

Date: 2011-02-09

Test Laboratory: SGS Testing Korea
 File Name: [WCDMA V_LE.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA V_Head

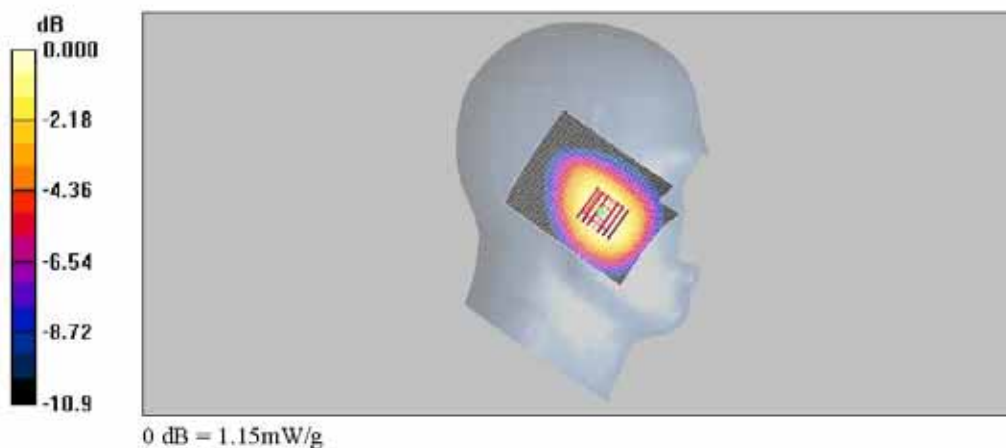
Communication System: WCDMA V; Frequency: 846.6 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 846.6 \text{ MHz}$; $\sigma = 0.917 \text{ mho/m}$; $\epsilon_r = 42.7$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Left Section

DASY4 Configuration:

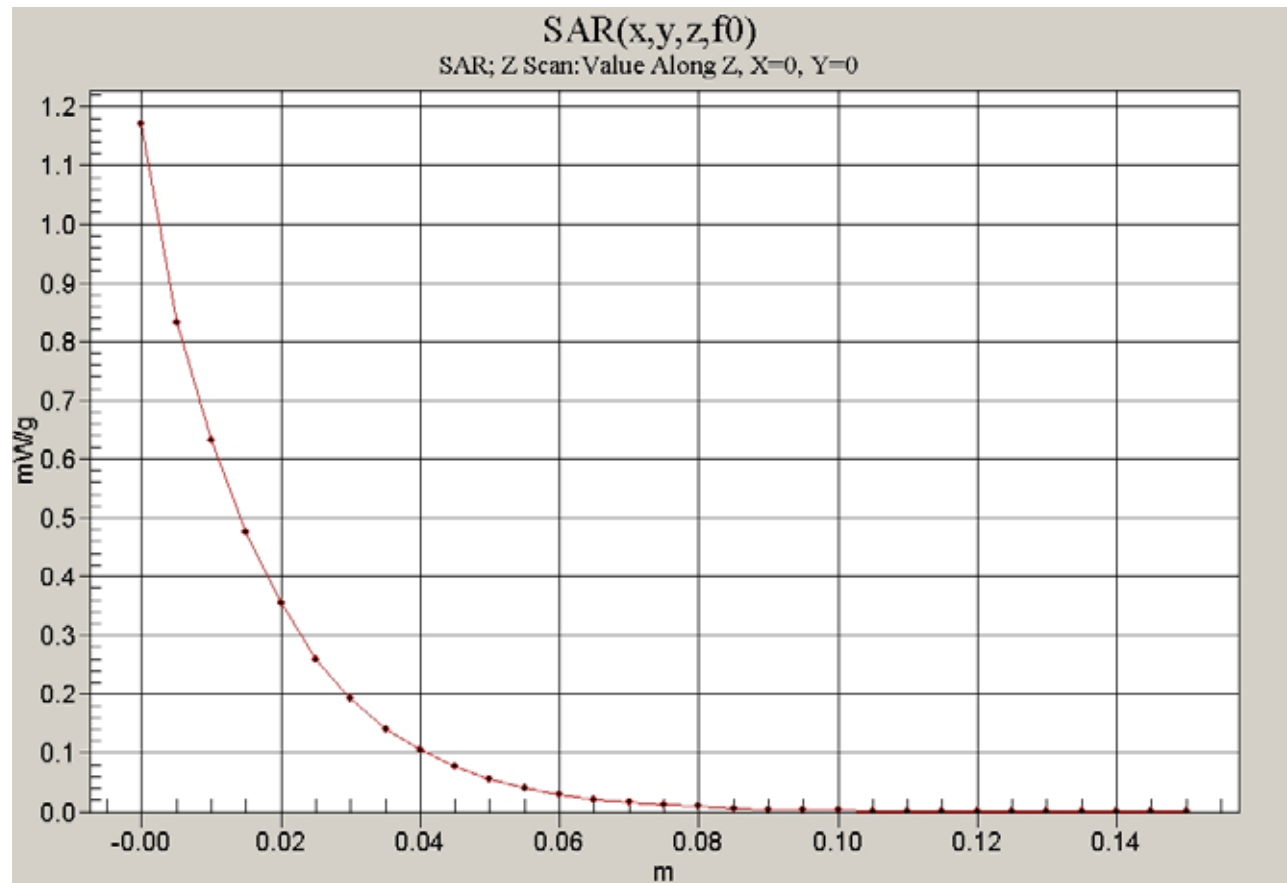
- Probe: ET3DV6 - SN1782; ConvF(6.26, 6.26, 6.26); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP_900MHz; Type: SAM MIC #2000-93; Serial: TP-1300
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA V_LE_High_Cheek/Area Scan (61x81x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (interpolated) = 1.12 mW/g

WCDMA V_LE_High_Cheek/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 11.2 V/m ; Power Drift = -0.161 dB
 Peak SAR (extrapolated) = 1.45 W/kg
 SAR(1 g) = 1.06 mW/g ; SAR(10 g) = 0.741 mW/g
 Maximum value of SAR (measured) = 1.15 mW/g



Z Scan



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 File Name: [WCDMA V_LE.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA V_Head

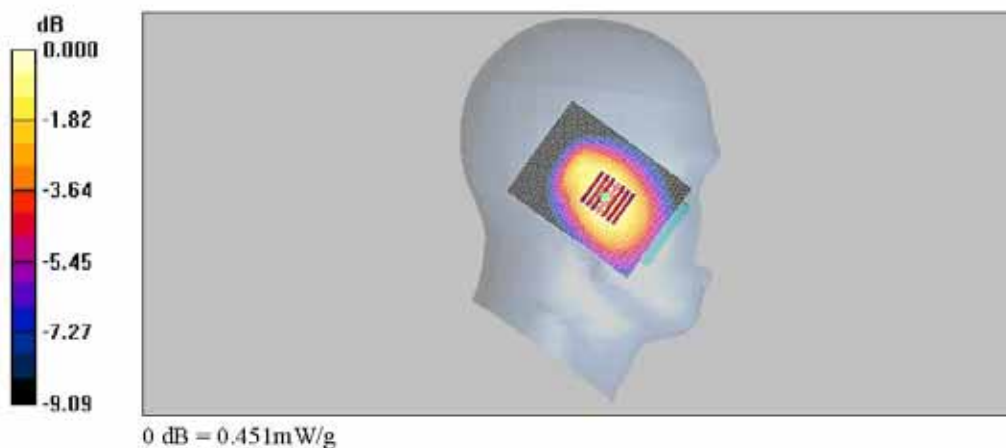
Communication System: WCDMA V; Frequency: 836.6 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 836.6 \text{ MHz}$; $\sigma = 0.895 \text{ mho/m}$; $\epsilon_r = 42.6$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(6.26, 6.26, 6.26); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP_900MHz; Type: SAM MIC #2000-93; Serial: TP-1300
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA V_LE_Mid_Tilt/Area Scan (61x81x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (interpolated) = 0.448 mW/g

WCDMA V_LE_Mid_Tilt/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$,
 $dy=5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 16.3 V/m ; Power Drift = -0.008 dB
 Peak SAR (extrapolated) = 0.543 W/kg
 SAR(1 g) = 0.423 mW/g ; SAR(10 g) = 0.311 mW/g
 Maximum value of SAR (measured) = 0.451 mW/g



Date: 2011-02-09

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 File Name: [WCDMA V_RE.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA V_Head

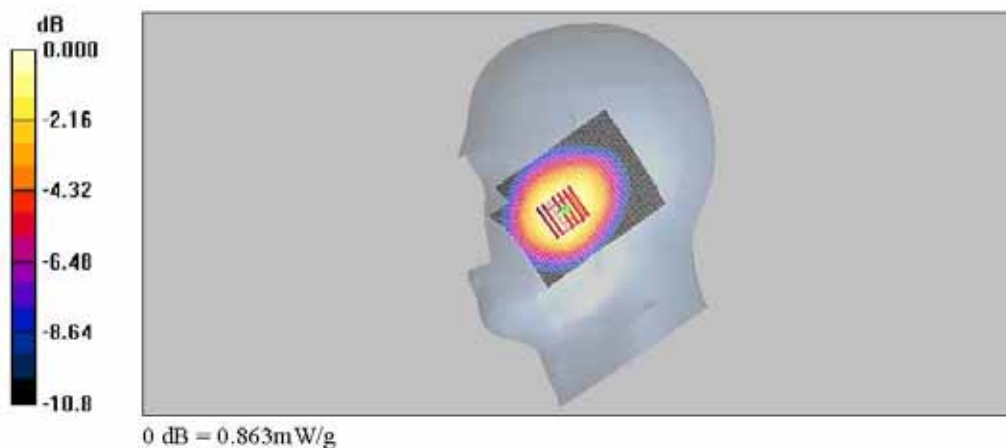
Communication System: WCDMA V; Frequency: 826.4 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 826.5$ MHz; $\sigma = 0.872$ mho/m; $\epsilon_r = 42.8$; $\rho = 1000$ kg/m³
 Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(6.26, 6.26, 6.26); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP_900MHz; Type: SAM MIC #2000-93; Serial: TP-1300
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA V_RE_Low_Cheek/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.845 mW/g

WCDMA V_RE_Low_Cheek/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 11.2 V/m; Power Drift = 0.014 dB
 Peak SAR (extrapolated) = 1.03 W/kg
 SAR(1 g) = 0.817 mW/g; SAR(10 g) = 0.594 mW/g
 Maximum value of SAR (measured) = 0.863 mW/g



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DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA V_Head

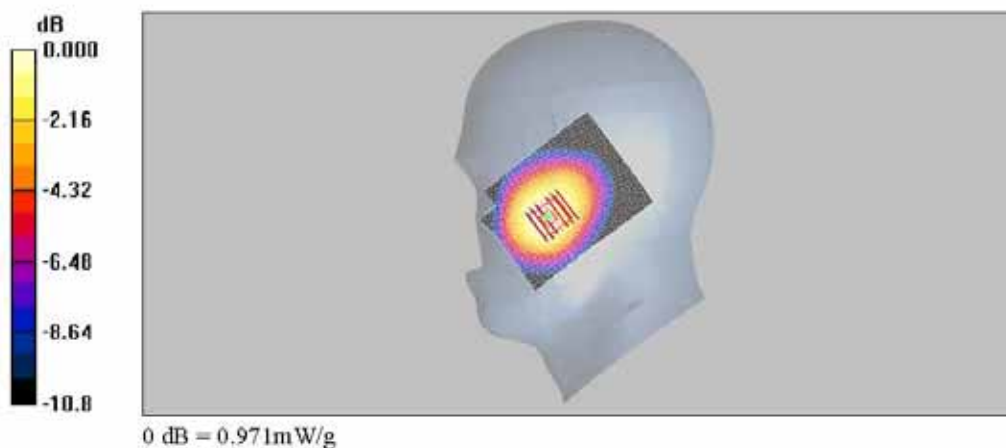
Communication System: WCDMA V; Frequency: 836.6 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 836.6 \text{ MHz}$; $\sigma = 0.895 \text{ mho/m}$; $\epsilon_r = 42.6$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(6.26, 6.26, 6.26); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP_900MHz; Type: SAM MIC #2000-93; Serial: TP-1300
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA V_RE_Mid_Cheek/Area Scan (61x81x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (interpolated) = 0.956 mW/g

WCDMA V_RE_Mid_Cheek/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 11.5 V/m ; Power Drift = 0.119 dB
 Peak SAR (extrapolated) = 1.15 W/kg
 SAR(1 g) = 0.914 mW/g ; SAR(10 g) = 0.664 mW/g
 Maximum value of SAR (measured) = 0.971 mW/g



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 Program Name: WCDMA V_Head

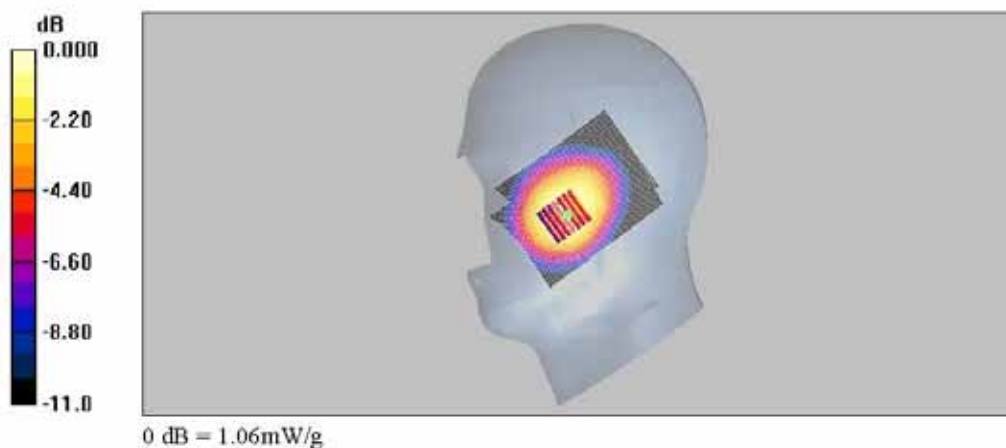
Communication System: WCDMA V; Frequency: 846.6 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 846.6 \text{ MHz}$; $\sigma = 0.917 \text{ mho/m}$; $\epsilon_r = 42.7$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(6.26, 6.26, 6.26); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP_900MHz; Type: SAM MIC #2000-93; Serial: TP-1300
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA V_RE_High_Cheek/Area Scan (61x81x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (interpolated) = 1.03 mW/g

WCDMA V_RE_High_Cheek/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 11.9 V/m; Power Drift = -0.167 dB
 Peak SAR (extrapolated) = 1.27 W/kg
 SAR(1 g) = 0.993 mW/g; SAR(10 g) = 0.719 mW/g
 Maximum value of SAR (measured) = 1.06 mW/g



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DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA V_Head

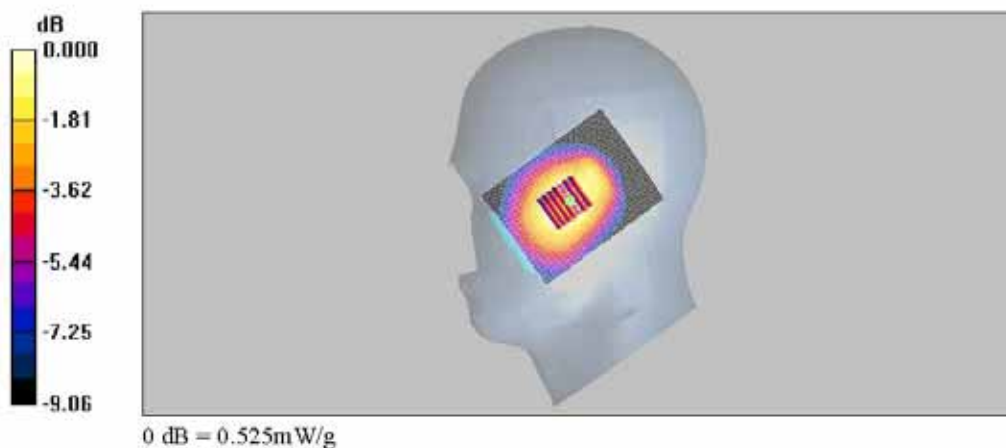
Communication System: WCDMA V; Frequency: 836.6 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 836.6 \text{ MHz}$; $\sigma = 0.895 \text{ mho/m}$; $\epsilon_r = 42.6$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(6.26, 6.26, 6.26); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP_900MHz; Type: SAM MIC #2000-93; Serial: TP-1300
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA V_RE_Mid_Tilt/Area Scan (61x81x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (interpolated) = 0.524 mW/g

WCDMA V_RE_Mid_Tilt/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$,
 $dy=5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 18.0 V/m; Power Drift = -0.020 dB
 Peak SAR (extrapolated) = 0.632 W/kg
 SAR(1 g) = 0.494 mW/g; SAR(10 g) = 0.369 mW/g
 Maximum value of SAR (measured) = 0.525 mW/g



WCDMA V Body SAR Test

Date: 2011-02-07

Test Laboratory: SGS Testing Korea
 File Name: [WCDMA V_Body_Front.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA V_Body

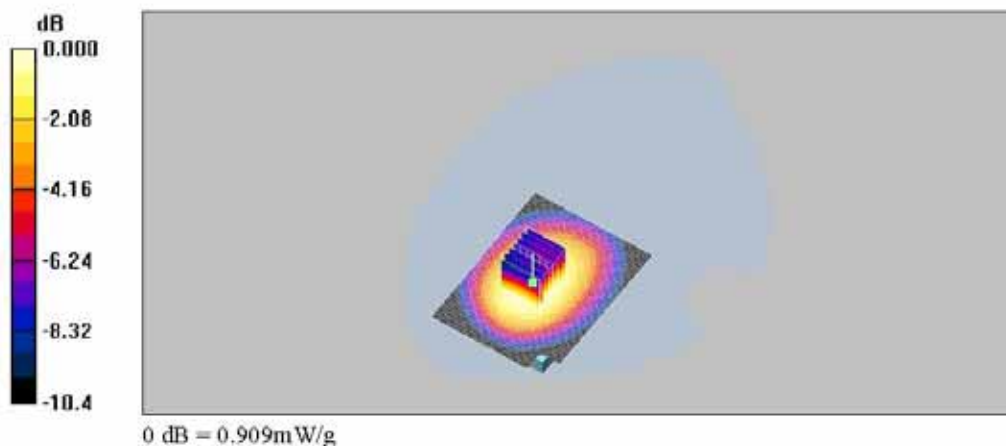
Communication System: WCDMA V; Frequency: 826.4 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 826.5$ MHz; $\sigma = 0.931$ mho/m; $\epsilon_r = 54.3$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(6.11, 6.11, 6.11); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP_900MHz; Type: SAM MIC #2000-93; Serial: TP-1300
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA V_Front_Low/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.916 mW/g

WCDMA V_Front_Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 13.0 V/m; Power Drift = 0.039 dB
 Peak SAR (extrapolated) = 1.14 W/kg
 SAR(1 g) = 0.855 mW/g; SAR(10 g) = 0.612 mW/g
 Maximum value of SAR (measured) = 0.909 mW/g



Date: 2011-02-07

Test Laboratory: SGS Testing Korea
 File Name: [WCDMA V_Body_Front.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA V_Body

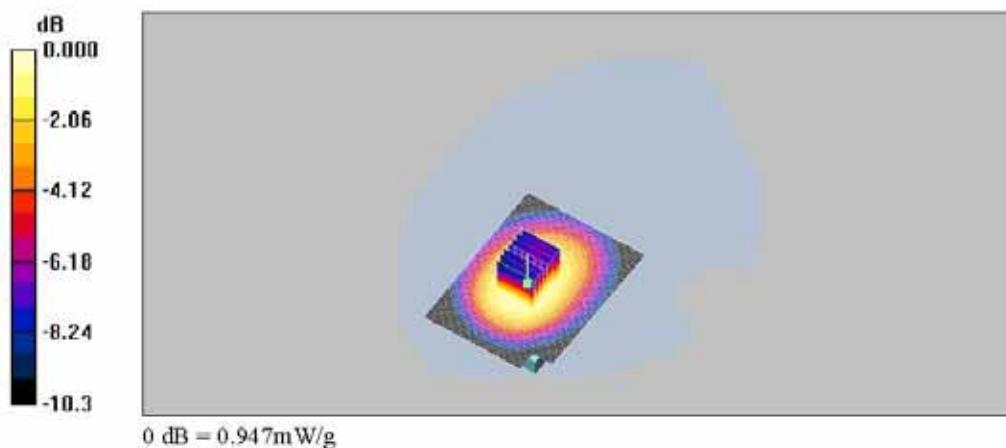
Communication System: WCDMA V; Frequency: 836.6 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 836.6 \text{ MHz}$; $\sigma = 0.947 \text{ mho/m}$; $\epsilon_r = 54.2$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(6.11, 6.11, 6.11); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP_900MHz; Type: SAM MIC #2000-93; Serial: TP-1300
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA V_Front_Mid/Area Scan (61x81x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (interpolated) = 0.949 mW/g

WCDMA V_Front_Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 13.2 V/m ; Power Drift = -0.040 dB
 Peak SAR (extrapolated) = 1.19 W/kg
 SAR(1 g) = 0.892 mW/g ; SAR(10 g) = 0.637 mW/g
 Maximum value of SAR (measured) = 0.947 mW/g



Date: 2011-02-07

Test Laboratory: SGS Testing Korea
 File Name: [WCDMA V_Body_Front.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA V_Body

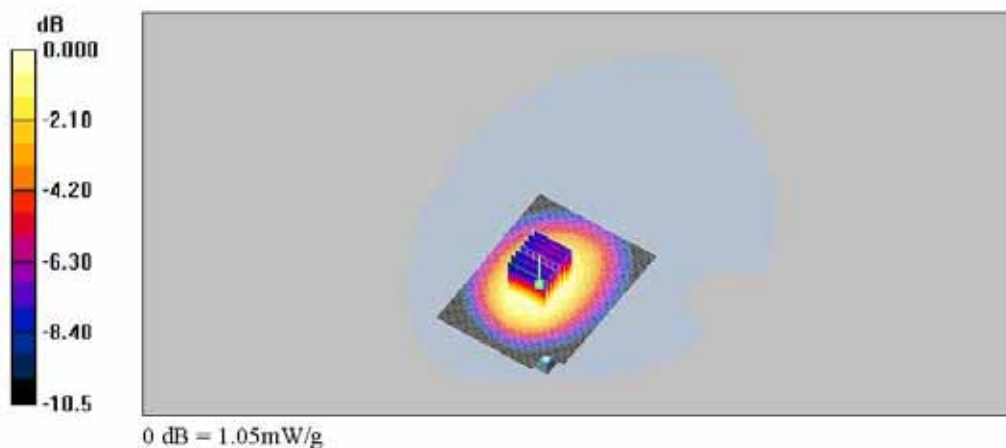
Communication System: WCDMA V; Frequency: 846.6 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 846.6 \text{ MHz}$; $\sigma = 0.962 \text{ mho/m}$; $\epsilon_r = 54.3$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(6.11, 6.11, 6.11); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP_900MHz; Type: SAM MIC #2000-93; Serial: TP-1300
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA V_Front_High/Area Scan (61x81x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (interpolated) = 1.07 mW/g

WCDMA V_Front_High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 14.3 V/m ; Power Drift = -0.164 dB
 Peak SAR (extrapolated) = 1.30 W/kg
 SAR(1 g) = 0.995 mW/g ; SAR(10 g) = 0.714 mW/g
 Maximum value of SAR (measured) = 1.05 mW/g



Date: 2011-02-07

Test Laboratory: SGS Testing Korea
 File Name: [WCDMA V_Body_Back.da4](#)

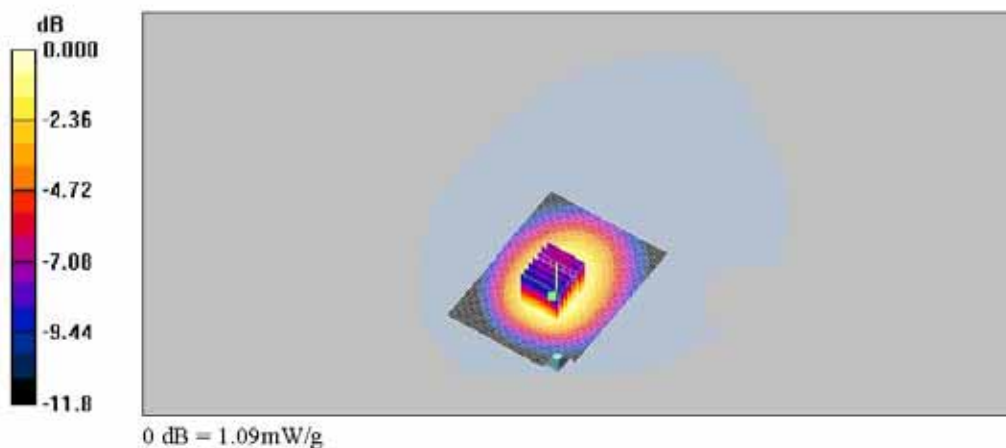
DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA V_Body

Communication System: WCDMA V; Frequency: 826.4 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 826.5 \text{ MHz}$; $\sigma = 0.931 \text{ mho/m}$; $\epsilon_r = 54.3$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section

DASY4 Configuration:
 - Probe: ET3DV6 - SN1782; ConvF(6.11, 6.11, 6.11); Calibrated: 2010-04-28
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn567; Calibrated: 2011-01-27
 - Phantom: SAM MIC #2000-93 with CRP_900MHz; Type: SAM MIC #2000-93; Serial: TP-1300
 - Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA V_Back_Low/Area Scan (61x81x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (interpolated) = 1.09 mW/g

WCDMA V_Back_Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 13.6 V/m; Power Drift = 0.044 dB
 Peak SAR (extrapolated) = 1.38 W/kg
SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.723 mW/g
 Maximum value of SAR (measured) = 1.09 mW/g



Date: 2011-02-07

Test Laboratory: SGS Testing Korea
 File Name: [WCDMA V_Body_Back.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA V_Body

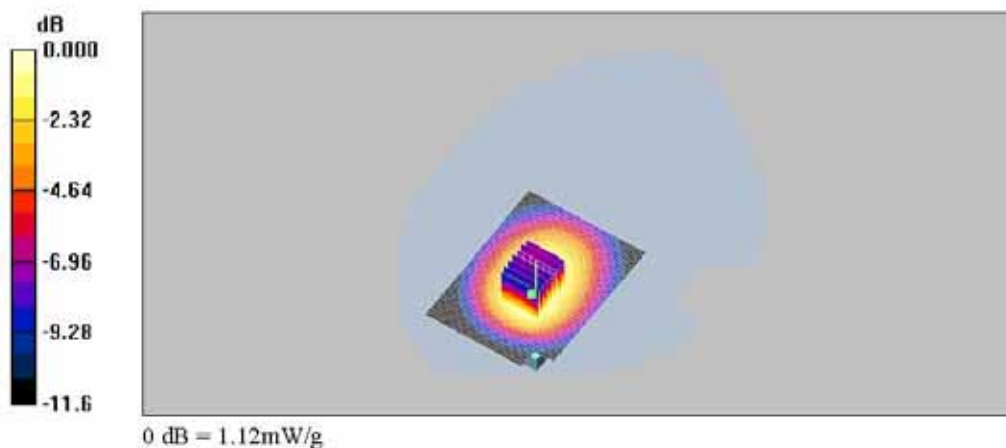
Communication System: WCDMA V; Frequency: 836.6 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 836.6 \text{ MHz}$; $\sigma = 0.947 \text{ mho/m}$; $\epsilon_r = 54.2$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(6.11, 6.11, 6.11); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP_900MHz; Type: SAM MIC #2000-93; Serial: TP-1300
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA V_Back_Mid/Area Scan (61x81x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (interpolated) = 1.11 mW/g

WCDMA V_Back_Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 13.8 V/m; Power Drift = -0.042 dB
 Peak SAR (extrapolated) = 1.41 W/kg
 SAR(1 g) = 1.05 mW/g; SAR(10 g) = 0.743 mW/g
 Maximum value of SAR (measured) = 1.12 mW/g



Date : 2011-02-07

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 File Name: [WCDMA V_Body_Back.da4](#)

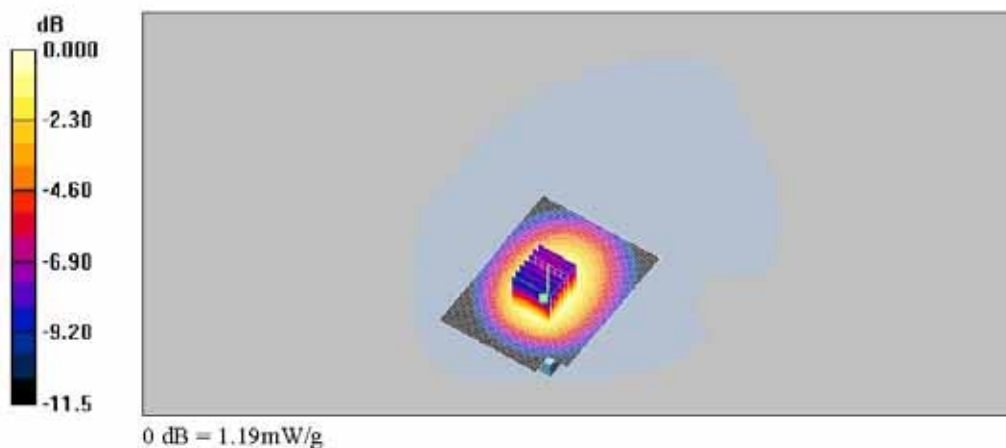
DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA V_Body

Communication System: WCDMA V; Frequency: 846.6 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 846.6 \text{ MHz}$; $\sigma = 0.962 \text{ mho/m}$; $\epsilon_r = 54.3$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section

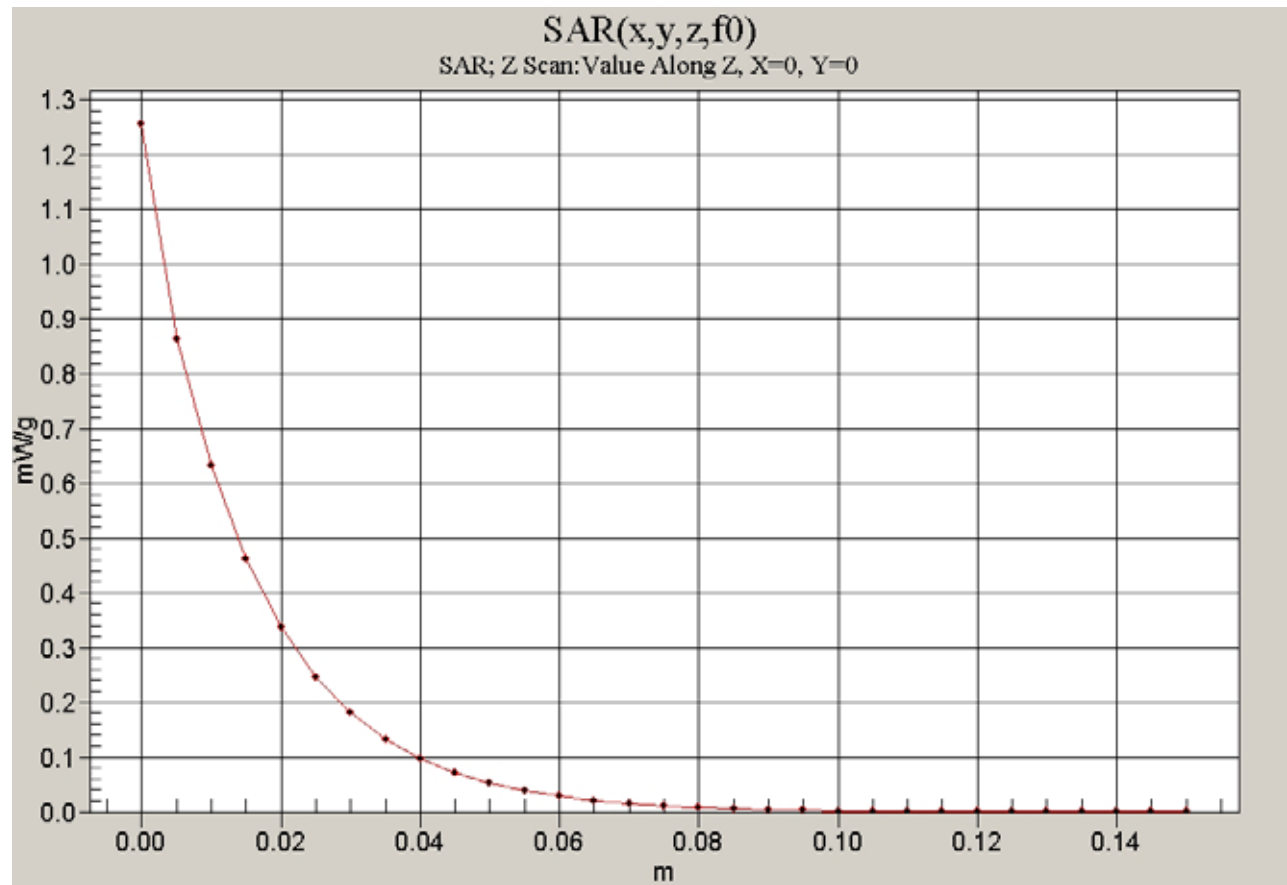
DASY4 Configuration:
 - Probe: ET3DV6 - SN1782; ConvF(6.11, 6.11, 6.11); Calibrated: 2010-04-28
 - Sensor-Surface: 4mm (Mechanical Surface Detection)
 - Electronics: DAE3 Sn567; Calibrated: 2011-01-27
 - Phantom: SAM MIC #2000-93 with CRP_900MHz; Type: SAM MIC #2000-93; Serial: TP-1300
 - Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA V_Back_High/Area Scan (61x81x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (interpolated) = 1.18 mW/g

WCDMA V_Back_High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 14.1 V/m ; Power Drift = -0.007 dB
 Peak SAR (extrapolated) = 1.50 W/kg
 SAR(1 g) = 1.12 mW/g ; SAR(10 g) = 0.794 mW/g
 Maximum value of SAR (measured) = 1.19 mW/g



Z Scan



Date: 2011-02-07

Test Laboratory: SGS Testing Korea
 File Name: [WCDMA V_Body_Edge A&B.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA V_Body

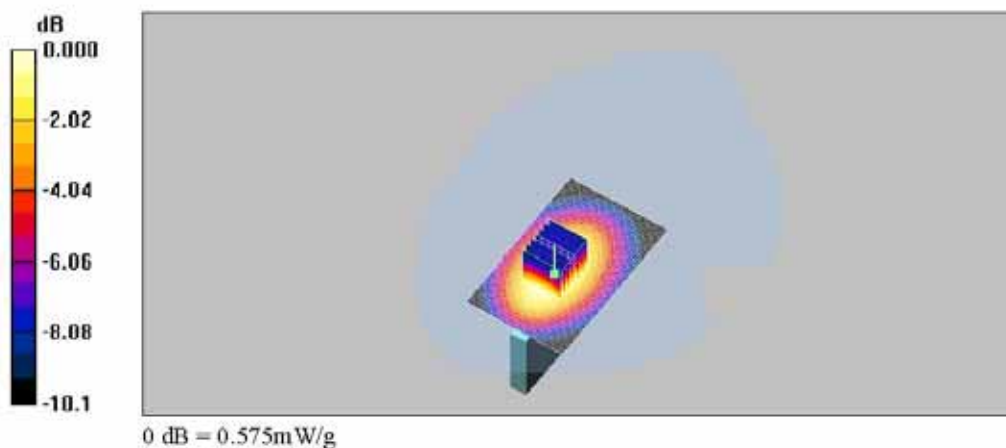
Communication System: WCDMA V; Frequency: 836.6 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 836.6 \text{ MHz}$; $\sigma = 0.947 \text{ mho/m}$; $\epsilon_r = 54.2$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(6.11, 6.11, 6.11); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP_900MHz; Type: SAM MIC #2000-93; Serial: TP-1300
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA V_Edge A_Mid/Area Scan (51x81x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (interpolated) = 0.577 mW/g

WCDMA V_Edge A_Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 12.7 V/m ; Power Drift = 0.025 dB
 Peak SAR (extrapolated) = 0.754 W/kg
 SAR(1 g) = 0.541 mW/g ; SAR(10 g) = 0.369 mW/g
 Maximum value of SAR (measured) = 0.575 mW/g



Date: 2011-02-07

Test Laboratory: SGS Testing Korea
 File Name: WCDMA V_Body_Edge A&B.da4

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA V_Body

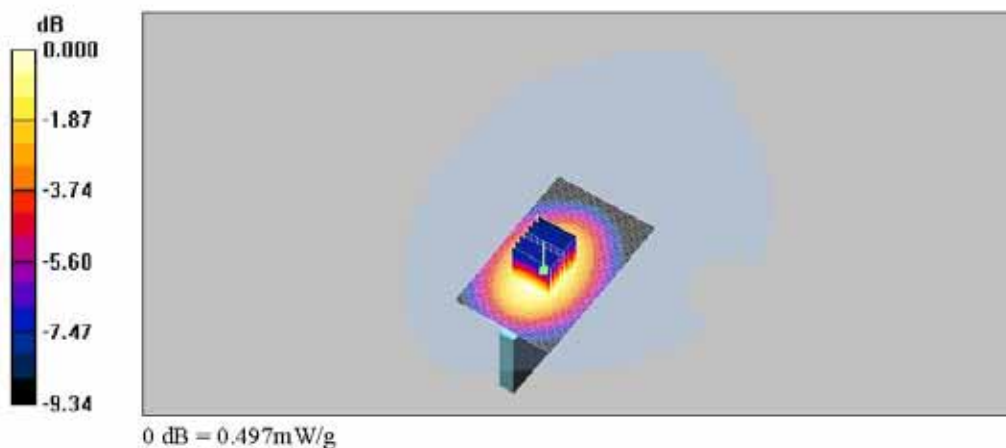
Communication System: WCDMA V; Frequency: 836.6 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 836.6 \text{ MHz}$; $\sigma = 0.947 \text{ mho/m}$; $\epsilon_r = 54.2$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(6.11, 6.11, 6.11); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP_900MHz; Type: SAM MIC #2000-93; Serial: TP-1300
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA V_Edge B_Mid/Area Scan (51x81x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (interpolated) = 0.496 mW/g

WCDMA V_Edge B_Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 11.5 V/m ; Power Drift = 0.016 dB
 Peak SAR (extrapolated) = 0.644 W/kg
 SAR(1 g) = 0.466 mW/g ; SAR(10 g) = 0.324 mW/g
 Maximum value of SAR (measured) = 0.497 mW/g



Date: 2011-02-07

Test Laboratory: SGS Testing Korea
 File Name: [WCDMA V_Body_Edge C.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA V_Body

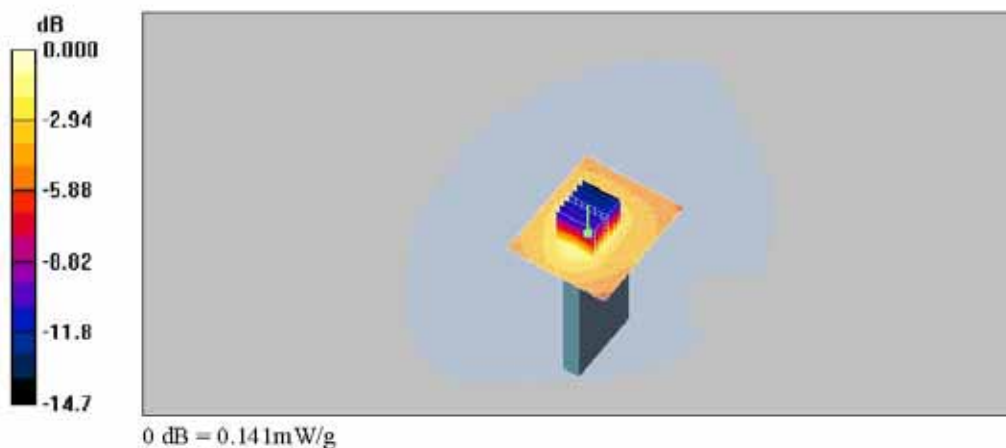
Communication System: WCDMA V; Frequency: 836.6 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 836.6 \text{ MHz}$; $\sigma = 0.947 \text{ mho/m}$; $\epsilon_r = 54.2$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(6.11, 6.11, 6.11); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP_900MHz; Type: SAM MIC #2000-93; Serial: TP-1300
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA V_Edge C_Mid/Area Scan (51x61x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (interpolated) = 0.134 mW/g

WCDMA V_Edge C_Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 12.5 V/m; Power Drift = 0.095 dB
 Peak SAR (extrapolated) = 0.287 W/kg
 SAR(1 g) = 0.132 mW/g; SAR(10 g) = 0.073 mW/g
 Maximum value of SAR (measured) = 0.141 mW/g



WCDMA II Head SAR Test

Date: 2011-02-01

Test Laboratory: SGS Testing Korea
 File Name: [WCDMA II_LE.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA II_Head

Communication System: W-CDMA II; Frequency: 1880 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.45$ mho/m; $\epsilon_r = 38.6$; $\rho = 1000$ kg/m³
 Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(5.04, 5.04, 5.04); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn912; Calibrated: 2010-11-18
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA II_LE_Mid_Cheek/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.767 mW/g

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

Reference Value = 9.65 V/m; Power Drift = -0.146 dB

Peak SAR (extrapolated) = 1.43 W/kg

SAR(1 g) = 0.760 mW/g; SAR(10 g) = 0.385 mW/g

Maximum value of SAR (measured) = 0.850 mW/g

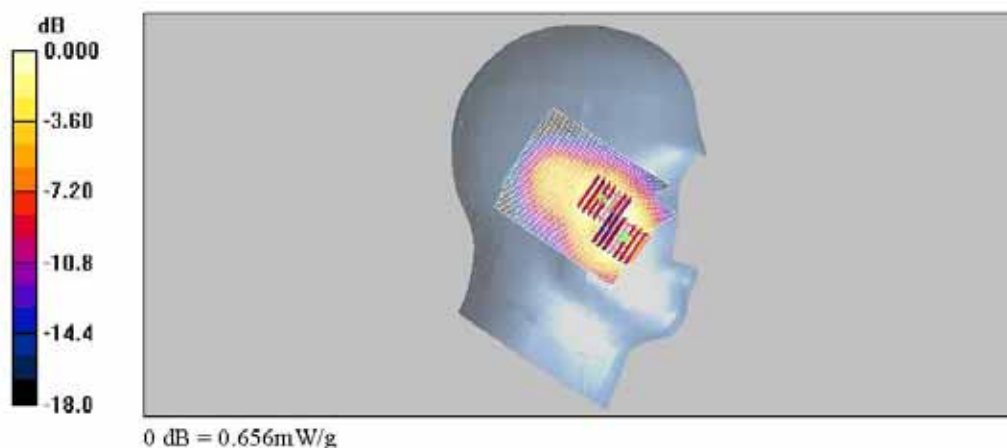
WCDMA II_LE_Mid_Cheek/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.65 V/m; Power Drift = -0.146 dB

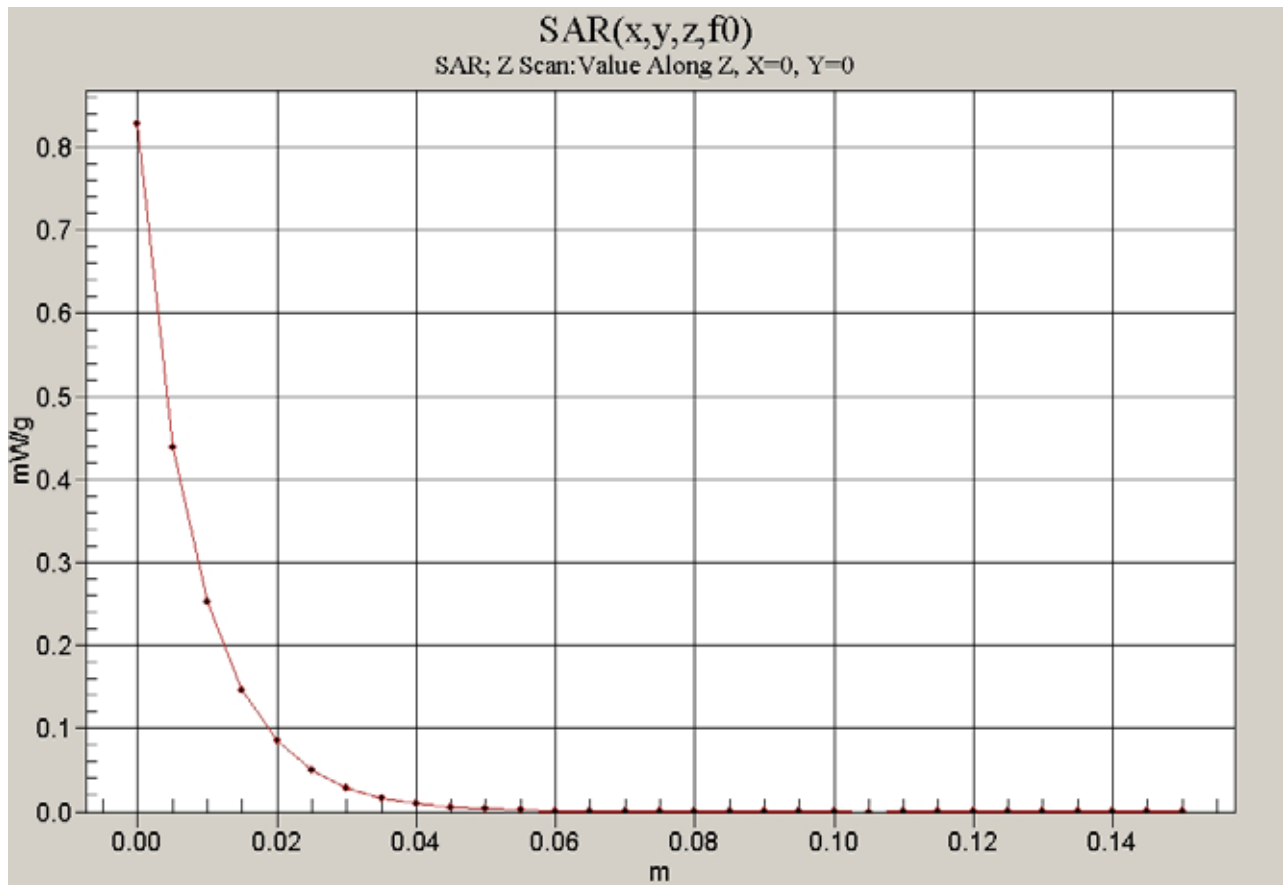
Peak SAR (extrapolated) = 0.936 W/kg

SAR(1 g) = 0.579 mW/g; SAR(10 g) = 0.320 mW/g

Maximum value of SAR (measured) = 0.656 mW/g



Z Scan



Date: 2011-02-01

Test Laboratory: SGS Testing Korea
 File Name: [WCDMA II_LE.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA II_Head

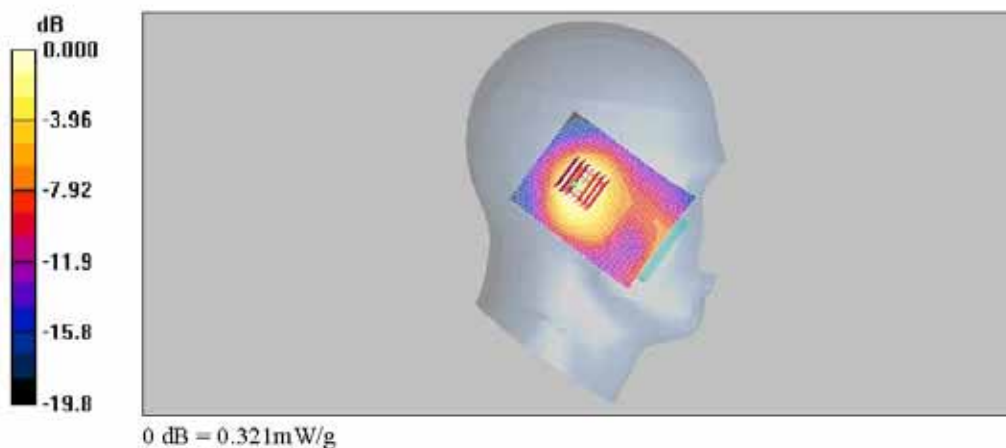
Communication System: W-CDMA II; Frequency: 1880 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.45$ mho/m; $\epsilon_r = 38.6$; $\rho = 1000$ kg/m³
 Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(5.04, 5.04, 5.04); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn912; Calibrated: 2010-11-18
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA II_LE_Mid_Tilt/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.352 mW/g

WCDMA II_LE_Mid_Tilt/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 14.1 V/m; Power Drift = -0.081 dB
 Peak SAR (extrapolated) = 0.465 W/kg
 SAR(1 g) = 0.297 mW/g; SAR(10 g) = 0.173 mW/g
 Maximum value of SAR (measured) = 0.321 mW/g



Date: 2011-02-01

Test Laboratory: SGS Testing Korea
 File Name: [WCDMA II_RE.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA II_Head

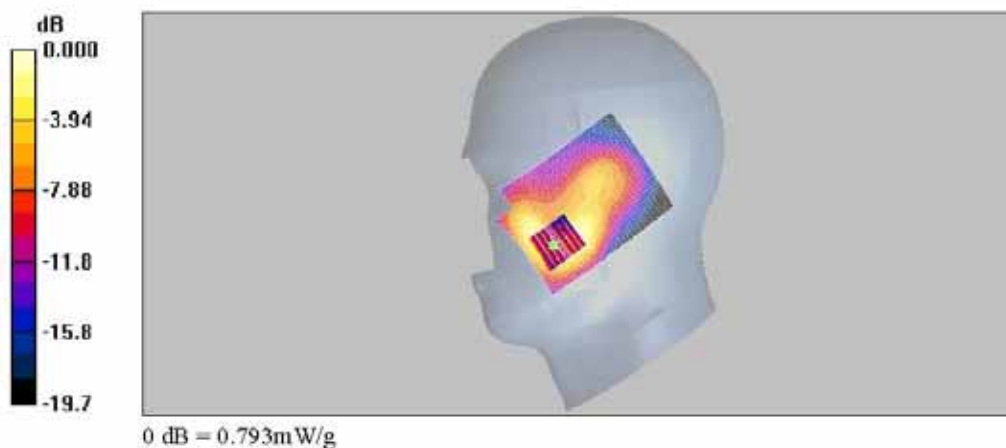
Communication System: W-CDMA II; Frequency: 1880 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.45$ mho/m; $\epsilon_r = 38.6$; $\rho = 1000$ kg/m³
 Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(5.04, 5.04, 5.04); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn912; Calibrated: 2010-11-18
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA II_RE_Mid_Cheek/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.793 mW/g

WCDMA II_RE_Mid_Cheek/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 8.30 V/m; Power Drift = 0.035 dB
 Peak SAR (extrapolated) = 1.21 W/kg
 SAR(1 g) = 0.696 mW/g; SAR(10 g) = 0.377 mW/g
 Maximum value of SAR (measured) = 0.793 mW/g



Date: 2011-02-01

Test Laboratory: SGS Testing Korea
 File Name: [WCDMA II_RE.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA II_Head

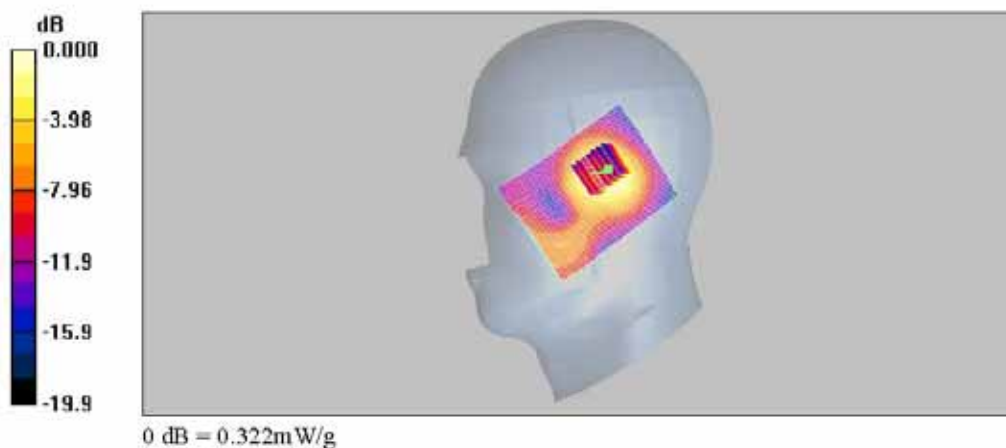
Communication System: W-CDMA II; Frequency: 1880 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.45 \text{ mho/m}$; $\epsilon_r = 38.6$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(5.04, 5.04, 5.04); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn912; Calibrated: 2010-11-18
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA II_RE_Mid_Tilt/Area Scan (61x81x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (interpolated) = 0.369 mW/g

WCDMA II_RE_Mid_Tilt/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 14.4 V/m ; Power Drift = 0.008 dB
 Peak SAR (extrapolated) = 0.439 W/kg
 SAR(1 g) = 0.297 mW/g ; SAR(10 g) = 0.179 mW/g
 Maximum value of SAR (measured) = 0.322 mW/g



WCDMA II Body SAR Test

Date: 2011-01-31

Test Laboratory: SGS Testing Korea
 File Name: [WCDMA II_Body_Front.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA II_Body

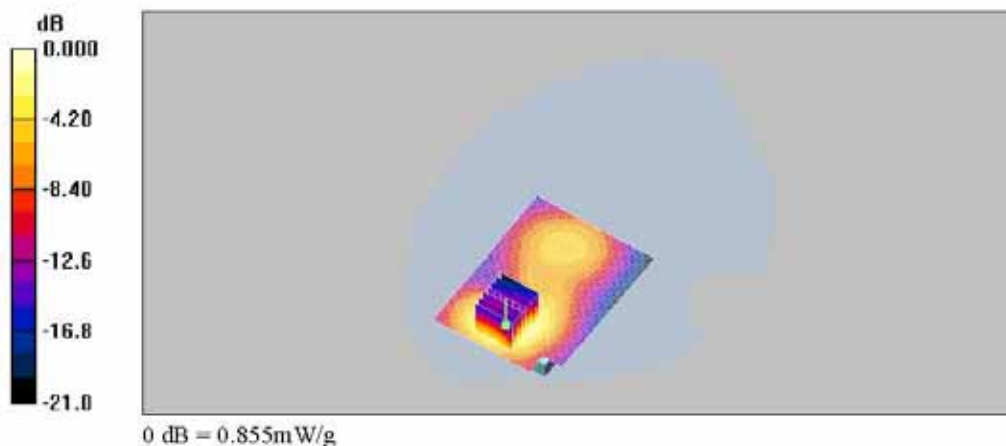
Communication System: W-CDMA II; Frequency: 1880 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 52.3$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(4.46, 4.46, 4.46); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn912; Calibrated: 2010-11-18
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA II_Mid_Front/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.847 mW/g

WCDMA II_Mid_Front/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 10.1 V/m; Power Drift = 0.097 dB
 Peak SAR (extrapolated) = 1.21 W/kg
 SAR(1 g) = 0.759 mW/g; SAR(10 g) = 0.410 mW/g
 Maximum value of SAR (measured) = 0.855 mW/g



Date: 2011-01-31

Test Laboratory: SGS Testing Korea
 File Name: [WCDMA II_Body_Back.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA II_Body

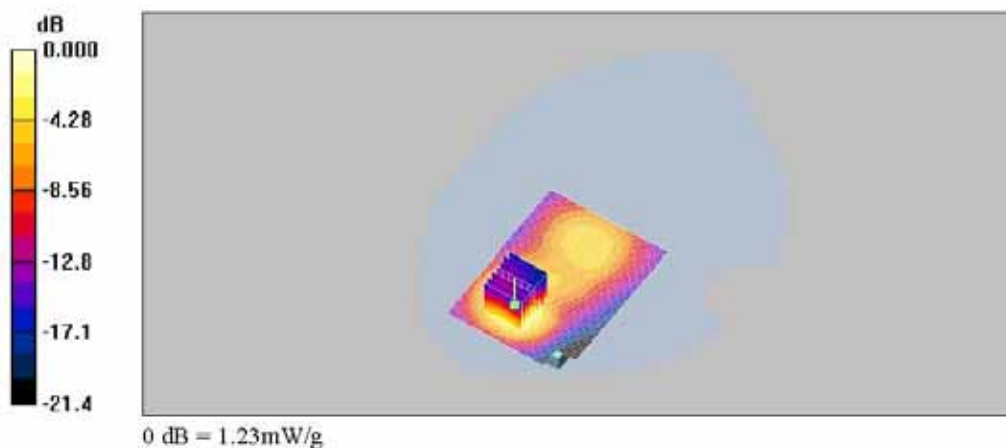
Communication System: W-CDMA II; Frequency: 1852.4 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 52.4$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(4.46, 4.46, 4.46); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn912; Calibrated: 2010-11-18
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA II_Low_Back/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 1.24 mW/g

WCDMA II_Low_Back/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 13.1 V/m; Power Drift = -0.009 dB
 Peak SAR (extrapolated) = 1.82 W/kg
 SAR(1 g) = 1.11 mW/g; SAR(10 g) = 0.586 mW/g
 Maximum value of SAR (measured) = 1.23 mW/g



Date: 2011-01-31

Test Laboratory: SGS Testing Korea
 File Name: [WCDMA II_Body_Back.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA II_Body

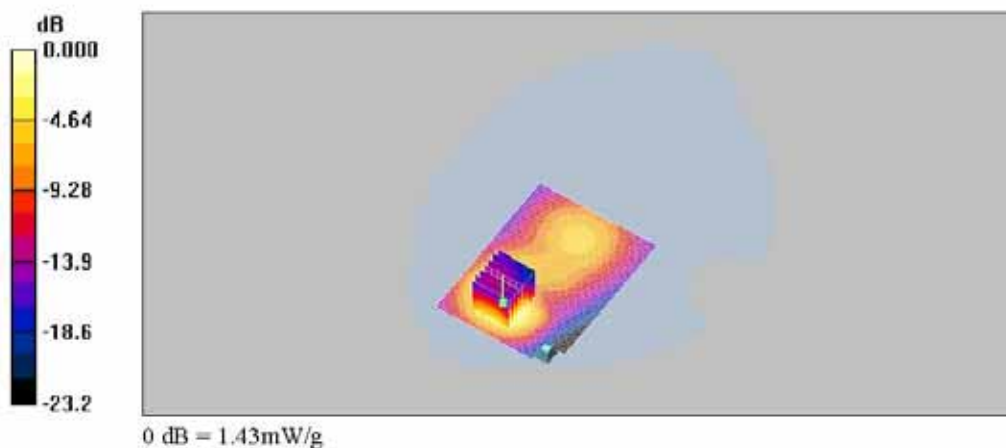
Communication System: W-CDMA II; Frequency: 1880 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 52.3$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section

DASY4 Configuration:

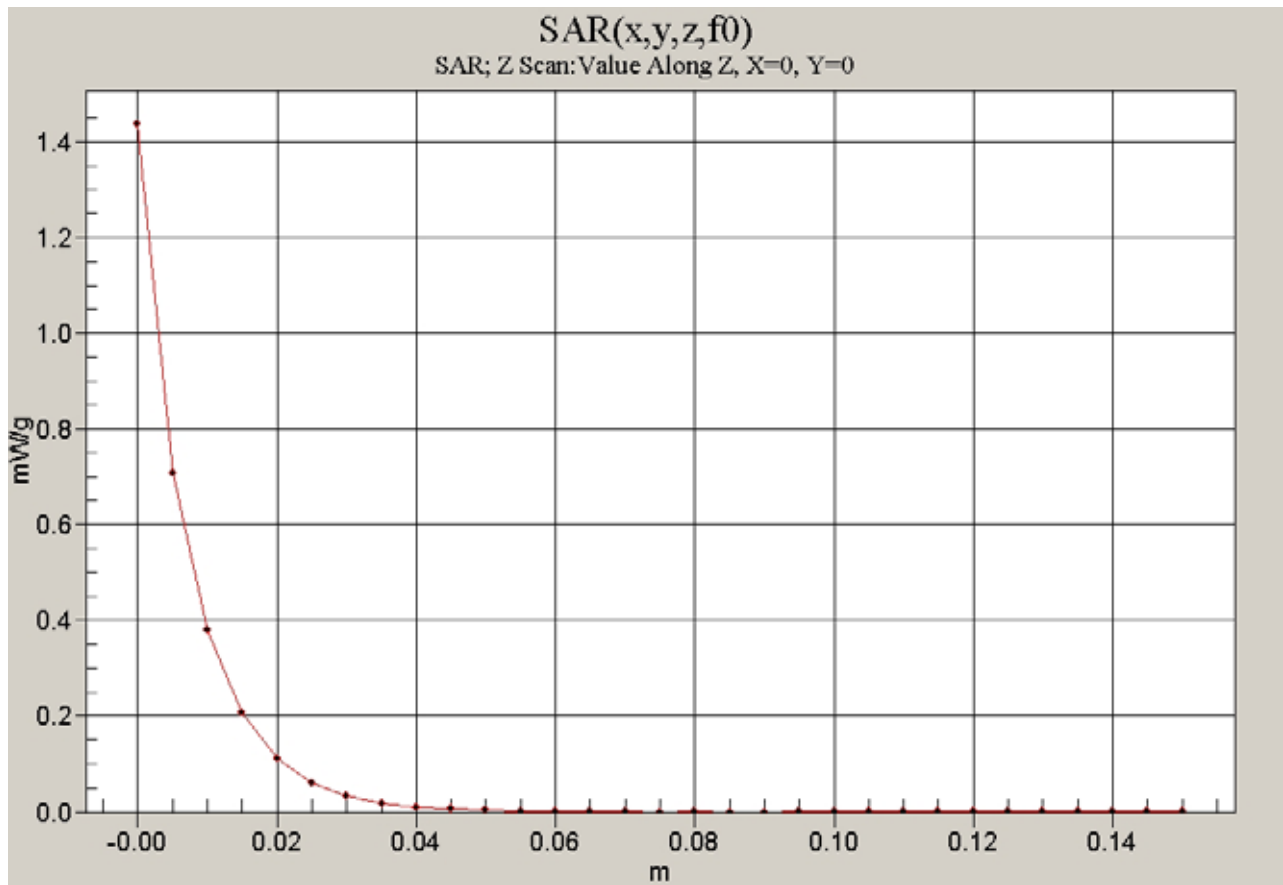
- Probe: ET3DV6 - SN1782; ConvF(4.46, 4.46, 4.46); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn912; Calibrated: 2010-11-18
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA II_Mid_Back/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 1.40 mW/g

WCDMA II_Mid_Back/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 12.4 V/m; Power Drift = -0.045 dB
 Peak SAR (extrapolated) = 2.09 W/kg
 SAR(1 g) = 1.26 mW/g; SAR(10 g) = 0.650 mW/g
 Maximum value of SAR (measured) = 1.43 mW/g



Z Scan



Date: 2011-01-31

Test Laboratory: SGS Testing Korea
 File Name: [WCDMA II_Body_Back.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA II_Body

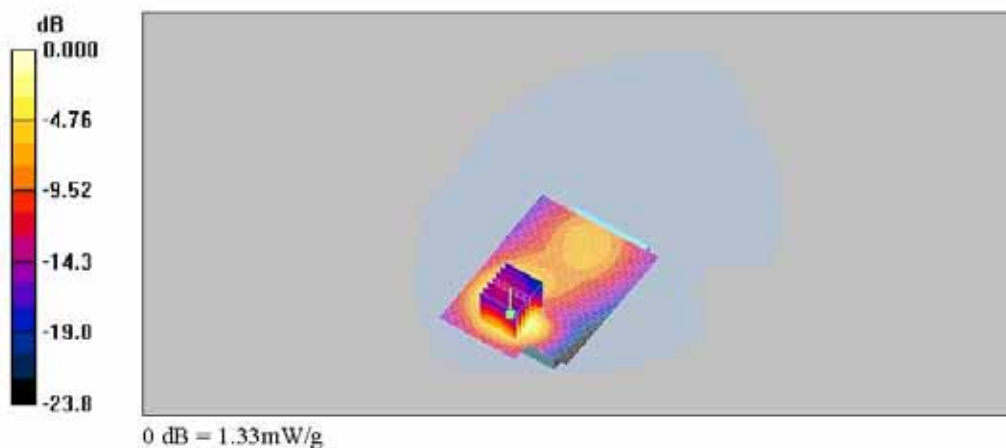
Communication System: W-CDMA II; Frequency: 1907.6 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 1908 \text{ MHz}$; $\sigma = 1.56 \text{ mho/m}$; $\epsilon_r = 52.2$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(4.46, 4.46, 4.46); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn912; Calibrated: 2010-11-18
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA II_High_Back/Area Scan (61x81x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (interpolated) = 1.39 mW/g

WCDMA II_High_Back/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 11.2 V/m; Power Drift = -0.036 dB
 Peak SAR (extrapolated) = 2.02 W/kg
 SAR(1 g) = 1.2 mW/g; SAR(10 g) = 0.612 mW/g
 Maximum value of SAR (measured) = 1.33 mW/g



Date: 2011-01-31

Test Laboratory: SGS Testing Korea
 File Name: [WCDMA II_Body_Edge A&B.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA II_Body

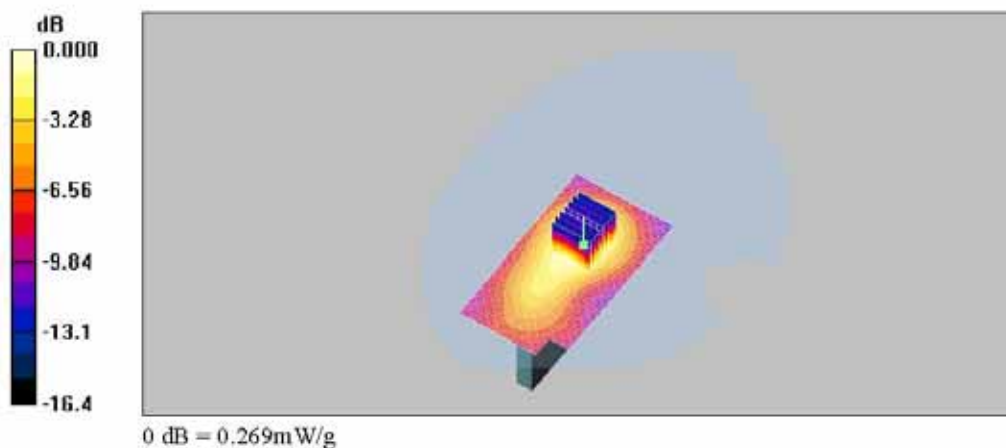
Communication System: W-CDMA II; Frequency: 1880 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.53 \text{ mho/m}$; $\epsilon_r = 52.3$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(4.46, 4.46, 4.46); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn912; Calibrated: 2010-11-18
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA II_MId_Edge A/Area Scan (51x91x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (interpolated) = 0.271 mW/g

WCDMA II_MId_Edge A/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 9.11 V/m ; Power Drift = 0.056 dB
 Peak SAR (extrapolated) = 0.357 W/kg
 SAR(1 g) = 0.244 mW/g ; SAR(10 g) = 0.145 mW/g
 Maximum value of SAR (measured) = 0.269 mW/g



Date: 2011-01-31

Test Laboratory: SGS Testing Korea
 File Name: [WCDMA II_Body_Edge A&B.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA II_Body

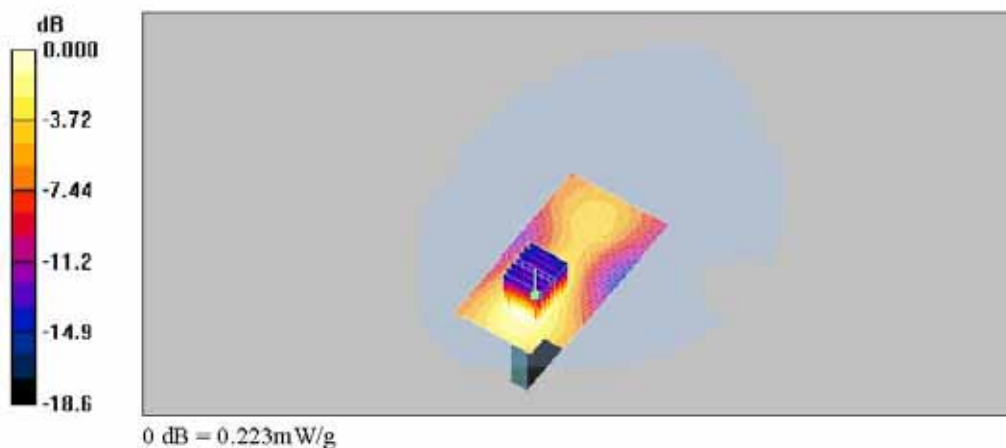
Communication System: W-CDMA II; Frequency: 1880 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 52.3$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(4.46, 4.46, 4.46); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn912; Calibrated: 2010-11-18
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA II_MId_Edge B/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.223 mW/g

WCDMA II_MId_Edge B/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 8.04 V/m; Power Drift = 0.154 dB
 Peak SAR (extrapolated) = 0.306 W/kg
 SAR(1 g) = 0.201 mW/g; SAR(10 g) = 0.117 mW/g
 Maximum value of SAR (measured) = 0.223 mW/g



Date: 2011-01-31

Test Laboratory: SGS Testing Korea
 File Name: [WCDMA II_Body_Edge C.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA II_Body

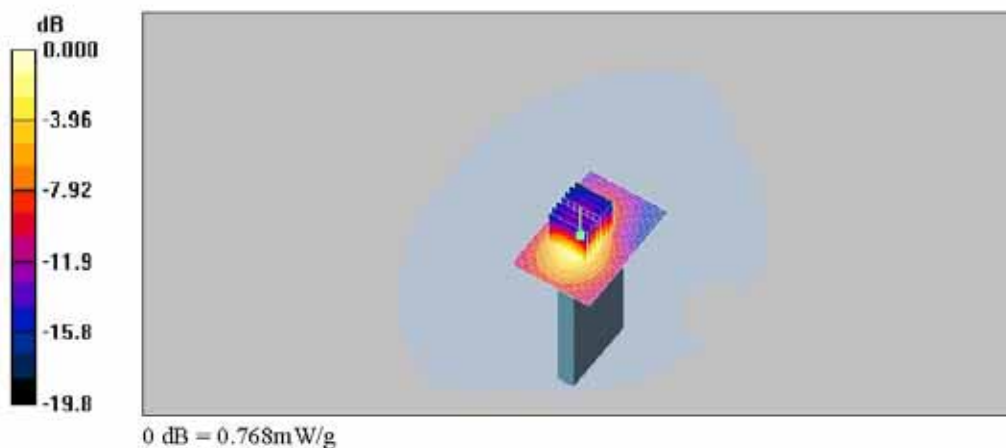
Communication System: W-CDMA II; Frequency: 1852.4 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 52.4$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(4.46, 4.46, 4.46); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn912; Calibrated: 2010-11-18
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA II_Edge C_Low/Area Scan (41x61x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.822 mW/g

WCDMA II_Edge C_Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 23.2 V/m; Power Drift = -0.017 dB
 Peak SAR (extrapolated) = 1.09 W/kg
 SAR(1 g) = 0.677 mW/g; SAR(10 g) = 0.355 mW/g
 Maximum value of SAR (measured) = 0.768 mW/g



Date: 2011-01-31

Test Laboratory: SGS Testing Korea
 File Name: [WCDMA II_Body_Edge C.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA II_Body

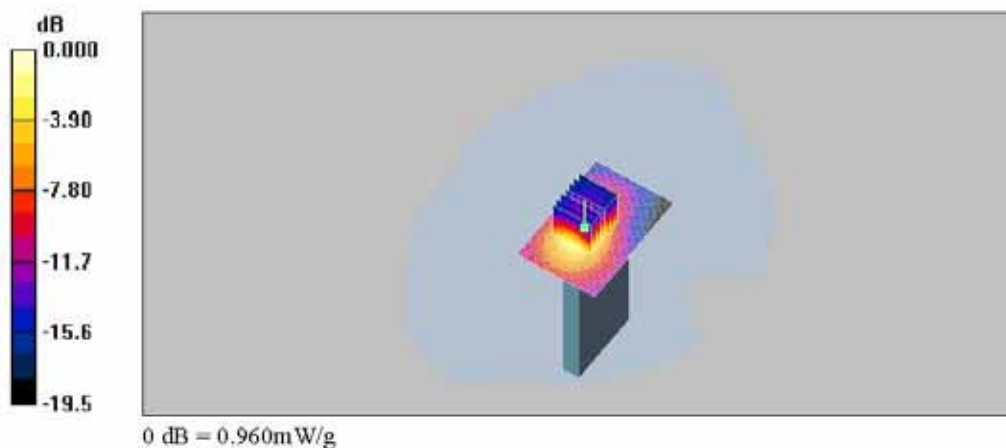
Communication System: W-CDMA II; Frequency: 1880 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 52.3$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(4.46, 4.46, 4.46); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn912; Calibrated: 2010-11-18
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA II_Edge C_Mid/Area Scan (41x61x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 1.05 mW/g

WCDMA II_Edge C_Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 24.5 V/m; Power Drift = 0.093 dB
 Peak SAR (extrapolated) = 1.37 W/kg
SAR(1 g) = 0.843 mW/g; SAR(10 g) = 0.435 mW/g
 Maximum value of SAR (measured) = 0.960 mW/g



Date: 2011-01-31

Test Laboratory: SGS Testing Korea
 File Name: [WCDMA II_Body_Edge C.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WCDMA II_Body

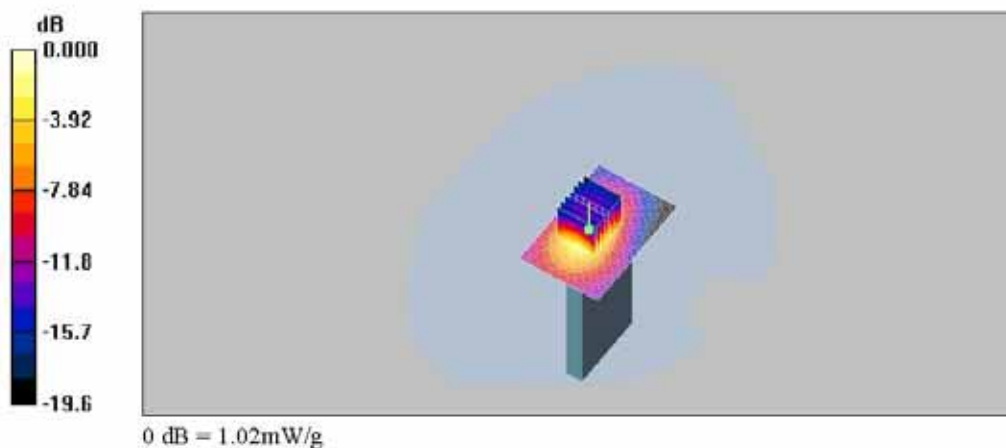
Communication System: W-CDMA II; Frequency: 1907.6 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 1908 \text{ MHz}$; $\sigma = 1.56 \text{ mho/m}$; $\epsilon_r = 52.2$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(4.46, 4.46, 4.46); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn912; Calibrated: 2010-11-18
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA II_Edge C_High/Area Scan (41x61x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (interpolated) = 1.11 mW/g

WCDMA II_Edge C_High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 25.6 V/m; Power Drift = -0.025 dB
 Peak SAR (extrapolated) = 1.46 W/kg
 SAR(1 g) = 0.890 mW/g; SAR(10 g) = 0.457 mW/g
 Maximum value of SAR (measured) = 1.02 mW/g



WLAN Head SAR Test

Date: 2011-02-10

Test Laboratory: SGS Testing Korea
 File Name: [WLAN_LE.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WLAN_Head

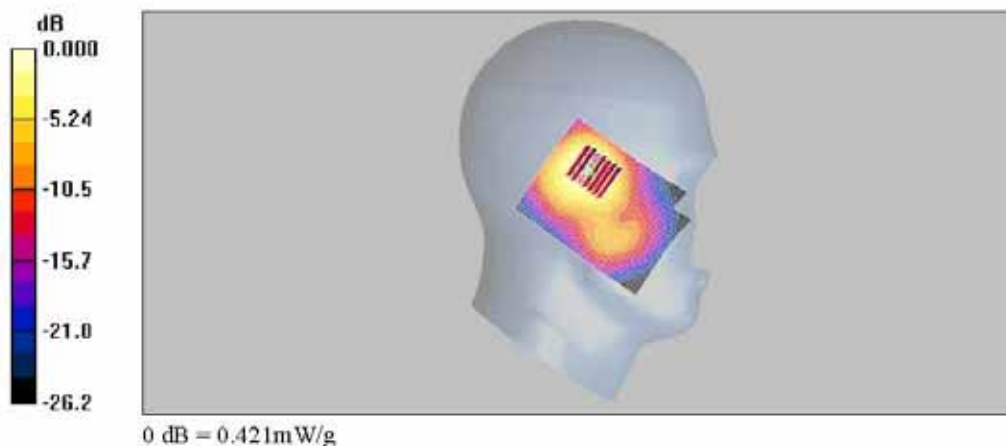
Communication System: WLAN; Frequency: 2412 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 2412 \text{ MHz}$; $\sigma = 1.72 \text{ mho/m}$; $\epsilon_r = 37.8$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(4.48, 4.48, 4.48); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WLAN_LE_11b_Low_Cheek/Area Scan (61x81x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (interpolated) = 0.381 mW/g

WLAN_LE_11b_Low_Cheek/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 10.7 V/m ; Power Drift = -0.043 dB
 Peak SAR (extrapolated) = 1.06 W/kg
 $\text{SAR}(1 \text{ g}) = 0.384 \text{ mW/g}$; $\text{SAR}(10 \text{ g}) = 0.177 \text{ mW/g}$
 Maximum value of SAR (measured) = 0.421 mW/g



Date: 2011-02-10

Test Laboratory: SGS Testing Korea
 File Name: [WLAN_LE.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WLAN_Head

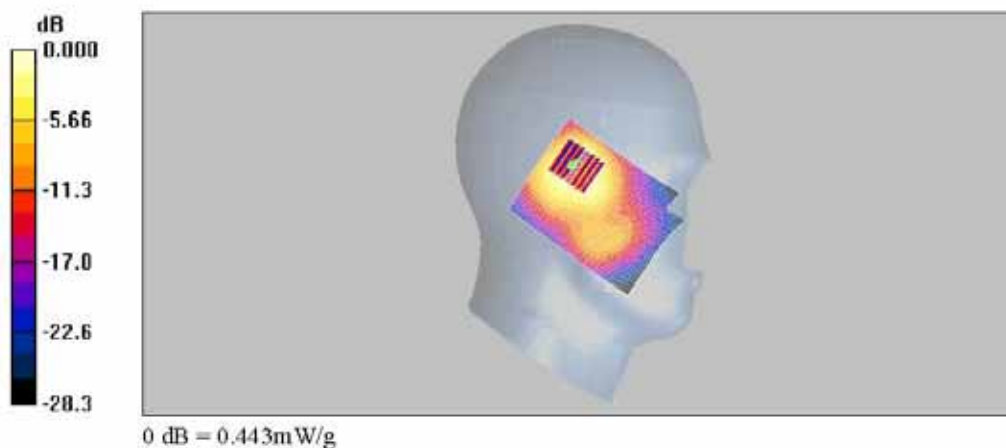
Communication System: WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.79$ mho/m; $\epsilon_r = 37.5$; $\rho = 1000$ kg/m³
 Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(4.48, 4.48, 4.48); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WLAN_LE_11b_Mid_Cheek/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.402 mW/g

WLAN_LE_11b_Mid_Cheek/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 11.0 V/m; Power Drift = -0.187 dB
 Peak SAR (extrapolated) = 1.14 W/kg
 SAR(1 g) = 0.412 mW/g; SAR(10 g) = 0.185 mW/g
 Maximum value of SAR (measured) = 0.443 mW/g



Date: 2011-02-10

Test Laboratory: SGS Testing Korea
 File Name: [WLAN_LE.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WLAN_Head

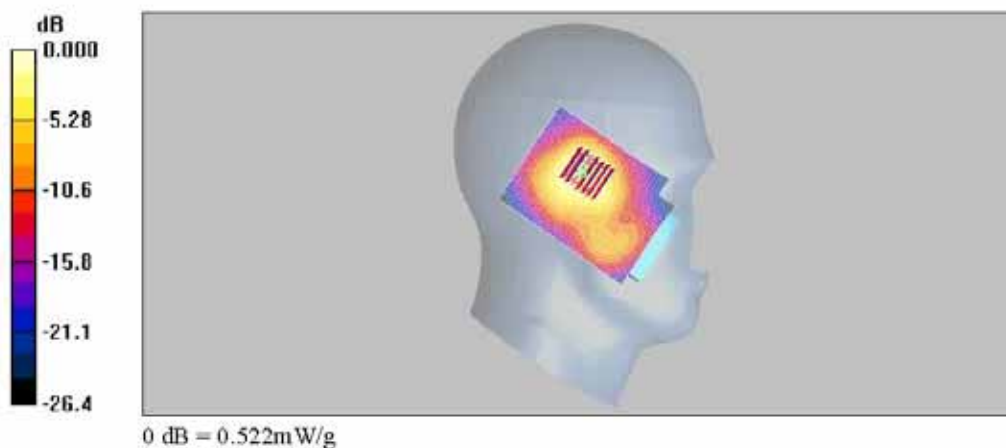
Communication System: WLAN; Frequency: 2462 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 2462 \text{ MHz}$; $\sigma = 1.84 \text{ mho/m}$; $\epsilon_r = 37.5$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Left Section

DASY4 Configuration:

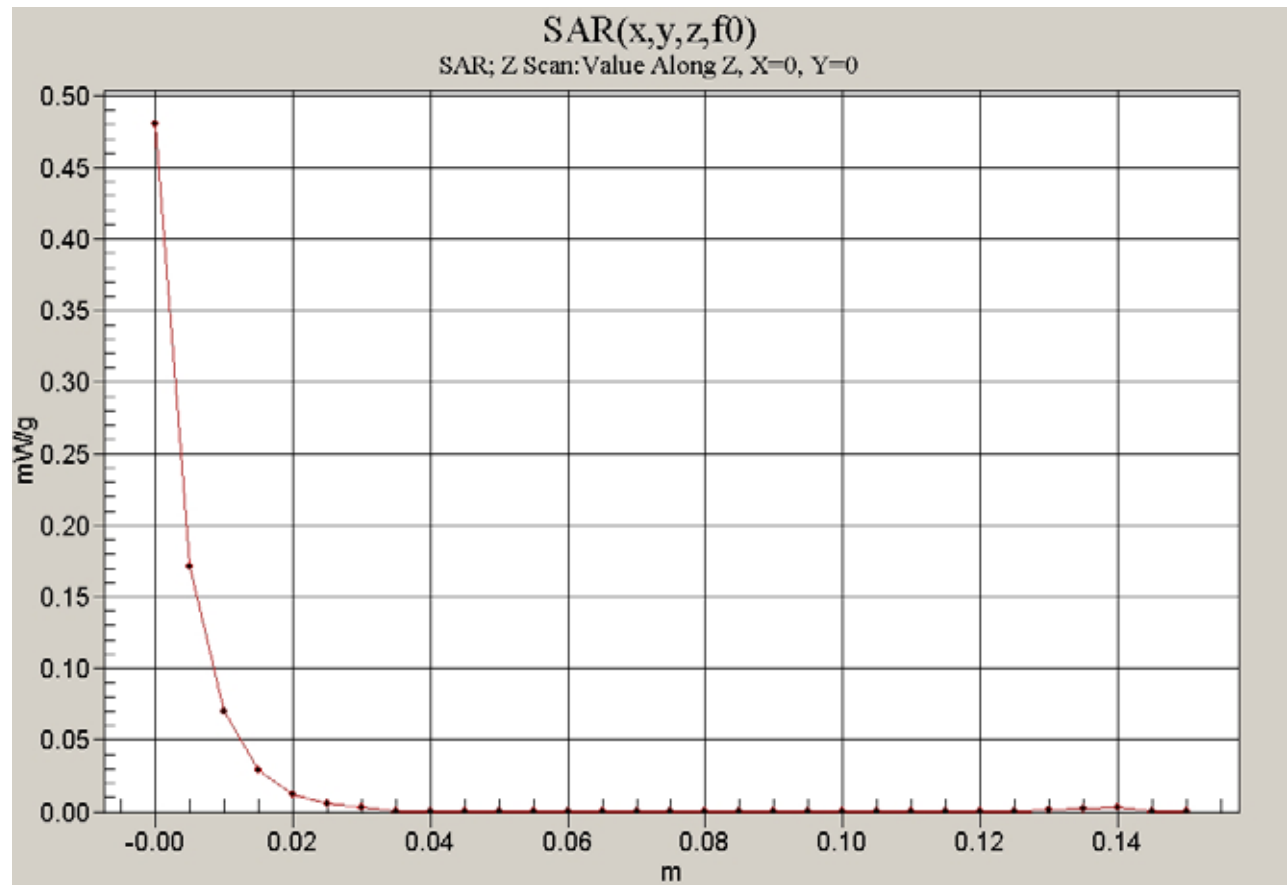
- Probe: ET3DV6 - SN1782; ConvF(4.48, 4.48, 4.48); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WLAN_LE_11b_High_Cheek/Area Scan (61x81x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (interpolated) = 0.521 mW/g

WLAN_LE_11b_High_Cheek/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 11.6 V/m; Power Drift = 0.006 dB
 Peak SAR (extrapolated) = 1.32 W/kg
 SAR(1 g) = 0.474 mW/g; SAR(10 g) = 0.217 mW/g
 Maximum value of SAR (measured) = 0.522 mW/g



Z Scan



Date: 2011-02-10

Test Laboratory: SGS Testing Korea
 File Name: [WLAN_LE.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WLAN_Head

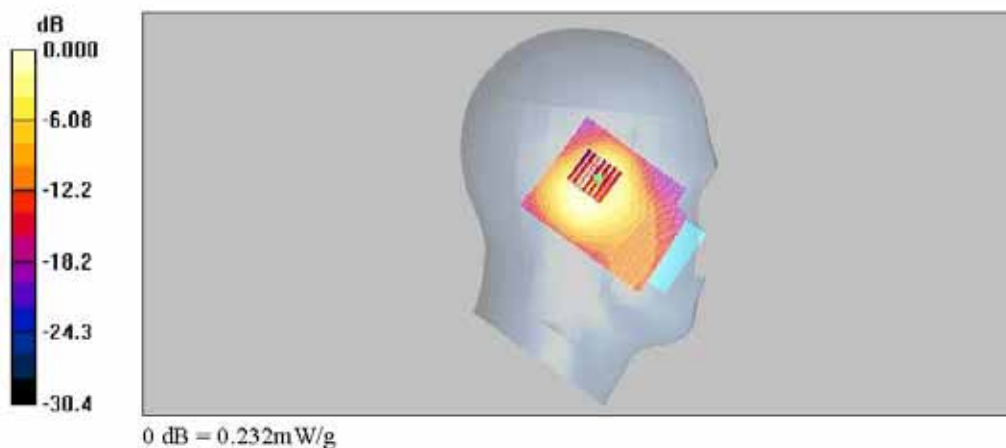
Communication System: WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.79$ mho/m; $\epsilon_r = 37.5$; $\rho = 1000$ kg/m³
 Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(4.48, 4.48, 4.48); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WLAN_LE_11b_Mid_Tilt/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.256 mW/g

WLAN_LE_11b_Mid_Tilt/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 11.9 V/m; Power Drift = -0.015 dB
 Peak SAR (extrapolated) = 0.558 W/kg
 SAR(1 g) = 0.216 mW/g; SAR(10 g) = 0.111 mW/g
 Maximum value of SAR (measured) = 0.232 mW/g



Date: 2011-02-10

Test Laboratory: SGS Testing Korea
 File Name: [WLAN_RE.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WLAN_Head

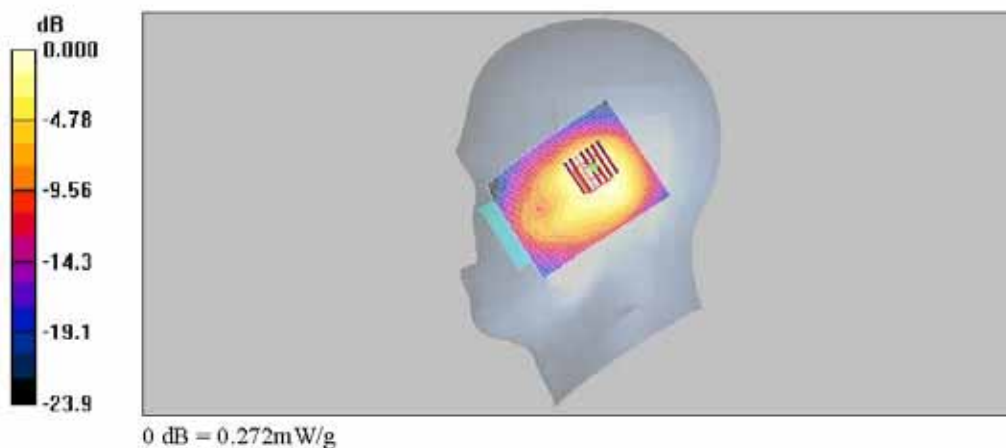
Communication System: WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.79$ mho/m; $\epsilon_r = 37.5$; $\rho = 1000$ kg/m³
 Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(4.48, 4.48, 4.48); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WLAN_RE_11b_Mid_Cheek/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.285 mW/g

WLAN_RE_11b_Mid_Cheek/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 12.1 V/m; Power Drift = -0.108 dB
 Peak SAR (extrapolated) = 0.469 W/kg
 SAR(1 g) = 0.251 mW/g; SAR(10 g) = 0.135 mW/g
 Maximum value of SAR (measured) = 0.272 mW/g



Date: 2011-02-10

Test Laboratory: SGS Testing Korea
 File Name: [WLAN_RE.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WLAN_Head

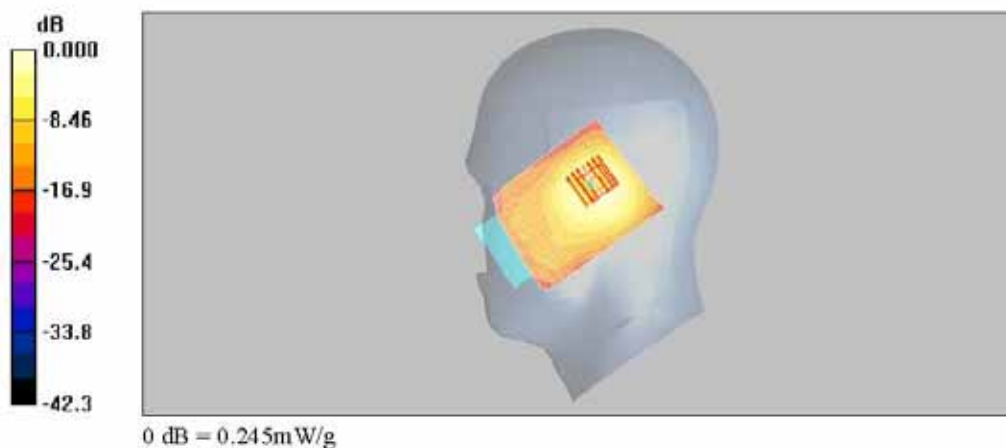
Communication System: WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.79$ mho/m; $\epsilon_r = 37.5$; $\rho = 1000$ kg/m³
 Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(4.48, 4.48, 4.48); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WLAN_RE_11b_Mid_Tilt/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.254 mW/g

WLAN_RE_11b_Mid_Tilt/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 12.3 V/m; Power Drift = -0.107 dB
 Peak SAR (extrapolated) = 0.450 W/kg
 SAR(1 g) = 0.226 mW/g; SAR(10 g) = 0.116 mW/g
 Maximum value of SAR (measured) = 0.245 mW/g



WLAN Body SAR Test

Date: 2011-02-10

Test Laboratory: SGS Testing Korea
 File Name: [WLAN_Body.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WLAN_Body

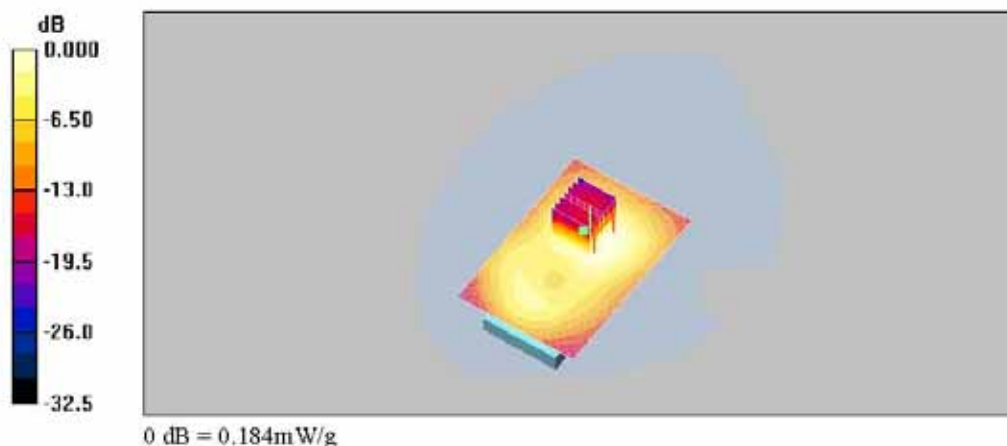
Communication System: WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 51$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(4.07, 4.07, 4.07); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WLAN_Body_11b_Front_Mid/Area Scan (61x91x1): Measurement grid: dx=15mm,
 dy=15mm
 Maximum value of SAR (interpolated) = 0.179 mW/g

WLAN_Body_11b_Front_Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm,
 dy=5mm, dz=5mm
 Reference Value = 7.96 V/m; Power Drift = 0.098 dB
 Peak SAR (extrapolated) = 0.385 W/kg
 SAR(1 g) = 0.176 mW/g; SAR(10 g) = 0.094 mW/g
 Maximum value of SAR (measured) = 0.184 mW/g



Date: 2011-02-10

Test Laboratory: SGS Testing Korea
 File Name: [WLAN_Body.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WLAN_Body

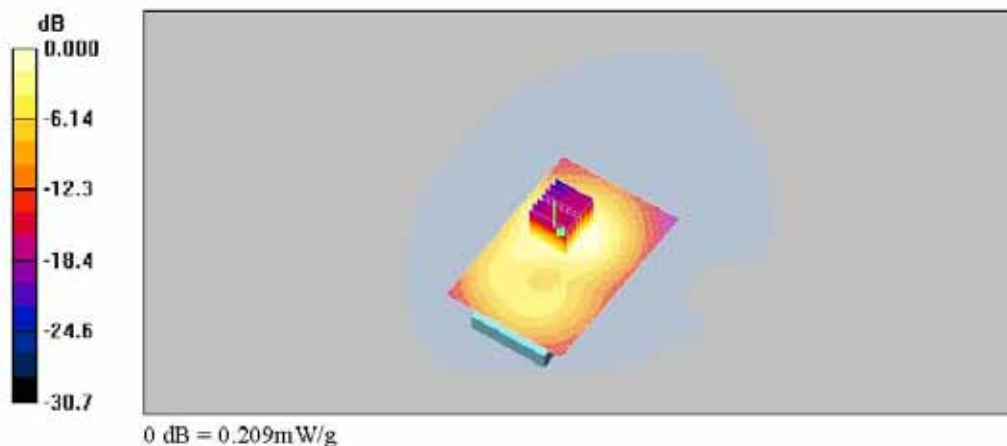
Communication System: WLAN; Frequency: 2412 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 2412 \text{ MHz}$; $\sigma = 1.94 \text{ mho/m}$; $\epsilon_r = 51.1$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section

DASY4 Configuration:

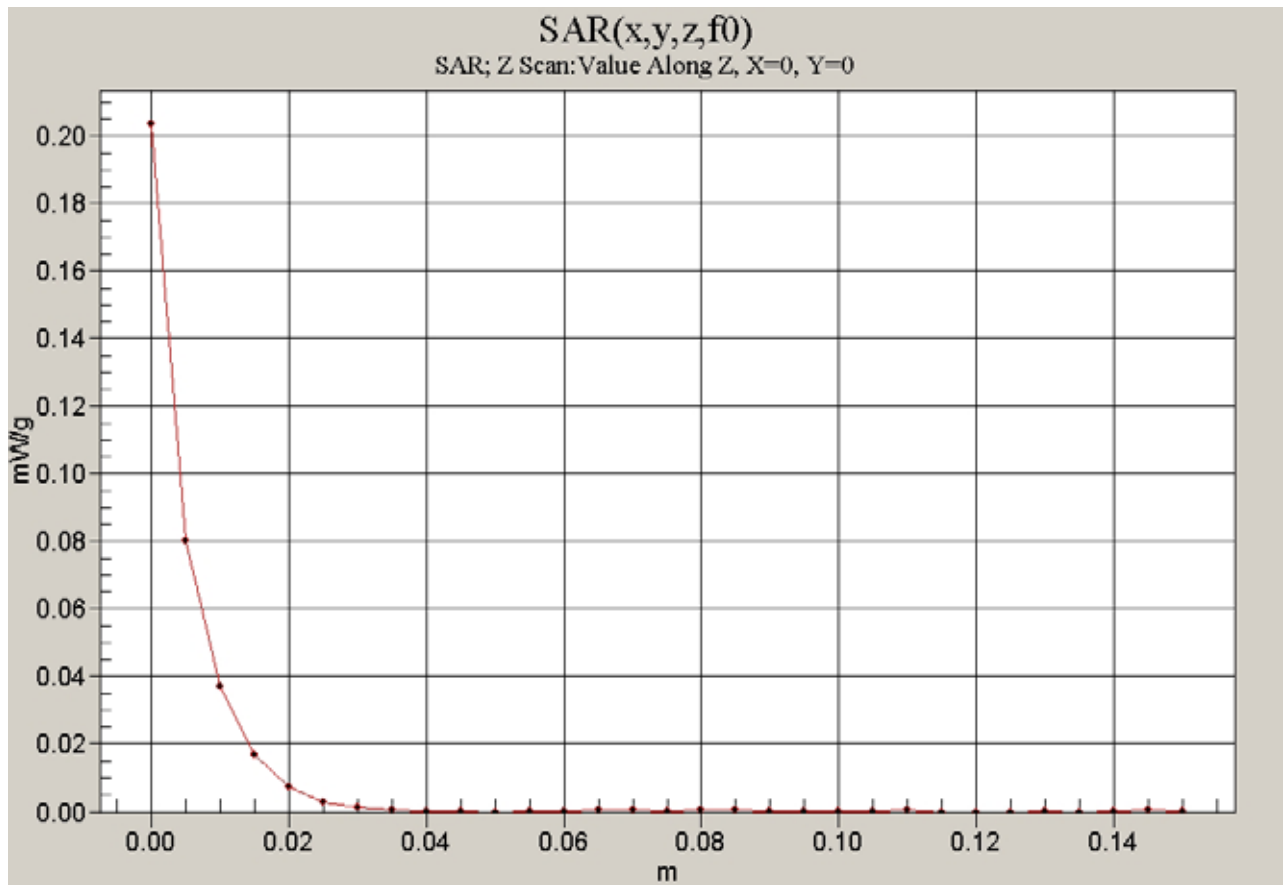
- Probe: ET3DV6 - SN1782; ConvF(4.07, 4.07, 4.07); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WLAN_Body_11b_Back_Low/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.211 mW/g

WLAN_Body_11b_Back_Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 8.24 V/m; Power Drift = -0.197 dB
 Peak SAR (extrapolated) = 0.470 W/kg
 SAR(1 g) = 0.200 mW/g; SAR(10 g) = 0.107 mW/g
 Maximum value of SAR (measured) = 0.209 mW/g



Z Scan



Date: 2011-02-10

Test Laboratory: SGS Testing Korea
 File Name: [WLAN_Body.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WLAN_Body

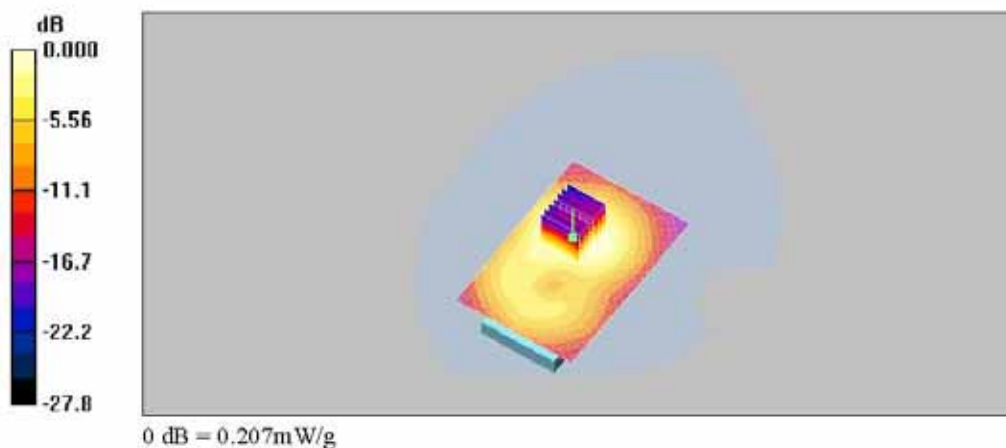
Communication System: WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 51$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(4.07, 4.07, 4.07); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WLAN_Body_11b_Back_Mid/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.212 mW/g

WLAN_Body_11b_Back_Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 8.12 V/m; Power Drift = 0.088 dB
 Peak SAR (extrapolated) = 0.456 W/kg
 SAR(1 g) = 0.197 mW/g; SAR(10 g) = 0.106 mW/g
 Maximum value of SAR (measured) = 0.207 mW/g



Date: 2011-02-10

Test Laboratory: SGS Testing Korea
 File Name: [WLAN_Body.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WLAN_Body

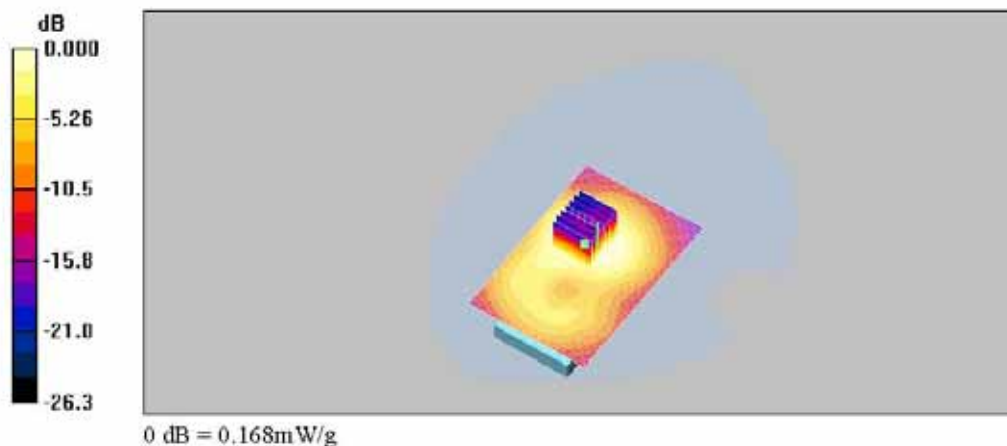
Communication System: WLAN; Frequency: 2462 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 2462 \text{ MHz}$; $\sigma = 2.03 \text{ mho/m}$; $\epsilon_r = 51$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(4.07, 4.07, 4.07); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WLAN_Body_11b_Back_High/Area Scan (61x91x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (interpolated) = 0.168 mW/g

WLAN_Body_11b_Back_High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 7.33 V/m ; Power Drift = 0.031 dB
 Peak SAR (extrapolated) = 0.398 W/kg
SAR(1 g) = 0.161 mW/g ; SAR(10 g) = 0.088 mW/g
 Maximum value of SAR (measured) = 0.168 mW/g



Date: 2011-02-10

Test Laboratory: SGS Testing Korea
 File Name: [WLAN_Body_Edge B.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WLAN_Body

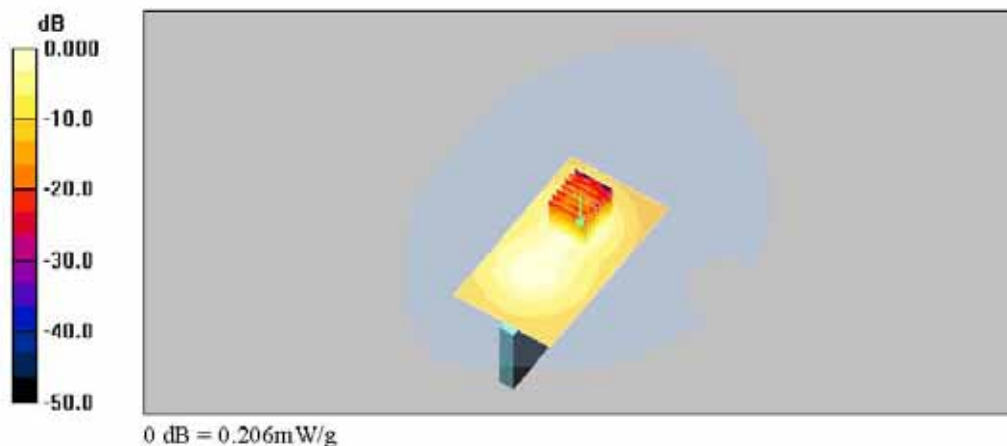
Communication System: WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 51$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(4.07, 4.07, 4.07); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WLAN_Body_11b_Edge B_Mid/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.207 mW/g

WLAN_Body_11b_Edge B_Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 8.06 V/m; Power Drift = 0.092 dB
 Peak SAR (extrapolated) = 0.490 W/kg
 SAR(1 g) = 0.196 mW/g; SAR(10 g) = 0.091 mW/g
 Maximum value of SAR (measured) = 0.206 mW/g



Date: 2011-02-10

Test Laboratory: SGS Testing Korea
 File Name: [WLAN_Body_Edge D.da4](#)

DUT: LG-P350g; Type: Mobile Phone; Serial: 101KPED000356
 Program Name: WLAN_Body

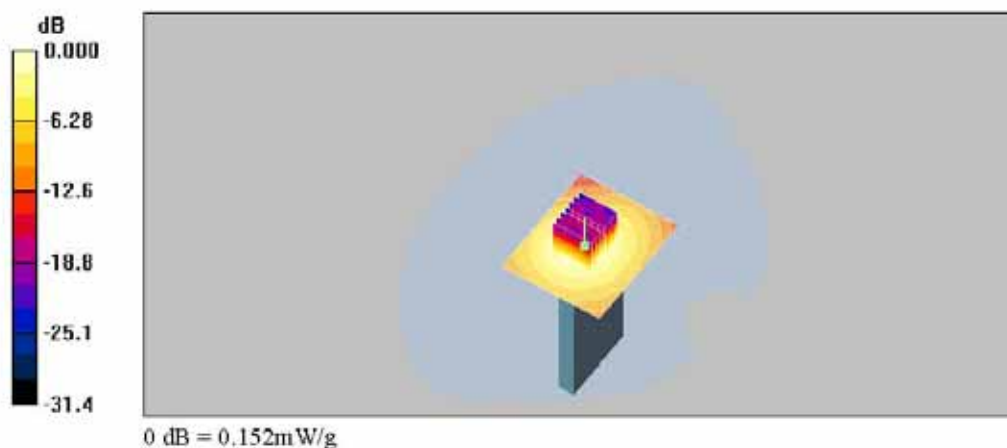
Communication System: WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 2437$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 51$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1782; ConvF(4.07, 4.07, 4.07); Calibrated: 2010-04-28
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2011-01-27
- Phantom: SAM MIC #2000-93 with CRP; Type: SAM MIC #2000-93; Serial: TP-1299
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

WLAN_Body_11b_Edge D_Mid/Area Scan (51x61x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.153 mW/g

WLAN_Body_11b_Edge D_Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 8.83 V/m; Power Drift = -0.191 dB
 Peak SAR (extrapolated) = 0.342 W/kg
SAR(1 g) = 0.144 mW/g; SAR(10 g) = 0.072 mW/g
 Maximum value of SAR (measured) = 0.152 mW/g



Appendix B

Uncertainty Analysis

a	b	c	d	e = f(d,k)	g	i = cxg/e	k
Uncertainty Component	Section in P1528	Tol (%)	Prob. Dist.	Div.	Ci (1g)	1g _{ui} (%)	Vi (Veff)
Probe calibration	E.2.1	6.3	N	1	1	6.30	∞
Axial isotropy	E.2.2	0.5	R	1.73	0.71	0.20	∞
hemispherical isotropy	E.2.2	2.6	R	1.73	0.71	1.06	∞
Boundary effect	E.2.3	0.8	R	1.73	1	0.46	∞
Linearity	E.2.4	0.6	R	1.73	1	0.35	∞
System detection limit	E.2.5	0.25	R	1.73	1	0.14	∞
Readout electronics	E.2.6	0.3	N	1	1	0.30	∞
Response time	E.2.7	0	R	1.73	1	0.00	∞
Integration time	E.2.8	2.6	R	1.73	1	1.50	∞
RF ambient Condition - Noise	E.6.1	3	R	1.73	1	1.73	∞
RF ambient Condition - reflections	E.6.1	3	R	1.73	1	1.73	∞
Probe positioning - mechanical tolerance	E.6.2	1.5	R	1.73	1	0.87	∞
Probe positioning - with respect to phantom	E.6.3	2.9	R	1.73	1	1.67	∞
Max. SAR evaluation	E.5.2	1	R	1.73	1	0.58	∞
Test sample positioning	E.4.2	2.3	N	1	1	2.30	9
Device holder uncertainty	E.4.1	3.6	N	1	1	3.60	∞
Output power variation - SAR drift measurement	6.62	5	R	1.73	1	2.89	∞
Phantom uncertainty (shape and thickness tolerances)	E.3.1	4	R	1.73	1	2.31	∞
Liquid conductivity - deviation from target values	E.3.2	5	R	1.73	0.64	1.85	∞
Liquid conductivity - measurement uncertainty	E.3.2	1.2	N	1	0.64	0.77	5
Liquid permittivity - deviation from target values	E.3.3	5	R	1.73	0.6	1.73	∞
Liquid permittivity - measurement uncertainty	E.3.3	1.1	N	1	0.6	0.66	5
Combined standard uncertainty				RSS		9.63	2754
Expanded uncertainty (95% CONFIDENCE INTERVAL)				K=2		19.27	



Report File No. : F690501/RF-SAR001917
Date of Issue : 2011-02-16
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Appendix C

Calibration Certificate

- PROBE

- DAE 3

- DAE 4

- 835 MHz, 1900 MHz, 2450 MHz DIPOLE

- PROBE Calibration Certificate

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 Accreditation Service (SAS)
 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 **SGS-KES (Dymstec)**

Certificate No: **ET3-1782_Apr10**

CALIBRATION CERTIFICATE

Object **ET3DV6 - SN:1782**

Calibration procedure(s) **QA CAL-01.v6, QA CAL-12.v6, QA CAL-23.v3 and QA CAL-25.v2
 Calibration procedure for dosimetric E-field probes**

Calibration date: **April 28, 2010**

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 (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41495277	1-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41498067	1-Apr-10 (No. 217-01136)	Apr-11
Reference 3 dB Attenuator	SN: S5054 (3c)	30-Mar-10 (No. 217-01159)	Mar-11
Reference 20 dB Attenuator	SN: S5086 (20b)	30-Mar-10 (No. 217-01161)	Mar-11
Reference 30 dB Attenuator	SN: S5129 (30b)	30-Mar-10 (No. 217-01160)	Mar-11
Reference Probe ES3DV2	SN: 3013	30-Dec-09 (No. ES3-3013_Dec09)	Dec-10
DAE4	SN: 660	29-Sep-09 (No. DAE4-660_Sep09)	Sep-10

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-09)	In house check: Oct-10

Calibrated by:	Name	Function	Signature
	Jeton Kastrat	Laboratory Technician	
Approved by:	Name	Function	Signature
	Katja Pokovic	Technical Manager	

Issued: April 28, 2010

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 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConvF	sensitivity in TSL / NORM _{x,y,z}
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
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., $\vartheta = 0$ is normal to probe axis

Calibration is Performed According to the Following Standards:

- 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
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not effect the E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)_{x,y,z}** = NORM_{x,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.
- DCP_{x,y,z}**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- A_{x,y,z}; B_{x,y,z}; C_{x,y,z}; VR_{x,y,z}**: A, B, C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ 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 NORM_{x,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.

ET3DV6 SN:1782

April 28, 2010

Probe ET3DV6

SN:1782

Manufactured:	April 15, 2003
Last calibrated:	April 30, 2009
Modified:	April 27, 2010
Recalibrated:	April 28, 2010

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

ET3DV6 SN:1782

April 28, 2010

DASY - Parameters of Probe: ET3DV6 SN:1782

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	2.01	1.74	1.86	$\pm 10.1\%$
DCP (mV) ^B	93.9	96.4	91.2	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dBuV	C	VR mV	Unc ^C (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	300.0	$\pm 1.5\%$
			Y	0.00	0.00	1.00	300.0	
			Z	0.00	0.00	1.00	300.0	

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_{field} uncertainty inside TSL (see Pages 5 and 6).

^B Numerical linearization parameter: uncertainty not required.

^C Uncertainty is determined using the maximum deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

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DASY - Parameters of Probe: ET3DV6 SN:1782

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz]	Validity [MHz] ^c	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth Unc (k=2)
450	± 50 / ± 100	43.5 ± 5%	0.87 ± 5%	6.67	6.67	6.67	0.19	2.19 ± 13.3%
835	± 50 / ± 100	41.9 ± 5%	0.89 ± 5%	6.26	6.26	6.26	0.51	2.05 ± 11.0%
1750	± 50 / ± 100	40.1 ± 5%	1.37 ± 5%	5.30	5.30	5.30	0.53	2.60 ± 11.0%
1900	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	5.04	5.04	5.04	0.69	2.24 ± 11.0%
2450	± 50 / ± 100	39.2 ± 5%	1.80 ± 5%	4.48	4.48	4.48	0.99	1.71 ± 11.0%

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

ET3DV6 SN:1782

April 28, 2010

DASY - Parameters of Probe: ET3DV6 SN:1782

Calibration Parameter Determined in Body Tissue Simulating Media

f [MHz]	Validity [MHz] ^c	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth Unc (k=2)
450	± 50 / ± 100	56.7 ± 5%	0.94 ± 5%	7.53	7.53	7.53	0.15	2.33 ± 13.3%
635	± 50 / ± 100	55.2 ± 5%	0.97 ± 5%	6.11	6.11	6.11	0.42	2.40 ± 11.0%
1750	± 50 / ± 100	53.4 ± 5%	1.49 ± 5%	4.68	4.68	4.68	0.63	3.03 ± 11.0%
1900	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	4.46	4.46	4.46	0.85	2.44 ± 11.0%
2450	± 50 / ± 100	52.7 ± 5%	1.95 ± 5%	4.07	4.07	4.07	0.99	1.40 ± 11.0%

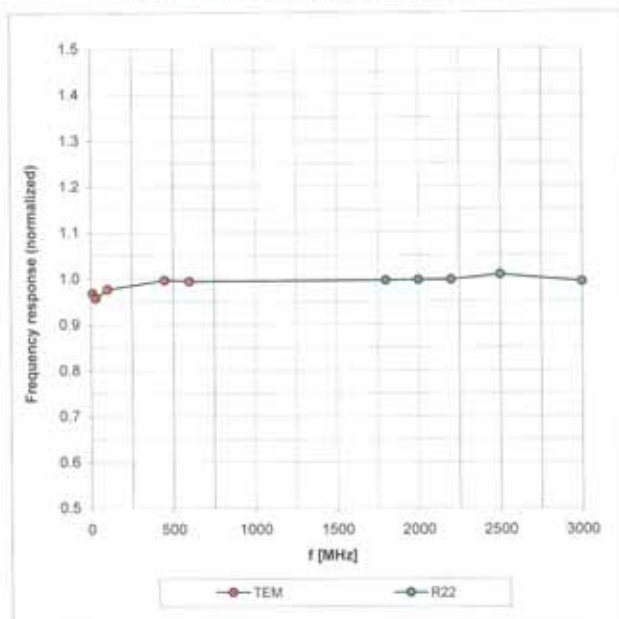
^c The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

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Frequency Response of E-Field

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

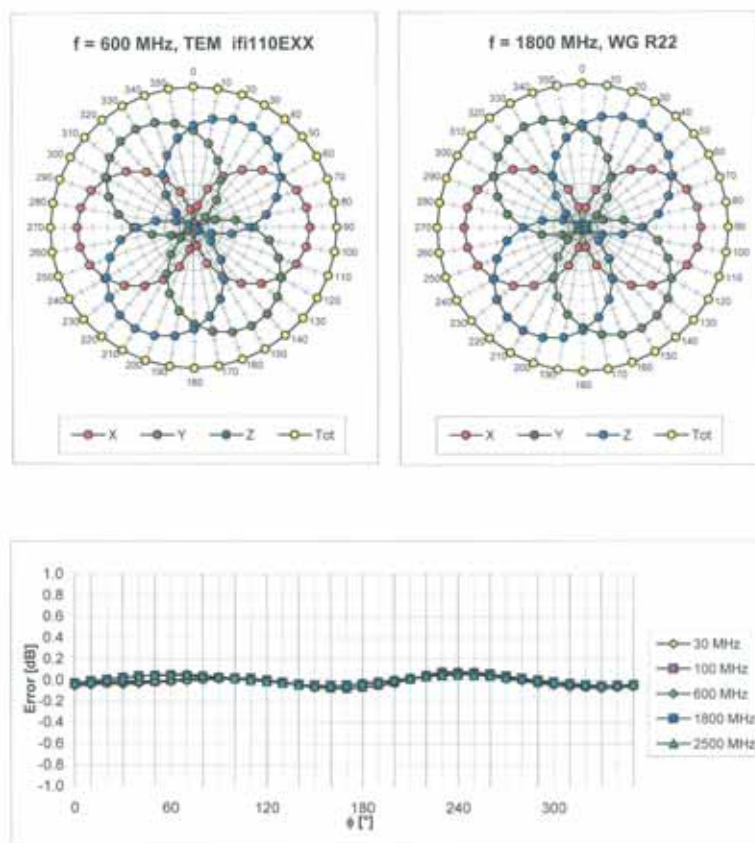


Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

ET3DV6 SN:1782

April 28, 2010

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

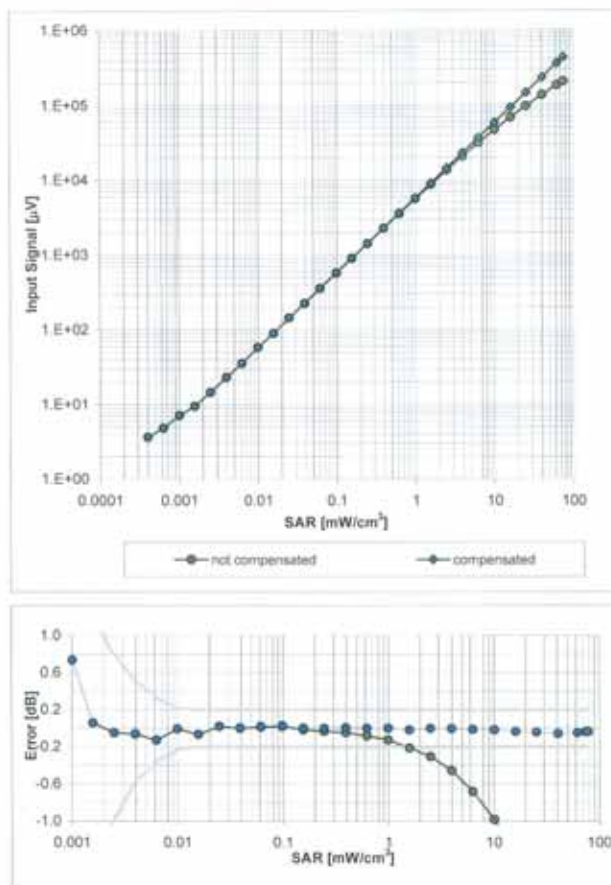


Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

ET3DV6 SN:1782

April 28, 2010

Dynamic Range $f(\text{SAR}_{\text{head}})$ (Waveguide R22, $f = 1800 \text{ MHz}$)

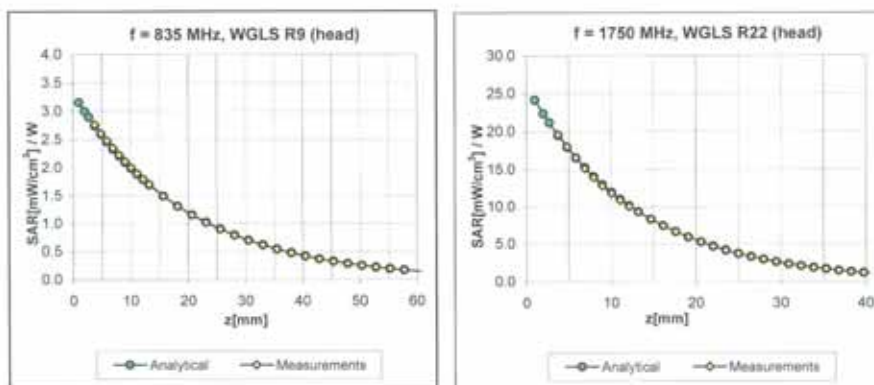


Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

ET3DV6 SN:1782

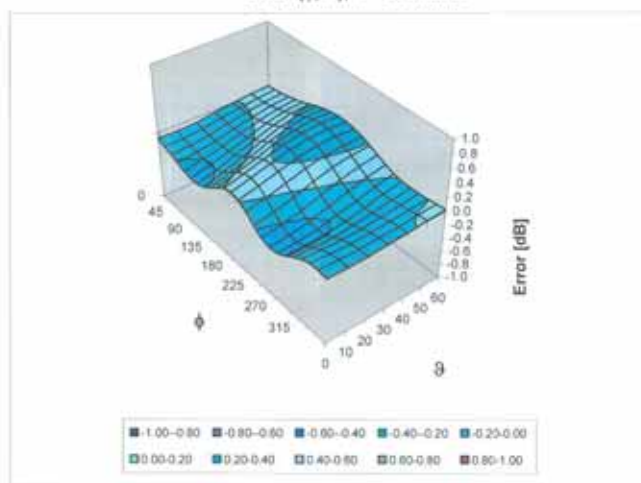
April 28, 2010

Conversion Factor Assessment



Deviation from Isotropy in HSL

Error (ϕ , θ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: $\pm 2.6\%$ (k=2)

ET3DV6 SN:1782

April 28, 2010

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	Not applicable
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	6.8 mm
Probe Tip to Sensor X Calibration Point	2.7 mm
Probe Tip to Sensor Y Calibration Point	2.7 mm
Probe Tip to Sensor Z Calibration Point	2.7 mm
Recommended Measurement Distance from Surface	4 mm

-DAE 3 Calibration Certificate

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Accreditation No.: **SCS 108**

Client **SGS (Dymstec)**

Certificate No: **DAE3-567_Jan11**

CALIBRATION CERTIFICATE

Object **DAE3 - SD.000 D03 AA - SN: 567**

Calibration procedure(s) **QA CAL-06.v22
 Calibration procedure for the data acquisition electronics (DAE)**

Calibration date: **January 27, 2011**

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 $(22 \pm 3)^{\circ}\text{C}$ and humidity $< 70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	28-Sep-10 (No:10376)	Sep-11
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Calibrator Box V1.1	SE UMS 006 AB 1004	07-Jun-10 (in house check)	In house check: Jun-11

Calibrated by:	Name Andrea Guntli	Function Technician	Signature
Approved by:	Name Fin Bornholt	Function R&D Director	Signature

Issued: January 27, 2011

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Accreditation No.: **SCS 108**

Glossary

DAE data acquisition electronics
Connector angle information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters

- **DC Voltage Measurement:** Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- **Connector angle:** The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
 - **DC Voltage Measurement Linearity:** Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
 - **Common mode sensitivity:** Influence of a positive or negative common mode voltage on the differential measurement.
 - **Channel separation:** Influence of a voltage on the neighbor channels not subject to an input voltage.
 - **AD Converter Values with inputs shorted:** Values on the internal AD converter corresponding to zero input voltage
 - **Input Offset Measurement:** Output voltage and statistical results over a large number of zero voltage measurements.
 - **Input Offset Current:** Typical value for information; Maximum channel input offset current, not considering the input resistance.
 - **Input resistance:** Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
 - **Low Battery Alarm Voltage:** Typical value for information. Below this voltage, a battery alarm signal is generated.
 - **Power consumption:** Typical value for information. Supply currents in various operating modes.

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1 μ V, full range = -100...+300 mV

Low Range: 1LSB = 61nV, full range = -1.....+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	404.644 $\pm$ 0.1% (k=2)	404.400 $\pm$ 0.1% (k=2)	404.475 $\pm$ 0.1% (k=2)
Low Range	3.94940 $\pm$ 0.7% (k=2)	3.96974 $\pm$ 0.7% (k=2)	3.94828 $\pm$ 0.7% (k=2)

Connector Angle

Connector Angle to be used in DASY system	5.5 $^{\circ}$ $\pm$ 1 $^{\circ}$
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Appendix

1. DC Voltage Linearity

High Range	Reading (μV)	Difference (μV)	Error (%)
Channel X + Input	200011.1	0.86	0.00
Channel X + Input	20005.53	5.63	0.03
Channel X - Input	-19994.55	6.05	-0.03
Channel Y + Input	200012.0	3.19	0.00
Channel Y + Input	19998.16	-0.94	-0.00
Channel Y - Input	-19999.31	0.89	-0.00
Channel Z + Input	200007.6	-0.57	-0.00
Channel Z + Input	20000.62	1.02	0.01
Channel Z - Input	-19997.10	3.20	-0.02

Low Range	Reading (μV)	Difference (μV)	Error (%)
Channel X + Input	1999.6	-0.43	-0.02
Channel X + Input	200.86	0.86	0.43
Channel X - Input	-198.93	1.07	-0.54
Channel Y + Input	2000.2	0.40	0.02
Channel Y + Input	200.07	0.07	0.03
Channel Y - Input	-199.81	0.09	-0.05
Channel Z + Input	1999.8	-0.29	-0.01
Channel Z + Input	199.45	-0.75	-0.38
Channel Z - Input	-200.35	-0.25	0.12

2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Common mode Input Voltage (mV)	High Range Average Reading (μV)	Low Range Average Reading (μV)
Channel X	200	3.83	1.88
	-200	0.20	-2.32
Channel Y	200	0.69	-0.01
	-200	-1.13	-1.19
Channel Z	200	4.39	4.66
	-200	-6.15	-6.31

3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Input Voltage (mV)	Channel X (μV)	Channel Y (μV)	Channel Z (μV)
Channel X	200	-	2.13	-0.21
Channel Y	200	3.01	-	3.24
Channel Z	200	1.69	-1.11	-

4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	High Range (LSB)	Low Range (LSB)
Channel X	16333	16454
Channel Y	16169	16436
Channel Z	15951	16115

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Input 10MΩ

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	-0.23	-1.40	0.68	0.42
Channel Y	-0.84	-2.05	0.49	0.41
Channel Z	-0.76	-1.62	0.54	0.38

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <251A

7. Input Resistance (Typical values for information)

	Zeroing (kOhm)	Measuring (MOhm)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

8. Low Battery Alarm Voltage (Typical values for information)

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+7.9
Supply (- Vcc)	-7.6

9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.01	+6	+14
Supply (- Vcc)	-0.01	-8	-9

-DAE 4 Calibration Certificate

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Accreditation No.: **SCS 108**

Client **Dymstec**

Certificate No: **DAE4-912_Nov10**

CALIBRATION CERTIFICATE

Object **DAE4 - SD 000 D04 BK - SN: 912**

Calibration procedure(s) **QA CAL-06.v22
 Calibration procedure for the data acquisition electronics (DAE)**

Calibration date: **November 18, 2010**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
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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 (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	28-Sep-10 (No:10376)	Sep-11
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Calibrator Box V1.1	SE LMS 006 AB 1004	07-Jun-10 (in house check)	In house check: Jun-11

Calibrated by:	Name Andrea Gunti	Function Technician	Signature
Approved by:	Name Fin Bornholt	Function R&D Director	Signature

Issued: November 18, 2010

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Glossary

DAE data acquisition electronics
Connector angle information used in DASY system to align probe sensor X to the robot coordinate system.

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- **Connector angle:** The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
 - **DC Voltage Measurement Linearity:** Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
 - **Common mode sensitivity:** Influence of a positive or negative common mode voltage on the differential measurement.
 - **Channel separation:** Influence of a voltage on the neighbor channels not subject to an input voltage.
 - **AD Converter Values with inputs shorted:** Values on the internal AD converter corresponding to zero input voltage
 - **Input Offset Measurement:** Output voltage and statistical results over a large number of zero voltage measurements.
 - **Input Offset Current:** Typical value for information; Maximum channel input offset current, not considering the input resistance.
 - **Input resistance:** Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
 - **Low Battery Alarm Voltage:** Typical value for information. Below this voltage, a battery alarm signal is generated.
 - **Power consumption:** Typical value for information. Supply currents in various operating modes.

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1 μ V , full range = -100...+300 mV

Low Range: 1LSB = 61nV , full range = -1.....+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	404.944 $\pm$ 0.1% (k=2)	404.680 $\pm$ 0.1% (k=2)	404.704 $\pm$ 0.1% (k=2)
Low Range	3.93580 $\pm$ 0.7% (k=2)	3.97412 $\pm$ 0.7% (k=2)	3.99629 $\pm$ 0.7% (k=2)

Connector Angle

Connector Angle to be used in DASY system	294.5 $^{\circ}$ $\pm$ 1 $^{\circ}$
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Appendix

1. DC Voltage Linearity

High Range	Reading (μV)	Difference (μV)	Error (%)
Channel X + Input	200004.8	0.31	0.00
Channel X + Input	19998.22	-1.28	-0.01
Channel X - Input	-19997.29	2.51	-0.01
Channel Y + Input	200003.2	-0.22	-0.00
Channel Y + Input	19998.50	-1.80	-0.01
Channel Y - Input	-20001.32	-1.62	0.01
Channel Z + Input	199996.9	-5.72	-0.00
Channel Z + Input	19998.31	-1.59	-0.01
Channel Z - Input	-19999.21	0.19	-0.00

Low Range	Reading (μV)	Difference (μV)	Error (%)
Channel X + Input	1999.0	-0.95	-0.05
Channel X + Input	199.53	-0.27	-0.13
Channel X - Input	-200.89	-0.79	0.39
Channel Y + Input	1999.3	-0.65	-0.03
Channel Y + Input	200.02	-0.08	-0.04
Channel Y - Input	-200.53	-0.73	0.37
Channel Z + Input	2000.0	0.10	0.01
Channel Z + Input	197.98	-2.02	-1.01
Channel Z - Input	-201.74	-1.84	0.92

2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Common mode Input Voltage (mV)	High Range Average Reading (μV)	Low Range Average Reading (μV)
Channel X	200	-0.44	-1.91
	-200	2.98	1.49
Channel Y	200	17.00	16.47
	-200	-18.13	-18.66
Channel Z	200	9.18	9.08
	-200	-11.53	-11.66

3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Input Voltage (mV)	Channel X (μV)	Channel Y (μV)	Channel Z (μV)
Channel X	200	-	3.51	-1.20
Channel Y	200	2.71	-	6.18
Channel Z	200	3.63	-0.17	-

4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	High Range (LSB)	Low Range (LSB)
Channel X	15821	16047
Channel Y	15851	15743
Channel Z	15617	16749

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Input 10M Ω

	Average (μ V)	min. Offset (μ V)	max. Offset (μ V)	Std. Deviation (μ V)
Channel X	0.10	-1.19	1.64	0.64
Channel Y	-1.00	-2.43	0.23	0.50
Channel Z	-0.90	-2.03	1.18	0.55

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

7. Input Resistance (Typical values for information)

	Zeroing (kOhm)	Measuring (MOhm)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

8. Low Battery Alarm Voltage (Typical values for information)

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+7.9
Supply (- Vcc)	-7.6

9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.01	+6	+14
Supply (- Vcc)	-0.01	-8	-9

- 835 MHz Dipole Calibration Certificate

**Calibration Laboratory of
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 Zeughausstrasse 43, 8004 Zurich, Switzerland



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 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **SGS KES (Dymstec)**

Certificate No: **D835V2-490_May10**

CALIBRATION CERTIFICATE

Object **D835V2 - SN: 490**

Calibration procedure(s) **QA CAL-05.v7
 Calibration procedure for dipole validation kits**

Calibration date: **May 21, 2010**

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 (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	08-Oct-09 (No. 217-01086)	Oct-10
Power sensor HP 8481A	US37292783	08-Oct-09 (No. 217-01086)	Oct-10
Reference 20 dB Attenuator	SN: 5086 (20g)	30-Mar-10 (No. 217-01158)	Mar-11
Type-N mismatch combination	SN: 5047.2 / 06327	30-Mar-10 (No. 217-01162)	Mar-11
Reference Probe ES3DV3	SN: 3205	30-Apr-10 (No. ES3-3205_Apr10)	Apr-11
DAE4	SN: 601	02-Mar-10 (No. DAE4-601_Mar10)	Mar-11

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 54206	18-Oct-01 (in house check Oct-09)	In house check: Oct-10

	Name	Function	Signature
Calibrated by:	Jeton Kastrali	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 21, 2010

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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:

- 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
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- 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:

- DASY4/5 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	DASY5	V5.2
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 $\pm$ 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 $\pm$ 0.2) °C	41.7 $\pm$ 6 %	0.91 mho/m $\pm$ 6 %
Head TSL temperature during test	(22.5 $\pm$ 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	2.42 mW / g
SAR normalized	normalized to 1W	9.68 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	9.62 mW /g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.58 mW / g
SAR normalized	normalized to 1W	6.32 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	6.29 mW /g $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.2 ± 6 %	0.98 mho/m ± 6 %
Body TSL temperature during test	(22.0 ± 0.2) °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.49 mW / g
SAR normalized	normalized to 1W	10.0 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	9.84 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.63 mW / g
SAR normalized	normalized to 1W	6.52 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	6.47 mW / g ± 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	49.9 Ω - 5.3 j Ω
Return Loss	- 25.4 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	45.4 Ω - 6.9 j Ω
Return Loss	- 21.2 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.381 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	May 19, 2003

DASY5 Validation Report for Head TSL

Date/Time: 21.05.2010 10:57:47

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:490

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL900

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.91 \text{ mho/m}$; $\epsilon_r = 41.9$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.03, 6.03, 6.03); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

Pin=250 mW /d=15mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement

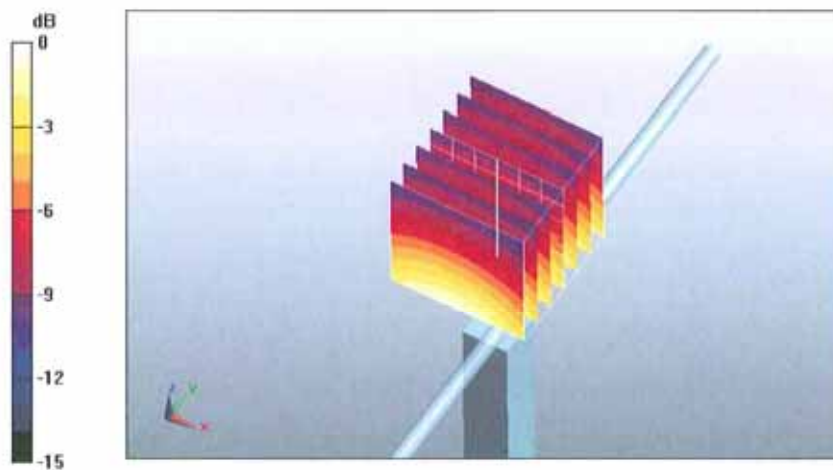
grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 57.1 V/m; Power Drift = 0.00869 dB

Peak SAR (extrapolated) = 3.6 W/kg

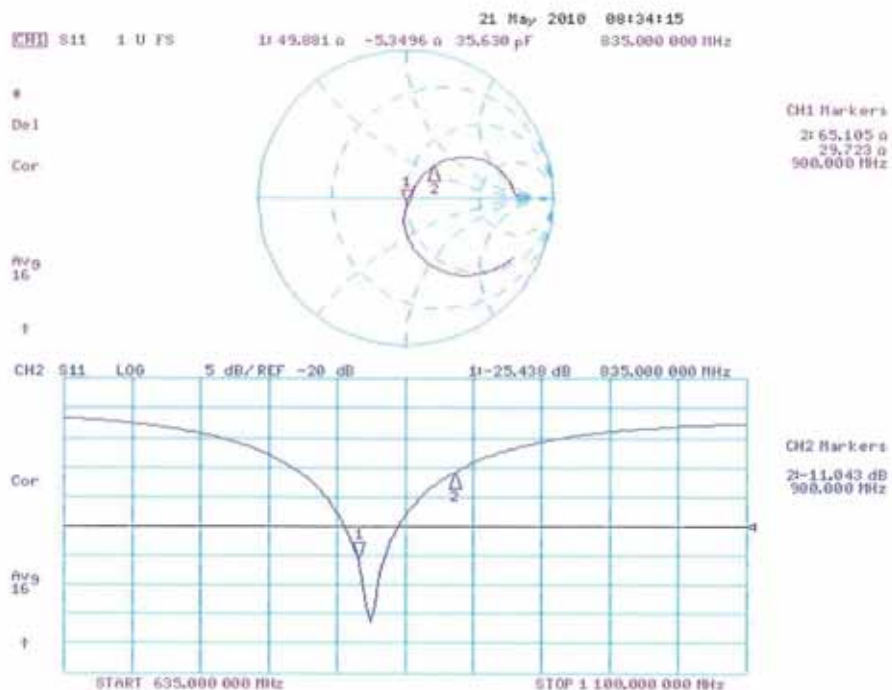
SAR(1 g) = 2.42 mW/g; SAR(10 g) = 1.58 mW/g

Maximum value of SAR (measured) = 2.8 mW/g



0 dB = 2.8mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body

Date/Time: 20.05.2010 10:28:20

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:490

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: MSL900

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.98 \text{ mho/m}$; $\epsilon_r = 54.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.86, 5.86, 5.86); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

Pin250 mW /d=15mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement

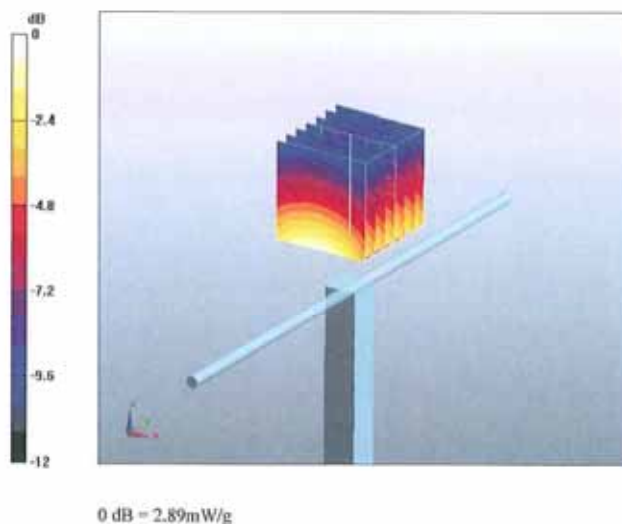
grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 56.1 V/m; Power Drift = 0.000723 dB

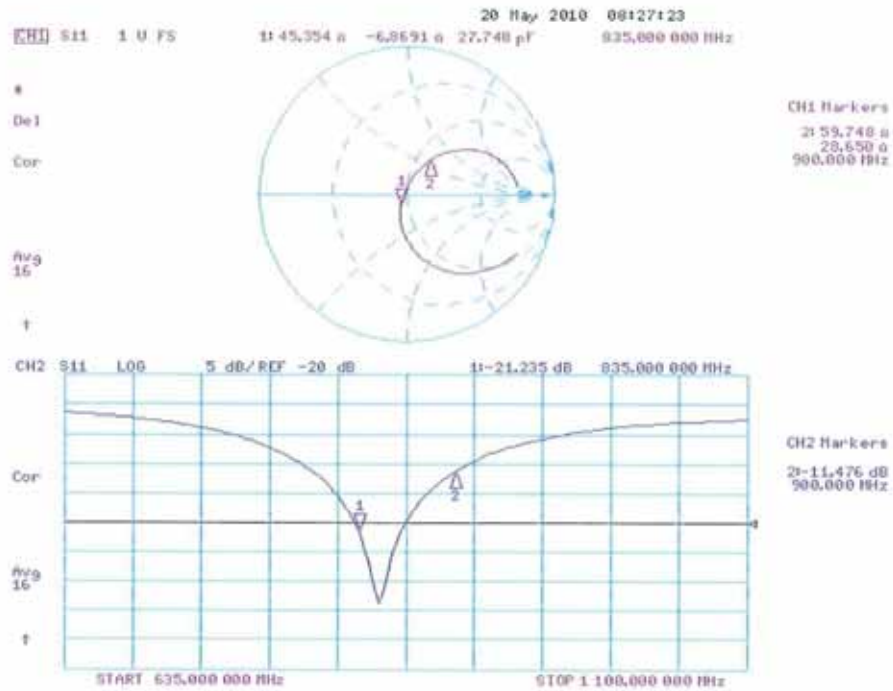
Peak SAR (extrapolated) = 3.65 W/kg

SAR(1 g) = 2.49 mW/g; SAR(10 g) = 1.63 mW/g

Maximum value of SAR (measured) = 2.89 mW/g



Impedance Measurement Plot for Body TSL



- 1900 MHz Dipole Calibration Certificate

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Accreditation No.: **SCS 108**

Client **SGS KES (Dymstec)**

Certificate No: **D1900V2-5d033_May10**

CALIBRATION CERTIFICATE

Object **D1900V2 - SN: 5d033**

Calibration procedure(s) **QA CAL-05.v7
 Calibration procedure for dipole validation kits**

Calibration date: **May 26, 2010**

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 (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-09 (No. 217-01086)	Oct-10
Power sensor HP 8481A	US37292783	06-Oct-09 (No. 217-01086)	Oct-10
Reference 20 dB Attenuator	SN: 5086 (20g)	30-Mar-10 (No. 217-01158)	Mar-11
Type-N mismatch combination	SN: 5047.2 / 06327	30-Mar-10 (No. 217-01162)	Mar-11
Reference Probe ES3DV3	SN: 3205	30-Apr-10 (No. ES3-3205_Apr10)	Apr-11
DAE4	SN: 601	02-Mar-10 (No. DAE4-601_Mar10)	Mar-11
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-09)	In house check: Oct-10

Calibrated by: **Name: Dimce Iliev, Function: Laboratory Technician, Signature: [Signature]**

Approved by: **Name: Katja Pokovic, Function: Technical Manager, Signature: [Signature]**

Issued: May 27, 2010

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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:

- 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
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- 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:

- DASY4/5 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	DASY5	V5.2
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 $\pm$ 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 $\pm$ 0.2) °C	39.7 $\pm$ 6 %	1.41 mho/m $\pm$ 6 %
Head TSL temperature during test	(21.5 $\pm$ 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	9.90 mW / g
SAR normalized	normalized to 1W	39.6 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	39.4 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.15 mW / g
SAR normalized	normalized to 1W	20.6 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	20.5 mW / g $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.1 ± 6 %	1.52 mho/m ± 6 %
Body TSL temperature during test	(21.8 ± 0.2) °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	10.3 mW / g
SAR normalized	normalized to 1W	41.2 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	41.3 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.50 mW / g
SAR normalized	normalized to 1W	22.0 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	22.0 mW / g ± 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$49.5 \Omega + 3.8 j\Omega$
Return Loss	- 28.4 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	$47.1 \Omega + 4.3 j\Omega$
Return Loss	- 25.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.205 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	March 17, 2003

DASY5 Validation Report for Head TSL

Date/Time: 17.05.2010 15:51:21

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d033

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL U11 BB

Medium parameters used: $f = 1900 \text{ MHz}$; $\sigma = 1.41 \text{ mho/m}$; $\epsilon_r = 39.8$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.09, 5.09, 5.09); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement

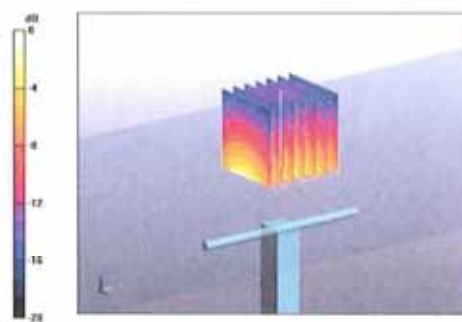
grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 97.4 V/m; Power Drift = 0.00578 dB

Peak SAR (extrapolated) = 18.3 W/kg

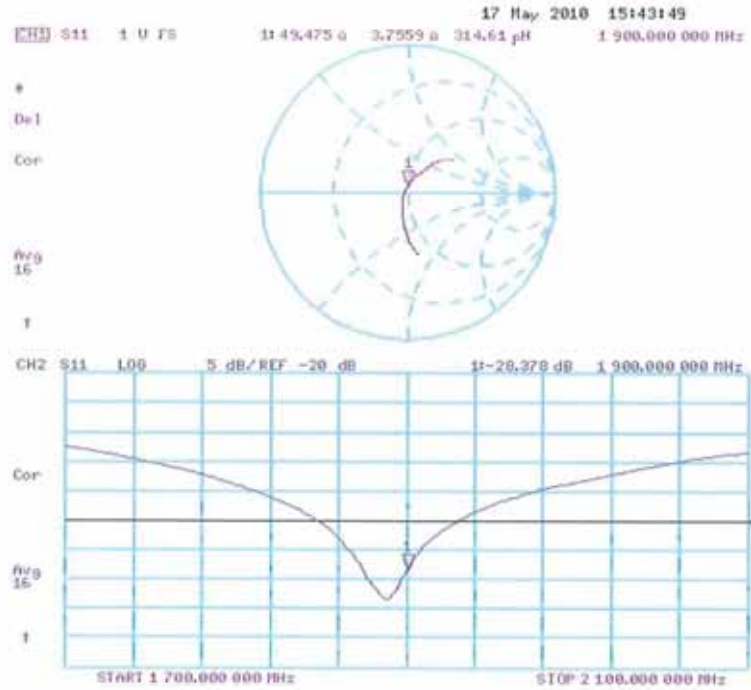
SAR(1 g) = 9.9 mW/g; SAR(10 g) = 5.15 mW/g

Maximum value of SAR (measured) = 12.4 mW/g



0 dB = 12.4mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body

Date/Time: 26.05.2010 15:04:02

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d033

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: MSL U11 BB

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 54.1$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.59, 4.59, 4.59); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement

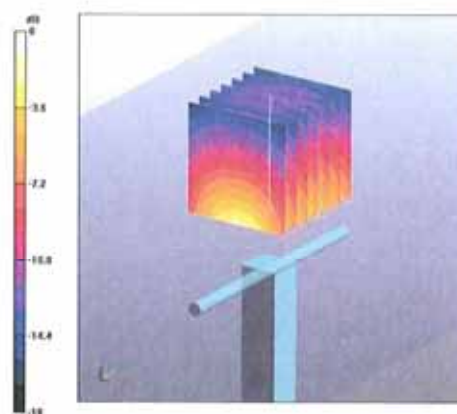
grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 97.2 V/m; Power Drift = -0.00657 dB

Peak SAR (extrapolated) = 17.1 W/kg

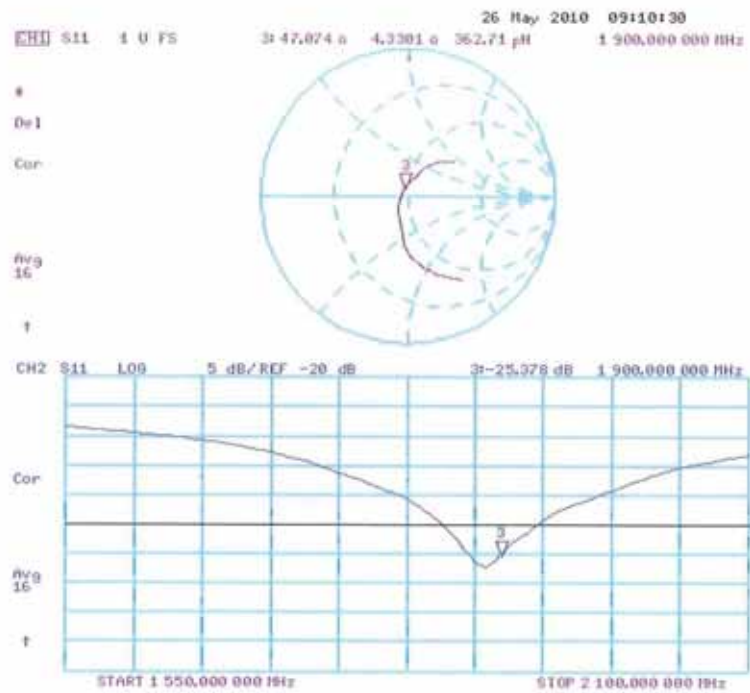
SAR(1 g) = 10.3 mW/g; SAR(10 g) = 5.5 mW/g

Maximum value of SAR (measured) = 12.9 mW/g



0 dB = 12.9mW/g

Impedance Measurement Plot for Body TSL



- 2450 MHz Dipole Calibration Certificate

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Accreditation No.: **SCS 108**

Client **SGS (Dymstec)**

Certificate No: **D2450V2-734_May10**

CALIBRATION CERTIFICATE

Object **D2450V2 - SN: 734**

Calibration procedure(s) **QA CAL-05.v7**
 Calibration procedure for dipole validation kits

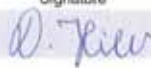
Calibration date: **May 27, 2010**

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 $(22 \pm 3)^{\circ}\text{C}$ and humidity $< 70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-09 (No. 217-01086)	Oct-10
Power sensor HP 8481A	US37292783	06-Oct-09 (No. 217-01086)	Oct-10
Reference 20 dB Attenuator	SN: 5086 (20g)	30-Mar-10 (No. 217-01158)	Mar-11
Type-N mismatch combination	SN: 5047.2 / 06327	30-Mar-10 (No. 217-01162)	Mar-11
Reference Probe ES3DV3	SN: 3205	30-Apr-10 (No. ES3-3205_Apr10)	Apr-11
DAE4	SN: 601	02-Mar-10 (No. DAE4-601_Mar10)	Mar-11
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-09)	In house check: Oct-10

	Name	Function	Signature
Calibrated by:	Dimce Iliev	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 27, 2010

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Calibration Laboratory of
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 Zeughausstrasse 43, 8004 Zurich, Switzerland



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 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:

- 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
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- 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:

- DASY4/5 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	DASY5	V5.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V4.9	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	39.0 $\pm$ 6 %	1.76 mho/m $\pm$ 6 %
Head TSL temperature during test	(21.5 $\pm$ 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	12.8 mW / g
SAR normalized	normalized to 1W	51.2 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	51.7 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.03 mW / g
SAR normalized	normalized to 1W	24.1 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	24.2 mW / g $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	53.6 ± 6 %	1.97 mho/m ± 6 %
Body TSL temperature during test	(21.8 ± 0.2) °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.4 mW / g
SAR normalized	normalized to 1W	53.6 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	53.5 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.31 mW / g
SAR normalized	normalized to 1W	25.2 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	25.2 mW / g ± 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$53.8 \Omega + 3.2 j\Omega$
Return Loss	- 26.4 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	$49.8 \Omega + 4.4 j\Omega$
Return Loss	- 27.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.153 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	May 07, 2003

DASY5 Validation Report for Head TSL

Date/Time: 25.05.2010 14:48:31

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:734

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: HSL U11 BB

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.76$ mho/m; $\epsilon_r = 39$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.53, 4.53, 4.53); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement

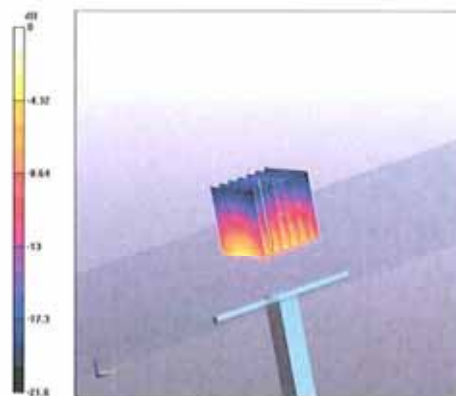
grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 101.2 V/m; Power Drift = 0.030 dB

Peak SAR (extrapolated) = 26.1 W/kg

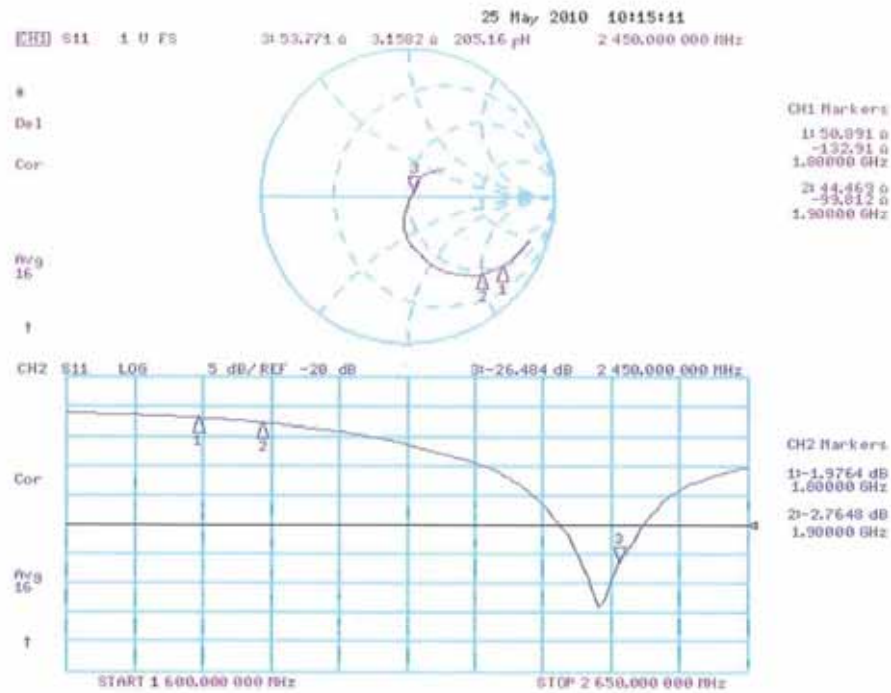
SAR(1 g) = 12.8 mW/g; SAR(10 g) = 6.03 mW/g

Maximum value of SAR (measured) = 16.7 mW/g



0 dB = 16.7mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body

Date/Time: 27.05.2010 10:14:45

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:734

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: MSL U11 BB

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.97$ mho/m; $\epsilon_r = 53.6$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.31, 4.31, 4.31); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement

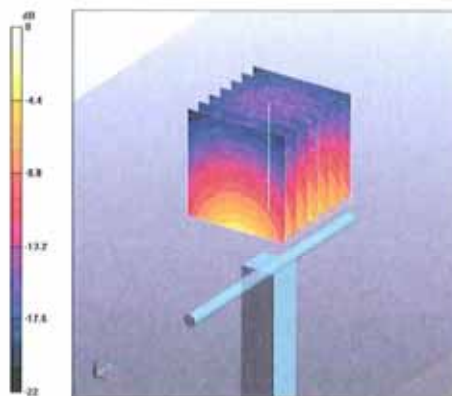
grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 96.7 V/m; Power Drift = -0.030 dB

Peak SAR (extrapolated) = 27.3 W/kg

SAR(1 g) = 13.4 mW/g; SAR(10 g) = 6.31 mW/g

Maximum value of SAR (measured) = 17.4 mW/g



0 dB = 17.4mW/g

Impedance Measurement Plot for Body TSL

