PCS 1900; Frequency: 1880.00 MHz;Duty Cycle: 1:8.3
Medium: Head 1880 MHz;(σ = 1.4mho/m; ε_r =41.6; ρ = 1000 kg/m^3)
Phantom section: Left Section

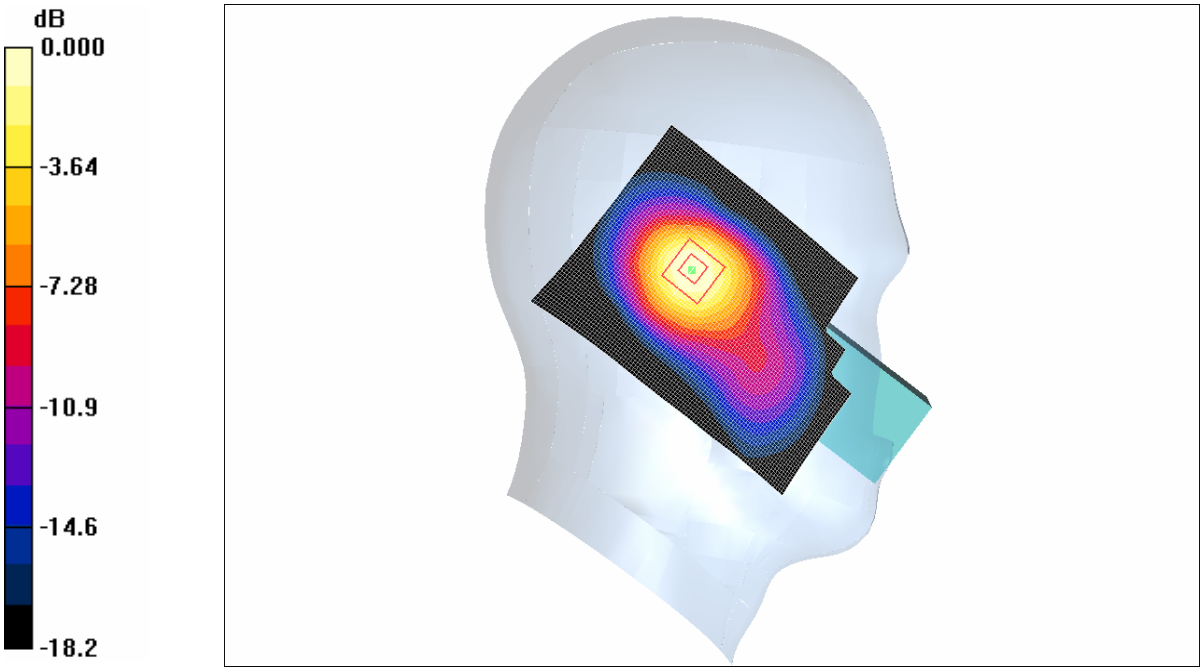
Test Date: 11/28/2007;Ambient Temp: 22. 9°C;Tissue Temp: 21.8°C

Probe: ES3DV3 - SN3066; ConvF(4.85, 4.85, 4.85); Calibrated: 2007-01-23
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn534; Calibrated: 2007-09-24
Phantom: SAM 1800; Type: SAM 4.0; Serial:TP-1066
Measurement SW: DASY4, V4.7 Build 44; Post processing SW: SEMCAD, V1.8 Build 171

Left Head Tilt, Ch.661, Fixed Ant., Standard Battery

Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.427mW/g

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.5V/m; Power Drift = -0.287dB
Peak SAR (extrapolated) = 0.558W/kg
SAR(1 g) = 0.337mW/g; SAR(10 g) = 0.187mW/g
Maximum value of SAR (measured) = 0.371mW/g



0 dB = 0.371mW/g

LG Electronics Inc.

DUT: KP110a ;Type: Dual-Band Mobile Phone; Serial:#1

Communication System: GPRS 850; Frequency: 836.60 MHz;Duty Cycle: 1:4.15
Medium: Head 837 MHz;(σ = 0.96mho/m; ε_r = 55.2; ρ = 1000 kg/m^3)
Phantom section: Flat Section

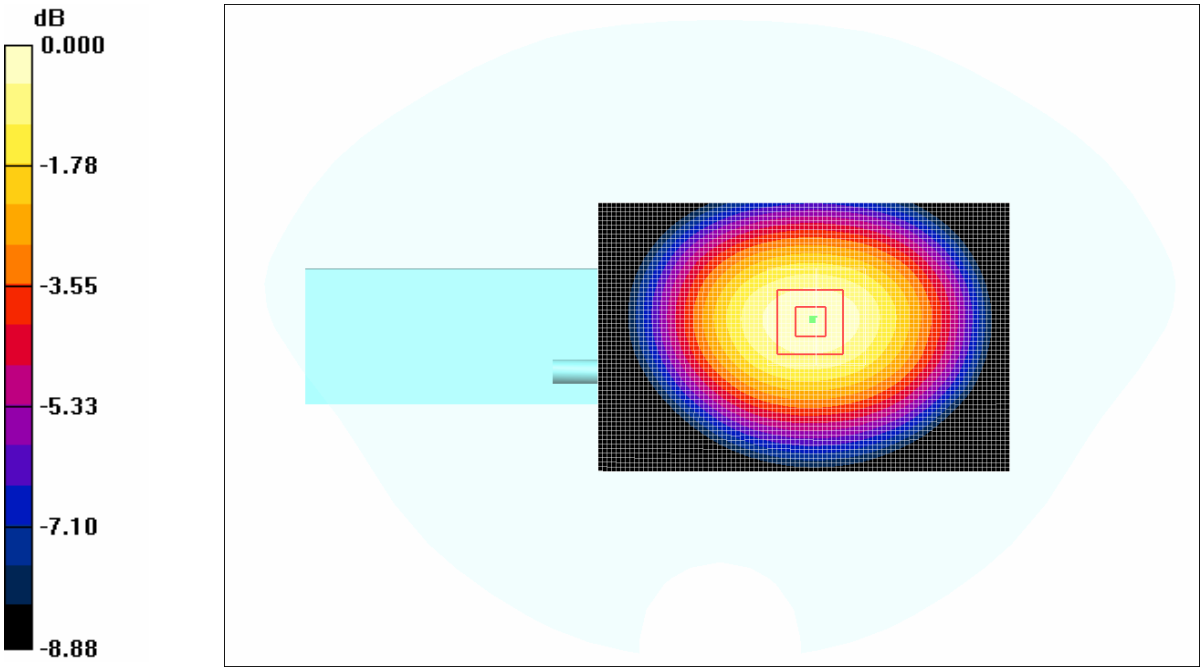
Test Date: 11/27/2007;Ambient Temp: 22. 9˚C;Tissue Temp: 21.8˚C

Probe: ES3DV3 - SN3066; ConvF(5.84, 5.84, 5.84); Calibrated: 2007-01-23
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn534; Calibrated: 2007-09-24
Phantom: SAM 835; Type: SAM 4.0; Serial:TP-1066
Measurement SW: DASY4, V4.7 Build 44; Post processing SW: SEMCAD, V1.8 Build 171

Flat Touch, Ch.190, Front, Fixed Ant., Standard Battery

Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.207mW/g

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.7 V/m; Power Drift = 0.006dB
Peak SAR (extrapolated) = 0.256W/kg
SAR(1 g) = 0.197mW/g; SAR(10 g) = 0.143mW/g
Maximum value of SAR (measured) = 0.209mW/g



0 dB = 0.209mW/g

LG Electronics Inc.

DUT: KP110a ;Type: Dual-Band Mobile Phone; Serial:#1

Communication System: GPRS 850; Frequency: 836.60 MHz;Duty Cycle: 1:4.15
Medium: Head 837 MHz;(σ = 0.96mho/m; ε_r = 55.2; ρ = 1000 kg/m^3)
Phantom section: Flat Section

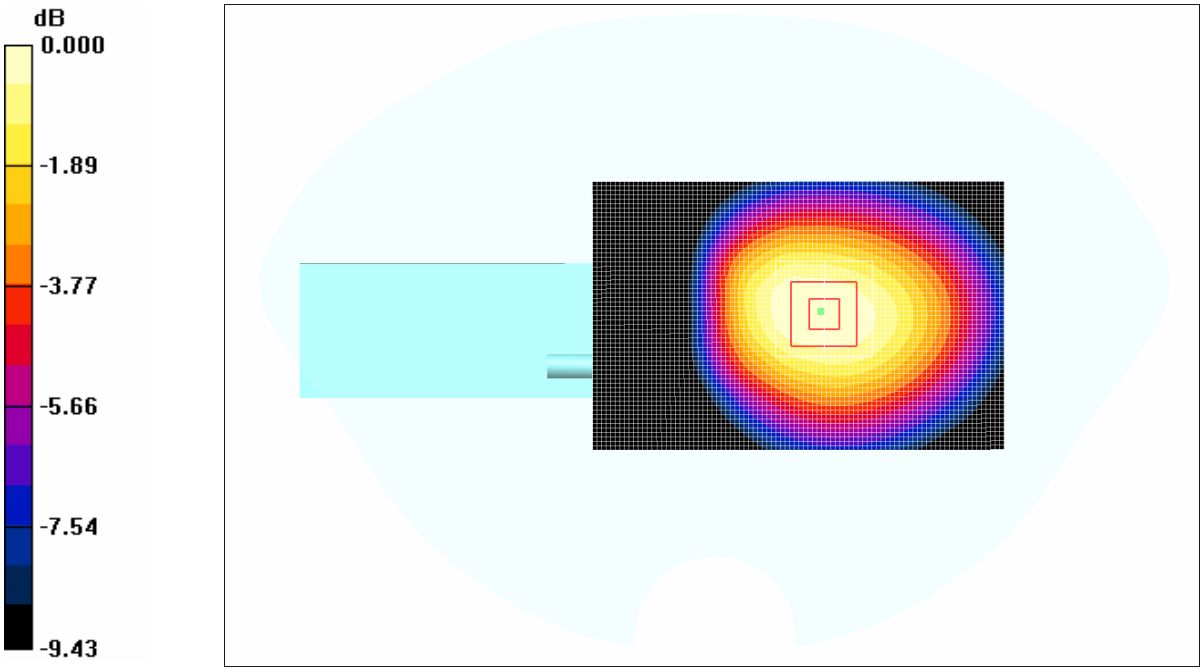
Test Date: 11/27/2007;Ambient Temp: 22. 9˚C;Tissue Temp: 21.8˚C

Probe: ES3DV3 - SN3066; ConvF(5.84, 5.84, 5.84); Calibrated: 2007-01-23
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn534; Calibrated: 2007-09-24
Phantom: SAM 835; Type: SAM 4.0; Serial:TP-1066
Measurement SW: DASY4, V4.7 Build 44; Post processing SW: SEMCAD, V1.8 Build 171

Flat Touch, Ch.190, Rear, Fixed Ant., Standard Battery

Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.349mW/g

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.6 V/m; Power Drift = -0.156dB
Peak SAR (extrapolated) = 0.426W/kg
SAR(1 g) = 0.327mW/g; SAR(10 g) = 0.238mW/g
Maximum value of SAR (measured) = 0.347mW/g



0 dB = 0.347mW/g

LG Electronics Inc.

DUT: KP110a ;Type: Dual-Band Mobile Phone; Serial:#1

Communication System: GPRS 1900; Frequency: 1880.00 MHz;Duty Cycle: 1:4.15
Medium: Head 1880 MHz;(σ = 1.5 mho/m; ε_r =53.3; ρ = 1000 kg/m^3)
Phantom section: Flat Section

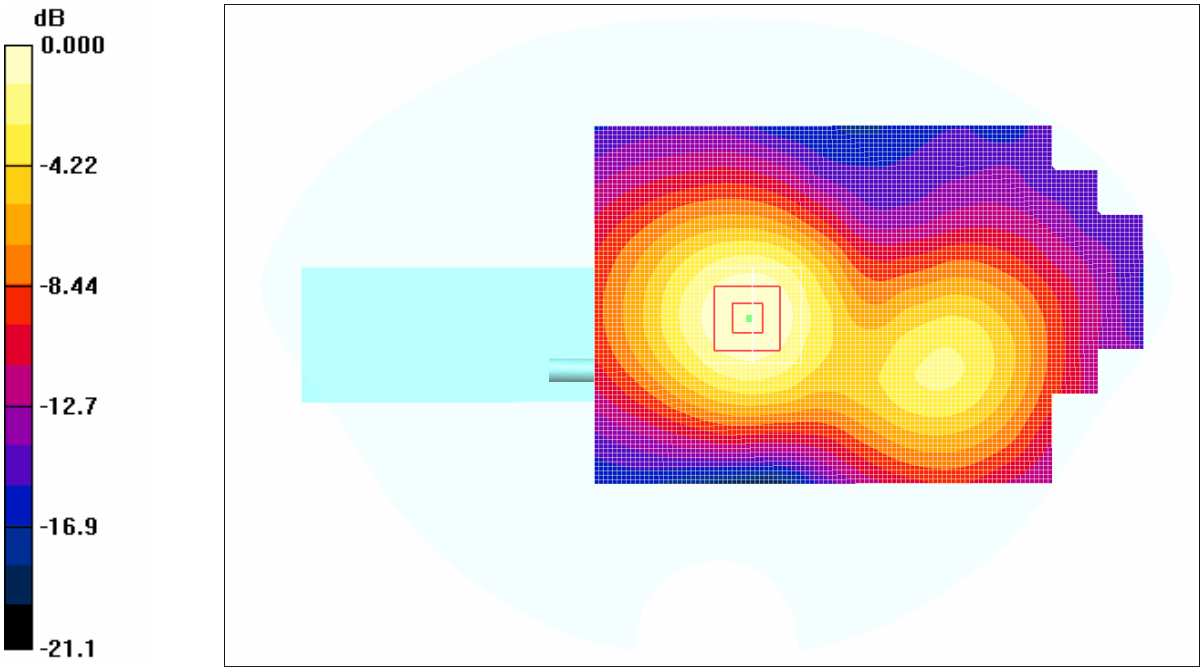
Test Date: 11/28/2007;Ambient Temp: 22. 9˚C;Tissue Temp: 21.8˚C

Probe: Probe: ES3DV3 - SN3066; ConvF(4.6, 4.6, 4.6); Calibrated: 2007-01-23
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn534; Calibrated: 2007-09-24
Phantom: SAM 1800; Type: SAM 4.0; Serial:TP-1066
Measurement SW: DASY4, V4.7 Build 44; Post processing SW: SEMCAD, V1.8 Build 171

Flat Touch, Ch.661, Front, Fixed Ant., Standard Battery

Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.135mW/g

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.59V/m; Power Drift = 0.032dB
Peak SAR (extrapolated) = 0.192W/kg
SAR(1 g) = 0.123mW/g; SAR(10 g) = 0.075mW/g
Maximum value of SAR (measured) = 0.134mW/g



0 dB = 0.134mW/g

LG Electronics Inc.

DUT: KP110a ;Type: Dual-Band Mobile Phone; Serial:#1

Communication System: GPRS 1900; Frequency: 1880.00 MHz;Duty Cycle: 1:4.15
Medium: Head 1880 MHz;(σ = 1.5 mho/m; ε_r =53.3; ρ = 1000 kg/m^3)
Phantom section: Flat Section

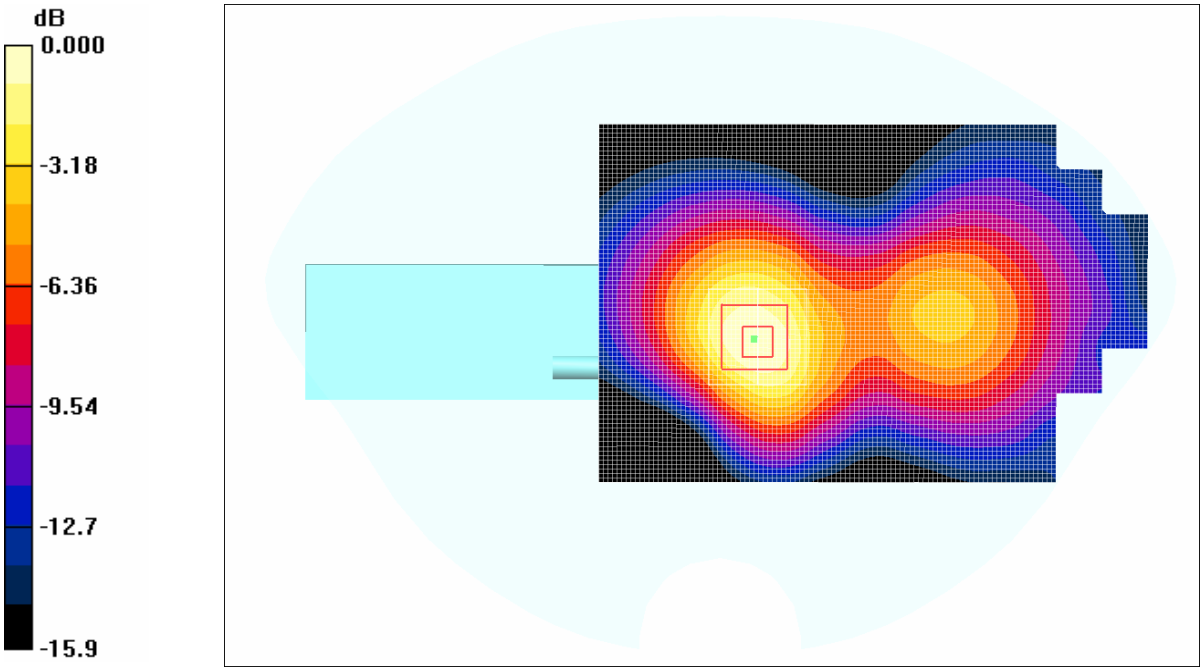
Test Date: 11/28/2007;Ambient Temp: 22. 9˚C;Tissue Temp: 21.8˚C

Probe: Probe: ES3DV3 - SN3066; ConvF(4.6, 4.6, 4.6); Calibrated: 2007-01-23
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn534; Calibrated: 2007-09-24
Phantom: SAM 1800; Type: SAM 4.0; Serial:TP-1066
Measurement SW: DASY4, V4.7 Build 44; Post processing SW: SEMCAD, V1.8 Build 171

Flat Touch, Ch.661, Rear, Fixed Ant., Standard Battery

Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.285mW/g

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.0V/m; Power Drift = -0.095dB
Peak SAR (extrapolated) = 0.403W/kg
SAR(1 g) = 0.249mW/g; SAR(10 g) = 0.146mW/g
Maximum value of SAR (measured) = 0.272mW/g



0 dB = 0.272mW/g

LG Electronics Inc.

DUT: KP110a ;Type: Dual-Band Mobile Phone; Serial:#1

Communication System: GSM 850; Frequency: 836.60 MHz;Duty Cycle: 1:8.3
Medium: Head 837 MHz;(σ = 0.898mho/m; ε_r = 41.3; ρ = 1000 kg/m^3)
Phantom section: Left Section

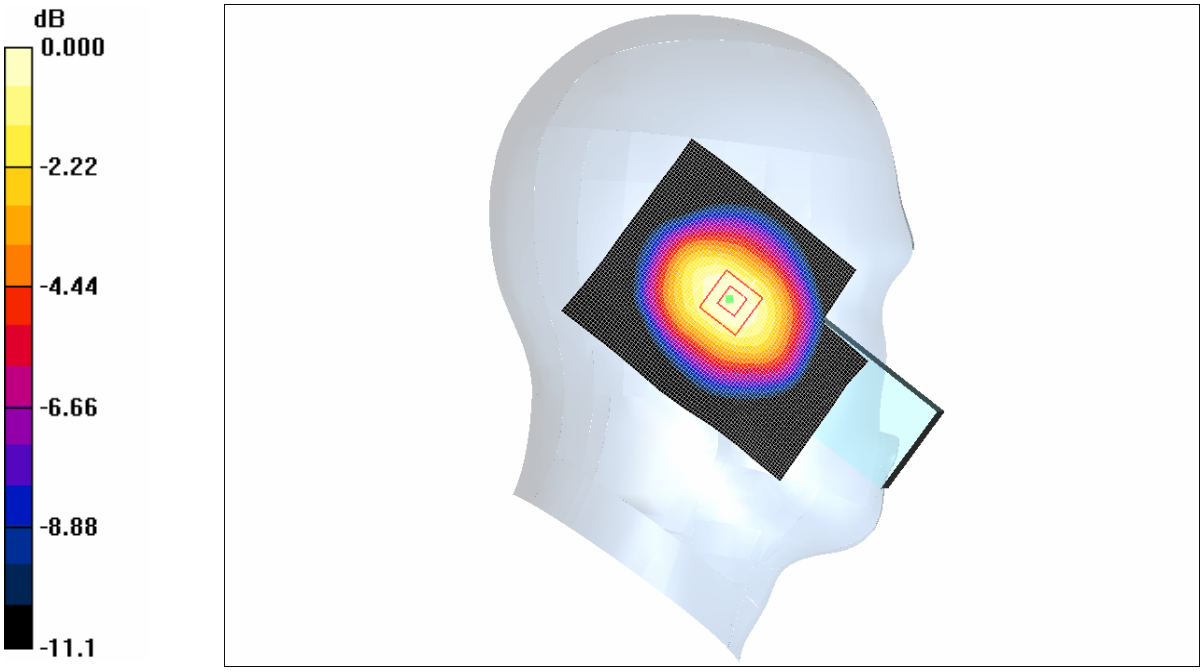
Test Date: 11/27/2007;Ambient Temp: 22. 9˚C;Tissue Temp: 21.8˚C

Probe: ES3DV3 - SN3066; ConvF(5.96, 5.96, 5.96); Calibrated: 2007-01-23
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn534; Calibrated: 2007-09-24
Phantom: SAM 835; Type: SAM 4.0; Serial:TP-1066
Measurement SW: DASY4, V4.7 Build 44; Post processing SW: SEMCAD, V1.8 Build 171

Left Head Touch, Ch.190, Fixed Ant., Standard Battery

Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.425mW/g

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.8V/m; Power Drift = -0.325dB
Peak SAR (extrapolated) = 0.524W/kg
SAR(1 g) = 0.385mW/g; SAR(10 g) = 0.264mW/g
Maximum value of SAR (measured) = 0.411mW/g



0 dB = 0.411mW/g

LG Electronics Inc.

DUT: KP110a ;Type: Dual-Band Mobile Phone; Serial:#1

Communication System: PCS 1900; Frequency: 1880.00 MHz;Duty Cycle: 1:8.3
Medium: Head 1880 MHz;(σ = 1.4mho/m; ε_r =41.6; ρ = 1000 kg/m^3)
Phantom section: Left Section

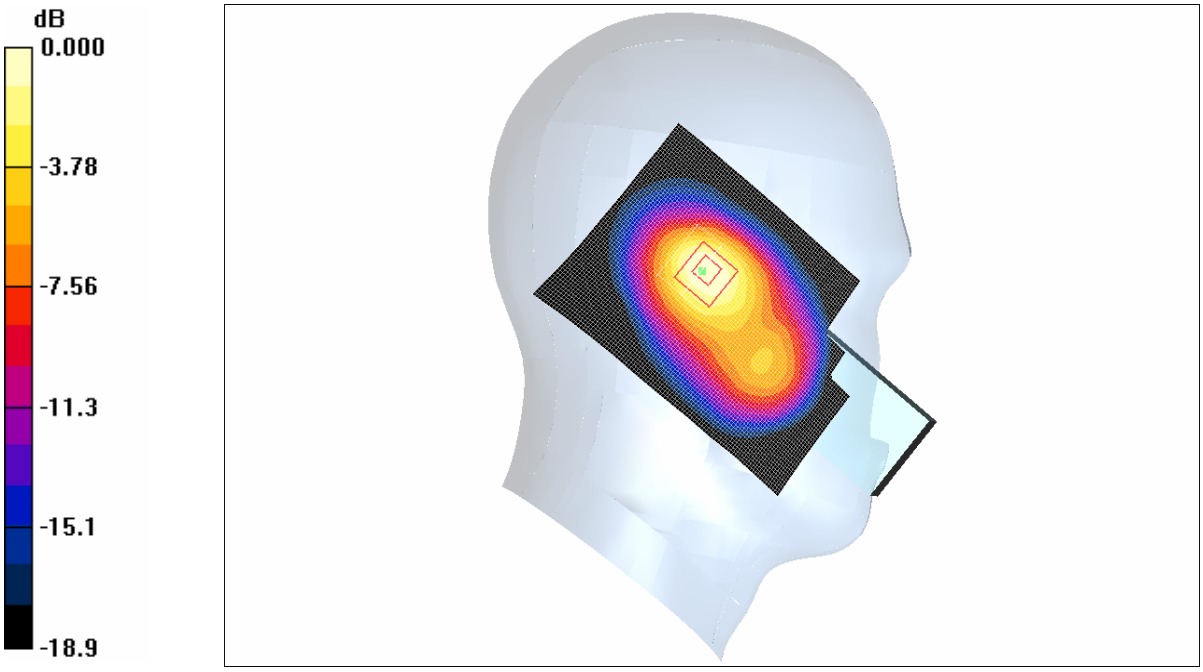
Test Date: 11/28/2007;Ambient Temp: 22. 9˚C;Tissue Temp: 21.8˚C

Probe: ES3DV3 - SN3066; ConvF(4.85, 4.85, 4.85); Calibrated: 2007-01-23
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn534; Calibrated: 2007-09-24
Phantom: SAM 1800; Type: SAM 4.0; Serial:TP-1066
Measurement SW: DASY4, V4.7 Build 44; Post processing SW: SEMCAD, V1.8 Build 171

Left Head Touch, Ch.661, Fixed Ant., Standard Battery

Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.508mW/g

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.3V/m; Power Drift = -0.122dB
Peak SAR (extrapolated) = 0.742W/kg
SAR(1 g) = 0.434mW/g; SAR(10 g) = 0.236mW/g
Maximum value of SAR (measured) = 0.471mW/g



0 dB = 0.471mW/g

LG Electronics Inc.

DUT: KP110a ;Type: Dual-Band Mobile Phone; Serial:#1

Communication System: GPRS 850; Frequency: 836.60 MHz;Duty Cycle: 1:4.15
Medium: Head 837 MHz;(σ = 0.96mho/m; ε_r =55.2; ρ = 1000 kg/m^3)
Phantom section: Flat Section

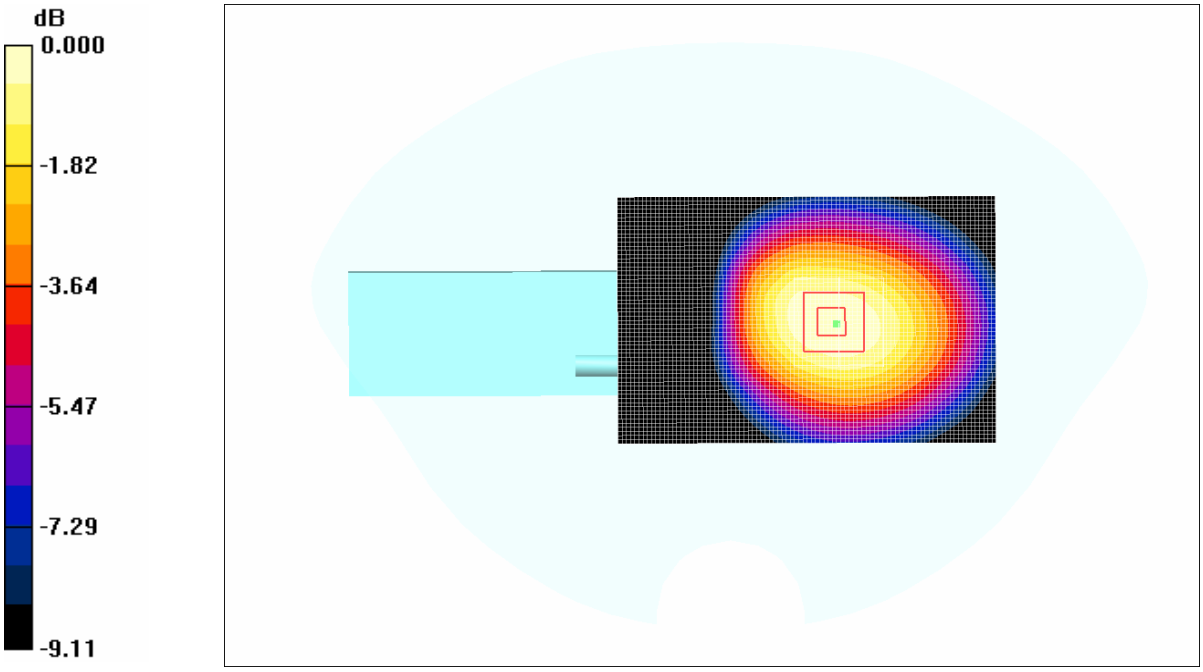
Test Date: 11/27/2007;Ambient Temp: 22. 9˚C;Tissue Temp: 21.8˚C

Probe: ES3DV3 - SN3066; ConvF(5.84, 5.84, 5.84); Calibrated: 2007-01-23
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn534; Calibrated: 2007-09-24
Phantom: SAM 835; Type: SAM 4.0; Serial:TP-1066
Measurement SW: DASY4, V4.7 Build 44; Post processing SW: SEMCAD, V1.8 Build 171

Flat Touch, Ch.190, Rear, Fixed Ant., Standard Battery

Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.344mW/g

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.0V/m; Power Drift = 0.290dB
Peak SAR (extrapolated) = 0.424W/kg
SAR(1 g) = 0.325mW/g; SAR(10 g) = 0.236mW/g
Maximum value of SAR (measured) = 0.345mW/g



0 dB = 0.345mW/g

LG Electronics Inc.

DUT: KP110a ;Type: Dual-Band Mobile Phone; Serial:#1

Communication System: GPRS 1900; Frequency: 1880.00 MHz;Duty Cycle: 1:4.15
Medium: Head 1880 MHz;(σ = 1.5 mho/m; ε_r =53.3; ρ = 1000 kg/m^3)
Phantom section: Flat Section

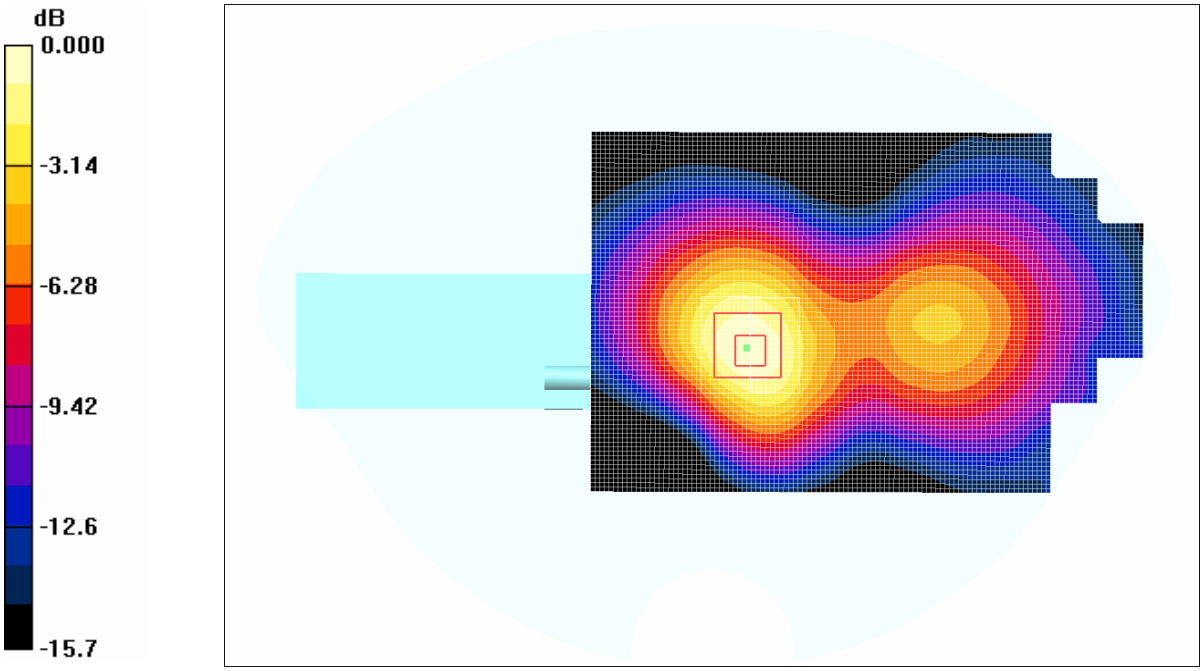
Test Date: 11/28/2007;Ambient Temp: 22. 9˚C;Tissue Temp: 21.8˚C

Probe: Probe: ES3DV3 - SN3066; ConvF(4.6, 4.6, 4.6); Calibrated: 2007-01-23
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn534; Calibrated: 2007-09-24
Phantom: SAM 1800; Type: SAM 4.0; Serial:TP-1066
Measurement SW: DASY4, V4.7 Build 44; Post processing SW: SEMCAD, V1.8 Build 171

Flat Touch, Ch.661, Rear, Fixed Ant., Standard Battery

Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.279mW/g

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.9V/m; Power Drift = -0.056dB
Peak SAR (extrapolated) = 0.397W/kg
SAR(1 g) = 0.248mW/g; SAR(10 g) = 0.146mW/g
Maximum value of SAR (measured) = 0.269mW/g



0 dB = 0.269mW/g

LG Electronics Inc.

DUT: KP110a ;Type: Dual-Band Mobile Phone; Serial:#1

Communication System: GSM 850; Frequency: 836.60 MHz;Duty Cycle: 1:8.3
Medium: Head 837 MHz;(σ = 0.898mho/m; ε_r = 41.3; ρ = 1000 kg/m^3)
Phantom section: Left Section

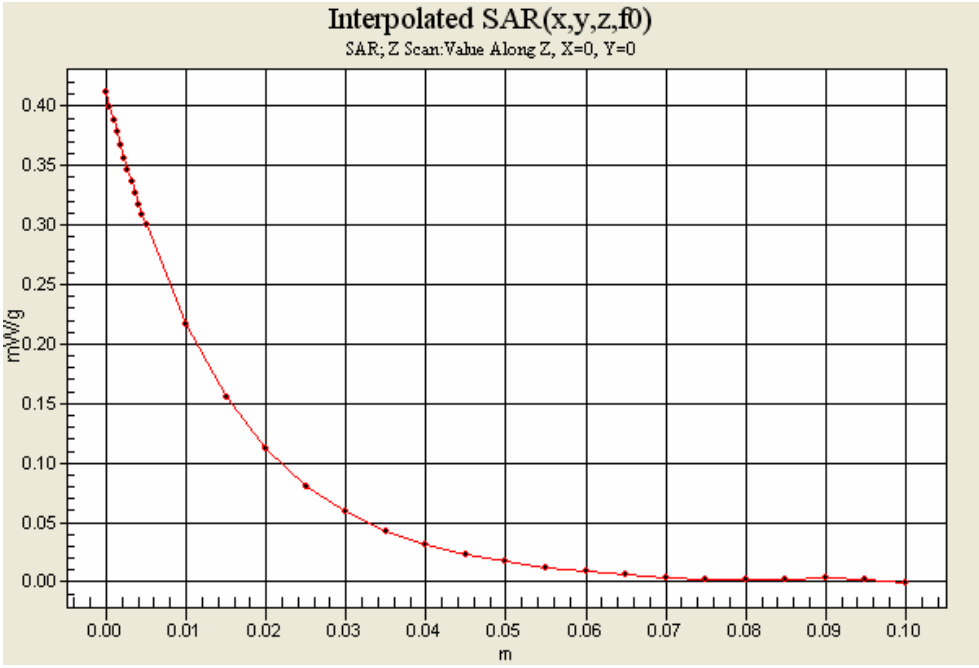
Test Date: 11/27/2007;Ambient Temp: 22. 9˚C;Tissue Temp: 21.8˚C

Probe: ES3DV3 - SN3066; ConvF(5.96, 5.96, 5.96); Calibrated: 2007-01-23
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn534; Calibrated: 2007-09-24
Phantom: SAM 835; Type: SAM 4.0; Serial:TP-1066
Measurement SW: DASY4, V4.7 Build 44; Post processing SW: SEMCAD, V1.8 Build 171

Left Head Touch, Ch.190, Fixed Ant., Standard Battery

Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.425mW/g

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.8V/m; Power Drift = -0.325dB
Peak SAR (extrapolated) = 0.524W/kg
SAR(1 g) = 0.385mW/g; SAR(10 g) = 0.264mW/g
Maximum value of SAR (measured) = 0.411mW/g



0 dB = 0.411mW/g

LG Electronics Inc.

DUT: KP110a ;Type: Dual-Band Mobile Phone; Serial:#1

Communication System: PCS 1900; Frequency: 1880.00 MHz;Duty Cycle: 1:8.3
Medium: Head 1880 MHz;(σ = 1.4mho/m; ε_r =41.6; ρ = 1000 kg/m^3)
Phantom section: Left Section

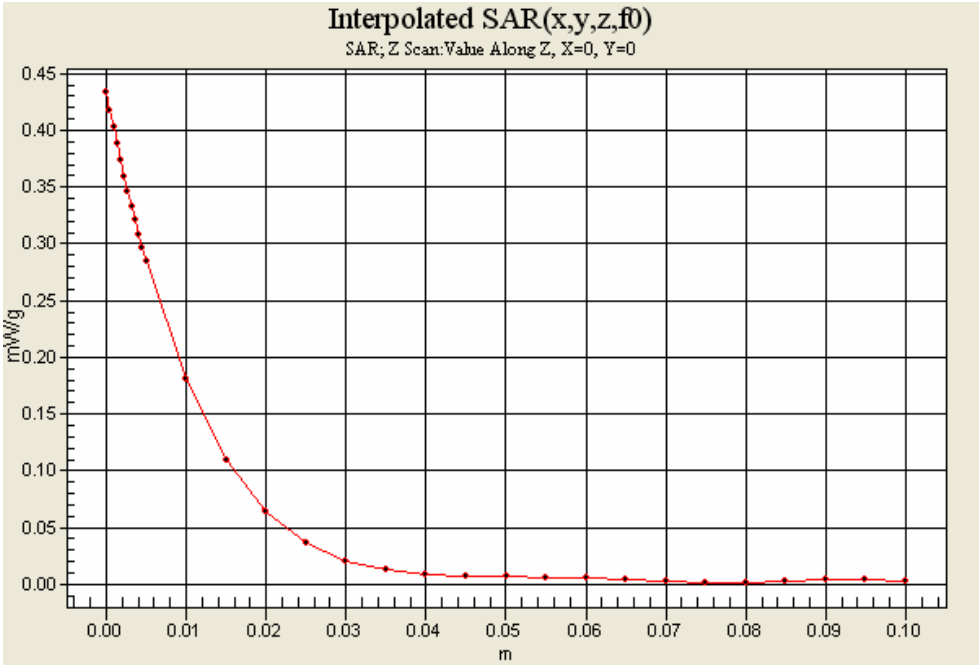
Test Date: 11/28/2007;Ambient Temp: 22. 9˚C;Tissue Temp: 21.8˚C

Probe: ES3DV3 - SN3066; ConvF(4.85, 4.85, 4.85); Calibrated: 2007-01-23
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn534; Calibrated: 2007-09-24
Phantom: SAM 1800; Type: SAM 4.0; Serial:TP-1066
Measurement SW: DASY4, V4.7 Build 44; Post processing SW: SEMCAD, V1.8 Build 171

Left Head Touch, Ch.661, Fixed Ant., Standard Battery

Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.508mW/g

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.3V/m; Power Drift = -0.122dB
Peak SAR (extrapolated) = 0.742W/kg
SAR(1 g) = 0.434mW/g; SAR(10 g) = 0.236mW/g
Maximum value of SAR (measured) = 0.471mW/g



0 dB = 0.471mW/g

LG Electronics Inc.

DUT: KP110a ;Type: Dual-Band Mobile Phone; Serial:#1

Communication System: GPRS 850; Frequency: 836.60 MHz;Duty Cycle: 1:4.15
Medium: Head 837 MHz;(σ = 0.96mho/m; ε_r =55.2; ρ = 1000 kg/m^3)
Phantom section: Flat Section

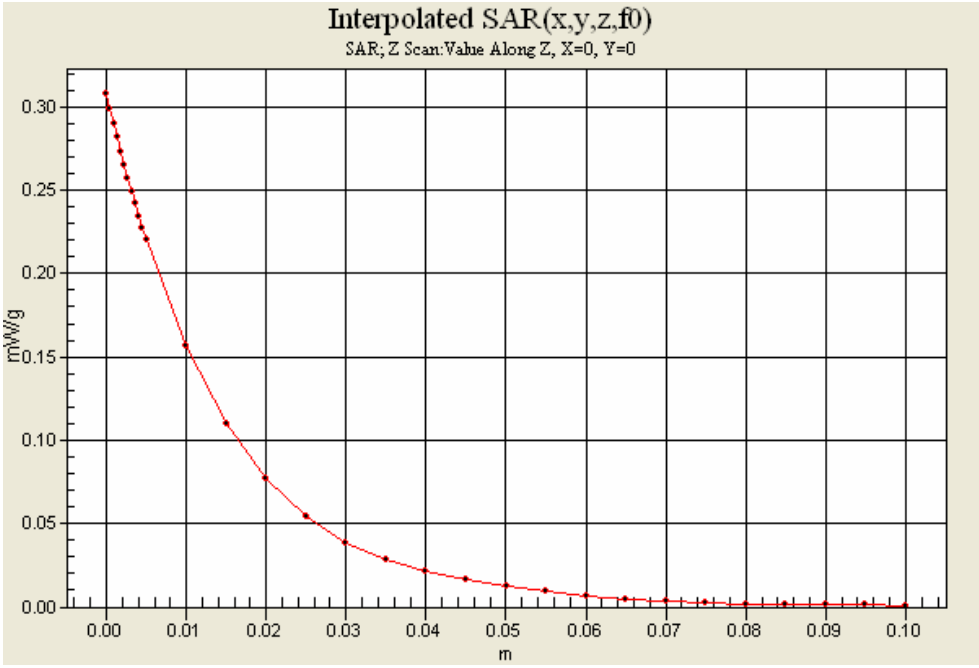
Test Date: 11/27/2007;Ambient Temp: 22. 9˚C;Tissue Temp: 21.8˚C

Probe: ES3DV3 - SN3066; ConvF(5.84, 5.84, 5.84); Calibrated: 2007-01-23
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn534; Calibrated: 2007-09-24
Phantom: SAM 835; Type: SAM 4.0; Serial:TP-1066
Measurement SW: DASY4, V4.7 Build 44; Post processing SW: SEMCAD, V1.8 Build 171

Flat Touch, Ch.190, Rear, Fixed Ant., Standard Battery

Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.344mW/g

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.0V/m; Power Drift = 0.290dB
Peak SAR (extrapolated) = 0.424W/kg
SAR(1 g) = 0.325mW/g; SAR(10 g) = 0.236mW/g
Maximum value of SAR (measured) = 0.345mW/g



0 dB = 0.345mW/g

LG Electronics Inc.

DUT: KP110a ;Type: Dual-Band Mobile Phone; Serial:#1

Communication System: GPRS 1900; Frequency: 1880.00 MHz;Duty Cycle: 1:4.15
Medium: Head 1880 MHz;(σ = 1.5 mho/m; ε_r =53.3; ρ = 1000 kg/m^3)
Phantom section: Flat Section

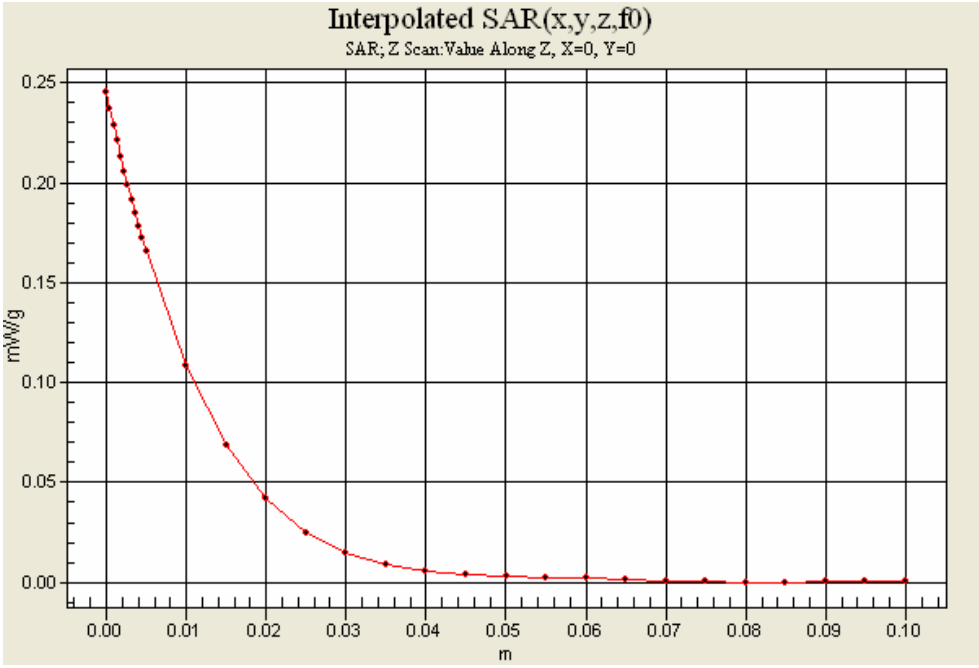
Test Date: 11/28/2007;Ambient Temp: 22. 9˚C;Tissue Temp: 21.8˚C

Probe: Probe: ES3DV3 - SN3066; ConvF(4.6, 4.6, 4.6); Calibrated: 2007-01-23
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn534; Calibrated: 2007-09-24
Phantom: SAM 1800; Type: SAM 4.0; Serial:TP-1066
Measurement SW: DASY4, V4.7 Build 44; Post processing SW: SEMCAD, V1.8 Build 171

Flat Touch, Ch.661, Rear, Fixed Ant., Standard Battery

Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.279mW/g

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.9V/m; Power Drift = -0.056dB
Peak SAR (extrapolated) = 0.397W/kg
SAR(1 g) = 0.248mW/g; SAR(10 g) = 0.146mW/g
Maximum value of SAR (measured) = 0.269mW/g



0 dB = 0.269mW/g

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Federal Office of Metrology and Accreditation
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client LG (Dymstec)

Certificate No: ES3-3066_Jan07

CALIBRATION CERTIFICATE

Object	ES3DV3 - SN:3066
Calibration procedure(s)	QA CAL-01.v5 Calibration procedure for dosimetric E-field probes
Calibration date:	January 23, 2007
Condition of the calibrated item	In Tolerance

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41495277	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41498087	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Reference 3 dB Attenuator	SN: S5054 (3c)	10-Aug-06 (METAS, No. 217-00592)	Aug-07
Reference 20 dB Attenuator	SN: S5086 (20b)	4-Apr-06 (METAS, No. 251-00558)	Apr-07
Reference 30 dB Attenuator	SN: S5129 (30b)	10-Aug-06 (METAS, No. 217-00593)	Aug-07
Reference Probe ES3DV2	SN: 3013	4-Jan-07 (SPEAG, No. ES3-3013_Jan07)	Jan-08
DAE4	SN: 654	21-Jun-06 (SPEAG, No. DAE4-654_Jun06)	Jun-07

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Oct-06)	In house check: Oct-07

	Name	Function	Signature
Calibrated by:	Katja Pokovic	Technical Manager	
Approved by:	Niels Kuster	Quality Manager	

Issued: January 23, 2007

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Federal Office of Metrology and Accreditation
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not effect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

ES3DV3 SN:3066 January 23, 2007

Probe ES3DV3

SN:3066

Manufactured:	December 14, 2004
Last calibrated:	February 21, 2006
Repaired:	January 17, 2007
Recalibrated:	January 23, 2007

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

ES3DV3 SN:3066 January 23, 2007

DASY - Parameters of Probe: ES3DV3 SN:3066

Sensitivity in Free Space[A] Diode Compression[B]

NormX	**1.20** ± 10.1%	$\mu V/(V/m)^2$	DCP X	**97** mV
NormY	**1.41** ± 10.1%	$\mu V/(V/m)^2$	DCP Y	**96** mV
NormZ	**1.23** ± 10.1%	$\mu V/(V/m)^2$	DCP Z	**96** mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL **1450 MHz** **Typical SAR gradient: 5 % per mm**

Sensor Center to Phantom Surface Distance		**3.0 mm**	**4.0 mm**
SAR_{be} [%]	Without Correction Algorithm	6.0	2.7
SAR_{be} [%]	With Correction Algorithm	0.0	0.1

TSL **1950 MHz** **Typical SAR gradient: 10 % per mm**

Sensor Center to Phantom Surface Distance		**3.0 mm**	**4.0 mm**
SAR_{be} [%]	Without Correction Algorithm	7.9	4.4
SAR_{be} [%]	With Correction Algorithm	0.1	0.3

Sensor Offset

Probe Tip to Sensor Center	**2.0** mm

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

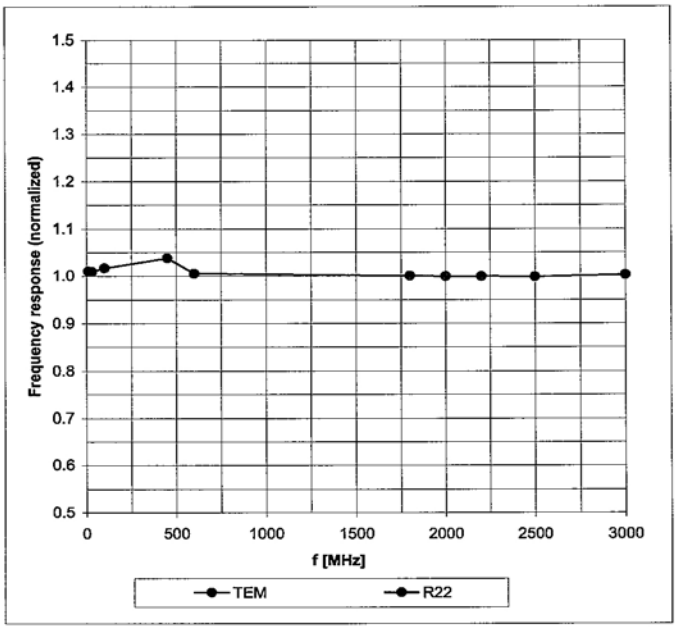
[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Page 8).

[B] Numerical linearization parameter: uncertainty not required.

ES3DV3 SN:3066 January 23, 2007

Frequency Response of E-Field

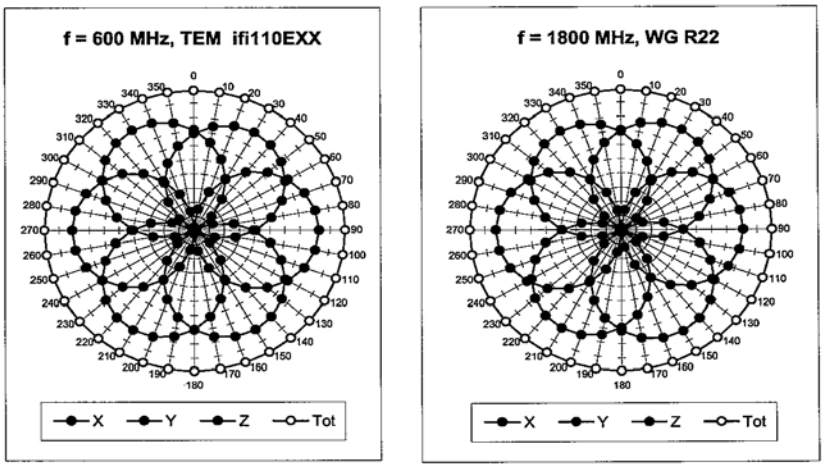
(TEM-Cell:ifi110 EXX, Waveguide: R22)

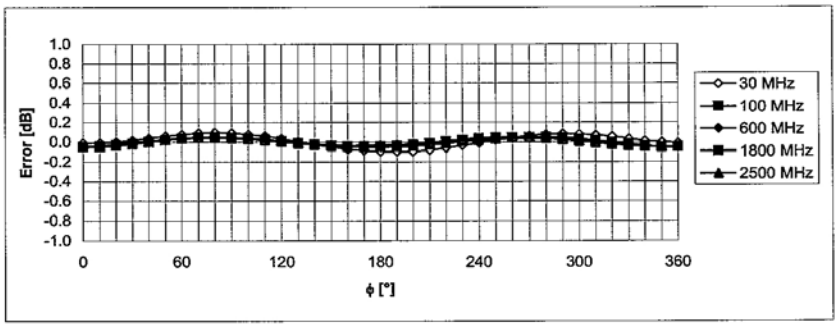


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

ES3DV3 SN:3066 January 23, 2007

Receiving Pattern (ϕ), ϑ = 0°





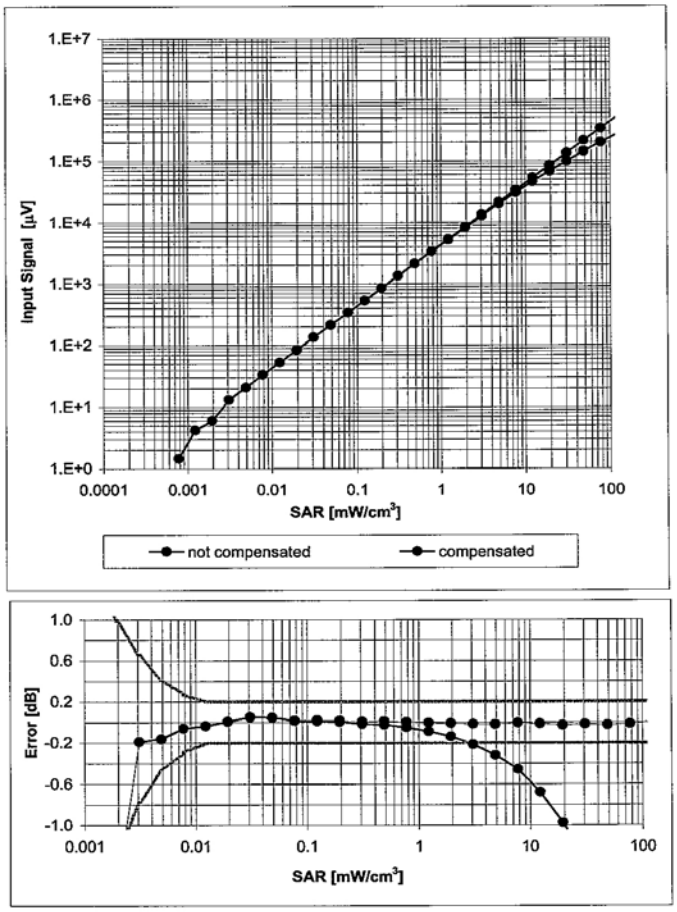
Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Certificate No: ES3-3066_Jan07 Page 6 of 9

ES3DV3 SN:3066 January 23, 2007

Dynamic Range f(SAR_{head})

(Waveguide R22, f = 1800 MHz)

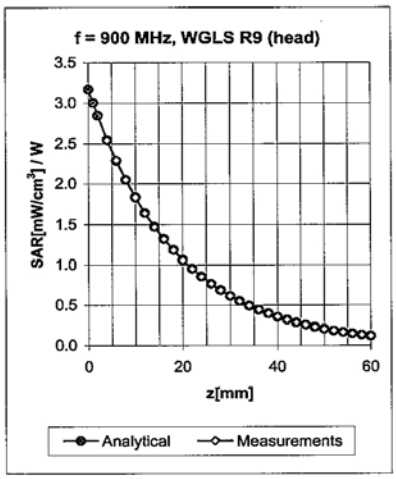


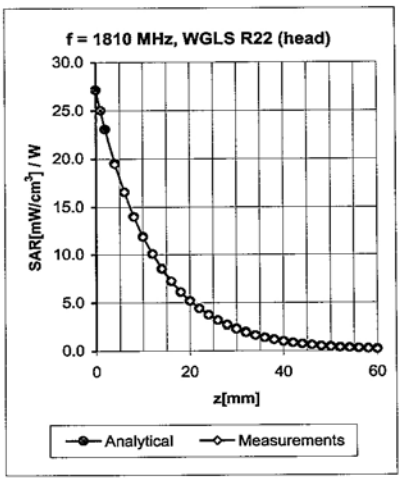
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Certificate No: ES3-3066_Jan07 Page 7 of 9

ES3DV3 SN:3066 January 23, 2007

Conversion Factor Assessment





f [MHz]	Validity [MHz][C]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.92	1.18	5.96 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.89	1.18	4.85 ± 11.0% (k=2)
1950	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.84	1.22	4.59 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.95	1.16	5.84 ± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.81	1.34	4.60 ± 11.0% (k=2)
1950	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.78	1.29	4.36 ± 11.0% (k=2)

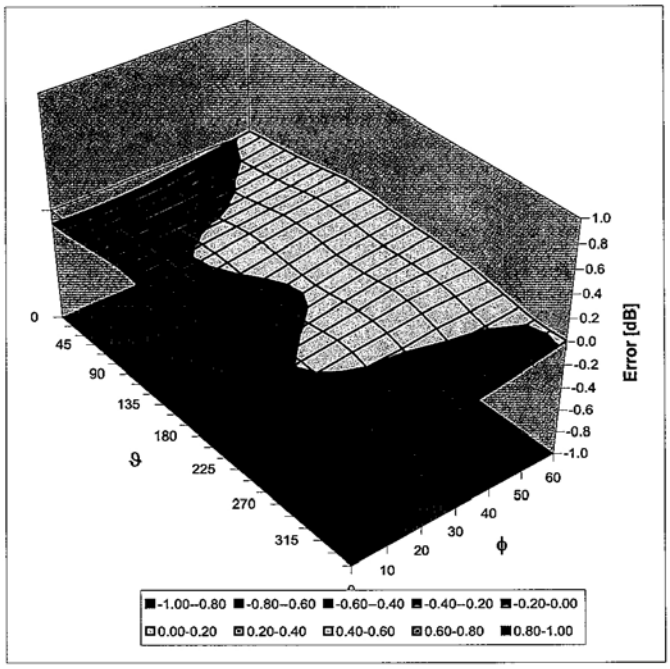
[C] The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

Certificate No: ES3-3066_Jan07 Page 8 of 9

ES3DV3 SN:3066 January 23, 2007

Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

Certificate No: ES3-3066_Jan07 Page 9 of 9

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Federal Office of Metrology and Accreditation
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client Estech (Dymstec)

Certificate No: D835V2-475_Sep06

CALIBRATION CERTIFICATE

Object	D835V2 - SN: 475
Calibration procedure(s)	QA CAL-05.v6 Calibration procedure for dipole validation kits
Calibration date:	September 12, 2006
Condition of the calibrated item	In Tolerance

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	04-Oct-05 (METAS, No. 251-00516)	Oct-06
Power sensor HP 8481A	US37292783	04-Oct-05 (METAS, No. 251-00516)	Oct-06
Reference 20 dB Attenuator	SN: 5086 (20g)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference 10 dB Attenuator	SN: 5047.2 (10r)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference Probe ET3DV6	SN 1507	28-Oct-05 (SPEAG, No. ET3-1507_Oct05)	Oct-06
DAE4	SN 601	15-Dec-05 (SPEAG, No. DAE4-601_Dec05)	Dec-06

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-05)	In house check: Oct-07
RF generator Agilent E4421B	MY41000675	11-May-05 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Nov-05)	In house check: Nov-06

	Name	Function	Signature
Calibrated by:	Mike Meili	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: September 13, 2006

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Federal Office of Metrology and Accreditation
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY4	V4.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V4.9	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.7 ± 6 %	0.89 mho/m ± 6 %
Head TSL temperature during test	(23.6 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	condition	
SAR measured	250 mW input power	2.29 mW / g
SAR normalized	normalized to 1W	9.16 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**9.25 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.49 mW / g
SAR normalized	normalized to 1W	5.96 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**6.00 mW / g ± 16.5 % (k=2)**

[1] Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.7 Ω - 0.5 jΩ
Return Loss	- 35.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.383 ns

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

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	November 15, 2002

DASY4 Validation Report for Head TSL

Date/Time: 12.09.2006 18:38:05

Test Laboratory: SPEAG, Zurich, Switzerland

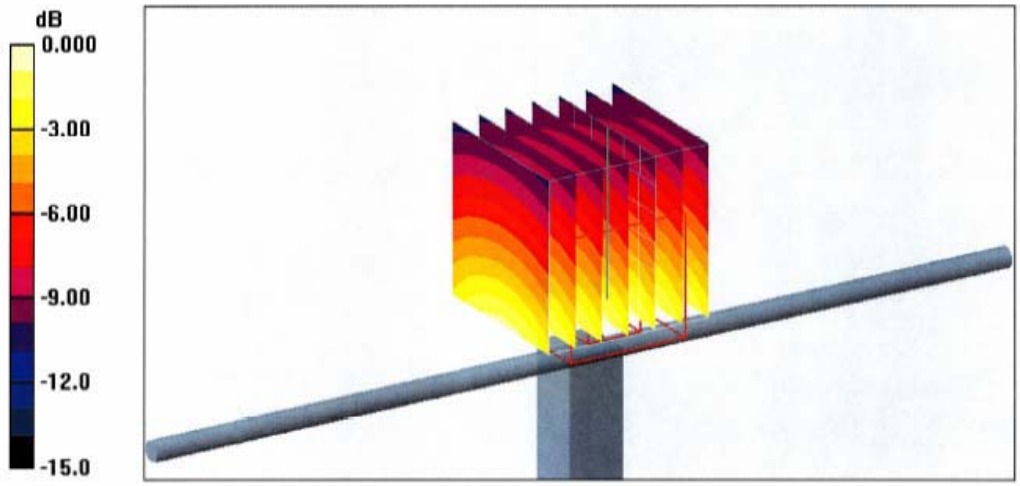
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 475

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: HSL 900 MHz;
Medium parameters used: f = 835 MHz; σ = 0.893 mho/m; ε_r = 42.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

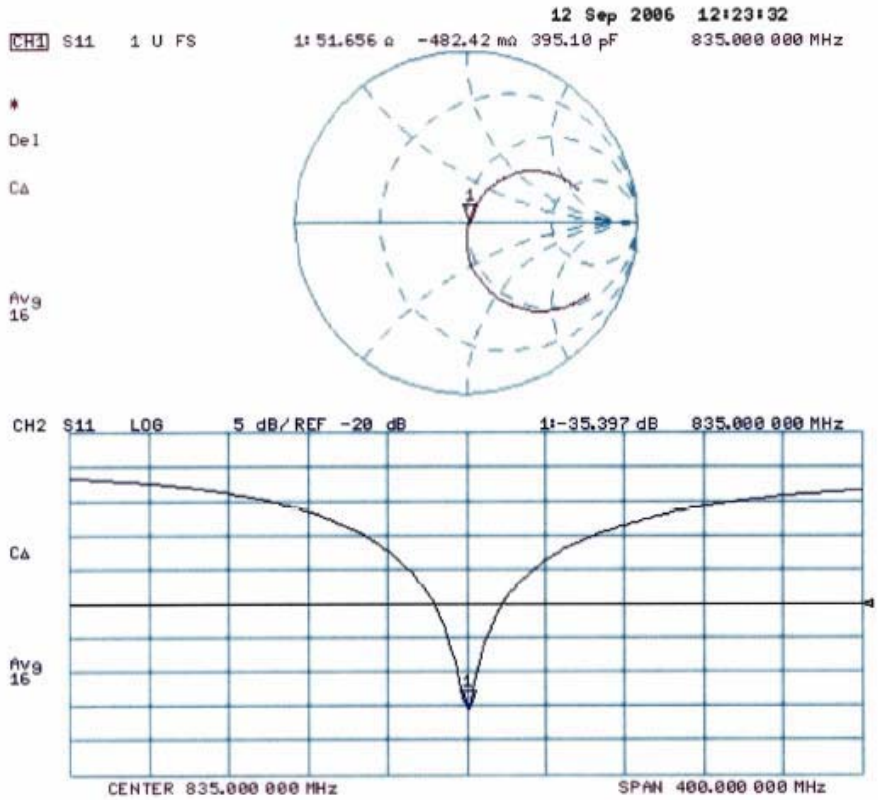
- Probe: ET3DV6 - SN1507 (HF); ConvF(6.09, 6.09, 6.09); Calibrated: 28.10.2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Pin = 250 mW; d = 15 mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.6 V/m; Power Drift = -0.033 dB
Peak SAR (extrapolated) = 3.41 W/kg
SAR(1 g) = 2.29 mW/g; SAR(10 g) = 1.49 mW/g
Maximum value of SAR (measured) = 2.48 mW/g



0 dB = 2.48mW/g

Impedance Measurement Plot for Head TSL



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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Federal Office of Metrology and Accreditation
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client **LG (Dymstec)**

Certificate No: D1900V2-5d017_Jan07

CALIBRATION CERTIFICATE

Object	D1900V2 - SN: 5d017
Calibration procedure(s)	QA CAL-05.v6 Calibration procedure for dipole validation kits
Calibration date:	January 23, 2007
Condition of the calibrated item	In Tolerance

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	03-Oct-06 (METAS, No. 217-00608)	Oct-07
Power sensor HP 8481A	US37292783	03-Oct-06 (METAS, No. 217-00608)	Oct-07
Reference 20 dB Attenuator	SN: 5086 (20g)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference 10 dB Attenuator	SN: 5047.2 (10r)	10-Aug-06 (METAS, No 217-00591)	Aug-07
Reference Probe ET3DV6	SN: 1507	19-Oct-06 (SPEAG, No. ET3-1507_Oct06)	Oct-07
Reference Probe ES3DV3	SN: 3025	19-Oct-06 (SPEAG, No. ES3-3025_Oct06)	Oct-07
DAE4	SN 907	20-Jul-06 (SPEAG, No. DAE4-907_Jul06)	Jul-07

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-05)	In house check: Oct-07
RF generator Agilent E4421B	MY41000675	11-May-05 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Oct-06)	In house check: Oct-07

	Name	Function	Signature
Calibrated by:	Mike Meli	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 24, 2007

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Federal Office of Metrology and Accreditation
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY4	V4.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.8 ± 6 %	1.43 mho/m ± 6 %
Head TSL temperature during test	(21.7 ± 0.2) °C	—	—

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	condition	
SAR measured	250 mW input power	9.66 mW / g
SAR normalized	normalized to 1W	38.6 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**37.6 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	5.05 mW / g
SAR normalized	normalized to 1W	20.2mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**19.9 mW / g ± 16.5 % (k=2)**

[1] Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.2 Ω + 3.0 jΩ
Return Loss	- 27.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.196 ns

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

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	June 4, 2002

DASY4 Validation Report for Head TSL

Date/Time: 23.01.2007 14:37:49

Test Laboratory: SPEAG, Zurich, Switzerland

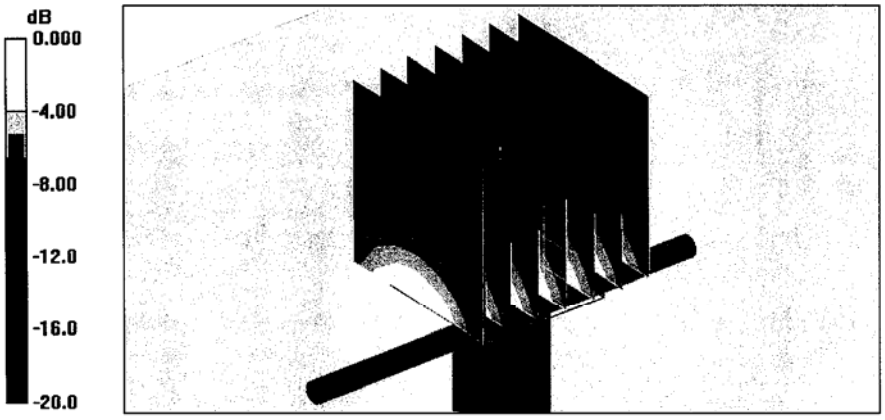
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d017

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: HSL U10 BB;
Medium parameters used: f = 1900 MHz; σ = 1.43 mho/m; ε_r = 38.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (HF); ConvF(4.97, 4.97, 4.97); Calibrated: 19.10.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn907; Calibrated: 20.07.2006
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.0 V/m; Power Drift = 0.028 dB
Peak SAR (extrapolated) = 16.9 W/kg
SAR(1 g) = 9.66 mW/g; SAR(10 g) = 5.05 mW/g
Maximum value of SAR (measured) = 11.0 mW/g



0 dB = 11.0mW/g

Impedance Measurement Plot for Head TSL